



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

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I have out-of-state friends that visit me from time to time and they always want to go see Reelfoot Lake and visit this National Wildlife Refuge. Thank you for preserving and managing the refuge for us to enjoy and all of my friends. The National Wildlife Refuge means so much to me.—Survey comment from visitor to Reelfoot National Wildlife Refuge.



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

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# Introduction

The National Wildlife Refuge System (Refuge System), established in 1903 and managed by the U.S. Fish and Wildlife Service (Service), is the leading network of protected lands and waters in the world dedicated to the conservation of fish, wildlife and their habitats. There are 556 national wildlife refuges (NWRs) and 38 wetland management districts nationwide, including possessions and territories in the Pacific and Caribbean, encompassing more than 150 million acres. The mission of the Refuge System is to "administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." Part of achieving this mission is the goal "to foster understanding and instill appreciation of fish, wildlife-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 Reelfoot 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 logistically feasible onsite. Visitors were sampled on 35 randomly selected refuges and 18 other refuges that were selected by Service Regional Offices to respond to priority refuge planning processes.

#### **Developing the Survey Instrument**

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

#### **Contacting Visitors**

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

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

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

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

Refuge staff and/or volunteers (survey recruiters) contacted visitors on-site following a protocol provided by USGS to ensure a diverse sample. Instructions included contacting visitors across the entire sampling shift (for example, every n<sup>th</sup> 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 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 Reelfoot 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 Reelfoot National Wildlife Refuge**

Reelfoot NWR is located in northwestern Tennessee, and in southwestern Kentucky. Reelfoot NWR was established in 1941 to manage the northern third of Reelfoot Lake as a refuge for migratory birds. The proximity of Reelfoot NWR to the Mississippi River has always made the area a major stopover and wintering ground for migratory waterfowl and bald eagles. Since its creation, Reelfoot NWR has acquired additional lands in southwestern Kentucky, expanding the current size to 10,428 acres.

Reelfoot NWR's unique habitat was created by a series of violent earthquakes from December 1811 to February 1812. Most of Reelfoot NWR, 6,000 acres, is covered by woodlands, with 2,000 acres of open water, and about 1,100 acres each of wetlands and croplands. It is now known for its large concentrations of ducks, geese, raptors, wading birds, and shorebirds. The Reelfoot Lake area has the largest concentration of wintering bald eagles in the continental United States as well. Reelfoot NWR management activities include managing water for waterfowl, wading and shore birds, cooperative farming for wildlife, control of noxious vegetation, big and small game management and cooperative partnerships.

Reelfoot NWR attracts nearly 275,000 visitors annually (based on 2008 RAPP database; U.S. Fish and Wildlife Service, 2011, written comm.). Visitors enjoy environmental education and interpretive programs, fishing, hunting, wildlife observation and photography. Hunts include big and small game, squirrel and raccoon. Reelfoot NWR offers two observation towers, hiking trails and an auto tour route as well. Figure 1 displays a map of Reelfoot NWR. For more information, please visit *http://www.fws.gov/reelfoot/*.

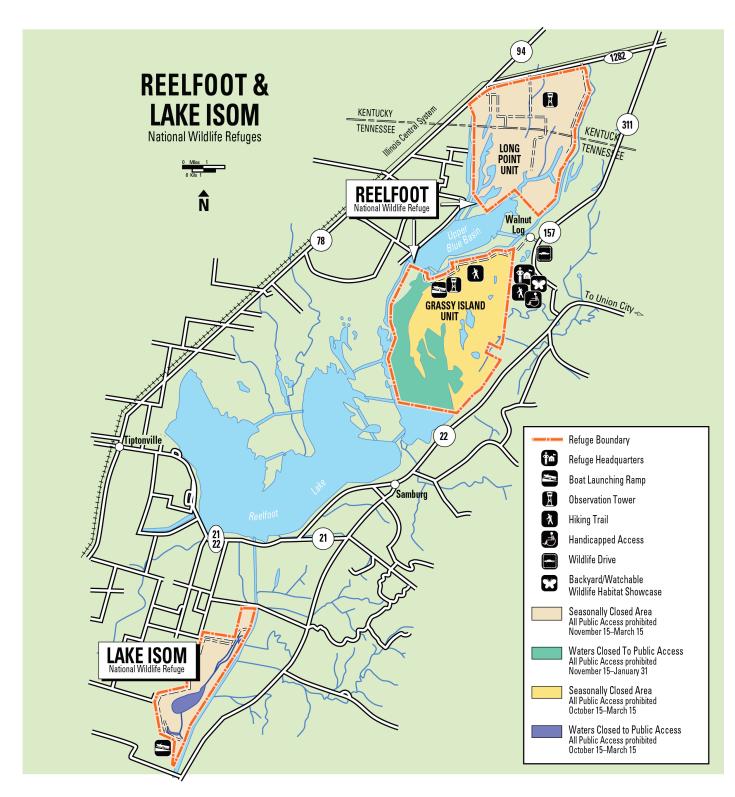


Figure 1. Map of Reelfoot NWR, courtesy of U.S. Fish and Wildlife Service.

# Sampling at Reelfoot National Wildlife Refuge

A total of 137 visitors agreed to participate in the survey during the sampling periods at the identified locations at Reelfoot NWR (table 2). In all, 95 visitors completed the survey for a 71% response rate and  $\pm 8\%$  margin of error at the 95% confidence level.<sup>1</sup> A third sampling period was added to account for the low number of contacts in the second sampling period.

Sampling period	Dates	Locations	Total contacts	Undeliverable addresses	Completed surveys	Response rate
1	10/30/10 to 11/13/10	Visitor Center Long Point Check Station Grassy Island Check Station Refuge Patrol	95	3	70	76%
2	1/15/11 to 1/29/11	Visitor Center Patrol of public use areas	9	0	4	44%
3	6/11/11	Fishing ponds	33	1	21	66%
Total			137	4	95	71%

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

# **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 Reelfoot 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 (93%) and that the Refuge System has the mission of conserving, managing, and restoring fish, wildlife, plants and their habitat (93%). Positive responses to these questions concerning the management and mission

<sup>&</sup>lt;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).

of the Refuge System do not indicate the degree to which these visitors understand the day-to-day management practices of individual refuges, only that visitors feel they have a basic knowledge of who manages refuges and why. Compared to other public lands, many visitors feel that refuges provide a unique recreation experience (82%; see Appendix B for visitor comments on "What Makes National Wildlife Refuges Unique?"); however, reasons for why visitors find refuges unique are varied and may not directly correspond to their understanding of the mission of the Refuge System. More than half of visitors to Reelfoot NWR had been to at least one other National Wildlife Refuge in the past year (70%), with an average of 5 visits to other refuges during the past 12 months.

#### Visiting This Refuge

Some surveyed visitors (36%) had only been to Reelfoot NWR once in the past 12 months, while others had been multiple times (64%). These repeat visitors went to the refuge an average of 9 times during that same 12-month period. Visitors used the refuge during only one season (55%), during multiple seasons (30%), and year-round (15%).

Most visitors first learned about the refuge from friends/relatives (63%), people in the local community (19%), signs on the highway (18%), or refuge printed information (18%; fig. 2). Key information sources used by visitors to find their way to this refuge include previous knowledge (60%), signs on highways (43%), or directions from friends/family (15%; fig. 3).

Some visitors (65%) lived in the local area (within 50 miles of the refuge), whereas 35% were nonlocal visitors. For most local visitors, Reelfoot NWR was the primary purpose or sole destination of their trip (68%; table 3). For most nonlocal visitors, the refuge was the primary purpose or sole destination of their trip (74%). Local visitors reported that they traveled an average of 30 miles to get to the refuge, while nonlocal visitors traveled an average of 153 miles. Figure 4 shows the residence of visitors travelling to the refuge. About 83% of visitors travelling to Reelfoot NWR were from Tennessee.

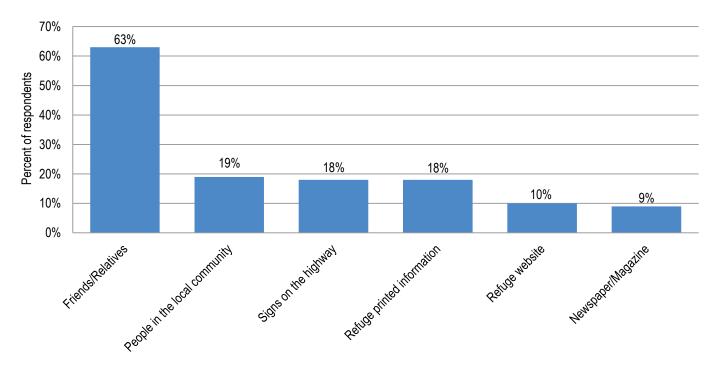


Figure 2. How visitors first learned or heard about Reelfoot NWR (n = 89).

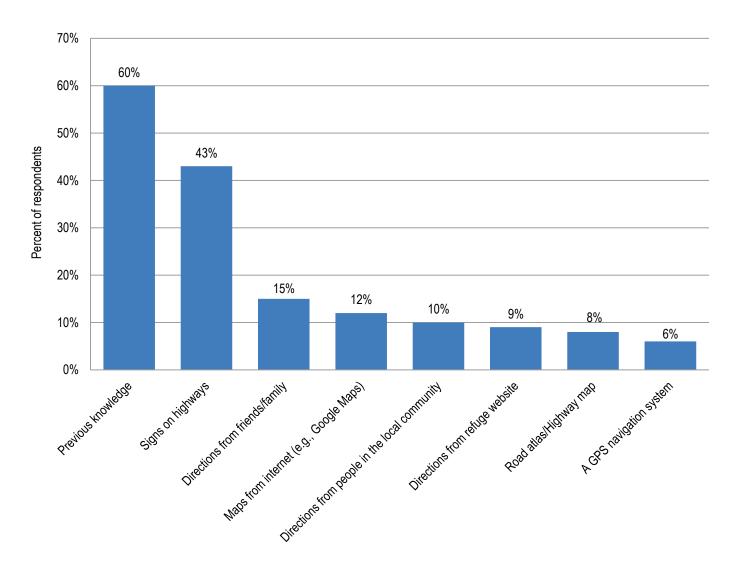
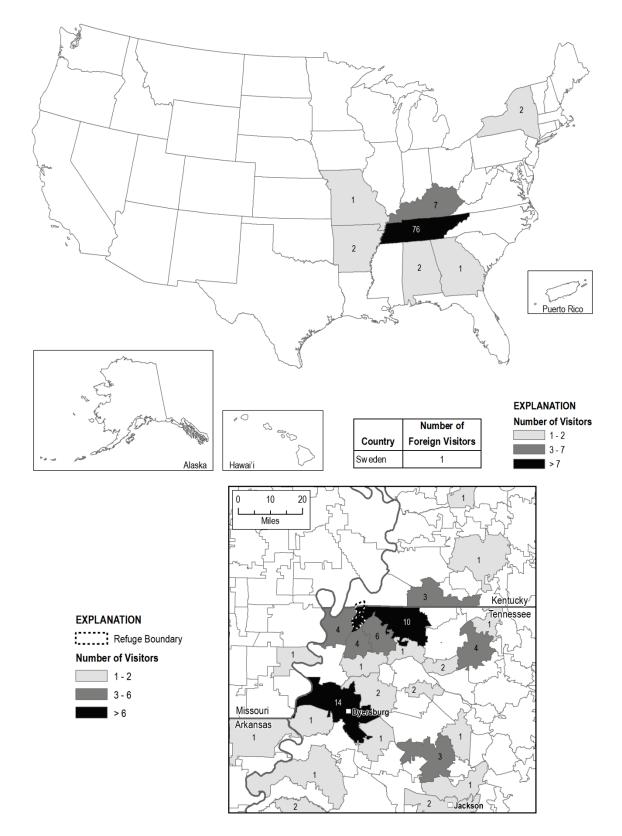


Figure 3. Resources used by visitors to find their way to Reelfoot NWR during *this* visit (n = 89).

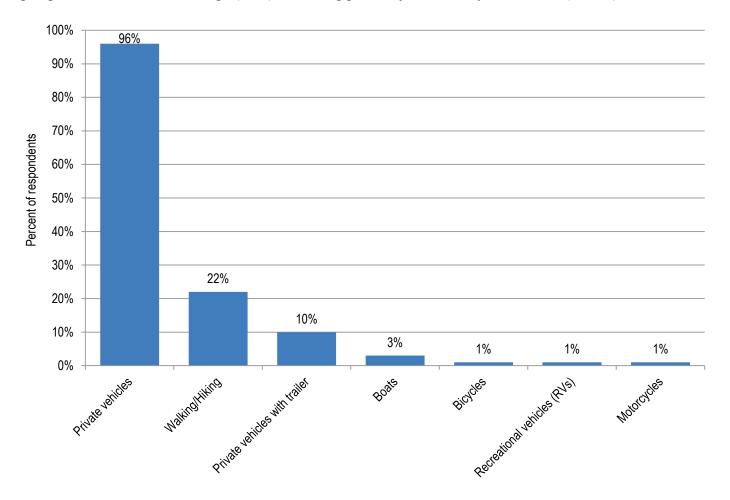
	Table 3.	Influence of Reelfoot NWR	on visitors' c	decision to tak	e this trip.
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		Visiting this refuge was	
Visitors	the primary reason for trip	one of many equally important reasons for trip	an incidental stop
Nonlocal	74%	10%	16%
Local	68%	19%	14%
Total	70%	16%	14%



**Figure 4.** Number of visitors travelling to Reelfoot NWR by residence. Top map shows residence by state and bottom map shows residence by zip codes near the refuge (n = 92).

Surveyed visitors reported that they spent an average of 6 hours at Reelfoot NWR during one day there (a day visit is assumed to be 8 hours). However, the most frequently reported length of visit during one day was actually 8 hours (49%). The key modes of transportation used by visitors to travel around the refuge were private vehicle (96%) and walking/hiking (22%; fig. 5). Most visitors indicated they were part of a group on their visit to this refuge (62%), travelling primarily with family and friends (table 4).



**Figure 5.** Modes of transportation used by visitors to Reelfoot NWR during *this* visit (n = 90).

Table 4.	Type and size of group	s visiting Reelfoot NWI	R (for those who indicated th	hey were part of a group,	n = 56).

Group type	Percent (of those traveling		Average group size		
Cloup type	in a group)	Number of adults	Number of children	Total group size	
Family/Friends	93%	2	1	3	
Commercial tour group	0%	0	0	0	
Organized club/School group	0%	0	0	0	
Other group type	7%	2	0	2	

Surveyed visitors participated in a variety of refuge activities during the past 12 months (fig. 6); the top three activities reported were auto tour route/driving (43%), wildlife observation (42%), and big game hunting (38%). The primary reasons for their most recent visit included hunting (42%), special event (13%), and bird watching (12%; fig. 7). The visitor center was used by 65% of visitors, mostly to ask information of staff/volunteers (70%), view the exhibits (65%), and stop to use the facilities (for example, get water, use restroom) (50%; fig. 8).

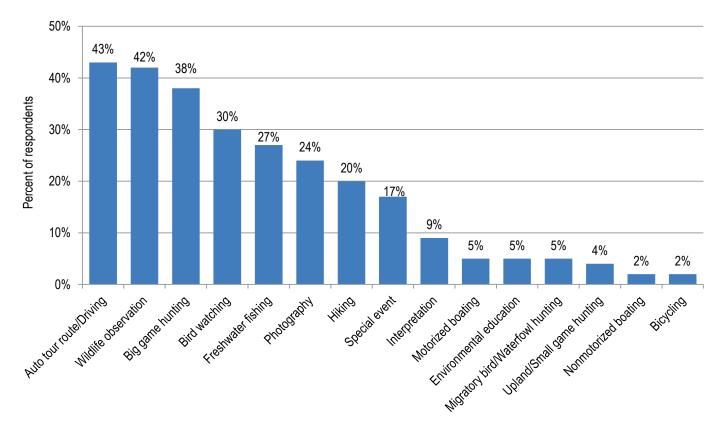


Figure 6. Activities in which visitors participated during the past 12 months at Reelfoot NWR (n = 92). See Appendix B for a listing of "other" activities.

#### Visitor Characteristics

Nearly all (99%) surveyed visitors to Reelfoot 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 61% male with an average age of 47 years and 39% female with an average age of 48 years. Visitors, on average, reported they had 14 years of formal education (college or technical school). The median level of income was \$50,000–\$74,999. See Appendix A for more demographic information. In comparison, the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation found that participants in wildlife watching and hunting on public land were 55% male and 45% female with an average age of 46 years, an average level of education of 14 years (associate degree or two years of college), and a median income of \$50,000–\$74,999 (Harris, 2011, personal communication). Compared to the U.S. population, these 2006 survey participants are more likely to be male, older, and have higher education and income levels (U.S. Department of the Interior and U.S. Department of Commerce, 2007).

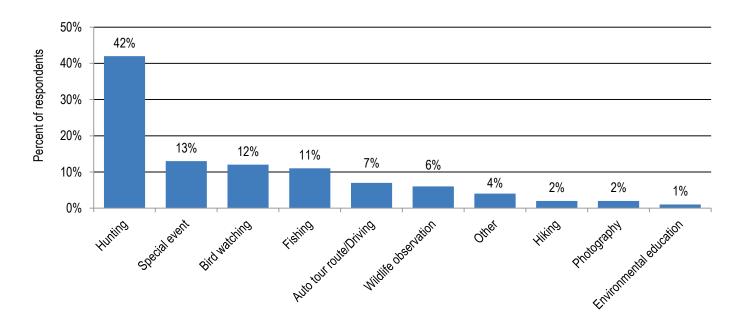
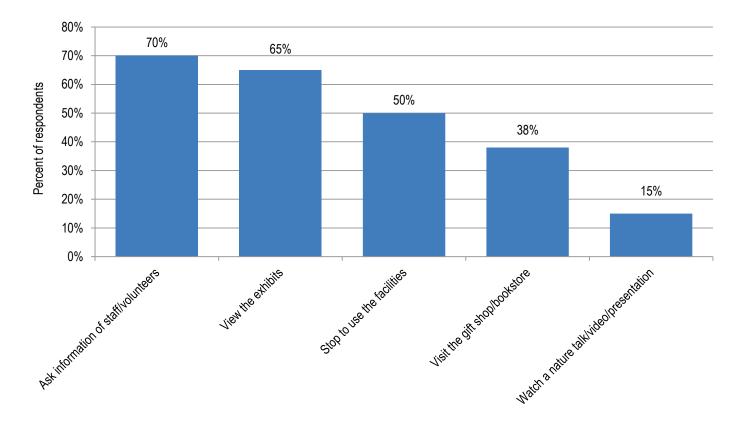


Figure 7. The primary activity in which visitors participated during *this* visit to Reelfoot NWR (n = 84). See Appendix B for a listing of "other" activities.



**Figure 8.** Use of the visitor center at Reelfoot NWR (for those visitors who indicated they used the visitor center, n = 60).

#### **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, 65% of visitors to Reelfoot NWR indicated that they live within the local area. Nonlocal visitors (35%) 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. *It is important to note that summary statistics based on a small sample size (n < 30) may not provide a reliable representation of that population*. During the two sampling periods, nonlocal visitor spending 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.

Visitors	n¹	Median	Mean	Standard deviation	Minimum	Maximum
Nonlocal	30	\$40	\$53	\$54	\$0	\$281
Local	51	\$30	\$43	\$46	\$0	\$215

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

 $^{1}n$  = 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.

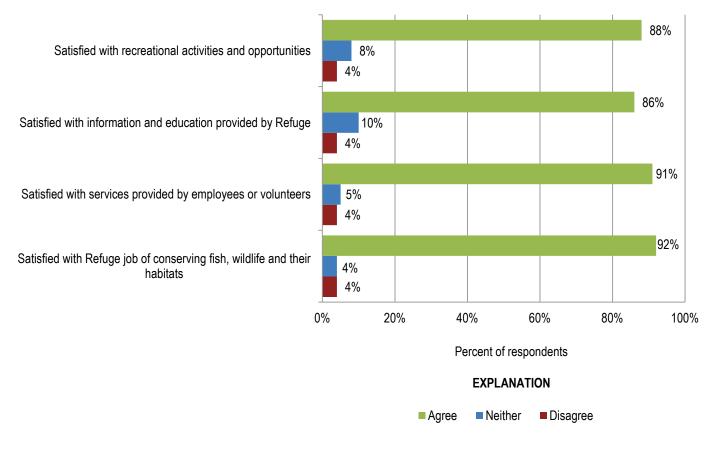
#### Visitor Opinions about This Refuge

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 Reelfoot NWR were as follows (fig. 9):

- 88% were satisfied with the recreational activities and opportunities,
- 86% were satisfied with the information and education about the refuge and its resources,
- 91% were satisfied with the services provided by employees or volunteers, and
- 92% were satisfied with the refuge's job of conserving fish, wildlife and their habitats. Although 29% of visitors (n = 25) indicated they paid a fee to enter Reelfoot NWR, the refuge does

not have an entrance fee. It is not known why a small number of visitors thought they paid a fee to enter.



**Figure 9.** Overall satisfaction with Reelfoot NWR during *this* visit ( $n \ge 90$ ).

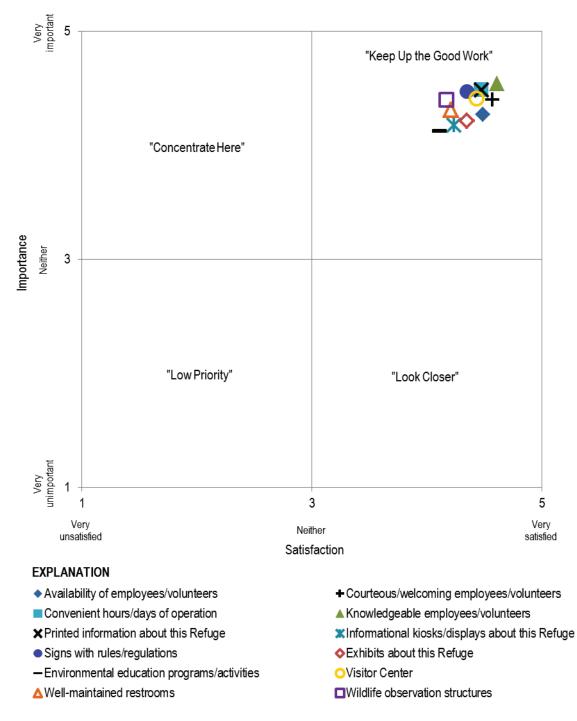
#### Importance/Satisfaction Ratings

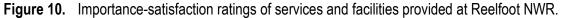
Comparing the importance and satisfaction ratings for visitor services provided by refuges can help to identify how well the services are meeting visitor expectations. The importance-performance framework presented in this section is a tool that includes the importance of an attribute to visitors in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

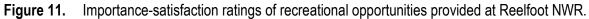
Graphically plotting visitors' importance and satisfaction ratings for different services, facilities, and recreational opportunities provides a simple and intuitive visualization of these survey measures. However, this tool is not without its drawbacks. One is the potential for variation among visitors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

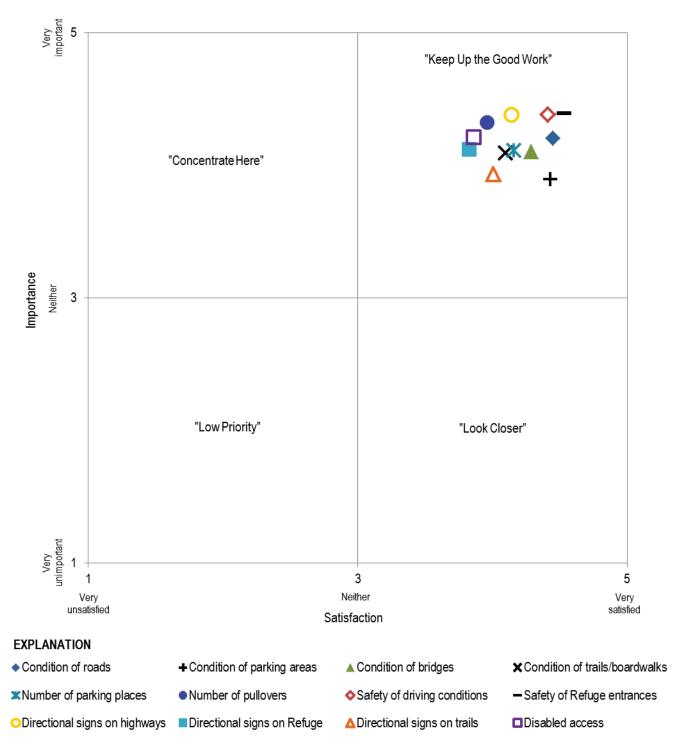
Figures 10-12 depict surveyed visitors' importance-satisfaction results for refuge services and facilities, recreational opportunities, and transportation-related features at Reelfoot NWR, respectively. All refuge services and facilities fell in the "Keep Up the Good Work" quadrant (fig. 10). All refuge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

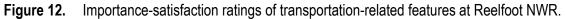












#### Visitor Opinions about National Wildlife Refuge System Topics

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 Reelfoot NWR are reported here.

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

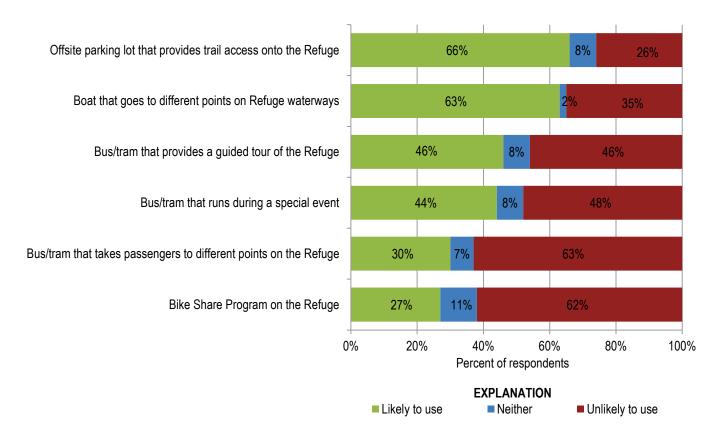
Visitors use a variety of transportation means to access and enjoy national wildlife refuges. While many visitors arrive at the refuge in a private vehicle, alternatives such as buses, trams, watercraft, and bicycles are increasingly becoming a part of the visitor experience. Previous research has identified 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.

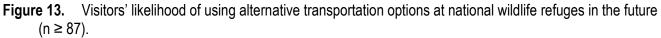
Of the six Refuge System-wide alternative transportation options listed on the survey, the majority of Reelfoot NWR visitors who were surveyed were likely to use the following options at national wildlife refuges in the future (fig. 13):

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

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

When asked about using alternative transportation at Reelfoot NWR specifically, 41% of visitors indicated they were unsure whether it would enhance their experience; however, some visitors thought alternative transportation would enhance their experience (26%) and others thought it would not (32%).



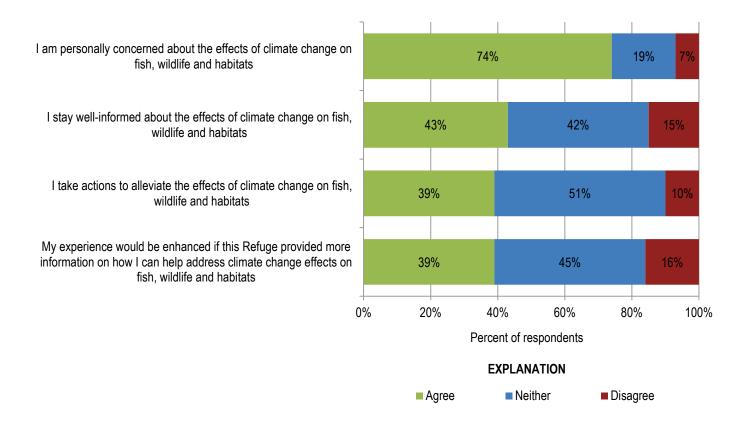


#### Climate Change and the National Wildlife Refuge System

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 Reelfoot NWR agreed with the following statement (fig. 14) :

• "I am personally concerned about the effects of climate change on fish, wildlife and habitats."



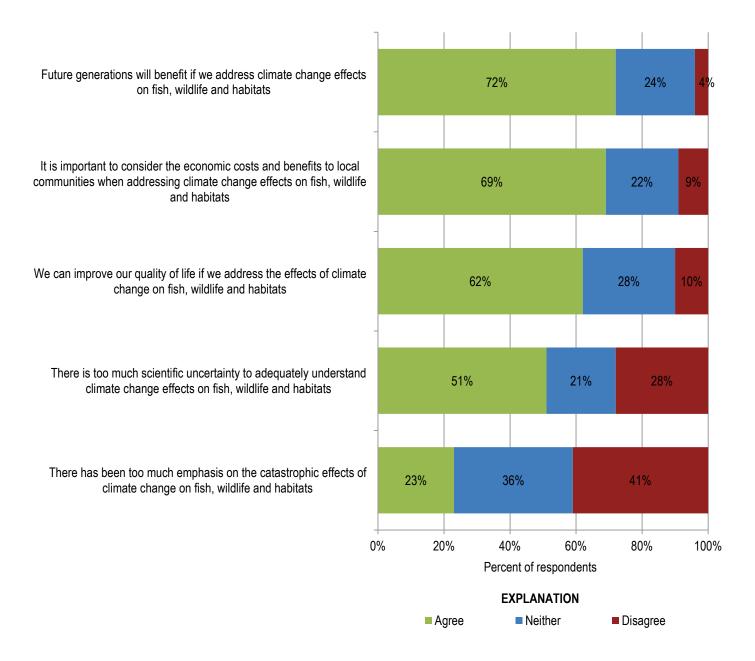
**Figure 14.** Visitors' personal involvement with climate change related to fish, wildlife and their habitats ( $n \ge 84$ ).

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

- "Future generations will benefit if we address climate change effects;"
- "It is important to consider the economic costs and benefits to local communities when addressing climate change effects;"
- "We can improve our quality of life if we address the 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 some visitors (39%) indicated that their experience would be enhanced if Reelfoot NWR provided information about how they could help address the effects of climate change on fish, wildlife, and their habitats (fig. 14), and framing the information in a way that resonates most with visitors may result in a more engaged public who support strategies aimed at alleviating climate change pressures. Data will be analyzed further at the aggregate, or national level, to inform the development of a comprehensive communication strategy about climate change.



**Figure 15.** Visitors' beliefs about the effects of climate change on fish, wildlife and their habitats ( $n \ge 86$ ).

# Conclusion

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

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

# 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*.
- 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*.
- 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.*)
- 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.
- 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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Appendix A: Survey Frequencies for Reelfoot National Wildlife Refuge

# National Wildlife Refuge Visitor Survey







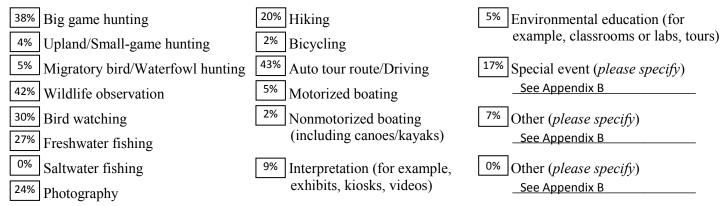
#### PLEASE READ THIS FIRST:

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

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

#### **SECTION 1. Your visit to this Refuge**

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



Which of the activities above was the *primary* purpose of your visit to this Refuge?
 (*Please write <u>only one activity</u> 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	?
65% Yes → If yes, what did you do there? ( <i>Ple</i>	ease mark <u>all that apply</u> .)
<sup>38%</sup> Visit the gift shop or bookstore	15% Watch a nature talk/video/presentation
<sup>65%</sup> View the exhibits	50% Stopped to use the facilities (for example, get water, use restroom)
Ask information of staff/volunteers	10% Other ( <i>please specify</i> ) See Appendix B

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

Nonlocal	Local	Total
74%	68%	70%
10%	19%	16%
16%	14%	14%

It was the primary purpose or sole destination of my trip.

It was one of many equally important reasons or destinations for my trip.

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	153	number of miles
Local	30	number of miles

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

See R	Report	for	Results
-------	--------	-----	---------

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

38%	No	(skip t	to question	# <b>9</b> )
-----	----	---------	-------------	--------------

62% Yes  $\rightarrow$  What type of group were you with on your visit? (*Please mark <u>only one</u>*.)

93% Family and/or friends	0% Organized club or school group
<sup>0%</sup> Commercial tour group	7% Other ( <i>please specify</i> ) See Appendix B

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

- 2 number 18 years and over 1 number 17 years and under
- 9. How did you first learn or hear about this Refuge? (*Please mark <u>all that apply</u>*.)

63% Friends or relatives	10% Refuge website
18% Signs on highway	Other website ( <i>please specify</i> ) See Appendix B
<sup>0%</sup> Recreation club or organization	<sup>0%</sup> Television or radio
19% People in the local community	9% Newspaper or magazine
[18%] Refuge printed information (brochure, map)	Other ( <i>please specify</i> ) See Appendix B

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

34%	Spring	42% Summer	76%	Fall	30%	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? <u>6</u> number of visits
- ...other National Wildlife Refuges in the last 12 months? <u>3</u> number of visits

#### **SECTION 2. Transportation and access at this Refuge**

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

96% Private vehicle without a trailer	<sup>0%</sup> Refuge shuttle bus or tram	1% Bicycle
<sup>10%</sup> Private vehicle with a trailer	1% Motorcycle	22% Walk/Hike
(for boat, camper or other)	<sup>0%</sup> ATV or off-road vehicle	0% Other ( <i>please specify below</i> )
<sup>0%</sup> Commercial tour bus	<sup>3%</sup> Boat	See Appendix B
1% Recreational vehicle (RV)	<sup>0%</sup> Wheelchair or other mobility at	id

#### 2. Which of the following did you use to find your way to this Refuge? (Please mark <u>all that apply.)</u>

43% Signs on highways	9% Directions from Refuge website
<sup>6%</sup> A GPS navigation system	10% Directions from people in community near this Refuge
<sup>8%</sup> A road atlas or highway map	15% Directions from friends or family
12% Maps from the Internet (for example,	60% Previous knowledge/I have been to this Refuge before
MapQuest or Google Maps)	O%         Other (please specify)         See Appendix B

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)?	44%	19%	7%	20%	10%
a bike that was offered through a Bike Share Program for use while on the Refuge?	42%	20%	11%	22%	4%
a bus or tram that provides a guided tour of the Refuge with information about the Refuge and its resources?	30%	16%	8%	31%	15%
a boat that goes to different points on Refuge waterways?	23%	11%	2%	37%	26%
a bus or tram that runs during a special event (such as an evening tour of wildlife or weekend festival)?	32%	16%	8%	28%	16%
an offsite parking lot that provides trail access for walking/hiking onto the Refuge?	17%	9%	8%	39%	27%
some other alternative transportation option? ( <i>please specify</i> ) See Appendix B	21%	9%	36%	12%	21%

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

26% Yes

32% No

41% 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.* 

	-	portan						Satisfa			
Cir	rcle one	e for ec	ich iter	m.			Circle	one fo	or each	ı item.	
Very Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Very Important		Very Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Very Satisfied	Not Applicable
2%	6%	5%	42%	45%	Surface conditions of roads	5%	3%	2%	22%	68%	NA
5%	13%	8%	35%	39%	Surface conditions of parking areas	5%	2%	6%	21%	67%	NA
5%	3%	17%	28%	47%	Condition of bridges	5%	0%	13%	27%	56%	NA
4%	5%	11%	39%	41%	Condition of trails and boardwalks	4%	8%	15%	22%	52%	NA
5%	1%	12%	41%	41%	Number of places for parking	7%	5%	7%	29%	53%	NA
1%	2%	9%	39%	49%	Number of places to pull over along Refuge roads	2%	11%	11%	40%	36%	NA
4%	1%	6%	32%	57%	Safety of driving conditions on Refuge roads	4%	4%	6%	22%	65%	NA
4%	1%	1%	40%	54%	Safety of Refuge road entrances/exits	3%	2%	2%	21%	71%	NA
5%	0%	6%	30%	59%	Signs on highways directing you to the Refuge	7%	8%	8%	19%	58%	NA
4%	7%	10%	32%	48%	Signs directing you around the Refuge roads	6%	13%	10%	31%	39%	NA
7%	5%	15%	33%	40%	Signs directing you on trails	4%	4%	18%	34%	40%	NA
4%	1%	19%	23%	53%	Access for people with physical disabilities or who have difficulty walking	4%	7%	22%	34%	34%	NA

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

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

65%	Yes				
35%	No $\rightarrow$ How	much time did you	spend in loc	al comm	unities on this trip?
	2	number of hours	OR	2	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 <u>Local Communities &amp; at this Refuge</u> <i>(within 50 miles of this Refuge)</i>
Motel, bed & breakfast, cabin, etc.	
Camping	
Restaurants & bars	
Groceries	
Gasoline and oil	cults
Local transportation (bus, shuttle, rental car, etc.)	See Report for Results
Refuge entrance fee	a eport is
Recreation guide fees (hunting, fishing, wildlife viewing, etc.)	Seeker
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?

<sup>2</sup> number of people sharing expenses

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

	\$0 6%	\$10 10%	\$20 25%	\$35 8%	\$50 18%	\$75 3%	\$100 16%	\$125 0%	\$150 1%	\$200 3%	\$250 8%
5.	2	a member ark <u>only o</u>		up paid a	fee or used	a pass to er	ter this Re	fuge, how ap	propriate w	as the fee?	
0	% Far too	low 4	% Too low	7 88% A	bout right	8% Too	high [	0% Far too		Did not pay (skip to Secti	
6. Please indicate whether you disagree or agree with the following statement. ( <i>Please mark <u>only one</u></i> .)											
	The valu I paid.	e of the re	creation of	oportunit	ies and serv	vices I exp	erienced at	this Refuge	e was at lea	st equal to t	he fee

4% Neither agree or disagree

56% Agree

<sup>36%</sup> Strongly agree

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

0% Disagree

4% Strongly disagree

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

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Not Applicable
Overall, I am satisfied with the recreational activities and opportunities provided by this Refuge.	2%	2%	8%	41%	47%	NA
Overall, I am satisfied with the information and education provided by this Refuge about its resources.	1%	3%	10%	41%	45%	NA
Overall, I am satisfied with the services provided by employees or volunteers at this Refuge.	1%	3%	4%	32%	59%	NA
This Refuge does a good job of conserving fish, wildlife and their habitats.	2%	2%	3%	30%	62%	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 f	for each item				Circle	one fo	r each i	item.		
Very Unimportant Somewhat Unimportant	Neither Somewhat Important	v ery Important	<b>Refuge Services, Facilities, and Activities</b>	Very Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Very Satisfied	Not Applicable	
4% 6%	5% 31%	55%	Availability of employees or volunteers	1%	0%	10%	27%	63%	NA	
2% 4%	6% 27%	61%	Courteous and welcoming employees or volunteers	2%	0%	8%	17%	73%	NA	
2% 2%	2% 25%	68%	Knowledgeable employees or volunteers	2%	1%	4%	19%	74%	NA	
1% 5%	4% 26%	65%	Printed information about this Refuge and its resources (for example, maps and brochures)	4%	1%	8%	18%	69%	NA	
2% 2% 1	13% 40%	42%	Informational kiosks/displays about this Refuge and its resources	3%	4%	15%	24%	54%	NA	
1% 2%	6% 29%	61%	Signs with rules/regulations for this Refuge	1%	2%	11%	31%	55%	NA	
1% 5% 1	10% 40%	44%	Exhibits about this Refuge and its resources	1%	5%	9%	28%	57%	NA	
2% 5% 1	13% 37%	43%	Environmental education programs or activities	1%	3%	26%	24%	46%	NA	
2% 1%	6% 33%	57%	Visitor Center	2%	2%	7%	26%	62%	NA	
2% 0%	5% 31%	61%	Convenient hours and days of operation	1%	1%	10%	25%	63%	NA	
4% 4%	8% 27%	57%	Well-maintained restrooms	5%	4%	17%	13%	61%	NA	
1% 1% 1	13% 25%	60%	Wildlife observation structures (decks, blinds)	2%	2%	17%	32%	46%	NA	
4% 7% 1	17% 32%	40%	Bird-watching opportunities	1%	0%	24%	26%	49%	NA	
2% 2%	6% 36%	53%	Opportunities to observe wildlife other than birds	1%	7%	10%	31%	51%	NA	
2% 2% 1	11% 39%	45%	Opportunities to photograph wildlife and scenery	1%	1%	15%	31%	52%	NA	
15% 3% 1	11% 10%	61%	Hunting opportunities	1%	6%	15%	22%	55%	NA	
7% 2%	11% 16%	64%	Fishing opportunities	1%	1%	14%	22%	62%	NA	
4% 4% 2	22% 34%	37%	Trail hiking opportunities	1%	3%	26%	34%	36%	NA	
10% 5% 2	24% 28%	33%	Water trail opportunities for canoeing or kayaking	3%	3%	45%	17%	31%	NA	
12% 4%	32% 23%	28%	Bicycling opportunities	2%	5%	47%	24%	22%	NA	
7% 5% 3	35% 23%	30%	Volunteer opportunities	2%	3%	47%	18%	31%	NA	

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

See Appendix B

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

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

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

93% Yes	7% No
93% Yes	7% No

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

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

82%	Yes
-----	-----

18% No

If you answered "Yes" to Question 2, please briefly describe what makes Refuges unique.
 See Appendix B

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

Statements about climate change	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I am personally concerned about the effects of climate change on fish, wildlife and their habitats.	3%	3%	20%	40%	33%
We can improve our quality of life if we address the effects of climate change on fish, wildlife and their habitats.	6%	5%	28%	36%	26%
There is too much scientific uncertainty to adequately understand how climate change will impact fish, wildlife and their habitats.	8%	20%	22%	38%	13%
I stay well-informed about the effects of climate change on fish, wildlife and their habitats.	1%	14%	43%	36%	7%
It is important to consider the economic costs and benefits to local communities when addressing the effects of climate change on fish, wildlife and their habitats.	5%	5%	22%	53%	16%
I take actions to alleviate the effects of climate change on fish, wildlife and their habitats.	5%	5%	51%	32%	7%
There has been too much emphasis on the catastrophic effects of climate change on fish, wildlife and their habitats.	11%	30%	36%	15%	8%
Future generations will benefit if we address the effects of climate change on fish, wildlife and their habitats.	2%	1%	24%	44%	28%
My experience at this Refuge would be enhanced if this Refuge provided more information about how I can help address the effects of climate change on fish, wildlife and their habitats.	9%	7%	45%	25%	14%

#### **SECTION 6. A Little about You**

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

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

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

2. Are you? 61% Male 39% Female

3. In what year were you born? <u>1963</u> (YYYY)

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

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
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					mide	lle sch	ool)					tec	chnica	l schoo	ol)	professional school)			ool)
<u> </u>				39	%				43%	,			40%				14%	6	
5. What ethnicity do you consider yourself? 1% Hispanic or Latino 99% Not Hispanic or Latino																			
	<ul> <li>6. From what racial origin(s) do you consider yourself? (<i>Please mark <u>all that apply</u>.</i>)</li> <li><sup>3%</sup> American Indian or Alaska Native <sup>2%</sup> Black or African American <sup>98%</sup> White</li> <li><sup>0%</sup> Asian <sup>0%</sup> Native Hawaiian or Pacific Islander</li> </ul>																		
7. How many members of your household contribute to paying the household expenses? 2 persons																			
8.	Includi year?	ng thes	se mem	ıbers,	what w	as you	ur app	proxir	nate ho	ousehol	d inco	me fro	om all	source	es (befo	ore tax	.es) las	t	

4% Less than \$10,000	17% \$35,000 - \$49,999	11% \$100,000 - \$149,999
15% \$10,000 - \$24,999	24% \$50,000 - \$74,999	0% \$150,000 - \$199,999
15% \$25,000 - \$34,999	13% \$75,000 - \$99,999	1% \$200,000 or more

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

25 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 Reelfoot 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
Arts and Crafts weekend	1
Fishing Rodeo	6
Flea Market	1
Tennessee Herpetological Society field outing	1
Youth Fishing Rodeo	8
Total	17

Other Activity	Frequency
Camping	1
Eat fish	1
Family reunion and church functions	1
Family reunions	1
Local history	1
Scouting	1
Total	6

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
Eat out	1
Local history	1
To visit the museum	1
Total	3

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

Other Visitor Center Activity	Frequency
Brochures	1
Check out the bird feeders	1
Hunting permit	1
Looked for maps	1
Turned in card for hunt	1
Total	5

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	2
Hunting partner	1
Hunting party of two	1
Total	4

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

Other Ways Heard about This Refuge	Frequency
School	1
Tennessee guidebook	1
Total	2

# **Survey Section 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 of the above with interpretive guide.	1
ATV	3
Four wheeler	1
Four wheeler for hunting	1
Horseback	1
Private vehicle	2
Private vehicle and boat	1
Segway	1
Total	11

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

Comments on Transportation-related Items at This Refuge (n = 11)

I actually liked this road better when it was gravel, though I'm selfish in this: there are more folks using the area now and I liked the smaller crowds.

I felt like all boardwalks and roads were very good.

I wish there were more walking trails. I'd love to walk close to the lake, but it's so limited.

I would have liked more hiking trails.

More access to trails for hunting.

Need more access to the refuge by vehicle.

Roads on Long Point Refuge need fixing.

The roads are great and very well maintained and I always enjoy my trips to Reelfoot NWR.

Use four wheelers to retrieve dead deer.

Use of ATVs (not allowed). That's the main reason on all the big game hunts that everyone tries to hunt in the same areas, as it's easier to get deer out. It wouldn't hurt to use ATVs if and only if you get a deer down.

We would have loved to have been able to bring our horses and ridden about some areas of the refuge. Horseback is a really great and unobtrusive way to view nature.

# Survey Section 4

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

Comments on Services, Facilities, and Activities at This Refuge (n = 33)

Better deer and turkey hunting, food plots.

Every year, the fishing rodeo seems to become more of a success.

Everyone was very kind and helpful. I enjoy hunting there. The only bad thing is that there are several fallen trees and limbs from the ice storm 2 years ago making it hard to get around the woods or to get a deer out. Not much you can do to correct this problem. I do like hunting there during bow season or when I get drawn for gun hunt.

Everything was great, besides having to drag those deer. Took 5 hours to get to the truck.

#### Great staff, well managed.

I am proud of Terri at our refuge; she is always kind and courteous towards me and my kids. I appreciate all the activities she does. She is doing a fine job.

I really believe the Visitor Center should be open at all times, even on Saturdays. Some people need to have a real restroom, especially for the women it is needed. On my last trip, I had to drive 14 minutes away to find a bathroom during the Fishing Rodeo. Those bathrooms outside are not good for women.

I think Grassy and Long Point Deer Hunts should be made into four hunts instead of two hunts, and then you would not have as many hunters at one time. It would be safer and hunters would be able to take more deer.

I think Reelfoot is an excellent place to visit. I would recommend it to anyone who loves the outdoors.

I was very happy with the staff.

I was very satisfied with my son and the overall experience at the refuge.

I wish I lived close enough to volunteer and attend various educational opportunities. I miss the presentations at the state lodge (I miss the lodge, for that matter). The Airpark Inn had that absolutely awesome boardwalk. I sure wish there was a boardwalk somewhere on that side of the lake.

I would like to see more wildlife feeding and protecting programs and less hunting. Every time I visit, it sounds like a war zone.

I would love to see the interpretive kiosk cover the history of the Night Riders at Grassy Island. I also would love to see something about the bald eagle, ducks, or the 1811-1812 earthquakes.

Need to have better, more up-to-date maps.

Quota hunt needs to be moved to a weekend that does not interfere with opening weekend of muzzleloader.

Reelfoot is one of the best birding spots year round. Part of it is controlled by the federal government and part is controlled by the state.

Reelfoot National Wildlife Refuge desperately needs a detailed topography map!

Reelfoot NWR has well-maintained roads and I love the hunting opportunities when you are drawn. The permit fee is also very reasonable.

Refuge offers very limited big game hunting opportunities. Refuge should greatly increase hunting opportunities and staff to monitor harvest, etc.

Somewhat unsatisfied with boating ramps. They are not long enough in the water. Two different times, I messed up my boat trailer dropping off the ramp. Please make them longer into the water. Thanks.

The facilities really need to improve. It has really lost the attraction for this lake.

The platform for watching wildlife was shaky, and I felt unsafe being there.

The ranger who was at the Visitor Center when we visited was great! She was very knowledgeable and provided great recommendations for our visit.

The staff was great. I got to pet an owl.

The volunteer with whom we dealt was very helpful, accommodating and extremely knowledgeable of the wildlife, history and the area.

There is not a lot of advertising in the community about the hours or days the refuge is open.

This is a superb refuge. The staff is most helpful to the public in whatever appropriate activity is being pursued and the property is a true jewel in the area offering a very valuable opportunity to enjoy our local natural world.

Use of four wheelers on hunt.

Water on the lake is dried up. I did not stay overnight because of the conditions of the lake. That was my main reason for going. What a disappointment.

We are very satisfied.

We really enjoyed our trip to the kids free Fishing Rodeo. As a single parent, it was all I could afford to take my two young daughters fishing more frequently.

We were all treated well and enjoyed the park ranger that stopped by to talk to us.

## **Survey Section 5**

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

Comments on What Makes Refuges Unique? (n = 64)

A good place to hunt and fish.

Accessibility to areas and ability to view animals and birds.

Allow extra opportunities to hunt and fish while conserving wildlife.

Because you can get drawn for a deer hunt to manage the herd, but at the same time they conserve their habitat and many other habitats yearround.

Bigger deer and more of them.

Brief glimpse into our local wildlife habitat.

Chances to see all the different environments, and experience all the different opportunities they have to offer.

Conserving and restoring. A balance of hunting and saving wildlife for out next generation. A place everyone can enjoy wildlife.

Eagles. Viewed many different types of animals and birds. Good crappie fishing!

Educational opportunities and wildlife conservation.

I am a hunting and fishing person. To me, it is so important to have refuges for our fish and wildlife and to have habitats for them. The experience I have had fishing and learning about the things on the refuge has been wonderful. I want my kids to experience it and love it like I do. Thank God we have refuges to enjoy for ourselves and our kids. Thank you so much.

I enjoy visiting refuge lands that have been set aside so future generations can come see nature.

I have never seen a lake with so many trees in it. There were tons of eagles and a wide variety of birds.

I love being able to see these animals and birds in a protected area. The staff, as well as other visitors, are friendly and knowledgeable.

I notice a lot more time and effort is involved in a refuge. We need more of them; let's not lose Grassy when the time comes.

I think, without government funded refuges, there would be no places of beauty, nor anywhere for the average population to hunt and fish the way our forefathers did.

I use the refuge primarily to deer hunt. By controlling the number of hunters allowed to hunt each year, harvest numbers are controlled. Controlling harvest numbers means bigger deer. That is important to me.

It gives people the chance to really learn about nature at a close range and see how they live out in the wild. At this refuge, the people are so helpful. Thank you.

It gives you the opportunity to hunt a well managed piece of ground that could provide you with the chance to kill a trophy animal.

It is a great opportunity for all children and families to be together at a great outing and to experience the opportunity of fishing, and to let children know that there are things to do besides drugs.

It is very well watched over and makes for a great hunting experience, if you are lucky enough to be drawn.

It's a place where wildlife can rest, feed, and drink while hunting is going on. It is also a place to learn and educate people.

Its community outreach to the young makes it unique. The resources that are available to the youth every year is outstanding. This year has to be the best in Tennessee and beyond.

Keeps in balance, so that people and wildlife do not get out of hand.

Managed quota hunts!

More wildlife and natural habitats.

Nice Visitor Center, and knowledgeable staff that was helpful and friendly.

Park was very well maintained.

Protect existing wildlife habitat and afford opportunities for enjoyment in the habitat and use of wildlife.

Protection from loud vehicles like "sea-doos" and speed boats. It really enhances the experience. I used to plan to retire on Center Hill Lake, but when those "sea doo" type vehicles came into use, it totally changed my mind. Way too noisy - in fact, they're the reason my friends sold their place on the lake.

Safe place for man and wildlife.

Some places don't allow hunting.

Teaching.

The ability for game to reach the peak of their size and age.

The experience and positive influence on young children.

The friendly staff, impressive taxidermy and the bird watching stand.

The history of the lake and the wildlife. The fishing is good at certain times of the year, although I don't fish as much as I used to.

The hunting.

The intimacy with the wildlife and the environment. Although this refuge does not offer horseback riding opportunities, we have greatly enjoyed that whenever they have been available.

The kids love fishing.

The lake itself; just keep it cleaned up.

The limited times you can hunt.

The main goal is to provide habitat for the wildlife and not people management like you would see in a State Park system. More natural setting to experience the wildlife in.

The quietness and serenity they have for the wildlife makes the refuge such a peaceful place to visit.

The refuges are better professionally staffed.

The trail boardwalk opportunities to see wildlife in the natural habitat.

The wildlife viewing areas, and animal display at Visitor Center.

Their responsibility and the care that they have for wildlife, the people that visit, and with the environment.

These areas are great places for conservation without the interference of massive hotels and golf courses, which often distract from other public lands.

They are nice places to fish.

They are set aside particularly for wildlife and are well maintained and managed.

They have more resources available than most other public lands to make it easier for people to visit and enjoy these important natural areas.

They help conserve fish and wildlife.

They offer information about the local wildlife and a lot of programs that educate kids about wildlife.

They provide an opportunity for millions of people to get a better view of wildlife, trees, and rocks, as well as a place to get out of the cities.

They're open to the public.

This is a place where you can relax, learn, and enjoy the outdoors. Whenever I go to the fishing rodeo, I always learn more about fishing than the last year.

This one includes a boat port at Reelfoot Lake, which is unique. We saw about 40 different birds. A very enjoyable trip.

This refuge had more people available for questions.

This refuge is a good place to hunt, fish, and view wildlife. This refuge is a great place to take my kids and grandkids to hunt, fish, and view wildlife.

To me, it allows children who normally wouldn't get to go fishing a chance to do so. Also, they are able not only to get fish, but also to enjoy the park rangers with animals such as snakes and owls and get a chance to pet and hold the animals. We were all treated with respect and have had fun taking our children to the fishing rodeo for the last five years. This was our final year to get to do the fishing rodeo. Our family has really enjoyed it and will miss it. Thank you all for allowing us to go there and enjoy time with our family. May God bless all that help.

Trails, hunting, and fishing opportunities.

Wildlife sightings, especially eagles and deer.

You can see wildlife in their habitat, not just around people areas.

Additional Comments (n = 19)

Better deer and turkey hunting. No scouting one week before hunting season. More draw hunts for deer and turkey.

For the draw hunt at Long Point, it would be better if you eliminated out of state people from being drawn. The reason is because, most of the time, they don't even come to the hunt. This just takes away from the local people that really care about hunting. Also, it might help if there were priority points for this draw hunt, so you can have a better chance of getting drawn. Anything to help the local person get drawn more often.

Had a very good time on my last hunting trip there. Trails and roads are in very good shape. People working there are nice and helpful.

I am not happy to think that you would take our tax money to put forth the climate change lies. Is there not anyone interested in the truth? There have been temperature changes many times before. When the earth warms, the people do well. Food can be grown in more areas. There are scientists who try to give the truth. Is there anyone who will listen? We should take care of the planet! This can be done without making a few people wealthy and destroying the rest of us. Please be responsible!

I enjoy going to the Fishing Rodeo with my church group. I also enjoy spending time at the Empty Nest Lodge, which took place five years ago, but I still remember having a good time. Thank you (signature).

I have out of state friends that visit me from time to time and they always want to go see Reelfoot Lake and visit this National Wildlife Refuge. Thank you for preserving and managing the refuge for us to enjoy and all of my friends. The National Wildlife Refuge means so much to me.

I truly appreciate and cherish this refuge and the opportunities I have to explore it. Thank you.

I was very happy that I had the opportunity to see the bald eagle, thanks to the information from volunteers.

I wish they would make sure to leave more food resources for the ducks and geese. Make sure the farmers do their part. When there are refuge hunts, there are a lot of people that do not show up. I wish they would come up with something like this: if people show up the day of the hunt, then let them draw.

I would like to see the gun deer season be open for 5 or more days instead of 3 days.

It is one of my favorite places to visit. It has a unique history and folklore and is one of the most scenic places in northwestern Tennessee.

Keep up the good work.

Overall, well managed and well maintained.

Some years, Reelfoot Lake is a good place to visit, but it really has changed not for the best. The facilities sure need to be improved. The eagles are about the only point of interest there, and their resting place sure needs improving.

Thank you for doing all that you do with the refuges. They are all greatly appreciated by so many of us hunters. Thanks!

Thank you for the opportunity to hunt, fish, and view wildlife on this refuge.

The lady there at the Visitor Center is very personable. She has a good sense of humor and is very informative.

The Visitor Center staff went out of their way to help us. Thank you and keep up the great work.

We frequently take our horses on our trips.