Economic Value of the Fur Trapping Industry in Oregon

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Introduction

The purpose of this report is to document the economic value of the fur trapping industry in Oregon. The approach will be to estimate both the economic effects captured by the industry (fur values) and economic effects captured by others such as: agriculture (reduced predation on livestock), forestry (reduced seedling losses), and recreators (increased wildlife populations). Figure 1 presents the estimates for the total economic benefits of trapping in Oregon. As can be seen, the magnitude of the benefits to agriculture, forestry, and recreators is much larger than the economic benefits to trappers. The remainder of the report documents and describes the data and methods used to derive the economic aspects of trapping. Estimates of the economic consequences of changes in the level of trapping are presented to evaluate the impact of changes in the level of trapping in Oregon.

Fur Values

Furbearers are a valuable renewable natural resource in Oregon. The value of the 1985 fur harvest was $1,300,000 for 77,000 pelts.[1] The annual value of the fur harvest has been generally increasing since the early 1960s when only $150,000 worth of pelts was harvested. In 1980, the value of the fur harvest was almost $2,000,000. Since then, the value has fallen to between $1,100,000 and $1,300,000 per year. These trends in total pelt values are displayed in Figure 2.

Figure 1.

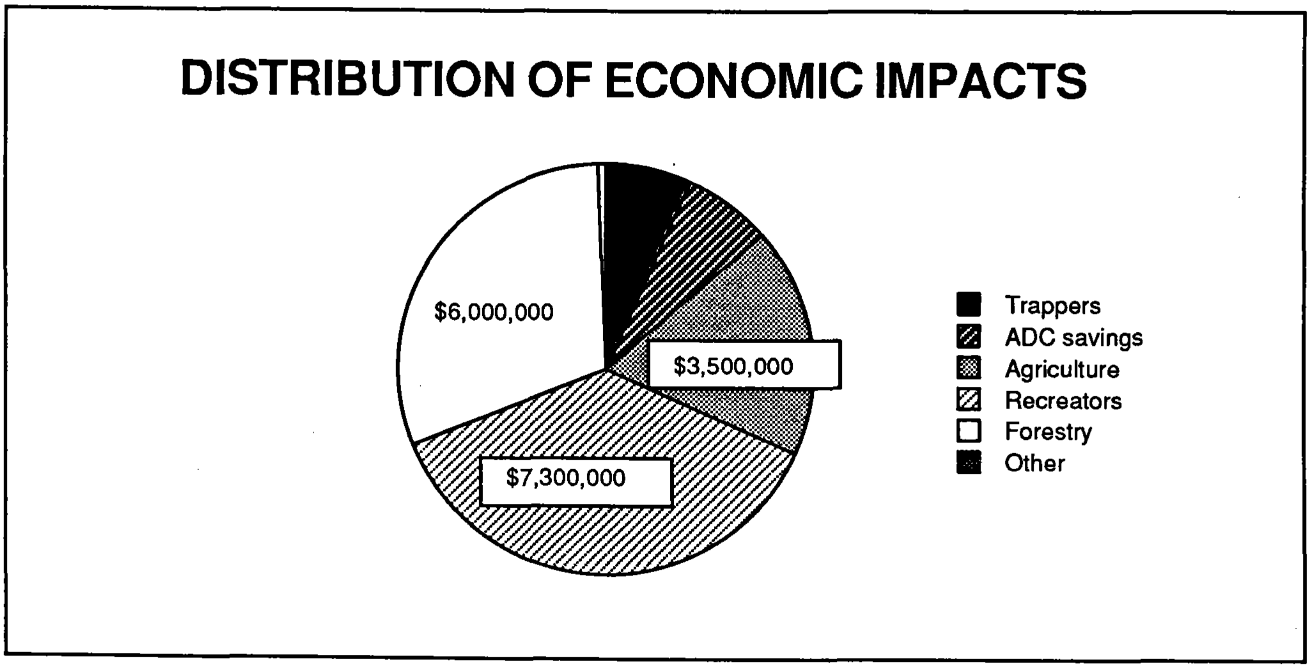

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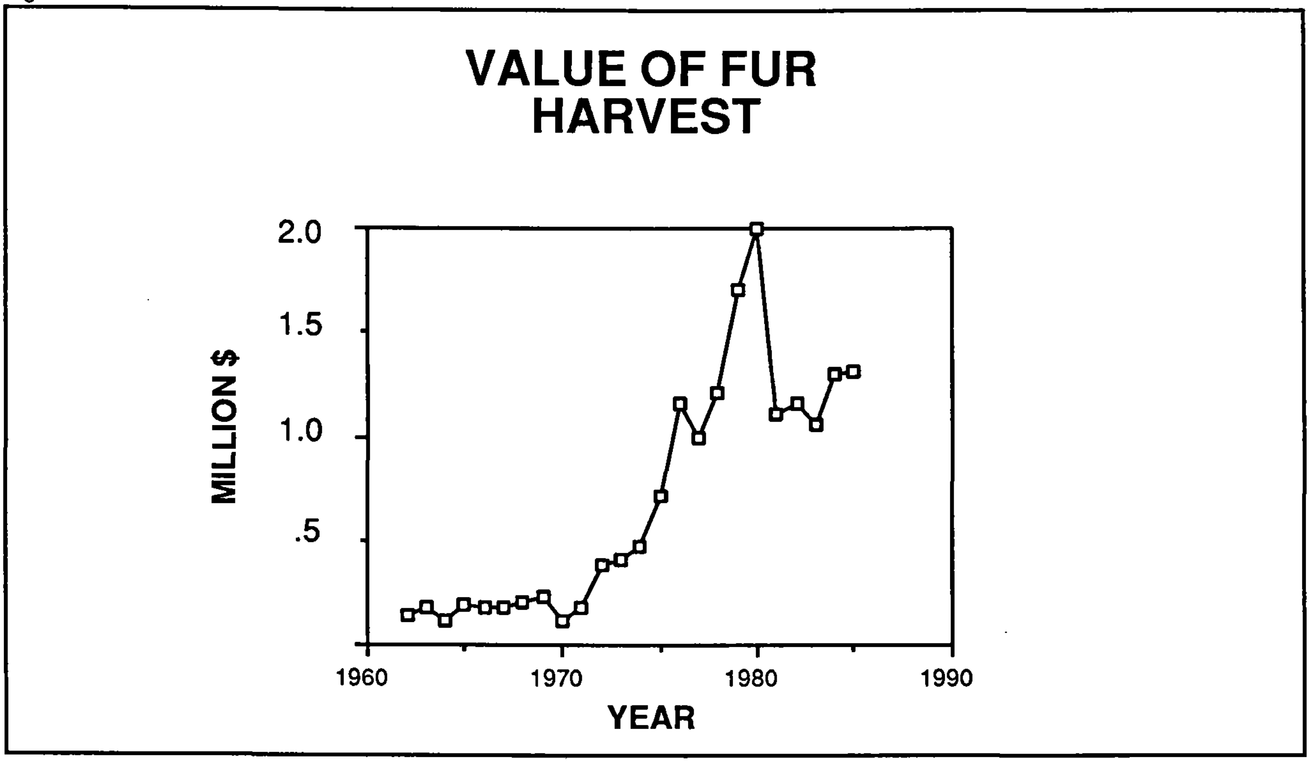
Figure 2.



The furbearers of most economic importance in terms of pelt values are: beaver, bobcat, coyote, muskrat, nutria, and raccoon. As can be seen in Figures 3 and 4, these species constitute more than 90% of the pelt value. Figure 3 displays the relationships for the average of the years 1962 to 1985, and Figure 4 displays the relationships for 1985. The most significant difference between the average and the recent years is the decline in the economic importance of beaver pelts and the increase in the economic importance of bobcat pelts. The trends over time for each of the major species are displayed in the Appendix figures. The value of the bobcat pelts rise from almost nothing in the 1960s to a peak of more than $600,000 in 1985. The value of beaver pelts follows a much different pattern. Their value fluctuates widely over the period. Nutria and muskrat seem to follow a trend of increasing values in the 1960s and 1970s with declines in value since 1980. Coyote pelts show large increases in value for the period of the 1970s with only moderate declines since the peak of 1981.

Figure 3.

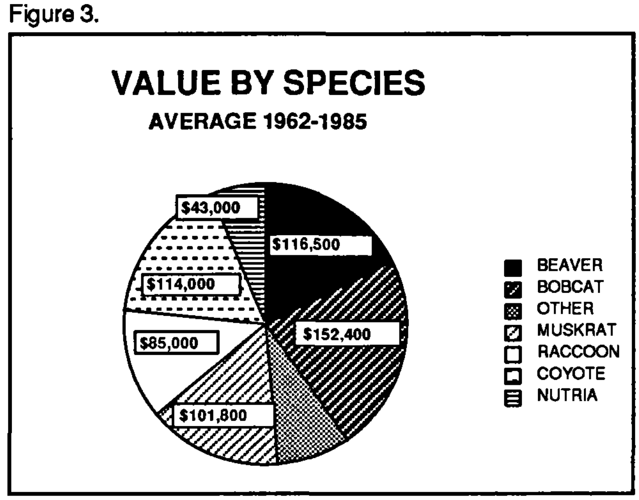
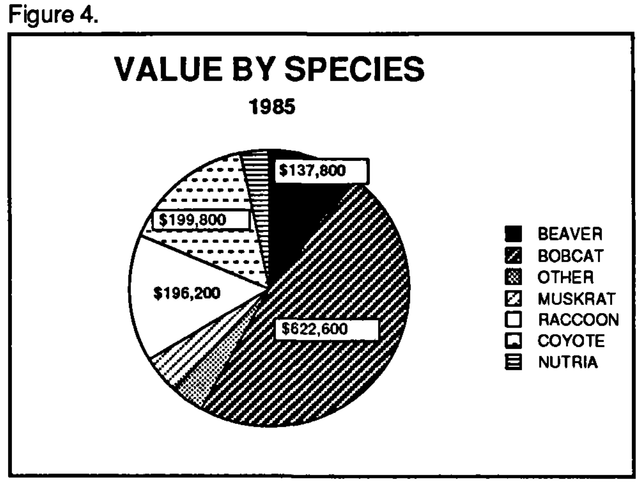


Figure 4.



Pelt Harvest

The fur value described above depends upon both the number of pelts harvested and their prices.

The historical number of pelts harvested is presented in Figure 5. Compared to the historical data on total value of pelts, the number harvested has increased at a slower rate, reflecting a general increase in the price level for pelts. For the 1960-1975 period, the average harvest was approximately 50,000 pelts. Since then, the average harvest has increased to approximately 90,000 pelts per year.

The number of pelts harvested by species is displayed for the average year in Figure 6 and for the 1985 year in Figure 7.[2] On the average, the muskrat is the species with the highest harvest followed by beaver, nutria, raccoon, coyote, and bobcat. The major difference between the average year and 1985 is the reduction in the quantity of beaver pelts harvested.

Figure 6.

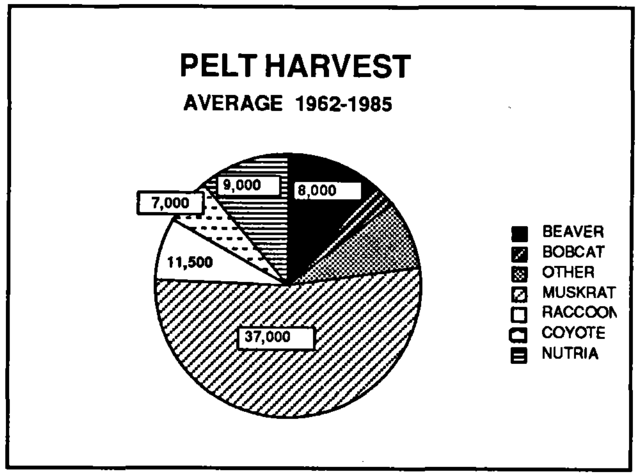


Figure 7.

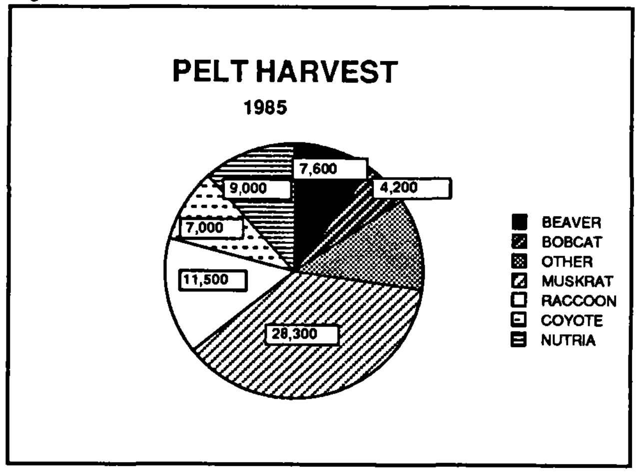
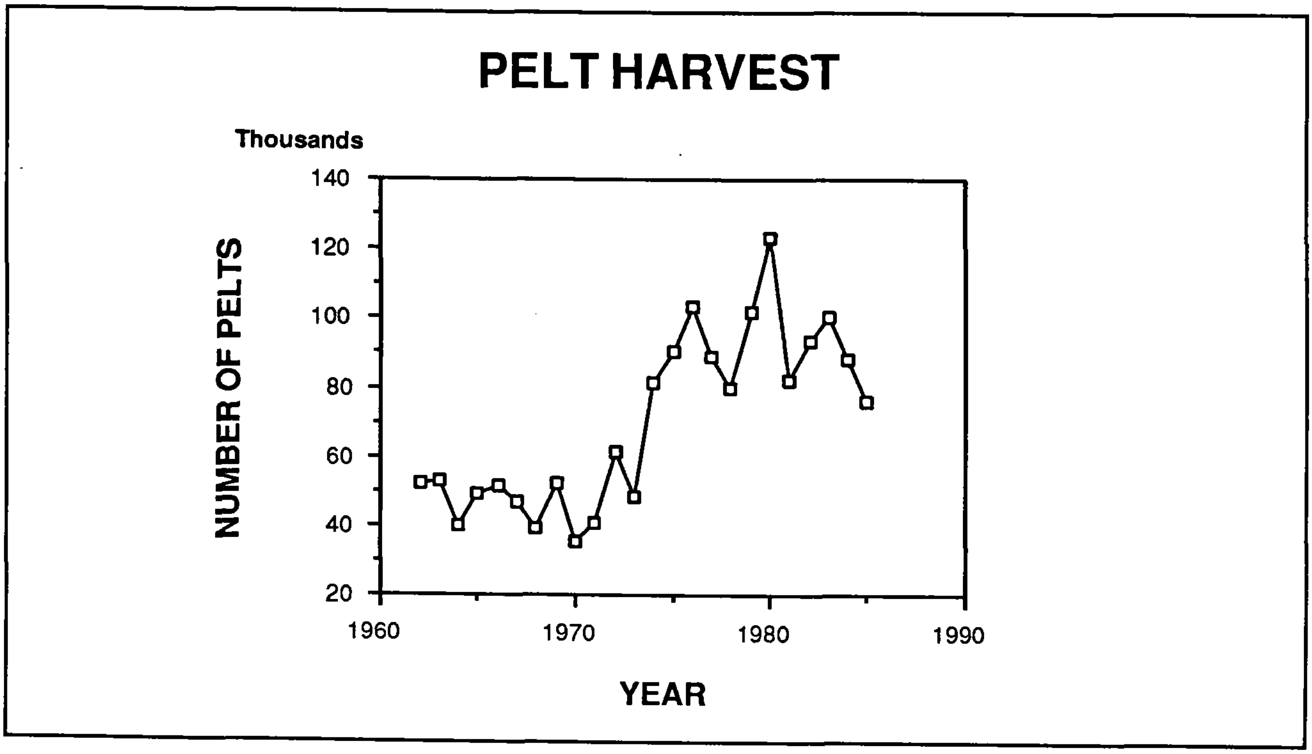


Figure 5.



The harvest by species is displayed in the Appendix figures. The trend for beaver harvest is generally down from the levels of the 1960s, while the trends for muskrat and nutria are moderately up, and the trends for coyote, raccoon, and bobcat are up sharply.

Pelt Prices

Pelt prices vary as widely as harvests. The trends in prices are displayed in Figure 8.[3] Prices by species are displayed in the Appendix figures. The general trend has been one of increasing prices from the early 1960s until the peak in 1980. Since then prices have declined and then recently rebounded on the strength of prices for bobcat pelts.

Figure 8.

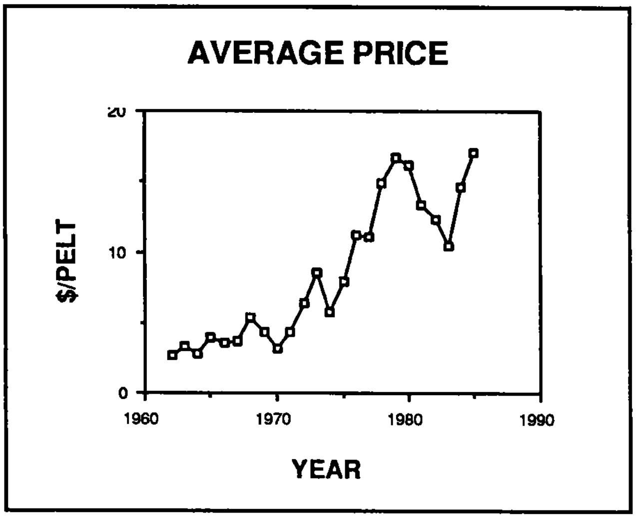
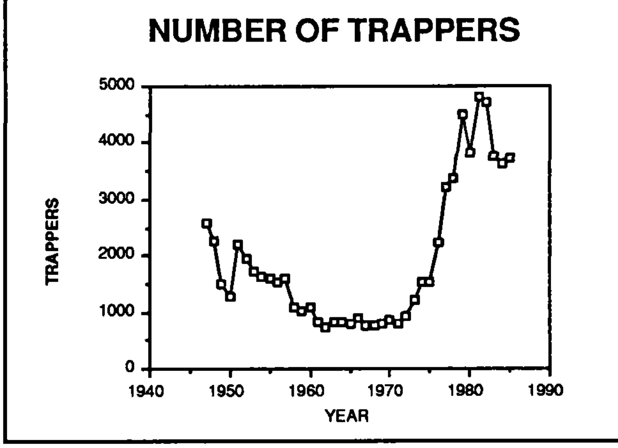


Figure 9.



Number of Trappers

Data on the number of trappers are presented in Figure 9. As can be seen, the number of trappers declined from around 2,000 in the 1940s to about 1,500 in the 1950s to about 750 in the 1960s. During the 1970s, the number of trappers increased steadily to the 4,000 level where it has remained during the 1980s. The rapid increase in the number of trappers for the 1970-1980 period can be attributed to the large rise in pelt prices in that time period. The recent reductions in pelt prices have led to reduced numbers of trappers.

The returns from pelt sales provide trappers with a source of income and in some cases with full time employment. In 1985, there were 3,716 furtaker licenses sold. For 1985, this resulted in an average value of just over $350 per trapper. Given this low average, it is obvious that many trappers are trapping to supplement their income, or for recreational purposes.

Economic Impact on Agriculture

Crop and livestock growers are economically impacted by trapping. Trapping done specifically to reduce predator damage to livestock or to reduce furbearer damage to crops results in economic benefits to agriculture. Trapping done in agricultural areas which results in reductions of excess populations of predators or other problem causing furbearers also results in economic benefits to agriculture.

The agricultural losses are both varied and economically important to many agricultural enterprises. To illustrate the variety of losses, a sample of reports from trappers responding to damage complaints is presented in Table 1. The damages vary from flooding of cropland, to damage of irrigation systems, to killing of poultry and livestock, to destruction of trees. The damages were caused by a variety of species of furbearers, not just predators. Of interest to an economic evaluation is the difference between the damages in the worst year and the damages after trappers have been trapping on the farm. For the limited sample reported, damages were reduced from an average worst year figure of $1,566 to $342. This difference is caused in large part by efforts of trappers to control agricultural damages. Similar large differences between control and no control conditions have been observed in experimental conditions by the U.S. Fish and Wildlife Service.[4]

The extent of damages by predators for the State of Oregon as estimated by the U.S. Fish and Wildlife Service is reported in Figure 10.[5,6] As can be seen, significant numbers of lambs, calves, and sheep were killed by predators. While the absolute

Table 1. Sample of Trapper Damage Complaint Reports

CAUSED BY	DAMAGE	1981	1982	AVERAGE 1981-82	WORST YEAR
			DOLLARS		
BEAVER	Cutting fruit trees. Flooding pasture.	0	0	0	700
COYOTES	Killing sheep.	400	600	500	750
BEAVER	Cutting fruit trees.	200	200	200	200
BEAVER	Cutting fruit trees.	0	0	0	200
BEAVER	Flooding pasture.	500	500	500	500
BEAVER	Cutting fruit trees.	0	300	150	300
RACCOON	Killing chickens.	150	50	100	150
BEAVER	Cutting trees.	500	500	500	1,500
COYOTES	Killing sheep and cattle.	250	0	125	2,800
GRAY FOX	Killing turkeys.	0	165	83	165
NUTRIA & BEAVER	Cutting shade trees.	1,000	1,000	1,000	1,000
COYOTES & RACCOON	Killing sheep and turkeys.	960	1,350	1,155	1,350
RACCOON & NUTRIA	Destroying sugar beet seed crop.	600	680	640	680
RACCOON	Destroying peach crop.	200	500	350	500
NUTRIA & MUSKRATS	Destroying irrigation systems and crops.	900	1,500	1,200	1,500
BEAVER	Flooding cropland.	0	0	0	16,000
NUTRIA	Eating corn and wheat.	0	0	0	1,200
NUTRIA	Destruction of corn crop.	100	50	75	1,500
COYOTES	Killing house cats.	75	75	75	100
COYOTES	Killing farm animals.	175	230	203	230
AVERAGE		301	385	343	1,566

numbers indicated that more lambs than other livestock were killed by predators, the economic value of the losses, as seen in Figure 10, indicate that the loss of calves is more important. For 1985 the value of losses was reported as $3,037,961. The vast majority of the damages are related to losses of calves and lambs, $2,442,621 or 80.4% of the total losses. Of the total damages, $2,997,225 or 98.7% were caused by coyotes. In the case of coyotes, one of the most valuable furbearers was at the same time responsible for most of the predation on livestock.

Livestock losses to predators are reported by the U.S. Fish and Wildlife Service's Animal Damage Control group. The estimates for cattle, calves, sheep, and lambs are based on research results from Oregon State University. [7] These estimates are in general agreement with other studies of livestock losses to predators,[8] and this data source are judged to be reliable.

However, losses of poultry, goats, and pigs are not well documented. Many of these losses take place on small farmsteads and are not reported as damage complaints. Since there are large number of these farms, many with a few chickens, ducks, and/or other animals, the total losses to predators for these animals are likely to be seriously underestimated.

In addition to predation on domestic livestock, furbearers cause other types of agricultural damage. Beavers cause flooding which can kill crops, flood roadways, and impair irrigation systems. Beavers also kill trees. Muskrats and nutria eat crops, weaken or destroy irrigation ditches and levees. Raccoons eat fruit and corn and coyotes have been observed eating watermelons. While the economic impact of watermelons lost to

Figure 10.

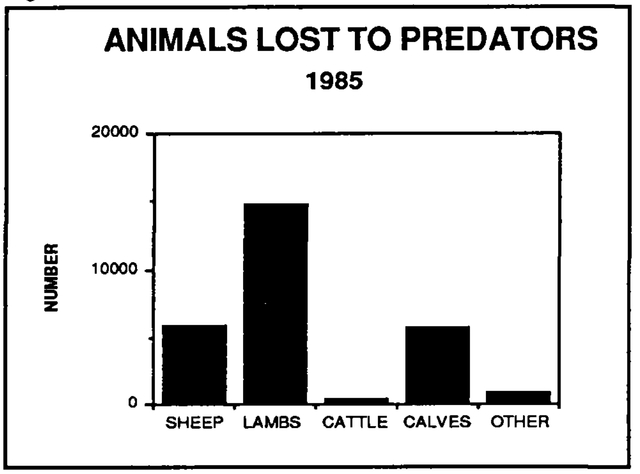


Figure 11.

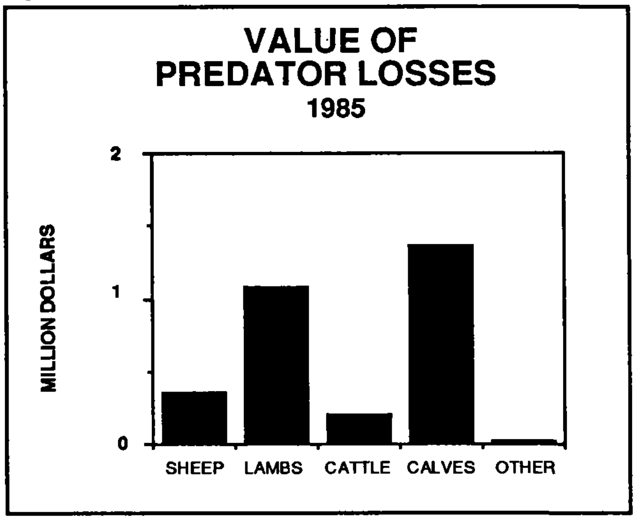
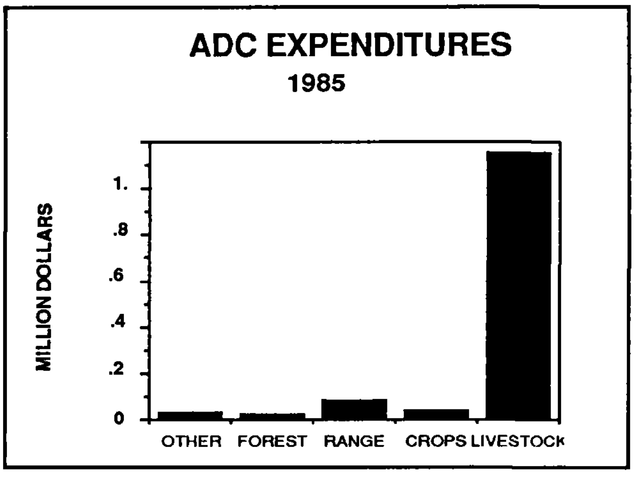


Figure 12.



coyotes is trivial, the economic impact of damage to irrigation systems and crop losses is not trivial. Unfortunately, the economic extent of this type of information on damage to agriculture is not available. Specific examples of types of damages have been documented, but a statewide survey would be necessary to develop a reliable estimate. In the absence of such a survey, the damages were judged on the basis of selected observations of damage. Considering the selected observations, an estimate of $425,000 per year was judged to be reasonable. The $425,000 value may be an underestimate of actual damages. In the case that damages are lower, the impact on total agricultural damage would be minimal because of the much larger magnitude of the livestock loss component of agricultural damage.

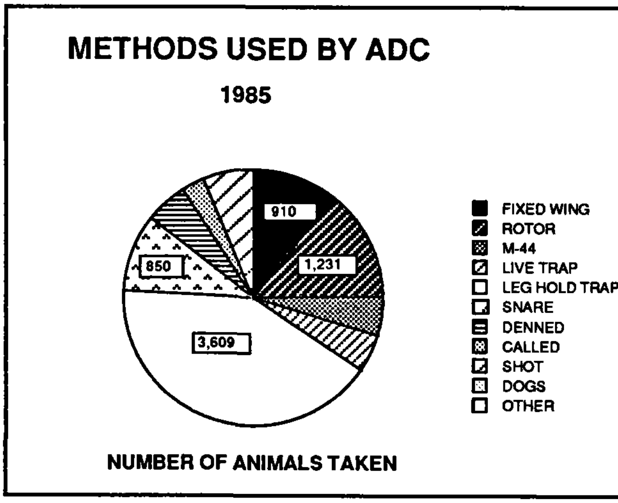
In addition to the actual damages caused by predators, the cost of the government animal damage control programs must also be considered as a cost to society. For 1985 the cost of the Federal program in Oregon is presented in Figure 12. The total cost was $1,338,797, requiring the equivalent of 38 full time employees. Even though the cost of ADC is a cost to society in general, it does provide jobs and incomes for trappers. Of this total amount, more than 80% was spent to control livestock losses. The remainder was spent to control other types of damages. Data on ADC costs are actual accounting data from the U.S. Fish and Wildlife Service Animal Damage Control Annual Reports. Only 25 of the 36 counties in Oregon have federal ADC programs. Thus the data on ADC costs are an underestimate because the non-participating counties have local ADC programs. Further, any ADC costs incurred by individuals in protecting their livestock and crops are not considered. The magnitude of the underestimate of total ADC costs is likely to be between $150,000 and $250,000.

The number of animals taken by the methods used by the Federal government animal damage control are displayed in Figure 13. The two most used methods are helicopters, 14.1%, and leg hold traps, 41.3%. The remaining animals were taken by other methods. Because of attempts to further regulate the use of leg hold traps, it is important to note the importance of leg hold traps for animal damage control.

Other Damages

The extent of damages caused by furbearers other than predators is not well documented.

Figure 13.



One indication of damage is the data reported in Table 1. The most dramatic incidence of furbearer caused damage was a train derailment near Wren caused by beavers damming up a culvert. The damage estimate for this one incidence was estimated at $500,000. Further, to prevent such incidences, railroads constantly patrol tracks, clean culverts blocked by beavers, and occasionally rebuild culverts damaged by beavers.[10] The costs of preventative maintenance and repair of beaver related damage are estimated to be $50,000 per year for railroads and another $50,000 per year for similar damages caused to forest roads by beavers damming up culverts.[11]

Information on damages caused to transportation systems by beavers was obtained from personal contact with railroad personnel and private foresters. The estimate of $100,000 per year is only one fifth of the approximately half million dollars damages reported for the beaver caused train derailment near Wren. The estimate is based upon the increased costs of maintenance of forest roads and railroads caused by beavers plugging culverts. A much more detailed survey would be necessary to develop precise estimates of these damages.

Impacts on Forest Industry

Mountain beaver (*Aplodontia rufa*) cause serious damage to Douglas-fir and other species of trees in the Oregon coastal forests.[12] It is standard forestry practice to attempt to prevent or reduce the damage by trapping. Other control methods exist that can reduce damage by mountain beavers. These alternatives involve the use of poisons or the use of physical barriers, such as Vexar tubing, around seedlings. Until recently, no poisons were registered for mountain beaver control. The use of Vexar tubing has the disadvantage of costing between $100 and $250 per acre compared to only $40 per acre for trapping.[13] Thus, until the registered pesticide has proven itself an effective control method, a savings of at least $60 dollars an acre can be obtained by the use of trapping to control mountain beaver. Since approximately 100,000 acres need protection in Oregon, this translates into roughly a $6,000,000 average annual savings to the forestry industry.

Impact on Recreational Hunting Values

Predator populations obviously have impacts on populations of game animal. Decreases in populations of antelope and deer both have been observed as a result of coyote predation. Reductions in waterfowl and upland game populations have also been observed as the result of coyotes, foxes, raccoons, and other predators.[14] The impact of these predators on game populations and the resultant impact of reduced game populations on numbers of hunters and the resultant recreational values are not well documented. However, the fact that recreational hunting has economic value cannot be questioned.

The estimates of the relation of trapping to recreational hunting are based on the fact that, all else equal, hunters prefer and will spend more and hunt more often in areas with higher chances of success. If predators are reducing game animal populations, then predators have a direct economic impact on hunters. Both logic and observation lead to the conclusion that predation does have an impact on game population levels. However, at the current time, the state of the art in wildlife population modeling does not provide a clear indication of the magnitude of the link. Thus the relationship estimated was based on the professional judgment of wildlife and recreation managers.

Participation in recreational hunting in Oregon is estimated at more than 350,000 hunters and almost, 5,000,000 days of hunting.[15] These hunters spent almost $150,000,000 on hunting or slightly more than $400 each. These expenditures involve travel costs, $160 per hunter, and equipment and other costs, $270 per hunter. Given the magnitude of these expenditures, it is obvious that hunters place a high economic value upon the opportunity to hunt in Oregon. Further, these expenditures generate income for those providing services and selling equipment to hunters. Table 2 presents a summary of the 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for recreational hunting in Oregon.

In addition to the expenditure method, other methods exist to measure the economic value of recreational hunting.[16] The expenditure approach was used for this study because of 1) data availability, 2) its base on actual money transactions, 3) its simplicity, and 4) the high likelihood that alternative methods of recreation value measurement would produce similar results.

Table 2. 1980 Summary of Recreational Hunting in Oregon

TOTAL HUNTERS	356,000
Big Game	290,600
Small Game	90,600
Migratory Birds	78,200
TOTAL DAYS OF HUNTING	4,836,200
TOTAL EXPENDITURES	$145,796,200
AVERAGE EXPENDITURE PER HUNTER PER YEAR	$433
For Travel	$163
For Equipment	$270
AVERAGE EXPENDITURE PER DAY	$30

Policy Questions

The above data can be used to analyze potential policies or regulations related to fur harvests and/or trapping. The basic economic principle of such an analysis is to compare the costs or benefits with the policy to the costs or benefits without the policy. Three alternative policies will be analyzed and compared to the current situation. The three alternatives are a 10% reduction in trapping, a 50% reduction, and a complete ban. For the purpose of the examples, animal damage control is assumed to decrease also. Table 3 presents the economic impacts of the three policies.

The procedure to calculate changes in income from trapping is straightforward. A 10% reduction in trapping results in a 10% reduction in income from trapping. It should be noted that in addition to harvest, the fur prices play an extremely important role in determining trappers' incomes. Prices for the 1985 year are used in the analysis. These prices are somewhat lower than prices in other recent years so the estimates of income impacts can be considered conservative.

The impact of a complete ban on trapping is estimated as a twofold increase in agricultural damages. Previous research data and simulation models suggest a twofold or more increase in losses if all control of predators were stopped.[17] The data in Table 1 and experimental results of the U.S. Fish and Wildlife Service indicate that such an increase in losses would be expected if control efforts were stopped. The impact of a 50% reduction is estimated to be a 100% increase in damages, while the impact of a 10% reduction is estimated to be a 20% increase in damages.

The estimate for forestry values is simply the additional cost of protecting 100,000 acres if vexar tubing is used instead of trapping.

The estimates for other costs are generated on the same basis as agricultural damages, i.e., a twofold increase in damages if trapping is banned.

The impact of reductions of trapping on recreational hunting values was estimated to be a 5% reduction in recreational expenditures for a complete ban on

Table 3. Economic Impact of Alternative Fur Harvest Policies

	CURRENT SITUATION	10% REDUCTION	50% REDUCTION	COMPLETE BAN
		—DOLLARS—		
TRAPPER INCOME	1,312,930	1,181,637	656,465	0
change		131,293	656,465	1,312,930
AGRICULTURAL IMPACTS				
LIVESTOCK	3,037,961	3,341,757	4,556,942	6,075,922
OTHER	500,000	550,000	750,000	1,000,000
change		353,796	1,768,981	3,537,961
ADC COSTS	1,338,797	1,204,917	669,399	0
change		(133,880)	(669,399)	(1,338,797)
RECREATION VALUES	145,796,000	145,067,020	142,151,100	138,506,200
change		728,980	3,644,900	7,289,800
FORESTRY IMPACTS	2,000,000	2,600,000	5,000,000	8,000,000
change		600,000	3,000,000	6,000,000
OTHER IMPACTS	100,000	110,000	150,000	200,000
change		10,000	50,000	100,000
TOTAL CHANGE		**1,690,189**	**8,450,947**	**16,901,894**

trapping, a 2.5% reduction in recreation for a 50% reduction in trapping, and a .5% reduction for a 10% decrease in trapping.

To calculate the economic costs of the alternative prices, the reduction in trapper income, the increase in agricultural damages, the increase in costs of forestry protection, the increase in other damages and the reduction, recreation values are added together. The savings in ADC expenditures are then subtracted to obtain the net economic impact of the policy. The bottom line estimates from Table 3 are an economic cost of a 10% reduction of trapping of approximately $2,000,000, a cost of a 50% reduction of approximately $8,000,000, and an economic cost of approximately $16,000,000 for a complete ban on trapping. The estimates for a complete ban are displayed graphically in Figure 1. These estimates do not include estimates of the secondary economic impact generated by changes in expenditures and income of ranchers, farmers, recreators, and trappers. The estimates also do not consider the small but positive impact of fur sales on balance of trade caused by the fact that many furs are exported.

The distribution of impacts among the sectors shows that the major impacts of regulations on trapping will be felt not by trappers but by hunters and the forestry and agriculture industries. Figure 1 displays the relative magnitude of the impacts.

Reliability of Major Predictions

The damage analysis of restrictions on trapping is based on three major predictions.

1. The increase in agricultural damage.
2. The decrease in recreational hunting.
3. The increase in forestry costs.

Extensive and irrefutable scientific studies to document the exact magnitude of these predictions do not exist. On the other hand, sound evidence exists which indicates that there is a relationship between trapping, agricultural damage, recreational hunting opportunities, and forestry costs. To complete an economic analysis, reasonable estimates of these relationships need to be specified. The procedure used in this analysis was to develop estimates based on judgment, considering the evidence available. The basic policy conclusions that the indirect economic benefits of trapping are of a larger magnitude than the value of the fur harvest hold for reductions in these relationships of more than a factor of 10. Thus, while the exact magnitude the economic impacts of trapping may be argued and is certainly worthy of further research the basic policy conclusion is clear; trapping has benefits to economic interests in agriculture, recreation, and forestry which are of larger magnitude than the fur values.

Footnotes

1. Data on fur values are reported annually by the Oregon State Department of Fish and Wildlife.

2. Data on fur harvests are reported annually by the Oregon State Department of Fish and Wildlife.

3. Data on fur prices are reported annually by the Oregon State Department of Fish and Wildlife.

4. For example, see DeLorenzo, Donald G. and V. W. Howard, Jr., Evaluation of Sheep Losses on a Range Lambing Operation Without Predator Control in Southeastern New Mexico. Final Report to U.S. Fish and Wildlife Service, Denver Wildlife Research Center, 1976.

5. Data are from the 1985 annual Report for Animal Damage Control, U.S. Fish and Wildlife Service, Portland, Oregon.

6. For an evaluation of the predation problem at the national level see:

   (1) Gee, C. Kerry, et al, <u>Sheep and Lamb Losses to Predators and Other Causes in the Western United States</u>, United States Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 369, Washington, D.C., April 1977.

   (2) Gum, Russell L., et al., <u>Coyote Control: A Simulation Evaluation of Alternative Strategies</u>, U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service, Agricultural Economic Report No. 408, Washington, D.C., July 1978.

(3) Stuby, Richard G., et al., Public Attitudes toward Coyote Control. U.S. Department of Agriculture, Economics, Statistics, and Cooperative Service, ESCS-54, Washington, D.C., May 1979.

(4) Arthur, Louise M., et al., Predator Control: The Public Viewpoint. Transactions of the 42nd North American Wildlife and Natural Resources Conference, Wildlife Management Institute, Washington, D.C., 1977.

(5) Gum, Russell L., and William E. Martin, "Economic and Socio-Environmental Evaluation of Predator Control Alternatives," Western Journal of Agricultural Economics. July 1979, pp.33-44.

7. "Documentation of Livestock Losses to Predators in Oregon," Special Report 501, 1978.

8. For Example, see "Sheep and Lamb Losses to Predators and Other Causes in the Western United States," U.S. Department of Agriculture, Agricultural Economic Report No. 369, 1977.

9. The data on damage complaints are collected and reported annually by the Oregon Department of Fish and Wildlife.

10. Information on damages to railroads was obtained by personal communication with railroad personnel.

11. Information on damages to forest roads was obtained by personal communication with forestry personnel.

12. For a discussion of the problem, see John E. Borrecco and Robert J. Anderson, "Mountain Beaver Problems in the Forests of California, Oregon and Washington," Proceedings Ninth Vertebrate Pest Conference (Jerry Clark, Ed.) Fresno, California, March 4-6, 1980, pp.135-142.

13. Data on cost of trapping and cost of Vexar tubing were obtained from discussions with private and government foresters. Data on forestry damage by mountain beavers were estimated on the basis of a synthesis of biological studies of mountain beavers, data on seedling sales by the state nursery, and personal contact with private and government foresters.

14. For example, see Trainer et. al., "Mortality of Mule Deer Fawns in Southeastern Oregon, 1968-1979", Wildlife Research Report #10, Oregon Department of Fish and Wildlife, 1981.

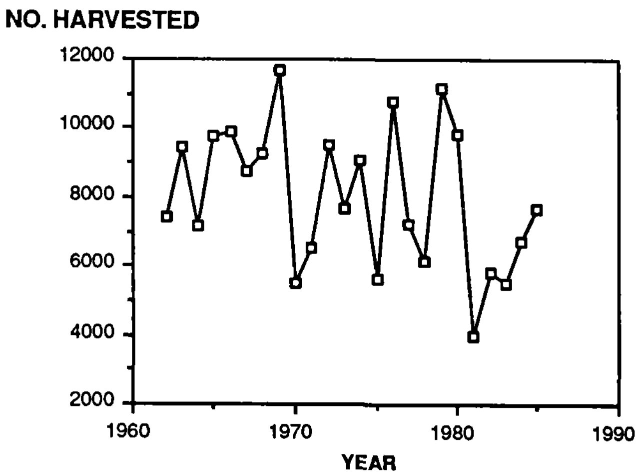
15. Data on participation and expenditures are from the 1980 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, U.S. Department of Interior, 1982.

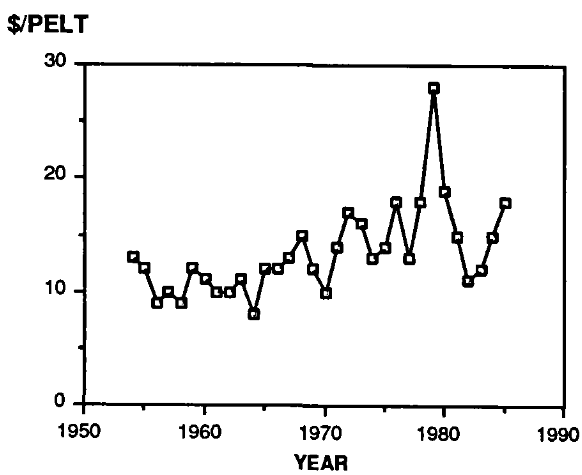
16. For a reasonably non-technical discussion of the economic issues involved, see Martin, William E., and Russell L. Gum, "Economic Value of Hunting, Fishing, and General Rural Outdoor Recreation, Wildlife Society Bulletin, Spring 1978, pp. 3-7.

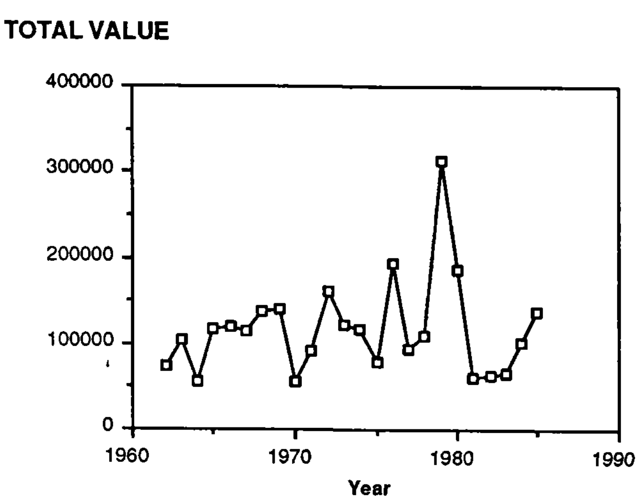
17. See, Gum, Russell L., et al., Coyote Control: A Simulation Evaluation of Alternative Strategies. U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service, Agricultural Economic Report No. 408, Washington, D.C., July 1978, for further discussion of the response function between livestock losses and predator control.

Appendix: Figures by Species

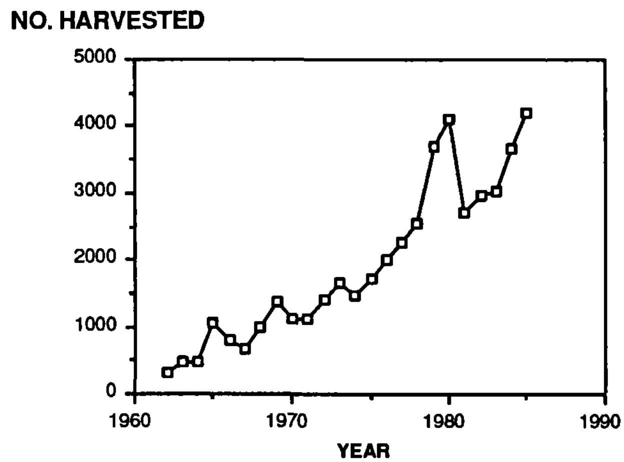
BEAVER

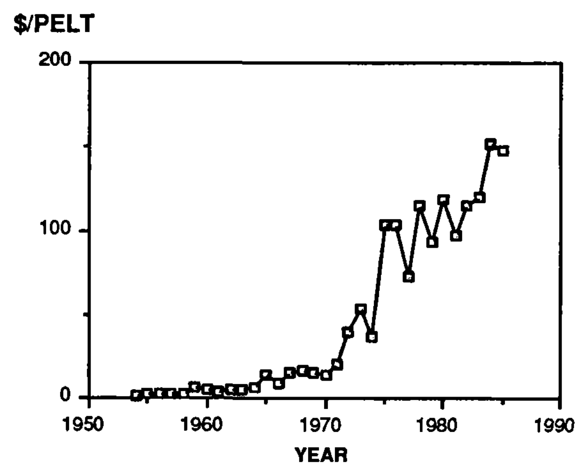


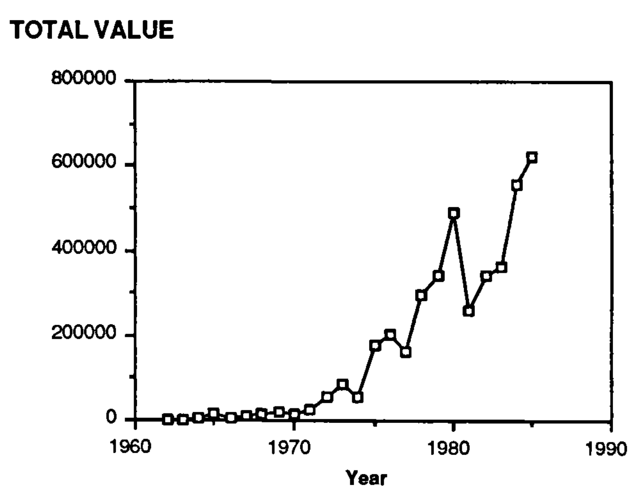




BOBCAT







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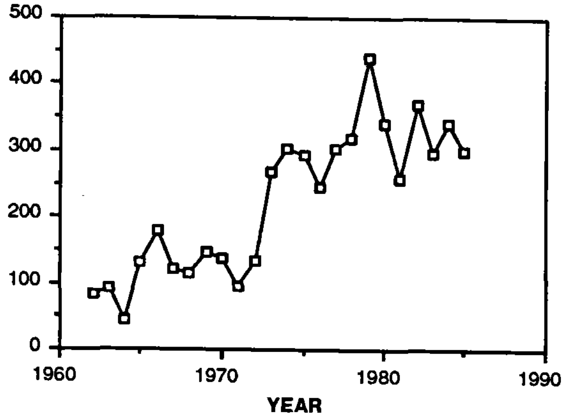

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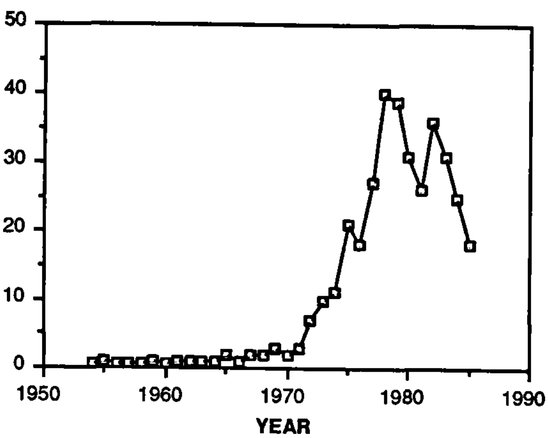

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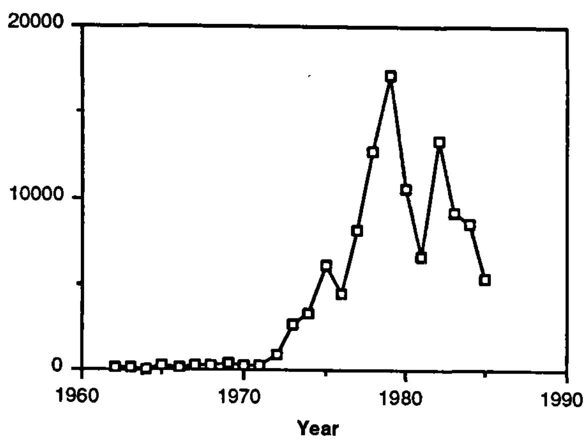

RED FOX

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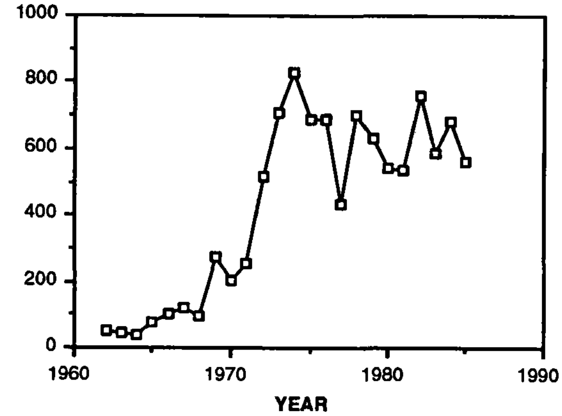

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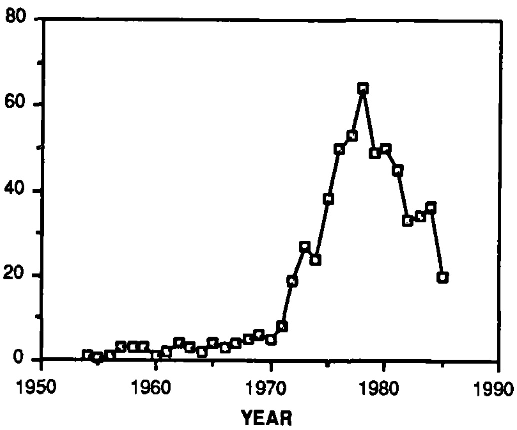

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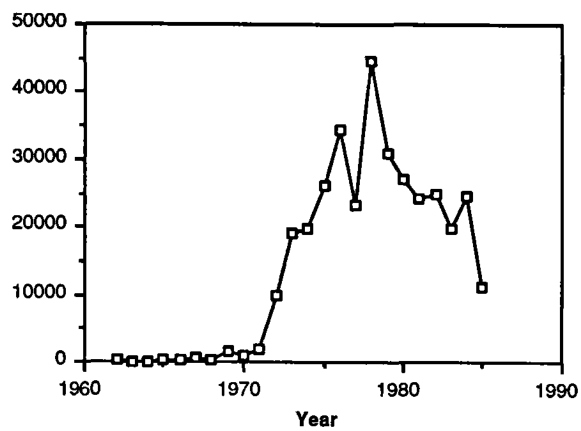

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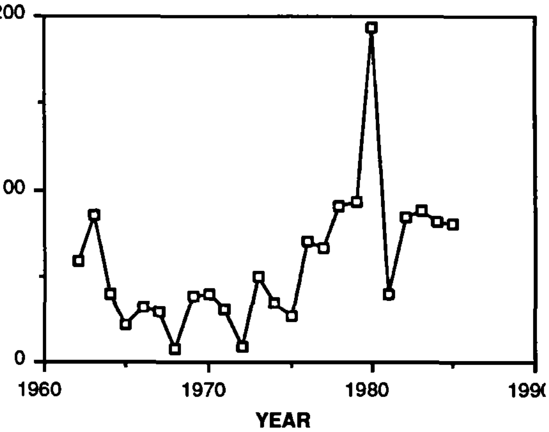

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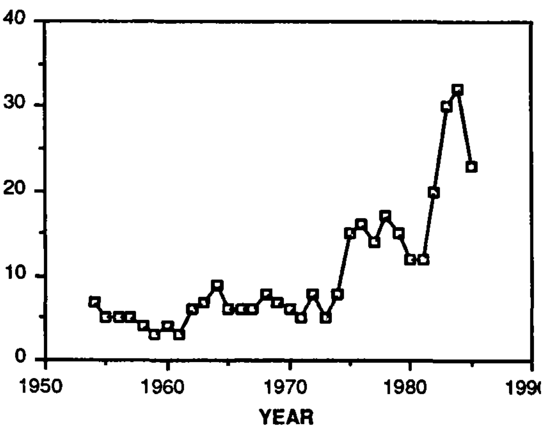

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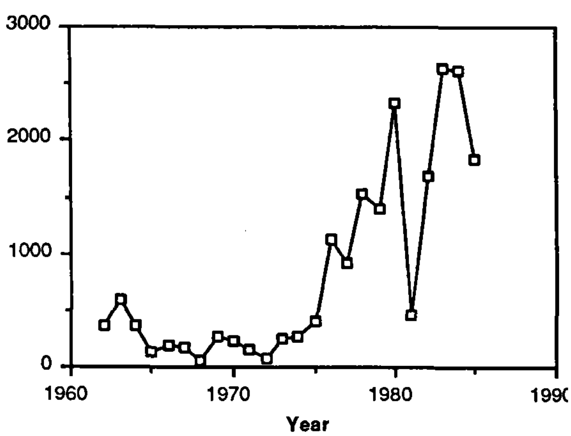

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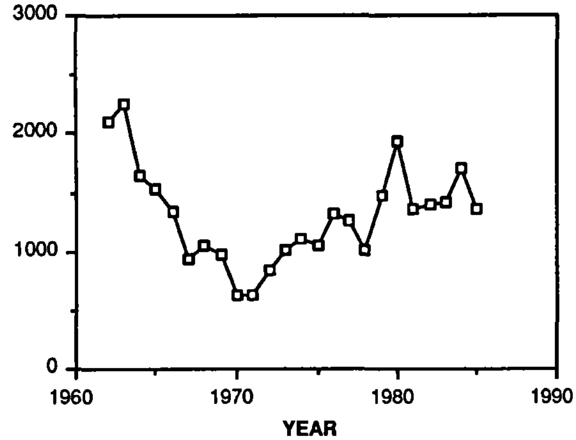

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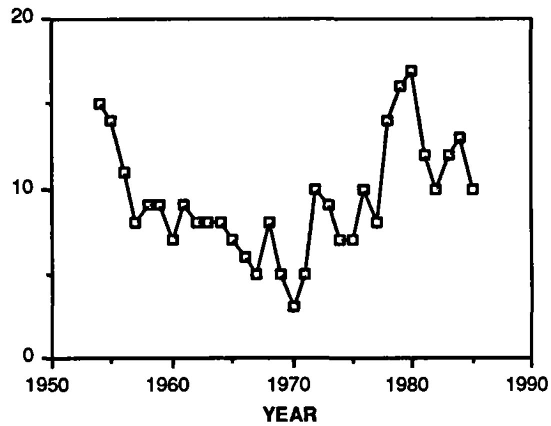

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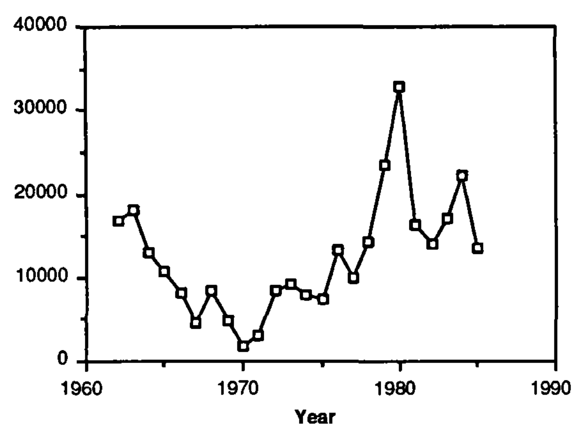
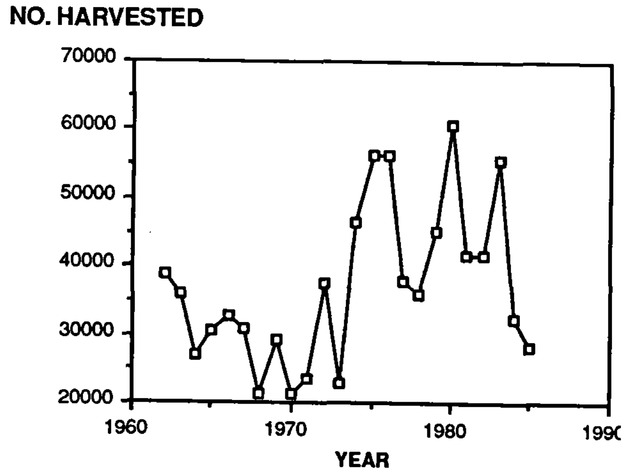
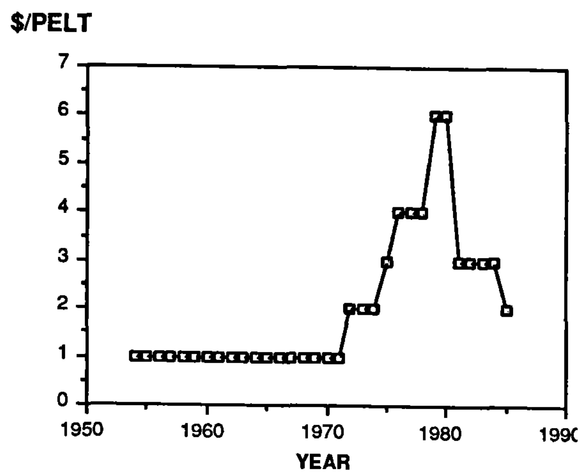
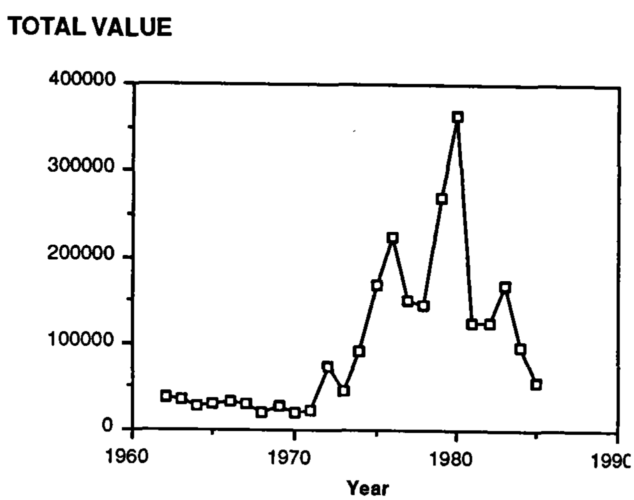


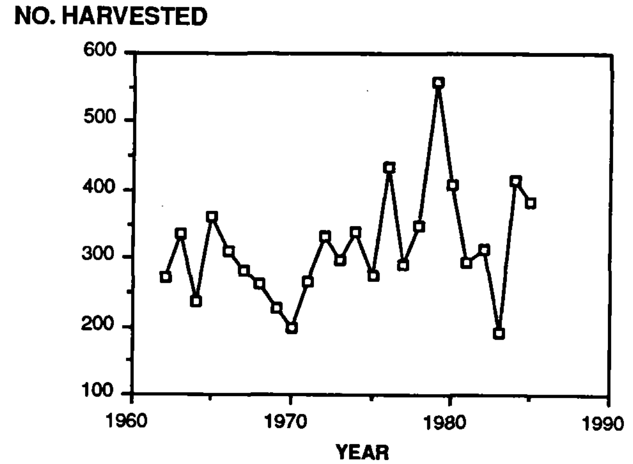
MUSKRAT

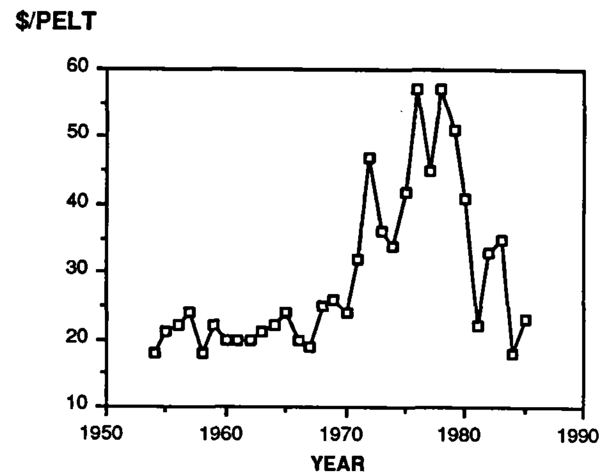


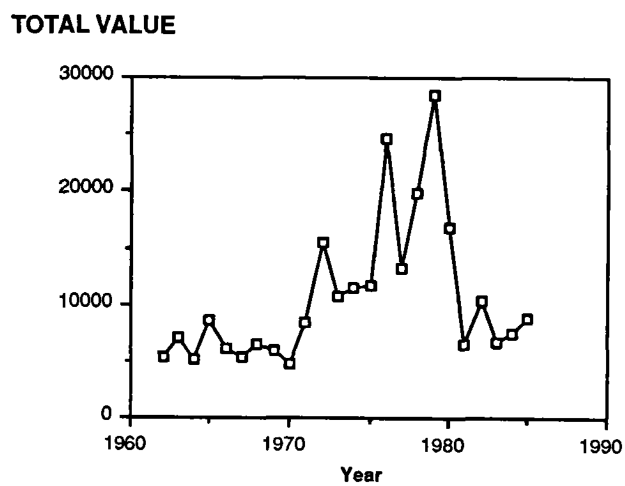




RIVER OTTER







RACCOON

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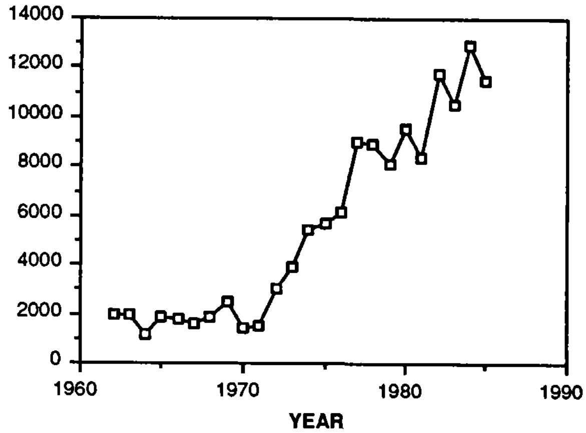

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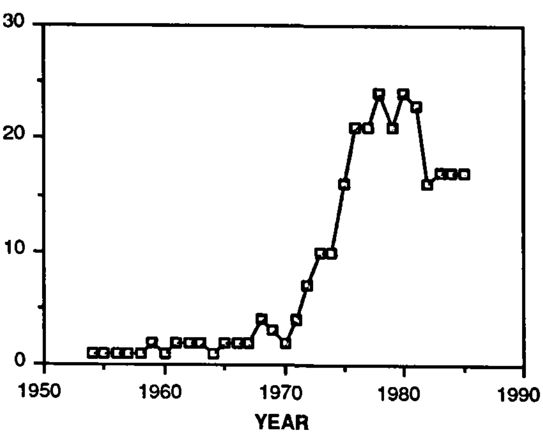

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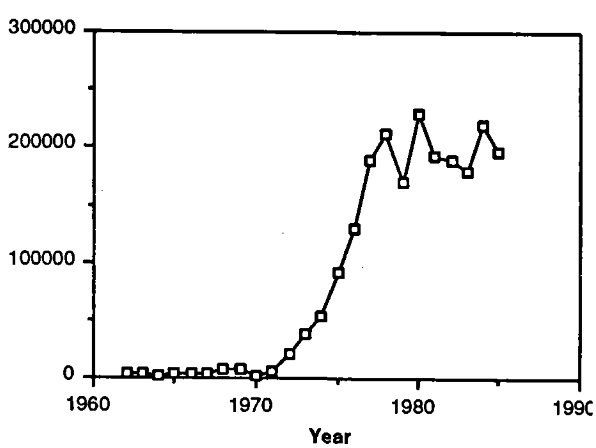

BADGER

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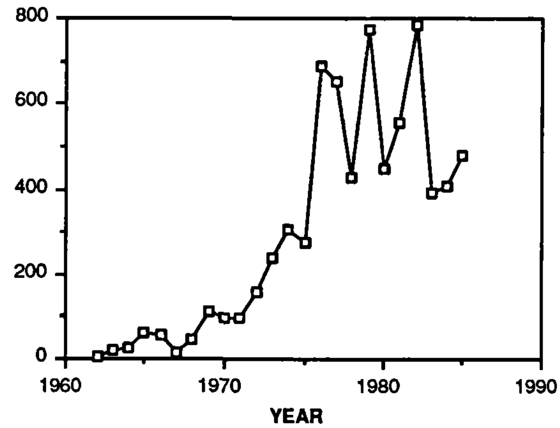

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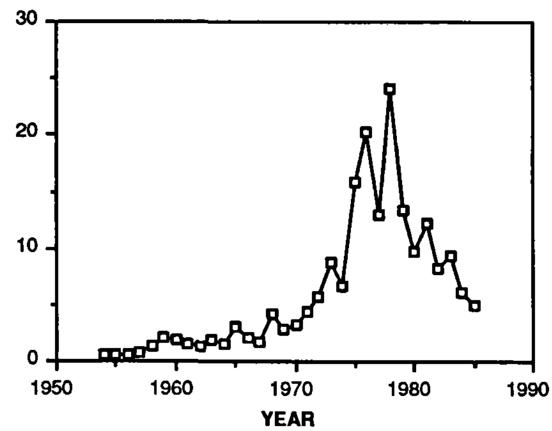

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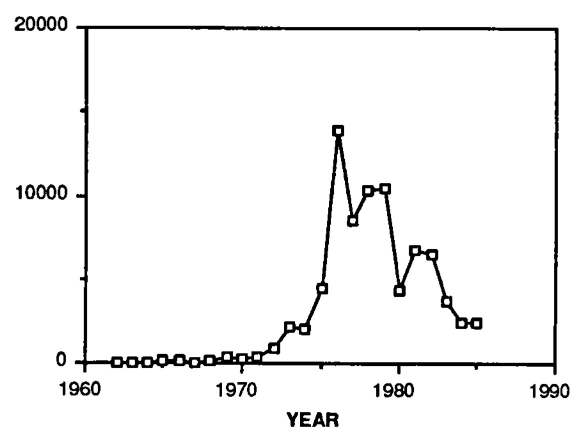

COYOTE

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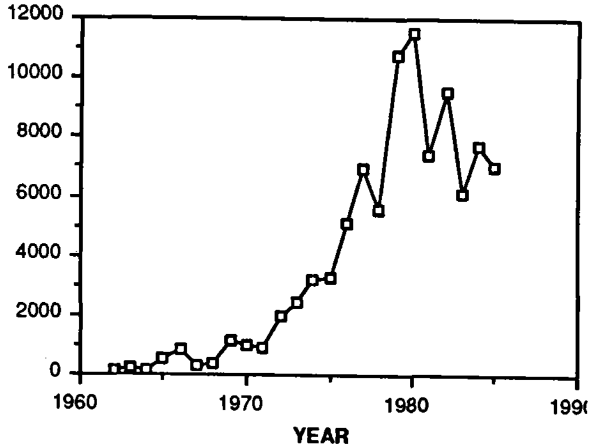

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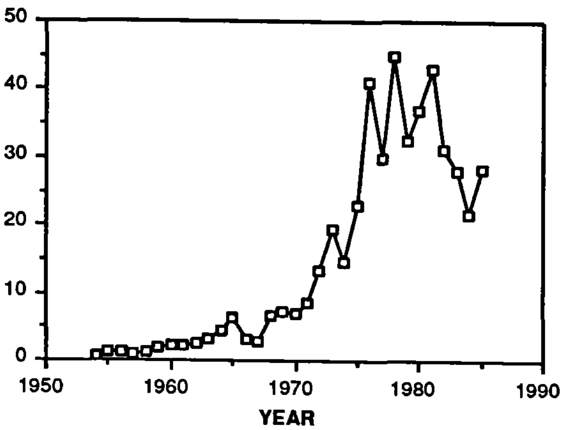

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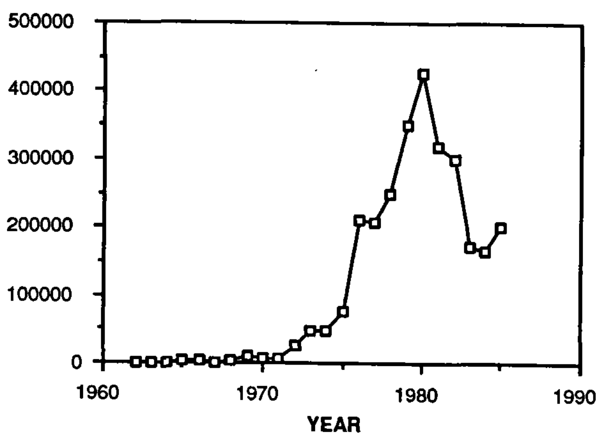

NUTRIA

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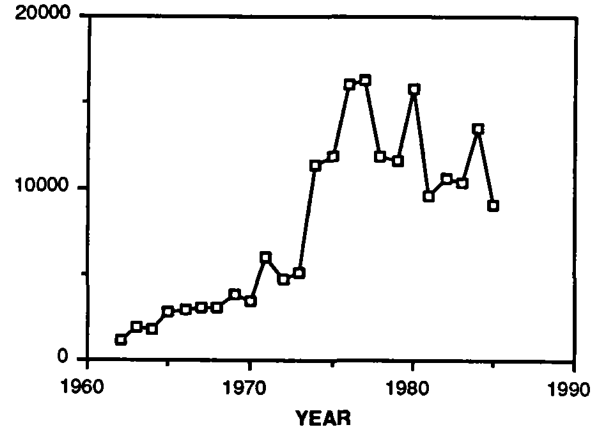

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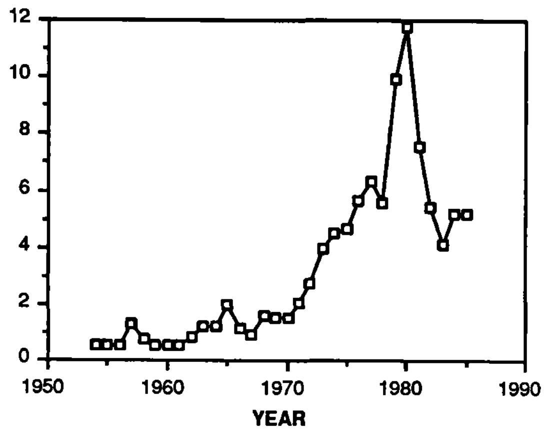

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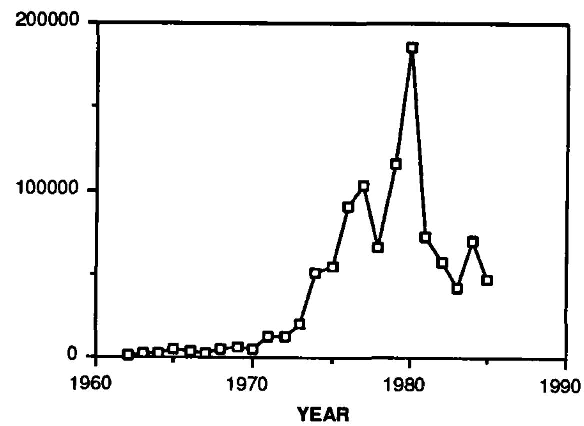

SPOTTED SKUNK

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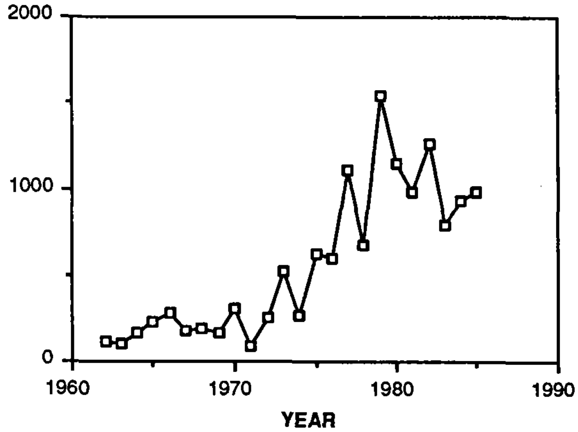

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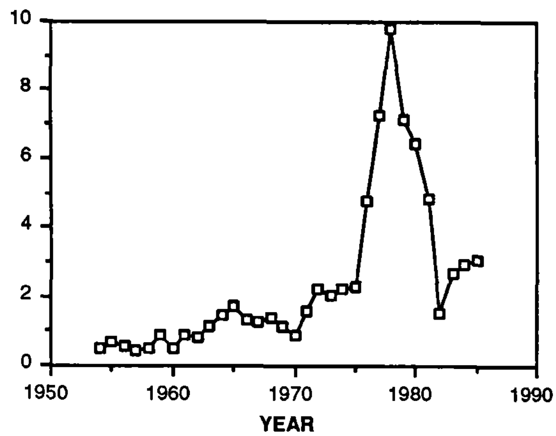

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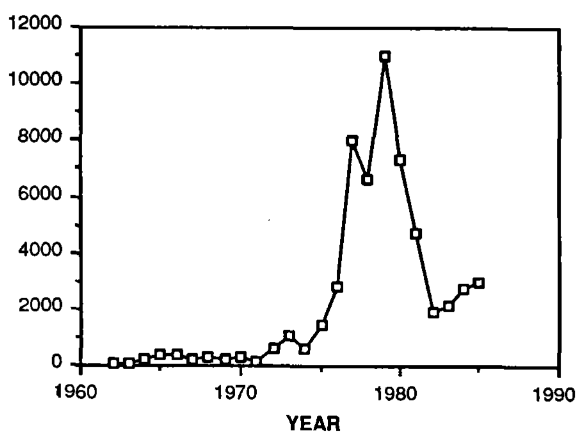

STRIPED SKUNK

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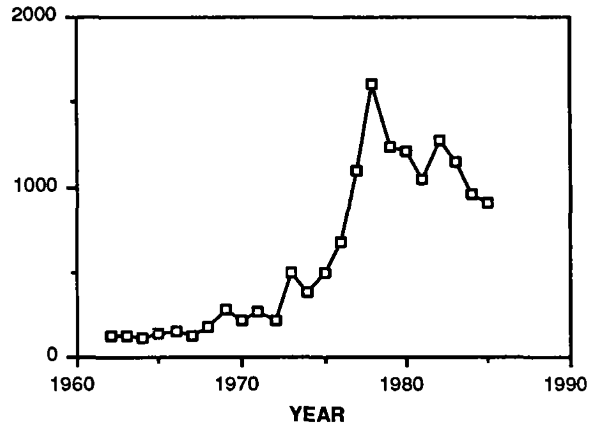

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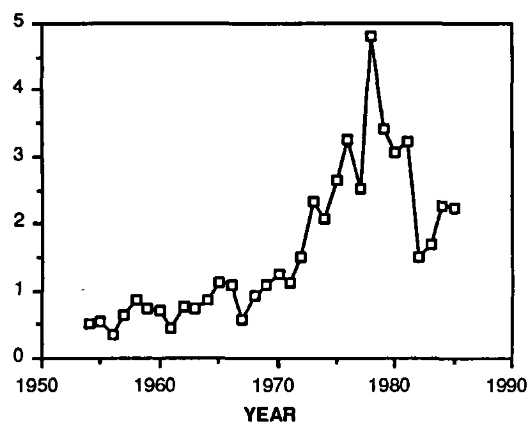
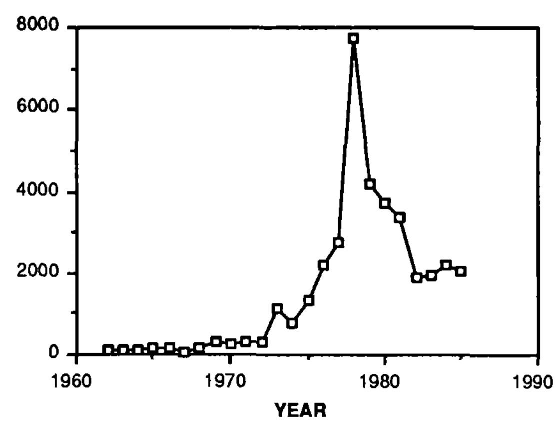


TOTAL VALUE



OPOSSUM

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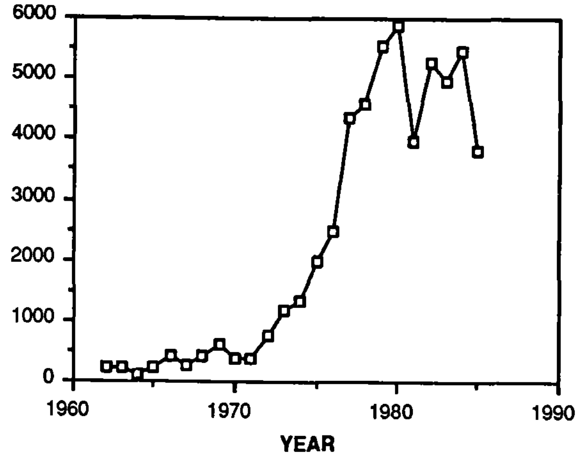

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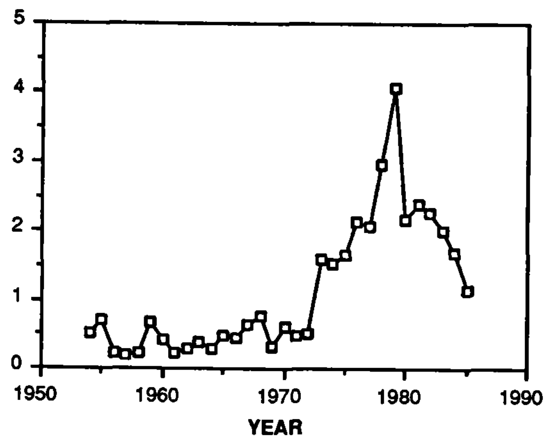

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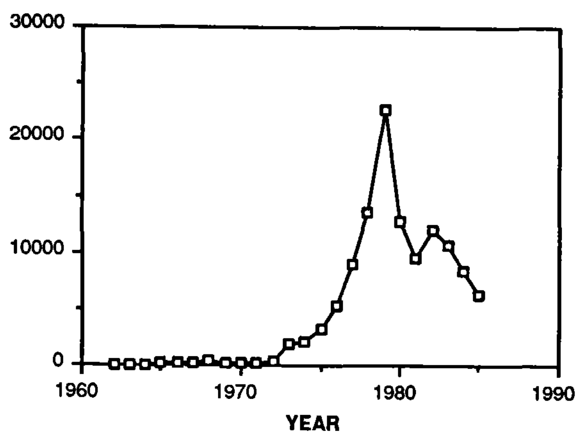

Appendix Table 1 — Pelt Harvest by Species

YEAR	BEAVER	BOBCAT	GRAY FOX	RED FOX	MARTEN	MINK	MUSCRAT	RIVER OTTER	RACCOON	BADGER	COYOTE	NUTRIA	OPOSSUM	SPOTTED SKUNK	STRIPED SKUNK	TOTAL
1962	7,383	324	83	53	59	2,105	38,785	272	1,923	6	143	1,196	246	114	129	52,821
1963	9,446	481	93	47	85	2,262	36,036	335	1,934	19	199	1,954	235	99	130	53,355
1964	7,153	481	46	39	40	1,639	26,946	236	1,191	24	162	1,749	108	167	111	40,092
1965	9,799	1,063	132	75	22	1,538	30,644	361	1,855	61	513	2,760	237	225	140	49,425
1966	9,878	801	177	101	32	1,343	32,740	309	1,808	57	830	2,878	435	280	151	51,820
1967	8,780	674	122	121	29	938	30,889	282	1,599	16	282	3,049	286	180	126	47,373
1968	9,238	984	116	94	8	1,046	21,164	262	1,890	44	414	3,082	424	195	173	39,134
1969	11,675	1,366	148	276	38	978	29,211	226	2,456	113	1,128	3,853	610	169	280	52,527
1970	5,490	1,110	136	202	39	635	21,215	198	1,431	97	1,005	3,479	399	305	219	35,960
1971	6,492	1,123	96	254	30	633	23,584	265	1,550	98	897	5,950	383	87	268	41,710
1972	9,499	1,399	133	517	9	838	37,440	331	2,995	156	1,963	4,687	766	254	218	61,205
1973	7,674	1,645	267	707	50	1,017	22,911	298	3,897	242	2,419	5,141	1,197	516	492	48,473
1974	9,090	1,473	301	827	34	1,114	46,412	339	5,436	306	3,240	11,286	1,340	271	377	81,846
1975	5,656	1,720	294	691	27	1,058	56,200	276	5,694	277	3,286	11,812	1,972	628	501	90,092
1976	10,784	1,998	246	691	70	1,328	56,160	434	6,156	687	5,112	15,997	2,477	595	679	103,414
1977	7,252	2,276	304	436	66	1,257	37,838	291	9,012	653	6,938	16,272	4,356	1,104	1,094	89,149
1978	6,153	2,553	317	699	90	1,013	36,004	348	8,874	430	5,563	11,841	4,584	672	1,604	80,745
1979	11,148	3,694	440	630	93	1,466	45,041	558	8,091	776	10,775	11,611	5,557	1,544	1,234	102,658
1980	9,812	4,095	341	543	194	1,936	60,833	409	9,556	450	11,538	15,834	5,900	1,141	1,212	123,794
1981	3,999	2,699	257	537	39	1,349	41,714	295	8,382	554	7,408	9,534	3,962	978	1,043	82,750
1982	5,815	2,971	371	756	84	1,396	41,735	314	11,804	784	9,520	10,612	5,282	1,255	1,272	93,971
1983	5,517	3,010	295	584	88	1,416	55,688	191	10,527	391	6,100	10,262	4,962	792	1,149	100,972
1984	6,714	3,661	340	682	82	1,703	32,540	416	12,967	406	7,707	13,511	5,453	931	960	88,073
1985	7,656	4,207	300	562	80	1,352	28,324	383	11,546	481	7,031	9,057	3,822	976	908	76,685
AVE	8,004	1,909	223	422	58	1,307	37,086	318	5,524	297	3,924	7,809	2,291	562	603	70,335
MIN	3,999	324	46	39	8	633	21,164	191	1,191	6	143	1,196	108	87	111	35,960
MAX	11,675	4,207	440	827	194	2,262	60,833	558	12,967	784	11,538	16,272	5,900	1,544	1,604	123,794

Appendix: Table 2 — Pelt Values by Species

YEAR	BEAVER	BOBCAT	GRAY FOX	RED FOX	MARTEN	MINK	MUSCRAT	RIVER OTTER	RACCOON	BADGER	COYOTE	NUTRIA	OPOSSUM	SPOTTED SKUNK	STRIPED SKUNK	TOTAL
1962	73,830	1,620	83	212	354	16,840	38,785	5,440	3,846	8	376	1,017	71	95	99	142,676
1963	103,906	2,405	93	141	595	18,096	36,036	7,035	3,868	36	613	2,462	92	112	94	175,583
1964	57,224	2,886	46	78	360	13,112	26,946	5,192	1,191	35	708	2,134	32	240	95	110,280
1965	117,588	14,882	264	300	132	10,766	30,644	8,664	3,710	184	3,293	5,520	111	385	154	196,597
1966	118,536	7,209	177	303	192	8,058	32,740	6,180	3,616	117	2,615	3,310	196	367	162	183,776
1967	114,140	10,110	244	484	174	4,690	30,889	5,358	3,198	29	807	2,866	180	227	71	173,466
1968	138,570	16,728	232	470	64	8,368	21,164	6,550	7,560	183	2,823	5,024	322	277	157	208,493
1969	140,100	20,490	444	1,656	266	4,890	29,211	5,876	7,368	328	8,167	5,818	195	194	305	225,308
1970	54,900	15,540	272	1,010	234	1,905	21,215	4,752	2,862	315	6,965	5,219	243	278	272	115,981
1971	90,888	23,583	288	2,032	150	3,165	23,584	8,480	6,200	426	7,795	12,317	188	138	300	179,534
1972	161,483	54,561	931	9,823	72	8,380	74,880	15,557	20,965	906	26,167	12,889	383	574	325	387,896
1973	122,784	88,830	2,670	19,089	250	9,153	45,822	10,728	38,970	2,130	47,050	20,358	1,903	1,037	1,146	411,920
1974	118,170	54,501	3,311	19,848	272	7,798	92,824	11,526	54,360	2,047	47,369	50,674	2,050	599	780	466,130
1975	79,184	177,160	6,174	26,258	405	7,406	168,600	11,592	91,104	4,413	75,184	54,808	3,254	1,432	1,318	708,290
1976	194,112	205,794	4,428	34,550	1,120	13,280	224,640	24,738	129,276	13,877	210,717	90,863	5,301	2,856	2,214	1,157,765
1977	94,276	163,872	8,208	23,108	924	10,056	151,352	13,095	189,252	8,476	207,307	103,815	8,973	8,004	2,757	993,476
1978	110,754	293,595	12,680	44,736	1,530	14,182	144,016	19,836	212,976	10,320	249,389	66,191	13,569	6,612	7,731	1,208,118
1979	312,144	343,542	17,160	30,870	1,395	23,456	270,246	28,458	169,911	10,437	349,110	115,762	22,673	11,024	4,196	1,710,383
1980	186,428	487,305	10,571	27,150	2,328	32,912	364,998	16,769	229,344	4,383	425,868	186,050	12,803	7,348	3,721	1,997,977
1981	59,985	261,803	6,682	24,165	468	16,188	125,142	6,490	192,786	6,759	317,951	72,363	9,469	4,743	3,358	1,108,353
1982	63,965	341,665	13,356	24,948	1,680	13,960	125,205	10,362	188,864	6,492	298,262	57,729	11,990	1,895	1,908	1,162,281
1983	66,204	361,200	9,145	19,856	2,640	16,992	167,064	6,685	178,959	3,660	170,434	42,279	10,023	2,130	1,953	1,059,225
1984	100,710	556,472	8,500	24,552	2,624	22,139	97,620	7,488	220,439	2,460	167,088	69,852	9,216	2,746	2,170	1,294,076
1985	137,808	622,636	5,400	11,240	1,840	13,520	56,648	8,809	196,282	2,367	199,821	47,096	4,434	2,996	2,034	1,312,931
AVE	116,517	152,424	4,607	14,593	793	12,426	101,897	10,733	85,245	3,392	114,176	43,014	4,923	2,318	1,534	668,591
MIN	54,900	1,620	46	78	64	1,905	21,164	4,752	1,191	8	376	1,017	32	95	71	110,280
MAX	312,144	556,472	17,160	44,736	2,640	32,912	364,998	28,458	229,344	13,877	425,868	186,050	22,673	11,024	7,731	1,997,977

Appendix: Table 3 — Pelt Prices by Species

YEAR	BEAVER	BOBCAT	GRAY FOX	RED FOX	MARTEN	MINK	MUSCRAT	RIVER OTTER	RACCOON	BADGER	COYOTE	NUTRIA	OPOSSUM	SPOTTED SKUNK	STRIPED SKUNK
1954	13.00	1.00	0.50	1.00	7.00	15.00	1.00	18.00	1.00	0.50	0.50	0.50	0.50	0.50	0.50
1955	12.00	3.00	1.00	0.50	5.00	14.00	1.00	21.00	1.00	0.50	1.42	0.50	0.70	0.67	0.53
1956	9.00	2.00	0.50	1.00	5.00	11.00	1.00	22.00	1.00	0.50	1.12	0.50	0.22	0.55	0.34
1957	10.00	3.00	0.50	3.00	5.00	8.00	1.00	24.00	1.00	0.83	1.00	1.29	0.20	0.47	0.65
1958	9.00	3.00	0.50	3.00	4.00	9.00	1.00	18.00	1.00	1.43	1.15	0.78	0.23	0.52	0.86
1959	12.00	6.00	1.00	3.00	3.00	9.00	1.00	22.00	2.00	2.10	1.99	0.56	0.68	0.86	0.74
1960	11.00	5.00	0.50	1.00	4.00	7.00	1.00	20.00	1.00	1.90	2.23	0.52	0.40	0.48	0.71
1961	10.00	4.00	1.00	2.00	3.00	9.00	1.00	20.00	2.00	1.46	2.11	0.57	0.23	0.91	0.46
1962	10.00	5.00	1.00	4.00	6.00	8.00	1.00	20.00	2.00	1.31	2.63	0.85	0.29	0.83	0.77
1963	11.00	5.00	1.00	3.00	7.00	8.00	1.00	21.00	2.00	1.88	3.08	1.26	0.39	1.13	0.72
1964	8.00	6.00	1.00	2.00	9.00	8.00	1.00	22.00	1.00	1.47	4.37	1.22	0.30	1.44	0.86
1965	12.00	14.00	2.00	4.00	6.00	7.00	1.00	24.00	2.00	3.01	6.42	2.00	0.47	1.71	1.10
1966	12.00	9.00	1.00	3.00	6.00	6.00	1.00	20.00	2.00	2.05	3.15	1.15	0.45	1.31	1.07
1967	13.00	15.00	2.00	4.00	6.00	5.00	1.00	19.00	2.00	1.81	2.86	0.94	0.63	1.26	0.56
1968	15.00	17.00	2.00	5.00	8.00	8.00	1.00	25.00	4.00	4.17	6.82	1.63	0.76	1.42	0.91
1969	12.00	15.00	3.00	6.00	7.00	5.00	1.00	26.00	3.00	2.90	7.24	1.51	0.32	1.15	1.09
1970	10.00	14.00	2.00	5.00	6.00	3.00	1.00	24.00	2.00	3.25	6.93	1.50	0.61	0.91	1.24
1971	14.00	21.00	3.00	8.00	5.00	5.00	1.00	32.00	4.00	4.35	8.69	2.07	0.49	1.59	1.12
1972	17.00	39.00	7.00	19.00	8.00	10.00	2.00	47.00	7.00	5.81	13.33	2.75	0.50	2.26	1.49
1973	16.00	54.00	10.00	27.00	5.00	9.00	2.00	36.00	10.00	8.80	19.45	3.96	1.59	2.01	2.33
1974	13.00	37.00	11.00	24.00	8.00	7.00	2.00	34.00	10.00	6.69	14.62	4.49	1.53	2.21	2.07
1975	14.00	103.00	21.00	38.00	15.00	7.00	3.00	42.00	16.00	15.93	22.88	4.64	1.65	2.28	2.63
1976	18.00	103.00	18.00	50.00	16.00	10.00	4.00	57.00	21.00	20.20	41.22	5.68	2.14	4.80	3.26
1977	13.00	72.00	27.00	53.00	14.00	8.00	4.00	45.00	21.00	12.98	29.88	6.38	2.06	7.25	2.52
1978	18.00	115.00	40.00	64.00	17.00	14.00	4.00	57.00	24.00	24.00	44.83	5.59	2.96	9.84	4.82
1979	28.00	93.00	39.00	49.00	15.00	16.00	6.00	51.00	21.00	13.45	32.40	9.97	4.08	7.14	3.40
1980	19.00	119.00	31.00	50.00	12.00	17.00	6.00	41.00	24.00	9.74	36.91	11.75	2.17	6.44	3.07
1981	15.00	97.00	26.00	45.00	12.00	12.00	3.00	22.00	23.00	12.20	42.92	7.59	2.39	4.85	3.22
1982	11.00	115.00	36.00	33.00	20.00	10.00	3.00	33.00	16.00	8.28	31.33	5.44	2.27	1.51	1.50
1983	12.00	120.00	31.00	34.00	30.00	12.00	3.00	35.00	17.00	9.36	27.94	4.12	2.02	2.69	1.70
1984	15.00	152.00	25.00	36.00	32.00	13.00	3.00	18.00	17.00	6.06	21.68	5.17	1.69	2.95	2.26
1985	18.00	148.00	18.00	20.00	23.00	10.00	2.00	23.00	17.00	4.92	28.42	5.20	1.16	3.07	2.24
AVERAGE	$13.44	$47.34	$11.36	$18.77	$10.28	$9.38	$2.03	$29.34	$8.69	$6.06	$14.74	$3.19	$1.13	$2.41	$1.59
MIMIMUM	$8.00	$1.00	$0.50	$0.50	$3.00	$3.00	$1.00	$18.00	$1.00	$0.50	$0.50	$0.50	$0.20	$0.47	$0.34
MAXIMUM	$28.00	$152.00	$40.00	$64.00	$32.00	$17.00	$6.00	$57.00	$24.00	$24.00	$44.83	$11.75	$4.08	$9.84	$4.82