



## Multi-State Wildlife Viewing Study

### Literature Review

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## Purpose and Background

Wildlife viewing (intentionally observing, feeding, or photographing wildlife) is among the fastest growing outdoor recreation activities in the United States, with significant implications for the work of wildlife agencies. Wildlife viewers are thus a critical constituency for wildlife agencies, especially given stable or declining rates of participation in hunting and angling over the past decade. However, viewers' direct support of wildlife agencies is limited, perhaps due to perceptions about agency roles and priorities.

While important insights have emerged piecemeal from a number of surveys, agencies and conservation organizations lack summarized and easily accessible information about the state of research on viewer behaviors, experiences, perceptions, needs, and preferences. This information is essential for more meaningful and substantive engagement with this constituency. This literature review – part of a larger study of wildlife viewers nationally conducted by the Dayer Human Dimensions Lab at Virginia Tech with the Association of Fish and Wildlife Agencies Wildlife Viewing and Nature Tourism working group – aimed to fill this knowledge gap. We focused on distilling insights that could aid agencies and organizations in better engaging wildlife viewers, ultimately helping agencies and organizations be more inclusive of and relevant to wildlife viewers, fulfill their missions, and advance fish and wildlife conservation. The literature review also informed the design of a national- and regional-scale survey of wildlife viewers conducted in summer 2021.



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## Who are wildlife viewers?

*Defining demographics and behaviors of wildlife viewers.*

### Demographics

About **a third of the U.S. population are wildlife viewers**, defined as people who intentionally **observe, photograph, or feed wildlife** (USDOI et al. 2016). **81.1 million** (94%) of wildlife viewers participate in viewing **within a mile of their home** (around-the-home viewers) while **23.7 million** (27.6%) **of wildlife viewers** take trips to view wildlife **more than a mile** from their home (away-from-home viewers) (USDOI et al. 2016).

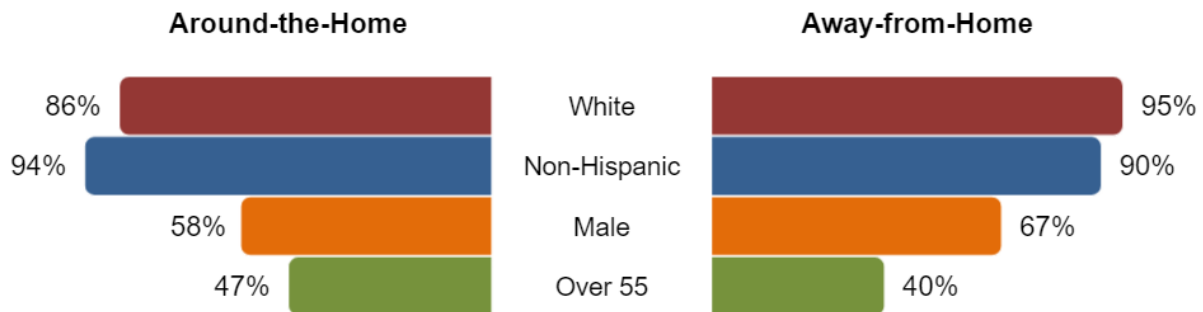


Figure 1. Demographics of around-the-home viewers and away-from-home viewers. Source: USDOI et al. (2016)

The majority of viewers are **white, non-Hispanic, and highly educated**, with most holding a bachelor's degree or higher (USDOI et al. 2016, NAWMP 2021, Cordell et al. 1997). Estimates of gender and age distribution vary by study, though generally, **casual birders tend to be higher proportion female**, while **competitive birders tend to be higher proportion male** (Cooper & Smith 2010). Wildlife viewers tend to be more evenly distributed among genders (Cordell et al. 1997, USDOI et al. 2006, USDOI et al. 2011). Studies of the general public have found that people aged 55-64 are most likely to participate in wildlife viewing, with nearly half participating in viewing around their homes (USDOI et al. 2016). Additionally, **69-75% of viewers** live in metropolitan areas with more than 250,000 people (USDOI et al. 2016). Further information regarding gender and ethnracial identities can be found in the "[Diversity & Inclusion](#)" section.



## Wildlife Viewing Behavior

Approximately **8%-10% of the U.S. population** (21-23.7 million people) take trips more than a mile from their homes to view wildlife (USDOI et al. 2016, Outdoor Foundation 2019). A majority of these people (69%) view only within their own state, while 21% view only in other states (USDOI et al. 2016). The number of wildlife viewers who **view only in other states** has increased **60% over the past 20 years** (USDOI et al. 1996, USDOI et al. 2016), which could suggest local growth in destination viewing opportunities that mimic the worldwide increase in ecotourism to view wildlife (Smith 2001).

**About 80% of wildlife viewers view on lands that are managed for public use**, and nearly two-thirds view only on public lands (USDOI et al. 2016). The presence of wildlife is the most important attribute for recreationists visiting public lands (Dhami et al. 2014), which suggests that managing public lands for viewing opportunities may draw wildlife viewers and non-viewers alike.



1. Three people watch birds fly over trees and hills from an observation platform.

Most viewers tend to view birds (72%) and mammals (59%), while far fewer view fish (18%) and marine mammals (10%) (USDOI et al. 2016), although this difference may be partially due to the additional costs to view many of these species (Dimmock 2008). Additionally, wildlife viewers and birders **favor rare or endangered species** (Manfredo & Larson 1993, NAWMP 2021), **spending considerably more time and money** pursuing them (Booth et al. 2011, Brock et al. 2020).



## **How do wildlife viewers spend their time?**

*Understanding specialization, behaviors, and barriers of wildlife viewers.*

### **Wildlife Viewing Specialization**

**Recreationists vary** greatly in their skills, capabilities, and interests. Studying **specialization**, a framework of the intensity of involvement of recreationists in an activity, enables managers to understand the unique skills and needs of recreationists and thus provide a satisfying experience to a diverse audience (Salz et al. 2001; Scott and Schafer 2001).

Specialization has **applications** in a variety of **outdoor recreation activities**, such as hiking (e.g., Shafer and Hammit, 1995), hunting (e.g., Kuentzel and Heberlein, 1992), fishing (e.g., Chipman and Helfrich, 1988), and birding (e.g., Scott and Schafer 2001, Lee and Scott, 2004, Harshaw et al. 2020), with limited research in wildlife viewing generally. There are **three primary domains** of specialization: **behavior** (time and financial investment in the activity), **skill/knowledge** (how skilled an individual is) and **commitment** (how central the activity is to the individual's life) (Scott and Schafer 2001). Commitment in specialization is related to how individuals self-identity – **more committed** birders describe **birding as a stronger part of their identity** than less committed individuals. In Hong Kong, higher specialization among bird watchers was found to be linked with participation in pro-environmental behavior (Cheung et al. 2016).



2. Two men with binoculars and one with a telescope look into a field.

A study of eBird registrants found that while there is **lower participation of Black, Indigenous, and people of color (BIPOC) in birding**, BIPOC birders are **not** generally **less specialized** than white birders (Rutter et al. 2021).



## Barriers to Wildlife Viewing

Outdoor recreators face a variety of barriers to recreating, including a **lack of connection** to nature, often due to a **lack of access** to green spaces; **limited time, money, and transportation** to access viewing sites; **lack of knowledge** about where to go viewing; and **apprehension** surrounding safety and comfort (Floyd et al. 2016, Outdoor Foundation 2019, The Nature of Americans 2017, U. S. Department of Agriculture 2008, Grooms et al. 2020, NAWMP 2021). Viewers with **mobility challenges** face additional barriers when sites do not have **ADA-compliant trails and barrier-free viewing opportunities**, and when site conditions are not clearly described on websites or printed media (Rose & McGregor 2021). Further information regarding barriers faced by Black, Indigenous, and people of color (BIPOC) can be found in the “Diversity & Inclusion” section.

## Conservation Behaviors

Conservation behaviors are actions that contribute to protection or responsible use of the environment in pursuit of environmental and/or social outcomes (Bennett et al. 2018). Conservation behaviors can be further broken down into **conservation lifestyle** (e.g., household actions in the private sphere), **land**

**stewardship** (e.g., support for wildlife and habitat conservation), **social environmentalism** (e.g., peer interactions and group membership), and **environmental citizenship** (e.g., civic engagement in the policy arena) (Larson et al 2015). Participation in **bird watching** and bird feeding is associated with **higher** participation in **pro-environmental behavior** and attachment to wildlife (Larson et al. 2018; Dayer et al. 2019). For example, a 2021 study found that birdwatchers were more likely than non-birdwatchers to purchase environmentally friendly products, specifically organic or bird-friendly coffee (Williams et al. 2021).



3. A sample cat tag license plate, with a panther, from Florida.





## **How do wildlife viewers spend their money?**

*Examining wildlife viewing expenditures and likeliness to support state wildlife agencies financially.*

### **Past Trip Expenditures**

Birdwatching and wildlife viewing spending supports economic development and conservation (Loomis et al. 2018). In 2011, birders spent an estimated \$15 billion on their trips and \$26 billion on equipment, which supported 666,000 jobs and \$31 billion in employment income (Carver 2013). The National Survey found the average person spent **\$573** per year on **trip-related** expenditures, annually (USDOI et al. 2016). Total expenditures per person for **away-from-home** viewing was **\$1193** annually.

### **Supporting the Agency Financially**

State fish and wildlife agencies depend heavily on wildlife recreationists to financially support conservation efforts (AFWA and WMI 2019). Historically, **hunters and anglers** have provided a significant amount of **financial support** to agencies by **user-pay mechanisms** as part of the North American Model of Wildlife Management (Hamilton, 1992; Organ et al. 2012). Although not all agencies have yet experienced this, it has been found that the **decline or plateau** of participation in **consumptive** recreation has created a funding challenge for conservation (Anderson and Loomis 2006; Hinrichs et al. 2020)

The National Survey of Hunting, Fish, and Wildlife-related Recreation (USDOI et al. 2016) provided an in-depth examination of hunting expenditures, related to different licenses, stamps, tags, and permits. The average **hunter** spent **\$36** per year. The public land use access fee was the only metric to measure **wildlife viewers'** agency-related expenditures and was an average of **\$31** per year. In a Virginia survey, recreationists were divided into four groups: birder-viewers, hunter-anglers, viewer-hunter-anglers, and birder-viewer-hunter-anglers (Grooms et al. 2020). Further, the study found that **60% of birders-viewers paid** some fees, permits, or licenses in the past year.

A survey of Virginia wildlife recreationists found **great interest in purchasing DWR's Restore the Wild Membership among birders** (Grooms et al. 2020). This membership includes an access pass to wildlife management areas, as well as other gifts based on purchase amount.



Birdwatchers and wildlife viewers also support agencies through traditionally-consumptive avenues, such as the Duck Stamp. A 2018 study found that 20% of the participants in the Audubon Christmas Bird Count had purchased the Duck Stamp



4. Virginia's Restore the Wild logo over a picture of the mountains at sunset.

(Shiple et al. 2019). A 2018 study of the general American public found the respondents were in favor of an equal split of **public taxes** and **license fees** to support wildlife management programs (Manfredo et al. 2018). Interest also exists for new models to support conservation funding. For example, a survey of college students found 72% of respondents support funding from industry sources, such as resource extraction (Larson et al. 2021). These students also supported

state sources of funding, such as a general sales tax, while only 43% of respondents supported more traditional user-based sources such as license fees and excise taxes (Larson et al. 2021).



## **What are wildlife viewers' experiences and perceptions of state agencies?**

*Understanding viewers' experience with, familiarity, and trust and state fish and wildlife Agencies.*

### **Experience With Agency Programs And Services**

Experience with environmental programming has been shown to increase adults' (De Young 1993) and children's (Louv 2008; Theirmer and Ernst 2013) participation in conservation behaviors. A

study of the impact of participation in United States Fish and Wildlife Service's programs on youth found **programs increase emotional connections to nature** as well as the likelihood of the individual to participate in conservation behaviors (Theirmer & Ernst 2013).



*5. The Beaver Brook Wildlife Management Area sign overlooking a field and hills.*

A survey of wildlife recreationists in Virginia (Grooms et al 2020) found that the most **commonly used agency program and service** by birders-viewers were **Wildlife Management Areas** and **information about wildlife in Virginia**; the least commonly used program was non-science volunteer opportunities, which reported an 85% "very" or "somewhat" satisfaction rate with the general public. Further, participants were largely satisfied with the programs they participated in.

### **Wildlife Viewer's Familiarity and Perception of State Wildlife Agencies**

Studies suggest that, compared to hunters and anglers, wildlife viewers and bird watchers are less familiar with state fish and wildlife agencies (AFWA & WMI 2019; Watkins 2000; Grooms et al 2020). Birder-viewers in Virginia indicated, on average,



that the agency should place lower priority on serving hunters and anglers compared to what they thought it currently does and greater emphasis on birding and wildlife viewing (Grooms et al. 2020).

Familiarity with a state agency may increase constituents' willingness to cooperate with conservation efforts (Lubell 2007; Schmidt 2018). A study in Israel examined the relationship between familiarity, trustworthiness, and likeliness to donate to non-profit organizations. Interestingly, it found that **familiarity was a stronger influence of donations than trust**, potentially due to unique social situations in Israel that led respondents to have lower trust in nonprofits (Katz 2018).

## Trust

Typically though, trust has been shown to play an important role in the management effectiveness of state wildlife agencies (Stern and Baird 2015; Riley et al. 2018; & Grooms 2021) and may play a role in the likeliness of constituents to provide financial support to organizations (Katz 2018).



6. An interpreter, in waders, presenting to children.

Agency trust is generally defined as the ability of one group to **accept vulnerability** to the **actions of an agency**, based on their **expectations** of the agency (meaning that the group expects the agency to meet expectations) (Stern and Baird 2015; Riley et al. 2018; and Grooms 2021). Studies that examined respondents' trust in different levels of government found that the public has somewhat **low trust in elected officials** ((NAWMP 2021)) and that the general public tends to **trust state wildlife agencies more than the federal government** (Manfredo et al. 2018).

A framework to study hunters in Michigan identified two factors that influence trust: **procedural fairness** of the agency (i.e. involving stakeholders in decision-making processes and listening to feedback) and **technical competency** of the agency (i.e. knowledge and competency in science; application of ecology in wildlife research and



management). **Procedural fairness** had **four times** greater impact on overall trust than technical competence (Riley et al. 2018).

The Trust Ecology Framework was utilized in the survey of Virginia wildlife viewers (Grooms et al. 2020). This framework examines **dispositional** (a person's tendency to be trusting), **affinitive** (based on emotions and perceptions from interacting with people from an agency), **rational** (based on perceptions of past actions of an agency), and **systems-based** trust (based on perceptions of procedures, laws, and structures within the agency) (Stern and Baird 2002).



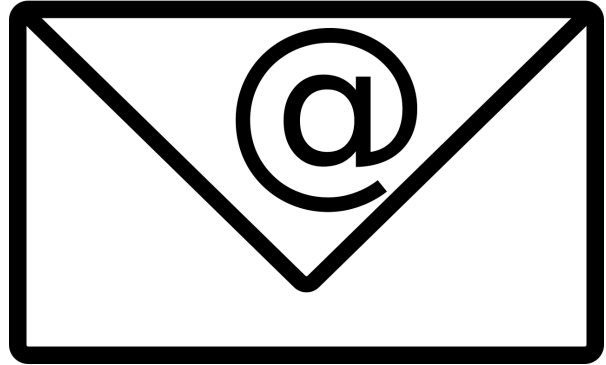
## What would wildlife viewers like from the agency?

*Exploring wildlife viewers' preferred forms of support and communication from the agency, as well as the outdoor recreation adoption model.*

### Preferred Communication

Generally, wildlife viewers want to receive **more information** overall from state agencies, with agency-affiliated viewers favoring electronic modes of communication such as email updates, e-newsletters, and agency websites, and viewers unaffiliated with state agencies favoring printed materials (Grooms et al. 2020). Members of the U.S. public who are seeking information

on nature-related topics prefer to gain knowledge through **personal experiences** with staff such as conversations and hands-on demonstrations and by accessing **content online** (Wilkins et al. 2018). Science organizations, universities, and friends and family are the most trusted sources of nature-related information for the public. Because friends and family are among the most trusted sources of information, shareable online content can help build trust with a much larger constituency (Wilkins et al. 2018).



7. An email logo.

### Agency Support for Viewing Wildlife

The majority of wildlife viewers desire access to **more places to go birding** and **wildlife viewing**, as well as **more information** about accessing wildlife management areas (Grooms et al. 2020). Viewers also preferred their management agency to allocate **more funds to the protection of habitat** than to the conservation of game or nongame wildlife species. They also desire to hear how any funds that they provide to the agency are being used to support causes of interest to them (Grooms et al. 2020).



## **Other Outdoor Recreation**

*Examining participation of wildlife viewers in other outdoor activities.*

People who view wildlife tend to participate in various other recreational activities, both consumptive (hunting and angling) and nonconsumptive (wildlife viewing) (Grooms 2021). For example, **91% of birders engage in other types of non-motorized outdoor recreation** and 84% spend time learning about nature (NAWMP 2021). There is **extensive overlap between** recreators who identify as **hunters, anglers, and wildlife viewers**, and ample evidence suggests that wildlife **recreation identities** and participation **are complex and nuanced, not strictly following** the classic model of **consumptive vs nonconsumptive** recreation as distinct and separate (Grooms 2021, Cooper et al. 2015, Connelly et al. 1985). Additionally, recreationists who have multiple recreation identities (e.g., a birder and a hunter) participate more heavily in conservation activities (Cooper et al. 2015, Grooms 2021).



8. A woman rock-climbing.



## **Diversity & Inclusion**

*Wildlife viewing in the BIPOC community.*

When considering barriers to wildlife recreation for Black, Indigenous, and people of color (BIPOC), the constraints faced by white recreators apply, but other cultural barriers are also present (Floyd et al. 2016; The Wilderness Society 2019; Finney 2014; Rutter et al. 2021). The outdoors are dominated by white recreators, staff, and volunteers, which can result in a feeling of otherness by those who do not fit this mold. This can also result in a “Don’t loop”, where people of color **don’t meet or know others** who participate in wildlife viewing, which **lowers the likelihood they will start to view** on their own (Robinson 2005). In line with this, birdwatchers who have a friend or relative who birdwatch spend considerably more time birding and have considerably more birding knowledge than those who don’t (Rutter et al. 2021). For BIPOC who participate in wildlife viewing, many **fear that they will be perceived as a threat or treated differently** by the majority-white group, and when staff lack diversity and cultural competency, it further constrains their outdoor engagement (Floyd et al. 2016).

**Women of color** face additional constraints due to unique barriers at the intersection of their ethnoracial background and gender (Roberts & Henderson 1997, Finney 2014). These women often cite a **lack of social support** and discomfort or fear relating to their specific identities as further barriers to outdoor recreation, but these barriers decrease when peers of their gender and ethnoracial background encourage them, either directly or through representation, to get outside (Roberts & Henderson 1997, Robinson 2005, Rutter et al. 2021). The **absence of role models** in media and marketing also sends a clear message to women of color that the outdoors remains a space for white recreationists, and while advertising and marketing have begun to include people of color, they often exclude women and diverse, multiracial groups. Many of these actions are unintentional, but they contribute to outdoor spaces that are unwelcoming to many communities (Roberts & Henderson 1997).



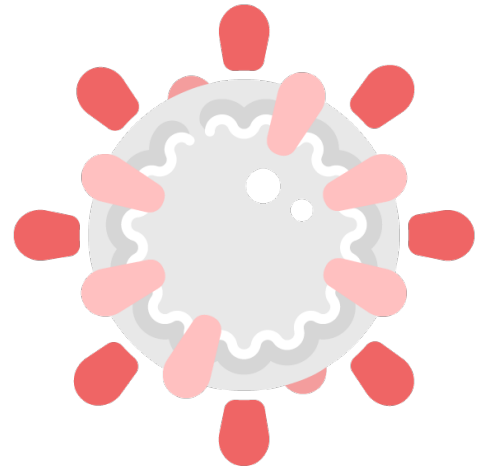


## **What about COVID-19 and wildlife viewing?**

*Initial efforts to understand the impact of a global pandemic on wildlife viewing.*

The World Health Organization (WHO) declared the COVID-19 virus a pandemic on March 11th, 2020. At the time of development of this literature review, researchers have begun to explore effects of the pandemic and associated lockdowns on outdoor recreation and wildlife viewing.

In the immediate weeks following the WHO's declaration of a pandemic, participation declined in a majority of outdoor recreation activities; however, there was a slight **increase in participation in wildlife viewing and bird watching** (Rice et al. 2020). Likewise, recreationists initially visited public lands for outdoor recreation less, while recreating in their neighborhood and city streets more (Rice et al. 2020). **Lockdowns** and associated impacts of the pandemic also led to **more people engaging in outdoor recreation** for the first time (Rice et al. 2020). It remains to be seen if newly recruited recreationists will continue engaging in the activity following the lifting of COVID-19 lockdowns and restrictions and a return to work and school.



9. A cartoon drawing of the COVID-19 virus.

Other COVID studies focused on birdwatchers alone and found **birders stopped participating in group birding outings**, instead birding alone or just with a spouse (Randler et al. 2020). During the start of the pandemic, birding also became a more local, around-the-home activity, with birders turning to their backyards and gardens (Randler et al. 2020). Youth engagement in birdwatching and wildlife viewing also increased slightly during 2020 when compared to 2019 (Outdoor Foundation 2021).



## **Next Steps**

Researchers from Virginia Tech, in collaboration with the AFWA Wildlife Viewing and Nature Tourism Working Group (WVNT), are conducting a survey (summer/fall 2021) of wildlife viewers nationwide to expand from site-specific insights and contribute to a more thorough understanding of wildlife viewers in the United States. Many of the topics focused on within this literature review will be assess. Preliminary findings shall be shared the WVNT 2022 Academy in Arizona (<https://www.wvntacademy.com/>), and a report will be released in summer 2022.



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