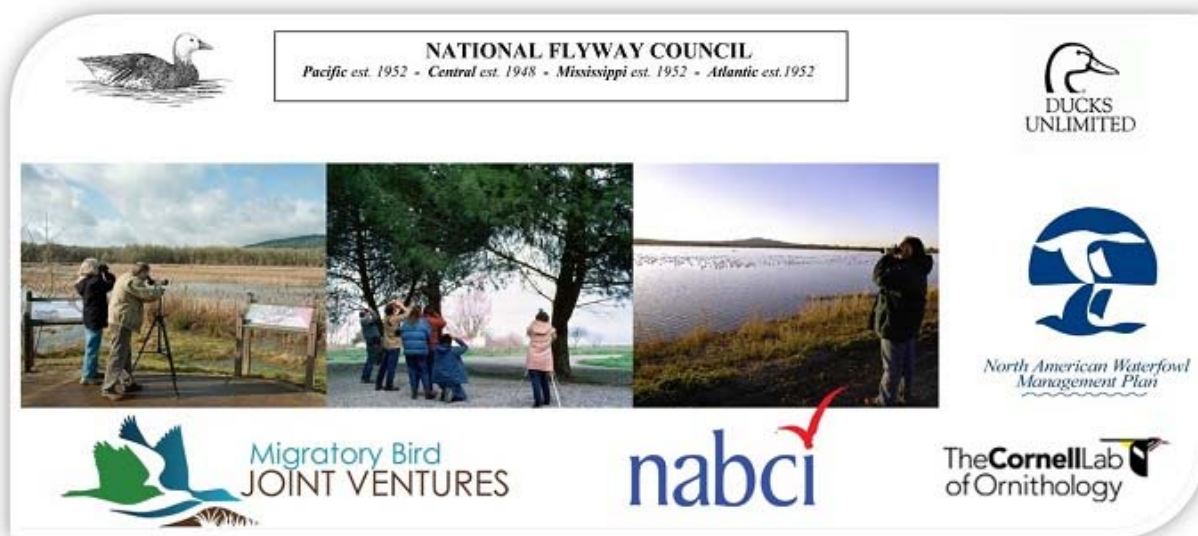


North American Birdwatching Survey: Summary Report Atlantic Flyway 2018



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 Atlantic Flyway 2018

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Suggested Citation

Slagle, Kristina and Alia Dietsch. 2018. North American Birdwatching Survey: Summary Report Atlantic Flyway. Report to the National Flyway Council from the Minnesota Cooperative Fish and Wildlife Research Unit, University of Minnesota and The Ohio State University. St. Paul, MN 55108

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Acknowledgements

This project was funded by the member states of the National Flyway Council (NFC) and Ducks Unlimited. Leadership and staff at the NFC and the Association of Fish and Wildlife Agencies (AFWA) provided critical support and assistance in contracting between the University of Minnesota and the NFC.

We would like to acknowledge the primary direction for study design and implementation provided by the Human Dimensions Working Group of the National Flyway Council, its members, and its executive committee. In addition, extensive technical assistance with study design and study implementation was provided by representatives from all member states of the NFC, the NFC's Public Engagement Team and its members, the Migratory Bird Joint Ventures, the AFWA's North American Bird Conservation Initiative and its members, U.S. Geological Survey Fort Collins Science Center, U.S. Fish and Wildlife, Ducks Unlimited, various team members and committees of the North American Waterfowl Management Plan (NAWMP), the Cornell Lab of Ornithology, and D.J. Case and Associates.

Several key individuals associated with one or more of the organizations above provided significant contributions to and assistance with the design of the study including (in alphabetical order): Barbara Avers, Joe Buchanan, Ashley Dayer, Matt DiBona, Cal DuBrock, Jennie Duberstein, Howie Harshaw, Dale Humburg, Coren Jagnow, Don Kraege, Holly Miller, Mike Peters, Andy Raedeke, Rudy Schuster, Judith Scarl, Dean Smith, Blair Stringham, Mark Vrtiska, and Khristi Wilkins.

Contents

Suggested Citation	ii
Report Authors.....	ii
Acknowledgements.....	ii
Contents	iv
List of Tables and Figures.....	vi
Section 1. Introduction and Overview	1
Background	1
Study Objectives	1
Study Design and Methods.....	2
Section 2. Participation.....	11
Birding.....	11
Other activities.....	12
Section 3. Avidity and Constraints	28
Avidity	28
Constraints.....	28
Section 4. Place.....	40
Preferences	40
Ecosystem Services	40
Section 5. Discrete Choice Models for Preferred Trips.....	48
Section 6. Engagement	55
Community	55
Trust.....	56
Conservation Support	56
Section 7. Respondent Characteristics	84
References	91
Appendices	93
Appendix A: Survey Instrument.....	94
Appendix B: Non-response Survey Instrument	95
Appendix C: Contact E-mails.....	100

Appendix D: Institutional Review Board Determinat 106

List of Tables and Figures

Table 1.1 Stratification for North American Birdwatching Survey	7
Figure 1.1 Flyway map	7
Table 1.2 Distribution of eBird membership across the United States	8
Table 1.3 Response rates for states in the Atlantic Flyway	9
Table 1.4 Response and weights applied to each state-level response.....	10
Table 2.1 Birdwatching or birding participation	13
Table 2.2 Wild Bird Activities	13
Table 2.2a Wild bird activities significance tests	14
Table 2.3 Waterfowl Activities.....	14
Table 2.3a Waterfowl Activities significance tests	14
Table 2.4 Other game bird activities.....	15
Table 2.4a Other game bird activities significance tests	15
Table 2.5 Water Bird Activities	16
Table 2.5a Waterbird activities significance tests	16
Table 2.6 Bird of prey activities	17
Table 2.6a Bird of prey activities significance tests	17
Table 2.7 Hummingbird activities	18
Table 2.7a Hummingbird activities significance tests	18
Table 2.8 Songbird activities	19
Table 2.8a Songbirds activities significance tests	19
Table 2.9 Other bird activities.....	20
Table 2.9a Other birds activities significance tests.....	20
Table 2.10 Percent taking birding trips >1 mile from home and median number of trips taken in past year by flyway substrata.....	21
Table 2.11 Types of participation in birding	22
Table 2.11 Types of participation in birding, cont.	23
Table 2.11a Types of participation in birding response distribution	24
Table 2.11b Types of participation in birding ANOVA tests.....	25
Table 2.12 Participation in consumptive recreation.....	26
Table 2.12a Participation in consumptive recreation significance tests	26
Table 2.13 Nature Based Recreation	27
Table 2.13a Nature Based Recreation significance tests	27
Table 3.1 Importance of birdwatching.....	30
Table 3.1 Importance of birdwatching, cont.	31
Table 3.1a Importance of birdwatching response distribution	32
Table 3.1b Importance of birdwatching ANOVA tests.....	33
Table 3.2 Equipment Owned	34

Table 3.2a Equipment owned significance tests.....	34
Table 3.3 Personal rating of ability to observe and identify birds on scale from 1=Novice to 7=Expert.....	34
Table 3.4 Barriers to participation	35
Table 3.4 Barriers to participation (cont.).....	36
Table 3.4b Barriers to participation ANOVA tests	38
Table 3.4b Barriers to participation ANOVA tests, cont.	39
Table 4.2 Knowledge and visitation of wetlands	42
Table 4.3 Level of concern for ecological benefits.....	43
Table 4.3b Level of concern for ecological benefits ANOVA tests.....	45
Table 4.4 Ecological services least concerned about losing.....	46
Table 4.5 Ecological services most concerned about losing	47
Table 5.1 Possible trip choice characteristics in discrete choice experiment.....	50
Figure 5.1 Background for Discrete Choice Experiment for birdwatching	51
Figure 5.2 Example of choice scenario for birdwatching DCE	52
Table 5.2 Relative attribute importance derived from hierarchical Bayes estimation.....	53
Table 5.3 Results of the hierarchical Bayes model for trip choice for birdwatching	54
Table 6.1 Level of social identification with group types.....	57
Table 6.1a Level of social identification with group types response distribution	58
Table 6.1b Level of social identification with group types ANOVA tests.....	58
Table 6.2 National Audubon Society Member.....	58
Table 6.3 Level of involvement in bird groups.....	59
Table 6.3b Level of involvement in bird groups ANOVA tests	60
Table 6.4 Importance of eBird	61
Table 6.5 Participation in conservation activities in past year	62
Table 6.5a Participation in conservation activities response distribution.....	63
Table 6.5b Participation in conservation activities ANOVA Tests.....	64
Table 6.6 Participation in wetland conservation activities in past year	65
Table 6.6a Participation in conservation activities response distribution.....	66
Table 6.6b Participation in wetland conservation activities ANOVA tests	67
Table 6.7a Personal community: Recreation	68
Table 6.7b Personal community: Agencies	69
Table 6.7c Personal community: Environmental Occupations	70
Table 6.7d Personal community: Conservation organizations	71
Table 6.7e Personal community: Hunting organizations	72
Table 6.7f Personal community: Bird groups.....	73
Table 6.8 Trust in various institutions.....	74
Table 6.8a Trust in various institutions response distribution	75
Table 6.8b Trust in various institutions ANOVA tests.....	76
Table 6.9 Percent making donation greater than \$0 in past year	77

Table 6.9a Percent making donation greater than \$0 in past year significance tests	77
Table 6.9b Donations to wetland or waterfowl conservation	78
Table 6.9c Donations to conservation of other bird species	78
Table 6.9d Donations to birdwatching and related issues.....	79
Table 6.10 Permits purchased and fees paid in the past 12 months.....	80
Table 6.10a Permits purchased and fees paid significance tests.....	81
Table 6.11 Willingness to pay for permits and fees in the next 12 months	82
Table 6.11a Willingness to pay for permits and fees significance tests	83
Table 7.1 Percent reporting race	85
Table 7.1a Race significance tests.....	85
Table 7.2 Ethnicity	85
Table 7.3 Gender.....	86
Table 7.4 Age	86
Table 7.5 Education	87
Table 7.6 Nature-related profession.....	87
Table 7.7 Income.....	88
Table 7.8 Rural land ownership	89
Table 7.9 Urban vs Rural Residence.....	90
Table 7.10 Urban vs Rural Upbringing	90

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 publics’ 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 NSW and NABS studies.

The NSW 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 Atlantic Flyway

State	Flyway Stratum	eBird Sample	Number Returned	Response Rate
FL	AL	5602	1301	23.2%
GA	AL	4030	796	19.8%
NC	AL	4886	988	20.2%
SC	AL	2282	462	20.2%
TOTAL		16800	3547	21.1%
DE	AM	642	146	22.7%
MD/DC	AM	3807	1031	27.1%
NJ	AM	3631	864	23.8%
PA	AM	7387	1775	24.0%
VA	AM	4906	1157	23.6%
WV	AM	775	174	22.5%
TOTAL		21148	5147	24.3%
CT	AU	2226	533	23.9%
ME	AU	1657	471	28.4%
MA	AU	4176	1072	25.7%
NH	AU	1577	358	22.7%
NY	AU	8691	2073	23.9%
RI	AU	410	102	24.9%
VT	AU	1531	399	26.1%
TOTAL		20268	5008	24.7%
Atlantic Total		58216	13702	23.5%
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
FL	AL	5602	0.3335	0.0962	0.0418	1301	0.9091	1.0135	1.0630
GA	AL	4030	0.2399	0.0692	0.0301	796	1.0689	1.1916	1.2499
NC	AL	4886	0.2908	0.0839	0.0365	988	1.0441	1.1640	1.2209
SC	AL	2282	0.1358	0.0392	0.0170	462	1.0429	1.1626	1.2194
TOTAL		16800	1.0000	0.2886	0.1254	3547			
DE	AM	642	0.0304	0.0110	0.0048	146	1.0702	1.0350	1.0856
MD/DC	AM	3807	0.1800	0.0654	0.0284	1031	0.8987	0.8691	0.9116
NJ	AM	3631	0.1717	0.0624	0.0271	864	1.0228	0.9891	1.0375
PA	AM	7387	0.3493	0.1269	0.0551	1775	1.0129	0.9795	1.0274
VA	AM	4906	0.2320	0.0843	0.0366	1157	1.0320	0.9980	1.0468
WV	AM	775	0.0366	0.0133	0.0058	174	1.0840	1.0483	1.0996
TOTAL		21148	1.0000	0.3633	0.1579	5147			
CT	AU	2226	0.1098	0.0382	0.0166	533	1.0319	0.9830	1.0311
ME	AU	1657	0.0818	0.0285	0.0124	471	0.8693	0.8280	0.8685
MA	AU	4176	0.2060	0.0717	0.0312	1072	0.9625	0.9169	0.9617
NH	AU	1577	0.0778	0.0271	0.0118	358	1.0884	1.0368	1.0875
NY	AU	8691	0.4288	0.1493	0.0649	2073	1.0359	0.9868	1.0350
RI	AU	410	0.0202	0.0070	0.0031	102	0.9932	0.9461	0.9924
VT	AU	1531	0.0755	0.0263	0.0114	399	0.9481	0.9031	0.9473
TOTAL		20268	1.0000	0.3482	0.1513	5008			
Atlantic Total		58216		1.0000	0.4346	13702			
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 (96%), and only slightly fewer reported feeding birds at their home (89-92%; Table 2.2). Analyses indicated some significant difference between the substrata, though effect sizes suggest these differences were small (Table 2.2a).

Nearly all respondents reported watching waterfowl (87-91%; Table 2.3), waterbirds (89-90%; Table 2.5), birds of prey (96-97%; Table 2.6), hummingbirds (91-92%; Table 2.7), songbirds (98%; Table 2.8), and other birds (75-79%; Table 2.9). About 40% of respondents reported photographing all birds except other game birds (21-29%; Table 2.4), and slightly more reported photographing songbirds (51-52%). There were significant but small differences between the substrata in watching other game birds (Upper: 79%, Middle: 65%, Lower: 58%, Tables 2.4, 2.4a) and respondents claiming to have not done any activities related to other game birds (Upper: 20%, Middle: 34%, Lower: 41%). Other differences between the substrata were significant but small (Tables 2.3a-2.9a).

Most respondents had taken a trip more than 1 mile from home in the past 12 months, and there were no differences between the substrata (73-74%; Table 2.10). Respondents indicated the number of trips taken in the past 12 months, and the median across the substrata was 10-12 trips (Table 2.10). 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 statements, “I typically use binoculars to view birds,” and “I often use a camera instead of using binoculars,” (\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, none of the differences produced an effect size greater than zero (Table 2.11b).

OTHER ACTIVITIES

Participation in consumptive recreation in the past 12 months was highest for fishing (90%-95%; Table 2.12) and lowest for hunting other migratory birds (5-7%). Differences between the substrata were significant but small on several items (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 and learning about nature (Table 2.13). Analyses revealed significant differences between the substrata on participation in several activities, but differences were small (Table 2.13a).

Table 2.1 Birdwatching or birding participation

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Do you ever participate in birdwatching or birding?	Yes	99.5%	99.5%	99.6%	99.5%
	No	.5%	.5%	.4%	.5%
	Valid N	3513	5089	4959	13562

Table 2.2 Wild Bird Activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Wild bird activities	Watching birds at my home	99.7%	99.6%	98.8%	99.3%
	Feeding birds at my home	89.5%	92.2%	88.8%	90.2%
	Watching birds away from my home	96.0%	95.9%	96.1%	96.0%
	Photographing or filming birds	71.8%	70.8%	70.5%	71.0%
	Counting/monitoring birds	74.5%	75.0%	68.8%	72.7%
	Keeping track of the birds you see on a list	79.2%	80.3%	79.8%	79.8%
	Installing or maintaining nest boxes for birds	56.0%	57.5%	50.8%	54.7%
	Valid N	3513	5089	4959	13562

Table 2.2a Wild bird activities significance tests

		Chi-Square	df	Cramer's V
Wild bird activities	Watching birds at my home	30.56*	2	.05*
	Feeding birds at my home	41.76*	2	.06*
	Watching birds away from my home	0.38	2	.01
	Photographing or filming birds	3.31	2	.02
	Counting/monitoring birds	61.15*	2	.07*
	Keeping track of the birds you see on a list	1.54	2	.01
	Installing or maintaining nest boxes for birds	49.83*	2	.06*

*p < 0.05

Table 2.3 Waterfowl Activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Waterfowl activities	Waterfowl watching	86.5%	88.0%	90.9%	88.6%
	Waterfowl feeding	8.0%	5.2%	5.1%	6.0%
	Waterfowl photographing	42.4%	39.7%	41.8%	41.2%
	Waterfowl did not do any activities	12.4%	11.1%	8.1%	10.4%
	Valid N	3513	5089	4959	13562

Table 2.3a Waterfowl Activities significance tests

		Chi-Square	df	Cramer's V
Waterfowl activities	Waterfowl watching	44.80*	2	.06*
	Waterfowl feeding	35.99*	2	.05*
	Waterfowl photographing	7.99*	2	.02*
	Waterfowl did not do any activities	46.02*	2	.06*

*p < 0.05

Table 2.4 Other game bird activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Other game bird activities	Other game birds watching	58.1%	64.9%	79.1%	68.0%
	Other game birds feeding	3.2%	3.6%	6.6%	4.5%
	Other game birds photographing	21.3%	22.0%	28.5%	24.1%
	Other game birds did not do any activities	40.8%	34.2%	19.7%	31.0%
	Valid N	3513	5089	4959	13562

Table 2.4a Other game bird activities significance tests

		Chi-Square	df	Cramer's V
Other game bird activities	Other game birds watching	467.95*	2	.19*
	Other game birds feeding	71.48*	2	.07*
	Other game birds photographing	83.49*	2	.08*
	Other game birds did not do any activities	445.19*	2	.18*

*p < 0.05

Table 2.5 Water Bird Activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Water bird activities	Water birds watching	89.7%	88.5%	90.3%	89.5%
	Water birds feeding	2.4%	.8%	.9%	1.3%
	Water birds photographing	47.2%	42.3%	42.7%	43.8%
	Water birds did not do any activities	9.3%	10.8%	8.6%	9.6%
	Valid N	3513	5089	4959	13562

Table 2.5a Waterbird activities significance tests

		Chi-Square	df	Cramer's V
Water bird activities	Water birds watching	9.96*	2	.03*
	Water birds feeding	51.08*	2	.06*
	Water birds photographing	22.60*	2	.04*
	Water birds did not do any activities	12.81*	2	.03*

*p < 0.05

Table 2.6 Bird of prey activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Bird of prey activities	Birds of prey watching	96.3%	96.4%	96.8%	96.5%
	Birds of prey feeding	2.1%	1.8%	1.7%	1.9%
	Birds of prey photographing	43.3%	41.3%	40.7%	41.7%
	Birds of prey did not do any activities	2.8%	3.0%	2.5%	2.8%
	Valid N	3513	5089	4959	13562

Table 2.6a Bird of prey activities significance tests

		Chi-Square	df	Cramer's V
Bird of prey activities	Birds of prey watching	2.08	2	.01
	Birds of prey feeding	1.94	2	.01
	Birds of prey photographing	5.65	2	.02
	Birds of prey did not do any activities	1.91	2	.01

*p < 0.05

Table 2.7 Hummingbird activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Hummingbird activities	Hummingbirds watching	91.0%	91.7%	91.6%	91.5%
	Hummingbirds feeding	58.0%	57.0%	53.3%	56.0%
	Hummingbirds photographing	38.4%	35.8%	36.2%	36.7%
	Hummingbirds did not do any activities	7.3%	6.7%	6.6%	6.8%
	Valid N	3513	5089	4959	13562

Table 2.7a Hummingbird activities significance tests

		Chi-Square	df	Cramer's V
Hummingbird activities	Hummingbirds watching	1.94	2	.01
	Hummingbirds feeding	21.72*	2	.04*
	Hummingbirds photographing	6.11*	2	.02*
	Hummingbirds did not do any activities	1.78*	2	.01

*p < 0.05

Table 2.8 Songbird activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Songbird activities	Song birds watching	98.0%	98.3%	98.2%	98.2%
	Song birds feeding	70.0%	71.3%	67.3%	69.6%
	Song birds photographing	51.8%	51.8%	51.4%	51.6%
	Song birds did not do any activities	.5%	.4%	.4%	.4%
	Valid N	3513	5089	4959	13562

Table 2.8a Songbirds activities significance tests

		Chi-Square	df	Cramer's V
Songbird activities	Song birds watching	1.56	2	.01
	Song birds feeding	19.38*	2	.04*
	Song birds photographing	0.24	2	.00
	Song birds did not do any activities	1.51	2	.01

*p < 0.05

Table 2.9 Other bird activities

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Other bird activities	Other birds watching	74.9%	76.1%	78.5%	76.7%
	Other birds feeding	28.7%	28.1%	26.9%	27.9%
	Other birds photographing	34.6%	34.0%	35.1%	34.5%
	Other birds did not do any activities	23.1%	22.5%	19.6%	21.7%
Valid N		3513	5089	4959	13562

Table 2.9a Other birds activities significance tests

		Chi-Square	df	Cramer's V
Other bird activities	Other birds watching	0.41	2	.01
	Other birds feeding	5.24	2	.02
	Other birds photographing	3.85	2	.02
	Other birds did not do any activities	0.71	2	.01

*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 Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
In past 12 months, did you take any trips at least 1 mile or more from your home primarily for birdwatching?	Yes	72.5%	72.9%	73.5%	73.0%
	No	27.5%	27.1%	26.5%	27.0%
In the past 12 months, about how many trips at least 1 mile from your home did you take primarily for birdwatching?		10.0	11.0	12.0	11.0
Valid N		3480	5046	4924	13449
Trips taken Y/N significance:		$\chi^2 (2) = 1.07$		Cramer's V = .01	
# of trips significance:		F (2, 6795) = 10.40* $\eta^2 = .00$			

Table 2.11 Types of participation in birding

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
I can identify most birds I see in the field	3.7	.87	3283	3.8	.87	4755	3.8	.88	4650	3.8	.88	12689
I can readily identify many birds in the field by sound	3.1	1.15	3289	3.1	1.17	4747	3.1	1.14	4656	3.1	1.15	12692
I tend to take photos of birds for the primary purpose of having someone help me identify them	2.2	.97	3286	2.2	.96	4755	2.2	.97	4657	2.2	.97	12698
I tend to need to use a field guide (paper or electronic) to identify birds	3.5	1.00	3286	3.4	1.02	4750	3.4	1.00	4663	3.4	1.01	12698
I often use websites, social media or ID apps such as Merlin to identify birds	3.3	1.16	3290	3.2	1.18	4755	3.2	1.18	4656	3.2	1.17	12702
I photograph birds as a way to watch them	3.0	1.26	3282	2.9	1.26	4749	2.9	1.26	4645	2.9	1.26	12675

Table 2.11 Types of participation in birding, cont.

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	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	3.9	1.12	3288	4.0	1.09	4753	4.0	1.06	4656	4.0	1.09	12698
I tend to just watch birds without using any special equipment	2.5	1.24	3282	2.3	1.18	4748	2.3	1.19	4650	2.4	1.20	12679
I use eBird to report my birdwatching experiences	3.0	1.21	3287	3.0	1.19	4751	2.9	1.18	4644	2.9	1.19	12683

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	1.1%	9.2%	19.0%	54.1%	16.6%	12689
I can readily identify many birds in the field by sound	8.7%	26.0%	22.1%	33.2%	9.9%	12692
I photograph birds as way to watch them	24.1%	44.7%	20.0%	9.7%	1.6%	12698
I typically use binoculars to view birds	2.8%	18.4%	26.2%	40.6%	12.0%	12698
I often use websites, social media or ID apps such as Merlin to identify birds	8.5%	21.4%	19.9%	37.4%	12.9%	12702
I tend to need to use a field guide (paper or electronic) to identify birds	15.4%	26.4%	19.5%	27.8%	10.8%	12675
I can identify most birds I see in the field	2.6%	10.4%	14.7%	33.0%	39.3%	12698
I tend to just watch birds without using any special equipment	25.6%	37.6%	16.0%	13.7%	7.0%	12679
I often use a camera instead of using binoculars	11.8%	29.8%	19.9%	29.6%	8.9%	12683
I use eBird to report my birdwatching experiences	11.2%	24.0%	21.4%	25.5%	17.9%	12676

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	2.07	2	1.04	1.35	0.26	
	Within Groups	9737.49	12686	0.77			
	Total	9739.56	12688				.00
I can readily identify many birds in the field by sound	Between Groups	13.87	2	6.94	5.22	0.01	
	Within Groups	16848.73	12689	1.33			
	Total	16862.60	12691				.00
I tend to take photos of birds for the primary purpose of having someone help me identify them	Between Groups	10.38	2	5.19	5.58	0.00	
	Within Groups	11813.01	12695	0.93			
	Total	11823.39	12697				.00
I tend to need to use a field guide (paper or electronic) to identify birds	Between Groups	38.75	2	19.37	19.09	0.00	
	Within Groups	12884.28	12696	1.01			
	Total	12923.03	12698				.00
I often use websites, social media or ID apps such as Merlin to identify birds	Between Groups	36.19	2	18.10	13.13	0.00	
	Within Groups	17507.20	12699	1.38			
	Total	17543.39	12701				.00
I photograph birds as way to watch them	Between Groups	26.39	2	13.20	8.34	0.00	
	Within Groups	20046.45	12672	1.58			
	Total	20072.85	12674				.00
I typically use binoculars to view birds	Between Groups	7.09	2	3.55	3.00	0.05	
	Within Groups	14992.95	12695	1.18			
	Total	15000.05	12697				.00
I often use a camera instead of using binoculars	Between Groups	48.25	2	24.13	16.76	0.00	
	Within Groups	18243.21	12676	1.44			
	Total	18291.47	12678				.00
I tend to just watch birds without using any special equipment	Between Groups	7.34	2	3.67	2.59	0.07	
	Within Groups	17929.52	12679	1.41			
	Total	17936.86	12681				.00
I use eBird to report my birdwatching experiences	Between Groups	1.21	2	0.60	0.37	0.69	
	Within Groups	20762.73	12673	1.64			
	Total	20763.94	12675				.00

Table 2.12 Participation in consumptive recreation

	Flyway substrata			Flyway Atlantic
	Lower Atlantic	Middle Atlantic	Upper Atlantic	
Fishing (last 12 months)	95.4%	90.5%	89.9%	91.8%
Hunting waterfowl (last 12 months)	5.3%	6.7%	6.9%	6.3%
Hunting other migratory birds (last 12 months)	7.4%	6.9%	4.6%	6.3%
Hunting other game birds (last 12 months)	5.1%	13.2%	12.6%	10.5%
Hunting any other game animals (last 12 months)	16.4%	25.0%	23.6%	22.8%
Other	7.1%	6.6%	8.3%	7.3%
Valid N	3513	5089	4959	13562

Table 2.12a Participation in consumptive recreation significance tests

		Chi-Square	df	Cramer's V
Activity	Fishing (last 12 months)	25.33*	2	.05*
	Hunting waterfowl (last 12 months)	0.54	2	.01
	Hunting other migratory birds (last 12 months)	12.22*	2	.03*
	Hunting other game birds (last 12 months)	2.00*	2	.05*
	Hunting any other game animals (last 12 months)	10.86*	2	.03*
	Other	1.72	2	.02

*p < 0.05

Table 2.13 Nature Based Recreation

		Flyway substrata			Flyway Atlantic
		Lower Atlantic	Middle Atlantic	Upper Atlantic	
Activity	Spending time in nature away from home	94.1%	95.0%	95.3%	94.9%
	Non-motorized outdoor recreation activities	85.1%	87.1%	90.2%	87.6%
	Motorized outdoor recreation activities	22.8%	16.0%	18.2%	18.7%
	Viewing wildlife	99.1%	99.6%	99.7%	99.5%
	Consumptive wildlife-based activities	22.5%	20.3%	19.1%	20.5%
	Learning about nature	80.6%	81.9%	81.0%	81.2%
	Backyard/at-home nature activities	94.1%	94.2%	92.8%	93.7%
	Other	17.3%	17.4%	18.6%	17.8%
	Valid N	3513	5089	4959	13562

Table 2.13a Nature Based Recreation significance tests

		Chi-Square	df	Cramer's V
Activity	Spending time in nature away from home	3.76	2	.02
	Non-motorized outdoor recreation activities	51.03*	2	.06*
	Motorized outdoor recreation activities	63.19*	2	.07*
	Viewing wildlife	7.65*	2	.02*
	Consumptive wildlife-based activities	13.62*	2	.03*
	Learning about nature	2.52	2	.01
	Backyard/at-home nature activities	8.01*	2	.02*
	Other	7.06*	2	.04*

*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,” “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,” “Developing my skills and abilities in birdwatching is important to me,” (\bar{x} = 4.0-4.5; Table 3.1, 3.1a). Agreement was weakest for the following statements: “If I couldn't go birdwatching I am not sure what I would do instead,” and “Most of my friends are in some way connected with birdwatching,” (\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 reported not owning any equipment for birdwatching (6%, Table 3.2), while most reported owning binoculars (92-93%). There were small differences between the substrata in ownership of cameras and spotting scopes for birdwatching, but the effect sizes were small (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). There were no differences between the substrata.

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 ($\bar{x} = 2.0$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these differences are small (Table 3.4b).

Table 3.1 Importance of birdwatching

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	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	4.2	.80	3310	4.2	.82	4788	4.2	.82	4685	4.2	.81
Most of my friends are in some way connected with birdwatching	2.5	1.00	3311	2.5	1.01	4788	2.5	.97	4686	2.5	.99	12785
Birdwatching has central role in my life	3.5	1.10	3309	3.5	1.12	4791	3.5	1.09	4683	3.5	1.10	12783
A lot of my life is organized around birdwatching	2.9	1.13	3309	2.9	1.14	4789	2.9	1.13	4680	2.9	1.13	12779
If I couldn't go birdwatching I am not sure what I would do instead	2.4	1.06	3309	2.5	1.07	4789	2.4	1.05	4683	2.4	1.06	12781
Developing my skills and abilities in birdwatching is important to me	4.0	.79	3315	4.0	.81	4792	4.0	.81	4685	4.0	.81	12792

Table 3.1 Importance of birdwatching, cont.

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	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	3314	3.7	.97	4788	3.7	.98	4686	3.7	.97	12789
Using new techniques, technology and equipment to help me identify more birds is important to me	3.4	.95	3313	3.3	.98	4791	3.3	.96	4691	3.3	.97	12796
Challenging my birdwatching skills is important	3.6	.93	3311	3.6	.95	4788	3.6	.95	4672	3.6	.94	12772
Being in nature is an important part of birdwatching	4.5	.71	3311	4.4	.71	4789	4.5	.71	4682	4.5	.71	12783
The sights and sounds of nature are important to birdwatching	4.5	.65	3308	4.5	.64	4786	4.5	.65	4681	4.5	.65	12775
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	0.9%	2.3%	12.6%	44.2%	39.9%	12783
If I couldn't go birdwatching I am not sure what I would do instead	14.4%	42.0%	27.1%	13.8%	2.8%	12785
Birdwatching has central role in my life	4.5%	15.9%	26.0%	34.8%	18.7%	12783
Birdwatching is one of the most enjoyable activities I do	10.1%	29.5%	27.7%	23.8%	9.0%	12779
Challenging my birdwatching skills is important	18.7%	39.3%	25.2%	12.4%	4.3%	12781
Most of my friends are in some way connected with birdwatching	1.0%	2.9%	18.3%	51.6%	26.2%	12792
Using new techniques, technology and equipment to help me identify more birds is important to me	2.9%	7.9%	23.6%	45.3%	20.4%	12789
The sights and sounds of nature are important to birdwatching	4.0%	14.4%	36.6%	35.3%	9.7%	12796
Getting to enjoy the natural environment through birdwatching is important	2.1%	10.1%	31.4%	40.5%	15.9%	12772
Getting a chance to add a new bird to my life list is important to me	0.6%	1.2%	5.8%	35.9%	56.6%	12783
A lot of my life is organized around birdwatching	0.5%	0.6%	4.0%	39.7%	55.2%	12775
Being in nature is an important part of birdwatching	0.6%	0.6%	5.3%	39.8%	53.7%	12792

Table 3.1b Importance of birdwatching ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
Birdwatching is one of the most enjoyable activities I do	Between Groups	.81	2	.40	.61	.54	
	Within Groups	8492.59	12780	.66			
	Total	8493.40	12782				.00
Most of my friends are in some way connected with birdwatching	Between Groups	2.70	2	1.35	1.38	.25	
	Within Groups	12508.13	12782	.98			
	Total	12510.83	12784				.00
Birdwatching has central role in my life	Between Groups	7.47	2	3.74	3.08	.05	
	Within Groups	15485.07	12780	1.21			
	Total	15492.54	12782				.00
A lot of my life is organized around birdwatching	Between Groups	3.71	2	1.86	1.44	.24	
	Within Groups	16452.46	12775	1.29			
	Total	16456.17	12777				.00
If I couldn't go birdwatching I am not sure what I would do instead	Between Groups	.47	2	.23	.21	.81	
	Within Groups	14394.18	12778	1.13			
	Total	14394.65	12780				.00
Developing my skills and abilities in birdwatching is important to me	Between Groups	.48	2	.24	.37	.69	
	Within Groups	8306.90	12789	.65			
	Total	8307.38	12791				.00
Getting a chance to add a new bird to my life list is important to me	Between Groups	20.70	2	10.35	11.04	.00	
	Within Groups	11991.60	12785	.94			
	Total	12012.31	12787				.00
Using new techniques, technology and equipment to help me identify more birds is important to me	Between Groups	32.36	2	16.18	17.27	.00	
	Within Groups	11985.60	12792	.94			
	Total	12017.96	12794				.00
Challenging my birdwatching skills is important	Between Groups	1.89	2	.95	1.06	.35	
	Within Groups	11395.78	12768	.89			
	Total	11397.67	12770				.00
Being in nature is an important part of birdwatching	Between Groups	2.35	2	1.17	2.33	.10	
	Within Groups	6433.75	12779	.50			
	Total	6436.10	12781				.00
The sights and sounds of nature are important to birdwatching	Between Groups	.01	2	.00	.01	.99	
	Within Groups	5407.37	12772	.42			
	Total	5407.37	12774				.00
Getting to enjoy the natural environment through birdwatching is important	Between Groups	.50	2	.25	.55	.58	
	Within Groups	5849.85	12788	.46			
	Total	5850.35	12790				.00

Table 3.2 Equipment Owned

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Equipment owned	Own binoculars for birdwatching	91.8%	92.7%	92.5%	92.4%
	Own cameras for birdwatching	50.2%	45.0%	45.7%	46.8%
	Own spotting scopes for birdwatching	32.6%	37.0%	39.1%	36.5%
	Do not own any special equipment for birdwatching	6.1%	5.8%	5.6%	5.8%
	Valid N	3304	4781	4676	12761

Table 3.2a Equipment owned significance tests

		Chi-Square	df	Cramer's V
Equipment owned	Own binoculars for birdwatching	2.96	2	.02
	Own cameras for birdwatching	22.85*	2	.04*
	Own spotting scopes for birdwatching	35.20*	2	.05*
	Do not own any special equipment for birdwatching	1.00	2	.01

*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	4.4	4.4	4.4	4.4
	SD	1.33	1.33	1.29	1.32
	Valid N	3306	4777	4683	12766
Significance:		F (2, 12765) = 2.57		$\eta^2=.00$	

Table 3.4 Barriers to participation

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid	Mean	SD	Valid
			N			N			N			N
Don't feel welcome in bird viewing areas	1.3	.64	3238	1.3	.67	4685	1.3	.64	4598	1.3	.65	12520
Areas are too crowded	1.7	.89	3234	1.7	.88	4683	1.7	.88	4594	1.7	.88	12509
Lack of birds in my area	1.4	.69	3235	1.4	.70	4675	1.3	.67	4583	1.4	.69	12493
Poor quality of the natural habitat in my area	1.4	.73	3244	1.4	.72	4685	1.3	.66	4597	1.4	.70	12526
Poor quality of facilities in my area	1.3	.63	3235	1.3	.61	4673	1.3	.59	4586	1.3	.61	12493
Don't have the skills	1.4	.67	3240	1.4	.66	4685	1.4	.65	4595	1.4	.66	12519
Don't have the companions/people to go with	1.6	.78	3243	1.6	.81	4688	1.5	.78	4596	1.6	.79	12526
Public areas to go to are too far away	1.4	.72	3241	1.4	.70	4688	1.4	.68	4590	1.4	.70	12518
It costs too much to do	1.3	.58	3240	1.2	.56	4691	1.2	.56	4590	1.2	.56	12520

Table 3.4 Barriers to participation (cont.)

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Don't have time to go	2.0	1.00	3245	2.0	1.01	4690	2.0	1.00	4599	2.0	1.00	12534
Don't feel safe in bird viewing areas	1.3	.57	3237	1.2	.56	4682	1.2	.54	4587	1.2	.56	12505
Restrictions on public lands due to hunting	1.7	.88	3225	1.7	.88	4677	1.6	.84	4585	1.7	.87	12486
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	1.5	.76	3239	1.4	.74	4690	1.4	.71	4591	1.4	.74	12519
Expense of access fees/permits	1.3	.61	3232	1.3	.60	4679	1.3	.59	4589	1.3	.60	12499

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	81.5%	11.6%	4.8%	2.2%	12520
Areas are too crowded	53.6%	28.2%	13.2%	5.0%	12509
Lack of birds in my area	73.4%	18.1%	6.7%	1.8%	12493
Poor quality of the natural habitat in my area	71.7%	19.4%	6.8%	2.0%	12526
Poor quality of facilities in my area	75.3%	18.8%	4.9%	1.0%	12493
Don't have the skills	69.5%	22.9%	6.5%	1.1%	12519
Don't have the companions/people to go with	60.7%	26.5%	9.8%	3.0%	12526
Public areas to go to are too far away	68.7%	22.4%	7.3%	1.6%	12518
It costs too much to do	83.0%	12.2%	3.7%	1.1%	12520
Don't have time to go	40.6%	29.2%	20.3%	9.9%	12534
Don't feel safe in bird viewing areas	82.4%	13.4%	3.1%	1.2%	12505
Restrictions on public lands due to hunting	55.1%	28.9%	10.8%	5.2%	12486
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	68.3%	21.9%	7.2%	2.6%	12519
Expense of access fees/permits	79.9%	14.7%	4.1%	1.4%	12499

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	1.22	2	.61	1.42	.24	0.00
	Within Groups	5352.09	12518	.43			
	Total	5353.30	12520				
Areas are too crowded	Between Groups	6.09	2	3.04	3.92	.02	0.00
	Within Groups	9712.83	12507	.78			
	Total	9718.92	12509				
Lack of birds in my area	Between Groups	3.86	2	1.93	4.06	.02	0.00
	Within Groups	5940.66	12490	.48			
	Total	5944.52	12492				
Poor quality of the natural habitat in my area	Between Groups	27.12	2	13.56	27.69	.00	0.00
	Within Groups	6132.52	12523	.49			
	Total	6159.64	12525				
Poor quality of facilities in my area	Between Groups	8.83	2	4.41	11.95	.00	0.00
	Within Groups	4614.00	12490	.37			
	Total	4622.83	12492				
Don't have the skills	Between Groups	2.54	2	1.27	2.94	.05	0.00
	Within Groups	5421.73	12517	.43			
	Total	5424.28	12519				
Don't have the companions/people to go with	Between Groups	3.14	2	1.57	2.51	.08	0.00
	Within Groups	7825.34	12523	.62			
	Total	7828.48	12525				
Public areas to go to are too far away	Between Groups	6.94	2	3.47	7.15	.00	0.00
	Within Groups	6072.74	12515	.49			
	Total	6079.68	12517				

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	2.71	2	1.36	4.27	.01	0.00
	Within Groups	3968.43	12518	.32			
	Total	3971.14	12520				
Don't have time to go	Between Groups	4.22	2	2.11	2.10	.12	0.00
	Within Groups	12614.39	12531	1.01			
	Total	12618.61	12533				
Don't feel safe in bird viewing areas	Between Groups	5.12	2	2.56	8.32	.00	0.00
	Within Groups	3843.28	12502	.31			
	Total	3848.39	12504				
Restrictions on public lands due to hunting	Between Groups	18.42	2	9.21	12.31	.00	0.00
	Within Groups	9342.31	12484	.75			
	Total	9360.73	12486				
Access is too difficult (no auto tour options, walking trails, open gates, etc.)	Between Groups	26.39	2	13.20	24.36	.00	0.00
	Within Groups	6779.58	12517	.54			
	Total	6805.97	12519				
Expense of access fees/permits	Between Groups	2.87	2	1.43	4.00	.02	0.00
	Within Groups	4482.21	12497	.36			
	Total	4485.08	12499				

Section 4. Place

PREFERENCES

Most respondents did their birdwatching within the flyway substrata in which they resided, with Florida (10%), New York (14%), and Pennsylvania (12%) most frequently reported across the flyway (Table 4.1).

Most respondents knew of wetlands nearby (92-97%; Table X), and had visited wetlands in the past 12 months (87-91%). Knowledge of wetlands was significantly higher in the Upper Atlantic than in either the Middle or Lower Atlantic (Table 4.2), but this difference was small.

ECOSYSTEM SERVICES

Overall ratings for levels of concern for ecosystem services were lowest for loss of hunting opportunities (\bar{x} = 1.6-1.7; Table 4.3, 4.3a), and highest for providing home for animals such as butterflies and bees that pollinate plants and crops, and providing a home for wildlife (\bar{x} = 3.8), and clean water (\bar{x} = 3.7-3.8). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these were small (Table 4.3b). Respondents chose "Hunting opportunities," most frequently as their benefit of least concern (74-75%; Table 4.4). Respondents most frequently indicated they were most concerned with losing benefits of providing a home for wildlife (40-45%; 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 Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
CT	.0%	.0%	9.8%	3.5%
DE	.1%	3.5%	.1%	1.3%
FL	32.8%	1.0%	1.1%	10.2%
GA	21.6%	.0%	.2%	6.3%
MA	.1%	.1%	20.4%	7.2%
MD	0.0%	16.9%	.2%	6.2%
ME	.2%	.1%	8.6%	3.1%
NC	27.7%	.4%	.1%	8.2%
NH	.1%	.0%	7.1%	2.5%
NJ	.2%	17.2%	.6%	6.5%
NY	.2%	.8%	39.6%	14.3%
PA	.2%	32.0%	.2%	11.7%
RI	.1%	.1%	2.2%	.8%
SC	13.3%	.1%	.0%	3.9%
VA	.3%	21.9%	.0%	8.0%
VT	.1%	.1%	7.6%	2.7%
WV	.0%	3.3%	0.0%	1.2%
Valid N	3024	4359	4309	11691

In which state do you go birdwatching most often?

Table 4.2 Knowledge and visitation of wetlands

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Do you know of any wetlands in your local area or community?	Yes	91.5%	91.9%	96.8%	93.5%
	No	8.5%	8.1%	3.2%	6.5%
	Valid N	3139	4586	4452	12175
Have you visited any wetlands in the last 12 months?	Yes	86.1%	86.6%	90.6%	87.9%
	No	13.9%	13.4%	9.4%	12.1%
	Valid N	3138	4585	4456	12177
Knowledge significance:		$\chi^2 = 120.00^*$			Cramer's V=.10*
Visit significance:		$\chi^2 = 47.26^*$			Cramer's V=.06*

Table 4.3 Level of concern for ecological benefits

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Flooding Protection	3.5	.76	3111	3.4	.81	4535	3.4	.83	4414	3.4	.80	12058
Erosion Protection	3.5	.70	3105	3.5	.72	4533	3.5	.75	4412	3.5	.72	12047
Wildlife viewing and birdwatching	3.7	.58	3106	3.6	.62	4534	3.6	.61	4411	3.6	.60	12049
Hunting opportunities	1.6	.92	3104	1.7	.92	4521	1.7	.94	4398	1.7	.93	12022
Storage of greenhouse gases, such as carbon	3.2	.99	3101	3.2	.92	4510	3.3	.91	4392	3.2	.94	12002
Clean water	3.8	.54	3116	3.7	.56	4539	3.8	.53	4415	3.8	.54	12069
Clean air	3.7	.62	3110	3.7	.63	4529	3.7	.59	4417	3.7	.61	12054
Providing home for wildlife	3.8	.46	3114	3.8	.47	4538	3.8	.44	4416	3.8	.46	12066
Providing a home for animals such as butterflies and bees that pollinate plants and crops	3.8	.46	3110	3.8	.48	4538	3.8	.46	4417	3.8	.47	12063
Scenic places for inspiration or spiritual renewal	3.4	.84	3112	3.3	.87	4531	3.3	.83	4405	3.3	.85	12047

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	3.2%	10.6%	27.6%	58.6%	12058
Erosion Protection	1.9%	8.1%	29.3%	60.8%	12047
Wildlife viewing and birdwatching	0.7%	4.7%	23.8%	70.8%	12049
Hunting opportunities	58.7%	22.8%	11.8%	6.7%	12022
Storage of greenhouse gases, such as carbon	6.9%	14.0%	27.4%	51.7%	12002
Clean water	0.9%	2.9%	15.4%	80.8%	12069
Clean air	1.4%	4.2%	17.4%	76.9%	12054
Providing home for wildlife	0.4%	1.7%	13.9%	84.0%	12066
Providing a home for animals such as butterflies and bees that pollinate plants and crops	0.4%	2.0%	13.7%	83.9%	12063
Scenic places for inspiration or spiritual renewal	4.3%	12.0%	29.2%	54.5%	12047

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	23.61	2	11.80	18.22	0.00	0.00
	Within Groups	7812.19	12057	0.65			
	Total	7835.80	12059				
Erosion Protection	Between Groups	7.14	2	3.57	6.80	0.00	0.00
	Within Groups	6323.96	12046	0.52			
	Total	6331.10	12048				
Wildlife viewing and birdwatching	Between Groups	3.08	2	1.54	4.22	0.01	0.00
	Within Groups	4394.39	12048	0.36			
	Total	4397.48	12050				
Hunting opportunities	Between Groups	2.46	2	1.23	1.43	0.24	0.00
	Within Groups	10363.79	12020	0.86			
	Total	10366.25	12022				
Storage of greenhouse gases, such as carbon	Between Groups	35.91	2	17.96	20.69	0.00	0.00
	Within Groups	10414.35	12000	0.87			
	Total	10450.26	12002				
Clean water	Between Groups	2.30	2	1.15	3.93	0.02	0.00
	Within Groups	3538.91	12067	0.29			
	Total	3541.22	12069				
Clean air	Between Groups	2.35	2	1.18	3.12	0.04	0.00
	Within Groups	4538.77	12053	0.38			
	Total	4541.13	12055				
Providing home for wildlife	Between Groups	0.90	2	0.45	2.17	0.11	0.00
	Within Groups	2500.57	12065	0.21			
	Total	2501.47	12067				
Providing a home for animals such as butterflies and bees that pollinate plants and crops	Between Groups	0.33	2	0.16	0.75	0.47	0.00
	Within Groups	2621.53	12062	0.22			
	Total	2621.86	12064				
Scenic places for inspiration or spiritual renewal	Between Groups	6.27	2	3.13	4.34	0.01	0.00
	Within Groups	8702.29	12045	0.72			
	Total	8708.55	12047				

Table 4.4 Ecological services least concerned about losing

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Least concerned about losing	Flooding Protection	3.3%	4.0%	4.7%	4.0%
	Erosion Protection	2.2%	1.9%	2.4%	2.2%
	Wildlife viewing and birdwatching	.5%	1.0%	.8%	.8%
	Hunting opportunities	74.9%	73.5%	73.8%	74.0%
	Storage of greenhouse gases	9.4%	8.8%	7.4%	8.5%
	Clean water	.5%	.4%	.4%	.4%
	Clean air	1.2%	1.4%	1.7%	1.4%
	Providing a home for wildlife	.4%	.5%	.3%	.4%
	Providing a home for butterflies and bees (pollinators)	.2%	.4%	.4%	.3%
	Scenic places for inspiration and spiritual renewal	7.5%	8.3%	8.0%	8.0%
	Valid N	3049	4461	4356	11863
Significance:		$\chi^2 = 33.92^*$		Cramer's V=.04*	

Table 4.5 Ecological services most concerned about losing

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Most concerned about losing	Flooding Protection	9.9%	8.8%	8.2%	8.9%
	Erosion Protection	2.9%	3.8%	2.7%	3.2%
	Wildlife viewing and birdwatching	13.9%	14.3%	13.3%	13.8%
	Hunting opportunities	.4%	.7%	.7%	.6%
	Storage of greenhouse gases	1.0%	1.6%	1.6%	1.4%
	Clean water	23.0%	20.4%	20.7%	21.2%
	Clean air	2.5%	2.3%	1.6%	2.1%
	Providing a home for wildlife	40.4%	41.2%	44.7%	42.2%
	Providing a home for butterflies and bees (pollinators)	4.5%	5.7%	4.6%	5.0%
	Scenic places for inspiration and spiritual renewal	1.5%	1.3%	1.8%	1.5%
	Valid N	3056	4471	4363	11887
	Significance:	$\chi^2 = 62.58^*$		Cramer's V=.05*	

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 5.2) provide a summary of how important each of the 7 attributes were in respondents’ choices.

The utilities of each level for each attribute are summarized in Table 5.3. The larger the range in the part-worth utilities (i.e. the average utilities across levels within that attribute) for an attribute, the more influential that attribute is on respondents’ choices and the greater the importance of that attribute. The set of part-worth utilities for each attribute is scaled to sum to zero, so some part-worth utilities are necessarily negative numbers for some levels. A negative part-worth utility does not mean that the level has a negative utility; but the larger the number, the higher the utility. This means that a large positive number has higher utility than a large negative number.

The most important attributes in the choice of birdwatching trips were: 1) travel distance; 2) chance to see rare or unusual bird species; and 3) the naturalness of the area. The levels with the highest utility included: 1) travel distances 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.




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	BirdviewChoice_Random1=1 <input type="radio"/>	BirdviewChoice_Random1=2 <input type="radio"/>	BirdviewChoice_Random1=3 <input type="radio"/>

Table 5.2 Relative attribute importance derived from hierarchical Bayes estimation

Season choice attribute	Importances	SD
Diversity	9.37	3.73
Rarity	17.92	9.77
Number of birds	5.05	2.85
Ease of access	8.45	7.04
Wetlands	10.34	4.78
Naturalness	13.28	7.73
Travel Distance	35.58	16.29

Notes: n = 9,672

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	-33.02	16.79
- Observe 20 species	-4.83	9.33
- Observe 30 species	9.03	8.01
- Observe 40 or more species	28.82	16.93
Rarity		
- No rare or unusual species	-62.16	35.20
- Chance to see rare or unusual species	62.16	35.20
Number of birds		
- Less than 100	-13.91	13.75
- Hundreds	1.48	10.10
- Thousands	12.42	15.75
Ease of Access		
- Easy access with paved trails and roads	7.66	27.14
- Moderate access with some paved trails	13.18	17.86
- Difficult access with unpaved trails and paths	-20.84	41.68
Wetlands		
- No wetland habitats	-25.09	16.04
- Wetlands but NO waterfowl/wetland birds	-17.74	12.02
- Wetlands with waterfowl/wetland birds	42.83	21.32
Naturalness		
- Area is developed	-46.17	27.58
- Natural habitat and setting	46.17	27.58
Travel Distance		
- 2 miles or less	92.61	68.25
- 25 miles	66.01	40.29
- 50 miles	31.08	22.77
- 100 miles	-51.86	37.36
- 200 miles	-137.84	77.52
None	-186.64	168.76

Notes: n = 9,672

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 ($\bar{x} = 4.0$; Table 6.1, 6.1a) or a conservationist ($\bar{x} = 3.9-4.0$). Identification as any type of hunter was relatively low overall ($\bar{x} = 1.1-1.2$). While analyses revealed significant differences between the substrata on several items, effect sizes suggest these differences were small (Table 6.1b).

Between 40-45% of respondents reported membership in National Audubon Society (Table 6.2), and analyses suggest significant but small differences between the substrata.

Respondents reported the frequency of conservation activities, and reported most often making their yard more desirable to wildlife ($\bar{x} = 4.0-4.2$; Table 6.5, 6.5a), and least often volunteering to improve wildlife habitat in my community ($\bar{x} = 2.3-2.4$). 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 most often reported voting for candidates or ballot issues to support wetlands or waterfowl conservation ($\bar{x} = 2.4-2.7$; Table 6.6, 6.6a), and least often working on land improvement project related to wetlands or waterfowl conservation, and volunteering my personal time and effort to conserve wetlands and waterfowl ($\bar{x} = 1.5-1.6$). While analyses revealed significant differences between the substrata on several items, 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 reported the highest levels of trust in birding/birdwatching organizations ($\bar{x} = 4.0-4.1$; Table 6.8, 6.8a), similar for university researchers and scientists ($\bar{x} = 3.7$) and other conservation organizations ($\bar{x} = 3.5-3.6$), and lowest 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 are 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 (81-82%; Table 6.9), as well as conservation of other birds (72-75%). Analyses revealed significant differences between the substrata, but these were small (Table 6.9a).

Most respondents indicated having paid a State Park access permit or fee (76-87%; Table 6.10), while relatively fewer respondents reported paying access fees for land owned by non-governmental conservation organizations (15-20%) or access fees for land owned by non-governmental conservation organizations (16-21%). Analyses revealed significant but small differences in purchasing behavior between substrata (Table 6.10a), notably in State Park access permit or fee (Upper: 81%, Middle: 76%, Lower: 87%), and State Wildlife Management Area access permit or fee (Upper: 26%, Middle: 31%, Lower: 39%).

Respondents were asked to indicate their willingness to pay for the same fees and permits in the next 12 months. A majority of respondents indicated a willingness to pay all permits and fees in the next 12 months except for the Federal Migratory Bird Hunting and Conservation Stamp (Upper: 41%, Middle: 41%, Lower: 38%; Table 6.11). Analyses revealed significant differences in willingness to pay between substrata, however these were small (Table 6.11a).

Table 6.1 Level of social identification with group types

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Identify yourself as a birdwatcher	4.0	.98	3245	4.0	.98	4702	4.0	.98	4598	4.0	.98	12545
Identify yourself as a waterfowl hunter	1.1	.43	3122	1.1	.40	4536	1.1	.44	4413	1.1	.42	12071
Identify yourself as other type of hunter	1.2	.62	3121	1.2	.73	4538	1.2	.71	4419	1.2	.69	12078
Identify yourself as a conservationist	3.9	1.03	3211	3.9	1.05	4664	4.0	1.01	4557	3.9	1.03	12431

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%	7.4%	25.3%	29.2%	37.7%	12545
Identify yourself as a waterfowl hunter	95.5%	2.5%	1.0%	0.5%	0.4%	12071
Identify yourself as other type of hunter	90.4%	4.0%	2.6%	1.7%	1.4%	12078
Identify yourself as a conservationist	1.5%	8.6%	21.9%	31.1%	36.9%	12431

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	.78	2	.39	.40	.67	
	Within Groups	12077.74	12543	.96			
	Total	12078.51	12545				0.00
Identify yourself as a waterfowl hunter	Between Groups	.17	2	.08	.48	.62	
	Within Groups	2131.54	12068	.18			
	Total	2131.71	12070				0.00
Identify yourself as other type of hunter	Between Groups	3.38	2	1.69	3.50	.03	
	Within Groups	5825.78	12075	.48			
	Total	5829.16	12077				0.01
Identify yourself as a conservationist	Between Groups	16.97	2	8.48	7.99	.00	
	Within Groups	13199.26	12429	1.06			
	Total	13216.23	12431				0.00

Table 6.2 National Audubon Society Member

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Are you a member of the National Audubon Society?	Yes	44.8%	40.2%	41.5%	42.0%
	No	55.2%	59.8%	58.5%	58.0%
	Valid N	3117	4552	4425	12092
Significance:		$\chi^2 = 16.39^*$		Cramer's V=.04*	

Highest levels of involvement were with bird conservation groups (\bar{x} = 2.2-2.3; Table 6.3, 6.3a) and lowest levels were with ornithological societies (\bar{x} = 1.4-1.5). While analyses revealed significant differences between the substrata, effect sizes suggest these differences were small (Table 6.3b).

Table 6.3 Level of involvement in bird groups

	Flyway substrata											
	Lower Atlantic			Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Involvement with birding and birdwatching groups	1.8	.91	2987	1.8	.91	4414	1.8	.93	4297	1.8	.92	11692
Involvement with bird conservation groups	2.3	.91	3109	2.2	.87	4548	2.3	.88	4444	2.3	.89	12098
Involvement with ornithological societies	1.4	.74	2773	1.5	.80	4103	1.4	.77	3981	1.4	.77	10852
Involvement with local naturalist orgs	1.8	.96	2892	1.9	1.01	4279	1.9	.99	4188	1.9	.99	11351

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	46.8%	31.7%	15.0%	6.4%	11692
Involvement with bird conservation groups	18.4%	45.4%	25.3%	10.8%	12098
Involvement with ornithological societies	70.9%	17.9%	8.0%	3.2%	10852
Involvement with local naturalist orgs	44.6%	30.2%	15.5%	9.7%	11351

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	6.10	2	3.05	3.63	0.03	
	Within Groups	9827.31	11695	0.84			
	Total	9833.41	11697				0.00
Involvement with bird conservation groups	Between Groups	29.35	2	14.67	18.70	0.00	
	Within Groups	9492.94	12098	0.78			
	Total	9522.29	12100				0.00
Involvement with ornithological societies	Between Groups	13.42	2	6.71	11.21	0.00	
	Within Groups	6496.49	10855	0.60			
	Total	6509.90	10857				0.00
Involvement with local naturalist orgs	Between Groups	18.92	2	9.46	9.67	0.00	
	Within Groups	11111.60	11355	0.98			
	Total	11130.52	11357				0.00

About 70% of respondents in each substrata considered their participation in eBird either slightly or moderately important, and analyses revealed no difference between the substrata (Table 6.4).

Table 6.4 Importance of eBird

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
How important is participating in eBird to you?	Not at all important	10.4%	11.2%	10.5%	10.7%
	Slightly important	35.5%	35.3%	35.7%	35.5%
	Moderately important	32.2%	31.6%	32.5%	32.1%
	Very important	21.9%	21.9%	21.4%	21.7%
	Valid N	3114	4548	4426	12085
Significance:		$\chi^2 = 2.48$		Cramer's V=.01	

Table 6.5 Participation in conservation activities in past year

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	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	4.2	1.02	3138	4.1	1.04	4608	4.0	1.10	4457	4.1	1.06	12200
Volunteered to improve wildlife habitat in my community	2.3	1.29	3112	2.4	1.32	4558	2.3	1.27	4422	2.3	1.29	12090
Talked to others in my community about conservation issues	2.9	1.28	3123	2.9	1.26	4586	3.0	1.24	4429	3.0	1.26	12136
Participated as an active member in a nature, outdoor, or conservation group	2.7	1.45	3127	2.7	1.47	4577	2.7	1.44	4434	2.7	1.46	12136
Donated money to support wildlife/habitat conservation	2.9	1.26	3127	3.0	1.26	4583	3.0	1.27	4443	3.0	1.27	12151

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	4.1%	3.4%	16.8%	30.8%	45.0%	12200
Volunteered to improve wildlife habitat in my community	35.9%	22.0%	23.5%	9.7%	8.9%	12090
Talked to others in my community about conservation issues	17.0%	16.1%	33.7%	19.2%	14.0%	12136
Participated as an active member in a nature, outdoor, or conservation group	30.0%	18.8%	20.1%	14.0%	17.1%	12136
Donated money to support wildlife/habitat conservation	16.9%	17.1%	33.7%	17.7%	14.6%	12151

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	29.74	2	14.87	13.34	0.00	
	Within Groups	13604.31	12200	1.12			
	Total	13634.05	12202				0.00
Volunteered to improve wildlife habitat in my community	Between Groups	12.94	2	6.47	3.88	0.02	
	Within Groups	20169.04	12089	1.67			
	Total	20181.98	12091				0.00
Talked to others in my community about conservation issues	Between Groups	14.46	2	7.23	4.55	0.01	
	Within Groups	19269.09	12135	1.59			
	Total	19283.55	12137				0.00
Participated as an active member in a nature, outdoor, or conservation group	Between Groups	9.74	2	4.87	2.30	0.10	
	Within Groups	25698.95	12135	2.12			
	Total	25708.69	12137				0.00
Donated money to support wildlife/habitat conservation	Between Groups	65.28	2	32.64	20.39	0.00	
	Within Groups	19449.22	12150	1.60			
	Total	19514.50	12152				0.00

Table 6.6 Participation in wetland conservation activities in past year

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
Worked on land improvement project related to wetlands or waterfowl conservation	1.5	.91	3106	1.5	.91	4538	1.5	.94	4405	1.5	.92	12047
Attended meetings about wetlands or waterfowl conservation	1.5	.93	3105	1.5	.89	4534	1.6	.95	4407	1.5	.92	12043
Volunteered my personal time and effort to conserve wetlands and waterfowl	1.5	.95	3104	1.5	.90	4537	1.5	.98	4399	1.5	.94	12039
Contacted elected officials or government agencies about wetlands and waterfowl conservation	1.6	1.01	3108	1.5	.93	4534	1.6	.98	4404	1.6	.97	12045
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	2.7	1.49	3106	2.4	1.43	4526	2.4	1.43	4378	2.5	1.45	12010
Advocated for political action to conserve wetlands and waterfowl	2.2	1.36	3107	2.0	1.27	4531	2.1	1.32	4386	2.1	1.32	12023

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	73.9%	12.0%	9.2%	2.9%	2.0%	12047
Attended meetings about wetlands or waterfowl conservation	69.3%	14.0%	12.4%	2.8%	1.6%	12043
Volunteered my personal time and effort to conserve wetlands and waterfowl	72.3%	12.6%	9.9%	3.0%	2.2%	12039
Contacted elected officials or government agencies about wetlands and waterfowl conservation	67.5%	13.5%	13.6%	3.6%	1.8%	12045
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	41.8%	8.1%	21.7%	17.1%	11.3%	12010
Advocated for political action to conserve wetlands and waterfowl	51.0%	13.0%	18.7%	10.2%	7.1%	12023

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	2.22	2	1.11	1.31	0.27	
	Within Groups	10253.92	12046	0.85			
	Total	10256.15	12048				0.00
Attended meetings about wetlands or waterfowl conservation	Between Groups	6.83	2	3.41	4.02	0.02	
	Within Groups	10232.81	12042	0.85			
	Total	10239.64	12044				0.00
Volunteered my personal time and effort to conserve wetlands and waterfowl	Between Groups	7.78	2	3.89	4.37	0.01	
	Within Groups	10719.15	12037	0.89			
	Total	10726.93	12039				0.00
Contacted elected officials or government agencies about wetlands and waterfowl conservation	Between Groups	22.70	2	11.35	12.09	0.00	
	Within Groups	11307.49	12044	0.94			
	Total	11330.19	12046				0.00
Voted for candidates or ballot issues to support wetlands or waterfowl conservation	Between Groups	145.64	2	72.82	34.87	0.00	
	Within Groups	25071.48	12007	2.09			
	Total	25217.12	12009				0.01
Advocated for political action to conserve wetlands and waterfowl	Between Groups	78.19	2	39.10	22.66	0.00	
	Within Groups	20739.22	12020	1.73			
	Total	20817.41	12022				0.00

Table 6.7a Personal community: Recreation

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: Birdwatcher	Acquaintance	49.0%	50.0%	52.8%	50.7%
	Close Friend	53.5%	53.0%	56.8%	54.5%
	Relative	48.3%	48.0%	50.2%	48.8%
	Myself	86.6%	85.8%	86.7%	86.3%
	Valid N	3160	4617	4491	12265
Personal Community: Angler	Acquaintance	54.9%	52.1%	54.3%	53.7%
	Close Friend	41.5%	38.1%	40.3%	39.9%
	Relative	55.9%	54.4%	52.2%	53.1%
	Myself	27.3%	24.0%	23.8%	24.9%
	Valid N	2435	3558	3365	9360
Personal Community: Waterfowl Hunter	Acquaintance	67.4%	65.8%	68.9%	67.4%
	Close Friend	27.6%	28.3%	27.5%	27.8%
	Relative	35.2%	30.7%	30.0%	31.8%
	Myself	5.2%	5.2%	4.8%	5.1%
	Valid N	1361	1876	1850	5094
Personal Community: Other hunter	Acquaintance	61.8%	62.2%	65.7%	63.3%
	Close Friend	34.2%	36.2%	34.5%	35.1%
	Relative	46.5%	46.2%	42.2%	44.9%
	Myself	7.7%	9.3%	8.3%	8.5%
	Valid N	2063	3076	2925	8060

Table 6.7b Personal community: Agencies

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: State/provincial park manager/employee	Acquaintance	82.7%	84.6%	80.8%	82.9%
	Close Friend	25.1%	21.0%	23.0%	22.9%
	Relative	6.5%	7.0%	8.0%	7.1%
	Myself	5.4%	3.2%	2.9%	3.8%
	Valid N	1196	1672	1292	4182
Personal Community: National Park Manager/Employee	Acquaintance	80.1%	81.8%	80.8%	81.0%
	Close Friend	24.6%	22.8%	21.5%	23.0%
	Relative	7.8%	7.4%	9.0%	8.0%
	Myself	2.1%	2.8%	2.6%	2.5%
	Valid N	1103	1513	1262	3895
Personal Community: Federal wildlife agency manager/employee	Acquaintance	84.1%	84.7%	86.4%	85.0%
	Close Friend	27.6%	22.4%	23.4%	24.4%
	Relative	5.2%	5.6%	6.1%	5.6%
	Myself	3.9%	5.0%	3.1%	4.1%
	Valid N	833	1062	938	2848
Personal Community: State/provincial wildlife agency manager/employee	Acquaintance	84.1%	85.4%	85.4%	85.0%
	Close Friend	27.6%	20.2%	23.1%	23.5%
	Relative	7.0%	6.7%	6.7%	6.8%
	Myself	5.0%	2.8%	3.4%	3.7%
	Valid N	1072	1354	1314	3756

Table 6.7c Personal community: Environmental Occupations

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: Farmer/Rancher	Acquaintance	62.9%	64.7%	68.5%	65.6%
	Close Friend	27.0%	27.4%	26.4%	26.9%
	Relative	33.9%	30.3%	25.0%	29.4%
	Myself	8.5%	7.6%	9.2%	8.4%
	Valid N	1640	2450	2445	6526
Personal Community: Outdoor Educator	Acquaintance	73.6%	74.7%	74.4%	74.3%
	Close Friend	37.6%	34.6%	35.9%	35.9%
	Relative	9.9%	10.2%	10.5%	10.2%
	Myself	21.0%	19.1%	18.6%	19.5%
	Valid N	1782	2673	2663	7107
Personal Community: Wildlife artist	Acquaintance	69.6%	70.5%	72.5%	71.0%
	Close Friend	26.4%	24.6%	27.6%	26.3%
	Relative	13.3%	13.8%	11.7%	12.9%
	Myself	14.7%	13.9%	14.6%	14.4%
	Valid N	1349	1777	1957	5087
Personal Community: Wildlife biologist	Acquaintance	74.4%	75.3%	75.5%	75.1%
	Close Friend	36.6%	32.9%	33.7%	34.3%
	Relative	11.2%	11.4%	11.9%	11.5%
	Myself	14.8%	13.1%	15.3%	14.4%
	Valid N	1592	2104	2260	5963
Personal Community: Wildlife photographer	Acquaintance	63.6%	62.9%	65.1%	63.9%
	Close Friend	39.7%	34.9%	36.6%	36.9%
	Relative	20.0%	20.0%	21.3%	20.5%
	Myself	44.2%	41.5%	41.9%	42.4%
	Valid N	2262	3186	3214	8666

Table 6.7d Personal community: Conservation organizations

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: Member of fishing/conservation organizations	Acquaintance	62.4%	64.1%	62.4%	63.0%
	Close Friend	36.9%	34.1%	34.1%	34.9%
	Relative	31.4%	31.1%	30.1%	30.8%
	Myself	27.0%	27.1%	29.0%	27.7%
	Valid N	1063	1732	1623	4407
Personal Community: Member of national conservation organization	Acquaintance	51.8%	49.5%	51.7%	50.9%
	Close Friend	41.5%	38.6%	43.2%	41.1%
	Relative	30.4%	32.7%	35.0%	32.9%
	Myself	68.1%	68.3%	67.9%	68.1%
	Valid N	1943	2928	2957	7814
Personal Community: Member of local conservation organization	Acquaintance	63.4%	59.6%	60.9%	61.1%
	Close Friend	43.4%	41.1%	44.2%	42.9%
	Relative	25.0%	26.4%	30.4%	27.5%
	Myself	60.5%	62.7%	65.1%	63.0%
	Valid N	1450	2217	2350	5999
Personal Community: Member of local naturalist organization	Acquaintance	67.3%	64.2%	64.5%	65.1%
	Close Friend	45.1%	44.4%	45.3%	44.9%
	Relative	17.6%	21.5%	22.1%	20.7%
	Myself	53.6%	57.3%	59.8%	57.2%
	Valid N	1304	2139	1972	5400

Table 6.7e Personal community: Hunting organizations

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: Member of Ducks Unlimited	Acquaintance	66.5%	61.2%	64.4%	63.9%
	Close Friend	28.3%	28.9%	25.7%	27.7%
	Relative	25.1%	25.0%	24.3%	24.8%
	Myself	12.0%	13.8%	12.8%	12.9%
	Valid N	864	1124	1059	3060
Personal Community: Member of Delta Waterfowl	Acquaintance	78.0%	74.0%	85.0%	78.6%
	Close Friend	17.7%	20.1%	19.6%	19.3%
	Relative	15.1%	10.2%	9.1%	11.1%
	Myself	5.2%	9.3%	4.2%	6.5%
	Valid N	115	173	139	428
Personal Community: Member of state waterfowl association	Acquaintance	75.7%	74.9%	76.5%	75.7%
	Close Friend	26.0%	23.7%	23.7%	24.3%
	Relative	14.8%	15.7%	11.2%	13.9%
	Myself	11.0%	6.9%	7.6%	8.4%
	Valid N	273	355	341	973
Personal Community: Member of non-waterfowl hunting organization	Acquaintance	66.2%	66.3%	65.9%	66.2%
	Close Friend	28.9%	30.3%	30.8%	30.0%
	Relative	25.8%	24.5%	28.1%	26.0%
	Myself	10.2%	13.1%	11.6%	11.7%
	Valid N	546	742	631	1928

Table 6.7f Personal community: Bird groups

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal Community: Member of birding group	Acquaintance	65.2%	62.4%	64.7%	64.0%
	Close Friend	50.5%	48.1%	49.3%	49.2%
	Relative	21.5%	24.7%	22.7%	23.1%
	Myself	58.7%	60.2%	58.9%	59.3%
	Valid N	1993	3020	2904	7908
Personal Community: Member of bird conservation group	Acquaintance	54.2%	51.8%	52.8%	52.8%
	Close Friend	44.2%	41.5%	45.5%	43.7%
	Relative	27.3%	27.1%	31.3%	28.7%
	Myself	78.0%	76.2%	80.2%	78.2%
	Valid N	2504	3711	3754	9957
Personal Communication: Member of ornithological group	Acquaintance	68.3%	65.9%	66.5%	66.7%
	Close Friend	43.8%	45.3%	43.6%	44.3%
	Relative	12.6%	15.7%	14.7%	14.5%
	Myself	42.5%	49.5%	46.4%	46.5%
	Valid N	1234	1915	1859	4999

Table 6.8 Trust in various institutions

	Lower Atlantic			Flyway substrata Middle Atlantic			Upper Atlantic			Flyway Atlantic		
	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N	Mean	SD	Valid N
State wildlife agencies	3.2	.91	3109	3.2	.88	4548	3.2	.89	4441	3.2	.89	12094
Federal wildlife and land management agencies	3.1	.92	3101	3.1	.94	4538	3.1	.95	4433	3.1	.94	12069
Elected officials	1.7	.76	3115	1.7	.78	4540	1.8	.81	4425	1.7	.79	12077
Waterfowl hunting/conservation organizations	2.8	1.02	3049	2.9	1.00	4472	2.8	1.00	4347	2.8	1.01	11866
Birding/bird conservation organizations	4.0	.74	3122	4.0	.72	4567	4.1	.72	4450	4.0	.73	12136
Other conservation organizations	3.5	.83	3041	3.6	.80	4449	3.6	.80	4342	3.6	.81	11828
University researchers/scientists	3.7	.89	3103	3.7	.87	4531	3.7	.88	4419	3.7	.88	12051

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	3.6%	16.1%	42.6%	32.8%	5.0%	12094
Federal wildlife and land management agencies	5.4%	18.4%	41.2%	30.4%	4.7%	12069
Elected officials	45.6%	36.9%	16.1%	1.3%	0.2%	12077
Waterfowl hunting/conservation organizations	10.3%	25.9%	37.1%	23.3%	3.5%	11866
Birding/bird conservation organizations	0.3%	2.7%	15.4%	57.2%	24.4%	12136
Other conservation organizations	1.0%	7.6%	35.6%	46.0%	9.7%	11828
University researchers/scientists	1.6%	7.6%	26.9%	47.8%	16.1%	12051

Table 6.8b Trust in various institutions ANOVA tests

		Sum of Squares	df	Mean Square	F	Sig.	η^2
State wildlife agencies	Between Groups	4.31	2	2.16	2.72	0.07	
	Within Groups	9601.53	12095	0.79			
	Total	9605.84	12097				0.00
Federal wildlife and land management agencies	Between Groups	7.65	2	3.82	4.35	0.01	
	Within Groups	10622.69	12069	0.88			
	Total	10630.34	12071				0.00
Elected officials	Between Groups	51.70	2	25.85	42.09	0.00	
	Within Groups	7415.93	12076	0.61			
	Total	7467.63	12078				0.01
Waterfowl hunting/conservation organizations	Between Groups	7.49	2	3.75	3.70	0.02	
	Within Groups	12024.47	11866	1.01			
	Total	12031.97	11868				0.00
Birding/bird conservation organizations	Between Groups	9.42	2	4.71	8.92	0.00	
	Within Groups	6408.86	12136	0.53			
	Total	6418.28	12138				0.00
Other conservation organizations	Between Groups	12.80	2	6.40	9.83	0.00	
	Within Groups	7700.32	11829	0.65			
	Total	7713.12	11831				0.00
University researchers/scientists	Between Groups	10.21	2	5.11	6.57	0.00	
	Within Groups	9371.75	12050	0.78			
	Total	9381.96	12052				0.00

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

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Percent making donation greater than \$0 in past year	Wetland or Waterfowl conservation	46.4%	48.8%	48.1%	47.9%
	Conservation of other birds	71.7%	72.8%	75.0%	73.3%
	Birdwatching and related issues	80.6%	81.8%	80.8%	81.1%
	Waterfowl hunting	10.6%	10.4%	9.5%	10.1%
	Valid N	2183	3334	3321	8821

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	12.17*	2	.03*
	Conservation of other birds	24.93*	2	.05*
	Birdwatching and related issues	13.59*	2	.03*
	Waterfowl hunting	0.62	2	.01

*p < 0.05

Table 6.9b Donations to wetland or waterfowl conservation

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Wetland or waterfowl conservation	\$0	65.7%	62.4%	61.9%	63.2%
	Less than \$250	30.4%	33.9%	34.7%	33.2%
	\$250 to \$999	3.0%	3.0%	2.6%	2.9%
	\$1000 to \$2499	0.6%	0.5%	0.6%	0.5%
	\$2500 to \$4999	0.1%	0.1%	0.2%	0.1%
	\$5000 to \$9999	0.1%	0.0%	0.0%	0.0%
	\$10,000 or more	0.1%	0.0%	0.0%	0.1%
	Valid N	2952	4328	4193	11472

Table 6.9c Donations to conservation of other bird species

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Conservation of other bird species	\$0	47.7%	44.6%	41.8%	44.5%
	Less than \$250	44.0%	46.6%	48.6%	46.5%
	\$250 to \$999	6.4%	6.9%	7.5%	7.0%
	\$1000 to \$2499	1.2%	1.3%	1.2%	1.2%
	\$2500 to \$4999	0.3%	0.3%	0.4%	0.3%
	\$5000 to \$9999	0.1%	0.1%	0.2%	0.2%
	\$10,000 or more	0.2%	0.2%	0.3%	0.2%
	Valid N	2992	4379	4283	11650

Table 6.9d Donations to birdwatching and related issues

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Birdwatching and relating issues	\$0	41.8%	38.5%	37.6%	39.1%
	Less than \$250	49.5%	52.0%	52.5%	51.4%
	\$250 to \$999	6.7%	7.5%	8.0%	7.5%
	\$1000 to \$2499	1.2%	1.4%	1.3%	1.3%
	\$2500 to \$4999	0.4%	0.2%	0.3%	0.3%
	\$5000 to \$9999	0.2%	0.2%	0.1%	0.2%
	\$10,000 or more	0.2%	0.1%	0.2%	0.2%
	Valid N	3020	4438	4298	11753

Table 6.9e Donations to waterfowl hunting and hunting related issues

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Waterfowl hunting and hunting related issues	\$0	91.9%	91.8%	92.2%	92.0%
	Less than \$250	7.2%	7.3%	7.1%	7.2%
	\$250 to \$999	0.6%	0.7%	0.4%	0.6%
	\$1000 to \$2499	0.2%	0.2%	0.2%	0.2%
	\$2500 to \$4999	0.0%	0.0%	0.1%	0.0%
	\$5000 to \$9999	0.0%	0.0%	0.0%	0.0%
	\$10,000 or more	0.0%	0.0%	0.0%	0.0%
	Valid N	2867	4209	4061	11134

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

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Fees/Permits paid for in past 12 months	Federal Migratory Bird Hunting and Conservation Stamp	15.1%	20.0%	17.3%	17.6%
	National Wildlife Refuge access fees	46.4%	51.5%	43.9%	47.4%
	State Park access permit or fee	86.9%	75.5%	81.0%	80.9%
	State Wildlife Management Area access permit or fee	39.0%	31.3%	25.9%	31.8%
	County/local Conservation Land access fees	27.0%	17.0%	19.1%	20.7%
	Access fees for land owned by non-governmental conservation organizations	16.4%	17.3%	20.9%	18.2%
	National Park pass	51.9%	57.6%	46.8%	52.2%
	Valid N	3513	5089	4959	13562

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	13.27*	2	.03*
	National Wildlife Refuge access fees	40.66*	2	.06*
	State Park access permit or fee	140.72*	2	.11*
	State Wildlife Management Area access permit or fee	153.10*	2	.11*
	County/local Conservation Land access fees	127.02*	2	.10*
	Access fees for land owned by non-governmental conservation organizations	10.87*	2	.03*
	National Park pass	73.01*	2	.08*

*p < 0.05

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

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Fees/Permits willing to pay for in next 12 months	Federal Migratory Bird Hunting and conservation Stamp	37.6%	41.0%	41.3%	40.1%
	National Wildlife Refuge access fees	82.4%	82.1%	82.9%	82.5%
	State Park access permit or fee	94.3%	88.8%	92.5%	91.7%
	State Wildlife Management Area access permit or fee	79.6%	76.1%	78.0%	77.8%
	County/local Conservation Land access fees	73.6%	69.0%	71.5%	71.2%
	Access fees for land owned by non-governmental conservation organizations	66.7%	66.0%	69.2%	67.3%
	National Park pass	84.2%	84.4%	80.6%	83.1%
	Valid N	3513	5089	4959	13562

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	4.00	2	.02
	National Wildlife Refuge access fees	4.66	2	.02
	State Park access permit or fee	57.66*	2	.07*
	State Wildlife Management Area access permit or fee	20.79*	2	.04*
	County/local Conservation Land access fees	24.02*	2	.05*
	Access fees for land owned by non-governmental conservation organizations	5.10	2	.02
	National Park pass	38.47*	2	.06*

*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 (99%; Tables 7.1, 7.1a), and non-Hispanic (98-99%; Table 7.2). Respondents were more female, but this difference was not significant (Table 7.3).

After removing any respondents under the age of 18, the average age of respondents was 60 years old, with no substantive differences between the substrata (Table 7.4). Almost half of respondents reported graduate or professional-level education (44-51%; Table 7.5), and another third reported holding a Bachelor's degree (30-34%). Analyses showed significant but small differences in education between the substrata. Most respondents indicated that a nature related profession was not their primary source of personal income across substrata (86-87%), with no significant differences between substrata (Table 7.6). Across substrata, 52- 58% made less than \$75,000 per year in personal income, while 10-12% made more than \$150,000 (Table 7.7). Analyses indicate significant but small differences between the substrata.

A majority of respondents did not own rural land (57-71%), and those that did owned an average of 442 acres to 606 acres (Table 7.8). There were significant differences between the substrata in whether or not respondents owned land in a rural area (Upper: 43%, Middle: 32%, Lower: 29%). There were no significant difference between substrata in the number of acres owned. Half of respondents in the Lower Atlantic substrata reported living in a medium or large urban area, and 37% reported the same in the Middle Atlantic, and 25% in the Upper Atlantic (Table 7.9). The Upper Atlantic was overall significantly more rural than the rest of the flyway (Upper reporting residence in rural area: 20%, Middle: 18%, Lower: 12%); analyses suggest these differences were small. Respondents also reported the population size of the area where they grew up, and while analyses revealed significant differences, these were small (Table 7.10).

Table 7.1 Percent reporting race

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Race	American Indian/Native American	1.7%	1.4%	1.5%	1.5%
	Asian	1.0%	1.3%	1.4%	1.2%
	Black or African American	.9%	.8%	.6%	.7%
	Native Hawaiian or Pacific Islander	.2%	.1%	.2%	.2%
	White	98.6%	98.5%	98.5%	98.5%
	Valid N	3017	4395	4260	11671

Table 7.1a Race significance tests

		Chi-Square	df	Cramer's V
Race	American Indian/Native American	1.88	2	.01
	Asian	2.48	2	.01
	Black or African American	2.70	2	.02
	Native Hawaiian or Pacific Islander	0.89	2	.01
	White	1.80	2	.01

*p < 0.05

Table 7.2 Ethnicity

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Hispanic or Latino	Yes	1.9%	1.4%	1.1%	1.5%
	No	98.1%	98.6%	98.9%	98.5%
	Valid N	3028	4414	4285	11727
Significance:		$\chi^2 = 7.96^*$		Cramer's V=.03*	

Table 7.3 Gender

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Gender	Male	42.2%	43.7%	43.9%	43.3%
	Female	57.8%	56.3%	56.1%	56.7%
	Valid N	3091	4516	4389	11994
Significance:		$\chi^2 = 2.60$		Cramer's V=.02	

Table 7.4 Age

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
	Mean	60	59	60	60
Age	SD	13.49	13.72	13.61	13.62
	Range	77	76	77	77
	Valid N	3039	4444	4342	11822
Significance:		F (2,11824)= 4.15*		$\eta^2=.00$	

Table 7.5 Education

		Flyway substrata			Flyway Atlantic
		Lower Atlantic	Middle Atlantic	Upper Atlantic	
Level of education	Some high school or less	.6%	.8%	.6%	.7%
	High school diploma or GED	3.5%	4.5%	3.3%	3.8%
	Some college (no degree)	11.1%	9.2%	8.6%	9.5%
	Associate's degree (2 years)	6.6%	5.6%	6.5%	6.2%
	Bachelors degree (4 years)	33.9%	31.0%	30.2%	31.6%
	Graduate or professional school	44.3%	48.9%	50.9%	48.3%
	Valid N	3089	4505	4383	11975
Significance:		$\chi^2 = 51.48^*$		Cramer's V=.05*	

Table 7.6 Nature-related profession

		Flyway substrata			Flyway Atlantic
		Lower Atlantic	Middle Atlantic	Upper Atlantic	
Is a nature-related profession primary source of personal income?	Yes	12.8%	13.3%	13.8%	13.3%
	No	87.2%	86.7%	86.2%	86.7%
	Valid N	3102	4533	4409	12042
Significance:		$\chi^2 = 1.41$		Cramer's V=.01	

Table 7.7 Income

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Personal income	Less than \$24,999	12.5%	12.6%	14.0%	13.1%
	\$25,000 to \$49,999	23.3%	19.8%	21.1%	21.3%
	\$50,000 to \$74,999	22.3%	19.2%	22.0%	21.1%
	\$75,000 to \$99,999	15.3%	16.8%	16.8%	16.3%
	\$100,000 to \$124,999	11.3%	12.8%	10.9%	11.7%
	\$125,000 to \$149,999	5.2%	6.8%	4.7%	5.6%
	\$150,000 to \$199,999	4.1%	5.4%	4.0%	4.5%
	\$200,000 to \$249,999	2.7%	2.6%	2.8%	2.7%
	\$250,000 to \$299,999	1.2%	1.6%	1.2%	1.3%
	\$300,000 or more	2.1%	2.3%	2.6%	2.3%
Valid N		2665	3850	3785	10300
Significance:		$\chi^2 = 62.17^*$		Cramer's V=.06*	

Table 7.8 Rural land ownership

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Do you own land in a rural area	Yes	29.2%	32.1%	43.0%	35.1%
	No	70.8%	67.9%	57.0%	64.9%
	Mean	494	606	442	510
How many acres of rural land?	SD	4,354.51	4,914.67	4,145.06	4,464.27
	Range	42,798	43,041	43,043	43,043
	Valid N	3111	4535	4412	12057
Own land Y/N significance:		$\chi^2 = 186.24^*$		Cramer's V=.12*	
Acreage owned significance:		F (2,3908)= 0.52		$\eta^2=.00$	

Table 7.9 Urban vs Rural Residence

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Where you live now	Large Urban area (500,000 or more)	21.0%	18.3%	11.8%	16.8%
	Medium Urban area (50,000 to 499,999)	32.0%	19.0%	12.8%	20.6%
	Small city (10,000 to 49,999)	20.8%	21.4%	23.9%	22.1%
	Small town (2,000 to 9,999)	14.5%	23.1%	31.6%	23.6%
	Rural area (less than 2,000)	11.6%	18.3%	19.9%	16.9%
	Valid N	3104	4509	4398	12010
Significance:		$\chi^2 = 755.56^*$		Cramer's V=.18*	

Table 7.10 Urban vs Rural Upbringing

		Flyway substrata			Flyway
		Lower Atlantic	Middle Atlantic	Upper Atlantic	Atlantic
Where you grew up	Large Urban area (500,000 or more)	18.7%	17.1%	15.2%	16.9%
	Medium Urban area (50,000 to 499,999)	26.3%	20.7%	19.9%	22.0%
	Small city (10,000 to 49,999)	22.6%	22.5%	25.5%	23.6%
	Small town (2,000 to 9,999)	19.1%	24.2%	25.8%	23.3%
	Rural area (less than 2,000)	13.3%	15.5%	13.6%	14.2%
	Valid N	3053	4434	4333	11820
Significance:		$\chi^2 = 105.63^*$		Cramer's V=.07*	

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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

1

2

3

4

5

6

Expert

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?

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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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This message was sent from:

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

Participate in the birdwatcher survey.

November 21, 2016

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correctly?
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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

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correctly?
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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

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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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This message was sent from:

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

Appendix D: Institutional Review Board Determinat

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
--	---------------------------

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

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

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

Email completed form to irb@umn.edu

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



Project Title

Provide the grant title below if the project is funded.

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

Section 1 Contact Information

Name (last name, First name MI) Fulton, David C.		Highest Earned Degree: PhD
Preferred contact information: dcfulton@umn.edu 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.