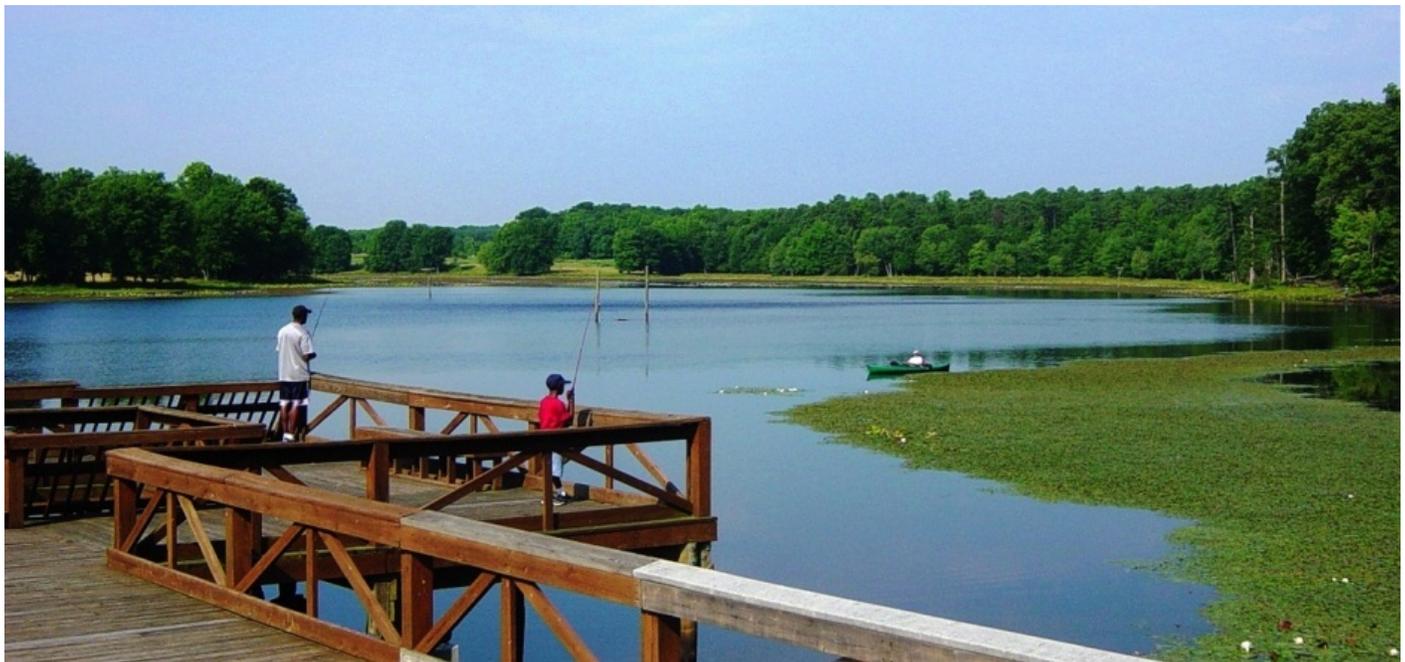




# National Wildlife Refuge Visitor Survey 2010/2011: Individual Refuge Results for Patuxent Research Refuge

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

*We really enjoy our visits to the Refuge. We hike, watch birds, and visit the exhibit at the Visitor Center. When we have out-of-town guests, we always take them to the Refuge. They're always surprised something like this is so close to Washington, DC.—Survey comment from visitor to Patuxent Research Refuge.*



Patuxent Research 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 Patuxent Research Refuge 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 Patuxent Research Refuge (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):** 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 Patuxent Research Refuge, 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 Patuxent Research Refuge

Patuxent Research Refuge is situated along the Patuxent and Little Patuxent Rivers between Washington, D.C. and Baltimore, Maryland. The refuge is comprised of land formerly managed by the Departments of Agriculture and Defense. The refuge supports a wide diversity of wildlife in forest, meadow, and wetland habitats. Located 20 miles north of Washington, D.C. and 20 miles south of Baltimore, Maryland, this 12,750-acre refuge is the only National Wildlife Refuge in the system established to support wildlife research.

The refuge was established in 1936 by way of an executive order from President Franklin D. Roosevelt. The refuge has since grown from its original size of 2,670 acres to almost 13,000 acres through acquisitions from the Departments of Agriculture and Defense. Patuxent Research Refuge's mission of conserving and protecting the nation's wildlife and habitat through research and wildlife management techniques has remained virtually unchanged.

Patuxent Research Refuge is divided into three areas. The North Tract offers hunting, fishing, wildlife observation, trails and many interpretive programs. The Central Tract houses the offices and study sites of the many research biologists. The South Tract is where the Visitor Center and its trails are located. The Visitor Center and the North Tract are the only areas open for visitor activities. Patuxent attracts almost 180,000 visitors annually (based on 2008 RAPP database; U.S. Fish and Wildlife Service, 2011, written comm.), partly due to its proximity to two large metropolises. Visitors enjoy environmental education, interpretation programs, fishing, hunting, photography and wildlife observation. Figure 1 below displays a map of the refuge. For more information, please visit <http://www.fws.gov/northeast/patuxent/index.htm>

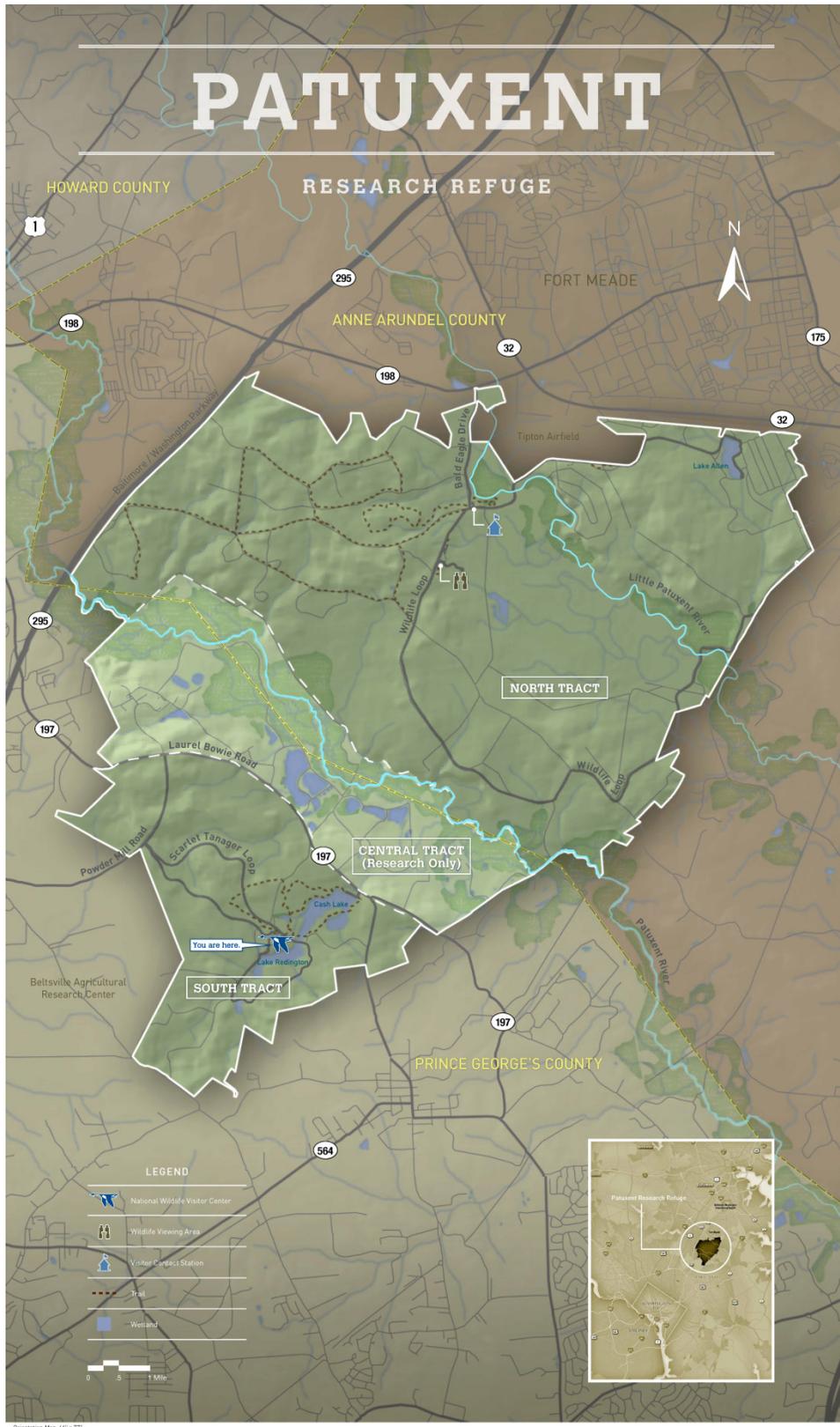


Figure 1. Map of Patuxent Research Refuge, courtesy of U.S. Fish and Wildlife Service.

## Sampling at Patuxent Research Refuge

A total of 294 visitors agreed to participate in the survey during the two sampling periods at the identified locations at Patuxent Research Refuge (table 2). In all, 209 visitors completed the survey for a 74% response rate and  $\pm 5\%$  margin of error at the 95% confidence level.<sup>1</sup>

**Table 2.** Sampling and response rate summary for Patuxent Research Refuge.

Sampling period	Dates	Locations	Total contacts	Undeliverable addresses	Completed surveys	Response rate
1	10/2/2010 to 10/16/2010	National Wildlife Visitor Center North Tract Contact Station Hunting Contact Station Cash Lake	151	6	105	72%
2	4/9/2011 to 4/23/2011	National Wildlife Visitor Center Trailhead Near Visitor Center North Tract Contact Station	143	6	104	76%
<b>Total</b>			<b>294</b>	<b>12</b>	<b>209</b>	<b>74%</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 Patuxent Research Refuge 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 (84%) and that the Refuge System has the mission of conserving, managing, and restoring fish, wildlife, plants and their habitat (85%). 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-

<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).

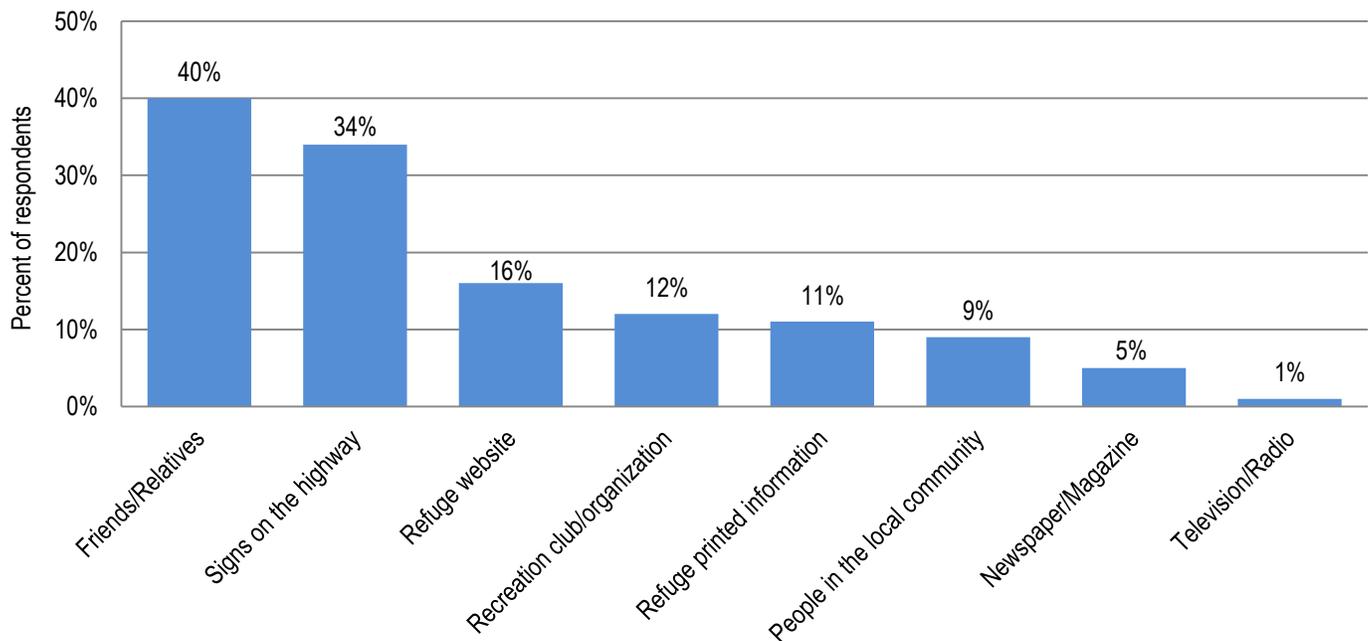
day management practices of individual refuges, only that visitors feel they have a basic knowledge of who manages refuges and why. Compared to other public lands, many visitors feel that refuges provide a unique recreation experience (84%; see Appendix B for visitor comments on “What Makes National 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 Patuxent Research Refuge had been to at least one other National Wildlife Refuge in the past year (52%), with an average of 8 visits to other refuges during the past 12 months.

### Visiting This Refuge

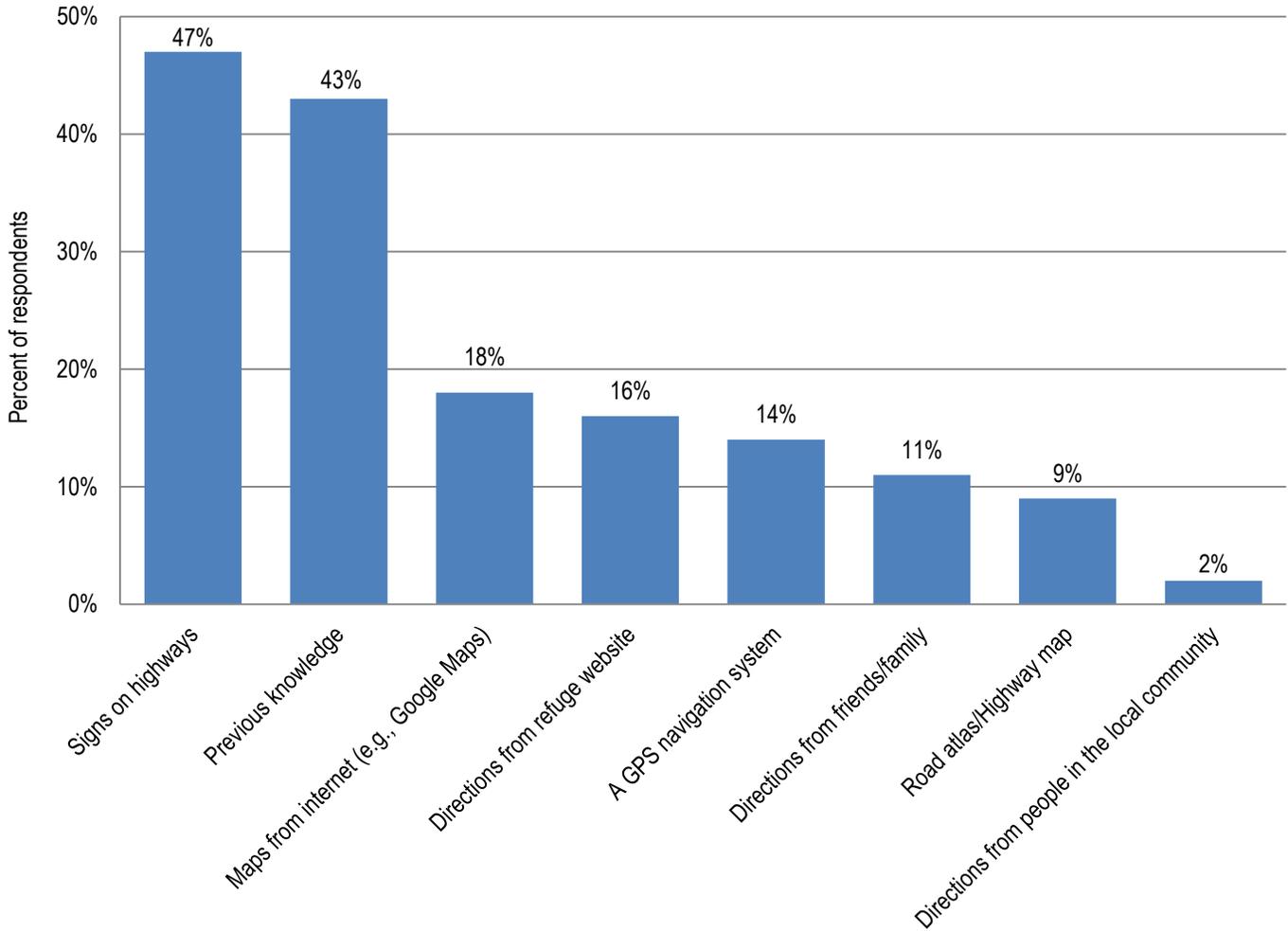
Some surveyed visitors (32%) had only been to Patuxent Research Refuge once in the past 12 months, while most had been multiple times (68%). These repeat visitors went to the refuge an average of 17 times during that same 12-month period. Visitors used the refuge during only one season (45%), during multiple seasons (36%), and year-round (19%).

Most visitors first learned about the refuge from friends/relatives (40%), signs on the highway (34%), or refuge website (16%; fig. 2). Key information sources used by visitors to find their way to this refuge include signs on highways (47%), previous knowledge (43%), or maps from internet (e.g., Google Maps) (18%; fig. 3).

Most visitors (88%) lived in the local area (within 50 miles of the refuge), whereas 12% were nonlocal visitors. For most local visitors, Patuxent Research Refuge was the primary purpose or sole destination of their trip (85%; table 3). For most nonlocal visitors, the refuge was an incidental or spur-of-the-moment stop on a trip taken for other purposes (62%). Local visitors (n = 183) reported that they traveled an average of 15 miles to get to the refuge, while nonlocal visitors (n = 26) traveled an average of 387 miles. ***It is important to note that summary statistics based on a small sample size (n < 30) may not provide a reliable representation of the population.*** Figure 4 shows the residence of visitors travelling to the refuge. About 80% of visitors travelling to Patuxent Research Refuge were from Maryland.



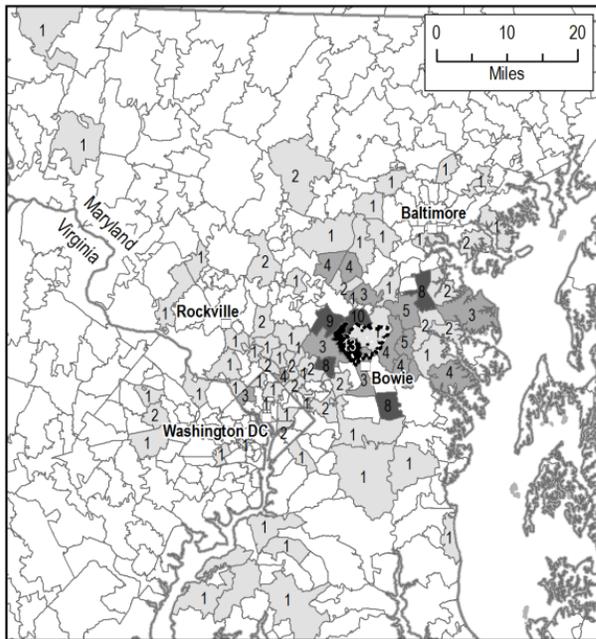
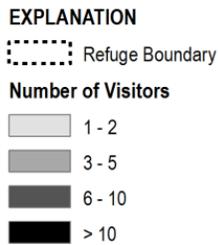
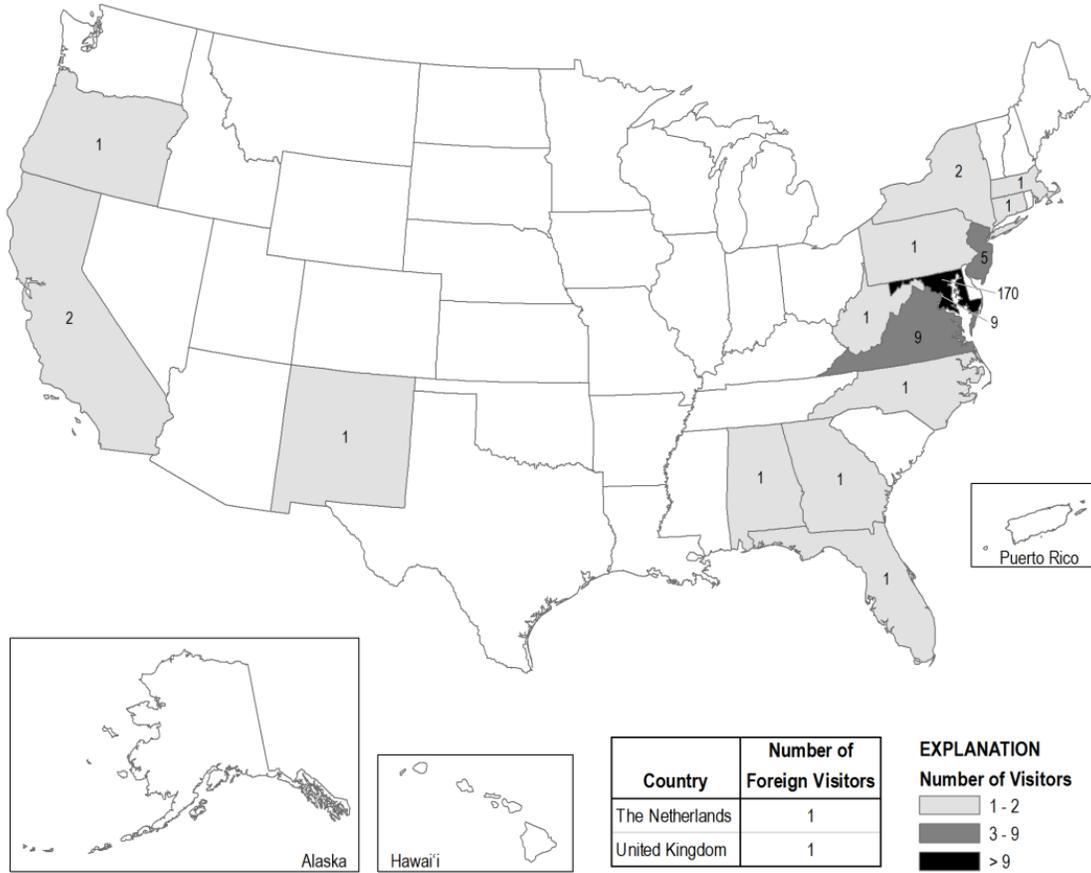
**Figure 2.** How visitors first learned or heard about Patuxent Research Refuge (n = 200).



**Figure 3.** Resources used by visitors to find their way to Patuxent Research Refuge during *this* visit (n = 207).

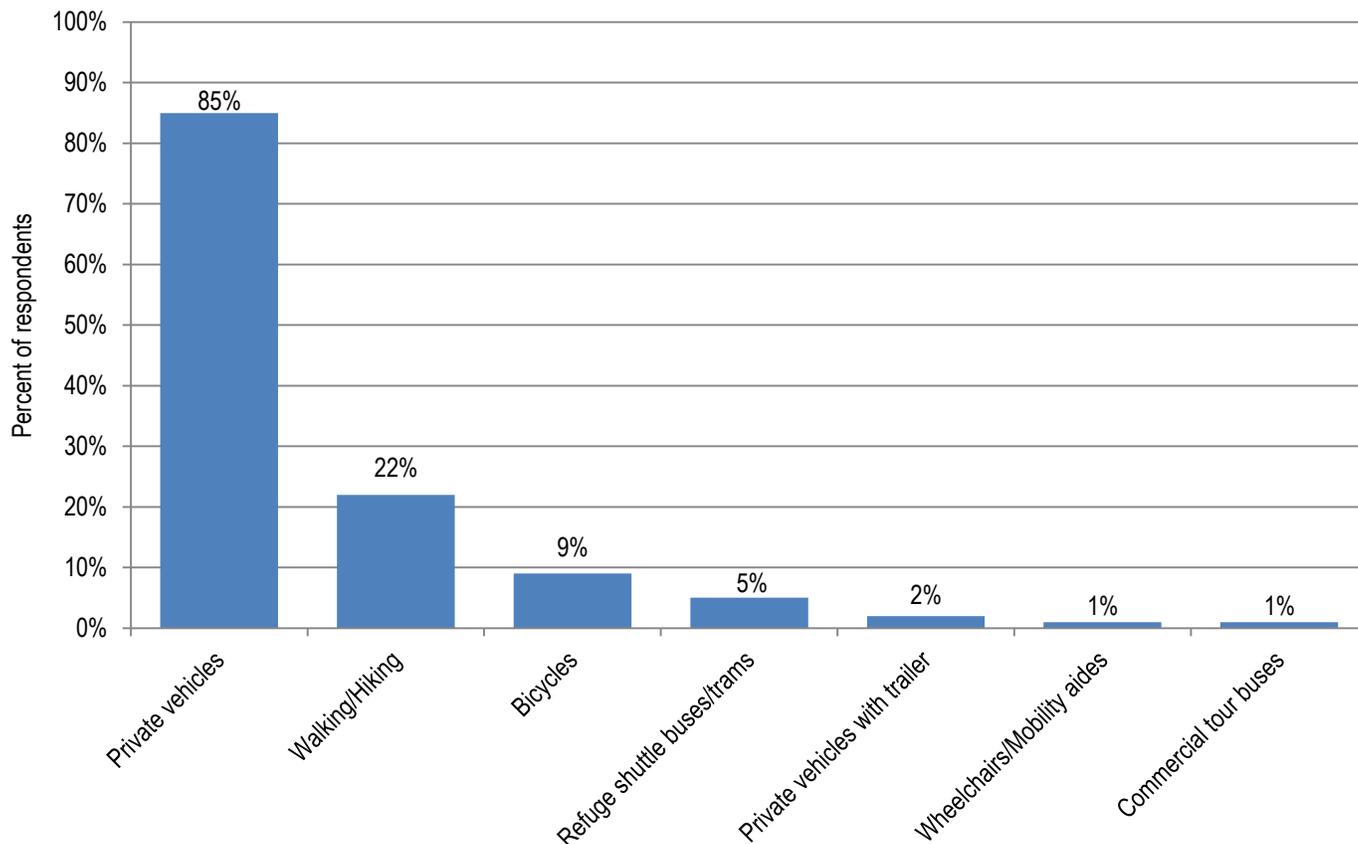
**Table 3.** Influence of Patuxent Research Refuge on visitors' decision to take *this* trip.

Visitors	Visiting this refuge was...		
	the primary reason for trip	one of many equally important reasons for trip	an incidental stop
Nonlocal	19%	19%	62%
Local	84%	8%	8%
Total	77%	9%	14%



**Figure 4.** Number of visitors travelling to Patuxent Research Refuge by residence. Top map shows residence by state and bottom map shows residence by zip codes near the refuge (n = 209).

Surveyed visitors reported that they spent an average of 3 hours at Patuxent Research Refuge 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 2 hours (24%). The key modes of transportation used by visitors to travel around the refuge were private vehicle (85%), walking/hiking (22%), and bicycle (9%; fig. 5). Some visitors indicated they were part of a group on their visit to this refuge (52%), travelling primarily with family and friends (table 4).

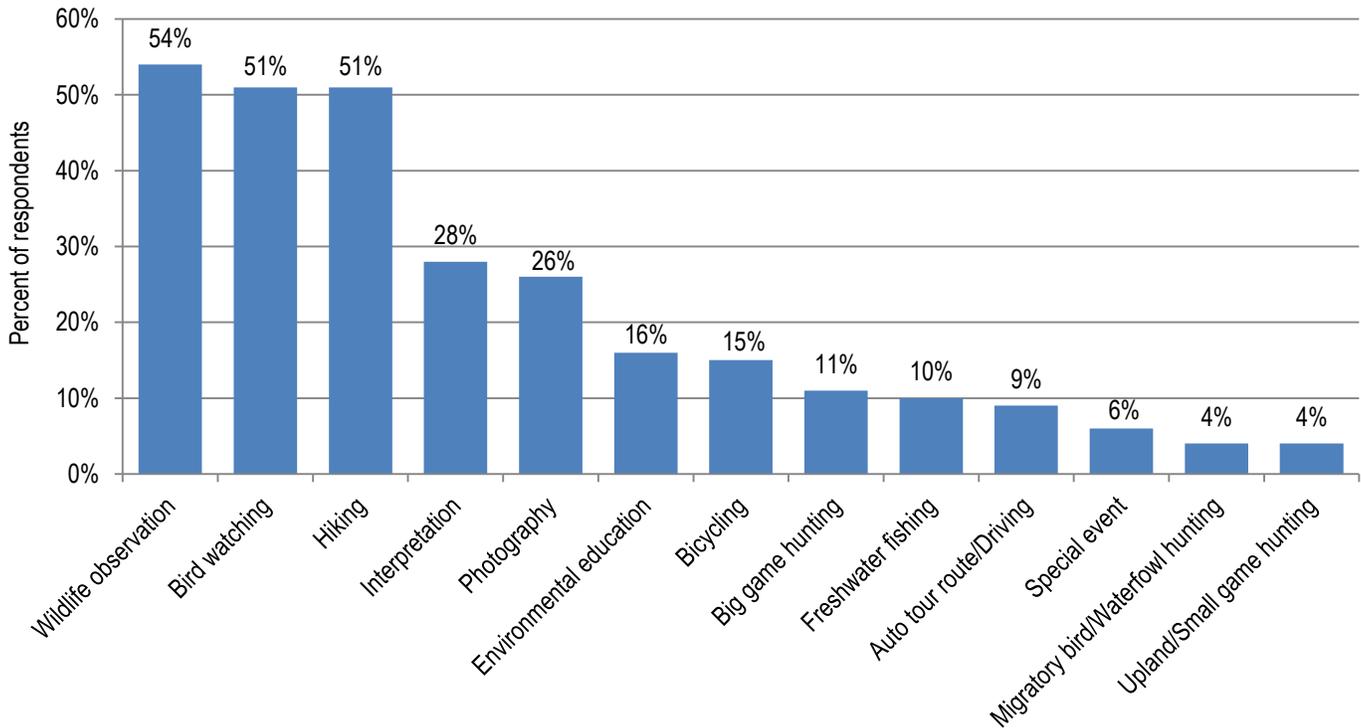


**Figure 5.** Modes of transportation used by visitors to Patuxent Research Refuge during *this* visit (n = 208).

**Table 4.** Type and size of groups visiting Patuxent Research Refuge (for those who indicated they were part of a group, n = 109).

Group type	Percent (of those traveling in a group)	Average group size		
		Number of adults	Number of children	Total group size
Family/Friends	82%	2	1	3
Commercial tour group	0%	0	0	0
Organized club/School group	9%	12	7	19
Other group type	9%	12	4	16

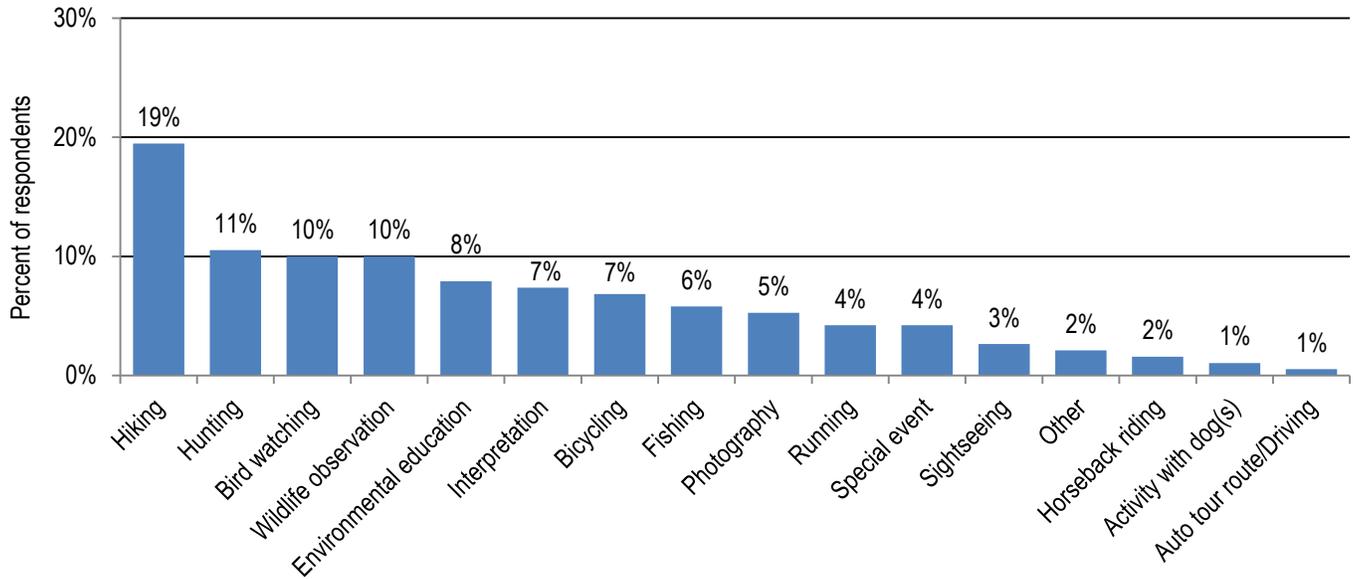
Surveyed visitors participated in a variety of refuge activities during the past 12 months (fig. 6); the top three activities reported were wildlife observation (54%), bird watching (51%), and hiking (51%). The primary reasons for their most recent visit included hiking (19%), hunting (11%), bird watching (10%), and wildlife observation (10%; fig. 7). The visitor center was used by 85% of visitors, mostly to view the exhibits (73%), stop to use the facilities (for example, get water, use restroom; 70%), and ask information of staff/volunteers (70%; fig. 8).



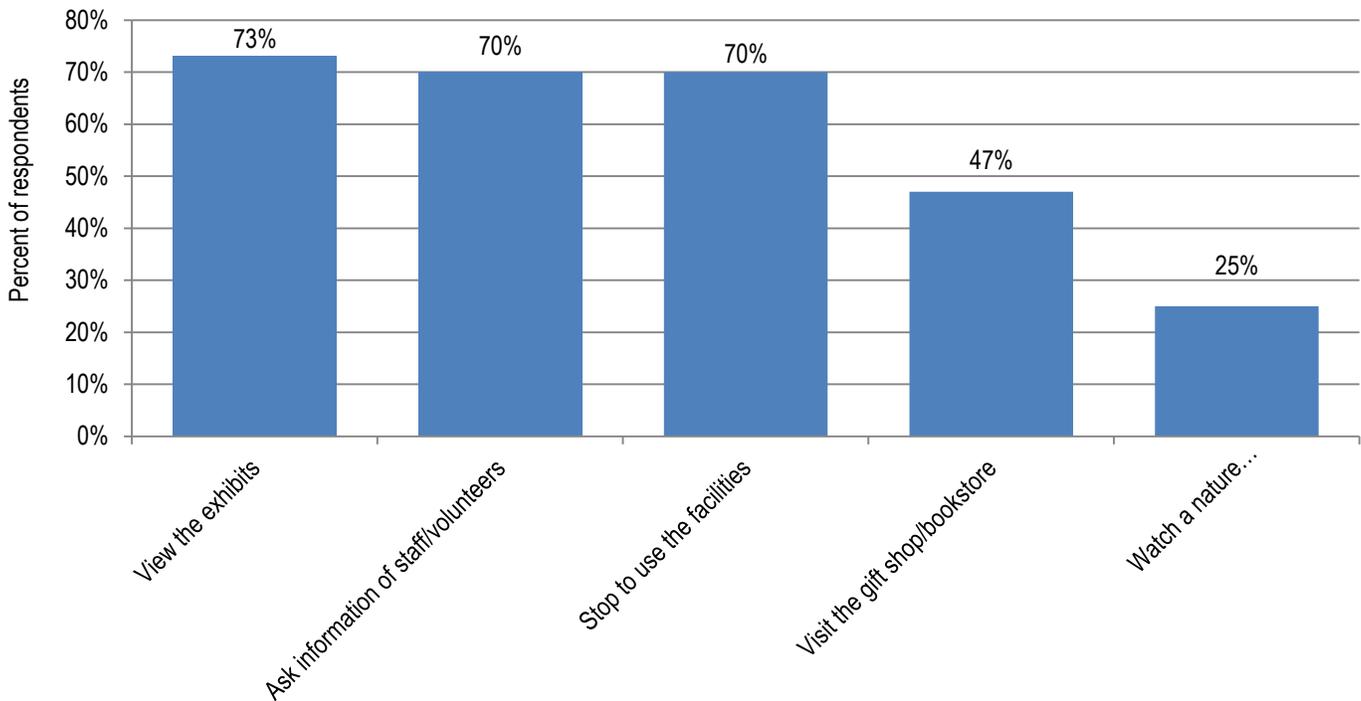
**Figure 6.** Activities in which visitors participated during the past 12 months at Patuxent Research Refuge (n = 206). See Appendix B for a listing of “other” activities.

### Visitor Characteristics

Nearly all (97%) surveyed visitors to Patuxent Research Refuge indicated that they were citizens or permanent residents of the United States. Only those visitors 18 years or older were sampled. Visitors were a mix of 60% male with an average age of 50 years and 40% female with an average age of 49 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 Patuxent Research Refuge (n = 190). See Appendix B for a listing of “other” activities.



**Figure 8.** Use of the visitor center at Patuxent Research Refuge (for those visitors who indicated they used the visitor center, n = 178).

## 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, 88% of surveyed visitors to Patuxent Research Refuge indicated that they live within the local area. Nonlocal visitors (12%) 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 \$67 per person per day and local visitors spent an average of \$46 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 Patuxent Research Refuge expressed in dollars per person per day.

Visitors	n <sup>1</sup>	Median	Mean	Standard deviation	Minimum	Maximum
Nonlocal	21	\$47	\$67	\$65	\$0	\$210
Local	120	\$10	\$46	\$111	\$0	\$580

<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.

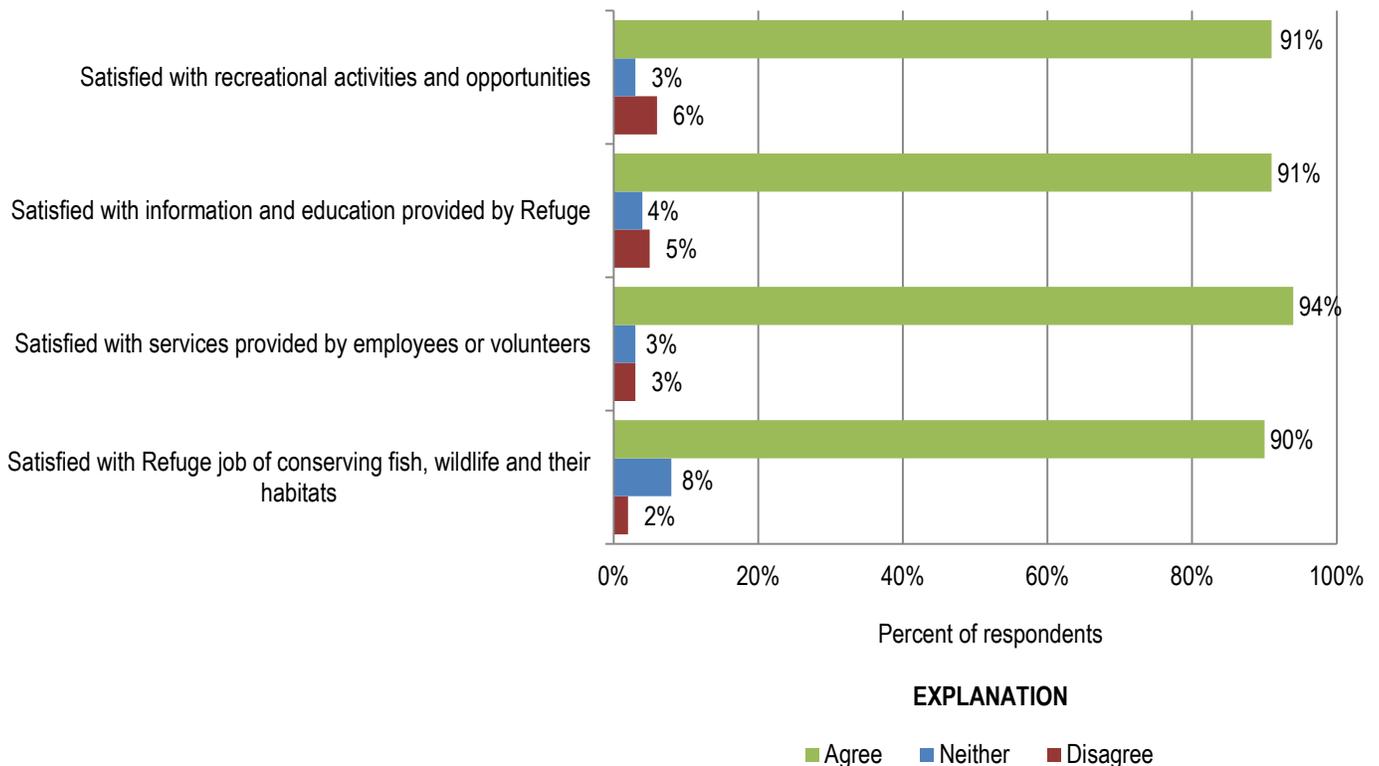
## Visitor Opinions about This Refuge

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 Patuxent Research Refuge were as follows (fig. 9):

- 91% were satisfied with the recreational activities and opportunities,
- 91% were satisfied with the information and education about the refuge and its resources,
- 94% were satisfied with the services provided by employees or volunteers, and
- 90% were satisfied with the refuge's job of conserving fish, wildlife and their habitats.

Although 17% (n = 35) of visitors indicated they paid a fee to enter Patuxent Research Refuge, the refuge does not have an entrance fee. It may be that some of these visitors were referencing the fee to hunt on the refuge charged by the cooperating association.



**Figure 9.** Overall satisfaction with Patuxent Research Refuge during this visit (n ≥ 198).

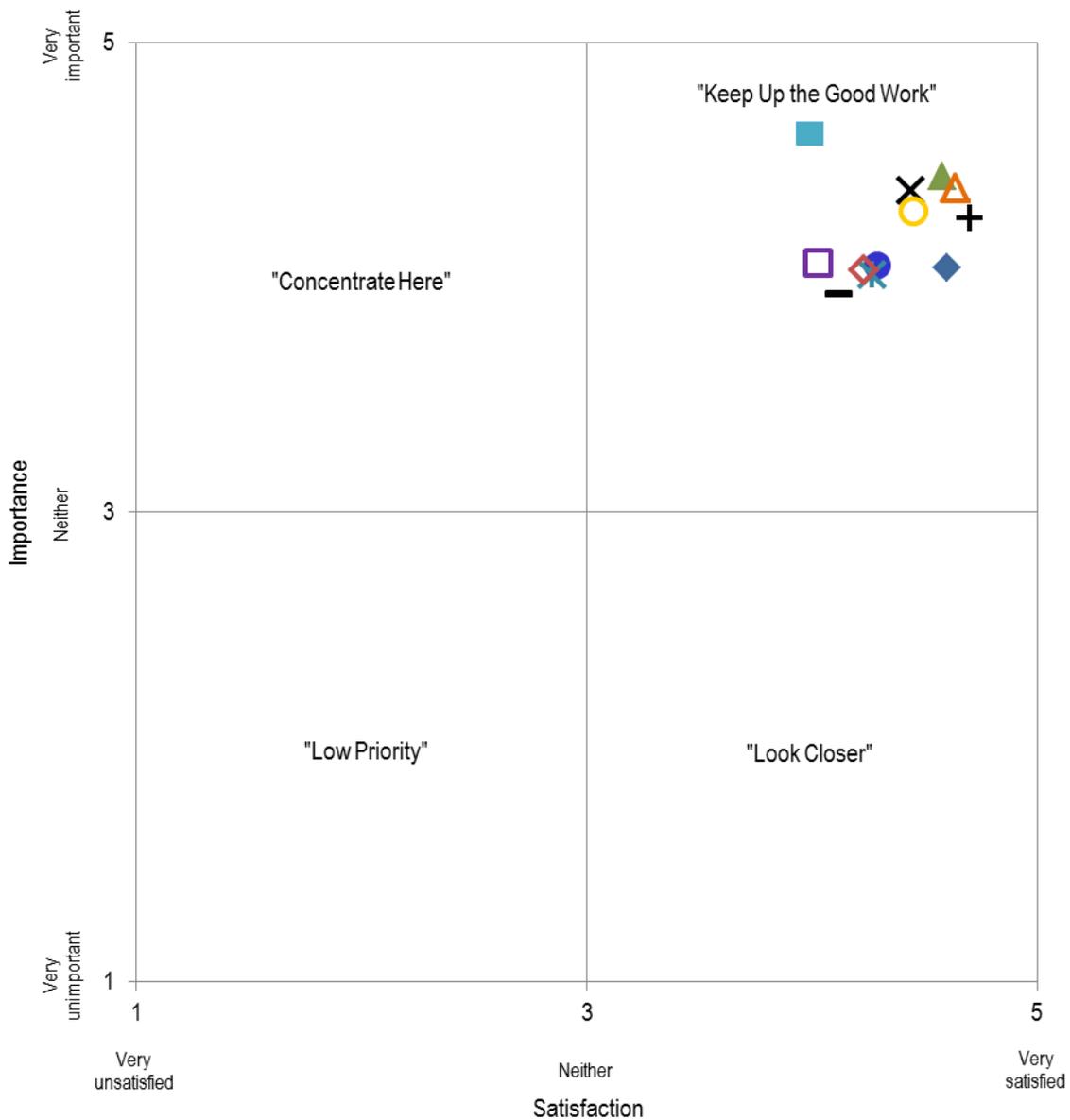
## Importance/Satisfaction Ratings

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

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

*Graphically plotting visitors' importance and satisfaction ratings for different services, facilities, and recreational opportunities provides a simple and intuitive visualization of these survey measures. However, this tool is not without its drawbacks. One is the potential for variation among visitors regarding their expectations and levels of importance (Vaske et al., 1996; Bruyere et al., 2002; Wade and Eagles, 2003), and certain services or recreational opportunities may be more or less important for different segments of the visitor population. For example, hunters may place more importance on hunting opportunities and amenities such as blinds, while school group leaders may place more importance on educational/informational displays than would other visitors. This potential for highly varied importance ratings needs to be considered when viewing the average results of this analysis of visitors to Patuxent Research Refuge. 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.*

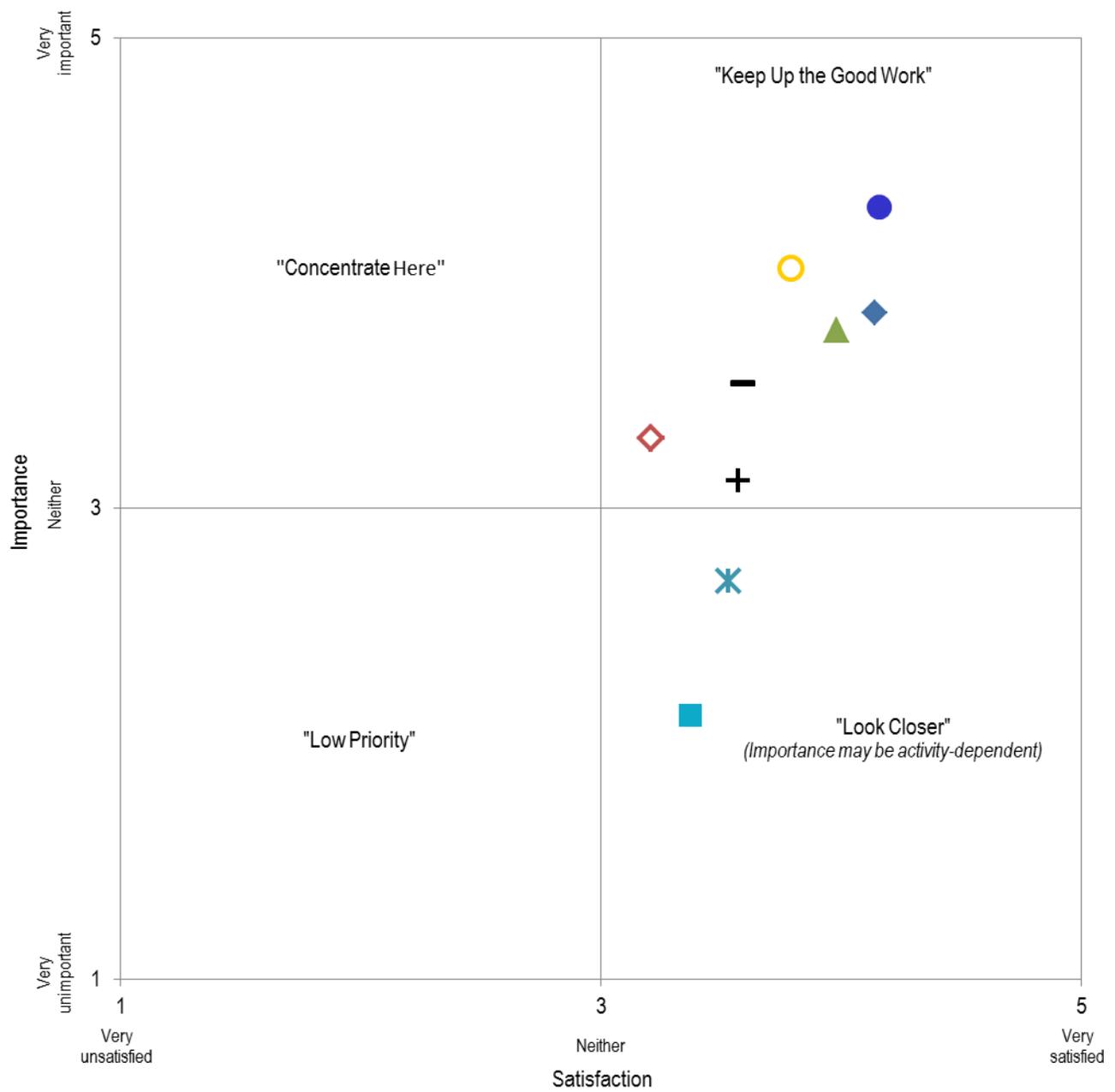
Figures 10 - 12 depict surveyed visitors' importance-satisfaction results for refuge services and facilities, recreational opportunities, and transportation-related features at Patuxent Research Refuge, respectively. All services and facilities fell in the "Keep Up the Good Work" quadrant (fig. 10). Nearly all refuge recreational opportunities fell in the "Keep Up the Good Work" quadrant except hunting opportunities and fishing opportunities, which fell into the "Look Closer" quadrant (fig. 11). The average importance of hunting and fishing activities may be higher among visitors who have participated in these activities 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
- Signs with rules/regulations
- ◇ Exhibits about this Refuge
- Visitor Center
- △ Well-maintained restrooms
- + Courteous/welcoming employees/volunteers
- × Printed information about this Refuge
- ⊠ Informational kiosks/displays about this Refuge
- Environmental education programs/activities
- Convenient hours/days of operation
- Wildlife observation structures

**Figure 10.** Importance-satisfaction ratings of services and facilities provided at Patuxent Research Refuge.



**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 Patuxent Research Refuge.



## 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 Patuxent Research Refuge are reported here.*

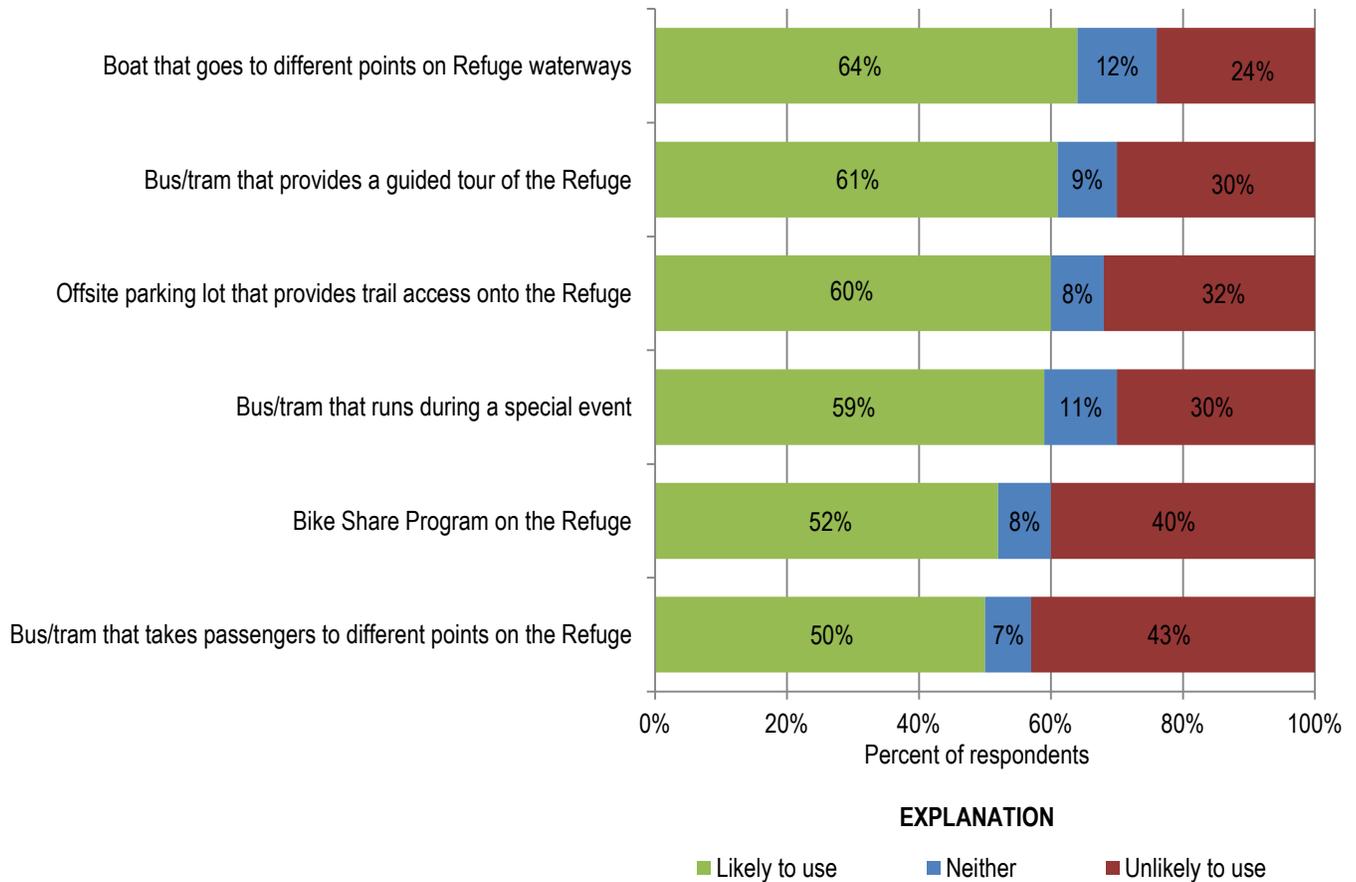
### Alternative Transportation and the National Wildlife Refuge System

*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 Patuxent Research Refuge visitors who were surveyed were likely to use the following options at national wildlife refuges in the future (fig. 13):

- a boat that goes to different points on Refuge waterways;
- a bus/tram that provides a guided tour;
- an offsite parking lot that provides trail access;
- a bus/tram that runs during a special event;
- a bike share program; and
- a bus/tram that takes passengers to different points.

When asked about using alternative transportation at Patuxent Research Refuge specifically, 42% of visitors indicated they were unsure whether it would enhance their experience; however, some visitors thought alternative transportation would enhance their experience (25%) and others thought it would not (33%).



**Figure 13.** Visitors’ likelihood of using alternative transportation options at national wildlife refuges in the future (n ≥ 198).

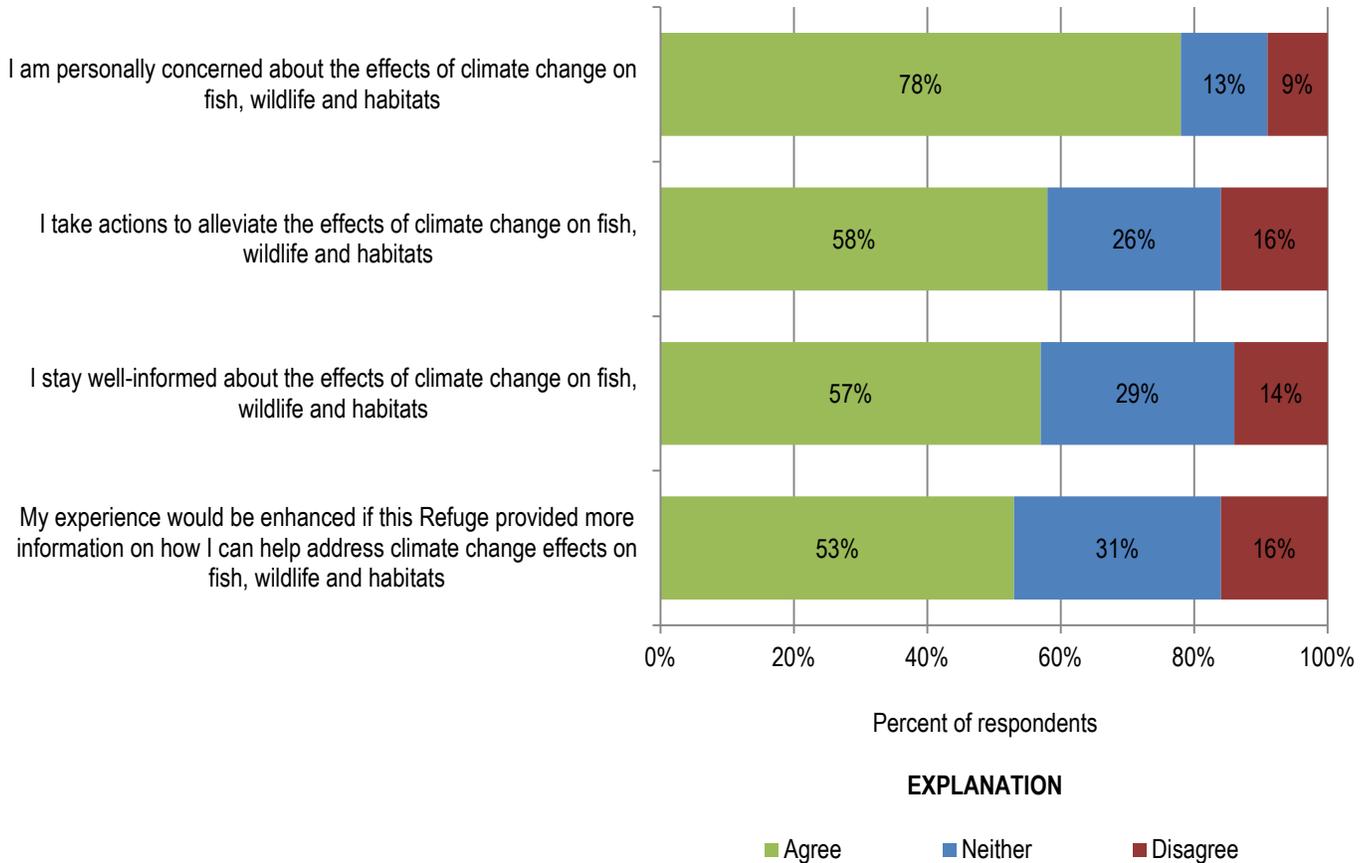
### Climate Change and the National Wildlife Refuge System

*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 Patuxent Research Refuge agreed with the following statements (fig. 14):

- “I am personally concerned about the effects of climate change on fish, wildlife and habitats;”
- “I take actions to alleviate the effects of climate change;”
- “I stay well-informed about 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 ≥ 197).

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).

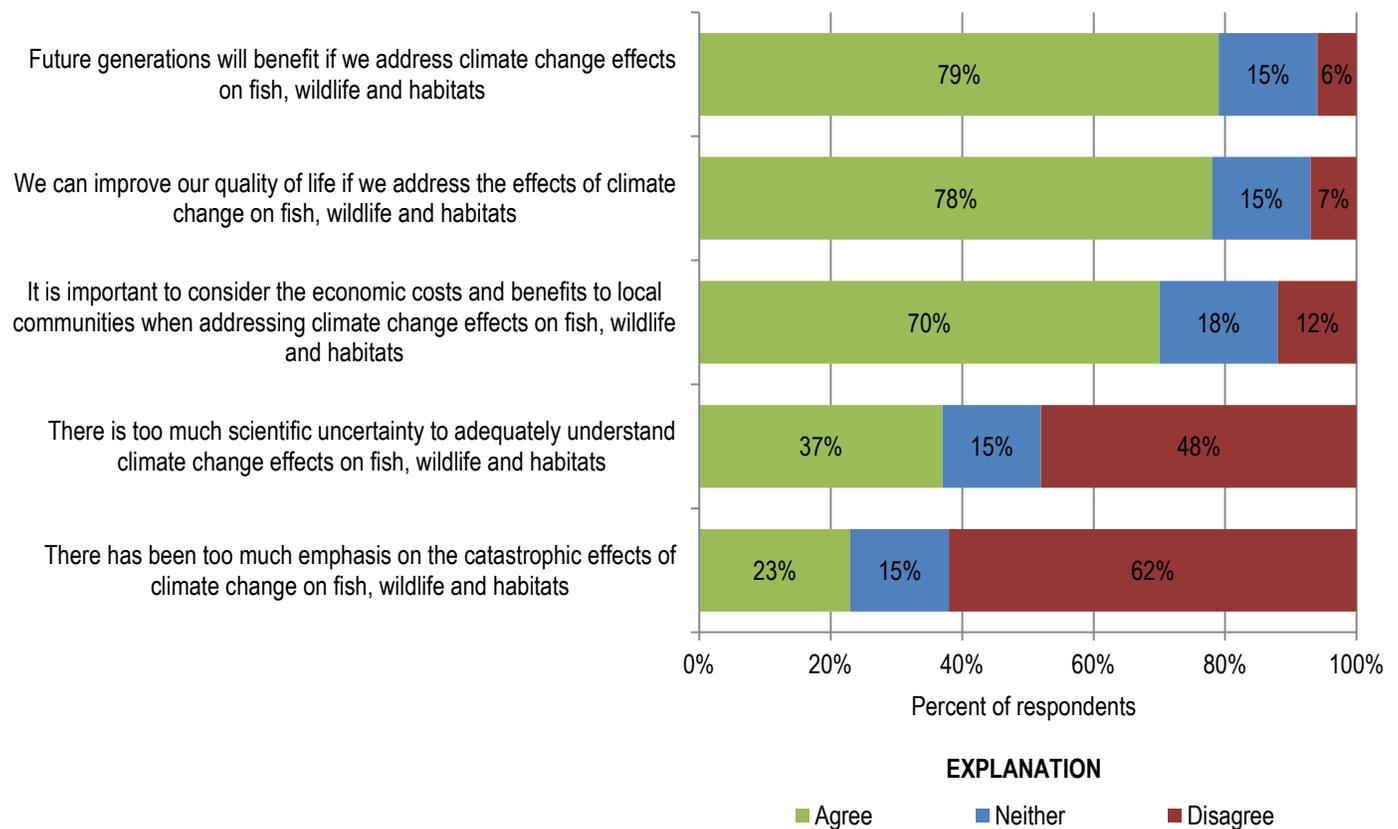
For Patuxent Research Refuge, the majority of visitors believed the following regarding climate change related to fish, wildlife and their habitats (fig. 15):

- “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 some visitors (53%) indicated that their experience would be enhanced if Patuxent Research Refuge 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 ≥ 197).

## Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Patuxent Research Refuge 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.**

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**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"/> 11% Big game hunting                | <input type="checkbox"/> 51% Hiking   | <input type="checkbox"/> 16% Environmental education (for example, classrooms or labs, tours) |
| <input type="checkbox"/> 4% Upland/Small-game hunting        | <input type="checkbox"/> 15% Bicycling  |   |
| <input type="checkbox"/> 4% Migratory bird/Waterfowl hunting | <input type="checkbox"/> 9% Auto tour route/Driving                                 | <input type="checkbox"/> 6% Special event ( <i>please specify</i> )<br><u>See Appendix B</u>  |
| <input type="checkbox"/> 54% Wildlife observation            | <input type="checkbox"/> 0% Motorized boating                                       |   |
| <input type="checkbox"/> 51% Bird watching                   | <input type="checkbox"/> 0% Nonmotorized boating (including canoes/kayaks)          | <input type="checkbox"/> 15% Other ( <i>please specify</i> )<br><u>See Appendix B</u>         |
| <input type="checkbox"/> 10% Freshwater fishing              |   |   |
| <input type="checkbox"/> 0% Saltwater fishing                | <input type="checkbox"/> 28% Interpretation (for example, exhibits, kiosks, videos) | <input type="checkbox"/> 0% Other ( <i>please specify</i> )<br><u>See Appendix B</u>          |
| <input type="checkbox"/> 26% 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?

- 15% No
- 85% Yes → If yes, what did you do there? (Please mark **all that apply.**)
- |  |   |
|--|---|
| <input type="checkbox"/> 47% Visit the gift shop or bookstore    | <input type="checkbox"/> 25% Watch a nature talk/video/presentation                               |
| <input type="checkbox"/> 73% View the exhibits                   | <input type="checkbox"/> 70% Stopped to use the facilities (for example, get water, use restroom) |
| <input type="checkbox"/> 70% Ask information of staff/volunteers | <input type="checkbox"/> 21% 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	
<input type="checkbox"/> 19%	<input type="checkbox"/> 85%	<input type="checkbox"/> 77%	It was the primary purpose or sole destination of my trip.
<input type="checkbox"/> 19%	<input type="checkbox"/> 8%	<input type="checkbox"/> 9%	It was one of many equally important reasons or destinations for my trip.
<input type="checkbox"/> 62%	<input type="checkbox"/> 8%	<input type="checkbox"/> 14%	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**   387   number of miles

**Local**   15   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?

48% No (skip to question #9)

52% Yes → What **type of group** were you with on your visit? (Please mark **only one**.)

82% Family and/or friends

9% Organized club or school group

0% Commercial tour group

9% 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

  2   number 17 years and under

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

40% Friends or relatives

17% Refuge website

34% Signs on highway

5% Other website (please specify) See Appendix B

13% Recreation club or organization

1% Television or radio

9% People in the local community

5% Newspaper or magazine

11% 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**.)

70% Spring  
(March-May)

44% Summer  
(June-August)

69% Fall  
(September-November)

28% Winter  
(December-February)

11. How many times have you visited...

...this Refuge (including this visit) in the last 12 months?   12   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"/> 85% | Private vehicle without a trailer                             | <input type="checkbox"/> 5% | Refuge shuttle bus or tram       | <input type="checkbox"/> 9%  | Bicycle                               |
| <input type="checkbox"/> 2%  | Private vehicle with a trailer<br>(for boat, camper or other) | <input type="checkbox"/> 0% | Motorcycle                       | <input type="checkbox"/> 22% | Walk/Hike                             |
| <input type="checkbox"/> 1%  | Commercial tour bus   | <input type="checkbox"/> 0% | ATV or off-road vehicle          | <input type="checkbox"/> 2%  | Other ( <i>please specify below</i> ) |
| <input type="checkbox"/> 0%  | Recreational vehicle (RV)                                     | <input type="checkbox"/> 0% | Boat                             | <u>See Appendix B</u>        |                                       |
|                              |   | <input type="checkbox"/> 1% | Wheelchair or other mobility aid |                              |                                       |

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

- |                              |  |                              |   |
|------------------------------|--|------------------------------|---|
| <input type="checkbox"/> 47% | Signs on highways  | <input type="checkbox"/> 16% | Directions from Refuge website                        |
| <input type="checkbox"/> 14% | A GPS navigation system  | <input type="checkbox"/> 2%  | Directions from people in community near this Refuge  |
| <input type="checkbox"/> 9%  | A road atlas or highway map                                      | <input type="checkbox"/> 11% | Directions from friends or family                     |
| <input type="checkbox"/> 18% | Maps from the Internet (for example,<br>MapQuest or Google Maps) | <input type="checkbox"/> 43% | Previous knowledge/I have been to this Refuge before  |
|                              |  | <input type="checkbox"/> 2%  | Other ( <i>please specify</i> ) <u>See Appendix B</u> |

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

How likely would you be to use...	Very Unlikely	Somewhat Unlikely	Neither	Somewhat Likely	Very Likely
...a bus or tram that takes passengers to different points on the Refuge (such as the Visitor Center)?	<input type="checkbox"/> 32%	<input type="checkbox"/> 12%	<input type="checkbox"/> 7%	<input type="checkbox"/> 25%	<input type="checkbox"/> 25%
...a bike that was offered through a Bike Share Program for use while on the Refuge?	<input type="checkbox"/> 27%	<input type="checkbox"/> 13%	<input type="checkbox"/> 8%	<input type="checkbox"/> 26%	<input type="checkbox"/> 25%
...a bus or tram that provides a guided tour of the Refuge with information about the Refuge and its resources?	<input type="checkbox"/> 22%	<input type="checkbox"/> 8%	<input type="checkbox"/> 9%	<input type="checkbox"/> 29%	<input type="checkbox"/> 32%
...a boat that goes to different points on Refuge waterways?	<input type="checkbox"/> 19%	<input type="checkbox"/> 6%	<input type="checkbox"/> 12%	<input type="checkbox"/> 33%	<input type="checkbox"/> 31%
...a bus or tram that runs during a special event (such as an evening tour of wildlife or weekend festival)?	<input type="checkbox"/> 20%	<input type="checkbox"/> 10%	<input type="checkbox"/> 11%	<input type="checkbox"/> 30%	<input type="checkbox"/> 29%
...an offsite parking lot that provides trail access for walking/hiking onto the Refuge?	<input type="checkbox"/> 19%	<input type="checkbox"/> 12%	<input type="checkbox"/> 8%	<input type="checkbox"/> 25%	<input type="checkbox"/> 35%
...some other alternative transportation option? ( <i>please specify</i> ) <u>See Appendix B</u>	<input type="checkbox"/> 8%	<input type="checkbox"/> 0%	<input type="checkbox"/> 0%	<input type="checkbox"/> 46%	<input type="checkbox"/> 46%

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

- 25% Yes       33% No       42% 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
5%	18%	13%	47%	18%	Surface conditions of roads	10%	15%	5%	24%	46%	NA
8%	18%	17%	43%	15%	Surface conditions of parking areas	7%	8%	10%	20%	56%	NA
4%	6%	16%	38%	35%	Condition of bridges	5%	8%	16%	25%	46%	NA
4%	7%	8%	35%	46%	Condition of trails and boardwalks	3%	10%	9%	30%	48%	NA
4%	6%	12%	51%	27%	Number of places for parking	4%	2%	5%	21%	69%	NA
7%	17%	25%	35%	16%	Number of places to pull over along Refuge roads	3%	13%	26%	28%	30%	NA
3%	4%	10%	38%	45%	Safety of driving conditions on Refuge roads	6%	5%	10%	21%	58%	NA
4%	4%	11%	35%	47%	Safety of Refuge road entrances/exits	5%	4%	10%	21%	59%	NA
4%	5%	13%	40%	38%	Signs on highways directing you to the Refuge	4%	5%	13%	24%	55%	NA
5%	4%	12%	47%	32%	Signs directing you around the Refuge roads	2%	6%	14%	31%	47%	NA
3%	4%	14%	31%	48%	Signs directing you on trails	3%	11%	15%	30%	41%	NA
11%	8%	26%	24%	30%	Access for people with physical disabilities or who have difficulty walking	5%	10%	38%	17%	30%	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)?

88% Yes

12% No → How much time did you spend **in local communities** on this trip?

  2   number of hours      OR        4   number of days

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

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

See Report for Results

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

  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
15%	35%	24%	6%	9%	2%	6%	1%	1%	0%	2%

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**.)*

3%	Far too low	3%	Too low	89%	About right	3%	Too high	3%	Far too high	83%	Did not pay a fee
<i>(skip to Section 4)</i>											

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

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

0%	Strongly disagree	3%	Disagree	11%	Neither agree or disagree	40%	Agree	46%	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.	2%	4%	3%	35%	56%	NA
Overall, I am satisfied with the information and education provided by this Refuge about its resources.	2%	2%	4%	34%	57%	NA
Overall, I am satisfied with the services provided by employees or volunteers at this Refuge.	1%	2%	3%	25%	69%	NA
This Refuge does a good job of conserving fish, wildlife and their habitats.	3%	0%	8%	23%	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
4%	6%	12%	39%	39%	Availability of employees or volunteers	3%	1%	6%	14%	76%	NA
3%	5%	7%	35%	51%	Courteous and welcoming employees or volunteers	2%	2%	5%	10%	82%	NA
2%	3%	5%	30%	60%	Knowledgeable employees or volunteers	2%	2%	7%	16%	73%	NA
2%	2%	5%	41%	51%	Printed information about this Refuge and its resources (for example, maps and brochures)	2%	3%	6%	29%	60%	NA
3%	6%	16%	41%	35%	Informational kiosks/displays about this Refuge and its resources	2%	4%	15%	24%	55%	NA
3%	4%	16%	41%	36%	Signs with rules/regulations for this Refuge	2%	2%	15%	28%	53%	NA
3%	6%	15%	40%	37%	Exhibits about this Refuge and its resources	2%	5%	14%	27%	52%	NA
5%	4%	19%	36%	36%	Environmental education programs or activities	2%	3%	25%	20%	49%	NA
3%	3%	8%	35%	51%	Visitor Center	2%	3%	9%	23%	64%	NA
2%	1%	2%	24%	72%	Convenient hours and days of operation	8%	11%	5%	27%	49%	NA
3%	2%	6%	33%	56%	Well-maintained restrooms	2%	1%	6%	13%	78%	NA
4%	4%	11%	43%	38%	Wildlife observation structures (decks, blinds)	2%	8%	16%	31%	42%	NA
8%	8%	16%	29%	39%	Bird-watching opportunities	1%	5%	20%	26%	47%	NA
4%	5%	14%	39%	38%	Opportunities to observe wildlife other than birds	4%	9%	22%	32%	33%	NA
8%	6%	20%	37%	30%	Opportunities to photograph wildlife and scenery	1%	4%	28%	31%	37%	NA
58%	6%	18%	4%	15%	Hunting opportunities	7%	2%	60%	9%	22%	NA
37%	9%	20%	16%	18%	Fishing opportunities	4%	3%	52%	18%	23%	NA
5%	4%	9%	22%	60%	Trail hiking opportunities	1%	4%	18%	31%	45%	NA
15%	7%	28%	34%	16%	Water trail opportunities for canoeing or kayaking	5%	8%	62%	13%	13%	NA
10%	10%	23%	31%	26%	Bicycling opportunities	3%	8%	41%	23%	25%	NA
16%	10%	33%	26%	14%	Volunteer opportunities	3%	3%	51%	20%	23%	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?

84%

Yes

16%

No

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

85%

Yes

15%

No

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

84%

Yes

16%

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%	4%	14%	34%	44%
We can improve our quality of life if we address the effects of climate change on fish, wildlife and their habitats.	4%	3%	15%	36%	42%
There is too much scientific uncertainty to adequately understand how climate change will impact fish, wildlife and their habitats.	21%	28%	16%	26%	11%
I stay well-informed about the effects of climate change on fish, wildlife and their habitats.	2%	12%	29%	41%	17%
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%	8%	18%	51%	19%
I take actions to alleviate the effects of climate change on fish, wildlife and their habitats.	5%	11%	26%	41%	17%
There has been too much emphasis on the catastrophic effects of climate change on fish, wildlife and their habitats.	37%	25%	15%	15%	8%
Future generations will benefit if we address the effects of climate change on fish, wildlife and their habitats.	3%	4%	15%	29%	50%
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.	5%	11%	30%	40%	14%

## 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?

97% Yes  3% No → If not, what is your home country? See Figure 4 in Report

2. Are you?  60% Male  40% Female

3. In what year were you born? 1961 (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%			10%				38%				53%			

5. What ethnicity do you consider yourself?  3% Hispanic or Latino  97% 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  6% Black or African American  93% White  
 3% 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"/> 0% Less than \$10,000  | <input type="checkbox"/> 4% \$35,000 - \$49,999  | <input type="checkbox"/> 31% \$100,000 - \$149,999 |
| <input type="checkbox"/> 1% \$10,000 - \$24,999 | <input type="checkbox"/> 17% \$50,000 - \$74,999 | <input type="checkbox"/> 15% \$150,000 - \$199,999 |
| <input type="checkbox"/> 7% \$25,000 - \$34,999 | <input type="checkbox"/> 16% \$75,000 - \$99,999 | <input type="checkbox"/> 9% \$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.)?

20 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 Patuxent Research 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
Art Show	1
Bee Festival	1
Birthday Bash (October and March)	1
Cub Scout Visit	1
Earth day activity	1
Environmental education, Bald Eagles	1
Film Festival, other film festivals, Annual Festival in the fall	1
Maryland Hunting & Fishing Day	1
Run for the refuge	2
Tram ride	1
U.S. Fish and Wildlife Service Migratory Bird Meeting	1
Total	12

Other Activity	Frequency
Art show	2
Boy Scout Badge requirement Soil & Water Conservation	1
BPP volunteer	1
Camping with my scouting unit.	1
Educators workshop	1

Got lost - found center	1
Horseback riding	4
Lecture on hunter education	1
Running	8
Running/jogging	1
Science workshop	1
Scouting	1
Tram ride	2
Viewing the scenery	1
Visit a relative who works here	1
Visit family	1
Volunteer	1
Walking dog	2
Total	31

2 <sup>nd</sup> Other Activity	Frequency
BBS volunteer	1

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
Boy Scout Badge requirement Soil & Water Conservation	1
Exercise	1
Relaxation	1

Taking the kids out	1
Viewing the scenery	1
Visit Family	1
Visit the Wildlife Center, followed by a trip to the Northern Tract.	1
Visiting	2
Total	9

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

Other Visitor Center Activity	Frequency
A specially put together Girl Scout program	1
Attended training	1
Check-in	3
Check-in/check-out	2
Children's educational classes	2
Classes	1
Filled out permit	5
Get a fishing permit	1
Got butterfly list	1
Hunter Control Station	2
Looked for bird feeders	1
Mandatory registration	3
Meeting	1
Obtained the trail map/guide	1
Photography	1

Pick up map	1
Register	1
Rode tram with a Tour Guide	1
Show off photographs; ride the tram	1
Sign in and get pass	1
Sign in, look at Observation Books.	1
Trolley Tour	1
Used courtyard space for class to eat lunch	1
Used nature trails for hiking	1
Used the education pavilion	1
Visited the duck stamp art display	1
Total	37

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
BSA Venturing Crew	1
Cub Scouts	1
Girl Scouts	1
Group gathered here for education training	1
Home school group	1
Meade Natural Heritage Association	1
U.S. Fish and Wildlife Service Migratory Bird Meeting	1

Weekly bicycling group	1
Workshop for MD Teachers	1
Total	9

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

Other Website	Frequency
Community events website	1
DC Hiking	1
Google maps	1
Internet search for hiking in the area	1
Mountain Bike Trails	1
www.google.com	1
www.marylandrunning.com	1
Yahoo groups	1
Total	8

Other Ways Heard about This Refuge	Frequency
A colleague at work	1
Book	1
Book (60 Hikes within 60 Miles of DC)	1
Education conference	1
Falcon Hiking Guide	1
Former DOI employee	1
Former employee of NBS/BRD	1

Frederick County Public Schools, School Yard Habitats Program Director	1
Ft. Meade Employee	1
Geographical map and local guide	1
GPS	1
Home school umbrella group	1
Jug Bay Wildlife Refuge	1
Local trips guide book	1
Map	2
Public school workshop location	1
Road Map	1
Teacher	1
Teacher organizer	1
Teacher workshop	1
Wildlife Refuge Book	1
Work	1
<b>Total</b>	<b>23</b>

## Survey Section 2

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

Other Forms of Transportation	Frequency
Campus charter bus	1
Horse	1
Stroller	1
Tram	2
<b>Total</b>	<b>5</b>

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

Other Ways Found This Refuge	Frequency
Brochure from previous visit to refuge	1
Directions from Refuge Visitor Center	1
Directions in hiking book	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, golf cart	1
Bicycle	1
Bike through trails	1
Drive my own car to onsite parking.	1
It would be great to cross country ski on the tram road in the winter when the tram doesn't run!	1
Just wanted to note that the reason I would NOT do the other options is because we have a dog - she's one of the main reasons we visit parks and we wouldn't leave her behind. If she were able to join us on a boat or bus, I would take those options.	1
My personal vehicle	4
My trike	1
Parking close to the fishing lake.	1
Segway	2
Small watercraft rental for waterways.	1
Transportation to/from large cities to the refuge.	1
Total	16

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

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Comments on Transportation-related Items at This Refuge (n = 47)

Access to Cash Lake from Route 197 (Laurel-Bowie Road) is very hazardous! There are no turning lanes and traffic moves very fast.

Allow bikes to go through. You already have laid ten times as much asphalt for parking as would be needed to extend the existent trails.

An improvement would be to have more visible markers on the trails.

As I noted earlier, one of the main reasons we visit parks and refuges is to spend time outdoors with our dog. She is part of the family and we would not leave her behind. We would be happy to take other transportation forms in the park (such as a bus or boat), if she were able to join us on them.

Biking is permitted on the north tract. It would be nice if biking were allowed on the other tract also.

Boardwalk across the lake has been closed.

Boardwalk was closed, and that's why we came. No clearly marked trails with trail lengths or a map.

By way of explanation, the road on the Northern Tract is extremely rough and hazardous to passenger vehicles. There are a LOT of pot holes. Some of them help to keep speeds down, but there are far too many!!! I had transported my brother around who has a cast on his leg. Wheelchair access should be better maintained in the Northern Tract.

Condition of trails and boardwalks - very disappointed in the trail areas that were roped off because they were in need of repairs, yet talking with the volunteer at the Visitors Center, we found out that there was no plan to repair/reopen the trails that are currently unsafe (like the floating bridge).

Easy place to find, and parking is good.

Entrance roadway is in bad repair (pot holes).

Excellent job, tram tour was great, looking forward to the new trail signage!

Fix the roads on Patuxent north, south and central.

From the main road/entrance to the Office, there are many, many, many pot holes. Please fix it before the winter gets here. It is in the same condition since the last winter.

Had to share road with bikes - was somewhat unsafe.

I could talk for hours about the potential that this refuge has on its Northern Track portion. Unfortunately, refuge staff shuts the door on all ideas/assistance offered from the Meade Natural Heritage Association. I would extend an invitation to anyone reading this survey to come and sit at a meeting held by MNHA and ask the public who are attending more questions about this refuge. Second Tuesday of every month at the hunting control station.

I didn't really use much that was offered during this trip. I hope to return in the near future.

I got around by horse, so I wouldn't have used other means of transportation. If I didn't use my horse, I would have ridden my bike. The refuge roads and trails were all in great shape except for the entrance road, a gravel road with a lot of pot holes. I know it takes money to fix that, I'm

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just glad the refuge is here and open to horses, so it's easy to overlook the pot holes.

I know money is tight, but the road in and out is awful!

I think they need bigger, brighter signs directing cars to the one-way exit road. The sign is there, but it's kind of small and hidden behind tree branches.

I would like more car access points and to be able to explore more of the refuge.

In the dark exhibit steps could easily be missed.

Many of the roads and parking areas need major repair.

My elderly mother was with us and was able to navigate the Refuge, and only a few muddy spots made it difficult.

On the last bend before you enter the Visitors Center area, there is a small lake that once was above the road. It might be helpful for signs to be posted to say how far the Visitor Center is from the road.

Paths are accessible for baby strollers - Thank you!

People who have a difficult time walking or need a wheelchair really can't use the trails AROUND the Lakes. HOWEVER, there is so much to see and do at the Visitor's Center and the Refuge that IS available for special needs people, that this is a VERY MINOR point. In fact... if ALL of the trails WERE changed to accommodate wheelchairs, people would turn it into a "park" rather than letting it be a refuge for wildlife. We need more spaces that are protected for animal life, rather than always invading the space where animals are free to live.

Road conditions during the wet season are bad. Bridge over Patuxent River on Duvall Bridge Road needs repair.

Roads could have been better, but they did not detract from my visit.

Signs off of 295 S are confusing. First sign says to go one way - second sign says to go another way.

The entrance road into the refuge is tremendously marked with pot holes, some very deep and/or wide. For visitors NOT in trucks, this can be somewhat difficult to drive along. I haven't spent enough time yet exploring the various trails, but the few I have walked didn't have much signage or directions beyond the initial entrance to the trail. Signs deeper into the trails - particularly the longer ones - would be very helpful.

The entrance road just outside the gate has some substantial pot holes that could be fixed to enhance safety and avoid guests popping their car tires. The signs on the trails could be updated so that they are more clear.

The entry road could really use some work on the very large pot holes heading into the contact station area.

The guys are doing a great job.

The refuge is doing a good job.

The refuge is well maintained in the area that we hike, and we have been very happy with our experiences there.

The road needs resurfacing in some areas.

The road on the North Tract at Patuxent refuge is horrible. I visited the North Tract once to fish and have not returned. I understand the area used to be an old army range, but the pot holes could at least be filled in with some dirt.

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The roads need attention.

The roadway within the refuge is in poor shape, but I mainly use it for biking and running, so it really does not affect me.

The signs directly on trails were very clear and helpful.

The tram idea was excellent. It was very clean, the driver exercised caution and safety, and the guide was very, very knowledgeable. Very enjoyable! I shared my experience with at least 10 people.

This survey is very timely. I broke a sway bar on my vehicle last night in one of the countless pot holes in this refuge. The road conditions are a disgrace.

Transportation is not my primary concern here. Lack of wildlife habitat is. There is good wildlife protection without enough wildlife to protect.

Usually I visit the refuge as part of a bicycle ride. The entrance road needs repaving, as there are bad pot holes. Refuge paths are fine for able hikers; however, a handicapped relative finds them difficult.

Very good!

Would be nice to have an occasional pull off on the access road, in case folks want to take pictures without blocking the road.

## Survey Section 4

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

Comments on Services, Facilities, and Activities at This Refuge (n = 93)

A brief visit, but very enjoyable which I plan to repeat.

An excellent place for mountain biking on paved and unpaved surfaces.

At this facility there is a 15" spread rule on antlered white tailed deer. This should be changed to 6 points or more. Many people have been fined and lost joy of harvesting a fine animal just because they misjudged a .25" spread from a tree stand at low light. I also believe these gentlemen are not criminals (or they would not have turned in the deer). Should be refunded their money and antlers if possible.

Clean out weeds for shore line fishing.

Closing at 4:00?? PLEASE! We'd like to be able to take sunset pictures in the summer.

Displays at the Visitor Center are in places out-of-date, worn out, and in need of repair.

Excellent job and great exhibits.

Excellent Visitors Center. Hours too short, no evenings.

Excellent! Hopefully lake bridge will be fixed next time.

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First, there are very few opportunities for freshwater fishing in the refuge, WHICH CAN BE IMPROVED by simple things like access and cleaning some of the ponds so the fish can grow. Second, THERE IS NO access to Lake Allen because of live firing during the week. THAT is plain stupid. Move the range to allow people to fish, especially handicapped folks. The access on the Northern Tract is a huge issue.

Great!

Hunting is an incongruous activity to offer at a wildlife refuge.

I believe that the majority of the American public would prefer to eliminate or severely limit hunting at the National Wildlife Refuges. The vast majority of visitors are interested in hiking and nature viewing opportunities and the sound of gunshots in the distance is very disturbing.

I believe the refuge should invest in feed lots for the deer populations.

I bike to the refuge quite a bit, and the road going into the refuge is very narrow. Cars are not eager to have bikes on the road and this is dangerous. It would be nice to have a bike path.

I currently home school both my toddler sons for pre-school. We love the outdoor pond where there are thousands of tadpoles. Our family would appreciate more live, real educational opportunities such as this one. Also, modes of the programs are for older children, but toddlers love nature too!

I don't like the refuge being closed on holidays for hunting.

I enjoyed visiting the refuge, but we were not able to access a large part of it due to the hunting season. I do not hunt and do not approve of hunting and it's frustrating that my park experience has to be so limited by an activity I disapprove of so strongly.

I find the staff at Patuxent always very friendly and nice. This is very important to me.

I have a friend who has volunteered at the refuge for many years and has enjoyed the experience. I've found that the exhibits tell me a bit more than I usually want to know. If there was a paved bicycle path around the lakes of the refuge I would use it (maybe even unpaved).

I just stopped in briefly to do some birding, so I didn't pay close attention to many of these things. Most important of all to me is continued existence of natural areas, and also access to these areas so that I can walk/drive around to study nature. 24 hour access is always preferred; it's difficult to enjoy and study nocturnal creatures when forced to leave at sunset.

I see no fun in being there except for the tadpoles that my daughter likes to catch. I didn't know we could fish in the river. You should have horses.

I strongly believe fishermen should be allowed to fish from the floating bridge structure at Cash Lake.

I was extremely disappointed that the floating bridge was inaccessible and in need of repairs, but yet not appearing to receive any repair in the future.

I will have to experience more of this refuge and its services before I can make further comments.

I wish the preserve could be open past 4pm on weekdays once daylight savings time starts. I don't like it in the fall/winter when the preserve is closed to folks who don't hunt.

I wish there were fewer hunting days allowed, but when hunting is allowed, the refuge should be closed otherwise to visitors.

I would like longer hours for the trails to be open.

I would recommend opening earlier in the summer hours. I love coming here to run, but, in the summer, when it's lighter earlier in the morning,

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I'd love to be able to get into it before 8am for my run.

It is very unfortunate that the refuge advertises left wing politics in the displays- namely "4 legs good, 2 legs bad." Why degrade mankind in displays, then send this survey out asking for money?

It would be nice if it stayed open past 4:30.

It would be nice to have more hunting information and opportunities. It is still not very clear on what is allowed and not allowed in areas.

It would be so great if the refuge could have expanded hours during the week so guests could take advantage of it before or after work.

Like to get to more places in the refuge but this is a refuge not only for me.

Longer season for freshwater fishing at Cash Lake. Open Cash Lake for fishing on holidays. Create turning lanes on Route 197 at Cash Lake entrance. Create and maintain open channel at bottom of ramp for easier boat launching.

Mandatory sign-in at the Visitor Center should be relaxed.

Many trails are often inaccessible/closed. No canoe opportunities or rentals.

More funding is needed to extend hours and repair roads.

More interpretive guided walks would be wonderful. Evening ranger programs would be fantastic.

My home refuge is not limited in photography possibilities except in limiting where I can go but many refuges are not set up to maximize photography which should help increase visitation.

Needs to have better hours, sunrise to sunset.

Nice children's educational programs.

Open more areas to see birds.

Opening some of the other fire roads that are currently closed would greatly increase the time spent there, for running, biking, and hiking.

Our guide on the tram tour was excellent! Very knowledgeable and friendly.

Outdoor trash cans should be provided.

Please install a water fountain that produces cold water.

Refuge closes too early. Should open more of the refuge to visitors.

Several interactive exhibits at the Visitors Center were not working, but they were not labeled as "out of order" or "down for repair." Many people tried to use the exhibit, but were frustrated that they were broken. This left a bad impression on how the center was run. Otherwise, this was a WONDERFUL Visitors Center!

Some exhibits were not functioning well.

Sure there are volunteer opportunities. This refuge is overall unmaintained in the north track section and everything is very limited as to what

you can do. There's absolutely nothing for kids and the roadway is entirely unsafe. Fishing - yeah, if you like to catch lily pads all day.

The elderly lady volunteering in the gift shop was very unfriendly! The paid staff was superb!

The enclosed bird blind, with binoculars, was thoughtfully constructed, as were the taxidermy displays, though the howling wolf became annoying after awhile. The climate change exhibit needs to be much more engaging, as time is running out in which to stop the inevitable consequences.

The exhibits are great and the staff and volunteers have been wonderful over a couple visits. I wish we could bicycle, but I really like the hiking trails and benches scattered near the trails.

The exhibits in the Visitor Center were very hot and stuffy. I left 2 hours earlier than planned, and in a poor mood, because I could not stand the heat.

The facilities and services at the Visitors Center were excellent. Great information and courteous employees.

The facility itself was very well built and inviting. The exhibits, however, focused too much on the negative impacts of the environment that we had created rather than the wildlife of the area, how to view the wildlife or how to find it.

The hours for fishing should be until dusk. The fishing season is too short, should have more time to visit Cash Lake and fish.

The hours of operation for the Patuxent Wildlife Refuge are poor at best. Poor hours coupled with closures for military ranges often results in more closure time.

The hunting program at this refuge is well run, but the quality deer management program so limits deer that can be taken that the deer population seems to be excessive, which seems counter to the goal of the program.

The North Tract is popular with horseback riders and I hope it continues to be available to us. Just because we are on horses doesn't mean we aren't nature lovers, birdwatchers, etc.

The Patuxent Wildlife Refuge is very famous for its work with cranes (wow!), but no information on this amazing work can be found in the Visitor Center. Also, had a wonderful tram tour with a volunteer who served as a guide. It would have been great to have more guided tours in the form of walks/hikes with knowledgeable guides to educate us about the plant and wildlife. A longer tram tour would also have been lovely.

The people and the facilities at Patuxent Research Refuge are great! Also, they have a great deer management program; just need to put in food plots.

The plant growth has taken over the shoreline and shore fishing is very limited. I also think a second boat ramp will help some of the traffic at the entrance on busy summer weekends.

The refuge closes far too early in the spring and summer; the closing time should reflect the number of daylight hours, not a set time on the clock.

The refuge is a great place for recreation and wildlife observation. Hunting seems incompatible with the function of the refuge (other than maybe a periodic hunt to thin the deer herds). Too much deference is shown to hunters- they're given vehicle access to parts of the refuge never given to other recreational users.

The refuge offers excellent fishing opportunities on the south tract. The new pier is a great addition. Hopefully, some of the weeds around Cash Lake can be removed to aid shoreline fishing. As far as hunting, I have considered hunting on the refuge but too much "red tape" exists. The primary reasons are the shorter season for small game animals and additional Wildlife Heritage permit fees. After buying the state hunting license, I have no desire to spend more money. Thus, I hunt on public lands owned by the state.

The refuge trails are closed too often for hunting, September-January. There is no balance for bird watching/other users.

The refuge was a wonderful stop on our mini-vacation. Much better than the cherry blossoms. Thank you for being there.

The staff at this facility was very friendly and knowledgeable about the refuge. We were cordially greeted at the door and asked if we had any questions. The children were awed by the exhibits and really enjoyed the hands-on features.

The staff was friendly and welcoming.

The staff was getting ready for a big event the next day, so they really didn't interact with my group very much. I came with a local Cub Scout group.

The tram that circulates should run a little more frequently and during the week... especially during spring break when you're probably going to have more visitors!

The volunteers are particularly friendly and try to help. The displays are extensive and informative.

This is a great place and all the people who work there have been high quality folks.

This refuge needs more animals in it like deer, rabbits, muskrat, groundhogs, non-migratory animals and birds. Turkeys, koala bears, lizards, monkeys, and more real wildlife. There is just not near enough of it here.

This was an excellent field trip location. Volunteers and employees really helped the children (5th graders) learn and extended what they had been learning in class. I had many favorable comments from parents about the trip as well. Thank you.

Truthfully, my husband and I stopped to use the restrooms. However, once there we found it very interesting, informative and done well. We have gone to other refuges and enjoy hiking, wildlife observation, etc. We plan to come back and make a full visit.

Very nice and educational; enjoyed the trails and Visitors Center.

Very professional, knowledgeable, courteous, and friendly staff.

Very satisfied.

Visitors Center closes too early. Exhibits need repair.

We had a very nice day. Your facility is clean and well maintained.

We have been really happy with the services and condition of the park. I expect that we will hike and photograph there at least every other month from spring to winter due to its proximity to our house.

We initially tried to visit the refuge on Labor Day. Our hiking book did not mention that it was closed on ALL federal holidays. It was also somewhat difficult to find complete information online about whether we could hike safely during hunting season. However, the volunteer clearly answered our question once we arrived.

We regularly attend programs for 7 and 10 year-olds and really enjoyed the class offered in December (for 10 and 13 year-olds). I'd love to see some classes for adults and teens (each as a group).

We were not given much time to explore the refuge (maybe an hour). The small portion we saw was amazing, keep up the good work.

We would have enjoyed more opportunities for young children to learn about the environment in the welcome center. Many of the exhibits were too high for my six year old to reach and my three year old was completely bored.

Well stocked variety of fish species: Large Mouth Bass, Pickerel, sunfish, crappie, and bluegill.

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Wonderful and helpful employees.

Would like better signage and more to mark wooded trails indicating location and distance to Visitors Center (Rangers building).

Would like to see crops (corn/soy/fruit trees) grown for wildlife.

You feed the birds but you need to help the undernourished deer habitat by planting some food crops natural to the area.

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## Survey Section 5

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

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Comments on What Makes Refuges Unique? (n = 142)

A "refuge" to me means no hunting or fishing. National Forests offer these activities. A refuge should offer more opportunities to view wildlife.

A conscious effort to maintain a clean environment for the wildlife, and educational opportunities.

A large natural area in the middle of the very developed, highly populated, Baltimore corridor.

An opportunity to experience wildlife at their natural environment and learn from their experience.

Areas are not overridden by uncontrolled public exposure, unlike state parks that have limited to no control.

As a teacher I appreciate the trainers and workshops provided to do a variety of activities with my students from hikes to games that helped them understand ecological consequences. As a regular guest I enjoyed the tram tour, museum exhibits and trails.

Beauty. I like the new water dock.

Because it helps the environment it is teaching about.

Because they are focused on their objective of wildlife conservation.

Being part of a network to preserve. Migratory ports. Research funding to inform large issues. Exhibits of resource to learn more about the flora and fauna.

Besides providing protected land for wildlife, the refuges give the public a means to view and observe wildlife in its natural habitat and LEARN about nature.

Better birding!

Care in maintaining and providing opportunities to hike in a natural setting and see wildlife.

Clean and natural habitat.

Close proximity to a large metropolitan area.

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Combination of land (pine forest and open fields) and water habitats, swamp land, and a chance to watch all of this throughout the year.

Compared to other "parklands," the refuge is a more natural and undisturbed experience.

Conserving wildlife in urban areas. Provides recreation opportunities that only a few people know about - very relaxing.

Controlled hunting and check in game.

Different activities for all types of people and their interests.

Educates visitors to ongoing efforts to improve our planet through habitat improvement and restoration.

Education.

Educational components including staff, abundance of wildlife in refuge to observe.

Emphasis is on wildlife conservation and education.

Emphasis on conservation, public education, and a place for migrating birds.

Environment, Knowledgeable, water, Visitors Center, hours and days of operation, trail hiking opportunities, etc.

Feeling of nature being protected and preserved.

Fishing lead free zones is unique and the record size bass.

Focus on access to & information about wildlife.

For us, it is readily accessible, so it is easy just to hop in the car for a few minutes to take a nice walk, see bald eagles, ospreys, songbirds, etc., and take pictures of the scenic views in the spur of the moment.

Friendly staff, very clean, neat layout.

Generally, their location determines what is being preserved and protected.

Good location!

Great children's educational programs!

Hard to find a way to get outside "in nature" if you don't own land.

Hunting

Hunting privileges, but the refuge needs to be open Sundays, most people only have the weekends to hunt.

I am an avid hunter and the requirements for hunting keeps unethical hunters from ruining your hunting opportunities.

I feel as if I have a stake or responsibility for/in them.

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I have visited NWRs throughout the US. Many of the refuges seem to emphasize land/wildlife preservation over visitor services, but at least provide access for those willing to get out and look around. This seems reasonable and meets my personal preferences perfectly. We do have national parks for providing more extensive interpretive and educational experiences. Some NWRs (like Santa Ana in south TX) have nice visitor services, and this makes sense given the lack of a national park in that part of the country - I'm glad the refuge system is providing important education about the Lower Rio Grande Valley. To me, it's logical to use funds strategically - provide more extensive visitor services where there is a genuine need (e.g., no nature centers, state parks, or national parks nearby), but keep it simple elsewhere: acquire land and provide access (unlimited if possible) to it. Many NWRs do not charge an access fee, which is different from state and national parks. Some of the very best birding I've experienced has been at NWRs with limited visitor services. Research internships for students at NWRs are also valuable in my opinion.

I like the idea that the U.S. Fish and Wildlife Service uses these lands to preserve their natural state. The wildlife are in their natural environment. That is most important.

I love how this refuge feels like a piece of tranquility in an otherwise busy place. I go here to immerse myself in nature and get away from cars, buses, people, and city life in general.

I love to hunt.

I really enjoy the catch and release of bass and the size of the fish in the lake. I agree with the catch and release concept.

I visit the wildlife center weekly. It provides a quiet and relaxing place, allowing me to reflect and be at peace.

I would have to say "provisionally," if access to fishing were improved as noted above.

I would recommend visiting this refuge to anyone. The overall layout of this site was easy to navigate and had very interesting exhibits.

It is a beautiful place and I am very happy that I live close by and can enjoy the nature there.

It is good to have lands that are "less managed" or perhaps maintained in a more primitive state. Also, it is very important to have critical habitats preserved and protected.

It is obviously blaming man for destruction of habitat. Ironically there are no trash cans at the center.

It provides a good, basic introduction to the outdoors for young children.

It seems to be well run and safe.

It was wonderful to have such a beautiful place with nice trails for horseback riding and other activities so close to Washington DC. This place is a treasure for all to enjoy.

It's a large area with many different places to stop. I prefer this to places where there is one main parking area and everyone stops there.

It's a nice green space in a highly populated region.

It's good for the public to know the range of activities and the importance of the Service's mission.

It's not as crowded as National Parks but has the amenities on a much smaller scale.

Less "touristy", grounds are in a more natural state.

Managed mainly for the benefit of the wildlife over opportunities for recreation.

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More of a natural environment, more organic way of experiencing woodland. Also, more education on preserving the environment and great awareness on which animals are endangered. My family loves visiting Patuxent Refuge Center. The staff and volunteers are wonderful, but maybe add some turtles in that pond.

More of a natural setting and much less commercial.

More opportunity for learning experiences.

Most refuges focus on preserving habitat for birds, and providing unique viewing and educational opportunities which cannot be found at other type of public parks.

My family has visited so many refuges over the last ten years. We go to them in whatever state we are vacationing in or visiting. They are always educational, welcoming and an amazing experience to share with children, tomorrow's leaders in our environment. The more you can do to engage children, the better chance our environment has.

Offers an enjoyable experience with high impact conservation message.

One of the only green spaces between Washington DC and Baltimore.

Opportunities and facilities designed to observe wildlife in a natural environment.

Opportunity to observe and photograph wildlife in their natural habitat.

Opportunity to observe nature in a natural habitat.

Opportunity to see nature as it should be.

Organized, interpretive, displays relative to local area!

Patuxent Research Refuge offers something for everyone. Great deer management program, just need to put in more food plots. Need to have a fall turkey season.

Patuxent Research Refuge provides a safe place to run that is also convenient to where I live. It is easy to check in and the staff are always friendly.

Peacefulness and serenity. Wildlife in their natural setting.

Preserves what we have left today for future generations.

Protected lands. Positive learning experience.

Refuges are managed for wildlife with access for people, not primarily managed for the people at possible expense to wildlife.

Refuges are the one public land where the primary objective is the conservation of wildlife- very important.

Research Refuge.

Sensible rules for fishing and keeping the fish.

Since the refuges cater to wildlife conservation and habitat development, it offers exceptional possibilities to see wildlife and natural behavior. I think that the NWRs in general are one of our nation's richest jewels.

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The ability to hunt on the Refuge.

The area is getting smaller and refuges supply this.

The attitude of refuges compared to National Parks gives them a different feel. Patuxent is even more unique because of its location.

The beautifully and artfully designed Visitors Center exhibits and diagrams.

The bird watching.

The chance to see wildlife in nature.

The chance to see wildlife, especially migratory birds. To be able to see conservation techniques to preserve habitats and wildlife. The availability of hikes in woods.

The combination of conservation of wildlife and recreation opportunities. When I am there I feel like a part of something more than just a place to hike.

The conservation of the land available, not just use and abuse.

The educational displays and helpful, knowledgeable personnel. Explanations of why things were done (e.g., water cleaning parts) were very interesting to the students. Great tram ride also.

The educational programs for children are great.

The enclosed ecosystem is quite complete and a joy to see.

The focus is on nature preservation more than tourist recreation.

The focus of the refuge is preservation and education, as opposed to just recreation.

The focus on conservation.

The focus on wildlife and wildlife observation is much greater than at National Parks which have a land conservation focus. I enjoy both.

The goal is looking after and preserving our natural resources for the public to use and enjoy.

The indoor telescopes and listening devices, except many were not working.

The information in the exhibits is child friendly and there are both indoor and outdoor opportunities for activities.

The interactive exhibits were fabulous.

The lack of a large Visitor Center limits visitors, which makes the experience more enjoyable. And the hunting program is stellar.

The Patuxent Research Refuge is an outstanding model for habitat conservation and wildlife management. I thoroughly am impressed with this refuge.

The Patuxent Wildlife Refuge is unique in that it provides excellent fishing in an area with few freshwater fishing locations.

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The primary mission of conservation and restoration sets the refuges apart from other public lands, which might be utilized more for entertainment and profit.

The primary mission of conserving habitat and restoring fish, wildlife and plants produces a unique recreational experience. Thank you.

The proximity to Baltimore and Washington DC.

The refuges are primarily for nature and not for organized recreation.

The sheer amount of nature and potential wildlife amidst an urban area is for me, as a foreign national, truly impressive.

The tour on the little bus. You can get an opportunity to visit and to have an expert point out a number of things that you could otherwise overlook.

The varied landscapes (woods, ponds, watershed, etc.). The tram, water recycling and yearly events make it even better.

The variety of activities.

The Visitors Center and great hiking availabilities.

The Visitors Center exhibits are extraordinary- the tone and the information was very well set up. I love the ones with steps on benches for the little ones to stand on (more of these would be good). The special events are awesome! Art Festival, Bee Festival, etc. Funnel cakes were a yummy treat!

The wildlife at this refuge is mostly local, so there are no exotic animals - just natural nature, which we tend to overlook, but is so important to our local area.

The wildlife, the natural landscape, the no-pets rule, and they're geared to teach about the wildlife and the habitats.

Their primary purpose is to maintain the wildlife and then to allow humans access.

There are not many public lakes for fishing near Cash Lake. It is well maintained and has both a pier and bathroom facilities.

These protected areas are extremely important outside of the zoo in managing and protecting our endangered species.

They allow for natural habitat and a wide variety of animals and knowledgeable staff to explain why the wildlife and trees are the way they are.

They allow passive recreation such as running, hiking, and biking while having the chance to view unique habitats that have been preserved and left to adapt naturally without outside pressure, i.e. roads, highways, etc.

They give a good balance between wildlife conservation, recreational activities, and hunting.

They give wildlife a quiet place to live their lives and still allow the public to glimpse them in their natural habitat.

They let animals be natural, but monitored. However, I do believe that they shouldn't be as strictly managed and more observed so they can behave naturally without a lot of human contact, but that's more of a personal opinion.

They offer the opportunity for people to interact with and observe wildlife in somewhat natural environments, and preserve that environment from development.

They provide crucial habitat, which affords great bird and other wildlife viewing opportunities and usually beautiful scenery.

They tend to be more developed with walkways and information.

This is my place to get away from stress and view rare and common animals. I have visited over 200 refuges throughout the U.S.

This one was carved out of a huge swath of open land owned by the army. It is a continuous strip that allows for a lot of wildlife habitat and lots of opportunities to see and photograph wildlife just outside DC.

This refuge was a former Military Base and maintains a firing range for Military and Law Enforcement use. More public access to the range should be allowed.

This was our first experience and now it has made us aware of the beauty that surrounds us. I've even put up a bird feeder that the squirrels get into (I don't even mind). Thank you for being there to open my eyes. I've also noticed where Beavers have cut down some trees by the reservoir.

Topography, location in the bay ecosystem, and history as part of a US training ground all make this refuge unique.

Undisturbed natural habitats freely open to the public.

Varied and largely unspoiled habitat, protected from development.

Very enjoyable and not nearly as crowded as other parks/hiking areas.

We hike and canoe many of the local parks and refuges in roughly a 50-100 mile radius. Almost all of them are unique in some way. This park is well laid out with exposure to forest, wetlands and the lake. Some of the wildlife at this park, such as the cormorant, differs from other parks. The trails at this park also keep you closer to the water's edge with longer lower bridges that let you see the wetland life (e.g., turtles, frogs, lily pads) better.

We walk in the refuge all year round and have unique and special experiences every time. Different flowers and mushrooms growing, frogs, beavers, foxes, Bald Eagles, Whooping Cranes, etc. Every season, something lovely.

Well-maintained. I could run here to practice for upcoming marathons and ultra marathons. I do not have to worry about traffic while running. I like the well-maintained restroom and cold water to drink. I love those volunteers. They are very, very friendly and helpful.

While the main focus of other parks is recreation and nature enjoyment, refuges are more focused on preserving the natural habitat and the natural balance of the ecosystem. This provides a much more natural and educational experience for visitors. I feel this type of refuge is worth every penny of tax revenue used for support and maintenance.

Wildlife refuges are unique in that they are established to preserve natural habitat, not ornamental plants, and need to be of sufficient size to protect an ecosystem. However, there needs to be a proactive program to plant endangered trees and plants, which could become an attraction.

With so much land and habitat destroyed by development, the refuges preserve a sample of nature. There really isn't too much left.

Wonderful environment that enhances the protection of precious habitat and wildlife.

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#### Additional Comments (n = 49)

Although I did not experience a large amount of wildlife, I clearly understand that there are good days and bad days for viewing wildlife. The day I visited was overcast, cold and breezy. Not a great day for wildlife, but a good one for a brisk hike.

Contact me (Name and Number listed) if you want help establishing the refuge for photography or ideas in marketing them. I would like to see

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them continue to exist. I rely on them to de-stress and do what is right.

Could this refuge be opened earlier in the summer time (8:00 am)?

Great place -- more family events would be welcome.

Great place. Need to do a better job of advertising Patuxent... never heard of it or knew about all the awesome programs it offers until a friend told me and we visited. People in DC should know about this!

I applaud your vigilance to get feedback.

I enjoy visiting the refuge, thank you U.S. Fish and Wildlife Service!

I feel very safe while using the hiking trails, and only dislike the drive in, as the road is so full of pot holes.

I found the paid staff to be highly trained professionals and extremely passionate towards what they do. Their dedication, knowledge and passion were obvious, and contributed significantly to the enjoyment of our visit.

I had a great visit (my first visit to this location). I walked one trail and drove the wildlife loop. I am thrilled that this land is set aside for the good of wildlife and the environment (and thus also for the good of our entire society). I am also very grateful to have access to this land to enjoy and study nature. Hunters were on the land the day I was there--hunting and fishing are also important uses of NWRs, and even though I don't hunt myself, I support these activities. It was great that I could still bird on part of the refuge while hunters were using other parts--I would have been disappointed if I had been closed out completely by hunting. I'd like to emphasize this: most important for me is the protection of natural areas and the ecosystems that they encompass; second most important for me is access to this land--roads (gravel or dirt is fine) with pull-offs and some trails along with the most liberal access hours possible. I do think that NWRs also can and do play important roles in research, education, and public outreach. Creative partnerships with regional entities like state parks, nature centers, community organizations, schools and universities might provide cost-effective ways of enhancing public education without taking needed funds away from land acquisition and basic access maintenance needs. Thank you very much for our National Wildlife Refuge System--it has been an integral part of my personal and professional life for over 20 years.

I had a wonderful experience at the Visitors Center. I have referred others to your program. I plan on revisiting later in the summer.

I have enjoyed hunting on this refuge for the last 35 years and plan on using the refuge in the future until I can no longer get around.

I like being able to run and not worry about cars hitting me.

I like that it is very convenient to major highways and close to my home and work. I wish it stayed open until dusk rather than closing at 4:30. I understand if the Visitor Center closes earlier, but it would be nice if the trails could stay open later.

I like what everybody at the refuge has done.

I tried to do this online and kept getting kicked out.

I would like to thank the refuge for a very memorable visit for my family and a well organized one.

Is this a good use of taxpayers' money?

It does make you appreciate nature more.

Keep up the good work! Refuge volunteers are doing very important work.

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Love the Patuxent Research Refuge. Great people and habitats.

More hands-on learning experiences (classes/workshops) for toddlers ages 2-4! How about an incubator and allow toddlers to stop in occasionally to track development of eggs and learn about life cycle of chicks?

My family also enjoys the refuge. Every time we have been there we have felt comfortable, welcome and safe. Educational opportunities are excellent, including the teacher education materials and classes. Only one of my students had ever been to the refuge before and I only learned about it this year. Send information to private schools as well as the public schools. One last note, in the wolf education area, the wolf howling is very distracting to students with hearing problems and this with ADD. Some of the students were disturbed that they couldn't focus on the presentation- which they really enjoyed.

Please do not conform to the politically correct viewpoint; stay informed with today's wildlife biologists who have done a wonderful job of understanding the importance of maintaining healthy deer populations through game management.

Please have other refuge staff members from across the state/east coast come and rate the Patuxent Research Refuge. The staff members there fail to communicate and enhance anything viewable or used by the public. It's by far the worst refuge ever and it's getting worse yearly.

Thank you for this opportunity to support our wildlife refuge! (Signed)

Thank you!

Thanks for the important work you do and for the opportunity to participate in this survey! P.S. Thought you'd like to know that your online survey website was very disappointing and frustrating. It simply didn't work!

Thanks!

The climate change exhibit should emphasize the need for government and international solutions rather than focus on individual solutions, which will amount to too little, too late.

The gentleman at the Visitor Center was friendly and informative. I did not know the refuge was on approximately 13,000 acres. Also, my son and I, unbeknownst to us, walked into a private screening in the auditorium. The ranger staff (about 4 people) was viewing the film. One of the young ladies came over to let us know they were pre-screening a film called Carbon Nation, but we were free to stay if we wished. Although we did not decide to stay, I thought it was nice of her to come and acknowledge us and not tell us we had to leave. This told me a lot about the people who work at this refuge center - and they have CLASS. Thank you.

The Patuxent Research Refuge is a great resource and provides excellent recreation, especially for many military personnel nearby. Its hours of operation need improvement to make the recreation and other benefits of the refuge available to visitors.

The Patuxent Research Refuge is one of the better maintained hiking areas that we regularly visit.

The survey website was down when I tried to use it. I recommend not sending survey notices out multiple times. I completed the survey at my first available opportunity. Sending multiple survey notices wastes natural resources and money.

This was the second time we went. We chose to go this time particularly because we thought the tram, the relatively flat hiking terrain, and the well-equipped Visitor Center would accommodate my elderly mother, and it did.

To add to my earlier comment- I am not one of the unfortunate hunters to lose their harvest but I feel for them. I know what a great experience a clean harvest can be and would not want to lose my trophy and become a criminal for misjudging a .25" or SP in exciting conditions. You can respond to this statement at (e-mail given here). I would like to hear your comments on this.

Trip was an accidental one. Noticed signs on our way back to New Jersey for Washington DC. Returned to DC one month later and made a purposeful stop at the refuge.

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We just use the Refuge as a bicycle rest stop.

We love Patuxent Research Refuge.

We need more deer to kill for food.

We particularly enjoy the guided bird walks.

We really enjoy our visits to the Refuge. We hike, watch birds, and visit the exhibit at the Visitor Center. When we have out-of-town guests, we always take them to the Refuge. They're always surprised something like this is so close to Washington DC.

We really enjoy visiting the refuge and have for many years (as many as 12)! We love the classes/programs! I like that adults can stay and are encouraged to learn along with their children! We religiously attend both annual events and always enjoy the entertainment (crafts, meeting the animals, information booths) and the paid entertainment (especially "Magpie" and the reptile crew from March). We would love to see some updating to the exhibits! While the message is relevant, the details may not be (which wildlife is threatened/endangered). Also "reduce, reuse, recycle" is old and tired (although true). I'd love to see an updated display of what wildlife you might see in that season or something about how Patuxent reuses their water, something about projects/research underway at Patuxent currently, or even something about volunteers and how they help/who they are (this would be a great place to feature the volunteer of the year and runners up)! Another idea might be "meet the interns". Or, pictures taken at the second annual events (Birthday Bash) could be displayed to draw attention to those events. I'd love to see more things for homeschoolers! Watkins Nature Center (and other PG county nature centers too) offers home school science classes. While that might be a bit too big of an undertaking, it would be nice to have some classes geared to us home school folks. Also, I'd love to see classes for 14-year olds as an age group. We attended "Skull Scene Investigation" and loved it!!! Other topics could be the same as the younger ones: The watershed, wildlife in fall/winter/spring/summer, wetland ecosystems, forest layers, and so many others. I'd also like to see classes for adults!! The hikes/bird watching is too easy for us. I'd love to see something like the topicality visited above. Signs on the way in to tell how far the Visitors Center is would be helpful. It's a long entry way and people wonder. It would be nice to see/find volunteers hiking the trails!!

We used the North Tract, I believe it is called; we did not visit (this time) the Center. I have worked for and with the USGS, NPS, USDA/FS, and FWS.

Web site NOT user friendly!

Will definitely come back again. It is a very peaceful place to visit.

Would like to see hunting control and Visitor Center integrated.

You need to take better care of the deer habitat, the majority is undernourished.

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