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Economic Values of Wild Fur Harvest in North Dakota

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Highlights

The North Dakota wild fur industry exists as a small, but important economic and recreational activity. This paper describes the role of furbearers and estimates the impact of recreational furbearer hunting and trapping on the North Dakota economy.

Furbearers are animals whose pelts human's use for clothing. Furs are almost exclusively used for garments and trim on clothing. Furbearers are harvested for sport and for profit and to prevent damage to domestic livestock, fowl, and crops.

North Dakota furbearer hunters and trappers harvest about \$500,000 worth of raw furs per year. Wild fur harvesters spend \$30 million each year hunting and trapping in the state. Most of these are recreational hunters and trappers, who, in the aggregate, get about \$12 million in nonmonetary enjoyment over and above their expenditures from their participation. These expenditures generate another \$69 million in economic activity, producing gross business receipts of \$99 million. This level of gross business volume supports 1,466 jobs throughout various economic sectors that provide inputs to support furbearer hunting and trapping activities. Over half of these economic impacts occur in rural areas of North Dakota.

ECONOMIC VALUES OF WILD FUR HARVEST IN NORTH DAKOTA

Jay A. Leitch, James F. Baltezore,
and Jeffrey Dammel*

Introduction

Wild fur trade was almost solely responsible for North Dakota's early European exploration and settlement. The wild fur industry survives today as a small, but nonetheless locally important, economic and recreational activity. The purpose of this paper is to describe the role of furbearers in North Dakota and to estimate the impact of recreational furbearer hunting and trapping on the state's economy. This information should help game management planners, economic development specialists, special interest groups, and government policymakers.

Scope of Study

Furbearers have been praised as economic and environmental assets and maligned as societal liabilities. Furs have been the focus of ethical and philosophical debates in recent years based on the propriety of human use of furs and the methods for capturing wild furbearers. These debates are not included in this paper.

This paper addresses the harvest of wild furbearers by licensed hunters and trappers. Controversies within the industry and the economics of furbearer ranching and depredation are beyond the scope of this paper.

One problematic aspect of analyzing wild fur harvest in North Dakota is identifying a statistical population of participants. Only one license is required for either hunting or trapping furbearers, and participants may do both. Between 5 and 6 percent of participants trap exclusively, 75 percent hunt exclusively, and the rest both hunt and trap (Harmoning 1992).

North Dakota Furbearers

Furbearers are animals whose pelts are demanded for human use as clothing. Much of the nineteenth century demand for beaver pelts was to make felt hats. Furs are used today almost exclusively for garments and trim on clothing.

Five of North Dakota's furbearers make up a majority of pelt sales, another six are harvested in limited numbers, and twelve are rare or endangered (Table 1). Coincidentally, all mammalian

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TABLE 1. SALES AND VALUE OF PELTS OF NORTH DAKOTA FURBEARERS, 1990-91, AND STATUS OF PROTECTED FURBEARER SPECIES

Species ^a	1990-91 Sales ^b	Season-Average Pelt Price ^b	Total Value
Mink (<i>Mustela vison</i>)	863	14.07	12,146.60
Common Raccoon (<i>Procyon lotor</i>)	4,516	4.01	18,123.02
Common Muskrat (<i>Ondatra zibethicus</i>)	541	0.49	266.55
Red Fox (<i>Vulpes vulpes</i>)	9,999	4.90	48,999.35
Coyote (<i>Canis latrans</i>)	4,608	9.36	43,149.80
Weasels (<i>Mustela frenata</i> , <i>M. erminea</i>)	116	0.78	91.00
Striped Skunk (<i>Mephitis mephitis</i>)	245	3.36	823.25
American Badger (<i>Taxidea taxus</i>)	762	4.86	3,707.00
American Beaver (<i>Castor canadensis</i>)	1,371	7.78	10,664.77
Bobcat (<i>Lynx rufus</i>)	3	85.00	255.00
White-tailed Jackrabbit (<i>Lepus townsendii</i>)	31	0.98	30.50
			<u>\$138,256.84</u>

-----Status in N.D.^c-----

Black-footed Ferret (<i>Mustela nigripes</i>)	Endangered
Lynx (<i>Lynx lynx</i>)	Peripheral
Eastern Spotted Skunk (<i>Spilogale putorius</i>)	Watch
Virginia Opossum (<i>Didelphis virginiana</i>)	Watch
North River Otter (<i>Lutra canadensis</i>)	Endangered
Mountain Lion (<i>Felis concolor</i>)	Threatened
Gray Wolf (<i>Canis lupus</i>)	Extinct (Great Plains Wolf)
American Marten (<i>Martes americana</i>)	Extirpated
Fisher (<i>Martes pennanti</i>)	Endangered
Wolverine (<i>Gulo gulo</i>)	Extirpated
Kit or Swift Fox (<i>Vulpes velox</i>)	Endangered
Common Gray Fox (<i>Urocyon cinereoargenteus</i>)	Watch

^aArthur W. Adams. 1961. Furbearers of North Dakota. State Game & Fish Department, Bismarck, North Dakota.

^bNorth Dakota Game and Fish Department records. Bismarck.

^cNorth Dakota Game and Fish Department. 1986. The Rare Ones. North Dakota Outdoors 39(2):1-32.

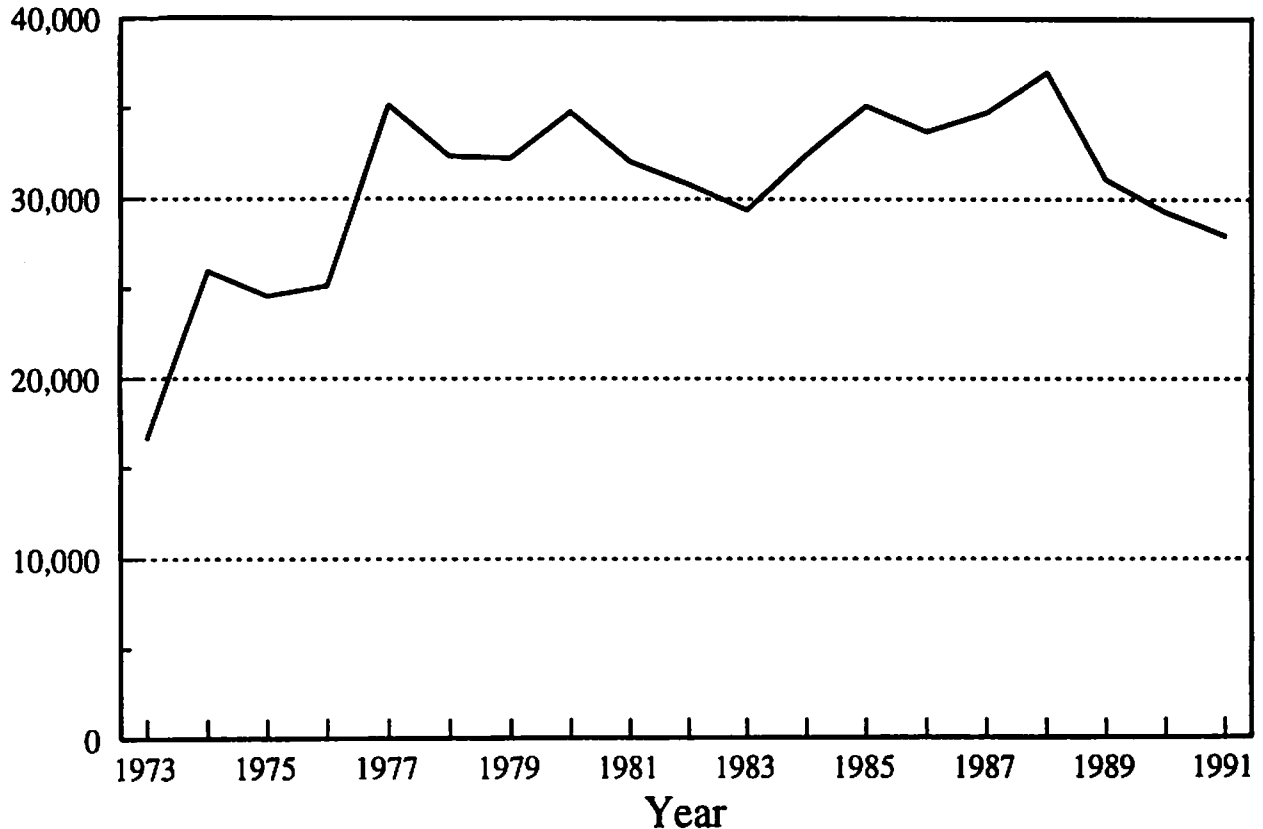
predators are also furbearers, including such wide-ranging species as coyotes, foxes, and skunks. Predators include any furbearer that preys on wild game animals or on domestic livestock, fowl, or crops.

Furbearers face some of the same population and habitat problems as other animals. For example, the black-footed ferret is an endangered species. However, the beaver, once nearly extirpated from many areas, has become an overabundant pest in some places.

Furbearers are harvested for sport and for profit and to prevent damage to domestic livestock, fowl, and crops. Sport hunters pursue furbearers for the challenge, to improve game bird populations, and because hunting seasons extend beyond the hunting season for game animals. Some trap or hunt furbearers for profit. Some predatory furbearers, primarily the coyote, have been the real or perceived scourge of ranchers since European settlement.

Sport hunters and trappers, professional trappers, government animal control specialists, and farm and ranch operators harvest (or control) furbearers. Sport hunters include those who call predators and stalk or still hunt. Sport trappers have a diverse socioeconomic background but are primarily rural residents (Baltezare and Leitch 1992). An average of 30,000 furbearer hunters/trappers were licensed per year over the past 20 years in North Dakota (Figure 1).

License Sales



SOURCE: North Dakota Game and Fish Department, Bismarck

Figure 1. North Dakota Furbearer Hunter/Trapper License Sales, 1973 to 1991

Much of the furor over furs surrounds harvest, capture, or control methods hunters/trappers use. One debate focuses on the humaneness of leg-hold traps; while another focuses on the indiscriminate nature of traps and poisons. Furbearers are trapped, snared, and hunted. Leg-hold traps, Conibear traps that kill instantly, and live traps are all used. Furbearers are shot responding to predator calls, stalked and still hunted, and sometimes hunted from the air. In addition, predatory furbearers often are poisoned with explosive cyanide cartridges.

Economic Impacts of Wild Fur Harvest

Economic impacts of wild fur harvest involve a variety of perspectives. Individual participants receive income and recreational benefits. Rural communities benefit from fur harvesters' expenditures at local businesses. The State Game and Fish Department receives license revenue used in management programs. Finally, managed furbearer harvests improve the resource and decrease the likelihood of depredation on wild game and on domestic livestock, fowl, and crops.

Participants' Values

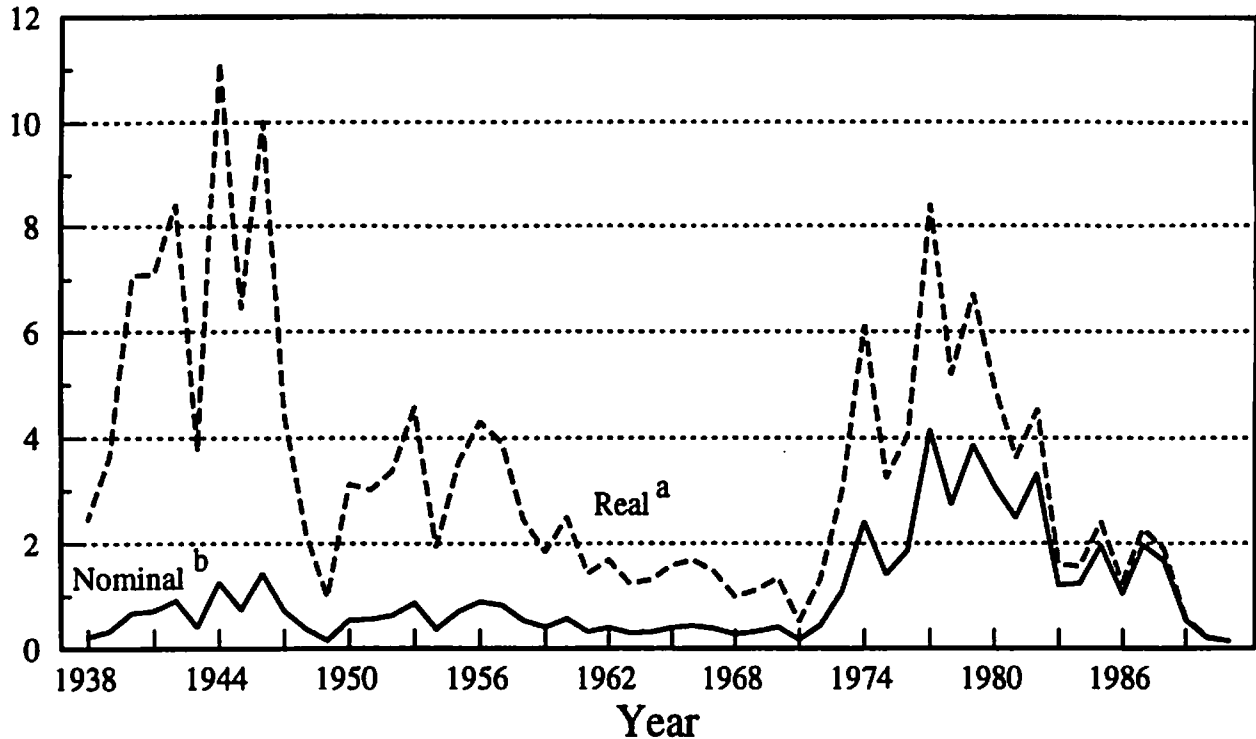
Participants in recreational furbearer hunting and trapping benefit from the income from pelt sales and from personal satisfaction they receive from participating in the activity.

Market Value: Pelt Sales

Furbearer hunters and trappers have harvested about \$500,000 in raw furs per year (Figure 2). The annual value of North Dakota pelt sales depends upon the relationships among pelt demand (a function of international tastes and preferences), worldwide pelt supplies (not affected by North Dakota's production), and the local availability of furbearers (a function of land use, weather, and game management policy). Thus, North Dakota fur harvesters are "price takers" whose level of effort is based primarily on expected prices and availability of furbearers.

Furs represent one of the few American consumer product industries that enjoys a favorable balance of trade. The United States exports fur garments and pelts to more than 30 countries. Italy, West Germany, Japan, and Switzerland are principal buyers. The fur garment industry employs approximately 250,000 people in the United States, either directly or indirectly. U.S. retail sales of fur garments exceeded \$1 billion in 1991 (Fellingham 1992).

Dollars (millions)



^aReal dollars have been adjusted for inflation.

^bNominal dollars are the actual dollar amounts in the years they occurred.

SOURCE: North Dakota Game and Fish Department, Bismarck

Figure 2. Raw Fur Sales in North Dakota, 1937-38 to 1991-92

Nonmarket Value: Satisfaction

Resource economists sometimes call the satisfaction of an experience consumers' surplus--the benefit of an experience over-and-above actual dollar costs of that experience (Tietenberg 1992). Consumer's surplus is a proxy for what the participant would be willing to pay for the experience if a market existed.

Leitch and Kerestes (1982) estimated that, as a group, North Dakota hunters and anglers value their time spent afield at about 40 percent above what they spend to participate. In other words,

for every dollar spent on an outdoor activity, an average participant receives \$1.40 in benefits or about \$0.40 more than is spent. \$0.40 is consumers' surplus or the surplus a consumer realizes when his willingness to pay exceeds his actual costs.

All wild fur harvesters spend about \$30 million each year in North Dakota (30,000 licensees who spend an average of \$1,000 each). Thus, their consumers' surplus is approximately \$12 million per year (\$30 million x .4). While consumers' surplus accrues wholly to the participant as satisfaction and, as such, is not represented as actual dollars subject to taxation or regional multiplier effects, it is a useful indicator of the net value of an activity to participants. Consumer surplus also serves as a proxy for the contribution of the activity to the way of life that makes the activity available to the participant.

Rural Community Values

Far more visible and quantifiable than consumers' surplus are the expenditures wild fur harvesters make in rural communities. Furbearer hunters/trappers spent an average of about \$1,000 each during the 1990-91 season (Baltezare and Leitch 1992), up from \$650 (54 percent) during the 1986-87 season (Baltezare and Leitch 1988).

Every dollar outdoor sportsmen spend in North Dakota generates an additional \$2.31 in expenditures for those who sell goods and services to outdoor recreationists (Table 2) (Coon et al. 1990). As the "multiplier" effect ripples through the economy, \$0.67 in personal income (income to households) is also generated. In addition, every \$65,500 in gross business receipts generated by direct expenditures in the recreation and tourism sector is enough to support one job.

The \$30 million annual expenditures of furbearer hunters and trappers generates another \$69 million in economic activity in the state, for total gross business receipts of about \$99 million (\$30 million multiplied by the gross receipts multiplier of 3.31). Approximately \$20 million ultimately ends up as personal income to individuals in North Dakota (\$30 million multiplied by the households multiplier of 0.67). This level of gross business volume (\$99 million) supports 1,466 jobs throughout the various economic sectors that in some way provide inputs that support furbearer hunting and trapping activity.

The actual economic impact of harvesting furbearers depends upon some assumptions about participants' behavior. Three scenarios were developed to depict likely alternative interpretations of "economic impact." Scenario I depicts the effect of considering only the value of pelt exports. Scenario

TABLE 2. GROSS BUSINESS RECEIPTS MULTIPLIERS (INPUT-OUTPUT INTERDEPENDENCE COEFFICIENTS) FOR RECREATION AND TOURISM IN NORTH DAKOTA

Economic Sector	Each Dollar Spent in the Recreation and Tourism Sector Generates Gross Receipts of
Agriculture, Livestock	0.0761
Agriculture, Crops	0.1917
Nonmetallic Mining	0.0039
Contract Construction	0.0547
Transportation	0.0127
Communications and Utilities	0.0869
Agricultural Processing and Miscellaneous Manufacturing	0.5043
Retail Trade	0.4288
Finance, Insurance, and Real Estate	0.1052
Business and Personal Services	0.0552
Professional and Social Services	0.0476
Households (Personal Income)	0.6733
Government	0.0724
Coal Mining	0.0000
Thermal-Electric Generation	0.0000
Petroleum and Natural Gas Exploration and Extraction	0.0000
Petroleum Refining	0.0000
Recreation and Tourism	1.0000
Gross Receipts Multiplier	3.3128

SOURCE: Randal C. Coon, Theresa K. Golz, and Jay A. Leitch. 1990. Expanding the North Dakota Input-Output Model to Include Recreation and Tourism. Agricultural Economics Report No. 255, Agricultural Experiment Station, North Dakota State University.

II approximates the net contribution furbearer hunting and trapping make. Scenario III estimates the actual impact of current levels of furbearer hunting and trapping activity.

Scenario I

If participants would spend the same amount of money in the community without furbearer hunting and trapping, the annual contribution would result in the export of \$500,000 worth of pelts. This "new money" would generate about \$1.6 million in economic activity (export value multiplied by the gross receipts multiplier), support 25 jobs, and add \$337,000 to household income (Table 3).

Scenario II

If however, without furbearer hunting and trapping, participants spend the money they previously spent pursuing

TABLE 3. ECONOMIC IMPACTS OF FURBEARER HUNTING AND TRAPPING UNDER VARIOUS SCENARIOS, 1990

	Scenario ^a		
	I (Exports)	II (Contribution)	III (Impact)
	----- \$000 -----		
New Money Expenditures	500	12,000	30,000
Gross Business Receipts (rural ^b)	1,600 (864)	38,520 (20,800)	96,000 (51,840)
Personal Income (rural ^b)	337 (182)	8,080 (4,320)	20,200 (10,908)
	----- jobs -----		
Employment (rural ^b)	25 (13)	588 (318)	1,466 (792)

^aScenario I represents the most conservative impact estimate, assuming only the income from pelt sales represents new money. Scenario II represents a reasonable "middle-ground," assuming all money that would leave the region without furbearer hunting and trapping activity represents new money. This scenario can be considered an estimate of the **contribution** of the activity. Scenario III represents an estimate of the **impact** of the activity on the region's economy, acknowledging that the expenditures are, in fact, being made.

^bRural represents the activity in rural communities, rather than in urban areas of the state.

furbearers in North Dakota in other states, then the new money **contribution** is equal to the amount of money that would otherwise leave the state. About 40 percent of North Dakota hunters would go elsewhere if hunting opportunities were not available in the state (Baltezare and Leitch 1992). In these instances, participants are substituting locally available activity for imports, thereby holding money in the area that otherwise would have gone to another state.

Considering 40 percent of the total expenditures, or \$12 million, as a contribution to the state results in estimated gross receipts of nearly \$40 million. This gross business volume supports 600 jobs and generates over \$8 million in household income (Table 3).

Scenario III

Furbearer hunter and trapper expenditures of \$30 million annually in North Dakota **impact** business activity by \$99 million. However, this represents an impact and not a net contribution to

the state's economy, since some expenditures would remain in the region without furbearer-related activities (60 percent as in Scenario II).

Another important aspect is the effect furbearer hunter and trapper expenditures have on rural communities. Sixty-four percent of rural hunter and trapper expenditures and 30 percent of urban hunter and trapper expenditures are made in rural areas (Baltezare and Leitch 1992). This represents approximately 54 percent of total expenditures (Table 3).

State Game and Fish Department Revenues

Furbearer hunting and trapping also generate income for the State Game and Fish Department. At \$7 per license, the 27,998 licenses sold for the 1990-91 season accounted for almost a \$200,000 income for the Department. In addition, the Department receives Pittman-Robertson funds from the federal government in proportion to the number of license holders in the state. Furbearer hunting and trapping activity is part of this calculation. This money is returned into various aspects of Department operations, thereby supporting management of wildlife resources, including the furbearer resource.

Depredation

Depredation is the negative side of the economic impact of furbearers in North Dakota. North Dakota sheep producers lost about 5,800 sheep and lambs to wild predators in 1990 (National Agricultural Statistics Service 1991). The estimated value of these losses was \$245,000. In addition, about 2 percent of all cattle losses in 1991 were attributed to wild predators (National Agricultural Statistics Service 1991a).

Predators also take many game and nongame species of wildlife (Dakota Country 1989). Fox, skunk, mink, and raccoon are responsible for reduced duck nesting success. Coyotes kill deer as well as small animals. Considerable resources are devoted to controlling predator depredation of wild species.

Conclusions

The role of furbearers in North Dakota's economy has been long and varied. Many furbearers are seen as positive influences on the environment and the economy, while others, primarily some predators, are viewed as detrimental to both production agriculture and wild game bird populations.

One aspect of the furbearer harvest, recreational hunting and trapping, contributes substantially to economic activity in rural communities. Over half of the nearly \$40 million in gross business receipts generated by furbearer hunting and trapping expenditures in the state each year, including \$8.1 million in household income, occurs in rural communities. Of the 600 jobs these expenditures support, 300 are in rural communities.

Participants in furbearer hunting and trapping realize a consumers' surplus (i.e., psychic profit) of about \$12 million above and beyond their expenses. The State Game and Fish Department also benefits financially from the activities of furbearer hunters and trappers.

The availability of furbearers as a recreational resource supports economic activity in rural areas, helping to diversify and strengthen their local economic base. The harvest of wild furs in North Dakota is yet another way to help maintain the economic health of rural communities. It is also another example of the contribution renewable natural resources continue to make both to the economy and to the quality of life in the state.

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