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Birdwatchers' attitudes and preferences that influence their decisions to engage in local, national, and international birdwatching trips

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ABSTRACT

Birdwatching tourism has significant economic potential and is a growing form of ecotourism. Birdwatchers throughout the United States have diverse attitudes and motivations, and here we sought to understand how, and why, birdwatchers select birdwatching destinations at local, in-country, and international scales. A questionnaire survey ($n = 427$ participants) revealed that 98% participate in local birdwatching trips, 96% participate in in-country trips, and 78% participate in international trips. Among those who travel internationally, opportunities to see rare birds and well-planned itineraries were the most important factors. Moreover, hardcore birdwatchers prioritized rare species and increasing their life list, while casual birdwatchers showed interest in non-birdwatching activities and travel infrastructure. Our analysis revealed that income significantly determines the number of countries visited, with lower-income birdwatchers visiting fewer countries. The top international destinations for birdwatchers include Costa Rica, Ecuador, and Mexico. A factor analysis illustrated distinct birdwatchers' clusters, with some preferring tour guides and itineraries, and others preferring the presence of high bird diversity and rare birds or travel logistics. Our analysis highlights the differential and complex attitudes and preferences of U.S.-based birdwatchers and we discuss how these differences can influence the growing field of avitourism.

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1. Introduction

Ecotourism is one of the fastest-growing segments of the global tourism industry (Balmford et al., 2009; Ismail et al., 2021), generating significant revenue and contributing substantially to the gross domestic product (GDP) of several biodiversity-rich countries, including Costa Rica (Echeverri et al., 2022), Namibia (Naidoo et al., 2011, 2016); and Colombia (Echeverri et al., 2025; Maldonado et al., 2018). As a nature-based form of

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travel that emphasizes environmental sustainability and cultural respect, ecotourism has the potential to support both conservation outcomes and local livelihoods (Balmford et al., 2009; Naidoo et al., 2016).

Within the broader ecotourism sector, avitourism – traveling in search of birds – is a prominent sub-sector, with clear economic and sustainability benefits (Steven et al., 2015, 2017, 2018). In the United States alone, an estimated 42.6 million people engage in birdwatching or birding outside their homes (United States Fish & Wildlife Service, 2023, p. 30). Birdwatchers are not homogenous in their attitudes, behaviors, and values towards avian wildlife (Dayer et al., 2020; Rutter et al., 2021). Birdwatchers engage with birds across a spectrum, from those who are casual local observers (Scott & Thigpen, 2003) to those seeking rare species (Callaghan et al., 2018; Pease et al., 2023) and those who are international travelers (Echeverri et al., 2019). Such variability among birdwatchers is not only a matter of engagement but also an observed behavioral pattern driven by different attitudes, values, and value orientations (Manfredo et al., 2021). Thus, understanding birdwatchers' attitudes and behaviors is crucial for estimating the potential of avitourism, particularly in the context of its continuous expansion in developing countries (Biggs et al., 2011; Ocampo-Peñuela & Winton, 2017; Steven et al., 2015; 2021). Birdwatching is an increasingly popular form of special interest or niche tourism, requiring tailored approaches to destination planning and marketing (Robinson & Novelli, 2007). Situating avitourism within this broader tourism framework highlights the potential to contribute to tailored tourism approaches throughout the world.

Despite the potential and growing interest in avitourism, there remains global inequities in the ability for a country to leverage the potential economic benefits of this ecotourism activity (Winton & Ocampo-Peñuela, 2018). Countries with rich avian diversity, particularly in tropical regions, are poised to benefit significantly from avitourism (Echeverri et al., 2022 Ocampo-Peñuela & Winton, 2017;). However, the potential for sustainable avitourism is often untapped due to socio-economic and political challenges that act as barriers or detractors for tourism. For instance, countries like Colombia, historically facing issues like armed conflict, are beginning to leverage avitourism as a central economic activity in their bioeconomy (Maldonado et al., 2018), as they progress towards political stability (Ocampo-Peñuela & Winton, 2017). Conversely, nations such as Bolivia and Venezuela, despite their rich bird diversity (Haffer, 1990), attract fewer tourists and are not as well positioned to develop avitourism as a main sector of economic activity (World Data, 2024).

Quantifying the diverse attitudes and behaviors of individual birdwatchers provides a first step towards addressing these global inequities in avitourism potential (Sinkular et al., 2025). Individual actions are influenced by and impact the broader socio-economic and political landscapes (Görg, 2007). While structural and systemic barriers play a major role in limiting avitourism in some regions, the preferences and perceptions of individual birdwatchers can also reflect these larger socio-economic situations (Stronza et al., 2019). For example, the absence of travel to certain biodiversity-rich countries may stem not only from conflict or weak infrastructure, but also from birdwatchers' concerns about safety, cost, or logistical challenges that are directly or indirectly linked with the socio-economic landscape (Langhans et al., 2023). Examining what birdwatchers prioritize, and which destinations they avoid or aspire to visit, can help identify how individual attitudes interact with broader access constraints, and where mismatches between avian

diversity and tourism demand may exist. Increased involvement and specialization in birdwatching correlate with greater travel distances and expenditures (Hvenegaard, 2002).

Existing studies highlight how factors like infrastructure, cost, and conflict influence tourism at the country level (Sinkular et al., 2025), but comparatively fewer have explored how individual birdwatcher preferences and behaviors with these structural constraints, potentially reinforcing global inequities (Görg, 2007). Birdwatchers' concerns about safety, affordability, and logistical ease may contribute to patterns of avoidance or preference that mirror broader socio-economic inequalities (Stronza et al., 2019). Understanding how birders weigh these factors – alongside species richness – could highlight where mismatches exist between tourism demand and conservation opportunity. Although some studies have examined motivations and specialization (e.g. Hvenegaard, 2002; Vas, 2017; Şekercioğlu, 2002), there remains a gap in identifying distinct behavioral profiles of birdwatchers and how these relate to international travel decisions, especially in the Global South.

In this paper, we address this gap by empirically examining how different types of birdwatchers select destinations and perceive barriers to travel. Our overall aim is to advance the understanding of birdwatcher typologies and the behavioral dimensions shaping avitourism demand. We pursue five specific objectives. First, we describe the demographic and socio-economic profile of birdwatchers and test how this correlates with an a priori typology (casual, enthusiastic, and hardcore). Second, we assess participation frequency in birdwatching and its associations with background variables. Third, we analyze attitudes toward birdwatching trips and explore how they vary across types. Fourth, we investigate international travel behaviors, including motivations and perceived barriers. Fifth, we identify clusters of birdwatchers using factor analysis and offer qualitative insights from an open-ended question to contextualize our findings. In doing so, our study contributes to a more nuanced and inclusive understanding of the global avitourism landscape, providing insights that may help reduce mismatches between biodiversity value and tourism demand and inform planning strategies that support equitable and sustainable tourism development.

2. Material and methods

To address our research objectives, we conducted an online questionnaire survey and distributed it to birdwatching groups and tour companies. The survey was approved by the Institutional Review Boards of UC Santa Cruz (HS-FY2024-46) and University of Florida (ET00020501).

2.1. Survey design

Our online survey had 34 questions, both open and close ended, with ranking questions and Likert-scale items (Table A1). Quantitative items were designed to gather demographic data, birdwatching frequency, and attitudes towards factors motivating birdwatching destinations. Open-ended questions aimed to capture the birdwatchers' motivations towards the birdwatching and past experiences. The survey was structured into four main sections. The first three sections delved into birdwatcher's attitudes

towards local, in-country, and international birdwatching activities, respectively. Within the international birdwatching tours section, preferences for tours, and financial considerations related to birdwatching tours were asked. The final section of the survey was focused on participant demographics, which were asked last to avoid possible anchoring in responses and bias results (Schmader, 2002). We asked respondents to self-classify as casual, enthusiastic, or hardcore birdwatchers. We defined *casual* birdwatchers as those who 'enjoys birdwatching while taking trips for other primary reasons (nature, culture, or hobbies). Doesn't necessarily keep a list and is mostly driven by the enjoyment of birds for their beauty or interesting features;' *enthusiastic* as 'Dedicated birdwatcher who enjoys watching new birds but is motivated by other things (like bird ecology, song beauty) besides growing their personal "life list." Goes on trips to watch birds but also enjoys other activities during their trips;' and a *hardcore* birdwatcher who is 'highly dedicated birdwatcher often seeking to grow their personal "life list." Goes on trips predominately to watch birds, and other activities are secondary. Is driven by search for rare, elusive, and endemic birds. Always brings their own specialized equipment.' An original version of the survey was pilot tested for about 3 weeks with ~10 individual birders to identify ambiguities and optimize overall logic of the questions. After the pilot, we fixed the survey instrument by carefully incorporating participant's feedback. The final version of the survey was distributed online using the Qualtrics platform (see Appendix S1).

2.2. Participant recruitment and sample size calculation

Our recruitment strategy relied on a convenience sample, given that the authors self-identify as birdwatchers and belong to communities of birdwatchers. This facilitated direct access to potential participants through events, social networks, and industry connections particularly relevant to our research objectives. We chose an online questionnaire approach through Qualtrics because it allowed efficient access to a potentially global birdwatching community, particularly those who engage in national and international travel. This approach aligns with the community we wanted to sample (i.e. birdwatchers) as online networks are a primary communication channel for birdwatchers and this method is cost-effective. However, we recognize that online surveys rely on convenience sampling, potentially introducing biases toward more active or digitally engaged birdwatchers. For inclusion in the study, participants had to be over 18 years old. We targeted participants that identify as birders and travel internationally for birdwatching.

We launched our survey on October 26th, 2023 at the South American Bird Fair in Mindo, Ecuador, which had hundreds of participants, all involved in birdwatching. We designed a poster to be used as advertisement (Figure A1). In addition, we shared the survey on multiple social media platforms (e.g. X [formerly Twitter], Facebook, BlueSky; Figure A2) and via word-of-mouth to collaborators and colleagues who are known birdwatchers and/or have connections to known birdwatchers. We also opportunistically gathered email addresses from a google search looking for tour companies with a focus on birds or birdwatching, with a particular emphasis on tour companies that offer tours globally. We then emailed each company individually (Figure A3) asking them to share the survey with their networks. Our survey closed on March 8, 2024. We prevented

bots from accessing our survey by blocking search engines from indexing the survey in their search results. Additionally, since there was no monetary incentive to complete the survey, bots are of lesser concern (Goodrich et al., 2023).

The sample size was calculated using Cochran's sample size formula at a 95% confidence interval and 5% margin of error (Bartlett et al., 2001). This formula requires an estimate of the population we are sampling, birdwatchers. Considering the Merlin app used for bird identification had 5.9 million new users in 2023, and eBird, an app for documenting bird observations, has approximately 930,000 active users which is not all encompassing of birdwatchers, we can safely assume the birdwatching population for which we wanted to target consists of over 1 million people (Team eBird, 2024). We tested different birdwatching population sizes over 1 million in the Cochran's sample size formula and found minimal effect on the ideal sample size, which we found to be between 384 and 385 respondents indicating that our sample size was sufficient (see Results). However, after our sampling was complete, 74% of our respondents were from the United States, and because birdwatching behavior can vary across cultures and countries, we focused our main analyses and discussion on this dominant subset of U.S. birdwatchers ($n = 288$) to avoid overgeneralization. But we provide a complete summary of responses from all participants, including international respondents, in the Supplementary Material for comparative context and future reference.

2.3. Statistical analysis

At the end of the survey, we downloaded the data, and did some cleaning of open text fields to standardize countries and ethnicities. We only used completed surveys for analysis, which included all respondents who clicked through all questions in the survey, even if they did not respond to every non-required question. For the ranking questions, there were incorrect or incomplete responses, so we filtered out this data prior to analyzing rank. We received 427 complete surveys. After reviewing ranking questions, we retained 55% of the answers on the factors that influence local birdwatching ($n = 226$), 54% of answers on the factors that influence in-country birdwatching ($n = 220$), and 54% of answers on the factors that influence international birdwatching ($n = 215$).

To determine the influence of the categorical demographic variables on birdwatcher type, we performed a Fisher's Exact Test. To investigate the influence of income level on international travel for birdwatching, we ran a Kruskal–Wallis test using number of countries as the response variable and income level as the predictor variable. We chose this test due to the positively skewed distribution of the number of countries respondents visited. Additionally, to compare birder type to individual category ranks, we ran a Wilcoxon rank sum test due to the ordinal nature of our response variable. We ran Wilcoxon rank sum tests individually across all combinations of birdwatcher type and category to determine significant relationships, which was inferred at $\alpha \leq 0.05$.

For the question that asked respondents to rate the influence of 11 variables on their importance when selecting international travel, we analyzed this data by using summary statistics, data visualization, and by running a factor analysis. First, we analyzed the data using the Likert function in the *likert* package in R (Bryer & Speerschneider, 2016). This allowed us to plot the importance of each variable individually. To further examine the data, we used the *psych* package in R (Revelle, 2023) to run a factor analysis, allowing us

to determine the enabling conditions (pull factors) and deterring conditions (push factors) in the importance ratings (Punel et al., 2019). We performed an exploratory factor analysis using fa.parallel in the *pysch* package (Revelle, 2023), and subsequently performed the factor analysis using varimax rotation (Fieger et al., 2019). To determine internal consistency within items that load to each factor, we calculated Cronbach's alpha using the *lmt* package in R (Rizopoulos, 2006).

2.4. Open-ended data analysis

At the end of the survey, we asked respondents if they would like to leave any comments regarding factors that affect birdwatcher decisions when selecting a birdwatching experience locally, in-country, or internationally. To quantify these answers, we read through the comments to determine themes. We found six main themes that have a strong influence on travel decisions: outside influence (i.e. friends, family, competing interests, etc.), accessibility, ethics, trip cost, safety, and time available for travel. While most of these themes were asked in survey questions, this open-ended question provided us with information on the factors that respondents deem highly influential in determining travel while also not constraining them to predetermined categories. We then tagged comments based on the six themes, where one comment may be tagged with multiple themes and some comments may not fit into any of the themes as they were not related to travel decisions. Then, we determined the percentage of each theme present based on the number of surveys where respondents left a comment.

2.5. Data availability

Code and anonymized and de-identified data are available in this Zenodo repository: https://doi.org/10.5281/zenodo.16747935.

3. Results

3.1. Demographic and socio-economic profile of birdwatchers

We received a total of 575 responses, of which 427 were deemed complete and usable (Table 1). After filtering for US-only respondents, we retained 313 survey respondents (74% of respondents). Most of our respondents were male (55.0%), over 65 years old (47.1%), and white (89.3%). In terms of education, most respondents had a college degree (92.9%). We found 30.3% had a Bachelor's degree, 31.3% had a master's degree, and 31.3% had a doctorate or higher. Annual income levels varied, but most respondents fell into the categories less than $50,000 (12.4%), $50,000-$100,000 (34.7%), and $100,000-$200,000 (35.1%). A majority of respondents had more than 10 years of birdwatching experience (73.8%), and self-identified in the casual birdwatcher (8.0%), enthusiastic birdwatcher (57.5%), or hardcore birdwatcher (34.5%) category.

Birdwatcher type was influenced by various factors. Based on Fisher's Exact Test, gender was significantly different between birdwatcher types ($P < 0.005$), where males

Table 1. Demographics of survey respondents, grouped by their self-identified type of birdwatcher.

Characteristics	Casual birder	Enthusiastic birder	Hardcore birder	Total
Sex				
Male	28.0%	50.6%	68.5%	55.0%
Female	64.0%	48.3%	30.6%	43.4%
Non-binary	0%	1.1%	0%	0.64%
Prefer not to say	8.0%	0%	0.9%	0.96%
Age				
18–24	4.0%	5.0%	10.2%	6.7%
25–34	32.0%	14.4%	9.3%	14.1%
35–44	24.0%	11.7%	12.0%	12.8%
45–54	12.0%	3.9%	7.4%	5.8%
55–64	4.0%	11.7%	18.5%	13.5%
65+	24.0%	53.1%	42.6%	47.1%
Degree				
High school or equivalent	4.0%	3.9%	6.6%	4.8%
Bachelor's degree	32.0%	28.5%	33.0%	30.3%
Master's degree	20.0%	36.3%	25.5%	31.3%
Doctorate or higher	36.0%	29.6%	33.0%	31.3%
Other	8.0%	1.7%	1.9%	2.3%
Annual Income				
Less than $50,000	19.0%	14.3%	7.8%	12.4%
$50,000–$100,000	28.6%	38.1%	30.4%	34.7%
$100,000–$200,000	33.3%	32.7%	39.2%	35.1%
$200,000–$400,000	14.3%	9.5%	18.6%	13.1%
$400,000–$600,000	4.8%	2.4%	2.0%	2.4%
Over $600,000	0%	3.0%	2.0%	2.4%
Birdwatcher experience				
Less than 1 year	4.0%	0.6%	0%	0.6%
1–5 years	32.0%	9.4%	9.3%	11.2%
6–10 years	24.0%	14.4%	12%	14.4%
More than 10 years	40.0%	75.6%	78.7%	73.8%
Participation in birdwatching trips				
Locally	100.0%	97.2%	98.1%	97.8%
In-Country	88.0%	95.6%	99.1%	96.2%
Internationally	52.0%	81.7%	80.6%	78.9%
Frequency of local birdwatching trips				
Less than once a month	20.0%	6.3%	2.8%	6.2%
1–5 times a month	52.0%	37.9%	19.8%	32.8%
6–10 times a month	24.0%	16.1%	25.5%	20.0%
More than 10 times a month	4.0%	39.7%	51.9%	41.0%
Frequency of in-country birdwatching trips				
Less than once a year	31.8%	5.2%	3.8%	6.6%
1–5 times a year	54.5%	59.9%	34.6%	50.5%
6–10 times a year	13.6%	16.3%	28.0%	20.3%
More than 10 times a year	0%	18.6%	33.6%	22.6%
Median number of countries visited for birdwatching				
Countries (range)	5 (1-10)	9 (1-83)	8 (1-91)	8 (1-91)

made up increasingly higher proportions of the birdwatcher groups from the casual (28.0%) to enthusiastic (50.6%) to hardcore (68.5%) birdwatcher group. There is a significant difference between birdwatcher type and age ($P = 0.005$), where casual birdwatchers were, on average, younger than enthusiastic and hardcore birdwatchers. We found no influence on birdwatcher type from education ($P = 0.29$) and income ($P = 0.31$). Years of birdwatching experience influenced birdwatcher type ($P = 0.002$), where 40.0% of casual, 75.6% of enthusiastic, and 78.7% of hardcore birdwatchers had more than 10 years of birdwatching experience.

3.2. Birdwatching participation frequency

Most study participants, 97.8%, participate in local birdwatching trips, 96.2% participate in in-country birdwatching trips, and 78.9% participate in international birdwatching trips (Table 1; Figure 1). Income did not significantly influence local birdwatching frequency ($P = 0.53$) or in-country birdwatcher frequency ($P = 0.89$). However, birdwatcher type does influence frequency of local birdwatching ($P < 0.005$), where 72.0% of casual birdwatchers travel locally 5 times or less a month, 54.0% of enthusiastic birdwatchers travel locally 6 times or more a month, and 77.4% of hardcore birdwatchers travel locally 6 times or more a month. Birdwatcher type also influences frequency of in-country birdwatching ($P < 0.005$), where 86.3% of casual birdwatchers travel in-country 5 times or less per year, 76.2% of enthusiastic birdwatchers travel in-county 1 to 10 times per year, and 61.6% of hardcore birdwatchers travel in-country 6 or more times a year.

Income significantly influences the number of countries a respondent visited ($p < 0.005$), where annual income levels under $50,000 significantly reduced the number of countries a respondent visited. However, respondents with income above $50,000, did not significantly differ in the number of countries they visited. Birdwatcher type did not significantly influence the number of countries a respondent visited ($P = 0.06$). However, we found that casual birdwatchers visited fewer countries ($\bar{x} = 4.8$, SD = 3.1) than enthusiastic ($\bar{x} = 13.2$, SD = 14.3, $P = 0.04$) and hardcore ($\bar{x} = 16.5$, SD = 19.0, $P = 0.06$) birdwatchers. There was no significant difference between enthusiastic and hardcore birdwatchers ($P = 0.71$). Respondents who travel internationally for birdwatching (see Table 1), have traveled to a median of 10 countries (range = 2–91).

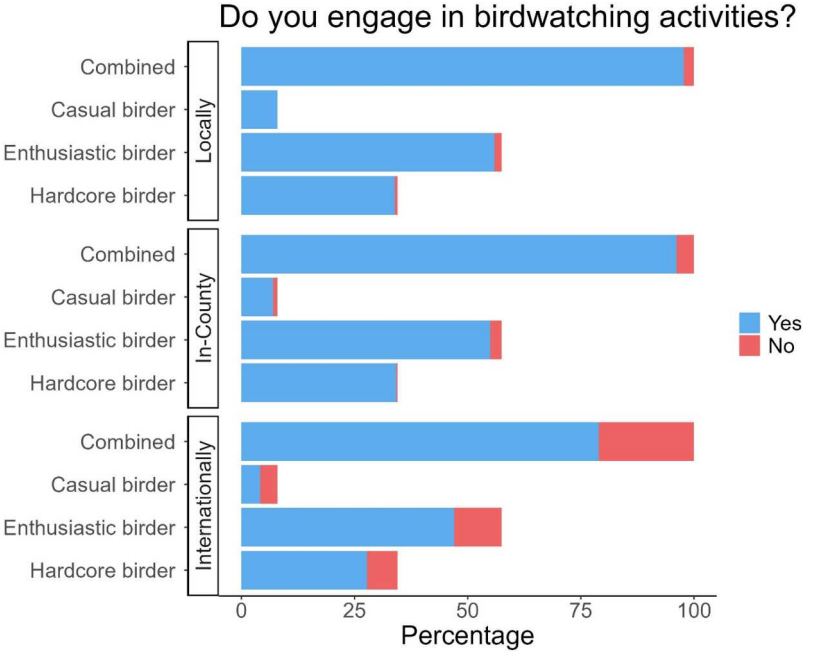

Figure 1. Distribution of engagement in birdwatching activities locally, in-country, and internationally, stratified by birdwatcher type. Combined indicates the total for all birdwatcher types.

3.3. Birdwatchers' attitudes and influencing factors when considering birdwatching trips

We found differences between birdwatcher type and ranking of factors that influenced local birdwatching (Figure 2(a)). Casual birders ranked exploring new sites ($\bar{x} = 1.93$, SD = 0.96) significantly higher than enthusiastic birders ($\bar{x} = 2.76$, SD = 1.27, $P = 0.02$) and hardcore birders ($\bar{x} = 3.02$, SD = 1.02, $P < 0.005$). Hardcore birders rank finding rare species ($\bar{x} = 2.14$, SD = 1.14) significantly higher than casual birders ($\bar{x} = 3.33$, SD = 1.05, $P < 0.005$) and enthusiastic birders ($\bar{x} = 2.78$, SD = 1.35, $P < 0.005$). All birdwatcher groups similarly valued meeting new people ($\bar{x} = 3.79$–3.97, $P > 0.05$). Hardcore birders significantly rank adding birds to life list ($\bar{x} = 2.34$, SD = 1.30) higher than enthusiastic birders ($\bar{x} = 2.83$, SD = 1.34, $P = 0.02$), but not higher than casual birders ($\bar{x} = 3.00$, SD = 1.56, $P = 0.14$). Hardcore birders rank species monitoring ($\bar{x} = 3.42$, SD = 1.43) significantly lower than enthusiastic birders ($\bar{x} = 2.78$, SD = 1.46, $P = 0.006$), but similar to casual birders ($\bar{x} = 2.93$, SD = 1.44, $P = 0.22$).

Some similar trends appeared when examining the ranking of factors that influenced in country birdwatching trips (Figure 2(b)). Casual birders ranked exploring new sites

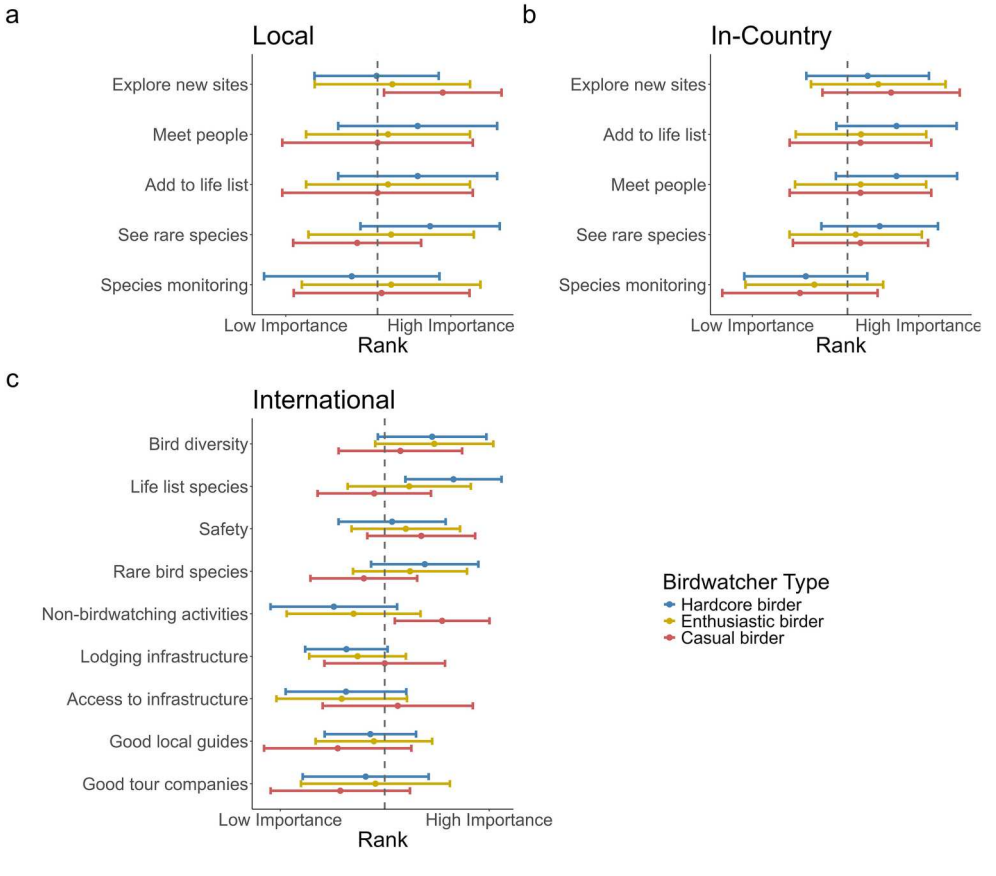

Figure 2. Average rank of importance of listed variables on travel (a) locally (b) in-country and (c) internationally. The error bars are the standard deviation of responses. The vertical dashed lines represent medium importance.

($\bar{x} = 1.69$, SD = 1.03) significantly higher than hardcore birders ($\bar{x} = 2.62$, SD = 1.10, $P = 0.005$), but not significantly more than enthusiastic birders ($\bar{x} = 2.26$, SD = 1.27, $P = 0.12$). Hardcore birders ranked seeing rare birds ($\bar{x} = 2.25$, SD = 1.05) significantly higher than enthusiastic birders ($\bar{x} = 2.66$, SD = 1.26, $P = 0.04$), but not significantly more than casual birders ($\bar{x} = 2.77$, SD = 0.83, $P = 0.08$). Additionally, hardcore birders ranked adding birds to their life list ($\bar{x} = 2.05$, SD = 1.18) significantly higher than enthusiastic birders ($\bar{x} = 2.46$, SD = 1.61, $P = 0.04$), but not significantly higher than casual birders ($\bar{x} = 3.31$, SD = 1.38, $P = 0.56$). All birdwatcher groups similarly value meeting new people ($\bar{x} = 3.82$–4.8, $P > 0.05$) and species monitoring ($\bar{x} = 3.94$–4.09, $P > 0.05$).

Among those that participated in international birdwatching trips ($n = 247$), attitudes varied among respondents. Overall, well planned itineraries and opportunities to see rare birds were the most important factors, followed by knowledgeable local tour guides and high bird diversity, with bird blinds and feeders being the least important factor (Figure 2(c)). Of note, local bird guides were more important than non-local bird guides. There were differences between birdwatcher type and ranking of international birdwatching motivations. Bird diversity is not ranked significantly different among birdwatcher groups ($\bar{x} = 3.10$–4.40, $P > 0.05$). Hardcore birders ranked finding rare species ($\bar{x} = 3.47$, SD = 2.05) significantly higher than casual birders ($\bar{x} = 5.80$, SD = 2.04, $P < 0.005$), but not enthusiastic birders ($\bar{x} = 4.03$, SD = 2.18, $P = 0.10$). Similarly, hardcore birders significantly ranked adding birds to life list ($\bar{x} = 2.37$, SD = 1.84) higher than casual birders ($\bar{x} = 5.40$, SD = 2.17, $P < 0.005$) and enthusiastic birders ($\bar{x} = 4.06$, SD = 2.36, $P < 0.005$). All birdwatcher groups similarly valued good tour companies ($\bar{x} = 5.43$–6.7, $P > 0.05$), good local guides ($\bar{x} = 5.52$–6.8, $P > 0.05$), and safety ($\bar{x} = 3.6$–4.77, $P > 0.05$). Casual birders ranked access to travel infrastructure ($\bar{x} = 4.5$, SD = 2.88) significantly higher than enthusiastic birders ($\bar{x} = 6.65$, SD = 2.50, $P = 0.02$) and hardcore birders ($\bar{x} = 6.48$, SD = 2.31, $P = 0.03$). Casual birders ranked lodging infrastructure ($\bar{x} = 5.00$, SD = 2.31) significantly higher than hardcore birders ($\bar{x} = 6.47$, SD = 1.58, $P = 0.04$). Casual birders ranked availability of other activities ($\bar{x} = 2.80$, SD = 1.81) significantly higher than enthusiastic birders ($\bar{x} = 6.19$, SD = 2.56, $P < 0.005$) and hardcore birders ($\bar{x} = 6.95$, SD = 2.42, $P < 0.005$), and enthusiastic birders ranked availability of other activities significantly higher than hardcore birders ($P = 0.04$).

3.4. Barriers and motivations for international birdwatching travel

The 21.1% of respondents who have not traveled internationally for birdwatching reported that it is mostly due to cost (75.8%) and other factors (40.9%) such as limited time for travel (i.e. limited vacation time or family commitments), disability inhibits travel, desire to limit carbon footprint, and inability to get a travel visa or passport. However, 87.7% of respondents who do not currently travel internationally want to do so in the future. With the top countries they desire to visit being Costa Rica, Australia, New Zealand, Colombia, and Ecuador (Figure 3).

Of the respondents who do travel internationally, 83.8% have stayed at a dedicated birdwatching or nature lodge, 83.3% have hired a birdwatching guide, 78.9% joined an organized birdwatching tour, and 33.8% attended a bird festival or fair. The preference for group travel was highly variable with 7.4% of respondents always traveling alone,

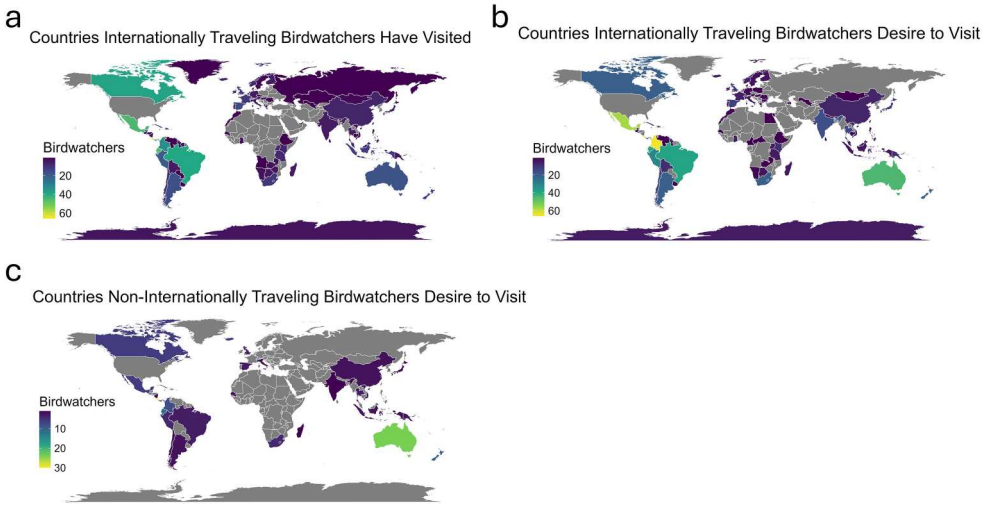

Figure 3. Count of (a) countries visited by internationally traveling birdwatchers, (b) countries internationally birdwatchers plan or desire to visit, and (c) countries non-internationally traveling birdwatchers desire to visit. All respondents are from the United States of America.

17.0% traveling mostly alone and occasionally with a group, 11.8% traveling equally alone and with a group, 32.8% traveling mostly with a group and occasionally alone, and 31.0% always traveling with a group. Most respondents gather information about international birdwatching trips from friends or fellow birdwatchers (83.8%), birdwatching tour company websites (73.2%), and online search engines (70.2%). Most respondents spend between $100 and $600 per day on international travel (83.2%), with 18.1% of respondents spending $100-200, 32.1% spending $200-$400, and 33.0% spending $400-$600 a day on international travel. A majority of respondents believe investing in local livelihoods is moderately important (35.5%), very important (39.5%), or extremely important (13.6%). Similarly, a majority of respondents believe investing in conservation and habitat restoration for birds is moderately important (21.1%), very important (46.5%), or extremely important (22.8%).

Of the respondents who do travel internationally, the top visited countries were Costa Rica ($n = 62$), Ecuador ($n = 45$), Mexico ($n = 45$), Brazil ($n = 40$), Canada ($n = 38$), and Colombia ($n = 33$; Figure 3(a)). The top countries these respondents plan to but have not yet visited are Colombia ($n = 65$), Costa Rica ($n = 65$), Mexico ($n = 56$), Australia ($n = 45$), Brazil ($n = 39$), and Ecuador ($n = 36$; Figure 3(b)). Of respondents that do not currently travel internationally, the top countries they desire to visit are Costa Rica ($n = 30$), Australia ($n = 24$), New Zealand ($n = 10$), Colombia ($n = 8$), Ecuador ($n = 8$), and Canada ($n = 6$; Figure 3(c)).

3.5. Factor analysis of birdwatching trip/experience preferences

The result of the factor analysis reveals that there are different types of travel. Where some birdwatchers prefer tour guides and itineraries, others may be more motivated by the presence of high bird diversity and rare birds, travel logistics, or conservation

focus and support for local communities. In all, attitudes about variables that influence international travel can be grouped into these four categories: knowledgeable tour guides with well-planned itineraries (group 1), presence of high bird diversity and rare birds (group 2), logistics in terms of safety and lodging infrastructure (group 3), and focus on conservation with knowledgeable local tour guides and photography opportunities (group 4; Figure 4; Table 2). For all groups, analysis of Cronbach's alpha revealed that removing any of the loading factors, defined as values over 0.3 (Yong & Pearce, 2013), would not increase the Cronbach's alpha, meaning they contributed positively to group consistency. The first group had high correlation among knowledgeable non-local tour guides, knowledgeable local tour guides, and well-planned itineraries, and scored low on cost, focus on conservation, and bird photography. Cronbach's alpha for this group was 0.71 (CI 0.64–0.77). The second group had high correlation among opportunities to see rare birds and high bird diversity, and scored low in lodging infrastructure, focus on conservation, and personal safety. Cronbach's alpha for this group was 0.66 (CI 0.56–0.74). The third group had high correlation among personal safety, lodging infrastructure, bird blinds and feeders, and cost, and scored low in opportunities to see rare birds, knowledgeable non-local tour guides, and knowledgeable local tour guides. Cronbach's alpha for this group was 0.53 (CI 0.41–0.63). The last group had high correlation among focus on conservation, bird blinds and feeders, and bird photography, and scored low in knowledgeable non-local tour guides, opportunities to see rare birds, and well-planned itineraries. Cronbach's alpha was 0.43 (CI 0.35–0.56). The alpha values reported here are generally considered satisfactory to relatively high, aside from group 4 which is not satisfactory (Tabor, 2018).

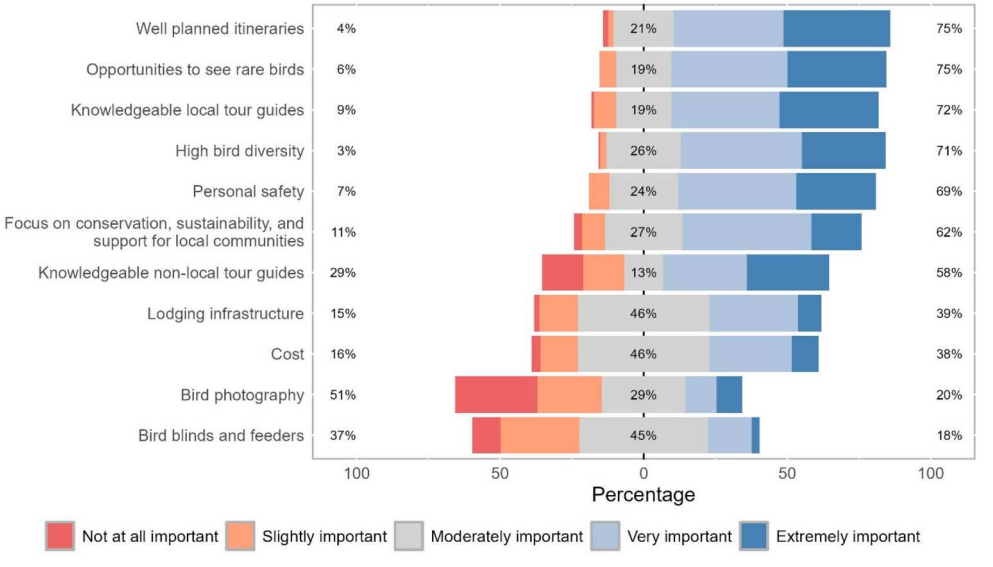

Figure 4. Reported factors that are important when selecting international trips, as a percentage of responses.

Table 2. Results from factor analysis on correlated matrix of variables that are important for birdwatchers as they are choosing international birdwatching destinations. The questions were in ranking format with 5 different options from not at all important to extremely important.

	Group 1	Group 2	Group 3	Group 4
High bird diversity	0.190	0.538	0.136	0.102
Opportunities to see rare birds	0.099	0.916	−0.113	−0.002
Personal safety	0.118	0.026	0.526	0.122
Cost	−0.128	0.220	0.270	0.099
Knowledgeable non-local tour guides	0.866	0.043	0.020	−0.063
Knowledgeable local tour guides	0.537	0.133	0.054	0.305
Well-planned itineraries	0.652	0.110	0.183	0.025
Bird photography	0.068	0.185	0.190	0.255
Bird blinds and feeders	0.348	0.248	0.306	0.287
Focus on conservation, sustainability, and support for local communities	0.032	0.005	0.149	0.779
Lodging infrastructure	0.128	−0.033	0.591	0.074
Statistics				
Eigen values	2.09	0.69	0.55	0.20
Cronbach's alpha values (CI)	0.71 (0.64–0.77)	0.66 (0.56–0.74)	0.53 (0.41–0.63)	0.43 (0.25–0.56)

3.6. Analysis of open-ended question

We asked respondents if they would like to leave any comments regarding factors that affect birdwatcher decisions when selecting a birdwatching experience locally, in-country, or internationally. Of the 105 comments left by respondents, 18.1% stated other factors outside of birdwatching had an important influence on travel. For example, one respondent expressed

> Birdwatching internationally allows me to experience a place from a different perspective … but it's equally or even more important for me to experience the local communities and learn as much as I can about their history, culture, and approaches to conservation.

Other reasons mentioned that have an important influence on travel decisions are non-birder or casual birder traveling companions (i.e. partner, family, friends), interest in other taxa, interest in local culture, and international work trips. Additionally, 8.57% stated accessibility was a critical factor determining travel. For example, one respondent reported 'My husband is mobility impaired … we look for trips where we can practice 'slow birding." Often the respondents reported that due to their age, they require more accessible birdwatching trips. Further, 6.67% felt that ethics such as supporting the local economy or reducing carbon emissions was an important factor influencing travel. For example, one respondent stated,

> I would be interested in birding experience in another country but I'd need to ensure it was low-carbon trip and consistent with my ethics overall (not destructive to the environment or local people, not a highly commercialized thing, promoting good birding ethics in the field, contributing to the net well-being of the world basically).

Income was stated as a limiting factor for 8.57% of birders. For example, a respondent from stated, 'Birding is getting too expensive. Making it more difficult to bird internationally.' In addition, 4.76% of respondents who commented, cited safety as a critical factor in determining travel. For example, a one respondent stated, 'For international trips I do look at international news and state department travel warnings.' Lastly,

3.81% of respondents stated they have limited time for travel. For example, one respondent said 'I mostly go to see a local rare bird if I can include a drive there with another errand I need to run … I don't feel like I have much time to recreate.'

4. Discussion

Our survey revealed that birdwatchers have complex attitudes and preferences as it pertains to local, in-country, and international birdwatching trips. Overall, our results illustrate a general enthusiasm and interest in international birdwatching trips, highlighting the potential of birdwatching as a source of ecotourism revenue (Pintassilgo et al., 2023). Where some birdwatchers prefer tour guides and itineraries, others may be more motivated by presence of high bird diversity and rare birds, travel logistics, or focus on conservation. Our work has quantified and documented important characteristics of birdwatching attitudes, including the overall demographics, motivations, and how these vary across groups of birdwatchers.

4.1. Demographic and socio-economic profile of birdwatchers

We found that most participants in our study were male, white, and middle-aged with a high education background, matching previous work (Randler, 2023; Randler et al., 2023). The high proportion of white respondents is likely due to our focus in the United States and lack of diversity in birdwatching with 89.3% of eBird registrants being non-Hispanic white (Rutter et al., 2021). In total, 66.4% of respondents were over 45 years old. Considering the median age of US citizens is 38.4 years old, the respondents taking this survey were older than average (Data Commons, 2022). This higher-than-average age of birdwatchers has been documented by previous studies such as Randler (2021) who found the mean age of birdwatchers is 47 years old, and McFarlane (1994) who found the mean age of birdwatchers is 51.

The respondents in our study had a higher educational degree than average, with 92.9% of respondents possessing a bachelor's degree, and of those, 62.8% holding an advanced education degree. On average in the US, 37% of people possess a college or university education and only 14% possess advanced education degrees (United States Census Bureau, 2023a). The higher-than-average education level among birdwatchers has been documented in previous studies such as McFarlane (1994) who found over 70% of birdwatchers had college or university education, and Randler (2021) who found 56% of birdwatchers had college or university education. It is possible that the higher education level of respondents in our study may be due to our methods of targeting birdwatchers who travel, which requires enough income for leisure activities. However, while the income reported in this study is skewed slightly higher than the median household income of $74,580 (United States Census Bureau, 2023b), most participants were within the $50,000-$200,000 annual income range. This is similar to the result of Rutter et al. (2021) who found similar levels of income among birdwatchers compared to the public.

We also found that the proportion of male birdwatchers increased in combination with the commitment to birdwatching, which has also been reported by other researchers (Hvenegaard, 2002; Randler, 2021; Vas, 2017). This phenomenon is often attributed to

men having a stronger preference for competition and tendency to act authoritatively (Cooper & Smith, 2010), and to barriers faced by women and other genders in the birdwatching community (Lee et al., 2015). Additionally, we found an increasing proportion of birdwatchers in enthusiastic and hardcore birdwatching categories beyond the age of 55, which follows a similar trend to years of experience.

4.2. Important considerations of birdwatching trips

Locally (i.e. for local birdwatching trips), our results highlight the importance of providing accessibility to birdwatching sites, identifying key species for birdwatchers, and facilitating social interactions for those birdwatchers interested in this aspect of the activity. In comparison, for international birdwatching trips, our results highlight the importance of catering birdwatching tours differently according to the category of birdwatcher targeted. Where some birdwatchers prefer tour guides and itineraries, others may be more motivated by the presence of high bird diversity and rare birds, travel logistics, or conservation focus and support for local communities. Despite differences in our findings of birdwatcher groups, some factors are valued by all birdwatchers and should be prioritized when offering birdwatching tourism activities, such as safety, lodging infrastructure, and good tour companies. Importantly, all birdwatchers are interested in bird diversity, adding species to their life list, and seeing rare species, highlighting the potential importance of publicly available bird data for places wanting to cash in birdwatching tourism benefits (Winton & Ocampo-Peñuela, 2018).

Although casual birdwatchers represented a smaller portion of our sample, their perspectives provide meaningful insight into how less-specialized birdwatchers engage with birdwatching activities. We especially highlight that casual birdwatchers tend to undertake fewer international trips and more local or in-country birdwatching trips. Understanding this group is important for identifying pathways into more committed birdwatching and for designing inclusive tourism opportunities at more localized and in-country scales. However, we acknowledge that the casual birdwatchers made up a relatively small portion of our population (8.0%) but yet the overall results remain the same when they are included or not included (compare Figure 1 to Figure A4 and Figure 4 to Figure A5). For example, we speculate that local birdwatching festivals could provide an opportunity for casual birdwatchers to become more interested in the hobby (e.g., Lawton et al., 2009). When catering to casual birdwatchers, the availability of non-birdwatching activities should be prioritized, as well as access to lodging infrastructure.

Our analysis found hardcore birdwatchers demonstrate an inclination towards international birdwatching activities compared to their casual and enthusiastic counterparts, who show a more prominent interest in local and in-country experiences. Casual birdwatchers' participation drops notably for international trips, indicating that their birdwatching activities are likely more opportunistic, secondary to other travel motives, or constrained by the challenges and demands of international travel. For local and in-country birdwatching, all groups rate exploring new sites and monitoring species as relatively high in importance, with hardcore birdwatchers placing slightly greater emphasis on these activities, potentially due to their commitment to extensive life lists and species tracking. At the international level, the priorities shift, with hardcore birdwatchers

ranking the potential to see rare and life list species as most critical, aligning with their pursuit of avian diversity. Enthusiastic birdwatchers also value these factors but give comparable weight to the quality of tour companies and guides, reflecting a desire for a balanced experience that combines birdwatching with learning and support from expert guides. Casual birdwatchers, while still interested in bird diversity, show a broader interest in non-birdwatching activities, safety, and infrastructure, suggesting that their international trips are more multifaceted, seeking a blend of avian observation with general travel experiences.

4.3. Current patterns and preference destinations of international birdwatching trips

Our results showed that the most recently visited countries were Costa Rica, followed by Ecuador, Mexico, Brazil, Canada, and Colombia. Two factors seem to explain the fact that international birdwatchers chose to visit these countries. Given that our results represent individuals who reside in the United States, location seems to play a key role because all the most visited countries are within the Americas. The availability of specialized ecotourism infrastructure is also a factor that is considered by birdwatchers, as signaled by the fact that Costa Rica is the most visited country (Echeverri et al., 2022). As for bird species, concentration of small or restricted range species (those with distribution <100,000km^2) appears to be prioritized by birdwatchers, as described by survey results. The countries that international birdwatchers visit the most rank among the top 12 for small-range bird concentrations globally (Table A3): Costa Rica (11th), Ecuador (4th), Mexico (12th), Brazil (7th), and Colombia (3rd). Canada is an exception ranking 111th and thus its inclusion might be explained by other factors that affect birdwatcher travel decisions, such as conference travel, family visits, among others. For the countries that international birdwatchers plan to visit next, we observed a similar trend. All desired countries are in the Americas and rank high for their bird diversity and rarity. Of the international birdwatchers, 12.6% surveyed would like to visit Colombia next, number one in the world for bird richness and 3rd for small-ranged species. Costa Rica and Mexico, rank 11th and 12th for small-ranged birds respectively. Brazil (7th), Australia (15th), and Peru (2nd) also ranked as desirable countries to visit. The addition of Peru to the list confirms the importance of bird rarity and availability of specialized infrastructure, as this country is a leader in ecotourism (Baumhackl, 2019; Myers et al., 2000).

The group of countries that non-internationally traveling birdwatchers want to visit show slightly different trends. These respondents are those who have not traveled internationally for birdwatching, but selected these countries as ones they would like to visit if they had a chance. Costa Rica and Australia were the most desired countries to visit. Australia ranks 15th for small-ranged birds and 2nd globally for endemic birds given that it is a large island. The other three countries mentioned were New Zealand, Colombia, Ecuador, and Canada. New Zealand, similar to Australia, is ranked 17th for small-ranged birds and 10th for endemic species. Notably, birdwatchers have visited and desire to visit developing countries, confirming the potential for birdwatching tourism to bring sustainable economic benefits to these nations (Maldonado et al., 2018; Ocampo-Peñuela & Winton, 2017).

4.4. Relevance for birdwatching tour companies and lodges

Our results have implications for understanding birdwatcher behavior and can inform local and international tour companies, as well as governments at all scales, in their efforts to support birdwatching tourism as a sustainable and environmentally responsible economic alternative (Maldonado et al., 2018). First, these stakeholders and rights holders should focus on ensuring broad representation and recognize the diverse and multi-faceted clientele of birdwatchers, understanding that their needs and priorities vary depending on their level of experience and motivations. Second, we found evidence that participants prefer local knowledgeable guides over non-local knowledgeable guides, illustrating the importance of hiring and supporting local community members who possess invaluable Traditional Ecological Knowledge about birds (Iskandar et al., 2021). This preference underscores not only the immersive experience that local guides can provide but also a growing awareness among birdwatchers of the social and economic benefits of engaging with local expertise.

Additionally, recent discussions on sustainable birdwatching have emphasized the environmental impact of long-distance travel associated with birding tourism. The emerging concept of low-carbon birding encourages practices such as prioritizing local birdwatching experiences, minimizing air travel, and promoting carbon-conscious transportation options (Fang et al., 2015). Birdwatching tour companies and lodges can contribute to these efforts by offering itineraries that reduce carbon footprints, promoting biodiversity-rich destinations accessible by sustainable transportation, and integrating conservation contributions into their business models. By aligning with these principles, the birdwatching industry can support not only avian conservation and local livelihoods but also broader climate goals, ensuring that bird-based tourism remains both environmentally responsible and economically viable in the long term.

4.5. Global inequities in avitourism

We recognize that global inequities in avitourism potential are not solely driven by individual preferences. Instead, they often result from structural barriers such as political instability, armed conflict, underdeveloped infrastructure, or limited investment in ecotourism (Stronza et al., 2019; Stronza & Gordillo, 2008). Even in countries with high avian richness and biodiversity, these barriers can limit their ability to attract and benefit from international birdwatchers. This aligns with broader understandings of access – not just in terms of physical or financial means – but in terms of capabilities, governance structures, and power relations (Langhans et al., 2023; Ribot & Peluso, 2003). Our findings suggest that birdwatchers' preferences are shaped not only by biodiversity, but also by perceptions of accessibility, safety, and infrastructure, contributing to understanding how individual behaviors and attitudes interact with broader systems. But we acknowledge that global inequities in avitourism potential are a result of many socio-economic factors not related to individual preferences. Future work could build on this by examining how enabling conditions for avitourism – such as community engagement, safety, and conservation investment – interact with socio-economic conditions.

Our results have particular relevance for South America, likely stemming from the fact that our analysis focused on U.S.-based birdwatchers and the regional proximity to South

America and Latin countries from the United States. Given this region is home to a large percentage of the world's biodiversity, it makes sense that birdwatchers are excited to travel to these areas. Because we find birdwatching tourists value this rarity in addition to infrastructure such as safety and lodging, these findings are particularly relevant for potential destinations. As an example, recent policy discussions, such as those led by the Inter-American Development Bank (Alpízar et al., 2020) focused on cases from Latin American and Caribbean countries highlights the potential for placing biodiversity into public policy, where biodiversity is framed as a component of a country's development agenda. Indeed, our results have relevance for this, supporting the notion that tourism opportunities exist if biodiversity continues to be framed this way, and if the necessary infrastructure is in place. We also suggest that similar cases could be made for other parts of the world where biodiversity is proportionately high.

4.6. Future work

Our analyses provide some evidence of the importance of birdwatching trips, but we acknowledge that our sampling was biased. While our survey included respondents from multiple countries, we concentrated our main analysis on U.S. birdwatchers to ensure internal consistency and avoid making overgeneralized claims. However, we speculate that the birdwatching community in the U.S. likely parallels birdwatching behavior documented in other countries, we believe our findings may offer useful insights that are likely generalizable to other nations with established birdwatching cultures (compare Figure 1 to Figure A6 and Figure 4 to Figure A7). Our sample was not stratified and relied on a convenience sample, limiting the generalizability of our results to other regions and groups. We predefined birdwatcher categories based on existing work and our own experience as birdwatchers, yet respondent comments indicated these were not comprehensive.

5. Conclusion

We show how motivations and behaviors vary across birder types and spatial scales, contributing to the growing literature on birdwatching tourism, and thus we provide a series of key avenues for future research. First, future research should build a more holistic set of categories of birders, as opposed to a set of predefined groups, or ideally present birdwatchers along a spectrum from least active to most hardcore. Such future work could maximize the utility of catering to different types of birdwatchers. Second, future research should examine how birdwatchers' preferences and behaviors, such as traveling shorter distances, choosing local destinations, or engaging in slower forms of travel, can align with broader climate goals. Third, future work should investigate how preferences and motivations vary among different regions and how the inter-connectedness among regions leads to a global avitourism economy.

Our study advances the understanding of how and why birdwatchers select birdwatching destinations, expanding previous research on birder motivations (e.g. Hvenegaard, 2002; Pintassilgo et al., 2023; Vas, 2017) to include multiple spatial scales across a typology of birders. Our results illustrate the importance of recognizing how different types of birdwatchers have distinct motivations and priorities, supporting previous research

(Rutter et al., 2021; Steven et al., 2018). We extend the relevant literature by showing that the diversity of birdwatching experiences, the value placed on local guides, and the growing potential for community-based tourism in biodiverse regions of the Global South are all critical considerations for advancing sustainable birdwatching tourism. Addressing the varied needs of birdwatchers in an equitable fashion, while promoting local livelihoods, remains a prominent avenue for further scientific work. However, sustainability must also account for the environmental footprint of birdwatching, particularly regarding travel-related emissions. As awareness of climate impacts grows, the concept of low-carbon birding offers a valuable framework for promoting more environmentally responsible tourism behaviors, which is supported by our findings of attitudes and behaviors of those choosing local travel opportunities. Ultimately, our study highlights the significant potential of birdwatching as a form of ecotourism that, when thoughtfully managed, can be both economically inclusive and ecologically mindful.

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Author contributions

CTC and NOP conceptualized the project. CTC and BMM curated the data, ran analyses, and created figures with advisement from AE and NOP. CTC acquired funding for the project. All authors were involved in paper planning and writing of the draft.

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