



U.S. Fish & Wildlife Service

NATIONAL WILDLIFE REFUGE VISITOR SURVEY

*2018 Results for
Hanalei National Wildlife Refuge*



**THE OHIO STATE
UNIVERSITY**



Acknowledgments

This study was funded by the U.S. Fish & Wildlife Service/National Wildlife Refuge System's Natural Resource Program Center, Division of Visitor Services & Communications, and Division of Facilities, Equipment, & Transportation. The study design and survey instrument were developed collaboratively with representatives from the U.S. Fish & Wildlife Service and researchers from The Ohio State University. We would also like to thank any staff and volunteers at Hanalei

National Wildlife Refuge who assisted with the implementation of this survey effort. We would like to especially acknowledge the following American Conservation Experience team members for their work in implementing the on-the-ground sampling for the 2018 survey effort: Ellen Bley, Kylie Campbell, Michelle Ferguson, Justin Gole, James Puckett, Nicole Stagg, and Angelica Varela. Lastly, we thank Emily Neidhardt for designing this report.

Report citation:

Dietsch, A. M., Sexton, N. R., Lyon, K. M., Hartel, C. M., & Mengak, L. F. (2019). National Wildlife Refuge Visitor Survey: 2018 Results for Hanalei National Wildlife Refuge. Columbus, OH: The Ohio State University, School of Environment and Natural Resources.

Front cover: A clear day at Hanalei National Wildlife Refuge. U.S. Fish & Wildlife Service.

Contents

| | |
|--|----|
| Acknowledgments | ii |
| Understanding Wildlife Refuge Visitors & Their Experiences | 1 |
| Surveying Visitors at This Wildlife Refuge | 3 |
| Visitor Characteristics | 5 |
| Trip Characteristics | 6 |
| Information Sources Used for Trip Planning..... | 9 |
| Use of Social Media | 11 |
| Participation in Recreational Activities | 12 |
| Comfort in Nature/Feeling Safe & Welcome | 14 |
| Satisfaction with Refuge Experiences | 16 |
| Economic Benefits to Local Communities & Visitors..... | 20 |
| Encouraging Return Visits & Future Recreation Participation..... | 22 |
| Conclusion..... | 25 |
| References | 26 |
| Appendix A: Survey Methodology | 27 |
| Appendix B: Response Frequencies and Averages by Survey Question | 29 |
| Appendix C: Open-Ended Survey Responses by Question..... | 41 |

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 Hanalei National Wildlife Refuge, referred to as “this wildlife refuge” or “refuge” throughout this report. Percentages noted throughout the report were rounded to the



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

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

Hanalei National Wildlife Refuge is located on the north side of the Island of Kaua'i in Hawai'i. The refuge was established in 1972 under the Endangered Species Act to preserve habitat for five endangered waterbirds: the koloa maoli (Hawaiian duck), the 'ālae ke'oke'o (Hawaiian coot), the 'ālae 'ula (Hawaiian moorhen), the ae'o (Hawaiian stilt), and the nēnē (Hawaiian goose). This wildlife refuge is also home to 45 other species of birds, including migratory shorebirds such as the Pacific golden plover. The 917 acres are characterized by mostly flat areas within the Hanalei River Valley surrounded by steep, lush mountains. Refuge staff manage water control structures that divert the Hanalei River to create impoundments, crop fields, and wet pastures that provide food and shelter for wildlife. ē

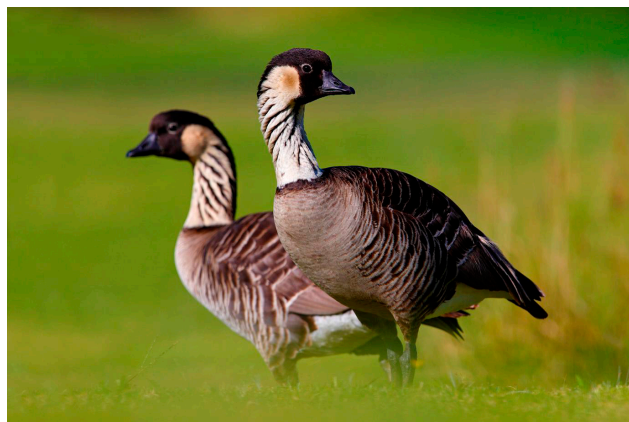
Hanalei National Wildlife Refuge attracts over 402,782 visitors annually (U.S. Fish and Wildlife Service, 2018, written comm.). While this wildlife refuge is closed to public access to minimize disturbance to wildlife; visitors can get a glimpse of the refuge from an observation deck along the Kuhio Highway. Interpretive panels at this observation point allow visitors

to learn about the history and purpose of the refuge. Additionally, visitors can kayak along the Hanalei River, although they must launch their boats from outside of the refuge. A state managed hiking trail, the Okolehao trail, is accessible within the refuge.

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 271 visitors agreed to participate in the survey by providing their names and addresses.
- In all, 110 visitors completed the survey online (80%) or by mail (21%) after their refuge visit, resulting in a 43% response rate.
- Results for this wildlife refuge have a $\pm 8\%$ margin of error at the 95% confidence level. For more details on limitations of results and survey methodology, see Appendix A.



Endangered nēnē (Hawaiian goose), commonly seen at Hanalei National Wildlife Refuge. U.S. Fish & Wildlife Service.

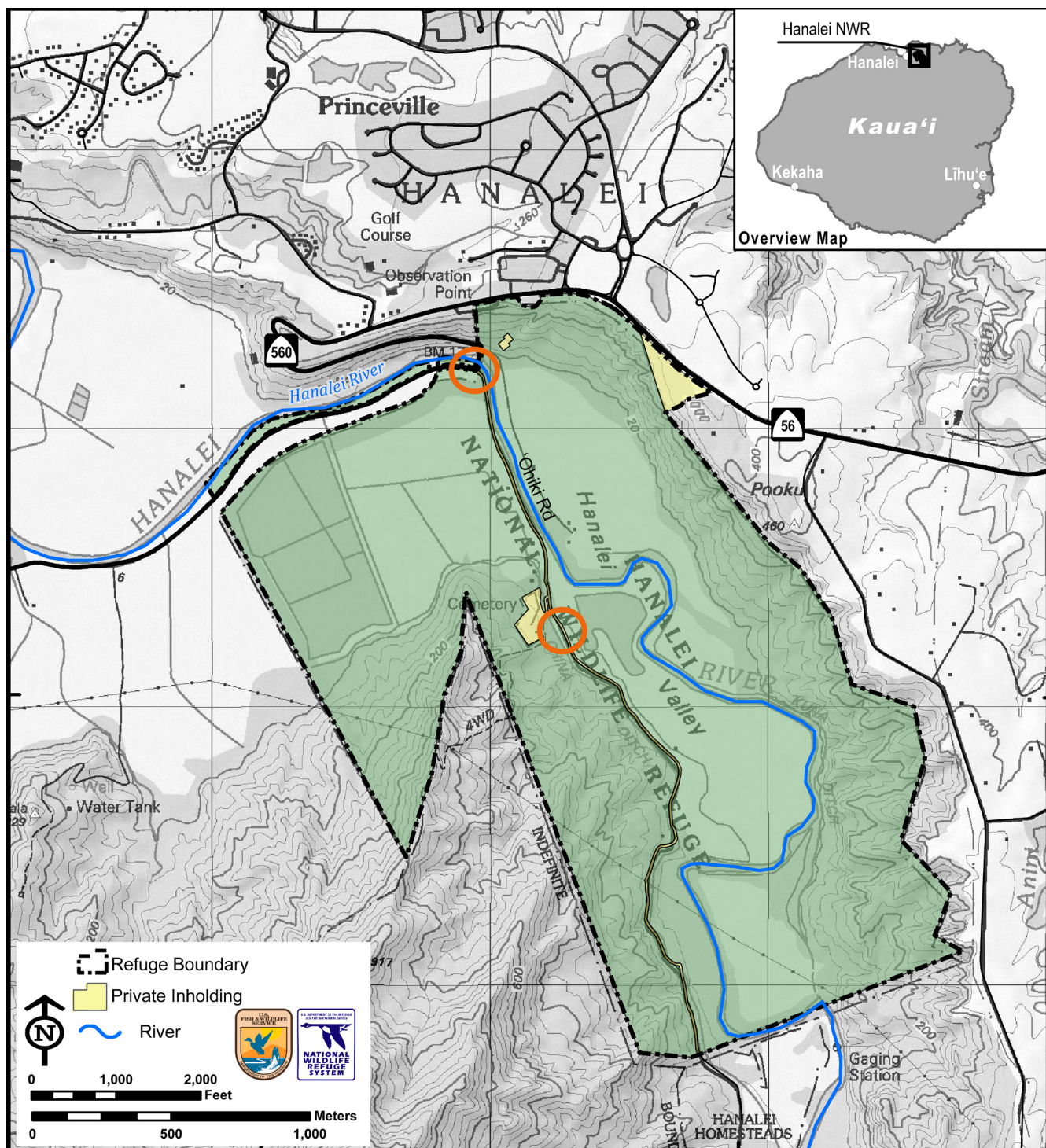


Fig. 2: Map of Hanalei National Wildlife Refuge. Visitors were contacted at the circled locations from 6/9/2018–6/18/2018 and 10/3/2018–10/13/2018.

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; www.socialexplorer.com).

AGE & GENDER

- 49% of visitors were female with an average age of 47 years (Fig. 3).
- 51% were male with an average age of 45 years.

EDUCATION

- 3% of visitors had a high school degree or less.
- 40% had at least some college.
- 54% had an advanced degree.

RACE & ETHNICITY

Most prevalent race or ethnicity (Fig. 4):

- White (91%).
- Two or more (3%).

INCOME

- Visitors had a mean income range of \$100,000-\$149,999 (Fig. 5).

OTHER TRIP CHARACTERISTICS

- Average group size of 3 people.
- 8% visited the refuge alone.
- 79% visited with at least one other adult.
- 13% visited with a combination of at least 1 adult and 1 child.

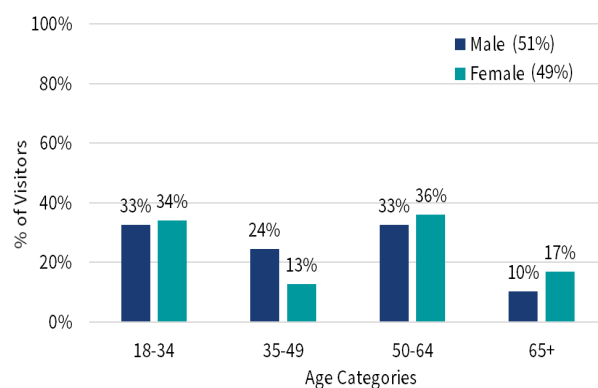


Fig. 3: Distribution of visitors to this refuge by gender and age group.

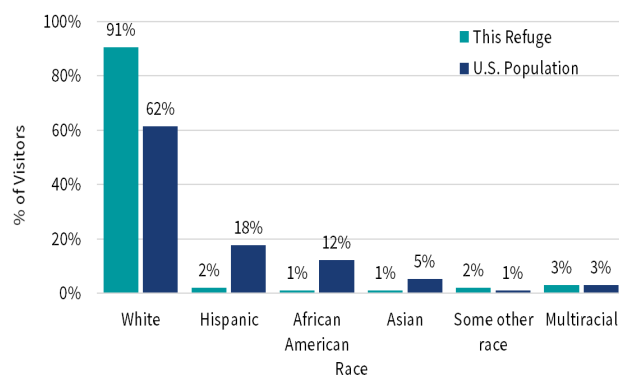


Fig. 4: Race and ethnicity of visitors to this refuge compared to the national average.

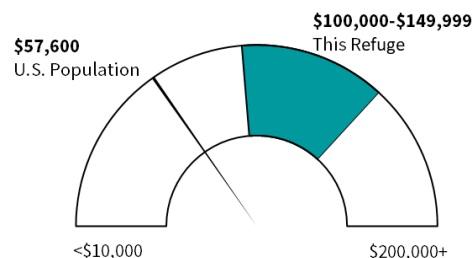


Fig. 5: Mean income range of visitors to this refuge compared to the national median income.

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 ≤ 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 (10%) include:

- For locals, this refuge was the primary reason for their trip (64%) (Fig. 6).
- Local visitors traveled an average of 19 minutes to arrive at this refuge (Fig. 7).

NONLOCAL VISITORS

Highlights of trip characteristics for nonlocal visitors to this wildlife refuge (90%) include:

- For nonlocals, this refuge was an incidental stop taken as part of a trip for other purposes (52%) (Fig. 6).
- Nonlocal visitors traveled an average of 10 hours to arrive at this refuge (Fig. 8).
- Of the 85% of visitors who lived in the U.S., nonlocal visitors were most often from California (32%) and Hawaii (15%).
- 15% of respondents were international visitors.

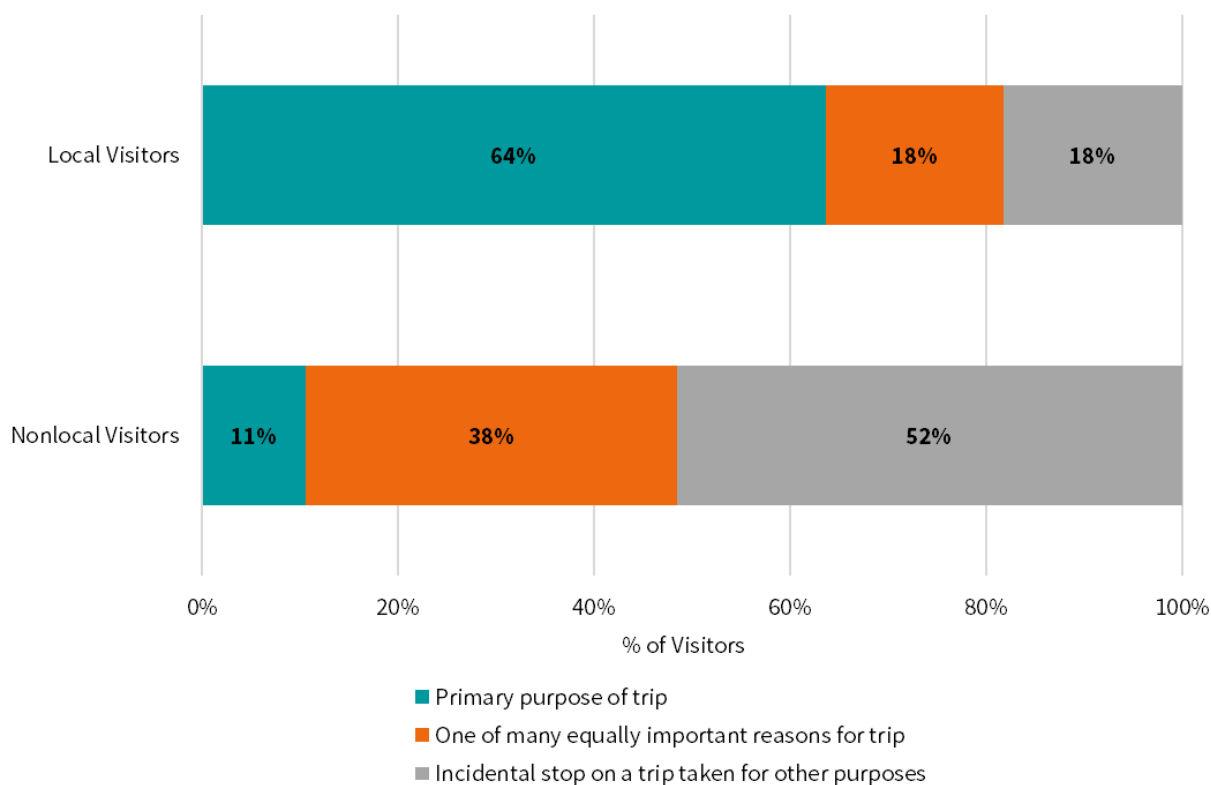


Fig. 6: Purpose of most recent refuge visit for local (living ≤ 50 miles from the refuge) and nonlocal (living > 50 miles from the refuge) visitors.

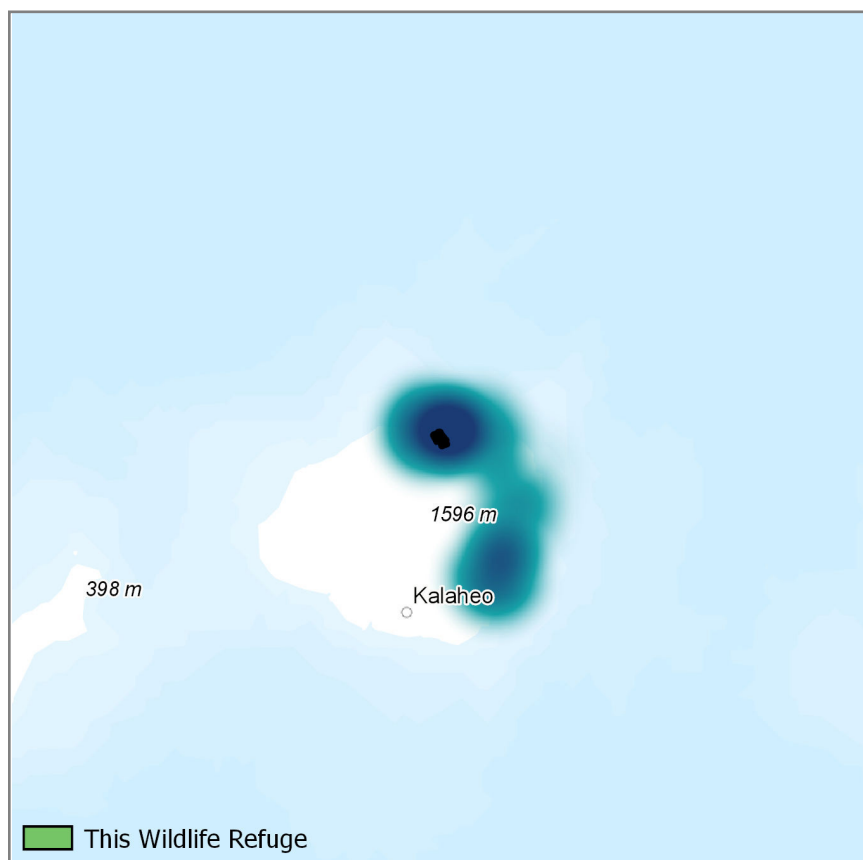


Fig. 7: Map showing residence of local visitors to this refuge. Darker shading represents relatively higher visitation from that area.

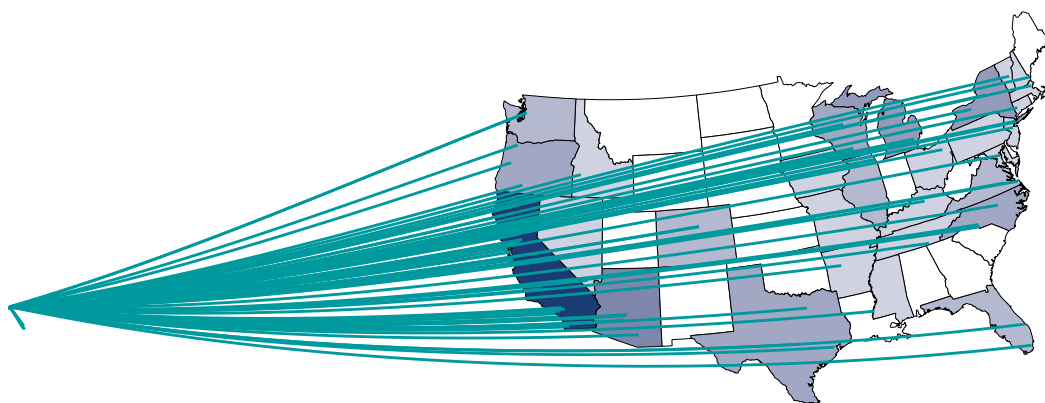


Fig. 8: Map showing residence of visitors to this refuge by zip code, with each line representing visitation from a different zip code. The convergence point of the lines is the geographical center of the refuge. Darker shading of the states represents higher visitation from that state.

OTHER TRIP CHARACTERISTICS

Other trip characteristics include:

- To get to this wildlife refuge, visitors primarily traveled by private vehicle without a trailer (94%) and by foot (10%) (Fig. 9).
- Once on the refuge, visitors primarily traveled by foot (43%) and by private vehicle without a trailer (33%) (Fig. 9).
- Visits occurred during winter (6%), spring (8%), summer (34%), and fall (74%).
- 98% of visitors made a single-day trip to this refuge, spending an average of 3 hours, while 2% of visitors were on a multi-day trip to this wildlife refuge that averaged 2 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:

- 13% were repeat visitors to this wildlife refuge, visiting an average of 9 times.
- 65% visited other national wildlife refuges, averaging 3 visits.
- 89% visited other public lands, averaging 9 visits.

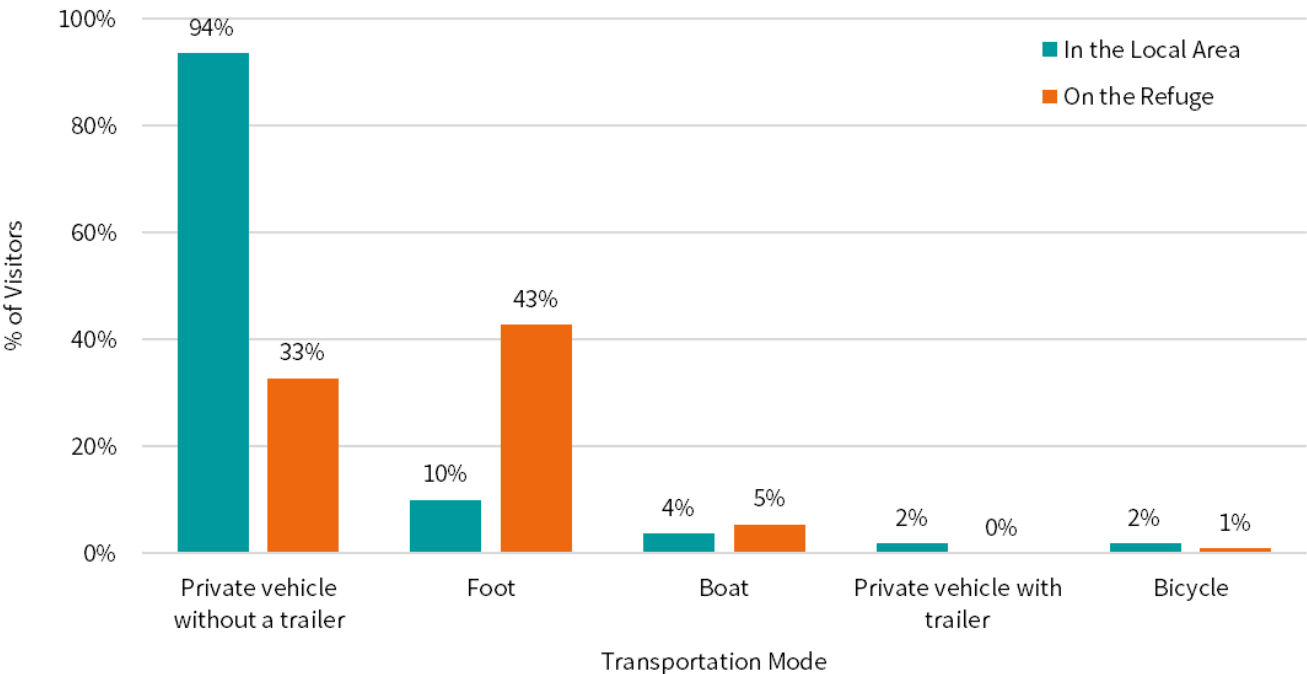


Fig. 9: Modes of transportation used by visitors to get from the local area to this refuge and within the boundaries of this refuge.

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 travel guidebook.
- Refuge-specific sources that were most helpful to visitors regardless of age included refuge website and refuge employees/volunteers.
- Use of information sources varied by age groups (see Figs. 10-12 for details).

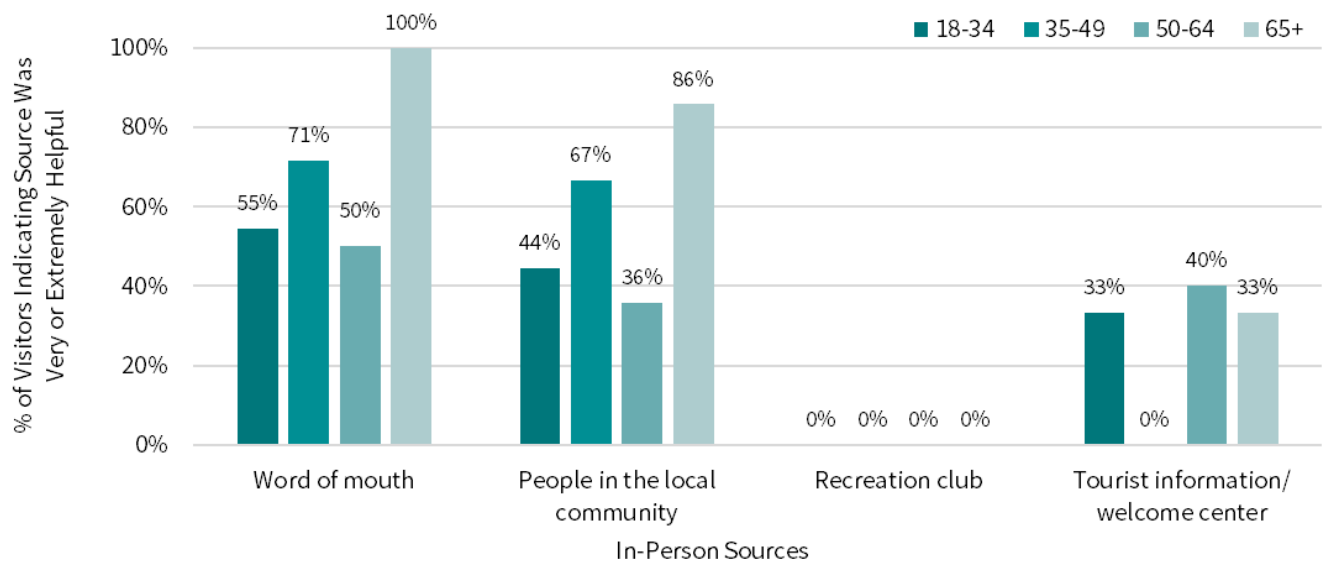


Fig. 10: Percent of visitors by age group who found in-person information sources very or extremely helpful in planning their trip.

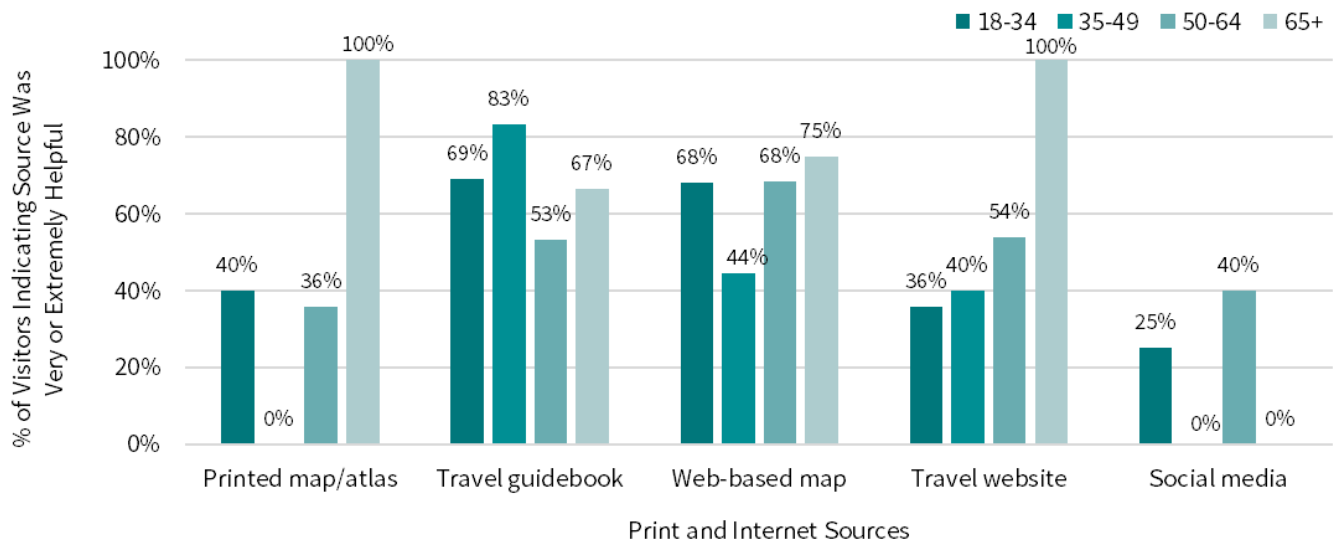


Fig. 11: Percent of visitors by age group who found print and internet information sources very or extremely helpful in planning their trip.

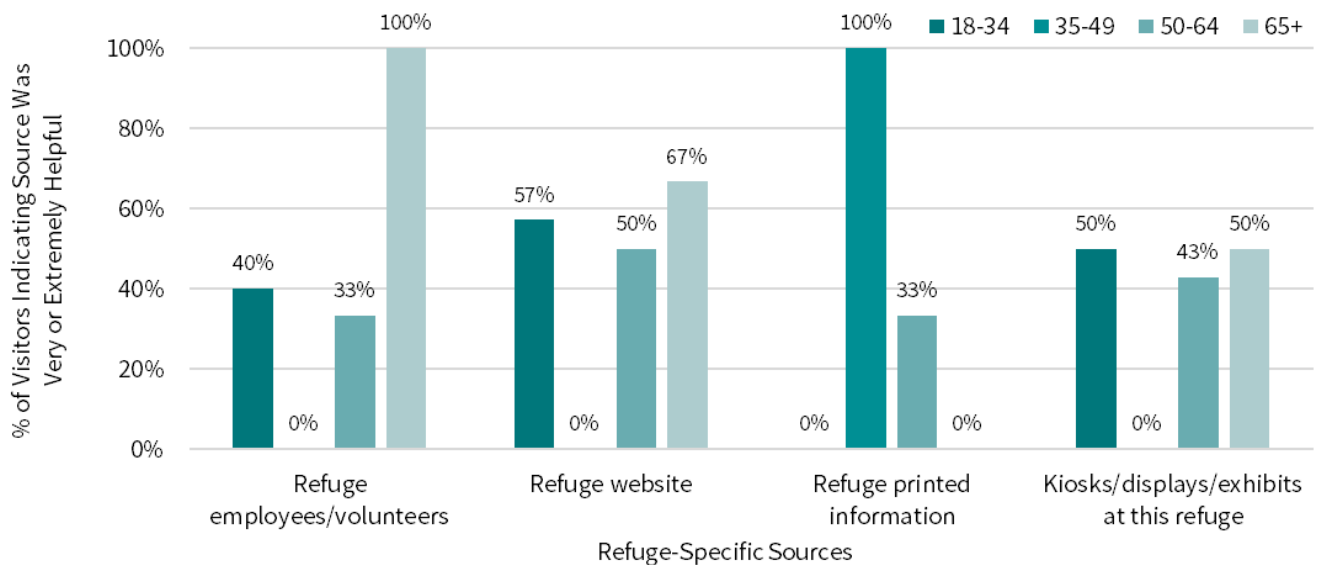


Fig. 12: Percent of visitors by age group who found refuge-specific information sources very or extremely helpful in planning their trip.

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 60% 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 Instagram (45%) and Facebook (41%).
- Visitors 35-49 years old preferred to use Instagram (31%) and Facebook (31%).
- Visitors 50-64 years old preferred to use Facebook (35%) and Instagram (19%).
- Visitors 65 or older preferred to use Facebook (45%) and Instagram (36%).

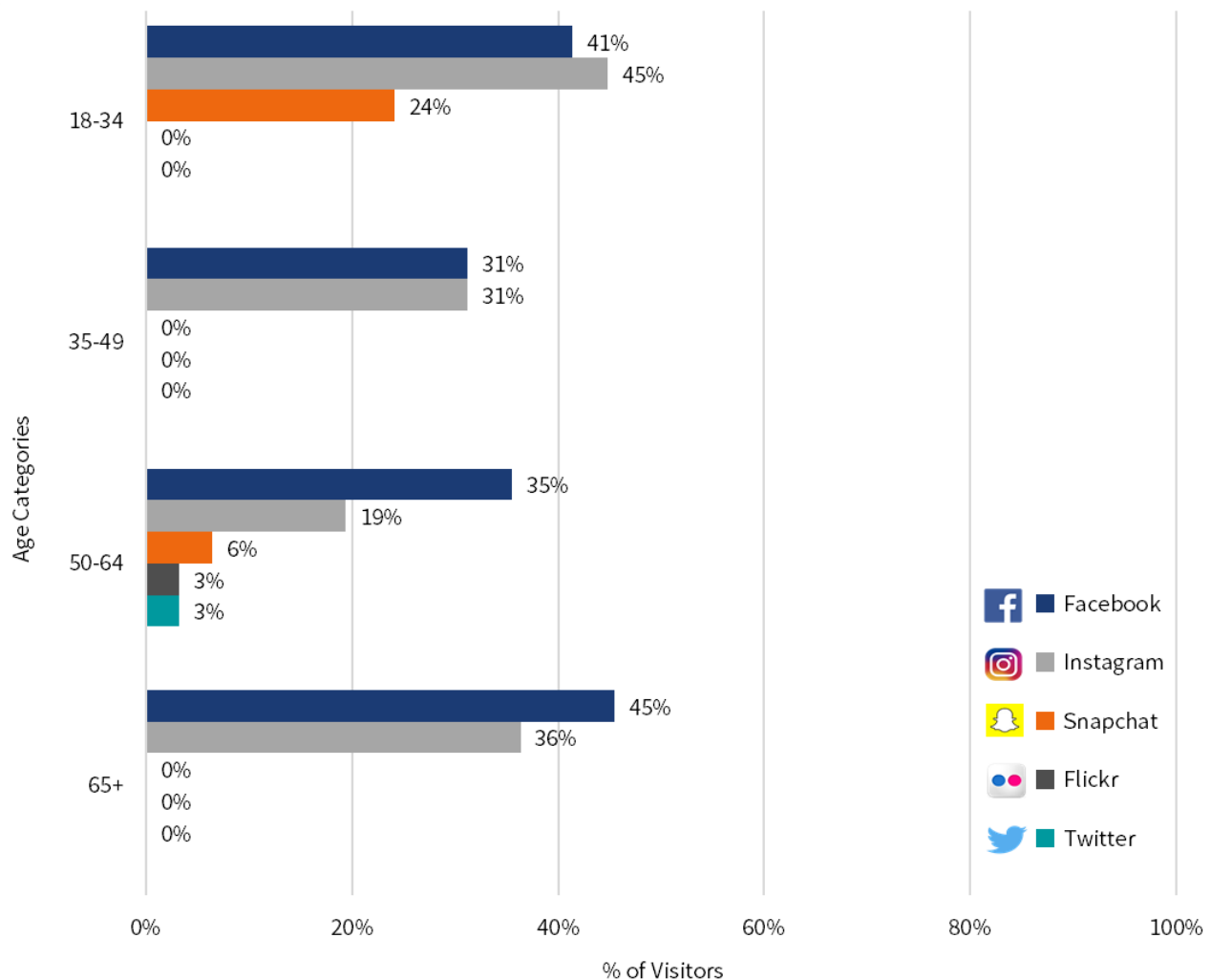


Fig. 13: Percent of visitors by age group who used various social media platforms to share their experience on this refuge with others.

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 hiking (90%), wildlife observation (47%), and photography (44%) (Fig. 14).
- The top three activities noted as their primary activity on the day visitors were contacted to participate in the survey were hiking (76%), nonmotorized boating (8%), and photography (5%) (Fig. 14).



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

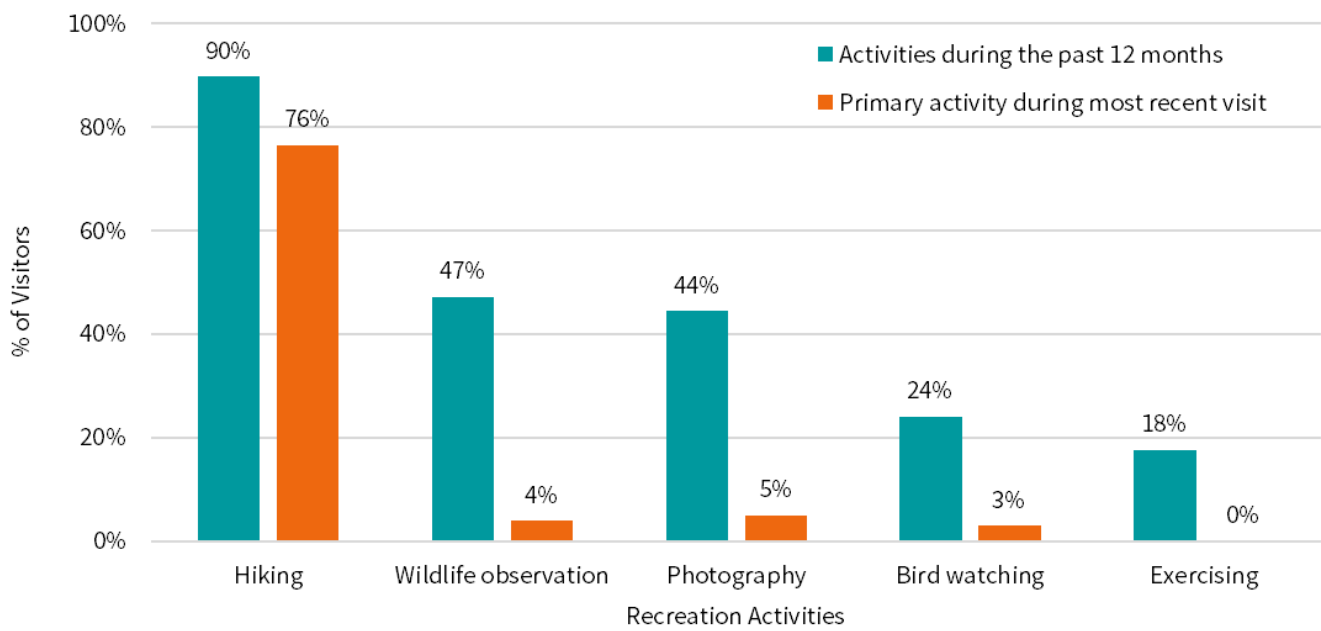


Fig. 14: Recreational activities visitors participated in during the past 12 months and their primary activity during their most recent visit to this refuge.



A view from the Okolehao Trail at Hanalei National Wildlife Refuge. Photo credit: Ellen Bley.

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:

- 70% of visitors felt welcome during their refuge visit (Fig. 15).
- 90% of visitors felt safe during their refuge visit (Fig. 15).
- 96% of visitors felt comfortable in nature, but 10% did not like being in nature alone (Fig. 16).

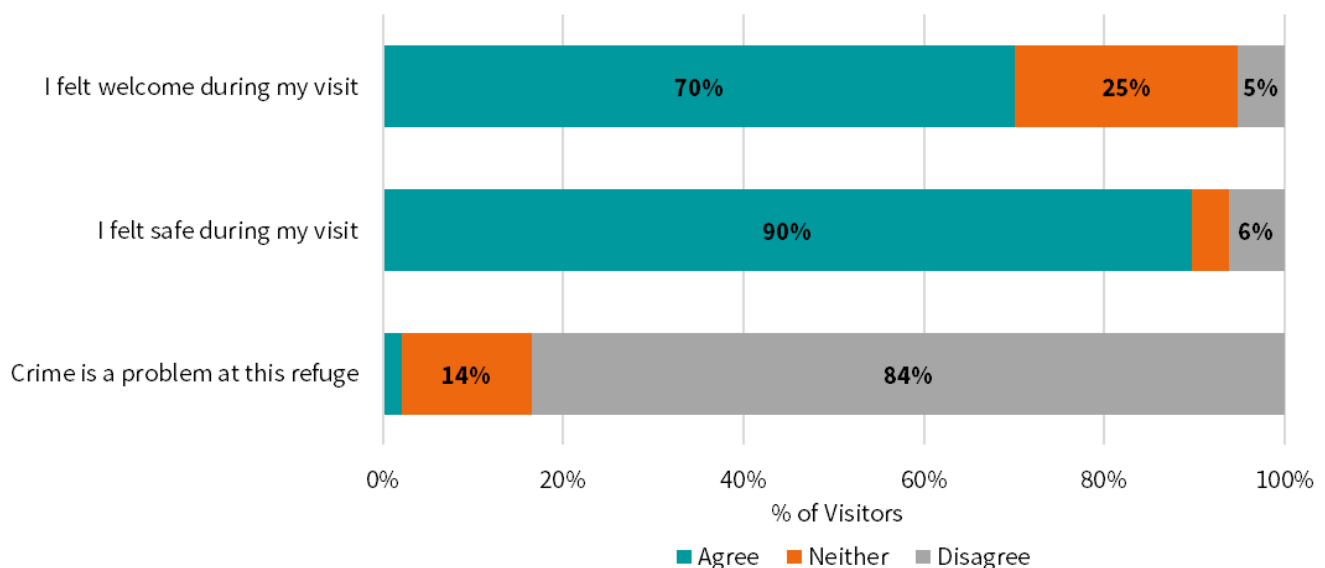


Fig. 15: Visitors' perceptions of safety and feeling welcome at this refuge during their visit.

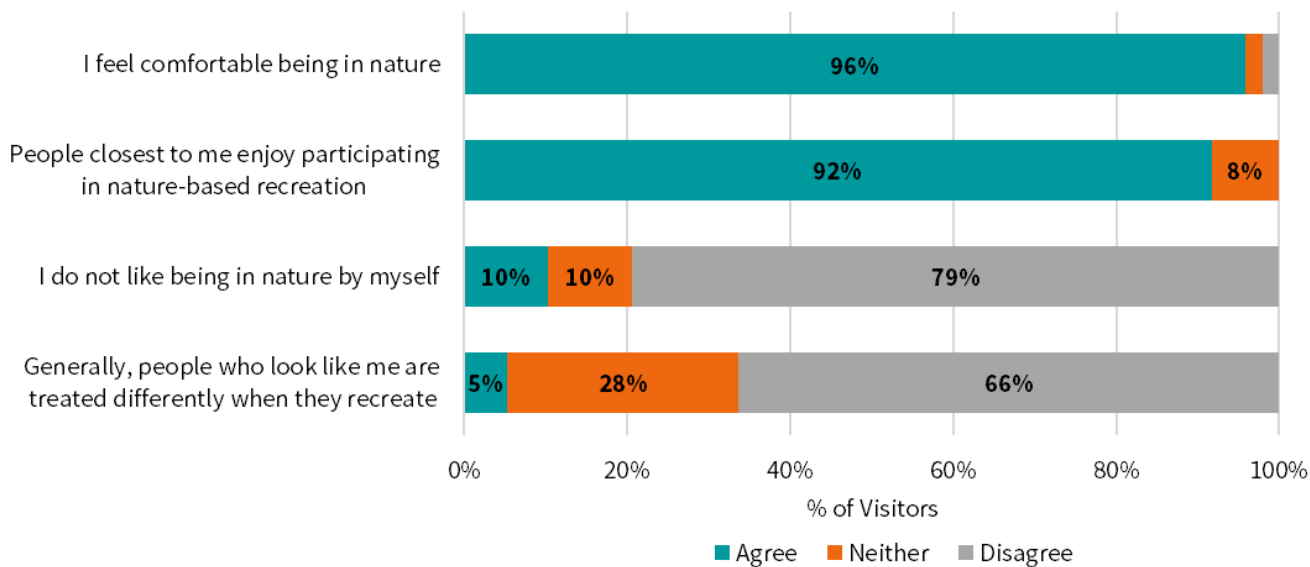


Fig. 16: Visitors' comfort with being in nature.



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:

- 72% of visitors were very or extremely satisfied with the overall experience at this wildlife refuge (Fig. 17).
- 66% of visitors were very or extremely satisfied with this wildlife refuge's job of conserving fish, wildlife, and their habitats (Fig. 17).

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. 18):

- refuge hours/days of operation (84%) and
- courteous and welcoming employees/volunteers (71%).

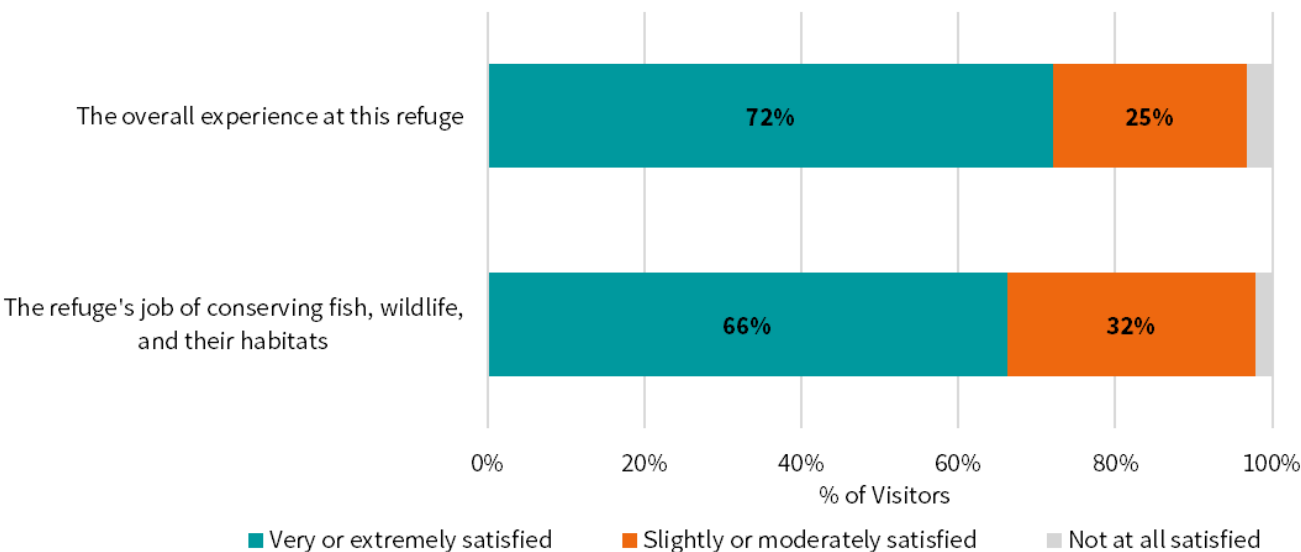


Fig. 17: Visitors' satisfaction with their experience at this refuge and with this refuge's job of conserving fish, wildlife, and habitats.

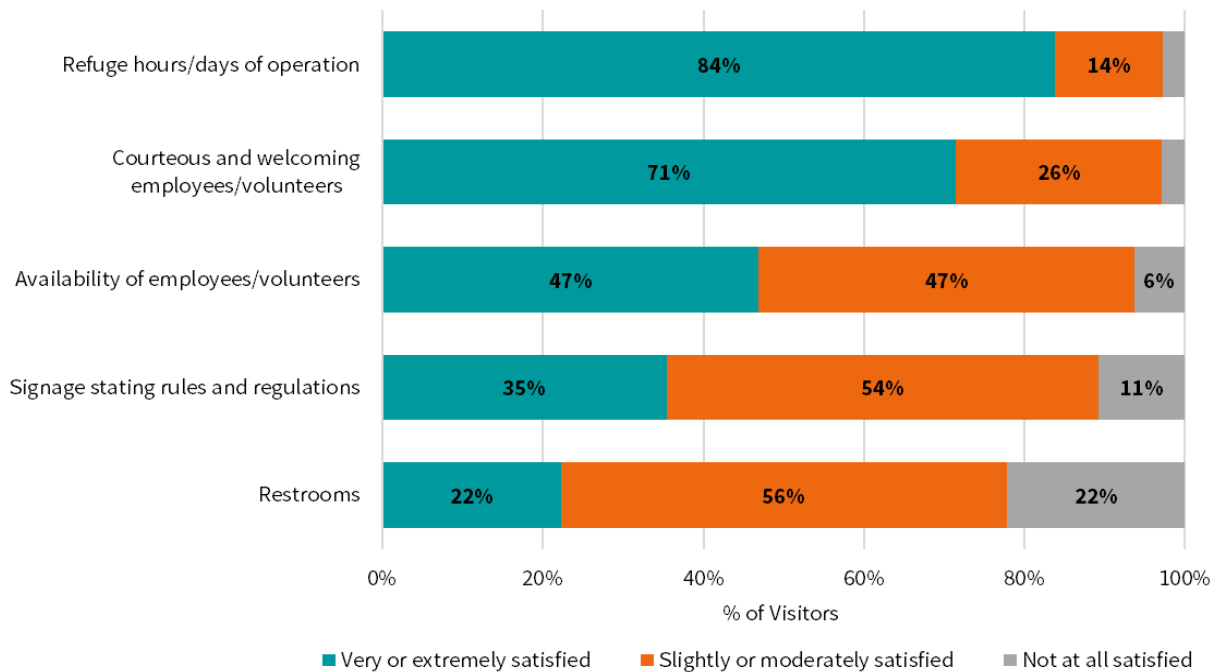


Fig. 18: Visitors' satisfaction with customer service and amenities at this refuge.

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. 19):

- photography (82%),
- trail hiking (81%), and
- bird watching (68%).

"[Hanalei National Wildlife Refuge] was just beautiful. I loved the ruggedness and that it was uncrowded at this wildlife refuge and on the island." – Visitor to Hanalei National Wildlife Refuge

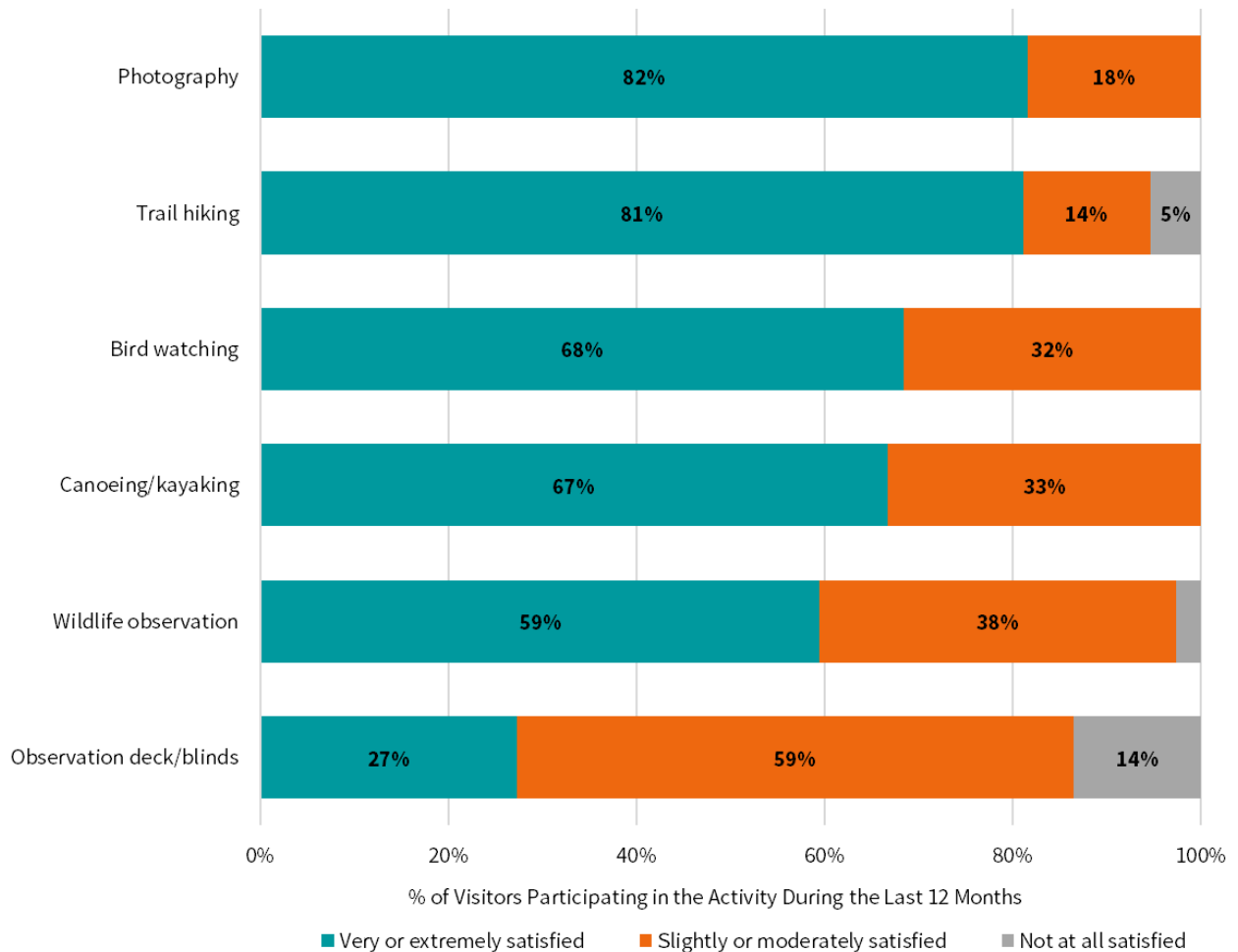


Fig. 19: Visitors' satisfaction with recreational opportunities at this refuge. Only visitors (10 or more) who participated in activities related to each opportunity at this refuge during the last 12 months were included.

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. 20):

- Getting to this wildlife refuge, visitors were most satisfied with safety of refuge road entrances and exits (66%).
- Getting around this wildlife refuge, visitors were most satisfied with safety of driving conditions on refuge roads (72%), condition of bridges on roadways (61%), and condition of refuge roads (58%).
- Accessing recreation on this wildlife refuge, visitors were most satisfied with safety of roads or trails for nonmotorized use (50%).

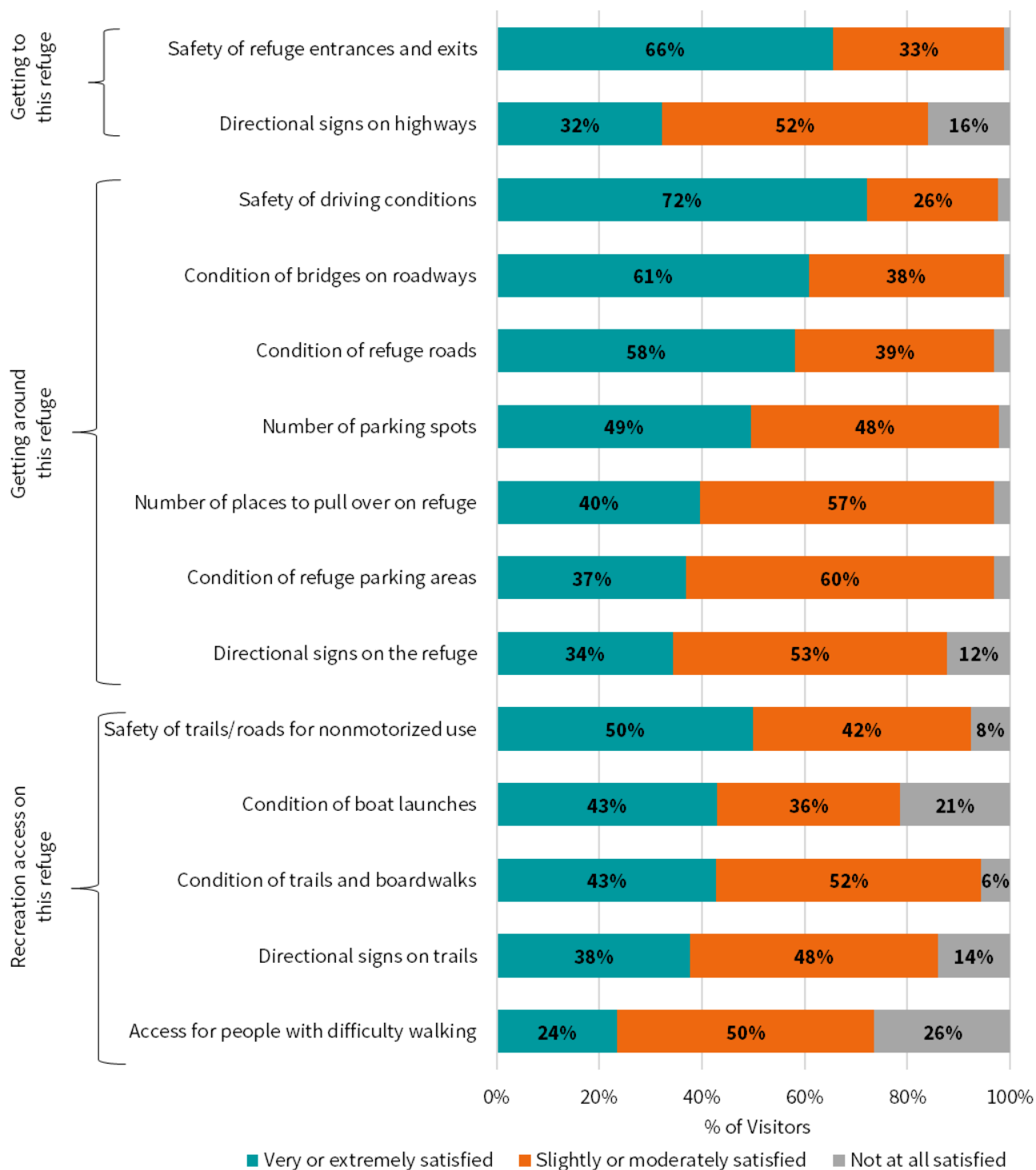


Fig. 20: Visitors' satisfaction with how the refuge is managing transportation-related features.

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 ≤ 50 miles from this wildlife refuge; 10%) are as follows:

- On average, local visitors accounted for less than 1% of expenditures.
- Top trip expenditures by locals were for food/drink and transportation (Fig. 21).
- The average amount paid by locals to visit this wildlife refuge was \$27 per person per day (Fig. 21).
- Local visitors were personally willing to pay an additional \$38 per day on average to visit this wildlife refuge (Fig. 22).

Results for nonlocal visitors (those living >50 miles from this wildlife refuge; 90%) are as follows:

- On average, nonlocals accounted for more than 99% of expenditures.
- Top trip expenditures by nonlocals were for lodging and food/drink (Fig. 21).
- The average amount paid by nonlocals to visit this wildlife refuge was \$279 per person per day (Fig. 21).
- Nonlocal visitors were personally willing to pay an additional \$199 per day on average to visit this wildlife refuge (Fig. 22).
- Nonlocal visitors spent an average of 8 days in the local community during this visit.





Fig. 21: 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.

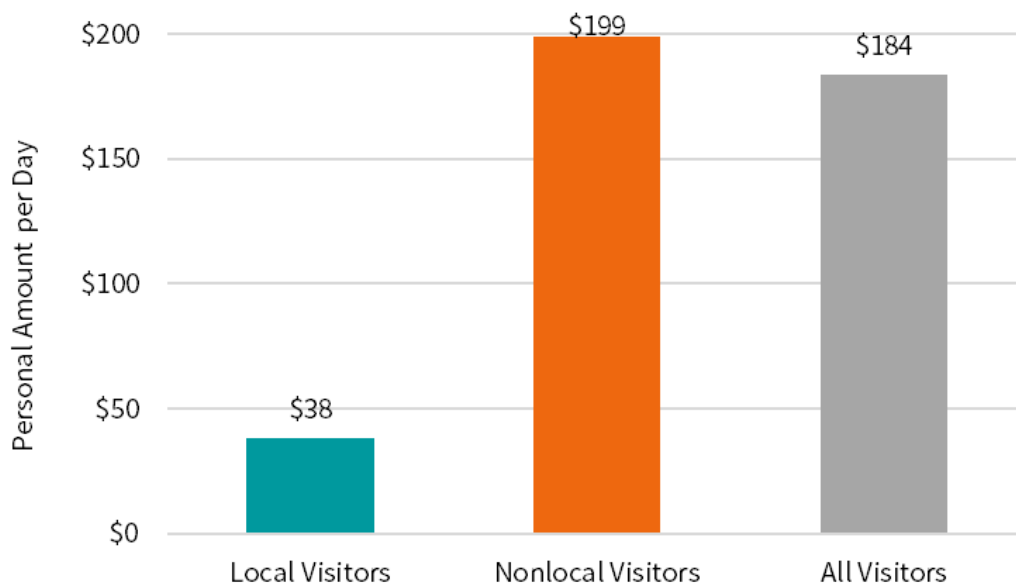


Fig. 22: Total personal willingness to pay per day above and beyond most recent trip expenses if costs were to increase for local, nonlocal, and all visitors. Due to the fixed-response question format, estimates of willingness to pay may underestimate the amount visitors would actually pay. Responses 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 highlighting unique local culture (74%), engaging youth (38%), and engaging families and multiple generations (35%) (Fig. 23).
- The top two factors likely to increase visitors' future participation in their primary recreation activity were more infrastructure (29%) and recreation equipment available for rent (8%) (Fig. 24).
- The top two factors likely to decrease visitors' future participation in their primary recreation activity were more people participating in their primary activity (33%) and less regulations on hunting (22%) (Fig. 24).

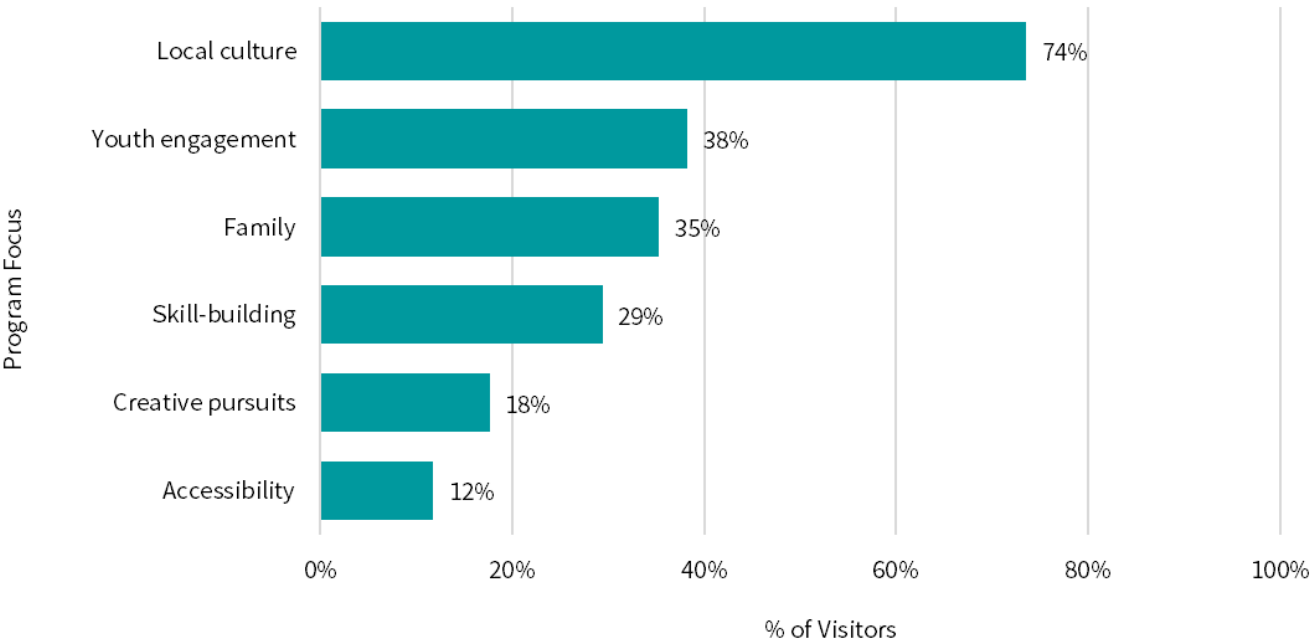


Fig. 23: Types of programs that would encourage visitors to return to this refuge.

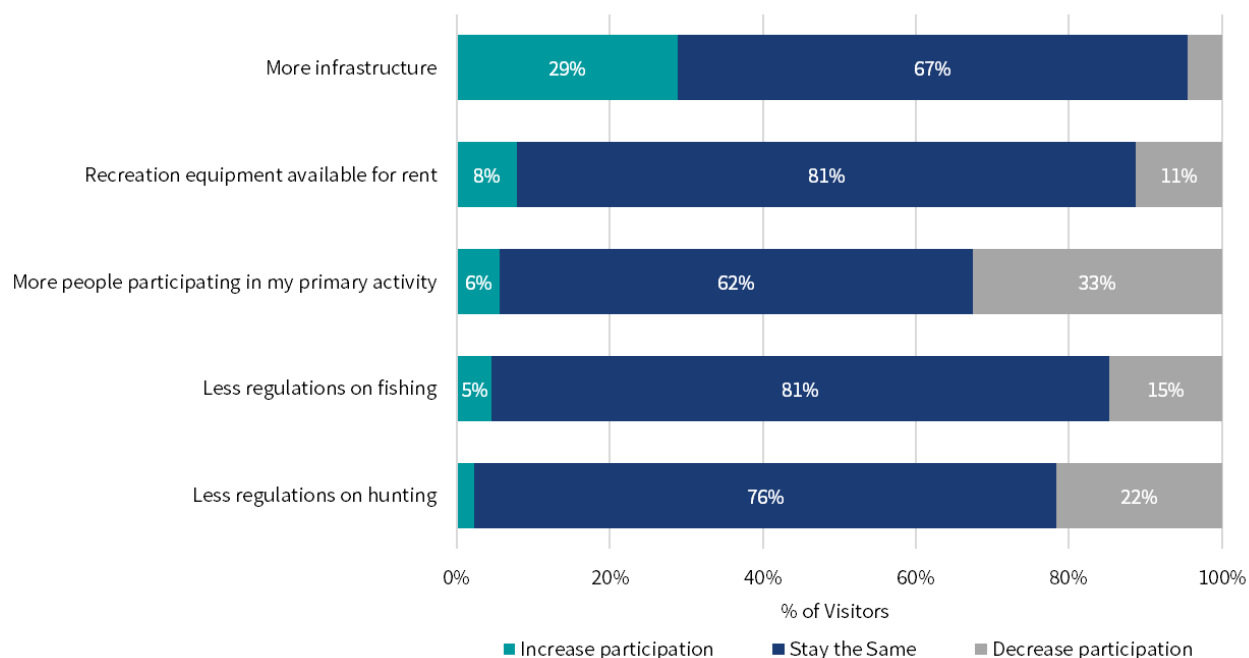


Fig. 24: Changes in visitors’ participation in their primary activity if the listed recreation factors were to change.

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. 25):

- pedestrian paths (32%),
- a bike-share program (21%), and
- public transit systems that stops at or near this refuge (14%).

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. 26):

- The top two resource changes likely to increase visitors’ future participation in their primary recreation activity were a greater diversity of species (51%) and an improvement in the quality of wildlife habitat other than wetlands (46%).
- The top two resource changes likely to decrease visitors’ future participation in their primary recreation activity were more acreage open to hunting and fishing (26%) and less water available for recreation (26%).

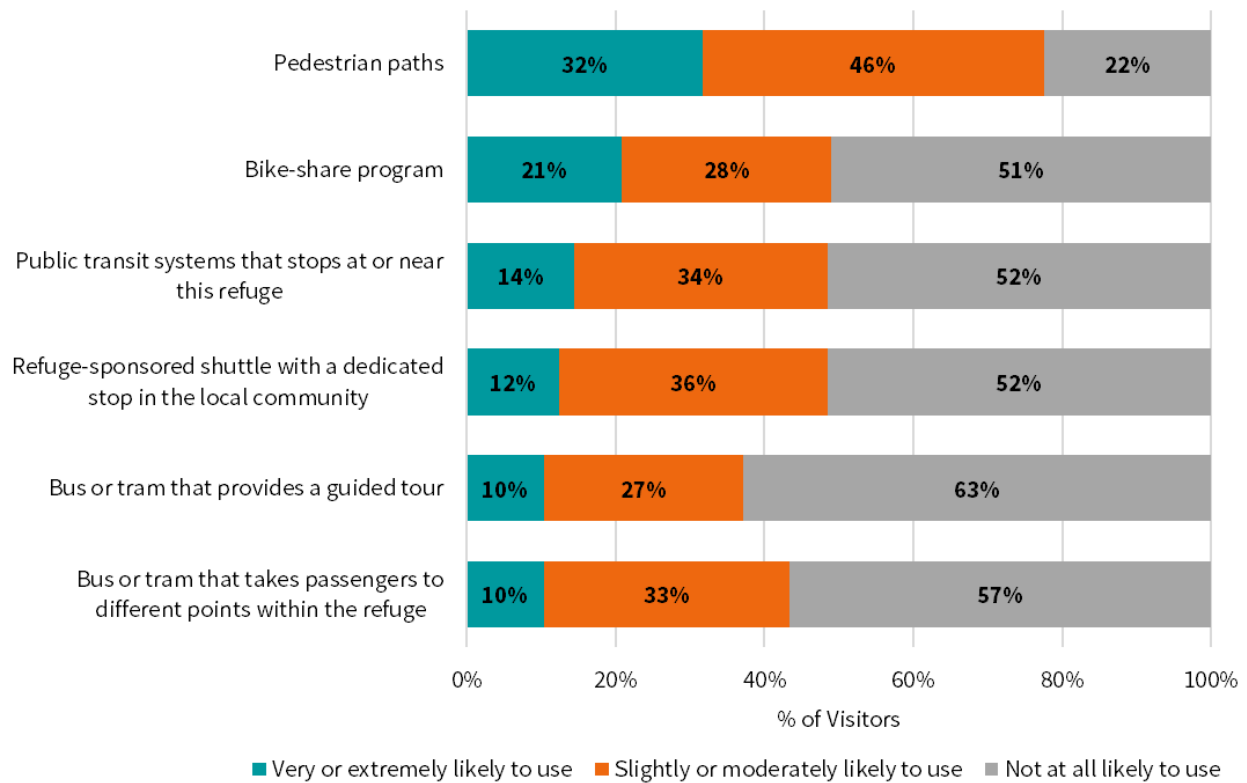


Fig. 25: Visitors' likelihood of using alternative transportation options if offered at this refuge.

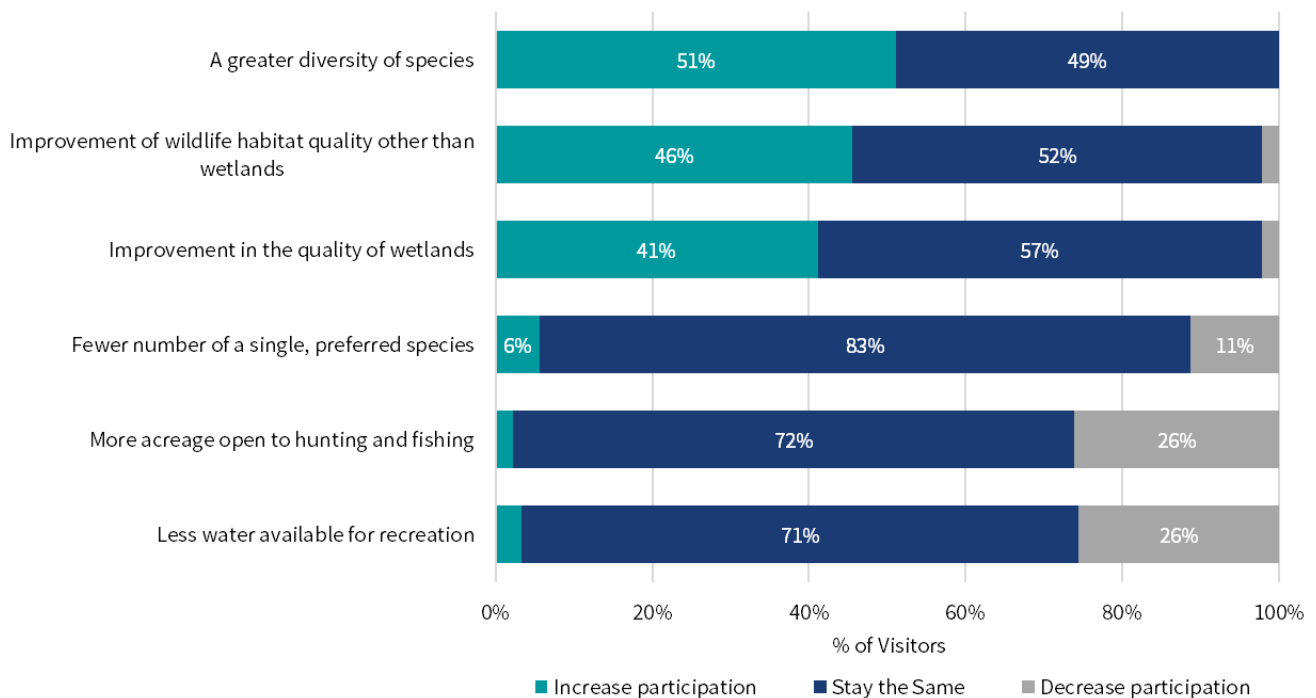


Fig. 26: Changes in visitors' participation in their primary activity if the listed resources were to change.

Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Hanalei 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

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

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

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

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

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

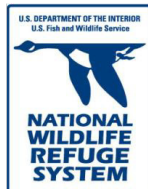
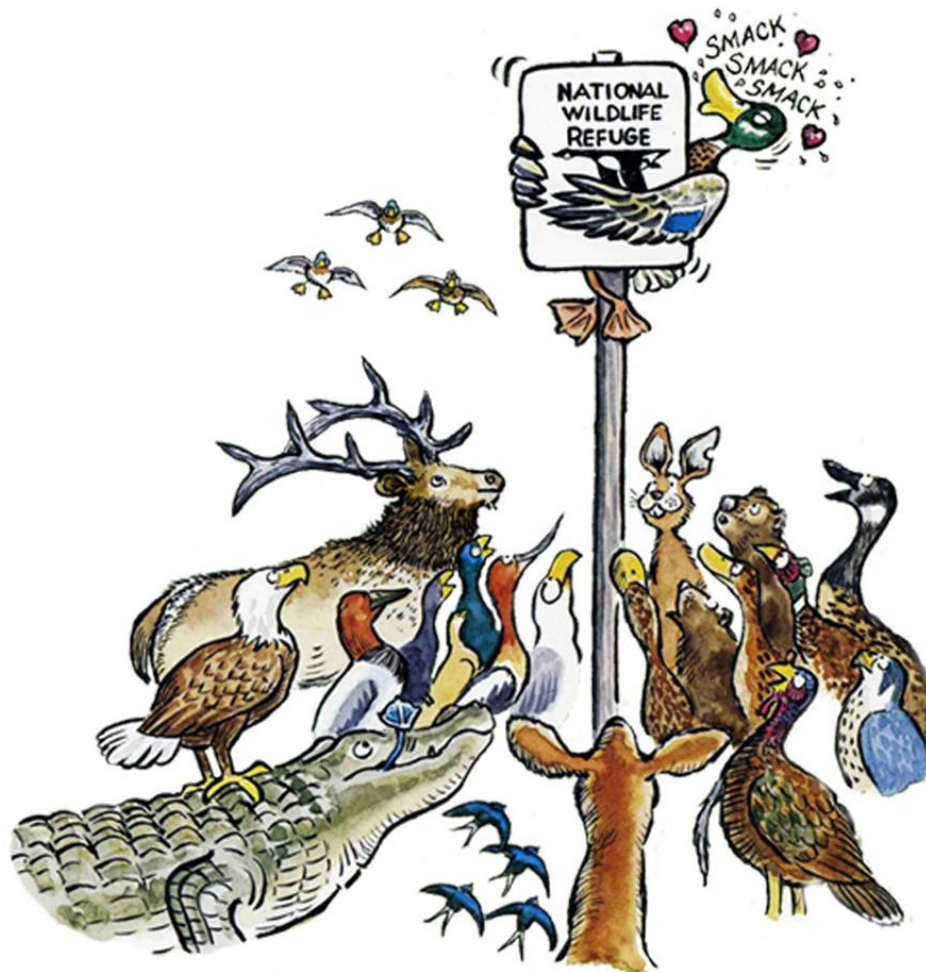
response distribution, meaning if respondents were given a dichotomous choice question, approximately 80% of respondents would select one choice and 20% would select the other (Salant & Dillman, 1994).

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.

SECTION 1. Your visit to this refuge

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"/> 47% | Wildlife observation | <input type="checkbox"/> 90% | Hiking/Walking | <input type="checkbox"/> 1% | Volunteering |
| <input type="checkbox"/> 24% | Bird watching | <input type="checkbox"/> 18% | Jogging/Running/Exercising | <input type="checkbox"/> 0% | Environmental education program (classroom visits, labs) |
| <input type="checkbox"/> 44% | Photography | <input type="checkbox"/> 5% | Bicycling | | |
| <input type="checkbox"/> 0% | Big game hunting | <input type="checkbox"/> 13% | Auto tour route/Driving | <input type="checkbox"/> 2% | Interpretative program (bird walks, staff/volunteer-led talks) |
| <input type="checkbox"/> 0% | Upland/Small game hunting | <input type="checkbox"/> 3% | Motorized boating | | |
| <input type="checkbox"/> 0% | Waterfowl/Migratory bird hunting | <input type="checkbox"/> 14% | Nonmotorized boating (canoeing, kayaking) | <input type="checkbox"/> 0% | Refuge special event (<i>specify</i>) <u>See Appendix C</u> |
| <input type="checkbox"/> 0% | Freshwater fishing | <input type="checkbox"/> 4% | Foraging (berries, nuts, other) | <input type="checkbox"/> 1% | Other (<i>specify</i>) <u>See Appendix C</u> |
| <input type="checkbox"/> 0% | Saltwater fishing | <input type="checkbox"/> 5% | 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"/> 17% | It was the primary purpose or sole destination of my trip. |
| <input type="checkbox"/> 36% | It was one of many equally important reasons or destinations for my trip. |
| <input type="checkbox"/> 48% | 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.)

2 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?

This refuge does not have a Visitor Center – no results are presented.

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: 2 day(s)

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

☐ 10% Yes

☐ 90% 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: 4 hour(s)

If you spent one day or more in the local area, enter the number of days: 8 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: 22 minutes

If you travelled more than one hour, round to the nearest hour: 10 hours

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

☐ 8% Spring
(March-May)

☐ 34% Summer
(June-August)

☐ 74% Fall
(September-November)

☐ 6% Winter
(December-February)

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

...this refuge (including this visit)? 2 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? 9 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"/> 38% Facebook | <input type="checkbox"/> 11% Snapchat | <input type="checkbox"/> 1% Personal blog (for example, Tumblr, Wordpress) |
| <input type="checkbox"/> 1% Flickr | <input type="checkbox"/> 1% Twitter | <input type="checkbox"/> 3% Travel-related website (for example, Trip Advisor) |
| <input type="checkbox"/> 34% Instagram | <input type="checkbox"/> 0% Vimeo | <input type="checkbox"/> 2% Other (<i>specify</i>) <u>See Appendix C</u> |
| <input type="checkbox"/> 1% Pinterest | <input type="checkbox"/> 2% YouTube | <input type="checkbox"/> 40% 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"/> 9% | <input type="checkbox"/> 13% | <input type="checkbox"/> 25% | <input type="checkbox"/> 19% | <input type="checkbox"/> 34% | <input type="checkbox"/> 69% |
| Word of mouth (for example, a friend or relative) | <input type="checkbox"/> 3% | <input type="checkbox"/> 8% | <input type="checkbox"/> 28% | <input type="checkbox"/> 36% | <input type="checkbox"/> 26% | <input type="checkbox"/> 62% |
| People in the local community near the refuge | <input type="checkbox"/> 0% | <input type="checkbox"/> 13% | <input type="checkbox"/> 36% | <input type="checkbox"/> 36% | <input type="checkbox"/> 15% | <input type="checkbox"/> 61% |
| Refuge employees or volunteers | <input type="checkbox"/> 9% | <input type="checkbox"/> 16% | <input type="checkbox"/> 28% | <input type="checkbox"/> 25% | <input type="checkbox"/> 22% | <input type="checkbox"/> 69% |
| Printed map or atlas | <input type="checkbox"/> 6% | <input type="checkbox"/> 10% | <input type="checkbox"/> 42% | <input type="checkbox"/> 39% | <input type="checkbox"/> 3% | <input type="checkbox"/> 70% |
| Web-based map (for example, Google Maps, Waze) | <input type="checkbox"/> 0% | <input type="checkbox"/> 10% | <input type="checkbox"/> 23% | <input type="checkbox"/> 47% | <input type="checkbox"/> 20% | <input type="checkbox"/> 42% |
| Refuge website | <input type="checkbox"/> 19% | <input type="checkbox"/> 13% | <input type="checkbox"/> 19% | <input type="checkbox"/> 44% | <input type="checkbox"/> 6% | <input type="checkbox"/> 84% |
| Travel website (for example, TripAdvisor) | <input type="checkbox"/> 11% | <input type="checkbox"/> 8% | <input type="checkbox"/> 36% | <input type="checkbox"/> 36% | <input type="checkbox"/> 8% | <input type="checkbox"/> 65% |
| Other website (<i>specify</i>) <u>See Appendix C</u> | <input type="checkbox"/> 0% | <input type="checkbox"/> 7% | <input type="checkbox"/> 13% | <input type="checkbox"/> 27% | <input type="checkbox"/> 53% | <input type="checkbox"/> 81% |
| Social media (for example, Facebook, Instagram) | <input type="checkbox"/> 25% | <input type="checkbox"/> 8% | <input type="checkbox"/> 33% | <input type="checkbox"/> 25% | <input type="checkbox"/> 8% | <input type="checkbox"/> 88% |
| Recreation club or organization | <input type="checkbox"/> 80% | <input type="checkbox"/> 0% | <input type="checkbox"/> 20% | <input type="checkbox"/> 0% | <input type="checkbox"/> 0% | <input type="checkbox"/> 95% |
| Refuge printed information (for example, brochure) | <input type="checkbox"/> 25% | <input type="checkbox"/> 0% | <input type="checkbox"/> 50% | <input type="checkbox"/> 13% | <input type="checkbox"/> 13% | <input type="checkbox"/> 92% |
| Kiosks/displays/exhibits at the refuge | <input type="checkbox"/> 27% | <input type="checkbox"/> 0% | <input type="checkbox"/> 27% | <input type="checkbox"/> 27% | <input type="checkbox"/> 18% | <input type="checkbox"/> 89% |
| Travel guidebook or other book | <input type="checkbox"/> 7% | <input type="checkbox"/> 5% | <input type="checkbox"/> 23% | <input type="checkbox"/> 40% | <input type="checkbox"/> 26% | <input type="checkbox"/> 58% |
| Tourist information or welcome center | <input type="checkbox"/> 25% | <input type="checkbox"/> 8% | <input type="checkbox"/> 33% | <input type="checkbox"/> 17% | <input type="checkbox"/> 17% | <input type="checkbox"/> 88% |
| Other source (<i>specify</i>) <u>See Appendix C</u> | <input type="checkbox"/> 0% | <input type="checkbox"/> 0% | <input type="checkbox"/> 0% | <input type="checkbox"/> 0% | <input type="checkbox"/> 100% | <input type="checkbox"/> 97% |

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 |
| 2% | 30% | 44% | 17% | 7% | Surface conditions of refuge roads | 3% | 4% | 34% | 44% | 14% | NA |
| 11% | 25% | 46% | 11% | 7% | Surface conditions of parking areas | 3% | 12% | 48% | 24% | 13% | NA |
| 3% | 15% | 36% | 34% | 13% | Condition of bridges on roadways | 1% | 3% | 35% | 43% | 18% | NA |
| 1% | 4% | 37% | 44% | 14% | Condition of trails and boardwalks | 6% | 10% | 42% | 35% | 8% | NA |
| 54% | 9% | 19% | 14% | 3% | Condition of boat launches | 21% | 0% | 36% | 21% | 21% | NA |
| 3% | 21% | 38% | 29% | 10% | Number of places for parking | 2% | 12% | 37% | 37% | 13% | NA |
| 18% | 28% | 28% | 22% | 5% | Number of places to pull over on refuge roads | 3% | 14% | 43% | 29% | 11% | NA |
| 6% | 17% | 22% | 40% | 15% | Safety of driving conditions on refuge roads | 2% | 5% | 21% | 51% | 21% | NA |
| 6% | 16% | 27% | 37% | 14% | Safety of refuge road entrances/exits | 1% | 4% | 29% | 48% | 18% | NA |
| 6% | 10% | 25% | 36% | 23% | Safety of roads/trails for nonmotorized users (for example, bicyclists and hikers) | 8% | 8% | 35% | 37% | 13% | NA |
| 13% | 22% | 30% | 27% | 9% | Signs on highways directing you to this refuge | 16% | 21% | 31% | 24% | 8% | NA |
| 14% | 18% | 30% | 30% | 8% | Signs directing you around refuge roads | 12% | 23% | 30% | 22% | 12% | NA |
| 4% | 15% | 21% | 42% | 19% | Signs directing you on trails | 14% | 24% | 25% | 28% | 9% | NA |
| 39% | 26% | 14% | 14% | 6% | Access for people with physical disabilities or who have difficulty walking | 26% | 21% | 29% | 18% | 6% | 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 | 94% | 33% |
| Private/rental vehicle with a trailer (for boat, camper, or other) | 2% | 0% |
| Recreational vehicle (RV) | 0% | 0% |
| Refuge shuttle bus/tram | 0% | 1% |
| Tour bus/van | 0% | 0% |
| Public transportation | 2% | 1% |
| Motorcycle | 0% | 0% |
| Bicycle | 2% | 1% |
| Foot (for example, walking/hiking) | 10% | 43% |
| Boat | 4% | 5% |
| Other (<i>specify</i>): <u>See Appendix C</u> | 1% | 2% |
| Other (<i>specify</i>): <u>See Appendix C</u> | 0% | 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) | 57% | 18% | 15% | 6% | 4% |
| Bus or tram that provides a guided tour of the refuge with information about this refuge and its resources | 63% | 15% | 11% | 8% | 2% |
| Refuge-sponsored shuttle with a dedicated stop in the local community for picking up people at set times | 52% | 12% | 24% | 10% | 2% |
| Public transit system that stops at or near this refuge | 52% | 21% | 13% | 13% | 1% |
| Bike-share program that offers bicycles for rent on or near this refuge | 51% | 16% | 13% | 15% | 6% |
| Pedestrian paths for access to this refuge from the local community | 22% | 14% | 32% | 17% | 14% |

SECTION 4. Your expenses related to your refuge visit

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 | <u>Amount spent in the local area/communities & at this refuge</u> (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> | |

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"/> 7% \$0 | <input type="checkbox"/> 10% \$30 | <input type="checkbox"/> 18% \$100 | <input type="checkbox"/> 8% \$250 |
| <input type="checkbox"/> 3% \$5 | <input type="checkbox"/> 1% \$45 | <input type="checkbox"/> 2% \$125 | <input type="checkbox"/> 1% \$350 |
| <input type="checkbox"/> 7% \$10 | <input type="checkbox"/> 3% \$60 | <input type="checkbox"/> 3% \$150 | <input type="checkbox"/> 9% \$500 |
| <input type="checkbox"/> 7% \$20 | <input type="checkbox"/> 2% \$75 | <input type="checkbox"/> 6% \$200 | <input type="checkbox"/> 10% \$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 |
| 3% | 15% | 18% | 41% | 22% | Convenient hours/days of operation for this refuge | 3% | 1% | 12% | 55% | 28% | NA |
| 40% | 27% | 16% | 13% | 3% | Availability of employees or volunteers | 6% | 9% | 38% | 38% | 9% | NA |
| 38% | 23% | 14% | 18% | 7% | Courteous and welcoming employees or volunteers | 3% | 6% | 20% | 43% | 29% | NA |
| 4% | 25% | 32% | 28% | 11% | Signs with rules/regulations for this refuge | 11% | 9% | 45% | 25% | 11% | NA |
| This refuge does not have a Visitor Center. | | | | | | | | | | | |
| 15% | 20% | 21% | 22% | 21% | Well-maintained restrooms | 22% | 33% | 22% | 17% | 6% | NA |
| 29% | 16% | 28% | 21% | 6% | Recreational structures (decks, blinds, platforms) | 14% | 17% | 45% | 24% | 0% | NA |
| 29% | 27% | 21% | 13% | 9% | Bird-watching opportunities | 2% | 19% | 25% | 37% | 17% | NA |
| 14% | 18% | 35% | 22% | 11% | Opportunities to observe wildlife other than birds | 3% | 18% | 34% | 27% | 18% | NA |
| 10% | 13% | 34% | 29% | 14% | Opportunities to photograph wildlife and scenery | 1% | 6% | 17% | 41% | 35% | NA |
| 21% | 32% | 25% | 13% | 9% | Environmental education opportunities | 6% | 31% | 37% | 17% | 9% | NA |
| 89% | 7% | 3% | 0% | 1% | Hunting opportunities | 30% | 0% | 30% | 30% | 10% | NA |
| 81% | 9% | 6% | 3% | 1% | Fishing opportunities | 10% | 10% | 30% | 40% | 10% | NA |
| 0% | 2% | 7% | 30% | 61% | Trail hiking opportunities | 6% | 8% | 8% | 39% | 40% | NA |
| 25% | 26% | 23% | 16% | 9% | Bicycling opportunities | 10% | 14% | 48% | 14% | 14% | NA |
| 22% | 21% | 22% | 17% | 18% | Water trail opportunities for canoeing or kayaking | 4% | 4% | 32% | 39% | 21% | NA |
| 59% | 20% | 14% | 2% | 4% | Volunteer opportunities | 18% | 9% | 64% | 9% | 0% | NA |
| 23% | 16% | 23% | 21% | 16% | Wilderness experience opportunities | 0% | 9% | 23% | 35% | 33% | 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. | 1% | 4% | 25% | 41% | 29% |
| I felt safe during my visit to this refuge. | 1% | 5% | 4% | 54% | 36% |
| Crime <u>is</u> a problem at this refuge. | 52% | 32% | 14% | 1% | 1% |
| I feel comfortable being in nature. | 2% | 0% | 2% | 35% | 61% |
| I do <u>not</u> like being in nature by myself. | 52% | 28% | 10% | 9% | 1% |
| People closest to me enjoy participating in nature-based recreation. | 0% | 0% | 8% | 42% | 50% |
| Generally, people who look like me are treated differently when they participate in nature-based recreation. | 49% | 17% | 28% | 5% | 0% |

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. | 2% | 4% | 27% | 50% | 16% |
| The quality of the overall experience when visiting this refuge. | 3% | 4% | 20% | 55% | 17% |

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 | 26% | 71% | 3% |
| More acreage open to hunting and fishing | 26% | 72% | 2% |
| More infrastructure (for example, bathrooms, observation decks) | 4% | 67% | 29% |
| Recreation equipment available for rent (for example, fishing rods, binoculars, snowshoes) | 11% | 81% | 8% |
| Less regulations on fishing | 15% | 81% | 5% |
| Less regulations on hunting | 22% | 76% | 2% |
| A greater diversity of species | 0% | 49% | 51% |
| Fewer numbers of a single, preferred species | 11% | 83% | 6% |
| More people participating in my primary activity | 33% | 62% | 6% |
| An improvement in the quality of wetlands | 2% | 57% | 41% |
| An improvement in the quality of wildlife habitat other than wetlands | 2% | 52% | 46% |

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

20% Yes 59% No 22% 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.*)

59% 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:

38% Programs that engage youth

18% Programs that focus on creative pursuits (for example, art, writing, meditation)

35% Programs that focus on family/multiple-generations

12% Programs that support people with accessibility concerns (for example, difficulty walking, in a wheelchair)

29% Programs that teach skills to visitors

9% Other (*specify*) See Appendix C

74% Programs that highlight unique local culture

SECTION 7. A little about you

**** 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? ☐ 51% Male ☐ 49% Female

2. In what year were you born? 1972 (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"/> 2% | | | <input type="checkbox"/> 3% | | | | <input type="checkbox"/> 40% | | | | <input type="checkbox"/> 54% | | | |

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

| | |
|--|---|
| <input type="checkbox"/> 94% White | <input type="checkbox"/> 1% American Indian or Alaska Native |
| <input type="checkbox"/> 2% Hispanic, Latino, or Spanish | <input type="checkbox"/> 0% Middle Eastern or North African |
| <input type="checkbox"/> 2% Black or African American | <input type="checkbox"/> 1% Native Hawaiian or Other Pacific Islander |
| <input type="checkbox"/> 3% 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"/> 0% Less than \$10,000 | <input type="checkbox"/> 7% \$35,000 - \$49,999 | <input type="checkbox"/> 22% \$100,000 - \$149,999 |
| <input type="checkbox"/> 1% \$10,000 - \$24,999 | <input type="checkbox"/> 4% \$50,000 - \$74,999 | <input type="checkbox"/> 19% \$150,000 - \$199,999 |
| <input type="checkbox"/> 1% \$25,000 - \$34,999 | <input type="checkbox"/> 16% \$75,000 - \$99,999 | <input type="checkbox"/> 30% \$200,000 or more |

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

| | | |
|---|---|--|
| <input type="checkbox"/> 61% Employed full-time | <input type="checkbox"/> 1% Unemployed | <input type="checkbox"/> 17% Retired |
| <input type="checkbox"/> 6% Employed part-time | <input type="checkbox"/> 2% Homemaker/caregiver | <input type="checkbox"/> 0% Disabled/unable to work |
| <input type="checkbox"/> 10% Self-employed | <input type="checkbox"/> 3% 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?

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?”

| Other Activity | Frequency |
|------------------|-----------|
| Helicopter tours | 1 |

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

| Primary Activity | Frequency |
|-------------------------|-----------|
| Auto tour route/driving | 1 |
| Bird watching | 3 |
| Hiking | 78 |
| Nature observation | 1 |
| Nonmotorized boating | 8 |
| Photography | 5 |
| Running | 1 |
| Sightseeing | 1 |
| Wildlife observation | 4 |

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 |
|----------------------------|-----------|
| Meetup | 1 |
| Strava | 1 |
| WhatsApp | 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 |
|-------------------------|-----------|
| AllMaps | 1 |
| AllTrails | 5 |
| eBird | 2 |
| Gaia Pro | 1 |
| Google | 1 |
| Hike trail guide online | 1 |
| Shaka guide | 2 |

| Other Information Sources | Frequency |
|--|-----------|
| Posted signage for refuge/photographs | 1 |
| We drove by it and saw the trailhead sign the day before we hiked the trail. | 1 |

Survey Section 4

Question 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).”

| Other Expenses | Frequency |
|----------------|-----------|
| Golf | 3 |

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 | 1 |
| General environmental education | 1 |
| Hiking-related programs | 1 |
| 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."

Comments on Transportation-Related Features at This Refuge (n=22)

Beautiful area!

Currently due to rehab on Hanalei beach, from storm damage, there were no accessible boat launch or roadways open to the river. Accessibility to the river was only possible through the kayak business where we rented kayaks. Our friends, who owned personal equipment, were not able to accompany us.

Do not post signs. There are already too many people.

Hi! Some guidebooks listed the Okeleha Trail as an easy hiking trail. Several listed it as challenging. It was challenging. There was a substantial climb, ropes, etc. I was not fully prepared for the mud and incline. Made it up and back but fell about a dozen times. The park's attempts to lay down mesh and other material to hold up the slopes has been mostly stripped away. So, hiker signage might be helpful - hopefully this is transportation-related and relevant. Thanks!

Let's keep making a huge effort to help save the Kauai endemic birds! Well, let's help save all Hawaiian bird species!

Mud, lots and lots of mud.

Roads were rough and very narrow. Difficult to navigate with cars coming from the other direction.

Small carpark opposite the trailhead. Trail was well signposted, and parking was close.

The entrance road to the Hanalei NWR currently says "local traffic only" even though there is no road work being done or road damage on the way to the NWR entrance. This was put in after the Kauai flooding.

The parking lot was not very big, and it was pretty muddy.

The signage on Kauai is dismal, but I think I like it like that. It goes along with the Island life there. It also keeps the foot traffic down on some of the harder to find trails and beaches. It's kind of an adventure!

The trail was in extremely bad shape and not safe. There were no signs as to progress on this steep trail and I thought I might pass out; it was so hot, humid, and lack of air flow.

The trailhead was not well marked. It seemed like traffic was not supposed to go down the road that the trailhead was on.

The transportation-related features at this refuge are inadequate; narrow, poorly maintained roadways, inadequate road shoulders, non-existent or distant observation points.

The volunteer that helped us out and signed us up for the survey was resourceful.

There were no signs directing traffic to the refuge. We discovered a road during our visit to Hanalei on Maui, HI and started driving down it. In a short while we saw a small roadside sign designating the area as a wildlife sanctuary. It did not have a designated gate, as the road also had residences along it as well as fields growing taro. The road was a mixture of gravel/dirt and no wider than two lanes.

This particular refuge is very underdeveloped.

To my knowledge there is only a short gravel road to a small parking area for this refuge. Perhaps I am wrong. We only kayaked but would intend to hike at another time.

Trail conditions were horrible. Wet, slippery, unsafe. I didn't stay long. But the road system getting there, and parking were fine.

Very limited improvements which at this location is not a problem. Signage could be better.

We access the Hanalei river from Hanalei kayak's dock - a business. Was not aware on our paddle that we were in a refuge - did not see any signage.

We didn't expect it to be developed and don't want it to become overcrowded.

Survey Section 5

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

Comments on Services, Facilities, and Opportunities at This Refuge (n=20)

A restroom would be helpful in the parking lot.

Bare bones facility.

Bathrooms at the trailhead would be helpful/nice.

Bathrooms would have been nice.

Better signage toward the end of the trail would be very helpful. My party and a few others got turned around before the finish.

I am quite surprised to be asked to do a survey because this site is so underdeveloped.

I never saw any facilities at the refuge. Just the trailhead.

I only hiked the trail.

I only went on one hike and I did not know I was in any particular refuge.

It would be nice to have a restroom available near the parking lot.

It would be nice to have a restroom but this is wilderness.

Less muddy - haha! Force of nature that we have to deal with. But very pleased that there was netting on this trail for traction. Mud or not - very happy.

Need a water fountain/restroom.

The hiking trail is very poorly maintained. It's dangerous and slippery, but such a beautiful, fabulous place for a hike and exercise.

There are no services, facilities, or opportunities at this refuge.

This park doesn't need facilities. The trailhead to the refuge is close to a town that provides sufficient facilities for anyone looking for them.

We didn't see restrooms or a visitor center or any employees. We did see birds but could only see them from the one-lane dirt road - there were no boardwalks or platforms that we saw.

We hiked the Okolehao trail at Hanalei, Maui, HI. The trail was reasonably slippery because of the amount of rain the area normally receives. There was a fine, plastic, black mesh covering some of the trail areas to assist either with holding the soil in place during heavy rains, or to assist with traction while hiking. The cloth was bunched together in some areas so that it didn't cover the trail entirely. But the footing was okay for us in those areas. We hike to enjoy the outdoors, get some exercise and absorb the areas we visit. Opportunities for taking photos of the views and the surrounding areas is important to us. Clearing away vegetation in some key areas along the trail to allow for good photographic vantage points would help to improve our experience. For example, there is a large, electrical wire support tower at a beautiful vantage point along the trail, but the grasses and other vegetation did not allow safe access to the areas that would provide good photographs. Also, at the bench at the end of the main trail (the trail does extend beyond this point but the guide book we used, the ultimate Kauai guidebook, did not recommend going further) there was a good view of the Hanalei bay area but the inner island view was obstructed by overgrown vegetation which did not seem to give us the view of 1/5 of the island that the guide book promised. So, in a nutshell, we can handle trails that are a bit challenging with mud, steepness, certain obstacles, etc. But would like to be able to enjoy the reward of an unobstructed view after the climb. Overall, we enjoyed the trail as it was mostly wide and easy to walk and the view that we saw was pretty spectacular.

We only hiked on one trail. Not aware of other services or facilities.

Would like to see the trails and refuge better signposted.

End of Survey

General Comments (n=11)

Love the hiking trail in Hanalei. Visited recently was post April 2018 floods. Would love more hiking trail in the wildlife refuge.

Hanalei is gorgeous!

I know that there was no snorkeling (marine life observing/watching) or surfing at this refuge, and maybe not at any, but those were two major draws for the trip and were not included in the options.

I would like to see signs to identify birds, description of wetlands, streams in the area. History of the area (agriculture, culture, etc.).

It would really help to have the hiking trail maintained. Thank you so much!!!!

Kauai was just beautiful. I loved the ruggedness and that it was uncrowded at this refuge and on the island.

Let's try to get rid of invasive plant/tree species, nonnative plants, non-native mammals. Let's replant native trees/plants. Let's keep trying to protect our endemic birds that are all on the verge of extinction!

Overall, we enjoyed our time, but our biggest complaint is that the trails were not well marked, and the parking lot was not well marked. The trail was washed out and it would have been nice to have signage along the trail so we would have known where we were at during the hike and where the end of the trail ended.

Posted trail maps at the trailhead would have been helpful even though I had GPS/map downloaded on my phone. It's nice to know the options that lay ahead. I loved it, so beautiful and peaceful. A great find on my first trip to Kauai!

We kayaked in from the kayak rental outside the refuge. It was lovely - flowers in the water, turtles, birds. We also drove into the refuge just to observe wildlife but the road conditions were less than ideal. This visit was just part of a longer visit to Hawaii from the mainland. We are unlikely to return in the near future just because of the distance from home.

We primarily went for hiking and only realized it was a refuge because of this survey.