

Economic Impact of Resident Hunters and Anglers in North Dakota in 1986

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North Dakota's licensed hunters and anglers continue to have a substantial impact on the state's economy. Leitch (1984) reported licensed resident hunters and anglers spent \$225 million in the state in 1981 (\$271 million when adjusted for inflation to reflect 1986 dollars). Anderson and Leitch (1984) reported that nonresident hunters and anglers spent another \$13 million in the state in 1983 (\$14 million when adjusted for inflation to reflect 1986 dollars).

In 1986, 92,189 resident hunters and 125,044 resident anglers spent \$310 million in North Dakota (Baltezore et al. 1987). The real level of 1986 hunting and angling expenditures was 14 percent, or \$39 million, greater than in 1981. This represents a growth in real terms of 2.8 percent per year. Hunting and fishing is an important sector in the state's economy, especially since many of the inputs are service oriented, generating high business and employment multipliers in a somewhat depressed rural economy.

Sportsmen's Expenditures

The Department of Agricultural Economics has cooperated with the North Dakota Game and Fish Department to develop an ongoing sportsman activity data collection system. The objective is a comprehensive data set that will facilitate analyses of participation and harvest, socioeconomic and demographic characteristics of participants, aggregate impacts on the economy and the natural resource base, and ultimately be comparable with a time-series data set maintained by the U.S. Fish and Wildlife Service on five-year intervals (U.S. Department of the Interior, Fish and Wildlife Service 1982).

Sportsman expenditure and activity data are useful to game and fish managers and planners for decision making and can also be used by resource economists and wildlife researchers for technical analyses of social and biological issues, such as estimates of recreation demand or of wildlife harvests.

Data from three years are now available for North Dakota resident sportsmen, with two year's data available for nonresidents (Table 1).

Average spending per sportsman in 1986 was compared to 1982, indicating higher average total seasonal and daily expenditures for most sportsman activities (Baltezore et al. 1987). Increases in aggregate expenditures were the result of higher reported expenditures for fixed inputs (primarily vehicles) used during the 1986 season.

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Table 1. Hunting and Angling Activity Data for North Dakota.

Activity	Number of Observations in Data Sets				
	Nonresident	Resident			
	1978	1983	1981	1982	1986
Firearms Antelope	NA	NA	—	516	500
Archery Antelope	23	4	—	338	539
Firearms Deer	259	249	1,345	944	1,335
Archery Deer	154	75	265	132	1,065
Wild Turkey	NA	NA	229	183	1,629
Small Game	1,907	675	632	772	1,145
Furbearer	NA	NA	215	326	2,100
Special Big Game ^a	NA	NA	12	17	110
Fishing: summer	—	670	658	661	1,768
winter	—	—	—	381 ^b	475

^aSpecial big game includes moose, elk, and bighorn sheep.

^bData are from 1983 for Devils Lake only and includes nonresidents.

Over 300,000 hunting and fishing licenses were sold in North Dakota in 1986 (Table 2). Fishing licenses accounted for the single largest group sold, comprising 43 percent of the total, followed by firearms deer licenses with 22 percent of total sales.

While special big game hunters generally spend by far the most per day of hunting, summer anglers spend more per person on a seasonal basis than all others except special big game hunters (Table 3). Winter anglers have the lowest average expenditure per person on both a daily and a seasonal basis.

Expenditures by hunters and anglers can be divided into two general categories, variable and fixed (Table 4). Variable goods and services are consumed or used over a short time period or can only be used once. Their cost is directly related to the level of activity. Fixed inputs last longer and may be used more than once.

Itemized expenditures can be aggregated into appropriate sector delineations corresponding to those in the North Dakota Input-Output Model (Coon and Leistritz 1987), allowing for estimation of the economic and employment impacts of hunter and angler expenditures on the North Dakota economy. Generally, sportsman expenditures on variable goods and services support the business and per-

Table 2. Resident License Types and Licenses Issued for Each Hunting and Angling Activity, 1986.

Lic平 Type	Lic平es Sold	Percent
Fishing	143,751	43.1
Firearms Deer	75,000 ^a	22.5
Small Game	66,185	19.8
Furbearer	34,781	10.4
Archery Deer	10,735	3.2
Wild Turkey	1,922 ^a	0.6
Archery Antelope	732	0.2
Firearms Antelope	325 ^a	0.1
Special Big Game ^b	152	0.1
TOTAL	333,583	100.0

^aAdditional free licenses were issued to landowners.

^bSpecial big game includes elk, moose, and bighorn sheep.

SOURCE: North Dakota Game and Fish Department.

sonal services sector while expenditures on fixed inputs support businesses in the retail trade sector. Approximately 25 percent and 75 percent of total hunting and fishing expenditures occur in the business and personal services and retail trade sectors, respectively.

Some may argue that money spent by resident hunters and anglers is money that would be spent in the state even if they did not hunt and fish - they would golf, go bowling, go to the movies, or buy other recreational equipment. While this may be partially true, a more likely scenario is that the availability of outdoor activities in the state substitutes for importing recreation from neighboring states. In other words, it keeps North Dakota dollars in the state. The availability of hunting and fishing opportunities may also be the reason why some North Dakotans live here and why others came here to live and work.

While many of the durable goods used by hunters and anglers are imported from other states, almost all are wholesaled and retailed in the state. However, there are several manufacturers of sporting goods in North Dakota, generating business activity all along the production, wholesale, retail, and activity cycle.

Items strictly for hunting and fishing manufactured in the state include duck decoys, bullets, plastic floats, trolling flaps, cold weather outerwear, downriggers, squid and cannon balls (salmon tackle), boats, fish houses, and fishing lures (North Dakota Economic Development Commission 1985 and MacRae 1982). Many other items used for hunting and fishing are also produced in-state, such as tents, campers, houseboats, docks, boat lifts, travel trailers, and hunting dogs. State residents also hold patents and collect royalties for hunting and fishing items they have developed and market nationwide, and some worldwide.

About \$8 in federal excise tax was returned to the state in the form of Pittman-Robinson (PR) and Dingle-Johnson (DJ) monies for each license bought in 1986. The Game and Fish Department received a total of \$1,436,152 in PR (wildlife) and \$1,227,394 in DJ (fisheries) funds in fiscal year 1986 (Oct. 1, 1985 to Sept. 30, 1986). These funds are the state's share of the federal excise tax on sporting goods, allocated by license sales.

Table 3. Daily, Seasonal, and Projected Aggregate Expenditures by Resident Hunters and Anglers in North Dakota in 1986.

Activity	Average Expenditure Per Person	Projected Total Expenditures	
	Daily	Season	-----dollars-----
Hunting:			
Firearms Antelope	499	606	348,000
Archery Antelope	248	1,161	783,000
Firearms Deer	211	597	48,135,000
Archery Deer	70	748	7,040,000
Wild Turkey	372	489	913,000
Small Game:			
Upland game	180	844	44,712,000
Waterfowl	87	598	21,868,000
Furbearer	98	646	17,921,000
Special Big Game	846	1,505	229,000
Hunting Subtotal			141,949,000
Fishing:			
Summer	127	1,269	158,681,000
Winter	33	273	8,998,000
Fishing Subtotal			167,779,000
Cost of Licenses			3,452,000
Total Hunting and Fishing Expenditures			313,080,000

SOURCE: Baltezore et al. 1987.

Table 4. Resident Hunter and Angler Expenditure Categories.

Expenditure Category
Variable Goods and Services
Food and beverages
Lodging
Transportation
Ammunition
Access fees
Meat processing
Fixed Inputs
Arrows
Weapons
Camping equipment
Clothing
Vehicles
Binoculars
Depth finder
Dogs
Traps
Skinning equipment
Boats, motors, and trailers
Fishing equipment
Duck boats and decoys
All terrain vehicles
Winter fishing equipment
Other fixed inputs

Impact on Rural North Dakota

Rural North Dakota supplies most of the amenity and other natural resource inputs that contribute to hunting and fishing activities. Wildlife habitat, fishing waters, and fish and wildlife resources are each elements of the state's rural environment. A substantial portion of the \$310 million spent by sportsmen in the state in 1986 was spent in rural areas, generating business activity and supporting employment in areas with few job alternatives. Sportsmen's dollars are spent in communities where a few more meals sold and a few more fillups at the service station each day during the hunting season can markedly affect small, service oriented businesses.

Sportsman expenditures generate \$1.25 in gross business volume in addition to the \$1 spent, for a multiplier of 2.25. In addition, each \$1 spent generates \$0.48 in personal income and every \$82,400 spent by sportsmen supports one job (Coon and Leistritz 1987). Hunters and anglers account for \$698 million in gross business volume, \$149 million in personal income, and 8,470 jobs in North Dakota. Resident hunters and anglers thus generate 3 percent of gross state product, 2 percent of state personal income, and 3 percent of state employment with little or no investment since these returns stem primarily from the state's natural resource base.

Community and Rural Development Implications

Hunting and fishing contribute not only to the economic well-being of North Dakota, but also to the general welfare of its residents, all without the negative effects of smokestacks or competing with other industries. The opportunity to hunt and fish is a personal intangible that adds to the quality of life. In the search for a match between North Dakota's rural communities and commercial or industrial development, the availability of hunting and fishing is a positive factor.

Rural leaders should look seriously at the potential for increasing hunting and fishing activity in their jurisdictions. It

appears to offer large returns to small, rural communities with little investment in a business environment with few viable alternatives.

With upward of 2½ million acres of the state's cropland projected to be placed in the Conservation Reserve Program, there may be enhanced opportunities to increase the social and economic returns to hunting and wildlife enjoyment in the state.

References

- Anderson, Randall S., and Jay A. Leitch. 1984. **Characteristics and Expenditures of Nonresident Sportsmen in North Dakota in 1983.** Agricultural Economics Report No. 77, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, Fargo.
- Baltezore, James F., Jay A. Leitch, Theresa Golz, and Arlen K. Harmoning. 1987. "Resident Hunter and Angler Expenditures and Characteristics in North Dakota in 1986." AE 87008, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, Fargo.
- Coon, Randal C. and F. Larry Leistritz. 1987. "The North Dakota Economy: Estimating Recent Changes and Projecting Future Trends in the Economic Base." Agricultural Economics Statistical Series No. 41, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, Fargo.
- Leitch, Jay A. 1984. "Leisure Time Industries." **North Dakota Farm Research** 42(1):45-47.
- MacRae's. 1982. **North Dakota State Industrial Directory.** New York, NY: MacRae's Blue Book Inc.
- North Dakota Economic Development Commission. 1985. "1985-1986 North Dakota Directory of Manufactures." Bismarck, ND.
- U.S. Department of the Interior and U.S. Department of Commerce. 1982. **1980 National Survey of Fishing, Hunting, and Wildlife - Associated Recreation.** Fish and Wildlife Service and Bureau of the Census. Washington, D.C.: U.S. Government Printing Office.

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Table 4. Percent total solids of Russet Norkotah and two standard potato varieties grown in the North Central Regional potato variety trial (1982-1984).

State or Province	1982			1983			1984		
	Russet Norkotah	Norgold Russet	Russet Burbank	Russet Norkotah	Norgold Russet	Russet Burbank	Russet Norkotah	Norgold Russet	Russet Burbank
Alberta	21.3	22.0	20.0	21.4	21.0	23.5	20.8	21.4	21.1
Manitoba	23.5	23.0	23.5	21.4	20.9	21.4	23.1	22.2	22.6
Colorado	18.9	17.5	20.9	14.3	15.0	16.9	20.1	19.7	22.2
Indiana	18.1	18.8	18.4	—	—	—	16.0	15.0	18.1
Iowa	14.0	13.2	15.0	12.9	11.9	14.2	16.7	14.8	16.4
Kansas	21.7	19.2	19.2	—	—	—	18.2	15.0	18.0
Kentucky	17.8	17.3	18.7	18.9	18.1	17.2	20.0	17.2	20.5
Louisiana	16.5	16.5	17.3	—	—	—	15.6	15.4	15.6
Michigan	19.8	18.8	22.7	—	—	—	19.6	18.8	22.2
Minnesota	17.3	16.7	18.6	—	—	—	18.6	18.0	21.8
Nebraska	17.7	16.9	18.2	19.4	19.4	19.9	17.3	17.5	18.2
North Dakota	21.2	20.5	19.2	17.1	17.1	18.8	21.6	20.5	21.2
Ohio	19.4	19.4	20.9	20.4	19.2	19.2	—	—	—
South Dakota	17.8	17.4	18.9	17.3	16.0	17.1	18.4	17.3	21.0
Wisconsin	17.7	16.9	19.9	17.3	16.7	19.2	18.0	16.7	19.9
Average	18.8	18.3	19.4	18.0	17.5	18.7	18.9	17.8	19.9