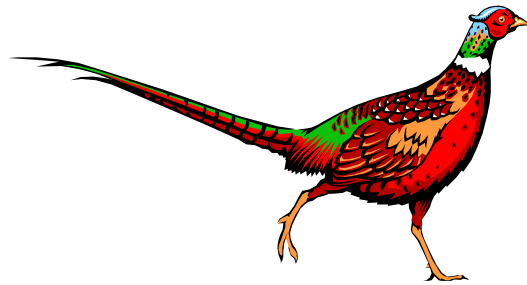


# 2011 Minnesota August Roadside Survey

*Prepared by:*

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## ABSTRACT

Population indices for ring-necked pheasants and mourning doves fell significantly from last year, and population indices for gray partridge, cottontail rabbits, and white-tailed jackrabbits were similar to 2010 but below the 10-year and long-term averages. The population index for white-tailed deer was similar to 2010 and the 10-year average. Sandhill crane indices were also unchanged from last year. Conservation Reserve Program (CRP) enrollment in Minnesota declined by 21,000 acres from 2010, including 9,000 acres from the pheasant range, but increases in enrollment of other farm programs and acquisition of public lands exceeded CRP losses, yielding a net gain of about 8,000 acres of protected habitat in the pheasant range. The winter of 2010-11 was the second consecutive severe winter for much of the farmland region, and it was followed by a cold, wet spring. Thus, conditions for overwinter survival of farmland wildlife in 2011 were below average, and reproductive conditions were similarly poor.

The 2011 pheasant index (23.0 birds/100 mi) fell 64% from 2010, and was 71% below the 10-year average, 77% below the long-term average, and 79% below the benchmark years of 1955-64 (soil-bank years with marginal cropland in long-term set-aside, a diversified agricultural landscape, more small grains and tame hay, and less pesticide use). The 2011 hen pheasant index was 63% below last year and 72% below the 10-year average, reflecting poor over-winter survival. The number of broods observed was 69% below last year and 75% below the 10-year average, which reflected fewer hens available for nesting and poor reproductive conditions. Projecting from the roadside index, an estimated 249,000 roosters may be harvested this fall, similar to 2001, another year with a severe winter followed by a cold, wet spring. The best opportunity for harvesting pheasants appears to be in the East Central region, where winter weather was slightly less severe than in western Minnesota.

The gray partridge index was similar to last year, but 75% below the 10-year mean and 76% below the long-term average. Observed regional changes were not significant, but were based on small samples. Gray partridge counts were highest in the South Central, Southwest, and Southeast regions.

The cottontail rabbit index was similar to last year, but 42% below the 10-year average and 24% below the long-term average. Counts of cottontail rabbits were highest in the East Central, Southeast, and South Central regions. The jackrabbit index did not change significantly in 2011, but was 96% below the long-term average. The range-wide jackrabbit population peaked in the late 1950's and declined to low levels in the 1980s, from which populations have not recovered. Counts of white-tailed jackrabbits were highest in the Southwest region.

The number of mourning doves observed in 2011 was below last year, the 10-year average, and the long-term average. In contrast, the white-tailed deer index was similar to last year and the 10-year average, but significantly higher than the long-term average. Sandhill crane indices were unchanged from 2010 except in the Northwest region, where they declined by 43%.

## INTRODUCTION

This report summarizes the 2011 Minnesota August roadside survey. The annual survey is conducted annually during the first half of August by Minnesota Department of Natural Resource (MNDNR) enforcement and wildlife personnel throughout the farmland region of Minnesota (Figure 1). The August roadside survey consists of 171 25-mile routes (1-4 routes/county); 152 routes are located in the ring-necked pheasant range.

Observers drove each route in the early morning at 15-20 miles/hour and recorded the number of pheasants, gray (Hungarian) partridge, cottontail rabbits, white-tailed jackrabbits, and

other wildlife they saw. Counts conducted on cool, clear, calm mornings with heavy dew yield the most consistent results because wildlife, especially pheasants, gray partridge, and rabbits, move to warm, dry areas (e.g., gravel roads) during early-morning hours. These data provide an **index of relative abundance** and have been used to monitor annual changes and long-term trends in regional and range-wide populations. Results were reported by agricultural region (Figure 1) and range-wide; however, population indices for species with low detection rates are imprecise and should be interpreted cautiously.

## ACKNOWLEDGMENTS

I thank all cooperators for their efforts in completing routes in 2011; without their help the survey would not be possible. Tonya Klinkner provided assistance with data entry. John Giudice and Marrett Grund reviewed an early draft of this report. Tabor Hoek of the Minnesota Board of Water & Soil Resources (BWSR) provided enrollment data on cropland-retirement programs in Minnesota.

## WEATHER SUMMARY

The winter of 2010-11 was the second consecutive severe winter for much of the farmland region of Minnesota. Snow cover exceeded 6 inches throughout most of the farmland zone from early-December through late March, and snow depths exceeded 18 inches for 12 consecutive weeks in many areas (Minnesota Climatology Working Group [MCWG], <http://climate.umn.edu/doc/snowmap.htm>). In addition, monthly temperatures averaged 3°F below normal (range -1°F to -7°F, MCWG, <http://climate.umn.edu/cawap/monsum/monsum.asp>) in all farmland regions from December through March. Cold, wet conditions continued through April, May, and June in most farmland regions. Thus, conditions for over-winter survival of farmland wildlife and production of young were poor throughout most of the farmland region in 2011.

## HABITAT CONDITIONS

CRP enrollment continued a declining trend with losses from 2010 of 9,000 acres in Minnesota's pheasant range, 16,000 acres in the prairie-chicken range, and 21,000 acres statewide. In addition, 17,000 acres of Reinvest in Minnesota (RIM) enrollments were lost statewide. However, gains in RIM-Wetlands Reserve Program (RIM-WRP) enrollments and acquisitions of Wildlife Management Areas (WMA) and Waterfowl Production Areas (WPA) in the pheasant range exceeded CRP and RIM losses, yielding a net gain of about 8,000 acres of protected habitat since 2010. Habitat enrolled in farm programs (e.g., CRP, CREP, RIM, WRP) declined from a 2007 peak of 1.1 million acres to 948,000 acres in the pheasant range, whereas habitat protected as WMAs and WPAs increased to 719,000 acres. Within the pheasant range, protected grasslands account for about 6.4% of the landscape (range: 3.0-10.1%; Table 1).

Farm programs make up the largest portion of protected grasslands in the state. The expiration of a large proportion of existing CRP contracts is still a major concern for future wildlife populations, with over 550,000 acres in Minnesota scheduled to expire in the next 3 years. Furthermore, the 41st general CRP signup held during spring, 2011, enrolled far fewer acres (33,180) than are expiring on September 30, 2011 (127,535 acres). The future of farmland retirement programs remains under threat due to competing economic opportunities (e.g., high land rental rates, ethanol production).

The MNDNR continues to expand the habitat base through accelerated WMA acquisition with 4,585 acres of new WMAs in the pheasant range in the last year. New funding from the

Lessard-Sams Outdoor Heritage account has accelerated acquisition of WMAs and WPAs throughout Minnesota's farmland zone. In addition, the Working Lands Initiative (<http://www.dnr.state.mn.us/workinglands/index.html>) will attempt to protect and expand large wetland-grassland complexes in 12 counties in western Minnesota.

## **SURVEY CONDITIONS**

Observers completed 166 of the 171 routes in 2011. Weather conditions during the survey ranged from excellent (calm, heavy dew, clear sky) to medium (light dew and overcast skies). Medium-to-heavy dew conditions were present at the start of 96% of the survey routes, which was similar to 2010 (95%) but better than the 10-year average (92%). Clear skies (<30% cloud cover) were present at the start of 76% of routes, with wind speeds <7 mph recorded for 96% of routes. The survey period was extended to July 28<sup>th</sup> - August 19<sup>th</sup> to allow most routes to be completed.

## **RING-NECKED PHEASANT**

The average number of pheasants observed (23.0/100 mi) fell 64% (Table 2) from 2010 and was 71% below the 10-year average (Table 2; Figure 2A), 77% below the long-term average (Table 2), and 79% below the benchmark years of 1955-64. Total pheasants observed per 100 miles ranged from 5.3 in the Southeast to 50.8 in the East Central region (Table 3). Declines from last year were significant in the West Central (-62%), Central (-75%), Southwest (-82%), and South Central regions (-59%; Table 3).

The range-wide hen index (3.4 hens/100 mi) was 63% below last year, and 72% below the 10-year average (Table 2). The hen index varied from 0.8 hens/100 miles in the Southeast to 8.3 hens/100 miles in the East Central region, and was lower than last year for the West Central ( $-60 \pm 26\%$  [95% CI]), Central ( $-77 \pm 47\%$ ), Southwest ( $-82 \pm 40\%$ ), and South Central regions ( $-59 \pm 41\%$ ). The range-wide cock index (5.2 cocks/100 mi) declined 36% from 2010 and 39% from the 10-year average (Table 2). The cock index was significantly lower than last year in the Central ( $-48 \pm 34\%$ ), Southwest ( $-48 \pm 40\%$ ), and Southeast regions ( $-88 \pm 57\%$ ). The 2011 hen:cock ratio was 0.65, which was the second lowest ratio on record and far below average ( $1.47 \pm 0.33$  [SD]) for the CRP years (1987-2010). A low sex ratio may reflect a delayed nesting effort, or greater mortality for hens than cocks.

The number of pheasant broods observed (3.2/100 mi) was 69% below last year, 75% below the 10-year average, and 76% below the long-term average (Table 2). The brood index remains far below the benchmark years of 1955-64 (34.9 broods/100 mi). Regional brood indices ranged from 0.8 broods/100 miles in the Southeast to 7.1 broods/100 miles in the East Central region. Average brood size in 2011 ( $4.6 \pm 0.2$  [SE] chicks/brood) was similar to last year ( $4.5 \pm 0.2$  [SE] chicks/brood), but below the 10-year mean ( $4.8 \pm 0.1$  [SE] chicks/brood) and the long-term average ( $5.5 \pm 0.1$  [SE] chicks/brood; Table 2). The median hatch date for pheasants was June 9 ( $n = 116$ ), the same as the 10-year average (Table 2). The distribution of estimated hatch dates for observed broods was unimodal but skewed to the right, which suggests that many early nesting attempts were unsuccessful. Successful late-season nests tend to be underrepresented in roadside data. Median age of broods observed was 8 weeks (range: 2-16 weeks).

A severe winter throughout the pheasant range (the second consecutive severe winter) was expected to result in reduced hen counts, and this was observed in the survey data. In addition, cool, wet weather during April - June likely contributed to reduce brood survival rates. Thus, a decline in the range-wide pheasant index due to weather was expected, but the magnitude of the decline was disappointing. Projecting from the roadside index, an estimated 249,000 roosters may be harvested

this fall, similar to 2001 (Figure 2A), another year with a severe winter followed by a cold, wet spring. The best opportunity for harvesting pheasants appears to be in the East Central region, where winter weather was slightly less severe than in western Minnesota.

### **GRAY PARTRIDGE**

Range-wide, the gray partridge index (1.7 partridge/100 miles) was similar to last year but 75% below the 10-year average and 76% below the long-term average (Table 2, Figure 2B). Within regions, the partridge index ranged from 0.0/100 miles in the Northwest, Central, and East Central regions to 4.3/100 miles in the South Central region (Table 3). There were no significant regional changes from last year (Table 3). Observations of gray partridge were too few for analysis by age class (n=7 broods statewide).

Conversion of diversified agricultural practices to more intense land-use with fewer haylands, pastures, small grain fields, and hedgerows have reduced the amount of suitable habitat for the gray partridge in Minnesota. Gray partridge in their native range (southeastern Europe and northern Asia) are associated with arid climates and their reproductive success is limited in the Midwest except during successive dry or drought years. Consequently, gray partridge are more strongly affected by weather conditions during nesting and brood rearing than are pheasants. The Southwest, Southeast, and South Central regions offer the best opportunity for harvesting gray partridge in 2011.

### **COTTONTAIL RABBIT and WHITE-TAILED JACKRABBIT**

The eastern cottontail rabbit index (3.6 rabbits/100 mi) was similar to last year, but 42% below the 10-year average and 24% below the long-term average (Table 2, Figure 3A). The cottontail rabbit index ranged from 0.0 rabbits/100 miles in the Northwest to 8.9 rabbits/100 miles in the East Central region (Table 3). Among regions, cottontail indices declined significantly from last year only in the Central region (-55%; Table 3). The best opportunities for harvesting cottontail rabbits are in the East Central, Southeast, and South Central regions.

The index of white-tailed jackrabbits did not change significantly from 2010, but was 53% below the 10-year average and 96% below the long-term average (Table 2, Figure 3B). The range-wide jackrabbit population peaked in the late 1950's and declined to low levels in 1980s (Figure 3B). The long-term decline in jackrabbits reflects the loss of their preferred habitats (i.e., pasture, hayfields, and small grains). The greatest potential for white-tailed jackrabbit hunting is likely in the Southwest region (Table 3). However, indices of relative abundance and annual percent change should be interpreted cautiously because estimates are based on a small number of sightings.

### **WHITE-TAILED DEER**

The index for white-tailed deer (14.8 deer/100 mi) was similar to last year and the 10-year average, but 69% above the long-term average (Table 2, Figure 4A). Among regions, deer indices were significantly different from 2010 only in the Southwest (Table 3).

### **MOURNING DOVE**

The number of mourning doves observed (158.8 doves/100 mi) in 2011 was below last year, the 10-year average, and the long-term average (Table 2, Figure 4B). The mourning dove index ranged from 99.4 doves/100 miles in the Northwest region to 201.7 doves/100 miles in the West Central Region (Table 3). The number of mourning doves heard along U.S. Fish and Wildlife Service call-count survey (CCS) routes (n = 14) in Minnesota was similar to last year. Trend

analyses indicated the number of mourning doves heard along the CCS routes declined 1.6% per year (95% CI: -3.7 to 0.3%) during 2002-2011 and declined 1.4% per year (95% CI: -2.2 to -0.6%) during 1966-2011 (Seamans et al. 2011).

### **SANDHILL CRANE**

For only the third consecutive year, observers were asked to report the number of adult and juvenile sandhill cranes observed on the August Roadside Survey. Range-wide, the 2011 index averaged 9.9 cranes/100 miles of survey, including 2.5 juveniles/100 miles (Table 2). Compared to 2010, we detected no change in the total number of cranes observed or the number of juvenile cranes observed (Table 2). Among regions, crane indices ranged from 0.0/100 miles in the Southwest and Southeast regions to 45.2 cranes/100 miles in the East Central region (Table 3). Regional crane indices were significantly different from last year only in the Northwest, where they declined 43% (Table 3). Juvenile cranes were observed in the Central (3.3/100 mi), East Central (16.9/100 mi), South Central (0.1/100 mi), and Northwest (4.5/100 mi) regions.

### **OTHER SPECIES**

Notable incidental sightings: bald eagle (Wright County), Coopers hawk (Redwood County), great blue heron (Stevens County), belted kingfishers (Dodge and Douglas Counties), trumpeter swan (Pine County), magpies (Polk and Red Lake Counties), indigo bunting (Stevens County), upland sandpiper (Watonwan County), prairie chickens (Clay and Norman Counties), sharp-tailed grouse (Kittson, Polk, and Red Lake Counties), wild turkeys (Big Stone, Chippewa, Chisago, Dodge, Fillmore, Freeborn, Kandiyohi, Le Sueur, Marshall, Morrison, Mower, Polk, Pope, Red Lake, Sherburne, Sibley, Stearns, Steele, Todd, Traverse, Washington, and Wright Counties), coyotes (Lac Qui Parle, Le Sueur, Roseau, and Traverse Counties), badger (Lincoln County), and red fox (Traverse County).

### **LITERATURE CITED**

- Seamans, M. E., K. Parker, and T. A. Sanders. 2011. Mourning dove population status, 2011. U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C.
- [MCWG] Minnesota Climatology Working Group. 2011. MCWG Home Page <http://climate.umn.edu/>. Accessed on August 3, 2011.

Table 1. Abundance (total acres) and density (acres/mi<sup>2</sup>) of undisturbed grassland habitat within Minnesota's pheasant range, 2011<sup>a</sup>.

AGREG	Cropland Retirement						USFWS <sup>c</sup>	MNDNR <sup>d</sup>	Total	Density	
	CRP	CREP	RIM	RIM-WRP	WRP	%				ac/mi <sup>2</sup>	
WC <sup>b</sup>	313,629	39,203	18,458	9,139	18,453	181,062	109,080	689,023	10.1	64.9	
SW	100,364	25,286	14,619	1,094	766	19,519	57,462	219,109	5.8	37.1	
C	137,655	15,320	17,154	2,594	3,100	86,094	46,898	308,817	5.1	32.7	
SC	85,750	28,181	11,192	5,846	8,791	8,515	31,721	179,996	4.5	28.5	
SE	75,321	2,718	6,770	570	771	36,240	52,161	174,550	4.7	30.1	
EC	4,515	0	1,127	0	4	4,720	85,832	96,198	3.0	19.2	
Total	717,233	110,707	69,319	19,243	31,886	336,151	383,154	1,667,693	6.4	40.9	

<sup>a</sup> Unpublished data, Tabor Hoek, BWSR, 23 August 2011.

<sup>b</sup> Does not include Norman County.

<sup>c</sup> Includes Waterfowl Production Areas (WPA) and USFWS refuges.

<sup>d</sup> MNDNR Wildlife Management Areas (WMA).

Table 2. Range-wide trends (% change) in number of wildlife observed per 100 miles driven, Minnesota August roadside survey, 1955-2011.

Species Subgroup	Change from 2010 <sup>a</sup>					Change from 10-year average <sup>b</sup>				Change from long-term average <sup>c</sup>			
	<i>n</i>	2010	2011	%	95% CI	<i>n</i>	2001-10	%	95% CI	<i>n</i>	LTA	%	95% CI
<b>Ring-necked pheasant</b>													
Total pheasants	146	64.1	23.0	-64	±18	146	81.4	-71	±13	146	101.5	-77	±8
Cocks	146	8.2	5.2	-36	±17		8.6	-39	±14		11.5	-54	±12
Hens	146	9.1	3.4	-63	±19		12.4	-72	±14		14.7	-77	±10
Broods	146	10.3	3.2	-69	±18		12.7	-75	±14		13.3	-76	±9
Chicks per brood	116	4.5	4.6	2			4.8	-5			5.5	-18	
Broods per 100 hens	116	112.9	92.1	-19			103.5	-11			101.4	-9	
Median hatch date	113	Jun 9	Jun 9				Jun 09						
<b>Gray partridge</b>													
Total partridge	163	3.0	1.7	-42	±72	163	7.0	-75	±30	148	16.1	-76	±18
<b>Eastern cottontail</b>													
	163	4.7	3.6	-23	±26	163	6.3	-42	±15	148	6.8	-24	±17
<b>White-tailed jackrabbit</b>													
	163	0.1	0.2	74	±178	163	0.4	-53	±41	148	1.8	-96	±13
<b>White-tailed deer</b>													
	163	14.8	14.8	0	±24	163	14.4	2	±22	167	9.2	69	±34
<b>Mourning dove</b>													
	163	213.8	158.8	-26	±16	163	222.7	-29	±10	148	273.2	-16	±13
<b>Sandhill Crane</b>													
Total cranes	163	10.3	9.9	-4	±47								
Juveniles	163	2.0	2.5	25	±64								

<sup>a</sup> Includes Northwest region, except for pheasants. Estimates based on routes (*n*) surveyed in both years.

<sup>b</sup> Includes Northwest region, except for pheasants. Estimates based on routes (*n*) surveyed at least 9 of 10 years.

<sup>c</sup> LTA = 1955-2010, except for deer = 1974-2010. Estimates for all species except deer based on routes (*n*) surveyed  $\geq 40$  years; estimates for deer based on routes surveyed  $\geq 25$  years. Thus, Northwest region (8 counties in Northwest were added to survey in 1982) included only for deer.



Table 3. Continued.

Region Species	Change from 2009					Change from 10-year average				Change from long-term average			
	<i>n</i>	2010	2011	%	95% CI	<i>n</i>	2001-10	%	95% CI	<i>n</i>	LTA	%	95% CI
<b>Southwest</b>													
Ring-necked pheasant	19	104.2	19.2	-82	±38	19	159.8	-88	±20	19	119.5	-84	±15
Gray partridge		8.2	4.0	-51	±145		23.3	-83	±46		42.4	-91	±27
Eastern cottontail		3.4	3.8	13	±104		7.6	-50	±40		8.2	-54	±33
White-tailed jackrabbit		0.4	0.6	51	±286		1.0	-39	±93		3.9	-84	±30
White-tailed deer		20.0	9.7	-52	±39		14.5	-33	±38		8.2	17	±58
Mourning dove		238.7	189.6	-21	±27		334.1	-43	±18		314.9	-40	±18
Sandhill Crane		0.0	0.0										
<b>South Central</b>													
Ring-necked pheasant	32	56.5	23.1	-59	±42	32	85.1	-73	±26	32	133.3	-83	±13
Gray partridge		5.7	4.3	-26	±88		12.4	-66	±49		19.3	-78	±28
Eastern cottontail		5.4	4.6	-14	±44		9.0	-48	±21		7.7	-40	±23
White-tailed jackrabbit		0.0	0.4				0.2	73	±158		1.8	-79	±32
White-tailed deer		3.4	6.0	79	±116		5.5	9	±62		3.4	79	±98
Mourning dove		294.4	177.4	-40	±29		278.3	-36	±15		259.0	-32	±16
Sandhill Crane		1.0	0.6	-37	±170								
<b>Southeast</b>													
Ring-necked pheasant	19	8.6	5.3	-39	±94	19	26.6	-80	±30	19	73.7	-93	±27
Gray partridge		3.4	3.2	-6	±277		5.7	-44	±133		13.9	-77	±59
Eastern cottontail		8.0	7.6	-5	±60		8.0	-5	±51		7.7	-2	±51
White-tailed jackrabbit		0.0	0.0				0.1	-100	±90		0.6	-100	±43
White-tailed deer		12.8	12.9	0	±61		15.9	-19	±47		10.2	26	±47
Mourning dove		79.9	119.7	50	±36		194.6	-39	±19		225.1	-47	±17
Sandhill Crane		0.0	0.0										

<sup>a</sup> Based on routes (*n*) surveyed in both years.

<sup>b</sup> Based on routes (*n*) surveyed at least 9 of 10 years.

<sup>c</sup> LTA = 1955-2010, except for Northwest region (1982-2010) and white-tailed deer (1974-2010). Estimates based on routes (*n*) surveyed  $\geq 40$  years (1955-2010), except for Northwest ( $\geq 20$  years) and white-tailed deer ( $\geq 25$  years).

<sup>d</sup> Eight Northwestern counties (19 routes) were added to the August roadside survey in 1982.

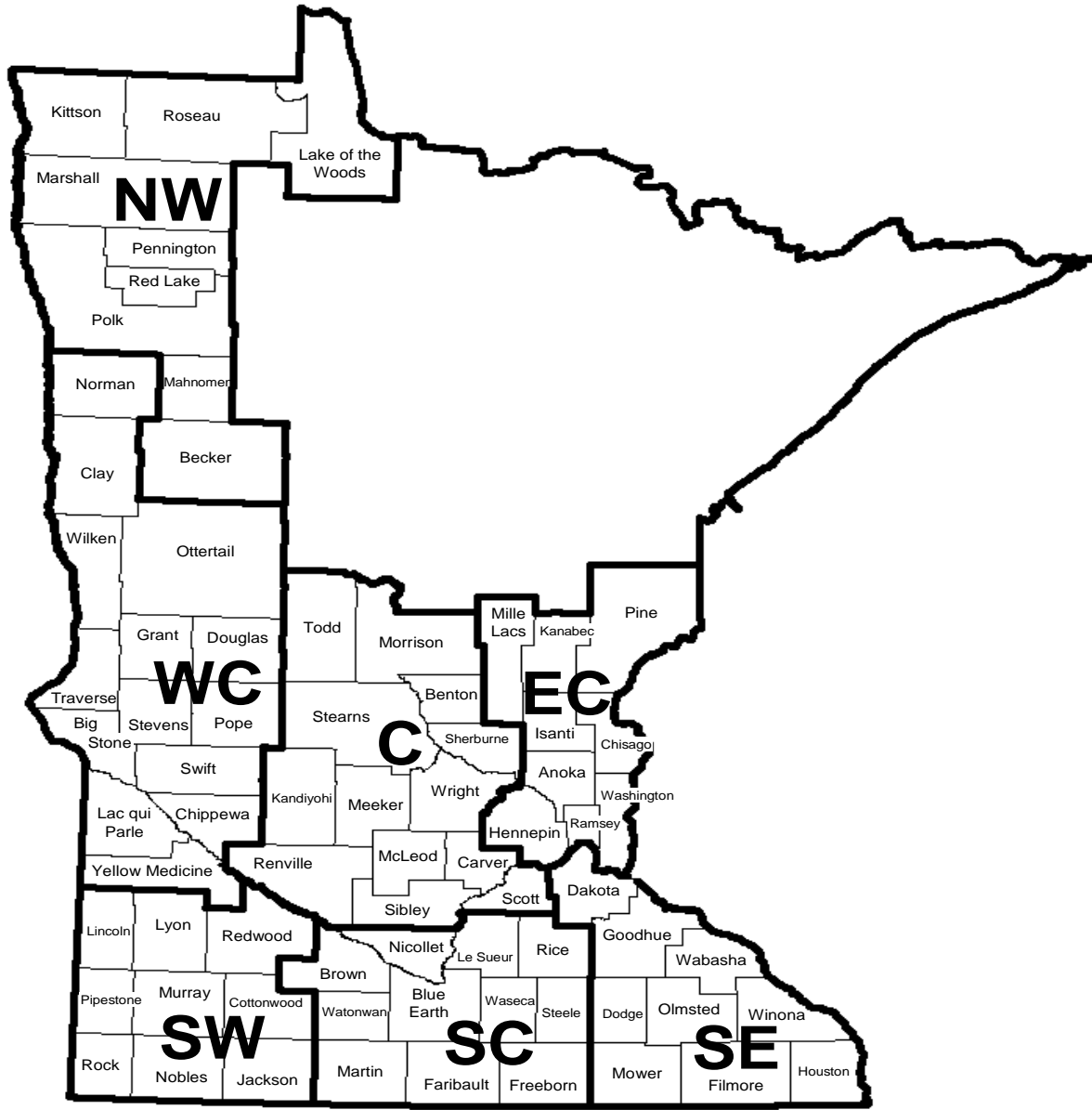


Figure 1. Survey regions for Minnesota's August roadside survey, 2011.

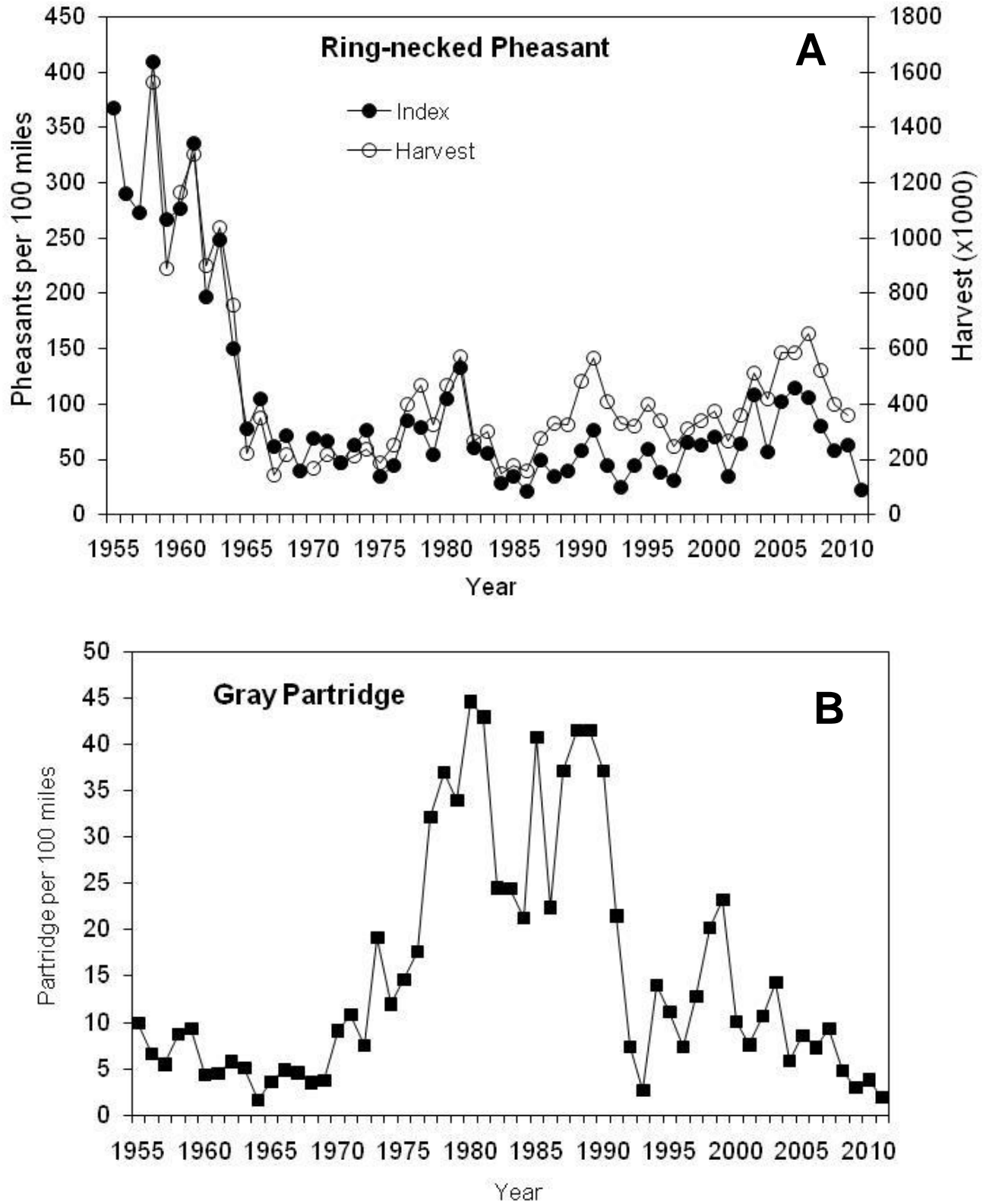


Figure 2. Range-wide index of ring-necked pheasants (A) and gray partridge (B) seen per 100 miles driven in Minnesota, 1955-2011. Does not include the Northwest region. Based on all survey routes completed.

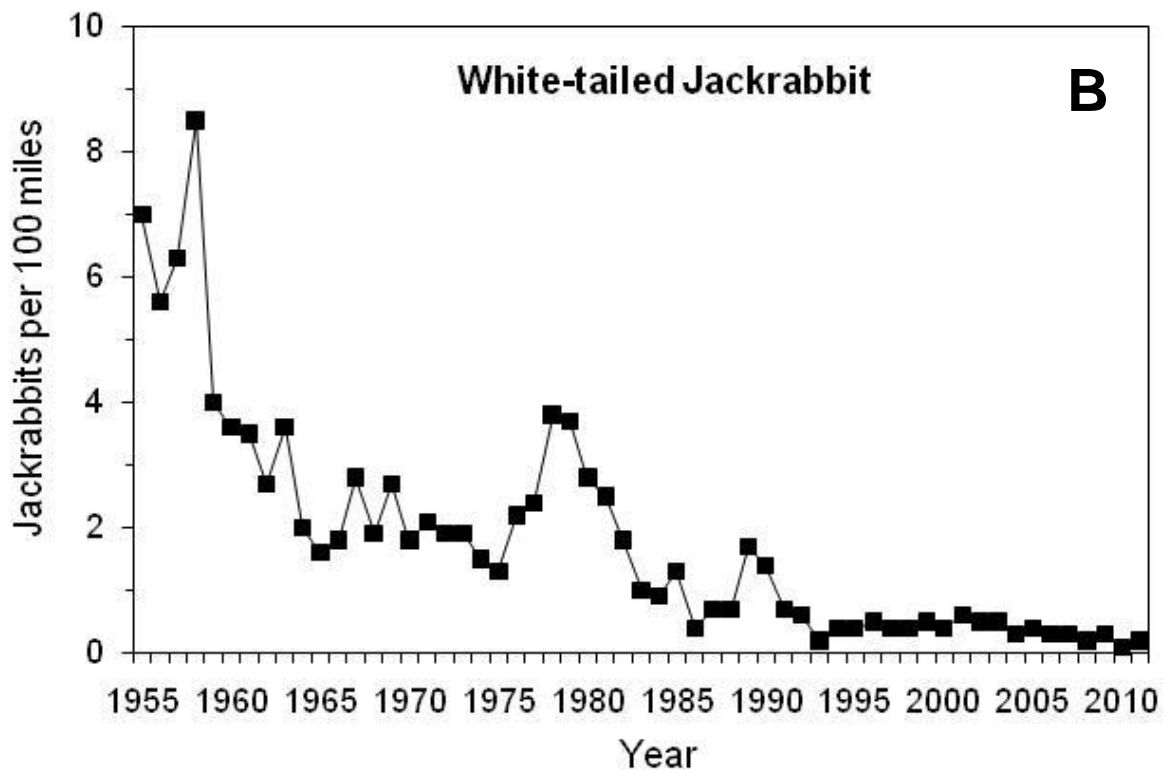
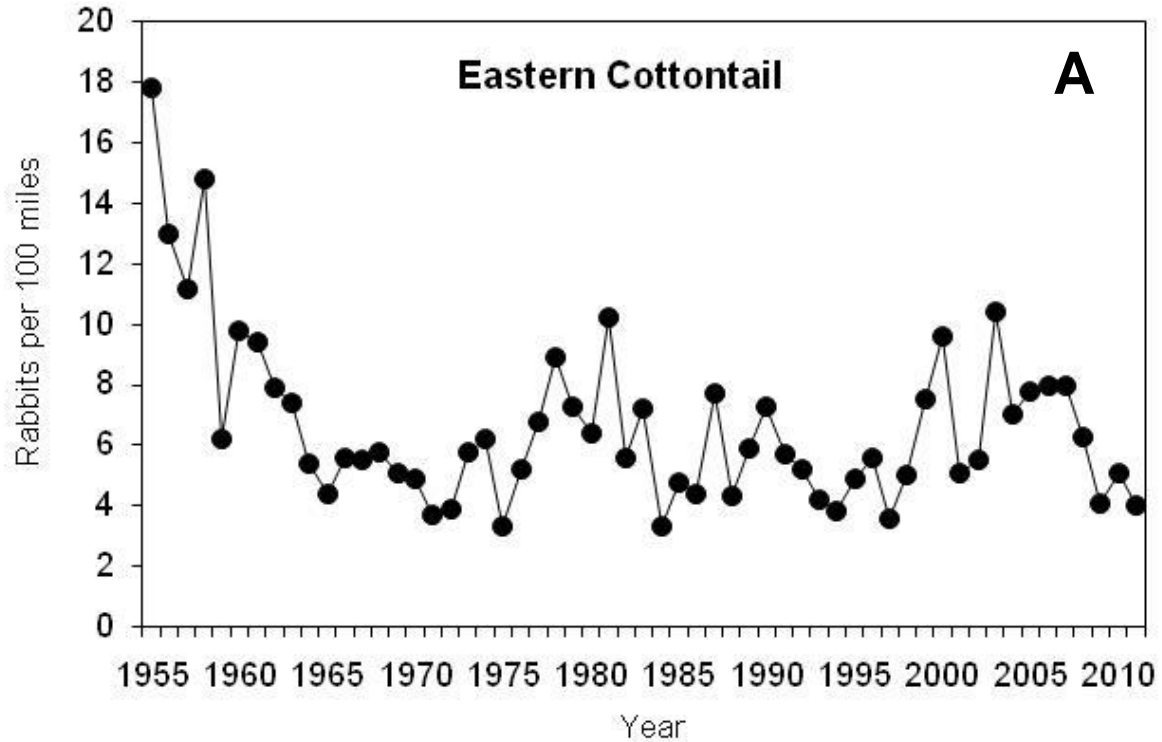


Figure 3. Range-wide index of eastern cottontail (A) and white-tailed jackrabbits (B) seen per 100 miles driven in Minnesota, 1955-2011. Does not include the Northwest region. Based on all survey routes completed.

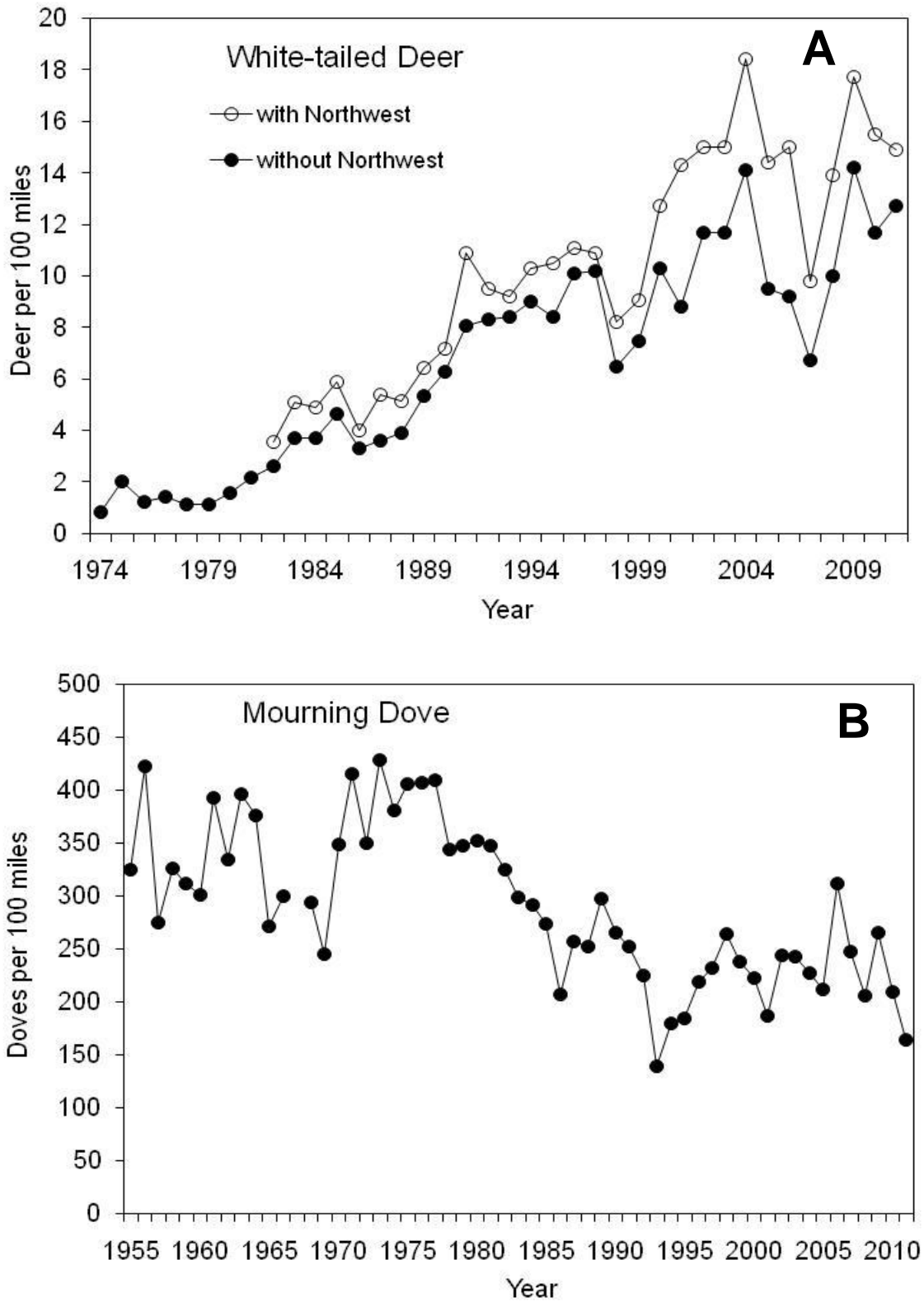


Figure 4. Range-wide index of white-tailed deer (A) and mourning doves (B) seen per 100 miles driven in Minnesota, 2011. Doves were not counted in 1967 and the dove index does not include the Northwest region. Based on all survey routes completed.