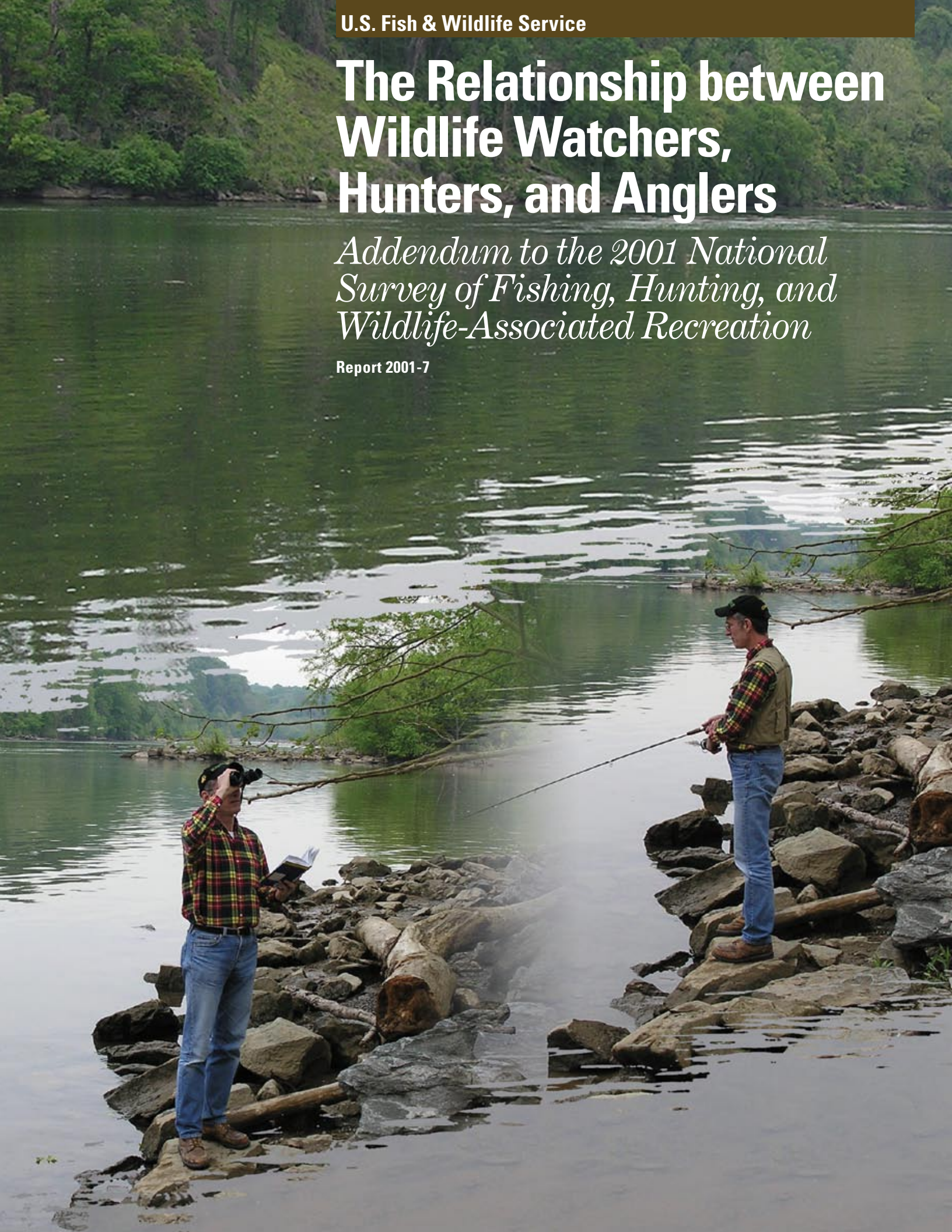
U.S. Fish & Wildlife Service

The Relationship between Wildlife Watchers, Hunters, and Anglers

Addendum to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Report 2001-7



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March 2005

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This report is intended to complement the National and State Reports for the 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. The conclusions in this report are the author's and do not represent official positions of the U.S. Fish and Wildlife Service.

The author thanks Sylvia Cabrera, Richard Aiken, Natalia Perez, Jim Greer, and Dave Buschena for valuable input into this report.

Contents

Introduction

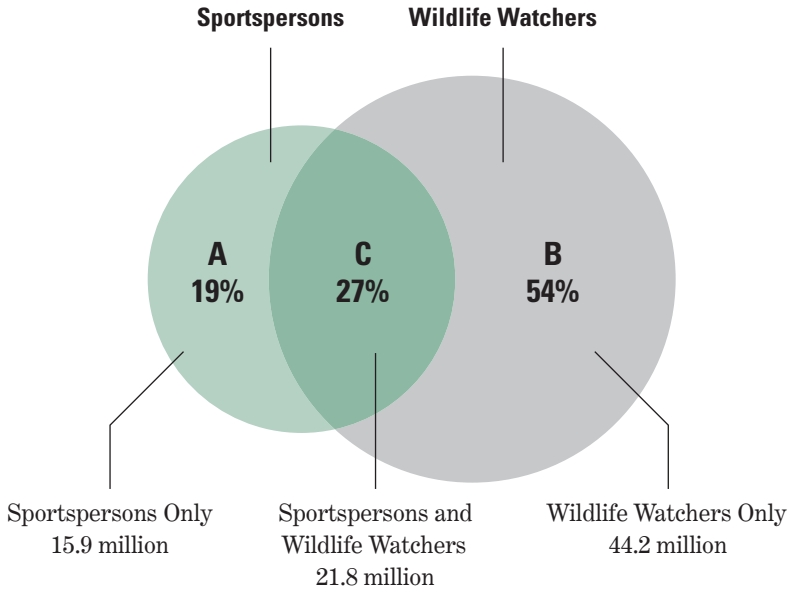
In 2001 there were 82 million U.S. residents 16 years old and older who participated in wildlife-related recreation. This total of wildlife-related recreationists is often split into two different types: non-consumptive and consumptive. Non-consumptive recreation includes activities such as feeding, observing, or photographing wildlife. Consumptive recreation includes both hunting and fishing. In 2001 participants in non-consumptive activities, who are often referred to as wildlife watchers, totaled 66.1 million, and participants in consumptive activities, who are often referred to as sportspersons, totaled 37.8 million.

A graphical representation of consumptive and non-consumptive recreationists is presented in Figure 1. 54% of wildlife-related recreationists were wildlife watchers only, 19% were sportspersons only, and 27% were both wildlife watchers and sportspersons.

The populations of consumptive and non-consumptive recreationists are certainly interrelated. Both share a mutual concern and appreciation for the outdoors and wildlife resources. Moreover, there are a relatively large number who participate in both non-consumptive and consumptive recreation.

Of the 37.8 million sportspersons (anglers and hunters) nearly 22 million were also wildlife watchers in 2001. To some that feel sportspersons and watchers have few common interests, this statistic may come as a surprise. Pick a sportsperson at random and there is nearly a 60% chance that he or she will also be a wildlife watcher. Or, put another way, only about 4 in 10 sportspersons will not participate in any wildlife watching.

Figure 1. Wildlife-Related Recreationists, by Type of Activity: 2001
(Population 16 years of age and older.)



Note: Sportspersons are hunters and anglers. Wildlife watchers are observers, photographers, and feeders of wildlife.

Despite the interrelationship, the two groups are sometimes considered or treated as separate and distinct by professionals involved with wildlife recreation from a management, marketing, advocacy, or academic perspective. The notion of separate and distinctive groups of recreationists is due in part to the existence of interest groups who represent each group nearly exclusively. These interest groups sometimes have divergent opinions about resource management objectives; and, when conflict arises, both sides can become emphatically opposed to one another.

To be sure, besides their sometimes differing resource management objectives, there are other important differences between the two groups. For example, there are some notable differences in their socioeconomic characteristics. The proportion of the U.S. population who participates in wildlife watching tends to go up with age, whereas the proportion who participates in sporting activities, i.e., hunting or fishing, tends to go down. When considered in conjunction with information about ongoing demographic changes in the U.S., these socioeconomic characteristics have important implications about recreation participation in the future.

This report seeks to broaden the understanding of the interrelationship between consumptive and non-consumptive recreationists through the following objectives. Analyze sportspersons participation in wildlife watching. In other words, segment total wildlife-watching participants by sportsperson classification i.e., whether they also participated in hunting and fishing. After segmenting wildlife-watching participants by

sportsperson classification, compare the types of wildlife-watching activities enjoyed by both groups. Compare the socioeconomic characteristics of the three different groups of recreationists shown in Figure 1: wildlife watchers exclusively, sportspersons exclusively, and those who are both sportspersons and wildlife watchers. The socioeconomic characteristics compared include population size of residence, geographic region of residence, age, sex, ethnicity, race, income, and education. Examine wildlife-related recreation spending by the three different groups. Examine the relationship between historical hunting/fishing participation and wildlife watching. Lastly, examine the change in an individual's likelihood of wildlife-watching participation given that he or she participated in hunting or fishing.

Knowledge obtained through this analysis could be useful for a variety of reasons. Differing participation patterns among the two groups by age and ethnicity could indicate how aging baby boomers and increasing urbanization in the U.S. may affect recreation participation in the future. Knowledge of expenditures by the different groups could give manufacturers a better understanding of total sales potential for different types of products. Knowledge of the relationship between prior hunting and fishing activity and wildlife watching may foster greater consensus about the appropriate stewardship of resources among interest groups or give resource managers guidance in designing resource plans that are capable of bringing the greatest satisfaction to all recreationists.

Report Organization

The report is organized into five parts:

Part One: The "Wildlife Watching Participation by Sportsperson Classification" section examines the size and geographic dispersion of the wildlife-watching population by type of activity and by sportsperson classification. Estimates of total participation levels and days of participation are made for numerous aspects of around-the-home and away-from-home wildlife watching.

Part Two: The "Socioeconomic Characteristics" section compares the characteristics of the three different groups of recreationists who appear in Figure 1: wildlife watchers exclusively, sportspersons exclusively, and those who are both sportspersons and wildlife watchers.

Part Three: The "Expenditures by Type of Recreationist" section provides a detailed analysis of all wildlife recreation spending by recreationist type. Recreationists are treated as either watchers exclusively, sportspersons exclusively, or sportspersons and wildlife watchers.

Part Four: The "Historical Fishing and Hunting Activity of Wildlife Watchers" section examines the percent of all wildlife watchers who have participated in hunting or fishing in the past.

Part Five: Lastly, in the "Wildlife-Watching Participation Model" section a logit regression model is used to examine the impact that numerous variables have on the probability that an individual will participate in wildlife watching.

Data and Definitions

All reported data contained herein are from the *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR)*.[1] Consequently, all participation, dollar expenditures, and hunting behavior statistics are representative of 2001. Additionally, all data represents persons age 16 years and older.

The exact questions used to identify wildlife watchers appear in Appendix A; but, in summary, the following definitions are applicable.

An away-from-home wildlife watcher is one who took trips or outings at least one mile from home for the primary purpose of observing, photographing, or feeding wildlife. Trips do not include those to zoos, circuses, aquariums, museums, nor those for hunting, fishing, or scouting.

An around-the-home wildlife watcher is one who participated in one or more of the following activities within a one mile radius of home: photographing any type of wildlife; feeding any type of wildlife; visiting public parks or publicly owned natural areas for the purpose of observing, photographing, or feeding wildlife; taking a special interest in wildlife other than simply noticing wildlife while doing other activities; or maintaining natural areas or plantings for the benefit of wildlife.

For the sake of brevity wildlife watchers are often referred to simply as watchers. The activity of wildlife watching is referred to simply as watching. Sportsperson activities, i.e., hunting and fishing, are referred to simply as sporting activities. Recreationists that do not participate in sporting activities are referred to as non-sportspersons. The three recreationist groups shown in Figure 1 are referred to as follows: *watchers only* participate in wildlife watching only; *sportspersons only* participate in sporting activities only; *watchers-sportspersons* participate in both watching and sporting activities.

[1] FHWAR documents are available on the U.S. Fish and Wildlife Service webpage: http://federalaid.fws.gov/surveys/surveys.html.

Part One—Wildlife-Watching Participation by Sportsperson Classification

Analysis of wildlife watching by sportsperson classification reveals the portion of nonconsumptive recreation attributable to sportspersons and differences in the nonconsumptive recreation activities between sportspersons and non-sportspersons.

Wildlife Watching Nationally

Table 1 reveals the number of participants and days of wildlife watching by type of activity and sportsperson classification. It reveals that a substantial portion of all nonconsumptive recreationists in 2001, 33%, were also sportspersons. The remaining percentages in column five can be used to gauge which activities have a comparatively higher proportion attributable to sportspersons. For example, a comparison of row two and row six reveals that sportspersons make up a substantially higher share of participants in away-from-home than around-the-home wildlife watching. They make up 44% of away-from-home watchers and 32% of around-the-home watchers. Comparisons of percentages are useful in determining how wildlife watching activities of sportspersons differ in emphasis from non-sportspersons.

Table 1 indicates little variation in sportspersons' share of wildlife watching activities within the broader around-the-home and away-from-home classifications. The proportion of sportspersons within all activities classified as away from home are close to 44%. There is a slight increase in share for feeding wildlife, 46%, and a slight decrease in share for photographing, 42%. Interestingly, within the around-the-home activities, the share of sportspersons is slightly higher for photographing wildlife.

Table 1. Wildlife-Watching Participants and Days by Type of Activity and Sportsperson Classification: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Participants					
All Wildlife Watching	**66,105**	**44,263**	**67%**	**21,842**	**33%**
Away from Home	21,823	12,190	56%	9,633	44%
Observe Wildlife	20,080	11,594	58%	8,487	42%
Photograph Wildlife	9,427	5,423	58%	4,004	43%
Feed Wildlife	7,078	3,798	54%	3,279	46%
Around the Home	62,928	42,766	68%	20,162	32%
Observe Wildlife	42,111	28,385	67%	13,726	33%
Photograph Wildlife	13,937	8,825	63%	5,113	37%
Feed Wildlife	53,988	36,757	68%	17,231	32%
Visit Public Parks or Areas	10,981	7,326	67%	3,655	33%
Maintain Plantings or Natural Areas	13,073	8,769	67%	4,304	33%
Average Days of Participation					
All Wildlife Watching	**83**	**83**		**84**	
Away from Home	17	17		18	
Observe Wildlife	15	14		16	
Photograph Wildlife	8	8		9	
Feed Wildlife	15	14		15	
Around the Home	81	81		82	
Observe Wildlife	123	124		119	
Photograph Wildlife	14	14		14	
Visit Public Parks or Areas	4	4		5	
Total Days					
All Wildlife Watching	**5,488,866**	**3,659,767**	**67%**	**1,829,099**	**33%**
Away from Home	372,006	201,582	54%	170,425	46%
Observe Wildlife	295,345	162,190	55%	133,155	45%
Photograph Wildlife	76,324	41,436	54%	34,888	46%
Feed Wildlife	103,307	53,043	51%	50,264	49%
Around the Home	5,116,860	3,458,186	68%	1,658,674	32%
Observe Wildlife	5,159,259	3,532,392	69%	1,626,867	32%
Photograph Wildlife	190,120	119,255	63%	70,865	37%
Visit Public Parks or Areas	225,324	141,599	63%	83,725	37%

Table 1 also shows the total days and average days of wildlife watching around the home and away from home. The total number of days around the home and away from home was 5.5 billion, and the proportion attributable to sportspersons is identical to that for participants, 33%.

The average days of wildlife watching of sportspersons and non-sportspersons are very similar. The average of sportspersons is one to two days higher for most types of wildlife watching. However, it is notably 5 days lower for observing wildlife around the home.

Table 2 displays the distribution of away-from-home and around-the-home watchers by species of wildlife observed. Sportspersons and non-sportspersons do have some apparent differences in species viewed. For around the home, sportspersons have an appreciably higher concentration of watchers who observe fish and other wildlife, large land mammals, and reptiles or amphibians. Sportspersons' shares of total participation for these species are 45%, 40%, and 39% respectively, which is higher than their overall around-the-home share of 32%. Sportspersons also have a relatively higher than average share of participants observing large land mammals and fish away from home, where their shares of total participants are 47% and 48% respectively. Additionally, at 47%, sportspersons have a higher share of away-from-home watchers of "Other Birds."

In summary, whether from a days or total participants perspective, sportspersons comprise a substantial portion of wildlife watching. Further, the information in Tables 1 and 2 reveals that sportspersons and non-sportspersons have very slight differences in the average number of days across all types of watching, but there are some apparent differences in species observed. Sportspersons have a relatively higher proportion of participants who observe large land mammals and fish.

Table 2. Participants in Wildlife Watching by Species and Sportsperson Classification: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Away from Home, Total	**21,823**	**12,190**	**56%**	**9,633**	**44%**
Total Birds	18,580	10,987	59%	7,593	41%
Birds of Prey	12,495	7,176	57%	5,319	43%
Waterfowl	14,432	8,477	59%	5,955	41%
Water Birds	10,314	6,089	59%	4,225	41%
Songbirds	12,878	7,633	59%	5,245	41%
Other Birds	7,907	4,211	53%	3,695	47%
Total Land Mammals	15,506	8,612	56%	6,894	45%
Large Land Mammals	12,226	6,485	53%	5,741	47%
Small Land Mammals	12,958	7,500	58%	5,458	42%
Fish	6,330	3,290	52%	3,040	48%
Marine Mammals	3,013	2,016	67%	997	33%
Other Wildlife	9,409	5,604	60%	3,805	40%
Around the Home, Total	**62,928**	**42,766**	**68%**	**20,162**	**32%**
Birds	40,306	27,377	68%	12,929	32%
Large Land Mammals	17,481	10,548	60%	6,933	40%
Small Land Mammals	32,747	22,254	68%	10,494	32%
Reptiles or Amphibians	9,773	5,975	61%	3,798	39%
Insects	13,835	9,195	66%	4,640	34%
Fish or Other Wildlife	7,932	4,324	55%	3,609	45%

Wildlife Watching by State

Tables 3, 4, and 5 reveal the number of watchers by sportsperson classification and state where watching occurred. Table 3 presents the state distribution of away-from-home watchers, and Table 4 presents the state distribution of around-the-home watchers. Table 5 presents the total recreationists by type shown in Figure 1: *watchers only, sportspersons only,* and *watchers-sportspersons.* Generally, the tables reveal a wide variation in the proportional distribution of watchers with respect to sportsperson classification.

Table 3 reveals that the proportional distribution of away-from-home watchers between non-sportspersons and sportspersons varies substantially by state. At 80% Mississippi has the highest sportsperson share. Minnesota, Oklahoma, and Georgia follow with 63%, 59%, and 57% sportspersons. Altogether, sportspersons account for 50% or more of away-from-home watchers in 14 states. States with the least sportsperson share of away-from-home watchers are California, Delaware, Connecticut, and Massachusetts, with 21%, 26%, 26%, and 28% respectively.

Table 3. Away-from-Home Wildlife Watchers by Sportsperson Classification and State Where Activity Occurred: 2001

(Population 16 years of age and older. Numbers in thousands.)

	All Away-from-home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
AK	292	141	48%	151	52%
AL	276	145	53%	132	47%
AR	211	94	45%	117	55%
AZ	638	446	70%	191	30%
CA	2270	1804	79%	466	21%
CO	838	493	59%	346	41%
CT	279	207	74%	73	26%
DE	96	71	74%	25	26%
FL	1503	889	59%	614	41%
GA	411	178	43%	234	57%
HI	141	88	62%	53	38%
IA	310	141	45%	169	55%
ID	451	277	61%	174	39%
IL	638	347	54%	291	46%
IN	474	262	55%	212	45%
KS	297	147	49%	150	51%
KY	385	192	50%	193	50%
LA	314	151	48%	163	52%
MA	542	388	72%	154	28%
MD	533	315	59%	218	41%
ME	419	261	62%	158	38%
MI	884	479	54%	405	46%
MN	634	233	37%	400	63%
MO	738	357	48%	381	52%
MS	131	**	**	*105	*80%
MT	511	327	64%	184	36%
NC	588	327	56%	261	44%
ND	93	58	62%	35	38%
NE	186	102	55%	84	45%
NH	425	291	68%	134	32%
NJ	688	484	70%	204	30%
NM	387	263	68%	124	32%
NV	309	201	65%	107	35%
NY	1330	860	65%	469	35%
OH	898	529	59%	370	41%
OK	403	166	41%	237	59%
OR	910	625	69%	285	31%
PA	1279	786	61%	493	39%
RI	98	54	55%	44	45%
SC	331	157	47%	174	53%
SD	181	80	44%	101	56%
TN	683	413	60%	270	40%
TX	1002	566	56%	435	44%
UT	530	266	50%	263	50%
VA	772	517	67%	255	33%
VT	307	210	68%	97	32%
WA	1065	700	66%	365	34%
WI	1000	527	53%	473	47%
WV	219	134	61%	85	39%
WY	416	233	56%	182	44%

**Estimate based on small sample size.*

***Sample Size too small to report data reliably*

Table 4 reveals that the distribution of around-the-home watchers between non-sportspersons and sportspersons also varies substantially by state. At 61% Wyoming has the highest sportsperson share. Alaska, Utah, and Montana follow with 56%, 48%, and 48% respectively. At 15% California has the lowest sportsperson share for around-the-home watchers just as it does for away-from-home. Massachusetts, Nevada, and Rhode Island all follow with 22%.

Table 4. Around-the-Home Wildlife Watchers by Sportsperson Classification and State of Residence: 2001

(Population 16 years of age and older. Numbers in thousands.)

	All Around-the-Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
AK	221	98	44%	123	56%
AL	925	588	64%	337	36%
AR	762	455	60%	308	40%
AZ	1,063	822	77%	241	23%
CA	4,853	4,111	85%	742	15%
CO	1,127	729	65%	398	35%
CT	859	631	73%	228	27%
DE	168	119	71%	48	29%
FL	2,635	1,617	61%	1,017	39%
GA	1,305	781	60%	524	40%
HI	120	71	59%	49	41%
IA	939	601	64%	338	36%
ID	333	196	59%	137	41%
IL	2,379	1,512	64%	866	36%
IN	1,727	1,161	67%	566	33%
KS	718	433	60%	285	40%
KY	1,234	769	62%	466	38%
LA	802	520	65%	282	35%
MA	1,443	1,126	78%	316	22%
MD	1,261	905	72%	357	28%
ME	501	345	69%	156	31%
MI	2,361	1,564	66%	797	34%
MN	1,932	1,024	53%	908	47%
MO	1,514	941	62%	572	38%
MS	576	357	62%	219	38%
MT	341	178	52%	163	48%
NC	1,815	1,321	73%	494	27%
ND	125	66	53%	59	47%
NE	469	301	64%	168	36%
NH	445	319	72%	126	28%
NJ	1,640	1,205	73%	435	27%
NM	449	335	75%	114	25%
NV	300	234	78%	66	22%
NY	3,442	2,528	73%	914	27%
OH	2,653	1,905	72%	748	28%
OK	997	588	59%	409	41%
OR	1,204	838	70%	366	30%
PA	3,371	2,365	70%	1,005	30%
RI	237	184	78%	53	22%
SC	1,045	652	62%	393	38%
SD	241	140	58%	101	42%
TN	1,655	1,134	69%	520	31%
TX	2,930	1,835	63%	1,095	37%
UT	515	267	52%	248	48%
VA	2,105	1,484	71%	620	29%
VT	280	181	65%	99	35%
WA	2,105	1,452	69%	653	31%
WI	2,076	1,310	63%	766	37%
WV	492	345	70%	147	30%
WY	154	60	39%	93	61%

Figure 2. Percent Away-from-Home Wildlife Watchers Who Were also Sportspersons

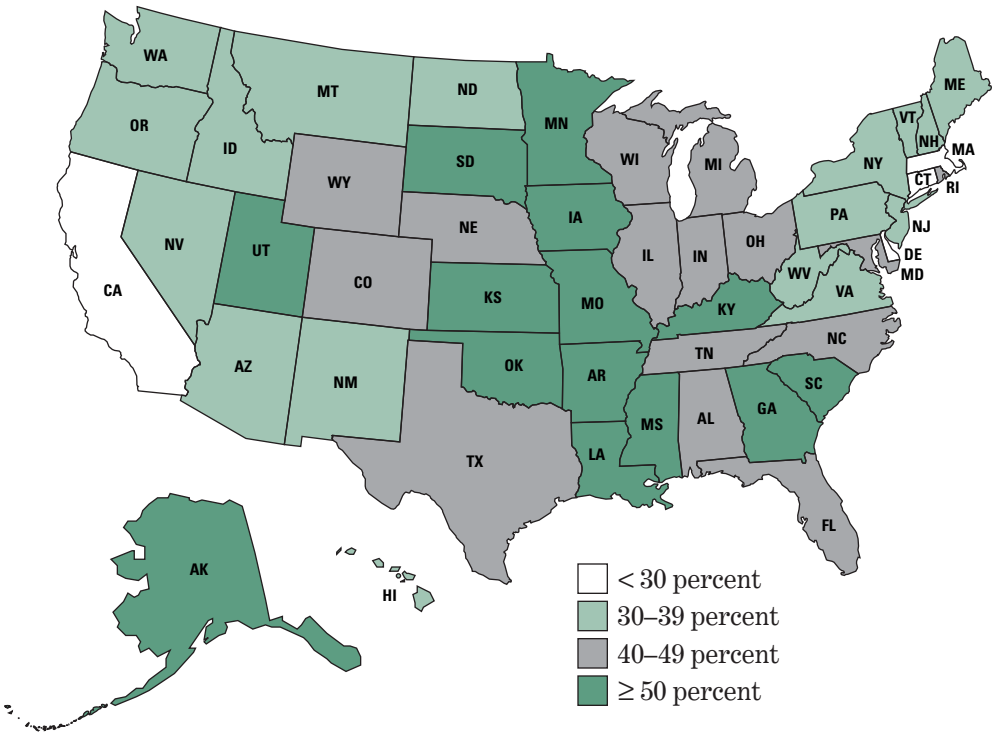


Figure 3. Percent Around-the-Home Wildlife Watchers Who Were also Sportspersons

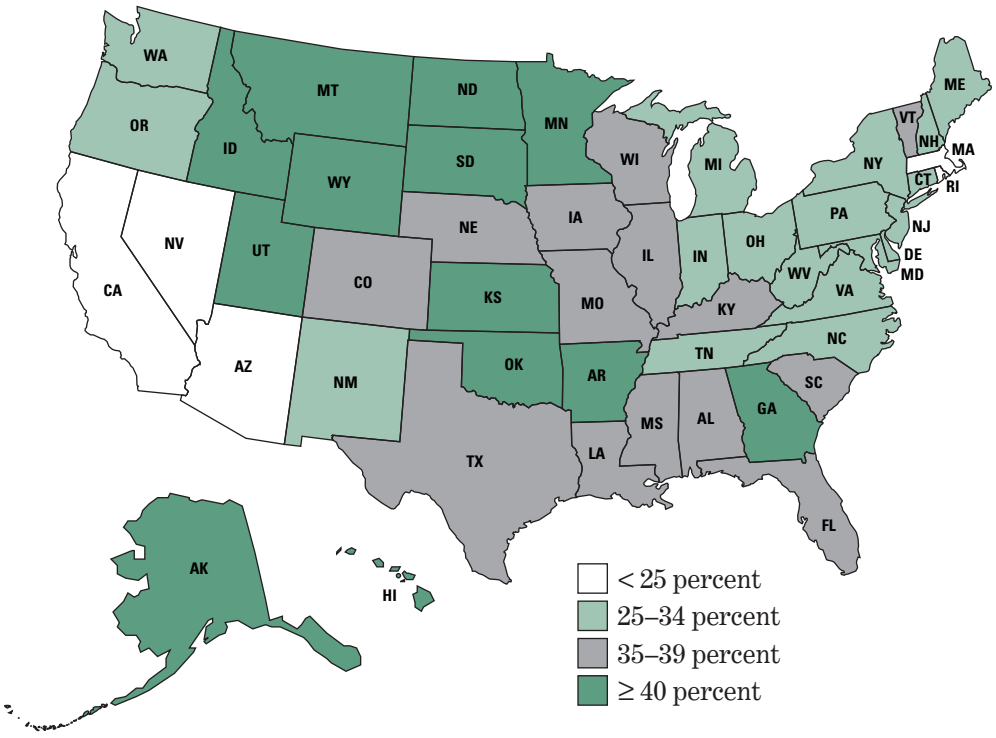


Figure 2 displays a graphical representation of sportspersons' share of away-from-home wildlife watchers by state.

Figure 3 displays a graphical representation of the sportsperson share of around-the-home wildlife watchers by state.

Table 5 indicates similarly that the share of recreationists that are *watchers-sportspersons* varies dramatically by state. Those that participate in both activities ranges from a low of 16% for California to a high of 47% for Montana. Other states with notably low proportions of *watchers-sportspersons* are Massachusetts, New Jersey, and Arizona, which all have less than 20%. At the other extreme, Minnesota and Utah both have greater than 41% *watchers-sportspersons*.

Table 5. Participation in Wildlife-Related Recreation by Recreationist Type and State of Residence: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All Recreationists	*Watchers Only*	*Percent of All*	*Sportspersons Only*	*Percent of All*	*Watchers-Sportspersons*	*Percent of All*
AK	320	115	36%	79	25%	126	39%
AL	1,323	597	45%	358	27%	368	28%
AR	1,038	417	40%	260	25%	361	35%
AZ	1,296	859	66%	189	15%	248	19%
CA	6,873	4,387	64%	1,382	20%	1,104	16%
CO	1,518	839	55%	305	20%	374	25%
CT	996	665	67%	113	11%	218	22%
DE	220	126	57%	50	23%	44	20%
FL	3,857	1,699	44%	1,001	26%	1,157	30%
GA	1,932	796	41%	606	31%	530	28%
HI	195	81	42%	69	35%	45	23%
IA	1,212	632	52%	229	19%	351	29%
ID	507	201	40%	119	23%	187	37%
IL	3,148	1,641	52%	656	21%	851	27%
IN	2,179	1,265	58%	393	18%	521	24%
KS	942	451	48%	207	22%	284	30%
KY	1,547	844	55%	283	18%	420	27%
LA	1,326	497	37%	486	37%	343	26%
MA	1,726	1,205	70%	233	13%	288	17%
MD	1,546	975	63%	235	15%	336	22%
ME	607	351	58%	87	14%	169	28%
MI	2,950	1,625	55%	526	18%	799	27%
MN	2,388	951	40%	395	16%	1,042	44%
MO	2,010	934	46%	398	20%	678	34%
MS	851	318	37%	272	32%	261	31%
MT	438	159	36%	76	17%	203	47%
NC	2,330	1,348	58%	446	19%	536	23%
ND	228	58	25%	93	41%	77	34%
NE	623	315	51%	125	20%	183	29%
NH	506	331	65%	56	11%	119	24%
NJ	1,993	1,324	66%	299	15%	370	19%
NM	595	339	57%	124	21%	132	22%
NV	439	245	56%	105	24%	89	20%
NY	3,990	2,497	62%	466	12%	1,027	26%
OH	3,407	1,894	55%	639	19%	874	26%
OK	1,308	578	44%	266	20%	464	36%
OR	1,545	934	60%	259	17%	352	23%
PA	4,169	2,521	60%	647	16%	1,001	24%
RI	280	184	66%	38	13%	58	21%
SC	1,375	701	51%	296	22%	378	27%
SD	326	150	46%	75	23%	101	31%
TN	2,109	1,206	57%	403	19%	500	24%
TX	4,515	1,770	39%	1,427	32%	1,318	29%
UT	736	268	37%	164	22%	304	41%
VA	2,535	1,565	62%	367	14%	603	24%
VT	319	194	61%	32	10%	93	29%
WA	2,537	1,605	63%	303	12%	629	25%
WI	2,489	1,348	54%	330	13%	811	33%
WV	694	341	49%	177	26%	176	25%
WY	223	85	38%	51	23%	87	39%

Part Two–Socioeconomic Characteristics

This section compares the socioeconomic characteristics of wildlife watchers and sportspersons from several perspectives. The aim is to show how socioeconomic characteristics of different groups or sets of recreationists differ from one another. The comparisons made in this section can best be explained through the use of Figure 1. First, the socioeconomic characteristics of the set of all wildlife watchers are compared to the characteristics of the set of all sportspersons. In Figure 1 the group of recreationists in areas A and C are compared to the group of recreationists in C and B. This is a simplistic comparison that ignores the overlap or intersection of the two groups. Second, the characteristics of those who are *watchers-sportspersons,* area C, are compared to those who are *watchers only,* area B, and *sportspersons only,* area A. The socioeconomic characteristics addressed include the following: population size of residence, Bureau of Census geographic region, age, sex, ethnicity, race, household income, and education.

As will be shown below, an understanding of the distinctiveness of the different recreationist groups yields information about how each will likely be affected by ongoing demographic trends in the U.S. such as population urbanization, increasing average age, and minority growth.

Comparison of Wildlife Watchers and Sportspersons

Table 6 summarizes the socioeconomic characteristics of wildlife watchers and sportspersons. The first row in Table 6 indicates 31% of all U.S. residents 16 years of age and older are wildlife watchers, and 18% are sportspersons. Deviations from this overall distribution yield information about how socioeconomic characteristics of wildlife watchers differ from sportspersons. This overall distribution is referred to as an "average." The discussion that follows addresses each of the socioeconomic characteristics presented in Table 6.

Population Size of Residence

The population size of residence is measured in terms of metropolitan statistical area (MSA). "The general concept of a metropolitan . . . statistical area is that of a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core . . . Each metropolitan statistical area must have at least one urbanized area of 50,000 or more inhabitants."

Consequently, classification by MSA type provides information on the population of recreationist residences. The categories of MSA listed in Table 6 indicate whether the recreationist lived in a MSA of various sizes or lived outside of a MSA, which indicates a more rural residency.

The table indicates that the percent of the population who participates (participation rate) falls for both wildlife watching and sporting activities as the population size of residence rises. The participation rate in wildlife watching falls from 41% for those residing outside MSAs to 29% for those residing inside MSAs. Similarly, the participation rate in sporting activities falls from 27% for those residing outside MSAs to 16% for those residing inside MSAs. Moreover, the rate also tends to fall as the size of MSA increases.

When considering the change in the participation rate between recreationists residing outside MSAs and those inside MSAs, it is important to note that the proportional decrease is greater for sporting activities. The participation rate for sporting activities falls from 27% to 16%, which represents a proportional change of -43%, compared to a -29% change in wildlife watching.

Census Geographic Regions

The participation rate of both wildlife watchers and sportspersons varies substantially by geographic region. The participation rate for both groups is highest in the West North Central region with rates of 43% and 29% respectively. The lowest participation rate for watching occurs in the West South Central with 25%. The Middle Atlantic and Pacific tie for the lowest

Table 6. Selected Characteristics of Wildlife Watchers and Sportspersons: 2001
(Population 16 years of age and older. Numbers in thousands.)

	U.S. Population	*Wildlife Watchers*	*Percent of Population*	*Sportspersons*	*Percent of Population*
Total All Persons	**212,298**	**66,105**	**31%**	**37,805**	**18%**
Population Size of Residence					
Metropolitan statistical area (MSA)	171,147	49,414	29%	26,564	16%
1,000,000 or more	112,984	29,724	26%	14,739	13%
250,000 to 999,999	41,469	12,880	31%	7,638	18%
50,000 to 249,999	16,693	6,811	41%	4,186	25%
Outside MSA	41,151	16,691	41%	11,241	27%
Census Geographic Region					
New England	10,575	3,875	37%	1,504	14%
Middle Atlantic	29,806	8,740	29%	3,810	13%
East North Central	34,082	11,631	34%	6,400	19%
West North Central	14,430	6,206	43%	4,239	29%
South Atlantic	39,286	11,395	29%	6,957	18%
East South Central	12,976	4,514	35%	2,865	22%
West South Central	23,337	5,747	25%	4,924	21%
Mountain	13,308	4,619	35%	2,757	21%
Pacific	34,498	9,377	27%	4,349	13%
Age					
16-17	7,709	1,678	22%	1,497	19%
18-24	22,234	3,051	14%	3,303	15%
25-34	35,333	8,869	25%	7,136	20%
35-44	44,057	14,939	34%	9,966	23%
45-54	40,541	14,491	36%	7,826	19%
55-64	25,601	10,326	40%	4,629	18%
65+	36,823	12,752	35%	3,447	9%
Sex					
Male	101,916	30,695	30%	28,462	28%
Female	110,381	35,409	32%	9,343	8%
Ethnicity					
Hispanic	21,910	2,699	12%	1,743	8%
Non-Hispanic	190,388	63,409	33%	36,063	19%
Race					
White	181,129	62,781	35%	35,300	19%
Black	21,708	2,029	9%	1,666	8%
Asian	7,141	654	9%	365	5%
All Others	2,320	641	28%	474	20%

continues

Table 6. Selected Characteristics of Wildlife Watchers and Sportspersons: 2001 – continued
(Population 16 years of age and older. Numbers in thousands.)

	U.S. Population	*Wildlife Watchers*	*Percent of Population*	*Sportspersons*	*Percent of Population*
Annual Household Income					
Under $10,000	10,594	2,387	23%	978	9%
$10-$19,999	15,272	3,837	25%	1,831	12%
$20-$24,999	10,902	2,879	26%	1,659	15%
$25-$29,999	11,217	3,461	31%	2,000	18%
$30-$34,999	11,648	4,069	35%	2,349	20%
$35-$39,999	9,816	3,142	32%	2,186	22%
$40-$49,999	16,896	6,402	38%	4,116	24%
$50-$74,999	31,383	12,359	39%	7,893	25%
$75-$99,999	17,762	7,735	44%	4,413	25%
$100,000 or More	19,202	8,010	42%	4,521	24%
Not Reported	57,606	11,823	21%	5,858	10%
Education					
11 years or less	32,820	7,201	22%	4,705	14%
12 years	73,719	21,154	29%	13,039	18%
1-3 years of college	49,491	16,013	32%	9,980	20%
4 years of college	34,803	12,603	36%	5,994	17%
5 years or more of college	21,464	9,133	43%	3,817	18%

percent of sportspersons with 13%. While the participation rate varies substantially for both watching and sporting activities, there is relatively more variation in sporting participation.

Age
Participation rates for watching and sporting activities vary substantially with respect to age. The participation rate for sporting activities is rather stable by age categories, except for the recreationists 65 years of age and older. Beyond 64 the participation rate for sporting activities declines substantially. However, there is a positive correlation with the rate of wildlife watching by age. The percent of the population who participates climbs from 22% for those 16-17 to 40% for those 55-64. It then declines to 35% for those over 64, but overall the positive correlation persists.

Sex
The participation rate for watching and sporting activities also differ substantially with respect to gender. The rate of participation in watching is relatively stable around 31% for both males and females. However, for sporting activities the participation rate of males is substantially higher than that of females.

Ethnicity
Hispanics have a substantially lower participation rate than Non-Hispanics in both wildlife watching and sporting activities. 12% of Hispanics participate in watching compared to 33% of Non-Hispanics. Similarly, 8% of Hispanics participate in sporting activities compared to 19% of Non-Hispanics.

Race
The participation rate for both wildlife watching and sporting activities is substantially higher for Whites than Blacks and Asians. While 35% of Whites are watchers, Blacks and Asians participate at a 9% rate. Similarly, the participation rate of Whites in sporting activities is 19%, while Blacks and Asians participate at rates of 8% and 5% respectively.

Annual Household Income
The participation rates of both watching and sporting activities generally increase as incomes increase. The rate for watching climbs from 23% for those with incomes of under $10,000 to 44% for those with incomes of $75,000-$99,999. Similarly, the rate for sporting activities climbs from 9% for those with incomes of under $10,000 to 25% for those with incomes of $50,000-$99,999.

Education
The participation rate for watching has a positive correlation with years of education, whereas the participation rate for sporting activities is positively correlated over a portion of the range. The rate for watching climbs from 22% for those with 11 years of education or less to 43% for those with 5 or more years of college. The rate for sporting activities climbs from 14% for those with 11 years of education or less to 20% for those with 1-3 years of college, and then falls slightly to 18% for those with 5 or more years of college.

Characteristics of Different Recreationist Groups

Rather than compare all wildlife watchers with all sportspersons, this section compares the socioeconomic characteristics of the three different groups of recreationists in Figure 1*: watchers only, sportspersons only, watchers-sportspersons.* In other words it compares the socioeconomic characteristics of those in regions A, B, and C in Figure 1. Comparison by type of recreationist reveals additional information about how the composition of wildlife recreationists will likely change due to demographic shifts.

Table 7. Socioeconomic Characteristics of Different Types of Wildlife-Related Recreationists: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All Wildlife Recreationists	*Watchers Only*	*Percent of All*	*Sportspersons Only*	*Percent of All*	*Watchers-Sportspersons*	*Percent of All*
Total All Persons	**82,068**	**44,263**	**54%**	**15,963**	**20%**	**21,842**	**27%**
Population Size of Residence							
Metropolitan statistical area (MSA)	60,876	34,312	56%	11,462	19%	15,102	25%
1,000,000 or more	36,087	21,348	59%	6,363	18%	8,376	23%
250,000 to 999,999	16,164	8,526	53%	3,284	20%	4,354	27%
50,000 to 249,999	8,625	4,439	51%	1,814	21%	2,372	28%
Outside MSA	21,192	9,951	47%	4,501	21%	6,740	32%
Census Geographic Region							
New England	4,428	2,924	66%	553	12%	951	22%
Middle Atlantic	10,133	6,323	62%	1,393	14%	2,417	24%
East North Central	14,129	7,729	55%	2,498	18%	3,903	27%
West North Central	7,717	3,478	45%	1,511	20%	2,728	35%
South Atlantic	14,485	7,528	52%	3,090	21%	3,867	27%
East South Central	5,804	2,939	51%	1,290	22%	1,575	27%
West South Central	8,174	3,250	40%	2,427	30%	2,497	30%
Mountain	5,744	2,987	52%	1,125	20%	1,632	28%
Pacific	11,455	7,106	62%	2,078	18%	2,271	20%
Age							
16-17	2,641	1,144	43%	963	37%	534	20%
18-24	4,963	1,660	33%	1,912	39%	1,391	28%
25-34	12,267	5,131	42%	3,398	28%	3,738	30%
35-44	19,033	9,067	48%	4,094	21%	5,873	31%
45-54	17,350	9,524	55%	2,859	16%	4,967	29%
55-64	11,926	7,297	61%	1,600	14%	3,029	25%
65+	13,888	10,441	75%	1,136	8%	2,311	17%
Sex							
Male	43,257	14,795	34%	12,562	29%	15,900	37%
Female	38,810	29,467	76%	3,401	9%	5,942	15%
Ethnicity							
Hispanic	3,824	2,081	55%	1,125	29%	619	16%
Non-Hispanic	78,249	42,186	54%	14,840	19%	21,223	27%
Race							
White	77,202	41,902	54%	14,421	19%	20,879	27%
Black	3,130	1,464	47%	1,101	35%	565	18%
Asian	882	517	59%	228	26%	137	15%
All Others	855	381	45%	214	25%	260	30%

continues

Table 7. Socioeconomic Characteristics of Different Types of Wildlife-Related Recreationists: 2001 – continued
(Population 16 years of age and older. Numbers in thousands.)

	All Wildlife Recreationists	*Watchers Only*	*Percent of All*	*Sportspersons Only*	*Percent of All*	*Watchers-Sportspersons*	*Percent of All*
Annual Household Income							
Under $10,000	2,912	1,934	66%	525	18%	453	16%
$10-$19,999	4,749	2,918	62%	912	19%	919	19%
$20-$24,999	3,614	1,955	54%	735	20%	924	26%
$25-$29,999	4,327	2,327	54%	866	20%	1,134	26%
$30-$34,999	5,012	2,663	53%	943	19%	1,406	28%
$35-$39,999	4,120	1,934	47%	978	24%	1,208	29%
$40-$49,999	8,104	3,988	49%	1,702	21%	2,415	30%
$50-$74,999	15,564	7,671	49%	3,205	21%	4,688	30%
$75-$99,999	9,447	5,034	53%	1,712	18%	2,701	29%
$100,000 or More	9,620	5,099	53%	1,610	17%	2,911	30%
Not Reported	14,599	8,741	60%	2,776	19%	3,082	21%
Education							
11 years or less	9,712	5,007	51%	2,511	26%	2,194	23%
12 years	26,766	13,727	51%	5,612	21%	7,427	28%
1-3 years of college	19,926	9,946	50%	3,913	20%	6,067	30%
4 years of college	14,986	8,992	60%	2,383	16%	3,611	24%
5 years or more of college	10,406	6,589	63%	1,273	12%	2,544	24%

Table 7 summarizes the socioeconomic characteristics of the different recreationist groups. The first row indicates 54% of all recreationists are *watchers only,* 19% are *sportspersons only,* and 27% are *watchers-sportspersons.* As discussed for the tables above, deviations from these percentages yield information about how the different types of recreationists differ from one another.

Population Size of Residence
Table 7 indicates that recreationists who live outside MSAs are more likely to be *watchers-sportspersons* than those who live inside MSAs. 32% of recreationists who live outside MSAs are *watchers-sportspersons,* which compares to 25% of those who live inside MSAs. There is also an apparent negative correlation between the size of MSA and the proportion of *watchers-sportspersons.* The proportion goes from a low of 23% for MSAs of one million or more residents to 27% for MSAs of less than a million.

Census Geographic Regions
The share of *watchers-sportspersons* varies dramatically by geographic region. The highest proportion occurs in the West North Central Region with 35%. The West South Central region follows close behind with 31%. At the other extreme are the Pacific Region with 20% and New England with 22%.

If there is some conflict between the resource management objectives of wildlife watchers and sportspersons, then potential conflict could be greater in regions with a lower share of *watchers-sportspersons.* A lower share of *watchers-sportspersons* indicates fewer recreationists who desire a management strategy that provides for a desirable mix of both activities. The individuals that participate in both activities are likely to favor "middle-of-the road" management practices. To be sure, individuals who participate in both activities will likely differ in their optimal "mix" of management practices to satisfy both interests, but they all will desire preservation of resource amenities useful for both. In the West North Central and West South Central a relatively large portion of watchers are also sportspersons and vice versa. Alternatively, in the Pacific region there is a substantially smaller intersection in recreation practices. If it is true that conflict is greater in regions with a smaller intersection of recreationists, one implication is that resource managers in the Pacific region may have a more difficult task of satisfying the desires of both.

Age
Age has a dramatic impact on the type of recreation in which individuals participate. The proportion of all recreationists who are *watchers only* is positively correlated with age. For recreationists 18-24, only 33% are *watchers only.* However, as age increases this share climbs consistently up to 75% for those 65 and older. Conversely, those who participate in only sporting activities fall from 39% in the 18-24 category to 8% for those 65 and older.

Sex
37% of males are *watchers-sportspersons,* which compares to only 15% of females.

Ethnicity
Hispanics are notably less likely than Non-Hispanics to participate in watching and sporting activities. The share of *watchers-sportspersons* for Hispanics is 16%, while for Non-Hispanics the share climbs to 27%.

Race
The results for race indicate some noteworthy differences in recreationist type. For *sportspersons only,* Whites participate at notably lower rate than the other races. Whites also have a substantially higher share of *watchers-sportspersons.* Compared to the variation in *sportspersons only* and *watchers-sportspersons* there is relatively little racial variation in the proportion of recreationists who are *watchers only.*

Annual Household Income
There is some variation in the proportion of recreationists who are *watchers-sportspersons* at the very low end of the income distribution. The lowest income brackets have a notably lower share. Those with incomes of less than $10,000 and $10,000-$19,999 have shares of 16% and 19% respectively. This percent climbs sharply for those with incomes of $20,000 or more.

Education
There is some variation in recreationist type by years of education. The share of *watchers only* increases sharply for those with 4 years of college or more. Their share climbs from around 50% for those with less than 4 years of college to around 61% for those with more.

Implication of Demographic Change on Wildlife Recreation
Under certain conditions, the socioeconomic information discussed above can be used to gauge the likely effect of ongoing demographic trends on participation in the different types of wildlife recreation. If certain assumptions hold, current demographic trends have implications on the future participation rate of individuals in wildlife watching and sporting activities. They also have implications about the proportion of all recreationists who will likely participate in both watching and sporting activities.

Major Demographic Trends in the U.S.
There are several demographic trends in the U.S. that will likely impact wildlife-related recreation in the years ahead. It is beyond the scope of this report to analyze each trend in detail, but a short summary is warranted.

The percent of the U.S. population living in rural housing continues to fall. In 1960 approximately 30% of U.S. residents lived in rural areas. This percent has since fallen to 27% in 1970, 25% in 1995, and 22% in 2000.[2]

The percent of the U.S. population of Hispanic ethnicity is on the rise. In 1980, 6.4% of U.S. residents were Hispanic. This percent has since risen to 9.0% in 1990 and 12.0% in 2000. It is expected to rise to 14.6% by 2010.[3]

The percent of the population who are of White and not of Hispanic origin is declining. In 1980, 79.6% of U.S. residents were White and not Hispanic, and this has since fallen to 75.6% in 1990 and 69.5% in 2000. This percent is expected to fall further to 67.3% by 2010[3].

Finally, there is the trend of an aging population in the U.S., due to maturing baby boomers. In 1990 the percent of the population over 55 years of age was 20.9%. This percent rose to 21.1% in 2000 and 22.6% in 2005. This percent is expected to continue climbing to 24.7% in 2010 and 28.9% in 2020[3].

Impact on Wildlife Watching and Sporting Activities
Under the assumption of relative stability in the participation percentages in Table 6 for population size of residence and age, the demographic trends discussed above provide some indication of how the overall participation rate for wildlife watching will change relative to that of sporting activities. The assumption of relative stability in the participation percentages is best explained using an example. Table 6 indicates that 35% of the U.S. population 65 and over participates in wildlife watching, 40% of those between 55-64 participate, and 36% of those between 45-54 participate. The assumption is that these percentages will not change, or if they do change, they will change only slightly. This is an important assumption to keep in mind in the following discussion. There may be reason to believe that this assumption will not hold. For example, Table 6 indicates that 9% of those 65 and over participate in sporting activities. However, advances in medical care and nutrition continue to improve the health of older Americans. Consequently, it is possible that in the future a greater share of people 65 and older will participate in sporting activities.

If there are relatively stable participation rates for population size of residence and age, current demographic trends imply that the overall participation rate for wildlife watching will increase relative to sporting activities. As discussed above, the decline in participation that occurs because individuals reside inside an MSA as opposed to outside is greater for sporting activities than for wildlife watching. The implication is that increased urbanization will have a relatively greater impact on sporting activities than on wildlife watching. Additionally, the wildlife watching participation rate is positively correlated with age, and the participation rate for sporting activities is negatively correlated with age. Consequently, the continued aging of the U.S. population likely portends growth in wildlife watching relative to hunting and fishing.

Impact on Share of Recreationists that Participate in Both Wildlife Watching and Sporting Activities
Current demographic trends also imply that the share of recreationists who participate in both wildlife watching and sporting activities will likely decline. This conclusion is based on an assessment of how trends will affect those recreationists that are represented in the "Watchers-Sportspersons" column of Table 7, and it could have important political and resource management implications. Essentially, changes in the share of recreationists that participate in both wildlife watching and sporting activities indicate whether the population of recreationists will become increasingly united or divided. A smaller share of participants in both activities indicates that the composition of wildlife recreationists will become increasingly divided.

All of the demographic trends discussed above portend increasing division of wildlife recreationists. Table 7 indicates that the proportion of those who are both *watchers-sportspersons* falls as age increases. Consequently, the aging population of baby boomers suggests that the share of all recreationists that participate in both watching and sporting activities will likely decline in the future. Table 7 also indicates that the share of *watchers-sportspersons* falls as the population size of residence increases, and the ongoing demographic trend is one of increased urbanization. Hispanics are substantially less likely to participate in both watching and sporting activities than Non-Hispanics, and the Hispanic population is rapidly increasing. Lastly, Whites are more likely to participate in both types of recreation than all other races taken together, and the White population is growing slower than others.

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[2] "Factors Related to Hunting and Fishing Participation Among the Nation's Youth," *Responsive Management* (2003).

[3] "Statistical Abstract of the United States 2004-2005," *U.S. Census Bureau.*

Part Three—Expenditures by Type of Recreationist

This section examines wildlife recreation spending by type of recreationist: *watchers only, sportspersons only,* and *watchers-sportspersons.* The analysis of spending by type of recreationist differs from the conventional analysis by type of activity. Examining wildlife recreation spending by type of recreationist reveals that the majority of spending on wildlife recreation is made by individuals that participate in both watching and sporting activities. This finding helps dispel the notion that spending is made by two separate groups of recreationists.

USFWS/Debbie McCrensky

The *2001 FHWAR* queried respondents about their spending attributable to wildlife recreation, and it distinguished non-consumptive spending from consumptive spending. In other words, it distinguished spending made pursuant to wildlife watching from that made pursuant to either hunting or fishing. In the published data tables of the *2001 FHWAR,* these expenditures are presented in detail. However, publishing estimates by type of activity alone conceals the substantial crossover of recreationists from one type of activity into the other. In a sense, estimates by type of activity alone foster an impression that the two types of recreationists belong to separate cliques or factions. However, the analysis presented above indicates that this is clearly not the case, as substantial crossover does occur.

Although not presented in the published tables, data available from the *2001 FHWAR* CD can be used to analyze spending from numerous other perspectives. Total wildlife-watching expenditures can be apportioned between sportspersons and non-sportspersons. Total hunting and fishing spending can be apportioned between those who participate in wildlife watching and those who do not. Average expenditures of sportspersons who are wildlife watchers can be calculated and compared to those who are not. Average expenditures of wildlife watchers who are sportspersons can be calculated and compared to those who are not. Total wildlife recreation spending can be apportioned between recreationists of different types. Table 8 and tables in Appendix D address wildlife-recreation spending in every perspective listed here. However, this discussion is focused on the last perspective, as it is the most instructive in highlighting the interrelationship of the different types of recreationists.

Figure 4 displays total wildlife-related recreation spending in two ways. The graph on the top displays spending by type of activity. It indicates that 65% of all wildlife recreation spending is made pursuant to hunting or fishing and 35% to wildlife watching. This is the historical method in which spending has been displayed. The graph on the bottom displays spending by type of recreationist. It indicates that the majority of spending on wildlife recreation is done by persons who participate in both wildlife watching and sporting activities. 57% of all recreation expenditures are made by recreationists in both "camps." Expenditures made by recreationists who participate in only sporting activities or wildlife watching are nearly equal and respectively comprise 20% and 23% of all spending. From this perspective, it is clear that the majority of recreation spending is not made by two mutually exclusive groups.

Table 8 presents spending by recreationist type in greater detail. Expenditures are categorized by type of good purchased. "Hunting equipment" includes purchases of rifles, ammunition, and hunting dogs. "Fishing equipment" includes purchases of rods, reels, tackle boxes, and lures. "Auxiliary hunting and fishing equipment" includes spending made pursuant to either hunting or fishing such as camping equipment, clothing, and taxidermy costs. Wildlife-watching equipment includes binoculars, photographic equipment, film, bird food, bird houses, etc. "Auxiliary wildlife-watching equipment" is similar to auxiliary hunting and fishing equipment and includes camping equipment, tents,

tarps, and backpacking equipment, but the primary intended use of these items was to support wildlife-watching activity, not hunting or fishing. Special equipment includes purchases of big ticket items such as boats, campers, trucks, and cabins that are primarily purchased for use in wildlife-related recreation.

For trip-related expenditures, 60% is attributable to *watchers-sportspersons,* 24% is attributable to *sportspersons only,* and 16% is attributable to *watchers only.* The relatively lower share for *watchers only* is due to substantially lower spending on "Other trip costs." *Watchers only* account for 4% of other trip costs, and in the largest category of expenditures within other trip costs, boating costs, they account for only 1%. The only category within other trip costs where *watchers only* account for a higher than average proportion of spending is public land use fees, where their share is 25%. This likely results from their relatively high use of public parks that charge admission fees.

Two-thirds of all spending on fishing equipment and more than two-thirds of all spending on hunting equipment is attributable to *watchers-sportspersons.* This is a potentially valuable piece of information for manufacturers of hunting and fishing equipment.

Almost two-thirds of wildlife-watching equipment is attributable to *watchers only.* This is generally in line with the proportion of wildlife-watching participants that do not participate in sporting activities, which is seen in Table 1.

In summary, there are items where the proportional distribution of wildlife recreation expenditures differs from the 23%, 20%, and 57% for all items presented in Figure 4. Nevertheless, there is not one type of good where spending from only one of the recreationist categories dominates all spending. Spending for every good is attributable to more than one recreationist classification, which underscores the interrelationship that recreationists have in the marketplace.

Figure 4. Expenditures for Wildlife-Related Recreation
(Total expenditures $108 billion.)

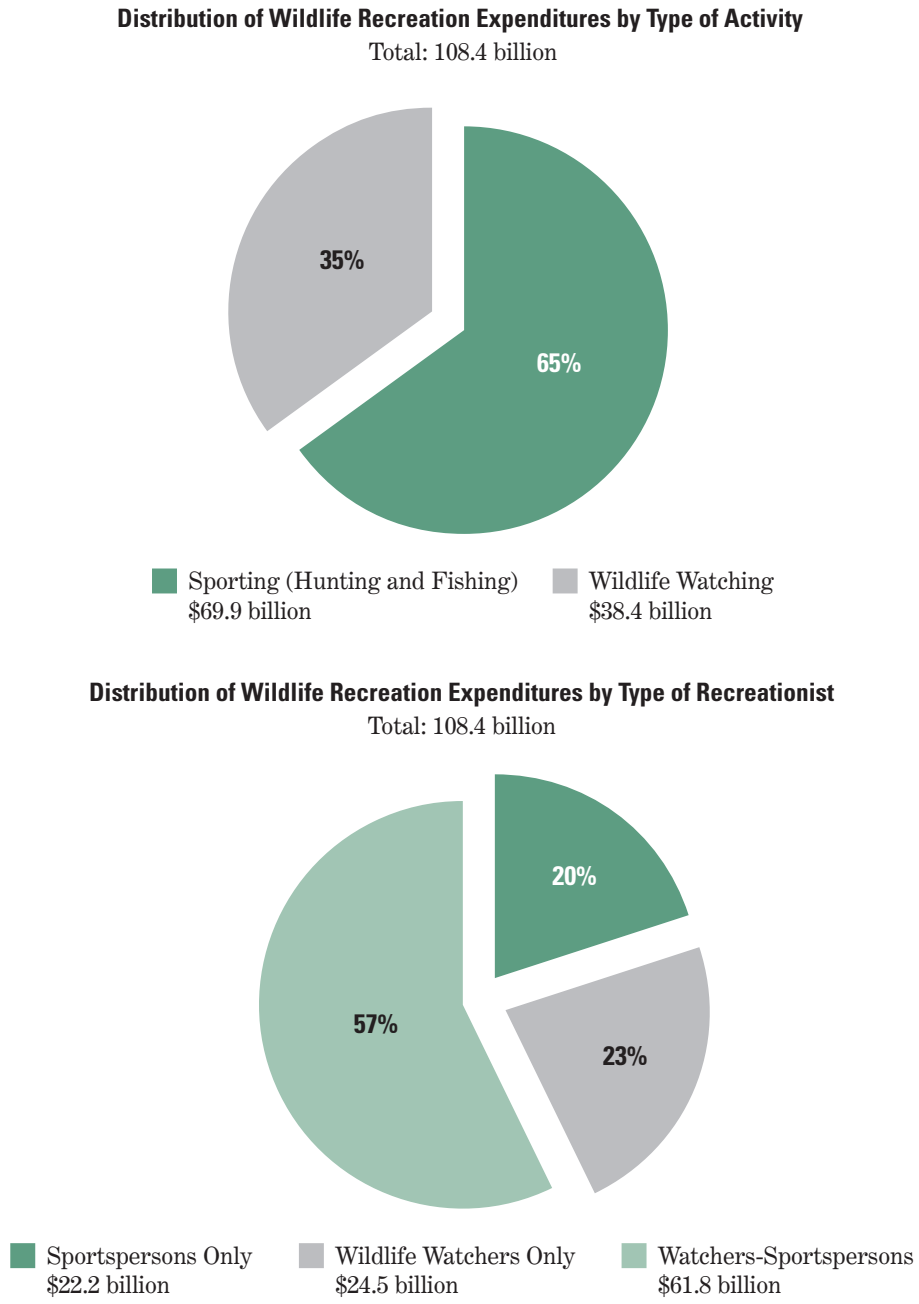


Table 8. Expenditures for all Wildlife-Related Recreation by Recreationist Type: 2001
(Population 16 years of age and older. Numbers in thousands of dollars.)

	All	*Watchers Only*	*Percent of All*	*Sportspersons Only*	*Percent of All*	*Watchers-Sportspersons*	*Percent of All*
Total, All Items	**108,390,816**	**24,481,139**	**23%**	**22,153,608**	**20%**	**61,756,074**	**57%**
Trip-Related Expenditures							
Total trip-related	**28,070,831**	**4,520,120**	**16%**	**6,755,896**	**24%**	**16,794,814**	**60%**
Food and lodging, total	13,149,781	2,770,299	21%	2,843,705	22%	7,535,778	57%
Food	8,957,513	1,535,602	17%	2,094,846	23%	5,327,066	60%
Lodging	4,192,268	1,234,697	29%	748,859	18%	2,208,712	53%
Transportation, total	7,900,619	1,502,425	19%	1,679,980	21%	4,718,215	60%
Public	1,288,653	531,225	41%	201,928	16%	555,501	43%
Private	6,611,965	971,200	15%	1,478,052	22%	4,162,713	63%
Other trip costs, total	7,020,431	247,396	3%	2,232,212	32%	4,540,822	65%
Guide fees, pack trip or package fees	1,177,171	50,917	4%	338,945	29%	787,309	67%
Public land use fees	289,585	73,192	25%	63,950	22%	152,443	53%
Private land use fees	514,249	13,428	3%	133,710	26%	367,111	71%
Equipment rental	395,107	57,196	14%	104,546	27%	233,366	59%
Boating costs	3,042,802	38,025	1%	974,448	32%	2,030,328	67%
Heating and cooking fuel	205,249	14,638	7%	60,842	30%	129,769	63%
Bait	1,105,350	N.A.	N.A.	444,396	40%	660,954	60%
Ice	290,917	N.A.	N.A.	111,376	38%	179,541	62%
Equipment and Other Expenses							
Total	**80,319,985**	**19,961,019**	**25%**	**15,397,711**	**19%**	**44,961,260**	**56%**
Hunting equipment	4,866,399	N.A.	N.A.	1,437,191	30%	3,429,207	70%
Fishing equipment	4,640,715	N.A.	N.A.	1,592,844	34%	3,047,872	66%
Auxiliary hunting and fishing equipment	2,627,686	N.A.	N.A.	684,658	26%	1,943,028	74%
Wildlife-watching equipment	7,353,977	4,564,821	62%	N.A.	N.A.	2,789,158	38%
Auxiliary wildlife-watching equipment	716,899	319,264	45%	N.A.	N.A.	397,637	55%
Special equipment	44,288,116	10,446,204	23%	9,564,151	22%	24,277,764	55%
Magazines, books	639,936	177,021	28%	74,500	11%	388,415	61%
Land leasing and ownership	11,889,496	3,325,727	28%	1,536,556	13%	7,027,213	59%
Membership dues and contributions	1,435,465	674,276	47%	109,741	8%	651,448	45%
Plantings	699,309	453,706	65%	N.A.	N.A.	245,602	35%
Licenses, stamps, tags, and permits	1,161,988	N.A.	N.A.	398,072	34%	763,915	66%

(Z) less than 0.5%.
N.A. Not Applicable
Note: "Hunting equipment" includes purchases of rifles, ammunition, and hunting dogs. "Fishing equipment" includes purchases of rods, reels, tackle boxes, and lures. "Auxiliary hunting and fishing equipment" includes spending made pursuant to either hunting or fishing such as camping equipment, clothing, and taxidermy costs. Wildlife-watching equipment includes binoculars, photographic equipment, film, bird food, bird houses, etc. "Auxiliary wildlife-watching equipment" is similar to auxiliary hunting and fishing equipment and includes camping equipment, tents, tarps, and backpacking equipment, but the primary intended use of these items was to support wildlife-watching activity, not hunting or fishing. Special equipment includes purchases of big ticket items such as boats, campers, trucks, and cabins that are primarily purchased for use in wildlife-related recreation

Part Four–Historical Fishing and Hunting Participation of Wildlife Watchers

Heretofore, this analysis has shown that there are numerous wildlife recreationists who participate in both wildlife watching and hunting or fishing in the same year: a third of all watchers in 2001 participated in sporting activities, and more than half of all sportspersons in 2001 participated in wildlife watching. Consequently, the notion of two mutually exclusive groups of recreationists is not tenable, and it is more difficult to distinguish two groups of recreationists than one might suppose.

The distinctiveness of two separate groups is even more obscure when recreation activity is considered for more than the span of one year. If someone did not participate in hunting or fishing in 2001, but did in prior years, should he or she still be considered a sportsperson? If so, how many years of inactivity in hunting or fishing must pass before one is no longer considered a sportsperson? These are certainly subjective questions that elicit different responses. Some may consider a recreationist a viable sportsperson if he or she participated in hunting or fishing within the last three years; whereas, others may consider participation within the last five years to be sufficient. Fortunately, data from the *2001 screen phase* of the *FHWAR* can be used to satisfactorily answer this question from different perspectives.

The *2001 FHWAR* was conducted in two phases by the U.S. Census Bureau. The first was the *screen phase* in which the Census Bureau interviewed a sample of 80,000 households nationwide to determine who in the household had fished, hunted, or engaged in wildlife-watching activities in years 2000 and before, and who planned to engage in those activities in 2001. In most cases, one adult household member provided information for all household members. The second was the *detailed interview phase* in which those selected as likely anglers, hunters, and wildlife watchers from the *screen* were given detailed interviews about their recreation activities in 2001. Heretofore, all the data discussed in this analysis was from the *detailed interview phase* because it provides the most information about recreationist activities in 2001. The *screen* data could not have been used because respondents answer only a limited set of questions about prior activity and expected future activity, and it has a longer recall period, so it is more prone to suffer from recall bias. However, because the *screen* does query respondents about sporting activities for years prior to 2000, it is uniquely suited to analyze the relationship between wildlife watching in 2000 and prior sporting activities.

Figures 5 and 6 display the distribution of away-from-home and around-the-home watchers based on prior sporting activities. The distributions presented rely on only that portion of the screen sample that answered questions about his or her own activities. All observations where the survey respondent was queried about the activity of another household member were excluded for reliability considerations. Lastly, those who are considered watchers in each figure indicated that they participated in wildlife watching in the year 2000.

Figure 5 indicates that the proportion of all away-from-home watchers who are also sportspersons is substantially greater than the 44% previously indicated in Table 1 if historical sporting activities are considered valid criteria for one's inclusion into the set of all sportspersons. It indicates that within two years prior to the time of the survey, 57% of all away-from-home watchers hunted or fished. More than half of all respondents who indicated that they had participated in away-from-home wildlife watching in 2000 also participated in either hunting

or fishing from 1998 to 2000. The proportion of away-from-home watchers who participated in hunting or fishing within 5 years of the time of the survey goes up to 63%. Lastly, and perhaps most surprising, Figure 5 indicates that 80% of away-from-home watchers have hunted or fished at some point.

Similarly, Figure 6 indicates that the proportion of all around-the-home watchers who are considered sportspersons is substantially greater than the 32% previously indicated in Table 1 if historical sporting activities are considered valid criteria for one's inclusion into the set of all sportspersons. It indicates that within the two years prior to the time of the survey, 44% of all around-the-home watchers either hunted or fished. The proportion of around-the-home watchers who participated in hunting or fishing within 5 years of the time of the survey goes up to 49%. Lastly, Figure 6 indicates that 72% of around-the-home watchers have hunted or fished at some point.

Given the findings here that more than 60% of away-from-home and 49% of around-the-home watchers have participated in either hunting or fishing within 5 years from the time of the survey, this analysis supports the notion that it is more difficult to distinguish two separate groups of recreationists if respondents' prior sporting activities are taken into account. It underscores just how interrelated the different types of wildlife recreationists really are.

Figure 5. Distribution of Away-from-Home Wildlife Watchers by Hunting and Fishing Activity

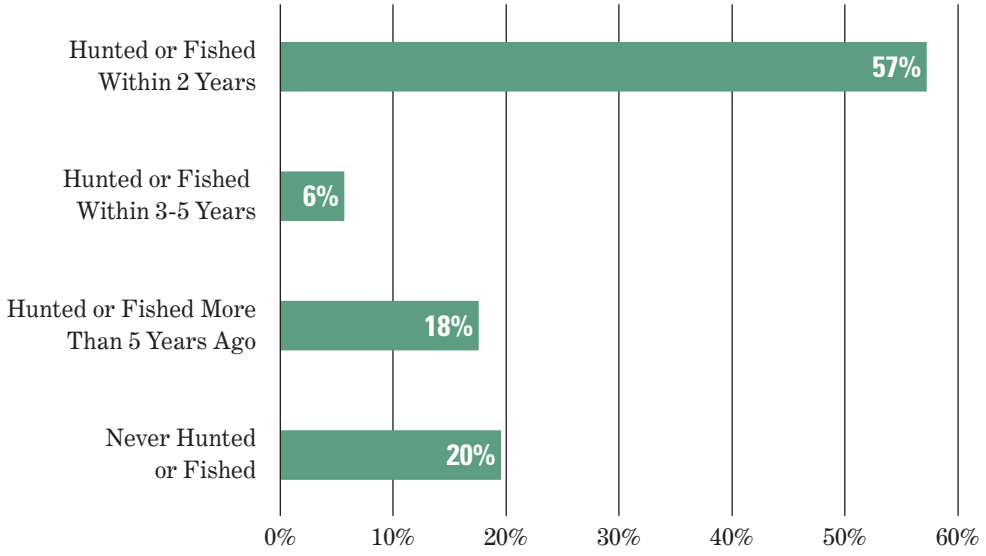
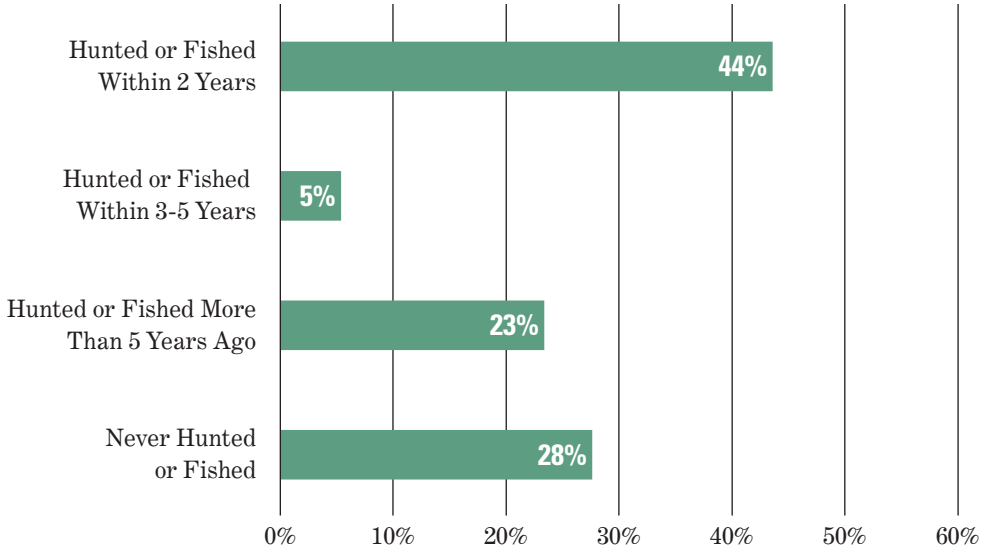


Figure 6. Distribution of Around-the-Home Wildlife Watchers by Hunting and Fishing Activity



Part Five–Wildlife-Watching Participation Model

Figures 5 and 6 indicate that the majority of both around-the-home and away-from-home wildlife watchers have participated in sporting activities at some point. However, these tables alone do not assess the increase in the probability that someone will be a wildlife watcher given he or she has hunted or fished in the past. This section presents a wildlife-watching regression model to estimate this effect.

To appropriately assess the increase in probability that someone will be a wildlife watcher if he or she has hunted in the past, the regression model should also include several other variables that are significantly correlated with wildlife-watching participation. Table 6 indicates that there are numerous other variables that are likely correlated with wildlife watching. The participation rate appears to vary with respect to all the variables that appear in Table 6: population size and geographic region of residence, age, gender, ethnicity, race, income, and education. Logit regression is an appropriate method to assess the change in the probability in watching participation attributable to all of these variables. Logit regression helps eliminate the confounding effects of cross correlation among these variables. For example, the participation rate increases as income increases and as age increases. However, income also tends to increase with age. This cross correlation acts to conceal the independent impact that age and income have on participation. By using regression, the effect of each on the probability of wildlife watching can be isolated more effectively. Additionally, regression permits assessment of whether the correlations of the different variables with wildlife watching are significant. In other words it permits an assessment of the probability that the observed relationship occurred by chance.

The logit regression used here models the logarithm of the odds ratio that an individual participated in wildlife watching in 2000 as a function of a set of explanatory variables or hunter characteristics. All wildlife watching, both around-the-home and away-from-home, is grouped together in this model.[4] The logit regression is described by the following two equations.

$$(1) \quad P_i = \frac{e^{\beta_i X_i}}{1 + e^{\beta_i X_i}}$$

$$(2) \quad \ln\left(\frac{P_i}{1 - P_i}\right) = \sum_{i=1} \beta_i X_i$$

where:

P_i = Probability that the ith individual wildlife watched in 2000 (i.e., "yes")

X_i = Vector of explanatory variables

β = Vector of coefficients to be estimated

Variables

The explanatory variables that are used in the logit regression model are contained in Table 9. Many of the variables are nominal variables. Each nominal variable used in the logit has a base or reference case. The reference case is given a value of 0 in the estimated equation. Consequently, the calculated coefficient for the reference case is embodied in the coefficient for the intercept term. The reference case for each nominal variable is given by the first level for each in Table 9. Thus, the reference case is as follows:

- Neither Hunted nor Fished from 1995-2000
- White race
- Not Hispanic
- Male
- Lives in MSA of more than one million people
- More than 5 years of college education
- Never married or widowed
- Lives in Pacific or Middle Atlantic or East North Central regions[5]

Every variable value other than the reference case has a coefficient. Each of these coefficients indicate the change in the log odds ratio from equation 2 that occurs when the value of the respective nominal variable is different than the reference case. For example, since "Neither Hunted nor Fished from 1995-2000" is the reference case for HUNT_FISH, each of the other levels (Both Hunted and Fished, Fished Only, Hunted Only) will have a coefficient. The coefficient for "Fished Only" will indicate the change in the log odds that results because a wildlife watcher in 2000 went fishing but not hunting from 1995-2000. The same will also be the case for the "Both Hunted and Fished" and "Hunted Only" coefficients. These results for the HUNT_FISH variable are the primary focus of this analysis.

Results

The results from the logistic regression procedure are presented in Table 10. A negative number in the Estimation column indicates that the variable in question has a negative relationship with the likelihood that one participated in wildlife watching in 2000. Additionally, the Pr > ChiSq column indicates the probability that the relationship between each variable and the target variable (likelihood of wildlife watching) occurs by chance. A Pr > ChiSq of less than 0.05 is considered strongly statistically significant, while a value of less than 0.1 is considered significant. An example will serve to explain the particulars of Table 10. The table indicates that the estimate for "Fished Only" is 0.975. Since the base case for HUNT_FISH is "Neither Hunted nor Fished," the positive result indicates that, all other things equal, individuals that went fishing but not hunting from 1995-2000 were more likely to participate in wildlife watching in 2000.

[4] Independent models for away-from-home and around-the-home watching were also estimated by the author, and the results are available by request.

[5] These regions were grouped together because differences in likelihood of wildlife watching between them were found insignificant.

Table 9. Logit Regression Explanatory Variables

Age	Age of recreationist in years for those older than 15
INCOME	Ordinal variable with 10 levels, treated as continuous Under $10,000 $10,000-$19,999 $20,000-$24,999 $25,000-$29,999 $30,000-$34,999 $35,000-$39,999 $40,000-$49,999 $50,000-$74,999 $75,000-$99,999 $100,000 or More
HUNT_FISH	Nominal variable with 4 levels that indicate hunting and fishing activity from 1995-2000 Neither hunted or fished Both hunted and fished Fished only Hunted only
RACE	Nominal variable with 3 levels to indicate race White Asian Black Other
HISPANIC	Indicator variable with 2 values to indicate ethnicity Not Hispanic Hispanic
SEX	Indicator variable with 2 values to indicate respondent gender Male Female
MSA	Nominal variable with 4 levels to indicate size of residence 1,000,000 or more 250,000-999,999 50,000-249,999 Outside MSA
EDUC	Nominal variable with 5 levels to indicate years of education 5 years or more of college 4 years of college 1-3 years of college 12 years 11 Years or less
MARITAL	Nominal variable with 3 levels to indicate marital status Never Married or Widowed Married or Divorced
CENDIV	Nominal variable with 9 levels to indicate geographic region of residence Pacific/East North Central/Middle Atlantic East South Central Mountain New England South Atlantic West North Central West South Central

Additionally, the Pr > ChiSq indicates a probability of <.0001, which is strongly significant. This significance indicates that there is greater than a 99.99% probability that the relationship between "Fished Only" and wildlife watching did not occur by chance.

The results here confirm the statistical significance of several of the relationships that appear in Table 6. All other things equal, as income increases and as age increases the likelihood of participation in wildlife watching also increases. Being Hispanic indicates lower likelihood of participation in wildlife watching. The negative coefficients for all the values of RACE indicate that each has a lower likelihood of participation in wildlife watching than Whites, which is the reference case value. The reference case for MSA is metropolitan areas of one million people or more. Consequently, the positive coefficients for all the values of MSAs of less than one million people indicate that all individuals that reside in smaller MSAs and outside MSAs are more likely to participate in wildlife watching. Moreover, the coefficients for "50,000-249,999" and "Outside MSA" are notably larger than that of "250,000-999,999," which indicates that those who reside in the smallest MSAs and outside MSAs are the most likely to participate in wildlife watching.[6] The positive coefficient for "Female" indicates that women are more likely to participate than men. Those who are either "Divorced" or "Married" are more likely to participate than those who have never married or are widowed. It is possible that those who are divorced or married are more likely to participate in wildlife watching because they are also more likely have children, and those with children are more likely to participate in wildlife watching.

Residents of several regions have significantly lower likelihood of participation in wildlife watching than the base case of Pacific, East North Central, and Middle Atlantic, and residents in only one region are significantly more likely. Individuals in the East South Central, Mountain, South Atlantic, West North Central, and West South Central are all

[6] Linear hypotheses tests on the regression coefficients indicate that the differences between "Outside MSA" and "250,000-999,999" are significant at the 0.01 level. Likewise, the differences between "50,000-249,999" and "250,000-999,999" are also significant at the 0.01 level.

Table 10. Analysis of Maximum Likelihood Estimates of Logit Regression

Variable	*Value*	*Estimate*	*Standard Error*	*Chi-Square*	*Pr > ChiSq*
Intercept		-1.558	0.070	490.7	<.0001
AGE		0.018	0.001	614.0	<.0001
INCOME		0.044	0.005	84.5	<.0001
HUNT_FISH	Fished Only	0.975	0.027	1285.1	<.0001
HUNT_FISH	Hunted Only	0.798	0.078	105.9	<.0001
HUNT_FISH	Hunted and Fished	1.439	0.038	1411.6	<.0001
RACE	Asian	-1.259	0.080	249.7	<.0001
RACE	Black	-0.989	0.045	476.4	<.0001
RACE	Other	-0.355	0.089	15.7	<.0001
HISPANIC	Hispanic	-0.572	0.049	134.8	<.0001
SEX	Female	0.432	0.025	309.5	<.0001
MSA	250,000-999,999	0.091	0.032	8.3	0.004
MSA	50,000-249,999	0.291	0.042	49.0	<.0001
MSA	Outside MSA	0.260	0.031	72.7	<.0001
EDUC	0-11 years	-0.674	0.050	182.3	<.0001
EDUC	1-3 years of college	-0.296	0.040	55.8	<.0001
EDUC	12 years	-0.582	0.039	218.0	<.0001
EDUC	4 years of college	-0.277	0.041	45.1	<.0001
MARITAL	Married/Divorced	0.242	0.027	80.1	<.0001
CENDIV	East South Central	-0.226	0.047	23.0	<.0001
CENDIV	Mountain	-0.174	0.037	22.4	<.0001
CENDIV	New England	0.152	0.037	16.6	<.0001
CENDIV	South Atlantic	-0.108	0.034	10.0	0.001
CENDIV	West North Central	-0.112	0.040	7.7	0.005
CENDIV	West South Central	-0.445	0.050	80.8	<.0001

significantly less likely to participate in wildlife watching than those in the Pacific, East North Central, or Middle Atlantic. Only individuals in New England are significantly more likely to participate.

Individuals who participated in hunting or fishing from 1995-2000 are significantly more likely to have participated in wildlife watching in 2000 than those who did not. This is indicated by the positive coefficients for "Hunted and Fished," "Fished Only," and "Hunted Only." Moreover, those who both "Hunted and Fished" have the highest likelihood of participation in wildlife watching, followed by those who "Fished Only," and then those who "Hunted Only."[7] These results suggests that even after controlling for other factors that are also correlated, there is still a statistically significant increase in likelihood of wildlife watching participation given participation in hunting or fishing within five years prior to the survey.

Calculated Probabilities

The results in Table 10 can be used to directly calculate the probability that an individual participated in wildlife watching in 2000 if appropriate values of the explanatory variables are known. To refrain from a discussion about how to use the results, several tables are created that exhibit the results of the regression procedure. Tables 11 and 12 show the probability, expressed as a percent, that individuals participated in wildlife watching in 2000. Table 11 shows the probabilities for individuals who have never married or are widowed. Table 12 shows the probabilities for individuals who are either married or divorced.

Each cell in Tables 11-12 contains the probability that an individual participated in wildlife watching in 2000. For example, the first row and first column of Table 11 indicates the following: a White male who lives in the Pacific region in a metropolitan statistical area with greater than one million residents has a probability of wildlife watching participation of 33%. If the individual is otherwise the same, but did participate in both hunting and fishing within 5 years prior to 2000, the probability of wildlife watching rises to 68%. This is displayed in the second row and first column from the left in Table 11.

The probabilities are calculated using the mean value of income, age, and education. The probabilities shown will certainly change for individuals that do not have mean income, age, and education. The means are used to convey an understanding of how

[7] Linear hypotheses tests indicate that all pairwise comparisons for differences between coefficients for "Fish Only," Hunt Only," and "Hunt and Fish" are all significant at the 0.05 level.

different categorical variables affect the probability of wildlife watching. The mean values used in these calculations are income of $30,000-39,9999, age of 50, and education of 1-3 years of college.

There is no implication of causality in the probabilities. In the example previously mentioned, it was indicated that the probability that a White male individual who lives in the Pacific region in a metropolitan statistical area with greater than one million residents has a probability of wildlife watching participation of 33%, and if he also participated in hunting and fishing this probability rises to 68%. It should not be interpreted that participating in hunting and fishing *causes* the probability of wildlife watching to increase 35%. The modeling performed here makes use of what data are available from the *FHWAR screen.* The reality is that there are likely variables excluded from the modeling that affect both the likelihood of participation in wildlife watching and the likelihood of participation in hunting and fishing. This is referred to as a confounding variables impact. One variable that is often discussed as having a substantial impact on participation in wildlife recreation is exposure to the activity at an early age. The real cause of the high association of non-consumptive recreation (wildlife watching) and consumptive recreation (hunting and fishing) could be childhood exposure to both types of activities. The data available do not permit an analysis of this impact. What is known is that, whatever the cause, individuals who participate in hunting and fishing have a higher probability of participation in wildlife watching than those who do not.

With these clarifications in mind, there are several interesting aspects of Tables 11 and 12 that merit some discussion. The tables clearly indicate that the impact of urbanization on the probability of wildlife watching is relatively small when compared to that of hunting and fishing activity, race, and sex. The previous example indicated that the probability that a White male who lives in the Pacific region in a MSA with greater than one million residents has a probability of wildlife watching participation of 33%. If the only change is that the individual resides outside of a MSA, this probability rises to 39%. All other things equal, income, sex, marital status, education, etc., the change in probability resulting from a change in metropolitan status alone is relatively small. By comparison, if the individual is Asian rather than White, then the probability falls from 33% to 12%. The change in probability resulting from variation in race is on par with that of prior hunting and fishing activity. The largest relative changes in wildlife watching participation are observed when race and prior hunting and fishing activity are varied.

There is relatively little variation in wildlife watching probability from changes in geographic region. Lastly, relatively moderate changes in wildlife watching probabilities are observed when gender and marital status are changed.

Table 11. Probability of Never Married/Widowed Individuals with Mean Income, Age, and Education Participating in Wildlife Watching in 2000

			MSA of 1 million or more				*MSA of 250,000-999,999*				*MSA of 50,000-249,999*				*Outside MSA*			
Gender	*Region*	*Hunt/Fish*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*
Male																		
	Pac./Mid Atl./East N. Cent.	Did not Hunt or Fish	33%	12%	16%	26%	35%	13%	17%	27%	40%	16%	20%	32%	39%	15%	19%	31%
		Hunted and Fished	68%	37%	44%	59%	69%	39%	46%	61%	74%	44%	51%	66%	73%	43%	50%	65%
		Fished Only	57%	27%	33%	48%	59%	29%	35%	50%	64%	33%	39%	55%	63%	32%	39%	54%
		Hunted Only	52%	24%	29%	43%	55%	25%	31%	46%	59%	29%	35%	51%	59%	29%	35%	50%
	East South Central	Did not Hunt or Fish	28%	10%	13%	22%	30%	11%	14%	23%	34%	13%	16%	27%	34%	13%	16%	26%
		Hunted and Fished	62%	32%	38%	54%	64%	34%	40%	56%	69%	39%	45%	61%	68%	38%	44%	60%
		Fished Only	51%	23%	28%	42%	53%	24%	30%	44%	58%	28%	34%	49%	57%	28%	33%	49%
		Hunted Only	47%	20%	25%	38%	49%	21%	26%	40%	54%	25%	30%	45%	53%	24%	30%	44%
	Mountain	Did not Hunt or Fish	29%	11%	13%	23%	31%	11%	14%	24%	36%	14%	17%	28%	35%	13%	17%	27%
		Hunted and Fished	64%	33%	39%	55%	66%	35%	42%	57%	70%	40%	47%	62%	69%	39%	46%	61%
		Fished Only	52%	24%	29%	44%	55%	25%	31%	46%	60%	29%	35%	51%	59%	29%	35%	50%
		Hunted Only	48%	21%	26%	39%	50%	22%	27%	41%	55%	26%	31%	46%	54%	25%	31%	46%
	New England	Did not Hunt or Fish	36%	14%	18%	29%	39%	15%	19%	31%	43%	18%	22%	35%	43%	17%	22%	34%
		Hunted and Fished	71%	41%	47%	63%	73%	43%	50%	65%	76%	48%	55%	69%	76%	47%	54%	69%
		Fished Only	60%	30%	36%	52%	62%	32%	38%	54%	67%	37%	43%	59%	66%	36%	42%	58%
		Hunted Only	56%	27%	32%	47%	58%	28%	34%	49%	63%	33%	39%	54%	62%	32%	38%	54%
	South Atlantic	Did not Hunt or Fish	31%	11%	14%	24%	33%	12%	15%	25%	37%	14%	18%	29%	36%	14%	18%	29%
		Hunted and Fished	65%	35%	41%	57%	67%	37%	43%	59%	71%	41%	48%	64%	71%	41%	47%	63%
		Fished Only	54%	25%	30%	45%	56%	27%	32%	47%	61%	31%	37%	52%	60%	30%	36%	52%
		Hunted Only	50%	22%	27%	41%	52%	23%	29%	43%	57%	27%	33%	48%	56%	27%	32%	47%
	West North Central	Did not Hunt or Fish	31%	11%	14%	24%	33%	12%	15%	25%	37%	14%	18%	29%	36%	14%	18%	29%
		Hunted and Fished	65%	35%	41%	57%	67%	37%	43%	59%	71%	41%	48%	64%	71%	41%	47%	63%
		Fished Only	54%	25%	30%	45%	56%	27%	32%	47%	61%	31%	37%	52%	60%	30%	36%	52%
		Hunted Only	49%	22%	27%	41%	52%	23%	29%	43%	57%	27%	33%	48%	56%	27%	32%	47%
	West South Central	Did not Hunt or Fish	24%	8%	11%	18%	26%	9%	11%	20%	30%	11%	14%	23%	29%	10%	13%	22%
		Hunted and Fished	57%	27%	33%	48%	59%	29%	35%	51%	64%	34%	40%	56%	63%	33%	39%	55%
		Fished Only	46%	19%	24%	37%	48%	21%	25%	39%	53%	24%	29%	44%	52%	24%	29%	43%
		Hunted Only	41%	17%	21%	33%	43%	18%	22%	35%	48%	21%	26%	40%	48%	21%	25%	39%

continues

Table 11. Probability of Never Married/Widowed Individuals with Mean Income, Age, and Education Participating in Wildlife Watching in 2000 – continued

			MSA of 1 million or more				*MSA of 250,000-999,999*				*MSA of 50,000-249,999*				*Outside MSA*			
Gender	*Region*	*Hunt/Fish*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*
Female																		
	Pacific	Did not Hunt or Fish	43%	18%	22%	35%	45%	19%	24%	37%	50%	22%	27%	42%	50%	22%	27%	41%
		Hunted and Fished	76%	48%	54%	69%	78%	50%	57%	71%	81%	55%	61%	75%	81%	54%	61%	74%
		Fished Only	67%	36%	43%	59%	69%	38%	45%	61%	73%	43%	50%	65%	72%	43%	49%	65%
		Hunted Only	63%	32%	39%	54%	65%	34%	41%	56%	69%	39%	46%	61%	69%	38%	45%	61%
	East South Central	Did not Hunt or Fish	38%	15%	18%	30%	40%	16%	20%	32%	45%	19%	23%	36%	44%	18%	23%	36%
		Hunted and Fished	72%	42%	49%	64%	74%	44%	51%	66%	77%	49%	56%	71%	77%	48%	55%	70%
		Fished Only	62%	31%	37%	53%	64%	33%	40%	55%	68%	38%	44%	60%	68%	37%	44%	59%
		Hunted Only	57%	28%	33%	49%	60%	29%	35%	51%	64%	34%	40%	56%	64%	33%	39%	55%
	Mountain	Did not Hunt or Fish	39%	15%	19%	31%	41%	17%	21%	33%	46%	20%	24%	37%	45%	19%	24%	37%
		Hunted and Fished	73%	43%	50%	65%	75%	46%	52%	67%	78%	51%	57%	72%	78%	50%	56%	71%
		Fished Only	63%	32%	39%	54%	65%	34%	41%	57%	69%	39%	46%	61%	69%	38%	45%	61%
		Hunted Only	59%	29%	35%	50%	61%	31%	37%	52%	65%	35%	41%	57%	65%	34%	41%	56%
	New England	Did not Hunt or Fish	47%	20%	25%	38%	49%	22%	26%	40%	54%	25%	31%	45%	53%	25%	30%	45%
		Hunted and Fished	79%	51%	58%	72%	80%	54%	60%	74%	83%	59%	65%	78%	83%	58%	64%	77%
		Fished Only	70%	40%	47%	62%	72%	42%	49%	64%	76%	47%	54%	69%	75%	46%	53%	68%
		Hunted Only	66%	36%	42%	58%	68%	38%	44%	60%	72%	43%	49%	65%	72%	42%	49%	64%
	South Atlantic	Did not Hunt or Fish	41%	16%	20%	32%	43%	18%	22%	34%	48%	21%	25%	39%	47%	20%	25%	38%
		Hunted and Fished	74%	45%	52%	67%	76%	47%	54%	69%	79%	52%	59%	73%	79%	51%	58%	72%
		Fished Only	64%	34%	40%	56%	66%	36%	42%	58%	71%	41%	47%	63%	70%	40%	47%	62%
		Hunted Only	60%	30%	36%	51%	62%	32%	38%	54%	67%	37%	43%	59%	66%	36%	42%	58%
	West North Central	Did not Hunt or Fish	40%	16%	20%	32%	43%	17%	22%	34%	48%	21%	25%	39%	47%	20%	25%	38%
		Hunted and Fished	74%	45%	52%	67%	76%	47%	54%	69%	79%	52%	59%	73%	79%	51%	58%	72%
		Fished Only	64%	34%	40%	56%	66%	36%	42%	58%	71%	41%	47%	63%	70%	40%	46%	62%
		Hunted Only	60%	30%	36%	51%	62%	32%	38%	54%	67%	36%	43%	59%	66%	36%	42%	58%
	West South Central	Did not Hunt or Fish	33%	12%	15%	25%	35%	13%	17%	27%	39%	16%	19%	31%	39%	15%	19%	31%
		Hunted and Fished	67%	37%	43%	59%	69%	39%	46%	61%	73%	44%	51%	66%	73%	43%	50%	65%
		Fished Only	56%	27%	32%	47%	59%	29%	34%	50%	63%	33%	39%	55%	63%	32%	38%	54%
		Hunted Only	52%	23%	29%	43%	54%	25%	31%	45%	59%	29%	35%	50%	58%	28%	34%	50%

Table 12. Probability of Married/Divorced Individuals with Mean Income, Age, and Education Participating in Wildlife Watching in 2000

			MSA of 1 million or more				*MSA of 250,000-999,999*				*MSA of 50,000-249,999*				*Outside MSA*			
Gender	*Region*	*Hunt/Fish*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*
Male																		
	Pac./Mid Atl./East N. Cent.	Did not Hunt or Fish	39%	15%	19%	31%	41%	16%	20%	33%	46%	19%	24%	37%	45%	19%	23%	36%
		Hunted and Fished	73%	43%	50%	65%	74%	45%	52%	67%	78%	50%	57%	71%	77%	49%	56%	71%
		Fished Only	62%	32%	38%	54%	65%	34%	40%	56%	69%	39%	45%	61%	68%	38%	45%	60%
		Hunted Only	58%	28%	34%	49%	60%	30%	36%	52%	65%	35%	41%	57%	64%	34%	40%	56%
	East South Central	Did not Hunt or Fish	33%	12%	16%	26%	35%	13%	17%	28%	40%	16%	20%	32%	39%	16%	19%	31%
		Hunted and Fished	68%	37%	44%	60%	70%	40%	46%	62%	74%	45%	51%	66%	73%	44%	50%	66%
		Fished Only	57%	27%	33%	48%	59%	29%	35%	50%	64%	34%	40%	55%	63%	33%	39%	55%
		Hunted Only	53%	24%	29%	44%	55%	26%	31%	46%	60%	30%	36%	51%	59%	29%	35%	50%
	Mountain	Did not Hunt or Fish	35%	13%	16%	27%	37%	14%	18%	29%	41%	17%	21%	33%	41%	16%	20%	32%
		Hunted and Fished	69%	39%	45%	61%	71%	41%	48%	63%	75%	46%	53%	68%	74%	45%	52%	67%
		Fished Only	58%	28%	34%	50%	61%	30%	36%	52%	65%	35%	41%	57%	64%	34%	40%	56%
		Hunted Only	54%	25%	30%	45%	56%	27%	32%	47%	61%	31%	37%	52%	60%	30%	36%	52%
	New England	Did not Hunt or Fish	42%	17%	21%	34%	44%	19%	23%	36%	49%	22%	27%	41%	49%	21%	26%	40%
		Hunted and Fished	76%	47%	53%	68%	77%	49%	56%	70%	81%	54%	61%	74%	80%	53%	60%	74%
		Fished Only	66%	35%	42%	58%	68%	38%	44%	60%	72%	42%	49%	65%	72%	42%	48%	64%
		Hunted Only	62%	32%	38%	53%	64%	34%	40%	55%	68%	38%	45%	60%	68%	37%	44%	60%
	South Atlantic	Did not Hunt or Fish	36%	14%	17%	28%	38%	15%	19%	30%	43%	18%	22%	35%	42%	17%	21%	34%
		Hunted and Fished	70%	40%	47%	63%	72%	42%	49%	65%	76%	47%	54%	69%	76%	47%	53%	68%
		Fished Only	60%	30%	36%	51%	62%	32%	38%	53%	67%	36%	43%	58%	66%	35%	42%	58%
		Hunted Only	56%	26%	32%	47%	58%	28%	34%	49%	63%	32%	38%	54%	62%	32%	38%	53%
	West North Central	Did not Hunt or Fish	36%	14%	17%	28%	38%	15%	19%	30%	43%	18%	22%	34%	42%	17%	21%	34%
		Hunted and Fished	70%	40%	47%	62%	72%	42%	49%	65%	76%	47%	54%	69%	75%	47%	53%	68%
		Fished Only	60%	30%	36%	51%	62%	32%	38%	53%	67%	36%	43%	58%	66%	35%	42%	57%
		Hunted Only	55%	26%	32%	47%	58%	28%	34%	49%	63%	32%	38%	54%	62%	31%	38%	53%
	West South Central	Did not Hunt or Fish	29%	10%	13%	22%	31%	11%	14%	24%	35%	13%	17%	27%	34%	13%	16%	27%
		Hunted and Fished	63%	33%	39%	54%	65%	35%	41%	57%	69%	39%	46%	61%	69%	38%	45%	61%
		Fished Only	52%	23%	28%	43%	54%	25%	30%	45%	59%	29%	35%	50%	58%	28%	34%	49%
		Hunted Only	47%	20%	25%	39%	49%	22%	27%	41%	54%	25%	31%	46%	54%	25%	30%	45%

continues

Table 12. Probability of Married/Divorced Individuals with Mean Income, Age, and Education Participating in Wildlife Watching in 2000 – continued

			MSA of 1 million or more				*MSA of 250,000-999,999*				*MSA of 50,000-249,999*				*Outside MSA*			
Gender	*Region*	*Hunt/Fish*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*	*White*	*Asian*	*Black*	*Other*
Female																		
	Pacific	Did not Hunt or Fish	49%	22%	26%	40%	51%	23%	28%	43%	56%	27%	32%	48%	56%	26%	32%	47%
		Hunted and Fished	80%	54%	60%	74%	82%	56%	62%	76%	85%	61%	67%	79%	84%	60%	66%	79%
		Fished Only	72%	42%	49%	64%	74%	44%	51%	66%	77%	49%	56%	71%	77%	49%	55%	70%
		Hunted Only	68%	38%	44%	60%	70%	40%	47%	62%	74%	45%	52%	67%	74%	44%	51%	66%
	East South Central	Did not Hunt or Fish	44%	18%	22%	35%	46%	19%	24%	37%	51%	23%	28%	42%	50%	22%	27%	41%
		Hunted and Fished	76%	48%	55%	70%	78%	50%	57%	71%	81%	55%	62%	75%	81%	54%	61%	75%
		Fished Only	67%	37%	43%	59%	69%	39%	45%	61%	73%	44%	50%	66%	73%	43%	50%	65%
		Hunted Only	63%	33%	39%	55%	65%	35%	41%	57%	70%	39%	46%	62%	69%	39%	45%	61%
	Mountain	Did not Hunt or Fish	45%	19%	23%	36%	47%	20%	25%	38%	52%	24%	29%	43%	51%	23%	28%	43%
		Hunted and Fished	77%	49%	56%	71%	79%	52%	58%	72%	82%	57%	63%	76%	82%	56%	62%	76%
		Fished Only	68%	38%	44%	60%	70%	40%	47%	62%	74%	45%	52%	67%	74%	44%	51%	66%
		Hunted Only	64%	34%	40%	56%	66%	36%	42%	58%	71%	41%	47%	63%	70%	40%	47%	62%
	New England	Did not Hunt or Fish	53%	24%	30%	44%	55%	26%	31%	46%	60%	30%	36%	51%	59%	29%	35%	51%
		Hunted and Fished	83%	57%	64%	77%	84%	60%	66%	78%	86%	64%	70%	82%	86%	64%	70%	81%
		Fished Only	75%	46%	53%	68%	77%	48%	55%	70%	80%	53%	60%	74%	79%	52%	59%	73%
		Hunted Only	71%	42%	48%	64%	73%	44%	50%	66%	77%	49%	55%	70%	76%	48%	55%	69%
	South Atlantic	Did not Hunt or Fish	46%	20%	24%	38%	49%	21%	26%	40%	54%	25%	30%	45%	53%	24%	30%	44%
		Hunted and Fished	79%	51%	58%	72%	80%	53%	60%	74%	83%	58%	65%	77%	83%	57%	64%	77%
		Fished Only	70%	40%	46%	62%	72%	42%	48%	64%	75%	47%	53%	68%	75%	46%	53%	68%
		Hunted Only	66%	35%	42%	57%	68%	37%	44%	60%	72%	42%	49%	64%	71%	42%	48%	64%
	West North Central	Did not Hunt or Fish	46%	20%	24%	38%	49%	21%	26%	40%	54%	25%	30%	45%	53%	24%	29%	44%
		Hunted and Fished	78%	51%	58%	72%	80%	53%	60%	74%	83%	58%	64%	77%	83%	57%	64%	77%
		Fished Only	70%	39%	46%	62%	71%	42%	48%	64%	75%	47%	53%	68%	75%	46%	52%	68%
		Hunted Only	66%	35%	42%	57%	68%	37%	44%	60%	72%	42%	49%	64%	71%	41%	48%	64%
	West South Central	Did not Hunt or Fish	38%	15%	19%	30%	40%	16%	20%	32%	45%	19%	24%	37%	45%	19%	23%	36%
		Hunted and Fished	72%	43%	49%	65%	74%	45%	52%	67%	78%	50%	57%	71%	77%	49%	56%	70%
		Fished Only	62%	32%	38%	54%	64%	34%	40%	56%	69%	38%	45%	61%	68%	38%	44%	60%
		Hunted Only	58%	28%	34%	49%	60%	30%	36%	51%	65%	34%	41%	56%	64%	34%	40%	56%

Summary

Often the populations of all wildlife recreationists are divided into groups of either wildlife watchers or sportspersons. Sometimes these two groups of recreationists are perceived as mutually exclusive or nearly exclusive. However, they are really interrelated from numerous perspectives. This report analyzes several aspects of their interrelationship.

Perhaps the most tangible evidence against the notion of two mutually exclusive groups of recreationists is the magnitude of their intersection. The majority of sportspersons also participate in wildlife watching. Alternatively, 32% of all around-the-home and 44% of all away-from-home wildlife watchers are also sportspersons. Moreover, these percentages rise substantially if an individual's prior historical participation in sporting activities is considered. If a recreationist is still considered a sportsperson if he or she participated in either hunting or fishing within the last five years, sportsperson share of around-the-home and away-from-home watchers increases to 49% and 63% respectively.

Further, this report uses regression analysis to show the increase in the probability of wildlife watching participation given information on prior hunting and fishing activity. The results suggests that even after controlling for other factors that are also correlated, there is still a statistically significant increase in likelihood of wildlife watching given participation in hunting or fishing within five years prior to the survey. Additionally, the probabilities generated from the regression indicate that, compared to other variables, there are relatively large changes in wildlife-watching participation due to changes in prior hunting and fishing activity.

From the perspective of spending in the marketplace and subsequent impact on the economy, there is substantial interrelationship between consumptive and non-consumptive recreationists. This report shows that the majority of wildlife-recreation expenditures are made by those who participate in *both* wildlife watching and sporting activities. Those who participate in both watching and sporting activities account for 57% of all spending, while those who participate in only wildlife watching and only sporting activities each account for around 21%.

In the years ahead the interrelationship of consumptive and non-consumptive recreationists will likely experience change due to the distinctive socioeconomic characteristics of each. Demographic trends in the U.S. portend several changes in the participation rates for different types of wildlife recreation. Relatively fast growth in metropolitan populations, relatively slow growth in the population of Whites compared to other races, rapid population growth in Hispanics, and an aging populace will likely have two effects: the overall participation rate for wildlife watching will increase relative to sporting activities, and the share of recreationists who participate in both wildlife watching and sporting activities will likely decline.

Appendix A. Wildlife-Watching Questions

The analysis for this report is based on information collected by the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. The questions used to collect the information are provided below.

An away-from-home wildlife watcher is someone who answered yes to the following question:

> *"From January 1, 2001 to December 31, 2001 did you take any trips or outings in the United States of at least one mile from home for the primary purpose of observing, photographing, or feeding wildlife? Do not include trips to zoos, circuses, aquariums, museums, or trips for hunting, fishing, or scouting."*

An around-the-home wildlife watcher is someone who answered yes to one of the following questions:

> *"From January 1, 2001 to December 31, 2001 did you take any special interest in wildlife around your home (area within a one-mile radium of your home), other than simply noticing wildlife while doing other activities? By this I mean, did you closely observe wildlife or try to identify types of wildlife you did not know?*
>
> *"From January 1, 2001 to December 31, 2001 did you photograph any type of wildlife around your home?"*
>
> *"From January 1, 2001 to December 31, 2001 did you feed wild birds around your home?"*
>
> *"From January 1, 2001 to December 31, 2001 did you feed any kind of fish or wildlife, other than birds, around your home?"*
>
> *"From January 1, 2001 to December 31, 2001 did you visit any public parks or publicly-owned natural areas within a one-mile radius of your home, for the purpose of observing photographing, or feeding wildlife?"*
>
> *"During 2001, did you maintain in the area around your home any plantings, such as food or cover plants, for the PRIMARY PURPOSE of benefiting fish or wildlife? Include areas in agricultural crops."*

Appendix B. Wildlife-Watching Days by State

Table B-1. Wildlife-Watching Days Away from Home by Sportsperson Classification and State Where Watching Occurred: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All Non-Residential	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
AK	3,892	1,693	44%	2,199	57%
AL	3,643	1,708	47%	1,936	53%
AR	1,562	605	39%	957	61%
AZ	4,584	2,705	59%	1,879	41%
CA	23,807	19,455	82%	4,352	18%
CO	9,510	5,119	54%	4,391	46%
CT	7,241	4,448	61%	2,793	39%
DE	722	311	43%	411	57%
FL	21,388	9,026	42%	12,362	58%
GA	4,868	1,172	24%	3,696	76%
HI	1,718	970	57%	748	44%
IA	6,393	2,883	45%	3,511	55%
ID	3,610	2,350	65%	1,260	35%
IL	7,656	5,051	66%	2,605	34%
IN	11,999	5,790	48%	6,209	52%
KS	2,416	1,144	47%	1,272	53%
KY	5,689	3,293	58%	2,396	42%
LA	2,432	679	28%	1,753	72%
MA	10,198	6,670	65%	3,528	35%
MD	6,809	4,049	60%	2,759	41%
ME	4,981	2,749	55%	2,232	45%
MI	13,999	5,525	40%	8,473	61%
MN	13,234	4,600	35%	8,634	65%
MO	12,448	6,451	52%	5,997	48%
MS	3,288	**	**	*3,133	*95%
MT	4,612	2,627	57%	1,984	43%
NC	5,947	3,605	61%	2,342	39%
ND	523	255	49%	268	51%
NE	2,240	1,062	47%	1,177	53%
NH	3,178	2,061	65%	1,117	35%
NJ	9,873	5,987	61%	3,886	39%
NM	6,381	4,607	72%	1,774	28%
NV	1,567	1,032	66%	534	34%
NY	21,583	9,829	46%	11,754	55%
OH	19,814	11,414	58%	8,399	42%
OK	4,058	1,395	34%	2,663	66%
OR	8,517	5,984	70%	2,533	30%
PA	18,990	13,062	69%	5,928	31%
RI	1,414	694	49%	720	51%
SC	4,616	1,006	22%	3,610	78%
SD	1,923	1,082	56%	840	44%
TN	6,144	3,770	61%	2,374	39%
TX	7,711	3,327	43%	4,384	57%
UT	4,414	1,660	38%	2,754	62%
VA	8,906	6,015	68%	2,891	33%
VT	3,717	2,885	78%	832	22%
WA	11,256	7,039	63%	4,218	38%
WI	16,499	6,287	38%	10,212	62%
WV	2,619	851	33%	1,768	68%
WY	3,924	1,972	50%	1,952	50%

**Estimate based on small sample size.* ***Sample Size too small to report data reliably*

Table B-2. Wildlife-Watching Days Around the Home by Sportsperson Classification and State of Residence: 2001
(Population 16 years of age and older. Numbers in thousands.)

	All Around the Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
AK	11,921	5,634	47%	6,287	53%
AL	72,899	50,496	69%	22,403	31%
AR	51,652	29,999	58%	21,653	42%
AZ	110,828	89,094	80%	21,735	20%
CA	266,148	224,568	84%	41,580	16%
CO	76,580	57,537	75%	19,043	25%
CT	89,931	67,313	75%	22,617	25%
DE	11,028	8,041	73%	2,987	27%
FL	162,652	115,772	71%	46,880	29%
GA	98,987	53,415	54%	45,572	46%
HI	8,815	3,359	38%	*5,456	*62%
IA	115,051	70,870	62%	44,181	38%
ID	22,854	9,801	43%	13,052	57%
IL	193,555	128,307	66%	65,247	34%
IN	206,598	138,179	67%	68,419	33%
KS	49,325	29,595	60%	19,730	40%
KY	70,426	52,967	75%	17,459	25%
LA	67,055	46,042	69%	21,012	31%
MA	127,510	104,150	82%	23,360	18%
MD	81,304	53,650	66%	27,654	34%
ME	51,707	35,316	68%	16,391	32%
MI	192,186	122,855	64%	69,332	36%
MN	128,152	56,471	44%	71,681	56%
MO	101,873	65,326	64%	36,547	36%
MS	52,032	31,211	60%	20,821	40%
MT	41,660	22,376	54%	19,284	46%
NC	112,606	67,630	60%	44,976	40%
ND	8,612	6,447	75%	2,165	25%
NE	37,939	24,544	65%	13,395	35%
NH	34,369	24,909	73%	9,460	28%
NJ	132,869	100,523	76%	32,346	24%
NM	49,236	38,248	78%	10,988	22%
NV	23,894	18,254	76%	*5,639	*24%
NY	308,032	215,959	70%	92,073	30%
OH	212,353	139,980	66%	72,372	34%
OK	87,639	51,232	59%	36,407	42%
OR	104,403	77,807	75%	26,596	26%
PA	354,204	235,304	66%	118,901	34%
RI	17,064	13,759	81%	3,305	19%
SC	64,760	40,183	62%	24,577	38%
SD	21,101	14,459	69%	6,642	32%
TN	126,188	88,188	70%	38,000	30%
TX	217,276	125,915	58%	91,362	42%
UT	39,115	18,478	47%	20,638	53%
VA	203,983	132,863	65%	71,120	35%
VT	27,934	20,666	74%	7,267	26%
WA	171,757	119,695	70%	52,062	30%
WI	226,381	157,428	70%	68,953	31%
WV	46,014	33,475	73%	12,539	27%
WY	14,049	7,540	54%	6,509	46%

**Estimate based on small sample size.*

Appendix C. Selected Characteristics of Wildlife Watchers

Table C-1. Selected Characteristics of Away-from-Home Wildlife Watchers by Sportsperson Classification
(Population 16 years of age and older. Numbers in thousands.)

	All Away from Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Total All Persons	**21,823**	**12,190**	**56%**	**9,633**	**44%**
Population Size of Residence					
Metropolitan statistical area (MSA)	16,536	9,906	60%	6,630	40%
1,000,000 or more	10,126	6,354	63%	3,773	37%
250,000 to 999,999	4,191	2,410	58%	1,781	43%
50,000 to 249,999	2,218	1,142	52%	1,077	49%
Outside MSA	5,287	2,284	43%	3,003	57%
Census Geographic Region					
New England	1,155	744	64%	411	36%
Middle Atlantic	2,849	1,731	61%	1,118	39%
East North Central	3,571	1,859	52%	1,712	48%
West North Central	2,059	863	42%	1,196	58%
South Atlantic	3,469	1,849	53%	1,621	47%
East South Central	1,086	556	51%	530	49%
West South Central	1,822	787	43%	1,035	57%
Mountain	2,020	1,135	56%	885	44%
Pacific	3,793	2,667	70%	1,127	30%
Age					
16-17	688	366	53%	321	47%
18-24	1,364	657	48%	707	52%
25-34	3,770	1,963	52%	1,806	48%
35-44	5,701	2,964	52%	2,738	48%
45-54	4,991	2,918	59%	2,073	42%
55-64	2,929	1,762	60%	1,167	40%
65+	2,381	1,560	66%	822	35%
Sex					
Male	11,388	4,922	43%	6,466	57%
Female	10,436	7,268	70%	3,167	30%
Ethnicity					
Hispanic	890	710	80%	180	20%
Non-Hispanic	20,933	11,480	55%	9,453	45%
Race					
White	20,890	11,595	56%	9,295	45%
Black	535	327	61%	209	39%
Asian	178	*153	*86%	**	**
All Others	*220	*115	*52%	*105	*48%

continues

Table C-1. Selected Characteristics of Away-from-Home Wildlife Watchers by Sportsperson Classification – continued
(Population 16 years of age and older. Numbers in thousands.)

	All Away from Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Annual Household Income					
Under $10,000	491	289	59%	202	41%
$10,000-$19,999	867	567	66%	299	35%
$20,000-$24,999	854	515	60%	339	40%
$25,000-$29,999	1,109	625	56%	484	44%
$30,000-$34,999	1,459	752	52%	707	49%
$35,000-$39,999	1,109	543	49%	567	51%
$40,000-$49,999	2,365	1,255	53%	1,110	47%
$50,000-$74,999	4,585	2,449	53%	2,136	47%
$75,000-$99,999	2,910	1,664	57%	1,247	43%
$100,000 or More	2,872	1,705	59%	1,167	41%
Not Reported	3,202	1,825	57%	1,377	43%
Education					
11 years or less	1,845	943	51%	901	49%
12 years	5,938	2,891	49%	3,047	51%
1-3 years of college	5,796	2,934	51%	2,861	49%
4 years of college	4,464	2,787	62%	1,678	38%
5 or more years of college	3,781	2,635	70%	1,146	30%

**Estimate based on small sample size.*
***Sample Size too small to report data reliably*

Table C-2. Selected Characteristics of Around-the-Home Wildlife Watchers by Sportsperson Classification
(Population 16 Years of Age and Older. Numbers in Thousands.)

	All Around the Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Total All Persons	**62,928**	**42,766**	**68%**	**20,162**	**32%**
Population Size of Residence					
Metropolitan statistical area (MSA)	46,889	33,274	71%	13,615	29%
1,000,000 or more	28,152	20,634	73%	7,518	27%
250,000 to 999,999	12,210	8,305	68%	3,905	32%
50,000 to 249,999	6,527	4,335	66%	2,192	34%
Outside MSA	16,040	9,492	59%	6,548	41%
Census Geographic Region					
New England	3,765	2,787	74%	978	26%
Middle Atlantic	8,452	6,098	72%	2,354	28%
East North Central	11,196	7,452	67%	3,744	33%
West North Central	5,938	3,507	59%	2,432	41%
South Atlantic	10,911	7,286	67%	3,625	33%
East South Central	4,390	2,848	65%	1,542	35%
West South Central	5,490	3,397	62%	2,093	38%
Mountain	4,282	2,821	66%	1,461	34%
Pacific	8,504	6,570	77%	1,933	23%
Age					
16-17	1,504	961	64%	543	36%
18-24	2,694	1,626	60%	1,068	40%
25-34	8,137	4,773	59%	3,364	41%
35-44	14,101	8,590	61%	5,511	39%
45-54	13,899	9,603	69%	4,296	31%
55-64	10,084	7,162	71%	2,922	29%
65+	12,511	10,051	80%	2,460	20%
Sex					
Male	28,825	15,367	53%	13,458	47%
Female	34,103	27,399	80%	6,704	20%
Ethnicity					
Hispanic	2,486	1,990	80%	495	20%
Non-Hispanic	60,443	40,776	68%	19,667	33%
Race					
White	59,877	40,377	67%	19,500	33%
Black	1,939	1,532	79%	407	21%
Asian	593	559	94%	**	**
All Others	519	299	58%	*220	*42.%

continues

Table C-2. Selected Characteristics of Around-the-Home Wildlife Watchers by Sportsperson Classification
(Population 16 Years of Age and Older. Numbers in Thousands.)

	All Around the Home	*Non-Sportspersons*	*Percent of All*	*Sportspersons*	*Percent of All*
Annual Household Income					
Under $10,000	2,344	1,842	79%	501	21%
$10-$19,999	3,728	2,973	80%	755	20%
$20-$24,999	2,765	2,061	75%	703	25%
$25-$29,999	3,304	2,245	68%	1,059	32%
$30-$34,999	3,799	2,405	63%	1,394	37%
$35-$39,999	2,950	1,754	60%	1,196	41%
$40-$49,999	6,070	3,892	64%	2,177	36%
$50-$74,999	11,564	7,410	64%	4,154	36%
$75-$99,999	7,349	4,767	65%	2,582	35%
$100,000 or More	7,705	5,061	66%	2,644	34%
Not Reported	11,351	8,354	74%	2,997	26%
Education					
11 years or less	6,849	4,796	70%	2,052	30%
12 years	20,255	13,431	66%	6,823	34%
1-3 years of college	15,199	9,717	64%	5,481	36%
4 years of college	11,931	8,651	73%	3,280	28%
5 years or more of college	8,696	6,171	71%	2,525	29%

**Estimate based on small sample size.*
***Sample Size too small to report data reliably*

Appendix D. Expenditures for Wildlife Watching and Sporting Activities

Table D-1. Wildlife-Watching Expenditures by Sportsperson Classification: 2001
(Population 16 years of age and older. Numbers in thousands except averages.)

	All	*Non-Sportspersons*	*Average Non-Sportsperson*	*Sportspersons*	*Average Sportsperson*
Total, all items	**38,414,486**	**24,481,139**	**735**	**13,933,352**	**804**
Trip-Related Expenditures					
Total trip-related	**8,162,439**	**4,520,120**	**436**	**3,642,319**	**464**
Food and lodging, total	4,818,843	2,770,299	318	2,048,544	309
Food	2,835,868	1,535,602	178	1,300,266	196
Lodging	1,982,975	1,234,697	340	748,278	371
Transportation, total	2,595,542	1,502,425	156	1,093,118	147
Public	702,231	531,225	373	171,007	305
Private	1,893,311	971,200	106	922,111	126
Other trip costs, total	748,054	247,396	66	500,657	192
Guide fees, pack trip or package fees	113,034	50,917	60	62,117	174
Public land use fees	114,813	73,192	28	41,621	33
Private land use fees	50,430	13,428	27	37,002	102
Equipment rental	105,198	57,196	75	48,002	122
Boating costs	326,461	38,025	97	288,435	434
Heating and cooking fuel	38,118	14,638	18	23,480	30
Equipment and Other Expenses					
Total	**30,252,047**	**19,961,019**	**649**	**10,291,033**	**657**
Wildlife-watching equipment, total	7,353,977	4,564,821	150	2,789,158	182
Binoculars, spotting scopes	507,387	305,553	107	201,834	111
Photographic equipment	1,656,755	1,075,910	367	580,845	382
Film and developing	910,423	537,411	63	373,012	75
Commercially prepared bird food	2,034,825	1,363,569	57	671,257	57
Other bulk foods to feed birds	569,867	349,944	42	219,923	49
Feed for other wildlife	503,006	217,753	38	285,253	73
Nest boxes, bird houses, feeders	732,671	469,623	44	263,049	50
Day packs, carrying cases, and special clothing	323,043	173,057	104	149,986	117
Other equipment	116,000	72,001	31	43,999	38
Auxiliary equipment	716,899	319,264	165	397,637	191
Tents, tarps	185,552	70,385	91	115,167	98
Frame packs and backpacking equipment	129,382	56,919	94	72,464	149
Other camping equipment	266,382	111,159	107	155,223	168
Other auxiliary equipment	135,583	80,801	*673	54,783	291
Special equipment	15,468,714	10,446,204	13,531	5,022,512	7,872
Off-the-road vehicle	6,677,688	4,345,544	13,884	2,332,144	10,140
Travel or tent trailer, motor home	6,272,294	4,387,965	17,910	1,884,329	11,216
Boats, boat accessories	996,463	360,152	1,801	636,312	2,419
Cabins	**	**	**	**	**
Other Special	*572,396	*553,847	*11,077	**	**
Magazines, books	331,955	177,021	36	154,934	46
Land leasing and ownership	4,761,010	3,325,727	10,458	1,435,283	6,056
Membership dues and contributions	920,183	674,276	124	245,907	106
Plantings	699,309	453,706	118	245,602	137

**Estimate based on small sample size.*
***Sample Size too small to report data reliably*

Table D-2. Sporting Expenditures by Wildlife-Watching Classification: 2001
(Population 16 years of age and older. Numbers in thousands except averages.)

	All	*Non-Watchers*	*Average Non-Watcher*	*Wildlife Watchers*	*Average Wildlife Watcher*
Total, all items	**69,976,330**	**22,153,608**	**1,491**	**47,822,722**	**2,270**
Trip-Related Expenditures					
Total trip-related	**19,908,392**	**6,755,896**	**492**	**13,152,495**	**670**
Food and lodging, total	8,330,938	2,843,705	237	5,487,234	315
Food	6,121,645	2,094,846	176	4,026,800	233
Lodging	2,209,293	748,859	277	1,460,434	288
Transportation, total	5,305,077	1,679,980	142	3,625,097	209
Public	586,422	201,928	300	384,494	394
Private	4,718,654	1,478,052	126	3,240,602	189
Other trip costs, total	6,272,377	2,232,212	203	4,040,165	256
Guide fees, pack trip or package fees	1,064,137	338,945	279	725,192	392
Public land use fees	174,772	63,950	43	110,822	43
Private land use fees	463,819	133,710	174	330,109	243
Equipment rental	289,909	104,546	118	185,364	138
Boating costs	2,716,341	974,448	315	1,741,893	324
Heating and cooking fuel	167,131	60,842	38	106,289	33
Bait	1,105,350	444,396	50	660,954	52
Ice	290,917	111,376	22	179,541	24
Equipment and Other Expenses					
Total	**50,067,938**	**15,397,711**	**1,203**	**34,670,227**	**1,798**
Hunting equipment	4,866,399	1,437,191	396	3,429,207	493
Fishing equipment	4,640,715	1,592,844	195	3,047,872	229
Auxillary equipment	2,627,686	684,658	218	1,943,028	252
Camping equipment	739,967	241,742	205	498,225	160
Binoculars, spotting scopes	296,318	56,952	105	239,366	127
Special fishing and hunting clothing, boots, foul weather gear	924,554	232,692	127	691,862	153
Other	666,846	153,271	245	513,575	246
Special equipment	28,819,402	9,564,151	7,567	19,255,252	7,174
Off-the-road vehicle	5,734,891	1,863,008	9,362	3,871,882	7,224
Travel or tent trailer, motor home	13,299,315	4,565,675	13,752	8,733,640	13,233
Boats, boat accessories	6,311,427	2,280,173	3,744	4,031,255	2,999
Cabins	3,161,500	**	**	*2,328,988	*31,903
Other Special	312,270	22,784	92	289,486	462
Magazines, books	307,981	74,500	36	233,481	42
Land leasing and ownership	7,128,486	1,536,556	2,466	5,591,930	3,278
Membership dues and contributions	515,282	109,741	85	405,541	103
Licenses, stamps, tags, and permits	1,161,988	398,072	42	763,915	52

**Estimate based on small sample size.*

***Sample Size too small to report data reliably*

U.S. Fish & Wildlife Service
Division of Federal Aid
Washington, DC 20240
http://federalaid.fws.gov

March 2005

Cover: USFWS/Thomas Taylor