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.

Keywords: avitourism; avitourists; birders; birdwatching; birdwatchers; ecotourism

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; Naidoo, et al. 2016); and Colombia (Maldonado, et al. 2018; Echeverri, et al. 2025). As a nature-based form of travel that emphasizes environmental sustainability and cultural respect, ecotourism has the potential to support both conservation outcomes and local livelihoods (Naidoo, et al. 2016; Balmford, et al. 2009).

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 and 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 and 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 (Novelli 2007; 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 and Ocampo-Peñuela 2018). Countries with rich avian diversity, particularly in tropical regions, are poised to benefit significantly from avitourism (Ocampo-Peñuela and Winton 2017, Echeverri et al. 2022). 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 and 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. 2024). 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. 2024), 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; Şekercioğlu 2002; Vas 2017), 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 A.1). 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 A.1). In addition, we shared the survey on multiple social media platforms (e.g., X [formerly Twitter], Facebook, BlueSky; Figure A.2) 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 A.3) 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 and 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 here: https://doi.org/10.5281/zenodo.16740540.

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 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).

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288 *3.3 Birdwatchers' attitudes and influencing factors when considering birdwatching trips*

289 We found differences between birdwatcher type and ranking of factors that influenced local
290 birdwatching (Figure 2a). Casual birders ranked exploring new sites ($\bar{x}$ = 1.93, SD = 0.96)
291 significantly higher than enthusiastic birders ($\bar{x}$ = 2.76, SD = 1.27, P = 0.02) and hardcore birders
292 ($\bar{x}$ = 3.02, SD = 1.02, P < 0.005). Hardcore birders rank finding rare species ($\bar{x}$ = 2.14, SD =
293 1.14) significantly higher than casual birders ($\bar{x}$ = 3.33, SD = 1.05, P < 0.005) and enthusiastic
294 birders ($\bar{x}$ = 2.78, SD = 1.35, P < 0.005). All birdwatcher groups similarly valued meeting new
295 people ($\bar{x}$ = 3.79 – 3.97, P > 0.05). Hardcore birders significantly rank adding birds to life list ($\bar{x}$
296 = 2.34, SD = 1.30) higher than enthusiastic birders ($\bar{x}$ = 2.83, SD = 1.34, P = 0.02), but not
297 higher than casual birders ($\bar{x}$ = 3.00, SD = 1.56, P = 0.14). Hardcore birders rank species
298 monitoring ($\bar{x}$ = 3.42, SD = 1.43) significantly lower than enthusiastic birders ($\bar{x}$ = 2.78, SD =
299 1.46, P = 0.006), but similar to casual birders ($\bar{x}$ = 2.93, SD = 1.44, P = 0.22).

300

301 Some similar trends appeared when examining the ranking of factors that influenced in country
302 birdwatching trips (Figure 2b). Casual birders ranked exploring new sites ($\bar{x}$ = 1.69, SD = 1.03)
303 significantly higher than hardcore birders ($\bar{x}$ = 2.62, SD = 1.10, P = 0.005), but not significantly
304 more than enthusiastic birders ($\bar{x}$ = 2.26, SD = 1.27, P = 0.12). Hardcore birders ranked seeing
305 rare birds ($\bar{x}$ = 2.25, SD = 1.05) significantly higher than enthusiastic birders ($\bar{x}$ = 2.66, SD =
306 1.26, P = 0.04), but not significantly more than casual birders ($\bar{x}$ = 2.77, SD = 0.83, P = 0.08).
307 Additionally, hardcore birders ranked adding birds to their life list ($\bar{x}$ = 2.05, SD = 1.18)
308 significantly higher than enthusiastic birders ($\bar{x}$ = 2.46, SD = 1.61, P = 0.04), but not
309 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 2c). 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, 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 3a). 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 3b). 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 3c).

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 and 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 0.77 (CI 0.64 – 0.71). 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 – 0.58). 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).

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, 15.3% 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 et al. 2023; Randler 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 and 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 and Ocampo-Penuela 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 A.4 and Figure 4 to Figure A.5). For example, we speculate that local birdwatching festivals could provide an opportunity for casual birdwatchers to become more interested in the hobby. 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

516 infrastructure is also a factor that is considered by birdwatchers, as signaled by the fact that
517 Costa Rica is the most visited country (Echeverri et al. 2022). As for bird species, concentration
518 of small or restricted range species (those with distribution <100,000km^2) appears to be
519 prioritized by birdwatchers, as described by survey results. The countries that international
520 birdwatchers visit the most rank among the top 12 for small-range bird concentrations globally
521 (Table A.3): Costa Rica (11th), Ecuador (4th), Mexico (12th), Brazil (7th), and Colombia (3rd).
522 Canada is an exception ranking 111th and thus its inclusion might be explained by other factors
523 that affect birdwatcher travel decisions, such as conference travel, family visits, among others.
524 For the countries that international birdwatchers plan to visit next, we observed a similar trend.
525 All desired countries are in the Americas and rank high for their bird diversity and rarity. Of the
526 international birdwatchers, 12.6% surveyed would like to visit Colombia next, number one in the
527 world for bird richness and 3rd for small-ranged species. Costa Rica and Mexico, rank 11th and
528 12th for small-ranged birds respectively. Brazil (7th), Australia (15th), and Peru (2nd) also ranked
529 as desirable countries to visit. The addition of Peru to the list confirms the importance of bird
530 rarity and availability of specialized infrastructure, as this country is a leader in ecotourism
531 (Baumhackl 2019; Myers et al. 2000).
532
533 The group of countries that non-internationally traveling birdwatchers want to visit show slightly
534 different trends. These respondents are those who have not traveled internationally for
535 birdwatching, but selected these countries as ones they would like to visit if they had a chance.
536 Costa Rica and Australia were the most desired countries to visit. Australia ranks 15th for small-
537 ranged birds and 2nd globally for endemic birds given that it is a large island. The other three
538 countries mentioned were New Zealand, Colombia, Ecuador, and Canada. New Zealand, similar

539 to Australia, is ranked 17th for small-ranged birds and 10th for endemic species. Notably,
540 birdwatchers have visited and desire to visit developing countries, confirming the potential for
541 birdwatching tourism to bring sustainable economic benefits to these nations (Maldonado et al.
542 2018; Ocampo-Peñuela and Winton 2017).
543
544 *4.4 Relevance for birdwatching tour companies and lodges*
545 Our results have implications for understanding birdwatcher behavior and can inform local and
546 international tour companies, as well as governments at all scales, in their efforts to support
547 birdwatching tourism as a sustainable and environmentally responsible economic alternative
548 (Maldonado et al. 2018). First, these stakeholders and rights holders should focus on ensuring
549 broad representation and recognize the diverse and multi-faceted clientele of birdwatchers,
550 understanding that their needs and priorities vary depending on their level of experience and
551 motivations. Second, we found evidence that participants prefer local knowledgeable guides over
552 non-local knowledgeable guides, illustrating the importance of hiring and supporting local
553 community members who possess invaluable Traditional Ecological Knowledge about birds.
554 This preference underscores not only the immersive experience that local guides can provide but
555 also a growing awareness among birdwatchers of the social and economic benefits of engaging
556 with local expertise.
557
558 Additionally, recent discussions on sustainable birdwatching have emphasized the environmental
559 impact of long-distance travel associated with birding tourism. The emerging concept of low-
560 carbon birding encourages practices such as prioritizing local birdwatching experiences,
561 minimizing air travel, and promoting carbon-conscious transportation options (Fang et al. 2015).

562 Birdwatching tour companies and lodges can contribute to these efforts by offering itineraries
563 that reduce carbon footprints, promoting biodiversity-rich destinations accessible by sustainable
564 transportation, and integrating conservation contributions into their business models. By aligning
565 with these principles, the birdwatching industry can support not only avian conservation and
566 local livelihoods but also broader climate goals, ensuring that bird-based tourism remains both
567 environmentally responsible and economically viable in the long term.
568
569 *4.5 Global inequities in avitourism*
570 We recognize that global inequities in avitourism potential are not solely driven by individual
571 preferences. Instead, they often result from structural barriers such as political instability, armed
572 conflict, underdeveloped infrastructure, or limited investment in ecotourism (Stronza et al. 2008;
573 Stronza et al. 2019). Even in countries with high avian richness and biodiversity, these barriers
574 can limit their ability to attract and benefit from international birdwatchers. This aligns with
575 broader understandings of access—not just in terms of physical or financial means—but in terms
576 of capabilities, governance structures, and power relations (Ribot and Peluso 2003; Langhans et
577 al. 2023). Our findings suggest that birdwatchers' preferences are shaped not only by
578 biodiversity, but also by perceptions of accessibility, safety, and infrastructure, contributing to
579 understanding how individual behaviors and attitudes interact with broader systems. But we
580 acknowledge that global inequities in avitourism potential are a result of many socio-economic
581 factors not related to individual preferences. Future work could build on this by examining how
582 enabling conditions for avitourism—such as community engagement, safety, and conservation
583 investment—interact with socio-economic conditions.
584

585 Our results have particular relevance for South America, likely stemming from the fact that our
586 analysis focused on U.S.-based birdwatchers and the regional proximity to South America and
587 Latin countries from the United States. Given this region is home to a large percentage of the
588 world's biodiversity, it makes sense that birdwatchers are excited to travel to these areas.
589 Because we find birdwatching tourists value this rarity in addition to infrastructure such as safety
590 and lodging, these findings are particularly relevant for potential destinations. As an example,
591 recent policy discussions, such as those led by the Inter-American Development Bank (Alpízar et
592 al. 2020) focused on cases from Latin American and Caribbean countries highlights the potential
593 for placing biodiversity into public policy, where biodiversity is framed as a component of a
594 country's development agenda. Indeed, our results have relevance for this, supporting the notion
595 that tourism opportunities exist if biodiversity continues to be framed this way, and if the
596 necessary infrastructure is in place. We also suggest that similar cases could be made for other
597 parts of the world where biodiversity is proportionately high.
598
599 *4.5 Future work*
600 Our analyses provide some evidence of the importance of birdwatching trips, but we
601 acknowledge that our sampling was biased. While our survey included respondents from
602 multiple countries, we concentrated our main analysis on U.S. birdwatchers to ensure internal
603 consistency and avoid making overgeneralized claims. However, we speculate that the
604 birdwatching community in the U.S. likely parallels birdwatching behavior documented in other
605 countries, we believe our findings may offer useful insights that are likely generalizable to other
606 nations with established birdwatching cultures (compare Figure 1 to Figure A.6 and Figure 4 to
607 Figure A.7). Our sample was not stratified and relied on a convenience sample, limiting the

608 generalizability of our results to other regions and groups. We predefined birdwatcher categories
609 based on existing work and our own experience as birdwatchers, yet respondent comments
610 indicated these were not comprehensive.
611
612 **5. Conclusion**
613 We show how motivations and behaviors vary across birder types and spatial scales, contributing
614 to the growing literature on birdwatching tourism, and thus we provide a series of key avenues
615 for future research. First, future research should build a more holistic set of categories of birders,
616 as opposed to a set of predefined groups, or ideally present birdwatchers along a spectrum from
617 least active to most hardcore. Such future work could maximize the utility of catering to different
618 types of birdwatchers. Second, future research should examine how birdwatchers' preferences
619 and behaviors, such as traveling shorter distances, choosing local destinations, or engaging in
620 slower forms of travel, can align with broader climate goals. Third, future work should
621 investigate how preferences and motivations vary among different regions and how the inter-
622 connectedness among regions leads to a global avitourism economy.
623
624 Our study advances the understanding of how and why birdwatchers select birdwatching
625 destinations, expanding previous research on birder motivations (e.g., Hvenegaard 2002; Vas
626 2017; Pintassilgo et al. 2023) to include multiple spatial scales across a typology of birders. Our
627 results illustrate the importance of recognizing how different types of birdwatchers have distinct
628 motivations and priorities, supporting previous research (Steven et al. 2018; Rutter et al. 2021).
629 We extend the relevant literature by showing that the diversity of birdwatching experiences, the
630 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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Tables

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)

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)	0.77 (0.64 – 0.71)	0.66 (0.56 – 0.58)	0.53 (0.41 – 0.63)	0.43 (0.25 – 0.56)

Figures

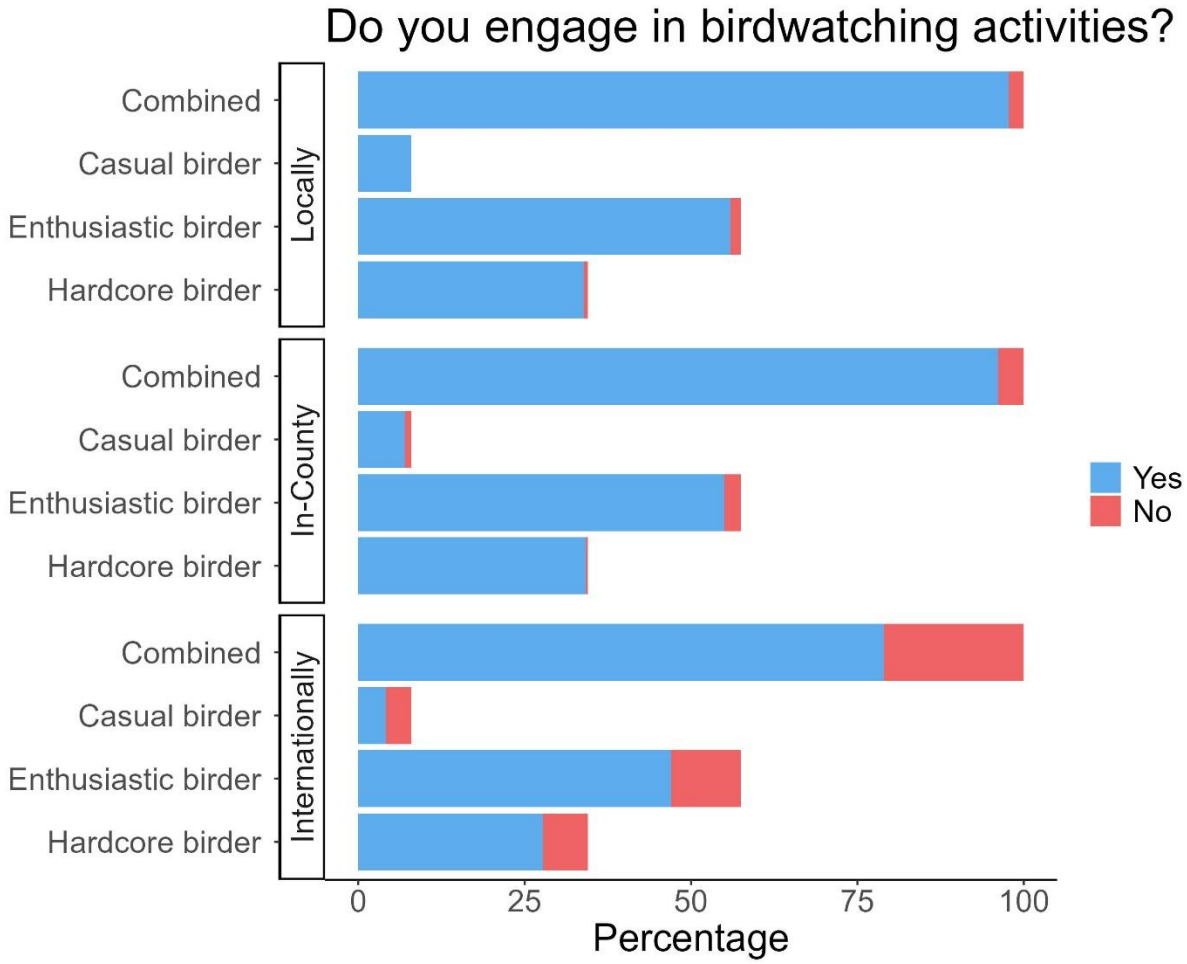

Figure 1. Distribution of engagement in birdwatching activities locally, in-country, and internationally, stratified by birdwatcher type. Combined indicates the total for all birdwatch types.

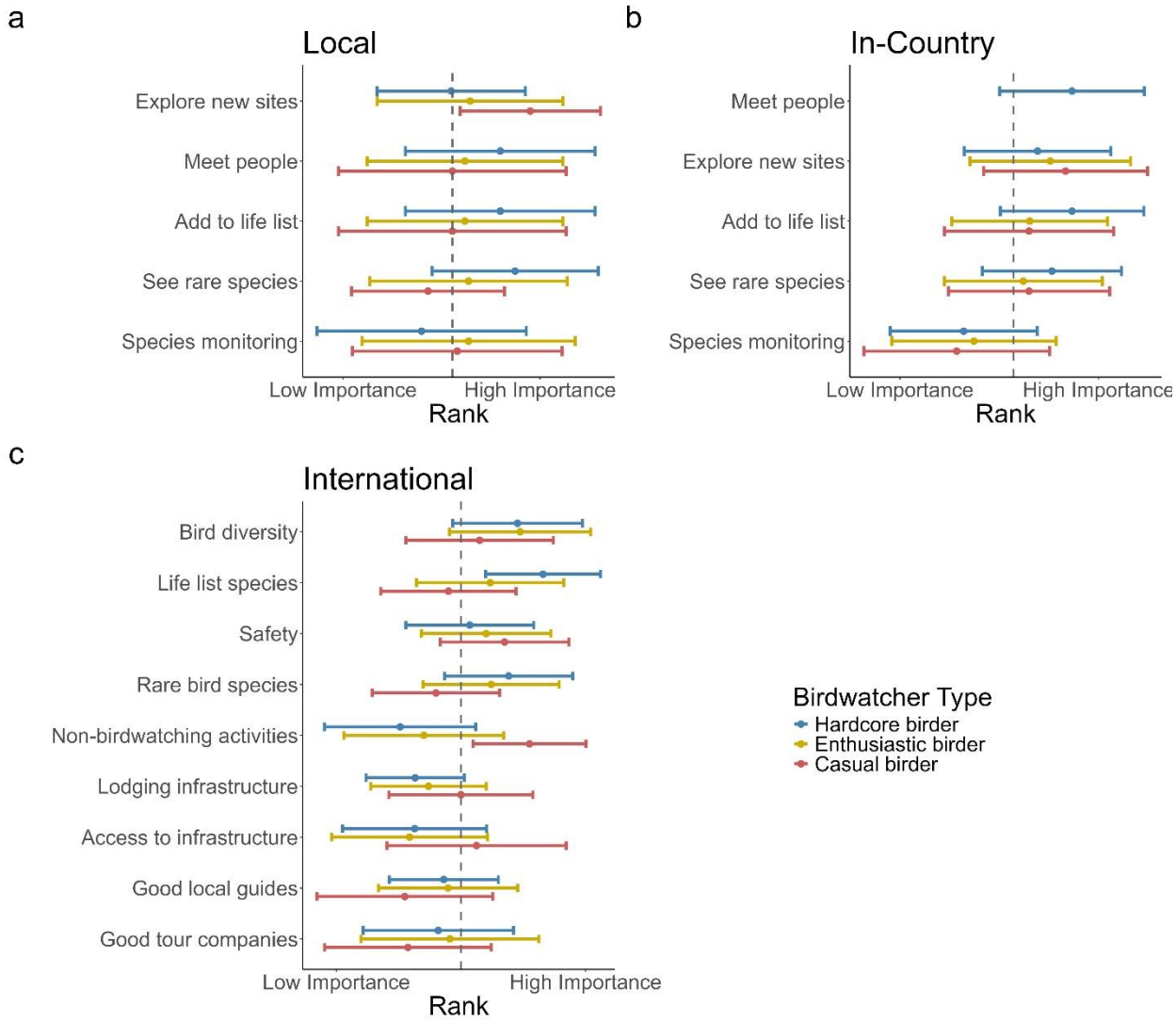

Figure 2. Average rank of importance of listed variables on travel a) locally b) in-country and c) internationally. The error bars are the standard deviation of responses. The vertical dashed lines represent medium importance.

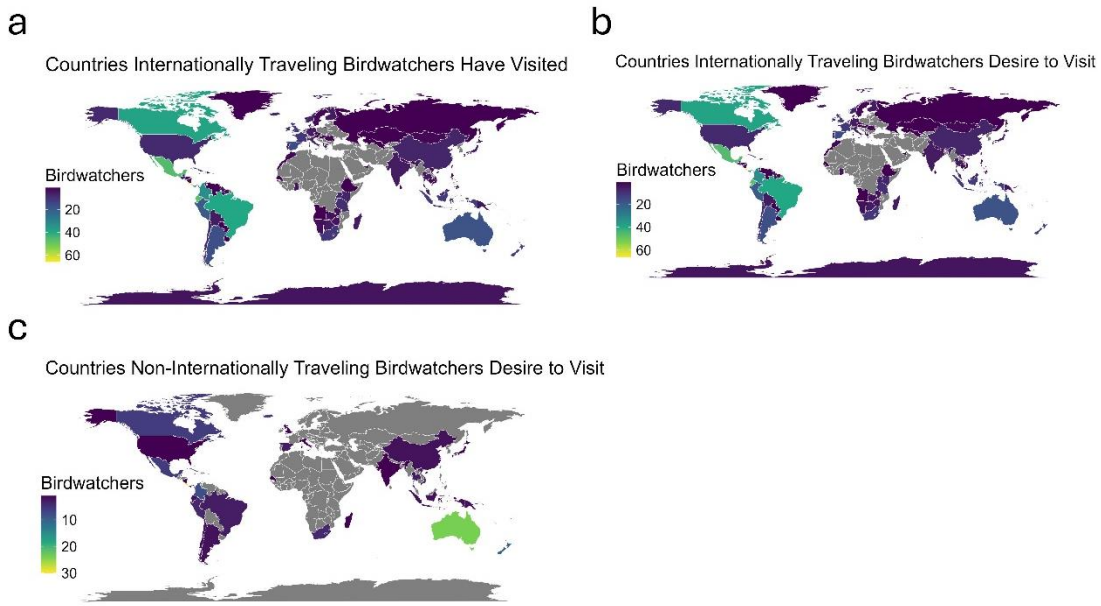

Figure 3. Count of a) countries visited by internationally traveling birdwatchers, b) countries internationally bird watchers plan or desire to visit, and c) countries non-internationally traveling birdwatchers desire to visit.

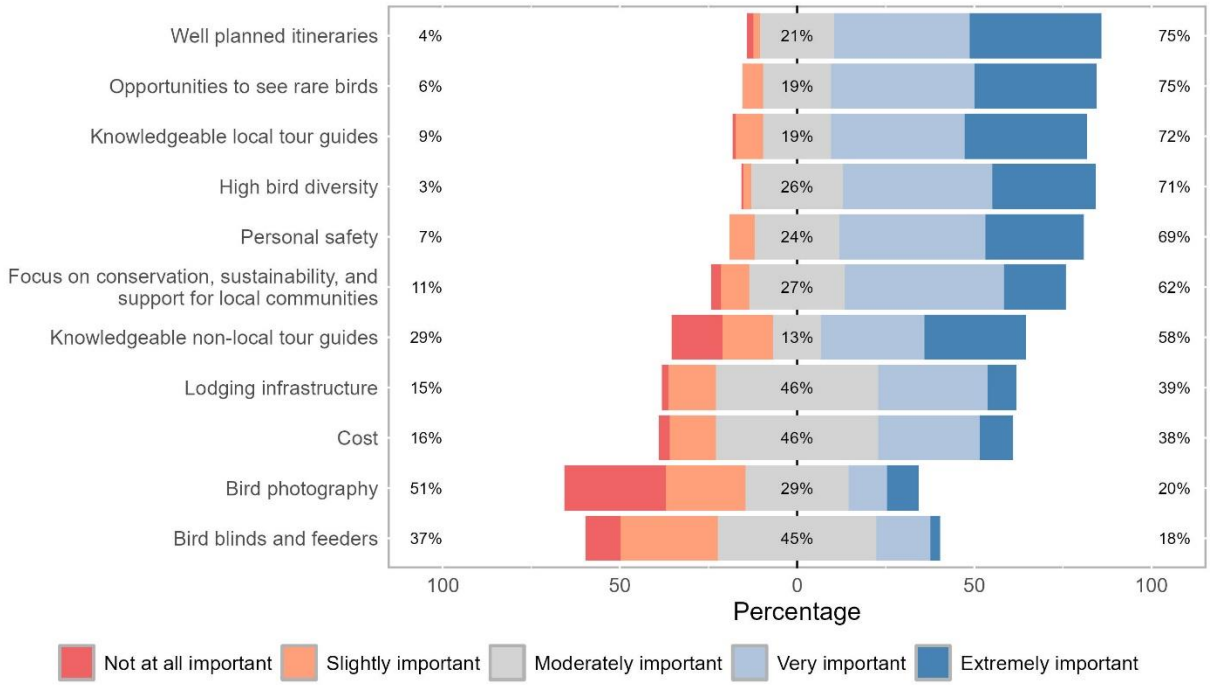

Figure 4. Reported factors that are important when selecting international trips, as a percentage of responses.

Appendix A

Table A.1. The survey questions used to determine birdwatchers' decisions regarding birdwatching tours. The '#' column represents the question number. Question is the full question asked to respondents. Question type is the format of the question. Choices are the options available for each question.

#	Question	Question Type	Choices
1	Do you engage in birdwatching activities locally?	Multiple choice	• Yes • No
2	How often do you engage in local (within 2hrs by car of your home) birdwatching activities per month?	Multiple choice	• Less than once a month • 1-5 times a month • 6-10 times a month • More than 10 times a month
3	What are the most important factors when visiting local birdwatching sites? • Reporting or looking for rare species • Growing my (county/state/life) bird list • Long-term monitoring of birding sites • Exploring new birdwatching sites • Meeting and socializing with other birdwatchers	Rank	1 - 5
4	Please mention any other factors that are important to you when visiting local birdwatching sites.	Open text	
5	Do you engage in bird watching activities in-country (more than 2hrs by car from your home but within your country of residence)?	Multiple choice	• Yes • No
6	How often do you engage in bird watching activities in-country (more than 2hrs by car from your home but within your country of residence)?	Multiple choice	• Less than once a year • 1-5 times a year • 6-10 times a year • More than 10 times a year
7	What are the most important factors when visiting in-country birdwatching sites? • Reporting or looking for rare species • Growing my (county/state/life) bird list	Rank	1 - 5

	• Long-term monitoring of birdwatching sites • Meeting and socializing with other birdwatchers		
8	Please mention any other factors that important to you when visiting in-country birdwatching sites.	Open text	
9	Why have you not traveled more than 2hrs by car from your home for birdwatching?	Multiple choice (select all)	• Cost • Comfort • Accessibility • Safety • Health • Not interested • Don't have information about where to go • Not enough interesting birds • Other (please specify): open text
10	Do you engage in birdwatching activities internationally (outside your country of residence)?	Multiple choice	• Yes • No
11	Why have you not traveled internationally for birdwatching?	Multiple choice (select all)	• Cost • Comfort • Accessibility • Safety • Health • Not interested • Don't have information about where to go • Not enough interesting birds • Other (please specify): open text
12	In the future, would you like to travel internationally to engage in birdwatching activities?	Multiple choice	• Yes • No
13	If you were to go birdwatching internationally, which three countries would you hope to visit first. • 1st • 2nd • 3rd	Open text	

14	How many countries have you visited for birdwatching, excluding your country of residence? Write an approximate number if you don't remember.	Open text		
15	Please list the last 3 countries you visited for birdwatching. • Most recent • 2nd • 3rd	Open text		
16	Please list the next 3 countries you plan to, or hope to, visit next for birdwatching • 1st • 2nd • 3rd	Open text		
17	When you select an international country to visit for birdwatching what aspects do you consider to be most important? • Overall bird diversity • Endemic and rare bird species • Potential to add the most new birds to your life list • Good tour companies • Good local guides • Safety • Access to infrastructure so that I can travel by myself (e.g. roads, rental car) • Lodging infrastructure • Availability of non-birdwatching activities (e.g. culture, gastronomic, other nature tourism)	Rank	1 - 9	
18	Please mention any other factors that are important to you when visiting international birdwatching sites.	Open text		
19	Please check all that apply if you have participated in these.	Multiple choice (select all)	• Organized birdwatching tour (an all-inclusive tour where the purpose was solely to look at and/or photograph birds)	

			• Hired a birdwatching guide • Stayed at a dedicated birdwatching/nature lodge • Attended a bird festival/fair • None of the above
20	How often do you travel alone versus in a group of birdwatchers on international birdwatching trips?	Multiple choice	• Always alone • Mostly alone, occasionally with a group • About equally alone and with a group • Mostly with a group, occasionally alone • Always with a group
21	How important is/are the following factors when selecting an international birdwatching trip. • High bird diversity • Opportunities to see rare and/or endemic birds • Personal safety • Cost • Experienced and knowledgeable (non local) tour guides • Experienced and knowledgeable (local) tour guides • Well-planned itineraries and birdwatching spots • Bird photography opportunities • Access to bird blinds and feeders (nectar, fruit, grains, moth) • Focus on conservation, sustainability, and support for local communities • Lodging infrastructure	Likert	• Not at all important • Slightly important • Moderately Important • Very important • Extremely important
22	How do you typically gather information about birdwatching trips?	Multiple choice (select all)	• Online search engines • Birdwatching tour company websites

			• Recommendations from friends or fellow birdwatchers • Birdwatching forums or online communities • Social media platforms • Birdwatching magazines or publications • Bird fairs • Other: open text
23	What is the average cost per day (in US dollars) of the international birdwatching trips you have taken?	Multiple choice	• $50-$100 • $100-$200 • $200-$400 • $400-$600 • More than $600
24	When selecting an international birdwatching trip, how important is it to you that some of the birdwatching trip profits are invested in: • Local communities to improve their livelihoods • Conservation and restoration activities that benefit birds and their habitats	Likert	• Not at all important • Slightly important • Moderately Important • Very important • Extremely important
25	What is your age?	Multiple choice	• 18-24 • 25-34 • 35-44 • 45-54 • 55-64 • 65 or above
26	What is your gender?	Multiple choice	• Male • Female • Non-binary • Prefer not to say • Other: open text
27	What is your country of Nationality	Multiple choice	List of all countries
28	What is your highest level of education completed?	Multiple choice	• High school or equivalent • Bachelor's degree/Undergraduate degree • Master's degree

			• Doctorate (PhD) or higher • Other: open text
29	In what country do you current reside?	Multiple choice	List of all countries
30	How do you identify your racial or ethnic background?	Open text	
31	What is your household annual income bracket in US dollars?	Multiple choice	• Less than $50,000 • $50,000-$100,000 • $100,000-$200,000 • $200,000-$400,000 • Over $600,000
32	How many years of birdwatching experience do you have?	Multiple choice	• Less than 1 year • 1-5 years • 6-10 years • More than 10 years
33	What kind of birdwatcher best describes you	Multiple choice	• Hardcore birder – 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. • Enthusiastic birder – 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. • Casual birder – enjoys bird watching while taking trips for other primary reasons (nature, culture, hobbies). Doesn’t necessarily keep a list and is mostly driven by the

			enjoyment of birds for their beauty or interesting features.
34	The aim of this study is to understand the factors that affect birdwatcher decisions when selecting a birdwatching experience locally, in-country, and internationally. If you would like to add nay comments regarding this topic, please write them below.	Open text	

Figure A.1. The flyer that was distributed to birdwatching groups, birdwatchers, and tour guides.

Figure A.2. A screenshot of the message posted to X (formerly twitter), highlighting a number of reposts, likes, and views.

Dear Birdwatching East Africa Tours representative,

We are a team of researchers from the University of California Santa Cruz (Natalia Ocampo-Peñuela) and the University of Florida (Corey T. Callaghan) writing to you about a survey we are conducting. We aim to better understand birdwatching tourism, and how birders select international countries as their destination, as well as the role tour companies play in the decision-making process. We would love your help in disseminating the link to the survey.

It is our hope that this information will be helpful in bolstering and improving global birdwatching tourism opportunities, and ultimately conservation of important bird habitats and species that birdwatchers like to visit. We also feel that the information we collect would be helpful to designing and improving bird tours offered and where they are offered.

We are writing to you in hopes that you would be willing to share a link to our survey with your clientele/organization via any email list serves and/or social media posts. The survey is anonymous and takes about 10 minutes to complete. It is available here: https://ucsantacruz.co1.qualtrics.com/jfe/form/SV_001X3MRTBByn6E6. And please see the attached flyer as well.

Thank you so much for your time and consideration, and please feel to reach out with any questions. We'd be more than happy to hop on a zoom or phone call to discuss more about our research if you'd like.

All the best,

Brittany M. Mason, Corey T. Callaghan, and Natalia Ocampo-Peñuela

Figure A.3. An example of an email sent to a specific birdwatching tour company, which we sent to >50 such email addresses opportunistically sourced online.

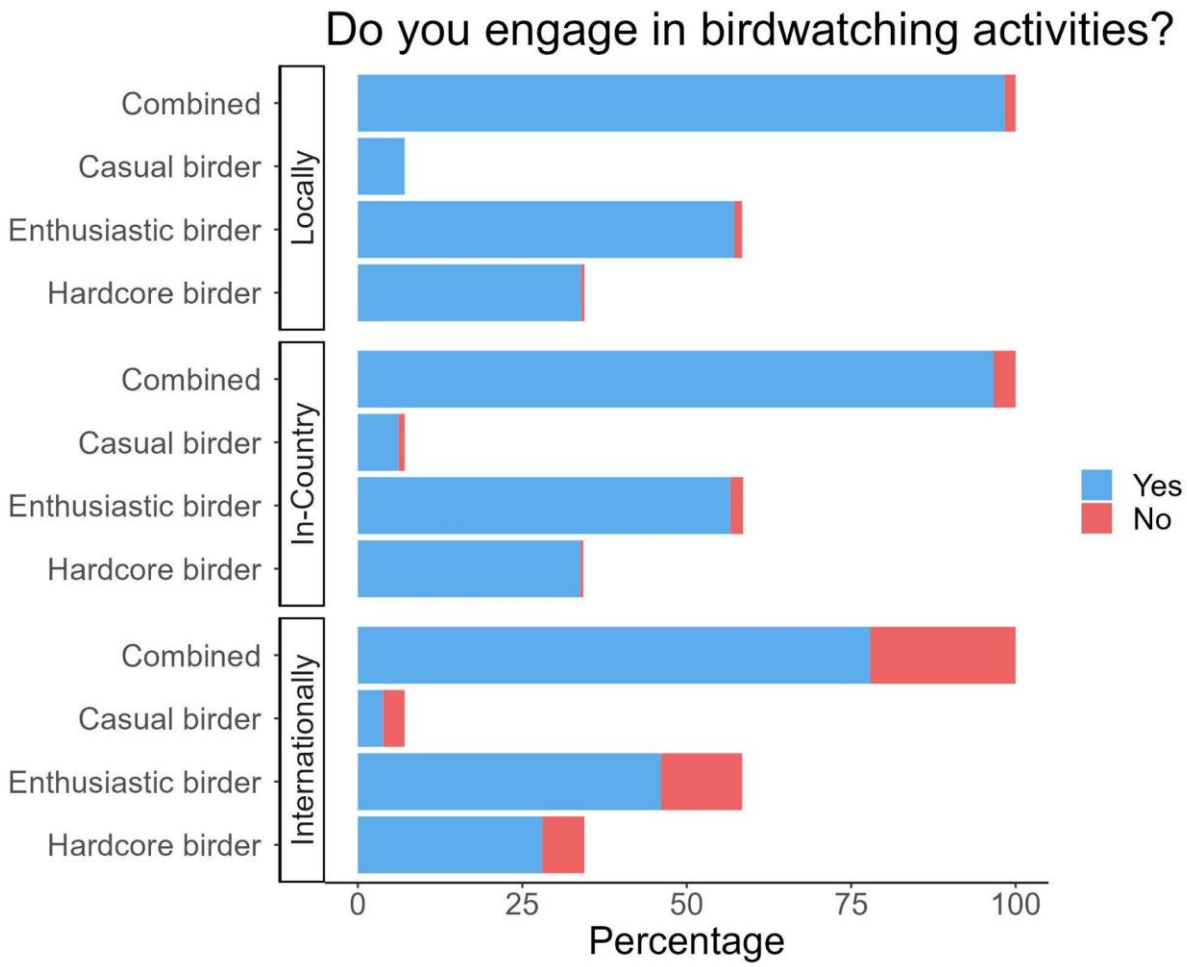

Figure A.4. Distribution of engagement in bird watching activities locally, in-country, and internationally, stratified by birdwatcher type for respondents who identify as enthusiastic or hardcore birders and are US residents (n=288). Combined indicates the total for all birdwatch types.

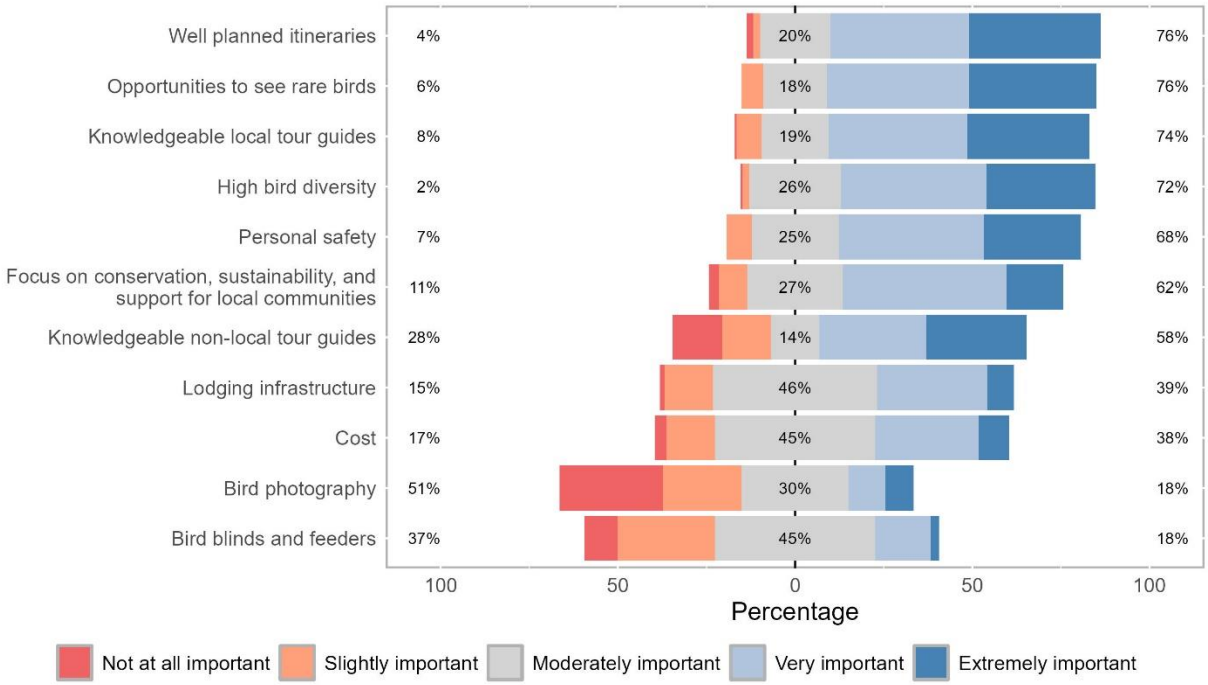

Figure A.5. Reported factors that are important when selecting international trips, as a percentage of responses, for respondents who identify as enthusiastic or hardcore birders and are US residents (n=288).

Table A.3. Top 111 countries ranked by number of small-ranged bird species (<10,000km^2). Other columns show all bird richness, endemic richness, and rank for both those measures. Data from BirdLife International.

Country name	Continent	# All	Rank All	# Endemics	Rank Endemic	# Small-ranged	Rank Small-ranged
Indonesia	Asia	1737	4	540	1	580	1
Peru	Americas	1860	2	133	5	378	2
Colombia	Americas	1866	1	92	9	352	3
Ecuador	Americas	1624	5	42	17	314	4
Papua New Guinea	Oceania	742	31	113	8	222	5
Philippines	Asia	594	57	259	3	162	6
Brazil	Americas	1816	3	258	4	155	7
Venezuela	Americas	1385	7	51	15	155	8
Panama	Americas	884	21	9	46	129	9
Solomon Islands	Oceania	245	156	68	14	122	10
Costa Rica	Americas	842	23	9	47	114	11
Mexico	Americas	1097	11	121	6	110	12
Bolivia	Americas	1437	6	20	30	107	13
India	Asia	1210	9	75	12	95	14
Australia	Oceania	725	33	359	2	91	15
United Republic of Tanzania	Africa	1074	12	35	19	72	16
New Zealand	Oceania	230	164	91	10	66	17
Democratic Republic of the Congo	Africa	1110	10	14	38	63	18
United States of America	Americas	824	25	77	11	62	19
Argentina	Americas	1001	15	16	36	53	20
China	Asia	1288	8	70	13	51	21
Madagascar	Africa	248	155	119	7	50	22
Kenya	Africa	1057	13	12	40	49	23
Malaysia	Asia	723	34	9	48	49	24
Fiji	Oceania	108	200	36	18	48	25
Dominican Republic	Americas	236	161	0	200	44	26
Haiti	Americas	244	158	0	198	43	27
Timor-Leste	Asia	235	163	0	202	41	28
Jamaica	Americas	201	170	31	21	40	29
Uganda	Africa	998	16	1	83	40	30

Sri Lanka	Asia	376	92	31	20	39	31
Taiwan	Asia	374	93	28	23	38	32
Cameroon	Africa	888	20	6	55	38	33
Chile	Americas	429	82	10	43	36	34
French Polynesia	Oceania	95	204	45	16	35	35
South Africa	Africa	762	30	18	32	34	36
Puerto Rico	Americas	237	160	15	37	34	37
New Caledonia	Oceania	127	189	27	26	33	38
Sao Tome and Principe	Africa	90	205	28	25	32	39
Myanmar	Asia	1034	14	9	45	31	40
Rwanda	Africa	636	46	0	114	31	41
Cuba	Americas	292	130	28	24	30	42
Japan	Asia	442	78	24	27	30	43
Vietnam	Asia	829	24	10	42	30	44
Honduras	Americas	710	36	1	86	30	45
Micronesia (Federated States of)	Oceania	127	190	22	28	29	46
Guyana	Americas	791	29	0	107	29	47
Comoros	Africa	100	202	21	29	28	48
Angola	Africa	920	18	17	34	28	49
Saint Lucia	Americas	176	178	5	57	28	50
Nigeria	Africa	867	22	3	66	28	51
Guatemala	Americas	698	38	1	88	28	52
Vanuatu	Oceania	87	206	11	41	27	53
Burundi	Africa	597	56	0	121	27	54
Thailand	Asia	935	17	3	65	26	55
Nicaragua	Americas	684	42	0	111	26	56
Mozambique	Africa	676	44	2	75	24	57
Martinique	Americas	185	174	2	78	24	58
Dominica	Americas	181	176	2	79	23	59
Nepal	Asia	820	27	1	85	23	60
Ethiopia	Africa	821	26	18	31	22	61
Yemen	Asia	345	105	10	44	22	62
Saint Vincent and the Grenadines	Americas	170	180	3	68	22	63
Malawi	Africa	633	48	1	90	22	64
Seychelles	Africa	96	203	17	35	21	65
Palau	Oceania	114	196	13	39	21	66

Zambia	Africa	734	32	2	74	21	67
Montserrat	Americas	167	181	1	103	21	68
Samoa	Oceania	46	218	9	49	20	69
Bahamas	Americas	245	157	8	51	20	70
Equatorial Guinea	Africa	434	81	4	62	20	71
Guadeloupe	Americas	166	184	3	69	20	72
Antigua & Barbuda	Americas	178	177	1	102	20	73
Saint Kitts and Nevis	Americas	167	182	1	104	19	74
El Salvador	Americas	488	71	0	133	19	75
Somalia	Africa	570	60	7	52	18	76
Barbados	Americas	187	173	1	101	18	77
Cambodia	Asia	515	69	2	76	17	78
Bhutan	Asia	618	50	0	117	17	79
Northern Mariana Islands	Oceania	115	195	7	53	16	80
Mauritius	Africa	76	209	29	22	15	81
Falkland Islands (Malvinas)	Americas	120	193	3	70	14	82
Cayman Islands	Americas	198	172	2	77	14	83
Lao People's Democratic Republic	Asia	697	39	1	89	14	84
Saudi Arabia	Asia	392	88	1	95	14	85
British Virgin Islands	Americas	149	188	0	215	14	86
Reunion	Africa	56	213	18	33	13	87
Tonga	Oceania	51	216	3	72	13	88
Grenada	Americas	113	197	2	80	13	89
United States Virgin Islands	Americas	151	187	0	214	13	90
American Samoa	Oceania	43	220	0	224	13	91
Spain	Europe	380	90	8	50	12	92
French Southern and Antarctic Territories	Antarctica	52	215	3	71	12	93
Namibia	Africa	599	55	1	92	12	94
Pakistan	Asia	611	52	0	119	12	95
Cook Islands	Oceania	38	224	7	54	11	96
Guam	Oceania	102	201	5	59	11	97

Bangladesh	Asia	603	54	0	120	11	98
Turks and Caicos Islands	Americas	210	168	0	206	11	99
Azores Islands	Europe	311	117	4	63	10	100
Portugal	Europe	311	118	4	64	10	101
Trinidad and Tobago	Americas	397	85	3	67	10	102
Mayotte	Africa	70	211	2	81	9	103
Zimbabwe	Africa	629	49	0	116	9	104
Republic of Korea	Asia	357	99	0	150	9	105
Anguilla	Americas	112	198	0	218	9	106
Suriname	Americas	695	40	0	109	8	107
Cote d'Ivoire	Africa	672	45	0	113	8	108
Liberia	Africa	536	66	0	129	8	109
Belize	Americas	530	67	0	130	8	110
Canada	Americas	495	70	0	132	8	111

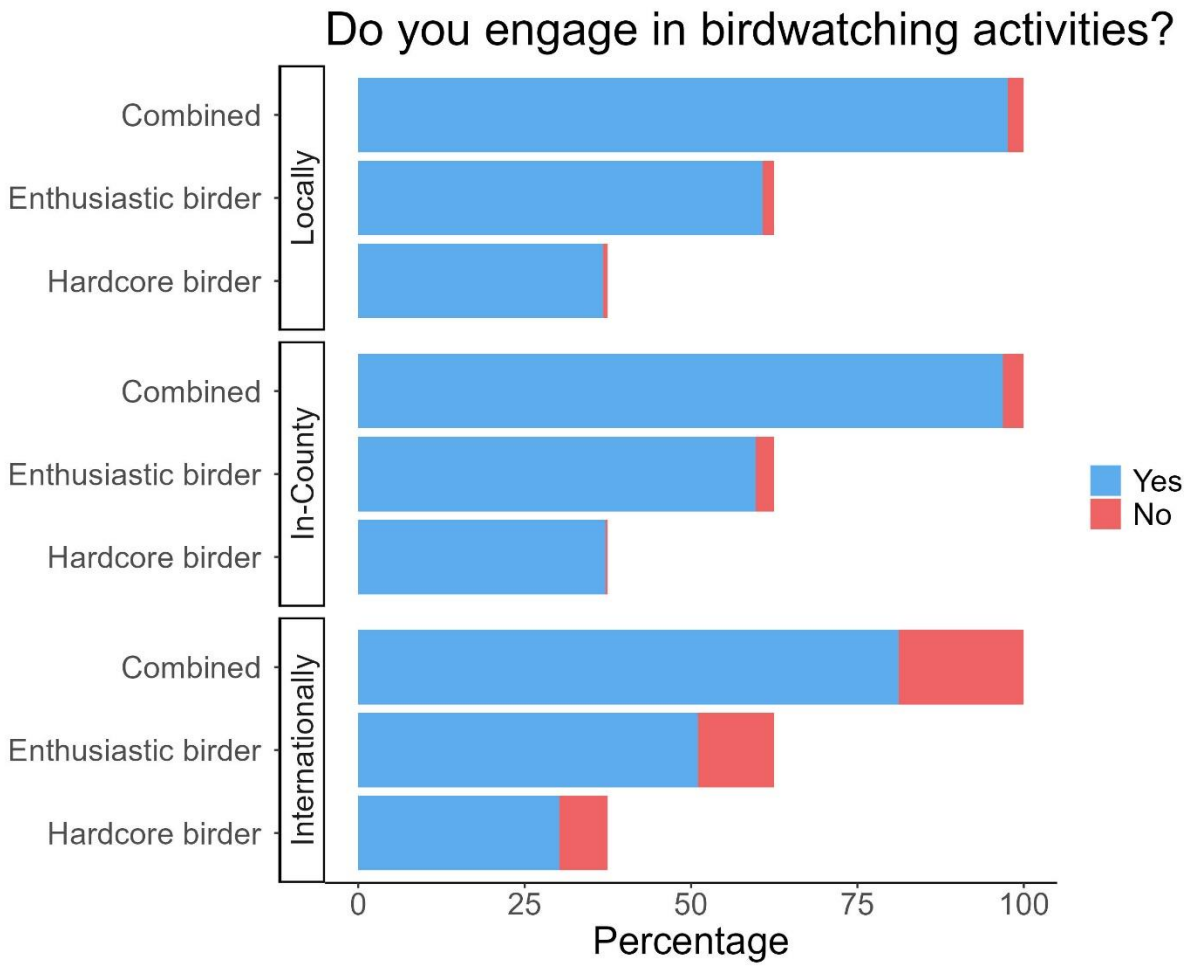

Figure A.6. Distribution of engagement in bird watching activities locally, in-country, and internationally, stratified by birdwatcher type. Combined indicates the total for all birdwatch types.

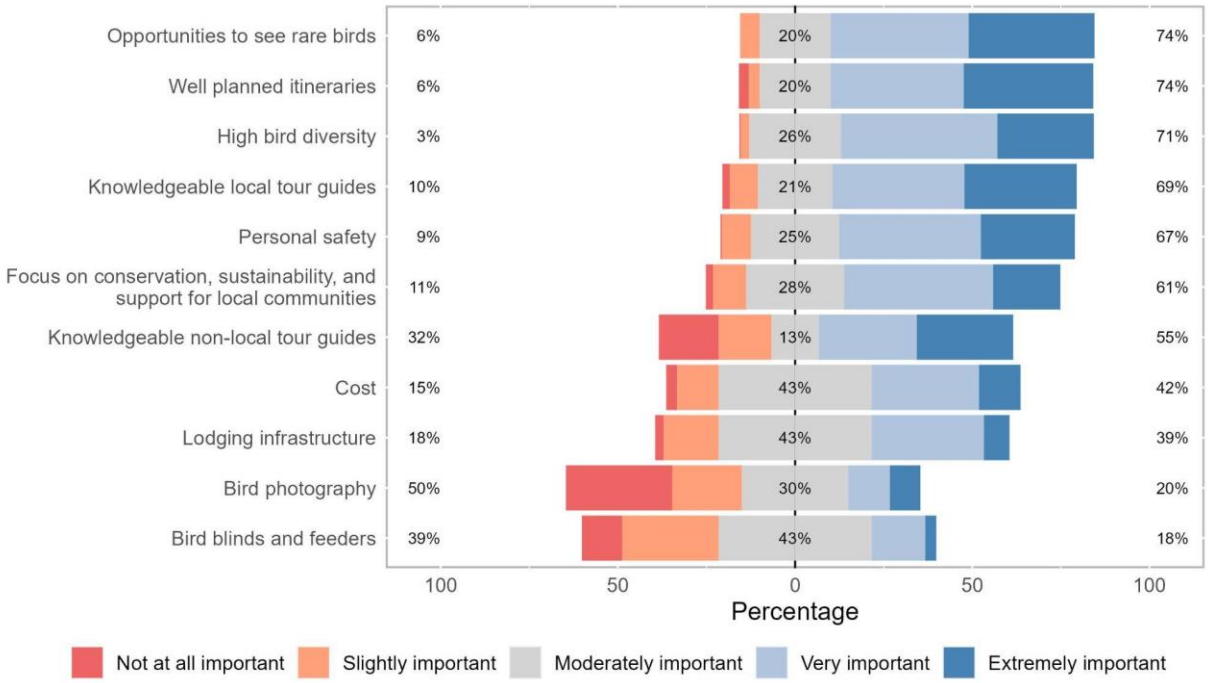

Figure A.7. Reported factors that are important when selecting international trips, as a percentage of responses, for all respondents (n=427).