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Status of Wildlife Populations,  
Fall 1984 and 1979-1983 Hunting  
and Trapping Harvest Statistics

compiled by

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Status of Wildlife Populations, Fall 1984  
and  
1979-1983 Hunting and Trapping Harvest Statistics

The Section of Wildlife Research Unit has published this booklet each fall since 1977; it is primarily an administrative document intended for use by Department of Natural Resources personnel. Content is quite similar to past years--there are separate sections with data on farmland, forest and wetland wildlife and another with harvest statistics from various hunting and trapping seasons back to 1979.

The data presented results 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.

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

We are also in the final stages of preparing a booklet similar to this one which will contain summaries of recent findings/activities from each research project currently active. That booklet will be published each year from now on as a companion to this volume. The two together will then constitute an annual report on all projects of the Wildlife Populations and Research Unit.

Blair Joselyn  
26 September 1984

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FARMLAND WILDLIFE POPULATIONS  
AND CENSUSES

Table 1. May 1984 roadside census results for ring-necked pheasants by agricultural region.

Region	Miles censused	Individuals per 100 miles		Percent <sub>b</sub> change
		1984	10 yr. ave <sup>a</sup>	
West Central	675	43.3	17.4	149%
Central	525	4.8	18.2	-74%
East Central	363	9.4	37.0	-75%
Southwest	350	3.7	12.5	-70%
South Central	450	10.4	27.4	-62%
Southeast	446	6.3	42.7	-85%
Statewide	2,809	15.6	26.4	-41%

<sup>a</sup> From 1972-1981.

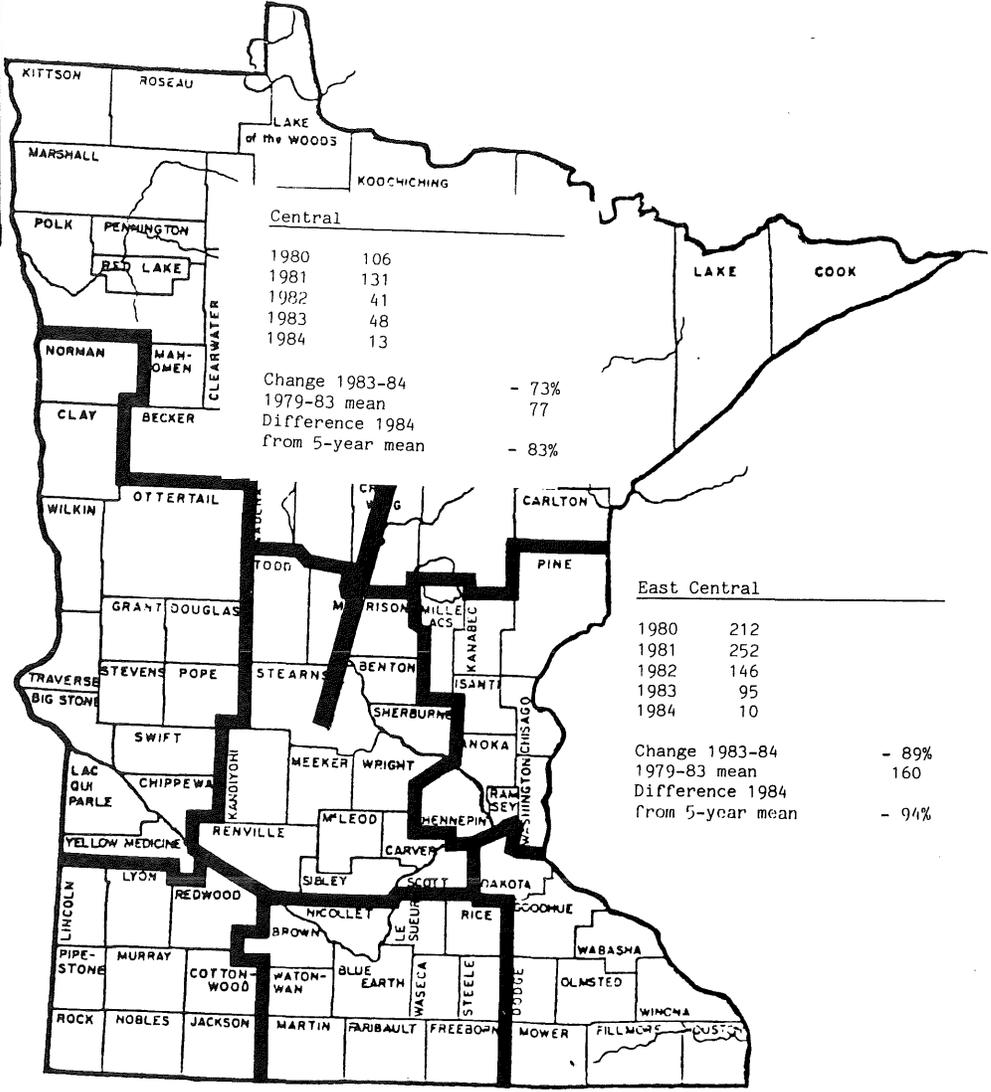
<sup>b</sup> From 10 year average.

Table 2. May 1984 roadside census results for selected farmland wildlife species by agricultural region.

Region	Miles censused	Gray (hun) partridge	Eastern cottontail	W.T. jack rabbit	W.T. deer
West Central	675	7.6	4.2	2.5	8.6
Central	525	3.6	4.8	0.4	2.7
East Central	363	0.0	0.8	0.3	4.4
Southwest	350	17.7	4.9	2.3	3.4
South Central	450	4.9	2.9	0.0	1.3
Southeast	446	1.8	2.7	0.2	6.3
Statewide	2,809	5.8 (7.8) <sup>a</sup>	3.3 (5.8) <sup>a</sup>	1.0	4.8 (1.7) <sup>a</sup>

<sup>a</sup> 1972-1981 average.

Statewide	
1980	100
1981	130
1982	59
1983	55
1984	28
Change 1983-84	- 49%
1979-83 mean	79
Difference 1984 from 5-year mean	- 65%



Central	
1980	106
1981	131
1982	41
1983	48
1984	13
Change 1983-84	- 73%
1979-83 mean	77
Difference 1984 from 5-year mean	- 83%

West Central	
1980	71
1981	116
1982	69
1983	88
1984	64
Change 1983-84	- 27%
1979-83 mean	77
Difference 1984 from 5-year mean	- 17%

East Central	
1980	212
1981	252
1982	146
1983	95
1984	10
Change 1983-84	- 89%
1979-83 mean	160
Difference 1984 from 5-year mean	- 94%

Southwest	
1980	30
1981	80
1982	27
1983	10
1984	9
Change 1983-84	- 10%
1979-83 mean	32
Difference 1984 from 5-year mean	- 72%

South Central	
1980	110
1981	126
1982	48
1983	25
1984	26
Change 1983-84	+ 4%
1979-83 mean	72
Difference 1984 from 5-year mean	- 64%

Southeast	
1980	85
1981	94
1982	29
1983	51
1984	21
Change 1983-84	- 59%
1979-83 mean	63
Difference 1984 from 5-year mean	- 67%

Figure 1. Pheasants observed per 100 miles of August census route, 1980-1984, and percent change 1983-1984 for routes censused both years.

Table 3. County, regional, and statewide August ring-necked pheasant census results, 1980-1984.

Region and County	Miles censused 1984	Pheasants observed per 100 miles					1979-83 mean	Percent <sup>a</sup> change 1983-1984
		1980	1981	1982	1983	1984		
West Central	950	70.9	116.3	68.9	87.5	64.5	76.5	-26%
Big Stone	75	384	352	187	340	257		
Chippewa	50	236	172	54	52	60		
Clay	75	0	0	19	44	25		
Douglas	50	60	24	126	32	16		
Grant	50	28	10	46	0	30		
Lac qui Parle	75	144	224	204	212	137		
Norman	75	0	0	0	0	0		
Ottertail	50	72	140	100	56	124		
Pope	75	60	179	107	148	63		
Stevens	75	87	287	73	188	84		
Swift	75	-	113	21	58	39		
Traverse	75	37	3	3	7	55		
Wilkin	75	2	27	29	4	3		
Yellow Medicine	75	59	59	13	14	1		
Central	800	105.7	131.0	41.2	48.1	12.8	76.8	-73%
Benton	50	44	256	74	84	10		
Carver	50	238	178	22	22	18		
Kandiyohi	75	100	131	44	82	9		
McLeod	25	126	106	-	28	0		
Meeker	75	198	293	83	18	28		
Morrison	75	77	39	29	18	0		
Renville	50	0	10	0	0	0		
Scott	50	202	244	120	166	6		
Sherburne	50	36	20	20	24	0		
Sibley	75	116	157	27	44	17		
Stearns	100	73	65	26	44	40		
Todd	75	39	117	41	72	20		
Wright	50	256	112	54	40	18		
East Central	425	211.8	252.4	146.4	95.3	10.1	160.1	-89%
Anoka	50	160	96	28	4	2		
Chisago	75	383	480	280	265	20		
Hennepin	25	136	76	16	60	0		
Isanti	75	237	335	171	139	12		
Kanabec	50	216	224	142	116	10		
Mille Lacs	75	49	209	135	40	17		
Pine	25	126	182	122	58	0		
Washington	50	332	176	140	26	0		

Table 3. Continued.

Region and County	Miles censused 1984	Pheasants observed per 100 miles					Percent <sup>a</sup> change 1983-1984	
		1980	1981	1982	1983	1984	1979-83 mean	1983-1984
Southwest	475	30.2	80.0	27.3	10.1	8.6	32.2	-15%
Cottonwood	50	72	62	32	2	10		
Jackson	50	20	58	68	24	10		
Lincoln	50	0	134	2	4	0		
Lyon	50	2	24	50	0	0		
Murray	50	116	180	60	54	0		
Nobles	75	19	91	3	1	0		
Pipestone	50	40	40	2	6	28		
Redwood	50	2	42	4	-	30		
Rock	50	2	84	24	4	4		
South Central	775	109.9	125.8	47.5	25.1	25.5	71.9	+2%
Blue Earth	75	156	79	5	31	7		
Brown	75	44	85	55	7	33		
Fairbault	75	93	59	35	24	8		
Freeborn	75	16	97	24	0	25		
LeSueur	75	201	277	115	65	40		
Martin	75	115	183	91	21	65		
Nicollet	75	128	93	39	16	1		
Rice	75	149	147	55	25	1		
Steele	50	234	222	50	26	98		
Waseca	50	87	114	0	32	4		
Watonwan	75	27	56	24	35	15		
Southeast	500	84.7	94.2	28.9	50.9	20.6	63.1	-60%
Dakota	50	130	102	92	98	4		
Dodge	50	248	314	40	96	20		
Fillmore	50	-	80	16	24	38		
Goodhue	50	-	44	0	2	0		
Houston	50	4	60	6	4	0		
Mower	75	132	139	55	54	45		
Olmsted	75	91	83	53	108	29		
Wabasha	50	22	14	4	16	0		
Winona	50	24	4	6	-	32		
Statewide	3,925	100.2	130.0	58.6	54.6	28.2	78.9	-48%

<sup>a</sup> Percent change 1983-1984 for miles censused both years only.

Table 4. August 1983 roadside census results for selected farmland wildlife species by agricultural region.

Individuals per 100 miles						
Region	Miles censused	Gray (hun) partridge	Eastern cottontail	W.t. jack rabbit	Mourning dove	W.t. deer
NW	475	16.2	1.9	1.5	189	19.6
WC	925	31.5	7.0	2.3	517	4.9
C	750	20.1	6.5	1.2	289	4.5
EC	375 <sup>a</sup>	0.0	13.6	0.0	139	2.7
SW	475	65.7	5.7	0.0	242	3.4
SC	800	24.3	3.6	0.9	214	1.9
SE	475	8.4	12.2	0.8	193	2.5
Statewide <sup>b</sup>	3,800	25.7	7.6	1.3	320	5.9

<sup>a</sup> An additional 50 miles were censused for gray partridge.

<sup>b</sup> Statewide means exclude the NW region.

Table 5. August 1984 roadside census results for selected farmland wildlife species by agricultural region.

Individuals per 100 miles						
Region	Miles censused	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 <sup>a</sup>	3,825	23.1	3.0	0.9	296	3.7

<sup>a</sup> Statewide means exclude the NW region.

Table 6. Statewide August roadside census results for selected farmland wildlife species, 1980-1984.

Species	Animals per 100 miles <sup>a</sup>					Percent <sup>a</sup> change 1983-1984
	1980	1981	1982	1983	1984	
Ring-necked pheasant <sup>b</sup>	99.6	130.0	58.6	54.6	28.0	-49%
Gray partridge (Hun) <sup>b</sup>	47.0	45.3	22.0	25.7	23.1	-11%
Mourning dove <sup>b</sup>	357	346	298	320	296	-8%
Sharp-tailed grouse			0.05	0.02	0.12	+500%
Greater prairie-chicken			0.00	0.00	0.23	+100%
Sandhill crane			1.00	1.22	1.14	-7%
Eastern cottontail <sup>b</sup>	6.5	10.4	5.1	7.6	3.0	-60%
White-tailed jack rabbit <sup>b</sup>	3.0	2.5	1.7	1.3	0.9	-31%
Gray & fox squirrels			0.90	1.03	1.65	+60%
Gray & red foxes			0.32	0.24	0.23	-4%
Striped & spotted skunks			0.22	0.22	0.49	+123%
Badger			0.02	0.00	0.00	0%
White-tailed deer <sup>b</sup>	1.6	2.2	3.5	5.9	3.7	-37%

<sup>a</sup> 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 each year.

<sup>b</sup> NW region not included in these means.

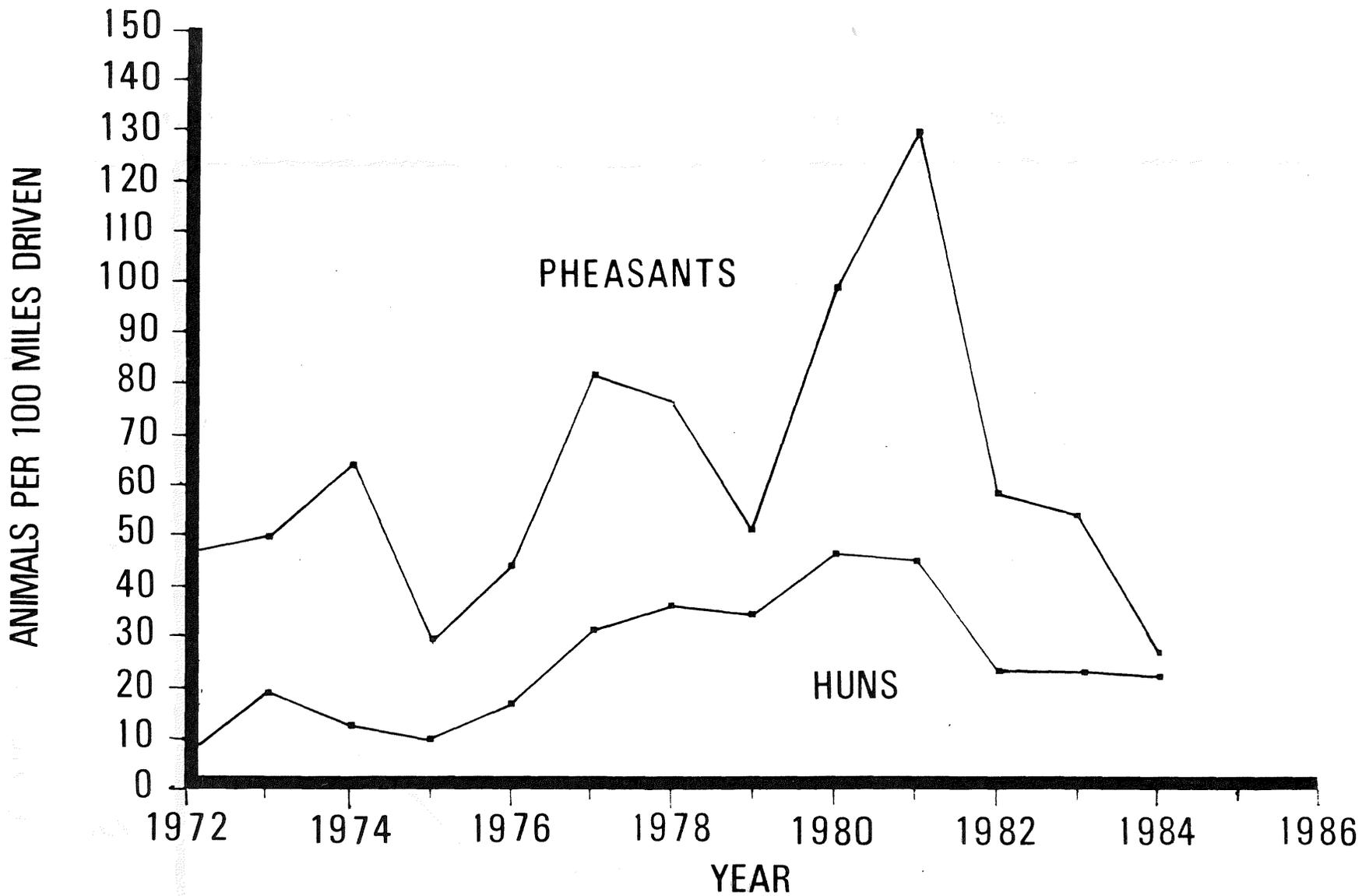


Figure 2. August roadside census indices (animals observed/100 mi.) of pheasants and gray partridge (huns), 1972-1984.

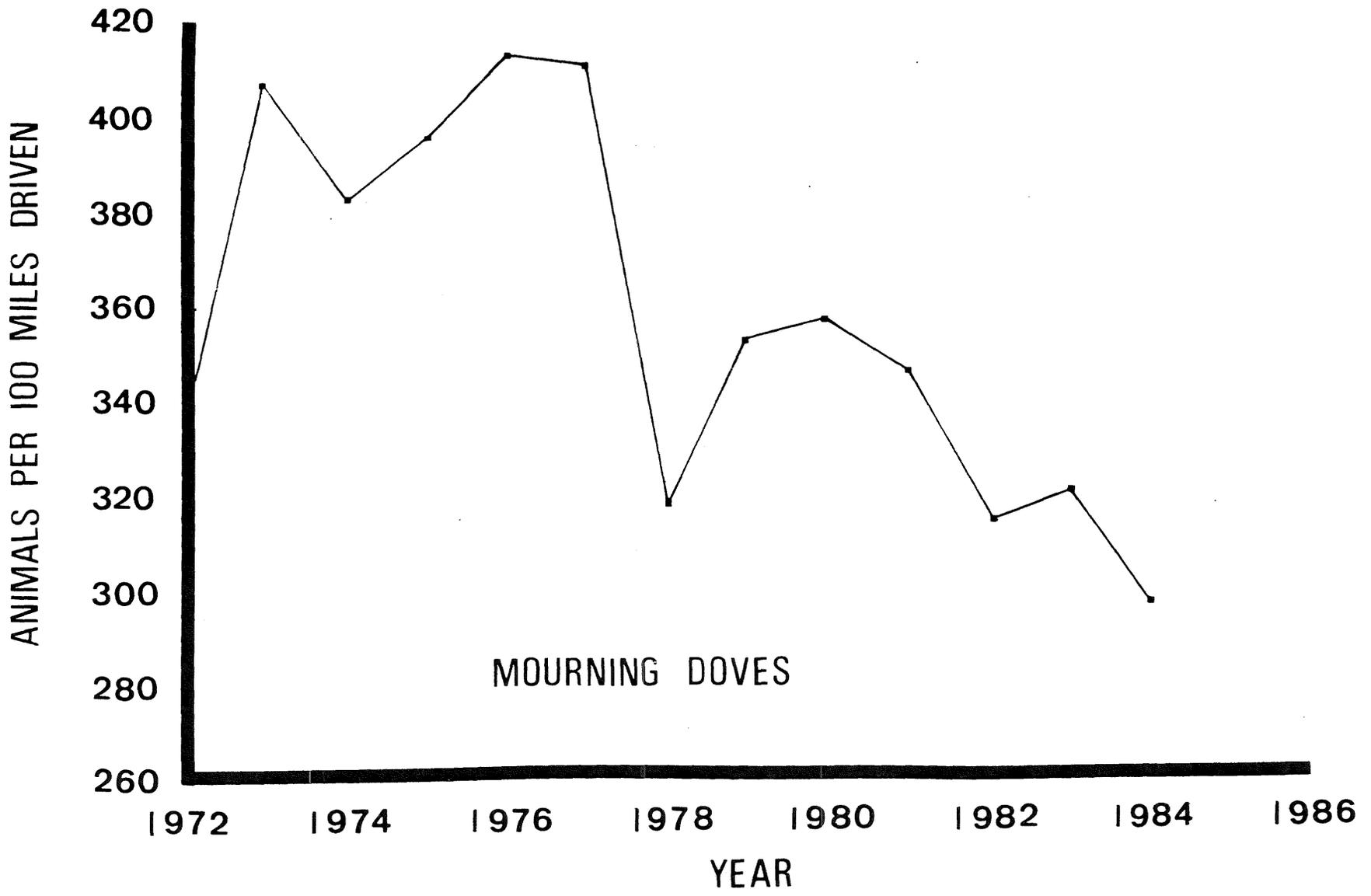


Figure 3. August roadside census indices (animals observed/100 mi.) of mourning doves, 1972-1984.

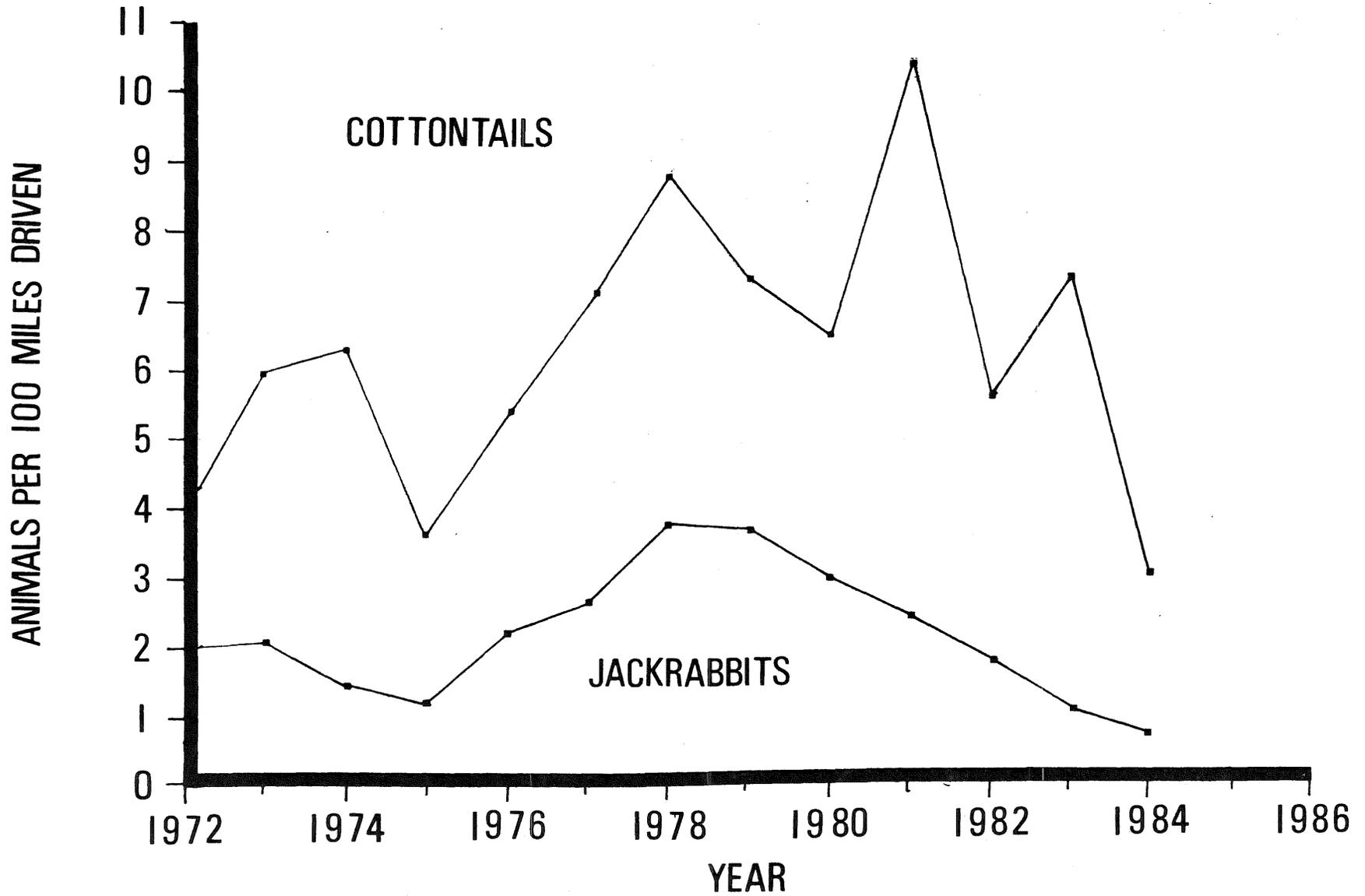


Figure 4. August roadside indices (animals observed/100 mi.) of eastern cottontail and white-tailed jackrabbits, 1972-1984.

**ANIMALS PER 100 MILES DRIVEN**



Figure 5. August roadside census indices (animals observed/100 mi.) of white-tailed deer, 1974-1984.

Table 7. Greater prairie-chicken spring booming ground counts for 15 northwestern counties, 1978-1984 (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 <sup>b</sup>
Becker	26 ( 4)	102 ( 9)	156 (16)	159 (16)	133 (13)	174 (17)	96 ( 9)
Cass	9 ( 1)	14 ( 2) <sup>a</sup>	17 ( 6) <sup>a</sup>	63 (15) <sup>a</sup>	68 (16) <sup>a</sup>	65 (15)	54 (15) <sup>a</sup>
Chippewa	8 ( 1)	2 ( 1)	2 ( 1)	2 ( 1)	0	2 ( 1)	0
Clay	261 (21)	205 (17) <sup>a</sup>	186 (17) <sup>a</sup>	196 (16) <sup>a</sup>	216 (12) <sup>a</sup>	161 (15)	110 ( 7)
Hubbard	-- --	-- --	-- --	4 ( 1)	3 ( 1)	3 ( 1)	5 ( 1)
Mahnomen	71 ( 4)	81 ( 7)	203 (21)	223 (20)	294 (22)	316 (22)	149 (19)
Marshall	-- --	-- --	-- --	3 ( 1)	7 ( 2)	3 ( 1)	2 ( 2)
Morrison	-- --	-- --	-- --	-- --	1 ( 1)	0	-- --
Norman	130 ( 9)	213 (13)	230 ( 9)	210 ( 9)	273 (15)	194 (11) <sup>a</sup>	119 ( 8)
Ottertail	8 ( 2)	19 ( 5)	13 ( 2)	9 ( 2)	12 ( 1)	10 ( 3)	7 ( 1)
Pennington	-- --	8 ( 1)	-- --	2 ( 1)	6 ( 1)	5 ( 1)	4 ( 1)
Polk	140 (16)	192 (18) <sup>a</sup>	269 (27)	254 (26)	283 (29)	232 (26)	146 (22) <sup>a</sup>
Red Lake	7 ( 1)	8 ( 1)	8 ( 1)	19 ( 2)	19 ( 2)	14 ( 2)	12 ( 2)
Wadena	-- (10) <sup>a</sup>	27 ( 3) <sup>a</sup>	10 ( 3)	60 (12) <sup>a</sup>	64 (11)	18 ( 6)	19 ( 2)
Wilkin	180 (14)	77 ( 4)	164 (14)	206 (23) <sup>a</sup>	269 (20)	223 (18)	60 ( 6)
Total	841 (74)	948 (81)	1,258(117)	1,410(144)	1,648(146)	1,420(139)	783 (95)
Avg. no. males/ground	11.4	11.7	10.8	9.8	11.2	10.2	8.2

<sup>a</sup> 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.

<sup>b</sup> 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.

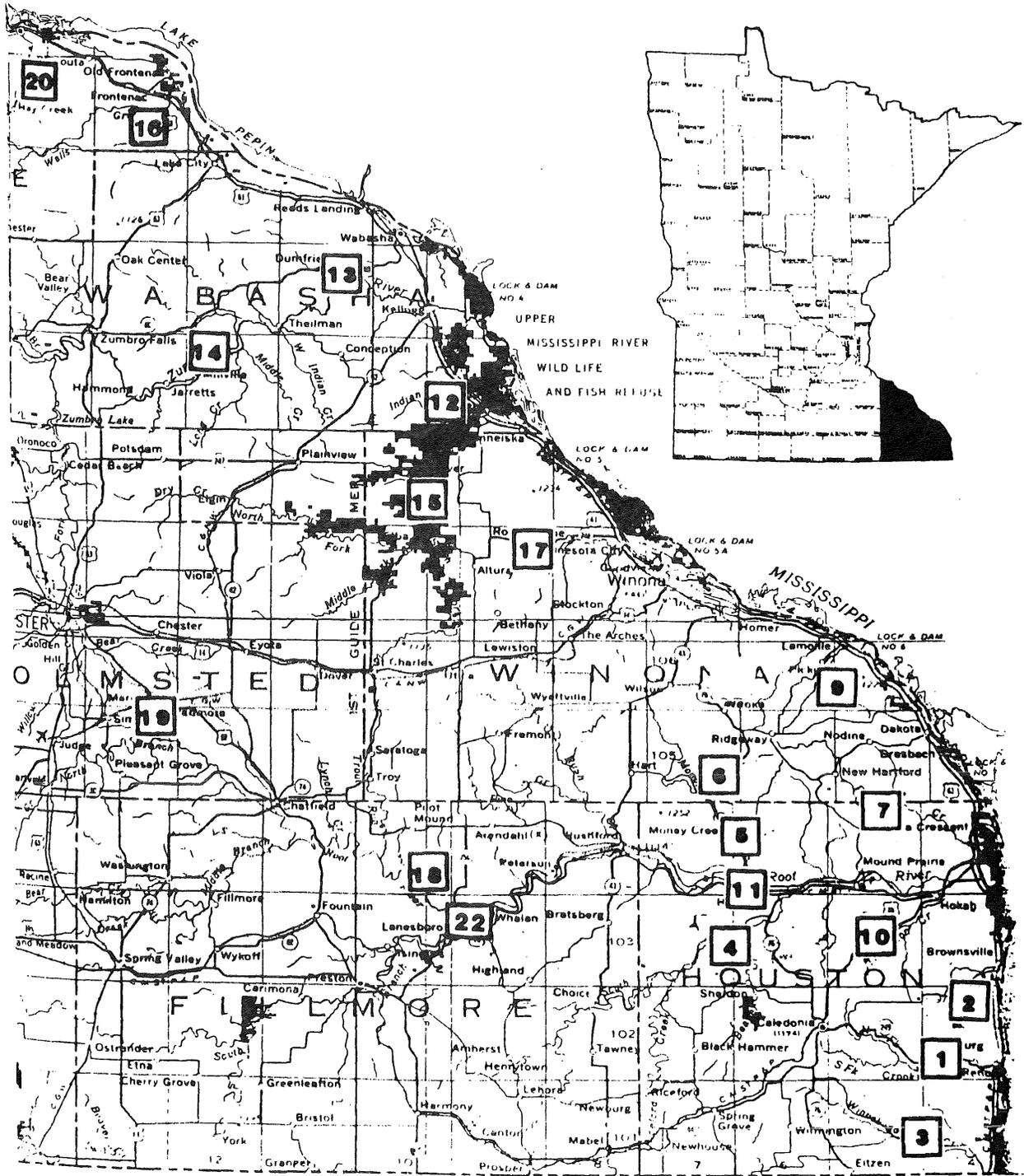


Figure 6. Approximate locations of gobble-count census routes in southeastern Minnesota (not shown are routes #21 - Welch - located between Cannon Falls and Red Wing in Goodhue County, and #8 - Oxbow - located north of Byron in Olmsted County).

Table 8. "Best Day" turkey gobbling counts in southeastern Minnesota, 1976-1984.

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

<sup>a</sup> Routes that have been discontinued are not included.

<sup>b</sup> Stops w/out interference.

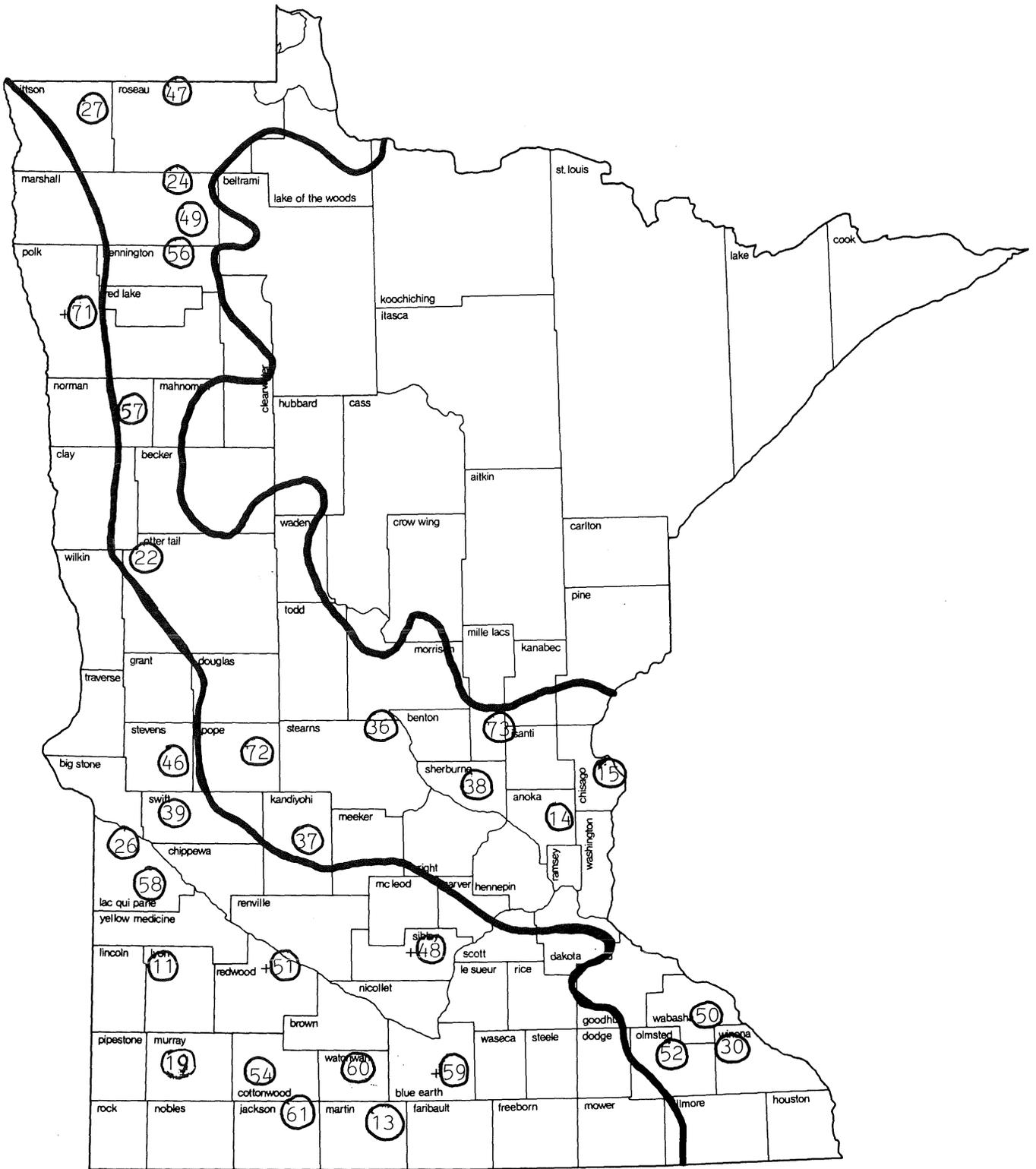


Figure 7. General locations of scent post routes in the Farmland and Transition Zones, 1983. Routes marked with (+) were not run in 1983.

Table 9. Mean predator scent post indices (Ind) and annual percent changes in indices (PC) for nine species in the Farmland and Transition Zones, 1977-1983.

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

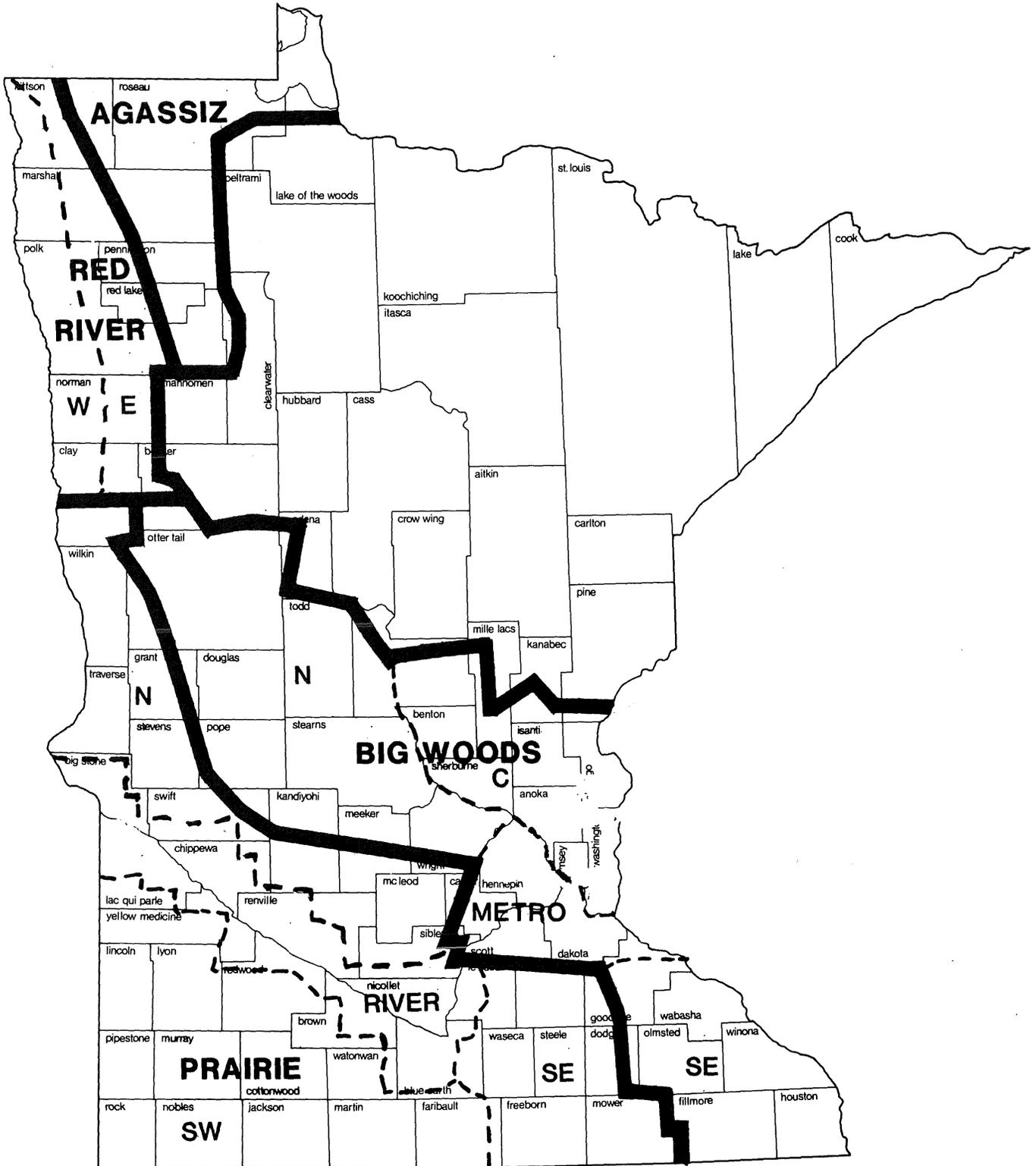


Figure 8. Deer management units and sub-units in the Farmland Zone.

Table 10. Productivity of deer in the Big Woods and Prairie Deer Management Units (DMU), 1980-1984.

	Age class	Pregnancy rate	Fetuses per pregnancy	Proportion of sample	Gross productivity <sup>a</sup>
BIG WOODS					
1984 (N=199)	Fawn	21%	1.00	38%	1.19 fawns/doe
	Yearling	92%	1.90	18%	
	Adult	92%	1.85	44%	
1983 (N=211)	Fawn	55%	1.38	35%	1.43 fawns/doe
	Yearling	95%	1.79	23%	
	Adult	96%	2.00	42%	
1982 (N=237)	Fawn	46%	1.19	35%	1.31 fawns/doe
	Yearling	88%	1.77	23%	
	Adult	96%	1.90	42%	
1981 (N=181)	Fawn	60%	1.06	36%	1.39 fawns/doe
	Yearling	97%	1.68	22%	
	Adult	96%	2.00	42%	
1980 (N=173)	Fawn	61%	1.18	35%	1.43 fawns/doe
	Yearling	94%	1.71	21%	
	Adult	98%	1.93	44%	
PRAIRIE					
1984 (N=111)	Fawn	20%	1.15	31%	1.08 fawns/doe
	Yearling	86%	1.41	13%	
	Adult	84%	1.92	56%	
1983 (N= 92)	Fawn	61%	1.36	35%	1.53 fawns/doe
	Yearling	93%	1.86	23%	
	Adult	100%	2.00	42%	
1982 (N=132)	Fawn	47%	1.18	35%	1.39 fawns/doe
	Yearling	84%	1.80	23%	
	Adult	100%	2.03	42%	
1981 (N=132)	Fawn	50%	1.06	36%	1.38 fawns/doe
	Yearling	95%	1.75	22%	
	Adult	97%	1.96	42%	
1980 (N=108)	Fawn	63%	1.06	35%	1.34 fawns/doe
	Yearling	92%	1.64	21%	
	Adult	93%	1.95	44%	

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

Table 11. Spring densities of deer in the farmland zone, 1979-1984.

DMU	Deer per square mile					GOAL <sup>a</sup>	1984 pct. of goal
	1979	1981	1982	1983	1984		
<u>RED RIVER</u>	1.0	1.9	2.0	2.1	2.2	1.6	138%
<u>AGASSIZ</u>	2.9	4.5	5.0	5.7	5.8	6.5	89%
<u>BIG WOODS</u>							
North	3.5	3.9	4.0	4.1	4.2	4.1	102%
Central	3.1	5.0	5.5	5.9	5.9	5.9	100%
Metro	2.3	1.8	1.9	2.2	2.3	2.2	105%
SE	3.6	7.0	7.4	7.5	7.5	6.8	110%
<u>PRAIRIE</u>							
North	1.0	1.9	2.1	2.2	1.7	1.5	113%
River	1.2	2.5	2.6	2.6	2.8	2.2	127%
SW	0.9	1.7	1.8	1.9	1.9	1.3	146%
SE	0.8	1.4	1.5	1.6	1.9	1.2	158%
<u>FARMLAND ZONE</u>		3.0	3.2	3.3	3.4	3.0	113%

FOREST WILDLIFE POPULATIONS  
AND CENSUSES

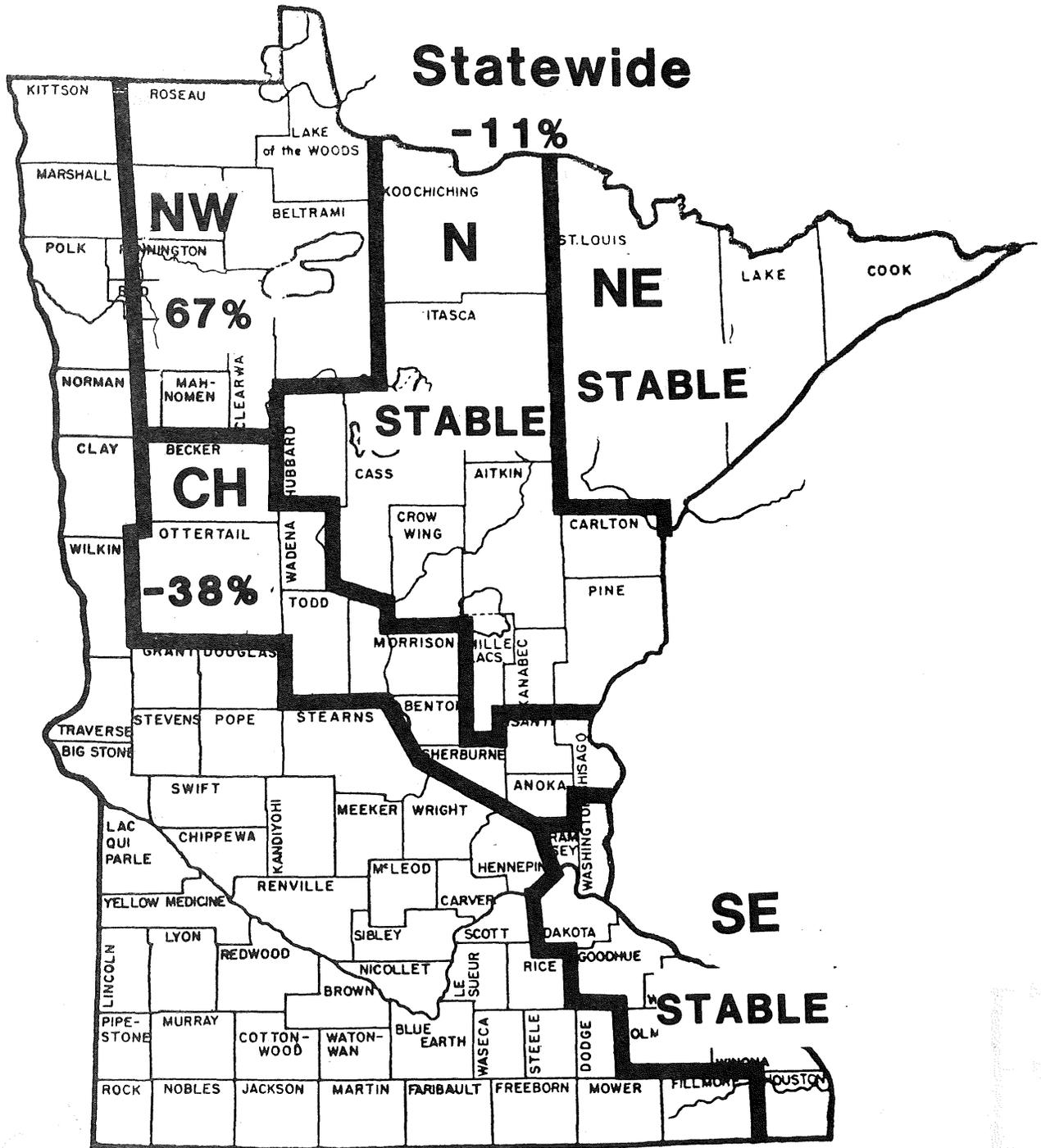


Figure 9. Changes from 1983-1984 in average numbers of ruffed grouse drums per stop on roadside counts.

Table 12. Mean number of ruffed grouse drums per stop by census zone, 1964-1984.

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
1984	1.0	1.1	0.6	0.5	1.4	0.8

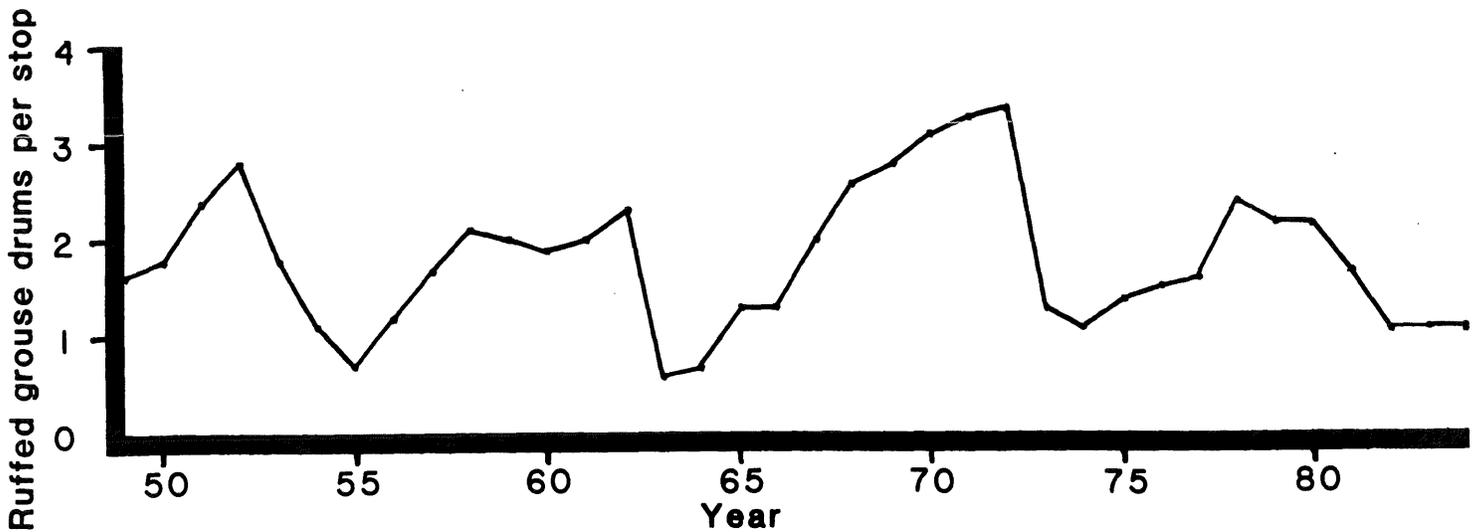


Figure 10. Mean number of ruffed grouse drums per stop in the North census zone, 1949-1984.



Table 13. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1984.

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%
1984	2	0.2	2%

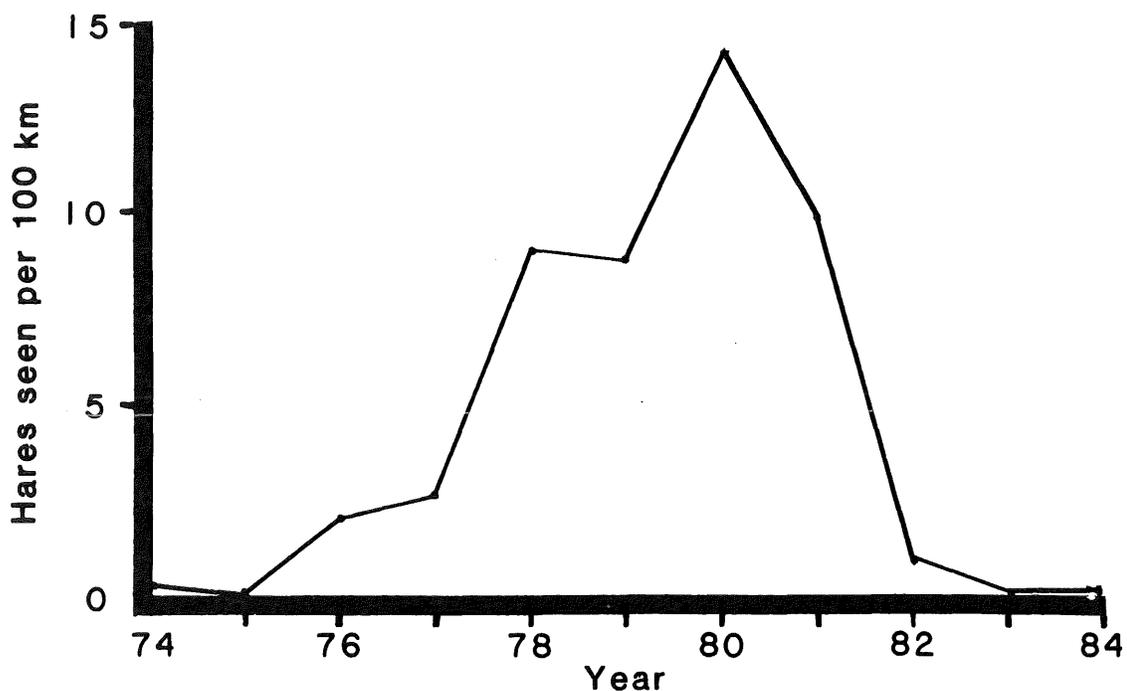


Figure 12. Snowshoe hares seen on ruffed grouse drumming routes in the Northwest, North, and Northeast census zones (combined), 1974-1984.

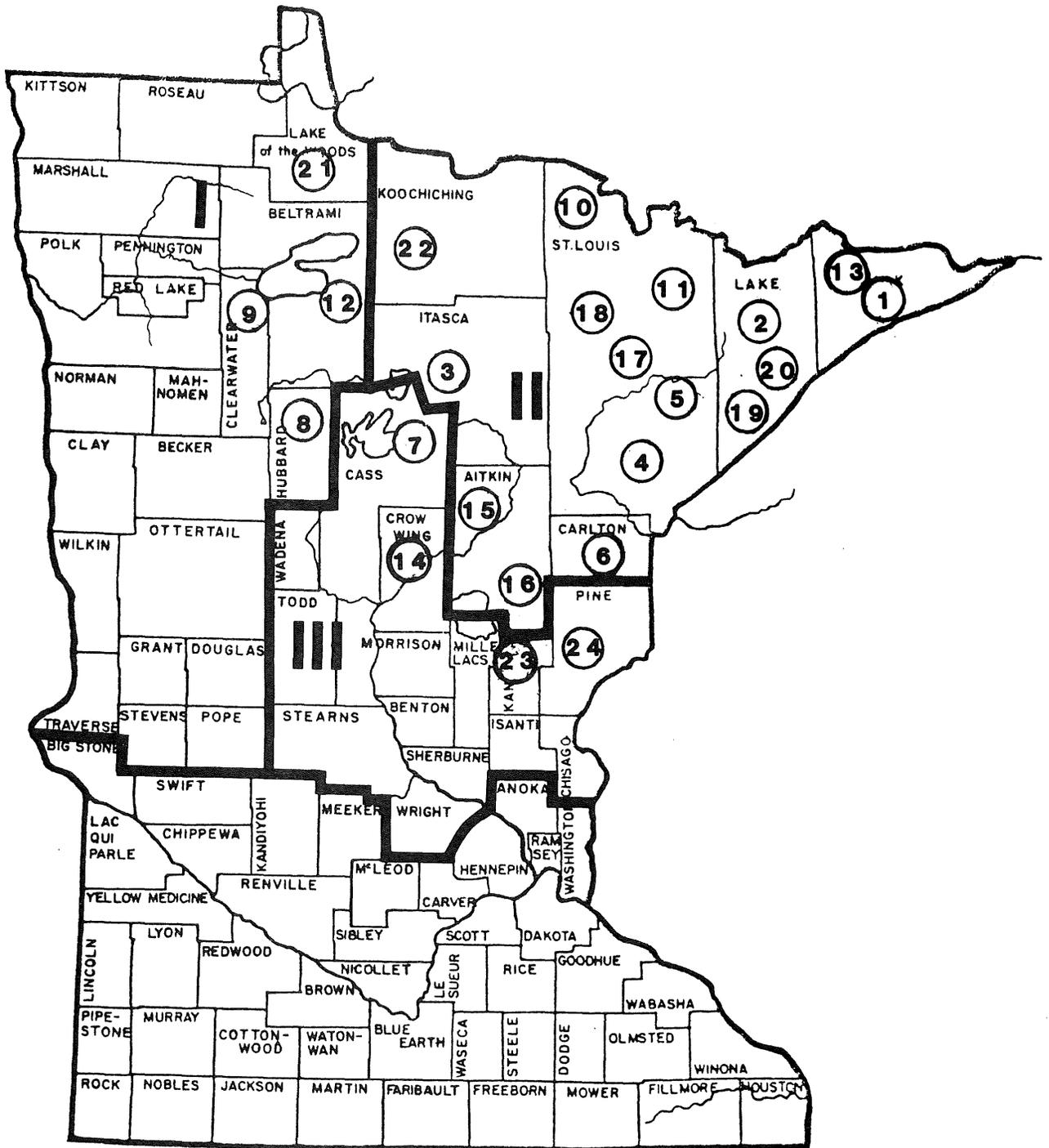


Figure 13. Approximate location of 24 aerial beaver census routes, within DNR Regions I-III.

Table 14. Live beaver colonies per mile of census route in northern Minnesota, 1974-1983.

number	Route name	Year									
		1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
1	Cascade	0.55	1.12	0.52	0.39	1.07	-	0.42	0.43	0.40	0.35
2	Kawishiwi	0.33	0.95	-	0.73	0.97	0.68	0.75	0.50	0.72	0.65
3	Itasca	0.46	0.80	0.60	0.74	1.04	0.66	0.63	0.48	0.43	0.57
4	South St. Louis	0.48	0.74	0.63	0.76	0.99	-	0.64	0.74	-	0.58
5	Central St. Louis	0.60	1.23	-	-	1.02	0.95	0.90	0.95	0.65	0.79
6	Carlton & Pine	0.45	0.56	0.26	0.69	0.89	0.60	0.83	0.67	0.22	0.56
7	Cass	0.37	0.80	0.57	0.83	1.03	1.00	0.95	0.53	0.63	0.89
8	Balsam-Hennepin	0.60	0.40	0.28	0.51	0.39	0.55	0.44	0.43	0.60	0.58
9	Pinewood-Mississippi	0.56	0.32	0.33	0.55	0.32	-	0.38	0.39	0.49	0.48
10	Kabetogama Peninsula	2.20	2.21	2.39	2.14	2.91	3.05	2.52	3.55	2.66	2.89
11	Ely-Finger Lakes	0.92	1.85	-	1.41	1.59	1.26	1.06	0.98	1.17	1.32
12	Hay Creek-Kelliher	0.78	0.48	0.46	0.68	0.44	-	0.43	0.48	0.70	0.55
13	Cook County Transect	0.23	0.57	0.36	0.30	0.49	-	0.23	0.40	0.33	0.48
14	Cass-Crow Wing	0.43	0.67	0.43	0.59	0.70	0.68	0.78	0.61	0.74	0.68
15	Little Willow-Aitkin	0.24	0.35	-	0.42	0.45	0.47	0.44	0.38	0.40	0.40
16	East Aitkin County	0.52	0.62	0.47	0.89	1.14	0.96	0.72	0.52	0.86	0.82
17	West Vermilion	0.67	0.93	0.54	1.03	1.25	1.12	0.96	1.05	0.86	0.34
18	Blackduck	0.92	1.41	0.97	1.24	1.54	1.31	1.09	1.22	0.91	0.71
19	Splitrock	1.11	1.45	1.21	1.14	1.45	-	1.07	-	-	0.55
20	Isabella	0.58	0.80	0.73	0.66	0.66	0.68	0.60	0.65	-	0.15
21	Red Lake-Pine Island	0.62	0.51	0.44	0.63	0.44	0.73	0.40	0.41	0.50	0.39
22	Northome	0.40	0.61	0.53	0.75	0.75	0.85	0.86	0.91	0.97	1.06
23	Kanabec County	0.78	0.61	0.65	0.84	0.59	0.55	0.70	0.48	0.55	0.65
24	Southern Pine	0.92	0.91	0.88	0.85	0.74	0.88	0.93	0.58	0.76	0.69
	DNR Region I	0.64	0.43	0.38	0.59	0.40	0.64	0.41	0.43	0.57	0.50
	DNR Region II	0.67	1.01	0.77	0.89	1.14	1.05	0.86	0.90	0.81	0.76
	DNR Region III	0.63	0.75	0.63	0.78	0.77	0.78	0.84	0.55	0.67	0.73

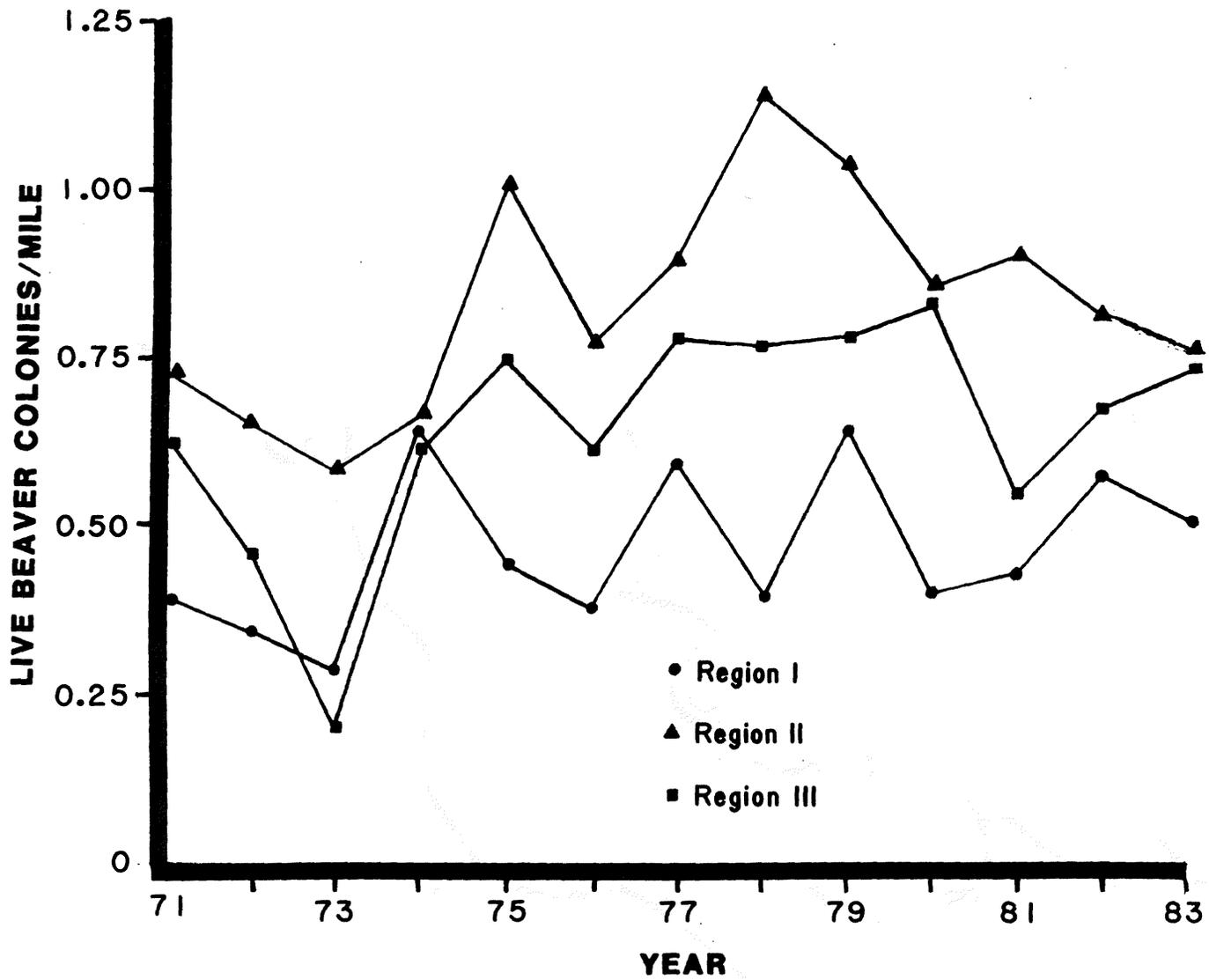


Figure 14. Numbers of live beaver colonies per mile in the three forested DNR Regions, 1971-1983.

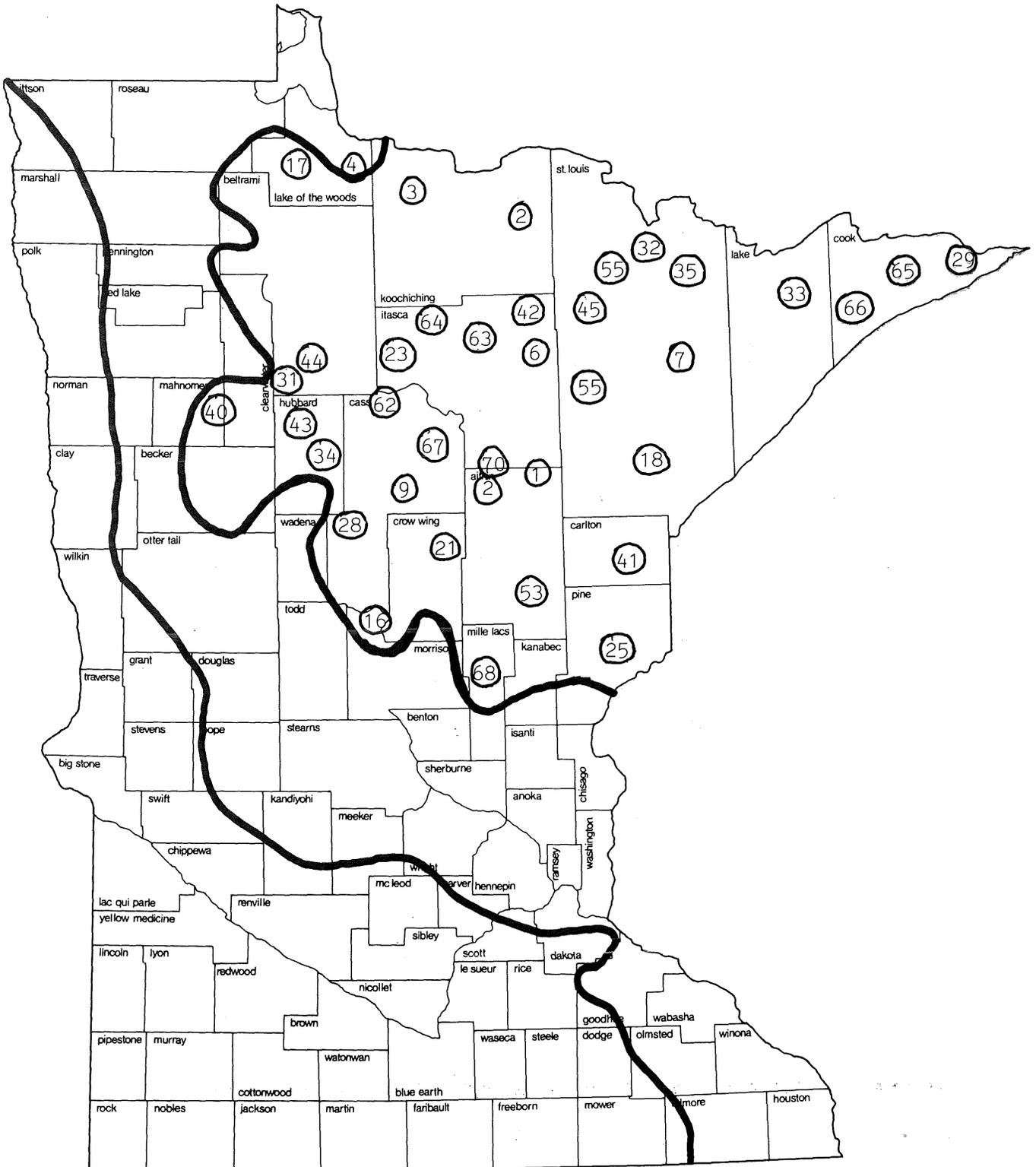


Figure 15. General locations of scent post routes in the Forest Zone, 1983.

Table 15. Mean predator scent post indices (Ind) and annual percent changes in indices (PC) for nine species in the Forest Zone, 1975-83.

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

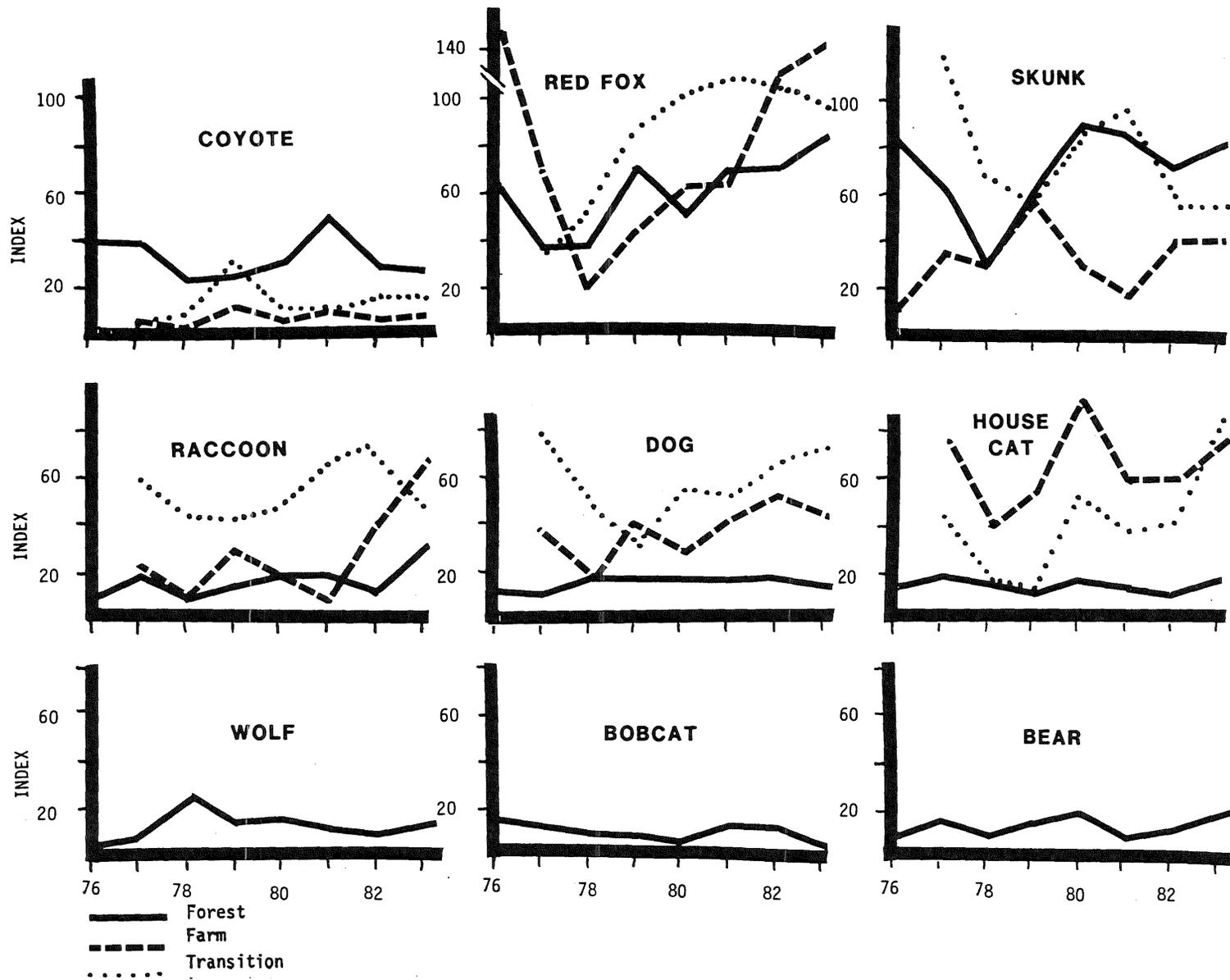


Figure 16. Mean scent post indices for nine species in the Forest, Transition and Farmland Survey Zones, 1976-1983.

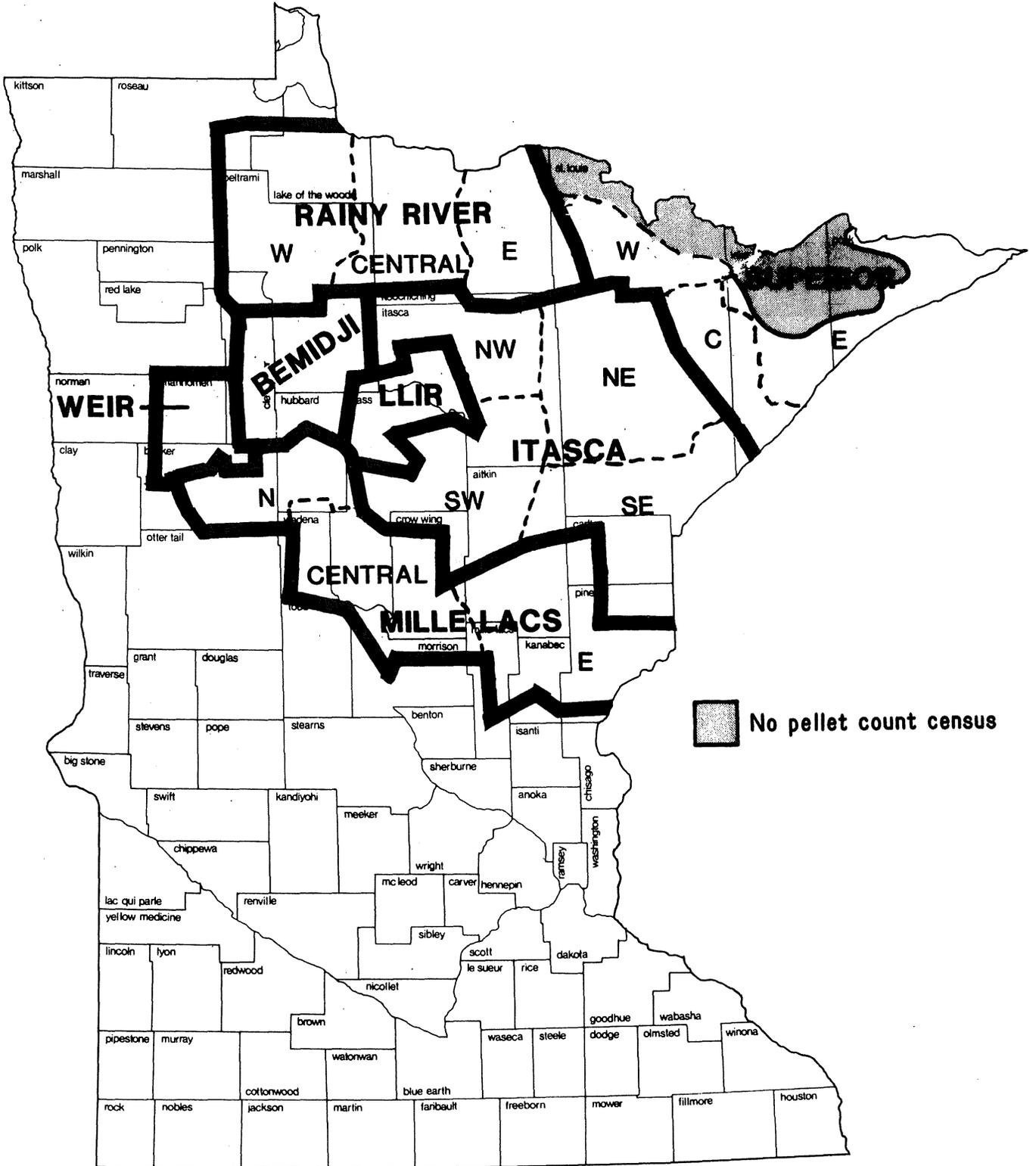


Figure 17. Deer management units and sub-units in the Forest Zone.

Table 16. Spring (pre-fawning) estimates of deer per square mile as determined by pellet counts, 1979-1984.

Area	Year					
	1979	1980	1981	1982	1983	1984
<u>Itasca DMU</u>						
NW	16.6 ± 3.9	16.8 ± 3.9	22.9 ± 4.3	22.4 ± 4.5	-----	20.8 ± 4.2
SW	14.1 ± 4.3	14.5 ± 4.1	16.9 ± 4.7	17.3 ± 4.8	21.0 ± 6.2	17.0 ± 3.8
NE	17.3 ± 4.1	15.1 ± 3.6	16.7 ± 3.8	14.1 ± 3.5	14.2 ± 3.6	11.5 ± 3.6
SE	13.6 ± 5.0	12.0 ± 5.2	18.1 ± 5.3	10.8 ± 4.2	15.4 ± 4.9	12.8 ± 4.0
<u>Rainy River DMU</u>						
West	12.5 ± 3.6	10.9 ± 3.7	-----	13.9 ± 6.0	-----	12.8 ± 4.2
Central	11.2 ± 3.5	8.2 ± 2.6	-----	11.4 ± 6.1	-----	10.7 ± 6.3
East	14.4 ± 7.4	21.8 ± 6.9	19.1 ± 5.1	8.9 ± 3.2	21.8 ± 6.9	15.1 ± 4.1
<u>Mille Lacs DMU</u>						
West	11.0 ± 2.8	12.4 ± 3.3	17.8 ± 4.7	18.0 ± 5.2	-----	12.3 ± 2.7
Central	9.3 ± 3.6	7.6 ± 2.4	11.3 ± 4.1	17.4 ± 4.8	16.1 ± 4.7	17.2 ± 4.5
East	16.5 ± 4.7	9.4 ± 2.5	14.0 ± 2.8	14.1 ± 3.7	15.8 ± 3.2	12.8 ± 3.2
<u>Superior DMU<sup>a</sup></u>						
West	20.0 ± 5.2	15.1 ± 3.4	21.4 ± 5.0	15.4 ± 2.9	-----	18.2 ± 7.1
Central	12.1 ± 4.9	10.2 ± 3.3	15.2 ± 5.6	16.2 ± 10.2	-----	14.1 ± 5.2
East	4.8 ± 1.6	4.8 ± 1.7	-----	-----	-----	-----
<u>Bemidji DMU</u>						
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	46.7 ± 14.0
White Earth IR		6.3 ± 2.9	4.1 ± 1.9	10.1 ± 5.8	11.4 ± 4.3	10.2 ± 4.9
Leech Lake IR				13.3 ± 3.6	14.1 ± 3.7	11.8 ± 3.8
Bearville Study Area		31.2 ± 9.5	38.1 ± 7.2	39.5 ± 8.7	38.0 ± 5.8	15.6 ± 4.3
Camp Ripley	23.2 ± 7.1	17.0 ± 5.1	19.2 ± 5.2	31.0 ± 8.2	31.6 ± 7.1	47.0 ± 12.4
Mille Lacs WMA	33.9 ± 7.7	24.9 ± 6.6	30.5 ± 11.2	35.4 ± 11.6	24.2 ± 6.6	17.5 ± 4.5
St. Croix State Park	52.2 ± 24.1	45.0 ± 21.2	39.6 ± 9.6	53.3 ± 14.8	41.6 ± 9.5	49.8 ± 11.9

<sup>a</sup> No pellet counts were conducted in the Boundary Waters Canoe Area or the Voyageurs National Park.

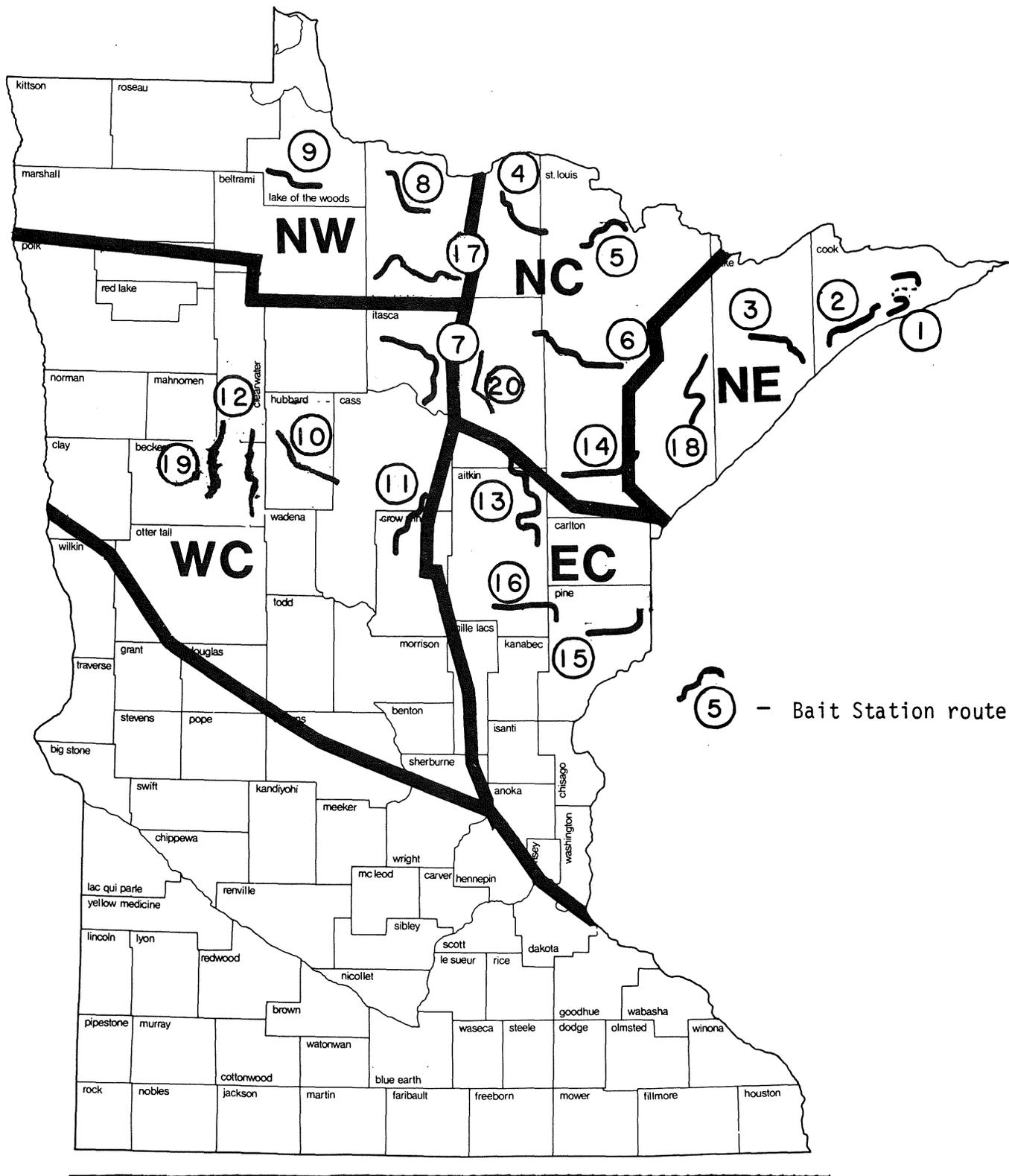


Figure 18. Approximate location of 5 Bear Permit Areas (NW, WC, NC, EC, NE) and 20 black bear bait station routes.

Table 17. Black bear bait post index (percent of baits taken) for 20 bait post routes by Bear Permit Area, 1981-1984<sup>a</sup>. All baits (50 per route) except those entirely removed by other animals were considered available to bears<sup>b</sup>.

Bear permit area	Route number	Year			
		1981	1982	1983	1984
Northeast	1	33	22	41	38
	2	22	14	15	10
	3	2	37	44	14
	18	-	-	8	20
	Mean	19	24	27	20
North Central	4	60	22	54	33
	5	54	31	44	28
	6	27	17	18	30
	14	4	16	14	4
	20 <sup>c</sup>	48	69	66	35
Mean	39	31	39	26	
Northwest	8	14	8	10	44
	9	40	16	27	20
	17	-	-	19	49
	Mean	27	12	19	38
West Central	7	45	19	43	18
	10	23	26	44	24
	11	22	12	30	21
	12	44	22	65	37
	19 <sup>d</sup>	-	-	28	10
Mean	34	20	42	22	
East Central	13	40	24	40	30
	15	36	24	22	24
	16	-	-	36	24
	Mean	38	24	33	26
Overall mean visitation index		32	24	33	26

<sup>a</sup> Caution should be taken in interpreting these results because it has yet to be demonstrated that in fact the index accurately reflects density.

<sup>b</sup> In previous reports, baits taken by other animals were not excluded. Therefore, some results presented here may differ slightly from previous reports.

<sup>c</sup> Bear Study Area.

<sup>d</sup> Route 19 changed in 1984.

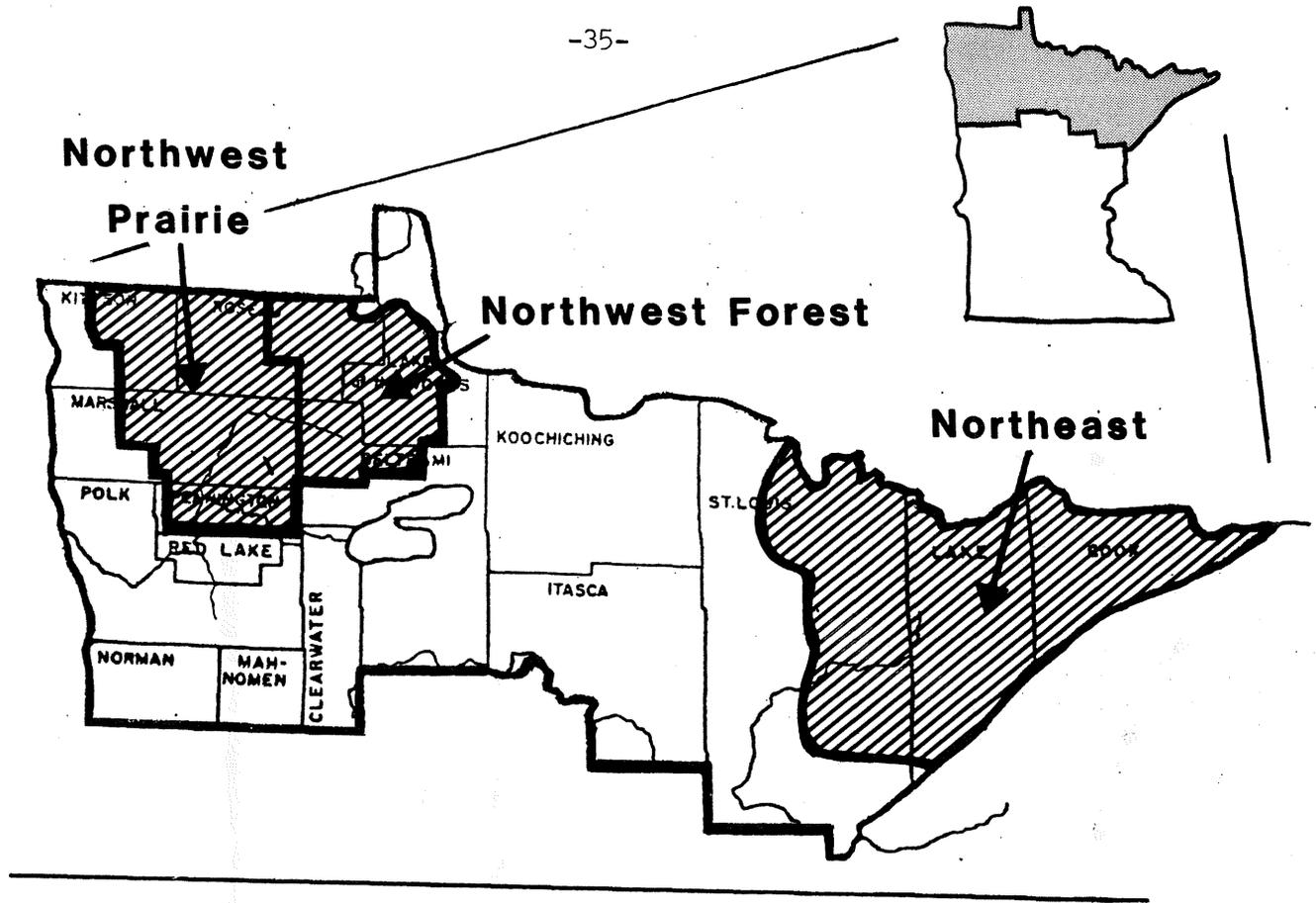


Figure 19. Approximate boundaries of aerial moose census.

Table 18. Moose population estimates from Aerial Moose Census in Minnesota ( $\pm$  90% Confidence Interval).

Area	Sq. miles <sup>a</sup>	1982-83	1983-84	% change
Northeast	4809	4947 $\pm$ 1250	4535 $\pm$ 1741 <sup>b</sup>	-8
Northwest Forest	1779	447 $\pm$ 172	482 $\pm$ 236 <sup>b</sup>	+8
Northwest Prairie	2126	3817 $\pm$ 982	3683 $\pm$ 582 <sup>b</sup>	-3.5

<sup>a</sup> Total land area within census zone. Does not include area of lakes more than 10 acres.

<sup>b</sup> Total population using moose observed and the sightability correction factor.

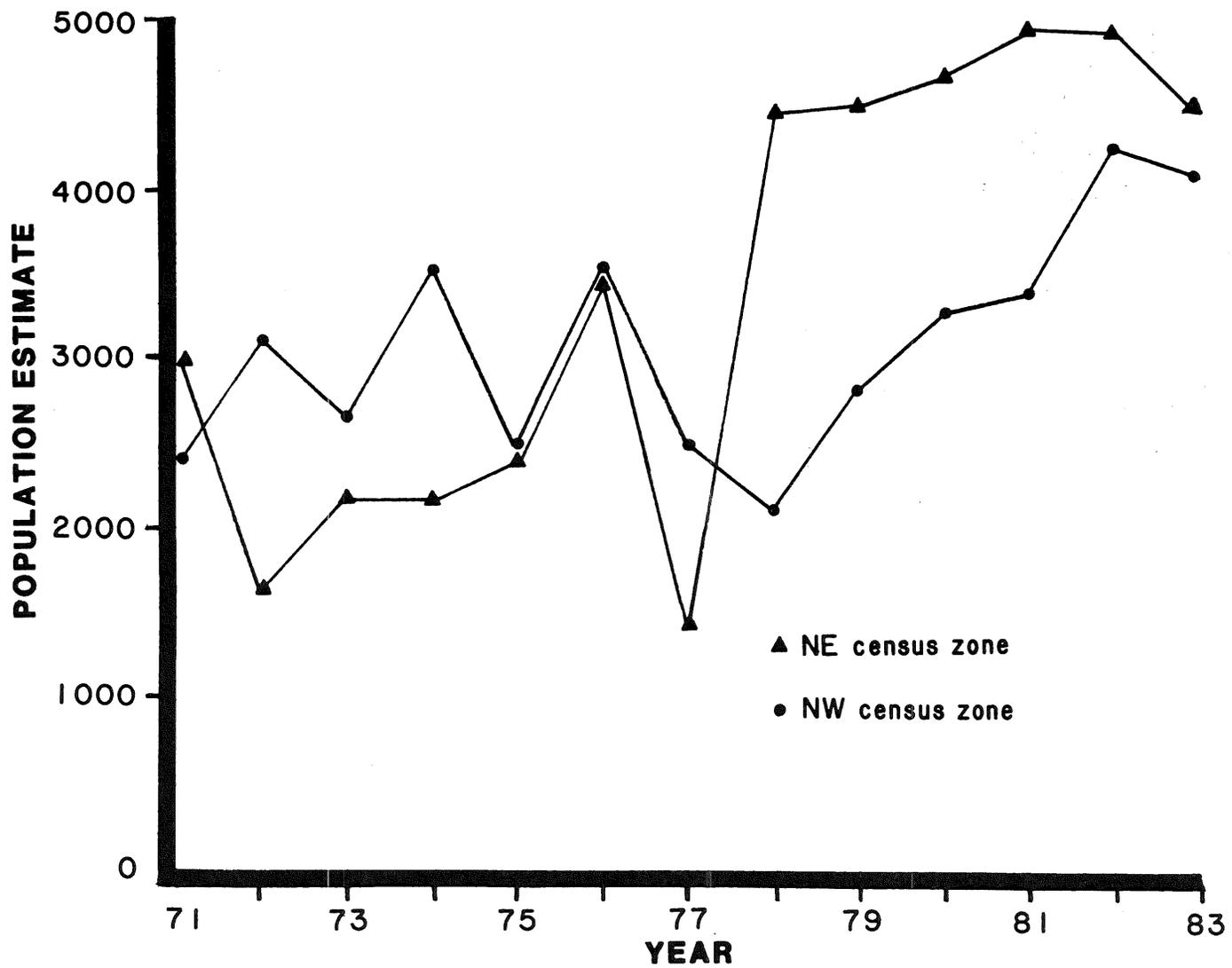


Figure 20. Moose population estimates in the two moose census zones, 1971-1983 (NW - Prairie and NW - Forest census zones combined into NW census zone).

MIGRATORY BIRD POPULATIONS  
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Table 19. Estimated number of breeding ducks in Minnesota based on spring aerial census transects, 1977-1984.

Species	Year	Unadjusted population index	Visibility factor	Adjusted population estimate <sup>c</sup>
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	86,418	2.04	176,000
	1984	105,556	2.22	234,000
	Blue-winged teal	1977	41,666	5.26
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
1984		94,559	2.93	277,000
Other ducks		1977	32,250	4.34
	1978	41,520	4.16	170,000
	1979 <sup>a</sup>	46,745	3.70	173,000
	1980	60,684	2.77	168,000
	1981	53,601	3.37	181,000
	1982 <sup>b</sup>	59,821	5.18	310,000
	1983	47,121	3.74	176,000
	1984	59,105	1.84	110,000
	Totals	1977	170,080	--
1978		142,345	--	615,000
1979 <sup>a</sup>		169,890	--	598,000
1980		237,785	--	756,000
1981		214,820	--	671,000
1982 <sup>b</sup>		173,780	--	799,000
1983		182,612	--	462,000
1984		259,220	--	621,000

<sup>a</sup> 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.

<sup>b</sup> The 1982 total also includes a large number of scaup - 120,000.

<sup>c</sup> Includes all breeding individuals.

Table 20. Winter population estimates (post hunting season) of the Canada goose eastern prairie flock, 1963-1984 (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 29 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 <sup>a</sup>
1982	210,000 <sup>b</sup>
1983	163,000 <sup>b</sup>

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

<sup>b</sup> Supplemental information suggests that the 1983 population was 170,000 - 190,000 birds.

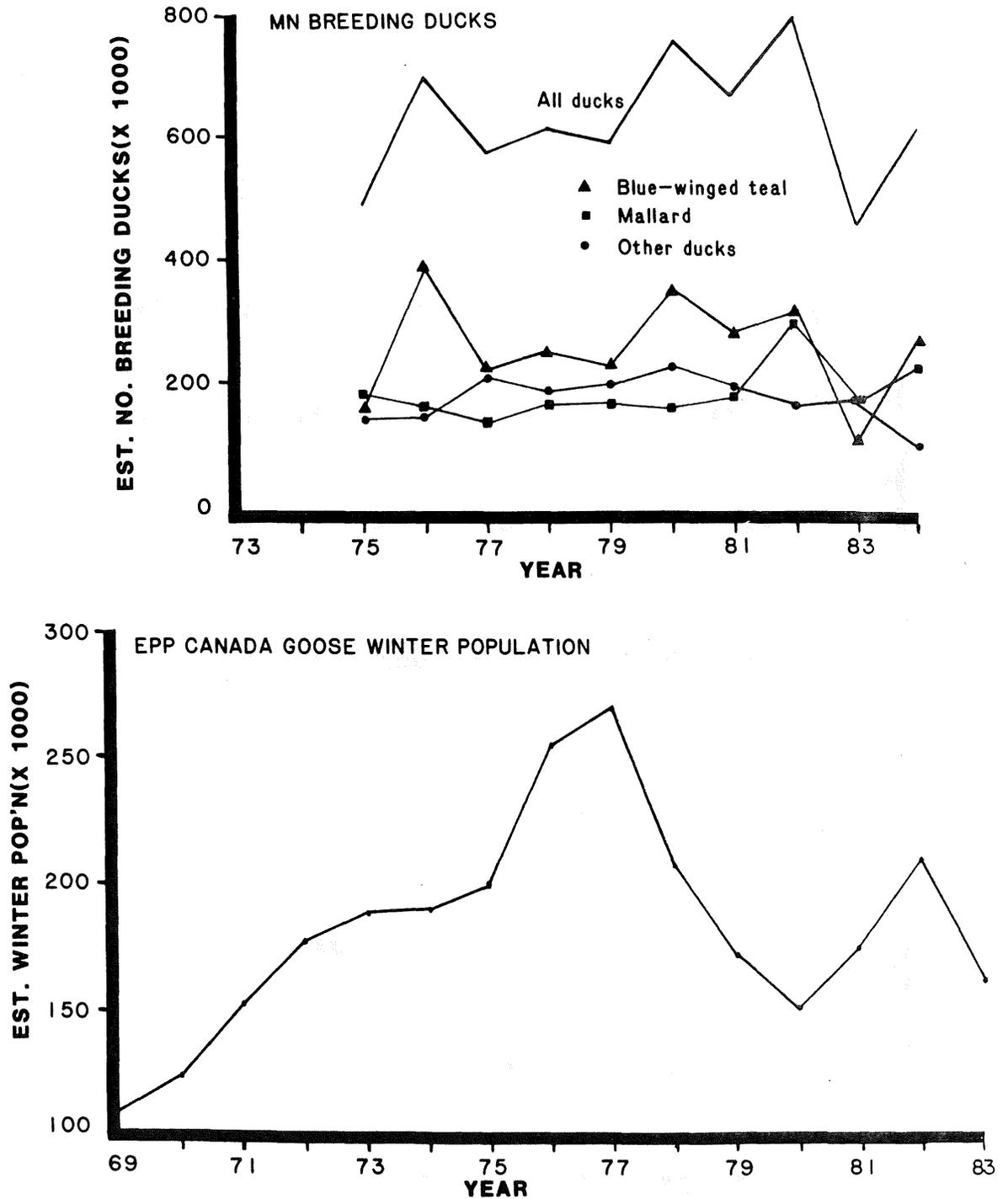


Figure 21. Estimated numbers of Minnesota breeding ducks, 1975-1984 (above), and winter population estimates of the Eastern Prairie Population (EPP) Canada goose flock, 1969-1983 (below) (goose data taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Admin. Rep. 29pp).

Table 21. North American breeding population estimates for 10 species of ducks, 1955-83 (in thousands)<sup>a</sup> (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 19 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	5,566
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 (1) <sup>b</sup>	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	1,146	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
1955-83 Ave.	8,493	1,484	3,164	2,137	4,970	1,972	5,888	712	572	6,936
Percent Change in 1984 from:										
1983	-16	+17	+36	-30	+14	-1	-10	-2	+8	-4
1955-83 Ave.	-30	+21	+26	-16	-22	+13	-38	+19	-1	+21

<sup>a</sup> All duck indexes adjusted for visibility bias.

<sup>b</sup> Percent increase ( ) due to inclusion of Wisconsin.

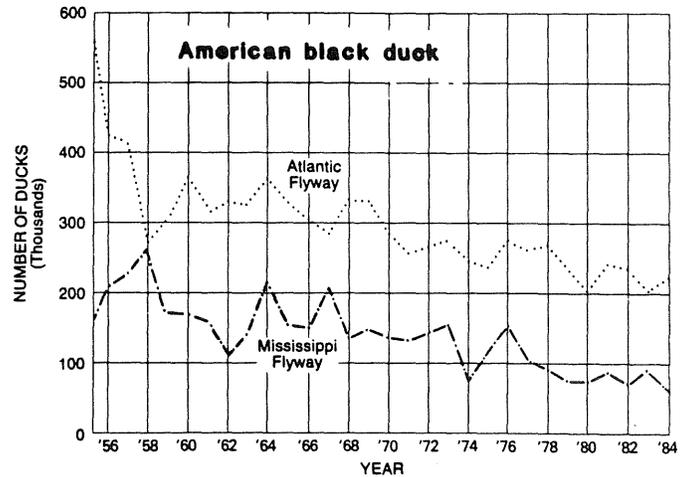
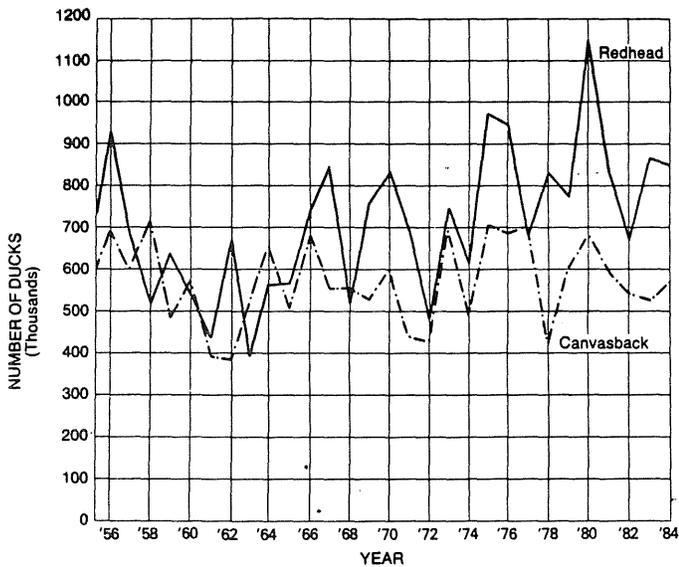
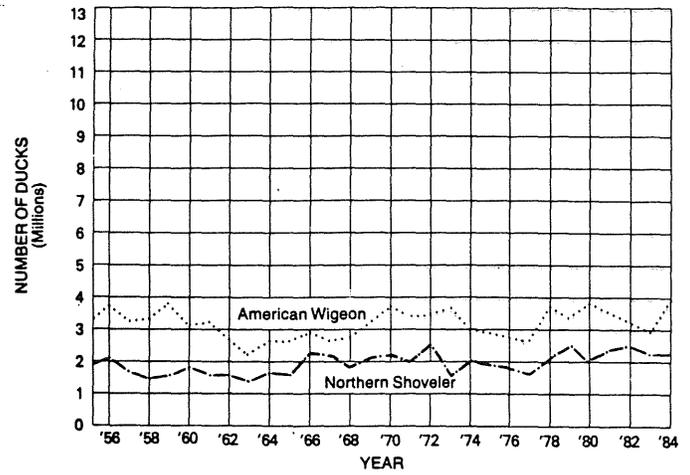
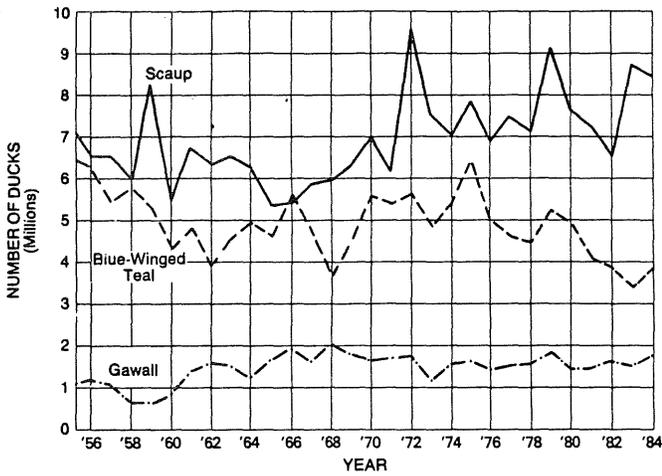
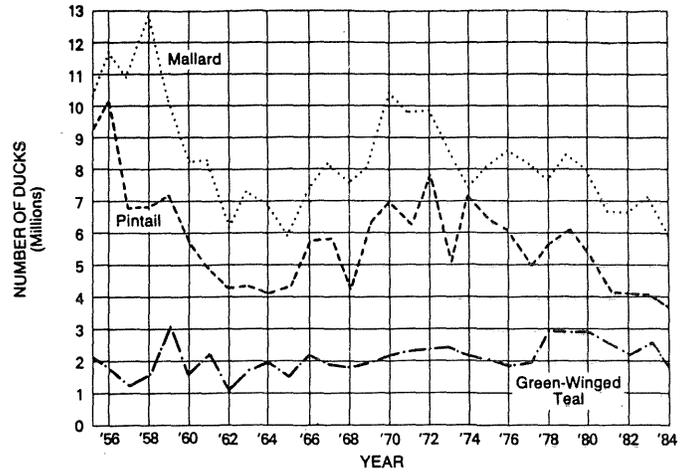
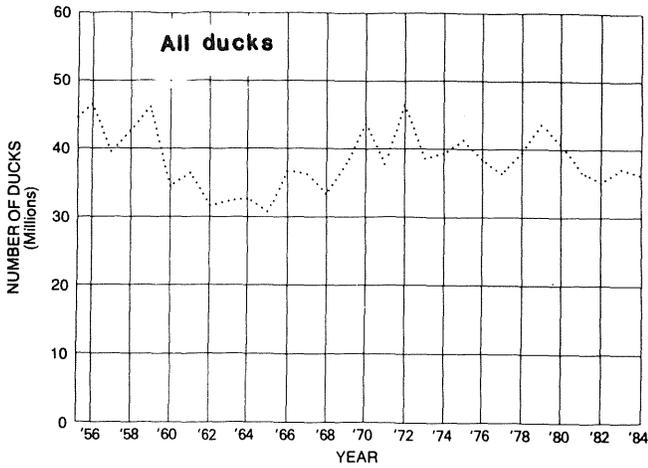


Figure 22. North American breeding population estimates for selected ducks, and winter population estimates for black ducks in 2 flyways, 1955-1984 (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 29 pp.).

Table 22. Summary of the number of May (adjusted for visibility) and July ponds in the southern portions of Alberta, Saskatchewan, and Manitoba, 1961-1984 (Taken from: U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 29 pp.).

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
1984	2,458	1,262	51.3
1961-83 Average	3,707	1,655	45.7
% Change in 1984 From:			
1983	-37	-44	+12
1961-83 Average	-34	-24	+12

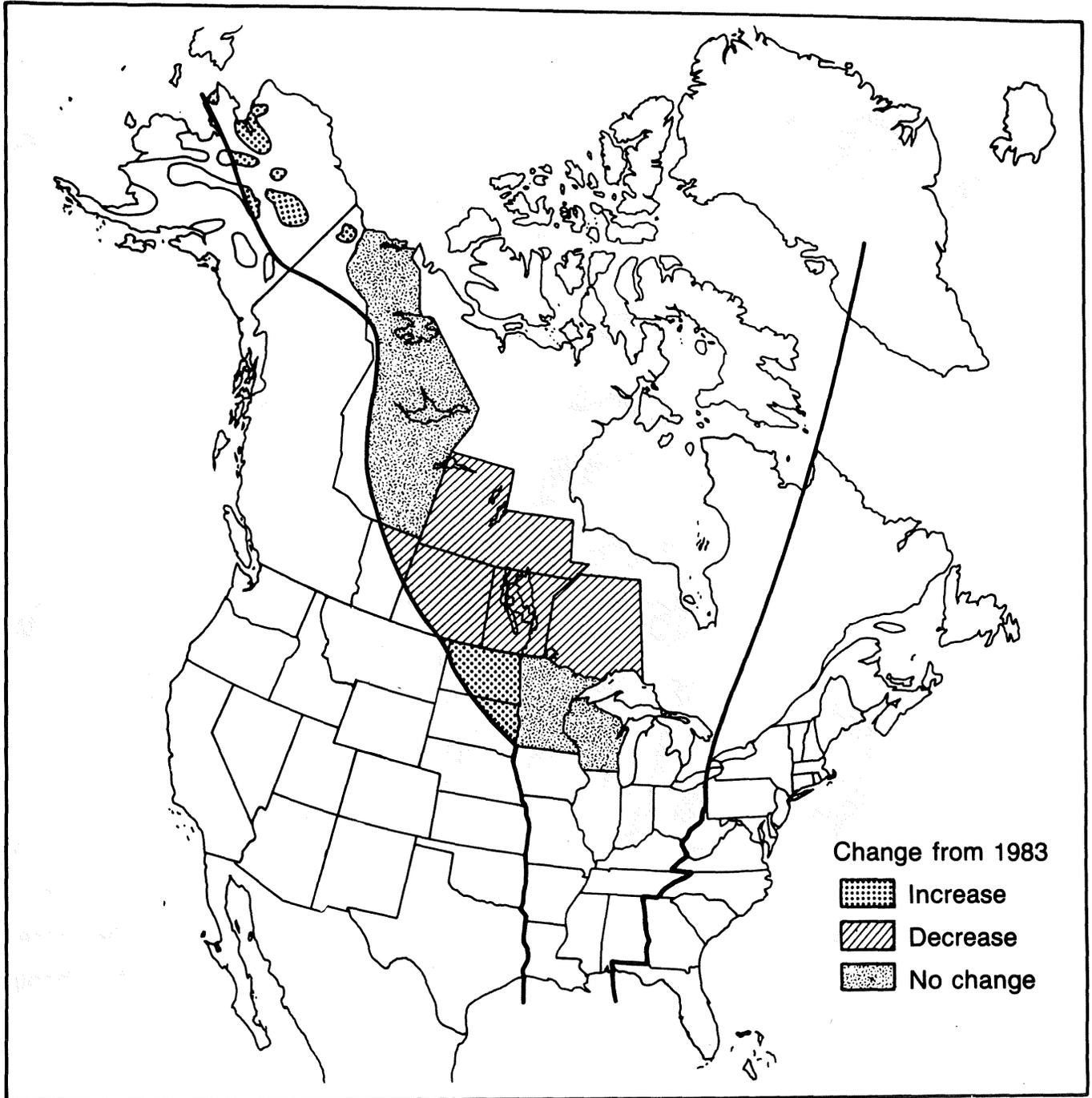


Figure 23. Fall 1984 duck flight forecast for the Mississippi flyway, change from 1983; FORECAST: No change (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 29 pp.).

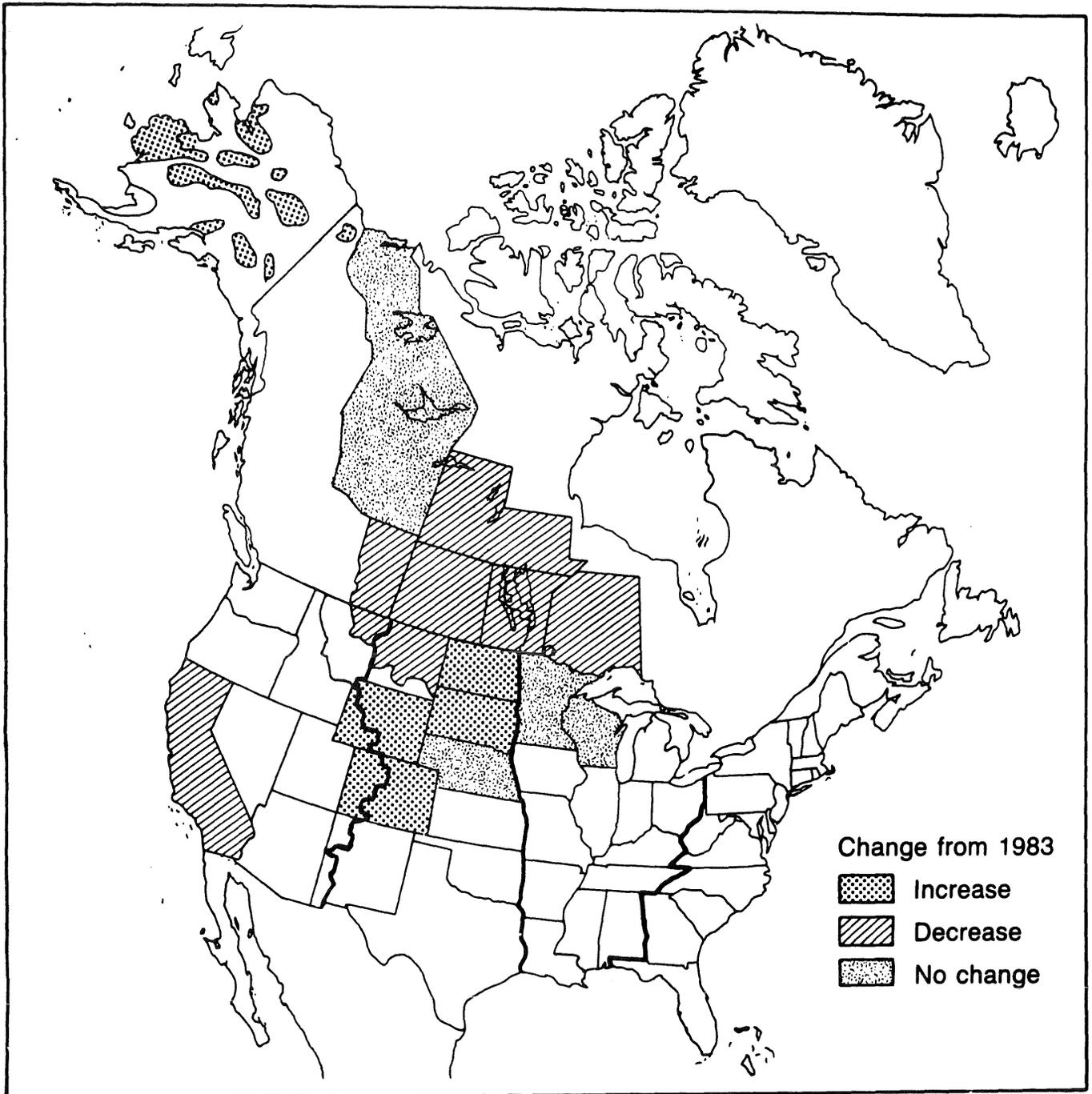


Figure 24. Fall 1984 duck flight forecast for Canada and U.S., change from 1983; FORECAST: No change (taken from: U.S. Fish & Wildlife Service/Canadian Wildlife Service. 1984. 1984 Status of waterfowl and fall flight forecast; July 25, 1984. U.S.F.W.S. Adm. Rep. 29 pp.).

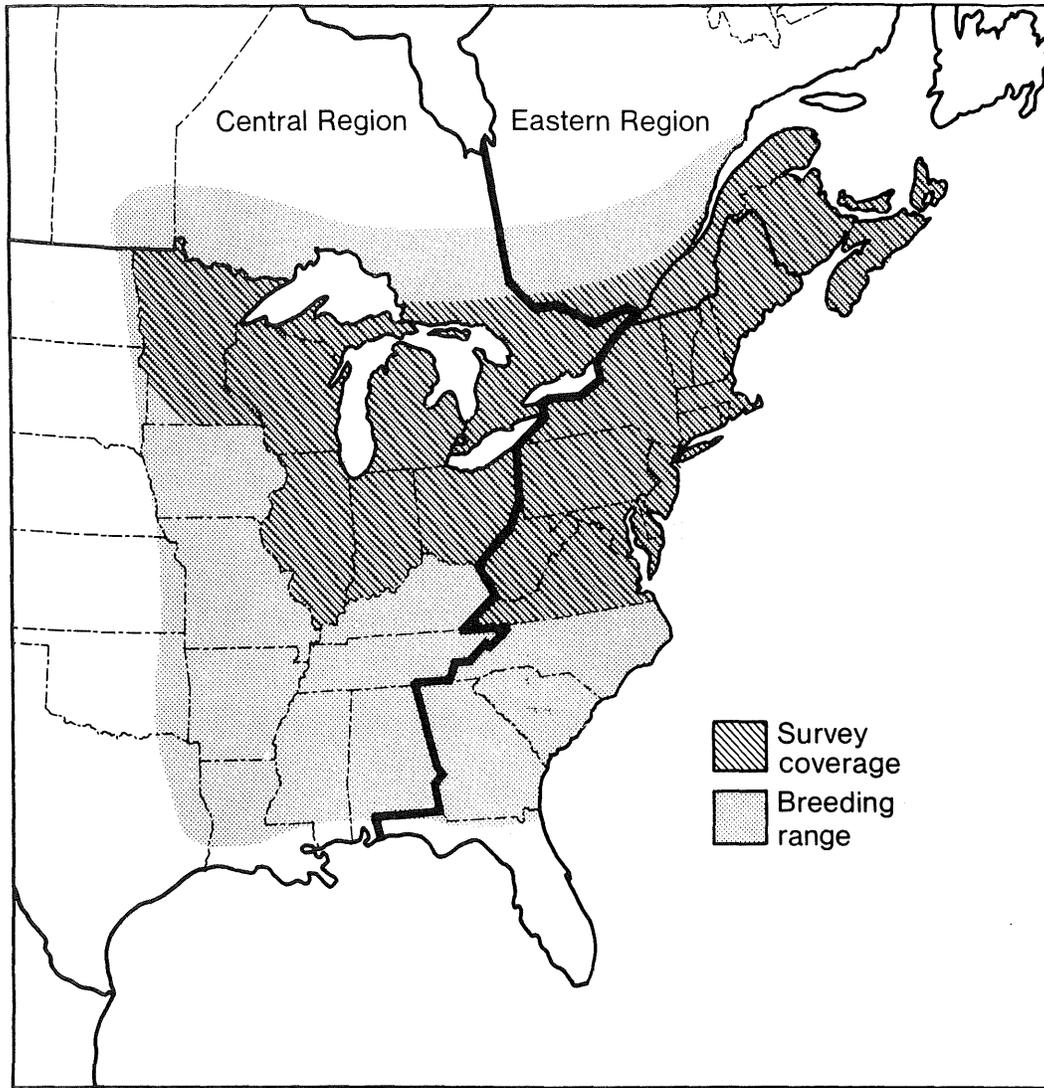


Figure 25. Approximate woodcock breeding range and regions covered by singing-ground survey, 1984 (Taken from: Tautin, J. 1984. 1984 Status of American Woodcock. U.S.F.W.S. Adm. Rep., June 1984. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

Table 23. Woodcock breeding population indices in the U.S. Central Region as indicated by singing-ground surveys in 1983 and 1984 (Taken from: Tautin, J. 1984. 1984 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1984. Office Migr. Bird Manage., Laurel, Maryland. 14 pp.).

State or Province	Number of routes conducted		Comparable routes <sup>a</sup>	Woodcock heard per comparable route		Percent change
	1983	1984		1983	1984	
IL	15	10	93	0.00	0.00	0.0
IN	45	25	58	0.45	0.38	-16.0
MI	122	125	112	4.12	4.52	9.7
MN	94	79	106	2.80	2.58	-8.0
OH	47	38	77	0.84	0.71	-15.5
ON	100	96	84	4.65	4.69	0.9
WI	79	83	102	2.28	2.14	-6.1
Totals	502	456	627			
		Weighted Averages <sup>b</sup>		3.03	3.04	-0.3

<sup>a</sup> Includes routes carried as constant zero routes.

<sup>b</sup> 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 Delaware, Illinois, Indiana, Rhode Island, Virginia and Quebec did not meet these criteria.

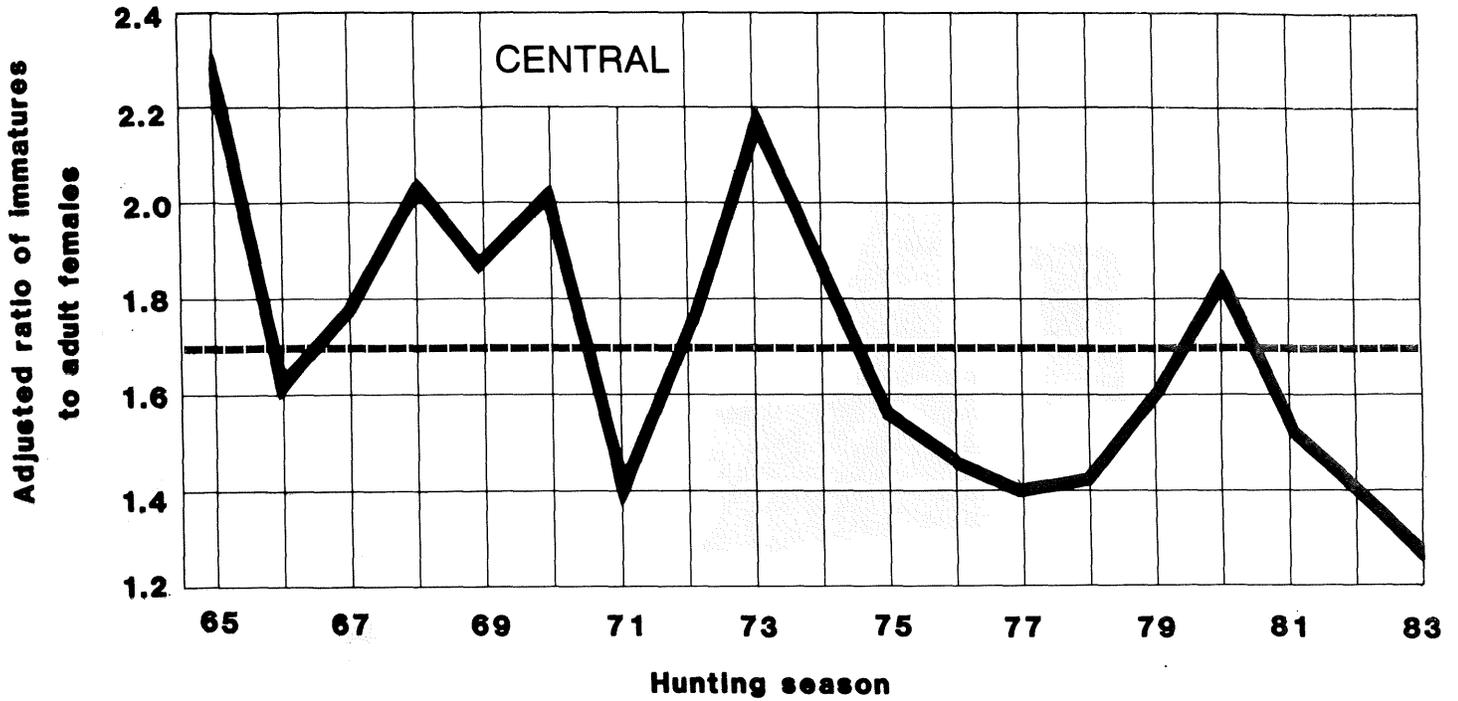


Figure 26. Adjusted index of American woodcock recruitment, 1965-1983, base year = 1969 (Taken from: Tautin, J. 1984. 1984 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1984. Office Migr. Bird Manage., Laurel, MD. 14 pp.).

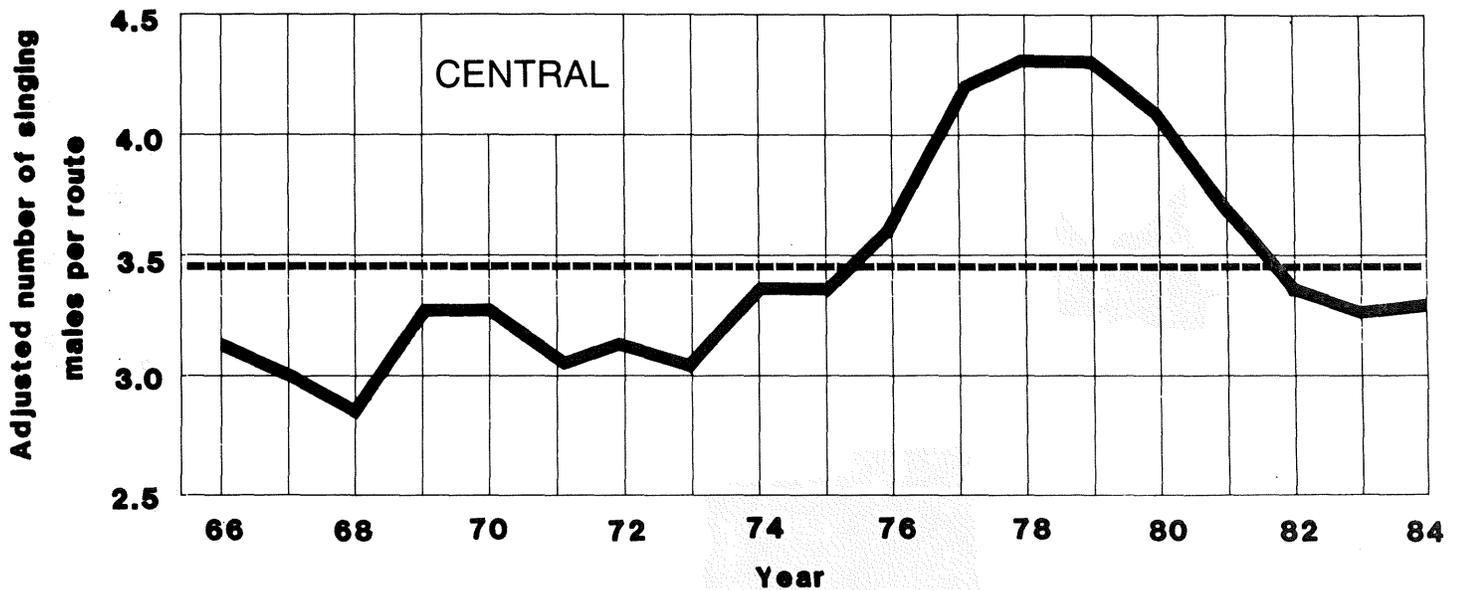
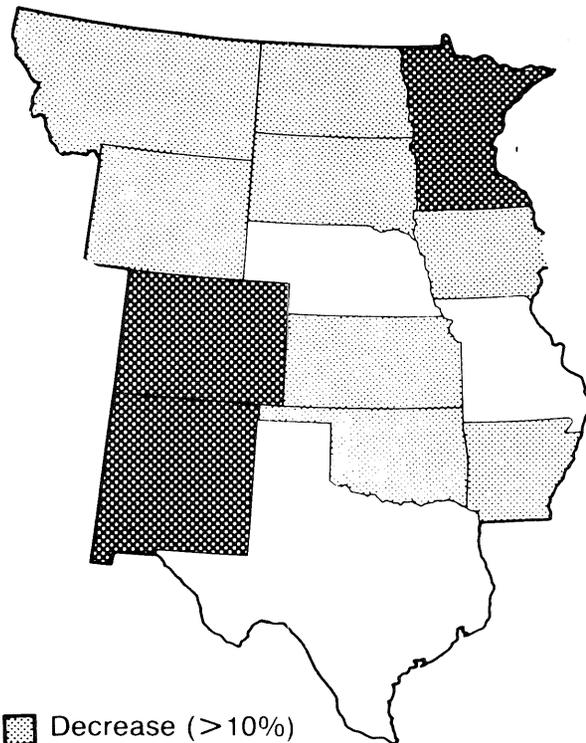
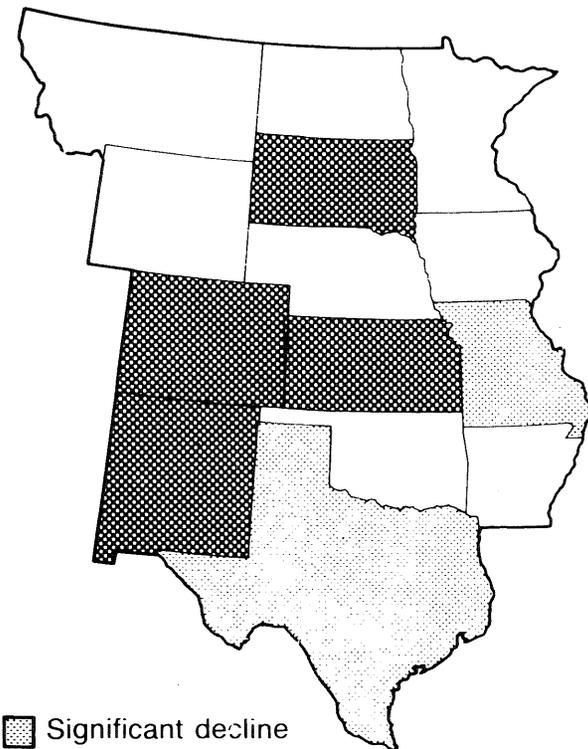


Figure 27. Adjusted index of the American woodcock breeding population, 1966-84, base year = 1970 (Taken from: Tautin, J. 1984. 1984 Status of American woodcock. U.S.F.W.S. Adm. Rep., June 1984. Office Migr. Bird Manage., Laurel, MD. 14 pp.).



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

Figure 28. Changes in number of mourning doves heard by state in the Central management unit, 1983-1984 (Taken from: Dolton, D.D. 1984. 1984 Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 19 pp.).



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

Figure 29. Trend in number of mourning doves heard per route by state in the Central management unit, 1974-1984 (Taken from: Dolton, D.D. 1984. 1984 Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 19 pp.).

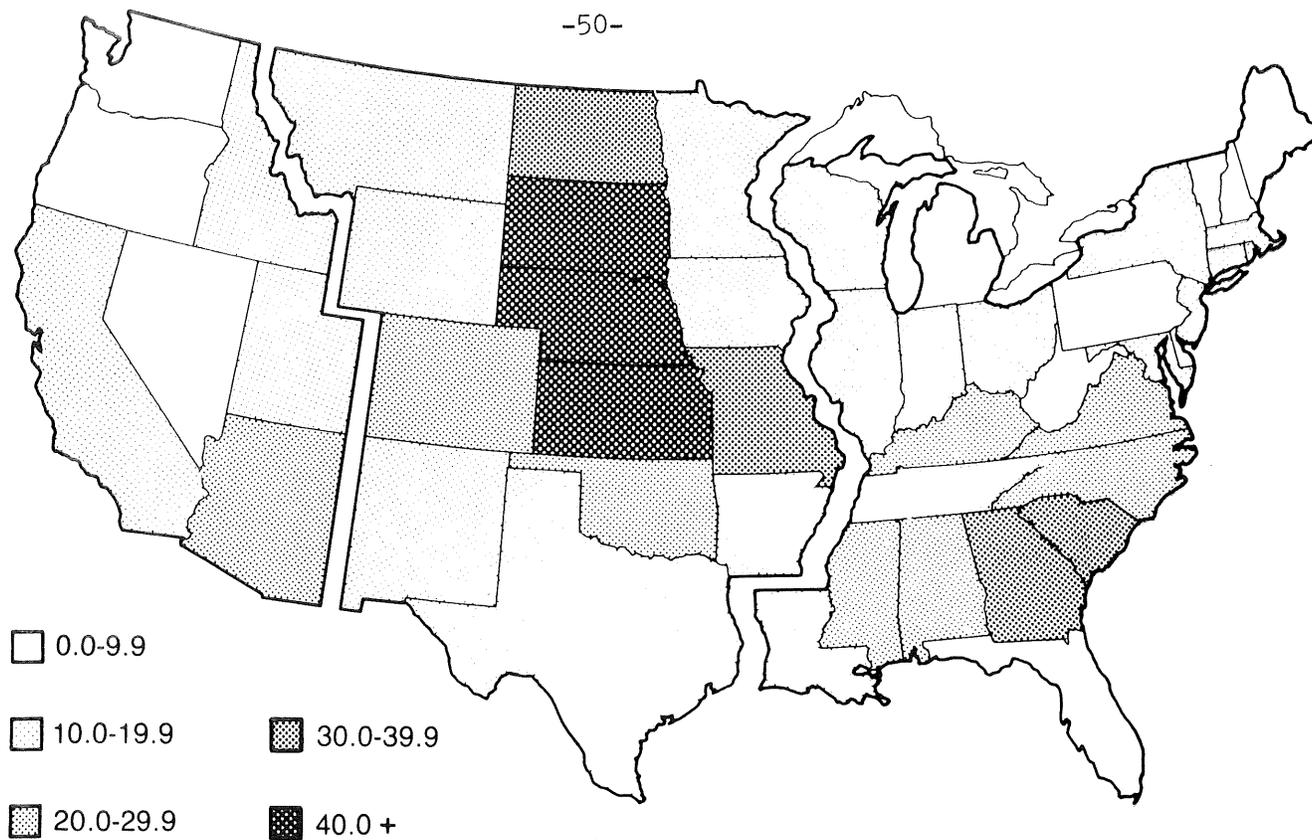


Figure 30. Mean number of mourning doves heard per route by state, 1984 (Taken from: Dolton, D.D. 1984. 1984 Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 19 pp.).

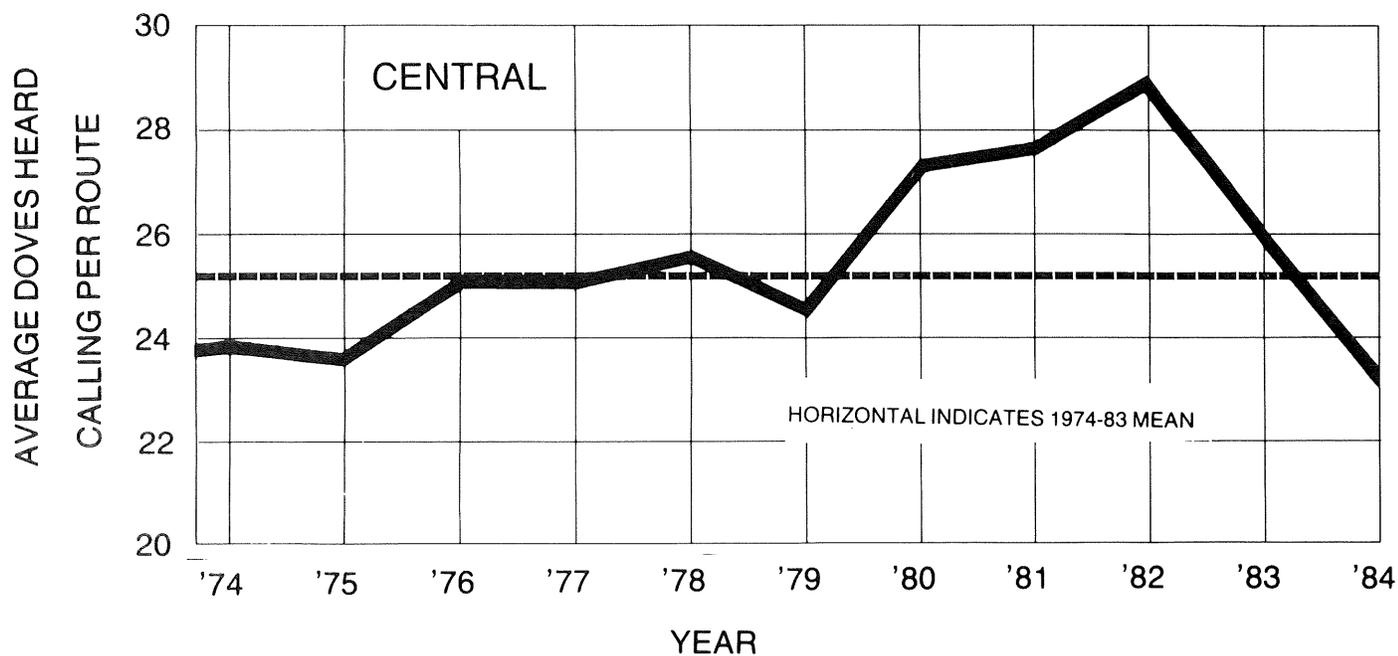


Figure 31. Population index of breeding mourning doves in the Central management unit, 1974-1984 (Taken from: Dolton D.D. 1984. 1984 Mourning dove breeding population status. U.S.F.W.S. Adm. Rep. 19 pp.).

HUNTING  
HARVEST STATISTICS

Table 24. Resident small game hunter<sup>a</sup> response to mail surveys, 1979-1983.

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

<sup>a</sup> Includes individual and combination sportsman, regular small game, and senior licensees.

Table 25. Use of resident small game hunter licenses<sup>a</sup>, 1979-1983.

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

<sup>a</sup> Includes individual and combination sportsman, regular small game, and senior licenses.

Table 26. Estimated number of hunters and estimated take per hunter for various species, 1979-1983.

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

\* No estimate made.

<sup>a</sup> Estimates for gray and fox squirrels prior to 1981 are for both species combined.

Table 27. Resident small game hunting license sales and estimated hunter harvest, 1979-1983.

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

Table 27. Continued.

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\* No estimate made.

<sup>a</sup> Estimates based upon response of hunters to questionnaires.

<sup>b</sup> U.S. Fish and Wildlife Service harvest estimates for 1983 are:

Ducks . . . . .	994,934	Other geese . . . . .	811
Canada goose . . . . .	54,036	American coot . . . . .	23,068

<sup>c</sup> Harvest estimates for gray and fox squirrels prior to 1981 are for both species combined.

Table 28. Mail survey results of nonresident small game hunters, 1979-1983.

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Nonresident licenses issued	3,902	3,981	4,271	3,187	2,911
Questionnaires					
Number mailed	622	222	280	361	384
Number not delivered	74	85	21	21	25
Number returned	491 (89.6%)	117 (85.4%)	214 (82.6%)	281 (82.6%)	280 (78.0%)
Total nonresidents and percent of all nonresidents hunting:					
Ducks	2,100 (53%)	2,000 (49%)	2,055 (48%)	1,840 (58%)	1,500 (52%)
Canada goose	700 (19%)	600 (15%)	718 (17%)	830 (26%)	580 (20%)
Ruffed grouse	1,500 (39%)	2,000 (51%)	1,656 (39%)	960 (30%)	620 (21%)
Ring-necked pheasant	800 (19%)	800 (19%)	1,436 (34%)	680 (21%)	500 (17%)
Raccoon <sup>a</sup>	400 (11%)	200 (6%)	125 (3%)	100 (3%)	170 (6%)
Total nonresident take:					
Ducks	20,000	17,000	19,000	15,000	17,500
Canada goose	1,000	1,000	2,000	1,500	1,300
Ruffed grouse	9,000	16,000	7,000	3,000	1,700
Ring-necked pheasant	2,000	2,000	5,000	1,500	2,200
Raccoon	3,000	1,000	1,000	700	1,400

<sup>a</sup> 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
1983	8	8

Table 29. Species composition of the Minnesota waterfowl harvest, 1982 and 1983 (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1984. Waterfowl harvest and hunter activity in the United States during the 1983 hunting season. U.S.F.W.S. Adm. Rep. Office Migr. Bird. Manage., Laurel, Maryland. 27 pp.).

Species	1982		1983		Percent change
	Harvest	Pct of harvest	Harvest	Pct of harvest	
Mallard	249,500	30.54	292,300	29.38	17
Domestic mallard	500	0.06	700	0.07	40
American black duck	4,100	0.50	2,100	0.21	-49
Black x mallard	<100	0.00	200	0.02	--
Gadwall	23,700	2.90	17,800	1.79	-25
American Wigeon	35,900	4.39	42,100	4.23	17
Green-winged teal	48,500	5.94	67,200	6.75	39
Blue-winged/cinnamon teal	117,300	14.36	132,300	13.30	13
Northern shoveler	7,500	0.92	18,300	1.84	144
Northern pintail	13,600	1.67	21,700	2.18	60
Wood duck	120,600	14.76	169,200	17.01	40
Redhead	28,300	3.46	31,500	3.17	11
Canvasback	6,800	0.83	10,700	1.08	57
Greater scaup	700	0.08	3,500	0.35	400
Lesser scaup	52,100	6.38	50,400	5.07	-3
Ring-necked duck	72,100	8.83	114,800	11.54	59
Goldeneyes	7,600	0.93	2,700	0.27	-64
Bufflehead	15,500	1.90	7,600	0.76	-51

Table 29. Continued.

Species	1982		1983		Percent change
	Harvest	Pct of harvest	Harvest	Pct of harvest	
Ruddy duck	6,900	0.85	6,300	0.63	-9
Scoters	1,100	0.14	900	0.09	-18
Hooded merganser	4,600	0.56	2,300	0.23	-50
Other mergansers	<100	0.00	200	0.02	--
Other ducks	<100	0.00	<100	0.00	0
Total	816,900	100.00	994,800	100.00	22

Table 30. Top 10 states in number of adult waterfowl hunters, 1983, and number of hunter-days and retrieved duck kill, in each (taken from: Carney, S.M., M.F. Sorenson, and E.M. Martin. 1984. Waterfowl harvest and hunter activity in the United States during the 1983 hunting season. U.S.F.W.S. Adm. Rep. Office Migr. Bird Manage., Laurel, Maryland. 27 pp.).

State	Number of adults waterfowl hunters	Number of hunter-days	Retrieved duck kill	Ducks retrieved per hunter-day
Minnesota	133,077	1,013,831	994,934	0.98
Louisiana	121,071	1,190,021	2,270,041	1.91
California	98,267	830,095	1,396,035	1.68
Texas	97,464	648,728	874,145	1.35
Wisconsin	85,328	707,679	504,538	0.71
New York	60,751	335,266	251,479	0.75
Pennsylvania	60,356	372,087	133,465	0.36
Washington	58,966	419,167	510,544	1.22
Illinois	57,727	591,521	456,860	0.77
Michigan	46,737	424,556	314,523	0.74
Mississippi Flyway	563,194	5,901,108	6,526,915	1.11
United States	1,677,646	13,011,721	14,081,875	1.08

Table 31. Summary of wild turkey harvest, 1978-1984.

Year	Season	No. of hunters <sup>b</sup>	Number of turkeys taken			Percent Success <sup>b</sup>
			North zones <sup>a</sup>	South zones <sup>a</sup>	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	
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	600	4	19	23	3.8
Total	3,000	32	146	178	5.9	

Table 31. Continued.

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<sup>a</sup> 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.

<sup>b</sup> At 100% participation.

Table 32. Resident deer hunting license sales and registered harvest statistics, 1974-1983  
(revised license sales figures).

Year	Number of licenses sold			Number of deer registered				Percent success <sup>a</sup>		
	Firearms <sup>b</sup>	Archery	Muzzle-loader <sup>c</sup>	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	369,022	54,062	2,325	93,045	5,566	441	99,052	25.2	10.3	19.0
1983	391,062	55,803	2,400	132,457	5,977	652	139,086	33.9	10.7	27.2

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

<sup>b</sup> Including muzzleloader licenses.

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

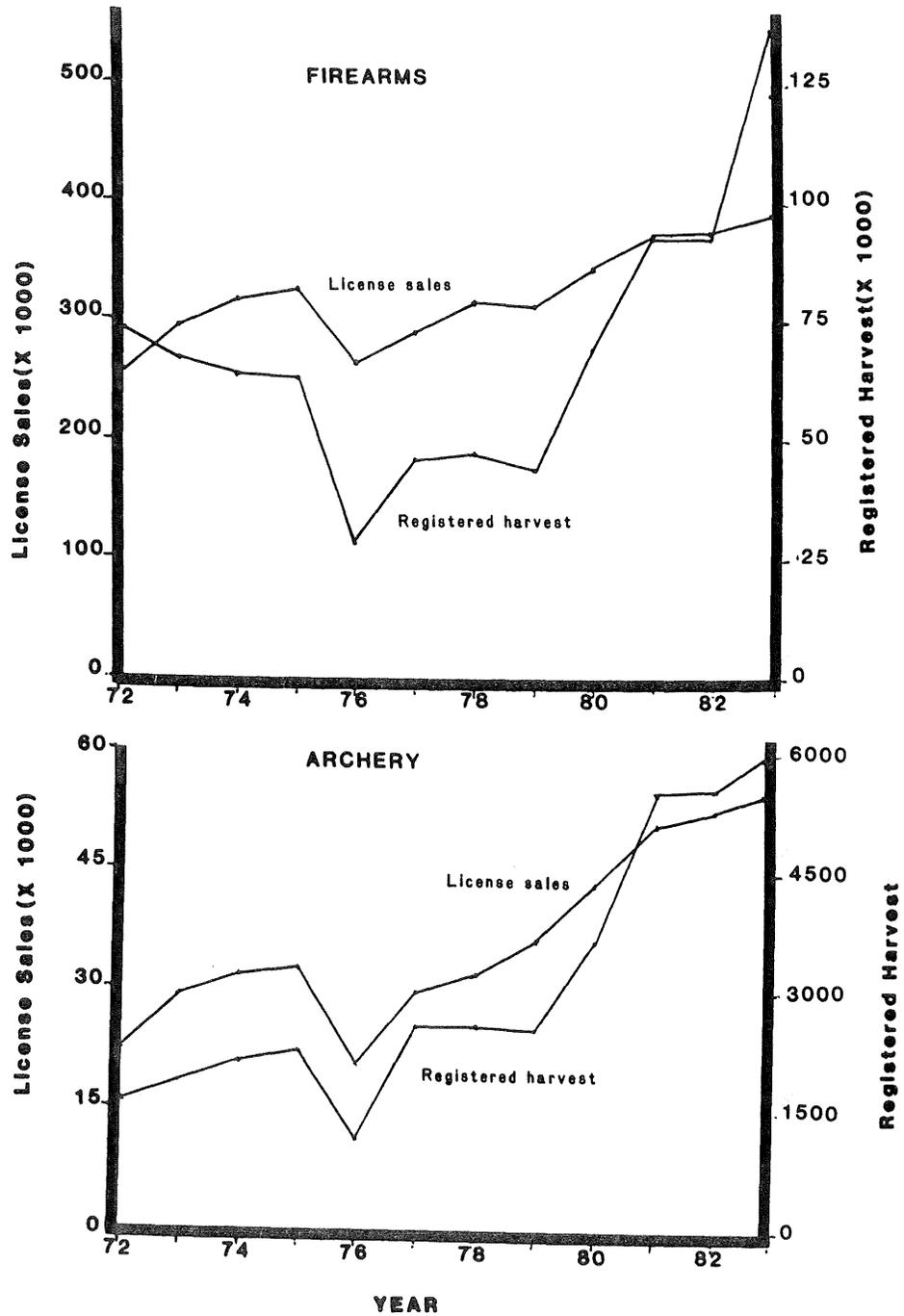


Figure 32. Firearms (above) and archery (below) deer hunting license sales and registered harvests, 1972-1983.

Table 33. Deer harvest summary based upon response to mail survey of 13,953 Firearms Deer License holders, 1983.

Sub-DMU	Number of		Kill		H-D/kill	Percent success
	Hunters	Hunter-days	Registered	Estimated		
Rainy River C	5,600	30,100	2,276	2,214	13.6	39.5
Rainy River E	8,900	48,900	2,767	3,195	15.3	35.6
Superior W	7,800	41,100	2,049	2,522	16.3	32.1
Superior C	5,200	30,600	1,158	1,485	20.6	28.0
Superior E	2,900	14,900	541	476	31.4	16.2
Itasca NW	16,500	81,100	6,516	6,250	13.0	37.6
Itasca SW	29,200	160,400	6,740	7,679	20.9	26.3
Itasca NE	24,200	153,800	3,853	5,437	28.3	22.4
Itasca SE	25,900	157,500	6,026	6,979	22.6	26.9
Leech Lake Res.	7,200	32,900	1,387	1,878	17.5	26.1
Mille Lacs E	30,200	164,100	8,283	8,352	19.7	27.6
Rainy River W	6,500	31,100	3,240	3,139	9.9	47.7
Bemidji	12,000	55,000	7,383	5,942	9.3	49.3
White Earth Res.	2,600	11,300	914	897	12.7	33.7
Mille Lacs N	14,700	62,000	7,494	6,670	9.3	45.2
Mille Lacs C	21,500	101,700	8,918	8,464	12.0	39.3
Agassiz	10,500	48,600	7,887	6,586	7.4	62.5
Big Woods E	18,600	92,900	5,715	6,222	14.9	33.3
Big Woods M	4,600	18,000	1,562	1,205	15.0	25.7
Big Woods SE	23,200	82,100	8,990	9,978	8.2	43.0
Red River W	1,000	2,700	460	364	7.6	36.1
Red River E	5,500	12,300	3,950	3,840	3.2	69.5
Big Woods N	31,800	68,100	13,951	13,453	5.1	42.3
Prairie N	6,700	14,000	3,436	3,139	4.5	46.3
Prairie River	10,200	21,000	5,520	5,157	4.1	50.4
Prairie SW	12,600	27,400	7,970	7,119	3.9	56.2
Prairie SE	6,600	14,800	2,832	2,747	5.4	41.2
Statewide <sup>a</sup>	358,900	1,579,700	132,457 <sup>b</sup>	138,650	11.4	38.6

<sup>a</sup> Statewide total number of hunters ≠ sum of units as some hunters hunt in more than a single Sub-DMU. Of 394,673 license buyers, 2.6% did not hunt.

<sup>b</sup> Includes 639 registered deer with kill zone unknown.

Table 34. Archery deer harvest by county, 1979-1983.

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

Table 34. Continued

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

Table 34. Continued.

County	1979	1980	1981	1982	1983
Sherburne	60	89	128	116	113
Sibley	22	33	41	30	32
Stearns	49	81	134	143	122
Steele	7	14	19	27	29
Stevens	13	9	11	21	27
Swift	23	42	67	49	67
Todd	45	52	95	109	103
Traverse	7	12	21	13	21
Wabasha	20	15	18	30	61
Wadena	14	21	45	69	70
Waseca	20	26	46	35	55
Washington	15	39	75	91	88
Watonwan	16	31	34	30	35
Wilkin	2	15	26	34	39
Winona	72	96	116	138	117
Wright	29	45	71	78	83
Yellow Medicine	34	35	47	38	54
Unknown	40	20	25	63	23
Camp Ripley	148	b	153	129	237
St. Croix State Park	b	b	b	b	b
Totals	2577	3641	5535	5566	5977

<sup>a</sup> Camp Ripley not included.

<sup>b</sup> No archery hunt.

Table 35. Deer harvest during 1983 special muzzleloader season.

Open area	Adult		Fawn		Total
	Male	Female	Male	Female	
Carlos Avery WMA	9	20	14	14	57
Gores Pool WMA	0	2	1	2	5
McCarthy Lake WMA	0	0	0	1	1
Meadowbrook WMA	4	4	1	2	11
Mille Lacs WMA	1	2	1	1	5
R.J. Dorer Memorial SF	1	4	3	2	10
Red Lake WMA & Beltrami					
Island SF	2	21	5	1	29
Roseau River WMA	0	0	2	1	3
Thief Lake WMA	2	1	1	1	5
Lac qui Parle WMA &					
Big Stone NWR	29	61	41	27	168
Lake Shetek SP	7	12	10	6	35
Whitewater WMA	22	67	38	23	150
Rum River SF)	0	1	2	0	3
George Washington SF)	2	3	0	0	5
Savanna SF)	0	0	1	1	2
Chengwatana SF)	0	0	0	1	1
Nemadji SF)	1	0	0	0	1
Talcot Lake WMA	45	27	48	17	137
Walnut Lake WMA	1	3	0	0	4
Danvers WMA	1	0	0	0	1
Paul Bunyan GR	4	8	2	5	19
<b>Total</b>	<b>131</b>	<b>236</b>	<b>170</b>	<b>115</b>	<b>652</b>

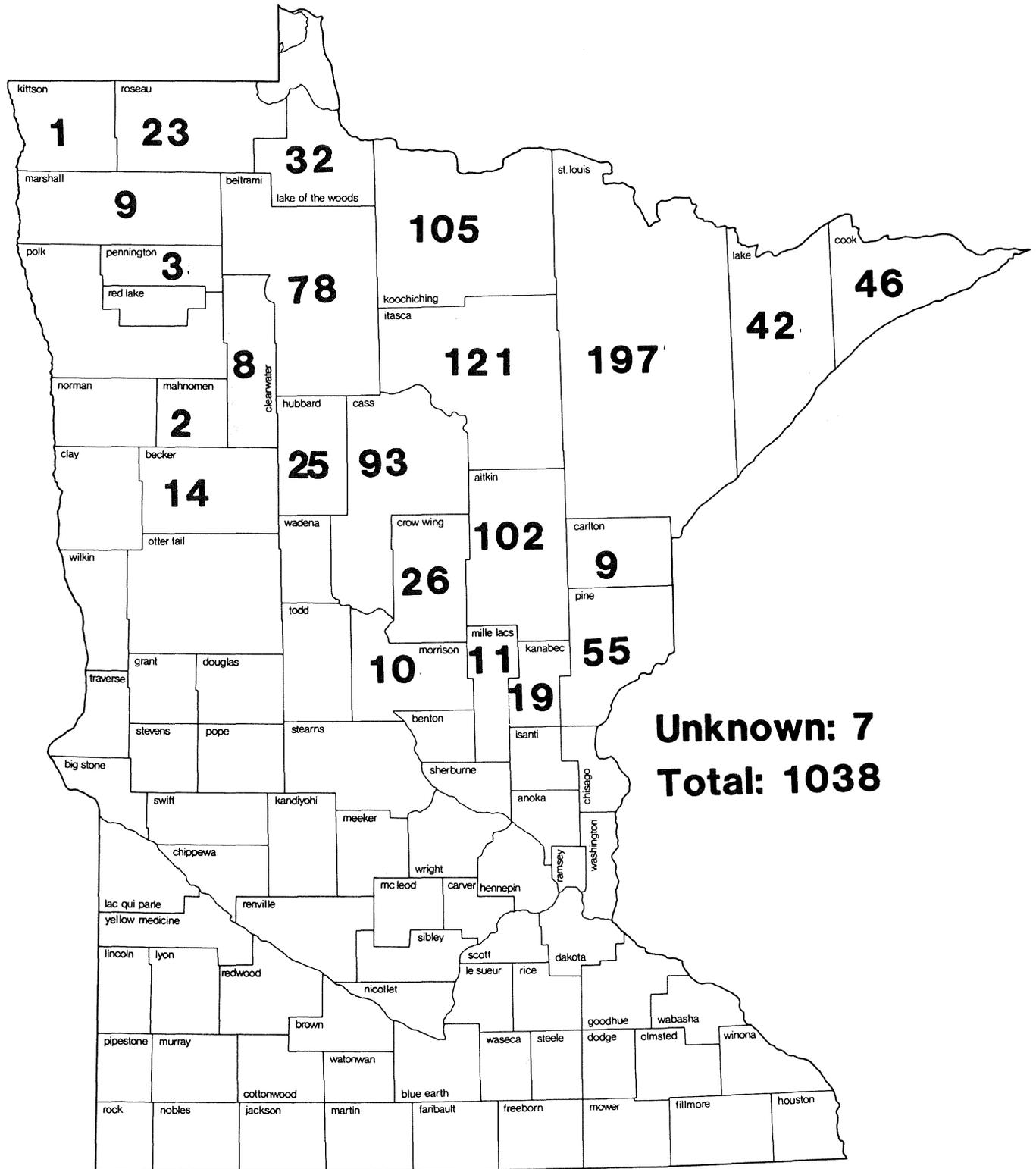


Figure 33. Black bear registered harvest by county, 1983 season.

Table 36. Black bear license sales and registered harvests by county, 1979-1983.

County	Year				
	1979	1980	1981	1982	1983
License sales <sup>a</sup>	7,583	8,677	11,429	1,921	3,482
Aitkin	55	92	128	39	100
Becker	13	7	9	1	14
Beltrami	42	28	79	24	78
Carlton	7	17	18	3	9
Cass	57	69	110	29	93
Chisago	0	0	1	0	0
Clearwater	12	3	18	4	8
Cook	72	148	79	7	46
Crow Wing	12	9	33	8	26
Hubbard	16	14	19	11	25
Isanti	0	1	3	0	0
Itasca	108	212	172	50	121
Kanabec	10	12	18	8	19
Kittson	1	0	0	0	1
Koochiching	89	137	149	66	105
Lake	40	74	80	17	42
Lake of the Woods	12	30	43	25	32
Mahnomen	0	0	1	2	2
Marshall	1	2	3	1	9
Mille Lacs	5	5	12	3	9
Morrison	3	1	1	1	10
Norman	0	0	0	0	0
Pennington	0	0	1	0	3
Pine	31	62	73	20	55
Polk	0	1	0	0	0
Red Lake	0	3	2	0	0
Roseau	4	18	18	7	23
St. Louis	148	289	284	64	197
Wadena	0	0	1	0	0
Wilkin	1	0	0	0	0

Table 36. Continued.

County	Year				
	1979	1980	1981	1982	1983
Unknown	4	13	4	2	7
Total	743	1,247	1,359	392	1,034

<sup>a</sup> 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, 1971-1983.

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 38. Trapper response to mail surveys, 1979-1983.

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	87.2

Table 39. Use of trapper licenses, 1979-1983.

	Return from mail survey	Projections from license sales
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>
1983		
Trapped	549 ( 82.8%)	13,862
Did not trap	114 ( 17.2%)	2,879
	<u>663 (100.0%)</u>	<u>16,741</u>

Table 40. Estimated number of trappers and estimated take per trapper of various furbearers, 1979-1983.

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

Table 41. Minnesota trapper license sales and estimated annual harvest, 1979-1983.

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

<sup>a</sup> Separate licenses were issued for juveniles (13-17 years old) and adults (18 and older), beginning in 1982. Of 16,741 trapping licenses sold 3,395 (20.3%) were juvenile licenses and 13,346 (79.7%) were adult licenses.

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

<sup>c</sup> Based upon trapper's response to mail surveys.

<sup>d</sup> Registered harvest for lynx and bobcat includes animals taken by hunting.

Table 42. Average price per pelt paid to hunters and trappers in Minnesota, 1974-1983.

Average pelt prices paid trappers in Minnesota (dollars)										
Species	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Muskrat	2.50	3.00	4.03	4.25	4.56	5.90	5.62	3.47	2.19	2.24
Mink <sup>a</sup> (male)	(9.50)	(13.00)	27.40	22.15	36.69	42.83	37.55	34.35	24.43	30.33
Mink (female)			10.07	8.86	14.80	18.61	16.04	17.22	10.63	14.55
Ermine (S.T. Weasel)	0.75	0.75	0.41	0.44	0.47	0.56	0.64	0.59	0.56	0.56
L.T. Weasel	0.75	0.75	0.87	0.85	1.01	0.94	0.84	0.96	0.80	0.93
Raccoon	12.50	21.00	23.54	22.30	45.83	36.42	27.44	32.35	17.95	12.66
Striped Skunk	2.50	2.50	2.95	2.78	4.13	4.14	4.74	3.46	2.58	2.77
Eastern Spotted Skunk	2.00	2.50	5.02	5.42	7.37	3.48	6.06	2.58	1.75	N.A.
Badger	9.00	18.00	18.66	21.07	39.55	24.02	18.39	18.14	9.04	10.96
Opossum	0	1.50	1.72	2.11	2.10	2.12	2.52	1.58	0.87	0.71
Red Fox	24.00	50.00	49.52	52.97	72.21	55.43	50.81	51.48	31.10	32.81
Gray Fox	12.00	19.00	24.75	25.51	45.44	42.51	37.87	26.74	23.48	22.95
Coyote	12.00	29.00	41.32	34.03	56.62	39.76	31.37	41.28	25.41	18.79
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
Beaver <sup>a</sup> (fall-winter)	15.80	12.25	15.79	13.45	17.64	32.74	17.88	14.48	10.69	9.52
Beaver (spring)	15.80	12.25	15.79	13.45	17.64	28.71	19.58	16.52	12.55	11.60
Otter	45.00	32.50	36.99	41.23	58.85	63.37	32.78	29.80	25.65	24.79
Fisher <sup>a</sup> (male)	----No Open Season----			(71.23)	131.89	107.67	89.51	94.42	69.91	70.59
Fisher (female)	----No Open Season----			(71.23)	147.23	127.79	104.29	110.08	99.08	121.08

<sup>a</sup> Differences in pelt prices were not calculated before 1975 for mink, 1979 for beaver, and 1978 for fisher.

FURBEARER REGISTRATION STATISTICS

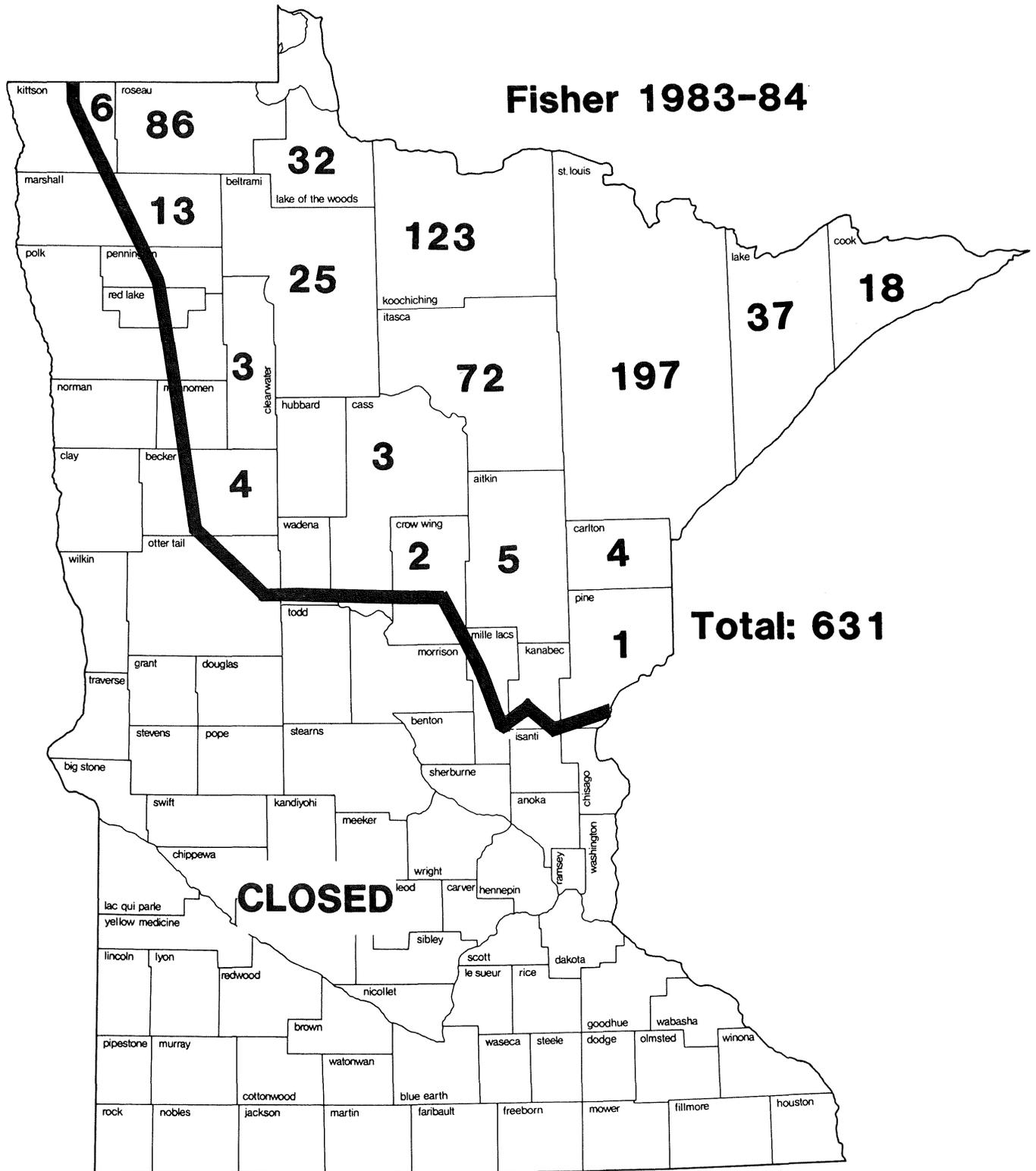


Figure 34. Registered harvest of fisher by county, 1983-84 season.

Table 43. Fisher harvest by county and sex, 1983 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	1	4	0	5
Becker	2	2	0	4
Beltrami	16	9	0	25
Carlton	2	2	0	4
Cass	3	0	0	3
Clearwater	1	2	0	3
Cook	5	13	0	18
Crow Wing	1	1	0	2
Itasca	27	44	1	72
Kittson	5	1	0	6
Koochiching	56	67	0	123
Lake	14	23	0	37
Lake of the Woods	13	19	0	32
Marshall	7	6	0	13
Pine	1	0	0	1
Roseau	41	45	0	86
St. Louis	73	124	0	197
Total	268	362	1	631

Table 44. Comparison of fisher harvest by county, 1979-1983<sup>a</sup>.

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

<sup>a</sup> There was no fisher season during the winter of 1980-81.

Table 45. Fisher harvest by date and sex, 1983-84 season.

Date	Sex			Total	% of Total	Cumulative Percent
	Male	Female	Unknown			
12/01	3	2	1	6	0.9	0.9
12/02	20	36	0	56	8.9	9.8
12/03	47	59	0	106	16.8	26.6
12/04	32	60	0	92	14.5	41.1
12/05	26	39	0	65	10.3	51.4
12/06	22	31	0	53	8.4	59.8
12/07	31	34	0	65	10.3	70.1
12/08	14	30	0	44	7.0	77.1
12/09	27	29	0	56	8.9	86.0
12/10	25	18	0	43	6.8	92.8
12/11	13	9	1	23	3.7	96.5
Unknown	7	15	0	22	3.5	100.0
<b>Total</b>	<b>268</b>	<b>362</b>	<b>2</b>	<b>631</b>	<b>100.0</b>	<b>100.0</b>

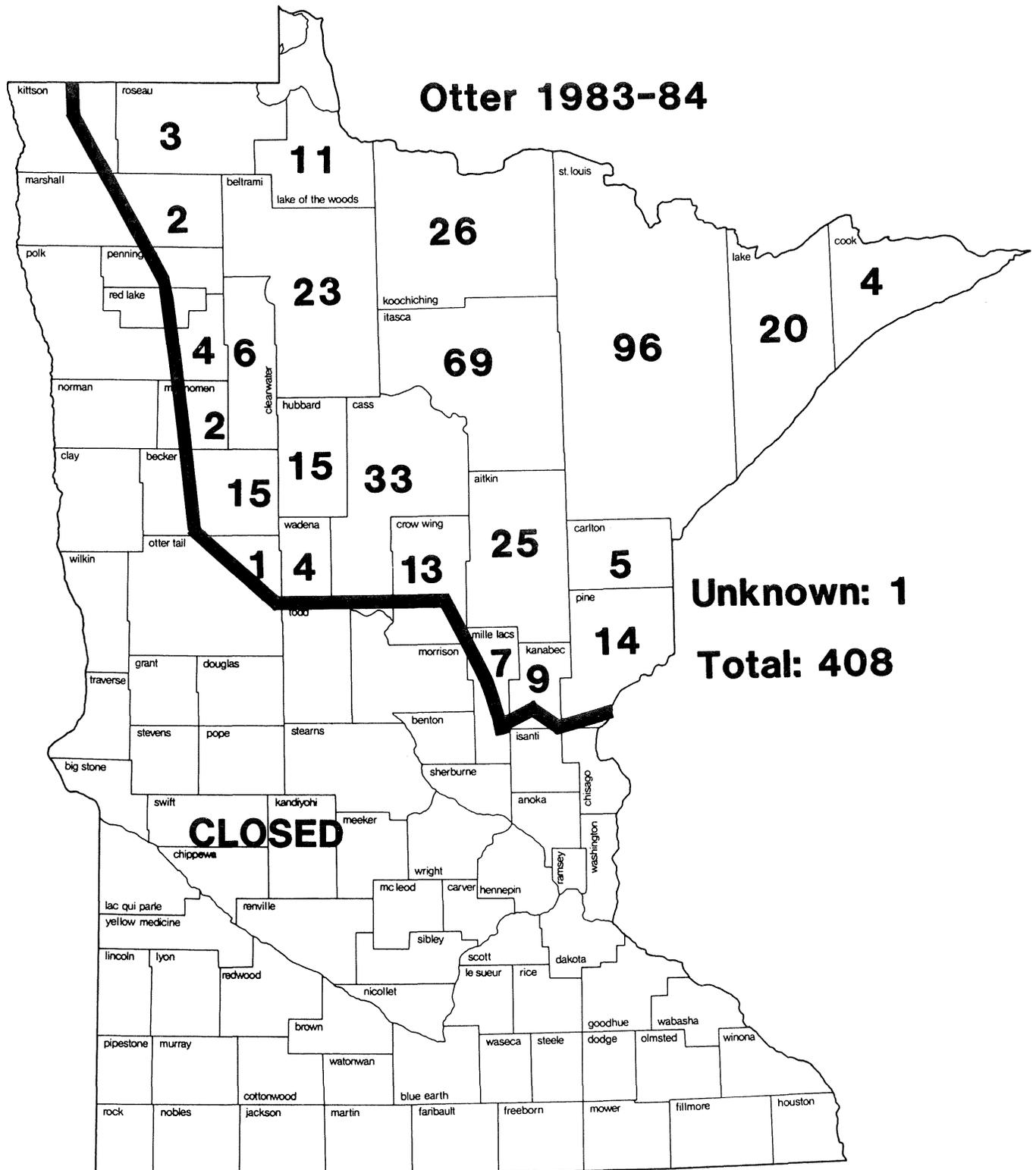


Figure 35. Registered harvest of otter by county, 1983-84 season.

Table 46. Otter harvest by county and sex, 1983 season.

County	Sex		Total
	Male	Female	
Aitkin	15	10	25
Becker	9	6	15
Beltrami	17	6	23
Carlton	4	1	5
Cass	19	14	33
Clearwater	5	1	6
Cook	4	0	4
Crow Wing	9	4	13
Hubbard	12	3	15
Itasca	42	27	69
Kanabec	3	6	9
Koochiching	15	11	26
Lake	12	8	20
Lake of the Woods	6	5	11
Mahnomen	2		2
Marshall	2	0	2
Mille Lacs	6	1	7
Ottertail	1	0	1
Pine	9	5	14
Polk	3	1	4
Roseau	3	0	3
St. Louis	51	45	96
Wadena	1	3	4
Unknown	1	0	1
Total	251	157	408

Table 47. Comparison of otter harvest by county, 1980-1983.

County	15-29 Nov. 1980	14-28 Nov. 1981	13-27 Nov. 1982	12-26 Nov. 1983
Aitkin	74	21	20	25
Becker	31	12	8	15
Beltrami	47	28	39	23
Carlton	17	11	4	5
Cass	69	41	36	33
Chisago	closed	1 (closed)	closed	closed
Clearwater	16	12	9	6
Cook	28	15	17	4
Crow Wing	37	18	15	13
Hubbard	47	28	21	15
Itasca	133	48	56	69
Kanabec	23	13	4	9
Koochiching	92	32	23	26
Lake	81	13	15	20
Lake of the Woods	29	8	9	11
Mahnomen	0	2	2	2
Marshall	0	0	0	2
Mille Lacs	2	8	2	7
Ottertail	0	0	1	1
Pennington	1	1	0	0
Pine	45	17	21	14
Polk	6	5	3	4
Red Lake	0	1	3	0
Roseau	13	7	3	3
St. Louis	319	125	69	96
Wadena	1	4	4	4
Unknown	0	14	1	1
<b>Total</b>	<b>1,111</b>	<b>471</b>	<b>385</b>	<b>408</b>

Table 48. Otter harvest by date and sex, 1983 season.

Date	Sex			Total	% of Total	Cumulative Percent
	Male	Female	Unknown			
11/12	5	3	0	8	2.0	2.0
11/13	24	18	0	42	10.3	12.3
11/14	36	17	0	53	13.0	25.3
11/15	32	20	0	52	12.7	38.0
11/16	20	10	0	30	7.3	45.3
11/17	10	10	0	20	4.9	50.2
11/18	16	17	0	33	8.1	58.3
11/19	12	10	0	22	5.4	63.7
11/20	19	12	0	31	7.6	71.3
11/21	12	7	0	19	4.7	76.0
11/22	8	7	0	15	3.7	79.7
11/23	15	9	0	24	5.9	85.6
11/24	14	7	0	21	5.1	90.7
11/25	10	5	0	15	3.7	94.4
11/26	14	4	0	18	4.4	98.8
Unknown	1	0	4	5	1.2	100.0
<b>Total</b>	<b>248</b>	<b>156</b>	<b>4</b>	<b>408</b>	<b>100.0</b>	<b>100.0</b>

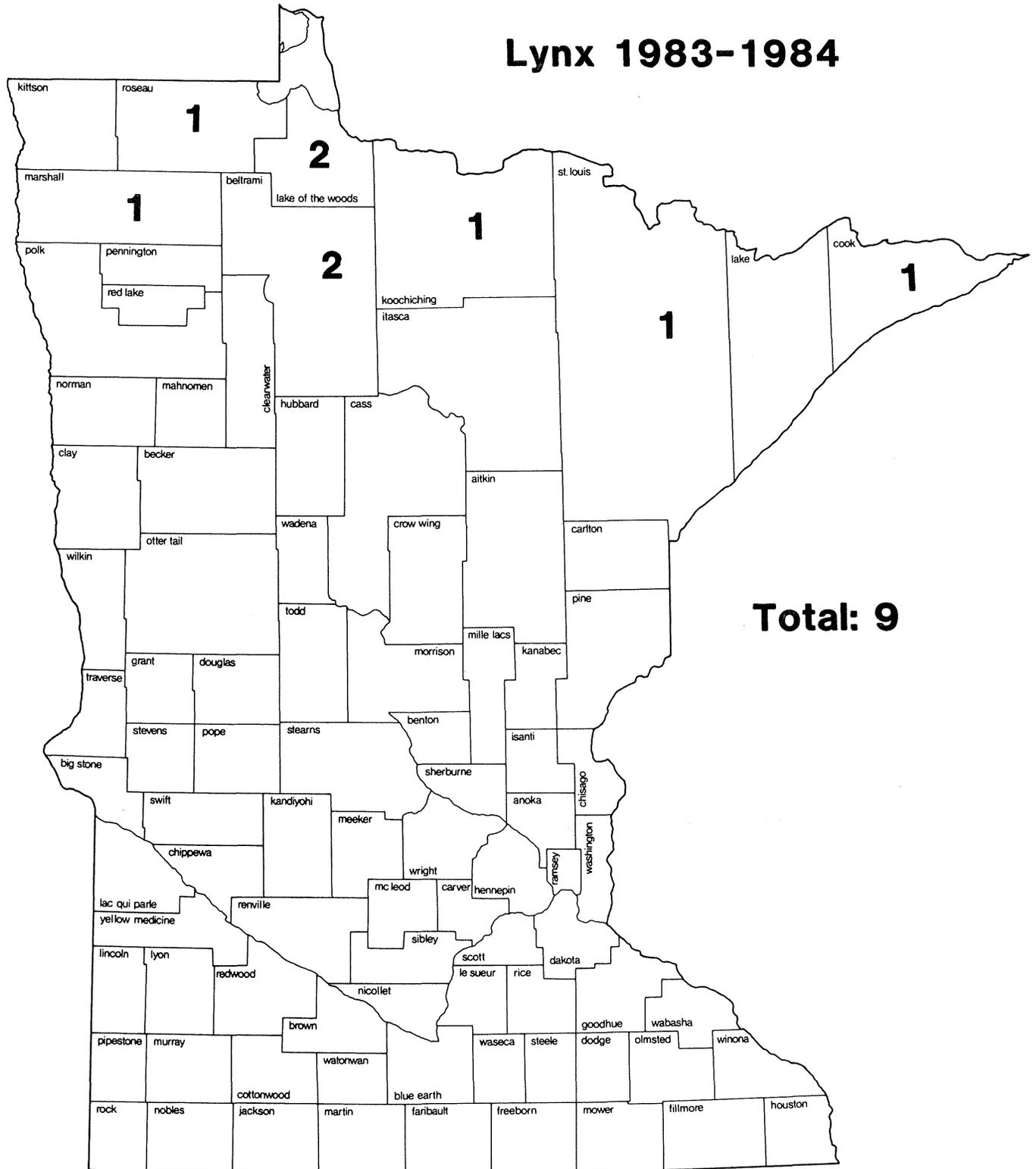


Figure 36. Registered harvest of lynx by county, 1983-84 season.

Table 49. Comparison of lynx harvest by county, 1979-80 - 1983-84.

County	1979-80	1980-81	1981-82 <sup>a</sup>	1982-83	1983-84
Becker	0	0	0	1	0
Beltrami	1	0	0	2	2
Carlton	0	0	1	1	0
Cook	0	0	0	0	1
Crow Wing	0	0	0	1	0
Itasca	3	1	2	0	0
Koochiching	10	2	0	1	1
Lake	11	2	0	5	0
Lake of the Woods	8	5	10	8	2
Mahnomen	1	0	0	0	0
Marshall	0	0	0	0	1
Martin	0	0	0	1	0
Morrison	0	0	1	0	0
Pine	0	0	0	1	0
Roseau	3	3	1	5	1
St. Louis	5	2	2	2	1
Unknown	0	3	0	0	0
Total	42	16	17	28	9

<sup>a</sup> 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.

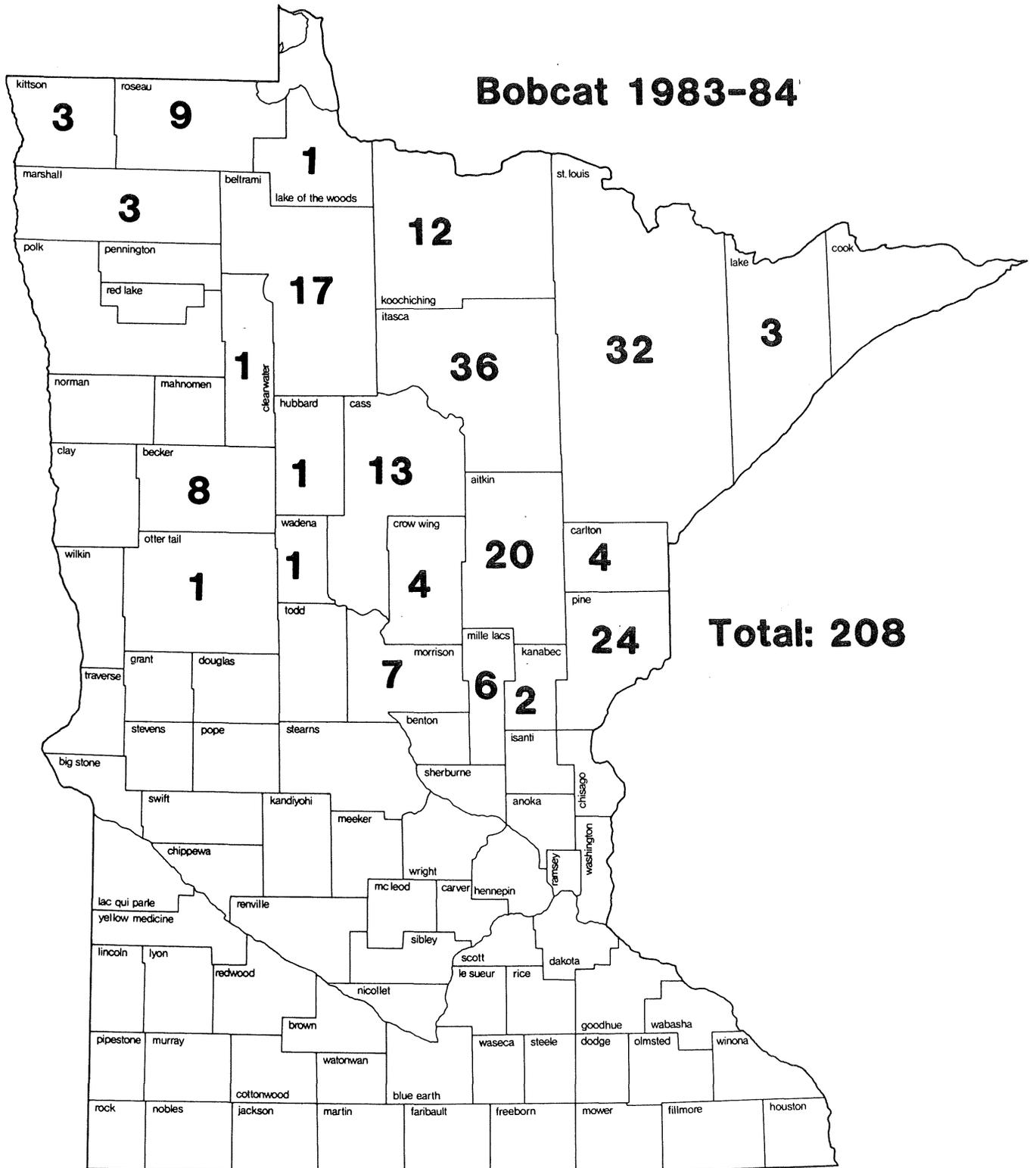


Figure 37. Registered harvest of bobcat by county, 1983-84 season.

Table 50. Comparison of bobcat harvest by county, 1979-80 - 1983-84.

County	1979-80	1980-81	1981-82 <sup>a</sup>	1982-83	1983-84
Aitkin	42	36	45	28	20
Becker	6	9	1	6	8
Beltrami	10	0	2	18	17
Brown	1	0	0	0	0
Carlton	22	32	15	15	4
Cass	26	9	26	30	13
Chisago	0	0	0	1	0
Clearwater	2	1	0	1	1
Cook	1	0	0	2	0
Crow Wing	3	1	2	4	4
Douglas	0	0	1	0	0
Hubbard	13	6	3	4	1
Itasca	24	10	32	46	36
Kanabec	6	0	2	2	2
Kittson	0	1	5	5	3
Koochiching	8	3	0	3	12
Lake	7	3	4	8	3
Lake of the Woods	6	3	3	3	1
Marshall	3	0	6	2	3
Mille Lacs	3	0	4	0	6
Morrison	0	0	0	5	7
Ottertail	2	0	3	2	1
Pennington	0	1	1	0	0
Pine	40	27	21	20	24
Roseau	4	0	4	9	9
St. Louis	62	65	78	59	32
Wadena	0	0	2	0	1
Unknown	0	3	0	1	0
<b>Total</b>	<b>291</b>	<b>210</b>	<b>260</b>	<b>274</b>	<b>208</b>

<sup>a</sup> 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 51. Time distribution of bobcat harvest by 5-day increments, 1983-84 season.

Interval	Total	% of Total	Cumulative Percent
Dec. 1-5	31	14.9	14.9
Dec. 6-10	38	18.3	33.2
Dec. 11-15	17	8.2	41.4
Dec. 16-20	19	9.1	50.5
Dec. 21-25	9	4.3	54.8
Dec. 26-30	16	7.7	62.5
Dec. 31-Jan. 4	22	10.6	73.1
Jan. 5-9	10	4.8	77.9
Jan. 10-14	17	8.2	86.1
Jan. 15-19	14	6.7	92.8
Jan. 20-22 <sup>a</sup>	11	5.3	98.1
Unknown	4	1.9	100.0
Total	208	100.0	100.0

<sup>a</sup> 3-day interval.

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- Badger, census 7; harvest 54, 55, 76, 77; pelt price 78  
Bear, black, census 15, 16, 28-30, 33, 34; harvest 70-72  
Beaver, census 25-27; harvest 77; pelt price 78  
Bobcat, census 15, 16, 28-30; harvest 77, 90-92; pelt price 78  
Bufflehead, harvest 58  
Canvasback, census 41, 42; harvest 58  
Cat, domestic, census 15, 16, 28-30  
Coot, American, harvest 54, 55  
Cottontail, eastern census 2, 6, 7, 10; harvest 54, 55  
Coyote, census 15, 16, 28-30; harvest 54, 55, 76, 77; pelt prices 78  
Crane, sandhill, census 7  
Deer, white-tailed, census 2, 6, 7, 11, 17-19, 31, 32; harvest 63-69  
Dog, domestic, census 15, 16, 28-30  
Dove, mourning, census 6, 7, 9, 49, 50  
Duck, American black, census 42; harvest 58  
Duck, hybrid (Black X Mallard), harvest 58  
Duck, ring-necked, harvest 58  
Duck, ruddy, harvest 59  
Duck, wood, harvest 58  
Ducks, census 38, 40-42, 44, 45; harvest 54, 55, 57-59  
Ermine, harvest 76, 77; pelt prices 78  
Fall duck flight forecast 44, 45  
Fisher, harvest 77, 80-83; pelt prices 78  
Fox, gray, harvest 54, 55, 76, 77; pelt prices 78  
Fox, red, census 15, 16, 28-30; harvest 54, 55, 76, 77; pelt prices 78  
Gadwall, census 41, 42; harvest 58  
Gallinules/rails, harvest 54, 55  
Goldeneye, common, harvest 58  
Goose, Canada, census 39, 40; harvest 54, 55, 57  
Goose, other, harvest 54, 55  
Grouse, ruffed, census 21, 22; harvest 54, 55, 57  
Grouse, sharp-tailed, census 23; harvest 54, 55  
Grouse, spruce, harvest 54, 55  
Hare, snowshoe, census 24; harvest 54, 55  
Hunter activity statistics 52-57, 60, 63-65, 71, 72  
Lynx, harvest 77, 88, 89; pelt prices 78  
Mallard, census 38, 40-42; harvest 58  
Mallard, domestic, harvest 58  
Merganser, hooded, harvest 59  
Mink, harvest 76, 77; pelt prices 78  
Moose, census 35, 36; harvest 73  
Muskrat, harvest 76, 77; pelt prices 78  
Opossum, harvest 76, 77; pelt prices 78  
Otter, river, harvest, 77, 84-87; pelt prices 78  
Partridge, gray (hungarian), census 2, 6-8; harvest 54, 55  
Pelt Prices 78  
Pheasant, ring-necked, census 2-5, 7, 8; harvest 54, 55, 57

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Pintail, northern, census 41, 42; harvest 58  
Ponds, May and July 43  
Prairie-chicken, greater, census 12  
Rabbit, cottontail (see: Cottontail, eastern)  
Rabbit, white-tailed jack, census 2, 6, 7, 10; harvest 54, 55  
Raccoon, census 15, 16, 28-30; harvest 54, 55, 76, 77; pelt prices 78  
Rails/gallinules, harvest 54, 55  
Redhead, census 41, 42; harvest 58  
Scaup, greater, census 41, 42; harvest 58  
Scaup, lesser, census 41, 42; harvest 58  
Scoters, harvest 59  
Shoveler, northern, census 41, 42; harvest 58  
Skunk, eastern spotted, census 15, 16; harvest 76, 77; pelt prices 78  
Skunk, striped, census 15, 16, 28-30; harvest 76, 77; pelt prices 78  
Snipe, common, harvest 54, 55  
Squirrel, fox, harvest 54, 55  
Squirrel, gray, harvest 54, 55  
Teal, blue-winged, census 38, 40-42; harvest 58  
Teal, green-winged, census 41, 42; harvest 58  
Trapper activity statistics 75-77  
Turkey, wild, census, 13, 14; harvest 61, 62  
Weasel, long-tailed, harvest 76, 77; pelt prices 78  
Weasel, short-tailed (see: Ermine)  
Wigeon, American, census 41, 42; harvest 58  
Wolf, gray, census 15, 16, 28-30  
Woodcock, American, census 46-48; harvest 54, 55