

1986-87
MINNESOTA

FURBEARER
REGISTRATION
STATISTICS

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Section of Wildlife
DEPARTMENT OF NATURAL RESOURCES

1986-87 FURBEARER REGISTRATION STATISTICS

Ed Boggess, Section of Wildlife, Minnesota Department of Natural Resources, St. Paul 55155-4007

The attached tables and figures summarize harvest data for bobcat, fisher, pine marten and river otter, as obtained from records of animals registered by Conservation Officers.

Bobcat

The 1986-87 bobcat season was 36 days (Nov. 29-Jan. 3), compared to 51 days in 1985-86, and was the shortest season ever for bobcats in Minnesota. Despite the good access due to little snow and mild temperatures, the harvest was limited to 160. The objective of the shorter season was to limit harvest to less than 200 animals.

Fisher

The fisher harvest rebounded in 1986, probably mainly as a result of improved access for trappers due to the low snowfall. The total registered harvest of 1068 was 58% higher than in 1985, when very heavy snows occurred during the season.

Marten

Minnesota's second modern marten season produced a harvest of 798, compared to 430 in 1985. The limit remained at one and trapping was restricted to the extreme northeastern portions of the state. Again, most of the increase is attributed to improved weather conditions during the trapping season, although increased marten populations and trapper interest may also have been factors.

Otter

The 1986 otter harvest of 777 represented an increase of 39% over 1985. Most of this increase probably was the result of the earlier opening date for 1986 (November 1) instead of the more traditional opener on Saturday nearest November 15. The increase might have been even greater except the weather was severe during the second week of the otter season. Strong winds and very low temperatures occurred, with some heavy snows in the extreme northwest.

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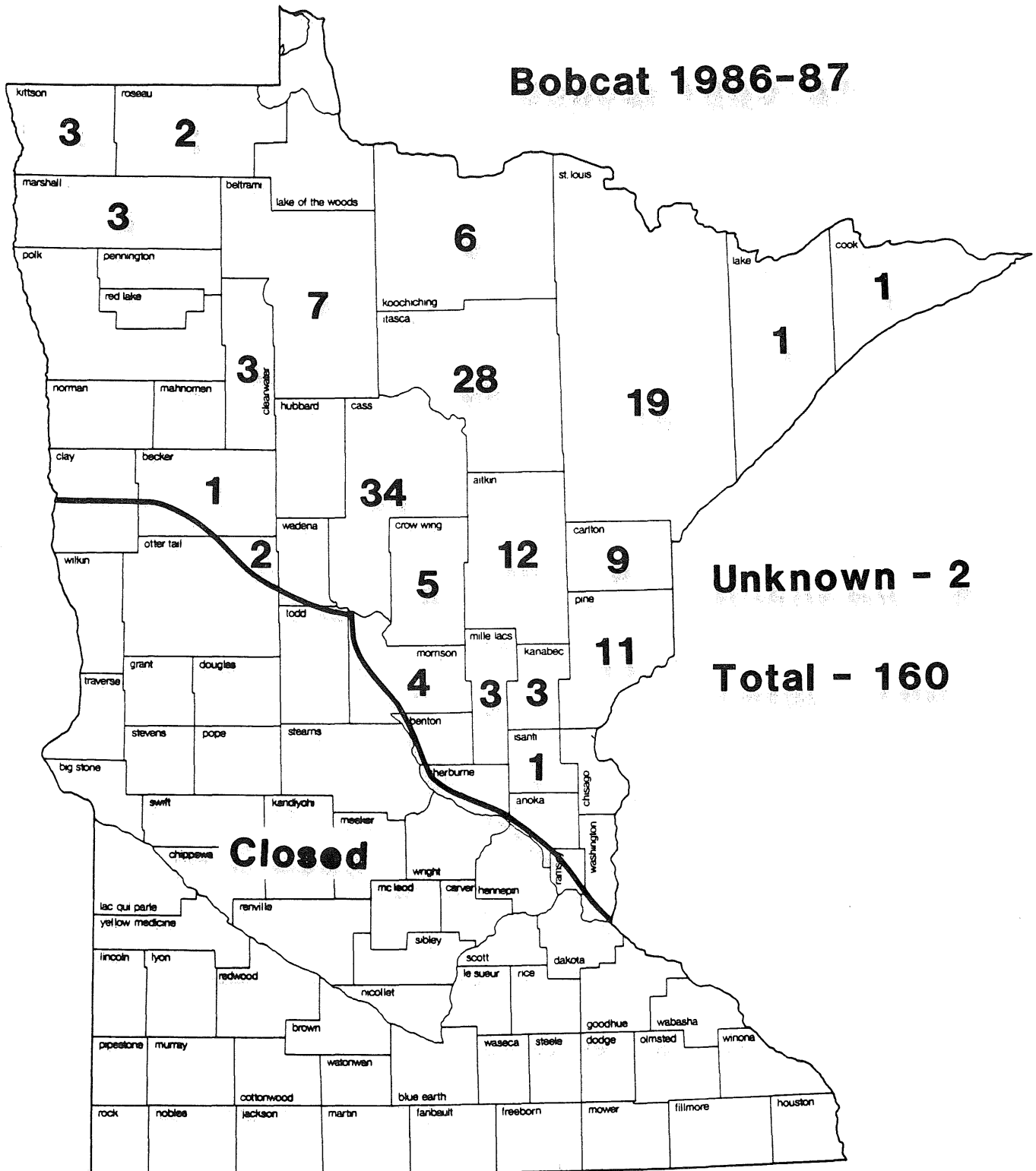


Figure 1. Bobcat harvest by county, 1986-87.

Table 1. Comparison of bobcat harvest by county, 1982-83 - 1986-87.

County	1982-83	1983-84	1984-85	1985-86	1986-87
Aitkin	28	20	25	14	12
Becker	6	8	9	1	1
Beltrami	18	17	24	5	7
Carlton	15	4	20	6	9
Cass	30	13	42	20	34
Chisago	1	0	0	1	0
Clearwater	1	1	0	0	3
Cook	2	0	1	0	1
Crow Wing	4	4	5	6	5
Hubbard	4	1	1	0	0
Isanti	0	0	0	0	1
Itasca	46	36	50	15	28
Kanabec	2	2	6	2	3
Kittson	5	3	0	0	3
Koochiching	3	12	8	8	6
Lake	8	3	1	1	1
Lake of the Woods	3	1	1	1	0
Marshall	2	3	1	1	3
Mille Lacs	0	6	0	4	3
Morrison	5	7	5	4	4
Ottertail	2	1	1	3	2
Pine	20	24	20	14	11
Polk	0	0	1	0	0
Red Lake	0	0	0	1	0
Renville	0	0	1	0	0
Roseau	9	9	14	2	2
St. Louis	59	32	43	8	19
Wadena	0	1	1	2	0
Unknown	1	0	1	0	2
Total	274	208	280	119	160

Table 2. Time distribution of bobcat harvest by 5-day increments, 1986-87 season.

Interval	Sex			Total	% of Total	Cumulative Percent
	M	F	U			
Nov. 29-Dec. 3	3	6	0	9	5.9	5.9
Dec. 4-8	11	16	0	27	17.8	23.7
Dec. 9-13	10	18	0	28	18.4	42.1
Dec. 14-18	13	15	0	28	18.4	60.5
Dec. 19-23	5	9	0	14	9.2	69.7
Dec. 24-28	8	13	0	21	13.8	83.5
Dec. 29-Jan. 2	9	9	0	18	11.9	95.4
Jan. 3 ^a	3	4	0	7	4.6	100.0
Unknown	0	2	6	8		
TOTAL	62	92	6	160	100.0	100.0

^a1-day interval

Table 3. Distribution of bobcat harvest among takers, 1979-80 thru 1986-87.

Number Taken	Number of Takers									
	<u>1979-80</u> # (%)	<u>1980-81</u> # (%)	<u>1981-82</u> # (%)	<u>1982-83</u> # (%)	<u>1983-84</u> # (%)	<u>1984-85</u> # (%)	<u>1985-86</u> # (%)	<u>1986-87</u> # (%)	<u>Total (79-88)</u> # (%)	
1	88 (61.1)	51 (55.4)	123 (71.1)	111 (65.3)	108 (72.0)	116 (65.2)	70 (78.7)	92 (76.7)	759	(68.0)
2	34 (23.6)	21 (22.8)	29 (16.8)	30 (17.6)	32 (21.3)	39 (21.9)	11 (12.4)	18 (15.0)	214	(19.2)
3	9 (6.2)	6 (6.5)	10 (5.8)	16 (9.4)	6 (4.0)	13 (7.3)	6 (6.7)	9 (7.5)	75	(6.7)
4	4 (2.8)	4 (4.3)	5 (2.9)	10 (5.9)	4 (2.7)	9 (5.1)	1 (1.1)	0 (0.0)	37	(3.3)
5	9 (6.3)	10 (10.9)	6 (3.5)	3 (1.8)	0 (0.0)	1 (0.5)	1 (1.1)	1 (0.8)	31	(2.8)
TOTAL	144	92	173	170	150	178	89	120	1116	

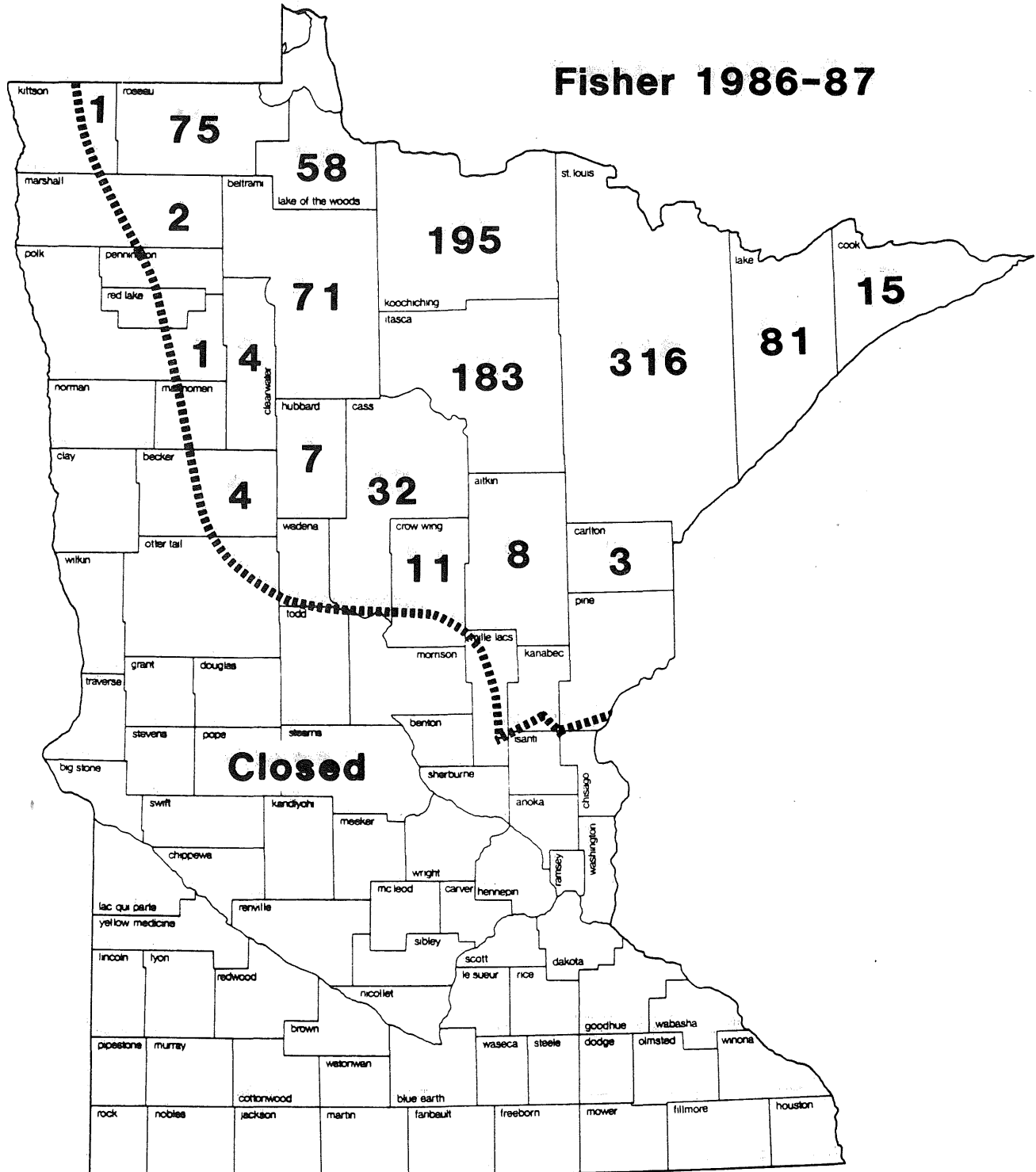


Figure 2. Fisher harvest by county, 1986-87.

Table 4. Fisher harvest by county and sex, 1986 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	4	4	0	8
Becker	4	0	0	4
Beltrami	33	38	0	71
Carlton	3	0	0	3
Cass	24	8	0	32
Clearwater	2	2	0	4
Cook	4	11	0	15
Crow Wing	5	6	0	11
Hubbard	4	3	0	7
Itasca	93	89	1	183
Kittson	1	0	0	1
Koochiching	94	101	0	195
Lake	28	52	1	81
Lake of the Woods	24	34	0	58
Marshall	2	0	0	2
Norman	0	1	0	1
Polk	1	0	0	1
Roseau	30	45	0	75
St. Louis	139	177	0	316
TOTAL	495	571	2	1068

Table 5. Comparison of fisher harvest by county, 1982-1986

County	1982	1983	1984	1985	1986
Aitkin	15	5	10	8	8
Becker	2	4	3	1	4
Beltrami	41	25	96	27	71
Carlton	4	4	3	0	3
Cass	6	3	19	17	32
Clearwater	1	3	6	4	4
Cook	21	18	16	9	15
Crow Wing	6	2	11	6	11
Hubbard	0	0	7	1	7
Itasca	139	72	228	84	183
Kittson	0	6	2	1	1
Koochiching	182	123	255	157	195
Lake	115	37	80	49	81
Lake of the Woods	52	32	85	46	58
Marshall	6	13	10	5	2
Norman	0	0	0	0	1
Pine	0	1	1	0	0
Polk	0	0	0	0	1
Roseau	36	86	111	68	75
St. Louis	286	197	345	195	316
Unknown	0	0	1	0	0
Total	912	631	1289	678	1068

Table 6. Fisher harvest by date and sex, 1986-87 season.

Date	Sex			Total	% of Known Total	Cumulative Percent
	Male	Female	Unknown			
11/29	2	1	0	3	0.3	0.3
11/30	15	25	0	40	3.8	4.1
12/01	37	36	0	73	6.9	11.0
12/02	22	40	0	62	5.9	16.9
12/03	25	59	1	85	8.1	25.0
12/04	37	37	0	74	7.0	32.0
12/05	30	33	0	63	6.0	38.0
12/06	44	61	0	105	10.0	48.0
12/07	57	64	0	121	11.5	59.5
12/08	40	33	0	73	6.9	66.4
12/09	30	23	0	53	5.0	71.4
12/10	27	43	0	70	6.6	78.0
12/11	32	19	0	51	4.9	82.9
12/12	18	18	0	36	3.4	86.3
12/13	47	34	0	81	7.7	94.0
12/14	27	36	0	63	6.0	100.0
Unknown	2	7	6	15	-	-
TOTAL	492	569	7	1068	100.0	100.0

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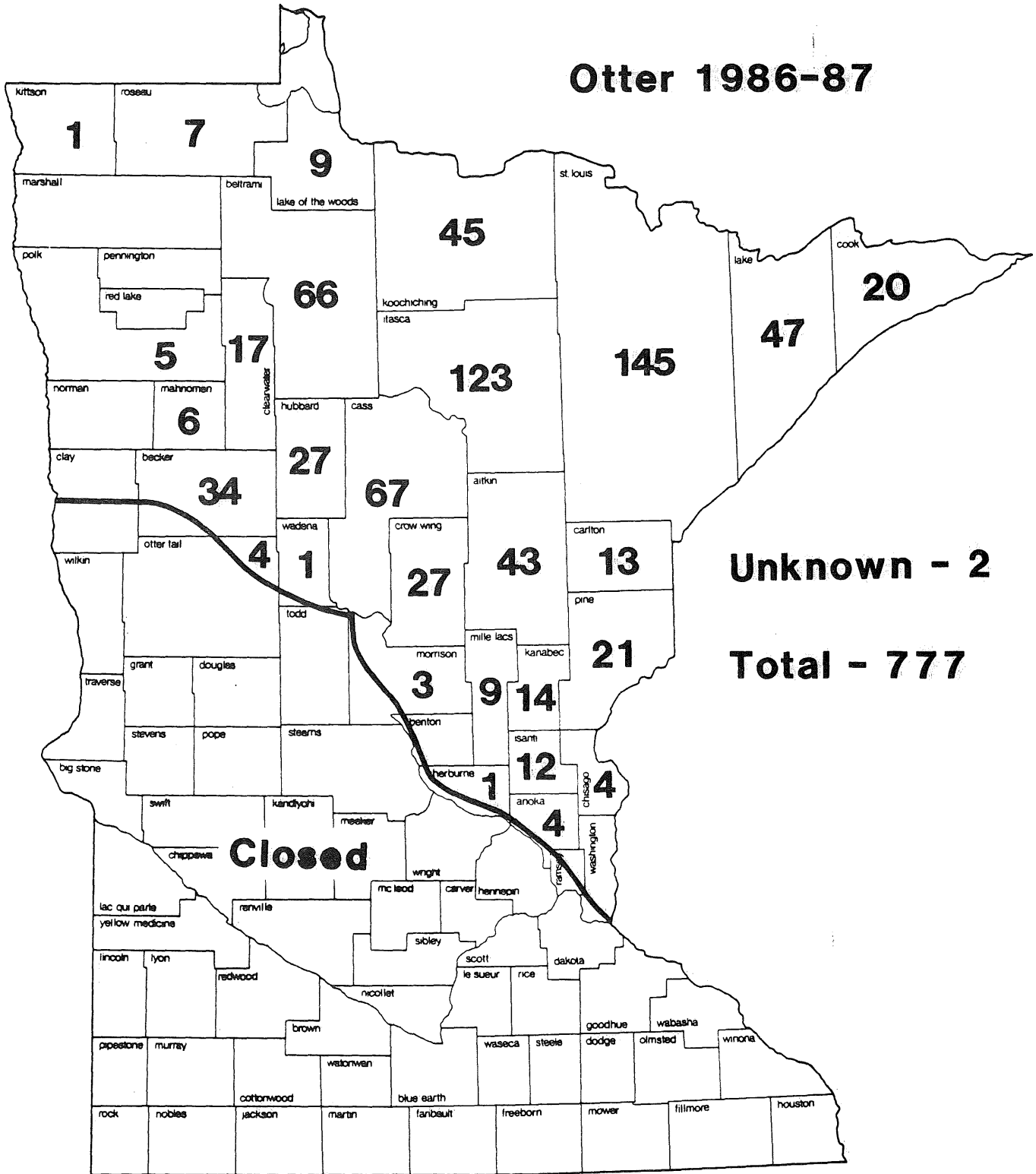


Figure 3, Otter harvest by county, 1986-87.

Table 7. Otter harvest by county and sex, 1986-87 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	25	17	1	43
Anoka	3	1	0	4
Becker	22	12	0	34
Beltrami	37	29	0	66
Carlton	8	5	0	13
Cass	41	26	0	67
Chisago	2	2	0	4
Clearwater	11	6	0	17
Cook	8	12	0	20
Crow Wing	20	7	0	27
Hubbard	15	12	0	27
Isanti	6	6	0	12
Itasca	68	55	0	123
Kanabec	9	5	0	14
Kittson	1	0	0	1
Koochiching	25	20	0	45
Lake	26	21	0	47
Lake of the Woods	3	6	0	9
Mahnomen	3	3	0	6
Mille Lacs	7	2	0	9
Morrison	3	0	0	3
Ottertail	1	1	2	4
Pine	12	9	0	21
Polk	2	3	0	5
Roseau	4	3	0	7
St. Louis	77	67	1	145
Sherburne	0	1	0	1
Wadena	0	1	0	1
Unknown	0	0	2	2
TOTAL	439	332	6	777

Table 8. Comparison of otter harvest by county, 1982-1986.

County	11/13-11/27	11/12-11/26	11/17-12/1	11/16-12/15	11/1-11/30
	1982	1983	1984	1985	1986
Aitkin	20	25	34	17	43
Anoka	0	0	0	0	4
Becker	8	15	18	24	34
Beltrami	39	23	33	46	66
Carlton	4	5	13	10	13
Cass	36	33	49	59	67
Chisago	0	0	0	0	4
Clearwater	9	6	11	6	17
Cook	17	4	16	5	20
Crow Wing	15	13	15	26	27
Hubbard	21	15	22	25	27
Isanti	0	0	0	0	12
Itasca	56	69	94	96	123
Kanabec	4	9	9	4	14
Kittson	0	0	0	0	1
Koochiching	23	26	34	38	45
Lake	15	20	18	25	47
Lake of the Woods	9	11	13	5	9
Mahnomen	2	2	3	14	6
Marshall	0	2	0	1	0
Mille Lacs	2	7	7	4	9
Morrison	0	0	0	0	3
Ottertail	1	1	1	1	4
Pennington	0	0	0	1	0
Pine	21	14	29	20	21
Polk	3	4	5	6	5
Red Lake	3	0	0	0	0
Roseau	3	3	5	5	7
St. Louis	69	96	96	119	145
Sherburne	0	0	0	0	1
Wadena	4	4	2	2	1
Unknown	1	1	2	0	2
TOTAL	385	408	529	559	777

Table 9. Otter harvest by date and sex, 1986-87 season.

Date	Sex			Total	% of Known Total	Cumulative Percent
	Male	Female	Unknown			
11/01	3	6	0	9	1.2	1.2
11/02	19	15	0	34	4.4	5.6
11/03	39	18	0	57	7.5	13.1
11/04	24	20	0	44	5.7	18.8
11/05	20	20	0	40	5.2	24.0
11/06	21	13	1	35	4.6	28.6
11/07	30	17	0	47	6.1	34.7
11/08	16	18	0	34	4.5	39.2
11/09	17	10	0	27	3.5	42.7
11/10	25	13	0	38	5.0	47.7
11/11	10	7	0	17	2.2	49.9
11/12	15	7	0	22	2.9	52.8
11/13	2	11	0	13	1.7	54.5
11/14	8	15	0	23	3.0	57.5
11/15	28	26	0	54	7.1	64.6
11/16	15	14	0	29	3.8	68.4
11/17	11	6	0	17	2.2	70.6
11/18	10	6	0	16	2.1	72.7
11/19	4	5	0	9	1.2	73.9
11/20	21	15	1	37	4.8	78.7
11/21	6	6	0	12	1.6	80.3
11/22	11	9	0	20	2.6	82.9
11/23	4	8	0	12	1.6	84.5
11/24	15	1	0	16	2.1	86.6
11/25	10	2	0	12	1.6	88.2
11/26	15	8	0	23	3.0	91.2
11/27	6	9	0	15	2.0	93.2
11/28	11	7	0	18	2.4	95.6
11/29	7	6	0	13	1.7	97.3
11/30	11	10	0	21	2.7	100.0
Unknown	0	1	12	13	--	--
TOTAL	434	329	14	777	100.0	100.0

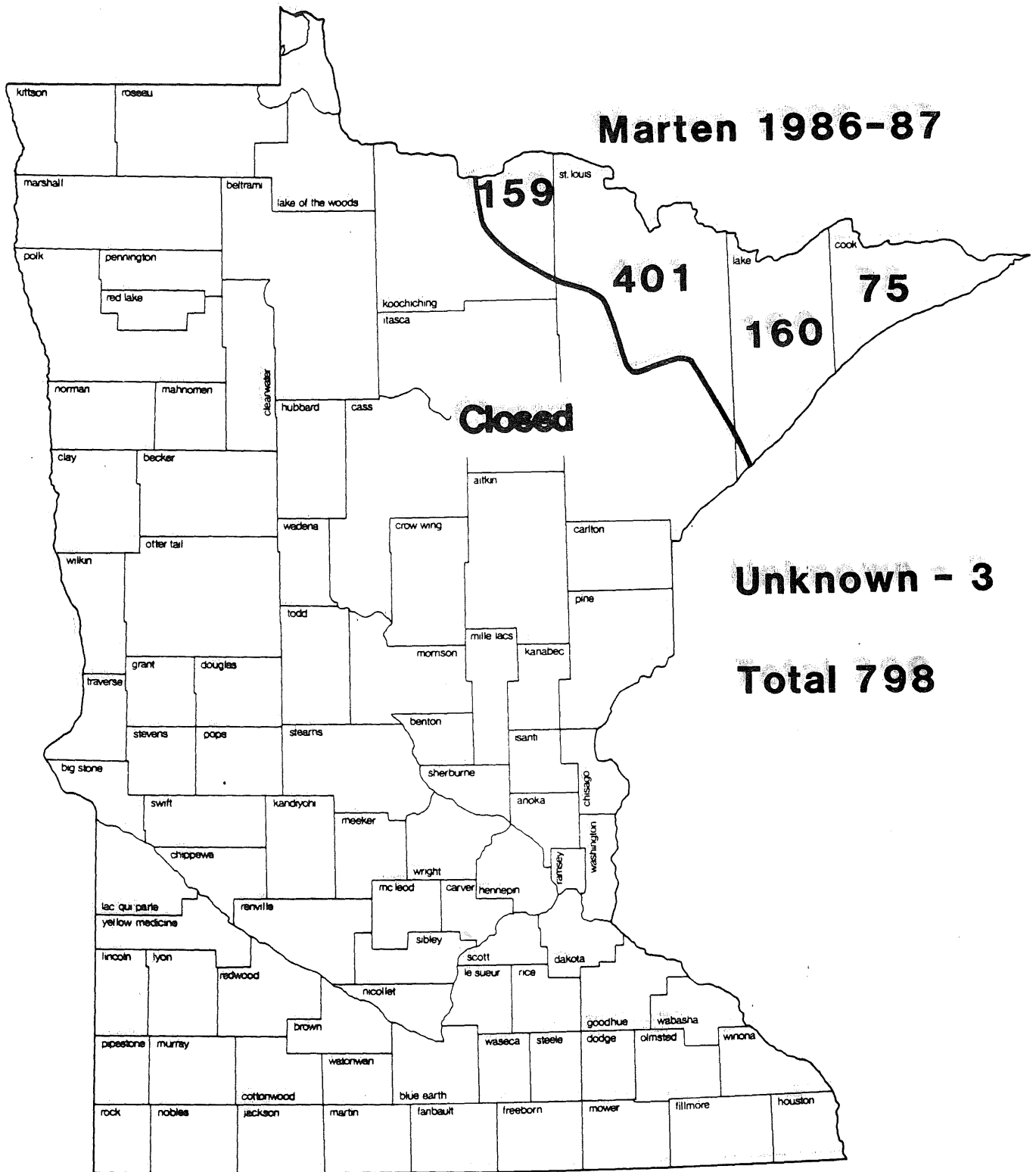


Figure 4. Marten harvest by county, 1986-87.

Table 10. Marten harvest by county and sex, 1986-87.

County	Sex			Total
	Male	Female	Unknown	
Cook	61	14	0	75
Koochiching	109	50	0	159
Lake	121	38	1	160
St. Louis	265	133	3	401
Unknown	1	2	0	3
TOTAL	557	237	4	798

Table 11. Comparison of marten harvest by county, 1985-1986.

County	1985	1986
Cook	51	75
Koochiching	72	159
Lake	119	160
St. Louis	188	401
Unknown	0	3
TOTAL	430	798

Table 12. Marten harvest by date and sex, 1986-87.

Date	Male	Female	Unknown	Total	% of Total	Cumulative Percent
11/29	3	1	0	4	0.5	0.5
11/30	47	25	0	72	9.1	9.6
12/1	43	13	0	56	7.1	16.7
12/2	28	6	1	35	4.4	21.1
12/3	55	25	1	81	10.2	31.3
12/4	31	14	0	45	5.7	37.0
12/5	34	20	0	54	6.8	43.8
12/6	61	24	0	85	10.7	54.5
12/7	60	31	2	93	11.7	66.2
12/8	38	17	0	55	6.9	73.1
12/9	31	7	0	38	4.8	77.9
12/10	40	15	0	55	7.0	84.9
12/11	23	9	0	32	4.1	89.0
12/12	21	10	0	31	3.9	92.9
12/13	24	14	0	38	4.8	97.7
12/14	14	4	0	18	2.3	100.0
Unknown	4	2	0	6	--	--
TOTAL	557	237	4	798	100.0	100.0

BOBCATS, 1986-1987

Bill Berg and Dave Kuehn, Forest Wildlife Populations and Research Group, DNR

A total of 160 bobcats were registered during the Nov. 29, 1986 to Jan. 3, 1987 trapping and hunting season, an increase of 34% over 1985-86 but below the 1977-78 to 1984-85 mean of 241 (Fig. 1).

Of a total of 132 carcasses examined, 26% were juveniles (<1 yr.), 17% were yearlings (1-2 yr.), and 58% were adults (>2 yr.). The proportion of juveniles was the lowest (range 31-54%), and the proportion of adults (>2yr.) was the highest (range 35-52%), since carcass collections began in 1977. Seventy-seven percent of the increase in the 1986-87 bobcat harvest was explained by an increase in the adult cohort harvest. Sex ratios in the juvenile and adult cohorts were unchanged from previous years; the yearling ratio (32% males) was the lowest since collections began (\bar{x} = 56% males).

The 1986-87 harvest took an estimated 9% of the available population. As predicted from the 1985-86 model, this harvest rate stabilized the earlier population decline, and a harvest of approximately 200 in 1987-88 will permit a slight increase (Fig. 1).

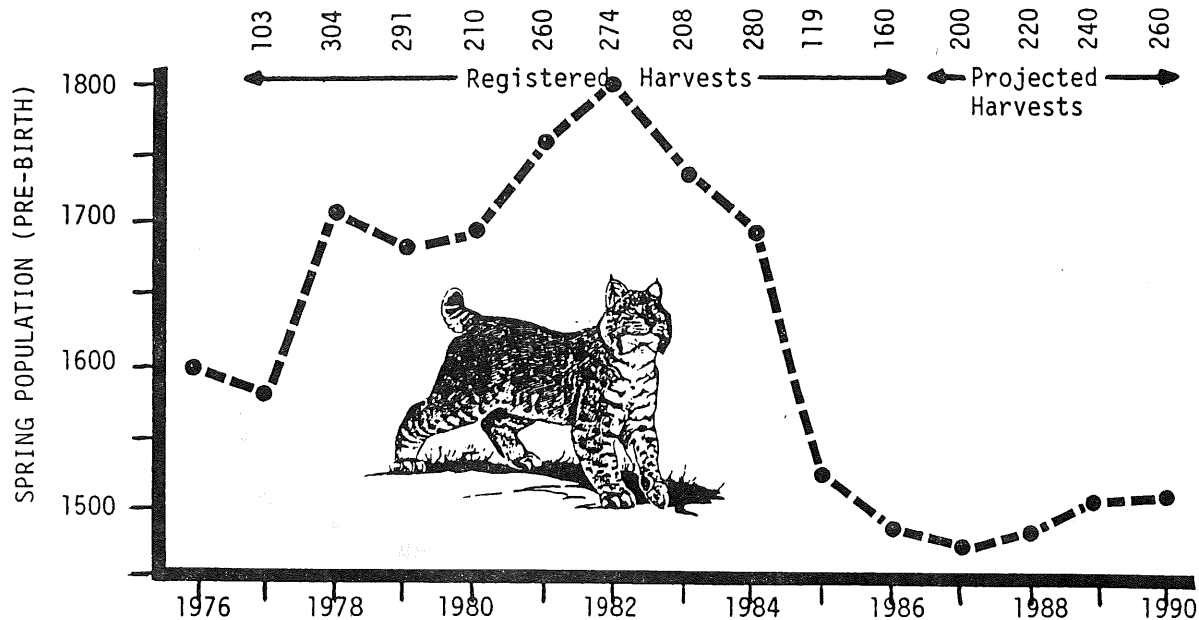


Figure 1. Bobcat population model, 1976-1990, with registered harvests until 1986, and projected harvests thereafter. Non-harvest mortality is 30% summer, 25% winter for juveniles, and 10% summer, 10% winter for yearlings and adults. Juvenile non-harvest mortality was increased 10-30% in summer and winter, 1982-1987, to compensate for decreased prey availability. Registered harvests were increased 10% to compensate for unregistered and confiscated bobcats.

FISHER, 1986-1987

Bill Berg and Dave Kuehn, Forest Wildlife Populations and Research Group, DNR

During the Nov. 29-Dec. 14 1986 fisher season 1068 fisher were registered. This total was 58% above 1985, and 22% above the 1981-85 mean harvest of 874 (Fig. 1).

A total of 1186 fisher carcasses were examined; the increase over the registered total was due to carcasses received from legal Leech Lake Indian Reservation Harvests, and confiscations by Division of Enforcement.

Juveniles comprised 59% of the harvest, the lowest since carcass examinations began in 1977, and below the 1977-85 mean of 66%. Yearlings and adults were 24% and 18%, respectively, of the harvest. Sex ratios were 48% males in the juvenile cohort (1977-85 \bar{x} = 49%), and 44% males in the >1.7 year old cohort (1977-85 \bar{x} = 40%). The number of juveniles per adult female (>2.7 year) remained low (5.3:1), similar to 1985 (5.4:1) and 1979-80 (5.6:1).

The 1986 registered harvest took 11% of the available fall population, compared to 8-15% in 1981-85, and 21-33% in 1977-79. Based on 1987 modeling, the population will stabilize at simulated post-1986 harvests of 1500, and increase about 10% annually with harvests approximating 1200 (Fig. 1).

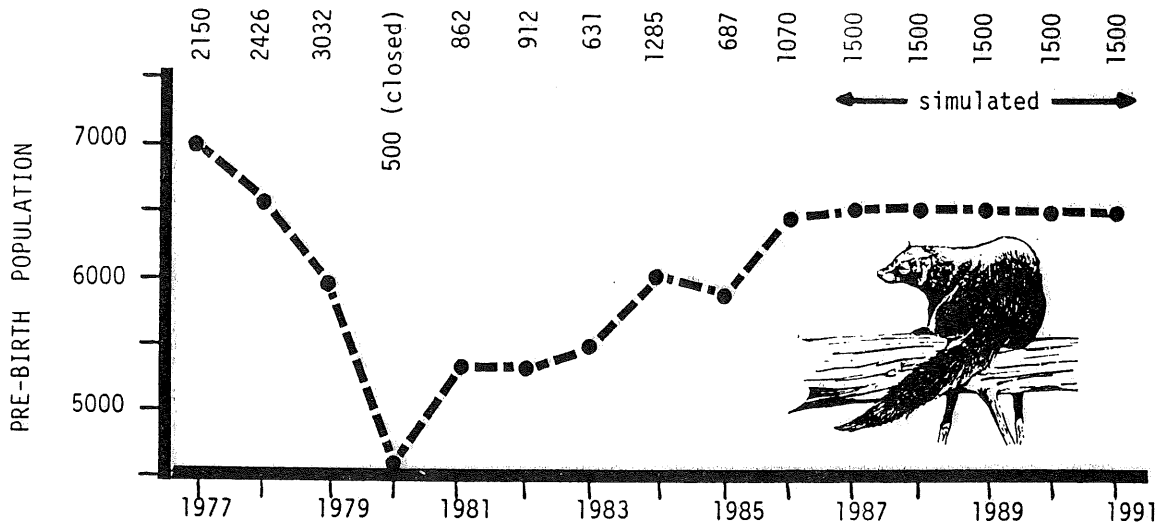


Figure 1. Fisher population model, 1977-1991, with registered harvests until 1986, and simulated registered harvests of 1500 after 1986. Non-harvest mortality is 30% summer, 25% winter for juvs., and 10% summer, 10% winter for yearlings and adults. Juvenile non-harvest mortality was increased 5-10% in summer and winter, 1983-1987, to compensate for decreased prey availability. Harvest mortality was increased 25% over registration totals to compensate for unregistered and confiscated fisher.

OTTER, 1986-1987

Bill Berg and Dave Kuehn, Forest Wildlife Populations and Research Group, DNR

During the November 1-30 otter trapping season, 777 otter were registered, up 40% from 1985. The increase was only slightly influenced by the increased otter trapping area (see harvest distribution map).

A total of 745 otter carcasses were aged. Juveniles comprised 45% (1981-85 \bar{x} = 48%), yearlings (1-2 yr.) 23% (1981-85 \bar{x} = 24%), and adults (> 2 yr.) 31% (1981-85 \bar{x} = 21%). The proportions of otters in the juvenile, yearling, and adult age classes approximated their respective percent increases in the overall harvest (50%, 24%, 26%, respectively). The proportion of males in each harvested cohort was 6-9% lower than the 1981-85 means; the overall sex ratio was 48% males (1981-85 \bar{x} = 54% males).

The modeled proportion of the available population harvested in 1986 was 13%, compared to a range of 9%-21% during 1976-85. Registered harvests of 840 annually after 1986 will allow the modeled otter population to increase 1%-3% annually (Fig. 1). If 1050 otters are registered yearly, the modeled population decreases 1%-2% annually after 1987.

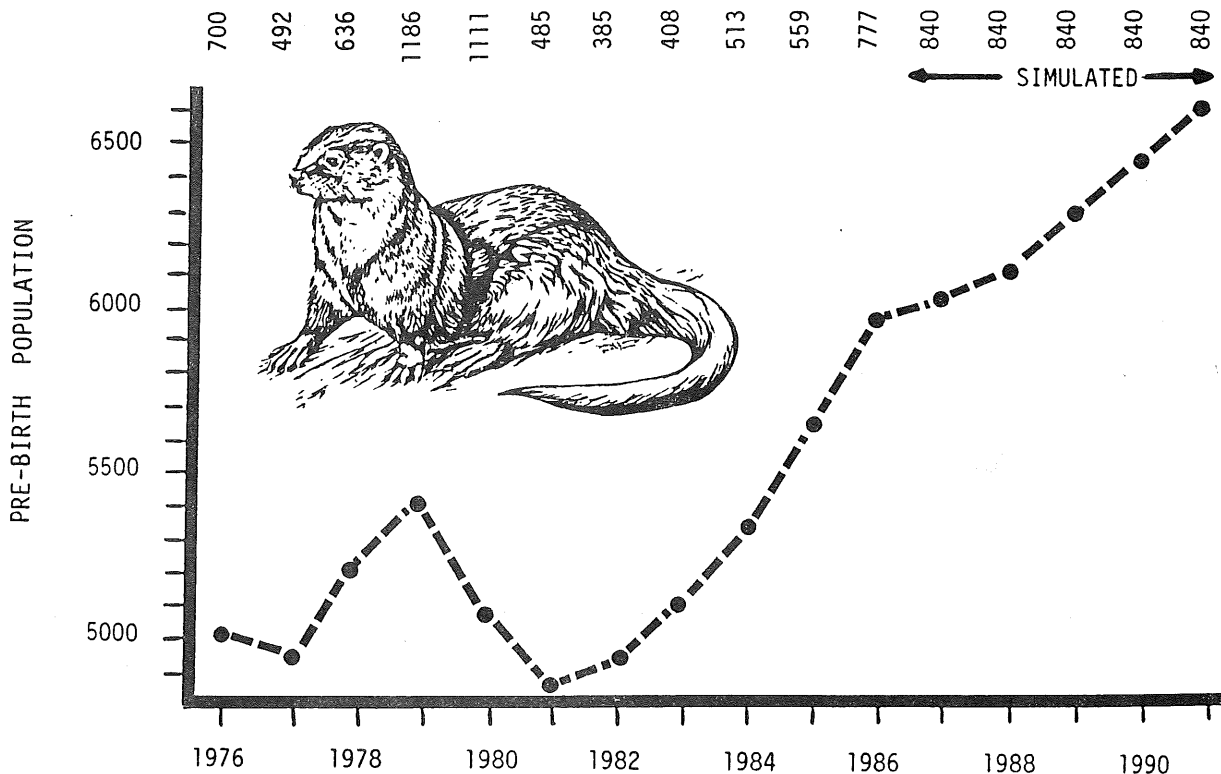


Figure 1. Otter population model, 1976-1991. Actual trapping harvests (top) until 1986 are followed by simulated projected harvests, 1987-1991. Non-harvest mortality for juveniles is 25% summer, 15% winter; for yearlings 10% summer, 10% winter; and for adults 6% summer, 6% winter. Harvest mortality was increased 20% over registration totals to compensate for accidentally trapped and confiscated fisher.

PINE MARTEN 1986-1987

Bill Berg and Dave Kuehn, Forest Wildlife Populations and Research Group, DNR

During Minnesota's second pine marten trapping season in nearly 60 years, 798 marten were registered. This total, although 86% above the 1985 harvest, was within limits suggested by the 1985-86 simulation model.

A total of 884 marten carcasses were examined, more than the registered total due to accidentally trapped, confiscated marten.

As in 1985, males dominated the harvest. The juvenile (< 1 yr.), yearling (1-2 yr.), and adult (> 2 yr.) cohorts comprised 65%, 71%, and 81% males, respectively. Juveniles, yearlings, and adults represented 64%, 21%, and 15%, respectively, of the total harvest, compared to 73%, 18%, and 9%, respectively, in 1985.

In 1986 22% of the modeled autumn marten population was harvested, compared to 13% in 1985. This harvest rate stabilized the population increase; however, with the same harvests after 1986 as in 1986, the modeled population resumes its increase of 2-7% annually (Fig. 1). Presuming that the increased harvests partly compensate for the modeled 50% accidental harvest, the population may actually be increasing more rapidly than shown in Fig. 1.

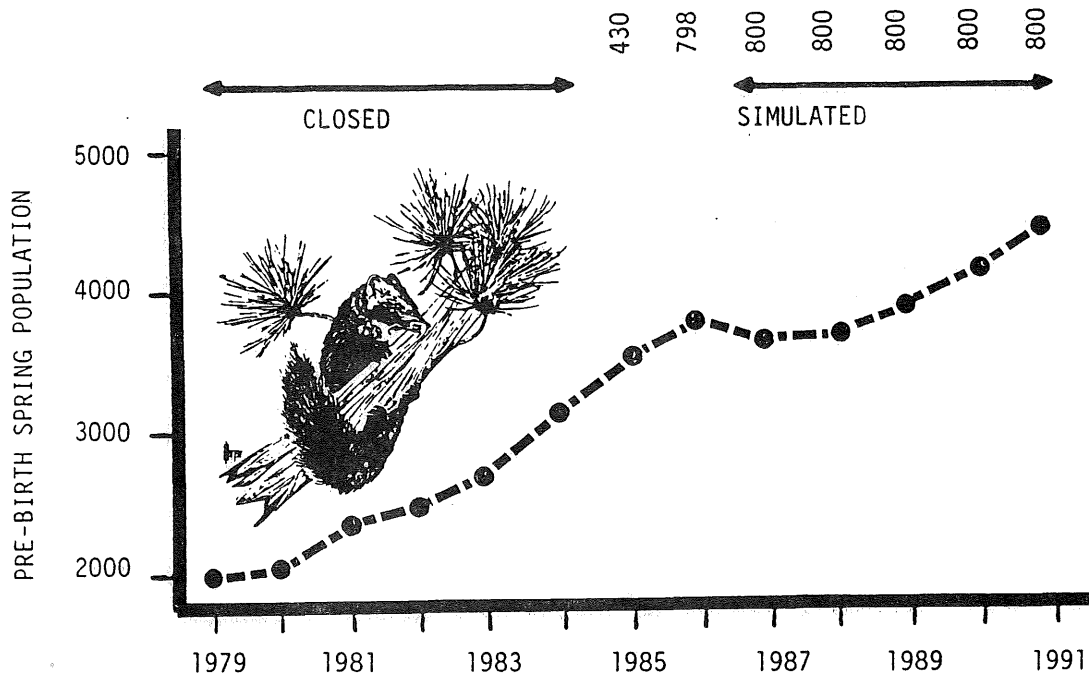


Figure 1. Pine marten population model, 1979 to 1991. Registered harvests are shown at top for 1985 and 1986, followed by projected harvests of 800 after 1986. Non-harvest summer-winter mortality for juveniles is 40% and 20%, for yearlings 10% and 10%, and for adults 10% and 10%. For modeling purposes the registered harvest was increased by an additional 50% to account for accidental take.