National Survey of Birdwatchers: Nationwide and Flyway Comparisons

A cooperative study completed by:

Minnesota Cooperative Fish and Wildlife Research Unit

and

University of Minnesota

for the

National Flyway Council

National Survey of Birdwatchers: Nationwide and Flyway Comparisons

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Section 1: Introduction and Overview

1.1 Background

The North American Waterfowl Management Plan (NAWMP) was implemented in 1986 with the goal of maintaining abundant and resilient waterfowl populations in North America and sufficient wetlands and related habitats to sustain those populations (U.S. Fish and Wildlife Service and Canadian Wildlife Service 1986). In 2012 the planning committee, in consultation with stakeholders, decided to revise the NAWMP with additional goals to plan for changing times. The 2012 NAWMP Revision provides a new vision of waterfowl management that emphasizes a growing and supportive core of waterfowl hunters and an engaged conservation community inspired by waterfowl and wetlands.

To achieve this goal, NAWMP partners must engage both the traditional and waterfowl hunting community and broader stakeholder groups who are interested in waterfowl and the conservation of waterfowl and wetlands. To facilitate this engagement, the National Flyway Council (NFC) – in cooperation with the four Flyway Councils, the NAWMP planning committee, and non-governmental agencies – initiated the formation of a Human Dimensions Working Group (HDWG). This working group is tasked with obtaining and incorporating human dimensions information and approaches into migratory bird conservation programs, policies, and practices. To inform this task, three surveys – a waterfowl hunter survey, a birdwatcher survey, and a public survey – were administered in the United States. Similar birdwatcher and hunter surveys occurred concurrently in Canada. Separate summary reports are available for the U.S. general public, waterfowl hunter surveys, as well as the Canadian surveys (U.S. Geological Survey 2017; Patton 2021b; Harshaw 2018a, 2018b). This report presents results from the U.S. birdwatcher survey, and throughout the rest of this report refers to it as the National Birdwatching Survey (NBS).

1.2 Study Objectives

The key objectives of the NAWMP birdwatcher survey are:

1. Identifying the key attributes important to birding experiences.

2. Examining the social, political, economic, and human capital capacity for conserving waterfowl and wetlands.

3. Assessing the knowledge, preferences, levels of use and support for waterfowl and wetlands conservation.

4. Assessing decisions to participate in birdwatching and level of identity as birdwatcher, hunter and conservationist.

5. Assessing the importance of ecological goods and services provided by wetlands.

The expected outcomes of this study are:

- Quantified measures of stakeholder preferences.

- A greater likelihood of developing NAWMP objectives and management actions informed by waterfowl and wetland stakeholders.

- A focus on biologically feasible harvest management actions that provide the greatest benefits in terms of stakeholder preferences.

A collaborative research team at the U.S. Geological Survey's Fort Collins Science Center, the Minnesota Cooperative Research Unit located at the University of Minnesota, and the University of Alberta completed the key research. Collaborators at the University of Minnesota, with review and technical assistance from the Minnesota Cooperative Research Unit, completed data analyses and report writing.

1.3 Study Design and Methods

1.3.1 Workshops

The NBS study involved multiple phases and research activities. A core portion of the birdwatcher survey involved discrete choice experiments (DCEs). The DCEs allow researchers to identify respondents' preferences for specific attributes of birdwatching, and to highlight which attributes respondents value relative to other attributes. The attributes used in the DCEs were identified through a series of workshops with stakeholders conducted by researchers from the U.S. Geological Survey Fort Collins Science Center.

Researchers designed and implemented the U.S. stakeholder workshops from November 2014 to June 2015. A total of 12 workshops with birdwatchers were completed in key geographic locations across the flyways[1] in the U.S. to provide a diverse representation of important ecological characteristics and social traditions of birdwatching opportunities. The primary outcome of the workshops was the identification of key attributes of birdwatching experiences. Researchers used this information in the design of the DCEs in the NBS.

1.3.2 Survey Instruments

Researchers designed the NBS between June 2015 and September 2016. In addition to the birdwatcher workshops, the survey design involved multiple workshops, meetings, webinars, reviews and comments from representatives of key partners. The core design team included Human Dimensions Working Group members from the Atlantic, Mississippi, Central and Pacific Flyways. This team held multiple meetings and webinars to identify appropriate sampling and questionnaire design. In addition to achieving the previously identified objectives and implementing DCEs on viewing preferences, the birdwatcher survey also included questions targeting three areas identified by the HDWG as important:

1. *Decisions*: This series of questions indicates participation levels in viewing, hunting, and conservation. It offers the potential to identify stakeholder segments based on participation levels as well as types of participation. This set of questions also includes constraints to birdwatching participation.

[1] A flyway describes a common route that is used by a group of birds during migration from breeding to wintering areas. There are 4 flyways in North America (Atlantic, Mississippi, Central, and Pacific), which are divided into administrative boundaries to facilitate management (U.S. Fish and Wildlife Service, 2017). The Pacific Flyway also includes Alaska; however, Hawaii is not a part of any flyway.

2. *Identity*: Measures of identity formation indicate the degree to which birdwatchers have developed personal identities associated with an activity or social role.

3. *Capacity*: The long-term sustainability of waterfowl and wetlands depends on building support. This survey includes questions to identify the levels of support birdwatchers are providing through donations, membership, and other behaviors and attitudes.

1.3.3 Sampling Design

The National Birdwatching Survey (Appendix A) was administered online via email invitations to U.S. residents 18 years and older who participate in birdwatching. Sample frame limitations, however, do limit the generalizability of survey results. No national lists of birdwatchers were commercially available. Based on suggestions from the HDWG, permission was obtained to use the Cornell Lab of Ornithology's eBird membership list as the sample frame.

Developed and launched by the Cornell Lab of Ornithology in 2002, eBird is a real-time, online checklist program used by more than 100,000 birders in the United States and Canada. Individuals provide their e-mail address when they create an online account, and they have the option to provide a physical mailing address. The online tools available through eBird allow individuals to maintain information about their personal birding activities which keeps them engaged in using the site. The list of names, e-mails and physical addresses available through eBird represents a useful sampling frame for contacting potential respondents to the NBS throughout the United States.

The eBird sample is only strictly generalizable to eBird members, and cannot be used to represent the larger population of birdwatchers in the U.S. without acknowledging limitations. In this report, the data were weighted to reflect the distribution of eBird membership across the states. We applied the stratification scheme from the 2005 National Survey of Duck Hunters and the NSWH for regional and national reports (Table 1.1; Figure 1.1), and applied weights accordingly (Tables 1.2, 1.3, and 1.4).

We obtained the complete list of eBird members on October 24, 2016. We selected only respondents who indicated they lived within the United States, provided a seemingly valid e-mail address and who had logged into eBird at least once since January 1, 2012. After removing identifiably duplicate members, we obtained a final list of 134,111 eBird members living within the United States at the time of their last login to eBird (Table 1.2). These individuals were distributed throughout the United States relatively proportional to the populations of the states; however, California, Texas, and Florida were all under-represented in eBird relative to their population size.

1.3.4 Data Collection

We adapted procedures outlined in Dillman, Smyth, and Christian (2014) for web and mobile survey implementation using up to five e-mail contacts (Appendix C). The University of Minnesota's Institutional Review Board made a determination on September 22, 2016 that this study did not meet the regulatory definition of human subjects research, and, therefore, it did not require additional human subjects review (Appendix D). The initial contact with study participants was made on November 16, 2016 using the University of Minnesota's mass e-mail program with an information banner from the,

"College, of Food, Agricultural and Natural Resources Sciences." The initial e-mail contact had the subject of, "Birdwatching for eBird." It provided information about the purpose of the study and the entities conducting the study. We provided recipients with a clickable link to the survey labeled, "Birdwatcher Survey" and a unique 7-digit access code. Individuals were also provided an e-mail that they could contact to receive an automated reply e-mail with the web address included that they could click or open a web browser to connect to the survey. Of the 134,111 e-mail addresses in the initial sample, a total of 126,083 (94.4%) could be delivered to the intended recipients. We completed up to 4 additional contacts to encourage response, removing the e-mail addresses for those who had already completed the survey each time we sent out a new e-mail invitation.

By January 6, 2017, a total of 32,818 respondents had at least partially completed the survey and we closed data collection. However, we had not yet reached the target of n = 400 for Arkansas and re-opened the survey on February 13, 2017 and made 3 additional e-mail contacts only to eBird members residing in Arkansas on February 13, 15, and 21, 2017. In addition, we contacted all non-respondents in Arkansas the first week of March with a contact letter mailed through the U.S. Postal Service that indicated we had attempted to contact them through e-mail. We provided them with background information and the web address of the survey along with their 7-digit access code and a $1 incentive. We made a second mailed contact to any remaining non-respondents the second week of March and we stopped data collection on March 23, 2017. A total of 33, 071 surveys were at least partially completed and recorded, providing a response rate of 24.7%. Individual state response rates are reported in Table 1.3, and the weights calculated and applied for the strata and flyway level estimates reported in this summary are in Table 1.4.

A web-based survey was used to reduce costs and to facilitate the implementation of the DCE portion of the survey. Discrete choice experiments can be cumbersome to implement in traditional paper-and-pencil surveys due to their complexity of design and the amount of space required to present questions. Data were collected using Sawtooth Software's Lighthouse Studio (https://www.sawtoothsoftware.com). Sawtooth Software was chosen for data collection because it allows for the design, hosting, implementation, data collection and analysis of DCE data using Choice Based Conjoint (CBC) software.

To conduct a non-response assessment, we drew a proportional random sample of 16,000 non-respondents left in the initial sample. These 16,000 individuals were sent a shortened survey questionnaire the second week of April 2017 and asked to respond by mail. Completed non-response surveys were collected through May 31, 2017. Data on key questions concerning birdwatching experiences, identity, and demographics were collected from non-respondents to assess if there are any substantive differences between people who completed the full-length online survey and those who did not respond to it (Appendix B). A total of 3,730 (23.3%) individuals returned a completed non-response survey. Key questions concerning birdwatching experiences, identity, and demographics were collected from non-respondents to assess if there are any substantive differences between people who completed the complete survey and those who did not respond to it. Summary results of the non-response survey and comparisons with respondents are reported in Section 8 of this report.

Where appropriate we report results of statistical tests in summary tables. We use the following convention when reporting statistical significance for these tests: * $p \leq 0.05$, ** $p \leq 0.01$, and *** $p \leq 0.001$. The level of significance by itself does not indicate the strength of the relationship (effect size) or the practical significance of the relationship. Increasing survey sample sizes gives researchers greater power to detect differences; however, surveys with large samples sizes (e.g., n > 1,000) may yield

statistically significant results that have little practical meaning. Unlike significance tests, effect size is independent of sample size. We report effect size for statistically significant tests using the Cramer's *V*, phi, and eta^2 measures of association, where appropriate. We use the following thresholds for interpreting the magnitude of effect sizes for all statistically significant tests:

Effect Size	Use	Interpretation[1]			
		Negligible	Small	Medium	Large
Cramer's *V*/phi	Chi-square test	< 0.10	0.10	0.30	>0.50
eta^2 (η^2)	One-way ANOVA	< 0.01	0.01	0.06	0.14

[1] (Cohen 1988; Vaske 2008)

Table 1.1: Stratification for National Birdwatching Survey

Flyway	Sub-regions	States
Atlantic	Lower Atlantic	FL, GA, NC, SC
	Middle Atlantic	DE, MD, NJ, PA, VA, WV
	Upper Atlantic	CT, ME, MA, NH, NY, RI, VT
Mississippi	Lower Mississippi	AL, AR, LA, MS, TN
	Middle Mississippi	IL, IN, IA, KY, MO, OH
	Upper Mississippi	MI, MN, WI
Central	Lower Central	NM, OK, TX
	Middle Central	CO, KS, NE, WY
	Upper Central	MT (ZIP 59000-59699), ND, SD
Pacific	Lower Pacific	AZ, NV, UT
	Middle Pacific	CA
	Upper Pacific	AK, ID, MT (ZIP 59700-59999), OR, WA

Figure 1-1: United States Flyway map

Table 1.2: Distribution of eBird membership across the United States

State	Initial Sample Size	Percent of Sample	Percent of USA	State	Initial Sample Size	Percent of Sample	Percent of USA
Alabama	1,332	0.01%	1.51%	Montana	872	0.65%	0.32%
Alaska	860	0.64%	0.23%	Nebraska	679	0.51%	0.59%
Arizona	1,948	1.45%	2.15%	Nevada	539	0.40%	0.91%
Arkansas	1,312	0.98%	0.93%	New Hampshire	1,577	1.18%	0.41%
California	11,444	8.53%	12.15%	New Jersey	3,631	2.71%	2.77%
Colorado	2,892	2.16%	1.72%	New Mexico	1,238	0.92%	0.64%
Connecticut	2,226	1.66%	1.11%	New York	8,691	6.48%	6.11%
Delaware	642	0.48%	0.30%	North Carolina	4,886	3.64%	3.14%
Florida	5,602	4.17%	6.38%	North Dakota	247	0.18%	0.24%
Georgia	4,030	3.00%	3.19%	Ohio	5,380	4.01%	3.59%
Hawaii	155	0.12%	0.44%	Oklahoma	1,078	0.80%	1.21%
Idaho	831	0.62%	0.52%	Oregon	3,069	2.29%	1.27%
Illinois	3,923	2.93%	3.96%	Pennsylvania	7,387	5.51%	3.96%
Indiana	2,307	1.72%	2.05%	Rhode Island	410	0.31%	0.33%
Iowa	1,121	0.84%	0.97%	South Carolina	2,282	1.70%	1.54%
Kansas	1,244	0.93%	0.90%	South Dakota	326	0.24%	0.27%
Kentucky	1,155	0.86%	1.37%	Tennessee	2,827	2.11%	2.06%
Louisiana	920	0.69%	1.45%	Texas	7,057	5.26%	8.62%
Maine	1,657	1.24%	0.41%	Utah	1,024	0.76%	0.94%
Maryland	3,807	2.84%	2.07%	Vermont	1,531	1.14%	0.19%
Massachusetts	4,176	3.11%	2.11%	Virginia	4,906	3.66%	2.60%
Michigan	5,128	3.82%	3.07%	Washington	4,159	3.10%	2.26%
Minnesota	2,924	2.18%	1.71%	West Virginia	775	0.58%	0.57%
Mississippi	710	0.53%	0.93%	Wisconsin	4,627	3.45%	1.79%
Missouri	2,162	1.61%	1.89%	Wyoming	405	0.30%	0.18%
Total Sample					**134,111**		
Total w/o Hawaii					**133,956**		

Table 1.3: Response rates for states by flyway

Flyway	Sub-regions	State	eBird Sample	Number Responses	Response Rate
Atlantic Flyway	Lower Atlantic	Florida	5,602	1,301	23.2%
		Georgia	4,030	796	19.8%
		North Carolina	4,886	988	20.2%
		South Carolina	2,282	462	20.2%
		Sub-total	*16,800*	*3,547*	*21.1%*
	Middle Atlantic	Delaware	642	146	22.7%
		Maryland	3,807	1,031	27.1%
		New Jersey	3,631	864	23.8%
		Pennsylvania	7,387	1,775	24.0%
		Virginia	4,906	1,157	23.6%
		West Virginia	775	174	22.5%
		Sub-total	*21,148*	*5,147*	*24.3%*
	Upper Atlantic	Connecticut	2,226	533	23.9%
		Maine	1,657	471	28.4%
		Massachusetts	4,176	1,072	25.7%
		New Hampshire	1,577	358	22.7%
		New York	8,691	2,073	23.9%
		Rhode Island	410	102	24.9%
		Vermont	1,531	399	26.1%
		Sub-total	*20,268*	*5,008*	*24.7%*
Atlantic Flyway Total			**58,216**	**13,702**	**23.5%**
Mississippi Flyway	Lower Mississippi	Alabama	1,332	272	20.4%
		Arkansas	1,312	461	35.1%
		Louisiana	920	216	23.5%
		Mississippi	710	133	18.7%
		Tennessee	2,827	570	20.2%
		Sub-total	*7,101*	*1,652*	*23.3%*
	Middle Mississippi	Illinois	3,923	1,043	26.6%
		Indiana	2,307	548	23.8%
		Iowa	1,121	278	24.8%
		Kentucky	1,155	231	20.0%
		Missouri	2,162	548	25.3%
		Ohio	5,380	1,278	23.8%
		Sub-total	*16,048*	*3,926*	*24.5%*
	Upper Mississippi	Michigan	5,128	1,451	28.3%
		Minnesota	2,924	1,163	39.8%
		Wisconsin	4,627	1,217	26.3%
		Sub-total	*12,679*	*3,831*	*30.2%*
Mississippi Flyway Total			**35,828**	**9,409**	**26.3%**

Table 1.3 (continued): Response rates for states by flyway

Flyway	Sub-regions	State	eBird Sample	Number Responses	Response Rate
Central Flyway	Lower Central	New Mexico	1,238	372	30.0%
		Oklahoma	1,078	196	18.2%
		Texas	7,057	1,515	21.5%
		Sub-total	*9,373*	*2,083*	*22.2%*
	Middle Central	Colorado	2,892	774	26.8%
		Kansas	1,244	274	22.0%
		Nebraska	679	176	25.9%
		Wyoming	405	96	23.7%
		Sub-total	*5,220*	*1,320*	*25.3%*
	Upper Central	Montana (East)	319	114	35.7%
		North Dakota	247	72	0.3%
		South Dakota	326	104	31.9%
		Sub-total	*892*	*290*	*32.5%*
Central Flyway Total			**15,485**	**3,693**	**23.8%**
Pacific Flyway	Lower Pacific	Arizona	1,948	551	28.3%
		Nevada	539	125	23.2%
		Utah	1,024	254	24.8%
		Sub-total	*3,511*	*930*	*26.5%*
	Middle Pacific	California	11,444	2,891	25.3%
	Upper Pacific	Alaska	860	195	22.7%
		Idaho	831	239	28.8%
		Montana (West)	553	176	31.8%
		Oregon	3,069	723	23.6%
		Washington	4,159	1,113	26.8%
		Sub-total	*9,472*	*2,446*	*25.8%*
Pacific Flyway Total			**24,427**	**6,267**	**25.7%**
National Total			**133,956**	**33,071**	**24.7%**

Table 1.4: Weights applied to state-level responses

Flyway	State	Sub-Region Proportion	Flyway Proportion	National Proportion	Sub-Region Weight	Flyway Weight	National Weight
Atlantic Flyway	Florida	0.3335	0.0962	0.0418	0.9091	1.0135	1.0630
	Georgia	0.2399	0.0692	0.0301	1.0689	1.1916	1.2499
	North Carolina	0.2908	0.0839	0.0365	1.0441	1.1640	1.2209
	South Carolina	0.1358	0.0392	0.0170	1.0429	1.1626	1.2194
	Sub-total	*1.0000*	*0.2886*	*0.1254*			
	Delaware	0.0304	0.0110	0.0048	1.0702	1.0350	1.0856
	Maryland/DC	0.1800	0.0654	0.0284	0.8987	0.8691	0.9116
	New Jersey	0.1717	0.0624	0.0271	1.0228	0.9891	1.0375
	Pennsylvania	0.3493	0.1269	0.0551	1.0129	0.9795	1.0274
	Virginia	0.2320	0.0843	0.0366	1.0320	0.9980	1.0468
	West Virginia	0.0366	0.0133	0.0058	1.0840	1.0483	1.0996
	Sub-total	*1.0000*	*0.3633*	*0.1579*			
	Connecticut	0.1098	0.0382	0.0166	1.0319	0.9830	1.0311
	Maine	0.0818	0.0285	0.0124	0.8693	0.8280	0.8685
	Massachusetts	0.2060	0.0717	0.0312	0.9625	0.9169	0.9617
	New Hampshire	0.0778	0.0271	0.0118	1.0884	1.0368	1.0875
	New York	0.4288	0.1493	0.0649	1.0359	0.9868	1.0350
	Rhode Island	0.0202	0.0070	0.0031	0.9932	0.9461	0.9924
	Vermont	0.0755	0.0263	0.0114	0.9481	0.9031	0.9473
	Sub-total	*1.0000*	*0.3482*	*0.1513*			
Atlantic Flyway Total			1.0000	0.4346			
Mississippi Flyway	Alabama	0.1876	0.0372	0.0099	1.1393	1.2860	1.2090
	Arkansas	0.1848	0.0366	0.0098	0.6621	0.7474	0.7026
	Louisiana	0.1296	0.0257	0.0069	0.9909	1.1185	1.0515
	Mississippi	0.1000	0.0198	0.0053	1.2419	1.4019	1.3179
	Tennessee	0.3981	0.0789	0.0211	1.1538	1.3025	1.2244
	Sub-total	*1.0000*	*0.1982*	*0.0530*			
	Illinois	0.2445	0.1095	0.0293	0.9202	0.9878	0.9286
	Indiana	0.1438	0.0644	0.0172	1.0299	1.1056	1.0393
	Iowa	0.0699	0.0313	0.0084	0.9865	1.0590	0.9955
	Kentucky	0.0720	0.0322	0.0086	1.2232	1.3131	1.2344
	Missouri	0.1347	0.0603	0.0161	0.9652	1.0361	0.9740
	Ohio	0.3352	0.1502	0.0402	1.0299	1.1055	1.0393
	Sub-total	*1.0000*	*0.4479*	*0.1198*			
	Michigan	0.4044	0.1434	0.0383	1.0678	0.9281	0.8725
	Minnesota	0.2306	0.0816	0.0218	0.7597	0.6603	0.6207
	Wisconsin	0.3649	0.1291	0.0345	1.1488	0.9985	0.9386
	Sub-total	*1.0000*	*0.3539*	*0.0947*			
Mississippi Flyway Total			1.0000	0.2675			

Table 1.4 (continued): Weights applied to state-level responses

Flyway	State	Sub-Region Proportion	Flyway Proportion	National Proportion	Sub-Region Weight	Flyway Weight	National Weight
Central Flyway	New Mexico	0.1321	0.0799	0.0092	0.7396	0.7937	0.8216
	Oklahoma	0.1150	0.0696	0.0080	1.2223	1.3117	1.3578
	Texas	0.7529	0.4557	0.0527	1.0352	1.1109	1.1500
	Sub-total	*1.0000*	*0.6053*	*0.0700*			
	Colorado	0.5540	0.1868	0.0216	0.9448	0.8911	0.9224
	Kansas	0.2383	0.0803	0.0093	1.1481	1.0828	1.1209
	Nebraska	0.1301	0.0438	0.0051	0.9756	0.9201	0.9525
	Wyoming	0.0776	0.0262	0.0030	1.0668	1.0061	1.0415
	Sub-total	*1.0000*	*0.3371*	*0.0390*			
	North Dakota	0.2769	0.0160	0.0018	1.1153	0.8181	0.8469
	South Dakota	0.3655	0.0211	0.0024	1.0191	0.7476	0.7739
	Montana (East)	0.3576	0.0206	0.0024	0.9097	0.6674	0.6908
	Sub-total	*1.0000*	*0.0576*	*0.0067*			
Central Flyway Total			1.0000	0.1156			
Pacific Flyway	Arizona	0.5548	0.0797	0.0145	0.9365	0.9070	0.8728
	Nevada	0.1535	0.0221	0.0040	1.1422	1.1063	1.0645
	Utah	0.2917	0.0419	0.0076	1.0679	1.0343	0.9953
	Sub-total	*1.0000*	*0.1437*	*0.0262*			
	California		0.4685	0.0854		1.0156	0.9773
	Idaho	0.0877	0.0340	0.0062	0.8979	0.8921	0.8584
	Montana (West)	0.0584	0.0226	0.0041	0.8114	0.8061	0.7757
	Oregon	0.3240	0.1256	0.0229	1.0962	1.0891	1.0480
	Washington	0.4391	0.1703	0.0310	0.9650	0.9587	0.9225
	Alaska	0.0908	0.0352	0.0064	1.1389	1.1315	1.0888
	Sub-total	*1.0000*	*0.3878*	*0.0707*			
Pacific Flyway Total			*1.0000*	*0.1824*			
National Total							1.0000

Section 2: Participation

2.1 Birding

Nearly all respondents (99%) indicated they participate in birdwatching or birding (Table 2.1). Respondents who did not participate were thanked for their time and did not receive additional questions.

A large majority of respondents indicated their birding activities include 6 of the 7 activities asked about in the survey (Table 2.2; Figure 2.1). The vast majority watched birds at home (99%), fed birds at home (90%), and watched birds away from home (98%). While a slightly smaller majority kept track of the birds they saw on a list (82%), photographed birds (73%), and counted the birds they saw (72%). About half of respondents (51%) said they installed or maintained nesting boxes. There were statistically significant, but negligent differences across flyways for most of the birdwatching activities measured (Table 2.3). In reference to installing or maintaining nesting boxes, a small but significant relationship found between flyways. Respondents from the Mississippi (56%) and Atlantic (55%) Flyways were more likely than those from the Central (46%) or Pacific (37%) Flyways to install or maintain nesting boxes (Figure 2.2)

Most respondents reported watching waterfowl (90%; Table 2.4), water birds (90%; Table 2.8), birds of prey (96%; Table 2.10), hummingbirds (93%; Table 2.12), and songbirds (98.2%; Table 2.14).[2] Feeding hummingbirds and feeding and photographing songbirds was popular among respondents. Half of respondents (58%) fed hummingbirds (Table 2.12) and two-thirds (68%) fed songbirds, while half of respondents (52%) photographed songbirds (Table 2.14). There were statistically significant but negligible differences between flyways in watching, feeding, and photographing the various groups of birds (Tables 2.5 – 2.17).

Three-quarters (76%) of respondents took a trip greater than 1 mile from their home to watch birds within the previous 12 months (Table 2.18). On average, respondents take 33 birdwatching trips annually (Table 2.19).

On average, respondents had the highest level of agreement with the statement, “I typically use binoculars to view birds,” ($\overline{x}$ = 4.0, SD 1.20), and the lowest level of agreement with the statement, “I tend to take photos of birds for the primary purpose of having someone help me identify them,” ($\overline{x}$ = 2.2, SD 1.04; Tables 2.20; 2.21). There were statistically significant but negligible differences between flyways in types of participation (Table 2.22).

2.2 Other Activities

Participation in consumptive recreation in the past 12 months was highest for fishing (25%) and lowest for hunting waterfowl (2%; Table 2.23). Hunting game animals other than birds was the most frequently reported hunting activity (7%); analyses suggest statistical differences between the flyways were significant but negligible (Table 2.24).

Most respondents (over 90%) reported in the past 12 months spending time in nature away from home, viewing wildlife, participating in non-motorized outdoor recreation activities, and participating in

[2] Waterfowl are birds such as ducks, geese, and swans. Water birds include shorebirds, herons, pelicans, storks, etc.

backyard/at-home nature activities, while 84% reported learning about nature (Table 2.25). One-fifth to one-quarter reported participating in other remaining activities not specifically mentioned (19%), motorized outdoor recreation (20%), and consumptive wildlife-based activities (23%). Analyses suggest statistically significant but negligible differences between the flyways (Table 2.26).

Table 2.1: Birdwatching or birding participation

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Do you ever participate in birdwatching or birding?	Yes	99.7%	99.7%	99.5%	99.5%	99.6%
	No	0.3%	0.3%	0.5%	0.5%	0.4%
	Valid N	6,227	3,659	9,345	13,685	32,869

[1] No statistically significant difference was found between flyways. χ^2 (3, N=32869) = 5.74, p = 0.13

Table 2.2: Participation in wild bird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Wild bird activities	Watching birds at my home	99.3%	99.3%	99.4%	99.4%	99.3%
	Feeding birds at my home	84.1%	89.3%	92.1%	90.5%	89.6%
	Watching birds away from my home	98.9%	98.2%	97.4%	97.2%	97.7%
	Photographing or filming birds	75.4%	76.4%	72.0%	72.0%	73.1%
	Counting/monitoring birds	71.2%	73.4%	71.2%	72.9%	72.2%
	Keeping track of the birds you see on a list	84.2%	84.8%	80.9%	81.4%	82.2%
	Installing or maintaining nest boxes for birds	37.4%	46.5%	56.5%	55.3%	51.3%
	Valid N range	(6,067-6,182)	(3,578-3,632)	(9,095-9,238)	(13,295-13,559)	(32,041-32,565)

Table 2.3: Participation in wild bird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Wild bird activities	Watching birds at my home	1.09	3	0.006
	Feeding birds at my home	250.31*	3	0.088
	Watching birds away from my home	41.01*	3	0.036
	Photographing of filming birds	32.99*	3	0.032
	Counting/monitoring birds	15.69*	3	0.022
	Keeping track of the birds you see on a list	59.47*	3	0.043
	Installing or maintaining nest boxes for birds	671.61*	3	0.145

*p<0.05

Table 2.4: Participation in waterfowl activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Waterfowl Activities	Waterfowl watching	93.1%	89.8%	90.1%	88.2%	89.8%
	Waterfowl feeding	5.3%	6.1%	7.0%	5.9%	6.1%
	Waterfowl photographing	47.9%	46.8%	41.2%	41.0%	43.0%
	No waterfowl activities	5.5%	9.1%	8.7%	10.4%	8.9%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.5: Participation in waterfowl activities flyway comparison

		Chi-Square	df	Cramer's *V*
Waterfowl Activities	Waterfowl watching	114.16*	3	0.059
	Waterfowl feeing	19.81*	3	0.025
	Waterfowl photographing	116.66*	3	0.060
	No waterfowl activities	124.83*	3	0.062

*p<0.05

Table 2.6: Participation in other game bird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Other game bird activities	Game birds watching	69.1%	67.3%	70.0%	66.5%	68.0%
	Game birds feeding	6.1%	6.0%	5.5%	4.4%	5.2%
	Game birds photographing	29.2%	29.6%	25.2%	23.6%	25.7%
	No game bird activities	27.3%	29.5%	27.1%	30.3%	28.8%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.7: Participation in other game bird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Other game bird activities	Game birds watching	36.70*	3	0.034
	Game birds feeing	31.97*	3	0.031
	Game birds photographing	100.61*	3	0.056
	No game bird activities	36.42*	3	0.033

*p<0.05

Table 2.8: Participation in water bird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Water bird activities	Water birds watching	92.9%	88.3%	89.5%	88.5%	89.6%
	Water birds feeding	1.0%	1.5%	1.3%	1.3%	1.3%
	Water birds photographing	49.0%	48.1%	41.5%	43.4%	44.5%
	No water bird activities	5.3%	9.8%	8.8%	9.5%	8.6%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.9: Participation in water bird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Water bird activities	Water birds watching	97.35*	3	0.055
	Water birds feeing	5.89	3	0.013
	Water birds photographing	110.30*	3	0.058
	No water bird activities	107.60*	3	0.057

*p<0.05

Table 2.10: Participation in birds of prey activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Bird of prey activities	Birds of prey watching	97.4%	97.0%	96.6%	95.9%	96.5%
	Birds of prey feeding	2.2%	2.3%	2.2%	1.8%	2.0%
	Birds of prey photographing	48.2%	48.4%	41.6%	41.4%	43.5%
	No birds of prey activities	1.4%	1.7%	2.1%	2.7%	2.2%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.11: Participation in bird of prey activities flyway comparison

		Chi-Square	df	Cramer's *V*
Bird of prey activities	Birds of prey watching	33.02*	3	0.032
	Birds of prey feeding	5.6	3	0.013
	Birds of prey photographing	127.82*	3	0.063
	No birds of prey activities	42.69*	3	0.036

*p<0.05

Table 2.12: Participation in hummingbird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Hummingbird activities	Hummingbird watching	95.9%	93.0%	93.7%	90.4%	92.6%
	Hummingbird feeding	57.5%	59.2%	62.2%	55.3%	58.0%
	Hummingbird photographing	45.6%	45.4%	39.3%	36.3%	39.8%
	No hummingbird activities	2.4%	4.8%	4.0%	6.7%	5.0%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.13:Participation in hummingbird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Hummingbird activities	Hummingbird watching	214.24*	3	0.081
	Hummingbird feeding	108.03*	3	0.058
	Hummingbird photographing	206.80*	3	0.080
	No hummingbird activities	196.07*	3	0.078

*p<0.05

Table 2.14: Participation in songbird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Songbird activities	Songbird watching	98.5%	98.4%	98.2%	98.0%	98.2%
	Songbird feeding	61.6%	66.4%	72.2%	69.5%	68.4%
	Songbird photographing	53.1%	56.2%	51.8%	51.6%	52.5%
	No songbird activities	0.3%	0.3%	0.3%	0.4%	0.4%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.15: Participation in songbird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Songbird activities	Songbird watching	6.39	3	0.014
	Songbird feeding	207.61*	3	0.080
	Songbird photographing	27.60*	3	0.029
	No songbird activities	2.55	3	0.009

*p<0.05

Table 2.16: Participation in other bird activities

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Other bird activities	Other bird watching	59.2%	59.0%	54.6%	52.8%	55.2%
	Other bird feeding	13.5%	19.1%	21.0%	19.2%	18.6%
	Other bird photographing	28.8%	28.8%	24.5%	23.8%	25.5%
	No other bird activities	11.2%	12.4%	14.7%	14.9%	13.9%
	Valid N	6,175	3,633	9,222	13,529	32,514

Table 2.17:Participation in other bird activities flyway comparison

		Chi-Square	df	Cramer's *V*
Other bird activities	Other bird watching	93.00*	3	0.053
	Other bird feeding	146.04*	3	0.067
	Other bird photographing	80.56*	3	0.050
	No other bird activities	62.48*	3	0.044

*p<0.05

Table 2.18: Percent taking birding trips > 1 mile from home

In the past 12 months, did you take any trips at least 1 mile or more from your home primarily for birdwatching?		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
	Yes	83.5%	80.4%	74.1%	73.0%	76.1%
	No	16.5%	19.6%	25.9%	27.0%	23.9%
	Valid N	6,170	3,627	9,215	13,510	32,475

[1] χ^2 (3, N=32475) = 316.56, p <0.05 Cramer's *V* = 0.099

Table 2.19: Number of birding trips > 1 mile from home in past year

In the past 12 months, about how many trips at least 1 mile from your home did you take primarily for birdwatching?		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
	Mean	36.0	31.0	30.0	33.2	32.6
	SD	59.62	52.36	53.46	58.95	56.97
	Valid N	5,154	2,917	6,830	9,861	24,709

[1] F (3, 24570) = 12.29, p<0.05; η^2 = 0.00

Table 2.20: Type of participation in birding response distribution

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Valid N
I can identify most birds I see in the field.	1.1%	9.0%	18.1%	54.3%	17.5%	30,795
I can readily identify many birds in the field by sound.	8.4%	26.0%	21.7%	33.7%	10.3%	30,790
I tend to take photos of birds for the primary purpose of having someone help me identify them.	24.2%	43.4%	20.4%	10.3%	1.6%	30,798
I tend to need to use a field guide to identify birds.	2.8%	18.5%	25.4%	40.8%	12.5%	30,809
I often use websites, social media, or ID apps such as Merlin to identify birds.	8.6%	21.8%	19.5%	37.2%	12.9%	30,810
I photograph birds as a way to watch them.	15.5%	25.3%	19.3%	28.6%	11.3%	30,749
I typically use binoculars to view birds.	2.4%	9.3%	13.5%	33.3%	41.4%	30,786
I often use a camera instead of using binoculars.	25.5%	37.7%	16.1%	13.7%	7.1%	30,784
I tend to just watch birds without using any special equipment.	12.3%	31.1%	20.6%	28.2%	7.9%	30,773
I use eBird to report my birdwatching experiences.	10.8%	23.4%	21.2%	26.0%	18.5%	30,754

Table 2.21: Types of participation in birding

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
I can identify most birds I see in the field.	3.8	0.94	5,886	3.8	1.06	3,445	3.8	1.11	8,768	3.8	0.94	12,745	3.8	1.02	30,795
I can readily identify many birds in the field by sound.	3.1	1.18	5,884	3.1	1.25	3,440	3.1	1.29	8,766	3.1	1.19	12,749	3.1	1.23	30,790
I tend to take photos of birds for the primary purpose of having someone help me identify them.	2.2	1.00	5,885	2.3	1.10	3,441	2.2	1.08	8,767	2.2	1.00	12,755	2.2	1.04	30,798
I tend to need to use a field guide to identify birds.	3.4	1.07	5,893	3.4	1.16	3,444	3.4	1.20	8,766	3.4	1.08	12,755	3.4	1.13	30,809
I often use websites, social media or ID apps such as Merlin to identify birds.	3.2	1.22	5,886	3.3	1.32	3,443	3.2	1.34	8,771	3.3	1.23	12,759	3.2	1.28	30,810
I photograph birds as a way to watch them.	3.0	1.31	5,876	3.1	1.39	3,437	2.9	1.38	8,753	2.9	1.30	12,732	2.9	1.34	30,749
I typically use binoculars to view birds.	4.2	1.07	5,886	4.1	1.19	3,437	4.0	1.31	8,757	4.0	1.1	12,755	4.0	1.2	30,786
I often use a camera instead of using binoculars.	2.3	1.21	5,888	2.5	1.31	3,445	2.4	1.29	8,765	2.4	1.2	12,736	2.4	1.26	30,784
I tend to watch birds without using special equipment.	2.7	1.17	5,882	2.7	1.24	3,440	3.0	1.3	8,761	3.0	1.2	12,740	2.9	1.25	30,773
I use eBird to report my birdwatching experiences	3.2	1.31	5,876	3.3	1.41	3,437	3.1	1.42	8,756	3.2	1.32	12,733	3.2	1.36	30,754

Scale: 1 = Strongly Disagree to 5 = Strongly Agree

Table 2.22: Types of participation in birding ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η2
I can identify most birds I see in the field.	Between Groups	6.42	3	2.14	2.11	0.097	0.00
	Within Groups	31,256.78	30,804	1.02			
	Total	31,263.20	30,807				
I can readily identify many birds in the field by sound.	Between Groups	8.77	3	2.92	1.95	0.120	0.00
	Within Groups	46,155.91	30,798	1.50			
	Total	46,164.68	30,801				
I tend to take photos of birds for the primary purpose of having someone help me identify them.	Between Groups	14.86	3	4.95	4.65	0.003	0.00
	Within Groups	32,828.32	30,807	1.07			
	Total	32,843.18	30,810				
I tend to need to use a field guide to identify birds.	Between Groups	2.52	3	0.84	0.67	0.570	0.00
	Within Groups	38,762.87	30,819	1.26			
	Total	38,765.39	30,822				
I often use websites, social media or ID apps such as Merlin to identify birds.	Between Groups	22.24	3	7.41	4.60	0.003	0.00
	Within Groups	49,664.14	30,820	1.61			
	Total	49,686.38	30,823				
I photograph birds as a way to watch them.	Between Groups	51.84	3	17.28	9.68	0.000	0.00
	Within Groups	54,917.32	30,759	1.79			
	Total	54,969.16	30,762				
I typically use binoculars to view birds.	Between Groups	212.06	3	70.69	50.38	0.000	0.00
	Within Groups	43,204.39	30,794	1.40			
	Total	43,416.45	30,797				
I often use a camera instead of using binoculars.	Between Groups	32.13	3	10.71	6.77	0.000	0.00
	Within Groups	48,731.78	30,795	1.58			
	Total	48,763.91	30,798				
I tend to just watch birds without using special equipment.	Between Groups	387.22	3	129.07	83.13	0.000	0.00
	Within Groups	47,790.04	30,781	1.55			
	Total	48,177.46	30,784				
I use eBird to report my birdwatching experiences.	Between Groups	84.25	3	28.08	15.26	0.000	0.00
	Within Groups	56,620.07	30,764	1.84			
	Total	56,704.32	30,767				

Table 2.23: Participation in consumptive recreation

Last 12 Months	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Fishing	19.8%	28.1%	30.2%	22.6%	24.8%
Hunting waterfowl	2.2%	3.3%	3.2%	1.6%	2.3%
Hunting other migratory birds	1.4%	4.9%	2.8%	1.6%	2.3%
Hunting other game birds	3.5%	5.9%	4.7%	2.6%	3.7%
Hunting any other game animals	4.8%	8.8%	9.6%	5.4%	6.8%
Other	2.0%	2.6%	2.3%	1.8%	2.1%
Valid N Range	(2,978-5,838)	(1,715-3,408)	(4,325-8,693)	(6,613-12,603)	(15,615-30,491)

Table 2.24: Participation in consumptive recreation flyway comparison

		Chi-Square	df	Cramer's *V*
Activity last 12 months	Fishing	268.98*	3	0.094
	Hunting waterfowl	72.47*	3	0.049
	Hunting other migratory birds	162.77*	3	0.073
	Hunting other game birds	116.25*	3	0.062
	Hunting other game animals	197.84*	3	0.081
	Other	14.73*	3	0.031

*p<0.05

Table 2.25: Nature based recreation

Activity	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Spending time in nature away from home	96.9%	95.0%	95.0%	95.2%	95.4%
Non-motorized outdoor recreation activities	94.1%	89.2%	89.6%	90.1%	90.6%
Motorized outdoor recreation activities	16.9%	20.5%	25.0%	19.3%	20.5%
Viewing wildlife	99.8%	99.5%	99.8%	99.8%	99.7%
Consumptive wildlife-based activities	18.4%	26.4%	28.6%	20.6%	23.0%
Learning about nature	87.0%	85.3%	83.8%	83.5%	84.4%
Backyard/at-home nature activities	95.7%	95.2%	96.9%	96.4%	99.6%
Other	21.2%	20.3%	18.7%	17.9%	19.0%
Valid N Range	(2,623-6,190)	(1,574-3,633)	(3,995-9,242)	(5,749-13,554)	(13,917-32,572)

Table 2.26: Participation in nature based recreation flyway comparison

	Chi-Square	df	Cramer's *V*
Spending time in nature away from home	37.60*	3	0.034
Non-motorized outdoor recreation activities	70.22*	3	0.047
Motorized outdoor recreation activities	170.77*	3	0.073
Viewing wildlife	5.34	3	0.013
Consumptive wildlife-based activities	292.48*	3	0.096
Learning about nature	29.81*	3	0.030
Backyard/at-home nature activities	31.38*	3	0.031
Other	50.62*	3	0.060

*p<0.05

Section 3: Avidity and Constraints

3.1 Avidity

Avidity can refer to several aspects of a recreational experience (Scott and Shafer 2001) – here, it was assessed via the centrality or importance it holds for the individual, in addition to the equipment they use and their self-assessed expertise as a birdwatcher. Four in five respondents (85%) agreed birdwatching was one of their most enjoyable activities (Table 3.1) Respondents reported strong agreement (Table 3.2) with the following statements:

- *Birdwatching is one of the most enjoyable activities I do.* ($\bar{x}$ = 4.2, SD 1.00)
- *Being in nature is an important part of birdwatching.* ($\bar{x}$ = 4.5, SD 0.92)
- *The sights and sounds of nature are important to birdwatching.* ($\bar{x}$ = 4.5, SD 0.88)
- *Getting to enjoy the natural environment through birdwatching is important.* ($\bar{x}$ = 4.5, SD 0.89)

On average, respondents tended to disagree that most of their friends were connected to birdwatching ($\bar{x}$ = 2.5, SD 1.06) and that they would not know what to do instead if they could go birdwatching ($\bar{x}$ = 2.5, SD 1.13). There were statistically significant but negligible differences in the importance of birdwatching between flyways (Table 3.3).

Only a small portion of respondents reported not owning any equipment for birdwatching (5%, Table 3.4), while most reported owning binoculars (92%). There were statistically significant but negligible differences between the flyways in ownership of cameras and spotting scopes for birdwatching (Table 3.5).

Respondents rated themselves as somewhat skilled in identifying birds. On a 7-point skill level scale, where 1 is a novice and 7 is an expert, respondents averaged a rating of 4.4 (Table 3.6). Similar to the other measures of avidity, there were statistically significant but negligible differences between flyways.

3.2 Constraints

Respondents were asked to indicate on a scale of 1 to 4, where 1 was *not at all* and 4 was *large barrier*, the extent to which 14 potential constraints were barriers to their participation in birdwatching. Not having time to go birdwatching was the highest rated barrier overall (Table 3.7). Nearly two-thirds (60%) said this was a barrier to some degree. On average, respondents felt this was a slight barrier to their participation ($\bar{x}$ = 2.0, SD 1.05; Table 3.8). The remaining 13 constraints were rated, on average, below 2 (slight barrier). This suggests that overall, barriers to participation are either not serious for eBird participants, or they have found ways to navigate these barriers already and they no longer impede participation. Statistically significant but negligible differences were found between flyways on barriers to participation (Table 3.9).

Table 3.1: Importance of birdwatching response distribution

Statements	Level of Agreement					Valid N
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	
Birdwatching is one of the most enjoyable activities I do.	0.8%	2.6%	12.1%	43.9%	40.7%	30,961
Most of my friends are in some way connected with birdwatching.	13.9%	41.4%	27.1%	14.7%	2.9%	30,944
Birdwatching has a central role in my life.	4.2%	15.2%	25.7%	35.6%	19.2%	30,948
A lot of my life Is organized around birdwatching.	9.3%	28.9%	27.8%	24.5%	9.5%	30,936
If I couldn't go birdwatching I am not sure what I would do instead.	18.4%	39.2%	25.0%	12.9%	4.4%	30,940
Developing my skills and abilities in birdwatching is important to me.	0.8%	2.8%	16.9%	52.1%	27.4%	30,968
Getting a chance to add a new bird to my life list is important to me.	2.9%	7.8%	23.1%	45.2%	21.1%	30,971
Using new techniques, technology, and equipment to help me identify more birds is important to me.	3.6%	14.4%	35.7%	36.2%	10.1%	30,984
Challenging my birdwatching skills is important.	2.0%	9.6%	29.7%	42.0%	16.7%	30,942
Being in nature is an important part of birdwatching.	0.5%	1.1%	5.3%	34.7%	58.4%	30,957
The sights and sounds of nature are important to birdwatching.	0.5%	0.5%	3.7%	38.5%	56.8%	30,951
Getting to enjoy the natural environment through birdwatching is important.	0.5%	0.5%	4.7%	38.8%	55.5%	30,976

Table 3.2: Importance of birdwatching

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Birdwatching is one of the most enjoyable activities I do.	4.3	0.84	5,906	4.2	1.04	3,460	4.2	1.14	8,802	4.2	0.90	12,841	4.2	1.00	30,961
Most of my friends are in some way connected with birdwatching.	2.6	1.03	5,909	2.6	1.09	3,456	2.5	1.09	8,789	2.5	1.02	12,843	2.5	1.06	30,944
Birdwatching has a central role in my life.	3.6	1.10	5,902	3.5	1.21	3,459	3.4	1.27	8,795	3.5	1.14	12,840	3.5	1.19	30,948
A lot of my life Is organized around birdwatching.	3.1	1.15	5,898	3.0	1.24	3,456	2.9	1.26	8,793	2.9	1.17	12,836	3.0	1.21	30,936
If I couldn't go birdwatching I am not sure what I would do instead.	2.5	1.09	5,902	2.5	1.19	3,455	2.4	1.17	8,792	2.5	1.09	12,838	2.5	1.13	30,940
Developing my skills and abilities in birdwatching is important to me.	4.1	0.80	5,902	4.1	0.99	3,463	4.0	1.10	8,800	4.0	0.89	12,850	4.0	0.96	30,968
Getting a chance to add a new bird to my life list is important to me.	3.7	1.02	5,909	3.8	1.15	3,462	3.7	1.22	8,801	3.7	1.04	12,846	3.7	1.11	30,971
Using new techniques, technology, and equipment to help me identify more birds is important to me.	3.4	0.99	5,909	3.4	1.11	3,462	3.3	1.17	8,807	3.3	1.03	12,853	3.3	1.08	30,984
Challenging my birdwatching skills is important.	3.7	0.96	5,903	3.7	1.09	3,459	3.6	1.16	8,799	3.6	1.01	12,829	3.6	1.06	30,942
Being in nature is an important part of birdwatching.	4.5	0.74	5,902	4.5	0.95	3,461	4.5	1.08	8,802	4.5	0.82	12,840	4.5	0.92	30,957
The sights and sounds of nature are important to birdwatching.	4.6	0.70	5,903	4.5	0.93	3,461	4.5	1.04	8,802	4.5	0.77	12,832	4.5	0.88	30,951
Getting to enjoy the natural environment through birdwatching is important.	4.5	0.70	5,906	4.5	0.95	3,464	4.6	1.05	8,804	4.5	0.79	12,849	4.5	0.89	30,976

Scale: 1 = Strongly Disagree to 5 Strongly Agree

Table 3.3: Importance of birdwatching ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Developing my skills and abilities in birdwatching is important to me.	Between Groups	33.95	3	11.32	11.80	0.000*	0.00
	Within Groups	29,698.19	30,967	0.96			
	Total	29,732.14	30,970				
If I couldn't go birdwatching I am not sure what I would do instead.	Between Groups	27.52	3	9.17	8.29	0.000*	0.00
	Within Groups	34,244.00	30,950	1.11			
	Total	34,271.52	30,953				
Birdwatching has central role in life.	Between Groups	115.29	3	38.43	27.48	0.000*	0.00
	Within Groups	43,129.52	30,956	1.39			
	Total	43,244.81	30,959				
Birdwatching is one of the most enjoyable activities I do.	Between Groups	120.22	3	40.07	27.84	0.000*	0.00
	Within Groups	44,537.19	30,941	1.44			
	Total	44,657.41	30,944				
Challenging my birdwatching skills is important.	Between Groups	14.86	3	4.95	3.91	0.008*	0.00
	Within Groups	39,167.27	30,944	1.27			
	Total	39,182.13	30,947				
Most of my friends are in some way connected to birdwatching.	Between Groups	43.91	3	14.64	16.21	0.000*	0.00
	Within Groups	27,968.36	30,972	0.90			
	Total	28,012.27	30,975				
Using new techniques, technology, and equipment to help me identify more birds is important to me.	Between Groups	14.87	3	4.96	4.08	0.007*	0.00
	Within Groups	37,645.13	30,974	1.22			
	Total	37,660.00	30,977				
The sights and sounds of nature are important to birdwatching.	Between Groups	26.92	3	8.97	7.76	0.000*	0.00
	Within Groups	35,844.90	30,989	1.16			
	Total	35,871.82	30,992				
Getting to enjoy the natural environment through birdwatching is important.	Between Groups	73.48	3	24.49	22.08	0.000*	0.00
	Within Groups	34,329.75	30,948	1.11			
	Total	34,403.23	30,951				
Getting a chance to add a new bird to my life list is important to me.	Between Groups	23.98	3	8.00	9.83	0.000*	0.00
	Within Groups	25,176.31	30,963	0.81			
	Total	25,200.29	30,966				
A lot of my life is organized around birdwatching.	Between Groups	17.67	3	5.89	7.91	0.000*	0.00
	Within Groups	23,047.06	30,958	0.74			
	Total	23,064.73	30,961				
Being in nature is an important part of birdwatching.	Between Groups	29.62	3	9.87	12.88	0.000*	0.00
	Within Groups	23,738.53	30,981	0.77			
	Total	23,768.15	30,984				

Table 3.4: Equipment owned specifically for bird watching

Equipment Owned	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Binoculars	93.2%	93.8%	92.2%	92.1%	92.5%
Camera	48.8%	52.9%	47.1%	46.6%	47.9%
Spotting Scope	47.4%	44.9%	36.5%	36.4%	39.4%
No special equipment	4.6%	4.3%	5.9%	5.8%	5.4%
Valid N	5,913	3,465	8,809	12,855	30,995

Table 3.5: Equipment owned for birdwatching flyway comparison

Equipment Owned	Chi-Square	df	Cramer's *V*
Binoculars	16.86*	3	0.023
Camera	47.89*	3	0.039
Spotting Scope	282.64*	3	0.095
No special equipment	23.95*	3	0.028

*p<0.05

Table 3.6: Personal rating of ability to observe and identify birds

		Flyway				National
		Pacific	Central	Mississippi	Atlantic	
How would you rate your own ability to observe and identify birds?	Mean[1]	4.5	4.5	4.4	4.4	4.4
	SD	1.38	1.49	1.53	1.38	1.45
	Valid N	5,894	3,454	8,793	12,823	30,917
Significance: F (3,30923) = 13.29 η2= 0.00						

[1] Scale: 1 = Novice to 7 = Expert

Table 3.7: Barriers to participation response distribution

Statements	Degree of Barrier				Valid N
	Not at all a barrier	Slight barrier	Moderate barrier	Large barrier	
Don't feel welcome in bird viewing areas	81.3%	11.9%	4.7%	2.2%	30,441
Areas are too crowded	52.5%	29.0%	13.3%	5.1%	30,388
Lack of birds in my area	71.3%	19.6%	7.1%	1.9%	30,368
Poor quality of the natural habitat in my area	70.0%	20.5%	7.3%	2.2%	30,427
Poor quality of facilities in my area	74.1%	19.7%	5.2%	1.0%	30,351
Don't have the skills	70.0%	22.4%	6.5%	1.0%	30,419
Don't have the companions/people to go with	61.4%	28.9%	9.7%	3.0%	30,452
Public areas to go to are too far away	68.4%	22.7%	7.4%	1.5%	30,414
It costs too much to do	82.1%	13.0%	3.8%	1.1%	30,420
Don't have time to go	40.3%	29.7%	19.8%	10.1%	30,460
Don't feel safe in bird viewing areas	81.9%	13.8%	3.2%	1.1%	30,410
Restrictions on public lands due to hunting	56.5%	28.5%	10.1%	4.9%	30,354
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	67.1%	22.9%	7.3%	2.7%	30,417
Expense of access fees/permits	78.5%	15.9%	4.3%	1.4%	30,394

Table 3.8: Barriers to participation

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Don't feel welcome in bird viewing areas	1.3	0.68	5,829	1.3	0.70	3,412	1.3	0.70	8,674	1.3	0.67	12,576	1.3	0.68	30,441
Areas are too crowded	1.8	0.91	5,817	1.8	0.96	3,397	1.7	0.94	8,659	1.7	0.90	12,565	1.7	0.92	30,388
Lack of birds in my area	1.4	0.70	5,806	1.5	0.79	3,403	1.4	0.77	8,662	1.4	0.71	12,549	1.4	0.74	30,368
Poor quality of the natural habitat in my area	1.4	0.72	5,827	1.5	0.82	3,399	1.4	0.80	8,670	1.4	0.72	12,582	1.4	0.76	30,427
Poor quality of facilities in my area	1.3	0.59	5,802	1.4	0.72	3,397	1.4	0.72	8,653	1.3	0.63	12,549	1.3	0.66	30,351
Don't have the skills	1.3	0.62	5,823	1.4	0.68	3,405	1.4	0.74	8,668	1.4	0.68	12,575	1.4	0.69	30,419
Don't have the companions/people to go with	1.5	0.77	5,828	1.5	0.82	3,411	1.6	0.88	8,681	1.6	0.81	12,582	1.5	0.83	30,452
Public areas to go to are too far away	1.4	0.65	5,827	1.4	0.77	3,404	1.5	0.79	8,659	1.4	0.72	12,574	1.4	0.74	30,414
It costs too much to do	1.2	0.57	5,823	1.3	0.65	3,404	1.2	0.64	8,666	1.2	0.58	12,576	1.2	0.61	30,420
Don't have time to go	1.9	1.00	5,830	2.0	1.10	3,409	2.0	1.09	8,681	2.0	1.03	12,590	2.0	1.05	30,460
Don't feel safe in bird viewing areas	1.3	0.59	5,825	1.2	0.59	3,408	1.2	0.62	8,666	1.2	0.58	12,561	1.2	0.59	30,410
Restrictions on public lands due to hunting	1.6	0.85	5,802	1.6	0.86	3,400	1.6	0.93	8,661	1.7	0.89	12,541	1.6	0.89	30,354
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	1.5	0.75	5,818	1.5	0.82	3,401	1.5	0.82	8,672	1.4	0.76	12,576	1.5	0.78	30,417
Expense of access fees/permits	1.3	0.62	5,819	1.3	0.66	3,404	1.3	0.68	8,668	1.3	0.62	12,555	1.3	0.64	30,394

[1] Scale: 1 = Not at all to 4 = Large barrier

Table 3.9: Barriers to participation ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Don't feel welcome in bird viewing areas.	Between Groups	3.49	3	1.16	2.50	0.058	0.00
	Within Groups	14,165.53	30,458	0.47			
	Total	14,169.02	30,461				
Areas are too crowded.	Between Groups	34.84	3	11.62	13.76	0.000*	0.00
	Within Groups	25,667.42	30,404	0.84			
	Total	25,702.26	30,407				
Lack of birds in my area	Between Groups	33.17	3	11.06	20.47	0.000*	0.00
	Within Groups	16,413.82	30,385	0.54			
	Total	16,446.99	30,388				
Poor quality of the natural habitat in my area	Between Groups	26.41	3	8.80	15.33	0.000*	0.00
	Within Groups	17,479.15	30,442	0.57			
	Total	17,505.56	30,445				
Poor quality of facilities in my area	Between Groups	27.33	3	9.11	20.88	0.000*	0.00
	Within Groups	13,248.82	30,369	0.44			
	Total	13,276.15	30,372				
Don't have the skills	Between Groups	34.29	3	11.43	24.03	0.000*	0.00
	Within Groups	14,477.21	30,437	0.48			
	Total	14,511.50	30,440				
Don't have the companions/people to go with	Between Groups	32.50	3	10.83	15.82	0.000*	0.00
	Within Groups	20,865.33	30,469	0.69			
	Total	20,897.83	30,472				
Public areas to go to are too far away	Between Groups	30.83	3	10.28	19.05	0.000*	0.00
	Within Groups	16,413.33	30,432	0.54			
	Total	16,444.16	30,435				
It costs too much to do	Between Groups	4.91	3	1.64	4.47	0.004*	0.00
	Within Groups	11,140.53	30,436	0.37			
	Total	11,145.44	30,439				
Don't have time to go	Between Groups	46.71	3	15.57	14.12	0.000*	0.00
	Within Groups	33,605.85	30,476	1.10			
	Total	33,652.56	30,479				
Don't feel safe in bird viewing areas	Between Groups	4.25	3	1.42	4.02	0.007*	0.00
	Within Groups	10,724.59	30,427	0.35			
	Total	728.84	30,430				
Restrictions on public lands due to hunting	Between Groups	44.40	3	14.80	18.66	0.000*	0.00
	Within Groups	24,086.70	30,375	0.79			
	Total	24,131.10	30,378				
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	Between Groups	30.18	3	1.06	1.73	0.160	0.00
	Within Groups	18,666.07	30,433	0.61			
	Total	18,696.25	30,436				
Expense of access fees/permits	Between Groups	5.16	3	1.72	4.17	0.006*	0.00
	Within Groups	12,549.55	30,412	0.41			
	Total	12,554.71	30,415				

Section 4: Place

4.1 Place

Most respondents went birdwatching within the flyway where they lived (Table 4.1). Nationally, most birdwatching occurred in California (9%), followed by New York (6%), Texas (5%), Pennsylvania (5%), Florida (5%), and Ohio (4%).

Nearly all respondents knew of wetlands nearby (93%; Table 4.2) and most had visited wetlands in the past 12 months (88%; Table 4.3). Analyses suggested statistically significant but negligible differences between the flyways.

4.2 Ecosystem Services

Overall respondent ratings for levels of concern for ecological benefits were lowest for loss of hunting opportunities. Half of respondents (56%) said they were not at all concerned about this (Table 4.4). Respondents rated their level of concern for the remaining ecological benefits, on average, as somewhat to very concerned (Table 4.5). The greatest level of concern was for providing a home for wildlife (84% very concerned) and providing a home for animals such as butterflies and bees that pollinate plants and crops (83% very concerned). There were statistically significant but small differences between the flyways on the level of concern for loss of hunting opportunities ($F = 86.98$, $p \leq 0.001$, $\eta^2 = 0.01$). On average, respondents in the Central and Mississippi Flyways were slightly concerned compared with respondents in the Pacific and Atlantic Flyways who were not at all concerned (Table 4.6). There were statistically significant but negligible differences between flyways for the remaining ecological benefits measured.

Table 4.1: State where most of respondent birdwatching occurred

State	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Alaska	3.43%	0.03%	0.06%	0.03%	0.69%
Alabama	0.02%	0.00%	3.40%	0.07%	0.93%
Arkansas	0.15%	0.12%	3.23%	0.07%	0.94%
Arizona	7.86%	0.31%	0.31%	0.18%	1.69%
California	45.08%	0.75%	0.31%	0.29%	8.87%
Colorado	0.32%	18.48%	0.15%	0.13%	2.33%
Connecticut	0.00%	0.03%	0.03%	3.46%	1.49%
Delaware	0.00%	0.00%	0.04%	1.31%	0.57%
Florida	0.26%	0.35%	0.90%	10.20%	4.69%
Georgia	0.02%	0.03%	0.15%	6.29%	2.73%
Hawaii	0.09%	0.00%	0.02%	0.01%	0.03%
Iowa	0.02%	0.08%	3.18%	0.01%	0.86%
Idaho	3.38%	0.00%	0.06%	0.02%	0.67%
Illinois	0.03%	0.10%	10.14%	0.06%	2.73%
Indiana	2.00%	0.03%	6.22%	0.02%	1.67%
Kentucky	0.02%	0.06%	2.82%	0.03%	0.77%
Kansas	0.04%	6.85%	0.08%	0.02%	0.84%
Louisiana	0.03%	0.10%	2.59%	0.04%	0.72%
Massachusetts	0.13%	0.02%	0.10%	7.24%	3.15%
Maryland	0.16%	0.03%	0.09%	6.18%	2.69%
Maine	0.00%	0.06%	0.10%	3.11%	1.36%
Michigan	0.07%	0.12%	13.45%	0.11%	3.64%
Minnesota	0.07%	0.10%	8.21%	0.09%	2.24%
Missouri	0.07%	0.37%	5.66%	0.06%	1.58%
Mississippi	0.02%	0.00%	1.99%	0.02%	0.54%
Montana	2.54%	2.17%	0.09%	0.05%	0.78%
North Carolina	0.11%	0.09%	0.29%	8.18%	3.60%
North Dakota	0.00%	1.42%	0.02%	0.01%	0.17%
Nebraska	0.00%	3.82%	0.03%	0.01%	0.46%
New Hampshire	0.00%	0.00%	0.00%	2.52%	1.08%
New Jersey	0.05%	0.00%	0.02%	6.45%	2.77%
New Mexico	0.14%	8.06%	0.06%	0.08%	1.02%
Nevada	1.98%	0.07%	0.01%	0.04%	0.41%
New York	0.05%	0.13%	0.15%	14.28%	6.16%
Ohio	0.09%	0.08%	14.95%	0.14%	4.05%
Oklahoma	0.02%	6.20%	0.06%	0.01%	0.75%
Oregon	12.29%	0.14%	0.10%	0.14%	2.44%
Pennsylvania	0.02%	0.10%	0.05%	11.70%	5.02%
Rhode Island	0.00%	0.00%	0.02%	0.83%	0.36%
South Carolina	0.02%	0.03%	0.04%	3.87%	1.67%
South Dakota	0.04%	1.93%	0.03%	0.02%	0.25%
Tennessee	0.05%	0.10%	6.80%	0.12%	1.88%

Table 4.1 continued: State where most respondent birdwatching occurred

State	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Texas	0.28%	44.01%	0.54%	0.27%	5.50%
Utah	3.91%	0.20%	0.04%	0.02%	0.79%
Virginia	0.07%	0.14%	0.11%	8.00%	3.47%
Vermont	0.00%	0.03%	0.03%	2.74%	1.18%
Washington	16.81%	0.35%	0.12%	0.14%	3.33%
Wisconsin	0.16%	0.16%	13.06%	0.08%	3.55%
West Virginia	0.00%	0.03%	0.02%	1.21%	0.52%
Wyoming	0.08%	2.67%	0.06%	0.05%	0.37%
Valid N	5,671	3,259	8,099	11,743	28,719

Table 4.2: Knowledge of wetlands

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Do you know of any wetlands in your local area or community?	Yes	95.9%	90.0%	93.0%	93.5%	93.4%
	No	4.1%	10.0%	7.0%	6.5%	6.6%
	Valid N	5,714	3,259	8,453	11,743	29,672

[1] χ^2 (3, N=29672) = 120.25 $p < 0.05$ Cramer's $V = 0.06$

Table 4.3: Visitation of wetlands in the last year

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Have you visited any wetlands in the last 12 months?	Yes	92.2%	86.5%	86.6%	87.9%	88.2%
	No	7.8%	13.5%	13.4%	12.1%	11.8%
	Valid N	5,719	3,328	8,452	12,231	29,679

[1] χ^2 (3, N=29679) = 121.05 $p < 0.05$ Cramer's $V = 0.06$

Table 4.4: Level of concern for ecological benefits response distribution

Statements	Level of Concern				Valid N
	Not at all concerned	Slightly concerned	Somewhat concerned	Very concerned	
Flooding protection	3.8%	11.7%	28.6%	55.9%	29,383
Erosion protection	2.2%	8.9%	30.1%	58.8%	29,359
Wildlife viewing and birdwatching	0.8%	4.3%	23.2%	71.7%	29,370
Hunting opportunities	56.3%	23.1%	13.0%	7.6%	29,299
Storage of greenhouse gases, i.e. carbon	7.7%	14.3%	27.0%	51.0%	29,249
Clean water	1.1%	3.6%	15.8%	79.6%	29,418
Clean air	1.6%	5.0%	17.9%	75.5%	29,385
Providing home for wildlife	0.4%	1.7%	14.1%	83.8%	29,417
Providing a home for pollinators	0.5%	2.1%	14.2%	83.2%	29,415
Scenic places for inspiration or spiritual renewal	4.2%	11.7%	28.8%	55.2%	29,379

Table 4.5: Level of concern for ecological benefits

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Flood protection	3.3	0.90	5,655	3.3	1.03	3,296	3.3	1.05	8,371	3.4	0.88	12,112	3.4	0.97	29,383
Erosion protection	3.4	0.81	5,663	3.4	0.94	3,287	3.4	0.99	8,360	3.5	0.80	12,101	3.4	0.89	29,359
Wildlife viewing and birdwatching	3.7	0.60	5,663	3.6	0.82	3,288	3.6	0.91	8,367	3.7	0.69	12,103	3.7	0.78	29,370
Hunting opportunities	1.6	0.91	5,642	1.8	1.03	3,281	1.8	1.05	8,351	1.7	0.95	12,076	1.7	0.98	29,299
Storage of greenhouse gases (carbon)	3.3	0.95	5,640	3.1	1.11	3,276	3.2	1.12	8,328	3.3	0.97	12,056	3.2	1.04	29,249
Clean water	3.7	0.63	5,672	3.7	0.84	3,295	3.7	0.90	8,680	3.8	0.64	12,123	3.7	0.76	29,418
Clean air	3.7	0.68	5,670	3.6	0.89	3,288	3.6	0.94	8,372	3.7	0.70	12,108	3.7	0.81	29,385
Providing home for wildlife	3.9	0.48	5,673	3.8	0.75	3,292	3.8	0.85	8,383	3.8	0.57	12,120	3.8	0.69	29,417
Providing a home for pollinators	3.8	0.54	5,674	3.8	0.77	3,292	3.8	0.85	8,385	3.8	0.58	12,117	3.8	0.70	29,415
Scenic places for inspiration or spiritual renewal	3.4	0.84	5,674	3.3	0.99	3,284	3.3	1.05	8,372	3.4	0.91	12,101	3.4	0.96	29,379

[1] Scale: 1 = Not at all concerned to 4 = Very Concerned

Table 4.6: Level of concern for ecological benefits ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Flood protection	Between Groups	89.70	3	29.90	33.01	0.000*	0.00
	Within Groups	26,647.15	29,414	0.91			
	Total	26,736.85	29,417				
Erosion protection	Between Groups	50.54	3	16.85	22.04	0.000*	
	Within Groups	22,465.09	29,392	0.76			
	Total	22,515.63	29,395				
Wildlife viewing	Between Groups	38.47	3	12.82	22.18	0.000*	0.00
	Within Groups	16,997.84	29,399	0.58			
	Total	17,036.31	29,402				
Hunting opportunities	Between Groups	251.71	3	83.90	86.98	0.000*	0.01
	Within Groups	28,290.61	29,328	0.96			
	Total	28,542.32	29,331				
Storage of greenhouse gases such as carbon	Between Groups	114.89	3	38.30	36.00	0.000*	
	Within Groups	31,144.02	29,279	1.06			
	Total	31,228.91	23,282				
Clean water	Between Groups	36.61	3	13.20	23.81	0.000*	0.00
	Within Groups	16,331.50	29,449	0.56			
	Total	16,368.11	29,452				
Clean air	Between Groups	51.65	3	17.22	27.11	0.000*	
	Within Groups	18,677.81	29,417	0.64			
	Total	18,729.46	29,420				
Providing home for wildlife	Between Groups	27.90	3	9.30	20.76	0.000*	0.00
	Within Groups	13,192.50	29,447	0.45			
	Total	13,220.40	29,450				
Providing a home for pollinators	Between Groups	15.95	3	5.32	11.41	0.000*	0.00
	Within Groups	13,720.43	29,447	0.47			
	Total	13,736.38	29,450				
Scenic places for inspiration or spiritual renewal	Between Groups	55.81	3	18.60	20.61	0.000*	0.00
	Within Groups	26,543.43	29,409	0.90			
	Total	26,599.24	29,412				

Table 4.7: Ecological services least concerned about losing

Service least concerned about losing	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Flood protection	6.1%	5.5%	5.7%	4.0%	5.1%
Erosion protection	2.8%	3.3%	2.4%	2.2%	2.5%
Wildlife viewing and birdwatching	0.7%	0.6%	1.0%	0.8%	0.8%
Hunting opportunities	74.8%	66.1%	67.3%	74.0%	71.4%
Storage of greenhouse gases	8.1%	13.5%	11.6%	8.5%	9.8%
Clean water	0.3%	0.4%	0.4%	0.4%	0.4%
Clean air	1.3%	1.9%	1.7%	1.4%	1.5%
Providing a home for wildlife	0.5%	0.3%	0.4%	0.4%	0.4%
Providing a home for pollinators	0.3%	0.3%	0.5%	0.3%	0.4%
Scenic place for inspiration and spiritual renewal	5.2%	8.2%	8.9%	8.0%	7.7%
Valid N	5,614	3,223	8,254	11,916	28,953

[1] χ^2 (36, N=28953) = 308.55 $p < 0.05$ Cramer's $V = 0.07$

Table 4.8: Ecological services most concerned about losing

Service most concerned about losing	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Flood protection	5.3%	10.1%	7.9%	8.9%	8.1%
Erosion protection	1.7%	2.1%	2.8%	3.2%	2.7%
Wildlife viewing and birdwatching	16.2%	17.8%	14.2%	13.8%	14.8%
Hunting opportunities	0.7%	0.8%	0.8%	0.6%	0.7%
Storage of greenhouse gases	1.5%	1.5%	1.4%	1.4%	1.4%
Clean water	14.8%	16.2%	23.1%	21.2%	20.0%
Clean air	2.3%	1.8%	2.2%	2.1%	2.1%
Providing a home for wildlife	51.9%	42.4%	38.9%	42.2%	43.1%
Providing a home for pollinators	3.4%	5.4%	7.1%	5.0%	5.3%
Scenic place for inspiration and spiritual renewal	2.2%	1.9%	1.6%	1.5%	1.7%
Valid N	5,626	3,232	8,268	11,940	29,067

[1] χ^2 (36, N=29067) = 547.91 $p < 0.05$ Cramer's $V = 0.10$

Section 5: Discrete Choice Models for Preferred Trips

This study included a discrete choice experiment (DCE) examining the preferences of birdwatchers concerning different potential combinations of birdwatching experiences. Choice models present hypothetical scenarios to respondents to measure individuals' preferences for alternatives composed of multiple resource and management attributes (Adamowicz, Louviere & Williams 1994; Louviere, Hensher & Swait 2000; Oh et al. 2005). The approach depends on the imperfect relationship between behavioral intention and behavior (Ajzen & Fishbein 1980) yet allows estimation of the effects of all parameters of interest independently. Individuals are assumed to be utility maximizers, and respondents' choices reflect the perceived utility of the alternatives presented (McFadden 1981). Individual respondent choices reflect the personal utility of attributes and attribute levels and are aggregated to estimate the utility of attributes and attribute levels in a population (McFadden 1981). In an economic sense, utility is simply a measure of the perceived usefulness of something to an individual. The degree to which someone chooses one circumstance over another provides the ability to measure its perceived usefulness, or utility, to that person. In general, the utility of an attribute level may be considered a reflection of relative desirability (Orme 2014).

Alternatives presented in this choice experiment consisted of seven attributes:

1. **Diversity:** How many kinds or species of birds you see
2. **Rarity:** Whether there are rare or unusual species of birds
3. **Number of birds:** The total number of birds you see
4. **Ease of access:** How difficult it is to get into and around an area
5. **Wetlands:** Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species
6. **Naturalness:** The degree to which the area is in a natural condition or has been developed
7. **Travel distance:** Total distance from home to the location (one-way).

Response options varied from 2 to 5 for each attribute (Table 5.1). In order to have adequate power to conduct this experiment, we developed 10 survey versions. In each, respondents were presented with 10 different hypothetical comparisons of birdwatching experiences and asked to choose one option. Each scenario included two viewing option choices plus a "none" (i.e., I would not go if these were my only choices). The background explanation of the DCE and an example of the choice scenarios are presented in Figures 5.1 and 5.2.

We conducted analyses with all study respondents who completed the choice questions (n = 24,420). Results for the hierarchical Bayes model, including average utilities, or usefulness, for each attribute level, summarize the preference among birdwatchers. The attribute importances (Table 5.2) provide a summary of how important each of the 7 attributes were in respondents' choices. The utilities of each level for each attribute are summarized in Table 5.3. The larger the range in the part-worth utilities (i.e. the average utilities across levels within that attribute) for an attribute, the more influential that attribute is on respondents' choices and the greater the importance of that attribute. The set of part-worth utilities for each attribute is scaled to sum to zero, so some part-worth utilities are necessarily negative numbers for some levels. A negative part-worth utility does not mean that the level has a negative utility; but the larger the number, the higher the utility. This means that a large positive number has higher utility than a large negative number.

The most important attributes in the choice of birdwatching trips were: 1) travel distance; 2) chance to see rare or unusual bird species; and 3) the naturalness of the area. The levels with the highest utility included: 1) travel distance of 2 miles or less; 2) travel distance of less than 25 miles; 3) chance to see rare/unusual species; 4) natural setting; and 5) wetlands with waterfowl/wetland birds.

Table 5.1: Possible trip choice characteristics in DCE

Attribute	Possible Levels
Diversity: How many kinds or species of birds do you see	Observe 10 or fewer species Observe 20 species Observe 30 species Observe 40 or more species
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species Chance to see rare or unusual species
Number of birds: The total number of birds you see	Less than 100 birds Hundreds of birds Thousands of birds
Ease of access: How difficult it is to get into and around an area	Easy access with paved trails and roads Moderate access with some paved trails Difficult access with unpaved trails and paths
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	No wetland habitats Wetlands but no waterfowl/wetland birds Wetlands with waterfowl/wetland birds
Naturalness: The degree to which the area is in a natural condition or has been developed	Area is developed Natural habitat and setting
Travel distance: Total distance from home to the location (one-way_	2 miles or less 25 miles 50 miles 100 miles 200 miles

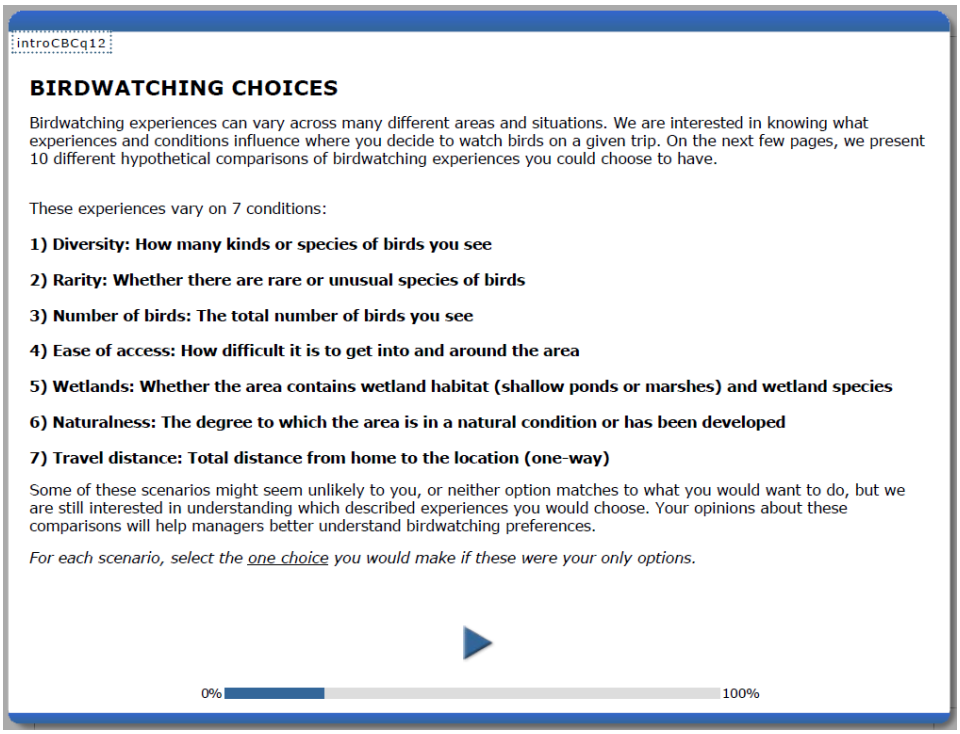

Figure 5-1: Background for DCE for birdwatching

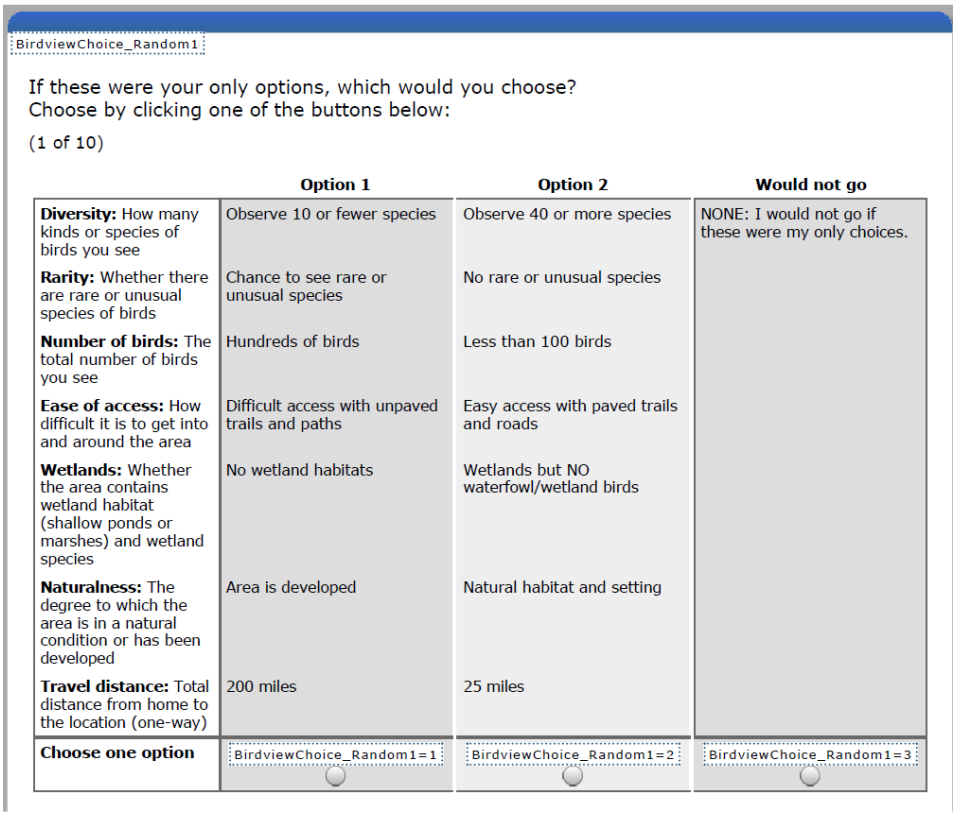

Figure 5-2: Example of choice scenario for birdwatching DCE

Table 5.2: Relative attribute importance derived from hierarchical Bayes estimation

Diversity	9.54	4.11
Rarity	18.36	10.08
Number of birds	4.89	2.61
Ease of Access	8.65	7.14
Wetlands	10.27	4.82
Naturalness	13.83	7.85
Travel distance	34.46	16.26

[1] n = 24,420

Table 5.3: Results of hierarchical Bayes model for trip choice for birdwatching

Attribute	Level	Average Utilities[1]	SD
Diversity	Observe 10 or fewer species	-33.75	17.94
	Observe 20 species	-5.27	9.06
	Observe 30 species	10.32	8.27
	Observe 40 or more species	28.70	18.91
Rarity	No rare or unusual species	63.59	36.46
	Chance to see rare or unusual species	-63.59	36.46
Number of Birds	Less than 100	-14.71	11.58
	Hundreds	1.32	8.23
	Thousands	13.39	14.19
Ease of Access	Easy access with paved trails and roads	6.47	28.11
	Moderate access with some paved trails	13.78	17.64
	Difficult access with unpaved trails and paths	-20.24	43.32
Wetlands	No wetland habitats	-25.06	15.13
	Wetlands but NO waterfowl/wetland birds	-18.68	10.38
	Wetlands with waterfowl/wetland birds	43.74	21.20
Naturalness	Natural habitat and setting	48.16	27.92
	Area is developed	-48.16	27.92
Travel Distance	2 miles or less	89.52	68.14
	25 miles	65.76	39.60
	50 miles	29.05	18.70
	100 miles	-51.10	37.72
	200 miles	-133.22	76.70
None		-219.45	179.03

[1] n = 24,420

Section 6: Engagement

6.1 Community

Most respondents considered themselves a birdwatcher (68%) or a conservationist (69%; Table 6.1). The highest average identification with several different social groups (birdwatcher, waterfowl hunter, other type of hunter, conservationist) was as a birdwatcher ($\bar{x}$ = 4.0, SD 1.12) or a conservationist ($\bar{x}$ = 4.0, SD 1.15; Table 6.2). Identification as any type of hunter was relatively low. There were statistically significant but negligible differences between flyways on respondents' social identity (Table 6.3).

About 4 in 10 respondents (42%) were members of the National Audubon Society (Table 6.4). Respondents' highest levels of involvement in bird-related groups were with bird conservation groups and the lowest levels of involvement were reported with ornithological societies (Table 6.5; Table 6.6). There were statistically significant but small differences between flyways (Table 6.7).

Few respondents (11%) reported that their participation in eBird was not at all important (Table 6.8). Nearly one-quarter (22%) of respondents indicated that participating in eBird was very important. Analyses suggest statistically significant but negligible differences.

Respondents were asked about their participation in 5 conservation activities. Nearly half of respondents (45%) said they worked very often at making their yard or land more desirable to wildlife (Table 6.9; Table 6.10). The least often reported activity was volunteering to improve wildlife habitat in their community, with over half (57%) reporting they rarely or never did this. Analyses suggest statistically significant but negligible differences between flyways (Table 6.11). Looking specifically at wetland conservation activities in the past year, respondents reported most often voting for candidates or ballot issues to support wetland or waterfowl conservation (Table 6.12; Table 6.13). Nearly one-third (30%) reported voting in support of wetlands or waterfowl conservation often or very often. Respondents were least likely to have worked on wetlands and waterfowl conservation land improvement projects or volunteer their time and effort, with 72 percent and 71 percent, respectively, indicating they never did this. There were statistically significant but negligible to small differences between flyways (Table 6.14). On average, the Pacific flyway respondents indicate a slightly greater frequency of participation in voting for candidates and ballot issues or advocating political action to conserve wetlands and waterfowl.

We used a social network approach to understand the diversity of relationships and connections that individuals have in their personal networks (Harshaw and Tindall 2005; Lin, Fu & Hsung 2001). Respondents were presented with a list of 24 avocational, occupational, and organizational structural positions and asked what relationship if any they had associated with the position through an acquaintance, close friend, relative, or self. The percentage of respondents reporting ties to the positions at each level of relationship are summarized in Tables 6.15 through 6.20.

6.2 Trust

Respondents indicated highest levels of trust in birding/birdwatching organizations (Table 6.21, Table 6.22). The lowest levels of trust were reported for elected officials, with 8 in 10 respondents (82%) saying they did not trust them at all or had little trust in elected officials. While analyses revealed significant differences between the strata on several items, effect sizes suggest differences were negligible (Table 6.23).

6.3 Conservation Support

Monetary support for conservation can take the form of donations, permit purchases, and fees. Respondents were asked about their support during the past year to wetland or waterfowl conservation, conservation of other birds, birdwatching and related issues, and waterfowl hunting. Possible responses to this item were $0, less than $250, $250-$999, $1000-$2499, $2500-$4999, $5000-$9999, and $10,000 or more. Because of the non-normal distribution of donations (see Tables 6.26-6.29), responses were dichotomized as $0 donation or more than $0. Most respondents reported having donated to birdwatching and related issues (62%; Table 6.24), as well as conservation of other birds (55%). Few reported donating to causes related to waterfowl hunting (9%). Analyses revealed small but negligible differences (Table 6.25).

Most respondents (67%) indicated having paid a State Park access permit or fee (Table 6.30), while relatively few respondents reported purchasing a Federal Migratory Bird Hunting and Conservation Stamp (13%). Analyses revealed significant but small differences in purchasing behavior between flyways (Table 6.31). In the case of National Park passes, State Park access permits, county/local conservation land access fees, State Wildlife Management Area permits, and National Wildlife Refuge access fees, a slightly higher percentage of respondents in the Pacific and Central Flyways indicated paying for permits in the past 12 months.

Most respondents indicated a willingness to for permits and fess, with one exception, in the next 12 months for (Table 6.32). Only about 38 percent of respondents said they were willing to purchase the Federal Migratory Bird Hunting and Conservation Stamp in the next 12 months. There were statistically significant but negligible differences between flyways in respondents' willingness to pay for permits and fees (Table 6.33).

Table 6.1: Level of social identification with group types response distribution

Group Type	Level of Self-Identification					Valid N
	Not At All	Slightly	Moderately	Strongly	Very Strongly	
Identify yourself as a birdwatcher	0.4%	6.9%	24.5%	29.3%	38.9%	30,458
Identify yourself as a waterfowl hunter	94.0%	3.2%	1.4%	0.7%	0.6%	29,365
Identify yourself as other type of hunter	87.6%	5.1%	3.2%	2.2%	1.9%	29,400
Identify yourself as a conservationist	1.5%	8.3%	20.9%	30.7%	38.6%	30,203

Table 6.2: Level of personal social identification with group types

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Identify yourself as a birdwatcher	4.1	0.99	5,829	4.0	1.14	3,397	3.9	1.22	8,681	4.0	1.05	12,601	4.0	1.12	30,458
Identify yourself as a waterfowl hunter	1.1	0.47	5,616	1.1	0.60	3,266	1.1	0.58	8,410	1.1	0.44	12,125	1.1	0.51	29,365
Identify yourself as other type of hunter	1.2	0.71	5,619	1.4	0.94	3,277	1.3	0.92	8,424	1.2	0.71	12,132	1.3	0.80	29,400
Identify yourself as a conservationist	4.1	1.03	5,780	4.0	1.16	3,385	3.9	1.27	8,600	4.0	1.09	12,486	4.0	1.15	30,203

[1] Scale: 1 = Not at all to 5 = Very strongly

Table 6.3: Level of social identification with group types ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Identify yourself as a birdwatcher	Between Groups	78.70	3	26.24	21.58	0.000*	0.00
	Within Groups	37,039.88	30,473	1.22			
	Total	37,118.58	30,476				
Identify yourself as a waterfowl hunter	Between Groups	18.32	3	6.11	23.70	0.000*	0.00
	Within Groups	7,574.04	29,385	0.26			
	Total	7,592.36	29,388				
Identify yourself as other type of hunter	Between Groups	130.75	3	43.58	68.23	0.000*	0.00
	Within Groups	18,791.79	29,420	0.64			
	Total	18,922.54	29,423				
Identify yourself as a conservationist	Between Groups	129.96	3	43.32	33.37	0.000*	0.00
	Within Groups	39,234.96	30,223	1.30			
	Total	39,364.94	30,226				

*p<0.05

Table 6.4: National Audubon Society Member

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Are you a member of the National Audubon Society?	Yes	49.2%	42.3%	36.6%	42.0%	42.0%
	No	50.8%	57.7%	63.4%	58.0%	58.1%
	Valid N	5,699	3,308	8,401	12,146	29,502

[1] χ^2 (3, N=29502) = 223.19 p < 0.05 Cramer's *V* = 0.09

Table 6.5: Level of involvement in bird groups response distribution

Bird Groups	Level of Involvement				Valid N
	Not at all involved	Slight involvement	Moderate involvement	High involvement	
Involvement with birding groups and birdwatching groups	46.1%	32.2%	15.5%	6.3%	28,566
Involvement with bird conservation groups	19.0%	44.9%	24.9%	11.3%	29,482
Involvement with ornithological societies	68.7%	19.1%	8.7%	3.5%	26,627
Involvement with local naturalist organizations	44.2%	30.3%	15.7%	9.8%	27,679

Table 6.6: Level of involvement in bird groups

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Involvement with birding groups and birdwatching groups	1.8	0.92	5,498	1.9	0.98	3,214	1.8	0.98	8,163	1.8	0.93	11,744	1.8	0.95	28,566
Involvement with bird conservation groups	2.4	0.93	5,694	2.0	0.97	3,305	2.2	0.98	8,382	2.3	0.91	12,152	2.3	0.95	29,482
Involvement with ornithological societies	1.5	0.80	5,149	1.6	0.91	2,983	1.5	0.87	7,649	1.4	0.78	10,901	1.5	0.83	26,627
Involvement with local naturalist organizations	2.0	0.99	5,346	2.0	1.11	3,086	1.9	1.05	7,896	1.9	1.00	11,402	1.9	1.02	27,679

[1] Scale: 1 = No involvement to 4 = High involvement

Table 6.7: Level of involvement in bird groups ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Involvement with birding and birdwatching groups	Between Groups	24.90	3	8.30	9.22	0.000*	0.00
	Within Groups	25,736.30	28,595	0.90			
	Total	25,761.20	28,598				
Involvement with bird conservation groups	Between Groups	188.43	3	62.81	70.74	0.000*	0.01
	Within Groups	26,203.08	29,509	0.89			
	Total	26,391.51	29,512				
Involvement with ornithological societies	Between Groups	48.30	3	16.10	23.50	0.000*	0.00
	Within Groups	18,264.47	26,659	0.69			
	Total	18,312.77	26,662				
Involvement with local naturalist organizations	Between Groups	48.89	3	16.30	15.60	0.000*	0.00
	Within Groups	28,939.39	27,706	1.05			
	Total	28,988.28	27,709				

Table 6.8: Importance of eBird

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
How important is participating in eBird to you?	Not at all important	10.9%	10.3%	11.1%	10.7%	10.8%
	Slightly important	34.2%	33.2%	36.7%	35.5%	35.3%
	Moderately important	31.9%	32.2%	32.6%	32.1%	32.2%
	Very important	23.0%	24.3%	19.6%	21.7%	21.7%
	Valid N					

[1] χ^2 () = 45.94 p < 0.05 Cramer's *V* = 0.04

Table 6.9: Participation in conservation activities response distribution

Conservation Activity	Level of Participation					Valid N
	Never	Rarely	Sometimes	Often	Very Often	
Made my yard or land more desirable to wildlife	4.1%	3.4%	17.1%	30.8%	44.6%	29,731
Volunteered to improve wildlife habitat in my community	34.7%	22.2%	24.3%	9.4%	9.3%	29,466
Talked to others in my community about conservation issues	16.1%	15.7%	33.5%	20.0%	14.7%	29,596
Participated as an active member in a nature, outdoor, or conservation group	28.9%	18.3%	20.3%	14.4%	18.1%	29,593
Donated money to support wildlife/habitat conservation	17.5%	17.5%	33.3%	16.8%	14.9%	29,615

Table 6.10: Participation in conservation activities in past year

Conservation Activities	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Made my yard or land more desirable to wildlife	4.0	1.14	5,714	4.1	1.24	3,333	4.1	1.30	8,480	4.1	1.14	12,255	4.1	1.21	29,731
Volunteered to improve wildlife in my community	2.4	1.29	5,668	2.4	1.39	3,300	2.4	1.37	8,406	2.3	1.32	12,144	2.4	1.34	29,466
Talked to others in my community about conservation issues	3.1	1.25	5,699	3.0	1.36	3,322	3.0	1.39	8,438	3.0	1.29	12,190	3.0	1.32	29,596
Participated in a nature, outdoor, or conservation group	2.9	1.47	5,698	2.8	1.56	3,318	2.7	1.56	8,438	2.7	1.48	12,190	2.7	1.51	29,592
Donated money to support wildlife/habitat conservation	3.1	1.32	5,707	2.9	1.32	3,323	2.8	1.38	8,431	3.0	1.29	12,205	2.9	1.33	29,615

[1] Scale: 1 = Never to 5 = Very often

Table 6.11: Participation in conservation activities ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Made my yard or land more desirable to wildlife	Between Groups	81.18	3	27.06	19.02	0.000*	0.00
	Within Groups	42,335.97	29,756	1.42			
	Total	42,417.15	29,759				
Volunteered to improve wildlife habitat in my community	Between Groups	12.14	3	4.05	2.26	0.079	0.00
	Within Groups	52,707.19	29,492	1.79			
	Total	52,719.33	29,495				
Talked to others in my community about conservation issues	Between Groups	116.12	3	38.71	22.22	0.000*	0.00
	Within Groups	51,599.78	29,621	1.74			
	Total	51,715.90	29,624				
Participated as an active member in a nature, outdoor, or conservation group	Between Groups	207.67	3	69.22	30.38	0.000*	0.00
	Within Groups	67,489.76	29,619	2.28			
	Total	67,697.43	29,622				
Donated money to support wildlife/habitat conservation	Between Groups	210.67	3	70.22	40.09	0.000*	0.00
	Within Groups	51,931.95	29,644	1.75			
	Total	42,142.62	29,647				

Table 6.12: Participation in conservation activities response distribution

Conservation Activity	Level of Participation					Valid N
	Never	Rarely	Sometimes	Often	Very Often	
Worked on land improvement project related to wetlands or waterfowl conservation	72.1%	12.8%	9.6%	3.2%	2.3%	29,405
Attended meetings about wetlands or waterfowl conservation	67.2%	15.0%	13.0%	3.0%	1.7%	29,392
Volunteered my personal time and effort to conserve wetlands and waterfowl	71.0%	13.6%	10.1%	3.2%	2.1%	29,343
Contacted elected officials or government agencies about wetlands and waterfowl conservation	67.6%	13.6%	13.5%	3.5%	1.7%	29,378
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	39.7%	8.0%	22.0%	17.8%	12.5%	29,299
Advocated for political action to conserve wetlands and waterfowl	50.1%	12.9%	19.0%	10.6%	7.4%	29,334

Table 6.13: Participation in wetland conservation activities in past year

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
Worked on land improvement project related to wetlands or waterfowl conservation	1.6	1.00	5,664	1.5	0.97	3,300	1.5	1.02	8,392	1.5	0.93	12,101	1.5	0.97	29,405
Attended meetings about wetlands or waterfowl conservation	1.7	1.01	5,659	1.6	0.96	3,301	1.6	0.99	8,387	1.5	0.93	12,097	1.6	0.97	29,392
Volunteered my personal time and effort to conserve wetlands and waterfowl	1.6	1.01	5,634	1.5	0.93	3,296	1.5	0.97	8,372	1.5	0.96	12,093	1.5	0.97	29,343
Contacted elected officials or government agencies about wetlands and waterfowl conservation	1.7	1.04	5,650	1.5	0.90	3,293	1.5	0.98	8,388	1.6	0.99	12,099	1.6	0.99	29,378
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	2.9	1.49	5,646	2.4	1.46	3,288	2.5	1.50	8,354	2.5	1.48	12,063	2.6	1.49	29,299
Advocated for political action to conserve wetlands and waterfowl	2.3	1.40	5,653	2.0	1.31	3,289	2.0	1.36	8,368	2.1	1.34	12,077	2.1	1.36	29,334

[1] Scale: 1 = Never to 5 = Very often

Table 6.14: Participation in wetland conservation activities ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
Worked on land improvement project related to wetlands or waterfowl conservation	Between Groups	38.17	3	12.73	13.41	0.000*	0.00
	Within Groups	27,915.89	29,431	0.95			
	Total	27,954.07	29,434				
Attended meetings about wetlands or waterfowl conservation	Between Groups	59.74	3	19.91	21.22	0.000*	0.00
	Within Groups	27,607.05	29,418	0.94			
	Total	27,666.79	29,421				
Volunteered my personal time and effort to conserve wetlands and waterfowl	Between Groups	38.66	3	12.89	13.72	0.000*	0.00
	Within Groups	27,579.46	29,364	0.94			
	Total	27,618.12	29,367				
Contacted elected officials or government agencies about wetlands and waterfowl conservation	Between Groups	102.07	3	34.02	34.80	0.000*	0.00
	Within Groups	28,748.43	29,404	0.98			
	Total	28,850.50	29,407				
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	Between Groups	729.92	3	243.31	110.20	0.000*	0.01
	Within Groups	64,726.24	29,329	2.21			
	Total	65,456.16	29,332				
Advocated for political action conserve wetlands and waterfowl	Between Groups	342.19	3	114.06	62.30	0.000*	0.01
	Within Groups	53,756.38	29,363	1.83			
	Total	54,098.57	29,366				

*p<0.05

Table 6.15: Personal community – Recreation

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Birdwatcher	Acquaintance	57.0%	51.6%	50.8%	49.7%	51.5%
	Close friend	60.7%	56.1%	52.2%	53.3%	54.7%
	Relative	46.7%	47.6%	49.1%	47.8%	47.9%
	Myself	86.7%	85.7%	85.8%	84.5%	85.4%
Angler	Acquaintance	53.1%	45.0%	43.9%	40.1%	42.2%
	Close friend	33.7%	37.7%	36.1%	29.8%	33.1%
	Relative	41.4%	47.1%	48.2%	40.4%	43.4%
	Myself	19.6%	24.2%	24.9%	18.6%	21.1%
Waterfowl hunter	Acquaintance	34.3%	38.5%	37.7%	27.4%	32.7%
	Close friend	15.8%	20.4%	18.0%	11.3%	15.0%
	Relative	17.1%	20.3%	19.4%	12.9%	16.3%
	Myself	3.4%	4.7%	4.0%	2.1%	3.1%
Other hunter	Acquaintance	39.1%	47.1%	48.4%	40.7%	43.2%
	Close friend	22.7%	31.5%	31.3%	22.6%	26.0%
	Relative	27.1%	37.4%	39.8%	28.9%	32.5%
	Myself	6.4%	10.2%	9.9%	5.5%	7.4%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.16: Personal community – Agencies

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
State park manger/employee	Acquaintance	31.4%	35.5%	31.6%	27.7%	30.3%
	Close friend	9.4%	9.7%	8.9%	7.6%	8.6%
	Relative	2.1%	2.3%	2.5%	2.4%	2.3%
	Myself	1.2%	1.8%	1.6%	1.3%	1.4%
National park manager/employee	Acquaintance	33.4%	32.0%	26.5%	25.2%	27.8%
	Close friend	12.4%	10.6%	8.0%	7.1%	8.7%
	Relative	3.2%	3.0%	2.9%	2.5%	2.8%
	Myself	1.7%	1.6%	1.1%	0.8%	1.1%
Federal wildlife agency manager/employee	Acquaintance	29.9%	28.3%	21.6%	19.3%	22.9%
	Close friend	10.6%	8.8%	6.4%	5.5%	7.1%
	Relative	2.3%	2.1%	1.8%	1.3%	1.7%
	Myself	2.6%	1.9%	1.3%	0.9%	1.4%
State wildlife agency manager/employee	Acquaintance	32.7%	34.9%	30.6%	25.5%	29.3%
	Close friend	11.0%	10.2%	8.8%	7.0%	8.6%
	Relative	2.3%	2.1%	2.5%	2.0%	2.2%
	Myself	1.9%	1.5%	1.8%	1.1%	1.5%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.17: Personal community – Environmental occupations

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Farmer/Rancher	Acquaintance	37.6%	45.4%	39.2%	34.2%	37.5%
	Close friend	15.8%	22.0%	18.6%	14.0%	16.5%
	Relative	16.8%	25.3%	23.1%	15.3%	18.8%
	Myself	4.2%	8.1%	6.5%	4.4%	5.3%
Outdoor educator	Acquaintance	48.0%	46.6%	44.9%	42.1%	44.5%
	Close friend	26.2%	23.4%	22.1%	20.4%	22.3%
	Relative	6.9%	6.2%	6.2%	5.8%	6.2%
	Myself	14.8%	14.1%	12.4%	11.0%	12.5%
Wildlife artist	Acquaintance	37.2%	32.4%	29.5%	28.8%	31.0%
	Close friend	15.7%	12.0%	10.5%	10.7%	11.7%
	Relative	5.6%	5.3%	5.6%	5.2%	5.4%
	Myself	7.7%	6.6%	6.0%	5.9%	6.3%
Wildlife biologist	Acquaintance	46.3%	43.0%	37.5%	35.7%	39.0%
	Close friend	27.1%	21.2%	17.2%	16.3%	19.1%
	Relative	8.0%	5.8%	5.7%	5.5%	6.0%
	Myself	12.1%	10.3%	7.2%	6.9%	8.3%
Wildlife photographer	Acquaintance	51.7%	48.5%	45.3%	44.2%	46.4%
	Close friend	32.7%	31.4%	25.3%	25.5%	27.5%
	Relative	15.6%	15.6%	14.3%	14.2%	14.6%
	Myself	33.3%	34.9%	30.4%	29.3%	31.0%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.18: Personal community – Membership in conservation organizations

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Member of fishing/conservation organizations	Acquaintance	26.3%	26.8%	26.4%	22.3%	24.6%
	Close friend	15.7%	14.0%	14.7%	12.3%	13.8%
	Relative	11.5%	11.7%	12.5%	10.9%	11.5%
	Myself	10.7%	10.2%	11.5%	9.8%	10.5%
Member of national conservation organization	Acquaintance	43.0%	35.8%	32.8%	31.9%	34.7%
	Close friend	36.2%	27.0%	24.3%	25.7%	27.5%
	Relative	24.6%	19.6%	18.3%	20.6%	20.6%
	Myself	48.4%	40.1%	39.0%	42.7%	42.5%
Member of local conservation organization	Acquaintance	36.2%	32.0%	30.7%	29.4%	31.3%
	Close friend	27.5%	21.4%	20.6%	20.6%	22.0%
	Relative	14.7%	11.1%	12.2%	13.3%	13.0%
	Myself	25.1%	27.1%	26.6%	30.3%	29.9%
Member of local naturalist organization	Acquaintance	32.8%	34.2%	30.0%	28.2%	30.3%
	Close friend	23.9%	23.1%	19.1%	19.5%	20.6%
	Relative	9.8%	8.6%	7.6%	9.0%	8.7%
	Myself	27.9%	26.1%	22.9%	24.8%	25.0%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.19: Personal community – Membership in hunting organizations

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Member of Ducks Unlimited	Acquaintance	20.9%	24.0%	24.0%	15.7%	19.8%
	Close friend	9.2%	10.7%	10.7%	6.8%	8.7%
	Relative	7.4%	8.8%	10.0%	6.1%	7.7%
	Myself	3.5%	4.4%	4.3%	3.2%	3.7%
Member of Delta Waterfowl	Acquaintance	4.5%	4.6%	5.5%	2.7%	4.0%
	Close friend	1.2%	1.3%	1.8%	0.7%	1.1%
	Relative	0.5%	0.6%	0.7%	0.4%	0.5%
	Myself	0.3%	0.3%	0.4%	0.2%	0.3%
Member of state waterfowl association	Acquaintance	9.1%	9.1%	10.0%	5.9%	8.0%
	Close friend	3.1%	3.0%	3.2%	1.9%	2.6%
	Relative	1.6%	1.7%	2.1%	1.1%	1.5%
	Myself	0.9%	0.7%	0.8%	0.7%	0.8%
Member of non-waterfowl hunting organization	Acquaintance	14.4%	17.7%	16.6%	10.2%	13.6%
	Close friend	6.7%	8.6%	7.9%	4.6%	6.4%
	Relative	5.1%	6.1%	7.1%	4.0%	5.3%
	Myself	2.2%	3.8%	3.2%	1.8%	2.5%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.20: Personal community – Membership in bird groups

Personal Community		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Member of birding group	Acquaintance	47.9%	45.7%	41.2%	40.6%	42.7%
	Close friend	38.3%	36.9%	30.1%	31.2%	32.9%
	Relative	15.6%	15.4%	14.0%	14.7%	14.8%
	Myself	42.9%	41.6%	36.7%	37.7%	38.8%
Member of bird conservation group	Acquaintance	51.1%	47.9%	41.8%	42.2%	44.4%
	Close friend	44.8%	39.7%	32.7%	34.9%	36.7%
	Relative	24.2%	21.7%	19.4%	22.9%	22.1%
	Myself	67.8%	62.0%	56.9%	62.4%	61.9%
Member of ornithological group	Acquaintance	35.3%	35.3%	28.6%	26.8%	29.8%
	Close friend	23.1%	24.1%	18.5%	17.8%	19.7%
	Relative	6.1%	7.4%	6.9%	5.8%	6.4%
	Myself	20.6%	25.3%	19.9%	18.6%	20.1%
Valid N		5,839	3,409	8,685	12,581	30,463

Table 6.21: Trust in various institutions response distribution

Institution	Level of Trust					Valid N
	Do not trust at all	Trust a little	Trust somewhat	Trust a lot	Trust completely	
State wildlife agencies	4.2%	16.5%	41.3%	33.1%	4.9%	29,518
Federal wildlife and land management agencies	5.4%	18.1%	40.7%	30.9%	5.0%	29,458
Elected officials	45.7%	36.7%	16.0%	1.4%	0.2%	29,466
Waterfowl hunting/conservation organizations	9.1%	25.9%	37.3%	24.2%	3.4%	29,017
Birding/bird conservation organizations	0.3%	2.7%	15.2%	57.2%	24.6%	29,593
Other conservation organizations	1.2%	7.7%	35.5%	46.0%	9.7%	28,821
University researchers/scientists	1.6%	7.8%	26.9%	47.6%	16.1%	29,411

Table 6.22: Trust in various institutions

Statements	Flyways												National		
	Pacific			Central			Mississippi			Atlantic					
	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N	Mean[1]	SD	N
State wildlife agencies	3.1	0.92	5,690	3.2	1.09	3,322	3.2	1.10	8,409	3.2	0.94	12,148	3.2	1.02	29,518
Federal wildlife and land management agencies	3.0	0.97	5,678	3.2	1.07	3,315	3.2	1.12	8,394	3.1	0.99	12,123	3.1	1.04	29,458
Elected officials	1.8	0.80	5,676	1.7	0.82	3,322	1.7	0.84	8,387	1.7	0.80	12,132	1.7	0.82	29,466
Waterfowl hunting/conservation organizations	2.7	0.97	5,599	2.9	1.09	3,273	3.0	1.12	8,280	2.8	1.06	11,919	2.9	1.07	29,017
Other conservation organizations	4.0	0.77	5,707	4.0	0.95	3,330	4.0	1.04	8,417	4.0	0.81	12,190	4.0	0.91	29,593
University researchers/scientists	3.6	0.84	5,557	3.5	0.98	3,247	3.5	1.04	8,184	3.6	0.87	11,881	3.6	0.94	28,821

[1] Scale: 1 = Do not trust at all to 5 = Trust completely

Table 6.23: Trust in various institutions ANOVA flyway comparison

		Sum of Squares	df	Mean Square	F	Sig.	η2
State wildlife agencies	Between Groups	101.97	3	33.99	33.72	0.000*	0.00
	Within Groups	29,785.72	29,549	1.01			
	Total	887.69	29,552				
Federal wildlife and land management agencies	Between Groups	76.87	3	25.62	24.02	0.000*	0.00
	Within Groups	31,459.37	29,490	1.07			
	Total	31,536.24	29,493				
Elected officials	Between Groups	31.14	3	10.38	15.70	0.000*	0.00
	Within Groups	19,495.94	29,493	0.66			
	Total	19,527.08					
Waterfowl hunting/conservation organizations	Between Groups	169.15	3	56.38	49.98	0.000*	0.00
	Within Groups	32,776.82	29,053	1.13			
	Total	32,945.97	29,056				
Birding/bird conservation organizations	Between Groups	3.97	3	1.32	1.67	0.172	0.00
	Within Groups	23,495.17	29,620	0.79			
	Total	23,499.14	29,623				
Other conservation organizations	Between Groups	19.34	3	6.45	7.49	0.000*	0.00
	Within Groups	24,832.29	28,852	0.86			
	Total	24,851.63	28,855				
University researchers/scientists	Between Groups	18.53	3	6.18	6.13	0.000*	0.00
	Within Groups	29,661.65	29,440	1.01			
	Total	29,680.18	29,443				

*p<0.05

Table 6.24: Percent donating in past year

	Causes	Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Percent donating money in past year	Wetland or waterfowl conservation	38.7%	33.3%	36.7%	36.8%	36.7%
	Conservation of other birds	60.0%	55.5%	52.3%	55.0%	55.3%
	Birdwatching and related issues	65.0%	63.2%	57.8%	62.4%	61.7%
	Waterfowl hunting	7.8%	10.5%	10.4%	7.6%	8.7%
	Valid N	(5,224 to 5,529)	(3,063 to 3,222)	(7,889 to 8,197)	(11,184 to 11,805)	(27,304 to 28,702)

Table 6.25: Percent donating in past year flyway comparison

	Causes	Chi-Square	df	Cramer's *V*
Percent donating money in past year	Wetland of waterfowl conservation	25.75*	3	0.03
	Conservation of other birds	81.82*	3	0.05
	Birdwatching and related issues	68.96*	3	0.05
	Waterfowl hunting	61.79*	3	0.05

*p<0.05

Table 6.26: Donations to wetland or waterfowl conservation

Cause	Donation Amount	Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Wetland or waterfowl conservation	$0	61.3%	66.7%	63.3%	63.2%	63.3%
	Less than $250	33.8%	30.0%	33.0%	33.2%	32.9%
	$250 to $999	3.8%	2.4%	3.0%	2.9%	3.0%
	$1,000 to $2,499	0.9%	0.6%	0.4%	0.5%	0.6%
	$2,500 to $4,999	0.2%	0.2%	0.2%	0.1%	0.2%
	$5,000 to $9,999	0.0%	0.0%	0.0%	0.0%	0.0%
	$10,000 or more	0.1%	0.1%	0.1%	0.1%	0.1%
	Valid N	5,408	3,152	8,077	11,523	28,104

Table 6.27: Donations to conservation of other bird species

Cause	Donation Amount	Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Conservation of other bird species	$0	39.6%	44.3%	47.4%	44.5%	44.4%
	Less than $250	48.0%	45.9%	44.8%	46.5%	46.3%
	$250 to $999	9.4%	7.0%	6.1%	7.0%	7.2%
	$1,000 to $2,499	2.1%	1.9%	1.2%	1.2%	1.5%
	$2,500 to $4,999	0.5%	0.5%	0.3%	0.3%	0.4%
	$5,000 to $9,999	0.3%	0.1%	0.0%	0.2%	0.2%
	$10,000 or more	0.1%	0.3%	0.1%	0.2%	0.2%
	Valid N	5,496	3,207	8,154	11,702	28,505

Table 6.28: Donations to birdwatching and related issues

Cause	Donation Amount	Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Birdwatching and related issues	$0	36.4%	38.2%	43.1%	39.1%	39.6%
	Less than $250	51.2%	51.1%	49.1%	51.4%	50.7%
	$250 to $999	9.5%	7.8%	6.4%	7.5%	7.6%
	$1,000 to $2,499	1.9%	1.9%	1.1%	1.3%	1.4%
	$2,500 to $4,999	0.6%	0.6%	0.2%	0.3%	0.4%
	$5,000 to $9,999	0.1%	0.2%	0.0%	0.2%	0.1%
	$10,000 or more	0.2%	0.2%	0.0%	0.2%	0.1%
	Valid N	5,529	3,222	8,197	11,805	28,702

Table 6.29: Donations to waterfowl hunting and hunting related issues

Cause	Donation Amount	Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Waterfowl hunting and hunting related issues	$0	91.8%	88.9%	89.2%	92.0%	90.8%
	Less than $250	7.3%	10.2%	9.7%	7.2%	8.3%
	$250 to $999	0.6%	0.7%	0.8%	0.6%	0.7%
	$1,000 to $2,499	0.2%	0.1%	0.2%	0.2%	0.2%
	$2,500 to $4,999	0.1%	0.0%	0.1%	0.0%	0.0%
	$5,000 to $9,999	0.0%	0.0%	0.0%	0.0%	0.0%
	$10,000 or more	0.0%	0.1%	0.0%	0.0%	0.0%
	Valid N	5,224	3,063	7,889	11,184	27,304

Table 6.30: Permits purchased and fees paid in the past 12 months

Fees/Permits past 12 months	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Federal migratory bird hunting and conservation stamp (Duck Stamp)	12.1%	15.5%	13.9%	13.2%	13.4%
National Wildlife Refuge access	42.6%	41.8%	27.7%	34.9%	35.2%
State park access	77.4%	78.5%	65.8%	61.4%	67.5%
State wildlife management area access	33.8%	34.3%	22.1%	23.7%	26.4%
County/local conservation land access	29.8%	18.8%	17.1%	15.4%	18.9%
Access fees for land owned by non-governmental conservation orgs.	16.1%	18.5%	11.2%	13.8%	14.1%
National park pass	61.1%	52.4%	40.0%	39.7%	45.2%
Valid N	(5,408 to 5,686)	(3,150 to 3,300)	(8,096 to 8,392)	(11,701 to 12,070)	(28,309 to 29,394)

Table 6.31: Permits purchased and fees paid in the past 12 months flyway comparison

Fees/Permits past 12 months	Chi-Square	df	Cramer's *V*
Federal Migratory Bird Hunting and Conservation Stamp (Duck Stamp)	22.14*	3	0.03
National wildlife refuge access	419.16*	3	0.12
State park access	540.71*	3	0.14
State wildlife management area access	399.69*	3	0.12
County/local conservation land access	538.07*	3	0.14
Access fees for land owned by non-governmental orgs.	134.78*	3	0.07
National park pass	763.38*	3	0.16

*p<0.05

Table 6.32: Willingness to pay for permits and fees in the next 12 months

Willingness to pay next 12 months	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
Federal migratory bird hunting and conservation stamp (Duck Stamp)	38.1%	40.0%	37.9%	37.1%	37.8%
National Wildlife Refuge access	82.3%	79.3%	72.2%	74.4%	75.8%
State park access	91.3%	92.6%	86.3%	84.5%	87.2%
State wildlife management area access	77.9%	76.4%	69.9%	70.6%	72.5%
County/local conservation land access	73.6%	66.7%	62.9%	64.6%	66.0%
Access fees for land owned by non-governmental conservation orgs.	67.5%	65.7%	57.3%	61.7%	62.1%
National park pass	85.3%	82.8%	78.2%	76.9%	79.5%
Valid N	(5,372 to 5,558)	(3,134 to 3,236)	(7,973 to 8,184)	(11,450 to 11,751)	(27,910 to 28,675)

Table 6.33: Willingness to pay for permits and fees flyway comparison

Fees/Permits past 12 months	Chi-Square	df	Cramer's *V*
Federal Migratory Bird Hunting and Conservation Stamp (Duck Stamp)	8.89*	3	0.02
National wildlife refuge access	222.20*	3	0.08
State park access	197.13*	3	0.08
State wildlife management area access	162.12*	3	0.08
County/local conservation land access	207.72*	3	0.09
Access fees for land owned by non-governmental orgs.	166.50*	3	0.08
National park pass	171.25*	3	0.08

*p<0.05

Section 7: Respondent Characteristics

Respondents answered a series of sociodemographic questions regarding race, ethnicity, gender, age, education, profession, rural land ownership, urban/rural residence, urban/rural upbringing, income, and state of residence. Respondents were predominantly white (95%; Tables 7.1, 7.2), and non-Hispanic (98%; Table 7.3). Just over half of respondents (56%) were female (Table 7.4)

After removing any respondents under the age of 18, the median age of respondents was 37 years old, with negligible differences between the flyways (Table 7.5). Almost half of respondents (47%) reported graduate or professional-level education (Table 7.6), and another one-third (32%) reported holding a Bachelor's degree. Analyses showed statistically significant but negligible differences in education between flyways. Most respondents (84%) indicated a nature related profession was not their primary source of personal income, with significant but negligible differences between flyways (Table 7.7). Slightly more than half of respondents (57%) reported making less than $75,000 per year in personal income, while 10% reported an annual income of $150,000 or more (Table 7.8). Analyses indicate statistically significantly but negligible differences between flyways in respondents' annual income.

One-third of respondents (35%) reported owning land in a rural area, with respondents owning an average of 525 acres of rural land (Table 7.9). There were statistically significant but negligible differences between flyways in rural land ownership and average amount of land owned. Forty-four percent of respondents reported living in medium or large urban areas, while about 18 percent reported living in a rural area with a population less than 2,000 (Table 7.10). There were statistically significant but small differences between flyways and respondents' current residence. A higher percentage of respondents in the Pacific (30%) and Central (28%) flyways reported living in large urban areas with populations of 500,000 or more. The Atlantic Flyway had the highest percentage of respondents (24%) who reported living in small towns (populations 2,000 to 9,999), and the Mississippi Flyway had the highest percentage of respondents (22%) who reported living in rural areas. Respondents also reported the population size of the area where they grew up, and analyses revealed statistically significant but small differences between flyways (Table 7.11). A similar pattern to respondents' current residence can be seen across flyways for where respondents grew up.

Table 7.1: Race

Respondent Race	Flyways				National
	Pacific	Central	Mississippi	Atlantic	
American Indian/Native American	2.3%	3.4%	2.1%	1.5%	2.0%
Asian	2.5%	1.1%	1.1%	1.2%	1.4%
Black or African American	0.4%	0.5%	0.4%	0.7%	0.6%
Native Hawaiian or Pacific Islander	0.3%	0.2%	0.1%	0.2%	0.2%
White	94.0%	95.0%	95.7%	95.0%	95.0%
Valid N	5,698	3,294	8,405	12,158	29,503

Table 7.2: Race significance tests flyway comparison

Race	Chi-Square	df	Cramer's *V*
American Indian/Native American	45.86*	3	0.04
Asian	62.64*	3	0.05
Black or African American	10.38*	3	0.02
Native Hawaiian or Pacific Islander	2.97	3	0.01
White	21.66*	3	0.03

*p<0.05

Table 7.3: Ethnicity

Ethnicity		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Hispanic or Latino	Yes	2.4%	2.6%	1.0%	1.5%	1.7%
	No	97.6%	97.4%	99.0%	98.5%	98.3%
	Valid N	5,545	3,207	9,203	11,780	28,680

[1] χ^2 (3, 28680) = 62.17 p < 0.05 Cramer's *V* = 0.05

Table 7.4: Gender

Gender	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Male	44.9%	46.8%	44.2%	43.3%	44.3%
Female	55.1%	53.1%	55.8%	56.7%	55.7%
Valid N	5,651	3,266	8,349	12,048	29,260

[1] χ^2 (3, 29260) = 14.02 p < 0.05 Cramer's *V* = 0.02

Table 7.5: Age (restricted 18-90 years old)

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Age	Median	36	36	38	37	37
	IQR	16	16	17	16	17
	Valid N	5,602	3,222	8,258	11,875	28,901

[1] F (3, 28932) = 18.46 p < 0.05 η^2 = 0.00

Table 7.6: Education

Level of Education	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Some high school or less	0.6%	0.8%	0.7%	0.7%	0.7%
High school diploma or GED	1.4%	3.0%	4.1%	3.8%	3.3%
Some college (no degree)	10.4%	11.0%	11.4%	9.5%	10.4%
Associate's degree	6.4%	5.4%	6.3%	6.2%	6.2%
Bachelor's degree	32.1%	32.8%	33.3%	31.6%	32.3%
Graduate or professional school	49.1%	47.1%	44.1%	48.3%	47.2%
Valid N	5,671	3,267	8,345	12,029	29,257

[1] χ^2 (15, 29257) = 143.90 p < 0.05 Cramer's *V* = 0.07

Table 7.7: Nature-related profession

		Flyways[1]				National
		Pacific	Central	Mississippi	Atlantic	
Is a nature-related profession a primary source of personal income?	Yes	19.6%	17.4%	15.7%	13.3%	15.6%
	No	80.4%	82.6%	84.3%	86.7%	84.4%
	Valid N	5,691	3,287	8,378	12,095	29,398

[1] χ^2 (3, 29398) = 123.18 p < 0.05 Cramer's *V* = 0.06

Table 7.8: Income

Personal Income	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Less than $24,999	12.5%	13.8%	14.6%	13.1%	13.5%
$25,000 to $49,999	21.4%	21.4%	23.2%	21.3%	21.8%
$50,000 to $74,999	20.9%	22.7%	22.9%	21.1%	21.7%
$75,000 to $99,999	16.5%	16.6%	16.4%	16.3%	16.4%
$100,000 to $124,999	11.6%	10.2%	10.0%	11.7%	11.1%
$125,000 to $149,999	5.3%	5.2%	4.2%	5.6%	5.1%
$150,000 to $199,999	5.7%	4.7%	4.1%	4.5%	4.6%
$200,000 to $249,999	2.4%	2.3%	1.9%	2.7%	2.4%
$250,000 to $299,999	1.3%	1.1%	1.0%	1.3%	1.2%
$300,000 or more	2.4%	2.0%	1.7%	2.3%	2.1%
Valid N	5,103	2,891	7,372	10,346	25,648

[1] χ^2 (27, 25648) = 105.41 p < 0.05 Cramer's *V* = 0.06

Table 7.9: Rural land ownership

		Flyways				National
		Pacific	Central	Mississippi	Atlantic	
Do you own land in a rural area?[1]	Yes	28.3%	34.5%	38.2%	35.1%	34.6%
	No	71.7%	65.5%	61.8%	64.9%	65.4%
	Valid N	5,690	3,292	8,385	12,111	29,425
Acres of rural land owned[2]	Mean	949	530	336	508	525
	SD	6042.3	3982.4	3422.6	4439.5	4409.9
	Valid N	1,611	1,137	3,201	4,249	10,198

[1] χ^2 (3, 29425) = 147.72 p < 0.05 Cramer's *V* = 0.07
[2] F (3, 9523) = 6.57 p < 0.05 η^2 = 0.00

Table 7.10: Urban and rural residence

Current Residence	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Large urban area (500,000 or more)	30.5%	28.5%	16.9%	16.8%	20.7%
Medium urban area (50,000 to 499,999)	26.9%	25.4%	24.5%	20.6%	23.4%
Small city (10,000 to 49,999)	17.2%	15.9%	21.1%	22.1%	20.2%
Small town (2,000 to 9,999)	12.0%	11.5%	15.2%	23.6%	17.8%
Rural area (less than 2,000)	13.4%	18.8%	22.4%	16.9%	17.9%
Valid N	5,678	3,272	8,364	12,064	29,323

[1] χ^2 (12, 29323) = 1282.70 p < 0.05 Cramer's *V* = 0.21

Table 7.11: Urban and rural upbringing

Where Grew Up	Flyways[1]				National
	Pacific	Central	Mississippi	Atlantic	
Large urban area (500,000 or more)	26.4%	21.4%	18.5%	16.9%	19.6%
Medium urban area (50,000 to 499,999)	25.0%	25.1%	24.0%	22.0%	23.5%
Small city (10,000 to 49,999)	21.4%	19.1%	21.2%	23.6%	22.0%
Small town (2,000 to 9,999)	15.2%	16.0%	16.8%	23.3%	19.2%
Rural area (less than 2,000)	11.9%	18.3%	19.5%	14.2%	15.7%
Valid N	5,598	3,220	8,250	11,873	28,886

[1] χ^2 (12, 28886) = 588.94 p < 0.05 Cramer's *V* = 0.14

Section 8: Nonresponse Comparisons

8.1 Comparison of respondents and nonrespondents

To conduct a non-response assessment, we drew a proportional random sample of 16,000 non-respondents left in the initial sample. These 16,000 individuals were sent a shortened survey questionnaire the second week of April 2017 and asked to respond by mail. Completed non-response surveys were collected through May 31, 2017. Data on key questions concerning birdwatching experiences, identity, and demographics were collected from non-respondents to assess if there are any substantive differences between people who completed the full-length online survey and those who did not respond to it. A total of 3,730 (23.3%) individuals returned a completed non-response survey. Key questions concerning birdwatching experiences, identity, and demographics were collected from non-respondents to assess if there are any substantive differences between people who completed the complete survey and those who did not respond to it.

Respondents (R) and nonrespondents (NR) reported very similar participation patterns in nature-based activities with only negligible differences in activity participation (Table 8.1). A slightly smaller percentage of nonrespondents (96.4%) compared to respondents (99.6%) indicated that they ever participate in birdwatching or birding. The most notable differences were that a slightly larger percentage of respondents (76.1%) reported taking at least 1 trip 1 mile away from their home primarily for birdwatching compared to nonrespondents (70.1%). A larger percentage of respondents also reported photographing birds (R = 73%, NR = 64%), counting/monitoring birds (R = 73%, NR = 64%), and keeping a bird list (R = 82%, NR = 72%).

Larger percentages of respondents than nonrespondents tended to rate themselves toward “expert” in their ability to observe and identify birds and indicate that eBird was very important to them. These differences, while statistically significant, were negligible as indicated by effect size measures less than 0.1 (Table 8.2).

There were no differences in the race/ethnicity of respondents and nonrespondents (Table 8.3) and negligible differences in the population of the locations hey lived and their level of education. Notably, while 56% of respondents were female, 63% of nonrespondents were female (Table 8.3). While respondents did not differ income, the mean age of nonrespondents (60.4) was slightly older than respondents (58.5). On average, nonrespondents ($\bar{x}$ = 23.6 trips) also took about 9 fewer trips than respondents ($\bar{x}$ = 32.7 trips) at least 1 mile from their home primarily for birdwatching (Table 8.4).

There were only very minor differences reported by respondents and nonrespondents concerning their involvement and motivations for birdwatching, with respondents indicating that birdwatching was slightly more central to their lives and enjoyable to them. Nonrespondents had slightly higher mean scores on the role of nature while birdwatching. While statistically significant these differences were mostly negligible (Table 8.5).

Table 8.1: Comparison of respondents and nonrespondents on nature-based activities

		Nonrespondents	Respondents	χ^2	p	phi
In past 12 months, did you take any trips at least 1 mile or more from your home primarily for birdwatching?	Yes	70.1%	76.1%	60.72	0.000	0.04
	No	29.9%	23.9%			
	n	3516	32475			
Spending time in nature away from home	Yes	91.9%	95.4%	86.8	0.000	0.05
	No	8.1%	4.6%			
	n	3687	32506			
Viewing wildlife	Yes	98.2%	99.6%	102.1	0.000	0.05
	No	1.8%	0.4%			
	n	3701	32571			
Learning about nature	Yes	78.9%	82.9%	37.64	0.000	0.03
	No	21.1%	17.1%			
	n	3702	32291			
Backyard/at-home nature activities	Yes	95.4%	94.0%	12.18	0.000	0.02
	No	4.6%	6.0%			
	n	3713	32515			
Fishing (last 12 months)	Yes	26.2%	24.8%	3.57	0.059	0.01
	No	73.8%	75.2%			
	n	3689	30491			
Hunting other migratory birds (last 12 months)	Yes	4.0%	2.3%	41.56	0.000	0.04
	No	96.0%	97.7%			
	n	3684	30090			
Hunting other game birds (last 12 months)	Yes	4.1%	3.8%	1.14	0.285	0.01
	No	95.9%	96.2%			
	n	3684	30062			
Hunting any other game animals (last 12 months)	Yes	6.8%	6.8%	0.00	0.97	0.00
	No	93.2%	93.2%			
	n	3684	30180			

Table 8.1: Continued. Comparison of respondents and nonrespondents on nature-based activities

		Nonrespondents	Respondents	χ^2	p	phi
Watching birds at my home	Yes	99.6%	99.3%	2.92	0.088	0.01
	No	0.4%	0.7%			
	n	3719	32565			
Feeding birds at my home	Yes	91.60%	89.7%	12.94	0.000	0.02
	No	8.40%	10.3%			
	n	3717	32462			
Watching birds away from my home	Yes	93.5%	96.8%	110.14	0.000	0.06
	No	6.5%	3.2%			
	n	3700	32492			
Photographing or filming birds	Yes	64.3%	73.3%	132.69	0.000	0.06
	No	35.7%	26.7%			
	n	3695	32041			
Counting/monitoring birds	Yes	63.6%	72.8%	139.47	0.000	0.06
	No	36.4%	27.2%			
	n	3700	32192			
Keeping track of the birds you see on a list	Yes	72.0%	81.6%	196.03	0.000	0.07
	No	28.0%	18.4%			
	n	3706	32274			
Installing or maintaining next boxes for birds	Yes	54.5%	51.6%	10.79	0.001	0.02
	No	45.5%	48.4%			
	n	3696	32094			
Are you a member of the National Audubon Society?	Yes	35.1%	41.9%	64.07	0.000	0.04
	No	64.9%	58.1%			
	n	3706	29502			
Do you own land in a rural area?	Yes	41.6%	34.6%	69.77	0.000	0.05
	No	58.4%	65.4%			
	n	3691	29424			

Table 8.2: Comparison of respondents and nonrespondents on birdwatching skills, eBird participation, and birdwatching location

		Nonrespondents	Respondents	χ^2	p	Cramer's *V*
How would you rate your own ability to observe and identify birds?	Novice	3.9%	2.6%	245.2	0.000	0.06
	2	8.9%	6.3%			
	3	16.8%	12.8%			
	4	28.8%	24.7%			
	5	30.1%	33.7%			
	6	9.1%	16.0%			
	Expert	2.3%	4.0%			
	n	3497	30916			
How important is participating in eBird to you?						
	Not at all important	15.5%	10.8%	113.56	0.000	0.06
	Slightly important	36.2%	35.3%			
	Moderately important	32.2%	32.2%			
	Very important	16.1%	21.7%			
	n	3675	29501			
Other than home, where do most of your birdwatching activities occur?						
	Privately-owned lands with no general public access	4.9%	5.4%	116.98	0.00	0.06
	Publicly-accessible lands	83.4%	86.9%			
	I only watch birds at my home	11.0%	6.3%			
	I'm not sure	0.7%	1.4%			
	n	3433	30799			

Table 8.3: Comparison of respondents and nonrespondents on demographic characteristics

	Nonrespondents	Respondents	χ^2	p	Cramer's *V*
Where you live now			37.15	0.000	0.03
Large Urban area (500,000 or more)	17.7%	20.8%			
Medium Urban area (50,000 to 499,999)	23.0%	23.4%			
Small city (10,000 to 49,999)	19.7%	20.2%			
Small town (2,000 to 9,999)	18.1%	17.8%			
Rural area (less than 2,000)	21.4%	17.9%			
n	3680	29324			
Level of education					
Some high school or less	1.0%	0.7%	17.36	0.004	0.02
High school diploma or GED	3.9%	3.3%			
Some college (no degree)	11.0%	10.4%			
Associate's degree (2 years)	7.2%	6.2%			
Bachelor's degree (4 years)	31.6%	32.3%			
Graduate or professional school	45.3%	47.2%			
n	3691	29257			
Race/ethnicity					
Hispanic or Latino	1.4%	1.7%	1.76	0.185	0.01
Amer. Indian/Native American	2.9%	2.0%	13.76	0.000	0.02
Asian	1.2%	1.4%	0.78	0.377	0.01
Black or African American	0.5%	0.6%	0.11	0.738	0.00
Nat. Hawaiian or Pacific Islander	0.3%	0.2%	1.64	0.200	0.01
White	95.3%	95.0%	0.575	0.448	0.00
n	3729	29503			
Gender					
Male	37.0%	44.3%	69.98	0.000	0.05
Female	63.0%	55.7%			
n	3705	29260			

Table 8.4: Mean comparisons between respondents and nonrespondents for age, birding trips, and income

		n	$\bar{x}$	Std. Dev.	F	p	η^2
age	nonrespondents	3614	60.4	13.0	63.5	0.000	<0.01
	respondents	28815	58.5	13.6			
In the past 12 months, about how many trips at least 1 mile from your home did you take primarily for birdwatching?	nonrespondents	2439	23.6	46.2	57.87	0.000	0.01
	respondents	24505	32.7	56.7			
Personal income[1]	nonrespondents	3177	3.65	1.894	3.49	0.620	<0.01
	respondents	25648	3.58	2.076			

[1]Response categories ranged from 1 = less than $24,999 to 9 = $300,000 or more.

Table 8.5: Mean comparisons between respondents and nonrespondents on involvement and motivations for birdwatching

		n	$\bar{x}$[1]	Std. Dev.	F	p	η2
Developing my skills and abilities in birdwatching is important to me.	nonrespondents	3502	4.2	0.7	99.04	0.000	<0.01
	respondents	30967	4.0	0.8			
If I couldn't go birdwatching I am not sure what I would do instead.	nonrespondents	3499	2.5	1.1	0.05	0.819	<0.01
	respondents	30940	2.5	1.1			
Birdwatching has a central role in my life.	nonrespondents	3496	3.3	1.1	139.12	0.000	<0.01
	respondents	30948	3.5	1.1			
Birdwatching is one of the most enjoyable activities I do.	nonrespondents	3493	4.0	0.8	263.1	0.000	<0.01
	respondents	30960	4.2	0.8			
Challenging my birdwatching skills is important.	nonrespondents	3473	3.6	0.9	14.45	0.000	<0.01
	respondents	30942	3.6	0.9			
Most of my friends are in some way connected with birdwatching.	nonrespondents	3482	2.4	1.0	31.04	0.000	<0.01
	respondents	30944	2.5	1.0			
Using new techniques, technology and equipment to help me identify more birds is important to me.	nonrespondents	3502	3.1	1.0	141.58	0.000	0.01
	respondents	30983	3.4	1.0			
The sights and sounds of nature are important to birdwatching.	nonrespondents	3520	4.5	0.6	1.34	0.247	<0.01
	respondents	30950	4.5	0.6			

[1]Response scale for mean scores was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 8.5: Continued. Mean comparisons between respondents on nonrespondents on involvement and motivations for birdwatching

		n	$\bar{x}$ [1]	Std. Dev.	F	p	**η2**
Getting to enjoy the natural environment through birdwatching is important.	nonrespondents	3508	4.6	0.6	22.38	0.000	<0.01
	respondents	30975	4.5	0.7			
Getting a chance to add a new bird to my life list is important to me.	nonrespondents	3514	3.7	1.0	0.05	0.819	<0.01
	respondents	30970	3.7	1.0			
A lot of my life is organized around birdwatching.	nonrespondents	3514	2.6	1.1	344.7	0.000	0.01
	respondents	30936	3.0	1.1			
Being in nature is an important part of birdwatching.	nonrespondents	3518	4.6	0.6	25.76	0.000	<0.01
	respondents	30957	4.5	0.7			

[1]Response scale for mean scores was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Section 9: References

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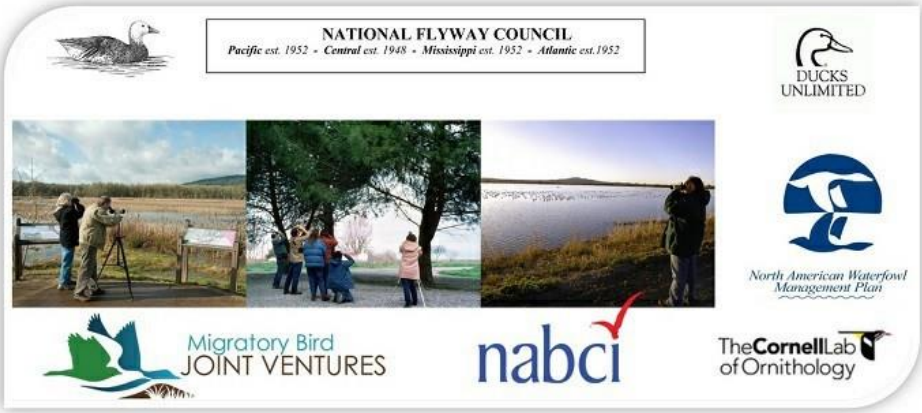
Section 10: Appendices

Appendix A: Survey Instrument

Start

NORTH AMERICAN BIRDWATCHING SURVEY



Thank you for participating in this study about birdwatching. You are one of only a relatively few people in your state being contacted to participate in this study. Your state wildlife management agency is helping to sponsor this study because it is important to them to understand your birdwatching experiences and what you think might improve them. We are working closely with eBird at the Cornell Lab of Ornithology, your state wildlife managers, the National Flyway Council, Migratory Bird Joint Ventures and the North American Bird Conservation Initiative to complete this study. The survey will take about 15-20 minutes to complete, and we greatly appreciate your time and effort. Your responses are very important to this study and will be used to help guide and improve the management of birds in North America in the future. Please be assured that your participation in the study, and all of your responses, will be kept confidential. You must be 18 or older to participate . Thank you for your help!

Please enter the your Access Code listed in the message we sent to you below:

Submit Personal Access Code:

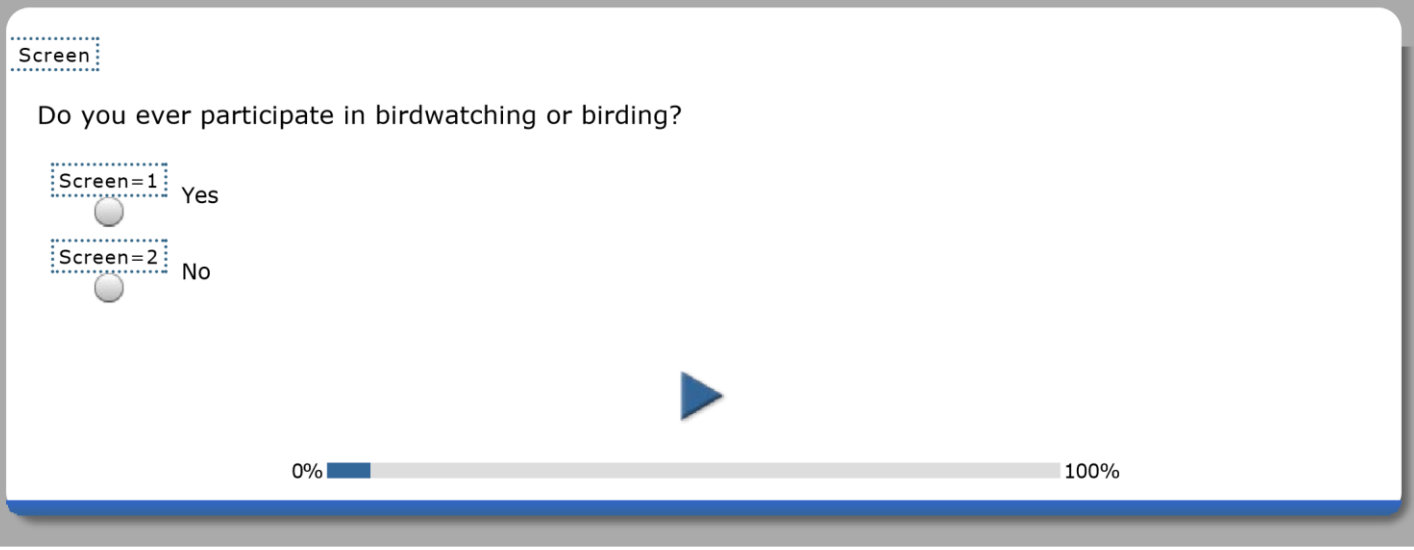
UNIVERSITY OF MINNESOTA
Driven to Discover℠

Please click on the blue arrow to move to the next page of the survey.

BIRDER

Birdwatching, and birding, are forms of wildlife observation in which the observation of birds is a recreational activity. They can be done with the naked eye, using binoculars and telescopes, or by listening for bird sounds. In this study, we are interested in the opinions and behaviors of everyone who specifically spends time viewing birds. We realize that there are different levels of participating in "birding" and "birdwatching". We are using the term **"birdwatching"** to refer to both activities and all levels of participation. We hope this does not cause any confusion for you in responding to our questions. Thanks for your help!

0% 100%


Screen
Do you ever participate in birdwatching or birding?
Screen=1
Yes
Screen=2
No
0%
100%

Q1

Q1. In the last 12 months, have you participated in the following nature-based activities? Please select "Yes" or "No" for each type of activity.

Yes	No	
Q1_r1=1	Q1_r1=2	Spending time in nature away from home (e.g., picnicking, relaxing in nature, camping)
Q1_r2=1	Q1_r2=2	Non-motorized outdoor recreation activities (e.g., hiking, backpacking, horseback riding, bicycling, rock climbing, skiing, swimming, canoeing and kayaking)
Q1_r3=1	Q1_r3=2	Motorized outdoor recreation activities (e.g., motorized boating, riding ATVs, snowmobiling)
Q1_r4=1	Q1_r4=2	Viewing wildlife (e.g., wildlife watching, birdwatching, bird feeding, wildlife photography)
Q1_r5=1	Q1_r5=2	Consumptive wildlife-based activities (e.g., hunting, fishing)
Q1_r6=1	Q1_r6=2	Learning about nature (e.g., attending festivals or lectures, visiting a nature center)
Q1_r7=1	Q1_r7=2	Backyard/at-home nature activities (e.g., gardening, landscaping)
Q1_r8=1	Q1_r8=2	Other (please specify if yes) Q1_r8_other

Please click on the blue arrow to move to the next page of the survey. You can also click on the back arrow to review questions.

0% 100%

Q2

Q2. In the **last 12 months**, which of the following activities related to wild birds did you participate in, if any? Please check either "Yes" or "No".

	Yes	No
Watching birds at my home	Q2_r1=1	Q2_r1=2
Feeding birds at my home	Q2_r2=1	Q2_r2=2
Watching birds away from my home	Q2_r3=1	Q2_r3=2
Photographing or filming birds	Q2_r4=1	Q2_r4=2
Counting/monitoring birds (e.g., Christmas or Backyard Bird Count)	Q2_r5=1	Q2_r5=2
Keeping track of the birds you see on a list, online or on paper	Q2_r6=1	Q2_r6=2
Installing or maintaining nest boxes for birds	Q2_r7=1	Q2_r7=2

0% 100%

Q3

Q3. In the **last 12 months**, did you participate in the following activities with the types of **wild birds** below? *Please check all that apply OR "I did not do these activities"*.

	In the last 12 months, I participated in . . .			
	Watching	Feeding	Photographing	I did not do these activities
Waterfowl (ducks, geese, etc.)	Q3_r1_c1	Q3_r1_c2	Q3_r1_c3	Q3_r1_c4
Other game birds (grouse, pheasant, turkey, etc.)	Q3_r2_c1	Q3_r2_c2	Q3_r2_c3	Q3_r2_c4
Water birds (shorebirds, herons, cranes, etc.)	Q3_r3_c1	Q3_r3_c2	Q3_r3_c3	Q3_r3_c4
Birds of prey (hawks, eagles, owls, etc.)	Q3_r4_c1	Q3_r4_c2	Q3_r4_c3	Q3_r4_c4
Hummingbirds	Q3_r5_c1	Q3_r5_c2	Q3_r5_c3	Q3_r5_c4
Song birds (warblers, sparrows, thrushes, finches, etc.)	Q3_r6_c1	Q3_r6_c2	Q3_r6_c3	Q3_r6_c4
Other birds (anything not mentioned)	Q3_r7_c1	Q3_r7_c2	Q3_r7_c3	Q3_r7_c4

0% 100%

Q4

Q4

In the past 12 months , did you take any trips at least 1 mile or more from your home primarily for birdwatching?

Q4=1 Yes

Q4=2 No

0% 100 %

Q5

Q5

In the past 12 months , about how many trips at least 1 mile from your home did you take primarily for birdwatching? (Please enter a number below).

0% 100 %

BirdwatchingDefn

Please remember as you answer the next questions that we are interested in the opinions and behaviors of everyone who specifically spends time viewing birds. We realize that there are different levels of participating in birding and birdwatching. We are using the term "birdwatching" to refer to both activities. Thanks for your help!

0% 100 %

introCBCq12

BIRDWATCHING CHOICES

Birdwatching experiences can vary across many different areas and situations. We are interested in knowing what experiences and conditions influence where you decide to watch birds on a given trip. On the next few pages, we present 10 different hypothetical comparisons of birdwatching experiences you could choose to have.

These experiences vary on 7 conditions:

1) **Diversity: How many kinds or species of birds you see**

2) **Rarity: Whether there are rare or unusual species of birds**

3) **Number of birds: The total number of birds you see**

4) **Ease of access: How difficult it is to get into and around the area**

5) **Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species**

6) **Naturalness: The degree to which the area is in a natural condition or has been developed**

7) **Travel distance: Total distance from home to the location (one-way)**

Some of these scenarios might seem unlikely to you, or neither option matches to what you would want to do, but we are still interested in understanding which described experiences you would choose. Your opinions about these comparisons will help managers better understand birdwatching preferences.

For each scenario, select the <u>one choice</u> you would make if these were your only options.

0% 100 %

BirdviewChoice_Random1

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(1 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 10 or fewer species	Observe 40 or more species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	Chance to see rare or unusual species	No rare or unusual species	
Number of birds: The total number of birds you see	Hundreds of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Difficult access with unpaved trails and paths	Easy access with paved trails and roads	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	No wetland habitats	Wetlands but NO waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Area is developed	Natural habitat and setting	
Travel distance: Total distance from home to the location (one-way)	200 miles	25 miles	
Choose one option	BirdviewChoice_Random1=1	BirdviewChoice_Random1=2	BirdviewChoice_Random1=3

BirdviewChoice_Random2

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(2 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 30 species	Observe 20 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species	Chance to see rare or unusual species	
Number of birds: The total number of birds you see	Thousands of birds	Thousands of birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands with waterfowl/wetland birds	No wetland habitats	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	50 miles	100 miles	
Choose one option	BirdviewChoice_Random2=1	BirdviewChoice_Random2=2	BirdviewChoice_Random2=3

BirdviewChoice_Random3

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(3 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 10 or fewer species	Observe 30 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	Chance to see rare or unusual species	No rare or unusual species	
Number of birds: The total number of birds you see	Less than 100 birds	Hundreds of birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Easy access with paved trails and roads	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands with waterfowl/wetland birds	Wetlands but NO waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	2 miles or less	25 miles	
Choose one option	BirdviewChoice_Random3=1	BirdviewChoice_Random3=2	BirdviewChoice_Random3=3

BirdviewChoice_Random4

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(4 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 40 or more species	Observe 20 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	Chance to see rare or unusual species	No rare or unusual species	
Number of birds: The total number of birds you see	Hundreds of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Easy access with paved trails and roads	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	No wetland habitats	Wetlands with waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	2 miles or less	50 miles	
Choose one option	BirdviewChoice_Random4=1	BirdviewChoice_Random4=2	BirdviewChoice_Random4=3

BirdviewChoice_Random5

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(5 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 30 species	Observe 20 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species	Chance to see rare or unusual species	
Number of birds: The total number of birds you see	Thousands of birds	Hundreds of birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Easy access with paved trails and roads	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands but NO waterfowl/wetland birds	Wetlands with waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	200 miles	100 miles	
Choose one option	BirdviewChoice_Random5=1	BirdviewChoice_Random5=2	BirdviewChoice_Random5=3

BirdviewChoice_Random6

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(6 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 40 or more species	Observe 10 or fewer species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species	Chance to see rare or unusual species	
Number of birds: The total number of birds you see	Thousands of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands but NO waterfowl/wetland birds	Wetlands but NO waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Area is developed	Natural habitat and setting	
Travel distance: Total distance from home to the location (one-way)	100 miles	25 miles	
Choose one option	BirdviewChoice_Random6=1	BirdviewChoice_Random6=2	BirdviewChoice_Random6=3

BirdviewChoice_Random7

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(7 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 10 or fewer species	Observe 30 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species	No rare or unusual species	
Number of birds: The total number of birds you see	Thousands of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Easy access with paved trails and roads	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	No wetland habitats	No wetland habitats	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	50 miles	2 miles or less	
Choose one option	BirdviewChoice_Random7=1	BirdviewChoice_Random7=2	BirdviewChoice_Random7=3

BirdviewChoice_Random8

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(8 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 40 or more species	Observe 20 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	Chance to see rare or unusual species	Chance to see rare or unusual species	
Number of birds: The total number of birds you see	Hundreds of birds	Thousands of birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands with waterfowl/wetland birds	Wetlands but NO waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Area is developed	Natural habitat and setting	
Travel distance: Total distance from home to the location (one-way)	200 miles	50 miles	
Choose one option	BirdviewChoice_Random8=1	BirdviewChoice_Random8=2	BirdviewChoice_Random8=3

BirdviewChoice_Random9

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(9 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 10 or fewer species	Observe 20 species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	No rare or unusual species	Chance to see rare or unusual species	
Number of birds: The total number of birds you see	Hundreds of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Easy access with paved trails and roads	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	Wetlands but NO waterfowl/wetland birds	No wetland habitats	
Naturalness: The degree to which the area is in a natural condition or has been developed	Area is developed	Natural habitat and setting	
Travel distance: Total distance from home to the location (one-way)	25 miles	100 miles	
Choose one option	BirdviewChoice_Random9=1	BirdviewChoice_Random9=2	BirdviewChoice_Random9=3

BirdviewChoice_Random10

If these were your only options, which would you choose?
Choose by clicking one of the buttons below:

(10 of 10)

	Option 1	Option 2	Would not go
Diversity: How many kinds or species of birds you see	Observe 20 species	Observe 40 or more species	NONE: I would not go if these were my only choices.
Rarity: Whether there are rare or unusual species of birds	Chance to see rare or unusual species	No rare or unusual species	
Number of birds: The total number of birds you see	Thousands of birds	Less than 100 birds	
Ease of access: How difficult it is to get into and around the area	Moderate access with some paved trails	Difficult access with unpaved trails and paths	
Wetlands: Whether the area contains wetland habitat (shallow ponds or marshes) and wetland species	No wetland habitats	Wetlands with waterfowl/wetland birds	
Naturalness: The degree to which the area is in a natural condition or has been developed	Natural habitat and setting	Area is developed	
Travel distance: Total distance from home to the location (one-way)	2 miles or less	200 miles	
Choose one option	BirdviewChoice_Random10=1	BirdviewChoice_Random10=2	BirdviewChoice_Random10=3

0% 100%

Q6

Q6

We are interested in knowing how much birdwatching means to you. Please indicate how much you disagree or agree with the following statements about your involvement in birdwatching. (Please select one response for each statement).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Developing my skills and abilities in birdwatching is important to me.	Q6_r6=1	Q6_r6=2	Q6_r6=3	Q6_r6=4	Q6_r6=5
If I couldn't go birdwatching I am not sure what I would do instead.	Q6_r5=1	Q6_r5=2	Q6_r5=3	Q6_r5=4	Q6_r5=5
Birdwatching has a central role in my life.	Q6_r3=1	Q6_r3=2	Q6_r3=3	Q6_r3=4	Q6_r3=5
Birdwatching is one of the most enjoyable activities I do.	Q6_r1=1	Q6_r1=2	Q6_r1=3	Q6_r1=4	Q6_r1=5
Challenging my birdwatching skills is important.	Q6_r9=1	Q6_r9=2	Q6_r9=3	Q6_r9=4	Q6_r9=5
Most of my friends are in some way connected with birdwatching.	Q6_r2=1	Q6_r2=2	Q6_r2=3	Q6_r2=4	Q6_r2=5
Using new techniques, technology and equipment to help me identify more birds is important to me.	Q6_r8=1	Q6_r8=2	Q6_r8=3	Q6_r8=4	Q6_r8=5
The sights and sounds of nature are important to birdwatching.	Q6_r11=1	Q6_r11=2	Q6_r11=3	Q6_r11=4	Q6_r11=5
Getting to enjoy the natural environment through birdwatching is important.	Q6_r12=1	Q6_r12=2	Q6_r12=3	Q6_r12=4	Q6_r12=5
Getting a chance to add a new bird to my life list is important to me.	Q6_r7=1	Q6_r7=2	Q6_r7=3	Q6_r7=4	Q6_r7=5
A lot of my life is organized around birdwatching.	Q6_r4=1	Q6_r4=2	Q6_r4=3	Q6_r4=4	Q6_r4=5
Being in nature is an important part of birdwatching.	Q6_r10=1	Q6_r10=2	Q6_r10=3	Q6_r10=4	Q6_r10=5

0% 100%

Q7

Q7

Do you have any of the following equipment that you *own primarily for birdwatching*? (Check all that apply).

Q7_1 ☐ Binoculars

Q7_2 ☐ Cameras

Q7_3 ☐ Spotting scopes

Q7_4 ☐ None of the above

Q8

Q8

How would you rate your own ability to observe and identify birds? Please respond on a scale where 1 = novice to 7 = expert.

1 (Novice)	2	3	4	5	6	7 (Expert)
Q8_r1=1 ○	Q8_r1=2 ○	Q8_r1=3 ○	Q8_r1=4 ○	Q8_r1=5 ○	Q8_r1=6 ○	Q8_r1=7 ○

0% 100%

Q9

Q9

We are interested in knowing how you participate in birdwatching. Please indicate how much you disagree or agree with each of the following statements about your involvement in birdwatching.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I tend to take photos of birds for the primary purpose of having someone help me identify them.	Q9_r3=1	Q9_r3=2	Q9_r3=3	Q9_r3=4	Q9_r3=5
I can readily identify many birds in the field by sound.	Q9_r2=1	Q9_r2=2	Q9_r2=3	Q9_r2=4	Q9_r2=5
I photograph birds as a way to watch them.	Q9_r6=1	Q9_r6=2	Q9_r6=3	Q9_r6=4	Q9_r6=5
I typically use binoculars to view birds.	Q9_r7=1	Q9_r7=2	Q9_r7=3	Q9_r7=4	Q9_r7=5
I often use websites, social media, or ID apps such as Merlin to identify birds.	Q9_r5=1	Q9_r5=2	Q9_r5=3	Q9_r5=4	Q9_r5=5
I tend to need to use a field guide (paper or electronic) to identify birds.	Q9_r4=1	Q9_r4=2	Q9_r4=3	Q9_r4=4	Q9_r4=5
I can identify most birds I see in the field.	Q9_r1=1	Q9_r1=2	Q9_r1=3	Q9_r1=4	Q9_r1=5
I tend to just watch birds without using any special equipment.	Q9_r9=1	Q9_r9=2	Q9_r9=3	Q9_r9=4	Q9_r9=5
I often use a camera instead of using binoculars.	Q9_r8=1	Q9_r8=2	Q9_r8=3	Q9_r8=4	Q9_r8=5
I use eBird to report my birdwatching experiences.	Q9_r10=1	Q9_r10=2	Q9_r10=3	Q9_r10=4	Q9_r10=5

0% 100%

Q10

Q10

Other than at your home, where do most of your birdwatching activities occur? (Please select only one).

Q10=1 Privately-owned lands with no general public access

Q10=2 Publicly-accessible lands

Q10=3 I only watch birds at my home

Q10=4 I'm not sure

0% 100%

Q10A

10 b

In which state do you go birdwatching most often? (Please select one state).

0% 100 %

Q11

Q11

To what extent are each of the following a barrier to your participation in birding/birdwatching ***in the next 12 months***? (Please select one response for each).

	Not at all a barrier	Slight barrier	Moderate barrier	Large barrier
Don't feel welcome in bird viewing areas	Q11_r1=1	Q11_r1=2	Q11_r1=3	Q11_r1=4
Areas are too crowded	Q11_r2=1	Q11_r2=2	Q11_r2=3	Q11_r2=4
Lack of birds in my area	Q11_r3=1	Q11_r3=2	Q11_r3=3	Q11_r3=4
Poor quality of the natural habitat in my area	Q11_r4=1	Q11_r4=2	Q11_r4=3	Q11_r4=4
Poor quality of facilities in my area	Q11_r5=1	Q11_r5=2	Q11_r5=3	Q11_r5=4
Don't have the skills	Q11_r6=1	Q11_r6=2	Q11_r6=3	Q11_r6=4
Don't have companions/people to go with	Q11_r7=1	Q11_r7=2	Q11_r7=3	Q11_r7=4
Public areas to go to are too far away	Q11_r8=1	Q11_r8=2	Q11_r8=3	Q11_r8=4
It costs too much to do	Q11_r9=1	Q11_r9=2	Q11_r9=3	Q11_r9=4
Don't have time to go	Q11_r10=1	Q11_r10=2	Q11_r10=3	Q11_r10=4
Don't feel safe in bird viewing areas	Q11_r11=1	Q11_r11=2	Q11_r11=3	Q11_r11=4
Restrictions on public lands due to hunting	Q11_r12=1	Q11_r12=2	Q11_r12=3	Q11_r12=4
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	Q11_r13=1	Q11_r13=2	Q11_r13=3	Q11_r13=4
Expense of access fees/permits	Q11_r14=1	Q11_r14=2	Q11_r14=3	Q11_r14=4

0% 100%

Q12

Q12

In the **last 12 months**, what fishing or hunting activities did you participate in, if any? *Please check "Yes" or "No" for each.*

	Yes	No
Fishing	Q12_r1=1	Q12_r1=2
Hunting waterfowl (ducks, geese, etc.)	Q12_r2=1	Q12_r2=2
Hunting other migratory birds (doves, woodcocks, rail, etc.)	Q12_r3=1	Q12_r3=2
Hunting other game birds (grouse, pheasant, etc.)	Q12_r4=1	Q12_r4=2
Hunting any other game animals (deer, elk, rabbit, etc.)	Q12_r5=1	Q12_r5=2
Other (specify if yes) Q12_r6_other	Q12_r6=1	Q12_r6=2

0% 100%

Q13

Q13

A person can think of themselves in a variety of ways. Please indicate the extent to which you identify yourself as a/an...(Select one for each).

	Not at all	Slightly	Moderately	Strongly	Very strongly
Birdwatcher	Q13_r1=1	Q13_r1=2	Q13_r1=3	Q13_r1=4	Q13_r1=5
Waterfowl Hunter	Q13_r2=1	Q13_r2=2	Q13_r2=3	Q13_r2=4	Q13_r2=5
Other Type of Hunter	Q13_r3=1	Q13_r3=2	Q13_r3=3	Q13_r3=4	Q13_r3=5
Conservationist	Q13_r4=1	Q13_r4=2	Q13_r4=3	Q13_r4=4	Q13_r4=5

0% 100%

Q14

Q14

We are interested in knowing about your "personal community" and whether you know people in certain kinds of occupations and people affiliated with certain types of organizations. Among your relatives, close friends, or acquaintances, are there people who participate in the following activities, have the following jobs or who belong to the following organizations? Also, would you classify yourself in any of the following areas? (Select all that apply for each row or leave blank for "no one" in that row).

	Acquaintance	Close Friend	Relative	Myself
Angler	Q14_r1_c1	Q14_r1_c2	Q14_r1_c3	Q14_r1_c4
Birdwatcher	Q14_r2_c1	Q14_r2_c2	Q14_r2_c3	Q14_r2_c4
Farmer/Rancher	Q14_r3_c1	Q14_r3_c2	Q14_r3_c3	Q14_r3_c4
National park manager/employee	Q14_r4_c1	Q14_r4_c2	Q14_r4_c3	Q14_r4_c4
Outdoor educator	Q14_r5_c1	Q14_r5_c2	Q14_r5_c3	Q14_r5_c4
State/provincial park manager/employee	Q14_r6_c1	Q14_r6_c2	Q14_r6_c3	Q14_r6_c4
Waterfowl hunter	Q14_r7_c1	Q14_r7_c2	Q14_r7_c3	Q14_r7_c4
Other type of hunter (e.g., small/big game)	Q14_r8_c1	Q14_r8_c2	Q14_r8_c3	Q14_r8_c4
State/provincial wildlife agency manager/employee	Q14_r9_c1	Q14_r9_c2	Q14_r9_c3	Q14_r9_c4
Federal wildlife agency manager/employee	Q14_r10_c1	Q14_r10_c2	Q14_r10_c3	Q14_r10_c4
Wildlife artist (amateur or professional)	Q14_r11_c1	Q14_r11_c2	Q14_r11_c3	Q14_r11_c4
Wildlife biologist	Q14_r12_c1	Q14_r12_c2	Q14_r12_c3	Q14_r12_c4
Wildlife photographer (amateur or professional)	Q14_r13_c1	Q14_r13_c2	Q14_r13_c3	Q14_r13_c4

Q14 is continued on the next screen.

0% 100%

Q14cont

Q14 (Continued). We are interested in knowing about your "personal community" and whether you know people in certain kinds of occupations and people affiliated with certain types of organizations. Among your relatives, close friends, or acquaintances, are there people who participate in the following activities, have the following jobs or who belong to the following organizations? Also, would you classify yourself in any of the following areas? (Select all that apply for each row or leave blank for "no one" in that row).

	Acquaintance	Close Friend	Relative	Myself
Member of a fishing/conservation organizations (e.g., Trout Unlimited; Izaak Walton)	Q14cont_r1_c1	Q14cont_r1_c2	Q14cont_r1_c3	Q14cont_r1_c4
Member of birding and birdwatching groups (e.g., American Birding Association)	Q14cont_r2_c1	Q14cont_r2_c2	Q14cont_r2_c3	Q14cont_r2_c4
Member of bird conservation groups (e.g., National Audubon Society, including local chapters; American Bird Conservancy, Cornell Lab, bird observatories)	Q14cont_r3_c1	Q14cont_r3_c2	Q14cont_r3_c3	Q14cont_r3_c4
Member of ornithological societies and groups (e.g., Western field ornithologist, National or regional ornithological societies)	Q14cont_r4_c1	Q14cont_r4_c2	Q14cont_r4_c3	Q14cont_r4_c4
Member of Ducks Unlimited	Q14cont_r5_c1	Q14cont_r5_c2	Q14cont_r5_c3	Q14cont_r5_c4
Member of Delta Waterfowl	Q14cont_r6_c1	Q14cont_r6_c2	Q14cont_r6_c3	Q14cont_r6_c4
Member of state or regional waterfowl association	Q14cont_r7_c1	Q14cont_r7_c2	Q14cont_r7_c3	Q14cont_r7_c4
Member of a hunting/conservation organizations not focused on waterfowl (e.g., National Wild Turkey Federation, Rocky Mountain Elk Foundation)	Q14cont_r8_c1	Q14cont_r8_c2	Q14cont_r8_c3	Q14cont_r8_c4
Member of other local/regional conservation organizations	Q14cont_r9_c1	Q14cont_r9_c2	Q14cont_r9_c3	Q14cont_r9_c4
Member of a local naturalist organizations	Q14cont_r10_c1	Q14cont_r10_c2	Q14cont_r10_c3	Q14cont_r10_c4
Member of other national/international conservation organizations (e.g., The Nature Conservancy, Sierra Club, World Wildlife Fund)	Q14cont_r11_c1	Q14cont_r11_c2	Q14cont_r11_c3	Q14cont_r11_c4

Q15

Q15

Please indicate your involvement with the following organizations in the past 12 months. Please indicate your level of involvement in each even if you were not a member.

	No Involvement	Slight Involvement	Moderate Involvement	High Involvement
Birding and birdwatching groups (e.g, American Birding Association)	Q15_r1=1	Q15_r1=2	Q15_r1=3	Q15_r1=4
Bird conservation groups (e.g., National Audubon society, including local chapters; American Bird Conservancy, Cornell Lab, bird observatories)	Q15_r2=1	Q15_r2=2	Q15_r2=3	Q15_r2=4
Ornithological societies and groups (e.g., Western field ornithologist, National or regional ornithological societies)	Q15_r3=1	Q15_r3=2	Q15_r3=3	Q15_r3=4
Local naturalist organizations	Q15_r4=1	Q15_r4=2	Q15_r4=3	Q15_r4=4

Q16

Q16

How much do you trust the following organizations to keep your best interest in mind as a birdwatcher? (Select one for each organization).

	Do not trust at all	Trust a little	Trust somewhat	Trust a lot	Trust completely
State wildlife agencies	Q16_r1=1	Q16_r1=2	Q16_r1=3	Q16_r1=4	Q16_r1=5
Federal wildlife and land management agencies	Q16_r2=1	Q16_r2=2	Q16_r2=3	Q16_r2=4	Q16_r2=5
Elected officials	Q16_r3=1	Q16_r3=2	Q16_r3=3	Q16_r3=4	Q16_r3=5
Waterfowl hunting/conservation organizations	Q16_r4=1	Q16_r4=2	Q16_r4=3	Q16_r4=4	Q16_r4=5
Birding/bird conservation organizations	Q16_r5=1	Q16_r5=2	Q16_r5=3	Q16_r5=4	Q16_r5=5
Other conservation organizations	Q16_r6=1	Q16_r6=2	Q16_r6=3	Q16_r6=4	Q16_r6=5
University researchers/scientists	Q16_r7=1	Q16_r7=2	Q16_r7=3	Q16_r7=4	Q16_r7=5

0% 100%

Q17

Q17

Please indicate how much money you personally donated to the following causes in the past 12 months. (Select one for each).

Total amount donated in $	$0	Less than $250	$250 to $999	$1000 to $2499	$2500 to $4999	$5000 to $9999	$10,000 or more
Wetland and/or waterfowl conservation	Q17_r1=1	Q17_r1=2	Q17_r1=3	Q17_r1=4	Q17_r1=5	Q17_r1=6	Q17_r1=7
Conservation of other bird species	Q17_r2=1	Q17_r2=2	Q17_r2=3	Q17_r2=4	Q17_r2=5	Q17_r2=6	Q17_r2=7
Birdwatching and related issues	Q17_r3=1	Q17_r3=2	Q17_r3=3	Q17_r3=4	Q17_r3=5	Q17_r3=6	Q17_r3=7
Waterfowl hunting and hunting related issues	Q17_r4=1	Q17_r4=2	Q17_r4=3	Q17_r4=4	Q17_r4=5	Q17_r4=6	Q17_r4=7

Q18a

Q18a

Please identify which of the following fees/permit options you have purchased in the past 12 months in order to access lands for birdwatching (Select "Yes" or "No" for each):

	Yes	No
Federal Migratory Bird Hunting and Conservation Stamp (Federal Duck Stamp)	Q18a_r1=1	Q18a_r1=2
National Wildlife Refuge access fees	Q18a_r2=1	Q18a_r2=2
State Park access permit or fee	Q18a_r3=1	Q18a_r3=2
State Wildlife Management Area access permit or fee	Q18a_r4=1	Q18a_r4=2
County/Local Conservation Land access fees	Q18a_r5=1	Q18a_r5=2
Access fees for land owned by non-governmental conservation organizations	Q18a_r6=1	Q18a_r6=2
National Park pass	Q18a_r7=1	Q18a_r7=2

0% 100%

Q18b

Q18b

Please identify which of the following fees/permit options you would be willing to pay in the next 12 months in order to access those lands for birdwatching (Select "Yes" or "No" for each):

	Yes	No
Federal Migratory Bird Hunting and Conservation Stamp (Federal Duck Stamp)	Q18b_r1=1	Q18b_r1=2
National Wildlife Refuge access fees	Q18b_r2=1	Q18b_r2=2
State Park access permit or fee	Q18b_r3=1	Q18b_r3=2
State Wildlife Management Area access permit or fee	Q18b_r4=1	Q18b_r4=2
County/Local Conservation Land access fees	Q18b_r5=1	Q18b_r5=2
Access fees for land owned by non-governmental conservation organizations	Q18b_r6=1	Q18b_r6=2
National Park pass	Q18b_r7=1	Q18b_r7=2

0% 100%

Q19

Q19

Do you purchase a state migratory bird/duck stamp or a state habitat stamp to assist conservation efforts?

Q19=1 Buy a stamp primarily to assist conservation and not to hunt

Q19=2 Buy a stamp but primarily for hunting

Q19=3 No, I do not buy a stamp

Q19b

In the next 12 months, would you be willing to purchase a state migratory bird/duck stamp or a state habitat stamp to assist conservation efforts?

Q19b=1 Would buy a stamp primarily to assist conservation and not to hunt

Q19b=2 Would buy a stamp but primarily for hunting

Q19b=3 No, I would not buy a stamp

Q20

Q20

Please indicate your level of involvement in the following **conservation and wildlife-related** activities ***in the last 12 months***. (Please select one for each activity).

	Never	Rarely	Sometimes	Often	Very often
Made my yard or land more desirable to wildlife	Q20_r1=1	Q20_r1=2	Q20_r1=3	Q20_r1=4	Q20_r1=5
Volunteered to improve wildlife habitat in my community	Q20_r2=1	Q20_r2=2	Q20_r2=3	Q20_r2=4	Q20_r2=5
Talked to others in my community about conservation issues	Q20_r3=1	Q20_r3=2	Q20_r3=3	Q20_r3=4	Q20_r3=5
Participated as an active member in a nature, outdoor, or conservation group	Q20_r4=1	Q20_r4=2	Q20_r4=3	Q20_r4=4	Q20_r4=5
Donated money to support wildlife/habitat conservation	Q20_r5=1	Q20_r5=2	Q20_r5=3	Q20_r5=4	Q20_r5=5

Q21

Q21

Please indicate your level of involvement in the following **wetlands or waterfowl conservation** activities ***in the last 12 months***. (Please select one for each activity).

	Never	Rarely	Sometimes	Often	Very often
Worked on land improvement projects related to wetlands or waterfowl conservation	Q21_r1=1	Q21_r1=2	Q21_r1=3	Q21_r1=4	Q21_r1=5
Attended meetings about wetlands or waterfowl conservation	Q21_r2=1	Q21_r2=2	Q21_r2=3	Q21_r2=4	Q21_r2=5
Volunteered my personal time and effort to conserve wetlands or waterfowl	Q21_r3=1	Q21_r3=2	Q21_r3=3	Q21_r3=4	Q21_r3=5
Contacted elected officials or government agencies about wetlands or waterfowl conservation	Q21_r4=1	Q21_r4=2	Q21_r4=3	Q21_r4=4	Q21_r4=5
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	Q21_r5=1	Q21_r5=2	Q21_r5=3	Q21_r5=4	Q21_r5=5
Advocated for political action to conserve wetlands or waterfowl	Q21_r6=1	Q21_r6=2	Q21_r6=3	Q21_r6=4	Q21_r6=5

0% 100%

IntroEGS

Your Opinions about Wetlands

In this section we would like to know what you think about wetlands.

Wetlands include swamps, marshes, bogs, shallow ponds (less than 6 feet deep), and shallow areas on lakeshores and seashores. Some wetlands are only wet some of the year, while others are wet year round. They can be in cities or in rural areas and can be the size of a basketball court or cover several square miles.

Q22

Q22

Do you know of any wetlands in your local area or community? (Please check only one).

Q22=1 Yes

Q22=2 No

Q23

Q23

Have you visited any wetlands ***in the last 12 months***? (Please check only one).

Q23=1 Yes

Q23=2 No

Q24

Q24

Wetlands perform a variety of functions which are beneficial to people. When wetlands are lost or degraded, these benefits can be greatly reduced or disappear altogether. Below is a list of benefits that are threatened due to loss of wetlands. How concerned would you be if the following benefits were reduced in your community due to a loss of wetlands? (Please select one response for each benefit).

Benefit	Not at all concerned	Slightly concerned	Somewhat concerned	Very concerned
A. Flooding protection	Q24_r1=1	Q24_r1=2	Q24_r1=3	Q24_r1=4
B. Erosion protection	Q24_r2=1	Q24_r2=2	Q24_r2=3	Q24_r2=4
C. Wildlife viewing and birdwatching	Q24_r3=1	Q24_r3=2	Q24_r3=3	Q24_r3=4
D. Hunting opportunities	Q24_r4=1	Q24_r4=2	Q24_r4=3	Q24_r4=4
E. Storage of greenhouse gases, such as carbon	Q24_r5=1	Q24_r5=2	Q24_r5=3	Q24_r5=4
F. Clean water	Q24_r6=1	Q24_r6=2	Q24_r6=3	Q24_r6=4
G. Clean air	Q24_r7=1	Q24_r7=2	Q24_r7=3	Q24_r7=4
H. Providing a home for wildlife	Q24_r8=1	Q24_r8=2	Q24_r8=3	Q24_r8=4
I. Providing a home for animals such as butterflies and bees that pollinate plants and crops	Q24_r9=1	Q24_r9=2	Q24_r9=3	Q24_r9=4
J. Scenic places for inspiration or spiritual renewal	Q24_r10=1	Q24_r10=2	Q24_r10=3	Q24_r10=4

Q25

Q25

Which of the wetlands benefits listed on the previous page would you be substantially reduced in your community? Please select the benefit you are losing.

most concerned about being most concerned about

Q25a

Which of the wetlands benefits listed on the previous page would you be substantially reduced in your community? Please select the benefit you are losing. *Be sure to select a different benefit than you selected above.*

least concerned about being least concerned about

0% 100 %

Introaboutyou

About You

To help us compare your responses to those of others, we have some questions about you. Please be assured that all of your answers will remain completely confidential.

Q26eBird

Q26

How important is participating in eBird to you?

Q26eBird=1 Not at all Important

Q26eBird=2 Slightly Important

Q26eBird=3 Moderately Important

Q26eBird=4 Very Important

Q26Aud

Are you a member of the National Audubon Society?

Q26Aud=1 Yes

Q26Aud=2 No

Q27

Q27

In what year were you born? (Enter the last 2 digits)

Year 19:

Q28

Q28

Are you . . . ?

Q28=1 Male

Q28=2 Female

Q29

Q29

What is the highest level of education you have completed? (Please select one).

Q30

Q30

Is a nature-related profession (such as farming, fisheries, forestry, environmental science, or conservation) the primary source of your **PERSONAL** income? (Please select one).

Q30=1 Yes

Q30=2 No

Q31

Q31

Do you own land in a rural area (outside of an urban or suburban area)?

Q31=1 Q31_1_other Yes--if so, how many acres do you own in total

Q31=2 No

0% 100%

Q32

Q32

Which of these categories best describes the place where you live now and where you lived during most of the time you were growing up (that is, until age 16)? (Please select only one in each row).

	Large urban area (population 500,000 or more)	Medium Urban area (population between 50,000 and 499,999)	Small city (population between 10,000 and 49,999)	Small town (population between 2,000 and 9,999)	Rural area (population less than 2,000)
Where you live now	Q32_r1=1	Q32_r1=2	Q32_r1=3	Q32_r1=4	Q32_r1=5
Where you grew up	Q32_r2=1	Q32_r2=2	Q32_r2=3	Q32_r2=4	Q32_r2=5

Q33

Q33

Please indicate which of the following categories applies to your total **personal** income for last year? (Please select one).

Q34

Q34

What ethnicity do you consider yourself? (Please select only one).

- Q34=1 Hispanic or Latino
- Q34=2 Not Hispanic or Latino

Q35

Q35

From what racial origin(s) do you consider yourself? (Please select all that apply).

- Q35_1 American Indian or Native Alaskan
- Q35_2 Asian
- Q35_3 Black or African American
- Q35_4 Native Hawaiian or other Pacific Islander
- Q35_5 White

Q36

Q36

In which state do you currently live? (Please select one state).

Comments

Please let us know about any key concerns you might have with any portion of the survey. When you page foward you will submit your answers, and move to the website of the North American Bird Conservation Initiative. **Thanks very much for your comments and the time and effort you have put into helping us with the review!**

donotbird

Thank you for your interest. At this time we are just trying to obtain responses from active birdwatchers.

0% 100 %

surveyend

Note:

When respondents take the survey in regular mode this page will not be displayed. Respondents will be redirected to the link below:

http://nabci-us.org/thanks-participating-birdwatcher-survey/

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0% 100%

Appendix B: Non-response Survey Instrument

Format Adjusted

<IDNUM> **North American Birdwatching Survey**

1. Do you ever participate in birdwatching or birding? (*Check only one*)
❒ YES
❒ NO →***GO TO QUESTION 7***

2. **In the past 12 months**, did you take any trips at least 1 mile or more from your home primarily for birdwatching?
❒ YES
❒ NO →***GO TO QUESTION 4***

3. **In the past 12 months,** about how many trips at least 1 mile from your home did you take primarily for birdwatching?
_____ (write in number)

4. How would you rate your own ability to observe and identify birds? Please respond on a scale where 1= novice to 7 = expert. (*Please circle one number*).

Novice						**Expert**
1	**2**	**3**	**4**	**5**	**6**	**7**

5. Other than at your home, where do most of your birdwatching activities occur? (Please select only one).

- ❒ Privately-owned lands with no general public access
- ❒ Publicly-accessible lands
- ❒ I only watch birds at my home
- ❒ I'm not sure

6. We are interested in knowing how much birdwatching means to you. Please indicate how much you disagree or agree with the following statements about your involvement in birdwatching. (Check one for each)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Developing my skills and abilities in birdwatching is important to me.	❒	❒	❒	❒	❒
If I couldn't go birdwatching I am not sure what I would do instead.	❒	❒	❒	❒	❒
Birdwatching has a central role in my life.	❒	❒	❒	❒	❒
Birdwatching is one of the most enjoyable activities I do.	❒	❒	❒	❒	❒
Challenging my birdwatching skills is important.	❒	❒	❒	❒	❒
Most of my friends are in some way connected with birdwatching.	❒	❒	❒	❒	❒
Using new techniques, technology and equipment to help me identify more birds is important to me.	❒	❒	❒	❒	❒
The sights and sounds of nature are important to birdwatching.	❒	❒	❒	❒	❒
Getting to enjoy the natural environment through birdwatching is important.	❒	❒	❒	❒	❒
Getting a chance to add a new bird to my life list is important to me.	❒	❒	❒	❒	❒
A lot of my life is organized around birdwatching.	❒	❒	❒	❒	❒
Being in nature is an important part of birdwatching.	❒	❒	❒	❒	❒

7. **In the last 12 months**, have you participated in the following nature-based activities? *Please check Yes or No for each.*

❒ Yes ❒ No	Spending time in nature away from home (e.g., picnicking, relaxing in nature, camping, hiking, climbing)
❒ Yes ❒ No	Viewing wildlife (e.g., wildlife watching, bird watching, bird feeding, wildlife photography)
❒ Yes ❒ No	Learning about nature (e.g., attending festivals or lectures, visiting a nature center)
❒ Yes ❒ No	Backyard/at-home nature activities (e.g., gardening, landscaping)
❒ Yes ❒ No	Fishing
❒ Yes ❒ No	Hunting other migratory birds (doves, woodcock, rail, etc.)
❒ Yes ❒ No	Hunting other game birds (grouse, pheasants)
❒ Yes ❒ No	Hunting all other game animals (deer, elk, rabbit, etc.)
❒ Yes ❒ No	Watching birds at my home
❒ Yes ❒ No	Feeding birds at my home
❒ Yes ❒ No	Watching birds away from my home
❒ Yes ❒ No	Photographing or filming birds
❒ Yes ❒ No	Counting/monitoring birds (e.g., Christmas or Backyard Bird Count)
❒ Yes ❒ No	Recording the birds you see on a list, online or on paper
❒ Yes ❒ No	Installing or maintaining nest boxes for birds

8. How important is participating in eBird to you? (*Check one*)

- ❒ Not at all important
- ❒ Slightly Important
- ❒ Moderately Important
- ❒ Very Important

9. Are you a member of the National Audubon Society? (*Check one*)

- ❒ YES
- ❒ NO

About You To help us compare your responses to those of others, we have some questions about you. Please be assured that all of your answers will remain completely confidential.

10. In what year were you born? 19_____

11. Are you…? ❒ Male ❒ Female

12. What is the highest level of education you have completed? (*Check one).*

❒ Some high school or less
❒ High school diploma or GED
❒ Some college (no degree)
❒ Associate's degree (2 years)
❒ Bachelor's degree (4 years)
❒ Graduate or professional school

13. Do you own land in a rural area (outside of an urban or suburban area)?

❒ No ❒ Yes → **If YES how many acres do you own in total**
_____ACRES

14. Which of these categories best describes the place where you live now? (*Check one*)

❒ Large urban area (population of 500,000 or more)
❒ Medium urban area (population between 50,000 and 499,999)
❒ Small city (population between 10,000 and 49,999)
❒ Small town (population between 2,000 and 9,999)
❒ Rural area (population less than 2,000)

15. Please indicate which of the following categories applies to your personal income for the last 12 months? *(Check one).*

❒ Less than $24,999
❒ $25,000-$49,999
❒ $50,000-$74,999
❒ $75,000-$99,999
❒ $100,000-$149,999
❒ $150,000-$199,999
❒ $200,000-$249,999
❒ $250,000-$299,999
❒ $300,000 or more

16. What ethnicity do you consider yourself? (*Check one).*

❒ Hispanic or Latino
❒ Not Hispanic or Latino

17. From what racial origin(s) do you consider yourself? (*Please <u>check all that apply</u>).*

❒ American Indian or Alaskan Native
❒ Asian
❒ Black or African American
❒ Native Hawaiian or other Pacific Islander
❒ White

18. Please let us know why you chose not to complete the survey online earlier? *(Check all that apply)*

- ❒ I didn't receive or notice the e-mail invitation
- ❒ I seldom or do not use the e-mail address provided to eBird
- ❒ I couldn't open the website even though I have internet access
- ❒ I didn't have time to complete the study earlier
- ❒ I was concerned that the invitation was a phishing scam
- ❒ I don't watch birds
- ❒ I didn't think the survey applied to me

Appendix C: Contact E-mails

Participate in the birdwatcher survey.

November 16, 2016

Is this email not displaying correctly?
View it in your browser.

UNIVERSITY OF MINNESOTA
Driven to Discover℠

College of Food, Agricultural and Natural Resource Sciences

Dear ,

We are contacting you to ask for your help in a national study of birding and birdwatching. The University of Minnesota and eBird at the Cornell Lab of Ornithology are working closely with the National Flyway Council (NFC), the North American Bird Conservation Initiative (NABCI), and your state wildlife agency to complete this study. We are contacting you because you participate in birding or birdwatching, and we believe you have an important point-of-view to share about bird conservation.

The survey will only take about 15 minutes to complete. To begin the survey, please click on this link:

Birdwatcher Survey

And then type in the following Access Code: JSY5526

This survey is confidential. Your participation is voluntary, and if you come to any question you prefer not to answer please skip it and go on to the next.

If you should have any questions please e-mail us at umn.birdwatcher@gmail.com or call 612-625-3718 and leave a detailed message.

Your participation is very important to the study and will help improve bird management and conservation across North America. We greatly appreciate your help with this study!

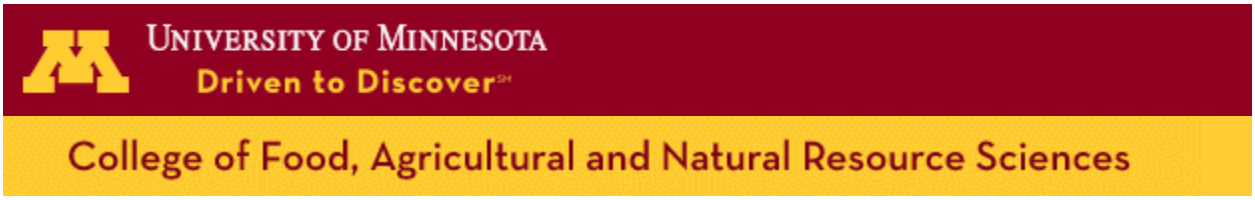
This message was sent from:
CFANS Research
1420 Eckles Avenue

St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

November 21, 2016

Is this email not displaying correctly?
View it in your browser.



Dear ,

Recently, we sent you an e-mail asking you to complete an online survey about your experiences birding or birdwatching. We are collaborating with the folks at eBird at the Cornell Lab of Ornithology on the study. If you have completed this survey, we would like to thank you very much. We truly appreciate your help.

If you have not answered the questionnaire yet, we'd like to urge you to do so. It should only take about 15 minutes to complete. Simply click on the link below and use your access code to begin answering questions:

Birdwatcher Survey

Access Code: NPJUB33

This first of its kind nationwide study is important to anyone concerned with bird management and conservation. Results will be used in planning to help improve bird management and conservation across North America.

If you should have any questions please e-mail the study director atumn.birdwatcher@gmail.com or call 612-625-3718 and leave a detailed message.

Your response is voluntary, and we greatly appreciate your help on this study!

This message was sent from:
CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

November 30, 2016

Is this email not displaying correctly?
View it in your browser.

UNIVERSITY OF MINNESOTA
Driven to Discover℠

College of Food, Agricultural and Natural Resource Sciences

Dear ,

A few days ago we sent an e-mail to you asking for your participation in a study of birding and birdwatching. If you completed it, thank you! If not we hope you can now.

We hope that providing the link to the survey makes it easier for you to respond. To begin the survey, simply click on this link:

Birdwatcher Survey

And then type in the following Access Code: 6HDW3G2

We had reports that some folks could not complete the survey due to the volume of response at the server. If you encounter a server error while taking the survey, you can return later and complete it from where you left off.

Your participation is very important to the study and will help improve bird management and conservation across North America.

Your response is voluntary, and we greatly appreciate your help on this study!

This message was sent from:
CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

December 7, 2016

Is this email not displaying correctly?
View it in your browser.

UNIVERSITY OF MINNESOTA
Driven to Discover℠

College of Food, Agricultural and Natural Resource Sciences

Dear ,

In November we contacted you asking for your help with the North American Birdwatching Survey. We are writing to you again because our ability to better understand birdwatching depends on hearing back from those people who have not yet responded. We need your help to ensure the results are as representative as possible.

If you have not answered the questionnaire yet, we ask that you do so now. To complete the study, click on the secure web address link below and use your access code to begin answering questions:

http://birdwatcher-survey.org/login.html

Access Code: GH5TAYG

The survey is hosted at our vendor's (Sawtooth Software) server and does not have anUMN.EDU address for that reason.

Responses to this survey are confidential and will not be connected to you in any reports of the data. If you should have any questions please e-mail the study director, Jason Spaeth, atbirdsurvey@umn.edu or call 612-625-3718 and leave a detailed message.

Thank you so much for considering this request, we greatly appreciate your help on this study!

This message was sent from:
CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

Is this email not displaying correctly?
View it in your browser.

December 15, 2017

UNIVERSITY OF MINNESOTA
Driven to Discover℠

College of Food, Agricultural and Natural Resource Sciences

Dear ,

We are writing to follow up on the message we sent last week asking you to participate in the North American Birdwatching Survey. This study is drawing to a close, and we really would like to hear from you before we run out of time.

The URL link and your personal access code are included below to provide an easy link to the survey website:

http://birdwatcher-survey.org/login.html

Access Code: 427WK86

We truly hope you will be able to share your opinions with us!

This message was sent from:
CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Appendix D: Institutional Review Board Determination

Route this form to:	U Wide Form: UM 1571
See instructions below.	June 2014

UNIVERSITY OF MINNESOTA

DETERMINATION OF HUMAN SUBJECT RESEARCH

Version 1.2

Updated June 2014, check http://www.irb.umn.edu for the latest version

This form is used to help researchers determine if a project requires IRB review. It also provided documentation that the IRB has reviewed the project description and issued a determination.

Additional information that may assist you in determining whether or not to submit an application can be found on the IRB website. See Does My Research Need IRB Review? and Guidance and FAQs IRB Review of Exempt Research.

Please allow up to five (5) business days for review and response.

Email completed form to irb@umn.edu

Based on the information provided, this project does not meet the regulatory definition of human subjects research. Additional IRB review is NOT required.

Project Title

Provide the grant title below if the project is funded.

Assessing the preferences of stakeholders and waterfowl management professionals to inform the implementation of the North American Waterfowl Management Plan

Section 1 Contact Information

Name (last name, First name MI)	Highest Earned Degree:
Fulton, David C.	PhD

Preferred contact information: dcfulton@umn.edu

Preferred email at which you may be contacted by IRB staff.

Affiliation and contact information

☒ University of Minnesota ☐ Fairview ☐ Gillette

U of M Required Contact information	**U of M Internet ID (x.500):**	dcfulton
	University Department:	FWCB

Section 2 Summary of Activities

2.1 Provide a brief description of your project. Include a description of what any participants will be asked to do and a description of the data accessed and/or collected (1,000 character limit).

Individuals will be asked to complete an online survey focused on waterfowl hunting regulations, conditions that influence the choice of waterfowl hunting or bird viewing recreational trips, importance of hunting and viewing, beliefs about wetland conservation, and some demographics including income within broad categories. We are targeting 10,000 completed surveys nationwide. The data will be aggregated at the regional and national levels and market analysis will be condcted to better understand the preferences for hunting and viewing experiences among different segments of the study population. Thi sinformation will be used to help set objectives for national level management plans of waterfowl, wetlands, and other bird species related to wetlands.

2.2 Are all of the data used in this project publicly available, e.g. blog, aggregate data, etc.?

Yes ☒ No

Section 3 Is this Project Human Subjects Research as Defined by Federal Regulations?

Research is defined in the Code of Federal Regulations, 45CFR46.102(d), as *a systematic investigation designed to develop or contribute to generalizable knowledge*

The Belmont report states "...the term 'research' designates an activity designed to test a hypothesis or answer a research question(s) [and] permit conclusions to be drawn... Research is usually described in a formal protocol that sets forth an objective and a set of procedures to reach that objective."

Research generally does **not** include operational activities such as routine outbreak investigations and disease monitoring and studies for internal management purposes such as program evaluation, quality assurance, quality improvement, fiscal or program audits, marketing studies or contracted-for services.

Generalizable knowledge is information where the intended use of the research findings can be applied to populations or situations beyond that studied. Note that publishing the results of a project does not automatically meet the definition of generalizable knowledge.

3.1 **Do you have a specific research question or hypothesis?**

☒ Yes No

3.2 **Is your primary intent to generate knowledge that can be applied broadly to the group/condition under study?**

☒ Yes No

Human subject is defined in the Code of Federal Regulations, 45CFR46.102(f)(1or2), as a living individual *about whom* an investigator obtains data through intervention or interaction or identifiable private information.

The specimen(s)/data/information must be collected from or be **about** live subjects. Research on cadavers, autopsy specimens or specimens/information from subjects now deceased is not human subjects research.

3.3 **Does this project involve intervention or interaction with a living individual or group of individuals? (e.g. confidential surveys, interviews, medical or educational testing)**

☒ Yes No

3.4 **Does this project involve access to identifiable private data or specimens from living individuals?**

Yes ☒ No

3.5 **Does this project consist exclusively of interviewing or surveying subjects about his/her area of expertise, with a focus on policies, practices, and/or procedures (e.g. the collected data does not focus on personal opinion or private information)?**

☒ Yes No

3.6 **Is the project meant to record the stories, knowledge or experiences of individuals? Oral histories typically do not intend to answer a research question or hypothesis.**

☐ Yes ☒ No

If a protocol exists for this project it must be submitted for review. Submit this request along with any supplemental documents that may aid in review of your project to the University of Minnesota IRB at irb@umn.edu.

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