

86-0817

Status of Wildlife Populations,
Fall 1985 and 1979-1984 Hunting
and Trapping Harvest Statistics

compiled by

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Status of Wildlife Populations, Fall 1985

and

1979-84 Hunting and Trapping Harvest Statistics

This is the 9th year that the Wildlife Populations and Research Unit has published this booklet; it is primarily an administrative document intended for use by DNR personnel.

New this year is information on the number of car-killed deer confiscated by deer management units (page 17, Table 8), and the relationship of car-kills to the antlered deer harvest in the Farmland zone 1976-1984 (page 18, Figure 9). Also presented for the first time are some results of the black bear hunter mail survey (pages 70, 71, and 72, Tables 36, 37, 38, and 39).

For farmland and forest wildlife, most of the field work associated with collection of census and survey data is carried out by wildlife managers (conservation officers also participate in pheasant counts). The Farmland and Forest Wildlife Population and Research groups coordinate these activities, analyze and interpret data, and prepare recommendations for season setting meetings. For wetland species, much of the census and survey work is done by personnel in the Wetland Wildlife Populations and Research Group. Harvest statistics are calculated primarily by personnel in the St. Paul office.

We will soon publish a booklet similar to this one containing summaries of findings/activities from each research project in 1984.

Blair Joselyn
Sept. 17, 1985

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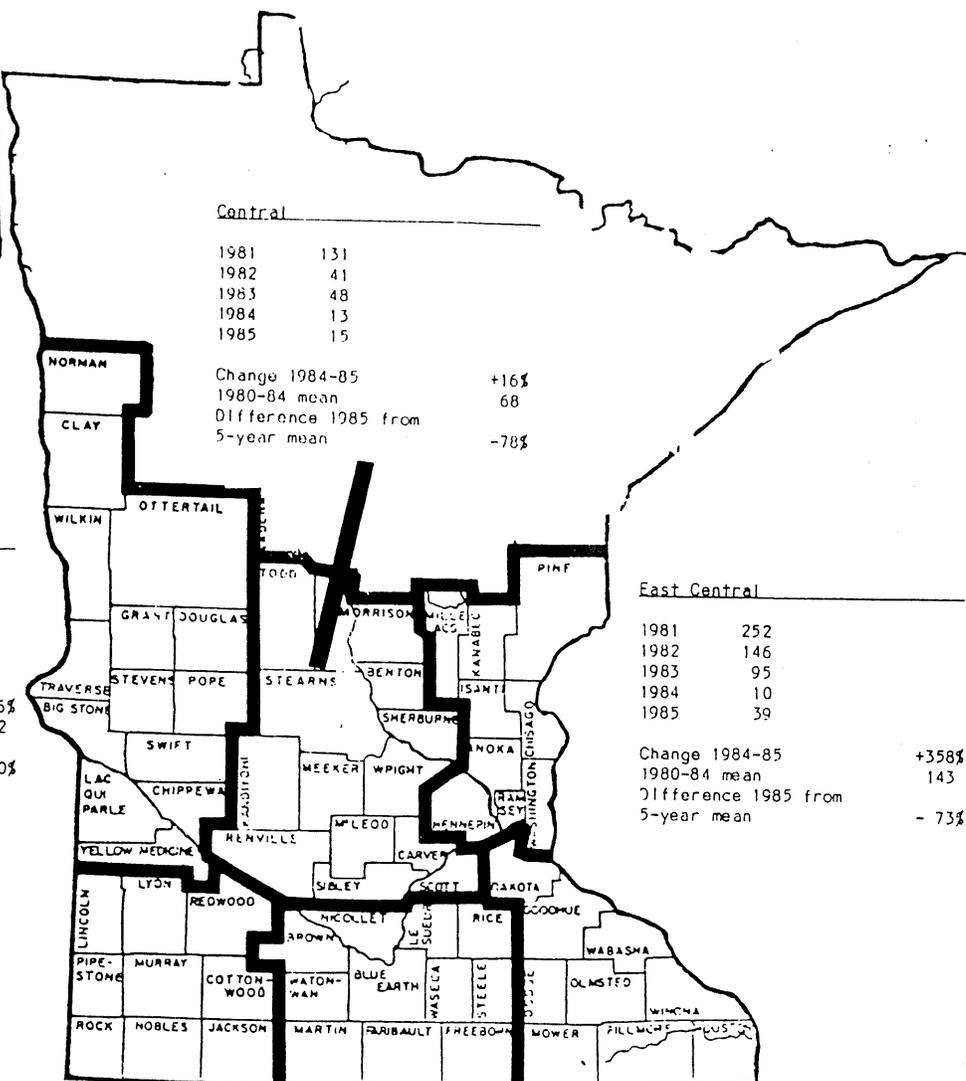
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FARMLAND WILDLIFE POPULATIONS
AND CENSUSES

Statewide		
1981	130	
1982	59	
1983	55	
1984	28	
1985	32	
Change 1984-85		+10%
1980-84 mean	74	
Difference 1985 from 5-year mean		-57%



Central		
1981	131	
1982	41	
1983	48	
1984	13	
1985	15	
Change 1984-85		+16%
1980-84 mean	68	
Difference 1985 from 5-year mean		-78%

West Central		
1981	116	
1982	69	
1983	88	
1984	64	
1985	57	
Change 1984-85		-16%
1980-84 mean	82	
Difference 1985 from 5-year mean		-30%

East Central		
1981	252	
1982	146	
1983	95	
1984	10	
1985	39	
Change 1984-85		+358%
1980-84 mean	143	
Difference 1985 from 5-year mean		-73%

Southwest			South Central			Southeast		
1981	80		1981	126		1981	94	
1982	27		1982	48		1982	29	
1983	10		1983	25		1983	51	
1984	9		1984	26		1984	21	
1985	14		1985	50		1985	31	
Change 1984-85		+59%	Change 1984-85		+17%	Change 1984-85		+40%
1980-84 mean	31		1980-84 mean	67		1980-84 mean	56	
Difference 1985 from 5-year mean		-55%	Difference 1985 from 5-year mean		-55%	Difference 1985 from 5-year mean		-45%

Figure 1. Pheasants observed per 100 miles of August census route, 1981-1985, and percent change 1984-1985 for miles censused both years.

Table 1. County, regional, and statewide August ring-necked pheasant census results, 1981-1985.

Region and County	Miles censused 1985	Pheasants observed per 100 miles					1980-84 mean	Percent change 1984-1985 ^a
		1981	1982	1983	1984	1985		
West Central	875	116.3	68.9	87.5	64.5	56.7	81.6	-16%
Big Stone	75	352	187	340	257	283		
Chippewa	50	172	54	52	60	38		
Clay	75	0	19	44	25	1		
Douglas	50	24	126	32	16	2		
Grant	50	10	46	0	30	12		
Lac qui Parle	75	224	204	212	137	40		
Norman	75	0	0	0	0	0		
Ottertall	50	140	100	56	124	106		
Pope	75	179	107	148	63	96		
Stevens	75	287	73	188	84	61		
Swift	NC	113	21	58	39	--		
Traverse	75	3	3	7	55	33		
Wilkin	75	27	29	4	3	3		
Yellow Medicine	75	59	13	14	1	39		
Central	825	131.0	41.2	48.1	12.8	15.2	67.8	+16%
Benton	50	256	74	84	10	60		
Carver	50	178	22	22	18	4		
Kandiyohi	75	131	44	82	9	25		
McLeod	50	106	--	28	0	16		
Meeker	75	293	83	18	28	8		
Morrison	75	39	29	18	0	0		
Renville	50	10	0	0	0	0		
Scott	50	244	120	166	6	38		
Sherburne	50	20	20	24	0	0		
Sibley	75	157	27	44	17	20		
Stearns	100	65	26	44	40	18		
Todd	75	117	41	72	20	0		
Wright	50	112	54	40	18	16		
East Central	425	252.4	146.4	95.3	10.1	38.8	143.2	+358%
Anoka	50	96	28	4	2	32		
Chisago	75	480	280	265	20	72		
Hennepin	NC	76	16	0	0	--		
Isanti	75	335	171	139	12	27		
Kanabec	50	224	142	116	10	32		
Mille Lacs	75	209	135	40	17	35		
Pine	50	182	122	58	0	66		
Washington	50	176	140	26	0	0		

Table 1. Continued.

Region and County	Miles censused 1985	Pheasants observed per 100 miles					1980-84 mean	Percent ^a change 1984-1985
		1981	1982	1983	1984	1985		
Southwest	400	80.0	27.3	10.1	8.6	14.3	31.2	+39%
Cottonwood	50	62	32	2	10	46		
Jackson	50	58	68	24	10	18		
Lincoln	50	134	2	4	0	4		
Lyon	50	24	50	0	0	0		
Murray	50	180	60	54	0	6		
Nobles	NC	91	3	1	0	--		
Pipestone	50	40	2	6	28	18		
Redwood	50	42	4	0	30	6		
Rock	50	84	24	4	4	16		
South Central	750	125.8	47.5	25.1	25.5	29.6	66.8	+ 7%
Blue Earth	75	79	5	31	7	8		
Brown	75	85	55	7	33	24		
Fairbault	75	59	35	24	8	24		
Freeborn	75	97	24	0	25	51		
LeSueur	75	277	115	65	40	80		
Martin	75	183	91	21	65	15		
Nicollet	75	93	39	16	1	12		
Rice	75	147	55	25	1	0		
Steele	50	222	50	26	98	2		
Waseca	50	114	0	32	4	23		
Watonwan	75	56	24	35	15	59		
Southeast	450	94.2	28.9	50.9	20.6	31.3	55.9	+40%
Dakota	NC	102	92	98	4	--		
Dodge	50	314	40	96	20	56		
Fillmore	50	80	16	24	38	2		
Goodhue	50	44	0	2	0	2		
Houston	50	60	6	4	0	0		
Mower	75	139	55	54	45	64		
Olmsted	75	83	53	108	29	49		
Wabasha	50	14	4	16	0	16		
Winona	50	4	6	0	32	36		
Statewide	3,625	130.0	58.6	54.6	28.2	32.4	74.3	+10%

^a Percent change 1984-1985 for miles censused both years only.

Table 2. August 1985 roadside census results for selected farmland wildlife species by agricultural region.

Region	Miles Censused	Individuals per 100 miles driven				
		Gray (hun) partridge	Eastern cottontail	W.t. Jack rabbit	Mourning dove	W.t. deer
NW	350	2.9	0.3	1.1	251	18.9
WC	850	29.5	2.6	1.8	468	8.5
C	775	17.0	4.3	0.5	245	3.2
EC	400	0.0	4.8	0.0	93	3.0
SW	400	101.5	6.3	3.3	265	8.3
SC	750	68.0	5.7	1.2	213	1.9
SE	450	46.2	5.8	3.6	235	7.6
Statewide ^a	3,625	41.6	4.6	1.6	275	5.2

^a Statewide means exclude the NW region.

Table 3. August 1984 roadside census results for selected farmland wildlife species by agricultural region.

Region	Miles Censused	Individuals per 100 miles driven				
		Gray (hun) partridge	Eastern cottontail	W.t. Jack rabbit	Mourning dove	W.t. deer
NW	475	10.5	0.2	0.4	165	14.5
WC	925	18.8	2.4	1.5	531	6.1
C	750	18.8	1.9	0.8	225	2.3
EC	400	0.0	3.5	0.0	205	2.0
SW	475	54.7	1.7	1.7	267	2.5
SC	775	28.5	4.3	0.5	184	1.9
SE	500	17.6	4.8	0.6	241	6.6
Statewide ^a	3,825	23.1	3.0	0.9	296	3.7

^a Statewide means exclude the NW region.

Table 4. Statewide August roadside census results for selected farmland wildlife species, 1981-1985.

Species	Animals per 100 miles driven ^a					Percent ^a change 1984-1985
	1981	1982	1983	1984	1985	
Ring-necked pheasant ^b	130.0	58.6	54.6	28.0	32.4	+16%
Gray partridge (Hun) ^b	45.3	22.0	25.7	23.1	41.6	+80%
Mourning dove ^b	346	298	320	296	275	- 7%
Sharp-tailed grouse		0.05	0.02	0.12	0.13	+ 8%
Greater prairie-chicken		0.00	0.00	0.23	0.00	-100%
Sandhill crane		1.00	1.22	1.14	1.84	+61%
Eastern cottontail ^b	10.4	5.1	7.6	3.0	4.6	+53%
White-tailed Jack rabbit ^b	2.5	1.7	1.3	0.9	1.6	+78%
Gray & fox squirrels		0.90	1.03	1.84	0.86	-53%
Gray & red foxes		0.32	0.24	0.28	0.23	-18%
Striped & spotted skunks		0.22	0.22	0.49	0.48	- 2%
Badger		0.02	0.00	0.00	0.00	0%
White-tailed deer ^b	2.2	3.5	5.9	3.7	5.2	+41%

^a The mean number of animals per 100 miles and percent change are calculated using total miles censused and are not corrected for only miles censused both years.

^b NW region not included in these means.

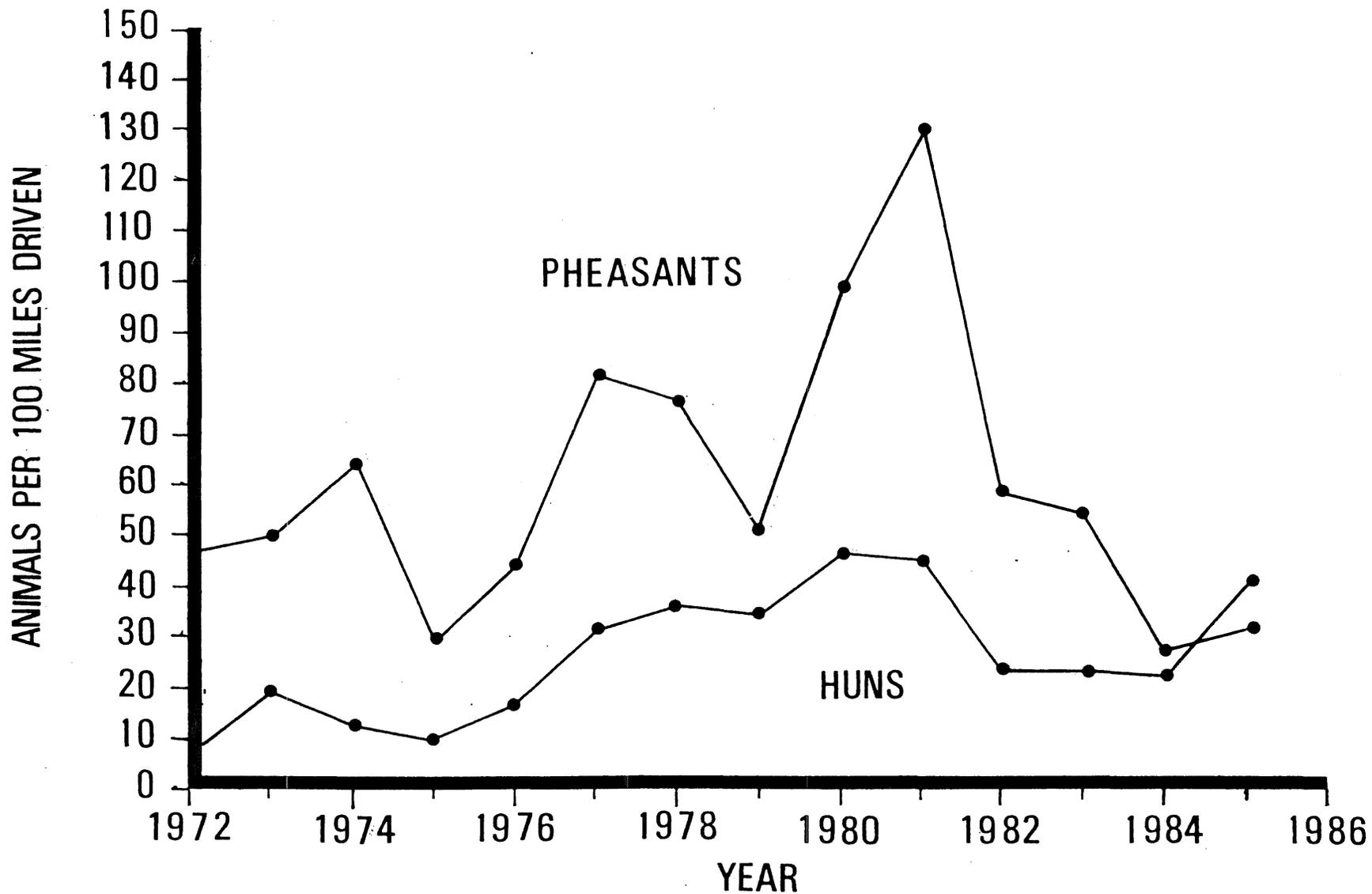


Figure 2. August roadside census indices (animals observed/100 mi.) of pheasants and gray partridge (huns), 1972-1985.

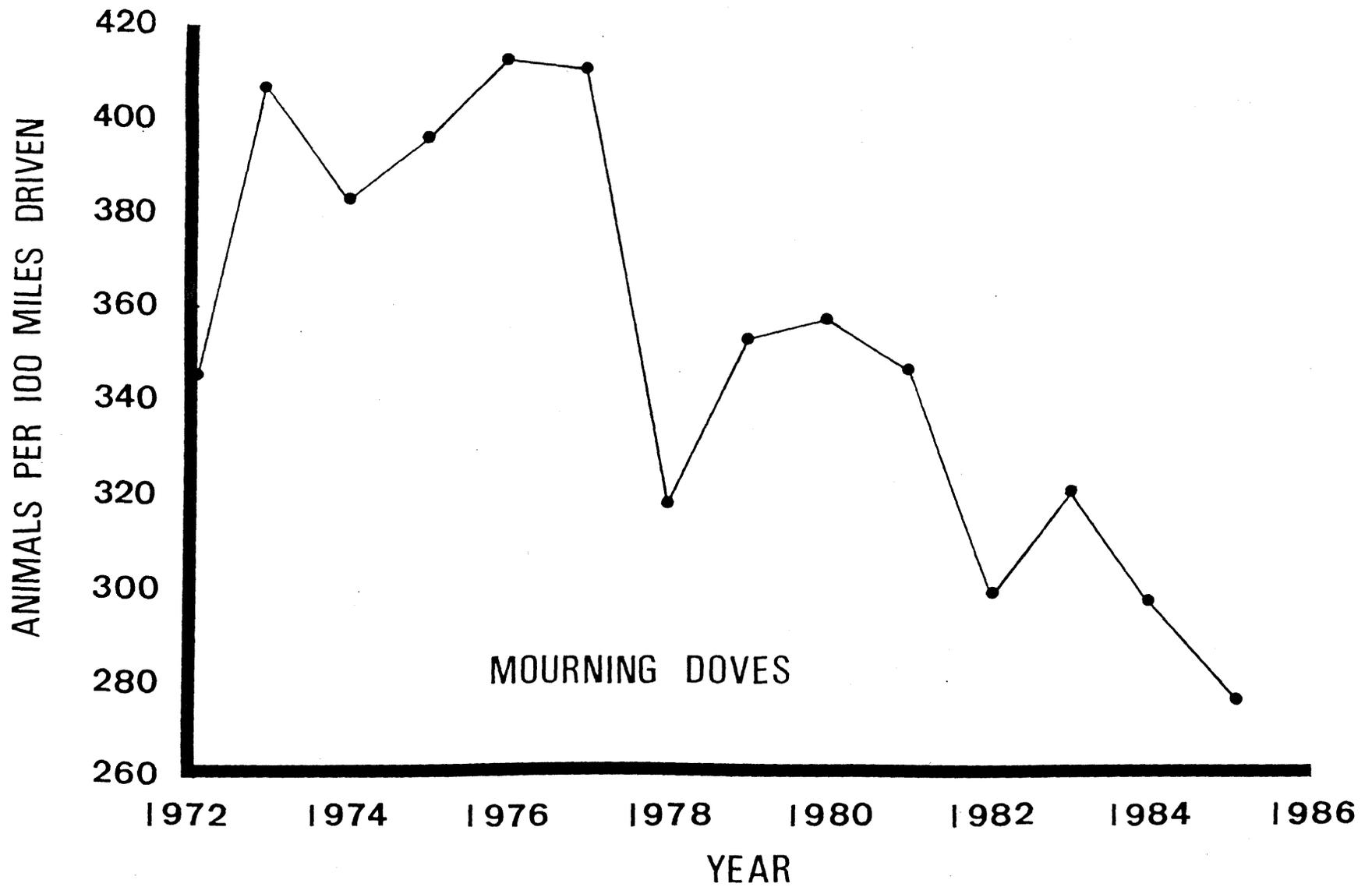


Figure 3. August roadside census indices (animals observed/100 mi.) of mourning doves, 1972-1985.

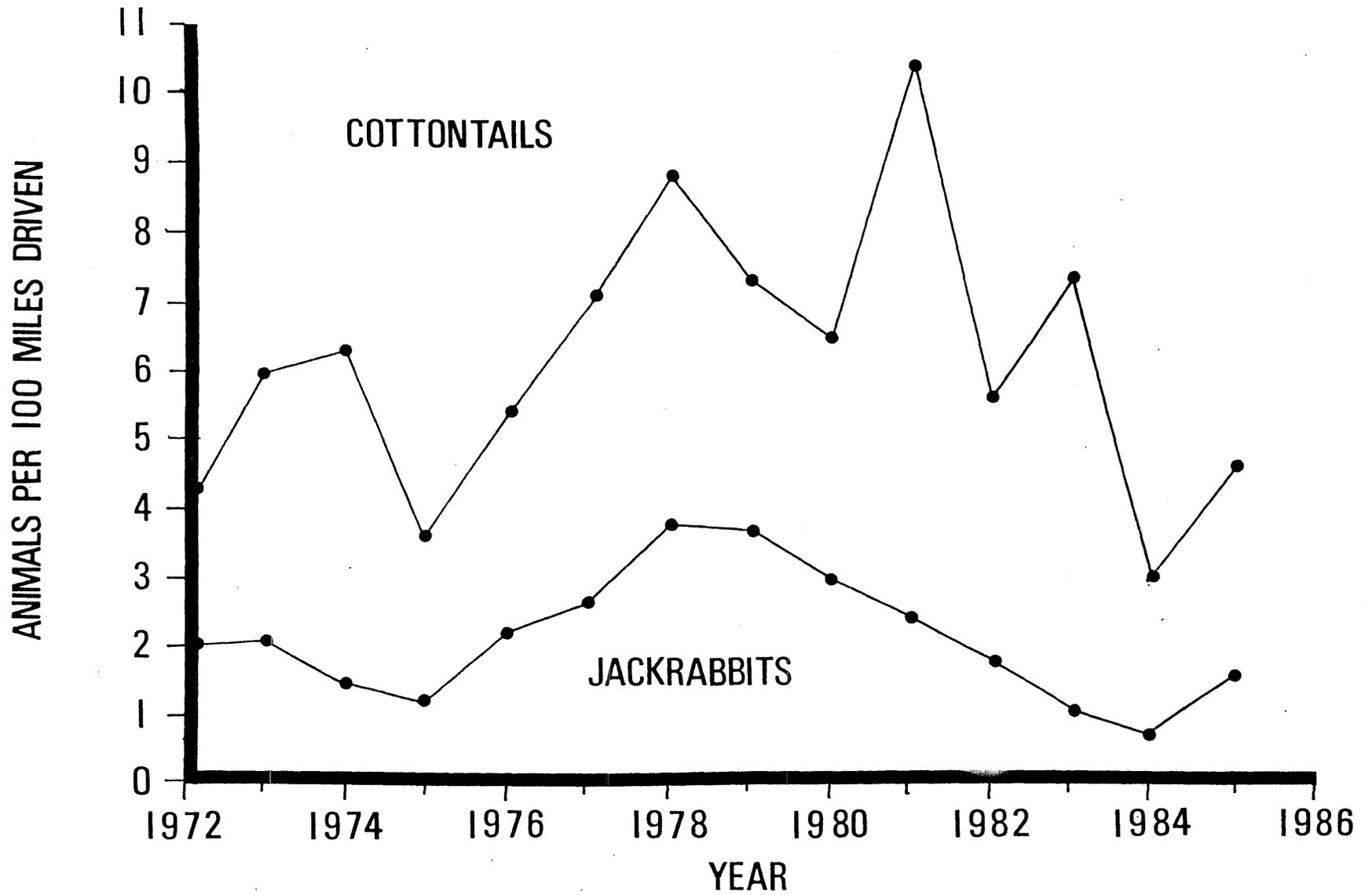


Figure 4. August roadside indices (animals observed/100 mi.) of eastern cottontail and white-tailed jackrabbits, 1972-1985.

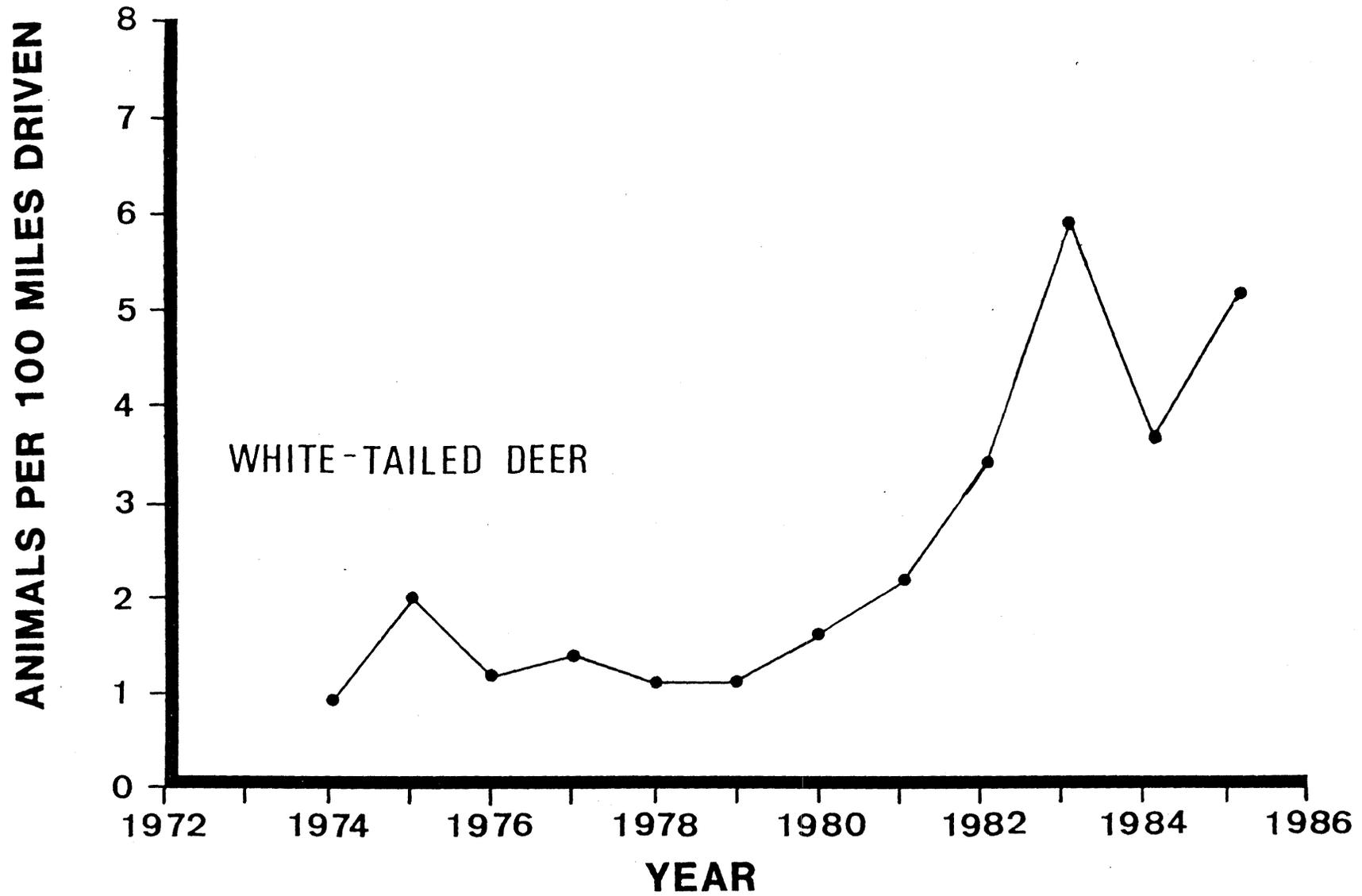


Figure 5. August roadside census indices (animals observed/100 mi.) of white-tailed deer, 1974-1985.

Table 5. Greater prairie-chicken spring booming ground counts for 15 northwestern counties, 1978-1985 (counts coordinated and summarized by AWM Terry Wolfe, Crookston).

County	No. of booming males (No. of booming grounds)							
	1978	1979	1980	1981	1982	1983	1984 ^b	1985
Becker	26 (4)	102 (9)	156 (16)	159 (16)	133 (13)	174 (17)	96 (9)	41 (3)
Cass	9 (1)	14 (2) ^a	17 (6) ^a	63 (15) ^a	68 (16) ^a	65 (15)	54 (15) ^a	58 (14)
Chippewa	8 (1)	2 (1)	2 (1)	2 (1)	0	2 (1)	0	0
Clay	261 (21)	205 (17) ^a	186 (17) ^a	196 (16) ^a	216 (12) ^a	161 (15)	110 (7)	127 (7)
Hubbard	0	0	0	4 (1)	3 (1)	3 (1)	5 (1)	16 (6) ^a
Mahnomen	71 (4)	81 (7)	203 (21)	223 (20)	294 (22)	316 (22)	149 (19)	134 (15)
Marshall	0	0	0	3 (1)	7 (2)	3 (1)	2 (2)	0
Morrison	0	0	0	0	1 (1)	0	0	0
Norman	130 (9)	213 (13)	230 (9)	210 (9)	273 (15)	194 (11) ^a	119 (8)	86 (7)
Ottertail	8 (2)	19 (5)	13 (2)	9 (2)	12 (1)	10 (3)	7 (1)	5 (1)
Pennington	0	8 (1)	0	2 (1)	6 (1)	5 (1)	4 (1)	3 (1)
Polk	140 (16)	192 (18) ^a	269 (27)	254 (26)	283 (29)	232 (26)	146 (22) ^a	162 (18)
Red Lake	7 (1)	8 (1)	8 (1)	19 (2)	19 (2)	14 (2)	12 (2)	2 (1)
Wadena	0 (10) ^a	27 (3) ^a	10 (3)	60 (12) ^a	64 (11)	18 (6)	19 (2)	34 (9) ^a
Wilkin	180 (14)	77 (4)	164 (14)	206 (23) ^a	269 (20)	223 (18)	60 (6)	149 (15) ^a
Total	841 (74)	948 (81)	1,258(117)	1,410(144)	1,648(146)	1,420(139)	783 (95)	817 (97)
Avg. no. males/ground	11.4	11.7	10.8	9.8	11.2	10.2	8.2	8.4

^a Data include only grounds on which counts were conducted. In several counties booming grounds were located but counts were not made, they are not included in the data presented.

^b Part of the reason for the low number of chickens is incomplete counts of known grounds. This was the case for Polk County and a few others. However, even after allowing for uncounted grounds, chicken numbers were down.

A DAM NO 3

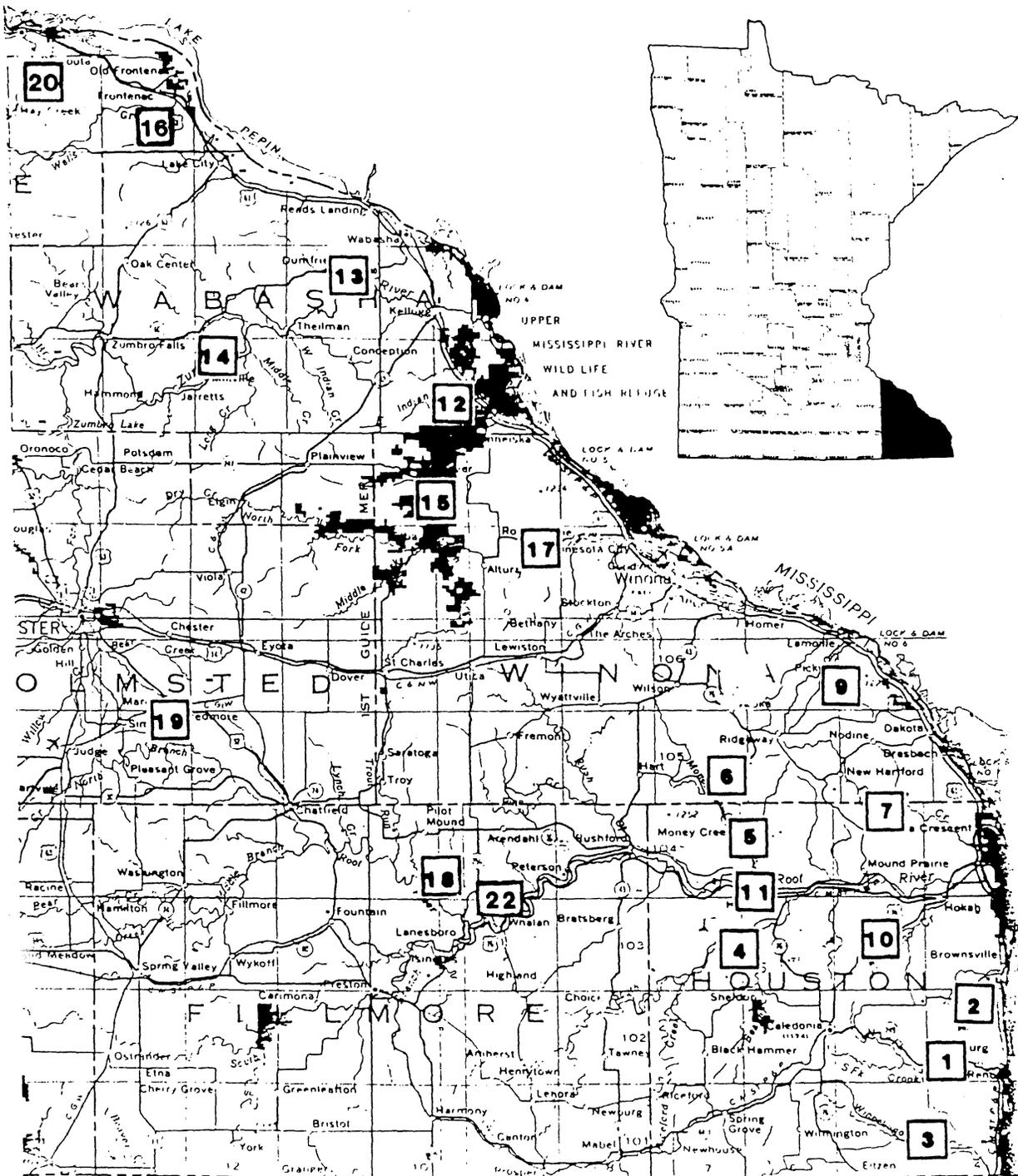


Figure 6. Approximate locations of gobble-count census routes in southeastern Minnesota (not shown are routes #21 - Welch - located between Cannon Falls and Red Wing in Goodhue County, #8 - Oxbow - located north of Byron in Olmsted County and #23 - Goodhue north).

Table 6. "Best Day" turkey gobbling counts in southeastern Minnesota, 1976-1985.

Route ^a	Percent of stops with gobblers (No. gobblers)									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Number of stops ^b	81	85	130	132	176	169	171	172	173	216
1. Crooked Creek	25(3)	100(25)	57(6)	40(7)	33(4)	29(7)	33(9)	0(0)	66(12)	33(5)
2. Wildcat	49(7)	60(11)	90(20)	10(1)	70(13)	33(6)	11(1)	20(3)	11(1)	30(4)
3. Winnebago	89(12)	88(20)	56(8)	56(8)	56(5)	44(4)	44(6)	67(10)	44(6)	25(5)
4. Yucatan		20(3)	14(1)	0(0)	0(0)	0(0)	22(2)	33(3)		10(1)
5. Houston		0(0)	13(1)	0(0)	20(2)	11(2)	10(2)	30(5)	10(1)	0(0)
6. Wiscoy			10(1)	0(0)	10(1)	0(0)	10(1)	0(0)	10(1)	0(0)
7. Pine			10(1)	0(0)	0(0)	11(2)	0(0)	0(0)	30(4)	11(1)
8. Oxbow								33(2)		25(3)
9. Pickwick				20(1)	0(0)	13(1)	0(0)	13(1)	0(0)	13(1)
10. Sullivan	11(2)	14(1)			20(2)	10(2)	25(4)	11(1)	38(4)	40(8)
11. Crystal		13(1)	0(0)		25(3)	13(1)	0(0)	13(1)	12(1)	13(1)
12. Snake-Indian	0(0)	22(3)	56(11)	30(5)	10(1)	29(4)	50(7)	0(0)	10(1)	30(4)
13. Zumbro east	0(0)	14(1)	43(6)	11(2)	20(3)	0(0)	0(0)	0(0)		
14. Zumbro west			0(0)	0(0)	0(0)	0(0)	11(1)	0(0)	0(0)	0(0)
15. Whitewater	50(28)	100(15)	67(26)	88(23)	89(23)	55(9)	11(1)	22(3)	33(5)	11(1)
16. Goodhue south			56(6)	50(6)	63(6)	13(1)	20(2)	0(0)	0(0)	0(0)
17. Rollingstone			11(2)	33(6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
18. Lanesboro					33(6)	63(7)	0(0)	25(2)	56(8)	67(12)
19. Cummingsville				11(2)	33(4)	25(2)	25(1)	38(3)	25(3)	14(3)
20. Hay Creek						33(6)	44(6)	14(3)	22(3)	
21. Welch						40(3)	50(4)	10(2)	10(1)	0(0)
22. Whalen									10(1)	20(3)
23. Goodhue north										0(0)
24. Kimball										25(2)
25. Lac qui Parle										10(1)
26. 7-Mile Creek										11(1)
Total	33(52)	46(80)	32(89)	17(61)	26(74)	19(57)	18(46)	14(39)	20(52)	16(56)

^a Routes that have been discontinued are not included.

^b Stops without interference.

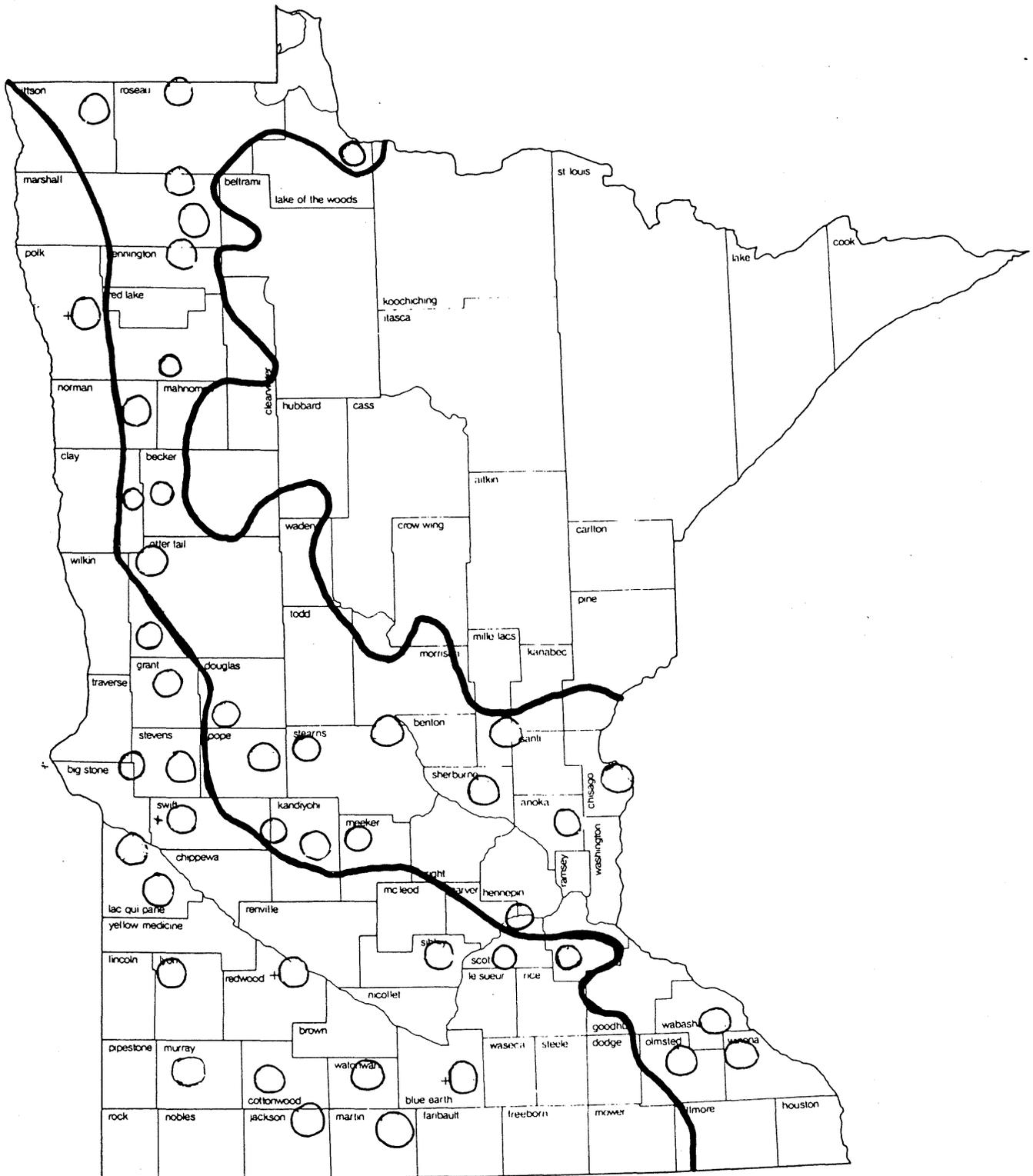


Figure 7. General locations of scent post routes in the Farmland and Transition Zones, 1984. Routes marked with (+) were not run in 1984.

Table 7. Mean predator scent post Indices (Ind) and annual percent changes in Indices (PC) for nine species in the Farmland and Transition Zones, 1977-1984.

Species	1977		1978		1979		1980		Year 1981		1982		1983		1984	
	Ind	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	
<u>Coyote</u>																
Farmland	3	0	-100	10	+100	3	-70	9	+200	4	-56	5	+25	9	+80	
Transition	0	8	+100	32	+300	12	-63	9	-25	17	+89	17	0	15	-12	
<u>Red Fox</u>																
Farmland	67	18	-73	44	+144	60	+36	64	+7	118	+84	142	+20	142	0	
Transition	38	49	+29	83	+69	98	+18	113	+15	104	-8	92	-12	109	+18	
<u>Skunk</u>																
Farmland	35	26	-26	55	+112	26	-53	17	-35	42	+147	42	0	58	+38	
Transition	117	65	-44	57	-12	83	+46	90	+8	58	-36	58	0	74	+28	
<u>Raccoon</u>																
Farmland	24	8	-67	27	+238	18	-33	5	-72	42	+740	65	+55	41	-37	
Transition	57	41	-28	39	-5	53	+36	62	+17	71	+15	44	-38	45	+2	
<u>Dog</u>																
Farmland	47	18	-62	40	+122	30	-25	41	+37	52	+27	42	-19	67	+60	
Transition	77	46	-40	31	-33	52	+68	50	-4	63	+26	68	+8	125	+84	
<u>House Cat</u>																
Farmland	76	40	-47	56	+40	91	+63	58	-36	58	0	72	+24	119	+65	
Transition	43	19	-56	13	-32	51	+292	39	-24	42	+8	81	+93	76	-6	
<u>Wolf</u>																
Farmland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Transition	0	0	0	0	0	0	0	0	0	0	0	0	0	4	+100	
<u>Bobcat</u>																
Farmland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Transition	6	3	-50	0	-100	1	+100	1	0	0	-100	0	0	1	+100	
<u>Bear</u>																
Farmland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Transition	0	0	0	0	0	2	+100	1	-50	2	+100	3	+50	5	+67	

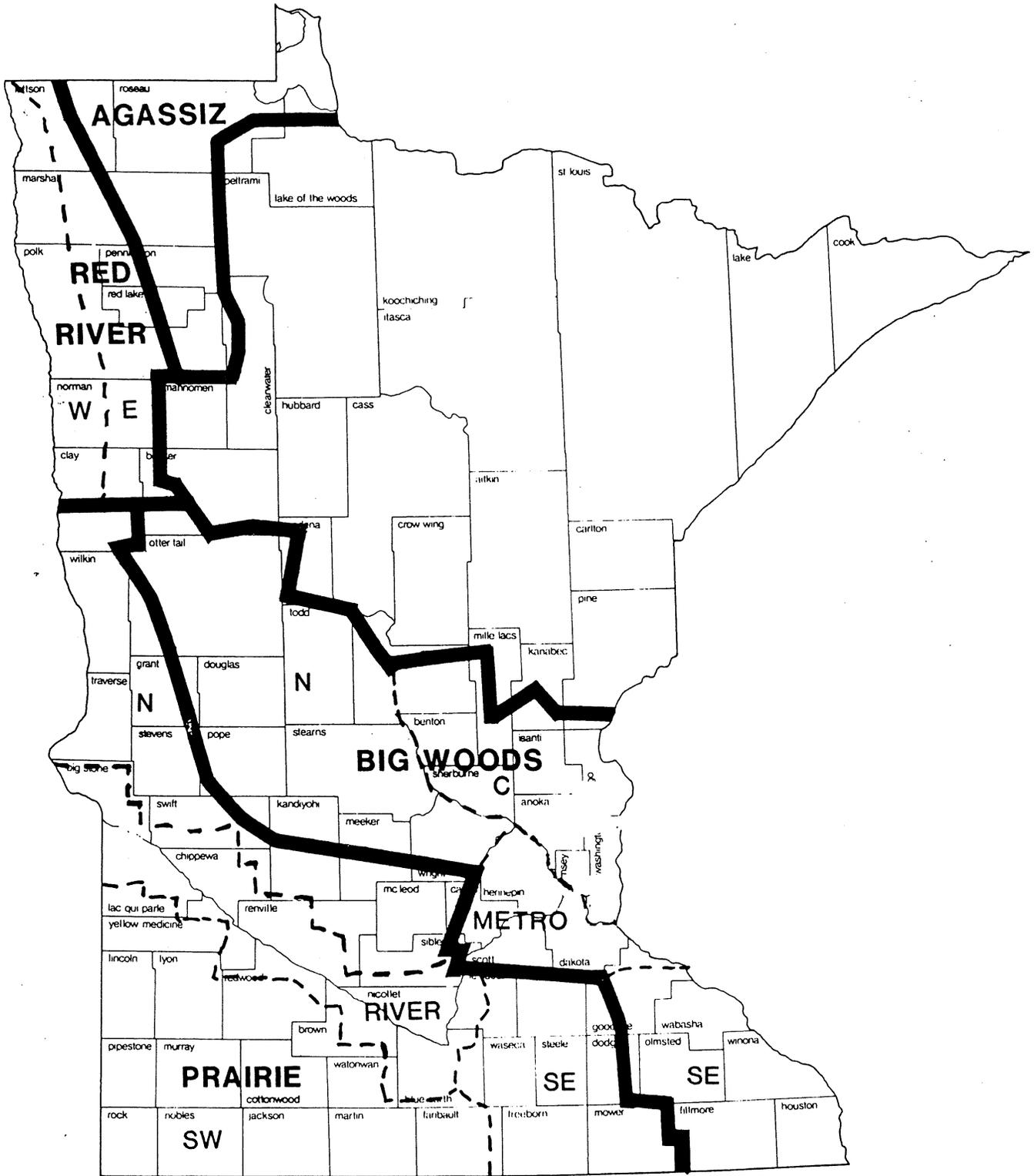


Figure 8. Deer management units and sub-units in the Farmland Zone.

Table 8. Number of car-killed deer confiscated in the Deer Management Units and sub-units of Minnesota's farmland zone, 1980-1984. Data are adjusted for miles driven to the base year of 1972.

DMU Sub-DMU	1980	1981	1982	1983	1984	\bar{X} 1980's	% Chg. 1983-84
<u>RED RIVER</u>	206	281	344	333	323	297	-3%
<u>AGASSIZ</u>	172	272	287	335	261	265	-22%
<u>BIG WOODS</u>	3,431	4,186	4,612	4,939	5,469	4,527	+11%
North	1,133	1,399	1,565	1,715	1,610	1,484	-6%
Central	661	893	885	904	1,065	882	+18%
Metro	1,126	1,219	1,296	1,391	1,803	1,367	+30%
SE	511	676	866	929	990	794	+6%
<u>PRAIRIE</u>	2,577	2,666	2,990	3,078	3,268	2,916	+6%
North	392	392	394	469	349	399	-26%
River	764	842	864	947	1,021	888	+8%
SW	833	871	992	967	1,009	934	+4%
SE	589	561	740	695	890	695	+28%
<u>FARMLAND^a</u> <u> ZONE</u>	6,387	7,405	8,232	8,684	9,321	8,005	+7%
<u>FOREST^b</u> <u> ZONE</u>	2,167	4,146	3,358	3,429	3,810	3,382	+11%
<u>STATEWIDE^c</u>	8,554	11,551	11,590	12,113	13,131	11,388	+8%

^a Farmland subtotals from regional enforcement summaries.

^b Forest subtotals = Statewide - Farmland.

^c Statewide data from summaries distributed by Division of Enforcement in St. Paul.

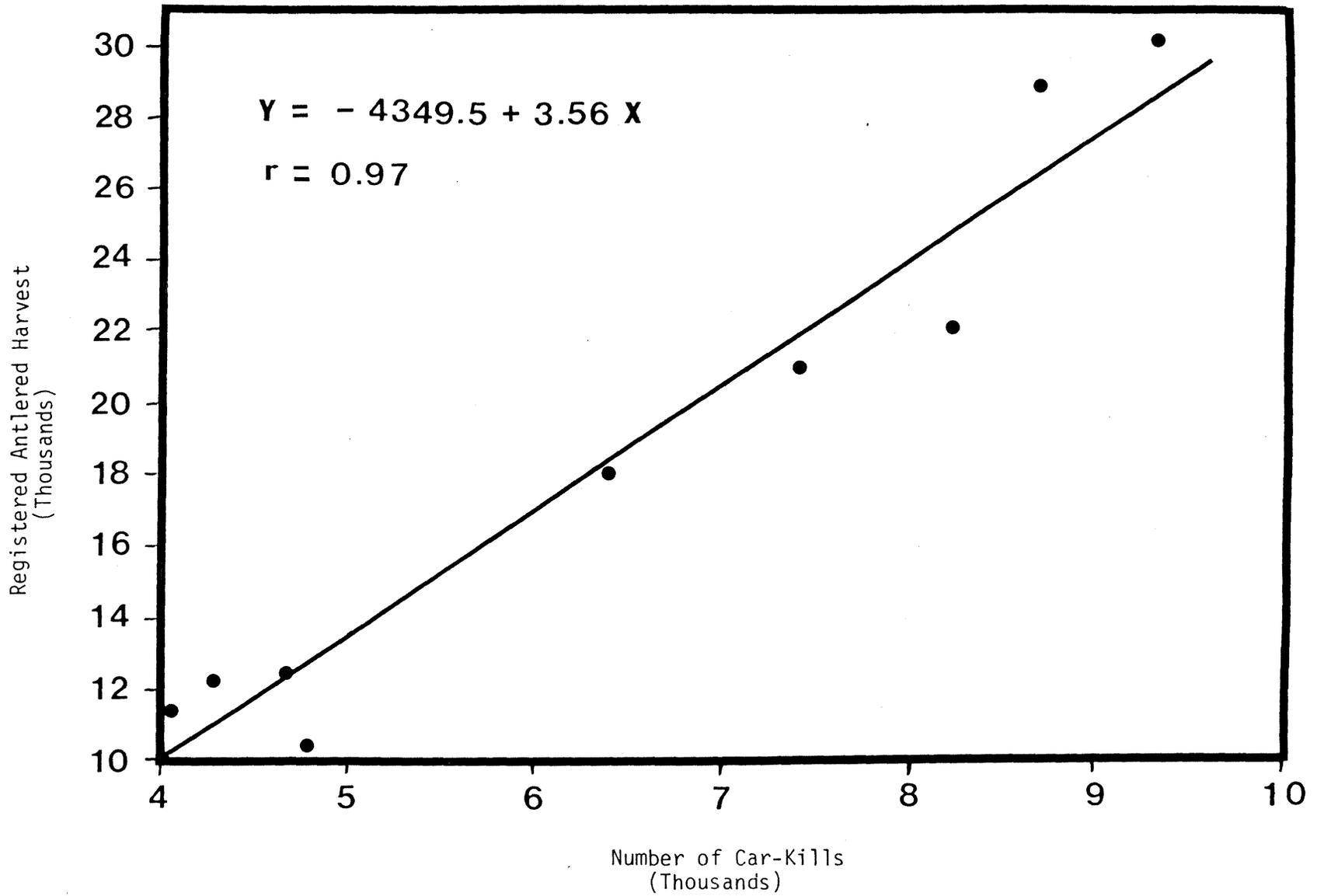


Figure 9. The relationship of car-kills (adjusted for miles driven) to antlered deer harvest in the Farmland Zone, 1976-1984.

Table 9. Productivity of deer in the Big Woods and Prairie Deer Management Units (DMU), 1981-1985.

	Age class	Pregnancy rate	Fetuses per pregnancy	Proportion of population	Gross productivity ^a
BIG WOODS					
1985 (N=140)	Fawn	50%	1.13	35%	1.35 fawns/doe
	Yearling	100%	1.72	23%	
	Adult	95%	1.90	42%	
1984 (N=174)	Fawn	22%	1.24	35%	1.17 fawns/doe
	Yearling	95%	1.67	23%	
	Adult	95%	1.79	42%	
1983 (N=182)	Fawn	55%	1.20	35%	1.38 fawns/doe
	Yearling	94%	1.89	23%	
	Adult	94%	1.88	42%	
1982 (N=253)	Fawn	43%	1.17	35%	1.31 fawns/doe
	Yearling	91%	1.75	23%	
	Adult	96%	1.90	42%	
1981 (N=169)	Fawn	66%	1.08	35%	1.41 fawns/doe
	Yearling	94%	1.70	23%	
	Adult	94%	2.02	42%	
PRAIRIE					
1985 (N= 66)	Fawn	38%	1.00	35%	1.24 fawns/doe
	Yearling	92%	1.58	23%	
	Adult	94%	1.97	42%	
1984 (N= 89)	Fawn	23%	1.14	35%	1.17 fawns/doe
	Yearling	91%	1.90	23%	
	Adult	86%	1.87	42%	
1983 (N= 92)	Fawn	61%	1.38	35%	1.58 fawns/doe
	Yearling	91%	2.00	23%	
	Adult	100%	2.07	42%	
1982 (N=132)	Fawn	43%	1.22	35%	1.33 fawns/doe
	Yearling	77%	1.80	23%	
	Adult	98%	2.03	42%	
1981 (N=132)	Fawn	44%	1.08	35%	1.35 fawns/doe
	Yearling	94%	1.88	23%	
	Adult	97%	1.91	42%	

^a Gross productivity calculated as pregnancy rate x fetuses/pregnancy weighted by the proportion of each age class in the population.

Table 10. Spring deer densities estimated from population modeling in Minnesota's farmland DMU's, 1981-1985.^a

DMU	Deer per square mile						1985 Pct. of goal
	1981	1982	1983	1984	1985	Goal	
<u>Red River</u>	1.9	2.0	2.2	2.2	2.5	1.6	156%
<u>Agassiz</u>	4.5	5.0	5.8	6.2	5.9	6.5	90%
<u>Big Woods</u>							
North	4.0	4.2	4.3	4.3	4.8	4.1	117%
Central	5.0	5.5	5.9	6.2	6.6	5.9	112%
Metro	1.8	1.9	2.2	2.3	2.5	2.2	114%
SE	7.0	7.4	7.5	8.0	7.8	6.8	115%
<u>Prairie</u>							
North	1.9	2.1	1.7	1.8	1.7	1.5	113%
River	2.5	2.6	2.8	2.5	2.8	2.2	127%
SW	1.7	1.8	1.9	1.7	2.0	1.3	154%
SE	1.4	1.5	1.9	1.9	2.3	1.2	192%
<u>Farmland Zone</u>	3.0	3.2	3.4	3.5	3.7	3.0	123%

^a Historic density figures may differ from those previously published due to periodic recalculation as more accurate modeling information is available.

FOREST WILDLIFE POPULATIONS
AND CENSUSES

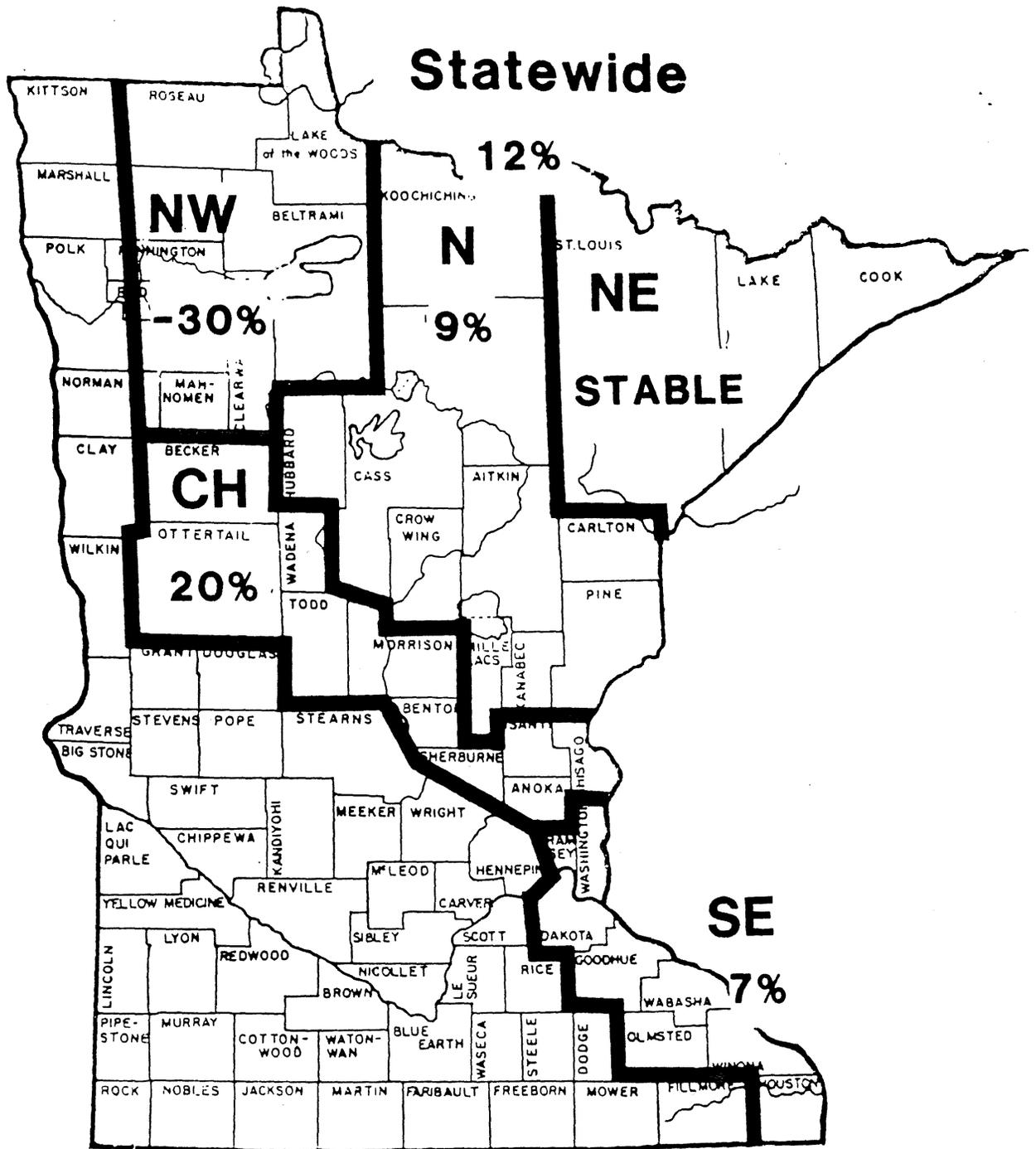


Figure 10. Changes from 1984-1985 in average numbers of ruffed grouse drums per stop on roadside counts.

Table 11. Mean number of ruffed grouse drums per stop by census zone, 1964-1985.

Year	Census Zone					Range-wide mean
	Northwest	North	Northeast	Central hardwoods	Southeast	
1964	0.4	0.7	0.9	0.3	1.3	0.6
1965	1.2	1.2	0.7	0.5	1.4	1.0
1966	1.4	1.4	0.6	0.7	1.9	1.0
1967	2.4	1.8	1.2	1.0	1.0	1.7
1968	3.2	2.3	1.6	1.0	1.3	2.0
1969	3.1	2.5	1.4	1.4	2.3	2.2
1970	1.9	3.1	0.9	1.6	2.1	2.2
1971	1.4	3.5	1.2	1.6	3.7	2.4
1972	2.1	3.7	1.0	2.0	3.1	2.6
1973	0.3	1.5	1.0	0.9	3.6	1.2
1974	0.8	1.1	0.6	0.7	3.0	1.0
1975	1.3	1.4	0.8	0.8	2.0	1.2
1976	0.8	1.5	0.4	0.9	1.8	1.1
1977	0.9	1.6	0.5	0.9	2.4	1.1
1978	2.0	2.4	0.8	1.4	2.5	1.8
1979	1.7	2.2	0.7	1.3	2.1	1.6
1980	1.9	2.2	0.7	1.9	2.7	1.7
1981	1.2	1.7	0.8	1.8	2.3	1.4
1982	0.9	1.1	0.3	0.9	1.1	0.8
1983	0.6	1.1	0.6	0.8	1.4	0.9
1984	1.0	1.1	0.6	0.5	1.4	0.8
1985	0.7	1.2	0.6	0.6	1.5	0.9

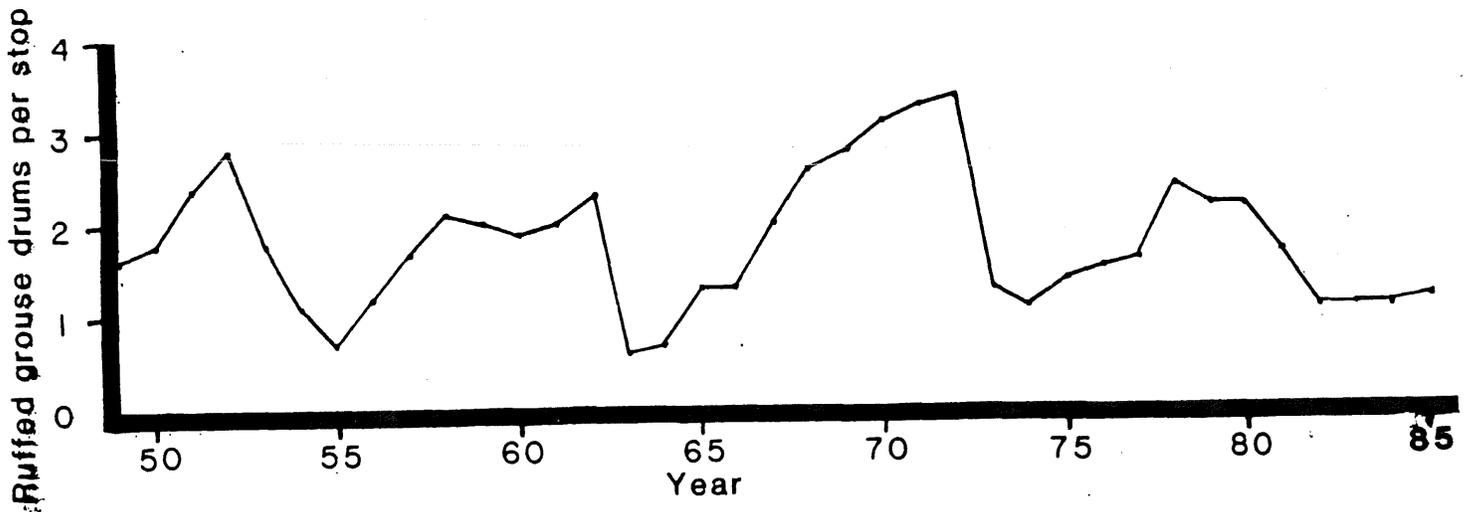


Figure 11. Mean number of ruffed grouse drums per stop in the North census zone, 1949-1985.

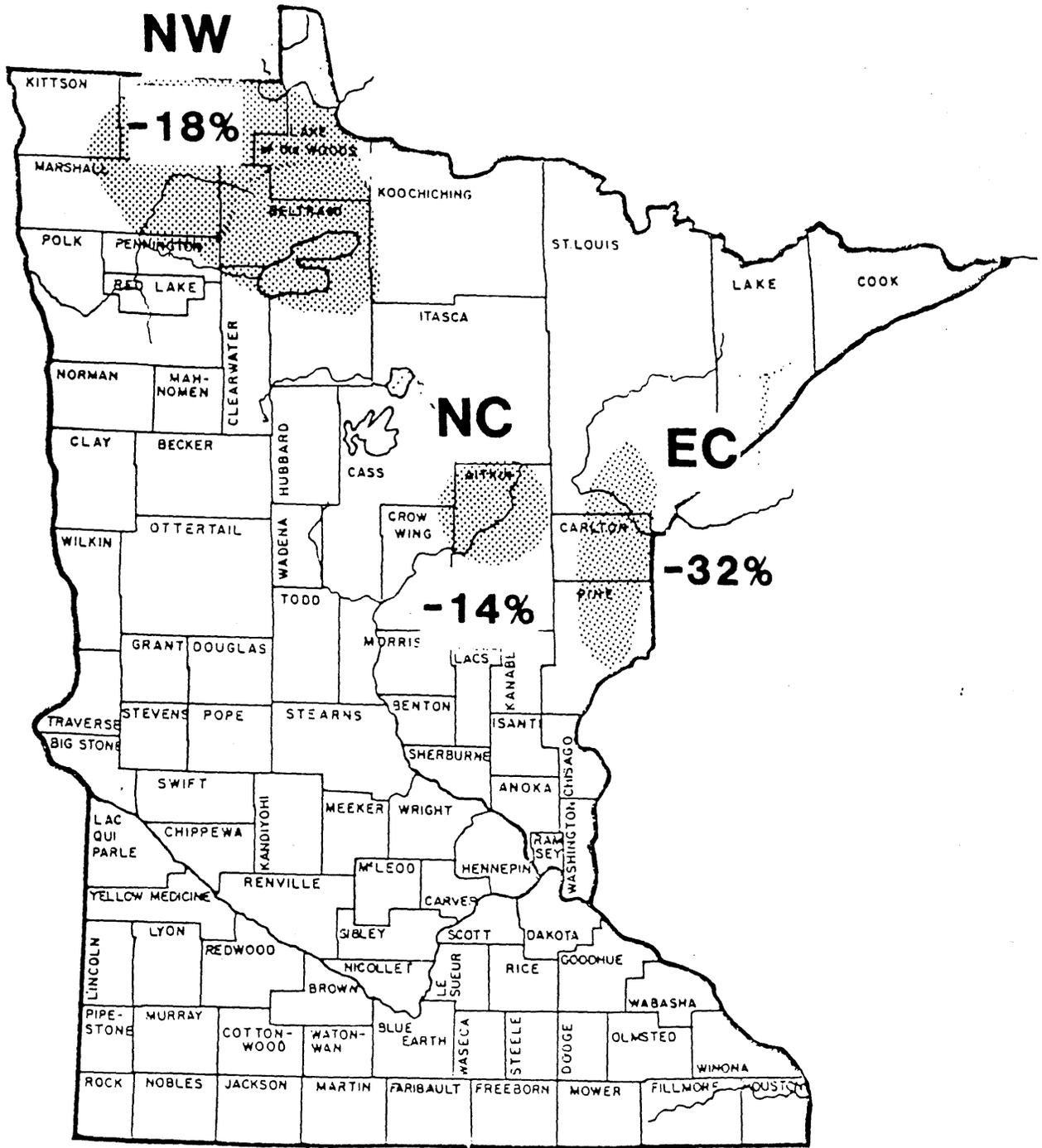


Figure 12. Changes in numbers of dancing male Sharp-tailed grouse on census areas, 1984-1985.

Table 12. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1985.

Year	No. of hares seen	No. of hares seen per 100 km	Percent of routes on which hare were seen
1974	3	0.4	7%
1975	0	0.0	0%
1976	16	2.0	24%
1977	23	2.8	21%
1978	92	9.0	47%
1979	87	8.8	37%
1980	153	14.1	37%
1981	124	9.9	49%
1982	22	1.3	22%
1983	9	0.1	3%
1984	2	0.2	2%
1985	4	0.3	4%

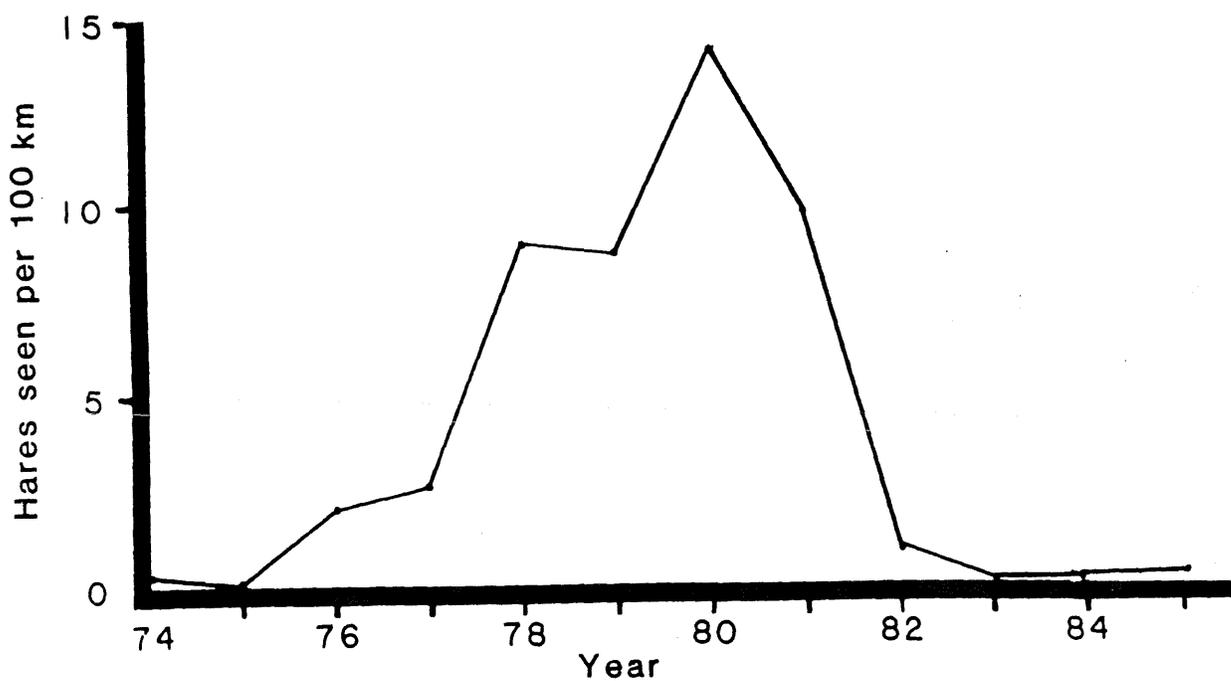


Figure 13. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1985.

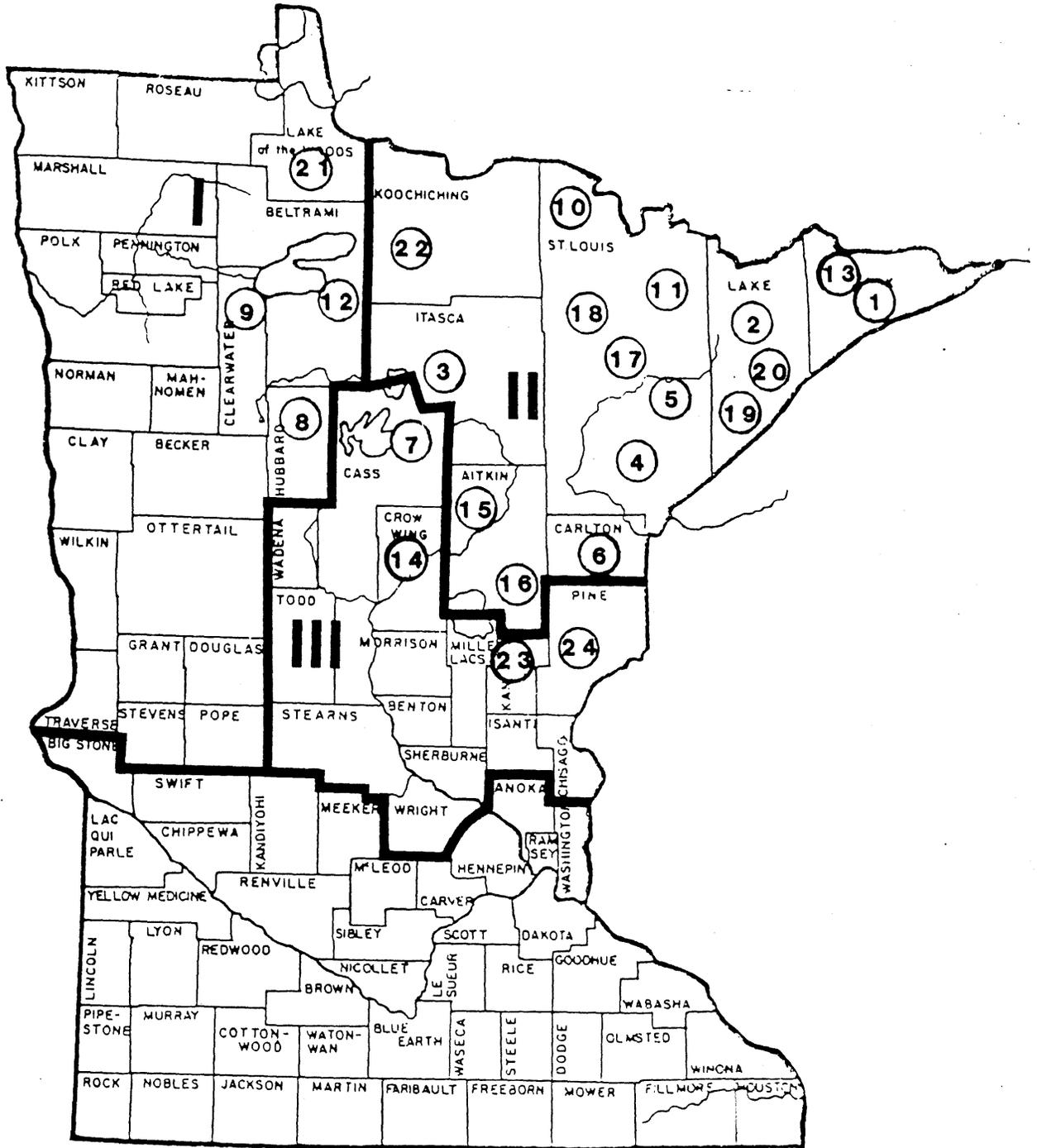


Figure 14. Approximate location of 24 aerial beaver census routes, within DNR Regions I-III.

Table 13. Live beaver colonies per mile of census route in northern Minnesota, 1975-1984.

Number	Route name	Year									
		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1	Cascade	1.12	0.52	0.39	1.07	-	0.42	0.43	0.40	0.35	0.44
2	Kawishiwi	0.95	-	0.73	0.97	0.68	0.75	0.50	0.72	0.65	0.70
3	Itasca	0.80	0.60	0.74	1.04	0.66	0.63	0.48	0.43	0.57	0.51
4	South St. Louis	0.74	0.63	0.76	0.99	-	0.64	0.74	-	0.58	0.57
5	Central St. Louis	1.23	-	-	1.02	0.95	0.90	0.95	0.65	0.79	0.57
6	Carlton & Pine	0.56	0.26	0.69	0.89	0.60	0.83	0.67	0.22	0.56	0.65
7	Cass	0.80	0.57	0.83	1.03	1.00	0.95	0.53	0.63	0.89	0.99
8	Balsam-Hennepin	0.40	0.28	0.51	0.39	0.55	0.44	0.43	0.60	0.58	0.54
9	Pinewood-Mississippi	0.32	0.33	0.55	0.32	-	0.38	0.39	0.49	0.48	-
10	Kabetogama Peninsula	2.21	2.39	2.14	2.91	3.05	2.52	3.55	2.66	2.89	3.30
11	Ely-Finger Lakes	1.85	-	1.41	1.59	1.26	1.06	0.98	1.17	1.32	1.02
12	Hay Creek-Kelliher	0.48	0.46	0.68	0.44	-	0.43	0.48	0.70	0.55	-
13	Cook County Transect	0.57	0.36	0.30	0.49	-	0.23	0.40	0.33	0.48	0.35
14	Cass-Crow Wing	0.67	0.43	0.59	0.70	0.68	0.78	0.61	0.74	0.68	0.76
15	Little Willow-Aitkin	0.35	-	0.42	0.45	0.47	0.44	0.38	0.40	0.40	0.31
16	East Aitkin County	0.62	0.47	0.89	1.14	0.96	0.72	0.52	0.86	0.82	0.81
17	West Vermillion	0.93	0.54	1.03	1.25	1.12	0.96	1.05	0.86	0.34	1.07
18	Blackduck	1.41	0.97	1.24	1.54	1.31	1.09	1.22	0.91	0.71	1.21
19	Splitrock	1.45	1.21	1.14	1.45	-	1.07	-	-	0.55	0.65
20	Isabella	0.80	0.73	0.66	0.66	0.68	0.60	0.65	-	0.15	-
21	Red Lake-Pine Island	0.51	0.44	0.63	0.44	0.73	0.40	0.41	0.50	0.39	-
22	Northome	0.61	0.53	0.75	0.75	0.85	0.86	0.91	0.97	1.06	1.37
23	Kanabec County	0.61	0.65	0.84	0.59	0.55	0.70	0.48	0.55	0.65	0.53
24	Southern Pine	0.91	0.88	0.85	0.74	0.88	0.93	0.58	0.76	0.69	0.72
	DNR Region I	0.43	0.38	0.59	0.40	0.64	0.41	0.43	0.57	0.50	0.54
	DNR Region II	1.01	0.77	0.89	1.14	1.05	0.86	0.90	0.81	0.76	0.90
	DNR Region III	0.75	0.63	0.78	0.77	0.78	0.84	0.55	0.67	0.73	0.75

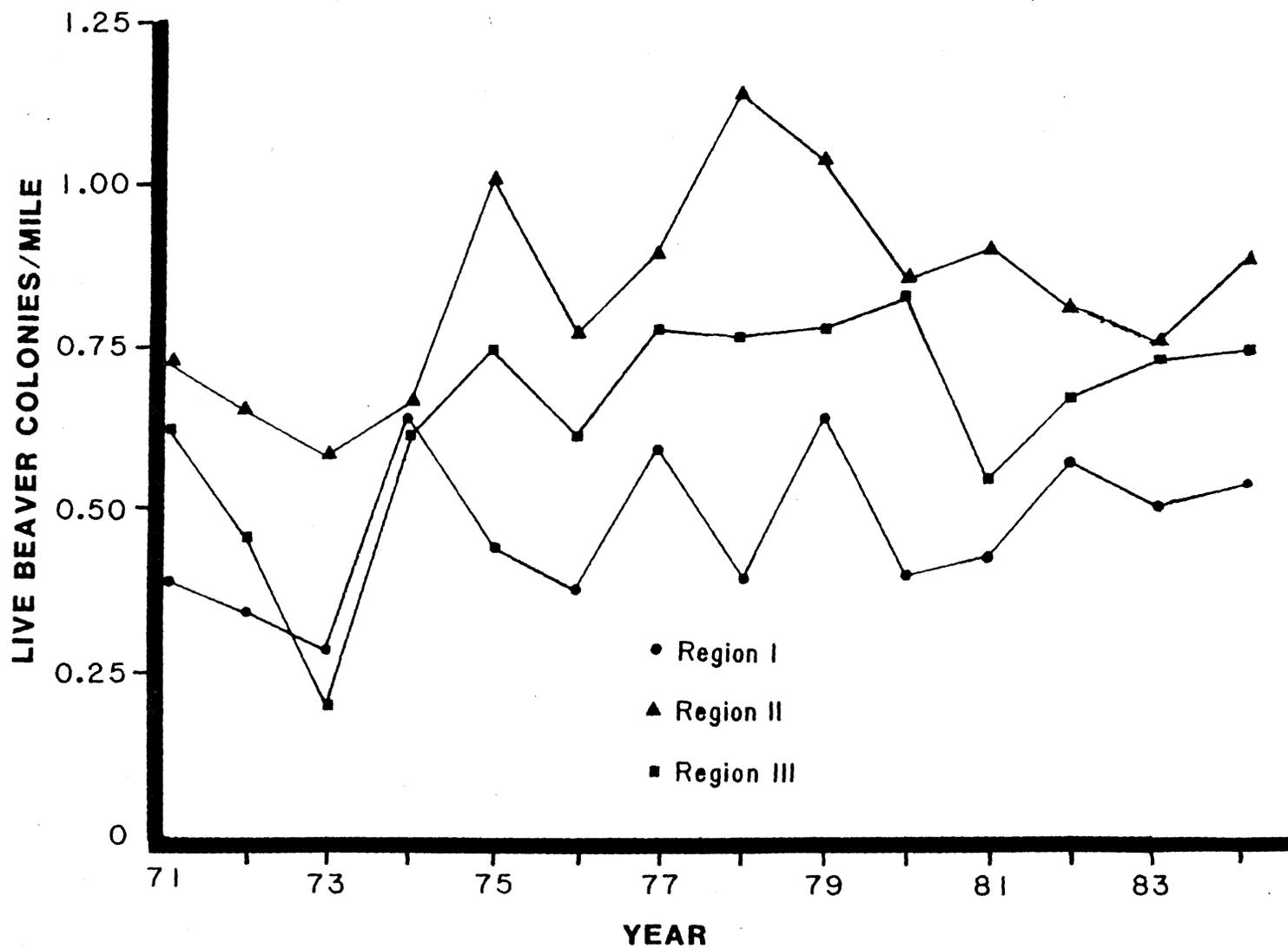


Figure 15. Numbers of live beaver colonies per mile in the three forested DNR Regions, 1971-1984.

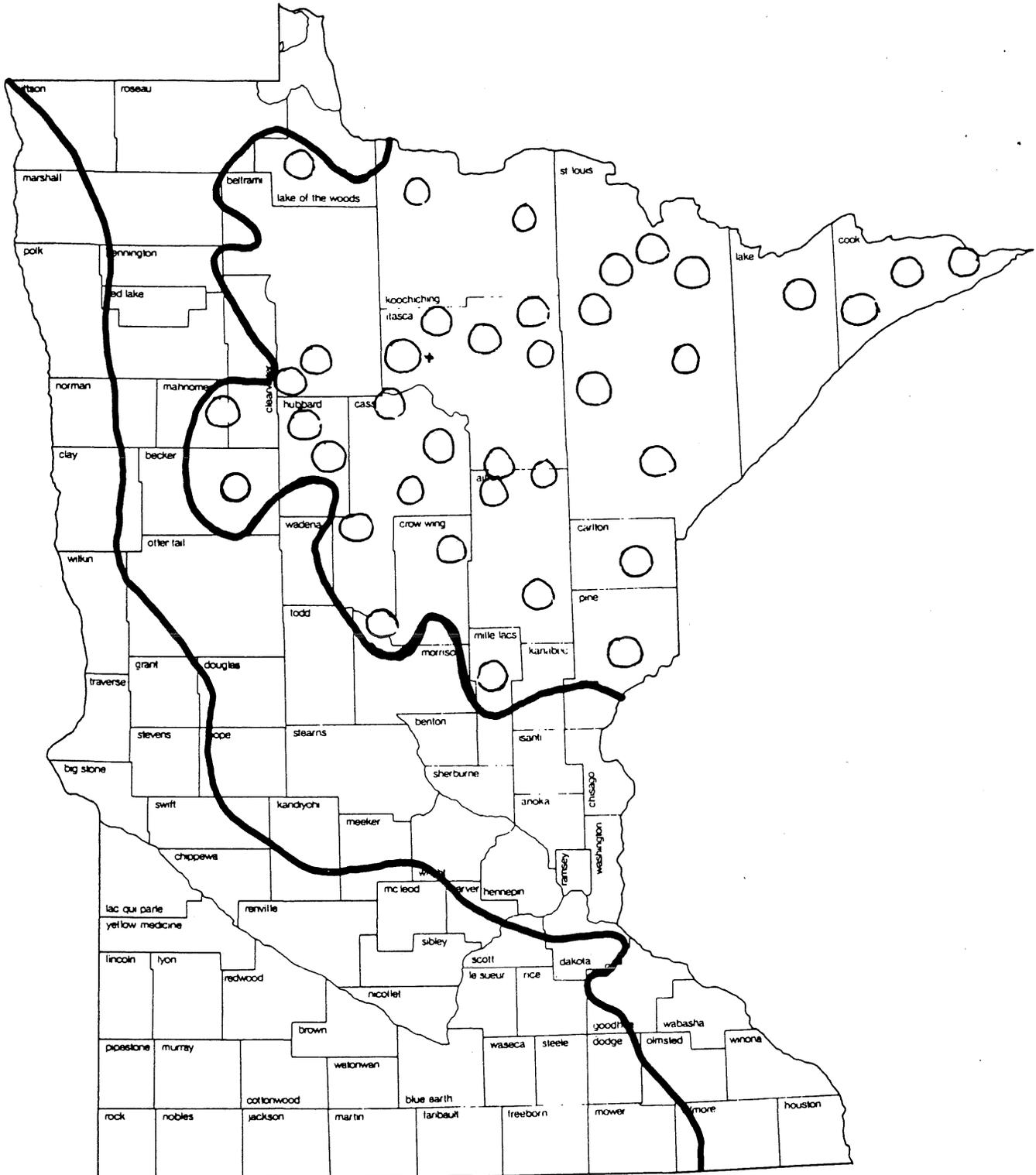


Figure 16. General locations of scent post routes in the Forest Zone, 1984. Routes marked with a (+) were not run in 1984.

Table 14. Mean predator scent post indices (Ind) and annual percent change (PC) for nine species in the Forest Zone, 1975-84.

Species	Year																			
	1975		1976		1977		1978		1979		1980		1981		1982		1983		1984	
	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC	Ind	PC
Coyote	63		40	-37	38	-5	25	-34	27	+8	33	+22	50	+52	29	-42	26	-10	34	+31
Red Fox	48		64	+33	38	-41	38	0	69	+82	49	-29	67	+37	69	+3	85	+23	58	-32
Skunk	6		80+1233		63	-21	26	-59	61	+135	87	+43	84	-3	73	-13	89	+22	95	+7
Raccoon	4		7	+75	17	+143	8	-53	11	+38	18	+64	20	+11	9	-55	28	+211	23	-18
Dog	50		10	-80	9	-10	17	+89	16	-6	17	+6	15	-12	17	+13	13	-24	25	+92
House cat	30		14	-53	19	+36	17	-11	11	-35	19	+73	16	-16	12	-25	19	+58	18	-5
Wolf	2		3	+50	4	+33	24	+500	14	-42	15	+7	8	-47	6	-25	11	+83	10	-9
Bobcat	2		13	+550	8	-38	6	-25	5	-17	2	-60	14	+600	14	0	3	-79	12	+300
Bear	13		5	-62	13	+160	7	-46	13	+86	20	+54	9	-55	11	+22	20	+82	11	-45

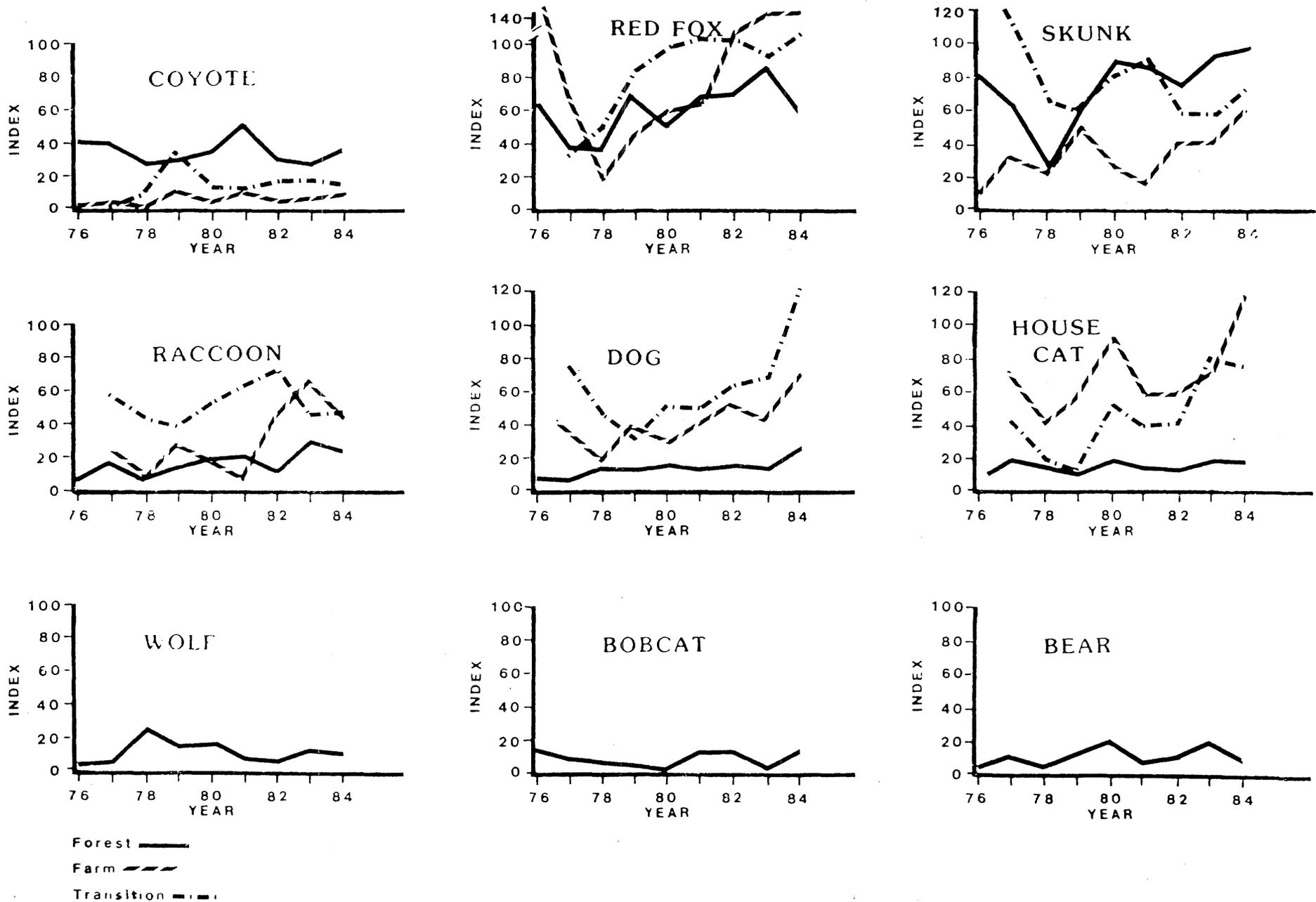


Figure 17. Mean scent post indices for nine species in the Forest, Transition and Farmland Survey Zones, 1976-1984.

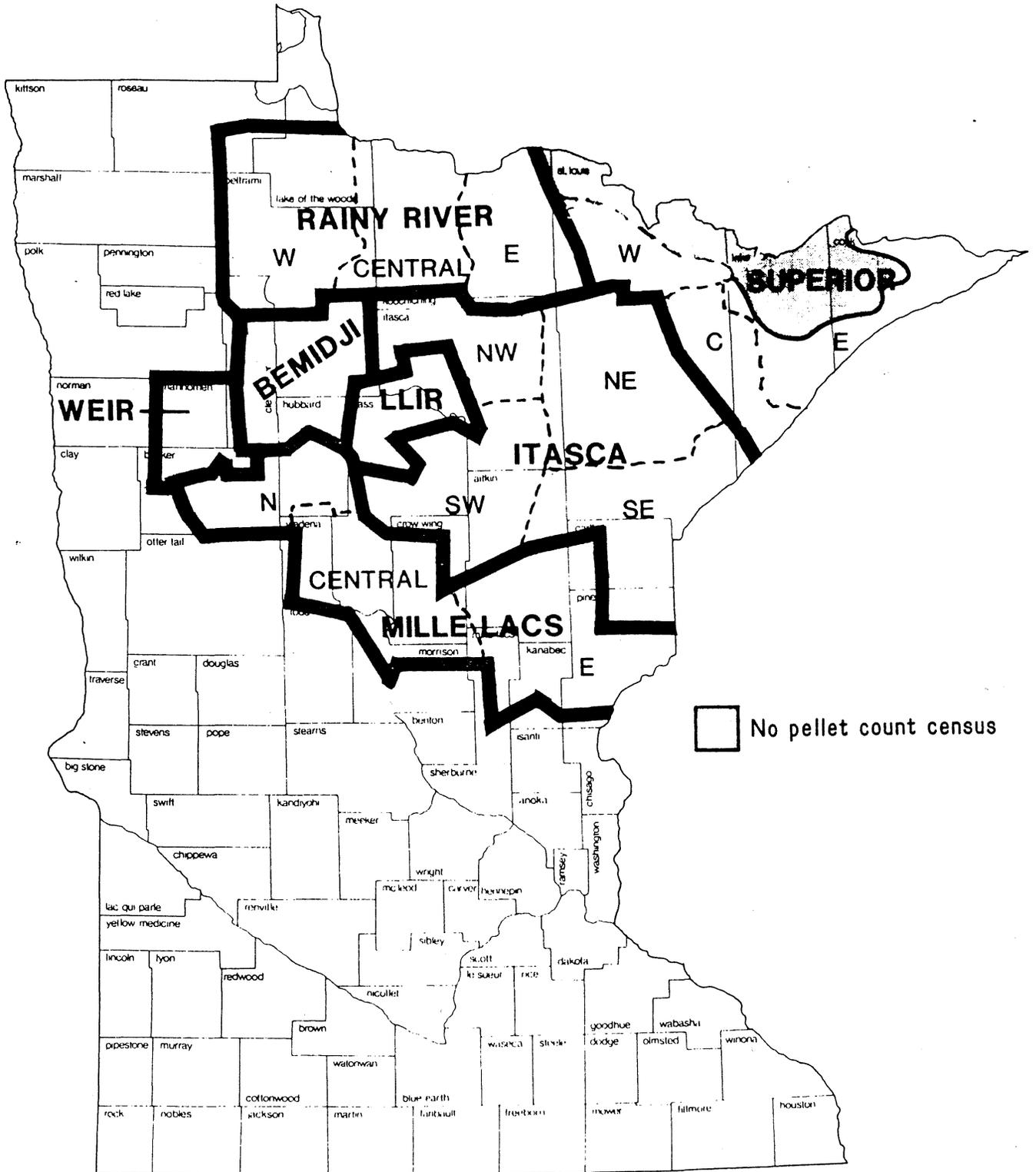


Figure 18. Deer management units and sub-units in the Forest Zone.

Table 15. Spring (pre-fawning) estimates of deer per square mile as determined by pellet counts, 1980-1985.

Area	Year					
	1980	1981	1982	1983	1984	1985
<u>Itasca DMU</u>						
NW	17.0 ± 3.9	22.9 ± 4.3	22.4 ± 4.5	-----	20.8 ± 4.2	29.6 ± 5.9
SW	14.5 ± 4.1	16.9 ± 4.7	17.6 ± 4.7	21.0 ± 6.2	17.0 ± 3.8	19.1 ± 5.0
NE	14.9 ± 3.6	16.7 ± 3.8	14.1 ± 3.5	14.2 ± 3.6	11.5 ± 3.6	15.8 ± 3.4
SE	12.0 ± 5.2	18.1 ± 5.3	10.8 ± 4.2	15.4 ± 4.9	12.8 ± 4.0	18.6 ± 5.2
<u>Rainy River DMU</u>						
West	10.9 ± 3.7	-----	13.9 ± 5.9	-----	12.8 ± 4.2	-----
Central	8.2 ± 2.6	-----	11.4 ± 6.0	-----	10.7 ± 6.3	10.8 ± 5.3
East	21.8 ± 6.9	19.1 ± 5.1	9.2 ± 3.3	21.8 ± 6.9	15.1 ± 4.1	16.9 ± 4.8
<u>Mille Lacs DMU</u>						
West	12.4 ± 3.3	17.8 ± 4.7	18.0 ± 5.2	-----	12.3 ± 2.7	18.8 ± 4.4
Central	7.6 ± 2.4	11.3 ± 4.1	17.4 ± 4.7	16.1 ± 4.7	17.2 ± 4.5	15.5 ± 3.7
East	9.4 ± 2.5	14.1 ± 2.8	14.1 ± 3.7	15.8 ± 3.2	12.8 ± 3.2	10.9 ± 2.7
<u>Superior DMU^a</u>						
West	15.1 ± 3.4	21.4 ± 5.0	15.4 ± 2.9	-----	18.2 ± 7.1	24.4 ± 4.0
Central	10.2 ± 3.3	15.2 ± 5.6	16.2 ± 10.2	-----	14.1 ± 5.2	15.0 ± 3.2
East	4.8 ± 1.7	-----	-----	-----	-----	-----
<u>Benldji DMU</u>						
	-----	11.4 ± 3.5	17.7 ± 5.4	20.1 ± 6.9	14.9 ± 3.8	12.9 ± 4.0
<u>Agassiz NWR</u>						
	12.4 ± 6.7	21.3 ± 6.7	24.4 ± 8.8	25.6 ± 8.4	-----	-----
<u>Tamarac NWR</u>						
	-----	70.7 ± 13.5	69.1 ± 25.3	62.5 ± 14.7	46.7 ± 14.0	36.5 ± 11.0
<u>White Earth IR</u>						
	6.3 ± 2.9	4.1 ± 1.9	10.1 ± 5.8	11.4 ± 4.3	10.2 ± 4.9	17.3 ± 5.6
<u>Leech Lake IR</u>						
	-----	-----	13.3 ± 3.6	14.1 ± 3.7	11.8 ± 3.8	11.9 ± 2.9
<u>Bearville Study Area</u>						
	31.2 ± 9.5	39.4 ± 6.9	39.5 ± 8.7	38.0 ± 5.8	15.6 ± 4.3	42.9 ± 7.2
<u>Camp Ripley</u>						
	17.0 ± 5.1	19.2 ± 5.2	31.0 ± 8.2	31.6 ± 7.1	47.0 ± 12.4	39.3 ± 9.7
<u>Mille Lacs WMA</u>						
	24.9 ± 6.6	30.5 ± 11.2	35.7 ± 11.7	24.2 ± 6.6	17.5 ± 4.5	10.0 ± 3.7
<u>St. Croix State Park</u>						
	45.0 ± 21.2	39.6 ± 9.6	53.3 ± 14.7	41.6 ± 9.5	49.8 ± 11.9	-----
<u>Elephant Lake</u>						
	31.3 ± 6.5	36.9 ± 6.2	-----	34.0 ± 8.0	39.0 ± 13.0	-----
<u>Aitkin County</u>						
	19.5 ± 5.7	15.9 ± 4.0	23.0 ± 7.5	26.3 ± 6.2	19.2 ± 5.8	21.1 ± 6.0
<u>Chippewa NF</u>						
	-----	-----	15.8 ± 4.2	17.6 ± 3.9	15.9 ± 3.5	19.1 ± 3.4

^a No pellet counts were conducted in the Boundary Waters Canoe Area or the Voyageurs National Park.

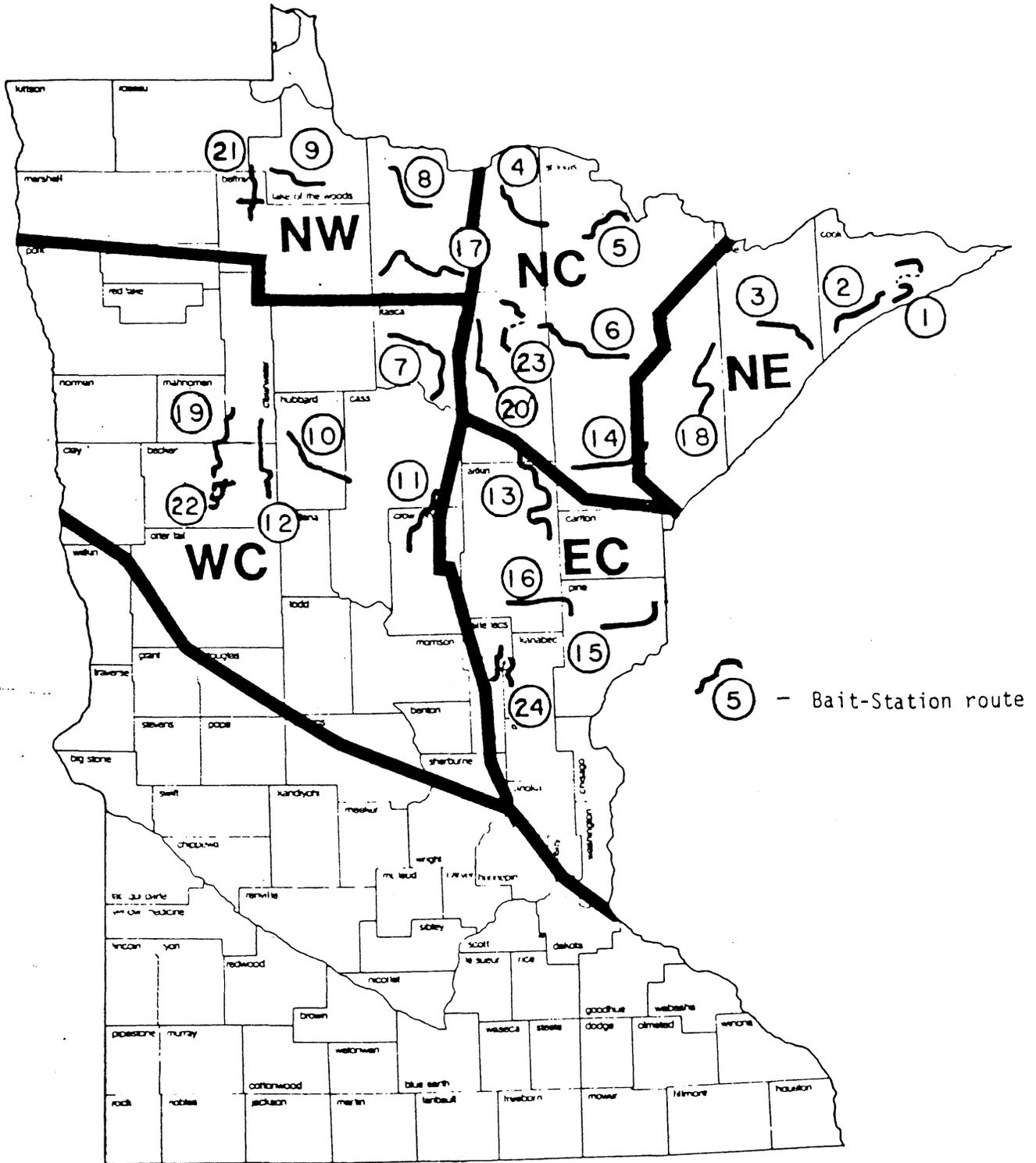


Figure 19. Location of bait-station routes within the Minnesota bear range.

Table 16. Percentage of baits on each bait route taken by bears during 1981-1985. All baits (50 per route) except those entirely removed by other animals were considered available to bears. Location of routes shown in Fig. 1.

Route No.	1981	1982	1983	1984	1985
1	33	22	41	38	22
2	22	14	15	10	30
3	2	37	44	14	26
4	60	22	54	33	47
5	54	31	44	28	29
6	27	17	18	30	44
7	45	19	43	18	26
8	14	8	10	44	46
9	40	16	27	20	30
10	23	26	44	24	31
11	22	12	31	21	39
12	44	22	65	37	27
13	40	24	40	30	33
14	4	16	14	4	18
15	36	24	22	24	35
16			36	24	19
17			19	49	66
18			8	20	42
19			28	10	18
20	48	69	66	35	45
21				6	6
22				20	8
23					28
24					20

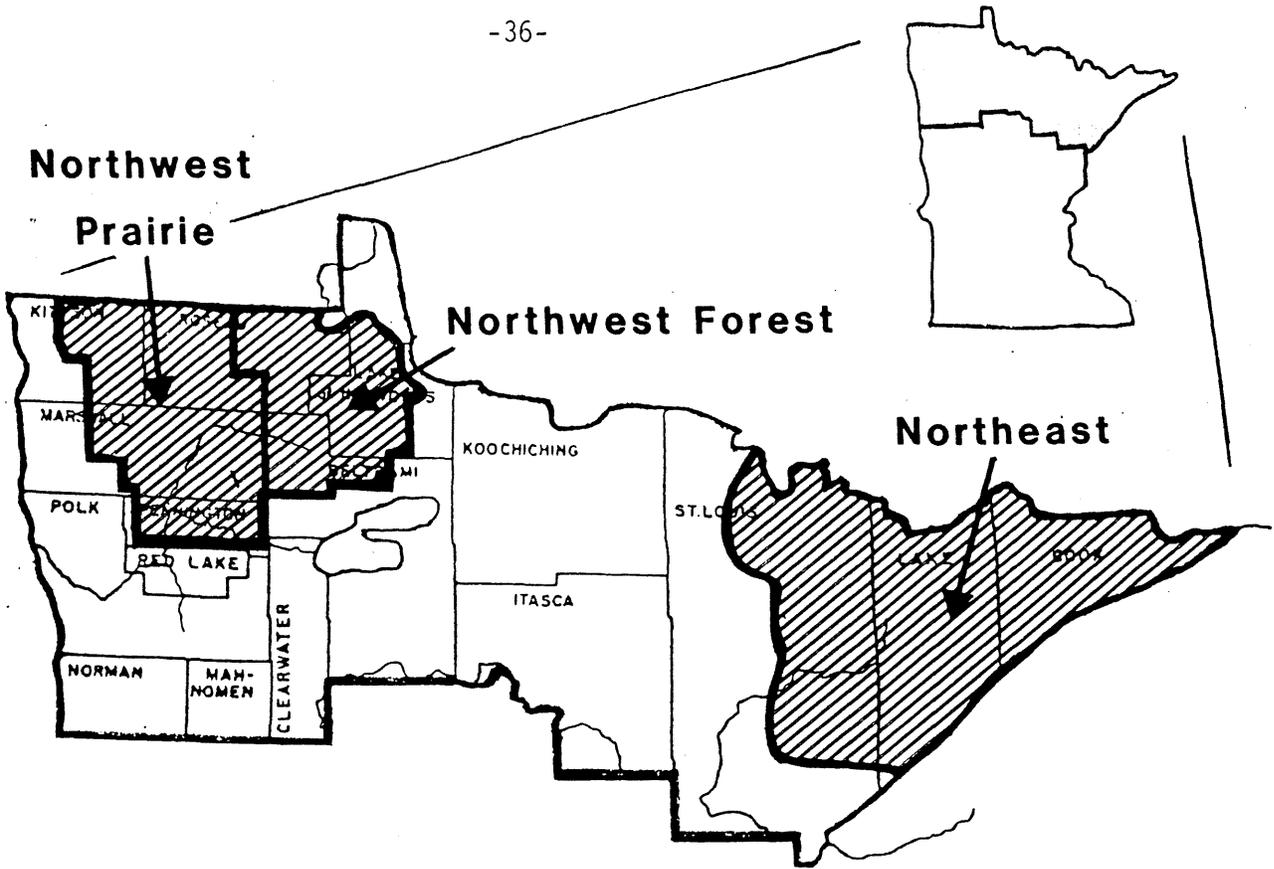


Figure 20. Approximate boundaries of aerial moose census.

Table 17. Moose population estimates from Aerial Moose Census in Minnesota ($\pm 90\%$ Confidence Interval).

Area	Sq. miles ^a	1982-83	1983-84	1984-85	% change 1983-84 to 1984-85
Northeast	4809	4947 \pm 1250	4535 \pm 1741 ^b	4968 \pm 1292 ^b	+9.5
Northwest Forest	1779	447 \pm 172	482 \pm 236 ^b	509 \pm 122 ^b	+5.6
Northwest Prairie	2126	3817 \pm 982	3683 \pm 582 ^b	3668 \pm 403 ^b	-0.4

^a Total land area within census zone. Does not include area of lakes more than 10 acres.

^b Total population using moose observed and the sightability correction factor.

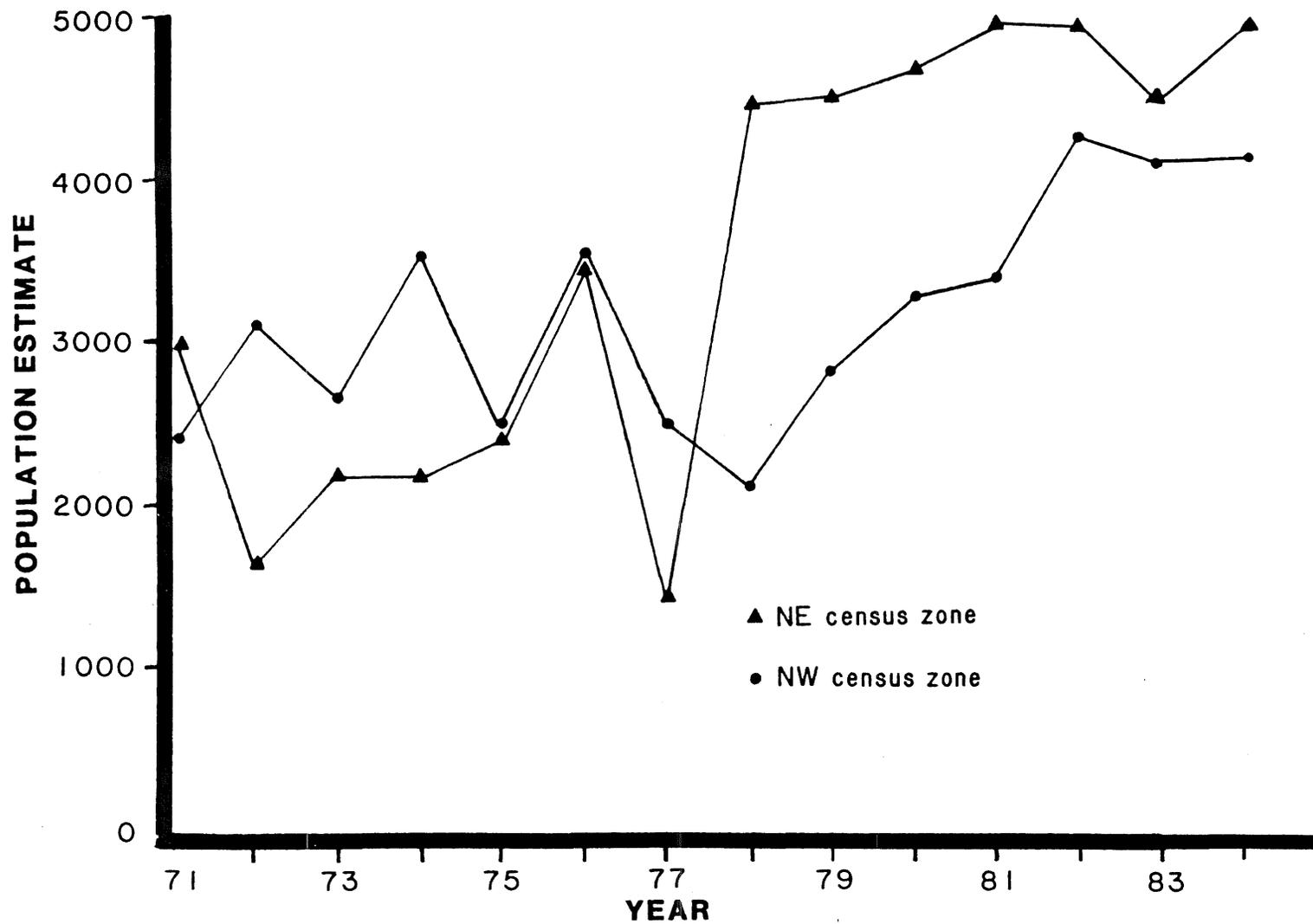


Figure 21. Moose population estimates in the two moose census zones, 1971-1984 (NW - Prairie and NW - Forest census zones combined into NW census zone).

MIGRATORY BIRD POPULATIONS
AND CENSUSES

Table 18. Estimated number of breeding ducks in Minnesota based on spring aerial census transects, 1977-1985.

Species	Year	Unadjusted population index	Visibility factor	Adjusted population estimate ^c	
Mallard	1977	96,164	2.27	218,000	
	1978	70,145	2.70	189,000	
	1979	73,226	2.70	198,000	
	1980	114,493	1.99	228,000	
	1981	92,009	2.19	201,000	
	1982	64,793	2.66	172,000	
	1983	87,001	2.04	177,000	
	1984	105,556	2.22	234,000	
	1985	102,994	2.32	238,946	+1.7%
	Blue-winged teal	1977	41,666	5.26	219,000
1978		30,680	8.33	256,000	
1979		49,919	4.54	227,000	
1980		57,710	6.25	360,000	
1981		69,210	4.17	289,000	
1982		49,340	6.45	318,000	
1983		49,380	2.24	111,000	
1984		94,559	2.93	277,000	
1985		93,118	3.23	300,771	+8.5%
Other ducks		1977	32,250	4.34	139,000
	1978	41,520	4.16	170,000	
	1979 ^a	46,745	3.70	173,000	
	1980	60,684	2.77	168,000	
	1981	53,601	3.37	181,000	
	1982 ^b	60,513	5.18	313,000	
	1983	47,510	3.74	178,000	
	1984	59,105	1.84	110,000	
	1985	50,889	2.05	104,283	-5.2%
	Totals	1977	170,080	--	576,000
1978		142,345	--	615,000	
1979 ^a		169,890	--	598,000	
1980		232,887	--	756,000	
1981		214,820	--	671,000	
1982 ^b		174,646	--	803,000	
1983		183,891	--	466,000	
1984		259,220	--	621,000	
1985		247,011	--	644,000	+3.7%

^a The unusually late cold spring in 1979 resulted in large numbers of lesser scaup being present in the state. These are not locally breeding birds. The 1979 total excludes 158,000 lesser scaup.

^b The 1982 total also includes a large number of scaup - 120,000.

^c Includes all breeding individuals.

Table 19. Winter population estimates (post hunting season) of the Canada goose eastern prairie flock, 1963-1984 (taken from: U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32 pp.).

Year	Population
1963	110,000
1964	103,000
1965	104,000
1966	121,000
1967	145,000
1968	134,000
1969	107,000
1970	121,000
1971	152,000
1972	177,000
1973	187,000
1974	188,000
1975	199,000
1976	254,000
1977	270,000
1978	207,000
1979	172,000
1980	151,000
1981	175,000 ^a
1982	210,000
1983	163,000 ^b
1984	168,000

^a In 1983, U.S.F.W.S. revised a previously published estimate (145,000) due to supplemental information.

^b Supplemental information suggests that the 1983 population was 170,000 - 190,000 birds.

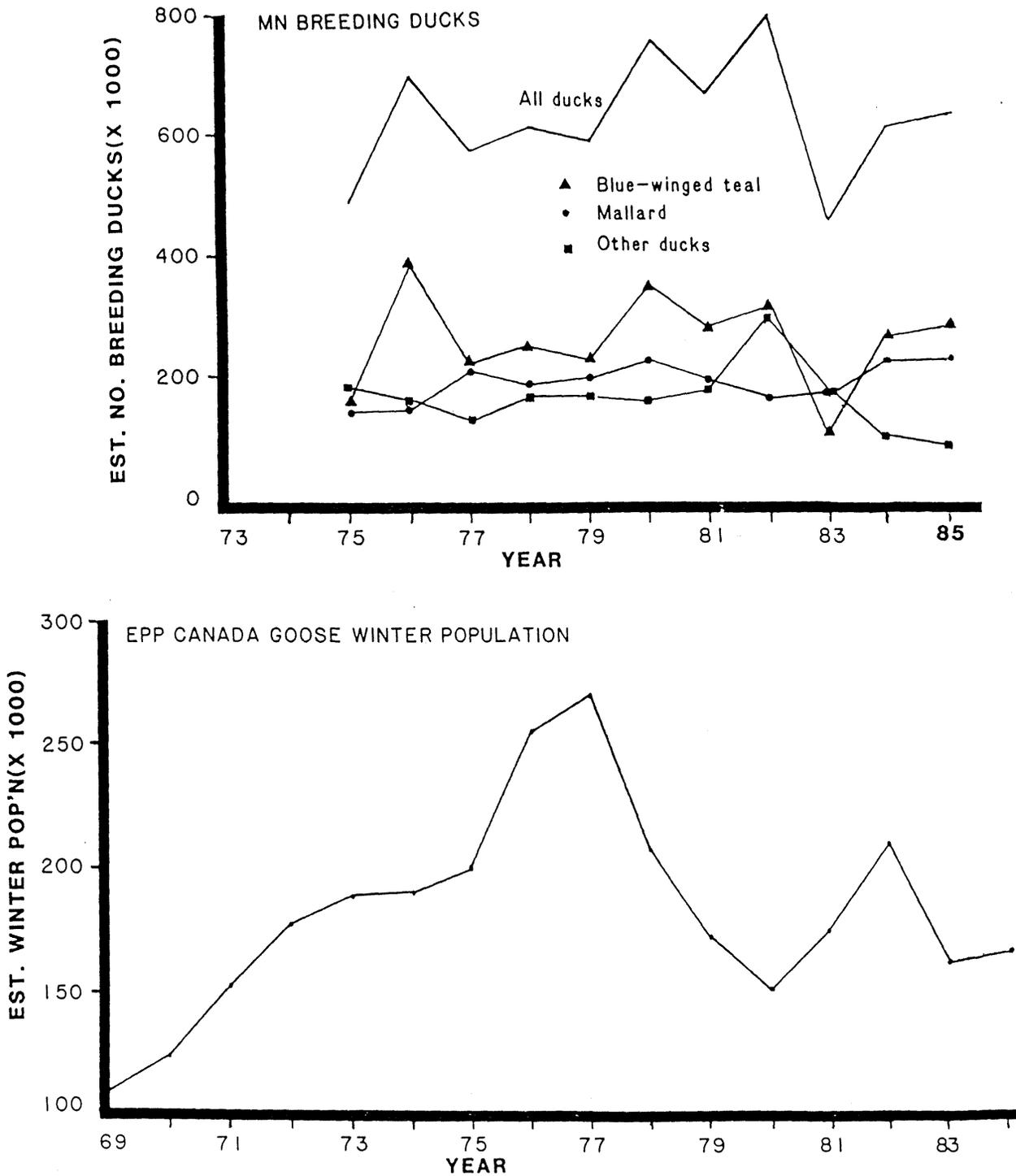


Figure 22. Estimated numbers of Minnesota breeding ducks, 1975-1985 (above), and winter population estimates of the Eastern Prairie Population (EPP) Canada goose flock, 1969-1984 (below) (goose data taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Admin. Rep. 32pp).

Table 20. North American breeding population estimates for 10 species of ducks, 1955-85 (In thousands)^a
 (taken from: U.S. Fish and Wildlife Service/Canadian Wildlife Service, 1985, 1985 Status of
 waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32 pp.).

Year	Mallard	Gadwall	American wigeon	Green- winged teal	Blue- winged teal	Northern shoveler	Pintail	Redhead	Canvasback	Scaup
1955	10,345	1,106	3,333	2,076	6,436	1,965	9,251	733	595	7,100
1956	11,711	1,202	3,712	1,898	6,267	2,084	10,124	928	692	6,595
1957	10,946	1,102	3,208	1,293	5,449	1,744	6,856	684	600	6,535
1958	12,904	687	3,372	1,618	5,799	1,515	6,889	524	713	6,040
1959	10,292	683	3,779	3,153	5,300	1,649	7,228	641	481	8,220
1960	8,206	873	3,165	1,630	4,303	1,859	5,769	542	575	5,366
1961	8,290	1,422	3,219	2,216	4,833	1,625	4,860	437	396	6,764
1962	6,144	1,610	2,721	1,119	3,890	1,633	4,299	664	385	6,398
1963	7,360	1,578	2,209	1,754	4,587	1,435	4,361	396	523	6,564
1964	6,974	1,223	2,630	2,051	4,943	1,685	4,111	560	658	6,326
1965	5,948	1,692	2,695	1,526	4,628	1,607	4,301	568	505	5,383
1966	7,401	1,976	2,901	2,219	5,616	2,272	5,777	747	683	5,421
1967	8,205	1,638	2,637	1,944	4,715	2,244	5,870	846	556	5,877
1968	7,586	2,098	2,783	1,805	3,697	1,811	4,225	502	557	5,971
1969	8,065	1,837	3,192	1,991	4,514	2,150	6,390	759	530	6,338
1970	10,379	1,698	3,752	2,259	5,633	2,269	7,004	834	601	6,930
1971	9,843	1,733	3,425	2,352	5,426	2,052	6,291	693	441	6,149
1972	9,867	1,776	3,428	2,407	5,673	2,505	7,875	489	429	9,527
1973 (1) ^b	8,781	1,198	3,665	2,444	4,866	1,657	5,114	754	696	7,535
1974 (1)	7,392	1,562	3,003	2,221	5,437	2,060	7,165	613	493	7,045
1975 (1)	8,109	1,672	2,862	2,038	6,441	1,994	6,387	974	706	7,846
1976 (1)	8,637	1,478	2,699	1,844	5,023	1,818	6,045	946	686	6,973
1977 (1)	8,226	1,546	2,678	1,952	4,626	1,616	4,971	688	702	7,490
1978 (1)	7,695	1,593	3,808	2,978	4,497	2,162	5,664	833	423	7,125
1979 (1)	8,444	1,889	3,388	2,920	5,278	2,555	6,070	774	606	9,135
1980 (2)	8,003	1,459	3,857	2,925	4,903	2,050	5,420	1,446	688	7,690
1981 (2)	6,757	1,479	3,555	2,515	4,076	2,403	4,227	825	594	7,253
1982 (1)	6,684	1,690	3,159	2,247	3,879	2,540	4,112	674	543	6,549
1983 (2)	7,107	1,536	2,923	2,574	3,381	2,237	4,086	866	528	8,788
1984 (2)	5,974	1,799	3,979	1,804	3,870	2,223	3,664	849	569	8,402
1985	5,475	1,410	2,506	1,873	3,756	1,925	2,935	701	411	6,235
1955-84										
Ave.	8,409	1,494	3,191	2,126	4,933	1,981	5,814	716	572	6,984
Percent Change In 1985 from:										
1984	-8	-22	-37	+4	-5	-13	-20	-17	-28	-26
1955-84										
Ave.	-35	-6	-21	-17	-24	-3	-50	-2	-28	-11

^a All duck indexes adjusted for visibility bias.

^b Percent increase () due to inclusion of Wisconsin.

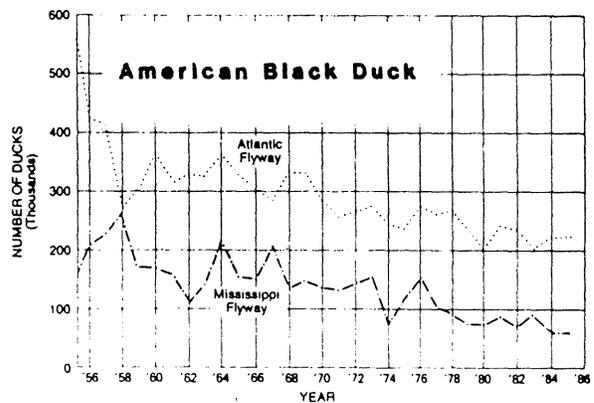
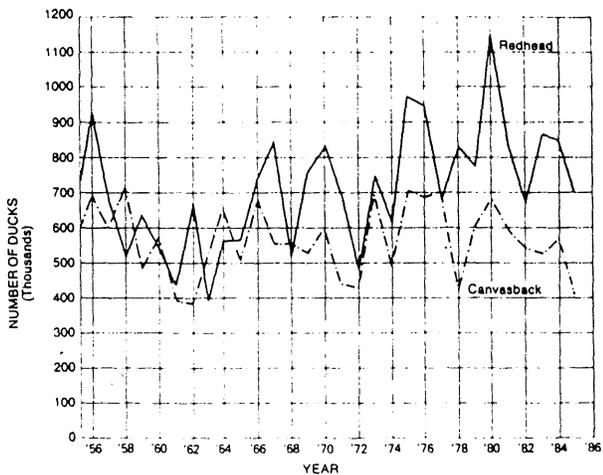
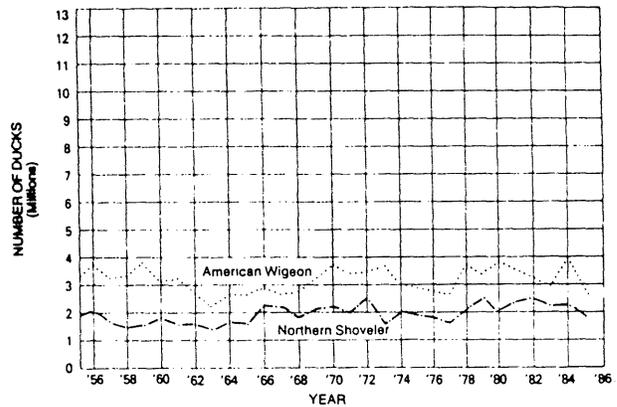
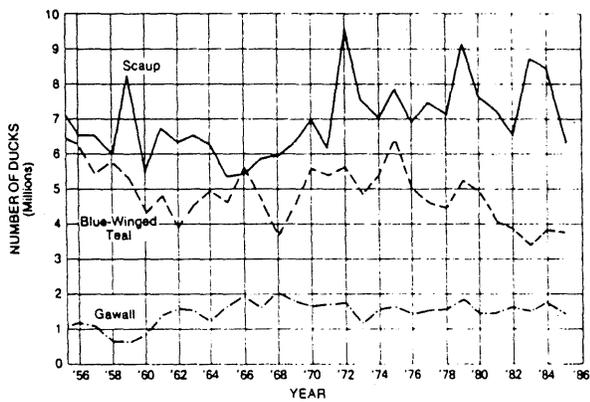
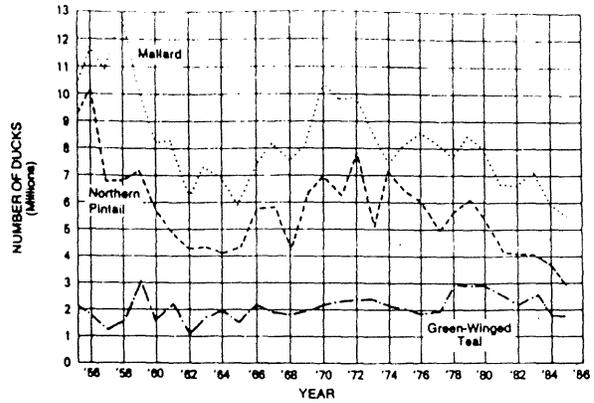
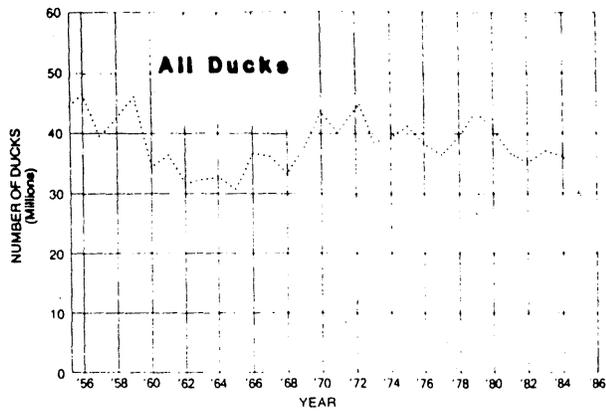


Figure 23. North American breeding population estimates for selected ducks, and winter population estimates for black ducks in 2 flyways, 1955-1985 (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32 pp.).

Table 21. Summary of the number of May (adjusted for visibility) and July ponds in the southern portions of Alberta, Saskatchewan, and Manitoba, 1961-1985 (Taken from: U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32pp.).

Year	May Ponds (thousands)	July Ponds (thousands)	% of Ponds remaining
1961	2,006	562	28.0
1962	2,531	814	32.2
1963	2,499	1,813	72.5
1964	3,445	1,308	38.0
1965	4,415	2,231	50.5
1966	4,672	1,979	42.4
1967	4,732	1,498	31.7
1968	1,938	803	41.4
1969	3,530	1,659	47.0
1970	4,957	2,613	52.7
1971	4,096	2,017	49.2
1972	4,065	1,313	32.3
1973	2,937	1,736	59.1
1974	6,693	2,753	41.1
1975	6,267	2,410	38.5
1976	5,057	2,138	42.3
1977	2,278	1,391	61.1
1978	3,622	1,520	42.0
1979	4,859	1,803	37.1
1980	2,141	899	42.0
1981	1,443	873	60.5
1982	3,184	1,662	52.2
1983	3,906	2,264	58.0
1984	2,458	1,270	51.7
1985	4,283	1,565	36.5
1961-84 Average	3,655	1,639	46.0
% Change In 1985 From:			
1984	+74	+23	-29
1961-84 Average	+17	-5	-21

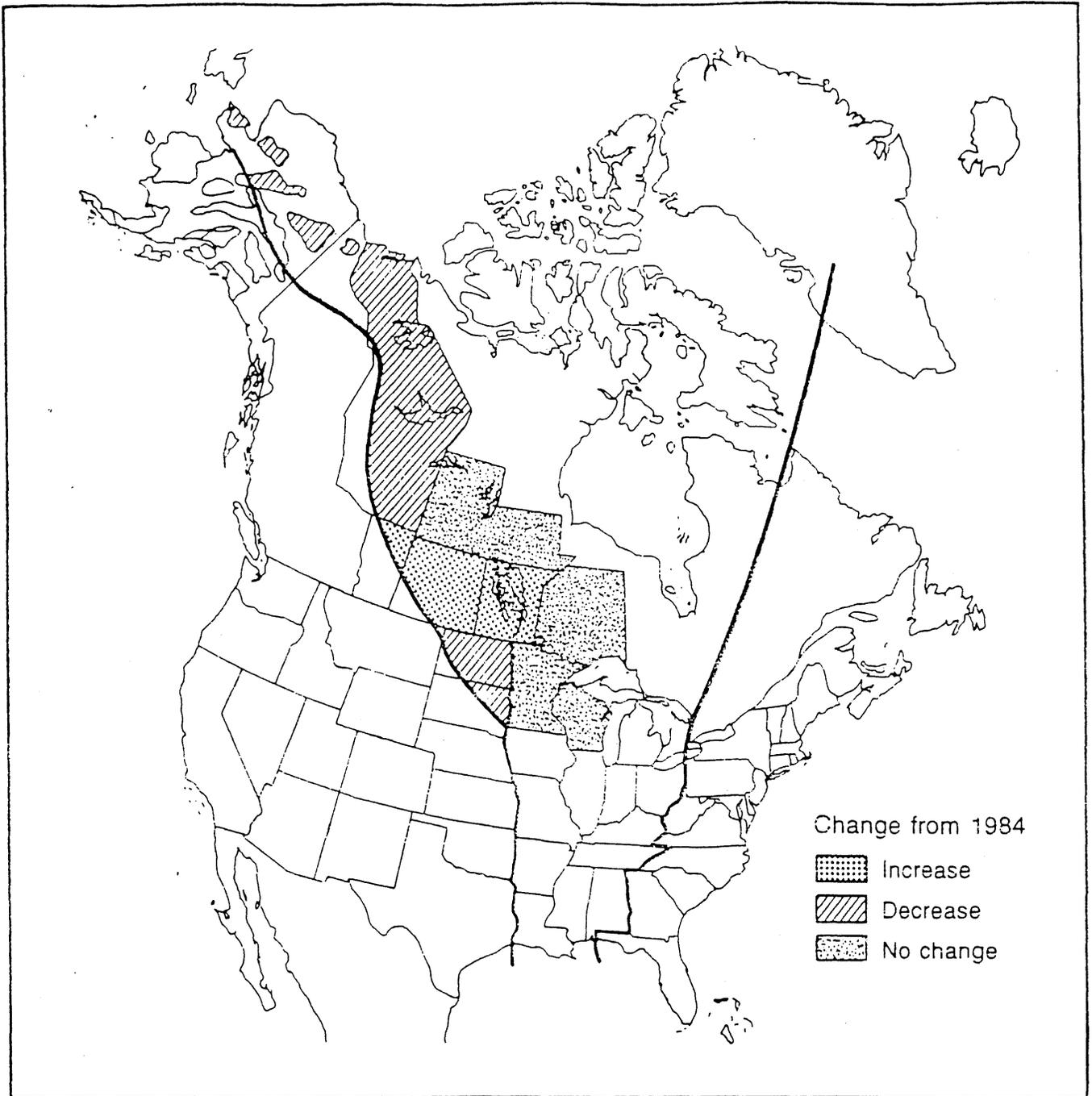


Figure 24. Fall 1985 duck flight forecast for the Mississippi flyway, change from 1984; FORECAST: Decrease (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32 pp.).

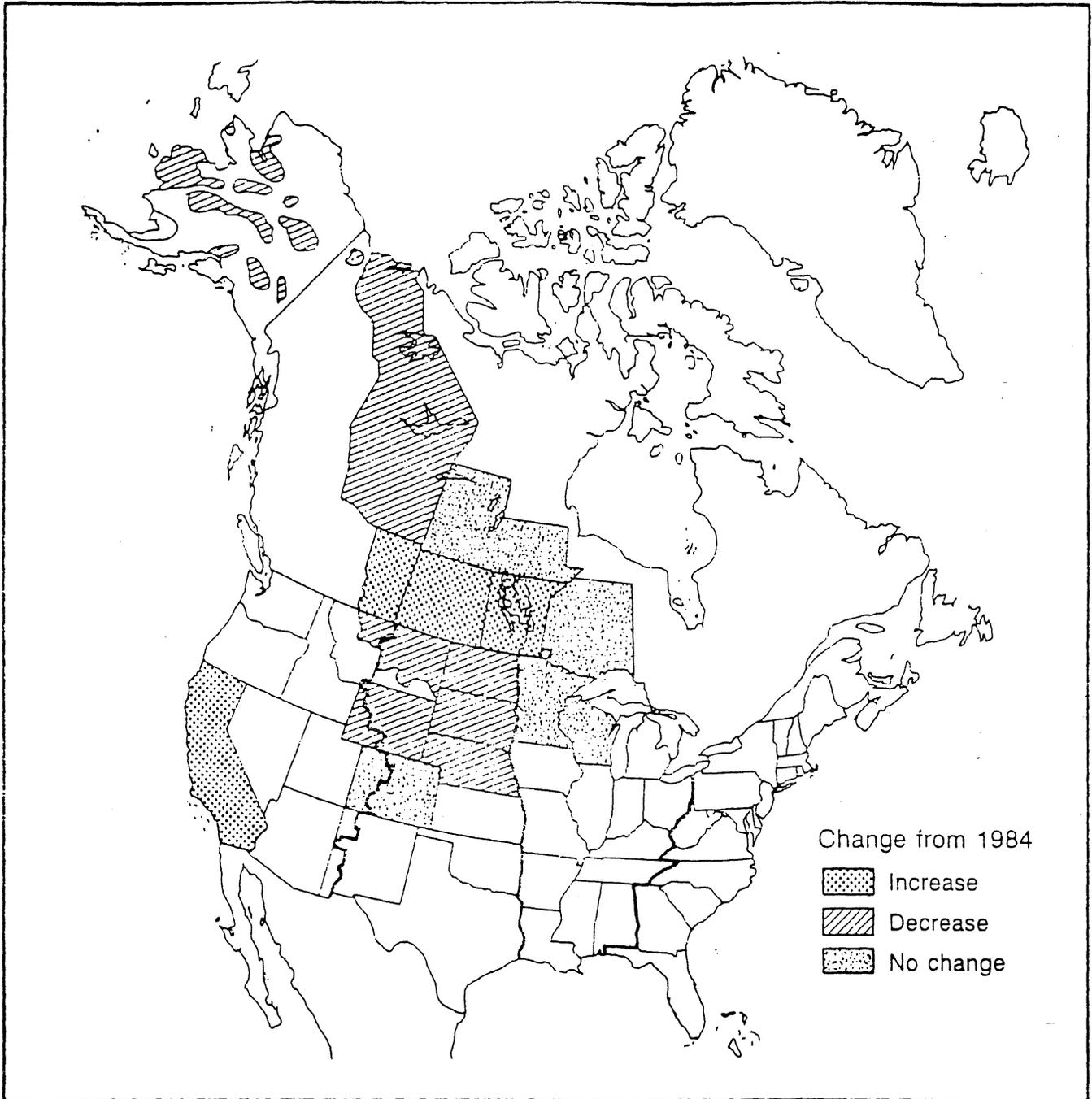


Figure 25. Fall 1985 duck flight forecast for Canada and U.S., change from 1984; FORECAST: Decrease (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1985. 1985 Status of waterfowl and fall flight forecast; July 25, 1985. U.S.F.W.S. Adm. Rep. 32 pp.).

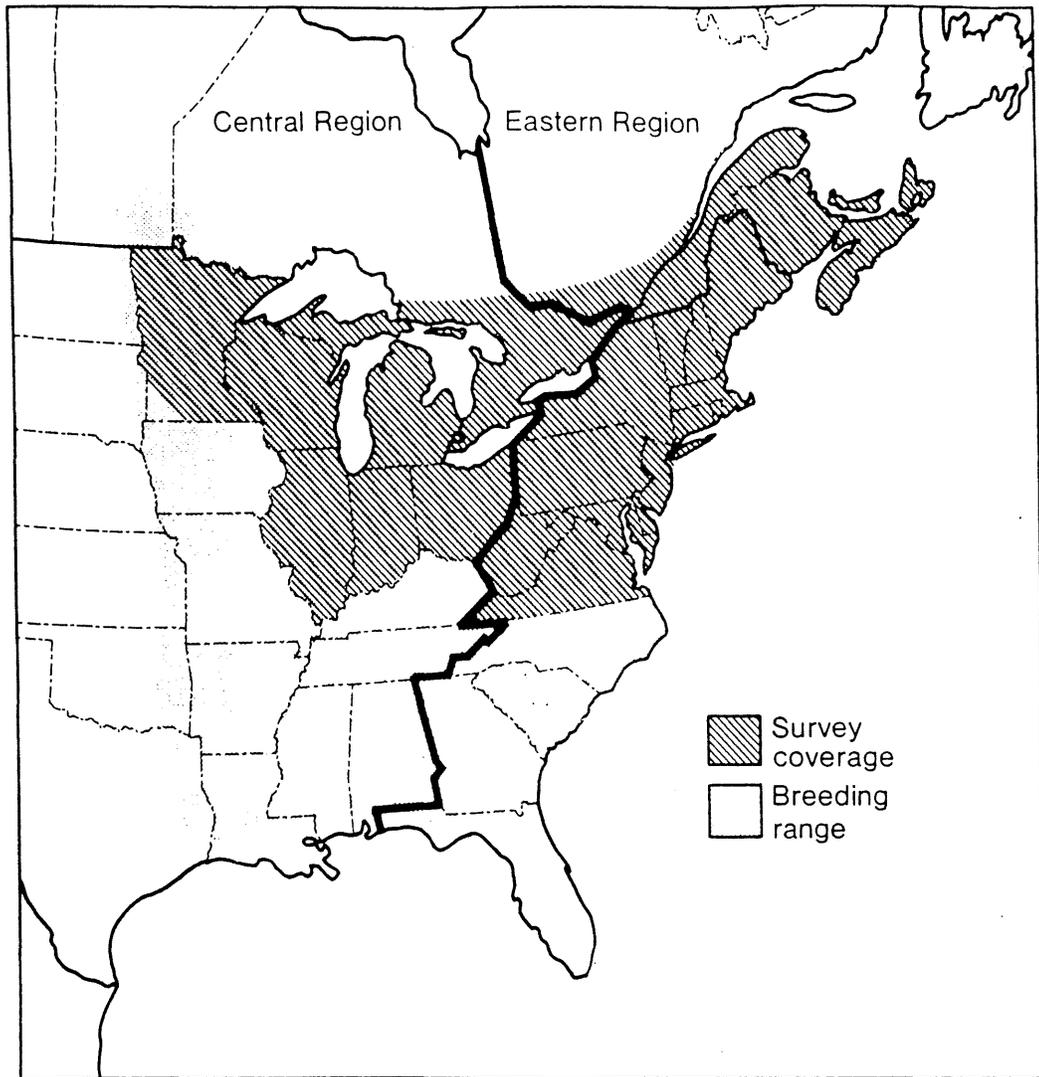


Figure 26. Approximate woodcock breeding range and regions covered by singing-ground survey, 1985 (Taken from: Tautin, J. 1985. 1985 Status of American Woodcock. U.S.F.W.S. Adm. Rep., June 1985. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

Table 22. Woodcock breeding population indices in the U.S. Central Region as indicated by singing-ground surveys in 1984 and 1985 (Taken from: Tautin, J. 1985. 1985 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1985. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

State or Province	Number of <u>routes conducted</u>		Comparable routes ^a	Woodcock heard per <u>comparable route</u>		Percent change
	1984	1985		1984	1985	
IL	10	9	100	0.04	0.08	100.0
IN	25	21	63	0.35	0.32	-8.6
MI	125	108	96	4.80	5.06	5.4
MN	79	75	104	2.90	3.14	8.3
OH	38	33	77	0.82	0.69	-15.9
ON	96	98	87	4.82	5.69	18.0
WI	83	71	104	2.14	2.16	0.9

^a Includes routes carried as constant zero routes.

^b Computer for States or Provinces where one comparable route represents less than 2,000 sq. mi. (5,180 sq. km.) and more than 0.5 birds were heard per route. Data from Delaware, Illinois, Indiana, Rhode Island, Virginia and Quebec did not meet these criteria.

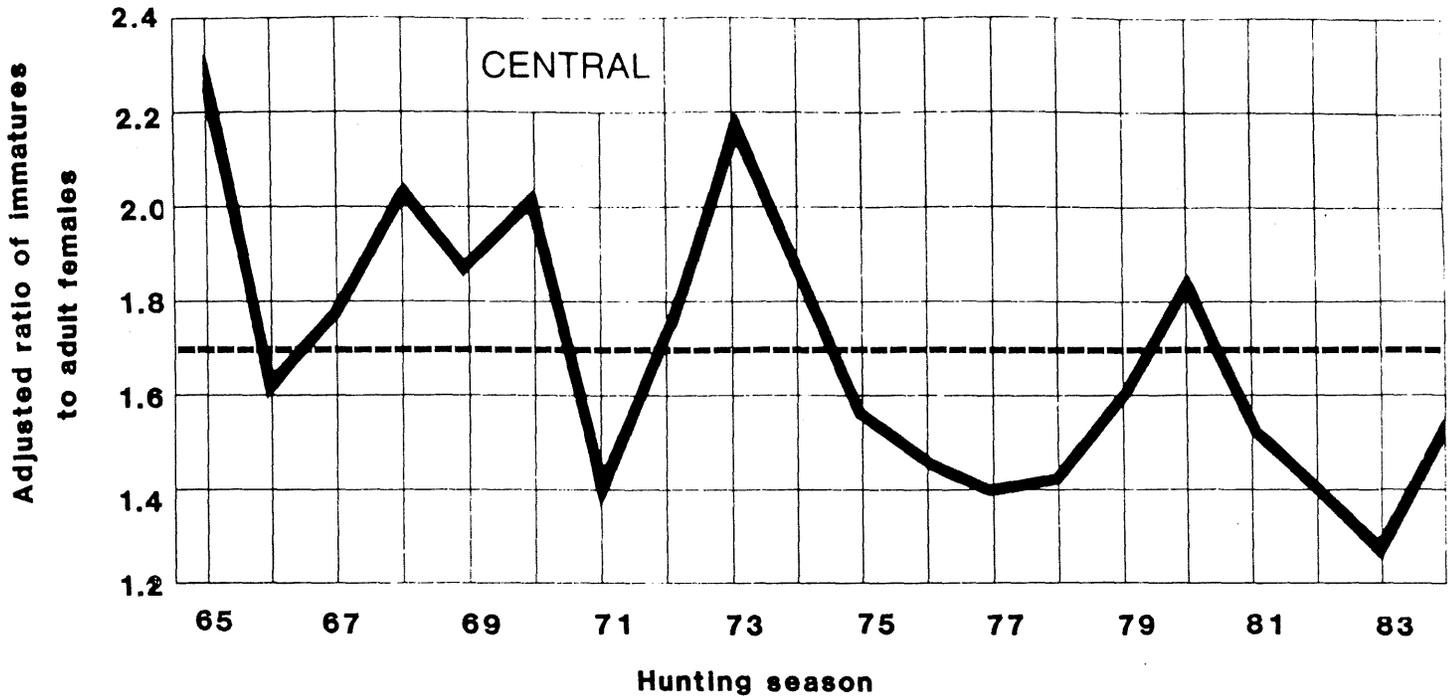


Figure 27. Adjusted index of American woodcock recruitment, 1965-1984, base year = 1969 (Taken from: Tautin, J. 1985. 1985 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1985. Office Migr. Bird Manage., Laurel, MD. 14 pp.).

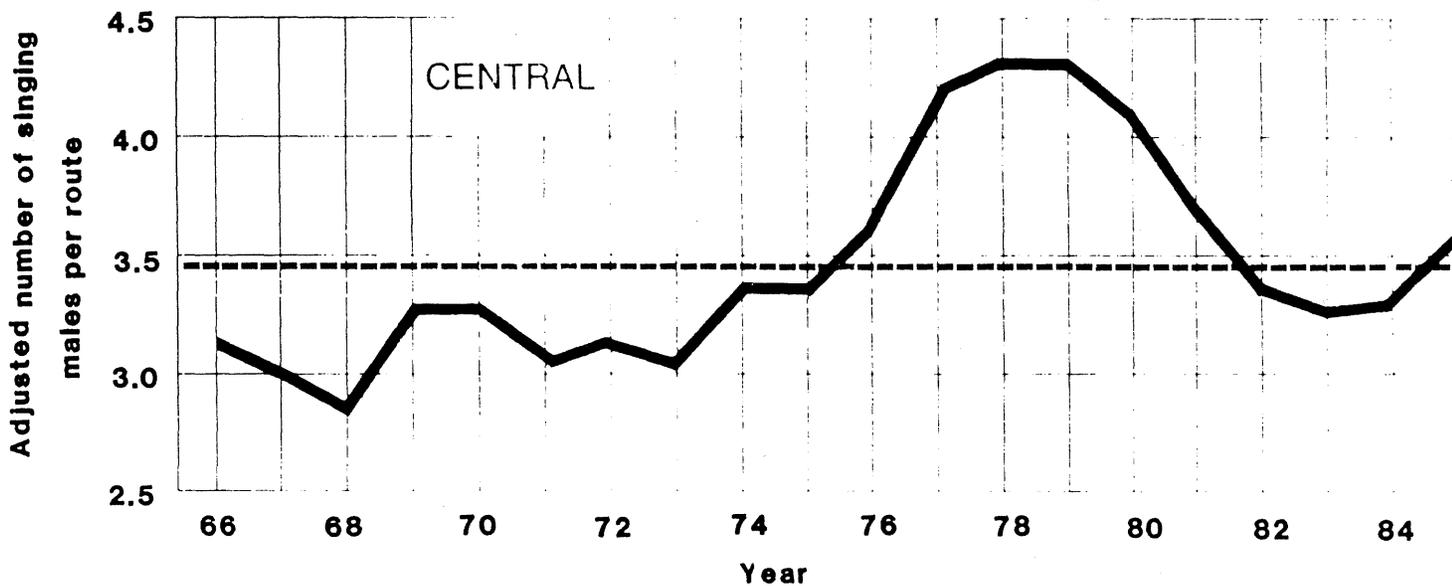


Figure 28. Adjusted index of the American woodcock breeding population, 1966-85 base year = 1970 (Taken from: Tautin, J. 1985. 1985 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1985. Office Migr. Bird Manage., Laurel, MD. 14 pp.).

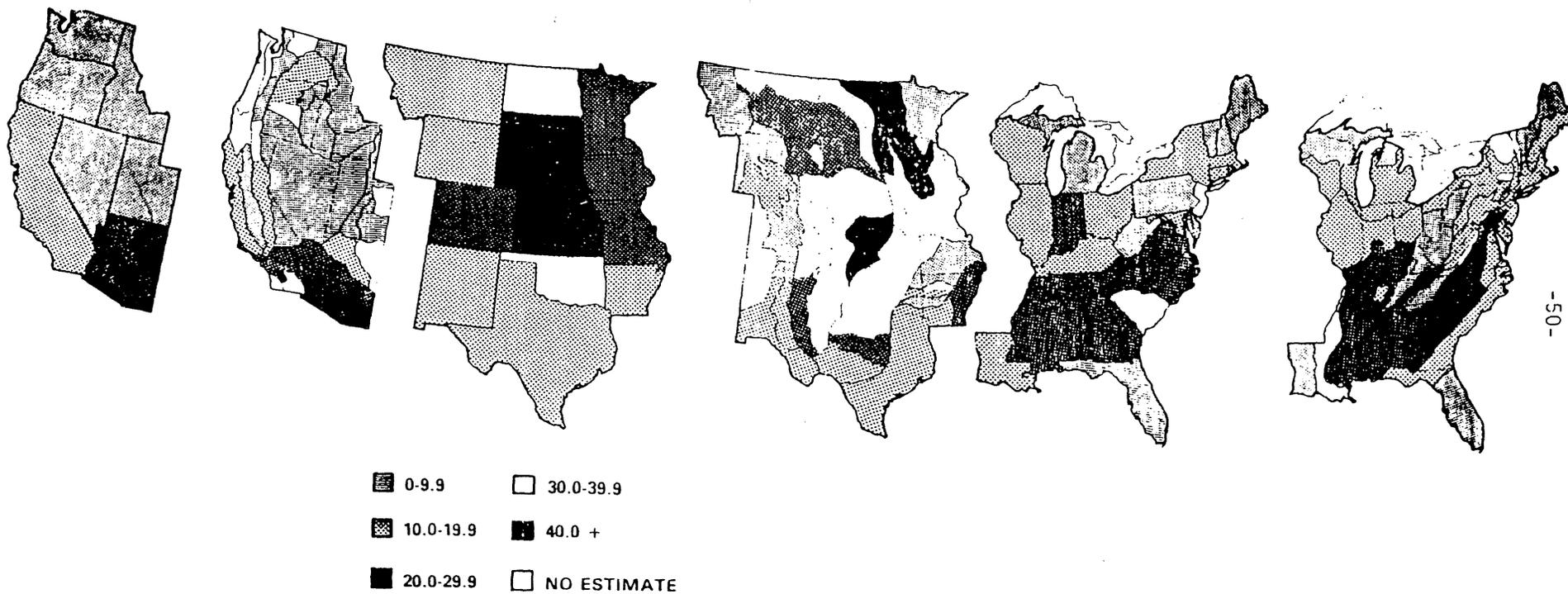
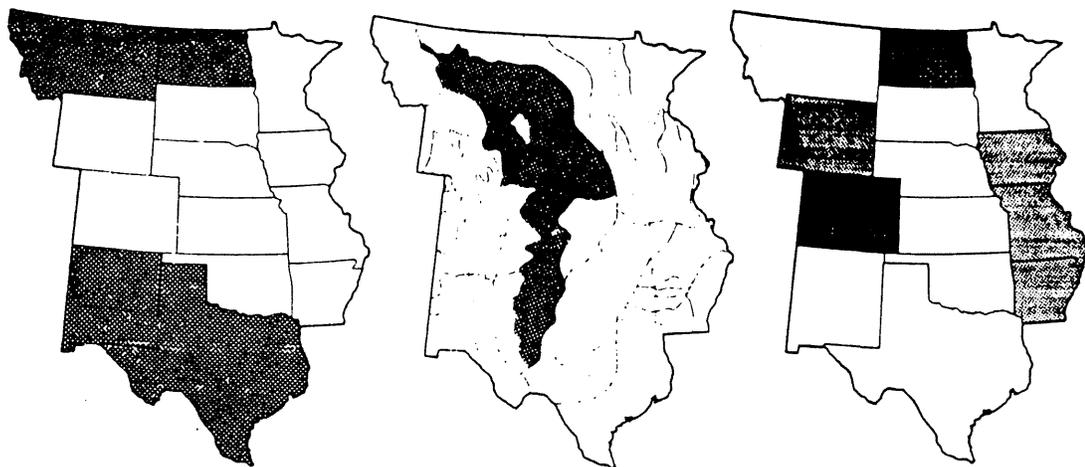
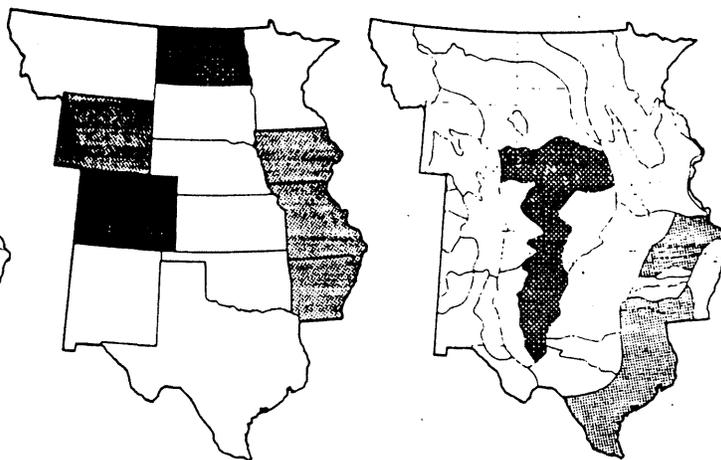


Figure 29. Mean number of mourning doves heard per route by state and physiographic region, 1985 (Taken from: Dolton, D. D. 1985. 1985 Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 11pp.).



DECREASE (P<0.05)
 NO CHANGE (P>0.05)
 INCREASE (P<0.05)

Figure 30. Changes in the number of mourning doves heard per route by state and physiographic region in the Central Management Unit, 1984-1985 (Taken from: Dolton, D. D. 1985. Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 11pp.).



DECREASE (P<0.05)
 NO CHANGE (P>0.05)
 INCREASE (P<0.05)

Figure 31. Trends in number of mourning doves heard per route by state and physiographic region in the Central Management Unit, 1966-1985 (Taken from: Dolton, D. D. 1985. Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 11pp.).

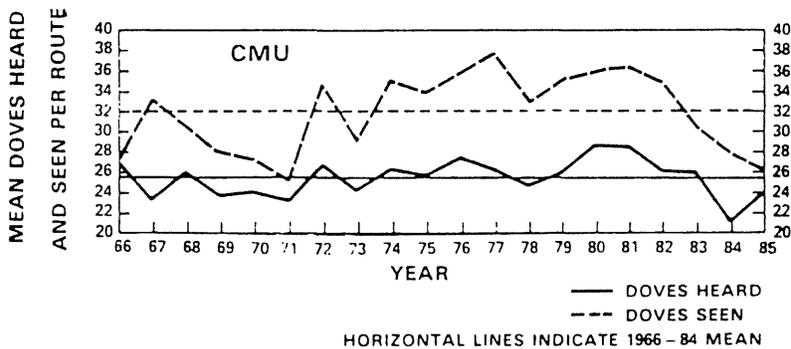


Figure 32. Population indices of breeding mourning doves in the Central Management Unit (CMU), 1966-1985. (Taken from: Dolton, D. D. 1985. Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 11pp.).

HUNTING
HARVEST STATISTICS

Table 23. Resident small game hunter^a response to mail surveys, 1979-1984.

Year	Number mailed	Number not delivered	Delivered questionnaires completed and returned	
			Number	Percent
1979	5,696	443	4,504	85.7
1980	6,434	385	4,963	82.0
1981	6,656	399	5,419	86.6
1982	5,963	266	4,792	84.1
1983	4,551	269	3,325	77.7 ^b
1984	4,096	127	3,280	82.6

^a Includes individual and combination sportsman, regular small game, and senior licensees.

^b Includes only those survey returns received by 25 April, 1984.

Table 24. Use of resident small game hunter licenses^a, 1979-1984.

	Returns from mail survey	Projections from license sales
1979		
Hunted	3,964 (88.0%)	296,766
Did not hunt	<u>540 (12.0%)</u>	<u>40,468</u>
	4,504 (100.0%)	337,234
1980		
Hunted	4,288 (86.4%)	311,717
Did not hunt	<u>675 (13.6%)</u>	<u>49,066</u>
	4,963 (100.0%)	360,783
1981		
Hunted	4,461 (82.3%)	306,843
Did not hunt	<u>958 (17.7%)</u>	<u>65,992</u>
	5,419 (100.0%)	372,835
1982		
Hunted	3,908 (81.6%)	257,546
Did not hunt	<u>884 (18.4%)</u>	<u>58,258</u>
	4,792 (100.0%)	315,804
1983		
Hunted	2,805 (84.4%)	232,973
Did not hunt	<u>520 (15.6%)</u>	<u>43,061</u>
	3,325 (100.0%)	276,034
1984		
Hunted	2,663 (81.2%)	211,740
Did not hunt	<u>617 (18.8%)</u>	<u>49,024</u>
	3,280 (100.0%)	260,764

^a Includes individual and combination sportsman, regular small game, and senior licenses.

Table 25. Estimated number of hunters and estimated take per hunter for various species, 1979-1984.

Species	Estimated number of hunters (thousands)						Estimated take per hunter					
	1979	1980	1981	1982	1983	1984	1979	1980	1981	1982	1983	1984
Ducks	155	128	138	134	117	134	9.4	9.3	8.4	8.1	10.6	10.8
Canada goose	57	51	47	52	41	51	1.5	1.4	1.4	1.6	1.6	1.6
Other geese	*	27	15	11	10	9	*	1.2	1.0	0.7	0.7	0.8
American coot	24	19	13	11	12	9	5.0	3.1	4.0	4.3	4.7	4.9
Common snipe	8	12	7	4	6	5	2.4	1.9	2.9	3.2	2.8	4.0
Rails/gallinules	2	*	1	1	2	1	2.9	*	1.6	3.1	1.2	1.4
American woodcock	22	25	23	20	16	17	2.8	2.7	2.8	2.7	3.9	4.3
Ring-necked pheasant	143	147	173	125	86	65	2.3	3.2	3.3	2.1	3.5	2.3
Ruffed grouse	151	150	145	115	78	87	4.7	6.3	3.9	2.6	2.4	3.7
Spruce grouse	18	25	15	13	9	12	1.5	1.3	1.7	1.1	1.1	1.7
Sharp-tailed grouse	24	27	16	14	9	9	2.3	2.1	2.2	1.2	1.1	0.8
Gray partridge (hun)	33	38	32	21	21	15	3.3	2.7	3.4	2.5	3.6	2.1
Gray squirrel ^a	80	78	70	53	38	39	5.1	6.6	5.9	5.1	5.3	5.3
Fox squirrel ^a			48	39	28	26			4.6	4.2	4.5	4.1
Eastern cottontail			60	36	29	22			4.4	4.4	3.8	3.4
White-tailed jack rabbit	18	22	17	11	7	6	2.5	2.4	2.7	2.6	1.9	1.9
Snowshoe hare	28	37	25	15	9	7	4.9	7.8	4.4	4.2	2.3	2.3
Raccoon	16	20	19	13	11	12	6.0	4.4	7.0	6.3	8.0	9.4
Red fox	13	17	19	12	11	11	1.6	1.7	1.9	1.5	2.0	2.3
Gray fox	4	8	4	3	2	3	1.1	0.4	1.0	0.9	0.9	1.4
Coyote	3	8	4	3	3	3	1.1	0.5	0.9	0.8	0.8	1.8
Badger	*	7	1	1	1	1	*	0.7	1.1	1.9	0.3	3.9

* No estimate made.

^a Estimates for gray and fox squirrels prior to 1981 are for both species combined.

Table 26. Resident small game hunting license sales and estimated hunter harvest, 1979-1984.

	1979	1980	1981	1982	1983	1984
Small game license sales	337,234	360,783	372,835	314,477	276,034	260,764
Federal duck stamp sales	159,068	158,311	142,345	134,803	138,161	138,820
State duck stamp sales	145,832	149,483	139,011	125,975	126,925	132,624
Pheasant stamp sales	-	-	-	-	113,889	81,969
Estimated harvest ^a (thousands)						
Ducks ^b	1,462	1,199	1,167	1,071	1,235	1,443
Canada goose ^b	85	72	71	81	62	82
Other geese ^b	*	33	16	7	8	8
American coot ^b	123	58	49	49	55	48
Common snipe	19	23	21	14	17	20
Rails/gallinules	7	*	2	3	2	0 1
American woodcock	60	67	63	54	58	70
Ring-necked pheasant	328	466	573	265	299	148
Ruffed grouse	709	941	576	302	183	320
Spruce grouse	27	34	24	14	10	21
Sharp-tailed grouse	54	56	34	17	10	7
Gray partridge (hun)	108	101	110	52	74	31
Gray squirrel ^c	403	514	409	271	199	208
Fox squirrel ^c			216	162	126	107
Eastern cottontail	188	249	263	135	98	61
White-tailed jack rabbit	45	52	45	27	13	11
Snowshoe hare	136	286	109	61	21	16
Raccoon	97	88	136	80	87	114
Red fox	21	28	37	19	21	26
Gray fox	4	3	4	2	2	4
Coyote (brush wolf)	3	4	4	2	3	5
Badger	No season	5	2	2	<1	2

* No estimate made.

^a Estimates based upon response of hunters to questionnaires.

^b U.S. Fish and Wildlife Service harvest estimates for 1984 are:

Ducks	967,667	Other geese	3,072
Canada goose	74,704	American coot	17,950

^c Harvest estimates for gray and fox squirrels prior to 1981 are for both species combined.

Table 27. Mail survey results of nonresident small game hunters, 1979-1984.

	1979	1980	1981	1982	1983	1984
Nonresident licenses issued	3,902	3,981	4,271	3,1874	2,911	3,060
Questionnaires						
Number mailed	622	222	280	361	384	237
Number not delivered	74	85	21	21	25	13
Number returned	491 (89.6%)	117 (85.4%)	214 (82.6%)	281 (82.6%)	280 (78.0%) ^a	192 (86.0%)
Total nonresidents and percent of all nonresidents hunting:						
Ducks	2,100 (54%)	2,000 (50%)	2,055 (48%)	1,840 (58%)	1,500 (52%)	2,090 (68%)
Canada goose	700 (18%)	600 (15%)	718 (17%)	830 (26%)	580 (20%)	820 (27%)
Ruffed grouse	1,500 (38%)	2,000 (50%)	1,656 (39%)	960 (30%)	620 (21%)	1,000 (33%)
Ring-necked pheasant	800 (21%)	800 (20%)	1,436 (34%)	680 (21%)	500 (17%)	390 (13%)
Raccoon	400 (10%)	200 (5%)	125 (3%)	100 (3%)	170 (6%)	130 (4%)
Total nonresident take:						
Ducks	20,000	17,000	19,000	15,000	17,500	24,000
Canada goose	1,000	1,000	2,000	1,500	1,300	1,300
Ruffed grouse	9,000	16,000	7,000	3,000	1,700	4,200
Ring-necked pheasant	2,000	2,000	5,000	1,500	2,200	1,500
Raccoon	3,000	1,000	1,000	700	1,400	1,100

^a Includes only those survey returns received by 25 April, 1984.

^b Nonresident raccoon hunters were required to purchase a nonresident raccoon hunting license for the first time in 1979 in addition to the nonresident small game license. There is a season bag limit of eight raccoons under this license.

Raccoon take per hunter:	Resident	Nonresident
1978	6	14
1979	6	6
1980	4	5
1981	7	7
1982	6	7
1983	8	8
1984	9	8

Table 28. Species composition of the Minnesota waterfowl harvest, 1983 and 1984 (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1985. Waterfowl harvest and hunter activity in the United States during the 1984 hunting season. U.S.F.W.S. Adm. Rep. Office Migr. Bird. Manage., Laurel, Maryland. 27 pp.).

Species	1983		1984 ^a		Percent change
	Harvest	Pct of harvest	Harvest	Pct of harvest	
Mallard	259,700	29.23	285,000	29.45	10
Domestic mallard	600	0.07	200	0.02	-67
American black duck	1,900	0.21	1,700	0.18	-11
Black x mallard	200	0.02	200	0.02	0
Gadwall	15,900	1.79	20,500	2.12	29
American wigeon	37,400	4.21	28,400	2.93	-24
Green-winged teal	59,900	6.74	79,500	8.22	33
Blue-winged/cinnamon teal	118,000	13.28	115,200	11.90	-2
Northern shoveler	16,300	1.83	9,700	1.00	-40
Northern pintail	19,200	2.16	22,400	2.32	17
Wood duck	151,600	17.06	174,100	17.99	15
Redhead	28,500	3.21	24,700	2.55	-13
Canvasback	9,700	1.09	6,800	0.70	-30
Greater scaup	3,100	0.35	3,400	0.35	10
Lesser scaup	45,500	5.12	71,100	7.35	56
Ring-necked duck	103,100	11.60	96,200	9.94	-7
Goldeneyes	2,400	0.27	8,000	0.83	233
Bufflehead	6,800	0.77	10,500	1.08	54
Ruddy duck	5,800	0.65	5,300	0.55	-9
Scoters	700	0.08	800	0.08	14
Hooded merganser	2,000	0.23	3,600	0.37	80
Other mergansers	200	0.02	500	0.05	150
Other ducks	<100	0.00	<100	0.00	0
Total	888,500	100.00	967,800	100.00	9

^a 1984 estimates are not final but are projections based on records of duck stamp sales through March 1985.

Table 29. Top 10 states in number of adult waterfowl hunters, 1984, and number of hunter-days and retrieved duck kill, in each (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1985. Waterfowl harvest and hunter activity in the United States during the 1984 hunting season. U.S.F.W.S. Adm. Rep. Office Migr. Bird Manage., Laurel, Maryland. 27 pp.).

State	Number of adult waterfowl hunters	Number of hunter-days	Retrieved duck kill	Ducks retrieved per hunter-day
Minnesota	126,816	948,072	967,667	1.02
Louisiana	114,344	1,006,815	1,847,656	1.84
Texas	96,546	706,070	938,872	1.33
California	94,343	759,105	991,524	1.31
Wisconsin	84,035	656,939	476,404	0.73
Pennsylvania	65,860	398,395	128,862	0.32
New York	59,270	325,937	272,545	0.84
Washington	58,111	414,773	443,535	1.07
Illinois	51,747	466,904	322,819	0.69
Michigan	46,721	405,070	331,633	0.82
Mississippi Flyway	644,668	5,420,704	5,651,337	1.04
United States	1,660,194	12,485,065	12,233,945	0.98

Table 30. Summary of wild turkey harvest, 1978-1985.

Year	Season	No. of hunters ^b	Number of turkeys taken			Percent success ^b
			North zones ^a	South zones ^a	Total	
1978	1	140	25	14	39	27.9
	2	140	9	12	31	22.1
	3	<u>140</u>	<u>15</u>	<u>9</u>	<u>24</u>	<u>17.1</u>
	Total	420	59	35	94	22.4
1979	1	210	31	14	45	21.4
	2	210	18	9	27	12.9
	3	210	16	10	26	12.4
	4	<u>210</u>	<u>7</u>	<u>11</u>	<u>18</u>	<u>8.6</u>
	Total	840	72	44	116	13.8
1980	1	300	15	19	34	11.3
	2	300	17	7	24	8.0
	3	300	11	13	24	8.0
	4	<u>300</u>	<u>11</u>	<u>5</u>	<u>16</u>	<u>5.3</u>
	Total	1,200	54	44	98	8.2
1981	1	375	17	24	41	10.9
	2	375	13	16	29	7.7
	3	375	5	19	24	6.4
	4	<u>375</u>	<u>5</u>	<u>14</u>	<u>19</u>	<u>5.1</u>
	Total	1,500	40	73	113	7.5
1982	1	500	9	20	29	5.8
	2	500	11	23	34	6.8
	3	500	6	16	22	4.4
	4	<u>500</u>	<u>7</u>	<u>14</u>	<u>21</u>	<u>4.2</u>
	Total	2,000	33	73	106	5.3
1983	1	525	10	22	32	6.1
	2	525	14	29	43	8.2
	3	525	4	22	26	5.0
	4	<u>525</u>	<u>3</u>	<u>12</u>	<u>15</u>	<u>2.9</u>
	Total	2,100	31	85	116	5.5
1984	1	600	16	41	57	9.5
	2	600	6	35	41	6.8
	3	600	3	30	33	5.5
	4	600	3	21	24	4.0
	5	<u>600</u>	<u>4</u>	<u>19</u>	<u>23</u>	<u>3.8</u>
	Total	3,000	32	146	178	5.9
1985	1	550	12	66	78	14.2
	2	550	8	84	92	16.7
	3	550	10	49	59	10.7
	4	550	2	43	45	8.2
	5	<u>550</u>	<u>4</u>	<u>45</u>	<u>49</u>	<u>8.9</u>
	Total	2,750	36	287	323	11.7

^a The North Zones are located from Red Wing to and including the Whitewater WMA; the South Zones extend from the southern edge of Whitewater WMA to the Iowa Border. The zone boundaries have changed annually and are presented in this manner for comparison.

^b At 100% participation.

Table 31. Resident deer hunting license sales and registered harvest statistics, 1974-1984 (revised license sales figures).

Year	Number of licenses sold			Number of deer registered				Percent success ^a		
	Firearms ^b	Archery	Muzzle-loader ^c	Firearms	Archery	Muzzle-loader	Total	Firearms	Archery	Muzzle-loader
1974	296,248	30,701	---	64,997	2,176	---	67,173	21.9	6.8	---
1975	327,596	31,836	---	63,604	2,265	---	65,869	19.4	7.1	---
1976	263,868	21,773	---	28,613	1,167	---	29,780	10.8	5.4	---
1977	287,271	29,404	1,000	45,918	2,609	32	48,550	16.0	8.9	3.2
1978	307,910	32,546	3,145	47,372	2,608	346	50,326	15.4	8.0	11.0
1979	312,754	35,657	3,128	44,340	2,578	318	47,236	14.2	7.2	10.1
1980	344,516	41,328	2,089	63,539	3,641	294	72,474	19.9	8.8	14.1
1981	369,425	50,063	2,238	93,027	5,535	385	98,947	25.2	11.1	17.2
1982	369,018	54,062	2,325	93,045	5,566	441	99,052	25.2	10.3	19.0
1983	391,099	55,803	2,400	132,457	5,977	652	139,086	33.9	10.7	27.2
1984	396,074	61,576	2,376	132,042	6,367	532	138,941	33.3	10.3	22.4

^a Unadjusted for nonresident harvest, success rates are therefore slightly (<1%) exaggerated.

^b Including muzzleloader licenses.

^c No special muzzleloader seasons were held before 1977. Figures for muzzleloader hunter numbers and percent success are estimates, based on samples of license receipts.

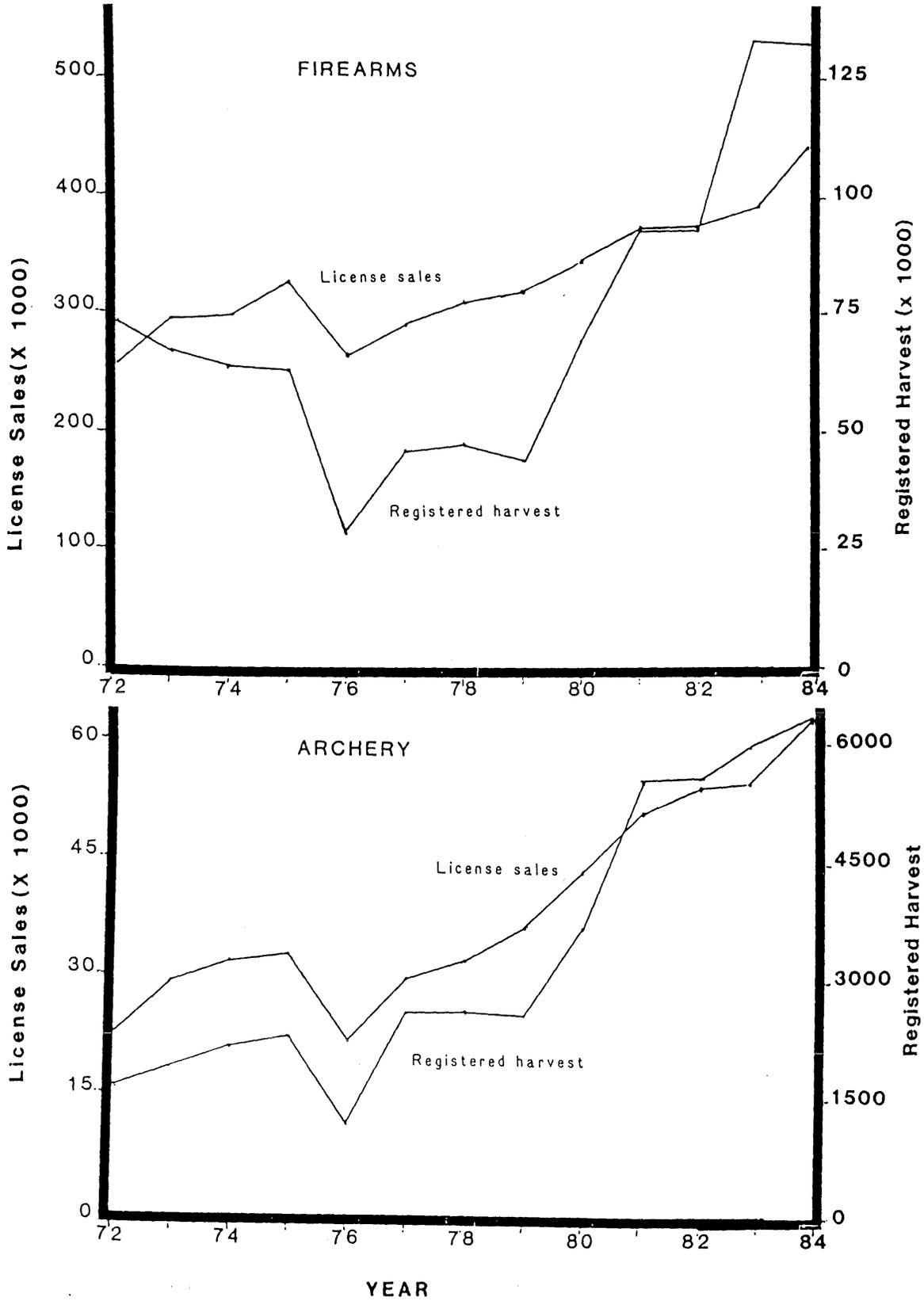


Figure 33. Firearms (above) and archery (below) deer hunting license sales and registered harvests, 1972-1984.

Table 32. Firearms deer harvest and success rates by DMU and Sub-DMU, 1984.

Unit	Permits Issued	Antlerless Registered	Permit Success	Bucks Registered	Total Reg. Kill
Red River W	664	291	43.8%	326	617
Red River E	5,200	2,949	56.7%	2,280	5,229
Red River Total	5,864	3,240	55.3%	2,606	5,846
Agassiz Total	10,795	5,600	51.9%	3,870	9,470
Rainy River W	4,974	2,480	49.9%	1,267	3,747
Rainy River C	1,500	896	59.7%	1,129	2,025
Rainy River E	2,000	1,054	52.7%	1,168	2,222
Rainy River Total	8,474	4,430	52.3%	3,564	7,994
Superior W	1,750	896	51.2%	929	1,825
Superior C	500	288	57.6%	687	975
Superior E	0	3	-	417	420
Superior Wild.	0	3	-	38	41
Superior IR	0	0	-	0	0
Superior Total	2,250	1,190	52.9%	2,071	3,261
Itasca NW	6,500	3,566	54.9%	2,478	6,044
Itasca SW	6,000	3,315	55.3%	3,013	6,328
Itasca NE	2,000	988	49.4%	1,949	2,937
Itasca SE	6,000	2,338	39.0%	2,065	4,403
LLIR	1,500	623	41.5%	608	1,231
Bemidji	12,000	5,156	43.0%	2,754	7,910
Itasca Total	34,000	15,986	47.0%	12,867	28,853
Mille Lacs W	12,795	5,088	39.8%	2,391	7,479
Mille Lacs C	13,500	7,096	52.6%	3,610	10,706
Mille Lacs E	6,300	3,633	57.7%	3,629	7,262
WEIR	400	256	64.0%	646	902
Mille Lacs Total	32,995	16,073	48.7%	10,276	26,349
Big Woods N	16,600	8,151	49.1%	6,497	14,648
Big Woods C	6,200	2,868	46.3%	2,494	5,362
Big Woods Metro	1,980	765	38.6%	957	1,722
Big Woods SE	13,082	6,498	49.7%	4,982	11,480
Big Woods Total	37,862	18,282	48.3%	14,930	33,212
Prairie N	3,603	1,735	48.2%	1,764	3,499
Prairie River	3,900	2,245	57.6%	2,258	4,503
Prairie SW	4,325	2,807	64.9%	3,260	6,067
Prairie SE	2,550	1,439	56.4%	1,460	2,899
Prairie Total	14,378	8,226	57.2%	8,742	16,968
Unknown	-	49	-	40	89
TOTAL	146,618	73,076	49.8%	58,966	132,042

Table 33. Archery deer harvest by county, 1979-1984.

County	1979	1980	1981	1982	1983	1984
Aitkin	34	68	110	107	94	88
Anoka	74	105	169	147	156	168
Becker	10	33	46	52	65	63
Beltrami	29	63	97	130	109	108
Benton	6	7	18	28	29	25
Big Stone	10	25	38	38	42	56
Blue Earth	35	73	80	78	116	94
Brown	27	36	46	48	47	50
Carlton	6	24	30	31	20	30
Carver	9	24	30	34	49	50
Cass	30	48	108	131	118	147
Chippewa	71	114	138	78	92	90
Chisago	31	38	68	78	95	103
Clay	19	44	75	84	94	123
Clearwater	3	17	21	21	27	20
Cook	0	1	12	7	5	9
Cottonwood	60	71	87	73	99	54
Crow Wing	32	47	123	105	99	156
Dakota	21	20	46	51	64	99
Dodge	17	19	26	22	45	76
Douglas	31	32	64	53	77	68
Faribault	31	51	46	49	57	47
Fillmore	22	46	50	64	75	81
Freeborn	38	37	47	34	690	60
Goodhue	34	57	63	69	71	69
Grant	10	19	18	22	27	27
Hennepin	35	78	69	44	97	78
Houston	25	46	55	70	58	67
Hubbard	42	56	97	130	102	98
Isanti	32	46	83	83	82	83
Itasca	36	98	171	146	113	127
Jackson	34	26	47	44	46	42
Kanabec	7	11	35	66	51	49
Kandiyohi	41	41	95	96	111	116
Kittson	1	8	12	10	28	32

Continued

Table 33. Continued.

County	1979	1980	1981	1982	1983	1984
Koochiching	23	28	33	18	21	29
Lac qui Parle	38	53	87	82	78	108
Lake	8	18	40	46	30	39
Lake of the Woods	9	12	13	13	14	22
LeSueur	13	27	38	31	39	52
Lincoln	57	50	72	56	74	35
Lyon	36	84	94	74	110	72
McLeod	63	32	40	28	2	33
Mahnomen	1	5	4	7	5	6
Marshall	18	38	39	45	66	82
Martin	25	40	35	38	56	33
Meeker	37	43	44	43	37	54
Mille Lacs ^a	8	21	40	57	35	63
Morrison	19	30	66	158	127	108
Mower	27	46	55	42	80	64
Murray	49	81	130	83	61	39
Nicollet	40	61	80	67	65	52
Nobles	34	43	79	33	54	17
Norman	11	15	20	34	35	45
Olmsted	25	24	55	51	85	84
Ottertail	60	98	133	153	175	178
Pennington	3	9	12	18	15	19
Pine	73	123	166	171	134	166
Pipestone	34	32	40	30	67	1
Polk	32	42	50	78	70	102
Pope	31	49	49	64	57	56
Ramsey	0	1	2	1	0	21
Red Lake	4	2	1	3	4	13
Redwood	38	50	81	63	82	63
Renville	20	35	55	63	59	32
Rice	31	38	45	51	39	54
Rock	16	14	38	31	14	0
Roseau	32	62	77	90	112	98
St. Louis	42	87	180	149	120	127
Scott	41	44	50	37	50	72

Continued

Table 33. Continued.

County	1979	1980	1981	1982	1983	1984
Sherburne	60	89	128	116	113	115
Sibley	22	33	41	30	32	43
Stearns	49	81	134	143	122	159
Steele	7	14	19	27	29	30
Stevens	13	9	11	21	27	26
Swift	23	42	67	49	67	59
Todd	45	52	95	109	103	126
Traverse	7	12	21	13	21	32
Wabasha	20	15	18	30	61	57
Wadena	14	21	45	69	70	64
Waseca	20	26	46	35	55	42
Washington	15	39	75	91	88	154
Watonwan	16	31	34	30	35	20
Wilkin	2	15	26	34	39	34
Winona	72	96	116	138	117	151
Wright	29	45	71	78	83	95
Yellow Medicine	34	35	47	38	54	47
Unknown	40	20	25	63	23	34
Camp Ripley	148		153	129	237	387
Totals	2,577	3,641	5,535	5,566	5,977	6,367

^a Camp Ripley not included.

Table 34. Deer harvest during 1984 special muzzleloader season.

	Adult		Fawn		Total
	Male	Female	Male	Female	
Carlos Avery WMA	4	7	7	4	22
Mille Lacs WMA	2	3	6	3	14
Roseau River WMA	2	0	2	1	5
Thief Lake WMA	4	2	0	1	7
Whitewater WMA (Sanctuary)	15	24	4	2	45
Whitewater WMA	16	68	33	22	139
Talcot Lake WMA	1	5	3	4	13
Lac qui Parle WMA and Big Stone NWR	23	58	42	28	151
Red Lake WMA and Beltrami Island SF	3	2	5	1	11
McCarthy Lake WMA	0	0	0	0	0
Gores Pool WMA	1	2	1	1	5
Walnut Lake WMA	1	1	1	3	6
Danvers WMA	3	1	2	1	7
Meadowbrook WMA	2	2	1	1	6
Lake Shetek SP	3	11	9	7	30
R. J. Dorer Mem. SF	1	1	2	2	6
Rum River SF	0	6	4	1	11
George Washington SF	3	7	3	1	14
Savanna SF	0	1	1	0	2
Chengwatana SF	0	0	0	1	1
Nemadji SF	0	0	1	0	1
Paul Bunyan GR	7	19	4	3	33
Elm Lake-Eckvold WMA	0	0	0	0	0
Cloquet Valley SF	0	1	1	0	2
Unknown	0	1	0	0	1
Total	91	222	132	87	532

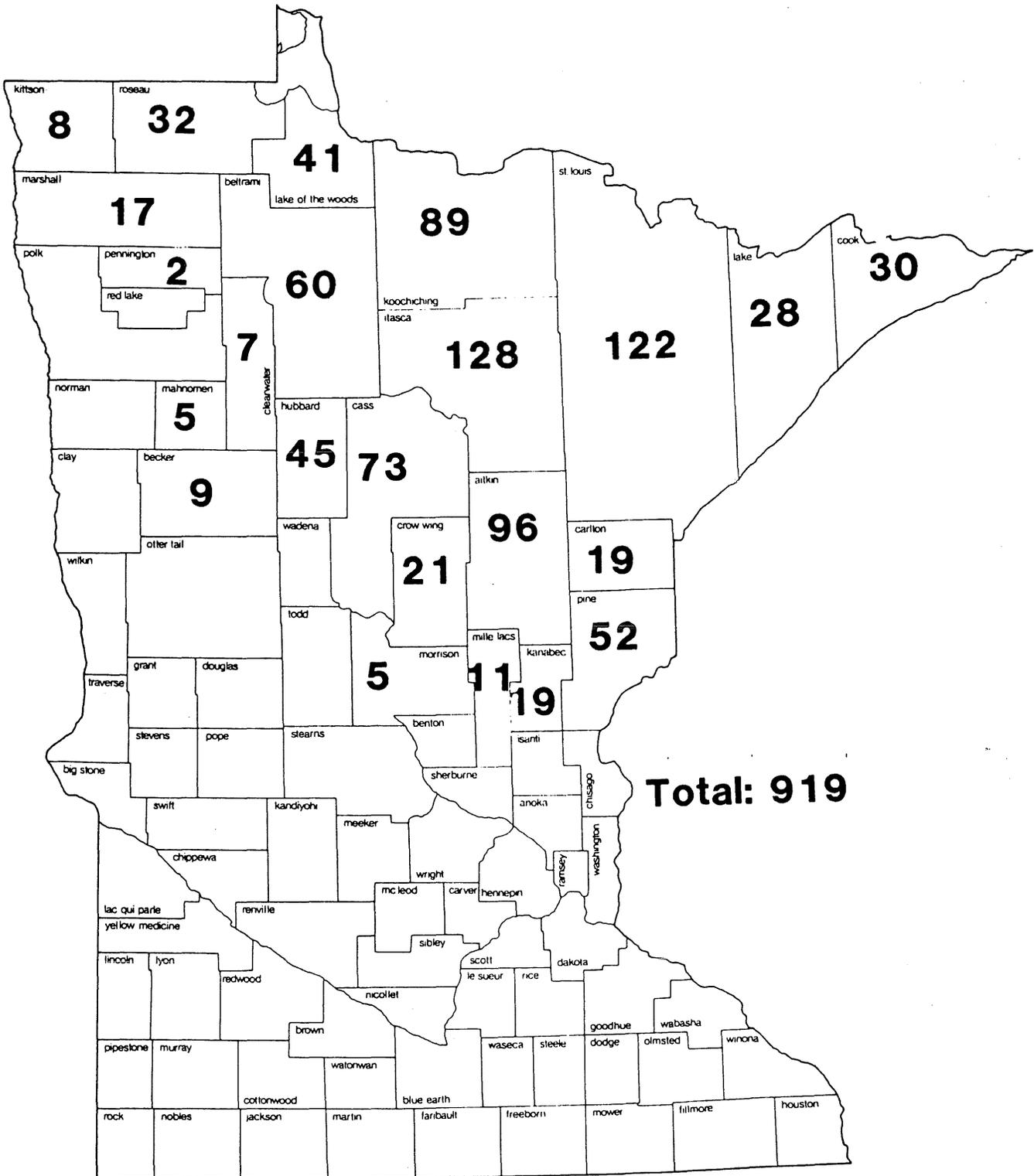


Figure 34. Black bear registered harvest by county, 1984 season.

Table 35. Black bear license sales and registered harvests by county, 1979-1984.

County	Year					
	1979	1980	1981	1982	1983	1984
License sales ^a	7,583	8,677	11,429	1,921	3,482	3,501
Atkin	55	92	128	39	102	96
Becker	13	7	9	1	14	9
Beltrami	42	28	79	24	78	60
Carlton	7	17	18	3	9	19
Cass	57	69	110	29	93	73
Chisago	0	0	1	0	0	0
Clearwater	12	3	18	4	8	7
Cook	72	148	79	7	46	30
Crow Wing	12	9	33	8	26	21
Hubbard	16	14	19	11	25	45
Isanti	0	1	3	0	0	0
Itasca	108	212	172	50	121	128
Kanabec	10	12	18	8	19	19
Kittson	1	0	0	0	1	8
Koochiching	89	137	149	66	150	89
Lake	40	74	80	17	42	28
Lake of the Woods	12	30	43	25	32	41
Mahnomen	0	0	1	2	2	5
Marshall	1	2	3	1	9	17
Mille Lacs	5	5	12	3	11	11
Morrison	3	1	1	1	10	5
Norman	0	0	0	0	0	0
Pennington	0	0	1	0	3	2
Pine	31	62	73	20	55	52
Polk	0	1	0	0	0	0
Red Lake	0	3	2	0	0	0
Roseau	4	18	18	7	23	32
St. Louis	148	289	284	64	197	122
Wadena	0	0	1	0	0	0
Wilkin	1	0	0	0	0	0
Unknown	4	13	4	2	7	0
Total	743	1,247	1,359	392	1,038	919

^a Includes resident and nonresident. Beginning in 1982, Minnesota began issuing a limited number of licenses on a lottery basis.

Table 36. Estimates of registration compliance, and harvest estimates of Minnesota black bears corrected for compliance.^a

	1980	1981	1982	1983	1984
Compliance estimated from hunting success ^b	83.0%	75.0%	92.0%	95.7%	93.2%
Compliance calculated directly ^c	d	d	d	98.4%	98.6%
Registered harvest	1,247	1,359	392	1,038	919
Harvest estimate	1,502	1,812	426	1,055	932

^a From a 5-year summary report of bear hunter surveys conducted by the Forest Wildlife Populations and Research Group.

^b Compliance rate = $\frac{\text{Registered harvest}}{\text{Estimated hunting success} \times \text{number of hunters}} \times 100$.

^c Compliance rate = $\frac{\text{Number bears taken by survey respondents that were registered}}{\text{Number of bears taken by survey respondents}} \times 100$.

^d Direct comparisons not made.

Table 37. Percent hunting success for those Minnesota bear hunters that hunted.

Permit area or group	1980	1981	1982	1983	1984
NW	14	21	21	34	40
NC	25	23	34	41	28
NE	25	16	32	42	23
WC	13	11	16	31	35
EC	13	16	27	29	30
All res.	17	16	23	34	31
All non-res.	33	24	48	54	42
All	18	17	24	34	31

Table 38. Percent of Minnesota bear hunters using bows, balts, and guides, with the estimated number of hunters using guides shown parenthetically.^a

Method	1980	1981	1982	1983	1984
Bow	b	21	18	21	24
Balt	b	53	57	63	62
Guide	5 (438)	7 (704)	6 (109)	6 (179)	6 (192)

^a From a 5-year summary report of bear hunter surveys conducted by the Forest Wildlife Populations and Research Group.

^b Not recorded in this survey.

Table 39. Percent hunting success of Minnesota bear hunters by method of hunt.^a

Method	1980	1981	1982	1983	1984
Firearm		16	24	35	32
Bow only		22	21	32	34
Balt		22	24	36	34
No balt		11	21	31	26
Guide	42	18	32	44	60
No guide	17	16	23	34	30

^a From a 5-year summary report of bear hunter surveys conducted by the Forest Wildlife Populations and Research Group.

Table 40. Moose hunt quota statistics and harvest data, 1971-1983.

Year	Area	Number 4-person licenses issued	Total number license applications	Chances for permit	Harvest	Party Success (%)	Sex of Moose	
							M	F
1971	NW	250	9,264	1:23	240	96.0	159 (66%)	81 (34%)
	NE	150						
1973	NW	335	13,560	1:26	306	91.3	213 (76%)	91 (24%)
	NE	185						
1975	NW	475	15,792	1:20	449	94.5	259 (58%)	188 (42%)
	NE	275						
1977	NW	630	16,586	1:18	598	94.9	348 (58%)	250 (42%)
	NE	300						
1979	NW	395	19,023	1:28	330	83.5	196 (59%)	134 (41%)
	NE	290						
1981	NW	505	20,521	1:23	455	90.1	283 (62%)	172 (38%)
	NE	375						
1983	NW	780	17,754	1:14	737	94.5	493 (67%)	244 (33%)
	NE	523						

TRAPPING
HARVEST STATISTICS

Table 41. Trapper response to mail surveys, 1979-1984.

Year	Number mailed	Number not delivered	Delivered questionnaires completed and returned	
			Number	Percent
1979	1,011	29	888	90.4
1980	1,345	110	1,072	86.8
1981	1,345	36	1,167	89.2
1982	925	28	794	88.5
1983	770	10	663 ^a	87.2 ^a
1984	556	9	495	90.5

^a Includes only those surveys returned by 25 April, 1984.

Table 42. Use of trapper licenses, 1979-1984.

		Return from mail survey	Projections from license sales
1979	Trapped	760 (85.6%)	15,512
	Did not trap	<u>128 (14.4%)</u>	<u>2,609</u>
		888 (100.0%)	18,121
1980	Trapped	918 (85.6%)	20,548
	Did not trap	<u>154 (14.4%)</u>	<u>3,457</u>
		1,072 (100.0%)	24,005
1981	Trapped	972 (83.3%)	19,725
	Did not trap	<u>195 (16.7%)</u>	<u>3,954</u>
		1,167 (100.0%)	23,679
1982	Trapped	688 (86.6%)	17,526
	Did not trap	<u>106 (13.4%)</u>	<u>2,700</u>
		794 (100.0%)	20,226
1983	Trapped	549 (82.8%)	13,862
	Did not trap	<u>114 (17.2%)</u>	<u>2,879</u>
		663 (100.0%)	16,741
1984	Trapped	445 (89.9%)	15,136
	Did not trap	<u>50 (10.1%)</u>	<u>1,700</u>
		495 (100.0%)	16,836

Table 43. Estimated number of trappers and estimated take per trapper of various furbearers, 1979-1984.

	Estimated number of trappers (thousands)						Estimated take per trapper					
	1979	1980	1981	1982	1983	1984	1979	1980	1981	1982	1983	1984
Muskrat	13	19	16	12	11	13	55.5	75.7	62.5	48.4	75.8	75.1
Mink	10	15	13	10	8	9	6.5	6.5	5.7	5.6	6.8	8.0
Ermine	2	2	1	1	<1	1	3.7	3.1	3.2	2.2	4.6	3.5
Long-tailed weasel	1	1	1	1	<1	1	2.3	2.9	2.8	1.6	4.0	2.1
Raccoon	10	11	12	9	9	9	6.6	5.4	6.2	6.4	7.8	8.3
Striped skunk	6	8	7	5	4	5	7.6	7.0	8.1	6.4	8.5	9.4
Eastern spotted skunk (clivet)	<1	<1	<1	<1	2	<1	2.0	7.1	1.6	6.7	2.5	1.4
Badger	2	2	2	1	1	1	1.6	1.6	1.8	1.7	2.1	1.6
Opossum	1	<1	<1	<1	<1	<1	2.0	1.7	2.1	1.8	3.1	2.8
Red fox	6	7	8	6	6	6	6.5	6.3	6.8	6.3	6.9	9.2
Gray fox	1	2	2	2	2	2	2.5	2.8	2.7	2.7	2.5	2.9
Coyote (brush wolf)	1	1	1	2	2	2	3.4	3.6	2.4	3.2	4.8	5.3

Table 44. Minnesota trapper license sales and estimated annual harvest, 1979-1984.

	1979	1980	1981	1982	1983	1984
Trapper license sales ^a	18,121	24,005	23,679	20,196	16,741	16,836
Beaver license sales ^b	6,692	8,503	6,602	1,971	-	-
Estimated harvest ^c (thousands)						
Muskrat	707	1,419	989	570	865	963
Mink	66	96	76	57	58	75
Ermine	7	7	3	1	2	3
Long-tailed weasel	3	3	4	1	1	1
Raccoon	65	61	72	60	69	78
Striped skunk	47	53	54	34	36	47
Eastern spotted skunk (civet)	<1	1	<1	1	<1	<1
Badger	3	3	3	2	2	2
Opossum	1	<1	1	<1	2	1
Red fox	39	42	53	41	42	58
Gray fox	4	5	5	5	5	5
Coyote (brush wolf)	5	4	3	5	9	10
Beaver (spring season)	22	22	16	10	76	101
Beaver (fall season)	54	51	30	24	30	51
Registered harvest						
Otter ^d	1,186	1,111	485	385	408	529
Lynx ^d	42	16	17	28	9	closed
Bobcat ^d	291	210	260	274	208	280
Fisher	3,032	closed	862	912	631	1,289

^a Separate licenses were issued for juveniles (13-17 years old) and adults (18 and older), beginning in 1982. Of 16,836 trapping licenses sold 3,256 (19.3%) were juvenile licenses and 13,580 (80.7%) were adult licenses.

^b Beginning in fall of 1982, beaver could be trapped with only a general trapping license; the separate beaver trapping license was dropped.

^c Based upon trapper's response to mail surveys.

^d Registered harvest for lynx and bobcat includes animals taken by hunting.

Table 45. Average price per pelt paid to hunters and trappers in Minnesota, 1974-1984.

Species	Average pelt prices paid trappers in Minnesota (dollars)										
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Muskrat	2.50	3.00	4.03	4.25	4.56	5.90	5.62	3.47	2.19	2.24	2.81
Mink ^a (male)	(9.50)	(13.00)	27.40	22.15	36.69	42.83	37.55	34.35	24.43	30.33	28.40
Mink ^a (female)			10.07	8.86	14.80	18.61	16.04	17.22	10.63	14.55	14.04
Ermine (S.T. Weasel)	0.75	0.75	0.41	0.44	0.47	0.56	0.64	0.59	0.56	0.56	0.77
L.T. Weasel	0.75	0.75	0.87	0.85	1.01	0.94	0.84	0.96	0.80	0.93	1.10
Raccoon	12.50	21.00	23.54	22.30	45.83	36.42	27.44	32.35	17.95	12.66	19.91
Striped Skunk	2.50	2.50	2.95	2.78	4.13	4.14	4.74	3.46	2.58	2.77	2.74
Eastern Spotted Skunk	2.00	2.50	5.02	5.42	7.37	3.48	6.06	2.58	1.75	N.A.	3.00
Badger	9.00	18.00	18.66	21.07	39.55	24.02	18.39	18.14	9.04	10.96	9.18
Opossum	0	1.50	1.72	2.11	2.10	2.12	2.52	1.58	0.87	0.71	1.14
Red Fox	24.00	50.00	49.52	52.97	72.21	55.43	50.81	51.48	31.10	32.81	29.07
Gray Fox	12.00	19.00	24.75	25.51	45.44	42.51	37.87	26.74	23.48	22.95	21.58
Coyote	12.00	29.00	41.32	34.03	56.62	39.76	31.37	41.28	25.41	18.79	19.06
Lynx	65.00	162.00	183.00	137.86	269.44	199.19	94.91	180.33	94.17	125.00	-
Bobcat	35.00	80.00	78.77	73.98	163.76	117.74	78.55	73.35	66.40	61.40	75.81
Beaver ^a (fall-winter)	15.80	12.25	15.79	13.45	17.64	32.74	17.88	14.48	10.69	9.52	12.51
Beaver (spring)	15.80	12.25	15.79	13.45	17.64	28.71	19.58	16.52	12.55	11.60	12.24
Otter	45.00	32.50	36.99	41.23	58.85	63.37	32.78	29.80	25.65	24.79	21.56
Fisher ^a (male)					131.89	107.67	89.51	94.42	69.91	70.59	70.26
Fisher ^a (female)				(71.23)	147.23	127.79	104.29	110.08	99.08	121.08	121.76

^a Differences in pelt prices were not calculated before 1975 for mink, 1979 for beaver, and 1978 for fisher.

FURBEARER REGISTRATION STATISTICS

Table 46. Fisher harvest by county and sex, 1984 season.

County	Sex		Total
	Male	Female	
Aitkin	7	3	10
Becker	1	2	3
Beltrami	37	59	96
Carlton	1	2	3
Cass	8	11	19
Clearwater	1	5	6
Cook	10	6	16
Crow Wing	8	3	11
Hubbard	2	5	7
Itasca	123	105	228
Kittson	2	0	2
Koochiching	106	149	255
Lake	50	30	80
Lake of the Woods	42	43	85
Marshall	4	6	10
Pine	1	0	1
Roseau	62	49	111
St. Louis	161	184	345
Unknown	0	1	1
Total	626	663	1,289

Table 47. Comparison of fisher harvest by county, 1979-1984^a.

County	1979-80	1981	1982	1983	1984
Aitkin	18	9	15	5	10
Becker	14	3	2	4	3
Beltrami	204	44	41	25	96
Carlton	4	0	4	4	3
Cass	27	6	6	3	19
Clearwater	9	3	1	3	6
Cook	60	36	21	18	16
Crow Wing	9	8	6	2	11
Hubbard	3	1	0	0	7
Isanti	27	closed	closed	closed	closed
Itasca	396	64	139	72	228
Kittson	0	0	0	6	2
Koochiching	556	142	182	123	255
Lake	313	121	115	37	80
Lake of the Woods	143	41	52	32	85
Mahnomen	7	1	0	0	0
Marshall	25	3	6	13	10
Pennington	6	0	0	0	0
Pine	1	0	0	1	1
Polk	3	0	0	0	0
Red Lake	3	0	0	0	0
Roseau	95	32	36	86	111
St. Louis	1,106	258	286	197	345
Unknown	3	90	0	0	1
Total	3,032	862	912	631	1,289

^a There was no fisher season during the winter of 1980-81.

Table 48. Fisher harvest by date and sex, 1984-85 season.

Date	Sex			Total	% of Total	Cumulative percent
	Male	Female	Unknown			
12/01	4	2	0	6	0.5	0.5
12/02	38	33	0	71	5.5	6.0
12/03	51	47	0	98	7.6	13.6
12/04	26	26	0	52	4.0	17.6
12/05	41	56	0	97	7.5	25.1
12/06	24	34	0	58	4.5	29.6
12/07	32	46	0	78	6.1	35.7
12/08	76	65	0	141	10.9	46.6
12/09	43	45	0	88	6.8	53.4
12/10	48	49	0	97	7.5	60.9
12/11	41	43	0	84	6.5	67.4
12/12	49	56	0	105	8.2	75.6
12/13	24	31	0	55	4.3	79.9
12/14	48	35	0	83	6.5	86.4
12/15	43	55	0	98	7.6	94.0
12/16	27	25	0	52	4.0	98.0
Unknown	11	15	0	26	2.0	100.0
TOTAL	626	663	0	1,289	100.0	100.0

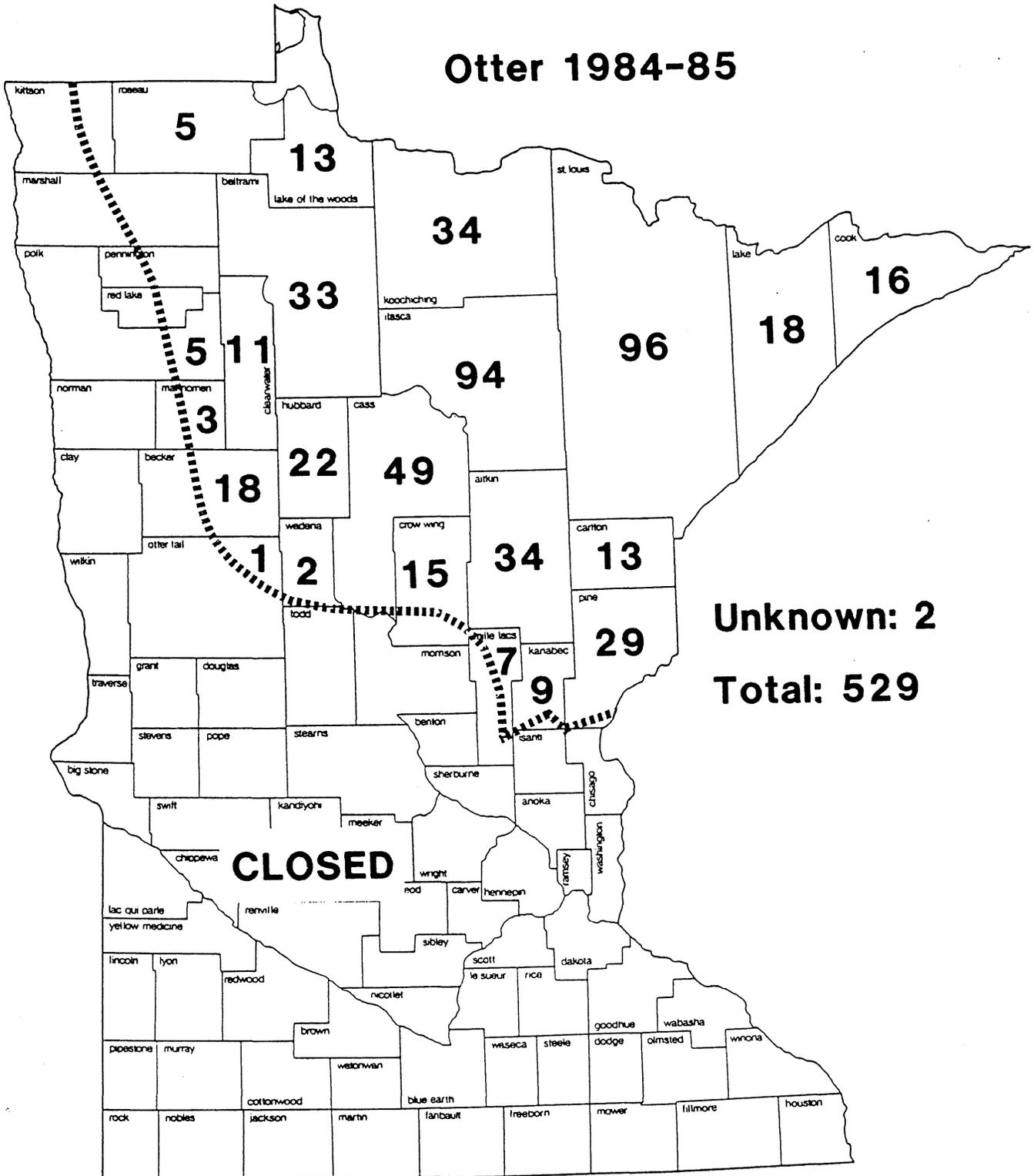


Figure 36. Registered harvest of otter by county, 1984-85 season.

Table 49. Otter harvest by county and sex, 1984-85 season.

County	Sex			Total
	Male	Female	Unknown	
Altkin	21	13	0	34
Becker	10	8	0	18
Beltrami	17	16	0	33
Carlton	8	5	0	13
Cass	24	25	0	49
Clearwater	5	6	0	11
Cook	8	8	0	16
Crow Wing	7	8	0	15
Hubbard	12	10	0	22
Itasca	60	32	2	94
Kanabec	3	6	0	9
Koochiching	23	11	0	34
Lake	12	5	1	18
Lake of the Woods	9	4	0	13
Mahnomen	2	1	0	3
Mille Lacs	5	2	0	7
Ottertail	0	1	0	1
Pine	20	9	0	29
Polk	4	1	0	5
Roseau	2	3	0	5
St. Louis	62	34	0	96
Wadena	1	1	0	2
Unknown	0	0	2	2
Total	315	209	5	529

Table 50. Comparison of otter harvest by county, 1981-1984.

County	14-28 Nov. 1981	13-27 Nov. 1982	12-26 Nov. 1983	17 Nov. - 1 Dec. 1984
Aitkin	21	20	25	34
Becker	12	8	15	18
Beltrami	28	39	23	33
Carlton	11	4	5	13
Cass	41	36	33	49
Clearwater	12	9	6	11
Cook	15	17	4	16
Crow Wing	18	15	13	15
Hubbard	28	21	15	22
Itasca	48	56	69	94
Kanabec	13	4	9	9
Koochiching	32	23	26	34
Lake	13	15	20	18
Lake of the Woods	8	9	11	13
Mahnomen	2	2	2	3
Marshall	0	0	2	0
Mille Lacs	8	2	7	7
Ottertail	0	1	1	1
Pennington	1	0	0	0
Pine	17	21	14	29
Polk	5	3	4	5
Red Lake	1	3	0	0
Roseau	7	3	3	5
St. Louis	125	69	96	96
Wadena	4	4	4	2
Unknown	15	1	1	2
Total	471	385	408	529

Table 51. Otter harvest by date and sex, 1984-85 season.

Date	Sex			Total	% of Total	Cumulative percent
	Male	Female	Unknown			
11/17	3	8	0	11	2.1	2.1
11/18	27	20	1	48	9.1	11.2
11/19	45	11	1	57	10.8	22.0
11/20	41	33	0	74	14.0	36.0
11/21	32	12	0	44	8.3	44.3
11/22	17	14	0	31	5.8	50.1
11/23	22	8	1	31	5.8	55.9
11/24	17	13	0	30	5.7	61.6
11/25	19	9	0	28	5.3	66.9
11/26	16	12	0	28	5.3	72.2
11/27	21	17	0	38	7.2	79.4
11/28	18	10	0	28	5.3	84.7
11/29	13	9	0	22	4.1	88.8
11/30	4	12	0	16	3.0	91.8
12/01	13	18	0	31	5.9	97.7
Unknown	7	3	2	12	2.3	100.0
Total	315	209	5	529	100.0	100.0

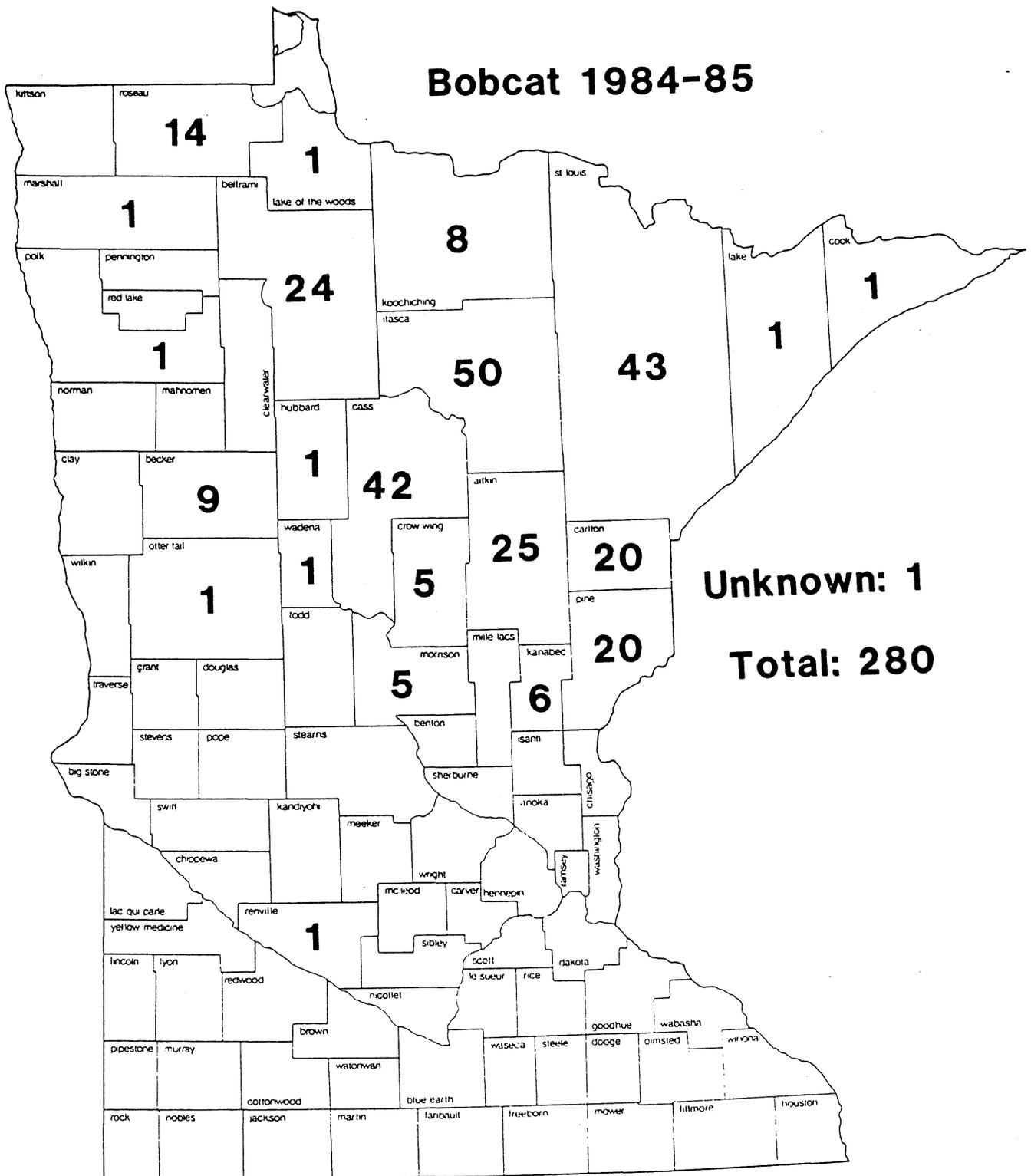


Figure 37. Registered harvest of bobcat by county, 1984-85 season.

Table 52. Comparison of bobcat harvest by county, 1980-81 - 1984-85.

County	1980-81	1981-82 ^a	1982-83	1983-84	1984-85
Aitkin	36	45	28	20	25
Becker	9	1	6	8	9
Beltrami	0	2	18	17	24
Carlton	32	15	15	4	20
Cass	9	26	30	13	42
Chisago	0	0	1	0	0
Clearwater	1	0	1	1	0
Cook	0	0	2	0	1
Crow Wing	1	2	4	4	5
Douglas	0	1	0	0	0
Hubbard	6	3	4	1	1
Itasca	10	32	46	36	50
Kanabec	0	2	2	2	6
Kittson	1	5	5	3	0
Koochiching	3	0	3	12	8
Lake	3	4	8	3	1
Lake of the Woods	3	3	3	1	1
Marshall	0	6	2	3	1
Mille Lacs	0	4	0	6	0
Morrison	0	0	5	7	5
Ottertail	0	3	2	1	1
Pennington	1	1	0	0	0
Pine	27	21	20	24	20
Polk	0	0	0	0	1
Renville	0	0	0	0	1
Roseau	0	4	9	9	14
St. Louis	65	78	59	32	43
Wadena	0	2	0	1	1
Unknown	3	0	1	0	1
Total	210	260	274	208	280

^aNortheast zone closed to taking of bobcat and lynx included: Cook County; most of Koochiching and Lake Counties; and portions of Beltrami, Itasca, Lake of the Woods, and St. Louis Counties.

Table 53. Time distribution of bobcat harvest by 5-day increments, 1984-85 season.

Interval	Total	% of Total	Cumulative percent
Dec. 1-5	25	8.9	8.9
Dec. 6-10	40	14.3	23.2
Dec. 11-15	41	14.6	37.8
Dec. 16-20	30	10.7	48.5
Dec. 21-25	24	8.6	57.1
Dec. 26-30	22	7.9	65.0
Dec. 31-Jan. 4	16	5.7	70.7
Jan. 5-9	19	6.8	77.5
Jan. 10-14	27	9.7	87.2
Jan. 15-20 ^a	25	8.9	96.1
Unknown	11	3.9	100.0
Total	280	100.0	100.0

^a 6-day interval

Table 54. Distribution of bobcat harvest among takers, 1977-78 thru 1984-85.

Number Taken	Number of Takers																	
	1977-78		1978-79		1979-80		1980-81		1981-82		1982-83		1983-84		1984-85		Total	
	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)
1	53	(73.6)	130	(66.3)	88	(61.1)	51	(55.4)	123	(71.1)	111	(65.3)	108	(72.0)	116	(65.3)	780	(66.4)
2	11	(15.3)	38	(19.4)	34	(23.6)	21	(22.8)	29	(16.8)	30	(17.6)	32	(21.3)	39	(21.4)	234	(19.8)
3	5	(6.9)	17	(8.7)	9	(6.2)	6	(6.5)	10	(5.8)	16	(9.4)	6	(4.0)	13	(7.5)	82	(7.0)
4	2	(2.8)	8	(4.1)	4	(2.8)	4	(4.3)	5	(2.9)	10	(5.9)	4	(2.7)	9	(5.2)	46	(3.9)
5	1	(1.4)	3	(1.5)	9	(6.3)	10	(10.9)	6	(3.5)	3	(1.8)	0	(0.0)	1	(0.6)	33	(2.8)
TOTAL	72		196		144		92		173		170		150		178		1175	(100.0)

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- Badger, census 6; harvest 55, 56, 77, 78; pelt price 79
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