

Status of Wildlife Populations,
Fall 1991 and 1981-1990 Hunting
and Trapping Harvest Statistics

compiled by
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Note: Data in this report may change as a result of future
verification and more comprehensive analysis.

Status of Wildlife Populations, Fall 1991

and

1981-90 Hunting and Trapping Harvest Statistics

This is the 15th year that the Wildlife Populations and Research Unit has compiled this booklet; it is primarily an administrative document intended for DNR personnel. (Since 1984 we have also generated a companion volume containing annual summaries of activities and findings from each ongoing research project in the Unit).

Most of the field work associated with collection of census and survey data for farmland and forest wildlife is performed by wildlife biologists and managers (conservation officers also participate in August roadside counts). The Farmland and Forest Wildlife Population and Research groups coordinate these activities, analyze and interpret data, and prepare recommendations for harvest regulations and season setting.

Much of the census and survey work for wetland species is done by personnel in the Wetland Wildlife Populations and Research Group.

Most of the hunting and trapping harvest estimates are calculated and summarized by St. Paul central office personnel.

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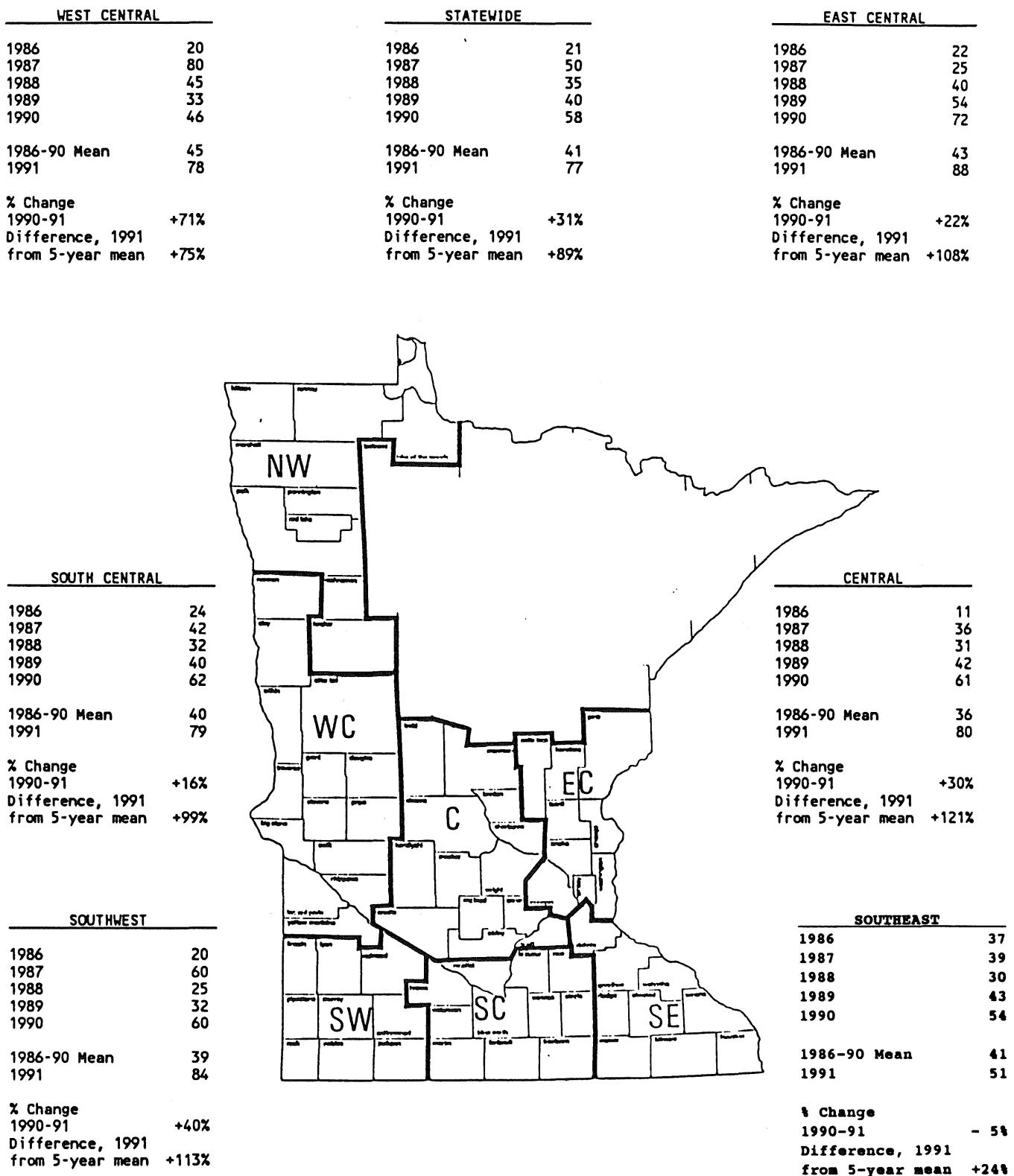


Figure 1. Ring-necked pheasants observed per 100 miles of August roadside count route, 1986-91, and percent change 1990-91 for routes surveyed both years.

Table 1. County, regional and statewide August roadside count results for ring-necked pheasants in Minnesota, 1986-91.

Region and County	Miles surveyed	Pheasants observed per 100 miles							Percent change ^a 1990-91
		1991	1986	1987	1988	1989	1990	1991	
								Mean	
West Central	925	19.6	79.5	45.3	33.1	45.6	78.1	44.6	+71
Big Stone	75	283	21	339	96	136	125		
Chippewa	50	26	116	48	52	64	80		
Clay	75	0	0	9	11	0	13		
Douglas	50	2	14	14	0	38	32		
Grant	50	10	4	0	18	8	18		
Lac Qui Parle	75	24	107	200	73	73	252		
Norman	50	0	0	0	0	0	0		
Otter Tail	50	52	140	44	2	18	22		
Pope	75	40	67	61	49	96	156		
Stevens	75	33	113	29	97	103	128		
Swift	75	17	63	17	77	37	108		
Traverse	75	23	69	53	4	0	31		
Wilkin	75	1	0	0	0	1	9		
Yellow Medicine	75	21	40	21	12	31	38		
Central	725	10.7	36.4	31.2	42.3	60.5	80.0	36.2	+30
Benton	50	8	8	28	74	24	36		
Carver	50	0	26	44	14	54	38		
Kandiyohi	75	3	8	60	71	51	207		
McLeod	50	14	--	20	154	88	74		
Meeker	75	5	21	28	65	133	272		
Morrison	50	22	8	2	28	36	68		
Renville	50	0	0	0	0	0	0		
Scott	50	14	72	48	42	140	28		
Sherburne	50	0	48	0	0	0	41		
Sibley	75	19	44	26	17	63	79		
Stearns	75	3	11	14	2	16	39		
Todd	50	44	26	80	100	78	88		
Wright	50	18	100	58	38	116	28		
East Central	425	22.4	24.5	40.0	53.6	72.0	88.2	42.5	+22
Anoka	50	0	4	20	16	108	76		
Chisago	75	25	43	33	115	131	164		
Hennepin	25	0	4	120	44	164	0		
Isanti	75	23	9	57	48	45	105		
Kanabec	50	38	26	18	0	40	8		
Mille Lacs	50	70	42	18	138	102	190		
Pine	50	6	30	70	0	8	66		
Washington	50	4	26	18	36	8	6		

Table 1. Continued.

Region and County	Miles surveyed	Pheasants observed per 100 miles							Percent change ^a 1990-91
		1991	1986	1987	1988	1989	1990	1991	
								1986-90 Mean	
Southwest	475	19.8	60.4	24.7	32.0	59.6	83.6	39.3	+40
Cottonwood	50	0	48	32	14	26	58		
Jackson	50	10	16	8	32	90	22		
Lincoln	50	4	76	0	18	60	390		
Lyon	50	16	22	28	48	32	48		
Murray	50	26	98	40	40	52	10		
Nobles	75	29	41	12	16	33	47		
Pipestone	50	20	46	40	20	64	86		
Redwood	50	16	6	22	0	22	8		
Rock	50	52	200	48	108	170	102		
South Central	700	23.5	41.7	31.6	39.6	61.8	78.7	39.6	+16
Blue Earth	NC	1	29	43	37	16	--		
Brown	75	28	24	35	52	41	47		
Faribault	75	12	49	13	21	15	7		
Freeborn	75	35	72	31	37	60	51		
LeSueur	75	24	83	47	32	145	323		
Martin	75	50	74	35	3	41	19		
Nicollet	75	0	43	7	52	72	37		
Rice	75	16	12	27	71	87	125		
Steele	50	2	68	34	12	86	116		
Waseca	75	81	3	96	73	95	36		
Watonwan	75	11	21	4	36	29	25		
Southeast	500	37.4	39.0	30.1	43.4	53.6	51.0	40.7	- 5
Dakota	50	62	4	0	14	6	6		
Dodge	50	12	66	48	94	62	34		
Fillmore	50	32	14	4	56	16	48		
Goodhue	50	0	4	12	10	38	16		
Houston	50	2	14	10	0	26	52		
Mower	75	72	71	44	65	88	59		
Olmsted	75	60	41	65	83	128	131		
Wabasha	50	54	6	22	20	36	70		
Winona	50	14	114	26	18	28	0		
Statewide	3750	21.2	50.0	34.8	39.8	57.5	76.9	40.7	+31

^a Percent change 1990-91 calculated only for routes surveyed both years.

Table 2. Statewide pheasant population parameters calculated from August roadside count results, 1986-91.

Population Parameter	1986	1987	1988	1989	1990	1991	Mean	Percent change ^a 1990-91
Cocks/100 Miles	2.6	3.6	2.8	2.9	4.9	5.9	3.4	+19
Hens/100 Miles	2.5	4.9	3.8	4.6	7.8	10.6	4.7	+33
Broods/100 Miles	3.6	7.0	4.7	5.2	7.9	12.1	5.7	+52
Mean Brood Size	4.5	5.9	6.0	6.2	5.7	5.0	5.7	-12
Broods/100 Hens	147.4	142.8	123.6	113.0	101.0	114.6	125.6	-15
Median Hatch Date	Jun 6	May 27	May 31	Jun 6	Jun 9	Jun 2	Jun 3 ^b	

^a Percent change 1990-91 calculated only for routes surveyed both years.

^b Median hatch date, 1986-90.

Table 3. Regional and statewide August roadside count results for gray (Hungarian) partridge, 1986-91.

Agricultural Region	Miles Surveyed 1991	Partridges observed per 100 miles						Percent change ^a 1990-91
		1986	1987	1988	1989	1990	1991	
Northwest	400	3.5	3.6	3.8	24.8	20.4	15.3	11.2 -8
West Central	925	10.1	14.7	25.9	20.0	14.8	15.5	17.1 +4
Central	725	4.6	15.1	18.2	13.1	19.5	11.6	14.1 -44
East Central	425	0.0	0.0	3.1	0.0	0.0	0.7	0.6 NA
Southwest	475	59.6	99.2	110.7	93.5	101.5	66.5	92.9 -34
South Central	700	45.3	47.0	63.6	84.1	62.7	23.9	60.5 -65
South East	500	20.8	66.6	40.4	42.0	34.6	18.4	40.9 -47
Statewide ^b	4175	20.6	33.4	37.3	39.7	35.2	20.9	33.2 -42

^a Percent change 1990-91 for routes surveyed both years only.

^b Statewide means include the Northwest agricultural region.

Table 4. Statewide gray (Hungarian) partridge population parameters calculated from August roadside count results, 1986-91.

Population Parameter	1986	1987	1988	1989	1990	1991	Percent change ^a 1985-89 Mean 1989-90	
							1985-89 Mean	1989-90
Adults/100 Miles	5.7	7.0	7.5	9.9	11.8	8.0	8.4	-33
Broods/100 Miles	1.9	2.7	3.1	3.3	3.3	2.1	2.7	-38
Mean Brood Size	8.0	9.9	9.7	9.1	7.1	6.1	8.8	-13
Broods/100 Adults	32.7	38.0	40.6	33.3	28.0	26.1	34.5	-8
Median Hatch Date	Jun 30	Jun 14	Jun 15	Jun 21	Jun 21	Jun 23	Jun 20 ^b	

^a Percent change 1990-91 for routes surveyed both years only.

^b Median hatch date, 1986-90.

Table 5. August roadside count results for selected farmland wildlife species and percent change 1990-91 by agricultural region.

Agricultural Region	Miles Surveyed 1991	Animals observed per 100 miles												
		Cottontail			Jackrabbit			Mourning dove			White-tailed deer			
		1991	1990	Percent change ^a	1991	1990	Percent change ^a	1991	1990	Percent change ^a	1991	1990	Percent change ^a	
∞	Northwest	400	2.0	1.9	+0	2.3	2.1	-10	205.8	170.3	+49	37.0	14.3	+143
	West Central	925	2.8	3.6	-21	1.4	2.2	-35	316.9	443.1	-28	9.3	6.7	+30
	Central	725	5.8	6.3	-12	0.7	0.4	+67	255.0	232.4	+3	4.6	3.2	+32
	East Central	425	8.9	10.6	-16	0.0	0.2	NA	187.3	128.0	+46	12.5	8.2	+51
	Southwest	475	4.2	4.0	+5	0.4	1.3	-67	169.5	159.4	+6	9.9	12.0	-18
	South Central	700	6.0	6.6	-2	0.4	2.1	-82	234.9	175.5	+35	3.9	3.6	+12
	Southeast	500	9.2	16.8	-45	0.4	1.2	-67	287.0	353.4	-19	11.8	7.6	+55
Statewide ^b		4150	5.3	6.7	-20	0.8	1.4	-47	248.3	255.6	-3	10.9	7.2	+48

^a Percent change 1990-91 calculated only for routes surveyed both years.

^b Statewide means include the Northwest agricultural region.

Table 6. Statewide August roadside count results for selected farmland wildlife species, 1987-91.

Species	Animals seen per 100 miles driven					Percent change ^a 1990-91
	1987	1988	1989	1990	1991	
Ring-necked pheasant ^b	50.0	34.8	39.8	57.9	76.9	+31
Gray partridge (Hun)	33.4	37.3	39.7	35.2	20.9	-42
Mourning dove	252.4	245.0	283.4	255.6	248.3	-3
Eastern cottontail	6.9	4.0	5.4	6.7	5.3	-20
White-tailed jack rabbit	0.7	0.7	1.6	1.4	0.8	-47
White-tailed deer	5.4	5.2	6.4	7.2	10.9	+48
Sharp-tailed grouse	0.00	0.36	0.00	0.05	0.29	+480
Greater prairie-chicken	0.00	0.00	0.00	0.02	0.00	NA
Sandhill crane	3.44	7.66	2.44	6.19	2.87	-55
Badger	0.05	0.00	0.03	0.00	0.02	NA
Gray & fox squirrel	1.19	1.62	1.20	0.85	1.38	+58
Gray & red fox	0.26	0.22	0.74	0.91	0.56	-43
Striped & spotted skunk	0.30	0.38	0.30	0.55	0.22	-63

^a Percent change 1990-91 calculated only for routes surveyed both years.

^b Ring-necked pheasant means do not include the Northwest agricultural region.

Table 7. Animals observed per 100 miles of August roadside count for 5 species in Minnesota, statewide summaries, 1955-91.^a

Year	Animals observed per 100 miles driven				
	Ring-necked pheasant	Gray partridge	Cotton-tail	Jack-rabbit	Mourning dove
1955	368.1	9.9	17.8	7.0	324.5
1956	290.0	6.6	13.0	5.6	422.6
1957	272.6	5.5	11.2	6.3	274.5
1958	409.1	8.7	14.8	8.5	326.0
1959	266.8	9.3	6.2	4.0	311.4
1960	276.3	4.4	9.8	3.6	300.8
1961	336.0	4.5	9.4	3.5	392.4
1962	197.4	5.8	7.9	2.7	334.6
1963	248.1	5.1	7.4	3.6	396.5
1964	149.8	1.6	5.4	2.0	375.9
1965	77.2	3.6	4.4	1.6	271.6
1966	105.0	4.9	5.6	1.8	299.6
1967	61.9	4.6	5.5	2.8	NC ^b
1968	71.4	3.5	5.8	1.9	293.5
1969	39.2	3.7	5.1	2.7	245.6
1970	69.6	9.1	4.9	1.8	348.3
1971	66.4	10.8	3.7	2.1	415.4
1972	47.3	7.5	3.9	1.9	349.8
1973	63.3	19.1	5.8	1.9	428.2
1974	76.3	12.0	6.2	1.5	380.8
1975	34.8	14.6	3.3	1.3	405.8
1976	44.8	17.6	5.2	2.2	407.4
1977	85.0	32.1	6.8	2.4	409.8
1978	79.0	37.0	8.9	3.8	344.5
1979	54.2	33.9	7.3	3.7	347.9
1980	104.9	44.6	6.4	2.8	352.2
1981	133.5	42.9	10.2	2.5	347.6
1982	60.2	24.5 (22.1)	5.6 (5.2)	1.8 (1.7)	325.0 (313.6)
1983	56.2	24.4 (23.4)	7.2 (6.7)	1.0 (1.0)	298.9 (286.6)
1984	28.6	21.3 (20.0)	3.3 (2.9)	0.9 (0.8)	292.0 (279.2)
1985	34.6	40.7 (37.0)	4.8 (4.4)	1.3 (1.2)	273.7 (270.1)
1986	21.2	22.4 (20.6)	4.4 (4.0)	0.4 (0.5)	207.0 (204.1)
1987	50.0	37.1 (33.4)	7.7 (6.9)	0.7 (0.7)	257.1 (252.4)
1988	34.8	41.5 (37.3)	4.3 (4.0)	0.7 (0.7)	252.3 (245.0)
1989	39.8	41.5 (39.7)	5.9 (5.4)	1.7 (1.6)	297.9 (283.4)
1990	57.5	37.1 (35.2)	7.3 (6.7)	1.4 (1.4)	266.0 (255.6)
1991	76.9	21.5 (20.9)	5.7 (5.3)	0.7 (0.8)	252.8 (248.3)

^a Eight counties in the Northwest agricultural region were added to the August count in 1982. Numbers in parentheses represent statewide means including Northwest agricultural region. These were not calculated for ring-necked pheasants because the Northwest counties are outside the pheasant range.

^b No count.

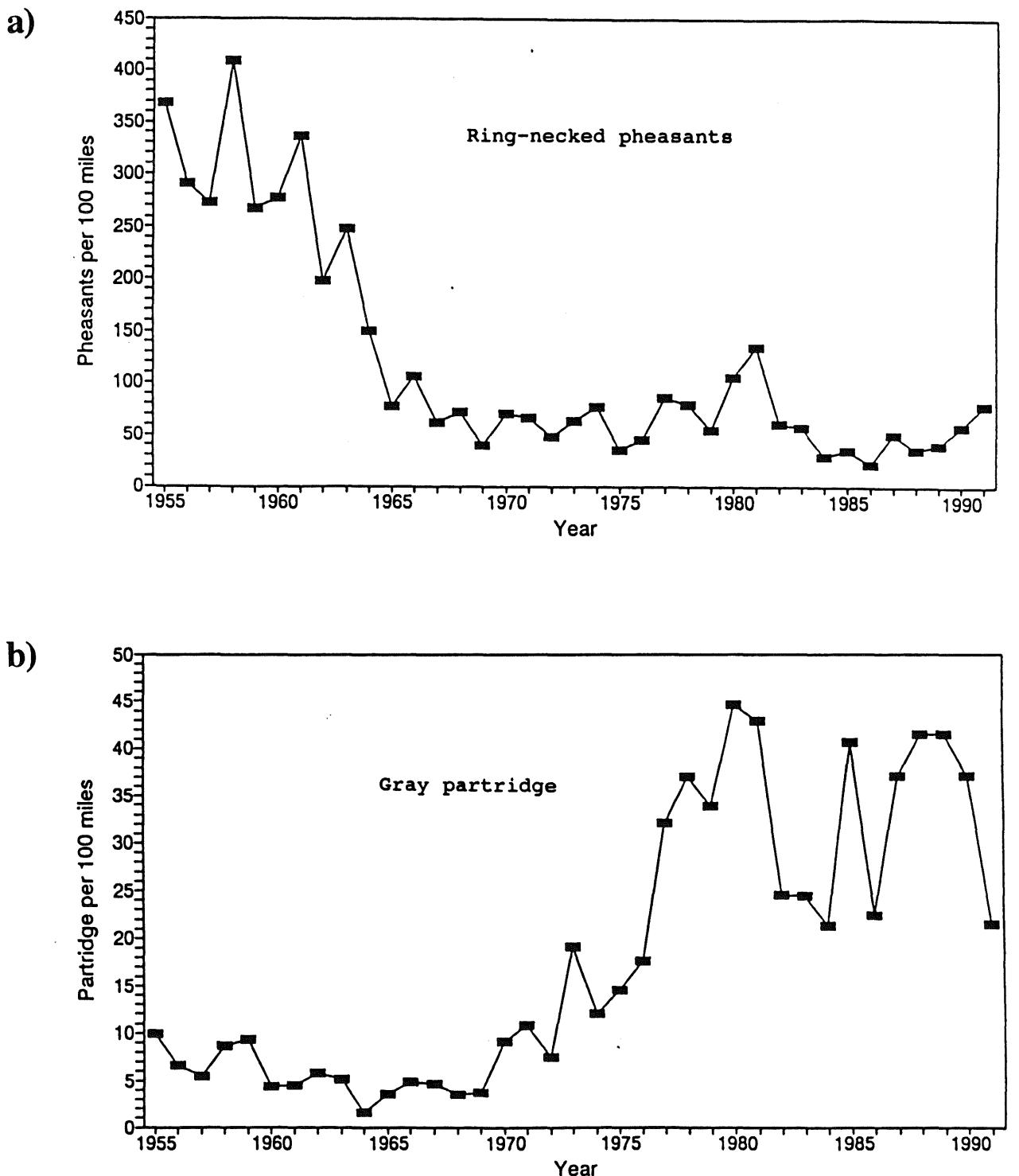


Figure 2. August roadside count indices (birds observed per 100 miles driven) for a) ring-necked pheasants and b) gray partridge, 1955-91.

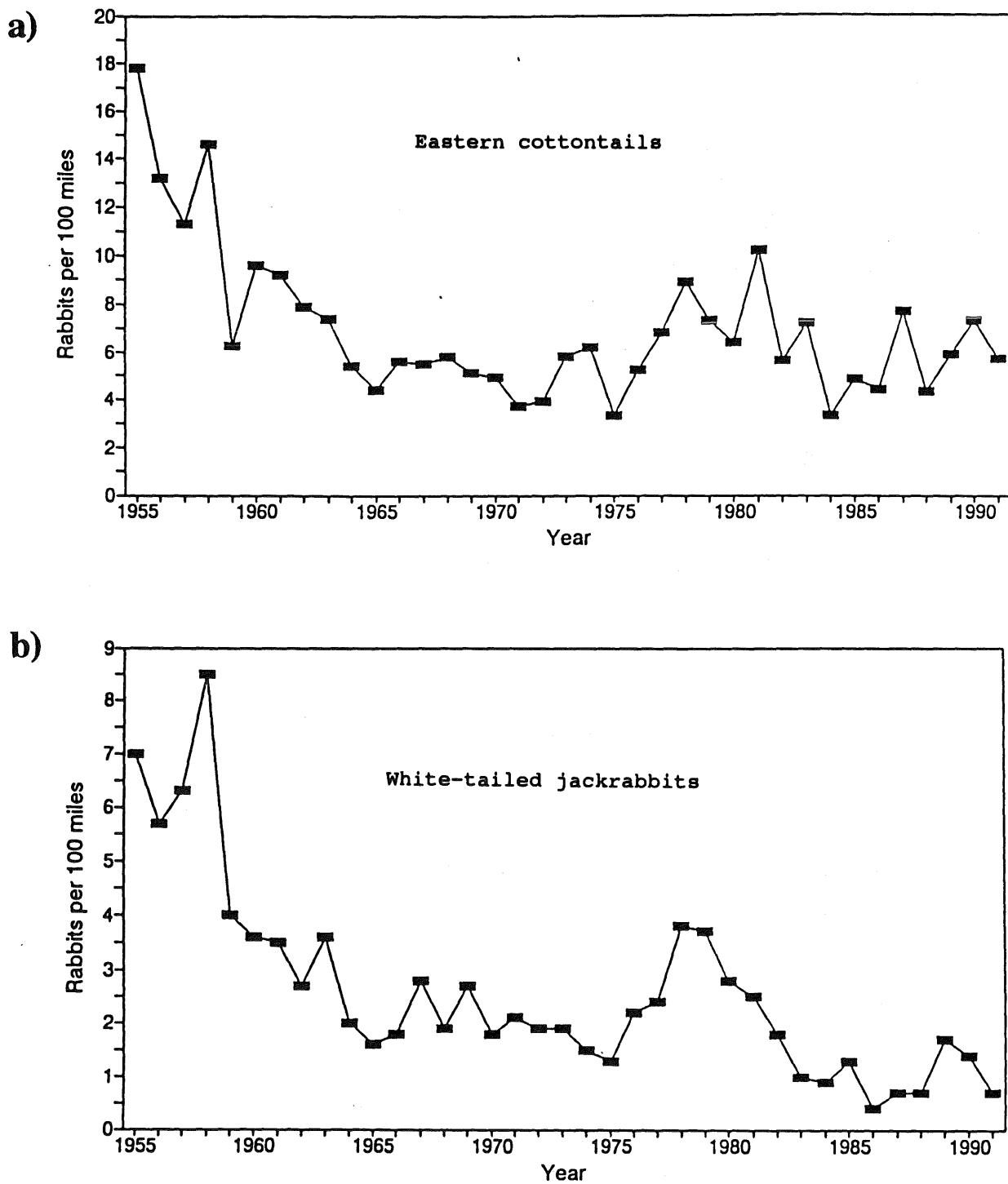


Figure 3. August roadside count indices (animals observed per 100 miles driven) for a) eastern cottontails and b) white-tailed jackrabbits, 1955-91.

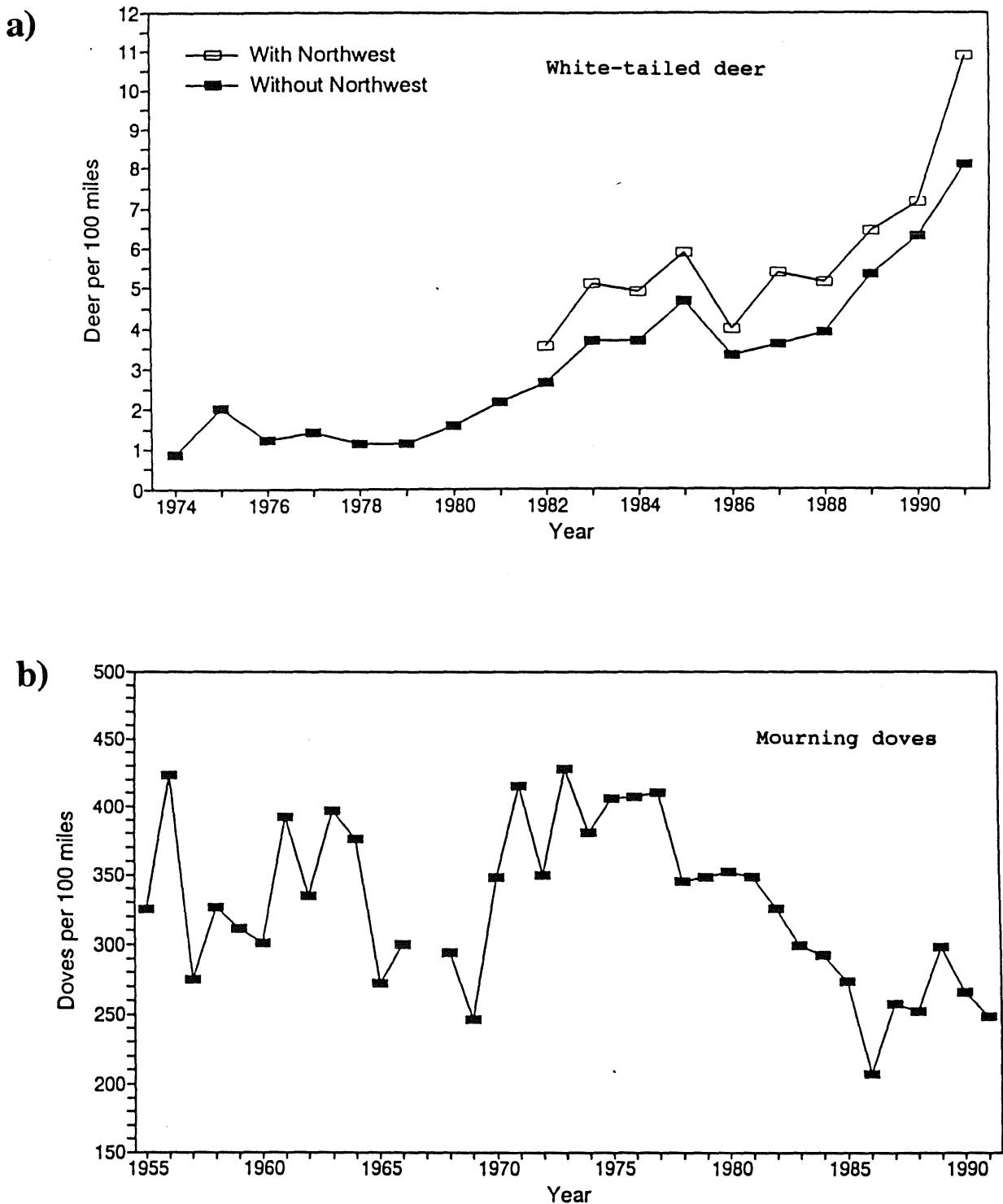


Figure 4. August roadside count indices (animals observed per 100 miles driven for a) white-tailed deer, including and excluding the Northwest agricultural region, 1974-91, and b) mourning doves, 1955-91.

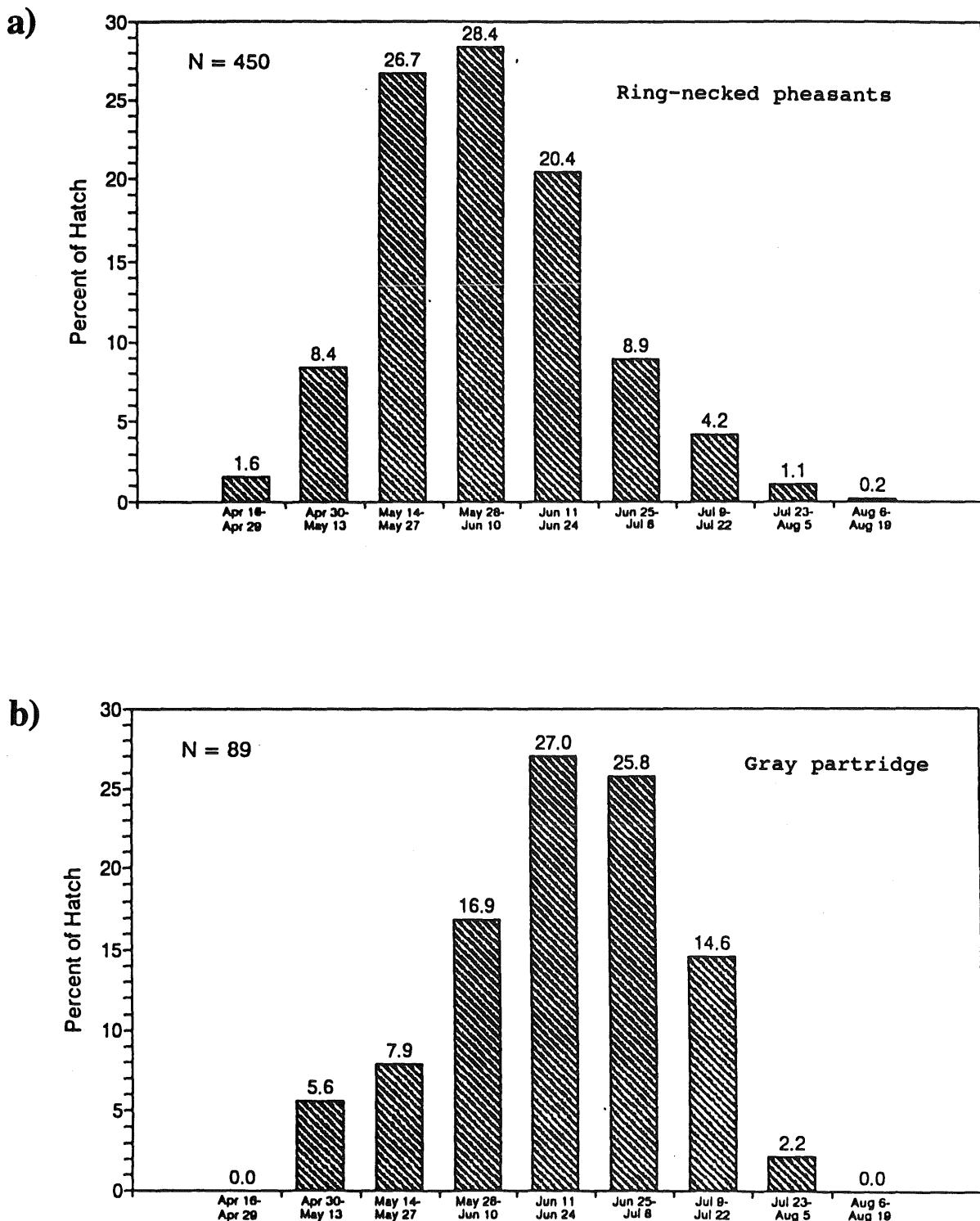


Figure 5. Distribution of hatch of a) ring-necked pheasant and b) gray partridge, 1991.

Table 8. Ring-necked pheasants observed per 100 miles of August roadside count in Minnesota, summarized by agricultural region, 1955-91.

Year	Agricultural region							State-wide ^a
	WC	C	EC	SW	SC	SE	NW	
1955	334.8	163.2	140.0	580.5	620.2	212.0	NO	368.1
1956	248.8	208.1	175.2	357.2	477.5	169.0	COUNT	290.0
1957	260.2	130.4	134.6	336.6	522.2	179.6		272.6
1958	490.3	261.9	300.0	473.4	592.9	125.6		409.1
1959	306.6	187.3	73.1	509.5	412.8	55.3		266.8
1960	367.0	243.4	202.5	294.3	356.8	37.7		276.3
1961	494.3	266.7	254.5	365.8	381.3	115.1		336.0
1962	264.2	140.5	143.8	214.7	239.3	114.0		197.4
1963	443.8	191.5	156.9	251.8	227.4	134.8		248.1
1964	224.5	83.1	26.3	185.3	211.1	83.8		149.8
1965	121.4	38.1	8.7	90.4	98.1	68.8		77.2
1966	109.6	67.2	26.3	108.8	175.5	101.8		105.0
1967	56.4	29.7	10.4	51.5	126.2	81.0		61.9
1968	64.9	39.7	16.9	78.1	124.7	94.0		71.4
1969	12.8	22.3	20.2	33.3	68.3	101.9		39.2
1970	19.7	26.9	8.9	55.2	108.6	194.2		69.6
1971	40.3	44.0	14.8	59.3	76.7	175.2		66.4
1972	19.9	28.0	44.0	37.3	66.7	104.8		47.3
1973	38.3	35.4	53.0	36.2	74.5	168.0		63.3
1974	50.6	73.3	84.7	59.8	93.0	107.5		76.3
1975	13.1	33.7	75.1	6.7	24.6	78.6		34.8
1976	11.9	28.1	68.2	2.1	82.8	80.8		44.8
1977	45.8	84.7	101.4	6.4	145.0	125.8		85.0
1978	36.1	79.9	178.4	23.2	106.0	77.2		79.0
1979	44.6	61.7	100.5	13.4	53.3	54.7		54.2
1980	78.8	116.8	221.2	19.5	110.0	84.9		104.9
1981	123.8	139.1	267.8	75.8	125.8	95.2		133.5
1982 ^b	70.8	43.7	155.1	26.1	49.1	28.9	0.0	60.2
1983	89.7	51.5	107.3	10.1	24.9	51.4	0.0	56.2
1984	66.5	13.6	10.1	8.4	25.8	20.6	0.4	28.6
1985	62.9	16.3	41.3	14.3	29.6	31.6	2.5	34.6
1986	19.6	10.7	22.4	19.8	23.5	37.4	0.0	21.2
1987	79.5	36.4	24.5	60.4	41.7	39.0	0.0	50.0
1988	45.3	31.2	40.0	24.7	31.6	30.1	0.0	34.8
1989	33.1	42.3	53.6	32.0	39.6	43.4	0.0	39.8
1990	45.6	60.5	72.0	59.6	61.8	53.6	0.0	57.5
1991	78.1	80.0	88.2	83.6	78.7	51.6	0.0	76.9

^a Statewide means do not include the Northwest agricultural region because the Northwest counties are outside the pheasant range.

^b Eight counties in the Northwest agricultural region were added to the August count in 1982 for all species except ring-necked pheasants.

Table 9. Gray partridge observed per 100 miles of August roadside count in Minnesota, summarized by agricultural region, 1955-91.

Year	Agricultural region							Statewide Mean	
	WC	C	EC	SW	SC	SE	NW	Without	With
								NW	NW
1955	16.4	8.0	0.0	10.8	9.5	9.0	NO	9.9	
1956	2.9	8.3	0.0	14.7	6.0	7.8	COUNT	6.6	
1957	6.4	4.5	0.0	11.7	7.0	0.2		5.5	
1958	20.4	8.6	0.0	10.2	0.3	6.0		8.7	
1959	13.0	17.3	0.0	20.4	5.3	0.0		9.3	
1960	3.9	6.5	0.0	12.1	0.6	4.9		4.4	
1961	5.6	13.4	0.0	2.1	0.6	0.0		4.5	
1962	2.5	10.4	0.0	3.1	0.3	22.0		5.8	
1963	3.3	10.8	0.0	11.1	0.9	4.8		5.1	
1964	0.9	2.5	0.0	2.0	1.9	2.4		1.6	
1965	5.3	2.9	0.0	6.8	2.3	4.0		3.6	
1966	1.8	3.5	0.0	18.3	0.1	11.4		4.9	
1967	2.6	2.2	0.0	8.2	13.5	0.0		4.6	
1968	4.4	3.1	0.0	9.5	0.0	5.0		3.5	
1969	5.2	2.6	0.0	10.9	0.0	4.5		3.7	
1970	7.1	8.2	0.0	32.8	3.7	4.0		9.1	
1971	12.7	3.8	0.0	28.9	7.2	10.1		10.8	
1972	6.7	3.3	0.0	18.3	1.6	18.4		7.5	
1973	8.2	7.8	0.0	66.9	11.7	26.0		19.1	
1974	6.9	10.3	0.0	27.4	8.4	20.2		12.0	
1975	11.0	2.3	0.0	67.5	8.6	5.6		14.6	
1976	10.6	8.7	0.0	59.3	15.4	22.4		17.6	
1977	16.0	32.8	0.0	93.3	31.0	31.6		32.1	
1978	26.1	22.6	0.2	144.2	30.7	14.8		37.0	
1979	43.0	24.3	0.0	88.5	34.8	12.2		33.9	
1980	57.9	41.7	0.0	99.0	41.2	27.6		44.6	
1981	38.1	26.8	0.5	138.7	44.4	19.0		42.9	
1982 ^a	23.6	23.0	0.7	69.7	17.1	16.0	3.6	24.5	22.1
1983	29.3	18.7	0.0	64.6	22.8	8.0	15.2	24.4	23.4
1984	18.2	17.3	0.0	49.7	26.5	16.2	9.5	21.3	20.0
1985	30.7	17.5	0.0	94.9	63.3	42.2	2.2	40.7	37.0
1986	10.1	4.6	0.0	59.6	45.3	20.8	3.5	22.4	20.6
1987	14.7	15.1	0.0	99.2	47.0	66.6	3.6	37.1	33.4
1988	25.9	18.2	3.1	110.7	63.6	40.4	3.8	41.5	37.3
1989	20.0	13.1	0.0	93.5	84.1	42.0	24.8	41.5	39.7
1990	14.8	19.5	0.0	101.5	62.7	34.6	20.4	37.1	35.2
1991	15.5	11.6	0.7	66.5	23.9	18.4	15.3	21.5	20.9

^a Eight counties in the Northwest agricultural region were added to the August count in 1982.

Table 10. Eastern cottontails observed per 100 miles of August roadside count in Minnesota, summarized by agricultural region, 1955-91.

Year	Agricultural region							Statewide Mean	
	WC	C	EC	SW	SC	SE	NW	Without	With
								NW	NW
1955	8.1	15.0	14.5	20.3	19.6	32.0	NO	17.8	
1956	9.6	16.2	12.4	16.2	12.8	12.7	COUNT	13.0	
1957	6.6	9.7	8.3	18.3	13.7	14.0		11.2	
1958	12.8	13.5	16.2	22.1	17.2	6.5		14.8	
1959	5.0	16.0	5.6	6.5	5.3	2.2		6.2	
1960	5.9	13.6	6.4	15.6	11.9	4.9		9.8	
1961	6.2	12.4	6.1	13.8	10.9	5.6		9.4	
1962	5.6	7.3	4.2	12.6	10.0	8.2		7.9	
1963	6.8	4.2	4.9	11.6	9.3	8.6		7.4	
1964	5.2	3.3	1.0	11.8	6.6	5.4		5.4	
1965	3.9	4.4	0.9	5.4	5.7	5.8		4.4	
1966	5.3	3.2	1.8	9.5	7.5	6.0		5.6	
1967	5.8	4.6	2.1	7.1	8.7	3.2		5.5	
1968	4.6	3.2	3.5	9.3	8.8	5.8		5.8	
1969	3.6	3.9	0.9	9.5	8.3	4.5		5.1	
1970	3.6	5.0	1.5	6.9	5.7	6.2		4.9	
1971	4.8	2.6	1.5	6.7	3.2	2.1		3.7	
1972	3.8	4.7	3.6	4.8	3.5	3.5		3.9	
1973	5.0	8.6	6.0	6.5	5.4	4.2		5.8	
1974	3.4	6.5	14.2	6.5	6.1	6.4		6.2	
1975	2.3	4.4	8.3	1.6	1.5	3.1		3.3	
1976	3.7	5.5	6.5	2.1	6.1	7.6		5.2	
1977	4.8	6.7	12.9	6.4	4.9	7.8		6.8	
1978	5.0	8.6	21.4	11.8	7.3	4.6		8.9	
1979	4.6	7.7	7.5	12.7	8.0	4.4		7.3	
1980	4.4	7.0	9.9	6.7	7.2	3.8		6.4	
1981	7.0	10.3	18.1	9.9	8.4	12.0		10.2	
1982 ^a	4.8	6.6	7.8	3.2	6.7	4.9	1.9	5.6	5.2
1983	7.0	5.9	13.2	5.7	3.6	12.2	1.9	7.2	6.7
1984	2.4	2.0	3.5	3.8	4.1	4.8	0.2	3.3	2.9
1985	2.4	4.4	4.7	6.5	5.7	7.6	0.2	4.8	4.4
1986	1.5	4.8	5.9	6.3	5.3	4.8	0.2	4.4	4.0
1987	5.7	7.0	11.5	8.2	6.6	10.6	0.6	7.7	6.9
1988	2.7	3.2	6.4	6.4	3.9	5.9	1.3	4.3	4.0
1989	3.6	5.9	8.9	6.7	4.2	9.2	1.3	5.9	5.4
1990	3.6	6.3	10.6	4.0	6.6	16.8	1.9	7.3	6.7
1991	2.8	5.8	8.9	4.2	6.0	9.2	2.0	5.7	5.3

^a Eight counties in the Northwest agricultural region were added to the August count in 1982.

Table 11. White-tailed jackrabbits observed per 100 miles of August roadside count in Minnesota, summarized by agricultural region, 1955-91.

Year	Agricultural region							Statewide Mean	
	WC	C	EC	SW	SC	SE	NW	Without NW	With NW
1955	9.0	2.6	1.5	13.0	10.6	1.6	NO COUNT	7.0	
1956	5.8	3.7	1.9	10.1	7.7	2.4		5.6	
1957	4.8	5.2	0.9	19.5	6.1	1.3		6.3	
1958	7.3	6.4	0.7	20.1	11.9	0.9		8.5	
1959	1.4	0.7	0.4	15.4	7.8	0.6		4.0	
1960	3.7	4.8	0.2	9.8	2.5	0.2		3.6	
1961	3.7	5.0	0.0	6.5	3.5	0.2		3.5	
1962	4.2	2.3	0.2	4.5	2.8	0.7		2.7	
1963	9.7	2.2	0.0	2.4	3.0	1.0		3.6	
1964	2.9	1.3	0.0	3.7	2.4	0.6		2.0	
1965	1.9	1.9	0.2	4.2	1.2	0.4		1.6	
1966	2.3	1.8	0.2	4.6	1.1	0.6		1.8	
1967	5.3	1.2	0.2	4.2	4.0	0.0		2.8	
1968	1.7	0.8	0.0	6.9	1.9	1.0		1.9	
1969	3.1	0.7	0.5	10.1	1.8	0.7		2.7	
1970	4.0	1.5	0.0	1.9	1.3	0.4		1.8	
1971	5.3	1.6	0.0	2.9	0.8	0.0		2.1	
1972	3.6	1.3	0.0	1.5	2.1	0.5		1.9	
1973	4.0	0.2	0.0	2.9	1.7	0.2		1.9	
1974	3.9	1.5	0.0	1.5	0.7	0.0		1.5	
1975	3.2	0.6	0.3	2.1	0.2	0.2		1.3	
1976	4.4	0.6	0.0	5.2	1.7	1.2		2.2	
1977	3.5	2.8	0.2	4.9	1.6	0.8		2.4	
1978	3.4	2.8	0.7	13.1	3.0	1.0		3.8	
1979	4.6	5.3	0.5	6.4	2.7	1.1		3.7	
1980	3.7	1.2	1.2	8.3	1.5	2.7		2.8	
1981	2.1	2.2	0.0	7.2	1.5	3.0		2.5	
1982 ^a	2.6	0.9	0.5	4.6	1.1	0.9	1.5	1.8	1.7
1983	2.3	0.9	0.0	0.0	0.9	0.8	1.3	1.0	1.0
1984	1.5	0.8	0.0	1.7	0.4	0.6	0.4	0.9	0.8
1985	1.7	0.4	0.0	3.2	1.5	0.7	1.0	1.3	1.2
1986	0.4	0.4	0.0	0.6	0.9	0.0	1.0	0.4	0.5
1987	1.2	0.3	0.0	0.4	1.0	1.0	0.4	0.7	0.7
1988	0.6	0.4	0.0	2.0	1.0	0.4	0.6	0.7	0.7
1989	2.6	1.1	0.0	2.1	2.4	0.6	1.1	1.7	1.6
1990	2.2	0.4	0.2	1.3	2.1	1.2	2.1	1.4	1.4
1991	1.4	0.7	0.0	0.4	0.4	0.4	2.3	0.7	0.8

^a Eight counties in the Northwest agricultural region were added to the August count in 1982.

Table 12. Mourning doves observed per 100 miles of August roadside count in Minnesota, summarized by agricultural region, 1955-91.

Year	Agricultural region							Statewide Mean	
	WC	C	EC	SW	SC	SE	NW	Without NW	With NW
1955	334.8	274.6	116.0	539.1	395.7	196.8	NO	324.5	
1956	347.4	552.6	277.7	591.5	461.0	285.9	COUNT	422.6	
1957	303.3	245.9	167.7	243.3	382.8	200.4		274.5	
1958	350.2	296.8	192.3	270.1	455.6	292.8		326.0	
1959	377.4	307.3	220.9	358.0	447.3	94.4		311.4	
1960	273.7	333.5	121.7	336.8	430.4	186.7		300.8	
1961	377.3	372.7	135.7	480.8	563.0	316.7		392.4	
1962	338.1	337.5	215.3	312.5	395.7	314.3		334.6	
1963	636.2	273.2	212.0	506.2	435.4	313.4		396.5	
1964	680.6	256.5	167.1	399.7	395.3	217.4		375.9	
1965	311.7	244.5	185.2	460.0	217.2	270.8		271.6	
1966	363.4	210.2	152.0	505.3	310.9	229.3		299.6	
1967 ^a									
1968	411.4	207.7	124.9	261.3	254.2	385.0		293.5	
1969	268.3	280.1	124.9	476.5	132.0	194.9		245.6	
1970	601.2	217.9	113.2	527.1	203.7	273.5		348.3	
1971	580.4	256.9	181.6	365.8	258.9	751.7		415.4	
1972	600.2	233.8	169.0	307.7	229.6	314.3		349.8	
1973	601.7	279.6	288.0	480.3	392.1	329.1		428.2	
1974	588.4	321.1	241.5	352.4	269.1	381.5		380.8	
1975	653.5	302.5	152.9	546.0	338.3	259.8		405.8	
1976	599.9	373.4	224.0	535.7	367.0	281.8		407.4	
1977	699.2	308.2	168.0	679.5	281.5	223.7		409.8	
1978	502.1	326.2	173.9	430.6	275.9	282.4		344.5	
1979	600.7	406.1	138.0	379.5	197.5	212.8		347.9	
1980	695.7	302.1	140.3	421.5	235.0	182.3		352.2	
1981	634.1	284.6	153.0	513.6	213.0	178.9		347.6	
1982 ^b	557.3	242.8	175.1	304.0	277.7	213.1	225.1	325.0	313.6
1983	517.0	289.2	130.5	277.9	213.9	193.3	188.6	298.9	286.6
1984	530.9	233.2	128.7	267.4	183.2	269.0	175.6	292.0	279.2
1985	500.6	245.4	93.2	242.5	212.5	151.1	233.9	273.7	270.1
1986	325.0	180.1	115.1	204.0	160.5	180.4	176.8	207.0	204.1
1987	440.9	222.9	104.7	257.3	208.1	161.1	215.2	257.1	252.4
1988	385.7	203.9	121.5	300.0	202.6	210.2	184.4	252.3	245.0
1989	501.4	242.5	125.9	329.7	257.3	180.0	165.9	297.9	283.4
1990	443.1	232.4	128.0	159.4	175.5	353.4	170.3	266.0	255.6
1991	316.9	255.0	187.3	169.5	234.9	287.0	205.8	252.8	248.3

^a Mourning doves were not counted in 1967.

^b Eight counties in the Northwest agricultural region were added to the August count in 1982.

Table 13. Greater prairie-chicken spring booming ground counts for 14 northwestern counties, 1980-91 (counts coordinated and summarized by AWM Terry Wolfe, Crookston).

County	No. of booming males (No. of booming grounds)											
	1980	1981	1982	1983	1984 ^b	1985	1986	1987	1988	1989	1990	1991
Becker	156 (1)	159 (16)	133 (13)	174 (17)	96 (9)	41 (3)	99 (11)	53 (7)	19 (3)	18 (3)	69 (7)	30 (3)
Cass	17 (6) ^a	63 (15) ^a	68 (16) ^a	65 (15)	54 (15) ^a	58 (14)	52 (14)	60 (15)	59 (13)	48 (9)	51 (8)	52 (12)
Chippewa	2 (1)	2 (1)	0	2 (1)	0	0	0	0	0	0	0	0
Clay	186 (17) ^a	196 (16) ^a	216 (12) ^a	161 (15)	110 (7)	127 (7)	86 (9) ^a	87 (9)	0	83 (8)	307 (18)	411 (28)
Hubbard	0	4 (1)	3 (1)	3 (1)	5 (1)	16 (6) ^a	16 (4)	22 (5)	24 (4)	19 (5)	29 (5)	24 (5)
Mahnomen	203 (21)	223 (20)	294 (22)	316 (22)	149 (19)	134 (15)	102 (17)	63 (9)	29 (5)	0	46 (6)	21 (3)
Marshall	0	3 (1)	7 (2)	3 (1)	2 (2)	0	0	0	0	0	1 (1)	0
Norman	230 (9)	210 (9)	273 (15)	194 (11) ^a	119 (8)	86 (7)	128 (10)	87 (9)	111 (9)	73 (7)	145 (11)	215 (12)
Ottertail	13 (2)	9 (2)	12 (1)	10 (3)	7 (1)	5 (1)	0 ^a	0	21 (3)	0	0	1 (1)
Pennington	0	2 (1)	6 (1)	5 (1)	4 (1)	3 (1)	0	0	0	0	9 (1)	0
Polk	269 (27)	254 (26)	283 (29)	232 (26)	146 (22) ^a	162 (18)	96 (17) ^a	72 (8)	72 (10)	150 (17)	204 (23)	267 (25)
Red Lake	8 (1)	19 (2)	19 (2)	14 (2)	12 (2)	2 (1)	0	0	0	5 (1)	34 (6)	38 (6)
Wadena	10 (3)	60 (12) ^a	64 (11)	18 (6)	19 (2)	34 (9) ^a	17 (7) ^a	105 (20)	99 (16)	59 (13)	134 (17)	145 (21)
Wilkin	164 (14)	206 (23) ^a	269 (20)	223 (18)	60 (6)	149 (15) ^a	81 (9) ^a	99 (8)	58 (3)	100 (6)	199 (15)	228 (13)
Total males/ground	1,258(117)	1,410(144)	1,648(146)	1,420(139)	783 (95)	817 (97)	677 (98)	648 (90)	492 (66)	555 (69)	1,228(118)	1,432(129)
	10.8	9.8	11.2	10.2	8.2	8.4	6.9	7.2	7.4	8.0	10.4	11.1

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

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

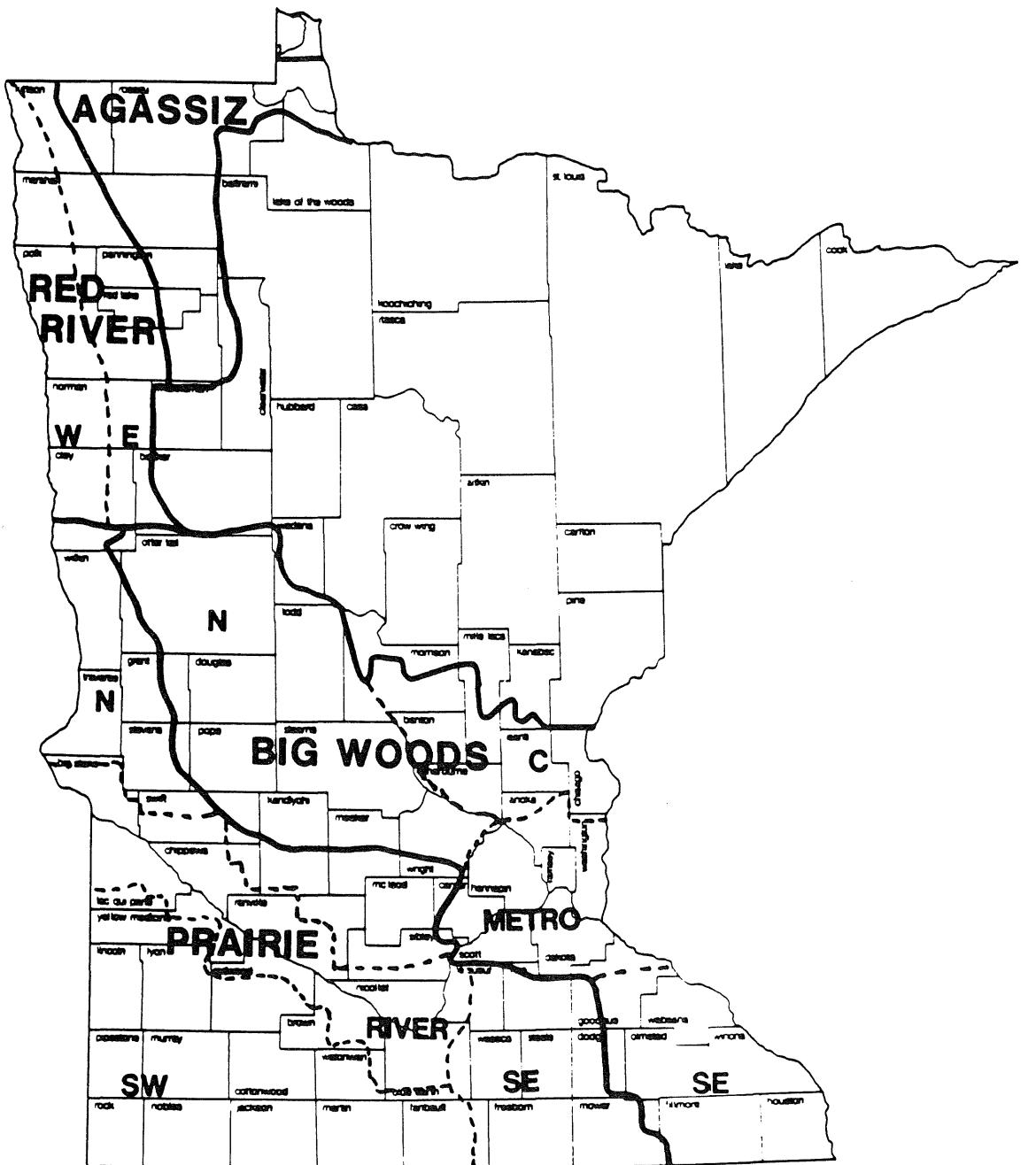


Figure 6. Deer Management Units (DMU) and sub-DMU's in the Farmland zone.

Table 14. Northwest^a Deer Management Unit (DMU) deer productivity results, 1978-1991.

	Fawns				Adults			
	N	n	Preg. rate (%)	Fetuses/ doe	n	Preg. rate (%)	Fetuses/ doe	
NW 1991	26	11	9	0.09	15	87	1.60	
NW 1990	47	18	22	0.22	29	93	1.66	
NW 1989	41	14	21	0.29	27	93	1.70	
NW 1988	-----insufficient sample size-----							
BASELINE MEAN (1978-87)			31	0.36		90	1.65	

^a RED RIVER (West, East) and AGASSIZ DMU's are combined into the Northwest DMU due to small sample size.

Table 15. BIG WOODS Deer Management Unit (DMU) deer productivity results, 1978-1991.

	Fawns				Adults			
	N	n	Preg. rate	Fetuses/ doe	n	Preg. rate	Fetuses/ doe	
			(%)			(%)		
BW North	33	6	33	0.33	27	96	1.78	
BW Central	35	15	33	0.40	20	90	1.60	
BW Metro	37	21	10	0.10	16	100	2.00	
BW SE	16	8	13	0.13	8	100	1.63	
BW 1991	121	50	20	0.22	71	96	1.76	
BW 1990	221	96	32	0.33	125	95	1.82	
BW 1989	136	51	31	0.31	85	96	1.85	
BW 1988	-----insufficient sample size-----							
BASELINE MEAN (1978-87)			44	0.51		94	1.74	

Table 16. PRAIRIE Deer Management Unit (DMU) deer productivity results, 1978-1991.

	Fawns				Adults		
	N	n	Preg. rate (%)	Fetuses/ doe	n	Preg. rate (%)	Fetuses/ doe
PR North	19	8	25	0.25	11	100	1.91
PR River	31	8	25	0.25	23	100	2.00
PR SW	44	14	14	0.14	30	87	1.67
PR SE	3	0	0	0.00	3	100	1.67
PR 1991	97	30	20	0.20	67	94	1.82
PR 1990	105	43	42	0.45	62	97	1.84
PR 1989	91	37	38	0.38	54	89	1.65
PR 1988	-----insufficient sample size-----						
BASELINE MEAN (1978-87)			46	0.54		93	1.78

Table 17. Estimated pre-fawning deer population and density (deer/mi²)^a, and antlerless permit and harvest summary by deer management unit (DMU), sub-unit (DMSU) and permit area (PA) of Minnesota's farmland zone, 1990-91.

DMU DMSU PA	1990				1991		Change in pre-fawning pop. (percent)	
	Pre-fawning population	Density	Permits issued	Total harvest	Pre-fawning population	Density		
RED RIVER								
West								
401	2292	2.24	499	609	2285	2.23	-0.31	
402	1878	1.84	615	696	1841	1.80	-1.97	
Total	4170	2.04	1114	1305	4126	2.02	-1.06	
East								
403	1495	3.99	712	657	1220	3.25	-18.39	
404	3156	5.10	1100	1173	2816	4.55	-10.77	
405	2812	4.41	1182	1115	2469	3.87	-12.20	
406	2365	5.74	1002	940	2106	5.11	-10.95	
407	2613	4.38	1220	1221	2369	3.97	-9.34	
408	2405	4.82	750	851	2249	4.51	-6.49	
Total	14846	4.73	5966	5957	13229	4.21	-10.89	
RED RIVER TOTAL	19016	3.67	7080	7262	17355	3.35	-8.73	
AGASSIZ								
201	2504	14.90	737	682	2388	14.21	-4.63	
202	2133	12.85	550	597	2184	13.16	2.39	
203	1917	17.75	300	436	2090	19.35	9.02	
204	6144	8.22	1500	1695	6221	8.33	1.25	
205	4358	7.36	650	1220	4254	7.19	-2.39	
206	2898	6.33	750	912	2806	6.13	-3.17	
207	2798	9.14	1000	924	2637	8.62	-5.75	
208	1578	3.39	300	393	1685	3.62	6.78	
209	2182	3.80	700	757	2039	3.55	-6.55	
210	3098	6.22	1000	1053	2857	5.74	-7.78	
AGASSIZ TOTAL	29610	7.25	7487	8669	29161	7.14	-1.52	
BIG WOODS								
North								
409	5891	14.20	2524	2514	5286	12.74	-10.27	
410	7921	7.40	3500	3338	6981	6.52	-11.87	
411	7654	11.29	3622	3600	6387	9.42	-16.55	
412	6207	5.36	2600	2872	5710	4.93	-8.01	
413	4186	6.49	1400	1784	4019	6.23	-3.99	
414	4730	8.36	1000	1585	5025	8.88	6.24	

Table 17. Continued.

DMU DMSU PA	1990			1991			Change in pre-fawning pop. (percent)
	Pre-fawning population	Density	Permits issued	Total harvest	Pre-fawning population	Density	
North cont...							
415	3127	4.18	700	1087	3030	4.05	-3.10
416	3284	5.55	1500	1591	2581	4.35	-21.41
417	5212	5.33	2200	2586	4084	4.18	-21.64
418	3474	4.45	1500	1818	3029	3.88	-12.81
419	3765	4.89	1500	1550	3348	4.35	-11.08
Total	55451	6.60	22046	24325	49480	5.89	-10.77
Central							
221	5495	8.47	400	1019	5528	8.52	0.60
222	6842	15.95	1000	1513	6338	14.77	-7.37
223	4336	11.75	700	994	3763	10.20	-13.21
224	865	19.22	150	169	920	20.44	6.36
225	9502	14.27	1700	2573	7536	11.32	-20.69
226	5452	10.88	900	1425	4435	8.85	-18.65
Total	32492	12.22	4850	7693	28520	10.73	-12.22
Metro							
227	5113	13.04	1500	1385	4032	10.29	-21.14
235	1040	17.05	150	258	1036	16.98	-0.38
236	4841	8.23	1132	1363	4026	6.85	-16.84
338	2937	4.94	500	985	2844	4.78	-3.17
339	2471	3.40	903	983	2398	3.21	-2.95
Total	16402	6.94	4185	4974	14336	6.07	-12.60
Southeast							
341	4119	6.32	2000	1684	4169	6.39	0.12
342	3512	8.87	1500	1478	3969	10.02	13.01
343	3927	5.99	1879	1815	4056	6.18	3.28
344	4064	22.09	1400	1631	4613	25.07	13.51
345	3280	9.88	1504	1543	3373	10.16	2.84
346	5767	15.42	2598	2837	5778	15.45	0.19
347	3473	8.00	1314	1612	3113	7.17	-10.37
348	4138	12.65	1727	2031	4154	12.70	0.39
349	5550	10.88	2699	2679	5623	11.03	1.32
Total	37830	9.79	16621	17310	38848	10.05	2.69
BIG WOODS TOTAL	142175	8.22	47702	54302	131184	7.59	-7.73

Table 17. Continued.

DMU DMSU PA	1990			1991			Change in pre-fawning pop. (percent)	
	Pre-fawning population	Density	Permits issued	Total harvest	Pre-fawning population	Density		
PRAIRIE								
North								
420	3072	4.81	808	1049	3213	5.03	4.59	
421	1959	2.73	681	753	1658	2.31	-15.36	
422	2039	3.29	414	625	2099	3.39	2.94	
423	1842	3.40	680	779	1478	2.73	19.76	
424	1921	3.83	600	775	1475	2.94	-23.22	
425	1184	2.75	200	295	1329	3.08	12.25	
426	2450	4.51	800	869	2183	4.02	-10.90	
427	2086	2.83	400	683	1798	2.44	-13.81	
428	2163	3.67	900	894	1730	2.93	-20.02	
Total	18716	3.52	5483	6722	16963	3.19	-9.37	
River								
431	1829	4.03	676	860	1280	2.82	-30.02	
433	5768	5.09	800	1895	5650	4.99	-2.05	
435	3143	3.96	400	958	3243	4.08	3.18	
440	2454	3.14	100	619	2734	3.50	11.41	
442	3842	4.69	1000	1498	3215	3.92	-16.32	
443	2410	4.80	1000	1234	1991	3.97	-17.39	
Total	19446	4.34	3976	7064	18113	4.04	-6.85	
Southwest								
446	2775	3.69	1144	1315	2599	3.46	-6.34	
448	4381	4.82	1993	2454	3621	3.98	-17.35	
450	1448	1.66	500	585	1486	1.70	2.62	
451	2250	3.27	1102	1229	1897	2.75	-15.69	
452	1427	2.31	655	737	1249	2.02	-12.47	
453	1599	2.15	550	727	1536	2.07	-3.94	
454	3112	3.77	700	1271	3176	3.85	2.06	
455	441	5.80	254	263	344	4.53	-22.00	
456	2145	2.84	700	853	2217	2.94	3.36	
457	1670	2.64	600	729	1645	2.60	-1.50	
458	1680	2.27	300	577	1853	2.51	10.30	
459	2625	2.69	1000	1211	2502	2.56	-4.69	
Total	25553	2.98	9498	11951	24125	2.81	-5.59	

Table 17. Continued.

DMU DMSU PA	1990			1991			Change in pre-fawning pop. (percent)	
	Pre-fawning population	Density	Permits issued	Total harvest	Pre-fawning population	Density		
PRAIRIE								
Southeast								
461	1993	3.92	700	929	1716	3.37	-13.90	
462	2227	4.20	1000	1122	2182	4.12	-2.02	
463	1266	2.79	906	841	1008	2.22	-20.38	
464	1129	3.09	600	579	936	2.56	-17.09	
465	910	2.39	300	446	795	2.09	-12.64	
466	2163	2.30	900	1059	2154	2.29	-0.42	
467	1369	1.80	650	754	1262	1.66	-7.82	
Total	11057	2.80	5056	5730	10053	2.55	-8.18	
PRAIRIE TOTAL	74772	3.35	24013	31467	69254	3.10	-7.38	
FARMLAND								
TOTAL	265573	5.43	86282	101700	246954	5.05	-7.01	

* Pre-fawning deer population and density determined from population modeling.

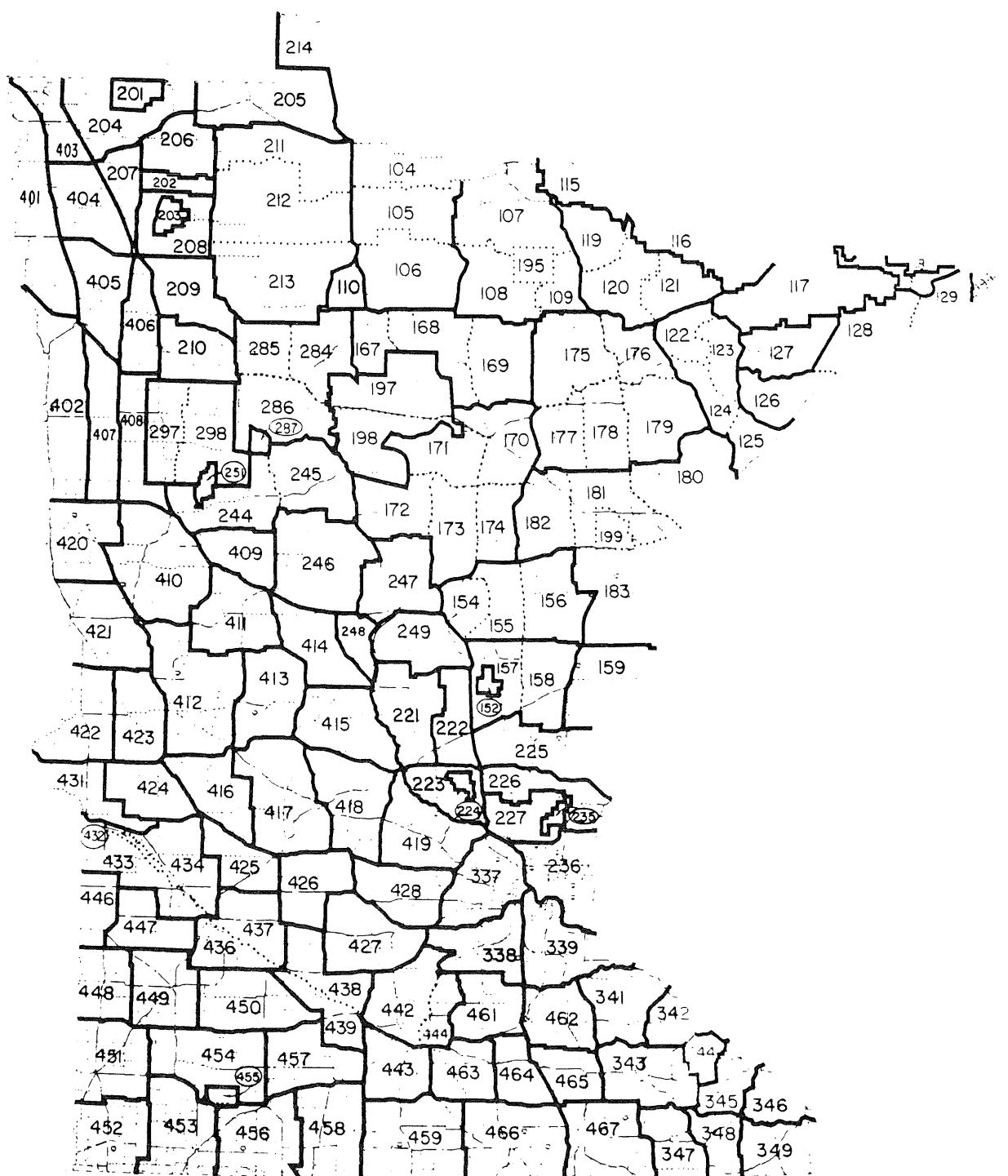


Figure 7. Minnesota antlerless deer permit area boundaries, 1990.

Table 18. Survey of wild turkey sightings by Minnesota antlerless-deer hunters. Comparison of mean number of turkeys seen per hunter per day (TPD) by year, Minnesota, 1986-90.

Antlerless deer permit area	TPD			
	1986	1987	1988	1990
221				0.06
222				0.05
223				0.02
225			0.10	0.03
226	0.05	0.15** ^a	0.12	0.04
227			0.02	0.05
235	0.07	0.18**	0.05**	0.20
236	0.01		0.19	0.05
337	0.13	0.35**	0.32	0.07
338	0.28	0.73**	0.64	0.59
339	0.92	0.95	1.46	0.96
341	0.74	0.97*	1.15	1.14
342	0.27	1.44	1.49***	1.62
343	0.27	1.25***	1.94*	1.54
344	0.79	1.25***	2.50*	2.53
345	0.94	2.96***	2.81	3.07
346	2.04	3.87***	4.24	3.40
347	1.68	2.56	3.23*	4.12
348	2.81	4.17**	6.28	5.15
349	3.31	3.64	5.66**	6.47*
415				0.11
418	0.09	0.16	0.07	0.03
419	0.23	0.24	0.10*	0.33
426				0.07
427			0.08	0.00
428			0.13	0.06
431	0.28	0.31	0.18	0.02
432 ^b	0.13	0.10	0.06	0.09
436 ^c			0.12	0.57
438 ^d			0.60	0.70
442 ^e	0.68	0.67	1.06**	1.05
443				1.87
446				0.49
447				0.03
449				0.00
450				0.03
				0.01

continued

Table 18. Continued.

Antlerless deer permit area	TPD				
	1986	1987	1988	1989	1990
456			0.05	0.00**	0.11
459		0.33	0.08	0.15	0.14
461		0.24	0.06	0.15	0.07
462		0.25	0.14	0.88**	0.74
463		0.03	0.02	0.03	0.07
464		0.03	0.00*	0.02	0.06
465		0.14	0.08	0.13	0.08
466		0.10	0.31	0.22	0.26
467		0.06	0.06	0.10	0.31

^a Significant change from previous year, *P≤0.10; **P≤0.05; ***P≤0.01.^b Permit areas 432, 433, and 434 combined (see figure 8).^c Permit areas 436 and 437 combined (see figure 8).^d Permit areas 438 and 439 combined (see figure 8).^e Permit areas 442, 443, and 444 combined (see figure 8).

PREDATOR SCENT POST SURVEY

NOTE: This survey is organized and coordinated by the Forest Wildlife Populations and Research Group, 1201 E. Hwy 2, Grand Rapids, MN 55744. Results are presented at this location in the book because of the statewide nature of the data.

SCENT POST ROUTE SPECIFICS - 1990

Zone	Rts. Done	No. Segments	Segment Density	Station Nights
Forest	36	163	1/199 mi ²	1502
Transition	25	100	1/254 mi ²	932
Farmland	23	88	1/299 mi ²	910
	84	351 -		3344

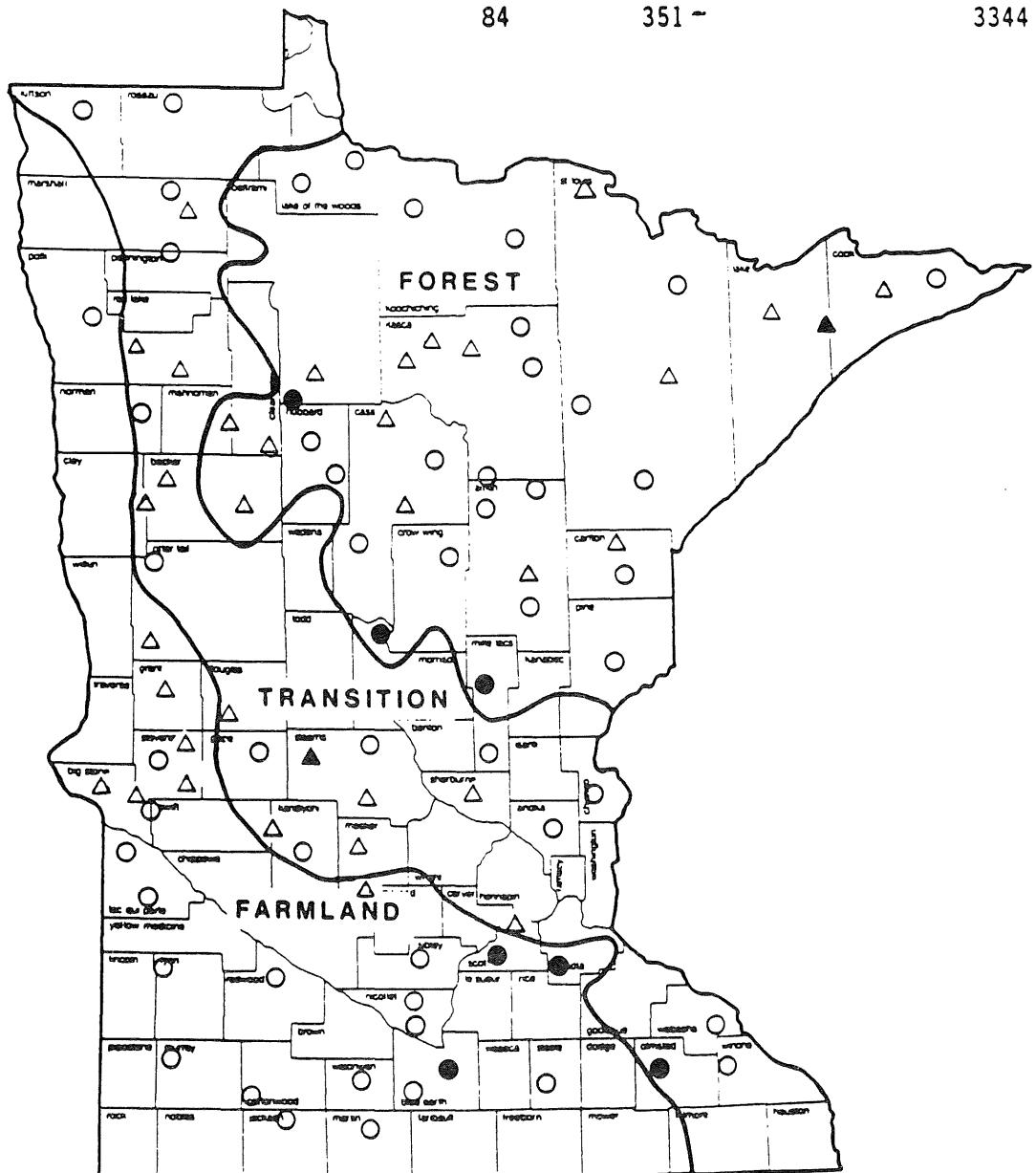


Figure 8. Approximate locations of scent post routes conducted by DNR (O) and non-DNR (Δ) in the Forest, Transition, and Farmland Survey Zones, 1990. Shaded symbols indicate routes that were not done in 1990.

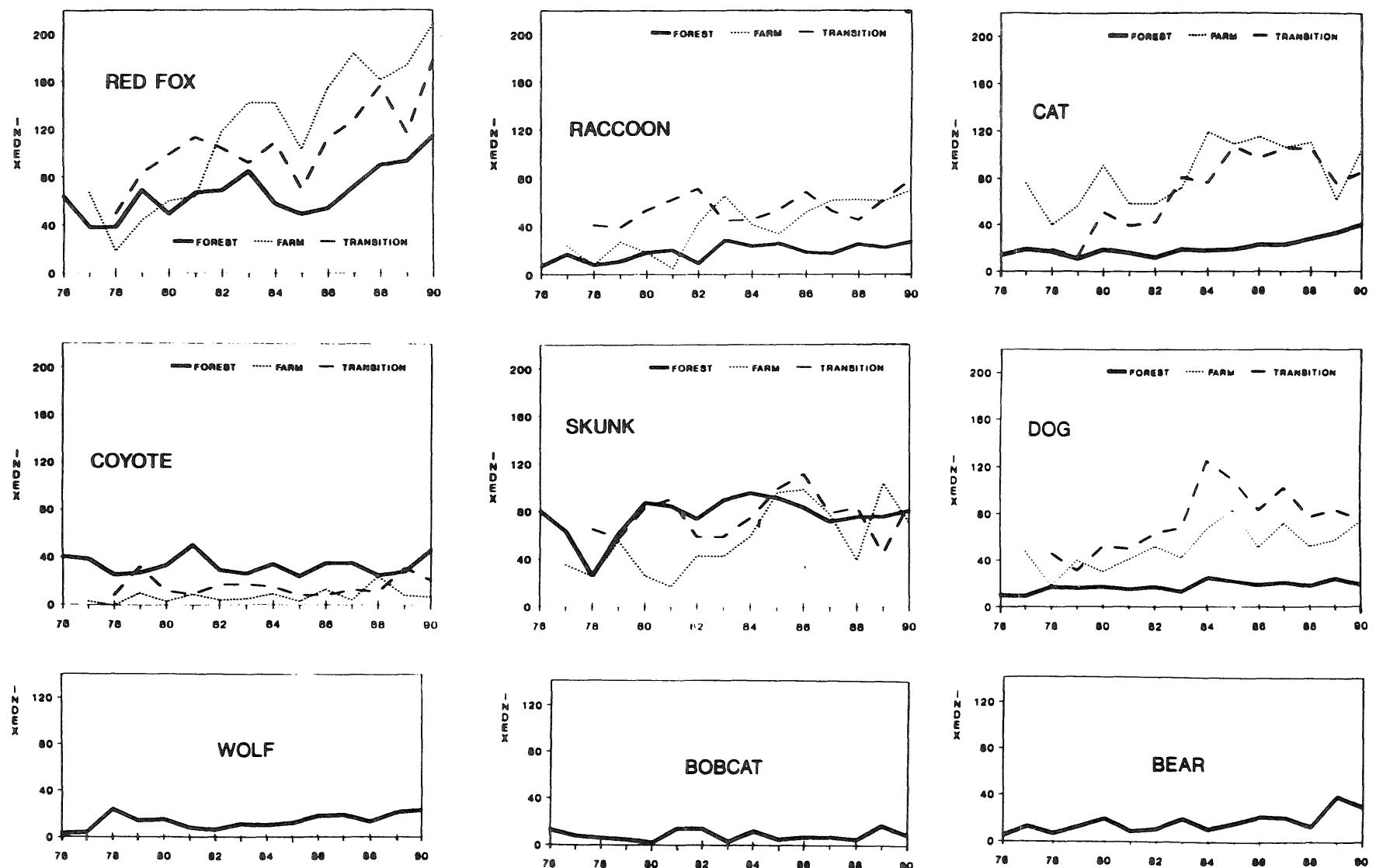


Figure 9. Scent post visitation indices for nine species in the Forest, Transition, and Farmland survey zones, 1976-90.

FOREST WILDLIFE POPULATIONS
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Grand Rapids, MN 55744
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Table 19. Mean number of ruffed grouse drums per stop by census zone, 1961-91.

Year	Census Zone					Range-wide mean
	Northwest	North	Northeast	Central hardwoods	Southeast	
1961	1.4	2.2	0.9	1.0	1.0	1.4
1962	3.0	2.1	0.5	1.2	1.6	1.6
1963	0.4	0.6	0.5	0.4	1.1	0.6
1964	0.4	0.7	0.9	0.3	0.6	0.6
1965	1.5	1.3	0.7	0.6	1.4	1.0
1966	1.6	1.2	0.6	0.7	1.9	1.0
1967	2.8	1.9	1.3	1.0	2.2	1.6
1968	3.8	2.3	1.6	1.0	2.4	2.0
1969	3.3	2.7	1.4	1.4	2.3	2.2
1970	2.1	3.2	0.9	1.6	2.1	2.2
1971	1.4	3.6	1.0	1.7	3.7	2.4
1972	2.1	3.7	1.0	2.1	3.1	2.7
1973	0.5	1.5	0.6	0.9	3.7	1.1
1974	0.7	1.1	0.8	0.7	3.0	1.0
1975	1.2	1.4	0.8	0.8	2.6	1.3
1976	0.8	1.5	0.4	0.9	1.8	1.1
1977	0.9	1.6	0.7	0.9	2.5	1.2
1978	2.1	2.4	0.8	1.4	2.3	1.7
1979	1.7	2.2	0.7	1.3	2.2	1.6
1980	1.9	2.1	0.7	1.9	2.7	1.7
1981	1.2	1.7	0.8	1.8	2.4	1.4
1982	0.9	1.1	0.3	0.9	1.1	0.8
1983	0.6	1.1	0.6	0.8	1.5	0.9
1984	1.0	1.1	0.6	0.5	1.4	0.8
1985	0.7	1.2	0.6	0.6	1.5	0.9
1986	1.7	1.1	0.4	0.6	2.5	1.0
1987	1.6	1.6	0.7	0.8	1.2	1.2
1988	1.3	2.0	1.0	1.0	1.1	1.4
1989	2.2	2.6	1.5	1.2	1.2	1.9
1990	0.8	2.5	0.9	1.1	1.2	1.6
1991	1.0	1.7	0.8	0.7	0.7	1.2

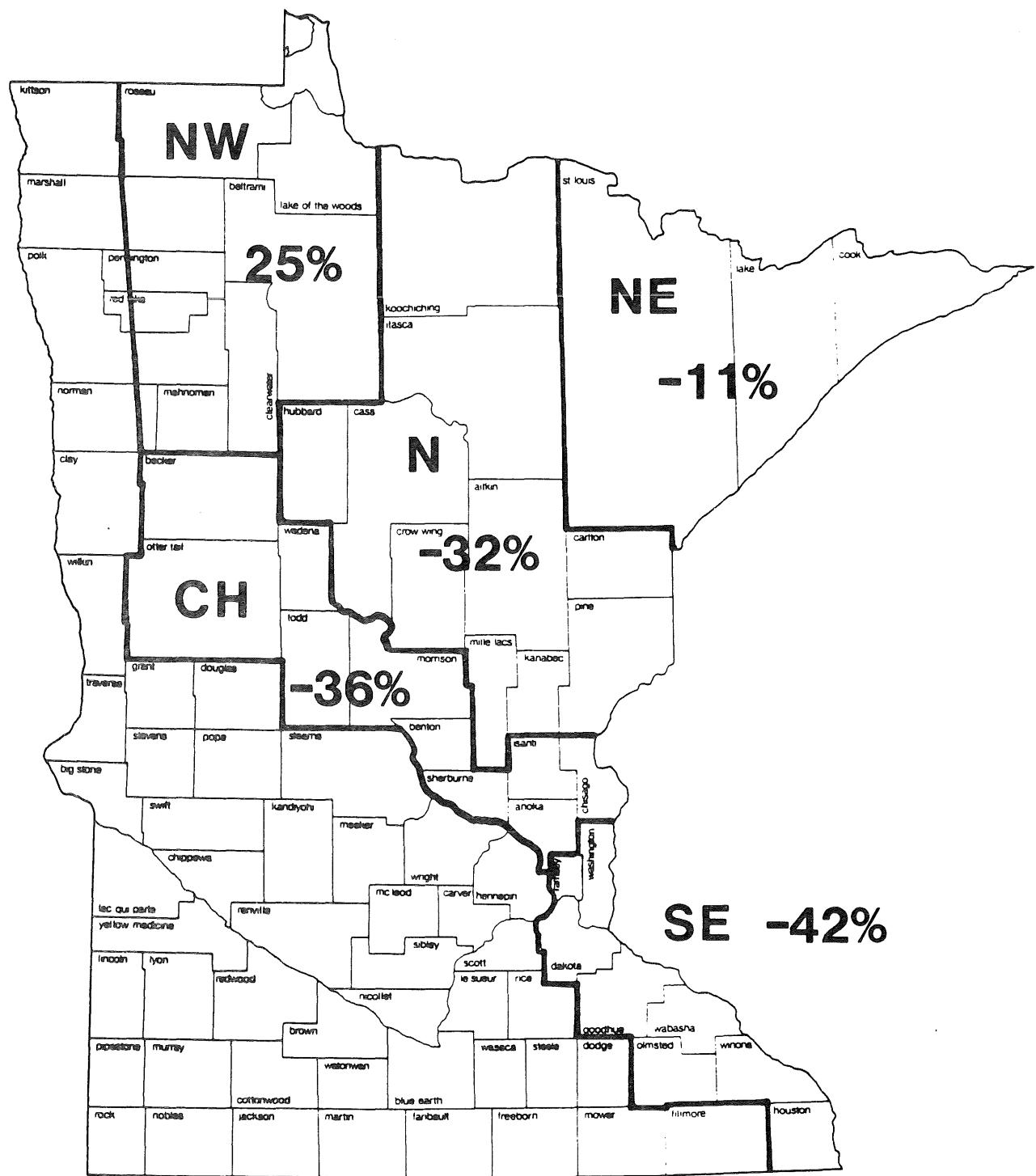


Figure 10. Changes in average numbers of ruffed grouse drums per stop on roadside counts, 1990-91.

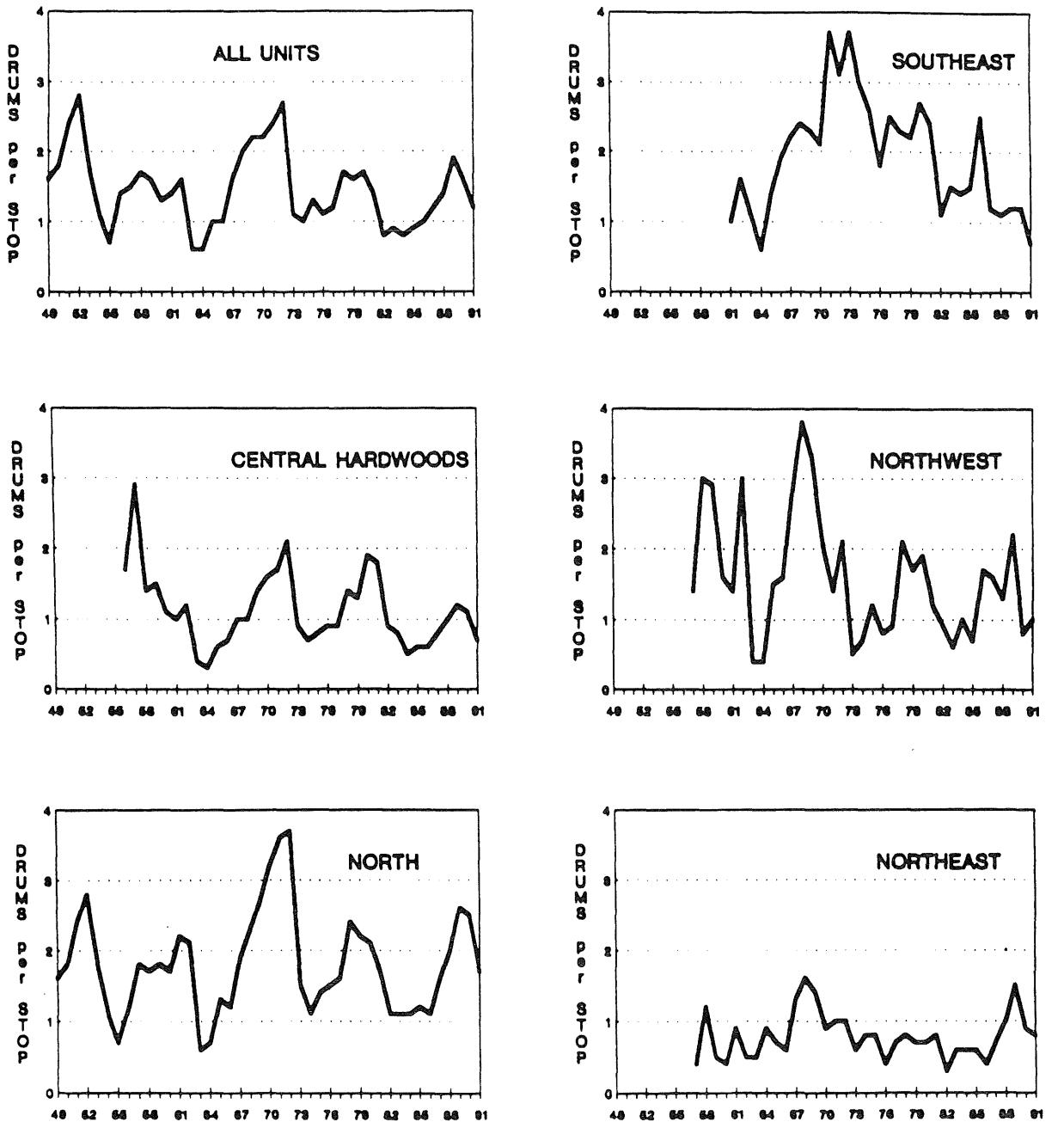


Figure 11. Summary of ruffed grouse drumming trends range-wide and in each of five survey zones, 1949-91.

NW - 8%

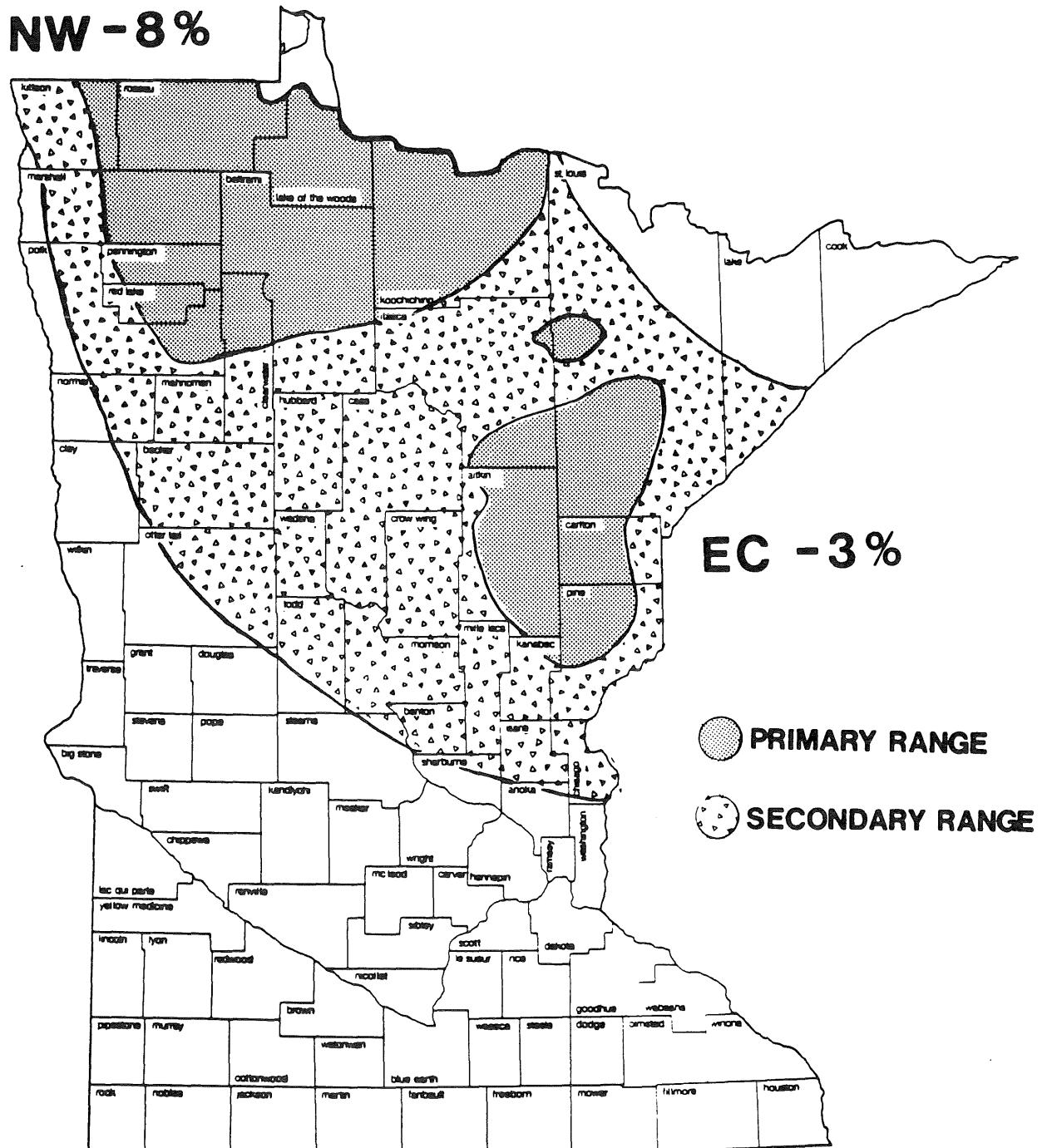


Figure 13. Changes in numbers of dancing male sharp-tailed grouse on Northwest and East-central survey areas, 1990-91.

Table 20. Number of snowshoe hares seen per 100 km of ruffed grouse drumming routes in the North, Northwest, and Northeast survey zones, 1974-91.

Year	Hares seen per 100 km
1974	0.4
1975	0.0
1976	2.0
1977	2.8
1978	9.0
1979	8.8
1980	14.1
1981	9.8
1982	1.8
1983	0.7
1984	0.2
1985	0.3
1986	0.2
1987	0.5
1988	0.9
1989	2.7
1990	2.3
1991	1.2

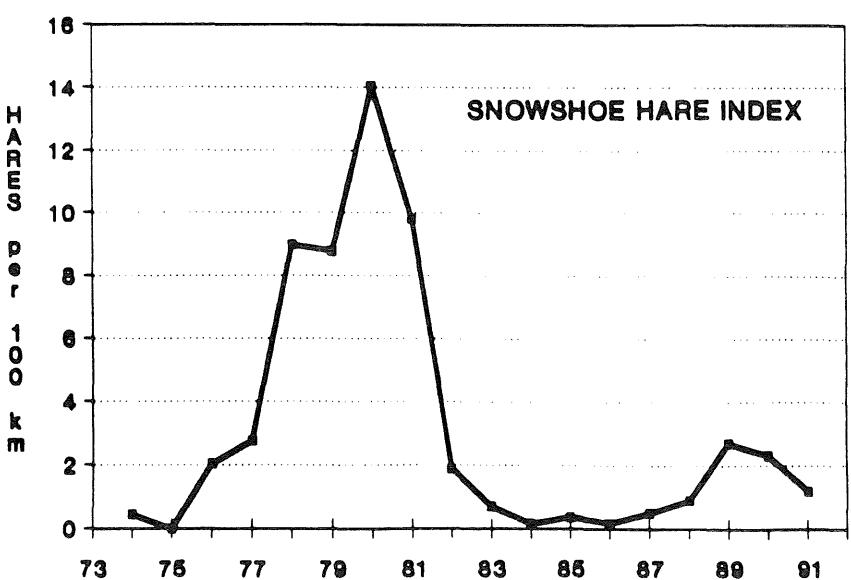


Figure 12. Snowshoe hare index (hares/100 km) based on hares seen on northern ruffed grouse drumming routes, 1976-1991.

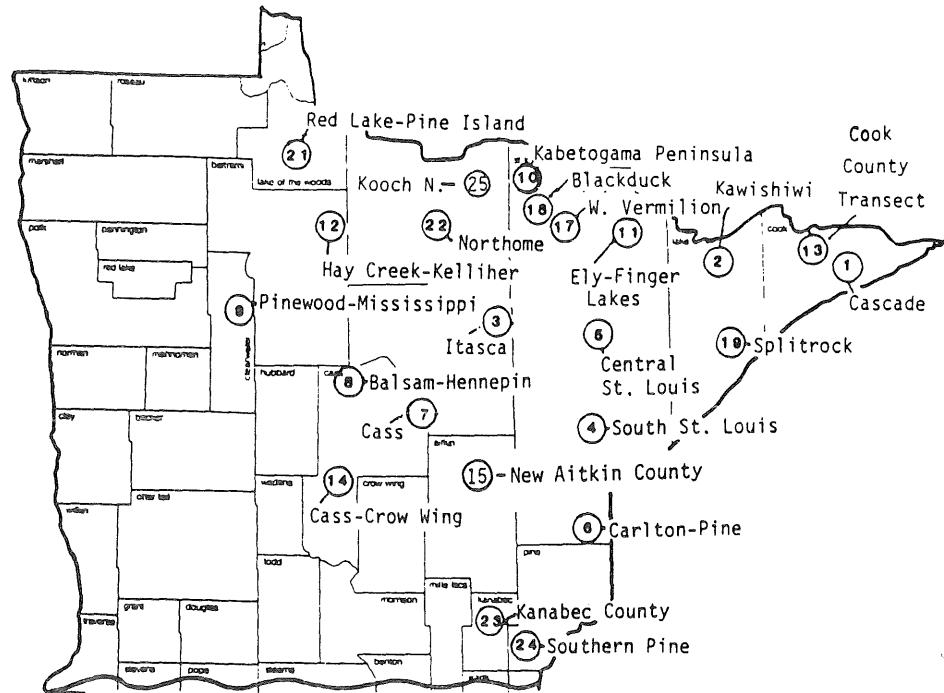


Figure 14. Approximate locations of 23 aerial beaver survey routes flown in 1990.

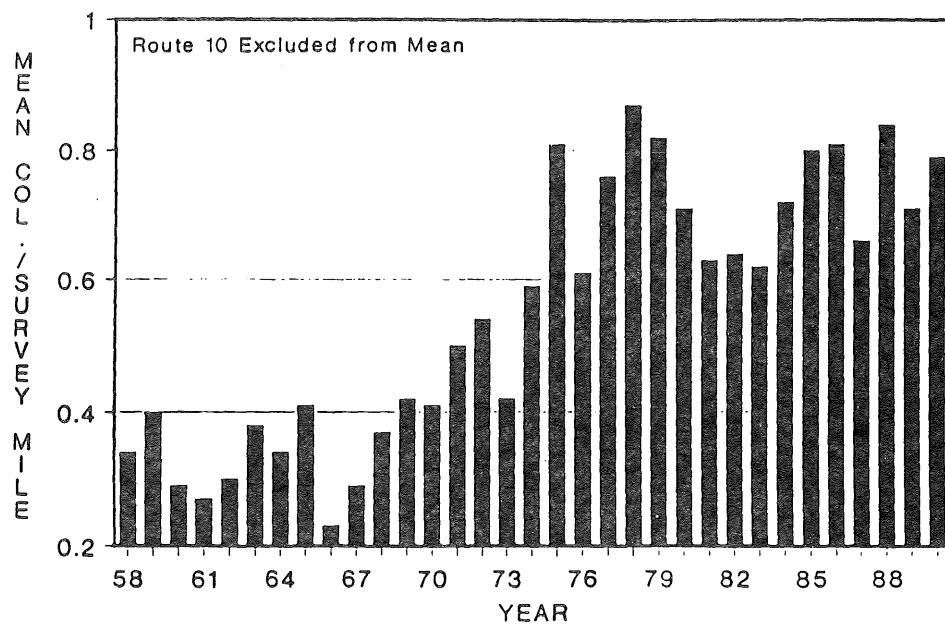


Figure 15. Range-wide mean number of live beaver colonies per mile of survey route, 1958-90.

Table 21. Live beaver colonies per mile of census route in northern Minnesota, 1980-90.

Number	Route name	Year										1984-89 Mean	% Change 1990-mean	
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990		
1	Cascade	0.42	0.43	0.40	0.35	0.44	0.46	-	0.37	0.40	0.43	0.44	0.42	4.8
2	Kawishiwi	0.75	0.50	0.72	0.65	0.70	0.78	-	1.03	0.72	0.47	0.80	0.74	8.1
3	Itasca	0.63	0.48	0.43	0.57	0.51	0.67	-	0.22	0.48	0.56	0.45	0.49	-8.2
4	South St. Louis	0.64	0.74	-	0.58	0.57	0.33	-	0.54	0.64	-	0.92	0.52	76.9
5	Central St. Louis	0.90	0.95	0.65	0.79	0.57	1.05	-	1.02	-	0.83	0.81	0.87	-6.9
6	Carlton & Pine	0.83	0.67	0.22	0.56	0.65	0.45	-	0.49	1.04	-	1.06	0.66	60.6
7	Cass	0.95	0.53	0.63	0.89	0.99	1.23	-	0.59	0.77	0.84	0.98	0.88	11.4
8	Balsam-Hennepin	0.44	0.43	0.60	0.58	0.54	-	-	0.74	0.57	0.59	0.46	0.61	-24.6
9	Pinewood-Mississippi	0.38	0.39	0.49	0.48	-	-	-	0.38	0.36	0.49	0.41	0.41	0.0
10	Kabetogama Peninsula	2.52	3.55	2.66	2.89	3.30	2.93	2.92	2.98	2.93	2.92	3.03	3.00	1.0
11	Ely-Finger Lakes	1.06	0.98	1.17	1.32	1.02	1.28	-	1.00	1.23	1.09	1.20	1.12	7.1
12	Hay Creek-Kelliher	0.43	0.48	0.70	0.55	-	-	-	0.49	0.49	0.56	0.46	0.51	-9.8
13	Cook County Transect	0.23	0.40	0.33	0.48	0.35	0.31	-	0.31	0.31	0.68	0.38	0.39	-2.6
14	Cass-Crow Wing	0.78	0.61	0.74	0.68	0.76	0.87	0.69	0.64	0.77	0.89	0.87	0.77	13.0
15	Little Willow-Aitkin	0.44	0.38	0.40	0.40	0.31	0.59	-	0.23	0.66	0.59	0.63	0.48	31.3
16	East Aitkin County	0.72	0.52	0.86	0.82	0.81	0.90	-	-	1.03	0.80	-	0.89	-
17	West Vermilion	0.96	1.05	0.86	0.34	1.07	0.73	0.95	0.80	0.87	-	1.29	0.88	46.6
18	Blackduck	1.09	1.22	0.91	0.71	1.21	1.53	-	0.84	1.20	-	1.24	1.20	3.3
19	Splitrock	1.07	-	-	0.55	0.65	0.56	-	1.15	1.18	0.53	0.73	0.81	-9.9
20	Isabella	0.60	0.65	-	0.15	-	-	-	-	-	-	-	-	-
21	Red Lake-Pine Island	0.40	0.41	0.50	0.39	-	-	-	0.37	0.30	0.36	0.33	0.34	-2.9
22	Northome	0.86	0.91	0.97	1.06	1.37	0.95	0.80	0.75	0.77	-	1.14	0.93	22.6
23	Kanabec County	0.70	0.48	0.55	0.65	0.53	0.76	-	0.52	1.29	0.94	0.81	0.81	0.0
24	Southern Pine	0.93	0.58	0.76	0.69	0.72	0.86	-	-	1.95	1.03	0.93	1.14	-18.4
25	Koochiching North								1.29	1.39	1.15	1.05	1.28	-18.0

BOBCAT

96

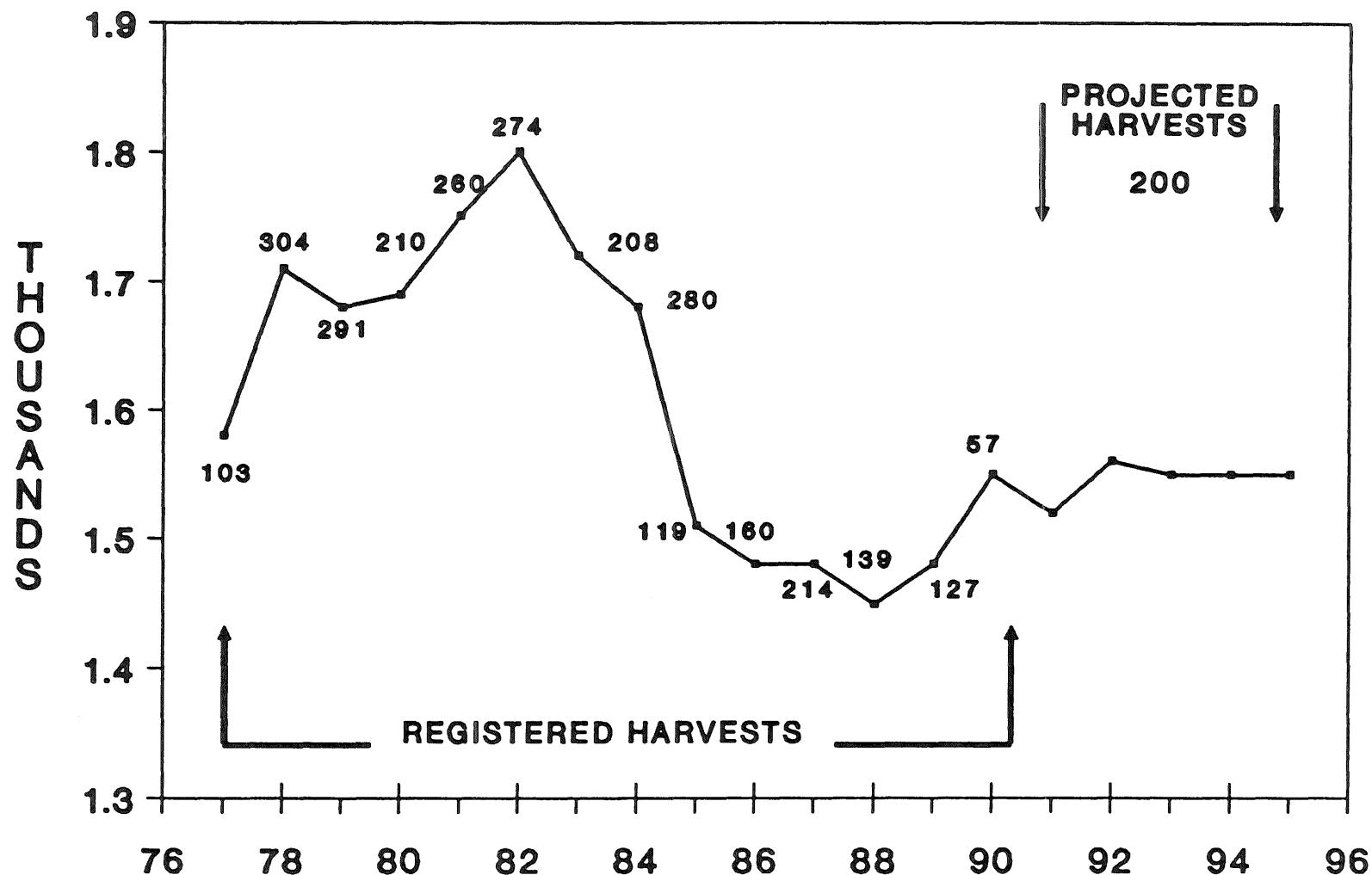


Figure 16. Population modeling summaries for bobcat, 1976-96.

Table 22. Bobcat harvest, age structure, and population index data, 1980-90.

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Registered take	304	291	274	208	280	119	160	214	139	127	87
% of autumn population harvested ^a	10%	12%	14%	10%	13%	6%	8%	11%	8%	6%	5%
No. of Carcasses examined	48	230	261	205	288	99	132	163	114	119	62
% juveniles	31%	37%	35%	37%	37%	33%	26%	33%	39%	39%	20%
% male juveniles	80%	59%	47%	56%	52%	41%	53%	44%	58%	49%	58%
% 1.7 yrs. old	33%	23%	15%	18%	13%	19%	17%	16%	18%	17%	34%
% males 1.7 yrs.	69%	63%	49%	56%	66%	41%	32%	52%	62%	53%	80%
% > 2.7 yrs. old	35%	40%	50%	37%	50%	48%	58%	51%	46%	44%	46%
% male > 2.7 yrs.	56%	55%	47%	51%	44%	43%	51%	48%	42%	56%	44%
% males overall	66%	58%	48%	45%	51%	42%	51%	48%	54%	53%	59%
Juv : > 2.7 yr. females	1.9	2.1	1.3	1.5	1.4	1.2	0.9	1.4	1.7	2.0	0.8
Scent post index ^b	2	14	14	3	12	5	8	7	5	17	10
Snowshoe hare index ^c	9.8	1.8	0.7	0.2	0.3	0.2	0.5	0.9	2.7	2.3	1.2
Mean pelt price	\$ 79	\$ 73	\$ 66	\$ 61	\$ 76	\$ 70	\$120	\$101	\$ 68	\$ 49	\$ 43

^a Includes registered harvests plus 10% unreported harvest.

^b Index for autumn prior to harvest season.

^c Index for spring after harvest season.

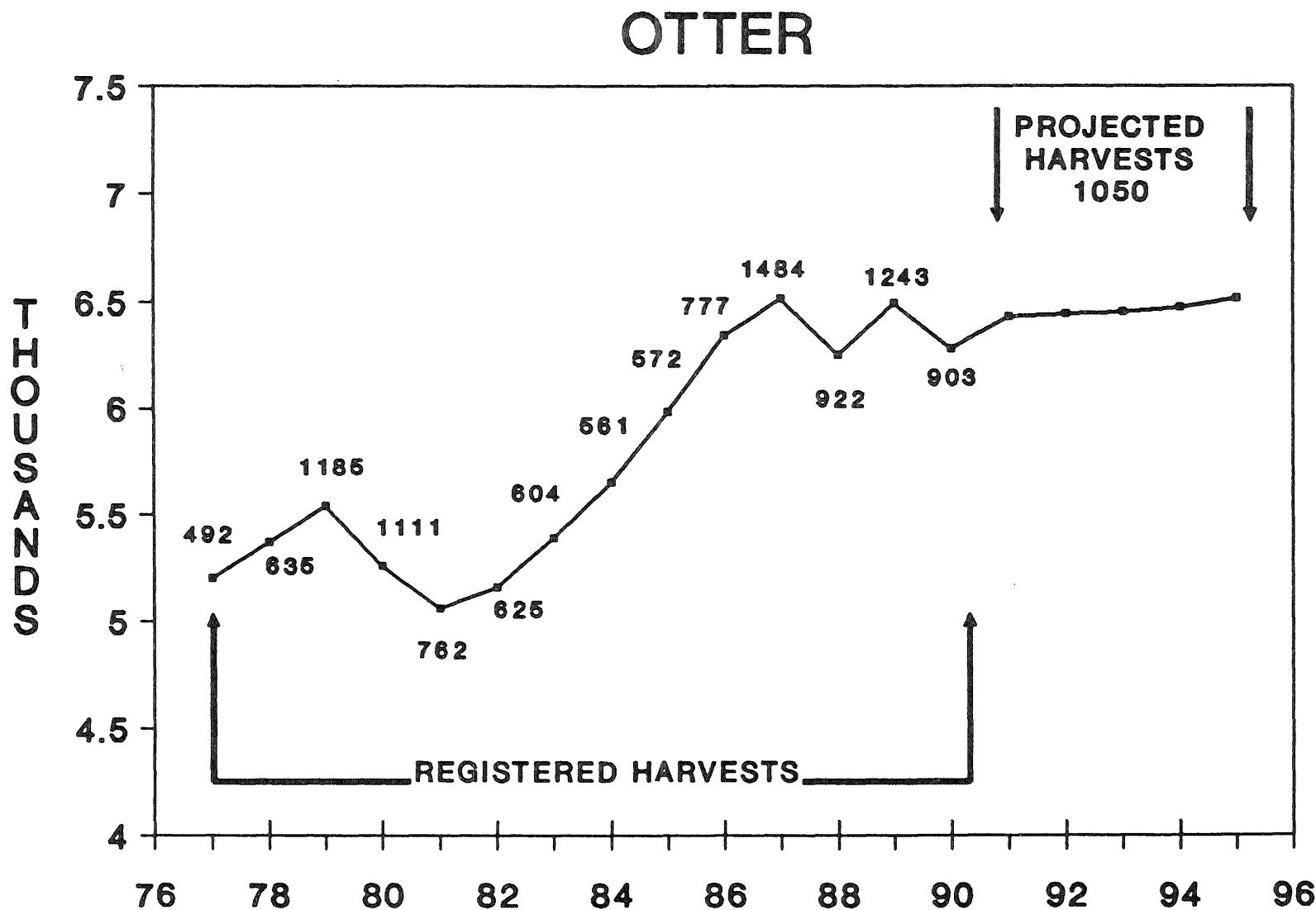


Figure 17. Population modeling summaries for otter, 1976-96.

Table 23. Otter harvest, carcass collection, and pelt price data, 1980-90. Carcasses were not collected after 1986.

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Season dates	11/15- 11/29	11/14- 11/28	11/13- 11/27	11/12- 11/26	11/17- 12/01	11/16- 12/15	10/24- 11/29	10/24- 11/29	10/29- 11/27	10/28- 12/17	10/27- 1/6
Registered harvest	1,111	485	385	408	513	559	777	1,386	922	1,294	903
% of autumn population harvested ^a	20%	9%	7%	7%	8%	8%	11%	17%	15%	18%	13%
No. carcasses examined	88	471	389	433	549	572	745	---	---	---	---
% juveniles	54.5	55.0	50.6	42.3	47.9	43.4	45.2	---	---	---	---
% yearlings	14.7	19.7	25.6	30.9	23.3	22.9	23.3	---	---	---	---
% male juveniles	39.6	55.6	56.7	55.7	47.1	53.3	45.1	---	---	---	---
% males ≥ 1.7 yrs.	57.5	53.3	65.1	56.8	50.0	50.0	48.1	---	---	---	---
Mean pelt prices:											
otter	\$33	\$30	\$26	\$25	\$22	\$21	\$24	\$23	\$22	\$22	\$24
beaver (autumn)	\$18	\$14	\$11	\$12	\$12	\$15	\$20	\$17	\$14	\$12	\$9

^a From population modeling; includes an additional 20% accidental harvest over registered total.

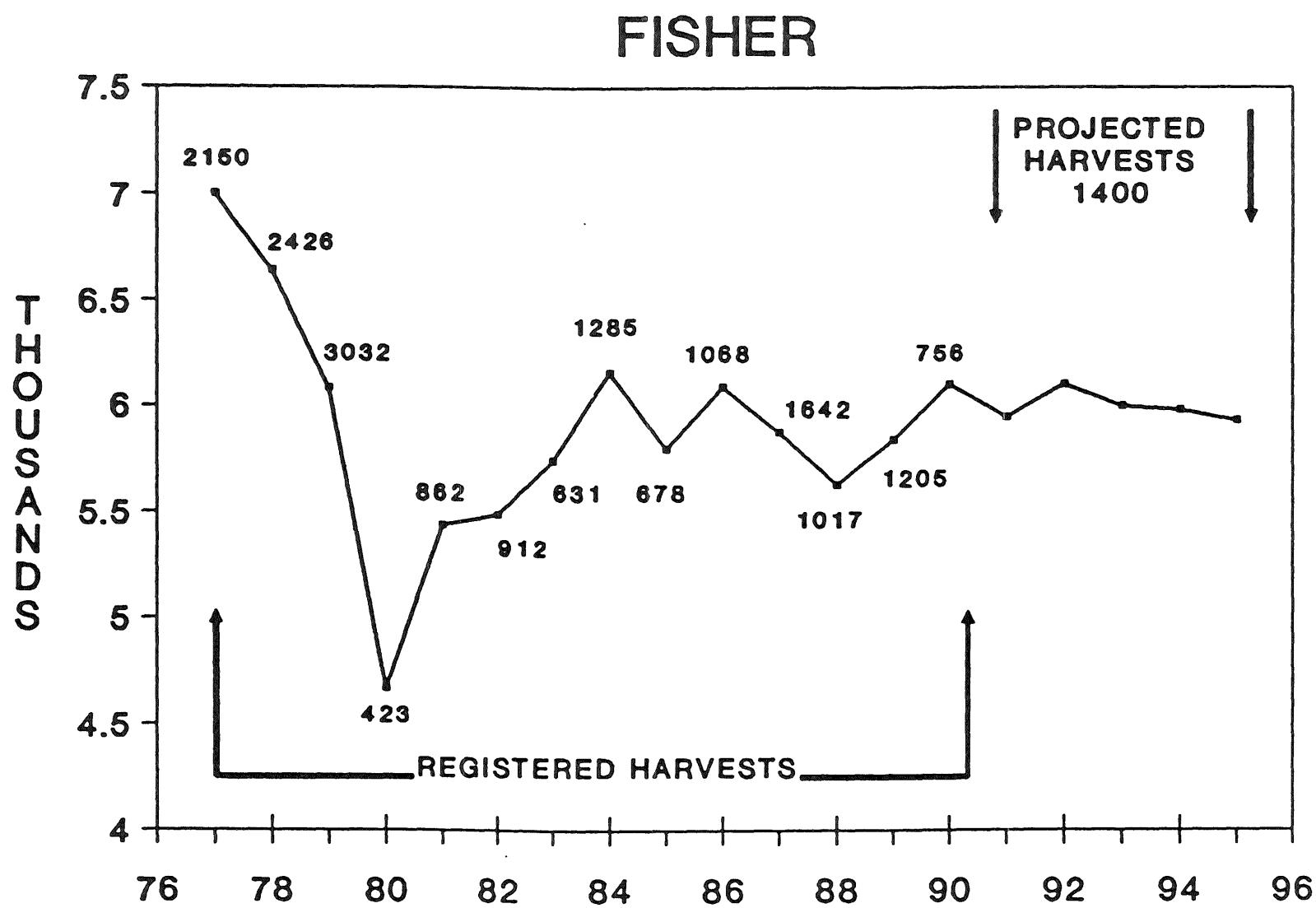


Figure 18. Population modeling summaries for fisher, 1976-96.

Table 24. Fisher harvest, carcass collection, and pelt price data, 1980-90.

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Season	Closed 12/01- 12/10	12/01- 12/11	12/01- 12/11	12/01- 12/16	11/30- 12/15	11/29- 12/14	11/28- 12/13	11/26- 12/11	12/02- 12/17	12/01- 12/16	
Limit	---	1	1	1	1	1	1	1	1	1	1
Registered take	(423)	862	912	631	1,289	678	1,068	1,642	1,025	1,243	756
% of available autumn population harvested ^a	9%	17%	17%	10%	18%	10%	14%	21%	16%	15%	12%
No. carcasses examined ^b	---	843	1,073	662	1,270	712	1,186	1,542	805	1,024	592
% juveniles	---	66%	66%	69%	63%	63%	59%	63%	70%	64%	65%
% 1.7 yr.	---	24%	19%	18%	20%	20%	24%	15%	15%	19%	14%
% ≥ 2.7 yrs.	---	10%	15%	13%	17%	18%	18%	22%	15%	17%	21%
Juv:ad. female ratio	---	10.5:1	9.4:1	8.8:1	7.2:1	5.4:1	5.3:1	4.7:1	6.8:1	5.8:1	4.5:1
% male juveniles	---	48%	46%	45%	52%	46%	48%	46%	48%	47%	44%
% male 1.7 yrs.	---	43%	41%	40%	45%	40%	50%	40%	39%	47%	55%
% male ≥ 2.7 yrs.	---	37%	52%	40%	45%	34%	37%	37%	33%	34%	30%
Pelt price: males females	\$90 \$104	\$94 \$110	\$70 \$99	\$71 \$121	\$70 \$122	\$74 \$130	\$84 \$162	\$84 \$170	\$54 \$100	\$26 \$53	\$35 \$46
Snowshoe hare index ^c	9.8	1.8	0.7	0.2	0.3	0.2	0.5	0.5	2.7	2.3	1.2

^a Estimated from population model.

^b May exceed registration totals due to accidental catches, etc.

^c Index for spring after harvest season.

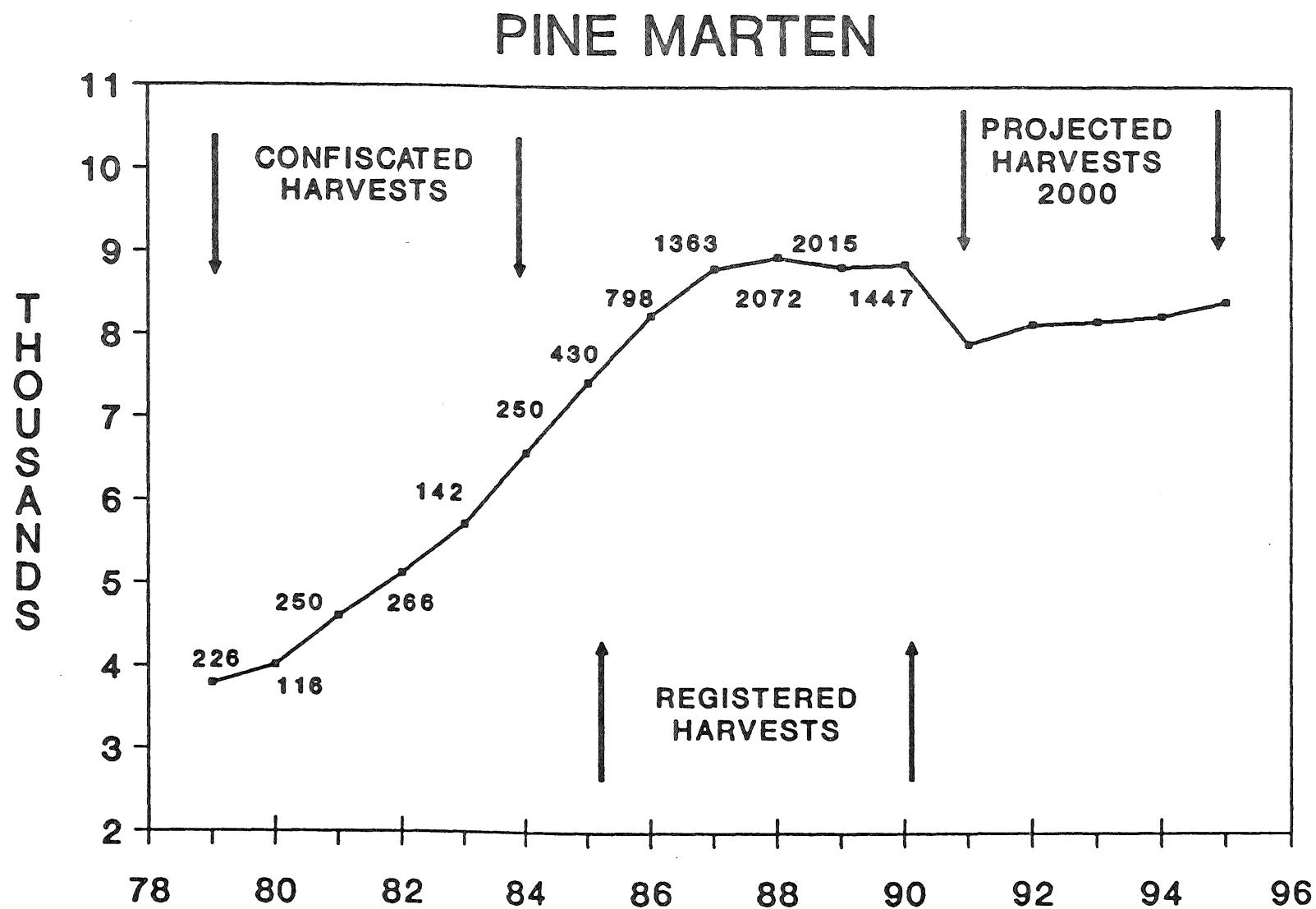


Figure 19. Population modeling summaries for pine marten, 1976-96.

Table 25. Pine marten harvest, carcass collection, and pelt price data, 1985-90.

	1985	1986	1987	1988	1989	1990
Season	11/30-12/15	11/29-12/14	11/28-12/13	11/26-12/11	12/02-12/17	12/01-12/16
Limit	1	1	1	2	2	2
Registered take	430	798	1,363	2,072	2,119	1,447
% of available autumn population harvested	6%	9%	16%	20%	20%	16%
No. carcasses examined	507	884	1,754	1,977	2,014	1,375
% juveniles	73%	64%	66%	66%	68%	48%
% 1.7 yr.	18%	21%	18%	11%	12%	18%
% \geq 2.7 yrs.	9%	15%	16%	23%	20%	34%
Juv:ad. female ratio	17.2:1	12.3:1	11.2:1	8.6:1	9.7:1	3.6:1
% male juveniles	69%	65%	65%	58%	57%	59%
% male 1.7 yrs.	68%	71%	67%	50%	63%	54%
% male \geq 2.7 yrs.	82%	81%	75%	66%	65%	61%
% males overall	70%	69%	67%	59%	59%	59%
pelt price (male)	\$30	\$36	\$43	\$50	\$48	\$44
pelt price (female)	\$28	\$27	\$39	\$43	\$47	\$41

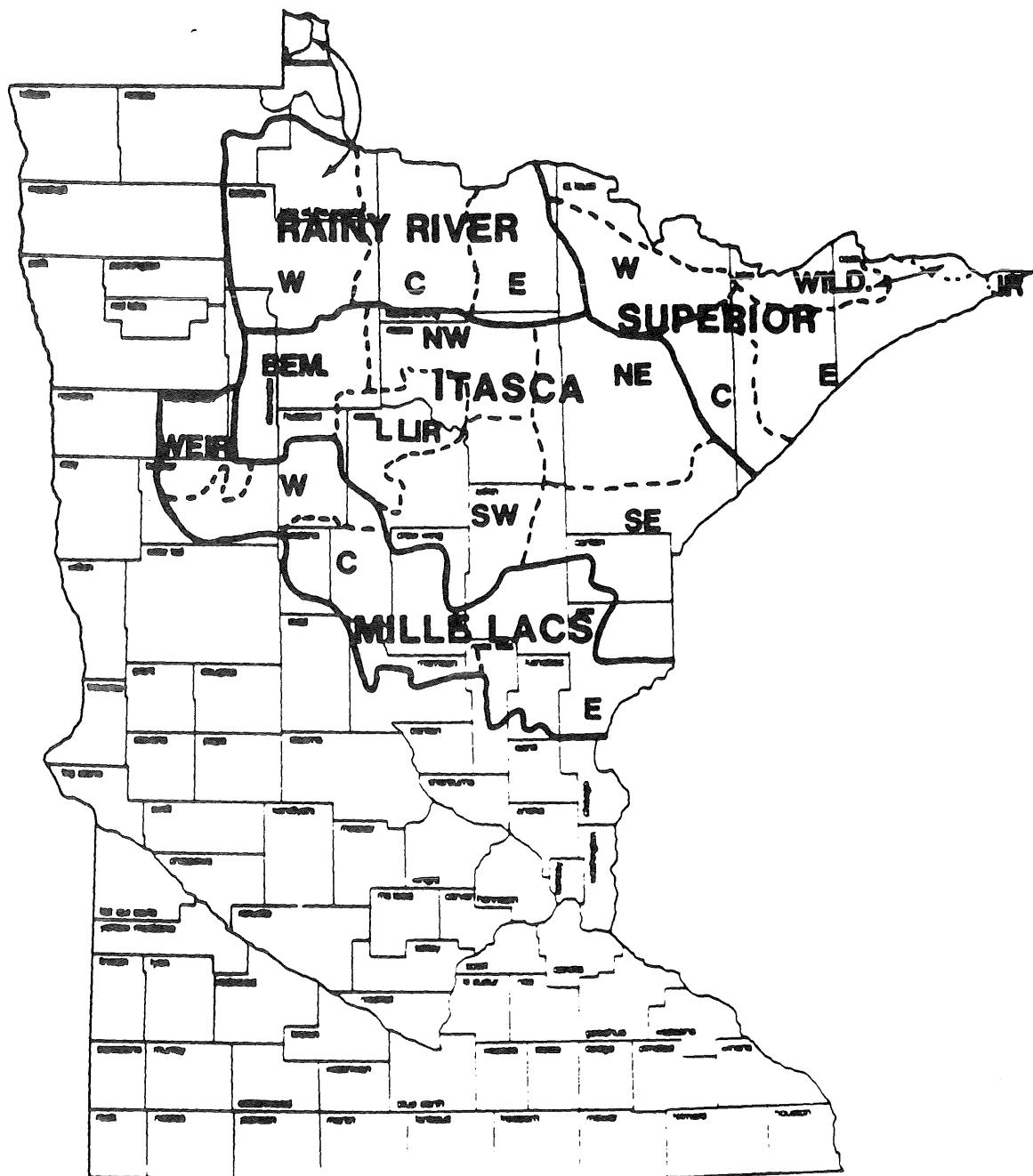


Figure 20. Deer Management Units (DMU) and sub-DMU's in the Forest Zone.

Table 26. Spring white-tailed deer densities estimated from population modeling in Deer Management Subunits of Minnesota's Forest zone, 1984-91.^a

DMU and subunit	Deer per square mile								Goal
	1984	1985	1986	1987	1988	1989	1990	1991	
<u>Itasca</u>									
Northwest	18.0	18.6	16.8	18.4	20.0	19.1	23.5	26.5	15-20
Southwest	12.0	13.2	12.4	14.4	16.2	15.5	20.0	23.2	15-20
Northeast	8.0	9.4	9.5	11.4	12.9	12.1	15.5	18.2	15-20
Southeast	12.0	14.3	15.1	18.4	21.2	20.8	26.3	30.7	10-15
Leech Lake IR	10.0	11.1	11.2	12.6	13.6	13.1	15.5	16.9	10-15
Bemidji	15.0	14.9	13.9	15.2	16.0	15.0	18.3	20.7	10-15
<u>Mille Lacs</u>									
West	15.7	15.9	15.0	15.7	16.7	16.8	20.2	22.9	10-15
Central	13.8	13.9	13.7	13.9	15.0	15.6	18.6	21.1	10-15
East	10.0	10.7	11.4	13.7	15.8	17.6	21.6	25.1	10-15
White Earth IR	5.4	5.7	5.8	6.1	6.2	6.0	6.8	7.3	10-15
<u>Rainy River</u>									
West	11.4	11.5	11.5	12.7	13.6	12.3	14.5	15.8	10-15
Central	6.6	7.1	6.9	8.0	8.6	7.6	9.2	10.2	10-15
East	14.0	15.8	15.7	18.1	19.8	17.6	21.2	23.3	15-20
<u>Superior</u>									
West	11.0	13.0	12.9	15.2	17.0	15.2	19.0	21.5	15-20
Central	8.0	9.3	9.4	11.2	12.4	10.7	14.1	16.2	10-15
East	3.5	4.1	4.0	5.1	5.9	4.8	6.3	7.3	3-8

^a Historical density figures may differ from those previously published because of annual recalculation as more accurate modeling data are available.

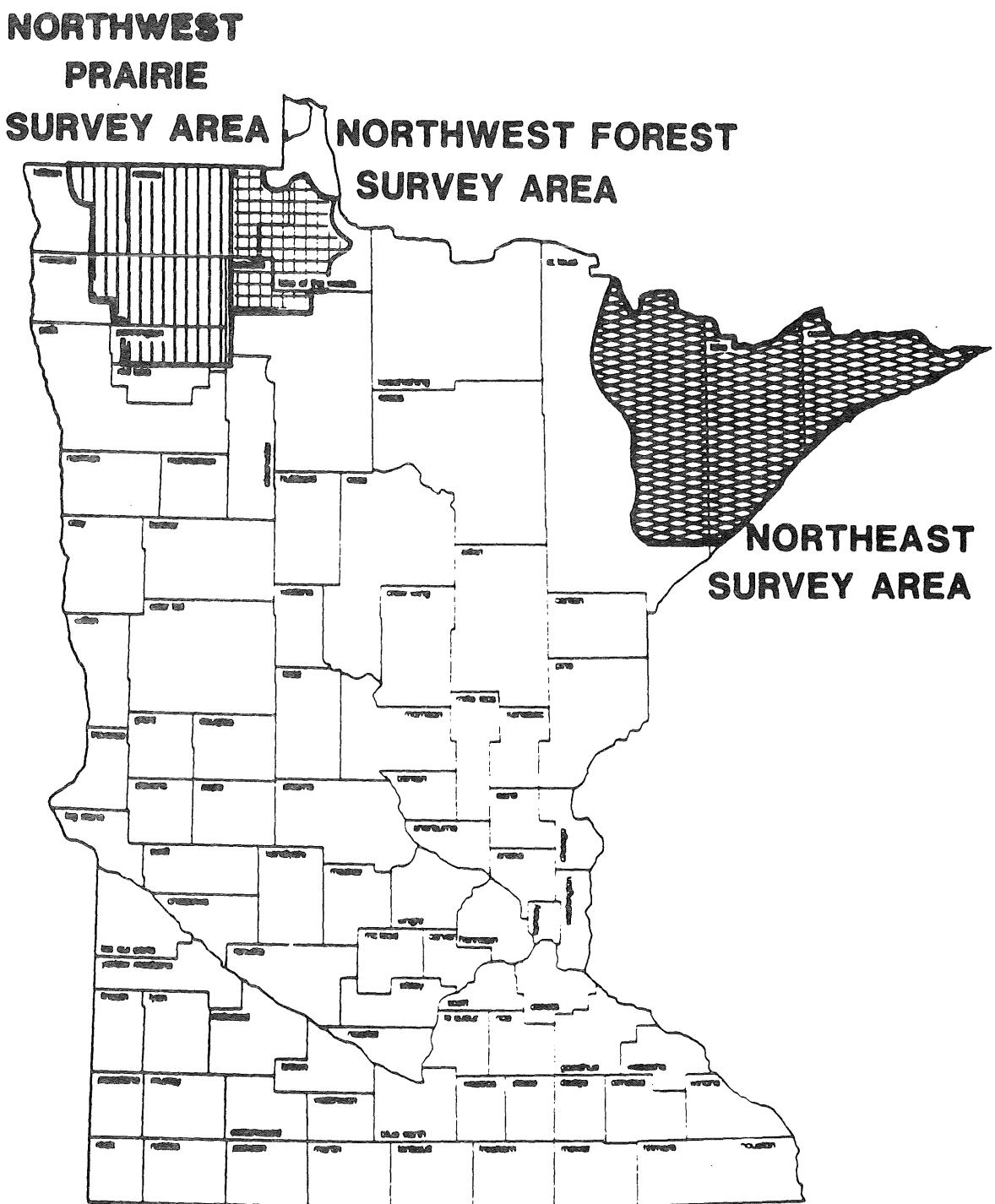


Figure 21. Aerial moose survey area boundaries.

Table 27. Moose population estimates from aerial moose survey in Minnesota, 1982-91.

Year	Population Estimate by Survey Area (+90% CI)					
	Northwest Prairie		Northwest Forest		Northeast	
1982-83	3772	(930)	370	(124)	4877	(999)
1983-84	2784	(567)	446	(139)	4274	(925)
1984-85	4086	(518)	578	(148)	5518	(1494)
1985-86	3415	(412)	433	(100)	4955	(1034)
1986-87	3740	(747)	307	(83)	6120	(1438)
1987-88	no survey		no survey		5457	(1057)
1988-89	2328	(474)	419	(153)	6702	(2357)
1989-90	1985	(435)	no survey		4429	(1218)
1990-91	2771	(817)	no survey		3688	(1669)
change 1989-90 to 1990-91	+39.6%		-		-16.7%	

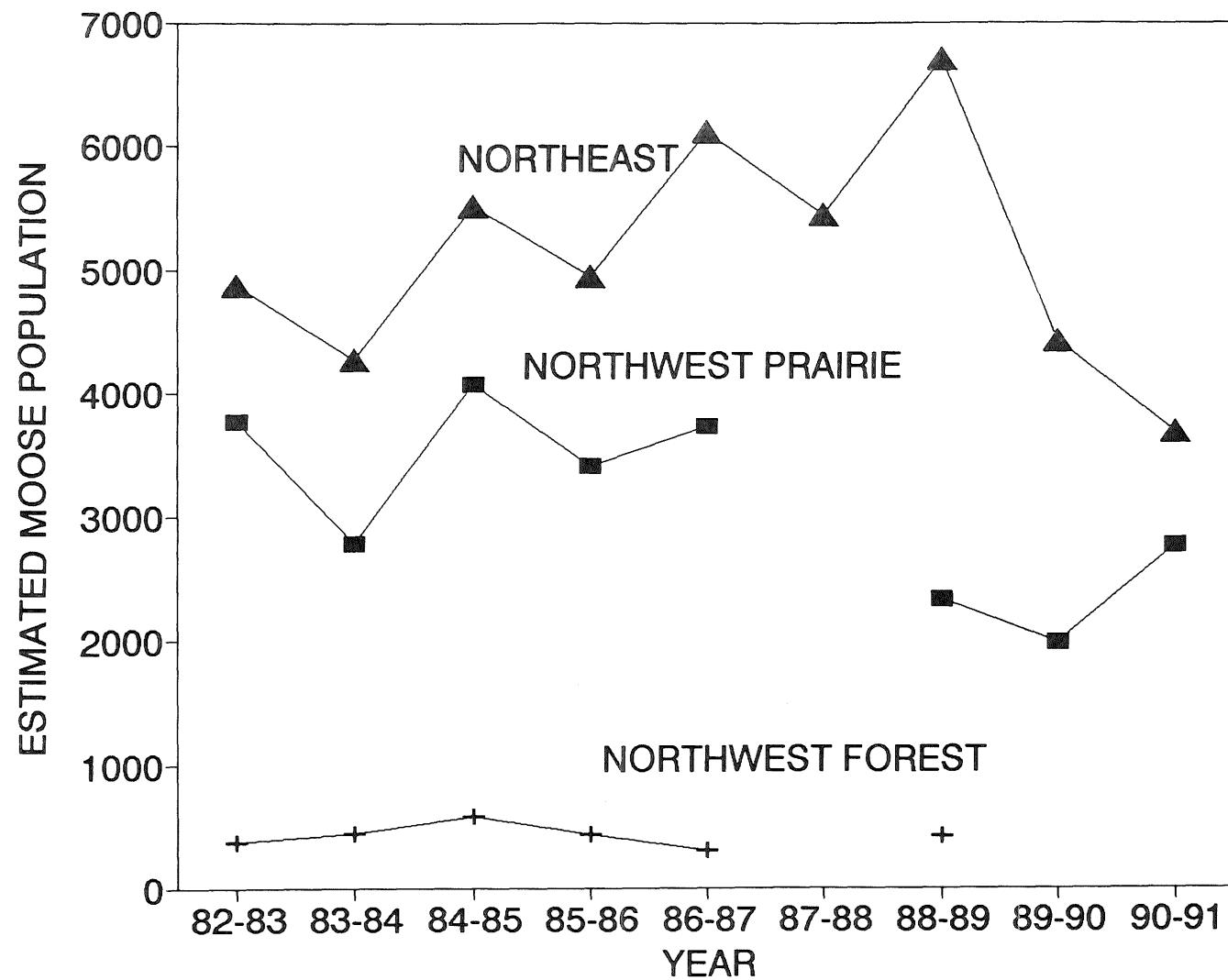


Figure 22. Moose population trends by survey area in northern Minnesota. Trend lines are broken where survey information was not collected.

MIGRATORY BIRD POPULATIONS
Wetland Wildlife Populations and Research
102 23rd Street
Bemidji, MN 56601
(218) 755-2973

1945-1946
1946-1947
1947-1948

Table 28. Estimated spring duck populations of selected species in Minnesota, 1975-91.^a

Species	Year	Unadjusted population index	Visibility factor	Adjusted ^b population estimate (thousands)
Mallard	1975	55,093	3.19	176
	1976	69,844	1.69	118
	1977	60,617	2.21	134
	1978	56,152	2.61	147
	1979	61,743	2.57	159
	1980	83,775	2.05	172
	1981	79,562	1.95	155
	1982	51,655	2.33	121
	1983	73,424	2.12	156
	1984	94,514	1.99	188
	1985	96,045	2.26	217
	1986	108,328	2.16	235
	1987	165,881	1.16	192
	1988	155,453	1.75	272
	1989	124,362	2.19	273
	1990	140,879	1.65	232
	1991	128,315	1.75	225
Blue-winged teal	1975	45,948	3.95	181
	1976	89,370	4.87	436
	1977	37,391	3.86	144
	1978	28,491	8.53	243
	1979	46,708	5.21	243
	1980	50,966	6.49	331
	1981	64,546	2.59	167
	1982	42,772	4.75	203
	1983	42,728	2.81	120
	1984	89,896	2.82	254
	1985	90,453	2.91	264
	1986	68,235	2.69	183
	1987	102,480	1.99	204
	1988	101,135	2.38	240
	1989	90,300	3.16	286
	1990	107,183	3.09	331
	1991	91,495	2.90	265

^a Population estimates are not valid for species other than mallards and blue-winged teal and, therefore, will no longer be reported here.

^b Adjusted population estimates are different from those publicized previously because of adjustments in visibility factors to standardize data for all years.

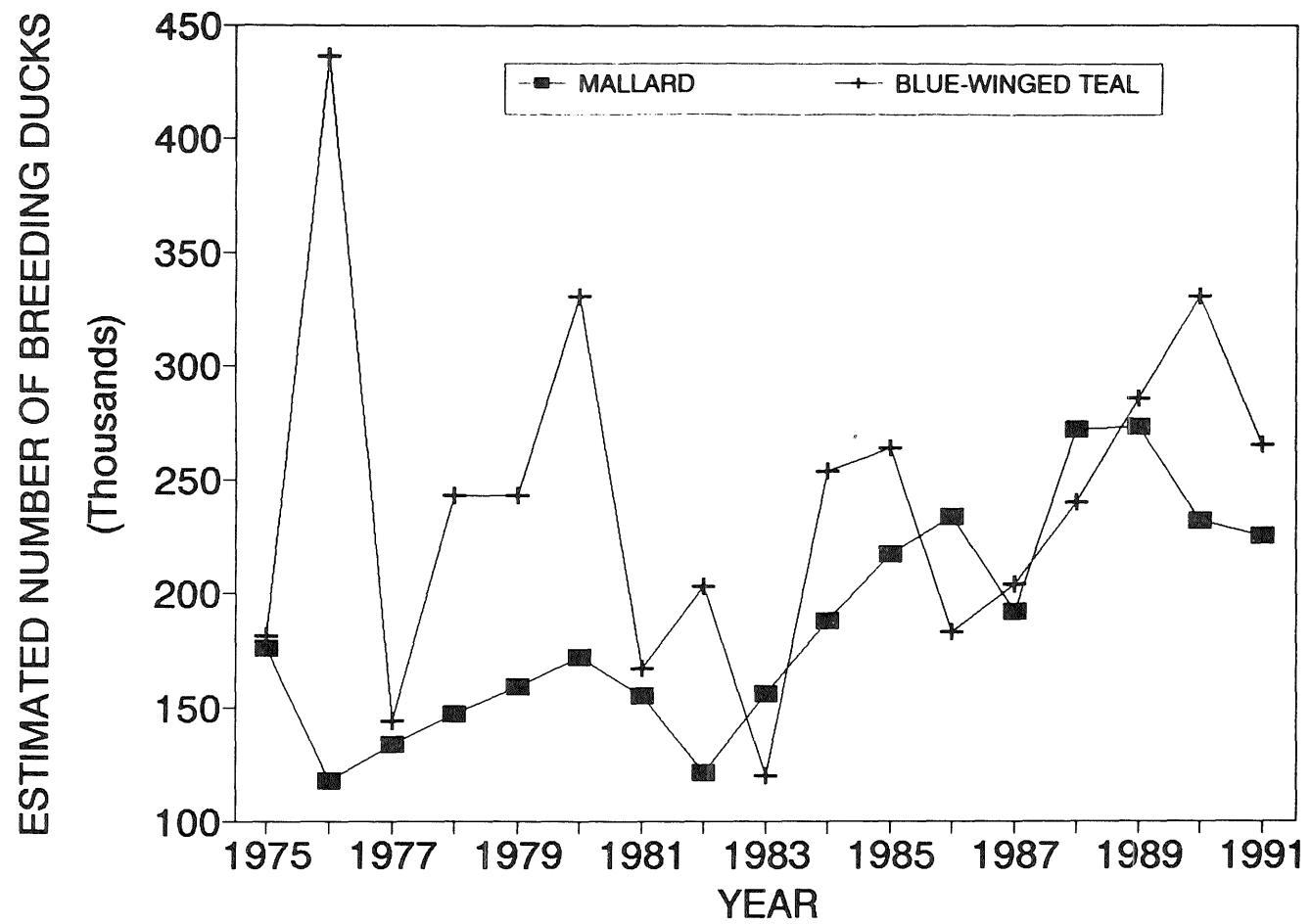


Figure 23. Estimated number of mallards and blue-winged teal breeding in Minnesota, 1975-91.

Table 29. Winter population estimates (post hunting season) of the Canada goose eastern prairie flock, 1963-90 (taken from : U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1991. 1991 Status of waterfowl and fall flight forecast; July 1991. 38pp).

Year	Population
1963	110,000
1964	103,000
1965	104,000
1966	121,000
1967	145,000
1968	134,000
1969	107,000
1970	121,000
1971	152,000
1972	177,000
1973	187,000
1974	188,000
1975	199,000
1976	254,000
1977	270,000
1978	207,000
1979	172,000
1980	151,000
1981	175,000 ^a
1982	210,000
1983	163,000 ^b
1984	168,000
1985	169,000
1986	183,000
1987	228,000
1988	184,000
1989	325,000
1990	218,000

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

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

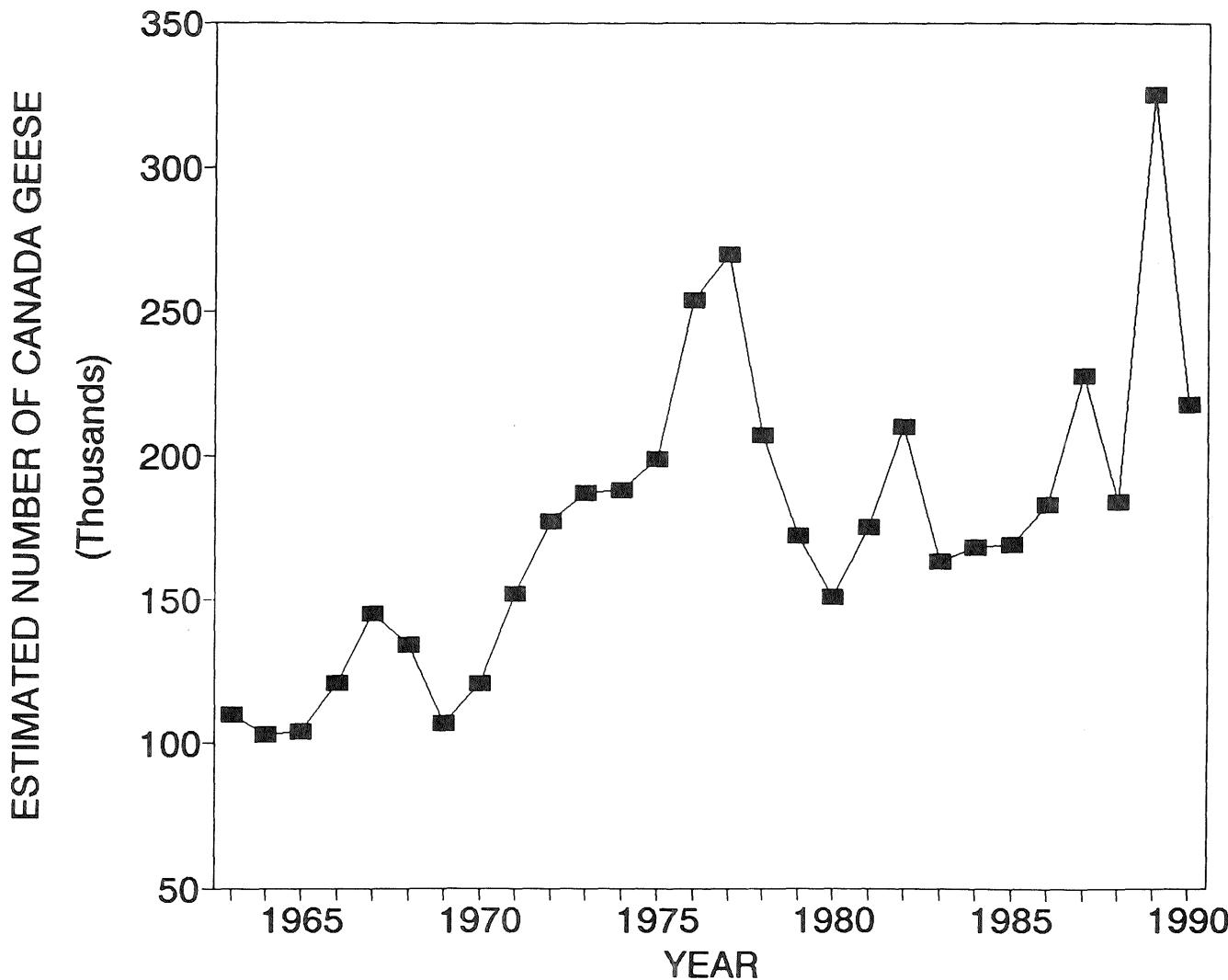


Figure 24. Winter population estimates of the Eastern Population of Canada geese, 1963-90 (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service reports 1991. 1991 Status of waterfowl and fall flight forecasts; July 1991. 38pp).

Table 30. Summary of the number of May ponds (adjusted for visibility) in Prairie Canada (portions of Alberta, Saskatchewan and Manitoba) 1961-91 and north-central U.S. (North Dakota, South Dakota and Montana) 1974-91. (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service, 1991. 1991 Status of waterfowl and fall flight forecast. July 1991. 38pp).

Year	Ponds (thousands)	
	Prairie Canada	North Central U.S. ^a
1961	2,006	--
1962	2,531	--
1963	2,499	--
1964	3,445	--
1965	4,415	--
1966	4,672	--
1967	4,732	--
1968	1,938	--
1969	3,530	--
1970	4,957	--
1971	4,096	--
1972	4,065	--
1973	2,937	--
1974	6,693	1,509
1975	6,267	1,911
1976	5,057	1,392
1977	2,278	771
1978	3,622	1,590
1979	4,859	1,522
1980	2,141	761
1981	1,443	683
1982	3,185	1,458
1983	3,906	1,259
1984	2,458	1,766
1985	4,283	1,327
1986	4,025	1,735
1987	2,598	1,348
1988	2,110	794
1989	1,696	1,290
1990	2,817	691
Average	3,476	1,252
1991	2,494	724
% Change in 1991 from:		
1990	-11	+ 5
Average	-29	-41

^a No comparable survey data available for the north-central U.S. during 1961-73.

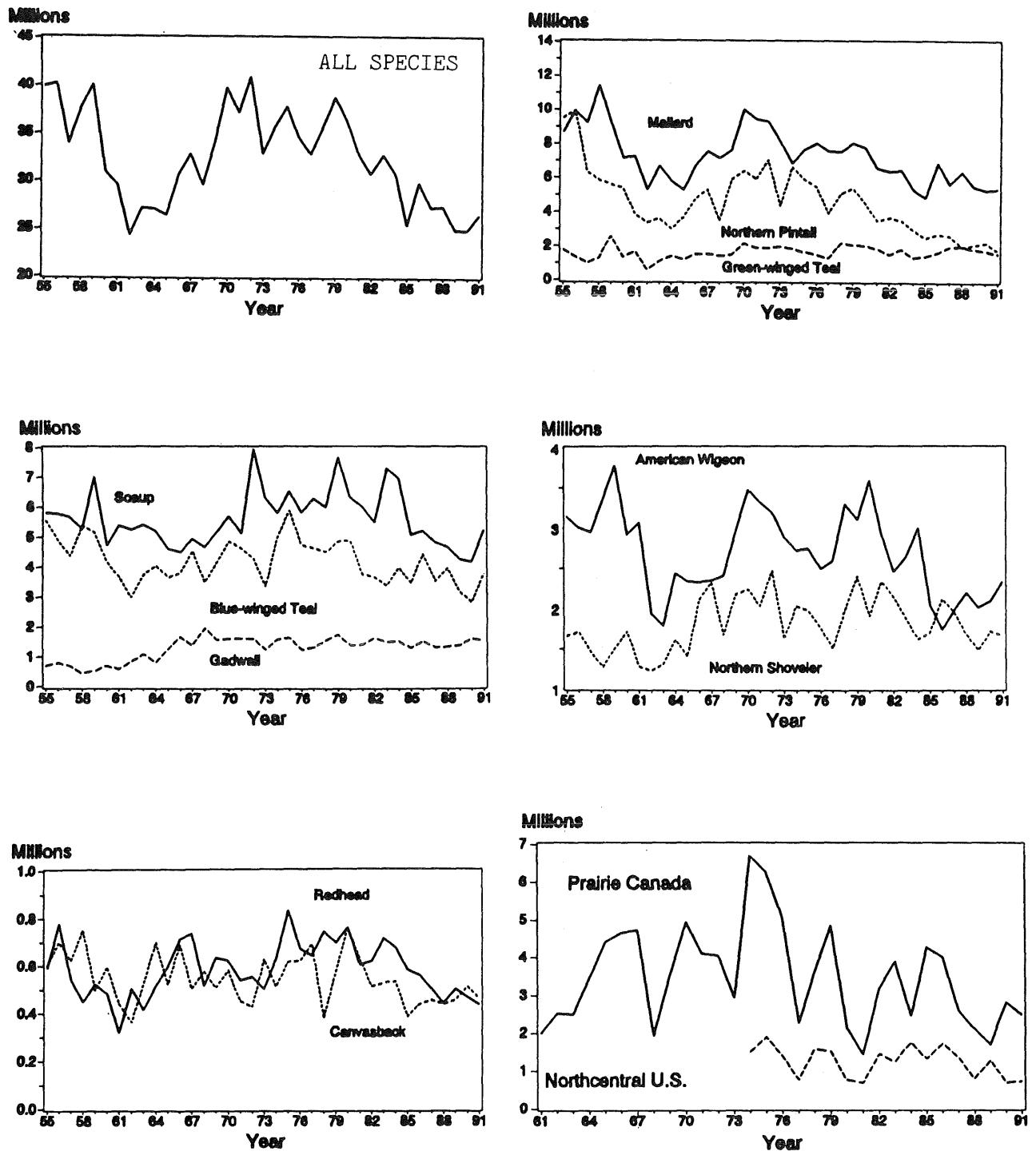


Figure 25. Estimates of North American breeding populations of selected ducks and number of water areas in May in Prairie Canada and Northcentral U.S. (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service 1991. 1991 Status of waterfowl and fall flight forecasts; July 1991. 38pp).

Table 31. North American Breeding population estimates for 10 species of ducks 1955-1991. (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service. 1991. 1991 Status of waterfowl and fall flight forecast; July 1991. 38pp). In thousands.^a

Year	Mallard	Gadwall	American wigeon	Green-winged teal	Blue-winged teal	Northern shoveler	Northern pintail	Redhead	Canvasback	Scaup
1955	8708	692	3142	1795	5547	1665	9520	592	599	5816
1956	9927	810	3008	1411	4903	1712	9967	780	703	5801
1957	9226	692	2950	1015	4362	1462	6356	544	625	5677
1958	11452	462	3371	1320	5387	1277	5862	449	755	5285
1959	9231	529	3780	2582	5148	1507	5610	524	499	7018
1960	7171	721	2921	1383	4177	1715	5400	484	598	4735
1961	7237	597	3068	1692	3654	1280	3856	318	440	5396
1962	5309	846	1929	639	2985	1228	3397	507	364	5256
1963	6683	1094	1783	1135	3747	1311	3616	415	523	5415
1964	5822	830	2438	1441	4045	1615	3026	519	701	5205
1965	5261	1273	2332	1235	3646	1406	3677	599	522	4609
1966	6723	1672	2330	1555	3800	2116	4778	712	690	4505
1967	7533	1384	2346	1570	4533	2319	5288	737	505	4954
1968	7152	1965	2407	1449	3492	1674	3506	518	578	4669
1969	7590	1579	2955	1508	4145	2177	5915	635	508	5170
1970	10026	1607	3473	2178	4866	2238	6396	624	582	5707
1971	9464	1604	3321	1916	4620	2027	5901	540	451	5112
1972	9326	1623	3196	1915	4294	2470	7045	554	427	7971
1973	8152	1251	2887	1970	3350	1629	4355	503	627	6312
1974	6849	1598	2717	1877	5005	2029	6639	629	513	5813
1975	7631	1644	2746	1689	5907	1974	5900	833	616	6543
1976	8053	1247	2493	1542	4763	1759	5481	672	620	5835
1977	7561	1319	2583	1328	4628	1508	3948	641	690	6303
1978	7538	1566	3295	2231	4506	1979	5113	743	380	6002
1979	8060	1753	3097	2080	4867	2398	5393	696	576	7676
1980	7790	1400	3593	2075	4909	1906	4520	760	760	6350
1981	6569	1412	2934	1865	3757	2333	3483	602	627	6014
1982	6377	1641	2460	1544	3673	2142	3709	618	512	5495
1983	6455	1518	2635	1835	3378	1874	3515	713	527	7286
1984	5333	1536	3004	1375	3986	1622	2980	675	532	6968
1985	4839	1308	2045	1441	3470	1700	2513	581	385	5083
1986	6874	1543	1740	1659	4450	2118	2736	560	438	5231
1987	5630	1318	1978	1983	3533	1948	2629	502	454	4847
1988	6348	1357	2194	2045	3979	1677	2014	441	437	4683
1989	5503	1382	2009	1846	3192	1483	2098	504	455	4281
1990	5305	1616	2089	1767	2828	1719	2243	466	511	4193
1991	5353	1573	2328	1601	3779	1663	1798	437	463	5247
1955-90 Avg.	7353	1288	2701	1664	4209	1805	4667	587	548	5645
Percent Change in 1991 From:										
1990	+1	-3	+11	-9	+34	-3	-20	-6	-9	+25
1955-90 Avg.	-27	+22	-14	-4	-10	-8	-62	-26	-16	-7

^a All duck indexes adjusted for visibility bias.

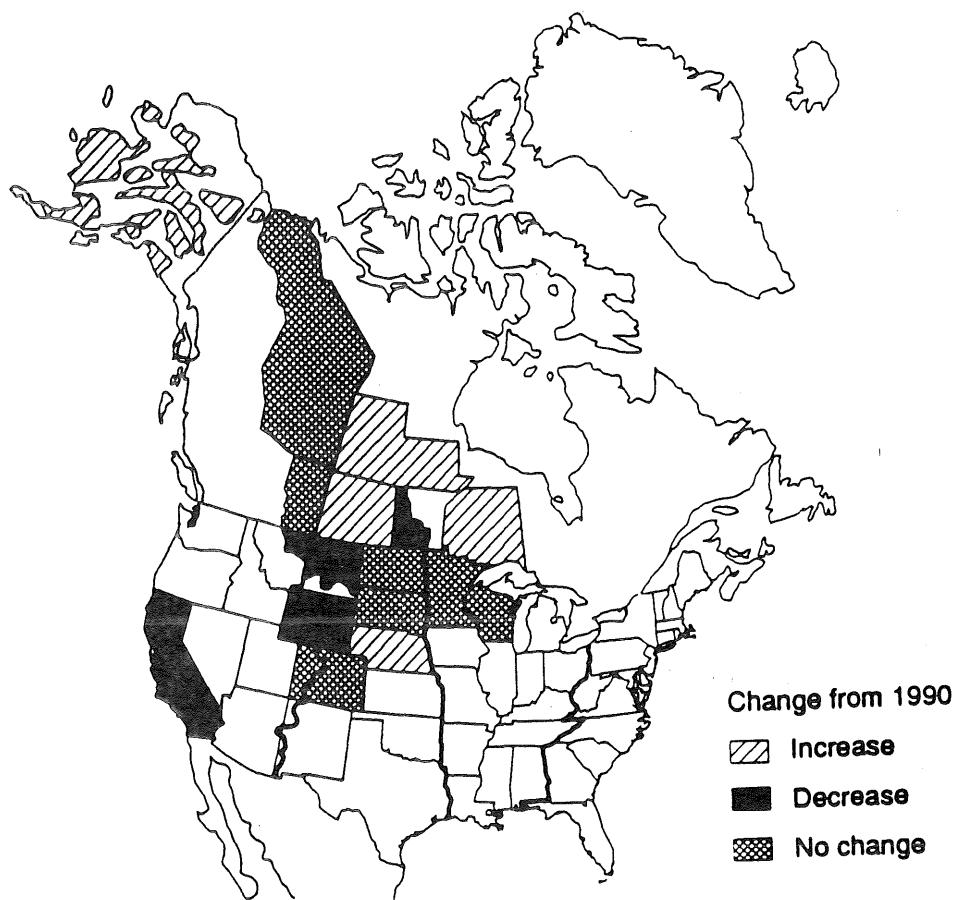


Figure 26. Fall 1991 duck flight forecast for Canada and the U.S., change from 1990, FORECAST: No Change (+6%) (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service 1991. 1991 Status of waterfowl and fall flight forecast; July 1991. 38pp).

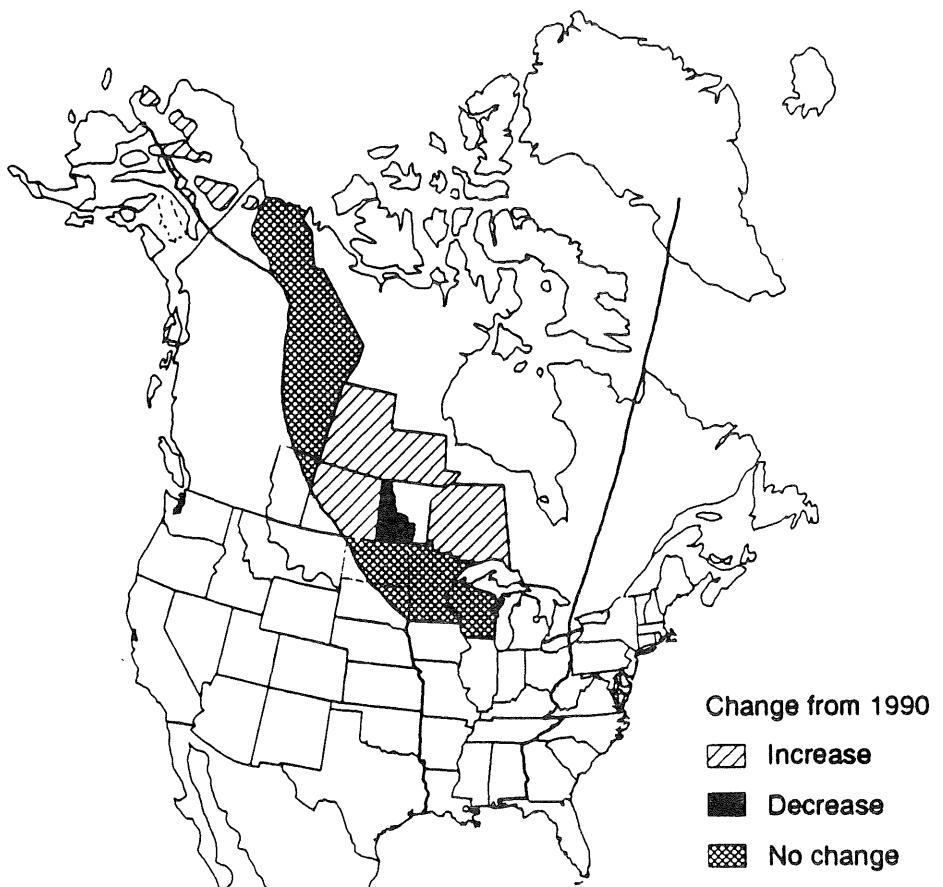


Figure 27. Fall 1991 duck flight forecast for the Mississippi Flyway, change from 1990, FORECAST: No Change (+7%) (from: U.S. Fish and Wildlife Service/Canadian Wildlife Service 1991. 1991 Status of waterfowl and fall flight forecast; July 1991. 38pp).

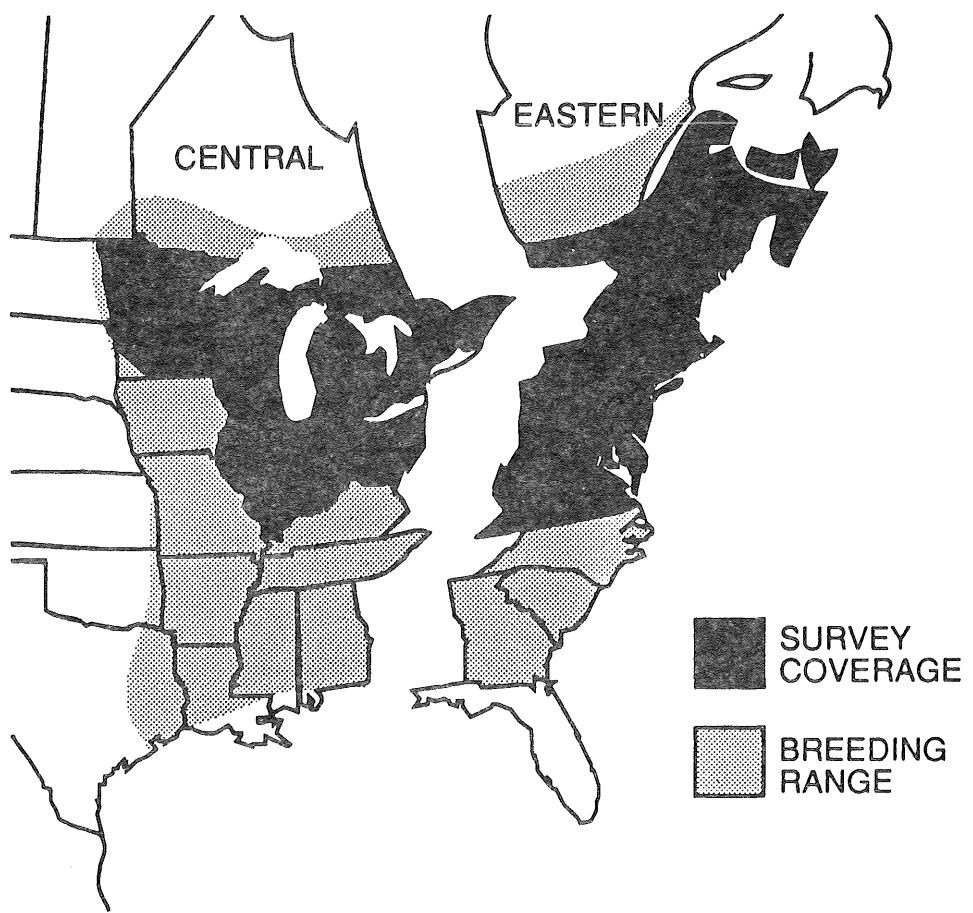


Figure 28. Woodcock breeding range, singing ground survey coverage, and woodcock management regions (from: Straw, Jr., J. Ashley 1991. American woodcock harvest and breeding population status, 1991. U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, MD. 14pp).

Table 32. Trends (% change per year^a) as determined by route regression in numbers of American woodcock heard by management region, state, and province. (from: Straw, Jr., J. Ashley 1991. American woodcock harvest and breeding status, 1991. U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, MD. 14pp).

Management Unit/State	2 year N ^b	% Change (1990-91)	Routes Run ^c	7 year (1985-91)		24 year (1968-91)	
				N	% Change	N	% Change
CENTRAL	296	3.75	426	477	0.645	648	-0.769
IL	10	+42.9	17	16	-22.0*** ^d	38	-1.3
IN	7	-14.4	20	17	8.0	50	-4.0*
MI	87	9.7	116	128	1.7	136	-0.5
MN	53	-0.7	70	78	2.0	108	0.7
OH	24	20.2	37	34	-4.1	69	-4.5**
ON	58	+6.9	86	118	-1.0	130	-0.3
WIS	57	-2.7	80	86	-0.2	108	-1.6**

^a Mean of weighted route trends within each State, Province, or Region. To estimate the total percent over several years, use: $100(\%/100+1)^y - 100$ where % is the annual change and y is the number of years.

^b Number of routes comparable in at least two years with one or more counts.

^c Total number of routes which were run and received prior to 5/31/91.

^d * P ≤ 0.10; ** P ≤ 0.05; *** P ≤ 0.01.

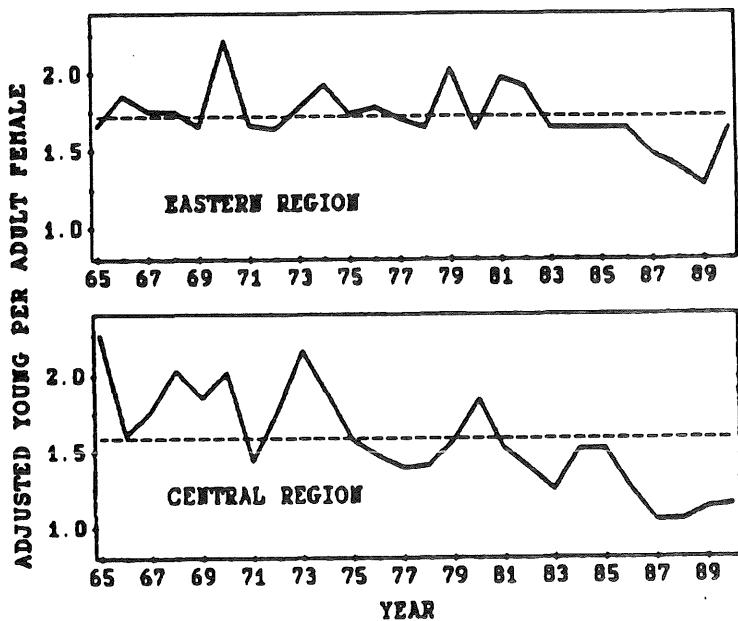


Figure 29. Adjusted index of American woodcock recruitment, 1965-90, base year 1969. (from: Straw, Jr., J. Ashley 1991. American woodcock harvest and breeding population status, 1991. U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, MD. 14pp).

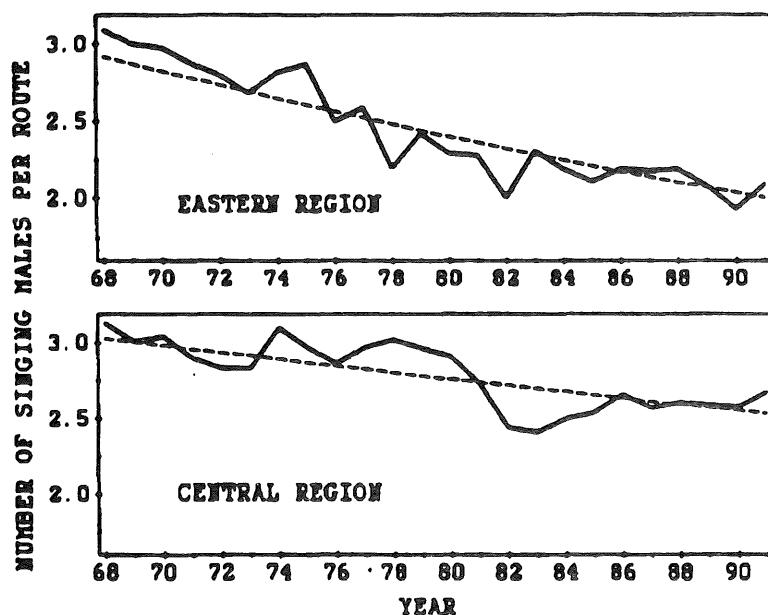


Figure 30. American woodcock breeding population trend and annual index, 1968-90; route regression analysis. (from: Straw, Jr., J. Ashley 1991. American woodcock harvest and breeding population status, 1991. U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, MD. 14pp).

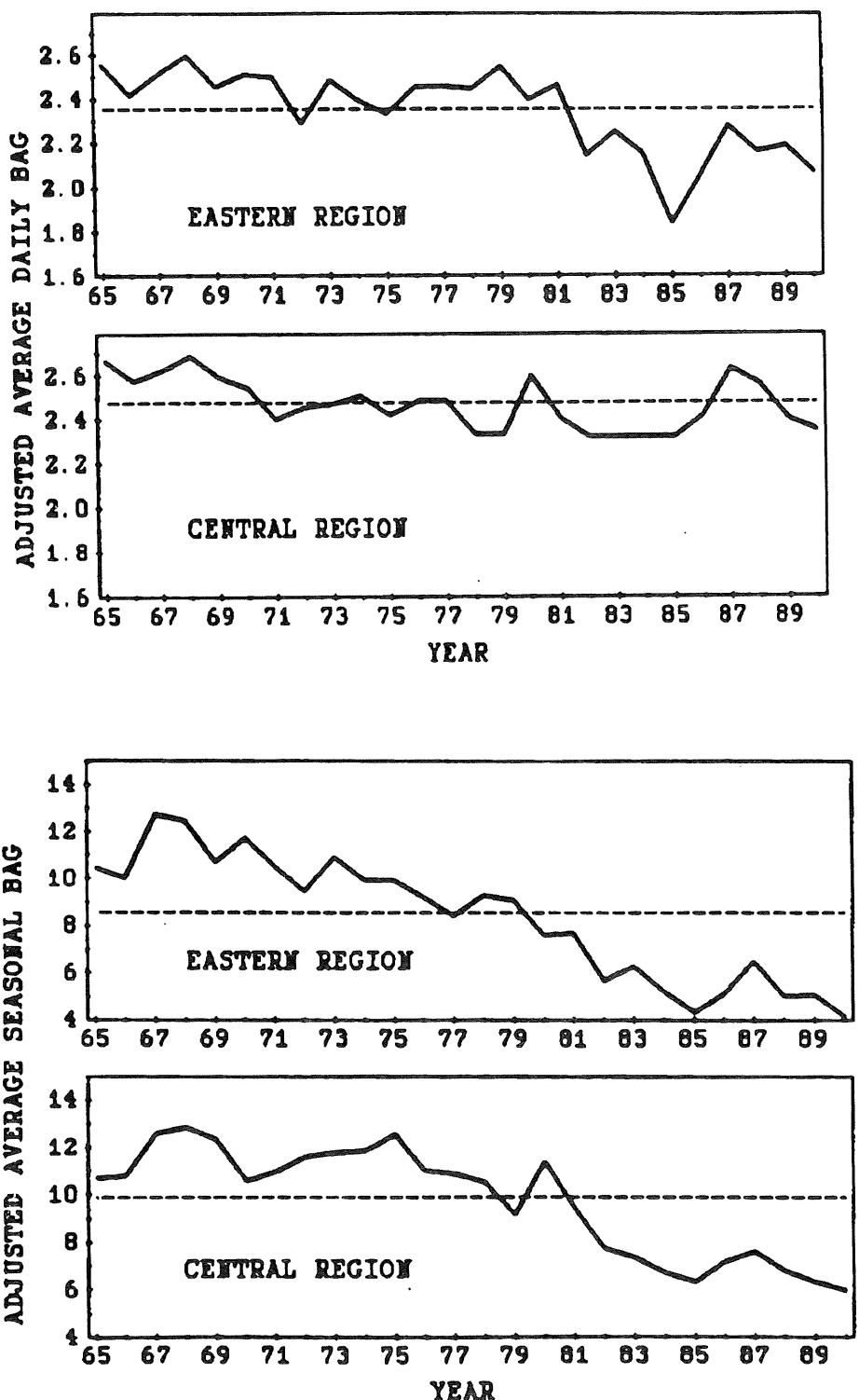


Figure 31. Adjusted indices of daily and seasonal hunting success of American woodcock, 1965-90, base year 1969. (from: Straw, Jr., J. Ashley 1991. American woodcock harvest and breeding population status, 1991. U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, MD. 14pp).

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Table 33. Minnesota Bald Eagle Nesting Activity in Four Survey Areas, 1990.

Survey Area	Occupied Breeding Areas	Successful Breeding Areas	Percent Successful	Number of Young	Young/Occupied Breeding Area	Average Brood Size
Chippewa NF	154	102	66	160	1.03	1.56
Superior NF	74	57	77	85	1.15	1.49
Voyageurs NP	28	17	61	23	.82	1.35
"Other Areas"	181	124	68	199	1.10	1.60
Minnesota Total	437	300	69	467	1.07	1.56

Table 34. Minnesota Bald Eagle Nesting Data, 1973-1990.

Year	Breeding Areas			Young		
	Occupied ^a	Number Successful	Percent Successful	Total	Per Occupied	Average Brood size
					Breeding Area	
1973	115	71	62	113	0.98	1.59
1974	127	77	61	96	0.76	1.25
1975	120	87	73	145	1.21	1.67
1976	122	93	76	163	1.34	1.75
1977	156	114	73	179	1.15	1.57
1978	168	115	68	188	1.12	1.63
1979	159	111	70	196	1.23	1.77
1980	181	133	73	239	1.32	1.80
1981	190	132	69	242	1.27	1.83
1982	207	145	70	245	1.18	1.69
1983	229	170	74	321	1.40	1.89
1984	245	165	67	274	1.12	1.66
1985	250	161 ^b	71 ^b	275 ^b	1.21 ^b	1.71 ^b
1986	266	187 ^c	72 ^c	312 ^c	1.21 ^c	1.67 ^c
1987	350	227	65	360	1.03	1.59
1988	372	250	67	412	1.11	1.65
1989	390	261	67	430	1.10	1.65
1990	437	300	69	467	1.07	1.56

^a Number of occupied breeding areas regardless of outcome.

^b These figures do not include data from 23 occupied nesting areas of unknown outcome in the Boundary Waters Canoe Area.

^c These figures do not include data from 9 occupied nesting areas of unknown outcome in the Boundary Waters Canoe Area.

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Table 35. Resident small game hunter^a response to mail surveys,
1979-80 through 1990-91.

Year	Number mailed	Number not delivered	<u>Delivered questionnaires completed and returned</u>	
			Number	Percent
1979-80	5,696	443	4,504	85.7
1980-81	6,434	385	4,963	82.0
1981-82	6,656	399	5,419	86.6
1982-83	5,963	266	4,792	84.1
1983-84	4,551	269	3,325	77.7
1984-85	4,096	127	3,280	82.6
1985-86	3,370	157	2,574	80.1
1986-87	4,668	208	3,623	81.2
1987-88	5,513	248	4,191	79.6
1988-89	15,388	857	11,431	78.7
1989-90	10,893	735	7,790	76.7
1990-91	5,000	394	3,467	75.3

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

Table 36. Use of resident small game hunter licenses^a, 1979-80 through 1990-91.

		Returns from mail survey	Projections from license sales
1979-80	Hunted	3,964 (88.0%)	296,766
	Did not hunt	<u>540</u> (12.0%)	<u>40,468</u>
		4,504 (100.0%)	337,234
1980-81	Hunted	4,288 (86.4%)	311,717
	Did not hunt	<u>675</u> (13.6%)	<u>49,066</u>
		4,963 (100.0%)	360,783
1981-82	Hunted	4,461 (82.3%)	306,843
	Did not hunt	<u>958</u> (17.7%)	<u>65,992</u>
		5,419 (100.0%)	372,835
1982-83	Hunted	3,908 (81.6%)	257,546
	Did not hunt	<u>884</u> (18.4%)	<u>58,258</u>
		4,792 (100.0%)	315,804
1983-84	Hunted	2,805 (84.4%)	232,973
	Did not hunt	<u>520</u> (15.6%)	<u>43,061</u>
		3,325 (100.0%)	276,034
1984-85	Hunted	2,663 (81.2%)	211,740
	Did not hunt	<u>617</u> (18.8%)	<u>49,024</u>
		3,280 (100.0%)	260,764
1985-86	Hunted	2,132 (82.8%)	213,883
	Did not hunt	<u>442</u> (17.2%)	<u>44,342</u>
		2,574 (100.0%)	258,225
1986-87	Hunted	3,006 (83.0%)	217,504
	Did not hunt	<u>617</u> (17.0%)	<u>44,549</u>
		3,623 (100.0%)	262,053
1987-88	Hunted	3,554 (84.8%)	242,875
	Did not hunt	<u>635</u> (15.2%)	<u>43,395</u>
		4,189 (100.0%)	286,270
1988-89	Hunted	9,391 (82.2%)	234,833
	Did not hunt	<u>2,040</u> (17.8%)	<u>50,852</u>
		11,431 (100.0%)	285,685
1989-90	Hunted	6,924 (88.9%)	272,307
	Did not hunt	<u>866</u> (11.1%)	<u>34,000</u>
		7,790 (100.0%)	306,307
1990-91	Hunted	2,798 (88.5%)	275,327
	Did not hunt	<u>363</u> (11.5%)	<u>35,777</u>
		3,161 (100.0%)	311,104

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

Table 37. Estimated number of hunters and estimated take per hunter for various species, 1982-83 through 1990-91.

	Estimated number of hunters (thousands)										Estimated take per hunter									
	1982- 83	1983- 84	1984- 85	1985- 86	1986- 87	1987- 88	1988- 89	1989- 90	1990- 91	1982- 83	1983- 84	1984- 85	1985- 86	1986- 87	1987- 88	1988- 89	1989- 90	1990- 91		
Ducks	134	117	134	122	132	114	77	83	80	8.1	10.6	10.8	9.1	9.0	8.2	6.9	7.6	7.9		
Canada goose	52	41	51	55	58	56	47	49	51	1.6	1.6	1.6	1.9	1.8	1.9	2.4	2.8	3.3		
Other geese	11	10	9	9	7	9	5	7	6	0.7	0.7	0.8	1.2	0.5	1.1	0.9	2.2	3.2		
American coot	11	12	9	11	11	8	3	4	4	4.3	4.7	4.9	4.4	5.3	3.6	2.6	3.7	4.9		
Common snipe	4	6	5	5	5	6	4	5	4	3.2	2.8	4.0	3.2	3.9	3.4	3.3	2.9	3.2		
Rails/gallinules	1	2	1	1	1	1	1	1	<1	3.1	1.2	1.4	2.3	1.1	3.6	1.8	7.2	2.5		
American woodcock	20	16	17	19	21	27	26	30	27	2.7	3.9	4.3	4.3	4.3	4.5	4.0	4.3	4.2		
Ring-necked pheasant	125	86	65	72	62	86	84	89	97	2.1	3.5	2.3	3.0	2.6	3.2	3.9	4.7	5.9		
Ruffed grouse	115	78	87	94	107	132	139	162	148	2.6	2.4	3.7	3.8	4.2	6.3	6.6	8.5	8.3		
Spruce grouse	13	9	12	12	12	16	15	20	18	1.1	1.1	1.7	2.1	1.7	2.3	2.6	3.4	3.6		
Sharp-tailed grouse	14	9	9	10	9	10	12	14	13	1.2	1.1	0.8	1.9	1.5	2.4	2.5	3.6	3.9		
Gray partridge	21	15	20	17	23	25	23	23	28	3.6	2.1	4.3	3.3	3.1	3.8	4.6	4.6	4.6		
Gray squirrel	53	38	39	38	41	40	37	35	37	5.1	5.3	5.3	5.2	5.7	5.6	5.8	6.1	6.3		
Fox squirrel	39	28	26	29	29	26	26	23	26	4.2	4.5	4.1	5.0	5.1	4.7	5.2	5.5	5.7		
Eastern cottontail	36	29	22	22	24	26	27	24	29	3.8	3.4	2.8	3.8	4.2	4.0	4.3	4.5	5.1		
White-tailed jack rabbit	11	7	6	6	4	5	5	6	7	2.6	1.9	1.9	3.0	3.4	2.2	1.8	3.0	2.0		
Snowshoe hare	15	9	7	7	8	10	9	10	13	4.2	2.3	2.3	2.3	3.2	2.6	3.7	5.7	5.1		
Raccoon	13	11	12	10	11	13	9	7	9	6.3	8.0	9.4	9.4	10.9	13.1	11.4	8.2	10.6		
Red fox	12	11	11	12	11	13	13	9	15	1.5	2.0	2.3	4.2	1.5	2.5	3.3	3.0	5.2		
Gray fox	3	2	3	2	2	3	3	2	3	0.9	0.9	1.4	2.0	0.8	1.3	0.9	2.3	2.8		
Coyote	3	3	3	5	4	5	6	4	8	0.8	0.8	1.8	3.1	1.6	1.1	1.2	2.5	2.7		
Badger	1	1	1	1	1	1	<1	1	1.9	0.3	3.9	1.8	1.0	1.6	1.5	1.6	1.9			

Table 38. Resident small game hunting license sales and estimated hunter harvest, 1982-83 through 1990-91.

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Small game license sales ^a	314,477	276,034	260,764	258,225	262,053	286,270	285,685	306,307	311,104
Federal duck stamp sales	134,803	138,161	138,820	134,594	139,391	125,831	92,772	97,939	103,971
State duck stamp sales ^b	123,834	125,212	131,394	125,559	146,747	120,235	89,228	97,659	102,151
Pheasant stamp sales ^b	-	114,189	81,587	85,252	81,027	102,944	100,478	108,124	122,260
Estimated harvest ^c (thousands)									
Ducks ^d	1,071	1,235	1,443	1,029	1,172	928	531	539	596
Canada geese ^d	81	62	82	86	101	106	114	103	122
Other geese ^d	7	8	8	9	3	11	5	9	24
American coot ^d	49	55	48	41	59	29	9	10	15
Common snipe	14	17	20	16	21	19	13	12	11
Rails/gallinules	3	2	1	2	1	5	1	3	<1
American woodcock	54	58	70	70	87	113	104	117	114
Ring-necked pheasant	265	299	148	179	159	277	332	321	478
Ruffed grouse	302	183	320	315	442	817	917	1,205	1,155
Spruce grouse	14	10	21	21	20	36	39	55	46
Sharp-tailed grouse	17	10	7	14	13	24	29	35	31
Gray partridge	52	74	31	77	54	69	95	86	112
Gray squirrel	271	199	208	186	235	222	217	193	221
Fox squirrel	162	126	107	140	145	122	134	113	146
Eastern cottontail	135	98	61	75	102	102	118	90	134
White-tailed jack rabbit	27	13	11	17	14	12	10	12	5
Snowshoe hare	61	21	16	12	25	26	32	48	78
Raccoon	80	87	114	85	122	170	102	51	94
Red fox	19	21	26	44	15	33	43	18	55
Gray fox	2	2	4	4	2	4	2	3	5
Coyote	2	3	5	11	7	6	7	6	15
Badger	2	2	<1	2	2	<1	2	<1	1

Harvest estimates in this table, and the number of hunters and mean take per hunter in Table 37, are calculated from different questions on the survey form. The sample used in calculations differs from one estimator to the next. This is because some respondents give specific answers to one question but not to a related one. A formula is used to calculate the total estimated take for each species which appears in this table. In most years the formula produces results rather close to those obtained by multiplying the average take per hunter times the number of hunters. However, in other years (e.g., 1985) results of the two methods are quite divergent, perhaps as a result of an unusual sample. This is being investigated further, and as a result, numbers may change somewhat in future reports. The most current report of survey findings will have the best data available at that time.

^a Duplicate licenses not included.

^b Excluded stamps sold with an issuing fee, many of which probably were purchased by collectors.

^c Estimates based upon response of hunters to questionnaires.

^d U.S. Fish and Wildlife Service harvest estimates for 1990 are:

Ducks	365,422	Other geese	284
Canada geese	88,496	American coot	7,264

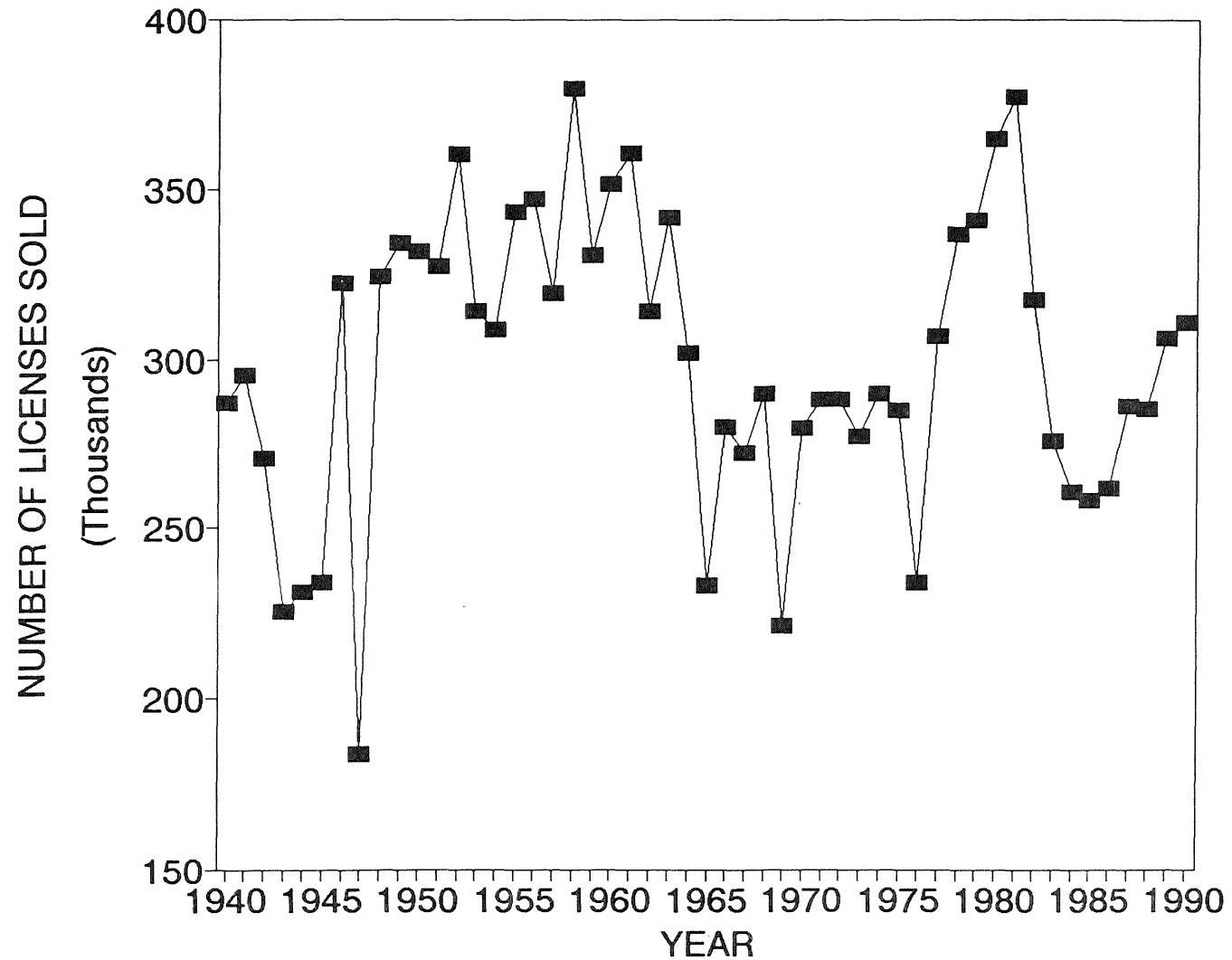


Figure 32. Numbers of Minnesota small game licenses sold, 1940-90.

Table 39. Mail survey results of nonresident small game hunters, 1982-83 through 1990-91.

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Nonresident licenses issued ^a	3,187	2,911	3,060	3,271	3,078	3,596	3,463	4,623	4,921
Questionnaires									
Number mailed	361	384	237	338	406	429	436	553	82
Number not delivered	21	25	13	25	42	19	33	52	7
Number (percent) returned	281 (82.6)	280 (78.0)	192 (86.0)	246 (78.6)	290 (79.7)	328 (80.0)	327 (81.1)	396 (79.0)	54 (72.0)
Estimated nonresidents and percent (in paren) of all nonresidents hunting:									
Ducks	1,840 (58)	1,500 (52)	2,090 (68)	1,900 (58)	1,810 (59)	990 (28)	1,130 (33)	1,521 (33)	1,342 (27)
Canada goose	830 (26)	580 (20)	820 (27)	800 (24)	850 (28)	515 (14)	700 (20)	866 (19)	1,074 (22)
Ruffed grouse	960 (30)	620 (21)	1,000 (33)	1,090 (33)	1,000 (32)	1,000 (28)	1,960 (57)	2,610 (56)	1,789 (36)
Ring-necked pheasant	680 (21)	500 (17)	390 (13)	720 (22)	510 (17)	400 (11)	690 (20)	1,042 (23)	895 (18)
Raccoon ^b	100 (3)	170 (6)	130 (4)	70 (2)	85 (3)	80 (2)	42 (1)	59 (1)	0 (0)c
Estimated nonresident take:									
Ducks	15,000	17,500	24,000	14,400	14,600	6,300	8,000	9,901	5,816
Canada goose	1,500	1,300	1,300	1,400	1,400	900	1,500	1,744	4,205
Ruffed grouse	3,000	1,700	4,200	3,500	3,800	6,100	12,300	20,739	14,852
Ring-necked pheasant	1,500	2,200	1,500	1,900	1,100	1,100	2,600	4,424	3,221
Raccoon	700	1,400	1,100	1,400	600	1,200	700	667	0

^a Excludes duplicate licenses and nonresident shooting preserve licenses.

^b Nonresident raccoon hunters were required to purchase a nonresident raccoon hunting license for the first time in 1979 in addition to the nonresident small game license. The initial season bag limit of 8 was increased to 12 in 1983 and to 20 in 1985.

^c In 1990 small game hunter survey no non-residents reported hunting/harvesting raccoons.

	<u>Raccoon take per hunter</u>		Number of nonresident raccoon licenses
	<u>Resident</u>	<u>Nonresident</u>	
1978	6	14	0
1979	6	6	404
1980	4	5	93
1981	7	7	121
1982	6	7	95
1983	8	8	102
1984	9	8	111
1985	9	20	108
1986	11	7	86
1987	13	15	145
1988	11	17	73
1989	8	11	41
1990	..	0	20

Table 40. Species composition of the Minnesota waterfowl harvest, 1989 and 1990 (from: Martin, E.M., P.H. Geissler, and A.N. Novara. 1991. Preliminary estimates of waterfowl harvest and hunter activity in the United States during the 1990 hunting season. U.S. Fish and Wildlife Service Adm. Rep., Office of Migratory Bird Management, Laurel, Maryland. June 1991. 34pp.).

Species	1989		1990		Percent change
	Harvest	Pct of harvest	Harvest	Pct of harvest	
Mallard	122,200	38.62	108,700	29.75	-11
Domestic mallard	100	0.04	700	0.19	+600
American black duck	300	0.11	500	0.13	+67
Black x mallard	400	0.12	0	0.00	-100
Gadwall	4,000	1.30	10,200	2.79	+155
American wigeon	12,500	3.94	13,200	3.61	+6
Green-winged teal	36,300	11.48	41,000	11.23	+13
Blue-winged/cinnamon teal	14,600	4.63	26,200	7.16	+79
Northern shoveler	2,300	0.73	1,400	0.39	-39
Northern pintail	7,200	2.29	6,000	1.65	-17
Wood duck	49,700	15.72	62,300	17.04	+25
Redhead	3,500	1.10	5,000	1.39	+43
Canvasback	300	0.08	0	0.00	-100
Greater scaup	500	0.15	2,300	0.63	+360
Lesser scaup	19,200	6.08	25,500	6.97	+33
Ring-necked duck	27,400	8.67	42,400	11.61	+55
Goldeneyes	4,200	1.34	5,500	1.51	+31
Bufflehead	8,800	2.77	8,700	2.39	-1
Ruddy duck	0	0.00	1,000	0.29	-
Scoters	400	0.13	0	0.00	-100
Hooded merganser	1,800	0.56	4,700	1.28	+161
Other mergansers	400	0.14	0	0.00	-100
Total	316,000 ^a	100.00	365,000 ^a	100.00 ^a	+16

^a Sum of all species does not equal total because of rounding error.

Table 41. Top 10 states in number of adult waterfowl hunters, 1990, and number of hunter-days and retrieved duck kill, in each (from: Martin, E.M., P.H. Geissler, and A.N. Novara. 1991. Preliminary estimates of waterfowl harvest and hunter activity in the United States during the 1990 hunting season. U.S. Fish and Wildlife Service Adm. Rep. Office of Migratory Bird Management, Laurel, Maryland. June 1991. 34pp.).

State	Number of active adult waterfowl hunters	Number of hunter-days	Retrieved duck kill	Ducks retrieved per hunter-day
Minnesota	88,385	637,693	365,422	0.57
Texas	85,654	649,337	542,246	0.84
Wisconsin	78,882	571,262	245,995	0.43
Louisiana	57,780	531,940	635,490	1.20
California	47,105	420,895	552,623	1.31
Michigan	44,681	375,166	184,475	0.49
Illinois	44,660	446,829	186,544	0.42
Pennsylvania	36,942	219,366	62,240	0.28
New York	34,996	237,738	164,293	0.69
Washington	27,522	236,972	260,115	1.10
Mississippi Flyway	464,831	3,912,396	2,563,041	0.66
United States	1,060,229	8,514,952	6,026,609	0.71

Table 42. Spring turkey hunting summary, 1978-91.

Year	Area of open hunt zone (mi ²)	Number of permit applicants	Number of permits available	Odds of drawing a permit ^a	Number of permits given	Number of persons hunting ^b	Registered turkey harvest	% success ^c
1978	389	10,740	420	25.6:1	411	398	94	23.6
1979	673	11,116	840	13.2:1	827	794	116	14.6
1980	858	9,613	1,200	8.0:1	1,191	1,072	98	9.1
1981	1,242	8,398	1,500	5.6:1	1,437	1,292	113	8.7
1982	1,490	7,223	2,000	3.6:1	1,992	1,625	106	6.5
1983	1,807	8,153	2,100	3.9:1	2,079	1,663	116	7.0
1984	2,061	7,123	3,000	2.4:1	2,837	2,270	178	7.8
1985	2,118	5,662	2,750	2.1:1	2,449	1,959	323	16.5
1986	1,897	5,715	2,500	2.3:1	2,251	1,801	333	18.5
1987	1,747	6,361	2,700	2.4:1	2,520	2,016	520	25.8
1988	1,781	8,402	3,000	2.8:1	2,994	2,395	674	28.1
1989	2,341	13,007	4,000	3.3:1	3,821	3,057	930	30.4
1990	3,819	14,326	6,600	2.2:1	6,126	5,513	1,709	31.0
1991	4,300	15,918	9,170	1.7:1	8,607	7,747	1,724	22.0

^a Calculated with total permits available to be given, and not adjusting for undersubscribed zones and time periods.

^b For 1978-82, based on a post-hunt mail survey. Number actually hunting in 1983-89 was estimated at 80% (from last year survey results were tabulated). Number actually hunting in 1991 was estimated at 90% (from preliminary results of 1991 survey).

^c Registered turkey harvest divided by number actually hunting, expressed as %.

Table 43. Synopsis of fall wild turkey hunt, Minnesota 1990.

1990	
# of zones	3
# of permits available	1000
# of permits issued	951
# turkeys registered	
Female - juvenile	85
- adult	91
Male - juvenile	67
- adult	83
Total	326
Hunter success (%) ^a	38%

^a Based on 90% of permit holders actually hunting (from mail survey).

Table 44. Deer hunting license sales, 1957-90^a.

Year	Firearms License Sales			Archery License Sales			
	Resident	Non-resident	Total	Resident	Non-resident	Total	Grand Total
1957	180,028	488	180,516	10,033	119	10,152	190,668
1958	203,430	552	203,982	10,968	118	11,086	215,068
1959	200,102	530	200,632	11,768	101	11,869	212,501
1960	233,593	621	234,214	11,834	122	11,956	246,170
1961	250,031	632	250,663	13,229	141	13,370	264,033
1962	244,166	676	244,842	11,776	150	11,926	256,768
1963	257,333	771	258,104	11,724	165	11,889	269,993
1964	278,032	1,021	279,053	13,472	193	13,665	292,718
1965	289,918	1,128	291,046	15,628	265	15,893	306,939
1966	284,195	1,287	285,482	17,203	277	17,480	302,962
1967	305,717	1,311	307,028	18,405	289	18,694	325,722
1968	302,216	1,442	303,658	20,188	292	20,480	324,138
1969	253,891	1,168	255,059	15,658	256	15,914	270,973
1970	188,166	334	188,500	12,277	220	12,497	200,997
1971	no firearms season			17,360	111	17,471	17,471
1972	257,998	959	258,957	21,985	326	22,311	281,268
1973	294,349	1,342	295,691	29,169	545	29,714	325,405
1974	296,248	1,747	297,995	30,701	644	31,345	329,340
1975	327,596	1,921	329,517	31,836	804	32,640	362,157
1976	263,868	1,029	264,897	21,773	263	22,036	286,933
1977	287,271	1,430	288,701	29,404	402	29,806	318,507
1978	307,910	1,776	309,686	32,546	476	33,022	342,708
1979	312,754	1,910	314,664	35,657	447	36,104	350,768
1980	344,516	2,378	346,894	41,328	634	41,962	388,856
1981	369,425	2,973	372,398	50,063	906	50,969	423,367
1982	369,018	3,038	372,056	54,084	848	54,932	426,988
1983	391,099	3,611	394,710	55,822	478	56,300	451,010
1984 ^b	396,074	4,307	400,381	61,576	583	62,159	462,540
1985 ^b	408,056	4,961	413,017	66,724	589	67,313	480,330
1986 ^b	412,079	4,473	416,555	67,745	547	68,292	484,847
1987 ^b	412,429	4,930	417,358	68,809	604	69,413	486,771
1988 ^b	407,861	5,626	413,487	68,255	717	68,972	482,459
1989 ^b	406,502	6,141	412,643	68,926	714	69,640	482,283
1990 ^b	419,251	6,461	425,712	68,511	749	69,260	494,972

^a Duplicate licenses not included. Leech Lake licenses are included during years they were issued.
Estimates as of 7/11/91.

^b Numbers include the following bonus deer licenses:

Year	1985	1986	1987	1988	1989	1990
Resident firearms (regular quota areas)	8,418	1,192	2,044	721	416	4,367
Resident firearms (state parks)	-	271	254	107	260	620
Non-resident firearms (regular quota area)	23	3	1	1	-	1
Resident archery (state parks)	-	27	-	-	-	-
Resident archery (metro)	-	917	1,380	1,013	1,225	1,416
Resident archery (orchard zone)	-	-	54	-	-	-
Totals	8,441	2,410	3,733	1,842	1,901	6,404

Table 45. Registered deer harvest and hunter success rates, 1974-90.

	Registered Harvest				Percent Success	
	Regular firearms	Archery	Special Muzzleloader season ^a	Total	Regular firearms and special muzzleloader seasons	Archery
1974	64,997	2,176	-	67,173	21.8	6.9
1975	63,604	2,265	-	65,869	19.3	6.9
1976	28,613	1,167	-	29,780	10.8	5.3
1977	45,918	2,609	32	48,559	15.9	8.8
1978	47,372	2,608	346	50,326	15.4	7.9
1979	44,340	2,577	318	47,235	14.2	7.1
1980	68,539	3,641	294	72,474	19.8	8.7
1981	93,027	5,535	385	98,947	25.1	10.9
1982	93,045	5,566	441	99,052	25.1	10.1
1983	132,457	5,977	652	139,086	33.6	10.6
1984	132,042	6,390	532	138,941	33.0	10.3
1985	138,065	7,575	563	146,203	33.4	11.3
1986	129,770	7,610	593	137,923	31.2	11.1
1987	135,003	7,535	535	143,073	32.4	10.9
1988	138,946	8,262	686	148,394	33.6	12.0
1989	129,551	9,307	622	139,480	31.4	13.5
1990	166,589	11,106	730	178,425	39.4	16.4

^a No special muzzleloader seasons were held before 1977.

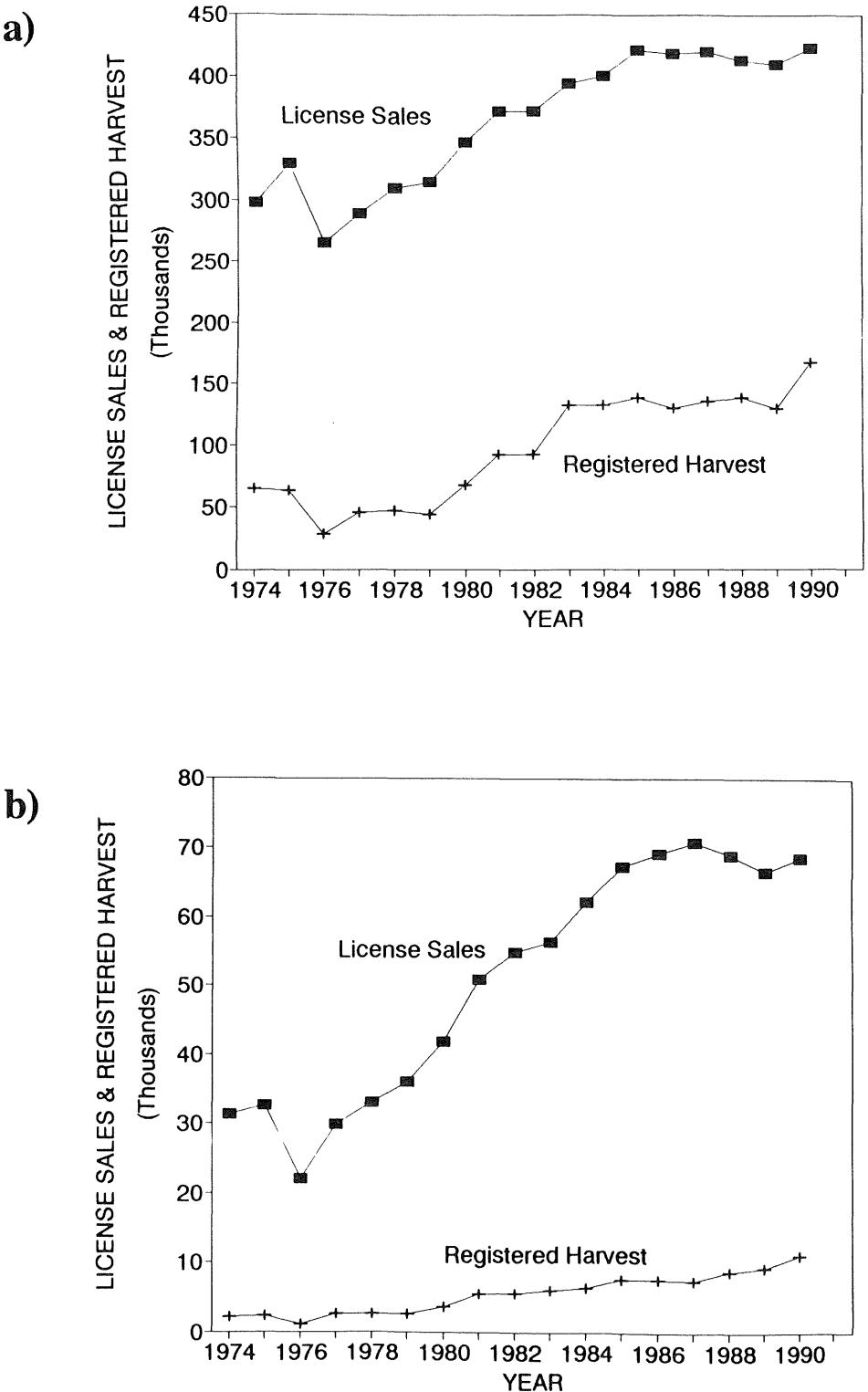


Figure 33. Numbers of Minnesota deer hunting licenses sold and registered harvest by (a) firearm and (b) archery hunters, 1974-91.

Table 46. White-tailed deer harvest and hunter success rates by DMU and Sub-DMU, 1990.

Unit	Permits Issued ^a	Antlerless Registered	Permit Success	Bucks Registered	Total Reg. Kill
Red River West	852	543	63.7%	509	1,052
Red River East	5,618	3,091	55.0%	2,482	5,573
RED RIVER Total	6,470	3,634	56.2%	2,991	6,625
AGASSIZ Total	7,264	3,980	54.8%	4,371	8,351
Rainy River West	900	534	59.3%	1,652	2,186
Rainy River Central	1,200	742	61.8%	1,649	2,391
Rainy River East	2,000	979	49.0%	1,761	2,740
RAINY RIVER Total	4,100	2,255	55.0%	5,062	7,317
Superior West	3,500	1,347	38.5%	1,617	2,964
Superior Wilderness	0	9	.0%	174	183
Superior Central	1,300	578	44.5%	1,211	1,789
Grand Portage I.R.	0	0	.0%	2	2
Superior East	550	226	41.1%	802	1,028
SUPERIOR Total	5,350	2,160	40.4%	3,806	5,966
Itasca NW	3,000	1,813	60.4%	3,226	5,039
Itasca SW	4,000	2,731	68.3%	4,843	7,574
Itasca NE	4,000	1,959	49.0%	3,548	5,507
Itasca SE	7,000	3,202	45.7%	4,801	8,003
Leech Lake Ind. Res.	1,100	491	44.6%	975	1,466
Bemidji	4,400	2,738	62.2%	3,448	6,186
ITASCA Total	23,500	12,934	55.0%	20,841	33,775
Mille Lacs West	4,400	2,538	57.7%	3,091	5,629
Mille Lacs Central	5,300	3,548	66.9%	4,984	8,532
Mille Lacs East	7,600	5,247	69.0%	8,057	3,304
White Earth Ind. Res.	300	169	56.3%	802	971
MILLE LACS Total	17,600	11,502	65.3%	16,934	28,436
Big Woods North	21,863	12,246	56.0%	10,314	22,560
Big Woods Central	4,850	2,944	60.7%	3,991	6,935
Big Woods Metro N	2,604	1,047	40.2%	1,066	2,113
Big Woods Metro S	1,802	860	47.7%	1,043	1,903
Big Woods SE	14,963	7,818	52.2%	6,656	14,474
BIG WOODS Total	46,082	24,915	54.1%	23,070	47,985
Prairie North	5,315	3,185	59.9%	2,966	6,151
Prairie River	3,547	2,695	76.0%	3,483	6,178
Prairie Southwest	8,899	5,926	66.6%	4,668	10,594
Prairie Southeast	5,070	2,814	55.5%	2,111	4,925
PRAIRIE Total	22,831	14,620	64.0%	13,228	27,848
Unknown		286		960	1,246
Total	133,197	76,118	57.1%	90,471	166,589

^a Does not include bonus permits.

Table 47. Archery deer harvest by county, 1979-90.

County	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Aitkin	34	68	110	107	94	88	140	130	137	146	184	213
Anoka	74	105	169	147	156	168	258	247	278	288	288	375
Becker	10	33	46	52	65	63	67	62	55	88	94	87
Beltrami	29	63	97	130	109	108	126	101	135	141	120	148
Benton	6	7	18	28	29	25	35	36	36	54	43	80
Big Stone	10	25	38	38	42	56	49	39	32	44	39	49
Blue Earth	35	73	80	78	116	94	116	95	123	147	148	177
Brown	27	36	46	48	47	50	38	66	60	74	76	92
Carlton	6	24	30	31	20	30	45	22	26	38	30	40
Carver	9	24	30	34	49	50	65	53	77	111	132	159
Cass	30	48	108	131	118	147	141	151	125	132	172	197
Chippewa	71	114	138	78	92	90	92	82	84	128	96	133
Chisago	31	38	68	78	95	103	142	135	121	140	161	216
Clay	19	44	75	84	94	123	111	132	109	135	147	170
Clearwater	3	17	21	21	27	20	22	29	30	40	27	27
Cook	0	1	12	7	5	9	29	12	8	14	14	17
Cottonwood	60	71	87	73	99	54	90	75	70	82	87	100
Crow Wing	32	47	123	105	99	156	177	159	165	180	197	254
Dakota	21	20	46	51	64	99	124	167	174	173	180	231
Dodge	17	19	26	22	45	76	52	63	77	80	103	99
Douglas	31	32	64	53	77	68	86	79	72	87	87	124
Faribault	31	51	46	49	57	47	58	73	53	78	66	88
Fillmore	22	46	50	64	75	81	108	83	109	143	120	174
Freeborn	38	37	47	34	69	60	61	67	87	99	104	103
Goodhue	34	57	63	69	71	69	113	112	111	120	123	154
Grant	10	19	18	22	27	27	33	26	19	33	44	33
Hennepin	35	78	69	44	97	78	105	156	176	138	190	217
Houston	25	46	55	70	58	67	79	75	92	89	114	123
Hubbard	42	56	97	130	102	98	126	138	127	129	128	144
Isanti	32	46	83	83	82	83	97	102	82	116	146	161
Itasca	36	98	171	146	113	127	155	169	140	175	169	220
Jackson	34	26	47	44	46	42	59	54	61	74	94	97
Kanabec	7	11	35	66	51	49	76	61	76	80	131	174
Kandiyohi	41	41	95	96	111	116	108	111	127	168	197	197
Kittson	1	8	12	10	28	32	24	23	47	40	66	95
Koochiching	23	28	33	18	21	29	20	29	27	31	35	34
Lac Qui Parle	38	53	87	82	78	108	141	107	96	122	120	142
Lake	8	18	40	46	30	39	50	40	40	54	42	48
Lake of the Woods	9	12	13	13	14	22	24	22	21	30	31	38
LeSueur	13	27	38	31	39	52	37	62	42	77	77	78
Lincoln	57	50	72	56	74	35	68	54	44	69	69	71
Lyon	36	84	94	74	110	72	104	104	82	113	107	102
McLeod	63	32	40	28	2	33	35	55	45	72	74	74
Mahnomen	1	5	4	7	5	6	9	8	4	2	12	13
Marshall	18	38	39	45	66	82	79	75	75	70	69	81
Martin	25	40	35	38	56	33	41	55	64	64	57	80
Meeker	37	43	44	43	37	54	59	61	76	102	119	129
Mille Lacs	8	21	40	57	35	63	51	40	64	55	70	114
Morrison ^a	19	30	66	158	127	108	114	66	104	118	110	186
Mower	27	46	55	42	80	64	113	121	105	123	117	155
Murray	49	81	130	83	61	39	90	71	86	88	89	94
Nicollet	40	61	80	67	65	52	64	88	50	75	105	94
Nobles	34	43	79	33	54	18	43	48	55	55	56	52
Norman	11	15	20	34	35	45	43	39	51	47	34	58
Olmsted	25	24	55	51	85	84	86	108	96	109	117	150

Table 47. Continued.

County	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Ottertail	60	98	133	153	175	178	234	223	237	237	253	302
Pennington	3	9	12	18	15	19	12	19	15	6	9	17
Pine	73	123	166	171	134	166	229	186	201	262	330	417
Pipestone	34	32	40	30	67	1	42	53	55	57	53	52
Polk	32	42	50	78	70	102	98	102	110	136	93	118
Pope	31	49	49	64	57	56	63	70	67	96	82	105
Ramsey	0	1	2	1	0	21	14	33	2	6	12	8
Red Lake	4	2	1	3	4	13	8	6	7	6	11	11
Redwood	38	50	81	63	82	63	72	68	63	75	77	85
Renville	20	35	55	63	59	32	62	60	66	61	78	80
Rice	31	38	45	51	39	54	56	59	93	77	108	113
Rock	16	14	38	31	14	22	51	39	51	44	42	49
Roseau	32	62	77	90	112	98	94	86	81	95	82	103
St. Louis	42	87	180	149	120	127	180	209	159	197	186	228
Scott	41	44	50	37	50	72	87	136	192	134	210	268
Sherburne	60	89	128	116	113	115	131	128	116	86	145	170
Sibley	22	33	41	30	32	43	43	44	46	46	70	67
Stearns	49	81	134	143	122	159	241	239	226	268	303	410
Steele	7	14	19	27	29	30	41	41	46	65	56	65
Stevens	13	9	11	21	27	26	25	20	26	28	19	30
Swift	23	42	67	49	67	59	68	67	84	94	96	101
Todd	45	52	95	109	103	126	169	141	127	147	162	185
Traverse	7	12	21	13	21	32	22	19	33	32	41	39
Wabasha	20	15	18	30	61	57	50	61	50	64	87	98
Wadena	14	21	45	69	70	64	43	62	43	60	68	76
Waseca	20	26	46	35	55	42	27	36	42	46	44	61
Washington	15	39	75	91	88	154	174	196	189	283	336	431
Watonwan	16	31	34	30	35	20	39	39	45	39	51	52
Wilkin	2	15	26	34	39	34	34	32	29	38	26	43
Winona	72	96	116	138	117	151	234	196	224	221	254	266
Wright	29	45	71	78	83	95	92	115	112	140	209	191
Yellow Medicine	34	35	47	38	54	47	47	44	49	70	92	79
Unknown	40	20	25	63	23	34	37	70	17	22	14	25
Camp Ripley	148	b	153	129	237	387	278	257	284	241	215	301
Totals	2577	3641	5535	5566	5977	6390	7575	7610	7715	8759	9541	11106

^a Camp Ripley not included.^b No archery hunt.

Table 48. Special Muzzleloader Season harvest by block, 1990.
 (Includes Special Permit Areas)

Block Number	Adult		Fawns		Total
	Male	Female	Male	Female	
152	7	12	6	7	32
157	1	10	3	4	18
158	0	2	0	0	2
159	3	11	2	3	19
169	4	12	5	2	23
175	0	1	0	1	2
179	0	1	0	0	1
180	0	1	1	0	2
183	0	1	0	0	1
201	0	1	1	1	3
202	1	0	0	0	1
203	2	0	0	0	2
205	0	1	0	0	1
211	7	10	6	0	23
212	1	1	0	0	2
223	0	2	0	0	2
225	0	1	1	0	2
227	0	1	0	0	1
235	3	2	4	2	11
245	11	18	4	1	34
246	0	2	1	2	5
247	2	1	1	0	4
249	8	11	3	8	30
284	0	0	1	0	1
339	1	1	1	0	3
341	0	2	0	0	2
342	1	5	2	1	9
344	22	54	41	24	141
345	1	1	0	2	4
346	0	0	1	0	1
348	1	2	1	0	4
405	0	0	1	0	1
416	2	1	0	0	3
417	0	0	2	0	2
422	0	1	0	0	1
424	1	3	0	1	5
431	2	11	3	4	20
432	18	51	34	19	122
433	6	14	10	7	37
434	1	3	3	1	8
436	0	0	1	0	1
446	2	3	0	1	6
449	0	1	1	0	2

Continued

Table 48. Continued.

Block Number	Adult		Fawns		Total
	Male	Female	Male	Female	
450	0	0	1	0	1
451	0	0	1	0	1
453	0	1	1	1	3
454	0	14	13	7	34
455	4	6	5	4	19
456	0	1	0	1	2
457	0	0	1	0	1
459	2	4	6	4	16
462	20	21	5	12	58
464	0	0	0	1	1
Total	134	302	173	121	730

Table 49. Muzzleloader Special Permit Area Data, 1990.

Area	Dates	Permits Issued	Applications	Harvest			Total
				Bucks	Antlerless		
Carlos Avery WMA (Sanctuary)	11/24-11/30	21	53	5	10	15 ^a	
	12/01-12/09	20	40	0	2	2 ^a	
Crow Wing S.P.	12/01-12/03	39	40	7	22	29	
Brainerd/Crow Wing County Airport	11/24-12/09	40	40	0	3	3	
Nerstrand Woods SP ^b	11/24-11/27	97	174	20	38	58	
Lake Shetek SP ^c	11/24-11/30	43	43	0	29	29	
Southwest M. Hunt	11/24-11/30	369	369	18	57	75	
	12/01-12/09	438	438	24	152	176	

^a Harvest for Carlos Avery Sanctuary was determined from a hunter questionnaire.

^b 45 Bonus Permits were issued for Nerstrand Woods State Park.

^c Lake Shetek State Park hunters were restricted to shooting antlerless deer only.

Table 50. Special Muzzleloader Season Harvests, 1981-1990.

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Carlos Avery WMA	53	31	57	22	23	41	*	*	*	12
Carlos Avery WMA (Sanctuary)	--	--	--	--	16	6	31	57	30	17
Cedar Rock WMA	--	--	--	--	--	--	--	--	2	--
Chengwatana SF	--	--	1	1	4	5	5	8	19	19
Cloquet Valley SF	--	--	--	2	1	0	2	4	5	3
Dalbo WMA	--	--	--	--	--	--	--	--	--	2
Danvers WMA	--	3	1	7	7	9	3	4	1	--
Elm Lake & Eckvoll WMA	--	--	--	--	--	--	--	3	--	2
Forestville SP	--	--	--	--	--	--	10	--	--	--
Fort Snelling SP	--	--	--	--	--	--	4	--	--	--
George Washington SF	--	--	5	14	16	17	4	11	15	23
Glacial Lake SP	--	--	--	--	--	--	--	18	6	--
Gores Pool WMA	--	--	5	5	1	2	3	3	3	3
Helmer Myre SP	--	--	--	--	--	--	--	--	41	--
Kabetogama SF	--	--	--	--	--	--	--	--	--	0
Kunkel WMA	--	--	--	--	--	--	--	--	--	2
Lac qui Parle WMA and Big Stone NWR	91	130	168	151	199	146	112	185	179	--
Lake Bronson SP	--	--	--	--	--	--	--	1	--	--
Lake Shetek SP	19	36	35	30	25	28	25	34	28	--
Land-O-Lakes SF	--	--	--	--	--	--	--	--	1	0
Lost River SF	--	--	--	--	--	--	--	--	--	1
McCarthy Lake WMA	1	0	1	0	0	2	5	6	8	9
Meadowbrook WMA	3	4	11	6	6	1	4	2	3	5
Mille Lacs WMA	54	25	5	14	13	13	21	28	25	32
Nemadji SF	--	--	1	1	0	3	2	3	4	1
Nerstrand Woods SF	--	--	--	--	--	--	--	45	--	--
Paul Bunyan Game Refuge	--	--	19	33	27	28	27	38	39	34
Red Lake WMA and Beltrami Island SF	14	14	29	11	21	27	14	25	17	25
R.J. Dorer Memorial SF	7	32	10	6	1	2	0	1	3	11
Roseau River WMA	4	1	3	5	3	4	2	3	7	3
Rum River SF	--	--	3	1	7	5	6	24	24	20
Savanna SF	--	--	2	2	6	6	0	4	5	0
Sturgeon River SF	--	--	--	--	--	--	--	--	--	2

Table 50. Continued.

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Talcot Lake WMA	16	61	137	13	43	19	29	45	31	--
Thief Lake WMA	12	6	5	7	8	2	6	3	2	1
Whitewater WMA	90	80	150	139	97	143	117	121	115	141
Whitewater Sanctuary	--	--	--	45	--	--	96	--	--	--
Walnut Lake WMA	5	0	4	6	5	6	7	10	10	--
 Totals	 385	 441	 652	 532	 563	 593	 535	 686	 622	 351

* Harvest totals from Carlos Avery WMA and Carlos Avery WMA (sanctuary) were combined for those years.

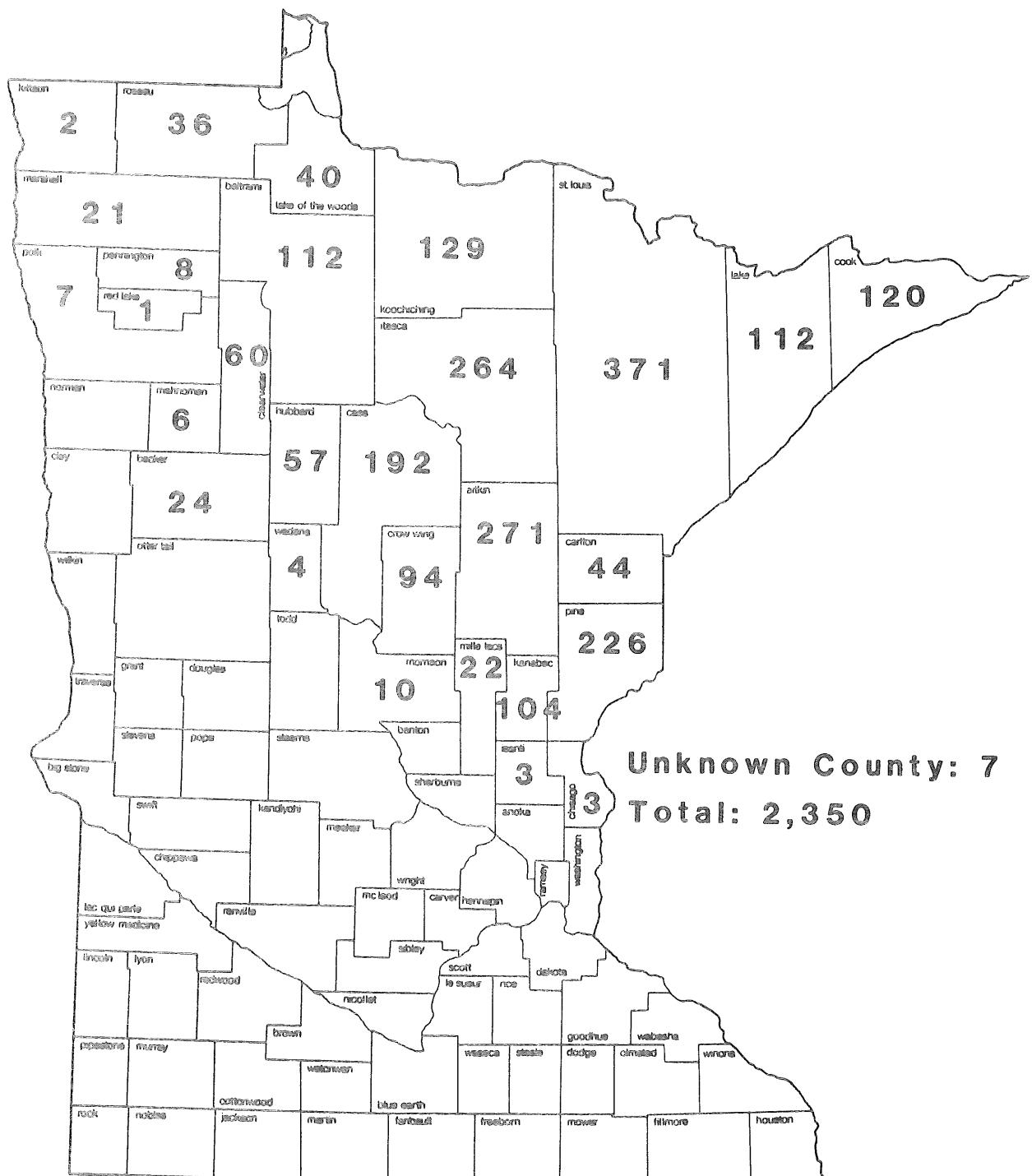


Figure 34. Black bear registered harvest by county, 1990 season.

Table 51. Registered bear harvest by county, 1978-1990.

County	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	Total
Aitkin	103	55	92	128	39	102	96	118	153	149	157	226	271	1,689
Anoka	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Becker	12	13	7	9	1	14	9	10	3	9	8	17	24	136
Beltrami	44	42	28	79	24	78	60	58	53	55	58	79	112	770
Benton	0	0	0	0	0	0	0	0	0	1	2	0	0	3
Carlton	14	7	17	18	3	9	19	34	39	21	28	31	44	284
Cass	51	57	69	110	29	93	73	114	89	134	96	173	192	1,280
Chisago	0	0	0	1	0	0	0	0	1	2	2	3	3	12
Clearwater	2	12	3	18	4	8	7	17	12	22	14	25	60	204
Cook	98	72	148	79	7	46	30	62	65	98	45	127	120	997
Crow Wing	9	12	9	33	8	26	21	36	22	37	34	47	94	388
Hubbard	23	16	15	19	11	25	45	41	36	37	30	42	57	397
Isanti	0	0	1	3	0	0	0	1	2	1	0	0	3	11
Itasca	158	108	212	172	50	121	128	170	183	242	179	245	264	2,232
Kanabec	28	10	12	18	8	19	19	18	36	34	52	48	104	406
Kittson	0	1	0	0	0	1	8	0	2	2	7	3	2	26
Koochiching	91	89	137	149	66	105	89	95	113	126	87	111	129	1,387
Lake	78	40	74	80	17	42	28	60	79	83	60	119	112	872
Lake of the Woods	16	12	30	43	25	32	41	29	32	27	48	51	40	426
Mahnomen	3	0	0	1	2	2	5	1	4	2	2	3	6	31
Marshall	0	1	2	3	1	9	17	12	5	14	24	14	21	123
Mille Lacs	7	5	5	12	3	11	11	28	14	16	21	17	22	172
Morrison	4	3	1	1	1	10	5	4	8	11	6	6	10	70
Norman	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Pennington	0	0	0	1	0	3	2	1	1	12	4	3	8	35
Pine	58	31	62	73	20	55	52	98	113	115	208	157	226	1,268
Polk	0	0	1	0	0	0	0	1	0	0	1	0	7	10
Red Lake	0	0	3	2	0	0	0	0	0	1	0	1	1	8
Rice	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Roseau	8	4	18	18	7	23	32	19	28	29	28	36	36	286
St. Louis	210	148	289	284	64	197	122	302	317	290	305	325	371	3,224
Wadena	1	0	0	1	0	0	0	0	0	0	1	1	4	8
Wilkin	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Unknown	9	4	13	4	22	7	0	11	6	5	2	1	5	89
Total	1,028	743	1,248	1,359	412	1,038	919	1,340	1,416	1,577	1,509	1,911	2,350	16,850

Table 52. Number of bear permits, licenses, hunters, and hunter-days, 1981-90.

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Permit applications	-- ^a	9,260	13,617	17,886	22,954	20,694	19,687	25,879	24,096	24,861
Permits available	--	1,960	3,550	3,880	4,290	4,730	4,810	5,310	5,520	6,370
Licenses purchased:										
Quota areas	--	1,921	3,471	3,489	3,948	4,188	4,213	4,297	4,628	5,568
No-quota areas	11,429	--	--	--	--	--	1,789	1,297	1,145	1,472
% Permit-holders buying license	--	98.0	97.8	89.9	92.0	88.5	87.6	80.9	83.8	87.4
% License-holders hunting	93.3	92.5	90.4	90.0	92.7	93.3	91.8	91.0	93.6	93.0
Estimated number hunters	10,700	1,800	3,100	3,100	3,700	3,900	5,500	5,100	5,400	6,500
Mean hunting-days per hunter	5.4	6.8	6.3	6.1	5.9	5.8	6.1	6.3	6.0	5.9
Estimated total hunting-days	57,900	12,000	19,800	19,200	21,700	22,600	33,400	31,800	32,600	38,700

^a License sales not limited by permit in 1981.

Table 53. Percent hunting success of those Minnesota bear hunters that hunted^a, 1982-90.

Area	1982	1983	1984	1985	1986	1987	1988	1989	1990
11 ^b	10	33	54	21	41	29	30	33	27
12	14	38	42	32	25	32	37	39	38
13	32	27	38	49	35	52	38	45	35
22	44	36	25	13	19	19	8	23	20
23	42	46	29	38	49	50	39	41	36
24	20	29	22	49	33	29	48	44	32
31	31	47	21	52	46	41	31	44	50
41	15	36	24	30	27	46	49	44	47
42	17	30	35	38	38	43	38	49	42
51	27	30	30	42	41	31	35	37	46
52 ^b	27	27	32	37	41	12	30	24	31
Statewide	24	35	31	40	40	31	34	38	39

^a From a bear hunter survey conducted by the Forest Wildlife Populations and Research Group.

^b Area numbers not officially recognized, but used herein to designate no-quota hunting areas established in 1987 (see figure below). Hunting licenses were controlled by a quota in these areas during 1982-86.

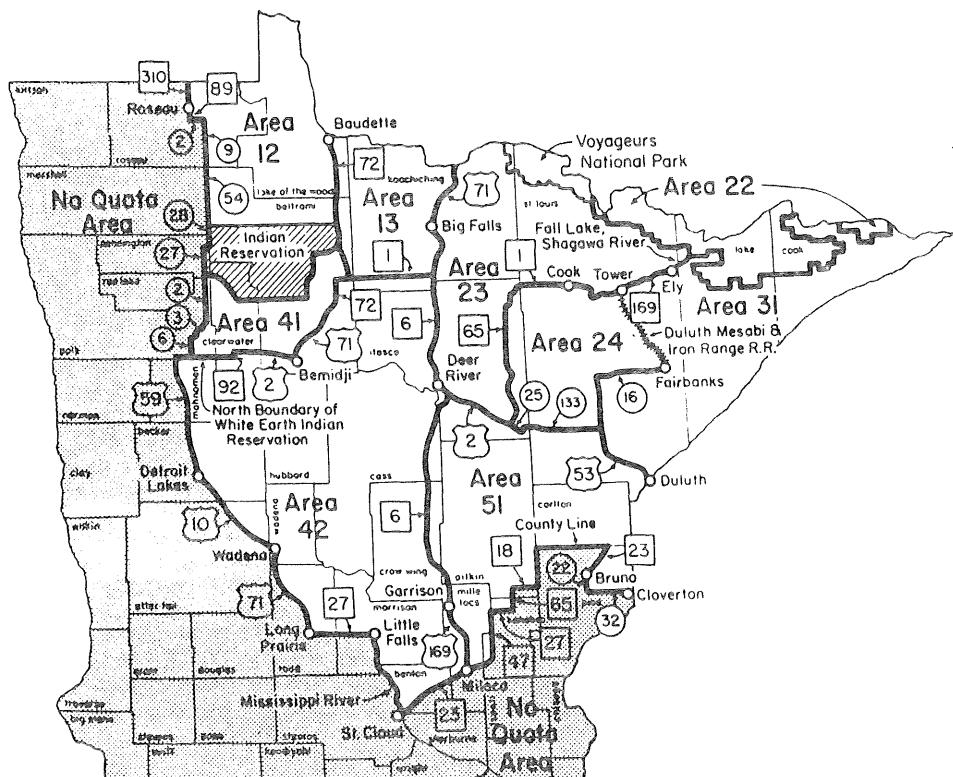


Figure 35. Boundaries of bear management units, 1990.

Table 54. Percent of Minnesota bear hunters using bows, baits, and guides^a, 1980-90.

Method	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Bow		17	14	19	21	16	19	23	21	20	20
Bait		53	55	62	61	66	69	75	75	75	74
Guide	5	7	6	5	6	5	6	6	7	6	6

^a From a bear hunter survey conducted by the Forest Wildlife Populations and Research Group.

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Table 55. Percent hunting success of Minnesota bear hunters by method of hunt^a, 1980-90.

Method	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Firearm	15	23	36	32	39	41	32	34	39	39	39
Bow only	22	19	34	27	42	33	31	33	35	42	
Bait	21	25	37	33	42	42	32	37	41	41	
No bait	11	21	32	26	34	33	30	25	31	27	
Guide	50	19	33	50	57	36	48	56	51	50	44
No guide	17	16	22	34	30	39	39	30	33	38	39

^a From a bear hunter survey conducted by the Forest Wildlife Populations and Research Group.

Table 56. Moose hunt quota and harvest statistics, 1971-89.

Year	Area	Number of	Number of	Chances	Harvest	Party	Sex of Moose	
		4-person licenses issued	4-person license applications				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	147 (65%)	80 (35%)
1977	NW	630	16,586	1:18	598	94.9	348 (58%)	250 (42%)
	NE	300			243	81.0	172 (71%)	71 (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%)
1983	NW	780	17,754	1:14	737	94.5	493 (67%)	244 (33%)
	NE	523			442	84.5	273 (62%)	169 (38%)
1985	NW	768	14,772	1:14	718	93.5	419 (58%)	299 (42%)
	NE	300			250	83.3	165 (66%)	85 (34%)
1987	NW	772	14,234	1:11	727	94.2	505 (69%)	222 (31%)
	NE	528			436	82.6	292 (67%)	144 (33%)
1989	NW	449	15,381	1:15	438	97.6	291 (66%)	147 (34%)
	NE	545			444	81.5	285 (64%)	159 (36%)

TRAPPING HARVEST STATISTICS
Section of Wildlife
Box 7, 500 Lafayette Rd.
St. Paul, MN 55155
(612) 296-3344

Table 57. Trapper response to mail surveys, 1979-80 through 1990-91.

Year	Number mailed	Number not delivered	<u>Delivered questionnaires completed and returned</u>	
			Number	Percent
1979-80	1,011	29	888	90.4
1980-81	1,345	110	1,072	86.8
1981-82	1,345	36	1,167	89.2
1982-83	925	28	794	88.5
1983-84	770	10	663	87.2
1984-85	556	9	495	90.5
1985-86	581	13	506	89.1
1986-87	582	8	514	89.5
1987-88	721	11	607	85.5
1988-89	852	25	727	87.9
1989-90	3,302	498	2,804	84.9
1990-91	2,294	102	1,875	85.5

Table 58. Use of trapper licenses, 1979-80 through 1990-91.

		Return from mail survey	Projections from license sales
1979-80	Trapped	760 (85.6%)	15,512
	Did not trap	<u>128</u> (14.4%)	<u>2,609</u>
		888 (100.0%)	18,121
1980-81	Trapped	918 (85.6%)	20,548
	Did not trap	<u>154</u> (14.4%)	<u>3,457</u>
		1,072 (100.0%)	24,005
1981-82	Trapped	972 (83.3%)	19,725
	Did not trap	<u>195</u> (16.7%)	<u>3,954</u>
		1,167 (100.0%)	23,679
1982-83	Trapped	688 (86.6%)	17,526
	Did not trap	<u>106</u> (13.4%)	<u>2,700</u>
		794 (100.0%)	20,226
1983-84	Trapped	549 (82.8%)	13,862
	Did not trap	<u>114</u> (17.2%)	<u>2,879</u>
		663 (100.0%)	16,741
1984-85	Trapped	445 (89.9%)	15,136
	Did not trap	<u>50</u> (10.1%)	<u>1,700</u>
		495 (100.0%)	16,836
1985-86	Trapped	420 (83.0%)	12,201
	Did not trap	<u>86</u> (17.0%)	<u>2,498</u>
		506 (100.0%)	14,699
1986-87	Trapped	442 (86.0%)	13,240
	Did not trap	<u>72</u> (14.0%)	<u>2,155</u>
		514 (100.0%)	15,395
1987-88	Trapped	512 (84.6%)	15,777
	Did not trap	<u>93</u> (15.4%)	<u>2,866</u>
		605 (100.0%)	18,643
1988-89	Trapped	582 (80.1%)	9,789
	Did not trap	<u>145</u> (19.9%)	<u>2,432</u>
		727 (100.0%)	12,221
1989-90	Trapped	2,251 (80.3%)	7,314
	Did not trap	<u>553</u> (19.7%)	<u>1,794</u>
		2,804 (100.0%)	9,108
1990-91	Trapped	1,399 (80.6%)	4,972
	Did not trap	<u>337</u> (19.4%)	<u>1,197</u>
		1,736 (100.0%)	6,169 ^a

^a 6,169 minus 13 duplicates as of 7/11/91.

Table 59. Estimated number of trappers and estimated take per trapper of various furbearers, 1981-82 through 1990-91.

	Estimated number of trappers (thousands)										Estimated take per trapper reporting that species									
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Muskrat	16	12	11	13	9	11	15	7	4	2	62.5	48.4	75.8	7.51	51.8	72.9	68.7	28.3	26.5	24.3
Mink	13	10	8	9	8	9	13	7	5	3	5.7	5.6	6.8	8.0	7.6	8.7	8.5	8.9	8.8	9.5
Short-tailed weasel	1	1	<1	1	<1	1	1	1	<1	<1	3.2	2.2	4.6	3.5	2.6	4.2	4.7	4.2	4.6	3.2
Long-tailed weasel	1	1	<1	1	<1	1	2	1	1	<1	2.8	1.6	4.0	2.1	2.0	5.2	4.4	5.0	4.6	2.8
Raccoon	12	9	9	9	8	8	11	6	4	2	6.2	6.4	7.8	8.3	11.3	11.4	11.9	12.8	11.6	15.8
Striped skunk	7	5	4	5	4	4	5	3	2	1	8.1	6.4	8.5	9.4	10.3	10.2	10.2	10.1	9.5	11.8
Eastern spotted skunk	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	1.6	6.7	2.5	1.4	2.5	2.5	1.8	2.0	4.8	7.3
Badger	2	1	1	1	1	1	1	1	<1	<1	1.8	1.7	2.1	1.6	2.1	1.7	1.9	2.0	1.8	2.4
Opossum	<1	<1	<1	<1	1	1	2	1	1	1	2.1	1.8	3.1	2.8	8.7	13.8	6.7	8.2	8.6	10.7
Red fox	8	6	6	6	5	5	6	4	2	2	6.8	6.3	6.9	9.2	6.1	7.5	8.7	13.3	10.1	18.3
Gray fox	2	2	2	2	2	2	2	1	1	<1	2.7	2.7	2.5	2.9	3.5	2.9	2.6	4.1	3.1	3.0
Coyote	1	2	2	2	1	2	2	1	1	1	2.4	3.2	4.8	5.3	4.5	3.8	3.3	3.7	4.3	3.4
Beaver (fall)	4	2	4	5	4	6	8	4	3	2	7.5	4.4	7.3	10.0	9.8	11.5	16.3	11.2	14.6	13.2
Beaver (spring)	1	3	4	3	4	4	4	2	2	1	12.6	25.5	25.4	30.3	21.7	21.7	22.7	14.1	19.9	18.8

Table 60. Minnesota trapper license sales and estimated annual harvest, 1981-82 through 1990-91^a.

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Trapper license sales ^b	23,679	20,196	16,741	16,836	14,699	15,395	18,643	12,221	9,108	6,169
Beaver license sales ^c	6,602	1,971	-	-	-	-	-	-	-	-
Estimated harvest ^d (thousands)										
Muskrat	989	570	865	963	477	826	1,007	185	118	55
Mink	76	57	58	75	57	77	110	59	40	25
Short-tailed weasel	3	1 ^e	2	3	1	3	7	3	2	1
Long-tailed weasel	4	1	1	1	1	3	7	3	2	1
Raccoon	72	60	69	78	89	95	134	74	41	34
Striped skunk	54	34	36	47	41	42	54	31	17	15
Eastern spotted skunk	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Badger	3	2	2	2	2	2	3	2	1	1
Opossum	1	<1	2	1	7	14	10	9	6	6
Red fox	53	41	42	58	29	40	57	53	25	33
Gray fox	5	5	5	5	6	6	5	5	2	1
Coyote	3	5	9	10	7	7	7	3	4	3
Beaver (fall season)	30	24	30	51	43	71	132	47	48	24
Beaver (spring season)	10	76	101	103	92	101	26	-	31	20
Registered harvest										
Otter ^f	485	385	408	529	559	777	1,386	922	1,294	888
Lynx ^f	17	28	9	closed						
Bobcat ^f	260	274	208	280	119	160	214	140	129	84
Fisher	862	912	631	1,289	678	1,068	1,642	1,025	1,243	746
Marten	closed	closed	closed	closed	430	798	1,363	2,072	2,119	1,349

^a Includes data for all seasons from October through April of years indicated.

^b Separate licenses were issued for juveniles (13-17 years old) and adults (18 and older), beginning in 1982. As of July 11, 1991, 6,169 trapping licenses were sold in 1990, 780 (12.6%) were juvenile licenses and 5,389 (87.4%) were adult licenses. Duplicate licenses excluded.

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

^d Based upon trappers' responses to mail surveys.

^e 1 is any number which rounds to 1.
<1 is <0.5.

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

Table 61. Average price per pelt paid to hunters and trappers in Minnesota, 1977-78 through 1990-91.

Species	Average pelt prices paid hunters and trappers in Minnesota (dollars)													
	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Muskrat	4.25	4.56	5.90	5.62	3.47	2.19	2.24	2.81	1.85	2.89	3.12	2.07	0.80	0.75
Mink (male)	22.15	36.69	42.83	37.55	34.35	24.43	30.33	28.40	25.29	35.75	40.54	39.76	30.38	23.06
Mink (female)	8.86	14.80	18.61	16.04	17.22	10.63	14.55	14.04	13.37	18.43	20.25	22.70	17.26	14.73
S.T. Weasel	0.44	0.47	0.56	0.64	0.59	0.56	0.56	0.77	0.98	0.98	0.89	1.11	1.20	1.55
L.T. Weasel	0.85	1.01	0.94	0.84	0.96	0.80	0.93	1.10	1.06	1.28	1.02	1.04	1.25	0.58
Raccoon	22.30	45.83	36.42	27.44	32.35	17.95	12.66	19.91	15.51	21.81	16.67	7.53	4.88	4.19
Striped Skunk	2.78	4.13	4.14	4.74	3.46	2.58	2.77	2.74	1.58	2.06	2.47	1.90	1.31	1.84
Eastern Spotted Skunk	5.42	7.37	3.48	6.06	2.58	1.75	N.A.	3.00	6.17	N.A.	N.A.	N.A.	N.A.	N.A.
Badger	21.07	39.55	24.02	18.39	18.14	9.04	10.96	9.18	6.45	5.43	5.74	2.99	2.91	4.33
Opossum	2.11	2.10	2.12	2.52	1.58	0.87	0.71	1.14	0.62	0.97	0.91	0.62	0.76	3.51
Red Fox	52.97	72.21	55.43	50.81	51.48	31.10	32.81	29.07	17.51	22.07	16.69	9.89	8.58	7.17
Gray Fox	25.51	45.44	42.51	37.87	26.74	23.48	22.95	21.58	15.00	22.60	22.56	11.45	7.39	5.16
Coyote	34.03	56.62	39.76	31.37	41.28	25.41	18.79	19.06	18.19	22.03	18.35	8.43	6.42	8.95
Lynx	137.86	269.44	199.19	94.91	180.33	94.17	125.00	-	-	-	-	-	-	-
Bobcat	73.98	163.76	117.74	78.55	73.35	66.40	61.40	75.81	70.00	120.15	101.10	68.31	48.50	42.50
Beaver ^a (fall-winter)	13.45	17.64	32.74	17.88	14.48	10.69	9.52	12.51	15.03	20.32	16.75	13.84	12.49	9.44
Beaver ^a (spring)	17.64	28.71	19.58	16.52	12.55	11.60	12.24	16.11	17.90	-	17.12	12.62	10.99	9.66
Otter	41.23	58.85	63.37	32.78	29.80	25.65	24.79	21.56	20.81	24.15	22.85	22.02	22.01	24.21
Fisher ^a (male)	131.89	107.67	89.51	94.42	69.91	70.59	70.26	73.55	84.32	84.36	53.83	26.15	34.85	
Fisher ^a (female)	(71.23)	147.23	127.79	104.29	110.08	99.08	121.08	121.76	130.47	162.29	170.31	99.63	52.92	46.25
Marten (male)	No Open Season									30.29	35.68	43.13	50.08	47.90
Marten (female)										27.61	26.58	39.20	43.46	46.88
													40.84	

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

REGISTERED FURBEARER HARVEST STATISTICS
Forest Wildlife Populations and Research Group
1201 E. Hwy 2
Grand Rapids, MN 55744
(218) 327-4432

Table 62. Registered furbearer harvests and total permits issued, 1985-90^a.

Year	<u>Bobcat</u>		<u>Fisher</u>		<u>Marten</u>		<u>Otter</u>	
	Permits	Harvest	Permits	Harvest	Permits	Harvest	Permits	Harvest
1985	--	119	--	678	746	430	--	559
1986	--	160	3,302	1,607	2,171	798	3,198	777
1987	--	214	4,952	1,642	3,025	1,363	4,708	1,386
1988	--	140	4,419	1,025	3,369	2,072	4,070	922
1989	--	129	3,712	1,243	3,074	2,119	3,549	1,294
1990	--	84	2,385	746	2,090	1,349	2,199	888

^a Prior request tags and permits were required beginning in 1985 for marten and in 1986 for fisher and otter. No possession tags or permits are required for bobcat.

BOBCAT 1990-1991

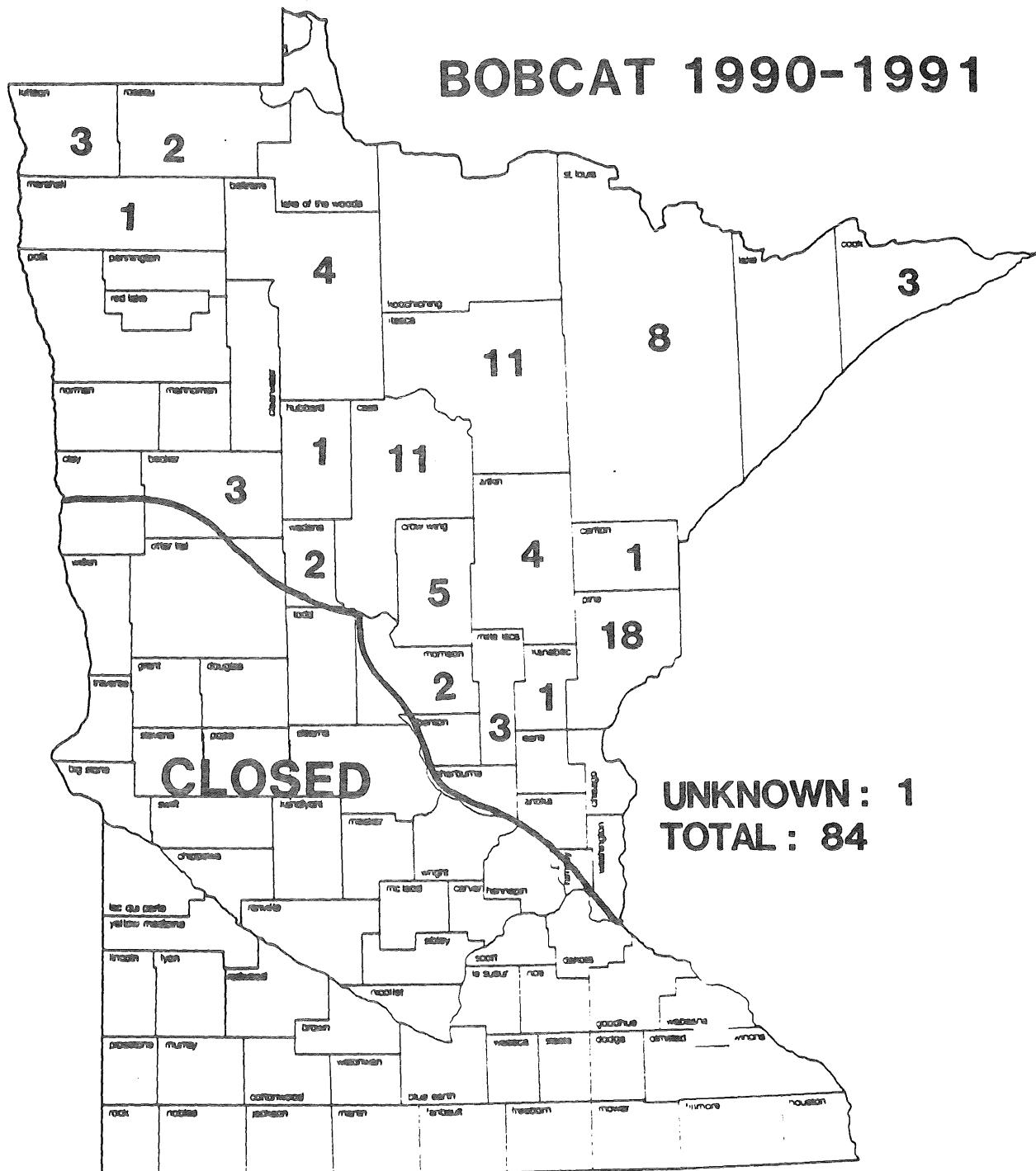


Figure 36. Bobcat harvest by county, 1990-91

Table 63. Time distribution of bobcat harvest by 5-day increments, 1990-91 season.

Interval	Sex		U	Total	% of Known Total ^a	Cumulative Percent
	M	F				
Dec. 1-5	2	7	0	9	11.1	11.1
Dec. 6-10	2	7	0	9	11.1	22.2
Dec. 11-15	4	9	0	13	16.1	38.2
Dec. 16-20	4	7	1	12	14.8	53.0
Dec. 21-25	4	2	2	8	9.9	62.9
Dec. 26-30	9	3	0	12	14.8	77.7
Dec. 31-Jan. 4	5	4	0	9	11.1	88.8
Jan. 5-6	4	4	1	9	11.1	100.0
Unknown	1	0	2	3	-	-
Total	35	43	6	84	100	100

^a Sum of percentages does not equal 100.0 because of rounding error.

Table 64. Distribution of bobcat harvest among takers, 1983-84 thru 1990-91.

Number Taken	Number of Takers								Total 1983-90 # (%)
	1983-84 # (%)	1984-85 # (%)	1985-86 # (%)	1986-87 # (%)	1987-88 # (%)	1988-89 # (%)	1989-90 # (%)	1990-91 # (%)	
1	108 (72.0)	116 (65.2)	70 (78.7)	92 (76.7)	104 (71.7)	88 (81.5)	56 (69.1)	47 (77.0)	681 (73.1)
2	32 (21.3)	39 (21.9)	11 (12.4)	18 (15.0)	23 (15.9)	11 (10.2)	13 (16.0)	9 (14.7)	156 (16.7)
3	6 (4.0)	13 (7.3)	6 (6.7)	9 (7.5)	10 (6.9)	7 (6.5)	5 (6.2)	1 (1.6)	57 (6.1)
4	4 (2.7)	9 (5.1)	1 (1.1)	0 (0.0)	6 (4.1)	1 (0.9)	3 (3.7)	4 (6.5)	28 (3.0)
5	0 (0.0)	1 (0.5)	1 (1.1)	1 (0.8)	2 (1.4)	1 (0.9)	4 (4.9)	0 (0.0)	10 (1.1)
Total	150	178	89	120	145	108	81	61	932

Table 65. Bobcat harvest by method of take, 1979-1990.

Year	Total Harvest	Trapping				Hunting			
		Harvest	(% of Total)	Takers	Average Take	Harvest	(% of Total)	Takers	Average Take
1979	291	253	(86.9)	--	--	38	(13.1)	--	--
1980	210	177	(84.3)	68	2.6	33	(15.7)	24	1.4
1981	260	219	(84.2)	143	1.5	41	(15.8)	30	1.4
1982	274	239	(87.2)	147	1.6	35	(12.8)	23	1.5
1983	208	168	(80.8)	118	1.4	40	(19.2)	32	1.3
1984	280	252	(90.0)	156	1.6	28	(10.0)	22	1.3
1985	119	83	(69.7)	62	1.3	36	(30.3)	27	1.3
1986	160	119	(74.4)	89	1.3	41	(25.6)	31	1.3
1987	214	177	(82.7)	118	1.5	37	(17.3)	26	1.4
1988	140	94	(67.1)	76	1.2	46	(32.9)	32	1.4
1989	129	90	(69.5)	49	1.8	39	(30.5)	28	1.4
1990	84*	61	(72.6)	43	1.4	22	(26.2)	17	1.3

* Sum of method totals is not equal to total harvest due to incomplete method data.

Table 66. Comparison of bobcat harvest by county, 1981-82 through 1990-91.

County	1981-82 ^a	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Aitkin	45	28	20	25	14	12	25	18	31	4
Becker	1	6	8	9	1	1	3	2	1	3
Beltrami	2	18	17	24	5	7	15	7	8	4
Carlton	15	15	4	20	6	9	9	4	1	1
Cass	26	30	13	42	20	34	28	13	27	11
Chisago	0	1	0	0	1	0	0	1	0	0
Clearwater	0	1	1	0	0	3	0	1	2	0
Cook	Closed	2	0	1	0	1	2	4	2	3
Crow Wing	2	4	4	5	6	5	1	2	0	5
Douglas	1	0	0	0	0	Closed	Closed	Closed	Closed	Closed
Hubbard	3	4	1	1	0	0	2	3	1	1
Isanti	0	0	0	0	0	1	0	0	1	0
Itasca	32	46	36	50	15	28	44	20	19	11
Kanabec	2	2	2	6	2	3	0	1	6	1
Kittson	5	5	3	0	0	3	6	2	0	3
Koochiching	0	3	12	8	8	6	9	13	1	0
Lake	4	8	3	1	1	3	4	2	1	0
Lake of the Woods	3	3	1	1	1	0	2	4	0	0
Marshall	6	2	3	1	1	3	4	0	0	1
Mille Lacs	4	0	6	0	4	3	8	2	0	3
Morrison	0	5	7	5	4	4	4	2	2	2
Ottertail	3	2	1	1	3	2	1	2	1	0
Pennington	1	0	0	0	0	0	0	0	0	0
Pine	21	29	24	29	14	11	15	23	15	18
Polk	0	0	0	1	0	0	0	1	0	0
Red Lake	0	0	0	0	1	0	0	0	0	0
Renville	0	0	0	1	0	Closed	Closed	Closed	Closed	Closed
Roseau	4	9	9	14	2	2	2	0	0	2
St. Louis	78	59	32	43	8	19	26	10	7	8
Wadena	2	0	1	1	2	0	2	2	2	2
Unknown	0	1	0	1	0	2	0	0	1	1
Total	260	274	208	280	119	160	214	140	129	84

^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.

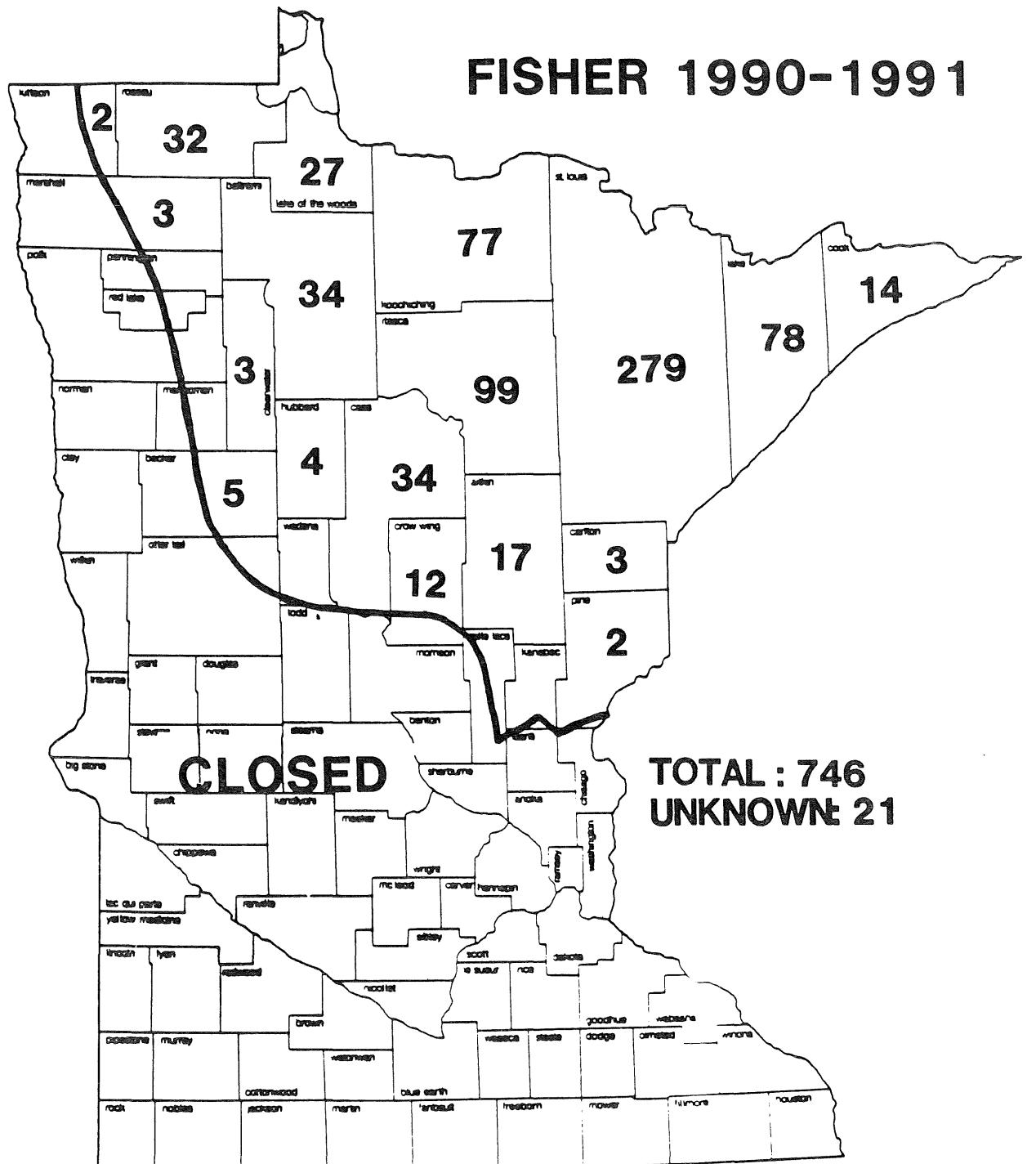


Figure 37. Fisher harvest by county, 1990-91.

Table 67. Fisher harvest by date and sex, 1990-91 season.

Date	Sex			Total	% of known Total ^a	Cumulative Percent
	Male	Female	Unknown			
Dec. 1	0	1	0	1	0.2	0.2
Dec. 2	17	22	2	41	6.1	6.3
Dec. 3	19	25	2	46	6.8	13.1
Dec. 4	19	26	5	50	7.4	20.5
Dec. 5	22	32	4	58	8.6	29.1
Dec. 6	18	28	2	48	7.1	36.2
Dec. 7	14	18	1	33	4.9	41.1
Dec. 8	30	38	1	69	10.2	51.3
Dec. 9	14	27	5	46	6.8	58.1
Dec. 10	19	32	2	53	7.9	66.0
Dec. 11	11	22	2	35	5.2	71.2
Dec. 12	25	21	0	46	6.8	78.0
Dec. 13	11	13	6	30	4.4	82.4
Dec. 14	18	17	1	36	5.3	87.7
Dec. 15	28	25	4	57	8.4	96.1
Dec. 16	12	13	1	26	3.9	100.0
Unknown	26	22	23	71	--	--
Total	303	382	61	746	100	100

^a Sum of percentages does not equal 100.0 because of rounding error.

Table 68. Fisher harvest by county and sex, 1990-91 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	11	6	0	17
Becker	2	2	1	5
Beltrami	9	25	0	34
Carlton	1	2	0	3
Cass	21	11	2	34
Clearwater	0	3	0	3
Cook	7	7	0	14
Crow Wing	8	4	0	12
Hubbard	4	0	0	4
Itasca	50	48	1	99
Kittson	2	0	0	2
Koochiching	40	37	0	77
Lake	30	48	0	78
Lake of the Woods	11	16	0	27
Marshall	0	3	0	3
Pine	2	0	0	2
Roseau	13	19	0	32
St. Louis	88	146	45	279
Unknown	4	5	12	21
Total	303	382	61	746

Table 69. Comparison of fisher harvest by county, 1981-90.

County	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Aitkin	9	15	5	10	8	8	24	14	26	17
Becker	3	2	4	3	1	4	2	4	4	5
Beltrami	44	41	25	96	27	71	115	68	78	34
Carlton	0	4	4	3	0	3	6	3	2	3
Cass	6	6	3	19	17	32	60	24	43	34
Clearwater	3	1	3	6	4	4	3	1	3	3
Cook	36	21	18	16	9	15	29	29	10	14
Crow Wing	8	6	2	11	6	11	14	3	12	12
Hubbard	1	0	0	7	1	7	9	6	8	4
Itasca	64	139	72	228	84	183	247	135	184	99
Kanabec	0	0	0	0	0	0	0	1	0	0
Kittson	0	0	6	2	1	1	4	2	1	2
Koochiching	142	182	123	255	157	195	303	128	211	77
Lake	121	115	37	80	49	81	114	78	80	78
Lake of the Woods	41	52	32	85	46	58	91	66	58	27
Mahnomen	1	0	0	0	0	0	0	5	0	0
Marshall	3	6	13	10	5	2	19	7	4	3
Norman	-----closed-----					1 ^a	1 ^a	closed	-----	
Pennington	0	0	0	0	0	0	0	1	0	0
Pine	0	0	1	1	0	0	1	1	3	2
Polk	0	0	0	0	0	1	0	1	0	0
Red Lake	0	0	0	0	0	0	1	0	0	0
Roseau	32	36	86	111	68	75	90	68	53	32
St. Louis	258	286	197	345	195	316	509	377	463	279
Unknown	90	0	0	1	0	0	0	3	0	21
Total	862	912	631	1,289	678	1,068	1,642	1,025	1,243	746

^a The reported harvest is accidental take - Norman County is closed to fisher trapping.

MARTEN 1990-1991

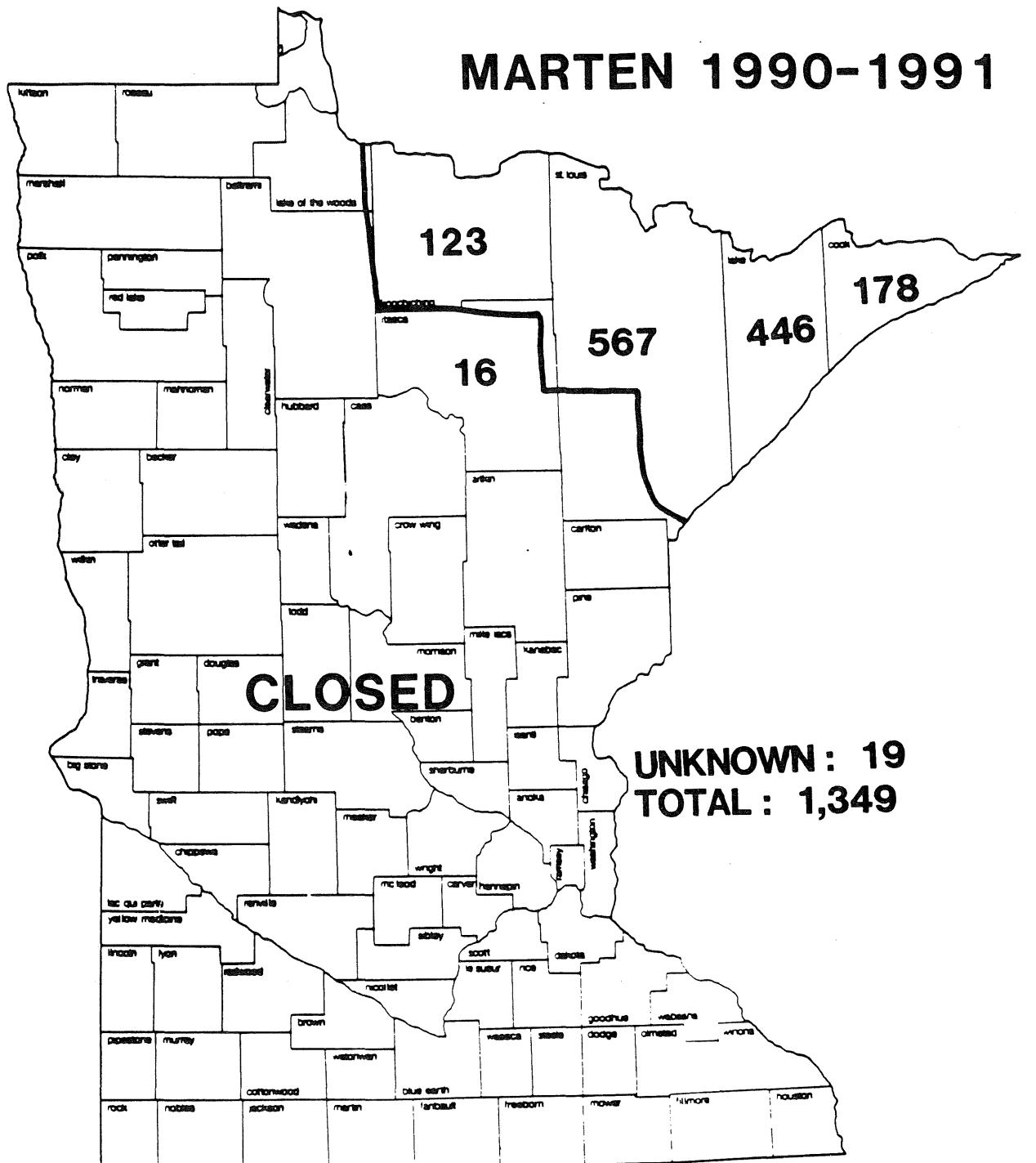


Figure 38. Pine marten harvest by county, 1990-91.

Table 70. Marten harvest by date and sex, 1989-90 season.

Date	Sex			Total	% of Known Total ^a	Cumulative Percent
	Male	Female	Unknown			
Dec. 1	10	6	0	16	1.3	1.3
Dec. 2	86	38	1	125	9.9	11.2
Dec. 3	88	34	3	125	9.9	21.1
Dec. 4	65	43	3	111	8.8	29.9
Dec. 5	72	28	7	107	8.5	38.4
Dec. 6	47	37	7	91	7.2	45.6
Dec. 7	52	19	5	76	6.0	51.6
Dec. 8	102	60	6	168	13.3	64.9
Dec. 9	66	28	3	97	7.7	72.6
Dec. 10	47	39	5	91	7.2	79.8
Dec. 11	25	13	2	40	3.2	83.0
Dec. 12	35	25	0	60	4.7	87.7
Dec. 13	28	18	0	46	3.6	91.3
Dec. 14	25	5	2	32	2.5	93.8
Dec. 15	28	18	4	50	3.9	97.7
Dec. 16	19	11	0	30	2.4	100.0
Unknown	25	13	46	84	-	-
Total	820	435	94	1,349	100	100

^a Sum of percentages does not equal 100.0 because of rounding error.

Table 71. Marten harvest by county and sex, 1990-91 season.

County	Sex			Total
	Male	Female	Unknown	
Cook	131	45	2	178
Itasca	10	4	2	16
Koochiching	80	43	0	123
Lake	283	163	0	446
St. Louis	310	179	78	567
Unknown	6	1	12	19
Total	820	435	94	1,349

Table 72. Comparison of marten harvest by county, 1986-90.^a

County	1986	1987	1988	1989	1990
Cook	75	143	305	288	178
Itasca	-----closed-----		11	18	16
Koochiching	159	275	266	204	123
Lake	160	270	457	481	446
Lake of the Woods	-----closed-----		1	0	0
St. Louis	401	675	1,032	1,123	567
Unknown	3	0	0	5	19
Total	798	1,363	2,072	2,119	1,349

^a No open season on marten prior to 1985.

OTTER 1990-1991

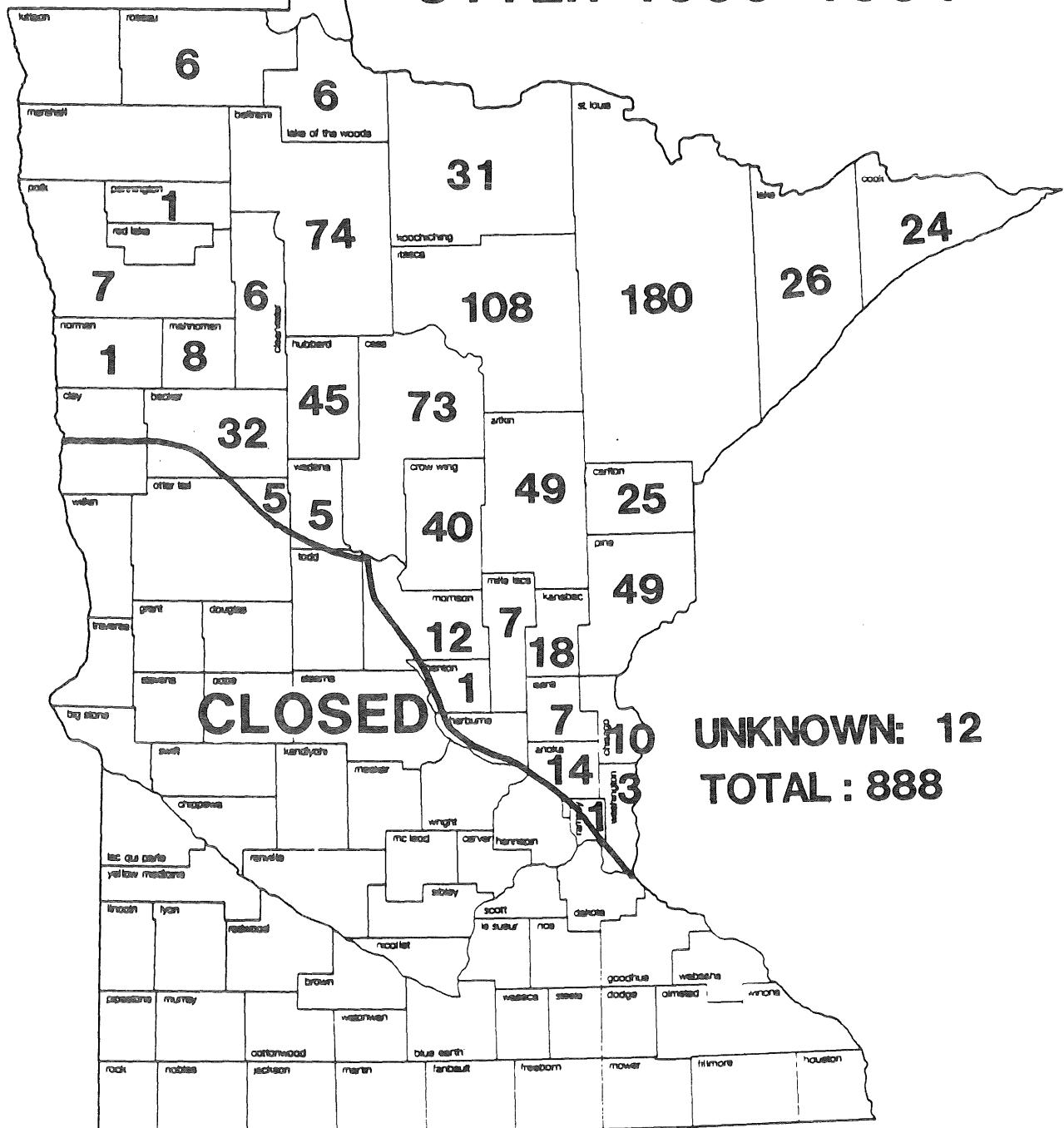


Figure 39. Otter harvest by county, 1990-91.

Table 73. Otter harvest by 5-day interval and sex, 1990-91 season.

Interval	Sex			Total	% of Known Total ^a		Cumulative Percent
	Male	Female	Unknown		Total ^a	Cumulative Percent	
Oct. 27-31	37	20	0	57	7.0	7.0	
Nov. 1-5	66	55	0	121	14.9	21.9	
Nov. 6-10	35	41	4	80	9.8	31.7	
Nov. 11-15	41	37	0	78	9.6	41.3	
Nov. 16-20	32	28	2	62	7.6	48.9	
Nov. 21-25	32	24	4	60	7.4	56.3	
Nov. 26-30	24	13	4	41	5.0	61.3	
Dec. 1-5	47	43	2	92	11.3	72.6	
Dec. 6-10	46	15	3	64	7.9	80.5	
Dec. 11-15	40	27	2	69	8.5	89.0	
Dec. 16-21	14	13	6	33	4.1	93.1	
Dec. 22-26	9	7	0	16	2.0	95.1	
Dec. 27-31	8	15	1	24	2.9	98.0	
Jan. 1-6 ^b	7	5	4	16	2.0	100.0	
Unknown	12	15	48	75	-	-	
Total	450	358	80	888	100	100	

^a Sum of percentages does not equal 100.0 because of rounding error.^b Six-day interval.

Table 74. Otter harvest by county and sex, 1990-91 season.

County	Sex			Total
	Male	Female	Unknown	
Aitkin	29	19	1	49
Anoka	6	8	0	14
Becker	19	13	0	32
Beltrami	41	32	1	74
Benton	1	0	0	1
Carlton	12	13	0	25
Cass	34	34	5	73
Chisago	3	6	1	10
Clearwater	1	5	0	6
Cook	14	10	0	24
Crow Wing	23	17	0	40
Hubbard	28	17	0	45
Isanti	1	1	5	7
Itasca	54	54	0	108
Kanabec	15	3	0	18
Koochiching	20	11	0	31
Lake	12	14	0	26
Lake of the Woods	4	2	0	6
Mahnomen	5	3	0	8
Marshall	0	0	0	0
Mille Lacs	4	3	0	7
Morrison	7	5	0	12
Norman	1	0	0	1
Ottertail	3	2	0	5
Pennington	0	1	0	1
Pine	27	22	0	49
Polk	3	4	0	7
Ramsey	0	1	0	1
Red Lake	0	0	0	0
Roseau	3	3	0	6
St. Louis	72	51	57	180
Sherburne	0	0	0	0
Todd	0	0	0	0
Wadena	4	1	0	5
Washington	1	2	0	3
Unknown	3	1	10	14
Total	450	358	80	888

Table 75. Comparison of otter harvest by county, 1982-90.

County	1982	1983	1984	1985	1986	1987	1988	1989	1990
Aitkin	20	25	34	17	43	55	57	62	49
Anoka	-----closed-----				4	2	8	21	14
Becker	8	15	18	24	34	41	55	49	32
Beltrami	39	23	33	46	66	125	87	92	74
Benton	-----closed-----				0	0	1	0	1
Carlton	4	5	13	10	13	24	12	13	25
Cass	36	33	49	59	67	147	84	130	73
Chisago	-----closed-----				4	11	9	8	10
Clearwater	9	6	11	6	17	19	5	13	6
Cook	17	4	16	5	20	33	25	31	24
Crow Wing	15	13	15	26	27	57	31	65	40
Hubbard	21	15	22	25	27	36	19	39	45
Isanti	-----closed-----				12	24	12	17	7
Itasca	56	69	94	96	123	199	141	207	108
Kanabec	4	9	9	4	14	28	31	30	18
Kittson	0	0	0	0	1	0	0	0	0
Koochiching	23	26	34	38	45	77	48	59	31
Lake	15	20	18	25	47	61	33	40	26
Lake of the Woods	9	11	13	5	9	39	16	11	6
Mahnomen	2	2	3	14	6	5	8	13	8
Marshall	0	2	0	1	0	1	1	3	0
Mille Lacs	2	8	8	4	0	28	17	12	7
Morrison	-----closed-----				3	17	9	13	12
Norman	-----closed-----				0	1	6	1	1
Ottertail	1	1	1	1	4	1	1	3	5
Pennington	0	0	0	1	0	1	0	1	1
Pine	21	14	29	20	21	70	41	64	49
Polk	3	4	5	6	5	7	8	10	7
Ramsey	0	0	0	0	0	0	0	0	1
Red Lake	3	0	0	0	0	1	0	4	0
Roseau	3	3	5	5	7	12	9	13	6
St. Louis	69	96	96	119	145	256	135	248	180
Sherburne	-----closed-----				1	1	4	5	0
Todd	0	0	0	0	0	0	0	3	0
Wadena	4	4	2	2	1	4	1	7	5
Washington	-----closed-----				0	3	3	4	3
Unknown	1	1	2	0	2	0	5	3	12
Total	385	408	529	559	777	1,386	922	1,294	888

