



**U.S. Fish & Wildlife Service**

# **NATIONAL WILDLIFE REFUGE VISITOR SURVEY**

*2018 Results for  
Tennessee National Wildlife Refuge*



**THE OHIO STATE  
UNIVERSITY**



## Acknowledgments

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*Front cover: View of Kentucky Lake from a field in Tennessee National Wildlife Refuge. Photo credit: Ellen Bley.*

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# Understanding Wildlife Refuge Visitors & Their Experiences

A hundred years in the making, the National Wildlife Refuge System (Refuge System) is a vast network of habitats that supports over 2,000 species of birds, mammals, reptiles, amphibians, and fish across the United States on national wildlife refuges (wildlife refuges). Wildlife refuges also provide unparalleled outdoor recreation experiences and health benefits to people by offering a chance to unplug from the stresses of modern life and reconnect with their natural surroundings. The National Wildlife Refuge System Improvement Act of 1997 specifically identified six priority recreational uses: hunting, fishing, wildlife observation and photography, environmental education, and interpretation (Fig. 1). These recreational activities are prioritized on every refuge where compatible with the refuge's stated purposes. Visitors may also engage in many other activities (for example, hiking, paddling, boating, and auto tour routes) where compatible.

At least one wildlife refuge exists within an hour's drive of most major metropolitan areas. With over 55 million visits per year, the Refuge System is committed to maintaining customer satisfaction and public engagement while helping people and wildlife to thrive. Increased

visitation is not limited to the Refuge System—over the past few years, there has been a rise in the number of people traveling to public lands and waters for recreation (Outdoor Foundation, 2018). This nationwide trend demands effective management of visitor access and use to ensure benefits for present and future generations.

The need to understand visitors and their experiences, as well as preferences for future opportunities, is further underscored by widespread societal changes that are shaping how people engage with nature and wildlife (Kellert et al., 2017; Manfredo et al., 2018). Researchers and land management professionals alike recognize the need to connect the next generation to nature and wildlife to enhance mental and physical well-being and build a broader conservation constituency (Charles & Louv, 2009; Larson, Green, & Cordell, 2011).

The National Wildlife Refuge Visitor Survey is a Refuge System-wide effort to monitor visitor characteristics, experience, and satisfaction with refuge experiences, as well as visitor economic contributions to local communities. The survey is conducted every five years on a rotating basis on wildlife refuges that have at least 50,000 visits per year. This effort provides refuge professionals with reliable baseline information and trend data that can be used to plan, design, and deliver quality visitor experiences, communicate the value of wildlife refuges to different audiences, and set future priorities. The National Wildlife Refuge Visitor Survey is a collaboration between the U.S. Fish & Wildlife Service (Service), The Ohio State University (OSU), and American Conservation Experience (ACE).

This report summarizes visitors and their experiences at Tennessee National Wildlife Refuge, referred to as “this wildlife refuge” or “refuge” throughout this report. Percentages noted throughout the report were rounded



*Fig. 1: Priority recreational uses of National Wildlife Refuges.*

to the nearest whole number and, when summarized per survey question, may not equal 100%. Additionally, most figures do not display a percentage for any category containing less than 5% of visitors. See Appendix A for the

survey methodology and limitations of findings. See Appendix B and C for visitor responses to specific survey questions for this wildlife refuge.



*2018 National Visitor Survey interns in action at wildlife refuges across the United States. Photo credit: U.S. Fish & Wildlife Service.*



# Surveying Visitors at This Wildlife Refuge

## REFUGE DESCRIPTION

Tennessee National Wildlife Refuge is located in northwestern Tennessee on the southern end of Kentucky Lake. The refuge was established in 1945 for the protection of migratory birds and its 51,000 acres are split into three units - Busseltown, Duck River Bottoms, and Big Sandy - that are spread along 65 miles of the Tennessee River as it becomes Kentucky Lake. The habitats within this wildlife refuge include open water, agricultural crops, vegetated wetlands, mudflats, shrub/scrub areas, and forest lands. These habitats, particularly the agricultural fields and wetlands, provide a winter home to large numbers of waterfowl. The refuge provides habitat for a wide diversity of other birds: 75% of all the bird species present in Tennessee have been observed within the refuge boundaries. In addition, the refuge is home to many mammals, fish, and reptiles. Whitetail deer and other small mammals such as raccoons and rabbits are common.

Tennessee National Wildlife Refuge attracts over 410,000 visitors annually (U.S. Fish and Wildlife Service, 2018, written comm.). Visitors have many recreational opportunities available to them. Multiple boat launches provide



*A snowy day at Tennessee National Wildlife Refuge. Photo credit: Kylie Campbell.*

opportunities for motorized and non-motorized boating. Fishing as well as hunting for deer, turkey, and other small game, are also allowed on the refuge. Visitors can observe wildlife and take photos from one of the hiking trails or observation towers. The refuge has a large visitor center that offers interpretive exhibits and programs.

## SAMPLING

Refuge professionals at this wildlife refuge identified two separate 14-day sampling periods and one or more sampling locations that best reflected the primary uses of the refuge as well as the diversity of activities that occur (Fig. 2). For more details on methodology for the National Wildlife Refuge Visitor Survey, see Appendix A.

- During the two sampling periods, a total of 380 visitors agreed to participate in the survey by providing their names and addresses.
- In all, 166 visitors completed the survey online (43%) or by mail (57%) after their refuge visit, resulting in a 46% response rate.
- Results for this wildlife refuge have a  $\pm 6\%$  margin of error at the 95% confidence level. For more details on limitations of results and survey methodology, see Appendix A.

## Tennessee National Wildlife Refuge

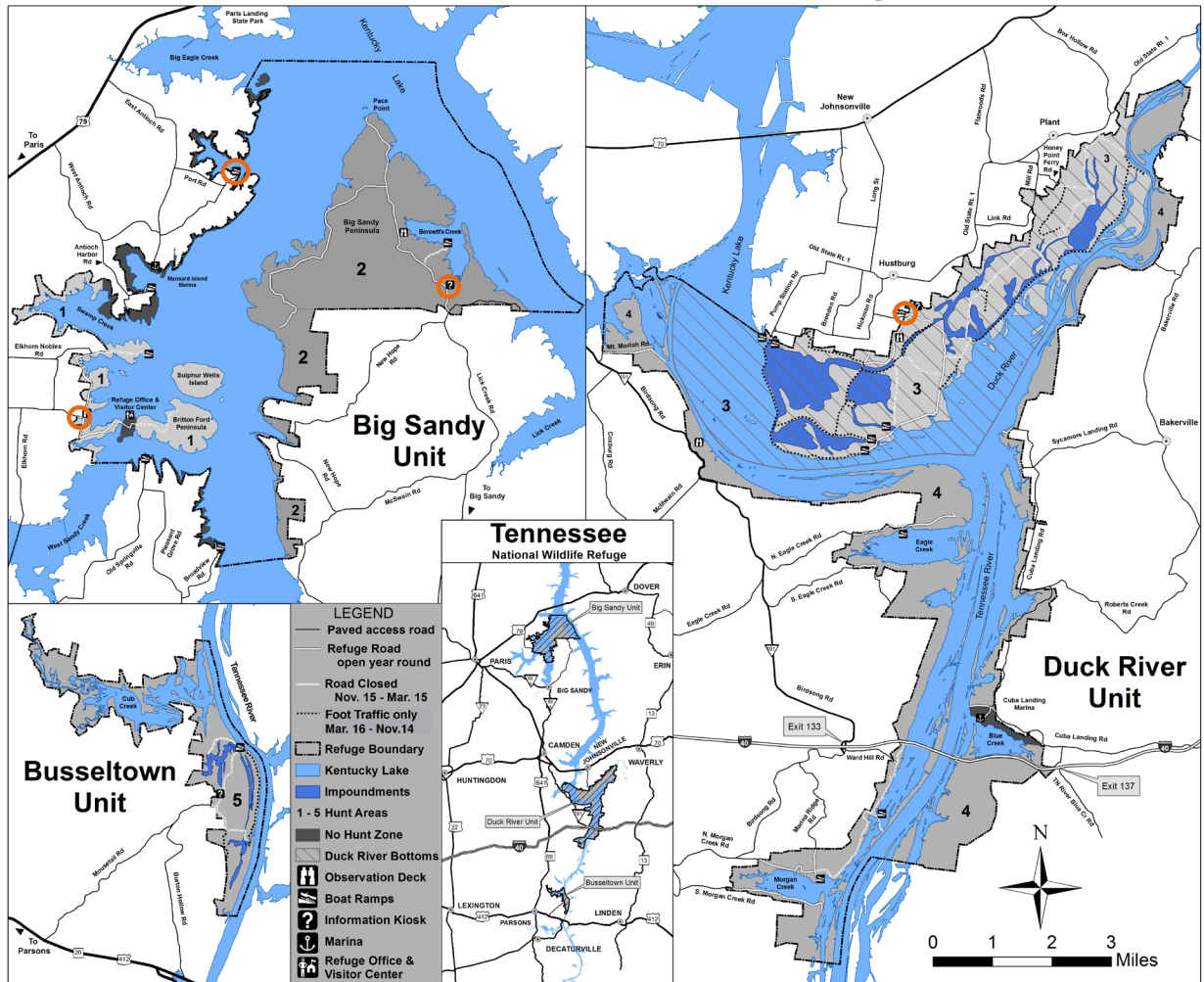


Fig. 2: Map of Tennessee National Wildlife Refuge. Visitors were contacted at the circled locations from 4/19/2018-4/28/2018 and 1/10/2018-1/21/2018.



# Visitor Characteristics

An important first step in managing visitor experiences is to understand the characteristics of those who currently visit wildlife refuges. Refuge professionals can compare visitor demographics to the demographic composition of nearby communities or the nation to inform engagement efforts with new audiences. Useful tools for these comparisons include Headwaters Economics' Economic Profile System and their Populations at Risk (<https://headwaterseconomics.org>) or U.S. Census Bureau products ([www.census.gov](http://www.census.gov); [www.socialexplorer.com](http://www.socialexplorer.com)).

## AGE & GENDER

- 28% of visitors were female with an average age of 60 years (Fig. 3).
- 72% were male with an average age of 58 years.

## EDUCATION

- 27% of visitors had a high school degree or less.
- 54% had at least some college.
- 19% had an advanced degree.

## RACE & ETHNICITY

Most prevalent race or ethnicity (Fig. 4):

- White (98%).

## INCOME

- Visitors had a mean income range of \$50,000-\$74,999 (Fig. 5).

## OTHER TRIP CHARACTERISTICS

- Average group size of 3 people.
- 26% visited the refuge alone.
- 58% visited with at least one other adult.
- 16% visited with a combination of at least 1 adult and 1 child.

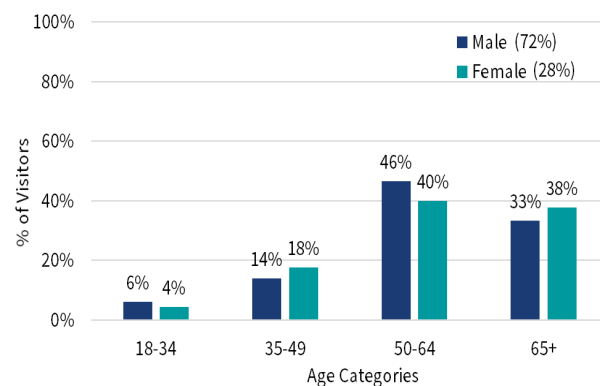


Fig. 3: Distribution of visitors to this refuge by gender and age group.

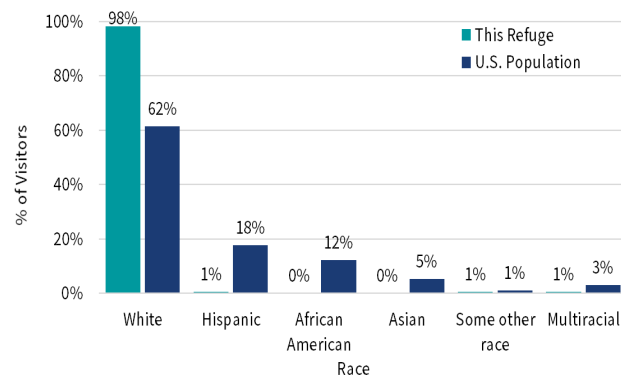


Fig. 4: Race and ethnicity of visitors to this refuge compared to the national average.

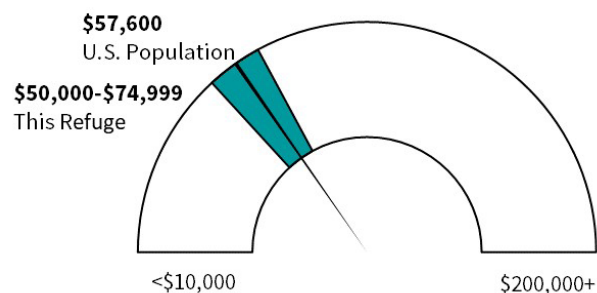


Fig. 5: Mean income range of visitors to this refuge compared to the national median income.

# Trip Characteristics

Understanding the travel patterns of visitors and why they choose to visit wildlife refuges is important for effective visitor use management. Comparisons of responses from local visitors (those living  $\leq 50$  miles from the refuge) and nonlocal visitors (those living  $> 50$  miles from the refuge) can inform communication efforts with current visitors and those who have yet to visit. Understanding seasonality helps refuge professionals better understand visitor use patterns and gauge supply and demand.

## LOCAL VISITORS

Highlights of trip characteristics for local visitors to this wildlife refuge (69%) include:

- For locals, this refuge was the primary reason for their trip (83%) (Fig. 6).
- Local visitors traveled an average of 20 minutes to arrive at this refuge (Fig. 7).

## NONLOCAL VISITORS

Highlights of trip characteristics for nonlocal visitors to this wildlife refuge (31%) include:

- For nonlocals, this refuge was the primary reason for their trip (79%) (Fig. 6).
- Nonlocal visitors traveled an average of 3 hours to arrive at this refuge (Fig. 8).
- Of the 100% of visitors who lived in the U.S., nonlocal visitors were most often from Tennessee (81%) and Kentucky (6%).

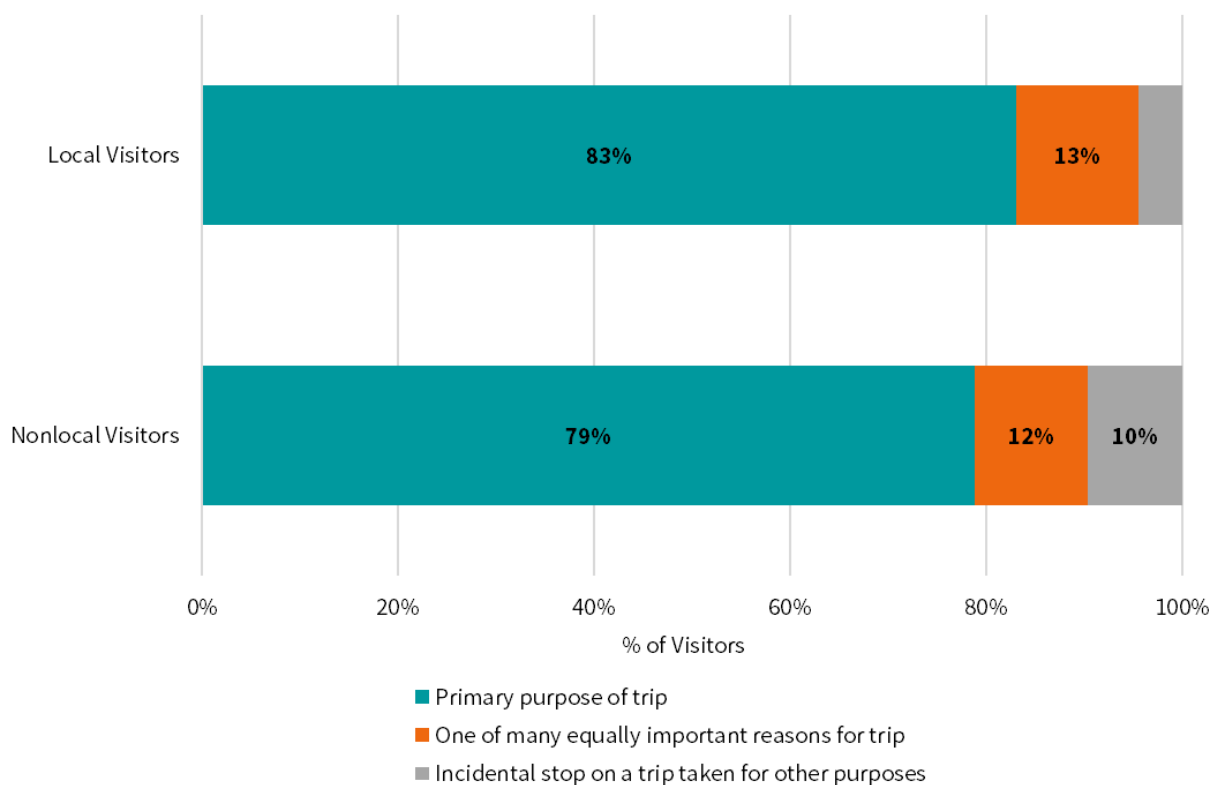
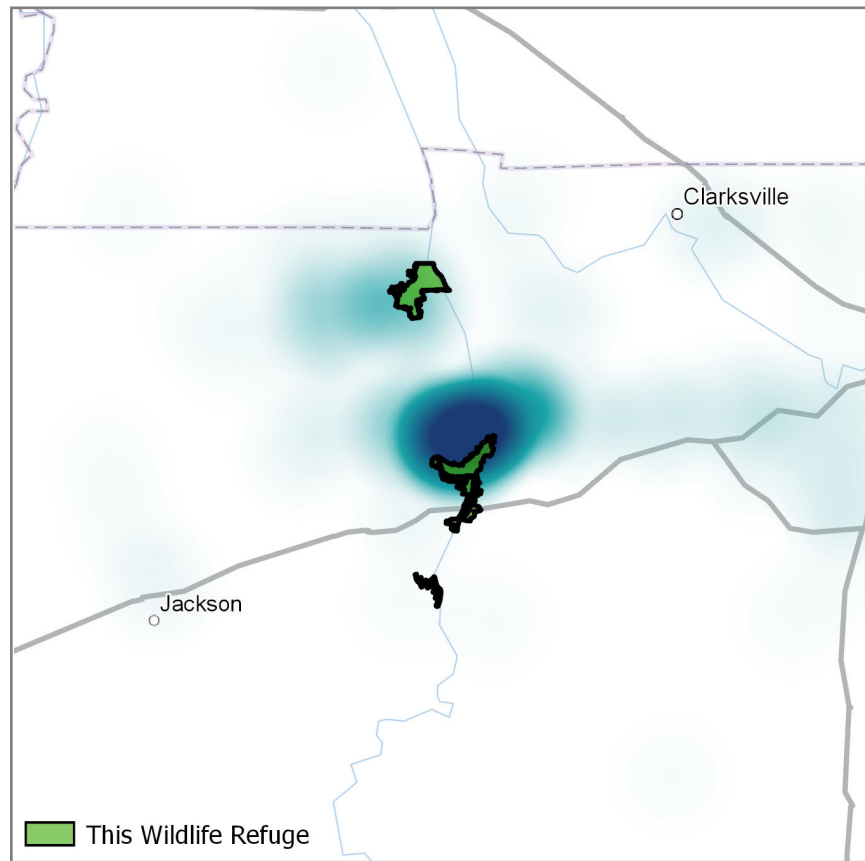
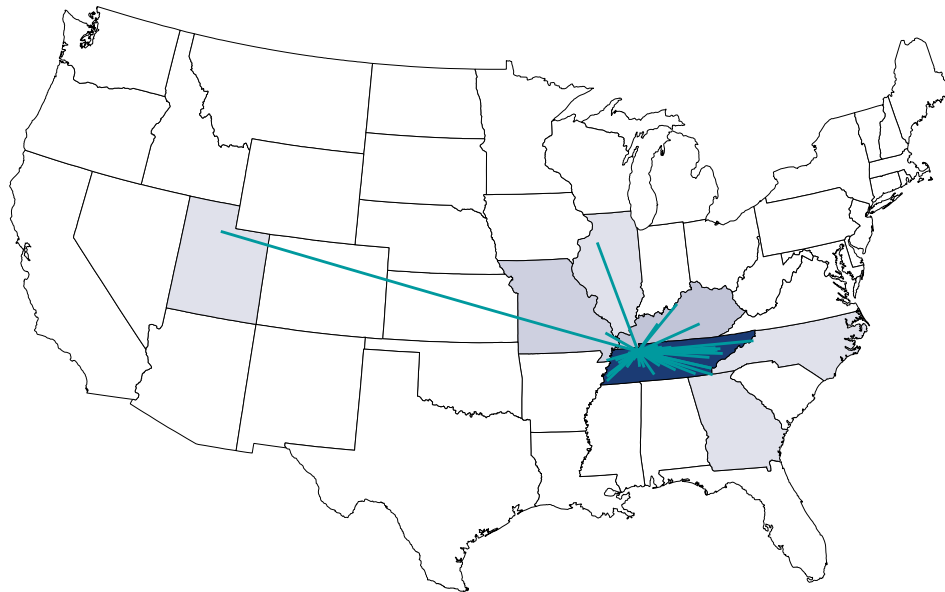


Fig. 6: Purpose of most recent refuge visit for local (living  $\leq 50$  miles from the refuge) and nonlocal (living  $> 50$  miles from the refuge) visitors.



*Fig. 7: Map showing residence of local visitors to this refuge. Darker shading represents relatively higher visitation from that area.*



*Fig. 8: Map showing residence of visitors to this refuge by zip code, with each line representing visitation from a different zip code. The convergence point of the lines is the geographical center of the refuge. Darker shading of the states represents higher visitation from that state.*

## OTHER TRIP CHARACTERISTICS

Other trip characteristics include:

- To get to this wildlife refuge, visitors primarily traveled by private vehicle without a trailer (80%) and by private vehicle with a trailer (22%) (Fig. 9).
- Once on the refuge, visitors primarily traveled by private vehicle without a trailer (53%) and by foot (14%) (Fig. 9).
- Visits occurred during winter (79%), spring (69%), summer (48%), and fall (62%).
- 86% of visitors made a single-day trip to this refuge, spending an average of 3 hours, while 14% of visitors were on a multi-day trip to this wildlife refuge that averaged 3 days.

During the 12 months prior to completing the survey, visitors also made multiple trips to this wildlife refuge, other wildlife refuges, and other public lands:

- 84% were repeat visitors to this wildlife refuge, visiting an average of 20 times.
- 54% visited other national wildlife refuges, averaging 3 visits.
- 64% visited other public lands, averaging 8 visits.

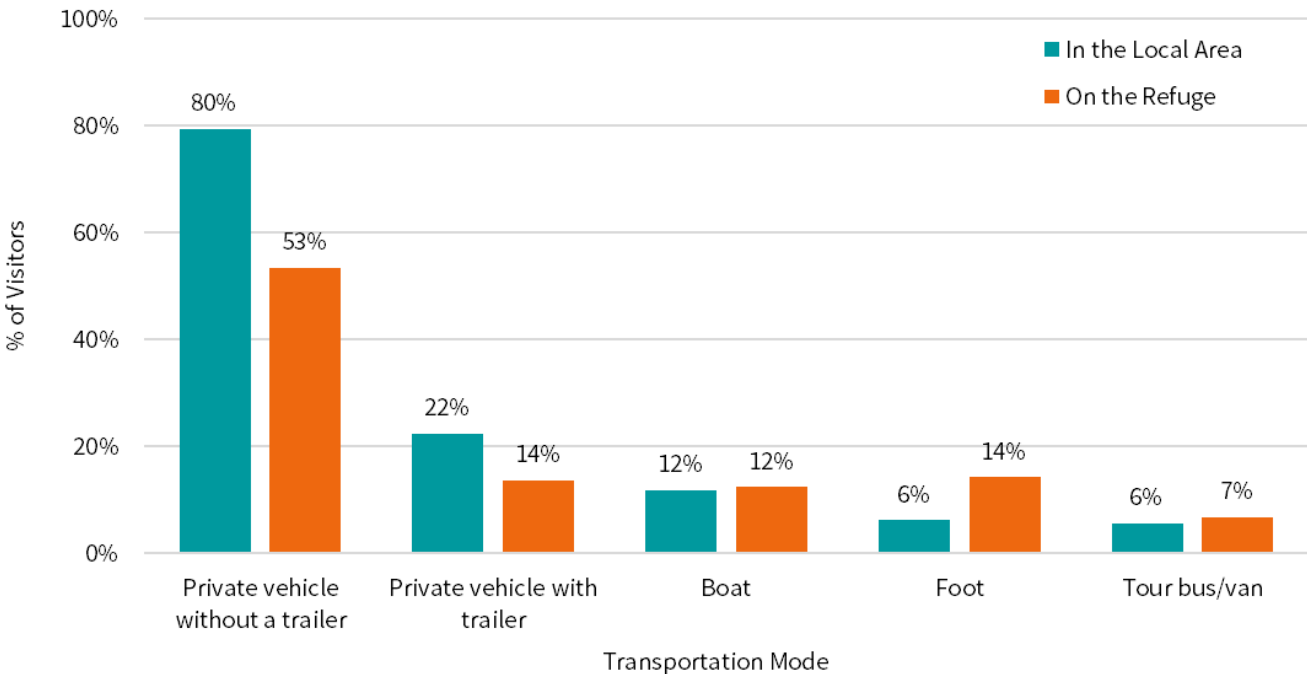


Fig. 9: Modes of transportation used by visitors to get from the local area to this refuge and within the boundaries of this refuge.

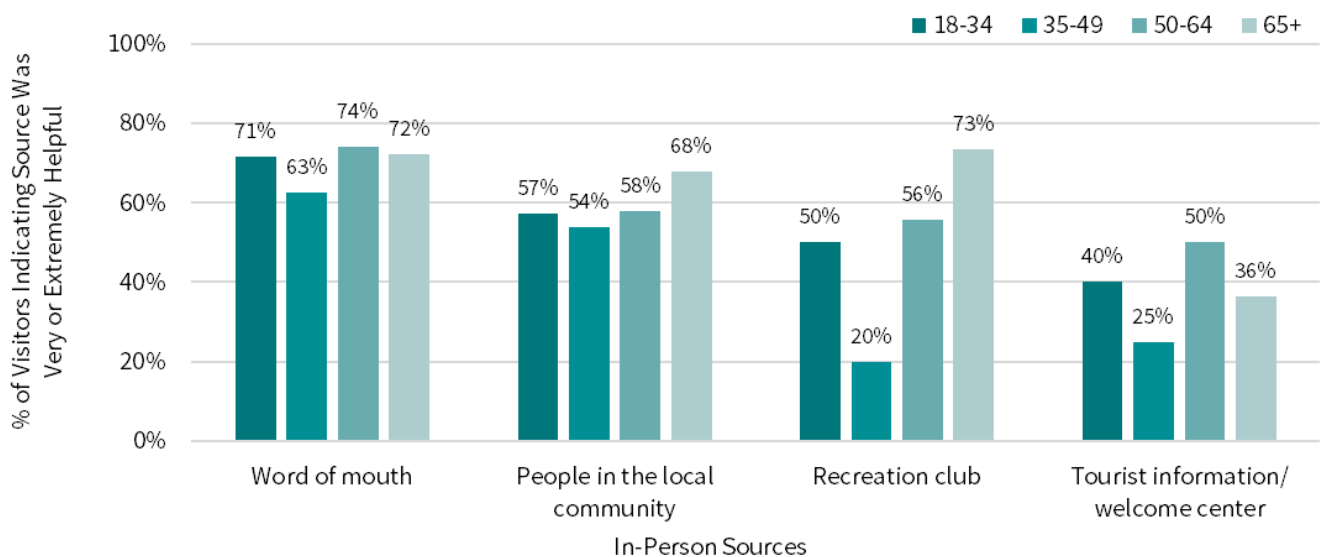


## Information Sources Used for Trip Planning

Knowing more about which information sources visitors use (or do not use) to plan their trips can improve communication strategies and facilitate positive experiences on refuges. The Refuge System's success in reaching new and diverse audiences as well as current visitors also depends on its ability to keep pace with communication trends (U.S. Fish & Wildlife Service, 2016a).

Visitors to this wildlife refuge found a variety of in-person, print/internet, and refuge-specific information sources helpful when planning their trips. Details for information sources identified as very or extremely helpful include:

- In-person sources that were most helpful to visitors regardless of age included word of mouth and people in the local community.
- Print and internet sources that were most helpful to visitors regardless of age included web-based map and printed map/atlas.
- Refuge-specific sources that were most helpful to visitors regardless of age included refuge employees/volunteers and refuge printed information.
- Use of information sources varied by age groups (see Figs. 10-12 for details).



*Fig. 10: Percent of visitors by age group who found in-person information sources very or extremely helpful in planning their trip.*

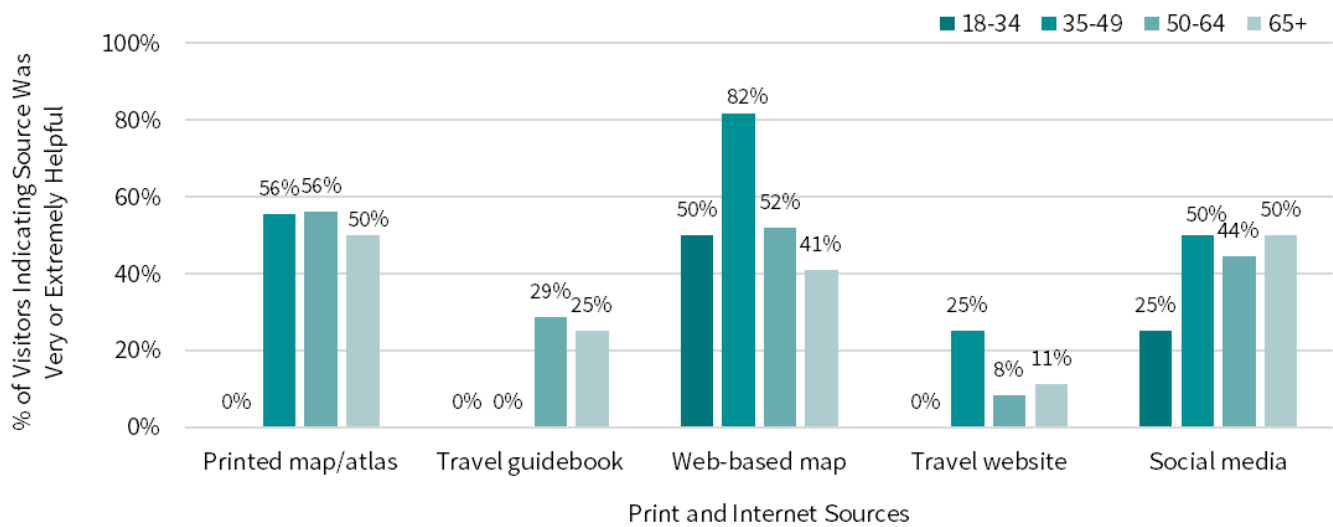


Fig. 11: Percent of visitors by age group who found print and internet information sources very or extremely helpful in planning their trip.

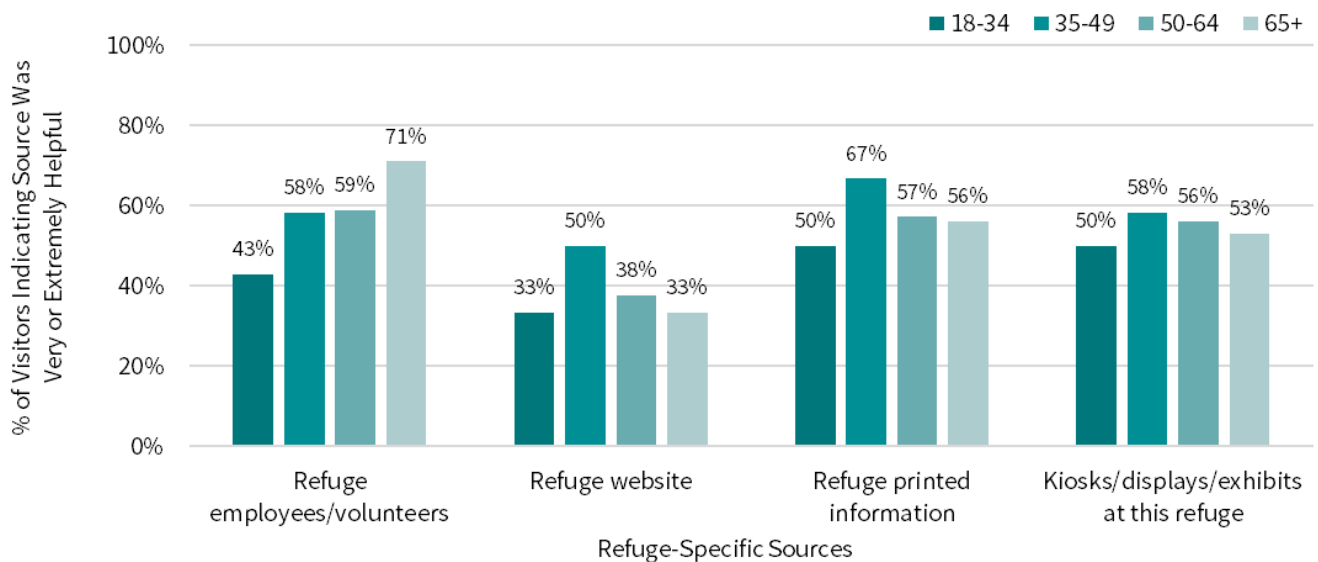


Fig. 12: Percent of visitors by age group who found refuge-specific information sources very or extremely helpful in planning their trip.

## Use of Social Media

Around 70% of Americans use social media to connect with one another, engage with news content, share information, and entertain themselves (Smith & Anderson, 2018). Social media posts can act as a virtual “word of mouth” method for increasing awareness about the refuge to the visitor’s network and beyond. A social media presence can further generate awareness of the refuge and its resources among audiences that do not use or did not otherwise learn about the refuge through traditional advertising outlets.

Social media was used by 47% of visitors to share their experience on this refuge with others. Use of specific social media platforms varied by age group (Fig. 13):

- Visitors 18-34 years old preferred to use Facebook (50%), Instagram (25%), and Snapchat (13%).
- Visitors 35-49 years old preferred to use Facebook (59%) and Instagram (14%).
- Visitors 50-64 years old preferred to use Facebook (42%) and Instagram (11%).
- Visitors 65 or older preferred to use Facebook (30%).

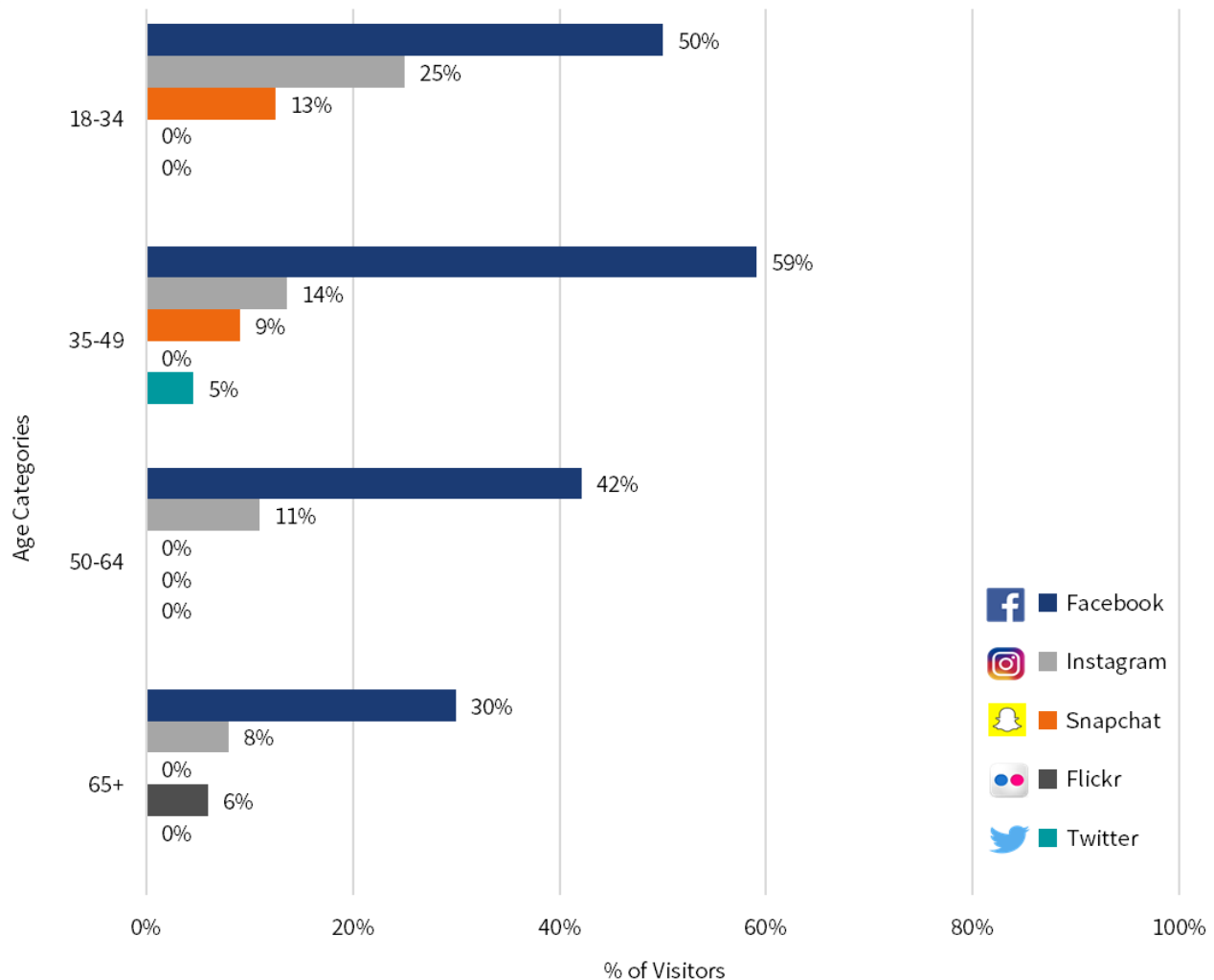


Fig. 13: Percent of visitors by age group who used various social media platforms to share their experience on this refuge with others.

## Participation in Recreational Activities

Some research shows that rates of participation in outdoor recreation activities have increased (Outdoor Foundation, 2018), while other studies have indicated declines in participation in heritage activities such as hunting (U.S. Fish & Wildlife Service, 2016a). In light of these trends it is important to understand recreation participation on refuges to create quality visitor experiences and foster personal and emotional connections to the refuge and its resources (U.S. Fish & Wildlife Service, 2011). Understanding what people do while visiting refuges can also aid in developing programs that facilitate meaningful interactions between visitors and refuge professionals. Finally, such information can help to ensure impacts to resources and conflicts among visitor groups are minimized.

Participation in recreational activities at this wildlife refuge can be characterized as follows:

- The top three activities in which visitors participated during the past 12 months were wildlife observation (76%), bird watching (60%), and fishing (36%) (Fig. 14).
- The top three activities noted as their primary activity on the day visitors were contacted to participate in the survey were bird watching (29%), wildlife observation (28%), and fishing (18%) (Fig. 14).
- Approximately 13% of visitors went to the visitor center, and they most often viewed the exhibits (45%), asked for information (45%), and watched a nature talk, video, or presentation (32%) (Fig. 15).



*Photo credit: U.S. Fish & Wildlife Service.*



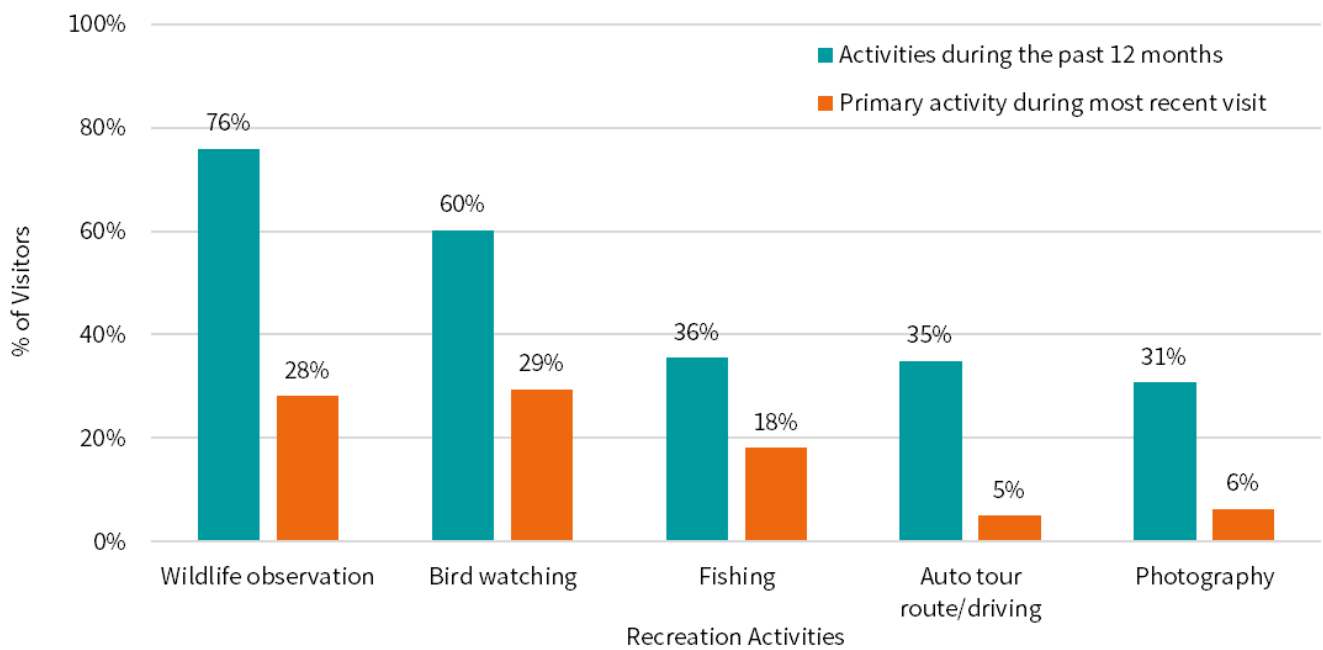


Fig. 14: Recreational activities visitors participated in during the past 12 months and their primary activity during their most recent visit to this refuge.

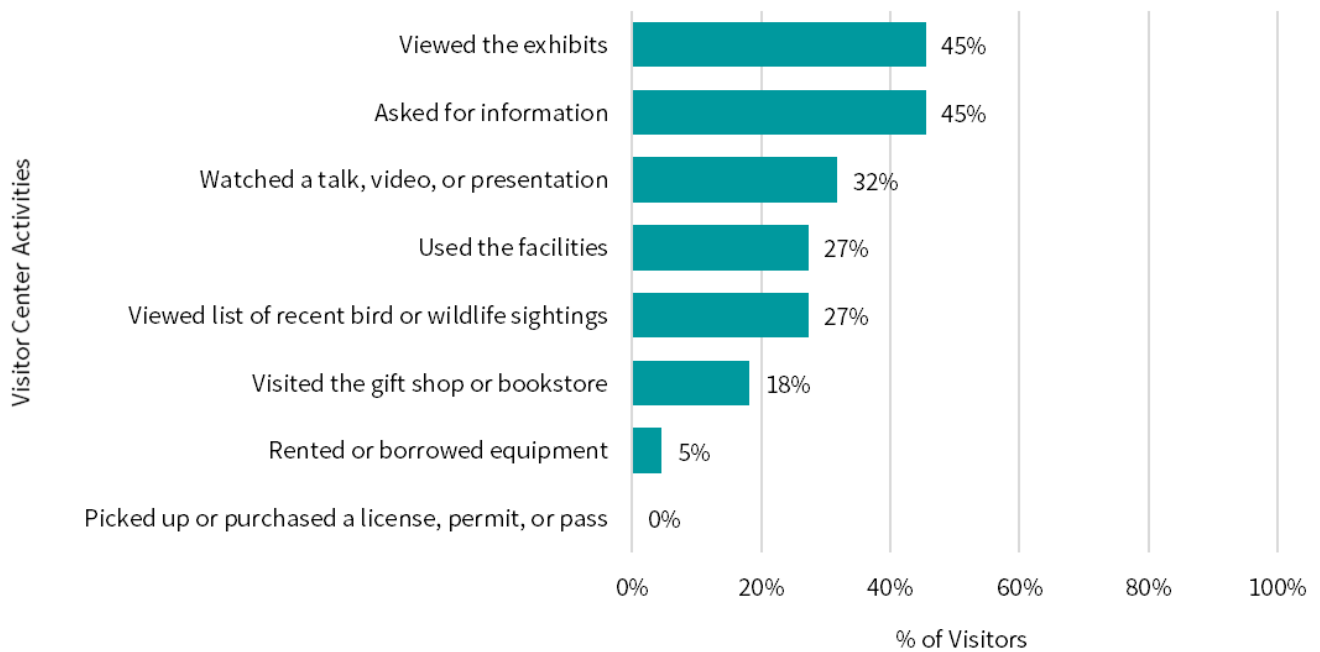


Fig. 15: Reasons visitors used the visitor center during their most recent visit to this refuge.

## Comfort in Nature/Feeling Safe & Welcome

While many people are repeat visitors to refuges, each year thousands of people experience these lands and waters for the first time. One barrier for some visitors, particularly those living in urban areas or with little past exposure to nature-based recreation, is the perception that being in nature is dangerous or unsafe (U.S. Fish & Wildlife Service, 2014). There may also be negative stigmas associated with outdoor spaces that arise from social contexts (for example, people associating being outdoors with poverty or ‘dirty’ contexts) and historical contexts in which being ‘in the woods’ was dangerous and unsafe (Sexton, Ross-Winslow, Pradines, & Dietsch, 2015).

While ensuring that visitors feel safe and welcome is a foundational standard of the Urban Wildlife Conservation Program (<https://www.fws.gov/urban>), these basic needs apply across the Refuge System.

Before visitors can appreciate the wonders of nature, their basic need for safety and belonging must be met. Thus, an understanding of how visitors perceive safety, belonging, accessibility, and comfort in nature is critical to ensure real threats to safety are minimized, and that individuals from all demographic groups feel as welcome and comfortable in nature as possible.

Visitors to this wildlife refuge shared the following about safety, belonging, and their comfort while being in nature:

- 73% of visitors felt welcome during their refuge visit (Fig. 16).
- 94% of visitors felt safe during their refuge visit (Fig. 16).
- 98% of visitors reported that they feel comfortable being in nature, but 8% do not like being in nature alone (Fig. 17).

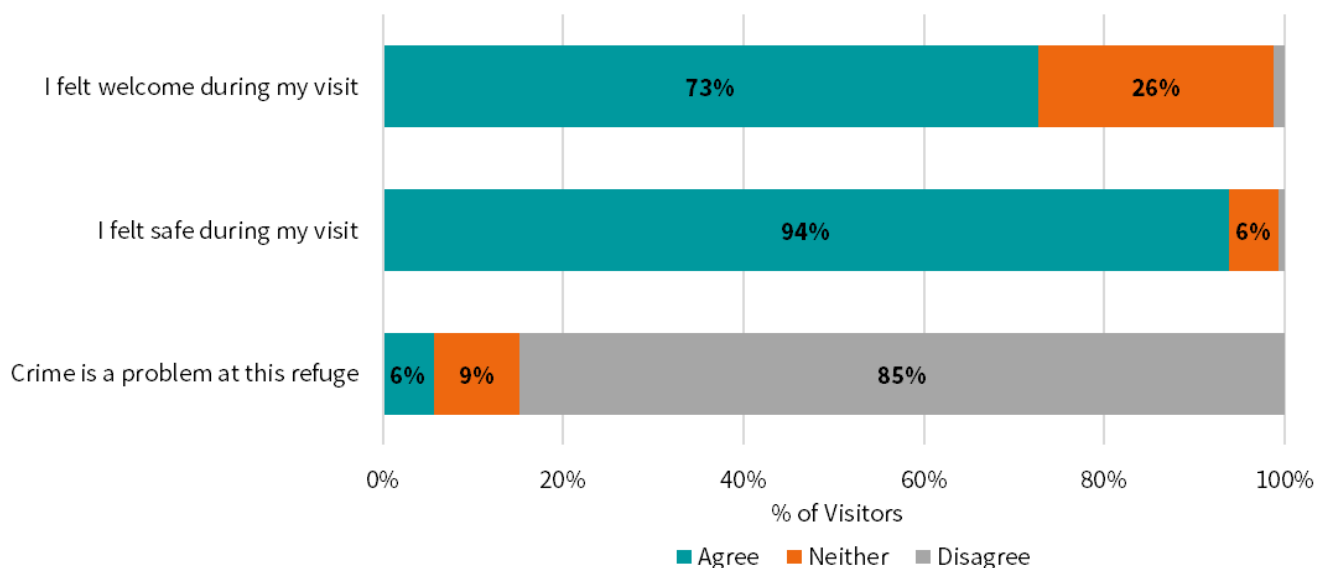


Fig. 16: Visitors' perceptions of safety and feeling welcome at this refuge during their visit.

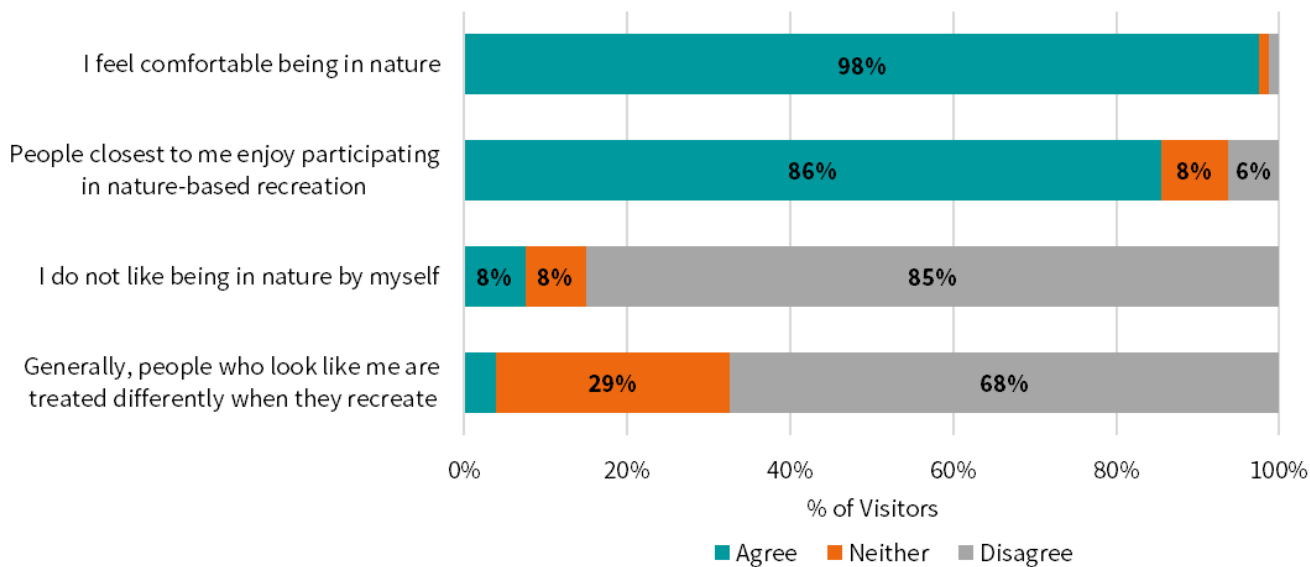


Fig. 17: Visitors’ comfort with being in nature.



Photo credit: U.S. Fish & Wildlife Service.

# Satisfaction with Refuge Experiences

## OVERALL SATISFACTION

Refuge professionals strive to maintain a high level of customer satisfaction by operating visitor centers; designing, installing, and maintaining accessible trails; constructing viewing blinds; and much more to facilitate quality recreational experiences. A solid understanding of visitors' perceptions of their experiences provides a framework for monitoring and responding to trends across time. Overall satisfaction with this wildlife refuge is summarized as follows:

- 66% of visitors were very or extremely satisfied with the overall experience at this wildlife refuge (Fig. 18).
- 63% of visitors were very or extremely satisfied with this wildlife refuge's job of conserving fish, wildlife, and their habitats (Fig. 18).

## CUSTOMER SERVICE

Refuge professionals regularly interact with visitors and maintain facilities to ensure high quality experiences. From greeting visitors, to keeping bathrooms clean, to clearly stating regulations, providing quality customer service is important to ensuring overall satisfaction.

Satisfaction with customer service was highest among visitors for the following (Fig. 19):

- refuge hours/days of operation (73%),
- signage stating rules and regulations (67%),
- visitor center (59%), and
- courteous and welcoming employees/volunteers (59%).

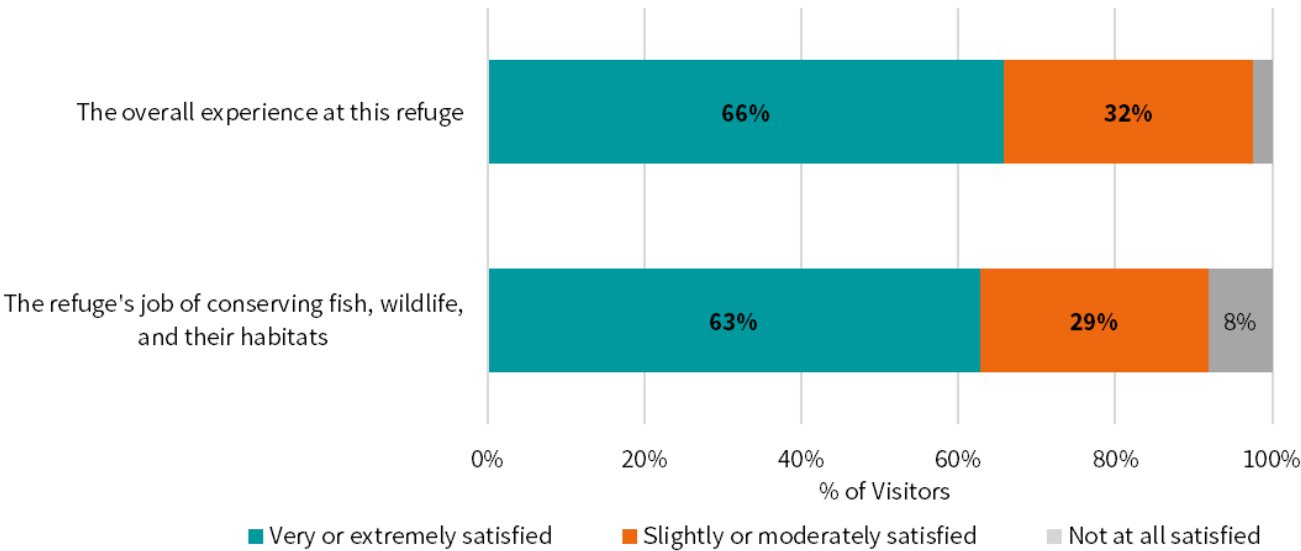


Fig. 18: Visitors' satisfaction with their experience at this refuge and with this refuge's job of conserving fish, wildlife, and habitats.



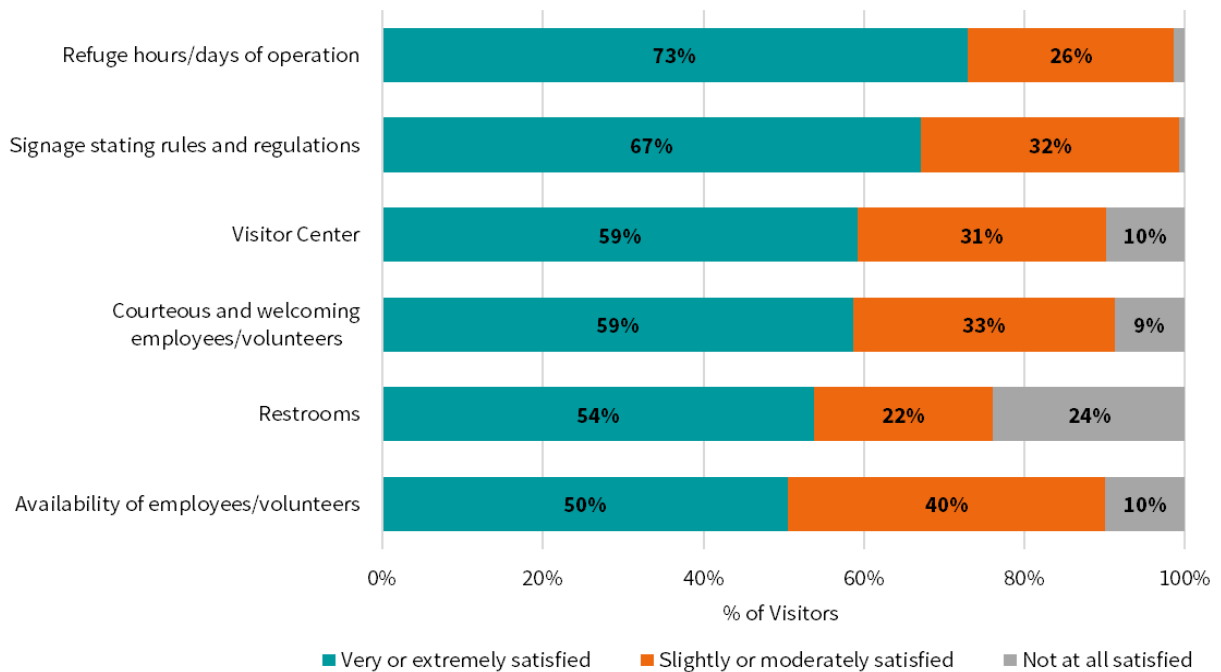


Fig. 19: Visitors' satisfaction with customer service and amenities at this refuge.

## RECREATIONAL OPPORTUNITIES

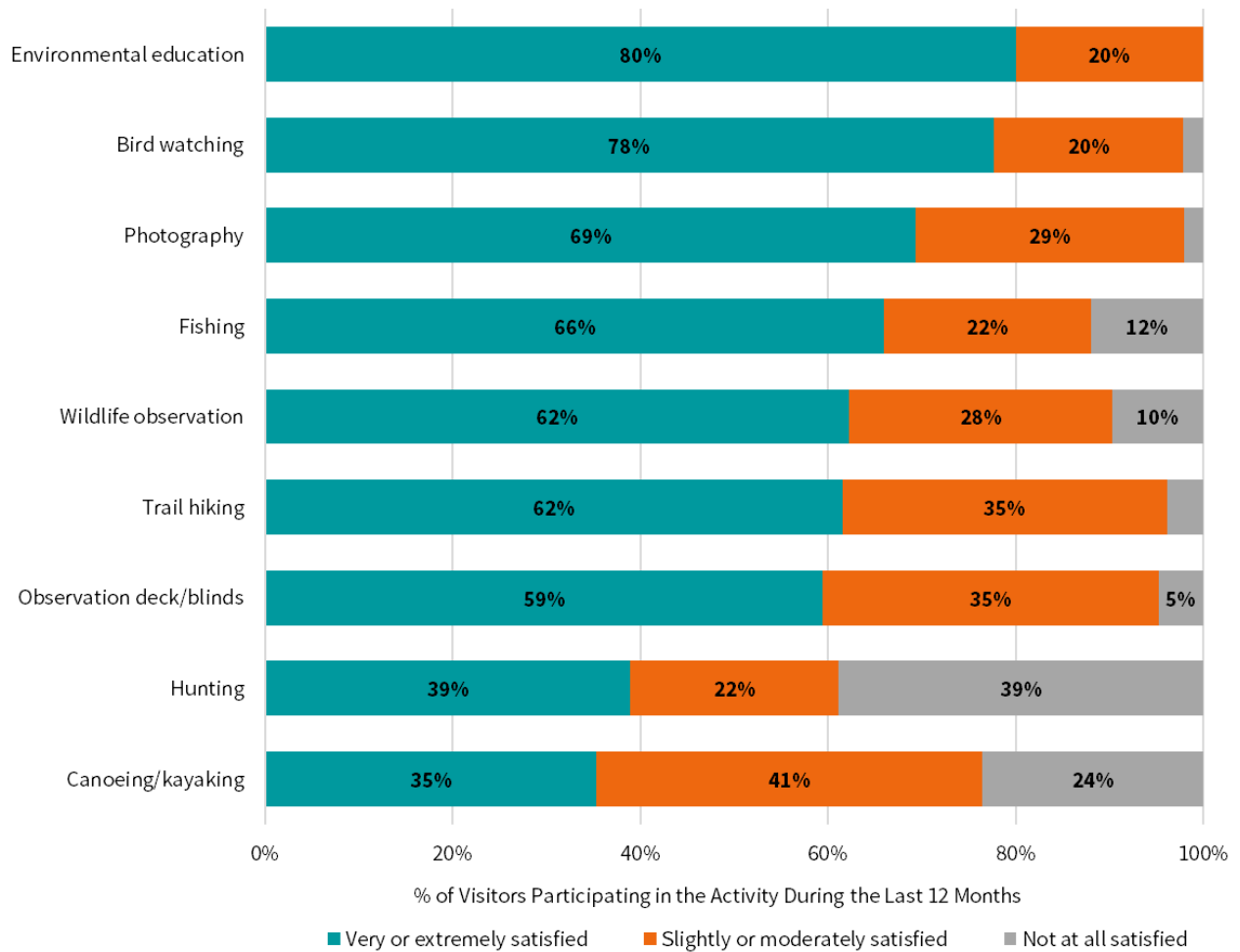
Outdoor recreation on wildlife refuges is a fundamental part of a visit. As American's values toward wildlife and their relationship with nature continue to shift (Kellert et al., 2017; Manfredo et al., 2018), public desires for recreational experiences on public lands are also likely to shift. In addition, researchers and land management professionals recognize the need to connect the next generation to nature and wildlife (Charles & Louv, 2009; Larson et al., 2011). A solid understanding of visitors' perceptions of their experiences provides a

framework for monitoring and responding to these recreation trends across time.

Satisfaction with recreation opportunities among visitors who had participated in the activity during the last 12 months was highest for the following (Fig. 20):

- environmental education (80%),
- bird watching (78%), and
- photography (69%).

*"The staff at the visitor center are extremely friendly, accommodating, helpful, and informative. I am there nearly every day during the winter months and continue to go there every day because of the staff. The volunteers who work there are also friendly and informative, and do everything they can to make my visit enjoyable."*  
 – Visitor to Tennessee National Wildlife Refuge



*Fig. 20: Visitors' satisfaction with recreational opportunities at this refuge. Only visitors (10 or more) who participated in activities related to each opportunity at this refuge during the last 12 months were included.*

## TRANSPORTATION SAFETY & ACCESS

Transportation networks connect local communities to refuges and are critical to visitors' experiences there. Visitors access refuges by plane, car, train, boat, bike, and foot. The Service works to ensure that the roads, trails, and parking areas are welcoming and safe for visitors of all abilities. A goal of the Service's National Long-Range Transportation Plan is to enhance experiences on wildlife refuges and fish hatcheries through improvement to the transportation network (U.S. Fish & Wildlife Service, 2016b). How visitors perceive different transportation features can be used to prioritize access and transportation improvements.

Visitors were satisfied with transportation safety and access at this wildlife refuge as follows (Fig. 21):

- Getting to this wildlife refuge, visitors were most satisfied with safety of refuge road entrances and exits (75%).
- Getting around this wildlife refuge, visitors were most satisfied with safety of driving conditions on refuge roads (67%), condition of parking areas (61%), and condition of bridges on roadways (60%).
- Accessing recreation on this wildlife refuge, visitors were most satisfied with condition of trails and boardwalks (58%), and safety of roads or trails for nonmotorized use (52%).

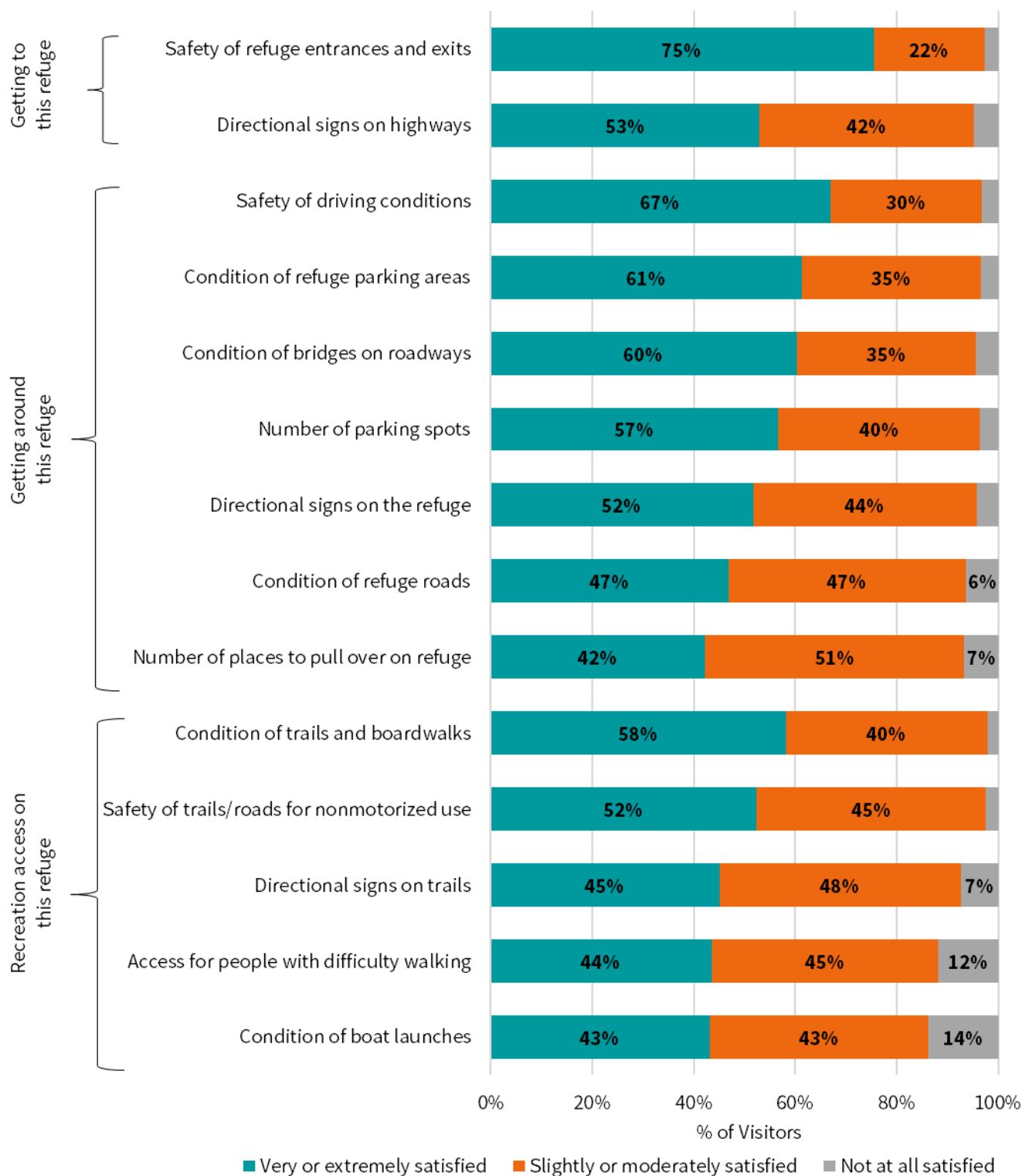


Fig. 21: Visitors' satisfaction with how the refuge is managing transportation-related features.

## Economic Benefits to Local Communities & Visitors

The value of any commodity is comprised of two elements: 1) the amount paid and 2) the additional benefit derived above and beyond what is paid. The first element equates to direct expenditures. Visitors to wildlife refuges pay for a variety of things, including nearby lodging, gas, food, and other purchases from local businesses. This spending has a significant positive contribution to local economies. The *Banking on Nature* report (Caudill & Carver, 2017) highlights how nearly 54 million visits to wildlife refuges during 2017 generated \$3.2 billion of economic output in local communities and supported over 41,000 jobs. The report further indicates that recreational spending on wildlife refuges generated \$229 million in tax revenue at the local, county, and state levels.

Determining benefits derived above and beyond what is paid is commonly estimated by “willingness to pay” for an experience. Studies show people are often willing to pay more for a recreational experience than what they actually spent (Neher, Duffield, & Patterson, 2011; Rosenberger & Loomis, 2001). For example, a visitor may have spent \$500 on lodging, food, and gasoline to make the trip possible, while also indicating that they would be willing to pay an additional \$50 to visit this wildlife refuge if total trip costs were to increase.

Results for local visitors (those living  $\leq 50$  miles from this wildlife refuge; 69%) are as follows:

- On average, local visitors accounted for 16% of expenditures.
- Top trip expenditures by locals were for retail and transportation (Fig. 22).
- The average amount paid by locals to visit this wildlife refuge was \$43 per person per day (Fig. 22).
- Local visitors were personally willing to pay an additional \$38 per day on average to visit this wildlife refuge (Fig. 23).

Results for nonlocal visitors (those living  $>50$  miles from this wildlife refuge; 31%) are as follows:

- On average, nonlocals accounted for 84% of expenditures.
- Top trip expenditures by nonlocals were for lodging and food/drink (Fig. 22).
- The average amount paid by nonlocals to visit this wildlife refuge was \$63 per person per day (Fig. 22).
- Nonlocal visitors were personally willing to pay an additional \$124 per day on average to visit this wildlife refuge (Fig. 23).
- Nonlocal visitors spent an average of 7 days in the local community during this visit.





Fig. 22: Individual daily expenditures in the local community for local, nonlocal, and all visitors. Expenditures were reported by respondents on a per group basis; the total expenditures were divided by the number of people in the group who shared trip expenditures and the number of days spent in the local community. The number of people sharing trip expenditures was often smaller than the total group size.

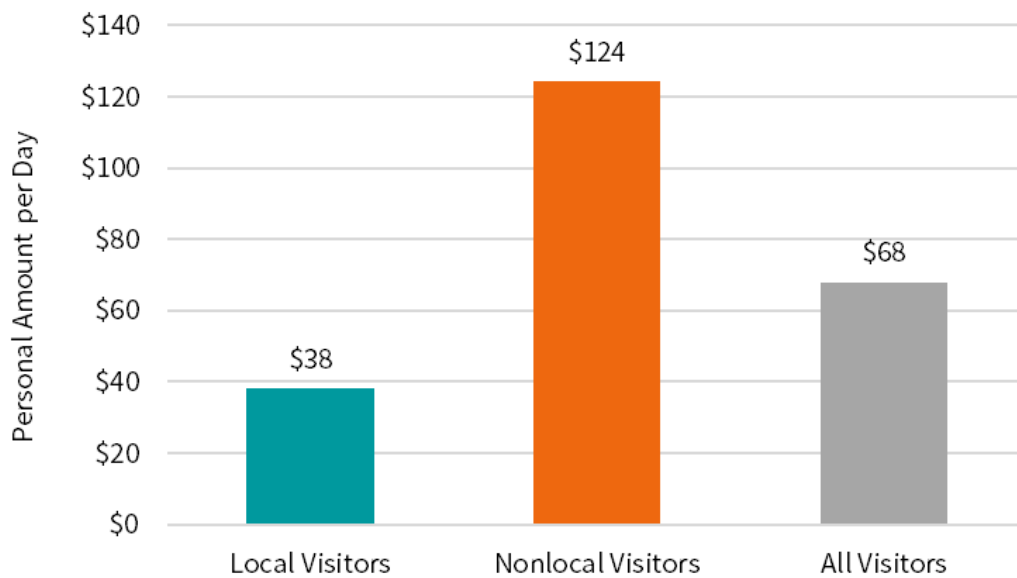


Fig. 23: Total personal willingness to pay per day above and beyond most recent trip expenses if costs were to increase for local, nonlocal, and all visitors. Due to the fixed-response question format, estimates of willingness to pay may underestimate the amount visitors would actually pay. Responses were divided by the number of days spent at the refuge.



# Encouraging Return Visits & Future Recreation Participation

Public land managers strive to maximize benefits for visitors while achieving and maintaining desired resource conditions. This complex task requires that managers accurately estimate visitor numbers, as well as where visitors go, what they do, their impacts on resources, how they perceive their experiences, and their desires for future visits. Gaining a sense of what would encourage visitors to return and how management activities affect their likelihood of returning can lead to improved visitor use and resource management (U.S. Fish & Wildlife Service, 2014).

## PROGRAMS AND OTHER OFFERINGS

Programming and other offerings that are compatible with the purpose of a refuge and the Refuge System mission can encourage people to continue visiting the refuge. Additionally, changes to regulations and access for improving resource availability may increase or decrease future participation, or have little effect at all.

In the future, changes in programming, offerings, or regulations would have an effect on visitation to this wildlife refuge as follows:

- Programs most likely to encourage visitors to return to this wildlife refuge included those focused on engaging youth (73%), engaging families and multiple generations (45%), and skill-building (37%) (Fig. 24).
- The top two factors likely to increase visitors' future participation in their primary recreation activity were more infrastructure (41%) and less regulations on hunting (20%) (Fig. 25).
- The top two factors likely to decrease visitors' future participation in their primary recreation activity were less regulations on hunting (21%) and more people participating in their primary activity (20%) (Fig. 25).

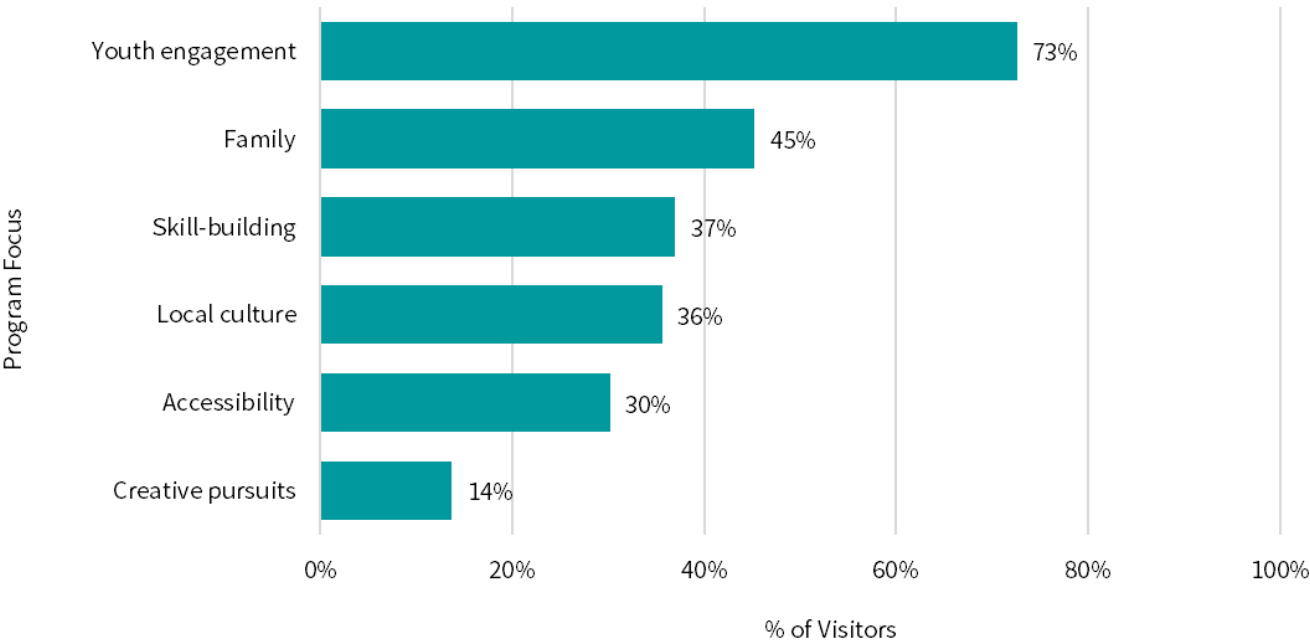


Fig. 24: Types of programs that would encourage visitors to return to this refuge.

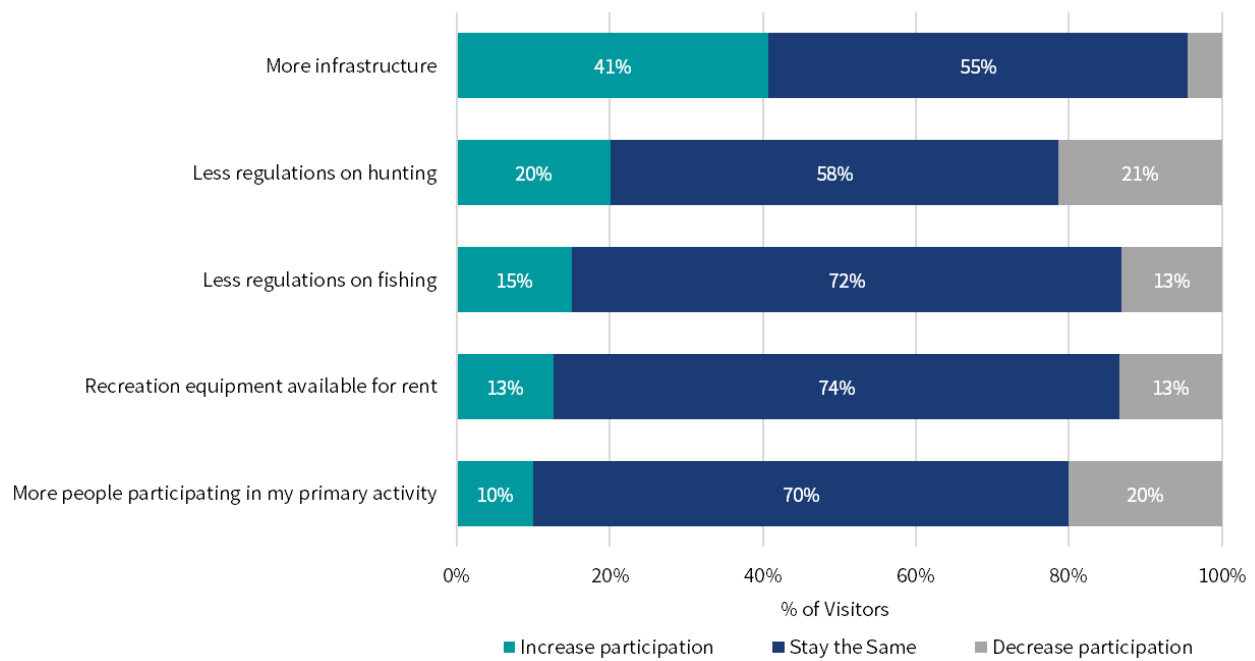


Fig. 25: Changes in visitors’ participation in their primary activity if the listed recreation factors were to change.

## ALTERNATIVE TRANSPORTATION

Understanding visitor demand for alternative transportation options is a goal of the Service’s National Long-Range Transportation Plan (U.S. Fish & Wildlife Service, 2016b). Alternative transportation options can be valuable in realizing refuge goals to conserve natural resources, reduce visitors’ carbon footprint (Volpe Center, 2010), and improve visitor experiences. Even though demand may be relatively small, any use of alternative transportation that is feasible at a wildlife refuge can help to meet goals.

The top future alternative transportation options supported by visitors at this wildlife refuge included (Fig. 26):

- bus/tram that provides a guided tour (15%),
- bus/tram that takes passengers to different points within refuge boundaries (10%), and
- pedestrian paths (8%).

## ECOSYSTEM SERVICES

Natural processes associated with wildlife refuges can provide benefits to people, including provisioning services such as food

and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and educational benefits; and supporting services such as nutrient cycling (Millennium Ecosystem Assessment, 2005). Understanding how changes in natural resources and related processes may impact future visitation and participation in certain recreation activities can improve resource and visitor management, as well as inform communication efforts with stakeholders and policy-makers (Patton, Bergstrom, Covich, & Moore, 2012).

In the future, changes to resources would affect visitation to this refuge as follows (Fig. 27):

- The top resource changes likely to increase visitors’ future participation in their primary recreation activity were a greater diversity of species (49%), an improvement in the quality of wildlife habitat other than wetlands (48%), and an improvement in the quality of wetlands (48%).
- The top resource changes likely to decrease visitors’ future participation in their primary recreation activity were less water available for recreation (41%) and fewer number of a single, preferred species (21%).

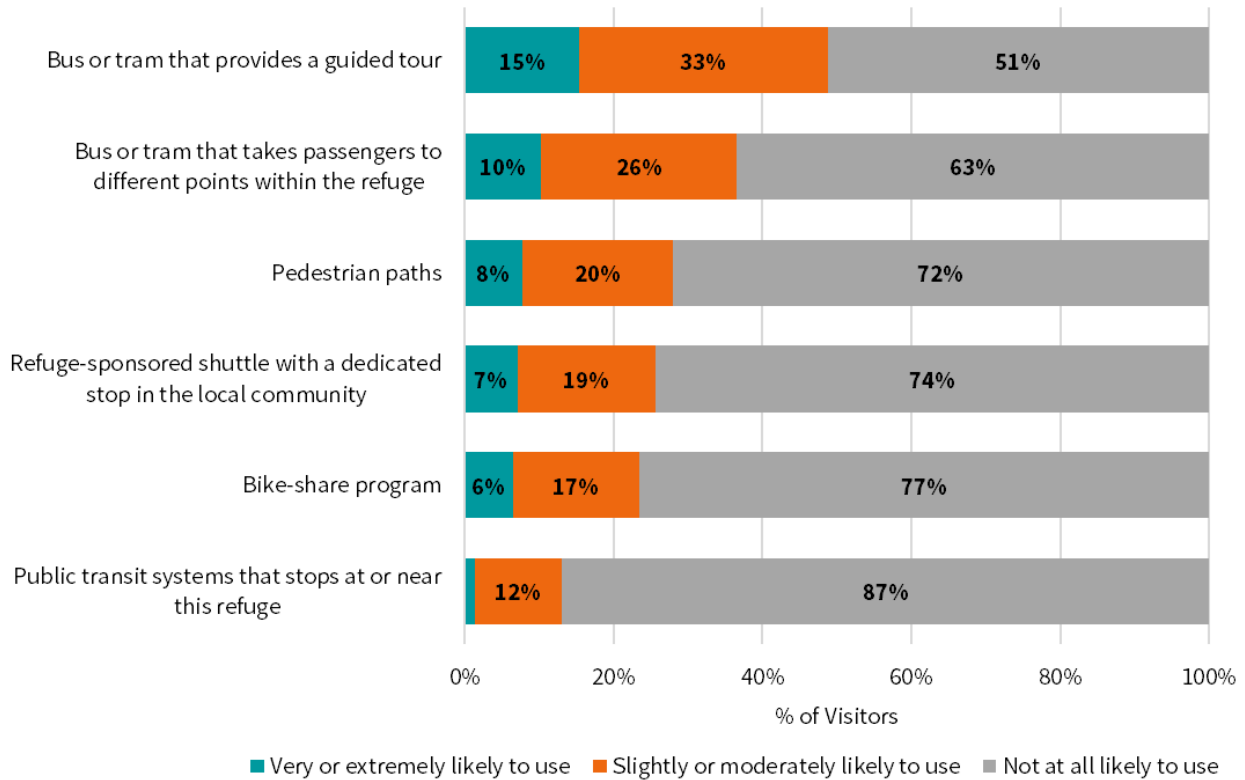


Fig. 26: Visitors' likelihood of using alternative transportation options if offered at this refuge.

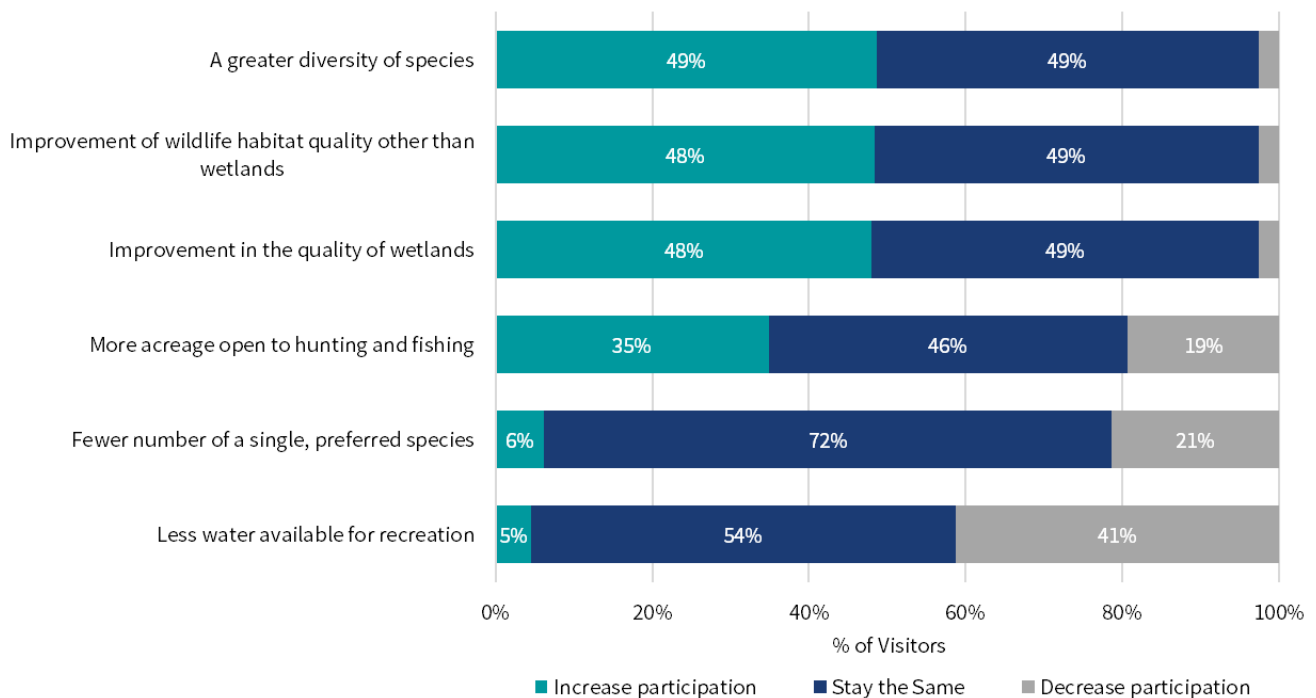


Fig. 27: Changes in visitors' participation in their primary activity if the listed resources were to change.

## Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Tennessee National Wildlife Refuge during 2018. They are intended to inform refuge planning, including the management of natural resources, recreation, and the design and delivery of programs for visitors. These results offer a baseline that can be used to monitor and evaluate efforts over time. Refuge professionals who understand

visitor demographics, trip characteristics, and desires for future conditions can make informed decisions for proactive visitor management and resource protection. Integrating this social science with biophysical science ensures that management decisions are consistent with the Refuge System mission while fostering a continued public interest in and connection with these special places we call national wildlife refuges.



*Photo credit: U.S. Fish & Wildlife Service.*



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## Appendix A: Survey Methodology

The National Wildlife Refuge Visitor Survey (NVS) team consisted of staff from The Ohio State University (OSU), U.S. Fish & Wildlife Service (Service), and American Conservation Experience (ACE) who collectively developed the following NVS methodology. Staff from OSU and the Service designed the survey instrument with multiple reviewers within the Refuge System providing feedback about content and wording. The logistical coordinator and interns from ACE conducted sampling on refuges. OSU staff coordinated survey mailings, analyzed data, and in cooperation with Service staff, designed the report template and created each refuge report.

### SAMPLING SCHEDULE

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Interns (survey recruiters) sampled on each participating refuge for two 14-day sampling periods between March 2018 and February 2019. Refuge staff identified the sampling periods and locations that best reflected the diversity of use and visitation patterns of the refuge.

The national visitor survey team developed a sampling schedule for each refuge that included eight randomly selected sampling shifts during each 14-day sampling period. Shifts were four-hour time bands stratified across mornings and afternoons/evenings. The NVS team customized the schedule as needed to accommodate the individual refuge sampling locations and specific spatial and temporal patterns of visitation. The target number of contacts was 25 adult visitors (18 years of age or older) per shift for a total of 375 participants contacted per refuge. Shifts were moved, added, or extended to address logistical limitations (for example, bad weather or low visitation).

### CONTACTING VISITORS ONSITE

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ACE interns received a multi-day training that included role-play exercises on a refuge to

simulate engagement of visitors. Once onsite, the interns contacted visitors following a protocol developed by OSU and Service staff. Interns surveyed across the entire sampling shift and only one visitor per group was asked to participate. If a visitor declined to participate, interns recorded a direct refusal. Visitors willing to participate provided their name, mailing address, language preference (English or Spanish), and answered a few initial questions about their experience that could be used for nonresponse comparisons. Willing visitors were also given a small token incentive (for example, sticker) as a thank you and reminder of their participation.

### COMPLETING A SURVEY AT HOME

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All visitors that agreed onsite to participate in the survey received a postcard mailed to their address within 10 days. The postcard thanked visitors for agreeing to participate, provided a weblink and unique password, and invited the visitor to complete the survey online. All participants then received the following sequence of correspondence by mail from OSU until a survey was returned and the address removed from the mailing list (as suggested by Dillman et al., 2014):

- 1) A packet consisting of a cover letter, survey, and postage-paid return envelope approximately seven days after the first postcard was mailed.
- 2) A reminder postcard mailed 14 days after the first packet was mailed.
- 3) A final packet consisting of a cover letter, survey, and postage-paid return envelope mailed seven days after the reminder postcard.

All printed correspondence and online material were provided in the language chosen by visitors onsite; however, visitors who went online to complete the survey were able to switch between English and Spanish. The

survey was designed to take no more than 25 minutes to complete, and the average completion time recorded by the online survey software was approximately 20 minutes.

## DATA ENTRY & ANALYSIS

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The NVS team used Qualtrics survey software to collect survey data online. OSU staff then exported the data for cleaning (for example, treatment of missing data) and analyses. The team entered data from the paper surveys into Microsoft Excel using a standardized survey codebook and data entry procedures. All data from the two sources (paper and online) were merged and analyzed using Statistical Package for the Social Sciences (SPSS, v.25) software.

## LIMITATIONS OF RESULTS

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The degree to which these results represent overall visitation at a wildlife refuge depends on the number of visitors who completed the survey (sample size), and how well the sample reflects the degree of use at the refuge (Scheaffer et al., 2011). Many respondents completing the survey will produce a smaller margin of error, leading to greater confidence in results, but only to a point. For example, a margin of error of  $\pm 5\%$  at a 95% confidence level signifies that if a reported percentage is 55%, then 95 out of 100 times that sample estimate would fall between 50% and 60% (if the same question was asked in the same way of the same sample). The margin of error for this survey was calculated with an 80/20

response distribution, meaning if respondents were given a dichotomous choice question, approximately 80% of respondents would select one choice and 20% would select the other (Salant & Dillman, 1994).

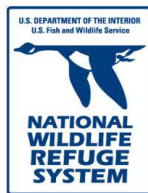
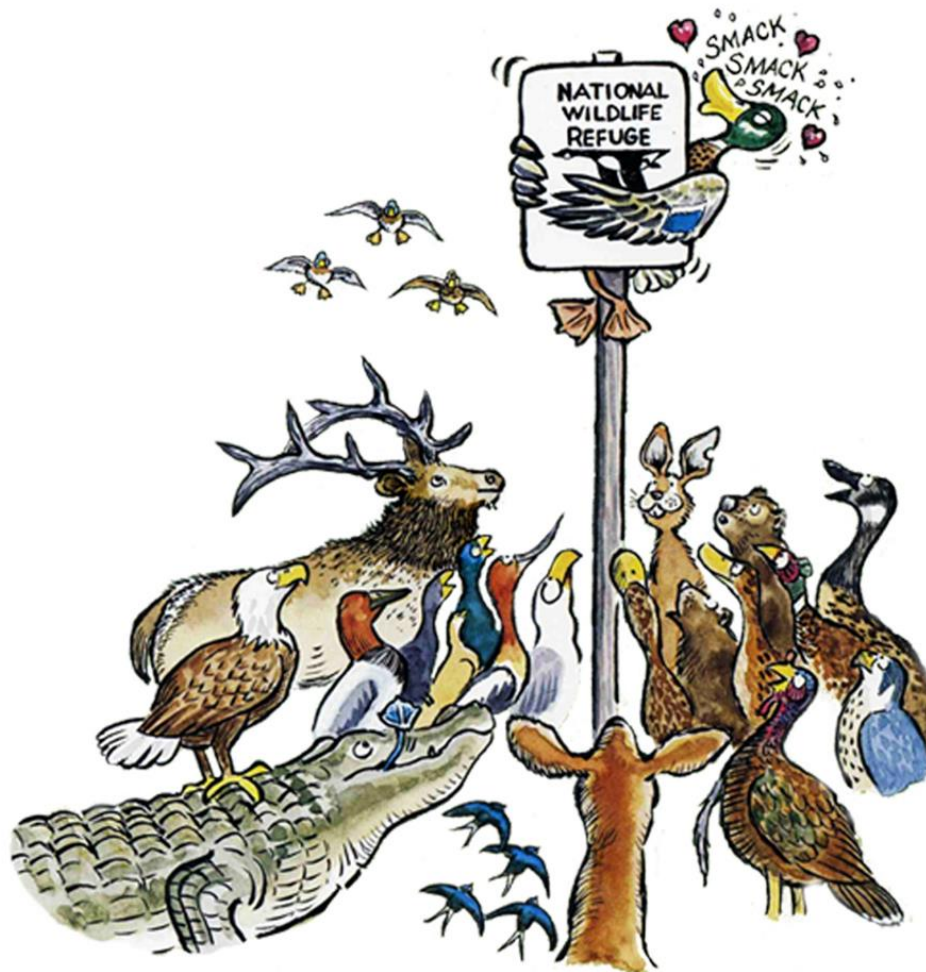
While OSU designed the standardized sampling protocol to account for spatial and temporal visitation patterns, the geography and infrastructure of wildlife refuges vary widely. This variation can affect who is ‘captured’ as part of the survey. For example, contacting visitors is much easier if everyone must pass through a single-entry point and much more difficult if a refuge has multiple access points over a large area. Additionally, the two 14-day sampling periods may not have effectively captured all visitor activities throughout the year on some wildlife refuges (for example, visitors who solely engage in ice fishing). As such, results presented in any one of these reports are aimed at representing overall visitation at a wildlife refuge while recognizing that particular visitor groups may vary in their beliefs and activities.

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# National Wildlife Refuge Visitor Survey



Front cover of the 2018 National Wildlife Refuge Visitor Survey instrument. Artwork credit: Kent Olson.

PLEASE READ THIS FIRST:

Thank you for visiting a national wildlife refuge and agreeing to participate in this study! We hope that you had an enjoyable experience. The U.S. Fish and Wildlife Service and The Ohio State University are conducting this survey to learn more about refuge visitors and their experiences in order to improve management and enhance visitor opportunities.

Please respond regarding the refuge and the visit for which you were asked to participate in this survey. The cover letter indicates the refuge you visited.

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SECTION 1. Your visit to this refuge

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1. Including your most recent visit, which activities did you participate in during the past 12 months at this refuge? (Mark all that apply.)

<input type="checkbox"/> 76% Wildlife observation	<input type="checkbox"/> 19% Hiking/Walking	<input type="checkbox"/> 4% Volunteering
<input type="checkbox"/> 60% Bird watching	<input type="checkbox"/> 4% Jogging/Running/Exercising	<input type="checkbox"/> 4% Environmental education program (classroom visits, labs)
<input type="checkbox"/> 31% Photography	<input type="checkbox"/> 3% Bicycling	
<input type="checkbox"/> 7% Big game hunting	<input type="checkbox"/> 35% Auto tour route/Driving	<input type="checkbox"/> 6% Interpretative program (bird walks, staff/volunteer-led talks)
<input type="checkbox"/> 3% Upland/Small game hunting	<input type="checkbox"/> 15% Motorized boating	
<input type="checkbox"/> 8% Waterfowl/Migratory bird hunting	<input type="checkbox"/> 3% Nonmotorized boating (canoeing, kayaking)	<input type="checkbox"/> 11% Refuge special event ( <i>specify</i> ) <u>See Appendix C</u>
<input type="checkbox"/> 36% Freshwater fishing	<input type="checkbox"/> 1% Foraging (berries, nuts, other)	<input type="checkbox"/> 0% Other ( <i>specify</i> ) <u>See Appendix C</u>
<input type="checkbox"/> 0% Saltwater fishing	<input type="checkbox"/> 2% Picnicking	

2. Which of the activities above was the primary purpose of your most recent visit to this refuge?

(Please write **only one activity** here.) See Appendix C

3. Which of the following best describes your most recent visit to this Refuge? (Mark only one.)

<input type="checkbox"/> 82% It was the primary purpose or sole destination of my trip.
<input type="checkbox"/> 12% It was one of many equally important reasons or destinations for my trip.
<input type="checkbox"/> 6% It was just an incidental or spur-of-the-moment stop on a trip taken for other purposes or to other destinations.

4. How many people were in your personal group, including yourself, on your most recent visit to this refuge? (Please answer each category.)

3 number of people 18 years and older      0 number of people under 18 years



5. Did you go to a visitor center at this refuge during your most recent visit?

☐ 87% No / Not Applicable

☐ 13% Yes → If yes, what did you do there? (*Mark all that apply.*)

☐ 45% Asked information of employees/volunteers

☐ 27% Looked at list of recent bird/wildlife sightings

☐ 32% Attended a talk/video/presentation

☐ 27% Stopped to use the facilities (for example, got water, used restroom)

☐ 45% Viewed the exhibits

☐ 0% Picked up/purchased a license, permit, or pass

☐ 5% Rented/borrowed equipment (for example, binoculars, fishing rod, snowshoes)

☐ 18% Visited the gift shop or bookstore

☐ 27% Other (*specify*) See Appendix C

6. How much time did you spend **at this refuge** during your most recent visit?

If you spent less than one day at this refuge, enter the number of hours: 3 hour(s)

If you spent one day or more at this refuge, enter the number of days: 3 day(s)

7. Do you live in the local area (within 50 miles of this refuge)?

☐ 69% Yes

☐ 31% No → How much time did you spend in **the local area** on this trip?

If you spent less than one day in the local area, enter the number of hours: 6 hour(s)

If you spent one day or more in the local area, enter the number of days: 7 day(s)

8. Approximately how many hours/minutes (one-way) did you travel from your home to this refuge?

If you travelled less than one hour, enter the number of minutes: 21 minutes

If you travelled more than one hour, round to the nearest hour: 3 hours

9. Including this visit, during which seasons did you visit this refuge in the last 12 months? (*Mark all that apply.*)

☐ 69% Spring  
(March-May)

☐ 48% Summer  
(June-August)

☐ 62% Fall  
(September-November)

☐ 79% Winter  
(December-February)

10. In the last 12 months, how many times have you visited...

...this refuge (including this visit?) 17 number of visits

...other national wildlife refuges? 3 number of visits

...other public lands (for example, national or state parks) to participate in the same primary activity as this visit? 8 number of visits

11. Which, if any, of the following social media outlets did you use to share your refuge experience with other people? (*Mark all that apply.*)

<input type="checkbox"/> 40%	Facebook	<input type="checkbox"/> 2%	Snapchat	<input type="checkbox"/> 2%	Personal blog (for example, Tumblr, Wordpress)
<input type="checkbox"/> 2%	Flickr	<input type="checkbox"/> 1%	Twitter	<input type="checkbox"/> 1%	Travel-related website (for example, Trip Advisor)
<input type="checkbox"/> 11%	Instagram	<input type="checkbox"/> 0%	Vimeo	<input type="checkbox"/> 5%	Other ( <i>specify</i> ) <u>See Appendix C</u>
<input type="checkbox"/> 0%	Pinterest	<input type="checkbox"/> 1%	YouTube	<input type="checkbox"/> 53%	I do not use social media

## SECTION 2. Information about this refuge and its resources

1. How helpful was each of the following sources to get information about this refuge and its resources? (*Circle one number for each source, or mark the box if you did **not** use a source.*)

Information source	For those who used a source, the % who found it to be...					Did not use
	Not at all helpful	Slightly helpful	Moderately helpful	Very helpful	Extremely helpful	
Personal knowledge from previous visit(s)	<input type="checkbox"/> 1%	<input type="checkbox"/> 0%	<input type="checkbox"/> 8%	<input type="checkbox"/> 34%	<input type="checkbox"/> 57%	<input type="checkbox"/> 17%
Word of mouth (for example, a friend or relative)	<input type="checkbox"/> 4%	<input type="checkbox"/> 10%	<input type="checkbox"/> 15%	<input type="checkbox"/> 33%	<input type="checkbox"/> 37%	<input type="checkbox"/> 27%
People in the local community near the refuge	<input type="checkbox"/> 6%	<input type="checkbox"/> 13%	<input type="checkbox"/> 22%	<input type="checkbox"/> 40%	<input type="checkbox"/> 19%	<input type="checkbox"/> 43%
Refuge employees or volunteers	<input type="checkbox"/> 13%	<input type="checkbox"/> 14%	<input type="checkbox"/> 10%	<input type="checkbox"/> 33%	<input type="checkbox"/> 30%	<input type="checkbox"/> 46%
Printed map or atlas	<input type="checkbox"/> 12%	<input type="checkbox"/> 15%	<input type="checkbox"/> 21%	<input type="checkbox"/> 33%	<input type="checkbox"/> 19%	<input type="checkbox"/> 55%
Web-based map (for example, Google Maps, Waze)	<input type="checkbox"/> 16%	<input type="checkbox"/> 13%	<input type="checkbox"/> 19%	<input type="checkbox"/> 31%	<input type="checkbox"/> 21%	<input type="checkbox"/> 56%
Refuge website	<input type="checkbox"/> 15%	<input type="checkbox"/> 19%	<input type="checkbox"/> 27%	<input type="checkbox"/> 30%	<input type="checkbox"/> 9%	<input type="checkbox"/> 58%
Travel website (for example, TripAdvisor)	<input type="checkbox"/> 47%	<input type="checkbox"/> 33%	<input type="checkbox"/> 7%	<input type="checkbox"/> 10%	<input type="checkbox"/> 3%	<input type="checkbox"/> 81%
Other website ( <i>specify</i> ) <u>See Appendix C</u>	<input type="checkbox"/> 33%	<input type="checkbox"/> 0%	<input type="checkbox"/> 13%	<input type="checkbox"/> 47%	<input type="checkbox"/> 7%	<input type="checkbox"/> 88%
Social media (for example, Facebook, Instagram)	<input type="checkbox"/> 12%	<input type="checkbox"/> 28%	<input type="checkbox"/> 16%	<input type="checkbox"/> 23%	<input type="checkbox"/> 21%	<input type="checkbox"/> 72%
Recreation club or organization	<input type="checkbox"/> 19%	<input type="checkbox"/> 12%	<input type="checkbox"/> 14%	<input type="checkbox"/> 30%	<input type="checkbox"/> 26%	<input type="checkbox"/> 72%
Refuge printed information (for example, brochure)	<input type="checkbox"/> 6%	<input type="checkbox"/> 11%	<input type="checkbox"/> 25%	<input type="checkbox"/> 25%	<input type="checkbox"/> 32%	<input type="checkbox"/> 55%
Kiosks/displays/exhibits at the refuge	<input type="checkbox"/> 8%	<input type="checkbox"/> 11%	<input type="checkbox"/> 27%	<input type="checkbox"/> 32%	<input type="checkbox"/> 22%	<input type="checkbox"/> 60%
Travel guidebook or other book	<input type="checkbox"/> 36%	<input type="checkbox"/> 32%	<input type="checkbox"/> 14%	<input type="checkbox"/> 9%	<input type="checkbox"/> 9%	<input type="checkbox"/> 86%
Tourist information or welcome center	<input type="checkbox"/> 22%	<input type="checkbox"/> 19%	<input type="checkbox"/> 19%	<input type="checkbox"/> 25%	<input type="checkbox"/> 16%	<input type="checkbox"/> 79%
Other source ( <i>specify</i> ) <u>See Appendix C</u>	<input type="checkbox"/> 25%	<input type="checkbox"/> 25%	<input type="checkbox"/> 0%	<input type="checkbox"/> 50%	<input type="checkbox"/> 0%	<input type="checkbox"/> 96%

### SECTION 3. Transportation and access at this refuge

1. First rate how important each of the following transportation-related features 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 have a specific feature or you did not experience it during this visit, please rate how important it is to you and then circle NA “Not Applicable” under the satisfaction column.*

Importance <i>Circle one for each item.</i>					Transportation-Related Features	Satisfaction <i>Circle one for each item.</i>					
Not at all Important	Slightly Important	Moderately important	Very Important	Extremely Important		Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied	Not Applicable
3%	9%	34%	36%	17%	Surface conditions of refuge roads	6%	9%	38%	38%	9%	NA
8%	16%	33%	32%	10%	Surface conditions of parking areas	3%	6%	29%	42%	19%	NA
4%	8%	28%	42%	17%	Condition of bridges on roadways	4%	8%	27%	48%	13%	NA
12%	18%	29%	30%	11%	Condition of trails and boardwalks	2%	10%	30%	42%	16%	NA
27%	10%	14%	31%	19%	Condition of boat launches	14%	17%	26%	37%	6%	NA
8%	20%	33%	28%	11%	Number of places for parking	4%	11%	29%	40%	16%	NA
5%	12%	30%	32%	21%	Number of places to pull over on refuge roads	7%	15%	36%	31%	11%	NA
4%	6%	24%	44%	22%	Safety of driving conditions on refuge roads	3%	6%	24%	49%	18%	NA
4%	7%	23%	42%	24%	Safety of refuge road entrances/exits	3%	5%	17%	54%	22%	NA
20%	17%	26%	22%	15%	Safety of roads/trails for nonmotorized users (for example, bicyclists and hikers)	2%	10%	36%	36%	17%	NA
9%	12%	28%	33%	18%	Signs on highways directing you to this refuge	5%	9%	34%	37%	16%	NA
8%	8%	30%	36%	17%	Signs directing you around refuge roads	4%	9%	35%	38%	14%	NA
21%	7%	26%	29%	17%	Signs directing you on trails	7%	16%	32%	38%	7%	NA
16%	10%	21%	30%	23%	Access for people with physical disabilities or who have difficulty walking	12%	7%	38%	35%	8%	NA

2. If you have any comments about transportation-related features at this refuge, please write them here.

See Appendix C

3. What modes of transportation did you use to travel from the local area to this refuge and within this refuge during your most recent trip? (*Mark all that apply.*)

Transportation modes used to travel...	...from the local area to this refuge	...within the boundaries of this refuge
Private/rental vehicle without a trailer	80%	53%
Private/rental vehicle with a trailer (for boat, camper, or other)	22%	14%
Recreational vehicle (RV)	2%	2%
Refuge shuttle bus/tram	2%	1%
Tour bus/van	6%	7%
Public transportation	2%	1%
Motorcycle	1%	0%
Bicycle	3%	2%
Foot (for example, walking/hiking)	6%	14%
Boat	12%	12%
Other ( <i>specify</i> ): <u>See Appendix C</u>	1%	0%
Other ( <i>specify</i> ): <u>See Appendix C</u>	1%	0%

4. Please tell us how likely you would be to use each transportation option **at this refuge** if it were available in the future. Not all options are currently available at every refuge. (*Circle one number for each option.*)

Transportation options	Not at all Likely	Slightly Likely	Moderately Likely	Very Likely	Extremely Likely
Bus or tram that takes passengers to different points within refuge boundaries (such as the Visitor Center)	63%	14%	12%	8%	2%
Bus or tram that provides a guided tour of the refuge with information about this refuge and its resources	51%	21%	13%	9%	6%
Refuge-sponsored shuttle with a dedicated stop in the local community for picking up people at set times	74%	10%	8%	4%	3%
Public transit system that stops at or near this refuge	87%	8%	3%	1%	0%
Bike-share program that offers bicycles for rent on or near this refuge	77%	8%	8%	4%	3%
Pedestrian paths for access to this refuge from the local community	72%	10%	10%	5%	3%



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## SECTION 4. Your expenses related to your refuge visit

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1. Record the amount of money that you and other members of your group spent in the local 50-mile area during your most recent visit to this refuge. Your group would include you and those with whom you shared expenses (for example, family members, traveling companions). *Enter the amount spent or enter 0 (zero) if you did not spend any money in a particular category.*

Categories	Amount spent in the local area/communities & at this refuge (within 50 miles of this refuge)
Hotel, bed & breakfast, cabin, etc.	
Camping fees (for example, tent, RV)	
Restaurants and bars	
Groceries	
Gasoline and oil (for private vehicles, boats, RVs, or other motors)	
Local transportation (for example, public transit, rental car)	See report for summary of visitor expenditures
Guides and tour fees	
Equipment rental (for example, bicycle, canoe, kayak)	
Sporting goods (for example, bait, binoculars)	
Souvenirs/clothing and other retail	
Other (specify) <u>See Appendix C</u>	

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

2 number of people sharing expenses

3. As you know, costs of travel such as gasoline, hotels, and public transportation often increase. If your total trip costs were to increase, what is the maximum extra amount you would pay and still visit this refuge? (*Mark the dollar amount that represents your response.*)

<input type="checkbox"/> 15% \$0	<input type="checkbox"/> 12% \$30	<input type="checkbox"/> 15% \$100	<input type="checkbox"/> 3% \$250
<input type="checkbox"/> 8% \$5	<input type="checkbox"/> 3% \$45	<input type="checkbox"/> 1% \$125	<input type="checkbox"/> 1% \$350
<input type="checkbox"/> 11% \$10	<input type="checkbox"/> 3% \$60	<input type="checkbox"/> 3% \$150	<input type="checkbox"/> 1% \$500
<input type="checkbox"/> 13% \$20	<input type="checkbox"/> 2% \$75	<input type="checkbox"/> 3% \$200	<input type="checkbox"/> 3% \$750

## SECTION 5. Your experience at this refuge

1. First rate how important each of the following services, facilities, and opportunities 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 item or you did not experience it on this visit, please rate how important it is to you and then circle NA "Not Applicable" under the satisfaction column.*

Importance <i>Circle one for each item.</i>					Refuge Services, Facilities, and Opportunities	Satisfaction <i>Circle one for each item.</i>					
Not at all Important	Slightly Important	Moderately important	Very Important	Extremely Important		Not at all Satisfied	Slightly Satisfied	Moderately satisfied	Very Satisfied	Extremely Satisfied	Not Applicable
4%	2%	15%	41%	37%	Convenient hours/days of operation for this refuge	1%	7%	19%	40%	33%	NA
22%	22%	33%	16%	8%	Availability of employees or volunteers	10%	10%	30%	29%	22%	NA
21%	20%	27%	18%	14%	Courteous and welcoming employees or volunteers	9%	7%	26%	27%	32%	NA
7%	5%	27%	37%	24%	Signs with rules/regulations for this refuge	1%	6%	26%	39%	28%	NA
19%	12%	27%	27%	14%	Visitor center	10%	7%	24%	34%	25%	NA
19%	2%	18%	34%	28%	Well-maintained restrooms	24%	0%	22%	27%	27%	NA
9%	7%	27%	34%	24%	Recreational structures (decks, blinds, platforms)	5%	11%	24%	39%	21%	NA
11%	4%	16%	28%	43%	Bird-watching opportunities	2%	4%	20%	35%	39%	NA
5%	1%	23%	38%	32%	Opportunities to observe wildlife other than birds	8%	3%	27%	33%	29%	NA
9%	4%	25%	26%	36%	Opportunities to photograph wildlife and scenery	3%	6%	25%	35%	31%	NA
14%	15%	32%	23%	16%	Environmental education opportunities	10%	6%	28%	33%	24%	NA
47%	7%	9%	15%	22%	Hunting opportunities	24%	9%	26%	24%	18%	NA
23%	7%	17%	22%	31%	Fishing opportunities	10%	2%	28%	35%	25%	NA
22%	14%	24%	26%	14%	Trail hiking opportunities	7%	16%	26%	36%	15%	NA
48%	14%	18%	14%	6%	Bicycling opportunities	17%	20%	28%	26%	9%	NA
35%	16%	23%	16%	10%	Water trail opportunities for canoeing or kayaking	10%	10%	36%	27%	17%	NA
43%	16%	20%	12%	9%	Volunteer opportunities	11%	13%	28%	24%	24%	NA
24%	13%	22%	23%	18%	Wilderness experience opportunities	8%	15%	28%	29%	20%	NA

2. If you have comments about the services, facilities, and opportunities at this refuge, please write them here.

See Appendix C

3. How much do you disagree or agree with each statement below? (*Circle one number for each statement.*)

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I felt welcome during my visit to this refuge.	0%	1%	26%	37%	35%
I felt safe during my visit to this refuge.	0%	1%	6%	46%	48%
Crime <u>is</u> a problem at this refuge.	53%	32%	9%	4%	2%
I feel comfortable being in nature.	0%	1%	1%	35%	62%
I do <u>not</u> like being in nature by myself.	64%	21%	8%	4%	3%
People closest to me enjoy participating in nature-based recreation.	1%	6%	8%	47%	39%
Generally, people who look like me are treated differently when they participate in nature-based recreation.	45%	23%	29%	2%	2%

4. How satisfied are you with the following? (*Circle one number for each statement.*)

	Not at all Satisfied	Slightly Satisfied	Moderately satisfied	Very Satisfied	Extremely Satisfied
The job this refuge is doing of conserving fish, wildlife, and their habitats.	8%	9%	20%	40%	22%
The quality of the overall experience when visiting this refuge.	2%	6%	26%	42%	24%

## SECTION 6. Future visits to this refuge

1. Considering **the primary activity** you participated in during your most recent visit to this refuge, please tell us how the following factors, if they occurred, could affect your future participation in that activity at this refuge. (*Circle one number for each factor.*)

If there was...	My participation in my primary activity would...		
	Decrease	Stay the same	Increase
Less water in lakes, rivers, or streams available for recreation	41%	54%	5%
More acreage open to hunting and fishing	19%	46%	35%
More infrastructure (for example, bathrooms, observation decks)	4%	55%	41%
Recreation equipment available for rent (for example, fishing rods, binoculars, snowshoes)	13%	74%	13%
Less regulations on fishing	13%	72%	15%
Less regulations on hunting	21%	58%	20%
A greater diversity of species	3%	49%	49%
Fewer numbers of a single, preferred species	21%	72%	6%
More people participating in my primary activity	20%	70%	10%
An improvement in the quality of wetlands	3%	49%	48%
An improvement in the quality of wildlife habitat other than wetlands	3%	49%	48%

2. Do you plan to return to this refuge in the next 12 months?

69% Yes      23% No      9% Not sure

3. Which of the following types of programs, if offered, would encourage you to return to this refuge in the future? (*Mark all that apply.*)

50% I do not typically participate in refuge programs

For those that do participate in refuge programs, the % that would be encouraged to return if the following programs were offered:

73% Programs that engage youth

14% Programs that focus on creative pursuits (for example, art, writing, meditation)

45% Programs that focus on family/multiple-generations

30% Programs that support people with accessibility concerns (for example, difficulty walking, in a wheelchair)

37% Programs that teach skills to visitors

12% Other (*specify*) See Appendix C

36% Programs that highlight unique local culture

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## SECTION 7. A little about you

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**\*\* Please tell us a little bit about yourself. Your answers to these questions will help us to know more about who visits national wildlife refuges. Answers will not be linked to any individual taking this survey. \*\***

1. Are you? ☐ 72% Male ☐ 28% Female

2. In what year were you born?  1959 (YYYY)

3. How many years of formal schooling have you had? (Circle one number.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
(elementary)					(junior high or middle school)			(high school)				(college or technical school)				(graduate or professional school)			
					<input type="checkbox"/> 1%			<input type="checkbox"/> 27%				<input type="checkbox"/> 54%				<input type="checkbox"/> 19%			

4. What race or ethnicity do you consider yourself? (Mark all that apply.)

<input type="checkbox"/> 99% White	<input type="checkbox"/> 1% American Indian or Alaska Native
<input type="checkbox"/> 1% Hispanic, Latino, or Spanish	<input type="checkbox"/> 0% Middle Eastern or North African
<input type="checkbox"/> 0% Black or African American	<input type="checkbox"/> 0% Native Hawaiian or Other Pacific Islander
<input type="checkbox"/> 0% Asian	<input type="checkbox"/> 0% Some other race or ethnicity

5. How many people (including yourself) live in your household?  2 persons

6. What was your approximate household income from all sources (before taxes) last year? (Mark only one.)

<input type="checkbox"/> 1% Less than \$10,000	<input type="checkbox"/> 15% \$35,000 - \$49,999	<input type="checkbox"/> 16% \$100,000 - \$149,999
<input type="checkbox"/> 7% \$10,000 - \$24,999	<input type="checkbox"/> 22% \$50,000 - \$74,999	<input type="checkbox"/> 8% \$150,000 - \$199,999
<input type="checkbox"/> 9% \$25,000 - \$34,999	<input type="checkbox"/> 17% \$75,000 - \$99,999	<input type="checkbox"/> 4% \$200,000 or more

7. Which of the following best describes your current employment situation? (Mark only one.)

<input type="checkbox"/> 38% Employed full-time	<input type="checkbox"/> 0% Unemployed	<input type="checkbox"/> 45% Retired
<input type="checkbox"/> 5% Employed part-time	<input type="checkbox"/> 2% Homemaker/caregiver	<input type="checkbox"/> 3% Disabled/unable to work
<input type="checkbox"/> 7% Self-employed	<input type="checkbox"/> 1% Student	<input type="checkbox"/> 0% Other (specify): <u>See Appendix C</u>

**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.**



## Comments?

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See Appendix C

PAPERWORK REDUCTION ACT STATEMENT: The Paperwork Reduction Act requires us to tell you why we are collecting this information, how we will use it, and whether or not you have to respond. The information that we collect in this survey will help us understand visitor satisfaction with and use of national wildlife refuges and to inform management and policy decisions. Your response is voluntary. An agency may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a valid OMB Control Number. We estimate it will take an average of 25 minutes to complete this survey. You may send comments concerning the burden estimate or any aspect of the survey to the Information Collection Clearance Officer, Fish and Wildlife Service, 4401 North Fairfax Drive, MS 222-ARLSQ, Arlington, VA 22203. OMB CONTROL # 0596-0236 EXPIRATION DATE 11/30/2020

## Appendix C: Open-Ended Survey Responses by Question

### Survey Section 1

Question 1: “Including your most recent visit, which activities did you participate in during the past 12 months at this refuge?”

Special Event	Frequency
Birding festival	1
Duck/Wood duck banding	2
Eagle tour	1
Fairy/frog houses	1
Hummingbird festival	1
Trim a tree for wildlife/visitors center	1
Wings of Winter Birding Festival	9

Question 2: “Which of the activities above was the primary purpose of your most recent visit to this refuge?”

Primary Activity	Frequency
Activity with dog(s)	1
Auto tour route/driving	8
Bicycling	1
Bird watching	47
Environmental education	3
Exercising	1
Fishing	29
Hiking	2
Hunting	7
Motorized boating	1
Other	2
Photography	10
Special event	2
Wildlife observation	44

Question 3: “Did you go to a visitor center at this refuge during your most recent visit?”; If Yes, “What did you do there?”

Other Visitor Center Activity	Frequency
Closed due to government shutdown	3
It was closed, so we watched birds from the porch.	1
Staff assisted bird watching	1
Wings of Winter meeting	1

Question 11: “Which, if any, of the following social media outlets did you use to share your refuge experience with other people?”

Other Social Media Outlets	Frequency
eBird	6
SmugMug	1

## Survey Section 2

Question 1. “How helpful was each of the following sources to get information about this refuge and its resources?”

Other Websites	Frequency
eBird	2
FWS.gov	1
KY lake fishing report	1
Parislanding.com	1
TN-bird listserv	1
Trbird.org	1
Wings of winter	1

Other Information Sources	Frequency
Ducks Unlimited	1
eBird	1
People talking	1

## Survey Section 6

Question 3: “Which of the following types of programs, if offered, would encourage you to return to this refuge in the future?”

Other Programs	Frequency
Bird-related programs	5
Hiking-related programs	1
Local history programs	2
Wildlife-related programs	1

### Survey Section 3

Question 2: “If you have any comments about transportation-related features at this refuge, please write them here.”

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#### Comments on Transportation-Related Features at This Refuge (n=35)

Blade the road better.

Boat dock is very poorly maintained – unsafe.

Boat ramp on main river needs work. It’s been bad for a few years.

Conditions were wet with rain, but roads were drivable. Signage was good.

Could use more parking.

County road is terrible. The county doesn't compact the gravel they install each year, so it washes out immediately after installation.

Enjoy sightseeing. Mainly look at ducks, deer, and turkeys. Fished occasionally.

Going over the spillways could be better and there were potholes.

I believe access for the difficult walking should be at the more convenient refuges across the board. I guess I would like to see it not have to take up swamps and a lot of fields to provide roads and trails.

I do not like the big stone gravel that was put on the hiking trail! Easy to twist ankle! The stones are not comfortable to walk on.

I would like that the refuge in New Johnsonville would have more than one entrance!

It would be great if there were better roads/trails to ride a bicycle. Riding on the loose gravel roads can be tricky.

It would be nice to see the refuge closed to vehicles during waterfowl season because of the people trying to scare up bird sitting & resting, just to see them.

It’s extremely important to keep the boat ramps and parking areas maintained to help keep anglers coming in, which helps with the local economies.

Leave roads that are open during summer open all the time. Also, if you are going to have a big game hunt, have it so a hunter can drive down a road to pick up an animal if they need to, as long as they stay on roadway.

More photo blinds would be nice. Wheeler NWR has a photo blind that is only available by reservation from the park superintendent. Something that would allow limited access to the areas that would normally be off-limits during the migration season. I realize the pintail point observation deck can serve as a photo blind, but I haven't had much success with it.

Need better bridges, water crossings. Could definitely use more places to pull off the side of the roads.

Not sure this falls under transportation, but would like to see a managed hiking trail for the summer months and less commercialization of the fields. This last trip was the first time in quite some time that I’ve seen the fields flooded for wildlife as they should be.



One muddy, pot holed rough spot on road just inside entrance to refuge but before entering gates to visitor's center.

Only one way in or out. Have gate, but they keep it locked.

Paved roads-excellent condition. Dirt roads were passable, but torn-up in a few places. Bad weather and partial federal government shutdown were obvious factors.

Repair/replace the boat ramp below the mouth of Duck River for access to the Tennessee River.

Riding on roads is sufficient for people with physical disabilities and/or difficulty walking. You can see everything you need from your vehicle.

Road is in awful condition, especially in the culverts.

Road very good.

Roads along dike (floodways) rough.

Some area flooded.

Some of the road is very rough. There is one road that is paved that is great, but 1/2 of it is closed Nov. to Mar.

The cobblestones need replacing.

The roadways could be slightly better than they are now, just for the fact that there are some potholes that, if hit, could really damage a low-riding vehicle such as my own.

They spent millions of dollars on a road that gets very little traffic. Total waste of money.

Use of concrete blocks/pavers is tough on vehicles, but I understand why they are used; but they need repairs in some instances.

Very pleased with road conditions, cleanliness (no trash), visitor courtesy (never a problem with visitors). Very much dislike that some entrances have been closed that we have previously enjoyed traveling.

Very wet conditions. Roadway difficult in spots.

Walking trail by visitor center wasn't well marked and didn't have a direct walkway to it. Had to just figure it out and walk across grass to get to entrance for trail.

## Survey Section 5

Question 2: "If you have comments about these services, facilities, and opportunities at this refuge, please write them here."

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### Comments on Services, Facilities, and Opportunities at This Refuge (n=55)

All but one road is closed in winter when waterfowl comes and you can't see 80% of what's on refuge.

At least one restroom would be a good addition. Additional observation decks/blinds would be great.

Boat launch ramps are in poor shape, have seen accidents on them - near drowning of an elderly woman. This can be repaired with minimum effort.

During our visit, the refuge facilities were closed due to government shutdown - but we were able to drive, walk, visit blind, etc.

Excellent Friends group of which we are proud to be a member and volunteer! Love TNWR staff!

I [name] do enquire that you would keep the New Johnsonville refuge entrance gate open all the time - this includes night time! This is very important!

I feel very fortunate to live near this wildlife refuge. I enjoy visiting each season, whether fishing or observing wildlife and the serenity just the way it is. I do not want to be intruded by modernization. I like it just like it is. Just reopen some of our former entrances. I do not feel that anyone abuses this wonderful opportunity.

I have been to the visitor center at other times and it is awesome. This trip occurred during the recent government shutdown.

I have not seen a refuge employee in three visits this winter.

I have visited the refuge all my life, it is just fine.

I know that they have deer hunts on this refuge. I would like to see some waterfowl hunts made available from specific areas through a draw type system where you would have to check in and out in the morning and when you leave. This would be very important to me. Maybe set a maximum number of hunters at a certain location with a set amount of ammo per person. This would be a great addition!

I live near the refuge and visit frequently. I have walked every levee in the place and I have seen some of the most awesome wildlife scenes.

I squirrel hunt with dogs. The refuge closes squirrel season in November when it is the best time to hunt with a squirrel dog. The refuge needs to make the season longer.

I think the wildlife center is not located in a good location for a lot of people to experience it. It is an excellent facility for educating children and is a beautiful building with great restrooms. Maybe more signs could explain its importance to the public.

I thought the TNWR had great facilities. I especially enjoyed the bird blind at the Duck River Unit, as well as the other observation decks around the refuge.

I visited during the government shutdown, but I felt it was handled well. As a birdwatcher, I would love there to be more limits surrounding the area on duck hunting.

I wasn't able to have a full experience of the facilities because of the government shutdown.

I wish there were more observation platforms to use.

I would like to see a decrease in deer hunts. I would like to see more water on this refuge, during early winter months, for the waterfowl and eagles.

I would like to see bathrooms available.

I would suggest opening up a small game hunting season for a short period in Feb. after duck season closes.

I've never been able to drive up to the visitor center because the gate has always been closed. I admit I haven't completely checked that out.

Important to note that on "this visit", we were affected by the asinine government shutdown. While the refuge side roads are closed this time of year anyway, water management was not happening, so conditions were deteriorating.

Keep on planting this refuge.

My visit was during the U.S. government shutdown, thus no facilities were open and the employees were furloughed.

Need bathrooms! No visitor center? Roads are very rough and dusty.

Need more focusing on fishing and the fish in the refuge and less about ducks!

No duck count available!

Not sure if or what opportunities are available, no way of knowing.

Outstanding visitor center with superb programs for school children with education about wildlife and conservation. Great periodic programs for the interest of the general public too. Large variety offered and outstanding speakers brought in. Very valuable to our community.

Partial federal government shutdown closed the visitor center/restrooms. On previous visits was extremely satisfied with both.

Refuge center closed due to Trump's shutdown.

Refuge service buildings minimal except kiosk. No restrooms, visitors centers or rangers stations!

Something needs to be done about the Asian carp in our rivers!

Staff does a great job.

Stop the deer hunts! It's a refuge paid for by we the people. This used to be a special place where people came from all over to view big deer. Now you're lucky to see one. The hunters come in from out of town and shoot their "earn a buck" and then dump it on side of road in our town.

The area I go to via the refuge road has no restroom facility at all, not even a port-o-john.

The staff at the visitor center at the Britton Ford area are extremely friendly, accommodating, helpful, and informative. I am there nearly every day during the winter months and continue to go there every day because of the staff. The volunteers who work there are also friendly and informative, and do everything they can to make my visit enjoyable.

The Tennessee National Wildlife Refuge has allowed the deer population to be decimated on the refuge. The opportunities for deer observation and enjoyable hunting have been exponentially decreased over the last 15 years with the refuge's deer management strategies. The deer used to be one of the main attractants to the refuge with multiple people driving to observe the numbers of deer, as well as the large mature bucks the refuge would grow. Friends of mine from as far as 100 miles from here comment on how they would visit the refuge recently and were shocked that they would see zero deer now. This deer decimation program has also affected surrounding private areas and the local landowners from having more opportunities of deer harvest because the refuge hunters will have to first shoot a doe before harvesting a buck. The hunters have been allowed to use rifles in this flat land, which I really don't know how someone has not been shot accidentally, and their hunting technique now is to walk the overgrown fields and ditches and jump deer and shoot at them on the run. This has led to many deer being wounded and left to die. They hunt this way to try and get their doe so they can concentrate on a buck. I don't know why though, because there are so few deer left there, it's not worth the efforts. When they first started allowing bow hunting, then muzzleloader only hunting, the TNWR was one of the premier hunting destinations in the state and people from all across the state would apply for the permits. Now it is looked at as a waste of time to even apply for. I understand the refuge is designed for waterfowl management, but it used to be so much more (better) for all opportunities and still held incredible waterfowl numbers.

The visitors center was shut down due to the federal government, so it was disappointing to not be able to visit it, talk with the park rangers, and enjoy all the center has to offer for additional educational opportunities and shop to help support it. We did enjoy bird watching on the outside patio.

There have been too many deer killing on the hunts, you cannot ride and see any deer anymore! I've been going to this refuge for 50 years, they have killed all the deer!

They run it extremely well.

TNWR visitor center/road was built on land taken by eminent domain. People were kept off that area for years to protect wildlife, but greed caused the USFWS to spend \$16,000,000 for an office/playhouse.

Too many deer hunts. Should go back to archery only for 5 years. Use to be able to go and see some big deer, why looking at wildlife now, you are lucky to see any. Restrooms - I do not know if we even have any.

Two trips in 2 years, both times government shutdown made it very hard and could not enjoy all that was to offer, wish you could find a way to stay open when 150 folks from all over come to visit.

Unfortunately, because of the shutdown, most of the facilities were not available to us. They looked great and would have been a nice oasis from the cold rain, but it was beyond all of our control.

Used to be that you could see big deer, but you barely can see a deer now. They don't flood and knock down food for ducks until after season, which is not helpful to the area at all.

Water level should be maintained until fish spawn instead of dropping it early to benefit farmers. Drop after first week of May to benefit fish.

Water on refuge when duck season opens. Very much needed to hold ducks here.

We have never visited the welcome station. We just enjoy riding and looking at scenery, and wildlife.

Well, there are no facilities at this unit, so maybe a bathroom would be a good idea. More wildlife viewing platforms or boardwalks would be wonderful.

Why do the TWRA and management try their best to keep the waterfowl away from the ones that hunt and buy licenses and help pay for their jobs?

Why not have more hunting opportunities?

With the government shutdown, we were unable to use facilities, which was very disappointing and inconvenient. The refuge staff was most helpful as volunteers, though it seems they were put in a very bad position, thanks to McConnell and Trump.

Would love a bathroom!! Would love to be able to use this refuge without being afraid of hunters. Would love to have more visual access to refuge Nov-Mar if could do so without disturbing waterfowl. Would love no hunting on refuge!!! Hunters w/their guns are frightening, especially when they come near the viewing hides. Sometimes the hunters stare at us-unnerving. If there was a ranger on patrol, it would be great. When we go, we are 2 women-with no guns.

## End of Survey

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### General Comments (n=37)

A great asset to our community. In all areas of wildlife management.

Duck River Refuge [likely referring to Duck River Unit of TNWR] really, really needs to focus on better water levels for fishing. In Humphrey County, there is very little to no bank fishing for the public. Something seriously needs to be done so people will have better bank fishing opportunities. I would love to have feedback on this matter thanks, [address].

Duck River Unit in New Johnsonville, TN has gone from one of the best in the state for waterfowl and large buck deer to possibly the worst in the last 15-20 years. They sell permits to hunt deer during regular season muzzleloader and my rifle hunts all fall. They have a regulation you have to kill a doe before killing a buck. This has and will not work because everyone shoots the yearlings and most are button bucks. They have been hunted to near extinction here and wildlife officials don't care at all. They weren't around when this refuge was more than equal on seeing big bucks to any refuge in the country. My children have never gotten to experience the fond memories I have as a child seeing deer just stand and watch you go by. Countless 140"-160" bucks being photographed by outdoor magazines from all over the country. This is a refuge paid for by the American people, so all wildlife can have a safe place to live not just ducks. Stop the damn hunts. It's all about selling a \$15 dollar permit. This refuge is also a major part of waterfowl migration that is slipping away every year. Back when the refuge held large numbers of ducks, they would flood the holes and fields in November when the first big migration occurs. Now they wait until Jan.-Feb. when ducks have already left this area because of no water or food. We totally lost Canada goose migration and yes partly weather-related but also lack of habitat with flooded fields, etc. Very sad to watch because of plain ignorance. They should be smart enough to know big cold fronts in Nov.-Dec., ducks are coming, get food and water ready, but they don't. They go by a pre-set plan that is b.s. It's almost like they don't want a refuge here anymore. Totally disgusted, please help!

Have come to area crappie fishing for 25 years and the last 3 years the fishing has gotten worse each year. Not sure if we will return next year.

I always enjoy my visit.



I am 79 yrs. old and have fished Kentucky lake for crappie since I was about 10 yrs. old. Fished White Oak, Leatherwood and now fish Big Sandy area exclusively. I started seeing dead Asian carp floating in the lake last spring. My fishing was pretty much as usual last yr. Spring of 2018 was altogether different. I generally fish about 2 months in the spring. This year I fished 3 trips, fished good cover but terrible results. Last year I caught more 9 1/2 inch fish than usual. This year I caught several 9 1/2 inch fish. So what happened to those 9 1/2 inch from last year? Did they die, starve, something eat them or just didn't grow?

I am glad to see this type of feedback opportunity being provided.

I do say again I, [name], want the New Johnsonville refuge entrance gate to be open all the time every day!

I fish for crappie in the Paris Landing area of Kentucky Lake - 2 of the last 3 years have been horrible (2016 and 2018). In fact, this year was dismal. If this trend continues, I will definitely quit fishing here!

I have visited the Big Sandy and Duck River units of the Tennessee National Wildlife Refuge, as well as the Britton Ford unit, and continue to visit all these units as often as I can and would not change anything.

I would like to see the land farmed on the refuge be divided to more farmers instead of nearly one! Something fishy going on!

Just moved from TX and purchased home very close, heard about refuge through young neighbor and decided to take a drive to check out on a very lovely January day. Have traveled by RV over past year to many other states and have visited several wildlife refuges and national parks, when within close proximity of RV park. Not physically disabled, but due to age and asthma prefer not too much walking especially in hot/humid months! Love nature and wildlife! Will go again during other seasons to view the changes, now that we are residents and very close to our home.

Lowest number of predatory birds and waterfowl that I have seen on this refuge in January, ever!

Many of the NWRs in Tennessee are poorly managed for diversity of wildlife. They are managed for ducks, and that is about it. Wetland marshes, habitat for bird species like rails, bitterns, etc. are virtually nonexistent. We desperately need management aimed at protection of a greater diversity of species, with particular focus on species of concern. There is no doubt that hunting and hunters drive a great deal of resources into wildlife conservation, but it cannot continue to be so exclusively about hunting. Thank you.

More effort on restocking lakes and quality of fishing, more food crops left for wildlife, if not flooded fish in lakes decline.

My wife and I enjoy visiting the refuge, sometimes we visit twice a day especially during January and February when we look for the bald eagles. We live close by so that makes it easier to visit. We enjoy crappie fishing and we're disappointed that the fishing hasn't been as good the last 3 years. Hopefully something could be done to improve the fishing. We also missed going to the eagle/waterfowl tour they hold each January, for some reason they didn't have one this year. Thank you for providing a beautiful place to visit and enjoy nature.

My wife and I live near the refuge and enjoy visiting all year long. Spring and early summer we like to fish and also look for wildlife, especially bald eagles. During the winter, our main purpose for visiting is to view the wildlife, which there is a variety to view. The crappie fishing has declined in recent years, last year was the worst, I guess it's due to the Asian carp problem. We missed having the eagle/waterfowl tour this year. That was always a great family outing! Thank you for maintaining the refuge and allowing us to visit and enjoy the great outdoors.

Need more focus on things for the fish and fishing, and less on ducks!

NWRs need more support. I would be willing as a non-hunter to try to pick up some of the slack from declining hunting revenue. The government shutdown is a travesty, and I would support more protections for all the people who work at NWRs.

Overall a great experience. Thanks for providing the opportunity.

Plant more corn for waterfowl - use resources on waterfowl. The only ppl that care about the refuge are duck hunters! Take care of them!

Please get rid of the Asian carp. The carp will stop people from using the refuge.

Protect migratory waterways.

Roads and boat ramps need repair. No commercial fishing or better enforcement. Call me I will explain [phone number].

Stop dragging/feeding waterfowl during statewide hunting season. Have a waterfowl hunting opportunities on management area.

Thank you for including me in this survey. My two main NWR are Cross Creeks, TN (10 miles) from my house and TWRA-Duck River Unit (30 miles) from my house. Blessed to have visited many National Refuges and National Forests in 49 states! Thanks to all who help!

The Tennessee National Wildlife Refuge (Duck River Unit) has allowed the deer population to be decimated on the refuge. The opportunities for deer observation and enjoyable hunting have been exponentially decreased over the last 15 years with the refuge's deer management strategies. The deer used to be one of the main attractants to the refuge with multiple people driving to observe the numbers of deer as well as the large mature bucks the refuge would grow. Friends of mine from as far as 100 miles from here comment on how they would visit the refuge recently and were shocked that they would see zero deer now. This deer decimation program has also affected surrounding private areas and the local landowners from having more opportunities of deer harvest, because the refuge hunters will have to first shoot a doe before harvesting a buck. The hunters have been allowed to use rifles in this flat land, which I really don't know how someone has not been shot accidentally, and their hunting technique now is to walk the overgrown fields and ditches and jump deer and shoot at them on the run. This has led to many deer being wounded and left to die. They hunt this way to try and get their doe so they can concentrate on a buck. I don't know why though, because there are so few deer left there, it's not worth the effort. When they first started allowing bow hunting, then muzzleloader only hunting, the TNWR was one of the premier hunting destinations in the state and people from all across the state would apply for the permits. Now it is looked at as a waste of time to even apply for. I understand the refuge is designed for waterfowl management, but it used to be so much more (better) for all opportunities and still held incredible waterfowl numbers. There also needs to be well defined buffer zones installed around refuge lines where private houses are close to the property line. Refuge deer hunters will hunt right on the property line and shoot across onto private property.

The visit commented on in this survey was during the U.S. government shutdown, so staff and facilities were not available.

There is roughly 5000 acres but only 2.5 miles is accessible for traveling and viewing wildlife. They should open a few of the roads that are closed for the season. Thanks.

This refuge has been destroyed by unsupervised hunting. It starts with the coon hunts. This is for the people that like to spotlight what few deer are left. The Duck River unit has ruined deer viewing and photography by overhunting. They say they eat the "duck corn" which is total [expletive] - I know the farmer. Go back to bow only or at most muzzleloader. There are so many crippled deer running around town from people jumping deer and unloading their gun on them, it's sickening. Please turn this refuge back into a refuge, not a hunting place.

Sad, sad days ahead if nothing changes. Get off the computer program and go outside. Manager should be ashamed.

TN National Wildlife Refuge is a treasure. The Trump govt shutdown was a disgrace. Impeachment now!

U.S.F.W.S. personnel are outstanding and so are the volunteers of the Friends group.

Unlock the gates to accommodate horseback riding!

Waterfowl numbers especially Canada goose populations have really declined over the years on the TN National Wildlife Refuge. Why?

We enjoy the observation deck on the Big Sandy, [part of this] wildlife refuge. We are glad the water area is closed for these birds to enjoy throughout the winter.

We just moved to the area recently and really enjoy having this wildlife refuge so close by. We look forward to seeing what it is like during the other seasons.

We visited as part of the Wings of Winter birding program offered by local bird partner enthusiasts and enjoyed our visit. I look forward to returning when the visitors center is open to further explore it and at different times in the year to see the refuge during different seasons.