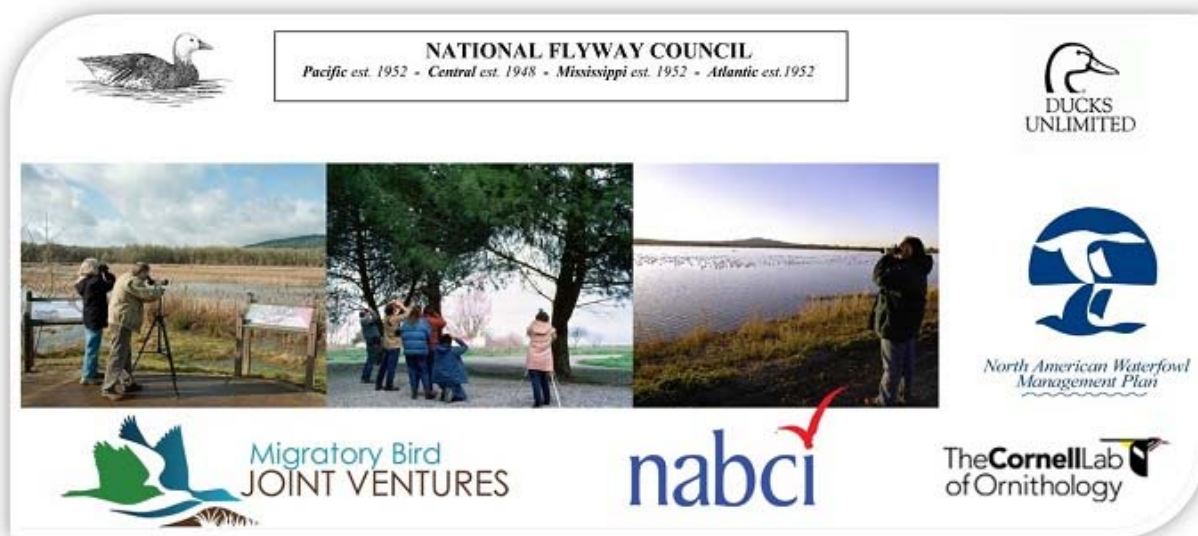


North American Birdwatching Survey: Summary Report Mississippi Flyway 2018



A cooperative study completed by:

Minnesota Cooperative Fish and Wildlife Research Unit
University of Minnesota

and

The Ohio State University

for the

National Flyway Council

North American Birdwatching Survey: Summary Report Mississippi Flyway 2018

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Section 1. Introduction and Overview

BACKGROUND

The National Flyway Council, in cooperation with the four Flyway Councils, the North American Waterfowl Management Plan (NAWMP) Committee, and non-governmental agencies initiated the formation of a Human Dimensions Working Group (HDWG) to obtain and incorporate human dimensions information and approaches into migratory bird conservation programs, policies and practices.

The 2012 NAWMP Revision *Vision Statement* 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. The goal is to have a public supportive of waterfowl and wetlands conservation that have strong emotional and pragmatic ties to waterfowl and wetlands. To achieve this goal, NAWMP partners must engage both the traditional waterfowl hunting community and the broader nontraditional stakeholder groups who are interested in waterfowl and the conservation of waterfowl and wetlands. To facilitate this engagement, the NFC's HDWG and other NAWMP partners developed a research proposal for North American stakeholder and general public surveys that will inform: 1) NAWMP objectives; 2) harvest objectives and strategies; 3) habitat management; and 4) public engagement strategies.

STUDY OBJECTIVES

The key objectives of the stakeholder and general public surveys were to:

- 1) Assess what hunters and other waterfowl conservationists (i.e., birders) most desire from their natural resource based management and social settings to inform NAWMP objectives and select habitat and population management alternatives.
- 2) Establish baseline measures that can be repeated to inform the development of a Public Engagement Strategy and monitor trends in achieving the NAWMP goal of "growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation."
- 3) Assess waterfowl hunters' and conservationists' knowledge, preferences, levels of use and support for waterfowl and wetlands conservation.
- 4) Assess the general public's participation in waterfowl-associated recreation and how much they support waterfowl and wetlands conservation.

5) Assess the general public's awareness and their perceptions regarding the importance of the benefits and values (i.e., Ecological Goods and Services - EGS) provided by waterfowl and wetlands conservation.

6) Assess waterfowl professionals' perspectives on the levels of waterfowl populations and habitats needed to support hunter and viewer use opportunities.

The expected outcomes of these studies were:

1) Quantified measures of stakeholder preferences;

2) A greater likelihood of developing NAWMP objectives and management actions that are informed by waterfowl and wetland stakeholders;

3) A focus on harvest management actions that will provide the greatest benefits in terms of stakeholder preferences within the context of what is biologically feasible.

The key research was completed by 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. Data analysis and report writing was completed by collaborators at The Ohio State University with review and technical assistance from the Minnesota Cooperative Research Unit.

STUDY DESIGN AND METHODS

Survey Questionnaires

The project included three surveys – a general public survey, a waterfowl hunter survey, a birdwatcher survey. The general public survey was mailed to 5000 individuals throughout the continental United States with a completed sample size target of 1200. A separate summary report is available for that effort (U.S. Geological Survey 2017). Throughout the rest of this report the waterfowl hunter survey is referred to as the National Survey of Waterfowl Hunters (NSWH) and the birdwatcher survey is referred to as the North American Birdwatching Survey (NABS).

The stakeholder studies involved multiple phases and research activities. A core portion of the waterfowl hunter and viewer surveys involved discrete stated choice experiments (DCE). The DCEs allow identification of key attributes and levels on those attributes that most influence hunter and viewer preferences for waterfowl hunting and viewing. 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.

Design and implementation of the U.S. stakeholder workshops began in November 2014 and was completed in June 2015. A total of 12 workshops with hunters and 12 with viewers were completed in key geographic locations across the Flyways in the U.S. to provide a diverse representation of important ecological characteristics and social traditions of the waterfowl hunting and viewing opportunities. A similar approach was taken in Canada. The primary outcome of the workshops was identification of key attributes of waterfowl hunting and bird viewing experiences. This information was used in the design of the DCEs in both the NSWH and NABS studies.

The NSWH and NABS surveys were designed between June 2015 and September 2016. In addition to the stakeholder workshops, the survey design involved multiple workshops, meetings, webinars, and reviews and comments from representatives of key partners including:

The core design team for the waterfowl hunter survey included Human Dimensions Working Group members from the Atlantic, Mississippi, Central and Pacific Flyways. These team held multiple meetings and webinars to identify appropriate sampling and questionnaire design. In addition to achieving the previously identified objects and implementing DCEs on hunting and viewing preferences, the hunter and viewer surveys also include questions targeting three areas identified by the HDWG as important:

- A. Decisions: Individual decisions to participate in viewing, hunting, and conservation are reflected in participation patterns. This series of questions would determine baseline participation levels in viewing, hunting, and conservation and offer the potential to identify stakeholder segments based on participation levels as well as types of participation.
- B. Identity: Measures of identity formation will focus on determining the degree to which hunters, viewers, and conservationists have developed personal identities associated with an activity or social role. (i.e., the individual's progression in formation of their identity as a hunter, viewer, etc.).
- C. Capacity: The NAWMP suggests the long-term sustainability of waterfowl and wetlands will depend on building support and relevancy. In essence, it is a matter of maintaining or increasing the capacity to grow waterfowl populations, protect and restore habitat, and the activities people enjoy that involve waterfowl and wetlands. Social science research suggests that institutional capacity can be thought of in terms of the social, political, economic, and human capital ("capital" can be defined as the available resources that can be used to effect action and outcomes). This survey will include questions to identify the levels of social, political, economic, and human capital that hunters, viewers, and the general public are providing to the institution of waterfowl and wetland conservation.

Additionally, the NABS study included questions concerning constraints to participating in birdwatching. The survey questionnaire items and wording were developing in close collaboration with a core design team representing the HDWG. A question-by-objective table is presented in Appendix A along with a copy of the waterfowl hunter survey. The table summarizes the objective addressed by each question and provides information concerning the source of the questions.

Sampling Design

The target population for the NABS included all U.S. resident hunters 18 years of age who participate in birding and birdwatching. The research proposal for the study also directed data collection to occur using web-based surveys with e-mail contacts. Consideration was given to using commercial vendors for a listing of birdwatchers/birders but no large national lists were commercially available. Suggestions from the HDWG focused on using integrated membership lists from the national Audubon Society and The Cornell Lab of Ornithology's eBird membership list. Both organizations expressed interest in the study but we were only able to obtain permission to use the eBird membership list.

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. They also 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 and keeps them engaged in using the site. The list of names, e-mails and physical addresses available through eBird represented a useful sampling frame for contacting potential respondents to the NABS throughout the United States and Canada.

The eBird sample can only be used to generalize back to eBird members and cannot be used to generalize back to the larger population of birdwatchers in the U.S. In subsequent reports, 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), and applied weights accordingly (weights for all states are available in the appendices of the regional reports for NABS).

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 no longer ago than 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 log in to eBird (Table 1.2). These individuals were distributed throughout the United States relatively proportional to the populations of the states, but California, Texas, and Florida were all under-represented in eBird relative to their population size.

Data Collection

We adapted procedures outlined in Dillman, Smyth, and Christian (2014) for web and mobile surveys survey implementation using up to five e-mail contacts. The initial contact was made on November 16, 2017 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 enter into 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 substrata 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. A total of 3,730 (23.3%) individuals returned a completed non-response survey. Key questions concerning waterfowl hunting 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 are reported in a separate addendum to 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 *** $p \leq 0.001$.

Table 1.1 Stratification for North American 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 59700-599990), OR, WA

Figure 1.1 Flyway map



Table 1.2 Distribution of eBird membership across the United States

State	Initial Sample Size	State/ Sample	State/ USA	State	Initial Sample Size	State/ Sample	State/ USA
Alabama	1332	0.0099	0.0151	Montana	872	0.0065	0.0032
Alaska	860	0.0064	0.0023	Nebraska	679	0.0051	0.0059
Arizona	1948	0.0145	0.0215	Nevada	539	0.0040	0.0091
Arkansas	1312	0.0098	0.0093	New Hampshire	1577	0.0118	0.0041
California	11444	0.0853	0.1215	New Jersey	3631	0.0271	0.0277
Colorado	2892	0.0216	0.0172	New Mexico	1238	0.0092	0.0064
Connecticut	2226	0.0166	0.0111	New York	8691	0.0648	0.0611
Delaware	642	0.0048	0.003	North Carolina	4886	0.0364	0.0314
Florida	5602	0.0417	0.0638	North Dakota	247	0.0018	0.0024
Georgia	4030	0.0300	0.0319	Ohio	5380	0.0401	0.0359
Hawaii	155	0.0012	0.0044	Oklahoma	1078	0.0080	0.0121
Idaho	831	0.0062	0.0052	Oregon	3069	0.0229	0.0127
Illinois	3923	0.0293	0.0396	Pennsylvania	7387	0.0551	0.0396
Indiana	2307	0.0172	0.0205	Rhode Island	410	0.0031	0.0033
Iowa	1121	0.0084	0.0097	South Carolina	2282	0.0170	0.0154
Kansas	1244	0.0093	0.009	South Dakota	326	0.0024	0.0027
Kentucky	1155	0.0086	0.0137	Tennessee	2827	0.0211	0.0206
Louisiana	920	0.0069	0.0145	Texas	7057	0.0526	0.0862
Maine	1657	0.0124	0.0041	Utah	1024	0.0076	0.0094
Maryland/DC	3807	0.0284	0.0207	Vermont	1531	0.0114	0.0019
Massachusetts	4176	0.0311	0.0211	Virginia	4906	0.0366	0.026
Michigan	5128	0.0382	0.0307	Washington	4159	0.0310	0.0226
Minnesota	2924	0.0218	0.0171	West Virginia	775	0.0058	0.0057
Mississippi	710	0.0053	0.0093	Wisconsin	4627	0.0345	0.0179
Missouri	2162	0.0161	0.0189	Wyoming	405	0.0030	0.0018
Total Sample					134111		
Without Hawaii					133956		

Table 1.3 Response rates for states in the Mississippi Flyway

State	Flyway Stratum	eBird Sample	Number Returned	Response Rate
AL	ML	1332	272	20.4%
AR	ML	1312	461	35.1%
LA	ML	920	216	23.5%
MS	ML	710	133	18.7%
TN	ML	2827	570	20.2%
TOTAL		7101	1652	23.3%
IL	MM	3923	1043	26.6%
IN	MM	2307	548	23.8%
IA	MM	1121	278	24.8%
KY	MM	1155	231	20.0%
MO	MM	2162	548	25.3%
OH	MM	5380	1278	23.8%
TOTAL		16048	3926	24.5%
MI	MU	5128	1451	28.3%
MN	MU	2924	1163	39.8%
WI	MU	4627	1217	26.3%
TOTAL		12679	3831	30.2%
Mississippi Total		35828	9409	26.3%
National Total		133956	33071	24.7%

Table 1.4 Response and weights applied to each state-level response

State	Flyway Stratum	eBird Sample	Substrata Proportion	Flyway Proportion	National Proportion	Number Returned	Substrata Weight	Flyway Weight	National Weight
AL	ML	1332	0.1876	0.0372	0.0099	272	1.1393	1.2860	1.2090
AR	ML	1312	0.1848	0.0366	0.0098	461	0.6621	0.7474	0.7026
LA	ML	920	0.1296	0.0257	0.0069	216	0.9909	1.1185	1.0515
MS	ML	710	0.1000	0.0198	0.0053	133	1.2419	1.4019	1.3179
TN	ML	2827	0.3981	0.0789	0.0211	570	1.1538	1.3025	1.2244
TOTAL		7101	1.0000	0.1982	0.0530	1652			
IL	MM	3923	0.2445	0.1095	0.0293	1043	0.9202	0.9878	0.9286
IN	MM	2307	0.1438	0.0644	0.0172	548	1.0299	1.1056	1.0393
IA	MM	1121	0.0699	0.0313	0.0084	278	0.9865	1.0590	0.9955
KY	MM	1155	0.0720	0.0322	0.0086	231	1.2232	1.3131	1.2344
MO	MM	2162	0.1347	0.0603	0.0161	548	0.9652	1.0361	0.9740
OH	MM	5380	0.3352	0.1502	0.0402	1278	1.0299	1.1055	1.0393
TOTAL		16048	1.0000	0.4479	0.1198	3926			
MI	MU	5128	0.4044	0.1431	0.0383	1451	1.0678	0.9281	0.8725
MN	MU	2924	0.2306	0.0816	0.0218	1163	0.7597	0.6603	0.6207
WI	MU	4627	0.3649	0.1291	0.0345	1217	1.1488	0.9985	0.9386
TOTAL		12679	1.0000	0.3539	0.0947	3831			
Mississippi Total		35828		1.0000	0.2675	9409			
National Total		133956				33071			

Section 2. Participation

BIRDING

Nearly all respondents indicated participating in birdwatching or birding (Table 2.1). Respondents replying “no” skipped to a page thanking them for their time and they did not respond to any further questions.

Nearly all respondents in each flyway substrata reported watching birds at their home in the past 12 months (99-100%), watching birds away from home (95-97%), and only slightly fewer reported feeding birds at their home (91-93%; Table 2.2). Analyses indicated some significant difference between the substrata, though effect sizes suggest these differences were small.

Nearly all respondents reported watching waterfowl (86-93%; Table 2.3), waterbirds (87-93%; Table 2.5), birds of prey (95-98%; Table 2.6), hummingbirds (93-96%; Table 2.7), songbirds (98-99%; Table 2.8), and other birds (74-80%; Table 2.9). Between about 40% of respondents reported photographing all birds except other game birds (20-30%; Table 2.4), and slightly more reported photographing songbirds (49-53%). There were significant but small differences between the substrata in watching other game birds (Upper: 83%, Middle: 68%, Lower: 57%, Tables 2.4a). Other differences between the substrata were significant but small (Tables 2.3a-2.9a).

Most respondents (67-77%) indicated they took a trip in the previous 12 months further than 1 mile from their home in order to watch birds (Table 2.10). Significantly fewer respondents in the Lower MS had taken trips than respondents (67%) in the Middle MS (77%); effect sizes suggest this differences was small. Respondents indicated the number of trips taken in the past 12 months, and the median across the substrata was between 10-13 trips. Data were heavily skewed with a small number of respondents reporting trips nearly every day, so the median is reported here. Analyses suggest significant differences between the substrata in the number of trips taken, but effect size suggests these were small.

Across the substrata, respondents indicated the highest agreement with the statement, “I typically use binoculars to view birds.” (\bar{x} = 3.9-4.0; Table 2.11, 2.11a), and the lowest agreement was with the statement, “I tend to take photos of birds for the primary purpose of

having someone help me identify them,” ($\bar{x} = 2.2-2.3$). While there were a few significant differences between substrata, effect sizes suggest these were small (Table 2.11b).

OTHER ACTIVITIES

Participation in consumptive recreation in the past 12 months was highest for fishing (90%-92%; Table 2.12) and lowest for other (7%). Analyses revealed significant but small differences between the substrata for every activity except “other” (Table 2.12a).

Across substrata, over 90% of respondents reported in the past 12 months spending time in nature away from home, viewing wildlife, and participating in backyard/at-home nature activities, while over 80% reported participating in non-motorized outdoor recreation activities (Table 2.13). Analyses revealed several significant but small differences between the substrata on several items, most notably for motorized outdoor recreation activities (Upper: 30%, Middle: 19%, Lower: 27%; Table 2.13).

Table 2.1 Birdwatching or birding participation

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Do you ever participate in birdwatching or birding?	Yes	99.3%	99.5%	99.6%	99.5%
	No	.7%	.5%	.4%	.5%
	Valid N	1629	3884	3786	9299

Table 2.2 Wild Bird Activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Wild bird activities	Watching birds at my home	99.3%	99.2%	99.5%	99.3%
	Feeding birds at my home	91.0%	91.5%	92.6%	91.8%
	Watching birds away from my home	95.4%	96.3%	97.0%	96.4%
	Photographing or filming birds	69.0%	71.8%	71.4%	71.1%
	Counting/monitoring birds	70.0%	73.2%	68.6%	71.0%
	Keeping track of the birds you see on a list	77.3%	81.0%	79.1%	79.6%
	Installing or maintaining nest boxes for birds	59.7%	53.7%	56.8%	56.0%
	Valid N	1629	3884	3786	9299

Table 2.2a Wild bird activities significance tests

		Chi-Square	df	Cramer's V
Wild bird activities	Watching birds at my home	2.89	2	.02
	Feeding birds at my home	2.83	2	.02
	Watching birds away from my home	6.61*	2	.03*
	Photographing or filming birds	3.88	2	.02
	Counting/monitoring birds	20.79*	2	.05*
	Keeping track of the birds you see on a list	9.84*	2	.03*
	Installing or maintaining nest boxes for birds	18.91*	2	.05*

*p < 0.05

Table 2.3 Waterfowl Activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Waterfowl activities	Waterfowl watching	85.8%	90.9%	92.8%	90.6%
	Waterfowl feeding	7.3%	6.3%	7.7%	7.0%
	Waterfowl photographing	37.8%	42.2%	42.5%	41.4%
	Waterfowl did not do any activities	13.0%	8.7%	6.4%	8.7%
	Valid N	1629	3884	3786	9299

Table 2.3a Waterfowl Activities significance tests

		Chi-Square	df	Cramer's V
Waterfowl activities	Waterfowl watching	69.12*	2	.09*
	Waterfowl feeding	6.30*	2	.03*
	Waterfowl photographing	11.85*	2	.04*
	Waterfowl did not do any activities	61.29*	2	.08*

*p < 0.05

Table 2.4 Other game bird activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Other game bird activities	Other game birds watching	57.3%	68.2%	83.1%	71.3%
	Other game birds feeding	4.3%	3.6%	8.8%	5.6%
	Other game birds photographing	20.1%	24.8%	29.9%	25.7%
	Other game birds did not do any activities	41.7%	31.0%	15.4%	27.6%
	Valid N	1629	3884	3786	9299

Table 2.4a Other game bird activities significance tests

		Chi-Square	df	Cramer's V
Other game bird activities	Other game birds watching	438.40*	2	.22*
	Other game birds feeding	101.73*	2	.11*
	Other game birds photographing	63.53*	2	.08*
	Other game birds did not do any activities	444.82*	2	.22*

*p < 0.05

Table 2.5 Water Bird Activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Water bird activities	Water birds watching	86.6%	89.8%	93.2%	90.3%
	Water birds feeding	1.3%	1.2%	1.5%	1.3%
	Water birds photographing	38.8%	43.2%	42.0%	41.9%
	Water birds did not do any activities	12.3%	9.7%	6.0%	8.9%
	Valid N	1629	3884	3786	9299

Table 2.5a Waterbird activities significance tests

		Chi-Square	df	Cramer's V
Water bird activities	Water birds watching	60.69*	2	.08*
	Water birds feeding	0.89	2	.01
	Water birds photographing	9.99*	2	.03*
	Water birds did not do any activities	65.27 *	2	.08*

*p < 0.05

Table 2.6 Bird of prey activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Bird of prey activities	Birds of prey watching	95.3%	97.8%	97.2%	97.1%
	Birds of prey feeding	1.0%	2.5%	2.6%	2.2%
	Birds of prey photographing	38.0%	43.6%	41.7%	41.9%
	Birds of prey did not do any activities	4.0%	1.6%	1.8%	2.2%
	Valid N	1629	3884	3786	9299

Table 2.6a Bird of prey activities significance tests

		Chi-Square	df	Cramer's V
Bird of prey activities	Birds of prey watching	31.95*	2	.06*
	Birds of prey feeding	14.49*	2	.04*
	Birds of prey photographing	15.77*	2	.04*
	Birds of prey did not do any activities	33.43*	2	.06*

*p < 0.05

Table 2.7 Hummingbird activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Hummingbird activities	Hummingbirds watching	93.1%	95.5%	94.3%	94.6%
	Hummingbirds feeding	65.5%	61.7%	62.5%	62.7%
	Hummingbirds photographing	41.5%	40.7%	37.2%	39.6%
	Hummingbirds did not do any activities	5.7%	3.2%	4.1%	4.0%
	Valid N	1629	3884	3786	9299

Table 2.7a Hummingbird activities significance tests

		Chi-Square	df	Cramer's V
Hummingbird activities	Hummingbirds watching	12.39*	2	.04*
	Hummingbirds feeding	6.67*	2	.03*
	Hummingbirds photographing	12.73*	2	.04*
	Hummingbirds did not do any activities	16.82*	2	.04*

*p < 0.05

Table 2.8 Songbird activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Songbird activities	Song birds watching	97.7%	98.8%	98.2%	98.4%
	Song birds feeding	70.7%	71.7%	74.1%	72.4%
	Song birds photographing	49.1%	53.1%	52.0%	51.9%
	Song birds did not do any activities	.7%	.2%	.3%	.3%
	Valid N	1629	3884	3786	9299

Table 2.8a Songbirds activities significance tests

		Chi-Square	df	Cramer's V
Songbird activities	Song birds watching	11.85*	2	.04*
	Song birds feeding	9.40*	2	.03*
	Song birds photographing	8.02*	2	.03*
	Song birds did not do any activities	9.19*	2	.03*

*p < 0.05

Table 2.9 Other bird activities

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Other bird activities	Other birds watching	74.1%	77.5%	79.8%	77.6%
	Other birds feeding	29.1%	29.2%	31.1%	29.8%
	Other birds photographing	32.0%	35.6%	35.3%	34.8%
	Other birds did not do any activities	24.2%	21.2%	18.3%	20.8%
	Valid N	1629	3884	3786	9299

Table 2.9a Other birds activities significance tests

		Chi-Square	df	Cramer's V
Other bird activities	Other birds watching	2.88	2	.02
	Other birds feeding	0.38	2	.01
	Other birds photographing	3.85	2	.02
	Other birds did not do any activities	31.97*	2	.06*

*p < 0.05

Table 2.10 Percent taking birding trips >1 mile from home and median number of trips taken in past year by flyway substrata

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
In past 12 months, did you take any trips at least 1 mile or more from your home primarily for birdwatching?	Yes	67.3%	76.6%	74.9%	74.1%
	No	32.7%	23.4%	25.1%	25.9%
In the past 12 months, about how many trips at least 1 mile from your home did you take primarily for birdwatching?		13.0	10.0	12.0	10.0
Valid N		1610	3854	3751	9215
Trips taken Y/N significance:		$\chi^2 (2) = 52.44^*$		Cramer's V = .08*	
# of trips significance:		F (2, 6795) = 5.06*		$\eta^2 = .00$	

Table 2.11 Types of participation in birding

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
I can identify most birds I see in the field.	3.8	.85	1533	3.8	.85	3671	3.8	.86	3564	3.8	.85	8768
I can readily identify many birds in the field by sound	3.1	1.14	1533	3.1	1.15	3668	3.2	1.13	3565	3.1	1.14	8766
I tend to take photos of birds for the primary purpose of having someone help me identify them.	2.3	.99	1537	2.2	.98	3664	2.2	.94	3566	2.2	.97	8767
I tend to need to use a field guide (paper or electronic) to identify birds.	3.5	1.00	1533	3.4	1.01	3665	3.4	1.00	3567	3.4	1.00	8766
I often use websites, social media or ID apps such as Merlin to identify birds	3.3	1.17	1535	3.2	1.17	3669	3.2	1.17	3566	3.2	1.17	8771
I photograph birds as a way to watch them.	2.9	1.23	1531	2.9	1.27	3660	2.9	1.26	3562	2.9	1.26	8753

Table 2.11 Types of participation in birding, cont.

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
I typically use binoculars to view birds.	3.9	1.09	1527	4.0	1.08	3667	4.0	1.06	3563	4.0	1.07	8757
I often use a camera instead of using binoculars.	2.5	1.21	1530	2.4	1.18	3670	2.4	1.19	3565	2.4	1.19	8765
I tend to just watch birds without using any special equipment.	3.0	1.17	1533	2.9	1.18	3668	3.0	1.16	3558	3.0	1.17	8761
I use eBird to report my birdwatching experiences	3.1	1.24	1531	3.2	1.30	3659	3.1	1.23	3567	3.1	1.26	8756

Scale from 1=Strongly Disagree to 5=Strongly Agree

Table 2.11a Types of participation in birding response distribution

Item	Response					Valid N
	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	1.0%	8.7%	17.8%	56.2%	16.3%	8768
I can readily identify many birds in the field by sound	7.8%	25.9%	21.7%	34.4%	10.2%	8766
I photograph birds as way to watch them	23.9%	44.0%	20.5%	10.1%	1.5%	8767
I typically use binoculars to view birds	2.6%	18.5%	25.0%	42.0%	11.8%	8766
I often use websites, social media or ID apps such as Merlin to identify birds	8.3%	22.4%	18.8%	38.4%	12.1%	8771
I tend to need to use a field guide (paper or electronic) to identify birds	15.7%	25.3%	19.4%	29.2%	10.4%	8753
I can identify most birds I see in the field	2.5%	10.1%	14.2%	35.0%	38.2%	8757
I tend to just watch birds without using any special equipment	24.4%	38.6%	16.5%	13.7%	6.9%	8765
I often use a camera instead of using binoculars	10.7%	29.2%	20.9%	30.6%	8.5%	8761
I use eBird to report my birdwatching experiences	11.0%	24.1%	22.0%	26.1%	16.8%	8756

Table 2.11b Types of participation in birding ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
I can identify most birds I see in the field.	Between Groups	1.48	2.00	0.74	1.02	0.36	
	Within Groups	6396.05	8764.44	0.73			
	Total	6397.53	8766.44				.00
I can readily identify many birds in the field by sound.	Between Groups	24.19	2.00	12.10	9.30	0.00	
	Within Groups	11392.91	8762.48	1.30			
	Total	11417.10	8764.48				.00
I tend to take photos of birds for the primary purpose of having someone help me identify them.	Between Groups	7.57	2.00	3.79	4.06	0.02	
	Within Groups	8173.21	8763.92	0.93			
	Total	8180.78	8765.92				.00
I tend to need to use a field guide (paper or electronic) to identify birds.	Between Groups	6.71	2.00	3.35	3.33	0.04	
	Within Groups	8824.08	8762.61	1.01			
	Total	8830.79	8764.61				.00
I often use websites, social media, or ID apps such as Merlin to identify birds.	Between Groups	18.11	2.00	9.05	6.62	0.00	
	Within Groups	11995.49	8767.28	1.37			
	Total	12013.60	8769.28				.00
I photograph birds as a way to watch them.	Between Groups	1.54	2.00	0.77	0.49	0.62	
	Within Groups	13877.82	8750.16	1.59			
	Total	13879.36	8752.16				.00
I typically use binoculars to view birds.	Between Groups	8.63	2.00	4.31	3.75	0.02	
	Within Groups	10055.48	8753.83	1.15			
	Total	10064.10	8755.83				.00
I often use a camera instead of using binoculars.	Between Groups	8.22	2.00	4.11	2.91	0.05	
	Within Groups	12375.12	8762.09	1.41			
	Total	12383.33	8764.09				.00
I tend to just watch birds without using any special equipment.	Between Groups	14.63	2.00	7.32	5.36	0.00	
	Within Groups	11946.02	8756.11	1.36			
	Total	11960.66	8758.11				.00
I use eBird to report my birdwatching experiences	Between Groups	3.71	2.00	1.85	1.17	0.31	
	Within Groups	13918.91	8754.16	1.59			
	Total	13922.62	8756.16				.00

Table 2.12 Participation in consumptive recreation

	Flyway substrata			Flyway
	Lower MS	Middle MS	Upper MS	MS
Fishing (last 12 months)	91.6%	90.9%	90.1%	90.7%
Hunting waterfowl (last 12 months)	12.7%	6.9%	10.2%	9.4%
Hunting other migratory birds (last 12 months)	12.4%	6.5%	8.1%	8.3%
Hunting other game birds (last 12 months)	9.2%	10.9%	20.0%	14.2%
Hunting any other game animals (last 12 months)	31.0%	22.3%	33.4%	28.4%
Other	6.7%	7.0%	6.8%	6.9%
Valid N	1629	3884	3786	9299

Table 2.12a Participation in consumptive recreation significance tests

		Chi-Square	df	Cramer's V
Activity	Fishing (last 12 months)	35.64*	2	.06*
	Hunting waterfowl (last 12 months)	23.72*	2	.05*
	Hunting other migratory birds (last 12 months)	20.56*	2	.05*
	Hunting other game birds (last 12 months)	80.37*	2	.10*
	Hunting any other game animals (last 12 months)	68.52*	2	.09*
	Other	4.48	2	.03

*p < 0.05

Table 2.13 Nature Based Recreation

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
	Spending time in nature away from home	92.0%	95.2%	95.8%	94.8%
	Non-motorized outdoor recreation activities	81.4%	87.8%	90.5%	87.5%
	Motorized outdoor recreation activities	26.6%	19.2%	29.8%	24.4%
Activity	Viewing wildlife	99.3%	99.5%	99.6%	99.5%
	Consumptive wildlife-based activities	27.9%	24.8%	33.5%	28.5%
	Learning about nature	75.4%	84.0%	82.8%	81.9%
	Backyard/at-home nature activities	94.1%	94.7%	95.2%	94.7%
	Other	17.1%	18.6%	19.6%	18.6%
	Valid N	1629	3884	3786	9299

Table 2.13a Nature Based Recreation significance tests

		Chi-Square	df	Cramer's V
	Spending time in nature away from home	32.68*	2	.06*
	Non-motorized outdoor recreation activities	83.21*	2	.10*
	Motorized outdoor recreation activities	117.88*	2	.11*
Activity	Viewing wildlife	4.50	2	.02
	Consumptive wildlife-based activities	73.48*	2	.09*
	Learning about nature	57.01*	2	.08*
	Backyard/at-home nature activities	2.89	2	.02
	Other	24.60*	2	.08*

*p < 0.05

Section 3. Avidity and Constraints

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. Respondents reported strong agreement with the following statements: “Birdwatching is one of the most enjoyable activities I do,” “Developing my skills and abilities in birdwatching is important to me,” “Being in nature is an important part of birdwatching,” “The sights and sounds of nature are important to birdwatching,” “Getting to enjoy the natural environment through birdwatching is important.” (\bar{x} = 4.1-4.5; Table 3.1, 3.1a). Agreement was weakest for the following statements: “Most of my friends are in some way connected with birdwatching,” and “If I couldn’t go birdwatching I am not sure what I would do instead” (\bar{x} = 2.4-2.5). Though there were significant differences between the substrata on a few items (Table 3.1b), effect sizes suggest these differences were small.

A small number of respondents reported not owning any equipment for birdwatching (5-7%, Table 3.2), while most reported owning binoculars (91-93%). There were significant but small differences between the substrata in ownership of cameras and spotting scopes for birdwatching (Table 3.2a).

Respondents were asked to rate their ability to observe and identify birds on a scale from 1 = Novice to 7 = Expert, and averaged around a rating of 4.4 across the substrata (Table 3.3). While differences were significant, effect size suggests the differences were small.

CONSTRAINTS

Constraints are any barriers that might impede birdwatching participation. Respondents were asked to rate series of barriers to participation on a scale of 1 = Not at all to 4 = Large barrier. With one exception, respondents’ average rating across substrata for all of the barriers fell below 2 (“slight barrier”), suggesting 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 (Table 3.4, 3.4a). “Don't have time to go,” had the highest average among the items ($\bar{x} = 2.0-2.1$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest none of the differences are substantive (Table 3.4b).

Table 3.1 Importance of birdwatching

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
	Birdwatching is one of the most enjoyable activities I do.	4.1	.82	1542	4.2	.81	3674	4.2	.83	3587	4.2	.82
Most of my friends are in some way connected with birdwatching.	2.5	1.00	1538	2.5	1.00	3673	2.5	.97	3578	2.5	.99	8789
Birdwatching has central role in my life	3.4	1.09	1542	3.4	1.08	3671	3.5	1.08	3583	3.5	1.08	8795
A lot of my life is organized around birdwatching.	2.9	1.11	1546	2.9	1.12	3666	2.9	1.11	3581	2.9	1.12	8793
If I couldn't go birdwatching I am not sure what I would do instead.	2.4	1.07	1541	2.5	1.05	3673	2.4	1.06	3578	2.4	1.06	8792
Developing my skills and abilities in birdwatching is important to me.	4.0	.78	1545	4.0	.79	3675	4.0	.79	3579	4.0	.79	8800

Table 3.1 Importance of birdwatching, cont.

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Getting a chance to add a new bird to my life list is important to me.	3.8	.95	1542	3.8	.95	3673	3.7	.99	3587	3.7	.97	8801
Using new techniques, technology and equipment to help me identify more birds is important to me.	3.4	.95	1544	3.3	.97	3676	3.3	.96	3588	3.3	.96	8807
Challenging my birdwatching skills is important.	3.6	.95	1544	3.6	.93	3674	3.6	.93	3581	3.6	.93	8799
Being in nature is an important part of birdwatching	4.4	.73	1544	4.5	.69	3674	4.5	.70	3585	4.5	.70	8802
The sights and sounds of nature are important to birdwatching	4.5	.64	1544	4.5	.63	3674	4.5	.63	3585	4.5	.63	8802
Getting to enjoy the natural environment through birdwatching is important.	4.5	.65	1953	4.5	.65	1245	4.5	.61	277	4.5	.65	3473

Scale from 1=Strongly Disagree to 5=Strongly Agree

Table 3.1a Importance of birdwatching response distribution

Item	Response					Valid N
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Developing my skills and abilities in birdwatching is important to me	0.8%	2.8%	13.2%	44.6%	38.6%	8802
If I couldn't go birdwatching I am not sure what I would do instead	13.9%	42.3%	26.4%	14.7%	2.6%	8789
Birdwatching has central role in my life	4.4%	16.0%	26.9%	35.7%	17.0%	8795
Birdwatching is one of the most enjoyable activities I do	9.4%	30.6%	28.2%	23.4%	8.4%	8793
Challenging my birdwatching skills is important	18.1%	40.2%	24.8%	12.6%	4.3%	8792
Most of my friends are in some way connected with birdwatching	0.8%	2.9%	17.6%	52.5%	26.2%	8800
Using new techniques, technology and equipment to help me identify more birds is important to me	2.8%	7.6%	22.9%	45.3%	21.4%	8801
The sights and sounds of nature are important to birdwatching	3.4%	14.9%	35.9%	35.8%	10.0%	8807
Getting to enjoy the natural environment through birdwatching is important	2.1%	9.9%	30.5%	42.3%	15.2%	8799
Getting a chance to add a new bird to my life list is important to me	0.5%	1.2%	5.4%	36.1%	56.8%	8802
A lot of my life is organized around birdwatching	0.5%	0.4%	3.6%	40.5%	55.1%	8802
Being in nature is an important part of birdwatching	0.5%	0.5%	5.0%	40.2%	53.7%	8804

Table 3.1b Importance of birdwatching ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Developing my skills and abilities in birdwatching is important to me	Between Groups	2.84	2	1.42	2.12	0.12	
	Within Groups	5906.10	8800	0.67			
	Total	5908.95	8802				.00
If I couldn't go birdwatching I am not sure what I would do instead	Between Groups	8.73	2	4.36	4.47	0.01	
	Within Groups	8583.37	8786	0.98			
	Total	8592.10	8788				.00
Birdwatching has central role in my life	Between Groups	5.29	2	2.65	2.26	0.10	
	Within Groups	10291.07	8792	1.17			
	Total	10296.37	8794				.00
Birdwatching is one of the most enjoyable activities I do	Between Groups	0.26	2	0.13	0.11	0.90	
	Within Groups	10931.30	8790	1.24			
	Total	10931.56	8792				.00
Challenging my birdwatching skills is important	Between Groups	0.54	2	0.27	0.24	0.79	
	Within Groups	9853.23	8789	1.12			
	Total	9853.77	8791				.00
Most of my friends are in some way connected with birdwatching	Between Groups	0.72	2	0.36	0.58	0.56	
	Within Groups	5487.85	8796	0.62			
	Total	5488.57	8798				.00
Using new techniques, technology and equipment to help me identify more birds is important to me	Between Groups	38.81	2	19.41	20.76	0.00	
	Within Groups	8224.24	8798	0.93			
	Total	8263.05	8800				.00
The sights and sounds of nature are important to birdwatching	Between Groups	19.98	2	9.99	10.80	0.00	
	Within Groups	8142.36	8804	0.92			
	Total	8162.34	8806				.00
Getting to enjoy the natural environment through birdwatching is important	Between Groups	1.95	2	0.97	1.12	0.33	
	Within Groups	7640.76	8795	0.87			
	Total	7642.70	8797				.00
Getting a chance to add a new bird to my life list is important to me	Between Groups	6.30	2	3.15	6.41	0.00	
	Within Groups	4327.72	8799	0.49			
	Total	4334.02	8801				.00
A lot of my life is organized around birdwatching	Between Groups	1.79	2	0.90	2.22	0.11	
	Within Groups	3554.71	8799	0.40			
	Total	3556.51	8801				.00
Being in nature is an important part of birdwatching	Between Groups	3.25	2	1.62	3.67	0.03	
	Within Groups	3893.90	8801	0.44			
	Total	3897.14	8803				.00

Table 3.2 Equipment Owned

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Equipment owned	Own binoculars for birdwatching	91.0%	92.3%	93.1%	92.3%
	Own cameras for birdwatching	49.6%	47.0%	46.1%	47.2%
	Own spotting scopes for birdwatching	32.1%	36.6%	38.9%	36.6%
	Do not own any special equipment for birdwatching	6.6%	6.0%	5.4%	5.9%
	Valid N	1544	3676	3574	8796

Table 3.2a Equipment owned significance tests

		Chi-Square	df	Cramer's V
Equipment owned	Own binoculars for birdwatching	6.60*	2	.03*
	Own cameras for birdwatching	5.33	2	.03
	Own spotting scopes for birdwatching	21.29*	2	.05*
	Do not own any special equipment for birdwatching	2.73	2	.02

*p < 0.05

Table 3.3 Personal rating of ability to observe and identify birds on scale from 1=Novice to 7=Expert

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
How would you rate your own ability to observe and identify birds?	Mean	4.3	4.4	4.5	4.4
	SD	1.36	1.28	1.30	1.31
	Valid N	1546	3669	3578	8793
Significance:		F (2, 8792) = 10.62* $\eta^2=.00$			

Table 3.4 Barriers to participation

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
	Don't feel welcome in bird viewing areas	1.3	.67	1508	1.3	.64	3628	1.3	.62	3540	1.3	.64
Areas are too crowded	1.7	.89	1506	1.7	.86	3625	1.6	.85	3530	1.7	.86	8659
Lack of birds in my area	1.4	.70	1511	1.5	.74	3621	1.4	.68	3531	1.4	.71	8662
Poor quality of the natural habitat in my area	1.4	.73	1507	1.5	.78	3629	1.4	.68	3535	1.4	.74	8670
Poor quality of facilities in my area	1.4	.67	1503	1.4	.67	3623	1.3	.60	3529	1.4	.65	8653
Don't have the skills	1.5	.71	1508	1.4	.68	3628	1.4	.66	3530	1.4	.68	8665
Don't have the companions/people to go with	1.6	.87	1508	1.6	.81	3633	1.6	.79	3543	1.6	.81	8681
Public areas to go to are too far away	1.5	.75	1507	1.5	.73	3624	1.4	.67	3530	1.5	.71	8659
It costs too much to do	1.3	.62	1507	1.3	.58	3626	1.2	.53	3536	1.2	.57	8667
Don't have time to go	2.0	1.01	1511	2.1	1.00	3633	2.0	1.01	3538	2.0	1.00	8681
Don't feel safe in bird viewing areas	1.3	.58	1507	1.3	.58	3627	1.2	.51	3534	1.2	.56	8666
Restrictions on public lands due to hunting	1.7	.88	1505	1.6	.83	3625	1.7	.86	3534	1.6	.85	8661

Table 3.4 Barriers to participation (cont.)

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	1.5	.81	1509	1.5	.74	3629	1.4	.73	3535	1.5	.75	8672
Expense of access fees/permits	1.3	.66	1510	1.3	.63	3626	1.3	.59	3533	1.3	.62	8668

Scale of 1=Not at all to 4=Large barrier

Table 3.4a Barriers to participation response distribution

Item	Response				Valid N
	Not at all a barrier	Slight barrier	Moderate barrier	Large barrier	
Don't feel welcome in bird viewing areas	81.9%	11.7%	4.4%	2.1%	8674
Areas are too crowded	54.3%	28.6%	12.6%	4.5%	8659
Lack of birds in my area	69.1%	21.5%	7.4%	2.0%	8662
Poor quality of the natural habitat in my area	67.9%	22.0%	7.7%	2.4%	8670
Poor quality of facilities in my area	71.8%	21.1%	6.0%	1.1%	8653
Don't have the skills	67.2%	24.2%	7.6%	1.0%	8665
Don't have the companions/people to go with	59.4%	26.7%	10.4%	3.5%	8681
Public areas to go to are too far away	65.9%	24.4%	8.1%	1.6%	8659
It costs too much to do	81.4%	13.7%	3.9%	1.1%	8667
Don't have time to go	37.3%	31.2%	20.6%	10.8%	8681
Don't feel safe in bird viewing areas	81.8%	13.9%	3.2%	1.1%	8666
Restrictions on public lands due to hunting	55.5%	29.0%	10.8%	4.7%	8661
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	66.0%	23.7%	7.4%	2.9%	8672
Expense of access fees/permits	78.7%	15.3%	4.4%	1.5%	8668

Table 3.4b Barriers to participation ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Don't feel welcome in bird viewing areas	Between Groups	1.65	2	0.82	2.03	0.13	0.00
	Within Groups	3521.73	8673	0.41			
	Total	3523.38	8675				
Areas are too crowded	Between Groups	6.47	2	3.24	4.36	0.01	0.00
	Within Groups	6422.97	8658	0.74			
	Total	6429.44	8660				
Lack of birds in my area	Between Groups	17.98	2	8.99	17.80	0.00	0.00
	Within Groups	4372.48	8660	0.50			
	Total	4390.46	8662				
Poor quality of the natural habitat in my area	Between Groups	36.13	2	18.06	33.73	0.00	0.01
	Within Groups	4641.52	8669	0.54			
	Total	4677.65	8671				
Poor quality of facilities in my area	Between Groups	16.37	2	8.18	19.78	0.00	0.00
	Within Groups	3580.21	8652	0.41			
	Total	3596.57	8654				
Don't have the skills	Between Groups	5.86	2	2.93	6.46	0.00	0.00
	Within Groups	3931.56	8663	0.45			
	Total	3937.42	8665				
Don't have the companions/people to go with	Between Groups	7.70	2	3.85	5.84	0.00	0.00
	Within Groups	5720.95	8680	0.66			
	Total	5728.64	8682				
Public areas to go to are too far away	Between Groups	18.94	2	9.47	18.90	0.00	0.00
	Within Groups	4337.75	8657	0.50			
	Total	4356.69	8659				

Table 3.4b Barriers to participation ANOVA tests, cont.

		Sum of Squares	df	Mean Square	F	Sig.	η^2
It costs too much to do	Between Groups	5.60	2	2.80	8.67	0.00	0.00
	Within Groups	2797.34	8666	0.32			
	Total	2802.94	8668				
Don't have time to go	Between Groups	9.81	2	4.91	4.86	0.01	0.00
	Within Groups	8754.21	8679	1.01			
	Total	8764.03	8681				
Don't feel safe in bird viewing areas	Between Groups	8.54	2	4.27	13.90	0.00	0.00
	Within Groups	2663.04	8665	0.31			
	Total	2671.58	8667				
Restrictions on public lands due to hunting	Between Groups	3.20	2	1.60	2.19	0.11	0.00
	Within Groups	6323.32	8661	0.73			
	Total	6326.52	8663				
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	Between Groups	12.76	2	6.38	11.33	0.00	0.00
	Within Groups	4881.87	8670	0.56			
	Total	4894.63	8672				
Expense of access fees/permits	Between Groups	0.72	2	0.36	0.95	0.39	0.00
	Within Groups	3308.27	8666	0.38			
	Total	3308.99	8668				

Section 4. Place

PREFERENCES

Most respondents did their birdwatching within the flyway substrata in which they resided, with Ohio (15%), Wisconsin (13%), and Michigan (13%) most frequently reported across the flyway (Table 4.1).

Most respondents knew of wetlands nearby (88-97%; Table 4.2), and had visited wetlands in the past 12 months (80-92%). Knowledge and visitation of wetlands was significantly higher in the Upper Mississippi than in either the Middle or Lower Mississippi (Table 4.2), but effect sizes suggest these differences were small.

ECOSYSTEM SERVICES

Overall respondent ratings for levels of concern for ecosystem services were lowest for loss of hunting opportunities ($\bar{x} = 1.8-2.0$; Table 4.3, 4.3a), and highest for providing home for animals such as butterflies and bees that pollinate plants and crops ($\bar{x} = 3.8$), clean water ($\bar{x} = 3.7-3.8$), and providing a home for wildlife ($\bar{x} = 3.7-3.8$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these differences are small (Table 4.3b). Respondents chose "Hunting opportunities," most frequently as their benefit of least concern (65-69%; Table 4.4). Respondents most frequently reported being most concerned with losing benefits of providing a home for wildlife (38-40%; Table 4.5). Analyses revealed significant but small differences in which benefits respondents were most and least concerned with losing.

Table 4.1 State where most of respondent birdwatching occurred

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
In which state do you go birdwatching most often?	AL	17.5%	.1%	.0%	3.4%
	AR	16.8%	.1%	0.0%	3.2%
	IA	.1%	6.9%	.2%	3.2%
	IL	.1%	22.3%	.2%	10.1%
	IN	.5%	13.5%	.2%	6.2%
	KY	0.0%	6.2%	0.0%	2.8%
	LA	13.3%	.1%	.0%	2.6%
	MI	0.0%	.5%	37.0%	13.4%
	MN	.2%	.1%	22.7%	8.2%
	MO	.1%	12.5%	0.0%	5.7%
	MS	10.4%	0.0%	.0%	2.0%
	OH	.2%	32.6%	.6%	14.9%
	TN	35.0%	.1%	.1%	6.8%
	WI	.3%	.6%	35.6%	13.1%
	Valid N	1372	3402	3335	8099

All states in Flyway reported

Table 4.2 Knowledge and visitation of wetlands

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Do you know of any wetlands in your local area or community?	Yes	88.0%	91.9%	97.2%	93.0%
	No	12.0%	8.1%	2.8%	7.0%
	Valid N	1472	3529	3455	8453
Have you visited any wetlands in the last 12 months?	Yes	80.0%	85.6%	91.5%	86.6%
	No	20.0%	14.4%	8.5%	13.4%
	Valid N	1471	3529	3456	8452
Knowledge significance:		$\chi^2 = 163.31^*$			Cramer's V=.14*
Visit significance:		$\chi^2 = 131.72^*$			Cramer's V=.13*

Table 4.3 Level of concern for ecological benefits

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
Flooding Protection	3.3	.85	1451	3.4	.82	3496	3.3	.86	3428	3.3	.84	8371
Erosion Protection	3.4	.77	1451	3.4	.76	3490	3.5	.74	3423	3.4	.76	8361
Wildlife viewing and birdwatching	3.6	.66	1456	3.6	.62	3496	3.7	.60	3418	3.6	.62	8367
Hunting opportunities	1.8	1.01	1450	1.8	.97	3488	2.0	1.04	3418	1.8	1.00	8351
Storage of greenhouse gases, such as carbon	3.0	1.03	1443	3.2	.97	3479	3.3	.93	3411	3.2	.97	8328
Clean water	3.7	.67	1454	3.7	.59	3503	3.8	.54	3426	3.7	.59	8380
Clean air	3.6	.72	1451	3.7	.66	3497	3.7	.64	3428	3.7	.66	8372
Providing home for wildlife	3.7	.54	1454	3.8	.47	3503	3.8	.47	3430	3.8	.48	8383
Providing a home for animals such as butterflies and bees that pollinate plants and crops	3.8	.53	1455	3.8	.48	3502	3.8	.48	3432	3.8	.49	8385
Scenic places for inspiration or spiritual renewal	3.3	.88	1454	3.3	.86	3495	3.4	.84	3427	3.3	.85	8372

Scale from 1=Not at all concerned to 4=Very concerned

Table 4.3a Level of concern for ecological benefits response distribution

Item	Response				Valid N
	Not at all concerned	Slightly concerned	Somewhat concerned	Very concerned	
Flooding Protection	3.9%	12.4%	29.7%	54.0%	8371
Erosion Protection	2.4%	9.2%	30.9%	57.6%	8361
Wildlife viewing and birdwatching	0.9%	4.9%	24.8%	69.4%	8367
Hunting opportunities	49.9%	25.0%	15.8%	9.3%	8351
Storage of greenhouse gases, such as carbon	8.4%	14.4%	27.4%	49.8%	8328
Clean water	1.2%	4.0%	15.7%	79.1%	8380
Clean air	1.8%	5.3%	18.1%	74.7%	8372
Providing home for wildlife	0.5%	2.0%	15.5%	82.0%	8383
Providing a home for animals such as butterflies and bees that pollinate plants and crops	0.5%	2.2%	14.7%	82.5%	8385
Scenic places for inspiration or spiritual renewal	4.4%	12.3%	29.7%	53.6%	8372

Table 4.3b Level of concern for ecological benefits ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Flooding Protection	Between Groups	3.77	2	1.89	2.67	0.07	
	Within Groups	5918.26	8372	0.71			
	Total	5922.04	8374				0.00
Erosion Protection	Between Groups	2.10	2	1.05	1.85	0.16	
	Within Groups	4766.81	8362	0.57			
	Total	4768.92	8364				0.00
Wildlife viewing and birdwatching	Between Groups	8.24	2	4.12	10.72	0.00	
	Within Groups	3214.49	8367	0.38			
	Total	3222.73	8369				0.00
Hunting opportunities	Between Groups	66.76	2	33.38	33.23	0.00	
	Within Groups	8389.42	8353	1.00			
	Total	8456.18	8355				0.01
Storage of greenhouse gases, such as carbon	Between Groups	44.69	2	22.35	23.94	0.00	
	Within Groups	7774.05	8330	0.93			
	Total	7818.75	8332				0.01
Clean water	Between Groups	16.72	2	8.36	24.33	0.00	
	Within Groups	2880.06	8381	0.34			
	Total	2896.78	8383				0.01
Clean air	Between Groups	9.89	2	4.94	11.33	0.00	
	Within Groups	3653.69	8374	0.44			
	Total	3663.57	8376				0.00
Providing home for wildlife	Between Groups	3.52	2	1.76	7.59	0.00	
	Within Groups	1944.63	8384	0.23			
	Total	1948.15	8386				0.00
Providing a home for animals such as butterflies and bees that pollinate plants and crops	Between Groups	2.74	2	1.37	5.78	0.00	
	Within Groups	1989.49	8386	0.24			
	Total	1992.23	8388				0.00
Scenic places for inspiration or spiritual renewal	Between Groups	8.52	2	4.26	5.86	0.00	
	Within Groups	6082.51	8374	0.73			
	Total	6091.03	8376				0.00

Table 4.4 Ecological services least concerned about losing

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Least concerned about losing	Flooding Protection	4.1%	5.1%	7.5%	5.7%
	Erosion Protection	1.9%	2.6%	2.5%	2.4%
	Wildlife viewing and birdwatching	1.5%	.8%	.9%	1.0%
	Hunting opportunities	64.7%	69.4%	66.0%	67.3%
	Storage of greenhouse gases	15.2%	11.0%	10.5%	11.6%
	Clean water	.3%	.5%	.3%	.4%
	Clean air	1.5%	1.3%	2.1%	1.7%
	Providing a home for wildlife	.8%	.4%	.3%	.4%
	Providing a home for butterflies and bees (pollinators)	.5%	.6%	.5%	.5%
	Scenic places for inspiration and spiritual renewal	9.5%	8.2%	9.4%	8.9%
	Valid N	1420	3462	3377	8254
	Significance:	$\chi^2 = 78.25$		Cramer's V=.07*	

Table 4.5 Ecological services most concerned about losing

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Most concerned about losing	Flooding Protection	11.4%	8.6%	5.1%	7.9%
	Erosion Protection	3.8%	2.5%	2.6%	2.8%
	Wildlife viewing and birdwatching	14.9%	14.7%	13.2%	14.2%
	Hunting opportunities	1.1%	.7%	.8%	.8%
	Storage of greenhouse gases	1.1%	1.3%	1.7%	1.4%
	Clean water	20.1%	20.7%	27.7%	23.1%
	Clean air	2.0%	2.6%	1.8%	2.2%
	Providing a home for wildlife	37.5%	39.9%	38.3%	38.9%
	Providing a home for butterflies and bees (pollinators)	7.1%	7.4%	6.9%	7.1%
	Scenic places for inspiration and spiritual renewal	1.0%	1.6%	1.9%	1.6%
	Valid N	1421	3467	3386	8269
	Significance:		$\chi^2 = 131.57^*$		Cramer's V=.09*

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 derive 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 season choice experiment consisted of seven attributes:

- 1) Diversity:** How many kind 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 levels 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.

Results for the hierarchical Bayes model (Table 5.2 and 5.3), including average utilities, or usefulness, for each attribute level, summarize the preference among birdwatchers. The attribute importances (Table 7.2) 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 discrete choice experiment

Attribute	Possible levels
Diversity: How many kind or species of birds you see	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - No rare or unusual species - Chance to see rare or unusual species
Number of birds: The total number of birds you see	<ul style="list-style-type: none"> - Less than 100 birds - Hundreds of birds - Thousands of birds
Ease of access: How difficult it is to get into and around an area	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> -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	<ul style="list-style-type: none"> - Area is developed - Natural habitat and setting
Travel distance: Total distance from home to the location (one-way)	<ul style="list-style-type: none"> - 2 miles or less - 25 miles - 50 miles - 100 miles - 200 miles

Figure 5.1 Background for Discrete Choice Experiment for Birdwatching

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 one choice you would make if these were your only options.



0% 100%

Figure 5.2 Example of choice scenario for birdwatching DCE

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	<div style="border: 1px dashed gray; display: inline-block; padding: 2px;">BirdviewChoice_Random1=1</div> <input type="radio"/>	<div style="border: 1px dashed gray; display: inline-block; padding: 2px;">BirdviewChoice_Random1=2</div> <input type="radio"/>	

Table 5.2 Relative attribute importance derived from hierarchical Bayes estimation

Season choice attribute	Importances	SD
Diversity	9.45	4.13
Rarity	18.38	9.95
Number of birds	5.23	2.87
Ease of access	9.24	7.63
Wetlands	10.40	4.82
Naturalness	13.28	7.56
Travel Distance	34.03	16.13

Notes: n = 6,755

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

Choice attribute - level	Average utilities	SD
Diversity		
- Observe 10 or fewer species	-32.49	19.95
- Observe 20 species	-5.23	11.08
- Observe 30 species	10.26	12.16
- Observe 40 or more species	27.47	19.17
Rarity		
- No rare or unusual species	-63.71	35.95
- Chance to see rare or unusual species	63.71	35.95
Number of birds		
- Less than 100	-13.37	14.32
- Hundreds	2.26	11.73
- Thousands	11.11	17.26
Ease of Access		
- Easy access with paved trails and roads	8.81	29.19
- Moderate access with some paved trails	14.29	19.75
- Difficult access with unpaved trails and paths	-23.10	45.24
Wetlands		
- No wetland habitats	-24.77	15.41
- Wetlands but NO waterfowl/wetland birds	-19.25	11.53
- Wetlands with waterfowl/wetland birds	44.02	21.49
Naturalness		
- Area is developed	-46.08	27.12
- Natural habitat and setting	46.08	27.12
Travel Distance		
- 2 miles or less	89.35	66.58
- 25 miles	65.51	40.65
- 50 miles	26.80	20.49
- 100 miles	-50.40	41.35
- 200 miles	-131.27	75.20
None	-215.39	171.26

Notes: n=6,755

Section 6. Engagement

COMMUNITY

The highest average identification among several different social groups (birdwatcher, waterfowl hunter, other type of hunter, conservationist) was as a birdwatcher ($\bar{x} = 3.94.0$; Table 6.1, 6.1a) or a conservationist ($\bar{x} = 3.8-4.0$). Identification as any type of hunter was relatively low overall ($\bar{x} = 1.2-1.4$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest none of the differences are substantive (Table 6.1b).

About one-third of respondents reported membership in National Audubon Society (Table 6.2); analyses revealed no significant differences between the substrata.

Highest reported levels of involvement were with bird conservation groups ($\bar{x} = 2.1-2.2$; Table 6.3, 6.3a) and lowest levels were with ornithological societies ($\bar{x} = 1.4-1.6$). While analyses revealed significant differences between the substrata on 2 items, effect sizes suggest these differences were small (Table 6.3b).

About 70% of respondents in each substrata considered their participation in eBird either slightly or moderately important; analyses suggest small significant differences (Table 6.4).

Respondents reported the frequency of conservation activities, and reported most often making their yard more desirable to wildlife ($\bar{x} = 4.1$; Table 6.5, 6.5a), and least often volunteering to improve wildlife habitat in my community ($\bar{x} = 2.2-2.4$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these differences were small (Table 6.5b). Respondents reported wetland conservation activities within the past year, and reported most often voting for candidates or ballot issues to support wetlands or waterfowl conservation ($\bar{x} = 2.7-2.9$; Table 6.6, 6.6a), and least often working on land improvement project related to wetlands or waterfowl conservation, volunteering my personal time and effort to conserve wetlands and waterfowl, attending meetings about wetlands or waterfowl conservation, contacting elected officials or government agencies about wetlands and waterfowl conservation ($\bar{x} = 1.5-1.6$). While analyses again revealed significant differences between the substrata on several items related to wetland conservation, effect sizes suggest these differences were small (Table 6.6b).

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 6.7a through 6.7f.

TRUST

Respondents indicated their highest levels of trust in birding/birdwatching organizations (\bar{x} = 3.9-4.1; Table 6.8, 6.8a), and reported similar levels of trust for university researchers and scientists (\bar{x} = 3.6-3.7) and other conservation organizations (\bar{x} = 3.4-3.5). They reported their lowest levels of trust for elected officials (\bar{x} = 1.7-1.8). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these differences were small (Table 6.8b).

CONSERVATION SUPPORT

Monetary support for conservation can take the form of donations, permit purchases, and fees. Respondents were asked about their previous support in 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 6.9b-6.9e), responses were dichotomized as \$0 donation or more than \$0. Most respondents reported having donated to birdwatching and related issues (78-81%; Table 6.9), as well as conservation of other birds (72-74%). Fewer reported donating to causes related to waterfowl hunting, and analyses revealed significant differences between the substrata, but these were small (Lower: 17%, Middle: 12%, Upper: 16%; Table 6.9a).

Most respondents indicated having paid a State Park access permit or fee (77-94%; Table 6.10), while relatively fewer respondents reported paying access fees for land owned by non-governmental conservation organizations (13-16%). Analyses revealed significant but small differences in purchasing behavior between substrata (Table 6.10a) for access fees for land

owned by non-governmental conservation organizations (Upper: 94%, Middle: 77%, Lower: 77%), and county/local conservation land access fees (Upper: 27%, Middle: 21%, Lower: 14%). Analyses revealed significant and medium differences in purchasing behavior between substrata in State Park access permit or fee (Upper: 31%, Middle: 43%, Lower: 54%; Table 6.10a).

A majority of respondents indicated a willingness to pay all listed permits and fees in the next 12 months except for the Federal Migratory Bird Hunting and Conservation Stamp (Upper: 40%, Middle: 41%, Lower: 31%; Table 6.11). Analyses revealed significant differences in willingness to pay between substrata (Table 6.11a), most notably for State Park access permit or fee (Upper: 97%, Middle: 89%, Lower: 91%).

Table 6.1 Level of social identification with group types

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
	Identify yourself as a birdwatcher	3.9	1.01	1514	4.0	.97	3633	4.0	.96	3534	4.0	.97
Identify yourself as a waterfowl hunter	1.2	.64	1464	1.1	.44	3518	1.2	.61	3430	1.1	.55	8410
Identify yourself as other type of hunter	1.4	.93	1465	1.3	.77	3526	1.4	.99	3435	1.3	.89	8424
Identify yourself as a conservationist	3.8	1.07	1495	3.9	1.05	3595	4.0	1.03	3514	3.9	1.05	8600

Scale of 1=Not at all to 5=Very strongly

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

Item	Response					Valid N
	Not at all	Slightly	Moderately	Strongly	Very strongly	
Identify yourself as a birdwatcher	0.4%	7.3%	25.9%	29.8%	36.6%	8681
Identify yourself as a waterfowl hunter	92.8%	3.7%	1.8%	0.9%	0.8%	8410
Identify yourself as other type of hunter	84.2%	6.0%	4.1%	3.2%	2.5%	8424
Identify yourself as a conservationist	1.8%	9.1%	21.4%	30.8%	36.9%	8600

Table 6.1b Level of social identification with group types ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Identify yourself as a birdwatcher	Between Groups	11.75	2	5.88	6.23	0.00	
	Within Groups	8191.77	8679	0.94			
	Total	8203.52	8681				0.00
Identify yourself as a waterfowl hunter	Between Groups	12.22	2	6.11	20.05	0.00	
	Within Groups	2562.14	8409	0.30			
	Total	2574.36	8411				0.00
Identify yourself as other type of hunter	Between Groups	52.52	2	26.26	32.75	0.00	
	Within Groups	6754.67	8423	0.80			
	Total	6807.19	8425				0.01
Identify yourself as a conservationist	Between Groups	15.78	2	7.89	7.19	0.00	
	Within Groups	9428.95	8600	1.10			
	Total	9444.73	8602				0.00

Table 6.2 National Audubon Society Member

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Are you a member of the National Audubon Society?	Yes	32.7%	38.7%	36.1%	36.6%
	No	67.3%	61.3%	63.9%	63.4%
	Valid N	1455	3518	3432	8401
Significance:		$\chi^2 = 16.46^*$		Cramer's V=.04*	

Table 6.3 Level of involvement in bird groups

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
Involvement with birding and birdwatching groups	1.8	.90	1436	1.8	.91	3386	1.8	.89	3344	1.8	.90	8163
Involvement with bird conservation groups	2.1	.89	1464	2.2	.88	3487	2.2	.89	3436	2.2	.89	8383
Involvement with ornithological societies	1.6	.88	1358	1.4	.77	3142	1.4	.76	3156	1.5	.79	7649
Involvement with local naturalist orgs	1.7	.92	1369	1.9	1.00	3279	1.9	.96	3257	1.9	.97	7896

Scale of 1=No involvement to 4=High involvement

Table 6.3a Level of involvement in bird groups response distribution

Item	Response				Valid N
	No involvement	Slight involvement	Moderate Involvement	High involvement	
Involvement with birding and birdwatching groups	47.7%	31.9%	14.6%	5.8%	8163
Involvement with bird conservation groups	22.6%	46.0%	22.2%	9.3%	8383
Involvement with ornithological societies	69.4%	18.8%	8.1%	3.6%	7649
Involvement with local naturalist orgs	46.5%	29.9%	14.7%	8.8%	7896

Table 6.3b Level of involvement in bird groups ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Involvement with birding and birdwatching groups	Between Groups	1.72	2	.86	1.06	.35	
	Within Groups	6612.75	8164	.81			
	Total	6614.47	8166				0.00
Involvement with bird conservation groups	Between Groups	5.61	2	2.81	3.58	.03	
	Within Groups	6581.87	8384	.79			
	Total	6587.48	8386				0.00
Involvement with ornithological societies	Between Groups	17.60	2	8.80	14.15	.00	
	Within Groups	4759.82	7653	.62			
	Total	4777.43	7655				0.00
Involvement with local naturalist orgs	Between Groups	39.93	2	19.97	21.26	.00	
	Within Groups	7420.25	7902	.94			
	Total	7460.18	7904				0.01

Table 6.4 Importance of eBird

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
How important is participating in eBird to you?	Not at all important	10.1%	11.4%	11.3%	11.1%
	Slightly important	38.3%	35.2%	37.7%	36.7%
	Moderately important	33.2%	32.3%	32.8%	32.6%
	Very important	18.4%	21.1%	18.2%	19.6%
	Valid N	1457	3517	3437	8408
Significance:		$\chi^2 = 14.43^*$		Cramer's V=.03*	

Table 6.5 Participation in conservation activities in past year

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Made my yard or land more desirable to wildlife	4.1	.96	1479	4.1	1.01	3545	4.1	1.01	3458	4.1	1.00	8480
Volunteered to improve wildlife habitat in my community	2.2	1.23	1467	2.4	1.33	3508	2.4	1.28	3434	2.4	1.29	8406
Talked to others in my community about conservation issues	2.9	1.26	1471	3.0	1.28	3522	3.0	1.26	3447	3.0	1.27	8438
Participated as an active member in a nature, outdoor, or conservation group	2.6	1.44	1469	2.7	1.49	3524	2.7	1.45	3448	2.7	1.46	8438
Donated money to support wildlife/habitat conservation	2.6	1.26	1464	2.8	1.27	3521	3.0	1.29	3450	2.9	1.28	8431

Scale of 1=Never to 5=Very often

Table 6.5a Participation in conservation activities response distribution

Item	Response					Valid N
	Never	Rarely	Sometimes	Often	Very often	
Made my yard or land more desirable to wildlife	3.3%	2.6%	16.6%	31.4%	46.1%	8480
Volunteered to improve wildlife habitat in my community	33.9%	22.3%	24.9%	9.3%	9.6%	8406
Talked to others in my community about conservation issues	17.2%	15.7%	32.5%	20.3%	14.3%	8438
Participated as an active member in a nature, outdoor, or conservation group	30.9%	18.1%	20.0%	13.8%	17.3%	8438
Donated money to support wildlife/habitat conservation	19.5%	18.7%	32.8%	15.3%	13.5%	8431

Table 6.5b Participation in conservation activities ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Made my yard or land more desirable to wildlife	Between Groups	.26	2	.13	.13	.88	
	Within Groups	8528.50	8479	1.01			
	Total	8528.77	8481				0.00
Volunteered to improve wildlife habitat in my community	Between Groups	44.96	2	22.48	13.46	.00	
	Within Groups	14033.47	8406	1.67			
	Total	14078.42	8408				0.00
Talked to others in my community about conservation issues	Between Groups	29.93	2	14.97	9.27	.00	
	Within Groups	13619.65	8438	1.61			
	Total	13649.58	8440				0.00
Participated as an active member in a nature, outdoor, or conservation group	Between Groups	28.46	2	14.23	6.65	.00	
	Within Groups	18060.45	8438	2.14			
	Total	18088.91	8440				0.00
Donated money to support wildlife/habitat conservation	Between Groups	93.07	2	46.54	28.50	.00	
	Within Groups	13766.68	8432	1.63			
	Total	13859.75	8434				0.01

Table 6.6 Participation in wetland conservation activities in past year

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
Worked on land improvement project related to wetlands or waterfowl conservation	1.5	.97	1460	1.5	.96	3503	1.6	.98	3432	1.5	.97	8392
Attended meetings about wetlands or waterfowl conservation	1.5	.95	1462	1.5	.93	3503	1.6	.96	3425	1.6	.94	8388
Volunteered my personal time and effort to conserve wetlands and waterfowl	1.5	.90	1458	1.5	.93	3499	1.5	.93	3417	1.5	.93	8372
Contacted elected officials or government agencies about wetlands and waterfowl conservation	1.5	.93	1462	1.5	.93	3502	1.6	.93	3428	1.5	.93	8388
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	2.3	1.41	1453	2.4	1.44	3489	2.7	1.47	3416	2.5	1.45	8354
Advocated for political action to conserve wetlands and waterfowl	1.9	1.27	1457	2.0	1.28	3493	2.2	1.34	3422	2.1	1.30	8368

Scale of 1=Never to 5=Very often

Table 6.6a Participation in conservation activities response distribution

Item	Response				Valid often	Valid N
	Never	Rarely	Sometimes	Often		
Worked on land improvement project related to wetlands or waterfowl conservation	72.2%	12.7%	9.1%	3.5%	2.5%	8392
Attended meetings about wetlands or waterfowl conservation	67.6%	14.9%	12.7%	3.0%	1.7%	8388
Volunteered my personal time and effort to conserve wetlands and waterfowl	71.4%	13.7%	9.8%	3.2%	1.9%	8372
Contacted elected officials or government agencies about wetlands and waterfowl conservation	69.2%	13.4%	12.8%	3.1%	1.5%	8388
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	41.1%	7.9%	22.3%	17.0%	11.7%	8354
Advocated for political action to conserve wetlands and waterfowl	52.7%	12.6%	18.2%	10.0%	6.6%	8368

Table 6.6b Participation in wetland conservation activities ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Worked on land improvement project related to wetlands or waterfowl conservation	Between Groups	8.82	2	4.41	4.69	0.01	.00
	Within Groups		7900.28	8393	0.94		
	Total		7909.10	8395			
Attended meetings about wetlands or waterfowl conservation	Between Groups	6.54	2	3.27	3.67	0.03	.00
	Within Groups		7477.65	8387	0.89		
	Total		7484.19	8389			
Volunteered my personal time and effort to conserve wetlands and waterfowl	Between Groups	7.33	2	3.67	4.26	0.01	.00
	Within Groups		7205.50	8371	0.86		
	Total		7212.83	8373			
Contacted elected officials or government agencies about wetlands and waterfowl conservation	Between Groups	3.05	2	1.52	1.76	0.17	.00
	Within Groups		7254.54	8388	0.86		
	Total		7257.59	8390			
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	Between Groups	265.03	2	132.51	63.40	0.00	.02
	Within Groups		17462.63	8355	2.09		
	Total		17727.66	8357			
Advocated for political action to conserve wetlands and waterfowl	Between Groups	58.58	2	29.29	17.24	0.00	.00
	Within Groups		14218.76	8369	1.70		
	Total		14277.34	8371			

Table 6.7a Personal community: Recreation

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal Community: Birdwatcher	Acquaintance	48.0%	52.5%	52.6%	51.7%
	Close Friend	47.5%	53.4%	55.7%	53.0%
	Relative	44.2%	49.8%	53.3%	49.9%
	Myself	84.2%	87.8%	88.2%	87.2%
	Valid N	1494	3567	3483	8543
Personal Community: Angler	Acquaintance	56.9%	53.4%	55.8%	55.0%
	Close Friend	43.1%	42.5%	49.5%	45.2%
	Relative	55.3%	59.4%	64.3%	60.4%
	Myself	29.9%	29.2%	34.1%	31.2%
	Valid N	1215	2777	2962	6927
Personal Community: Waterfowl Hunter	Acquaintance	68.2%	68.6%	69.1%	68.7%
	Close Friend	35.6%	30.0%	34.2%	32.8%
	Relative	36.9%	32.2%	37.6%	35.3%
	Myself	8.8%	4.7%	8.9%	7.2%
	Valid N	891	1749	2166	4765
Personal Community: Other hunter	Acquaintance	65.7%	63.4%	63.8%	64.0%
	Close Friend	42.4%	37.0%	45.7%	41.4%
	Relative	50.8%	49.3%	57.2%	52.6%
	Myself	14.5%	9.9%	15.8%	13.1%
	Valid N	1136	2578	2897	6567

Table 6.7b Personal community: Agencies

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal Community: State/provincial park manager/employee	Acquaintance	83.4%	84.4%	84.9%	84.4%
	Close Friend	26.2%	23.7%	22.6%	23.9%
	Relative	6.7%	6.2%	7.1%	6.6%
	Myself	4.2%	5.0%	3.6%	4.4%
	Valid N	620	1416	1187	3251
Personal Community: National Park Manager/Employee	Acquaintance	82.7%	79.6%	79.7%	80.3%
	Close Friend	24.9%	23.2%	25.0%	24.2%
	Relative	6.4%	9.3%	9.3%	8.7%
	Myself	3.6%	3.5%	2.9%	3.3%
	Valid N	560	1195	1088	2860
Personal Community: Federal wildlife agency manager/employee	Acquaintance	85.7%	84.8%	84.7%	85.0%
	Close Friend	28.8%	21.7%	26.5%	25.1%
	Relative	6.1%	7.4%	7.8%	7.2%
	Myself	6.5%	3.7%	5.9%	5.1%
	Valid N	468	836	899	2207
Personal Community: State/provincial wildlife agency manager/employee	Acquaintance	87.6%	87.3%	85.4%	86.7%
	Close Friend	26.5%	23.1%	26.3%	24.9%
	Relative	7.3%	5.9%	8.8%	7.2%
	Myself	5.6%	4.0%	5.9%	5.0%
	Valid N	597	1263	1186	3060

Table 6.7c Personal community: Environmental Occupations

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal Community: Farmer/Rancher	Acquaintance	62.9%	63.9%	64.4%	63.9%
	Close Friend	31.9%	31.2%	28.0%	30.0%
	Relative	36.4%	38.1%	37.6%	37.6%
	Myself	11.8%	10.9%	9.4%	10.5%
	Valid N	913	2246	2177	5334
Personal Community: Outdoor Educator	Acquaintance	74.3%	76.2%	76.5%	75.9%
	Close Friend	36.4%	38.1%	37.3%	37.5%
	Relative	8.8%	10.4%	11.4%	10.5%
	Myself	20.7%	21.0%	21.3%	21.0%
	Valid N	845	2174	2120	5130
Personal Community: Wildlife artist	Acquaintance	72.8%	69.5%	73.1%	71.5%
	Close Friend	27.6%	25.7%	23.9%	25.4%
	Relative	13.0%	14.1%	13.0%	13.5%
	Myself	12.5%	15.7%	14.1%	14.5%
	Valid N	606	1476	1519	3589
Personal Community: Wildlife biologist	Acquaintance	75.4%	78.4%	74.8%	76.5%
	Close Friend	40.5%	31.9%	35.7%	35.0%
	Relative	12.4%	10.4%	12.5%	11.5%
	Myself	19.9%	12.5%	14.6%	14.7%
	Valid N	748	1734	1788	4260
Personal Community: Wildlife photographer	Acquaintance	63.0%	65.6%	64.2%	64.6%
	Close Friend	37.4%	34.7%	36.9%	36.0%
	Relative	17.9%	19.5%	22.7%	20.4%
	Myself	45.4%	42.9%	43.1%	43.4%
	Valid N	1038	2521	2545	6090

Table 6.7d Personal community: Conservation organizations

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal Community: Member of fishing/conser vation organizations	Acquaintance	66.8%	64.9%	67.5%	66.3%
	Close Friend	37.4%	36.3%	37.6%	37.0%
	Relative	30.0%	31.4%	32.0%	31.4%
	Myself	27.2%	29.6%	29.1%	28.9%
	Valid N	551	1277	1659	3435
Personal Community: Member of national conservation organization	Acquaintance	55.8%	53.7%	54.6%	54.4%
	Close Friend	39.1%	40.1%	41.3%	40.3%
	Relative	26.9%	29.8%	32.7%	30.3%
	Myself	59.0%	65.7%	66.2%	64.7%
	Valid N	848	2188	2197	5216
Personal Community: Member of local conservation organization	Acquaintance	66.8%	66.2%	65.3%	66.0%
	Close Friend	45.1%	43.0%	45.4%	44.3%
	Relative	26.4%	25.2%	27.5%	26.3%
	Myself	51.8%	59.7%	57.3%	57.3%
	Valid N	686	1664	1677	4018
Personal Community: Member of local naturalist organization	Acquaintance	69.6%	68.2%	68.6%	68.6%
	Close Friend	40.3%	43.1%	45.8%	43.6%
	Relative	14.0%	17.6%	18.7%	17.4%
	Myself	47.1%	54.7%	51.8%	52.2%
	Valid N	613	1607	1570	3781

Table 6.7e Personal community: Hunting organizations

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal Community: Member of Ducks Unlimited	Acquaintance	68.2%	65.0%	67.4%	66.6%
	Close Friend	33.4%	28.9%	28.7%	29.8%
	Relative	29.5%	26.1%	28.7%	27.8%
	Myself	11.3%	12.0%	12.4%	12.0%
	Valid N	598	1145	1387	3109
Personal Community: Member of Delta Waterfowl	Acquaintance	82.5%	83.3%	79.9%	82.0%
	Close Friend	33.2%	20.2%	26.0%	27.0%
	Relative	11.9%	5.8%	13.2%	10.4%
	Myself	5.3%	6.3%	7.4%	6.2%
	Valid N Total	199	171	197	579
Personal Community: Member of state waterfowl association	Acquaintance	79.8%	78.0%	73.4%	76.8%
	Close Friend	27.7%	23.0%	24.3%	24.7%
	Relative	14.9%	12.3%	20.1%	15.9%
	Myself	5.7%	5.2%	7.7%	6.3%
	Valid N	265	372	492	1126
Personal Community: Member of non-waterfowl hunting organization	Acquaintance	68.8%	70.0%	68.7%	69.2%
	Close Friend	38.1%	31.5%	31.0%	32.8%
	Relative	30.0%	29.3%	29.3%	29.4%
	Myself	12.4%	12.4%	14.4%	13.2%
	Valid N	402	753	935	2075

Table 6.7f Personal community: Bird groups

		Flyway substrata			Flyway
		Lower	Middle	Upper	
		MS	MS	MS	MS
Personal Community: Member of birding group	Acquaintance	65.1%	65.9%	64.9%	65.4%
	Close Friend	48.3%	47.6%	47.9%	47.9%
	Relative	20.4%	22.3%	23.0%	22.2%
	Myself	57.0%	59.7%	56.9%	58.2%
	Valid N	909	2286	2258	5443
Personal Community: Member of bird conservation group	Acquaintance	53.6%	54.6%	55.4%	54.7%
	Close Friend	41.7%	42.2%	44.0%	42.8%
	Relative	22.4%	25.2%	27.2%	25.4%
	Myself	70.9%	76.1%	74.2%	74.4%
	Valid N	1096	2795	2721	6603
Personal Communication: Member of ornithological group	Acquaintance	68.0%	70.4%	67.2%	68.8%
	Close Friend	50.4%	43.0%	42.8%	44.5%
	Relative	16.0%	16.3%	17.4%	16.6%
	Myself	53.6%	45.4%	47.5%	47.8%
	Valid N	660	1462	1473	3595

Table 6.8 Trust in various institutions

	Lower MS			Flyway substrata Middle MS			Upper MS			Flyway MS		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
	State wildlife agencies	3.3	.93	1866	3.2	.91	1200	3.3	.92	267	3.3	.92
Federal wildlife and land management agencies	3.2	.93	1863	3.2	.95	1199	3.3	.91	264	3.2	.93	3324
Elected officials	1.7	.80	1865	1.7	.79	1203	1.8	.83	265	1.7	.80	3331
Waterfowl hunting/conservation organizations	2.9	1.00	1831	3.0	.97	1191	3.1	.91	262	3.0	.98	3281
Birding/bird conservation organizations	4.0	.75	1870	4.1	.72	1204	3.9	.70	268	4.0	.74	3338
Other conservation organizations	3.5	.82	1822	3.5	.85	1172	3.4	.84	264	3.5	.83	3255
University researchers/scientists	3.6	.92	1853	3.7	.92	1195	3.6	.87	267	3.6	.92	3311

Scale of 1=Do not trust at all to 5=Trust completely

Table 6.8a Trust in various institutions response distribution

Item	Response					Valid N
	Do not trust at all	Trust a little	Trust somewhat	Trust a lot	Trust completely	
State wildlife agencies	4.3%	16.3%	39.4%	34.1%	5.8%	8409
Federal wildlife and land management agencies	5.1%	17.1%	40.2%	31.8%	5.7%	8394
Elected officials	47.8%	35.7%	14.8%	1.4%	0.2%	8387
Waterfowl hunting/conservation organizations	7.2%	24.5%	37.1%	26.8%	4.3%	8280
Birding/bird conservation organizations	0.3%	3.0%	15.5%	56.7%	24.6%	8417
Other conservation organizations	1.3%	8.2%	36.0%	45.1%	9.4%	8184
University researchers/scientists	1.6%	8.0%	26.3%	47.6%	16.6%	8387

Table 6.8b Trust in various institutions ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
State wildlife agencies	Between Groups	39.51	2	19.75	22.86	0.00	
	Within Groups	7268.81	8411	0.86			
	Total	7308.32	8413				0.01
Federal wildlife and land management agencies	Between Groups	2.26	2	1.13	1.26	0.28	
	Within Groups	7520.70	8396	0.90			
	Total	7522.96	8398				0.00
Elected officials	Between Groups	2.91	2	1.46	2.37	0.09	
	Within Groups	5165.34	8391	0.62			
	Total	5168.25	8393				0.00
Waterfowl hunting/conservation organizations	Between Groups	24.08	2	12.04	12.42	0.00	
	Within Groups	8030.76	8286	0.97			
	Total	8054.84	8288				0.00
Birding/bird conservation organizations	Between Groups	12.61	2	6.30	11.72	0.00	
	Within Groups	4529.74	8419	0.54			
	Total	4542.35	8421				0.00
Other conservation organizations	Between Groups	18.57	2	9.28	13.73	0.00	
	Within Groups	5537.03	8187	0.68			
	Total	5555.60	8189				0.00
University researchers/scientists	Between Groups	17.29	2	8.65	10.91	0.00	
	Within Groups	6645.91	8389	0.79			
	Total	6663.20	8391				0.00

Table 6.9 Percent making donation greater than \$0 in past year

		Flyway substrata			Flyway
		Lower	Middle	Upper	
		MS	MS	MS	MS
Percent making donation greater than \$0 in past year	Wetland or Waterfowl conservation	46.8%	50.9%	52.8%	50.9%
	Conservation of other birds	72.1%	73.6%	74.1%	73.5%
	Birdwatching and related issues	80.7%	81.0%	78.4%	80.0%
	Waterfowl hunting	17.1%	12.4%	16.1%	14.6%
Valid N		922	2457	2475	5830

Table 6.9a Percent making donation greater than \$0 in past year significance tests

		Chi-Square	df	Cramer's V
Percent making donation greater than \$0 in past year	Wetland or Waterfowl conservation	31.96*	2	.06*
	Conservation of other birds	23.53*	2	.05*
	Birdwatching and related issues	14.11*	2	.04*
	Waterfowl hunting	16.43*	2	.05*

*p < 0.05

Table 6.9b Donations to wetland or waterfowl conservation

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Wetland or waterfowl conservation	\$0	69.2%	63.0%	60.5%	63.3%
	Less than \$250	27.2%	33.7%	35.3%	33.0%
	\$250 to \$999	2.9%	2.7%	3.5%	3.0%
	\$1000 to \$2499	0.5%	0.3%	0.4%	0.4%
	\$2500 to \$4999	0.2%	0.2%	0.1%	0.2%
	\$5000 to \$9999	0.0%	0.0%	0.1%	0.0%
	\$10,000 or more	0.0%	0.1%	0.1%	0.1%
	Valid N	1400	3375	3306	8077

Table 6.9c Donations to conservation of other bird species

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Conservation of other bird species	\$0	52.9%	46.8%	45.3%	47.4%
	Less than \$250	40.9%	45.7%	45.8%	44.8%
	\$250 to \$999	4.5%	6.3%	6.8%	6.1%
	\$1000 to \$2499	1.4%	0.8%	1.6%	1.2%
	\$2500 to \$4999	0.3%	0.3%	0.2%	0.3%
	\$5000 to \$9999	0.0%	0.1%	0.0%	0.0%
	\$10,000 or more	0.0%	0.1%	0.2%	0.1%
	Valid N	1412	3396	3354	8154

Table 6.9d Donations to birdwatching and related issues

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Birdwatching and relating issues	\$0	47.5%	42.1%	42.0%	43.1%
	Less than \$250	44.6%	50.6%	49.7%	49.1%
	\$250 to \$999	6.2%	6.2%	6.8%	6.4%
	\$1000 to \$2499	1.5%	0.8%	1.1%	1.1%
	\$2500 to \$4999	0.1%	0.3%	0.2%	0.2%
	\$5000 to \$9999	0.0%	0.0%	0.0%	0.0%
	\$10,000 or more	0.0%	0.0%	0.1%	0.0%
	Valid N	1417	3436	3347	8197

Table 6.9e Donations to waterfowl hunting and hunting related issues

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Waterfowl hunting and hunting related issues	\$0	88.6%	90.7%	87.6%	89.2%
	Less than \$250	9.7%	8.5%	11.2%	9.7%
	\$250 to \$999	1.2%	0.6%	0.9%	0.8%
	\$1000 to \$2499	0.4%	0.1%	0.2%	0.2%
	\$2500 to \$4999	0.0%	0.1%	0.1%	0.1%
	\$5000 to \$9999	0.0%	0.0%	0.0%	0.0%
	\$10,000 or more	0.2%	0.0%	0.0%	0.0%
	Valid N	1383	3280	3229	7889

Table 6.10 Permits purchased and fees paid in the past 12 months

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Fees/Permits paid for in past 12 months	Federal Migratory Bird Hunting and Conservation Stamp	21.0%	19.0%	15.5%	17.9%
	National Wildlife Refuge access fees	41.5%	39.3%	31.6%	36.5%
	State Park access permit or fee	77.4%	77.2%	94.1%	84.2%
	State Wildlife Management Area access permit or fee	39.2%	25.4%	27.7%	28.7%
	County/local Conservation Land access fees	13.9%	20.6%	27.2%	22.2%
	Access fees for land owned by non-governmental conservation organizations	14.1%	15.6%	13.2%	14.3%
	National Park pass	53.0%	54.8%	46.1%	50.9%
	Valid N	1629	3884	3786	9299

Table 6.10a Permits purchased and fees paid significance tests

		Chi-Square	df	Cramer's V
Fees/Permits paid for in past 12 months	Federal Migratory Bird Hunting and Conservation Stamp	0.96	2	.01
	National Wildlife Refuge access fees	0.538	2	.01
	State Park access permit or fee	761.82	2	.30*
	State Wildlife Management Area access permit or fee	66.54*	2	.09*
	County/local Conservation Land access fees	193.21*	2	.15*
	Access fees for land owned by non-governmental conservation organizations	5.35	2	.03
	National Park pass	13.21*	2	.04*

*p < 0.05

Table 6.11 Willingness to pay for permits and fees in the next 12 months

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Fees/Permits willing to pay for in next 12 months	Federal Migratory Bird Hunting and conservation Stamp	41.2%	41.1%	39.1%	40.4%
	National Wildlife Refuge access fees	80.3%	79.2%	77.4%	78.7%
	State Park access permit or fee	90.9%	89.3%	97.2%	92.5%
	State Wildlife Management Area access permit or fee	78.8%	76.1%	73.5%	75.7%
	County/local Conservation Land access fees	65.2%	68.4%	69.3%	68.1%
	Access fees for land owned by non-governmental conservation organizations	63.3%	63.3%	58.8%	61.6%
	National Park pass	82.3%	83.9%	82.5%	83.0%
	Valid N	1629	3884	3786	9299

Table 6.11a Willingness to pay for permits and fees significance tests

		Chi-Square	df	Cramer's V
Fees/Permits willing to pay for in next 12 months	Federal Migratory Bird Hunting and conservation Stamp	0.06	2	.00
	National Wildlife Refuge access fees	7.18*	2	.03*
	State Park access permit or fee	194.66*	2	.15*
	State Wildlife Management Area access permit or fee	2.69	2	.02
	County/local Conservation Land access fees	27.74*	2	.06*
	Access fees for land owned by non- governmental conservation organizations	0.25	2	.01
	National Park pass	16.89*	2	.05*

*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 largely white (97-99%; Tables 7.1, 7.1a), and non-Hispanic (99%; Table 7.2). Respondents were more likely to be female, though this difference is small (Table 7.3).

After removing any respondents under the age of 18, the average age of respondents was 58 years old, with no substantive differences between the substrata (Table 7.4). Almost half of respondents reported graduate or professional-level education (43-45%; Table 7.5), and another third reported holding a Bachelor's degree (33-34%). Analyses showed no differences between the substrata in education. Most respondents indicated that a nature related profession was not their primary source of personal income across substrata (83-85%), with no significant differences between substrata (Table 7.6). Across substrata, 60-64% made less than \$75,000 per year in personal income, while 8-10% made more than \$150,000 (Table 7.7). Analyses indicate no significant differences between the substrata.

A majority of respondents did not own rural land (59-69%), and those that did owned an average of 71 acres to 424 acres (Table 7.8). There were significant differences between the substrata in whether or not respondents owned land in a rural area (Upper: 55%, Middle: 69%, Lower: 59%). There were no significant difference between substrata in the number of acres owned. In the Lower and Middle Mississippi substrata, 44-45% of respondents reported living in a medium or large urban area, and 37% reported the same in the Upper Mississippi (Table 7.9). Respondents from the Upper Mississippi were overall significantly more rural in their current residence than the rest of the flyway (Upper reporting residence in rural area: 28%, Middle: 19%, Lower: 21%). Respondents also reported the population size of the area where they grew up, and analyses revealed significant but small differences (Table 7.10).

Table 7.1 Percent reporting race

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Race	American Indian/Native American	3.6%	2.1%	1.6%	2.2%
	Asian	2.1%	1.0%	.8%	1.1%
	Black or African American	.4%	.5%	.2%	.4%
	Native Hawaiian or Pacific Islander	.2%	.1%	.2%	.2%
	White	97.1%	98.6%	99.2%	98.5%
	Valid N	1415	3424	3327	8164

Table 7.1a Race significance tests

		Chi-Square	df	Cramer's V
Race	American Indian/Native American	17.39*	2	.05*
	Asian	18.24*	2	.05*
	Black or African American	5.21	2	.03
	Native Hawaiian or Pacific Islander	1.89	2	.02
	White	7.70*	2	.03*

*p < 0.05

Table 7.2 Ethnicity

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Hispanic or Latino	Yes	1.1%	1.1%	.8%	1.0%
	No	98.9%	98.9%	99.2%	99.0%
Valid N		1423	3432	3351	8203
Significance:		$\chi^2 = 2.39$		Cramer's V=.02	

Table 7.3 Gender

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Gender	Male	45.6%	43.8%	44.0%	44.2%
	Female	54.4%	56.2%	56.0%	55.8%
	Valid N	1450	3497	3404	8349
Significance:		$\chi^2 = 6.35^*$		Cramer's V=.04*	

Table 7.4 Age

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
	Mean	59	58	59	58
Age	SD	13.92	13.95	13.88	13.93
	Range	78	83	77	83
	Valid N	1436	3456	3367	8258
Significance:		F (2,3233)= 4.24*		$\eta^2=.00$	

Table 7.5 Education

		Flyway substrata			Flyway MS
		Lower MS	Middle MS	Upper MS	
Level of education	Some high school or less	.5%	.7%	.7%	.7%
	High school diploma or GED	4.0%	4.4%	3.9%	4.1%
	Some college (no degree)	12.6%	11.6%	10.6%	11.4%
	Associate's degree (2 years)	5.2%	6.0%	7.4%	6.3%
	Bachelors degree (4 years)	32.7%	32.8%	34.4%	33.3%
	Graduate or professional school	45.0%	44.5%	43.1%	44.1%
	Valid N	1451	3489	3407	8345
Significance:		$\chi^2 = 17.12$		Cramer's V=.03	

Table 7.6 Nature-related profession

		Flyway substrata			Flyway MS
		Lower MS	Middle MS	Upper MS	
Is a nature-related profession primary source of personal income?	Yes	17.4%	15.0%	15.7%	15.7%
	No	82.6%	85.0%	84.3%	84.3%
	Valid N	1455	3502	3423	8378
Significance:		$\chi^2 = 4.57$		Cramer's V=.02	

Table 7.7 Income

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Personal income	Less than \$24,999	15.7%	14.7%	14.0%	14.6%
	\$25,000 to \$49,999	21.9%	22.3%	25.0%	23.2%
	\$50,000 to \$74,999	21.9%	22.4%	24.0%	22.9%
	\$75,000 to \$99,999	15.6%	16.7%	16.3%	16.4%
	\$100,000 to \$124,999	10.9%	10.6%	8.8%	10.0%
	\$125,000 to \$149,999	4.5%	4.1%	4.2%	4.2%
	\$150,000 to \$199,999	4.8%	4.5%	3.2%	4.1%
	\$200,000 to \$249,999	1.7%	1.9%	2.0%	1.9%
	\$250,000 to \$299,999	1.0%	1.0%	.8%	1.0%
	\$300,000 or more	2.0%	1.6%	1.7%	1.7%
Valid N		1265	3072	3045	2899
Significance:		$\chi^2 = 28.29$		Cramer's V=.04	

Table 7.8 Rural land ownership

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Do you own land in a rural area	Yes	41.2%	31.2%	45.2%	38.2%
	No	58.8%	68.8%	54.8%	61.8%
How many acres of rural land?	Mean	71	424	401	340
	SD	216.02	3,972.61	3,836.77	3,468.68
	Range	3,000	43,028	42,798	43,028
	Valid N	1456	3507	3425	8386
Own land Y/N significance:		$\chi^2 = 147.50^*$		Cramer's V=.13*	
Acreage owned significance:		F (2,1061)= 2.14		$\eta^2=.00$	

Table 7.9 Urban vs Rural Residence

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Where you live now	Large Urban area (500,000 or more)	14.4%	20.8%	13.3%	16.9%
	Medium Urban area (50,000 to 499,999)	30.2%	22.9%	23.4%	24.5%
	Small city (10,000 to 49,999)	22.1%	23.0%	18.0%	21.1%
	Small town (2,000 to 9,999)	12.0%	14.5%	17.7%	15.2%
	Rural area (less than 2,000)	21.4%	18.7%	27.6%	22.4%
	Valid N	1444	3501	3424	8365
Significance:		$\chi^2 = 196.14^*$		Cramer's V=.11*	

Table 7.10 Urban vs Rural Upbringing

		Flyway substrata			Flyway
		Lower MS	Middle MS	Upper MS	MS
Where you grew up	Large Urban area (500,000 or more)	14.6%	20.4%	18.2%	18.5%
	Medium Urban area (50,000 to 499,999)	26.4%	22.7%	24.5%	24.0%
	Small city (10,000 to 49,999)	22.4%	22.3%	19.2%	21.2%
	Small town (2,000 to 9,999)	17.0%	15.4%	18.3%	16.8%
	Rural area (less than 2,000)	19.6%	19.2%	19.8%	19.5%
	Valid N	1422	3455	3379	8251
Significance:		$\chi^2 = 43.20^*$		Cramer's V=.05*	

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Appendices

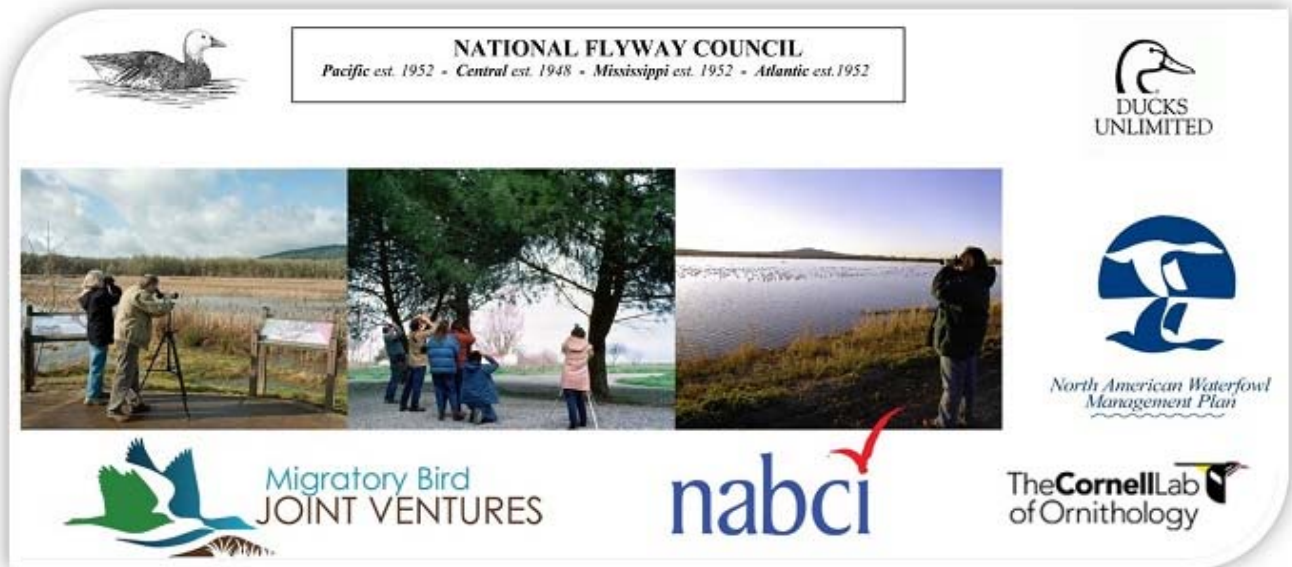
Appendix A: Survey Instrument

Please refer to separate Appendix for a copy of the North American Birdwatching Survey.

Appendix B: Non-response Survey Instrument

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

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

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

8. A person can think of themselves in a variety of ways. On a scale of “1” to “7”, where “1” is “not at all” and “7” is “completely”, how much would you identify yourself as the following? (Please circle one number for each)

	Not at all		Moderately			Completely	
	1	2	3	4	5	6	7
Birdwatcher	1	2	3	4	5	6	7
Duck Hunter	1	2	3	4	5	6	7
Goose Hunter	1	2	3	4	5	6	7
Other hunter	1	2	3	4	5	6	7
Conservationist	1	2	3	4	5	6	7

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

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

10. 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.

11. In what year were you born? 19_____

12. Are you...? Male Female

13. 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

14. 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

15. 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)

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

- | | | |
|---|--|--|
| <input type="checkbox"/> Less than \$24,999 | <input type="checkbox"/> \$75,000-\$99,999 | <input type="checkbox"/> \$200,000-\$249,999 |
| <input type="checkbox"/> \$25,000-\$49,999 | <input type="checkbox"/> \$100,000-\$149,999 | <input type="checkbox"/> \$250,000-\$299,999 |
| <input type="checkbox"/> \$50,000-\$74,999 | <input type="checkbox"/> \$150,000-\$199,999 | <input type="checkbox"/> \$300,000 or more |

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

- Hispanic or Latino
- Not Hispanic or Latino

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

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

19. 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 DiscoverSM

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](tel: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!

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The University of Minnesota is an equal opportunity educator and employer.

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.](#)



College of Food, Agricultural and Natural Resource Sciences

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 at umn.birdwatcher@gmail.com or call [612-625-3718](tel:612-625-3718) and leave a detailed message.

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

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This message was sent from:

CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

November 30, 2016

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UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

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!

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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.](#)



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 an UMN.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, at birdsurvey@umn.edu or call [612-625-3718](tel:612-625-3718) and leave a detailed message.

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

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This message was sent from:

CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA

Participate in the birdwatcher survey.

December 15, 2017

Is this email not displaying correctly?

[View it in your browser.](#)



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

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!

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The University of Minnesota is an equal opportunity educator and employer.

This message was sent from:

CFANS Research
1420 Eckles Avenue
St. Paul, MN, 55108
USA


Appendix D: Institutional Review Board Determination

DETERMINATION OF HUMAN SUBJECT RESEARCH

Version 1.2

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

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

<p>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.</p> <p>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.</p> <p>Please allow up to five (5) business days for review and response.</p> <p>Email completed form to irb@umn.edu</p>	<p>Based on the information provided, this project does not meet the regulatory definition of human subjects research. Additional IRB review is NOT required.</p> <div style="text-align: right; border: 1px solid black; padding: 5px;">  </div>
--	---

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) Fulton, David C.		Highest Earned Degree: PhD
Preferred contact information: <input type="checkbox"/> dcfulton@umn.edu <input type="checkbox"/> Preferred email at which you may be contacted by IRB staff.		
Affiliation and contact information <input checked="" type="checkbox"/> 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 conducted to better understand the preferences for hunting and viewing experiences among different segments of the study population. This information 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.