

Hunter and Angler Expenditures, Characteristics, and Economic Effects, North Dakota, 2001-2002

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The characteristics and expenditures of hunters and anglers in North Dakota have been periodically assessed since the 1970s. Since 1978, six studies have been conducted at approximately five-year intervals to assess socio-economic characteristics of both resident and nonresident hunters and anglers. This report represents the latest estimation of the economic effects of hunting and fishing on the state economy. The purpose of this study was to estimate the characteristics, expenditures, and economic effects of hunters and anglers in North Dakota during the 2001-2002 season, and compare current information to previous studies to identify trends in hunting and fishing activities.

Methods

The ND Game and Fish Department conducted a mail survey of hunters and anglers during the 2001-2002 season. A random sample of licensed hunters and anglers were mailed questionnaires to solicit information on expenditures made within North Dakota for the specified activity and season. Hunting and fishing activities were divided into 21 different categories, based on license type (i.e., resident,

nonresident, gratis), game type (i.e., antelope, big game, deer, furbearers, turkey, upland, waterfowl, and fish), and, when applicable, by weapon type (i.e., archery and firearm). The survey groups represented most of the hunting and angling activities in North Dakota during the 2001-2002 season. A total of 29,034 resident hunters and anglers and 7,199 nonresident hunters and anglers were sampled. Across all hunting and fishing categories, 17,234 individuals responded to the survey and 2,472 mailings were undeliverable, resulting in an overall response rate of 51 percent.

The number and type of hunting and fishing activities surveyed in 2001 were similar to previous studies. Two categories of hunting were excluded from this study that were included in previous studies. Spring turkey hunters (i.e., regular and gratis) and muzzleloader deer hunters were not surveyed in 2001, but their total spending represented a minor portion of all hunting expenditures in previous studies (Lewis et al. 1998). Two other changes included surveying darkhouse spearing participants and separating resident anglers into three categories (open water, ice, season-long) instead of the two previous categories (open water, ice).

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Several statistical methods were used to examine for data outliers. Expenditures were also evaluated by considering days participated, miles traveled, and/or other qualifying data to eliminate outliers that could not be considered defensible or reasonable. For example, \$5000 for ammunition for one day of hunting or \$2000 for food expense for two days of hunting would be considered unreasonable levels of spending.

Hunter and Angler Characteristics

Age, residence, income, gender, days participated, miles traveled, and other characteristics were solicited from survey participants. Resident and nonresident hunters and anglers participated about the same number of days and traveled the same distances as they did in the late 1980s and mid 1990s. Resident hunters and anglers continue to spend more time hunting and fishing in the state than nonresidents. Gross household incomes of nonresidents remain higher than residents. Recent changes in characteristics of hunters and anglers included a substantial increase in gross household incomes for both resident and nonresident participants and an increase in the percentage of resident hunters and anglers living in urban communities.

Residents

Averaged across all resident hunting categories, the typical resident hunter was male, 42 years old, hunted 6 days per year in North Dakota, lived in a community over 2,500 in population, had a gross income around \$50,000, and primarily hunted on private land. The typical resident angler was male, 47 years old, fished 18 days per year in the state, lived in an urban

community, and had a gross income around \$50,000.

Nonresidents

Averaged across all nonresident hunting categories, the typical nonresident hunter was male, 44 years old, hunted 5 days per year in North Dakota, lived in a community with a population of 2,500 or more, had a gross income around \$70,000, and primarily hunted on private land. The typical nonresident angler was male, 49 years old, fished 6 days per year in the state, lived in an urban community, and had a gross income around \$75,000.

Hunter and Angler Expenditures

An *economic contribution* analysis was conducted to measure all revenues associated with hunting and fishing in North Dakota, even if not all of the economic activity represented new wealth to the state. This approach was consistent with past studies. Economic effects of a project, program, policy, or activity can be categorized into direct and secondary impacts. Direct impacts are those changes in economic output, employment, or income that represent the initial or first effects of a project, program, or event. In this study, direct effects were the sum of all resident and nonresident hunting and fishing expenditures. Secondary impacts (sometimes categorized as indirect and induced effects) result from subsequent rounds of spending and respending within an economy, and are sometimes referred to as multiplier effects. The gross business volume (total economic effects) from hunting and fishing activities is a combination of direct and secondary effects.

Average Season Expenditures

Average expenditures for hunting and fishing participants in North Dakota were estimated for variable (nondurable goods/services), fixed (durable goods), and total (durable and nondurable goods/services) expenses. Nondurable goods represent items/services consumed or used in direct proportion to activity levels (e.g., lodging, food, gas, ammunition). Durable goods usually represent items that can be used over several seasons or can be used numerous times over extended periods before replacing (e.g., clothing, weapons, decoys, boats).

Gratis hunters had the lowest average total season expenditures of all the groups examined (Table 1). Total season expenditures for fall turkey gratis, antelope gratis, and deer gratis hunters were about \$128, \$189, and \$222, respectively. Total season expenditures for resident firearm antelope, resident firearm deer, and nonresident firearm deer hunters were \$463, \$431, and \$491, respectively. Resident archery antelope, resident archery deer, nonresident archery antelope, and nonresident archery deer hunters spent on average \$895, \$634, \$696, and \$1,170 per season, respectively (Table 1). Big game hunters had average total season expenditures of \$929.

Resident upland game and waterfowl hunters had total season expenditures of \$723 and \$810, respectively. Nonresident small game hunters, which included spending for both upland and waterfowl hunting activities, averaged \$768 per season. Given limitations with survey methods and licensing data, an estimate of average total season spending for resident small game hunters (upland game and waterfowl

combined) could not be developed. Thus, average spending for resident upland game and resident waterfowl hunters cannot be compared to nonresident small game spending.

Resident open water anglers spent about \$2,040 per season (Table 1). Average total season expenditures for resident ice fishing participants were \$619. The average resident angler (i.e., open water and ice fishing) spent \$2,597 per year. Residents participating in darkhouse spearing had \$451 in average season expenditures. Nonresident anglers spent on average \$884 per year for open water and ice fishing activities (Table 1).

Average Daily Expenditures

Average daily expenditures were estimated by dividing total season spending by the number of days of participation. Due to differences in season lengths, harvest opportunities, and typical activities required for some types of hunting/fishing, average daily expenditures can be useful in providing a relative measure of spending among activities.

Resident big game hunters had the highest daily expenditures, averaging \$311, followed by resident firearm and archery antelope hunters with average daily expenditures of \$272 and \$237, respectively (Table 1). Nonresident archery and firearm deer hunters spent on average \$191 and \$180 per day, respectively, compared to \$149 per day for resident firearm deer hunters. Nonresident small game hunters spent about \$155 per day; however, spending for both upland game and waterfowl hunting was included.

Table 1. Average Season and Daily Expenditures, by Activity, North Dakota, 2001

Residence/Activity	Average Season Expenditures			Days ^a	Average Daily Expenditures ^b		
	Variable	Fixed	Total		Variable	Fixed	Total
	----- \$ -----				----- \$ -----		
<u>Resident</u>							
Antelope							
Archery	265.46	629.61	895.07	5	67.10	169.54	236.64
Firearm	266.53	196.13	462.66	2	157.87	114.51	272.38
Gratis	72.60	116.51	189.11	2	42.25	57.97	100.22
Deer							
Archery	272.22	361.87	634.09	13	36.24	52.19	88.43
Firearm	219.50	211.26	430.76	4	72.12	76.60	148.72
Gratis	137.87	84.54	222.41	4	60.28	40.84	101.12
Muzzleloader ^c	123.27	186.02	309.29	na	--	--	--
Special Big Game	659.87	268.99	928.86	5	222.61	88.01	310.62
Furbearer	197.51	372.82	570.33	11	40.02	85.19	125.21
Small Game							
Upland	326.66	395.90	722.56	9	49.18	63.02	112.20
Waterfowl	374.50	435.23	809.73	8	56.27	83.91	140.18
Turkey							
Fall Regular	108.01	132.93	240.94	3	47.26	60.33	107.59
Fall Gratis	61.89	65.63	127.52	4	17.83	31.66	49.49
Spring Regular ^c	95.29	149.82	245.11	na	--	--	--
Spring Gratis ^c	56.44	105.38	161.82	na	--	--	--
Fishing							
Open Water	688.21	1,351.34	2,039.55	18	44.57	98.44	143.01
Ice	274.10	344.91	619.01	13	27.59	49.45	77.04
Season-long	760.95	1,835.74	2,596.69	24	43.23	134.75	177.98
Darkhouse Spearing	172.49	278.34	450.83	8	35.87	80.26	116.13
<u>Nonresident</u>							
Antelope Archery	594.81	101.28	696.09	6	112.68	19.21	131.89
Deer							
Archery	987.64	181.98	1,169.62	8	167.06	23.79	190.85
Firearm	401.03	90.33	491.36	3	147.17	32.44	179.61
Small Game	640.77	127.22	767.99	6	131.72	23.43	155.15
Fishing	570.59	313.04	883.63	6	136.47	42.20	178.67

^a Average number of days participated per individual.

^b Due to missing observations, average season expenditures divided by days participated will not necessarily equal average daily expenditures.

^c Spending represents 1996 expenditures adjusted for inflation. Groups were not surveyed in 2001.

Resident hunters pursuing only upland game spent about \$112 per day, while resident hunters pursuing only waterfowl spent \$140 per day. Gratis turkey, antelope, and deer hunters had average daily expenditures of \$49, \$100, and \$101, respectively (Table 1). Not including gratis hunters, resident archery deer and fall turkey hunters had the lowest average daily expenditures of all hunting activities (\$88 and \$108, respectively).

Average daily expenditures for resident season-long fishing was \$178, compared to \$179 for nonresidents. Resident ice fishing participants had the lowest average daily expenditures (\$77) of all fishing categories. Resident open water fishing participants had average daily expenditures of \$143, while residents participating in darkhouse spearing spent \$116 per day.

Total season expenditures for residents and nonresidents were comparable for similar activities; however, nonresidents generally spent fewer days hunting or fishing in the state than residents. As a result, daily expenditures were slightly higher for nonresidents than residents. Average daily expenditures for nonresidents were higher for lodging, meals, and other day-to-day expenses, while residents had higher average daily expenditures for equipment, clothing, gear-related expenses, and other services.

Participation Rates

The number of hunting and fishing licenses sold was provided by the ND Game and Fish Department (2002a). However, not everyone who purchases a license actually hunts or fishes during the season. The number of active participants was based on estimating participation rates using survey

data. Participation rates vary among the various hunting and fishing categories for several reasons. Typically, licenses which are difficult to obtain (e.g., the odds of drawing a lottery big game license are low) or those activities which require a specific license (e.g., nonresident waterfowl license) will have higher participation rates. General licenses (e.g., resident sportsman license) allow participation in many activities; however, the average individual will not necessarily participate in all activities allowed by the license. Thus, participation rates for activities allowed by general licenses will typically be lower than participation rates for other activities.

Resident big game, firearm antelope, firearm deer, and archery deer hunting had participation rates over 90 percent (Table 2). Similarly, spring turkey and resident archery antelope hunting had participation rates over 88 percent. Across all categories, participation rates for nonresident hunters and anglers were generally 90 percent or higher. Participation rates for open water fishing were 86 percent for residents. The participation rate for resident ice fishing was 37 percent, the lowest of all survey categories.

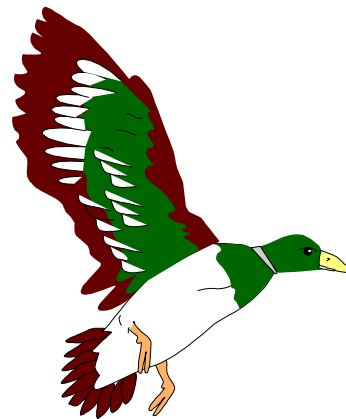


Table 2. License Sales, Active Participants, and Participation Rates, Hunters and Anglers, North Dakota, 2001-2002

Activity	License Sales	Participation Rate ----- percent-----	Active Participants ^a
<u>Resident</u>			
Antelope			
Archery	922	88.2	813
Firearm	821	95.9	787
Gratis	334	77.0	257
Deer			
Archery	11,903	94.5	11,247
Firearm	95,368	92.9	88,583
Gratis	11,137	81.4	9,064
Muzzleloader ^b	1,717	92.4	1,586
Special Big Game	386	97.2	375
Furbearer	50,389	51.0	25,708
Small Game			
Upland	66,954	78.8	52,749
Waterfowl	66,954	52.6	35,215
Turkey			
Fall Regular	6,191	79.6	4,931
Fall Gratis	448	71.2	319
Spring Regular ^b	2,672	88.9	2,376
Spring Gratis ^b	304	71.0	216
Fishing			
Open Water	136,262	85.7	116,828
Ice	136,262	37.4	50,948
Season-long	136,262	89.2	121,612
Darkhouse Spearing ^c	1,287	72.3	930
<u>Nonresidents</u>			
Antelope Archery	90	96.2	87
Deer			
Archery	1,325	95.1	1,260
Firearm	1,510	92.7	1,399
Small Game	41,702	99.1	41,329
Fishing	40,353	89.5	36,099

^a Based on the percentage of survey respondents indicating participation in each activity during the 2001-02 season, and does not include participants under 16 years of age.

^b Information was obtained from harvest surveys conducted by the ND Game and Fish Department even though those hunting activities were not included in the expenditure survey.

^c A separate license is not required for darkhouse spearing; however, participants must comply with state fishing license requirements and register their name and address with the ND Game and Fish Department.

Season-long fishing (residents) had the most participants of all hunting and fishing activities in North Dakota in 2001-2002 with about 121,600 individuals (Table 2). When the four categories of resident deer hunting were combined, those activities collectively had 110,480 participants¹--the second highest category. Resident small game hunting, which is comprised of upland game and waterfowl hunting, was the third highest activity with nearly 88,000 participants.¹ Nonresident small game hunting was the fourth highest activity with about 41,300 participants, followed by nonresident fishing with 36,100 participants (Table 2). Individuals can participate in more than one hunting and fishing activity; however, it is impossible, for example, to only count the individual who hunted deer, upland game, and turkeys as one active participant.

Projected Total Direct Expenditures

Total hunter and angler expenditures in North Dakota are a function of the number of participants and average total season expenditures per participant. Total participants in each hunting and fishing activity were multiplied by the average season total expenditures to arrive at an estimate of total hunter and angler spending.

Spring turkey, spring turkey gratis, and muzzleloader deer hunters were not surveyed in this study. To include spending from those hunting activities, total season expenditures from Lewis et al. (1998) were adjusted to reflect 2001 dollars using the Consumer Price Index (CPI) (U.S. Department of Labor 2002). The number of participants in those activities were

estimated using harvest surveys (ND Game and Fish Department 2002b).

Total direct expenditures by hunters and anglers in North Dakota during the 2001-2002 season were estimated at \$468.5 million, excluding purchases of licenses (Table 3). Resident hunter and angler expenditures were \$402.7 million and represented 86 percent of the total. Nonresident hunter and angler expenditures were \$65.9 million and represented 14 percent of the total.

Expenditures from all hunting activities were estimated at \$166.4 million (36 percent of all expenditures). Expenditures from all fishing activities were \$302.1 million and accounted for 64 percent of the total (Table 3).

Small game (i.e., upland game and waterfowl) hunting accounted for 50 percent (\$66.6 million) of all resident hunter expenditures (Table 3). Deer and furbearer hunting accounted for 36 percent (\$47.8 million) and 11 percent (\$14.7 million) of all resident hunter expenditures, respectively. Antelope, big game, and turkey hunting collectively accounted for about 3 percent of all resident hunter expenditures.

Nonresident expenditures associated with waterfowl hunting were estimated at \$20.9 million or about 61 percent of all nonresident hunter expenditures (Table 3). Upland game hunting accounted for 32 percent (\$10.8 million) of nonresident hunter expenditures. Collectively, small game hunters accounted for 93 percent

¹Active participants may not equal number of individuals, since individuals can participate in more than one activity.

Table 3. Total Direct Expenditures (excluding license purchases), by Hunting and Fishing Activity, Residents and Nonresidents, North Dakota, 2001-2002

Activity	Resident		Nonresident		Total	
	Total	Percent	Total	Percent	Total	Percent
	- 000s \$ -		- 000s \$ -		- 000s \$ -	
<u>Hunting</u>						
Antelope	1,140.4	0.9	60.6	0.2	1,201.0	0.3
Archery	727.7		60.6		788.3	
Firearm ^a	412.7		na		412.7	
Deer	47,795.3	36.1	2,161.1	6.4	49,956.4	10.7
Archery	7,131.4		1,473.7		8,605.2	
Firearm ^a	40,663.9		687.4		41,351.3	
Big Game	348.3	0.3	na		348.3	0.1
Turkey ^b	1,846.2	1.4	na		1,846.2	0.4
Furbearer	14,662.1	11.1	na		14,662.1	3.1
Small Game ^c	66,629.0	50.3	31,740.7	93.4	98,369.8	21.0
Upland	38,114.9		10,833.1		48,948.0	
Waterfowl	28,514.2		20,907.6		49,421.8	
Total	132,421.3	100.0	33,962.4	100.0	166,383.7	35.5
<u>Fishing</u>						
Open Water ^d	238,276.9	88.2	23,192.8	72.7	261,469.7	55.8
Ice ^d	31,537.9	11.6	8,704.9	27.3	40,242.7	8.6
Darkhouse Spearing	419.3	0.2	na		419.3	0.1
Total	270,234.0	100.0	31,897.7	100.0	302,131.8	64.5
<u>Total Hunting/Fishing</u>	402,655.4		65,860.1		468,515.5	

Note: Percentages and totals may not add due to rounding. na = not applicable.

^a Includes gratis and muzzleloader hunter expenditures.

^b Includes fall regular, fall gratis, spring regular, and spring gratis hunter expenditures.

^c Resident upland game and waterfowl hunters were surveyed separately. Nonresident upland game and waterfowl hunters were surveyed as one group. The split in spending between nonresident upland game and waterfowl hunting was based on a survey question requesting the percentage of total expenses attributable to each game type.

^d Resident open water fishing, ice fishing, and darkhouse spearing activities were surveyed separately. Nonresident anglers were surveyed as one group. The split in spending between nonresident open water and ice fishing was based on a survey question requesting the percentage of total expenses attributable to each type of fishing.

(\$31.7 million) of all nonresident hunter expenditures. Deer and archery antelope hunting collectively accounted for 7 percent of all nonresident hunter expenditures.

Expenditures associated with resident open water fishing were estimated at \$238.3 million, over 88 percent of total resident angler expenditures (Table 3). Collectively, ice fishing and darkhouse spearing expenditures represented about 12 percent of all resident angler spending. Expenditures for open water fishing by nonresidents were estimated at \$23.2 million, and represented 73 percent of all nonresident angler spending. Nonresident ice fishing expenditures represented 27 percent (\$8.7 million) of all nonresident angler spending (Table 3).

Expenditures for open water fishing generated the most spending with \$261.5 million or 56 percent of all resident and nonresident hunting and angling expenditures (Table 3). Resident and nonresident small game (both upland game and waterfowl) hunting was the second largest expenditure group with \$98.4 million or 21 percent of all spending. Deer hunting activities accounted for 11 percent of all expenditures.

Total Economic Effects

Total direct expenditures from all hunting and fishing activities were allocated to the North Dakota Input-Output Model to estimate secondary economic effects (i.e., multiplier effects), gross business volume (i.e., sum of direct and secondary effects in all economic sectors), secondary employment, and state-level tax revenues.

Total direct expenditures (\$468.5 million) from all hunting and fishing activities in North Dakota for the 2001-2002 season generated nearly \$544.9 million in secondary economic effects. The gross business volume (direct and secondary economic effects) of hunting and fishing in North Dakota was estimated at \$1 billion (Table 4).

Resident and nonresident hunters spent \$166.4 million on hunting activities in the state in 2001, which generated an additional \$199 million in secondary economic effects. Hunting activities generated \$365.4 million in gross business volume (Table 4).

Resident and nonresident anglers spent \$302.1 million on fishing activities in the state in 2001, which generated an additional \$346 million in secondary economic effects. Fishing activities generated \$648 million in gross business volume (Table 4).

Resident hunters and anglers spent about \$402.7 million in the state in 2001, which generated an additional \$461.1 million in secondary economic effects. Gross business volume from resident hunter and angler expenditures was estimated at nearly \$864 million (Table 4).

Nonresident hunters and anglers spent about \$65.9 million in the state in 2001, which generated an additional \$84 million in secondary economic effects within the state economy. The gross business volume resulting from nonresident hunters and anglers was estimated at nearly \$150 million (Table 4).

Table 4. Total Economic Contribution of Resident and Nonresident Hunting and Fishing Activities in North Dakota, 2001-2002

Activity	Resident	Nonresident	Total ^a
<u>Hunting</u>			
	----- 000s \$ -----		
Direct Expenditures	132,422	33,962	166,383
Secondary Effects	154,435	44,548	198,983
Gross Business Volume	286,857	78,510	365,367
<u>Fishing</u>			
Direct Expenditures	270,235	31,898	302,132
Secondary Effects	306,653	39,264	345,917
Gross Business Volume	576,888	71,162	648,050
<u>Total Hunting and Fishing</u>			
Direct Expenditures	402,657	65,860	468,517
Secondary Effects	461,088	83,812	544,900
Gross Business Volume	863,745	149,672	1,013,417
Secondary Employment ^b	10,681	2,436	13,117
State tax collections ^c	26,578	3,947	30,525

^a Totals may not add due to rounding.

^b Secondary employment was measured as full-time equivalent jobs.

^c State tax collections included sales and use, personal income, and corporate income taxes.

Direct expenditures and secondary economic effects from resident hunters, resident anglers, and nonresident hunters and anglers in 2001-02 generated about \$8.6 million, \$18 million, and \$4 million in state-level tax collections, respectively. Total state-level sales and use, personal income, and corporate income tax collections from hunting and fishing activities in the state in 2001-02 were \$25.5 million, \$2.7 million, and \$2.3 million, respectively. Total state-level tax collections were estimated at \$30.5 million (Table 4).

Expenditures in Rural Areas

Hunters and anglers were asked to indicate the percentage of expenditures made in cities less than 2,500 in population (i.e., rural areas) in an attempt to better understand the distribution of hunter and angler spending within the state. Rural hunters/anglers were defined as those who lived in towns less than 2,500 in population, resided on farms, or lived in rural non-farm settings. Urban hunters/anglers were defined as those living in cities with a population of 2,500 or more.

Rural Participants

Rural gratis hunters (antelope, deer, turkey) generally had the highest percentage of seasonal spending in rural areas (over 83 percent), while rural resident archery deer hunters had the lowest percentage of seasonal spending in rural areas (69 percent). Rural resident hunters, averaged across all hunting groups, spent about 79 percent of their total season expenditures in rural areas (Table 5).

Rural resident anglers participating in open water fishing had the highest average total season spending in rural areas of all rural participants (\$1,474). Rural nonresident archery deer hunters were second with \$883 spent in rural areas, followed by rural resident big game hunters and rural resident archery antelope hunters with \$778 and \$644, respectively. Rural nonresident small game hunters spent \$625 in rural areas of the state. Rural resident upland game and rural resident waterfowl hunters spent \$512 and \$590, respectively, in rural areas of the state. However, rural spending by nonresident and resident small game hunters are not directly comparable due to inclusion of expenditures for more than one hunting category in the nonresident spending estimates. Rural nonresident and rural resident firearm deer hunters spent \$367 and \$346 in rural areas, respectively. Rural gratis hunters spent the lowest total amount per season in rural areas (\$110 for fall turkey to \$185 for firearm deer) (Table 5).

Of all rural participants, total expenditures in rural areas were highest for rural resident open water anglers (\$60.3 million). The next highest groups were rural resident deer hunters, ice fishing anglers, and upland hunters with \$15 million, \$14.3 million, and \$9.2 million spent in rural areas, respectively (Table 5). Rural nonresident small game hunters and anglers spent about \$8.3 million and \$7.4 million, respectively, in rural areas. Total rural

expenditures by resident and nonresident rural hunters and anglers were estimated at \$133.5 million (Table 5).

Urban Participants

Urban gratis hunters generally spent the highest percentage of their season expenditures in rural areas, while urban resident anglers spent the lowest percentage of their season expenditures in rural areas (Table 5). Urban resident hunters, averaged across all hunting groups, spent about 53 percent of their total season expenditures in rural areas.

Urban nonresident archery deer hunters had the highest average total season spending in rural areas of all urban participants (\$877) (Table 5). The next highest groups were urban resident anglers participating in open water fishing and nonresident small game hunters with \$774 and \$619, respectively. Four other groups, urban nonresident anglers, urban resident special big game hunters, urban nonresident archery antelope hunters, and urban resident archery antelope hunters, all spent on average over \$500 per person in rural areas. Urban resident upland game and waterfowl hunters spent \$303 and \$333, respectively, in rural areas.

Of all urban participants, total expenditures in rural areas were highest for urban resident anglers participating in open water fishing (\$58.8 million). The next highest groups were urban nonresident small game hunters, urban nonresident anglers, urban resident upland hunters, and urban resident firearm deer hunters with \$17.4 million, \$13.8 million, \$10.5 million, and \$8.5 million in total expenditures in rural areas, respectively (Table 5). Total rural expenditures by resident and nonresident urban hunters and anglers were estimated at \$128.3 million (Table 5).

Table 5. Hunter and Angler Expenditures in Rural Areas by Rural and Urban Participants, North Dakota, 2001-2002

Residence/Activity	Rural Hunters/Anglers			Urban Hunters/Anglers		
	Rural Spending per Person		Total Spending in Rural Areas	Rural Spending per Person		Total Spending in Rural Areas
<u>Resident</u>	- % -	-- \$ --	-- \$ --	- % -	-- \$ --	-- \$ --
Antelope						
Archery	72.0	644	152,000	57.7	516	298,000
Firearm	79.1	366	121,000	64.8	300	137,000
Gratis	89.2	169	38,000	84.3	159	5,000
Deer						
Archery	68.7	436	2,353,000	42.8	271	1,587,000
Firearm	80.3	346	15,018,000	43.4	187	8,454,000
Gratis	83.0	185	1,506,000	51.2	114	103,000
Muzzleloader	74.0	229	203,000	35.5	110	77,000
Special Big Game	83.7	778	160,000	59.3	551	93,000
Furbearer	81.6	465	6,100,000	50.3	287	3,617,000
Small Game						
Upland	70.8	512	9,174,000	41.9	303	10,532,000
Waterfowl	72.8	590	7,269,000	41.1	333	7,622,000
Fall Turkey						
Regular	78.0	188	371,000	45.1	109	322,000
Gratis	86.6	110	28,000	57.1	73	5,000
Fishing						
Open Water	72.3	1,474	60,282,000	38.0	774	58,778,000
Ice	76.6	474	14,253,000	35.0	216	4,520,000
Darkhouse Spearing	71.1	320	161,000	36.9	166	71,000
<u>Nonresident</u>						
Antelope Archery	63.8	444	18,000	75.8	528	25,000
Deer						
Archery	75.5	883	568,000	75.0	877	541,000
Firearm	74.7	367	128,000	65.5	322	338,000
Small Game	81.4	625	8,265,000	80.6	619	17,390,000
Fishing	66.1	584	7,380,000	66.5	588	13,794,000
Total, all groups	76.3 ^a	na	133,548,000	54.7 ^a	na	128,309,000

Note: Average rural spending was rounded to the nearest dollar.

^a Simple average and does not reflect weighting by dollar volume or number of participants.

All Participants

Rural and urban resident hunters spent about \$42.5 million and \$32.9 million in rural areas of North Dakota during the 2001-2002 season, respectively (Table 6). Resident hunters spent about \$75.3 million in rural areas of the state, or 29 percent of all rural hunting and fishing expenditures in the state.

Rural and urban resident anglers spent about \$74.7 million and \$63.4 million in rural areas of North Dakota during the 2001-2002 season, respectively (Table 6). Resident anglers spent about \$138.1 million in rural areas of the state, which represented 53 percent of all rural hunting and fishing expenditures in the state. Resident hunters and anglers spent \$213.4 million in rural areas, or 81 percent of all rural expenditures in 2001 (Table 6).

Nonresident hunters spent \$27.3 million in rural areas of the state during the 2001-2002 season. Nonresident anglers spent \$21.2 million in rural areas of the state in 2001. Nonresident hunters and anglers spent \$48.4 million in rural areas, representing 19 percent of all rural expenditures in 2001 (Table 6).

Total rural expenditures for resident and nonresident hunters/anglers were estimated at \$261.9 million in North Dakota during the 2001-2002 season. Rural expenditures represented 56 percent of all expenditures in the state in 2001.

Comparison of Spending in 1996 and 2001

Average season expenditures, total direct expenditures, and statewide economic effects from hunter and angler expenditures

in 2001 were compared to those in 1996. Data from Lewis et al. (1998) was used to generate expenditure estimates for hunting and fishing survey groups using the same methods employed in this study. Thus, estimates of hunter and angler expenditures in 1996, developed for comparison in this study, will differ from those published by Lewis et al. (1998).

Season Expenditures

Overall, average season expenditures in 14 of the 19 survey groups increased from 1996-97 to 2001-02 (Table 7). Only five groups spent less on average per participant during the 2001-02 season than in the 1996-97 season. Archery hunters, as a group, with the exception of nonresident antelope hunters, had increases in average season spending over the period. Small game hunters, both resident and nonresident, also had increases in average spending over the period. Resident anglers increased their average season spending over the period; however, nonresident anglers decreased their average season spending.

Compared to spending in the 1996-97 season, after adjusting for inflation, average season expenditures for resident antelope hunters increased in the 2001-02 season (Table 7). Antelope gratis hunters increased their average season expenditures by 69 percent, while archery antelope and firearm antelope hunters increased their average season expenditures by 40 percent and 31 percent, respectively.



Table 6. Hunter and Angler Expenditures in Rural Areas, All Participants, North Dakota, 2001-2002

Group	Participants			Share of All Rural Spending
	Rural	Urban	All	
	----- 000s \$ -----			-- % --
Resident Hunters ^a	42,493	32,852	75,345	28.8
group percent	56.4	43.6		
Resident Anglers	74,696	63,369	138,065	52.7
group percent	54.1	45.9		
Total	117,189	96,221	213,410	81.5
group percent	54.9	45.1		
Nonresident Hunters	8,979	18,294	27,273	10.4
group percent	32.9	67.1		
Nonresident Anglers	7,380	13,794	21,174	8.1
group percent	34.9	65.1		
Total	16,359	32,088	48,447	18.5
group percent	33.8	66.2		
Total, all groups	133,548	128,309	261,857	
group percent	51.0	49.0		

^a Includes deer muzzleloader, but excludes spring turkey hunting groups.

Resident archery deer and firearm deer hunters increased their average season spending by 6 percent and 24 percent from 1996-97 to 2001-02, respectively (Table 7). Resident furbearer and gratis deer hunters each had a modest 2 percent decrease in average season spending.

Resident upland game and waterfowl hunters each spent on average 7 percent more in 2001-02 than in 1996-97 (Table 7). Fall turkey gratis hunters had the largest percentage increase (125 percent) in average spending of all survey groups.

Nonresident firearm deer and archery antelope hunters posted modest declines in average season spending of 1 percent and 3

percent, respectively (Table 7). However, nonresident archery deer hunters increased their average season spending by 48 percent over the period. Nonresident anglers spent 10 percent less per person during the 2001-02 season than in the 1996-97 season. Nonresident small game hunters in 2001-02 increased their average spending by 7 percent over 1996-97 season spending levels.



Table 7. Comparison of Average Variable, Fixed, and Total Season Expenditures, by Activity, North Dakota, 1996-1997 and 2001-2002

Category	1996-1997 ^a			2001-2002			Change in Total
	Variable	Fixed	Total	Variable	Fixed	Total	
<u>Resident</u>	----- 2001 \$ -----						
Antelope							
Archery	255	385	640	265	630	895	40%
Firearm	240	113	353	267	196	463	31%
Gratis	51	61	112	73	117	189	69%
Deer ^b							
Archery	303	298	600	272	362	634	6%
Firearm	218	129	348	220	211	431	24%
Gratis	140	87	227	138	85	222	-2%
Special Big Game	730	167	897	660	269	929	4%
Furbearer	240	343	583	198	373	570	-2%
Small Game							
Upland	449	225	674	327	396	723	7%
Waterfowl	392	364	756	375	435	810	7%
Fall Turkey ^b							
Regular	95	76	171	108	133	241	41%
Gratis	36	20	57	62	66	128	125%
Fishing							
Open Water	587	1,266	1,852	688	1,351	2,040	10%
Ice	233	326	559	274	345	619	11%
Darkhouse Spearing	na	na	na	172	278	451	na
<u>Nonresident</u>							
Antelope Archery	569	146	715	595	101	696	-3%
Deer							
Archery	689	99	788	988	182	1,170	48%
Firearm	421	77	498	401	90	491	-1%
Small Game	646	75	721	641	127	768	7%
Fishing	516	470	986	571	313	884	-10%

Note: Due to rounding, variable and fixed expenses may not equal total expenses. na=not available.

^a Adjusted for inflation to reflect 2001 dollars using the CPI (U.S. Department of Labor 2002).

^b Muzzleloader, spring turkey regular, and spring turkey gratis categories were not surveyed in 2001. As a result, estimated season expenditures were assumed to be equal to the 1996 expenditures after adjusting for inflation, and were not included for comparison between 1996 and 2001.

Hunter and Angler Participation

In general, antelope hunting was the only category with fewer licenses sold in 2001-02 than in 1996-97 (Table 8). All other survey groups had increased license sales from 1996-97 to 2001-02. The substantial decline in the number of antelope licenses available led to a 42 percent decrease in the number of resident antelope hunters from 1996-97 to 2001-02. The number of special big game hunters increased from 250 hunters in 1996-97 to 375 hunters in 2001-02. Sales of all types of resident deer licenses increased from 1996-97 to 2001-02, resulting in a 6 percent increase in the number of participants.

While the total number of licenses sold allowing furbearer hunting in the state increased by 25 percent from 1996-97 to 2001-02, the number furbearer hunters decreased by 10 percent. Similarly, while the sales of licenses allowing residents to hunt upland game and waterfowl increased over the period, the number of resident waterfowl hunters decreased 9 percent. However, the number of resident upland game hunters increased by 3 percent. Resident turkey license sales and the number of turkey hunters both doubled from 1996-97 to 2001-02. The number of resident anglers participating in open water fishing and ice fishing increased by 14 percent and 43 percent, respectively, from 1996-97 to 2001-02 (Table 8).

License sales and the number of active participants increased in all categories of nonresident hunting and angling from 1996-97 to 2001-02 (Table 8). Nonresident antelope hunters increased by 4 individuals over the period. The number of nonresident deer hunters increased by 68 percent from 1996-97 to 2001-02. Nonresident small

game hunters increased by 110 percent over the period, going from about 19,700 individuals to over 41,300 individuals. The number of nonresident anglers also increased substantially (103 percent) over the period, going from about 17,750 individuals in 1996-97 to nearly 36,100 individuals in 2001-02 (Table 8).

Total Direct Expenditures

As a result of increased average per person spending in most hunting and fishing survey groups and increased number of participants in most groups, total direct expenditures in North Dakota increased by \$106 million or 29 percent from 1996-97 to 2001-02 (Table 9). Expenditures for nondurable goods increased by 28 percent and durable good purchases increased by 31 percent. The greatest increase in spending between 1996-97 and 2001-02 came from durable good purchases, which increased by nearly \$62 million and represented 58 percent of the increase in total spending by all hunters and anglers.

Total direct expenditures by resident hunters and anglers increased by \$73 million or 22 percent from 1996-97 to 2001-02 (Table 9). Total direct expenditures by nonresident hunters and anglers increased by \$33 million or 101 percent over the period. Expenditures for hunting (resident and nonresident) increased by \$31 million or 23 percent from 1996-97 to 2001-02, while expenditures for fishing (resident and nonresident) increased by \$75 million or 33 percent.



Table 8. Comparison of License Sales and Active Participants, by Activity, North Dakota, 1996-1997 and 2001-2002

Activity	1996-1997 Season		2001-2002 Season		Percentage Change 1996-97 to 2001-02	
	Licenses	Participants	Licenses	Participants	Licenses	Participants
<u>Resident</u>						
Antelope						
Archery	1,169	1,076	922	813	-21	-24
Firearm	1,607	1,534	821	787	-49	-49
Gratis	713	575	334	257	-53	-55
Deer						
Archery	11,172	10,575	11,903	11,247	7	6
Firearm	86,226	84,855	95,368	88,583	11	4
Gratis	8,931	7,655	11,137	9,064	25	18
Muzzleloader	700	648	1,717	1,586	145	145
Special Big Game	256	250	386	375	51	50
Furbearer	40,340	28,469	50,389	25,708	25	-10
Small Game						
Upland	60,714	51,021	66,954	52,749	10	3
Waterfowl	60,714	38,627	66,954	35,215	10	-9
Wild Turkey						
Fall Regular	3,007	2,463	6,191	4,931	106	100
Fall Gratis	234	150	448	319	91	113
Spring Regular	1,335	1,197	2,672	2,376	100	98
Spring Gratis	110	78	304	216	176	177
Fishing						
Open Water	116,114	102,375	136,262	116,828	17	14
Ice	116,114	35,625	136,262	50,948	17	43
Darkhouse Spearing	na	na	1,287	930	na	na
<u>Nonresident</u>						
Antelope Archery	83	83	90	87	8	4
Deer						
Archery	694	674	1,325	1,260	91	87
Firearm	932	908	1,510	1,399	62	54
Small Game	19,848	19,707	41,702	41,329	110	110
Fishing	18,123	17,757	40,353	36,099	123	103

na = not applicable.

Expenditures by resident hunters increased by \$12.3 million or 10 percent, while expenditures by nonresident hunters increased by \$18.7 million or 123 percent (Table 9). Expenditures by nonresident anglers increased by \$14.4 million or 82 percent, while expenditures by resident anglers increased by \$60.7 million or 29 percent .

Only four survey groups had less total spending in 2001-02 than in 1996-97 (Table 10). Corresponding closely with decreased number of participants, total direct expenditures from resident firearm antelope, gratis antelope, furbearer, and waterfowl hunters decreased by 33 percent, 24 percent, 12 percent, and 2 percent, respectively.

Growth in total direct expenditures by resident deer hunters ranged from 12 percent for archery hunters to 145 percent for muzzleloader hunters from 1996-97 to 2001-02 (Table 10). Resident deer hunters spent over \$10 million more in 2001-02 than in 1996-97. Total direct expenditures by special big hunters increased by 55 percent over the period. Total spending for resident small game hunters (upland and waterfowl) increased by 5 percent, which included a 2 percent decline for waterfowl hunters and an 11 percent increase for upland game hunters. Total spending by resident turkey hunters increased by 151 percent from 1996-97 to 2001-02.

Resident anglers participating in open water fishing spent \$48.6 million more in 2001-02 than in 1996-97, which was the largest monetary increase of any hunting or angling survey group. Total direct expenditures for resident ice fishing activities increased by nearly 59 percent or \$11.6 million from 1996-97 to 2001-02 (Table 10).

Total spending by nonresident archery antelope hunters increased by 2 percent over the period. Total spending by nonresident archery deer hunters increased by 178 percent (\$0.9 million) from 1996-97 to 2001-02, and nonresident firearm deer hunter expenditures increased 52 percent. Nonresident angler expenditures, which included open water and ice fishing, increased by \$14.4 million or 82 percent over the period. Similarly, nonresident small game hunter expenditures, which includes upland game and waterfowl hunting, increased by \$17.5 million or 123 percent over the period (Table 10).



Table 9. Comparison of Total Direct Expenditures, by Residence and Activity, North Dakota, 1996-1997 and 2001-2002

Category	Total Direct Expenditures		Change from	
	1996-1997	2001-2002	1996-97 to 2001-02 Dollars	Percent
All Activities	----- 000s 2001 \$ -----			
Variable Expenses	160,074	204,393	44,319	27.7
Fixed Expenses	202,389	264,123	61,734	30.5
Total	362,463	468,515	106,052	29.3
All Activities				
Residents	329,701	402,655	72,954	22.1
Nonresidents	32,762	65,860	33,098	101.0
All Hunting	135,412	166,384	30,972	22.9
Residents	120,159	132,421	12,262	10.2
Nonresidents	15,254	33,962	18,708	122.6
All Fishing	227,050	302,132	75,082	33.1
Residents	209,542	270,234	60,692	29.0
Nonresidents	17,508	31,898	14,390	82.2

Note: Totals may not add due to rounding.

Total Economic Effects

Generally, the percentage change in secondary and total economic effects between the 1996-1997 and 2001-2002 seasons paralleled the percentage change in total direct expenditures (Table 11). Total direct expenditures increased 29 percent from 1996-97 to 2001-02. Secondary and total economic effects increased by 31 percent and 30 percent, respectively.

Secondary economic effects from hunting and fishing in North Dakota increased from \$417 million in 1996-97 to \$545 million in 2001-02. The total economic effect (i.e., direct and secondary effects in all sectors) of resident and

nonresident hunter and angler expenditures in North Dakota in 1996-97 was estimated at \$780 million compared to \$1 billion in 2001-02. Hunting and fishing activities produced an increase of \$234 million in total business activity within the state over the period (Table 11).

Gross business volume (i.e., direct and secondary effects) from hunting activities in the state from 1996-97 to 2001-02 increased 23 percent or by \$69 million, while the gross business volume from fishing activities increased 34 percent or by \$164 million. About 70 percent of the total change in gross business volume due to hunter and angler expenditures over the period was due to fishing activities (Table 11).

Table 10. Comparison of Total Direct Hunter and Angler Expenditures, by Hunting and Fishing Activity, North Dakota, 1996-1997 and 2001-2002

Activity	Total Direct Expenditures		Change from 1996-97 to 2001-02		Percentage of Total Direct Expenditures	
	1996-1997	2001-2002	Dollars	Percent	1996-97	2001-02
<u>Resident</u>						
	----- 000s 2001 \$ -----					
Antelope						
Archery	688.7	727.7	39.0	5.7	0.19	0.16
Firearm	541.1	364.1	(177.0)	-32.7	0.15	0.08
Gratis	64.2	48.6	(15.6)	-24.3	0.02	0.01
Deer						
Archery	6,350.0	7,131.4	781.4	12.3	1.75	1.52
Firearm	29,424.5	38,157.5	8,733.0	29.7	8.12	8.14
Gratis	1,740.6	2,015.8	275.2	15.8	0.48	0.43
Muzzleloader ^a	200.4	490.5	290.1	144.8	0.06	0.10
Special Big Game	224.3	348.3	124.0	55.3	0.06	0.07
Furbearer	16,609.9	14,662.1	(1,947.8)	-11.7	4.58	3.13
Small Game						
Upland	34,368.4	38,114.9	3,746.5	10.9	9.48	8.14
Waterfowl	29,211.6	28,514.2	(697.4)	-2.4	8.06	6.09
Wild Turkey						
Fall Turkey	420.9	1,188.2	767.3	182.3	0.12	0.25
Fall (Gratis)	8.5	40.7	32.2	378.8	0.00	0.01
Spring Turkey ^a	293.4	582.4	289.0	98.5	0.08	0.12
Spring Gratis ^a	12.6	35.0	22.4	177.8	0.00	0.01
Fishing						
Open Water	189,642.3	238,276.9	48,634.6	25.6	52.32	50.86
Ice	19,899.9	31,537.9	11,638.0	58.5	5.49	6.73
Darkhouse Spearing	na	419.3	na	na	na	0.09
<u>Nonresident</u>						
Antelope Archery	59.4	60.6	1.2	2.0	0.02	0.01
Deer						
Archery	531.0	1,473.7	942.7	177.6	0.15	0.31
Firearm	452.5	687.4	234.9	51.9	0.12	0.15
Small Game	14,210.7	31,740.7	17,530.0	123.4	3.92	6.77
Fishing	17,508.3	31,897.7	14,389.4	82.2	4.83	6.81

^a These groups were not surveyed in 2001. Average season expenditures in 2001 were set to the 1996 average expenditures after adjusting for inflation. The change in total direct expenditures depicted in the table for these groups between 1996 and 2001 is due only to a change in hunter participation.

Table 11. Comparison of Total Economic Contribution of Resident and Nonresident Hunting and Fishing Activities in North Dakota, 1996-1997 and 2001-2002

Activity	1996-1997 Season ^a	2001-2002 Season	Change 1996-2001	
<u>Hunting</u>	----- 000s \$ -----			- % -
Direct Expenditures	135,412	166,383	30,971	22.9
Secondary Effects	160,502	198,983	38,481	24.0
Gross Business Volume	295,914	365,367	69,453	23.5
<u>Fishing</u>				
Direct Expenditures	227,050	302,132	75,082	33.1
Secondary Effects	256,511	345,917	89,406	34.9
Gross Business Volume	483,561	648,050	164,489	34.0
<u>Total Hunting and Fishing</u>				
Direct Expenditures	362,462	468,517	106,055	29.3
Secondary Effects	417,013	544,900	127,887	30.7
Gross Business Volume	779,475	1,013,417	233,942	30.0
Secondary Employment ^b	10,119	13,117	2,998	29.6
State tax collections ^c	24,313	30,525	6,212	25.6

^a Adjusted for inflation to reflect 2001 dollars using the CPI (U.S. Department of Labor 2002).

^b Secondary employment was measured as full-time equivalent jobs.

^c State tax collections include sales and use, personal income, and corporate income taxes.

Secondary employment, which measures employment created by the volume of economic activity associated with hunting and fishing activities, but does not include those directly employed in hunting and fishing businesses, increased from about 10,100 full-time equivalent (FTE) jobs in 1996-97 to about 13,100 FTE jobs in 2001-02 (Table 11). Collections of state taxes increased by \$6.2 million over the period.



Conclusions

The growing popularity of hunting and fishing in the state over the last decade has created new challenges for wildlife management officials and policymakers. Population of most wildlife species increased during the 1990s, contributing to an increase in hunter and angler participation. Socio-economic data on hunters and anglers in the state has been periodically collected and assessed since the late 1970s. This study represents a continuation of those efforts, and provides insights into hunter and angler characteristics and the economic effects of hunting and fishing on the state and rural economies.

Despite substantial increases in the number of hunters and anglers in North Dakota during the 1990s, resident and nonresident hunters and anglers are participating about the same number of days and traveling the same distances as they did in the late 1980s and mid 1990s. Resident hunters and anglers continue to spend more time hunting and fishing in the state than nonresidents. Gross household incomes of nonresidents remain higher than residents. The majority of resident and nonresident hunters and anglers continue to be male, are in their early- to mid-40s, and hunt on private land. Recent changes in characteristics included a substantial increase in gross household incomes for both resident and nonresident participants and an increase in the percentage of resident hunters and anglers living in urban communities.

Expenses for durable and nondurable goods used while hunting and fishing in North Dakota varied substantially among the

activities surveyed. Generally, among the hunting categories, gratis hunters had the lowest per person spending and archery and big game hunters had the highest per person spending, while resident anglers had the highest season expenditures of all activities. Perhaps of greater importance than relative spending levels among the various hunting/fishing activities is the long-term trend in hunter and angler spending. Average per person spending in most hunting and angling activities, after adjusting for inflation, increased from 1996 to 2001. In the five categories that had lower per person season expenditures, total spending in those groups represented a small portion (7 percent) of all expenditures. Thus, average per person spending increased in the hunting and fishing categories that contribute the most to the state economy.

Comparisons between resident and nonresident per person season spending yielded several similarities and differences. The biggest disparity in per person spending occurred in season-long fishing where residents spent 194 percent more than nonresidents. However, nonresident archery deer hunters spent 84 percent more than residents, but resident archery antelope hunters spent 29 percent more than nonresidents. Little difference in per person spending existed for resident and nonresident small game and firearm deer hunters. Generally, average spending per day was higher for nonresidents; however, residents typically hunt more days than nonresidents. Despite a substantial difference in total per person spending between resident and nonresident anglers, spending per day between the two groups was nearly identical. As a rule of thumb, season spending levels per participant appear to be more influenced by the type of

activity, than by the residence of the participant.

While some differences exist between resident and nonresident spending for similar activities, those differences have less effect on the state economy than the number of participants. On the margin, adding or subtracting an equal number of resident or nonresident participants in the same hunting/fishing activity has similar economic consequences to the state economy. However, those economic effects may not be evenly distributed throughout the state. The average nonresident hunter/angler tends to spend more in rural areas than urban resident hunters/anglers, while rural resident hunters/anglers tend to spend more in rural areas than nonresident hunters/anglers. Nonresidents have a slightly greater per person impact on some services, such as lodging, guides, and food, while residents have a greater influence on other services, such as taxidermy, repairs, meat processing, and veterinarian care.

The relative share of spending in the various hunting and fishing activities compared to total spending remained mostly unchanged from 1996 to 2001. In 2001, hunting continued to represent slightly more than one-third of all expenditures, and fishing continued to represent nearly two-thirds of all expenditures. Expenditures for the categories with the most participation (small game, deer, and fishing) all maintained about the same percentage of total expenditures in 2001 as they did in 1996. Thus, no single hunting or fishing category substantially changed its relative importance when compared to other activities from 1996 to 2001.

Two themes were evident when evaluating the change in total spending from 1996 through 2001. First, total expenditures, measured in percentage and monetary terms, for fishing increased more than total spending for hunting. Second, expenditures by nonresident hunters and anglers increased, in percentage terms, substantially more than spending by residents. However, in monetary terms, the combined increase in spending by resident hunters and anglers was over double that of nonresidents.

Hunting and fishing continues to be an economically important industry in North Dakota largely due to increased hunter and angler participation. The growth in popularity of hunting and fishing has created new challenges for wildlife management officials and state policymakers. While information on the economic effects of hunter and angler expenditures can be important in making wildlife management decisions; economic information alone can not address all of the issues currently facing policymakers in the state. In the quest to capture economic activity from hunting and fishing activities, care should be exercised that the demand for wildlife-based recreation be matched with the biological and public limits of wildlife-based resources.



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Acknowledgments

This document is a summary of a more comprehensive report which contains supplemental information and additional documentation of study results. Copies of this report and a single copy of the main report, *Resident and Nonresident Hunter and Angler Expenditures, Characteristics, and Economic Effects, North Dakota, 2001-2002*, are available free of charge. Please address your inquiry to Carol Jensen, Department of Agribusiness and Applied Economics, North Dakota State University, P.O. Box 5636, Fargo, ND 58105-5636, phone 701-231-7441, fax 701-231-7400, e-mail cjensen@ndsuent.nodak.edu or these publications can be found on the Internet at the following web site: <http://agecon.lib.umn.edu/>.

The authors wish to extend their appreciation to all the hunters and anglers who took the time to participate in the survey and wish to extend special recognition to Arlen Harmoning, Wildlife Planner, ND Game and Fish Department, for his numerous contributions throughout the course of this project.

Financial support for this study was provided by the ND Game and Fish Department, Federal Aid in Wildlife Restoration Act (CFDA 15.611), Sport Fish Restoration Act (CFDA 15.605), and the North Dakota Agricultural Experiment Station.

The authors assume responsibility for any errors of omission, logic, or otherwise. Any opinions, findings, or conclusions expressed in this publication are those of the authors and do not necessarily reflect the views of the ND Game and Fish Department, the NDSU Department of Agribusiness and Applied Economics, or the ND Agricultural Experiment Station.

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