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Characteristics, Expenditures, and Economic Impact
of Resident and Nonresident Hunters and Anglers
in North Dakota, 1990-91 Season

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Highlights

The purpose of this study was to estimate characteristics, expenditures, and economic impacts of resident and nonresident hunters and anglers during the 1990-91 season in North Dakota. Specifically the study

- identified socioeconomic characteristics of resident and nonresident hunters and anglers,
- estimated resident and nonresident hunter and angler season and daily variable, fixed, and total expenditures,
- estimated direct and indirect economic activity resulting from resident and nonresident hunter and angler expenditures, and
- estimated the extent of resident and nonresident ruralization of hunter and angler expenditures.

Expenditures are ruralized when urban residents and nonresidents purchase goods and services in rural areas (communities with a population less than 2,500) of the state.

Resident open water anglers had the highest average season expenditure (\$2,363), and special big game hunters had the highest average daily expenditure (\$430) among resident hunting/fishing activities. Nonresident anglers had the highest average season expenditure (\$668), and small game hunters spent the most per day (\$123) among nonresident hunting/fishing activities.

Resident and nonresident hunters'/anglers' projected total direct expenditures (excluding the cost of licenses) in 1990 in North Dakota were \$351 million. Ninety-six percent of the total was attributable to resident hunting/fishing activities. Sixty percent was from fishing in the state.

Resident and nonresident expenditures generated \$1,168 million of total business activity in 1990 in North Dakota. Expenditures induced \$151 million in retail trade sales and \$237 million in personal income. Resident and nonresident expenditures supported 17,000 jobs across the state.

Sixty percent or \$9 million of nonresident expenditures was ruralized. Nearly 34 percent or \$58 million of urban resident expenditures was ruralized. Over 35 percent of the expenditures in rural areas was attributable to ruralized resident and nonresident hunting/fishing expenditures.

North Dakota Game and Fish personnel must continue to meet the demands of resident hunters/anglers, considering the extent of economic activity associated with their expenditures and the fact that a considerable number are willing to hunt and fish in other states if quality experiences are not available in North Dakota. Meeting these demands in-state ensures that resident hunting/fishing expenditures stay in North Dakota, helping to maintain and diversify the state's economic base. Once resident needs are satisfied, management efforts should focus on identifying the capacity for additional hunting/fishing opportunities and directing any excess capacity toward demands of nonresident hunters/anglers. Providing and expanding nonresident hunting/angling will expand North Dakota's economic base, considering that nonresident expenditures represent new money to the state's economy and generate additional economic activity and new wealth within the state.

Characteristics, Expenditures, and Economic Impact
of Resident and Nonresident Hunters and Anglers
in North Dakota, 1990-91 Season

James F. Baltezare and Jay A. Leitch*

Introduction

Recreation and tourism are important and expanding parts of North Dakota's economic base. The recreation and tourism sector was the fifth largest industry on average from 1985 to 1989 in North Dakota, comprising 4 percent of the state's economic base (Leistritz and Coon 1990). Direct recreation and tourism expenditures were \$694 million in 1990, up 6 percent from 1989 and 18 percent from 1988 (Dean Runyan Associates 1991).

A portion of these expenditures is directly attributable to hunting and fishing activities available in the state. Resident and nonresident hunters and anglers spend millions of dollars on goods and services, preparing for and participating in their respective hunting and fishing activities. These expenditures represent a vital source of economic activity for both urban and rural areas of North Dakota.

Resident and Nonresident Expenditures

Nonresident hunters' and anglers' expenditures represent "new money" to North Dakota. New money is essential to ensure continued economic growth within the state. Nonresident expenditures generate economic activity across the state but are of primary importance to rural communities, helping them to diversify their economic bases and strengthen their economies.

Generally, resident expenditures are not considered "new money" to the state but may be to communities. However, continued availability of hunting and angling activities ensures that the majority of money, which residents who hunt and fish spend, stays in the state and is not "leaked" to neighboring states with similar recreational activities. Resident spending is considered new money to the extent that in-state recreational activities reduce resident spending out of state.

Wildlife planners must weigh the impact management policies have on resident and nonresident hunters and anglers and wildlife-related resources. Management policies affecting hunters/anglers have a primary economic impact on rural communities and a secondary impact on the state's economy. Management decisions must attempt to balance the demand for hunting/angling activities with the supply of wildlife-related resources.

Purpose

The purpose of this study was to estimate characteristics, expenditures, and economic impacts of resident and nonresident hunters and anglers for the 1990-91 season in North Dakota. Specifically the study

- identified socioeconomic characteristics of resident and nonresident hunters and anglers,
- estimated resident and nonresident hunters' and anglers' season and daily variable, fixed, and total expenditures,

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- estimated direct and indirect economic activity resulting from resident and nonresident hunter and angler expenditures, and
- estimated the extent of resident and nonresident ruralization of hunter and angler expenditures.

Direct economic activity is the aggregate dollar value of resident and nonresident hunting and fishing expenditures. Indirect economic activity is the secondary effect from "responding" initial expenditures. Total business activity, personal income, and employment are measures of indirect economic activity. The level of direct and indirect economic activity generated from hunting and angling expenditures shows the portion of state economic activity directly attributable to the hunting/angling industry. Such information is useful for determining the contribution of wildlife-related recreation to the state's economic activity.

Rural areas of North Dakota supply most of the natural resource inputs necessary for hunting and fishing activities. Habitat, fishing waters, and fish and wildlife are part of the state's rural environment. Urban resident and nonresident hunters/anglers must travel to rural areas of the state to participate in wildlife resource-related activities. Residents and nonresidents spend money in both rural and urban areas. Resident expenditures are transferred between urban and rural areas as urban (rural) residents spend money in rural (urban) areas of the state.

Expenditures are "ruralized" when urban residents and nonresidents purchase goods and services in rural areas of the state. Recreational opportunities provide the means for resident hunters/anglers from urban centers and nonresident hunters/anglers to travel to and stay in rural areas of the state. Urban residents and nonresidents spend money in these areas in the process. Ruralized expenditures are an increasingly important economic consideration for rural areas as the state becomes more urban. The level of ruralized expenditures provides information to determine the usefulness of hunting/angling as an economic development tool for rural North Dakota.

Characteristics, expenditures, and economic impacts of resident and nonresident hunters/anglers are essential information planners require to ensure efficient and effective management of North Dakota's wildlife resources. Information gathered is important for preparing and justifying departmental budgets and activities. Data collected serve to justify maintaining or enhancing wildlife resources within the state.

Nonresident expenditure data were collected in 1976 (Leitch and Scott 1978) and 1983 (Anderson and Leitch 1984). Resident expenditure data were collected in 1981 (Leitch and Kerestes 1982), 1982 (Kerestes and Leitch 1983), and 1986 (Baltezare et al. 1987). Survey data collected in 1990-91 will be added to the time series data set and compared with past survey data to identify changes in resident and nonresident characteristics, expenditures, and economic impacts.

Several "special topic" areas also were considered in the study, including

- club memberships,
- private lands initiative,
- special big game preseason informational meeting,
- national expenditure survey,
- nonresident small game expenditures, and
- resident wild turkey expenditures.

Club memberships were investigated to determine their popularity among North Dakota hunters/anglers. Results of a national expenditure survey were

compared to expenditures in this study to identify and reconcile potential differences. Feedback concerning the private lands initiative was collected to determine resident hunter use.

Study results were used to assess special big game preseason informational meetings and to identify potential sources of improvement. Expenditures of nonresident small game hunters purchasing a license from vendors across the state were compared with expenditures of hunters purchasing a license directly from the North Dakota Game and Fish Department (NDGFD) for potential differences. Resident wild turkey expenditures were compared among early, late, winter, and spring seasons to determine significant differences.

Procedures

Various methods were used to administer surveys, estimate expenditures, determine confidence intervals, conduct significance tests, measure economic impacts, and assess club memberships. The following discussions identify specific methods used and steps taken to implement procedures for this study. Procedures outlined in past hunter/angler studies were followed whenever possible and applicable for comparisons.

Survey

Primary survey data were collected using questionnaires mailed to licensed hunters and anglers. The NDGFD provided a random set of names and addresses for all survey sample groups from hunting and fishing license records. License types include resident, nonresident, and gratis. Landowner hunters are eligible for gratis licenses for some species provided they own or lease a minimum of a quarter section of land and agree to hunt only on their own land.

Sample Groups

Sample groups represented hunting and angling opportunities available in North Dakota during 1990-91 for resident (including gratis) and nonresident hunters and anglers (Table 1). The survey excluded nonresident furbearer licensees. Names and addresses of 1990 or 1991 license holders were available for special big game,¹ resident (including gratis where applicable) firearms pronghorn antelope, turkey, firearms deer, muzzleloader deer, and all nonresident sample groups. Names and addresses from the 1989 license year were used for resident summer fishing, archery pronghorn antelope and deer, waterfowl and upland game, and furbearer.² Names and addresses for the resident ice fishing sample were based on respondents to the summer resident fishing survey who indicated they ice fished occasionally or frequently. Gratis hunters were surveyed separately from resident hunters based on recommendations of past studies, which found significant differences in expenditure patterns between gratis and resident hunters (Baltezare et al. 1987).

¹Special big game includes elk, moose, and bighorn sheep.

²Vendors throughout the state sell these licenses with no limit on the number sold. The time required to collect license information from vendors prohibits using current year license buyers for these surveys.

TABLE 1. SAMPLE GROUPS, SAMPLE SIZES, AND MAILINGS, NORTH DAKOTA HUNTER AND ANGLER SURVEY, 1990-91

Sample Group	First Mailing Date ^a	Second Mailing Date	Sample License Year	Sample Size
Archery Elk	Oct 16, 1990	Nov 6, 1990	1990	1 ^b
Archery Moose	Oct 16, 1990	Nov 6, 1990	1990	3 ^b
Open Water Fishing Resident	Oct 16, 1990	Nov 6, 1990	1988-89	1,887 ^b
Firearms Pronghorn Antelope Resident	Oct 22, 1990	N/A	1990	415 ^c
Gratis	Oct 22, 1990	N/A	1990	430 ^c
Bighorn Sheep	Oct 29, 1990	Nov 19, 1990	1990	8 ^b
Archery Pronghorn Antelope Resident	Oct 29, 1990	Nov 19, 1990	1989	545 ^b
Early Turkey Resident	Nov 12, 1990	N/A	1990	180 ^c
Waterfowl Resident	Nov 26, 1990	Dec 17, 1990	1989	904 ^b
Firearms Elk	Nov 26, 1990	Dec 17, 1990	1990	34 ^b
Firearms Deer Resident	Nov 26, 1990	Dec 17, 1990	1990	439 ^b
Gratis	Nov 26, 1990	Dec 17, 1990	1990	433 ^b
Nonresident	Nov 26, 1990	Dec 17, 1990	1990	325 ^b
Muzzleloader Deer Resident	Dec 10, 1990	N/A	1990	625 ^c
Late Turkey Resident	Dec 10, 1990	N/A	1990	220 ^c
Firearms Moose	Dec 17, 1990	Jan 7, 1991	1990	107 ^b
Turkey Resident Winter	Dec 31, 1990	N/A	1990	60 ^c
Gratis	Dec 31, 1990	N/A	1990	350 ^c
Archery Deer Resident	Dec 31, 1990	N/A	1989	1,700 ^c
Small Game Nonresident	Jan 7, 1991	N/A	1990 ^d	625 ^c
Upland Game Resident	Jan 7, 1991	Jan 28, 1991	1989	897 ^b
Small Game Nonresident	Mar 18, 1991	N/A	1990 ^e	625 ^c

(continued)

TABLE 1. (continued)

Sample Group	First Mailing Date ^a	Second Mailing Date	Sample License Year	Sample Size
Archery Deer Nonresident	Mar 18, 1991	Apr 8, 1991	1990	320 ^b
Archery Pronghorn Antelope Nonresident	Mar 18, 1991	Apr 8, 1991	1990	64 ^b
Ice Fishing ^f Resident	Mar 18, 1991	Apr 8, 1991	1988-89	341
Fishing Nonresident	Mar 18, 1991	Apr 8, 1991	1989-90	1,272 ^b
Furbearer Resident	Apr 1, 1991	N/A	1989	1,640 ^c
Spring Turkey Resident	May 13, 1991	N/A	1991	420 ^c

^aUp to two mailings were sent to obtain the desired number of usable returns.

^bQuestionnaires were sent by NDSU; mailing labels were provided by NDGFD.

^cQuestionnaires were included in a NDGFD survey.

^dSurvey of hunters who applied directly to NDGFD for a license.

^eSurvey of hunters who purchased a license from vendors across the state.

^fBased on summer fishing survey respondents indicating they ice fished occasionally or frequently.

Sample Sizes

Resident sample sizes were based on sample size projections reported in Baltezare et al. 1987. [See Kerestes and Leitch (1983a) for a detailed discussion of procedures used to determine appropriate sample sizes.] Sample sizes were adjusted upward, based on expected response rates, according to the number of survey mailings. The estimated sample size or the total population (all hunters/anglers who purchased a specific license type), whichever was lower, was the actual sample size for each sample group.

Sample sizes for resident archery pronghorn antelope and deer, waterfowl, upland game, furbearer, open water fishing, and ice fishing (those activities where samples were based on license sales from the previous year) were increased 25 percent to adjust for potential turnover in individuals who purchase licenses from one year to the next. Nonresident sample sizes were based on a desired sample size of 250 and adjusted upward for expected nonresponses. The fall turkey sample was divided proportionally among early (40 percent), late (48 percent), and winter (12 percent) seasons, based on percentage of license sales for each season.

TABLE 2. SUMMARY OF SURVEY RESPONSES BY ACTIVITY, NORTH DAKOTA RESIDENT AND NONRESIDENT HUNTERS AND ANGLERS, 1990-91

Activity	First Mailing	Second Mailing	Refusal or Undelivered	Returned	Response Rate ^a
	----- number of questionnaires -----				- percent -
<u>RESIDENT</u>					
Antelope					
Archery	545	344	52	326	66.1
Firearms	415	---	--	269	64.8
Gratis	430	---	--	170	39.5
Deer					
Archery	1,700	---	--	748	44.0
Firearms	439	288	8	261	60.6
Gratis	433	343	5	220	51.4
Muzzleloader	625	---	--	483	77.3
Special Big Game ^b	153	56	--	136	88.9
Small Game					
Waterfowl	904	565	68	578	69.1
Upland	897	605	69	515	62.2
Wild Turkey					
Early	180	---	--	115	63.9
Late	220	---	--	129	58.6
Winter	60	---	--	40	66.7
Gratis	350	---	--	94	26.9
Spring	420	---	--	254	60.5
Furbearer	1,640	---	--	503	30.7
Fishing					
Open Water	1,887	1,176	265	912	56.2
Ice	341	182	--	247	72.4
<u>NONRESIDENT</u>					
Antelope					
Archery	64	42	0	45	70.3
Deer					
Archery	320	182	16	219	72.0
Firearms	325	151	13	271	86.9
Small Game ^c	1,250	---	--	728	58.2
Fishing	1,272	875	153	662	59.2

^aResponse rate equals number of questionnaires returned divided by number of first mailing questionnaires less refusal or undelivered.

^bIncludes elk, moose, and bighorn sheep.

^cIncludes both hunters who applied directly to NDGFD and those who purchased licenses from vendors across the state.

Survey Instruments

Survey instruments were designed for each sample group (Appendix A). Questionnaire format was similar to past survey efforts to ensure results could be compared over time. NDGFD personnel reviewed the questionnaires to confirm study objectives would be met; to identify ambiguous, inflammatory, or unnecessary sections; and to isolate typographical errors and omissions.

Mailings

Survey administration was divided between NDGFD and North Dakota State University (NDSU) personnel for various sample groups. NDGFD personnel administered surveys for sample groups with only one questionnaire mailing³ (Table 1). Expenditure questionnaires were included with the annual NDGFD post-season harvest survey. NDSU personnel administered surveys for sample groups with two questionnaire mailings. Second mailings were mailed three to four weeks after the first mailing. A brief reminder was included in second mailings, encouraging respondents to complete the questionnaire (Appendix B). NDSU-administered mailings were sent bulk rate. NDGFD-administered survey mailings were sent first class at the presort rate.

Response Rates

Response rate equals

$$\frac{\text{number of questionnaires returned}}{\text{number of first mailing questionnaires} - \text{refusals and undelivered questionnaires}}$$

Resident response rates ranged from a high of 89 percent for special big game hunters to 27 percent for wild turkey gratis hunters (Table 2). Generally, response rates for gratis activities were lower than resident activities. Nonresident response rates ranged from 58 percent for small game hunters to 87 percent for firearms deer hunters.

Expenditures

Hunters and anglers make two types of expenditures--variable and fixed (Table 3). Variable expenditures represent purchases of goods and services that are consumed or used over a short time or that are only used once. Variable expenditures are directly related to the level of the activity. Fixed expenditures represent purchases of goods that last longer and may be used more than once. Fixed expenditures are not related to activity levels in the near term.

Expenditure data were summarized for individual expenditure categories and variable, fixed, and total season and daily expenditures for each activity (Appendices C through W). Average season variable and fixed expenditures were determined by summing individual expenditure categories for each expenditure type. Average total season expenditures were estimated by adding variable and fixed expenditures for those hunters and anglers with both variable and fixed expenditures. Daily expenditures were estimated by dividing season variable, fixed, and total expenditures by the number of days spent hunting/angling.

³Sample sizes for these sample groups were based on first mailing response rates reported in Baltezare et al. 1987.

TABLE 3. VARIABLE AND FIXED GOOD EXPENDITURE CATEGORIES

Category	Description
Variable Expenditures	
Access	Fees paid to gain access to land or to launch boats
Ammunition	Cartridges, shotshells
Bait	Cost of live bait
Film	Film and film developing
Food	Food and beverages
Lodging	Hotel, motel, etc.
Meat	Meat processing, packing, fish cleaning
Operating	Boat gas and oil, repairs and maintenance of equipment
Rentals	Boat, motor, fish house, or equipment rental
Taxidermy	Professional fees or materials for mounting fish, birds, or animals
Transportation	
Private	Gas, oil, repairs for vehicles on hunting/fishing trips
Commercial	Fares, vehicle rentals, charters
Veterinarian	Dog health care
Other	Anything used for hunting/fishing not included in above categories
Fixed Expenditures	
Arrows	Arrows
ATV	All terrain vehicles, snowmobiles, motorbikes
Binoculars	Binoculars, spotting scope, etc.
Boat	Boats, motors, and trailers
Camping	Tents, stoves, camping equipment used while hunting/fishing
Clothing	Special clothing used primarily for hunting/fishing
Depth finder	Depth or fish finders
Dogs	Hunting dogs
Duck boat/decoys	Duck boats, decoys, etc.
Fishing equipment	Rods, reels, tackle boxes, tackle, etc. hunting/fishing equipment not included in above categories
Skinning Equipment	Stretchers, knives, etc.
Traps	Traps, snares, trapping supplies (lures, scents), etc.
Vehicles	Pickups, motorhomes, or other vehicles bought primarily for hunting/fishing
Winter Fishing Equipment	Fish houses, heaters, ice augers, etc.
Weapons	Rifles, shotguns, bows, and accessories
Other	Game/predator calls, snowshoes, game bags, waders, and other accessories used for hunting/fishing

Confidence Intervals

Confidence intervals were estimated for season and daily variable, fixed, and total expenditures. A 90 percent confidence level ($\alpha = 0.05$, two-tailed) was assumed to be sufficient for this type of survey data. Confidence intervals were calculated, using the following equation:

$$\bar{X} \pm 1.64 * (s/\sqrt{n})$$

where

\bar{X} was the mean value of the sample group,
1.64 was the t-value based on a 90 percent confidence level,
s was the standard deviation of the sample mean, and
n was the number of observations in the sample.

A 90 percent confidence interval implies that there is a 90 percent probability that the true population mean lies within the confidence interval.

Significance Tests

T-tests were used to determine if means from different samples were from the same population. The basic T-test accommodates the assumption that the variances from sample groups were unequal (SAS Institute Inc. 1985). The test assumes data were normally and independently distributed within each sample.

Economic Impacts

Economic impacts were separated into direct and indirect, which were further divided into resident and nonresident to assess the economic contributions of each group. Resident and nonresident season expenditures were aggregated to estimate the overall direct and indirect economic impacts of hunter/angler expenditures on the North Dakota economy. The economic impacts of ruralized resident and nonresident hunter/angler expenditures also were estimated.

Direct Impact

The direct impact was the total dollar value of resident and nonresident hunter/angler expenditures in North Dakota. Average season expenditures multiplied by the number of active hunters/anglers represented the aggregate expenditure for a particular activity. The number of active hunters/anglers was based on the percentage of survey respondents actually participating in each hunting/fishing activity. License sales multiplied by the percentage of survey respondents participating equaled the number of active hunters/anglers. The total direct economic impact was estimated by summing the total season expenditures for each hunting/angling activity.

Indirect Impacts

Indirect impacts were the added economic activity generated from responding direct hunter/angler expenditures. The North Dakota 18-Sector

Input-Output Model⁴ was used to estimate indirect impacts (Coon et al. 1990). Changes in total business activity, retail trade sales, and employment represented the indirect impacts. Indirect impacts were identified for resident, nonresident, and all hunters/anglers in North Dakota.

Ruralized Expenditures

Total hunting/angling expenditures represent both resident and non-resident expenditures (Figure 1). Nonresident expenditures include expenditures specifically related to hunting/angling activities and other additional expenditures--goods and services purchased in North Dakota not directly related to hunting/angling activities (i.e., clothing, appliances, and furniture). Estimates of other additional expenditures were based on nonresident responses to a survey question asking how much money they spent in North Dakota in addition to hunting/angling expenditures. **These additional expenditures were not included in estimates of direct or indirect expenditures.** Nonresident hunting/angling expenditures occur in both urban and rural areas of the state.

Resident expenditures occur in either rural or urban areas of North Dakota. Money is transferred between urban and rural areas to the extent urban (rural) residents purchase hunting/angling-related goods and services in rural (urban) areas. Residents living in a city with a population equal to or greater than 2,500 are considered urban, and those living in a city with a population less than 2,500, on a farm or ranch, or in a rural but nonfarm area are considered rural.⁵

Urban resident expenditures in rural areas as a result of hunting and angling opportunities were defined as ruralization of hunter/angler expenditures (Figure 2). Nonresident expenditures to purchase hunting and angling goods and services in rural areas also were considered ruralization of hunter/angler expenditures. The total amount of ruralization was the sum of urban resident and nonresident expenditures in rural areas of North Dakota.

Resident and nonresident respondents were asked to indicate the percentage of their season expenditure spent in rural areas (communities under 2,500 in population). The average percentage of rural spending multiplied by each group's average season expenditure was the amount of expenditure per resident and nonresident in rural areas. The number of active sportsmen multiplied by the amount of expenditure in rural areas per sportsman for each activity equaled the total expenditure for all sportsmen in rural areas. Expenditures in rural areas were estimated for urban, rural, and all resident and nonresident hunters/anglers.

⁴The original 17-sector model was recently modified to include a recreation and tourism sector. The modification permits total direct resident and nonresident hunter and angler expenditures to be entered into the recreation and tourism sector of the model. Past estimates of indirect impacts have separated direct expenditures into those occurring in the retail trade and business and personal service sectors before introduction into the input-output model.

⁵Definitions of urban and rural residents are consistent with those of the Bureau of the Census.

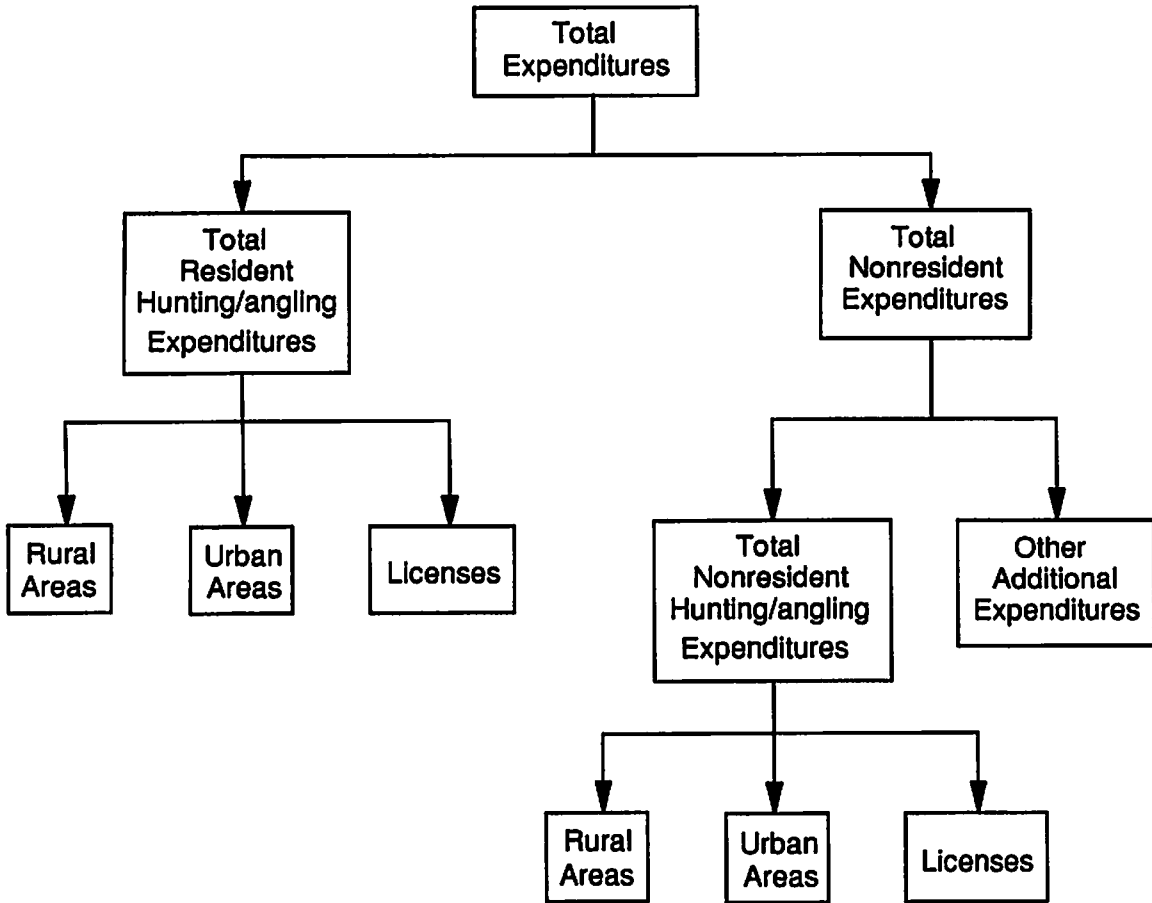


Figure 1. Flow of Resident and Nonresident Hunter/Angler Expenditures

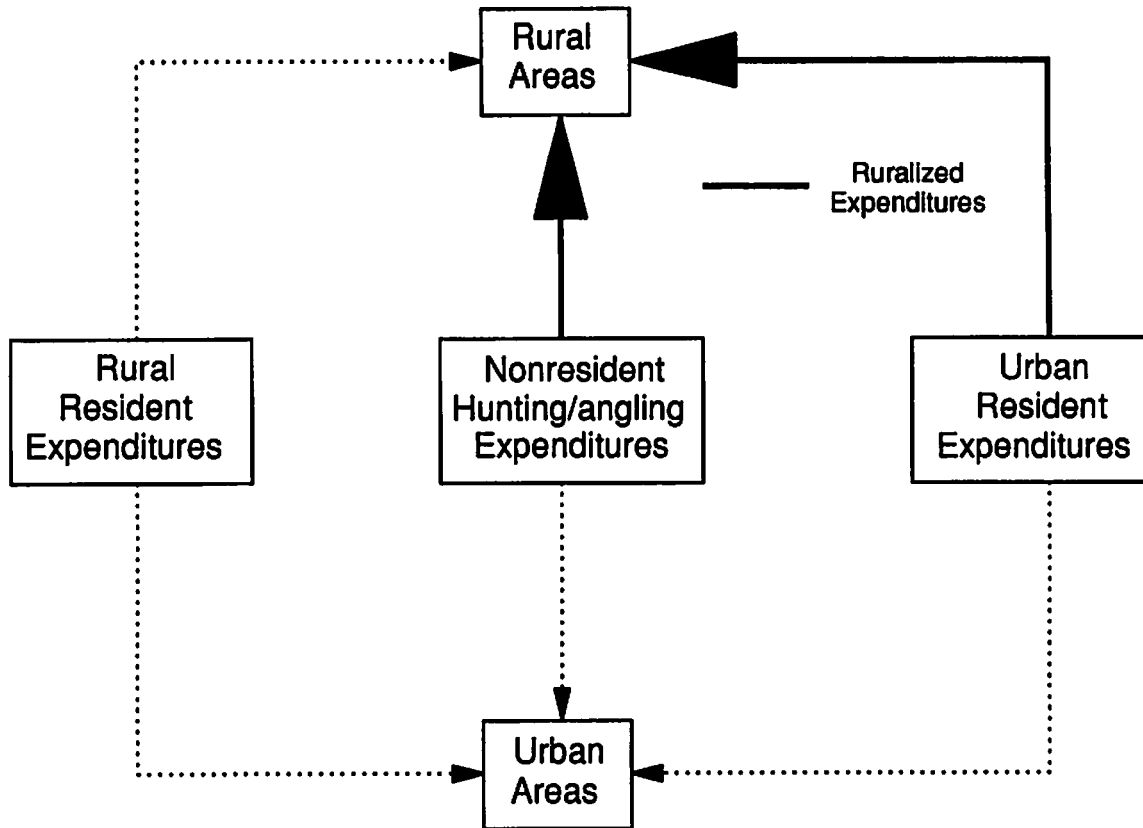


Figure 2. Flow of Urban and Rural Resident and Nonresident Hunter/Angler Expenditures

Club Memberships

Resident respondents were asked to list fishing, hunting, wildlife, or sportsman clubs or organizations for which they pay dues, including statewide or affiliated organizations and local clubs and organizations. Examples of statewide or affiliated organizations are Ducks Unlimited, Pheasants Forever, and Muskies Inc. Respondents indicated various national organizations (such as the National Rifleman's Association), local nonaffiliated clubs (such as the Grand Forks Gun Club), and local affiliated clubs (such as the Barnes County Chapter of the North Dakota Wildlife Federation) to which they were dues-paying members.

Survey results were used to estimate the extent of club affiliation of North Dakota hunters/anglers. The extent of club membership provides insight into the level of hunter/angler dedication to their respective activity. The degree of club membership also indicates where hunters/anglers are receiving information about issues related to hunting/angling activities.

Results

Results were organized into three basic areas--characteristics, expenditures, and economic impacts. Summary statistics are presented according to license type (i.e., pronghorn antelope, deer) within each of these areas. Further distinctions were made between resident and nonresident hunters/anglers. Responses were aggregated to estimate overall statistics for all resident and nonresident hunters/anglers where applicable.

Selected Characteristics of Resident Hunters/Anglers

Summary statistics for most survey questions concerning resident characteristics follow. Responses for characteristics not specifically mentioned are provided in the corresponding appendix relating to the particular activity. Comparisons with past survey data are provided where possible.

Residence

The hunting activity with the highest percentage of urban participants was archery pronghorn antelope (65 percent) (Table 4). Special big game had the highest percentage of rural participants (64 percent). In six out of ten hunting activities, the majority of participants resided in rural areas.⁶ Slightly more than half of the resident fishing participants resided in rural North Dakota.

Preseason Scouting

Nearly 85 percent of the special big game hunters preseason scouted in 1990 (Table 5). The percentage of special big game hunters who preseason scouted was similar among 1981, 1982, 1986, and 1990 surveys. Nearly 70 percent of the archery and muzzleloader deer hunters participated in preseason scouting. Less than 40 percent of the firearms pronghorn antelope, upland game, and combined wild turkey hunters preseason scouted.

Value of a Day of Hunting/Fishing

Respondents were asked to put a dollar value on a typical day of hunting/angling in North Dakota for the activity in which they participated. The largest average dollar value placed on an activity was \$320 for muzzleloader deer hunters (Table 6). Ice fishing participants reported the lowest average value of a day (\$37).

The average reported value of a day of hunting/fishing declined for nearly all activities from 1981 to 1990.⁷ The largest real decline in the average value of a day has occurred in special big game hunting, which fell from \$758 in 1981 to \$120 in 1990 (84 percent). Waterfowl and upland small game average values of a day of hunting have increased slightly since 1981.

⁶Upland game was not included because the percentage of urban and rural residents participating was virtually the same.

⁷The average value of a day reported in previous survey efforts was adjusted to 1990 dollars, using the GNP implicit price deflator.

TABLE 4. RESIDENCE OF RESIDENT NORTH DAKOTA HUNTERS/ANGLERS, BY ACTIVITY, 1990

Activity	Urban			Rural			
	City over 50,000	City 2,500 to 50,000	Total	Community Under 2,500	Farm or Ranch	Rural Nonfarm	Total
----- percent -----							
HUNTING							
Pronghorn Antelope							
Archery	14.2	50.8	65.0	15.2	10.7	9.1	35.0
Firearms ^a	13.0	35.6	48.6	23.0	16.5	11.9	51.4
Deer							
Archery	16.8	35.2	52.0	23.7	14.7	9.6	48.0
Firearms ^a	15.3	28.6	43.9	23.4	23.8	8.9	56.1
Muzzleloader	15.7	29.4	45.1	25.1	17.9	11.9	54.9
Special Big Game	9.0	26.9	35.9	26.0	32.1	6.0	64.1
Small Game							
Waterfowl	19.0	37.6	56.6	18.1	15.8	9.5	43.4
Upland	16.5	33.2	49.7	20.9	20.0	9.4	50.3
Wild Turkey ^a							
Combined ^b	16.9	40.0	56.9	18.7	17.8	6.6	43.1
Spring	17.5	28.4	45.9	21.0	22.7	10.4	54.1
Furbearer	12.2	28.4	40.6	25.1	24.3	10.0	59.4
FISHING							
Open Water	10.5	37.8	48.3	23.9	18.7	9.1	51.7
Ice	6.9	39.6	46.5	28.7	13.9	10.9	53.5

^aExcludes gratis hunters.

^bIncludes early, late, and winter seasons.

TABLE 5. PRESEASON SCOUTING, NORTH DAKOTA RESIDENT HUNTERS, BY ACTIVITY, 1981, 1982, 1986, AND 1990

Activity	1981		1982		1986		1990	
	Yes	No	Yes	No	Yes	No	Yes	No
	----- percent -----							
Pronghorn Antelope								
Archery	na	na	na	na	na	na	57	43
Firearms ^a	na	na	na	na	na	na	37	63
Deer								
Archery	67	33	na	na	na	na	69	31
Firearms ^a	na	na	na	na	33	77	43	57
Muzzleloader	na	na	na	na	na	na	68	32
Special Big Game	83	17	88	12	87	13	84	16
Small Game								
Waterfowl	na	na	na	na	na	na	42	58
Upland	na	na	na	na	na	na	33	67
Wild Turkey ^a								
Combined ^b	34	66	na	na	32	68	34	66
Spring	na	na	na	na	na	na	58	42

^aExcludes gratis hunters.

^bIncludes early, late, and winter seasons.

TABLE 6. AVERAGE VALUE OF A DAY SPENT HUNTING/FISHING IN NORTH DAKOTA, ESTIMATED BY RESIDENT RESPONDENTS, BY ACTIVITY, 1990 DOLLARS, 1981, 1982, 1986, 1990

Activity	1981	1982	1986	1990
	----- 1990 dollars -----			
HUNTING				
Pronghorn Antelope				
Archery	na	na	52	54
Firearms	na	na	na	92 ^a
Deer				
Archery	445	na	45	51
Firearms	108	na	55	58 ^a
Muzzleloader	na	na	na	320
Special Big Game	758	322	271	120
Small Game				
Waterfowl	40	na	69	56
Upland	40	na	76	42
Wild Turkey				
Combined ^b	103	na	199	48 ^a
Spring	na	na	na	54
Furbearer	106	91	47	55
FISHING				
Open Water	46	na	348	41
Ice	na	na	35	37

^aAverage includes gratis hunters.

^bIncludes early, late, and winter seasons.

Participation Days

The average archery deer hunter respondent spent 14 days hunting during the 1990 season (Table 7). Small game hunters, furbearer hunters/trappers, and summer and ice anglers participated more than 10 days each in their respective activities. Wild turkey hunters spent the least number of days participating.

The average number of days archery pronghorn antelope and small game hunters spent hunting increased from 1981 to 1990. Furbearer and summer fishing participation days declined over the same period. Firearms pronghorn antelope, archery and firearms deer, special big game, and wild turkey hunter participation days have not changed since 1981.

TABLE 7. AVERAGE DAYS SPENT HUNTING/FISHING BY NORTH DAKOTA RESIDENTS, BY ACTIVITY, 1981, 1982, 1986, 1990

Activity	1981	1982	1986	1990
	----- days -----			
HUNTING				
Pronghorn Antelope				
Archery	na	4	7	8
Firearms	na	2	2	2 ^a
Deer				
Archery	13	14	13	14
Firearms	4	4	5	4 ^a
Muzzleloader	na	na	na	4
Special Big Game	4	5	4	5
Small Game				
Waterfowl	7	6	8	11
Upland	6	5	9	13
Wild Turkey				
Combined ^b	2	2	2	2 ^a
Spring	na	na	na	3
Furbearer	17	12	12	12
FISHING				
Open Water	22	18	13	13
Ice	na	na	12	11

^aAverage includes gratis hunters.

^bIncludes early, late, and winter seasons.

Distance Traveled

The average special big game hunter traveled 1,131 miles for all hunting trips in 1990--the most of any group (Table 8). This compares to 247 miles for the average muzzleloader deer hunter respondent. Generally, hunter/angler miles traveled for all trips increased from 1981 to 1990.

TABLE 8. AVERAGE MILES TRAVELED TO HUNT/FISH BY NORTH DAKOTA RESIDENTS, BY ACTIVITY, 1981, 1982, 1986, 1990

Activity	1981	1982	1986	1990
	----- miles -----			
HUNTING				
Pronghorn Antelope				
Archery	na	467	688	777
Firearms	na	513	366	418 ^a
Deer				
Archery	437	164	465	654
Firearms	270	205	338	335 ^a
Muzzleloader	na	na	na	247
Special Big Game	397	567	583	1,131
Small Game				
Waterfowl	476	na	480	904
Upland	415	na	521	869
Wild Turkey				
Combined ^b	249	207	232	340 ^a
Spring	na	na	na	270
Furbearer	796	612	636	625
FISHING				
Open Water	na	103	649	860
Ice	na	na	651	672

^aAverage includes gratis hunters.

^bIncludes early, late, and winter seasons.

Ownership of Land Hunted

Over 80 percent of furbearer hunting/trapping during the 1990 season occurred on private land (Table 9). In contrast only 16 percent of special big game hunting occurred on private land. Generally, most of the hunting in 1990 in the state was on private land. Over 30 percent of the archery pronghorn antelope hunting occurred on federal land.

TABLE 9. PERCENTAGE OF RESIDENT HUNTING BY LAND TYPE BY ACTIVITY, NORTH DAKOTA, 1990

Activity	Land Type			
	Federal	State	Private	Unknown
----- percent -----				
Pronghorn Antelope				
Archery	31	6	61	2
Firearms	16	6	74	4
Deer				
Archery	15	13	70	2
Firearms	11	8	76	5
Muzzleloader	9	13	77	1
Special Big Game	8	73	16	3
Small Game				
Waterfowl	9	11	74	6
Upland	8	12	73	7
Wild Turkey				
Combined ^a	16	11	68	5
Spring	11	14	72	3
Furbearer	7	6	81	6

^aIncludes early, late, and winter seasons.

Hunting Substitutes

Archery and firearms pronghorn antelope and deer and wild turkey hunter survey instruments included a question asking respondents what they would do with the additional time and money if they could not hunt in North Dakota. Over 65 percent of the archery pronghorn antelope hunters indicated they would hunt out of state while 5 percent would move to another state that allowed hunting (Table 10). Over 40 percent of the respondents among all survey groups would use the additional time and money to hunt out of state if hunting opportunities were not available in North Dakota. This implies that North Dakota does not have substitute hunting activities for at least 40 percent of the resident hunter population. Resident hunters are willing to travel to other states if hunting is not available in North Dakota.

TABLE 10. RESPONSES TO "WHAT WOULD YOU DO WITH THE ADDITIONAL TIME AND MONEY IF YOU COULD NOT HUNT IN NORTH DAKOTA?" BY ACTIVITY, RESIDENT HUNTERS, 1990

Activity	Response ^a	Percentage
Archery Pronghorn Antelope	Hunt out of state	67
	Fish more	7
	Move to another state	5
Firearms Pronghorn Antelope ^b	Hunt out of state	48
	Fish more	11
	Work more	7
Archery Deer	Hunt out of state	39
	Fish more	18
	Hunt out of state and fish more	6
Firearms Deer ^b	Hunt out of state	42
	Fish more	9
	Work more	9
Wild Turkey	Hunt out of state	44
	Fish more	13
	Vacation	5

^aThe three most frequent responses are reported.

^bPercentages include gratis hunters.

Out-of-state Hunting/Fishing Activities

Archery and firearms deer, waterfowl and upland small game, and summer fishing survey instruments included questions designed to assess the extent of their participation in out-of-state hunting/fishing activities, the game and state hunted, and their reasons for hunting/fishing in another state. Over 75 percent of the archery deer hunters hunted in another state (Table 11). Deer and/or other big game were hunted most frequently. Montana, Minnesota, and South Dakota were the primary states hunted. The land and people were the most frequent reasons for hunting out of state. Less than 15 percent of the firearms deer, waterfowl, and upland game hunters hunted outside North Dakota.

Generally, Montana, Minnesota, and South Dakota were the most frequently reported states respondents hunted among all activities surveyed. Better hunting, friends and relatives lived there, and they wanted to hunt a specific type of game were the primary reasons for hunting in another state. Some upland small game hunters indicated they were not able to receive North Dakota hunting licenses for special big game hunting activities.

Twenty-five percent of the summer fishing respondents fished in a state other than North Dakota. Over half of the respondents fishing out of the state went to Minnesota. Better fishing, vacationing, and close proximity were the primary reasons for fishing in another state.

TABLE 11. RESIDENT OUT-OF-STATE HUNTING/FISHING, BY ACTIVITY, 1990

Activity/question	Response	Percentage
ARCHERY DEER		
Hunted out of state	Yes	77
	No	23
Game Hunted ^a	Deer	21
	Big game	19
	Deer and big game	12
State Hunted ^a	Montana	25
	Minnesota	23
	South Dakota	11
Reason for Hunting ^a	Land and people	37
	Friends, relative live there	15
	Better hunting	8
FIREARMS DEER^b		
Hunted out of state	Yes	10
	No	90
Game Hunted ^a	Deer	18
	Upland game	18
	Big game	18
State Hunted ^a	Montana	25
	Minnesota	23
	South Dakota	11
Reason for Hunting ^a	Type of game	25
	Friends, relative live there	21
	Better hunting	15
SMALL GAME--WATERFOWL		
Hunted out of state	Yes	14
	No	86
Game Hunted ^a	Upland game	24
	Deer, waterfowl, upland game	14
	Deer, upland game	18
State Hunted ^a	Montana	35
	South Dakota	30
	Minnesota	21
Reason for Hunting ^a	Better hunting	29
	Friends, relative live there	21
	Type of game	18
SMALL GAME--UPLAND		
Hunted out of state	Yes	10
	No	90
Game Hunted ^a	Upland game	41
	Big game	11
	Antelope	8
	Deer	8

(continued)

TABLE 11. (continued)

Activity/question	Response	Percentage
SMALL GAME--UPLAND (continued)		
State Hunted ^a	Montana	36
	South Dakota	17
	Minnesota	17
Reason for Hunting ^a	Type of game	34
	N.D. license availability ^c	16
	Better hunting	13
	Friends, relatives live there	13
OPEN WATER FISHING		
Fished out of state	Yes	25
	No	75
State Fished	Minnesota	55
	Canada	23
	South Dakota	16
Reason for Fishing	Better fishing	19
	Vacationing	16
	Closer	14

^aThe three most frequent responses are reported.

^bResponses weighted to include gratis hunters.

^cNorth Dakota small game licenses are unlimited. License availability referred to special big game hunting activities.

Selected Characteristics of Nonresident Hunters/Anglers

Summary statistics for most survey questions concerning nonresident characteristics are presented. Responses for characteristics not specifically mentioned are provided in the corresponding appendix that relates to the particular activity. Comparisons with past survey data are provided where possible.

Age

The majority of nonresident hunters/anglers in North Dakota was between 19 and 45 years of age (Table 12). Over 40 percent of small game hunters and nearly 50 percent of anglers were 45 years of age or older. Less than 5 percent of nonresident hunters/anglers were 18 years of age or younger.

Sex

Over 85 percent of the nonresident hunters/anglers in North Dakota were male (Table 13). Nearly 100 percent of the nonresident hunters were male. Over 10 percent of nonresident anglers were female. Similar responses were found in the 1983 nonresident hunter/angler survey.

TABLE 12. AGE OF NONRESIDENT HUNTERS/ANGLERS IN NORTH DAKOTA, BY ACTIVITY, 1990

Activity	18 years or less	19 to 45 years	46 to 65 years	Over 65 years
	----- percent -----			
Pronghorn Antelope				
Archery	5	70	21	4
Deer				
Archery	2	67	26	5
Firearms	3	62	30	5
Small Game	3	54	36	7
Fishing	2	51	34	13

TABLE 13. SEX OF NONRESIDENT HUNTERS/ANGLERS IN NORTH DAKOTA, BY ACTIVITY, 1983 AND 1990

Activity	1983		1990	
	Male	Female	Male	Female
	----- percent -----			
Pronghorn Antelope				
Archery	na	na	98	2
Deer				
Archery	100	0	99	1
Firearms	99	1	98	2
Small Game	99	1	98	2
Fishing	82	18	88	12

Occupation

Primary occupations of nonresident hunters in 1990 were professional and craftsman (Table 14). Principal occupations of nonresident anglers were professional and unemployed/retired. Similar findings were reported in 1983.

TABLE 14. OCCUPATIONS OF NONRESIDENT HUNTERS/ANGLERS IN NORTH DAKOTA, BY LICENSE TYPE, 1983 AND 1990

Occupation	License Type									
	Archery Pronghorn		Archery Deer		Firearms Deer		Small Game		Fishing	
	1983	1990	1983	1990	1983	1990	1983	1990	1983	1990
	----- percent -----									
Farming	na	5	8	4	8	6	2	1	5	8
Professional	na	26	14	19	22	19	28	24	17	18
Sales	na	5	10	6	11	7	11	12	6	6
Labor	na	7	26	15	11	11	6	5	13	13
Student	na	0	4	1	2	4	5	4	6	3
Government	na	2	4	5	4	5	6	6	3	4
Managerial/ Executive	na	5	5	12	9	14	19	14	8	8
Craftsman	na	24	14	14	11	14	6	7	10	6
Education	na	5	1	3	2	1	2	4	5	3
Unemployed/ Retired	na	7	5	6	10	8	8	11	16	18
Other	<u>na</u>	<u>14</u>	<u>9</u>	<u>15</u>	<u>10</u>	<u>11</u>	<u>7</u>	<u>12</u>	<u>11</u>	<u>13</u>
Total	na	100	100	100	100	100	100	100	100	100

Residence

Most nonresident hunter/angler respondents resided in urban areas (Table 15). Nearly 70 percent of firearms deer and 80 percent of small game hunters resided in urban areas. Over 40 percent and 35 percent of nonresident archery pronghorn antelope and deer hunters, respectively, lived on a farm or ranch or resided in a rural area but did not farm or ranch.

Value of a Day of Hunting/Fishing

The average dollar value of a day for nonresident hunters/anglers ranged from a low of \$49 for anglers to a high of \$81 for firearms deer hunters (Table 16). The average value of a day declined in real dollars from 1983 to 1990 for all nonresident hunting/angling activities. Nonresident anglers have experienced the largest percentage decline in the value of a day (47 percent).

TABLE 15. RESIDENCE OF NONRESIDENT HUNTERS/ANGLERS IN NORTH DAKOTA, BY ACTIVITY, 1990

Activity	Urban		Total	Rural			Total
	City over 50,000	City 2,500 to 50,000		Community Under 2,500	Farm or Ranch	Rural Nonfarm	
----- percent -----							
Pronghorn Antelope							
Archery	9.5	40.5	50.0	9.5	16.7	23.8	50.0
Deer							
Archery	21.8	31.1	52.9	10.7	9.2	27.2	47.1
Firearms	34.4	34.0	68.4	12.2	8.7	10.7	31.6
Small Game	46.1	32.7	78.8	6.9	3.6	10.7	21.2
Fishing	29.6	32.9	62.5	14.8	9.3	13.4	37.5

TABLE 16. AVERAGE VALUE OF A DAY SPENT HUNTING/FISHING IN NORTH DAKOTA, ESTIMATED BY NONRESIDENT RESPONDENTS, BY ACTIVITY, 1990 DOLLARS, 1983 AND 1990

Activity	1983	1990	Change

- 1990 dollars - - percent -			
Pronghorn Antelope			
Archery	na	72	na
Deer			
Archery	95	60	-37
Firearms	113	81	-28
Small Game	96	70	-27
Fishing	92	49	-47

Participation Days

The average number of nonresident hunter/angler participation days ranged from four days for firearms deer hunters to eight days for archery deer hunters (Table 17). The average number of participation days has not changed for all activities since 1976.

TABLE 17. AVERAGE DAYS SPENT HUNTING/
FISHING BY NONRESIDENTS, BY ACTIVITY,
1976, 1983, AND 1990

Activity	1976	1983	1990
	----- days -----		
Pronghorn Antelope			
Archery	9	na	7
Deer			
Archery	7	8	8
Firearms	4	4	4
Small Game	5	4	5
Fishing	na	8	6

Distance Traveled

Nonresident archery pronghorn antelope and deer hunters traveled over 1,100 miles, on average, in 1990 (Table 18). This was considerably more than for other hunters/anglers. Part of the difference may be attributed to inconsistent wording of questions among survey instruments. The archery pronghorn antelope and deer questionnaires asked miles traveled for all trips. The firearms deer, small game, and angler questionnaires asked the one-way distance from respondents' homes to where they hunted. Generally, the average distance nonresidents traveled to hunt in North Dakota had increased since 1976. The average distance nonresident anglers traveled to North Dakota had decreased from 1983 to 1990.

TABLE 18. AVERAGE DISTANCE TRAVELED
BY NONRESIDENT HUNTERS/ANGLERS, BY
ACTIVITY, 1976, 1983, AND 1990

Activity	1976	1983	1990
	----- miles -----		
Pronghorn Antelope			
Archery	535	na	1,529 ^a
Deer			
Archery	373	502	1,169 ^a
Firearms	588	639	567
Small Game	482	701	610
Fishing	na	696	489

^aRepresents miles traveled for all trips rather than just the one-way distance from the respondents' homes to where they hunted.

Ownership of Land Hunted

The majority of nonresident hunting during the 1990 season occurred on private land (Table 19). Hunting on private land ranged from 47 percent (archery pronghorn antelope hunters) to 81 percent (firearms deer hunters). Half of the archery pronghorn antelope hunting and nearly 40 percent of the archery deer hunting were on public land (federal and state land).

Little change has occurred in percentage of hunting by land type for deer and small game hunters. Most hunters still spend the majority of their time hunting on private land. Pronghorn antelope hunters have switched from hunting primarily on private land in 1976 to private and federal land in 1990.

TABLE 19. PERCENTAGE OF NONRESIDENT HUNTING BY LAND TYPE, BY ACTIVITY, NORTH DAKOTA, 1990

Activity	1976	1983	1990
	----- percent -----		
Pronghorn Antelope			
Archery			
Federal	14	na	40
State	21	na	10
Private	61	na	47
Unknown	4	na	3
Deer			
Archery			
Federal	18	19	25
State	25	19	14
Private	56	59	60
Unknown	1	3	1
Firearms			
Federal	11	12	8
State	9	7	9
Private	78	78	81
Unknown	2	3	2
Small Game			
Federal	12	12	10
State	12	9	11
Private	72	75	76
Unknown	4	4	3

Reasons for Hunting/Fishing in North Dakota

The most frequently reported reason nonresidents hunted/fished in North Dakota was that friends/relatives resided in the state (Table 20). Other reasons included the land and people and better hunting/fishing. Similar reasons were reported in the 1976 nonresident survey.

TABLE 20. RESPONSES TO "WHY DID YOU HUNT/FISH IN NORTH DAKOTA?" BY ACTIVITY, NONRESIDENTS, 1990

Activity	Response ^a	Percentage
Archery Pronghorn Antelope	Friends/relatives in N.D.	16
	Fun/sport of hunting	7
	Better hunting	7
Archery Deer	Friends/relatives in N.D.	25
	Land/people in N.D.	12
	Better hunting	6
Firearms Deer	Friends/relatives in N.D.	71
	Fun/sport of hunting	5
	Better hunting-	
	friends/relatives in N.D.	5
Small Game	Friends/relatives in N.D.	30
	Type of game	12
	Better hunting	6
Fishing	Friends/relatives in N.D.	29
	Better fishing	24
	Vacationing	7

^aThe three most frequent responses are reported.

Resident and Nonresident Hunter/Angler Expenditures

Resident and nonresident hunter/angler expenditures were organized into the following areas:

- daily and season expenditures,
- projected total expenditures,
- historical expenditures, and
- additional nonresident expenditures.

Average daily and season total expenditures (and corresponding confidence intervals) and projected total expenditures were estimated for each resident and nonresident activity. Resident and nonresident projected total expenditures in 1990 were compared to projected total expenditures from previous survey years to identify changes in expenditure patterns over time. Nonresident expenditures in addition to direct hunting/angling expenditures were also estimated.

Daily and Season Expenditures

Resident average daily expenditures ranged from \$26 for gratis wild turkey hunters to \$430 for special big game hunters (Table 21). (Itemized season expenditures and total variable and fixed season and daily expenditures for residents and nonresidents are provided in the appendix corresponding to the activity. See table of contents for the appropriate appendix.) Average season expenditures varied from \$63 for gratis wild turkey hunters to \$2,363 for summer anglers.

TABLE 21. AVERAGE SEASON AND DAILY EXPENDITURES, BY ACTIVITY, RESIDENT AND NONRESIDENT HUNTER/ANGLER SURVEY, 1990-1991

Activity	Expenditure			
	Season		Daily	
	Mean	C.I. ^a	Mean	C.I. ^a
----- dollars -----				
RESIDENTS				
Pronghorn Antelope				
Archery	1,096	± 172	156	± 74
Firearms				
Resident	560	± 239	325	± 125
Gratis	278	± 284	121	± 99
Special Big Game	1,458	± 544	430	± 110
Deer				
Archery	706	± 148	83	± 33
Firearms				
Resident	600	± 215	173	± 83
Gratis	138	± 24	42	± 7
Muzzleloader	501	± 195	174	± 74
Furbearer	1,042	± 328	208	± 132
Small Game				
Waterfowl	1,120	± 353	97	± 24
Upland	710	± 149	63	± 9
Wild Turkey				
Combined ^b	156	± 26	84	± 14
Spring	267	± 202	182	± 190
Gratis	63	± 25	26	± 10
Fishing				
Open Water	2,363	± 529	213	± 49
Ice	872	± 492	129	± 96
NONRESIDENTS				
Pronghorn Antelope				
Archery	368	± 55	54	± 8
Deer				
Archery	567	± 260	78	± 17
Firearms	466	± 133	118	± 33
Small Game	562	± 95	123	± 22
Fishing	668	± 206	117	± 27

^aIndicates a 90 percent confidence interval ($\alpha = 0.05$).

^bIncludes early, late, and winter seasons.

Nonresident archery pronghorn antelope hunter expenditures were the lowest per day (\$54) and for the season (\$368). Nonresident small game hunter expenditures were the highest per day (\$123). Nonresident angler expenditures were the highest among activities for the season (\$668).

Resident average season expenditures were higher in 1986 compared to 1982 for all hunting/angling activities except furbearers (Table 22). Season expenditures were generally lower in 1990 compared to 1986 for resident hunting/angling activities. Respondents had higher expenditures in most expenditure categories. However, for some activities, lower season expenditures for vehicles more than offset increases in other expenditure categories. Exceptions were small game waterfowl, gratis wild turkey, furbearer, and open water and ice fishing.

Resident average daily expenditures were generally lower in 1990 compared to 1986 (Table 22). Exceptions were gratis wild turkey hunters and resident open water and ice anglers.

TABLE 22. AVERAGE SEASON AND DAILY EXPENDITURES, BY ACTIVITY, RESIDENT HUNTERS AND ANGLERS, 1990 DOLLARS, 1982, 1986, AND 1990

Activity	Season			Daily		
	1982	1986	1990	1982	1986	1990
----- 1990 dollars ^a -----						
Pronghorn Antelope						
Archery	682	1,338	1,096	217	286	156
Firearms	542	720	560	359	569	325
Gratis	na	641	278	na	591	121
Deer						
Archery	272	862	706	29	81	83
Firearms	359	685	600	125	242	173
Gratis	na	na	138	na	na	42
Muzzleloader	na	na	501	na	na	174
Special Big Game	1,061	1,735	1,458	455	975	430
Small Game						
Waterfowl	234	689	1,120	39	100	97
Upland	206	973	710	38	207	63
Wild Turkey						
Combined	70	542	156	38	407	84
Gratis	na	38	63	na	18	26
Spring	na	na	267	na	na	182
Furbearer	748	745	1,042	na	na	208
Fishing						
Open Water	825	1,463	2,363	63	146	213
Ice	na	315	872	na	38	129

^aAdjusted to 1990 dollars, using the Gross National Product Implicit Price Deflator.

Nonresident average season expenditures were lower for archery and firearms deer hunters and higher for small game hunters in 1983 than for 1976 (Table 23). Season expenditures were higher for archery deer and small game hunters and anglers in 1990 than in 1986.

TABLE 23. AVERAGE SEASON EXPENDITURES, BY ACTIVITY, NONRESIDENT HUNTERS AND ANGLERS, 1990 DOLLARS, 1976, 1983, AND 1990

Activity	Season		
	1976	1983	1990
	----- 1990 dollars ^a -----		
Pronghorn Antelope			
Archery	na	na	368
Deer			
Archery	515	249	567
Firearms	515	480	466
Small Game	498	533	562
Fishing	na	564	668

^aAdjusted to 1990 dollars, using the Gross National Product Implicit Price Deflator.

Projected Total Expenditures

The number of licenses sold (Table 24) times the participation rate (Table 24) times season total expenditures (Table 21) provides a projection of total expenditures for each activity. Summing total expenditures among individual activities and adding the cost of licenses provides an estimate of the total direct economic impact hunter/angler expenditures have on the North Dakota economy. Total expenditures were estimated for residents and nonresidents and for aggregate hunting/fishing activities.

Total direct resident and nonresident hunter/angler expenditures in 1990 in North Dakota were \$355 million (Table 25). Total expenditures, excluding the cost of licenses, were \$351 million. Sixty percent of total direct expenditures was attributable to fishing activities. Over 20 percent of total expenditures was attributable to small game hunting. Resident expenditures were 96 percent (\$336 million) of total direct expenditures.

Historical Expenditures

Resident expenditures increased considerably from 1982 to 1986 before leveling off in 1990 (Table 26). Resident expenditures have increased from \$125 million in 1982 to \$336 million in 1990. Nonresident expenditures increased 194 percent from 1976 to 1983 and declined 3 percent from 1986 to 1990. Nonresident expenditures have increased from \$5 million in 1976 to \$15 million in 1990.

TABLE 24. LICENSE SALES, ACTIVE PARTICIPANTS, AND PARTICIPATION RATES, NORTH DAKOTA HUNTERS AND ANGLERS, 1990

Activity	License Sales	Active Participants ^a	Participation Rate
			-- percent --
<u>RESIDENTS</u>			
Pronghorn Antelope			
Archery ^b	1,215	1,141	93.9
Firearms ^c			
Resident	1,883	1,837	97.6
Gratis	817	718	87.9
Special Big Game ^e	153	153	100.0
Deer ^c			
Archery	10,460	10,104	96.6
Firearms			
Resident	55,601	53,673	96.5
Gratis	10,238	9,095	88.8
Muzzleloader	700	672	96.0
Furbearer ^c	27,998	22,857	81.6
Small Game ^c	59,537 ^d		
Waterfowl	--	27,529	46.2
Upland	--	52,109	87.5
Wild Turkey ^c			
Combined ^d	4,387	3,600	82.1
Spring	1,490	1,319	88.5
Gratis	348	245	70.4
Fishing ^c			
Open Water	113,093	73,785	65.2
Ice	---	29,853 ^f	---
<u>NONRESIDENTS</u>			
Pronghorn Antelope			
Archery ^b	64	64	100.0
Deer			
Archery ^b	404	393	97.3
Firearms ^c	635	613	96.5
Small Game ^c	7,765 (5,522) ^g	6,065	78.1
Fishing ^b	16,906	16,500	97.6

^aNumber of active participants based on the percentage of survey respondents actually participating in each activity during the 1990 season.

^bParticipation rate based on NDSU survey.

^cParticipation rate based on NDGFD survey.

^dSmall game license required to hunt both upland and/or waterfowl.

^eIncludes early, late, and winter seasons.

^fEstimate provided by NDGFD.

^gNumber in parenthesis is for those who were licensed to and did hunt waterfowl.

TABLE 25. TOTAL DIRECT RESIDENT AND NONRESIDENT EXPENDITURES IN NORTH DAKOTA, BY ACTIVITY, 1990

Activity	Resident		Nonresident		Total	
	Expenditure	Percentage	Expenditure	Percentage	Expenditure	Percentage
	- percent -		- dollars -		- dollars -	
Pronghorn Antelope ^a	2,478,330 ^b	0.7	23,560	0.2	2,501,890	0.7
Deer ^a	40,897,474 ^c	12.2	508,110	3.4	41,405,584	11.8
Special Big Game	223,074	0.1	0	0.0	223,074	0.1
Small Game ^d	67,801,348	20.1	3,408,530	22.8	71,209,878	20.3
Wild Turkey	927,142 ^e	0.3	0	0.0	927,142	0.3
Furbearer	<u>23,813,565</u>	<u>7.0</u>	<u>0</u>	<u>0.0</u>	<u>23,813,565</u>	<u>6.8</u>
Total Hunting	136,140,933	40.4	3,940,200	26.4	140,081,133	40.0
Hunting Percentage	97.2		2.8		100.0	
Total Fishing	<u>200,395,921</u>	<u>59.6</u>	<u>11,017,875</u>	<u>73.6</u>	<u>211,413,796</u>	<u>60.0</u>
Fishing Percentage	94.8		5.2		100.0	
Total Hunting and Fishing	336,536,854	100.0	14,958,075	100.0	351,494,929	<u>100.0</u>
Percentage	95.7		4.3		100.0	
Cost of Licenses	<u>2,697,829</u>		<u>735,407</u>		<u>3,433,236</u>	
Grand Total	339,234,683		15,693,482		354,928,165	

^aArchery and firearms combined.

^bAverage includes gratis hunters.

^cIncludes gratis and muzzleloader hunters.

^dIncludes upland game and waterfowl hunters.

^eIncludes gratis and spring season hunters.

TABLE 26. RESIDENT AND NONRESIDENT TOTAL DIRECT EXPENDITURES (EXCLUDING LICENSE FEES) AND PERCENTAGE CHANGE, 1990 DOLLARS, VARIOUS SURVEY YEARS

Survey Year	Residents		Nonresidents	
	Total	Change ^a	Total	Change ^a
	- 1990 dollars ^b - - percent - -		- 1990 dollars ^b - - percent - -	
1976	na	na	5,262,500	na
1982	125,462,142	na	na	na
1983	na	na	15,465,360	194
1986	356,845,592	184	na	na
1990	336,536,854	(6)	14,958,075	(3)

^aRepresents the percentage change from the previous survey year.

^bAdjusted to 1990 dollars, using the Gross National Product Implicit Price Deflator.

Additional Nonresident Expenditures

The average nonresident hunter spent \$13 to \$17 per day, or \$89 to \$124 in total, in the state for nonhunting-related goods and services during the season (Table 27). Most nonresident hunters spent an average of two days in North Dakota in addition to the days spent hunting. The average nonresident angler spent \$26 per day (\$269 in total) for nonangling-related goods and services and stayed seven additional days in the state.

TABLE 27. AVERAGE ADDITIONAL DAYS, AVERAGE ADDITIONAL DAILY EXPENDITURES, AVERAGE ADDITIONAL EXPENDITURES PER HUNTER/ANGLER, AND ADDITIONAL TOTAL DIRECT EXPENDITURES FOR ALL NONRESIDENT HUNTERS/ANGLERS IN NORTH DAKOTA, BY ACTIVITY, 1990

Activity	Average Additional Trip Days ^a	Average Additional Daily Expenditures ^b	Average Additional Expenditures Per Hunter/Angler	Additional Total Direct Expenditures For All Hunters/Anglers
	----- dollars -----			
Archery Antelope	3	14	121.17	7,755
Archery Deer	2	15	123.47	48,534
Firearms Deer	2	17	103.00	63,139
Small Game	2	13	89.00	539,785
Fishing	7	26	268.84	4,435,860
Total				5,095,073

^aTotal days spent in North Dakota during the hunting/fishing seasons less days spent hunting/fishing.

^bTotal additional expenditures divided by total days spent in North Dakota during the hunting/fishing seasons.

Collectively, nonresident hunters/anglers contributed \$5.1 million to the state's economy in addition to direct hunter/angler expenditures. Nearly 90 percent of additional expenditures was attributable to nonresident anglers, and over 10 percent was attributable to small game hunters.

Economic Impact of Resident and
Nonresident Hunters/Anglers

Resident and nonresident hunters/anglers accounted for \$1,168 million in total business activity in 1990 in North Dakota⁸ (Table 28). Hunting/angling expenditures generated \$151 million in retail trade sales and \$237 million in personal income. Participation in hunting/angling activities supported 17,000 jobs across North Dakota.

TABLE 28. RETAIL TRADE, PERSONAL INCOME, TOTAL BUSINESS ACTIVITY, AND EMPLOYMENT GENERATED BY RESIDENT AND NONRESIDENT HUNTER/ANGLER EXPENDITURES IN NORTH DAKOTA, 1990

Group	Retail Trade	Personal Income	Total Business Activity	Secondary Employment
	----- thousand dollars -----			-- jobs --
Residents	144,307	226,590	1,117,578	16,501
Nonresidents	<u>6,414</u>	<u>10,071</u>	<u>50,288</u>	<u>781</u>
Total	150,721	236,661	1,167,866	17,282

Resident and Nonresident
Ruralized Expenditures

Over 50 percent of residents' season expenditures for all hunting/angling was spent in rural areas of North Dakota (Table 29). Archery pronghorn antelope hunters spent 52 percent of their hunting season expenditures in rural areas compared to 78 percent for special big game hunters. Over half of direct resident hunter/angler expenditures was spent in rural North Dakota.⁹

⁸Hunting/angling expenditures were applied to the recreation and tourism sector, and the cost of licenses was applied to the government sector of the North Dakota Input-Output Model.

⁹This was estimated by dividing total hunting/fishing expenditures in rural areas (\$180,185,796) by total direct resident expenditures (\$336,536,854).

TABLE 29. RESIDENT URBAN, RURAL, AND ALL HUNTER/ANGLER EXPENDITURES IN RURAL AREAS, BY ACTIVITY, 1990

Activity	All Residents			Urban Residents ^a			Rural Residents ^b		
	Percentage Rural Spending	Seasonal Amount per Sportsmen	Amount all Sportsmen	Percentage Rural Spending	Seasonal Amount per Sportsmen	Amount all Sportsmen	Percentage Rural Spending	Seasonal Amount per Sportsmen	Amount all Sportsmen
		dollars			dollars			dollars	
HUNTING									
Archery Antelope	52	578	659,285	39	435	322,465	78	843	336,820
Firearms Antelope									
Resident	68	382	702,101	50	280	182,973	78	439	519,128
Gratis	82	227	163,176	0	0	0	82	227	163,176
Total	72 ^c	339 ^c	865,277	36	201	182,973	79	379	682,305
Archery Deer	56	335	3,380,297	30	254	903,895	70	378	2,476,402
Firearms Deer									
Resident	71	344	18,448,254	48	414	6,352,814	81	316	12,095,440
Gratis	84	116	1,055,398	0	0	0	84	116	1,055,398
Total	73 ^c	311 ^c	19,503,652	41	354	6,352,814	81	287	13,150,838
Muzzleloader Deer	63	178	119,644	29	253	50,045	77	147	69,598
Special Big Game	78	1,197	181,930	64	516	28,079	86	1,577	153,851
Small Game									
Waterfowl	66	624	17,159,256	43	579	5,987,791	80	651	11,171,465
Upland Game	66	404	21,060,673	42	366	6,327,793	78	423	14,732,880
Wild Turkey									
Resident	66	90	324,369	43	69	99,770	82	104	224,599
Gratis	58	36	8,895	0	0	0	58	36	8,895
Total	66 ^c	87 ^c	333,264	40	65	99,770	81	100	233,494
Spring	65	202	266,438	32	69	25,838	79	255	240,600
Furbearer	67	550	12,581,116	45	668	4,335,448	76	504	8,245,668
Total Hunting			76,110,831			24,616,910			51,493,921
Hunting Percentage			100			32			68
FISHING									
Open water	62	1,198	88,421,503	37	1,135	31,646,496	77	1,237	56,775,008
Ice	57	524	15,653,462	21	185	2,181,532	80	747	13,471,930
Total Fishing			104,074,965			33,828,027			70,246,938
Fishing Percentage			100			33			67
HUNTING AND FISHING COMBINED									
Total			180,185,796			58,444,937			121,740,859
Percentage			100			32			68

^aNorth Dakota residents living in a city with a population greater than 2,500.

^bNorth Dakota residents living in a city with a population less than or equal to 2,500, on a farm or ranch, or in a rural but nonfarm area.

^cValues are a weighted average based on the number of participants.

Urban residents' percentage of rural spending ranged from 21 percent for ice anglers to 64 percent for special big game hunters. Over \$58 million of urban resident expenditures was "ruralized" (spent in rural communities with populations less than 2,500). Over 30 percent of ruralized hunter and angler expenditures was the direct result of urban residents' expenditures.

Rural residents spent between 58 percent (gratis wild turkey hunters) and 86 percent (special big game hunters) of total season expenditures in rural North Dakota. Rural residents spent about \$122 million in rural areas accounting for nearly 70 percent of all resident expenditures in rural areas.

The percentage of nonresident expenditures in rural areas ranged from 62 percent for anglers to 78 percent for archery pronghorn antelope hunters (Table 30). The season amount per sportsman varied from \$287 to \$427 for archery pronghorn antelope and archery deer hunters, respectively. Nonresidents spent over \$8.5 million or 55 percent of total nonresident direct expenditures in rural areas of North Dakota in 1990.

TABLE 30. NONRESIDENT HUNTER/ANGLER EXPENDITURES IN RURAL AREAS, BY ACTIVITY, 1990

Activity	Percentage Rural Spending	Seasonal	Amount all
		Amount per Sportsman	Sportsmen
		--- \$ ---	--- \$ ---
Archery Pronghorn Antelope	78	287	18,389
Archery Deer	75	427	168,006
Firearms Deer	71	332	203,253
Small Game	70	394	1,313,232
Fishing	62	417	6,875,154
Total in Rural Areas			8,578,034

Collectively, nearly 55 percent of all resident and nonresident hunter and angler expenditures was spent in rural areas of North Dakota (Table 31). Residents made over 50 percent of expenditures in rural areas. Most of these expenditures were attributable to rural residents. Only 3 percent of total hunter/angler expenditures in rural areas was attributable to nonresidents. Over half of total hunting (56 percent) and angling (52 percent) expenditures was in rural areas of North Dakota.

TABLE 31. RESIDENT AND NONRESIDENT EXPENDITURES IN RURAL AND URBAN AREAS OF NORTH DAKOTA, BY ACTIVITY, 1990

Activity	In Rural Areas					In Urban Areas					Total Expenditures
	All	Total Residents	Urban Residents	Rural Residents	Nonresidents	All	Total Residents	Urban Residents	Rural Residents	Nonresidents	
	dollars										
Antelope	1,542,951	1,524,562	505,437	1,019,124	18,389	958,939	953,768	678,218	275,550	5,171	2,501,890
Deer	23,374,851	23,003,592	7,306,754	15,696,839	371,259	18,030,733	17,893,882	12,311,934	5,581,948	136,851	41,405,584
Special Big Game	183,127	183,127	28,264	154,863	0	39,947	39,947	15,311	24,636	0	223,074
Small Game	39,557,505	38,244,272	12,324,078	25,920,194	1,313,232	31,652,373	29,557,075	20,818,402	8,738,674	2,095,298	71,209,878
Wild Turkey	599,702	599,702	125,608	474,094	0	327,440	327,440	199,191	128,249	0	927,142
Furbearer	12,581,116	12,581,116	4,335,448	8,245,668	0	11,232,449	11,232,449	7,522,885	3,709,563	0	23,813,565
Total Hunting	77,839,252	76,136,372	24,625,589	51,510,783	1,702,880	62,241,881	60,004,561	41,545,940	18,458,620	2,237,320	140,081,134
Hunting Percentage	56	54	18	37	1	44	43	30	13	2	
Fishing	110,950,119	104,074,965	33,828,027	70,246,938	6,875,154	100,463,677	96,320,956	72,875,565	23,445,391	4,142,721	211,413,796
Fishing Percentage	52	49	16	33	3	48	46	35	11	2	
Grand Total	188,789,371	180,211,337	58,453,617	121,757,721	8,578,034	162,705,558	156,325,517	114,421,505	41,904,012	6,380,041	351,494,929
Percentage	54	51	16	35	3	46	44	33	11	2	

Special Topics

Various topics of special interest to NDGFD personnel were included in this study. Some topics required input from resident hunters. Surveys used to collect hunter/angler expenditures and characteristics provided the vehicles needed to collect data for these subject areas. Other topics were related to procedural issues used to collect expenditure data.

Club Membership

The percentage of resident hunters and anglers belonging to one or more clubs ranged from 21 percent for both gratis wild turkey hunters and open water fishing to 78 percent for archery pronghorn antelope hunters (Table 32). Over 50 percent of the archery pronghorn antelope hunters were members of two or more clubs, and nearly 30 percent were members of three or more clubs. The percentage of resident membership varied considerably by activity among the various state and national, local non-affiliated, and local affiliated organizations.

Private Lands Initiative

The NDGFD developed a private lands initiative which allows for the leasing of habitat and food plots in small acreage from private landowners for up to six years through renewable annual contracts. Land enrolled in the program is signed and opened to walking hunter access. Firearms deer, furbearer, and resident upland game questionnaires contained several questions to estimate the extent to which hunters use these lands.

Over half of the firearms deer hunters, small game upland hunters, and furbearer hunters/trappers was aware of the private lands initiative program in 1990 (Table 33). Forty percent of the small game upland hunters hunted on these lands during the season. This compares with 31 percent and 23 percent of furbearers and firearms deer hunters who hunted/trapped on these areas in 1990, respectively.

Preseason Informational Meetings

The NDGFD conducts preseason informational meetings for special big game hunters. Elk, moose, and bighorn sheep hunter questionnaires were designed to estimate the level of hunter attendance at these meetings and to evaluate the meeting. Respondents were asked to provide any suggestions for improving the format or content of the meetings.

Over 85 percent of the special big game hunters responding attended preseason informational meetings (Table 34). The majority of hunters rated the meeting as good. However, over 25 percent of the elk hunters rated the meeting as poor. Suggestions for improving the meeting included

- providing more information,
- ensuring landowner and game warden attendance,
- shortening the meeting,
- having more meetings at more locations for convenience,
- improving the presentation given by NDGFD personnel,
- reducing the meeting size,
- discussing efforts of NDGFD to improve big game management, and
- conducting meetings earlier in the year.

Of particular concern to respondents was the need for more information concerning elk. Some respondents felt too much emphasis was placed on moose hunting and not enough on elk hunting. Respondents indicated that more current films should be shown and that information contained in presentations should be more "up-to-date." Finally, respondents expressed displeasure with having to wait in line at the end of the meeting to collect their packets. Respondents indicated that packets should be ready for dispersal ahead of time.

TABLE 32. CLUB MEMBERSHIPS, BY ACTIVITY, RESIDENT HUNTERS AND ANGLERS, 1990

Club Membership	Archery Pronghorn Antelope			Archery Deer			Firearms Pronghorn Antelope			Firearms Deer			Muzzleloader Deer		
	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c
Participants	201			723			263			252			464		
1 or more clubs	157	78		255	35		121	46		80	32		254	55	
2 or more clubs	109	54		122	17		54	21		33	13		148	32	
3 or more clubs	57	28		47	7		24	9		15	6		68	15	
Organizations:															
State and National															
ND Bowhunters	58	29		28	4		4	2		1	1		8	2	
Ducks Unlimited	40	20		67	9		37	14		36	14		86	19	
ND Wildlife															
Federation	5	3		14	2		9	3		11	4		30	6	
United Sportsmen	8	4		12	2		7	3		3	1		10	2	
Pheasants Forever	14	7		14	2		20	8		10	4		17	4	
National Riflemen's															
Association	37	18		52	7		24	9		18	7		68	15	
Other National or															
Statewide	47	23		68	9		26	10		10	4		104	22	
Local Non-affiliates ^d	38	19		73	10		40	15		31	12		99	21	
Local Affiliates ^e	76	35		96	13		32	12		8	3		48	10	

(continued)

TABLE 32. (continued)

Club Membership	Gratis Firearms Pronghorn Antelope			Gratis Firearms Deer			Special Big Game			Small Game Waterfowl			Small Game Upland		
	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c
Participants	149			195			136			218			371		
1 or more clubs		41	28		43	22		69	51		92	42		106	29
2 or more clubs		17	11		16	8		41	30		34	16		40	11
3 or more clubs		7	5		2	1		19	14		11	5		15	4
Organizations:															
State and National															
ND Bowhunters		4	3		0	0		4	3		1	1		1	1
Ducks Unlimited		7	5		11	6		25	18		41	19		36	14
ND Wildlife															
Federation		2	1		4	2		5	4		11	5		11	4
United Sportsmen		0	0		0	0		4	3		4	2		3	1
Pheasants Forever		16	11		2	1		12	9		13	6		10	4
National Riflemen's Association		10	7		4	2		19	14		6	3		18	7
Other National or Statewide		14	9		11	6		18	13		16	7		10	4
Local Non-affiliates ^d		10	7		23	12		26	19		28	13		31	12
Local Affiliates ^e		2	1		6	3		17	13		18	8		8	3

(continued)

TABLE 32. (continued)

Club Membership	Fall Wild Turkey			Gratis Wild Turkey			Spring Wild Turkey			Furbearer			Open Water Fishing		
	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c	N ^a	n ^b	% ^c
Participants	234			66			225			292			595		
1 Club		119	51		14	21		109	48		112	38		122	21
2 Clubs		54	23		11	17		59	26		45	15		40	7
3 Clubs or more		25	11		2	3		35	16		15	5		19	3
Organizations:															
State and National															
ND Bowhunters		6	3		2	3		6	3		2	1		6	1
Ducks Unlimited		55	24		5	8		48	21		37	13		38	6
ND Wildlife															
Federation		11	5		1	2		17	8		9	3		14	2
United Sportsmen		12	5		2	3		16	7		6	2		4	1
Pheasants Forever		25	11		1	2		16	7		18	6		21	4
National Riflemen's Association		24	10		4	6		23	10		14	5		15	3
Other National or Statewide		29	12		9	14		23	10		19	7		11	2
Local Non-affiliates ^d		16	7		2	3		32	14		46	16		44	7
Local Affiliates ^e		20	9		1	2		22	10		17	6		28	5

^aTotal number of active participants in the survey sample.

^bTotal number of survey respondents within each club category.

^cPercentage of active participants within each club category.

^dClubs not affiliated with other national or state organizations.

^eLocal clubs affiliated with other national or state organizations.

TABLE 33. RESPONSES TO QUESTIONS CONCERNING THE PRIVATE LANDS INITIATIVE PROGRAM, 1990

Activity/question	Response	Percentage
FIREARMS DEER		
Aware of the program	Yes	52.8
	No	47.2
Hunt on these areas	Yes	22.7
	No	77.3
SMALL GAME--UPLAND		
Aware of the program	Yes	53.4
	No	46.6
Hunt on these areas	Yes	40.1
	No	59.9
FURBEARER		
Aware of the program	Yes	54.9
	No	45.1
Hunt on these areas	Yes	31.1
	No	68.9

TABLE 34. RESPONSES TO QUESTIONS CONCERNING PRESEASON INFORMATIONAL MEETINGS, NORTH DAKOTA RESIDENT SPECIAL BIG GAME HUNTERS, 1990

Question/ Response	Bighorn Sheep	Elk	Moose
	----- percent -----		
Attend preseason meeting			
Yes	100	86	95
No	0	14	5
Rating of preseason meeting			
Good	100	74	82
Poor	0	26	18

National Versus State Expenditure Surveys

The U.S. Fish and Wildlife Service (USFWS) has conducted national surveys of hunting, fishing, and wildlife-associated recreation every five years since 1955 (U.S. Department of the Interior 1989). One section of the survey focuses on both in- and out-of-state resident expenditures. The NDGFD contracted with the Department of Agricultural Economics, NDSU, Fargo, to

estimate resident in-state hunting/angling expenditures in 1981, 1982, and 1986. This study takes the first step in comparing hunter/angler direct expenditures between the national and state surveys. State and national direct expenditures were examined to determine if differences in expenditure estimates existed and to account for possible reasons for different expenditure estimates.

The 1985 national survey of North Dakota residents estimated in- and out-of-state resident hunting and fishing expenditures of \$195 million. The 1986 state survey of North Dakota residents estimated in-state hunting and fishing expenditures of \$313 million. This represents a difference of at least \$118 million between the two surveys. (The disparity between the two surveys would have been even larger if resident expenditures in other states were included in the NDSU survey.)

Possible reasons for the disparity between survey expenditure estimates include

- memory bias,
- survey bias, and
- double counting.

The potential for memory bias exists for the 1985 national survey because of the timeliness of the data collected. Survey data were gathered from January 1 through March 31 of 1986. Respondents were being asked to recall expenditures made as much as three months earlier for hunting and nearly 10 months earlier for fishing. The 1986 state survey collected data immediately after the particular hunting/fishing season closed. This narrows the time between the respondent's actual expenditure and the respondent's recollection of the expenditure to less than a month for hunting activities to a maximum of five months for fishing activities. Reducing the expenditure-recollection time period likely produces more reliable expenditure estimates and helps to minimize forgotten expenditures, since hunting/angling experiences should still be fresh in respondents' minds.

The potential for numerous types of survey bias existed in the 1985 national survey, including survey sponsor, type of survey, survey questionnaire, and survey enumerator. The 1985 national survey was administered by the U.S. Department of Commerce, Bureau of the Census, acting as the collecting agency for the U.S. Department of the Interior, USFWS. Past actions and policies of federal agencies in general, and the USFWS, in particular, have created controversies between the federal government and some North Dakota residents. Disputes have led to distrust and skepticism of federal agencies concerning the intended use of such data. Consequently, some residents would not cooperate, and some who did may have provided erroneous responses, affecting national survey estimates. Responses to the state survey should be more reliable since the agency directly responsible for managing the state's wildlife resources uses the information collected about respondents' hunting/fishing activities.

Personal interviews were used to collect data for the 1985 national survey. A personal interview approach requires immediate recall of expenditures with limited opportunity, first, to identify goods and services purchased and, second, to recall exact costs associated with goods and services consumed. Mail surveys were used to collect the 1986 state survey data. A mail survey provides respondents time to identify goods and services consumed and remember the cost or locate records (i.e., receipts, canceled checks) detailing expenditures for hunting/angling goods and services purchased.

The 1985 national survey questionnaire was 54 pages long, collecting information on all hunting/angling activities, including game hunted and harvested, days hunted/fished, out-of-state hunting/fishing trips, hours hunted/fished per day, miles traveled, and other related questions in addition to inquiries about expenditures. The length and complexity of the questionnaire required several hours to complete. The state survey separately collected information about days hunted/fished, game harvested, and expenditures for each hunting/fishing activity. Questionnaires were two pages or less in length and generally required less than an hour to complete. The simplistic nature and narrow focus of the state survey would seem to ensure more reliable expenditure estimates.

Surveys using personal interviews to collect data inherently have enumerator bias. Enumerators affect responses in several ways, including the manner in which questions are asked, the mannerisms of the enumerator during the interview process, and the extent of assistance in interpreting questions and formulating responses. Mail surveys do not have enumerator bias.

State expenditure estimates in 1986 may have double counted some expenditures, leading to inflated expenditure projections. Survey mailing lists were based on random samples of hunting/fishing licenses purchased for each activity. A hunter/angler in the state may have been sent two different survey questionnaires (i.e., firearms deer and firearms pronghorn antelope). Questionnaires were designed to collect expenditures associated with one particular activity. However, the respondent may have included the same level of expenditures on both surveys (i.e., included the cost of a pickup on firearms deer and firearms pronghorn antelope questionnaires).

Even if the same person was not surveyed twice, it is possible the respondent may assign more expenditures to the activity for which the respondent was surveyed than to another hunting/fishing activity in which the respondent participated in but was not surveyed. In some cases, respondents may hunt more than one type of game at the same time and include expenditures for both hunting activities in their survey responses for a particular activity.

Data are available to support limited statistical comparisons between the 1985 national survey, which reports in- and out-of-state expenditures, and the 1990 state survey, which reports only in-state expenditures, for fishing activities. The 1985 national survey estimated fishing expenditures of \$128 million with a 90 percent confidence interval of \pm \$25 million (Figure 3). The 1990 state survey estimated fishing expenditures of \$200 million with a 90 percent confidence interval of \pm \$44 million. Thus, expenditure estimates differ between the two surveys. However, data needed to conduct a formalized statistical significance difference test were not available.

Potential biases associated with the national survey and possible double counting of expenditures in the state survey suggest that the actual level of expenditures may lie somewhere between the two. Correcting biases associated with the national survey probably would increase estimated hunting/angling expenditures. Modifying the state survey to avoid potential double counting probably would lower estimated hunting/angling expenditures. The actual level of expenditures, however, is likely closer to the state survey estimates.

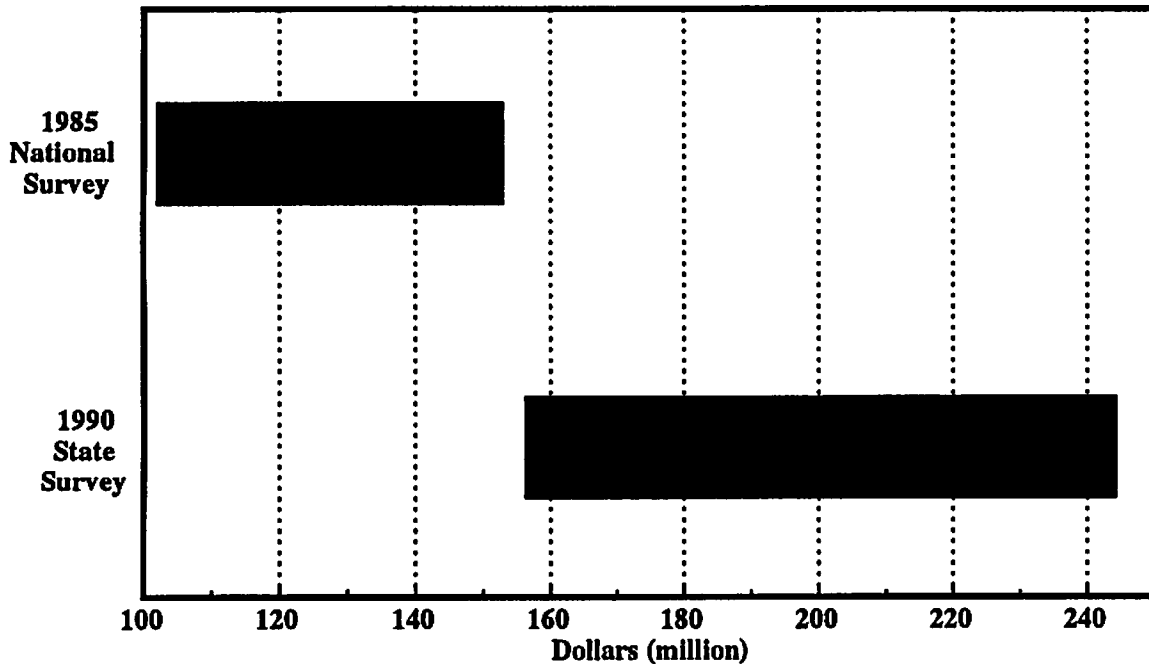


Figure 3. Comparison of 90 Percent Confidence Intervals for North Dakota Fishing Expenditures from the 1985 National Survey of Fishing, Hunting, and Wildlife-associated Recreation and the 1990 State Survey

Nonresident Small Game Expenditures

Nonresident small game hunters have the option of either applying directly to the NDGFD for licenses or purchasing licenses from vendors within the state. Questionnaires were sent to both groups to determine if a significant difference in expenditure patterns exists between the two groups. If significant differences were not found, then future survey samples could be drawn from nonresidents applying directly to NDGFD (whose names and addresses would be available and computerized) rather than having to wait for vendors to return records of license sales before drawing a representative sample from both groups. This would reduce the expenditure-recall time period, helping to alleviate potential memory bias, since surveys could be sent immediately after the hunting season.

Individuals applying directly to NDGFD had arithmetically higher season and daily variable, fixed, and total expenditures (Table 35). However, no statistically significant differences were found in expenditure patterns between the two groups. Higher expenditures for those applying to NDGFD, in part, could be attributed to a shorter expenditure-recall time.

TABLE 35. COMPARISON OF GROUP ONE AND GROUP TWO NONRESIDENT SMALL GAME HUNTER VARIABLE, FIXED, AND TOTAL SEASON AND DAILY EXPENDITURES, 1990

Expenditure	Group One ^a	Group Two ^b	Significant Difference ^c
	----- dollars -----		
Variable:			
Season	417.00 ± 32.81 ^d (n=385)	400.25 ± 35.54 (n=292)	No
Daily	95.39 ± 11.84 (n=358)	90.76 ± 10.56 (n=280)	No
Fixed:			
Season	142.20 ± 161.54 (n=228)	65.39 ± 14.76 (n=194)	No
Daily	30.53 ± 34.31 (n=215)	15.12 ± 5.30 (n=188)	No
Total:			
Season	602.82 ± 169.35 (n=228)	513.55 ± 55.08 (n=194)	No
Daily	130.64 ± 39.03 (n=215)	114.19 ± 17.62 (n=188)	No

^aHunters who applied directly to NDGFD for a license.

^bHunters who purchased a license from vendors across the state.

^cSignificant difference at a 90 percent confidence level.

^d90 percent confidence interval.

Wild Turkey Expenditures

Resident wild turkey early, late, winter, and spring season and daily variable, fixed, and total expenditures were compared to determine if significant differences in expenditure patterns existed among hunting seasons. If significant differences were not found, then expenditures from one season could serve as a proxy for all seasons. The number of surveys could be reduced from four to one, lowering the administrative costs of data collection.

Significant differences in daily and season variable and total expenditures were discovered among groups (Table 36). Significant differences in total season and daily expenditures were found primarily between early/late and late/winter seasons. Total daily and season expenditures were significantly higher during the early and winter seasons than during the late season. However, no significant differences were found between early, late, and winter and spring daily and season total expenditures. The majority of the late turkey season coincides with the firearms deer season, and many respondents may attribute lower expenditures to their turkey hunting when it is done in conjunction with their deer hunting.

TABLE 36. COMPARISON OF EARLY, LATE, WINTER, AND SPRING RESIDENT WILD TURKEY VARIABLE, FIXED, AND TOTAL SEASON AND DAILY EXPENDITURES, 90 PERCENT CONFIDENCE LEVEL, 1990

Hunting Season	Variable			Fixed			Total		
	Late	Winter	Spring	Late	Winter	Spring	Late	Winter	Spring
----- significant difference -----									
SEASONAL									
Early	Yes	No	Yes	No	No	No	Yes	No	No
Late	---	Yes	No	---	No	No	---	Yes	No
Winter	---	---	Yes	---	---	No	---	---	No
DAILY									
Early	Yes	Yes	Yes	No	No	No	Yes	No	No
Late	---	Yes	No	---	No	No	---	Yes	No
Winter	---	---	Yes	---	---	No	---	---	No

Future Survey Efforts

Findings and results from this survey provide the foundation for future survey efforts. Findings can be used to identify and select future survey groups and samples. Expenditure statistics can be used to estimate future sample sizes for each resident and nonresident hunter/angler activity.

Samples

Future surveys should continue to elicit responses from gratis hunters separately from resident hunters. Results from this survey support the finding in the 1986 survey that gratis hunters have lower expenditures than residents participating in the same activity. Separate samples should provide more reliable expenditure estimates for both groups.

Significant differences in resident wild turkey hunter expenditures existed among some of the hunting seasons (early, late, winter, and spring). Three alternative future survey samples are (1) the spring season, (2) the early or winter and late seasons, or (3) all seasons. No significant differences were identified between early, late, and winter and spring season and daily fixed and total expenditures. Spring wild turkey hunter expenditures could be used as a proxy for season and daily expenditures for the remaining survey groups. However, this option would not provide reliable variable season and daily expenditure estimates. A similar problem would exist if the early or winter and late-season hunters were surveyed (reliable estimates of fixed and total season and daily expenditures, but unreliable variable expenditure estimates).

Surveying all four seasons would provide the most reliable expenditure estimates.¹⁰ This alternative would have the highest survey cost. A decision concerning which alternative to use should be made, based on the value of narrower confidence intervals for variable expenditure estimates. If reliable fixed and total season and daily expenditures are the objective, then a survey of only spring wild turkey hunters is acceptable. However, results from such a survey would have to indicate that variable season and daily expenditures may not represent early and winter-season hunter expenditures.

No significant differences in expenditures were found between nonresident small game hunters applying directly to NDGFD for licenses and hunters purchasing licenses from state vendors. Therefore, samples for future expenditure surveys of nonresident small game hunters can be based exclusively on hunters applying directly to NDGFD.

Sample Sizes

Sample sizes for future resident and nonresident hunter/angler surveys in North Dakota are shown in Table 37. Estimates were based on season variable expenditure data from the 1990 survey. Sample sizes have not been adjusted for projected response rates.¹¹

Summary

Resident open water anglers had the highest average season expenditure (\$2,363) compared to other resident hunting/angling activities. Resident special big game hunters had the highest average daily expenditure (\$430). Gratis wild turkey hunters had the lowest average season (\$63) and daily (\$26) expenditures.

Nonresident anglers had the highest average season expenditure (\$668) compared to other nonresident hunting/angling activities. Nonresident small game hunters spent the most per day (\$123). Nonresident archery pronghorn antelope hunters spent the least per day (\$54) and had the lowest season expenditure (\$368).

Resident and nonresident hunter/angler projected total direct expenditures (excluding the cost of licenses and other additional nonresident expenditures) in North Dakota were over \$351 million in 1990. Ninety-six percent of total direct expenditures was attributable to resident hunting/fishing activities. Sixty percent of total resident and nonresident expenditures was the result of fishing participation in the state.

Total direct resident expenditures (excluding the cost of licenses) have increased from \$125 million in 1982 to nearly \$337 million in 1990. Nonresident expenditures have increased from \$5 million in 1976 to \$15 million in 1990.

¹⁰Sample sizes for each season should be proportional to the total number of wild turkey licenses sold.

¹¹Response rates should represent the number of survey mailings and the license year used to develop the survey mailing list. The sample size must be increased if licenses used to develop the mailing were not for the current year.

TABLE 37. FUTURE SAMPLE SIZES TO ESTIMATE
CONFIDENCE INTERVALS \pm 10 PERCENT OF THE MEAN
BASED ON SEASON VARIABLE EXPENDITURES, 1990

Activity	Confidence Level		
	80	90	95
- number of questionnaires -			
<u>RESIDENT</u>			
Pronghorn Antelope			
Archery	141	233	330
Firearms	82	134	191
Gratis	250	412	584
Deer			
Archery	204	335	476
Firearms	125	206	292
Gratis	194	319	452
Muzzleloader	136	223	317
Special Big Game	59	97	138
Small Game			
Waterfowl	243	399	567
Upland	212	349	496
Wild Turkey			
Combined	194	319	453
Gratis	445	732	1,040
Spring	190	312	444
Furbearer	462	760	1,079
Fishing			
Open Water	552	909	1,290
Ice	191	315	447
<u>NONRESIDENTS</u>			
Pronghorn Antelope			
Archery	50	82	116
Deer			
Archery	98	161	229
Firearms	115	189	268
Small Game	143	236	335
Fishing	177	292	415

Resident and nonresident expenditures generated \$1,168 million of total business activity in North Dakota in 1990. Expenditures induced \$151 million in retail trade sales and \$237 million in personal income. Resident and nonresident expenditures supported 17,000 jobs across the state.

Total resident and nonresident expenditures (including other additional nonresident expenditures and cost of licenses) were \$360 million in 1990 (Figure 4). Most (\$339 million or 94 percent) was attributable to resident hunting/angling expenditures. Approximately \$180 million and \$8.6 million of resident and nonresident expenditures, respectively, or 52 percent of total expenditures was in rural areas.

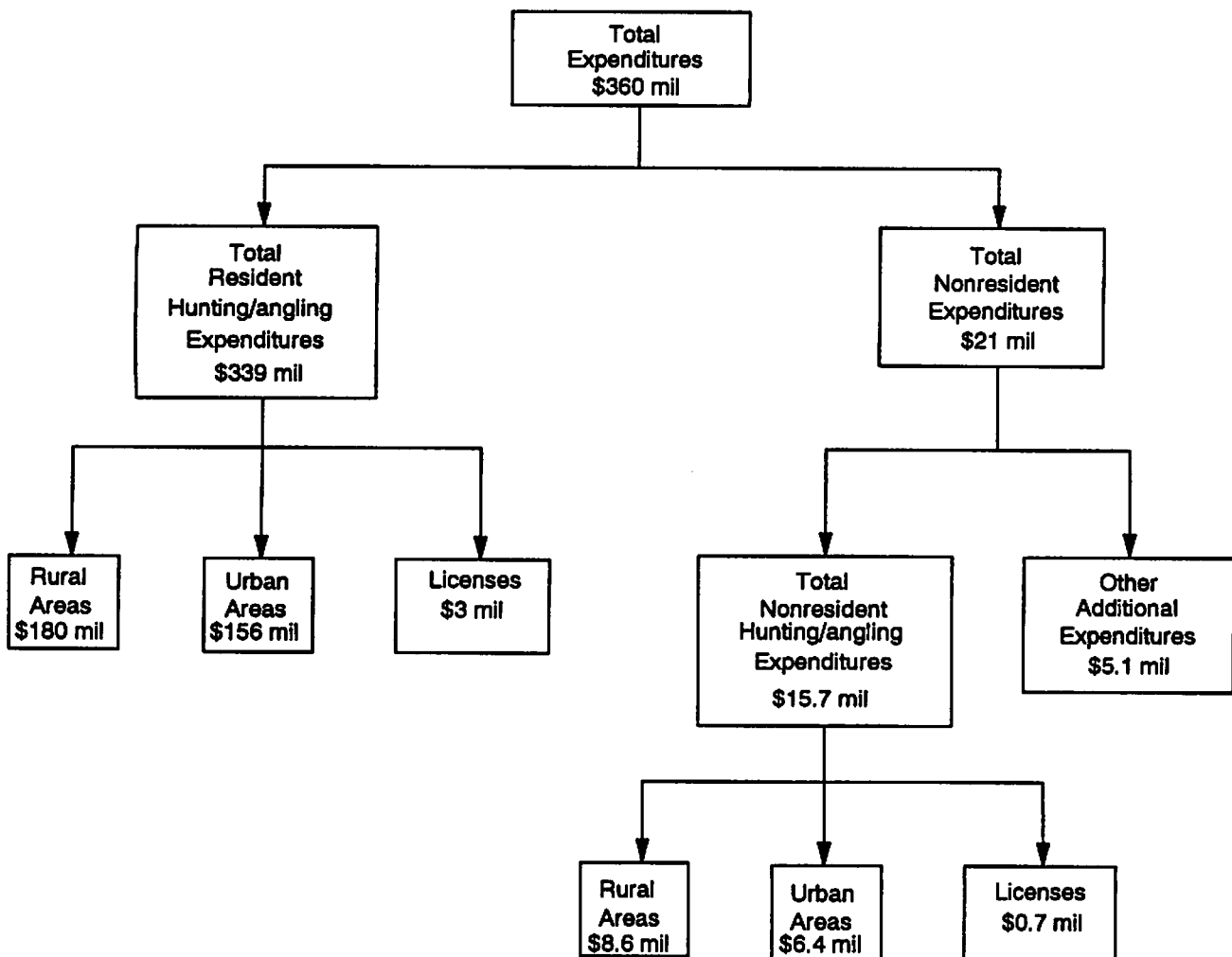


Figure 4. Dollar Flow of Resident and Nonresident Hunter/Angler Expenditures, 1990-91 Season, North Dakota

Rural residents accounted for most (\$122 million or 64 percent) of the expenditures in rural areas (Figure 5). Nearly 30 percent (\$58 million) and 5 percent (\$9 million) of expenditures in rural areas were attributable to urban residents and nonresidents, respectively.

Sixty percent (\$9 million) of nonresident expenditures was ruralized (Figure 5). Nearly 34 percent (\$58 million) of urban resident expenditures was ruralized. Over 35 percent of the expenditures in rural areas was attributable to ruralized resident and nonresident hunting/fishing expenditures.

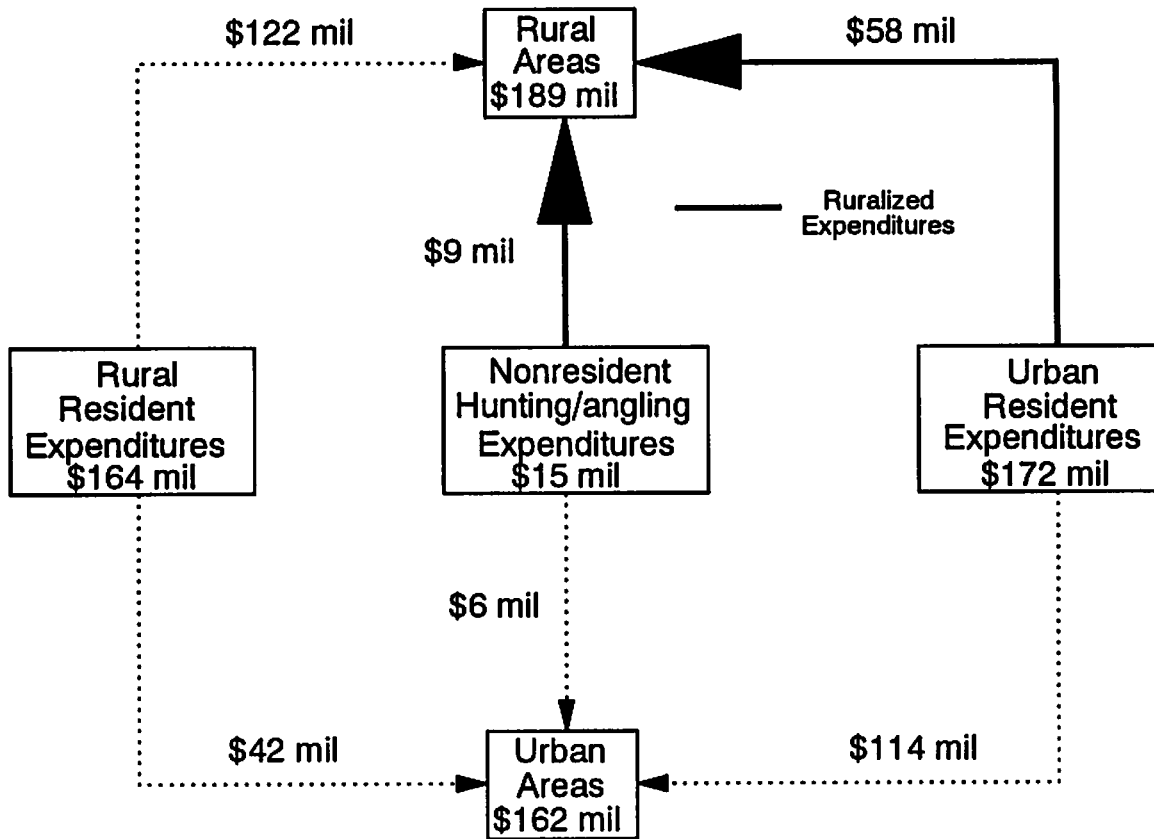


Figure 5. Dollar Flow of Urban and Rural Resident and Nonresident Hunter/Angler Expenditures, 1990-91 Season, North Dakota

Conclusions

Resident and nonresident hunters and anglers continue to be an important part of North Dakota's economy. Resident and nonresident expenditures represented 4 percent of the state's economic base and provided 5 percent of the state's employment in 1990. Hunting/fishing opportunities continue to furnish one mechanism to diversify and strengthen the state's economic base. However, the future extent and impact of resident and nonresident hunting/fishing expenditures on the North Dakota economy are uncertain.

North Dakota's population has declined from over 685,000 to under 640,000, or by about 7 percent, from 1984 to 1990 (Figure 6). A declining population implies fewer total resident hunters/anglers unless the percentage of the population hunting/fishing increases. The percentage of the North Dakota population angling has declined from 23 percent to 18 percent (22 percent) from 1980 to 1990 (Figure 7). The percentage of hunters has declined from 13.6 percent to 12.8 percent (6 percent) over the same period.¹² Reductions in the North Dakota population and the percentage of the population hunting/fishing suggests fewer total resident hunters/anglers in the state.

Population

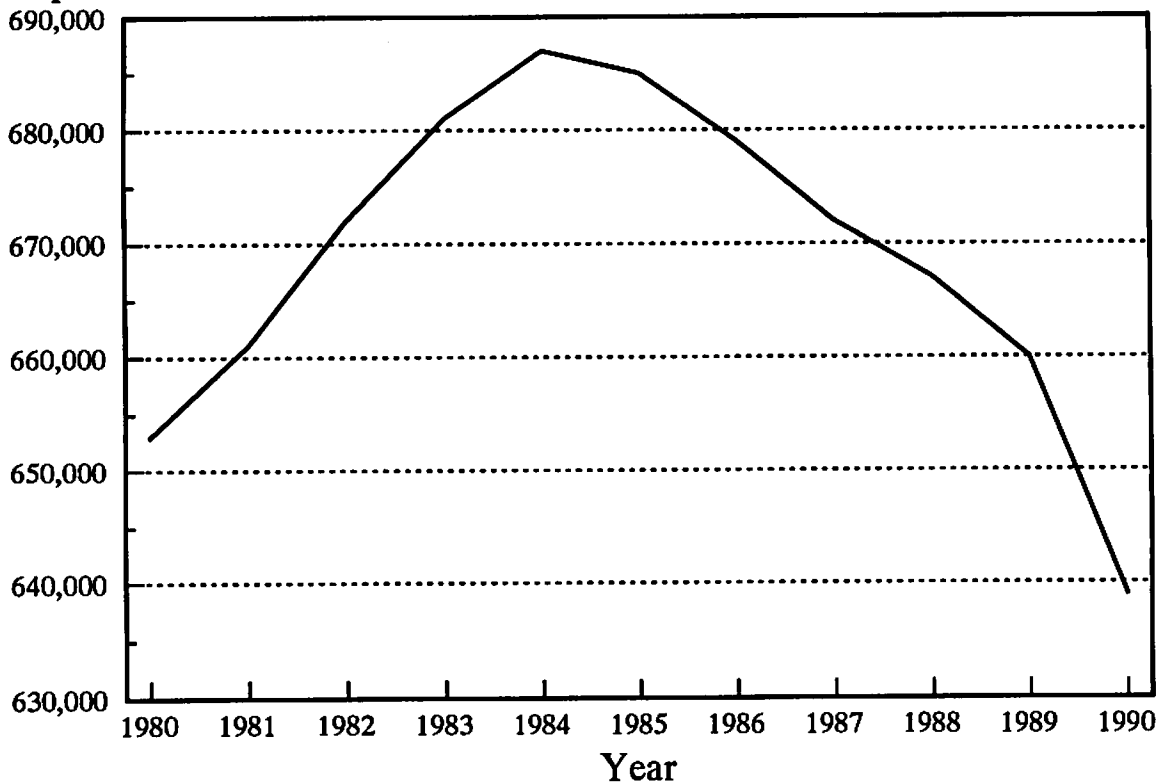


Figure 6. North Dakota Population, 1980-1990

SOURCE: U.S. Department of Commerce, Bureau of Census

¹²The percentage of the population who were anglers was determined by dividing annual total resident fishing licenses sold (fishing and husband/wife license types) by the estimated North Dakota population for each year. The percentage of hunters was determined by dividing annual general game license sales by the estimated North Dakota population for each year. All North Dakota residents, regardless of age, must purchase a general game license to hunt unless they only hunt furbearer (hunt, trap, or snare) or they (including immediate family members) hunt only small game on their own land.

Percent

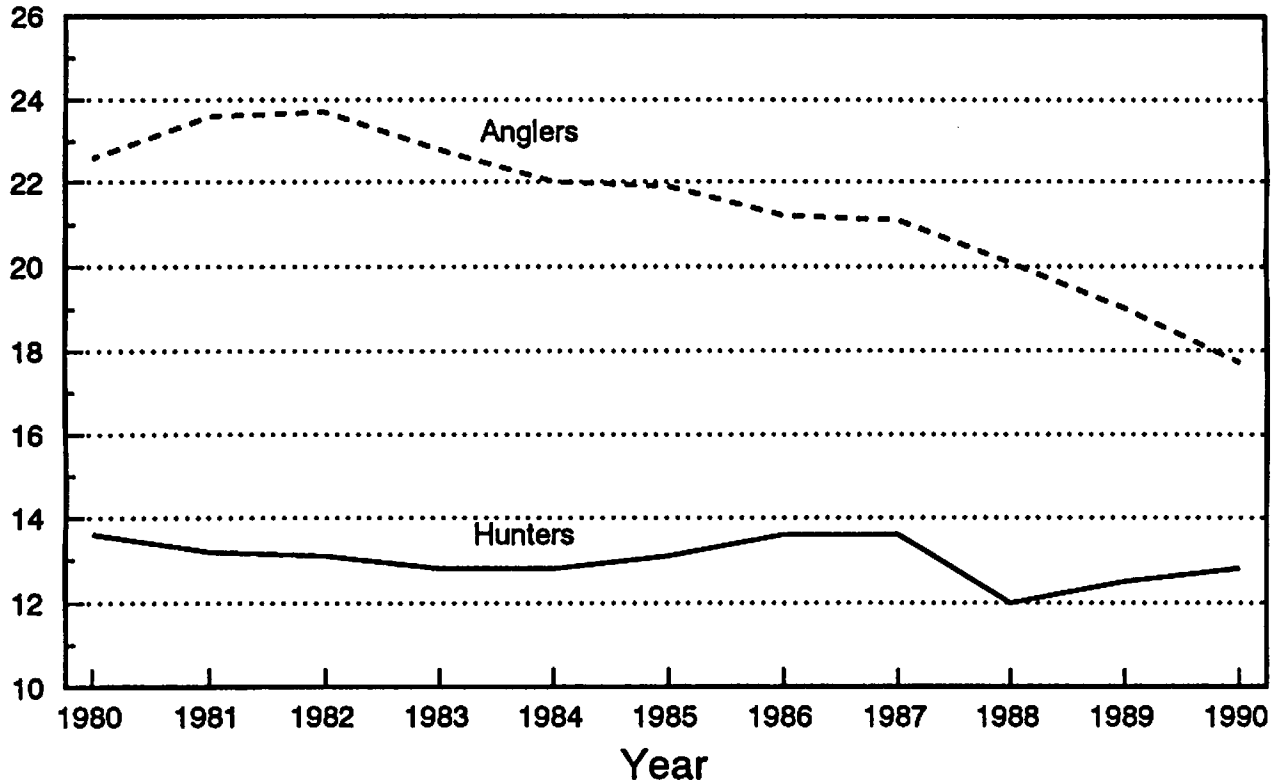


Figure 7. Percentage of North Dakota Population Who Are Anglers/Hunters, 1980-1990

Fewer resident hunters/anglers implies a reduction in state economic activity unless expenditures per hunter/angler increase. Average season expenditures of anglers, in particular, and hunters, in general, increased from 1986 to 1990. The 6 percent decline in total direct expenditures from 1986 to 1990 suggests increased expenditures per hunter/angler were insufficient to offset the decline in the number of hunting/fishing participants. Unless expenditures per hunter/angler increase considerably and/or the number of hunters/anglers in the state grows, the economic activity generated by resident hunters/anglers will decline. A decline in economic activity seems almost certain, considering state trends in population and absolute hunter/angler numbers.

Nonresident hunting and fishing license sales have remained relatively stable from 1980 to 1990 in North Dakota (Figure 8). Resident fishing license sales have declined 29 percent from 1982 to 1990 while resident hunting license sales have declined 8 percent from 1980 to 1990 (Figure 9). Stable nonresident hunting/fishing license sales combined with falling resident hunting/fishing license sales suggest capacity for additional hunters/anglers within North Dakota.¹³

¹³This statement assumes the decline in resident hunting/fishing license sales is not the result of NDGFD reducing the number of available licenses.

License Sales

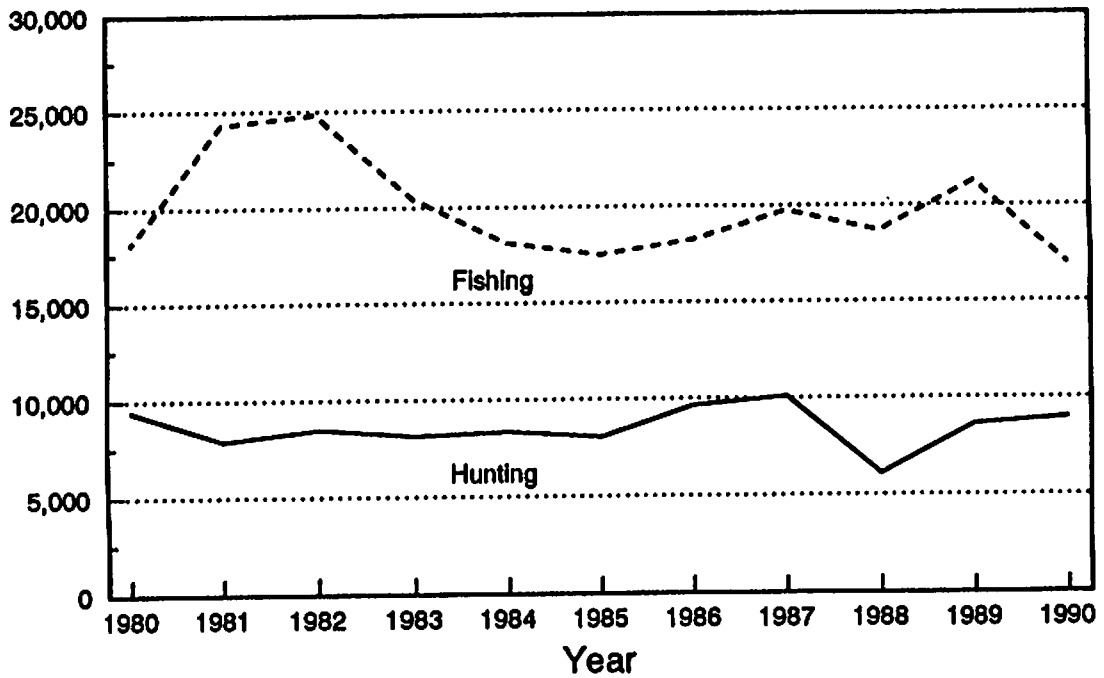


Figure 8. North Dakota Nonresident Fishing/Hunting License Sales, 1980-1990

License Sales

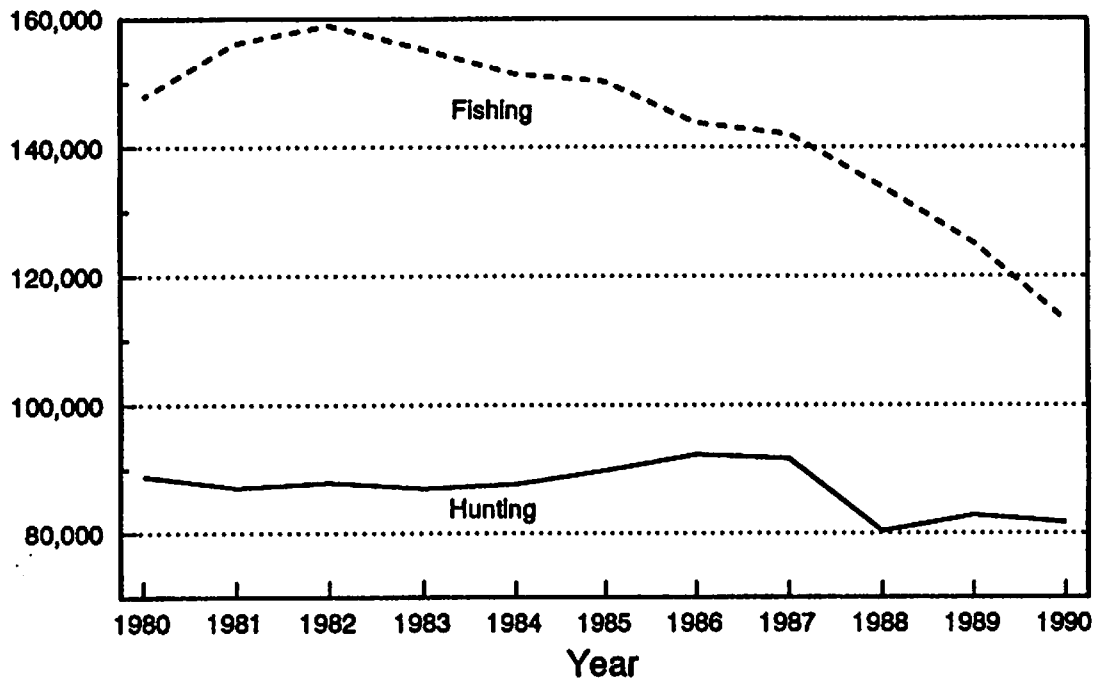


Figure 9. North Dakota Resident Fishing/Hunting License Sales, 1980-1990

The continuing declines in resident population and percentage of the population hunting/fishing imply residents will not absorb excess hunting/fishing capacity. Expanding opportunities for nonresident hunters/anglers could reduce excess hunting/fishing capacity, increase hunting/fishing expenditures, and boost economic activity within the state. Rural residents would benefit the most from expanding nonresident hunting/fishing participation since the majority of nonresidents' hunting/fishing expenditures in North Dakota is made in rural areas.

NDGFD personnel must ensure the demands of resident hunters/anglers are met. A considerable portion of resident sportsmen are willing hunt/fish in other states if quality hunting/fishing opportunities are not available in North Dakota. Meeting these demands in-state ensures resident hunting/fishing expenditures stay in the state, helping to maintain and diversify the state's economic base. Once resident needs are met, management efforts should focus on identifying the capacity for additional hunting/fishing opportunities. Excess capacity should be directed toward the demands of nonresident hunters/anglers. Nonresident hunting/angling is important in expanding the state's economic base since nonresident hunting/fishing expenditures represent new money and generate new wealth within the state.

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Appendix A
Questionnaires

1990 ARCHERY PRONGHORN ANTELOPE RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used only to develop overall statistics. Thank you for your cooperation.

1. Did you buy a North Dakota pronghorn antelope bow license for 1990? Yes No
If NO, please stop here and return the questionnaire.

2. Did you hunt pronghorn antelope with a bow in North Dakota during 1990? Yes No
If NO, please stop here and return the questionnaire.

3. Which county did you bow hunt the most? _____

4. How many days did you hunt pronghorn antelope in North Dakota during the 1990 bow season?
_____ days

5. Did you harvest a pronghorn antelope? Yes No
IF YOU HARVESTED A PRONGHORN ANTELOPE . . .
 - a) What was the date of kill? _____
 - b) In which county was your animal killed? _____
 - c) Was your pronghorn a LARGE BUCK SMALL BUCK LARGE DOE SMALL DOE

6. Did you do any preseason scouting? Yes No

7. What would you do with the additional time and money if you could not hunt in North Dakota?

8. If you could put a dollar value on a typical day of bow hunting pronghorn antelope in North Dakota, what would it be? \$ _____

9. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

10. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve pronghorn antelope bow hunting or pronghorn antelope management in the state?

Please Complete Reverse Side

11. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON PRONGHORN ANTELOPE BOW HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____
 Transportation (Gas, oil, repairs to vehicle) \$ _____
 Miles Traveled (for all trips) _____ miles
 Lodging (Hotel, motel, campground fees) \$ _____
 Film \$ _____
 Taxidermy \$ _____
 Land Access Fees \$ _____
 Meat Processing \$ _____
 Other (please specify) _____ \$ _____

12. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE PRONGHORN ANTELOPE BOW SEASON.

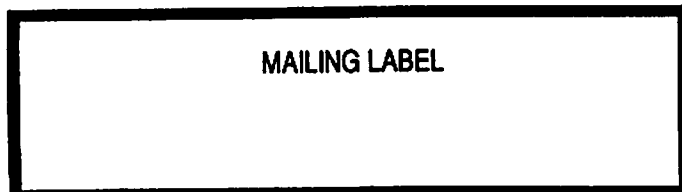
Weapons (Bows and arrows) \$ _____
 Binoculars or Spotting Scope \$ _____
 Clothing Used Primarily For Hunting \$ _____
 Pickup, Motorhome, or Other Vehicle \$ _____
 Camping Equipment \$ _____
 Other Equipment (please specify) _____ \$ _____

13. What percentage of your total expenditures listed in questions 11 and 12 above were spent in rural areas (communities under 2500 population)? _____%

14. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

15. Indicate the percentage of antelope hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	



1990 NONRESIDENT ARCHERY ANTELOPE HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt antelope with a bow in North Dakota during 1990? ___ Yes ___ No
 If **NO**, please stop here and return the questionnaire.

2. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON ANTELOPE BOW HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages	\$ _____
Private Transportation (Gas, oil, repairs)	\$ _____
Miles Traveled (for all trips)	_____ miles
Commercial Transportation (Bus, airfare, etc.)	\$ _____
Lodging (Hotel, motel, campground fees)	\$ _____
Film	\$ _____
Taxidermy	\$ _____
Land Access Fees	\$ _____
Meat Processing	\$ _____
Other (please specify) _____	\$ _____

3. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE ANTELOPE BOW SEASON.**

Weapons (Bows and arrows)	\$ _____
Binoculars or Spotting Scope	\$ _____
Clothing Used Primarily For Hunting	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

4. What percentage of your total expenditures listed in questions 2 and 3 above were spent in rural areas (communities under 2500 population)? _____ %

5. How much money did you spend in North Dakota during the 1990 antelope bow season in addition to those listed in questions 2 and 3 above? \$ _____

6. How many days did you hunt antelope in North Dakota during the 1990 bow season? _____ days

7. How many days did you spend in North Dakota during the 1990 bow season? _____ days

Please Complete Reverse Side

8. Did you harvest an antelope in North Dakota? Yes No
IF YOU HARVESTED AN ANTELOPE . . .
 a) What was the date of kill? _____
 b) In which county was your animal killed? _____
 c) Was your pronghorn a LARGE BUCK SMALL BUCK LARGE DOE SMALL DOE

9. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

10. If you could put a dollar value on a typical day of antelope hunting in North Dakota, what would it be?
 \$ _____

11. Indicate the percentage of antelope hunting you did on each land type.
 Federal %
 State %
 Private %
 Unknown %
 Total=100%

12. In which North Dakota county did you bow hunt the most? _____ County

13. Why did you hunt antelope in North Dakota? _____

14. What is your sex? Male Female

15. What is your age? 18 years or less 19 to 45 years 46 to 65 years over 65 years

16. What is your principal occupation?
 Farming Professional
 Sales Labor
 Government Managerial/Executive
 Craftsman Education
 Student Retired
 Unemployed Other (*specify*) _____

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve antelope bow hunting or antelope management in the state?



1990 FIREARMS PRONGHORN ANTELOPE RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

5. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON PRONGHORN ANTELOPE GUN HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

6. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE PRONGHORN ANTELOPE GUN SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

7. What percentage of your total expenditures listed in questions 5 and 6 above were spent in rural areas (communities under 2500 population)? _____%

8. Which of the following best describes where you live?

- _____ city over 50,000 population _____ city between 2,500 and 50,000 population
- _____ community under 2,500 population _____ farm or ranch
- _____ rural nonfarm

Please Complete Reverse Side

9. How many days did you hunt pronghorn antelope in North Dakota during the 1990 gun season?
_____ days

10. If you could put a dollar value on a typical day of pronghorn antelope hunting in North Dakota, what would it be?
\$ _____

11. Did you do any preseason scouting? _____ Yes _____ No

12. What would you do with the additional time and money if you could not hunt in North Dakota?

13. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

14. Indicate the percentage of antelope hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

15. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve pronghorn antelope gun hunting or pronghorn antelope management in the state?

1990 FIREARMS PRONGHORN ANTELOPE GRATIS HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

5. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON PRONGHORN ANTELOPE GUN HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages	\$ _____
Transportation (Gas, oil, repairs to vehicle)	\$ _____
Miles Traveled (for all trips)	_____ miles
Lodging (Hotel, motel, campground fees)	\$ _____
Ammunition	\$ _____
Film	\$ _____
Taxidermy	\$ _____
Land Access Fees	\$ _____
Meat Processing	\$ _____
Other (please specify) _____	\$ _____

6. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE PRONGHORN ANTELOPE GUN SEASON.

Weapons (Rifles, muzzleloaders, handguns, etc.)	\$ _____
Binoculars, Spotting Scope, Rifle Scope	\$ _____
Clothing Used Primarily For Hunting	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

7. What percentage of your total expenditures listed in questions 5 and 6 above were spent in rural areas (communities under 2500 population)? _____%

8. How many days did you hunt pronghorn antelope in North Dakota during the 1990 gun season? _____ days

Please Complete Reverse Side

9. If you could put a dollar value on a typical day of pronghorn antelope hunting in North Dakota, what would it be? \$ _____

10. What would you do with the additional time and money if you could not hunt in North Dakota?

11. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

12. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve pronghorn antelope gun hunting or pronghorn antelope management in the state?

1990 ARCHERY ELK HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your assistance.

1. Did you hunt elk in North Dakota during 1990? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

2. How many days did you hunt elk in North Dakota during the 1990 season? _____ days

3. Did you harvest an elk? ___ Yes ___ No

IF YOU HARVESTED AN ELK

a) What was the date of kill? _____

b) What type of elk did you harvest? Adult bull ___ Male calf ___ Adult cow ___ Female calf ___

4. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON ELK HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____

Transportation (Gas, oil, repairs to vehicle) \$ _____

Miles Traveled (for all trips) _____ miles

Lodging (Hotel, motel, campground fees) \$ _____

Film \$ _____

Taxidermy \$ _____

Land Access Fees \$ _____

Meat Processing \$ _____

Other (please specify) _____ \$ _____

5. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE ELK SEASON.

Weapons (Bows and arrows) \$ _____

Binoculars or Spotting Scope \$ _____

Clothing Used Primarily For Hunting \$ _____

Pickup, Motorhome, or Other Vehicle \$ _____

Camping Equipment \$ _____

Other Equipment (please specify) _____ \$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____ %

Please Complete Reverse Side

1990 FIREARMS ELK HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt elk in North Dakota during 1990? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

2. How many days did you hunt elk in North Dakota during the 1990 season? _____ days

3. Did you harvest a elk? ___ Yes ___ No
 IF YOU HARVESTED A ELK

a) What was the date of kill? _____

b) What type of elk did you harvest?
 Adult bull ___ Male calf ___ Adult cow ___ Female calf ___

4. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON ELK HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages \$ _____

Transportation (Gas, oil, repairs to vehicle) \$ _____

Miles Traveled (for all trips) _____ miles

Lodging (Hotel, motel, campground fees) \$ _____

Ammunition \$ _____

Film \$ _____

Taxidermy \$ _____

Land Access Fees \$ _____

Meat Processing \$ _____

Other (please specify) _____ \$ _____

5. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE ELK SEASON.**

Weapons \$ _____

Binoculars or Spotting Scope \$ _____

Clothing Used Primarily For Hunting \$ _____

Pickup, Motorhome, or Other Vehicle \$ _____

Camping Equipment \$ _____

Other Equipment (please specify) _____ \$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____ %

Please Complete Reverse Side

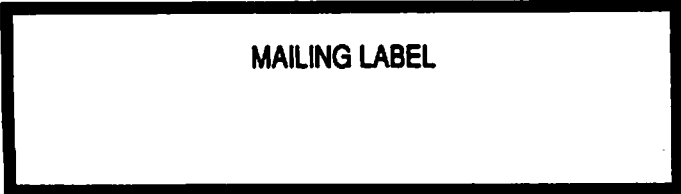
7. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm
8. Did you do any preseason scouting? Yes No
9. If you could put a dollar value on a typical day of elk hunting in North Dakota, what would it be?
 \$ _____
10. Indicate the percentage of elk hunting you did on each land type.
 Federal %
 State %
 Private %
 Unknown %
 Total=100%
11. What would you do with the additional time and money if you could not hunt in North Dakota?

12. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

13. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve elk hunting or elk management in the state?

14. Did you attend the preseason informational meeting? Yes No
 If YES, how would you rate the meeting? Good Poor
 Why? _____

 How could meetings be improved? _____



1990 ARCHERY MOOSE HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self-addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your assistance.

1. Did you hunt moose in North Dakota during 1990? ___ Yes ___ No
If **NO**, please stop here and return the questionnaire.

2. How many days did you hunt moose in North Dakota during the 1990 season? _____ days

3. Did you harvest a moose? ___ Yes ___ No
IF YOU HARVESTED A MOOSE
 a) What was the date of kill? _____
 b) What type of moose did you harvest? Adult bull ___ Male calf ___ Adult cow ___ Female calf ___
 c) In what unit was your moose killed? (see map) _____

4. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON MOOSE HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

5. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE MOOSE SEASON.

- Weapons (Bows and arrows) \$ _____
- Binoculars or Spotting Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____ %

7. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

8. Did you do any preseason scouting? Yes No

9. If you could put a dollar value on a typical day of moose hunting in North Dakota, what would it be?
\$ _____

10. Indicate the percentage of moose hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

11. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

12. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve moose hunting or moose management in the state?

13. Did you attend the preseason informational meeting? Yes No
If YES, how would you rate the meeting? Good Poor

Why? _____

How could these meetings be improved? _____



1990 FIREARMS MOOSE HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt moose in North Dakota during 1990? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

2. How many days did you hunt moose in North Dakota during the 1990 season? _____ days

3. Did you harvest a moose? ___ Yes ___ No
 IF YOU HARVESTED A MOOSE

a) What was the date of kill? _____

b) What type of moose did you harvest? Adult bull ___ Male calf ___ Adult cow ___ Female calf ___

c) In what unit was your moose killed? (see map) _____

4. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON MOOSE HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages \$ _____

Transportation (Gas, oil, repairs to vehicle) \$ _____

Miles Traveled (for all trips) _____ miles

Lodging (Hotel, motel, campground fees) \$ _____

Ammunition \$ _____

Film \$ _____

Taxidermy \$ _____

Land Access Fees \$ _____

Meat Processing \$ _____

Other (please specify) _____ \$ _____

5. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE MOOSE SEASON.**

Weapons \$ _____

Binoculars or Spotting Scope \$ _____

Clothing Used Primarily For Hunting \$ _____

Pickup, Motorhome, or Other Vehicle \$ _____

Camping Equipment \$ _____

Other Equipment (please specify) _____ \$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____%

7. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

8. Did you do any preseason scouting? Yes No

9. If you could put a dollar value on a typical day of moose hunting in North Dakota, what would it be?
\$ _____

10. Indicate the percentage of moose hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

11. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

12. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve moose hunting or moose management in the state?

13. Did you attend the preseason informational meeting? Yes No
If YES, how would you rate the meeting? Good Poor

Why? _____

How could these meetings be improved? _____



1990 BIGHORN SHEEP HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt bighorn sheep in North Dakota during 1990? Yes No
 If NO, please stop here and return the questionnaire.

2. How many days did you hunt bighorn sheep in North Dakota during the 1990 season? _____ days

3. Did you harvest a bighorn? Yes No
 IF YOU HARVESTED A BIGHORN SHEEP
 What was the date of kill? _____

4. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON BIGHORN SHEEP HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

5. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE BIGHORN SHEEP SEASON.**

- Weapons (Rifles, Bows and arrows) \$ _____
- Binoculars or Spotting Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____%

Please Complete Reverse Side

7. Which of the following best describes where you live?
____ city over 50,000 population ____ city between 2,500 and 50,000 population
____ community under 2,500 population ____ farm or ranch
____ rural nonfarm
8. Did you do any preseason scouting? ____ Yes ____ No
9. If you could put a dollar value on a typical day of bighorn sheep hunting in North Dakota, what would it be?
\$ _____
10. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

11. Indicate the percentage of sheep hunting you did on each land type.
- | | |
|------------|-------|
| Federal | ____% |
| State | ____% |
| Private | ____% |
| Unknown | ____% |
| Total=100% | |

12. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve bighorn sheep hunting or bighorn sheep management in the state?
-
-
-

13. Did you attend the preseason informational meeting? ____ Yes ____ No
If YES, how would you rate the meeting? ____ Good ____ Poor
- Why? _____
-
- How could meetings be improved? _____
-



1990 ARCHERY DEER RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

6. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER BOW HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____
Transportation (Gas, oil, repairs to vehicle) \$ _____
Miles Traveled (for all trips) _____ miles
Lodging (Hotel, motel, campground fees) \$ _____
Film \$ _____
Taxidermy \$ _____
Land Access Fees \$ _____
Meat Processing \$ _____
Other (please specify) _____ \$ _____

7. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER BOW SEASON.

Weapons (Bows and arrows) \$ _____
Binoculars or Spotting Scope \$ _____
Clothing Used Primarily For Hunting \$ _____
Pickup, Motorhome, or Other Vehicle \$ _____
Camping Equipment \$ _____
Other Equipment (please specify) _____ \$ _____

8. What percentage of your total expenditures listed in questions 6 and 7 above were spent in rural areas (communities under 2500 population)? _____ %

9. Which of the following best describes where you live?
_____ city over 50,000 population _____ city between 2,500 and 50,000 population
_____ community under 2,500 population _____ farm or ranch
_____ rural nonfarm

10. How many days did you hunt deer in North Dakota during the 1990 bow season? _____ days

11. Did you do any preseason scouting? ___ Yes ___ No

12. If you could put a dollar value on a typical day of archery deer hunting in North Dakota, what would it be?

\$ _____

13. What would you do with the additional time and money if you could not hunt in North Dakota?

14. Did you hunt in a state(s) other than North Dakota in 1990? Yes No

If YES, what did you hunt? (check all that apply)

Deer Waterfowl
 Antelope Upland game
 Other big game (moose, elk, sheep) Other (specify) _____

In which state(s) other than North Dakota did you hunt? _____

Why did you hunt in this state(s)? _____

15. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

16. Indicate the percentage of archery deer hunting you did on each land type.

Federal _____%
State _____%
Private _____%
Unknown _____%
Total=100%

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve archery deer hunting or deer management in the state?

1990 NONRESIDENT ARCHERY DEER HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt deer with a bow in North Dakota during 1990? Yes No
If NO, please stop here and return the questionnaire.

2. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER BOW HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____
Private Transportation (Gas, oil, repairs) \$ _____
Miles Traveled (for all trips) _____ miles
Commercial Transportation (Bus, airfare, etc.) \$ _____
Lodging (Hotel, motel, campground fees) \$ _____
Film \$ _____
Taxidermy \$ _____
Land Access Fees \$ _____
Meat Processing \$ _____
Other (please specify) _____ \$ _____

3. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER BOW SEASON.

Weapons (Bows and arrows) \$ _____
Binoculars or Spotting Scope \$ _____
Clothing Used Primarily For Hunting \$ _____
Pickup, Motorhome, or Other Vehicle \$ _____
Camping Equipment \$ _____
Other Equipment (please specify) _____ \$ _____

4. What percentage of your total expenditures listed in questions 2 and 3 above were spent in rural areas (communities under 2500 population)? _____%

5. How much money did you spend in North Dakota during the 1990 deer bow season in addition to those listed in questions 2 and 3 above? \$ _____

6. How many days did you hunt deer in North Dakota during the 1990 bow season? _____ days

7. How many days did you spend in North Dakota during the 1990 bow season? _____ days

Please Complete Reverse Side

8. Did you harvest a deer in North Dakota? Yes No
IF YOU HARVESTED A DEER . . .
 a) What was the date of kill? _____
 b) In which county was your animal killed? _____
 c) What type of deer was it? Mule Deer Whitetail
 d) What sex was it? Antlered Buck Button Buck Large Doe Small Doe

9. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

10. If you could put a dollar value on a typical day of deer hunting in North Dakota, what would it be?
 \$ _____

11. Indicate the percentage of deer hunting you did on each land type.
 Federal %
 State %
 Private %
 Unknown %
 Total=100%

12. In which North Dakota county did you bow hunt the most? _____ County

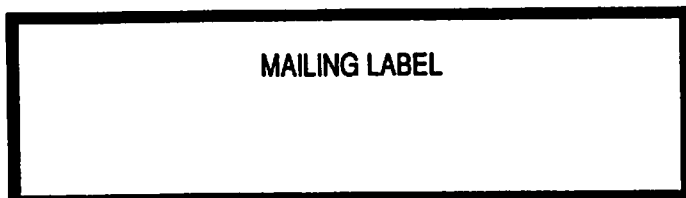
13. Why did you hunt deer in North Dakota? _____

14. What is your sex? Male Female

15. What is your age? 18 years or less 19 to 45 years 46 to 65 years over 65 years

16. What is your principal occupation?
 Farming Professional
 Sales Labor
 Government Managerial/Executive
 Craftsman Education
 Student Retired
 Unemployed Other (*specify*) _____

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve deer bow hunting or deer management in the state?



1990 FIREARMS DEER RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER GUN HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

2. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER GUN SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

3. What percentage of your total expenditures listed in questions 1 and 2 above were spent in rural areas (communities under 2500 population)? _____%

4. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

5. How many days did you hunt deer in North Dakota during the 1990 gun season? _____ days

6. Did you do any preseason scouting? _____ Yes _____ No

Please Complete Reverse Side

7. If you could put a dollar value on a typical day of deer hunting in North Dakota, what would it be?

\$ _____

8. What would you do with the additional time and money if you could not hunt in North Dakota?

9. Did you hunt in a state(s) other than North Dakota in 1990? Yes No

If YES, what did you hunt? (check all that apply)

- Deer Waterfowl
- Antelope Upland game
- Other big game (moose, elk, sheep) Other (specify) _____

In which state(s) other than North Dakota did you hunt? _____

Why did you hunt in this state(s)? _____

10. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

11. Indicate the percentage of deer hunting you did on each land type.

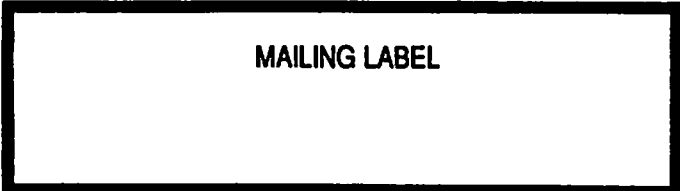
Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

12. The North Dakota Game and Fish Department currently has a program which leases habitat and food plots in small acreage from private landowners for up to ten years through annually renewable contracts. Areas are signed and open to walking hunting access.

Were you aware of this program? Yes No

If YES, did you hunt any of these areas? Yes No

13. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve deer gun hunting or deer management in the state?



1990 FIREARMS DEER GRATIS HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER GUN HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____
Transportation (Gas, oil, repairs to vehicle) \$ _____
Miles Traveled (for all trips) _____ miles
Lodging (Hotel, motel, campground fees) \$ _____
Ammunition \$ _____
Film \$ _____
Taxidermy \$ _____
Land Access Fees \$ _____
Meat Processing \$ _____
Other (please specify) _____ \$ _____

2. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER GUN SEASON.

Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
Binoculars, Spotting Scope, Rifle Scope \$ _____
Clothing Used Primarily For Hunting \$ _____
Pickup, Motorhome, or Other Vehicle \$ _____
Camping Equipment \$ _____
Other Equipment (please specify) _____ \$ _____

3. What percentage of your total expenditures listed in questions 1 and 2 above were spent in rural areas (communities under 2500 population)? _____ %

4. How many days did you hunt deer in North Dakota during the 1990 gun season? _____ days

5. If you could put a dollar value on a typical day of deer hunting in North Dakota, what would it be?
\$ _____

Please Complete Reverse Side

6. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

7. What would you do with the additional time and money if you could not hunt in North Dakota?

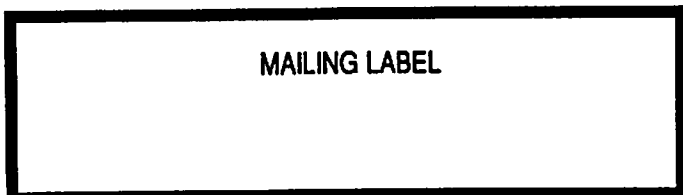
8. Did you hunt in a state(s) other than North Dakota in 1990? Yes No
If YES, what did you hunt? (check all that apply)

<input type="checkbox"/> Deer	<input type="checkbox"/> Waterfowl
<input type="checkbox"/> Antelope	<input type="checkbox"/> Upland game
<input type="checkbox"/> Other big game (moose, elk, sheep)	<input type="checkbox"/> Other (specify) _____

In which state(s) other than North Dakota did you hunt? _____

Why did you hunt in this state(s)? _____

9. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve deer gun hunting or deer management in the state?



1990 NONRESIDENT FIREARMS DEER HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt deer in North Dakota during the 1990 gun season? Yes No
If NO, please stop here and return the questionnaire.

2. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER GUN HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

- Food and Beverages \$ _____
- Private Transportation (Gas, oil, repairs) \$ _____
- Miles Traveled (one-way distance from home to where you hunted) _____ miles
- Commercial Transportation (Bus, airfare, etc.) \$ _____
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

3. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER GUN SEASON.**

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

4. What percentage of your total expenditures listed in questions 2 and 3 above were spent in rural areas (communities under 2500 population)? _____%

5. How much money did you spend in North Dakota during the 1990 deer gun season in addition to those listed in questions 2 and 3 above? \$ _____

6. How many days did you hunt deer in North Dakota during the 1990 gun season? _____ days

7. How many days did you spend in North Dakota during the 1990 gun season? _____ days

Please Complete Reverse Side

8. Did you harvest a deer in North Dakota in 1990? Yes No
IF YES, WHAT TYPE OF DEER WAS IT? Mule Deer Whitetail
WHAT SEX WAS IT? Antlered Buck Button Buck Large Doe Small Doe

9. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

10. If you could put a dollar value on a typical day of deer hunting in North Dakota, what would it be?
\$ _____

11. Indicate the percentage of deer hunting you did on each land type. Federal %
State %
Private %
Unknown %
Total=100%

12. In which North Dakota county did you hunt the most? _____ County

13. Why did you hunt deer in North Dakota? _____

14. What is your sex? Male Female

15. What is your age? 18 years or less 19 to 45 years 46 to 65 years over 65 years

16. What is your principal occupation?
 Farming Professional
 Sales Labor
 Government Managerial/Executive
 Craftsman Education
 Student Retired
 Unemployed Other (specify) _____

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve deer gun hunting or deer management in the state?



1990 DEER MUZZLELOADER HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

5. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON DEER MUZZLELOADER HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

6. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE DEER MUZZLELOADER SEASON.

- Weapons \$ _____
- Binoculars, Spotting Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

7. What percentage of your total expenditures listed in questions 5 and 6 above were spent in rural areas (communities under 2500 population)? _____%

8. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

9. How many days did you hunt deer in North Dakota during the 1990 muzzleloader season?
 _____ days

10. Did you do any preseason scouting? ___ Yes ___ No

11. If you could put a dollar value on a typical day on muzzleloader deer hunting in North Dakota, what would it be? \$ _____

12. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

13. Indicate the percentage of muzzleloader deer hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

14. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve muzzleloader deer hunting or deer management in the state?

1990 RESIDENT OPEN WATER FISHING SURVEY
(Spring, Summer & Fall 1990)

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you purchase a North Dakota fishing license for the 1990-91 season (May 5, 1990 through May 3, 1991)?
___ NO, if NO please stop here and return this questionnaire.
___ YES

2. What type of North Dakota fishing license did you purchase?
SENIOR CITIZEN ___ INDIVIDUAL ___ HUSBAND AND WIFE ___

3. Did you fish in North Dakota during 1990?
___ NO, if NO please stop here and return this questionnaire.
___ YES, if YES, how many days? _____ days

If you had a Husband and Wife fishing license, approximately how many days did:

HUSBAND GO FISHING WITHOUT WIFE? _____ days

WIFE GO FISHING WITHOUT HUSBAND? _____ days

HUSBAND AND WIFE GO FISHING TOGETHER? _____ days

4. How often do you ice fish in North Dakota?
NEVER ___ OCCASIONALLY ___ FREQUENTLY ___

5. How many people in your household have gone fishing in North Dakota during 1990? (including yourself) _____ persons

Of these, how many were under 16 years old and did not need a license? _____ persons

6. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

7. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve fishing or fish management in the state?

8. If you could put a dollar value on a typical day of fishing in North Dakota, what would it be?

\$ _____

Please complete reverse side

9. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON THE OPEN WATER FISHING SEASON IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages \$ _____
 Transportation (Gas, oil, repairs to vehicle) \$ _____
 Miles Traveled (for all trips) _____ miles
 Lodging (Hotel, motel, campground fees) \$ _____
 Bait \$ _____
 Gas and Oil (for boat motor) \$ _____
 Repair and Maintenance of Equipment \$ _____
 Boat and/or Motor Rental \$ _____
 Boat Launching or Access Fees \$ _____
 Film \$ _____
 Packing, Cleaning of Fish \$ _____
 Taxidermy \$ _____
 Other (please specify) _____ \$ _____

10. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE OPEN WATER FISHING SEASON.

Boat, Motor, Trailer \$ _____
 Depth/Fish Finder \$ _____
 Rods and Reels \$ _____
 Tackle and Tackle Box \$ _____
 Clothing Used Primarily For Fishing \$ _____
 Pickup, Motorhome, or Other Vehicle \$ _____
 Camping Equipment \$ _____
 Other Equipment (please specify) _____ \$ _____

11. What percentage of your total expenditures listed in questions 9 and 10 above were spent in rural areas (communities under 2500 population)? _____%

12. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

13. Did you fish in a state(s) other than North Dakota in 1990? ___ Yes ___ No
 In which state(s) other than North Dakota did you fish? _____
 Why did you fish in this state(s)? _____



1990-91 RESIDENT ICE FISHING SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you ice fish in North Dakota during the winter of 1990-91?
___ NO If NO, please stop here and return this questionnaire.
___ YES If YES, how many days? _____ days

If you had a Husband and Wife fishing license, approximately how many days did:
HUSBAND GO ICE FISHING WITHOUT WIFE? _____ days
WIFE GO ICE FISHING WITHOUT HUSBAND? _____ days
HUSBAND AND WIFE GO ICE FISHING TOGETHER? _____ days

2. How many people in your household have gone ice fishing in North Dakota during winter 1990-91?
(including yourself) _____ persons
Of these, how many were under 16 years old and did not need a license? _____ persons
3. If you could put a dollar value on a typical day of ice fishing in North Dakota, what would it be?
\$ _____

4. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve ice fishing in North Dakota?

5. Which of the following best describes where you live?
___ city over 50,000 population ___ city between 2,500 and 50,000 population
___ community under 2,500 population ___ farm or ranch
___ rural nonfarm

Please Complete Reverse Side

6. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON THE ICE FISHING SEASON IN NORTH DAKOTA IN 1990-91. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages	\$ _____
Transportation (Gas, oil, repairs to vehicle)	\$ _____
Miles Traveled (for all trips)	_____ miles
Lodging (Hotel, motel)	\$ _____
Bait	\$ _____
Heater Fuel	\$ _____
Repair and Maintenance of Equipment	\$ _____
Fish House Rental	\$ _____
Film	\$ _____
Packing, Cleaning of Fish	\$ _____
Taxidermy	\$ _____
Other (please specify) _____	\$ _____

7. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 OR 1991 FOR THE 1990-91 ICE FISHING SEASON.

Fish House, Heater	\$ _____
Ice Auger	\$ _____
Depth/Fish Finder	\$ _____
Rods and Reels	\$ _____
Tackle and Tackle Box	\$ _____
Clothing Used Primarily For Fishing	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Other Equipment (please specify) _____	\$ _____

8. What percentage of your total expenditures listed in questions 6 and 7 above were spent in rural areas (communities under 2500 population)? _____%



1990-91 NONRESIDENT ANGLER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information will be kept confidential and used only to develop overall statistics. Thank you for your cooperation.

1. Did you purchase a North Dakota fishing license for the 1990-91 season (May 5, 1990 through May 3, 1991)?
 NO If NO, please stop here and return this questionnaire.
 YES

2. What type of North Dakota fishing license did you purchase?
 3-DAY SHORT TERM LICENSE 7-DAY SHORT TERM LICENSE
 INDIVIDUAL SEASON LONG LICENSE HUSBAND AND WIFE SEASON LONG LICENSE

3. Did you fish in North Dakota during the 1990-91 fishing season?
 NO If NO, please stop here and return this questionnaire.
 YES If YES, how many days? _____ days

If you had a Husband and Wife fishing license, approximately how many days did:
 HUSBAND GO FISHING WITHOUT WIFE? _____ days
 WIFE GO FISHING WITHOUT HUSBAND? _____ days
 HUSBAND AND WIFE GO FISHING TOGETHER? _____ days

4. How many days did you spend in North Dakota during the 1990 fishing season? _____ days

5. How many people in your household have gone fishing in North Dakota during 1990-91 season? (including yourself) _____ persons

Of these, how many were under 12 years old and did not need a license? _____ persons

6. Did you ice fish in North Dakota in 1990-91? NO YES

7. If you could put a dollar value on a typical day of fishing in North Dakota, what would it be?
 \$ _____

8. Which of the following best describes where you live?
 city over 50,000 population city between 2,500 and 50,000 population
 community under 2,500 population farm or ranch
 rural nonfarm

9. What is your sex? Male Female

10. What is your age? 18 years or less 19 to 45 years 46 to 65 years over 65 years

11. What is your principal occupation?
 Farming Professional
 Sales Labor
 Government Managerial/Executive
 Craftsman Education
 Student Retired
 Unemployed Other (specify) _____

12. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON THE 1990-91 FISHING SEASON IN NORTH DAKOTA. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages	\$ _____
Private Transportation (Gas, oil, repairs)	\$ _____
Miles Traveled (one-way distance from home to where you fished)	_____ miles
Commercial Transportation (Bus, airfare, etc.)	\$ _____
Lodging (Hotel, motel, campground fees)	\$ _____
Bait	\$ _____
Gas and Oil (for boat motor), Ice House Heater Fuel	\$ _____
Repair and Maintenance of Equipment	\$ _____
Boat and/or Motor Rental, Fish House Rental	\$ _____
Boat Launching or Access Fees	\$ _____
Film	\$ _____
Packing, Cleaning of Fish	\$ _____
Taxidermy	\$ _____
Other (please specify) _____	\$ _____

13. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 AND 1991 FOR THE 1990-91 FISHING SEASON.

Boat, Motor, Trailer	\$ _____
Fish House, Heater	\$ _____
Ice Auger	\$ _____
Depth/Fish Finder	\$ _____
Rods and Reels	\$ _____
Tackle and Tackle Box	\$ _____
Clothing Used Primarily For Fishing	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

14. What percentage of your total expenditures listed in questions 12 and 13 above were spent in rural areas (communities under 2500 population)? _____%

15. How much money did you spend in North Dakota during the 1990-91 fishing season in addition to those listed in questions 12 and 13 above? \$ _____

16. Why did you fish in North Dakota? _____

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve fishing or fish management in the state?



1990 RESIDENT FURBEARER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

4. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON FURBEARER HUNTING AND TRAPPING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.

Food and Beverages	\$ _____
Transportation (Gas, oil, repairs to vehicle)	\$ _____
Miles Traveled (for all trips)	_____ miles
Lodging (Hotel, motel, campground fees)	\$ _____
Ammunition	\$ _____
Film	\$ _____
Taxidermy	\$ _____
Land Access Fees	\$ _____
Other (please specify) _____	\$ _____

5. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 OR 1991 FOR THE 1990-91 FURBEARER SEASON (1 SEP 1990 - 31 MAR 1991).

Traps, Snares & Trapping Supplies (Lures, scents)	\$ _____
Weapons (Rifles, handguns, etc.)	\$ _____
Binoculars, Spotting Scope, Rifle Scope	\$ _____
Predator Calls	\$ _____
Skinning Equipment, Stretchers, Knives	\$ _____
Clothing Primarily For Hunting/Trapping (Snowshoes)	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Snowmobile, Motorbike, A.T.V.	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

6. What percentage of your total expenditures listed in questions 4 and 5 above were spent in rural areas (communities under 2500 population)? _____%

7. If you participated in more than one activity, please allocate as best you can your total expenditures listed in questions 4 and 5 above between . . .

share of hunting expenses	_____%
share of trapping expenses	_____%
share of snaring expenses	_____%
total =	100 %

Please Complete Reverse Side

8. If you could put a dollar value on a typical day of furbearer hunting and/or trapping in North Dakota, what would it be? \$ _____
9. How many days did you hunt or trap furbearers in North Dakota during the 1990-91 season? _____ days
10. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm
11. Indicate the percentage of furbearer hunting/trapping you did on each land type. Federal _____%
 State _____%
 Private _____%
 Unknown _____%
 Total=100%
12. The North Dakota Game and Fish Department currently has a program which leases habitat and food plots in small acreage from private landowners for up to ten years through annually renewable contracts. Areas are signed and open to walking hunting access.
 Were you aware of this program? _____ Yes _____ No
 If YES, did you hunt any of these areas? _____ Yes _____ No
13. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies, Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

14. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve furbearer hunting and trapping or furbearer management in the state?

1990 MIGRATORY GAME BIRD RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you buy a North Dakota small game license for 1990? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

2. Did you hunt migratory game birds (ducks, geese, sandhill cranes, doves) in North Dakota during the 1990 season? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

3. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON MIGRATORY GAME BIRD HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages \$ _____

Transportation (Gas, oil, repairs to vehicle) \$ _____

Miles Traveled (for all trips) _____ miles

Lodging (Hotel, motel, campground fees) \$ _____

Ammunition \$ _____

Film \$ _____

Taxidermy \$ _____

Land Access Fees \$ _____

Meat Processing \$ _____

Veterinarian (Dog care) \$ _____

Repairs to Equipment \$ _____

Other (please specify) _____ \$ _____

4. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE MIGRATORY GAME BIRD SEASON.**

Weapons \$ _____

Dogs \$ _____

Binoculars or Spotting Scope \$ _____

Decoys \$ _____

Clothing Used Primarily For Hunting (boots, waders) \$ _____

Pickup, Motorhome, or Other Vehicle \$ _____

Duck boats, Canoes, Motors, etc. \$ _____

Camping Equipment \$ _____

Other Equipment (please specify) _____ \$ _____

5. What percentage of your total expenditures listed in questions 3 and 4 above were spent in rural areas (communities under 2500 population)? _____ %

Please Complete Reverse Side

6. If you hunted more than one type of migratory game, please allocate as best you can your total expenditures listed in questions 3 and 4 between . . .

share for duck hunting _____ %
share for goose hunting _____ %
share for crane hunting _____ %
share for dove hunting _____ %
total = 100 %

7. How many days did you hunt migratory game birds in North Dakota during the 1990 season?
_____ days

8. Did you do any preseason scouting? _____ Yes _____ No

9. Which of the following best describes where you live?
_____ city over 50,000 population _____ city between 2,500 and 50,000 population
_____ community under 2,500 population _____ farm or ranch
_____ rural nonfarm

10. If you could put a dollar value on a typical day of migratory game bird hunting in North Dakota, what would it be? \$ _____

11. Did you hunt in a state(s) other than North Dakota in 1990? _____ Yes _____ No

If YES, what did you hunt? (check all that apply)

_____ Deer _____ Waterfowl
_____ Antelope _____ Upland game
_____ Other big game(moose,elk, sheep) _____ Other (specify) _____

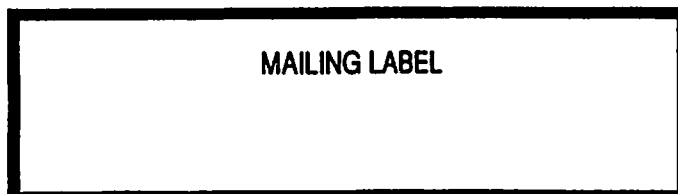
In which state(s) other than North Dakota did you hunt in 1990? _____

Why did you hunt in this state(s)? _____

12. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

13. Indicate the percentage of migratory bird hunting you did on each land type. Federal _____ %
State _____ %
Private _____ %
Unknown _____ %
Total=100%

14. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve migratory game bird hunting or migratory game bird management in the state?



1990 UPLAND GAME RESIDENT HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this questionnaire and return it in the stamped, self addressed envelope enclosed. Your cooperation is strictly voluntary. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you buy a North Dakota small game license for 1990? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

2. Did you hunt upland game (grouse, pheasant, partridge, doves, squirrels, rabbits) in North Dakota during the 1990 season? ___ Yes ___ No
 If NO, please stop here and return the questionnaire.

3. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON UPLAND GAME HUNTING IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages	\$ _____
Transportation (Gas, oil, repairs to vehicle)	\$ _____
Miles Traveled (for all trips)	_____ miles
Lodging (Hotel, motel, campground fees)	\$ _____
Ammunition	\$ _____
Film	\$ _____
Taxidermy	\$ _____
Land Access Fees	\$ _____
Meat Processing	\$ _____
Veterinarian (Dog care)	\$ _____
Other (please specify) _____	\$ _____

4. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE UPLAND GAME SEASON.**

Weapons (Shotguns, etc.)	\$ _____
Dogs	\$ _____
Binoculars or Spotting Scope	\$ _____
Clothing Used Primarily For Hunting	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

5. What percentage of your total expenditures listed in questions 3 and 4 above were spent in rural areas (communities under 2500 population)? _____ %

6. If you could put a dollar value on a typical day of hunting upland game in North Dakota, what would it be? \$ _____

7. If you hunted more than one species of upland game, please allocate as best you can your total expenditures listed in questions 3 and 4 on the previous page . . .

share for pheasant hunting	_____ %
share for grouse hunting	_____ %
share for partridge hunting	_____ %
share for other hunting	_____ %
total = 100 %	

8. How many days did you hunt upland game in North Dakota during the 1990 season? _____ days

9. Did you do any preseason scouting? ___ Yes ___ No

10. Which of the following best describes where you live?

_____ city over 50,000 population	_____ city between 2,500 and 50,000 population
_____ community under 2,500 population	_____ farm or ranch
_____ rural nonfarm	

11. Did you hunt in a state(s) other than North Dakota in 1990? ___ Yes ___ No

If YES, what do you hunt? (check all that apply)

_____ Deer	_____ Waterfowl
_____ Antelope	_____ Upland game
_____ Other big game (moose, elk, sheep)	_____ Other (specify) _____

In which state(s) other than North Dakota did you hunt? _____

Why did you hunt in this state(s)? _____

12. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

13. Indicate the percentage of upland game hunting you did on each land type.

Federal	_____ %
State	_____ %
Private	_____ %
Unknown	_____ %
Total=100%	

14. The North Dakota Game and Fish Department currently has a program which leases habitat and food plots in small acreage from private landowners for up to ten years through annually renewable contracts. Areas are signed and open to walking hunting access.

Were you aware of this program? ___ Yes ___ No

If YES, did you hunt any of these areas? ___ Yes ___ No

15. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve upland game hunting or upland game management in the state?



1990 NONRESIDENT SMALL GAME HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

1. Did you hunt small game in North Dakota during 1990?
 _____ NO, if NO please stop here and return this questionnaire.
 _____ YES

2. **PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON SMALL GAME HUNTING (UPLAND GAME AND/OR WATERFOWL) IN NORTH DAKOTA IN 1990. INCLUDE YOUR SHARE OF GROUP EXPENSES.**

Food and Beverages	\$ _____
Private Transportation (Gas, oil, repairs)	\$ _____
Miles Traveled (one-way distance from home to where you hunted)	_____ miles
Commercial Transportation (Bus, airfare, etc.)	\$ _____
Lodging (Hotel, motel, campground fees)	\$ _____
Ammunition	\$ _____
Film	\$ _____
Taxidermy	\$ _____
Land Access Fees	\$ _____
Meat Processing	\$ _____
Veterinarian (Dog care)	\$ _____
Repairs to Equipment	\$ _____
Other (please specify) _____	\$ _____

3. **PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE UPLAND GAME/WATERFOWL SEASON.**

Weapons	\$ _____
Dogs	\$ _____
Binoculars or Spotting Scope	\$ _____
Decoys	\$ _____
Clothing Used Primarily For Hunting (boots, waders)	\$ _____
Pickup, Motorhome, or Other Vehicle	\$ _____
Duck boats, Canoes, Motors, etc.	\$ _____
Camping Equipment	\$ _____
Other Equipment (please specify) _____	\$ _____

4. What percentage of your total expenditures listed in questions 2 and 3 above were spent in rural areas (communities under 2500 population)? _____%

Please Complete Reverse Side

5. How much money did you spend in North Dakota during the 1990 small game season in addition to those listed in questions 2 and 3 above? \$ _____
6. If you hunted both, please allocate as best you can your total expenditures listed in questions 2 and 3 above between . . .
- | | |
|-----------------------------|---------|
| share waterfowl hunting | _____ % |
| + share upland game hunting | _____ % |
| total = 100 % | |
7. How many days did you hunt small game in North Dakota during the 1990 season? _____ days
8. How many days did you spend in North Dakota during the 1990 small game season? _____ days
9. If you could put a dollar value on a typical day of hunting small game in North Dakota, what would it be? \$ _____
10. Indicate the percentage of small game hunting you did on each land type.
- | | |
|------------|---------|
| Federal | _____ % |
| State | _____ % |
| Private | _____ % |
| Unknown | _____ % |
| Total=100% | |
11. In which North Dakota county did you hunt the most? _____ County
12. Why did you hunt small game in North Dakota? _____

13. Which of the following best describes where you live?
- | | |
|--|--|
| _____ city over 50,000 population | _____ city between 2,500 and 50,000 population |
| _____ community under 2,500 population | _____ farm or ranch |
| _____ rural nonfarm | |
14. What is your sex? _____ Male _____ Female
15. What is your age? _____ 18 years or less _____ 19 to 45 years _____ 46 to 65 years _____ over 65 years
16. What is your principal occupation?
- | | |
|------------------|--------------------------------------|
| _____ Farming | _____ Professional |
| _____ Sales | _____ Labor |
| _____ Government | _____ Managerial/Executive |
| _____ Craftsman | _____ Education |
| _____ Student | _____ Retired |
| _____ Unemployed | _____ Other (<i>specify</i>) _____ |
17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve small game hunting or small game management in the state?

1990 FALL WILD TURKEY RESIDENT HUNTER SURVEY--EARLY SEASON

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

10. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON WILD TURKEY HUNTING IN NORTH DAKOTA IN THE 1990 FALL SEASON. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

11. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE FALL WILD TURKEY SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

12. What percentage of your total expenditures listed in questions 10 and 11 above were spent in rural areas (communities under 2500 population)? _____%

13. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

14. How many days did you hunt wild turkey in North Dakota during the 1990 fall season? _____ days

Please Complete Reverse Side

15. Did you do any preseason scouting? Yes No

16. If you could put a dollar value on a typical day of wild turkey hunting in North Dakota, what would it be?
\$ _____

17. Indicate the percentage of wild turkey hunting you did on each land type. Federal _____%
State _____%
Private _____%
Unknown _____%
Total=100%

18. What would you do with the additional time and money if you could not hunt in North Dakota?

19. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

20. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve wild turkey hunting or wild turkey management in the state?

1990 FALL WILD TURKEY RESIDENT HUNTER SURVEY--LATE SEASON

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

10. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON WILD TURKEY HUNTING IN NORTH DAKOTA IN THE 1990 FALL SEASON. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

11. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE FALL WILD TURKEY SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

12. What percentage of your total expenditures listed in questions 10 and 11 above were spent in rural areas (communities under 2500 population)? _____%

13. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

14. How many days did you hunt wild turkey in North Dakota during the 1990 fall season? _____ days

Please Complete Reverse Side

15. Did you do any preseason scouting? Yes No

16. If you could put a dollar value on a typical day of wild turkey hunting in North Dakota, what would it be?
\$ _____

17. Indicate the percentage of wild turkey hunting you did on each land type. Federal _____%
State _____%
Private _____%
Unknown _____%
Total=100%

18. What would you do with the additional time and money if you could not hunt in North Dakota?

19. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

20. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve wild turkey hunting or wild turkey management in the state?

1990 FALL WILD TURKEY RESIDENT HUNTER SURVEY--WINTER SEASON

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

10. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON WILD TURKEY HUNTING IN NORTH DAKOTA IN THE 1990 FALL SEASON. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

11. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE FALL WILD TURKEY SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

12. What percentage of your total expenditures listed in questions 10 and 11 above were spent in rural areas (communities under 2500 population)? _____%

13. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

14. How many days did you hunt wild turkey in North Dakota during the 1990 fall season? _____ days

Please Complete Reverse Side

15. Did you do any preseason scouting? Yes No

16. If you could put a dollar value on a typical day of wild turkey hunting in North Dakota, what would it be?

\$ _____

17. Indicate the percentage of wild turkey hunting you did on each land type. Federal %

State %

Private %

Unknown %

Total=100%

18. What would you do with the additional time and money if you could not hunt in North Dakota?

19. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

20. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve wild turkey hunting or wild turkey management in the state?

1991 SPRING WILD TURKEY HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

10. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON WILD TURKEY HUNTING IN NORTH DAKOTA IN THE 1991 SPRING SEASON. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

11. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1991 FOR THE SPRING WILD TURKEY SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

12. What percentage of your total expenditures listed in questions 10 and 11 above were spent in rural areas (communities under 2500 population)? _____%

13. Which of the following best describes where you live?
 _____ city over 50,000 population _____ city between 2,500 and 50,000 population
 _____ community under 2,500 population _____ farm or ranch
 _____ rural nonfarm

14. How many days did you hunt wild turkey in North Dakota during the 1991 spring season? _____ days

Please Complete Reverse Side

15. Did you do any preseason scouting? Yes No

16. If you could put a dollar value on a typical day of wild turkey hunting in North Dakota, what would it be?
\$ _____

17. Indicate the percentage of wild turkey hunting you did on each land type.

Federal	_____%
State	_____%
Private	_____%
Unknown	_____%
Total=100%	

18. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

19. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve wild turkey hunting or wild turkey management in the state?

1990 FALL WILD TURKEY GRATIS HUNTER SURVEY

The North Dakota Game and Fish Department and the Department of Agricultural Economics, North Dakota State University, would like to determine the economic activity generated by sportsmen and women in the state. To do this we are asking that you fill out this additional questionnaire page. Information provided will be kept confidential and used to develop overall statistics. Thank you for your cooperation.

10. PLEASE ESTIMATE AS BEST YOU CAN THE MONEY YOU SPENT ON WILD TURKEY HUNTING IN NORTH DAKOTA IN THE 1990 FALL SEASON. INCLUDE YOUR SHARE OF GROUP EXPENSES.

- Food and Beverages \$ _____
- Transportation (Gas, oil, repairs to vehicle) \$ _____
- Miles Traveled (for all trips) _____ miles
- Lodging (Hotel, motel, campground fees) \$ _____
- Ammunition \$ _____
- Film \$ _____
- Taxidermy \$ _____
- Land Access Fees \$ _____
- Meat Processing \$ _____
- Other (please specify) _____ \$ _____

11. PLEASE INDICATE THE COST OF ANY OF THE FOLLOWING ITEMS PURCHASED IN NORTH DAKOTA DURING 1990 FOR THE FALL WILD TURKEY SEASON.

- Weapons (Rifles, muzzleloaders, handguns, etc.) \$ _____
- Binoculars, Spotting Scope, Rifle Scope \$ _____
- Clothing Used Primarily For Hunting \$ _____
- Pickup, Motorhome, or Other Vehicle \$ _____
- Camping Equipment \$ _____
- Other Equipment (please specify) _____ \$ _____

12. What percentage of your total expenditures listed in questions 10 and 11 above were spent in rural areas (communities under 2500 population)? _____%

13. How many days did you hunt wild turkey in North Dakota during the 1990 fall season? _____ days

14. If you could put a dollar value on a typical day of wild turkey hunting in North Dakota, what would it be? \$ _____

Please Complete Reverse Side

15. What would you do with the additional time and money if you could not hunt in North Dakota?

16. Please list any fishing, hunting, wildlife or sportsman clubs or organizations for which you pay dues. Include both statewide or affiliated organizations like Ducks Unlimited, Pheasants Forever, Muskies Inc., ND Wildlife Federation, ND Sport Fishing Congress, United Sportsmen, ND Bowhunters, ND Furtakers, ND Shooting Sports, as well as clubs and organizations of a more localized area of influence.

17. Do you have any suggestions or comments on how the North Dakota Game and Fish Department could improve wild turkey hunting or wild turkey management in the state?

Appendix B
Reminder

We have not received your response to our survey of hunting and fishing activities. Your response is essential to determine the economic activity generated by sportsmen and women in the state. Even if you did not participate in any activities, we would like you to take this final opportunity to complete and return the questionnaire. Your assistance is greatly appreciated.

Thank you!

Appendix C
Resident Archery Pronghorn Antelope

APPENDIX TABLE C1. RESIDENT ARCHERY PRONGHORN ANTELOPE
HUNTER EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.02	
Film	7.17	
Food	62.21	
Lodging	9.32	
Meat	4.84	
Other	7.51	
Taxidermy	15.04	
Transportation	<u>128.17</u>	
Season	233.90 ± 25.19 ^b	(n=198, sd=216.16)
Daily	40.94 ± 5.29	(n=193, sd= 44.84)
Fixed:		
Binoculars	37.84	
Camping	67.44	
Clothing	35.25	
Other	5.99	
Vehicle	612.21	
Weapons	<u>101.51</u>	
Season	856.66 ± 447.24	(n=182, sd=216.16)
Daily	<u>115.19 ± 89.06</u>	(n=177, sd=587.39)
Total Fixed and Variable:		
Season	1,096.27 ± 171.82	(n=181, sd=3,791.13)
Daily	156.42 ± 73.64	(n=176, sd= 595.67)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE C2. SELECTED CHARACTERISTICS OF RESIDENT
ARCHERY PRONGHORN ANTELOPE HUNTERS, 1990

Characteristic	Groups	Percentage
Purchased a North Dakota pronghorn antelope license in 1990	Yes	65.6
	No	34.4
Hunted pronghorn with a bow in North Dakota during 1990	Yes	93.9
	No	6.1
Counties hunted most	Billings	25.7
	McKenzie	18.7
	Bowman	12.8
Harvested a pronghorn antelope	Yes	26.0
	No	74.0
County pronghorn antelope was harvested	Billings	25.5
	McKenzie	13.7
	Mountrail & Slope	11.8
Pronghorn antelope size/sex	Large buck	51.0
	Small buck	35.3
	Large doe	9.8
	Small doe	3.9

Appendix D
Nonresident Archery Pronghorn Antelope

APPENDIX TABLE D1. NONRESIDENT ARCHERY PRONGHORN ANTELOPE
HUNTER EXPENDITURES, 1990

Expenditure Category ^a	Mean		
	- dollars -		
Variable:			
Access	0.00		
Film	27.62		
Food	123.52		
Lodging	39.40		
Meat	4.86		
Other	10.88		
Taxidermy	16.86		
Transportation			
Commercial	0.00		
Private	<u>104.07</u>		
Season	327.21 ± 45.52 ^b	(n=42,	sd=179.89)
Daily	52.67 ± 9.02	(n=42,	sd= 35.63)
Fixed:			
Binoculars	2.19		
Camping	8.19		
Clothing	12.16		
Other	5.31		
Vehicle	0.00		
Weapons	<u>6.84</u>		
Season	34.69 ± 12.73	(n=32,	sd=43.92)
Daily	<u>4.87 ± 1.70</u>	n=32,	sd= 5.86)
Total Fixed and Variable:			
Season	368.13 ± 54.52	(n=32,	sd=188.06)
Daily	53.96 ± 7.89	(n=32,	sd= 27.22)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE D2. SELECTED CHARACTERISTICS OF NONRESIDENT ARCHERY PRONGHORN ANTELOPE HUNTERS, 1990

Characteristic	Groups	Percentage
Hunted pronghorn antelope with a bow in North Dakota during 1990	Yes	100.0
	No	0.0
Counties hunted most	Billings	34.5
	McKenzie	17.2
	Bowman	17.2
Harvested a pronghorn antelope	Yes	29.5
	No	70.5
County pronghorn antelope was harvested	Bowman	42.9
	Billings	28.6
	McKenzie	28.6
Pronghorn antelope size/sex	Large buck	46.2
	Small buck	38.5
	Large doe	15.4
	Small doe	0.0

Appendix E
Resident Firearms Pronghorn Antelope

APPENDIX TABLE E1. RESIDENT FIREARMS PRONGHORN ANTELOPE
HUNTER EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.17	
Ammunition	11.27	
Film	4.94	
Food	34.83	
Lodging	19.23	
Meat	16.32	
Other	1.56	
Taxidermy	46.02	
Transportation	<u>58.99</u>	
Season	193.14 ± 13.86 ^b	(n=260, sd=136.30)
Daily	116.58 ± 10.25	(n=258, sd=100.39)
Fixed:		
Binoculars	35.73	
Camping	4.13	
Clothing	13.56	
Other	2.53	
Vehicle	264.18	
Weapons	<u>43.91</u>	
Season	360.68 ± 236.42	(n=191, sd=1,992.27)
Daily	<u>205.18 ± 122.52</u>	(n=190, sd=1,029.81)
Total Fixed and Variable:		
Season	559.61 ± 239.29	(n=191, sd=2,016.48)
Daily	324.99 ± 124.93	(n=190, sd=1,050.00)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix F
Gratis Firearms Pronghorn Antelope

APPENDIX TABLE F1. GRATIS FIREARMS PRONGHORN ANTELOPE
HUNTER EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.00	
Ammunition	6.24	
Film	0.67	
Food	6.60	
Lodging	0.88	
Meat	14.62	
Other	1.41	
Taxidermy	11.24	
Transportation	<u>18.87</u>	
Season	60.29 ± 9.74 ^b	(n=153, sd=73.49)
Daily	34.97 ± 6.73	(n=149, sd=50.10)
Fixed:		
Binoculars	12.20	
Camping	2.50	
Clothing	5.88	
Other	0.68	
Vehicle	177.06	
Weapons	<u>21.19</u>	
Season	219.45 ± 282.12	(n=100, sd=1,720.25)
Daily	<u>87.06 ± 98.83</u>	(n= 96, sd= 590.42)
Total Fixed and Variable:		
Season	277.83 ± 283.62	(n=100, sd=1,729.42)
Daily	121.17 ± 99.44	(n= 96, sd= 594.07)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix G
Resident Archery Deer

APPENDIX TABLE G1. RESIDENT ARCHERY DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	1.59	
Film	3.69	
Food	48.13	
Lodging	5.79	
Meat	12.97	
Other	5.41	
Taxidermy	9.72	
Transportation	<u>107.31</u>	
Season	194.05 ± 14.97 ^b	(n=560, sd=215.97)
Daily	21.83 ± 3.35	(n=544, sd= 47.73)
Fixed:		
Binoculars	17.02	
Camping	22.60	
Clothing	41.78	
Other	10.26	
Vehicle	328.76	
Weapons	<u>75.57</u>	
Season	494.31 ± 143.45	(n=514, sd=1,983.01)
Daily	<u>59.90 ± 32.02</u>	(n=497, sd= 435.30)
Total Fixed and Variable:		
Season	705.52 ± 147.87	(n=505, sd=2,026.23)
Daily	82.78 ± 32.96	(n=489, sd= 444.39)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix H
Nonresident Archery Deer

APPENDIX TABLE H1. NONRESIDENT ARCHERY DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	32.42	
Film	10.38	
Food	107.95	
Lodging	58.71	
Meat	10.37	
Other	4.83	
Taxidermy	9.64	
Transportation		
Commercial	9.25	
Private	<u>122.07</u>	
Season	363.20 ± 31.63 ^b	(n=211, sd=280.12)
Daily	60.29 ± 8.00	(n=211, sd= 70.81)
Fixed:		
Binoculars	1.90	
Camping	5.39	
Clothing	16.41	
Other	4.71	
Vehicle	152.81	
Weapons	<u>23.82</u>	
Season	203.96 ± 253.06	(n=172, sd=2,023.65)
Daily	<u>16.08 ± 13.01</u>	(n=172, sd= 104.01)
Total Fixed and Variable:		
Season	566.52 ± 260.29	(n=172, sd=2,081.50)
Daily	77.64 ± 16.92	(n=172, sd= 135.31)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE H2. SELECTED CHARACTERISTICS OF NONRESIDENT ARCHERY DEER HUNTERS, 1990

Characteristic	Groups	Percentage
Hunted deer with a bow in North Dakota during 1990	Yes	97.3
	No	2.7
Counties hunted most	Slope	16.7
	McKenzie	14.9
	Billings	13.2
Harvested a deer	Yes	34.4
	No	65.6
County deer was harvested	Slope	14.9
	Dickey	12.8
	Billings	10.6
Deer species	Mule	45.6
	Whitetail	54.4
Deer size/sex	Large buck	48.6
	Small buck	6.9
	Large doe	31.9
	Small doe	12.5

Appendix I
Resident Firearms Deer

APPENDIX TABLE II. RESIDENT FIREARMS DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.22	
Ammunition	18.78	
Film	3.02	
Food	39.57	
Lodging	7.33	
Meat	41.79	
Other	2.38	
Taxidermy	5.81	
Transportation	<u>68.19</u>	
Season	187.09 ± 16.83 ^b	(n=255, sd=163.83)
Daily	50.90 ± 4.71	(n=253, sd= 45.72)
Fixed:		
Binoculars	25.23	
Camping	2.13	
Clothing	21.85	
Other	2.80	
Vehicle	281.58	
Weapons	<u>72.86</u>	
Season	406.44 ± 213.54	(n=222, sd=1,940.35)
Daily	<u>119.58 ± 82.84</u>	(n=220, sd= 749.25)
Total Fixed and Variable:		
Season	599.50 ± 214.95	(n=222, sd=1,952.89)
Daily	173.15 ± 82.96	(n=220, sd= 750.33)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix J
Gratis Firearms Deer

APPENDIX TABLE J1. GRATIS FIREARMS DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
- dollars -		
Variable:		
Access	0.00	
Ammunition	10.90	
Film	0.59	
Food	15.26	
Lodging	0.33	
Meat	34.31	
Other	0.97	
Taxidermy	4.64	
Transportation	<u>26.30</u>	
Season	94.19 ± 12.41 ^b	(n=182, sd=102.05)
Daily	30.89 ± 4.25	(n=180, sd= 34.75)
Fixed:		
Binoculars	5.42	
Camping	0.14	
Clothing	9.75	
Other	0.89	
Vehicle	0.00	
Weapons	<u>20.78</u>	
Season	36.99 ± 14.34	(n=144, sd=104.94)
Daily	<u>8.45 ± 2.89</u>	(n=143, sd= 21.07)
Total Fixed and Variable:		
Season	137.49 ± 23.71	(n=144, sd=173.51)
Daily	41.61 ± 6.69	(n=143, sd= 48.81)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix K
Nonresident Firearms Deer

APPENDIX TABLE K1. NONRESIDENT FIREARMS DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	1.83	
Ammunition	12.96	
Film	3.35	
Food	90.70	
Lodging	29.70	
Meat	23.90	
Other	6.85	
Taxidermy	8.59	
Transportation		
Commercial	33.51	
Private	<u>98.71</u>	
Season	309.78 ± 26.16 ^b	(n=263, sd=258.68)
Daily	85.50 ± 7.46	(n=262, sd= 73.59)
Fixed:		
Binoculars	6.96	
Camping	2.23	
Clothing	16.60	
Other	3.07	
Vehicle	80.23	
Weapons	<u>13.91</u>	
Season	123.01 ± 128.50	(n=192, sd=1,085.73)
Daily	<u>29.64 ± 32.27</u>	(n=191, sd= 271.97)
Total Fixed and Variable:		
Season	465.69 ± 133.09	(n=192, sd=1,124.49)
Daily	117.81 ± 33.24	(n=191, sd= 280.13)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE K2. SELECTED CHARACTERISTICS OF NONRESIDENT
FIREARMS DEER HUNTERS, 1990

Characteristic	Groups	Percentage
Hunted deer with a gun in North Dakota during 1990	Yes	97.8
	No	2.2
Counties hunted most	Barnes	6.8
	Ransom	6.8
	Dickey/Pembina/ Stutsman/Towner	4.2
Harvested a deer	Yes	79.5
	No	20.5
Deer species	Mule	8.6
	Whitetail	91.4
Deer size/sex	Large buck	69.5
	Small buck	7.1
	Large doe	16.7
	Small doe	6.7

Appendix L
Resident Muzzleloader Deer

APPENDIX TABLE L1. RESIDENT MUZZLELOADER DEER HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	1.21	
Ammunition	10.68	
Film	0.86	
Food	18.87	
Lodging	1.57	
Meat	11.44	
Other	1.11	
Taxidermy	1.44	
Transportation	<u>40.17</u>	
Season	86.89 ± 6.07 ^b	(n=458, sd=79.23)
Daily	27.23 ± 2.52	(n=457, sd=32.89)
Fixed:		
Binoculars	20.33	
Camping	1.37	
Clothing	26.16	
Other	5.00	
Vehicle	289.83	
Weapons	<u>68.61</u>	
Season	410.30 ± 193.15	(n=347, sd=2,193.88)
Daily	<u>145.36 ± 73.04</u>	(n=347, sd= 829.62)
Total Fixed and Variable:		
Season	501.23 ± 194.58	(n=346, sd=2,206.96)
Daily	173.91 ± 73.79	(n=346, sd= 836.93)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix M
Special Big Game

APPENDIX TABLE M1. SPECIAL BIG GAME HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	13.96	
Ammunition	18.06	
Film	14.23	
Food	106.90	
Lodging	76.90	
Meat	82.72	
Other	16.84	
Taxidermy	88.84	
Transportation	<u>166.20</u>	
Season	582.54 ± 49.40 ^b	(n=134, sd=348.66)
Daily	202.00 ± 30.34	(n=134, sd=214.16)
Fixed:		
Binoculars	29.30	
Camping	5.75	
Clothing	41.17	
Other	49.28	
Vehicle	651.20	
Weapons	<u>70.55</u>	
Season	847.25 ± 533.93	(n=100, sd=3,255.68)
Daily	<u>199.17 ± 100.15</u>	(n=100, sd= 610.66)
Total Fixed and Variable:		
Season	1,462.06 ± 544.22	(n=100, sd=3,318.39)
Daily	429.86 ± 109.50	(n=100, sd= 667.69)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE M2. SELECTED CHARACTERISTICS OF SPECIAL BIG GAME HUNTERS, 1990

Characteristic	Groups	Percentage
BIGHORN SHEEP		
Preseason scouting	Yes	57.1
	No	42.9
Attend preseason meeting	Yes	100.0
	No	0.0
Rating of preseason meeting	Good	100.0
	Poor	0.0
Harvested a bighorn sheep	Yes	85.7
	No	14.3
ELK		
Preseason scouting	Yes	96.6
	No	3.4
Attend preseason meeting	Yes	86.2
	No	13.8
Rating of preseason meeting	Good	73.9
	Poor	26.1
Harvested an elk	Yes	70.0
	No	30.0
Elk size/sex	Adult bull	61.9
	Male calf	9.5
	Adult cow	28.6
	Female calf	0.0
MOOSE		
Preseason scouting	Yes	82.7
	No	17.3
Attend preseason meeting	Yes	94.9
	No	5.1
Rating of preseason meeting	Good	82.1
	Poor	17.9
Harvested a moose	Yes	97.0
	No	3.0
Unit moose was harvested	1	17.0
	2	30.9
	3	20.2
	4	12.8
	5	5.3
	6	11.7
	7	2.1
Moose size/sex	Adult bull	55.8
	Male calf	6.3
	Adult cow	35.8
	Female calf	2.1

Appendix N
Resident Waterfowl

APPENDIX TABLE N1. RESIDENT WATERFOWL HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
- dollars -		
Variable:		
Access	1.55	
Ammunition	61.86	
Film	5.87	
Food	69.04	
Lodging	24.09	
Meat	8.24	
Other	5.85	
Repairs	13.26	
Taxidermy	10.19	
Transportation	132.44	
Veterinarian	<u>9.32</u>	
Season	340.31 ± 46.73 ^b	(n=210, sd=412.88)
Daily	35.04 ± 3.97	(n=202, sd= 34.36)
Fixed:		
Boat	0.01	
Binoculars	21.08	
Camping	10.96	
Clothing	59.36	
Decoys	22.17	
Dogs	8.90	
Other	1.99	
Vehicle	538.19	
Weapons	<u>93.71</u>	
Season	756.40 ± 326.50	(n=182, sd=2,685.78)
Daily	<u>61.44 ± 23.17</u>	(n=178, sd= 188.51)
Total Fixed and Variable:		
Season	1,119.74 ± 353.21	(n=180, sd=2,889.50)
Daily	97.38 ± 24.34	(n=176, sd= 196.90)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE N2. SELECTED CHARACTERISTICS OF RESIDENT
WATERFOWL HUNTERS, 1990

Characteristic	Groups	Percentage
Buy a small game license in 1990	Yes	81.5
	No	18.5
Hunt migratory game in North Dakota during 1990	Yes	45.7
	No	54.3
Expenses by game type	Duck	23.0
	Goose	56.0
	Crane	6.0
	Dove	15.0

Appendix O
Resident Upland Game

APPENDIX TABLE O1. RESIDENT UPLAND GAME HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.56	
Ammunition	47.42	
Film	3.40	
Food	75.51	
Lodging	15.81	
Meat	12.67	
Other	6.15	
Taxidermy	7.96	
Transportation	152.76	
Veterinarian	<u>15.30</u>	
Season	337.50 ± 34.13 ^b	(n=341, sd=384.30)
Daily	34.03 ± 2.70	(n=331, sd= 29.92)
Fixed:		
Binoculars	14.67	
Camping	10.08	
Clothing	50.23	
Dogs	6.43	
Other	4.91	
Vehicle	196.25	
Weapons	<u>68.78</u>	
Season	350.14 ± 136.01	(n=301, sd=1,438.82)
Daily	<u>28.03 ± 7.75</u>	(n=292, sd= 80.76)
Total Fixed and Variable:		
Season	709.59 ± 149.05	(n=300, sd=1,574.17)
Daily	62.77 ± 8.63	(n=291, sd= 89.81)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE O2. SELECTED CHARACTERISTICS OF RESIDENT
UPLAND GAME HUNTERS, 1990

Characteristic	Groups	Percentage
Buy a small game license in 1990	Yes	82.1
	No	17.9
Hunt upland game in North Dakota during 1990	Yes	82.7
	No	17.3
Expenses by game type	Pheasant	51.0
	Grouse	19.0
	Partridge	15.0
	Other	15.0

Appendix P
Nonresident Small Game

APPENDIX TABLE P1. NONRESIDENT SMALL GAME HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	5.39	
Ammunition	27.66	
Film	4.46	
Food	119.05	
Lodging	73.00	
Meat	1.46	
Other	14.23	
Repairs	4.86	
Taxidermy	4.76	
Transportation		
Commercial	46.36	
Private	107.62	
Veterinarian	<u>2.16</u>	
Season	409.77 ± 23.84 ^b	(n=677, sd=382.95)
Daily	93.36 ± 8.10	(n=638, sd=124.73)
Fixed:		
Boat	0.01	
Binoculars	1.30	
Camping	2.16	
Clothing	21.07	
Decoys	6.66	
Dogs	3.21	
Other	3.37	
Vehicle	54.82	
Weapons	<u>16.12</u>	
Season	106.89 ± 87.51	(n=422, sd=1,096.11)
Daily	<u>23.34 ± 18.46</u>	(n=403, sd= 225.94)
Total Fixed and Variable:		
Season	561.78 ± 94.90	(n=422, sd=1,188.75)
Daily	122.96 ± 22.37	(n=403, sd= 273.86)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE P2. SELECTED CHARACTERISTICS OF NONRESIDENT
SMALL GAME HUNTERS, 1990

Characteristic	Groups	Percentage
Hunted small game in North Dakota during 1990	Yes	93.7
	No	6.3
Counties hunted most	Bottineau	12.6
	Towner	7.6
	Hettinger	6.0
Expenses by game type	Waterfowl	55.0
	Upland	45.0

Appendix Q
Resident Wild Turkey

APPENDIX TABLE Q1. RESIDENT WILD TURKEY (EARLY, LATE, WINTER) HUNTER EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.73	
Ammunition	6.27	
Film	1.43	
Food	28.30	
Lodging	10.54	
Meat	0.36	
Other	1.30	
Taxidermy	0.48	
Transportation	<u>43.71</u>	
Season	92.50 ± 10.68 ^b	(n=241, sd=101.08)
Daily	50.49 ± 5.60	(n=237, sd= 52.59)
Fixed:		
Binoculars	8.80	
Camping	10.22	
Clothing	15.63	
Other	1.56	
Vehicle	1.46	
Weapons	<u>21.98</u>	
Season	59.11 ± 20.21	(n=160, sd=155.85)
Daily	<u>34.73 ± 12.25</u>	(n=159, sd= 94.20)
Total Fixed and Variable:		
Season	155.51 ± 26.21	(n=159, sd=201.50)
Daily	83.73 ± 14.33	(n=158, sd=109.81)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix R
Gratis Wild Turkey

APPENDIX TABLE R1. GRATIS WILD TURKEY HUNTER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Ammunition	3.90	
Film	0.34	
Food	8.22	
Lodging	0.40	
Meat	0.00	
Other	0.00	
Taxidermy	0.00	
Transportation	<u>18.65</u>	
Season	31.14 ± 10.53 ^b	(n=63, sd=50.97)
Daily	12.47 ± 3.63	(n=61, sd=17.29)
Fixed:		
Binoculars	13.32	
Camping	0.00	
Clothing	7.10	
Other	0.00	
Vehicle	2.44	
Weapons	<u>0.00</u>	
Season	24.02 ± 16.33	(n=42, sd=64.54)
Daily	<u>10.80 ± 9.65</u>	(n=40, sd=26.32)
Total Fixed and Variable:		
Season	62.79 ± 25.34	(n=42, sd=100.15)
Daily	26.10 ± 10.10	(n=40, sd= 38.94)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix S
Resident Spring Wild Turkey

APPENDIX TABLE S1. RESIDENT SPRING WILD TURKEY HUNTER
EXPENDITURES, 1991

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Ammunition	4.54	
Film	1.70	
Food	15.80	
Lodging	3.95	
Meat	0.24	
Other	0.67	
Taxidermy	6.38	
Transportation	<u>33.62</u>	
Season	66.60 ± 7.89 ^b	(n=226, sd=72.30)
Daily	32.88 ± 4.43	(n=223, sd=40.32)
Fixed:		
Binoculars	13.87	
Camping	0.80	
Clothing	7.11	
Other	3.12	
Vehicle	157.96	
Weapons	<u>14.31</u>	
Season	193.73 ± 198.90	(n=160, sd=1,534.07)
Daily	<u>144.67 ± 187.32</u>	(n=159, sd=1,440.26)
Total Fixed and Variable:		
Season	266.81 ± 202.09	(n=158, sd=1,548.95)
Daily	182.05 ± 189.95	(n=157, sd=1,451.27)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

Appendix T
Resident Furbearer

APPENDIX TABLE T1. RESIDENT FURBEARER HUNTER/TRAPPER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	0.17	
Ammunition	26.56	
Film	2.21	
Food	39.85	
Lodging	6.30	
Other	17.14	
Taxidermy	6.43	
Transportation	112.08	
Season	209.98 ± 33.78 ^b	(n=292, sd=351.94)
Daily	25.62 ± 4.90	(n=266, sd= 48.73)
Fixed:		
A.T.V.	26.77	
Binoculars	42.15	
Calls	6.77	
Camping	10.04	
Clothing	31.74	
Other	16.47	
Skinning Equip.	5.14	
Traps	5.74	
Vehicle	564.83	
Weapons	<u>111.69</u>	
Season	813.77 ± 319.21	(n=239, sd=3,009.03)
Daily	<u>180.75 ± 129.48</u>	(n=220, sd=1,171.08)
Total Fixed and Variable:		
Season	1,041.85 ± 327.78	(n=238, sd=3,083.41)
Daily	208.08 ± 131.90	(n=220, sd=1,192.93)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE T2. SELECTED CHARACTERISTICS OF RESIDENT
FURBEARER HUNTERS/TRAPPERS, 1990

Characteristic	Groups	Percentage
Expenses by hunting type	Hunting	95.4
	Trapping	4.2
	Snaring	0.4

Appendix U
Resident Summer Fishing

APPENDIX TABLE U1. RESIDENT SUMMER ANGLER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Access	3.13	
Bait	34.59	
Boat Gas	54.57	
Boat Rental	1.90	
Film	6.35	
Food	126.05	
Lodging	37.05	
Meat	1.67	
Other	5.03	
Repairs	56.57	
Taxidermy	10.43	
Transportation	<u>159.98</u>	
Season	490.43 ± 67.98 ^b	(n=469, sd=897.67)
Daily	45.35 ± 6.96	(n=445, sd= 89.50)
Fixed:		
Boat	570.68	
Camping	144.87	
Clothing	13.89	
Depth Finder	29.79	
Other	15.81	
Rods	44.85	
Tackle	46.87	
Vehicle	<u>943.87</u>	
Season	1,804.03 ± 478.62	(n=424, sd=6,009.37)
Daily	<u>164.22 ± 46.17</u>	(n=402, sd= 564.49)
Total Fixed and Variable:		
Season	2,362.57 ± 529.17	(n=416, sd=6,581.05)
Daily	212.86 ± 49.17	(n=395, sd= 595.84)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE U2. SELECTED CHARACTERISTICS OF RESIDENT
SUMMER ANGLERS, 1990

Characteristic	Groups	Percentage
Purchased a North Dakota fishing license for 1990-91 season	Yes	67.2
	No	32.8
License type	Senior citizen	15.2
	Individual	28.1
	Husband & wife	56.7
Fished in North Dakota during 1990	Yes	83.8
	No	16.2
Ice fish	Never	36.4
	Occasionally	47.0
	Frequently	16.6
Days fished		-- average --
	Husband	8.3
	Wife	0.3
	Husband & wife	7.3
How many people in household fished in 1990	All	2.5
	Under 16	0.7

Appendix V
Resident Ice Fishing

APPENDIX TABLE VI. RESIDENT ICE ANGLER
EXPENDITURES, 1990

Expenditure Category ^a	Mean	
	- dollars -	
Variable:		
Bait	16.31	
Film	0.63	
Food	53.19	
Heating gas	8.98	
House rent	0.62	
Lodging	2.47	
Meat	0.80	
Other	0.30	
Repairs	8.93	
Taxidermy	3.40	
Transportation	<u>82.86</u>	
Season	177.57 ± 30.95 ^b	(n=103, sd= 191.51)
Daily	20.29 ± 3.64	(n= 95, sd= 22.01)
Fixed:		
Auger	19.72	
Clothing	16.46	
Fish Finder	15.96	
Fish house	15.62	
Other	0.09	
Rods	16.24	
Tackle	14.73	
Vehicle	<u>593.18</u>	
Season	677.92 ± 488.28	(n=90, sd=2,824.50)
Daily	<u>107.54 ± 96.07</u>	(n=82, sd= 530.47)
Total Fixed and Variable:		
Season	872.37 ± 492.39	(n=90, sd=2,848.33)
Daily	128.61 ± 96.10	(n=82, sd= 530.64)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE V2. SELECTED CHARACTERISTICS OF RESIDENT ICE ANGLERS, 1990

Characteristic	Groups	Percentage
Ice fished in North Dakota during 1990	Yes	42.0
	No	58.0
		-- average --
Days fished	Husband	10.2
	Wife	0.0
	Husband & wife	2.8
How many people in household fished in 1990	All	2.1
	Under 16	0.8

Appendix W
Nonresident Fishing

APPENDIX TABLE W1. NONRESIDENT ANGLER EXPENDITURES, 1990

Expenditure Category ^a	Mean	
- dollars -		
Variable:		
Access	2.18	
Bait	20.46	
Boat/fish house gas	16.23	
Boat/fish house rental	13.63	
Film	3.60	
Food	104.99	
Lodging	52.25	
Meat	1.65	
Other	11.69	
Repairs	5.70	
Taxidermy	4.80	
Transportation		
Private	91.50	
Commercial	<u>16.65</u>	
Season	<u>332.37</u> ± 34.37 ^b	(n=271, sd=344.98)
Daily	81.48 ± 11.73	(n=251, sd=113.28)
Fixed:		
Auger	7.62	
Boat	197.88	
Camping	6.74	
Clothing	7.83	
Depth Finder	13.91	
Fish house	0.54	
Other	10.44	
Rods	12.84	
Tackle	24.80	
Vehicle	<u>13.59</u>	
Season	<u>293.11</u> ± 191.97	(n=189, sd=1,609.26)
Daily	<u>33.67</u> ± 20.60	(n=175, sd= 166.17)
Total Fixed and Variable:		
Season	667.75 ± 206.32	(n=188, sd=1,724.96)
Daily	116.53 ± 26.65	(n=174, sd= 214.33)

^aFor further explanation of categories, see Table 3.

^bIndicates a 90 percent confidence interval.

APPENDIX TABLE W2. SELECTED CHARACTERISTICS OF NONRESIDENT ANGLERS, 1990

Characteristic	Groups	Percentage
Purchased a North Dakota fishing license for 1990-91 season	Yes	43.5
	No	56.5
License type	Three day	41.9
	Seven day	27.8
	Individual	23.6
	Husband & wife	6.7
Fished in North Dakota during 1990	Yes	97.6
	No	2.4
Ice fish	Never	34.4
	Occasionally	65.6
	Frequently	16.6
Days fished		-- average --
	Husband	3.9
	Wife	1.0
	Husband & wife	3.7
How many people in household fished in 1990	All	1.8
	Under 12	0.3