

A BIOLOGICAL STUDY OF THE MUSKRAT, (ONDATRA ZIBETHICA ALBA,  
(SABINE) MILLER, 1912) IN MANITOBA

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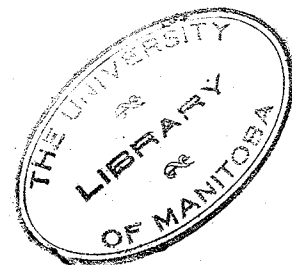
A Thesis  
Presented to  
the Faculty of Graduate Studies and Research  
University of Manitoba

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

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by  
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April 1950



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#### ACKNOWLEDGMENTS

The writer wishes to express his sincere appreciation to his director, Dr. J. A. McLeod for his valuable suggestions, pertinent information, and for the use of his private library.

Thanks are due to the members of the Department of Mines and Natural Resources, Game and Fisheries Branch, Manitoba Government for the use of the data which was obtained while under their employment during the summer of 1949.

The writer also wishes to express his thanks to Professor R. A. Wardle, Head of the Department of Zoology, University of Manitoba for his advice and for the use of his laboratory facilities.

Figure I --- A litter of ten muskrats which were photographed on June 30th, at Pruden Bay Station, Netley Marsh. Their average total body length was approximately 135 mm. which placed them at six days of age. The animals have been tagged for experimental purposes.



## FOREWORD

The early fur trade furnished the stimulus for exploration and the subsequent colonization of the North American continent.

"Probably the oldest industry in the world was the taking of furs for clothing; aborigines the world over have been dependent upon fur animals for ages. The early invaders of North America pushed into the West for furs. If one reviews the history of North America, he soon learns that not gold, agricultural lands, or timber attracted the hardy adventurers, but rather the claims of the fur trade." (Hamilton, 1939)

The fur trade of Canada plays an important role in the economic status of this country. A large population of Northern Canada is primarily dependent upon the fur bearing animals. Approximately 60,000 Eskimos and 20,000 Indians are supported largely by the fur industry. These natives cannot subsist on agriculture due to the unsuitability of the soil and also because of their nomadic nature. Since there exists a sufficient native population in Canada to secure all the furs that can be marketed, certain restrictions have been placed on the number of white trappers.

With the increasing demand for furs, many of the fur - bearing species have been trapped very heavily resulting in a serious decrease in their numbers. If the conditions of the habitat became severe, the outcome would have been extermination if conservation measures were not brought into function. The purpose of management and regulation is to permanently maintain the fur supply on a sustained - yield basis.



## INTRODUCTION

### Total Canadian Fur Production

The twenty two fur-bearing animals of Canada are mostly carnivorous mammals but also included are two rodents of great importance. The latter are the beaver and the muskrat. The total Canadian fur production during the season 1947/48 ending June 30th, is shown in Table I. This crop was worth over 32 million dollars. Therefore the Canadian fur industry is of considerable value.

### Muskrat Fur Production

The "banner of the fur trade" as formerly held by the beaver, has long since been replaced by the muskrat. Its broad distribution and enormous numbers as well as its great versatility which has enabled it to withstand prolonged heavy trapping and the severe fluctuations of its habitat have made this animal one of the most important species of the fur trade. It is trapped in Alaska, Canada, and in 47 states. Louisiana is by far the greatest producer and supplies approximately six million pelts yearly. The total North American production exceeds 10 million muskrat pelts annually.

Canadian production of these pelts amounted to over 3.5 million during the season 1947/48 ending June 30th. Table I states that their worth exceeded 9.5 million dollars. This same table also shows that the muskrat is the most abundant and the most valuable fur bearer in comparison to any of the

other species which are obtained from the wild. It constitutes approximately 30% of the total value of all the Canadian fur revenue.

Table II, has all the territories of Canada arranged in their order of importance with respect to her muskrat fur production. Manitoba, in the season 1947/48 ending June 30th, surpassed all the other regions in her yield of muskrat furs.

The number of raw pelts taken in Manitoba from the season 1942/43 to the season 1948/49 ending March 31st is shown in table III. The total amount of pelts cropped in this province during the season 1948/49 was approximately 1.67 million. The muskrat furnished over 930,000 of these pelts or slightly less than 56% of the total catch. These furs produced a revenue exceeding 1.25 million dollars. The total value of the furs for the season 1948/49 ending March 31st, as shown by table IV, was over 2.5 million dollars. Therefore the muskrat constitutes almost 50% of the total Canadian fur catch revenue. The muskrat formed not only the majority of the pelts taken from the wild in Manitoba but also the greatest return for any one species.

The abundance and the pelt value of the muskrat do not remain stationary. Tables V and VI show these fluctuations. During the past season, the muskrat population has reached almost another all time high in Manitoba. The

TABLE I  
TOTAL CANADIAN FUR PRODUCTION  
Season 1947/48

Kind	No. of Pelts		Total Value of Pelts	Average Value per Pelt
	Wild Life	Ranch raised		
<u>CANADA</u>				
Badger -----	1,034	-	\$ 1,380	\$ 1.33
Bear, white -----	246	-	6,530	26.54
Bear, not specified	827	-	2,257	2.73
Beaver -----	135,629	-	4,382,241	32.31
Cat, domestic -----	-	31	16	0.52
Coyote or prairie wolf -----	21,728	-	64,787	2.98
Ermine (weasel) ---	528,029	-	1,201,271	2.27
Fisher -----	2,788	35	102,230	36.21
Fitch -----	-	231	739	3.20
Fox, blue -----	606	1,579	34,775	15.92
Fox, cross -----	5,771	785	36,716	5.60
Fox, platinum -----	-	30,433	660,147	21.69
Fox, red -----	46,124	370	120,854	2.60
Fox, silver -----	1,085	127,300	1,583,006	12.33
Fox, white-marked -	-	19,789	254,119	12.84
Fox, white -----	55,354	69	616,210	11.12
Fox, not specified	109	20	438	3.40
Lynx -----	6,582	-	128,188	19.48
Marten -----	15,051	39	415,898	27.56
Mink, mutation ---	-	32,903	658,507	20.01
Mink, standard ---	92,191	529,412	110,426,077	16.77
Muskrat -----	3,569,157	-	9,518,064	2.67
Nutria -----	-	8	10	1.25
Otter -----	11,974	-	296,410	24.75
Rabbit -----	124,801	-	57,320	0.46
Raccoon -----	24,192	22	63,062	2.60
Skunk -----	19,096	-	12,770	0.67
Squirrel -----	2,543,798	-	1,577,887	0.62
Wild Cat -----	1,265	-	3,480	2.75
Wolf -----	1,231	-	3,539	2.87
Wolverine -----	452	-	4,064	8.99
<b>TOTAL -----</b>	<b>7,209,120</b>	<b>743,026</b>	<b>32,232,992</b>	<b>-</b>

(Figures obtained from the  
Dominion Bureau of Statistics)

TABLE II  
 CANADIAN MUSKRAT FUR PRODUCTION  
 Season 1947/48.

Territory	Number of Pelts (Wild)	Value	
		Total	Average per Pelt
Manitoba -----	1,004,762	\$2,712,857	\$2.70
Ontario -----	862,490	2,587,470	3.00
Saskatchewan -----	510,730	1,368,756	2.68
Alberta -----	463,193	1,097,767	2.37
North West Territories	395,992	864,782	2.30
Quebec -----	161,101	434,973	2.70
British Columbia ----	67,191	161,258	2.40
Nova Scotia -----	50,600	149,270	2.95
Yukon Territories ---	30,686	73,646	2.40
New Brunswick -----	21,299	63,897	3.00
Prince Edward Island	1,113	3,388	3.04

(Figures obtained from the Dominion  
 Bureau of Statistics)

TABLE III

## RAW PELTS TAKEN FROM THE WILD IN MANITOBA, 1942/43 TO 1948/49

Species	1942/43	1943/44	1944/45	1945/46	1946/47	1947/48	1948/49
Weasel -----	113,080	155,567	124,815	109,613	103,656	91,600	99,705
Squirrel -----	326,203	228,803	445,214	300,847	399,658	224,677	580,707
Muskrat -----	280,838	581,862	855,724	958,099	808,692	822,998	930,330
Mink -----	18,356	21,067	15,338	12,801	15,850	18,778	22,932
Skunk -----	22,839	42,235	26,981	14,747	12,026	1,494	653
Badger -----	725	1,040	513	432	239	90	34
Wolf, Coyote ----	4,054	7,745	5,295	3,801	2,132	2,268	1,725
Wolf, Timber ----	-	-	565	511	403	247	255
Fox, Silver -----	955	859	523	433	258	201	165
Fox, Blue -----	14	9	4	6	23	2	8
Fox, Cross -----	6,072	5,027	3,042	2,107	1,430	826	828
Fox, White -----	470	363	311	297	1,449	89	47
Fox, Red -----	24,043	24,717	14,533	10,241	6,271	3,173	2,836
Wolverine -----	12	12	9	12	24	14	16
Beaver -----	Closed	13,248	5,399	9,057	7,878	12,443	14,099
Otter -----	1,772	1,816	2,277	1,804	1,850	2,093	2,103
Fisher -----	317	490	418	315	24	50	11
Marten -----	347	269	234	213	15	97	18
Bear -----	101	193	87	71	37	38	44
Lynx -----	596	525	311	149	27	20	74
Jack Rabbit -----	-	-	14,886	14,824	9,728	7,998	5,760
Raccoon -----	-	-	-	-	-	28	56

(Manitoba Government Annual Report 1948/49)

TABLE IV

## ESTIMATED VALUATION OF FURS TAKEN FROM THE WILD, 1947/48 AND 1948/49

Species	Season 1947/48 Quantity	Estimated Valuation 1947/48	Season 1948/49 Quantity	Estimated Valuation 1948/49
Weasel -----	91,600	\$ 215,260.00	99,705	\$ 154,542.75
Squirrel -----	224,677	146,040.05	580,707	133,562.61
Muskrat -----	822,998	2,222,094.60	930,330	1,274,552.10
Mink -----	18,778	694,786.00	22,932	619,164.00
Skunk -----	1,494	1,120.50	653	326.50
Badger -----	90	135.00	34	44.20
Wolf, Coyote -----	2,268	6,804.00	1,725	4,312.50
Wolf, Timber -----	247	988.00	255	1,147.50
Fox, Silver -----	201	1,005.00	165	660.00
Fox, Blue -----	2	20.00	8	48.00
Fox, Cross -----	826	3,717.00	828	2,484.00
Fox, White -----	89	1,246.00	47	470.00
Fox, Red -----	3,173	9,519.00	2,836	5,672.00
Wolverine -----	14	140.00	16	128.00
Beaver -----	12,443	423,062.00	14,099	310,178.00
Otter -----	2,093	58,604.00	2,103	42,060.00
Fisher -----	50	1,500.00	11	275.00
Marten -----	97	2,910.00	18	360.00
Bear -----	38	76.00	44	88.00
Lynx -----	20	420.00	74	888.00
Jack Rabbit -----	7,998	5,198.70	5,760	1,728.00
Raccoon -----	28	56.00	56	112.00
		<u>\$3,794,701.85</u>		<u>\$2,552,803.16</u>
			Decrease - 33%	

TABLE V

FUR PRODUCTION FROM THE WILD, SHOWING HIGH, LOW AND AVERAGE PRODUCTION,  
1924/25 TO 1948/49

Species	Highest Production Number	Season	Lowest Production Number	Season	Average Production	Production Season 1948/49
Weasel -----	155,567	1943/44	56,187	1935/36	101,442	99,705
Squirrel (7 years) -----	580,707	1948/49	224,677	1947/48	358,015	580,707
Muskrat -----	958,099	1945/46	213,866	1927/28	468,702	930,330
Mink -----	28,888	1933/34	9,833	1927/28	16,900	22,932
Skunk -----	42,235	1943/44	653	1948/49	13,669	653
Badger -----	1,476	1927/28	Closed	Seasons	476	34
Wolf, Coyote -----	13,056	1927/28	1,725	1948/49	4,403	1,725
Wolf, Timber (5 years) ---	565	1944/45	247	1947/48	396	255
Fox, Silver -----	985	1933/34	86	1928/29	426	165
Fox, Blue -----	23	1946/47	-	1931/32	6	8
Fox, Cross -----	6,072	1942/43	795	1928/29	2,678	828
Fox, White -----	8,397	1924/25	47	1948/49	1,284	47
Fox, Red -----	24,717	1943/44	2,413	1928/29	9,940	2,836
Wolverine -----	88	1931/32	9	1944/45	27	16
Beaver -----	14,099	1948/49	Closed	Seasons	6,323	14,099
Otter -----	2,277	1944/45	714	1931/32	1,537	2,103
Fisher -----	953	1925/26	Closed	Seasons	362	11
Marten -----	2,191	1925/26	Closed	Seasons	542	18
Bear -----	598	1928/29	37	1946/47	194	44
Lynx -----	2,394	1925/26	Closed	Seasons	842	74
Jack Rabbit (5 years) ---	14,886	1944/45	5,760	1948/49	10,639	5,760
Raccoon (2 years) -----	56	1948/49	28	1947/48	42	56

TABLE VI

HIGHEST, LOWEST AND PRESENT AVERAGE VALUE OF PELTS TAKEN FROM THE WILD,  
1928/29 TO 1948/49

Species	Highest	Season	Lowest	Season	1948/49
Weasel -----	3.05	1945/46	.46	1932/33	1.55
Squirrel (7 years) -----	.80	1945/46	.23	1948/49	.23
Muskrat -----	3.50	1945/46	.44	1931/32	1.37
Mink -----	40.00	1945/46	4.96	1931/32	27.00
Skunk -----	3.95	1943/44	.50	1948/49	.50
Badger -----	30.00	1928/29	1.30	1948/49	1.30
Wolf, Coyote -----	20.00	1928/29	2.50	1948/49	2.50
Wolf, Timber (5 years) -----	10.00	1944/45	4.00	1947/48	4.50
Fox, Silver -----	113.50	1928/29	4.00	1948/49	4.00
Fox, Blue -----	51.00	1928/29	6.00	1948/49	6.00
Fox, Cross -----	71.25	1928/29	3.00	1948/49	3.00
Fox, White -----	51.00	1928/29	10.00	1948/49	10.00
Fox, Red -----	31.25	1928/29	2.00	1948/49	2.00
Wolverine -----	17.00	1945/46	3.80	1932/33	8.00
Beaver -----	47.00	1945/46	7.50	1934/35	22.00
Otter -----	31.75	1928/29	9.60	1931/32	20.00
Fisher -----	68.00	1943/44	25.00	1948/49	25.00
Marten -----	55.00	1945/46	11.30	1931/32	20.00
Bear -----	6.25	1928/29	.85	1931/32	2.00
Lynx -----	46.00	1943/44	11.42	1931/32	12.00
Jack Rabbit (5 years) -----	.85	1945/46	.30	1948/49	.30
Raccoon (2 years) -----	-	-	-	-	2.00



TABLE VII  
 CANADIAN PRODUCTION OF MUSKRAT RAW FURS  
 Seasons 1928/29 to 1947/48

SEASON	NUMBER	TOTAL VALUE	AVERAGE VALUE
1928/29	2,785,994	3,924,949	1.41
1929/30	2,109,232	1,781,651	0.84
1930/31	2,639,086	2,143,148	0.81
1931/32	2,632,984	1,403,993	0.53
1932/33	2,731,490	1,581,606	0.58
1933/34	2,538,565	1,863,322	0.73
1934/35	1,983,747	1,784,252	0.90
1935/36	1,630,231	2,148,605	1.32
1936/37	1,607,897	2,250,971	1.40
1937/38	1,748,239	1,320,509	0.76
1938/39	2,295,550	2,011,469	0.88
1939/40	3,241,089	3,829,318	1.18
1940/41	2,795,218	4,990,762	1.79
1941/42	2,408,436	4,954,504	2.06
1942/43	2,068,468	5,671,910	2.74
1943/44	2,038,868	4,654,641	2.28
1944/45	2,377,629	6,299,411	2.65
1945/46	3,420,496	11,159,502	3.26
1946/47	2,795,687	5,431,833	1.94
1947/48	3,569,157	9,518,064	2.67

(Figures obtained from  
 Dominion Bureau of Statistics)

numerical increase is however offset by a drop in the pelt value. Table VII illustrates the fluctuations in abundance and value of the total Canadian Muskrat raw fur production. The last recorded season of 1947/48 ending June 30th, had the greatest muskrat catch for a period of 19 years. Over 3.5 million muskrat pelts have been marketed during that season yielding over 9.5 million dollars. This statistical survey shows the importance of muskrat fur production in Canada as well as in Manitoba alone.

#### Rehabilitation Projects

In order to maintain the Canadian fur industry at a high constant level, various government departments have proceeded with the development of marsh lands for the purpose of fur production and rehabilitation of the fur - bearing species. Various measures were put into practice as an attempt to counteract the tendency of these animals to decline. The first method which resulted in success for some of the fur - bearing species was a reconstructive one. Fur farms were brought into large scale productivity with respect to such animals as the fox and the mink. A more recent development resulted in fur rehabilitation programs, where especially the beaver and the muskrat are actively assisted to increase their numbers in their natural environment.

The first step in this direction was undertaken at The Pas, Manitoba, in connection with the rehabilitation of