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THE WHITE-TAILED DEER IN MINNESOTA'S FARMLAND

THE 1960'S

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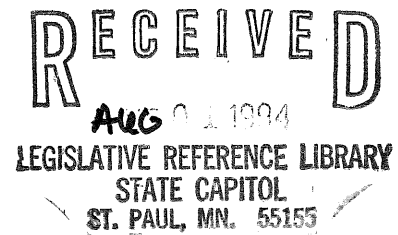


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THE WHITE-TAILED DEER IN MINNESOTA'S FARMLAND

The 1960's



Compiled by Alfred H. Berner and Dennis E. Simon

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Division of Fish and Wildlife

Farmland Wildlife Populations and Research Group

SOURCES OF INFORMATION

Deer harvests and license sales for 1920 through 1960 were obtained from:

Johnson, R.N., M.R. Kohout, and M.M. Nelson (Compilers). 1967. Minnesota game population statistics, harvests, and hunting regulations. Minn. Div. Game & Fish. 89pp.
This report was updated by W.H. Longley and L.W. Knudson in 1974 and updated and revised by T. Landwehr in 1984.

Firearms deer harvests were calculated by county for 1961-1969 from information obtained from Minnesota Wildlife Research Quarterlies.

Minnesota's deer hunting license sales for 1961-1969 were obtained from Minnesota Department of Natural Resources License Center files.

Historical information on populations and range was obtained from the following publications:

Erickson, A.B., V.E. Gunvalson, M.H. Stenlund, D.W. Burcalow, and L.H. Blankenship. 1961. The white-tailed deer of Minnesota. Minn. Div. Game & Fish. Tech. Bull. 5. 64pp.

Fashingbauer, B.A., J.M. Idstrom, C. Kinsey, W.H. Petrabor, D.W. Burcalow, and F.B. Lee. 1965. Big game in Minnesota. Minn. Div. Game & Fish. Tech. Bull. 9. 231pp.

Hine, R.L., and S. Nehls (Editors). 1980. White-tailed deer population management in the North Central States. Symp. 41st Midw. Fish & Wildl. Conf. 116pp.

Cover illustration by Cindy House reproduced from:

L.K. Halls (Editor). 1984. White-tailed deer ecology and management. Stackpole Books. 870pp.

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MINNESOTA WHITETAILS IN THE 1960'S

Purpose:

This publication is designed to provide you with a brief history of white-tailed deer populations and management in Minnesota's farmlands from settlement to 1970. Prior to the 1960's the overview is very general. However, from 1961, as deer management has become more intensive, harvest data are more detailed.

In this publication you will find a short historical narrative followed by a compilation of data on Minnesota's farmland deer harvest. Similar volumes will be available for the 1970's and 1980's. Hopefully, the information in this and other volumes will provide you with answers and insight into past, present and future management and population trends of white-tailed deer in Minnesota's farmlands.

Introduction:

In pre-settlement times, white-tailed deer were present throughout the wooded river valleys and woodlands of central and southern Minnesota (Fig. 1). Whitetails were most abundant in the hardwood forests (maple, basswood, oak) from the southeastern corner northwest to the central portion of Minnesota. The conifer forests of the north were the haven for moose and caribou and unfriendly to white-tailed deer.

The people settling Minnesota in the 1800's changed this natural balance by clearing the hardwood forests for agriculture and becoming efficient year-round predators on whitetails and other members of the deer family. By the 1880's, whitetails were eliminated from many former haunts (Fig. 2). Young forests of aspen and brush resulting from extensive cutting of the northern coniferous forests, however, created new habitats for the white-tail. By 1920, whitetails roamed throughout the northern forests once inhabited primarily by moose, and were absent in most of their former range (Fig. 3).

Despite attempts by the state to regulate hunting as early as 1858 (Table 1), any-deer hunting and habitat changes took their toll. Legal deer hunting in Minnesota's farmland areas was halted in 1923. Even in the north (Fig. 3) seasons varied, and from 1924 until the early 1940's were usually limited to even-numbered years.

With these restrictions and increased law enforcement, deer populations in the north began to grow. And, by the late 1930's, the whitetail began to repopulate its former haunts to the south and west. This repopulation of Minnesota's farmlands by deer took almost a quarter century. In 1946, Minnesota had its first statewide deer season since 1922. The 4-day, any-deer season in the farmland area was strong medicine; it took 5 years for the deer population in that area to recover.

Recovery from the 3-day, any-deer season in 1951 took another 6 years for most of the farmland area; the southwestern 6 counties remained closed until 1961. During 1957-1964 some portion of the farmland zone, which varied from year to year, was closed to deer hunting (Fig. 6 through 11). Not until 1965 was the entire state open again to firearms hunting. In the 1960's all of Minnesota was open to deer hunting only in 1965, 1967, and 1969.

By 1950, deer were present in all 87 Minnesota counties (Fig. 4). During most of the 1950's both deer populations and hunter numbers remained relatively constant. In the late 1950's, however, the deer population began increasing. This trend continued until 1965 after which the population began to go down steadily. The decline was most noticeable in the forest portion of the deer range, but reduced harvests were evident in the farmlands as well.

As all good predators do, hunters began to increase their numbers in concert with the deer population increases. From 1955 to 1965, their numbers increased from 164,000 to over 300,000. Hunter numbers continued to increase despite the declining deer population; license sales peaked at over 324,000 in 1967 (Table 2). The 17% decline in deer hunters through 1969 in no way matched the almost 50% decline in the deer population from 1965 to 1969.

The resulting situation of a declining deer population due to over-harvest of antlerless deer (adult does in particular) and increasing interest in deer hunting set the stage for a new era in management of deer in Minnesota.



Figure 1. Range map of deer family members in Minnesota prior to settlement

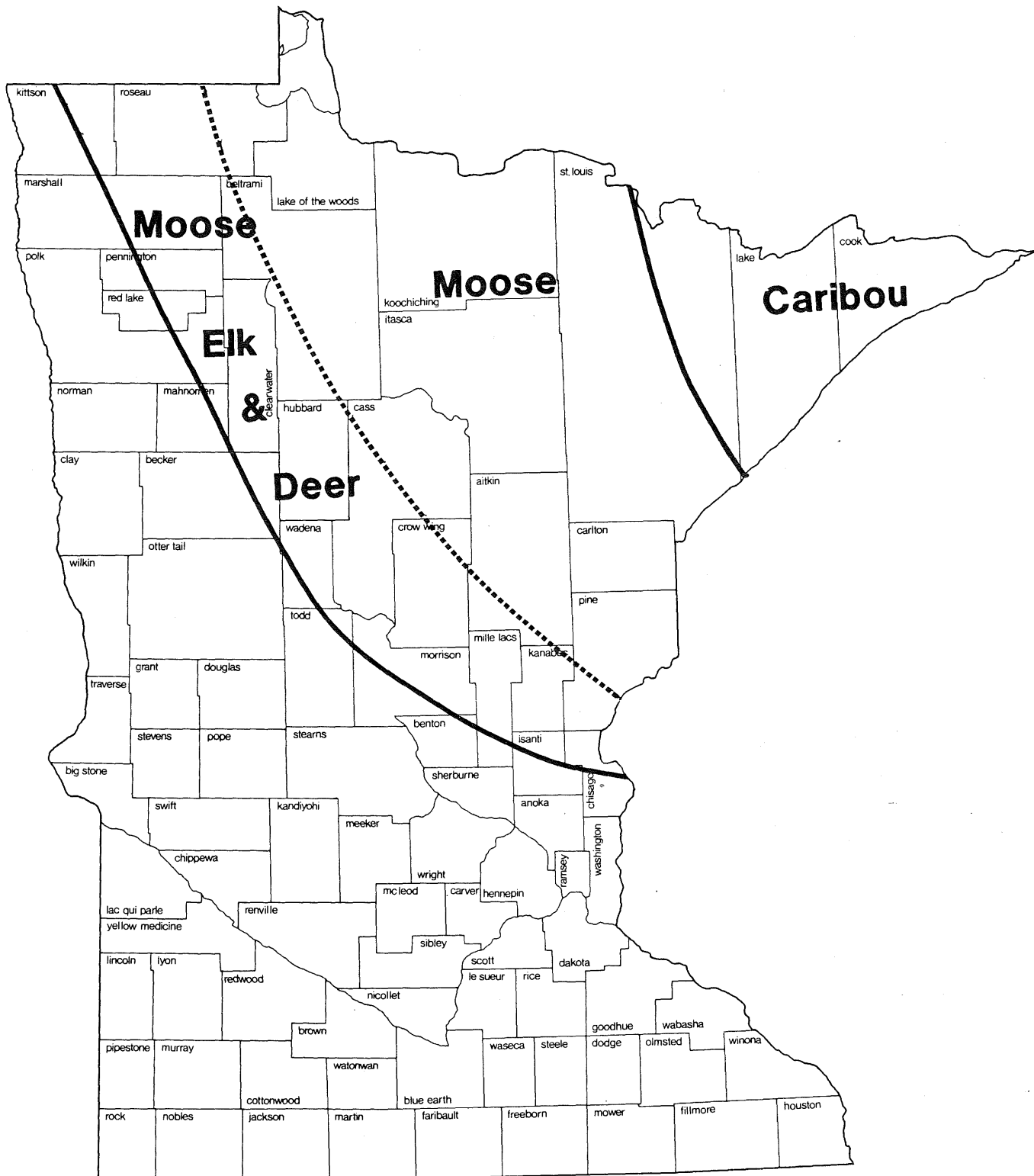


Figure 2. Range map of deer family members in Minnesota around 1880

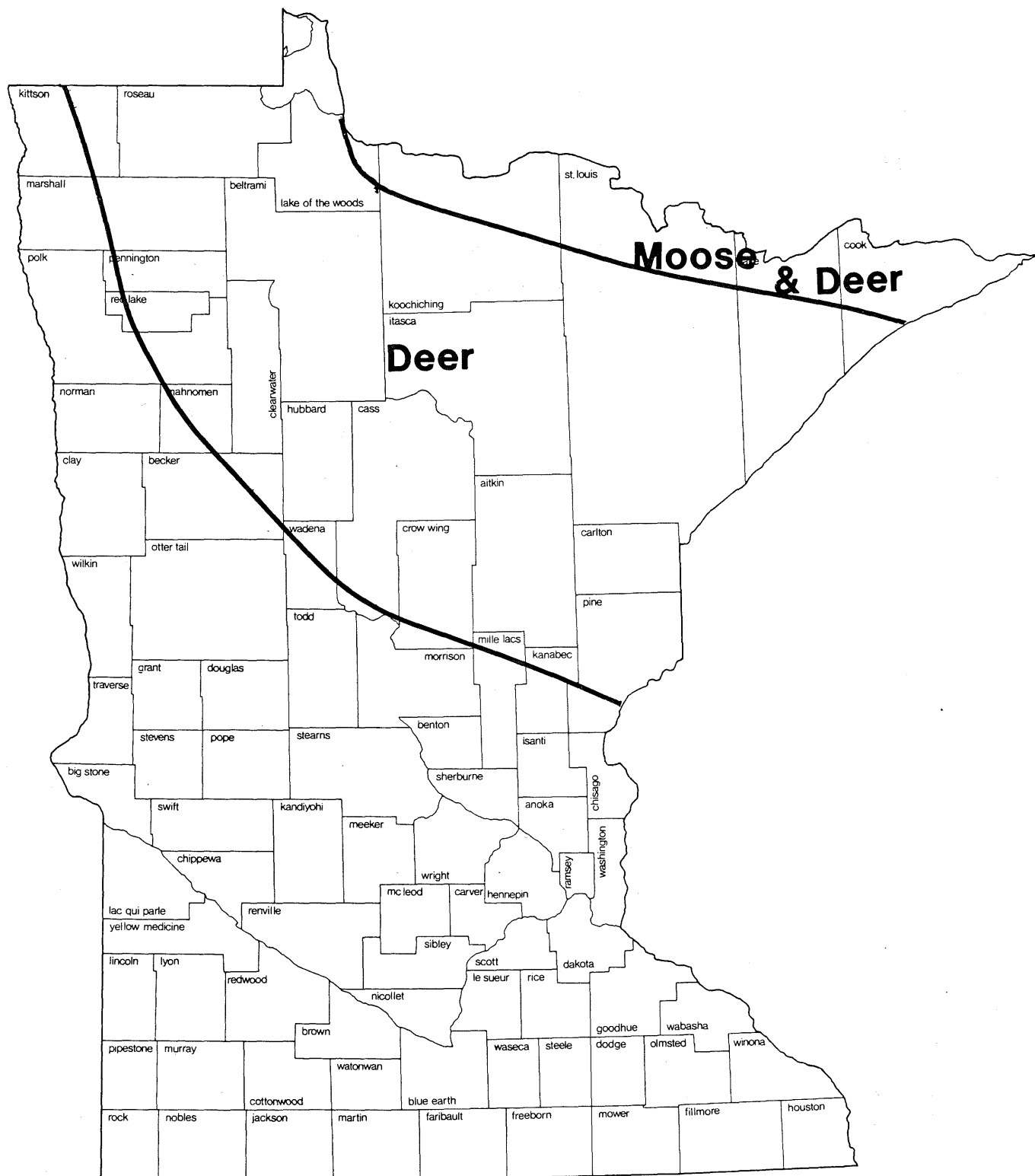


Figure 3. Range map of deer family members in Minnesota around 1920

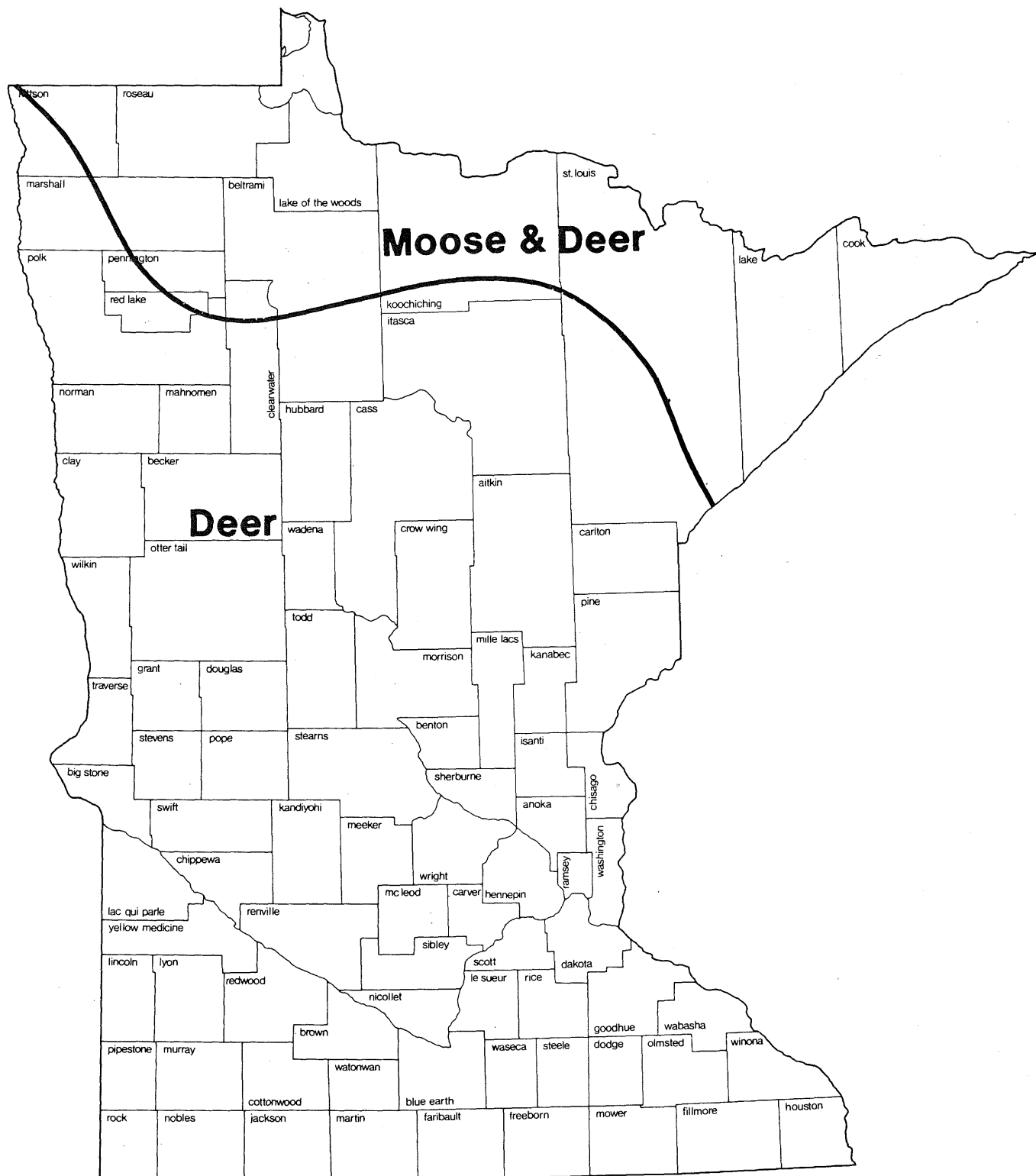


Figure 4. Range map of deer family members in Minnesota at present

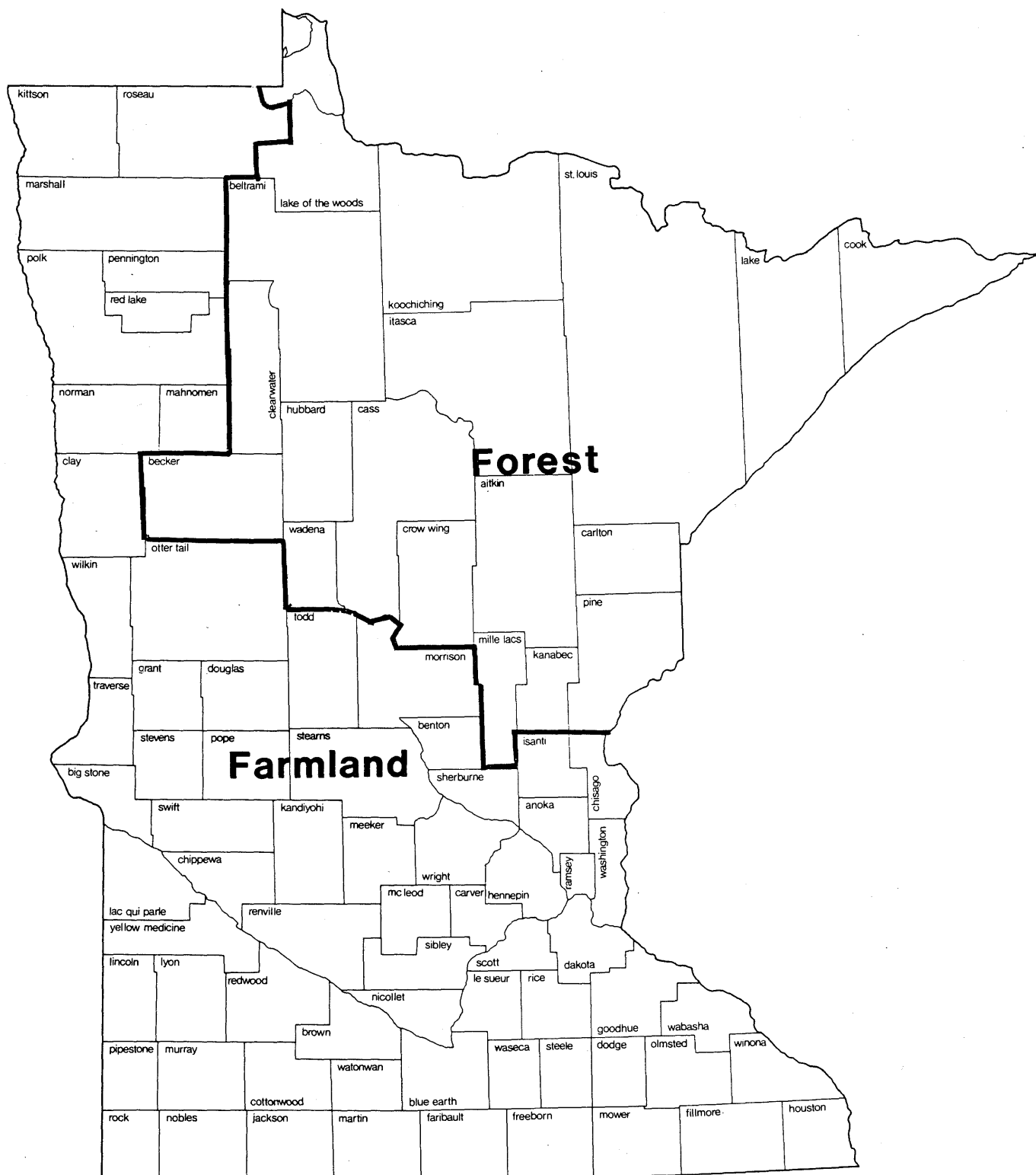


Figure 5. Minnesota's farmland and forest zones

Table 1. General frameworks for Minnesota's firearms deer seasons, 1858-1958

YEARS	LENGTH	OPENING DATES	LIMIT
1858-63	5 Mo.	Sept. 1	None
1864-73	5 Mo.	Aug. 1	"
1874-86	2.5 Mo.	Oct. 1	"
1887-92	1 Mo.	Nov. 1	"
1893-94	19 Days	"	"
1895-96	20 Days	"	5/License
1897-98	22 Days	Oct. 25	"
1899-1900	21 Days	Nov. 1	"
1901-04	"	Nov. 10	3/License
1905-14	"	"	2/License
1915-18	"	"	1/License
1919-20	22 Days	Nov. 15	"
1921-44 ^{a/}	5-11 Days	Nov. 10-21	"
1945-58 ^{b/}	1-9 Days	Nov. 8-20	"

^{a/} During 1921-44, season length was either 5, 6 or 11 days and starting dates varied from 11/10 to 11/21. During 1921-1958, there were 9 statewide closures (1923, '25, '27, '29, '31, '35, '39, '41, and '50) and 5 statewide deer seasons (1921, '22, '46, '51 and '56). Selected areas such as parks, refuges or even counties were opened or closed by Commissioner's Orders during this time.

^{b/} During 1945-1958, open and closed zones varied from year to year and from area to area. Season length varied by zone and starting dates varied from 11/8 to 11/20. For season frameworks during 1959-1969 see Figures 6 through 16.

Table 2. Minnesota's resident deer hunting license sales, 1960-1969

YEAR	FIREARMS	ARCHERY	TOTAL
1960	233,593	11,834	245,427
1961	250,031	13,229	263,260
1962	244,166	11,776	255,942
1963	257,333	11,724	269,057
1964	278,032	13,472	291,504
1965	289,918	15,628	305,546
1966	284,195	17,203	301,398
1967	305,717	18,405	324,122
1968	302,216	20,188	322,404
1969	253,891	15,658	269,549

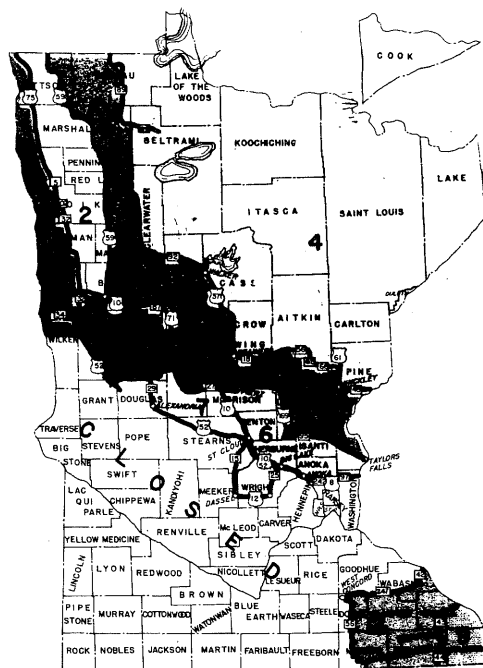


Figure 6. Minnesota deer season in 1959

Limit: One deer, any age or sex

Zone

- | | | |
|---|-------------------|---------------------|
| 1 | 2-days- Nov. 7-8 | Shotgun w/slug only |
| 2 | 3-days- Nov. 7-9 | Any legal firearm |
| 3 | 5-days- Nov. 7-11 | Any legal firearm |
| 4 | 9-days- Nov. 7-15 | Any legal firearm |
| 5 | 1-day - Nov. 7 | Any legal firearm |
| 6 | 3-days- Nov. 7-9 | Any legal firearm |
| 7 | 1-day - Nov. 7 | Shotgun w/slug only |
| 8 | 2-days- Nov. 7-8 | Shotgun w/slug only |
| 9 | 5-days- Nov. 7-11 | Shotgun w/slug only |

Bow and Arrow:

Oct. 1-31 Statewide
Nov. Same zones & seasons
as firearms

Note: Zone boundaries on season maps are general representations only. See annual commissioner's orders for precise boundary descriptions.

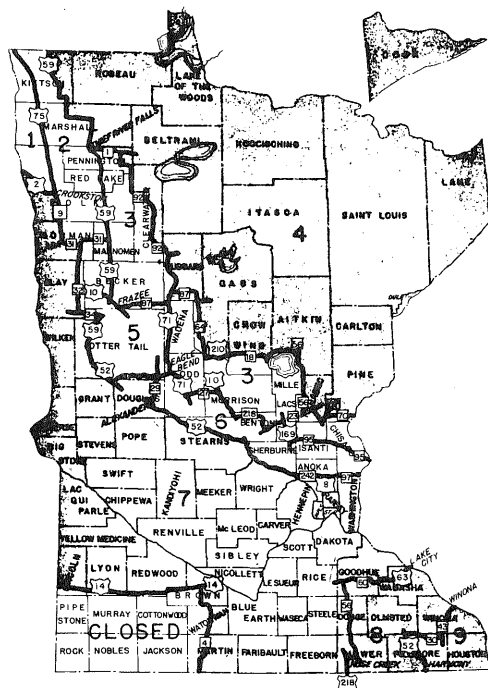


Figure 7. Minnesota deer season in 1960

Limit: One deer, any age or sex

Zone

- | | | |
|---|--------------------|---------------------|
| 1 | 2-days- Nov. 12-13 | Shotgun w/slug only |
| 2 | 3-days- Nov. 12-14 | Any legal firearm |
| 3 | 5-days- Nov. 12-16 | Any legal firearm |
| 4 | 9-days- Nov. 12-20 | Any legal firearm |
| 5 | 1-day - Nov. 12 | Any legal firearm |
| 6 | 2-days- Nov. 12-13 | Any legal firearm |
| 7 | 1-day - Nov. 12 | Shotgun w/slug only |
| 8 | 2-days- Nov. 12-13 | Shotgun w/slug only |
| 9 | 5-days- Nov. 12-16 | Shotgun w/slug only |

Bow and Arrow:

Oct. 1-31 Statewide
 Nov. Same zones & seasons
 as firearms

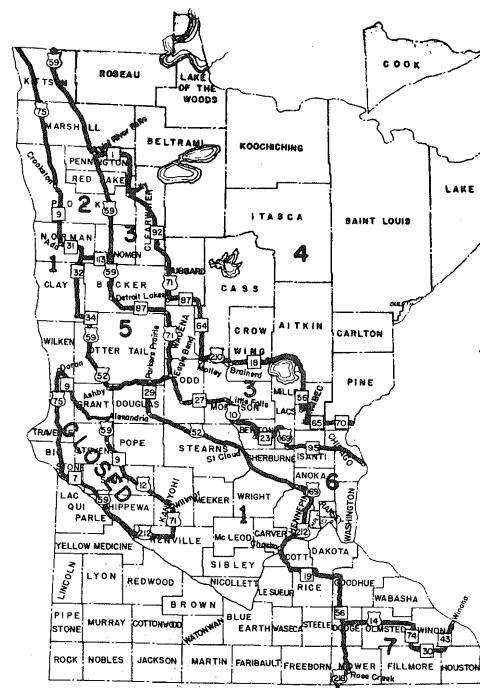


Figure 8. Minnesota deer season in 1961

Limit: One deer, any age or sex

Zone

- | | | |
|---|--------------------|---------------------|
| 1 | 1-day - Nov. 11 | Shotgun w/slug only |
| 2 | 3-days- Nov. 11-13 | Any legal firearm |
| 3 | 5-days- Nov. 11-15 | Any legal firearm |
| 4 | 9-days- Nov. 11-19 | Any legal firearm |
| 5 | 1-day - Nov. 11 | Any legal firearm |
| 6 | 2-days- Nov. 11-12 | Shotgun w/slug only |
| 7 | 3-days- Nov. 11-13 | Shotgun w/slug only |

Bow and Arrow:

Sept. 30-Oct. 31 Statewide
 Nov. Same zones & seasons
 as firearms

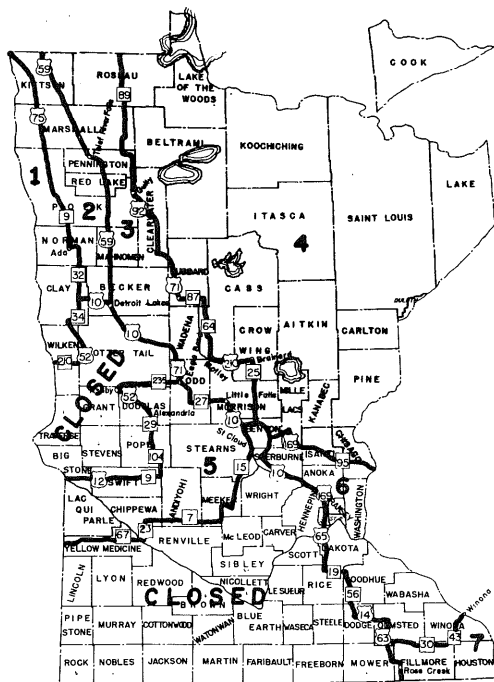


Figure 9. Minnesota deer season in 1962

Limit: One deer, any age or sex

Zone

- | | | |
|---|--------------------|---------------------|
| 1 | 1-day - Nov. 10 | Shotgun w/slug only |
| 2 | 3-days- Nov. 10-12 | Any legal firearm |
| 3 | 5-days- Nov. 10-14 | Any legal firearm |
| 4 | 9-days- Nov. 10-18 | Any legal firearm |
| 5 | 1-day - Nov. 10 | Shotgun w/slug only |
| 6 | 2-days- Nov. 10-11 | Shotgun w/slug only |
| 7 | 3-days- Nov. 10-12 | Shotgun w/slug only |

Bow and Arrow:

Sept. 29-Oct. 31 Statewide
Nov. Same zones & seasons
as firearms

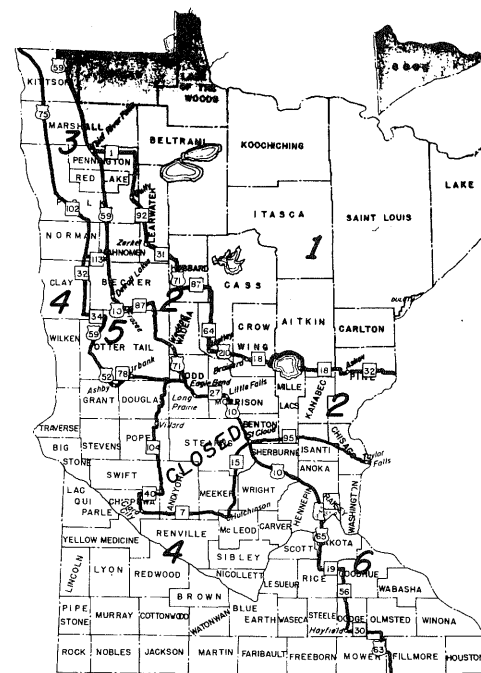


Figure 10. Minnesota deer season in 1963

Limit: One deer, any age or sex

Zone

- | | | |
|---|-------------------|---------------------|
| 1 | 9-days- Nov. 9-17 | Any legal firearm |
| 2 | 5-days- Nov. 9-13 | Any legal firearm |
| 3 | 3-days- Nov. 9-11 | Any legal firearm |
| 4 | 1-day - Nov. 9 | Shotgun w/slug only |
| 5 | 1-day - Nov. 9 | Any legal firearm |
| 6 | 3-days- Nov. 9-11 | Shotgun w/slug only |

Bow and Arrow:

Sept. 28-Oct. 31 Statewide
Nov. Same zones & seasons
as firearms
Nov. 30-Dec. 22 Southern 2/3
of state

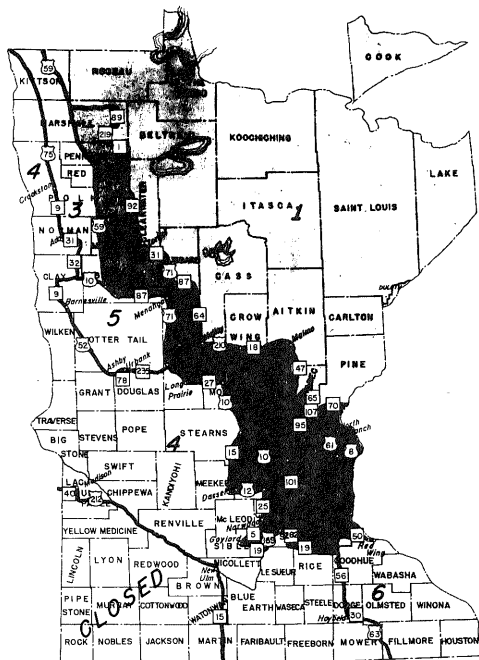


Figure 11. Minnesota deer season in 1964

Limit: One deer, any age, or sex

Zone

- | | | | |
|---|---------|-----------|---------------------|
| 1 | 9-days- | Nov. 7-15 | Any legal firearm |
| 2 | 5-days- | Nov. 7-11 | Any legal firearm |
| 3 | 3-days- | Nov. 7-9 | Any legal firearm |
| 4 | 1-day - | Nov. 7 | Shotgun w/slug only |
| 5 | 1-day - | Nov. 7 | Any legal firearm |
| 6 | 3-days- | Nov. 7-9 | Shotgun w/slug only |
| 7 | 5-days- | Nov. 7-11 | Shotgun w/slug only |
| 8 | 2-days- | Nov. 7-8 | Shotgun w/slug only |

Bow and Arrow:

Oct. 3-31 Statewide
 Nov. Same zones & seasons
 as firearms
 Nov. 28-Dec. 20 Southern 2/3
 of state

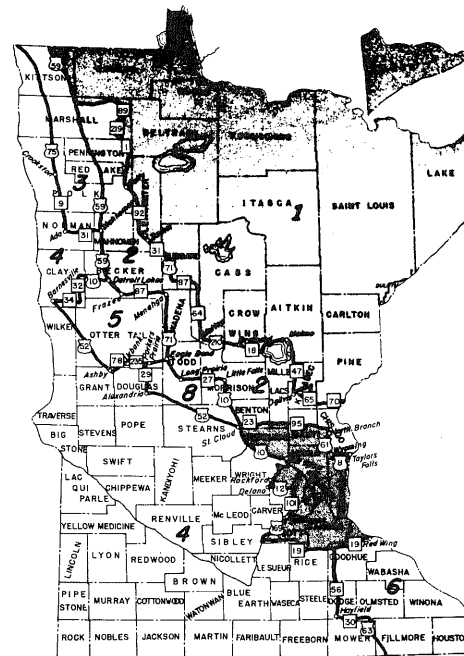


Figure 12. Minnesota deer season in 1965

Limit: One deer, any age, or sex

Zone

- | | | | |
|---|---------|------------|---------------------|
| 1 | 9-days- | Nov. 13-21 | Any legal firearm |
| 2 | 5-days- | Nov. 13-17 | Any legal firearm |
| 3 | 3-days- | Nov. 13-15 | Any legal firearm |
| 4 | 1-day - | Nov. 13 | Shotgun w/slug only |
| 5 | 1-day - | Nov. 13 | Any legal firearm |
| 6 | 3-days- | Nov. 13-15 | Shotgun w/slug only |
| 7 | 5-days- | Nov. 13-17 | Shotgun w/slug only |
| 8 | 2-days- | Nov. 13-14 | Shotgun w/slug only |

Bow and Arrow:

Oct. 2-31 Statewide
 Nov. Same zones & seasons
 as firearms
 Dec. 4-19 Southern 2/3 of
 state

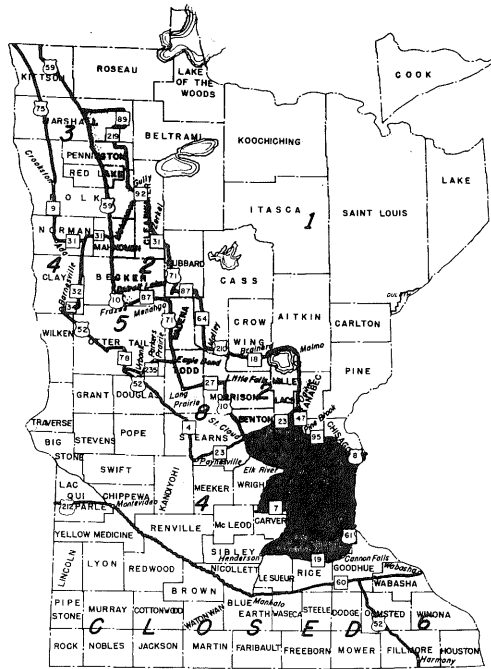


Figure 13. Minnesota deer season in 1966

Limit: One deer, any age or sex

Zone

- | | | | |
|---|---------|------------|---------------------|
| 1 | 9-days- | Nov. 12-20 | Any legal firearm |
| 2 | 5-days- | Nov. 12-16 | Any legal firearm |
| 3 | 3-days- | Nov. 12-14 | Any legal firearm |
| 4 | 1-day - | Nov. 12 | Shotgun w/slug only |
| 5 | 1-day - | Nov. 12 | Any legal firearm |
| 6 | 3-days- | Nov. 12-14 | Shotgun w/slug only |
| 7 | 5-days- | Nov. 12-16 | Shotgun w/slug only |
| 8 | 2-days- | Nov. 12-13 | Shotgun w/slug only |

Bow and Arrow:

Oct. 1-31 Statewide
 Nov. Same zones & seasons
 as firearms
 Dec. 3-18 Southern 2/3 of
 state

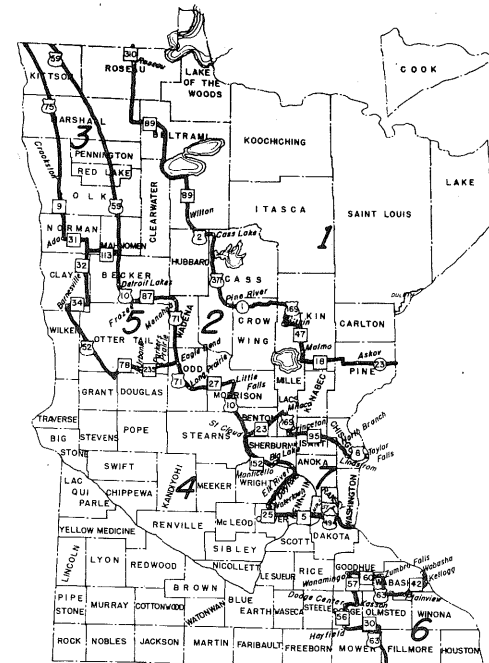


Figure 14. Minnesota deer season in 1967

Limit: One deer, any age or sex

Zone

- | | | | |
|---|---------|------------|---------------------|
| 1 | 9-days- | Nov. 11-19 | Any legal firearm |
| 2 | 5-days- | Nov. 11-15 | Any legal firearm |
| 3 | 3-days- | Nov. 11-13 | Any legal firearm |
| 4 | 1-day - | Nov. 11 | Shotgun w/slug only |
| 5 | 1-day - | Nov. 11 | Any legal firearm |
| 6 | 3-days- | Nov. 11-13 | Shotgun w/slug only |
| 7 | 5-days- | Nov. 11-15 | Shotgun w/slug only |

Bow and Arrow:

Sept. 30-Oct. 31 Statewide
 Nov. Same zones & seasons
 as firearms
 Dec. 2-17 Southern 2/3 of
 state

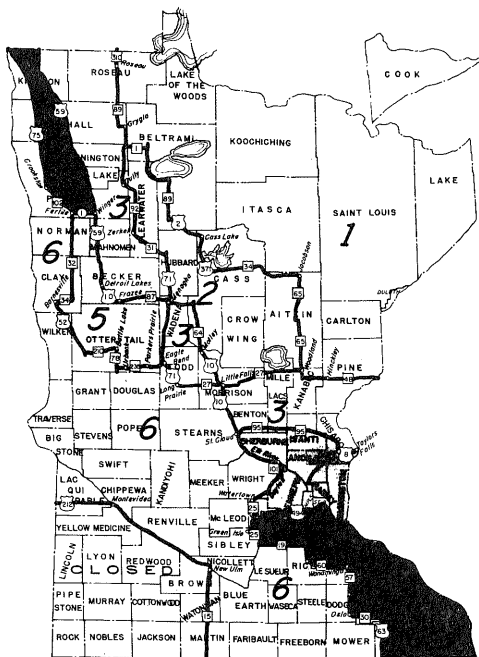


Figure 15. Minnesota deer season in 1968

Limit: One deer, any age or sex

Zone

- | | | | |
|---|---------|-----------|---------------------|
| 1 | 9-days- | Nov. 9-17 | Any legal firearm |
| 2 | 7-days- | Nov. 9-15 | Any legal firearm |
| 3 | 5-days- | Nov. 9-13 | Any legal firearm |
| 4 | 3-days- | Nov. 9-11 | Any legal firearm |
| 5 | 1-day - | Nov. 9 | Any legal firearm |
| 6 | 1-day - | Nov. 9 | Shotgun w/slug only |
| 7 | 7-days- | Nov. 9-15 | Shotgun w/slug only |
| 8 | 2-days- | Nov. 9-10 | Shotgun w/slug only |

Bow and Arrow:

Sept. 28-Oct. 31 Statewide
 Nov. Same zones & seasons
 as firearms
 Nov. 30-Dec. 22 Southern 2/3
 of state

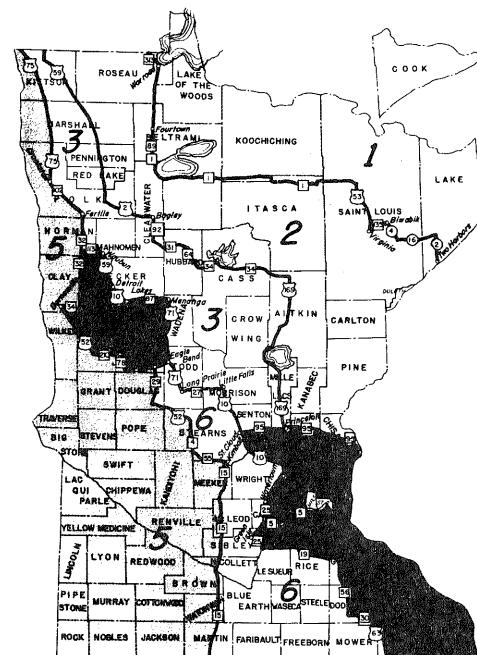


Figure 16. Minnesota deer season in 1969

Limit: One deer, any age or sex

Zone

- | | | | |
|---|---------|-----------|---------------------|
| 1 | 9-days- | Nov. 8-16 | Any legal firearm |
| 2 | 5-days- | Nov. 8-12 | Any legal firearm |
| 3 | 3-days- | Nov. 8-10 | Any legal firearm |
| 4 | 1-day - | Nov. 8 | Any legal firearm |
| 5 | 1-day - | Nov. 8 | Shotgun w/slug only |
| 6 | 2-days- | Nov. 8-9 | Shotgun w/slug only |
| 7 | 5-days- | Nov. 8-12 | Shotgun w/slug only |
| 8 | 3-days- | Nov. 8-10 | Shotgun w/slug only |

Bow and Arrow:

Oct. 4-31 Statewide
 Nov. Same zones & seasons
 as firearms
 Nov. 29-Dec. 21 Southern 2/3
 of state

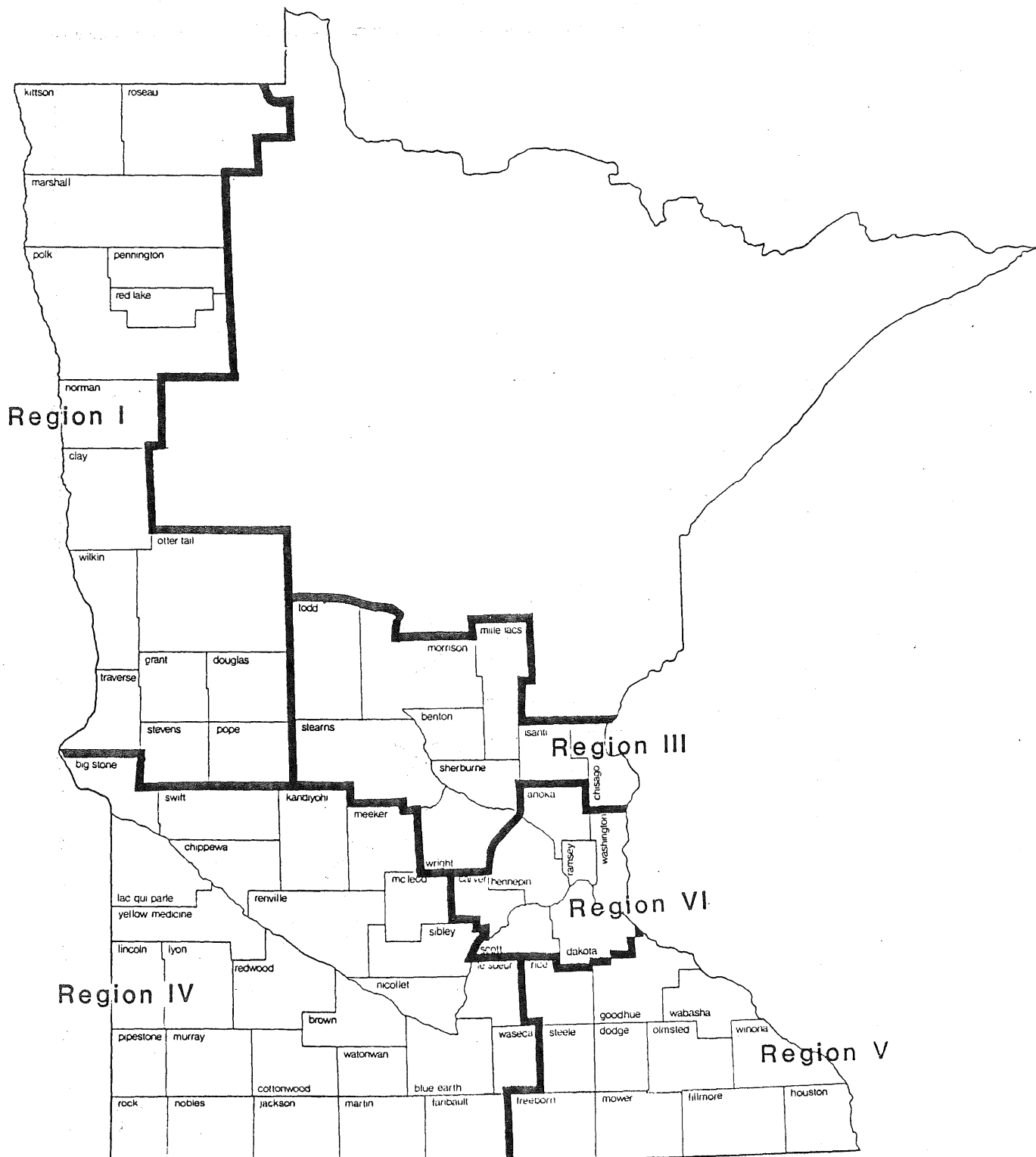


Figure 17. Counties and portions of present Department of Natural Resources regions used in summarizing deer data for Minnesota's farmland zone

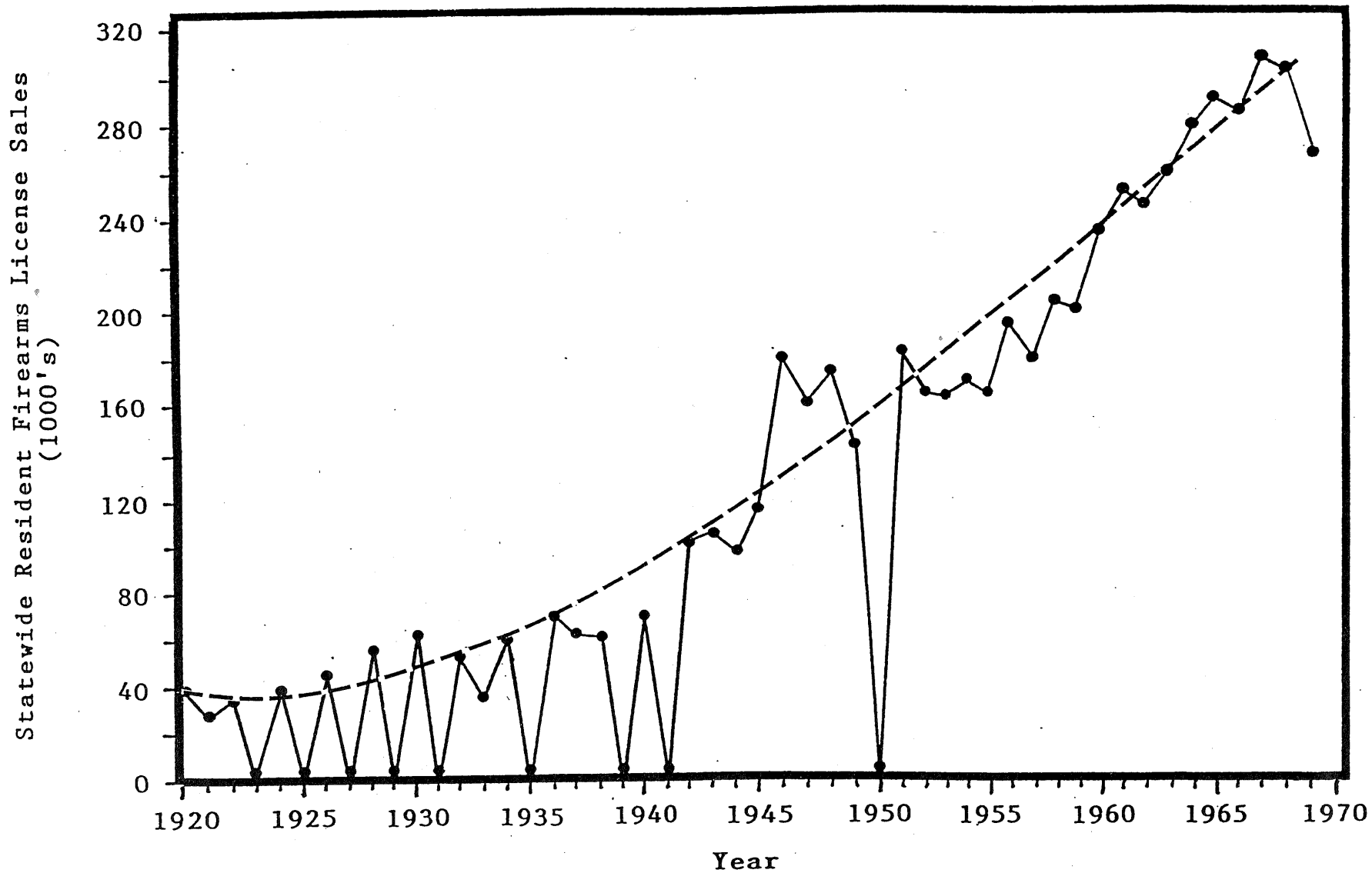


Figure 18. Statewide resident Minnesota firearms deer license sales, 1920-1969

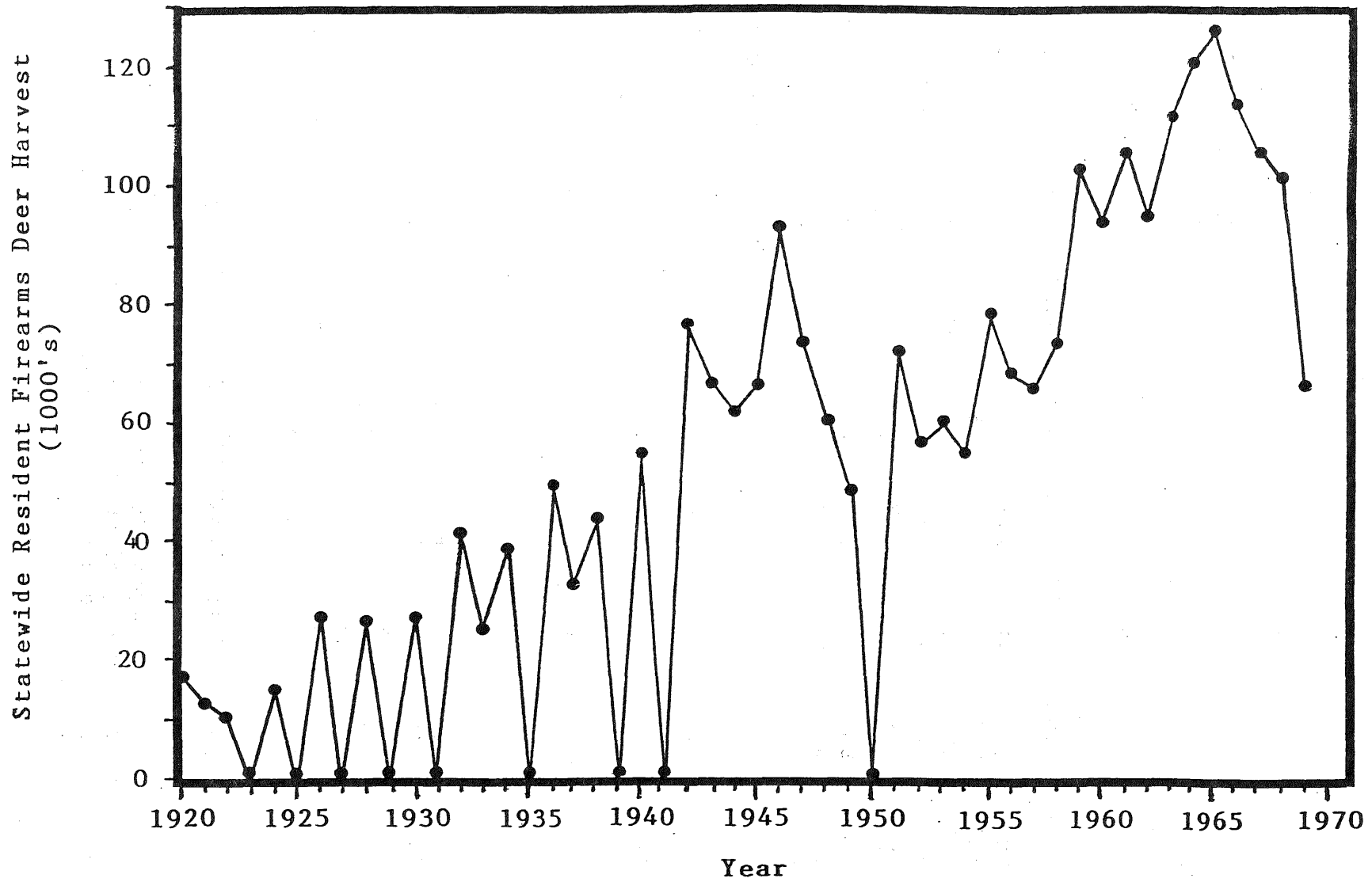


Figure 19. Statewide resident Minnesota firearms deer harvest, 1920-1969

Table 3. Estimated resident firearms deer harvest^{a/} for counties in the farmland zone and farmland portions of present Department of Natural Resources regions, 1961-1969

REGIONS & COUNTIES	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>REGION I</u>									
Clay	456	400	262	499	458	505	546	462	292
Douglas	591	218	291	414	598	505	321	288	387
Grant	99	0 ^{b/}	181	99	115	138	161	164	122
Kittson	1866	1033	1269	1320	1285	987	804	925	631
Marshall	4277	2461	2595	2325	2482	1986	1854	2014	1411
Norman	416	312	335	563	318	379	568	298	305
Ottertail	2919	498	2414	2629	3271	3008	2754	2158	1716
Pennington	669	481	234	392	433	333	364	308	231
Polk	1034	784	702	819	1166	976	932	1130	719
Pope	693	149	400	610	496	551	664	503	393
Red Lake	460	431	308	368	445	344	461	360	190
Roseau	4921	3565	3750	3519	3475	2342	2358	2096	1621
Stevens	17	0	29	56	44	92	96	92	41
Traverse	25	0	52	55	70	103	96	113	47
Wilkin	246	106	70	113	140	115	171	175	81
Total	18689	10438	12892	13781	14796	12364	12150	11086	8187
<u>REGION III</u>									
Benton	69	90	62	72	53	80	54	82	61
Chisago	275	321	359	487	738	1240	750	678	516
Isanti	138	127	163	185	280	482	300	401	244
Mille Lacs ^{c/}	603	494	385	482	337	620	466	514	366
Morrison	875	738	695	971	713	746	600	586	387
Sherburne	169	218	289	341	356	436	504	421	292
Stearns	468	299	35	564	407	551	354	267	427
Todd	594	429	299	637	916	723	579	647	624
Wright	145	0	171	259	115	138	204	144	197
Total	3336	2716	2458	3998	3915	5016	3811	3740	3114
<u>REGION IV</u>									
Big Stone	69	32	97	87	127	264	150	154	81
Blue Earth	415	0	348	166	293	57	525	185	393
Brown	178	0	185	4	75	0	193	10	156
Chippewa	71	146	149	256	115	264	257	247	163
Cottonwood	74	0	146	0	115	0	279	0	81
Faribault	131	0	205	56	102	0	182	72	142
Jackson	279	0	155	0	140	0	161	0	68
Kandiyohi	325	260	0	532	356	471	557	442	393
L.Q. Parle	257	216	170	187	255	184	343	216	231

Table 3. Cont.

REGIONS & COUNTIES	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>REGION IV</u> Cont.									
Le Sueur	54	0	110	107	88	172	96	72	170
Lincoln	161	0	158	0	242	0	332	0	170
Lyon	139	0	233	0	242	0	396	0	258
McLeod	38	0	70	26	26	46	43	21	54
Martin	41	0	51	2	31	0	32	10	68
Meeker	333	120	34	242	140	230	139	185	156
Murray	111	0	186	0	153	0	214	0	129
Nicollet	212	0	209	157	204	299	182	113	142
Nobles	39	0	98	0	57	0	54	0	27
Pipestone	5	0	17	0	13	0	54	0	54
Redwood	188	0	156	0	178	0	171	0	108
Renville	249	0	249	157	178	230	160	113	68
Rock	98	0	67	0	44	0	117	0	7
Sibley	138	0	128	105	102	184	129	51	163
Swift	117	84	128	187	127	218	300	206	170
Waseca	118	0	155	78	61	0	129	92	129
Watsonwan	37	0	120	0	53	0	118	0	81
Yellow Med.	200	63	194	0	305	0	332	0	244
Total	4077	921	3818	2349	3822	2619	5645	2189	3906
<u>REGION V</u>									
Dodge	54	29	50	49	22	0	96	82	75
Fillmore	860	496	590	587	776	563	857	699	638
Freeborn	150	0	79	55	92	0	150	103	122
Goodhue	1063	656	541	470	522	448	514	771	644
Houston	1098	679	607	507	725	1091	889	832	658
Mower	85	15	48	55	57	0	64	62	7
Olmsted	276	133	312	332	242	92	515	339	265
Rice	225	0	157	137	178	161	182	164	176
Steele	121	0	106	76	102	0	139	144	129
Wabasha	828	653	643	510	738	769	397	565	427
Winona	774	674	660	565	865	987	879	894	719
Total	5534	3335	3793	3343	4319	4111	4682	4655	3860
<u>REGION VI</u>									
Anoka	204	178	214	274	573	516	407	442	353
Carver	57	0	41	73	60	46	64	92	47
Dakota	321	155	259	244	229	230	96	216	231
Hennepin	42	0	48	74	102	69	86	62	14
Scott	157	16	78	190	191	264	86	154	129
Washington	143	123	136	212	293	356	360	277	217
Total	924	472	776	1067	1448	1481	1099	1243	991

Table 3. Cont.

REGIONS & COUNTIES	1961	1962	1963	1964	1965	1966	1967	1968	1969
FARMLAND	32560	17882	23737	24538	28300	25591	27387	22913	20058
FOREST	73821	78174	90983	97350	98886	89164	79662	79830	44808
STATE TOTAL ^{d/}	106763	96274	112807 ^{e/}	121778	127274	114815	106695	102753	67535

^{a/}Harvest was estimated from hunter report cards and postcard questionnaires. Harvest by county = (total statewide licensed hunters) X (proportion of hunter report cards per county) X (questionnaire adjusted success per county).

^{b/}Counties with 0's indicate the season was closed or no harvested was recorded in those areas.

^{c/}Represents the 50% of the county total included in the farmland zone.

^{d/}Farmland and Forest subtotals do not sum to match statewide harvest estimates due to unreported unknown county data and to truncating of historical data in the literature leading to cumulative rounding errors. Statewide estimates have a 95% confidence interval of $\pm 2.5\%$.

^{e/}The statewide success rate used in 1963 to calculate total harvest was 43.8%. Review of the data, however, indicates that the success rate was really 44.6% which would produce a statewide harvest of 114,777.

Table 4. Estimated mean^{a/} annual resident firearms deer harvest^{b/} for counties in the farmland zone and farmland portions of present Department of Natural Resources regions, 1961-1969

REGIONS & COUNTIES	1961-1969
<u>REGION I</u>	
Clay	431
Douglas	401
Grant	120
Kittson	1124
Marshall	2378
Norman	388
Ottertail	2374
Pennington	383
Polk	918
Pope	495
Red Lake	374
Roseau	3072
Stevens	52
Traverse	62
Wilkin	135
Total	12707
<u>REGION III</u>	
Benton	69
Chisago	596
Isanti	258
Mille Lacs ^{c/}	474
Morrison	701
Sherburne	336
Stearns	375
Todd	605
Wright	153
Total	3567
<u>REGION IV</u>	
Big Stone	118
Blue Earth	265
Brown	89
Chippewa	185
Cottonwood	77
Faribault	99
Jackson	89
Kandiyohi	371
L.Q. Parle	229

Table 4. Cont.

REGIONS &
COUNTIES 1961-1969

REGION IV Cont.

Le Sueur	97
Lincoln	118
Lyon	141
McLeod	36
Martin	26
Meeker	175
Murray	88
Nicollet	169
Nobles	31
Pipestone	16
Redwood	89
Renville	156
Rock	37
Sibley	111
Swift	171
Waseca	85
Watonwan	45
Yellow Med.	149
Total	3262

REGION V

Dodge	51
Fillmore	674
Freeborn	83
Goodhue	625
Houston	787
Mower	44
Olmsted	278
Rice	153
Steele	91
Wabasha	614
Winona	780
Total	4180

REGION VI

Anoka	351
Carver	53
Dakota	220
Hennepin	55
Scott	141
Washington	235
Total	1055

Table 4. Cont.

REGIONS & COUNTIES	1961-1969
FARMLAND	24771
FOREST	81409
STATEWIDE ^{d/}	106299

^{a/}Decade means include 0's for years when no season was held.

^{b/}Harvest was estimated from hunter report cards and postcard questionnaires. Harvest by county = (total statewide licensed hunters) X (proportion of hunter report cards per county) X (questionnaire adjusted success per county).

^{c/}Represents the 50% of the county total included in the farmland zone.

^{d/}Farmland and Forest subtotals do not sum to match statewide harvest estimates due to unreported unknown county data and to truncating of historical data in the literature leading to cumulative rounding errors. Statewide estimates have a 95% confidence interval of $\pm 2.5\%$.

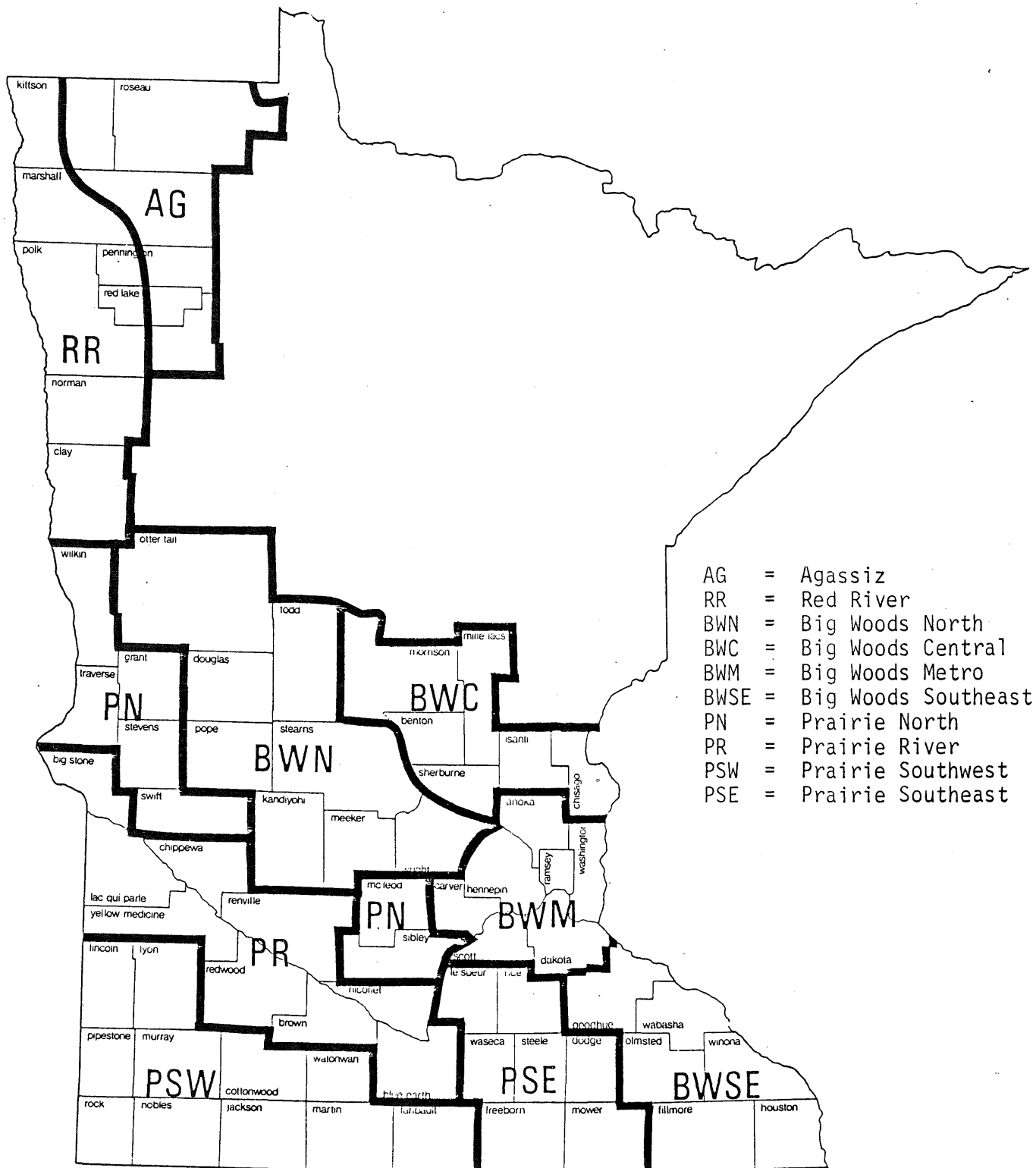


Figure 20. Counties, Deer Management Units and sub-Units used in summarizing deer data for Minnesota's farmland zone

Table 5. Estimated resident firearms deer harvest^{a/} for Deer Management Units and sub-Units in Minnesota's farmland zone, 1961-1969

DMU & Sub-UNIT	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>RED RIVER</u> ^{b/}	<u>3686</u>	<u>2564</u>	<u>2319</u>	<u>2911</u>	<u>2921</u>	<u>2601</u>	<u>2790</u>	<u>2553</u>	<u>1781</u>
<u>AGASSIZ</u> ^{c/}	<u>10413</u>	<u>6903</u>	<u>7136</u>	<u>6894</u>	<u>7141</u>	<u>5251</u>	<u>5097</u>	<u>5040</u>	<u>3619</u>
<u>BIG WOODS</u>	<u>14020</u>	<u>7724</u>	<u>9726</u>	<u>12463</u>	<u>14092</u>	<u>15212</u>	<u>13396</u>	<u>12659</u>	<u>10501</u>
North	6068	1973	3644	5887	6299	6177	5572	4634	4293
Central	2129	1988	1953	2538	2477	3604	2674	2682	1866
Metro	924	472	776	1067	1448	1481	1099	1243	991
SE	4899	3291	3353	2971	3868	3950	4051	4100	3351
<u>PRAIRIE</u>	<u>4441</u>	<u>691</u>	<u>4556</u>	<u>2270</u>	<u>4146</u>	<u>2527</u>	<u>6104</u>	<u>2661</u>	<u>4157</u>
North	680	190	658	641	624	896	996	822	678
River	1839	457	1757	1014	1730	1298	2313	1038	1586
SW	1115	0	1436	58	1192	0	1939	82	1085
SE	807	44	705	557	600	333	856	719	808
<u>FARMLAND</u> <u>ZONE</u>	<u>32560</u>	<u>17882</u>	<u>23737</u>	<u>24538</u>	<u>28300</u>	<u>25591</u>	<u>27387</u>	<u>22913</u>	<u>20058</u>
<u>FOREST</u> <u>ZONE</u>	<u>73821</u>	<u>78174</u>	<u>90983</u>	<u>97350</u>	<u>98886</u>	<u>89164</u>	<u>79662</u>	<u>79830</u>	<u>44808</u>
<u>STATE</u> <u>TOTAL</u> ^{d/}	<u>106763</u>	<u>96274</u>	<u>112807</u>	<u>121778</u>	<u>127274</u>	<u>114815</u>	<u>106695</u>	<u>102753</u>	<u>67535</u>

^{a/}Harvest was estimated from hunter report cards and postcard questionnaires. Harvest by county = (total statewide licensed hunters) X (proportion of hunter report cards per county) X (questionnaire adjusted success per county).

^{b/}Red River = Clay, Norman, Red Lake (50%), Pennington (50%), Polk (60%), Marshall (25%), and Kittson (30%).

^{c/}Agassiz = Roseau, Kittson (70%), Marshall (75%), Pennington (50%), Red Lake (50%), and Polk (40%).

^{d/}Forest and Farmland subtotals do not sum to match statewide harvest estimates due to unreported unknown county data and to truncating of historical data in the literature leading to cumulative rounding errors. Statewide estimates have a 95% confidence interval of $\pm 2.5\%$.

^{e/}The statewide success rate used in 1963 to calculate the total harvest was 43.8%. Review of the data, however, indicated that the success rate was really 44.6% which would produce a statewide harvest of 114,777.

Table 6. Estimated mean^{a/} annual resident firearms deer harvest^{b/} for Deer Management Units and sub-Units in Minnesota's farmland zone, 1961-1969

DMU & Sub-UNIT	1961-1969
<u>RED RIVER</u> ^{c/}	<u>2681</u>
<u>AGASSIZ</u> ^{d/}	<u>6388</u>
<u>BIG WOODS</u>	<u>12200</u>
North	4950
Central	2435
Metro	1056
SE	3759
<u>PRAIRIE</u>	<u>3505</u>
North	687
River	1448
SW	767
SE	603
<u>FARMLAND</u> ^{e/}	
<u>ZONE</u>	<u>24774</u>
<u>FOREST</u>	
<u>ZONE</u>	<u>81409</u>
<u>STATEWIDE</u> ^{f/}	<u>106299</u>

^{a/}Decade means include 0's for years when no season was held.

^{b/}Harvest was estimated from hunter report cards and postcard questionnaires. Harvest by county = (total statewide licensed hunters) X (proportion of hunter report cards per county) X (questionnaire adjusted success per county).

^{c/}Red River = Clay, Norman, Red Lake (50%), Pennington (50%), Polk (60%), Marshall (25%), and Kittson (30%).

^{d/}Agassiz = Roseau, Kittson (70%), Marshall (75%), Pennington (50%), Red Lake (50%), and Polk (40%).

^{e/}Due to rounding error, the farmland zone total does not match that in Table 4.

^{f/}Forest and Farmland subtotals do not sum to match statewide harvest estimates due to unreported unknown county data and to truncating of historical data in the literature leading to cumulative rounding errors. Statewide estimates have a 95% confidence interval of $\pm 2.5\%$.

Appendix A. Estimated resident firearms deer harvest^{a/} for forest zone counties, 1961-1969

COUNTY	1961	1962	1963	1964	1965	1966	1967	1968	1969
Aitkin	5161	4866	6292	5889	5447	5901	5175	4490	2768
Becker	2682	2313	1869	2112	3029	3123	2497	2661	1323
Beltrami	5751	5571	4573	5197	5651	5419	4415	4614	2958
Carlton	2582	2078	2904	3168	2660	2962	2143	2230	1011
Cass	6577	5610	6250	6532	7878	7417	5711	5456	2714
Clearwater	2151	2041	1259	1751	1973	2227	1511	2230	1269
Cook	1435	1535	2132	2347	2380	3008	2379	2507	1431
Crow Wing	1989	2010	1823	2261	2635	2480	1897	2117	1153
Hubbard	3969	3322	2776	3532	4938	4099	2700	3216	927
Itasca	12114	10843	12092	13668	14535	11906	9858	10049	5455
Kanabec	893	688	675	1030	738	1114	557	884	678
Kooch.	6981	5922	7088	7393	8107	5810	5379	5292	3833
Lake	2634	2570	4158	4527	3869	4099	4104	4573	3046
L. of Woods	3433	3122	3104	2754	2864	1504	2079	2240	1581
Mahnomen	499	502	300	374	509	666	514	503	278
Mille Lacs ^{b/}	603	493	385	483	338	620	466	514	367
Pine	4210	3758	4406	5522	4671	4535	3375	3350	1370
St. Louis	9357	20178	28053	28018	25684	21321	23723	21825	11771
Wadena	800	752	844	792	980	953	1179	1079	875
FOREST	73821	78174	90983	97350	98886	89164	79662	79830	44808
FARMLAND	32560	17882	23737	24538	28300	25591	27387	22913	20058
STATE TOTAL ^{c/}	106763	96274	112807	121778	127274	114815	106695	102753	67535

^{a/}Harvest was estimated from hunter report cards and postcard questionnaires. Harvest by county = (total statewide licensed hunters) X (proportion of hunters reporting per county) X (questionnaire adjusted success per county).

^{b/}Represents the 50% of the county total included in the forest zone.

^{c/}Forest and Farmland subtotals do not sum to match statewide harvest estimates due to unreported unknown county data and to truncating of historical data in the literature leading to cumulative rounding errors. Statewide estimates have a 95% confidence interval of $\pm 2.5\%$.

^{d/}The statewide success rate used in 1963 to calculate total harvest was 43.8%. Review of the data, however, indicates that the success rate was really 44.6% which would produce a statewide harvest of 114,777.

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