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Social support and identity promote diverse participation in wildlife viewing

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Abstract

1. Wildlife viewing is growing in popularity, especially among Black, Indigenous and people of colour (BIPOC), whose participation has increased dramatically in the last 20 years. We used a nationwide sample of wildlife viewers to examine how identity as a wildlife viewer, the importance of wildlife viewing to one's life, ethnoracial identity and social support influenced the degree of participation in wildlife viewing.
2. We examined data as part of a non-probabilistic online survey of wildlife viewers ($n = 17{,}104$). We were particularly interested in how participation, support, the importance of wildlife viewing, and identity as wildlife viewers varied across ethnoracial groups. Support has been found to influence involvement in various activities, while identity and importance have been shown to drive continued participation, suggesting that these factors may be of great value for encouraging and sustaining behaviour.
3. We found that, compared with White groups, multiple ethnoracial groups identified less as wildlife viewers. However, they indicated that wildlife viewing is more important to their lives. We also found that most ethnoracial groups received more support from friends, family, mentors and peers than White viewers.
4. This research can help understand the participation of Black, Indigenous and people of colour in outdoor recreation. Furthermore, this work demonstrates how legacies of racially motivated discriminatory policies may limit participation among ethnoracially diverse communities.

KEYWORDS
birding, diversity, equity and inclusion, outdoor recreation, wildlife recreation

1 | INTRODUCTION

Participation in nature-based activities provides a substantial benefit to human health (Bratman et al., 2012; Capaldi et al., 2015; Coventry et al., 2021; Jelks et al., 2021; Mantler & Logan, 2015; Martin et al., 2020). Yet, access to these activities is not equal among all people (Rigolon et al., 2018). As the wealth gap widens in the Global North (e.g. North America, Europe, Japan and Australia), segregation based on socioeconomic status and ethnoracial identity is intensifying (Jones et al., 2018; Tammaru

et al., 2020; van Ham et al., 2020). High-income, primarily White neighbourhoods often have the best access to high-quality green spaces or areas of greenness (e.g. trees and grasses) in otherwise urban areas (Nardone et al., 2021). In contrast, lower-income neighbourhoods, mainly composed of Black, Indigenous and people of colour (BIPOC) and typically highly urbanised, tend to have little to no access (Derkzen et al., 2017; Scarpa, 2016). Historic and prevailing systems of inequality, like redlining and gentrification, have and continue to separate BIPOC people from green spaces (Kronenberg et al., 2020; Nardone et al., 2021). Even when BIPOC communities have access to green spaces, they face more pronounced barriers to all forms of outdoor recreation, including less time, money and transportation to access sites; lack of knowledge about where to go to recreate; and apprehension surrounding safety and comfort (Floyd et al., 2016; Kellert et al., 2017; Outdoor Foundation, 2019). Additionally, preferred forms of recreation among BIPOC groups, like gathering in social groups with extended families and friends, often lack investment or require additional, advanced permitting from park departments (Floyd et al., 2016). Despite these barriers, a growing number of people in BIPOC communities in the United States and Europe are turning to nature-based activities (any activity occurring in green and blue spaces) as a way to engage with the outdoors (Edwards et al., 2022; Pharr & Lanham, 2023). For the purpose of this work, 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' (Sinkular et al., 2022, p. 26). Wildlife viewing, as federally defined in the United States, refers to 'closely observing or trying to identify birds or other wildlife; photographing wildlife; feeding birds or other wildlife; maintaining natural areas… or plantings (shrubs, agricultural crops, etc.) where benefit to wildlife is the primary concern; or visiting parks and natural areas… for the primary purpose of observing, feeding, or photographing wildlife' (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2016, p. 3). We recognise that these definitions may reflect Eurocentric views of nature and wildlife viewing and limit our sample to those who participate in wildlife viewing in this specific way. Even so, this form of wildlife viewing is among the most popular forms of nature-based activities (Connell, 2009; U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2016; Rice et al., 2020), with BIPOC participation nearly tripling in the last 20 years and outpacing the growth of White participation (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2001, 2016). This study was part of a larger project that aimed to provide state wildlife agencies with relevant information on how to engage wildlife viewers. Research that explores this type of participation and examines the factors that encourage BIPOC participants to engage in wildlife viewing is limited. To best support growing BIPOC communities in their wildlife viewing, we need to understand how to reduce barriers and encourage participation.

1.1 | Racial disparities in access to high-quality green space and wildlife viewing

While segregation has been increasing globally, the United States has a well-documented history of structural segregation (Catney, 2018), resulting in persistent disparities between BIPOC and White communities (Duncan et al., 2013; Kephart, 2022; Nardone et al., 2021). Historical segregation tactics disenfranchised poor and/or BIPOC communities, resulting in higher levels of pollution, fewer city services and economic opportunities and reduced access to high-quality green space, much of which persists today (Krimmel, 2018). Previously segregated neighbourhoods are often still primarily populated by BIPOC communities (Nardone et al., 2021), who may have less opportunity to view wildlife close to their homes, given the often limited and low-quality green spaces in their neighbourhoods (Kephart, 2022).

Despite these disparities, wildlife viewers who identify as Black, Indigenous and people of colour have nearly tripled in number since 2001 (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2001, 2016). In the United States, BIPOC populations have also increased from 25% in 2000 to 41% in 2020 (U.S. Census Bureau, 2021), and more than 52% of people under 18 identify as BIPOC (Jones et al., 2021). Yet, wildlife viewers are overwhelmingly White and non-Hispanic (hereby, White), with recent studies showing that only 10%–14% identify as BIPOC (Patton, 2021; U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2016). Nevertheless, younger and newer recruits to outdoor recreation are much more diverse than current participants, and these groups are rapidly increasing (Outdoor Foundation, 2023).

1.2 | Social support, importance and identity

Our research utilised novel applications of social support, identity and importance frameworks and explored how they are associated with wildlife viewing participation. Past research indicates that social support or the perceived encouragement provided by friends, family, mentors and peers (Gottlieb & Bergen, 2012), plays a prominent role in engagement in outdoor recreation (Schoffman et al., 2015). More specifically, increased social support has been shown to encourage sustained higher levels of participation in outdoor recreation (Gottlieb & Bergen, 2012; Schoffman et al., 2015). Despite an overall consensus on the importance of social connections in supporting involvement in wildlife viewing, few studies of BIPOC participants in outdoor recreation explore support and relationships as central motivators to participation. Social capital has been proposed as a mechanism among communities of colour that helps navigate societal systems not designed with the BIPOC experience in mind (Yosso, 2005). In line with this, BIPOC birders with a friend or relative who engages in birding spend considerably more time and have more birding knowledge than those who do not (Rutter et al., 2021). Additionally, BIPOC people who participate in outdoor recreation

rely heavily on social support to persist in this behaviour (Bagheri Hamaneh, 2024). However, social support remains an understudied aspect of BIPOC participation in outdoor recreation.

Whether or not people self-identify as wildlife viewers (identity) may also play a role in participation in wildlife viewing. Identity theory has emerged as a potentially significant driver of behaviour. It argues that one's self-identity related to a behaviour, for example, 'I think of myself as a wildlife viewer', is more predictive of that behaviour than other motivational frameworks (for example, the Theory of Planned Behaviour Ajzen, 1991; Rise et al., 2010). As identity is self-constructed, rather than driven externally by pressures to conform to prevailing attitudes or by fear of being rejected by a dominant social group, it may be a more enduring and predictive motivator for participation (Rise et al., 2010). Within wildlife viewing, we are beginning to see identity explored. For example, wildlife viewers, both White and BIPOC, who strongly identify as birders show more commitment to birding than those who do not identify as strongly (Rutter et al., 2021; Scott & Shafer, 2001). Other research in environmentalism and conservation shows that BIPOC respondents have lower levels of identification as environmentalists when compared to White respondents despite being more concerned about environmental issues (Pearson et al., 2018).

Finally, wildlife viewers may be encouraged by how important wildlife viewing is to their lives. Harshaw et al.'s (2021) framework for specialisation in outdoor recreation considers the behavioural (equipment and experience), cognitive (knowledge and skill) and affective (continued involvement and centrality) components of specialisation in birding and angling, respectively. They found that each dimension contributes to specialisation and continued behaviour. For this research, we examined the affective dimension of specialisation, hereby referred to as 'importance'. While all dimensions are valuable to understanding specialisation (e.g. Harshaw et al., 2021; Rutter et al., 2021), we were more interested in understanding persistence in wildlife viewing. Importance has been highlighted as a valuable dimension in understanding persistence in outdoor recreation (e.g. Beardmore et al., 2013; Lu & Schuett, 2014), but has been sparingly applied to wildlife viewing or across ethnoracial groups. Among BIPOC birders, importance appears to impact participation, but further research has called for investigating these impacts (Figure 1; Rutter et al., 2021). We used these frameworks to examine (1) how support, identity and importance were associated with degree of participation in wildlife viewing while accounting for ethnoracial identity and (2) how support, identity and importance differ among ethnoracial identities.

2 | METHODS

2.1 | Survey design

We conducted a Qualtrics panel survey of wildlife viewers from August to December 2021. Qualtrics maintains a database of individuals who have signed up to participate in panel survey research in exchange for a small financial incentive, and we relied on this database for recruitment. While this database does not necessarily represent the overall US population, with appropriate care and development, like setting demographic quotas, panel surveys are an effective alternative to in-person surveys (Wardropper et al., 2021). Participants in our study were invited directly through emails or application notifications from Qualtrics. To begin, we provided participants with ethical information and prompted them to indicate consent to participate in the study.

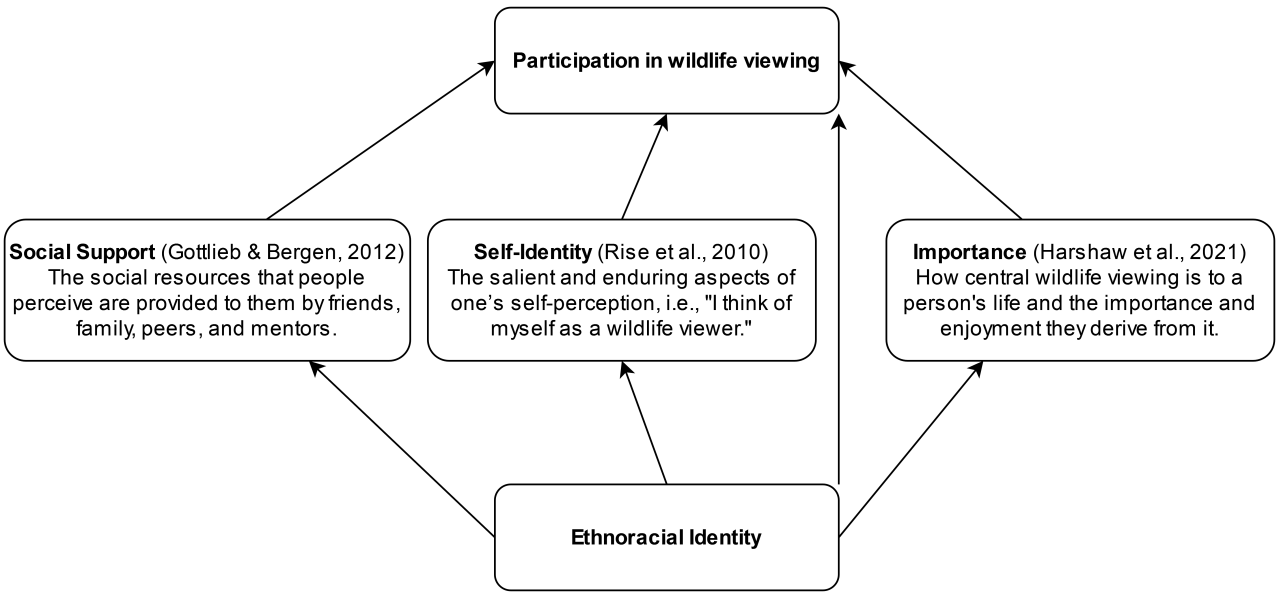

FIGURE 1 Our combined conceptual framework of social support (Gottlieb & Bergen, 2012), self-identity (Rise et al., 2010), and importance (Harshaw et al., 2021). We examined each framework's association with the extent of participation in wildlife viewing with other frameworks as marginal effects and how ethnoracial identities differed by each framework.

After consent, we screened for participation in wildlife viewing and ensured all participants were at least 18 years of age (S5). Because our sample was non-probabilistic, we used demographic quotas based on the probabilistic U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau (2016) National Survey of Fishing, Hunting and Wildlife-Associated Recreation (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2016) in an effort to collect a sample that was representative of the greater wildlife-viewing population based on age, gender and education level. This survey did not report in-depth race and ethnicity data, so we did not have data upon which we could set an ethnoracial quota, which is a limitation of this work. Meta-analyses of panel surveys have shown that effect sizes do not significantly differ from in-person or mail data (Walter et al., 2019) and that setting quotas makes panel surveys substantially more representative (Lehdonvirta et al., 2021). We instituted time limits and numerous attention check questions like reverse coding to ensure valid responses (see Sinkular et al., 2022, for more details on these methods). We collaborated with a 25-person steering committee of state fish and wildlife agency representatives from various backgrounds across the United States to develop the survey. As the purpose of the steering committee was to ensure that the results would be useful and relevant to state agencies, we chose members based on their professional experiences. We did not gather the demographics of the committee, so we cannot describe their ethnoracial backgrounds. This is a limitation of our work; future work should consider this in its design. We also reviewed the existing literature (Sinkular & Jennings, 2021) and adapted several questions from a similar study of wildlife viewers in Virginia, USA, previously conducted by our research group (Grooms, 2021). We conducted two rounds of pilot testing. The first was with a convenience sample of known wildlife viewers that was generally homogenous, majority White and middle or upper class. The second round was conducted with a randomly recruited Qualtrics panel that was reasonably diverse in age, gender, income and ethnoracial identity. After each pilot test, we modified questions to increase clarity and reduce the response burden.

We collected survey responses in two stages. First, we collected responses from approximately 1000 respondents in each of the four Association of Fish and Wildlife Agencies (AFWA) regions broadly consisting of the West, Midwest, Northeast and Southeast regions of the United States. In the second stage, we collected 500–1000 responses each from 15 states across the AFWA regions that opted to receive state-specific sampling. Due to the small sample size for some ethnoracial groups at the national level, we combined all survey responses for analysis, using state of residence as a random effect to ensure differences in participation in wildlife viewing, and overall recreation behaviour among states are accounted for in the model.

We used closed-ended questions asking about wildlife-viewing frequency, where people go to view wildlife, identity as a wildlife viewer, the importance of wildlife viewing to one's life, and perceived support. We measured where people view wildlife by asking how many days respondents participated in wildlife viewing within 1 mile of their homes (around-the-home) and more than 1 mile but within their state (away-from-home) in a typical year when COVID measures, such as lockdowns and social distancing, were not in place. This allowed us to understand both location and frequency. Using Harshaw et al. (2021) framework, we examined centrality, or how important and central wildlife viewing was to the lives of respondents (Harshaw et al., 2021). We asked respondents' extent of agreement on a five-point scale (Strongly disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Strongly agree) with six statements: (1) 'A lot of my life is organised around wildlife viewing', (2) 'Wildlife viewing has a central role in my life', (3) 'Being a wildlife viewer is an important part of who I am', (4) 'People who look like me participate in wildlife viewing', (5) 'I feel welcome among other wildlife viewers' and (6) 'I teach or mentor others in wildlife viewing'. The six statements used to measure centrality comprised an acceptable scale (Cronbach's $\alpha = 0.73$), so we combined them into a single measure called 'Importance'. We measured identity with the same bi-polar Likert scale and the statement: 'I think of myself as a wildlife viewer (Patton, 2021)'. We measured perceived support using Yosso's (2005) social support framework by asking to what extent Family members, Friends, Mentors, and Peers encourage respondent's participation in wildlife viewing on a 5-point unipolar Likert scale (Not at all, Very little, Somewhat, Quite a bit, A great deal; Yosso, 2005). The groups comprised a reliable scale (Cronbach's $\alpha = 0.84$), so we combined them into a single measure called 'Support'. We also asked about gender and ethnoracial identity. We formatted these questions to reflect current best practices as described by Spiel et al. (2019) and Jones (2017), respectively (Jones, 2017; Spiel et al., 2019). These included additional gender options (non-binary) and allowed people to opt-out or self-describe. We also combined race and ethnicity into a single question that allowed respondents to select as many ethnoracial categories as were appropriate for them. This research was approved by the Virginia Tech Institutional Review Board (protocol #20-1018). Many additional questions, including those on demographics, accessibility challenges and expenditures, were asked. Some of these results are described elsewhere (Sinkular et al., 2022, 2024). The complete questionnaire can be found in the Supporting Information Appendix (Table S5).

2.2 | Methods of analysis

We analysed the data using the programming language R. We examined race using categories generally based on US Census categories: Asian; Black or African American; Hispanic, Latino, or Spanish; Native American; Another race or ethnicity; and White. 'Another race or ethnicity' included those who indicated that they were of some other race and ethnicity, as well as those who identified as Middle Eastern or North African and Native Hawaiian or other Pacific Islander due to limitations on sample size in these groups. We also

examined three additional combined categories: Hispanic, Latino or Spanish and White; Native American and White; and Multiracial. For the first two categories, census data indicate that these populations are substantial ethnoracial communities in the United States (Jones et al., 2021) that are expected to engage in variable patterns of wildlife viewing. For respondents that selected more than one ethnoracial category and did not fit into other substantial subcategories based on US Census data, we created a category, 'Multiracial', often called 'two or more races'.

Using the package 'ordinal', we tested how ethnoracial groups, support, identity and importance affect participation in wildlife viewing and how support, identity and importance differ among ethnoracial groups (Christensen, 2022). We used White respondents as our comparison group because of their relative overrepresentation in wildlife viewing. In our models, we examined the marginal effects, or the change in the predicted value of our response variables per one-unit change in our predictor variables while holding all other predictors constant (Table 1). To account for regional differences, we treated respondents' state of residence as a random variable. We standardised the continuous predictor variables, resulting in a mean of zero and a standard deviation of one. Initial models included gender and income, but there were insufficient sample sizes of all subgroups (e.g., Native American women) to conduct conclusive analyses. Additionally, while income was predictive of some variables, it did not change the outcome for our variables of interest (see Appendix Table S1). As income is a well-established barrier to participation, we did not include it in this analysis. Our study explored the association between levels of participation and the predictors outlined in Table 1. It did not assess how these predictors are associated with non-participation, which limits the results and conclusions to wildlife viewers.

3 | RESULTS

3.1 | Overview of participants

Our sample of wildlife viewers consisted of 17,045 survey respondents who indicated their ethnoracial identity (Table 2). Our respondents identified as Asian ($n = 286$, 1.7%), Black or African American ($n = 1221$, 7.1%), Hispanic, Latino or Spanish ($n = 813$, 4.8%), Hispanic, Latino or Spanish + White ($n = 404$, 2.3%), Multiracial ($n = 387$, 2.3%), Native American ($n = 199$, 1.2%), Native American + White ($n = 241$, 1.4%), Another race or ethnicity ($n = 224$, 1.3%) and White ($n = 13{,}270$, 77.9%). As this was a survey of wildlife viewers, it is not likely to match the overall ethnoracial demographics of the United States. However, comparisons between our sample and US ethnoracial demographics can be found in the SI Appendix (Table S2). The average age of respondents was 49 years. 52% of respondents identified as men, 47.5% as women and 0.6% as non-binary. 68% of respondents had income below the US median of $75,000, indicating that we oversampled lower-income respondents (U.S. Census Bureau, 2021).

3.2 | Around-the-home and away-from-home viewing patterns

We found significant differences in around-the-home and away-from-home viewing. When compared to White respondents, most ethnoracial groups participated less in viewing around-the-home (Figure 2a). Asian respondents reported 64% lower (odds ratio [OR]: 0.36; 95% confidence interval [CI]: 0.28–0.46) participation than White respondents. Black or African Americans reported 56% (OR: 0.44; CI: 0.39–0.49), Hispanic, Latino or Spanish 47% (OR: 0.53; CI: 0.46–0.61), Hispanic, Latino or Spanish + White 42% (OR: 0.58; CI: 0.48–0.70), and Multiracial 34% (OR: 0.66; CI: 0.54–0.80) lower participation. Native American + White respondents had 30% (OR: 1.30; CI: 1.02–1.66) higher participation when compared to White respondents. Participation around-the-home was also positively associated with the level of support respondents received from family, friends, mentors and peers, the extent to which they identified as wildlife viewers, and the importance of viewing to their lives when accounting for ethnoracial identity. Support was associated with a 7% increase in around-the-home participation (OR: 1.07; CI: 1.04–1.11) for each standard deviation (equal to 1.03) increase in support, and importance was associated with an 8% increase in participation (OR: 1.08; CI: 1.03–1.12) for each one standard deviation (equal to 0.85) increase. Identity as a wildlife viewer was associated with a 46% increase in participation (OR: 1.46; CI: 1.40–1.50) for each standard deviation (equal to 0.98) increase in identity. Tables showing all odds ratio results can be found in the appendix (Table S3).

When examining away-from-home viewing behaviour, Asian respondents exhibit 32% lower (OR: 0.68; CI: 0.540–0.85) participation compared with White respondents. Black or African Americans showed 16% lower (OR: 0.83; CI: 0.74–0.94) and Hispanic, Latino or Spanish 20% (OR: 0.80; CI: 0.70–0.93) lower participation. Native Americans had 32% (OR: 1.32; CI: 1.01–1.72), and Native American + White had 31% (OR: 1.31; CI: 1.02–1.67) higher participation in away-from-home viewing compared to White respondents (Figure 2b). Participation in away-from-home viewing was positively associated with the level of support and identity respondents reported, as well as the importance of viewing to their lives when accounting for ethnoracial identity. Away-from-home participation increased by 47% (OR: 1.47; CI: 1.42–1.52) for each standard deviation (equal to 1.03) increase in support. Away-from-home participation increased by 18% (OR: 1.18; CI: 1.13–1.22) for each one standard deviation (equal to 0.98) increase in identity and by 49% (OR: 1.49; CI: 1.42–1.56) for each one standard deviation (equal to 0.85) increase in importance.

Overall proportions of participation by ethnoracial groups in around-the-home and away-from-home viewing can be found in the Supporting Information Appendix (Tables S4 and S5).

3.3 | Support and ethnoracial identity

Our results showed that Black or African American respondents indicated 37% higher support from family, friends, peers and mentors

TABLE 1 Models and variables used to assess differences in viewing patterns and impacts of support, identity and importance among ethnoracial groups.

Model	Predictor variables	Response variable
Ethnoracial identity and levels of support, identity and importance associated with around-the-home viewing	White only (Baseline for ethnoracial identity, Binary, 1, 0) Asian only (Binary, 1, 0) Black only (Binary, 1, 0) Latino only (Binary, 1, 0) Latino + White (Binary, 1, 0) Multiracial (Binary, 1, 0) Native American only (Binary, 1, 0) Native American + White (Binary, 1, 0) Another race or ethnicity (Binary, 1, 0) Support (Likert, 1–5) Identity (Likert, 1–5) Importance (Likert, 1–5)	Yearly participation in around-the-home viewing (Ordinal, 1–9)
Ethnoracial factors and levels of support, identity and importance associated with away-from-home viewing	White only (Baseline, Binary, 1, 0) Asian only (Binary, 1, 0) Black only (Binary, 1, 0) Latino only (Binary, 1, 0) Latino + White (Binary, 1, 0) Multiracial (Binary, 1, 0) Native American only (Binary, 1, 0) Native American + White (Binary, 1, 0) Another race or ethnicity (Binary, 1, 0) Support (Likert, 1–5) Identity (Likert, 1–5) Importance (Likert, 1–5)	Yearly participation in away-from-home viewing (Ordinal, 1–9)
Ethnoracial differences in perceived support	White only (Baseline, Binary, 1, 0) Asian only (Binary, 1, 0) Black only (Binary, 1, 0) Latino only (Binary, 1, 0) Latino + White (Binary, 1, 0) Multiracial (Binary, 1, 0) Native American only (Binary, 1, 0) Native American + White (Binary, 1, 0) Another race or ethnicity (Binary, 1, 0)	Extent of support provided by friends, family, mentors and peers (Likert, 1–5)
Ethnoracial differences in wildlife viewer identity	White only (Baseline, Binary, 1, 0) Asian only (Binary, 1, 0) Black only (Binary, 1, 0) Latino only (Binary, 1, 0) Latino + White (Binary, 1, 0) Multiracial (Binary, 1, 0) Native American only (Binary, 1, 0) Native American + White (Binary, 1, 0) Another race or ethnicity (Binary, 1, 0)	Extent to which respondents indicate that they identify as a wildlife viewer (Likert, 1–5)
Ethnoracial differences in wildlife viewing importance	White only (Baseline, Binary, 1, 0) Asian only (Binary, 1, 0) Black only (Binary, 1, 0) Latino only (Binary, 1, 0) Latino + White (Binary, 1, 0) Multiracial (Binary, 1, 0) Native American only (Binary, 1, 0) Native American + White (Binary, 1, 0) Another race or ethnicity (Binary, 1, 0)	Extent to which wildlife viewing is important to the lives of respondents (Likert, 1–5)

(OR: 1.37; CI: 1.22–1.53) when compared to White respondents. Hispanic, Latino or Spanish 71% higher (OR: 1.71; CI: 1.50–1.95); Hispanic, Latino or Spanish + White 165% (OR: 2.65; CI: 2.19–3.20); Multiracial 41% (OR: 1.41; CI: 1.17–1.68); and Native American respondents 47% (OR: 1.47; CI: 1.14–1.89) higher levels of support when compared to White respondents (Figure 3a).

3.4 | Identify as a wildlife viewer and the importance of wildlife viewing

We found that Asian respondents were 40% less likely to identify as wildlife viewers (OR: 0.60; CI: 0.48–0.74) when compared to White viewers. Black or African Americans identified 28% less likely (OR:

TABLE 2 Sociodemographic information of our sample of wildlife viewers.

Ethnoracial identity	Asian	1.7%
	Black or African American	7.1%
	Hispanic, Latino or Spanish only	4.8%
	Hispanic, Latino or Spanish + White	2.3%
	Multiracial	2.3%
	Native American	1.2%
	Native American + White	1.4%
	Another race or ethnicity	1.3%
	White	77.9%
Age (years)	Mean (SD)	48.9 (17.6)
Gender	Man	52.0%
	Woman	47.5%
	Non-binary	0.6%
Income	Less than $24,999	20.6%
	$25,000–$49,999	28.3%
	$50,000–$74,000	19.0%
	$75,000–$99,999	13.4%
	$100,000–$124,000	8.5%
	$125,000+	10.3%
Education level	High school diploma, equivalent or less	29.3%
	Some college	20.9%
	Associate's or technical degree	11.8%
	Bachelor's degree	24.1%
	Professional, master's or doctoral degree	13.9%

0.72; CI: 0.65–0.81), and Hispanic, Latino or Spanish 24% less (OR: 0.76; CI: 0.66–0.87) compared to White respondents. Hispanic, Latino or Spanish + White respondents exhibit 31% higher levels of identification when compared to White respondents (OR: 1.31; CI: 1.09–1.58; Figure 3b). We also found that Black or African American respondents stated wildlife viewing was 51% (OR: 1.51; CI: 1.35–1.69) more important to their lives when compared to White respondents. Hispanic, Latino or Spanish indicated 50% more (OR: 1.50; CI: 1.35–1.72); Hispanic, Latino or Spanish + White 160% (OR: 2.59; CI: 2.15–3.12); Native Americans 80% (OR: 1.80; CI: 1.39–2.34); Native American + White 27% (OR: 1.27; CI: 1.004–1.60); and another race or ethnicity 29% (OR: 1.28; CI: 1.01–1.64) more important to their lives when compared to White respondents. (Figure 3c).

4 | DISCUSSION

Our results suggest that BIPOC wildlife viewers differ from their White counterparts and vary in support, identity, importance and participation patterns. Generally, they relied more on personal support structures to participate, especially away-from-home. All survey participants engage in some form of wildlife viewing, but Asian, Black or African American, and Hispanic, Latino or Spanish respondents hesitated to consider themselves 'wildlife viewers' despite fitting the description. As self-identification increases, so does participation, especially around one's own home. Furthermore, we found that many BIPOC respondents report wildlife viewing is a more integral part of their lives when compared to White viewers. These results have implications for increasing our understanding of the underlying facilitators of wildlife viewing participation among BIPOC participants. Deepening this understanding can also give programme managers tools to create more inclusive and equitable wildlife-viewing programming.

4.1 | Around-the-home and away-from-home viewing patterns

We observed substantial variation in the wildlife viewing behaviours and representation of ethnoracial groups. We found that Asian, Black or African American, and Hispanic, Latino or Spanish respondents engaged in less wildlife viewing around and away from their homes when compared to White viewers. These differences among ethnoracial groups in their engagement with wildlife viewing may be due to negative cultural histories. For example, historical factors like enslavement and Jim Crow segregation may discourage Black participants from participating in wildlife activities (Johnson & Bowker, 2004). Similarly, for Latine participants, the outdoors may be viewed as a place of labour instead of leisure (Wald, 2022). Additionally, Asian participants may avoid outdoor activities due to legacies of indentured and forced labour (Chiang, 2010; Narváez, 2019). These factors likely influence engagement with wildlife viewing in unique ways, and further research is needed to understand these impacts on a deeper level.

Native American respondents engaged at similar or greater rates of wildlife viewing both around and away from their homes when compared to White viewers. These findings support previous research showing that Native Americans participate in wildlife viewing at higher rates (Rutter et al., 2021). Additionally, differences between Native Americans and other ethnoracial groups are likely influenced by the vastly different cultural relationships that Native Americans have with nature and outdoor recreation (Mullins et al., 2015). Indigenous cultures in the United States and globally often have relational kinships with nature, not viewing nature as a separation from community and individual but instead integrated as a relative (Moreton-Robinson, 2003; Mullins et al., 2015).

These results highlight distinct differences among BIPOC groups. They also suggest that some BIPOC communities, namely Asian, Black and Hispanic, Latino or Spanish, have lower immediate access to high-quality green spaces and other places to view wildlife (Robinson et al., 2023). Ethnoracial segregation such as this is seen across North America, Europe and Australia (Byrne, 2012; Hoffimann et al., 2017; Kronenberg et al., 2020). While other studies

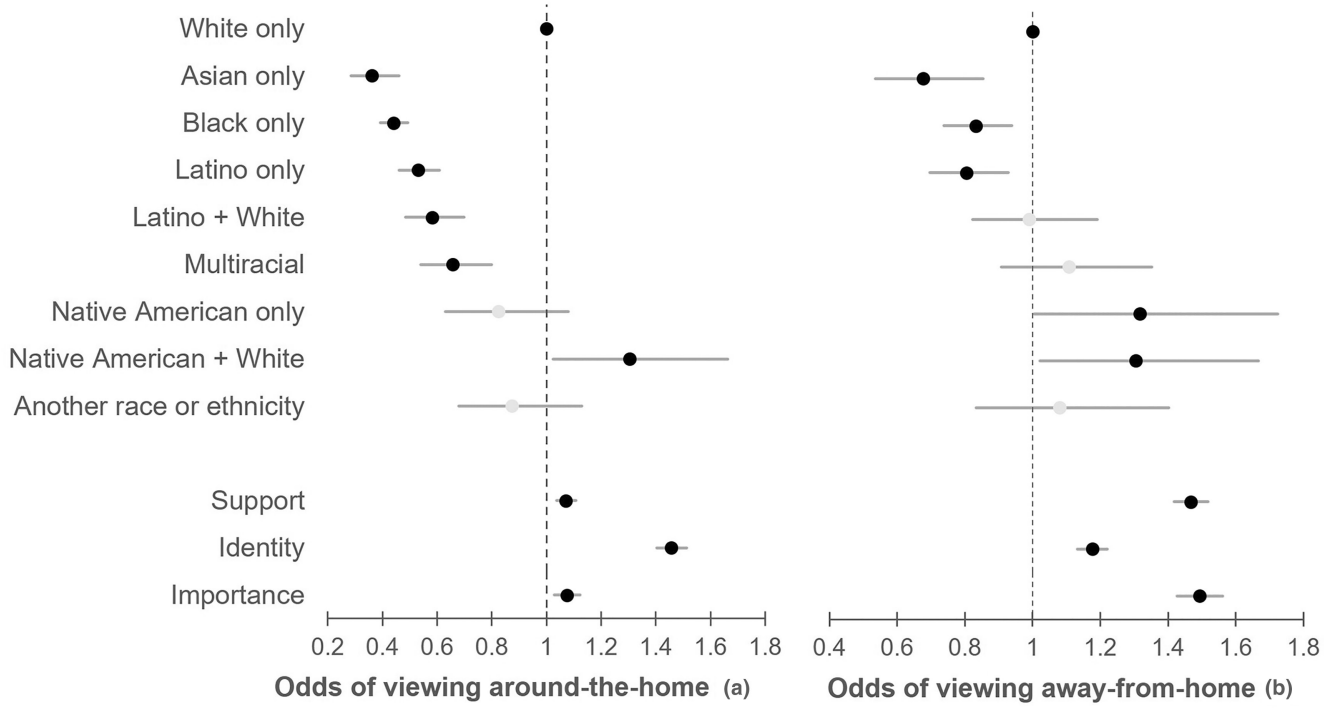

FIGURE 2 Odds ratios of participation in (a) around-the-home and (b) away-from-home wildlife viewing. For the categorical data (racial identity), the dotted line at 1 indicates the baseline group (White only) to which other racial identities are compared. For the ordinal data (support, identity, and importance), the odds ratio above the dotted line indicates the probability of viewing for each increase in one standard deviation of the predictor variables. Points are the odds ratio and error bars are 95% confidence intervals. Black points indicate statistically significant ratios. A response above 1.0 indicates significantly higher participation, while below 1.0 indicates significantly lower participation.

have shown how policies such as gentrification across the world and redlining in the United States affect communities' availability of green spaces (Kronenberg et al., 2020; Nardone et al., 2021), our study suggests that such policy may affect people's ability to recreate around their homes. If BIPOC viewers have lower access to viewing sites near their homes, they must travel further to participate in viewing. Accessing these sites takes more time, money and resources, which is likely to reduce the level of participation and the likelihood of starting to view wildlife. Increasing access pathways by creating more green spaces in BIPOC neighbourhoods and making existing spaces more easily accessible (i.e. through more transportation options like buses) can reduce this burden and more effectively support participation (Arakaki et al., 2019).

4.2 | Support and ethnoracial identity

Most BIPOC respondents in our study indicated that they receive higher levels of support than White respondents to participate in wildlife viewing, especially away from their homes. This affirms the significant role of social connections and support structures in encouraging initial and continued participation in wildlife viewing. Our results suggest that BIPOC respondents, namely Black or African American, Hispanic, Latino or Spanish, Hispanic, Latino or Spanish + White, multiracial and Native American respondents, may be relying on forms of community social capital (Yosso, 2005) to engage in wildlife viewing and that these support structures likely differ from those utilised by White respondents. Many studies examining BIPOC participation in outdoor recreation focus on existing barriers and suggest that eliminating barriers would increase participation. Still, our results show that building support is integral to sustained involvement, especially away from home. Likely, BIPOC viewers who receive support from friends, mentors, etc., are more able to effectively navigate the culture of wildlife viewing (Bagheri Hamaneh, 2024), which has historically been a White activity, both within the United States and globally (Cashman-Brown, 2012; Steven et al., 2018). Building frameworks that allow for better direct support (i.e., mentorship programmes and BIPOC-specific wildlife viewing events) is critical to encourage more direct connections to nature. Building support is a yet underexplored aspect of nature connectedness (Whitten et al., 2018). Still, research showing the importance of social support for BIPOC communities (Yosso, 2005) and the success of BIPOC-specific organisations in the United States, such as Outdoor Afro and Latino Outdoors, suggests that organisations providing this direct support may be contributing to increased engagement (Castillo, 2022; Taylor, 2022). Higher levels of nature connectedness are linked to improved well-being and higher participation in pro-environmental behaviours (Whitburn et al., 2020), which suggests that wildlife viewing is beneficial not just for human health but also overall ecological health.

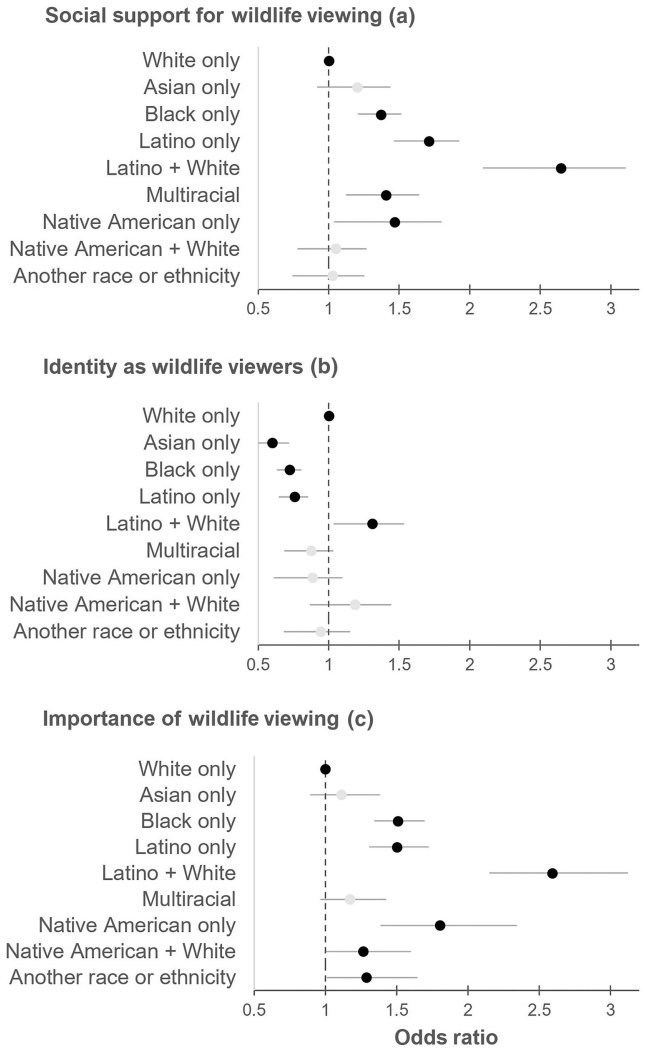

FIGURE 3 Odds ratios of (a) support for viewing, (b) identity as a viewer and (c) importance of viewing. The dotted line at 1 indicates the comparison group (White only). Points are the odds ratio and error bars are 95% confidence intervals. Black points indicate statistically significant ratios. A response above 1.0 indicates significantly higher participation, while below 1.0 indicates significantly lower participation.

4.3 | Identify as a wildlife viewer and the importance of wildlife viewing

We found that many BIPOC respondents expressed less self-identification as wildlife viewers despite indicating that wildlife viewing is as or more important to their lives when compared to White viewers. As our results show that participation increases with self-identification and importance, they suggest the relevance of identity theory and theories of importance in explaining diverse participation in wildlife viewing. Additionally, we see similar trends with environmentalism, showing that while Black, Indigenous and people of colour tend to be more concerned about environmental issues than White people, they do not consider themselves to be environmentalists (Pearson et al., 2018). Previous work also shows that racial groups have similar levels of specialisation in wildlife viewing (specifically birding), so a lack of self-identity may not be due to a lack of experience (Rutter et al., 2021). Lower rates of identification may be due, in part, to a lack of representation of wildlife viewers who share their identities both as seen participating in wildlife viewing and in advertisements or social media posts related to wildlife viewing (Finney, 2014; Roberts & Henderson, 2016). Legacies of inequity like White-only parks in the United States and gated green spaces in Europe disallowed Black, Indigenous and people of colour to meaningfully participate in outdoor recreation and wildlife viewing due to implicit and explicit exclusion, much of which still exists today (Finney, 2014; Kronenberg et al., 2020). This history of exclusion still impacts communities of colour in their pursuit of outdoor recreation (Floyd et al., 2016; Hoffimann et al., 2017). To create programs and environments that are inclusive and equitable, organisations providing wildlife viewing programs could work to unlearn Westernised concepts of nature. To do so, they could partner with community groups to better understand local contexts and alter programs to meet community groups where they are. Additionally, some research has suggested that increased representation in careers, communications and events can promote the internalisation of outdoor recreation and environmentalist identities (Bowden, 2021; Finney, 2014; Pearson et al., 2018; Robinson, 2005), but more research is needed to understand how identity is shaped and encouraged among communities of colour.

Compared with other large-scale research on wildlife viewers (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2016), our sample showed a more significant proportion of BIPOC respondents participating in wildlife viewing. It also examined ethnoracial groups not previously included in wildlife viewing research. Our findings support the growing body of literature showing that BIPOC participants are underrepresented in wildlife viewing when compared to their proportion of the US public (Arakaki et al., 2019; Finney, 2014; Floyd et al., 2016; Rutter et al., 2021). While research suggests that the gap is beginning to close (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, & U.S. Census Bureau, 2001, 2016), White respondents continue to dominate wildlife viewing spaces disproportionately (Steven et al., 2018). As global demographics change and we reckon with legacies of exclusion, supporting BIPOC wildlife viewers is a first step in diversifying wildlife viewing. Understanding how to encourage and uplift BIPOC participants in outdoor recreation is vital to meeting the needs of a changing public. We recommend that future research examine BIPOC communities specifically. While we were able to capture the largest proportional sample of BIPOC participants yet, small sample sizes in some groups limited our ability to examine intersectionality, such as patterns for women of colour. Future studies should be developed with intersectionality in mind. As more Black, Indigenous and people of colour develop an interest in wildlife viewing, it is essential to increase pathways that foster meaningful

engagement in wildlife viewing to ensure continued engagement with nature and the environment and overall health and wellness. In turn, these relationships with nature are likely to foster care for environmental issues (Cooper et al., 2015), which is especially important as we face the impacts of industrialisation, urbanisation and a changing climate.

AUTHOR CONTRIBUTIONS

Kelsey Jennings, Ashley A. Dayer and Willandia A. Chaves conceived the ideas and designed the survey instrument and methodology. Kelsey Jennings and Willandia A. Chaves analysed the data. Kelsey Jennings did the primary writing of the manuscript. Willandia A. Chaves and Ashley A. Dayer provided substantial feedback and editing. All authors approved the final draft of this manuscript for publication.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Our de-identified survey data (Jennings et al., 2024), including computed variables used in this manuscript, are archived with VTechData, the data repository for Virginia Tech. https://doi.org/10.7294/25914451.v2.

STATEMENT ON INCLUSION

The authors and a 25-person steering committee worked together to develop this survey. We conducted an extensive literature review before survey design and used current best practices for question design for more sensitive questions like race and gender. Some of the research team members share cultural affinities with our study participants.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Table S1. All models with income included.

Table S2. Ethnoracial percentages of our sample versus the U.S. census.

Table S3. Odds ratio results of all models.

Table S4. Participation percentages around-the-home by ethnoracial group in days.

Table S5. Participation percentages away-from-home by ethnoracial group in days.

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