NATIONAL WILDLIFE REFUGE SYSTEM

CHARACTERIZING THE EXPERIENCES OF VISITORS TO NATIONAL WILDLIFE REFUGES

2018-2023 NATIONAL-LEVEL RESULTS

ACKNOWLEDGMENTS

We thank the many collaborative partners of this effort, including The Ohio State University for designing the study and survey instrument, the American Conservation Experience members who contacted visitors onsite, and all the team members who entered data and helped manage the project. We also thank the staff and volunteers at all participating refuges who helped implement this survey. This work and report would not have been possible without their support.

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Front cover: Kodiak National Wildlife Refuge

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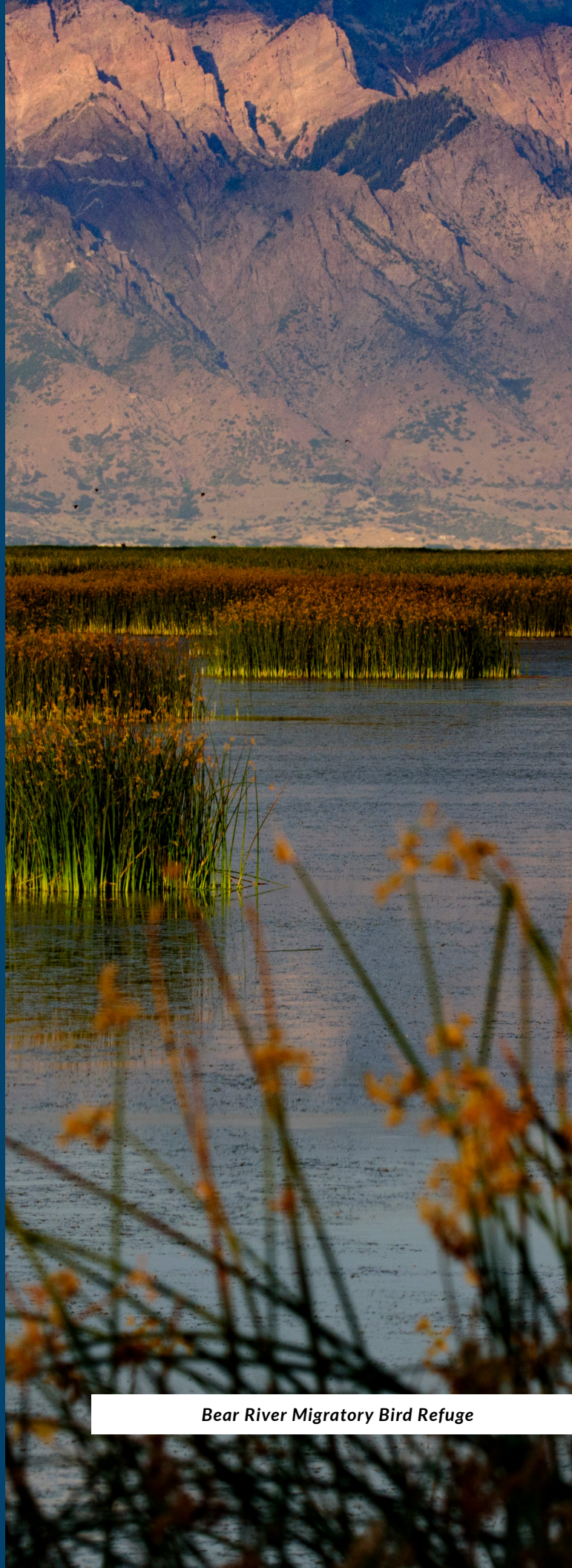


Bear River Migratory Bird Refuge

MESSAGE FROM THE CHIEF

The National Wildlife Refuge System is a vast and vital network of public lands and waters where wildlife and people thrive.

The Refuge System provides tens of millions of people each year with opportunities to enjoy outdoor recreation and spend time in nature; many visitors take part in outdoor pursuits such as hunting, fishing, hiking, paddling, wildlife viewing, and nature photography. Refuges offer visitors a chance to unplug from the stresses of life and take in the wildlife and habitats conserved by the U.S. Fish and Wildlife Service.

To learn more about who visits refuges and their experiences, the U.S. Fish and Wildlife Service embarked on a nationwide survey in 2018. This began a continuous research effort to inform our understanding of visitors' experiences, connect with nearby communities, quantify the economic benefits of refuges, and enhance our ability to tell the story of the Refuge System. The results in these pages speak to the experiences of over 20,000 visitors at more than 140 refuges. Refuge managers, planners, visitor and community engagement specialists, and others can apply these results to improve management of fish and wildlife resources, visitor experience, and facilities on refuge lands and waters. This report outlines key findings that help us to provide high-quality visitor experiences and identify areas for improvements to better meet the needs of the American people.

Whether visitors live in the local community and visit regularly or travel to destination refuges for once-in-a-lifetime experiences, the Refuge System seeks to ensure everyone enjoys what we have to offer. We remain committed to welcoming all people to experience the wonder and beauty of the Refuge System. The insights gained through this social science effort will help guide our efforts to steward these lands—ensuring they remain healthy, resilient, and accessible for generations to come. With continued support and engagement from partners, we can uphold the legacy of conservation that defines the Refuge System. It truly is one of our nation's best ideas.

With gratitude,

Cynthia Martinez
National Wildlife Refuge System Chief

National Elk Refuge

INTRODUCTION

The National Wildlife Refuge System

The National Wildlife Refuge System is a network of over 570 national wildlife refuges, protecting vital ecosystems and wildlife in all 50 states and U.S. territories. Refuges offer unparalleled access to outdoor activities like hunting, fishing, and wildlife observation (Fig. 1), providing health benefits and opportunities to enjoy nature. Many refuges are conveniently located within an hour's drive of most major metropolitan areas, serving both urban and rural communities and supporting local economies.

Understanding Visitors and Their Experiences

In recent decades, urbanization and modern lifestyles have influenced the ways the public engages with wildlife and the outdoors (Kellert et al., 2017; Manfredo et al., 2018). These changes have led to an increased demand for outdoor recreation at places like national wildlife refuges. In 2023, the Refuge System experienced more than 68 million annual visits, a 23% increase since 2018 (U.S. Fish and Wildlife Service, 2025). This rise in participation is on par with the nearly 16% nationwide increase in outdoor recreation participation observed during the same period (Outdoor Industry Association, 2019, 2024). As more people visit public lands, land managers must ensure these special places benefit wildlife conservation and visitors. Achieving these goals will help connect future generations with natural resources and the mental and physical health benefits of time spent outdoors, while building a broader conservation constituency (Charles & Louv, 2009; Larson et al., 2011).

Fig. 1. Priority recreational uses of National Wildlife Refuges

Minnesota Valley National Wildlife Refuge

The National Wildlife Refuge Visitor Survey

The National Wildlife Refuge Visitor Survey (National Visitor Survey or survey) monitors visitor characteristics, experiences, and satisfaction at national wildlife refuges. Managers use this reliable baseline and trend data to improve visitor experiences, engage with local communities, communicate the value of wildlife refuges, and set future priorities to help fish, wildlife, and people thrive.

The survey is conducted every five years at national wildlife refuges that meet a minimum annual visitation threshold. The 2018-2023 cycle of the survey included refuges with an annual visitation of 50,000 or greater. This ensures a representative sample of visitors at each refuge and accounts for approximately 70% of the total average annual visitation for the Refuge System for that period (U.S. Fish and Wildlife Service, 2025).

This report summarizes the results of the visitor survey for refuges included in the 2018-2023 study (Fig. 2). Results within this report highlight visitor characteristics and experiences at the national level (Fig. 3). All documents and insights from the National Visitor Survey, including individual refuge-level results and reports that will dive deeper into key topics, are available at **https://www.fws.gov/project/national-visitor-survey**.

Due to the diverse habitats and wide range of recreational opportunities available across the Refuge System, specific individual refuge-level survey results — in addition to this national-level report — are important to local and regional decision-making. Survey feedback can inform management responses to ensure effective visitor engagement and continued access to high-quality recreation. A list of refuges that participated in this study is provided in Appendix A.

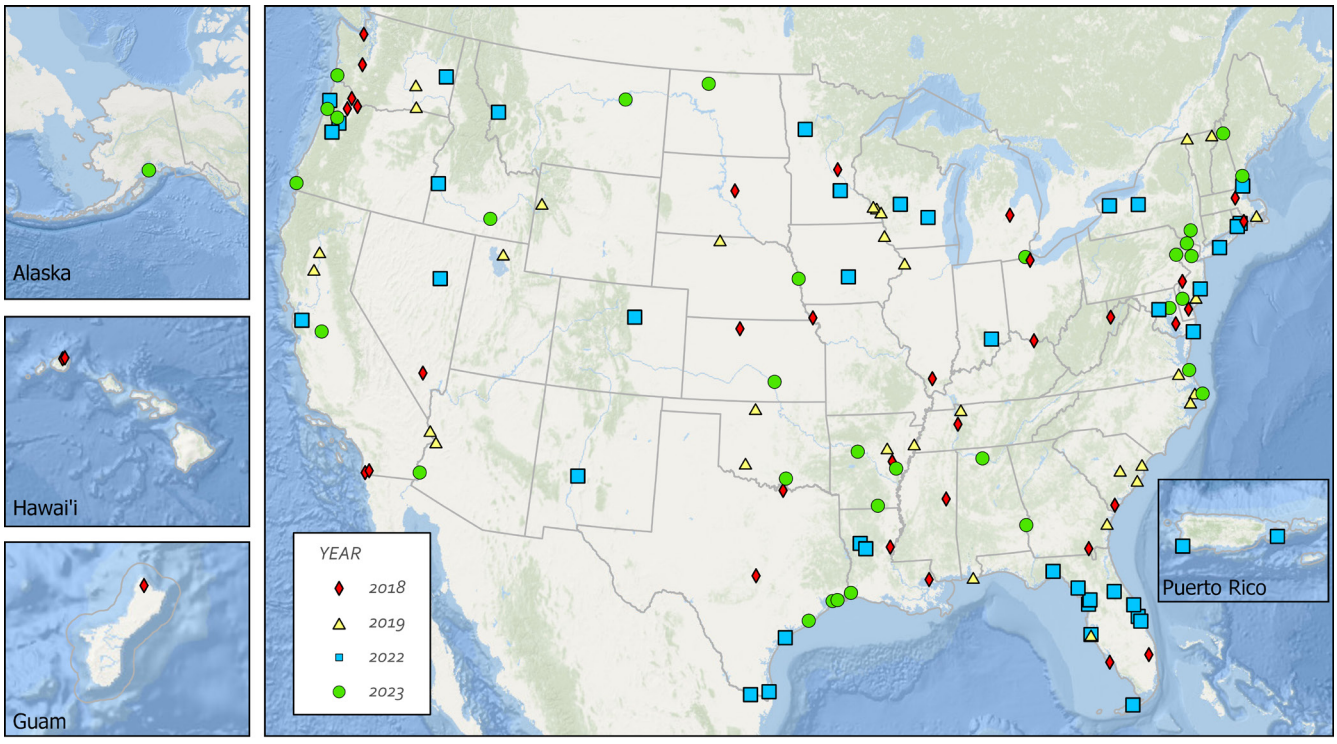


Fig. 2. Locations of refuges that participated in the 2018-2023 National Visitor Survey

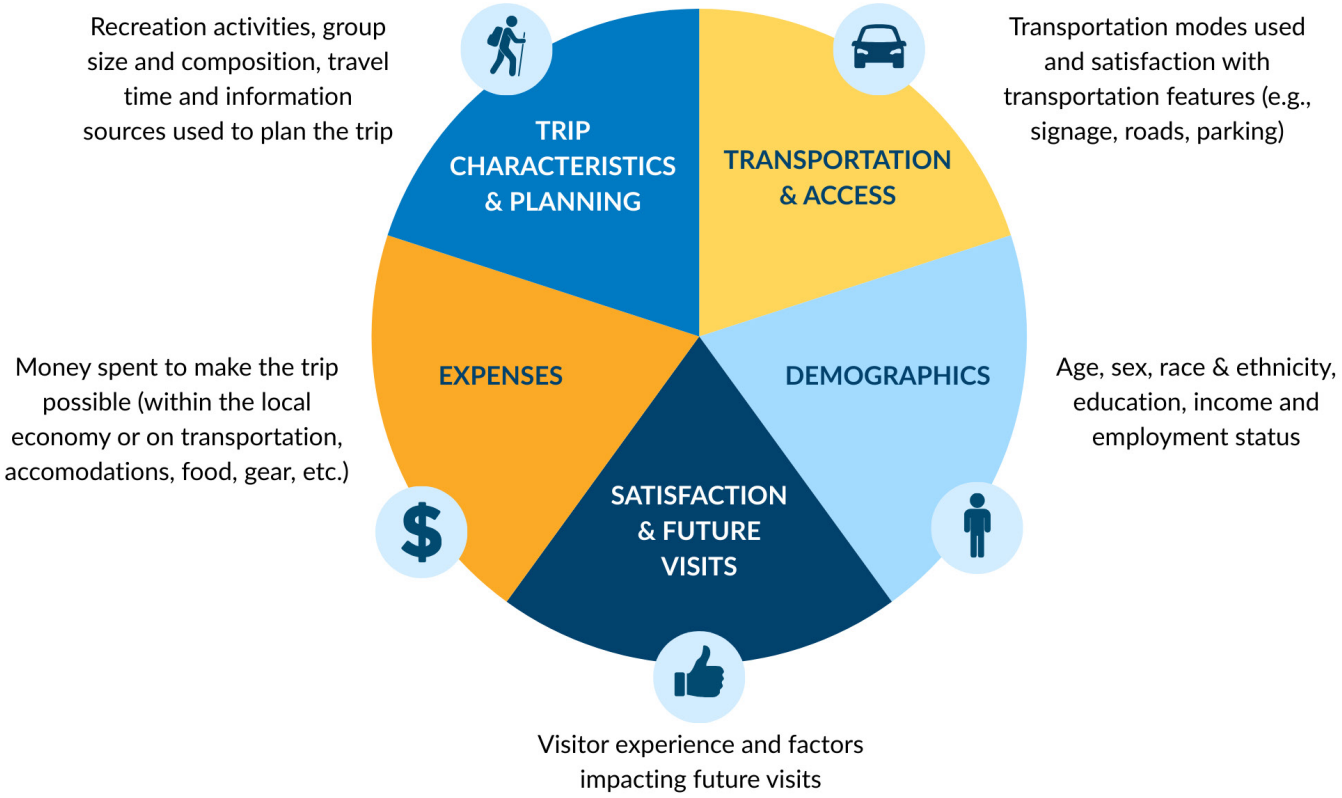


Fig. 3. National Visitor Survey areas of inquiry

Contacting Visitors

We surveyed visitors at participating refuges in 2018, 2019, 2022, and 2023, with a pause in 2020 and 2021 in response to the COVID-19 pandemic. We contacted visitors onsite at participating refuges during two separate 14-day sampling periods. With the help of refuge staff, we identified seasons, locations, and times that best represented typical visitor use patterns. For more details on methodology, including limitations, see Appendix B.

Between 2018 and 2023, a total of 39,942 adult visitors agreed to participate by providing their contact information. Overall, 53% of visitors (20,361) responded. Fifty-three percent of visitors completed the survey online and 47% completed it by mail. Results have a ±1% margin of error at the 99% confidence level. In most figures and tables, we rounded percentages to the nearest whole number and only displayed results for response categories containing 5% or more of visitors. As a result, percentages may not always total 100%.

HIGHLIGHTS

141
REFUGES PARTICIPATED

20,361
VISITORS SURVEYED

53%
RESPONSE RATE

Big Stone National Wildlife Refuge

Don Edwards San Francisco Bay National Wildlife Refuge

Nestucca Bay National Wildlife Refuge

OUTDOOR ACTIVITIES

Refuges offer many opportunities to enjoy the outdoors. As Americans' relationship with nature has changed (Kellert et al., 2017; Manfredo et al., 2018), their desires for recreational experiences on public lands have also shifted. In addition, researchers and land management professionals recognize the need to provide opportunities to access nature for future generations (Charles & Louv, 2009; Larson et al., 2011). Understanding participation in outdoor recreation and visits to wildlife refuges helps managers provide exceptional experiences tailored to visitors' shifting demands (U.S. Fish and Wildlife Service, 2011). This understanding also helps managers protect fish, wildlife, and their habitats while averting human-wildlife or user-group conflicts that may arise.

Visitors most often participated in wildlife observation (59%), hiking/walking (56%), and bird watching (46%) during the past 12 months (Fig. 4). Visitors' primary activities on the day they were contacted onsite were hiking/walking (21%), fishing (14%), wildlife observation (14%), and bird watching (13%) (Fig. 5).

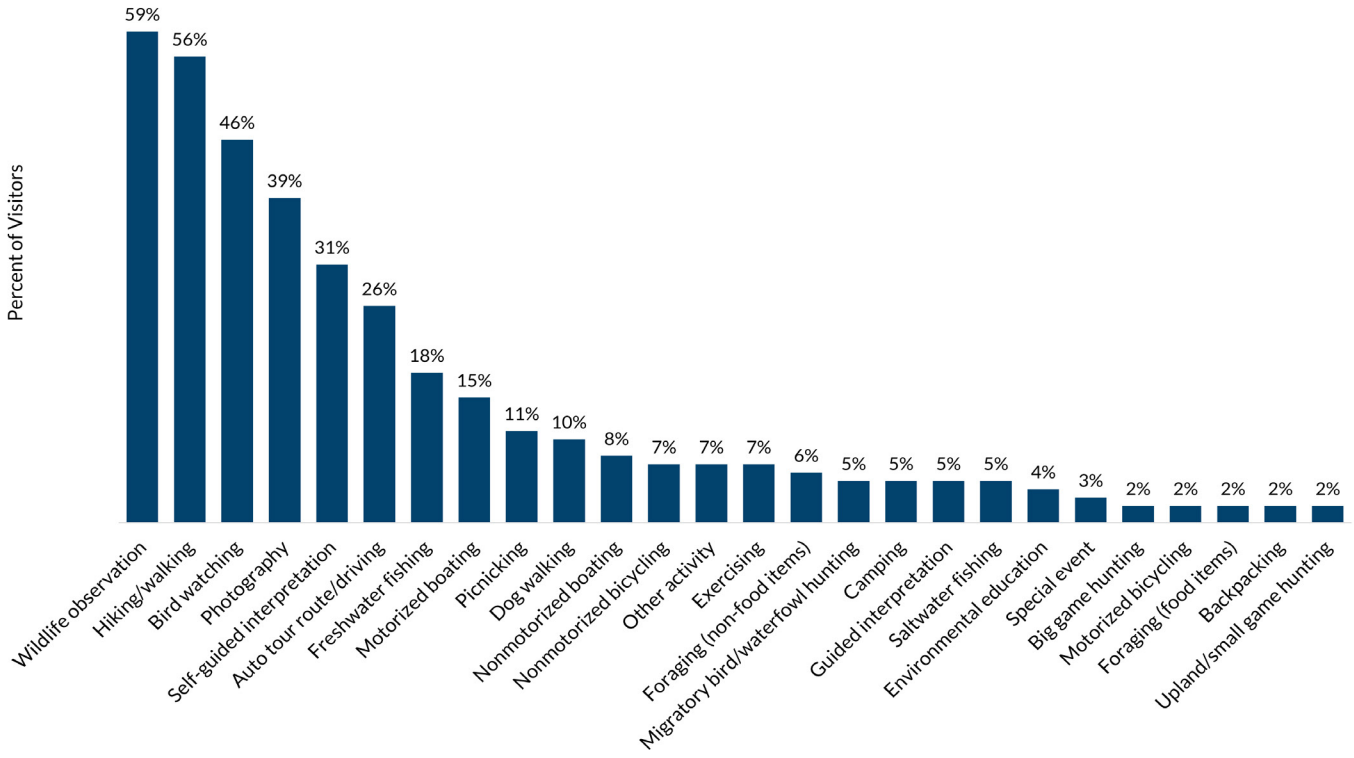


Fig. 4. Activities in which visitors participated during the 12 months prior to contact; any activity <2% is excluded from the figure

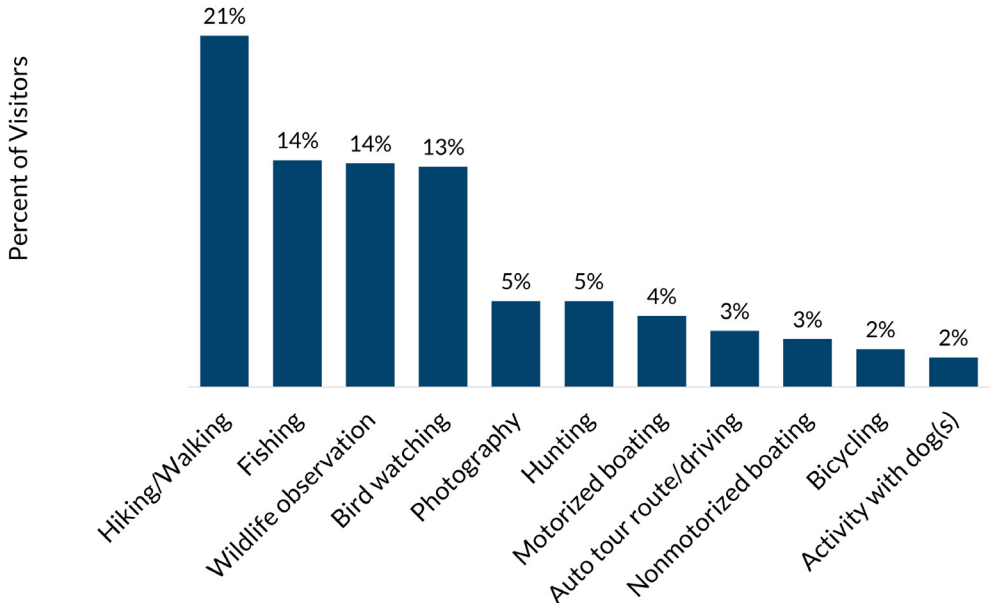


Fig. 5. Primary activities in which visitors participated on the day when they were contacted; any activity <2% is excluded from the figure

Desert National Wildlife Refuge

TRIP CHARACTERISTICS

Understanding visitors' travel patterns — such as the reason for their visit, the seasons in which they visit, and the people with whom they travel — helps managers plan for increased visitation and manage facilities and resources in sustainable ways.

Visitors enjoy refuges year-round with their family and friends, with visits occurring in autumn (58%), spring (57%), summer (52%) and winter (40%). People most often visited refuges with at least one other adult (63%) or a combination of at least one adult and one child (19%), while 18% of visitors went to refuges alone. The average group size was three people.

Visitors make repeat trips to national wildlife refuges over the course of a year. Nearly two thirds of visitors made multiple trips to the refuge where they were contacted (64%) and over half visited three or more national wildlife refuges (57%) annually. Nearly three quarters (74%) also made nine or more visits to other public lands.

Refuges benefit both local and nonlocal visitors. Half of visitors (50%) lived in the local area — within 50 miles of the refuge. Most visitors (98%) lived in the United States. For most local visitors (82%) and a plurality of nonlocal visitors (41%), visiting the refuge was the primary purpose of their trip (Fig. 6).

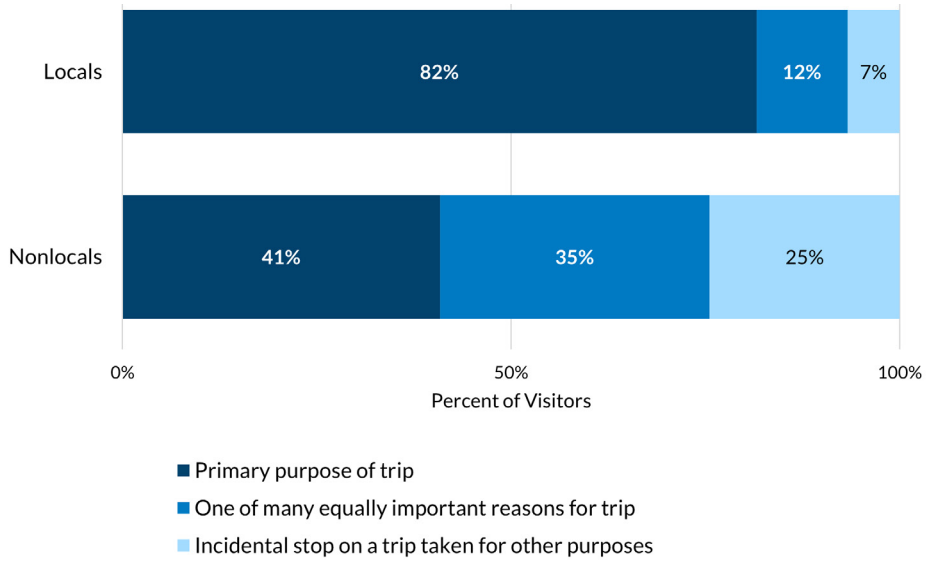


Fig. 6. Purpose of trip for local and nonlocal visitors

Locals averaged eight times as many visits to the refuge as did nonlocals in the previous 12 months (24 visits and 3 visits, respectively), highlighting the value of refuges as nearby nature experiences. The majority of locals (58%) visited the refuge six or more times in the last year, whereas the majority of nonlocals (59%) only visited once (Fig. 7). Local and nonlocal visitors did not vary significantly in the number of visits they made to other refuges or to other public lands. Local visitors traveled an average of 26 minutes to arrive at the refuge whereas nonlocal visitors traveled an average of six hours.

Visitors' trips to refuges are impactful even if completed in less than a day. Most visitors (84%) made single-day trips to refuges spending an average of three hours, while some (16%) were on a multi-day trip that averaged five days. Ninety five percent of local visitors and 73% of nonlocal visitors spent one day or less at the refuge they visited.

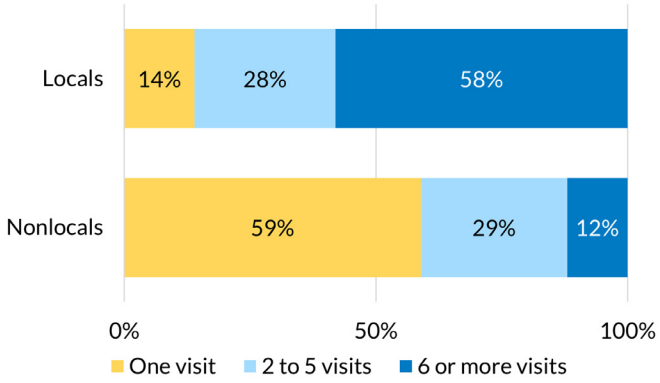


Fig. 7. Visits by local and nonlocal visitors to the refuge where they were contacted in the previous 12 months

Billy Frank Jr. Nisqually National Wildlife Refuge

J.N. "Ding" Darling National Wildlife Refuge

Cape Romain National Wildlife Refuge

Billy Frank Jr. Nisqually National Wildlife Refuge

"I love this wildlife refuge! I go as many times a week as I can. I feel safe [walking] by myself, and everyone is very friendly. I go for the opportunity to exercise (you can walk many miles), and also to observe and photograph wildlife, while feeling completely at ease. It's an incredibly beautiful place, and I see something different every time I go!"

VISITOR TO BILLY FRANK JR. NISQUALLY NATIONAL WILDLIFE REFUGE

VISITOR SATISFACTION WITH REFUGE OFFERINGS

Managers in the Refuge System strive to maintain a high level of customer satisfaction by operating visitor centers; designing, installing, and maintaining trails; constructing viewing blinds; providing maps and interpretive signage along trails, and much more. A solid understanding of visitors' perceptions of their experiences provides a framework for monitoring and responding to trends across time.

Overall, 97% of visitors were moderately, very, or extremely satisfied with the quality of the overall experience offered by refuges, and 95% of visitors were satisfied with the job refuges do of conserving fish, wildlife, and their habitats (Fig. 8). A previous assessment of visitor satisfaction at national wildlife refuges (Sexton et al., 2012) reported similarly high ratings, reflecting visitors' appreciation of the Refuge System's longstanding commitment to quality service.

Most visitors (82%) agreed that refuge staff and volunteers were courteous and welcoming, and that their perspectives would be understood if they spoke with staff and volunteers (71%). **The vast majority of visitors (93%) returned home from their trip thankful for what they experienced on refuges.**

97% of visitors were satisfied *with the quality of the overall experience offered by refuges*

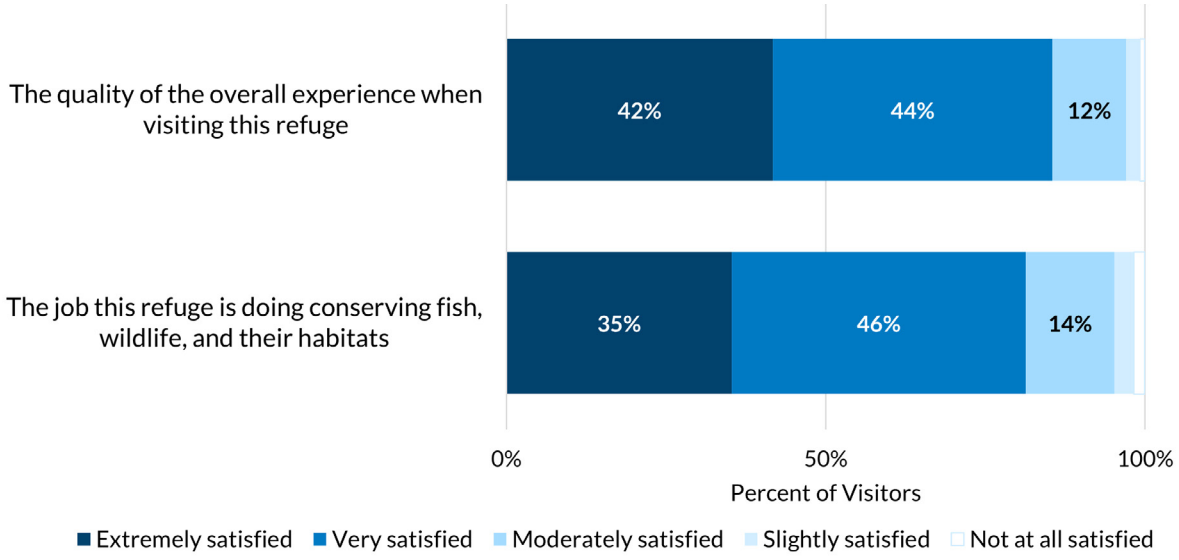


Fig. 8. Overall satisfaction with quality of experience and the conservation work done by refuges

Refuge staff and volunteers regularly interact with visitors and maintain facilities to ensure high-quality experiences. In response, visitors were overwhelmingly satisfied with refuges' convenient hours of operation, offerings at visitor centers, and well-maintained restrooms (Fig. 9).

Visitor satisfaction was also high for recreational opportunities provided by refuges, including fishing, bird watching, hiking and walking on trails, hunting, and water-based activities like boating (Fig. 10).

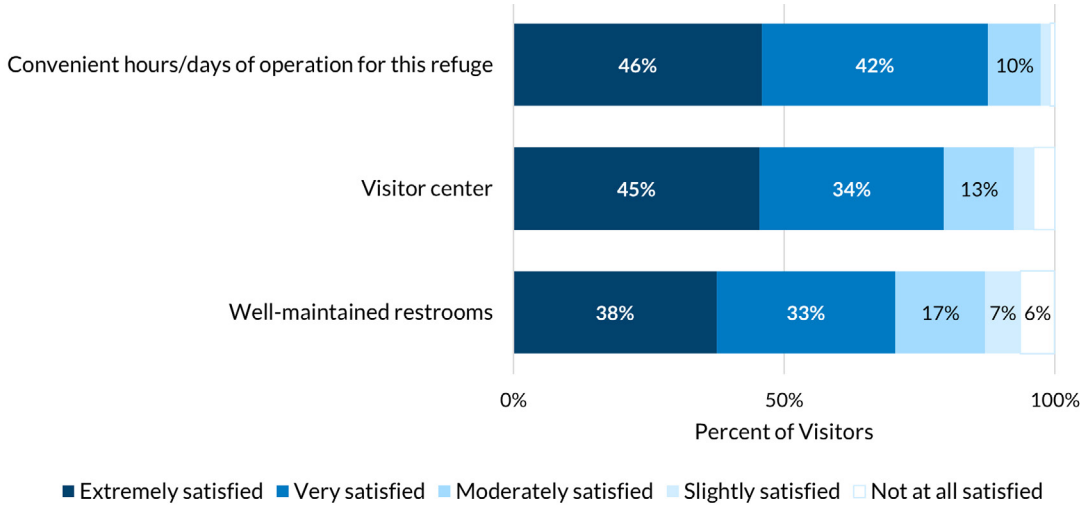


Fig. 9. Visitors' satisfaction with various aspects of refuge operations

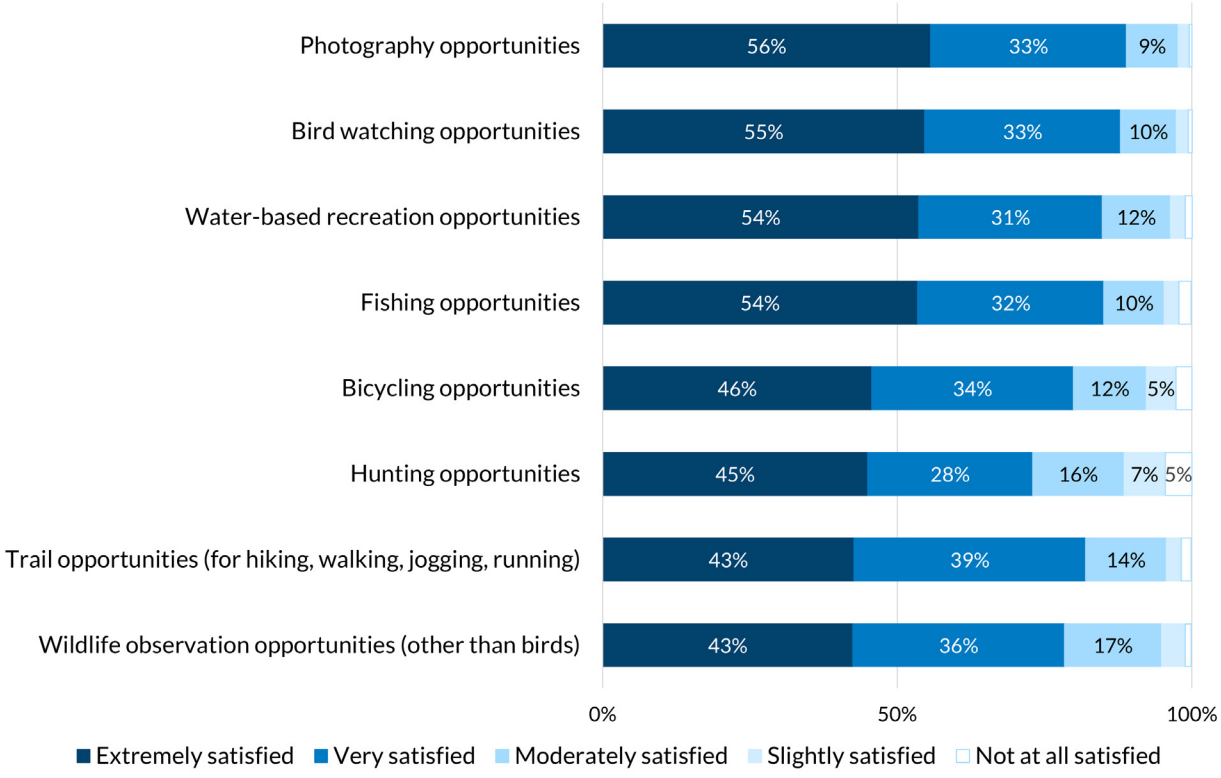


Fig. 10. Visitors' satisfaction with recreation opportunities on refuges

Minnesota Valley National Wildlife Refuge

Encouraging Return Visits

Managers of the Refuge System strive to use their limited staff and budgets to maximize benefits for visitors while protecting wildlife habitats. This complex task requires accurate estimation of visitor numbers and an understanding of where visitors go, what they do, what impact they have on the facilities and wildlife habitats, how they perceive their experiences, and what they want out of future visits. Gaining a sense of what would encourage visitors to return and how management activities and potential resource conditions affect their likelihood of returning, can lead to improved visitor experiences, quality natural resource management, and facilities prioritization.

Visitors' future participation in their primary recreation activity would increase if there were more acreage open for that activity within existing refuge boundaries (in other words, more opportunities; 56%). Participation would decrease in the future if there were more people participating in that activity (in other words, crowding; 26%) (Fig. 11). Additional, site-specific analysis may be necessary to identify refuges where visitors desire more open acreage for their primary activity or where crowding may be a concern.

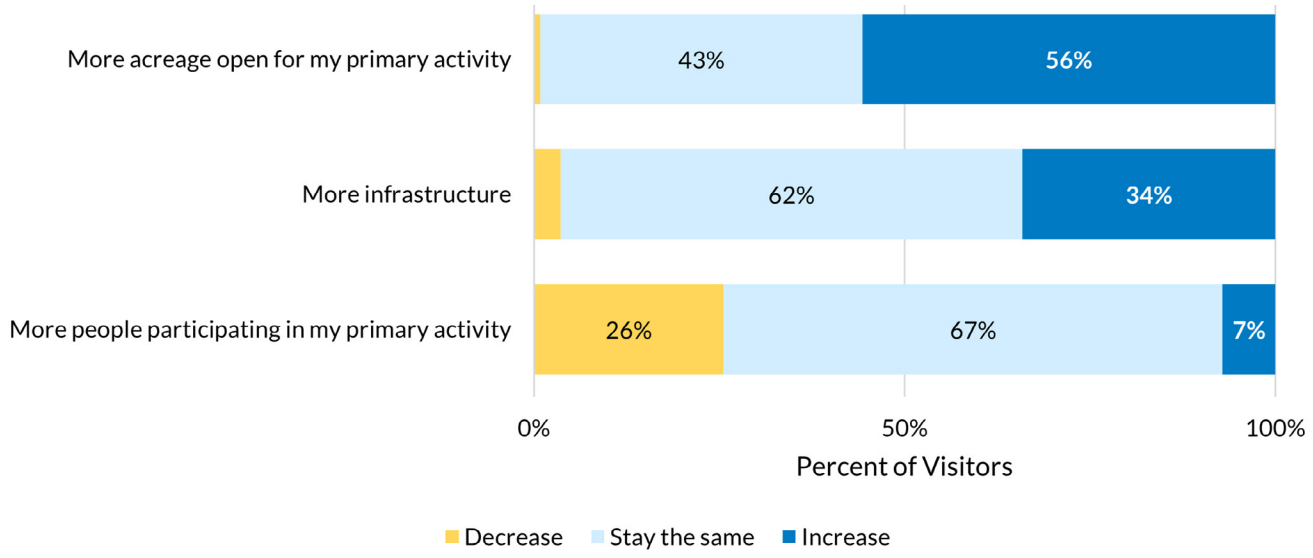


Fig. 11. Influence of management conditions on future participation in primary activity

Refuges provide numerous benefits to visitors and society including provisioning services such as food and clean water; regulating services such as flood and disease control; access to outdoor areas for recreation and education; and supporting services such as nutrient cycling (Millennium Ecosystem Assessment, 2005). Understanding how changes in resource conditions and ecosystem services may affect future visitation and participation in certain recreation activities can improve natural resource and visitor management, as well as inform communication efforts with community members, partners, and policymakers (Patton et al., 2012). The top resource changes likely to increase visitors' future participation in their primary recreation activity were a greater diversity of species (50%), an improvement in the quality of wildlife habitat other than wetlands (50%), and an improvement in the quality of wetlands (47%). Visitors' participation would likely decrease if less water were available for recreation (38%) (Fig. 12).

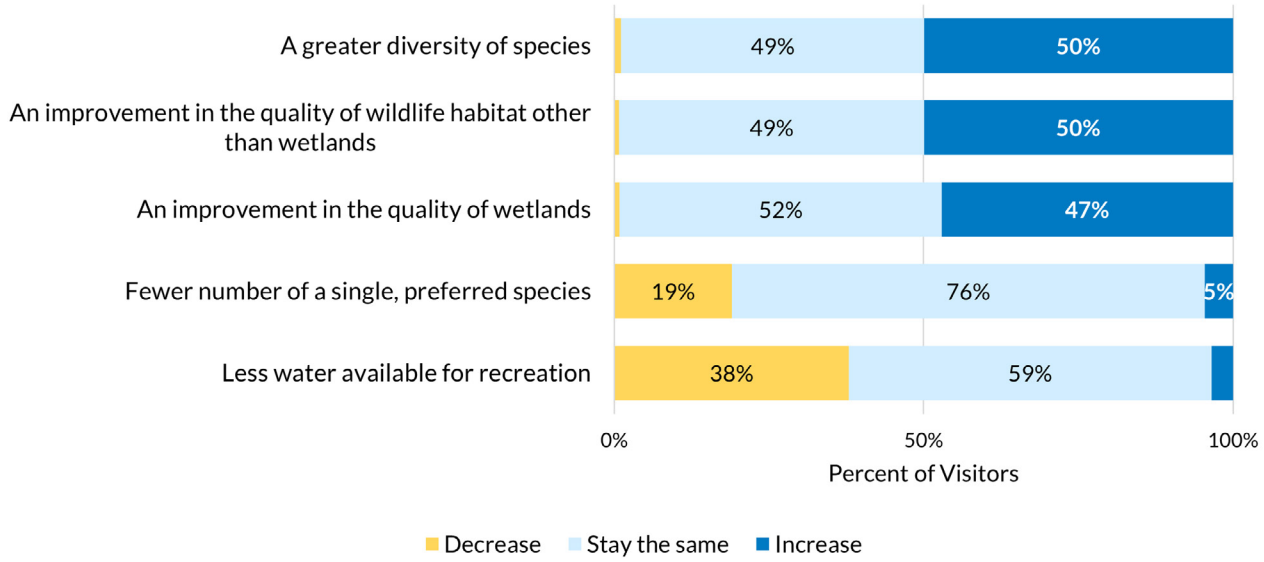


Fig. 12. Influence of resource conditions on future participation in primary activity

Future Demand for Programs

Programming and other offerings that are compatible with the purpose of a refuge and the Refuge System mission can attract people to the refuge. For example, interpretation and environmental education programs provide opportunities for first time visitors to become comfortable with outdoor recreation and instill an appreciation for fish, wildlife, and plants. Nearly two thirds (64%) of visitors expressed interest in participating in environmental education and interpretive programs in the future, especially those focused on skill building like species identification (78%) and those highlighting unique local culture (43%) (Fig. 13).

Preferences for refuge programming differed by age group, with 35–49-year-old visitors more interested in programs that engage youth; this age group may more commonly have children living at home who might benefit from opportunities to learn about nature and build skills. Visitors aged 18-34 were nearly twice as likely to want programs focused on creative outdoor pursuits than those in the 65+ age category.

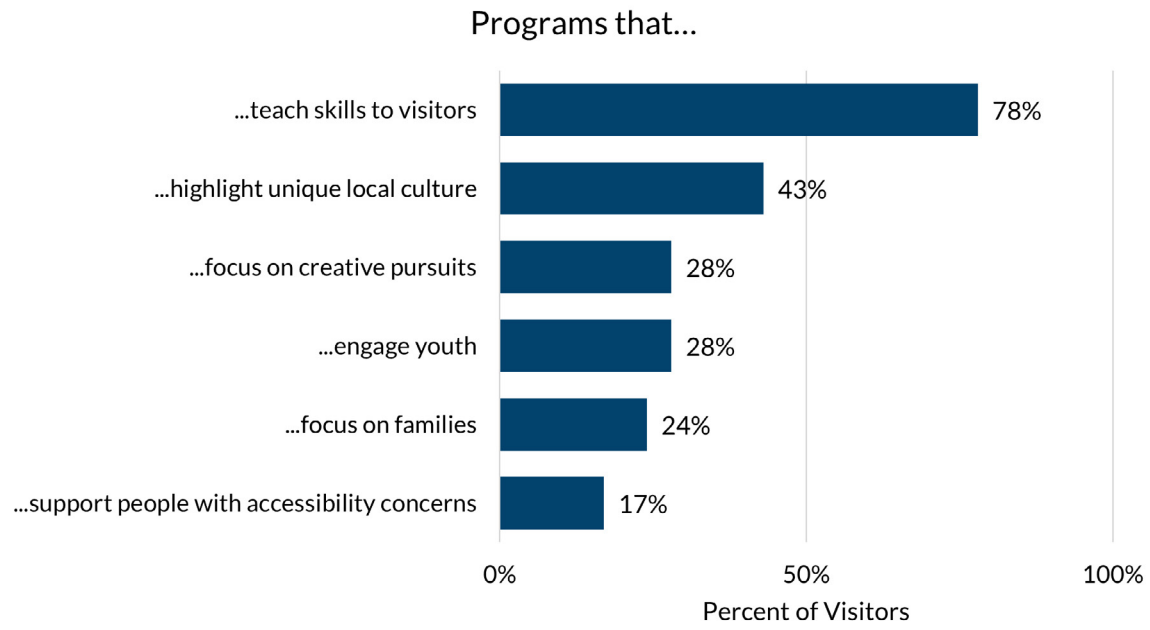


Fig. 13. Visitors' interest in future programs at refuges

John Heinz National Wildlife Refuge at Tinicum

A CLOSER LOOK AT HUNTERS, ANGLERS, AND BIRD WATCHERS

Refuges provide wildlife-dependent recreation opportunities that are not widely found on other public lands. This is especially evident for hunting, angling, and bird watching. For decades, refuges have drawn bird watchers looking to add a rare or iconic species to their life list, waterfowl hunters hoping to experience peak fall duck migration, and local anglers looking to catch fish close to home. Taken together, these results reflect the importance of refuges for exceptional hunting, angling, and bird watching experiences, among other activities.

Nearly one third of visitors (32%) participated in hunting, fishing, or bird watching on the day of their visit. We used primary activity to identify if visitors were a "hunter," "angler," or "bird watcher," however, we acknowledge that these groups are not mutually exclusive — a person can participate in more than one activity over the course of a year.

Demographics

Hunters represented a younger demographic than anglers and bird watchers (Fig. 14). Hunters and anglers were predominantly male, while bird watchers were more evenly split (Fig. 15).

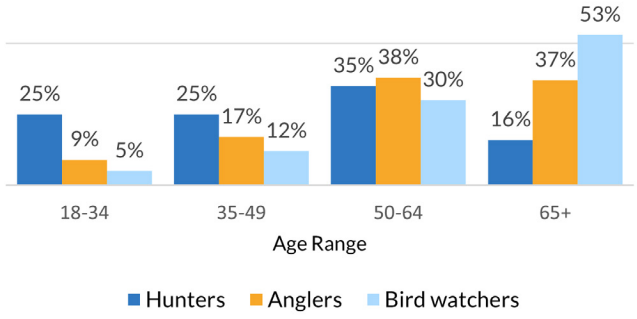


Fig. 14. Age distribution of hunters, anglers, and bird watchers

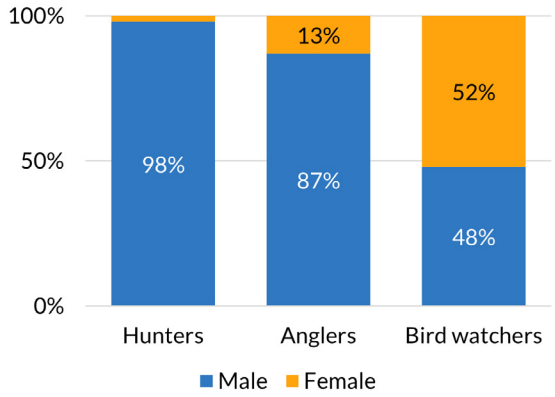


Fig. 15. Sex distribution of hunters, anglers, and bird watchers

Salt Plains National Wildlife Refuge

Kenai National Wildlife Refuge

Kirwin National Wildlife Refuge

Harris Neck National Wildlife Refuge

Trip Characteristics

Overall satisfaction among hunters (94%), anglers (95%), and bird watchers (98%) was extremely high, indicating the ongoing commitment of the Refuge System to providing high-quality wildlife-dependent recreation (Fig. 16).

Hunters, anglers, and bird watchers are repeat visitors, highlighting the significance of national wildlife refuges for these outdoor pursuits. Annually, anglers averaged 22 visits to the refuge where they were contacted, hunters averaged 17 visits, and bird watchers averaged eight visits. They also visited other refuges and public lands across the country, with bird watchers making the most visits to other refuges (6) and other public lands (15).

Most hunters (92%), anglers (82%), and bird watchers (54%) indicated that visiting the refuge was the primary purpose of their trip. Most anglers (62%) were drawn to local refuges within 50 miles of their home, whereas bird watchers (60%) more often traveled to refuges beyond 50 miles away. Hunters were almost evenly split with 49% staying local and 51% traveling more than 50 miles to a refuge.

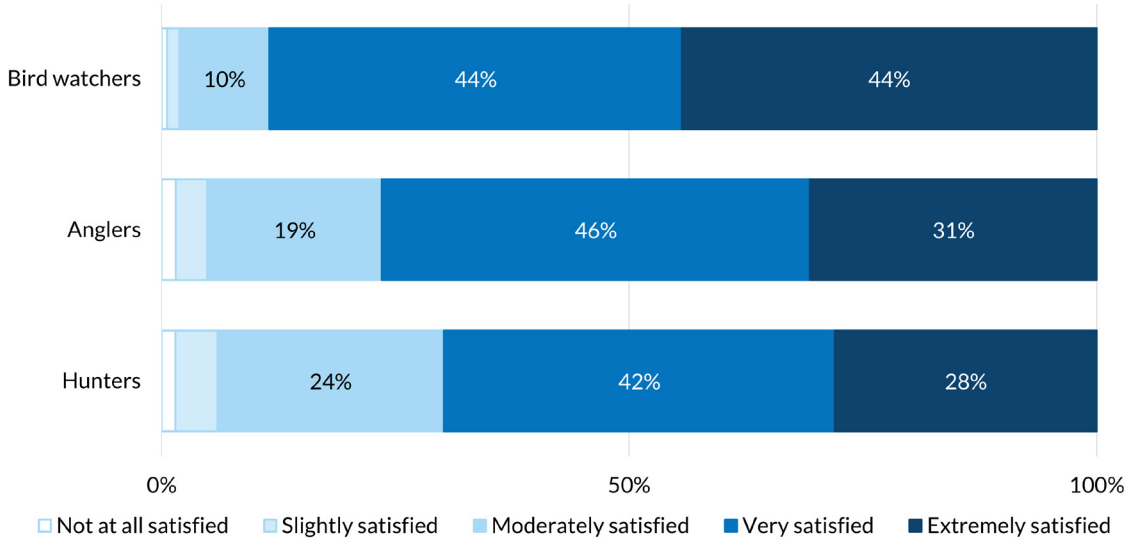


Fig. 16. Bird watchers', hunters', and anglers' satisfaction with the quality of the overall experience when visiting refuges

Return and Future Visits

Hunters and anglers were more likely than other visitors to say they intended to return to the refuge in the next year. Specifically, 94% of hunters and 87% of anglers indicated they were likely to return within a year compared to 66% of other recreationists who planned to do the same (Fig. 17). Bird watchers were more similar to other recreationists, with 68% of bird watchers indicating they were likely to return within a year. These results underscore the strong connection that some visitors have to refuges that offer hunting and fishing opportunities.

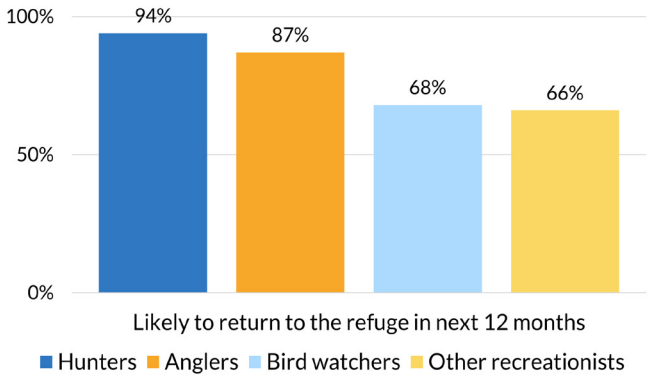


Fig. 17. Likelihood of return visit to the refuge in the next 12 months by activity

Improved resource conditions like a higher diversity of species and an increase in the quality of wetlands would increase future participation in hunting and bird watching. Most bird watchers (76%) reported that their participation would increase with more species diversity. Most bird watchers (73%) and hunters (59%) would increase their participation with improved wetland quality (Fig. 18).

Factors such as removing regulations, opening additional acreage for their activity, and the number of people recreating on the landscape would impact future participation in hunting, angling, and bird watching. All three groups indicated they would increase their participation if more acreage were open within existing refuge boundaries for their respective activity. Nearly half of hunters (48%) would decrease their hunting activity if there were more people participating in hunting (Fig. 19). The Service is committed to expanding hunting and fishing opportunities on national wildlife refuges and fish hatcheries, prioritizing cooperative management with states and tribes to enhance visitor experiences.

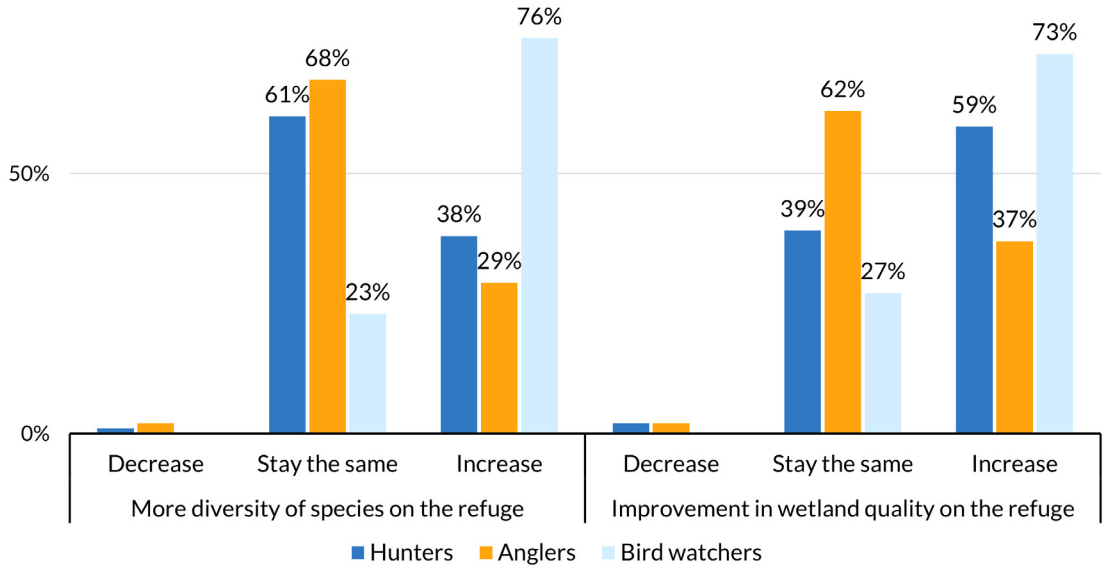


Fig. 18. Influence of resource conditions on future participation by activity

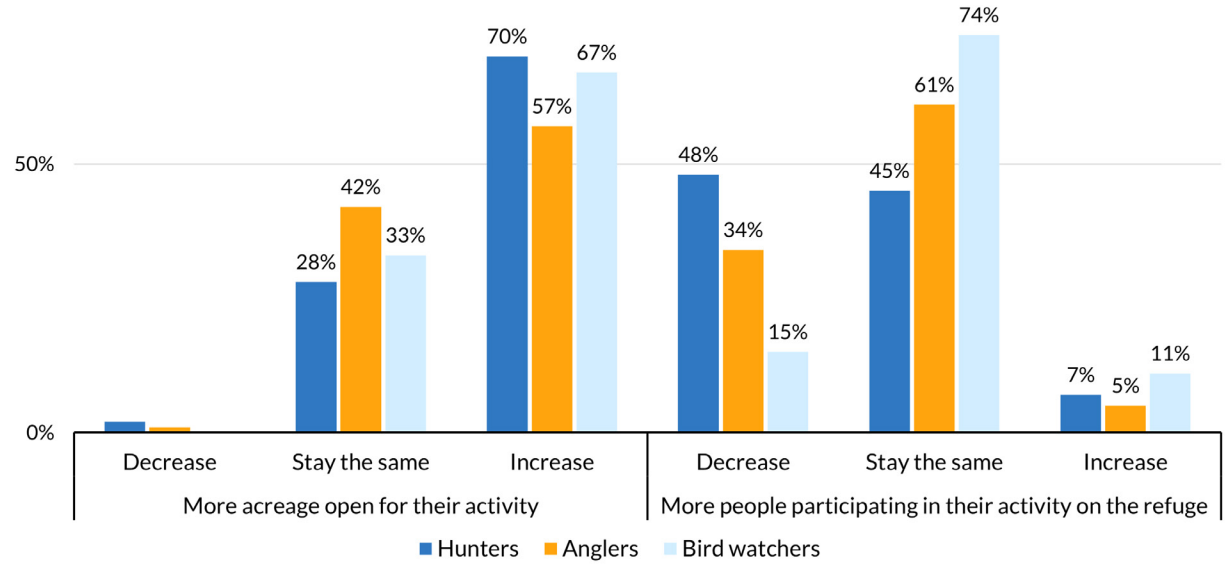


Fig. 19. Influence of management conditions on future participation by activity

A majority of hunters (60%), anglers (78%), and bird watchers (55%) felt that removing regulations on hunting would not impact their future participation in their respective activities. About a third of hunters (31%) would increase their participation in hunting if there were fewer regulations on the activity, while 42% of bird watchers would decrease their participation in bird watching if fewer hunting regulations existed.

Removing regulations on fishing would not impact future participation for most hunters (83%), anglers (69%), and bird watchers (73%). However, some anglers (21%) indicated their participation would increase with fewer fishing regulations, while 24% of bird watchers indicated their participation in bird watching would decrease if fewer fishing regulations existed (Fig. 20).

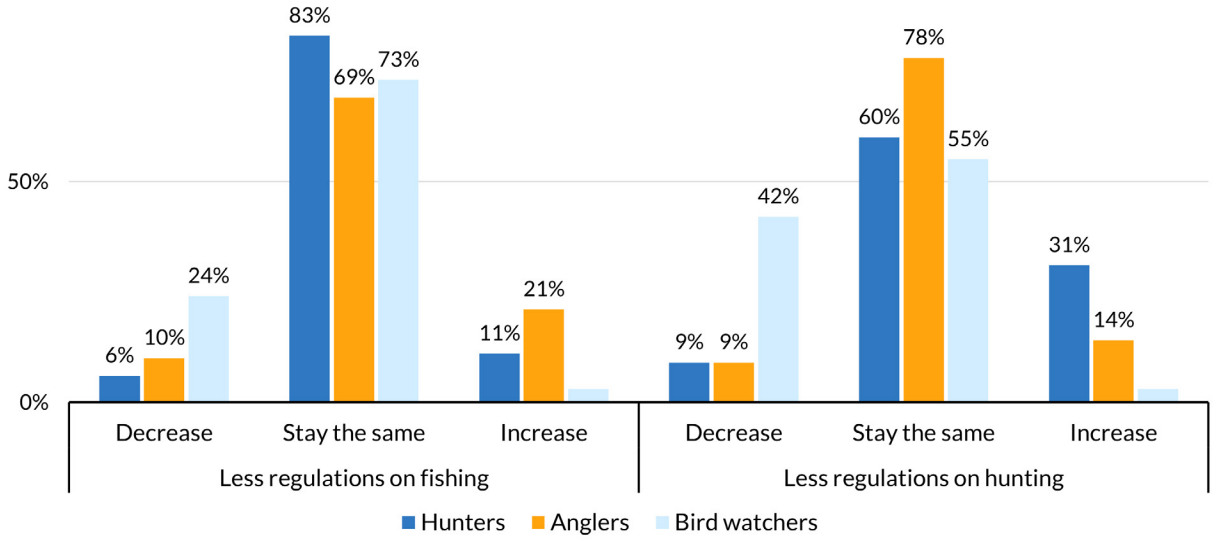


Fig. 20. Influence of removing regulations on future participation by activity

"I have been duck hunting for 43 years and have hunted all of the refuges in the Central Valley. This was the first refuge I hunted this year and I enjoyed it so much that I returned eight more times."

VISITOR TO SACRAMENTO
NATIONAL WILDLIFE REFUGE

Sacramento National Wildlife Refuge

TRANSPORTATION SAFETY AND ACCESS

Satisfaction with Transportation Features

The Federal Lands Transportation Program, a collaboration between the Federal Highway Administration and federal land management agencies including the Service, provides funding for the maintenance of many transportation features on national wildlife refuges. The Service's National Long-Range Transportation Plan directs the stewardship of a multi-modal transportation system on refuges (U.S. Fish and Wildlife Service, 2016).

The plan is guided by three central principles:
1) safe and efficient movement of people;
2) resource conservation design; and
3) economic generation.

This principled approach allows the Service to provide transportation infrastructure on refuges that ensures safe and convenient access and spurs local economic activity while protecting the species and habitats for which each refuge was established.

A key goal of the National Long-Range Transportation Plan is to enhance experiences on refuges through improvements to the transportation network. Visitors perceive transportation features (such as roadways, signs, trails, and parking areas) differently, and their input regarding safety and access can help prioritize future transportation improvements. With more than 90% of visitors traveling to the refuge by private vehicle, the condition of refuge roadways and parking areas matters.

Nationwide, approximately 95% of visitors were satisfied with key aspects of transportation access. Transportation access on refuges includes the ease and safety of entering and exiting from the refuge, the surface condition of refuge roads, and the condition of bridges on refuge roads (Fig. 21).

Signage

While getting to and navigating around a refuge, visitors rely on signage. Signs may show the location of the refuge in relation to a road or other landmark, help orient a visitor to trails and their distances, or post rules and regulations that apply to the site. **Nearly 90% of refuge visitors were satisfied with the signage on refuges**, including signs on highways

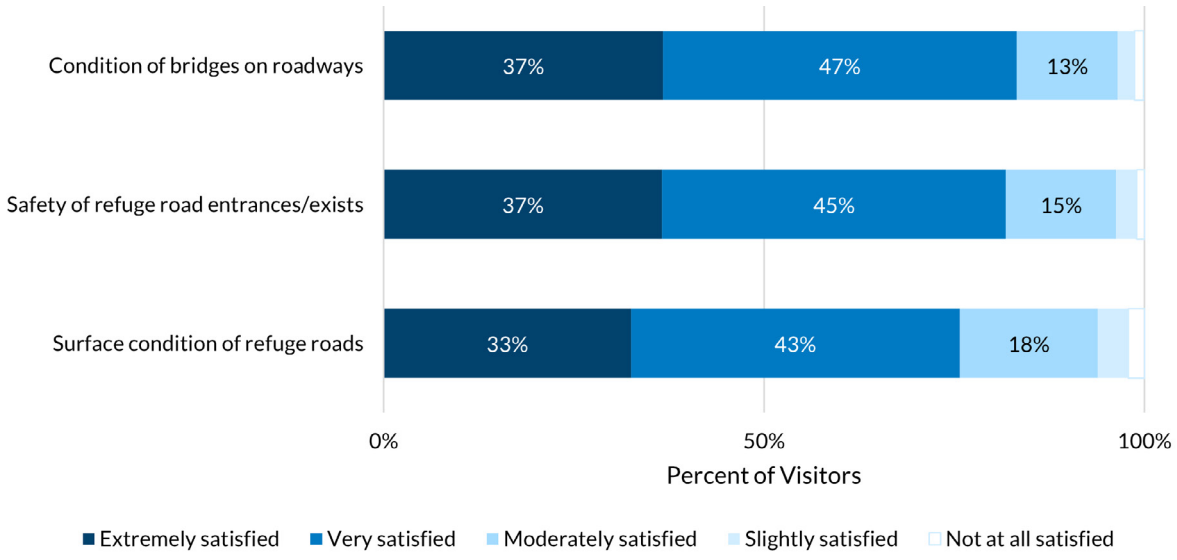


Fig. 21. Visitors' satisfaction with the safety and condition of refuge roadways

directing them to the refuge, around the refuge once they arrived, and while on refuge trails (Fig. 22).

Parking, Pullovers, and Trails

Visitors were highly satisfied with parking, pullovers, and trails. Nearly all visitors were satisfied with the condition of parking areas (95%) and the availability of parking (92%). They were also satisfied with the number of places to pull over on refuge roads (86%) (Fig. 23).

Overall, the vast majority of visitors were satisfied with recreation access features on refuges, including the condition of trails and boardwalks (96%) as well as roads and trails for nonmotorized users (94%). Boat launches also help visitors safely and quickly access lakes, rivers, and other water resources. Overall, most visitors (88%) were satisfied with boat launches (Fig. 24).

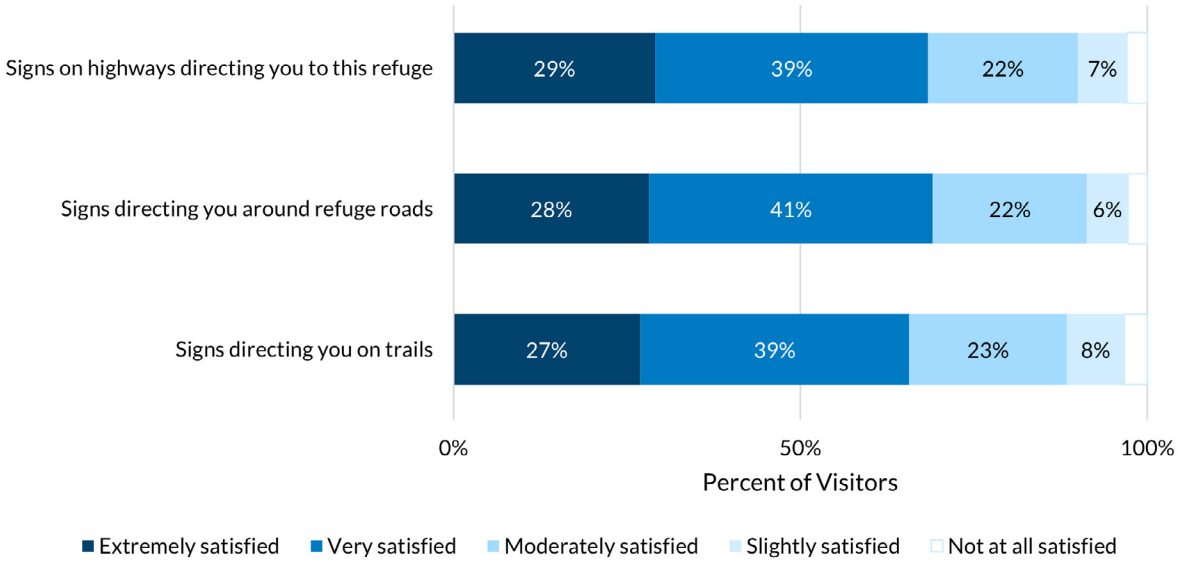


Fig. 22. Visitors' satisfaction with signage on refuges

Desert National Wildlife Refuge

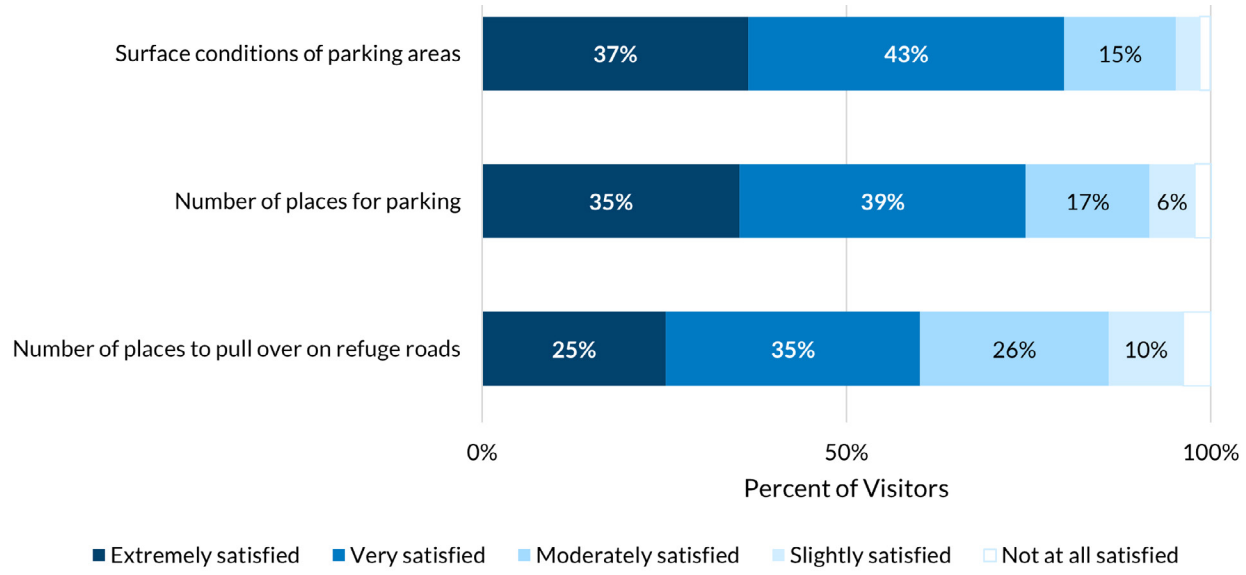


Fig. 23. Visitors' satisfaction with the safety and condition of refuge parking areas

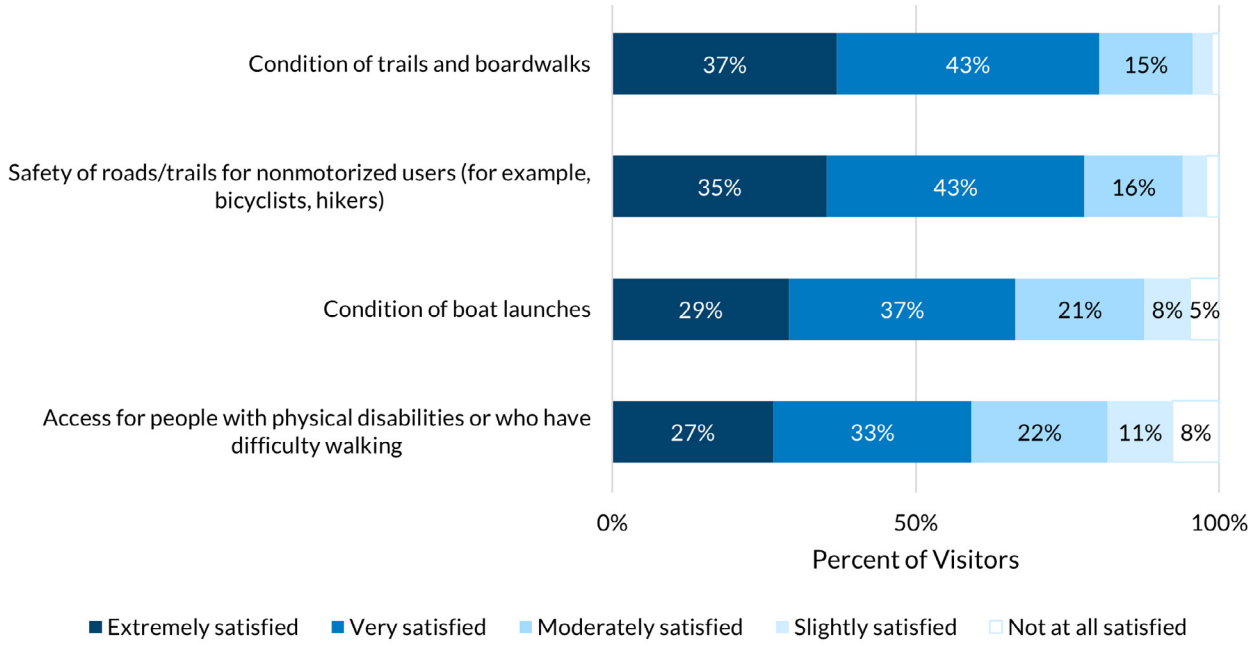


Fig. 24. Visitors' satisfaction with recreation access features on refuges

Access for People With Disabilities

The U.S. Centers for Disease Control and Prevention (2024) reports that more than 12% of people in the United States have serious difficulty walking or climbing stairs. The Refuge System is committed to providing access to all visitors, including those with disabilties. Most visitors were satisfied with access for those who have physical disabilities or difficulty walking (82%) (Fig. 24).

Future Transportation Demand

Understanding visitor demand for different transportation options is another objective of the Service's National Long-Range Transportation Plan. Even though demand for transportation alternatives may be relatively small, any use of these options where feasible can ensure that transportation on refuges helps to conserve fish, wildlife, plants, and their habitats while improving the visitor experience.

Visitors were most supportive of pedestrian paths from the local community to the refuge (45%) and a bus or tram that provides a guided tour (45%) or takes passengers around the refuge (37%) (Fig. 25). Individual refuge-level results offer additional insight for transportation decision making.

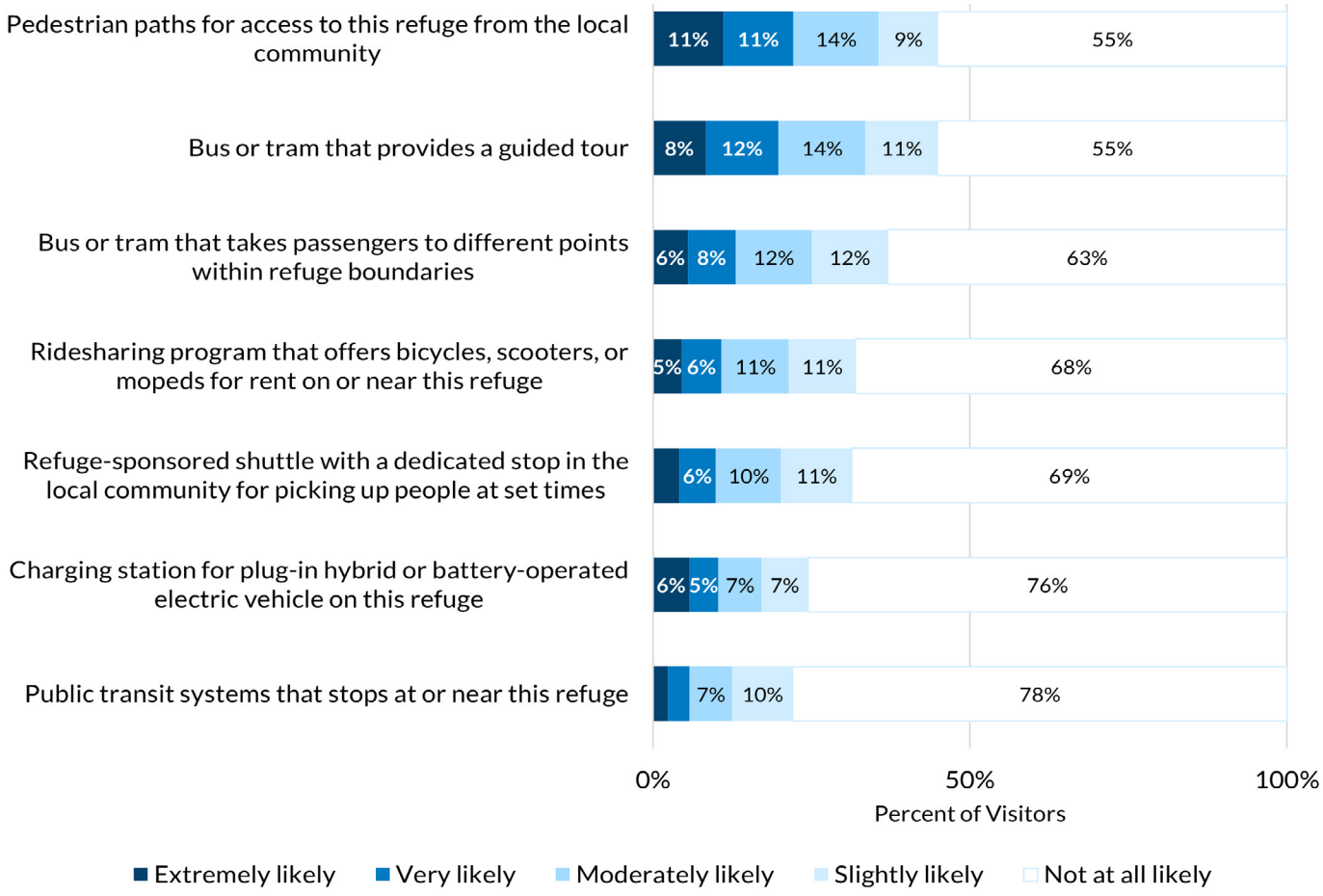


Fig. 25. Visitors' likelihood of using different transportation options if offered in the future at refuges

VISITOR CENTER USE

Visitor centers provide a place-based orientation that allows visitors to maximize their experiences on refuges. Visitor centers offer people the chance to learn about a refuge and its resources, get drinking water and use restrooms, and interact with refuge staff or volunteers. While use varies seasonally, over one third of visitors (36%) went to a visitor center during their most recent visit. Of those, around two thirds viewed the exhibits (67%) and used the restrooms (65%), about half visited the gift shop or bookstore (54%) or asked for information (52%), and one third viewed lists of bird or wildlife sightings (33%) (Fig. 26).

Nearly half of nonlocal visitors (48%) went to a visitor center during their trip, whereas fewer local visitors (25%) went, perhaps because they may already be familiar with the refuge and its offerings. Additionally, visitors participating in specific activities, such as environmental education (86%), guided interpretation (71%), wildlife observation (59%), and bird watching (52%), were more likely to use the visitor center than other recreationists who participated in activities like hunting (11%), fishing (11%), and motorized boating (5%).

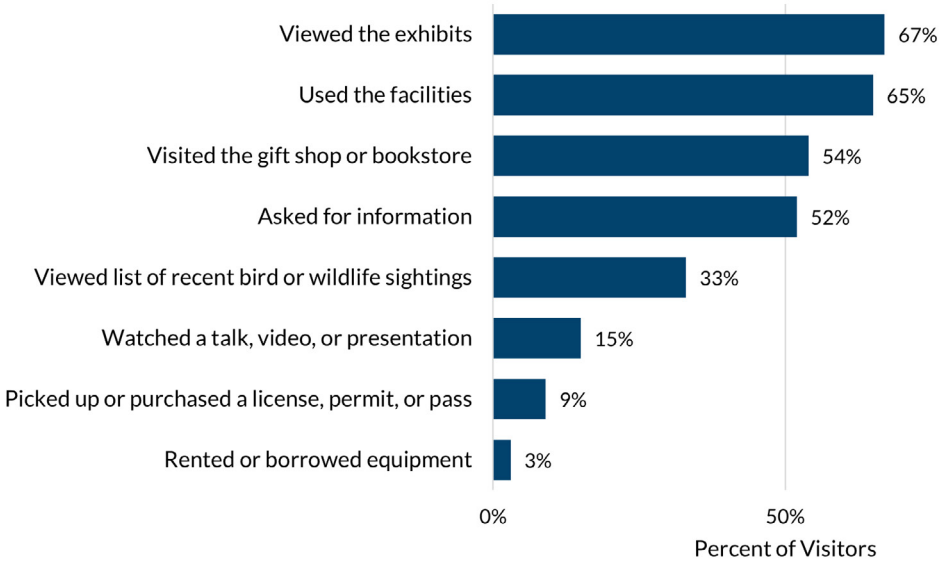


Fig. 26. Visitor center use for those who went to the visitor center at the refuge they visited

Don Edwards San Francisco Bay National Wildlife Refuge

Bear River Migratory Bird Refuge

COMMUNICATING WITH VISITORS

The Refuge System's success in connecting with current and future visitors depends, in part, on the Service's ability to keep pace with broader national communication trends. Refuges use a wide variety of delivery channels for visitor communications. Understanding which of these information sources are used by refuge visitors and how helpful they perceive the provided information to be can inform the development of comprehensive and adaptive visitor and community outreach strategies.

Information Sources

We asked visitors which information sources they used to get information about the refuge they visited and how helpful each of those resources were for learning about the refuge or planning their trip. Overall, visitors used a variety of in-person, print, internet, and refuge-specific information sources, with over half of visitors using web-based maps (55%), word of mouth (52%), and kiosks/displays/exhibits (52%). Visitors were least likely to rely on recreation clubs (15%), travel websites (15%), and travel guidebooks (14%) to plan their visit or learn about the refuge (Fig. 27).

For in-person sources, 87% of visitors indicated that word of mouth (for example, recommendations from friends or family) was the most helpful. For print and electronic (internet) sources external to the U.S. Fish and Wildlife Service, 88% of visitors indicated that web-based maps were the most helpful. For refuge-specific sources, 86% of visitors found kiosks, displays, or other exhibits at the refuge most helpful, followed closely by 85% of visitors who indicated that refuge employees/volunteers and refuge printed information were helpful (Fig. 28).

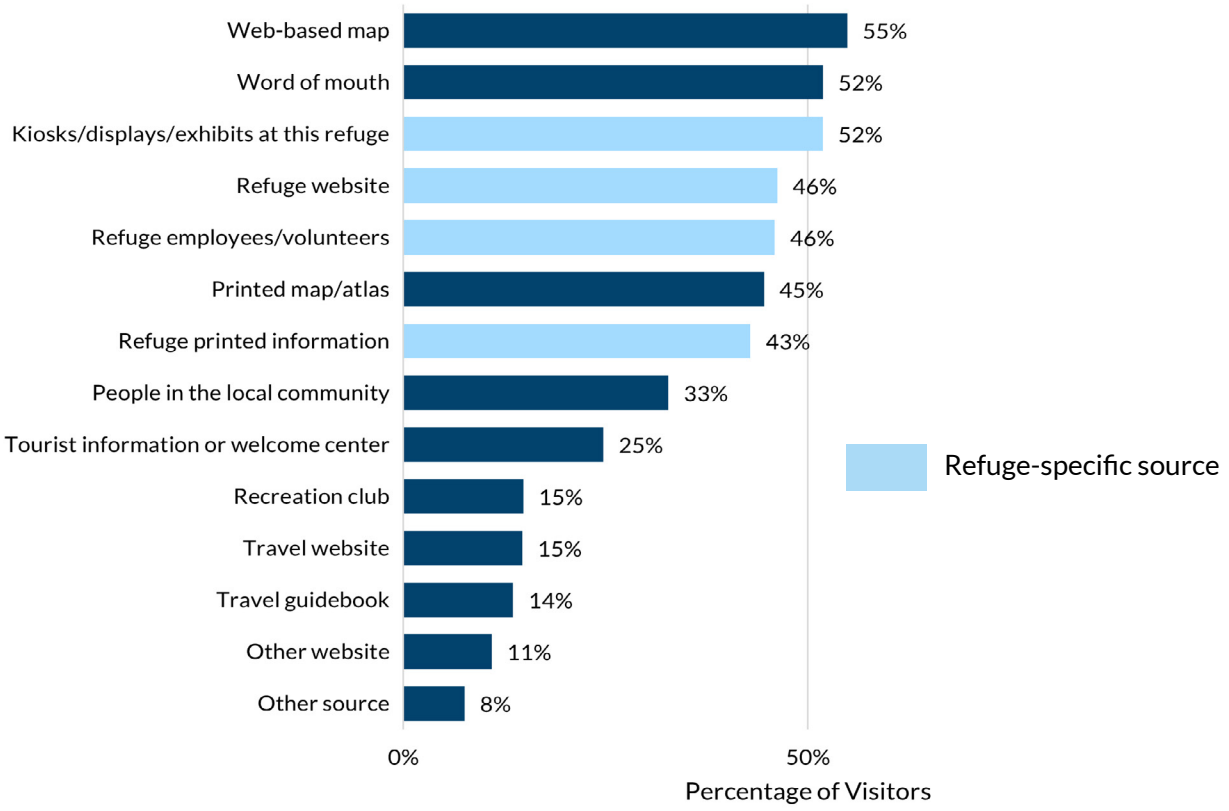


Fig. 27. Visitors' use of different information sources including those provided by refuges

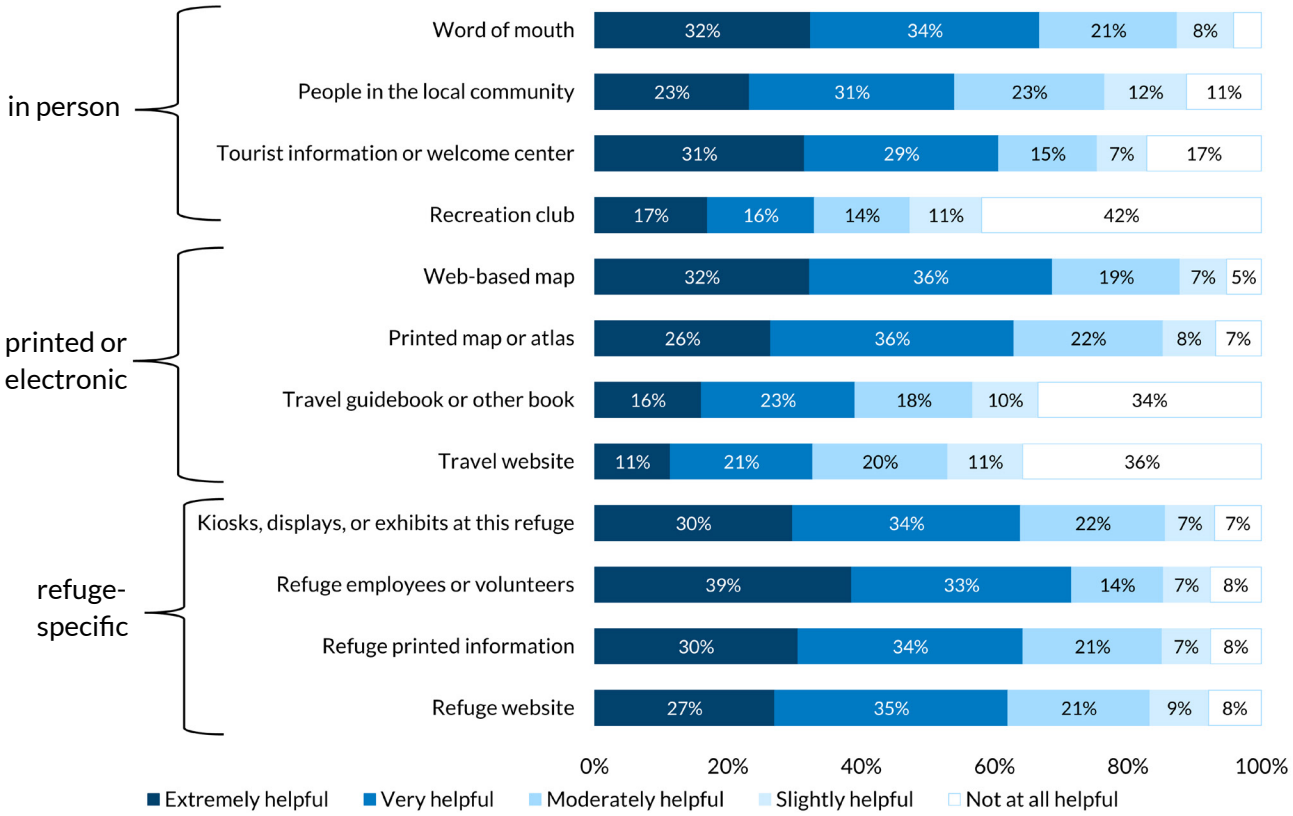
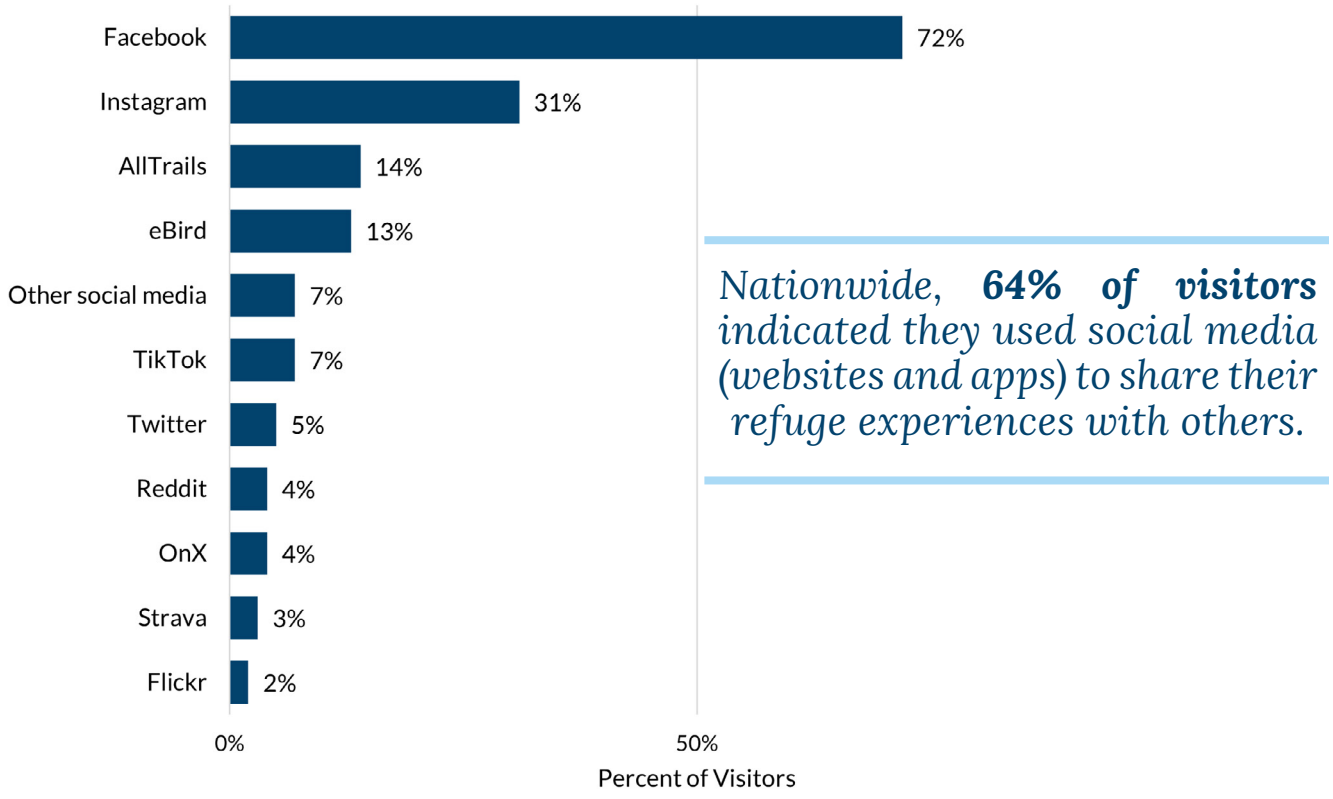


Fig. 28. Helpfulness of in-person, printed/electronic, and refuge-specific information sources used to plan a refuge visit

Use of Social Media

Visitors share their refuge experiences in a variety of ways, including by text, email, nature websites/apps with user-generated content (for example, eBird, AllTrails), and social media. Learning which communication channels visitors use to share their experiences with others can help managers better reach current and potential visitors.

Around 70% of American adults use social media to connect with one another, engage with news content, share information, and entertain themselves (DataReportal, 2024). 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 a refuge, its offerings, and its conservation efforts among audiences that lack exposure through traditional media outlets. Nationwide, 64% of visitors indicated they used social media (websites and apps) to share their refuge experiences with others. Visitors primarily use Facebook (72%) and Instagram (31%) to share their experience (Fig. 29), with visitors between 18-34 years old using both platforms equally and visitors 35 and over more commonly using Facebook.



Nationwide, ***64% of visitors*** *indicated they used social media (websites and apps) to share their refuge experiences with others.*

Fig. 29. Visitors' use of social media platforms and other websites to share about their refuge experience

Kilauea Point National Wildlife Refuge

"I have been coming to Kauai for over 30 years and visit this refuge quite a bit. [I like to] show guests and family the views, birds, and the various changes that this refuge has gone through."

VISITOR TO KILAUEA POINT
NATIONAL WILDLIFE REFUGE

VISITOR DEMOGRAPHICS

Understanding the characteristics of visitors to wildlife refuges is a critical step in providing high-quality visitor experiences. Demographic characteristics intersect other social and economic characteristics that can clarify who lives, works, and plays in communities neighboring refuges. By comparing the demographic composition for refuge visitors to that of nearby communities, the state in which a refuge is located, or the nation, managers can better facilitate broad engagement and participation in outdoor recreation with new and existing audiences. Headwaters Economics' U.S. Fish and Wildlife Service Socioeconomic Profile Tool, along with other socioeconomic data and trends tools (**https://headwaterseconomics.org**), and U.S. Census Bureau products (**www.census.gov**) are useful tools for such comparisons.

Refuge visitors are older, more educated, and have about the same income when compared to national averages. Most visitors surveyed (>71%) were 50 years of age or older. Male visitors made up a larger proportion (55%) of survey participants than did females. Female visitors were slightly younger than males (Fig. 30). Most visitors had completed college or technical school beyond high school (50%) or formal schooling beyond a four-year undergraduate degree (37%). Visitors' median household income ranged from $75,000 to $99,999 (Fig. 31). This is consistent with the national median household income of $80,610 in 2023 (U.S. Census Bureau, 2024).

Like other public lands visitors, refuge visitors do not represent national demographics for race and ethnicity. Nationwide, most refuge visitors (91%) identified as White; fewer identified as Hispanic or Latino (3%), Asian (2%), Black (1%), other race (for example, Native American, Native Hawaiian, Native Alaskan) (2%), or two or more races/ethnicities (2%). Visitors to other public lands also are predominantly White, such as national forests (95%) and national parks (77%) (Ziesler & Spalding, 2023). Results for refuges are aligned with this national trend, suggesting that America's public lands are not being utilized by all segments of the population. The Refuge System is expanding opportunities for outdoor pursuits for all audiences as participation grows across populations (Outdoor Industry Association, 2024).

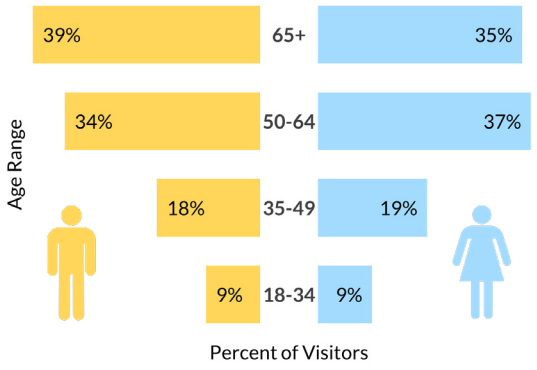


Fig. 30. Age distribution of male (left) and female (right) visitors

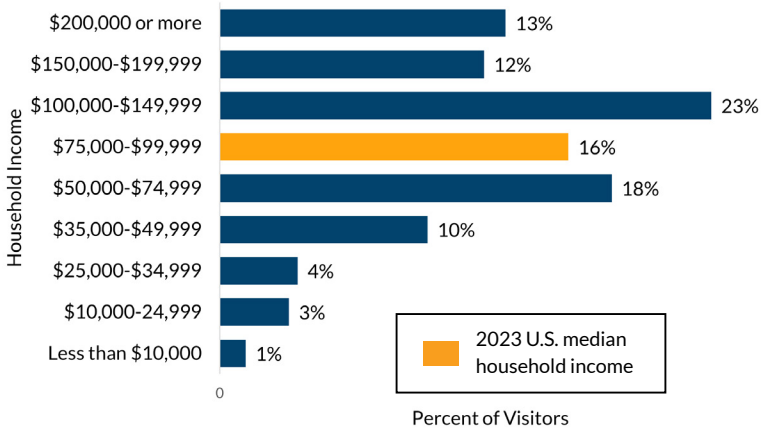
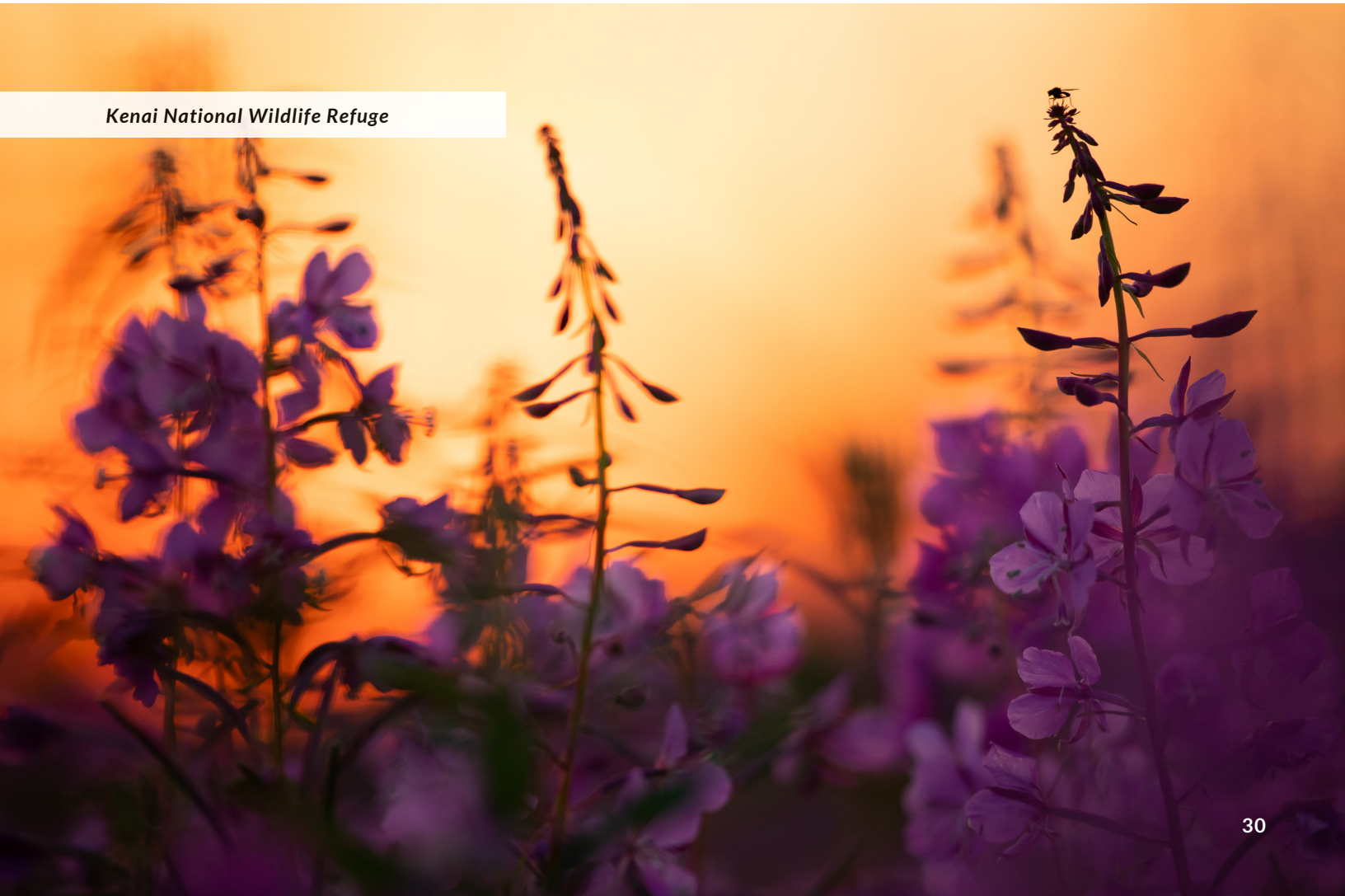


Fig. 31. Visitors' reported household income as compared to the 2023 U.S. median income

CONCLUSION

In its management of national wildlife refuges, the U.S. Fish and Wildlife Service strives to maximize benefits for visitors while conserving fish, wildlife, and their habitats. In addition to accurately estimating visitor numbers, managers must also consider where visitors go, what they do, what impact they have on the refuge environment, the seasons during which they visit, how they perceive their experiences, and what they want out of future visits.

These 2018-2023 National Visitor Survey results are intended to inform management of national wildlife refuges, including the management of natural resources, facilities, recreation and access, and the design and delivery of programs for visitors. These findings offer a baseline for monitoring and evaluating Refuge System efforts over time. Managers who understand visitor demographics, trip characteristics, satisfaction levels, and desires for future conditions can make informed decisions for visitor management and resource protection. Integrating this social science with biological science helps ensure that management decisions fulfill the Refuge System mission, while fostering continued public interest in and connection with these special places.



Kenai National Wildlife Refuge

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APPENDIX A: PARTCIPATING REFUGES

Alligator River National Wildlife Refuge
Ankeny National Wildlife Refuge
Aransas National Wildlife Refuge
Archie Carr National Wildlife Refuge
Arthur R. Marshall Loxahatchee National Wildlife Refuge
Back Bay National Wildlife Refuge
Balcones Canyonlands National Wildlife Refuge
Bald Knob National Wildlife Refuge
Baskett Slough National Wildlife Refuge
Bayou Sauvage Urban National Wildlife Refuge
Bear River Migratory Bird Refuge
Big Branch Marsh National Wildlife Refuge
Bill Williams River National Wildlife Refuge
Billy Frank Jr. Nisqually National Wildlife Refuge
Blackwater National Wildlife Refuge
Bombay Hook National Wildlife Refuge
Bon Secour National Wildlife Refuge
Bosque del Apache National Wildlife Refuge
Cabo Rojo National Wildlife Refuge
Cache River National Wildlife Refuge
Canaan Valley National Wildlife Refuge
Cape May National Wildlife Refuge
Cape Meares National Wildlife Refuge
Cape Romain National Wildlife Refuge
Charles M. Russell National Wildlife Refuge
Chassahowitzka National Wildlife Refuge
Cherry Valley National Wildlife Refuge
Chincoteague National Wildlife Refuge
Columbia National Wildlife Refuge
Crab Orchard National Wildlife Refuge
Cross Creeks National Wildlife Refuge
Crystal River National Wildlife Refuge
Dale Bumpers White River National Wildlife Refuge
Deer Flat National Wildlife Refuge
Desert National Wildlife Range
DeSoto National Wildlife Refuge
Detroit River International Wildlife Refuge
Don Edwards San Francisco Bay National Wildlife Refuge
Dungeness National Wildlife Refuge
Eastern Neck National Wildlife Refuge
Edwin B. Forsythe National Wildlife Refuge
Egmont Key National Wildlife Refuge
Elizabeth Alexandra Morton National Wildlife Refuge
Elizabeth Hartwell Mason Neck National Wildlife Refuge
Eufaula National Wildlife Refuge
Felsenthal National Wildlife Refuge
Fort Niobrara National Wildlife Refuge
Great Dismal Swamp National Wildlife Refuge
Great Meadows National Wildlife Refuge
Great Swamp National Wildlife Refuge
Guam National Wildlife Refuge
Hagerman National Wildlife Refuge
Hanalei National Wildlife Refuge
Hanford Reach National Monument
Harris Neck National Wildlife Refuge
Havasu National Wildlife Refuge
Holla Bend National Wildlife Refuge
Horicon National Wildlife Refuge
Imperial National Wildlife Refuge
Iroquois National Wildlife Refuge
J.N. 'Ding' Darling National Wildlife Refuge
Jocelyn Nungaray National Wildlife Refuge
John H. Chafee National Wildlife Refuge
John Heinz National Wildlife Refuge
Kealia Pond National Wildlife Refuge
Kenai National Wildlife Refuge
Kilauea Point National Wildlife Refuge
Kirwin National Wildlife Refuge
Laguna Atascosa National Wildlife Refuge
Lake Woodruff National Wildlife Refuge
Lee Metcalf National Wildlife Refuge
Loess Bluffs National Wildlife Refuge
Lower Suwannee National Wildlife Refuge
Mattamuskeet National Wildlife Refuge
McFaddin National Wildlife Refuge
McNary National Wildlife Refuge

Nestucca Bay National Wildlife Refuge
Minidoka National Wildlife Refuge
Minnesota Valley National Wildlife Refuge
Missisquoi National Wildlife Refuge
Montezuma National Wildlife Refuge
Muscatatuck National Wildlife Refuge
Nathaniel P. Reed Hobe Sound National Wildlife Refuge
National Elk Refuge
National Key Deer Refuge
Neal Smith National Wildlife Refuge
Necedah National Wildlife Refuge
Nestucca Bay National Wildlife Refuge
Ninigret National Wildlife Refuge
Ohio River Islands National Wildlife Refuge
Okefenokee National Wildlife Refuge
Ottawa National Wildlife Refuge
Parker River National Wildlife Refuge
Patuxent Research Refuge
Pea Island National Wildlife Refuge
Pelican Island National Wildlife Refuge
Pinckney Island National Wildlife Refuge
Prime Hook National Wildlife Refuge
Rachel Carson National Wildlife Refuge
Red River National Wildlife Refuge
Ridgefield National Wildlife Refuge
Rocky Mountain Arsenal National Wildlife Refuge
Sabine National Wildlife Refuge
Sachuest Point National Wildlife Refuge
Sacramento National Wildlife Refuge
Sacramento River National Wildlife Refuge
Salt Plains National Wildlife Refuge
Sam D. Hamilton Noxubee National Wildlife Refuge
San Bernard National Wildlife Refuge
San Diego Bay National Wildlife Refuge
San Diego National Wildlife Refuge
San Luis National Wildlife Refuge
Santa Ana National Wildlife Refuge
Santee National Wildlife Refuge
Shawangunk Grasslands National Wildlife Refuge
Sherburne National Wildlife Refuge
Shiawassee National Wildlife Refuge
Silvio O. Conte National Fish and Wildlife Refuge
St. Marks National Wildlife Refuge
Steigerwald Lake National Wildlife Refuge
Tamarac National Wildlife Refuge
Tennessee National Wildlife Refuge
Tishomingo National Wildlife Refuge
Trempealeau National Wildlife Refuge
Tualatin River National Wildlife Refuge
Turnbull National Wildlife Refuge
Umbagog National Wildlife Refuge
Upper Mississippi River National Wildlife and Fish Refuge-La Crosse District
Upper Mississippi River National Wildlife and Fish Refuge-McGregor District
Upper Mississippi River National Wildlife and Fish Refuge-Savanna District
Upper Mississippi River National Wildlife and Fish Refuge-Winona District
Vieques National Wildlife Refuge
Waccamaw National Wildlife Refuge
Wallkill River National Wildlife Refuge
Wapanocca National Wildlife Refuge
Wertheim National Wildlife Refuge
Wheeler National Wildlife Refuge
White Horse Hill National Game Preserve
Wichita Mountains Wildlife Refuge
Willapa National Wildlife Refuge
William L. Finley National Wildlife Refuge

APPENDIX B: SURVEY METHODOLOGY

The National Wildlife Refuge Visitor Survey team during the 2018-2023 sampling cycle included staff from the U.S. Fish and Wildlife Service (Service), The Ohio State University (Ohio State), and American Conservation Experience (ACE). Staff from Ohio State and the Service designed the survey instrument, with reviewers within and outside of the National Wildlife Refuge System providing feedback about content and wording. The Field Coordinator and members from ACE conducted sampling on refuges. Ohio State staff coordinated survey mailings, analyzed data, and in cooperation with Service staff, designed the report template and created individual refuge reports.

Sampling Schedule

ACE members (survey recruiters) sampled on each participating refuge between 2018 and 2023. Staff from each refuge identified the sampling periods and locations that best reflected the range of visitor use and visitation patterns of the refuge.

The ACE Field Coordinator developed a sampling schedule for each refuge that included a total of 15 sampling shifts that occurred at set times during each of two separate 14-day sampling periods. (Note: some refuges conducted sampling during only one 21-day sampling period due to visitation patterns or logistical reasoning). Shifts were four-hour time bands stratified across mornings and afternoons/evenings. The survey team customized the schedule as needed to accommodate individual refuge sampling sites and specific spatial and temporal patterns of visitation. Survey recruiters aimed to contact 25 adult visitors (18 years of age or older) per shift for a total of 375 contacts per refuge. Survey recruiters moved, added, or extended shifts to address inclement weather, abnormally low visitation, or other logistical issues.

Contacting Visitors Onsite

Survey recruiters attended a multi-day training delivered by ACE and the Service to prepare for onsite sampling and visitor interactions. Once onsite, teams of survey recruiters contacted visitors following a protocol developed by Ohio State and Service staff. Teams surveyed across the entire sampling shift and asked only one visitor per group to participate.

If a visitor declined to participate, survey recruiters attempted to ask the visitor a series of questions to check for nonresponse bias (for example, primary recreation activity, whether they lived locally (<50 miles) to the refuge, and group size and composition). Visitors willing to participate provided their name, mailing address, language preference (English or Spanish), and answered a few initial questions about their experience. Teams recorded all information using the Survey123 app. Willing visitors were also given a small token incentive (for example, a National Wildlife Refuge System sticker) as a thank you and reminder of their participation.

Completing a Survey at Home

All visitors who 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. They then received a series of mailings from Ohio State until they completed a survey or failed to respond after the reminder sequence, and their address was removed from the mailing list (as suggested by Dillman et al., 2014).

The survey was designed to take no more than 25 minutes to complete, and the average time respondents took to complete the online survey during the 2018 sampling effort was approximately 20 minutes.

Data Entry and Analysis

The survey team used Qualtrics survey software to collect survey data online before exporting the data for cleaning (for example, treatment of missing data) and analysis. We entered data from the paper surveys into Microsoft Excel using a standardized survey codebook and data entry procedures and then merged all data from the two sources (paper and online) and analyzed results using Statistical Package for the Social Sciences (SPSS) software.

For this report, we weighted data by annual visitation. First, we calculated an estimate reflecting the average annual visitation during the 2018-2023 sampling period according to the Refuge Annual Performance Plan, or RAPP (U.S. Fish and Wildlife Service, 2025) for each of the 141 participating refuges. Next, we summed these averaged visitation numbers to reflect the total average annual visitation for all refuges that participated in the survey. Finally, we applied a proportional weight to each refuge that either increased or decreased the impact that each visitor/refuge had in representing the national sample. For example, respondents to a refuge representing proportionally fewer visitors according to RAPP received a smaller weight (for example, < 1) while respondents to a refuge representing proportionally more visitors received a larger weight (for example, > 1). This weighting was necessary given that our sampling approach sought to have near equal representation (~200 respondents) for reporting at the refuge level.

Limitations of Results

The extent to which these results represent nationwide visitation to the Refuge System depends on both the number of visitors who completed the survey at each refuge (that is, sample size) and how accurately the sample reflects overall visitor use patterns (Scheaffer et al., 2011). Certain user groups may be underrepresented due to the nature or timing of their activities, which can make them less accessible to survey recruiters or less willing to participate in the survey. The margin of error for this survey was calculated with an 80/20 response distribution, meaning if respondents were given a dichotomous choice (A or B) question, approximately 80% of respondents would select one choice and 20% would select the other (Salant & Dillman, 1994).

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

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REFUGE SYSTEM