Understanding the Diversity of Eight Birder Sub-populations: Socio-demographic Characteristics, Motivations, Expenditures and Net Benefits

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Participation in birding is not only more popular than outdoor recreation activities like hunting and fishing but it is growing in popularity. National studies of wildlife watching provide limited social and economic understandings of birding and portray birders and their participation in terms of averages. There is a need to move beyond aggregate understandings and understand various sub-groups within the birding social world. Within-group differences among birders were explored using the same survey questions and methodology. We tested for differences among eight geographically dispersed birder sub-populations in terms of their demographic characteristics, birding motivations and behaviour, expenditures and willingness-to-pay for their birding experiences to demonstrate the breadth and complexity of the social world of birding. While there were few significant group differences in terms of the demographic characteristics of birders, there were significant group differences identified for most behavioural, motivational, and economic measures. Results reinforce the point that generalisations about the overall population of birders and their leisure activity should not rely solely on results from sub-population studies. Finally, this paper reported an average birding trip expenditure across groups ($506) as well as an estimated $50 per day in social benefits received by birders above and beyond trip costs.

Keywords: birding, birdwatching, contingent valuation, diversity, net benefits, sub-populations

Introduction

Participation in wildlife watching as a leisure activity is not only more popular than many other traditional outdoor activities like hunting and fishing but it is growing in popularity as well. About 66.1 million (31%) Americans 16 years of age and over participated in birding compared to 34.1 million (16%) and 13.0 million (6%) who participated in recreational fishing and hunting, respectively (US Fish and Wildlife Service and US Bureau of the Census, 2002). The National Survey on Recreation and the Environment reported that

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an even higher percentage of Americans (33%) participated in birding one or more times in the previous 12 months (U.S. Forest Service, 2001). They also indicate the rate of participation in birding (percentage of the population who participate) has increased from 12% (22.2 million) in 1982–83 to 33% (33 million) in 2000–2001 (US Forest Service, 2001).

There are several reasons for these numbers and why they may be surprising. First, the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation only started reporting national-level data for wildlife watching in 1980. Second, birding is an activity that requires little equipment to get started and little physical ability to participate. These types of low-cost activities always attract large numbers of participants compared to those like sport diving and boating that require major investments in equipment prior to participation. Third, birding can be characterised as a non-consumptive leisure activity in that resources are not captured or harvested in the process of participation. Such activities are consistent with increased public concerns for environmentalism, ecotourism, nature tourism, low impact leisure, resource stewardship and other such popular concepts today.

The birding social world includes all who watch birds for recreation or consider themselves birdwatchers or birders. A social world has been defined by Unruh (1979: 115) as 'an internally recognisable constellation of actors, organisations, events, and practices which have coalesced into a perceived sphere of interest and involvement for participants'. Social worlds are larger than their individual constituent groups and organisations, have no formal boundaries or membership lists which present challenges to survey sampling, and lack a centralised authority structure. Accordingly, we would expect the birding social world to contain a diversity of individuals who participate in a diversity of birding forms for a diversity of reasons or motivations.

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service and US Bureau of the Census, 1997) and the National Survey of Recreation and the Environment (US Forest Service, 2001) currently constitute the best available technical information on the diversity of opportunities in the birding social world, its participants and their extent of participation. Rather than providing insight into the full range of more or less specialised birding interests that serve to differentiate some members of the social world from other members (Kling & Gerson, 1978), these surveys portray birders and their participation in terms of common forms and averages. To be fair, these two surveys are doing exactly what they set out to do, namely, to provide overall understanding of the activity and support for the institution of natural resources management.

There is a need to move beyond aggregate understandings and identify and understand various sub-groups within the birding social world. Except for the aforementioned national surveys of birders that include a limited number of questions, most other studies of birders have segmented birders by various situations (their residence location, club membership, use of particular areas, and participation in birding-related events). Although these market segmentation efforts can be useful for understanding and acting upon birder diversity, because they are situation-specific studies, they nevertheless leave much of the diversity among birders unexplained.

The concept of recreation specialisation provides a means for comprehending and acting upon the diversity of the birding social world. Bryan (1977) first proposed recreation specialisation to explore the potential diversity within an activity, and defined it as 'a continuum of behaviour from the general to the particular reflected by equipment and skills used in the sport and activity/setting preferences' (Bryan, 1977: 175). Using on-site interviews and inductive reasoning, he identified four types of participants, each with a unique place on the specialisation continuum. At the lower end of the continuum were occasional participants, followed by generalists, technique specialists, and finally, at the upper end, technique and setting specialists. Bryan (1977) posited that the typology (and location of participants by group) was indicative of differences among social world participants in frequency of participation, setting preferences, technique preferences, equipment choices, social unit of participation, and natural resources management preferences. Similarly, Unruh (1979, 1980) classified social world participants into four transsituational types or groups (i.e. strangers, tourists, regulars and insiders) based on their social proximity about the social world and activities therein. Accordingly, birders are likely to start out in birding as 'strangers' with a naïve orientation while others are much more dedicated ('insiders') to the point where birding is a central life interest and basis for their identity. More attention has probably been devoted to regulars and insiders than strangers and tourists. Scott *et al*. (1999), for example, examined the characteristics of what they refer to as 'serious birders' or those individuals participating in the Great Texas Birding Classic. Cole and Scott (1999) found several significant differences in participation patterns between 'casual wildlife watchers' (Texas conservation passport holders) and 'serious birders' (American Birding Association members).

Several investigators have used various conceptual foundations, measures and statistical techniques to understand the overall birder social world from a recreation specialisation perspective. McFarlane (1996) developed a sampling frame of birders in Alberta, Canada that included mailing lists of natural history societies, a bird observatory, the only bird-watching club in the province and participants in the Edmonton bird count. Four groups of birders 'with a wide range of birding experience' were identified using cluster analysis. The clusters were ordered from low to high specialisation and named casual, novice, intermediate and advanced. The birding social world ranged from casual birders (43% of the sample) who watch and feed birds in their back yard, have low identification skills and a limited economic investment in the activity, to advanced birders (7% of the sample) who share their expertise with others, take several birding trips per year, can identify many species and have a great deal invested in their birding activity. Hvenegaard (2002) sampled birders at Doi Inthanon National Park in Thailand, identifying novice, advanced-active and advanced-experienced birders. He found that while specialisation rose with age, income and percent male gender, advanced birders were less interested in non-birding activities.

In an effort to tap the cross-section of wildlife watchers, Martin (1997) intercepted non-resident visitors at visitor centres as they entered Montana, United States. He used an index of recreation specialisation variables (frequency of

wildlife viewing trips, use of specialised equipment, the extent to which they made notes while viewing, and participation in wildlife counts or surveys to identify three categories of wildlife watchers: novices, intermediates and specialists. But as Cole and Scott (1999) point out, his sampling frame likely under-represented serious watchers and over-represented the views of low or non-participants.

McFarlane (1996) and Martin (1997) are to be commended for trying to tap a diversity of bird watchers in order to overcome the difficulties involved in identifying their respective populations of birders. Few studies since have gotten beyond persons participating in birding at particular times and places. It can be argued that particular times and places attract particular types of birders and are not a good place to try to understand the overall range of participants in the social world of birding (Fisher, 1997).

There has been considerably more research on the economic impacts of birding activity on local, regional and state economies, e.g. Wiedner and Kerlinger (1990) than on the economic value of birding to individuals, e.g. Hvenegaard *et al.* (1989). Most previous economic impact studies have relied on average multipliers applied to all expenditure categories to produce aggregated estimates of total economic output at the local, regional or state level (Kerlinger & Brett, 1995; Lingle, 1991; Wiedner & Kerlinger, 1990). At the individual level, we would expect participants at the low end of the specialisation continuum to have less money invested in birding-related equipment and to choose activities requiring the expenditure of less money per day for their birding activity than those participants at the high end participating in particular types of birding activity, i.e. festivals, events, etc. Because they have less invested emotionally in birding vis-a-vis other leisure activities and in birding equipment than more specialised birders, we would expect the former group to have a lower willingness-to-pay above trip costs than more specialised participants engaging in more particular forms of birding activity.

Birding is such a ubiquitous activity, much like walking for pleasure, that probably everyone is a participant to some extent at one time or another. As pointed out by Kellert (1985), the wide discrepancies in numbers of birders and their characteristics are likely due to the basic difficulties involved in defining the activity in a meaningful way for social survey participants. Are trends of increasing birding activity the result of a widening definition as more people look for ways to be involved in some way with the natural environment? Our research focused on people who participated in observing, feeding, or photographing wild birds and travelled away from home at least one mile (1609.34 kilometres) to do so in the previous 12 months. By defining birding this way, we sought to clarify our research focus for analysis and comparative purposes.

The goal of this paper is to look for differences and similarities across various geographically dispersed birder sub-populations in terms of their demographic characteristics, birding motivations and behaviour, expenditures and willingness-to-pay for their birding experiences to better understand the breadth and complexity of the social world of birding. This paper explores birders as they pursue their activity in various ways and in different situations to probe the extent of within-activity group differences. It is not our objective to test

or apply the recreation specialisation framework to recreational birding; we are simply using specialisation as a way of looking at and understanding our data. A paper focused on testing the specialisation concept with regard to birding is in preparation.

Methods

Because individuals are not required to purchase licences to participate in birding activities, there is no current complete listing of birders' names and addresses by state or nationally for random sampling purposes. Nor is there likely to be any such complete listing soon. This is why household studies are completed at the national and state levels to determine the rate of participation in birding, to locate birders for survey research purposes, and to understand their characteristics, behaviours and expenditures (Kellert, 1985; US Fish and Wildlife Service & US Bureau of the Census, 1997; US Forest Service, 2001). However, since these studies focus on other leisure activities besides birding, it has been impossible for them to acquire as much depth on birders and birding participation as would be possible from studies focusing on birders alone. In the future we expect there will be a national household survey of birders that will provide more in-depth understanding of this group and their activity than is currently available. In the meantime, there will continue to be questions about local studies of birders as to whether results are generalisable to the population level.

Four studies were completed between 1996 and 2001 with coverage of eight birder sub-populations in Nebraska, Texas, New Jersey and California, United States. The sampling frames for each of the sub-populations are shown in Table 1. In some cases, this involved sampling from mailing lists of members (SP-3), conference and festival attendees (SP-4, SP-6, SP-8) and visitors making reservations for bird observation blinds (SP-2). In other cases, we used various means to randomly sample birders at particular on-site locations (SP-1, SP- 5, SP-7). Usually birders were intercepted on a random basis and their names and addresses requested for a follow-up survey. The goal was usually to learn more about the extent of birding activity and expenditures in particular geographic areas. These data have been analysed and reported in each of the respective project reports (Eubanks & Stoll, 1999; Eubanks *et al.*, 1998, 2000; Fermata, 2001). In this paper, we present data on birders' demographic characteristics, behaviours, motivations, expenditures and willingness-to-pay above trip costs (net benefits) to better understand and appreciate sub-population differences and gain more of an overall population view of birders on these variables.

Our initial goal was to sample 300 birders in each of seven sub-population groups with regard to their birding activity in the Platte River study area (Eubanks *et al.*, 1998). This sample size was not always possible as some groups and events had less than 300 participants. Lists for two groups of wildlife observation blind users, members of two wildlife organisations and participants in two birding conferences/festivals were consolidated to form three sub-population groups: SP-2, SP-3 and SP-4, respectively. Between March 1–April 15, 1996, we intercepted visitors who watched sand hill

Table 1 Summary of birder survey information

Study	*Group*	*SP No.*	*Sample size*	*Response rate*
Platte River nature recreation study (Eubanks *et al.*, 1998)	Crane watchers at Fort Kearny State Historic Park and Recreation Area	SP-1	437	62*
	Visitors reserving blinds at the Rowe and Crane Meadows sanctuaries	SP-2	345	70*
	Nebraska members of the National Audubon Society and Ornithologists' Union	SP-3	287	49*
	Registrants at Spring River Conference/ Wings over the Platte	SP-4	192	66*
	Combined Platte River study (SP-1 to SP-4)			70**
Avitourism in Texas (Eubanks & Stoll, 1999)	Great Texas coastal birding map recipients	SP-5	170	61**
	Rio Grande Valley birding festival participants	SP-6	237	85**
Wildlife associated recreation on the New Jersey Delaware Bay shore (Eubanks *et al.*, 2000)	Wildlife organisation members and Delaware Bay shore area birders	SP-7	602	63**
A survey of two California nature festivals (Fermata, 2001)	Kern River Valley bioregions festival participants	SP-8	150	52**

*Raw response rate where the number returned usable is subtracted from the number mailed

**Effective response rate where the number of non-deliverables is subtracted from the number of usable returns prior to subtraction of the number mailed

cranes and other wildlife on a bridge at the Ft. Kearney State Historic Park and Recreation Area. We instituted a procedure to randomly select visitors on weekend and week-day days according to the proportional distribution of birder parties during these two periods. They were asked if they were willing to participate in a survey of birders and, if so, their names and addresses were collected for mailing purposes ($n = 700$). Few refused to participate.

Sampling frames for the remaining three studies were developed in similar fashion. In the Texas study (SP-6), mail surveys were sent to all 273 participants in the Rio Grande Valley Birding Festival sponsored by the Harlingen Chamber

of Commerce. Recipients of a birding map for the central Texas coast provided by the Texas Parks and Wildlife Department (TPWD) who sent a reply card to the agency requesting additional information about birding in Texas constituted an additional sampling frame in Texas. A sample of 300 individuals (SP-5) was randomly selected from the list of 4000 names and addresses provided by the TPWD. The sampling frame for the Delaware Bay study (SP-7) included the aggregated membership lists of two New Jersey wildlife organisations as well as field intercepts of New Jersey shore wildlife watchers ($n = 1034$) during a shorebird migration spectacle. In California, a mail survey was sent to all 268 registered attendees/group representatives participating in the Kern River Bioregions Festival (SP-8).

The Platte River survey followed the survey protocol advocated by Dillman (1978). The remaining three studies followed the survey protocol updated by Salant and Dillman (1994). This latter approach makes use of four successive first class mailings (if necessary). All individuals sampled receive identical surveys with the exception of different bid values for the contingent valuation analysis and a section for the geographic study event/area of concern. First, we sent a personalised letter alerting them that they would be receiving an 8–10 page mail survey. One week later, another letter with a copy of the survey and a self-addressed postpaid envelope was sent. One week later, a postcard reminder/thank you was sent to all in the sample. Three weeks later, a final personalised letter with a questionnaire was sent to non-respondents. The main difference between the two methods is that the Salant and Dillman (1994) method takes less time to complete and involves sending out one less questionnaire. The assumption is people are busier today than in previous years and that efforts need to be made to get their response in less rather than more time. From inspection, there were no notable differences between the response rates in the four Platte River study groups and the four study groups in the other three studies. Also, it should be noted that response rates for six of the eight sub-populations studied were above the 60% rate expected when using the two survey protocols (Salant & Dillman, 1994).

For the SP-1 to SP-4 subgroups, non-respondents were contacted by phone to avoid having to make the assumption that results from respondents and non-respondents were similar (Filion, 1980). A random sample of non-respondents was asked 11 questions from the mail survey (e.g. days travelled away from home for bird watching in the past 12 months, membership in birding/conservation organisations, one-way miles travelled to the Platte, trip expenditures, trip satisfaction, age, gender and annual household income) to ascertain whether their responses differed from respondents. There were no statistically significant differences between groups and hence we felt respondent data were representative of all group members. No non-response checks were completed in the other three studies and hence generalising results to their respective populations should be done with care.

The same questions were asked across the four studies. Not all of the questions used in the survey are reported in this paper. First, a series of questions was asked about birding behaviour and extent of respondent participation. For example, we asked how many trips they took from home expressly to go birding as well as the total number of days birding in the previous 12

months. We also asked if they were members of any local, state or national birding or conservation organisations. To assess their skill level, we asked them to compare their birding ability to that of other birders in general: less skilled, equally skilled, or more skilled. We also asked birders to read the descriptions provided and categorise themselves as committed, active or casual birders based on the descriptions provided. Finally, to get an idea of their personal investment in birding, we asked two questions. Cueing them with particular equipment items, we asked how much it would cost to replace all of the equipment they use for birding with similar equipment. We also wanted to know the extent of their commitment to birding; whether it was their most important outdoor activity, second most important, third most important or only one of many outdoor activities.

Using a Likert-type scale, individuals were asked to rate the importance of 12 reasons for participating or motivations for birding. Eight of the motivation scale items are activity general in that these are motivations for other outdoor recreation activities and not specific to birding. The remaining items are specific to birding. Some are measures of Driver (1977) recreation experience preference (REP) domains and others were derived from the work of Smith (1993).

A social and economic profile of birders was sought. Birders were asked to indicate their gender and age and select the last year of school completed. They were asked for their 'approximate annual household income, from all sources, before taxes' using standard $10,000 categories to $99,000 with two categories from $100,000 to $199,000 and a final category for $200,000 and above. Finally, birders were asked to indicate their race and ethnicity using current US Bureau of the Census categories.

A series of questions was asked about their most recent trip to the study area for birding activity. First, to put this in some perspective for the respondent, we asked approximately when this last trip took place, one-way miles from home, trip length in days, travel party size and composition, and number of days spent birding. Second, birders were asked to report their personal expenses (or pro-rated share) by category (e.g. transportation, lodging, food, miscellaneous and other) and by location of expenditure made (e.g. in the Central Platte River study area, elsewhere in the state of Nebraska and out of state).

In order to determine the annual consumer's surplus or net benefits associated with birding trips, we used a question to ascertain the extent of increase in expenses (over total trip costs) that would have caused respondents to cancel their last trip to the study area. This question used an open-ended format where birders were asked to write in a dollar figure. This is a form of contingent valuation, a method that generally relies upon the presentation of a hypothetical situation followed by questioning respondents regarding their decision 'contingent' upon the hypothetical circumstances becoming reality. These contingent valuation method (CVM) responses were used to estimate the net economic value of the birding experience. The contingent value of the birding experience, our case, is the difference between the total benefits received by the individual (total economic value) and the expenditures incurred to go birding.

Results

Birders were fairly homogeneous in terms of gender, age and race. First, there were no statistically significant group differences in gender distribution indicating that birding is a gender-equivalent activity (Table 2). Second, mean age ranged from 51 years for crane watchers at Ft Kearney to 60 years for Great Texas Coastal Birding Map recipients with two major group differences overall (Table 2). Third, whereas the vast majority (88–97%) of birders in all groups were Anglo, there were two major group differences overall among the subpopulations studied (Table 2).

Birders are a highly educated group with mean years of education ranging from 16 for Kern River Festival Participants to 17 for Great Texas Coastal Birding Map recipients (Table 2). Mean household income among groups ranged from $55,000 for the crane watchers at Ft Kearney to $96,000 for the Delaware Bay shore birders with three major group differences (Table 2). The proportion of birders who were retired ranged from 29% for the Kern River Bioregions Festival participants to 50% for the Rio Grande Valley Birding Festival participants (Table 2). Not surprisingly, with the South Texas coast being a retirement destination, SP-5 and SP-6 have the highest mean respondent ages.

When birders were asked how their birding skills compared with others, there was a wide range of capabilities reported among groups. Most birders (over 50%) in three groups of Platte River birders (SP-1, SP-2 and SP-4) reported that they were less skilled than other birders (Table 3). These same three groups also had the highest percentage reporting birding 'is only one of many activities' they participate in during their discretionary time. In the remaining birder groups, 39–49% reported they were equally skilled as other birders and 36–67% considered birding as their 'most important activity' (Table 3). Most birders in two groups (crane watchers at Ft Kearney and visitors reserving blinds at the Rowe and Crane Meadows sanctuaries) considered themselves to be casual viewers of birds (Table 3) and had the lowest proportions of committed birders. Most members of three groups (SP-5, SP-6 and SP-7) considered themselves active viewers. A majority of participants in the Rio Grande Valley Birding Festival (SP-6) considered themselves active viewers (Table 3) and this group, notably has the lowest proportion of casual birders.

The differences revealed in the preceding paragraph are reflected to some extent in the proportion of each birder group that belongs to birding and conservation organisations. In six of the eight birder groups, over two-thirds belonged to birding and/or conservation organisations (Table 3). These results contrast with those from the population level where only 12% of wildlife birdwatchers paid dues or made contributions to groups and organisations (US Fish and Wildlife Service and US Bureau of the Census, 2002). As might have been expected from other group results, crane watchers at Ft Kearney (SP-1) had the lowest proportion of organisation members (33%) while SP-3, SP-6 and SP-7 had the highest proportions. Mean equipment replacement value ranged from $996 for crane watchers at Ft Kearney to $4023 for Rio Grande Valley Birding Festival participants.

Table 2 Demographic characteristics of selected birder populations*

	SP-1	***SP-2***	***SP-3***	***SP-4***	***SP-5***	***SP-6***	***SP-7***	***SP-8***	**F**	**P**	***Total***	**n**
Percent female	46.6	56.0	48.8	56.9	46.2	49.6	51.2	58.6	1.86	0.0730	51.2	2096
(SE)	(2.55)	(2.77)	(3.42)	(3.69)	(4.18)	(3.35)	(2.18)	(4.98)			(1.01)	
	a	a	a	a	a	a	a	a				
Age	50.6	54.6	54.9	53.5	60.5	56.5	54.4	54.5	4.08	0.0002	54.4	2081
(SE)	(0.75)	(0.74)	(1.04)	(0.95)	(2.88)	(0.81)	(0.55)	(6.25)			(0.45)	
	b	ab	ab	b	a	ab	ab	ab				
Percent Anglo	95.9	94.9	95.7	97.1	91.2	97.3	94.3	87.6	2.90	0.0052	94.9	2029
(SE)	(1.03)	(1.24)	(1.40)	(1.28)	(2.44)	(1.10)	(1.02)	(3.36)			(0.49)	
	a	a	a	a	ab	a	ab	b				
Mean years of education	16.1	17.0	16.8	16.9	17.2	16.8	17.0	16.0	5.59	0.0001	16.7	2100
(SE)	(0.15)	(0.14)	(0.21)	(0.21)	(0.22)	(0.17)	(0.12)	(0.32)			(0.06)	
	bc	a	abc	ab	a	ab	a	c				
Mean household income ($)	55,119	65,519	57,284	62,711	73,571	73,495	96,163	62,011	28.20	0.0001	71,121	1828
(SE)	(2171)	(2646)	(2938)	(3492)	(4437)	(3333)	(2658)	(4502)			(1153)	
	c	bc	c	bc	b	b	a	bc				
Percent retired	33.1	39.7	35.3	36.9	48.3	50.2	31.8	29.3	5.36	0.0001	37.0	2080
(SE)	(2.42)	(2.75)	(3.27)	(3.62)	(4.19)	(3.36)	(2.03)	(4.60)			(1.06)	
	a	abc	ab	abc	bc	c	a	a				

*Means with the same letter are not significantly different at the 95% level (alpha = 0.05)

Table 3 Behavioral characteristics of selected birder sub-populations*

	SP-1	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	F	P	*Total*	n
Skill level (percent)												
Less skilled	76.9	67.7	47.1	55.3	43.8	33.2	42.1	36.4	30.69	0.0001	53.0	2095
	a	ab	cd	bc	cd	d	cd	d				
Equally skilled	18.9	27.0	38.5	33.2	40.4	48.9	44.7	41.4	14.50	0.0001	35.6	2095
	d	cd	abc	bc	abc	a	ab	ab				
More skilled	4.2	5.3	14.5	11.6	15.8	18.0	13.2	22.2	8.68	0.0001	11.4	2095
	d	cd	abc	bcd	ab	ab	abcd	a				
Centrality of activity (percent)												
Most important activity	8.0	17.7	42.7	27.2	51.7	66.8	49.1	36.3	57.33	0.0001	35.7	2115
	f	ef	bc	de	b	a	bc	cd				
Second most important activity	11.1	16.2	16.5	21.2	17.0	19.9	21.9	20.6	3.06	0.0033	17.8	2115
	a	a	a	a	a	a	a	a				
Third most important activity	9.1	10.1	8.7	11.4	6.8	4.9	9.3	7.8	1.10	0.3627	8.8	2115
	a	a	a	a	a	a	a	a				
Only one of many activities	71.8	56.0	32.1	40.2	24.5	8.4	19.6	35.3	71.77	0.0001	37.7	2115
	a	b	cde	c	de	f	ef	cd				
Commitment level (percent)												
Committed viewer	4.7	6.4	26.2	13.1	20.4	32.3	18.8	15.8	19.33	0.0001	16.0	2124
	e	de	ab	cde	bc	a	bc	bcd				

Continued

Table 3 (*contd*)

	SP-1	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	F	P	*Total*	n
Active viewer	22.0	37.6	43.1	48.6	51.7	61.1	59.5	44.6	24.91	0.0001	45.6	2124
	c	b	b	ab	ab	a	a	b				
Casual viewer	73.3	56.1	30.7	38.3	27.9	6.6	21.8	39.6	73.03	0.0001	38.5	2124
	a	b	cd	c	cd	e	d	c				
Percent belonging to birding/conservation organisations	32.8	61.1	93.3	80.3	72.1	89.4	89.2	68.3	89.63	0.0001	72.1	2129
	a	b	e	cd	bc	de	de	b				
Mean equipment replacement value in $ (SE)	996	1341	2185	2057	2490	4023	2831	2038	11.84	0.0001	2181	2093
	(113)	(108)	(268)	(329)	(417)	(571)	(229)	(381)			(102.22)	
	d	cd	bcd	bcd	bc	a	ab	bcd				
Mean number of trips away from home per year (SE)	4.5	4.5	13.8	11.2	14.1	10.6	13.7	17.9	7.36	0.0001	10.23	2039
	(0.56)	(0.45)	(2.16)	(2.20)	(2.34)	(1.19)	(1.85)	(2.97)			(0.62)	
	b	b	a	ab	a	ab	a	a				
Mean total days birding/viewing in previous 12 months (SE)	18.6	27.2	50.9	38.8	66.2	96.2	80.6	80.5	29.57	0.0001	55.0	2049
	(2.87)	(3.55)	(5.97)	(5.54)	(7.17)	(6.80)	(4.87)	(11.02)			(2.02)	
	e	de	cd	de	bc	a	ab	ab				

*Means with the same letter are not significantly different at the 95% level (alpha = 0.05)

The number of trips away from home in the previous 12 months ranged from five to 18. Recognising that trips for outdoor recreation purposes can vary in length, we asked birders to recall the number of days they participated in birding/viewing birds in the previous 12 months. Mean total number of days of participation ranged from 19 days (crane watchers at Ft Kearney) to 96 days (Rio Grande Valley Birding Festival participants (Table 3). These results contrast for the most part with those for the overall population of individuals 16 years of age and older who participated in nonresidential wildlife watching away from home (17 days) (US Fish and Wildlife Service and US Bureau of the Census, 2002).

Instead of ranking motivation items from highest to lowest overall, we focused instead on understanding how the importance of motivations or experience preferences varied among groups. First, it is important to note there were no significant group differences for the items 'to be with friends' and 'for family recreation'. Each of these items had roughly the same importance to participants in each of the eight groups studied (Table 4). These results reinforce the notion that birding is a social activity involving friends and family just like many other outdoor recreation activities. Second, there were fewer group differences for activity-general motivations (those motivations common to most outdoor recreation activities) than there were for activity specific motivations (those motivations unique to birding and other wildlife watching). For example, there were fewer statistically significant differences for activity–general items like 'to be outdoors', 'to enjoy the sights, smells and sounds of nature', 'to get away from the demands of life' and 'to do something creative' than there were for activity-specific items like 'to improve my birding skills and abilities' and 'to see bird species that I had not seen before' (Table 4). And third, from inspection, it appears that many of the activity-general experience preferences (i.e. be outdoors, enjoy sights, etc) are ranked more important overall than activity-specific experience preferences (i.e. improve birding skills, see as many bird species, etc). This finding has been reported previously in other studies of outdoor recreation experience preferences and is not unexpected. It doesn't mean that bird populations are unimportant to the activity of birding but rather they are more important for some participants than others. The more generic aspects of birding are important to all participants regardless of the centrality of the activity to them or their perceived skill and level of commitment. The total mean scores across sub-populations provide a means of understanding the extent to which various motivation items like 'to improve my birding skills and abilities' and 'to see bird species that I have not seen before' are more or less important to each group.

As expected, all respondents had expenditures for assorted items on their birding trips. The extent of such expenditure varied among birders and among the subgroups identified. Several patterns are evident and will be discussed below. First, however, a note of caution is in order for interpreting the figures presented in Table 5.

As presented, the expenditures in Table 5 represent a profile of the 'typical birder'. They are an average of all respondents. That is, if a respondent reported expenditures for some items but zero for other items, then the actual amounts

Table 4 Mean scores for birding motivations of selected birder populations*

*Motivations for fishing/viewing***	*SP-1*	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	**F**	**P**	*Total*	**n**
To be alone	2.10	1.98	2.40	2.14	2.00	1.95	2.10	2.45	4.62	0.0001	2.11	2028
	bc	c	ab	abc	c	c	bc	a				
To be outdoors	4.16	4.18	4.24	4.41	4.42	4.39	4.38	4.43	4.78	0.0001	4.30	2095
	b	ab	ab	ab	a	ab	ab	a				
To enjoy the sights, smells and sounds of nature	4.34	4.36	4.37	4.61	4.45	4.36	4.47	4.49	3.12	0.0028	4.42	2103
	b	b	b	a	ab	b	ab	ab				
To be with friends	2.70	2.69	2.69	3.00	2.82	2.84	2.72	2.89	2.02	0.0488	2.76	2070
	a	a	a	a	a	a	a	a				
To get away from the demands of life	3.34	3.12	3.36	3.36	3.45	3.11	3.31	3.57	2.65	0.0099	3.30	2080
	ab	b	ab	ab	ab	b	ab	a				
For family recreation	3.15	3.05	2.96	3.00	3.17	2.79	2.86	2.96	2.64	0.0102	2.98	2058
	a	a	a	a	a	a	a	a				
To improve my birding skills and abilities	2.58	2.92	3.30	3.18	3.54	3.93	3.48	3.29	36.39	0.0001	3.23	2077
	e	de	bc	cd	b	a	bc	bc				

Continued

Table 4 (*contd*)

*Motivations for fishing/viewing***	*SP-1*	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	**F**	**P**	*Total*	**n**
To get away from the family for a while	1.46	1.37	1.55	1.47	1.43	1.40	1.48	1.67	1.86	0.0731	1.46	2033
	ab	b	ab	ab	ab	b	ab	a				
To gain respect from other birders	1.29	1.31	1.51	1.43	1.46	1.52	1.46	1.69	5.01	0.0001	1.43	2060
	b	b	ab	b	ab	ab	ab	a				
To do something creative	2.38	2.43	2.58	2.56	2.66	2.53	2.53	2.80	1.93	0.0612	2.52	2056
	b	ab	ab	ab	ab	ab	ab	a				
To see bird species that I had not seen before	3.29	3.42	3.67	3.56	3.88	4.03	3.72	3.72	13.65	0.0001	3.62	2092
	d	d	bc	cd	abc	a	abc	abc				
To see as many bird species as possible	2.74	2.76	3.20	2.83	3.42	3.32	3.12	3.18	10.21	0.0001	3.03	2088
	c	c	ab	bc	a	a	abc	ab				

*Means with the same letter are not significantly different at the 95% level (alpha = 0.05)
**The scale for birding motivation statements is: 1 = not at all important, 2 = slightly important, 3 = moderately important, 4 = very important and 5 = extremely important

Table 5 Bird trip expenditures for selected birder populations*

	SP-1	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	F	P	*Total*	n
Transportation (SE)	$56.27	$97.46	$40.30	$88.21	$218.50	$233.59	$80.94	$56.13	20.75	0.0001	$98.63	1716
	(5.61)	(11.21)	(5.35)	(13.47)	(46.33)	(20.28)	(12.15)	(14.69)			(5.15)	
	b	b	b	b	a	a	b	b				
Lodging (SE)	$59.25	$105.13	$45.91	$129.17	$296.83	$262.58	$186.49	$76.60	22.51	0.0001	$135.51	1716
	(4.33)	(7.55)	(6.43)	(10.05)	(64.89)	(20.40)	(20.12)	(17.70)			(6.34)	
	d	cd	d	cd	a	ab	bc	d				
Food (SE)	$59.10	$88.09	$53.40	$106.06	$221.49	$210.21	$135.34	$68.92	31.90	0.0001	$110.01	1716
	(3.25)	(5.61)	(6.28)	(11.00)	(35.52)	(15.30)	(8.97)	(14.24)			(3.78)	
	cd	bcd	d	bc	a	a	b	cd				
Miscellaneous (SE)	$28.77	$49.11	$10.50	$87.58	$67.80	$170.15	$87.89	$46.60	16.65	0.0001	$68.33	1716
	(3.65)	(4.52)	(2.26)	(14.37)	(19.55)	(16.19)	(14.31)	(13.19)			(4.29)	
	bc	bc	c	b	bc	a	b	bc				
Other (SE)	$5.06	$19.04	$7.02	$10.12	$88.70	$20.40	$32.08	$9.97	3.76	0.0005	$19.78	1716
	(1.50)	(4.27)	(3.60)	(4.18)	(55.21)	(6.23)	(9.96)	(5.71)			(3.49)	
	b	b	b	b	a	b	b	b				
Total in state (SE)	$208.46	$358.83	$157.13	$421.13	$893.32	$896.93	$522.75	$258.22	47.68	0.0001	$432.25	1716
	(12.57)	(20.18)	(17.33)	(33.55)	(130.09)	(48.48)	(37.44)	(42.90)			(14.07)	
	de	bcd	e	bc	a	a	b	cde				
Out of state (SE)	$39.88	$71.67	$1.97	$73.89	$85.53	$71.92	$146.06	$23.44	1.74	0.0961	$73.59	1716
	(6.90)	(9.17)	(0.95)	(19.83)	(21.62)	(10.57)	(56.46)	(19.57)			(12.57)	
	a	a	a	a	a	a	a	a				
Total trip expenditures (SE)	$248.34	$430.50	$159.10	$495.02	$978.84	$968.85	$668.81	$281.66	25.60	0.0001	$505.84	1716
	(15.24)	(24.56)	(17.44)	(40.62)	(140.39)	(51.86)	(74.10)	(47.49)			(20.42)	
	cd	bcd	d	bc	a	a	b	cd				

*Means with the same letter are not significantly different at the 95% level (alpha = 0.05)

are used. This means that some respondents have a zero transportation expense (e.g. rode with others for free) while others have positive expenditures; they are all averaged together. Thus the mythical 'typical birder' has a total expenditure comprised of the elements as presented. Multiplying any one of these figures by total respondents would give a valid representation of that type of expenditure for the sample in aggregate. The alternative would be to present the average expenditure for only those respondents with the expense. This would be a more accurate representation of the actual amount spent for the item when an expenditure was made but would give an erroneous total expenditure if multiplied by the total number of birders. We have chosen to follow the former procedure.

Total trip expenditures averaged $506 for 1716 respondents (Figure 1). The subgroups varied from $159 to $979 and did have statistical differences among them. The two Texas groups (SP-5 and SP-6) were comparable to each other but different from the remaining groups. Likewise there was statistical comparability for groups SP-2, SP-4 and SP-7. The remaining groups are comparable in a statistical sense.

Moving on to look at the expenditure breakdowns by sub-group, two things appear noteworthy. First, the out-of-state category is statistically comparable for all groups. None seem to spend more or less than the others out-of-state (outside the state where the birding activity occurred, not necessarily their residence state) when making a recreational trip to go birding. The second item of note is that again the two sample groups birding in Texas had notably higher expenditures. Looking down the columns one is struck by the number of times an 'a' appears in one or both of these columns (SP-5 or SP-6) while not occurring elsewhere. Aside from these two items, it also appears that most groups have comparable expenditures for transportation, food, lodging, miscellaneous (e.g. equipment, souvenirs, fees), and other categories.[1]

Economic value is often confused with economic expenditures. Birders make substantial expenditures to engage in their activity, however, these expenditures are made for other items which are used to engage in the activity. These other items must be produced by someone and this entails the use of resources. Where do these resources come from? There are other productive uses to which they could be put for society's members. Thus, while birders

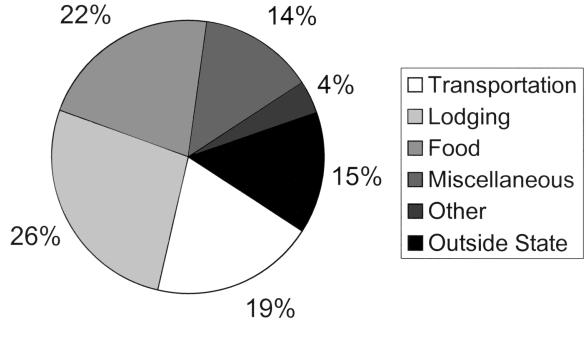

Figure 1 Distribution of trip expenditures ($505.84)

spend an average of $506 per trip, these expenditures require the taking of resources from other places in society to produce the goods and services they desire. The 'average' birder spends the $506 in expectation that the value (s)he receives is greater than what is being spent. This excess value is referred to as the net value (or consumer surplus) received from birding. This, while uncollected by economic agents (e.g. businesses and other sellers of services), is yet a value nonetheless. The 'average' birder receives this value from the birding experience and, thus, it is a value to society as a whole. In fact, to the extent that expenditures represent the value of other goods and services given up to provide the goods and services purchased by the 'average' birder, this net economic value is the value of birding to society.

So why is it that so much attention is often paid to the expenditures of recreationists? Because local communities and regions are interested in the impact of such expenditures upon their local revenues and employment. Local development entities desire to expand local revenues and employment. It is of little consequence that the benefits to their economies may come at the expense of other areas of the broader national economy. This attitude is not unexpected. The loss to other areas is outside their view, while the gain is not. From a national perspective such effects on other areas are important (and often cancel out against local gains), but certainly not from their own local perspective.

That said, our focus here is not upon the regional impact of expenditures. Since our paper has pooled studies from different geographic areas and regions, it is not feasible to talk about comparison of such effects on economies. Each has a different economic structure that would have a bearing upon the measurement and comparison of such re-spending effects (i.e. the recipient of expenditures re-spends them and causes further economic impacts). Here we focus on what is left after the expenditures have been made. That is, what is the net economic value (or consumer surplus) accruing to birding participants from their experiences?

We have estimated the net value of a birding trip by asking each respondent, given the trip expenditures reported, 'what increase in expenses would have caused you to cancel this last trip to the __ (study area)?' This response represents the residual value remaining after the expenditures had been made by the respondent. It is the uncollected value of the birding trip. For our responding birders, this was $163 per trip on average. While there were some statistically significant differences among the subgroups (Table 6), it is surprising how comparable this number appears (varying from $61 to $263). This comparability is even more striking when it is divided by the respondents' average days on the trip, to convert the estimate to a net value per day. The value per day for the entire group is $50 and again shows few statistical differences (but the range goes from $21 to $72). The final estimate is a rough approximation of net value per year of birding in the area. It is determined by multiplying the per day net value by the number of days birded in the study area. Across groups, the estimate of net birding value per year is $434 with one statistically different sub-group: the biodiversity festival attendees (SP-8) who had a much higher number of days per year in the area.[2]

Table 6 Net value of birding trip per day, per trip and annually in study area for selected birder populations*

	SP-1	*SP-2*	*SP-3*	*SP-4*	*SP-5*	*SP-6*	*SP-7*	*SP-8*	F	P	*Total*	n
Total days in area during past 12 months (SE)	4.52	5.67	7.97	11.77	29.07	11.45	8.18	86.04	57.68	0.0001	12.69	1731
	(0.92)	(1.24)	(1.14)	(3.57)	(5.52)	(1.90)	(0.66)	(13.21)			(0.98)	
	c	c	c	c	b	c	c	a				
Total days on this trip (SE)	2.55	3.36	2.60	3.57	8.73	6.50	3.83	2.93	22.26	0.0001	3.90	1741
	(0.12)	(0.14)	(0.26)	(0.19)	(1.45)	(0.59)	(0.29)	(0.24)			(0.14)	
	c	c	c	c	a	b	c	c				
Highest increase in trip costs – trip net value (SE)	$92.44	$159.79	$68.87	$196.18	$214.03	$206.99	$263.26	$60.50	6.19	0.0001	$163.22	907
	(9.77)	(17.04)	(12.54)	(32.21)	(72.69)	(22.60)	(43.01)	(15.32)			(10.43)	
	bc	abc	bc	abc	ab	abc	a	c				
Net value of trip per day (SE)	$38.68	$55.88	$34.13	$56.45	$48.94	$40.48	$72.41	$20.83	4.37	0.0001	$49.69	890
	(3.87)	(6.15)	(5.25)	(7.65)	(16.73)	(4.80)	(8.97)	(5.04)			(2.57)	
	ab	ab	b	ab	ab	ab	a	b				
Net value of trip per day – calculated**	$36.25	$47.56	$26.49	$54.95	$24.52	$31.84	$68.74	$20.65	na	na	$41.85	na
Net value of trip per year (SE)	$134.03	$211.76	$147.35	$698.34	$705.16	$321.62	$545.63	$2500.14	7.23	0.0001	$433.98	859
	(22.27)	(43.75)	(21.93)	(360.49)	(322.31)	(48.96)	(107.37)	(1103.18)			(69.11)	
	b	b	b	b	b	b	b	a				
Net value of trip per year – calculated†	$163.85	$269.65	$211.11	$646.79	$712.70	$364.62	$562.26	$1776.59	na	na	$531.09	na

*Means with the same letter are not significantly different at the 95% level (alpha = 0.05)
**Row 3 (highest increase in trip costs) divided by Row 2 (trip length in days). This avoids problems with missing data when doing calculations but sacrifices some observations in the process
†Row 5 (calculated per day value) divided by Row 1 (days birded in study area over past year). This avoids problems with missing data when doing calculations but sacrifices some observations in the process. In this case for SP-8 it also appears to reduce the influence of several outliers who bird more often and reported all the needed data while some other individuals did not do so

Discussion

This study provides insight into a much wider range of birding sub-population segments than available previously in the social science literature. It provides useful understanding to help rebut the notion that there is an 'average' birder, whereby measures of central tendency are used to characterise the population of participants. An overall mean would mask the within-group differences revealed in Tables 2–4. This is not to imply that we think we have studied the full range of birder sub-populations ranging from casual to committed but we have included results for more diverse groups than has previously been the case. Our results reinforce the point that generalisations about the population of birders should not rely solely on results from sub-population studies. While there were few significant group differences in terms of the demographic characteristics of birders, there were significant group differences identified for most behavioural, motivational and economic measures.

Also, our results provide a useful perspective of birders along the specialisation continuum but little understanding of the process by which they became socialised into birding. The crane watchers at Ft Kearney help us to understand individuals who are barely into the social world of birding. They stand in sharp contrast with the serious birders who participated in the Rio Grande Valley Birding Festival and might remind many in this latter group of how they first started birding. Questions like whether the birders watching the cranes at Ft Kearney will focus more on recreational birding in the future and become more skilled and committed remain to be seen through longitudinal studies of the birding population. The Platte River crane-watching spectacle probably plays a major role in attracting new recruits to birding but movement of individuals along the specialisation continuum in birding is neither linear nor inevitable based on previous research (Unruh, 1979). There will always be people who derive benefits from watching the cranes along the Platte and who participate in various leisure activities they consider more important than birding. After all, we know there are other 'birders' who do all of their bird-watching at home and do not participate in birding elsewhere.

Clearly birding trips have regional economic impacts. The direct expenditures of birders in these studies averaged $506 per trip, with $432 being spent in the state where the birding activity occurred. If used as an input to a regional economic impact model, estimates of birding impacts on regional economies could be generated and would likely constitute significant and, given the current activity growth rates, growing impacts. While birding is a non-consumptive activity, birders are not non-consumptive. They need travel inputs, lodging, food, and all of the other things required by other types of recreational participants and tourists.

In addition to their direct impacts on regional economies, birders also receive social values from their activity. While not collected by businesses, these are nonetheless values of the birding resources to citizens. Any alteration of these resources must take account of effects upon birding participants to the same extent that they would account for effects upon other economic agents within the economy. The social or net economic value of a birding day has

been estimated and could be used to provide initial indications of the value lost per birding day, sacrificed by alternative resource usage.

Future research efforts to learn more about birding as a leisure activity need to be multi-disciplinary and integrated. Better understandings of the sociology and psychology of birding without a concurrent good understanding of societal and individual benefits expressed in dollars make little sense. Perhaps a more integrated understanding of birding, its participants and benefits received will lead to a greater recognition of and respect for birding in the public policy-making arena. And this could lead to recognition of the need for a national survey focused exclusively on birding and the development of a bureaucracy within the US Fish and Wildlife Service to look out for birding interests. This could provide needed facilities and services, and a means of participant-based funding with which this could be accomplished.

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Notes

1. These comparisons are being made on a per trip basis and not on a per day basis. Possibly this would alter the Texas study group results as they have a statistically higher number of days per trip (see Table 6).
2. Because not all respondents reported days on trip or days birded per year in the study area, some are lost for the calculations. An alternative approach is to work directly with the mean data to get the value per day and per year. This alternative is also presented in the table but does not allow testing for statistical differences.

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