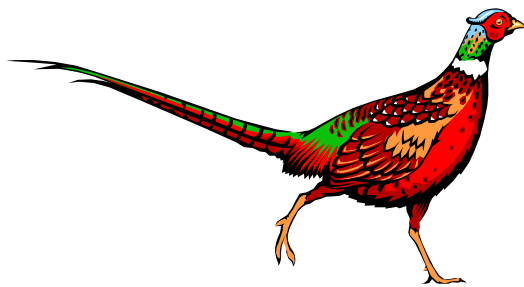




2015 Minnesota August Roadside Survey

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ABSTRACT

Mild winter conditions and relatively favorable spring and summer weather led to increases in the 2015 population indices for ring-necked pheasants, gray partridge, eastern cottontails, and mourning doves; however, all indices remain below the long-term averages. The white-tailed jackrabbit index was similar to 2014 and remains at a historic low. The population index for white-tailed deer was similar to 2014 and remains well above the long-term average. The index for total sandhill cranes increased but the index for juvenile cranes was similar to 2014.

Conservation Reserve Program (CRP) enrollment declined by 153,492 acres statewide since 2014. Increases in enrollment of other farm programs and acquisition of public lands continued to only partially offset CRP losses, yielding a net loss of 127,646 acres of protected wildlife habitat statewide last year. Within the pheasant range, there was a net loss of 4,353 acres of set-aside habitat. The winter of 2014-15 was milder than normal across all regions. Spring and early summer temperatures and precipitation amounts were normal to near-normal with the exception of May, which was slightly colder than normal and had variable rainfall amounts across the farmland zone. Overall, conditions for overwinter survival were above average and nesting season conditions were favorable for nesting birds.

The 2015 range-wide pheasant index (40.7 birds/100 mi) increased 33% from 2014 but was 39% below the 10-year average and 59% below the long-term average. Minnesota's pheasant population has declined since the mid-2000s in association with the loss of CRP acres, and indices over the past 5 years are comparable to the indices calculated in the mid-1980s. The hen index (6.1 hens/100 mi) increased 32% from 2014 but was 40% below the 10-year average. The cock index (4.9 cocks/100 mi) increased 8% from 2014 but also remained 40% below the 10-year average. The hen:cock ratio (1.27) was greater than the 2014 ratio (0.99) and closer to the average ratio (1.42) for the CRP years. The pheasant brood index (6.3 broods/100 mi) increased 35% from last year but remained 38% below the 10-year average and 51% below the long-term average. Average brood size in 2015 (4.7 chicks/brood) was similar to 2014 and the 10-year average but 14% below the long-term average (5.5 chicks/brood). The median hatch date for pheasants was 9 June 2015, which is 3 days earlier than the 10-year average. The best opportunity for harvesting roosters should be in the Southwest, West Central, and East Central regions.

The gray partridge index (2.3 birds/100 miles) increased 150% from 2014 but remains well below the 10-year and long-term averages (-44% and -83%, respectively). Partridge counts were highest in the Southeast and South Central regions. The eastern cottontail rabbit index (7.1 rabbits/100 mi) was 36% greater than last year, 34% above the 10-year average, and 20% above the long-term average. The cottontail indices were highest in the Southeast, South Central, Southwest, and East Central regions. The white-tailed jackrabbit index (0.1 rabbits/100 mi) did not change from last year and is 95% below the long-term average. The jackrabbit population peaked in the 1950s but declined to low levels in the 1980s with changes in agricultural land use and has not recovered. The white-tailed deer index (21.2 deer/100 mi) was similar to 2014, 33% above the 10-year average, and 98% above the long-term average. The mourning dove index (184.2 doves/100 mi) was 14% greater than 2014 but 13% and 27% below the 10-year and long-term averages, respectively. Mourning dove counts were highest in the Southwest, West Central, and South Central regions. Rangewide, the total sandhill crane index (14.7 total cranes/100 mi) increased 64% from 2014 and the juvenile index (1.2 juvenile cranes/100 mi) was similar to 2014.

INTRODUCTION

This report summarizes the 2015 Minnesota August Roadside Survey (ARS). The ARS is conducted annually during the first two weeks of August by Minnesota Department of Natural Resources (MNDNR) wildlife and enforcement personnel throughout Minnesota's farmland regions (Figure 1). The 2015 ARS consisted of 170 25-mile routes (1-4 routes/county); 151 routes were 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 observed. 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 are used to monitor annual changes and long-term trends in regional and range-wide populations. Results are 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.

HABITAT CONDITIONS

Undisturbed grassland habitat acres in Minnesota's farmland landscape continued to decline considerably last year. Conservation Reserve Program (CRP) enrollment declined by 153,492 acres statewide. Losses of CRP were more extensive in northwestern Minnesota's prairie chicken range (-130,540 acres) compared to the pheasant range (-23,116 acres). Acres enrolled in the Conservation Reserve Enhancement Program (CREP) held nearly steady whereas acres enrolled in Reinvest in Minnesota (RIM), Wetlands Reserve Program (WRP), and RIM-WRP increased slightly last year. Combined with acquisitions of state-owned Wildlife Management Areas (WMA) and federally-owned Waterfowl Production Areas (WPA), these gains only partially offset CRP losses, yielding a net loss of 127,646 acres statewide last year. The net loss of protected habitat in Minnesota's pheasant range was 4,353 acres. Similar to 2014, remaining protected habitat accounts for 5.9% of the landscape within the pheasant range (range: 3.1-9.6; Table 1).

Protecting grassland and wetland habitat remains one of the most critical environmental challenges facing Minnesota. Farm programs, especially CRP, make up the largest portion of protected grasslands in the pheasant range (Figure 2). Expiring CRP contracts continue to be a concern for future wildlife populations, with major losses yet to come (>495,000 acres in Minnesota scheduled to expire by fall 2018). Funding from the Legacy Amendment has helped accelerate acquisition of WMAs and WPAs throughout Minnesota's farmland zone, but not at a pace that can keep up with the loss of CRP acres. Minnesota's Prairie Conservation Plan has provided a blueprint for moving forward with conservation strategies and is being carried out through local technical teams (LTTs) using various state and federal funding sources to protect, restore, and enhance grasslands and wetlands. For more info, please visit: [Minnesota Prairie Plan](#).

Efforts to increase public hunting opportunities on private lands, especially land enrolled in a conservation program (e.g., CRP, CREP, RIM), have continued in 2015. The 2012 Minnesota Legislature established a Walk-in Access (WIA) program to provide public access to wildlife habitat on private land for hunting. The WIA program compensates landowners for providing hunter access through an agreement with MNDNR Wildlife. In August 2015, the U.S. Department of Agriculture (USDA) awarded a 3-year, \$1.67 million grant which will help continue funding of the WIA

program. For the 2015-2016 hunting season, 22,800 acres of private land across 200 sites in the West Central, Central, Southwest, and South Central regions are enrolled in the WIA program. Walk-in Access sites are open for public hunting from September 1 – May 31 where boundary signs are present. Hunters must purchase a \$3 WIA Validation to legally access WIA lands. For more information on the WIA program, including a printable atlas of enrolled sites by county, aerial photos of each site, interactive maps, and Global Positioning System (GPS) downloads, please visit the WIA program website at: www.mndnr.gov/walkin.

WEATHER SUMMARY

Minnesota's winter 2014-2015 was generally mild with warmer and drier than normal conditions across much of the farmland zone. November storms brought deeper snow (>6 inches) to some areas of the pheasant range, including West Central, Central, and East Central Minnesota (Minnesota Climatology Working Group [MCWG], [Weekly snow depth maps](#)), and temperatures were 8.0° F colder than normal across all regions in the farmland zone ([MCWG Climate Summary](#)). However, temperatures were 5.5° F and 3.5° F warmer than normal in December and January, respectively, and snow cover never exceeded 4 inches except in the Northwest during these months. February was 9.7° F colder than normal, on average. No region in the farmland zone had continuous deep snow cover for more than 2 weeks at a time during winter 2014-2015 except for the Northwest region which had deeper snow cover in some areas during January and February. Storms brought several inches of snow during the first and third weeks of March, but warmer than normal temperatures (average = 2.6° F above normal) melted the snow quickly.

Spring temperatures and precipitation were variable from April through June. April was slightly warmer and drier than normal (1.7° F above normal; 0.65 inches below normal). May was slightly colder than normal (-0.8° F below normal) with highly variable precipitation patterns across the farmland zone. The East Central, Southwest, South Central, and Southeast regions were only slightly wetter than normal (range: 1.05-1.23 inches above normal), whereas the Northwest, West Central, and Central regions received more precipitation (2.66, 3.30, and 2.27 inches above normal, respectively). On average across all farmland regions, June and July had near-normal temperatures and precipitation amounts.

Overall, the conditions for over-winter survival of wildlife were above average throughout the farmland zone in 2014-2015. Although conditions for nesting birds were cooler and wetter in May, June and July conditions were very beneficial for re-nesting and brood-rearing.

SURVEY CONDITIONS

The survey period was extended (30 July – 20 August) to allow routes to be completed, and observers completed 170 of 172 routes in 2015. One route in McLeod County and one route in Mower County were not completed within the survey's timeframe. Weather conditions during the survey ranged from excellent (calm winds, heavy dew, clear sky) to medium (light breeze and dew, overcast skies). Medium-to-heavy dew conditions were present at the start of 98% of the survey routes, which was better than 2014 (94%) and the 10-year average (93%). Clear skies (<30% cloud cover) were present at the start of 82% of routes and wind speeds <7 mph were recorded for 100% of the routes. Overall, survey conditions were excellent in 2015.

RING-NECKED PHEASANT

In 2015, the average number of pheasants observed (40.7 birds/100 mi) increased 33% from 2014 but remained 39% below the 10-year average (Table 2, Figure 3A), 59% below the long-term average, and 85% below the benchmark years of 1955-64. The pheasant population has declined since the mid-2000s in conjunction with the loss of CRP acres (Figure 2), and pheasant indices over the past 5 years are comparable to the indices calculated in the mid-1980s before the CRP era began (Figure 3A). Total pheasants observed per 100 mi ranged from 26.0 birds in the Southeast region to 76.4 birds in the Southwest region (Table 3). The pheasant roadside index showed substantial increases in the Southeast (138%) and East Central (126%) regions (Table 3). The Southwest (23%), West Central (31%), and Central (44%) regions also showed increased roadside indices, whereas the South Central Region (-2%) remained similar to 2014. The best opportunity for harvesting pheasants appears to be in the Southwest, West Central, and East Central regions.

The range-wide hen index (6.1 hens/100 mi) increased 32% from 2014 but was 40% below the 10-year average (Table 2). The hen index varied from 3.8 hens/100 mi in the Southeast to 11.4 hens/100 mi in the Southwest. The 2015 hen index was similar to 2014 in the West Central (1%) and Central (8%) regions and increased in the South Central (13%), Southwest (69%), East Central (152%), and Southeast (259%) regions. The range-wide cock index (4.9 cocks/100 mi) increased 8% from 2014 but remained 40% below the 10-year average (Table 2). The cock index increased in the South Central (12%), West Central (23%), and Central (39%) regions but decreased 16-29% in the other three regions of the pheasant range. The 2015 hen:cock ratio was 1.27, which was greater than 2014 (0.99) and closer to the average (1.42 ± 0.35) for the CRP years (1987-2014).

Across their range, the average number of pheasant broods observed (6.3 broods/100 mi) increased 35% from last year but remained 38% below the 10-year average and 51% below the long-term average (Table 2). Regional brood indices ranged from 3.9 broods/100 mi in the Central region to 13.1 broods/100 mi in the Southwest region. The brood index was similar to 2014 for the South Central and Central regions and increased in all other regions (range: 23-201%). The average brood size index in 2015 (4.7 ± 0.2 chicks/brood) was similar to 2014 and the 10-year average but 14% below the long-term average (5.5 ± 0.1 chicks/brood). The median hatch date for pheasants across their range was approximately 9 June 2015 ($n = 240$ broods), 3 days earlier than the 10-year average (Table 2). The distribution of estimated hatch dates was unimodal and normally distributed, which suggests that weather conditions in May and June were not disruptive to nesting overall. However, it is notable that the median hatch date for the West Central and South Central regions was delayed (15 June and 19 June, respectively).

The increase in pheasant counts can be attributed to the relatively mild winter and good nesting season conditions experienced throughout their range. Winter conditions for pheasants are considered severe when the temperature is $\leq 0^\circ$ F and snow cover exceeds 6 inches. Lack of simultaneous extreme cold and deep snow conditions improved overwinter survival of hens. Additionally, the lack of deep snow cover made food resources (e.g., weed seeds, waste grain) more readily available, which would have allowed hens to enter the nesting season in above-average body condition. Although heavier rains in some regions in May might have forced hens to re-nest, the drier conditions in June and July were beneficial to brood-rearing and likely improved chick survival rates.

GRAY PARTRIDGE

The range-wide gray partridge index (2.3 birds/100 miles) increased 150% from 2014 but remains well below the 10-year and long-term averages (-44% and -83%, respectively; Table 2, Figure 3B). The partridge index ranged from 0.0 birds/100 mi in the Central and East Central regions to 6.5 birds/100 mi in the Southeast region (Table 3). Observations of gray partridge broods ($n = 9$ broods statewide) were too few for analysis by age class.

Conversion of diversified agricultural practices (e.g., hayfields, pastures, small grains, and hedgerows) to more intense land-use (e.g., corn and soybeans) has 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 years. Consequently, gray partridge are more adversely affected by heavy precipitation during the breeding season than are pheasants. The Southeast and South Central regions will offer the best opportunity for harvesting gray partridge in 2015.

COTTONTAIL RABBIT and WHITE-TAILED JACKRABBIT

The eastern cottontail rabbit index (7.1 rabbits/100 mi) increased 36% from 2014 and was 34% above the 10-year average and 20% above the long-term average (Table 2, Figure 4A). The cottontail rabbit index ranged from 1.3 rabbits/100 mi in the Northwest to 13.4 rabbits in the Southeast (Table 3). The best opportunity for harvesting cottontail rabbits should be in the Southeast, South Central, Southwest, and East Central regions.

The number of white-tailed jackrabbits observed (0.1 rabbits/100 mi) remains at a historic low (i.e., 95% below the long-term average of 1.7 rabbits/100 mi; Table 2). The range-wide jackrabbit population peaked in the late 1950s and declined to low levels in the 1980s (Figure 4B). 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).

WHITE-TAILED DEER

The index for white-tailed deer (21.2 deer/100 mi) was similar to 2014, 33% above the 10-year average, and 98% above the long-term average (Table 2, Figure 5A). Roadside indices for deer ranged from 6.1 deer/100 mi in the South Central region to 58.7 deer/100 mi in the Northwest (Table 3).

MOURNING DOVE

The mourning dove index (184.2 doves/100 mi) was 14% greater than 2014 but 13% below the 10-year average and 27% below the long-term average (Table 2, Figure 5B). The index ranged from 75.1 doves/100 mi in the East Central region to 263.8 doves/100 mi in the Southwest region (Table 3). The best opportunities for harvesting doves should be in the Southwest, West Central, and South Central regions.

SANDHILL CRANE

The 2015 range-wide index of sandhill cranes averaged 14.7 total cranes/100 mi, representing a 64% increase in total cranes compared to 2014 (Table 2). Indices ranged from 0.0 total cranes/100 miles in the Southwest region to 65.7 total cranes/100 mi in the Northwest region (Table 3). Overall, regional indices for the total number of cranes increased in the West Central (300%), Central (70%),

and Northwest (120%) regions, decreased in the East Central (-8%) and South Central (-46%) regions, and remained similar in the Southeast region.

The range-wide index of juveniles was 1.2 juvenile cranes/100 mi, which was similar to 2014 (Table 2). Juvenile cranes were observed in the West Central, Central, East Central, and Northwest regions.

OTHER SPECIES

Notable incidental sightings included: belted kingfisher (Jackson and Nobles Counties), black-billed magpie (Polk and Red Lake Counties), common raven (Polk and Red Lake Counties), greater prairie-chicken (Clay and Wilkin Counties), meadowlark sp. (Redwood and Renville Counties), northern shrike (Dakota County), osprey (Wright County), pectoral sandpiper (Nobles County), purple martin (Nobles County), red-headed woodpecker (Nobles County), sharp-tailed grouse (Lac qui Parle and Red Lake Counties), trumpeter swan (Brown County), and upland sandpiper (Nobles, Redwood, and Traverse Counties). Wild turkey adults and poults were noted in 18 counties.

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LITERATURE CITED

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Table 1. Abundance (total acres) and density (acres/mi²) of undisturbed grassland habitat within Minnesota's pheasant range, 2015^a.

AGREG	Cropland Retirement						USFWS ^c	MNDNR ^d	Total	Density	
	CRP	CREP	RIM	RIM-WRP	WRP	%				ac/mi ²	
WC ^b	260,174	37,688	21,641	13,783	19,992	192,000	109,553	654,832	9.6	61.7	
SW	89,330	24,763	18,391	2,225	848	21,916	60,509	217,982	5.8	36.9	
C	119,102	14,326	31,530	6,328	3,067	89,432	49,614	313,398	5.2	33.2	
SC	81,615	27,656	12,741	10,039	8,978	9,288	34,065	184,382	4.6	29.2	
SE	56,441	2,706	7,269	692	985	36,731	53,159	157,983	4.3	27.3	
EC	3,430	0	1,132	0	4	4,994	91,117	100,677	3.1	20.1	
Total	610,092	107,139	92,704	33,066	33,874	354,361	398,017	1,629,253	5.9	37.8	

a. Unpublished data, Tabor Hoek, BWSR, 1 August 2015.

b. Does not include Norman County.

c. Includes Waterfowl Production Areas (WPA) and USFWS refuges.

d. MNDNR Wildlife Management Areas (WMA).

Table 2. Range-wide trends (% change) in number of wildlife observed per 100 miles driven, Minnesota August roadside survey, 1955-2015.

Species Subgroup	Change from 2014 ^a					Change from 10-year average ^b				Change from long-term average ^c			
	<i>n</i>	2014	2015	%	95% CI	<i>n</i>	2005-14	%	95% CI	<i>n</i>	LTA	%	95% CI
Ring-necked pheasant													
Total pheasants	148	30.6	40.7	33	±26	145	65.1	-39	±13	146	96.2	-59	±10
Cocks	148	4.5	4.9	8	±24	145	7.7	-40	±12	146	10.9	-57	±11
Hens	148	4.6	6.1	32	±30	145	10.0	-40	±14	146	13.9	-57	±11
Broods	148	4.7	6.3	35	±30	145	10.1	-38	±14	146	12.7	-51	±11
Chicks per brood	240	4.6	4.7	2			4.7	0			5.5	-14	
Broods per 100 hens	148	101.7	103.0	1			100.8	2			101.3	2	
Median hatch date	240	16	9 June				12 June						
Gray partridge	167	0.9	2.3	150	±198	164	4.1	-44	±38	146	15.0	-83	±19
Eastern cottontail	167	5.2	7.1	36	±27	164	5.4	34	±22	146	6.6	20	±20
White-tailed jackrabbit	167	0.1	0.1	0	±119	164	0.2	-56	±52	146	1.7	-95	±14
White-tailed deer	167	21.1	21.2	0	±19	164	16.0	33	±23	165	10.6	98	±32
Mourning dove	167	161.1	184.2	14	±18	164	203.4	-13	±11	146	268.6	-27	±12
Sandhill crane													
Total cranes	167	9.0	14.7	64	±75								
Juveniles	167	1.3	1.2	-6	±47								

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

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

^c LTA = 1955-2014, except for deer = 1974-2014. Estimates for all species except deer based on routes (*n*) surveyed ≥40 years; estimates for deer based on routes surveyed ≥25 years. Thus, Northwest region (8 counties in Northwest were added to survey in 1982) included only for deer.

Table 3. Regional trends (% change) in number of wildlife observed per 100 miles driven, Minnesota August roadside survey, 1955-2015.

Region Species	Change from 2014 ^a					Change from 10-year average ^b				Change from long-term average ^c			
	<i>n</i>	2014	2015	%	95% CI	<i>n</i>	2005-14	%	95% CI	<i>n</i>	LTA	%	95% CI
Northwest^d													
Gray partridge	19	0.0	0.8			19	0.5	55	±150	19	3.3	-74	±77
Eastern cottontail	19	0.4	1.3	198	±286	19	0.5	149	±234	19	0.8	58	±148
White-tailed jackrabbit	19	0.2	0.2	0	±302	19	0.4	-41	±126	19	0.6	-67	±75
White-tailed deer	19	45.9	58.7	28	±57	19	42.8	37	±61	19	31.1	89	±73
Mourning dove	19	78.3	85.3	9	±46	19	86.8	-2	±38	19	119.4	-29	±25
Sandhill crane	19	29.9	65.7	120	±195								
West Central^e													
Ring-necked pheasant	39	35.5	46.3	31	±60	35	72.9	-38	±30	37	97.9	-56	±23
Gray partridge	39	0.3	0.2	-33	±246	35	0.9	-73	±73	37	9.5	-98	±22
Eastern cottontail	39	3.1	2.6	-17	±54	35	2.8	-1	±45	37	3.9	-34	±32
White-tailed jackrabbit	39	0.2	0.1	-50	±229	35	0.3	-55	±107	37	2.2	-95	±21
White-tailed deer	39	24.8	17.4	-30	±31	35	15.2	18	±26	37	9.9	74	±40
Mourning dove	39	184.2	281.4	53	±40	35	239.8	10	±22	37	367.9	-22	±19
Sandhill crane	39	0.9	3.7	300	±371								
Central													
Ring-necked pheasant	27	18.5	26.7	44	±60	27	53.5	-50	±28	26	69.7	-60	±17
Gray partridge	27	0.3	0.0	-100	±206	27	1.0	-100	±90	26	9.2	-100	±49
Eastern cottontail	27	1.3	4.6	244	±186	27	5.2	-12	±48	26	6.5	-29	±33
White-tailed jackrabbit	27	0.0	0.0			27	0.0			26	1.1	-100	±24
White-tailed deer	27	14.7	20.4	40	±53	27	10.7	91	±64	26	6.0	223	±119
Mourning dove	27	88.3	123.1	40	±69	27	164.0	-25	±32	26	222.9	-44	±23
Sandhill crane	27	12.0	20.3	70	±95								
East Central													
Ring-necked pheasant	12	20.4	46.2	126	±128	13	55.4	-23	±46	13	85.8	-50	±30
Gray partridge	12	0.0	0.0			13	0.0			13	0.1	-100	±147
Eastern cottontail	12	7.0	8.9	28	±116	13	10.3	-15	±52	13	8.7	2	±46
White-tailed jackrabbit	12	0.0	0.0			13	0.0			13	0.2	-100	±64
White-tailed deer	12	22.2	23.6	6	±59	13	16.2	38	±66	13	9.6	133	±105
Mourning dove	12	78.4	75.1	-4	±50	13	100.3	-25	±30	13	117.2	-36	±38
Sandhill crane	12	43.2	39.6	-8	±50								

Table 3. Continued.

Region Species	Change from 2014					Change from 10-year average				Change from long-term average			
	<i>n</i>	2014	2015	%	95% CI	<i>n</i>	2005-14	%	95% CI	<i>n</i>	LTA	%	95% CI
Southwest													
Ring-necked pheasant	19	62.1	76.4	23	±45	19	125.3	-39	±23	19	114.5	-33	±23
Gray partridge	19	0.8	1.9	125	±304	19	14.7	-87	±32	19	39.8	-95	±19
Eastern cottontail	19	7.6	10.7	42	±72	19	6.3	70	±66	19	8.0	35	±58
White-tailed jackrabbit	19	0.4	0.4	0.0	±153	19	0.7	-43	±106	19	3.7	-89	±24
White-tailed deer	19	23.4	18.5	-21	±41	19	16.6	11	±51	19	9.6	93	±79
Mourning dove	19	335.6	263.8	-21	±37	19	313.1	-16	±31	19	310.4	-15	±32
Sandhill crane	19	0.0	0.0										
South Central													
Ring-necked pheasant	32	31.6	31.0	-2	±48	32	64.2	-52	±23	32	126.0	-75	±13
Gray partridge	32	3.6	6.1	69	±233	32	7.3	-16	±88	32	18.3	-67	±46
Eastern cottontail	32	8.1	11.6	43	±53	32	7.8	48	±46	32	7.6	53	±48
White-tailed jackrabbit	32	0.0	0.0			32	0.1	-100	±69	32	1.7	-100	±25
White-tailed deer	32	5.5	6.1	11	±66	32	5.5	11	±47	32	3.8	62	±66
Mourning dove	32	225.8	199.9	-12	±28	32	272.5	-27	±23	32	257.4	-22	±38
Sandhill crane	32	1.6	0.9	-46	±97								
Southeast													
Ring-necked pheasant	19	10.9	26.0	138	±169	19	15.4	69	±113	19	68.0	-62	±39
Gray partridge	19	0.0	6.5			19	5.1	29	±112	19	13.6	-52	±47
Eastern cottontail	19	11.6	13.4	16	±56	19	7.1	88	±65	19	7.5	78	±69
White-tailed jackrabbit	19	0.0	0.0			19	0.1	-100	±153	19	0.6	-100	±46
White-tailed deer	19	21.0	19.1	-9	±52	19	15.4	24	±73	19	10.9	76	±102
Mourning dove	19	68.5	133.1	94	±81	19	153.0	-13	±32	19	218.7	-39	±22
Sandhill crane	19	0.0	0.4										

^a Based on routes (*n*) surveyed in both years.

^b Based on routes (*n*) surveyed at least 9 of 10 years.

^c LTA = 1955-2014, except for Northwest region (1982-2014) and white-tailed deer (1974-2014). Estimates based on routes (*n*) surveyed ≥40 years (1955-2014), except for Northwest (≥20 years) and white-tailed deer (≥25 years).

^d Eight Northwestern counties (19 routes) were added to the August roadside survey in 1982.

^e Two routes were added to the West Central region in 2014.

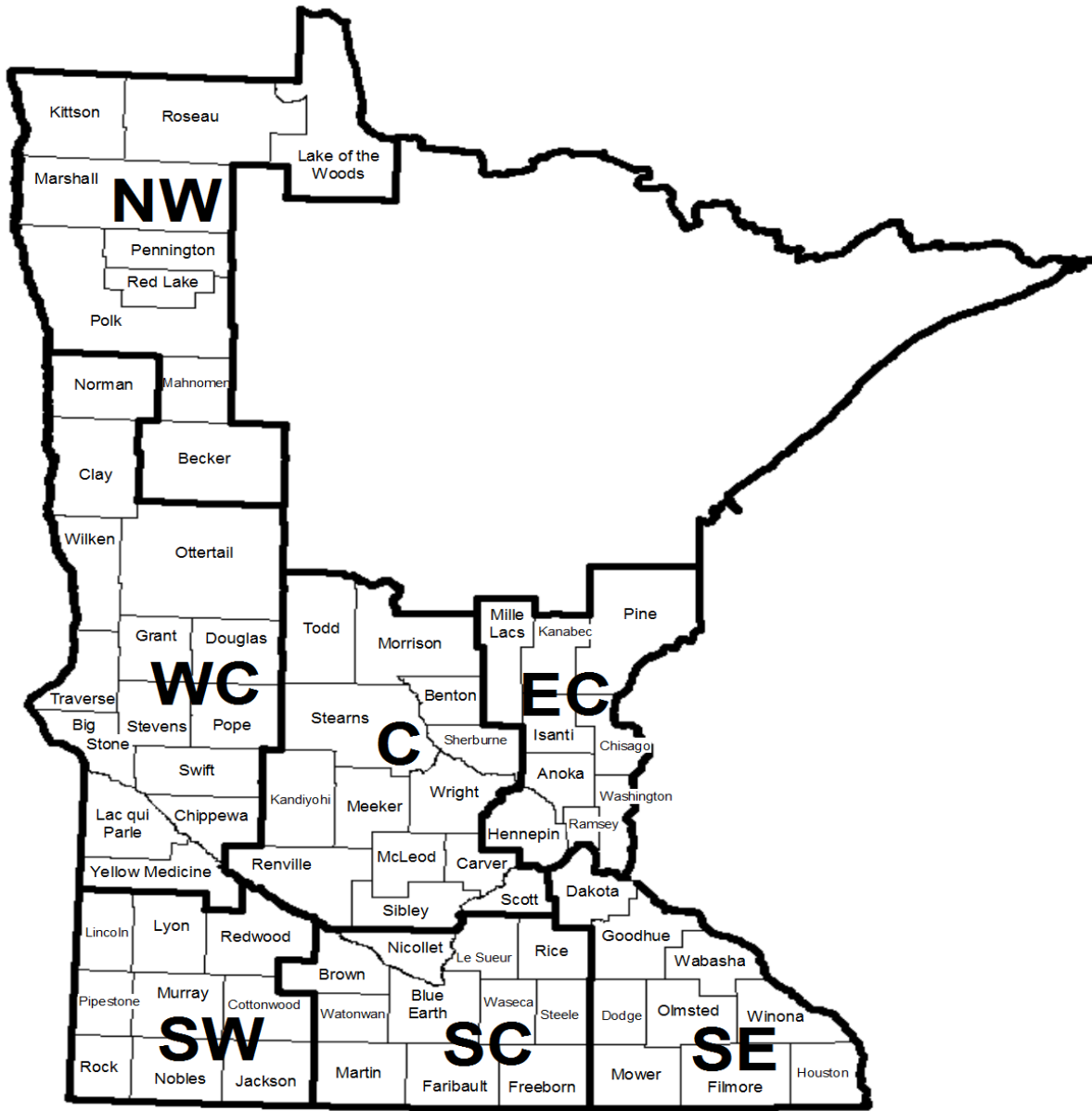


Figure 1. Survey regions for Minnesota's August roadside survey, 2015.

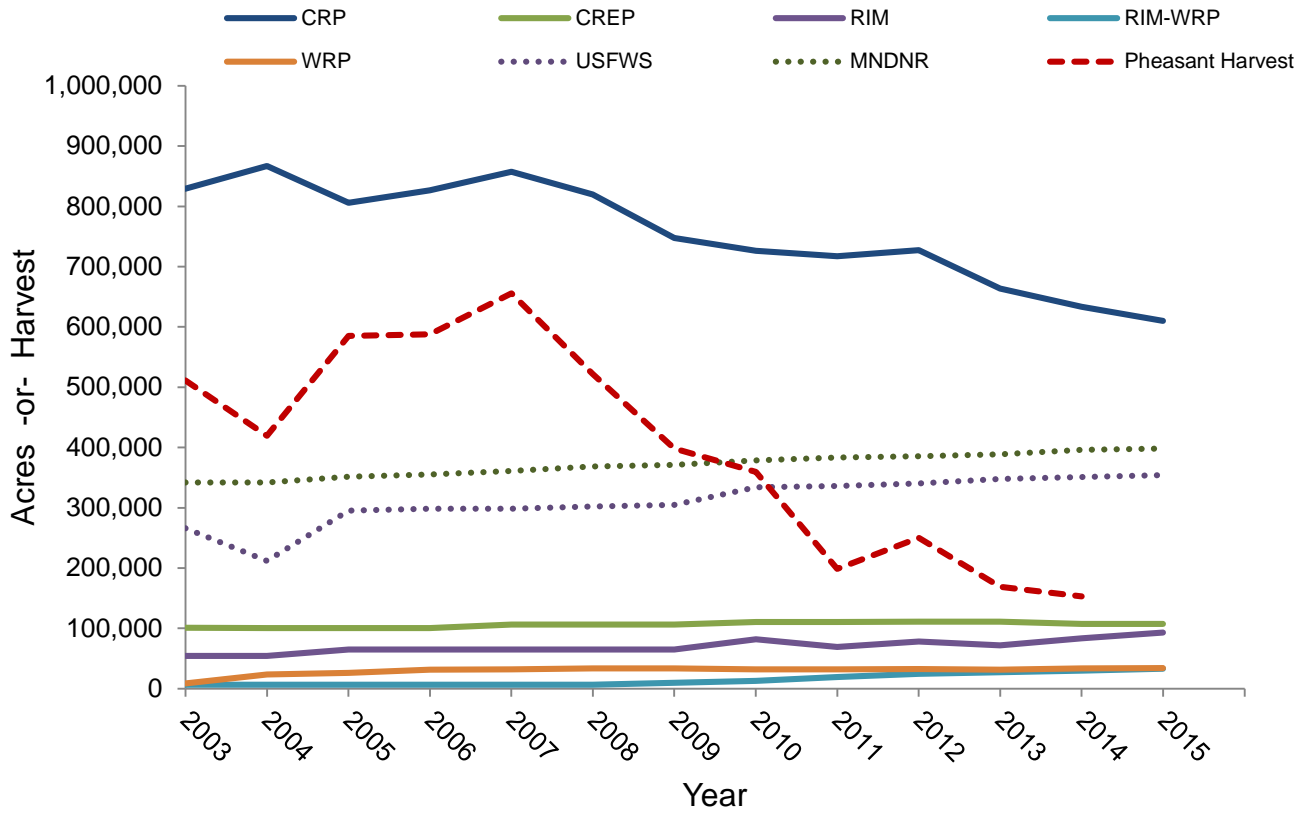


Figure 2. Acres enrolled in private and public land habitat conservation programs vs. ring-necked pheasant harvest trends in Minnesota, 2003-2015. Acres are calculated for the pheasant range only.

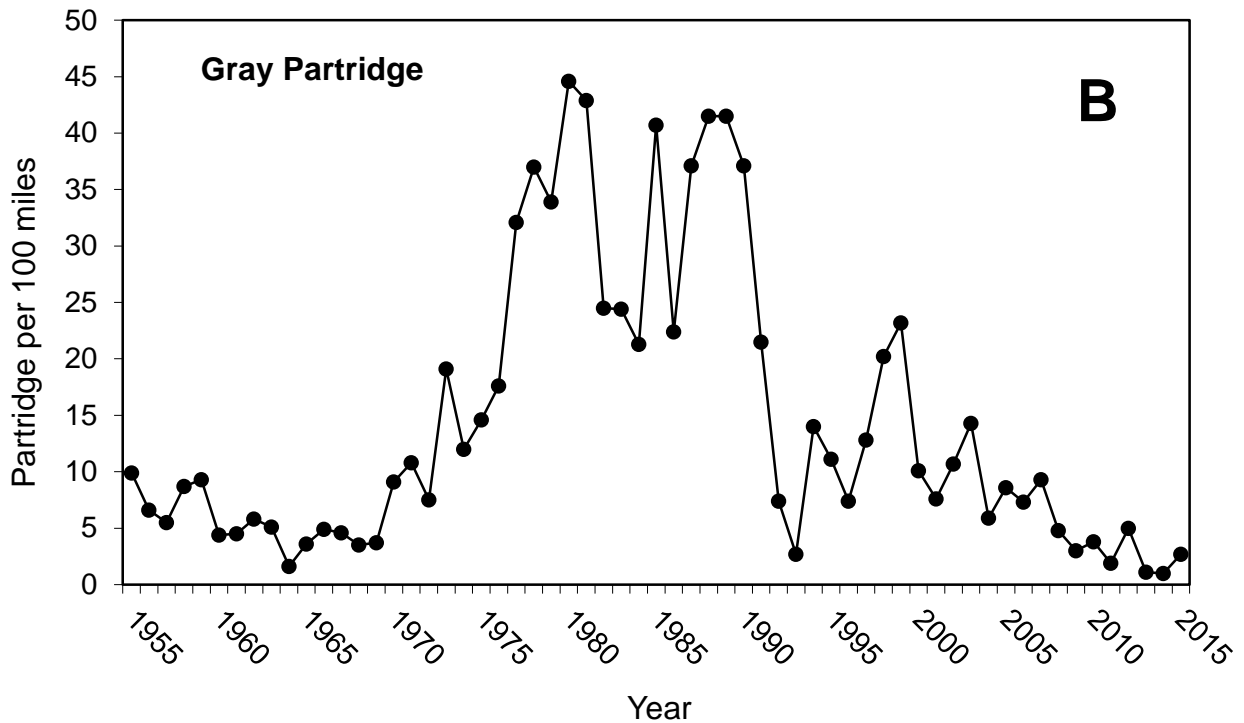
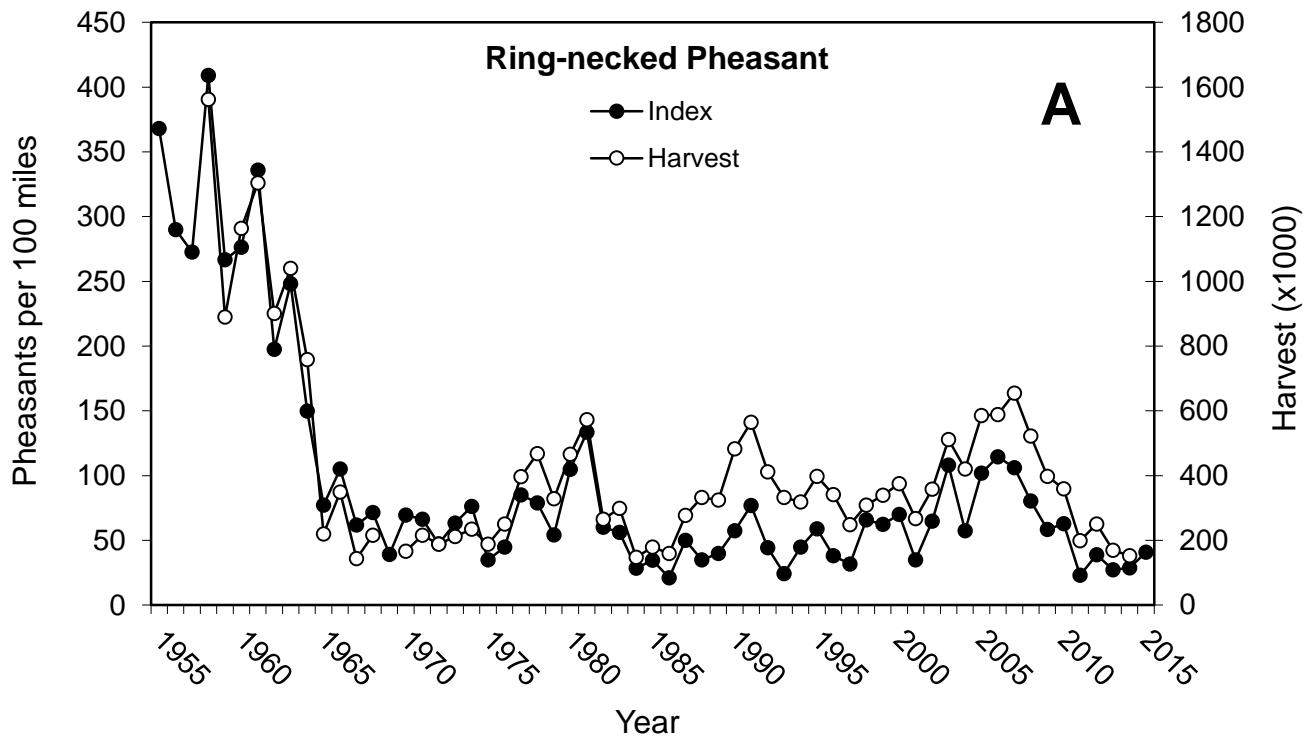


Figure 3. Range-wide index of ring-necked pheasants (A) and gray partridge (B) seen per 100 miles driven in Minnesota, 1955-2015. Does not include the Northwest region. Based on all survey routes completed.

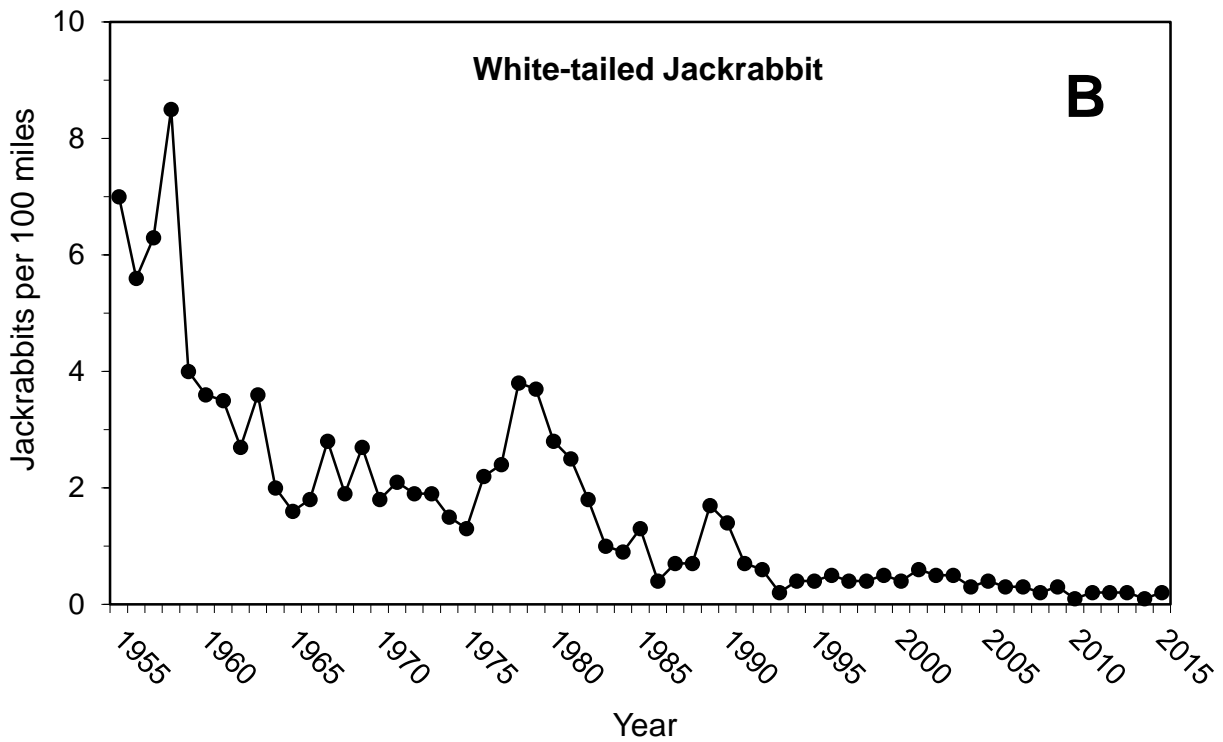
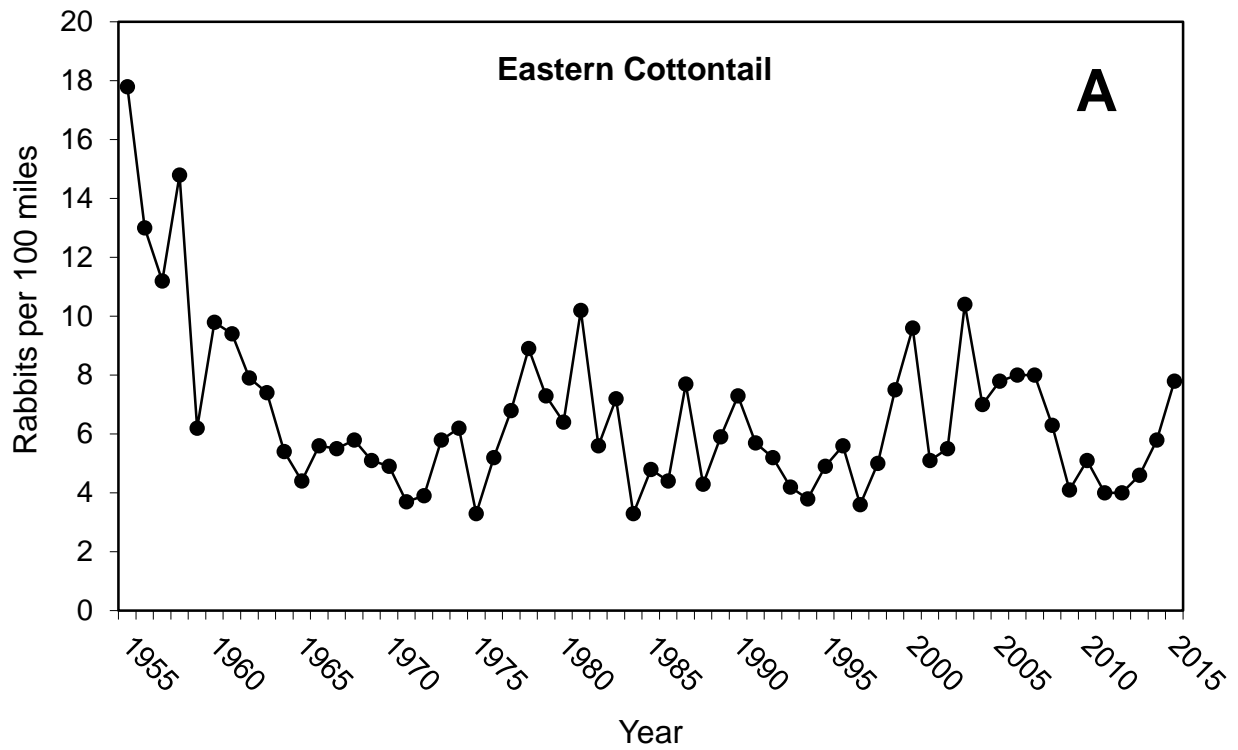


Figure 4. Range-wide index of eastern cottontail (A) and white-tailed jackrabbits (B) seen per 100 miles driven in Minnesota, 1955-2015. Does not include the Northwest region. Based on all survey routes completed.

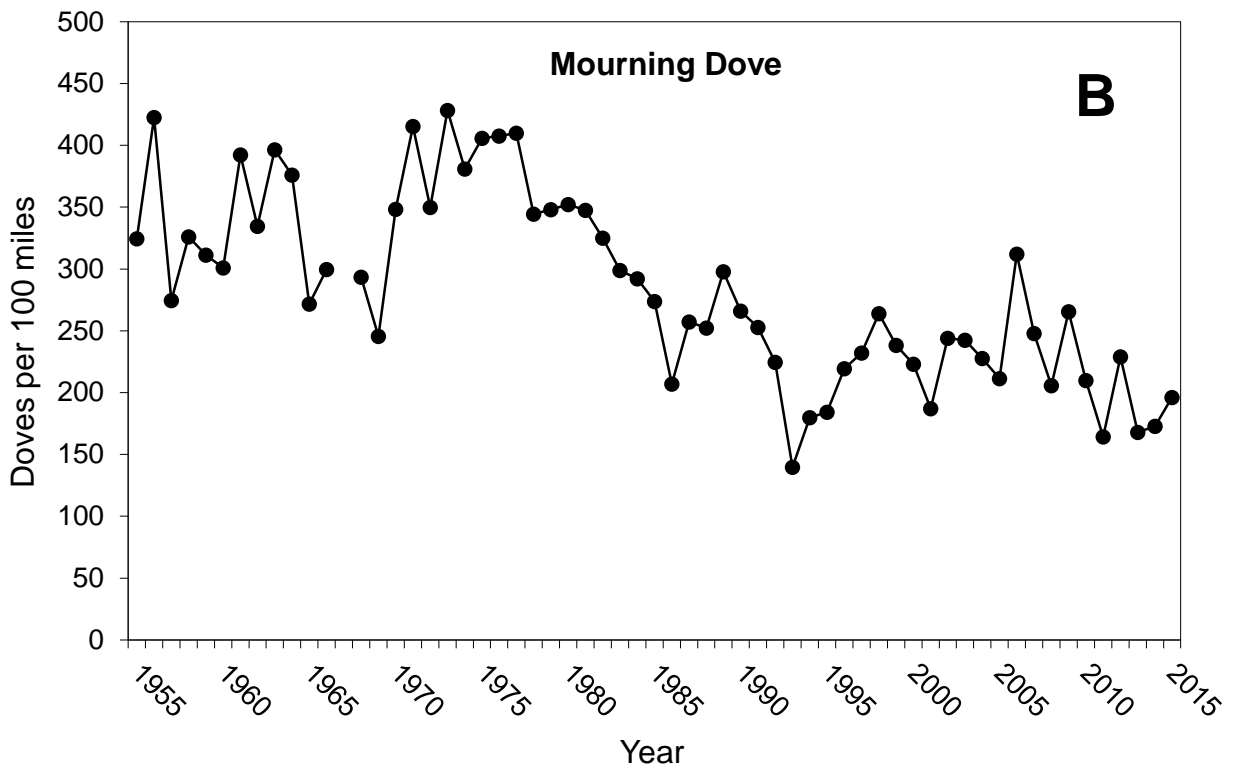
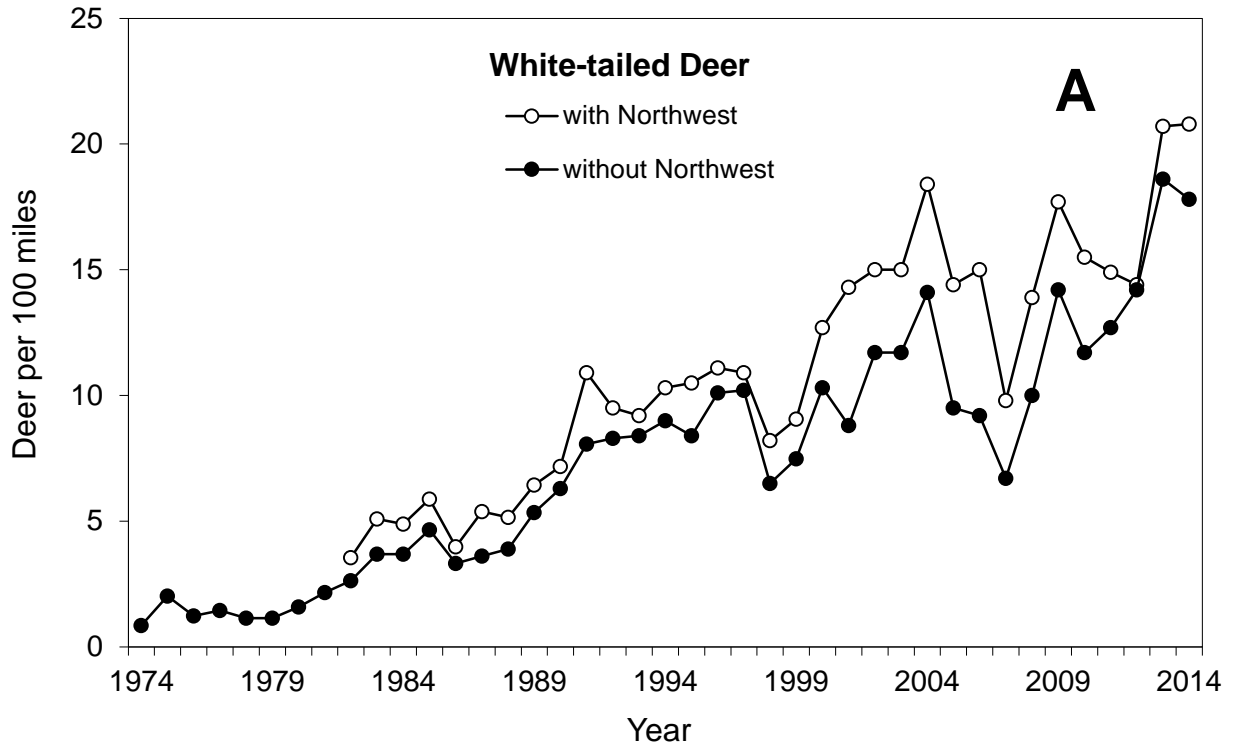


Figure 5. Range-wide index of white-tailed deer (A) and mourning doves (B) seen per 100 miles driven in Minnesota, 2015. Doves were not counted in 1967 and the dove index does not include the Northwest region. Based on all survey routes completed.