

U.S. Fish & Wildlife Service

Economic Impact of Waterfowl Hunting in the United States

*Addendum to the 2006 National
Survey of Fishing, Hunting, and
Wildlife-Associated Recreation*

Report 2006-2



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This report is intended to complement the National and State reports from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. The conclusions are the author's and do not represent official positions of the U.S. Fish and Wildlife Service.

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Introduction

Every year millions of sportspersons take to the field to hunt. Among them are waterfowl hunters who pursue ducks and geese in the nation's flyways. Waterfowl hunters have an important economic impact on local, state, and national economies. In 2006, waterfowl hunters represented 10 percent of all hunters, 7 percent of all hunting trip-related expenditures, and 6 percent of all hunting equipment expenditures.

This report provides information on these hunters, including their participation, demographic characteristics, and the economic impact of their expenditures. The first section of this report examines the demographic characteristics of waterfowl hunters. The second section examines the economic impact of waterfowl hunting on State and national economies. Due to small sample sizes, some state-level impacts are not presented. All dollar estimates are presented as 2006 dollars.

All data are from the *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* and represent participation and expenditures for the 2006 calendar year by U.S. residents 16 years of age and older. The 2006 survey was conducted for the U.S. Fish and Wildlife Service by the U.S. Census Bureau. The survey was conducted in two phases. First, the screening interview identified wildlife-related recreationists. Second, multiple interviews collected detailed information on participation and expenditures for persons 16 years of age and older. The U.S. Census Bureau collected the data primarily by telephone; respondents who could not be reached by telephone were interviewed in person. The response rate was 90 percent for the screen phase and 77 percent for the detailed sportsmen phase. For more detailed information on the methods of data collection, refer to the *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*¹.



Mike Hemming/USFWS

¹ This document is available on the U.S. Fish and Wildlife Service webpage: <http://wsfrprograms.fws.gov>

Waterfowl Hunters

Table 1 highlights the total number of waterfowl hunters, days, and trip-related and equipment-related expenditures². In 2006, approximately 1.3 million people participated in waterfowl hunting. While some hunters do hunt both ducks and geese, nearly 90 percent of waterfowl hunters at least hunt ducks. Waterfowl hunters spent \$494 million on trip expenditures and \$406 million on equipment expenditures in 2006. For trip expenditures, 36 percent was allocated for food and lodging, 37 percent was spent on transportation, and 27 percent was spent on other costs such as guide fees, user fees, and boat costs.

Table 1. 2006 Waterfowl Hunters, Days, & Expenditures
(Includes hunters 16 years of age and older.)

Hunters, all waterfowl*	1,306,000
Duck	1,147,000
Geese	700,000
Days, all waterfowl	13,071,000
Duck	12,173,000
Geese	6,008,000
Total Waterfowl Expenditures	\$900,285,000
Trip Expenditures**	\$493,987,000
Food and Lodging	\$177,125,000
Transportation	\$184,329,000
Other Trip Costs	\$132,533,000
Equipment Expenditures***	\$406,298,000

*The number of duck hunters, goose hunters, and days of hunting does not sum to the total number of waterfowl hunters because of multiple responses.

**Trip-related expenditures include food, drink, lodging, public and private transportation, guide fees, pack trip or package fees, public and private land use access fees, equipment rental, boating costs, and heating and cooking fuel.

***Equipment expenditures consist of rifles, shotguns, other firearms, ammunition, telescopic sights, decoys, hunting dogs and associated costs. Also included are auxiliary equipment such as camping equipment, binoculars, special hunting clothing, processing and taxidermy costs. Due to small sample sizes, special equipment purchases such as boats, campers, trucks, and cabins are excluded from equipment expenditures.

² The Survey does not have an expenditure category for waterfowl hunters. Therefore, expenditures are prorated by multiplying migratory bird expenditures by a ratio to derive waterfowl expenditures. This ratio is (number of days hunting geese and ducks)/(total number of days hunting migratory birds). For separate duck and geese expenditures, the numerator included only duck hunting days or goose hunting days.



Demographics

This section illustrates the demographic characteristics for waterfowl hunters. In addition, demographic characteristics are presented for all hunters to depict the differences and similarities with the waterfowl hunter subset.

Figures 1 and 2 show where hunters live by region and flyway. By region, the majority of waterfowl hunters live in the South (42 percent) and the Midwest (32 percent). While 17 percent of waterfowl hunters live in the West, only 9 percent live in the Northeast.

The continental United States is divided into four flyways: Atlantic, Central, Mississippi, and Pacific. These flyways represent major migration routes for migratory birds. Figure 2 shows that the majority of waterfowl hunters live in the Mississippi flyway (45 percent). Less than 1 percent of waterfowl hunters do not live in a designated flyway in the continental United States, instead living in Hawaii or Alaska.

Figure 1. Distribution of Waterfowl Hunters by Region

(Population 16 years of age and older.)

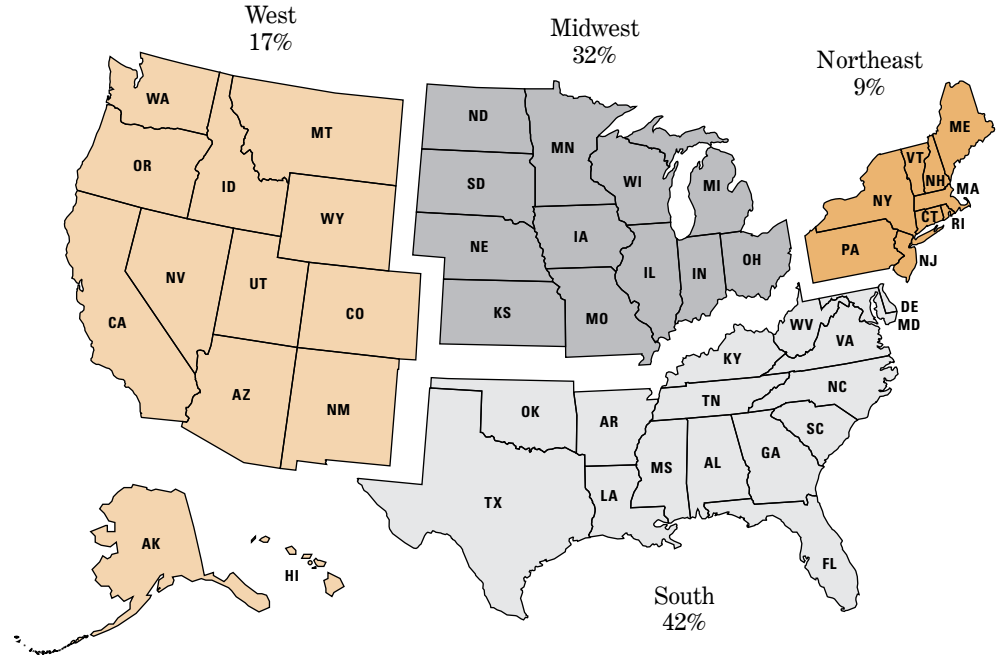
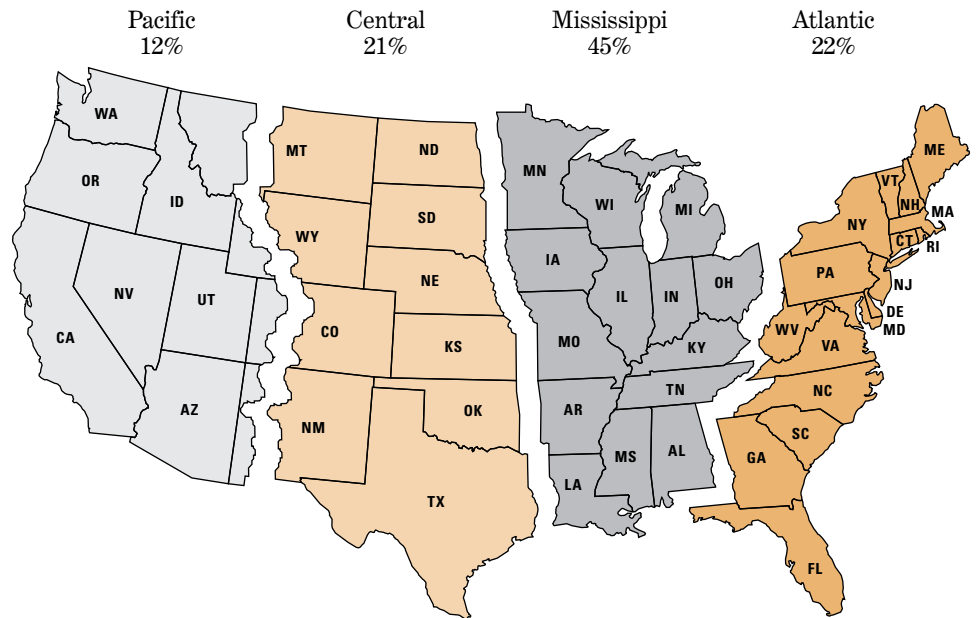


Figure 2. Distribution of Waterfowl Hunters by Flyway

(1.3 million total waterfowl hunters)



For waterfowl hunters, participation increases with age until the 35-44 age category (29 percent), after which waterfowl hunting decreases with age (Fig 3). This pattern does not follow for all hunters, for which participation remains relatively constant after the 35-44 age category.

Figure 4 depicts the association between waterfowl hunting and educational attainment. The number of waterfowl hunters generally increases with educational achievement. Only 84,000 waterfowl hunters (6 percent) have not obtained their high school degrees. Unlike waterfowl hunters, the percentage of all hunters does not increase with educational attainment. Instead, the percentage of all hunters decreases after attaining a high school diploma.

Figure 5 shows that waterfowl hunting is positively correlated with income. That is, as household income increases, the percentage of waterfowl hunters for each group also increases. Income is also positively correlated with the participation rate of all hunters. However, all hunters do not tend to be as affluent as waterfowl hunters. Waterfowl hunters with an annual household income of over \$50,000 is 74 percent (885,000 hunters) compared with 52 percent for all hunters (6.5 million hunters). (In Figure 5, “all hunters” does not sum to 100 percent due to those that did not report household income.)

Figure 3. Percent of Hunters by Age

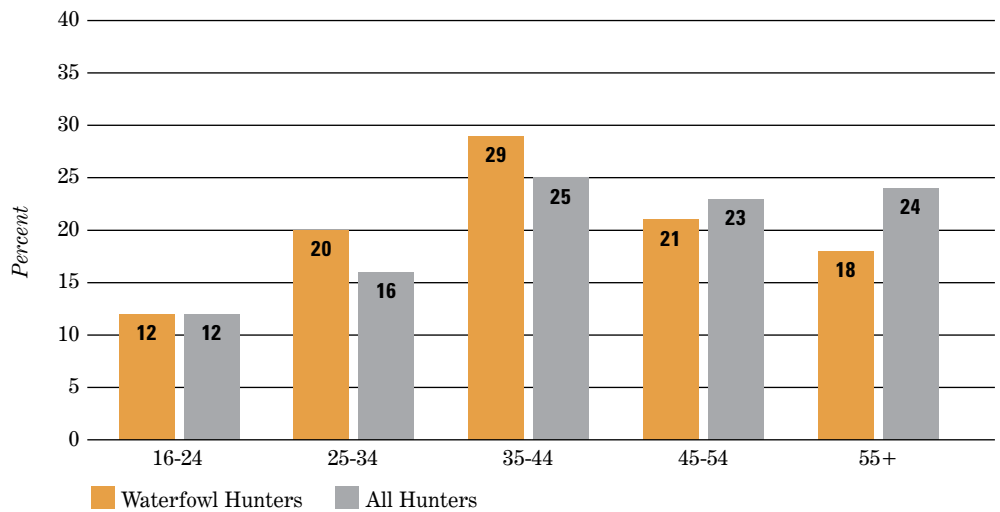


Figure 4. Percent of Hunters by Education

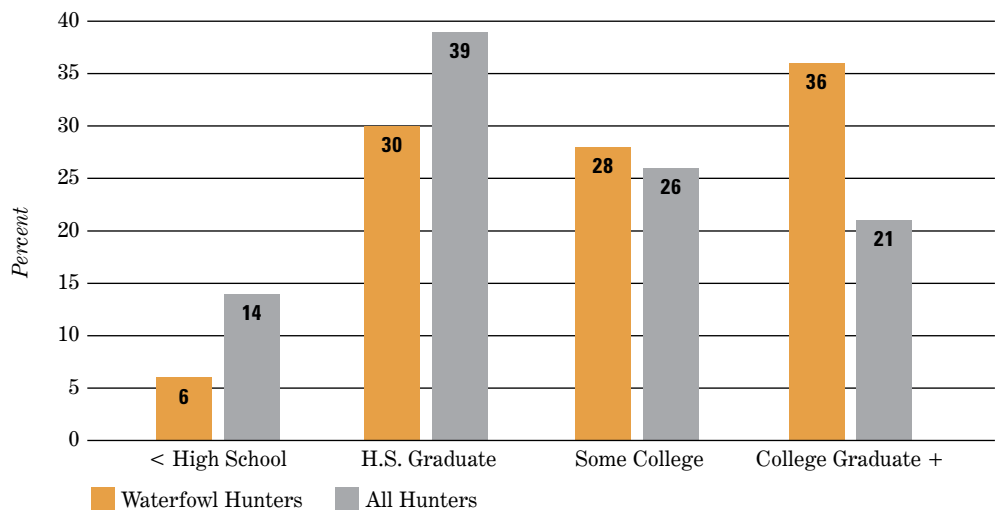
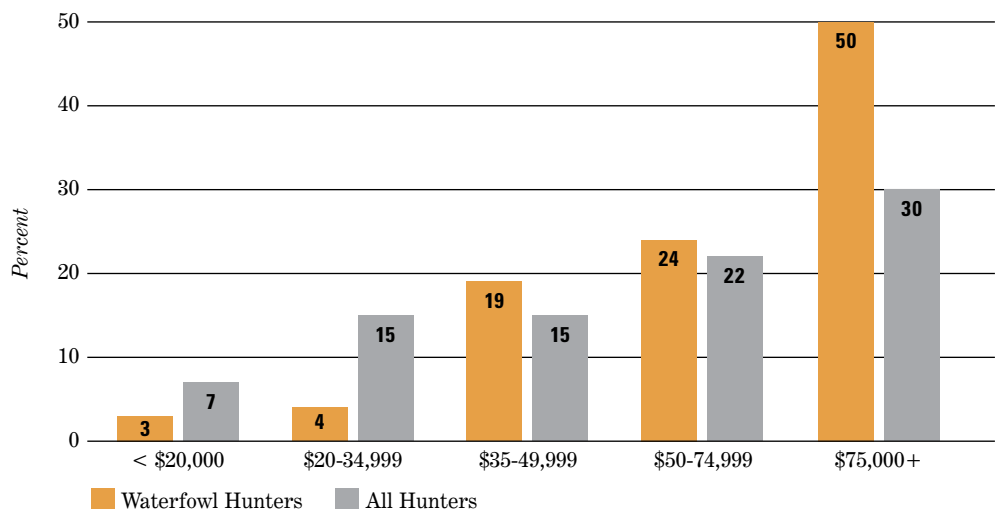


Figure 5. Percent of Hunters by Annual Household Income



Percents of all hunters does not add to 100 because of nonresponse.

Figures 6 and 7 compare hunting participation by residents of metropolitan statistical areas (MSA) with that of individuals living outside those areas. A MSA is a major populated area comprising a central city or urban core of 50,000 or more people and its surrounding counties or communities, as identified by the U.S. Census Bureau. It is not surprising that a majority of hunters also reside in those areas.

In 2006, 83 percent of the U.S. population 16 years of age and older, 62 percent of all hunters, and 70 percent of waterfowl hunters lived in MSAs (Figure 6). In contrast, 17 percent of the U.S. population lived outside MSAs compared with 38 percent of all hunters and 30 percent of waterfowl hunters.

It is not difficult to see that hunters are less urban than the population as a whole, and that a nonmetropolitan resident has a higher percentage chance of being a hunter than does a metropolitan resident. In 2006, 12 percent of all *nonmetropolitan* residents hunted and 2 percent waterfowl hunted; while, only 4 percent of all *metropolitan* residents hunted and 1 percent waterfowl hunted (Figure 7).

Figure 6. Percent of Hunters by Residence

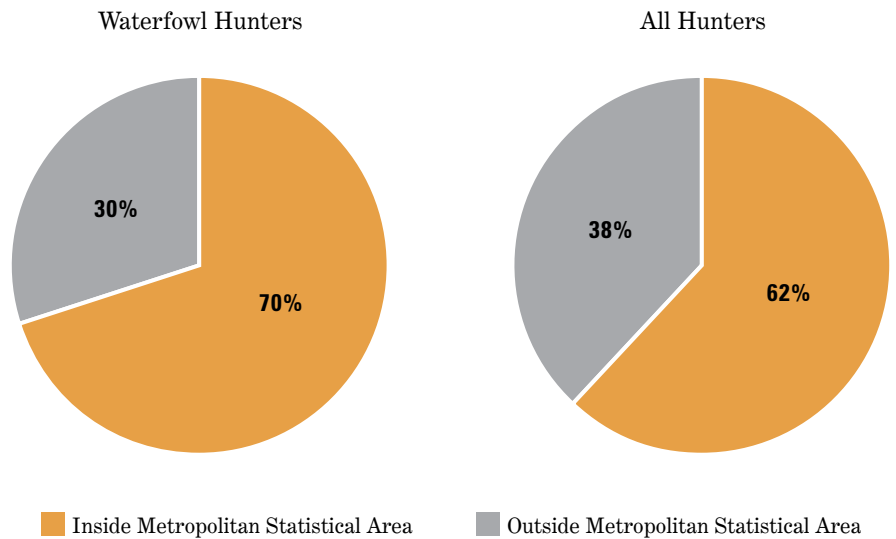
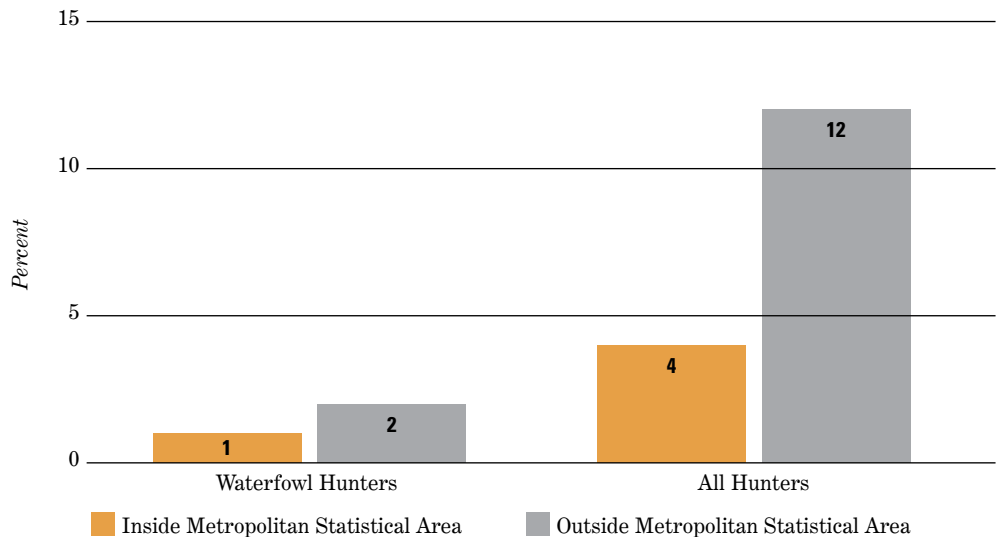


Figure 7. Percent of U.S. Population Who Hunted by Residence



Avidity and Expenditures

Figure 8 depicts the mean days of waterfowl hunting nationwide. Waterfowl hunters that hunt both ducks and geese average over twice as many days (21 days) as waterfowl hunters that do not hunt both. On average, duck hunters spend more days hunting (11 days) than goose hunters (9 days). All hunters averaged about 18 days per year, which is more often than the estimate for all waterfowl hunters (10 days).

In addition to hunting two more days on average, duck hunters also tend to spend more than goose hunters annually (Figure 9). However, waterfowl hunters that hunt both ducks and geese spend over 50 percent more (\$854) than duck hunters or goose hunters. All hunters tend to spend more (\$1,069) than waterfowl hunters.

Table 2 shows the number of people that participated in waterfowl hunting and the number of waterfowl hunting days by state. The 3 States with the most waterfowl hunters were Texas (121,000 hunters), Arkansas (100,000 hunters), and Louisiana (74,000 hunters).

Figure 8. Average Annual Days of Hunting

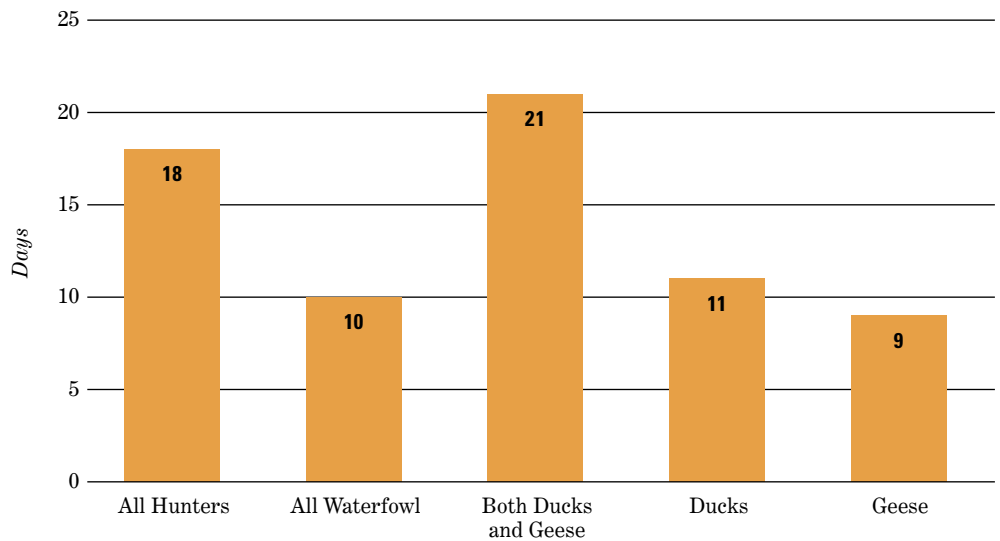


Figure 9. Average Annual Expenditures

(Including Trip-related and Equipment-related expenditures)

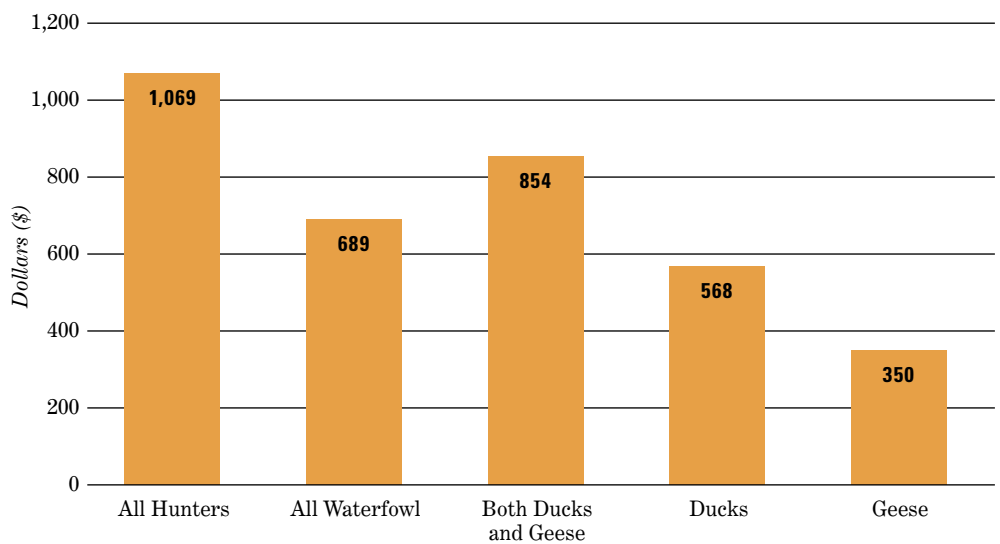


Table 2. Number of Waterfowl Hunters and Hunting Days (thousands)

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

State	Number of Hunters			Number of Days		
	Waterfowl	Ducks	Geese	Waterfowl	Ducks	Geese
Alabama	24	24	-	203	157	-
Arkansas	100	100	-	1,807	1,483	-
California	61	61	-	700	583	-
Colorado	32	-	-	403	-	-
Delaware	12	10	9	164	93	71
Georgia	29	-	-	123	-	-
Idaho	27	26	-	260	142	-
Illinois	71	65	57	1,418	798	620
Iowa	22	-	19	231	-	169
Kansas	30	27	20	498	273	225
Louisiana	74	72	-	1,326	1,191	-
Maryland	43	39	35	490	257	233
Massachusetts	14	13	-	145	92	-
Minnesota	52	49	-	897	472	-
Mississippi	41	41	-	318	270	-
Missouri	42	36	-	695	629	-
Montana	13	13	-	107	65	-
Nebraska	34	28	24	480	242	238
North Dakota	22	20	13	209	136	73
Oklahoma	38	34	21	375	270	105
Oregon	28	27	-	292	253	-
South Carolina	32	32	-	384	373	-
South Dakota	26	14	21	205	103	102
Tennessee	36	33	-	480	323	-
Texas	121	102	71	1,241	914	327
Utah	20	20	11	139	101	38
Vermont	5	-	-	66	-	-
Virginia	29	26	-	199	112	-
Washington	20	18	-	199	157	-
Wisconsin	66	48	54	1,001	517	483

Note: A hyphen (-) denotes sample sizes that are too small to report reliably (9 or less). States NOT listed have sample sizes too small to report reliably for any category (9 or less). These sample size criteria are consistent with the "2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation."

The Economic Impacts of Waterfowl Hunting

Waterfowl hunters spend money on a variety of goods and services for trip-related and equipment-related purchases. Trip-related expenditures include food, lodging, transportation, and other incidental expenses. Equipment expenditures consist of guns, decoys, hunting dogs, camping equipment, special hunting clothing, and other costs. By having ripple effects throughout the economy, these direct expenditures are only part of the economic impact of waterfowl hunting. The effect on the economy in excess of direct expenditures is known as the multiplier effect. For example, an individual may purchase decoys to use while duck hunting. Part of the purchase price will stay with the local retailer. The local retailer, in turn, pays a wholesaler who in turn pays the manufacturer of the decoys. The manufacturer then spends a portion of this income to pay businesses supplying the manufacturer. In this sense, each dollar of local retail expenditures can affect a variety of businesses. Thus, expenditures associated with waterfowl hunting can ripple through the economy by impacting economic activity, employment, and household income. To measure these effects, a regional input-output modeling method³ is utilized to derive estimates for total industry output, employment, employment income, and tax revenue associated with waterfowl hunting.

Total Industry Output

Table 3 depicts the economic effect of waterfowl hunting in 2006. The trip expenditures of \$494 million by waterfowl hunters generated \$1.2 billion in total output while equipment expenditures of \$406 million generated \$1.1 billion in total output in the United States. Total output includes the direct, indirect, and induced effects of the expenditures associated with waterfowl hunting.

³ The estimates for total industry output, employment, employment income, and federal and state taxes were derived using IMPLAN, a regional input-output model and software system.

Direct effects are the initial effects or impacts of spending money; for example, purchasing ammunition or a pair of binoculars are examples of direct effects. An example of an indirect effect would be the purchase of the ammunition by a sporting goods retailer from the manufacturer.

Finally, induced effects refer to the changes in production associated with changes in household income (and spending) caused by changes in employment related to both direct and indirect effects. More simply, people who are employed by the sporting goods retailer, by the wholesaler, and by the ammunition manufacturer spend their income on various goods and services which in turn generate a given level of output (induced effects).

Employment and Employment Income

Table 3 shows that waterfowl hunting expenditures in 2006 created 27,618 jobs and \$884 million in employment income. Thus, each job had an average annual salary of \$32,000. Jobs and job income in Table 3 include direct, indirect, and induced effects in a manner similar to total industrial output. Jobs include both full and part-time jobs, with a job defined as one person working for at least part of the calendar year. Job income consists of both employee compensation and proprietor income.

Federal and State Taxes

Federal and State tax revenue are derived from waterfowl hunting-related recreational spending. In 2006, \$154 million in State tax revenue and \$193 million in Federal tax revenue were generated.

Table 3. Summary of Economic Impacts

Waterfowl Hunters	1,306,000
Total Expenditures	\$900,285,000
Total Industry Output	\$2,349,964,000
Employment	27,618
Employment Income	\$884,496,000
State Tax Revenue	\$153,805,000
Federal Tax Revenue	\$192,576,000

State Impacts

The economic impact of a given level of expenditures depends, in part, on the degree of self-sufficiency of the area under consideration. An area with a high degree of self-sufficiency (out-of-area imports are comparatively small) will generally have a higher level of impacts associated with a given level of expenditures than an area with significantly higher imports (i.e., a comparatively lower level of self-sufficiency). Thus, the economic impacts of a given level of expenditures will generally be less for rural and other less economically integrated areas compared with other, more economically diverse areas or regions. The impacts in each State are only those impacts that occur within the State, and a State's multiplier is typically smaller than the multiplier for the United States.

Table 4 shows the economic impacts of trip-related and equipment-related waterfowl hunting expenditures by state in 2006. Due to small sample sizes, the economic impacts are not depicted for all States. Texas, Arkansas, and California generated the largest amount of total output at \$205 million, \$124 million, and \$106 million, respectively.

Table 4. Economic Impact of Waterfowl Hunting - State and National Totals, 2006.

(Dollar values are in thousands.)

<i>State</i>	<i>Trip & Equipment Expenditures</i>	<i>Total Output</i>	<i>Job Income</i>	<i>Jobs</i>	<i>State Tax Revenue</i>	<i>Federal Tax Revenue</i>
United States	\$900,285	\$2,349,965	\$884,497	27,618	\$153,805	\$192,576
Arkansas	\$91,000	\$124,005	\$47,895	2,505	\$9,154	\$9,404
California	\$74,328	\$105,939	\$43,843	1,242	\$8,214	\$9,483
Colorado	\$20,799	\$32,616	\$13,140	480	\$2,546	\$2,866
Delaware	\$2,761	\$3,972	\$1,606	59	\$336	\$343
Idaho	\$8,596	\$12,636	\$4,928	243	\$1,123	\$986
Illinois	\$55,372	\$82,770	\$32,565	1,067	\$5,736	\$7,231
Iowa	\$7,906	\$11,425	\$4,341	216	\$1,036	\$909
Kansas	\$16,842	\$24,193	\$9,637	439	\$1,765	\$1,954
Louisiana	\$43,086	\$62,166	\$24,347	1,101	\$4,255	\$4,351
Maryland	\$33,587	\$51,991	\$21,108	726	\$5,030	\$4,845
Massachusetts	\$3,258	\$4,896	\$2,130	64	\$364	\$477
Minnesota	\$28,563	\$43,122	\$16,761	653	\$3,370	\$3,767
Mississippi	\$12,041	\$17,189	\$6,705	349	\$1,404	\$1,244
Missouri	\$48,092	\$72,079	\$27,691	1,135	\$5,146	\$5,683
Montana	\$9,163	\$13,706	\$5,044	279	\$1,254	\$1,158
Nebraska	\$17,019	\$24,381	\$9,582	441	\$1,860	\$1,893
North Dakota	\$9,034	\$9,447	\$3,753	166	\$498	\$740
Oklahoma	\$16,002	\$23,249	\$8,769	404	\$1,763	\$1,808
South Carolina	\$17,284	\$22,934	\$9,027	411	\$1,849	\$1,832
South Dakota	\$2,768	\$3,511	\$1,402	65	\$225	\$274
Tennessee	\$29,783	\$48,951	\$19,441	775	\$3,627	\$4,033
Texas	\$135,628	\$204,875	\$78,557	2,948	\$15,770	\$16,661
Utah	\$12,187	\$19,117	\$7,238	315	\$1,617	\$1,475
Virginia	\$12,149	\$17,088	\$7,880	338	\$1,833	\$1,842
Washington	\$4,660	\$6,366	\$2,584	94	\$455	\$573
Wisconsin	\$19,070	\$26,208	\$10,364	444	\$2,195	\$2,147

Note: States NOT listed have sample sizes too small to report reliably (9 or less). These sample size criteria are consistent with the "2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation."

Summary

This report has presented information on the participation and expenditure patterns of approximately 1.3 million waterfowl hunters. Compared to all hunters, waterfowl hunters tend to be younger, have higher educational achievements, and are more affluent. The majority (74 percent) of waterfowl hunters live in the South and Midwest.

Trip-related and equipment-related expenditures associated with waterfowl hunting generated over \$2.3 billion in total economic output in 2006. This impact was dispersed across local, state, and national economies.



Glen Smart/USFWS

Appendix A – Sample Sizes

<i>State</i>	<i>Trip Expenditures</i>	<i>Waterfowl Hunters</i>	<i>Waterfowl Days</i>
Alabama	8	12	12
Arizona	2	3	3
Arkansas	36	41	41
California	16	16	16
Colorado	10	12	12
Connecticut	4	4	4
Delaware	23	28	28
Florida	3	6	5
Georgia	9	11	11
Idaho	12	12	12
Illinois	20	23	23
Indiana	9	9	9
Iowa	13	13	13
Kansas	17	17	17
Kentucky	5	6	6
Louisiana	28	31	31
Maine	5	6	6
Maryland	32	35	35
Massachusetts	10	12	12
Michigan	6	9	9
Minnesota	11	14	14
Mississippi	12	16	16
Missouri	15	16	16
Montana	14	15	15
Nebraska	32	35	35
Nevada	4	5	5
New Hampshire	5	6	6
New Jersey	8	8	8
New Mexico	5	6	6
New York	5	6	6
North Carolina	6	9	8
North Dakota	24	28	27
Ohio	1	3	3
Oklahoma	18	18	18
Oregon	9	11	11
Pennsylvania	9	9	9
Rhode Island	4	4	4
South Carolina	10	12	12
South Dakota	22	31	31
Tennessee	13	16	15
Texas	16	19	18
Utah	18	19	19
Vermont	7	10	10
Virginia	10	12	12
Washington	11	13	13
West Virginia	2	2	2
Wisconsin	16	21	21
Wyoming	6	7	7

References

MIG, Inc. *IMPLAN System*. Stillwater, MN. 1998.

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U.S. Department of the Interior
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