



# National Wildlife Refuge Visitor Survey 2010/2011: Individual Refuge Results for Bombay Hook National Wildlife Refuge

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*My husband and I thoroughly enjoy every trip we take to this refuge and cherish the pictures we get to take home with us. I hope that we are able to take our future kids with us as well.—Survey comment from visitor to Bombay Hook National Wildlife Refuge.*



Bombay Hook National Wildlife Refuge. Photo credit: Jamie Richie/USFWS.

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## Introduction

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

The Service contracted with the U.S. Geological Survey (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 Bombay Hook NWR (this refuge) and are part of USGS Data Series 643 (Sexton and others, 2011). All refuges participating in the 2010/2011 surveying effort will receive individual refuge results specific to the visitors to that refuge. Each set of results is organized by the following categories:

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

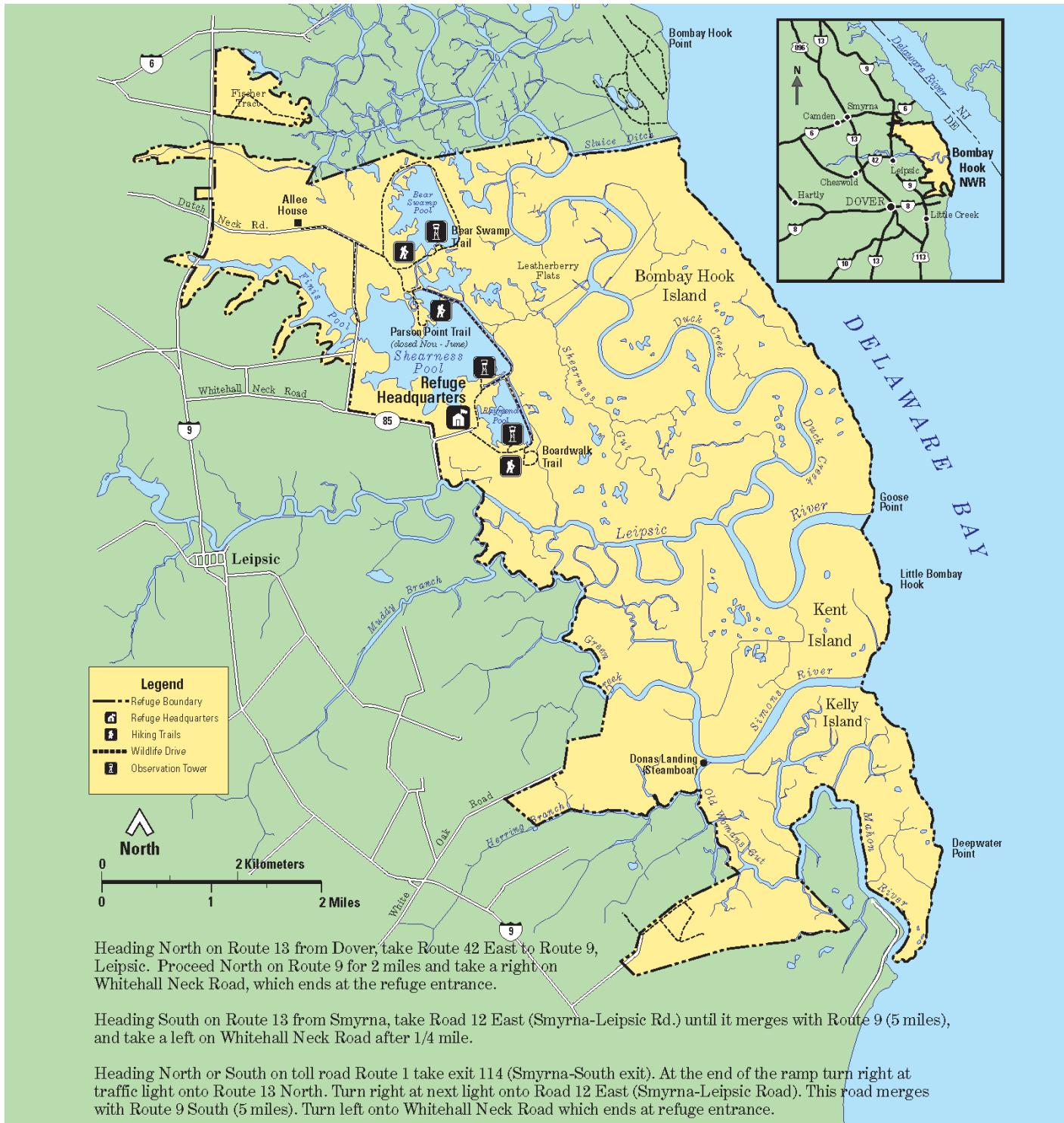
The extent to which these results accurately represent the total population of visitors to this refuge is dependent on 1) an adequate sample size of those visitors and 2) the representativeness of that sample. The adequacy of the sample size for this refuge is quantified as the margin of error. The composition 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 Bombay Hook NWR, any potential spatial and temporal sampling limitations specific to this refuge need to be considered when generalizing the results to the total population of visitors. For example, a refuge that sampled during a special event (for example, birding festival) held during the spring may have contacted a higher percentage of visitors who traveled greater than 50 miles to get to the refuge than the actual number of these people who would have visited throughout the calendar year (that is, oversampling of nonlocals). In contrast, another refuge may not have enough nonlocal visitors in the sample to adequately represent the beliefs and opinions of that group type. If the sample for a specific group type (for example, nonlocals, hunters, those visitors who paid a fee) is too low ( $n < 30$ ), a warning is included. Additionally, the term "*this* visit" is used to reference the visit on which people were contacted to participate in the survey, which may or may not have been their most recent refuge visit.

## **Refuge Description for Bombay Hook National Wildlife Refuge**

Bombay Hook National Wildlife Refuge is situated along 8 miles of the Delaware Bay about 10 miles north of Dover, Delaware. The refuge encompasses a diverse assortment of habitats with four-fifths of the refuge covered by tidal salt marsh with a mix of cordgrass meadows, mud flats, tidal pools, rivers, creeks, and tidal streams. The upland area includes forests, freshwater impoundments, brushy and timbered swamps, and fields of herbaceous plants. The diversity of habitats is evidenced by the diversity of wildlife. The refuge attracts waterfowl in the fall, songbirds and shorebirds in the spring, and tall wading birds in the summer. Deer, red foxes, beavers, turtles and many species of insects, nonpoisonous snakes, frogs, and salamanders also call the refuge home.

Bombay Hook NWR was established in 1937 as a resting and feeding area for migratory and wintering waterfowl. The refuge was purchased from private landowners with federal duck stamp funds, and now covers just less than 16,000 acres. The refuge attracts around 120,000 visitors annually (based on 2008 RAPP database; U.S. Fish and Wildlife Service, 2011, written comm.). Visitors enjoy the 12-mile auto tour route through the refuge, as well as environmental education and interpretation programs, hunting, wildlife observation and photography. Figure 1 below displays a map of the refuge. For more information, please visit <http://www.fws.gov/northeast/bombayhook/>.



**Figure 1.** Map of Bombay Hook NWR, courtesy of U.S. Fish and Wildlife Service.

## **Sampling at Bombay Hook National Wildlife Refuge**

A total of 314 visitors agreed to participate in the survey during the two sampling periods at the identified locations at Bombay Hook NWR (table 2). In all, 266 visitors completed the survey for an 85% response rate and  $\pm 5\%$  margin of error at the 95% confidence level.<sup>1</sup>

**Table 2.** Sampling and response rate summary for Bombay Hook NWR.

Sampling period	Dates	Locations	Total contacts	Undeliverable addresses	Completed surveys	Response rate	
1	11/13/2010 to 11/27/2010	Bombay Hook Visitor Center					
		Boardwalk Trailhead	155	0	132	85%	
		Daly Overlook along Shearness Pool					
2	5/21/2011 to 6/4/2011	Bombay Hook Visitor Center					
		Auto Tour Route along Bear Swamp Pool	159	1	134	85%	
		Boardwalk Trailhead					
Auto Tour Route along Shearness Pool							
<b>Total</b>			<b>314</b>	<b>1</b>	<b>266</b>	<b>85%</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 Bombay Hook NWR reported that before participating in the survey, they were aware of the role of the U.S. Fish and Wildlife Service in managing national wildlife refuges (91%) and that the Refuge System has the mission of conserving, managing, and restoring fish, wildlife, plants and their habitat (95%). Positive responses to these questions concerning the management and mission of the Refuge System do not indicate the degree to which these visitors understand the day-to-day management practices of individual refuges, only that visitors feel they have a basic knowledge of who

<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).

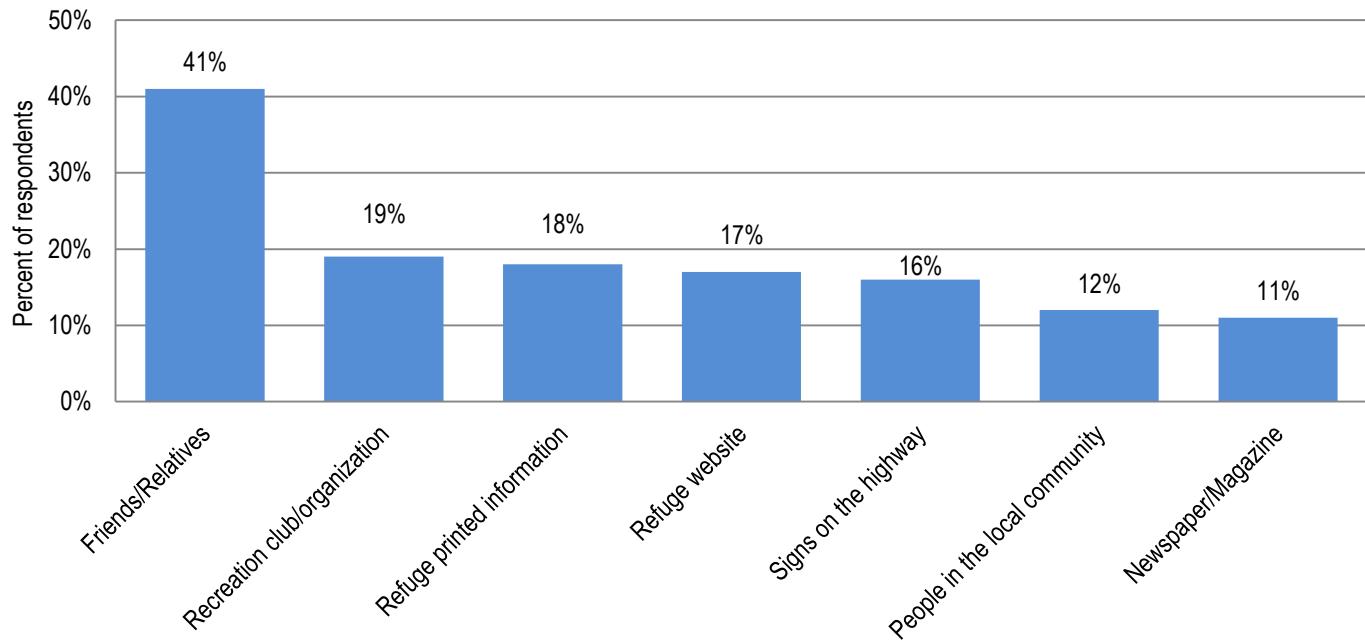
manages refuges and why. Compared to other public lands, many visitors feel that refuges provide a unique recreation experience (92%; see Appendix B for visitor comments on “What Makes National Wildlife Refuges Unique?”); however, reasons for why visitors find refuges unique are varied and may not directly correspond to their understanding of the mission of the Refuge System. Most visitors to Bombay Hook NWR had been to at least one other National Wildlife Refuge in the past year (87%), with an average of 6 visits to other refuges during the past 12 months.

### Visiting This Refuge

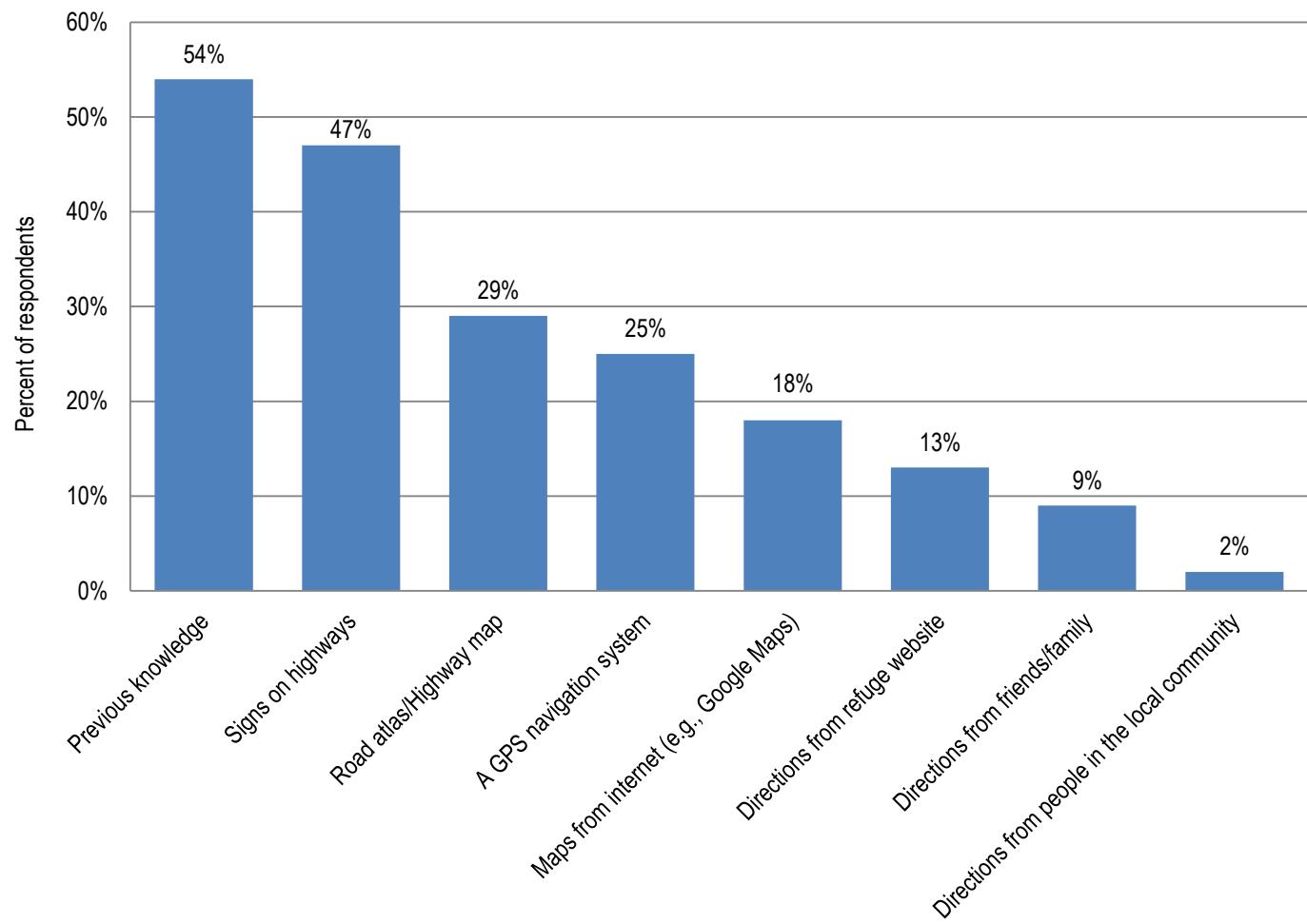
Some surveyed visitors (40%) had only been to Bombay Hook NWR once in the past 12 months, while most had been multiple times (60%). These repeat visitors went to the refuge an average of 10 times during that same 12-month period. Visitors used the refuge during only one season (42%), during multiple seasons (34%), and year-round (24%).

Most visitors first learned about the refuge from friends/relatives (41%), recreation club/organization (19%), or refuge printed information (18%; fig. 2). Key information sources used by visitors to find their way to this refuge include previous knowledge (54%), signs on highways (47%), or a road atlas/highway map (29%; fig. 3).

Some visitors (38%) lived in the local area (within 50 miles of the refuge), whereas 62% were nonlocal visitors. For most local visitors, Bombay Hook NWR was the primary purpose or sole destination of their trip (90%; table 3). For most nonlocal visitors, the refuge was also the primary purpose or sole destination of their trip (66%). Local visitors reported that they traveled an average of 27 miles to get to the refuge, while nonlocal visitors traveled an average of 175 miles. Figure 4 shows the residence of visitors travelling to the refuge. About a third (32%) visitors travelling to Bombay Hook NWR were from Delaware and about a third (28%) were from Maryland.



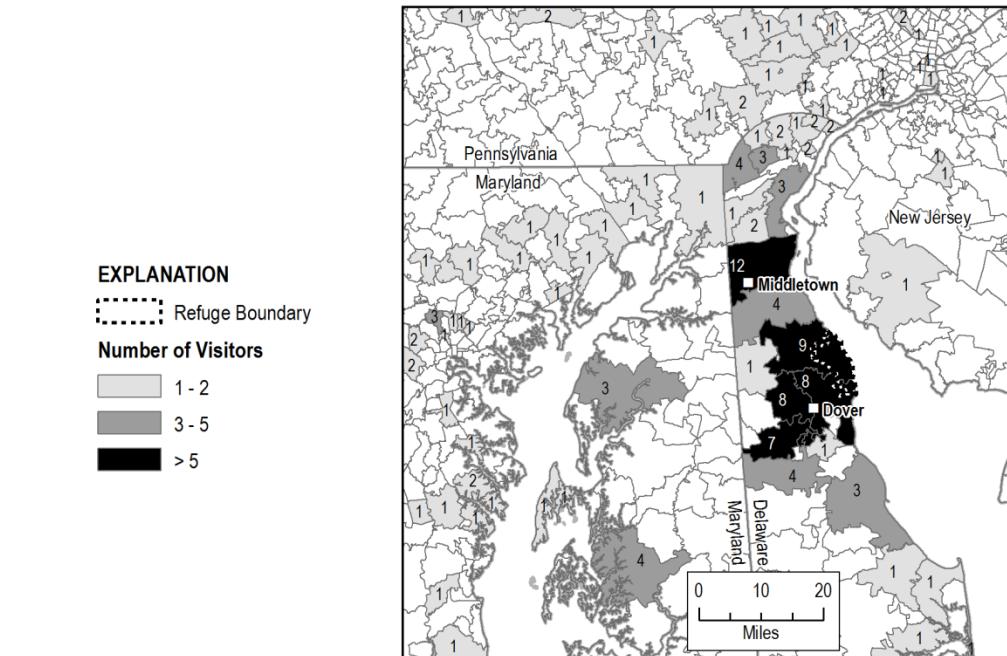
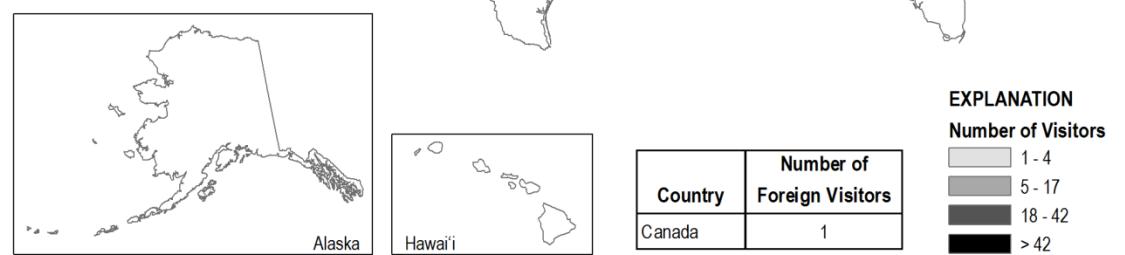
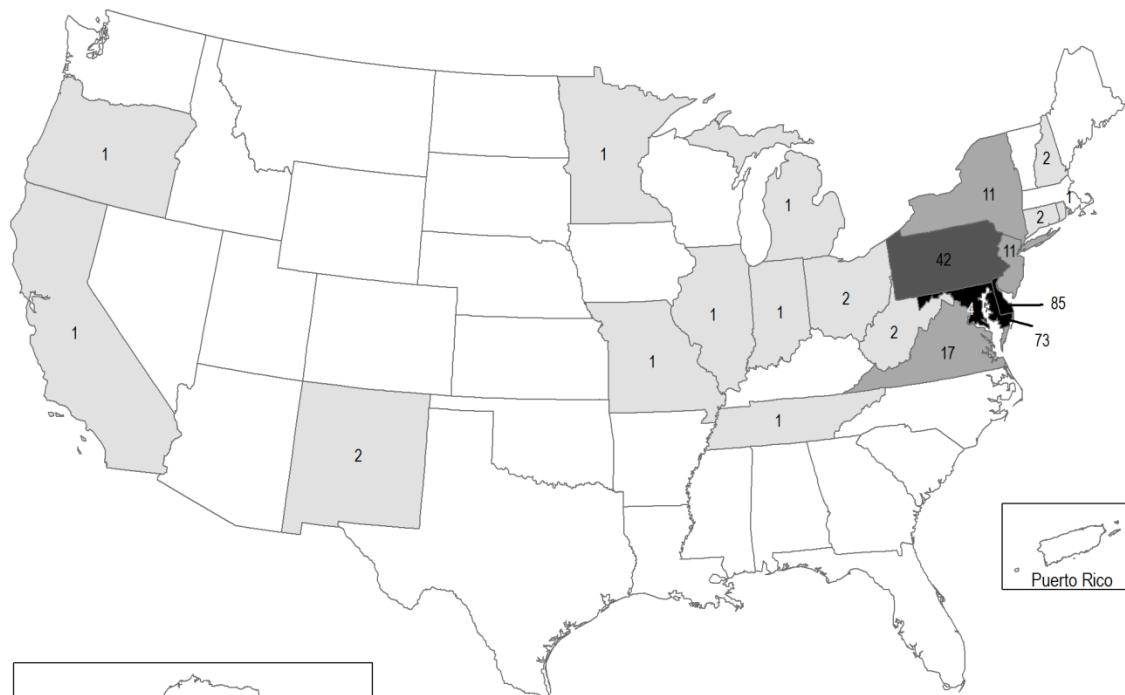
**Figure 2.** How visitors first learned or heard about Bombay Hook NWR (n = 258).



**Figure 3.** Resources used by visitors to find their way to Bombay Hook NWR during *this* visit ( $n = 262$ ).

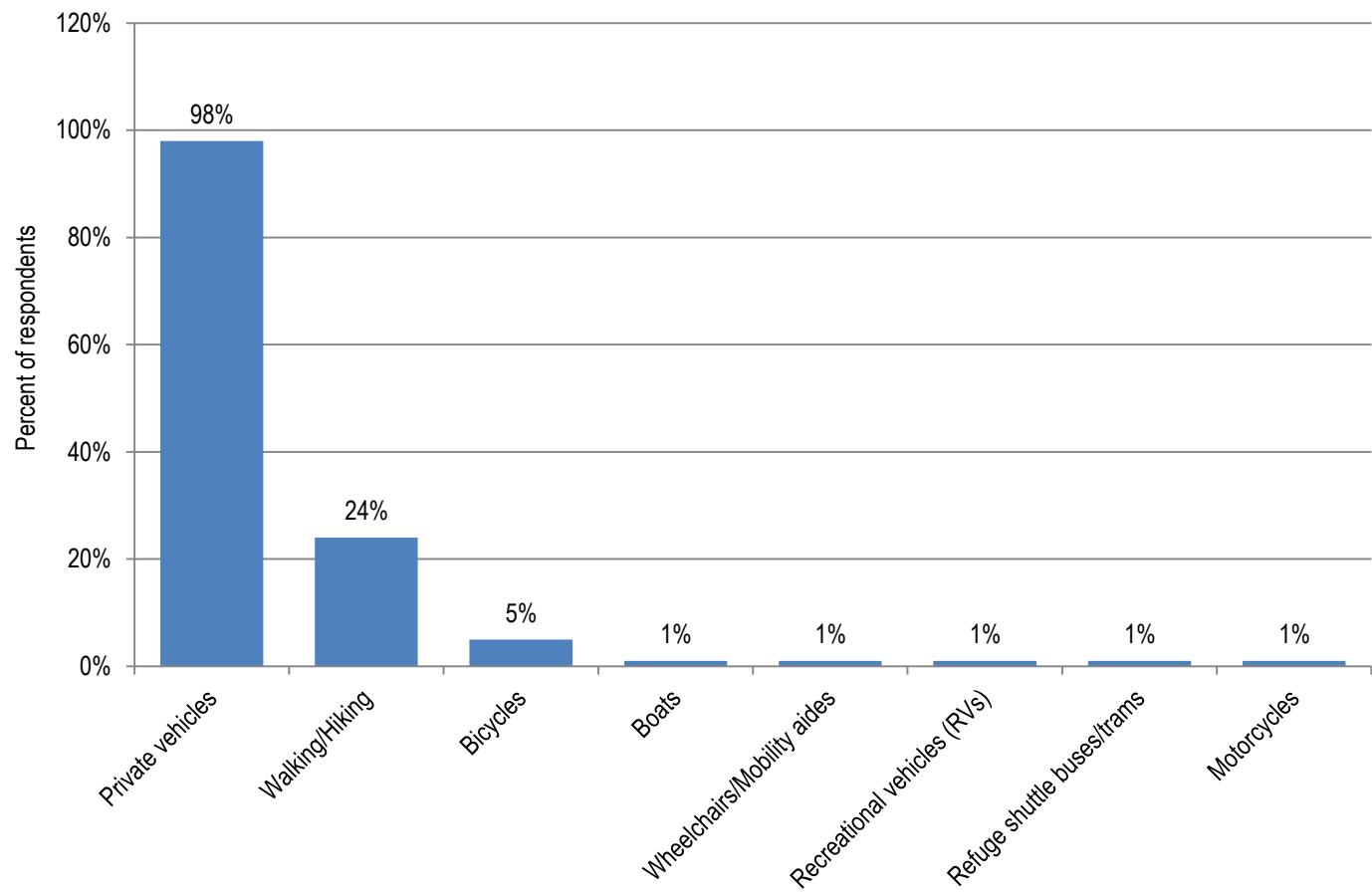
**Table 3.** Influence of Bombay Hook NWR on visitors' decision to take *this* trip.

Visitors	Visiting this refuge was...		
	the primary reason for trip	one of many equally important reasons for trip	an incidental stop
Nonlocal	66%	29%	5%
Local	90%	9%	1%
Total	75%	22%	3%



**Figure 4.** Number of visitors travelling to Bombay Hook NWR by residence. Top map shows residence by state and bottom map shows residence by zip codes near the refuge ( $n = 264$ ).

Surveyed visitors reported that they spent an average of 5 hours at Bombay Hook NWR during one day there (a day visit is assumed to be 8 hours). However, the most frequently reported length of visit during one day was actually 3 and 8 hours (23% for both). The key modes of transportation used by visitors to travel around the refuge were private vehicle (98%) and walking/hiking (24%; fig. 5). Most visitors indicated they were part of a group on their visit to this refuge (67%), travelling primarily with family and friends (table 4).

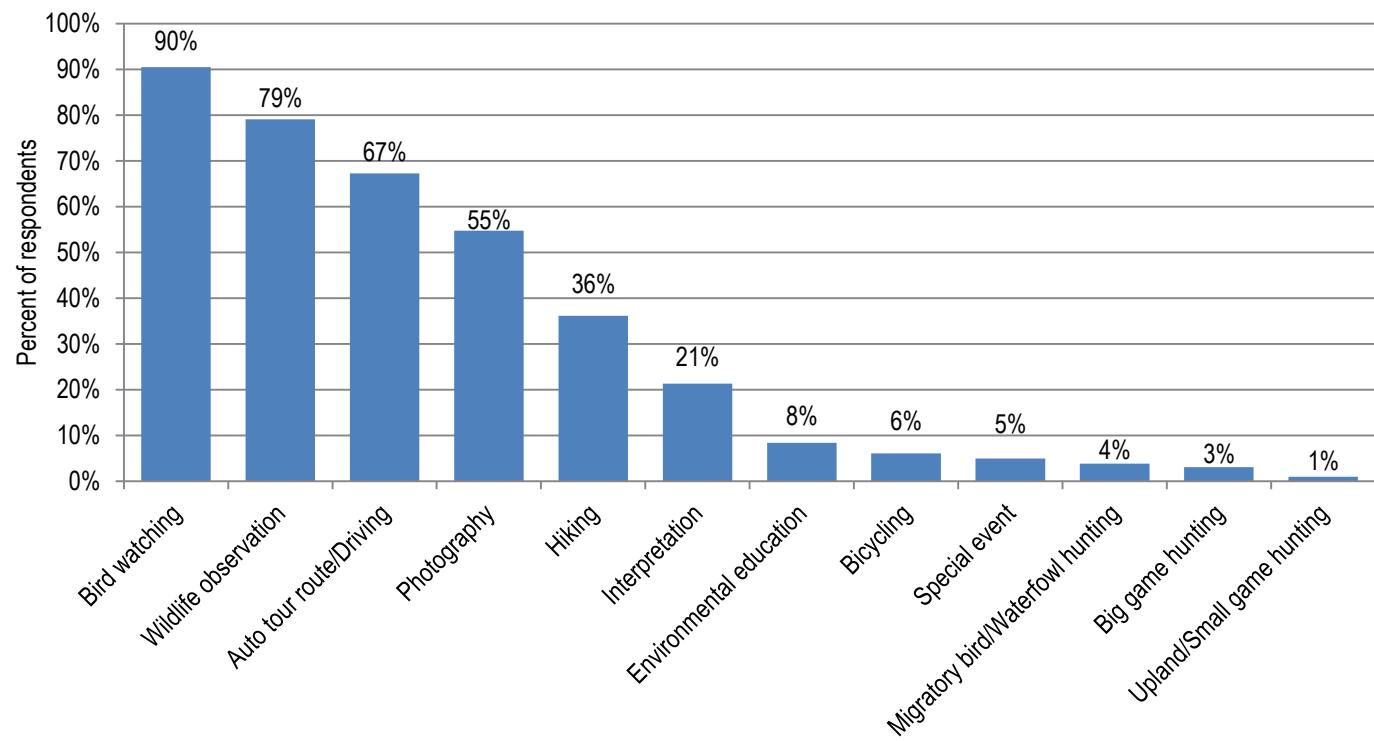


**Figure 5.** Modes of transportation used by visitors to Bombay Hook NWR during *this* visit (n = 262).

**Table 4.** Type and size of groups visiting Bombay Hook NWR (for those who indicated they were part of a group, n = 174).

Group type	Percent (of those traveling in a group)	Average group size		
		Number of adults	Number of children	Total group size
Family/Friends	82%	3	0	3
Commercial tour group	0%	0	0	0
Organized club/School group	16%	11	3	14
Other group type	2%	9	1	10

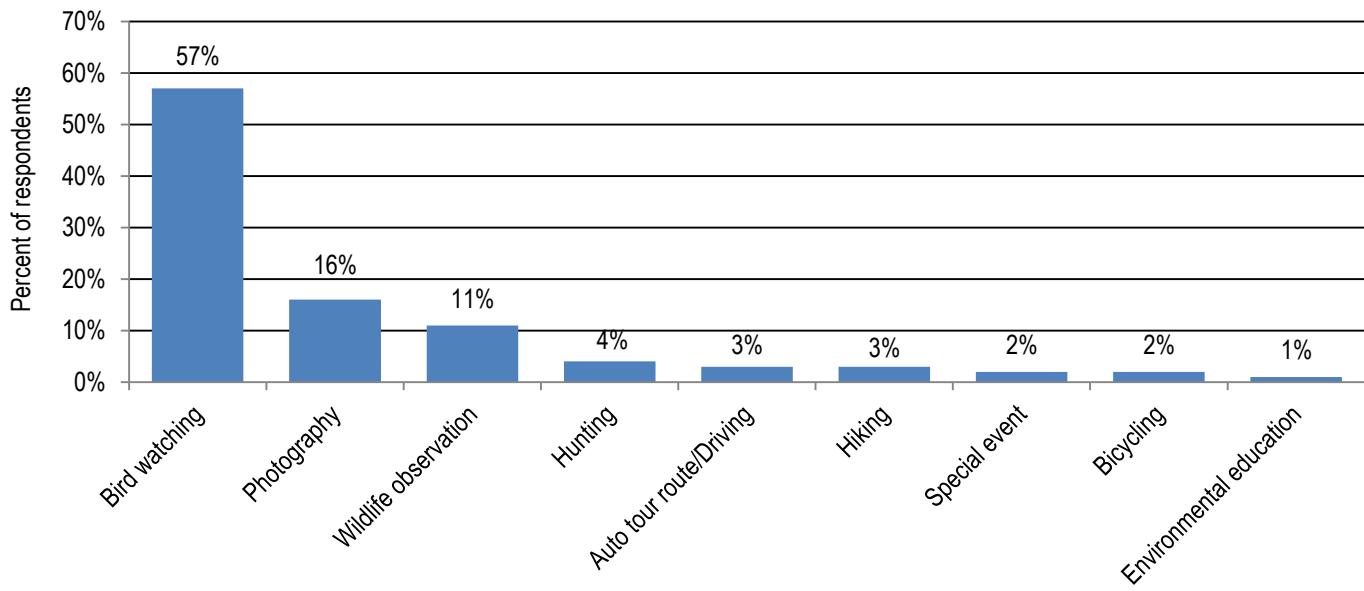
Surveyed visitors participated in a variety of refuge activities during the past 12 months (fig. 6); the top three activities reported were bird watching (90%), wildlife observation (79%), and auto tour route/driving (67%). The primary reasons for their most recent visit included bird watching (57%), photography (16%), and wildlife observation (11%; fig. 7). The visitor center was used by 96% of visitors, mostly to stop to use the facilities (for example, use bathroom, get water; 90%), visit the gift shop/bookstore (77%), and view the exhibits (76%; fig. 8).



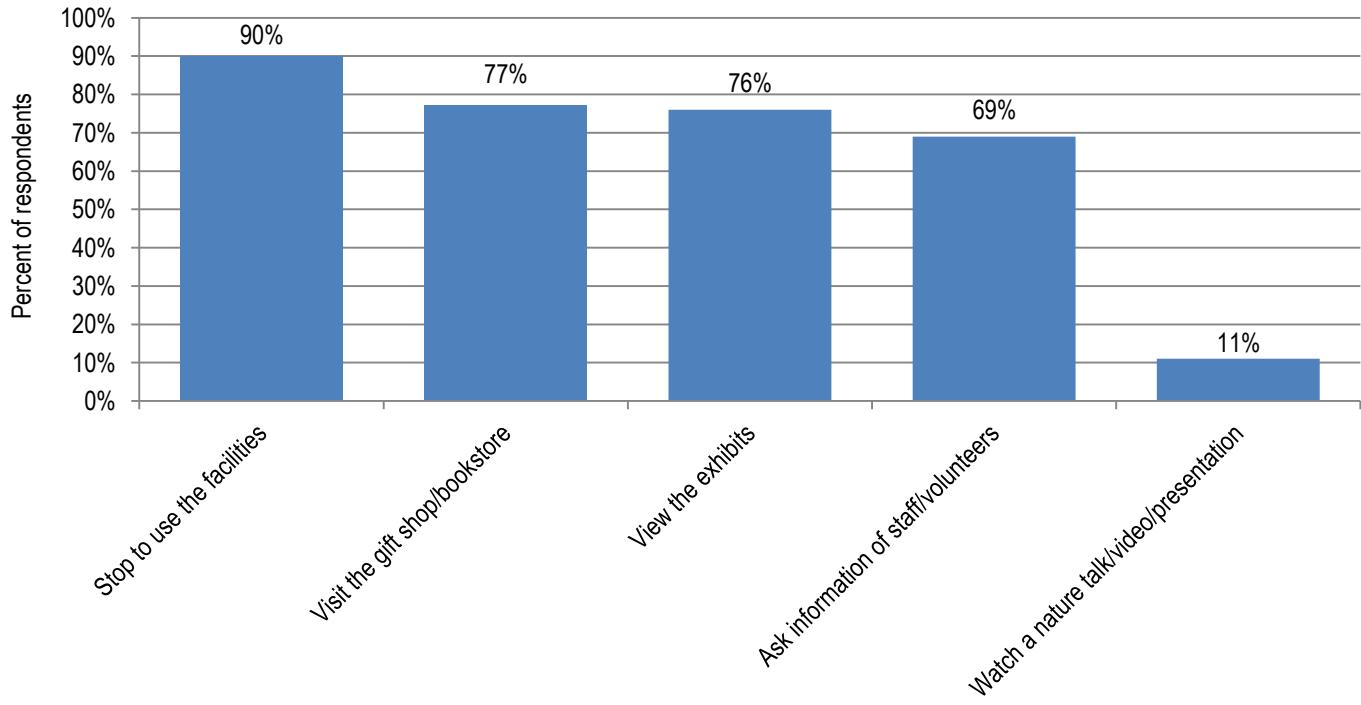
**Figure 6.** Activities in which visitors participated during the past 12 months at Bombay Hook NWR ( $n = 263$ ). See Appendix B for a listing of “other” activities.

### Visitor Characteristics

Nearly all (99%) surveyed visitors to Bombay Hook NWR indicated that they were citizens or permanent residents of the United States. Only those visitors 18 years or older were sampled. Visitors were a mix of 58% male with an average age of 61 years and 42% female with an average age of 58 years. Visitors, on average, reported they had 16 years of formal education (college or technical school). The median level of income was \$75,000–\$99,000. 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 Bombay Hook NWR ( $n = 250$ ). See Appendix B for a listing of “other” activities.



**Figure 8.** Use of the visitor center at Bombay Hook NWR (for those visitors who indicated they used the visitor center,  $n = 251$ ).

## 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, 38% of visitors to Bombay Hook NWR indicated that they live within the local area. Nonlocal visitors (62%) stayed in the local area, on average, for 1 day. Table 5 shows summary statistics for local and nonlocal visitor expenditures in the local communities and at the refuge, with expenditures reported on a per person per day basis. During the two sampling periods, nonlocal visitors spent an average of \$58 per person per day and local visitors spent an average of \$27 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 Bombay Hook NWR expressed in dollars per person per day.

Visitors	n <sup>1</sup>	Median	Mean	Standard deviation	Minimum	Maximum
Nonlocal	144	\$42	\$58	\$55	\$0	\$368
Local	70	\$19	\$27	\$30	\$0	\$164

<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.

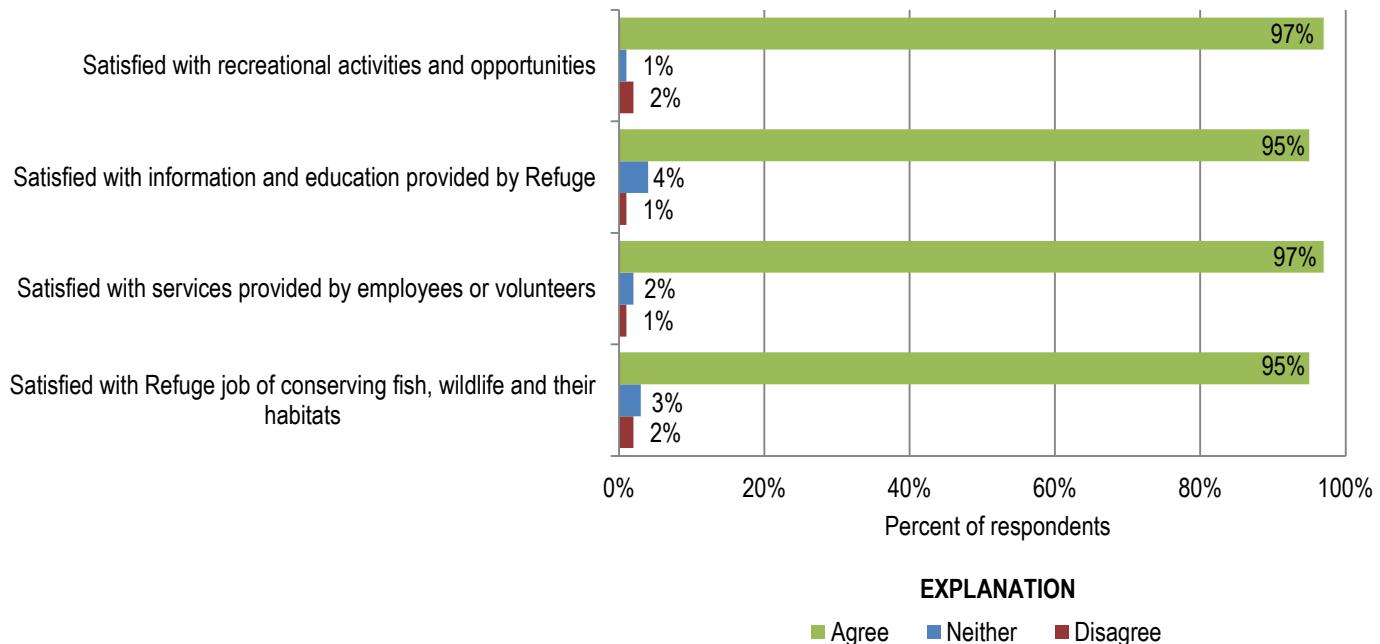
## Visitor Opinions about This Refuge

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.

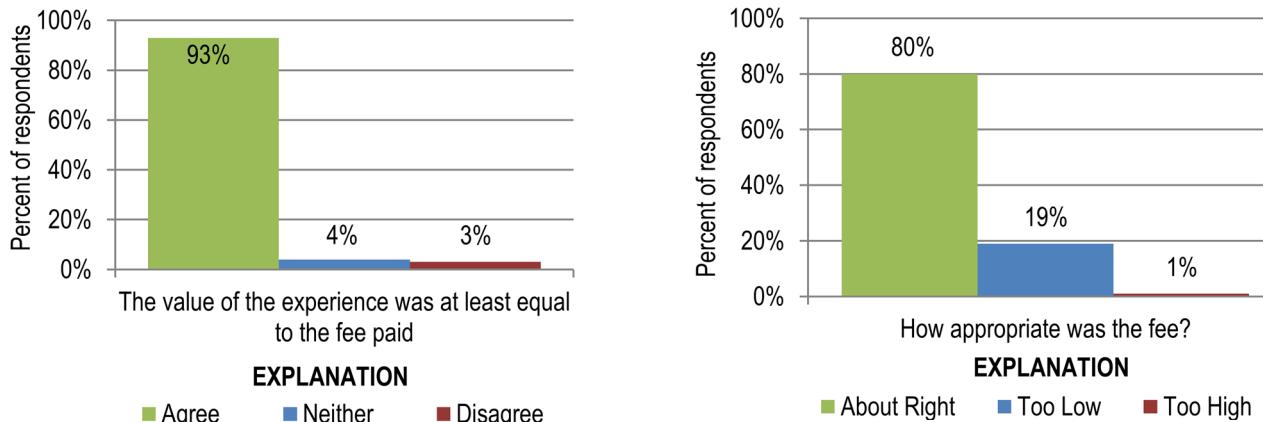
Surveyed visitors' overall satisfaction with the services, facilities, and recreational opportunities provided at Bombay Hook NWR were as follows (fig. 9):

- 97% were satisfied with the recreational activities and opportunities,
- 95% were satisfied with the information and education about the refuge and its resources,
- 97% were satisfied with the services provided by employees or volunteers, and
- 95% were satisfied with the refuge's job of conserving fish, wildlife and their habitats.

Of the 69% of visitors who indicated that they paid a fee to enter the refuge, 93% agreed that the opportunities and services were at least equal to the fee they paid; 80% felt the fee was about right, whereas 19% felt that the fee was too low and 1% thought it was too high (fig. 10).



**Figure 9.** Overall satisfaction with Bombay Hook NWR during *this* visit (n ≥ 259).



**Figure 10.** Opinions about fees at Bombay Hook NWR (for those visitors who indicated they paid a fee, n = 180).

### Importance/Satisfaction Ratings

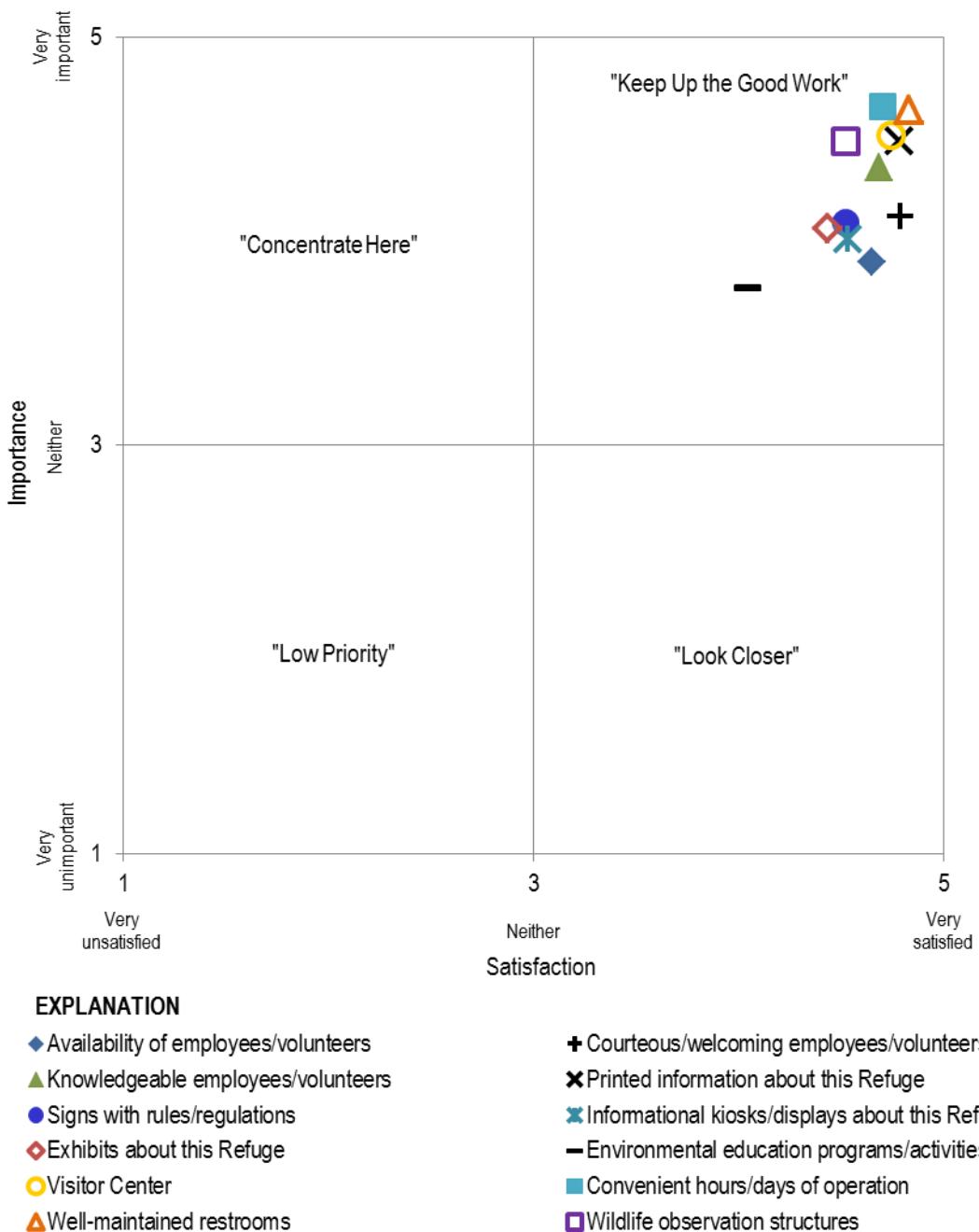
Comparing the importance and satisfaction ratings for visitor services provided by refuges can help to identify how well the services are meeting visitor expectations. The importance-performance framework presented in this section is a tool that includes the importance of an attribute to visitors in 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.

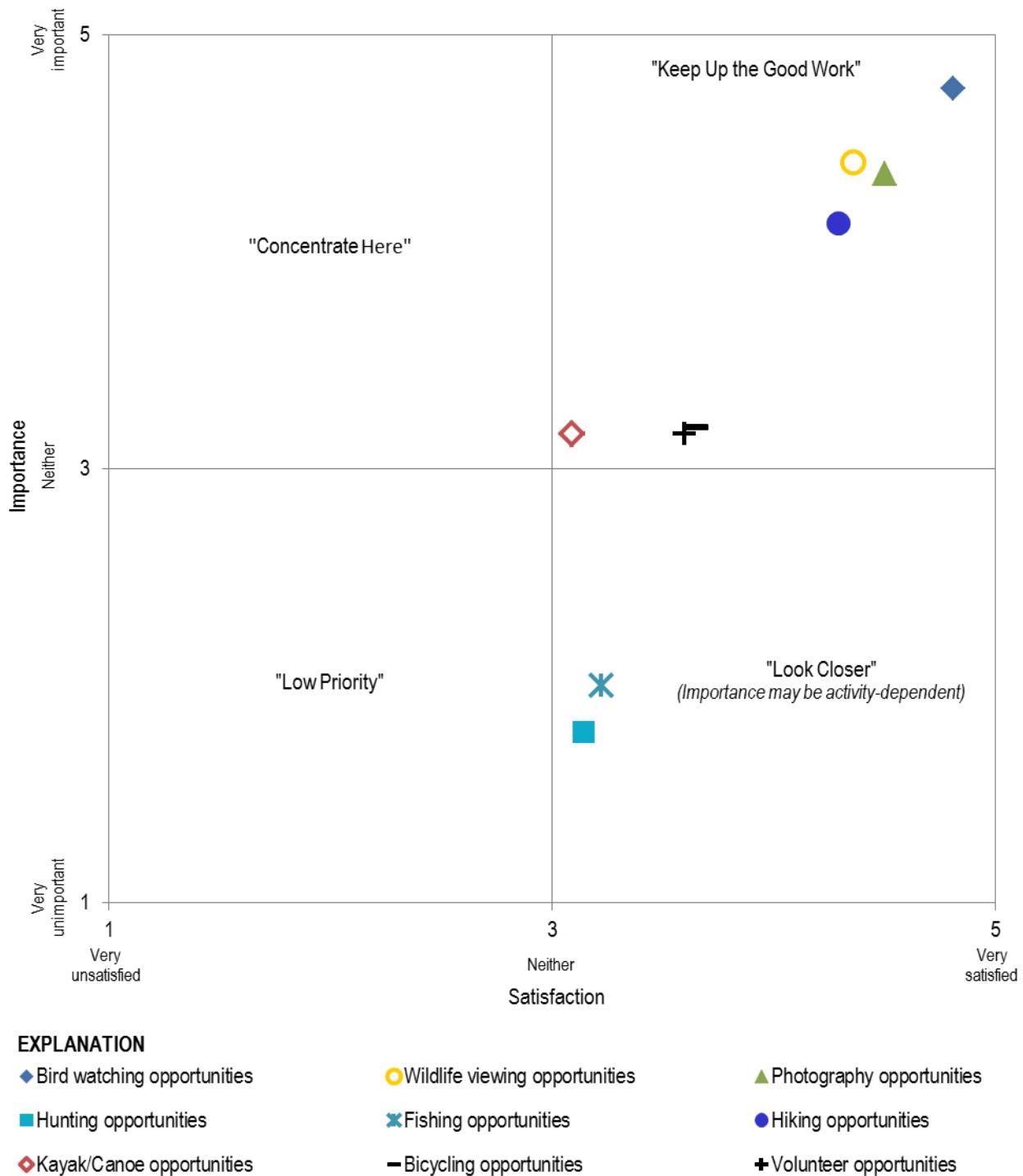
Graphically plotting visitors' importance and satisfaction ratings for different services, facilities, and recreational opportunities provides a simple and intuitive visualization of these survey measures. However, this tool is not without its drawbacks. One is the potential for variation among visitors 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 Bombay Hook NWR. This consideration is especially important when reviewing the attributes that fall into the "Look Closer" quadrant. In some cases, these attributes may represent specialized recreational activities in which a small subset of visitors participate (for example, hunting, kayaking) or facilities and services that only some visitors experience (for example, exhibits about the refuge). For these visitors, the average importance of (and potentially the satisfaction with) the attribute may be much higher than it would be for the overall population of visitors.

Figures 11-13 depict surveyed visitors' importance-satisfaction results for refuge services and facilities, recreational opportunities, and transportation-related features at Bombay Hook NWR, respectively. All refuge services and facilities fell in the "Keep Up the Good Work" quadrant (fig. 11). Nearly all refuge

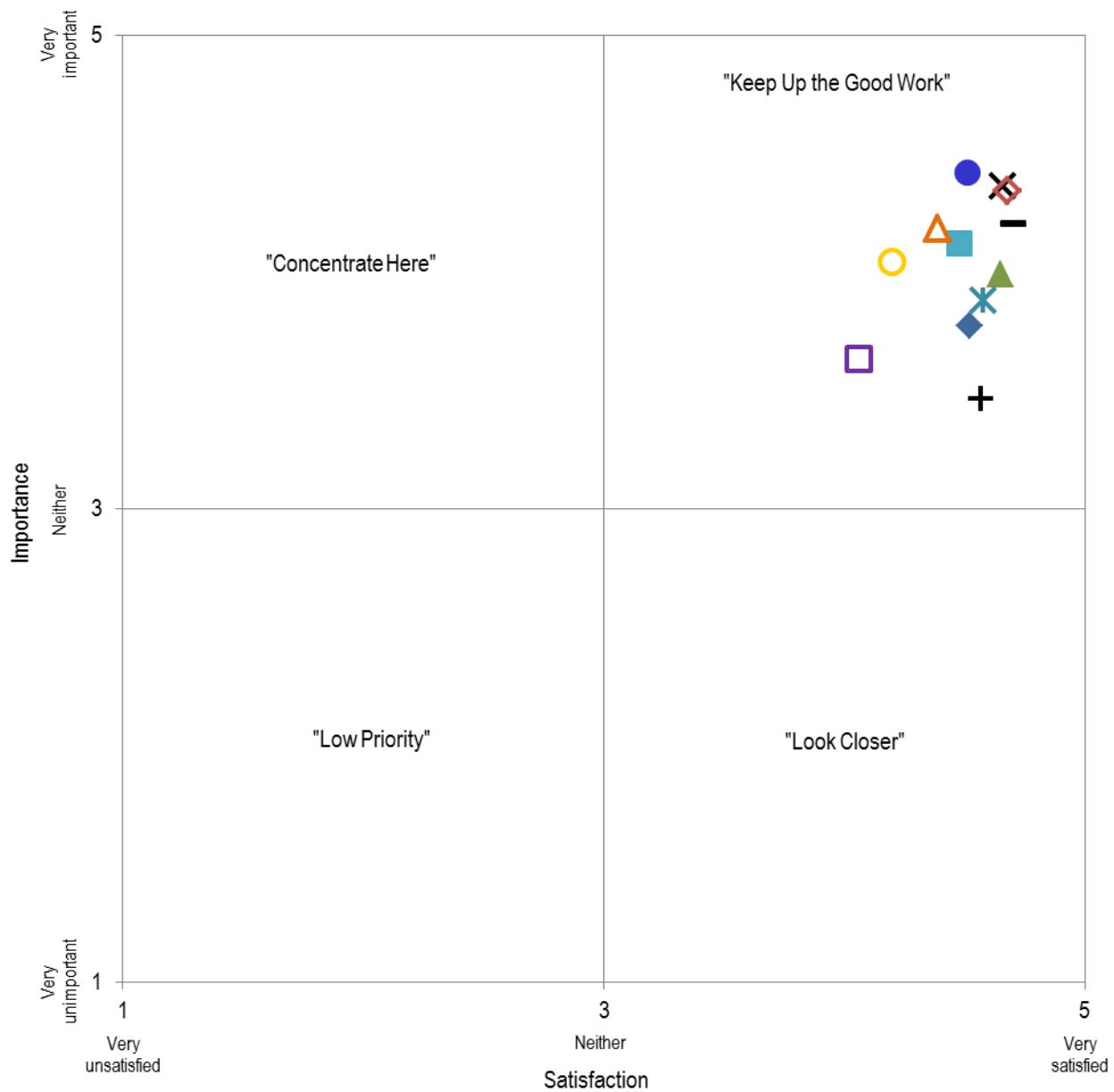
recreational opportunities fell in the “Keep Up the Good Work” quadrant except fishing and hunting opportunities, which fell into the “Look Closer” quadrant (fig. 12). The average importance of fishing and hunting activities in the “Look Closer” quadrant may be higher among visitors who have participated in these activities during the past 12 months; however, there were not enough individuals in the sample to evaluate the responses of such participants and/or it is not known how many visitors in the sample participated in the activity. All transportation-related features fell in the “Keep Up the Good Work” quadrant (fig. 13).



**Figure 11.** Importance-satisfaction ratings of services and facilities provided at Bombay Hook NWR.



**Figure 12.** Importance-satisfaction ratings of recreational opportunities provided at Bombay Hook NWR.



**Figure 13.** Importance-satisfaction ratings of transportation-related features at Bombay Hook NWR.

## **Visitor Opinions about National Wildlife Refuge System Topics**

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

### **Alternative Transportation and the National Wildlife Refuge System**

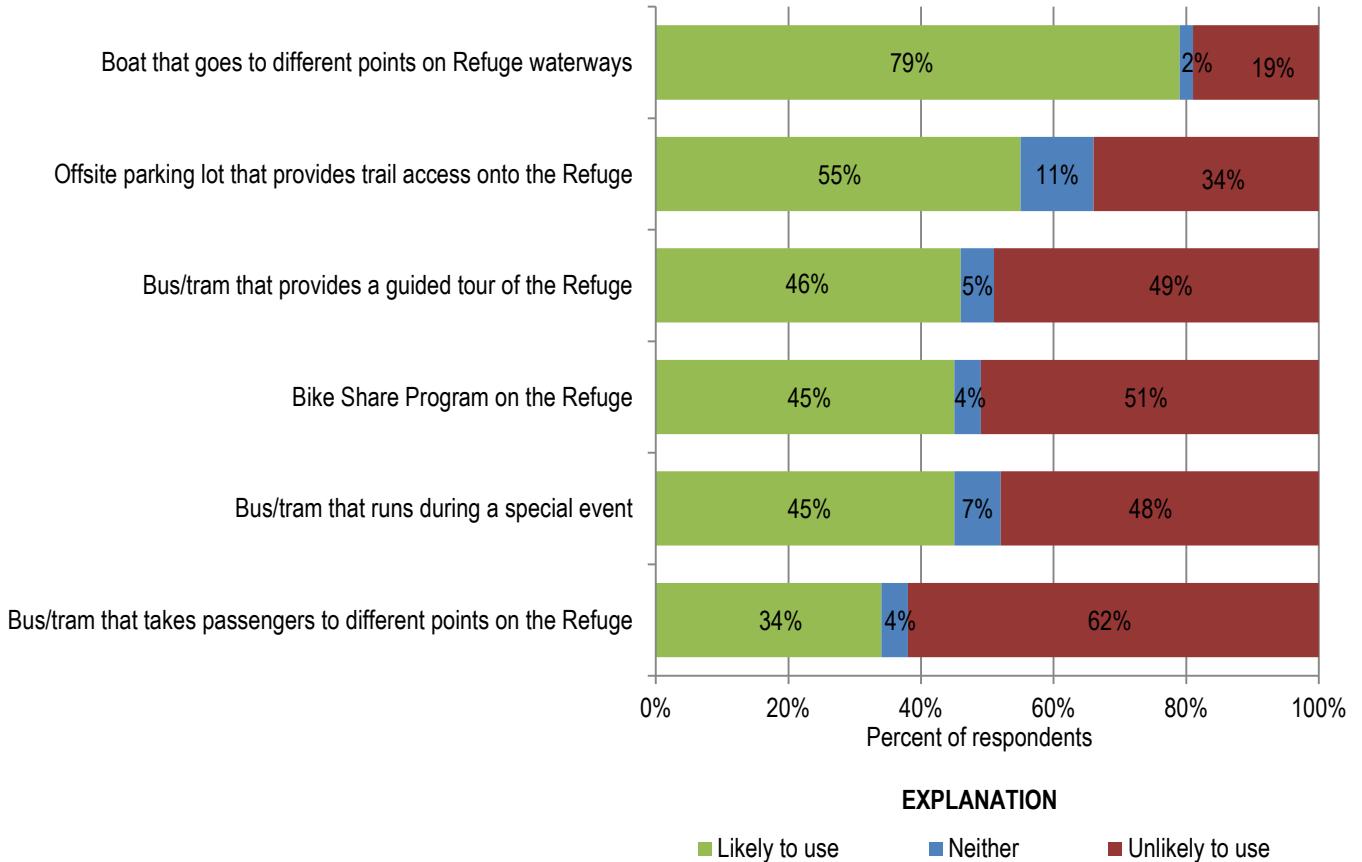
*Visitors use a variety of transportation means to access and enjoy national wildlife refuges. While many visitors arrive at the refuge in a private vehicle, alternatives such as buses, trams, watercraft, and bicycles are increasingly becoming a part of the visitor experience. Previous research has identified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

Of the six Refuge System-wide alternative transportation options listed on the survey, the majority of Bombay Hook NWR visitors who were surveyed were likely to use the following options at national wildlife refuges in the future (fig. 14):

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

The majority of visitors were *not* likely to use a bus/tram that takes passengers to different points or a bike share program on national wildlife refuges in the future (fig. 14).

When asked about using alternative transportation at Bombay Hook NWR specifically, 43% of visitors indicated they were unsure whether it would enhance their experience; however, some visitors thought alternative transportation would enhance their experience (20%) and others thought it would not (37%).



**Figure 14.** Visitors' likelihood of using alternative transportation options at national wildlife refuges in the future ( $n \geq 250$ ).

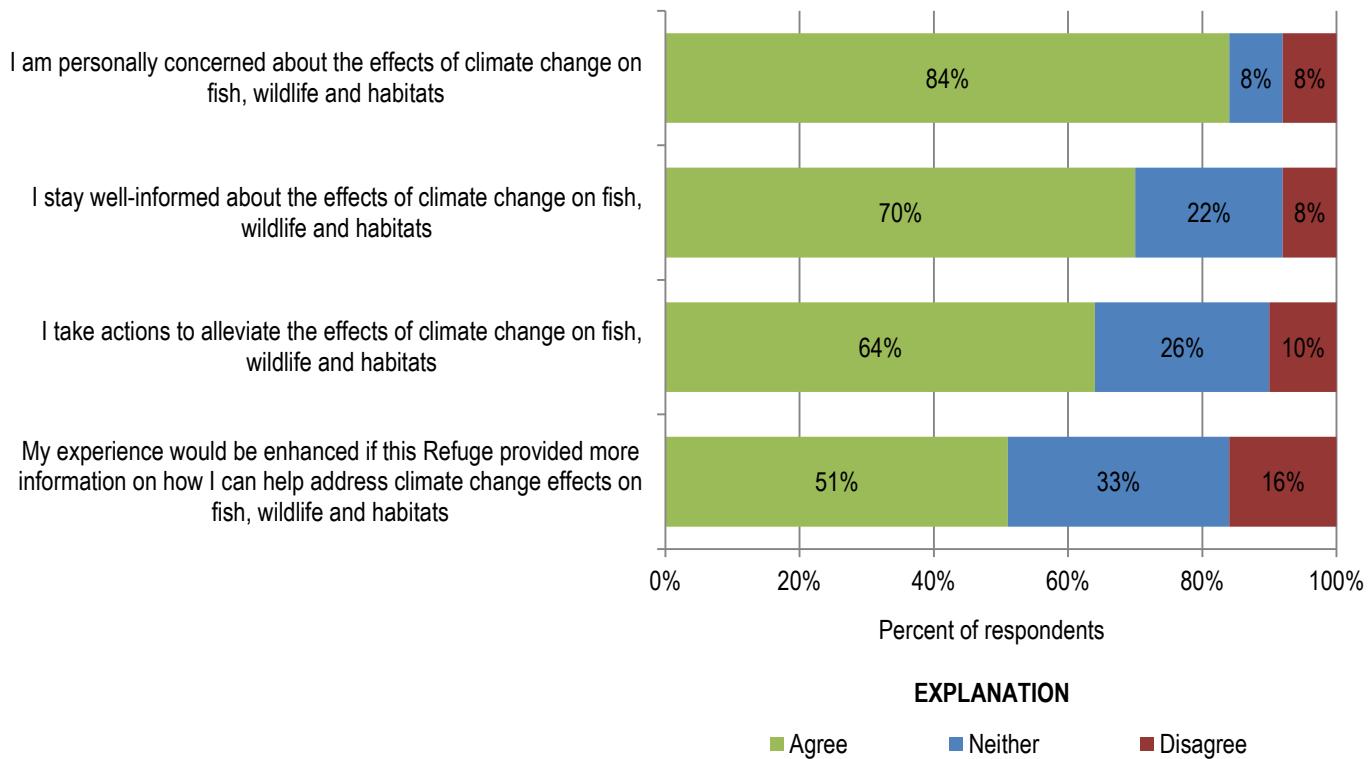
### Climate Change and the National Wildlife Refuge System

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 Bombay Hook NWR agreed with the following statements (fig. 15):

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



**Figure 15.** Visitors' personal involvement with climate change related to fish, wildlife and their habitats ( $n \geq 252$ ).

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).

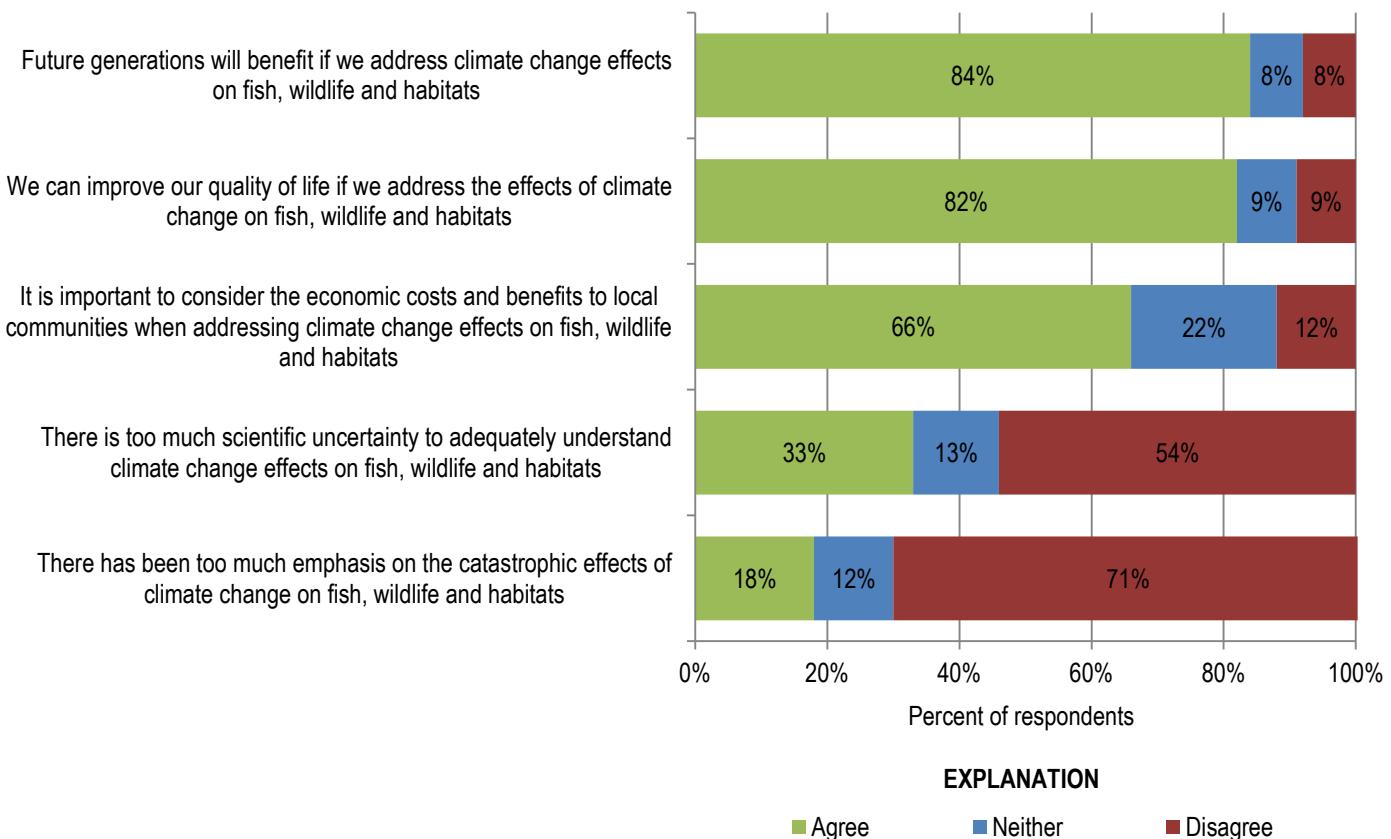
For Bombay Hook NWR, the majority of visitors believed the following regarding climate change related to fish, wildlife and their habitats (fig. 16):

- “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;” and
- “There is too much scientific uncertainty to adequately understand climate change effects.”

Such information suggests that certain beliefs resonate with a greater number of visitors than other beliefs do. This information is important to note because the majority of visitors (51%) indicated that their experience would be enhanced if Bombay Hook NWR provided information about how they could help address the effects of climate change on fish, wildlife, and their habitats (fig. 15), 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 16.** Visitors' beliefs about the effects of climate change on fish, wildlife and their habitats ( $n \geq 249$ ).

## Conclusion

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

Individual refuge results are available for downloading at <http://pubs.usgs.gov/ds/643/> as part of USGS Data Series 643 (Sexton and others, 2011). For additional information about this project, contact the USGS researchers at [national\\_visitor\\_survey@usgs.gov](mailto:national_visitor_survey@usgs.gov) or 970.226.9205.

## References

- Bruyere, B.L., Rodriguez, D.A., and Vaske, J.J., 2002, Enhancing importance-performance analysis through segmentation: *Journal of Travel and Tourism Marketing*, v. 12, no. 1, p. 81-95.
- Carver, E., and Caudill, J., 2007, Banking on nature 2006: The economic benefits to local communities of National Wildlife Refuge visitation: U.S. Fish and Wildlife Service, Division of Economics, Washington, D.C., 372 p., accessed September 30, 2011, at [http://www.fws.gov/refuges/about/msWord/BankingonNature\\_2006\\_11-23.doc](http://www.fws.gov/refuges/about/msWord/BankingonNature_2006_11-23.doc).
- Clark, J.R., 2001, Mission and Goals (National Fish and Wildlife Service Director's Order #132–601 FW1), accessed November 18, 2011 at [http://www.fws.gov/refuges/policiesandbudget/HR1420\\_missionGoals.html](http://www.fws.gov/refuges/policiesandbudget/HR1420_missionGoals.html).
- Dillman, D.A., 2007, Mail and Internet surveys: The tailored design method. (2nd ed.): Hoboken, N.J., John Wiley and Sons, Inc., 523 p.
- Krechmer, D., Grimm, L., Hodge, D., Mendes, D., and Goetzke, F., 2001, Federal lands alternative transportation systems study – Volume 3 – Summary of national ATS needs: prepared for Federal Highway Administration, and Federal Transit Administration in association with National Park Service, Bureau of Land Management, and U.S. Fish and Wildlife Service, 80 p. (Also available at [http://www.fta.dot.gov/documents/3039\\_study.pdf](http://www.fta.dot.gov/documents/3039_study.pdf))
- Leiserowitz, A., Maibach, E., and Roser-Renouf, C., 2008, Global warming's six Americas: An audience segmentation: New Haven, Conn., Yale University.
- Martilla, J.A., and James, J.C., 1977, Importance-performance analysis: *Journal of Marketing*, v. 41, p. 77–79.
- Nisbet, M.C., 2009, Communicating climate change: Why frames matter for public engagement: *Environment*, v. 51, p. 12-23.
- Salant, P., and Dillman, D.A., 1994, How to conduct your own study: New York, N.Y., John Wiley and Sons, Inc.

- Sexton, N.R., Dietsch, A.M., Don Carlos, A.W., Koontz, L., Solomon, A. and Miller, H., 2011, National wildlife refuge visitor survey 2010/2011: Individual refuge results: U.S. Geological Survey Data Series 643.
- Stynes, D.J., 2008, National Park visitor spending and payroll impacts, 2007: East Lansing, Mich., Michigan State University, Department of Community, Agriculture, Recreation and Resource Studies.
- Tarrant, M.A., and Smith, E.K., 2002, The use of a modified importance-performance framework to examine visitor satisfaction with attributes of outdoor recreation settings: *Managing Leisure*, v. 7, no. 2, p. 69–82.
- Uniack, T., 1999, The citizen's wildlife refuge planning handbook: Charting the future of conservation on the National Wildlife Refuge near you: Defenders of Wildlife, Washington, D.C., accessed April 2010 at [http://www.defenders.org/resources/publications/programs\\_and\\_policy/habitat\\_conservation/federal\\_lands/citizen's\\_wildlife\\_refuge\\_planning\\_handbook.pdf](http://www.defenders.org/resources/publications/programs_and_policy/habitat_conservation/federal_lands/citizen's_wildlife_refuge_planning_handbook.pdf).
- U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau, 2007, 2006 National survey of fishing, hunting, and wildlife-associated recreation: U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., 168 p.
- U.S. Fish and Wildlife Service, 2007, America's national wildlife refuges, Fact Sheet, last updated July 31, 2007.
- U.S. Fish and Wildlife Service, 2010, Rising to the urgent challenge: Strategic plan for responding to accelerating climate change: U.S. Fish and Wildlife Service, Division of Refuges, Washington, D.C., 32 p., accessed April 2011 at <http://www.fws.gov/home/climatechange/pdf/CCStrategicPlan.pdf>.
- Vaske, J.J., Beaman, J., Stanley R., and Grenier, M., 1996, Importance-performance and segmentation: Where do we go from here?: *in* Fesenmaier, D.R., O'Leary, J.T., and Uysal, M., eds., Recent advances in tourism marketing research: New York, The Haworth Press, Inc., p. 225-240.
- Wade, D.J. and Eagles, P.F.J., 2003, The use of importance-performance analysis and market segmentation for tourism management in parks and protected areas: An application to Tanzania's National Parks: *Journal of Ecotourism*, v. 2, no. 3, p. 196-212.

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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"/> 3% Big game hunting	<input type="checkbox"/> 36% Hiking	<input type="checkbox"/> 8% Environmental education (for example, classrooms or labs, tours)
<input type="checkbox"/> 1% Upland/Small-game hunting	<input type="checkbox"/> 6% Bicycling	<input type="checkbox"/> 5% Special event ( <i>please specify</i> ) <u>See Appendix B</u>
<input type="checkbox"/> 4% Migratory bird/Waterfowl hunting	<input type="checkbox"/> 67% Auto tour route/Driving	<input type="checkbox"/> 2% Other ( <i>please specify</i> ) <u>See Appendix B</u>
<input type="checkbox"/> 79% Wildlife observation	<input type="checkbox"/> 0% Motorized boating	<input type="checkbox"/> 0% Other ( <i>please specify</i> ) <u>See Appendix B</u>
<input type="checkbox"/> 90% Bird watching	<input type="checkbox"/> 0% Nonmotorized boating (including canoes/kayaks)	
<input type="checkbox"/> 0% Freshwater fishing	<input type="checkbox"/> 21% Interpretation (for example, exhibits, kiosks, videos)	
<input type="checkbox"/> 0% Saltwater fishing		
<input type="checkbox"/> 55% 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?

4% No

96% Yes → If yes, what did you do there? (*Please mark all that apply.*)

<input type="checkbox"/> 77% Visit the gift shop or bookstore	<input type="checkbox"/> 11% Watch a nature talk/video/presentation
<input type="checkbox"/> 76% View the exhibits	<input type="checkbox"/> 90% Stopped to use the facilities (for example, get water, use restroom)
<input type="checkbox"/> 69% Ask information of staff/volunteers	<input type="checkbox"/> 12% 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	
66%	90%	75%	It was the primary purpose or sole destination of my trip.
29%	9%	22%	It was one of many equally important reasons or destinations for my trip.
4%	1%	3%	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** 175 number of miles

**Local** 27 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?

No (*skip to question #9*)

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

82% Family and/or friends  16% Organized club or school group

0% Commercial tour group  2% Other (*please specify*) See Appendix B

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

4 number 18 years and over 1 number 17 years and under

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

<input checked="" type="checkbox"/> 41% Friends or relatives	<input checked="" type="checkbox"/> 17% Refuge website
<input checked="" type="checkbox"/> 16% Signs on highway	<input checked="" type="checkbox"/> 5% Other website ( <i>please specify</i> ) <u>See Appendix B</u>
<input checked="" type="checkbox"/> 19% Recreation club or organization	<input checked="" type="checkbox"/> 0% Television or radio
<input checked="" type="checkbox"/> 12% People in the local community	<input checked="" type="checkbox"/> 11% Newspaper or magazine
<input checked="" type="checkbox"/> 18% Refuge printed information (brochure, map)	<input checked="" type="checkbox"/> 13% Other ( <i>please specify</i> ) <u>See Appendix B</u>

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

71% Spring  41% Summer  71% Fall  34% Winter  
(March-May) (June-August) (September-November) (December-February)

11. How many times have you visited...

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

...other National Wildlife Refuges in the last 12 months? 6 number of visits

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## SECTION 2. Transportation and access at this Refuge

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

<input type="checkbox"/> 98% Private vehicle without a trailer	<input type="checkbox"/> 0% Refuge shuttle bus or tram	<input type="checkbox"/> 5% Bicycle
<input type="checkbox"/> 0% Private vehicle with a trailer (for boat, camper or other)	<input type="checkbox"/> 0% Motorcycle	<input type="checkbox"/> 24% Walk/Hike
<input type="checkbox"/> 0% Commercial tour bus	<input type="checkbox"/> 0% ATV or off-road vehicle	<input type="checkbox"/> 1% Other (please specify below) <u>See Appendix B</u>
<input type="checkbox"/> 1% Recreational vehicle (RV)	<input type="checkbox"/> 1% Boat	
	<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"/> 13% Directions from Refuge website
<input type="checkbox"/> 25% A GPS navigation system	<input type="checkbox"/> 2% Directions from people in community near this Refuge
<input type="checkbox"/> 29% A road atlas or highway map	<input type="checkbox"/> 9% Directions from friends or family
<input type="checkbox"/> 18% Maps from the Internet (for example, MapQuest or Google Maps)	<input type="checkbox"/> 54% Previous knowledge/I have been to this Refuge before
	<input type="checkbox"/> 1% Other (please specify) <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"/> 42%	<input type="checkbox"/> 20%	<input type="checkbox"/> 4%	<input type="checkbox"/> 26%	<input type="checkbox"/> 8%
...a bike that was offered through a Bike Share Program for use while on the Refuge?	<input type="checkbox"/> 34%	<input type="checkbox"/> 17%	<input type="checkbox"/> 4%	<input type="checkbox"/> 32%	<input type="checkbox"/> 13%
...a bus or tram that provides a guided tour of the Refuge with information about the Refuge and its resources?	<input type="checkbox"/> 35%	<input type="checkbox"/> 14%	<input type="checkbox"/> 5%	<input type="checkbox"/> 29%	<input type="checkbox"/> 17%
...a boat that goes to different points on Refuge waterways?	<input type="checkbox"/> 12%	<input type="checkbox"/> 6%	<input type="checkbox"/> 3%	<input type="checkbox"/> 41%	<input type="checkbox"/> 37%
...a bus or tram that runs during a special event (such as an evening tour of wildlife or weekend festival)?	<input type="checkbox"/> 34%	<input type="checkbox"/> 14%	<input type="checkbox"/> 7%	<input type="checkbox"/> 26%	<input type="checkbox"/> 19%
...an offsite parking lot that provides trail access for walking/hiking onto the Refuge?	<input type="checkbox"/> 20%	<input type="checkbox"/> 14%	<input type="checkbox"/> 11%	<input type="checkbox"/> 30%	<input type="checkbox"/> 25%
...some other alternative transportation option? (please specify) <u>See Appendix B</u>	<input type="checkbox"/> 11%	<input type="checkbox"/> 0%	<input type="checkbox"/> 6%	<input type="checkbox"/> 22%	<input type="checkbox"/> 61%

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

20% Yes       37% No       43% 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%	12%	7%	52%	24%	Surface conditions of roads	3%	4%	2%	21%	70%	NA
6%	18%	14%	48%	14%	Surface conditions of parking areas	4%	1%	5%	12%	78%	NA
6%	5%	14%	37%	39%	Condition of bridges	2%	0%	7%	11%	80%	NA
2%	3%	4%	40%	51%	Condition of trails and boardwalks	3%	1%	2%	18%	77%	NA
6%	8%	8%	48%	30%	Number of places for parking	2%	2%	4%	17%	74%	NA
3%	3%	2%	31%	61%	Number of places to pull over along Refuge roads	4%	2%	4%	22%	69%	NA
2%	3%	6%	37%	52%	Safety of driving conditions on Refuge roads	2%	1%	2%	15%	79%	NA
2%	3%	9%	45%	41%	Safety of Refuge road entrances/exits	2%	1%	3%	12%	82%	NA
3%	7%	13%	39%	39%	Signs on highways directing you to the Refuge	4%	6%	8%	32%	51%	NA
3%	4%	8%	47%	38%	Signs directing you around the Refuge roads	2%	4%	5%	23%	66%	NA
2%	5%	7%	46%	40%	Signs directing you on trails	3%	2%	9%	26%	60%	NA
8%	8%	26%	28%	30%	Access for people with physical disabilities or who have difficulty walking	1%	2%	29%	25%	43%	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

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

38% Yes

62% No → How much time did you spend **in local communities** on this trip?

2 number of hours      OR      3 number of days

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

Categories	Amount Spent in <b>Local Communities &amp; at this Refuge</b> <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> ) _____	

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

2 number of people sharing expenses

See Report for Results

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 3%	\$10 17%	\$20 21%	\$35 10%	\$50 19%	\$75 4%	\$100 12%	\$125 1%	\$150 2%	\$200 3%	\$250 8%
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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.*)

1% Far too low     18% Too low     80% About right     0% Too high     1% Far too high     31% Did not pay a fee  
(skip to Section 4)

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.**

3% Strongly disagree     1% Disagree     4% Neither agree or disagree     27% Agree     66% Strongly agree

#### **SECTION 4. Your experience at this Refuge**

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

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Not Applicable
Overall, I am satisfied with the recreational activities and opportunities provided by this Refuge.	0%	2%	1%	32%	64%	NA
Overall, I am satisfied with the information and education provided by this Refuge about its resources.	1%	0%	3%	34%	62%	NA
Overall, I am satisfied with the services provided by employees or volunteers at this Refuge.	0%	0%	2%	30%	68%	NA
This Refuge does a good job of conserving fish, wildlife and their habitats.	2%	0%	3%	27%	68%	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						Satisfaction					
Circle one for each item.						Circle one for each item.					
Very Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Very Important	Refuge Services, Facilities, and Activities	Very Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Very Satisfied	Not Applicable
3%	7%	14%	48%	28%	Availability of employees or volunteers	1%	1%	6%	16%	76%	NA
4%	5%	7%	43%	41%	Courteous and welcoming employees or volunteers	1%	0%	4%	8%	86%	NA
3%	3%	5%	34%	55%	Knowledgeable employees or volunteers	1%	1%	3%	19%	76%	NA
1%	3%	3%	32%	61%	Printed information about this Refuge and its resources (for example, maps and brochures)	0%	2%	1%	13%	84%	NA
2%	6%	11%	53%	28%	Informational kiosks/displays about this Refuge and its resources	0%	2%	7%	24%	66%	NA
3%	7%	8%	42%	40%	Signs with rules/regulations for this Refuge	0%	1%	9%	24%	65%	NA
1%	5%	11%	54%	29%	Exhibits about this Refuge and its resources	1%	1%	11%	26%	61%	NA
4%	5%	27%	39%	25%	Environmental education programs or activities	1%	2%	33%	24%	42%	NA
2%	1%	2%	34%	61%	Visitor Center	1%	0%	2%	19%	78%	NA
1%	1%	2%	25%	72%	Convenient hours and days of operation	1%	1%	1%	19%	77%	NA
1%	1%	2%	24%	72%	Well-maintained restrooms	1%	1%	0%	11%	87%	NA
1%	0%	4%	37%	57%	Wildlife observation structures (decks, blinds)	0%	3%	3%	32%	62%	NA
2%	0%	3%	9%	86%	Bird-watching opportunities	0%	2%	1%	10%	86%	NA
3%	2%	3%	37%	56%	Opportunities to observe wildlife other than birds	2%	2%	8%	34%	54%	NA
2%	3%	10%	24%	60%	Opportunities to photograph wildlife and scenery	2%	2%	6%	24%	65%	NA
68%	5%	17%	3%	8%	Hunting opportunities	9%	3%	70%	4%	15%	NA
56%	7%	21%	9%	6%	Fishing opportunities	3%	2%	77%	8%	11%	NA
3%	4%	8%	48%	38%	Trail hiking opportunities	0%	3%	12%	36%	48%	NA
18%	9%	29%	30%	15%	Water trail opportunities for canoeing or kayaking	7%	11%	59%	9%	13%	NA
15%	11%	28%	31%	15%	Bicycling opportunities	1%	4%	52%	16%	27%	NA
15%	8%	39%	20%	18%	Volunteer opportunities	0%	2%	63%	9%	27%	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?  91% Yes  9% No

...have the primary mission of conserving, managing, and restoring fish,  95% Yes  5% No  
wildlife, plants and their habitat?

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

92% Yes  8% 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%	3%	8%	36%	48%
We can improve our quality of life if we address the effects of climate change on fish, wildlife and their habitats.	5%	5%	9%	33%	48%
There is too much scientific uncertainty to adequately understand how climate change will impact fish, wildlife and their habitats.	22%	32%	13%	22%	11%
I stay well-informed about the effects of climate change on fish, wildlife and their habitats.	2%	6%	22%	51%	19%
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.	2%	10%	22%	55%	11%
I take actions to alleviate the effects of climate change on fish, wildlife and their habitats.	2%	8%	26%	45%	19%
There has been too much emphasis on the catastrophic effects of climate change on fish, wildlife and their habitats.	38%	33%	12%	11%	7%
Future generations will benefit if we address the effects of climate change on fish, wildlife and their habitats.	3%	5%	8%	34%	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.	6%	10%	33%	39%	12%

## 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. \*\***

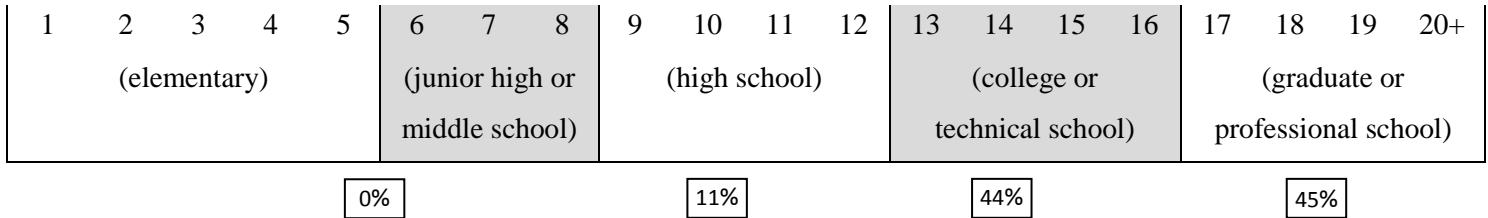
1. Are you a citizen or permanent resident of the United States?

99% Yes  1% No → If not, what is your home country? See Figure 4 in Report

2. Are you?  58% Male  42% Female

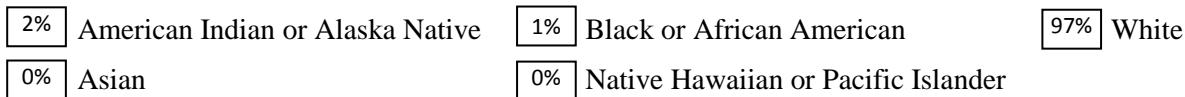
3. In what year were you born? 1951 (YYYY)

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



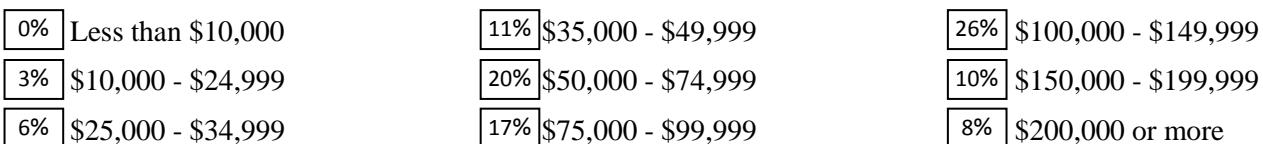
5. What ethnicity do you consider yourself?  2% Hispanic or Latino  98% Not Hispanic or Latino

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



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?



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

24 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 Bombay Hook National Wildlife Refuge

### Survey Section 1

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

Special Event	Frequency
"Bringing Nature Home" by Doug Tallamy, Horticulture Programs	1
American Bird Conservancy Tour	1
Audubon Society Chapter field trip	1
Christmas bird count	1
Fall Festival	1
Friends' fall open house	1
Horseshoe Crab Program	2
Lecture	1
Open house	2
Wading bird and Horseshoe Crab migration	1
Wildlife festival	1
Total	13

Other Activity	Frequency
Consult a volunteer on bird identification	1
Enjoying the outdoors	1
Introduce grandchildren to Bombay Hook	1
Painting and sketching, nature journaling	1
Visitors Center	1
Total	5

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
NA	

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

Other Visitor Center Activity	Frequency
Bought guidebook for local area.	1
Car tour with volunteer Raymond	1
Check the bird list	9
Checked the ebird kiosk	1
Get stamp in Blue Goose passport book	3
Handicapped hunting	1
Hunting	1
Loaned binoculars	1
Looked at maps of the refuge	1
Lunch at the new Pavilion	1
Observe the bird feeders	1
Purchase annual pass	2
Purchase the "Duck Stamp"	1
Report interesting bird sightings	1
Shorebird I.D. Workshop	1
Sign-in for hunting	1
Signed up for Refuge Tour	1
Training my dog	1
Used the eBird sightings kiosk computer	1
Total	30

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
Church group	2
Trip organized by owner of a wild bird center	1
Volunteer-led tour of the refuge	1
Total	4

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

Other Website	Frequency
Birding listservs	1
Birding website	2
Delaware	1
Delaware Audubon Society	1
Delaware birding website	1
Google	1
Google Birding Mid-Atlantic	1
Internet Description of Presentation	1
maps.google.com	1
National Wildlife Refuge website	1
Photography forum - Fredmiranda.com	1
Rare bird alert	1
Total	13

Other Ways Heard about This Refuge	Frequency
"Finding Birds in the National Capital Area" by Claudia Wilds, 2nd edition	1
AAA Tour Book	2
ANS	1

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Bird season	1
Birding guide	1
Birding guidebook	1
Birding guides	1
Book	1
Book - "Birding the Delaware Valley Region"	1
Book - Best Places to Photograph North American Wildlife	1
Book about birding sites	2
Book about National Wildlife Refuges	3
Book about traveling with your dog	1
Book on birdwatching sites in tri-state area	1
Book: "Where the Birds Are" published by Birds and Blooms magazine	1
Books about photography locations	1
Delaware state map	5
Delaware touring book	1
DeLorme maps	1
Frommer's Travel Guide	1
Map and book about the state.	1
On a DVD about Delaware	1
Site Guide Claudia Wilds	1
View from small airplane	1
Visitors Center	1
Wild Bird Center store in Rockville, MD	1
Total	34

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## Survey Section 2

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

Other Forms of Transportation	Frequency
Refuge van	1
School bus	1
Total	2

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

Other Ways Found This Refuge	Frequency
Delaware birding map	1
Member of my group	1
Total	2

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
Any transportation using clean energy	1
ATV	1
Bicycle to refuge	1
Bike, car pool	1
Boardwalk into marshy or swampy areas	1
Boat would be nice	1
Bus or tram	1
Fly over by plane	1
Horseback	1
Kayak rental	1
Kayaking/canoe tours	1
My own bicycle	2

My truck	1
Personal kayak	2
Private car	2
Provide more Wildlife Drives for private vehicles.	1
Segway	1
Shuttle service from nearest public transportation	1
Trolley	1
We used our school bus.	1
Total	23

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)

All areas are well kept.

Although most refuges use the same type of road, in a refuge this size a reduction of dust especially in the case of photography would be a benefit.

As a photographer, it is very important to have immediate access to a vehicle for protection from elements, safe transport of photo equipment, use of a vehicle as a blind so you don't get out and disturb wildlife, and to stay as long or little time as needed to photograph wildlife subject. A loud hulking bus will scare off wildlife much sooner than a privately owned vehicle.

As far as access for people with disabilities is concerned, we feel strongly that the wild nature of the refuge should be preserved as much as possible, and that people should know in advance the level of difficulty of a walk or trail.

Because I am a wheelchair user, we need our own accessible vehicle.

Bombay Hook is a very auto tour intensive refuge. I think it needs a tram or bus to cut down on vehicle traffic.

Bombay Hook staff and volunteers do a great job.

Certain areas should be off limits to those with walking disabilities.

Currently, there is no need for or advantage to having buses or trams. Boat and bike sharing could be fun.

Don't provide trams! It ruins the experience. Keep refuge roads open to the public!

Driving surface is well maintained.

During peak snow geese (waterfowl) watching in the fall & winter, lots of people park on the side of the road. Some might think this is causing habitat disturbance or is dangerous, but I think parking on the side of the road is only disturbing domestic grass species & invasive weeds. I also think people are pretty calm and safe when they pull out back onto the road.

Good roads and trails.

I am not positive, but I do seem to remember some dirt road parts where the road would really dust up when people drive by. I am not a fan of asphalt, but do not like my kids to be breathing in that kind of dust; if you know of a solution to this, it would be welcome.

I mostly ride a bike in the refuge and the type of stone used for the roads makes for a very bumpy ride.

I would like to see personal kayaks/canoes allowed to gain access to remote sites for birdwatching/photography. I would certainly understand restricted areas around the driving trails, so as not to interfere with those areas, but it is a BIG refuge.

In general, I like the idea of trams for visitors, but because I am a wildlife photographer, I need the flexibility of being able to work alone rather than with groups.

It would be helpful to add mileage/distances to signs.

It would be nice for them to drive us to the stands.

More 'one-way' signs are needed.

More signs on the highways before the main road you turn on. Special areas so disabled can get closer to water.

Must not damage environment.

Need porta-potty out in the area, not just at the Visitors Center.

Need to reroute the fishing trailers so they don't run over the horseshoe crabs that come ashore to lay eggs in the spring. Also, the remains for the horseshoe crabs that were cut up for bait were gross.

New boardwalks are great! Awesome new pavilion and picnic tables. Thanks!

On our second day, a good portion of the refuge was closed because of seasonal hunting. I wished that someone would have told us that on our arrival the day before. We would have planned our trip better. It was annoying and frustrating to not be able to go to all parts of the refuge on our second day.

Paved bike trails would be a big plus.

Personally, I hope they never black top the roads, as the dirt roads really add to the adventure!!

Sand roads are much better than gravel roads for bird watching and photography, because gravel roads are much noisier and scare wildlife away.

Since I was with other people who were driving and knew the area, I didn't pay attention to transportation issues.

Some road surface areas in this refuge are better than other areas for bicyclists. Some areas have rough blue chip stone, and some other areas have softer dirts and areas that can be a challenge. A "happy medium" would be more desirable for bicyclists.

Speed limits are posted, but not adhered to. Better speed limit enforcement is required. Signs should be posted for warning about turtles crossing the roads. Most people look out at the water, not at the road, and I have seen turtles that have been hit by cars. On a refuge, there should be no excuse for hitting an animal!

Speed limits are set too high for gravel roads (25 mph) and are not enforced. Often, vehicles raise a cloud of dust and dirt for hundreds of feet down the road, forcing you to put windows up and causing damage to optical/photographic equipment.

The only sign I have passed on my way to the refuge is at the entrance to the road leading to the main entrance. There is one boardwalk trail that I imagine is really good for people with disabilities. The fact that most wildlife/waterfowl can be viewed from a vehicle is a plus for people

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with disabilities as well. I wonder if one additional boardwalk area on the backside of the refuge would enhance experiences for those with disabilities (something closer to waterfowl since they cannot climb observation towers to get that view).

The Refuge System across the country should offer wildlife drives where conditions allow.

The roads are not walker or wheelchair friendly (they are all gravel).

The roads at Bombay Hook are fine.

The surface of roads in the refuge is not good for bikes.

This refuge offers several loop drives. All are easy to follow with plenty of pull over locations.

Transportation seems very adequate, and I have no major concerns.

Very good conditions. I think solar-charged rental Segways would be spot on and attract more visitors, especially if outfitted with bug protection during those seasons.

We don't like the one way trail. We were looking for a screech owl and were directed to a wood duck box where one of the rangers had seen one. We missed it and had to go all the way around the refuge again to find it. Annoying! Two way roads would help this and other situations like it.

We knew our way around, but I think a few more road signs inside the refuge would be helpful, especially for first timers.

We use this refuge for leading shorebird trips with a caravan of many cars. This refuge is very accommodating for that usage.

We visited with family who were familiar with the roads of the refuge.

We were very pleased and greatly enjoyed our stay there.

Wheel chair trails are very long for someone who has trouble walking long distances.

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## Survey Section 4

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

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Comments on Services, Facilities, and Activities at This Refuge (n = 97)

Absolutely wonderful!

Am not aware of cycling or volunteer activities at this refuge.

Bicycles are not normally seen on this refuge and my experience has been that it disturbs the wildlife and that photographic opportunities are much more limited when they are disturbed.

Bombay Hook closes part of the refuge to the public in the fall to allow hunting. I believe hunting should be confined to those times when the refuge is little used by people who come for nonconsumptive uses (winter, weekdays). It's a \*refuge\*!!! Deer hunting should be a secondary use. The goal of hunting should be to control the herd size, not a recreational opportunity. Manage deer for science, not recreation. No bird hunting should be allowed, ever - it's a \*refuge\*.

Bombay Hook is a great refuge.

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Bombay Hook is a national treasure.

Bombay Hook NWR is one of the premier birding locations on the east coast. I've visited every May for the last 30 years. It never disappoints.

Bugs kept us off the trails. We photographed from our car.

Considering the size of the refuge, a more elaborate trail system is certainly possible. How about renting out canoes/kayaks or other boats?

Deer hunting should be quality managed. Too many small bucks are shot.

Eliminate hunting.

Enjoyable visit.

Everyone at the refuge is always courteous. Bombay Hook is close to my relatives in the area.

Everyone I have talked to at this refuge were some of the nicest people I've met at any refuge and I've been to quite a few!

Flies made hiking intolerable - I was not warned about this.

Good gift shop/books. Helpful employees. Clean bathrooms (needs soap). Did not participate in any activities. Well maintained trails. Good signage, but cultural history signage could be improved.

Hunting should be strictly limited and for animal control only. NO pleasure hunting!!

I am handicapped, confined to a wheelchair, and require help using the facilities. Thank you for having large, well lighted, SINGLE OCCUPANCY bathrooms.

I appreciate the setup of the Visitor Center and that the restrooms are accessible all year round and before/after hours, even if the Visitor Center is not open. Since I travel pretty far to get to the refuge, it's difficult for me to arrive in time for early morning bird walks. I would love to see a bird walk in the evening, another time when birds are very active. I usually stay until dark each time I visit, every season.

I didn't do any kayaking, but I would be interested in doing so.

I do not believe hunting should be allowed in the refuge.

I don't understand why all the fields are not being utilized for farming? Many of the fields have been ignored and are now overgrown, significantly reducing the hunting opportunities.

I enjoy the opportunity to see waterfowl closeup.

I have been coming to the Bombay Hook Refuge for many years and consider it a prime destination for a bike ride or a run and as a place to show friends and relatives.

I have been pleased with the services given by the employees at the refuge.

I have hunted at the refuge for 30 years and have had great experiences. I hunted this year, 2010, and was disappointed that there were no crops planted. I will not return.

I learned most of the habits of local wildlife on my own; however, more qualified personnel would be helpful to explain seasonal activities of different wildlife.

I like when volunteer birders and/or knowledgeable employees are available near the waterfowl congregations. I was also very disappointed that during 2009 the Visitors Center seemed to be closed on certain weekends.

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I remember wishing that the bathroom had soap and water. I think it only had hand sanitizer, but cannot remember exactly.

I sincerely wish the hunting towers could be used for a specified amount of time after each hunting season to allow for closer wildlife observation and photography.

I think soap should be in the ladies restroom and not hand sanitizer.

I think you are doing a good job.

I thought the refuge was very well run and I enjoyed it immensely.

I use the refuge for bird watching primarily. We appreciated the good restrooms, and also appreciated a volunteer who told us what roads were closed because of hunting (very important).

I was very satisfied - the deer fly population was exceptional.

I wish hunting was not allowed.

I would like information about volunteer opportunities.

I would like more hiking trails. The Visitors Center, restrooms, exhibits, and all but one observation tower were great!

I would like to kayak to get to more remote areas.

If the refuge is going to be closed or partly closed due to hunting, the refuge should have prominent signs stating that.

It would be a great addition to have a bike friendly road surface.

It would be great to have more bird identification tours/workshops available, especially on weekends.

It would be wonderful if the deer stands could be used for bird and wildlife observation until a set time before the hunting seasons.

Kayak, canoe and/or bicycle rental is an idea worth considering, as long as such recreation does not adversely affect wildlife. More importantly, though, facilities to allow for the launch of private canoes or kayaks are not present at Bombay Hook and if present, would greatly enhance birding and recreational opportunities. Also, further trail development would be welcomed. Additional/improved blinds and observation areas would also be welcome. However, first priority for funding should always go to habitat management.

Knowledgeable people to lead birding groups are needed. There were some volunteers doing a great job, but they are no longer able to do it.

Maintenance of roads and paths and the Visitors Center are always good. This helps make it a pleasant visit. The new covered picnic area is a nice addition.

More trails would be nice.

Most of the refuge was closed for hunting on the weekend we were there. Trails for biking were very rocky (not gravel) and we were unable to ride much in the refuge. Most of our visit and bike riding were outside the refuge due to these reasons. Volunteers were great and the Visitors Center was welcoming.

My answer to the question about conservation was limited; the Refuge (Bombay Hook in DE) seems to be doing what they can, but the primary conservation pressures are external, where the refuge can't take direct action, and so the migratory birds the refuge exists to protect are doing very badly indeed through no fault of the refuge itself.

My family and I come here as often as we can. We have enjoyed ourselves every time. A beautiful and well maintained place. Thank-you.

My first visit was very enjoyable as well as informative. Unfortunately, a good portion of the trail was closed due to hunting. We will however

plan another visit in the very near future.

My only problem with the refuge is when there is limited access because of the hunting season.

My wife and I visit Bombay Hook about 2 to 3 times a week since we live in the area. Every visit is a great experience and everyone is different.

Need two portable restrooms located strategically on the refuge. It can be very inconvenient to have to drive back to the refuge headquarters to use the restroom.

Needed to use the toilets and they were clean!

No photo blinds. Observation towers have partly obstructed views. Doesn't maintain maximum shorebird habitat.

On a previous visit, the gift shop had more resources available for environmental education and books suitable for children. I felt the selection during this visit was very limited and I was disappointed.

Our first day on the refuge, the northern portion and trails were closed for hunting. I would like to see hunting banned from all wildlife refuges except for controlling populations. There was no charge for visiting the refuge that day, which I thought was fair.

Our visit was wonderful! It's a beautiful and well managed refuge. We were surprised at how rewarding our visit was: we saw a bald eagle fairly close up, box turtles crossing the road to lay eggs, and many other birds, wildflowers, etc. Places like this are very important to us; we hope funding cuts will not reduce the number of protected areas open to the public. We appreciate the amenities, but would not mind if funding cuts forced reduced services, as long as we could still visit sites like this. (If there could only be one service, bathrooms or pit toilets would be the most useful.) We came to this refuge specifically because my parents had visited many times in the past and spoke glowingly about it. We had never been to Bombay Hook before, but will certainly return, as we are avid travelers now. We visit wildlife refuges and other protected areas (federal, state and local) as well as historic sites wherever we go.

Overall a great place. Interpretive tours, night events, opportunities for off hour privileges for photography (permit, lottery, just like hunting) should be considered. I would pay for the chance to get in before sunrise.

Please go back to planting crops.

Restroom facilities are sometimes not stocked with paper products.

Staff and volunteers are excellent!

Thank you, thank you, thank you! I feel like my tax dollars are being well spent at Bombay Hook and other National Wildlife Refuges.

The bathroom stalls are too small and more are needed. More benches for sitting. Other than that, I love the refuge, and make a 4 hour drive to visit it once a month.

The employees were very courteous and helpful.

The employees were very helpful. This was a trip on our way home from Virginia, so we stopped and the employees offered us binoculars. We tried walking, but at that time of the year the bugs were horrible. I got the impression that the fall would be a good time to go.

The fields are not planted. Not very impressive for a federal wildlife refuge.

The hunting made me uneasy, as it broke the peace I was looking for.

The hunting needs to be managed. Let the little bucks go. All you see is the little basket rack bucks being taken. Please make it a guilty zone, 15 inches or bigger.

The information kiosks need to be redone.

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The refuge should supply photography blinds, just as they do for the hunters.

The Visitor Center was nice and the bathroom facilities were well maintained. I appreciated the picnic benches on which we could eat our lunch.

There are no photographic blinds whatsoever. The observation towers shake too much and are too far from the wildlife.

There are only bathroom facilities at the Visitors Center. People spend hours bird watching, taking pictures, and enjoying the 12 mile loop in the refuge. Toilet facilities spread out over the refuge would be a wonderful addition to this unbelievably beautiful refuge.

This is a very well run refuge that I frequent often. Tina Watson is terrific. On other occasions, I support the local economy more than on this particular trip. I wish it was managed more for shorebirds than waterfowl, since I am not a hunter.

Unfortunately, my last visit to this refuge was not very pleasant due to the flies and mosquitoes. We had to leave early. I don't know if you can do anything about it - maybe put a warning on the website for that time of year. We couldn't even get out of the car.

Use soap in the washrooms as well as hand sanitizer.

Very enjoyable experience. Not crowded.

Very interesting.

Very nice facility.

Very nice place.

Very satisfied with the staff, and the programs were beyond my expectations.

Very well run. Wonderful observation points.

Visitor Center is smaller than some other refuges that we've visited recently.

Visual field needs clearing at observation towers.

Volunteers and staff were great during my two visits to this Refuge. My brother and I currently have two more trips scheduled this year to this Refuge.

Was quite surprised to find that the refuge allowed hunting and even closed half of the refuge access to non-hunters during the authorized hunt. During the hunting, there was no charge to enter the refuge. I don't think that refuges should allow hunting. After all, the word refuge means 'a place of safe haven or security'.

We have visited this refuge many times over the years. The only "problem" we have is when part of the refuge is closed for hunting and we cannot go there for bird watching.

We love Bombay Hook, and try to visit at least once a year.

We love Bombay Hook. We have been visiting for many years. The volunteers are informed, polite, and helpful.

We really appreciate that the restrooms are open even after the Visitor Center closes.

We visit every year.

We visited in early November and the mosquitoes were so thick that we could not enjoy being outside of the car!

Well maintained refuge. Appreciative of volunteer efforts, knowledge and assistance. Facilities exceeded expectations.

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Wonderful refuge. There are some service roads I would like to walk quietly on to photograph wildlife, but are closed to the public. Access to the existing closed roads would provide more opportunities to view wildlife with minimal impact. If not complete open access, then maybe a permit system reminding visitors to stay on the road.

Would like to have had more days (full days) open for archery hunting and shotgun season.

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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 = 207)

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A chance to see waterfowl first-hand.

A peaceful environment (other than hunting) that allows visitors to observe and appreciate nature and wild animals in natural habitats - almost as God intended. Refuges are sanctuaries for man and beast, waterfowl, etc. I especially enjoy those refuges that have a driving tour and also allow bicyclists.

A place where wildlife is protected from human disturbance, and has peace to propagate and be observed.

Ability to get close to the animals.

Ability to observe nature as it is meant to be observed.

Able to see birds and wildlife in their natural habitat.

Access to important wildlife habitat, enjoyed by all, including hunters during proper seasons. I hunt only with a camera, but I hunted in my youth and value the time spent in the woods. Sportsmen pay their share and then some with the licensing fees to purchase and maintain these important refuges. I purchase Duck Stamps and have provided photographic support to assist the important efforts of wildlife conservation.

All wildlife is pretty to watch. This refuge is managed very well year after year. I love coming here.

An opportunity to do so much in a protected environment geared towards wildlife and habitat preservation.

As close to nature as possible with minimal interference.

As you said, they are managed for the protection of wildlife as contrasted with the purely recreational activities of people.

Auto trails are nicely designed to accommodate the needs of bird watchers. Water levels and plantings are managed to benefit the birds and having the birds attracted to where they can be viewed without being disturbed is very important.

Balances conservation with hunting opportunities.

Because of their wild nature, there is usually an abundance of wildlife to see.

Being on the east coast flyway offers birders a unique opportunity to see large numbers of waterfowl in the fall and winter and migrating song birds in the spring. Because it has both fresh and saltwater marshes, the bird species variety is enhanced.

Best driving experience within a refuge we have seen. Better than Blackwater NWR, which is closer to our home. Better and more diverse wildlife sightings, but worst bugs :)

Best potential for bird photography.

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Bird-friendly environment.

Birds, birds, and more birds!

Bombay is a great refuge for birds, which I particularly enjoyed seeing and photographing. A great resource!

Bureau of Land Management and National Parks provide similar opportunities, but National Wildlife Refuges are still the best for birding.

Close to natural conditions for wildlife. Effort is visible.

Close to the ocean.

Conservation of natural areas and the opportunity to visit and see wildlife and flora/fauna.

Dedicated primarily to the wildlife.

Deer and goose hunting has suffered very much due to no food in the fields to hold animals on the refuge. It used to be deer and goose heaven.

Definitely maintained as a refuge, not just a wildlife area.

Driving tour.

Each refuge we have visited has reflected the unique habitat and wildlife communities of that area. They work to preserve what is wild, wonderful, and unique about America.

Education opportunities and a refuge to the animals.

Emphasis on wildlife protection, maintenance, research.

Employees are always willing to answer questions and are helpful whenever they can be. Thank you!

Excellent opportunity to observe and enjoy wildlife and nature.

Expansive conservation.

Extensive viewing area for wildlife. Very undisturbed areas.

First is the ability to see wildlife (mostly birds). Second is the fact that refuges are pristine. I know humans manage habitat, but it is done in such a way that it doesn't affect the untouched feeling of the area.

Focused on wildlife and birds and not on people's recreational activities (they tend to make wildlife observation harder).

Freshwater pools with rich bird life - Avocets, Tundra Swans, Egrets, etc.

Gives the public a great experience.

Good balance between providing visitor friendly amenities (Visitors Center, good roads, very accessible) and leaving nature alone.

Good Visitors Center, excellent staff, nice blend of marshes, water and land.

Great bird migration site.

Great birding and wildlife viewing.

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Great opportunity in all seasons to see and photograph birds/wildlife without worrying about traffic.

Great opportunity to observe and photograph wildlife in a natural state on hiking trails and in the water (canoes/ kayaks). National Parks are more crowded and more regulated with more rules.

Higher level of preservation of wildlife habitat.

I find that refuges provide better opportunities for bird and wildlife viewing and photography than many other public lands.

I have learned a lot about different wildlife animals that I have never seen, and was able to take pictures and do research on them.

I have lived in the area for over 38 years and have visited the refuge numerous times. Each time is as exciting as the first time!

I know it is an area where the concern for birdlife is one of the main concerns; thus, it provides a great birding spot usually.

I like the natural aspects of a refuge. You get less families and more nature lovers. I like to photograph nature, and refuges are a great place to do it. I don't care for the hunting that takes place in refuges and believe that the migrating birds should remain safe.

I love the idea that the purpose of the reserve is for conserving wildlife and NOT primarily for citizen recreation! The reserves tend to draw more "nature lovers" as opposed to people who just want to have a picnic or throw a ball around. I'm disappointed about how many people go to national parks for self-focused recreation, as opposed to reveling in the nature that surrounds them. For these reasons, I love our National Wildlife Refuges!

I think Bombay Hook is unique, well maintained, and is an experience to visit.

In general, NWRs are larger and more well-maintained as far as roads and trails are concerned, and offer more opportunities for public wildlife education.

In referring to Bombay Hook NWR - Its variety of habitats and position along the Atlantic migratory flyway make it a great bird-watching spot, which is my primary interest in visiting.

Information (online or print) about wildlife, birds you can expect to see, and times of year to see them. Also, keeping the refuge habitats natural for all wildlife to feel welcome and protected.

It gives you the impression of what the land would have been like before modern conveniences.

It is a site for migratory birds (along the east coast).

It's a large facility with (usually) a wide variety of birds. But flies were impossible to tolerate in June and there were too many mosquitoes in some parts.

It's an unspoiled area to observe wildlife in its natural setting.

Just that the refuges provide a place for habitat to be protected and human disturbances are kept to a minimum... very important for animals in order for them to behave normally.

Just walking around and watching the wildlife.

Large amounts of migratory birds as well as a diversity of wildlife. I have seen bald eagles, foxes, deer, snakes, turtles, frogs and a multitude of birds. Great photographic experience.

Large flocks of birds and waterfowl.

Large, open areas. Lots of wildlife.

Less automobiles, not crowded, and protection of wildlife and habitat.

Location on the Atlantic Flyway.

Lots of wildlife and the chance to observe it in a natural setting without a lot of crowds and commercialization. It is just you and nature.

Lots of wildlife in its natural (uncaged) habitat.

More birds and other wildlife - fewer people. Compared to parks, people seem to be more respectful at refuges - staying on the trails and roads and not disturbing wildlife.

More information about wildlife. Help in providing habitat. Better access to wildlife.

More wild than National Parks. They serve a different function, and have a different focus.

No concession stands, boat rentals, etc. Able to enjoy the environment and wildlife/birds in the area. Enjoy the company of those who enjoy the things listed above! Interpretative displays about wildlife and protection of habitat. Simple pleasure of being outdoors without other distractions.

NWR sites are rather unique in offering Wildlife Drives where photographers can use vehicles as photo blinds. State facilities rarely offer this type of opportunity to the public. More and more private property in this country is being posted and access denied to people like myself.

NWRs generally provide unique opportunities for the observation of wildlife, which are not present or are not a priority in areas such as National Parks, Forests, and Seashores.

NWRs offer the best bird and wildlife-watching experience! NWRs are home to a greater diversity of species because the natural habitat is conserved and well-managed with the native flora and fauna in mind. While NWRs offer many recreational opportunities, conservation remains the focus, and for that we are grateful!

NWRs provide an astounding amount of information about wildlife and plants. Employees have always been superbly helpful and are obviously passionate about what they do. They try to provide a wonderful experience for the public.

Offers visitors an opportunity to experience Delaware marsh and nature habitats. Beautiful open space.

On Delaware Bay, Bombay Hook NWR offers wonderful views of migratory birds as they stop to feed. The refuge is also a major breeding area, so the birder or photographer can get great sightings and photos. Other wildlife abounds. Programs offered by the refuge are interesting and informative.

One word: HABITAT! This is key to finding birds. Anytime our travels take us near a NWR, we make a point to go there.

Open space, nice surroundings.

Opportunities to see birds, wildlife, and environments in natural settings.

Opportunities to see wildlife, sometimes rare or seldom seen, in its natural environment.

Other areas, like Parks, are primarily for people. NWRs are for the wildlife FIRST.

Our main interest is photography and this refuge provided excellent opportunities for that.

People overpopulation is adversely impacting wildlife and threatening extinction of many species.

Perfect place to observe birds and we desperately need wildlife refuges to preserve our wildlife and our quality of life.

Protected.

Provides a great place for watching shorebirds.

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Pure and natural maintenance of the environment.

Putting the wildlife first, above the needs of visitors.

Rare to see foxes.

Refuge provide up close and personal opportunities for seeing wildlife and experiencing the natural environments of an area.

Refuges are concerned about our natural resources and preserving them for all. Refuges protect these resources and the wildlife. I like driving, walking, sitting and listening, observing, and photographing nature. The refuge gives me a chance to do that. Since the baby boomers are the main financial supporters these days, I think there should be more benches near the water's edge and areas where disabled can sit and read, observe, picnic and enjoy.

Refuges are generally located in areas that have unique wildlife opportunities. I have found them to be great places for wildlife viewing and photography.

Refuges are generally well maintained facilities that put wildlife first. At the same time, they provide public access and viewing.

Refuges are managed primarily to benefit wildlife.

Refuges are places where a wide array of wildlife and birds can be observed within a small area.

Refuges are there for the wildlife. They are places where we get to visit the animals' natural habitat and watch their behaviors. The birds especially need places like the refuges during migration. This makes them excellent places to visit during that time to see birds and other wildlife we may never get a chance to see otherwise.

Refuges are there so people can observe nature in its natural state. How they control the water level for the birds and grass growth was interesting.

Refuges are unique because of their size, location, and the wildlife using the area.

Refuges are well maintained and have varied habitats for birds/vegetation. Refuges also have available and knowledgeable staff.

Refuges exist to manage and create habitat for wildlife and provide opportunities/education to the public (especially school children) about the importance of our wildlife. There is nothing like seeing birds and animals in the flesh where they live! The Black-necked Stilts nesting was our special treat this year! Keep up the good work. (Signed)

Refuges not only offer the opportunity to all types of flora and fauna, but educate the viewers and exude enthusiasm for the beauty and variety of our ecosystem.

Refuges offer diverse habitat for many species and provide a resting area for migratory birds. The protection of this land allows for protection of habitat that would otherwise be lost to development.

Refuges offer public access to habitats and areas that would be difficult to access.

Refuges often provide unique birding opportunities.

Refuges usually offer a better opportunity to see wildlife because of the more restricted access and better protection of wildlife.

So much acreage to see wildlife. Undisturbed. Plenty of opportunities to take pictures, as well as stop and enjoy the scenery.

Special habitat protection.

Teaches young children about the importance of animals in the wild and to show them how beautiful all life is.

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The ability to see wildlife in a natural state. Too many "wild" areas are being lost to development; without refuges, the ducks and other migrating species would continue to decline.

The ability to view and photograph wildlife in undisturbed settings.

The ability to view/photograph wildlife in their natural habitats and the knowledge/hope that the refuges will still be there in the future.

The absence of the general public. Access by car is wonderful. All areas are kept wild.

The access and educational opportunities along with the outstanding opportunity to observe wildlife in their natural habitat.

The amount of wildlife - knowing that space is protected, not developed. Peace and quiet, except for hunters. Learning opportunities for kids. Access for the public.

The auto tour is designed specifically for wildlife observation.

The bird watching and programs.

The chance to disappear into natural spaces and enjoy the peace, quiet, and wildlife which live there.

The chance to see migratory waterfowl and other birds when I might not be able to see them elsewhere.

The conservation of wildlife and the opportunity to be a part of it.

The easy access for observation of migratory waterfowl at all seasons of the year.

The fact that they are managed for the wildlife/birds, which tends to increase the opportunity to see wildlife/birds.

The focus is on nature and refuges are not commercialized.

The focus is on preserving wildlife, with visitor services being secondary. I feel more like I have less of an impact negatively on wildlife and do more for conservation by visiting a refuge.

The focus is on the wildlife and habitat rather than simple recreation.

The focus is on wildlife and habitat first, visitors second.

The focus is on wildlife management, with recreation secondary. They are unique in their concentrations of wildlife.

The focus is on wildlife; no camping or fishing at Bombay Hook.

The horseshoe crabs and migratory shorebirds - Red Knots, etc.

The large variety of wildlife and opportunities of seeing them, including some at short range. The satisfaction that governments are preserving and improving the existence of wildlife for all time. The lack of "honky tonk" signs and facilities typical of commercial management.

The management of water and land seasonally to enable specific plants and animals/birds to utilize the refuge property more completely.

The mission to provide bird habitat to such a large extent.

The National Parks are terrific, but areas easily accessed are crowded. National Monuments have less to do with flora and fauna. National Seashores are celebrating the location. National Refuges can be almost anywhere there is wildlife. People are truly just visiting there.

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The natural state.

The opportunity to observe nature in a beautiful setting.

The opportunity to observe wildlife drawn to an area maintained for it and not us.

The opportunity to see birds that we have not seen before (e.g., American avocet). The quiet.

The opportunity to see large flocks of waterfowl during the winter months and migration seasons.

The overdevelopment of areas make refuges important for those that enjoy unspoiled places.

The people that come here generally care about the wildlife and environment, which is amazing and great - unlike state "parks" where people are there to have a "good" time, usually leaving debris and noise, with no thought about the wildlife or environment or their impact or footprint.

The personal connection with the outdoors.

The primary purpose is to protect the environment/wildlife. The experience is enhanced because you are sharing the environment with mostly people who appreciate and respect the same things as you.

The primary purpose of refuges is wildlife management. Great places for wetland birds and other wetland species.

The quantity and variety of birds and waterfowl makes this a great refuge.

The Refuge System allows anyone to have a wildlife experience, while encouraging an awareness of the importance of the natural world and our role in its preservation. Its importance cannot be overstated.

The refuges that I have visited have high concentrations of birds and other animals that I go there to see.

The roads are drivable without hazard; the balance between hunting and bird watchers.

The size and diversity of both the refuge and the wildlife.

The volunteers were very helpful when it came to giving advice on how to make the most of our experience. We enjoyed talking to Randy, a volunteer. He had a lot of knowledge to share about the birds and allowed my children to look through the telescopes and books.

The water impoundments, which are well managed. Loved watching Black-necked stilts sitting on nests in one of these.

The wild landscape and the opportunity to observe wildlife in their natural surroundings.

The wildlife and the opportunities to observe wildlife in a natural setting.

Their access to wildlife habitat that is as unspoiled as possible. No frills is good!

There are many levels of protection: we like refuges because they provide a needed safety zone for wildlife. We visit, and canoe, camp, and hike in parks and forests (federal, state and local) in our home area and when we travel. We also understand that some areas should be more restricted and have more resources for protecting and enhancing precious remaining natural habitats.

There is basically no commercialization like you find in National Parks. We like this (makes it easier to get out to nature and leave that stuff behind).

There were a great variety of birds and even though we photographed from the car, the birds were very accessible to photograph.

They are a wonderful opportunity to experience the lives of migrating birds in ways not possible in populated areas. It gives one an appreciation for the creatures we share life with on this planet.

They are charged with protecting wildlife while making it accessible to the public. In many ways, these are contradictory responsibilities and

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require considerable finesse.

They are generally not very crowded and the focus is really on providing habitat for the wildlife instead of entertainment for people.

They are mini national parks with well educated staff.

They are more "rugged" (more of a wilderness experience). I do not want, and the refugees should not become, a National Park type of tourist attraction.

They are not like parks, whose mission is to please the public.

They are set aside for the wildlife.

They are the best managed, most accessible areas with excellent endangered wildlife protection. They have good access, knowledgeable employees and volunteers, and good information (printed and website). They provide a valuable contribution to the health of animals and the country. And they are a great learning experience for kids.

They are very well managed, always working to improve, and worth every minute we spend in a Refuge.

They are where "things" are happening... bird migrations, residency, etc. You find something every time you go there.

They emphasize habitat. They also encourage users to visit these habitats respectfully. Great educational opportunities. Volunteers play a very important role in this. They should be paid, and more money introduced to provide full time salaries.

They protect/provide habitat and education to the public.

They provide a greater wildlife experience.

They provide a rewarding and intimate setting for viewing wildlife - particularly bird watching.

They provide a safe and quality hunting experience.

They provide access to unique but managed environmental landscapes that host distinctive habitats for birds and wildlife.

They provide an invaluable opportunity to see wildlife, and it gives us great satisfaction to know that wildlife and the wildlife habitats are being protected and restored. They tend to be places of great quiet and are therefore very restorative to our spirits.

They provide an opportunity for the public to observe nature in an unspoiled, noncommercial environment.

They provide managed public access to wildlife environments, which are maintained for the benefit of the flora and fauna/birds that depend upon it. Put another way, they allow people to appreciate nature and other creatures, while having a minimal negative effect on the environment that we all depend upon.

They provide me with a place to practice my hobby of photography.

They provide the most natural settings to observe native plants and native/migrating wildlife. They tend to attract a certain type of individual that truly appreciates wildlife.

They tend to be placed where the birds migrate and tend to be large enough to attract them.

They tend to have better opportunities for wildlife viewing than National Parks and local parks run by counties or states. I can always find solace in a refuge, which is why I go. By limiting the amount of activity done there, it keeps unwanted traffic down.

They work to preserve the land, often planting to attract wildlife. Refuge gives visitors a place to observe birds without heavy traffic, and provide trails to walk in a quiet environment. Refuges are available to us all year long.

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This is a great place for bird watching. I have visited at least 45 different refuges.

This is the one of the oldest refuges and they do a nice job. One comment would be that they discontinued planting (feed opportunities) for the wildlife and I see fewer on my trips there. I felt this was a mistake. They have several very large pools and have both fresh and salt water impoundments.

Tighter control of visitors to allow for wildlife to act "naturally" in their environment. The interaction of wildlife in Yosemite is a perfect example of why there should be these barriers.

Usually large area with at least some public access.

Very courteous volunteers and lots of unusual birds.

Very good trails/boardwalks for bird watching.

Visiting a refuge is unique in that its sole mission is preservation of a specific habitat to serve the wildlife dependent on it, not to serve the public. One of my favorite aspects of the National Wildlife Refuge System is that not all of them are even accessible to the public.

Visitor Center was full of knowledgeable personnel.

We are able to enjoy nature in an area preserved from the pollution and encroachment of human buildings and industry.

We are interested in the birds, although out west and on the coasts we also enjoy great scenery.

We get to see wildlife in their natural environment. I like this!

We liked the opportunity to learn about and see the shorebirds/horseshoe crabs.

We love visiting National Wildlife Refuges, because we know the priority is for the conservation of the wildlife involved and yet they always provide opportunities to optimally see and appreciate the wildlife thriving there.

We visit refuges all over the US and have for over 40 years as nature lovers and birders. We are very lucky to have this system in place and enjoy the opportunities they present.

While not being a tourist trap, refuges are unique in that they provide wildlife viewing opportunities while still keeping the wildlife as the top priority of the refuge. We feel that is of utmost importance.

While we bird watch elsewhere, National Wildlife Refuges are set up for birding, which makes it convenient.

Wildlife is conserved and protected.

Wildlife is important to me. Refuges are designed to preserve and protect them. That is the reason I believe refuges are unique.

Wildlife management and spectacle of birding.

Wildlife preservation and the opportunity for visitors to see and appreciate them in their natural habitats.

With the focus on wildlife, refuges provide a more targeted experience than other public lands that attempt to be all things to all people. I am a birdwatcher and much of the best birdwatching I have done has been on refuges.

You are doing a good job.

You can always depend on them being there to do the things you like. The employees are very helpful and the refuges are always very clean.

You can experience nature at your leisure - quietly, with family and friends, or alone - without pressing crowds of people.

You don't get that great feeling of being closer to the wildlife in the middle of a town!

Additional Comments (n = 66)

About climate change: I believe it is real and that much of it is inevitable. Although some aspect is man-made, much of it is natural cycles. We need to study and understand this, but we should be careful about the amount of resources we spend on trying to control or change nature.

Blackwater NWR is a truly wonderful place!

Bombay Hook NWR has provided me and members of my family with many hours of enjoyment as we observe the great variety of birdlife that this unspoiled habitat offers. It is truly a beautiful place to visit. No changes are necessary to keep me happy. I even accept the bugs as part of the experience!

Bombay Hook NWR is a well managed refuge that does a great job of varying water tables at different times of year to attract wintering ducks and geese or migrating shorebirds. Fields are planted with grain for their nourishment. We consider it a jewel in the mid-Atlantic!

Contrary to popular belief among many nature-loving people, socialist countries do not have a very good track record when it comes to managing natural resources.

Doing a good job. (Signed)

Enjoyable experience.

Glad you're doing this survey. Don't worry about transportation so much. Instead, think about how to increase the visitor's experience while keeping it wild. (Signed)

Great place and critical to the protection of birds and wildlife, as well as human health and quality of life. Thank you.

Great place to visit - awesome.

I am pleased that I live close enough to visit 2 NWRs, but no matter where in the world I am, I try to check in on wildlife and birds.

I am strongly upset that Bombay NWR doesn't plant any farm crops anymore. I understand the GMO controversy and the recent lawsuits; however, I think crops can still be planted and the refuge managed to provide feeding fields for migratory waterfowl. I think the water levels in the impoundments need to be managed more carefully and with more effort to provide ideal habitat for shorebirds and waterfowl at the respective times of year. I think more work needs to be done to halt the spread of nonnative plant species. The impoundments are being ruined by Phrag. Lots of controlled burning needs to be done. I suggest burning efforts be handed back to local management. Overall, Bombay is wonderful, but like everywhere else, it could use more work and money. Keep up the good work.

I cannot emphasize enough the benefit of outdoor recreation for the body, mind and soul, nor the need to protect what we have. There is one planet Earth and everything is connected.

It disturbs me that hunting and fishing are allowed within a National Wildlife Refuge, even if it is for a limited time. A refuge is a refuge.

I enjoy coming and just listening for the sounds at the refuge and also the quietness.

I first visited Bombay Hook about 30 years ago. Now I live close by in Dover (6.5 miles away), so I have visited the refuge many times and will continue to do so as long as I live close by. I may be interested in volunteer opportunities at Bombay Hook or other locations. Thanks for the opportunity to express my opinions about Bombay Hook. (Signed)

I hope there will always be refuges to visit as well as national parks.

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I like Bombay Hook. My other preferred refuges are Blackwater, Chincoteague, and Assateague.

I live only 10 minutes from this refuge, so it is my "go-to" place for a restorative walk or wildlife experience. I constantly remind myself how fortunate I am to have this resource in my community and my life. Thank you!

I love Bombay Hook.

I love Bombay Hook. I go back over and over again. Thank you for providing such a beautiful place for all to enjoy. (Signed)

I think National Wildlife Refuges are extremely important to this country. We are very fortunate to have these areas near cities. I no longer hear the song of the wood thrashers because of suburban sprawl. I am 100% behind the efforts of conservation in their efforts to protect these sometimes low priority refuges. (Signed)

I think we are "spitting in the wind" trying to conserve other species when we need to put an emphasis on limiting our own population. With the population of the Earth expected to double again by 2040 to 12 billion, there won't be room for any other species but ours.

I think you should try to keep the admission rate low so that people can afford to visit; then, those people who can afford it can spend extra money on refuge souvenirs like T-shirts. We love refuge t-shirts and books and usually buy some.

I visited Bombay Hook while I was visiting family. I often stop to visit when in the area, and have done so for nearly 40 years.

I would like to see other areas of the refuge opened a few days a month to allow for observation and photography. Why should hunters be the only ones allowed into those areas?

In 1993, La Place orbital mechanics equations solved using supercomputers. Results show steady 12 degree Centigrade global warming over next 5,000 years due to orbital changes (more elliptical orbit, changes in Earth's tilt, change in pole location). So, Earth is going to warm regardless of human activity. Computer results also agree with past geological era temperature estimates derived by other means. Eleven thousand years ago, the Chesapeake region was a cold, treeless area with fauna comprised of large animals. Four thousand years ago, there were no oysters in Chesapeake Bay. In Colonial days, Chesapeake Bay routinely froze over for a period each winter. In 1793, the average temperature at the Hudson Bay Co. fort between Dec. 1 and April 15, 1794 at what is now Fargo, ND, was minus 23 degrees Fahrenheit for the entire period (little ice age). My point is that there already have been major temperature changes over the last few 1,000 years and the last few 100 years. Most species have already adapted to and will adapt to temperature changes. Some will die off, others will thrive. If the sea floods existing wetlands, it will create new ones elsewhere at the higher seawater elevation. In sum, is global warming real? Sure. Am I concerned about it? No. In the end, all efforts to control the Earth's temperature will fail. You can't keep 4 billion Asian, Indians, and Chinese from learning to drive. HVAC of living areas is increasing worldwide at a record pace, overwhelming any efforts at energy conservation. So, not much I can do about it.

It is one of my family's favorite places in our tri-state area and we visit Bombay Hook quite often.

It is useless to have good programs if the public does not know about them.

It was at Bombay Hook that my husband (then my boyfriend) hid an engagement ring in my binoculars' case and proposed to me. Bombay Hook is a very special place to us! :-)

It would be helpful if the main website gave more information about the Christmas Bird Count (e.g., the date and time and how to register) and perhaps post the results once the data is compiled.

It's an absolute jewel.

Keep doing what you are doing.

Keeping up the good work for the animals is the number one priority.

Love the "Hook"! Wish it were closer and would love to have a refuge like this near my home in PA.

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Loved our visit. Saw a great number of waterfowl! Thanks!

More interpretative signs (with great visuals) on the side of the road near waterfowl congregations would make nonbirders more appreciative of the refuge's resources. Also, I am concerned that it is too easy to honestly forget to pay the entrance fee in front of the Visitor's Center. On 2 occasions, I almost drove in without paying. This makes me wonder what people do who don't want to pay the entrance fee. Now, if the point is to make the fee semi-optinal so as not to alienate the public, then it is working. In any case, thanks for keeping open these national treasures in such troubling economic times!

My husband and I thoroughly enjoy every trip we take to this refuge and cherish the pictures we get to take home with us. I hope that we are able to take our future kids with us as well.

My wife and I love visiting Bombay Hook.

National Wildlife Refuges are among the very finest of features in this nation. There should be more of them and many of the present ones should be expanded. Great care must be taken to ensure that human use is not injurious to wildlife. Protection guidelines such as keeping visitors away from endangered species' nesting sites are essential.

National Wildlife Refuges should not allow special interest groups to dictate their mission and purpose. If I am expected to continue to pay increasing costs to utilize the refuges, I expect the refuges to follow through on their mission and not allow anti-hunting groups disguised as other groups to dictate how the refuge manages the land.

Nice Refuge. The bugs will drive you crazy after Memorial Day! I really feel strongly that deer hunts should be confined to times when visitation by birders, etc. is low. Closing parts of the refuge on prime fall weekends is absurd. Deer management can be done at any time.

Not a comment about the refuge, but on the previous questions about climate change: I'm very interested in eliminating my use of plastic and other things that contribute to trash heaps that will not biodegrade for many generations, but the use of the term "climate change" skewed my answers to the questions and didn't address other ways we can help the environment without debating whether climate change and global warming is real or not. Hope that makes sense. I am interested in knowing what sorts of things I can do to preserve what we have, and that goes way beyond climate change questions. If a couple survey questions were worded differently, you will get some different information from some patrons.

Not really sure the climate change questions can properly address the complexity of the issue.

Our group was disturbed that deer hunting is allowed in a wildlife refuge. Also, since it was our first trip to this refuge, we were not allowed to visit the entire refuge because of the deer hunting restrictions. The mosquitoes were horrendous. We did not expect this in November. The birds were wonderful, although we would have liked to be able to hike on the paths to get a closer look and see more than what we could see from the car.

Raymond, a volunteer guide, was outstanding! He drove us around and explained the unique features of Bombay Hook.

Thank heaven for the Bombay Hook National Wildlife Refuge, a time machine only twenty minutes from my front door.

Thank you for providing this questionnaire. I probably wouldn't have taken the time to contact the Fish & Wildlife Service on my own, even though it was a memorable experience. To the extent this survey is intended to gauge public support of funding environmental programs, count me as a strong supporter of this cause. I firmly believe that protection of the environment is the responsibility of society as a whole (and therefore should be funded by taxes). I would gladly approve an increase in the taxes I pay, if more funding would be devoted to this purpose. As much as I enjoy outdoor activities, if you have to make cuts, protection should take precedence over recreational activities.

Thank you to all the employees and wonderful volunteers that help to preserve the refuges, lands, parks, waterways, plants, fish, wildlife, birds, etc., for everyone to enjoy. (Signed)

The "No Planting Policy" must stop at Bombay Hook National Wildlife Refuge in Smyrna, Delaware. Because of the Federal Government, deer and geese have become accustomed to eating corn and soybeans in refuge fields. Years ago, before planting fields, deer ate acorns and tree tips. The US District Court (in Delaware) lawsuit has stopped the refuge from planting genetically modified crops resulting in deer and geese leaving the refuge and destroying neighboring farm fields. Today (2011), it is nearly impossible to buy seed that is not genetically modified.

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Refuge fields, once in agriculture production, are now growing brush and saplings 2 to 12 feet tall. Bombay Hook deer no longer eat acorns and saplings. Geese do not land in brush and woods. The creatures are now eating in neighboring farm fields at great expense to the farmers. We are losing 73 years of government money spent on important breeding ground for migratory birds and other waterfowl. Perhaps educational material to Delaware US District Court Judges would help.

The lifetime pass is a terrific bargain, but the fee structure may be outdated given the aging of the baby boomers. By increasing the fee slightly, or increasing the minimum age of eligibility, a bit more money would be available to benefit federally administered natural areas.

This "small" refuge provided a large opportunity. The field trip was to an area outside of the refuge and gave me a broader view than I would have had otherwise. Staff and volunteers were knowledgeable and contributed a lot to my experience. I hope to return to this Bombay Hook NWR.

This refuge is wonderful as is - please don't change it!

This was my first trip to Bombay Hook, and I was very impressed. I do not mind my tax dollars being used to fund your efforts. Thank you!

Very enjoyable day, even though quite hot. We managed views of several life birds!

We are new to the east coast (1.5 years). Bombay Hook has become one of our favorite places to bird. Also, we regularly go to Blackwater NWR and Chincoteague NWR. Keep up the great work!

We enjoyed our two days there and hope to return.

We enjoyed our visit and learned much information about birds, especially migratory birds.

We had a fantastic time. It was a wonderfully maintained refuge. Roads around the impounds are perfect for observing wildlife. Staff at the Visitor's Center were outgoing and knowledgeable. Thank you.

We had a very pleasant time for our first visit, even though part of the trail was closed to hunting as mentioned before. We came for the waterfowl viewing in particular and were quite impressed with the Visitor Center's display of waterfowl.

We had a wonderful time. We thought it was very well run, and people were helpful. We will definitely be coming back and have told our friends about it. Only downside was that it was very difficult to find - we missed it the first time altogether. Need more signs.

We had been wanting to visit Bombay Hook NWR for years. The refuge did not disappoint and it will be part of our itinerary on our next trip to Delaware.

We love Bombay Hook NWR!

We must preserve our refuges and wildlife areas from being open to oil and gas drilling. There is so little pristine land left in our country. No administration should be allowed to overturn the protection placed upon a refuge by caring citizens. We need the "special places" that our refuges provide us.

Wildlife needs food that has been provided for a long time. This includes both migratory birds and all game.

Would like to see farming back on the refuge and please, for safety reasons, keep the deer stands on the refuge!

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