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Idaho Results of the

Wildlife Viewer Survey

Enhancing Relevancy and Engaging Support from a Broader Constituency

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EXECUTIVE SUMMARY

Background

Wildlife viewing (closely observing, photographing, or feeding wildlife, maintaining plantings or natural areas for the benefit of wildlife, or taking trips to parks or other natural areas to feed, photograph, or observe wildlife) is one of the fastest growing wildlife-related recreation activities in the United States (US Fish and Wildlife Service, 2018). As participation in wildlife viewing continues to grow, so do questions about the characteristics of wildlife viewers and their perceptions of state agencies.

Historically, state fish and wildlife agencies (hereafter, state agencies) have depended on hunters and anglers to fund the agencies' conservation efforts, through a system known as the North American Model of Conservation (Price Tack et al., 2018). In this system, state agencies rely heavily on funds derived from sales taxes on certain sporting equipment and receipts from licenses and permits purchased by hunters, anglers, and trappers to support operations. In recent years, surveys show a plateau or decline in participation in hunting and angling, while participation in wildlife viewing continues to grow rapidly (US DOI et al., 2016). Yet, many viewers do not contribute directly to the state agencies responsible for ensuring the sustainability of resources on which their recreation activities depend.

As the number of viewers continues to rise, it is increasingly important that state agencies understand who these wildlife viewers are and their perspectives on and expectations of state agencies and wildlife conservation. Wildlife viewers have the potential to significantly aid state agencies in achieving their conservation goals (AFWA & WMI, 2019), through financial contributions as well as a range of other behaviors. This study of wildlife viewers in Idaho, one of 15 states which participated in state-level surveying, represents a key step in implementing the strategies outlined in the Fish and Wildlife Relevancy Roadmap (AFWA & WMI, 2019) by providing the Idaho Department of Fish and Game (hereafter, IDFG) with information and tools to connect with a broader constituency of wildlife viewers.

Methods

To understand wildlife viewers, our Virginia Tech research team collaborated with the Association of Fish and Wildlife Agencies' (AFWA) Wildlife Viewing and Nature Tourism Working Group (WVNTG) to conduct an multi-state survey of wildlife viewers in 2021, with additional sampling at the state level in 15 states. A Steering and Executive Committee, which consisted of members of the WVNTG and other state agency representatives, worked closely with us throughout the duration of this project. We also contracted with Qualtrics to conduct a panel

survey of wildlife viewers in Idaho. When conducted with appropriate methodological decisions, panel surveys have been shown to be a valuable tool to conduct online social science research in the conservation realm. Against declining response rates in phone and mail-in surveys, use of internet surveys has increased. They are cost-efficient and have the ability to quickly reach a large, broad group of individuals. Critics of internet surveys note challenges in reaching a truly representative population and highlight the need for rigorous methodology to ensure quality sampling. Quotas of demographic traits in the sample can help to reduce sampling error, along with other measures like attention checks and minimum completion times.

This survey was administered entirely online from October 29-December 15, 2021. Survey respondents were compensated by Qualtrics for their participation in the study. We used screening questions to ensure that all survey respondents resided in Idaho for most of the year, were over the age of 18 years old, who reported participating in wildlife viewing (defined as closely observing, photographing, or feeding wildlife, maintaining plantings or habitat for the benefit of wildlife, or taking trips to parks or other natural areas with the purpose of observing, feeding, or photographing wildlife) in the past five years. For the 15 states with additional sampling, the survey was adapted to be most applicable to each state.

The survey questionnaire was informed by the Multi-State Steering and Executive Committees, state agency representatives, and findings from a variety of surveys, including the Virginia Wildlife Recreation Study Report (Grooms et al., 2020), National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (hereafter, National Survey of Wildlife Recreation; USDOI et al., 2016), and a survey conducted by the North American Waterfowl Management Plan (NAWMP) Human Dimensions Working Group (NAWMP, 2021). Respondents answered questions about their wildlife viewing behaviors, identities, preferences, and experience with their state agencies.

To ensure high-quality responses, we incorporated numerous attention check questions and minimum time limits in this survey. We set demographic quotas for survey respondents based on findings from the 2016 National Survey of Fish and Wildlife-Related Recreation in an effort to achieve a survey sample that is representative of the wildlife viewing population across Idaho in terms of age, education level, and gender (US DOI et al., 2016). For the purposes of this report, we analyzed survey responses by comparing “consumptive viewers” (those who participated in hunting and/or angling in the past five years) and “nonconsumptive viewers” (those who did not participate in these other recreation activities). We chose to compare consumptive and nonconsumptive viewers’ responses throughout the report because of the focus of this project on expanding relevancy to a broader constituency for state agencies,

particularly for those wildlife viewers who are not already engaged in hunting and angling. Analysis primarily consisted of chi-square or t-tests conducted in the Statistical Package for Social Science (SPSS).

Findings

In the following section, we review findings for the state of Idaho, which consisted of a statewide descriptive analysis and a consumptive-nonconsumptive comparative analysis based on 504 complete survey responses. Our survey examined demographics, behaviors, frequency, and preferences of viewing activities of wildlife viewers in Idaho. We also examined Idaho wildlife viewers' current relationships with and preferences for support from IDFG. Just over half of our survey respondents were consumptive viewers and under half were nonconsumptive viewers. Overall, we found that consumptive and nonconsumptive viewers are distinctive groups; consumptive and nonconsumptive viewers have different preferences, behaviors, and levels of participation in wildlife viewing. We identified four demographics (gender, age, educational attainment, ethnoracial identity) that differed between consumptive and nonconsumptive viewers. Generally, we can define consumptive viewers as more active, involved, and specialized than nonconsumptive viewers; consumptive viewers participate in wildlife viewing more, spend more on wildlife viewing, and are more broadly active in wildlife viewing and outdoor recreation. We also found that consumptive viewers tended to have higher levels of experience with, familiarity with, and financial contribution (past, present, and future) to IDFG than nonconsumptive viewers.

Wildlife viewer demographics

Just under 90% of all respondents identified as solely White, and 11% identified as another race or ethnicity, or some combination. Over half of our respondents reported their total household income as $50,000 or higher. Approximately 36% of wildlife viewers surveyed lived in an urban area, 27% reported living in a small city, and the remaining 37% reported living in a rural area or small town.

Consumptive and nonconsumptive viewer comparisons

We found no differences in the demographic characteristics of consumptive and nonconsumptive viewers in terms of household income or residential location; however, we did find that consumptive viewers were significantly younger than nonconsumptive viewers by five years. In addition, when analyzing binary gender identity we found significantly more consumptive wildlife viewers identified as men and more nonconsumptive wildlife viewers identified as women. In addition, we found a significant difference in the level of educational

attainment of consumptive and nonconsumptive viewers. A higher percentage of nonconsumptive viewers reported attaining a Bachelor's degree and a higher percentage of consumptive viewers reported attaining a high school diploma, equivalent, or less. Finally, we found significantly more consumptive viewers identified as Black, Indigenous or people of color (BIPOC) than nonconsumptive viewers.

Wildlife viewing behaviors

Viewing interests and activities

Wildlife viewers in Idaho most commonly participated in wildlife viewing by visiting parks and natural areas with the purpose of viewing wildlife, photographing wildlife, or simply photographing or taking pictures of wildlife. Over three-quarters of wildlife viewers were interested in viewing land mammals and birds. In addition to visiting parks, state-managed areas (such as state parks, forests, boat landings, fishing areas, or Wildlife Management areas), and locally-managed areas (such as city or county parks, trails, or open spaces) to view wildlife, most wildlife viewers participated in viewing at their own home. In a typical year, just over 90% of the survey respondents reported viewing for 30 days or more per year around their homes.

Impacts of the COVID-19 pandemic on wildlife viewing

Compared to a typical year, participation in wildlife viewing (i.e., the number of days spent viewing) declined during the first year of the COVID-19 pandemic (March 2020-February 2021) for both around-the-home viewing (defined as within one mile of their home) and away-from-home viewing (both within Idaho and outside of Idaho). For the "upcoming year" (defined as fall 2021-fall 2022), wildlife viewers anticipated spending an amount of time viewing wildlife that was comparable to a typical year unaffected by the COVID-19 pandemic. We also asked wildlife viewers how the COVID-19 pandemic impacted their overall participation in wildlife viewing and interpreted these findings using "R3" terminology (recruitment, retention, and reactivation) from the Outdoor Recreation Adoption Model. Over two-thirds of wildlife viewers were classified as "retained" meaning the pandemic had no impact on their overall participation in wildlife viewing—they were wildlife viewing prior to the COVID-19 pandemic, and continued wildlife viewing during the pandemic. Next, just under one-fifth of wildlife viewers had participated in wildlife viewing prior to the COVID-19 pandemic, but stopped during the pandemic. Over 10% of wildlife viewers were classified as "reactivated," meaning that they had participated in wildlife viewing in the past, were not actively participating when the pandemic began, but resumed participation during or after March 2020. Finally, only

around 5% of wildlife viewers were classified as "recruited," meaning that they participated in viewing for the first time during the pandemic.

Skill level and support

In terms of expertise as a wildlife viewer, the vast majority of survey respondents self-identified as beginner, novice, or intermediate level viewers rather than advanced or expert. Over one-third of viewers reported having participated in wildlife viewing for roughly 20% or more of their lives. About two-thirds of wildlife viewers own (or have rented or borrowed) specialized equipment for viewing in the past five years. Family and friends were the strongest type of social support that influenced viewer participation.

Consumptive and nonconsumptive viewer comparisons

Overall, we found that the wildlife viewing behaviors of consumptive and nonconsumptive viewers tended to be different. More consumptive viewers participated in closely observing wildlife or trying to identify unfamiliar types of wildlife, taking trips or outings to any other location to observe, photograph or feed wildlife, and feeding other wildlife than nonconsumptive viewers. More consumptive viewers were interested in viewing reptiles and fish than nonconsumptive viewers. We found no differences between consumptive and nonconsumptive viewers for around-the-home viewing, both generally and in terms of the number of days spent viewing at home. However, nonconsumptive viewers were more likely to report fewer days spent viewing away from home in a typical year and the upcoming year. Similarly, nonconsumptive viewers reported fewer days viewing outside of Idaho or the U.S. in the first year of the COVID-19 pandemic year and the upcoming year than consumptive viewers. In addition, more consumptive viewers reported viewing on property of friends or family, federally-managed areas, and tribal lands in comparison to nonconsumptive viewers. The R3 phases of wildlife viewers during the COVID-19 pandemic did not vary significantly between consumptive and nonconsumptive viewers.

In terms of wildlife viewing expertise, we found that more nonconsumptive viewers classified themselves as beginner or novice and more consumptive viewers classified themselves as intermediate or advanced. There was no difference between consumptive and nonconsumptive viewers in percentage of life spent viewing or having owned, borrowed, or rented specialized equipment for wildlife viewing. Finally, we found that nonconsumptive viewers were more likely to report that they felt no social support at all from mentors than consumptive viewers.

Conservation behaviors

We investigated the likelihood of wildlife viewers in Idaho to participate in a number of conservation activities, both generally and with or in support of IDFG. Overall, wildlife viewers most often reported being likely to clean up trash or litter or purchase products that benefit or whose proceeds benefit wildlife. They least often reported being likely to collect data on wildlife or habitat to contribute to science or management or to inform or teach others about wildlife conservation. When comparing wildlife viewers' likelihood to engage in conservation behaviors generally or with/in support of the state agency, wildlife viewers expressed similar likelihood of engaging in conservation behaviors in collaboration with the IDFG in comparison to on their own.

However, we did find that wildlife viewers were more likely to collect data on wildlife or habitat to contribute to science or management with or in support of the IDFG compared to their interest to do so in general.

Consumptive and nonconsumptive viewer comparisons

When comparing consumptive and nonconsumptive viewers we found that more consumptive wildlife viewers reported higher levels of likelihood to participate in all conservation behaviors investigated independently of the IDFG with the exception of civic engagement and cleaning up trash or litter, for which there was no significant difference. We also found significant differences in the likelihood of consumptive and nonconsumptive viewers to participate in four conservation behaviors with or in support of the IDFG. Specifically, consumptive viewers were more likely to participate in teaching others about wildlife conservation, enhancing wildlife habitat, collecting data on wildlife or habitat to contribute to science or management, and cleaning up trash or litter than nonconsumptive viewers.

Wildlife viewing barriers

We surveyed wildlife viewers in Idaho about a variety of topics which limited their participation in wildlife viewing. Our results indicate that financial cost associated with wildlife viewing, lack of free time to participate in wildlife viewing, and distance to high-quality viewing locations are the greatest barriers, with more than half of wildlife viewers reporting *somewhat* to *a great deal* of limitation to their participation. Lack of free time and distance to viewing locations were also reported commonly as barriers.

We also specifically investigated the degree to which wildlife viewers experience accessibility challenges, which were defined as "[t]he difficulties someone experiences interacting with the

physical or social environment when engaging in a meaningful activity such as birding. These may be the result of mobility challenges, blindness or low vision, intellectual or developmental disabilities (including autism), mental illness, being Deaf or Hard of Hearing or other health concerns" (Rose and McGregor, 2021). We found that over one-third of wildlife viewers in Idaho experience *somewhat* to *a great deal of* accessibility challenges when participating in wildlife viewing.

Consumptive and nonconsumptive viewer comparisons

While only six of 14 barriers differed between consumptive and nonconsumptive viewers (lack of people who support wildlife viewing, few people to view with, financial costs associated with wildlife viewing, and accessibility challenges for themselves or the people they go wildlife viewing with), the overall pattern in these differences was the same; nonconsumptive viewers were more likely to feel that these barriers did not limit their participation in wildlife viewing at all. In addition, consumptive viewers experienced accessibility challenges to a slightly greater extent than nonconsumptive viewers while participating in wildlife viewing.

Relationships with IDFG

Finally, we explored Idahoan wildlife viewers' familiarity, perceptions, experiences, trust, and financial contributions to IDFG.

Familiarity with IDFG

Well over three-quarters of wildlife viewers were *slightly*, *moderately* or *extremely familiar* with IDFG as a whole and over 90% of survey respondents had seen the IDFG logo before. However, over a third of wildlife viewers were *not at all familiar* with IDFG staff. The majority of survey respondents in Idaho reported that they felt the state agency's level of prioritization of programs and services for wildlife viewing was *about right*; about a quarter of respondents felt it was *too low* or *far too low*. Still, survey respondents generally indicated moderate to high levels of trust in IDFG as an agency and in IDFG staff. Wildlife viewers also scored IDFG moderately, on average, on various facets of trust (capability, benevolence, and integrity).

Experience with IDFG and services

About two-thirds of survey respondents had used or engaged in at least one IDFG program or service in the last five years. Of the respondents who had utilized at least one program or service from IDFG in the past five years, they most commonly reported utilizing information

(about wildlife and wildlife viewing opportunities in the state), nature/education/visitor centers, and lands provided by IDFG. They most commonly reported utilizing information about wildlife in the state provided by IDFG, IDFG lands, and IDFG visitor education or nature centers. The least used IDFG programs were volunteer data collection and conservation law enforcement.

Financial contributions to IDFG

Over two-thirds of wildlife viewers in Idaho had made at least one purchase or contribution to the IDFG in the past five years. In general, more wildlife viewers had contributed via nonvoluntary mechanisms (e.g., fees or licenses) than voluntary mechanisms (e.g., donations or products) in the past five years. IDFG fishing and hunting licenses were the most commonly purchased items. In this section of the survey, we asked respondents about some financial contribution mechanisms that IDFG doesn't currently offer (for example, an IDFG lands access pass, permit, or entry fee). We also examined the likelihood of wildlife viewers to contribute via voluntary and nonvoluntary funding mechanisms. Over half of survey respondents in Idaho indicated that they were *moderately, very, or extremely likely* to purchase a fishing license; a IDFG lands access pass, permit, or entrance fee (an option currently unavailable in Idaho); lottery ticket for which the proceeds go to habitat conservation (another option currently unavailable in Idaho); or tangible products. Additionally, we found that over one-third of wildlife viewers were *very* or *extremely likely* to increase their contributions to IDFG if they knew their funds would be used for the conservation of rare and vulnerable species or to support conservation of the types of wildlife they like to view.

Viewing support preferences

To better support wildlife viewers' participation, the most respondents reported that IDFG can provide viewers with more information about where to go to see wildlife and more information about wildlife in Idaho. Finally, we found that the most preferred channels of state agency communication for wildlife viewers in Idaho were the IDFG website, email updates or e-newsletters, and printed materials (such as brochures and maps).

Consumptive and nonconsumptive viewer comparisons

Broadly, we found that consumptive and nonconsumptive viewers have very different perceptions of and experiences with the IDFG. Overall, consumptive viewers were considerably more familiar with and had stronger relationships with the IDFG, in terms of utilization of IDFG

programs, past and future contributions to the IDFG, and interest in receiving wildlife viewing support from IDFG.

In contrast, nonconsumptive viewers were far less familiar with all aspects of the IDFG. For example, nonconsumptive viewers were more likely to be *not at all familiar* with state agency lands, programs, staff, and mission than consumptive viewers. Indeed, over 50% of nonconsumptive viewers were *not at all familiar* with IDFG staff.

In addition, over 96% of consumptive viewers had seen the IDFG logo before, in comparison to 82% of nonconsumptive viewers. Although we did find some statistically significant differences in our measures of trust in IDFG between consumptive and nonconsumptive viewers, these differences are not necessarily relevant for management (as both groups still fell near the same level on the scales). Importantly, both consumptive and nonconsumptive viewers have similar, moderate levels of trust in the state agency.

The most sweeping differences between consumptive and nonconsumptive viewers were in their experiences with IDFG programs or financial contributions to IDFG. Over half of nonconsumptive viewers had not participated in or used any IDFG programs and services in the last five years, in comparison to just over one-quarter of consumptive viewers. More consumptive viewers had participated in or utilized every IDFG program or service with the exception of technical assistance or information about improving wildlife habitat than nonconsumptive viewers, for which there was no difference in participation. In addition, for past purchases and contributions, more consumptive viewers had purchased or contributed via all nonvoluntary and voluntary funding mechanisms (with the exceptions of a donation of land to IDFG through a conservation easement and direct donation to IDFG) in comparison to nonconsumptive viewers. At least one-quarter of nonconsumptive viewers reported being *not at all likely* to make any purchases or contributions in the next five years, with the exception of a land access fee or pass (an option currently unavailable in Idaho). Generally, consumptive viewers and nonconsumptive viewers expressed similar likelihood to increase their contributions to IDFG, given their contributions were used in a variety of ways. The only exception was if their contributions were used for more education or outreach related to conservation, for which consumptive viewers expressed a significantly stronger interest in comparison to nonconsumptive viewers.

We also found that, in general, there were few differences in preferred methods for receiving further support from the IDFG for respondents' wildlife viewing activities between consumptive and nonconsumptive viewers. Compared to nonconsumptive viewers, consumptive viewers expressed significantly more interest in more opportunities for youth to learn how to

participate in wildlife viewing, more training opportunities for wildlife viewing guides or mentors, and more opportunities to be involved in volunteer research or wildlife data collection activities. More nonconsumptive viewers than consumptive viewers expressed interest in none of the options for IDFG to support wildlife viewing.

Conclusions

The results of The Wildlife Viewer Survey for Idaho provide a profile of wildlife viewers which can be used by IDFG to overcome barriers to broader relevance, public engagement, and support (AFWA & WMI, 2019). Our profile includes what wildlife viewers like to participate in, how they view and trust state agencies, what services and programs they wish agencies provided, how they most like to support conservation through action and/or funding, and more.

As IDFG aims to better engage wildlife viewers in Idaho, we recommend three general needs to establish a lasting and equitable relationship: 1) provide wildlife viewing information and access, 2) promote around-the-home viewing opportunities, and 3) develop social support networks for wildlife viewers. As a part of this engagement process, we identify a need for the IDFG to focus efforts on wildlife viewers who do not hunt or fish through the provision of services that specifically serve them, including support for around-the-home viewing, birding, and information on wildlife viewing tailored for beginners. This is an important next step in developing relationships with this currently underserved group. These efforts will additionally serve the established constituency of hunters and anglers that also view wildlife. Finally, we recommend the development of wildlife viewer-specific funding mechanisms, with an emphasis on establishing funding relationships with wildlife viewers who do not hunt or fish.

The following report details the methodology, findings, and conclusions from analysis of data from the Wildlife Viewer Survey for Idaho. Accompanying Appendices contain the survey instrument, list of attention checks to ensure data quality, and supplemental results tables.

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BACKGROUND

Introduction

Across the United States, state fish and wildlife agencies (hereafter, state agencies) are key players in the conservation of wildlife and their habitats (AFWA, 2017). State agencies have legal authority and responsibility to steward wildlife resources as a public trust, in the interest of all current and future members of the public (Organ et al., 2012). To that end, the 50 state agencies manage public lands and waterways, provide technical support for conservation on private lands, conduct wildlife research and monitoring, and govern wildlife harvests and wildlife-associated recreation, among other activities (AFWA, 2017; Organ et al., 2012). Since their inception, the work of many state agencies has been largely funded through the sale of hunting and fishing licenses, boating and shooting permits, and taxes on recreation equipment under a user-pay user-benefit model (Organ et al., 2012). However, a shifting user-base and cultural conditions call for re-examining and possibly revising this model. In particular, declines or stagnation in hunting and angling among an increasingly urbanized population have made it clear that the sustainability of state agencies and their contributions to wildlife conservation is contingent on expanding and diversifying the financial and political support provided by the public (US DOI et al., 2016; AFWA & WMI, 2019). Specifically, agencies face the challenge of maintaining their current supporters while increasing their relevance to and engagement with new and broader constituencies (AFWA & WMI, 2019). These broader constituencies include people in diverse demographic, social, and geographic groups. In addition, this includes recreationists who are invested in wildlife and the outdoors, but may have values, interests, and behaviors that differ from those of the hunting and angling communities that have traditionally been the target audience for agencies (AFWA & WMI, 2019). Central among these nontraditional recreation groups are people who participate in wildlife viewing, one of the fastest growing outdoor recreation activities in the United States (US DOI et al., 2016).

Wildlife Viewers

Wildlife viewing is a broad category of wildlife-associated recreation that includes intentionally observing, photographing, or feeding wildlife, improving or maintaining wildlife habitats, and visiting parks and natural areas for the primary purpose of wildlife viewing (US DOI et al., 2016). As of 2016, over a third of US adults participate in various forms of wildlife viewing, including 14.3 million additional wildlife viewers reported since 2011 (US DOI et al., 2016). From 2011 to 2016, the number of US adults participating in wildlife viewing increased by 14.3 million, or an increase in participation to over one-third of the adult population. Viewers spend nearly $76 billion on their viewing activities annually, including $170 million in access fees for public lands (US DOI et al., 2016). Specifically, in Idaho, the 2011 National Survey of Hunting, Fishing, and

Wildlife-Associated Recreation (hereafter, National Survey of Wildlife Recreation) estimated 184,000 wildlife-watching participants in Idaho, approximately two in three of all state residents. Between 2001 and 2011, in-state wildlife-watching expenditures almost doubled (USDOI et al., 2011).

Birdwatchers and other viewers also directly contribute funds to wildlife and habitat conservation (Fulton et al., 2017). A study in New York State found that people who bird (including those who both hunt and bird) are more likely than non-recreationists and hunters to donate to conservation (Cooper et al., 2015). They are also more likely to participate in pro-environmental behaviors such as conducting habitat enhancement, joining environmental groups, and supporting conservation policy (Cooper et al., 2015). Similar patterns have been seen in Virginia, where recreationists who identify as birders or other viewers (alone or in addition to identifying as hunters and anglers) engage in a range of conservation activities more often than those who only hunt or fish (Grooms et al., 2020). Additionally, wildlife viewing is a means of connecting people to nature and garnering general support for wildlife conservation (Kellert et al., 2017). Wildlife viewers are thus a critical constituency for state fish and wildlife agencies, especially given stable or declining rates of participation in hunting and angling over the past decade (US DOI et al., 2016) and the ongoing need to generate broader support for agency efforts. However, viewers' direct support of wildlife agencies is currently limited. In part, this limited support is due to a lack of dedicated funding streams for wildlife viewers that would parallel the licenses, permits, and excise taxes that connect hunters and anglers to state agencies (Organ et al., 2012). Limited financial support from viewers may also be due to their perceptions that agencies serve them less than hunters and anglers (Grooms et al., 2019). Additionally, birders and other viewers tend to have lower levels of trust in state and federal agencies, relative to other entities (Fulton et al., 2017) and in comparison with hunters and anglers (Grooms et al., 2020).

While wildlife viewers undoubtedly benefit from the work of state agencies through activities such as habitat management and research, as well as established wildlife viewing programs that serve viewers directly, agency relationships with this emerging constituency are still relatively new in some states. The Fish and Wildlife Relevancy Roadmap (hereafter, Relevancy Roadmap) developed by the Association of Fish and Wildlife Agencies (AFWA) and Wildlife Management Institute (WMI) in 2019 identified limited capacity to understand and plan for engagement with new groups as key barriers in the ability of agencies to broaden their public support and serve diverse constituencies (AFWA & WMI 2019). The Relevancy Roadmap articulates a need for "increase[d] acquisition and application of social science information" to address these barriers with "science that is as robust and comprehensive as the ecological information relied upon in the past" (AFWA & WMI, 2019, p. 11). Indeed, important insights about wildlife viewer

behaviors and their relationships with agencies have emerged from social science surveys at both state (e.g., Cooper et al., 2015; Grooms et al., 2020) and national levels (e.g., Fulton et al., 2017; NAWMP, 2021; US DOI et al., 2016). (For a review of the current literature on wildlife viewing, see Sinkular et al., 2021) Nonetheless, key knowledge gaps remain about the activities, experiences, perceptions, needs, and preferences of wildlife viewers across the country–critical information for agencies to become more inclusive of and relevant to wildlife viewers, fulfill their missions and public trust directives, and sustainably advance fish and wildlife conservation for generations to come.

Project Background

A 2021 Multistate Conservation Grant Program (MSCGP) grant was awarded to the Association of Fish and Wildlife Agencies' (AFWA) Education, Outreach & Diversity (EOD) Committee - Wildlife Viewing and Nature Tourism (WVNT) Working Group and Virginia Tech to address barriers to the relevancy and inclusivity of state agencies for wildlife viewers. The project included a synthesis of current literature on the behaviors, interests, experiences, and preferences of wildlife viewers (Sinkular et al., 2021); a national-scale web-based survey (*n* = 4,030) that built upon previous research to deepen understanding of wildlife viewers across all four AFWA regions (West, Midwest, Northeast, and Southeast); and recommendations for improved engagement between state agencies and wildlife viewers, co-produced by the research team and staff from state agencies across the country. State agencies were offered the opportunity to opt in to additional survey data collection and analysis within their state in addition to the regional-level survey data and analysis. State-level sampling provided states with the unique opportunity to have results specific to the wildlife viewing constituencies in their state.

A six-member Executive Committee and a 16-member Steering Committee were established to guide implementation of the project by the Virginia Tech team. The Executive Committee, which included the Chair of the WVNT Working Group and other MSCGP proposal co-authors from five state agencies, provided big-picture, strategic guidance for the project and was also responsible for final decisions on a number of fine-scale details in survey design and administration. The Steering Committee, which included human dimensions, wildlife viewing, and nongame wildlife staff from 11 additional state agencies, participated in routine project meetings, liaised with others in their agencies related to the project, and provided feedback to ensure that the survey would be relevant to wildlife viewers and produce data that meet the needs of state agencies. Each of the states that participated in the state-level surveys participated in the Steering Committee. In doing so, they provided feedback on the design of the survey instrument and the state sampling approach.

About this Report

This report presents analysis of data from the Wildlife Viewer Survey (hereafter, Survey) for the state of Idaho and concludes with evidence-based communications and engagement strategies that the Idaho Department of Fish and Game (hereafter, IDFG) can implement to increase their relevance to wildlife viewers and the participation of wildlife viewers in activities that support agencies' conservation goals. The results and conclusions contained in this report contribute to the implementation of multiple strategies of the Relevancy Roadmap by identifying opportunities to enhance the relevancy of state fish and wildlife agencies to wildlife viewers, particularly those who are not already engaged in hunting and angling, avenues for building partnerships with viewers to support implementation of state conservation plans, and potential strategies for engaging viewers in conservation funding mechanisms (AFWA & WMI, 2019).

METHODS

Survey Instrument

Building upon other national and state-specific survey efforts of wildlife recreationists, and based on input from the Steering Committee and state agency representatives, we first developed the regional survey instrument, which consisted of 117 closed-ended questions about wildlife viewers' recreation and conservation behaviors and relationships with their state wildlife agencies.

After completing the regional survey, we adapted it for the state of Idaho through the addition of survey items about familiarity with IDFG, as well as the removal of survey options which were not applicable to the state for survey items about past behavior (see Appendix A for full survey instrument). For all questions which directly relate to the role of the state wildlife agency, IDFG was directly named.

Survey questions covered wildlife viewers':

- Duration, location, and frequency of participation in wildlife viewing
- Participation in other forms of outdoor recreation
- Level of specialization as a wildlife viewer
- Travel- and equipment-related expenditures for wildlife viewing
- Barriers to and social support for participating in wildlife viewing
- Likelihood of participating in conservation behaviors
- Pattern of participation in wildlife viewing during the COVID-19 pandemic
- Familiarity with, perceptions of, and trust in the state agency
- Experience with agency programs and services

- Past financial contributions to state wildlife agencies
- Likelihood to support agencies financially and through conservation behaviors in the future
- Preferred forms of viewing support and communications from the state agency
- Demographic characteristics

To aid in respondent recall, survey questions about behaviors are usually asked with reference to a distinct period of time (e.g., the past year; Vaske, 2019, Chapter 4). Due to the impact of the COVID-19 pandemic during the survey administration period and the desire to provide state agencies with information from a less unusual time, we instead asked respondents to reflect on "a typical year," which we defined in the survey instrument as "a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic."

Survey Sampling and Administration

State-level surveys were administered entirely online from October 29-December 15, 2021. All potential survey respondents were identified and recruited through a survey panel administered by Qualtrics, and participants completed the online survey through the Qualtrics platform. When conducted with appropriate methodological decisions, panel surveys have shown to be a valuable tool for conducting online social science research (Wardropper et al., 2021). Panel surveys are a form of internet surveys that consist of sampling respondents from an online group, or panel, and usually provide a small compensation. Attention checks, or quality assurance items (Czeisler et al., 2020), and time limits based on a fraction of the median completion time from pilot samples (Miller et al., 2020), are two tools utilized to increase the quality of response gathered in panel research. The survey was administered to separate samples in 15 states, with a goal of at least 500 respondents from each state (Figure 1).

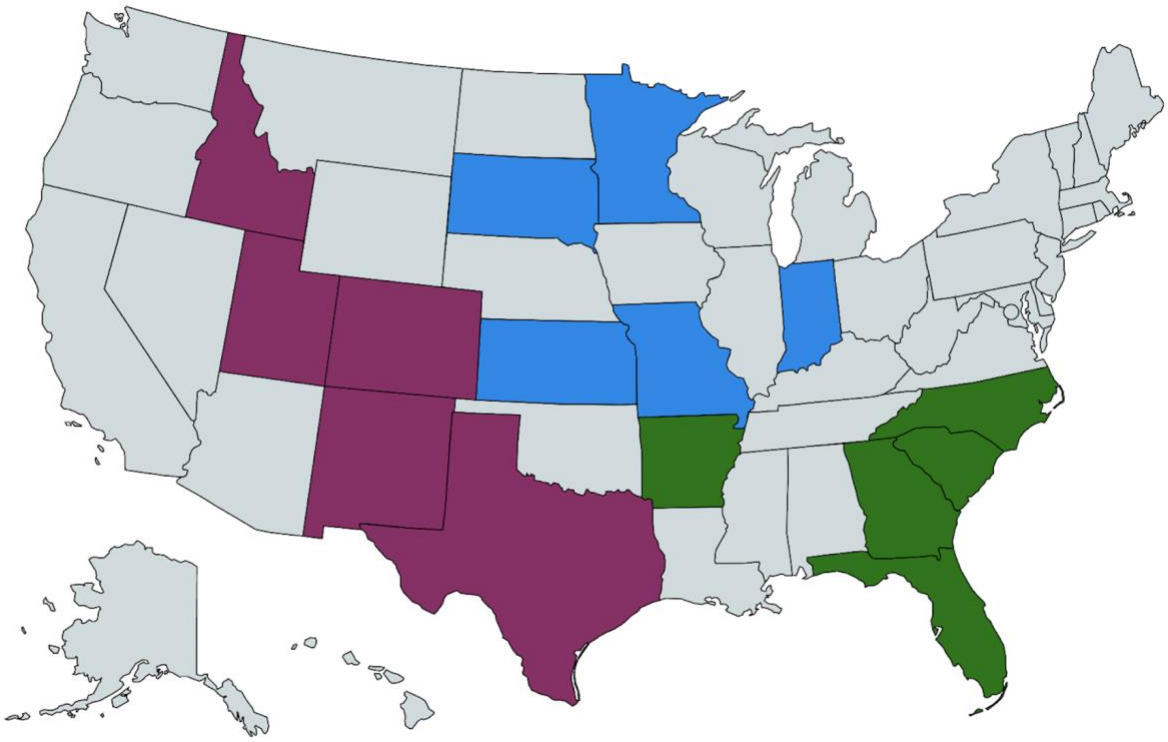

Figure 1: Map of state-level sampling
Map of the United States showing the 15 states that participated in state-level sampling for the Wildlife Viewer Survey. Participating states are colored according to their AFWA region assigned in the regional Wildlife Viewer Survey report (Magenta = Western sample, blue = Midwestern sample, green = Southeastern sample; Sinkular et al., 2022). Idaho (magenta) was in the Western sample.

Eligibility

Respondents were asked to indicate consent to participate in the study at the very beginning of the online survey instrument. Initial survey questions then screened for participant eligibility to participate in the study based on their 1) involvement in wildlife viewing; 2) state of residence; and 3) demographic characteristics such as age, gender, and education level.

Only individuals who had participated in some form of wildlife viewing in the past five years were able to complete the survey. This study did not examine traits of non-wildlife viewers. The survey provided a definition of both “wildlife” and “wildlife viewing” to ensure the inclusion of a broad range of people who participate in various forms of wildlife viewing and the exclusion of those who only observe wildlife incidentally during other outdoor activities. The following definitions were adapted from the 2016 National Survey of Wildlife Recreation (US DOI et al., 2016):

> For this survey, wildlife refers to all animals, such as birds, fish, insects, mammals, amphibians, and reptiles, that are living in natural environments, including in urban and semi-urban places. Wildlife does not include animals living in artificial or captive environments, such as aquariums, zoos, or museums, or domestic animals such as farm animals or pets.
>
> Wildlife viewing refers to intentionally observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing. Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting, or fishing, or intentionally scouting for game.

Participant eligibility was also determined by three broad demographic quotas set to ensure a representative sample of wildlife viewers, while also ensuring we would be able to meet targets for the number of respondents. In our state-level surveys, we set quotas for respondent gender, age, and education based on national-level results of the National Survey of Wildlife Recreation, with some changes to accommodate for lower sample sizes (US DOI et al., 2016). First, we required that each state sample consist of no more than 74% male or 51% female. For the age quota, we defined three broad categories by combining the smaller categories used in the National Survey of Wildlife Recreation (US DOI et al., 2016). We required that no more than 28% and no less than 17% of respondents be between 18 and 34 years old, no more than 41% be between 35 and 54 years old, and no more than 56% be 55 years old or older. Unlike the National Survey of Wildlife Recreation, we did not survey individuals under 18 years of age. Finally, while the National Survey of Wildlife Recreation classified respondent educational attainment in terms of the number of years of education (e.g., "11 years or less", "12 years", and "1 to 3 years of college"), we set quotas based on degree attainment, consistent with Qualtrics' standard survey methodology for panels, as well as other surveys of wildlife viewers (NAWMP, 2021). For state reports, we required that no more than 48% of respondents have completed a bachelor's or graduate degree.

Data Quality

We implemented a number of measures to maximize the quality of the data generated through the Qualtrics panel, including attention checks and a minimum completion time (following best practices for using survey panels, as described in Wardropper et al., 2021). The survey instrument contained two different kinds of attention checks. First, there were five sets of statements in the survey that were worded as opposites of each other (e.g., "Wildlife viewing has a central role in my life" and "Wildlife viewing is not an important part of my life"). Inconsistent responses to these statements indicated that a respondent may be taking the

survey without being thoughtful. For the second kind of attention check, we identified combinations of responses that suggested the respondent was providing bad data (e.g., if a respondent indicated that they participate in "photographing or taking pictures of wildlife" in one question and in a later question responded that they are "not interested in observing, photographing, or feeding wildlife"). Respondents who failed any two attention checks in the survey were eliminated from the final sample (see Appendix B for a full list of attention checks). Finally, we also established a minimum survey completion time in order to remove respondents from the sample that completed the survey so quickly that their responses were unlikely to have been genuine. The minimum completion time was set at 6.35 minutes (or 381 seconds), which was the longest survey duration for the fastest quintile of the 101 respondents in the Qualtrics pilot test of the regional survey.

In 2011[1], the population of wildlife viewers was estimated at 558,000 (U.S. DOI et al., 2011). According to Dillman et al., (2014) as cited in Vaske, 2019, a minimum sample of 384 is needed to generalize to a population of 558,000 at a 95% confidence interval with a ± 5% margin of error.

Data Analysis

In this report, we generally present response frequencies for each survey question from wildlife viewers across the entire state, referred to throughout the report as the "statewide sample", as well as separate response frequencies for "consumptive" and "nonconsumptive" wildlife viewers. Theoretical and applied frameworks both characterize wildlife recreation activities and recreationists by so-called "consumptive" and "nonconsumptive" definitions, based on their use of and impact on wildlife (Vaske & Roemer, 2013; Tremblay, 2001). Within this definition, consumptive activities, such as hunting, fishing, and trapping, generally result in the harvest or catching of species from their habitat, while nonconsumptive activities, such as hiking, birdwatching, and other forms of wildlife viewing, do not (Duffus & Deardon, 1990). We recognize the assignment of recreational activities into these categories is not clear-cut, as activities traditionally deemed nonconsumptive can also result in substantial negative impacts on wildlife, including mortality (Green & Higginbottom, 2000). Still, we compare consumptive and nonconsumptive viewers' responses throughout the report because of the focus of this project on expanding relevancy to a broader constituency for state agencies. Consumptive wildlife viewers were defined as those who participated in either (or both) hunting and angling as additional forms of outdoor recreation during the past five years. Nonconsumptive wildlife viewers were those without this experience. We used the Statistical Package for Social Science

[1] The most recent National Survey of Fishing, Hunting, & Wildlife-Associated Recreation (FHWAR) survey with published state-based results was from 2011.

(SPSS) to produce descriptive statistics for survey questions and to conduct inferential statistical tests (i.e., t-test, chi-square, or ANOVA) to explore differences across consumptive and nonconsumptive wildlife viewers. Results from these tests are described in the Results section and also included in Appendix C.

RESULTS

Survey response

The survey for the state of Idaho was initiated by 590 panel participants and completed successfully by 504 wildlife viewers. A total of 86 potential participants were considered ineligible because they did not complete the survey, did not consent to participate in the study, were under 18 years of age, had not participated in any of the included forms of wildlife viewing in the past five years, failed two attention checks, or completed the survey too quickly. The three demographic quotas that were set (see Methods) were achieved.

Out of 504 wildlife viewers, we classified 57% of our sample as consumptive viewers, meaning that, in addition to wildlife viewing, they reported participating in hunting or fishing in the past five years. Specifically, 34% of wildlife viewers in Idaho also fish, 4.2% also hunt, and 20% also hunt and fish. So, 43% of our sample were classified as nonconsumptive viewers, meaning that they did not report participation in hunting or fishing in the past five years.

Survey Quota: Age

We asked respondents to indicate their birth year, with options ranging from 1920 to "After 2003" (i.e., most recent age eligible). Respondents who indicated they were born in 2003 were then asked a follow-up question, "Are you 18 years of age?", in order to account for those who had not yet turned 18 at the time of survey completion.

The reported ages of all respondents in Idaho ranged from 18 to 88 (M = 46, SD = 17). Consistent with our established quota, 25% of respondents were between the ages of 18-34, 35% were between the ages of 35-54, and 39% of respondents were over the age of 55. A t-test indicated that the mean age of consumptive wildlife viewers (M = 45, SD = 16) was significantly higher than the mean age of nonconsumptive wildlife viewers by five years (M = 50, SD = 17; t = 3.24, df = 502, $p < .001$; Table 1; Figure 2).

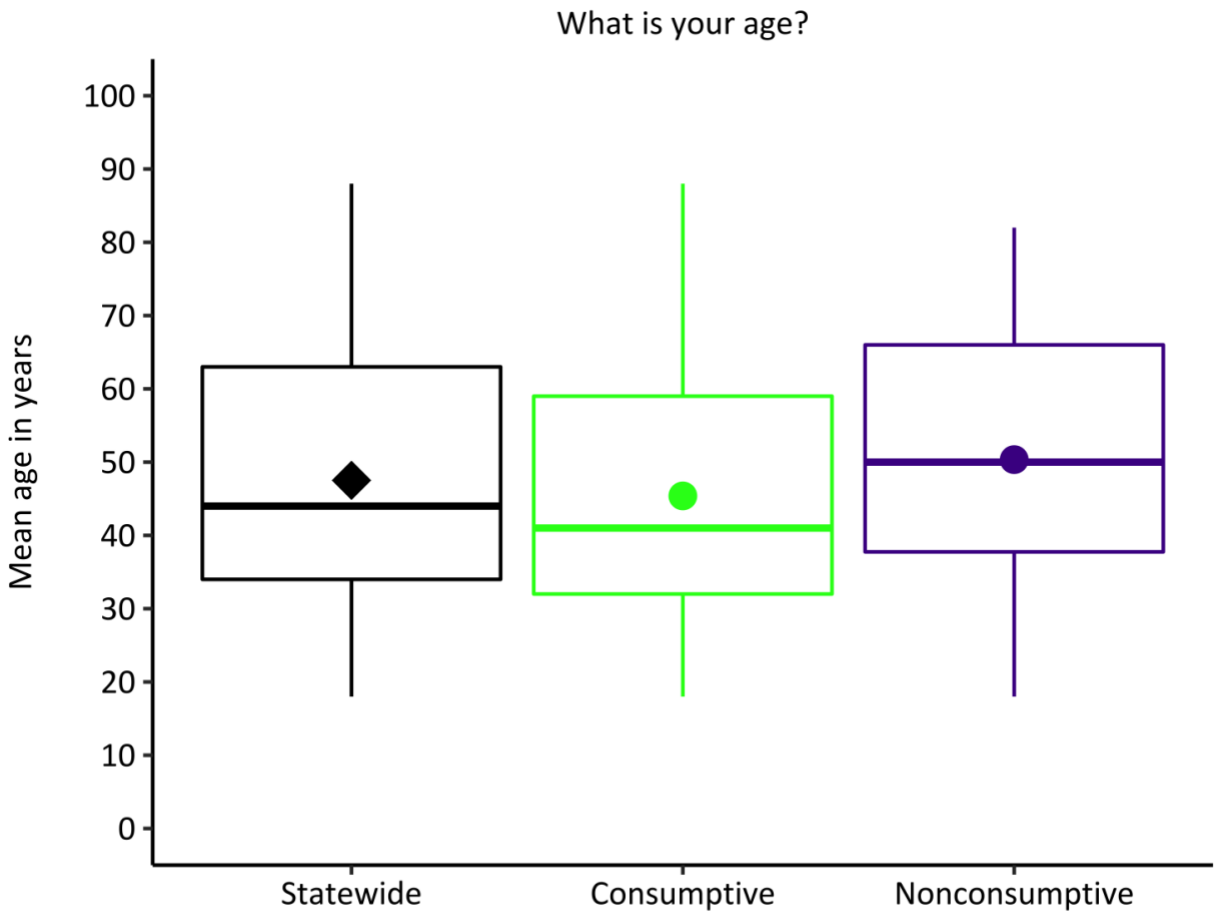

Figure 2: Respondent age
Boxplots (median and interquartile ranges within the boxes) showing the differences in the age of wildlife viewers in Idaho across the state (statewide) and for consumptive and nonconsumptive viewers. Points represent the mean age (diamond for statewide group, circles for consumptive-nonconsumptive group) and whiskers represent the minimum and maximum values for the dataset. A t-test indicated that the mean age of consumptive wildlife viewers was significantly higher than the mean age of nonconsumptive wildlife viewers (Table 1). Note that quotas were set for this question.

Survey Quota: Gender

We provided respondents with five gender-inclusive response options, as suggested by Speil et al. (2019). These options included "man," "woman," "non-binary," "prefer to not disclose," and "prefer to self-describe" accompanied by an open textbox. As described in the Methods, a quota was set only for two gender options (man and woman); other genders were not calculated in the gender quotas but were included in the sample of respondents.

Consistent with the quota, 48% of respondents were men and 51% of respondents were women (Figure 3). Only a very small percentage of respondents (1.0%) selected other response

options; 0.4% were non-binary and 0.2% preferred to not disclose. Due to low sample size, non-binary respondents, as well as any that preferred not to disclose their gender identity (n = 2) were not included in the following gender identity analysis of consumptive and nonconsumptive wildlife viewers. A chi-square test indicated a statistically significant difference in the binary gender identity of consumptive and nonconsumptive wildlife viewers (χ^2 = 5.00, df = 1, p = .03; Table 2; Figure 3), with more consumptive wildlife viewers identifying as men (52%) and more nonconsumptive wildlife viewers identifying as women (57%).

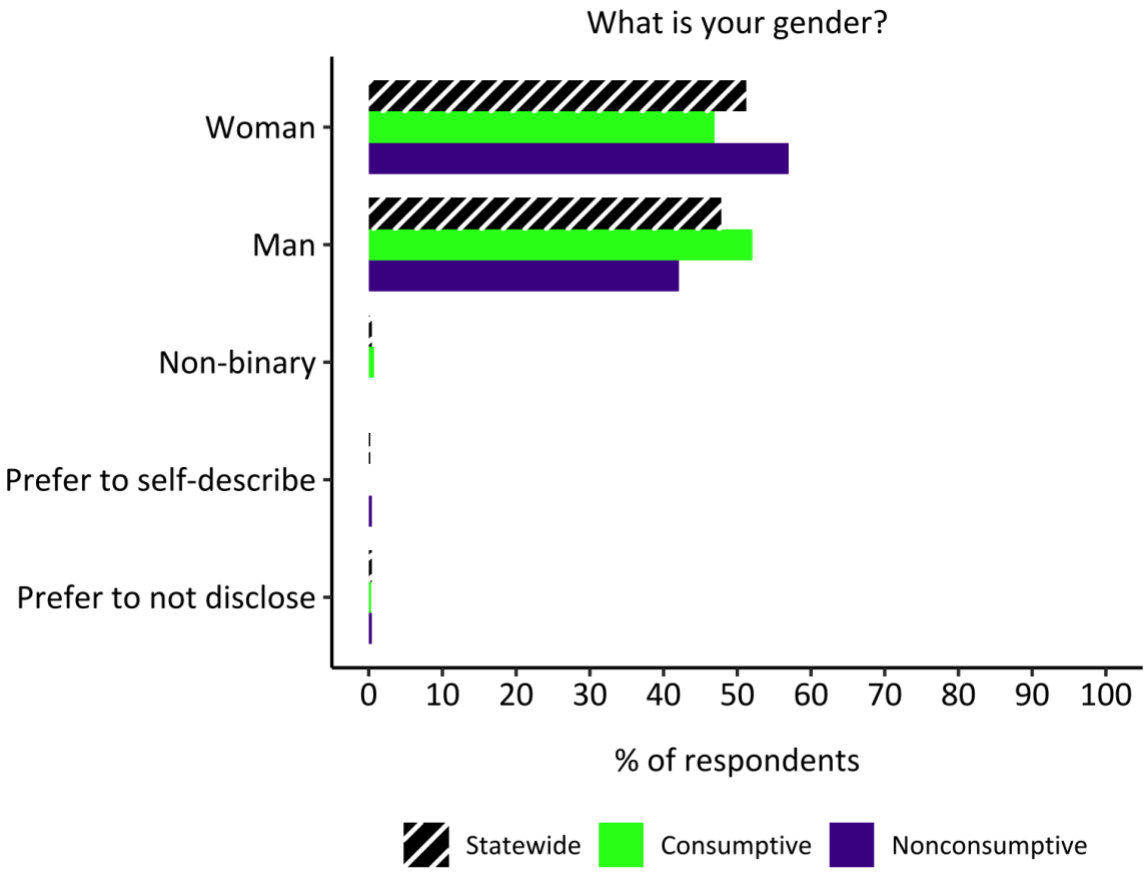

Figure 3: Respondent gender identity
Gender identity of wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. A chi-square test indicated a statistically significant difference in the binary gender identity of consumptive and nonconsumptive wildlife viewers (Table 2). Note that quotas were set for this survey question.

Survey Quota: Education

Although the quota included three categories for educational attainment, we included five response options in order to gain more specific information from respondents. We then collapsed these categories for the calculation of the quota. Consistent with the quota, less than 42% of respondents had attained 4 or more years of higher education; 20% of respondents held

a bachelor's degree, and 9.5% of respondents held advanced degrees (e.g., professional, master's, or doctoral degrees). Results showed that 22% of respondents had received a high school diploma, equivalent, or less education. In addition, 27% of respondents had completed some college, and 22% had achieved an associate or technical degree. A chi-square test indicated a statistically significant difference in the level of educational attainment of consumptive and nonconsumptive viewers ($\chi^2 = 12.17$, $df = 4$, $p = .02$; Table 3; Figure 4). More nonconsumptive viewers reported holding a bachelor's degree (25%) in comparison to consumptive viewers (16%).

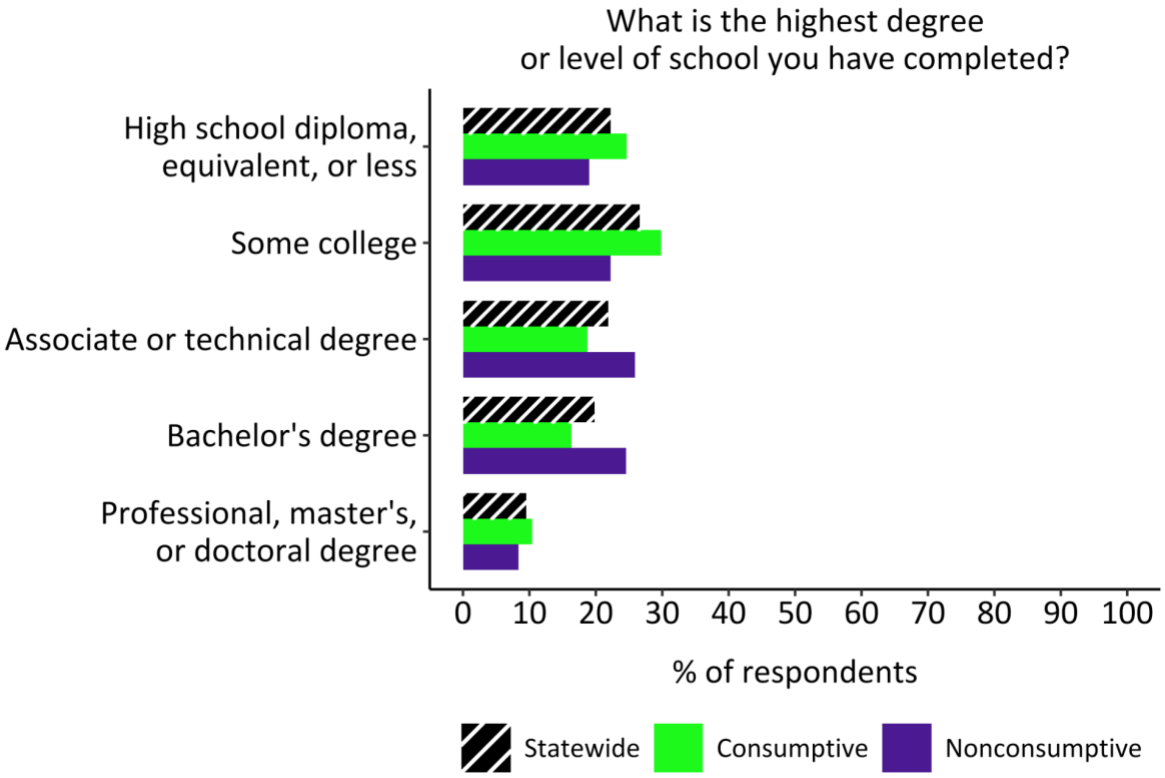

Figure 4: Respondent educational attainment
The highest level of education completed by wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. A chi-square test indicated a statistically significant difference in the education level of consumptive and nonconsumptive wildlife viewers (Table 3).

Demographics

Race and ethnicity

We provided respondents with a list of eight race or ethnicity options and asked them to select all categories that applied to them. These options were consistent with recommendations from the United States Census Bureau, which suggests asking a single question that includes race and ethnicity, rather than a question about race and another about ethnicity, in order to ease

respondent burden (Matthews et al., 2015). No quota was set for race and ethnicity, and our findings of wildlife viewers skewing toward White were consistent with literature (Rutter et al., 2021; US DOI et al., 2016).

While the statewide sample was primarily "White" (92%), respondents also identified as Hispanic, Latino, or Spanish (4.8%), American Indian or Alaska Native (3.0%), Asian (2.2%), and less than 1% of respondents as either Black or African American, Middle Eastern or North African, or Native Hawaiian or other Pacific Islander. Only 1.8% identified as "some other race or ethnicity." In addition, 3.8% of respondents identified with more than one race or ethnicity, which we refer to as "multiracial." Due to low sample size, analysis of ethnoracial identity for consumptive and nonconsumptive viewers was collapsed into two groups: White-only and Black, Indigenous, and people of color (hereafter, BIPOC). The BIPOC group includes all other ethnoracial identities, including individuals who identified as White and one other race or ethnicity. A chi-square test indicated significantly more consumptive viewers (15%) identified as BIPOC than nonconsumptive viewers (7.0%; $\chi^2 = 7.16$, $df = 1$, $p = .007$; Table 5; Figure 5).

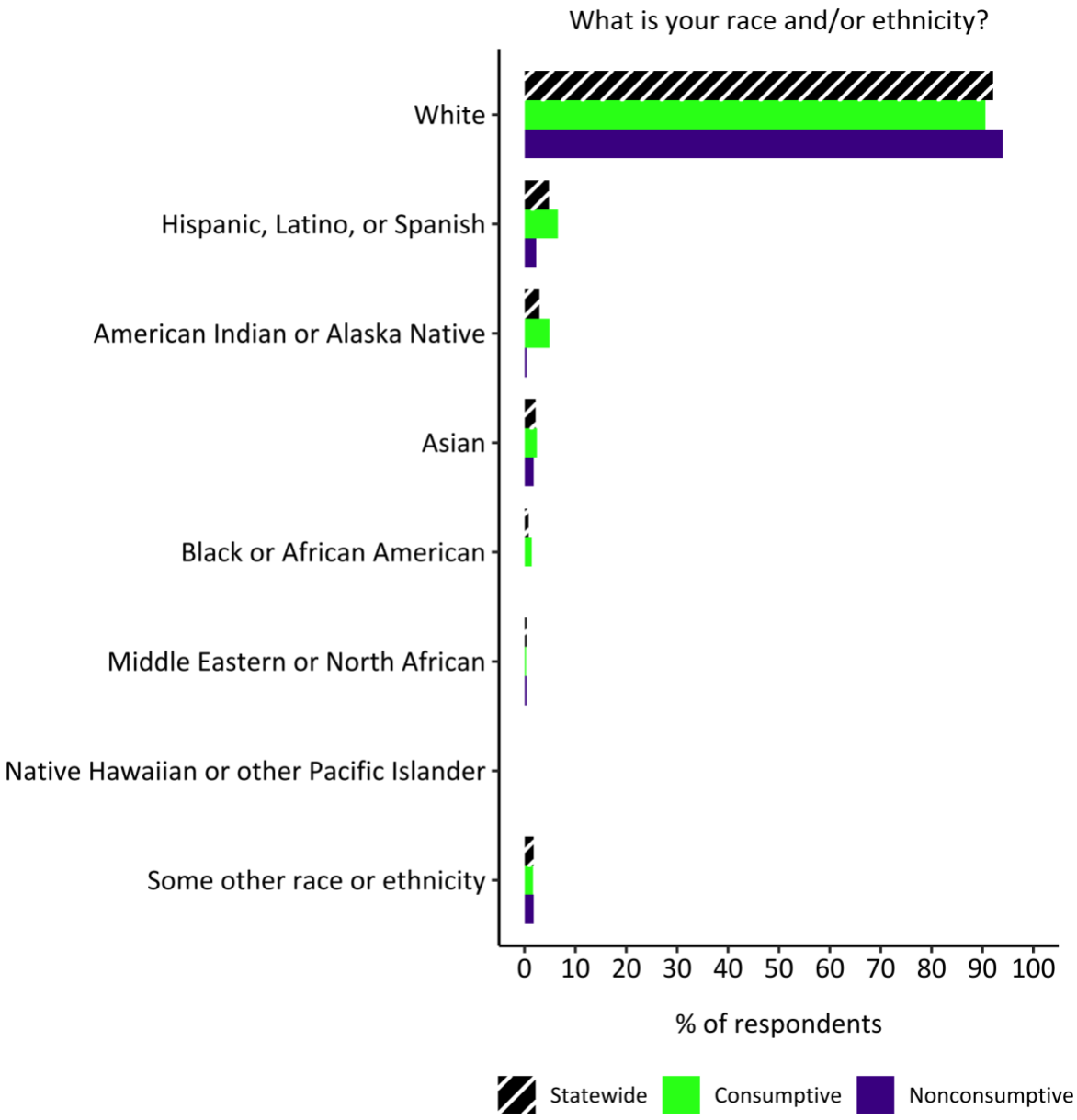

Figure 5: Respondent ethnoracial identity.
Ethnoracial identity of wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their ethnoracial identity. Due to low sample size, analysis of ethnoracial identity for consumptive and nonconsumptive viewers was collapsed into two groups: White-only and BIPOC. A chi-square test indicated a statistically significant difference in the ethnoracial identities of consumptive and nonconsumptive viewers when comparing between White-only and BIPOC groups (Table 5).

Household income

The survey asked respondents to select their total household income from six categories ranging from "Less than $24,999" to "$125,000 or more", with each category increasing by $25,000. In order to ease respondent burden, we reduced these options from the 10 categories presented in the National Survey of Wildlife Recreation, which ranged from "less than $20,000" to "$150,000 or more" (US DOI et al., 2016). A seventh option, listed as "prefer not to answer," was also included and was selected by 4.6% (*n* = 23) of respondents. This group of responses was excluded from the following analysis.

Slightly less than half (46%) of our respondents in Idaho reported their total household income as $49,999 or less. About one-third of respondents (31%) reported a total household income of $50,000-99,999 and almost 19% of survey respondents reported a total household income of $100,000 or more. The total household income level of survey respondents was slightly lower when compared to that of respondents who participated in wildlife watching from Idaho in the 2011 National Survey of Wildlife Recreation (U.S. DOI et al., 2011) in which 58% of wildlife viewers reported their household income as $50,000-$74,999. Note that Idaho-specific data from the 2016 National Survey of Wildlife Recreation was not gathered. A chi-square test indicated no statistically significant difference in the income level of consumptive and nonconsumptive viewers ($\chi^2 = 1.44$, $df = 6$, $p = .96$; Table 6; Figure 6).

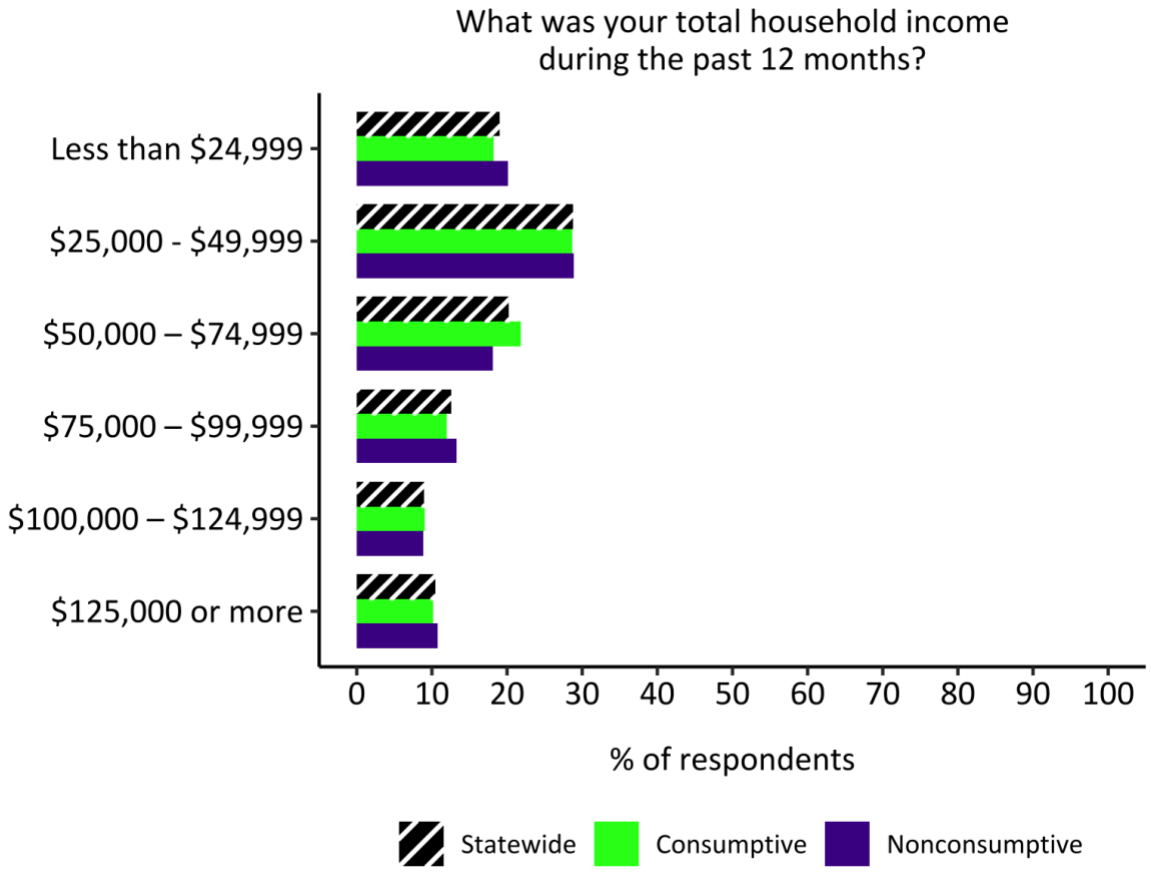

Figure 6: Respondent household income
The total household income range reported by wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. A chi-square test indicated no statistically significant difference in the income level of consumptive and nonconsumptive wildlife viewers (Table 6).

Residential location

We asked respondents to indicate the size of the area in which they currently live, with the following categories: "Rural area (less than 2,500 people)," "Small town (2,500 - 9,999 people)," "Small city (10,000 - 49,999 people)," or "Urban area (50,000 or more people)." These residential classifications are consistent with the definitions used by the US Census (2010).

Our sample was far more rural than that of the Idaho sample in the 2011 National Survey of Wildlife Recreation (US DOI et al., 2011), in which 39% of respondents lived in "Metropolitan Statistical Areas" with populations of 50,000 or more (US DOI et al., 2016). In our survey, only 36% of Idaho respondents reported living in an area with a population of 50,000 or more, but this was still the largest category in our sample (Table 7; Figure 7). A chi-square test indicated

the residential location of consumptive and nonconsumptive viewers did not vary significantly ($\chi^2 = 5.12$, $df = 3$, $p < .16$; Table 7; Figure 7).

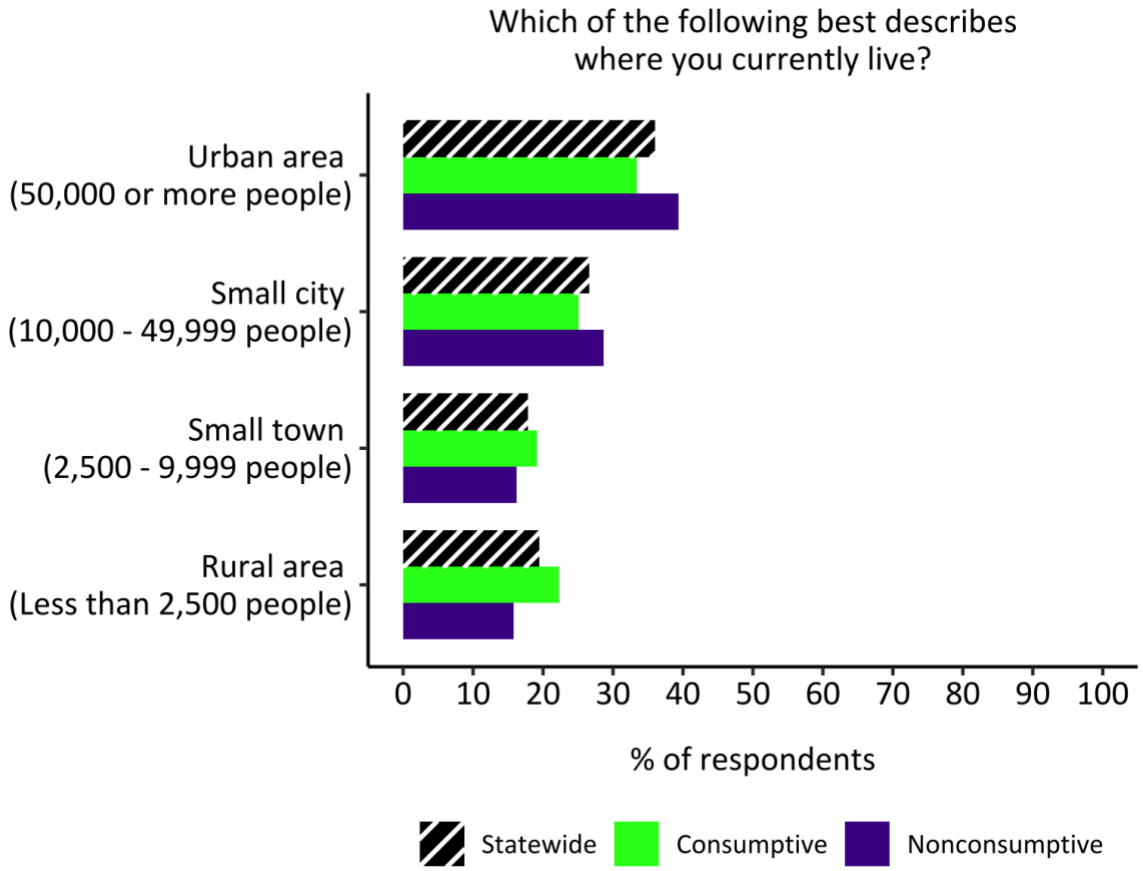

Figure 7: Respondent self-reported size of residential area
The self-reported size of the area in which wildlife viewers in Idaho reside for statewide and consumptive-nonconsumptive groups. A chi-square test indicated no statistically significant difference in the residential location of consumptive and nonconsumptive wildlife viewers (Table 7).

Wildlife viewing behaviors

Forms of wildlife viewing

As described in Methods, the National Survey of Wildlife Recreation defines wildlife viewing as "closely observing, feeding, and photographing wildlife, visiting parks and natural areas around the home because of wildlife, and maintaining plantings and natural areas around the home for the benefit of wildlife" (US DOI et al., 2016). Under this definition, wildlife viewing must occur as an intentional objective of the recreational activity, not incidental viewing. The survey noted: "Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting or fishing, or intentionally scouting for game." Incidental viewing,

or observing wildlife while doing other recreational activities, is not considered wildlife viewing under this definition and was thus excluded from this survey effort.

We presented respondents with a list of seven wildlife viewing activities adapted from the National Survey of Wildlife Recreation and asked them to select all activities they participate in during a typical year (i.e., a recent year (within the last five years) that was not impacted by unusual circumstances like the COVID-19 pandemic. For those who started viewing wildlife during the pandemic, we asked them to answer all questions about "a typical year" for the past year). Note that we split feeding wildlife into feeding wild birds and feeding other wildlife, due to the fact some state agencies discourage feeding of other wildlife year-round. The sum of percentages exceeds 100 because 85% of respondents selected more than one behavior. The most popular wildlife viewing behavior amongst respondents in Idaho was visiting parks and natural areas to observe, photograph, or feed wildlife (67%). The second most popular wildlife viewing behavior was photographing or taking pictures of wildlife (64%) followed by taking trips or outings to any other location to observe, photograph, or feed wildlife (57%). Over one-third of wildlife viewers reported feeding wild birds (42%). Chi-square tests indicated statistically significant differences for three wildlife viewing activities between consumptive and nonconsumptive wildlife viewers. Significantly more consumptive viewers participated in 1) closely observing wildlife or trying to identify unfamiliar types of wildlife, 2) taking trips or outings to any other location to observe, photograph, or feed wildlife, and 3) feeding other wildlife in comparison to nonconsumptive viewers (Figure 8; Table 8).

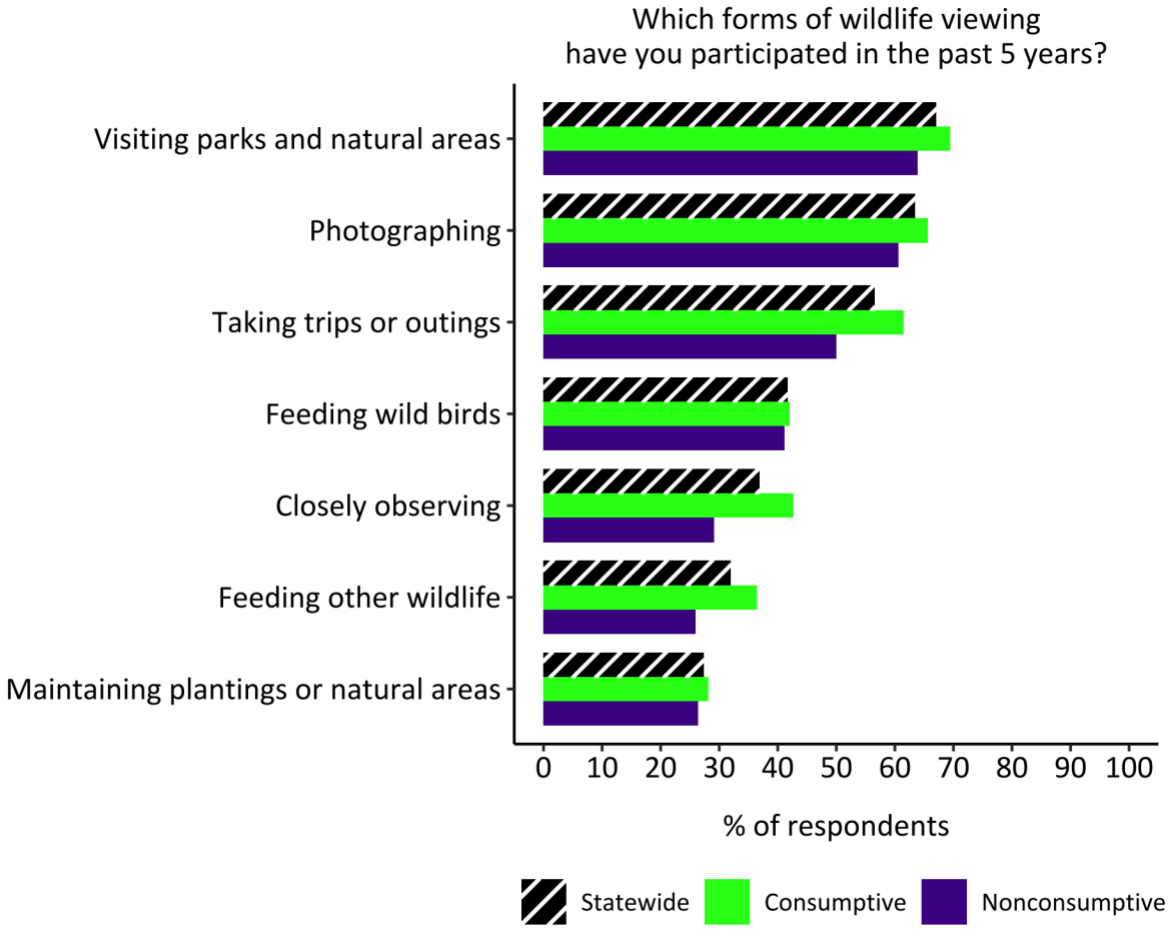

Figure 8: Forms of wildlife viewing
Forms of wildlife viewing that wildlife viewers in Idaho reported participating in over the past five years for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option. Chi-square tests indicated statistically significant differences for three wildlife viewing activities between consumptive and nonconsumptive wildlife viewers, 1) taking trips or outings to any other location to observe, photograph, or feed wildlife, 2) closely observing wildlife or trying to identify unfamiliar types of wildlife and 3) feeding other wildlife. (Table 8).

Types of wildlife

Wildlife viewers most commonly view birds, land mammals, and large mammals, including marine mammals, particularly in coastal states (Grooms et al., 2019; US DOI et al., Zeppel & Muloin, 2008). Birds, land mammals, and large mammals are typically the most popular types of wildlife viewed (Grooms et al., 2019; US DOI et al., 2016). We asked wildlife viewers to indicate the types of wildlife they liked to view (which included observing, photographing, or feeding). The list of eight types of wildlife to view was adapted from the Virginia Wildlife Recreation Survey (Grooms et al., 2019) and the National Survey of Wildlife Recreation (US DOI et al.,

2016) recreation activities. To enable comparison across multiple states, we asked about one type of wildlife, marine mammals, which does not live in or near Idaho.

In Idaho, 86% of respondents selected more than one option of types of wildlife they were interested in viewing. Land mammals were the most popular type of wildlife selected, with 88% of respondents statewide indicating interest in this response option. Similarly, 75% of all respondents indicated interest in birds. In addition, 43% indicated interest in viewing marine mammals, outside of Idaho. Over one-third of respondents expressed interest in viewing fish (40%). The least popular type of wildlife, besides the mutually exclusive response option "other types of wildlife" (0.4% of respondents selected this), was amphibians, still with 32% of respondents selecting this response option.

Chi-square tests indicated only two statistically significant differences in wildlife type viewing preferences between consumptive and nonconsumptive wildlife viewers. Consumptive viewers were significantly more likely to report interest in reptiles and fish in comparison to nonconsumptive viewers (Table 9; Figure 9).

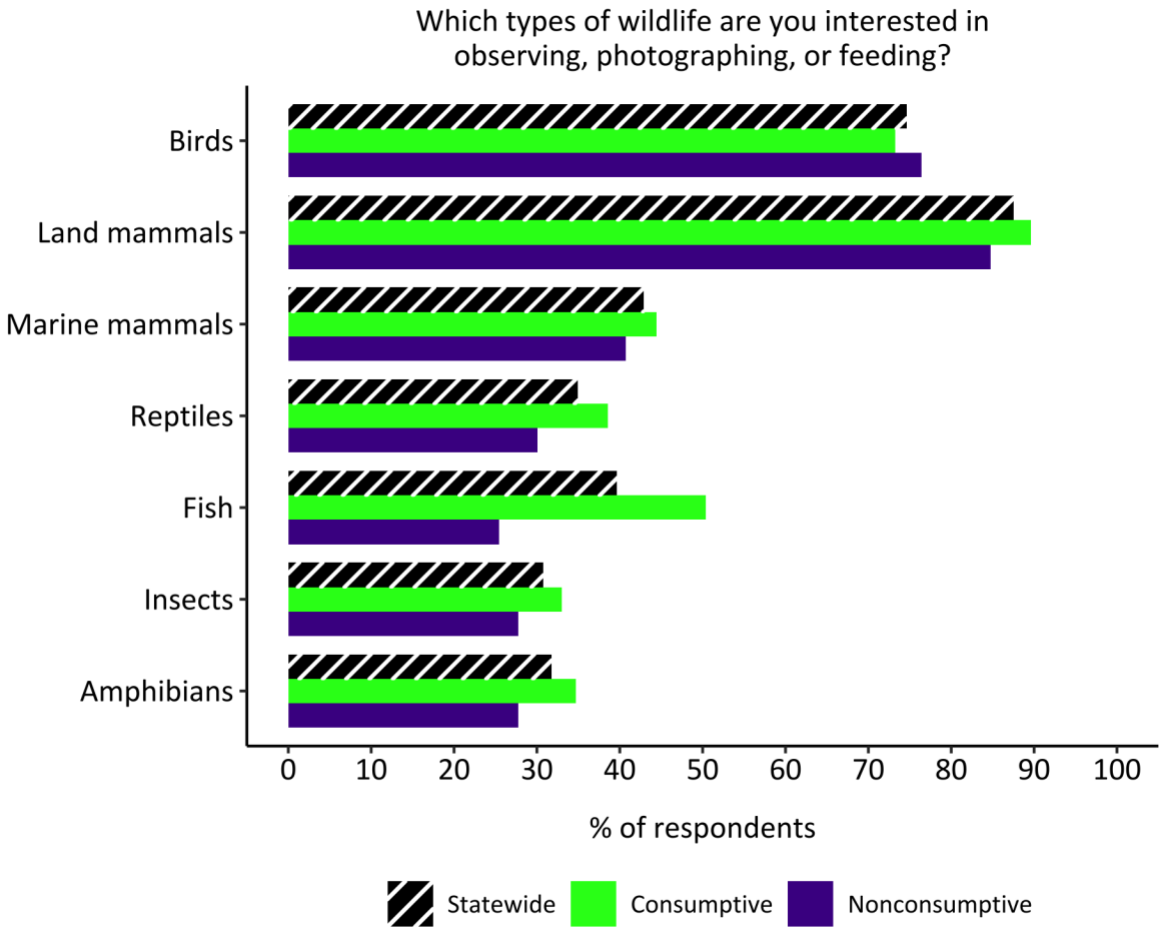

Figure 9: Interest in types of wildlife for wildlife viewing
Types of wildlife that wildlife viewers in Idaho reported interest in observing, photographing or feeding for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option. Chi-square tests indicated consumptive viewers were significantly more likely to report interest in reptiles and fish in comparison to nonconsumptive viewers (Table 9).

Recreational specialization of wildlife viewers

Across diverse forms of outdoor recreation, specialization refers to a continuum of intensity in an individual's interest and involvement in a given activity (Scott & Shafer, 2001). The best approach to measuring specialization is an area of active research and debate among scholars, but there is consensus that specialization is multidimensional, and as such, it is generally measured through multiple questions in survey research, rather than a single item (Needham et al., 2009). Specialization is consistently discussed and measured through three dimensions, often referred to as affective, behavioral, and cognitive (outlined in more detail below) (Needham et al., 2009). We developed a series of survey questions to evaluate each of these dimensions of specialization, drawing on concepts and items from a previous survey of eBird

participants conducted by the North American Waterfowl Management Plan (NAWMP) Human Dimensions Working Group (Harshaw et al., 2021) and a survey of anglers conducted by Needham et al. (2009). We present results for these dimensions separately below, as recommended by Lee and Scott (2004), in order to retain insights into each dimension.

Affective specialization: Centrality

Following Harshaw et al. (2021) and Needham et al. (2009), we assessed the affective dimension of viewers' specialization through the concept of centrality, which reflects how important wildlife viewing is in an individual's life. Respondents were asked to indicate their extent of agreement, on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*), with three statements: 1) "A lot of my life is organized around wildlife viewing," 2) "Wildlife viewing has a central role in my life," and 3) "Being a wildlife viewer is an important part of who I am." Responses to these three statements on the centrality of wildlife viewing to an individual's life comprised a reliable scale (Cronbach's alpha = .84), so we combined these variables by calculating the mean response to these items for an overall centrality measure (Table 10; Figure 10). The mean level of centrality was 3.02 (*SD* = 0.98) in Idaho, indicating that on average respondents selected *neither agree nor disagree*. A t-test indicated that the mean measure of centrality of wildlife viewing to an individual's life was marginally significantly higher in consumptive viewers (*M* = 3.14, *SD* = 0.91) in comparison to nonconsumptive viewers (*M* = 2.86, *SD* = 1.04; *t* = -3.15, *df* = 499, *p* = .05; Table 10; Figure 10). However, as both mean measures for consumptive and nonconsumptive viewers were about 3, this means that both groups, on average, selected *neither agree nor disagree* for the three statements.

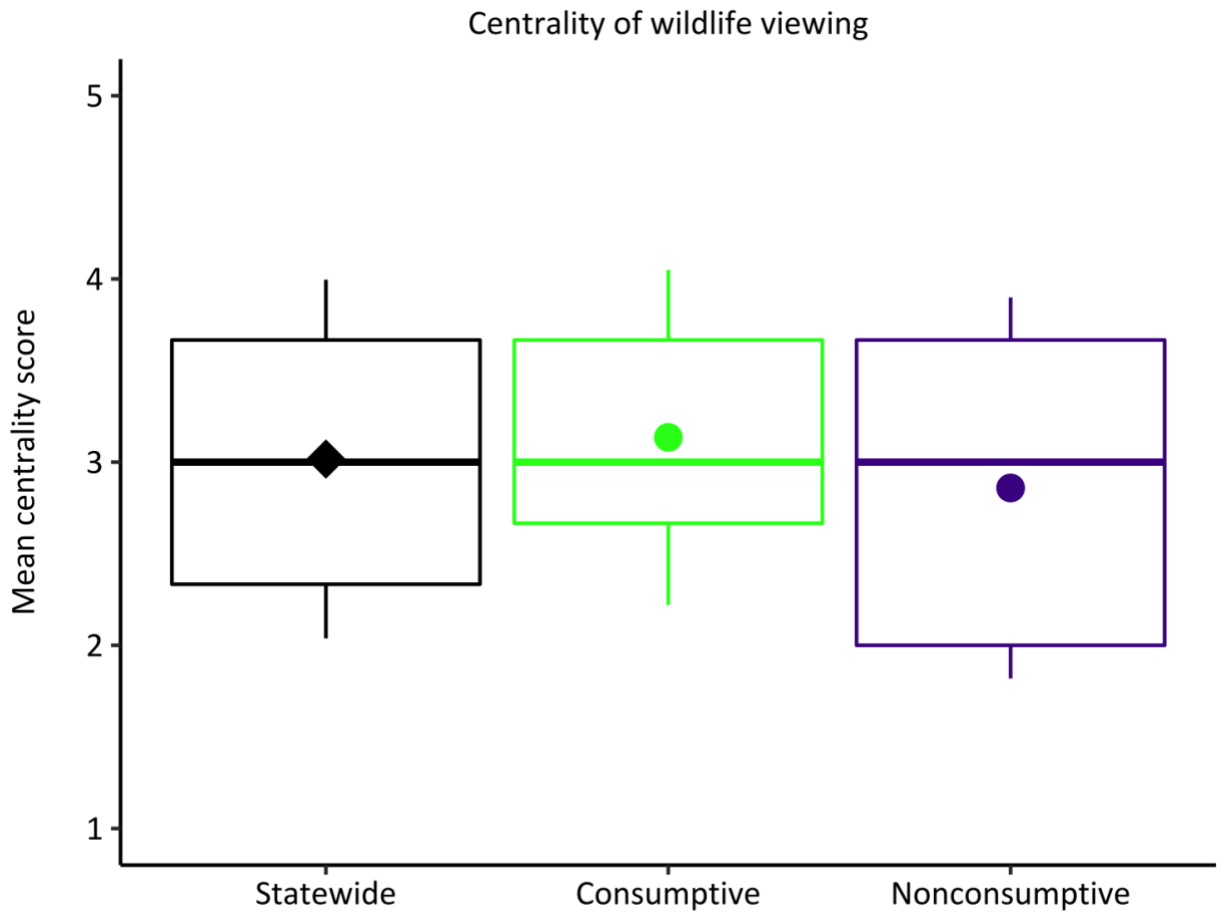

Figure 10: Centrality of wildlife viewing.
Boxplots (median and interquartile ranges within the boxes) showing the differences in the measure of centrality of wildlife viewing in the lives of wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. Points represent the mean centrality measure (diamond for statewide group, circles for consumptive-nonconsumptive group) calculated as the mean of respondents' extent of agreement with three statements about the importance of wildlife viewing in their lives on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Whiskers represent the mean ± 1 standard deviation. A t-test indicated that the mean measure of centrality of wildlife viewing to an individual's life was marginally significantly higher in consumptive viewers in comparison to nonconsumptive viewers (Table 10).

Behavioral specialization: Equipment and time spent viewing

We measured the behavioral dimension of specialization through respondents' use of specialized equipment for wildlife viewing and the duration of their experience in wildlife viewing. In Idaho, 62% of all wildlife viewers reported owning or renting specialized equipment, such as binoculars, cameras, mobile apps, spotting scopes, field guides, or specialized clothing in the past five years (Table 11; Figure 11). A chi-square test indicated the percentage of consumptive (65%) and nonconsumptive viewers (57%) who own, rent, or borrow specialized

equipment for wildlife viewing did not vary significantly (χ^2 = 2.95, *df* = 1, *p* = .07; Table 11; Figure 11).

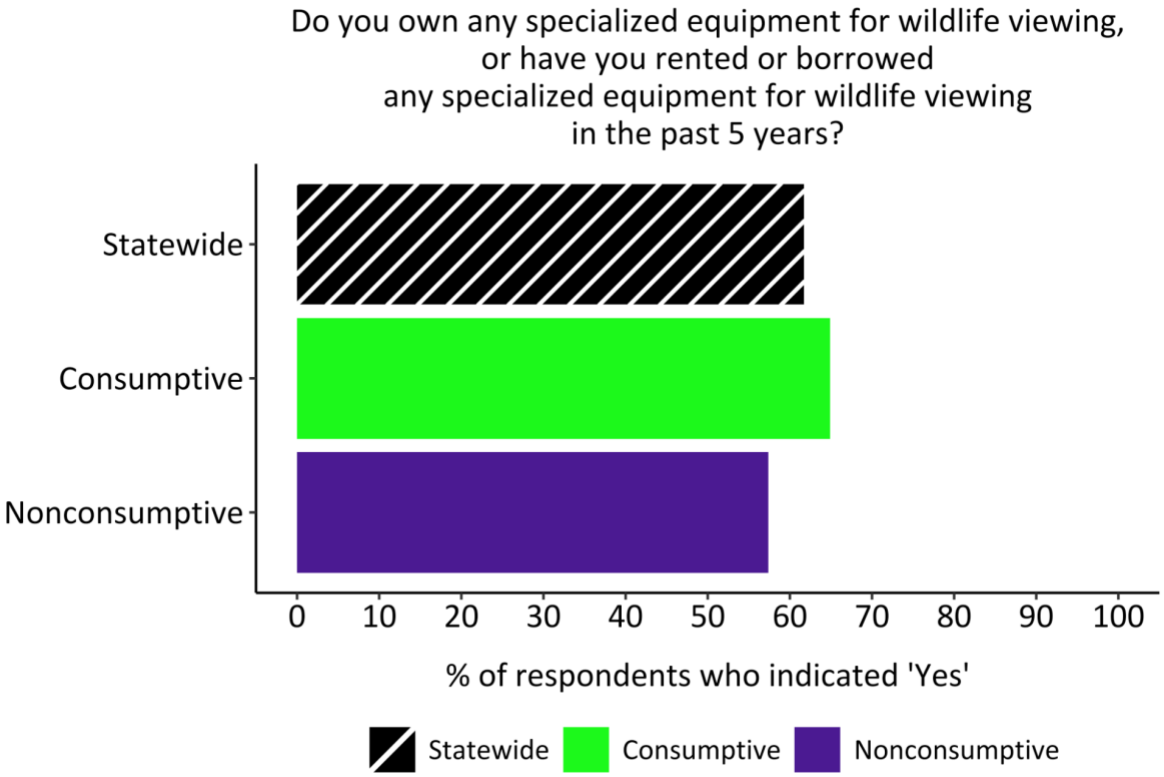

Figure 11: Owning, renting, or borrowing specialized equipment for wildlife viewing
Percent of wildlife viewers in Idaho who reported owning, renting, or borrowing specialized equipment for wildlife viewing in the past 5 years for statewide and consumptive-nonconsumptive groups. A chi-square test indicated no statistically significant difference between consumptive viewers and nonconsumptive viewers in the likelihood of owning or renting specialized equipment for wildlife viewing (Table 11).

As another measure of behavioral specialization, we also asked survey respondents to indicate how many years they had been participating in wildlife viewing and provided response options in five-year categories. To ease respondent burden, we did not present this question to respondents who indicated in a previous question that they had only started viewing during the COVID-19 pandemic. As the COVID-19 pandemic began about 18 months before the survey was administered, we added the 23 wildlife viewers who reported that they started viewing during the pandemic to the 1-5 years category. About 8.4% of viewers in Idaho had more than 50 years of wildlife viewing experience (Table 12).

In order to account for the effect of the age of respondents, we roughly estimated the percentage of life during which wildlife viewers had participated in wildlife viewing by creating five-equally sized categories (1-20%, 21-40%, 41-60%, 61-80%, and 81-100% of life). The majority of wildlife viewers had participated in the activity for less than half their life: 38%

reported viewing for one-fifth of their life or less, while 22% reported viewing for one to two-fifths of their life (Table 13; Figure 12). Just over 14% of respondents had participated in wildlife viewing for close to their entire life (meaning 81-100% of their lives). A chi-square test indicated no statistically significant difference in this measure of experience as a percentage of life spent viewing when comparing consumptive and nonconsumptive viewers ($\chi^2 = 4.94$, $df = 4$, $p = .29$; Table 13; Figure 12).

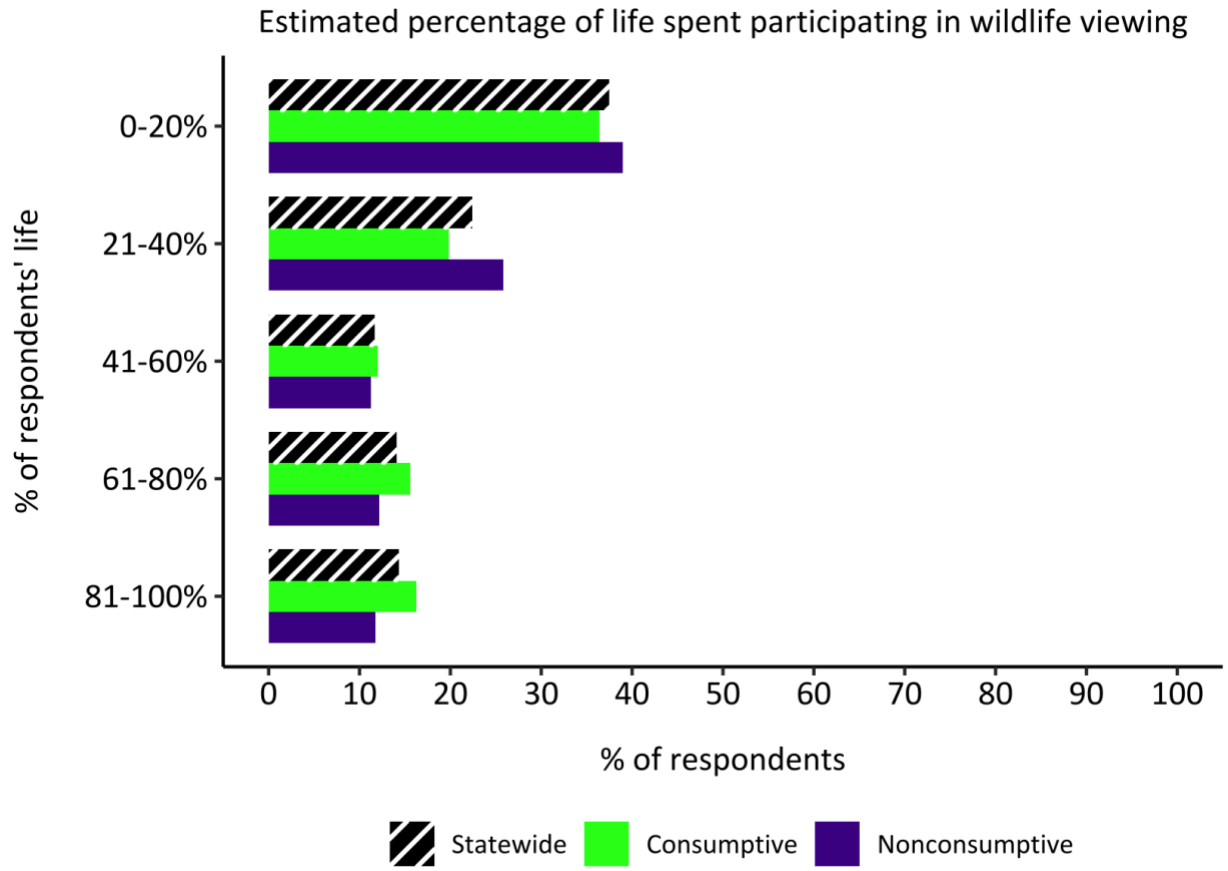

Figure 12: Estimated percentage of life spent viewing
The estimated percentage of life during which wildlife viewers had participated in wildlife viewing in five categories (1-20%, 21-40%, 41-60%, 61-80%, and 81-100% of life) for statewide and consumptive-nonconsumptive groups. A chi-square test revealed no statistically significant difference in this measure of experience as a percentage of life spent viewing when comparing consumptive and nonconsumptive viewers (Table 13).

Cognitive specialization: Skill level

Due to the number of diverse activities and types of wildlife that are included under the umbrella of wildlife viewing, we used a single, broad item to measure the cognitive dimension of specialization through viewers' self-rated level of expertise, ranging from beginner to expert. We asked respondents "How would you rate your skill level in wildlife viewing?" and provided them with five options ranging from "beginner" to "expert." In Idaho, 58% of respondents

considered themselves beginner or novice wildlife viewers. Over a third (36%) of viewers rated their skill level as intermediate. Only 6.2% of respondents considered themselves to be advanced and, even less, only 0.4% considered themselves to be expert wildlife viewers (Table 14; Figure 13). A chi-square test, with "advanced" and "expert" combined due to low sample sizes, indicated a statistically significant difference in self-rated expertise levels between consumptive and nonconsumptive wildlife viewers ($\chi^2 = 13.78$, $df = 3$, $p = .003$; Table 14; Figure 13). The majority of nonconsumptive wildlife viewers rated themselves as beginners or novices (67% combined beginner and novice), while fewer consumptive viewers rated themselves as beginners or novices (51% combined beginner and novice; Table 14; Figure 13).

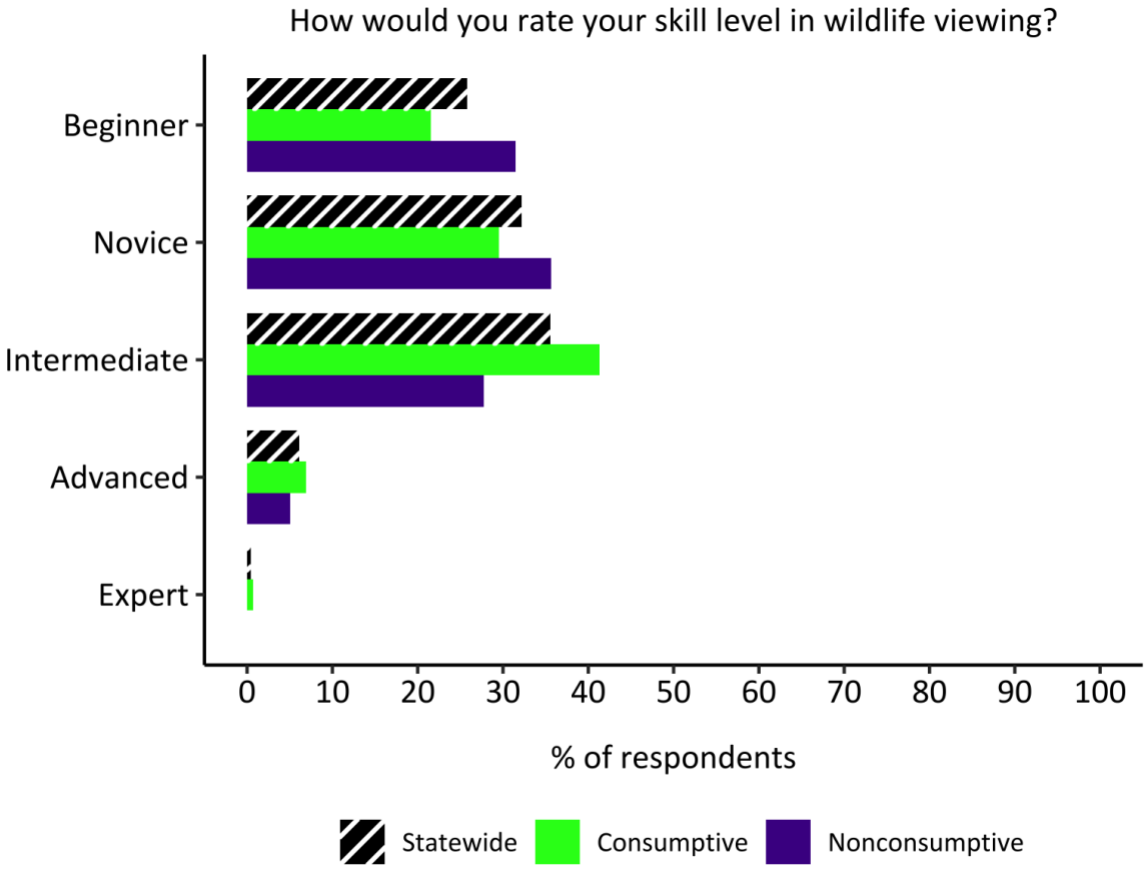

Figure 13: Respondents' self-rate wildlife viewing skill level
Respondents' self-rated level of skill in wildlife viewing for statewide and consumptive-nonconsumptive groups. A chi-square test with "advanced" and "expert" combined indicated a statistically significant difference in self-rated expertise levels between consumptive and nonconsumptive wildlife viewers (Table 14).

COVID-19 impacts on wildlife viewing participation and the R3 Framework

On March 11th, 2020, the World Health Organization declared the COVID-19 virus as a pandemic (Cucinotta & Vanelli, 2020). This pandemic dramatically altered everyday activities worldwide as federal, state, and local governments enacted public health policies to mitigate

the spread of this highly contagious virus (Cucinotta & Vanelli, 2020). For example, the COVID-19 pandemic and associated mitigations brought about unprecedented and dynamic changes in outdoor recreation behaviors throughout the country, which we are only beginning to understand. A study by Rice et al. (2020) indicated that, as limitations to travel on a wide range of scales were instituted, participation in outdoor activities declined significantly overall, with disproportionate negative effects for urban residents. However, another study showed slight increases in participation in wildlife viewing and recreation close to home (Hochocka et al., 2021).

While Idaho did not implement significant closures during the COVID-19 pandemic, we surveyed about its impacts on participation for comparison against other states. For this survey, we examined how COVID-19 affected wildlife viewers and the nature of their participation, as well as identified any potential valuable management implications for state fish and wildlife agencies interested in supporting wildlife viewing. We examined participation in wildlife viewing using the Outdoor Recreation Adoption Model (also referred to as the "R3 Framework") vis a vis the first year of the pandemic (Byrne & Dunfee, 2018). By comparing the number of days spent viewing in the first year of the COVID-19 pandemic against a typical year, we categorized wildlife viewers into four groups: "churned" (i.e., stopped viewing during the pandemic), retained (i.e., maintained viewing throughout the pandemic), "recruited" (i.e., began wildlife viewing for the first time during the pandemic) and "reactivated" (i.e., had participated in wildlife viewing in the past but were not actively participating when the pandemic began, but resumed participation during or after March 2020).

Just over two-thirds of respondents (68%) in Idaho fell into the "retained" category, indicating that the COVID-19 pandemic had no impact on their overall participation in wildlife viewing. The next largest group was the "churned" viewers (15%), meaning that they stopped viewing during the pandemic, followed by "reactivated" viewers (12%), meaning those who resumed participation during or after March 2020. Finally, the smallest proportion of wildlife viewers indicated they were "recruited" (4.6%) or began participating in wildlife viewing for the first time during or after March 2020. A chi-square test indicated no statistically significant difference between consumptive and nonconsumptive viewers' R3 participation categorization ($\chi^2 = 2.31$, $df = 3$, $p = .51$; Table 15; Figure 14).

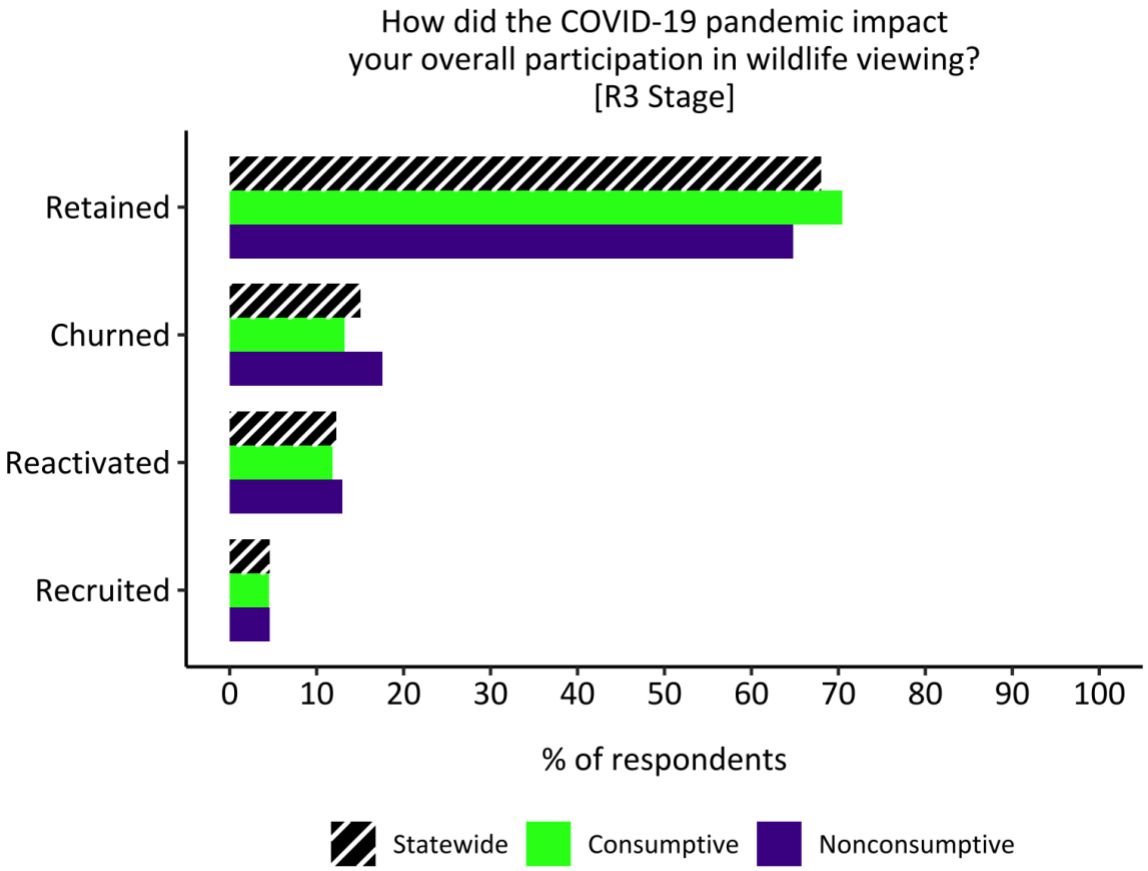

Figure 14: COVID-19 impact on wildlife viewing as R3
Impact of the COVID-19 pandemic on wildlife viewers' overall participation in wildlife viewing for statewide and consumptive-nonconsumptive groups. Respondents were separated into four groups; retained (maintained throughout the pandemic), churned (stopped viewing during the pandemic), reactivated (had participated in wildlife viewing in the past but were not actively participating when the pandemic began, but resumed participation during or after March 2020), and recruited (began wildlife viewing for the first time during the pandemic). A chi-square test indicated no statistically significant differences between consumptive and nonconsumptive viewers (Table 15).

Time spent wildlife viewing

In this section of the survey, wildlife viewers estimated the number of days they spent wildlife viewing during a typical year, the first year of the COVID-19 pandemic (March 2020 - February 2021), and the number of days that they anticipated wildlife viewing in the upcoming year. Wildlife viewers who indicated they were recruited (see COVID-19 section) during the pandemic were not asked to report the number of days they spent viewing during a typical year, as the first year of the COVID-19 pandemic was assumed to be their only year participating in wildlife viewing. They also reported how many days they anticipated viewing during the upcoming years (the next 12 months from the date of survey completion). For each time period, we specified three locations, following the National Survey of Wildlife Recreation's (US DOI et al.,

2016) definition of "around the home" ("within one mile of home") and "away from home" ("at least one mile away from home") which we further stratified in two locations: "more than one mile away from your home, but within your state" and "outside of your state or outside of the United States." We were interested in this nuance to better understand the impact of the COVID-19 pandemic on travel that occurred for wildlife viewing (Hochachka et al., 2021). For all time periods and locations, we provided respondents with seven equivalent categories of 30 days, with a single option for "0 days" and "211 or more days."

We first reviewed days viewed during a typical year (*n* = 478 around the home, *n* = 474 away from home, and *n* = 476 outside state or country; Table 16; Figures 15-17). Nearly all respondents (91%) reported participating in wildlife viewing around the home for 1 day or more in a typical year (Table 16; Figure 15). A substantial proportion (20%) reported wildlife viewing around the home for "211 or more days," which approximates to 17 days a month or more. Similar to around the home but slightly higher, 95% of wildlife viewers reported participating in wildlife viewing away from home for 1 day or more during a typical year (Table 16; Figure 16). Only 4.4% of wildlife viewers spent 211 or more days viewing away from home. Of all three wildlife viewing locations, wildlife viewers were least apt to participate in wildlife viewing outside of Idaho or the U.S., but still over half of respondents (67%) participated in wildlife viewing outside of Idaho or the U.S. for 1 day or more (Table 16; Figure 17).

Due to low group size for each category for consumptive and nonconsumptive viewers, statistical testing was done by comparing "0 days," "1-30 days," and ">30 days" per year. First, a chi-square with three categories ("0 days," "1-30 days," and ">30 days") indicated no statistically significant difference in time spent viewing around the home in a typical year between consumptive and nonconsumptive viewers (Table 17; Figure 15). The second chi-square test indicated that there was a statistically significant difference in away-from-home viewing in a typical year for consumptive and nonconsumptive viewers, with more consumptive viewers spending more than 30 days viewing away from home (Table 17; Figure 16). Finally, the third chi-square test indicated no statistically significant difference in time spent viewing outside of Idaho or the U.S. in a typical year between consumptive and nonconsumptive viewers (Table 17; Figure 17).

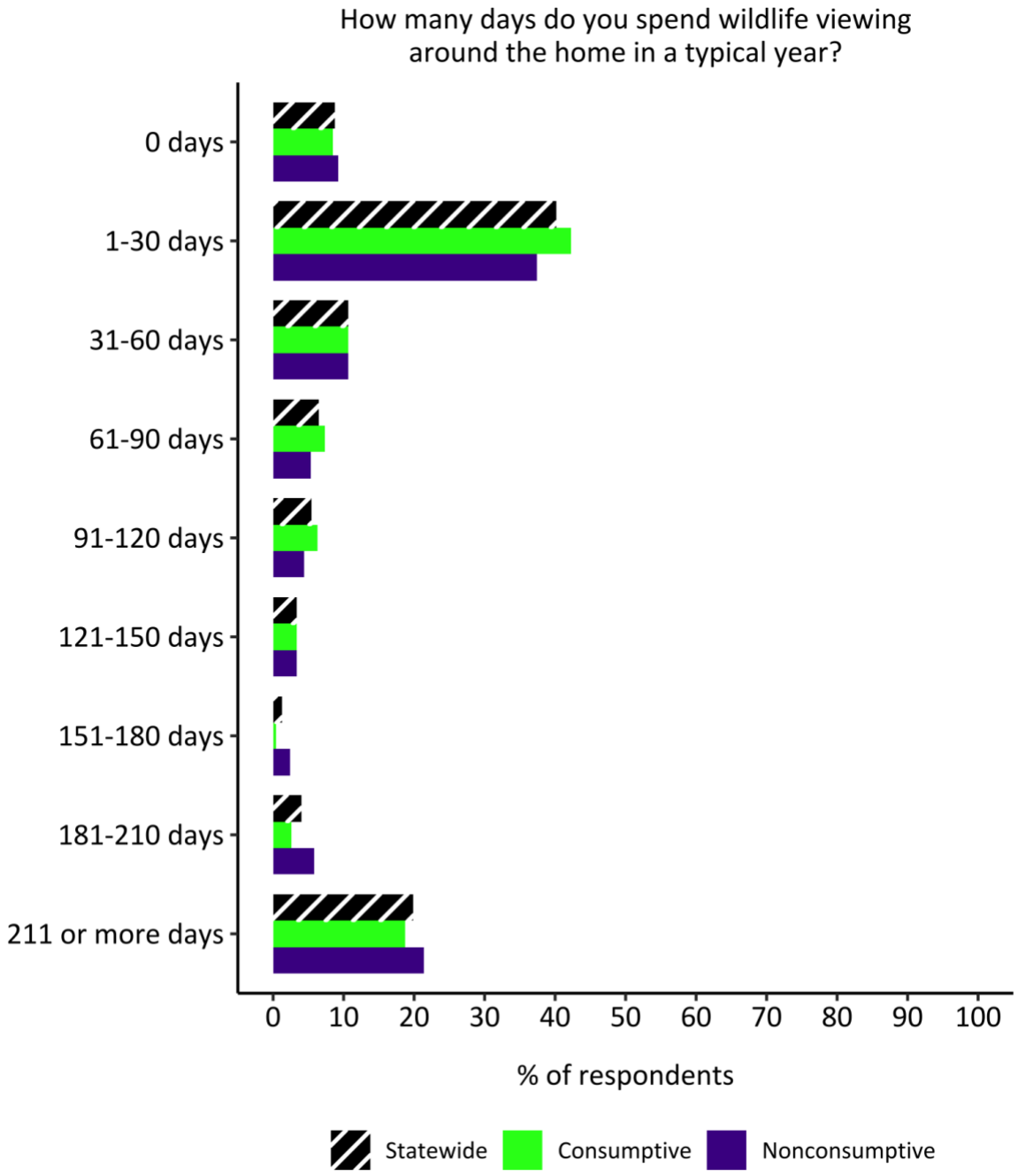

Figure 15: Days spent viewing around the home in a typical year

Days wildlife viewers in Idaho reported spending wildlife viewing around the home during a typical year for statewide and consumptive-nonconsumptive groups. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. A chi-square with three categories due to low sample sizes ("0 days", "1-30 days", and ">30 days") indicated no statistically significant difference in time spent viewing around the home in a typical year between consumptive and nonconsumptive viewers (Table 17).

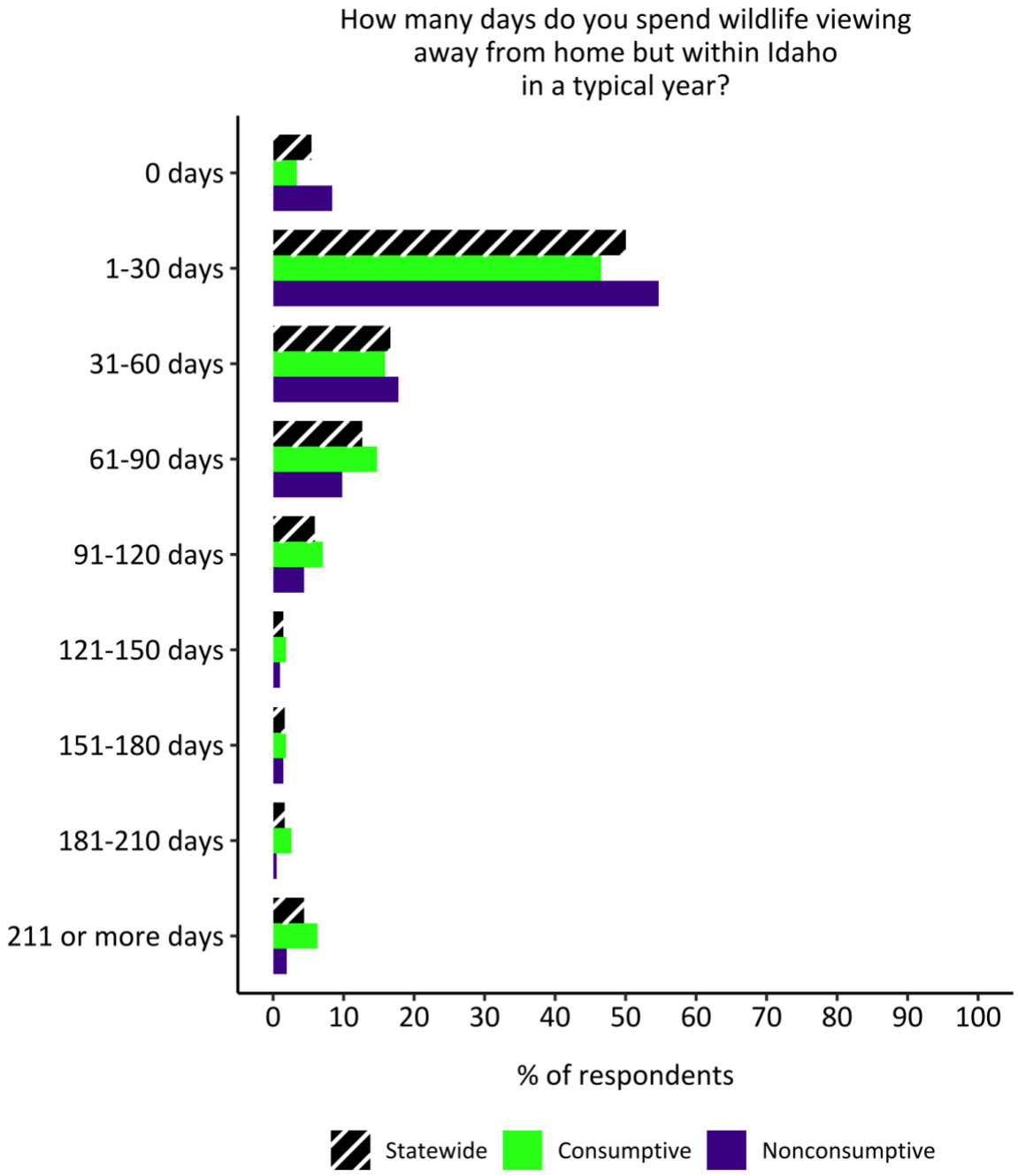

Figure 16: Days spent viewing away from home in a typical year

Days wildlife viewers in Idaho reported spending wildlife viewing away from home but within Idaho during a typical year for statewide and consumptive-nonconsumptive groups. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. A chi-square test indicated that there was a statistically significant difference in away-from-home viewing in a typical year for consumptive and nonconsumptive viewers (Table 17).

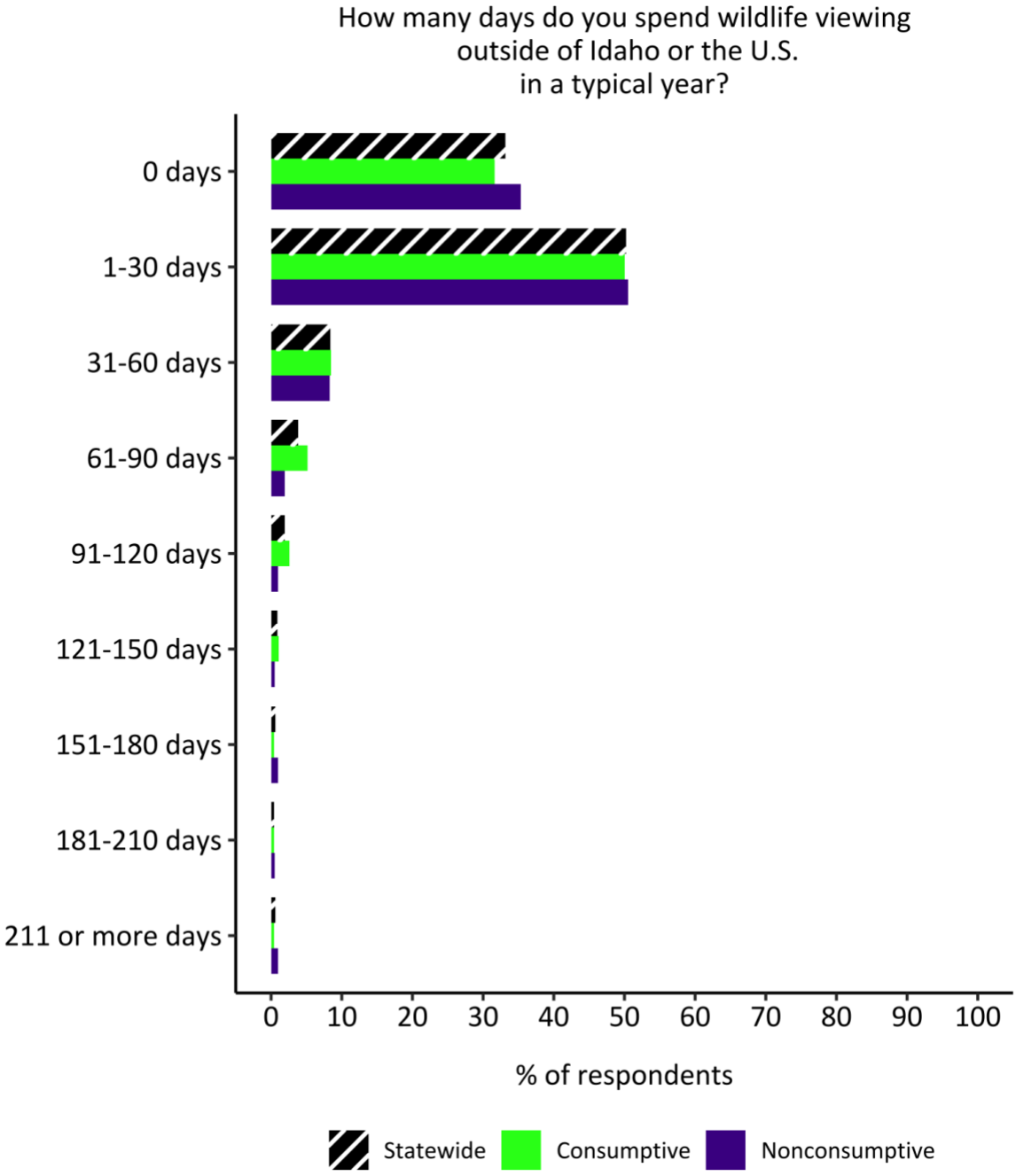

Figure 17: Days spent viewing out of state or U.S. in a typical year

Days wildlife viewers in Idaho reported spending wildlife viewing outside of Idaho or the US during a typical year for statewide and consumptive-nonconsumptive groups. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. A chi-square test indicated that there was no statistically significant difference in out-of-state-or-country viewing in a typical year between consumptive and nonconsumptive viewers (Table 17).

Next, we reviewed days viewing during the first year of the pandemic reported by all survey respondents, including the recruited viewers who were not part of the previous analysis (Table 16; Figures 18-20). Overall, total participation in wildlife viewing declined in all three locations in the first year of the pandemic when compared to a typical year. The proportion of respondents who participated in wildlife viewing around the home for at least 1 day decreased slightly from 91% to 86% (Table 16; Figure 18). Similarly, away-from-home wildlife viewing for 1 day or more also decreased slightly from 95% to 83% (Table 16; Figure 19). The most dramatic decrease occurred in wildlife viewing outside of state or country; only 47% of respondents reported viewing outside Idaho or the U.S. for 1 day or more (Table 16; Figure 20).

The chi-square tests for the first year of the pandemic indicated a statistically significant difference between consumptive and nonconsumptive viewers in only one category of viewing: outside Idaho or the U.S., with more nonconsumptive viewers spending zero days viewing outside of Idaho or the U.S. (Table 17; Figure 20). The time consumptive and nonconsumptive wildlife viewers spent viewing around the home and away-from-home during the first year of the pandemic did not vary significantly (Table 17; Figure 18, Figure 19).

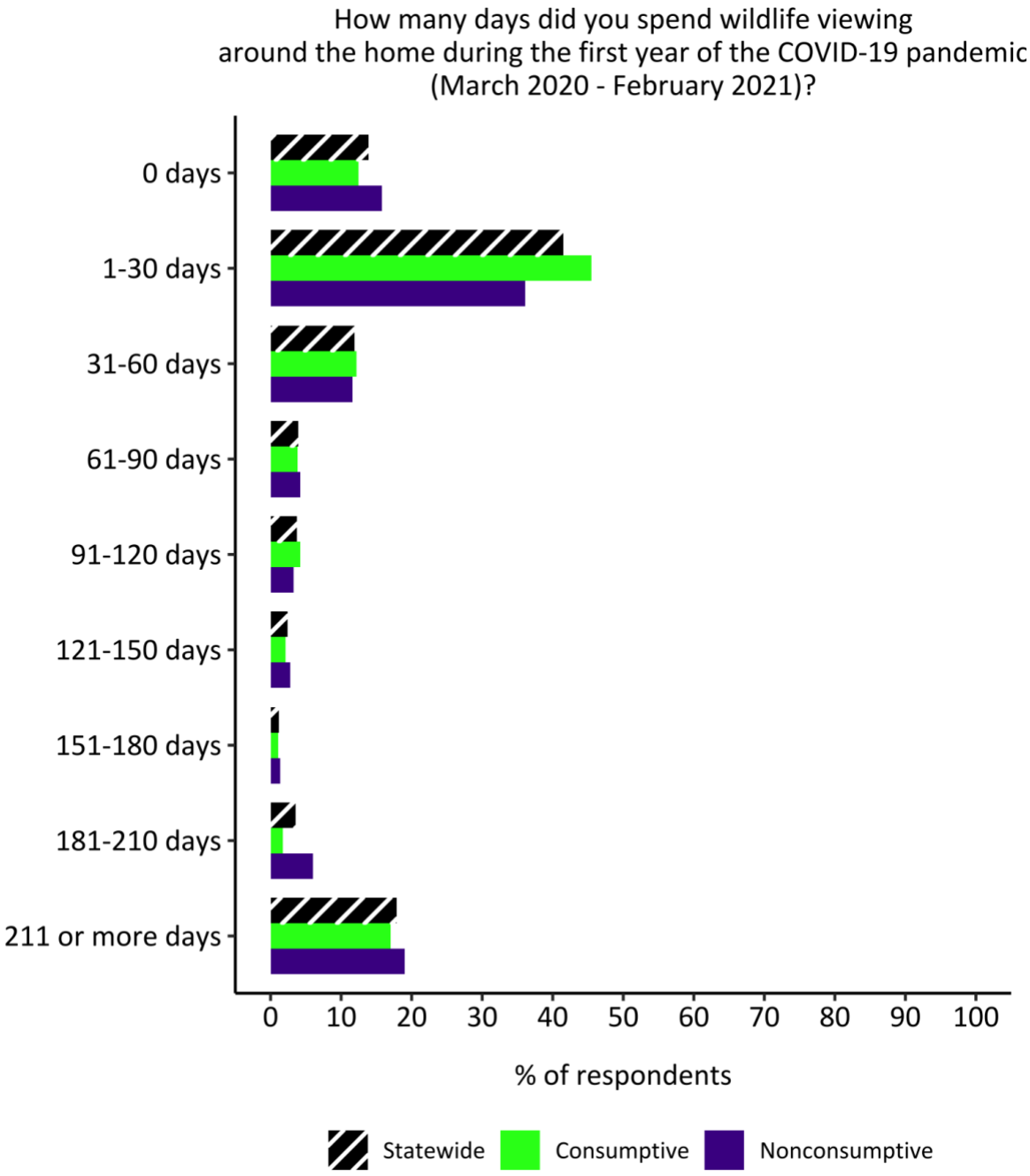

Figure 18: Days spent viewing around the home in first year of COVID-19 pandemic.
Days wildlife viewers in Idaho reported spending wildlife viewing around the home during the first year of the pandemic (March 2020-February 2021) for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated no statistically significant difference in time spent viewing around the home during the first year of the pandemic between consumptive and nonconsumptive viewers (Table 17).

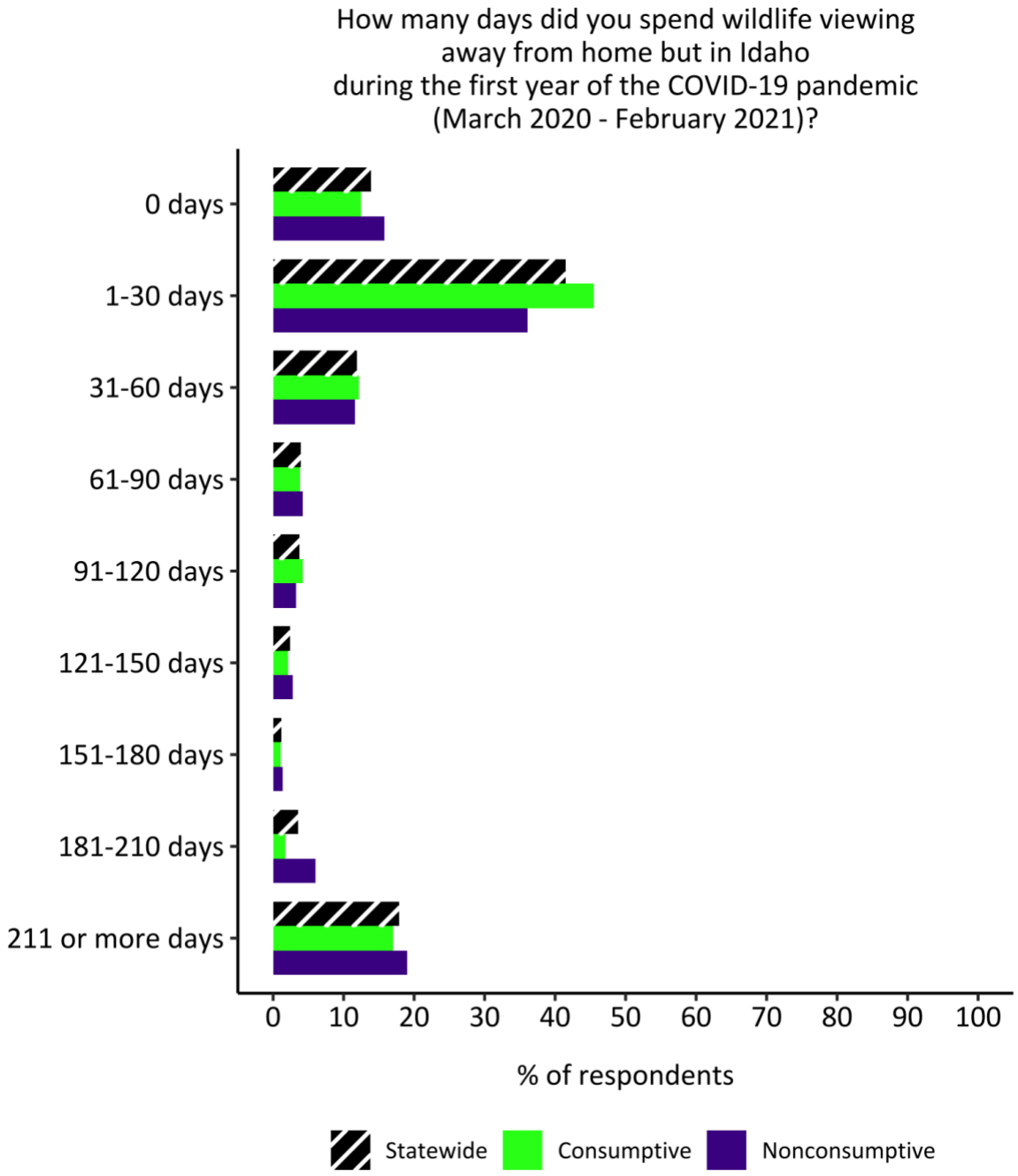

Figure 19: Days spent viewing away from home in first year of COVID-19 pandemic

Days wildlife viewers in Idaho reported spending wildlife viewing away from home but within Idaho during the first year of the pandemic (March 2020-February 2021) for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated that there was no statistically significant difference in away-from-home viewing during the first year of the pandemic for consumptive and nonconsumptive viewers (Table 17).

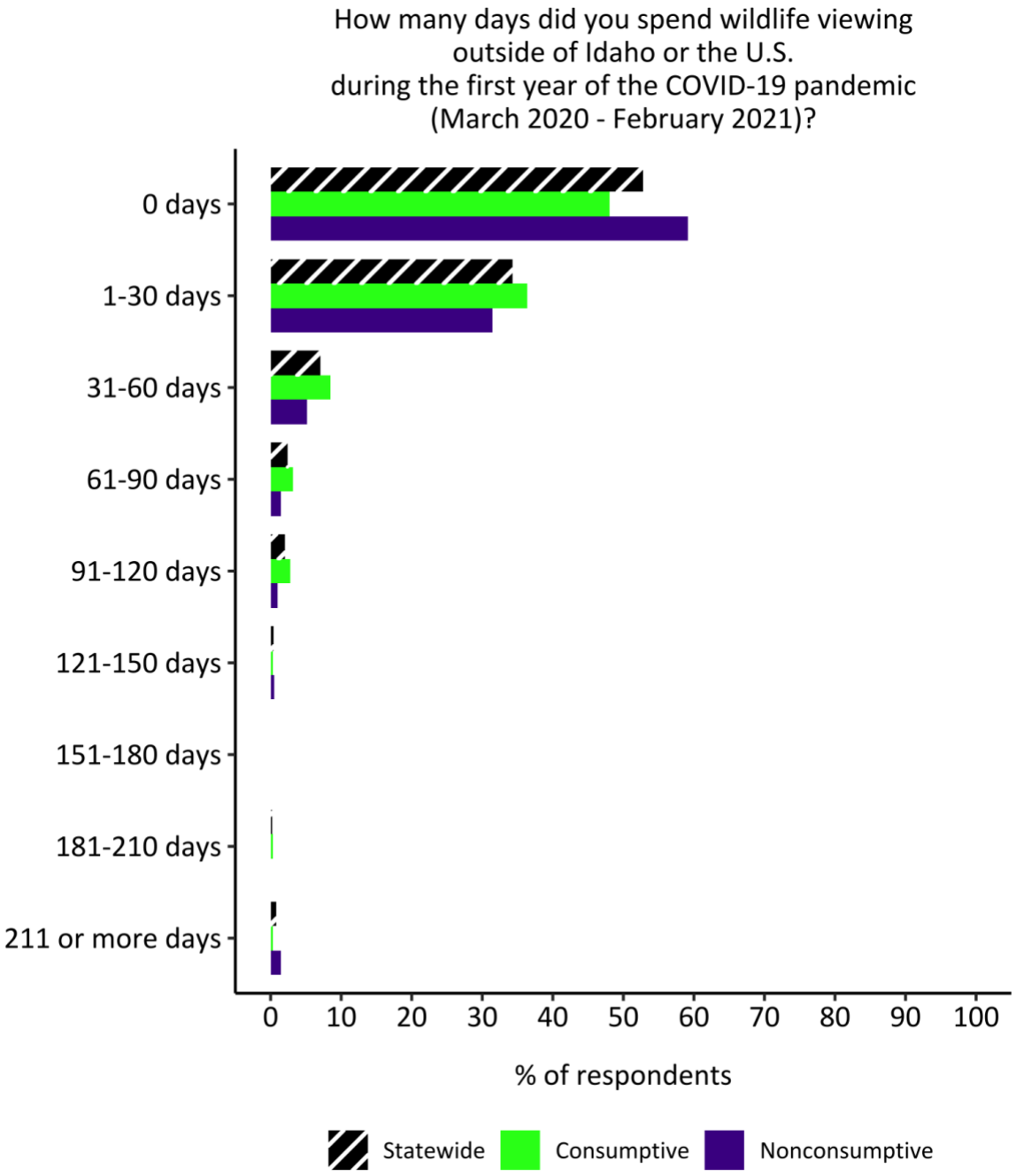

Figure 20: Days spent viewing out of state or U.S. in first year of COVID-19 pandemic

Days wildlife viewers in Idaho reported spending wildlife viewing outside of Idaho or the US during the first year of the pandemic (March 2020-February 2021) for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated that there was a statistically significant difference in time spent viewing around the home during the first year of the pandemic between consumptive and nonconsumptive viewers (Table 17). More nonconsumptive viewers indicated spending zero days viewing outside of Idaho or the U.S.

Finally, we asked respondents about days they anticipate viewing in the three locations during the next year (Table 16; Figures 21-23). Anticipated viewing was higher in all three locations when compared to the first year of the pandemic and was much closer to values reported during a typical year. Similarly to a typical year, 91% of respondents anticipated spending one or more days viewing around the home (Table 16; Figure 21). In addition, 92% of respondents anticipated spending one or more days viewing away from home (Table 16; Figure 22). We also note an increase in anticipated participation outside of Idaho or the U.S. in comparison to the first year of the COVID-19 pandemic, with 67% of respondents indicating they anticipated spending one or more days viewing outside of Idaho or the U.S. (Table 16; Figure 23).

The chi-square tests for anticipated time spent viewing in the upcoming year indicated a statistical significance between consumptive and nonconsumptive viewers in two categories. A chi-square with three categories ("0 days," "1-30 days," and "> 30 days") indicated no statistically significant difference in the time consumptive and nonconsumptive viewers anticipated spending viewing around the home in the upcoming year (Table 17; Figure 21). The second chi-square test indicated that there was a statistically significant difference in expected away-from-home viewing in the upcoming year for consumptive and nonconsumptive viewers, with more consumptive viewers spending more than 30 days viewing away from home than nonconsumptive (Table 17; Figure 22). Finally, the third chi-square test indicated that there was a statistically significant difference in expected out-of-state-or-country viewing in the upcoming year for consumptive and nonconsumptive viewers. More nonconsumptive viewers indicated expecting to spend 1-30 days viewing outside of Idaho or the U.S., but more consumptive viewers indicated expecting to spend more than 30 days outside of Idaho or the U.S. than nonconsumptive viewers. (Table 17; Figure 23).

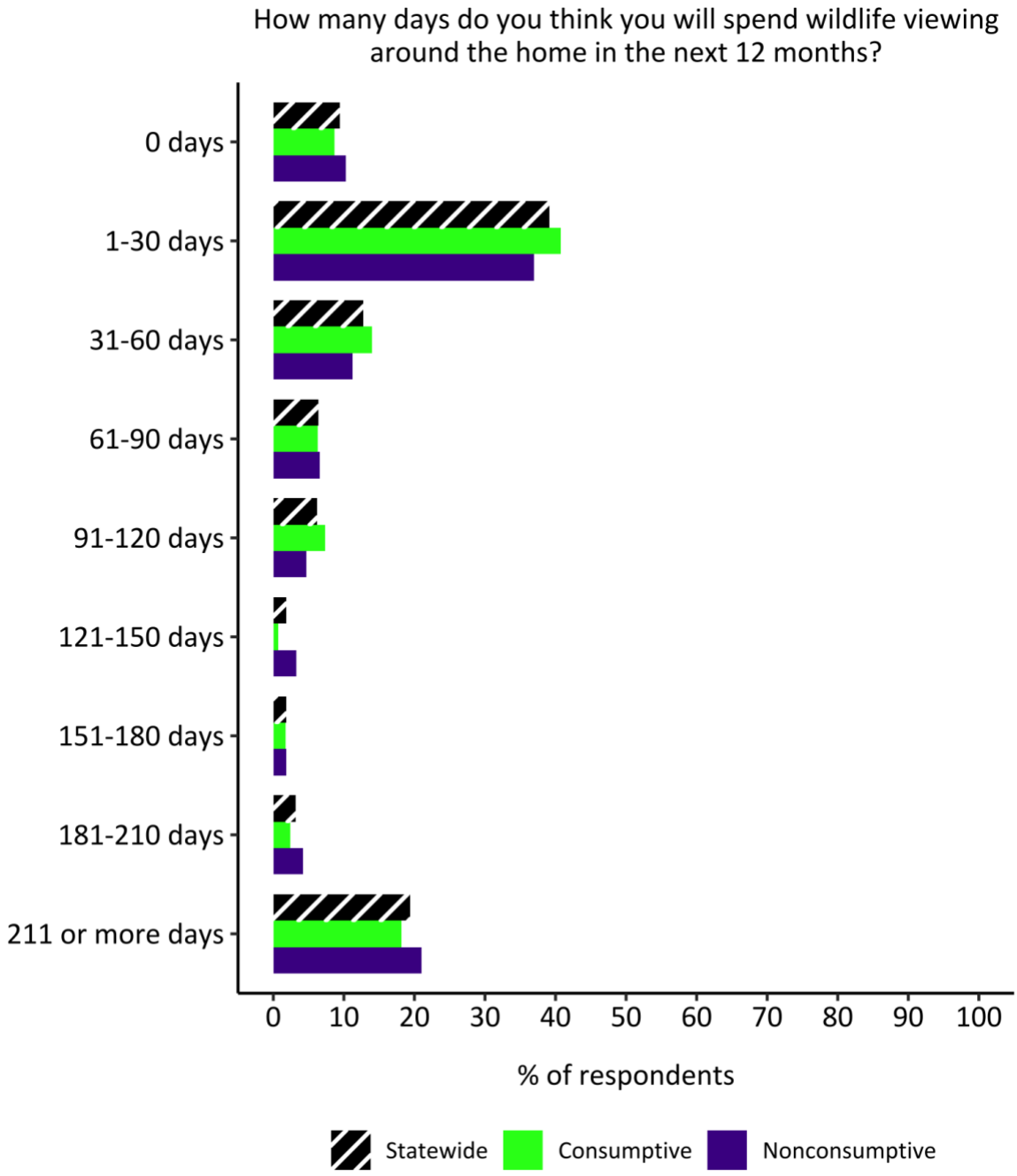

Figure 21: Days anticipated spent viewing around the home in the upcoming year

Days wildlife viewers in Idaho reported spending wildlife viewing around the home in the upcoming year for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated no statistically significant difference in time spent viewing around the home in the upcoming year between consumptive and nonconsumptive viewers (Table 17).

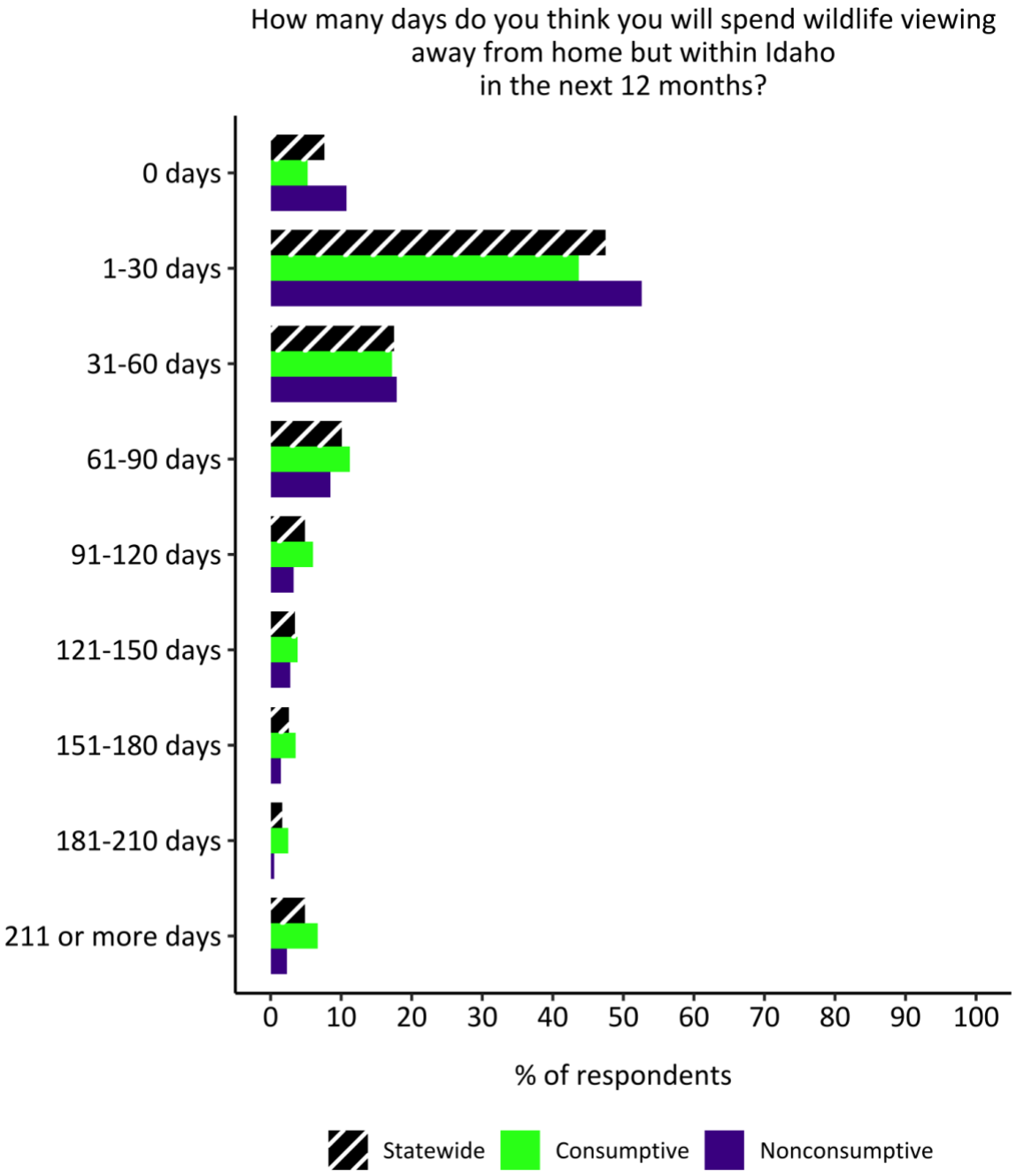

Figure 22: Days anticipated spent viewing away from home in the upcoming year

Days wildlife viewers in Idaho reported spending wildlife viewing away from home but within Idaho in the upcoming year for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated that there was a statistically significant difference in away-from-home viewing in the upcoming year for consumptive and nonconsumptive viewers (Table 17).

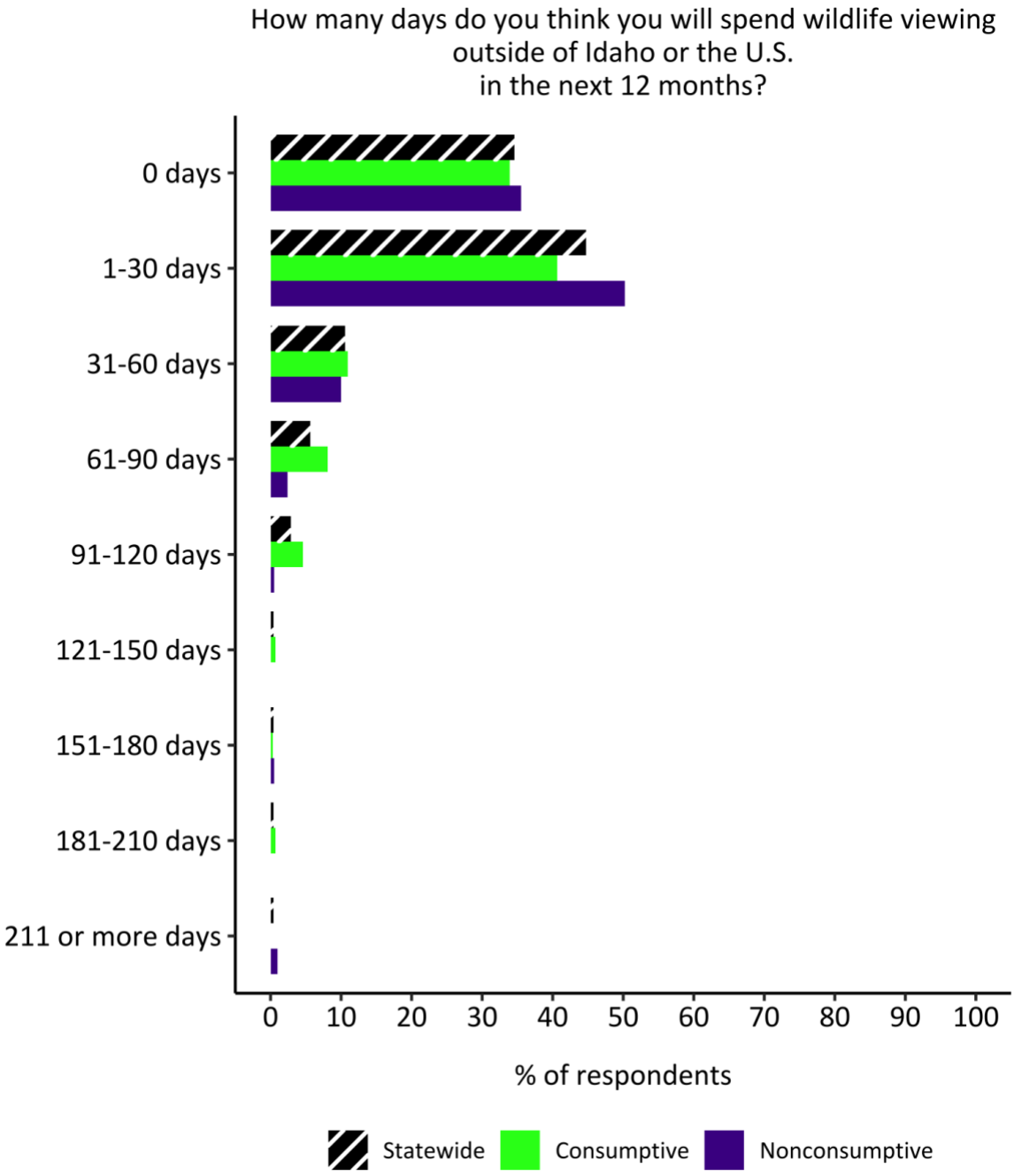

Figure 23: Days anticipated spent viewing out of state or U.S. in the upcoming year

Days wildlife viewers in Idaho reported spending wildlife viewing outside of Idaho or in the upcoming year for statewide and consumptive-nonconsumptive groups. This includes wildlife viewers who began participating in wildlife viewing during the pandemic. A chi-square with three categories due to low sample sizes ("0 days," "1-30 days," and "> 30 days") indicated that there was a statistically significant difference in time spent viewing around the home in the upcoming year between consumptive and nonconsumptive viewers (Table 17).

Wildlife viewing location

In addition to understanding around the home, away from home, and out-of-state viewing, we further examined the land ownership status of locations where respondents participate in wildlife viewing within Idaho. Wildlife viewing takes place across all land ownership statuses: from state land, and privately-owned land, (Bensen, 2001) to federally-owned land (Abrams et al., 2020), with vastly different managerial implications for each setting. We asked respondents "In a typical year, in which locations do you participate in wildlife viewing in Idaho?" This question was adapted from the Virginia Wildlife Recreation Survey (Grooms et al., 2019) to include options more applicable to the state setting. A list of seven locations was provided, featuring a mix of public, private, and tribal lands. In addition, an option reading "I am unsure who owns or manages the areas where I participate in wildlife viewing" (6.9% of respondents selected this) was also provided. Finally, a mutually exclusive option reading "I do not participate in wildlife viewing in any of the above locations" (0.8% of respondents selected this) was also provided. This mutually exclusive option was excluded from analysis.

Over 90% of respondents reported viewing in more than one location. Respondents in Idaho most commonly reported wildlife viewing in state-managed areas (75%), such as state parks, forests, boat landings, fishing areas, conservation areas, or Wildlife Management Areas. Tied for second place, the most commonly reported viewing locations were at respondents' own home or property (66%) and locally-managed areas, such as town or county parks, trails, or open spaces (66%; Table 18; Figure 24.) Close to two-thirds (65%) of wildlife viewers in Idaho utilized federally-managed areas, such as National Parks, National Wildlife Refuges, Bureau of Land Management Land, Waterfowl Production Areas, or National Forests. The least common location for wildlife viewing was tribal lands (9.9%; Table 18; Figure 24).

Statistical tests revealed some significant differences between consumptive and nonconsumptive wildlife viewers for where they viewed wildlife. First, a t-test indicated that the mean number of wildlife viewing locations for consumptive (M = 3.78, SD = 1.55) wildlife viewers was significantly higher than nonconsumptive viewers (M = 3.39, SD = 1.54; t = -2.84, df = 498, p = .002). Second, chi-square tests indicated three statistically significant differences in viewing locations in consumptive and nonconsumptive viewers. The number of consumptive wildlife viewers who participated in wildlife viewing on federally managed lands (such as National Parks, National Wildlife Refuges, Bureau of Land Management Land, Waterfowl Production Areas, or National Forests) and property of friends or family was significantly higher in comparison to nonconsumptive viewers (Table 18; Figure 24). Conversely, more nonconsumptive viewers participate in wildlife viewing on tribal lands in comparison to consumptive viewers (Table 18; Figure 24).

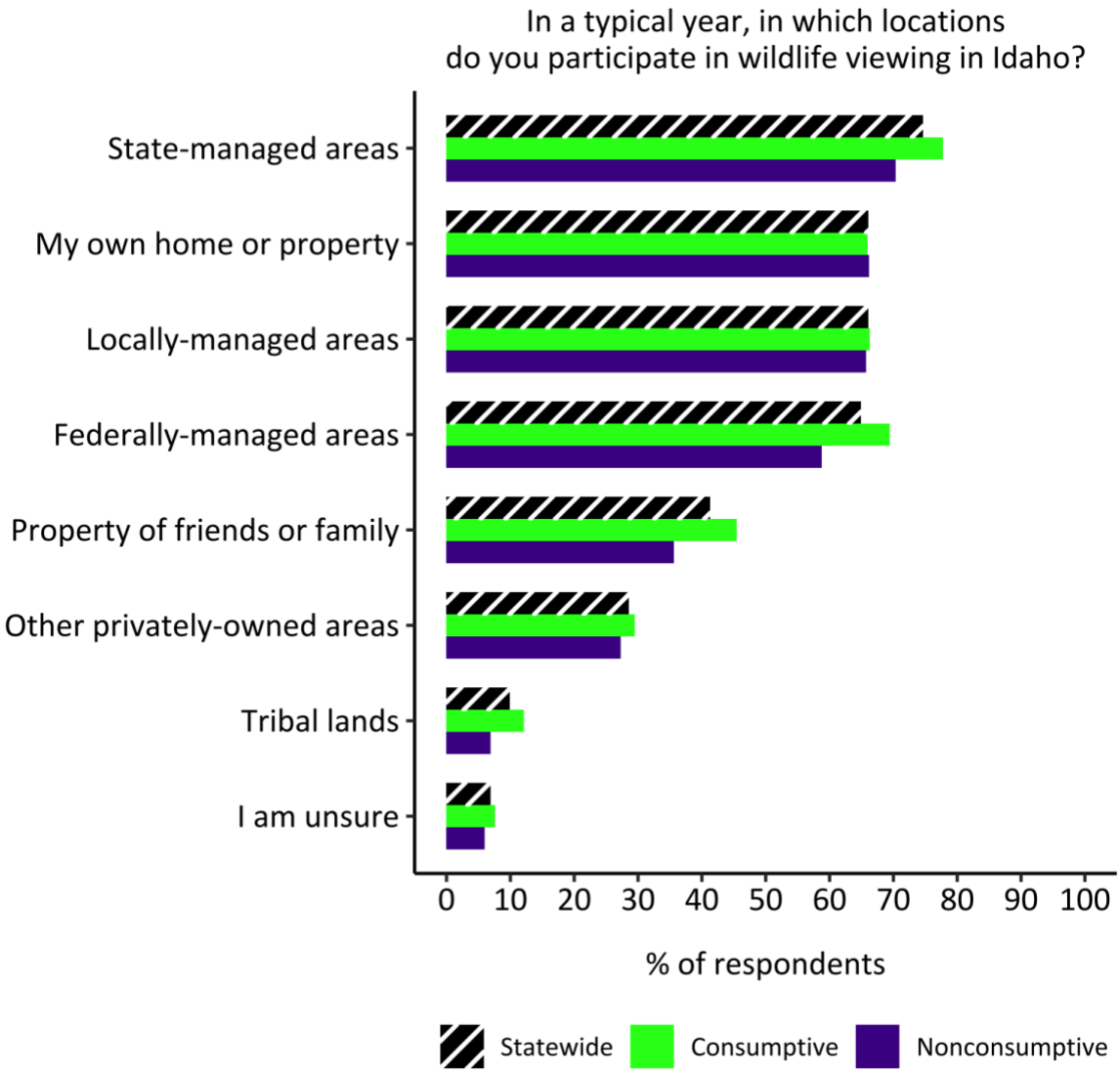

Figure 24: Wildlife viewing locations

Locations wildlife viewers in Idaho reported participating in wildlife viewing in a typical year for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option. Chi-square tests indicated that significantly more consumptive viewers participated in wildlife viewing on federally managed lands and property of friends or family than nonconsumptive viewers. Significantly more nonconsumptive viewers participating in viewing on tribal lands than consumptive viewers (Table 18).

Wildlife viewing-related expenditures

Wildlife viewing-related expenditures generate significant economic activity; the National Survey of Wildlife Recreation valued wildlife viewing-related expenditures at $75.9 billion in 2016. This survey also assessed wildlife viewers' trip-related expenses (food and lodging, transportation, and other trip costs), equipment expenditures (wildlife-watching equipment,

auxiliary equipment, and special equipment), and total other expenses (land leasing and owning, plantings, membership dues and contributions, magazines, books, and DVDs) (US DOI et al., 2016). To ease respondent burden, we collapsed the National Survey of Wildlife Recreation categories into two: trip-related costs and all other wildlife viewing expenses and equipment. We provided respondents with a drop-down box consisting of twelve equal-sized ($50 increments) options informed by the range of responses in the National Survey of Wildlife Recreation.

Just over one-third (35%) of survey respondents reported spending $100 or less on wildlife viewing trip-related costs annually and only 12% of respondents reported spending no money on trip-related costs annually. Over half, 53% of all respondents in Idaho indicated spending $101 or more on trip-related costs annually. Specifically, 9.3% of respondents reported spending more than $500 on trip related costs annually.

Due to the small sample size, we collapsed expenditures into three categories, which included $0, $1-$100, and $101 or more. A chi-square test indicated nonconsumptive and consumptive viewers' wildlife viewing trip-related expenditures varied statistically ($\chi^2 = 14.02$, $df = 2$, $p < .001$; Table 19B; Figure 25). About a fifth of nonconsumptive viewers (19%) reported spending no money on trip-related costs, compared to only 7.3% of consumptive viewers.

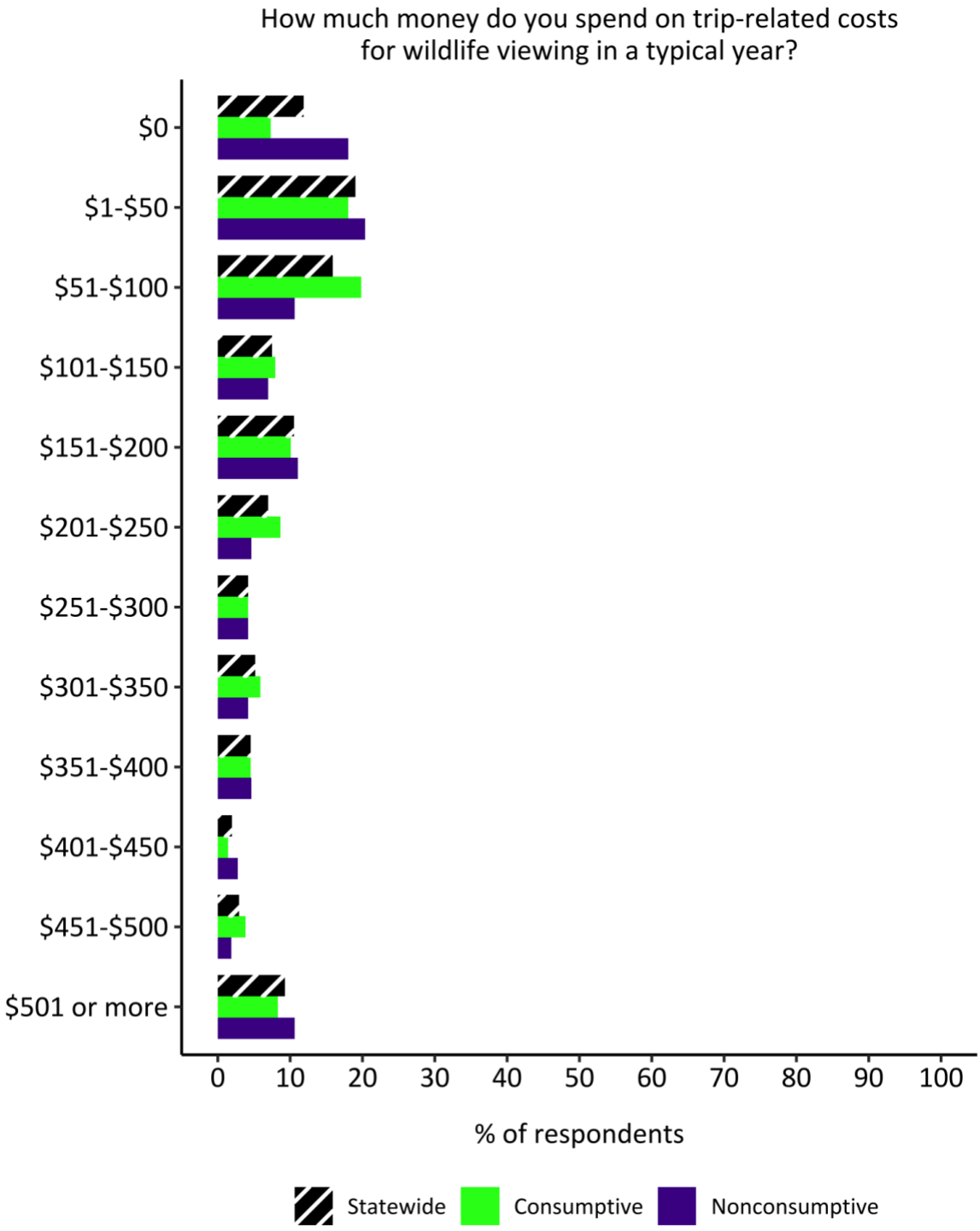

Figure 25: Trip-related wildlife viewing expenditures

Trip-related expenditures for wildlife viewing in a typical year reported by wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. A chi-square test with three categories ($0, $1 - $100, and $101 or more) indicated that wildlife viewing trip-related expenditures varied significantly when comparing consumptive and nonconsumptive wildlife viewers (Table 19).

We also asked wildlife viewers about their other wildlife viewing-related costs, such as binoculars, hiking or boating equipment for viewing, field guides, bird feeders or bird foods, or membership dues for wildlife viewing organizations. Over one-third of respondents (35%) indicated spending between $1 and $100 less on other wildlife viewing-related expenses. About a fifth (18%) of respondents reported spending no money annually on other wildlife viewing-related expenses. Just under half of all respondents (47%) reported spending $101 or more on other wildlife viewing related expenditures annually, with 6.8% of respondents reported spending $501 or more during a typical year.

Similar to trip-related expenditures, for analysis we collapsed expenditures into three categories, which included $0, $1-$100, and $101 or more. Another chi-square test indicated that other wildlife viewing-related expenditures varied significantly between consumptive and nonconsumptive viewers ($\chi^2 = 17.31$, $df = 2$, $p < .001$). Far more nonconsumptive (26%) viewers reported spending $0 on other wildlife viewing-related costs in comparison to consumptive viewers (12%). Conversely, more consumptive viewers (52%) reported spending $101 or more compared to nonconsumptive viewers (41%; Table 20B; Figure 26).

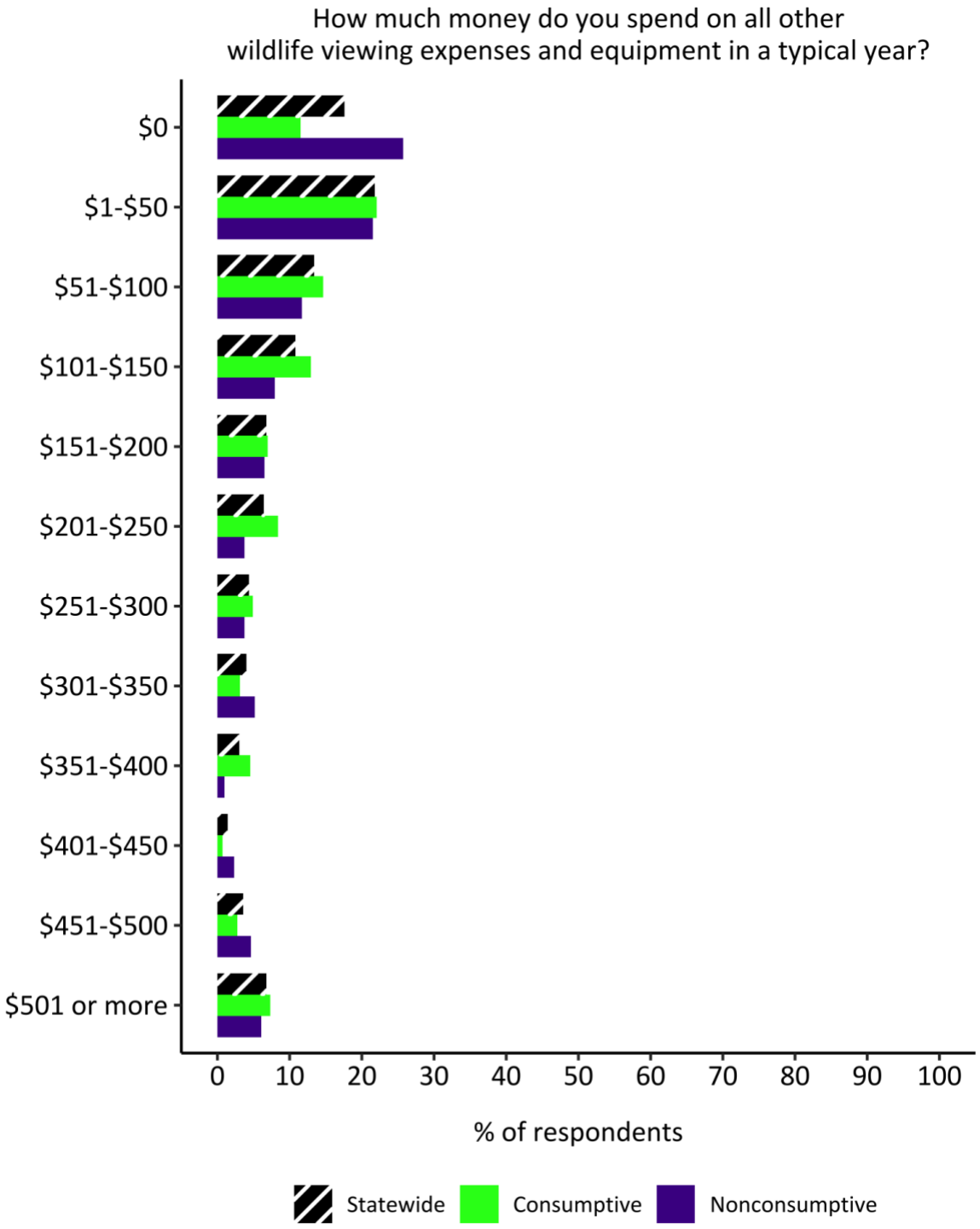

Figure 26: Other wildlife viewing-related expenditures

Other wildlife viewing-related expenditures in a typical year reported by wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. A chi-square test with three categories ($0, $1 - $100, and $101 or more) revealed that other wildlife viewing-related expenditures varied significantly when comparing consumptive and nonconsumptive wildlife viewers (Table 20).

Other outdoor recreation

Recent research has demonstrated that many wildlife recreationists participate in multiple forms of outdoor recreation that may include both consumptive and nonconsumptive uses of wildlife (Grooms et al., 2019). In order to explore this overlap in recreation participation among wildlife viewers, we asked respondents to indicate which other form(s) of outdoor recreational activity, out of a list of 17, they participate in during a typical year besides wildlife viewing. The list of other outdoor recreation activities used in the survey was adapted from the Virginia Wildlife Recreation Survey (Grooms et al., 2019).

Overall, in Idaho, 95% of viewers indicated that they participate in at least one other form of outdoor recreation. On average, respondents indicated participation in about five other forms of outdoor recreation (M = 5.21, SD = 2.97). Only 5.0% of wildlife viewers did not participate in any other forms of outdoor recreation. The most selected form of outdoor recreation was camping (68%), followed by running, walking, or jogging (58%). Over half of all respondents (55%) participated in hiking or backpacking. In Idaho, the least popular forms of outdoor recreation among wildlife viewers were botanizing (13%), climbing (10%), and geocaching (8.7%).

As the classification of consumptive and nonconsumptive viewers used throughout this report was generated with the responses from this survey question, additional analyses could not be performed for hunter-viewers, fisher-viewers, or viewers who did not participate in any other forms of outdoor recreation. In Idaho, just over half of respondents indicated that they participated in hunting (23%) and/or fishing (54%), with fishing being far more popular. Specifically, 34% of wildlife viewers in Idaho also fish, 4.2% also hunt, and 20% also hunt and fish.

Chi-square tests indicated many statistically significant differences between consumptive and nonconsumptive wildlife viewers, although with low number of respondents for several of the categories for both consumptive and nonconsumptive viewers (Table 21; Figure 27). Significantly more consumptive viewers participated in hiking or backpacking, swimming, recreational shooting, off-highway vehicle use, winter sports, foraging, motorized boating, non-motorized boating, and horseback riding than nonconsumptive viewers. The number of consumptive viewers who participated in running, walking or jogging; road or mountain biking; botanizing; climbing; and geocaching did not vary significantly in comparison to nonconsumptive viewers.

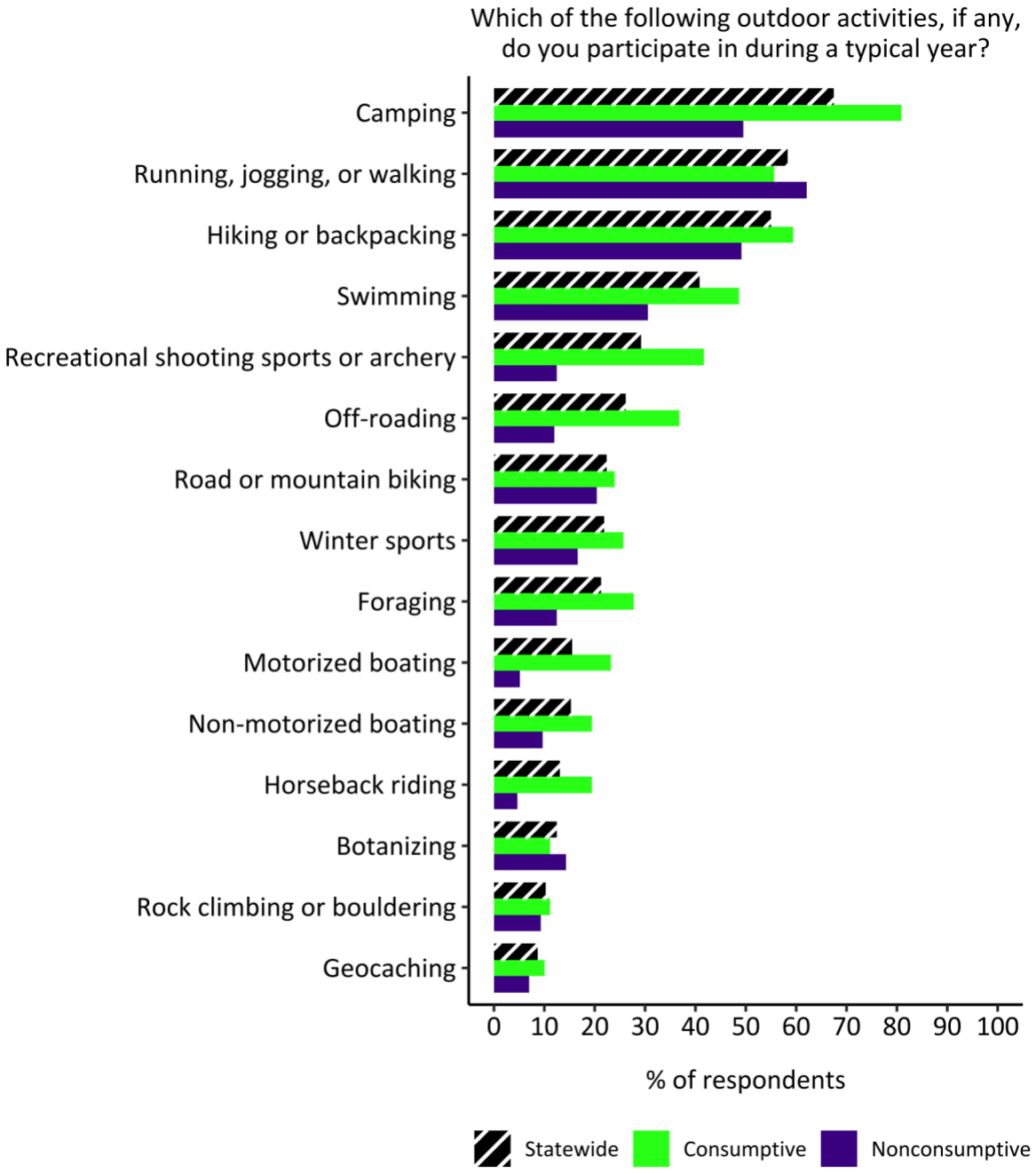

Figure 27: Other outdoor recreation activities

Outdoor activities that wildlife viewers in Idaho report participating in during a typical year for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option. Hunting and fishing are omitted from the figure as these activities were used to generate the consumptive-nonconsumptive group definitions. Chi-square tests indicated statistically more consumptive viewers participated in hiking or backpacking, swimming, recreational shooting, off-highway vehicle use, winter sports, foraging, motorized boating, non-motorized boating, and horseback riding in comparison to nonconsumptive viewers(Table 21).

Conservation behaviors

The literature shows that wildlife viewers, particularly hunter–birdwatchers (similar to our consumptive viewers which also includes anglers), are more likely to engage in pro-environmental behaviors, or conservation behaviors, than non-wildlife viewers (Cooper et al., 2015). We asked respondents to indicate how likely they would be to participate in seven different conservation behaviors within the next five years, if they had the opportunity to do so. These conservation behaviors were adapted from survey items used by Larson et al. (2015) and were selected to represent each of the four pro-environmental behavior domains identified in that study. Larson et al. (2015) described pro-environmental behaviors in four domains: 1) conservation lifestyle, which includes private, household activities with environmental benefits, such as recycling and green consumerism, 2) land stewardship, which involves interaction with local ecosystems to create, manage, or monitor wildlife habitats, 3) social environmentalism, which refers to activities that center on social interaction, such as communicating with or teaching others about the environment or environmental actions, and 4) environmental citizenship, which refers to financial or political contributions to environmental causes through donations, voting, and other forms of advocacy.

Wildlife viewers most often reported being likely to clean up trash or litter, with 66% of respondents indicating that they were *very likely* or *extremely likely* to participate in this conservation behavior (Figure 28, Table 22). Next, over one-third (37%) of respondents reported that they were *very likely* or *extremely likely* to participate in purchasing products that benefit wildlife or whose proceeds support conservation. Similarly, 34% of respondents reported that they were *very likely* or *extremely likely* to participate in civic engagement (such as voting or advocating) related to wildlife conservation. Respondents least often reported being *very likely* or *extremely likely* to collect data on wildlife or habitats to contribute to science or management (18%) or to inform or teach others about wildlife conservation (20%).

Notably, five out of seven chi-square tests revealed statistically significant tested conservation behaviors (Table 23; Figures 29-30). In these five behaviors (informing or teaching others about wildlife conservation, enhancing wildlife habitat, collecting data on wildlife or habitats, donating money to support wildlife conservation, and purchasing products that benefit wildlife or whose proceeds support conservation) a higher proportion of nonconsumptive viewers indicated they were *not at all likely* to participate in the action than consumptive viewers. The likelihood of participating in civic engagement or cleaning up trash or litter did not vary significantly between consumptive and nonconsumptive viewers.

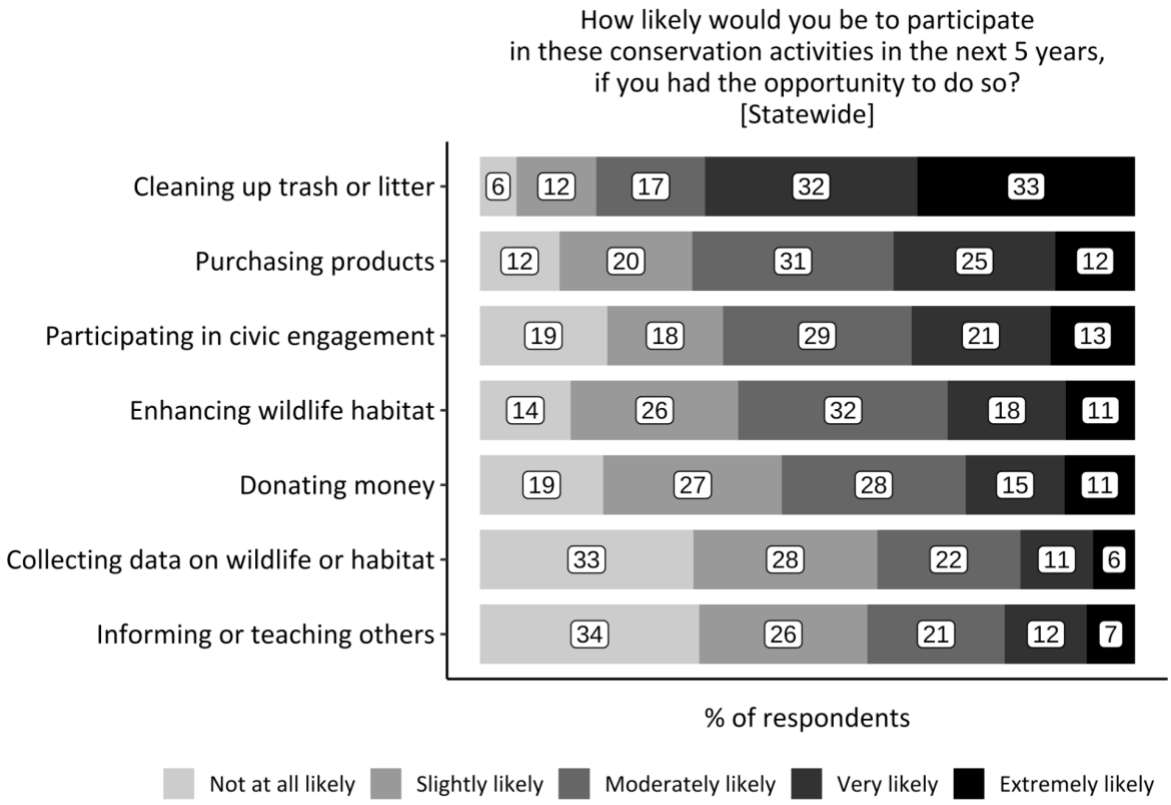

Figure 28: Likelihood of participating in conservation behaviors, statewide sample

Wildlife viewers' reported likelihood of participating in different conservation behaviors at the statewide level in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of gray lightens with decreasing likelihood of participation (Table 22).

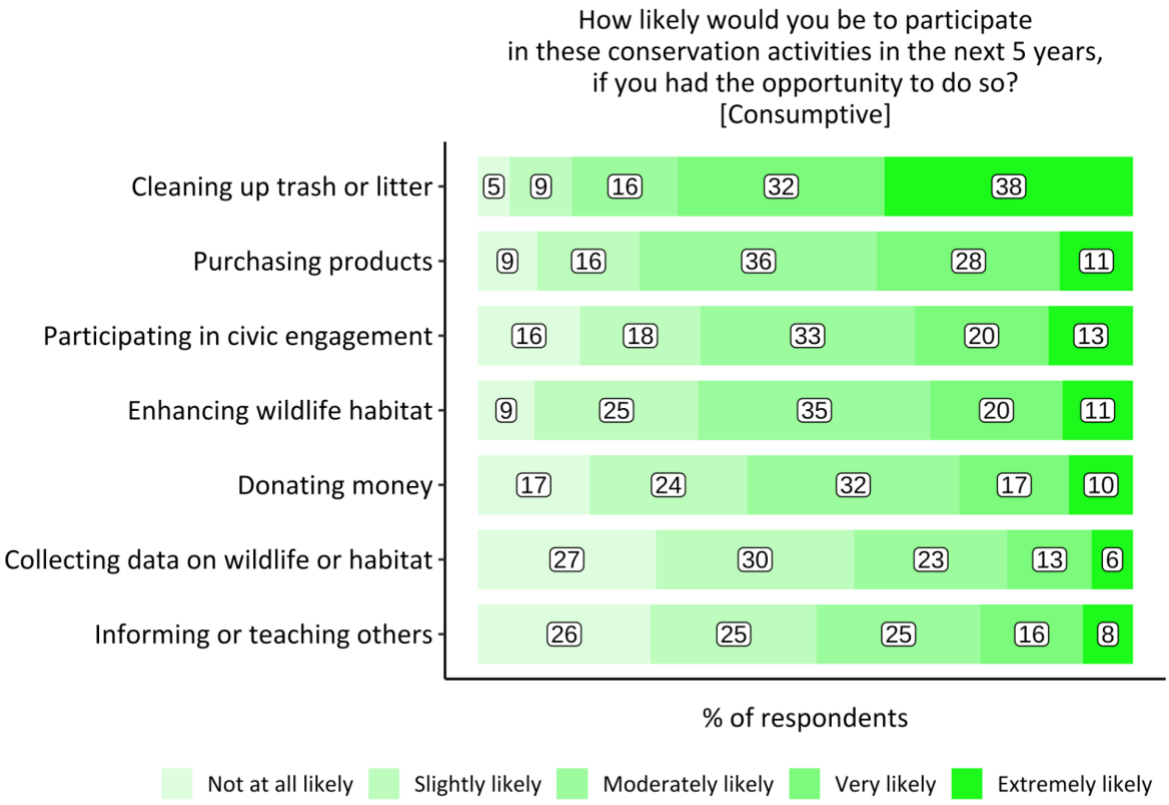

Figure 29: Likelihood of participating in conservation behaviors, consumptive respondents
Consumptive wildlife viewers' reported likelihood of participating in different conservation behaviors in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of green lightens with decreasing likelihood of participation (Table 23).

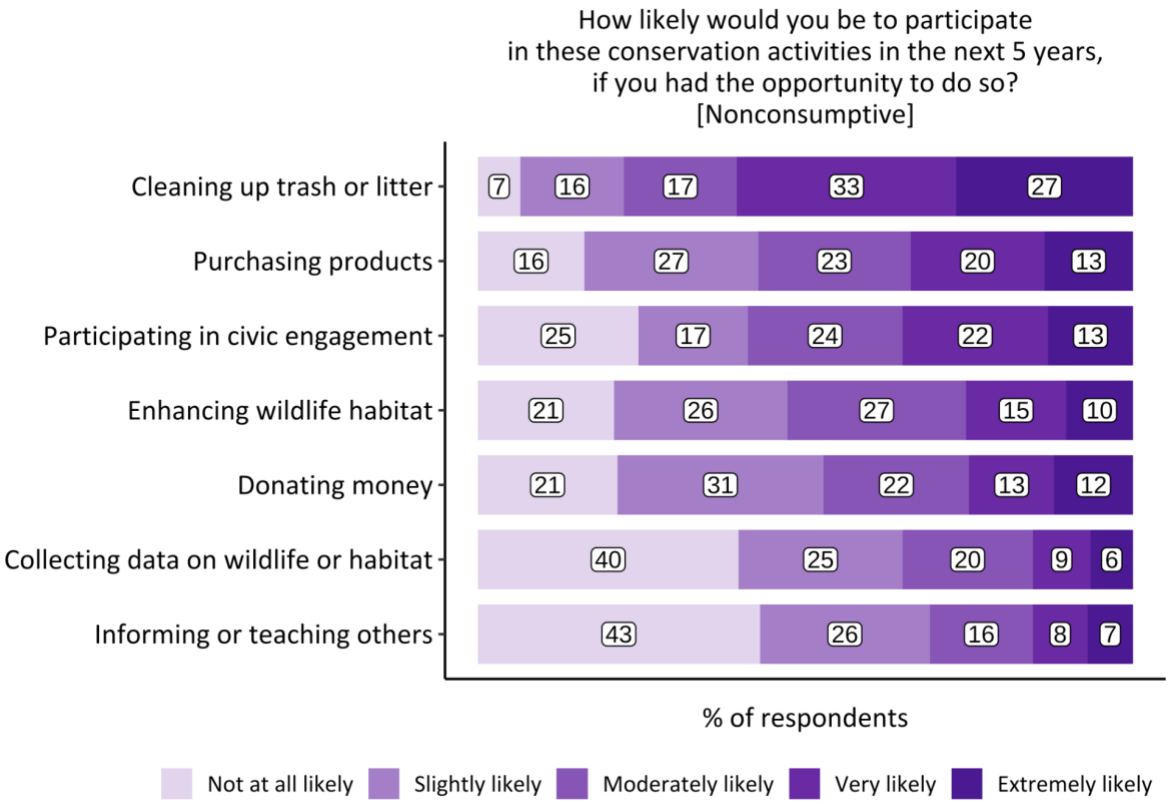

Figure 30: Likelihood of participating in conservation behaviors, nonconsumptive respondents
Nonconsumptive wildlife viewers' reported likelihood of participating in different conservation behaviors in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of purple lightens with decreasing likelihood of participation (Table 23).

We also asked respondents to indicate how likely they would be to participate in these same seven conservation behaviors with or in support of IDFG within the next five years if they had the opportunity to do so. Again, wildlife viewers most often reported being *very likely* or *extremely likely* to clean up trash or litter (62%), followed by purchasing products that benefit wildlife or whose proceeds support conservation (36%) and civic engagement (35%). They least often reported being *very likely* or *extremely likely* to work with or for IDFG to collect data on wildlife or habitat (22%) and to inform or teach others about wildlife conservation (20%; Table 24; Figure 31).

Similar to conservation behaviors without state agency support, four of the seven tested behaviors (specifically, informing or teaching others about wildlife conservation, enhancing wildlife habitat, collecting data on wildlife or habitat to contribute to science or management, and cleaning up trash or litter) showed statistically significant differences between consumptive and nonconsumptive viewers. In all four behaviors, a higher proportion of nonconsumptive

viewers indicated they were *not at all likely* to participate in the action than consumptive viewers (Table 25; Figures 32 - 33).

To test the impact of participating in conservation behaviors with or without the IDFG, we used a paired samples t-test across all seven behaviors. Respondents were slightly more likely to participate in informing or teaching others about wildlife conservation (difference in mean: 0.07; $t = 1.65$, $df = 485$, $p = .05$), enhancing wildlife habitat (difference in mean: 0.12; $t = 2.87$, $df = 485$, $p = .002$), donating money to support wildlife conservation (difference in mean: 0.88; $t = 3.95$, $df = 485$, $p < .001$), and picking up trash or litter (difference in mean: 0.07; $t = 1.70$, $df = 485$, $p = .05$) independently rather than in collaboration with IDFG. Respondents were more likely to collect data on wildlife or habitat to contribute to science or management with or in support of the IDFG rather than independently (difference in mean: -0.11; $t = -2.49$, $df = 485$, $p = .01$).

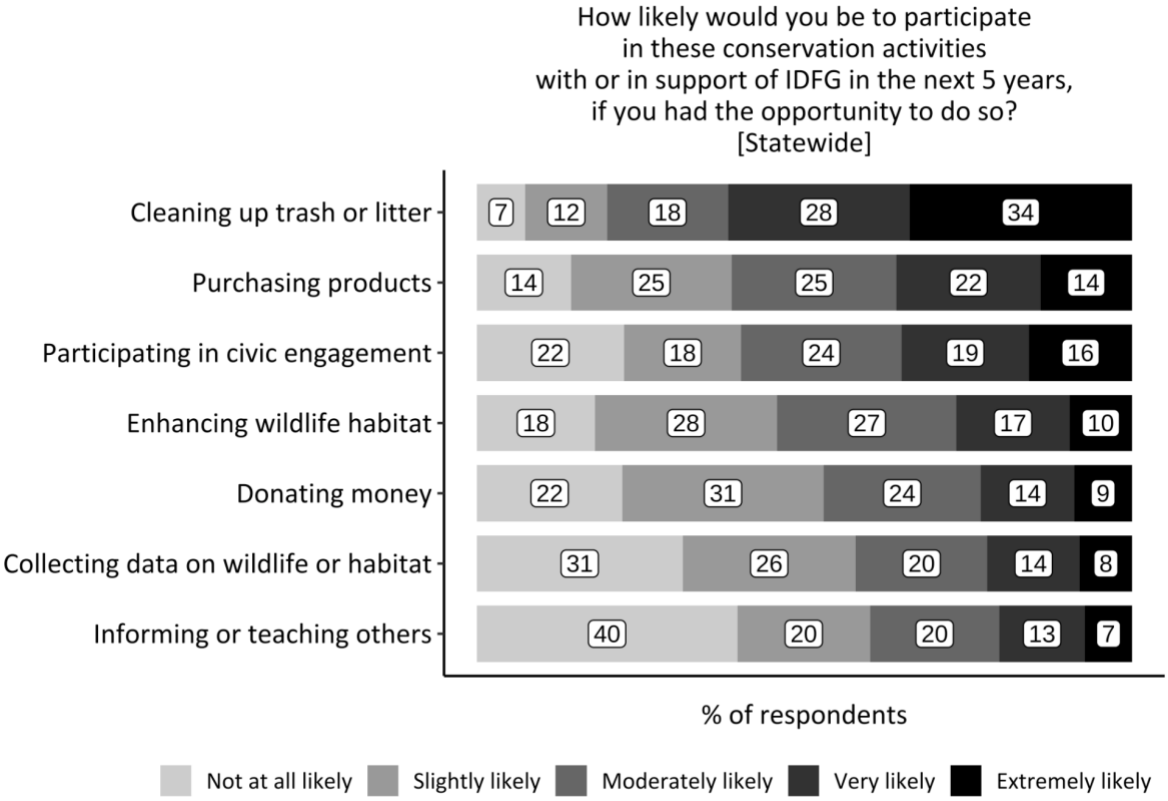

Figure 31: Likelihood of participating in conservation behaviors with or in support of state agency, statewide sample

Wildlife viewers' reported likelihood of participating in different conservation behaviors at the statewide level with or in support of IDFG in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of gray lightens with decreasing likelihood of participation (Table 24).

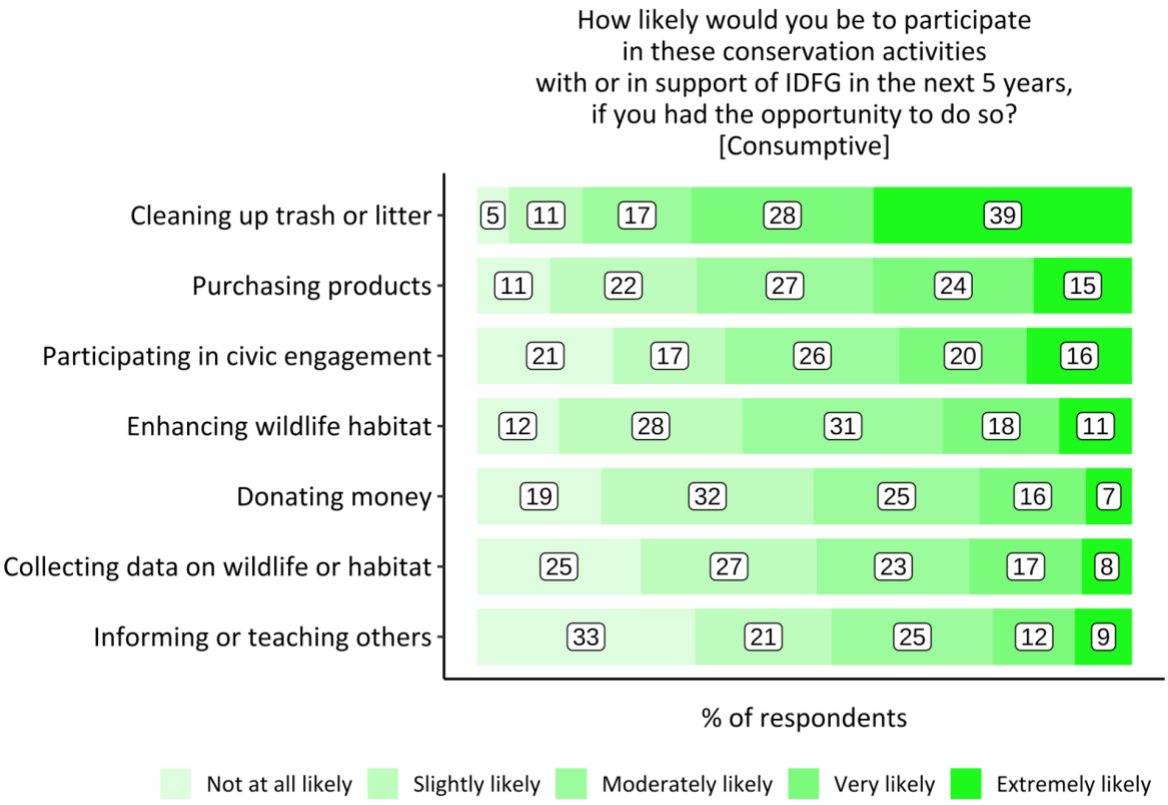

Figure 32: Likelihood of participating in conservation behaviors with or in support of state agency, consumptive respondents

Consumptive wildlife viewers' reported likelihood of participating in different conservation behaviors with or in support of IDFG in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of green lightens with decreasing likelihood of participation (Table 25).

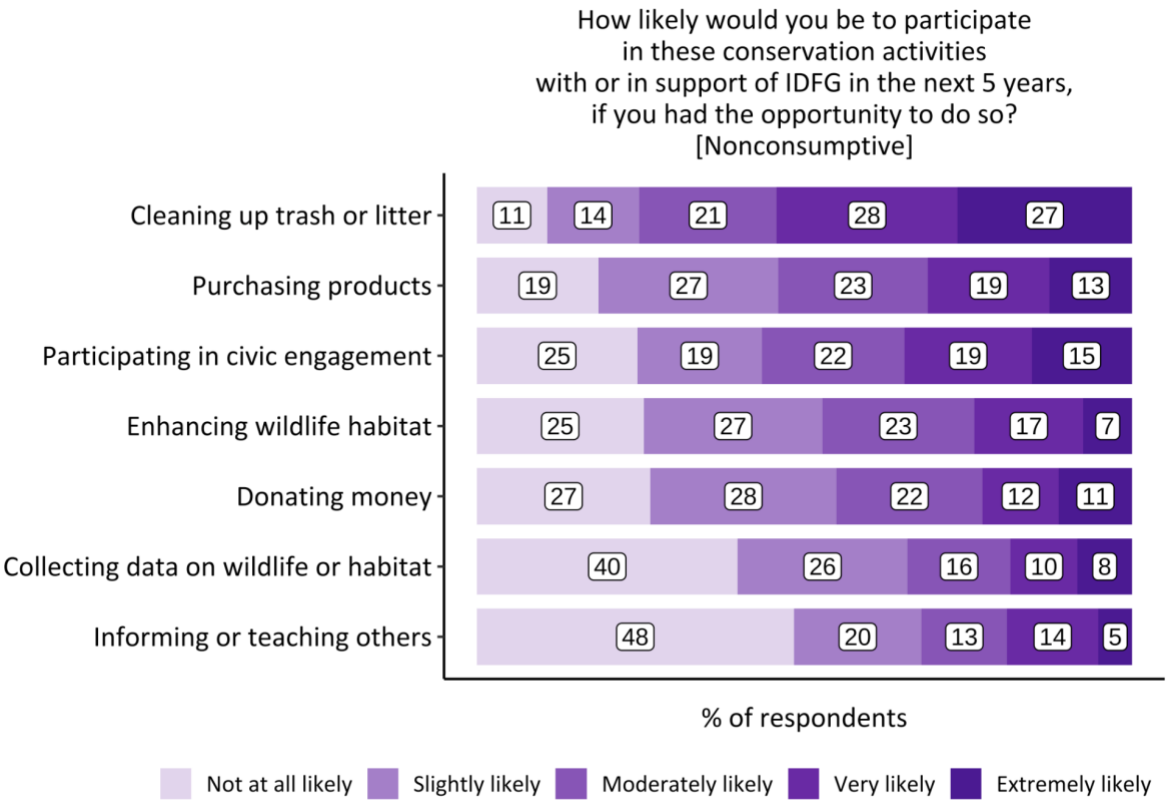

Figure 33: Likelihood of participating in conservation behaviors with or in support of state agency, nonconsumptive respondents

Nonconsumptive wildlife viewers' reported likelihood of participating in different conservation behaviors with or in support of IDFG in the next 5 years, if they had the opportunity to do so. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of purple lightens with decreasing likelihood of participation (Table 25).

Barriers to wildlife viewing

Wildlife viewers experience a variety of barriers to their participation in the activity including but not limited to time, lack of financial or transportation resources, or not knowing where to view wildlife (Grooms et al., 2019; NAWMP, 2021; US DOI et al., 2016). To examine barriers to participation in wildlife viewing, we provided respondents with a list of 14 common barriers and asked them to indicate the extent to which each of the barriers limited their participation in wildlife viewing, with response options ranging from 1 (*not at all*) to 5 (*a great deal*). We adapted the list from the National Survey of Birdwatchers with input from our Multi-State Steering Committee (NAWMP, 2021).

Our results indicate that financial cost associated with wildlife viewing is the greatest barrier examined in this study, with over half (57%) of respondents indicating cost limited participation in wildlife viewing *somewhat*, *quite a bit*, or *a great deal*. Over half of all respondents were

limited by lack of free time to participate in wildlife viewing (56% limited *somewhat*, *quite a bit*, or *a great deal*) and distance to high-quality locations for wildlife viewing (54% limited *somewhat*, *quite a bit*, or *a great deal*). The barrier that limited wildlife viewers in Idaho the least was lack of facilities at wildlife viewing locations (32% limited *somewhat*, *quite a bit*, or *a great deal*) and safety concerns when wildlife viewing (31% limited *somewhat*, *quite a bit*, or *a great deal*; Table 26; Figure 34).

Chi-square tests indicated only five statistically significant differences between the extent of limitation for consumptive and nonconsumptive wildlife viewers in terms of lack of free time to participate in wildlife viewing, few people to participate in wildlife viewing with, financial costs associated with wildlife viewing, accessibility challenges for themselves or people they view with, and few people who support wildlife viewing (due to a small number of respondents indicating *a great deal* for this option, it was combined into four categories for analysis (Table 27 - Table 27a; Figures 35-36). For all five of these barriers, more nonconsumptive viewers indicated they were *not at all* by the barrier than consumptive viewers.

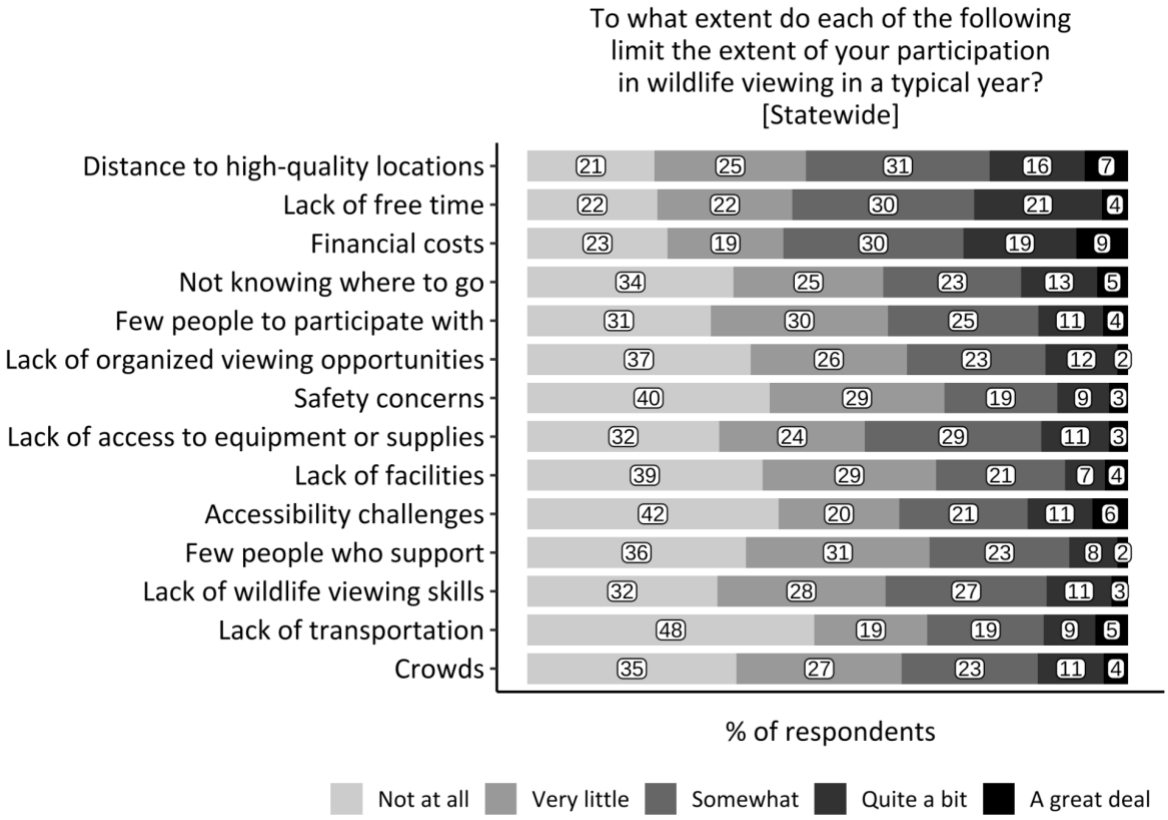

Figure 34: Barriers to wildlife viewing, statewide sample

Wildlife viewers' reported extent to which each of the barriers limited their participation at the statewide level. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all* to *a great deal*. The lightest gray boxes represent the viewers that indicated an item as being *not at all* a barrier to their participation (Table 26).

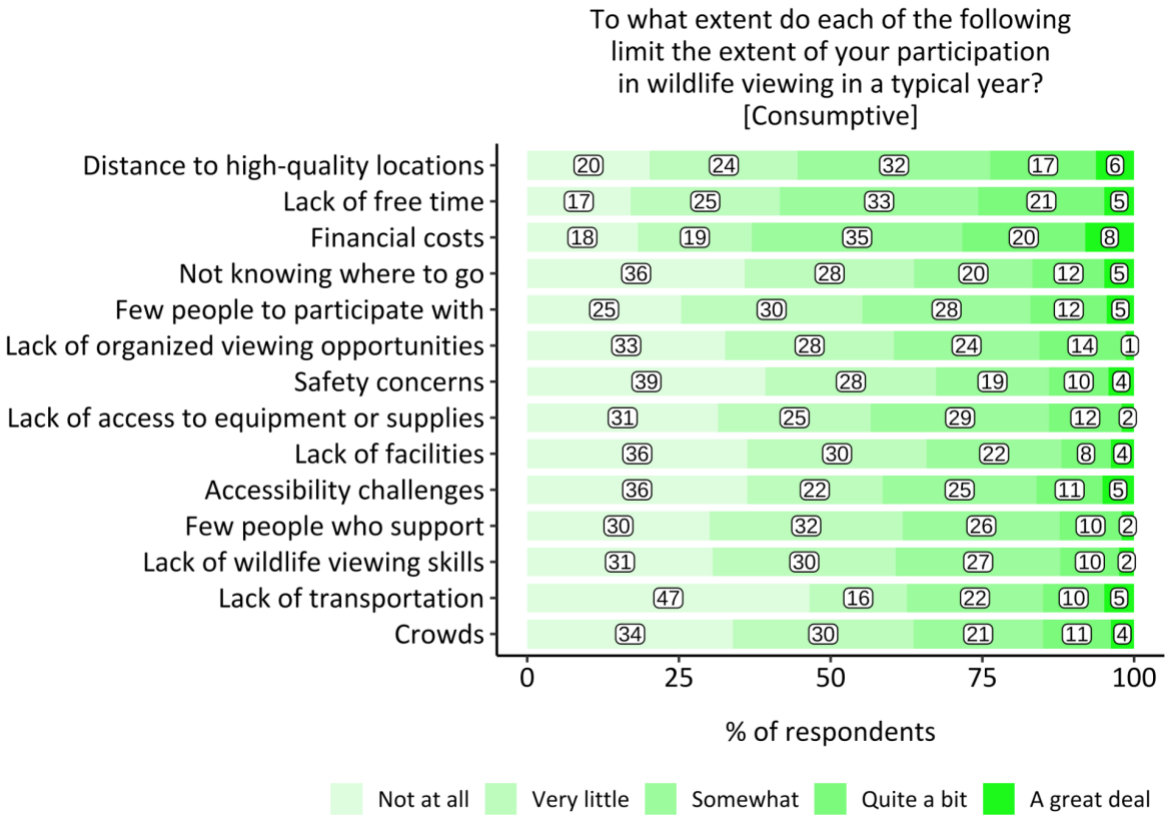

Figure 35: Barriers to wildlife viewing, consumptive respondents

Consumptive wildlife viewers' reported extent to which each of the barriers limited their participation at the statewide level. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all* to *a great deal*. The lightest green boxes represent the viewers that indicated an item as being *not at all* a barrier to their participation (Table 27).

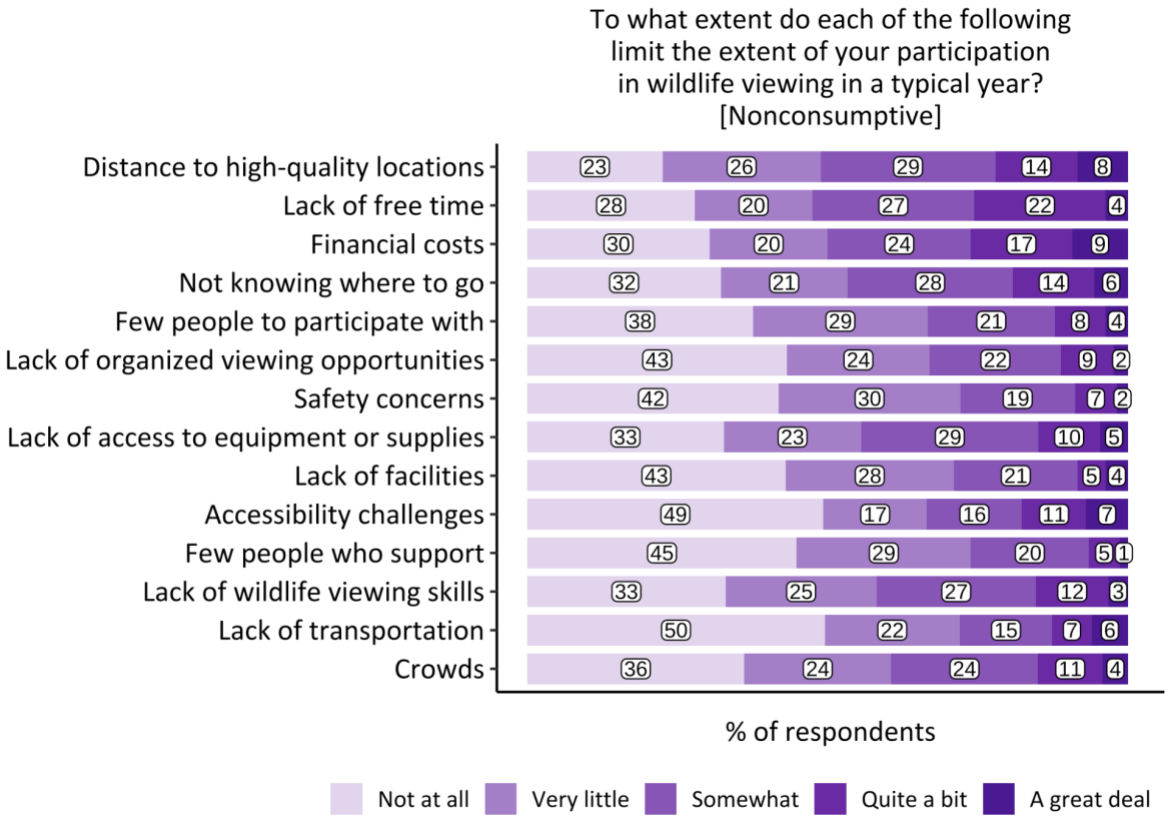

Figure 36: Barriers to wildlife viewing, nonconsumptive respondents
Nonconsumptive wildlife viewers' reported extent to which each of the barriers limited their participation. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all* to *a great deal*. The lightest purple boxes represent the viewers that indicated an item as being *not at all* a barrier to their participation (Table 27).

Groups that encourage participation in wildlife viewing

Social support or the resources either perceived or provided, by friends, family, mentors, peers, and other groups. (Gottlieb & Bergen, 2010), is linked to sustained higher levels of participation in outdoor recreation. For example, birders who have a friend or relative who also birds spend more time birding and have more birding knowledge than those who do not (Rutter et al., 2021; Schoffman et al. 2015). To further understand mechanisms of social support for wildlife viewing, we asked our respondents to what extent family, friends, peers, and mentors encourage their participation, with response options ranging from 1 (*not at all*) to 5 (*a great deal*). Respondents indicated that family provided the greatest extent of encouragement to participate, with 78% indicating that family members encouraged their wildlife viewing *somewhat*, *quite a bit*, or *a great deal*. This was followed by friends at 63%, peers at 52%, and mentors at 41%. Respondents relied on social support from mentors the least out of all four

groups, with 45% of all respondents indicating that mentors did not encourage their participation at all.

Chi-square tests only indicated that the extent of perceived social support between consumptive and nonconsumptive varied significantly for mentors ($\chi^2 = 18.14$, $df = 4$, $p < .001$). More nonconsumptive viewers reported feeling as though mentors did not encourage their participation in wildlife viewing at all (54% *not at all*) than consumptive viewers (39% *not at all*). There was no significant difference in the perceived support from family members, friends, and peers when comparing consumptive and nonconsumptive viewers (Tables 28-31; Figures 38-39).

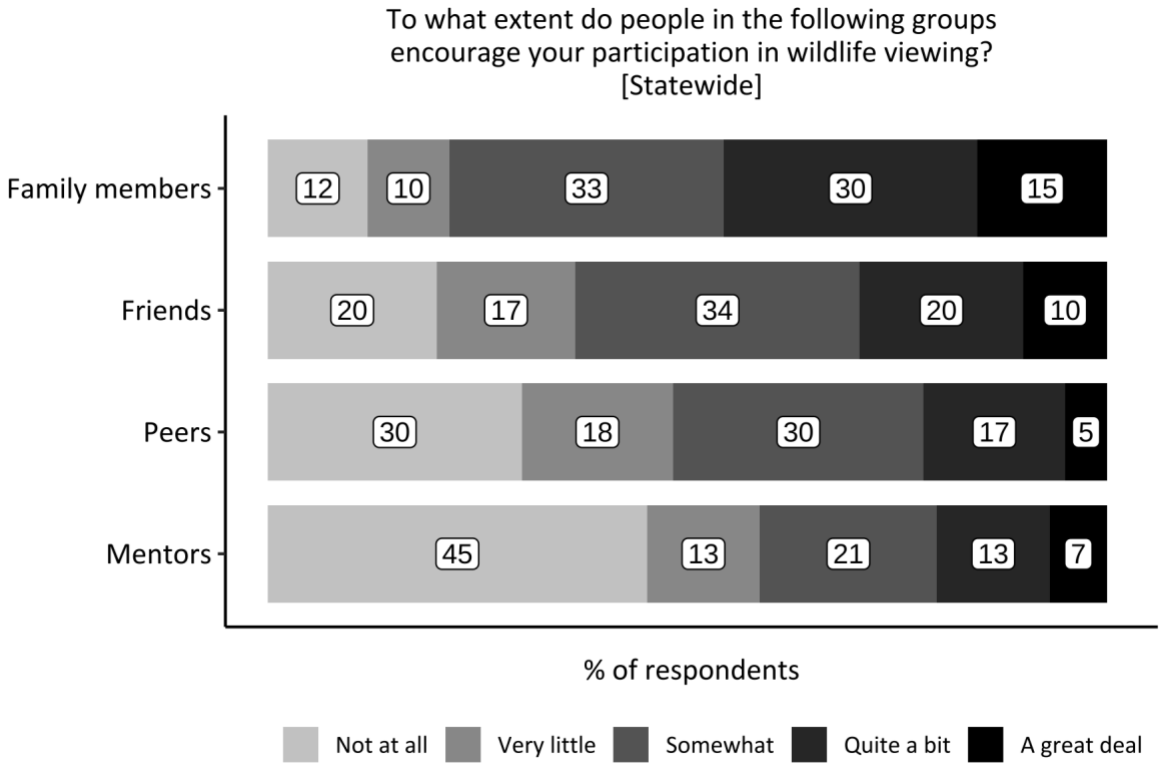

Figure 37: Groups that encourage viewing, statewide sample
The degree to which wildlife viewers at the statewide level feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest shade of gray represents viewers that indicated the least amount of social support: *not at all* (Tables 28-31).

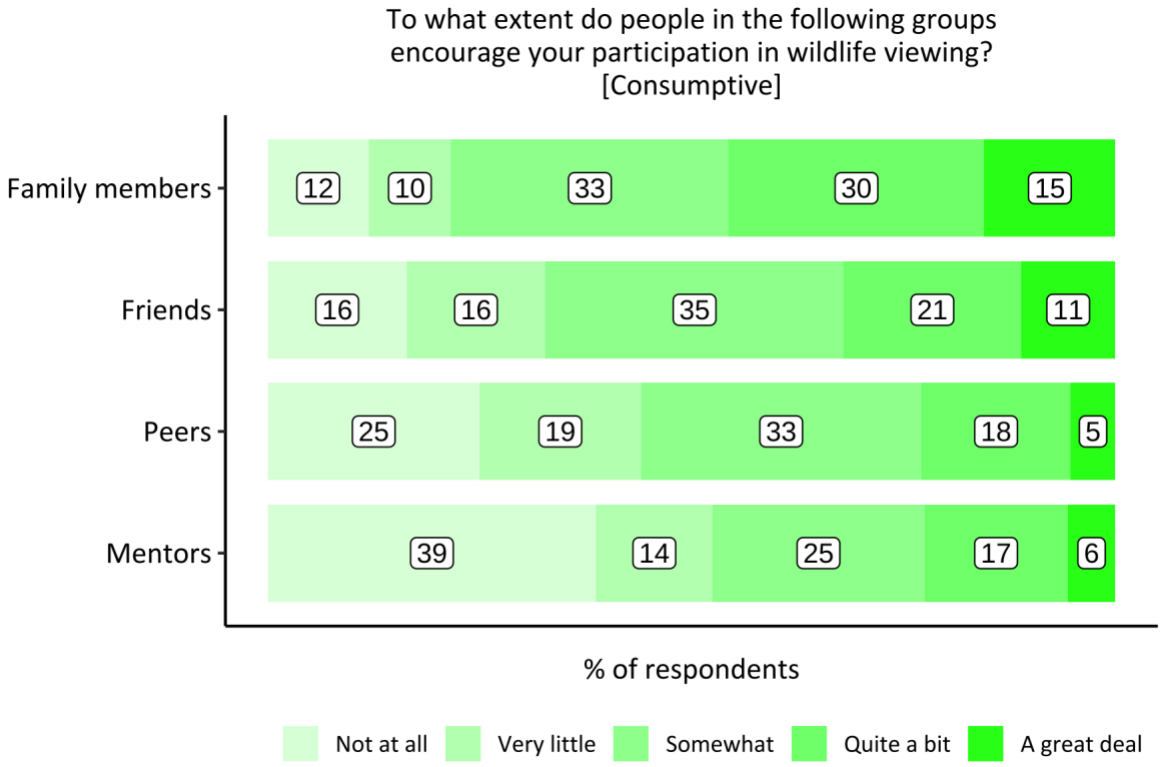

Figure 38: Groups that encourage viewing, consumptive respondents
The degree to which consumptive wildlife viewers in Idaho feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest shade of gray represents viewers that indicated the least amount of social support: *not at all* (Tables 28-31).

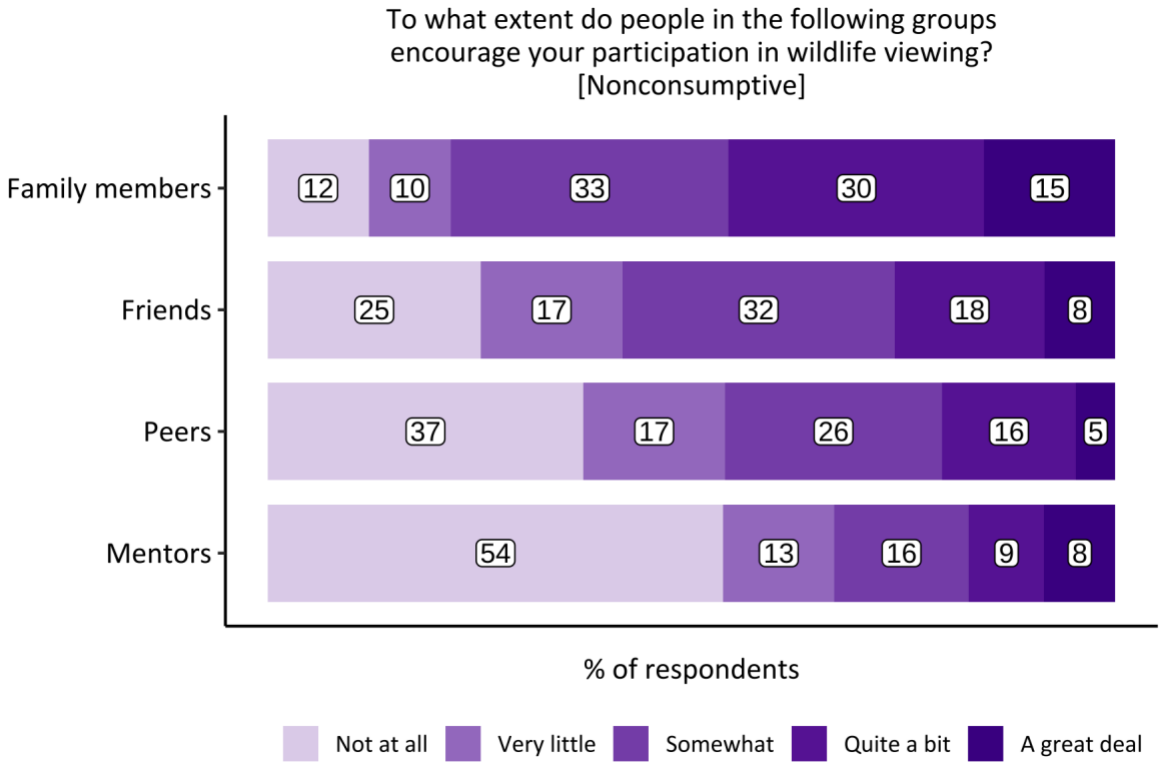

Figure 39: Groups that encourage viewing, nonconsumptive respondents
The degree to which nonconsumptive wildlife viewers in Idaho feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest shade of purple represents viewers that indicated the least amount of social support: *not at all* (Tables 28-31).

Accessibility and wildlife viewing

According to the Centers for Disease Control, 26% of American adults experience some type of disability (CDC, 2020). Historically, surveys and planning efforts for wildlife viewing have largely overlooked the needs and concerns of wildlife viewers with disabilities, beyond achieving Americans with Disabilities Act compliance (Michopoulou et al., 2015; Williams et al., 2004). As people with disabilities comprise a significant portion of the adult US population, we considered how this lack of focus on them impacts their wildlife viewing experience. To do so, we asked respondents about the extent to which they experience accessibility challenges related to wildlife viewing. We used a definition of the term "accessibility challenges" developed by Birdabilty (Rose & McGregor, 2021). Birdability defines accessibility challenges as:

> The difficulties someone experiences in interacting with or while using the physical or social environment while trying to engage in a meaningful activity (such as wildlife viewing). This may be a result of a mobility challenge, blindness or low vision,

intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing, or other health concerns.

In Idaho, 37% of wildlife viewers experience *somewhat*, *quite a bit*, or *a great deal* of accessibility challenges when wildlife viewing (Table 32; Figure 40). A chi-square test with *quite a bit* and *a great deal* combined (due to low sample size for the *a great deal* category) indicated no statistically significant differences in the experience of accessibility challenges for consumptive and nonconsumptive viewers ($\chi^2 = 3.85$, $df = 3$, $p = .28$; Table 32; Figure 40).

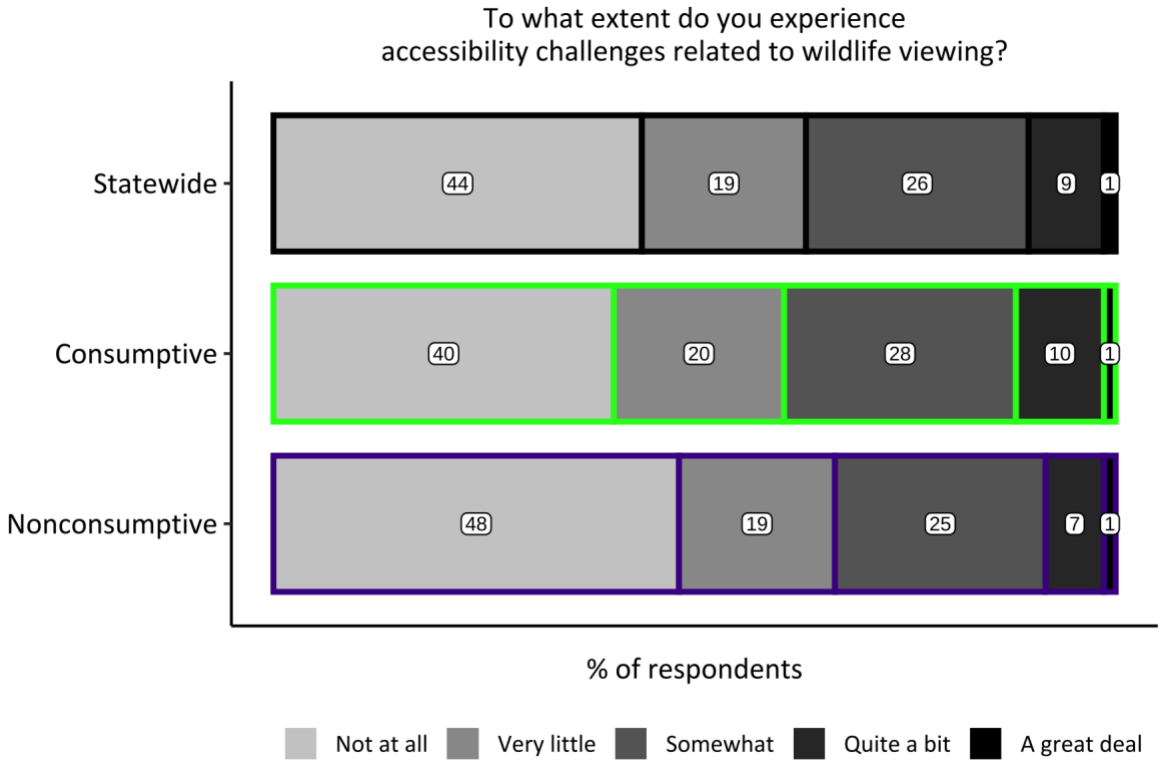

Figure 40: Accessibility challenges and wildlife viewing, all respondents
Wildlife viewers' extent to which they experience accessibility challenges for statewide and consumptive-nonconsumptive groups. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all* to *a great deal*. A chi-square test indicated no statistically significant difference in the experience of accessibility challenges for consumptive and nonconsumptive viewers (Table 32).

Familiarity

An individual's familiarity with an organization or entity may serve as an indicator of likelihood to contribute financially and a metric of that individual's perception of the entity (Katz, 2017). As state agencies endeavor to increase their engagement with a broader constituency (AFWA & WMI, 2016), familiarity may serve as an important indicator in measuring viewers' relationships with agencies and likelihood to provide financial support (Grooms, 2021; Katz,

2017).Consumptive viewers such as hunters and anglers may have more interaction with state fish and wildlife agencies due to permitting and license regulations (Grooms, 2021).

We utilized a variety of questions to thoroughly examine familiarity. We first asked wildlife viewers to indicate their level of familiarity with IDFG, with five unipolar options ranging from *not at all familiar* to *extremely familiar.* Most wildlife viewers were *slightly* or *moderately* familiar with IDFG (60%). Only 8.5% of respondents were *extremely familiar* with IDFG and 7.6% were not familiar with the agency at all (Table 33; Figure 41). A chi-square test indicated a statistically significant difference in familiarity with IDFG when comparing consumptive and nonconsumptive viewers ($\chi^2 = 39.77$, $df = 4$, $p < .001$; Table 33; Figure 41). More nonconsumptive viewers indicated they were *not at all familiar* or only *slightly familiar* with IDFG (44%) than consumptive viewers (24%).

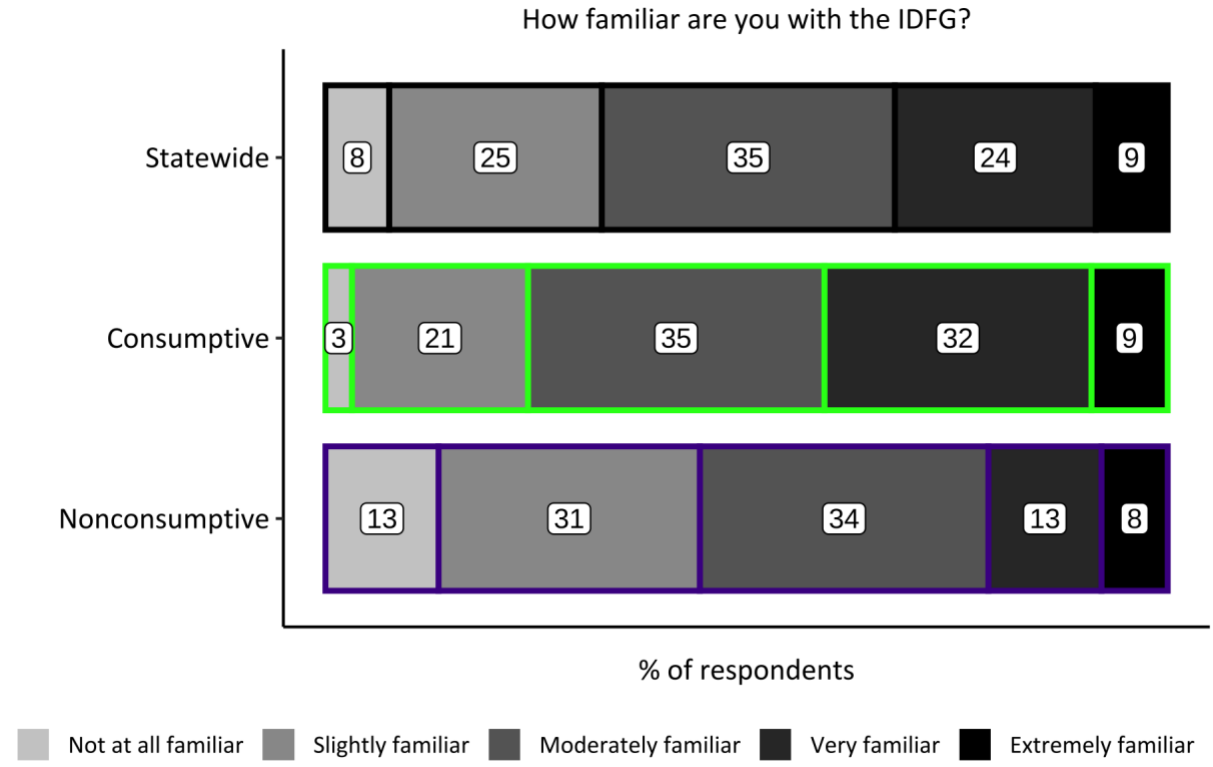

Figure 41: Familiarity with IDFG, all respondents
Wildlife viewers' self-reported level of familiarity with IDFG for statewide and consumptive-nonconsumptive groups. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all familiar* to *extremely familiar*. A chi-square test indicated a statistically significant difference in familiarity with the IDFG for consumptive and nonconsumptive viewers (Table 33).

Next, we investigated specific aspects of familiarity, specifically familiarity with IDFG staff, programs, lands, and mission. We found that 64% of respondents reported being *not at all* or

slightly familiar with IDFG staff (Figure 42). The majority of respondents reported *slightly* or *moderately* familiarity with IDFG programs (61%) and IDFG lands (58%). About half of all respondents (53%) reported being *not at all* or *slightly* familiar with the IDFG mission. Respondents were most familiar with IDFG lands, with 27% reporting they were *very* or *extremely familiar*.

Chi-square tests indicated highly statistically significant differences in familiarity between consumptive and nonconsumptive viewers for all four characteristics of IDFG (Tables 34-37; Figure 42). In all cases, nonconsumptive viewers were more likely to be *not at all familiar* with state agency lands, programs, staff, and mission than consumptive viewers. Indeed, about half of all nonconsumptive viewers, 52%, were *not at all familiar* with IDFG staff.

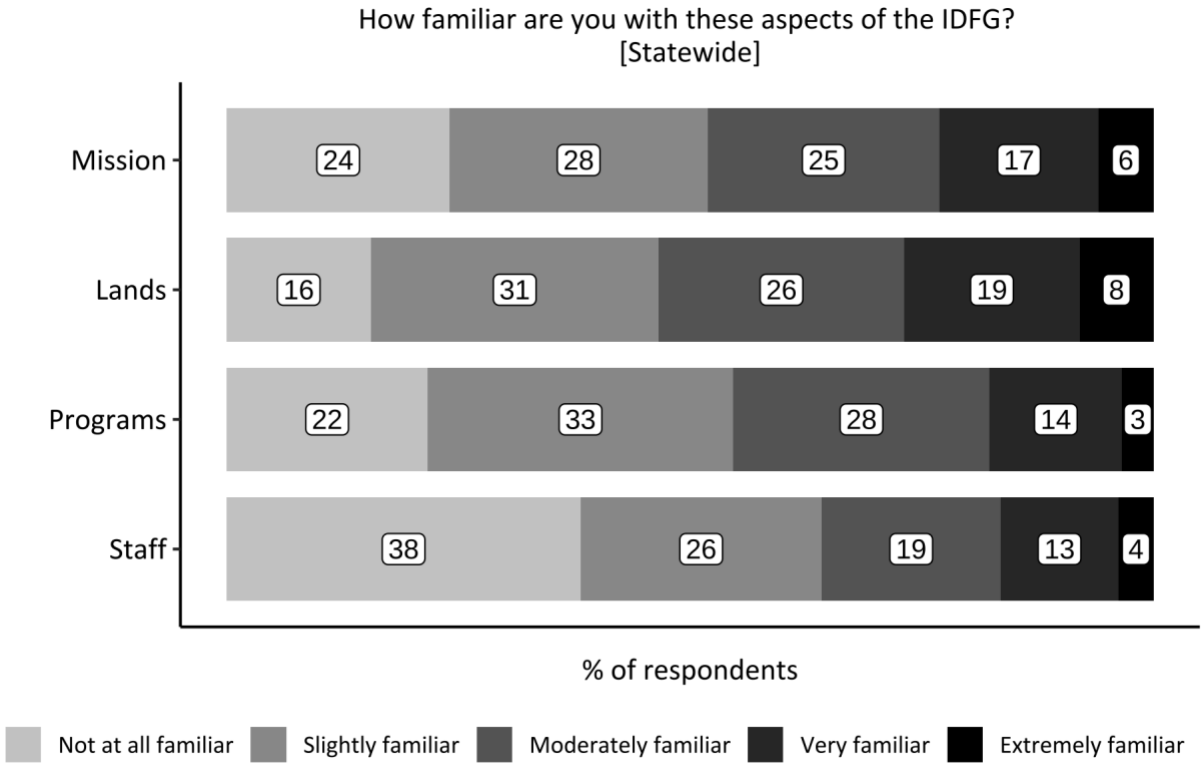

Figure 42: Familiarity with different aspects of IDFG, statewide sample
Wildlife viewers' self-reported level of familiarity with specific aspects of IDFG (mission, lands, programs, and staff) at the statewide level. Blocks represent the percentage of respondents who fell into each of the five categories: *not at all familiar* to *extremely familiar* (Tables 33-37).

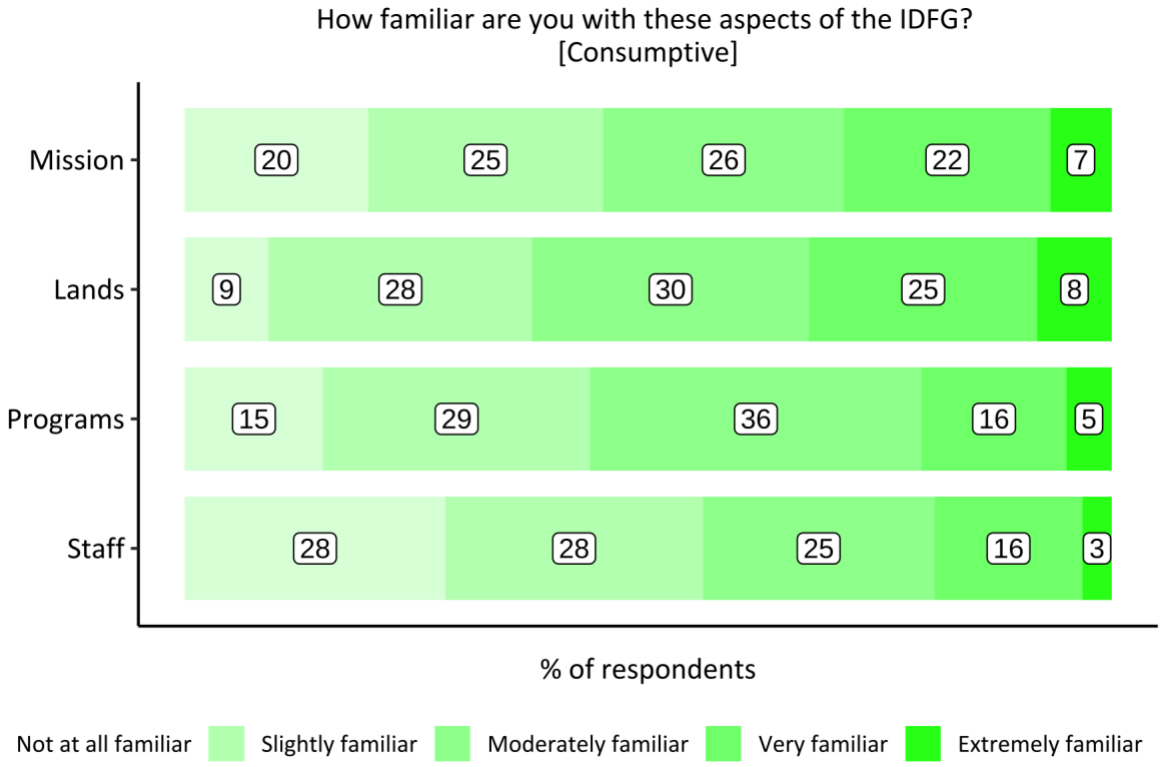

Figure 43: Familiarity with different aspects of IDFG, consumptive respondents
Consumptive wildlife viewers' self-reported level of familiarity with specific aspects of IDFG (mission, lands, programs, and staff). Blocks represent the percentage of respondents who fell into each of the five categories: *not at all familiar* to *extremely familiar* (Tables 33-37).

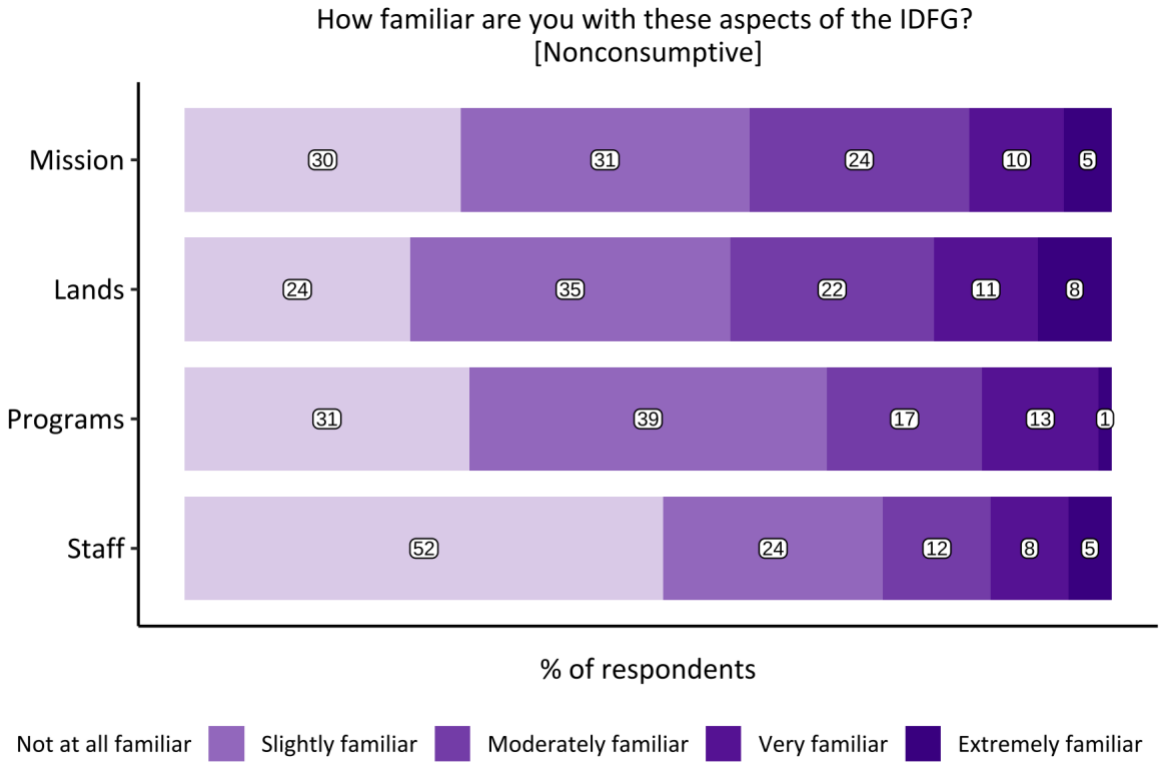

Figure 44: Familiarity with different aspects of IDFG, nonconsumptive respondents
Nonconsumptive wildlife viewers' self-reported level of familiarity with specific aspects of IDFG (mission, lands, programs, and staff). Blocks represent the percentage of respondents who fell into each of the five categories: *not at all familiar* to *extremely familiar* (Tables 33-37).

As our final measure of familiarity, we utilized a logo recognition question (Van Grinsven & Das, 2016). We asked respondents, "Have you seen this logo before?", accompanied with an image of the IDFG logo. Statewide, 90% of respondents indicated "Yes, I have seen this logo before." A chi-square test indicated that significantly more consumptive viewers (96%) than nonconsumptive viewers (82%) had seen the IDFG logo before ($\chi^2 = 26.67$, $df = 1$, $p < .001$; Table 38; Figure 45).

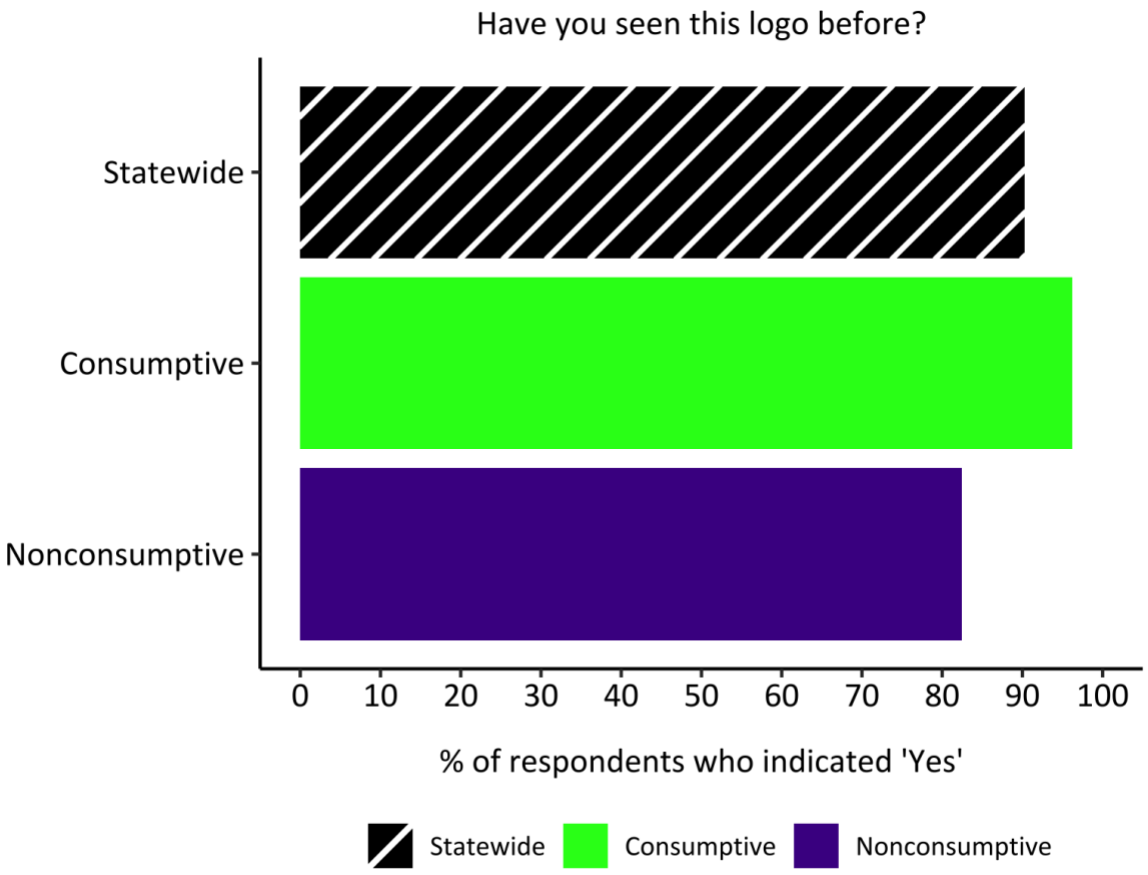

Figure 45: IDFG Logo recognition, all respondents
Wildlife viewers' recognition of the IDFG logo for statewide and consumptive-nonconsumptive groups. Bars indicate the percentage of respondents who indicated "Yes, I have seen this logo before." A chi-square test indicated that significantly more consumptive viewers than nonconsumptive viewers had seen the IDFG logo before than nonconsumptive viewers (Table 38).

Perception of state agency prioritization of programs and services for wildlife viewing

To further examine perceptions of IDFG, we examined viewers' thoughts on IDFG's prioritization of programs and services that support wildlife viewing. In previous research in Virginia, no differences between birder-viewers and hunter-anglers were found when comparing the prioritization of programs and services that support wildlife viewing (Grooms et al., 2021). The majority of both consumptive and nonconsumptive viewers felt that the agency was giving about the right level of prioritization to programs and services that support wildlife viewers, followed by about a quarter who thought that it was not high enough. In this survey, we evaluated respondents' perceptions of IDFG by examining how wildlife viewers perceive the level of prioritization the state agency places on programs and services that support wildlife viewing. We provided respondents with a five-point bipolar scale ranging from 1 (*far too low*) to 5 (*far too high*), with *about right* as the middle third option and a sixth option of "I don't have

an opinion" which 15% (*n* = 74) of respondents from the statewide level selected and were treated as missing values in the following analysis.

The majority of respondents in Idaho reported that they felt the level of prioritization of programs and services for wildlife viewing was *about right* (66%). About a quarter of respondents (27%) reported the level of prioritization was *too low* or *far too low*, indicating interest in seeing additional efforts from state agencies to support wildlife viewing. Only 6.3% of respondents felt that the level of prioritization was *too high* or *far too high*.

A chi-square test with three categories (*far too low* and *too low*, *just right*, *too high* and *far too high*) categories found a significant difference between consumptive and nonconsumptive viewers' perception of state agency prioritization ($\chi^2 = 7.25$, $df = 2$, $p = .03$). Fewer nonconsumptive viewers (61%) indicated that the prioritization level is *about right* in comparison to consumptive viewers (71%; Table 39B; Figure 46).

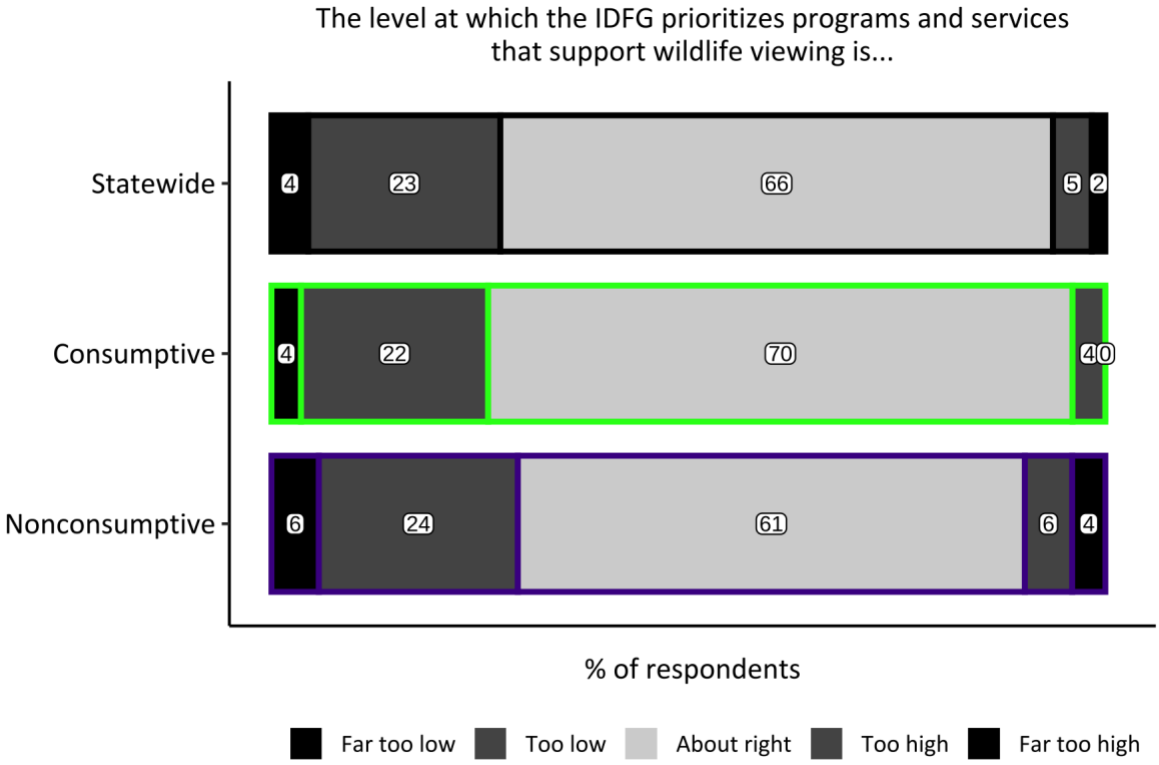

Figure 46: Perception of IDFG prioritization of programs and services for wildlife viewing, all respondents
Wildlife viewers' perception of IDFG's prioritization of programs and services for wildlife viewing for statewide and consumptive-nonconsumptive groups. Blocks represent the percentage of respondents who fell into each of the five categories: *far too low* to *far too high*. The lightest shade of gray indicates the percentage of respondents who felt the level of prioritization was *about right*. A chi-square test with three categories indicated that the difference between the perceived level of prioritization of consumptive and nonconsumptive viewers was statistically significant (Table 39).

Experiences with state agency programs and services

We further explored wildlife viewer relationships with IDFG by asking which state agency programs and services they had engaged with in the past five years. This list was modified by state agency representatives from Idaho to reflect the items offered by IDFG. Three possible options were not presented to respondents in Idaho as state agency representatives indicated that these were not currently available from IDFG: programs or presentations for groups or clubs, wildlife festivals or viewing competitions sponsored by IDFG, and live-stream wildlife cameras. A ninth option, "I have not used or engaged in any of these agency programs and services in the last five years," was provided, which was selected by 39% of all survey respondents in Idaho.

Of the remaining 61% of respondents who reported utilizing at least one agency program and service, 26% selected only one response option. Wildlife viewers in Idaho most commonly used information provided by IDFG, including information about wildlife in the state (38%) and information about wildlife viewing opportunities in the state (27%). The second most used agency service was IDFG lands (30%) and visitor or education centers (28%). The least used agency programs were volunteer data collection (9.9%) and conservation law enforcement (8.3%).

Chi-square tests indicated statistically significant differences in experience with consumptive and nonconsumptive viewers for the majority of all IDFG programs and services with the exception of technical assistance or information about habitat between. In all remaining cases, consumptive viewers were significantly more likely to have utilized the program or service than nonconsumptive viewers (Table 40; Figure 47). In addition, significantly more nonconsumptive viewers (51%) reported not utilizing any agency program or service in comparison to consumptive viewers (30%).

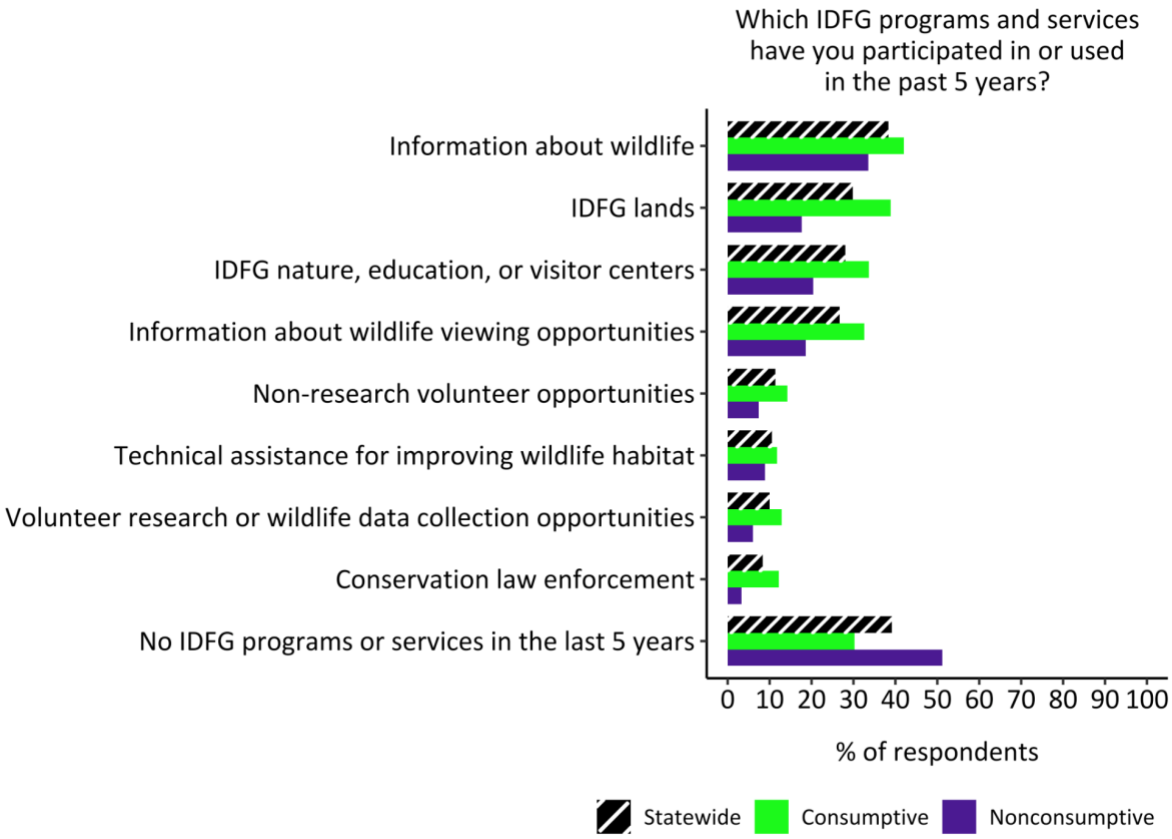

Figure 47: Experience with IDFG programs and services, all respondents
IDFG programs and services utilized by wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect which programs and services they utilized. Chi-square tests indicated statistically significant differences in participation for consumptive and nonconsumptive viewers for information about wildlife, IDFG lands, IDFG visitor or education centers, information about wildlife viewing opportunities, other volunteer opportunities not related to data collection, volunteer data collection, conservation law enforcement, or no experience with programs or services (Table 40).

Programs and services for children and youth

A follow-up question asked wildlife viewers if children or youth in their household had engaged in any IDFG programming, such as school-based programs, camps, or youth and family events. Respondents were provided with three options: "Yes, children or youth in my household have engaged in some of these programs," "No, children or youth in my household have not engaged in any of these programs," and "Not applicable." Over half (55%) of respondents reported the question was not applicable. Less than half of all respondents who had youth or children in their household reported them engaging in agency programs and services (45%; Table 41; Figure 48). A chi-square test indicated that, for respondents with children or youth in their household, consumptive wildlife viewers (50% indicating 'yes') were significantly more likely to

have children or youth who engaged in IDFG programming in comparison to nonconsumptive viewers (35% indicating 'yes'; $\chi^2 = 4.37$, $df = 1$, $p = .04$; Table 41; Figure 48).

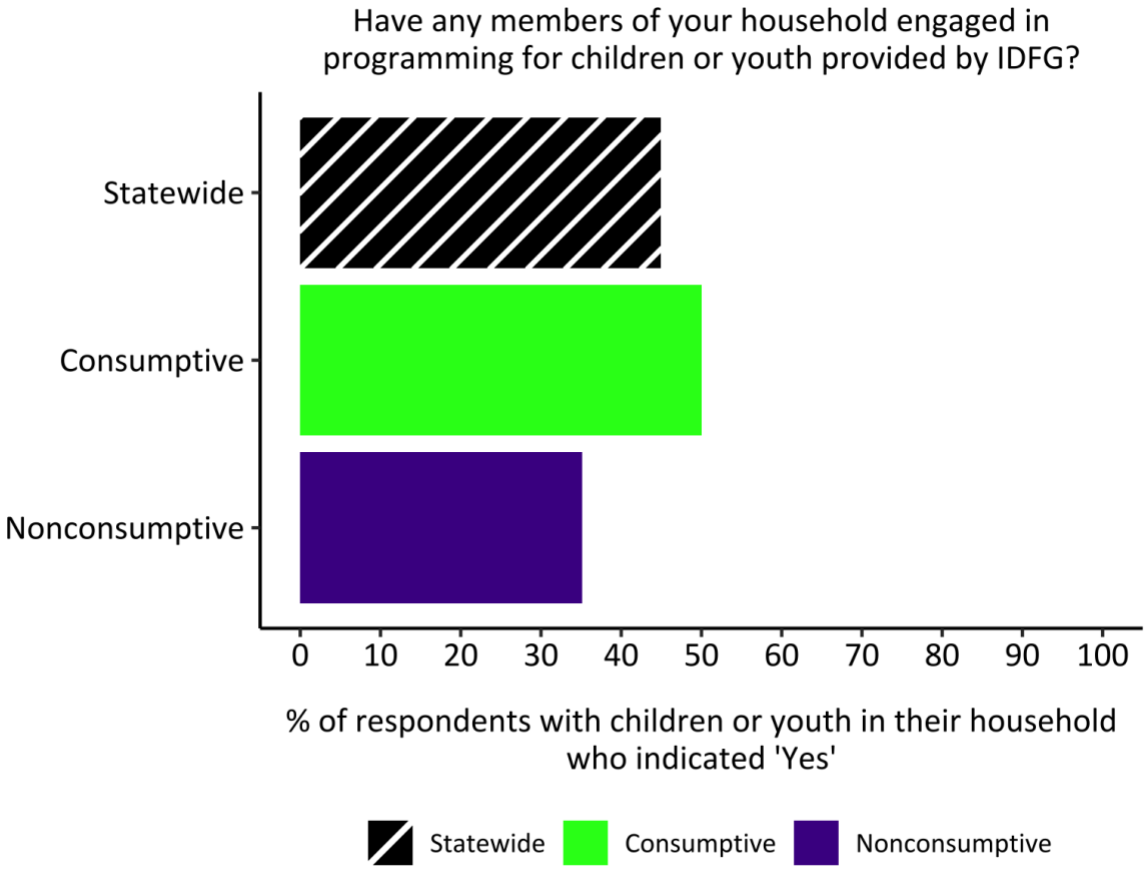

Figure 48: Experience with programs and services for youth, all respondents.
Wildlife viewers' engagement with IDFG youth programming for statewide and consumptive-nonconsumptive groups. Respondents without children or youth in their household are excluded. Bars represent the percentage of respondents with children or youth in their household who indicated "Yes; children or youth in my household have engaged in some of these programs." A chi-square test indicated that, for respondents with children or youth in their household, consumptive wildlife viewers were significantly more likely to have engaged in IDFG programming in comparison to nonconsumptive viewers (Table 41).

Trust

Trust is defined as the willingness to "accept vulnerability to the actions of the trusted party," meaning an individual expects an entity or agency to fulfill a task or action (Gefen, 2002). Past research indicates that Americans are more trusting of their state fish and wildlife agencies than local, federal governments, and elected officials (Manfredo et al., 2018). Birders specifically are twice as trusting of state agencies and federal wildlife and land management agencies than elected officials (NAWMP, 2021).

As an overall measure of trust, we first asked wildlife viewers to indicate their trust in 1) their state agency as an entity and 2) the staff at their state agency. For trust in the state agency as an entity and state agency staff, we measured trust on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The mean level of trust in the agency was 3.93 ± 0.04, which, on our scale, nearly corresponds to *slightly agree* (4). Similarly, trust in agency staff was 3.89 ± 0.04. When comparing consumptive and nonconsumptive viewers, t-tests indicated no statistically significant differences for mean levels of trust in IDFG and IDFG staff (Table 42; Figures 49-50).

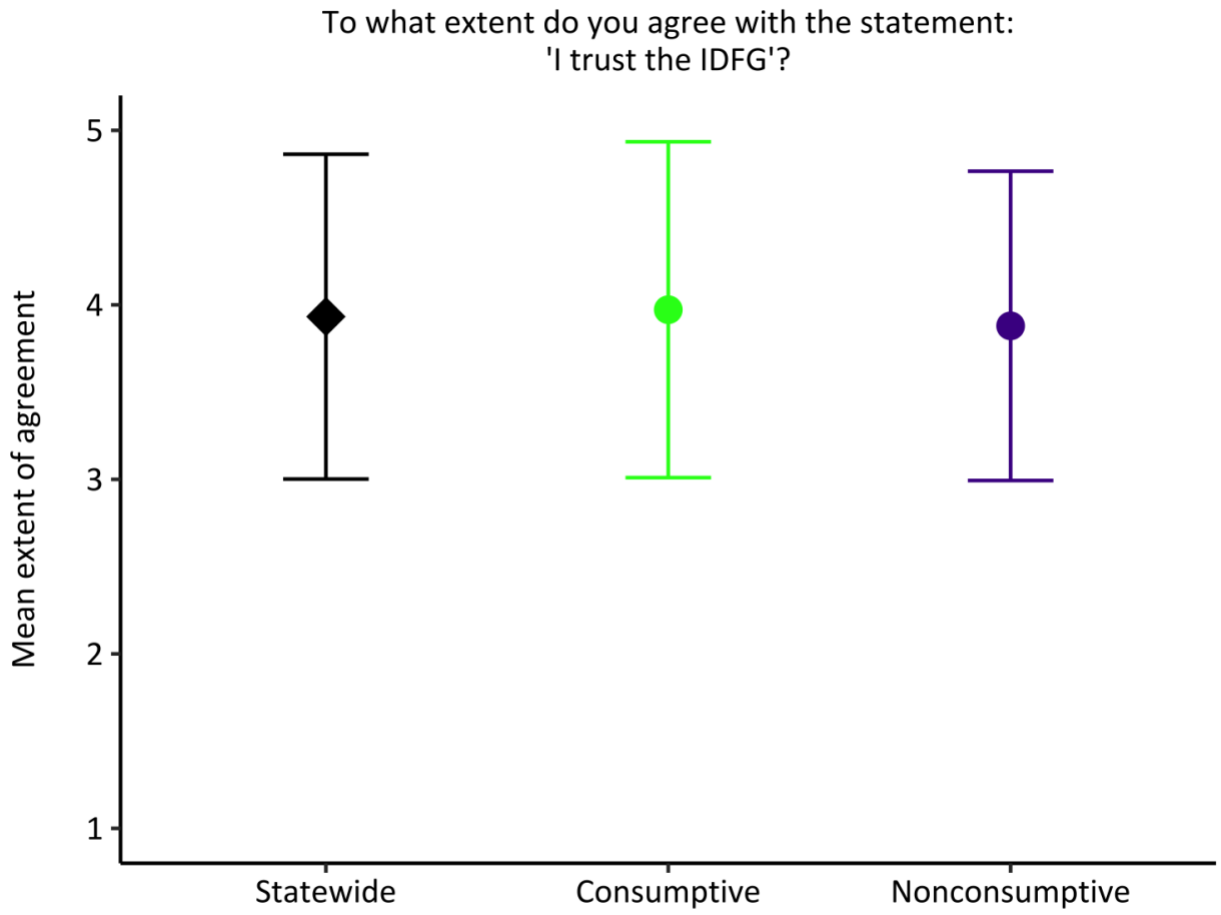

Figure 49: Mean trust in IDFG, all respondents

The mean extent to which wildlife viewers in Idaho agree with the statement "I trust the Idaho Department of Fish and Game" on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Points (diamond for statewide group, circles for consumptive-nonconsumptive group) indicate the mean extent of agreement on a 5-point scale and error bars indicate one standard deviation. A t-test indicated no statistically significant difference in the mean level of trust in IDFG as an entity for consumptive and nonconsumptive wildlife viewers (Table 42).

Figure 50: Mean trust in IDFG staff, all respondents
The mean extent to which wildlife viewers in Idaho agree with the statement "I trust Idaho Department of Fish and Game staff" on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Points (diamond for statewide group, circles for consumptive-nonconsumptive group) indicate the mean extent of agreement on a 5-point scale and error bars indicate one standard deviation. A t-test indicated no statistically significant difference in the mean level of trust in IDFG staff for consumptive and nonconsumptive wildlife viewers (Table 42).

Then we measured three aspects of trust according to Gefen (2002): benevolence, capability, and integrity. In our survey, we included 12 items asking wildlife viewers to indicate "the extent to which they agreed with the following statements." Three of these items were reverse-coded attention checks and removed from analysis. The remaining nine items were dedicated to each of the three components of the Gefen Trust Framework. Scales for each of the items were then computed as averages from each of the three items, with a final "Gefen Trust Score" computed as the average of all nine items (Cronbach's $\alpha = .91$). The first component, benevolence, included three statements: "I expect that Idaho's Department of Fish and Game intentions are benevolent," "I expect that Idaho's Department of Fish and Game is well meaning," and "I expect that Idaho's Department of Fish and Game has good intentions toward viewers."

Benevolence had a mean extent of agreement score of 3.92 ± 0.03 out of 5, which, on our scale, nearly corresponds to *slightly agree* (4). The second component, capability, included three statements: "Idaho Department of Fish and Game understands the environment they work in," "Idaho Department of Fish and Game knows about wildlife viewing," and "Idaho Department of Fish and Game knows how to support wildlife viewing." Our capability measure had a mean extent of agreement score of 4.04 ± 0.03, which, on our scale, nearly corresponds to *slightly agree* (4). The final component, integrity, included three statements: "I do not doubt the honesty of Idaho's Department of Fish and Game," "I expect that Idaho Department of Fish and Game will keep the promises they make," and "Promises made by Idaho Department of Fish and Game are likely to be reliable." This item had the lowest mean extent of agreement score of the three Gefen components: 3.31 ± 0.02 which, on our scale, most closely corresponds to *neither agree nor disagree* (3). T-tests indicated no statistically significant differences in any of the Gefen trust scores when comparing consumptive and nonconsumptive viewers (Table 42; Figures 51-53).

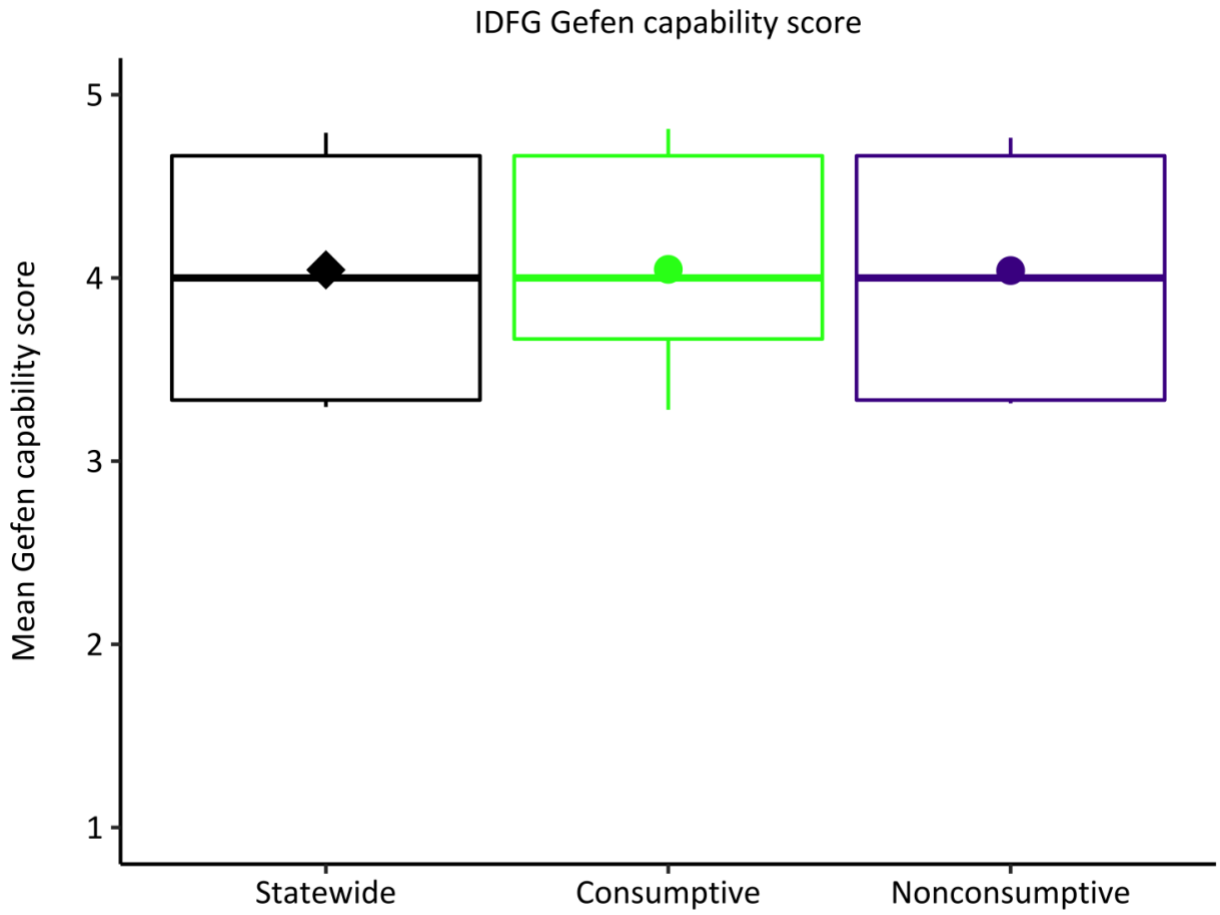

Figure 51: Gefen capability score, all respondents
Boxplots (median and interquartile ranges within the boxes) showing the differences in wildlife viewers' mean Gefen capability score on a 5-point scale. Points represent the mean Gefen capability measure (diamond for statewide group, circles for consumptive-nonconsumptive group) calculated as the mean of respondents' extent of agreement with three statements about the capability of the state agency on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). A t-test indicated no statistically significant differences in the Gefen capability score of consumptive and nonconsumptive viewers (Table 42).

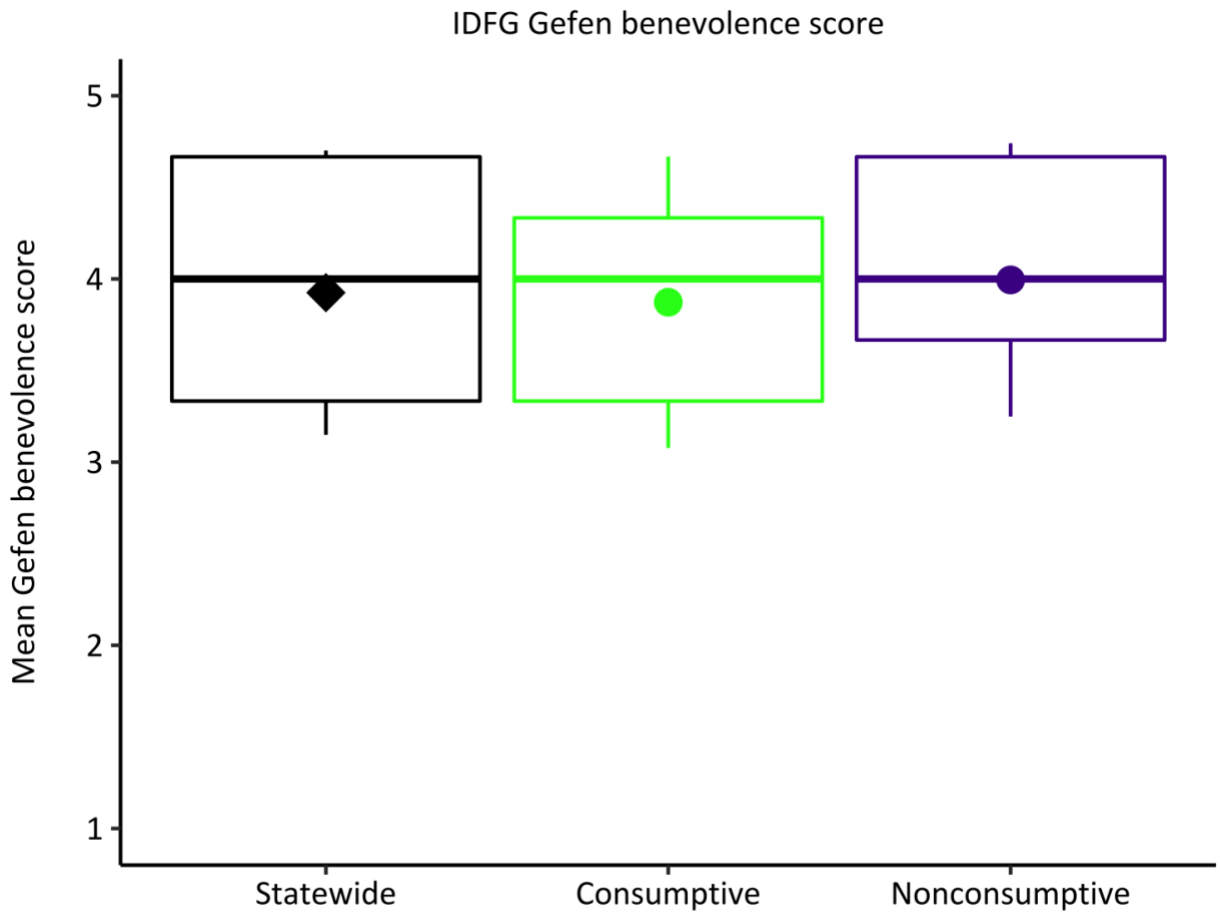

Figure 52: Gefen benevolence score, all respondents

Boxplots (median and interquartile ranges within the boxes) showing the differences in wildlife viewers' mean Gefen benevolence score on a 5-point scale. Points represent the mean Gefen capability measure (diamond for statewide group, circles for consumptive-nonconsumptive group) calculated as the mean of respondents' extent of agreement with three statements about the benevolence of the state agency on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). A t-test indicated no statistically significant differences in the Gefen benevolence score of consumptive and nonconsumptive viewers (Table 42).

Figure 53: Gefen integrity score, all respondents
Boxplots (median and interquartile ranges within the boxes) showing the differences in wildlife viewers' mean Gefen integrity score on a 5-point scale. Points represent the mean Gefen integrity measure (diamond for statewide group, circles for consumptive-nonconsumptive group) calculated as the mean of respondents' extent of agreement with three statements about the capability of the state agency on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). A t-test indicated no statistically significant differences in the Gefen integrity score of consumptive and nonconsumptive viewers (Table 42).

Past purchases and contributions

State agencies are closely tied to their constituency for funding to support programming and conservation (Grooms et al., 2021). Historically, state agencies relied heavily on hunters and anglers to support these efforts, partially through the North American Model of Conservation (Price Tack et al., 2015). As participation in wildlife viewing continues to grow, it is important to understand the mechanisms viewers use to financially support state agencies, as they may be different from the traditional hunter and angler constituency. In this section of the survey, we asked viewers how they had financially contributed to their state fish and wildlife agencies through a variety of expenditures or purchases. The literature shows that wildlife viewers are

both conservationists (Cooper et al., 2015) and interested in supporting their state agencies financially; however, few funding avenues exist for wildlife viewers to contribute directly to state agencies (Grooms et al., 2021).

We developed a list of 13 purchases or contributions and asked wildlife viewers to select all that they made in the last five years. Based on input from IDFG we removed the following options: IDFG conservation or habitat stamp required with purchase of a hunting license, IDFG conservation or habitat stamp voluntarily purchased independent of a hunting license, IDFG lands access pass, permit, or entrance fee, fees for a program or event hosted by IDFG, lottery ticket for which the proceeds go to habitat conservation, virtual products from IDFG (such as podcasts, e-books, and other online materials). A 14th, mutually exclusive option, "I have not made any of these purchases or contributions" was also provided, which 29% of respondents selected (Table 43). A chi-square test indicated that significantly far more nonconsumptive viewers (51%) had not made any purchases or contributions in the past five years in comparison to consumptive viewers (12%; $\chi^2 = 95.98$, $df = 1$, $p < .001$; Table 43). Due to a programming error, conservation or wildlife license plates were not included in the list despite being currently available in Idaho. In our nationwide survey of wildlife viewers, we found that 13% of respondents in the Western United States, including respondents from Idaho, had purchased a conservation or wildlife license plate in the past five years (Sinkular et al. 2022). For analysis purposes, we further split the contributions into voluntary (contributions made as a donation) and nonvoluntary (contributions required in order to receive access to an area or activity) (as in Grooms et al., 2021). Understanding preferences towards voluntary and nonvoluntary funding mechanisms may aid state agencies in developing targeted strategies for increasing contributions from wildlife viewers.

First, we examined what nonvoluntary funding mechanisms wildlife viewers utilized, specifically any IDFG fishing licensee and any IDFG hunting license. The highest proportion of wildlife viewers reported contributing through any IDFG fishing license (56%). This pattern held for both consumptive and nonconsumptive viewers. About 28% of wildlife viewers statewide had purchased any IDFG hunting license in the past five years. Chi-square tests indicated highly statistically significant differences when comparing the purchase of a hunting or fishing license by consumptive and nonconsumptive viewers. More consumptive viewers purchased fishing (80%) or hunting (42%) licenses than nonconsumptive viewers, but nonconsumptive viewers still reported purchasing hunting (10%) and fishing (25%) licenses (Table 43; Figure 54).

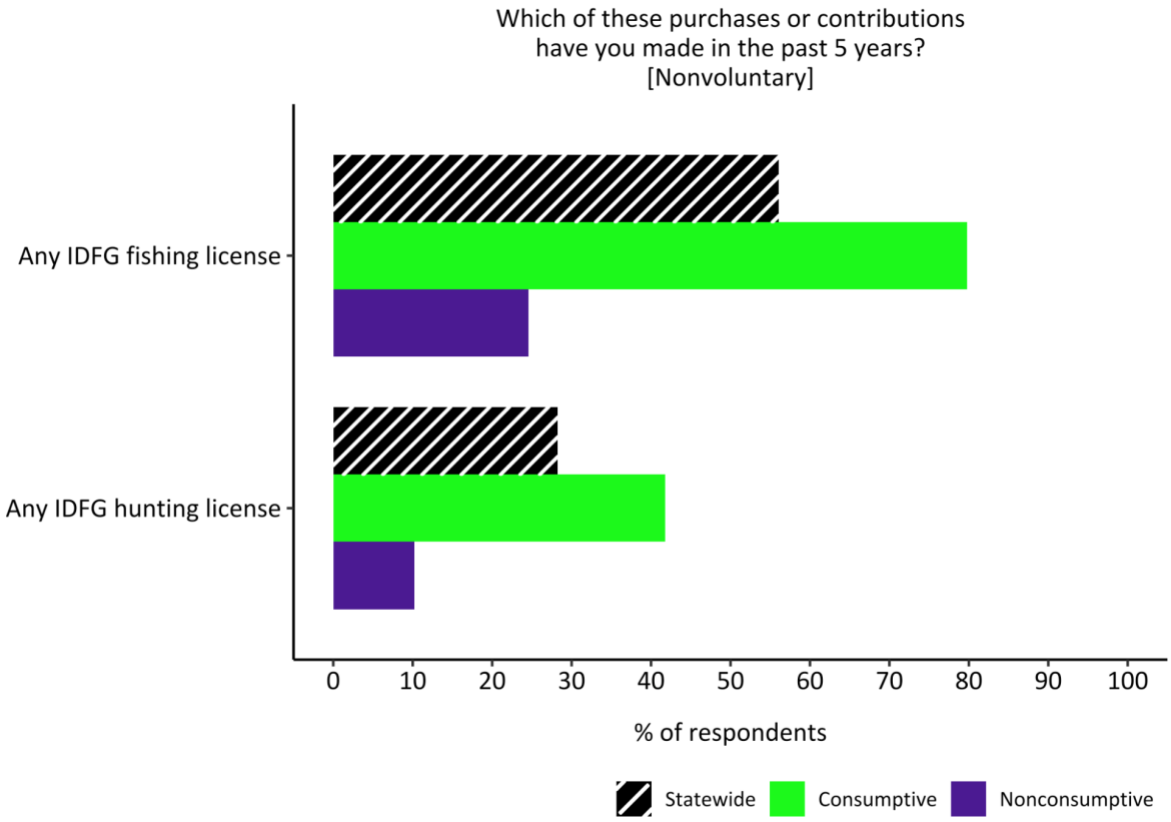

Figure 54: Past nonvoluntary financial contributions to IDFG, all respondents
Nonvoluntary purchases or contributions made towards IDFG in the past five years by wildlife viewers in Idaho in statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their contributions. Chi-square tests indicated highly statistically significant differences when comparing past purchases of fishing and hunting licenses of consumptive and nonconsumptive viewers (Table 43).

Next, we examined voluntary mechanisms of contribution. The most common voluntary mechanism was the purchase of a tangible product (such as books, maps, and other merchandise, 23%). Next, 15% of respondents reported contributing through a voluntary donation of a portion of state income tax return to IDFG. Wildlife viewers least commonly reported contributing to their state agencies through donation of land to IDFG through a conservation easement, with only 8.3% of respondents indicating they had contributed through this method. Chi-square tests indicated significant differences for two voluntary mechanisms, with more consumptive viewers contributing through tangible products (such as books, maps, and other merchandise) and donation of a portion of state income tax return to IDFG (29% and 19%, respectively) than nonconsumptive viewers (15% and 12%, respectively; Table 43; Figure 55).

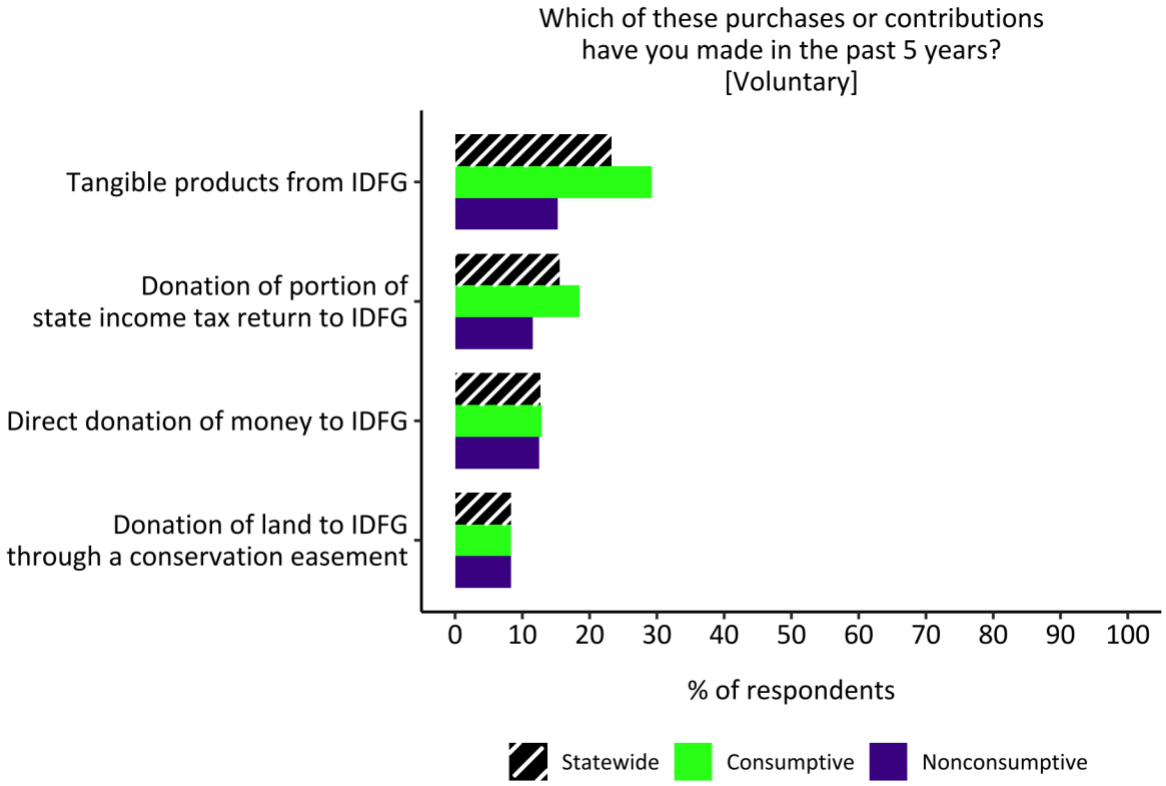

Figure 55: Past voluntary contributions to IDFG all respondents
Voluntary purchases or contributions made towards IDFG in the past five years by wildlife viewers in Idaho in statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their contributions. Chi-square tests indicated highly statistically significant differences when comparing past nonvoluntary purchases or contributions of consumptive and nonconsumptive viewers with regards to tangible products (such as books, maps, and other merchandise) and donation of a portion of state income tax return to IDFG.

Lifetime hunting and fishing licenses

If a respondent indicated that they purchased a lifetime hunting or fishing license, we used display logic to ask the question, "Have you purchased a lifetime hunting or fishing license?" Of the respondents in Idaho who indicated purchasing a hunting or fishing license (n = 297), 18% indicated purchasing a lifetime hunting or fishing license. A chi-square test indicated no statistically significant difference when comparing responses of consumptive (19%) and nonconsumptive viewers who had purchased hunting and fishing licenses (11%; χ^2 = 1.94, df = 1, p = .16 Table 44; Figure 56).

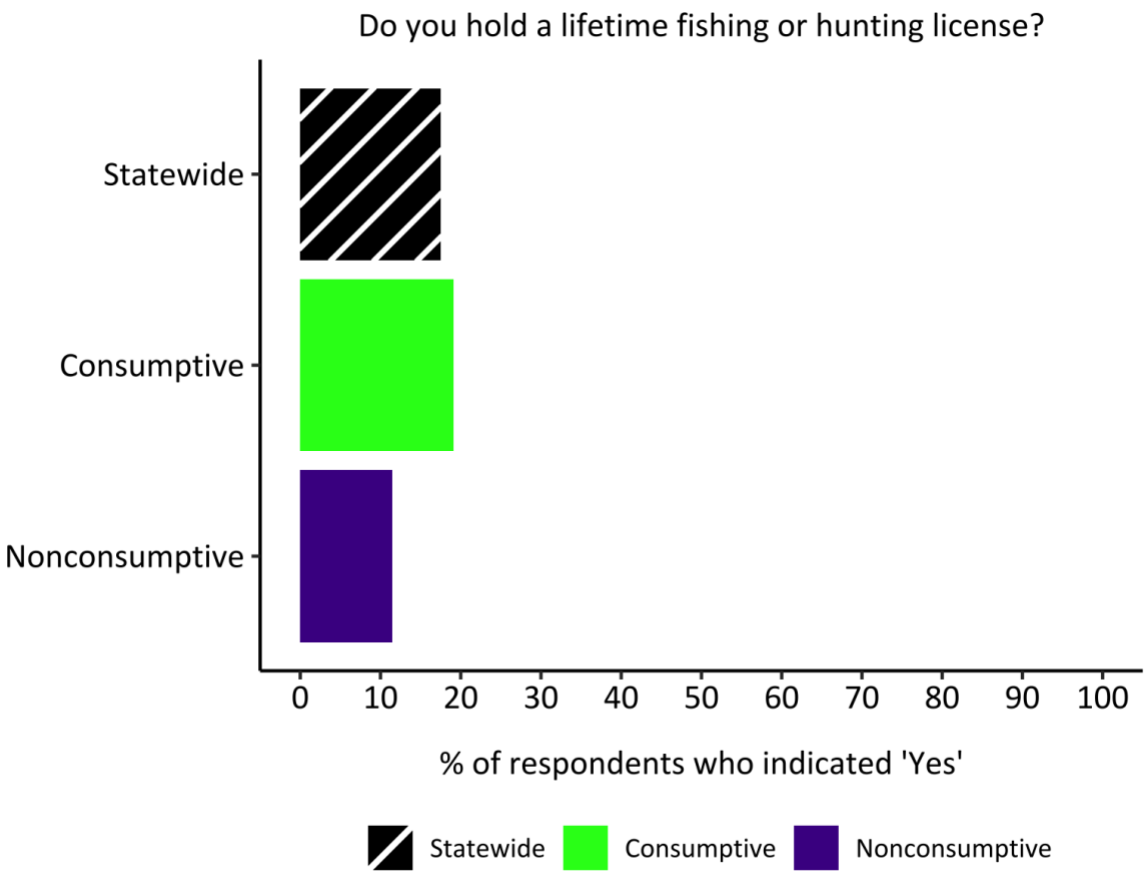

Figure 56: Lifetime hunting and fishing license, all respondents
Wildlife viewers in Idaho who indicated purchasing a hunting or fishing license (*n* = 297) that hold a lifetime license for statewide and consumptive-nonconsumptive groups. Bars represent the percentage of respondents who have purchased a hunting or fishing license in the past five years that indicated "Yes, I have a lifetime fishing or hunting license." A chi-square test indicated no statistically significant difference when comparing responses of consumptive and nonconsumptive viewers who had purchased hunting and fishing licenses (Table 44).

Future purchases and contributions

Next, we assessed the likelihood of respondents making any of the following purchases or expenditures in the upcoming five years with the question, "How likely are you to make the following purchases or contributions in the next 5 years, assuming these options are available in Idaho?" The question was similar to the previous item about past purchases, with the modification of a unipolar scale from 1 (*not at all likely*) to 5 (*extremely likely*). In addition, the hidden response options from the previous section (Idaho conservation or habitat stamp required with purchase of a hunting license, Idaho conservation or habitat stamp voluntarily purchased independent of a hunting license, IDFG lands access pass, permit, or entrance fee, fees for a program or event hosted by IDFG, lottery ticket for which the proceeds go to habitat conservation, virtual products from IDFG [such as podcasts, e-books, and other online

materials]) were included in this question in order to gauge wildlife viewers' likelihood to purchase these currently unavailable items if they were made available in the future.

First, we examined wildlife viewers' likelihood to financially contribute to IDFG via nonvoluntary funding mechanisms in the next five years. Well over half of respondents in Idaho indicated they were *moderately, very, or extremely likely* to purchase an IDFG lands access pass, permit, or entrance fee (69%) or fishing license (69%) in the next five years. Just less than half of respondents were also *moderately, very, or extremely likely* to contribute via a fee for a program or event (49%), hunting license (47%) or IDFG conservation or habitat stamp, required with the purchase of a hunting license (44%). Chi-square tests indicated statistically significant differences in the likelihood to contribute to IDFG financially in the future when comparing consumptive and nonconsumptive viewers for all nonvoluntary funding mechanisms, with far more nonconsumptive viewers indicating that they were *not at all likely* to purchase or contribute via any item (Table 46; Figure 59). For example, over half of nonconsumptive viewers reported that they were *not at all likely* to purchase any IDFG hunting license or IDFG required conservation or habitat stamp (Table 46; Figure 58-59).

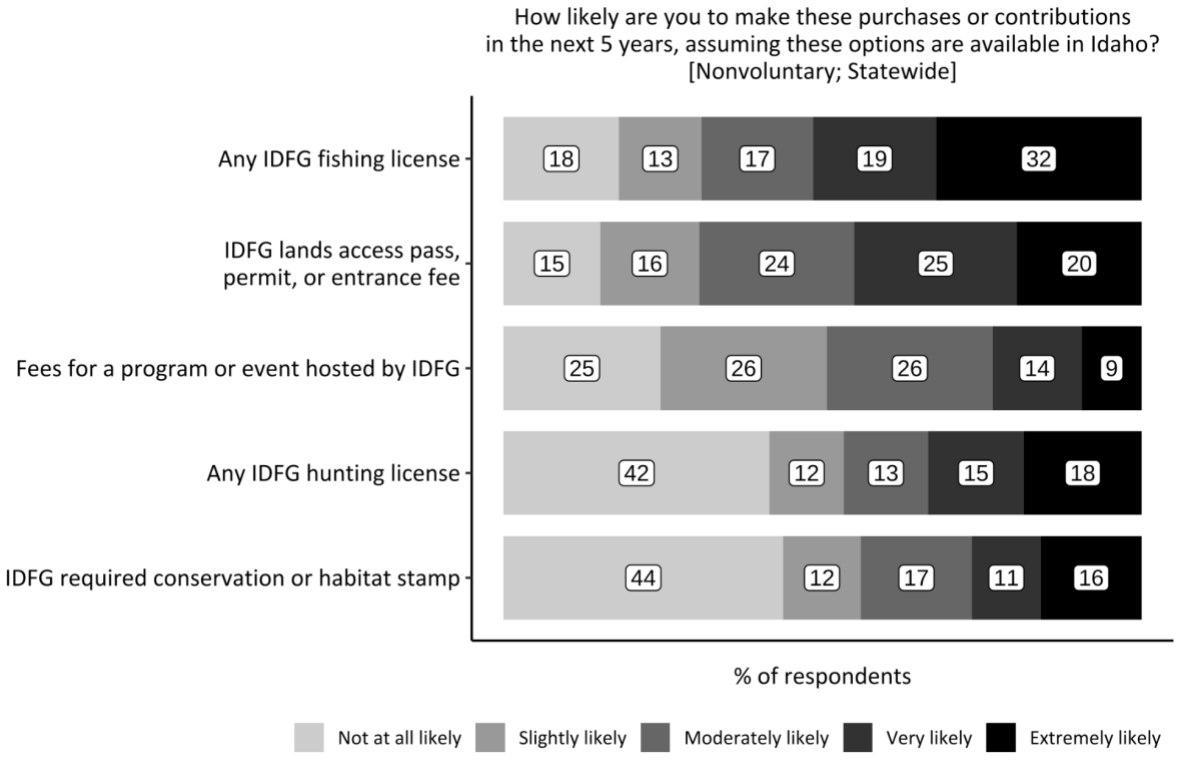

Figure 57: Likelihood of future nonvoluntary contributions, statewide sample
Wildlife viewers' reported likelihood of making nonvoluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at likely* to *extremely likely*. The shade of gray lightens with decreasing likelihood to purchase or contribute to IDFG via nonvoluntary funding mechanisms.

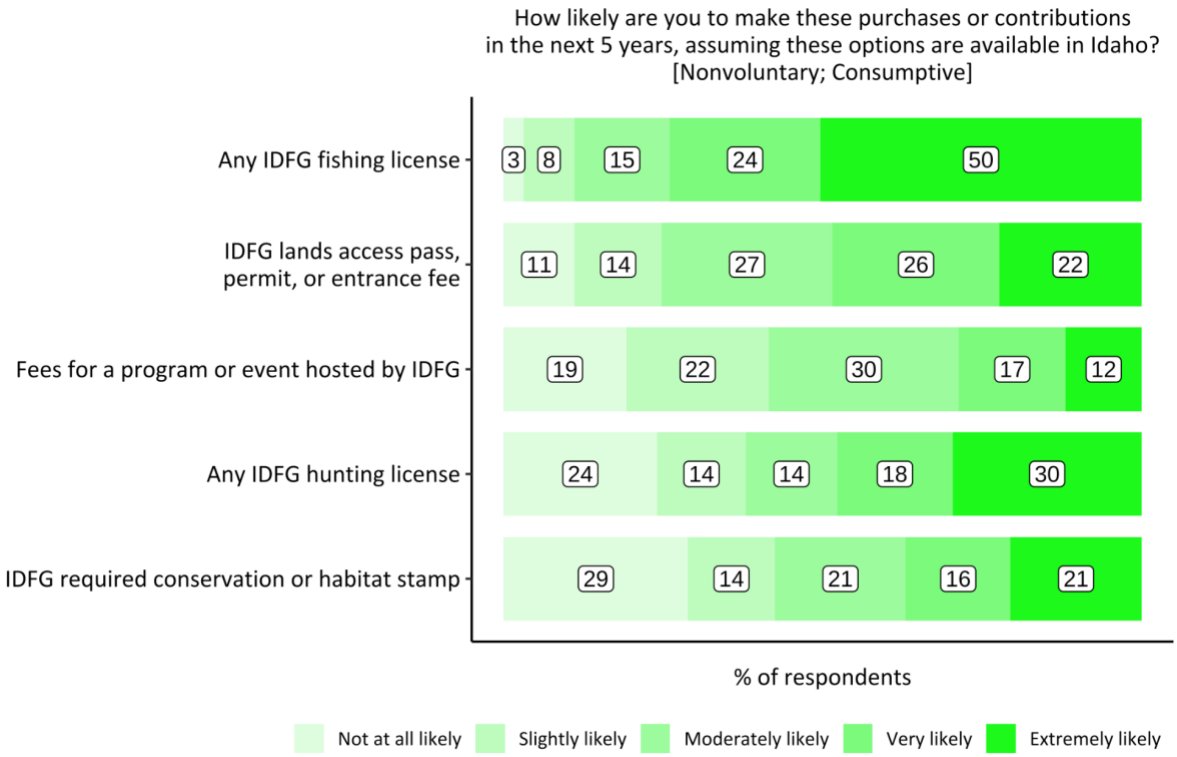

Figure 58: Likelihood of future nonvoluntary contributions, consumptive respondents
Consumptive wildlife viewers' reported likelihood of making nonvoluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of green lightens with decreasing likelihood to purchase or contribute to IDFG via nonvoluntary funding mechanisms.

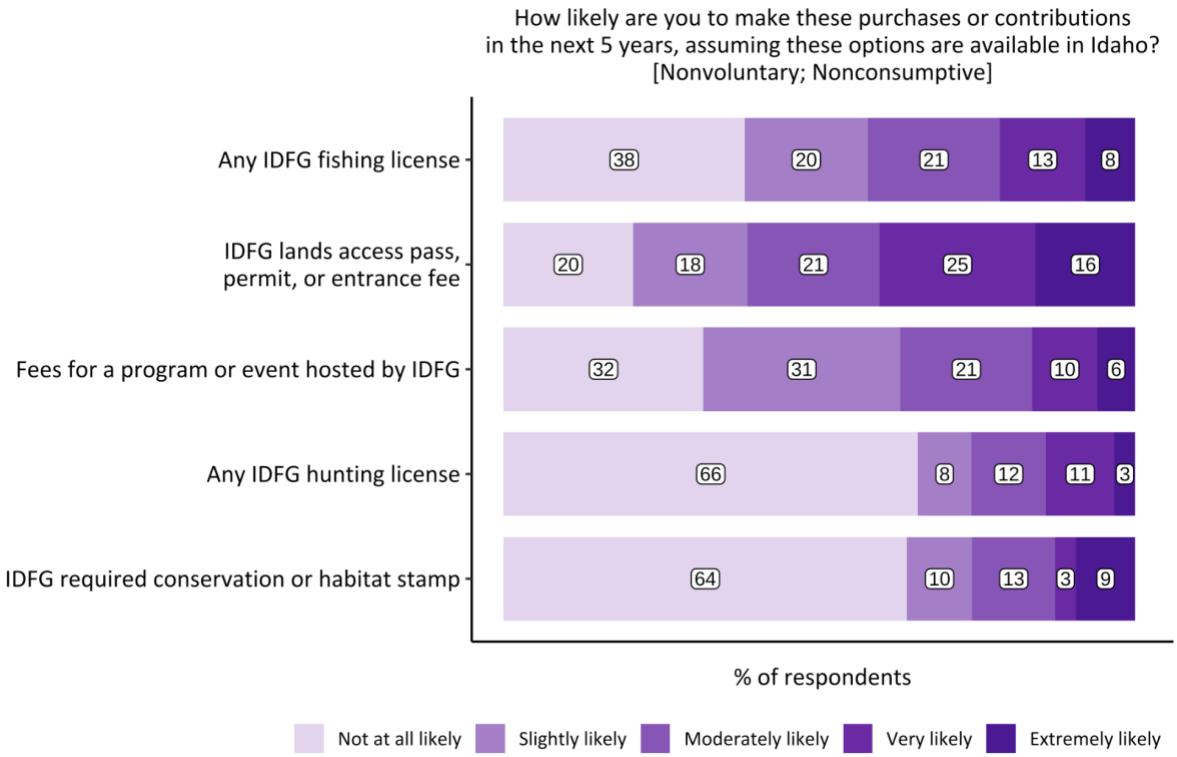

Figure 59: Likelihood of future nonvoluntary contributions, nonconsumptive respondents
Nonconsumptive wildlife viewers' reported likelihood of making nonvoluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of purple lightens with decreasing likelihood to purchase or contribute to IDFG via nonvoluntary funding mechanisms.

We also examined wildlife viewers' likelihood to financially contribute to IDFG via voluntary funding mechanisms in the next five years. The most popular voluntary mechanism was the purchase of a tangible product from IDFG (such as books, maps, and other merchandise), with 56% of respondents indicating that they were *moderately*, *very*, or *extremely likely* to purchase in the next five years. The second most popular voluntary funding mechanism was an option currently unavailable in Idaho, a lottery ticket for which proceeds go to habitat conservation, with half of respondents indicating that they were *moderately*, *very*, or *extremely likely* to purchase in the next five years, if it was made available. Over a third of respondents in Idaho indicated that they were *moderately*, *very*, or *extremely likely* to contribute via an Idaho conservation or habitat stamp, voluntarily purchased independent of a hunting license (40%) and the purchase of a conservation or wildlife license plate (40%). The least common voluntary contribution item was a donation of land to IDFG through a conservation easement, with only 26% of respondents indicating they were *moderately*, *very*, or *extremely likely* to contribute via this mechanism. Chi-square tests indicated statistically significant differences in the likelihood to contribute to IDFG financially in the future when comparing consumptive and

nonconsumptive viewers for three mechanisms: Idaho conservation or habitat stamp voluntarily purchased independent of a hunting license, lottery ticket for which the proceeds go to habitat conservation, and tangible products from IDFG (such as books, maps, and other merchandise). More nonconsumptive viewers indicated that they were *not at all likely* to purchase or contribute via all three items (Table 46; Figure 61-62).

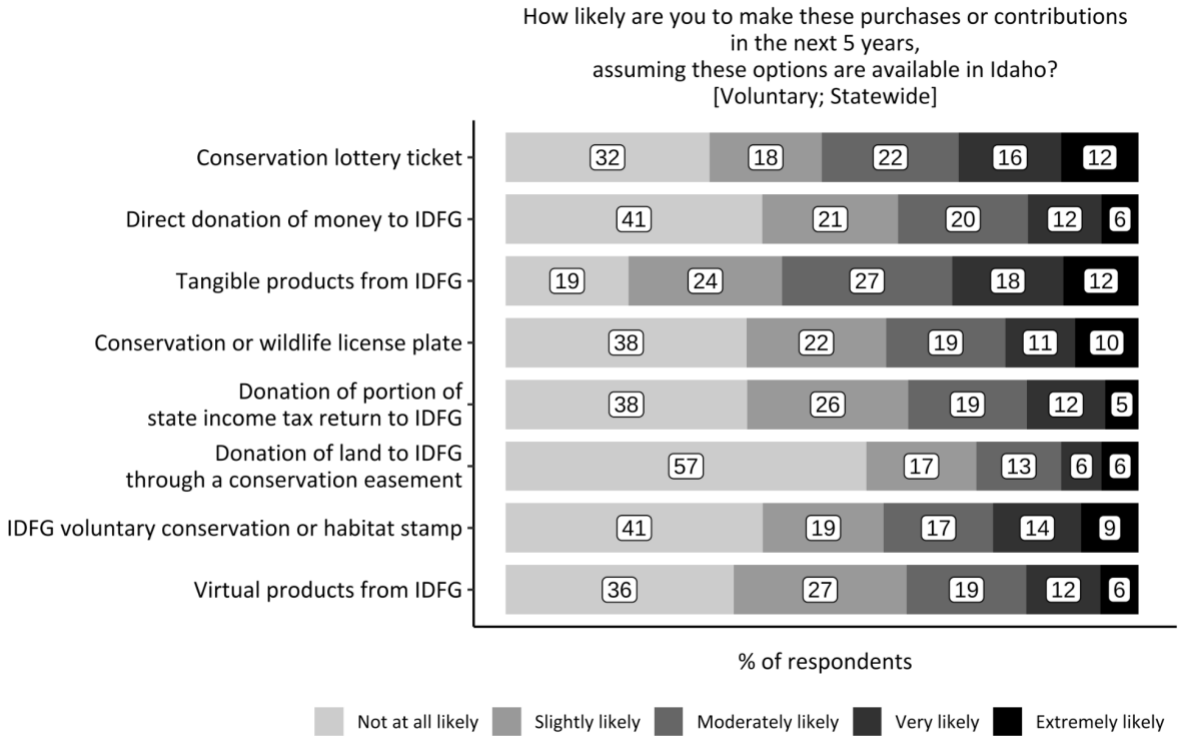

Figure 60: Likelihood of future voluntary contributions, statewide sample
Wildlife viewers' reported likelihood of making voluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at likely* to *extremely likely*. The shade of gray lightens with decreasing likelihood to purchase or contribute to IDFG via voluntary funding mechanisms.

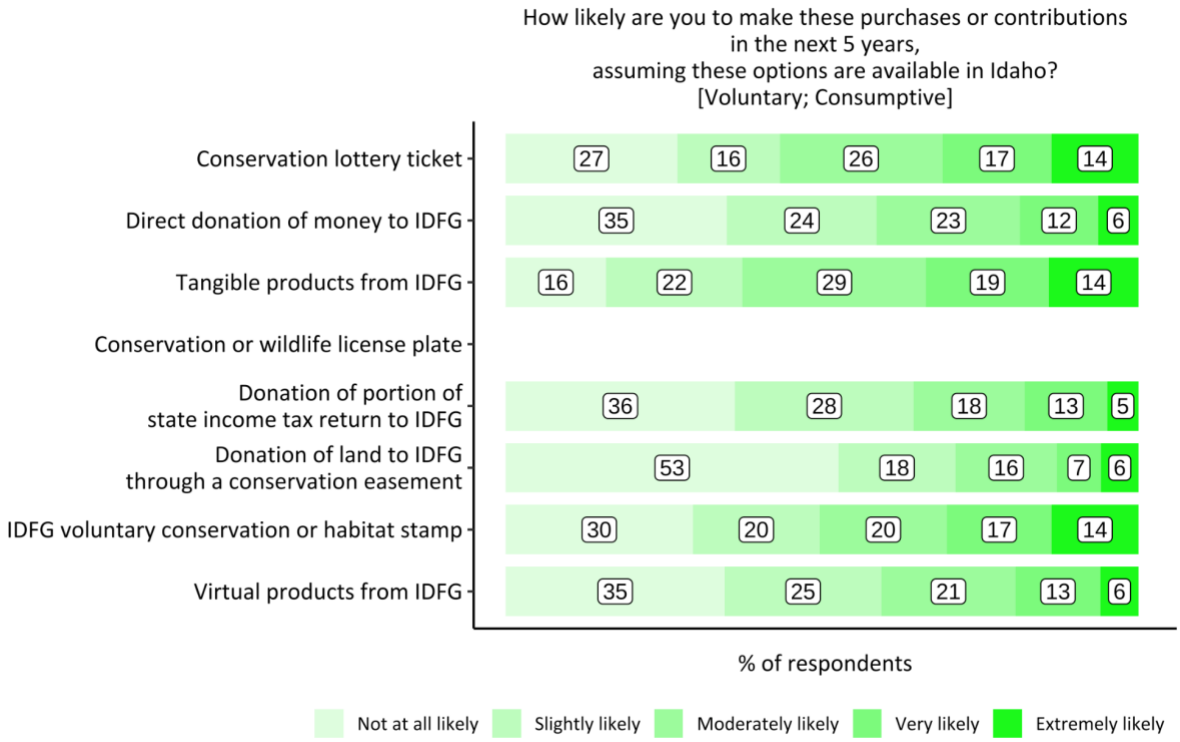

Figure 61: Likelihood of future voluntary contributions, consumptive respondents

Consumptive wildlife viewers' reported likelihood of making voluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of green lightens with decreasing likelihood to purchase or contribute to IDFG via voluntary funding mechanisms.

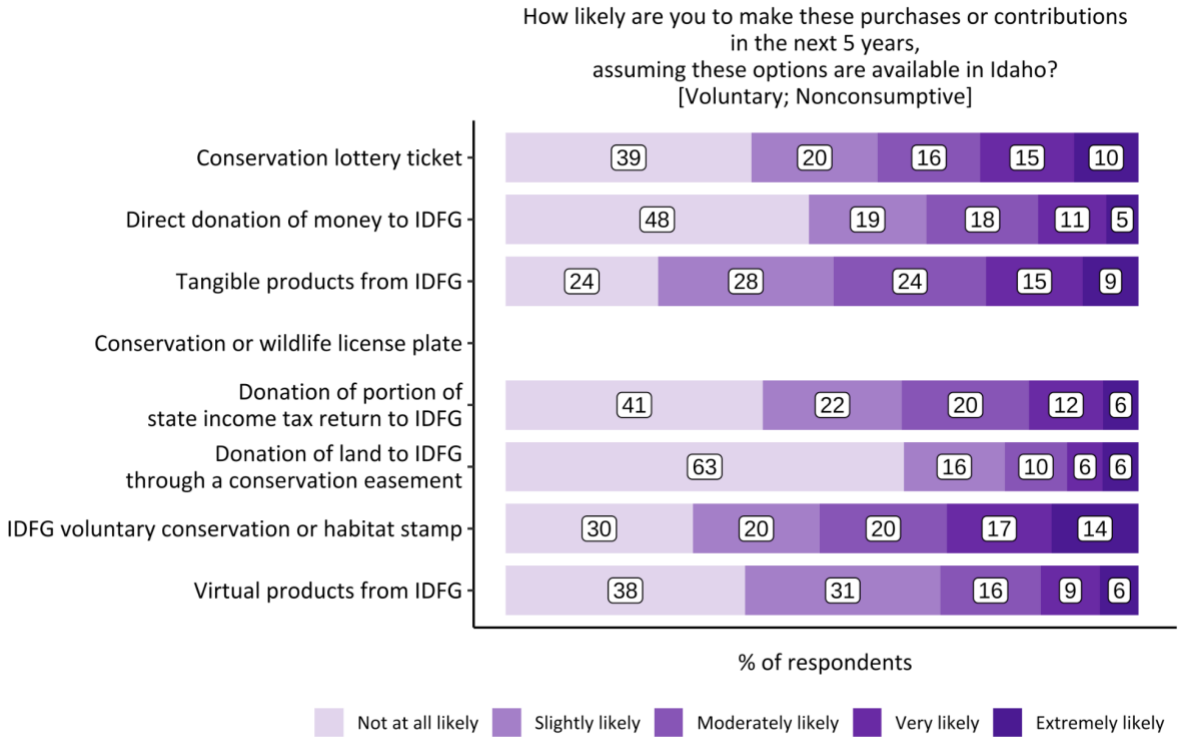

Figure 62: Likelihood of future voluntary contributions, nonconsumptive respondents
Nonconsumptive wildlife viewers' reported likelihood of making voluntary purchases or contributions at the statewide level in the next 5 years, assuming all options are available in Idaho. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of purple lightens with decreasing likelihood to purchase or contribute to IDFG via voluntary funding mechanisms.

Encouraging additional financial support

Wildlife viewers have expectations for how state agencies use their funds (Grooms et al., 2020). In this section, we further investigate those expectations. We asked, "How likely would you be to provide more financial support than you currently do to the Idaho Department of Fish and Game if your contributions were used in the following ways?" We provided respondents with a list of seven potential mechanisms of agencies utilizing their funds. The 5-point scale ranged from 1 (*not at all likely*) to 5 (*extremely likely*).

In Idaho, respondents indicated that they were most likely to provide additional financial support to IDFG if their contributions were used to support conservation of rare or vulnerable species (34% *very* or *extremely likely*) or if contributions were used to support conservation of the types of wildlife they like to view (33% *very* or *extremely likely*).

Chi-square tests indicated only one statistically significant difference in the likelihood of consumptive and nonconsumptive viewers to provide additional financial support. Significantly more nonconsumptive viewers reported that they were *not at all likely* or only *slightly likely* to provide more support if their funds were used for more education or outreach related to conservation (Table 48; Figures 64-65).

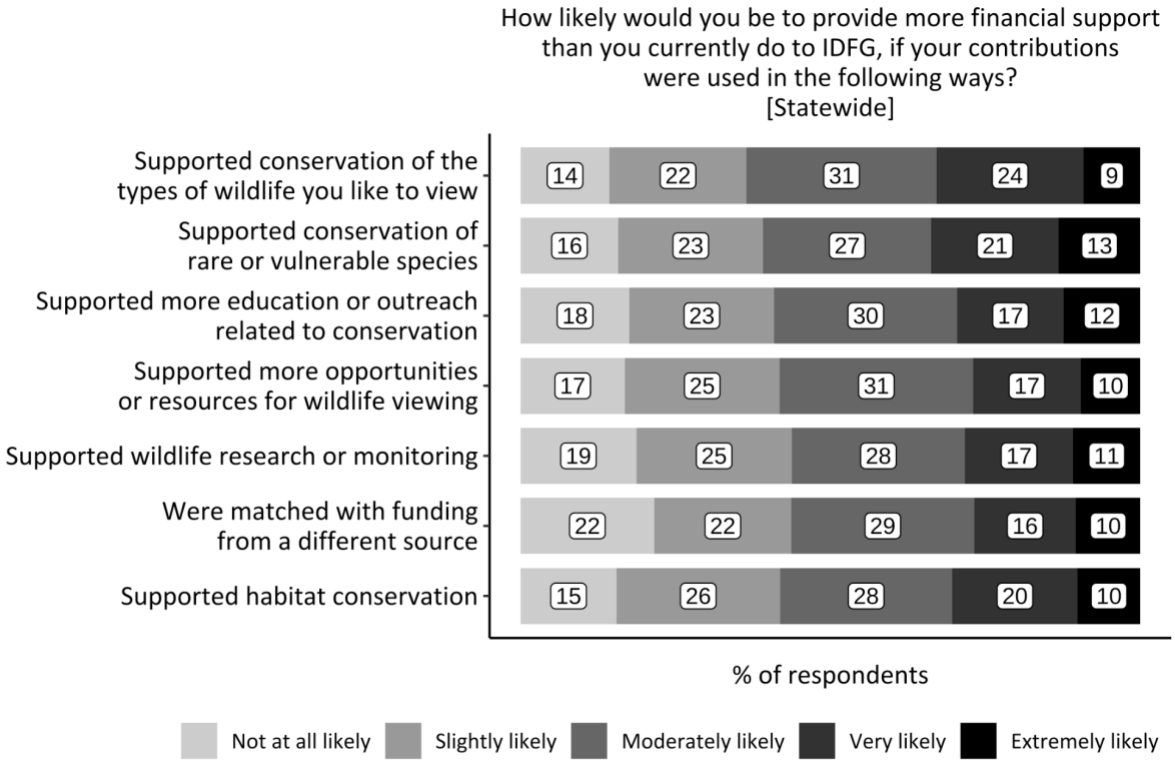

Figure 63: Encouraging additional support, statewide sample

Wildlife viewers' reported likelihood of providing more financial support than they currently do to IDFG, if their contributions were used in various ways at the statewide level. Each block represents the percentage of respondents who fell into each of the five categories: *not at likely* to *extremely likely*. The shade of gray lightens with decreasing likelihood to provide additional financial support to IDFG, given these potential uses of funds.

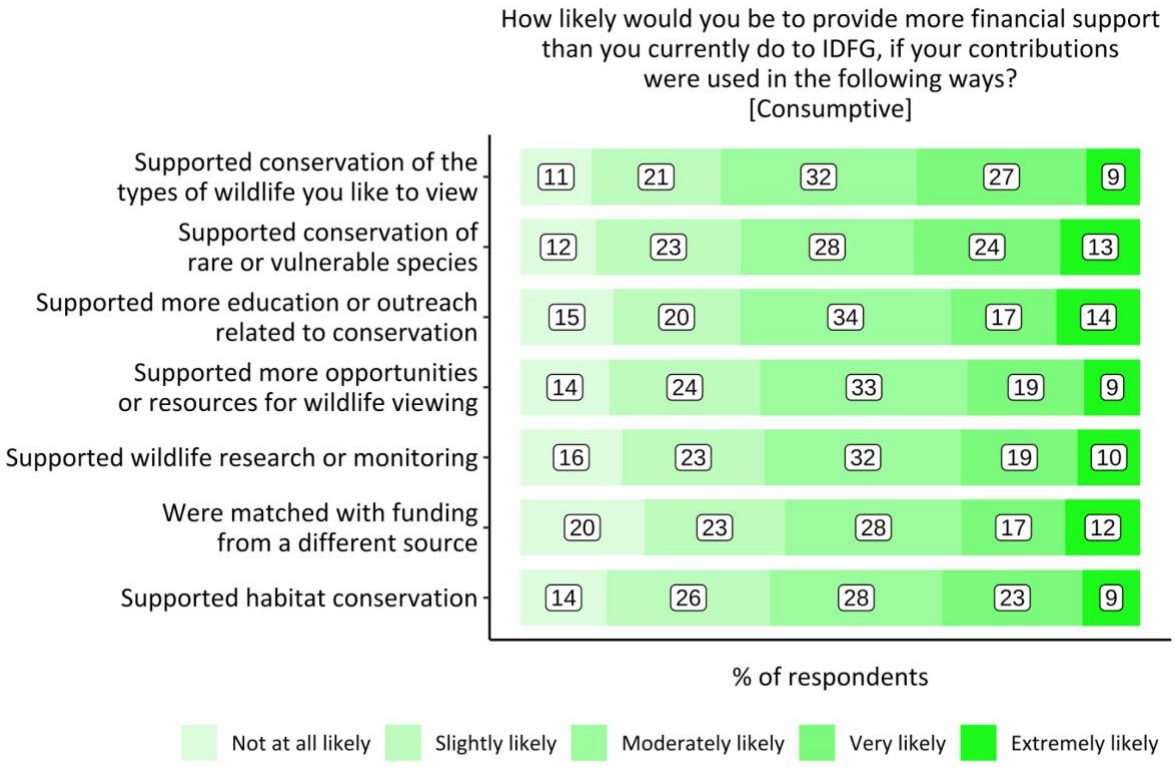

Figure 64: Encouraging additional support, consumptive respondents

Consumptive wildlife viewers' reported likelihood of providing more financial support than they currently do to IDFG, if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at likely* to *extremely likely*. The shade of green lightens with decreasing likelihood to provide additional financial support to IDFG, given these potential uses of funds.

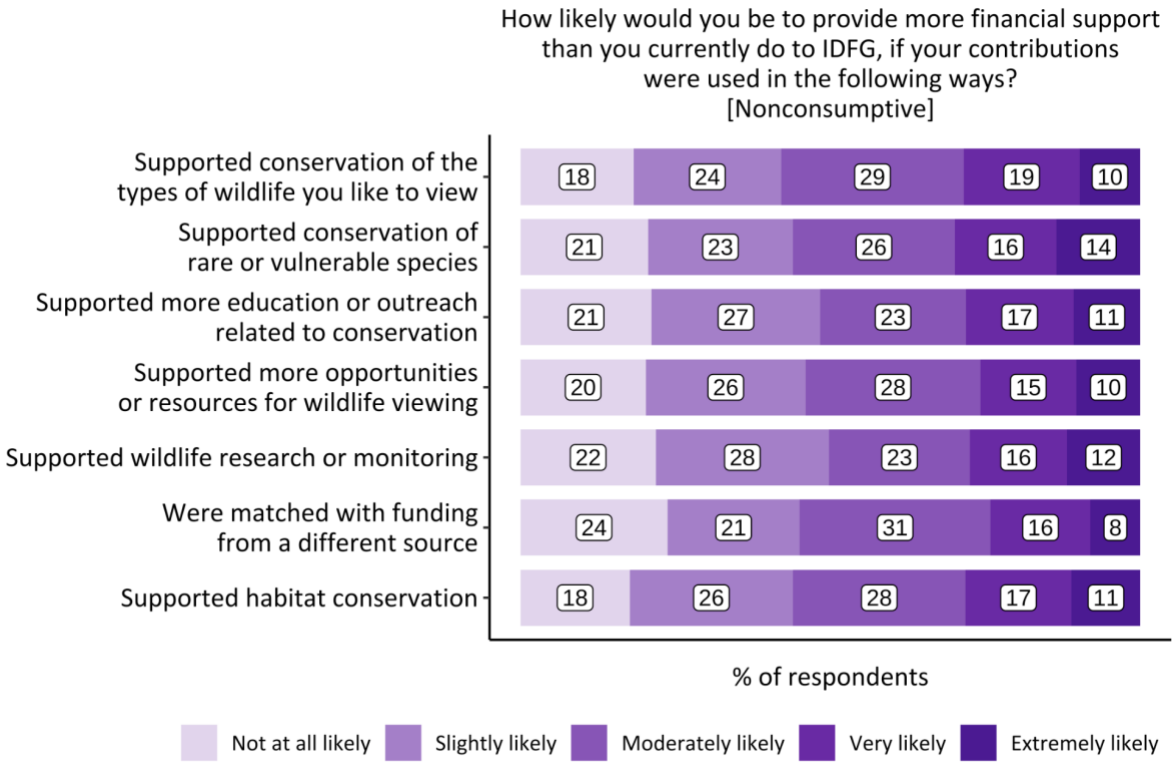

Figure 65: Encouraging additional support, nonconsumptive respondents
Nonconsumptive wildlife viewers' reported likelihood of providing more financial support than they currently do to IDFG, if their contributions were used in various ways at the statewide level. Each block represents the percentage of respondents who fell into each of the five categories: *not at likely* to *extremely likely*. The shade of purple lightens with decreasing likelihood to provide additional financial support to IDFG, given these potential uses of funds.

State agency support for wildlife viewing

AFWA's Relevancy Roadmap outlines broad recommendations for increasing engagement of state fish and wildlife agencies toward a broader constituency, including "increased and improved partnering and collaboration to increase engagement with, and service to, a broader constituency" (AFWA, 2016). Understanding what programs and services wildlife viewers prefer enables agencies to identify and prioritize programs to better engage this constituency. In addition, supporting wildlife viewers, through management programs and other changes, may help to increase relationships between viewers and agencies (AFWA, 2016; Grooms et al., 2021). To this end, we provided respondents with a list of 16 programs and services that may be available to support wildlife viewing and asked the question, "Which of the following potential programs or services from Idaho Fish and Game would better support your wildlife viewing activities in Idaho?" This list of items was initially developed based on focus groups conducted for a study of wildlife recreationists in Virginia (Grooms et al., 2019), which we then adapted based on feedback from our multi-state Steering Committee including IDFG

representatives. A 17th, mutually exclusive option, "I am not interested in any of these options to support my wildlife viewing activities" (selected by 9.5% of respondents), was also provided.

Statewide, respondents were most interested in receiving more information about where to go to see wildlife (52%) and more information about wildlife in Idaho (44%). These response options were followed by access to more places to go wildlife viewing (39%) and information about how to view wildlife (39%). In addition, respondents were also interested in more information about where and when to view wildlife where there is no hunting (38%). More than a quarter of respondents expressed interest in more accessible features in wildlife viewing locations (such as paved trails, accessible parking, or tactile signage; 28%), more opportunities for youth to learn how to participate in wildlife viewing (28%), more programs to improve wildlife viewing skills (27%), more programs to interact with other viewers (26%) and more wildlife viewing amenities (such as viewing platforms, blinds, or signs; 26%). Respondents were least interested in more opportunities to be involved in other volunteer activities, not related to research or data collection (11%).

Chi-square tests indicated only a handful of statistically significant differences when comparing consumptive and nonconsumptive viewers for the additional support items explored in this survey (Table 49; Figure 64-65). Generally, both groups of viewers expressed similar levels of interest in most options. Consumptive viewers were significantly more interested in more opportunities for youth, more training for guides, and more volunteer data collection opportunities (Table 49; Figure 64). In addition, significantly more nonconsumptive viewers (13%) indicated they were not interested in any of the response options provided to support their wildlife viewing activities in comparison to consumptive viewers (7.3%; Table 49; Figure 66).

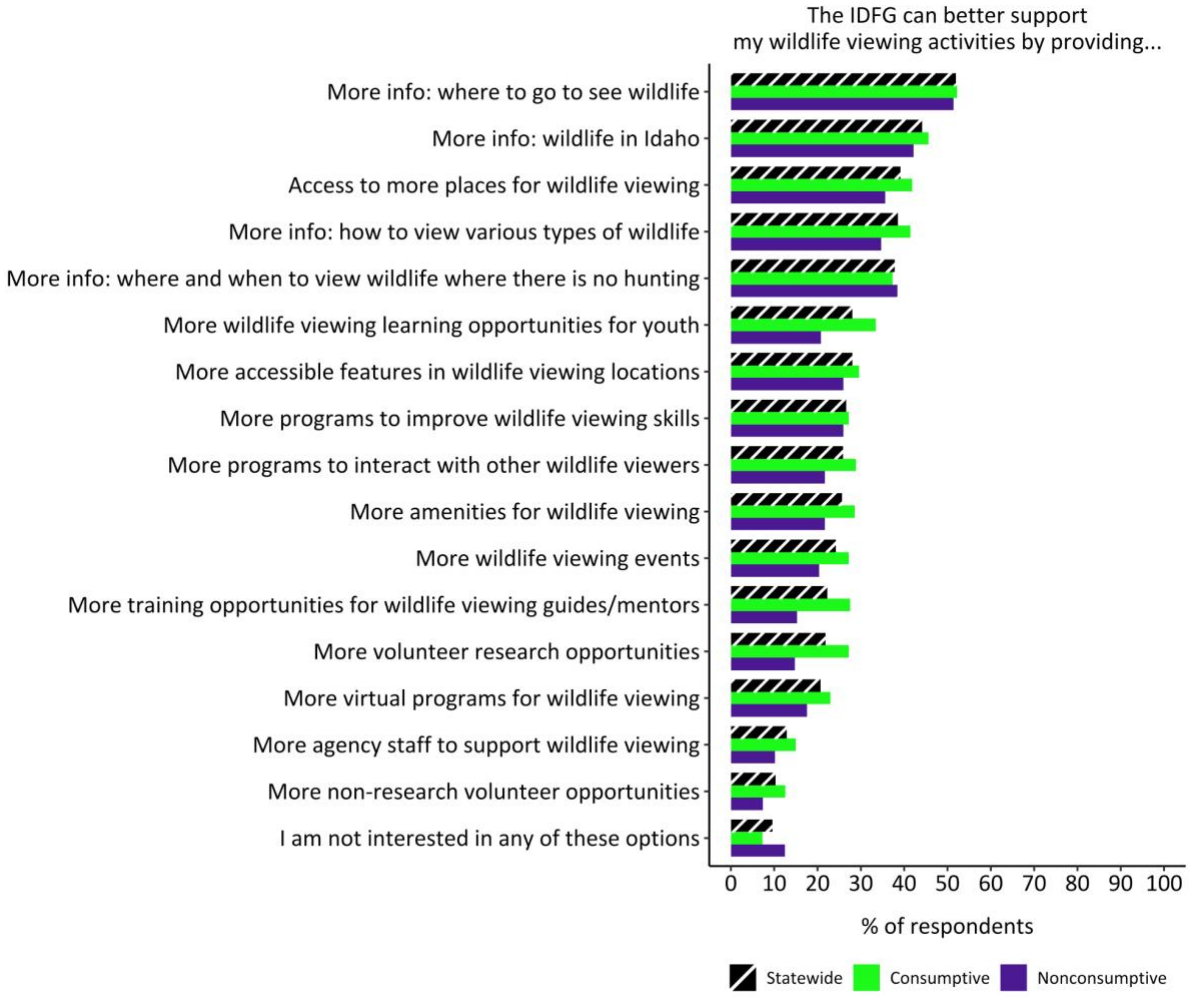

Figure 66: IDFG support for wildlife viewing, all respondents
IDFG programs and services indicated by wildlife viewers that would better support their wildlife viewing activities for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one program or service to reflect their opinion. Chi-square tests indicated that significantly more consumptive viewers were interested in more opportunities for youth to learn how to participate in wildlife viewing, more training for guides or mentors, and more opportunities for volunteer data collection. Significantly more nonconsumptive viewers indicated they were not interested in any of the response options provided to support their wildlife viewing activities (Table 49).

Preferred communication

We examined viewers' interest in methods of receiving information from state agencies to understand how IDFG can best communicate with wildlife viewers in Idaho about recreation opportunities and conservation issues. In this question, we provided wildlife viewers with a list of 15 popular virtual and non-virtual communication channels and asked which, if any, they were interested in receiving information from IDFG. A 16th, mutually exclusive option of, “I

would prefer not to receive information from Idaho Fish and Game ” was selected by 9.9% of respondents in Idaho.

The most preferred channels of state agency communication for wildlife viewers in Idaho was through the IDFG website (64%). This option was followed by printed materials (such as brochures and maps, 55%) and email updates e-newsletters (45%). The least popular form of state agency communication was blogs (7.1%). We asked respondents about a variety of social media platforms, including YouTube (22%), Instagram (16%), Twitter (9.5%), and TikTok (8.9%), with Facebook being the most popular (34%).

Chi-square tests indicated statistically significant differences in terms of the popularity of IDFG communication channels for consumptive and nonconsumptive viewers for just five response options. Significantly more consumptive viewers were interested in receiving information from IDFG via mailed newsletters or other subscriptions, Facebook, TikTok, text messages and one-on-one interactions with IDFG staff. Finally, significantly more nonconsumptive viewers indicated they preferred not to receive information from IDFG than consumptive viewers (Table 50; Figure 67).

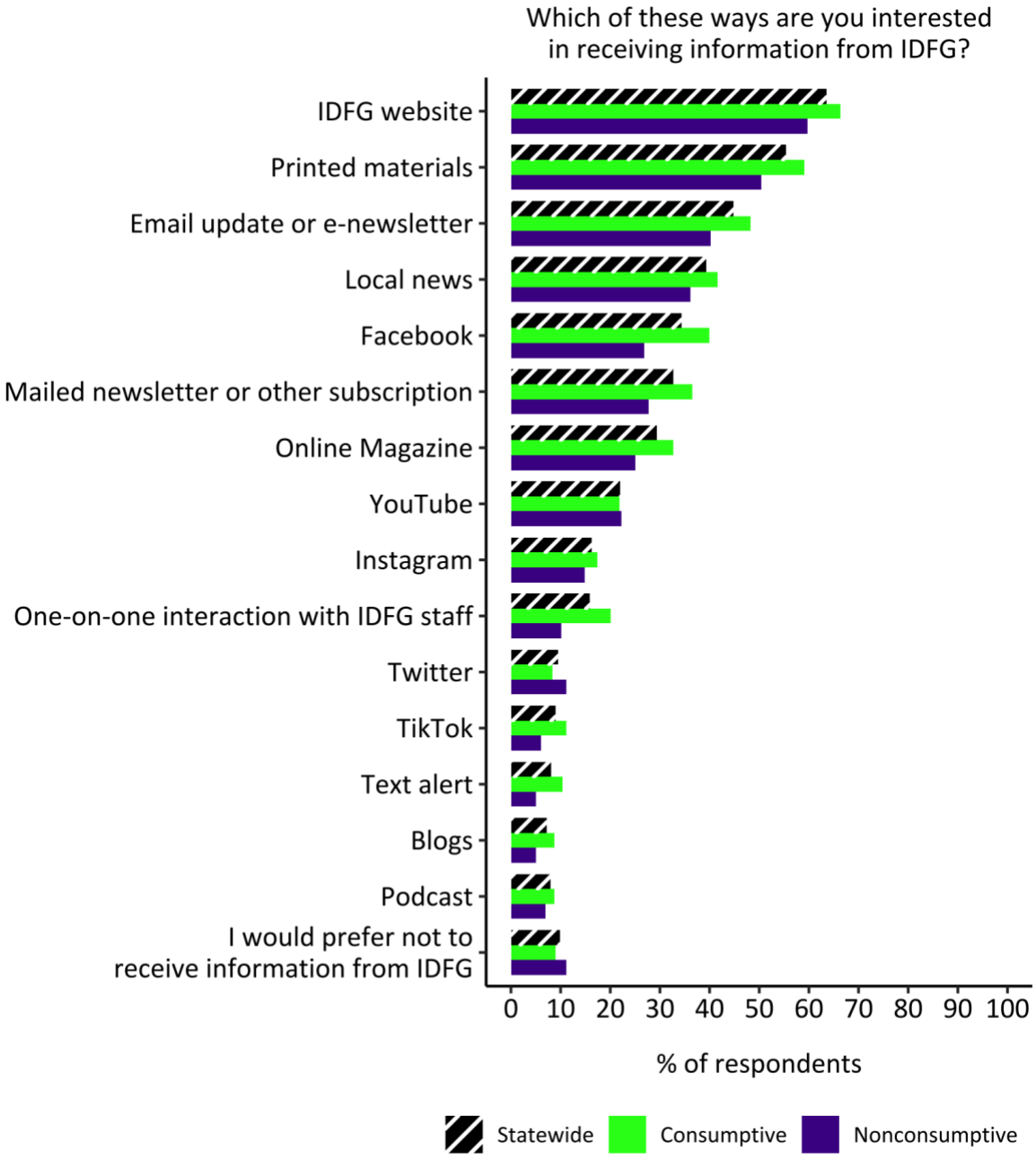

Figure 67: Preferred communication from IDFG, all respondents

Preferred method of communication for IDFGinformation of wildlife viewers in Idaho for statewide and consumptive-nonconsumptive groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their preferred method of communication. Chi-square tests indicated that significantly more consumptive viewers were interested in receiving information from IDFG via mailed newsletters or other subscriptions, Facebook, TikTok, and texts (Table 50). Significantly more nonconsumptive viewers indicated they preferred to receive information from IDFG in comparison to consumptive viewers (Table 50).

DISCUSSION AND CONCLUSION

The results of The Wildlife Viewer Survey in Idaho provide a profile of wildlife viewers which can be used by IDFG to overcome barriers to broader relevance, public engagement, and support (AFWA & WMI, 2019). In the following section, we apply this profile to discuss how IDFG may best support wildlife viewers in Idaho, broaden their relevance to wildlife viewers who do not hunt or fish, and develop financial support opportunities for wildlife viewers.

Supporting wildlife viewers in Idaho

As IDFG aims to better engage wildlife viewers in Idaho, we recommend three general needs to establish a lasting and equitable relationship: 1) provide wildlife viewing information and access, 2) promote around-the-home viewing opportunities, and 3) develop social support networks for wildlife viewers.

Provide wildlife viewing information and access

Wildlife viewers in Idaho were particularly interested in more information on when, where, and how to view wildlife, as well as increased access to wildlife viewing locations. There is an apparent desire for IDFG to play a key role as an information resource on wildlife viewing in Idaho, as the agency has started to do on its website through the "Idaho Watchable Wildlife Program" page (https://idfg.idaho.gov/watch/wildlife), which offers a brief overview of the Idaho Watchable Wildlife Program and link to the "Ponderosa Pine Scenic Byway Wildlife Viewing Guide." In addition, a variety of information about wildlife viewing and birding in Idaho is available on the IDFG website, but is not easily found without specifically searching for these resources. These resources include the Idaho Birding Trail and interactive map (https://idfg.idaho.gov/ibt) and quarterly newsletter, "Windows to Wildlife" (https://idfg.idaho.gov/media/newsletter/windows-to-wildlife) that provides additional information about viewing. Increasing accessibility, expanding awareness, and continuing to build out this information (e.g., adding information on the kinds of wildlife present in Idaho, information on how to view, and wildlife viewing-specific information for around the home) could encourage enhanced participation in wildlife viewing in Idaho, as most wildlife viewers classify their skill level as beginner to intermediate. Specific information on land mammal and bird viewing opportunities in Idaho will appeal to the most wildlife viewers, although all types of wildlife were of interest to at least one-quarter of viewers. Wildlife viewers were most interested in receiving such information from IDFG via the IDFG website, printed materials (such as brochures and maps), or email updates. Information from the Visit Idaho page (https://visitidaho.org/things-to-do/wildlife-viewing-birding/), Visit North Idaho (https://visitnorthidaho.com/activity-category/wildlife-viewing/), Visit Southern Idaho

(https://visitsouthidaho.com/nature-puts-show-wildlife-bird-watching-southern-idaho/), Idaho Birds (https://idahobirds.net/birding-idaho/destinations/birders-guide/), Intermountain Bird Observatory (https://www.boisestate.edu/ibo/) and the Idaho Wildlife Viewing Guide (physical book format only, https://idfg.idaho.gov/species/bibliography/1496556) are exemplary examples for introducing new resources and opportunities for wildlife viewers. Providing links to these programs and an updated digitized form of the Idaho Wildlife Viewing Guide on the Idaho Watchable Wildlife Page are great first steps to increasing accessibility to wildlife viewing information. Finally, based on the finding that 75% of survey respondents report participation in wildlife viewing on state-managed lands, including Wildlife Management Areas, these areas may have potential for development of additional infrastructure to further support access for wildlife viewing and enhanced outreach regarding their value as wildlife viewing areas.

Promote around-the-home viewing opportunities

The IDFG will also connect with more wildlife viewers if they develop means to serve those who view around the home, where a majority of viewers participate in viewing. Over two-thirds of viewers participate in viewing around their home and/or locally-managed areas, like county parks and trails. Further, the predominant barriers to viewing reported by respondents is financial costs associated with wildlife viewing, lack of free time for wildlife viewing, and distance to high-quality wildlife viewing locations distance to viewing sites, which could be addressed with programs viewers could do on their own at home or nearby the home. One opportunity for growth in around-the-home viewing is for IDFG to spotlight the Backyards for Wildlife Program (for more information: https://idfg.idaho.gov/old-web/docs/wildlife/nongame/leafletBackyardWildlife.pdf). Backyards for Wildlife provides information about how to maintain a wildlife-friendly yard and encourages viewers to partner with the National Wildlife Federation to certify the yard. Repackaging relevant information from this leaflet on the Watchable Wildlife page may help spotlight it to more viewers. Importantly, backyard wildlife habitat creation and maintenance provides an opportunity to engage viewers with conservation and the wildlife they appreciate in a new way; compared to other forms of wildlife viewing explored in our survey, fewer wildlife viewers currently participate in establishing or maintaining wildlife habitat. In addition, including resources both on feeding wild birds or collecting data on wildlife or habitat, along with information to encourage planting or otherwise creating wildlife habitat at home may be a way to develop deeper involvement with IDFG among wildlife viewers.

Develop social support networks for wildlife viewers

Finally, IDFG could develop and increase social support networks for all wildlife viewers, particularly those who have been historically underserved in wildlife recreation and by state and federal fish and wildlife agencies, including Black, Indigenous, and People of Color (Flores et

al., 2018; Loukaitou-Sideris & Mukhija, 2019; Winter et al., 2019; Sánchez et al., 2020; Thomas et al., 2022). Family and friends were the most commonly reported type of social support that influenced viewer participation; we identify a need for growth in social support from mentors in particular, which might be a role IDFG could fill or foster. Generally, this may consist of providing low-cost or free opportunities to view wildlife or offering support to local groups such as Friends of Idaho State Parks (https://www.idahofriends.org/) to provide location-specific wildlife viewing opportunities with direct mentorship. When considering historically underserved groups, the IDFG could provide financial and/or material support to other existing organizations that engage and mentor these communities. It is important to provide mentorship opportunities with mentors who share identities with potential mentees, as this is shown to increase retention in activities (Roberts & Henderson 1997; Robinson 2005, Swartz et al., 2019). Additionally, affinity-based mentorship opportunities for Idaho's refugee community is especially important, as these communities tend to participate in events and programs that are culturally-relevant to them and their communities (Dunnigan, 1982). Additional research examining potential mechanisms of support for Idaho's Black, Indigenous, and communities of color, especially with regards to community science, is underway.

Given that 37% of wildlife viewers in Idaho experience somewhat to a great deal of accessibility challenges, IDFG could also look for opportunities to connect with local organizations dedicated to supporting people living with disabilities, such as Birdability, to collaborate on developing further wildlife viewing opportunities. IDFG currently offers an extensive interactive birding map of the Idaho Birding Trail. IDFG could consider a filter on this map for accessible sites or spotlight the accessible birding locations map by Birdability and Audubon (https://storymaps.arcgis.com/stories/819bf15a20164b4ba5196c04f58836b4) which currently highlights over a dozen accessible birding locations in Idaho.

Broadening relevance to wildlife viewers who do not hunt or fish

Engaging with nonconsumptive recreationists serves as an opportunity for IDFG to expand their constituency and achieve relevancy goals (AFWA 2016) by connecting with a group not currently involved in hunting and angling and thereby not as closely tied to the agency. Our analysis of consumptive viewers (viewers who also fish or, in fewer cases, also hunt, or both) and nonconsumptive viewers (viewers who do not engage in hunting or fishing) revealed variation in the degree to which wildlife viewers are familiar with IDFG and, possibly as a consequence, differences in wildlife viewers' likelihood to engage with or financially support IDFG. Generally, consumptive viewers in Idaho are more active and involved in viewing than nonconsumptive viewers; consumptive viewers participate in wildlife viewing more, spend more on wildlife viewing, and are more broadly active in wildlife viewing and outdoor recreation. Consumptive viewers also tended to have higher levels of experience and familiarity

with and financial contributions (past and future) to IDFG than nonconsumptive viewers. Thus, we identify nonconsumptive viewers as a key demographic for which their lack of familiarity with the agency likely drives a lack of connection to IDFG. Increasing familiarity of wildlife viewers with IDFG may also lead to increased interest in participating in conservation behaviors in collaboration with the IDFG and contributing financially to the agency. In addition to a need to increase basic agency familiarity, the provision of services that specifically serve nonconsumptive viewers, including support for around-the-home viewing, birding/land mammal viewing, and information on wildlife viewing tailored for beginners, is an important next step in developing relationships with this currently underserved group.

Benefits to current constituents who also view wildlife

While consumptive and nonconsumptive recreationists are often treated as separate groups, both our findings and research published elsewhere (e.g., Cooper et al. 2015; Grooms et al. 2021) indicate that interest in wildlife viewing is a common ground for many wildlife recreationists. It is promising that only around one-quarter of both consumptive and nonconsumptive viewers believe IDFG is not prioritizing programs for wildlife viewers enough. Our findings show that consumptive recreationists desire all forms of support from IDFG related to wildlife viewing programs. In addition, we found that consumptive and nonconsumptive viewers are interested in similar programs, services, or support, with the only difference being consumptive viewers were more enthusiastically interested in some forms of state agency support (most likely due to established viewer-agency relationships from their hunting and angling activities). Thus, we suggest that engaging with and providing further support to nonconsumptive viewers will additionally serve and align with the interests of consumptive viewers. Finally, we do note that there may be potential for nonconsumptive viewers to engage in fishing, as over 40% of nonconsumptive viewers reported being *moderately*, *very*, or *extremely likely* to purchase any IDFG fishing license in the next five years.

Developing financial support opportunities for wildlife viewers

We found a strong potential for IDFG to engage wildlife viewers in opportunities to contribute financially to the agency. This potential is notable as it may be the case that the sample for this survey had a higher representation of low income viewers as Qualtrics panel surveys can be biased toward lower income respondents interested in the compensation for survey-taking (T. Soule, personal communications, March 30, 2022). In addition, over half of wildlife viewers reported interest in purchasing tangible products or lottery tickets for which the proceeds would go to conservation, in the next five years. Notably, the conservation lottery ticket is unavailable from IDFG at this time. The agency may consider developing a small online store for products related to wildlife or supporting development of a lottery fund that contributes to conservation (for an example, see Great Outdoors Colorado; https://goco.org/).

Establishing funding relationships with wildlife viewers who do not hunt or fish

Engaging nonconsumptive viewers in supporting IDFG will require re-thinking current funding models. Wildlife viewing does not appear to be a "gateway" to consumptive activities like hunting and fishing which traditionally fund IDFG as nonconsumptive viewers expressed little to no interest in typical funding mechanisms in the next five years. Thus, there is a need to develop viewer-specific opportunities for financial contributions. One option is the development of a wildlife viewer pass or membership similar to the Virginia DWR's "Restore the Wild Membership" (Sinkular et al., 2022). Such a membership could provide wildlife viewers with a specialized access pass, potentially to Wildlife Management Areas and/or other perks (e.g., merchandise, wildlife viewing equipment) based on purchase level. This is particularly relevant as we found that some nonconsumptive viewers had indeed purchased fishing licenses in the past five years, possibly as a way to gain access to wildlife viewing locations or contribute to IDFG. Wildlife viewer-specific funding mechanisms could provide a way for IDFG to increase their connection with viewers, particularly nonconsumptive viewers. But it is critical to keep in mind that people must feel that the money is going to a good cause–one that they believe in or that will serve their interests. For wildlife viewers in Idaho, this means using funds for species-level conservation; viewers were most likely to increase their contributions to IDFG if they knew their funds would be used for the conservation of rare and vulnerable species or the types of wildlife they like to view. Additionally, showcasing how funds are used, i.e., to support a specific species, may help to encourage contributions.

Conclusion

The Wildlife Viewer Survey in Idaho fills multiple knowledge gaps about wildlife viewers: what activities they like to participate in, how they view and trust state agencies, what services and programs they wish agencies provided, how they are most likely to support conservation through action and funding, and more. This baseline information can enable IDFG to start building, adapting, or strengthening programming, funding models, and other efforts to better connect and interact with wildlife viewers. In turn, these efforts will enable the IDFG to become more relevant to a larger constituency than they are currently.

While much work can be done using the data already collected and analyzed in the report, many additional opportunities exist to take this study to the next level through implementing activities at the state level and diving deeper into the data already collected. The WVNT Working Group is poised to support the implementation of these findings. Yet, the full implementation of the recommendations above will be best realized with a phase 2 multi-state grant, allowing the Working Group and IDFG to continue to work with Virginia Tech and each other in implementing results through a Community of Practice.

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APPENDIX A. Survey Instrument

FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

Thank you for your interest in taking this survey! Before we get started, we would like to share some information about this research study with you.

ABOUT THIS STUDY

This survey is being conducted by researchers at Virginia Tech, with funding from the Association of Fish and Wildlife Agencies (AFWA) and individual fish and wildlife agencies across the United States. **The goal of this research is to learn about the activities, experiences, and preferences of people who recreationally participate in wildlife viewing**, which includes observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing.

This survey should take you about 15-25 minutes to complete. Your participation in this research study is **voluntary and anonymous**. Your responses will never be presented in a way that they can be connected to your identity. The results of the survey will be published in summary form in reports, graduate theses, and journal articles. Anonymous survey data will be made available to state fish and wildlife agencies and may be archived online in a publicly accessible format. There are **no known risks** associated with this research; there are **no right or wrong answers** to survey questions; and **you can leave the survey at any time**, for any reason.

For questions about this survey, please contact Emily Sinkular at wildlifeviewingsurvey@vt.edu or (540) 358-0346. This research has been approved by Virginia Tech's IRB committee (Protocol #20-1018). If you have any questions or concerns about this study's conduct or your rights as a research subject, you may contact the Virginia Tech IRB at 540-231-3732 or at irb@vt.edu.

Do you consent to participate in this research study?

(Please select one.)

- ◯ Yes
- ◯ No

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FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

First, we would like to know about your participation in different kinds of wildlife viewing.

In which, if any, of the following forms of **wildlife viewing** have you participated in the past 5 years?

Note: *For this survey,* ***"wildlife"*** *refers to all animals, such as birds, fish, insects, mammals, amphibians, and reptiles, that are living in natural environments, including in urban and semi-urban places. Wildlife does not include animals living in artificial or captive environments, such as aquariums, zoos, or museums, or domestic animals such as farm animals or pets.* ***"Wildlife viewing"*** *refers to intentionally observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing. Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting, or fishing, or intentionally scouting for game.*

(Please select all that apply.)

- ☐ Closely observing wildlife or trying to identify unfamiliar types of wildlife
- ☐ Photographing or taking pictures of wildlife
- ☐ Feeding wild birds
- ☐ Feeding other wildlife
- ☐ Maintaining plantings or natural areas for the benefit of wildlife
- ☐ Visiting parks and natural areas to observe, photograph, or feed wildlife
- ☐ Taking trips or outings to any other location to observe, photograph, or feed wildlife
- ☐ I did not participate in any of these forms of wildlife viewing in the past 5 years.

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FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

Before we continue with the rest of the survey, we have just a few quick questions about you.

In **what year** were you born?

(Please select your birth year from the drop-down list.)

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Which state do you live in for most of the year?

(Please select a state from the drop-down list.)

What is your **gender**?

(Please select one.)

- ○ Man
- ○ Woman
- ○ Non-binary
- ○ Prefer to not disclose
- ○ Prefer to self-describe

What is the **highest degree or level of school** you have completed?

(Please select one.)

- ○ High school diploma, equivalent, or less
- ○ Some college
- ○ Associate's or technical degree
- ○ Bachelor's degree
- ○ Professional, master's or doctoral degree

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FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

Now, we would like to ask you more about your wildlife viewing activities.

Which of the following **types of wildlife** are you interested in observing, photographing, or feeding?

(Please select all that apply.)

- ☐ **Birds**
  (such as songbirds, waterfowl, birds of prey, etc.)
- ☐ **Insects or spiders**
  (such as butterflies, dragonflies, beetles, etc.)
- ☐ **Amphibians**
  (such as frogs, salamanders, etc.)
- ☐ **Land mammals**
  (such as deer, bears, elk, etc.)

- ☐ **Freshwater or saltwater fish**
  (such as sunfishes, darters, trout, salmon, sea bass, etc.)
- ☐ **Marine mammals**
  (such as whales, seals, dolphins, etc.)
- ☐ **Reptiles**
  (such as turtles, snakes, etc.)
- ☐ ***None of the above**, I am not interested in observing, photographing, or feeding wildlife*
- ☐ **None of the above,** *I am interested in observing, photographing, or feeding other types of wildlife*

How would you **rate your skill level** in wildlife viewing?

(Please select one.)

- ○ Beginner
- ○ Novice
- ○ Intermediate
- ○ Advanced
- ○ Expert

Do you own any **specialized equipment** for wildlife viewing *(such as binoculars, cameras, mobile apps, spotting scopes, field guides, or specialized clothing)*, or have you rented or borrowed any specialized equipment for wildlife viewing in the past 5 years?

(Please select one.)

- ◯ Yes
- ◯ No

>>

Next, we would like to know about your expenditures related to wildlife viewing.

How much money do you spend on the following expenses related to wildlife viewing in a typical year?

Note: *Throughout this survey we will ask you about your activities during "a typical year." This is because we recognize that the last year has been unusual due to the COVID-19 pandemic, and this may have impacted your participation in wildlife viewing. By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic. If you started viewing wildlife during the pandemic, please answer all questions about "a typical year" for the past year.*

(For each expense category below, please select the response that contains your best estimate of how much you typically spend.)

Trip-related costs for wildlife viewing *(such as transportation, lodging, guide fees, or access fees)*

All other wildlife viewing expenses and equipment *(such as binoculars, hiking or boating equipment for viewing, field guides, bird feeders or bird food, or membership dues for wildlife viewing organizations)*

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Now, we would like to know more about the role of wildlife viewing in your life.

To what extent do you **agree or disagree** with the following statements?

(Please select one response per statement.)

To what extent do you **agree or disagree** with the following statements?

(Please select one response per statement.)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think of **myself** as a wildlife viewer.	○	○	○	○	○
Being a wildlife viewer is an important part of **who I am**.	○	○	○	○	○
Wildlife viewing has a **central role** in my life.	○	○	○	○	○
A lot of my life is **organized** around wildlife viewing.	○	○	○	○	○
Wildlife viewing is **not an important** part of my life.	○	○	○	○	○
People who **look like me** participate in wildlife viewing.	○	○	○	○	○
I feel **welcome** among other wildlife viewers.	○	○	○	○	○
Being a wildlife viewer is **not a key** part of who I am.	○	○	○	○	○
I **teach** or **mentor** others in wildlife viewing.	○	○	○	○	○
Wildlife viewing is one of the **most enjoyable** activities I do.	○	○	○	○	○

We are also interested in your history with wildlife viewing.

How did the **COVID-19 pandemic** impact your overall participation in wildlife viewing?

(Please select one.)

- ○ **No impact;** I was wildlife viewing prior to the COVID-19 pandemic, and I continued wildlife viewing during the pandemic.
- ○ I was wildlife viewing prior to the COVID-19 pandemic, but **I stopped wildlife viewing** during the pandemic.
- ○ While I previously participated in wildlife viewing, I was not currently wildlife viewing when the COVID-19 pandemic started. During the pandemic, I **started wildlife viewing again**.
- ○ I **started wildlife viewing for the first time** during the COVID-19 pandemic.

For about **how many years** have you participated in wildlife viewing?

(Please select the category that contains your best estimate.)

FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

In this section of the survey, we will ask you about how much time you spend wildlife viewing in different locations. The first question asks about the number of days you spend wildlife viewing in *a typical year*. The next two questions ask you about how many days you spent wildlife viewing in the *past year* and how much time you think you will spend wildlife viewing in the *upcoming year*.

First, **how many days** do you spend wildlife viewing in each of the following locations **in a typical year**?

Note: By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select the response that contains your best estimate for the number of days you spend wildlife viewing in each location. If you do not typically participate in wildlife viewing in these locations, please select 0 days.)

First, **how many days** do you spend wildlife viewing in each of the following locations **in a typical year**?

Note: By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select the response that contains your best estimate for the number of days you spend wildlife viewing in each location. If you do not typically participate in wildlife viewing in these locations, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	○	○	○	○	○	○	○	○	○
More than 1 mile away from your home, but within your state	○	○	○	○	○	○	○	○	○
Outside of your state or outside of the United States	○	○	○	○	○	○	○	○	○

How many days did you spend wildlife viewing in each of the following locations **during the first year of the COVID-19 pandemic** (March 2020 - February 2021)?

(Please select the response that contains your best estimate for the number of days you spent wildlife viewing in each location. If you did not participate in wildlife viewing in these locations during the first year of the COVID-19 pandemic, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	○	○	○	○	○	○	○	○	○
More than 1 mile away from your home, but within your state	○	○	○	○	○	○	○	○	○
Outside of your state or outside of the United States	○	○	○	○	○	○	○	○	○

How many days do you think you will spend wildlife viewing in each of the following locations **in the next 12 months**?

(Please select the response that contains your best estimate for the number of days you expect to spend wildlife viewing in each location. If you do not expect to participate in wildlife viewing in these locations in the upcoming year, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	○	○	○	○	○	○	○	○	○
More than 1 mile away from your home, but within your state	○	○	○	○	○	○	○	○	○
Outside of your state or outside of the United States	○	○	○	○	○	○	○	○	○

<< >>

Now, we would like to know more about where you participate in wildlife viewing in Idaho.

In a typical year, in **which locations** do you participate in wildlife viewing in Idaho?

Note: *By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.*

(Please select all that apply.)

- ☐ My own home or property
- ☐ Property of friends or family
- ☐ Other privately-owned areas *(such as lands owned by land trusts, non-profit organizations, private companies, or individuals)*
- ☐ Locally-managed areas *(such as town or county parks, trails, or open spaces)*
- ☐ State-managed areas *(such as state parks, forests, boat landings, fishing areas, conservation areas, or Wildlife Management Areas)*
- ☐ Federally-managed areas *(such as National Parks, National Wildlife Refuges, Bureau of Land Management Land, Waterfowl Production Areas, or National Forests)*
- ☐ Tribal lands
- ☐ I am unsure who owns or manages the areas where I participate in wildlife viewing.
- ☐ I do not participate in wildlife viewing in any of the above locations.

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FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

Next, we would like to understand the factors that support and limit your participation in wildlife viewing.

To what extent do people in each of the following groups **encourage your participation** in wildlife viewing?

(Please select one response per statement.)

	Not at all	Very little	Somewhat	Quite a bit	A great deal
Family member(s)	○	○	○	○	○
Friend(s)	○	○	○	○	○
Mentor(s)	○	○	○	○	○
Peer(s)	○	○	○	○	○

To what extent do you experience **accessibility challenges** related to wildlife viewing?

Note: *By* ***"Accessibility challenges"*** *we mean the difficulties someone experiences in interacting with or while using the physical or social environment while trying to engage in a meaningful activity (such as wildlife viewing). This may be a result of a mobility challenge, blindness or low vision, intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing, or other health concerns. (Definition from Birdability.org)*

(Please select one.)

- ◯ Not at all
- ◯ Very little
- ◯ Somewhat
- ◯ Quite a bit
- ◯ A great deal

To what extent do each of the following **limit the extent of your participation** in wildlife viewing in a typical year?

Note: *By* ***"a typical year,"*** *we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.*

(Please select one response per statement.)

	Not at all	Very little	Somewhat	Quite a bit	A great deal
Lack of **free time** to participate in wildlife viewing	○	○	○	○	○
Few **people who support** your wildlife viewing activities	○	○	○	○	○
Few **people to participate in wildlife viewing with**	○	○	○	○	○
Lack of **organized viewing opportunities** within your community or social groups	○	○	○	○	○
Lack of wildlife viewing **skills**	○	○	○	○	○
Lack of access to **equipment or supplies** for wildlife viewing	○	○	○	○	○
Financial costs associated with wildlife viewing	○	○	○	○	○
Distance to high-quality locations for wildlife viewing	○	○	○	○	○
Not knowing **where to go wildlife viewing**	○	○	○	○	○
Lack of **transportation** to wildlife viewing locations	○	○	○	○	○
Accessibility challenges for yourself or the people you go wildlife viewing with	○	○	○	○	○
Lack of **facilities** at wildlife viewing locations	○	○	○	○	○
Safety concerns when wildlife viewing	○	○	○	○	○
Crowds in wildlife viewing locations	○	○	○	○	○

>>

We are also interested in your participation in other kinds of outdoor recreation.

Which of the following **outdoor activities**, if any, do you participate in during a typical year?

Note: *By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.*

(Please select all that apply.)

- ☐ Camping
- ☐ Fishing
- ☐ Horseback riding

- ☐ Winter sports *(such as skiing, snowboarding, or snowshoeing)*
- ☐ Rock climbing or bouldering
- ☐ Foraging *(for wild foods such as mushrooms or berries)*
- ☐ Hunting
- ☐ Swimming
- ☐ Recreational shooting sports or archery
- ☐ Geocaching
- ☐ Hiking or backpacking
- ☐ Off-roading or use of Off Highway Vehicles *(such as ATVs or snowmobiles)*
- ☐ Motorized boating
- ☐ Non-motorized boating *(such as kayaking or canoeing)*
- ☐ Road or mountain biking
- ☐ Running, jogging, or walking
- ☐ I do not participate in any of these activities.
- ☐ Botanizing or viewing wildflowers, other plants, or fungi

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FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

Now we would like to know more about your interest in participating in wildlife or habitat conservation activities in the future.

How likely would you be to participate in each of the following **conservation activities** in the next 5 years, if you had the opportunity to do so?

(Please select one response per conservation activity.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Informing or **teaching** others about wildlife conservation	○	○	○	○	○
Enhancing wildlife habitat *(the place or environment where wildlife live and grow)*	○	○	○	○	○
Participating in **civic engagement** *(such as voting or advocating)* related to wildlife conservation	○	○	○	○	○
Collecting data on wildlife or habitat to contribute to science or management	○	○	○	○	○
Donating money to support wildlife conservation	○	○	○	○	○
Purchasing products that benefit wildlife or whose proceeds support conservation	○	○	○	○	○
Cleaning up trash or litter	○	○	○	○	○

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FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

In this section of the survey, we would like to know more about your experiences with and thoughts about Idaho Department of Fish and Game, the state agency responsible for conserving fish and wildlife and their habitats and managing wildlife-related recreation in Idaho, among other things.

How **familiar** are you with Idaho Department of Fish and Game?
(Please select one.)

- ○ Not at all familiar
- ○ Slightly familiar
- ○ Moderately familiar
- ○ Very familiar
- ○ Extremely familiar

Now, we would like to know more about your **familiarity** with different aspects of Idaho Department of Fish and Game.

(Please select one response per statement.)

	Not at all familiar	Slightly familiar	Moderately familiar	Very familiar	Extremely familiar
Idaho Department of Fish and Game staff	○	○	○	○	○
Idaho Department of Fish and Game programs	○	○	○	○	○
Idaho Department of Fish and Game lands	○	○	○	○	○
Idaho Department of Fish and Game mission	○	○	○	○	○

Have you seen this logo before?

(Please select one.)

○ **Yes,** I have seen this logo before

○ **No,** I have not seen this logo before

Regardless of your level of familiarity with Idaho Department of Fish and Game, we are interested in your thoughts about **how the agency currently prioritizes** programs and services that support wildlife viewing. Please complete the following statement:

The level at which Idaho Department of Fish and Game prioritizes programs and services that support wildlife viewing is...

(Please select one.)

- ◯ Far too low
- ◯ Too low
- ◯ About right
- ◯ Too high
- ◯ Far too high
- ◯ I don't have an opinion.

<< >>

FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

We are also interested in any experiences you may have with the programs and services offered by Idaho Department of Fish and Game.

Idaho Department of Fish and Game offers a variety of **programs and services** that connect people with wildlife and support wildlife viewing. Which of the following Idaho Department of Fish and Game programs and services, if any, have you **participated in or used** in the past 5 years?

(Please select all that apply.)

- ☐ Volunteer research or wildlife data collection opportunities
- ☐ Volunteer opportunities, not related to research or data collection
- ☐ Technical assistance or information about improving wildlife habitat
- ☐ Information about wildlife viewing opportunities in the state
- ☐ Information about wildlife in the state
- ☐ Idaho Department of Fish and Game lands
- ☐ Idaho Department of Fish and Game nature, education, or visitor centers
- ☐ Conservation law enforcement
- ☐ I have not used or engaged in any of these agency programs or services in the last 5 years.

Have any members of your household engaged in programming for children or youth provided by Idaho Department of Fish and Game *(such as school-based programs, camps, or youth and family events)*?

(Please select one.)

- ◯ **Yes**; children or youth in my household have engaged in some of these programs.
- ◯ **No**; children or youth in my household have not engaged in any of these programs.
- ◯ **Not applicable**; I do not have children or youth in my household.

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FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

We would also like to understand how Idaho Department of Fish and Game can best meet the needs of wildlife viewers.

Which of the following potential programs or services from Idaho Department of Fish and Game would better **support your wildlife viewing activities** in Idaho? *(Please select all that apply.)*

Idaho Department of Fish and Game can better support my wildlife viewing activities by providing...

- ☐ More **amenities** for wildlife viewing *(such as viewing platforms, blinds, or signs)*
- ☐ More **accessible features** in wildlife viewing locations *(such as paved trails, accessible parking, or tactile signage)*
- ☐ More opportunities for **youth** to learn how to participate in wildlife viewing
- ☐ More wildlife viewing **events** *(such as wildlife viewing festivals or competitions)*
- ☐ More information about **where** to go to see wildlife
- ☐ More information about **wildlife in Idaho**
- ☐ More information about **how** to view various types of wildlife
- ☐ More programs to improve wildlife viewing **skills**
- ☐ More agency **staff** to support wildlife viewing
- ☐ Access to more **places** to go wildlife viewing
- ☐ More programs to **interact** with other wildlife viewers
- ☐ More **virtual programs** for wildlife viewing *(such as video classes, online presentations, or wildlife cameras)*

- ☐ More information about where and when to view wildlife where there is **no hunting**
- ☐ More **training** opportunities for wildlife viewing guides or mentors
- ☐ More opportunities to be involved in volunteer **research** or wildlife data collection activities
- ☐ I am **not interested** in any of these options to support my wildlife viewing activities.
- ☐ More opportunities to be involved in other **volunteer** activities, not related to research or data collection

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FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

Now, we would like to know about your past financial support of Idaho Department of Fish and Game.

Below are a variety of ways that wildlife conservation and recreation opportunities provided by Idaho Department of Fish and Game are *financially* supported by the public in Idaho. Which of the following **purchases or contributions**, if any, have you made in the past 5 years?

Note: *Please also select options for which you have ever made a one-time, permanent purchase, such as a lifetime hunting or fishing license.*

(Please select all that apply.)

- ☐ Any Idaho hunting license
- ☐ Any Idaho fishing license
- ☐ Voluntary donation of a portion of state income tax return to Idaho Department of Fish and Game
- ☐ Donation of land to Idaho Department of Fish and Game through a conservation easement
- ☐ Direct donation of money to Idaho Department of Fish and Game
- ☐ Tangible products from Idaho Department of Fish and Game *(such as books, maps, and other merchandise)*
- ☐ I have not made any of these purchases or contributions.

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FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

Now, we would like to know about future purchases or contributions you may make to Idaho Department of Fish and Game.

How likely are you to make the following **purchases or contributions** in the next 5 years, assuming these options are available in Idaho?
(Please select one response for each type of contribution, regardless of whether or not the option is currently available in Idaho.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Any Idaho hunting license	○	○	○	○	○
Any Idaho fishing license	○	○	○	○	○
Idaho conservation or habitat stamp *required with purchase of a hunting license*	○	○	○	○	○
Idaho conservation or habitat stamp *voluntarily purchased independent of a hunting license*	○	○	○	○	○
Conservation or wildlife license plate	○	○	○	○	○
Idaho Department of Fish and Game lands access pass, permit, or entrance fee	○	○	○	○	○
Fees for a program or event hosted by Idaho Department of Fish and Game	○	○	○	○	○
Voluntary donation of a portion of state income tax return to Idaho Department of Fish and Game	○	○	○	○	○

Donation of land to Idaho Department of Fish and Game through a conservation easement	○	○	○	○	○
Direct donation to Idaho Department of Fish and Game	○	○	○	○	○
Lottery ticket for which the proceeds go to habitat conservation	○	○	○	○	○
Virtual products from Idaho Department of Fish and Game *(such as podcasts, e-books, and other online materials)*	○	○	○	○	○
Physical products from Idaho Department of Fish and Game *(such as books, maps, and other merchandise)*	○	○	○	○	○

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FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

We would like to understand what might encourage you to provide additional financial support to wildlife conservation through Idaho Department of Fish and Game.

How likely would you be to provide **more financial support** than you currently do to Idaho Department of Fish and Game, if your contributions were used in the following ways?

(Please select one response per statement.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Supported **habitat** conservation	○	○	○	○	○
Supported conservation of **rare** or **vulnerable** species	○	○	○	○	○
Supported conservation of the types of **wildlife** you like to view	○	○	○	○	○
Supported more **opportunities** or **resources** for wildlife viewing	○	○	○	○	○
Supported more **education** or **outreach** related to wildlife conservation	○	○	○	○	○
Supported wildlife **research** or **monitoring**	○	○	○	○	○
Were **matched** with funding from a different source	○	○	○	○	○

<< >>

FISH AND WILDLIFE CONSERVATION VIRGINIA TECH

We would also like to know more about your interest in supporting Idaho Department of Fish and Game by participating in wildlife or habitat conservation activities in the future.

How likely would you be to participate in each of the following **conservation activities *with or in support of Idaho Department of Fish and Game*** in the next 5 years, if you had the opportunity to do so?

(Please select one response per conservation activity.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Informing or teaching others about wildlife conservation	○	○	○	○	○
Enhancing wildlife habitat *(the place or environment where wildlife live and grow)*	○	○	○	○	○
Participating in **civic engagement** *(such as voting or advocating)* related to wildlife conservation	○	○	○	○	○
Collecting data on wildlife or habitat to contribute to science or management	○	○	○	○	○
Donating money to support wildlife conservation	○	○	○	○	○
Purchasing products that benefit wildlife or whose proceeds support conservation	○	○	○	○	○
Cleaning up trash or litter	○	○	○	○	○

<< >>

FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

Next, we would like to know more about how you feel about Idaho Department of Fish and Game.

To what extent do you agree or disagree with each of the **following statements about Idaho Department of Fish and Game**?

(Please select one response per statement.)

	Strongly Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Strongly Agree
I **trust** Idaho Department of Fish and Game.	○	○	○	○	○
I **trust** the **staff** at Idaho Department of Fish and Game.	○	○	○	○	○
I **doubt** the **honesty** of Idaho Department of Fish and Game.	○	○	○	○	○
Promises made by Idaho Department of Fish and Game are likely to be **reliable**.	○	○	○	○	○
I expect that Idaho Department of Fish and Game will **keep promises** they make.	○	○	○	○	○
I **do not doubt** the honesty of Idaho Department of Fish and Game.	○	○	○	○	○

I expect that Idaho Department of Fish and Game is **well-meaning**.	○	○	○	○	○
I expect that Idaho Department of Fish and Game has **good intentions** toward wildlife viewers.	○	○	○	○	○
I expect that Idaho Department of Fish and Game's intentions are **benevolent**.	○	○	○	○	○
I **doubt** that Idaho Department of Fish and Game is **well-meaning**.	○	○	○	○	○
Idaho Department of Fish and Game **knows about** wildlife viewing.	○	○	○	○	○
Idaho Department of Fish and Game **understands** the environment they work in.	○	○	○	○	○

FISH AND WILDLIFE CONSERVATION
VIRGINIA TECH

Finally, we would like to learn how Idaho Department of Fish and Game can best communicate with wildlife viewers in Idaho about recreation opportunities and conservation issues.

Which, if any, of the following ways are you interested in **receiving information** from Idaho Department of Fish and Game?

Note: *Your responses are for data collection only. Idaho Department of Fish and Game will not receive your specific response nor contact you as a result of this survey.*

(Please select all that apply.)

- ☐ Printed materials *(such as brochures and maps)*
- ☐ Mailed newsletter or other subscription
- ☐ Email update or e-newsletter
- ☐ Online magazine
- ☐ Idaho Department of Fish and Game website
- ☐ Local news *(such as television or online or print newspapers)*
- ☐ Blogs
- ☐ Facebook
- ☐ Twitter

- [ ] Tik-Tok
- [ ] Instagram
- [ ] YouTube
- [ ] Podcast
- [ ] Text alert
- [ ] One-on-one interaction with agency staff
- [ ] I would prefer not to receive information from Idaho Department of Fish and Game.

>>

This is the final section of the survey. We have just a few more quick questions about you.

For about how many years total have you lived in Idaho?

(Please select the number that's your best estimate of total years you've lived in Idaho.)

What is your race and/or ethnicity?

(Please select all that apply.)

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic, Latino, or Spanish
- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Some other race or ethnicity
- ☐ White

What was your total household income during the past 12 months?

(Please select one.)

- ◯ Less than $24,999
- ◯ $25,000 - $49,999
- ◯ $50,000 – $74,999
- ◯ $75,000 – $99,999
- ◯ $100,000 – $124,999
- ◯ $125,000 or more
- ◯ I prefer not to answer.

What is your five-digit zip code?

Which of the following best describes where you currently live?

(Please select one per statement.)

- ◯ Rural area (Less than 2,500 people)
- ◯ Small town (2,500 - 9,999 people)
- ◯ Small city (10,000 - 49,999 people)
- ◯ Urban area (50,000 or more people)

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APPENDIX B. Reverse coded items and attention checks

1. Attention checks for the question, "In which, if any, of the following forms of wildlife viewing have you participated in the past 5 years?"

    a. Respondent selected ["Closely observing wildlife or trying to identify unfamiliar types of wildlife"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
    OR
    b. Respondent selected ["Photographing or taking pictures of wildlife"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
    OR
    c. Respondent selected ["Feeding wild birds"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
    OR
    d. Respondent selected ["Feeding other wildlife"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
    OR
    e. Respondent selected ["Visiting parks and natural areas to observe, photograph, or feed wildlife"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
    OR
    f. Respondent selected ["Taking trips or outings to any other location to observe, photograph, or feed wildlife"] AND ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]

2. Attention checks for "Now, we would like to know more about the role of wildlife viewing in your life. To what extent do you agree or disagree with the following statements?"

    a. Respondent selected ["Strongly Agree"] FOR ["Being a wildlife viewer is an important part of who I am" AND "Being a wildlife viewer is not a key part of who I am"]
    OR
    b. Respondent selected ["Strongly Disagree"] FOR ["Being a wildlife viewer is an important part of who I am"] AND ["Being a wildlife viewer is not a key part of who I am"]

OR

c. Respondent selected [“Strongly Agree”] FOR [“Wildlife viewing is not an important part of my life”] AND [“Wildlife viewing has a central role in my life”] OR
d. Respondent selected [“Strongly Disagree”] FOR [“Wildlife viewing is not an important part of my life” AND “Wildlife viewing has a central role in my life”]

3. Attention checks for “How many days do you spend wildlife viewing in each of the following locations in a typical year?”

    a. Respondent selected [211 or more days] IS SELECTED FOR [“Outside of your state or the United States”] AND [“More than 1 mile away from your home, but within your state”] OR [“Around or within 1 mile of your home”]

4. Attention checks for “How many days did you spend wildlife viewing in each of the following locations during the first year of the COVID-19 pandemic (March 2020 - February 2021)?”

    a. Respondent selected [211 or more days] IS SELECTED FOR [“Outside of your state or the United States”] AND [“More than 1 mile away from your home, but within your state”] OR [“Around or within 1 mile of your home”]

5. Attention checks for “How many days do you think you will spend wildlife viewing in each of the following locations in the next 12 months?”
    a. Respondent selected [211 or more days] IS SELECTED FOR [“Outside of your state or the United States”] AND [“More than 1 mile away from your home, but within your state”] OR [“Around or within 1 mile of your home”]

6. Attention checks for “Next, we would like to know more about how you feel about the Idaho Department of Fish and Game. To what extent do you agree or disagree with each of the following statements about the Idaho Department of Fish and Game?”

    a. Respondent selected [“Strongly Agree”] FOR [“I doubt the honesty of the Idaho Department of Fish and Game”] AND [“I can count on the Idaho Department of Fish and Game to be truthful”] OR [“Strongly Disagree”] IS SELECTED FOR [“I doubt the honesty of Idaho Department of Fish and Game”] AND [“I can count on Idaho Department of Fish and Game to be truthful”]

b. Respondent selected [“Strongly Agree”] FOR [“I expect that Idaho Department of Fish and Game’s intentions are benevolent”] AND [“I doubt that Idaho Department of Fish and Game is well meaning”] OR [“Strongly Disagree”] FOR [“I expect that Idaho Department of Fish and Game’s intentions are benevolent”] AND [“I doubt that Idaho Department of Fish and Game is well meaning”]

c. Respondent selected [“Strongly Agree”] FOR [“Idaho Department of Fish and Game knows very little about wildlife viewing”] AND [“Idaho Department of Fish and Game knows how to support wildlife viewers”] OR [“Strongly Disagree”] FOR [“Idaho Department of Fish and Game knows very little about wildlife viewing”] AND [“Idaho Department of Fish and Game knows how to support wildlife viewers”]

APPENDIX C. Tables Appendix

Table 1. Age (survey quota)

	Statewide (mean)	Consumptive (mean)	Nonconsumptive (mean)	Significance (t)
Age	47.51	45.38	50.34	**3.24*** **

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 502

Table 2. Gender (survey quota)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Man	47.8	52.1	42.1	**5.00***
Woman	51.2	46.9	56.9	
Non-binary	0.4	0.7	0.0	
Not Disclose	0.4	0.3	0.5	
Self-Describe	0.2	0.0	0.5	

Note that statistical tests are between consumptive and nonconsumptive groups, with only "man" and "woman" due to low sample size. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 3. Education (survey quota)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Professional, master's or doctoral degree	9.5	10.4	8.3	
Bachelor's degree	19.8	16.3	24.5	
Associate's or technical degree	21.8	18.8	25.9	**12.17***
Some college	26.6	29.9	22.2	
High school diploma, equivalent, or less	22.2	24.7	19.0	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 4. Race and ethnicity (for descriptive analysis)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
White	92.0	90.6	94.0
Hispanic, Latino, or Spanish	4.8	6.6	2.3
Multiracial	3.8	5.8	.9
American Indian or Alaska Native	3.0	4.9	.5
Asian	2.2	2.4	1.9
Some other race or ethnicity	1.8	1.7	1.9
Black or African American	0.8	1.4	0.0
Middle Eastern or North African	0.4	0.3	0.5
Native Hawaiian or other Pacific Islander	0.4	0.0	0.0

Table 5. Race and ethnicity (for statistical analysis)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
BIPOC	11.4	14.6	7.0	**7.16****
White	88.6	85.4	93.0	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 6. Household income

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Less than $24,999	18.1	17.4	19.1	1.44
$25,000 - $49,999	27.5	27.5	27.4	
$50,000 – $74,999	19.3	20.9	17.2	
$75,000 – $99,999	12.0	11.5	12.6	
$100,000 – $124,999	8.6	8.7	8.4	
$125,000 or more	10.0	9.8	10.2	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 6

Table 7. Residential location

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Rural area (Less than 2,500 people)	19.5	22.3	15.7	5.12
Small town (2,500 - 9,999 people)	17.9	19.2	16.2	
Small city (10,000 - 49,999 people)	26.6	25.1	28.7	
Urban area (50,000 or more people)	36.0	33.4	39.4	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 3

Table 8. Forms of wildlife viewing

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Visiting parks and natural areas to observe, photograph, or feed wildlife	67.1	69.4	63.9	1.72
Photographing or taking pictures of wildlife	63.5	65.6	60.6	1.31
Taking trips or outings to any other location to observe, photograph, or feed wildlife	56.5	61.5	50.0	**6.59***
Feeding wild birds	41.7	42.0	41.2	0.03
Closely observing wildlife or trying to identify unfamiliar types of wildlife	36.9	42.7	29.2	**9.72****
Feeding other wildlife	31.9	36.5	25.9	**6.29***
Maintaining plantings or natural areas for the benefit of wildlife	27.4	28.1	26.4	0.18

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 9. Types of wildlife

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Birds	74.6	73.3	76.4	0.63
Land Mammals	87.5	89.6	84.7	2.66
Marine Mammals	42.9	44.4	40.7	0.69
Reptiles	34.9	38.5	30.1	**3.87***
Fish	39.7	50.3	25.5	**31.93*****
Insects	30.8	33.0	27.8	1.57
Amphibians	31.7	34.7	27.8	2.74
Other Wildlife	0.4	0.3	0.5	n/a

Note that statistical tests are between consumptive and nonconsumptive groups. Due to the small number of respondents who indicated interest in other types of wildlife, a statistical test could not be conducted. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 10. Affective specialization: Centrality scale

Specialization	Statewide (Mean)	Consumptive (Mean)	Nonconsumptive (Mean)	Significance (t)
Centrality	3.02	3.14	2.86	**-3.15*** **

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 499

Table 11. Behavioral specialization: specialized equipment

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Yes, I have owned, rented, or borrowed specialized equipment.	61.7	64.9	57.4	2.95
No, I have not owned, rented, or borrowed specialized equipment.	38.3	35.1	42.6	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 12. Behavioral specialization: years viewing

# of years spent viewing	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
1-5 years	23.9	25.8	21.4
6-10 years	19.3	17.8	21.4
11-15 years	6.9	6.2	7.8
16-20 years	10.4	9.5	11.7
21-25 years	6.7	7.3	5.8
26-30 years	6.7	5.5	8.3
31-35 years	4.2	5.5	2.4
36-40 years	4.6	5.1	3.9
41-45 years	3.7	2.9	4.9
46-50 years	5.4	5.5	5.3
51-55 years	1.5	1.5	1.5
56-60 years	2.9	2.9	2.9
61-65 years	1.5	2.2	0.5
66 or more years	2.5	2.6	2.4

Table 13. Behavioral specialization: experience as percentage of life spent viewing

% of life spent viewing	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
0-20%	37.5	36.4	39.0	
21-40%	22.4	19.8	25.8	
41-60%	11.7	12.0	11.3	4.94
61-80%	14.1	15.5	12.2	
81-100%	14.3	16.3	11.7	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 14. Cognitive specialization: self-rated level of expertise

Self-rated skill level	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Beginner	25.8	21.5	31.5	
Novice	32.1	29.5	35.6	
Intermediate	35.5	41.3	27.8	**13.78*** **
Advanced	6.2	6.9	5.1	
Expert	0.4	0.7	0.0	

Note that statistical tests are between consumptive and nonconsumptive groups. Due to no nonconsumptive respondents indicating they were "expert" we combined "advanced" and "expert" for analysis purposes. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 15. COVID-19 impacts on wildlife viewing participation and the R3 Framework

R3 Category	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Retained	68.1	70.5	64.8	2.31
Churned	15.1	13.2	17.6	
Reactivated	12.3	11.8	13.0	
Recruited	4.6	4.5	4.6	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 3

Table 16. Time spent wildlife viewing (Statewide)

Statewide				
Year	**Location**	**0 days (%)**	**1 - 30 days (%)**	**> 30 days (%)**
Typical Year	**Around home**	8.8	40.2	51.0
	Away from home	5.5	50.0	44.5
	Outside of state or country	33.2	50.2	16.6
First year of COVID-19 pandemic	**Around home**	13.9	41.5	44.6
	Away from home	16.8	51.5	31.7
	Outside of state or country	52.8	34.3	12.9
Upcoming year	**Around home**	9.4	39.1	51.5
	Away from home	7.6	47.5	44.9
	Outside of state or country	34.6	44.7	20.6

Table 17. Time spent wildlife viewing: Consumptive and nonconsumptive

		C (%)	N (%)	C (%)	N (%)	C (%)	N (%)	
Year	**Location**	**0 days (%)**		**1 - 30 days (%)**		**> 30 days (%)**		**Significance (χ^2)**
Typical year	**Around home**	8.5	9.2	42.3	37.4	49.3	53.4	1.17
	Away from home	3.3	8.4	46.5	54.7	50.2	36.9	**11.53****
	Outside of state or country	31.6	35.3	50.0	50.5	18.4	14.2	1.70
First year of COVID-19 pandemic	**Around home**	12.5	15.7	45.5	36.1	42.0	48.1	4.59
	Away from home	14.4	20.1	50.9	52.3	34.7	27.6	4.40
	Outside of state or country	48.1	59.2	36.4	31.5	15.5	9.4	**7.27***
Upcoming year	**Around home**	8.7	10.3	40.8	36.9	50.5	52.8	0.91
	Away from home	5.3	10.8	43.7	52.6	51.1	36.6	**12.54****
	Outside of state or country	33.9	35.5	40.6	50.2	25.4	14.2	**9.96****

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 2

Table 18. Wildlife viewing location

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
State-managed areas	74.6	77.8	70.4	3.57
My own home or property	66.1	66.0	66.2	0.00
Locally-managed areas	66.1	66.3	65.7	0.02
Federally-managed areas	64.9	69.4	58.8	**6.14***
Property of friends or family	41.3	45.5	35.6	**4.93***
Other private property	28.6	29.5	27.3	0.29
Tribal lands	9.9	6.9	12.2	**3.75***
I am unsure	6.9	7.6	6.0	0.50

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 19. Wildlife viewing trip-related expenditures

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
$0	11.9	7.3	18.1
$1-$50	19.0	18.1	20.4
$51-$100	15.9	19.8	10.6
$101-$150	7.5	8.0	6.9
$151-$200	10.5	10.1	11.1
$201-$250	6.9	8.7	4.6
$251-$300	4.2	4.2	4.2
$301-$350	5.2	5.9	4.2
$351-$400	4.6	4.5	4.6
$401-$450	2.0	1.4	2.8
$451-$500	3.0	3.8	1.9
$501 or more	9.3	8.3	10.6

Table 19 B. Wildlife viewing trip-related expenditures (For analysis purposes)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
$0	11.9	7.3	18.1	
$1-$100	34.9	37.8	31.0	**14.02*** **
$101 or more	53.2	54.9	50.9	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 2

Table 20. Other wildlife viewing-related expenditures

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
$0	17.6	11.5	25.7
$1-$50	21.8	22.0	21.5
$51-$100	13.4	14.7	11.7
$101-$150	10.8	12.9	7.9
$151-$200	6.8	7.0	6.5
$201-$250	6.4	8.4	3.7
$251-$300	4.4	4.9	3.7
$301-$350	4.0	3.1	5.1
$351-$400	3.0	4.5	0.9
$401-$450	1.4	0.7	2.3
$451-$500	3.6	2.8	4.7
$501 or more	6.8	7.3	6.1

Table 20 B. Other wildlife viewing-related expenditures (For analysis purposes)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
$0	17.6	11.5	25.7	
$1-$100	35.2	36.7	33.2	**17.31****
$101 or more	47.2	51.7	41.1	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 2

Table 21. Other outdoor recreation

Other Outdoor Recreation	Statewide (% selecting item)	Consumptive (% selecting item)	Nonconsumptive (% selecting item)	Significance (χ^2)
Camping	67.5	80.9	49.5	**55.32*** **
Running, Walking, or Jogging	58.3	55.6	62.0	2.13
Hiking or Backpacking	55.0	59.4	49.1	**5.29***
Fishing	54.4	N/A		
Swimming	40.9	48.6	30.6	**16.65*** **
Recreational Shooting	29.2	41.7	12.5	**50.82*** **
Off Highway Vehicles	26.2	36.8	12.0	**39.17*** **
Hunting	23.2	N/A		
Biking	22.4	24.0	20.4	0.91
Winter Sports	21.8	25.7	16.7	**5.90*** **
Foraging	21.2	27.8	12.5	**17.23*** **
Motorized Boating	15.5	23.3	5.1	**31.16*** **

Non-Motorized Boating	15.3	19.4	9.7	**9.01****
Horseback Riding	13.1	19.4	4.6	**23.80*****
Botanizing	12.5	11.1	14.4	1.18
Climbing	10.3	11.1	9.3	0.46
Geocaching	8.7	10.1	6.9	1.51
None	5.0	N/A		

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 22. Conservation behaviors (general; statewide)

Statewide					
	Not at all likely (%)	**Slightly likely (%)**	**Moderately likely (%)**	**Very likely (%)**	**Extremely likely (%)**
Teaching Others	33.5	25.6	21.0	12.5	7.3
Enhancing Habitat	13.9	25.6	31.9	18.1	10.5
Civic engagement	19.4	17.7	28.8	21.2	12.9
Collecting Data	32.6	28.0	21.9	11.1	6.4
Donating	18.9	27.2	28.0	15.1	10.7
Purchasing products	12.2	20.3	30.7	24.7	12.2
Cleaning up trash	5.6	12.2	16.6	32.4	33.2

Table 23. Conservation behaviors (General; consumptive-nonconsumptive)

	Not at all likely (%)		Slightly likely (%)		Moderately likely (%)		Very likely (%)		Extremely likely (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Teaching Others	26.4	43.1	25.3	25.9	25.0	15.7	15.6	8.3	7.6	6.9	**20.60*** **
Enhancing Habitat	8.7	20.8	25.0	26.4	35.4	27.3	20.1	15.3	10.8	10.2	**17.41** **
Civic engagement	15.6	24.5	18.4	16.7	32.6	23.6	20.5	22.2	12.8	13.0	8.93
Collecting Data	27.2	39.8	30.3	25.0	23.3	19.9	12.9	8.8	6.3	6.5	**9.80***
Donating	17.1	21.3	24.0	31.5	32.4	22.2	16.7	13.0	9.8	12.0	**9.98***
Purchasing products	9.1	16.3	15.7	26.5	36.2	23.3	27.9	20.5	11.1	13.5	**22.41*** **
Cleaning up trash	4.9	6.5	9.5	15.8	16.1	17.2	31.6	33.5	37.9	27.0	9.22

Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 24. Conservation behaviors (With agency support; statewide)

Statewide					
	Not at all likely (%)	**Slightly likely (%)**	**Moderately likely (%)**	**Very likely (%)**	**Extremely likely (%)**
Teaching Others	39.8	20.3	19.7	13.1	7.2
Enhancing Habitat	18.1	27.8	27.4	17.3	9.5
Civic engagement	22.5	17.9	24.5	19.5	15.7
Collecting Data	31.4	26.4	20.1	14.1	8.0
Donating	22.2	30.7	24.0	14.2	8.8
Purchasing products	14.4	24.6	25.1	22.0	14.0
Cleaning up trash	7.4	12.4	18.5	27.7	33.9

Table 25. Conservation behaviors (With agency support; consumptive-nonconsumptive)

	Not at all likely (%)		Slightly likely (%)		Moderately likely (%)		Very likely (%)		Extremely likely (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Teaching Others	33.3	48.4	20.8	19.5	24.7	13.0	12.5	14.0	8.7	5.1	**17.95*** **
Enhancing Habitat	12.5	25.5	28.1	27.3	30.6	23.1	17.7	16.7	11.1	7.4	**15.85** **
Civic engagement	20.9	24.5	17.1	19.0	26.5	21.8	19.5	19.4	16.0	15.3	2.14
Collecting Data	25.1	39.8	26.8	25.9	23.3	15.7	17.1	10.2	7.7	8.3	**16.31** **
Donating	19.0	26.5	32.4	28.4	25.4	22.3	16.2	11.6	7.0	11.2	8.36
Purchasing products	11.2	18.6	22.4	27.4	26.9	22.8	24.5	18.6	15.0	12.6	9.28
Cleaning up trash	4.9	10.7	11.3	14.0	16.5	21.0	27.8	27.6	39.4	26.6	**13.52** **

Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 26. Barriers to wildlife viewing (Statewide)

Statewide					
	Not at all (%)	**Very little (%)**	**Somewhat (%)**	**Quite a bit (%)**	**A great deal (%)**
Lack of free time	21.7	22.5	30.2	21.3	4.4
Few people who support viewing	36.4	30.6	23.2	8.0	1.8
Few people to view with	30.5	29.5	25.0	10.8	4.2
Lack of organized viewing opportunities	37.2	26.0	23.1	11.9	1.8
Lack of viewing skills	31.6	28.0	26.8	10.7	2.8
Lack of access to equipment	32.0	24.2	29.4	11.2	3.2
Financial cost	23.4	19.2	30.0	18.8	8.6
Distance to viewing locations	21.2	25.2	30.6	15.8	7.2
Not knowing where to go viewing	34.3	25.0	23.0	12.6	5.2
Lack of transportation to viewing locations	47.8	18.8	19.4	8.6	5.4
Accessibility challenges	41.8	20.1	21.3	10.8	6.0
Lack of facilities at viewing locations	39.2	28.9	21.5	6.6	3.8
Safety concerns when viewing	40.4	29.0	18.8	8.6	3.2
Crowds in viewing locations	34.9	27.5	22.6	11.0	4.0

Table 27. Barriers to wildlife viewing (Consumptive-nonconsumptive)

	Not at all (%)		Very little (%)		Somewhat (%)		Quite a bit (%)		A great deal (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Lack of free time	17.0	27.9	24.7	19.5	32.6	27.0	20.8	21.9	4.9	3.7	**9.91***
Few people who support viewing	30.1	44.9	31.8	29.0	25.9	19.6	10.1	5.1	2.1	1.4	*Table 27B*
Few people to view with	25.3	37.6	29.9	29.1	27.8	21.1	12.5	8.5	4.5	3.8	**10.20***
Lack of organized viewing opportunities	32.6	43.3	27.8	23.7	24.0	21.9	14.2	8.8	1.4	2.3	*Table 27B*
Lack of viewing skills	30.6	33.0	30.2	25.1	27.1	26.5	9.7	12.1	2.4	3.3	2.34
Lack of access to equipment	31.5	32.7	25.2	22.9	29.4	29.4	11.9	10.3	2.1	4.7	3.14
Financial cost	18.2	30.4	18.9	19.6	34.6	23.8	20.3	16.8	8.0	9.3	**13.58****
Distance to viewing locations	20.2	22.5	24.4	26.3	31.7	29.1	17.4	13.6	6.3	8.5	2.69
Not knowing where to go viewing	35.9	32.2	27.9	21.0	19.5	27.6	11.8	13.6	4.9	5.6	6.65
Lack of transportation to viewing locations	46.5	49.5	16.1	22.4	22.4	15.4	10.1	6.5	4.9	6.1	8.07
Accessibility challenges	36.2	49.3	22.3	17.2	25.4	15.8	10.8	10.7	5.2	7.0	**12.57***
Lack of facilities at	36.3	43.0	29.6	28.0	22.2	20.6	8.1	4.7	3.9	3.7	3.83

viewing locations											
Safety concerns when viewing	39.3	41.9	28.1	30.2	18.6	19.1	9.8	7.0	4.2	1.9	3.68
Crowds in viewing locations	33.9	36.2	29.7	24.4	21.3	24.4	11.2	10.8	3.8	4.2	2.00

^ See table 27B for analysis for "Lack of organized viewing opportunities" and "Few people who support wildlife viewing. Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 27 B. Barriers to wildlife viewing (Consumptive-nonconsumptive; for analysis)

	Not at all (%)		Very little (%)		Somewhat (%)		Quite a bit AND a great deal (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Few people who support viewing	30.1	44.9	31.8	29.0	25.9	19.6	12.2	6.5	**13.79*** **
Lack of organized viewing opportunities	32.6	43.3	27.8	23.7	24.0	21.9	15.6	11.2	6.53

"Quite a bit" and "a great deal" are combined due to small sample size. Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 3

Table 28. Groups that encourage participation in wildlife viewing (Family)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all	11.9	10.1	14.4	
Very little	9.7	10.1	9.3	
Somewhat	32.7	33.7	31.5	3.41
Quite a bit	30.2	29.2	31.5	
A great deal	15.5	17.0	13.4	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 29. Groups that encourage participation in wildlife viewing (Friends)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all	20.1	16.4	25.1	6.64
Very little	16.5	16.4	16.7	
Somewhat	33.9	35.2	32.1	
Quite a bit	19.5	20.9	17.7	
A great deal	10.0	11.1	8.4	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 30. Groups that encourage participation in wildlife viewing (Mentors)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all	45.2	38.7	53.7	
Very little	13.5	13.7	13.1	
Somewhat	21.1	25.0	15.9	**18.14*** **
Quite a bit	13.5	16.9	8.9	
A great deal	6.8	5.6	8.4	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 31. Groups that encourage participation in wildlife viewing (Peers)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all	30.3	25.0	37.2	
Very little	18.0	19.0	16.7	
Somewhat	29.9	33.1	25.6	9.02
Quite a bit	16.8	17.6	15.8	
A great deal	5.0	5.3	4.7	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 32. Accessibility and wildlife viewing

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
Not at all	43.7	40.4	48.1
Very little	19.5	20.2	18.5
Somewhat	26.4	27.5	25.0
Quite a bit	8.9	10.5	6.9
A great deal	1.4	1.4	1.4

Table 32B. Accessibility and wildlife viewing, Analysis

	State wide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all	43.7	40.4	48.1	3.86
Very little	19.5	20.2	18.5	
Somewhat	26.4	27.5	25.0	
Quite a bit AND a great deal	10.3	11.9	8.3	
Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold. * p = .01 - .05 ** p = .001 - .01 *** p < .001 df = 3				

Table 33. Basic agency familiarity

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all familiar	7.6	3.1	13.4	
Slightly familiar	25.2	20.9	31.0	
Moderately familiar	34.8	35.2	34.3	**39.77*** **
Very familiar	23.9	31.7	13.4	
Extremely familiar	8.5	9.1	7.9	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 34. Familiarity with specific state agency characteristics (IDGF staff)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all familiar	38.2	28.1	51.6	
Slightly familiar	26.0	27.8	23.7	
Moderately familiar	19.3	25.0	11.6	**36.35*** **
Very familiar	12.7	16.0	8.4	
Extremely familiar	3.8	3.1	4.7	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 35. Familiarity with specific state agency characteristics (IDGF programs)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all familiar	21.7	14.9	30.7	
Slightly familiar	33.0	28.8	38.6	
Moderately familiar	27.6	35.8	16.7	**38.99*** **
Very familiar	14.3	15.6	12.6	
Extremely familiar	3.4	4.9	1.4	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 36. Familiarity with specific state agency characteristics (IDGF lands)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all familiar	15.5	9.0	24.3	
Slightly familiar	31.1	28.5	34.6	
Moderately familiar	26.5	29.9	22.0	**34.51*** **
Very familiar	18.9	24.7	11.2	
Extremely familiar	8.0	8.0	7.9	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 37. Familiarity with specific state agency characteristics (IDGF mission)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Not at all familiar	24.1	19.8	29.8	
Slightly familiar	27.8	25.3	31.2	
Moderately familiar	25.0	26.0	23.7	**17.66*** **
Very familiar	17.1	22.2	10.2	
Extremely familiar	6.0	6.6	5.1	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 38. Logo recognition

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Yes, I have seen this logo before	90.3	96.2	82.4	**26.67*** **
No, I have not seen this logo before	9.7	3.8	17.6	

Note that statistical tests are between consumptive and nonconsumptive groups.
Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 39. Perception of state agency prioritization of programs and services for wildlife viewing

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)
Far too low	4.4	3.5	5.7
Too low	23.0	22.4	23.9
About right	66.3	70.1	60.8
Too high	4.7	3.9	5.7
Far too high	1.6	0.0	4.0

Table 39B. Perception of state agency prioritization of programs and services for wildlife viewing (Analysis)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Far too low and too low	27.4	26.0	29.5	
About right	66.3	70.1	60.8	**7.25***
Too high and far too high	6.3	3.9	9.7	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold. Respondents that indicated 'no opinion' (*n* = 151) for this question were excluded in analysis.
* *p* = .01 - .05
** *p* = .001 - .01
*** *p* < .001
df = 2

Table 40. Experiences with state agency programs and services

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Information about wildlife in state	38.4	42.0	33.5	**3.78***
Agency lands	29.8	38.9	17.7	**26.47*****
Visitor or education centers	28.0	33.7	20.5	**10.66*****
Information about wildlife viewing opportunities	26.6	32.6	18.6	**12.41*****
Other volunteer opportunities, not related to data collection	11.3	14.2	7.4	**5.66***
Technical assistance or information about habitat	10.5	11.8	8.8	1.15
Volunteer data collection	9.9	12.8	6.0	**6.36***
Conservation law enforcement	8.3	12.2	3.3	**12.73*****
No agency programs or services	39.2	30.2	51.2	**22.69*****

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 41. Programs and services for children and youth

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Yes, youth have engaged in programming	45.0	50.0	35.1	**4.37***
No, youth have not engaged in programming	55.0	50.0	64.9	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold. Responses indicating no youth or children (statewide *n* = 279) in their household were excluded from analysis.
* *p* = .01 - .05
** *p* = .001 - .01
*** *p* < .001
df = 1

Table 42. Measures of trust in IDGF

	Statewide (Mean)	Consumptive (Mean)	Nonconsumptive (Mean)	Significance (t)
"I trust IDGF"	3.93	3.97	3.88	-1.11
"I trust IDGF staff"	3.89	3.91	3.87	-0.44
Gefen capability score	4.04	4.05	4.04	-0.10
Gefen benevolence score	3.92	3.87	3.99	1.75
Gefen integrity score	3.31	3.34	3.28	-1.36

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
"I trust IDGF" df = 502
"I trust IDGF staff" df = 501
Gefen capability score df = 502
Gefen benevolence score df = 502
Gefen integrity score df = 502

Table 43. Past purchases and contributions (nonvoluntary and voluntary)

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Hunting License	28.2	41.8	10.2	**60.84*** **
Fishing License	56.1	79.8	24.5	**152.75*** **
Income Tax Donation	15.5	18.5	11.6	**4.47***
Land Donation (Easement)	8.3	8.4	8.3	0.00
Direct Donation	12.7	12.9	12.5	0.02
Tangible Product	23.3	29.3	15.3	**13.51*** **
None	28.6	11.5	51.4	**95.98*** **

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 44. Lifetime fishing or hunting license purchases

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Yes, I have a lifetime fishing or hunting license	17.5	19.1	11.5	1.94
No, I do not have a lifetime fishing or hunting license	82.5	80.9	88.5	

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold. This question was only presented to respondents (*n* = 297) who had indicated they had purchased a fishing or hunting license in the past five years.
* *p* = .01 - .05
** *p* = .001 - .01
*** *p* < .001
df = 1

Table 45. Future purchases and contributions (Statewide)

Statewide					
	Not at all likely (%)	**Slightly likely (%)**	**Moderately likely (%)**	**Very likely (%)**	**Extremely likely (%)**
Habitat Stamp (Required)	43.8	12.2	17.4	10.8	15.8
Hunting License	41.7	11.6	13.2	15.0	18.4
Fishing License	18.1	12.9	17.5	19.3	32.2
Habitat Stamp (Voluntary)	40.6	19.1	17.3	13.9	9.1
Conservation License Plate	38.1	22.0	18.8	11.0	10.0
Land Access Fee	15.1	15.5	24.3	25.5	19.5
Program Fee	24.6	26.1	25.9	14.0	9.4
Income Tax Donation	38.2	25.5	18.7	12.4	5.2
Land Donation (Easement)	57.0	17.4	13.4	6.4	5.8
Direct Donation	40.6	21.5	20.5	11.6	5.8
Lottery Ticket	32.2	17.8	21.6	16.2	12.2
Virtual Product	36.0	27.4	18.9	11.7	6.0
Tangible Product	19.4	24.2	26.9	17.6	11.8

Table 46. Future purchases and contributions (Consumptive-nonconsumptive)

	Not at all likely (%)		Slightly likely (%)		Moderately likely (%)		Very likely (%)		Extremely likely (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Habitat Stamp (Required)	28.9	63.8	13.6	10.3	20.6	13.1	16.4	3.3	20.6	9.4	**68.03*** **
Hunting License	24.0	65.6	13.9	8.5	14.3	11.8	18.1	10.8	29.6	3.3	**104.21*** **
Fishing License	3.1	38.1	8.0	19.5	14.9	20.9	23.6	13.5	50.3	7.9	**174.05*** **
Habitat Stamp (Voluntary)	29.6	55.4	20.1	17.8	20.1	13.6	16.5	10.3	13.7	2.8	**42.62*** **
Conservation License Plate	37.2	39.3	18.2	27.1	20.4	16.8	13.0	8.4	11.2	8.4	8.58
Land Access Fee	11.1	20.5	13.6	18.1	26.8	20.9	26.1	24.7	22.3	15.8	**13.20***
Program Fee	19.2	31.6	22.4	31.2	29.7	20.9	16.8	10.2	11.9	6.0	**23.19*** **
Income Tax Donation	36.3	40.7	28.2	22.0	17.6	20.1	13.0	11.7	4.9	5.6	3.14
Land Donation (Easement)	52.6	62.9	18.5	16.0	16.0	9.9	7.0	5.6	5.9	5.6	6.55
Direct Donation	35.0	47.9	23.7	18.6	22.6	17.7	12.4	10.7	6.4	5.1	8.57
Lottery Ticket	27.1	38.9	16.2	19.9	25.7	16.2	17.3	14.8	13.7	10.2	**13.08***
Virtual Product	34.6	37.9	24.7	30.8	21.2	15.9	13.4	9.3	6.0	6.1	5.57

	Not at all likely (%)		Slightly likely (%)		Moderately likely (%)		Very likely (%)		Extremely likely (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Tangible Product	15.9	24.1	21.6	27.8	29.0	24.1	19.4	15.3	14.1	8.8	**11.41***

Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 47. Encouraging additional financial support (Statewide)

Statewide					
	Not at all likely (%)	**Slightly likely (%)**	**Moderately likely (%)**	**Very likely (%)**	**Extremely likely (%)**
Habitat conservation	15.5	26.4	27.8	20.2	10.1
Conservation of rare and vulnerable species	15.8	23.4	27.1	20.6	13.2
Conservation of preferred viewing species	14.3	22.1	30.7	23.7	9.2
Opportunities and resources for wildlife viewing	16.8	25.0	31.2	17.4	9.6
More education or outreach related to conservation	17.6	23.4	29.5	17.2	12.4
Wildlife research or monitoring	18.7	25.1	27.9	17.5	10.8
Funds matched by different source	21.5	22.2	29.5	16.5	10.4

Table 48. Encouraging additional financial support (Consumptive-nonconsumptive)

	Not at all likely (%)		Slightly likely (%)		Moderately likely (%)		Very likely (%)		Extremely likely (%)		Significance (χ^2)
	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	C (%)	NC (%)	
Habitat conservation	13.9	17.6	26.4	26.4	27.8	27.8	22.6	17.1	9.4	11.1	3.27
Conservation of rare and vulnerable species	12.2	20.6	23.3	23.4	27.9	26.2	23.7	16.4	12.9	13.6	8.82
Conservation of preferred viewing species	11.5	18.2	20.8	23.8	31.6	29.4	27.4	18.7	8.7	9.8	8.73
Opportunities and resources for wildlife viewing	14.3	20.2	24.4	25.8	33.4	28.2	18.8	15.5	9.1	10.3	4.71
More education or outreach related to conservation	14.9	21.1	20.5	27.2	34.0	23.5	17.0	17.4	13.5	10.8	**10.43***
Wildlife research or monitoring	16.4	21.8	23.0	28.0	31.7	22.7	18.8	15.6	10.1	11.8	7.65
Funds matched by different source	19.9	23.7	22.8	21.3	28.5	30.8	16.7	16.1	12.1	8.1	3.06

Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 4

Table 49. State agency support for wildlife viewing

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Info - where to view wildlife	51.9	52.3	51.4	0.04
Info - about wildlife in the state	44.1	45.6	42.1	0.62
More wildlife viewing locations	39.2	41.8	35.6	1.96
Info - how to view	38.6	41.5	34.7	2.36
Info - where to view where there is no hunting	37.8	37.3	38.4	0.07
More opportunities for youth	28.0	33.4	20.8	**9.72****
More accessible features	28.0	29.6	25.9	0.83
Programs to improve my viewing skills	26.6	27.2	25.9	0.10
Programs to interact with other viewers	25.8	28.9	21.8	3.30
More wildlife viewing amenities	25.6	28.6	21.8	3.00
More wildlife viewing events	24.3	27.2	20.4	3.11
More training for guides	22.3	27.5	15.3	**10.68*****
Volunteer data collection opportunities	21.9	27.2	14.8	**11.02*****

	Statewide (%)	Consumptive (%)	Nonconsumptive (%)	Significance (χ^2)
Virtual programs	20.7	23.0	17.6	2.19
More wildlife viewing staff	12.9	15.0	10.2	2.52
Other volunteer opportunities, not related to data collection	10.3	12.5	7.4	3.51
I am not interested in any of these options.	9.5	7.3	12.5	**3.84***

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1

Table 50. Preferred IDGF communication methods

	Statewide (% selecting item)	Consumptive (% selecting item)	Nonconsumptive (% selecting item)	Significance (χ^2)
Website	63.5	66.3	59.7	2.32
Printed Materials	55.4	50.5	59.0	3.66
Email Update	44.8	48.3	40.3	3.18
Local News	39.3	41.7	36.1	1.60
Facebook	34.3	39.9	26.9	**9.37****
Mailed Newsletter, Subscription	32.7	36.5	27.8	**4.22***
Online Magazine	29.4	32.6	25.0	3.47
YouTube	22.0	21.9	22.2	0.01
Instagram	16.3	17.4	14.8	0.59
Staff	15.9	20.1	10.2	**9.16****
Twitter	9.5	8.3	11.1	1.11
Tik-Tok	8.9	11.1	6.0	**3.94***

	Statewide (% selecting item)	Consumptive (% selecting item)	Nonconsumptive (% selecting item)	Significance (χ^2)
Text	8.1	10.4	5.1	**4.68***
Podcast	7.9	8.7	6.9	0.51
Blogs	7.1	8.7	5.1	2.40
None	9.9	9.0	11.1	0.60

Note that statistical tests are between consumptive and nonconsumptive groups. Statistically significant test values in bold.
* p = .01 - .05
** p = .001 - .01
*** p < .001
df = 1