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Status of Wildlife Populations,
Fall 1983 and 1978-1982 Hunting
and Trapping Harvest Statistics

compiled by

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Status of Wildlife Populations, Fall 1983
and
1978-1982 Hunting and Trapping Harvest Statistics

This is the 7th year that the Section of Wildlife Research Unit has published this booklet. It is intended primarily as an administrative document for use by Department of Natural Resources personnel. The booklet contains data on populations of farmland, forest and wetland wildlife species along with harvest statistics from various hunting and trapping seasons since 1978.

The data presented result from census and survey projects currently active in the Research Unit along with information on a number of migratory species from the U.S. Fish and Wildlife Service.

This year's book has for the first time data on snowshoe hare abundance, results of Federal mourning dove call counts, the spring beaver trapper survey, and population models of fisher, otter and bobcat. In addition, there are new presentations and expanded data on farmland wildlife population trends, August pheasant roadside counts, beaver, moose, ducks, geese, and small game and trapping harvest statistics. Results of the archery deer hunter survey are also included. An alphabetical species index has been added to facilitate finding information quickly.

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 and the deer productivity survey). 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 Population and Research Group. Harvest statistics are calculated primarily by personnel in the St. Paul office.

Blair Joselyn
9 September 1983

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FARMLAND WILDLIFE POPULATIONS
AND CENSUSES

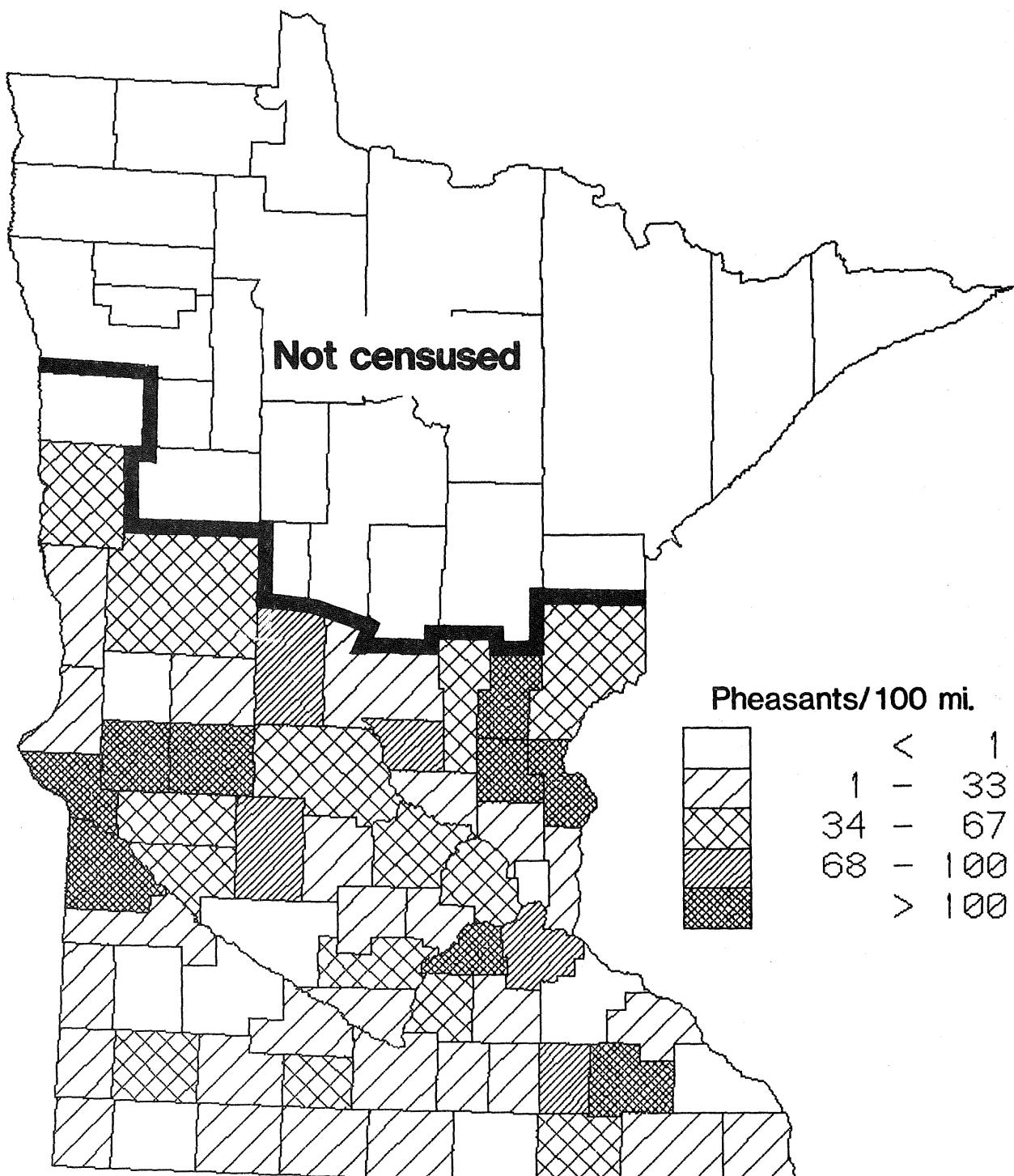
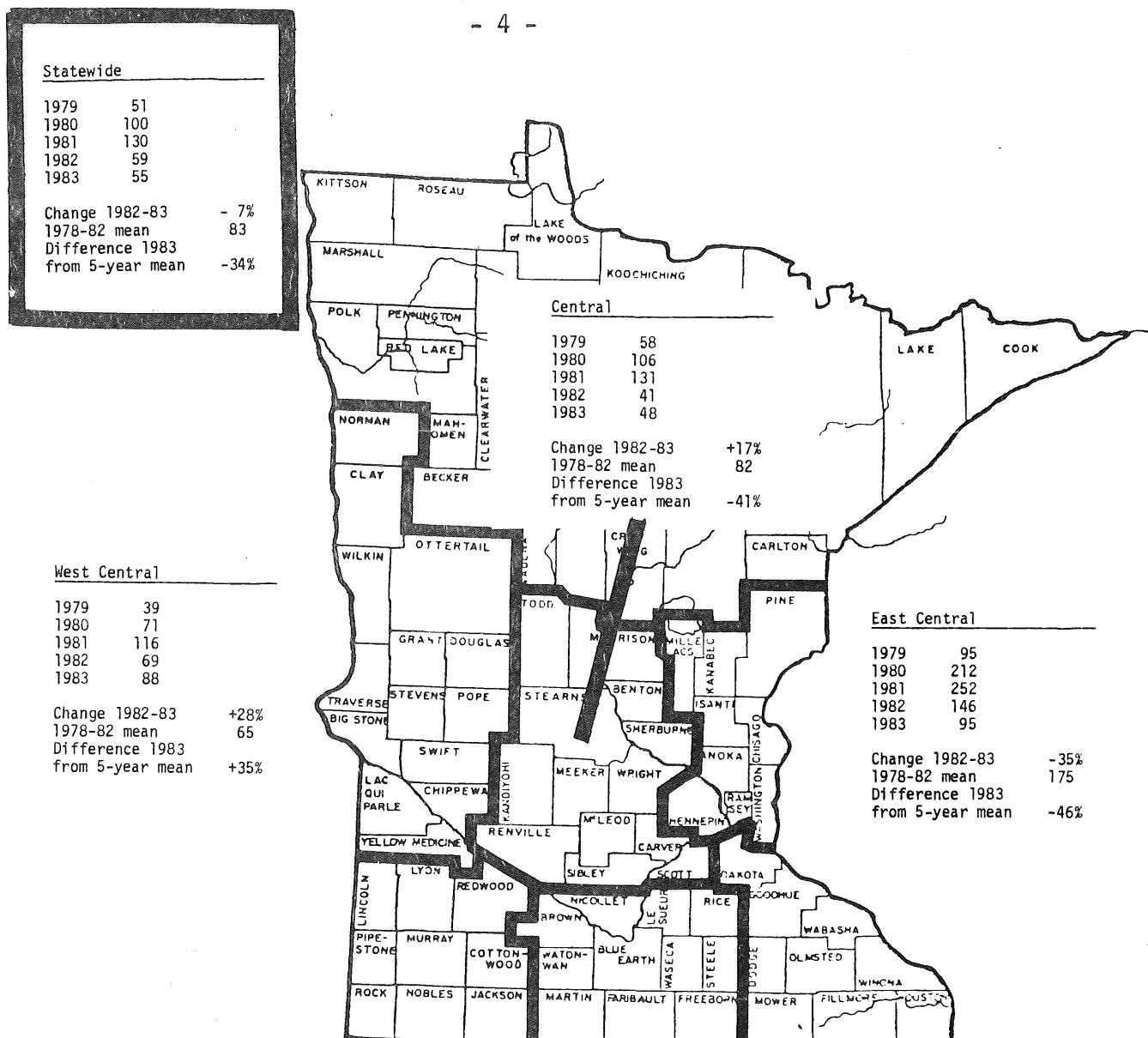


Figure 1. Number of ring-necked pheasants observed per 100 miles of August roadside census, by county, 1983.



Southwest

1979	13
1980	30
1981	80
1982	26
1983	10
Change 1982-83	-62%
1978-82 mean	34
Difference 1983 from 5-year mean	-71%

South Central

1979	51
1980	110
1981	126
1982	48
1983	25
Change 1982-83	-48%
1978-82 mean	88
Difference 1983 from 5-year mean	-72%

Southeast

1979	54
1980	85
1981	94
1982	29
1983	54
Change 1982-83	+86%
1978-82 mean	68
Difference 1983 from 5-year mean	-21%

Figure 2. Pheasants observed per 100 miles of August census route, 1979-1982, and percent change 1982-1983 for routes censused both years.

Table 1. County, regional, and statewide August ring-necked pheasant census results, 1979-1983.

Region and County	Miles censused	Pheasants observed per 100 miles						1978-82 mean	Change 1982-1983
		1983	1979	1980	1981	1982	1983		
West Central	950	38.7	70.9	116.3	68.9	87.5	65.4	+27%	
Big Stone	75	104	384	352	187	340			
Chippewa	50	56	236	172	54	52			
Clay	75	0	0	0	19	44			
Douglas	50	12	60	24	126	32			
Grant	50	16	28	10	46	0			
Lac qui Parle	75	65	144	224	204	212			
Norman	75	0	0	0	0	0			
Ottertail	50	106	72	140	100	56			
Pope	75	76	60	179	107	148			
Stevens	75	64	87	287	73	188			
Swift	75	26	-	113	21	58			
Traverse	75	13	37	3	3	7			
Wilkin	75	28	2	27	29	4			
Yellow Medicine	75	0	59	59	13	14			
Central	800	57.8	105.7	131.0	41.2	48.1	82.2	+17%	
Benton	50	48	44	256	74	84			
Carver	50	210	238	178	22	22			
Kandiyohi	75	44	100	131	44	82			
McLeod	50	66	126	106	-	28			
Meeker	75	29	198	293	83	18			
Morrison	75	18	77	39	29	18			
Renville	50	0	0	10	0	0			
Scott	50	156	202	244	120	166			
Sherburne	50	0	36	20	20	24			
Sibley	75	71	116	157	27	44			
Stearns	75	45	73	65	26	44			
Todd	75	4	39	117	41	72			
Wright	50	146	256	112	54	40			
East Central	450	94.6	211.8	252.4	146.4	95.3	174.7	-35%	
Anoka	50	36	160	96	28	4			
Chisago	75	176	383	480	280	265			
Hennepin	25	-	136	76	16	60			
Isanti	75	115	237	335	171	139			
Kanabec	50	82	216	224	142	116			
Mille Lacs	75	29	49	209	135	40			
Pine	50	60	126	182	122	58			
Washington	50	146	332	176	140	26			

Table 1. Continued.

Region and County	Miles censused	Pheasants observed per 100 miles					1978-82 mean	Change 1982-1983
		1983	1979	1980	1981	1982		
Southwest	475	13.4		30.2	80.0	27.3	10.1	34.8 -63%
Cottonwood	50	34		72	62	32	2	
Jackson	50	-		20	58	68	24	
Lincoln	50	0		0	134	2	4	
Lyon	50	26		2	24	50	0	
Murray	50	24		116	180	60	54	
Nobles	75	5		19	91	3	1	
Pipestone	50	4		40	40	2	6	
Redwood	50	0		2	42	4	-	
Rock	50	14		2	84	24	4	
South Central	800	51.4		109.9	125.8	47.5	25.1	88.1 -47%
Blue Earth	75	63		156	79	5	31	
Brown	75	69		44	85	55	7	
Faribault	75	59		93	59	35	24	
Freeborn	75	40		16	97	24	0	
Le Sueur	75	91		201	277	115	65	
Martin	75	23		115	183	91	21	
Nicollet	75	28		128	93	39	16	
Rice	75	35		149	147	55	25	
Steele	50	-		234	222	50	26	
Waseca	50	-		87	114	0	32	
Watonwan	75	40		27	56	24	35	
Southeast	475	53.8		84.7	94.2	28.9	53.8	67.8 +86%
Dakota	50	104		130	102	92	98	
Dodge	50	-		248	314	40	96	
Fillmore	50	46		-	80	16	24	
Goodhue	50	98		-	44	0	0	
Houston	50	2		4	60	6	2	
Mower	75	68		132	139	55	54	
Olmsted	75	56		91	83	53	108	
Wabasha	50	50		22	14	4	16	
Winona	25	0		24	4	6	-	
Statewide	3950	51.0		100.2	130.0	58.6	54.6	83.0 - 7%

Table 2. August 1982 roadside census results for selected farmland wildlife species by agricultural region.

Region	Miles censused	Individuals per 100 miles ^a				
		Gray (hun) partridge	Eastern cottontail	W. t. jack rabbit	Mourning dove	W. t. deer
NW	475	3.8	1.9	1.5	225	10.7
WC	925	22.5	4.8	2.6	558	4.9
C	700	23.0	6.5	0.9	234	2.4
EC	425	0.7	7.3	0.5	167	1.4
SW	475	69.7	3.6	4.7	315	2.9
SC	750	17.3	6.7	1.1	219	1.7
SE	450	16.0	4.2	0.9	213	0.9
Statewide	4200	22.0	5.1	1.7	298	3.5

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

Table 3. August 1983 roadside census results for selected farmland wildlife species by agricultural region.

Region	Miles censused	Individuals per 100 miles ^a				
		Gray (hun) partridge	Eastern cottontail	W. t. jack rabbit	Mourning dove	W. t. deer
NW	450	16.0	2.0	1.3	199	20.7
WC	925	29.3	7.0	2.3	517	4.9
C	750	20.9	6.5	1.2	321	5.0
EC	375	18.8	5.9	1.1	289	4.5
SW	475	62.9	6.4	0.0	271	3.8
SC	800	22.6	3.6	0.9	214	1.9
SE	475	8.0	12.2	0.8	193	2.5
Statewide	4175	23.4	6.6	1.1	284	5.3

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

Table 4. Statewide August roadside census results for selected farmland wildlife species, 1978-1983.

Species	Animals per 100 miles ^a						Percent change 1982-1983
	1978 ^b	1979 ^b	1980 ^b	1981 ^b	1982	1983	
Ring-necked pheasant ^b	76.0	51.0	99.6	130.0	58.6	54.6	- 7
Gray partridge (hun)	36.3	34.5	47.0	45.3	22.0	23.4	+ 6
Mourning dove	319	353	357	346	298	284	- 1
Sharp-tailed grouse					0.05	0.02	- 60
Greater prairie-chicken					0.00	0.00	0
Sandhill crane					1.00	1.22	+ 22
Eastern cottontail	8.8	7.3	6.5	10.4	5.1	6.6	+ 29
White-tailed jack rabbit	3.8	3.7	3.0	2.5	1.7	1.1	- 35
Gray & fox squirrels					0.90	1.03	+ 14
Gray & red foxes					0.32	0.24	- 25
Striped & spotted skunks					0.22	0.22	0
Badger					0.02	0.00	-100
White-tailed deer	1.1	1.1	1.6	2.2	3.5	5.3	+ 51

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

^b NW region not included in these means.

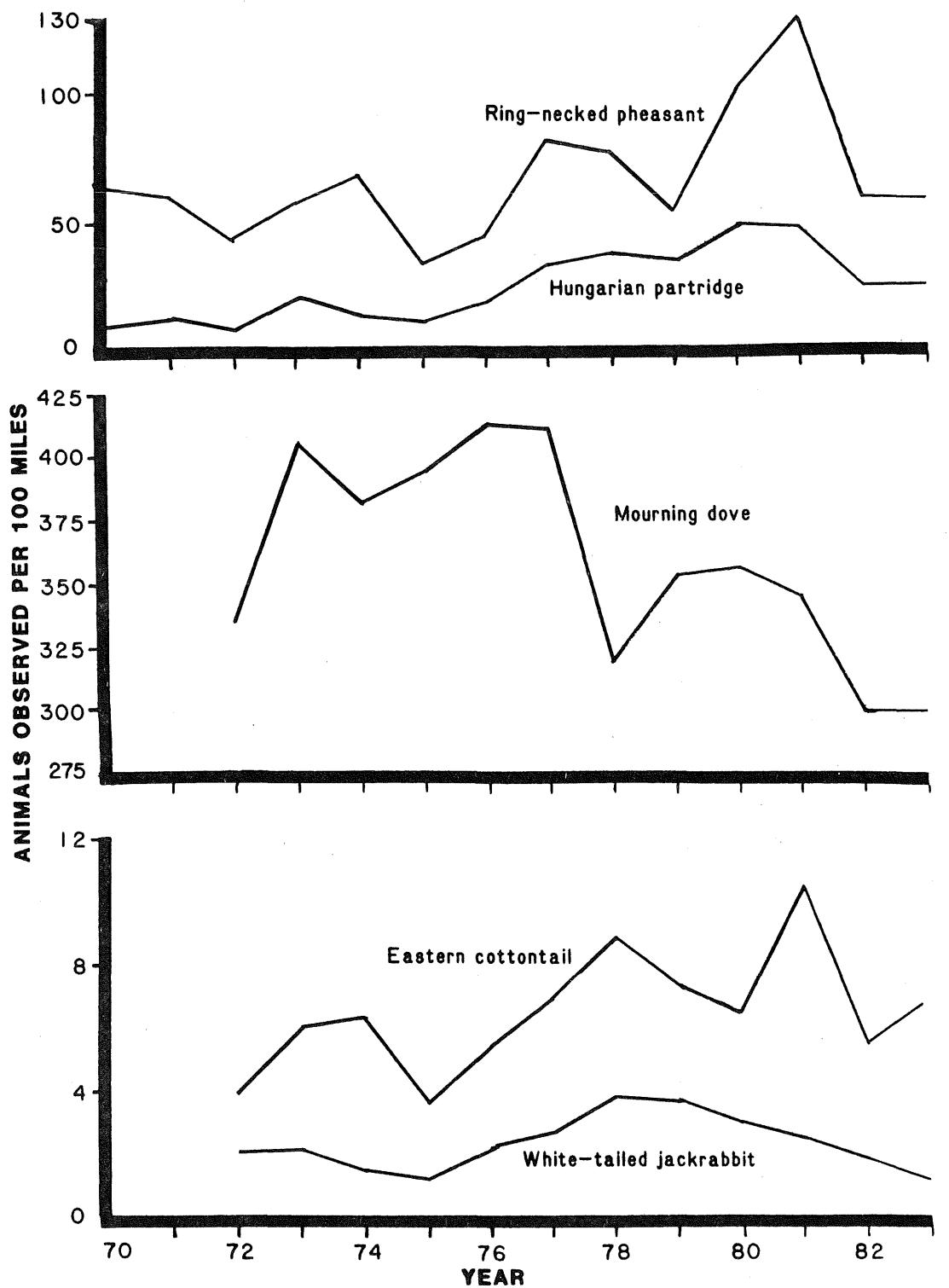


Figure 3. August roadside census indices (animals observed/100 mi.) of selected farmland wildlife species, 1970-1983.

Table 5. Greater prairie-chicken spring booming ground counts for 15 northwestern counties, 1978-1983
 (counts coordinated and summarized by AWM Terry Wolfe, Crookston).

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

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.

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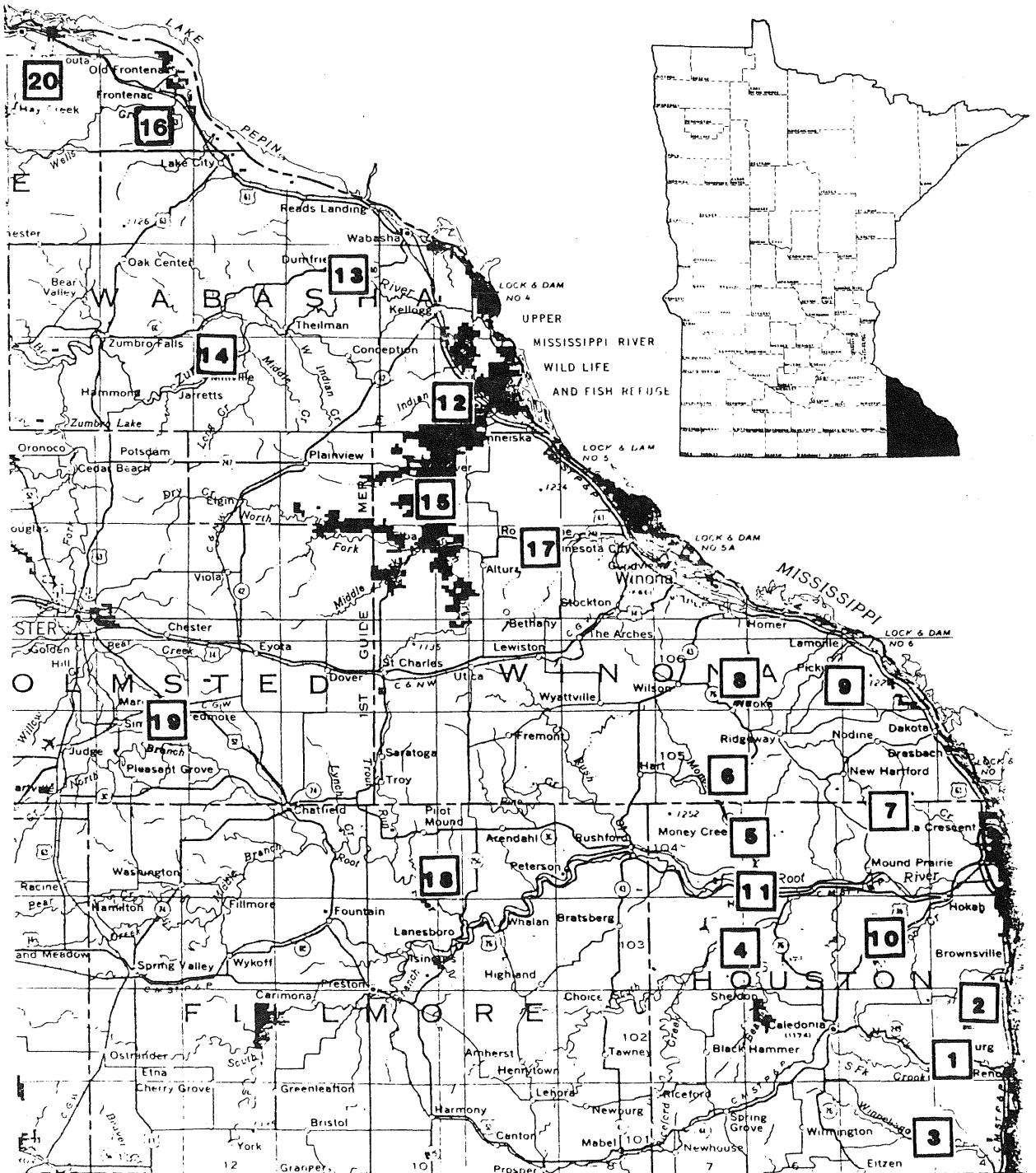


Figure 4. Approximate locations of gobble-count census routes in southeastern Minnesota (not shown are routes #21 - Welch - located between Cannon Falls and Red Wing in Goodhue County, and #8 - Oxbow - located north of Byron in Olmsted County).

Table 6. "Best Day" turkey gobbling counts in southeastern Minnesota, 1976-1983.

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

^a Routes that have been discontinued are not included.

^b Stops w/out interference

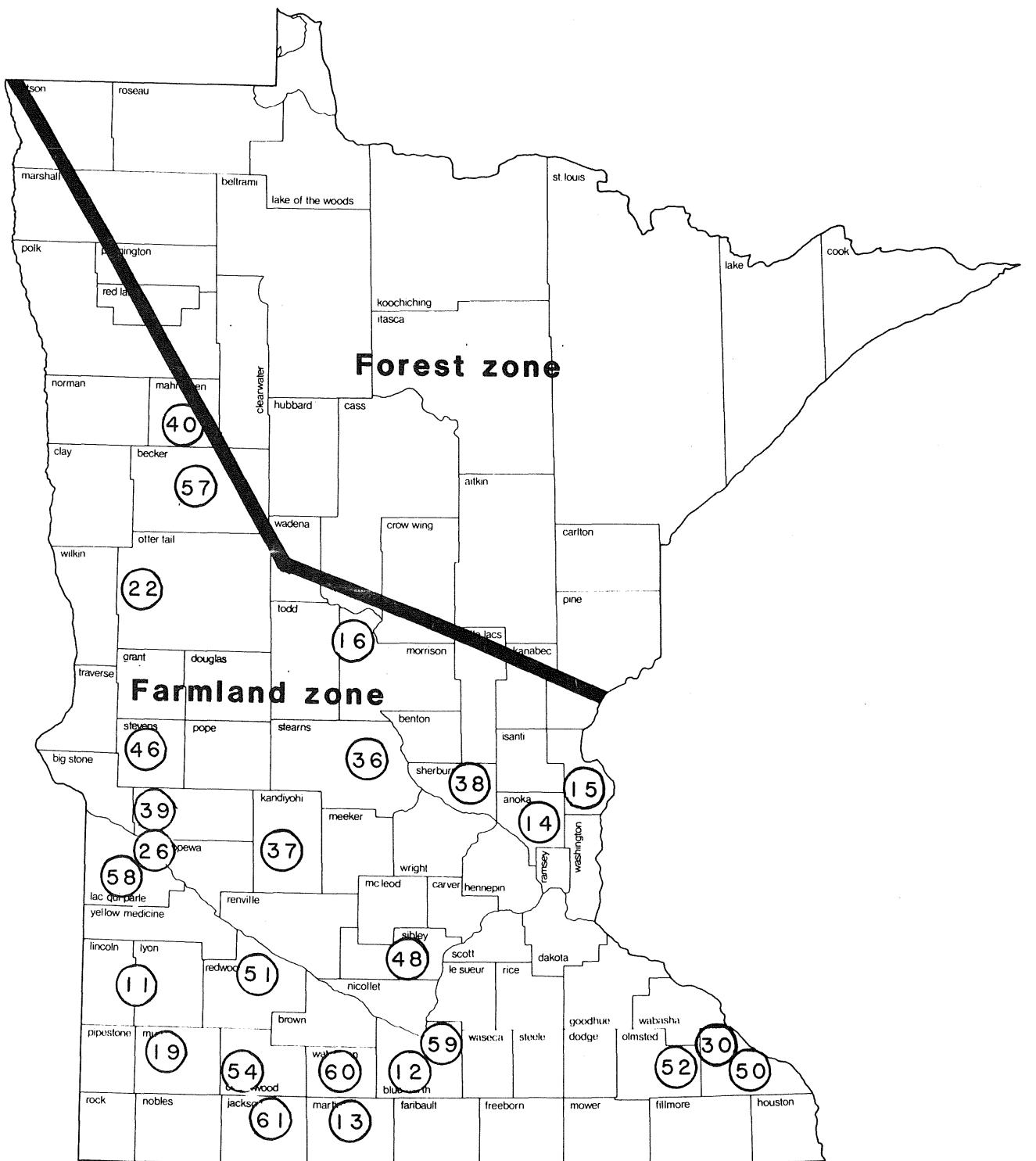


Figure 5. Approximate location of scent post routes in the Farmland Survey Zone. The following routes were not run in 1982: 16, 22.

Table 7. Indices^a for 24 predator scent post routes run in the Farmland Survey Zone, 1982 (see preceding map for route locations).

SPECIES ^b	ROUTE NUMBER																								Zone Index	% routes visited	
	11	12	13	14	15	19	26	30	36	37	38	39	40	46	48	50	51	52	54	57	58	59	60	61			
Coyote	20	-	-	5	-	-	11	-	75	-	61	-	17	-	-	-	-	-	-	-	-	-	-	-	9	25	
Red Fox	180	-	25	66	68	82	118	33	150	167	40	132	51	105	26	103	372	139	263	167	167	100	-	57	92	92	
Gray Fox	-	-	-	-	-	-	-	77	-	-	-	-	-	-	-	51	-	-	-	-	-	-	-	-	10	8	
Skunk	-	-	-	76	-	-	43	61	-	-	91	105	34	53	26	51	116	28	158	111	-	50	29	29	44	67	
Raccoon	120	-	25	177	57	61	16	55	-	21	263	26	17	-	26	-	47	-	263	-	56	-	-	57	69	67	
Weasel	-	-	-	15	5	-	21	-	-	-	-	-	53	-	26	-	-	-	-	-	-	-	-	-	7	21	
Mink	-	-	-	116	5	-	11	-	25	21	-	-	17	-	-	-	-	-	-	-	-	-	-	-	18	25	
Dog	8	50	25	30	204	41	11	61	50	208	10	158	17	53	132	26	23	278	-	83	111	100	57	29	74	96	
Cat	60	100	-	-	73	224	37	61	125	167	30	79	-	26	105	-	47	139	-	83	56	50	29	29	55	79	
Squirrel	-	-	-	45	5	20	-	77	-	21	-	-	68	-	-	26	-	-	-	-	-	-	-	-	19	29	
Rabbit	40	-	-	-	-	10	102	43	39	25	21	-	53	-	-	-	-	23	-	-	28	83	-	29	-	22	50
Deer	20	-	50	237	10	-	-	154	-	21	71	26	85	26	52	128	47	105	-	28	83	25	86	-	70	75	

^a Index = [(total visits/operable nights) x 1000].

^b Woodchuck occurred once on Route 38 and badger once on Route 26.

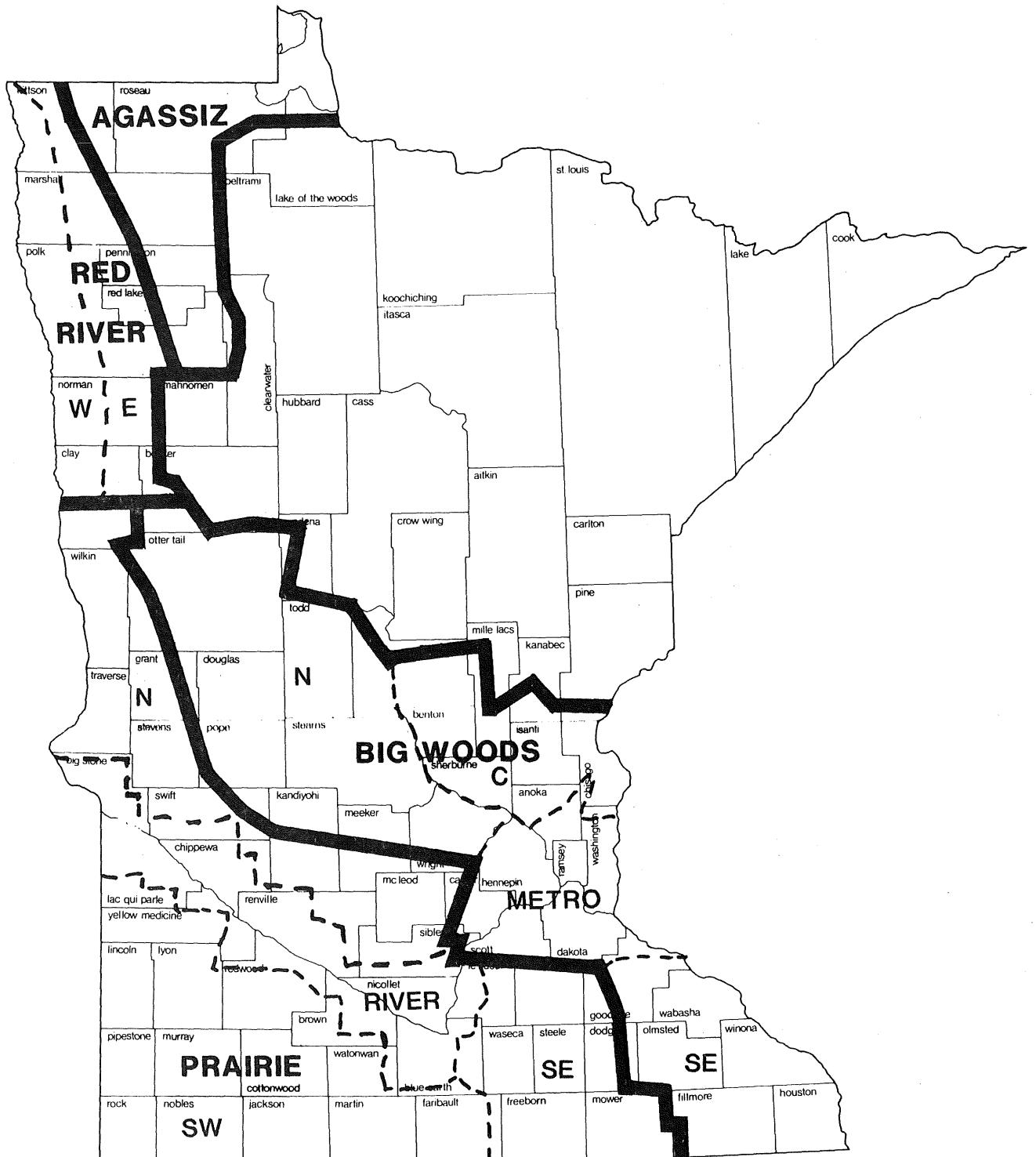


Figure 6. Deer management units and sub-units in the Farmland Zone.

Table 8. Productivity of deer in the Big Woods and Prairie Deer Management Units (DMU), 1979-1983.

	Age class	Pregnancy rate	Fetuses per pregnancy	Proportion of sample	Gross productivity ^a
BIG WOODS					
1983 (N=211)	Fawn	55%	1.38	35%	
	Yearling	95%	1.79	23%	
	Adult	96%	2.00	42%	1.43 fawns/ doe
1982 (N=237)	Fawn	46%	1.19	35%	
	Yearling	88%	1.77	23%	
	Adult	96%	1.90	42%	1.31 fawns/ doe
1981 (N=181)	Fawn	60%	1.06	36%	
	Yearling	97%	1.68	22%	
	Adult	96%	2.00	42%	1.39 fawns/ doe
1980 (N=173)	Fawn	61%	1.18	35%	
	Yearling	94%	1.71	21%	
	Adult	98%	1.93	44%	1.43 fawns/ doe
1979 (N=211)	Fawn	28%	1.11	34%	
	Yearling	90%	1.58	22%	
	Adult	95%	1.93	44%	1.23 fawns/ doe
PRAIRIE					
1983 (N=92)	Fawn	61%	1.36	35%	
	Yearling	93%	1.86	23%	
	Adult	100%	2.00	42%	1.53 fawns/ doe
1982 (N=132)	Fawn	47%	1.18	35%	
	Yearling	84%	1.80	23%	
	Adult	100%	2.03	42%	1.39 fawns/ doe
1981 (N=132)	Fawn	50%	1.06	36%	
	Yearling	95%	1.75	22%	
	Adult	97%	1.96	42%	1.38 fawns/ doe
1980 (N=108)	Fawn	63%	1.06	35%	
	Yearling	92%	1.64	21%	
	Adult	93%	1.95	44%	1.34 fawns/ doe
1979 (N=176)	Fawn	36%	1.21	34%	
	Yearling	94%	1.71	22%	
	Adult	92%	2.03	44%	1.32 fawns/ doe

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

Table 9. Spring densities of deer in the farmland zone, 1977-1983.

DMU	Deer per square mile						1983 pct. of goal
	1977	1979	1981	1982	1983	GOAL ^a	
<u>RED RIVER</u>	1.1	1.0	1.9	2.0	2.1	1.6	131%
<u>AGASSIZ</u>	3.5	2.9	4.5	5.0	5.7	6.5	87%
<u>BIG WOODS</u>							
North	3.4	3.5	3.9	4.0	4.1	4.1	100%
Central	2.3	3.1	5.0	5.5	5.9	5.9	100%
Metro	2.0	2.3	1.8	1.9	2.2	2.2	100%
SE	2.9	3.6	7.0	7.4	7.5	6.8	110%
<u>PRAIRIE</u>							
North	1.1	1.0	1.9	2.1	2.2	1.5	147%
River	1.0	1.2	2.5	2.6	2.6	2.2	116%
SW	0.8	0.9	1.7	1.8	1.9	1.3	146%
SE	0.7	0.8	1.4	1.5	1.6	1.2	133%
<u>FARMLAND ZONE</u>			3.0	3.2	3.3	3.0	110%

a

Goals as established in 1980.

FOREST WILDLIFE POPULATIONS
AND CENSUSES

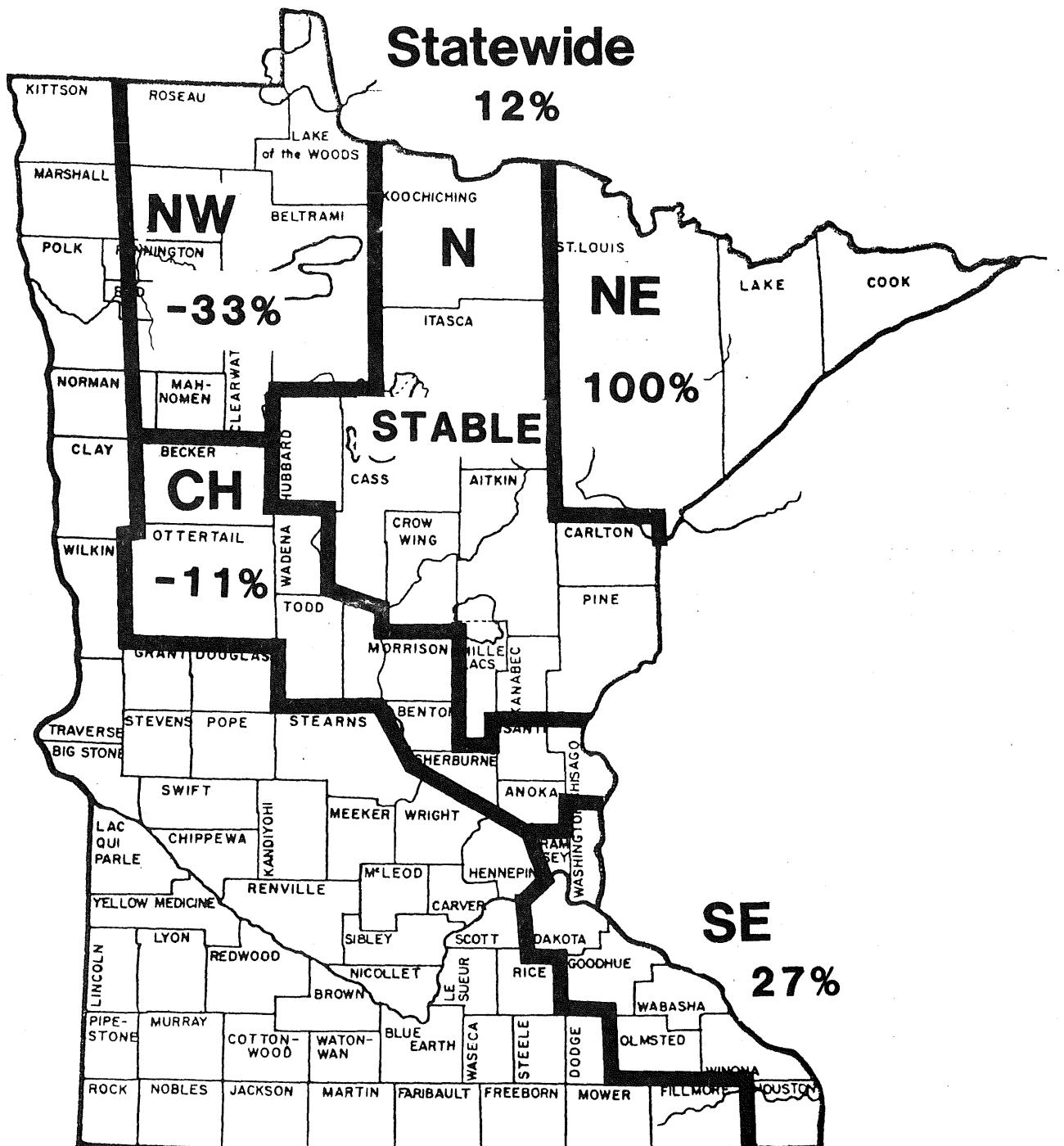


Figure 7. Changes from 1982-1983 in average numbers of ruffed grouse drums per stop on roadside counts.

Table 10. Mean number of ruffed grouse drums per stop by census zone, 1964-1983.

Year	Census Zone					Range-wide mean
	Northwest	North	Northeast	Central hardwoods	Southeast	
1964		0.7	0.9	0.3	1.3	0.6
1965		1.3	0.7	0.5	1.4	1.0
1966		1.3	0.6	0.7	1.9	1.0
1967		2.0	1.2	1.0	1.0	1.7
1968		2.6	1.6	1.0	1.3	2.0
1969		2.8	1.4	1.4	2.3	2.2
1970		3.1	0.9	1.6	2.1	2.2
1971		3.3	1.2	1.6	3.7	2.4
1972		3.4	1.0	2.0	3.1	2.6
1973	1.3	1.3	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	1.0	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

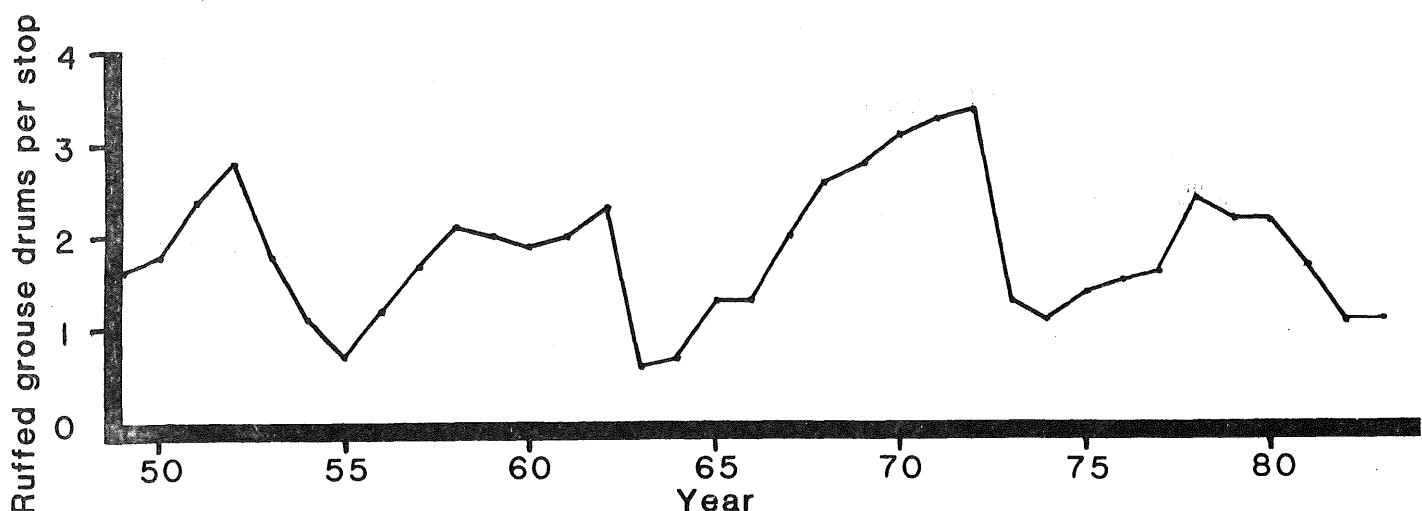


Figure 8. Mean number of ruffed grouse drums per stop in the North census zone, 1949-1983.

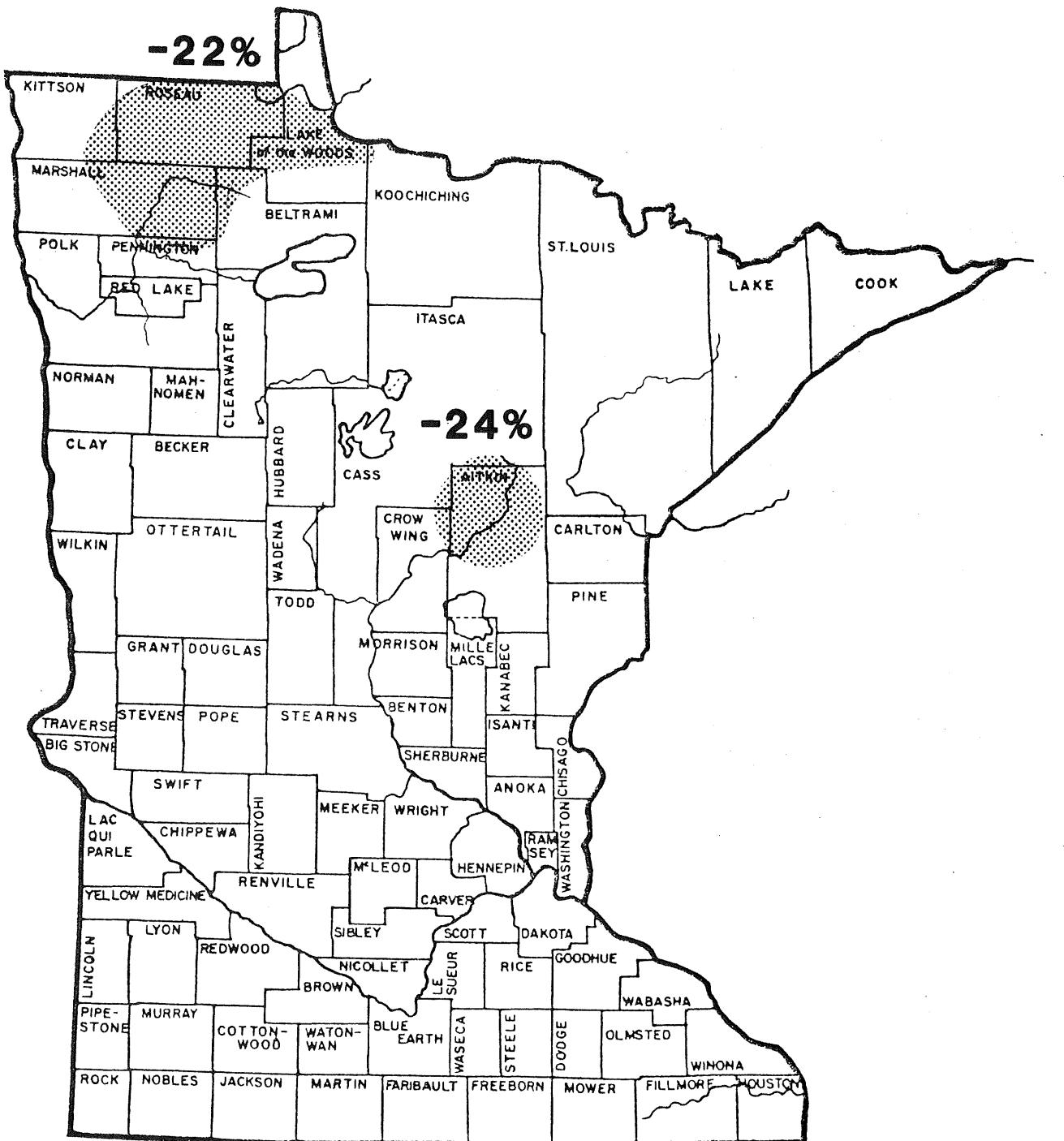


Figure 9. Changes in numbers of dancing male Sharp-tailed grouse on census areas, 1982-1983.

Table 11. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1983.

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	2.1	24%
1977	23	2.8	21%
1978	92	9.1	47%
1979	88	8.9	37%
1980	153	14.2	51%
1981	124	9.9	49%
1982	22	1.3	22%
1983	9	0.1	3%

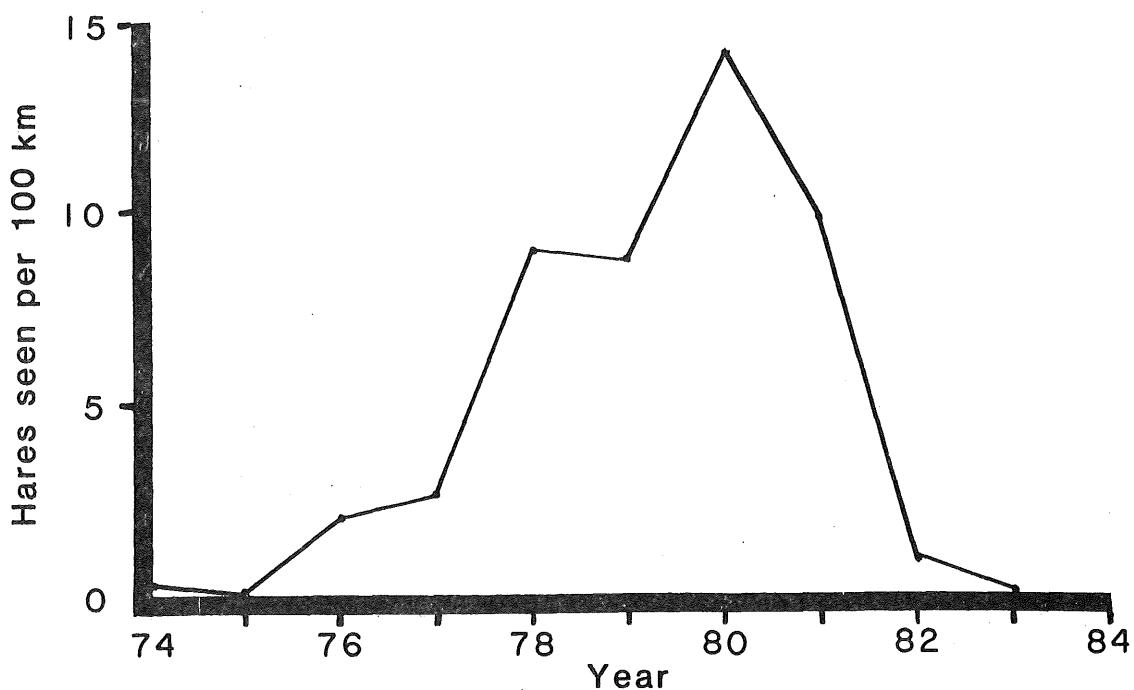


Figure 10. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1983.

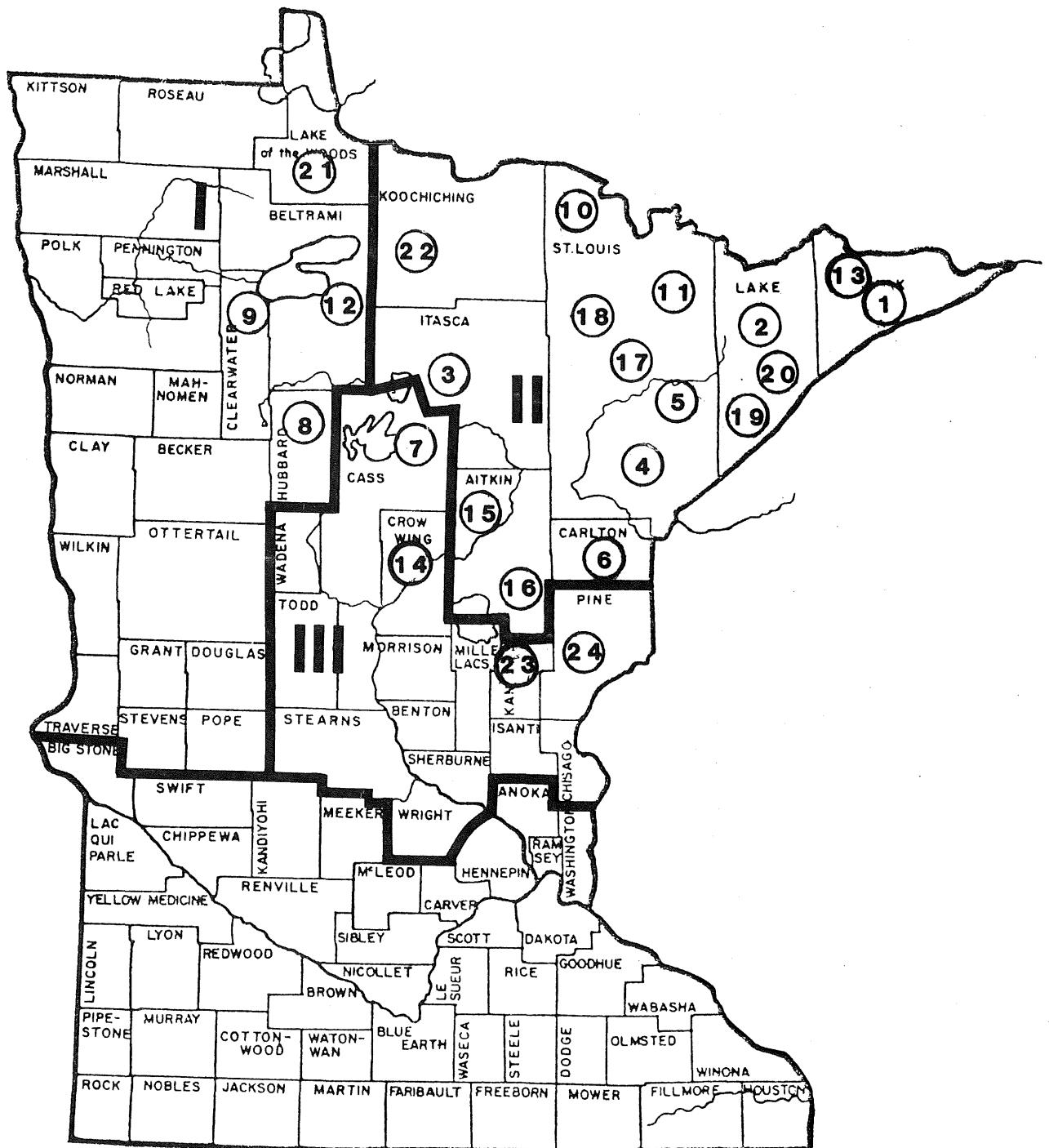


Figure 11. Approximate location of 24 aerial beaver census routes, within DNR Regions I-III.

Table 12. Live beaver colonies per mile of census route in northern Minnesota, 1973-1982.

Route number	Route name	Year									
		1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1	Cascade	0.44	0.55	1.12	0.52	0.39	1.07	-	0.42	0.43	0.40
2	Kawishiwi	0.92	0.33	0.95	-	0.73	0.97	0.68	0.75	0.50	0.72
3	Itasca	0.22	0.46	0.80	0.60	0.74	1.04	0.66	0.63	0.48	0.43
4	South St. Louis	-	0.48	0.74	0.63	0.76	0.99	-	0.64	0.74	-
5	Central St. Louis	0.78	0.60	1.23	-	-	1.02	0.95	0.90	0.95	0.65
6	Carlton & Pine	0.33	0.45	0.56	0.26	0.69	0.89	0.60	0.83	0.67	0.22
7	Cass	0.19	0.37	0.80	0.57	0.83	1.03	1.00	0.95	0.53	0.63
8	Balsam-Hennepin	0.31	0.60	0.40	0.28	0.51	0.39	0.55	0.44	0.43	0.60
9	Pinewood-Mississippi	0.16	0.56	0.32	0.33	0.55	0.32	-	0.38	0.39	0.49
10	Kabetogama Peninsula	1.52	2.20	2.21	2.39	2.14	2.91	3.05	2.52	3.55	2.66
11	Ely-Finger Lakes	1.32	0.92	1.85	-	1.41	1.59	1.26	1.06	0.98	1.17
12	Hay Creek-Kelliher	0.40	0.78	0.48	0.46	0.68	0.44	-	0.43	0.48	0.70
13	Cook County Transect	0.21	0.23	0.57	0.36	0.30	0.49	-	0.23	0.40	0.33
14	Cass-Crow Wing	0.21	0.43	0.67	0.43	0.59	0.70	0.68	0.78	0.61	0.74
15	Little Willow-Aitkin	0.18	0.24	0.35	-	0.42	0.45	0.47	0.44	0.38	0.40
16	East Aitkin County	-	0.52	0.62	0.47	0.89	1.14	0.96	0.72	0.52	0.86
17	West Vermilion	0.24	0.67	0.93	0.54	1.03	1.25	1.12	0.96	1.05	0.86
18	Blackduck	0.55	0.92	1.41	0.97	1.24	1.54	1.31	1.09	1.22	0.91
19	Splitrock	-	1.11	1.45	1.21	1.14	1.45	-	1.07	-	-
20	Isabella	0.30	0.58	0.80	0.73	0.66	0.66	0.68	0.60	0.65	-
21	Red Lake-Pine Island	-	0.62	0.51	0.44	0.63	0.44	0.73	0.40	0.41	0.50
22	Northome	-	0.40	0.61	0.53	0.75	0.75	0.85	0.86	0.91	0.97
23	Kanabec County	-	0.78	0.61	0.65	0.84	0.59	0.55	0.70	0.48	0.55
24	Southern Pine	-	0.92	0.91	0.88	0.85	0.74	0.88	0.93	0.58	0.76
	DNR Region I	0.29	0.64	0.43	0.38	0.59	0.40	0.64	0.41	0.43	0.57
	DNR Region II	0.58	0.67	1.01	0.77	0.89	1.14	1.05	0.86	0.90	0.81
	DNR Region III	0.20	0.63	0.75	0.63	0.78	0.77	0.78	0.84	0.55	0.67

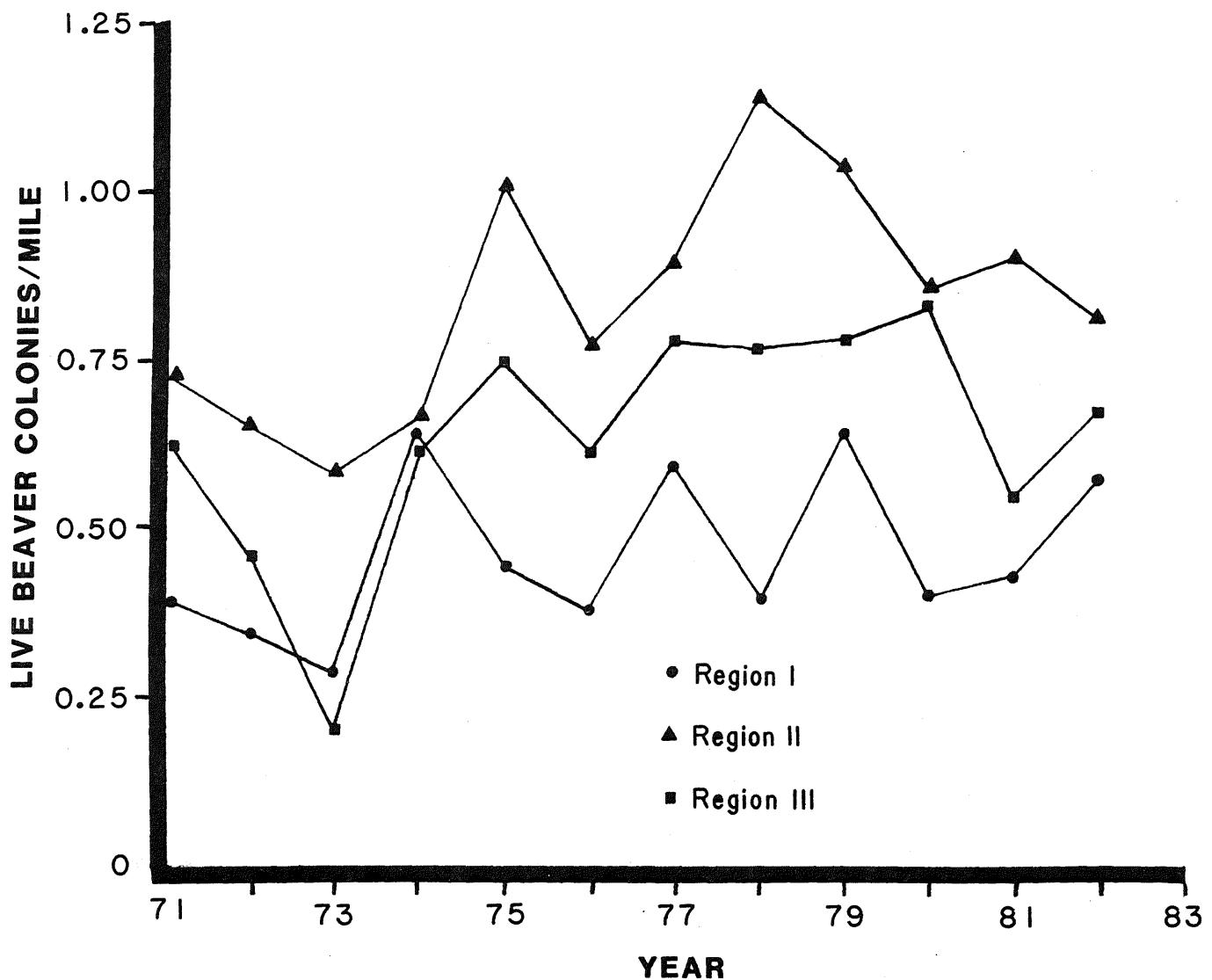


Figure 12. Numbers of live beaver colonies per mile in the three forested DNR Regions, 1971-1982.

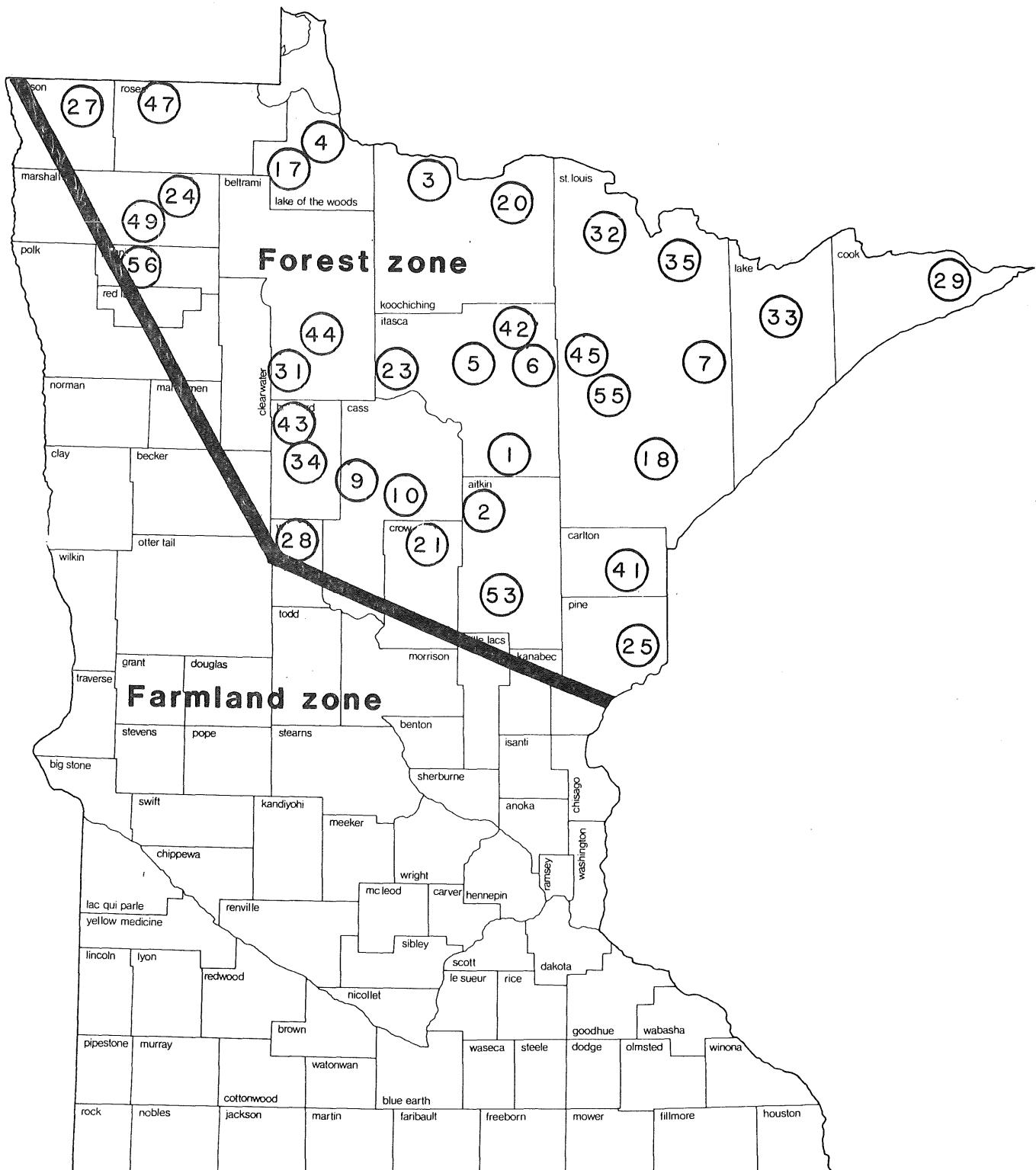


Figure 13. Approximate location of scent post routes in the Forest Survey Zone. The following route(s) were not run in 1982:
28.

Table 13. Indices^a for 33 predator scent post routes run in the Forest Survey Zone, 1982 (see preceding map for route locations).

SPECIES ^b	ROUTE NUMBER																			
	1	2	3	4	5	6	7	9	10	17	18	20	21	23	24	25	27	29	31	32
Coyote	57	11	38	27	-	10	96	-	15	30	18	-	-	-	28	20	20	139	51	14
Wolf	21	-	44	-	-	10	10	-	-	6	-	13	-	-	-	-	-	14	-	7
Red Fox	10	11	407	128	62	83	269	17	7	30	9	60	-	-	160	-	101	125	51	43
Bobcat	5	16	5	7	-	10	-	-	-	165	-	-	-	40	-	-	-	-	-	43
Skunk	109	66	33	134	62	62	51	105	118	189	-	60	20	120	45	120	116	56	103	14
Bear	5	16	16	7	-	-	15	5	7	55	-	-	-	40	11	-	-	7	-	7
Woodchuck	-	-	-	-	-	-	-	-	-	-	-	20	-	-	6	-	-	-	-	-
Raccoon	-	-	-	-	-	-	-	22	37	-	9	7	10	40	6	60	25	-	-	-
Marten	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	35	-	-
Weasel	-	-	-	-	-	-	-	-	-	6	-	27	-	-	11	-	-	-	-	-
Mink	-	-	121	13	-	-	-	-	-	-	-	40	-	-	17	20	-	-	-	29
Dog	41	49	-	40	-	-	5	11	37	-	-	-	10	-	6	-	15	-	51	-
Cat	5	27	-	67	-	-	-	-	7	-	-	-	25	60	28	80	10	-	77	-
Squirrel	5	-	-	13	-	21	20	-	-	98	-	47	10	60	-	-	-	28	-	-
Snowshoe hare	-	5	5	27	10	-	5	-	-	61	-	121	-	-	6	40	-	7	-	-
Deer	16	22	-	20	42	21	-	77	66	43	100	34	45	-	114	-	70	-	77	14

^a Index = [(total visits/operable nights) x 1000].^b Badger occurred twice on Route 34, and fisher once each on Routes 1, 6, and 49.

Continued

Table 13. Cont.

SPECIES ^b	ROUTE NUMBER														Zone Index	% routes visited
	33	34	35	41	42	43	44	45	47	49	53	55	56			
Coyote	20	14	-	-	13	72	14	26	100	-	-	50	-	28	70	
Wolf	-	-	7	-	-	-	-	-	-	-	-	-	-	6	27	
Red Fox	-	7	94	-	154	22	-	-	260	225	-	-	200	80	73	
Bobcat	-	-	-	-	51	-	-	53	-	-	-	-	-	12	30	
Skunk	-	111	-	82	77	130	117	26	40	50	125	-	75	74	88	
Bear	7	21	-	10	-	-	14	26	20	-	188	-	-	10	58	
Woodchuck	-	-	-	-	-	7	-	26	-	-	-	-	-	2	12	
Raccoon	-	7	-	31	-	14	-	-	-	150	375	-	25	11	45	
Marten	13	-	-	-	-	-	-	-	-	-	-	-	-	3	9	
Weasel	7	-	-	-	-	-	-	-	-	-	-	-	-	2	12	
Mink	-	-	-	41	-	-	-	79	20	225	125	-	50	15	30	
Dog	-	-	-	72	-	29	62	105	-	-	-	-	-	16	42	
Cat	-	-	-	62	-	14	7	-	-	-	-	-	50	13	42	
Squirrel	87	42	20	-	102	43	7	-	-	-	-	50	-	20	48	
Snowshoe hare	87	-	34	-	13	7	-	-	-	-	-	-	25	16	45	
Deer	-	62	-	21	38	138	41	26	20	75	-	100	100	41	76	

^a Index = [(total visits/operable nights) x 1000].^b Badger occurred twice on Route 34, and fisher once each on Routes 1, 6, and 49.

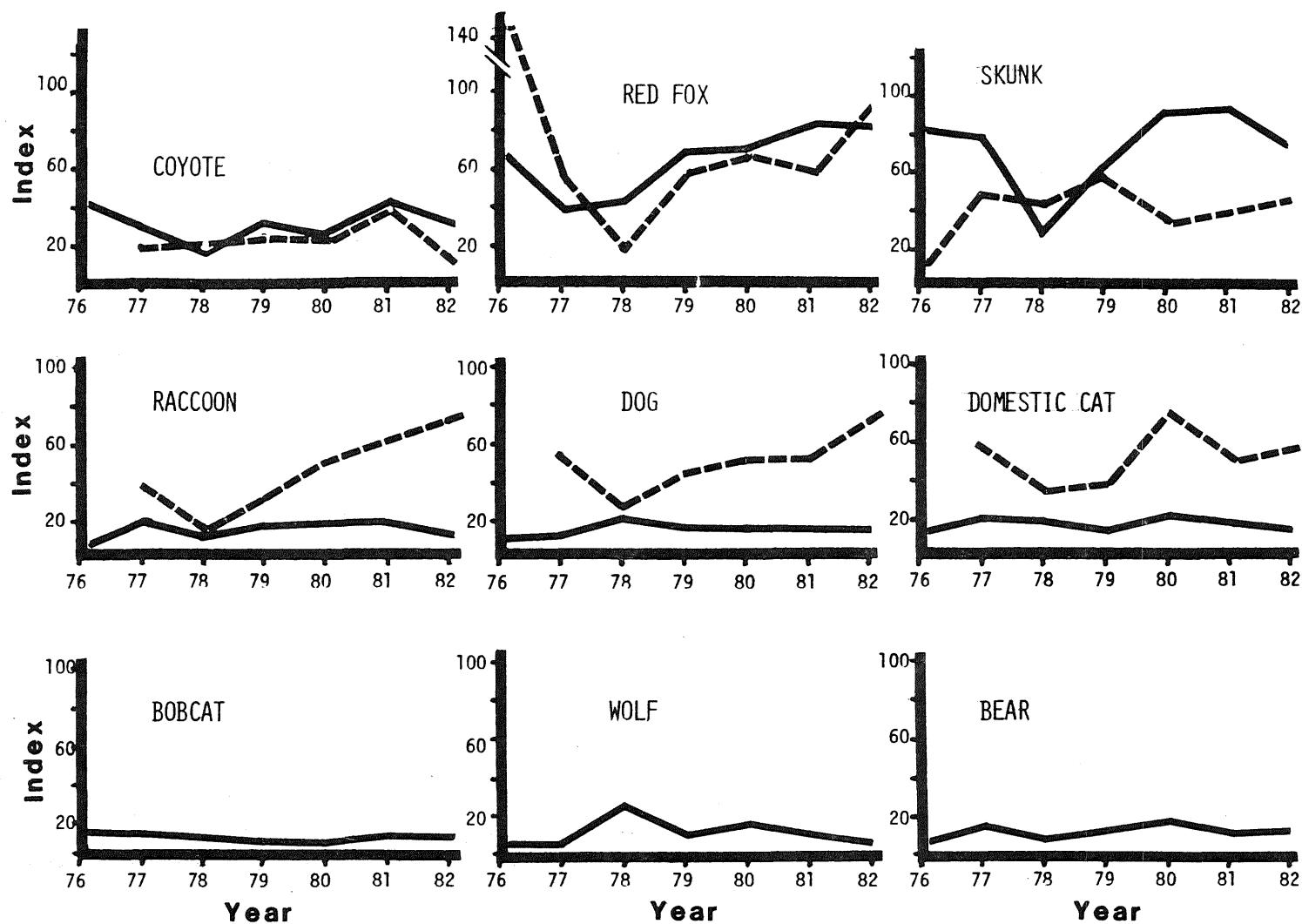


Figure 14. Mean scent post indices for nine species in the Forest (solid line) and Farmland (dashed line) Survey Zones, 1976-1982.

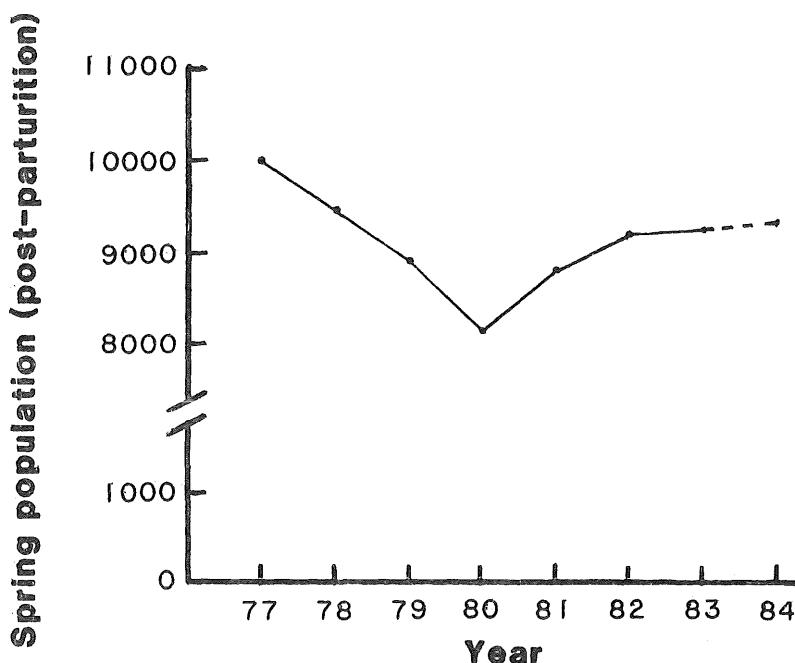


Figure 15. Hypothesized fisher population, 1977-1984, based on modeling of population parameters gathered from carcass collections and projected 1983 harvest of 1045.

Model conditions:

Spring 1977 population of 10,078.

Adult pregnancy rate = 90%.
Mean litter size = 2.8.

Registered harvests since 1977.

Age/sex data from carcass collections.

'Poaching factor' = 10%.

Natural mortality:

Juveniles	30%
Yearlings	15%
Adults	10%

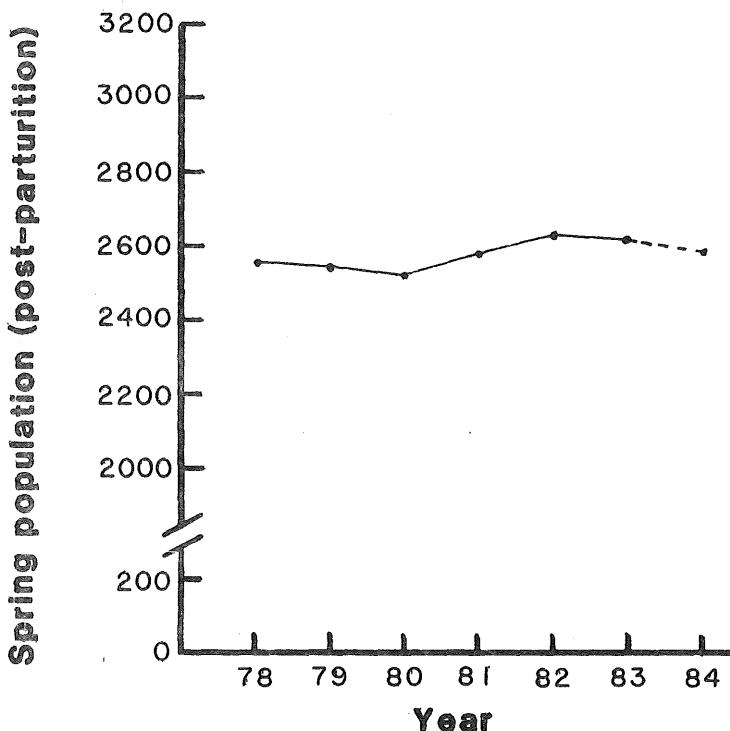


Figure 16. Hypothesized bobcat population, 1977-84, based on modeling of population parameters gathered from carcass collections and projected 1983 harvest of 310.

Model conditions:

Spring 1978 population of 2,550.

Adult pregnancy rate = 70%.

Mean litter size = 2.8.

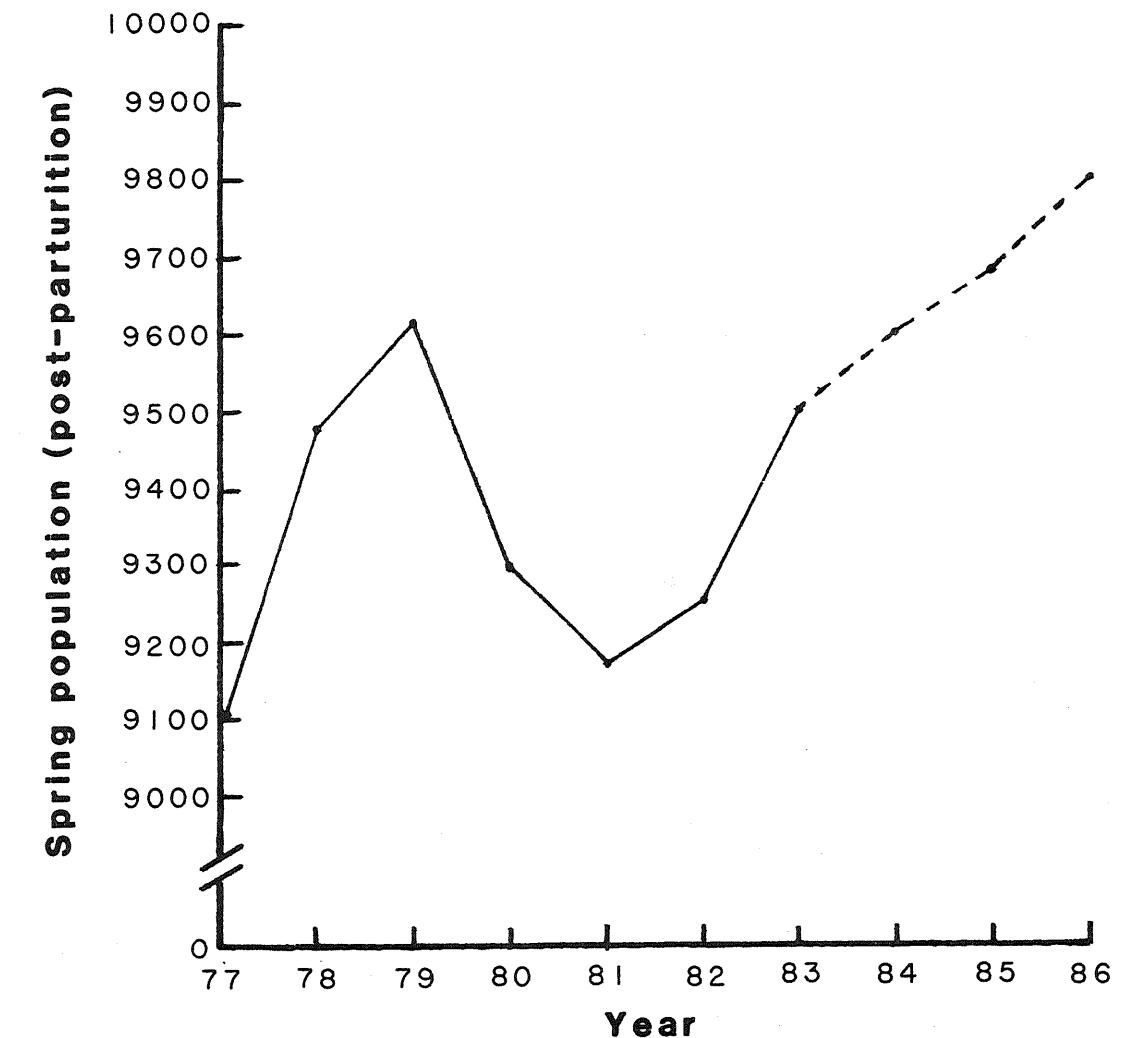
Registered harvests since 1977.

Age/sex data from carcass collections.

'Poaching factor' = 10%.

Natural mortality:

	<u>Summer</u>	<u>Winter</u>
Juveniles	30%	25%
Yearlings	10%	20%
Adults	20%	20%



Model conditions:

Spring 1977 population of 9100.

Adult pregnancy rate = 61%.

Mean litter size = 2.2.

'Poaching factor' = 10%.

Natural mortality:

	Summer	Winter
Juveniles	20%	15%
Yearlings	10%	10%
Adults	10%	10%

Figure 17. Hypothesized otter population, 1977-86 based on modeling of population parameters gathered from carcass collections and projected 1983 to 1986 harvests of 700 animals annually.

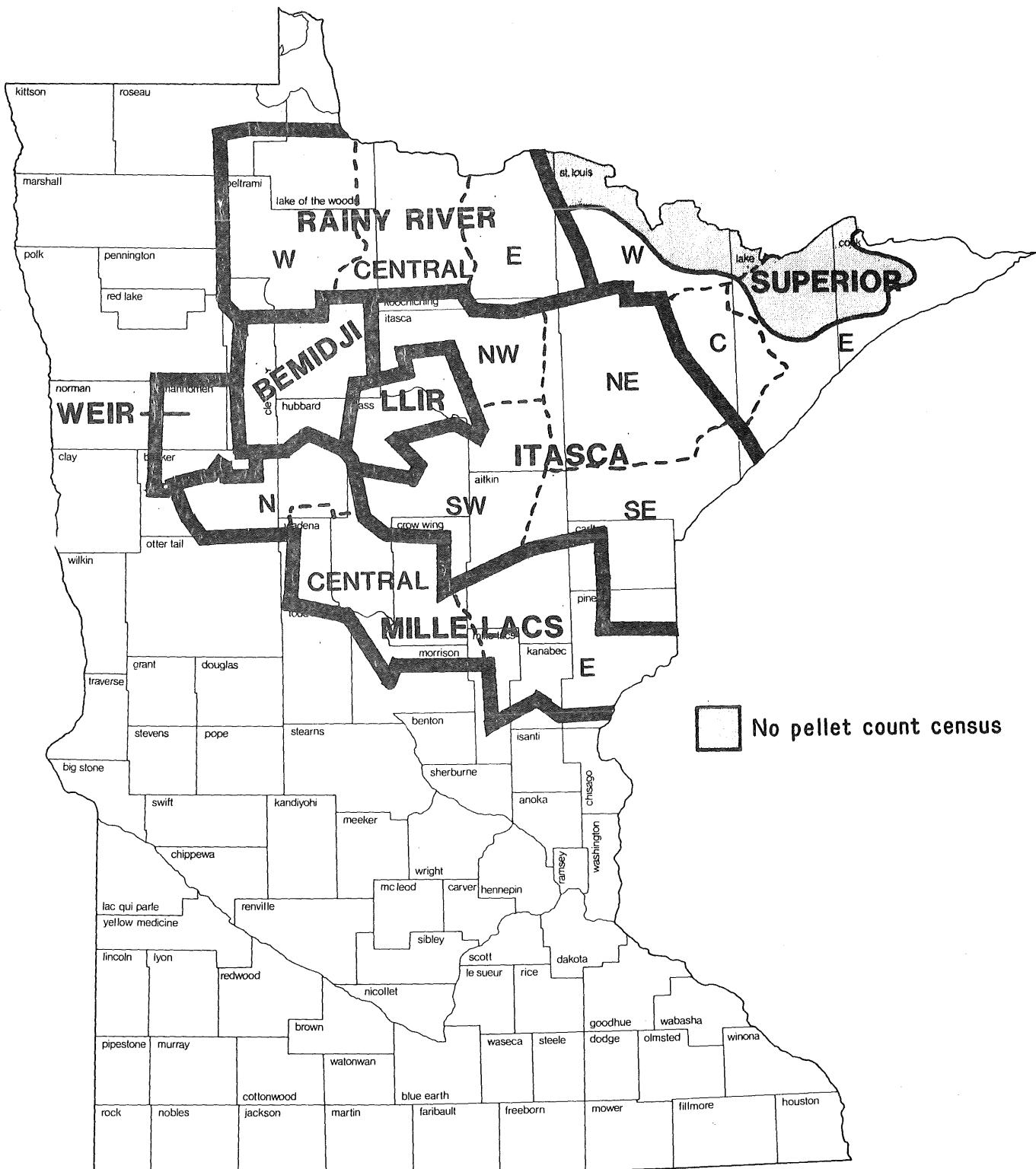


Figure 18. Deer management units and sub-units in the Forest Zone.

Table 14. Spring (pre-fawning) estimates of deer per square mile as determined by pellet counts,
1978-1983.

Area	Year					
	1978	1979	1980	1981	1982	1983
Itasca DMU						
NW	16.3 ± 4.5	16.6 ± 3.9	16.8 ± 3.9	22.9 ± 4.3	22.4 ± 4.5	-----
SW	12.7 ± 3.7	14.1 ± 4.3	14.5 ± 4.1	16.9 ± 4.7	17.3 ± 4.8	21.0 ± 6.2
NE	16.2 ± 3.3	17.3 ± 4.1	15.1 ± 3.6	16.7 ± 3.8	14.1 ± 3.5	14.2 ± 3.6
SE	13.2 ± 4.2	13.6 ± 5.0	12.0 ± 5.2	18.1 ± 5.3	10.8 ± 4.2	15.4 ± 4.9
Rainy River DMU						
West	7.4 ± 5.3	12.5 ± 3.6	10.9 ± 3.7	-----	13.9 ± 6.0	-----
Central	9.5 ± 5.2	11.2 ± 3.5	8.2 ± 2.6	-----	11.4 ± 6.1	-----
East	10.6 ± 5.4	14.4 ± 7.4	21.8 ± 6.9	19.1 ± 5.1	8.9 ± 3.2	21.8 ± 6.9
Mille Lacs DMU						
West	7.4 ± 2.3	11.0 ± 2.8	12.4 ± 3.3	17.8 ± 4.7	18.0 ± 5.2	-----
Central	9.7 ± 4.7	9.3 ± 3.6	7.6 ± 2.4	11.3 ± 4.1	17.4 ± 4.8	16.1 ± 4.7
East	14.9 ± 3.2	16.5 ± 4.7	9.4 ± 2.5	14.0 ± 2.8	14.1 ± 3.7	15.8 ± 3.2
Superior DMU^a						
West	20.0 ± 5.2	15.1 ± 3.4	21.4 ± 5.0	15.4 ± 2.9	-----	-----
Central	12.1 ± 4.9	10.2 ± 3.3	15.2 ± 5.6	16.2 ± 10.2	-----	-----
East	4.8 ± 1.6	4.8 ± 1.7	-----	-----	-----	-----
Bemidji DMU						
Agassiz NWR	13.5 ± 7.2	12.4 ± 6.7	21.3 ± 6.7	24.4 ± 8.7	25.6 ± 8.4	-----
Tamarac NWR			70.7 ± 13.5	69.1 ± 25.3	62.5 ± 14.7	-----
White Earth IR		6.3 ± 2.9	4.1 ± 1.9	10.1 ± 5.8	11.4 ± 4.3	-----
Leech Lake IR				13.3 ± 3.6	14.1 ± 3.7	-----
Bearville Study Area		31.2 ± 9.5	38.1 ± 7.2	39.5 ± 8.7	38.0 ± 5.8	-----
Camp Ripley	24.8 ± 6.9	23.2 ± 7.1	17.0 ± 5.1	19.2 ± 5.2	31.0 ± 8.2	31.6 ± 7.1
Mille Lacs WMA	30.6 ± 7.9	33.9 ± 7.7	24.9 ± 6.6	30.5 ± 11.2	35.4 ± 11.6	24.2 ± 6.6
St. Croix State Park	40.6 ± 15.2	52.2 ± 24.1	45.0 ± 21.2	39.6 ± 9.6	53.3 ± 14.8	41.6 ± 9.5

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

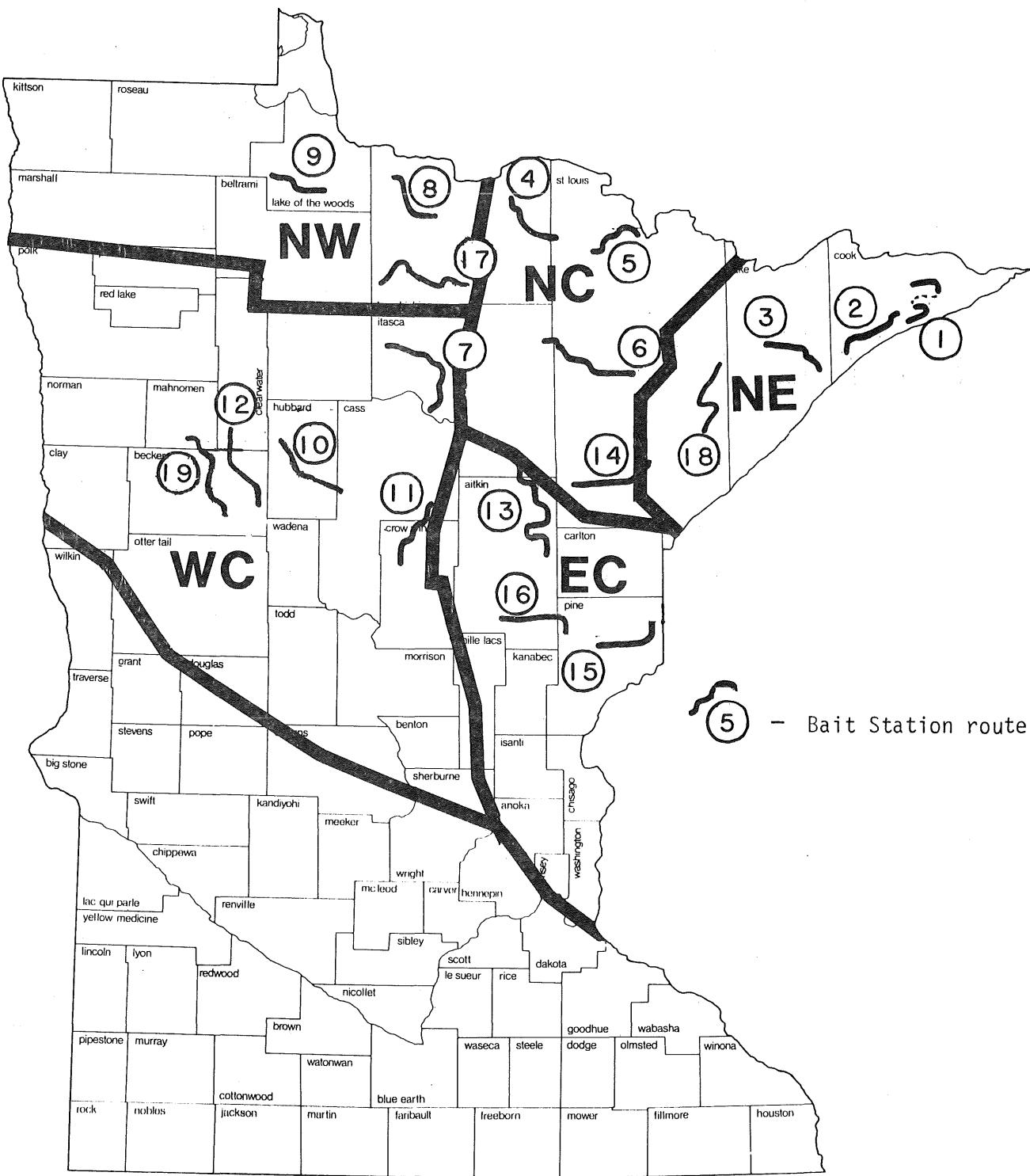


Figure 19. Approximate location of 5 Bear Permit Areas (NW, WC, NC, EC, NE) and nineteen black bear bait station routes.

Table 15. Black bear bait post index (percent of bait stations visited) for 19 bait post routes, by Bear Permit Area, 1981-1983.

Bear permit area ^a	Route number	Year		
		1981	1982	1983
Northeast	1	28	22	40
	2	22	14	14
	3	2	37	44
	18	-	-	8
	Mean	17	24	27
North Central	4	56	22	50
	5	54	31	44
	6	27	17	18
	14	4	16	14
	Mean	35	22	32
Northwest	8	14	6	10
	9	40	16	26
	17	-	-	18
	Mean	27	11	18
West Central	7	44	18	38
	10	22	26	44
	11	22	12	20
	12	44	22	62
	19	-	-	28
	Mean	33	20	38
East Central	13	32	24	40
	15	32	25	20
	16	-	-	36
	Mean	32	25	32
Overall mean visitation index		30	21	30

^a Groupings of bait post routes by region are different from those used in the 1981 and 1982 summaries of bait post results. These changes resulted from the shift in management unit boundaries from the original Bear Management Units to the present Bear Permit Areas.

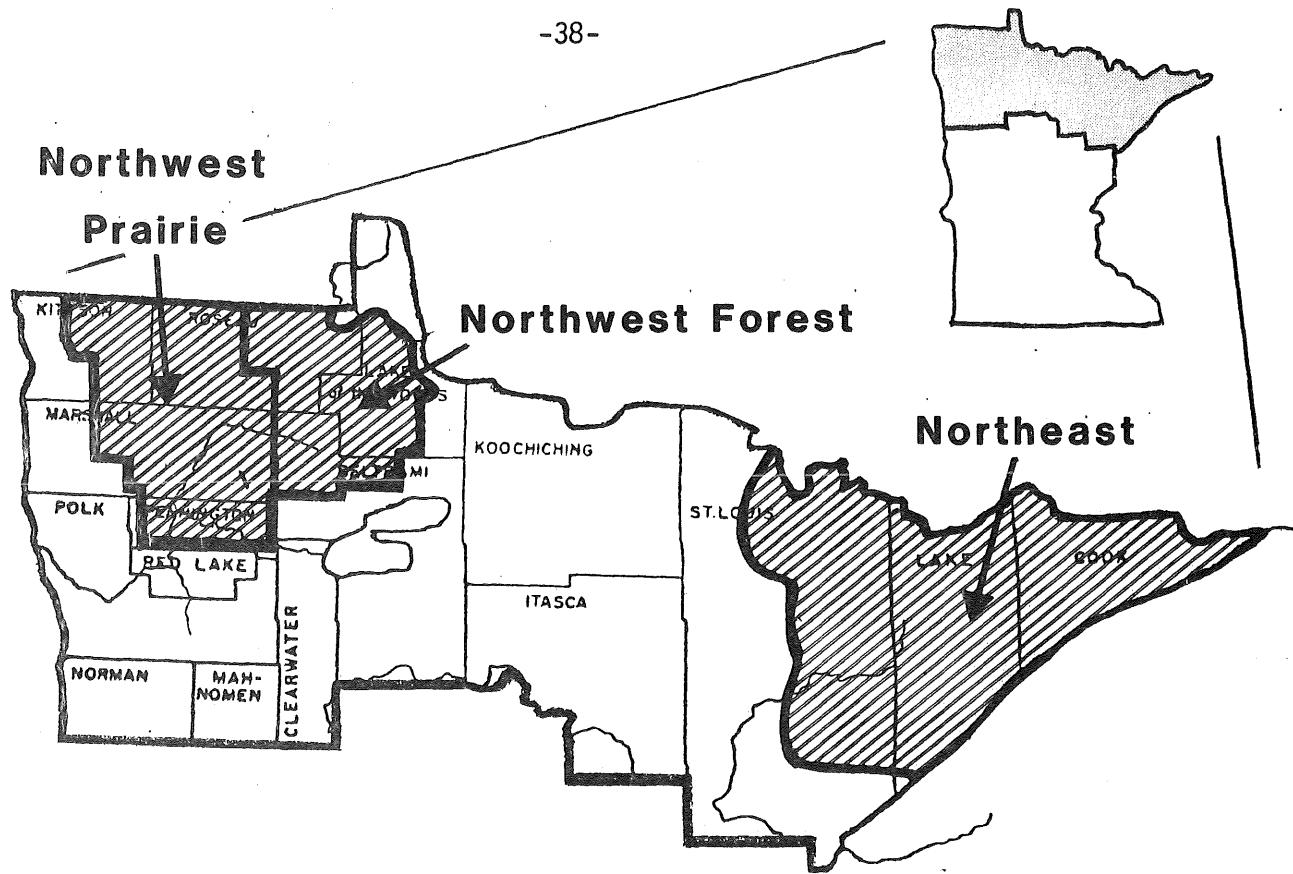


Figure 20. Approximate boundaries of aerial moose census and hunting zones.

Table 16. Moose populations as determined by aerial census in 1982-83.

Census zone	Square miles of moose range ^a	Population estimate ($\pm 90\%$ CI) ^b
Northeast	4809.1	4947 \pm 1250
Northwest-Forest	1799.6	447 \pm 172
Northwest-Prairie	2126.1	3817 \pm 982

^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.

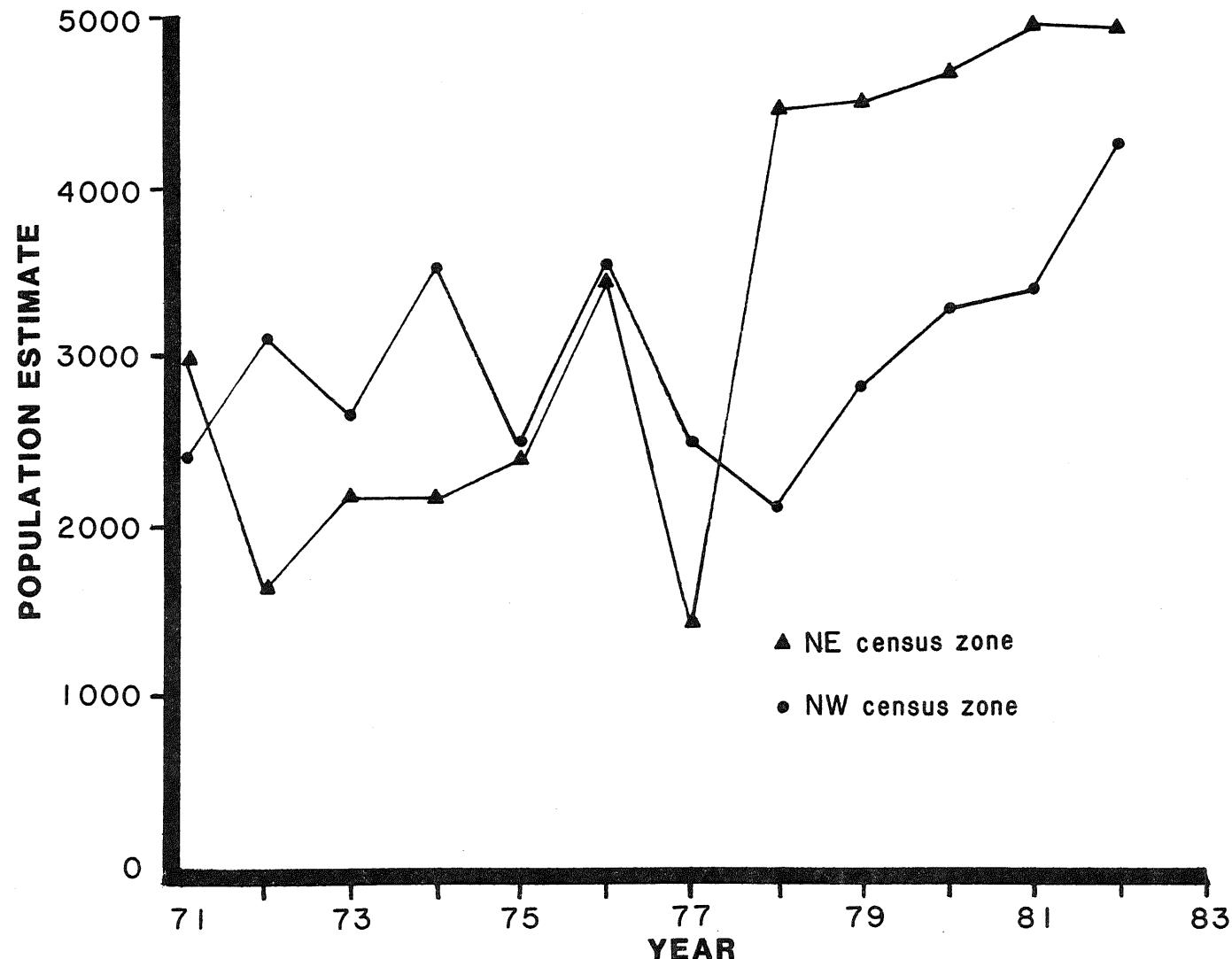


Figure 21. Moose population estimates in the two moose census zones, 1971-1982 (NW - Prairie and NW - Forest census zones combined into NW census zone).

MIGRATORY BIRD POPULATIONS
AND CENSUSES

Table 17. Estimated number of breeding ducks in Minnesota based on spring aerial census transects, 1976-1983.

Species	Year	Unadjusted population index	Visibility factor	Adjusted population estimate ^c
Mallard	1976	84,069	1.81	152,000
	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	86,418	2.04	176,000
	1980	57,710	6.25	360,000
	1981	69,210	4.17	289,000
Blue-winged teal	1982	49,167	6.45	317,000
	1983	49,073	2.24	110,000
	1976	93,116	4.16	387,000
	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	49,167	6.45	317,000
	1983	49,073	2.24	110,000
Other ducks	1976	66,914	2.41	158,000
	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	59,821	5.18	310,000
	1983 ^b	47,121	3.74	176,000
	1980	244,099	--	697,000
	1981	170,080	--	576,000
Totals	1982	142,345	--	615,000
	1983	169,890	--	598,000
	1980	237,785	--	756,000
	1981	214,820	--	671,000
	1982	173,780	--	799,000
	1983	182,612	--	462,000

^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 18. Winter population estimates (post hunting season) of the Canada goose eastern prairie flock, 1963-1983 (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Admin. Rep. 26pp.).

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

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

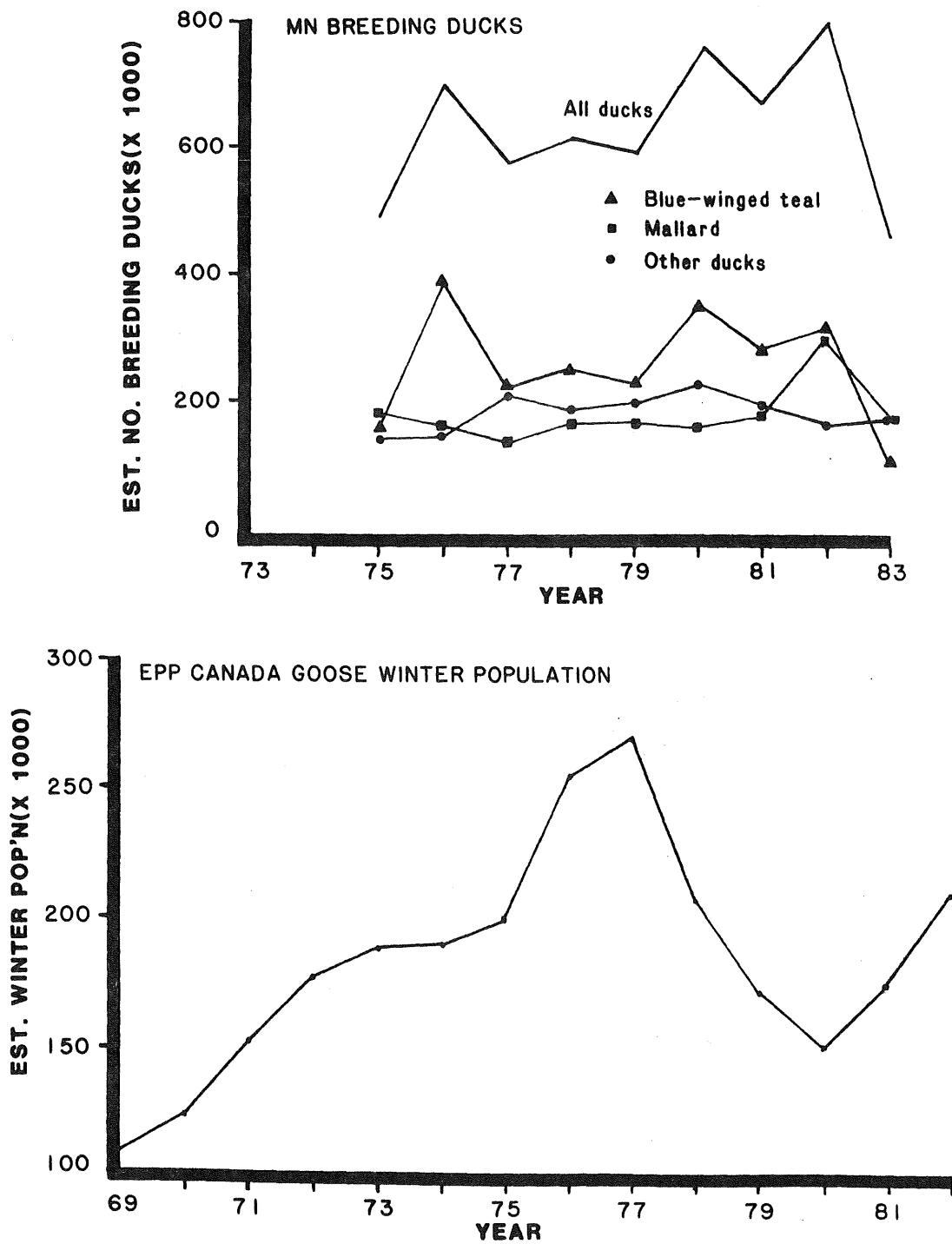


Figure 22. Estimated numbers of Minnesota breeding ducks, 1975-1983 (above), and winter population estimates of the Eastern Prairie Pothole (EPP) Canada goose flock, 1969-1982 (below) (goose data taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Admin. Rep. 26pp).

Table 19. U.S. breeding population estimates for 10 species of ducks, 1955-83 (in thousands)^a (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Admin. Rep. 26pp.).

Year	Mallard	Gadwall	American wigeon	Green-winged teal	Blue-winged teal	Northern shoveler	Northern 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	5,566
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	8,781(1) ^b	1,198	3,665	2,444	4,866	1,657	5,114	754	696	7,535
1974	7,392(1)	1,562	3,003	2,221	5,437	2,060	7,165	613	493	7,045
1975	8,109(1)	1,672	2,862	2,038	6,441	1,994	6,387	974	706	7,846
1976	8,637(1)	1,478	2,699	1,844	5,023	1,818	6,045	946	686	6,973
1977	8,226(1)	1,546	2,678	1,952	4,626	1,616	4,971	688	702	7,490
1978	7,695(1)	1,593	3,808	2,978	4,497	2,162	5,664	833	423	7,125
1979	8,444(1)	1,889	3,388	2,920	5,278	2,555	6,070	774	606	9,135
1980	8,003(2)	1,459	3,857	2,925	4,903	2,050	5,420	1,146	688	7,690
1981	6,757(2)	1,479	3,555	2,515	4,076	2,403	4,227	825	594	7,253
1982	6,684(1)	1,690	3,159	2,247	3,879	2,540	4,112	674	543	6,549
1983	7,107(2)	1,536	2,923	2,574	3,381	2,237	4,086	866	528	8,788
1955-82 Ave.	8,543	1,482	3,173	2,121	5,026	1,963	5,952	706	573	6,869
Percent Change in 1983 from:										
1982	+6	-9	-7	+15	-13	-12	-1	+28	-3	+34
1955-82 Ave.	-17	+4	-8	+21	-33	+14	-31	+23	-8	+28

^a All duck indexes adjusted for visibility bias.

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

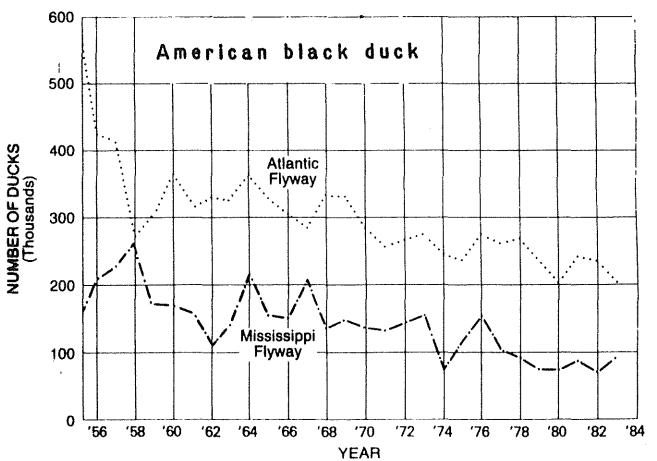
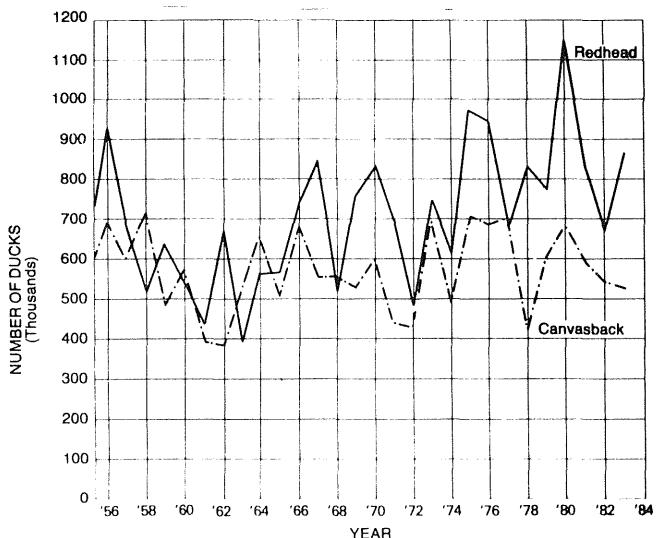
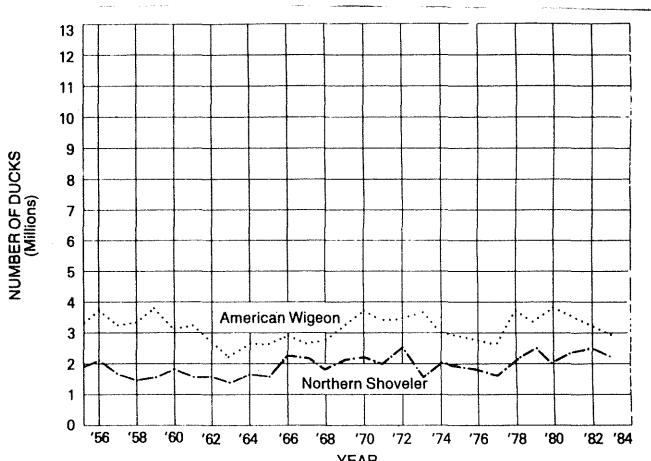
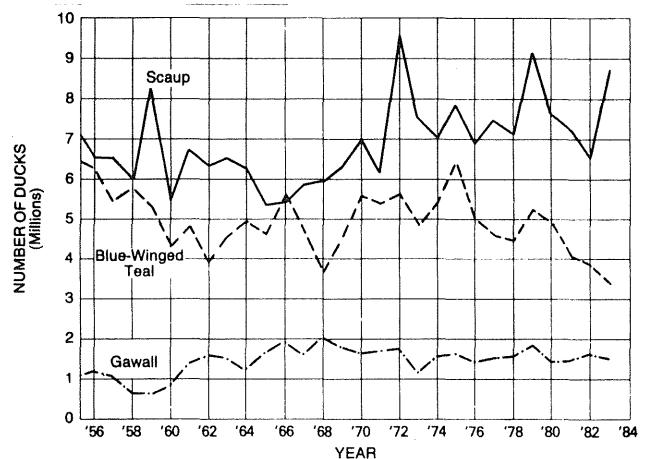
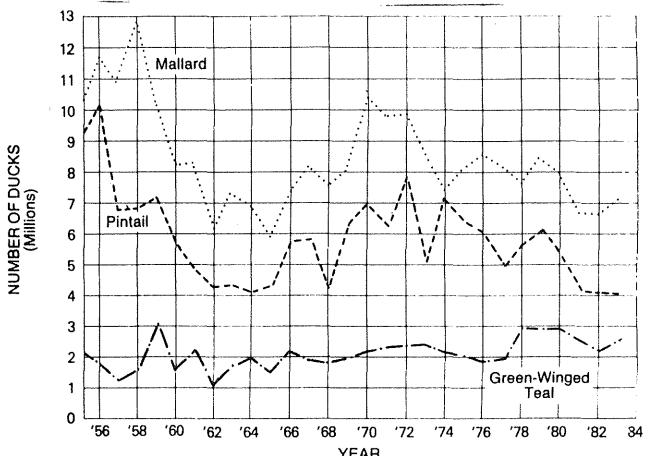
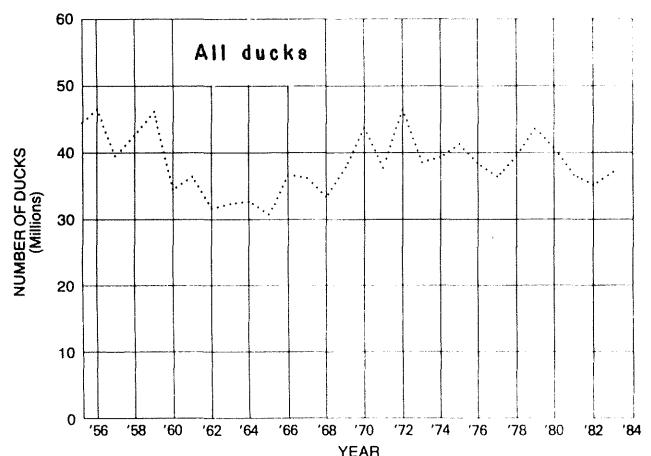


Figure 23. North American breeding population estimates for selected ducks, and winter population estimates for black ducks in 2 flyways, 1955-1983 (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Adm. Rep. 26 pp.).

Table 20. Summary of the number of May (adjusted for visibility) and July ponds in the southern portions of Alberta, Saskatchewan, and Manitoba, 1961-1983 (Taken from: U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Admin. Rep. 26pp.).

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	1,658	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	2,137	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	876	60.7
1982	3,184	1,662	52.2
1983	3,906	2,221	56.9
1961-82 Average	3,698	1,627	45.2
% Change in 1983			
From:			
1982	+ 23	+ 34	+ 9
1961-82 Average	+ 6	+ 37	+ 26

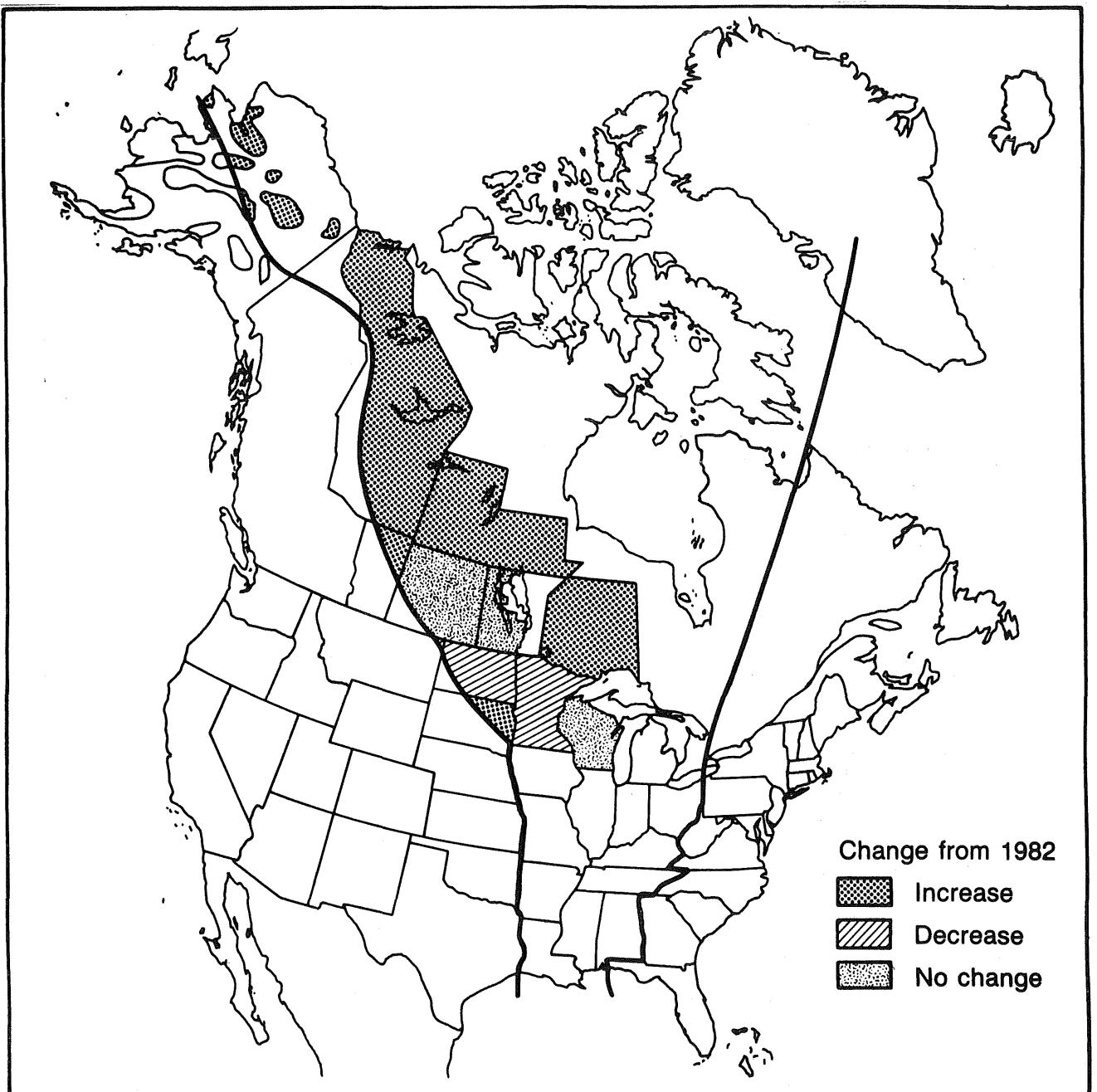


Figure 24. Fall 1983 duck flight forecast for the Mississippi flyway, change from 1982; FORECAST: No change (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Adm. Rep. 26 pp.).

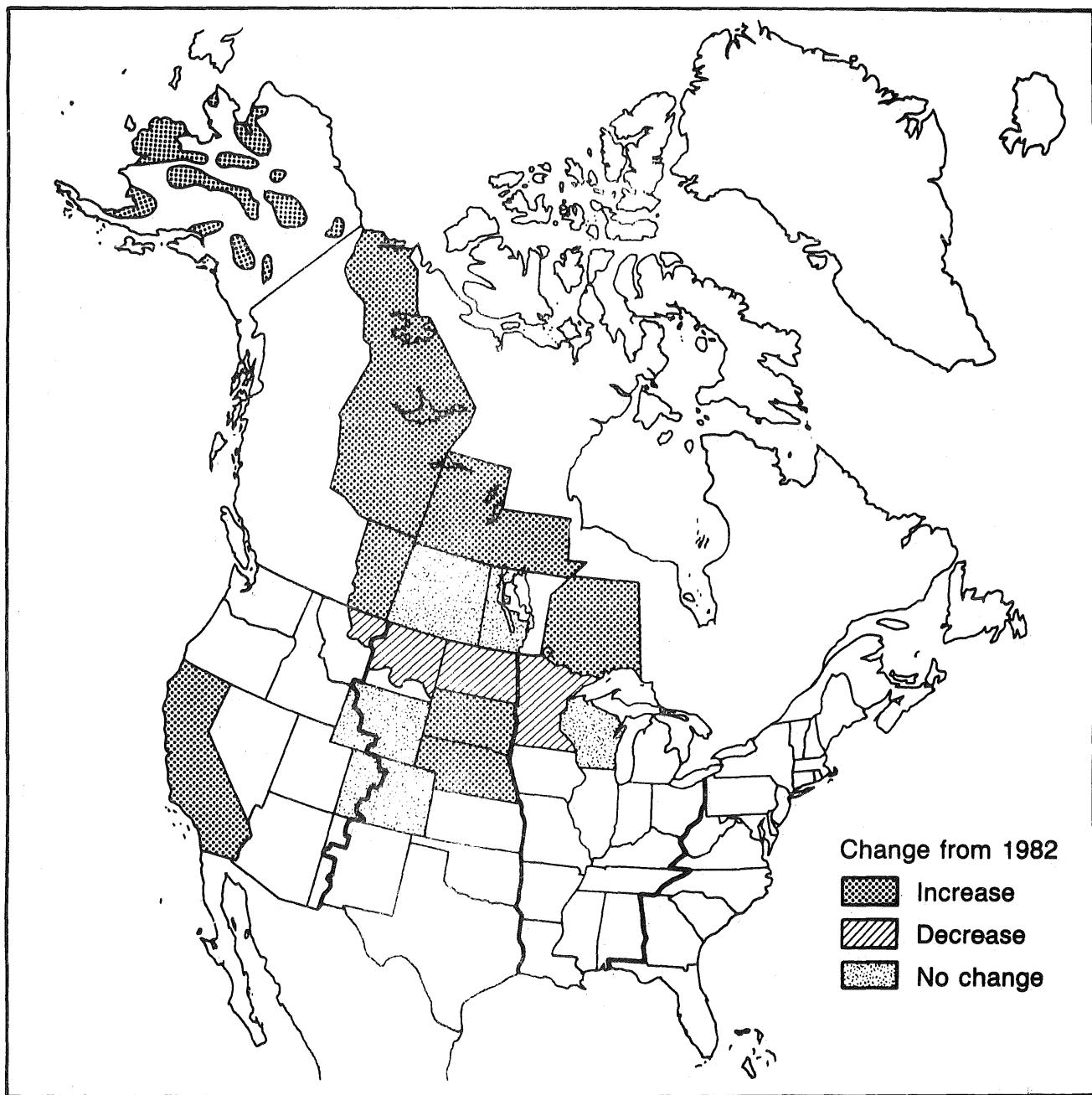


Figure 25. Fall 1983 duck flight forecast for Canada and U.S., change from 1982; FORECAST: No change (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1983. 1983 Status of waterfowl and fall flight forecast; July 25, 1983. U.S.F.W.S. Adm. Rep. 25 pp.).

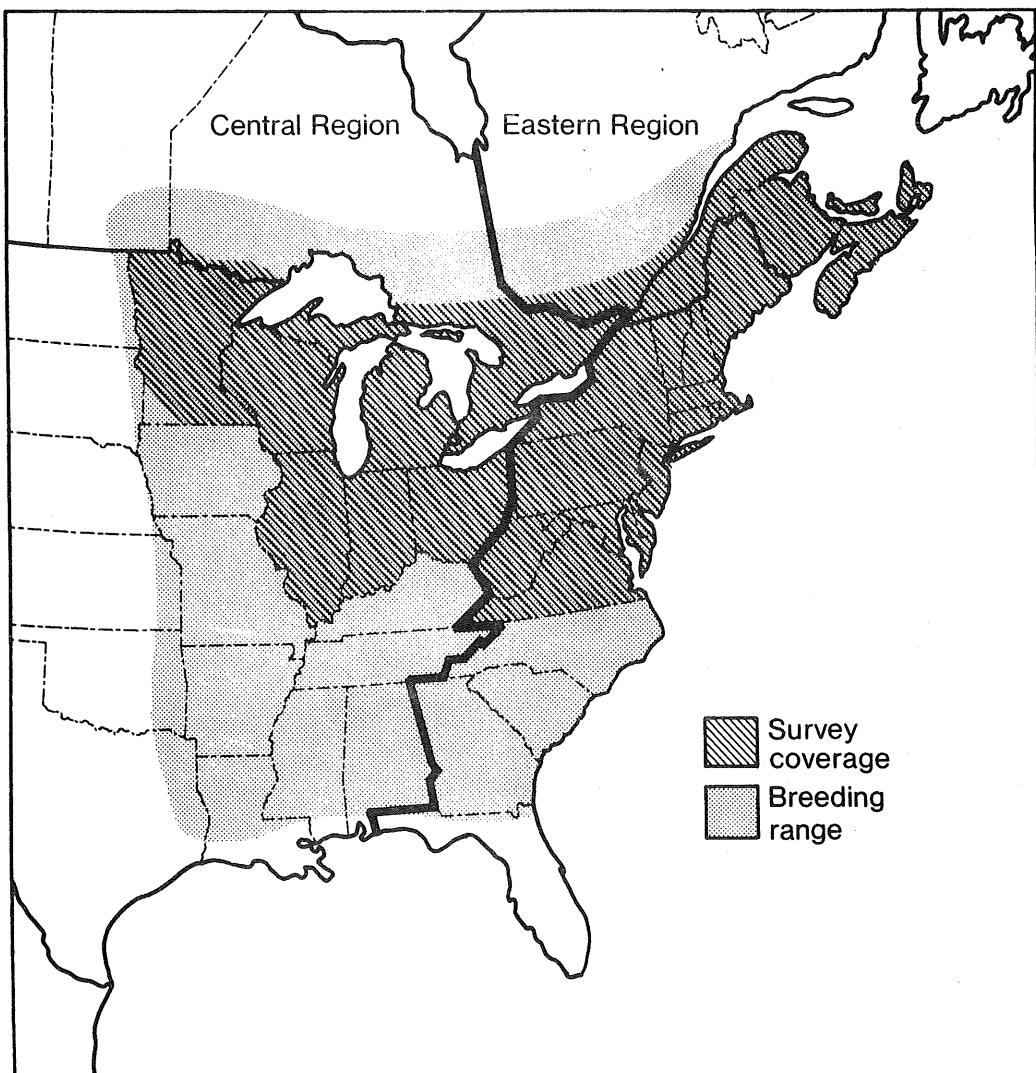


Figure 26. Approximate woodcock breeding range and regions covered by singing-ground survey, 1983 (Taken from: Tautin, J. 1983. 1983 Status of American Woodcock. U.S.F.W.S. Adm. Rep., June 1983. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

Table 21. Woodcock breeding population indices in the U.S. Central Region as indicated by singing-ground surveys in 1982 and 1983 (Taken from: Tautin, J. 1983. 1983 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1983. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

State or Province	Number of routes conducted		Comparable routes ^a	Woodcock heard per comparable route		Percent change
	1982	1983		1982	1983	
IL	11	15	100	0.12	0.51	325.0
IN	21	45	57	0.25	0.53	105.3
MI	121	122	110	4.59	3.89	-15.2
MN	77	94	104	2.72	2.67	-1.7
OH	31	47	81	0.69	0.93	34.2
ON	107	100	88	4.95	4.87	-1.6
WI	85	79	87	2.34	2.49	6.6
Totals	447	502	627			
	Weighted Averages ^b			3.17	3.06	-3.5

^a Includes routes carried as constant zero routes.

^b Computed 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 Illinois and Indiana did not meet these criteria.

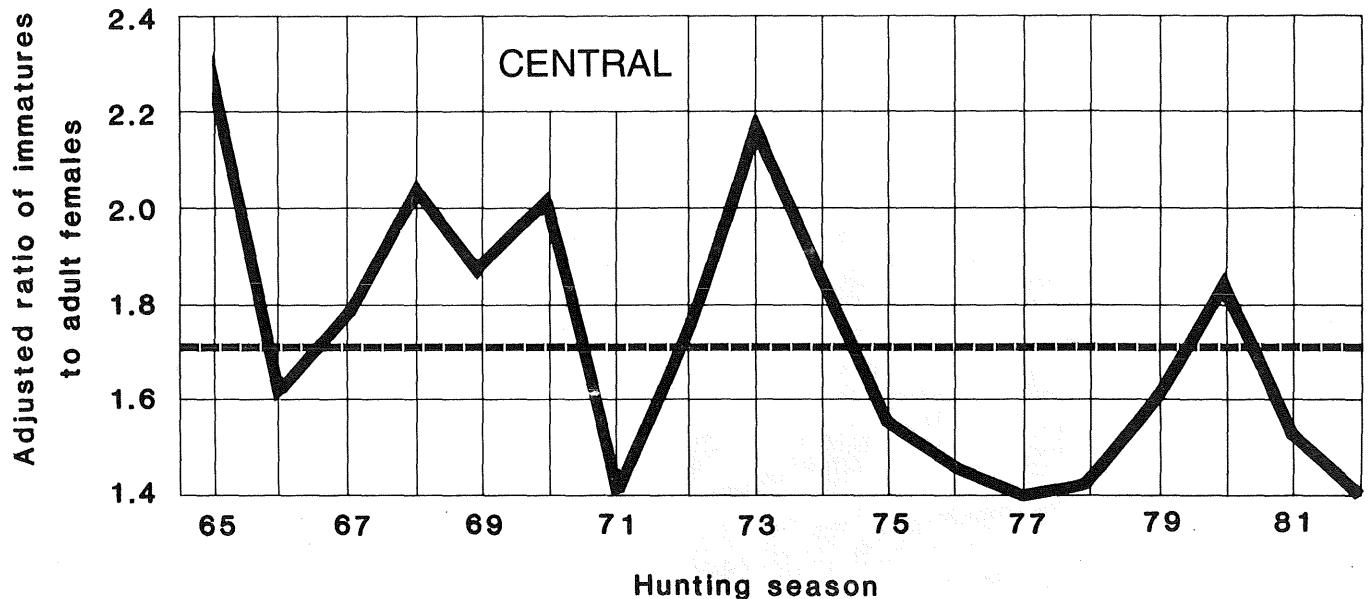


Figure 27. Adjusted index of American woodcock recruitment, 1965-1982, base year = 1969 (Taken from: Tautin, J. 1983. 1983 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1983. Office Migr. Bird Manage., Laurel, MD. 14 pp.).

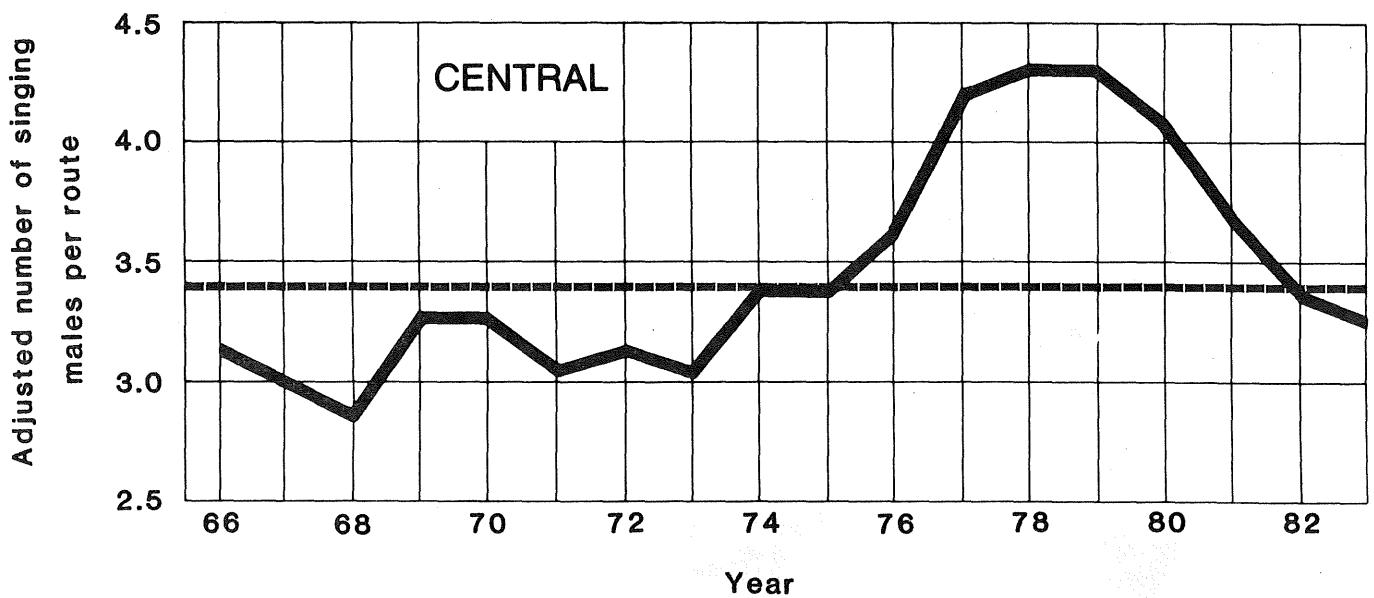
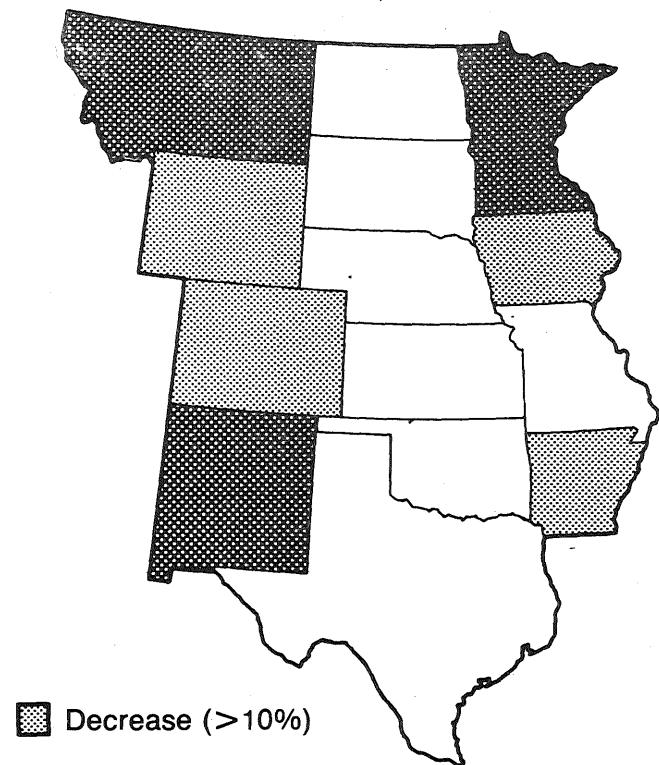
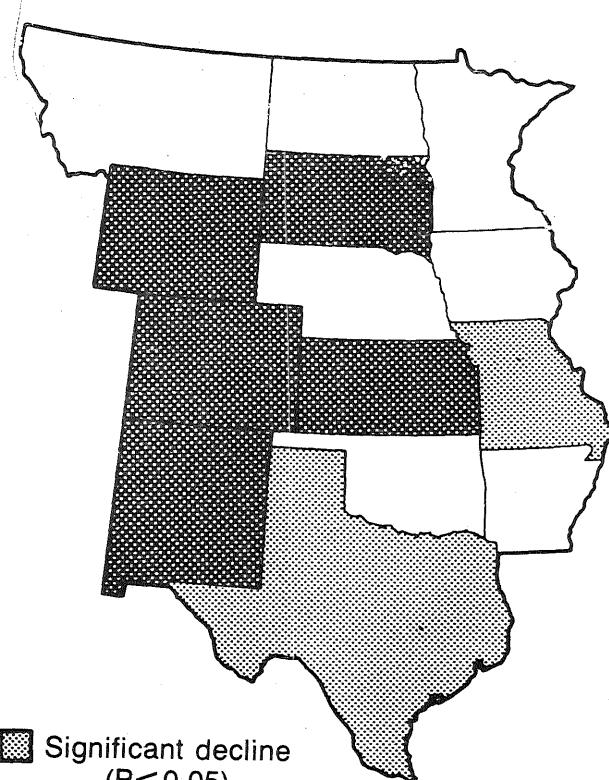


Figure 28. Adjusted index of the American woodcock breeding population, 1966-83, base year = 1970 (Taken from: Tautin, J. 1983. 1983 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1983. Office Migr. Bird Manage., Laurel, MD. 14 pp.).



- Decrease (>10%)
- No change (<10%)
- Increase (>10%)

Figure 29. Changes in number of mourning doves heard by state in the Central management unit, 1982-1983 (Taken from: Dolton, D.D. 1983. 1983 Mourning dove breeding population status. USFWS Adm. Rep. 19pp.).



- Significant decline ($P < 0.05$)
- No significant change ($P > 0.05$)
- Significant increase ($P < 0.05$)

Figure 30. Trend in number of mourning doves heard per route by state in the Central management unit, 1973-1983 (Taken from: Dolton, D.D. 1983. 1983 Mourning dove breeding population status. USFWS Adm. Rep. 19pp.).

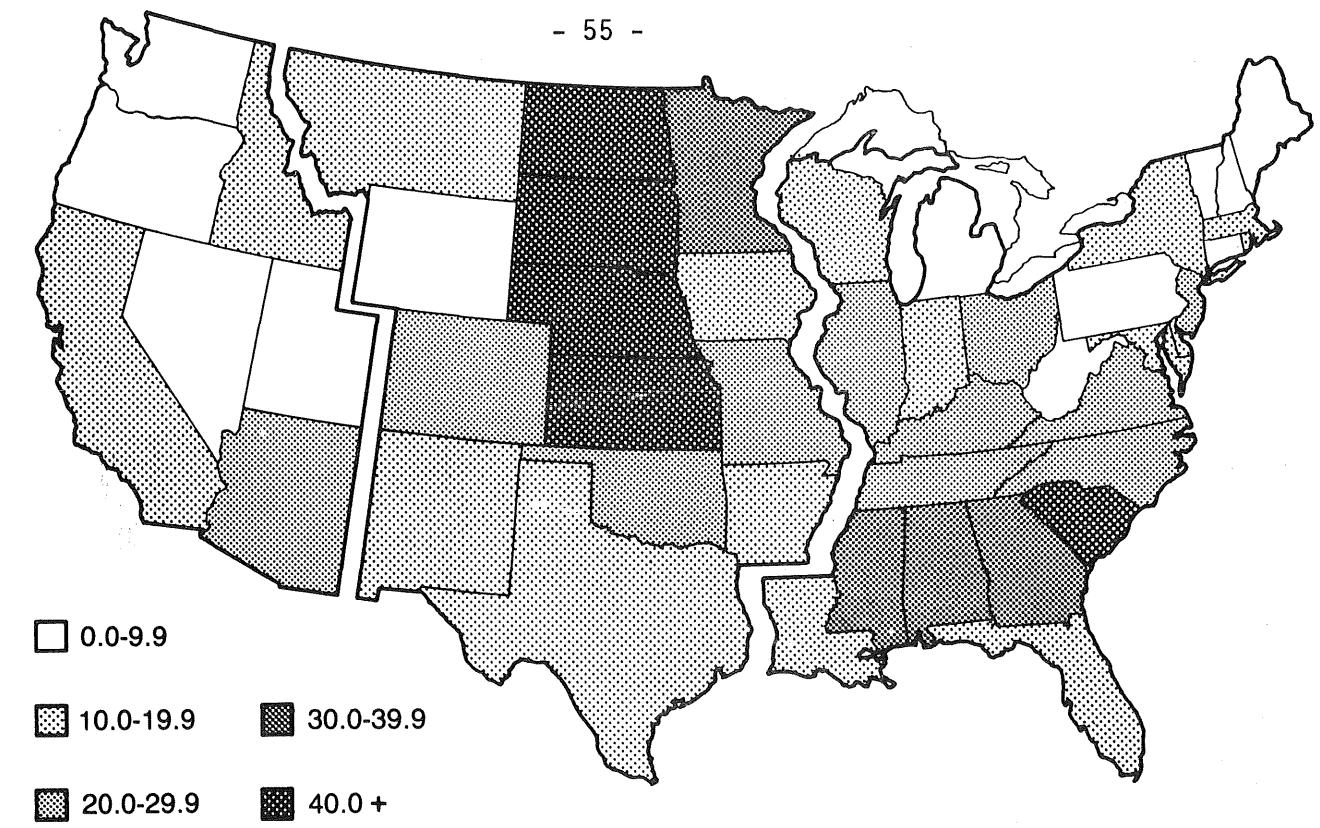


Figure 31. Mean number of mourning doves heard per route by state, 1983
(Taken from: Dolton, D.D. 1983. 1983 Mourning dove breeding population status. USFWS Adm. Rep. 19pp.).

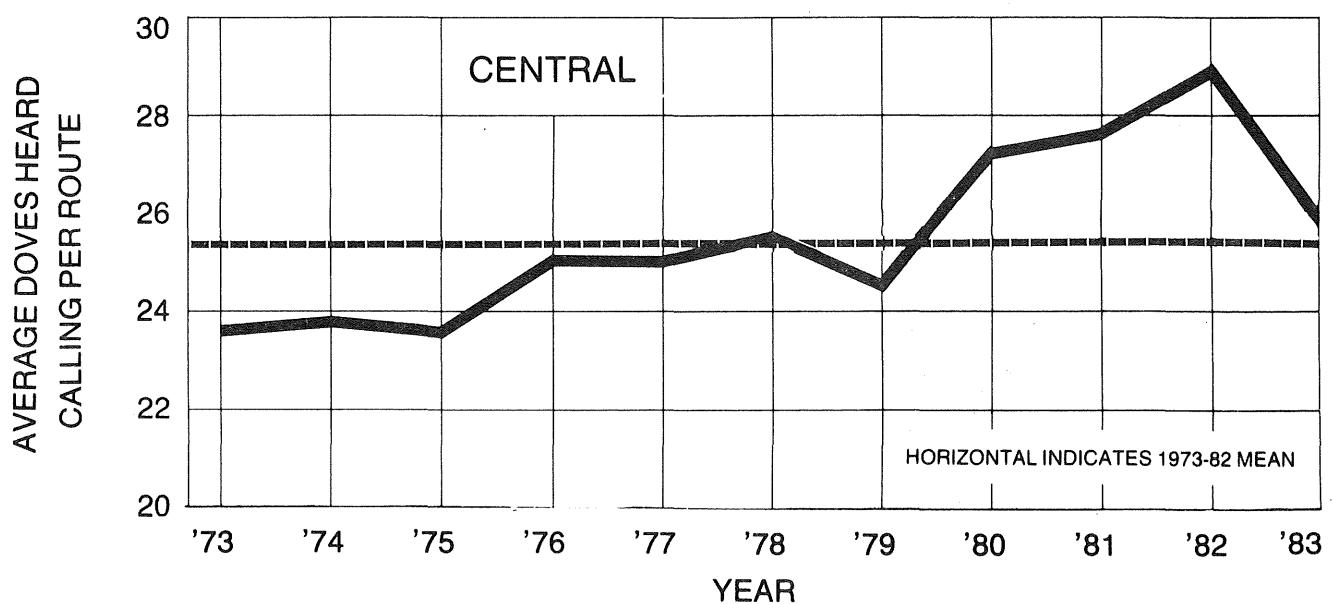


Figure 32. Population index of breeding mourning doves in the Central management unit, 1973-1983 (Taken from: Dolton, D.D. 1983. 1983 Mourning dove breeding population status. USFWS Adm. Rep. 19pp.).

HUNTING

HARVEST STATISTICS

Table 22. Resident small game hunter^a response to mail surveys, 1978-1982.

Year	Number mailed	Number not delivered	<u>Delivered questionnaires completed and returned</u>	
			Number	Percent
1978	6,492	360	5,385	87.8
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

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

Table 23. Use of resident small game hunter licenses^a, 1978-1982.

	Returns from mail survey	Projections from license sales
1978		
Hunted	4,746 (88.1%)	293,121
Did not hunt	<u>639</u> (11.9%)	<u>39,593</u>
	<u>5,385</u> (100.0%)	<u>332,714</u>
1979		
Hunted	3,964 (88.0%)	296,766
Did not hunt	<u>540</u> (12.0%)	<u>40,468</u>
	<u>4,504</u> (100.0%)	<u>337,234</u>
1980		
Hunted	4,288 (86.4%)	311,717
Did not hunt	<u>675</u> (13.6%)	<u>49,066</u>
	<u>4,963</u> (100.0%)	<u>360,783</u>
1981		
Hunted	4,461 (82.3%)	306,843
Did not hunt	<u>958</u> (17.7%)	<u>65,992</u>
	<u>5,419</u> (100.0%)	<u>372,835</u>
1982		
Hunted	3,908 (81.6%)	257,546
Did not hunt	<u>884</u> (18.4%)	<u>58,258</u>
	<u>4,792</u> (100.0%)	<u>315,804</u>

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

Table 24. Estimated number of hunters and estimated take per hunter for various species, 1978-1982.

Species	Estimated number of hunters (thousands)					Estimated take per hunter				
	1978	1979	1980	1981	1982	1978	1979	1980	1981	1982
Ducks	148	155	128	138	134	9.5	9.4	9.3	8.4	8.1
Canada goose	53	57	51	47	52	1.3	1.5	1.4	1.4	1.6
Other geese	*	*	27	15	11	*	*	1.2	1.0	0.7
American coot	20	24	19	13	11	4.5	5.0	3.1	4.0	4.3
Common snipe	6	8	12	7	4	3.4	2.4	1.9	2.9	3.2
Rails/gallinules	2	2	*	1	1	2.3	2.9	*	1.6	3.1
American woodcock	22	22	25	23	20	2.6	2.8	2.7	2.8	2.7
Ring-necked pheasant	156	143	147	173	125	3.0	2.3	3.2	3.3	2.1
Ruffed grouse	149	151	150	145	115	4.6	4.7	6.3	3.9	2.6
Spruce grouse	17	18	25	15	13	1.2	1.5	1.3	1.7	1.1
Sharp-tailed grouse	21	24	27	16	14	2.0	2.3	2.1	2.2	1.2
Gray partridge (hun)	37	33	38	32	21	3.5	3.3	2.7	3.4	2.5
Gray squirrel ^a	82	80	78	) 70	53	6.6	5.1	6.6	5.9	5.1
Fox squirrel ^a				) 48	39				4.6	4.2
Eastern cottontail	60	50	56	60	36	4.6	3.8	4.4	4.4	3.8
White-tailed jack rabbit	23	18	22	17	11	3.9	2.5	2.4	2.7	2.6
Snowshoe hare	25	28	37	25	15	6.4	4.9	7.8	4.4	4.2
Raccoon	18	16	20	19	13	6.5	6.0	4.4	7.0	6.3
Red fox	17	13	17	19	12	1.5	1.6	1.7	1.9	1.5
Gray fox	4	4	8	4	3	0.8	1.1	0.4	1.0	0.9
Coyote	4	3	8	4	3	1.0	1.1	0.5	0.9	0.8
Badger	*	*	7	1	1	*	*	0.7	1.1	1.9

* No estimate made.

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

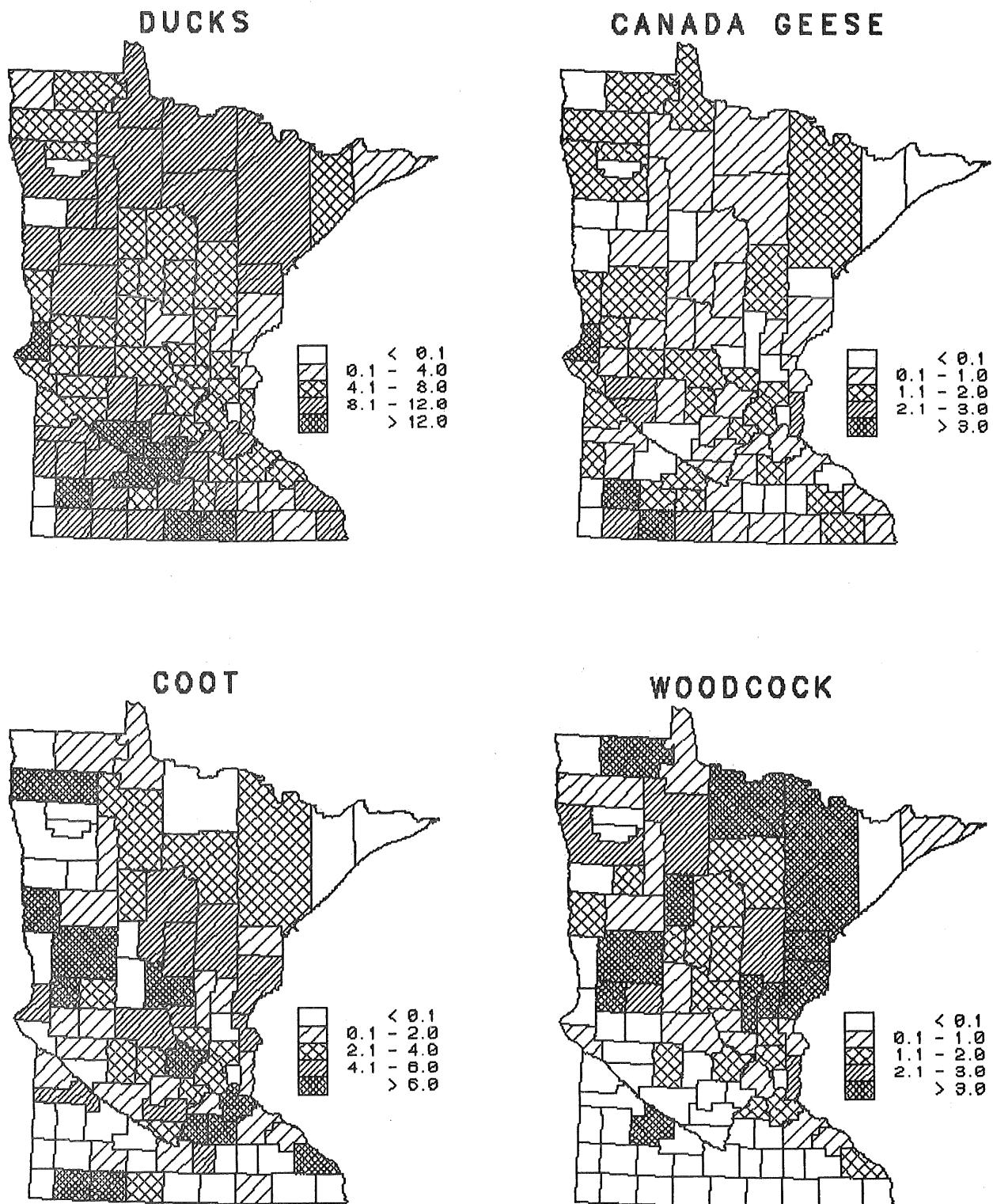
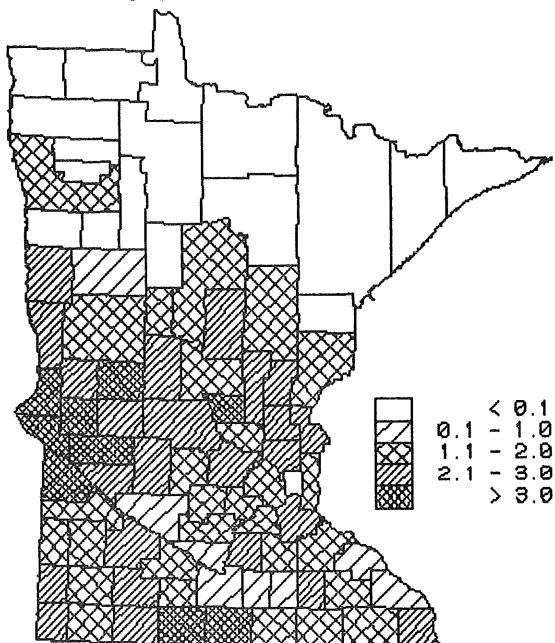
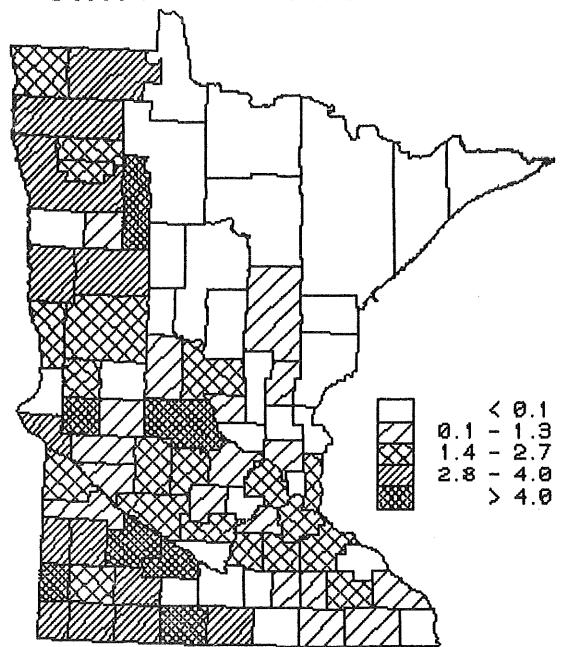


Figure 33. Average 1982 season bag, by county, for 16 species of small game as determined by a mail survey of 4,792 small game hunters (key numbers denote average number of animals bagged per hunter during the 1982 season).

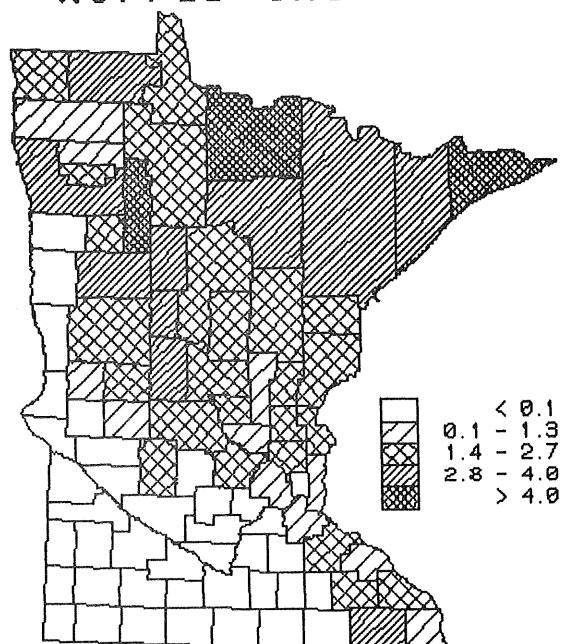
PHEASANT



GRAY PARTRIDGE



RUFFED GROUSE



SHARPTAILS

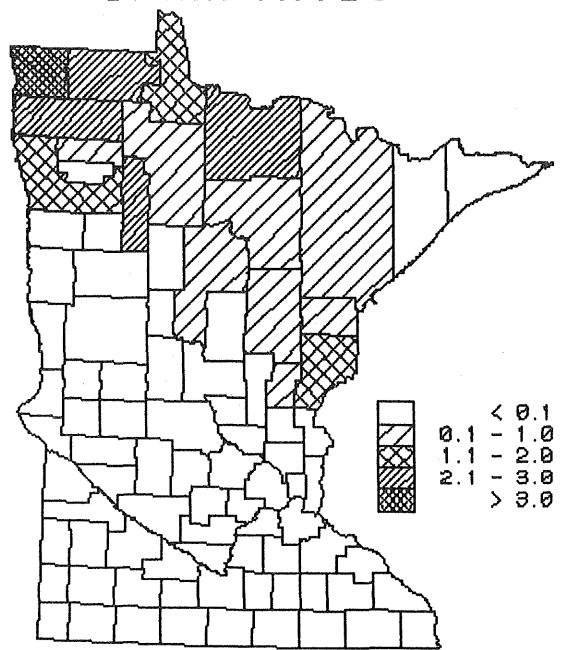
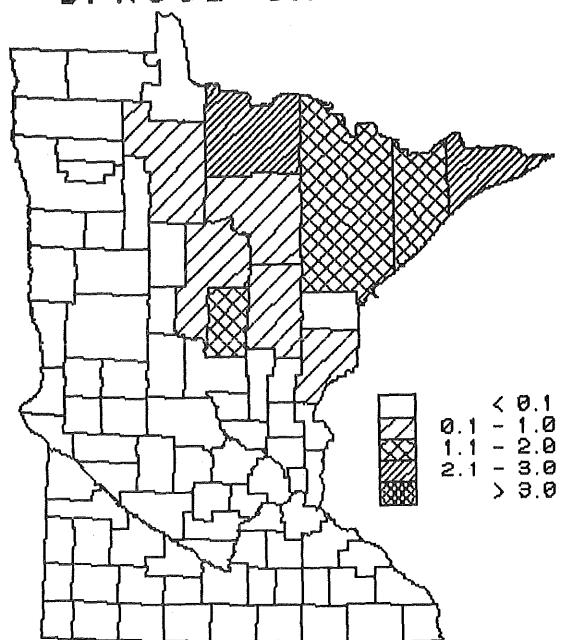
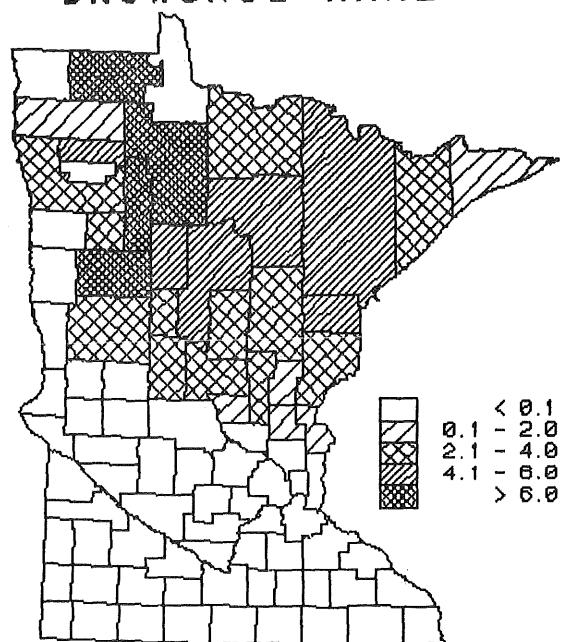


Figure 33. Continued.

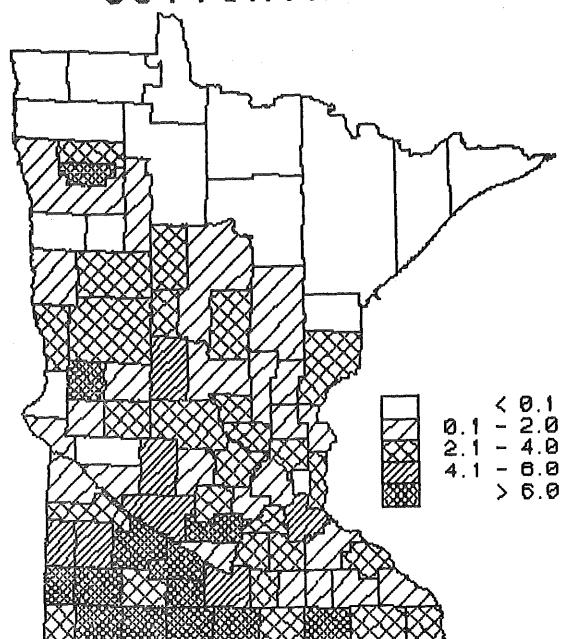
SPRUCE GROUSE



SNOWSHOE HARE



COTTONTAIL



JACKRABBIT

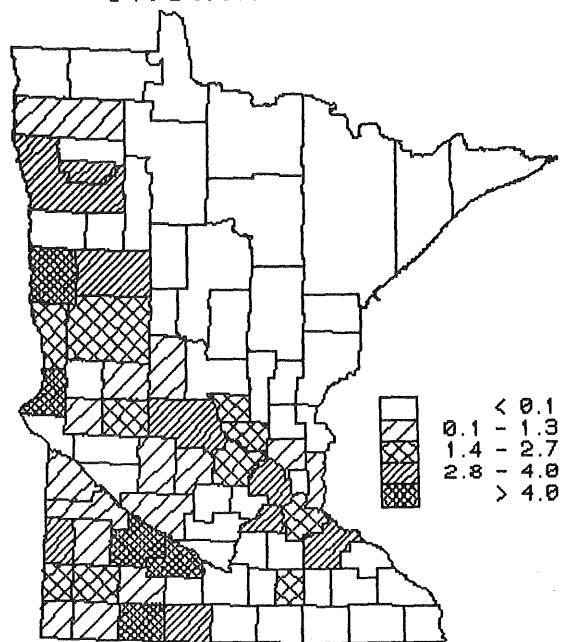
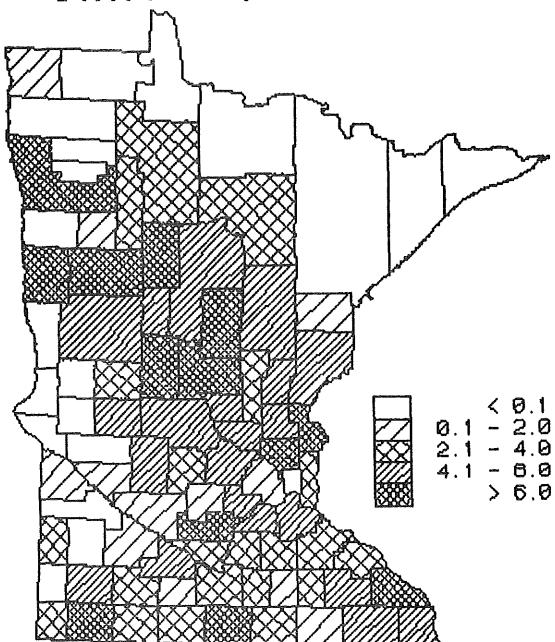
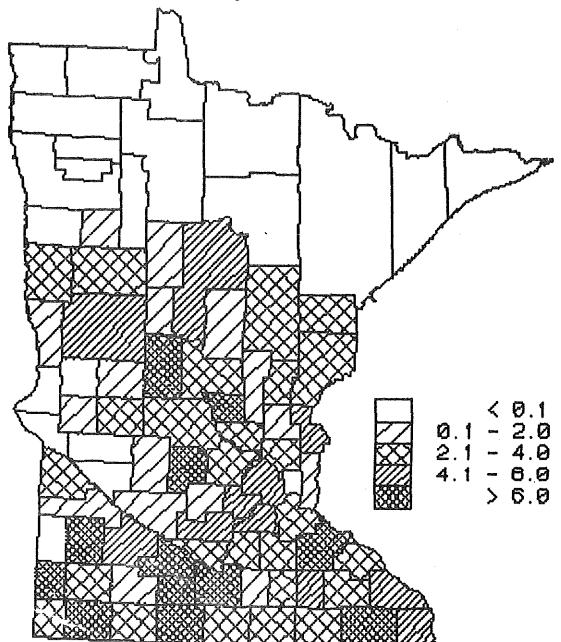


Figure 33. Continued.

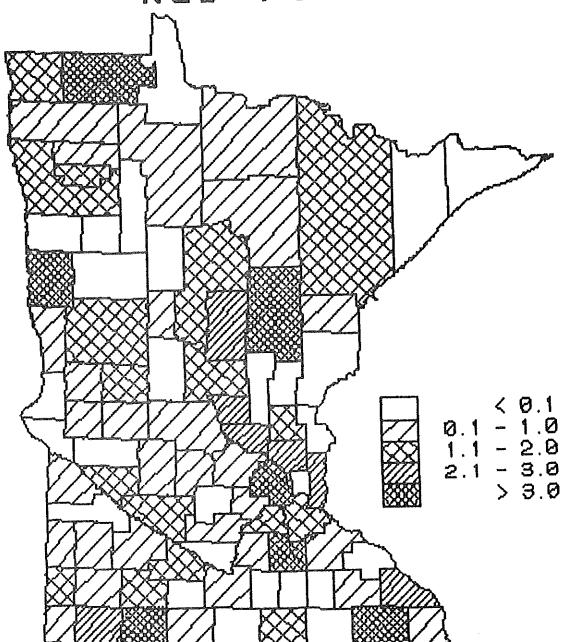
GRAY SQUIRREL



FOX SQUIRREL



RED FOX



RACCOON

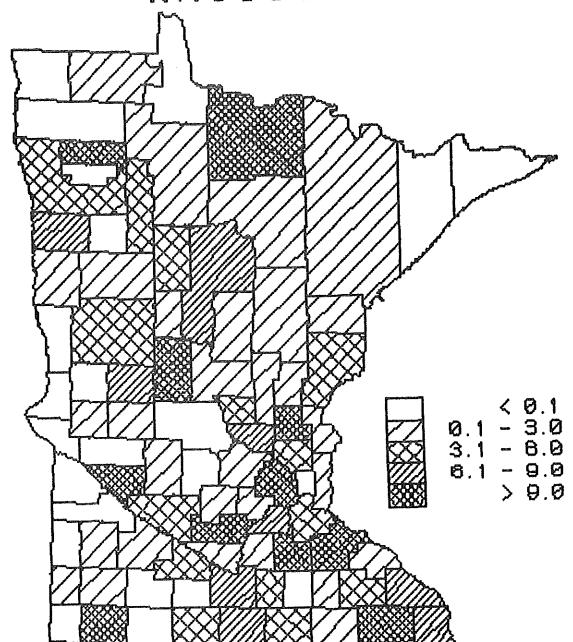


Figure 33. Continued.

Table 25. Resident small game hunting license sales and estimated hunter harvest, 1978-1982.

	1978	1979	1980	1981	1982
Small game license sales	332,714	337,234	360,783	372,835	315,804
Federal duck stamp sales	155,387	159,068	158,311	142,345	134,803
State duck stamp sales	129,030	145,832	149,483	139,011	N/A
Estimated harvest ^a (thousands)					
Ducks ^b	1,408	1,462	1,199	1,167	1,071
Canada geese ^b	72	85	72	71	81
Other geese ^b	*	*	33	16	7
American coot ^b	89	123	58	49	49
Common snipe	22	19	23	21	14
Rails/gallinules	5	7	*	2	3
American woodcock	58	60	67	63	54
Ring-necked pheasant	468	328	466	573	265
Ruffed grouse	692	709	941	576	302
Spruce grouse	20	27	34	24	14
Sharp-tailed grouse	43	54	56	34	17
Gray partridge (hun)	132	108	101	110	52
Gray squirrel ^c	) 540	403	514	409	271
Fox squirrel ^c	)			216	162
Eastern cottontail	272	188	249	263	135
White-tailed jack rabbit	90	45	52	45	27
Snowshoe hare	163	136	286	109	61
Raccoon	121	97	88	136	80

Continued

Table 25. Continued.

	1978	1979	1980	1981	1982
Red fox	25	21	28	37	19
Gray fox	3	4	3	4	2
Coyote (brush wolf)	4	3	4	4	2
Badger	---No open season---		5	2	2

* No estimate made.

^a Estimates based upon response of hunters to questionnaires.

^b U.S. Fish and Wildlife Service harvest estimates for 1982 are:

Ducks	773,317	Other geese	1,780
Canada goose	72,630	American coot	29,598

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

Table 26. Mail survey results of nonresident small game hunters, 1979-1982.

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Nonresident licenses issued	3,902	3,981	4,271	3,192
Questionnaires				
Number mailed	622	222	280	361
Number not delivered	74	85	21	21
Number returned	491 (89.6%)	117 (85.4%)	214 (82.6%)	281 (82.6%)
Total nonresidents and percent of all nonresidents hunting:				
Ducks	2,100 (53%)	2,000 (49%)	2,055 (48%)	1,840 (58%)
Canada goose	700 (19%)	600 (15%)	718 (17%)	830 (26%)
Ruffed grouse	1,500 (39%)	2,000 (51%)	1,656 (39%)	960 (30%)
Ring-necked pheasant	800 (19%)	800 (19%)	1,436 (34%)	680 (21%)
Raccoon ^a	400 (11%)	200 (6%)	125 (3%)	100 (3%)
Total nonresident take:				
Ducks	20,000	17,000	19,000	15,000
Canada goose	1,000	1,000	2,000	1,500
Ruffed grouse	9,000	16,000	7,000	3,000
Ring-necked pheasant	2,000	2,000	5,000	1,500
Raccoon	3,000	1,000	1,000	700

^a 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:	<u>Resident</u>	<u>Nonresident</u>
1978	6	14
1979	6	6
1980	4	5
1981	7	7
1982	6	7

Table 27. Species composition of the Minnesota waterfowl harvest, 1981 and 1982 (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1983. Waterfowl harvest and hunter activity in the United States during the 1982 hunting season. U.S.F.W.S. Adm. Rep. Office Migr. Bird. Manage., Laurel, Maryland. 27 pp.).

Species	1981		1982		Percent change
	Harvest	Pct of harvest	Harvest	Pct of harvest	
Mallard	253,100	31.38	235,600	30.46	-7
Domestic mallard	200	0.03	500	0.06	150
American black duck	1,900	0.23	3,900	0.51	105
Black x mallard	700	0.09	<100	0.00	--
Gadwall	23,400	2.90	22,300	2.88	-5
American Wigeon	42,500	5.27	33,900	4.38	-20
Green-winged teal	57,600	7.14	45,800	5.92	-20
Blue-winged/cinnamon teal	64,500	8.00	110,800	14.33	72
Northern shoveler	9,800	1.21	7,000	0.90	-29
Northern pintail	19,500	2.42	13,000	1.68	-33
Wood duck	107,600	13.34	114,500	14.81	6
Redhead	20,100	2.49	26,800	3.47	33
Canvasback	5,400	0.67	6,600	0.85	22
Greater scaup	3,600	0.45	700	0.09	-81
Lesser scaup	86,100	10.67	49,700	6.43	-42
Ring-necked duck	80,600	9.99	68,700	8.88	-15
Goldeneyes	7,100	0.88	7,200	0.93	1
Bufflehead	9,700	1.20	14,600	1.89	51
Ruddy duck	5,000	0.62	6,500	0.84	30
Scoters	1,700	0.21	1,100	0.14	-35
Hooded merganser	6,000	0.75	4,300	0.56	-28
Other mergansers	400	0.05	<100	0.00	--
Other ducks	<100	0.00	<100	0.00	0
Total	806,500	100.00	773,500	100.00	-4

Table 28. Top 10 states in number of adult waterfowl hunters, 1982, and number of hunter-days and retrieved duck kill, in each (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1983 Waterfowl harvest and hunter activity in the United States during the 1982 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	130,584	927,266	773,317	0.83
Louisiana	123,163	1,095,359	1,536,510	1.40
Texas	111,204	753,572	1,023,612	1.36
California	97,221	832,632	1,327,112	1.59
Wisconsin	89,533	751,036	392,574	0.52
New York	62,934	388,307	253,456	0.65
Pennsylvania	61,291	378,078	143,329	0.38
Washington	59,750	441,236	347,803	0.79
Illinois	52,733	522,868	317,038	0.61
North Dakota	49,345	290,369	251,256	0.87
Mississippi Flyway	671,298	5,751,833	4,932,869	0.86
United States	1,720,926	13,214,928	11,663,195	0.88

Table 29. Summary of wild turkey harvest, 1978-1983.

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	19	12	31	22.1
	3	140	15	9	24	17.1
	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	210	7	11	18	8.6
	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	300	11	5	16	5.3
	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	375	5	14	19	5.1
	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	500	7	14	21	4.2
	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	525	3	12	15	2.9
	Total	2,100	31	85	116	5.5

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 30. Resident deer hunting license sales and registered harvest statistics, 1973-1982 (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
1973	294,349	29,169	---	67,106	1,935	---	69,041	22.8	6.6	---
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	68,539	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	369,084	54,162	2,325	93,045	5,566	441	99,052	25.2	10.3	19.0

^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.

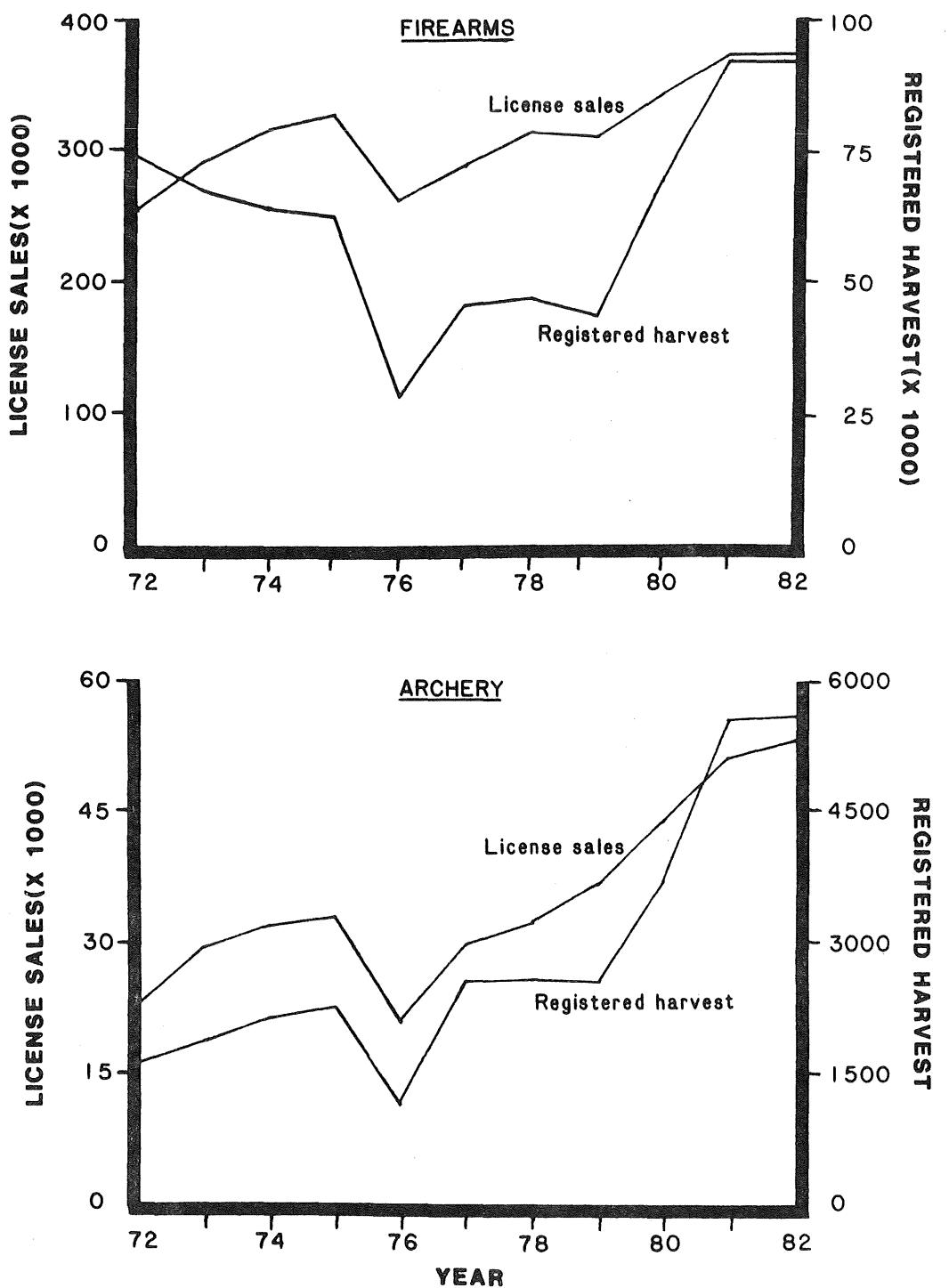


Figure 34. Firearms (above) and archery (below) deer hunting license sales and registered harvests, 1972-1982.

Table 31. Deer harvest summary based upon response to mail survey of 13,734 Firearms Deer License holders, 1982.

Sub-DMU	Number of		Kill		H-D/kill	Percent success
	Hunters	Hunter-days	Registered	Estimated		
Rainy River C	4,900	27,800	1,429	1,134	24.6	23.1
Rainy River E	9,200	49,800	1,501	1,431	34.8	15.5
Superior W	7,000	36,100	1,018	1,350	26.8	19.2
Superior C	3,100	18,100	638	459	39.5	14.4
Superior E	4,600	25,400	790	1,053	24.2	22.4
Itasca NW	17,000	85,800	4,317	4,158	20.6	24.4
Itasca SW	30,600	171,800	5,541	7,074	24.3	23.0
Itasca NE	24,100	151,000	3,229	4,401	34.3	18.2
Itasca SE	27,500	164,500	4,217	4,509	36.5	16.3
Leech Lake Res.	7,400	37,300	1,040	1,863	20.1	25.1
Mille Lacs E	33,900	182,100	6,570	6,912	26.4	20.4
Rainy River W	6,800	34,200	2,808	3,240	10.6	47.2
Bemidji	13,800	62,800	5,419	5,697	11.0	41.1
White Earth Res.	2,900	12,000	810	675	17.9	22.7
Mille Lacs N	16,700	72,900	5,289	4,752	15.3	28.4
Mille Lacs C	20,400	95,100	4,859	4,860	19.6	23.7
Agassiz	9,800	41,600	4,551	4,158	10.0	42.1
Big Woods E	14,900	58,700	4,028	4,347	13.5	29.1
Big Woods M	5,600	20,600	925	1,080	19.1	19.1
Big Woods SE	20,100	70,400	7,096	7,047	10.1	34.9
Red River W	1,100	3,700	370	378	9.9	34.1
Red River E	6,000	13,900	3,417	3,024	4.6	49.8
Big Woods N	33,400	72,300	11,249	12,339	5.9	36.9
Prairie N	6,300	14,300	2,325	2,133	6.7	33.6
Prairie River	10,300	22,000	3,875	3,483	6.3	33.5
Prairie SW	11,700	24,800	4,293	4,779	5.2	40.7
Prairie SE	6,900	15,600	1,497	1,728	9.0	24.7
Statewide ^a	353,600	1,585,600	93,045	107,001	15.5	29.0

^a Statewide total number of hunters ≠ sum of units as some hunters hunt in more than a single Sub-DMU.
Of 372,128 license buyers, 3.7% did not hunt.

Table 32. Antlerless permit holders' use of tags, 1982 Firearms Deer Season.

Sub DMU	Permits issued	No. deer tagged ^a		Permit hunter success
		Antler-less	(%)	
Rainy River Central	500	137	(27.3)	50.0%
Rainy River East	1,000	433	(43.3)	51.4%
Superior West	1,000	212	(21.2)	33.3%
Superior Central	0	-	-	-
Superior East	0	-	-	-
Itasca Northwest	2,500	1,625	(65.0)	68.0%
Itasca Southwest	3,000	1,992	(66.4)	71.3%
Itasca Northeast	2,500	1,110	(44.4)	48.7%
Itasca Southeast	3,000	1,500	(50.0)	58.5%
Leech Lake IR	500	268	(53.6)	53.6%
Mille Lacs East	3,500	2,009	(57.4)	59.2%
Zone 1	17,500	9,286	(53.1)	58.4%
Rainy River West	3,000	1,650	(55.0)	65.1%
Bemidji	4,500	2,623	(58.3)	65.4%
White Earth IR	200	95	(47.6)	47.6%
Mille Lacs North	4,500	2,745	(61.0)	66.0%
Mille Lacs Central	1,850	1,264	(68.3)	69.5%
Zone 2	14,050	8,377	(59.6)	65.8%
Agassiz	4,198	1,637	(39.0)	56.0%
Big Woods East	5,204	1,993	(38.3)	44.0%
Big Woods Metro	1,726	380	(22.0)	23.5%
Big Woods Southeast	9,851	4,403	(44.7)	48.5%
Zone 3	20,979	8,413	(40.1)	46.8%

Continued

Table 32. Continued.

Sub DMU	Permits issued	No. deer tagged ^a		Permit hunter success	
		Antler-less	(%)	Legal bucks	(%)
Red River West	317	106	(33.3)	106	(33.3)
Red River East	2,575	1,342	(52.1)	412	(16.0)
Big Woods North	13,123	6,903	(52.6)	840	(6.4)
Prairie North	2,739	1,008	(36.8)	318	(11.6)
Prairie River	4,200	2,394	(57.0)	218	(5.2)
Prairie Southwest	4,329	2,580	(59.6)	199	(4.6)
Prairie Southeast	1,800	538	(29.9)	166	(9.2)
Zone 4	29,083	14,871	(51.1)	2,259	(7.8)
Statewide	81,612	40,947	(50.2)	5,480	(6.7)

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^a

Determined by mail survey of 13,734 Firearms Deer License holders; arbitrarily assumes all permit holders hunted.

Table 33. Archery deer harvest summary based upon response to mail survey of 3,909 Archery Deer License holders, 1982.

Sub-DMU	Number of		Registered kill	H-D/kill	Percent success
	Hunters	Hunter-days			
Rainy River C	237	1,576	30	52.5	12.7
Rainy River E	558	3,681	18	204.5	3.2
Superior W	488	3,960	16	247.5	3.3
Superior C	349	3,375	26	129.8	7.4
Superior E	488	6,972	48	145.3	9.8
Itasca NW	1,227	9,859	107	92.1	8.7
Itasca SW	3,012	29,938	144	207.9	4.8
Itasca NE	1,869	20,247	45	449.9	2.4
Itasca SE	2,775	29,562	106	278.9	3.8
Leech Lake Res.	823	7,502	14	535.9	1.7
Mille Lacs E	4,811	45,986	321	143.3	6.7
Rainy River W	349	1,756	41	42.8	11.7
Bemidji	1,283	12,996	160	81.2	12.5
White Earth Res.	265	1,729	7	247.0	2.6
Mille Lacs N	1,925	18,420	111	165.9	5.8
Mille Lacs C	4,254	47,703	443	107.7	10.4
Agassiz	1,143	12,144	136	89.3	11.9
Big Woods E	7,461	88,809	446	199.1	6.0
Big Woods M	7,292	95,197	337	282.5	4.6
Big Woods SE	4,127	57,561	340	169.3	8.2
Red River W	683	7,795	55	141.7	8.1
Red River E	1,296	16,231	117	138.7	9.0
Big Woods N	7,725	108,026	751	143.8	9.7
Prairie N	2,859	37,231	240	155.1	8.4
Prairie River	3,807	64,017	475	134.8	12.5
Prairie SW	4,142	73,096	593	123.3	14.3
Prairie SE	2,942	42,403	233	182.0	7.9
Statewide	52,270	847,862	5,566 ^a	152.3	10.6

^a Includes 205 deer whose kill location was unknown.

Table 34. Archery deer harvest by county, 1978-1982.

County	1978	1979	1980	1981	1982
Aitkin	30	34	68	110	107
Anoka	45	74	105	169	147
Becker	14	10	33	46	52
Beltrami	35	29	63	97	130
Benton	1	6	7	18	28
Big Stone	9	10	25	38	38
Blue Earth	48	35	73	80	78
Brown	25	27	36	46	48
Carlton	6	6	24	30	31
Carver	6	9	24	30	34
Cass	17	30	48	108	131
Chippewa	76	71	114	138	78
Chisago	26	31	38	68	78
Clay	21	19	44	75	84
Clearwater	8	3	17	21	21
Cook	2	0	1	12	7
Cottonwood	79	60	71	87	73
Crow Wing	19	32	47	123	105
Dakota	13	21	20	46	51
Dodge	14	17	19	26	22
Douglas	40	31	32	64	53
Faribault	30	31	51	46	49
Fillmore	49	22	46	50	64
Freeborn	40	38	37	47	34
Goodhue	37	34	57	63	69
Grant	8	10	19	18	22
Hennepin	19	35	78	69	44
Houston	36	25	46	55	70
Hubbard	32	42	56	97	130
Isanti	25	32	46	83	83
Itasca	59	36	98	171	146
Jackson	28	34	26	47	44
Kanabec	13	7	11	35	66
Kandiyohi	57	41	41	95	96
Kittson	13	1	8	12	10
Koochiching	19	23	28	33	18
Lac qui Parle	28	38	53	87	82
Lake	8	8	18	40	46
Lake of the Woods	6	9	12	13	13
LeSueur	9	13	27	38	31

Table 34. Continued

County	1978	1979	1980	1981	1982
Lincoln	32	57	50	72	56
Lyon	57	36	84	94	74
McLeod	15	63	32	40	28
Mahnomen	0	1	5	4	7
Marshall	15	18	38	39	45
Martin	36	25	40	35	38
Meeker	25	37	43	44	43
Mille Lacs	10	8	21	40	57
Morrison	18	19	30	66	158 ^a
Mower	35	27	46	55	42
Murray	48	49	81	130	83
Nicollet	28	40	61	80	67
Nobles	51	34	43	79	33
Norman	10	11	15	20	34
Olmsted	20	25	24	55	51
Ottertail	54	60	98	133	153
Pennington	1	3	9	12	18
Pine	45	73	123	166	171
Pipestone	21	34	32	40	30
Polk	24	32	42	50	78
Pope	24	31	49	49	64
Ramsey	3	0	1	2	1
Red Lake	0	4	2	1	3
Redwood	38	38	50	81	63
Renville	20	20	35	55	63
Rice	19	31	38	45	51
Rock	34	16	14	38	31
Roseau	22	32	62	77	90
St. Louis	77	42	87	180	149
Scott	15	41	44	50	37
Sherburne	47	60	89	128	116
Sibley	15	22	33	41	30
Stearns	52	49	81	134	143
Steele	20	7	14	19	27
Stevens	10	13	9	11	21
Swift	25	23	42	67	49
Todd	33	45	52	95	109
Traverse	9	7	12	21	13
Wabasha	19	20	15	18	30
Wadena	10	14	21	45	69

Table 34. Continued.

County	1978	1979	1980	1981	1982
Waseca	21	20	26	46	35
Washington	20	15	39	75	91
Watonwan	16	16	31	34	30
Wilkin	2	2	15	26	34
Winona	76	72	96	116	138
Wright	26	29	45	71	78
Yellow Medicine	32	34	35	47	38
Unknown	10	40	20	25	63 ^c
Camp Ripley	190	148	b	153	129
St. Croix State Park	128	b	b	b	b
Totals	2608	2577	3641	5535	5566

a Camp Ripley not included.

b No archery hunt.

c Includes 32 registrations reported after data compilation.

Table 35. Deer harvest during 1982 special muzzleloader season.

Open area	Adult		Fawn			Total
	Mate	Female	Mate	Female	Unknown	
Carlos Avery WMA	3	12	5	11	0	31
Elm Lake & Eckvoll WMA	2	1	1	0	0	4
McCarthy Lake WMA	0	0	0	0	0	0
Meadowbrook WMA	0	3	1	0	0	4
Mille Lacs WMA	2	11	7	5	0	25
Moose Willow WMA	0	3	2	0	0	5
Red Lake WMA & Beltrami Island S.F.	5	6	3	0	0	14
Roseau River WMA	0	0	0	1	0	1
Thief Lake WMA	2	3	1	0	0	6
Lac Qui Parle WMA & Big Stone NWR	18	50	32	24	6	130
Lake Shetek SP	4	16	12	4	0	36
Whitewater WMA	12	28	22	18	0	80
Hay Creek DMF) Kruger Trail DMF) Snake Creek DMF) Trout Valley DMF) Reno Trail DMF)	6	12	7	7	0	32
Talcot Lake WMA	30	17	7	7	0	61
Walnut Lake WMA	0	0	0	0	0	0
Danvers WMA	0	0	1	2	0	3
Glacial Lakes SP	0	6	2	1	0	9
Total	84	168	103	80	6	441

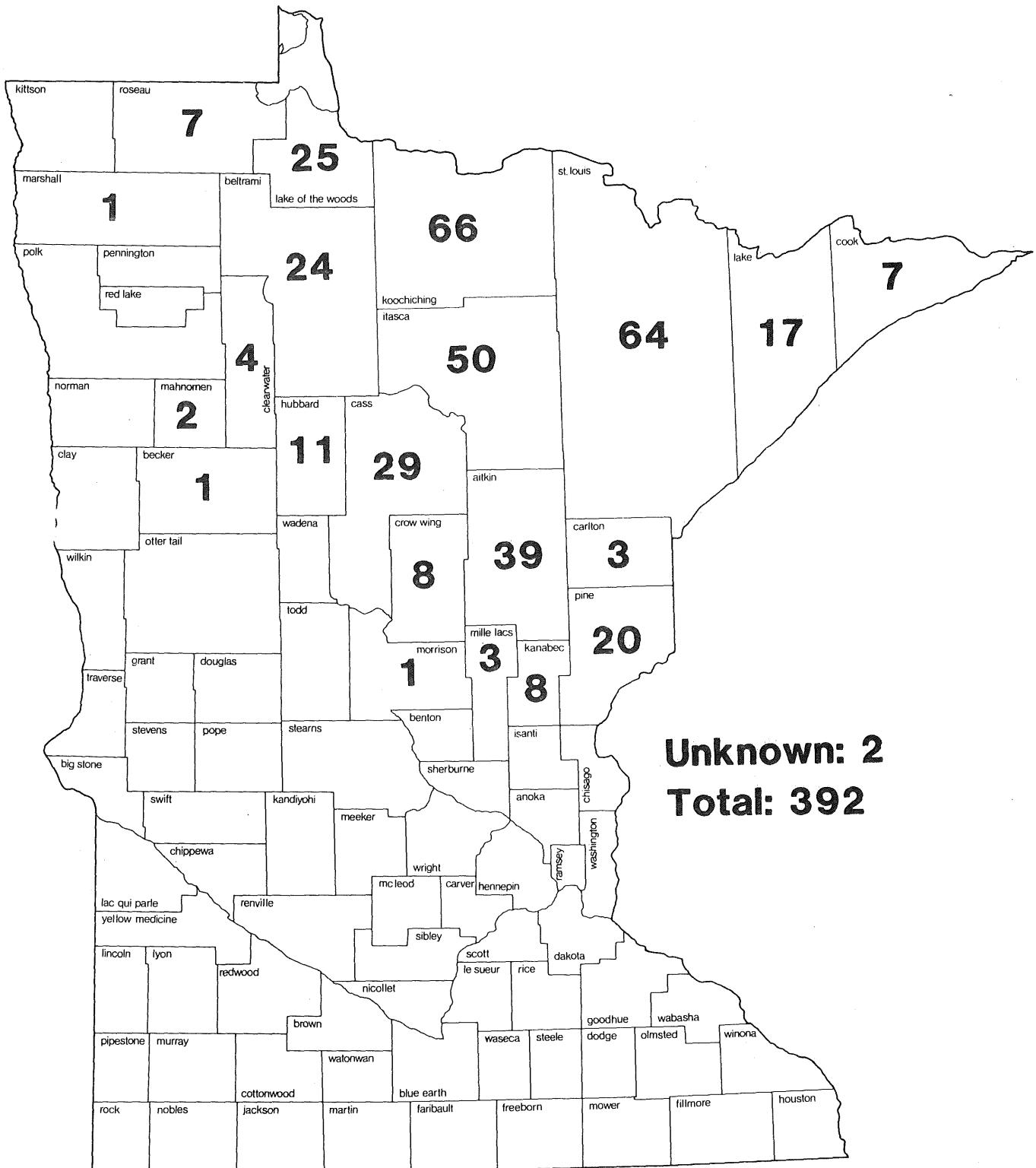


Figure 35. Black bear registered harvest by county, 1982 season.

Table 36. Black bear license sales and registered harvests by county, 1978-1982.

County	Year				
	1978	1979	1980	1981	1982
License sales ^a	7,112	7,583	8,677	11,429	1,921
Aitkin	103	55	92	128	39
Becker	12	13	7	9	1
Beltrami	44	42	28	79	24
Carlton	14	7	17	18	3
Cass	51	57	69	110	29
Chisago	0	0	0	1	0
Clearwater	2	12	3	18	4
Cook	98	72	148	79	7
Crow Wing	9	12	9	33	8
Hubbard	23	16	14	19	11
Isanti	0	0	1	3	0
Itasca	158	108	212	172	50
Kanabec	28	10	12	18	8
Kittson	0	1	0	0	0
Koochiching	91	89	137	149	66
Lake	78	40	74	80	17
Lake of the Woods	16	12	30	43	25
Mahnomen	3	0	0	1	2
Marshall	0	1	2	3	1
Mille Lacs	7	5	5	12	3
Morrison	4	3	1	1	1
Norman	1	0	0	0	0
Pennington	0	0	0	1	0
Pine	58	31	62	73	20
Polk	0	0	1	0	0
Red Lake	0	0	3	2	0
Roseau	8	4	18	18	7
St. Louis	210	148	289	284	64
Wadena	1	0	0	1	0
Wilkin	0	1	0	0	0
Unknown	9	4	13	4	2
Total	1,028	743	1,247	1,359	392

a

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

Table 37. Moose hunt quota statistics and harvest data, 1971-1981.

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			134	89.3	87 (65%)	47 (35%)
1973	NW	335	13,560	1:26	306	91.3	213 (76%)	91 (24%)
	NE	185			159	86.0	131 (83%)	24 (13%)
1975	NW	475	15,792	1:20	449	94.5	259 (58%)	188 (42%)
	NE	275			227	82.5	227 (65%)	147 (35%)
1977	NW	630	16,586	1:18	598	94.9	348 (58%)	250 (42%)
	NE	300			243	81.0	243 (71%)	172 (29%)
1979	NW	395	19,023	1:28	330	83.5	196 (59%)	134 (41%)
	NE	290			236	81.4	158 (67%)	78 (33%)
1981	NW	505	20,521	1:23	455	90.1	283 (62%)	172 (38%)
	NE	375			309	82.4	218 (71%)	91 (29%)

TRAPPING
HARVEST STATISTICS

Table 38. Trapper response to mail surveys, 1978-1982.

Year	Number mailed	Number not delivered	Delivered questionnaires completed and returned	
			Number	Percent
1978	803	23	711	91.2
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

Table 39. Use of trapper licenses, 1978-1982.

		Returns from mail survey	Projections from license sales
1978	Trapped	597 (84.0%)	10,933
	Did not trap	114 (16.0%)	2,083
		<u>711 (100.0%)</u>	<u>13,016</u>
1979	Trapped	760 (85.6%)	15,512
	Did not trap	128 (14.4%)	2,609
		<u>888 (100.0%)</u>	<u>18,121</u>
1980	Trapped	918 (85.6%)	20,548
	Did not trap	154 (14.4%)	3,457
		<u>1,072 (100.0%)</u>	<u>24,005</u>
1981	Trapped	972 (83.3%)	19,725
	Did not trap	195 (16.7%)	3,954
		<u>1,167 (100.0%)</u>	<u>23,679</u>
1982	Trapped	688 (86.6%)	17,526
	Did not trap	106 (13.4%)	2,700
		<u>794 (100.0%)</u>	<u>20,226</u>

Table 40. Estimated number of trappers and estimated take per trapper of various furbearers, 1978-1982.

	Estimated number of trappers (thousands)					Estimated take per trapper				
	1978	1979	1980	1981	1982	1978	1979	1980	1981	1982
Muskrat	8	13	19	16	12	38.3	55.5	75.7	62.5	48.4
Mink	7	10	15	13	10	6.7	6.5	6.5	5.7	5.6
Ermine	1	2	2	1	1	2.5	3.7	3.1	3.2	2.2
Long-tailed weasel	1	1	1	1	1	3.7	2.3	2.9	2.8	1.6
Raccoon	7	10	11	12	9	5.3	6.6	5.4	6.2	6.4
Striped skunk	4	6	8	7	5	8.7	7.6	7.0	8.1	6.4
Eastern spotted skunk (civet)	<1	<1	<1	<1	<1	1.9	2.0	7.1	1.6	6.7
Badger	2	2	2	2	1	2.2	1.6	1.6	1.8	1.7
Opossum	1	1	<1	<1	<1	3.1	2.0	1.7	2.1	1.8
Red fox	5	6	7	8	6	6.8	6.5	6.3	6.8	6.3
Gray fox	1	1	2	2	2	2.7	2.5	2.8	2.7	2.7
Coyote (brush wolf)	1	1	1	1	2	3.7	3.4	3.6	2.4	3.2

MUSKRAT

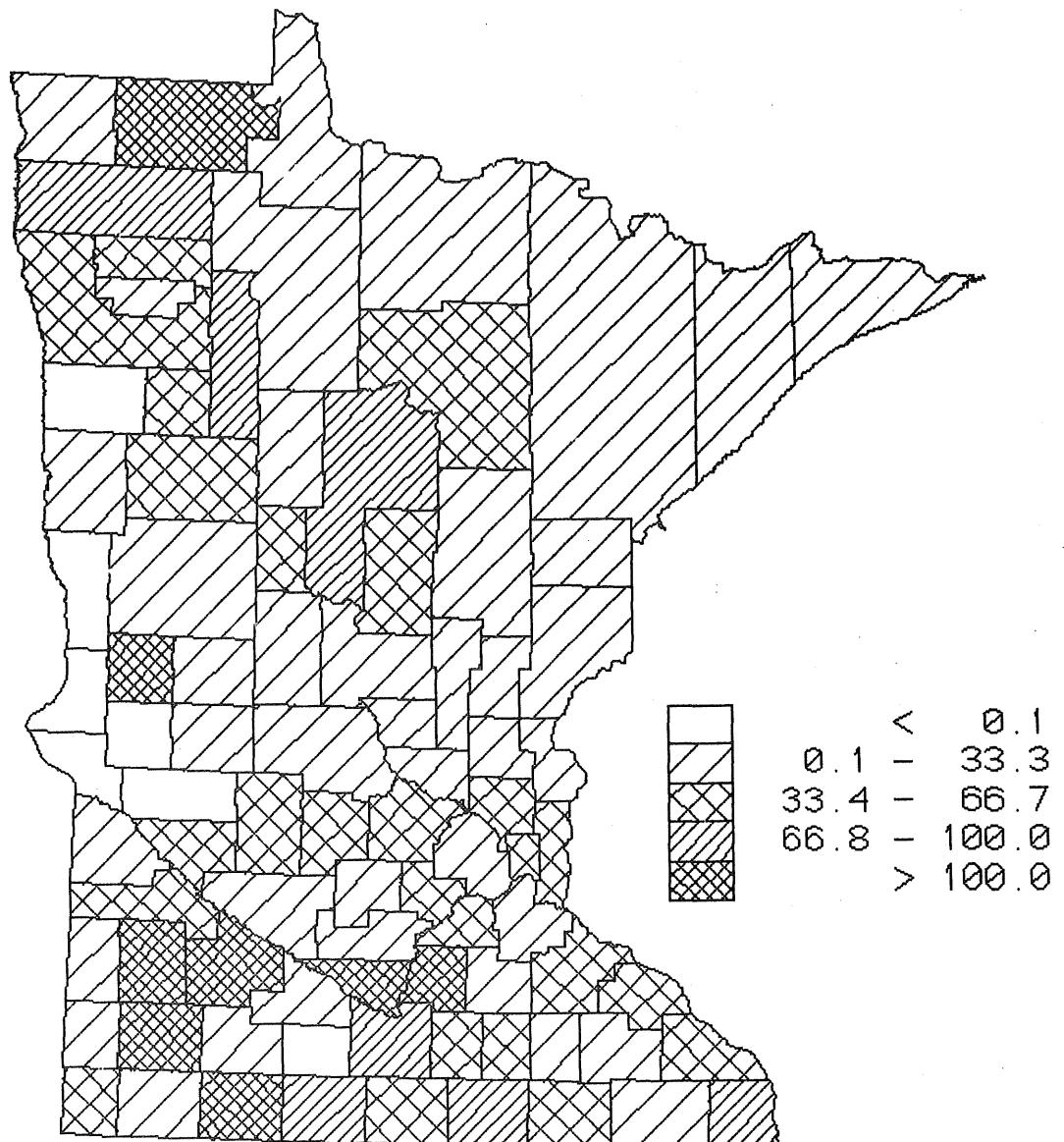


Figure 36. Average 1982 season take, by county, for 9 species of furbearer as determined by a mail survey of 794 trappers (key numbers denote average number of animals caught per trapper during the 1982 season).

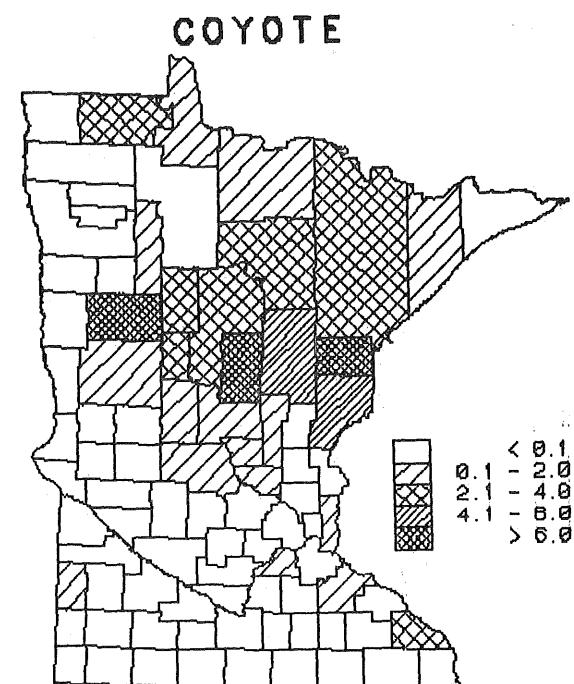
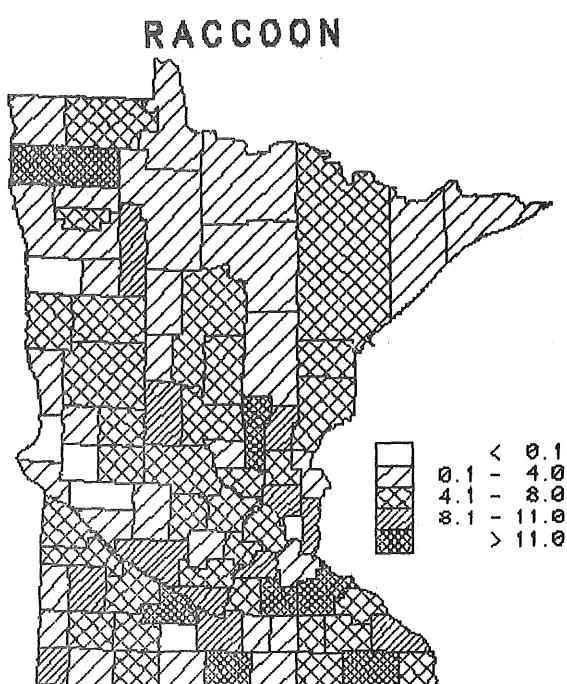
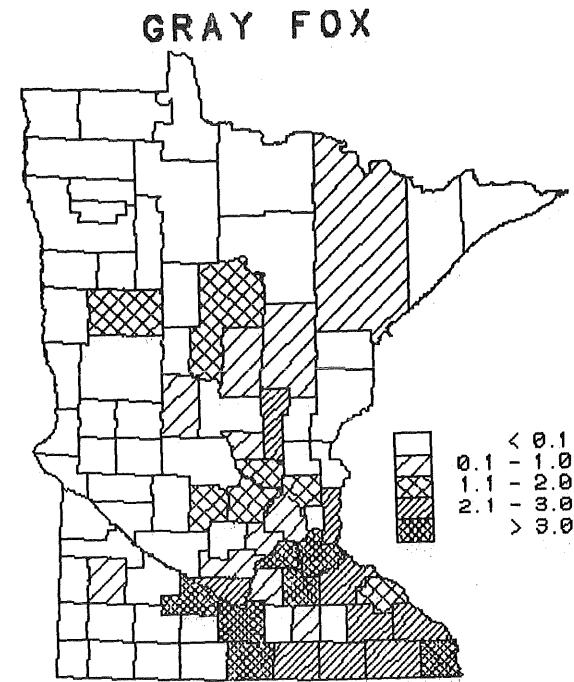
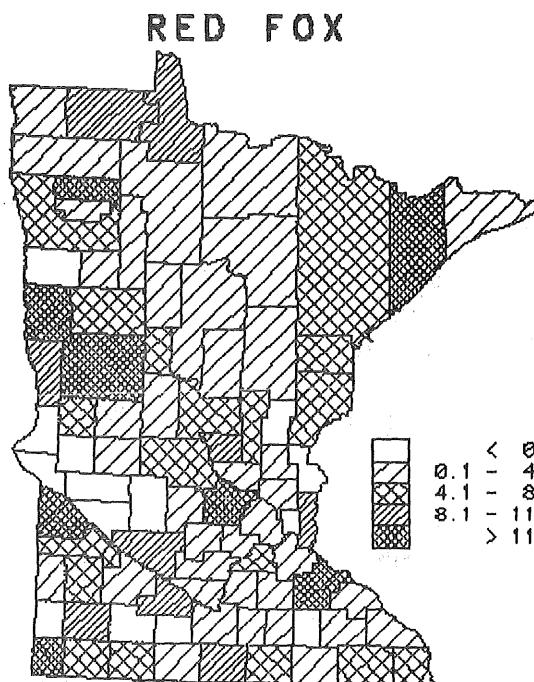
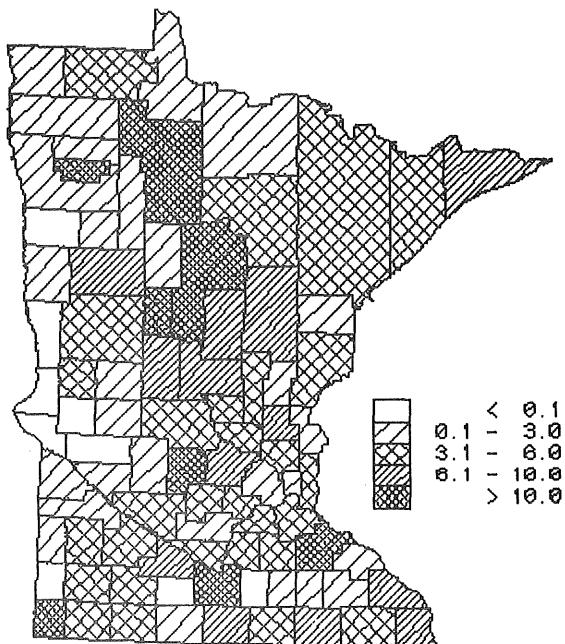
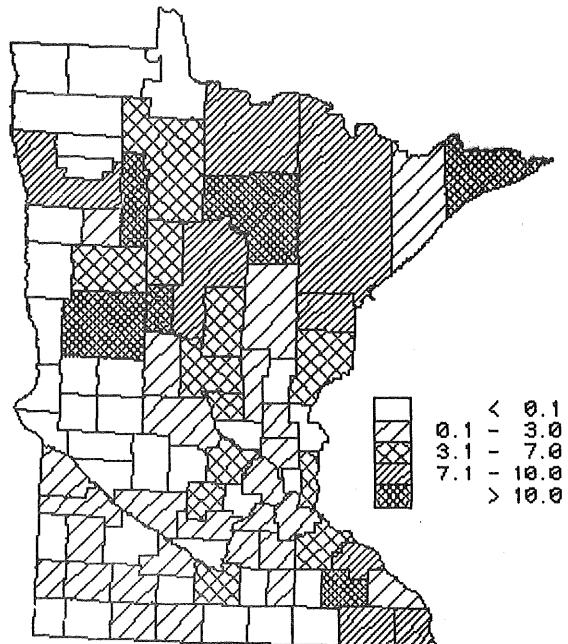


Figure 36. Continued.

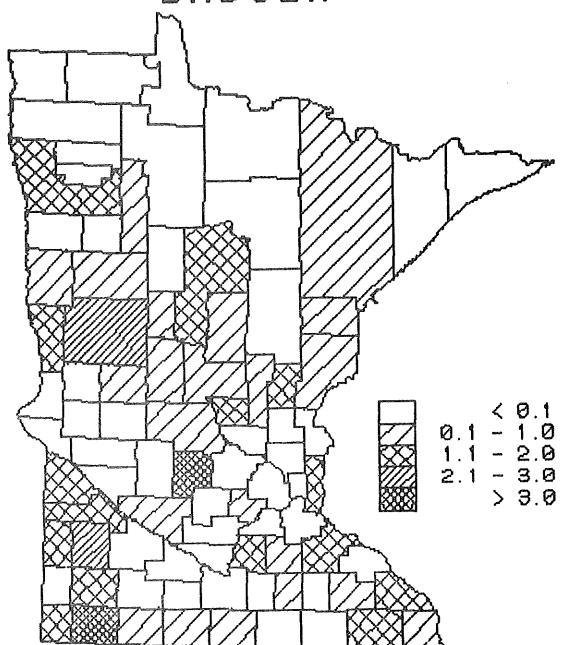
MINK



FALL BEAVER



BADGER



STRIPED SKUNK

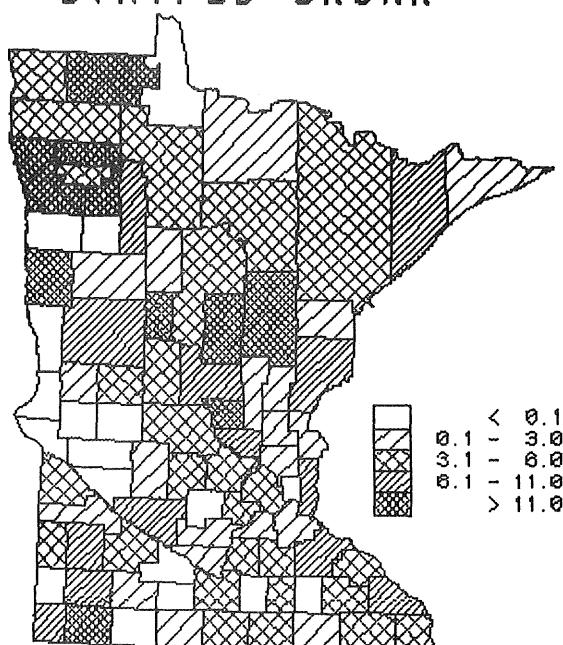


Figure 36. Continued.

Table 41. Minnesota trapper license sales and estimated annual harvest, 1978-1982.

	1978	1979	1980	1981	1982
Trapper license sales ^a	13,016	18,121	24,005	23,679	20,226
Beaver license sales	4,026	6,692	8,503	6,602	1,780 ^b
Estimated harvest ^c (thousands)					
Muskrat	316	707	1,419	989	570
Mink	47	66	96	76	57
Ermine	3	7	7	3	1
Long-tailed weasel	2	3	3	4	1
Raccoon	37	65	61	72	60
Striped skunk	38	47	53	54	34
Eastern spotted skunk (civet)	<1	<1	1	<1	1
Badger	4	3	3	3	2
Opossum	2	1	<1	1	<1
Red fox	36	39	42	53	41
Gray fox	3	4	5	5	5
Coyote (brush wolf)	5	5	4	3	5
Beaver (spring season)	20	22	22	16	10
Beaver (fall season)	33	54	51	30	24
Registered harvest					
Otter	636	1,186	1,111	485	385
Lynx ^d	28	42	16	17	28
Bobcat ^d	304	291	210	260	274
Fisher	2,426	3,032	closed	862	912

^a Separate licenses were issued for juveniles (13-17 years old) and adults (18 and older), beginning in 1982. Of 20,226 trapping licenses sold 4,303 (21.3%) were juvenile licenses and 15,923 (78.7%) 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 trappers' response to mail surveys.

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

Table 42. Average price per pelt paid to hunters and trappers in Minnesota, 1973-1982.

Species	Average pelt prices paid trappers in Minnesota (dollars)									
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Muskrat	2.00	2.50	3.00	4.03	4.25	4.56	5.90	5.62	3.47	2.19
Mink ^a (male)	(17.50)	(9.50)	(13.00)	27.40	22.15	36.69	42.83	37.55	34.35	24.43
Mink (female)				10.07	8.86	14.80	18.61	16.04	17.22	10.63
S.T. Weasel	0	0.75	0.75	0.41	0.44	0.47	0.56	0.64	0.59	0.56
L.T. Weasel	0	0.75	0.75	0.87	0.85	1.01	0.94	0.84	0.96	0.80
Raccoon	11.00	12.50	21.00	23.54	22.30	45.83	36.42	27.44	32.35	17.95
Striped Skunk	2.00	2.50	2.50	2.95	2.78	4.13	4.14	4.74	3.46	2.58
Spotted Skunk	2.00	2.00	2.50	5.02	5.42	7.37	3.48	6.06	2.58	1.75
Badger	8.50	9.00	18.00	18.66	21.07	39.55	24.02	18.39	18.14	9.04
Opossum	0	0	1.50	1.72	2.11	2.10	2.12	2.52	1.58	0.87
Red Fox	30.00	24.00	50.00	49.52	52.97	72.21	55.43	50.81	51.48	31.10
Gray Fox	10.00	12.00	19.00	24.75	25.51	45.44	42.51	37.87	26.74	23.48
Coyote	20.00	12.00	29.00	41.32	34.03	56.62	39.76	31.37	41.28	25.41
Lynx	65.00	65.00	162.00	183.00	137.86	269.44	199.19	94.91	180.33	94.17
Bobcat	15.00	35.00	80.00	78.77	73.98	163.76	117.74	78.55	73.35	66.40
Beaver ^a (fall-winter)	15.15	15.80	12.25	15.79	13.45	17.64	32.74	17.88	14.48	10.69
Beaver (spring)	15.15	15.80	12.25	15.79	13.45	17.64	28.71	19.58	16.52	12.55
Otter	32.50	45.00	32.50	36.99	41.23	58.85	63.37	32.78	29.80	25.65
Fisher ^a (male)	-----No Open Season-----				(71.23)	131.89	107.67	89.51	94.42	69.91
Fisher (female)						147.23	127.79	104.29	110.08	99.08

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

Table 43. Estimated beaver harvest 1 March - 30 April, 1982, based upon responses to questionnaires returned by trappers.

DNR Region	Sample		Average Beaver/Trapper	Estimate	
	No. trappers	No. beaver		No. trappers	No. beaver
1	90	775	8.61	189	1,627
2	186	2,539	13.65	390	5,324
3 ^a	70	1,107	15.81	147	2,324
4	27	296	10.96	57	625
5	13	96	9.38	27	253
6	1	2	2.00	2	4
State	381 ^b	4,815	12.64	799	10,157

^a Cass county included in Region 3.

^b Number of beaver trappers statewide is lower than the sum of regions because some of the trappers trapped in more than one region.

Table 44. Number of beaver trappers and trapping success, 1978-1982.

Beaver season	Licensed trappers	Active trappers	Harvest/trapper	Total harvest
1978 spring	2,661	1,836	10.8	20,000
fall	4,026	2,657 ^a	12.4	33,000
1979 spring	2,633	1,674	13.0	22,000
fall	6,692	4,326	12.4	54,000
1980 spring	2,100	1,509	14.4	22,000
fall	8,503	5,615	9.2	51,000
1981 spring	1,750	1,111	14.5	16,000
fall	6,602	4,080	7.5	31,000
1982 spring	1,390	799	12.6	10,000
fall	N/A	2,200	4.4	24,000

a

Estimate, no survey for fall 1978-79 season.

b

Beginning with the fall 1982 season, the beaver license was discontinued; trappers were allowed to take beaver on a general trapping license. Subsequent harvest estimates were determined from mail surveys of all trappers.

FURBEARER REGISTRATION STATISTICS

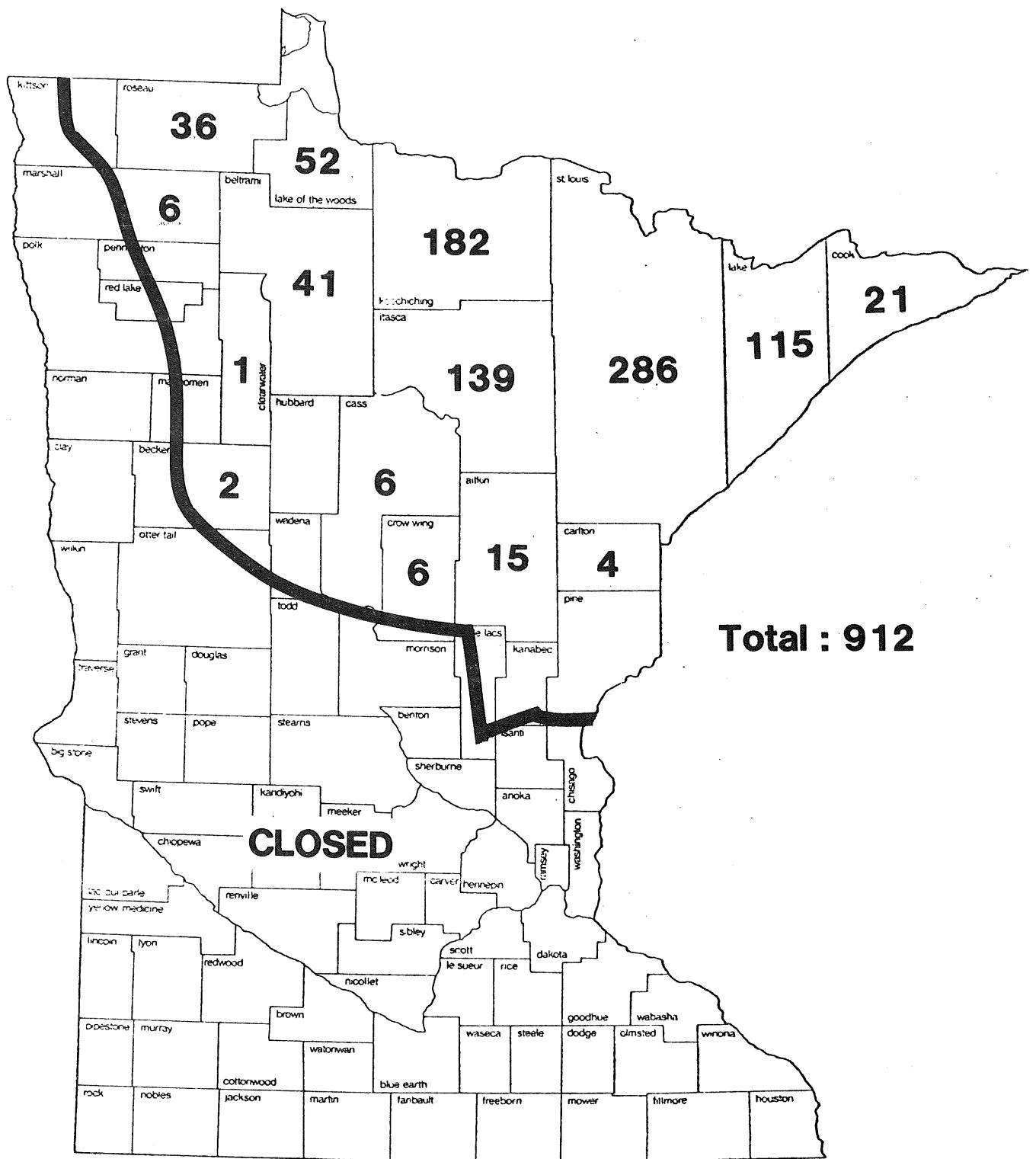


Figure 37. Registered harvest of fisher by county, 1982 season.

Table 45. Fisher harvest by county and sex, 1982 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	6	9	0	15
Becker	1	1	0	2
Beltrami	20	21	0	41
Carlton	2	2	0	4
Cass	4	2	0	6
Clearwater	0	1	0	1
Cook	12	9	0	21
Crow Wing	4	2	0	6
Itasca	66	73	0	139
Koochiching	81	100	1	182
Lake	40	75	0	115
Lake of the Woods	33	19	0	52
Marshall	2	4	0	6
Roseau	15	21	0	36
St. Louis	125	158	3	286
Total	411	497	4	912

Table 46. Comparison of fisher harvest by county, 1978-1982 ^a

County	1978-79	1979-80	1981	1982
Aitkin	0	18	9	15
Becker	0	14	3	2
Beltrami	136	204	44	41
Carlton	closed	4	0	4
Cass	24	27	6	6
Clearwater	10	9	3	1
Cook	78	60	36	21
Crow Wing	closed	9	8	6
Hubbard	1	3	1	0
Isanti	closed	27	closed	closed
Itasca	317	396	64	139
Koochiching	419	556	142	182
Lake	343	313	121	115
Lake of the Woods	65	143	41	52
Mahnomen	closed	7	1	0
Marshall	3	25	3	6
Pennington	4	6	0	0
Pine	closed	1	0	0
Polk	0	3	0	0
Red Lake	0	3	0	0
Roseau	51	95	32	36
St. Louis	975	1,106	258	286
Unknown	0	3	90	0
Total	2,426	3,032	862	912

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

Table 47. Fisher harvest by date and sex, 1982 season.

Date	Sex			Total	% of Total	Cumulative Percent
	Male	Female	Unknown			
12/01	3	2	0	5	0.5	0.5
12/02	33	28	0	61	6.7	7.2
12/03	61	81	0	142	15.6	22.8
12/04	59	50	1	110	12.1	34.9
12/05	60	74	0	134	14.7	49.6
12/06	28	52	0	80	8.8	58.5
12/07	25	39	0	64	7.0	65.5
12/08	34	56	0	90	9.9	75.4
12/09	24	30	0	54	5.9	81.3
12/10	44	43	0	87	9.5	90.8
Unknown	38	43	4	85	9.3	100.0
Total	409	498	5	912	100.0	100.0

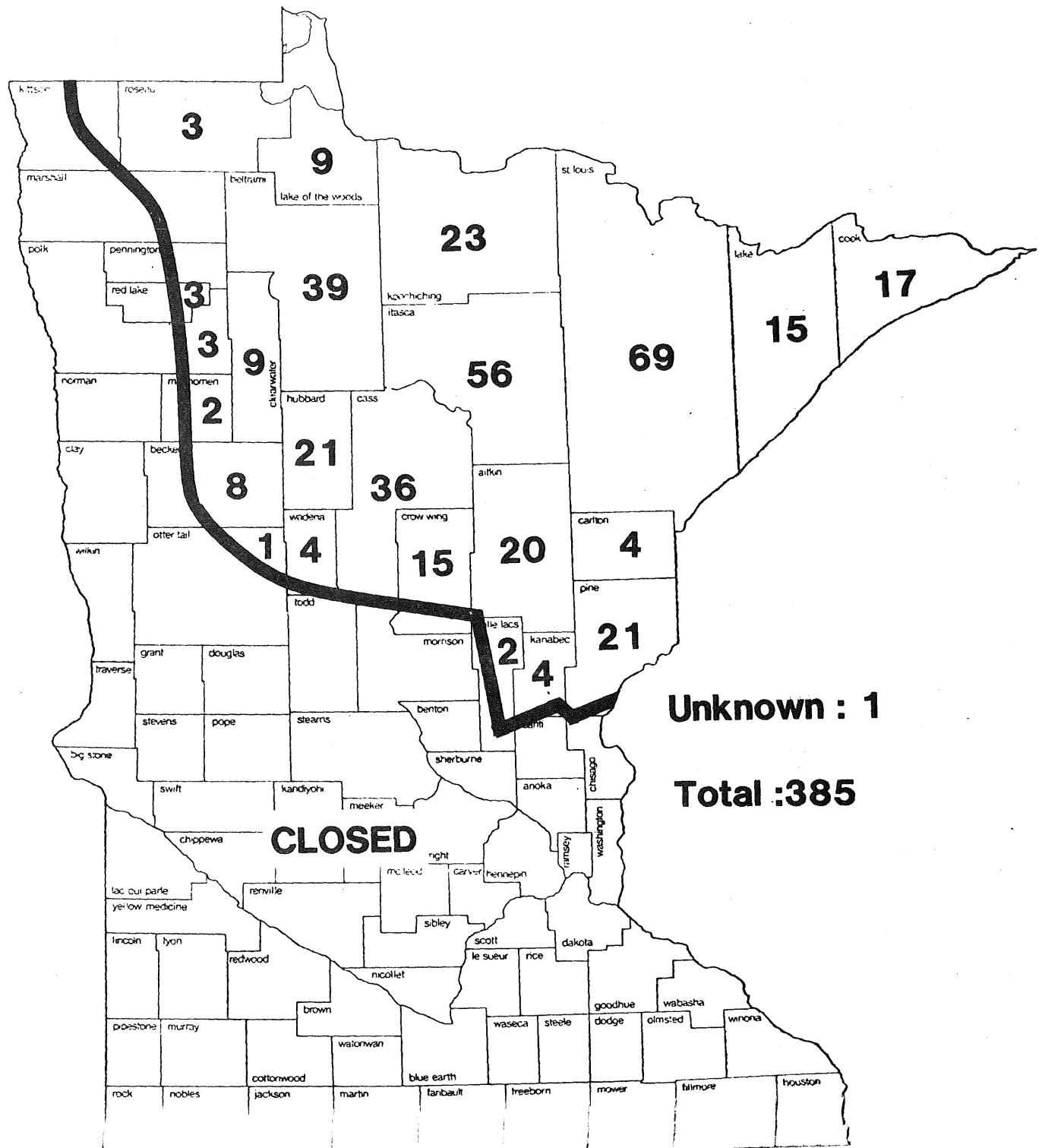


Figure 38. Registered harvest of otter by county, 1982 season.

Table 48. Otter harvest by county and sex, 1982 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	14	6	0	20
Becker	5	3	0	8
Beltrami	22	17	0	39
Carlton	3	1	0	4
Cass	21	15	0	36
Clearwater	7	2	0	9
Cook	6	11	0	17
Crow Wing	8	7	0	15
Hubbard	11	10	0	21
Itasca	38	18	0	56
Kanabec	2	2	0	4
Koochiching	16	7	0	23
Lake	9	6	0	15
Lake of the Woods	4	3	2	9
Mahnomen	0	2	0	2
Mille Lacs	2	0	0	2
Ottertail	1	0	0	1
Pine	15	6	0	21
Polk	3	0	0	3
Red Lake	1	2	0	3
Roseau	2	1	0	3
St. Louis	39	30	0	69
Wadena	3	1	0	4
Unknown	0	1	0	1
Total	232	151	2	385

Table 49. Comparison of otter harvest by county, 1979-1982

County	15-29 Nov. 1979	15-29 Nov. 1980	14-28 Nov. 1981	13-27 Nov. 1982
Aitkin	87	74	21	20
Becker	36	31	12	8
Beltrami	102	47	28	39
Carlton	34	17	11	4
Cass	96	69	41	36
Chisago	closed	closed	1 (closed)	closed
Clearwater	30	16	12	9
Cook	27	28	15	17
Crow Wing	46	37	18	15
Hubbard	30	47	28	21
Itasca	212	133	48	56
Kanabec	5	23	13	4
Koochiching	87	92	32	23
Lake	82	81	13	15
Lake of the Woods	28	29	8	9
Mahnomen	8	0	2	2
Mille Lacs	7	2	8	2
Ottertail	3	0	0	1
Pennington	0	1	1	0
Pine	34	45	17	21
Polk	6	6	5	3
Red Lake	1	0	1	3
Roseau	12	13	7	3
St. Louis	212	319	125	69
Wadena	0	1	4	4
Unknown	1	0	14	1
Total	1,186	1,111	471	385

Table 50. Otter harvest by date and sex, 1982 season.

Date	Sex			Total	% of Total	Cumulative Percent
	Male	Female	Unknown			
11/13	6	2	0	8	2.1	2.1
11/14	26	14	0	40	10.4	12.5
11/15	34	18	1	53	13.8	26.3
11/16	25	17	0	42	10.9	37.2
11/17	20	19	1	40	10.4	47.6
11/18	14	13	0	27	7.0	54.6
11/19	11	7	0	18	4.7	59.3
11/20	18	17	0	35	9.1	68.4
11/21	7	8	0	15	3.9	72.3
11/22	16	5	0	21	5.4	77.7
11/23	7	9	0	16	4.1	81.8
11/24	15	7	0	22	5.7	87.5
11/25	11	5	0	16	4.2	91.7
11/26	12	2	0	14	3.6	95.3
11/27	6	5	0	11	2.9	98.2
Unknown	4	3	0	7	1.8	100.0
Total	232	151	2	385	100.0	100.0

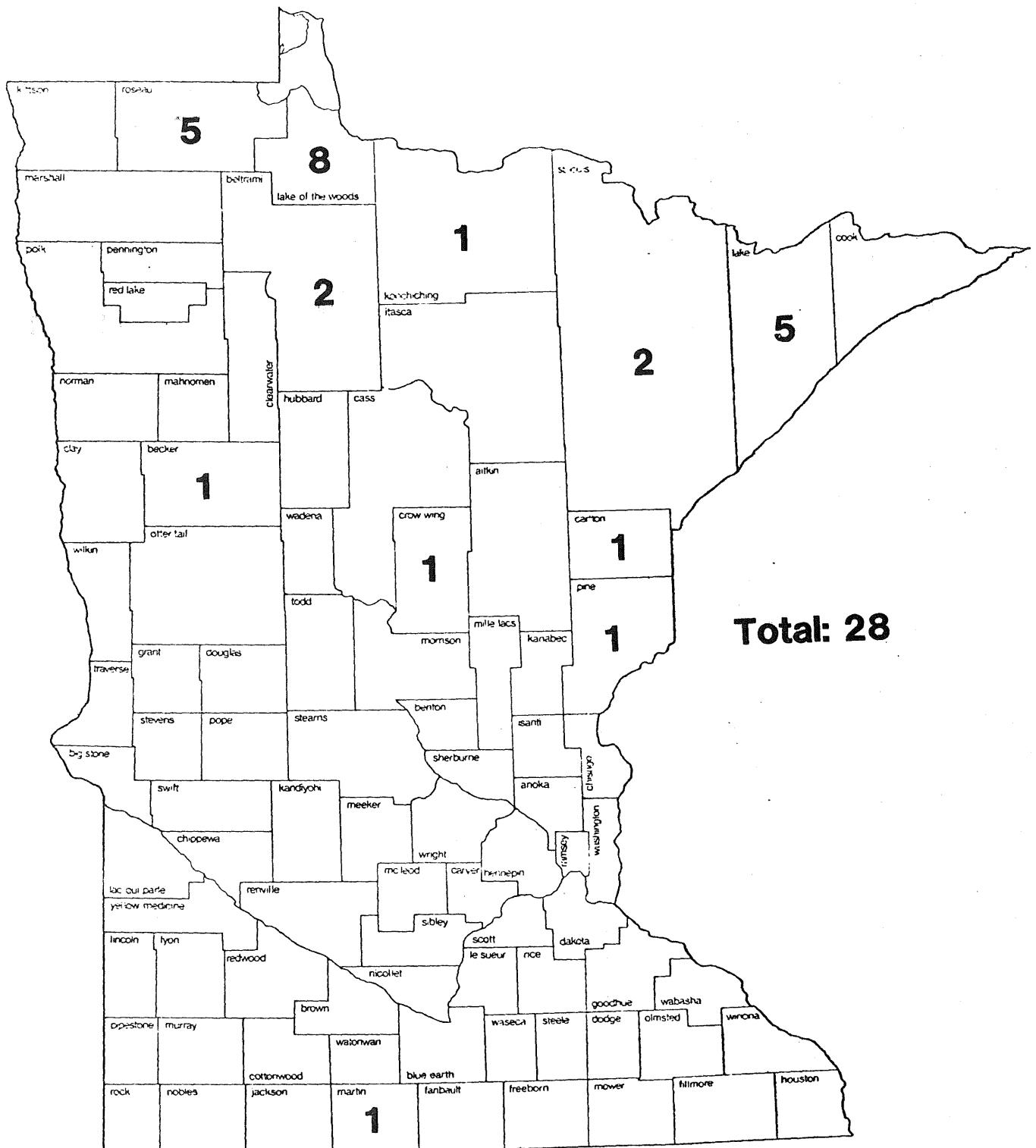


Figure 39. Registered harvest of lynx by county, 1982 season.

Table 51. Comparison of lynx harvest by county, 1978-79 - 1982-83.

County	1978-79	1979-80	1980-81	1981-82 ^a	1982-83
Becker	0	0	0	0	1
Beltrami	0	1	0	0	2
Carlton	0	0	0	1	1
Cook	6	0	0	0	0
Crow Wing	1	0	0	0	1
Itasca	0	3	1	2	0
Koochiching	6	10	2	0	1
Lake	10	11	2	0	5
Lake of the Woods	0	8	5	10	8
Mahnomen	0	1	0	0	0
Martin	0	0	0	0	1
Morrison	0	0	0	1	0
Pine	0	0	0	0	1
Roseau	1	3	3	1	5
St. Louis	4	5	2	2	2
Unknown	0	0	3	0	0
Total	28	42	16	17	28

^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.

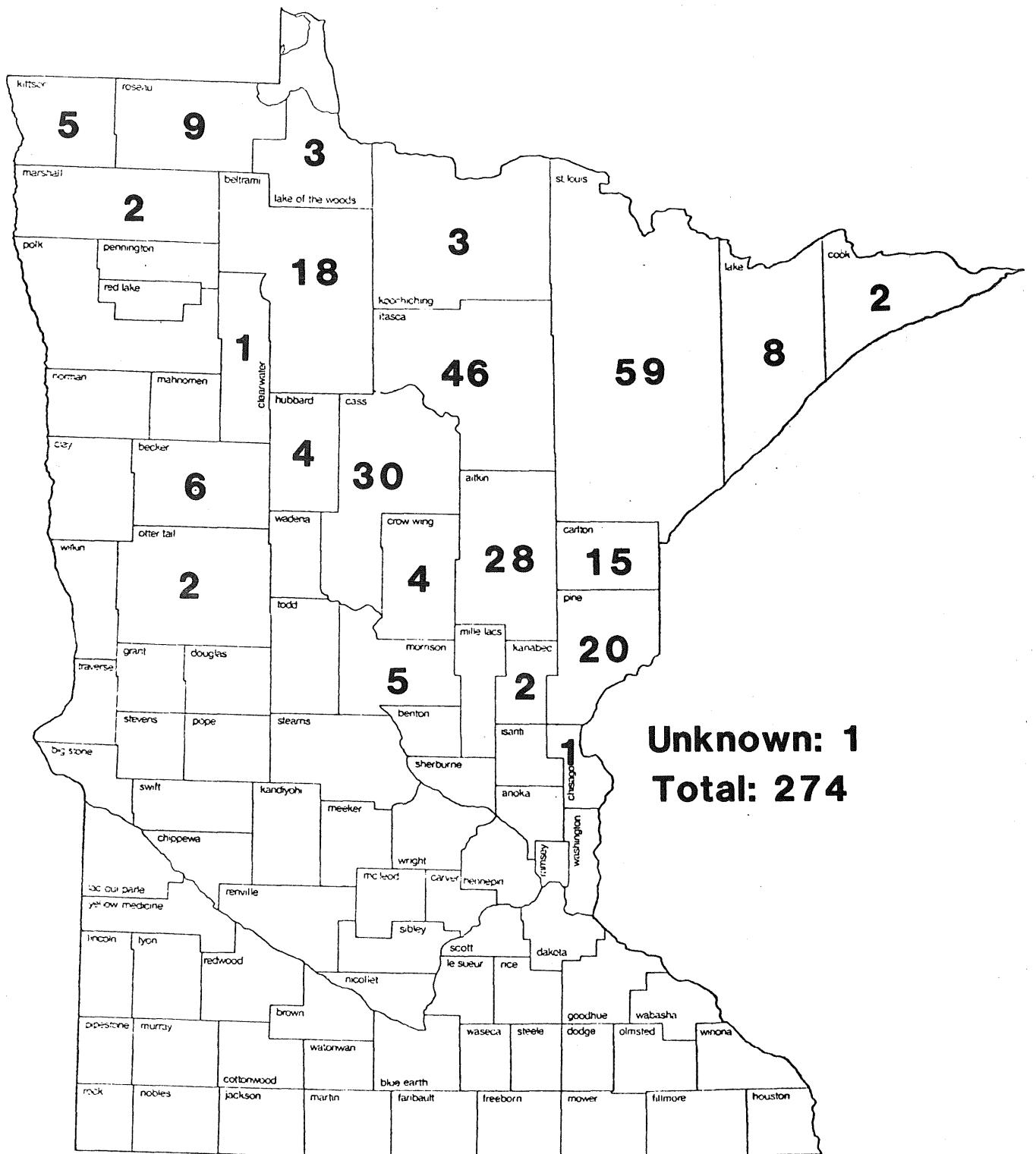


Figure 40. Registered harvest of bobcat by county, 1982 season.

Table 52. Comparison of bobcat harvest by county, 1978-79 - 1982-83.

County	1978-79	1979-80	1980-81	1981-82 ^a	1982-83
Aitkin	51	42	36	45	28
Becker	8	6	9	1	6
Beltrami	15	10	0	2	18
Brown	0	1	0	0	0
Carlton	17	22	32	15	15
Cass	34	26	9	26	30
Chisago	0	0	0	0	1
Clearwater	4	2	1	0	1
Cook	10	1	0	0	2
Crow Wing	2	3	1	2	4
Douglas	0	0	0	1	0
Hubbard	14	13	6	3	4
Itasca	37	24	10	32	46
Kanabec	7	6	0	2	2
Kittson	1	0	1	5	5
Koochiching	9	8	3	0	3
Lake	4	7	3	4	8
Lake of the Woods	1	6	3	3	3
Marshall	6	3	0	6	2
Mille Lacs	2	3	0	4	0
Morrison	0	0	0	0	5
Ottertail	0	2	0	3	2
Pennington	0	0	1	1	0
Pine	18	40	27	21	20
Roseau	7	4	0	4	9
St. Louis	50	62	65	78	59
Wadena	0	0	0	2	0
Unknown	0	0	3	0	1
Confiscated	7	0	0	0	0
Total	304	291	210	260	274

^a Northeast 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, 1982-83 season.

Interval	Total	% of Total	Cumulative Percent
Dec. 1-5	41	15.0	15.0
Dec. 6-10	27	9.8	24.8
Dec. 11-15	19	6.9	31.7
Dec. 16-20	23	8.4	40.1
Dec. 21-25	22	8.0	48.1
Dec. 26-30	31	11.3	59.4
Dec. 31-Jan. 4	25	9.1	68.5
Jan. 5-9	15	5.5	74.0
Jan. 10-14	21	7.7	81.7
Jan. 15-19 ^a	27	9.9	91.6
Jan. 20-23	15	5.5	97.1
Unknown	8	2.9	100.0
Total	274	100.0	100.0

^a 4-day interval.

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