

# ***Rural Mail Carrier Survey Report***

**2007**

**A Contribution of Pittman-Robertson Funds  
Federal Aid in Wildlife Restoration**

**Grant W-39-14**

**Kansas Department of Wildlife and Parks**

**Mike Hayden  
Secretary**

**Prepared by**

**Jim Pitman  
Small Game Coordinator**

**Joe Kramer, Director  
Fisheries and Wildlife  
Division**

**Mike Mitchener, Chief  
Wildlife Section**

**January 2008**



## **PERMISSION TO QUOTE**

**Persons wishing to quote from this report, for reproduction or reference, should first obtain permission from the Chief of the Wildlife Section, Kansas Department of Wildlife and Parks, 512 SE 25th Avenue, Pratt, KS 67124.**

## **EQUAL OPPORTUNITY STATEMENT**

**This program receives Federal financial assistance from the U.S. Fish and Wildlife Service. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior and its bureaus prohibit discrimination on the basis of race, color, national origin, age, disability or sex (in educational programs). If you believe that you have been discriminated against in any program, activity or facility, or if you desire further information, please write to:**

**The U.S. Fish and Wildlife Service  
Office of Diversity and Civil Rights Programs- External Programs  
4040 North Fairfax Drive, Suite 130  
Arlington, VA 22203**

## INTRODUCTION AND METHODS

The rural mail carrier survey (RMCS) was initiated in Kansas in 1962. In that first year, mail carriers were asked to record their observations of wildlife along their normal daily routes for 5 consecutive days during the third week of July (Summer). The following year the mail carriers were also asked to record observations during the 3<sup>rd</sup> weeks of January (Winter) and April (Spring). In 1966, a fourth survey period was added during the 2<sup>nd</sup> week of October (Fall). Since 1966, volunteer mail carriers from across the state have made observations during each of those 4 survey periods. In addition to recording wildlife observations the mail carriers also report their total mileage for each week surveyed and the primary county they traveled. The list of recorded wildlife species differs during each survey period. The species recorded during the summer RMCS include ring-necked pheasants (cocks, hens, young, and uncertain), northern bobwhites (adults, young, and uncertain), wild turkeys (adult and young), prairie chickens, and eastern cottontails. The species recorded during the spring and winter surveys includes: ring-necked pheasants (cocks, hens, and uncertain), northern bobwhites, prairie chickens, eastern cottontails, jack rabbits, and wild turkeys. During the fall survey period, mail carriers record the total number of ring-necked pheasants, northern bobwhites, prairie chickens, eastern cottontails, jack rabbits, wild turkeys, and tree squirrels (fox and gray squirrels).

The collected information is used to develop standardized statewide and regional indices for each species. *The index for each species is calculated as the average number of individuals observed for each 100 miles traveled.* Data from the spring, summer, and winter surveys are used to develop sex ratios (Male:Female) for ring-necked pheasants. Additionally, the information collected during the summer survey period is used to develop production indices for ring-necked pheasants (Young:Hen), northern bobwhites (Young:Adult), and wild turkeys (Young:Adult). Regional calculations are made for each of these indices using species-specific regions (Figure 1). A t-test is used to draw statistical comparisons between indices. Simple linear regression is used to determine if there is a statistically significant trend for each species-season combination over the previous 10-year period.

## RESULTS AND DISCUSSION

The annual changes in RMCS indices were a little more difficult to interpret this year than in the past. The winter survey period occurred during January 2007 when much of the western 1/3 of the state was covered with heavy snow. That heavy snow forced many wildlife species into open areas (e.g. roadways) and also improved sight-ability due to the sharp contrast between the white snow and darker colored animals. These conditions resulted in unusually high counts in the western 1/3 of the state and artificially inflated the western and statewide indices for the winter survey period. Thus, annual increases in the winter indices on a statewide scale and throughout the western part of the state did not reflect real increases in abundance. The winter 2007 indices remained valid in the regions unaffected by the winter 2006-2007 snow. Also, the other

3 survey periods (spring, summer, and fall) were not affected and those indices were still reliable predictors of annual changes in abundance.

Generally, spring indices decreased from the previous year on a statewide scale indicating that most small game species were negatively affected by the ice storms and deep snow experienced across many regions of the state during the winter of 2006-2007 (Table 1). Only the statewide spring index to wild turkey abundance increased from the previous year. Turkeys had near-average production in 2006 across the state (Figure 2) and they were much less affected by the type of weather conditions we experienced last winter than some of our other small game species. For these reasons the statewide turkey population increased significantly from 2006 on a statewide scale. The late spring frost and heavy summer rains and flooding of 2007 had substantial impacts on productivity of wild turkeys, ring-necked pheasants, and northern bobwhites. Those weather events effected productivity of each of those species differently due to differences in nesting chronology and nesting habitat.

Woodland-dependant species like turkeys and squirrels have increased significantly over the last 10 year period on a statewide scale (Table 1). This is undoubtedly due to the fact that the amount of woodland habitat across the state also increased over the same time period. Few statistically significant 10-year trends were detectable on a statewide scale for early successional grassland species such as pheasants, bobwhites, prairie chickens, cottontails, and jackrabbits (Table 1). Interpretations of these data are difficult due to discrepancies that were apparent across some of the season-specific 10-year trends. To better understand changes in abundance of these species over time it is necessary to analyze additional data from other departmental surveys.

Ring-necked pheasants – The RMCS spring index indicated that pheasants had declined substantially from the previous year in all but the northeast region. (Table 2). The decline in breeding numbers was due to poor production in 2006 (Figure 3) and additive winter mortality caused by the heavy snow that covered portions of far western Kansas. The mail carriers again reported seeing more cocks than hens during each of the winter, spring, and summer survey periods (Figure 4). This indicates that plenty of roosters were still available to copulate with all the hens following the fall hunting season. Despite the lower breeding numbers across much of the state the fall population increased due to greatly improved production from the previous year. Many Kansas pheasants nest in green wheat fields and the late spring frost and summer rain delayed harvest during 2007. The delayed wheat harvest gave those hens some additional time to hatch their nests and rear young. As a result, pheasant production was improved from the previous year in most of the state's management regions (Figure 3) and helped to either compensate or exceed the losses sustained by last winter's weather events. The pheasant population appears to be fairly stable in most regions of the state over the last 10-year period (Table 2).

Northern bobwhites – The spring indices showed declines in the number of breeding bobwhites in every region of the state (Table 3). These declines were mostly due to the severe winter conditions experienced across most of the state during 2006-2007. The

greatest bobwhite decline was in the western management region that includes the area blanketed with heavy snow cover during the winter of 2006-2007. Deep snow cover for long periods of time is very detrimental to bobwhites because they don't have the ability to scratch through heavy snow to locate food. Without a good source of high energy food they are not able to regulate their body temperature when conditions are below freezing. Fortunately, the weather conditions in western Kansas were good for nesting this past summer and good productivity compensated for some of the heavy losses sustained last winter (Figures 5-6). Nesting hens in other regions of the state didn't fair nearly as well. The heavy rain and flooding experienced this summer across much of central and southeast Kansas occurred during the peak reproductive period for bobwhites. Those weather events resulted in poor production in those regions adding to the declines sustained during the winter of 2006-2007 (Figure 6). The snow and ice storms of winter 2006-2007 and heavy rain and flooding during June 2007 have pushed bobwhite numbers in the southeastern part of the state to record lows heading into fall 2007 (Table 3). Fortunately, bobwhites are very prolific and with good weather conditions populations can rebound in 2-3 years following such catastrophic events. The season-specific 10-year trends show either stable or declining bobwhite populations in each of the state's 6 bobwhite management regions (Table 3).

Prairie chickens – The mail carriers generally see few prairie chickens during the 4 observation periods. Thus, the reliability of this survey for detecting annual or long-term changes in prairie chicken abundance on a regional scale is probably poor. However, the 10-year RMCS trends indicate that prairie chicken abundance is generally stable within each of the prairie chicken management regions (Table 4). To better understand changes in prairie chicken abundance it is necessary to use results from this survey along with results from other annual departmental surveys (e.g. annual prairie chicken lek survey).

Wild turkeys – Apparent increases in wild turkey spring breeding numbers were observed in every management region this past spring (Table 5). However, only the increase in the southeast region was statistically significant. The spring increases were likely a result of near-average production in 2006 which was a substantial improvement over the record low production observed during 2005 (Figure 2). Production during 2007 was again very poor in the eastern part of the state due to the heavy rain and flooding that hit the area this summer (Figure 7). In that portion of the state there will be noticeably fewer birds available to hunters over the next couple of seasons. Over the last 10-year period the RMCS generally shows statistically significant increases in turkey abundance in most regions of the state (Table 5). However, in recent years the turkey population in the eastern half of the state has declined. The turkey population may be starting to stabilize after more than a decade of rapid increase.

Rabbits – Both eastern cottontail and black-tailed jackrabbit populations appear to be fairly stable over the last 10-year period on a statewide scale and within each of their management regions (Tables 1, 6, & 7). Apparent annual declines in the fall indices in the southeast management region suggests that rabbit production was also hurt by the heavy rain and flooding that hit the region last summer.

Squirrels – The mail carriers only count squirrels during the fall survey period. None of the fall indices were statistically different from the previous year (Table 8). Over the last 10-year period squirrel abundance has been stable or increasing in every management region. The increases are undoubtedly due to the increase in woody habitat that has occurred over the same time period in the eastern ½ of the state.

Table 1. Statewide seasonal indices (birds/100 mi. traveled) to small game and wild turkey abundance in Kansas from the rural mail carrier survey, 2006-2007.

Species-Season <sup>a</sup>	n <sup>b</sup>	2006	n	2007	Annual Change (%)	10-year trend <sup>c</sup>
<b>Ring-necked pheasant</b>						
Winter	100	1.24	98	4.33	+249.2%*	Stable
Spring	98	2.44	100	1.53	-37.3%	Stable
Summer	100	2.00	101	2.19	+9.5%	Stable
Fall	97	1.54	100	1.37	-11.0%	Stable
<b>Northern bobwhite</b>						
Winter	100	0.52	98	1.18	+126.9%*	Stable
Spring	98	0.40	100	0.24	-40.0%*	Stable
Summer	100	1.17	101	0.89	-23.9%	Stable
Fall	97	0.62	100	0.49	-21.0%	Declining
<b>Prairie chicken<sup>d</sup></b>						
Winter	100	0.22	98	0.45	+104.5%	Stable
Spring	98	0.11	100	0.10	-9.1%	Stable
Summer	100	0.03	101	0.02	-33.3%	Stable
Fall	97	0.08	100	0.07	-12.5%	Stable
<b>Wild turkey</b>						
Winter	100	4.67	98	7.21	+54.4%*	Increasing
Spring	98	3.41	100	5.07	+48.7%*	Increasing
Summer	100	2.07	101	2.59	+25.1%	Increasing
Fall	97	5.38	100	4.09	-24.0%	Increasing
<b>Eastern cottontail</b>						
Winter	100	0.61	98	0.72	+18.0%	Increasing
Spring	98	0.82	100	0.72	-12.2%	Stable
Summer	100	1.29	101	0.98	-24.0%*	Stable
Fall	97	0.62	100	0.46	-25.8%	Stable
<b>Black-tailed jackrabbit</b>						
Winter	100	0.06	98	0.64	+966.7%*	Stable
Spring	98	0.13	100	0.10	-23.1%	Increasing
Fall	97	0.07	100	0.08	+14.3%	Stable
<b>Tree squirrels<sup>e</sup></b>						
Fall	97	2.32	100	2.04	-12.1%	Increasing

<sup>a</sup> Not all species are counted during all 4 seasons.

<sup>b</sup> The number of counties from which data were collected.

<sup>c</sup> Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

<sup>d</sup> Includes both greater and lesser prairie chickens.

<sup>e</sup> Includes both gray and fox squirrels.

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 2. Regional and seasonal indices (birds/100 mi. traveled) to ring-necked pheasant abundance in Kansas derived from the rural mail carrier survey, 2006-2007.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Northcentral</b>						
Winter	14	1.47	14	2.30	+56.5%*	Stable
Spring	14	3.26	14	2.47	-24.2%	Stable
Summer	14	3.65	14	2.94	-19.5%	Stable
Fall	14	3.15	14	2.17	-31.1%	Stable
<b>Northeast</b>						
Winter	18	0.75	17	0.54	-28.0%	Stable
Spring	18	0.80	18	0.87	+8.7%	Decreasing
Summer	19	1.42	18	0.72	-49.3%	Stable
Fall	18	0.46	18	0.33	-28.3%	Decreasing
<b>Northwest</b>						
Winter	11	2.60	10	20.23	+678.1%	Stable
Spring	10	4.18	11	3.48	-16.7%	Stable
Summer	10	3.93	12	3.32	-15.5%	Stable
Fall	9	2.64	11	2.57	-2.7%	Stable
<b>Southcentral</b>						
Winter	13	1.39	13	1.71	+23.0%	Stable
Spring	13	1.67	13	1.12	-32.9%	Stable
Summer	13	1.19	13	1.78	+49.6%	Stable
Fall	12	1.22	13	0.87	-28.7%	Stable
<b>Southeast</b>						
Non-range	--	--				
<b>Southwest</b>						
Winter	22	2.78	22	13.79	+396.0%*	Stable
Spring	22	7.56	22	3.58	-52.6%	Stable
Summer	22	3.91	22	6.84	+74.9%	Increasing
Fall	22	3.93	22	4.47	+13.7%	Increasing

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

\* Index is significantly different than previous year;  $P < 0.05$ .



Table 3. Regional and seasonal indices (birds/100 mi. traveled) to northern bobwhite abundance in Kansas derived from the rural mail carrier survey, 2006-2007.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Flint Hills</b>						
Winter	11	0.76	11	2.04	+168.4%*	Stable
Spring	11	0.55	11	0.53	-3.6%	Stable
Summer	11	1.31	11	1.40	6.9%	Stable
Fall	11	0.94	11	0.82	-12.8%	Declining
<b>Northcentral</b>						
Winter	16	0.23	14	0.05	-78.3%	Declining
Spring	15	0.32	15	0.11	-65.6%	Declining
Summer	16	1.17	15	1.03	-12.0%	Stable
Fall	15	0.63	15	0.48	-23.8%	Declining
<b>Northeast</b>						
Winter	13	0.34	14	0.51	+50.0%	Stable
Spring	14	0.30	14	0.25	-16.7%	Stable
Summer	14	1.10	14	0.98	-10.9%	Stable
Fall	14	0.37	14	0.41	+10.8%	Declining
<b>Southcentral</b>						
Winter	14	0.53	14	0.89	+67.9%	Stable
Spring	15	0.39	14	0.30	-23.1%	Stable
Summer	15	0.87	14	1.02	+17.2%	Stable
Fall	13	0.96	14	0.51	-46.9%	Stable
<b>Southeast</b>						
Winter	15	0.83	15	3.10	+273.5%*	Stable
Spring	14	0.47	15	0.29	-38.3%	Stable
Summer	15	1.79	15	0.90	-49.7%*	Declining
Fall	15	0.78	15	0.42	-46.2%	Declining
<b>Western</b>						
Winter	31	0.39	30	0.26	-33.3%	Stable
Spring	30	0.38	31	0.05	-86.8%*	Stable
Summer	29	0.82	32	0.38	-53.7%*	Stable
Fall	29	0.22	31	0.42	+90.9%	Stable

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 4. Regional and seasonal indices (birds/100 mi. traveled) to prairie chicken abundance in Kansas derived from the rural mail carrier survey, 2006-2007.

Region-Season	n <sup>a</sup>	2006	n	2007	Annual Change (%)	10-year trend <sup>b</sup>
<b>Blackjack (GPCH)</b>						
Winter	10	0.000	10	0.019	NA	Stable
Spring	9	0.000	10	0.000	NA	Stable
Summer	10	0.000	10	0.000	NA	Declining
Fall	10	0.000	10	0.005	NA	Stable
<b>Eastern Cropland (GPCH)</b>						
Winter	18	0.384	19	0.035	-90.9%	Stable
Spring	19	0.026	19	0.081	+211.5%	Stable
Summer	19	0.008	19	0.021	+162.5%	Stable
Fall	19	0.016	19	0.007	-56.3%	Declining
<b>Flint Hills (GPCH)</b>						
Winter	10	0.476	10	3.324	+598.3%*	Stable
Spring	10	0.204	10	0.295	+44.6%	Stable
Summer	10	0.034	10	0.033	-2.9%	Stable
Fall	10	0.314	10	0.011	-96.5%	Stable
<b>Northwest (GPCH &amp; LPCH)</b>						
Winter	24	0.275	23	0.283	+2.9%	Stable
Spring	23	0.263	24	0.170	-35.4%	Stable
Summer	23	0.074	25	0.046	-37.8%	Stable
Fall	22	0.125	24	0.145	+16.0%	Stable
<b>Southwest (LPCH)</b>						
Winter	24	0.000	24	0.007	NA	Stable
Spring	25	0.021	24	0.015	-28.6%	Stable
Summer	24	0.008	24	0.026	+225.0%	Increasing
Fall	24	0.004	24	0.034	+750.0%	Stable
<b>Western Cropland (GPCH)</b>						
Winter	14	0.172	12	0.042	-75.6%	Stable
Spring	13	0.063	13	0.062	-1.6%	Stable
Summer	14	0.059	13	0.012	-79.7%	Stable
Fall	12	0.055	13	0.164	+198.2%	Stable

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

<sup>d</sup>NA = not applicable.

GPCH = greater prairie-chicken, LPCH = lesser prairie-chicken

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 5. Regional and seasonal indices (birds/100 mi. traveled) to wild turkey abundance in Kansas derived from the rural mail carrier survey, 2006-2007.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Northcentral</b>						
Winter	16	5.62	14	7.63	+35.8%	Stable
Spring	15	6.97	15	8.18	+17.4%	Increasing
Summer	16	3.72	15	5.74	+54.3%	Increasing
Fall	15	8.87	15	8.05	-9.2%	Increasing
<b>Northeast</b>						
Winter	15	11.23	16	11.29	+0.5%	Increasing
Spring	16	4.42	16	6.28	+42.1%	Increasing
Summer	16	2.53	16	2.97	+17.4%	Increasing
Fall	16	5.47	16	3.87	-29.3%	Stable
<b>Northwest</b>						
Winter	18	4.40	17	8.45	+92.0%	Increasing
Spring	17	1.86	18	4.03	+116.7%	Stable
Summer	17	1.40	19	1.85	+32.1%	Stable
Fall	16	3.53	18	4.75	+34.6%	Increasing
<b>Southcentral</b>						
Winter	16	3.81	16	4.05	+6.3%	Increasing
Spring	16	2.62	16	4.75	+81.3%	Stable
Summer	16	1.85	16	2.42	+30.8%	Stable
Fall	15	6.46	16	5.05	-21.8%	Increasing
<b>Southeast</b>						
Winter	14	3.08	14	9.70	+214.9%*	Increasing
Spring	13	2.80	14	4.80	+71.4%*	Increasing
Summer	14	2.02	14	2.01	-0.5%	Stable
Fall	14	4.91	14	2.02	-58.9%*	Stable
<b>Southwest</b>						
Winter	21	1.02	21	3.35	+228.4%	Increasing
Spring	22	1.72	21	2.10	+22.1%	Increasing
Summer	21	0.98	21	0.98	0.0%	Increasing
Fall	21	3.16	21	2.01	-36.4%	Increasing

<sup>a</sup> The number of counties from which data were collected.

<sup>b</sup> Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 6. Regional and seasonal indices (animals/100 mi. traveled) to eastern cottontail abundance in Kansas derived from the rural mail carrier survey, 2006-2007.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Flint Hills</b>						
Winter	11	0.68	11	0.61	-10.3%	Stable
Spring	11	0.73	11	0.38	-47.9%	Stable
Summer	11	1.02	11	1.12	+9.8%	Stable
Fall	11	0.83	11	0.61	-26.5%	Stable
<b>Northcentral</b>						
Winter	16	0.56	14	0.60	+7.1%	Stable
Spring	15	0.96	15	0.55	-42.7%	Stable
Summer	16	1.57	15	0.94	-40.1%	Stable
Fall	15	1.11	15	0.67	-39.6%	Stable
<b>Northeast</b>						
Winter	13	0.75	14	0.70	-6.7%	Stable
Spring	14	0.77	14	0.81	+5.2%	Stable
Summer	14	1.55	14	1.07	-31.0%	Stable
Fall	14	0.57	14	0.42	-26.3%	Stable
<b>Southcentral</b>						
Winter	14	0.60	14	0.65	+8.3%	Stable
Spring	15	0.69	14	1.00	+44.9%	Stable
Summer	15	1.13	14	1.43	+26.5%	Stable
Fall	13	0.56	14	0.50	-10.7%	Stable
<b>Southeast</b>						
Winter	15	0.60	15	0.82	+36.7%	Stable
Spring	14	0.62	15	0.62	0.0%	Stable
Summer	15	1.12	15	0.72	-35.7%*	Stable
Fall	15	0.48	15	0.32	-33.3%	Declining
<b>Western</b>						
Winter	31	0.53	30	0.87	+64.2%	Increasing
Spring	30	1.11	31	0.86	-22.5%	Stable
Summer	29	1.37	32	0.80	-41.6%*	Stable
Fall	29	0.43	31	0.41	-4.7%	Stable

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 7. Regional and seasonal indices (animals/100 mi. traveled) to black-tailed jackrabbit abundance in Kansas derived from the rural mail carrier survey, 2006-2007. Jackrabbits are not counted during the summer survey period.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Flint Hills</b>						
Winter	11	0.008	11	0.009	+12.5%	Stable
Spring	11	0.011	11	0.015	+36.4%	Stable
Fall	11	0.005	11	0.029	+480.0%	Stable
<b>Northcentral</b>						
Winter	16	0.020	14	0.029	+45.0%	Stable
Spring	15	0.047	15	0.067	+42.6%	Stable
Fall	15	0.117	15	0.118	+0.9%	Stable
<b>Northeast</b>						
Winter	13	0.010	14	0.029	+190.0%	Stable
Spring	14	0.000	14	0.022	NA	Stable
Fall	14	0.014	14	0.024	+71.4%	Stable
<b>Southcentral</b>						
Winter	14	0.080	14	0.045	-43.8%	Increasing
Spring	15	0.061	14	0.035	-42.6%	Stable
Fall	13	0.055	14	0.066	+20.0%	Stable
<b>Southeast</b>						
Winter	15	0.000	15	0.022		Stable
Spring	14	0.042	15	0.062	+47.6%	Increasing
Fall	15	0.012	15	0.029	+141.7%	Increasing
<b>Western</b>						
Winter	31	0.160	30	2.887	+1704.4%*	Stable
Spring	30	0.457	31	0.303	-33.7%	Increasing
Fall	29	0.178	31	0.185	+3.9%	Stable

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

<sup>c</sup>NA = not applicable.

\* Index is significantly different than previous year;  $P < 0.05$ .

Table 8. Regional and seasonal indices (animals/100 mi. traveled) to tree squirrel (gray and fox squirrel) abundance in Kansas derived from the rural mail carrier survey, 2006-2007. Squirrels are only counted during the fall survey period.

<b>Region-Season</b>	<b>n<sup>a</sup></b>	<b>2006</b>	<b>n</b>	<b>2007</b>	<b>Annual Change (%)</b>	<b>10-year trend<sup>b</sup></b>
<b>Flint Hills</b>						
Fall	11	3.43	11	2.39	-30.3%	Increasing
<b>Northcentral</b>						
Fall	15	0.81	15	1.33	+64.2%	Stable
<b>Northeast</b>						
Fall	14	2.82	14	3.22	+14.2%	Stable
<b>Southcentral</b>						
Fall	13	1.84	14	1.28	-30.4%	Increasing
<b>Southeast</b>						
Fall	15	4.83	15	3.76	-22.2%	Stable
<b>Western</b>						
Fall	29	0.20	31	0.31	+55.0%	Stable

<sup>a</sup>The number of counties from which data were collected.

<sup>b</sup>Stable indicates that a statistically significant trend was not detectable ( $P > 0.05$ ).

\* Index is significantly different than previous year;  $P < 0.05$ .

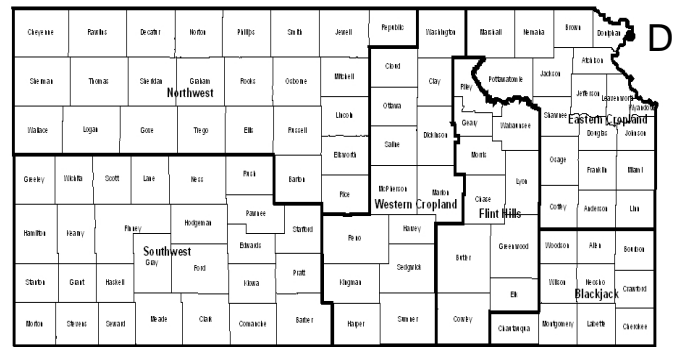
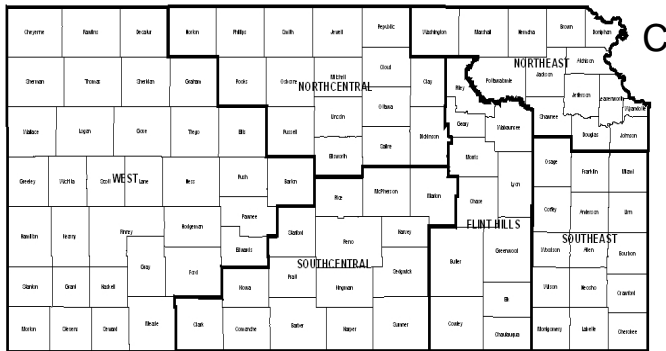
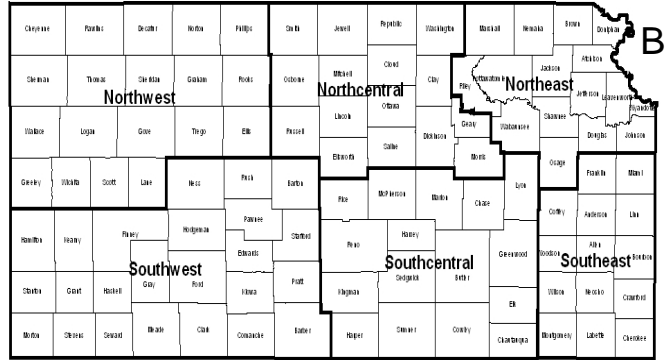
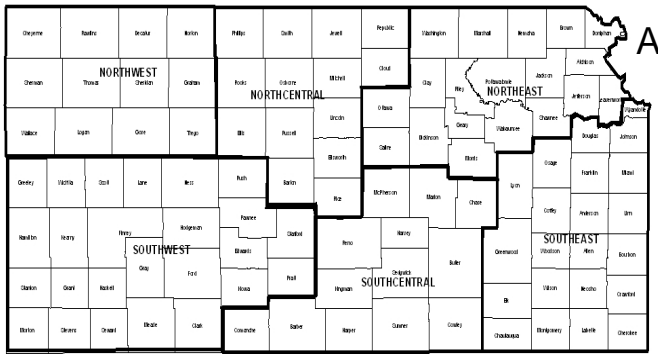


Figure 1. Kansas Department of Wildlife and Parks management regions for (A) ring-necked pheasant, (B) wild turkey, (C) northern bobwhite, eastern cottontail, black-tailed jackrabbit, and tree squirrel, and (D) prairie chickens.

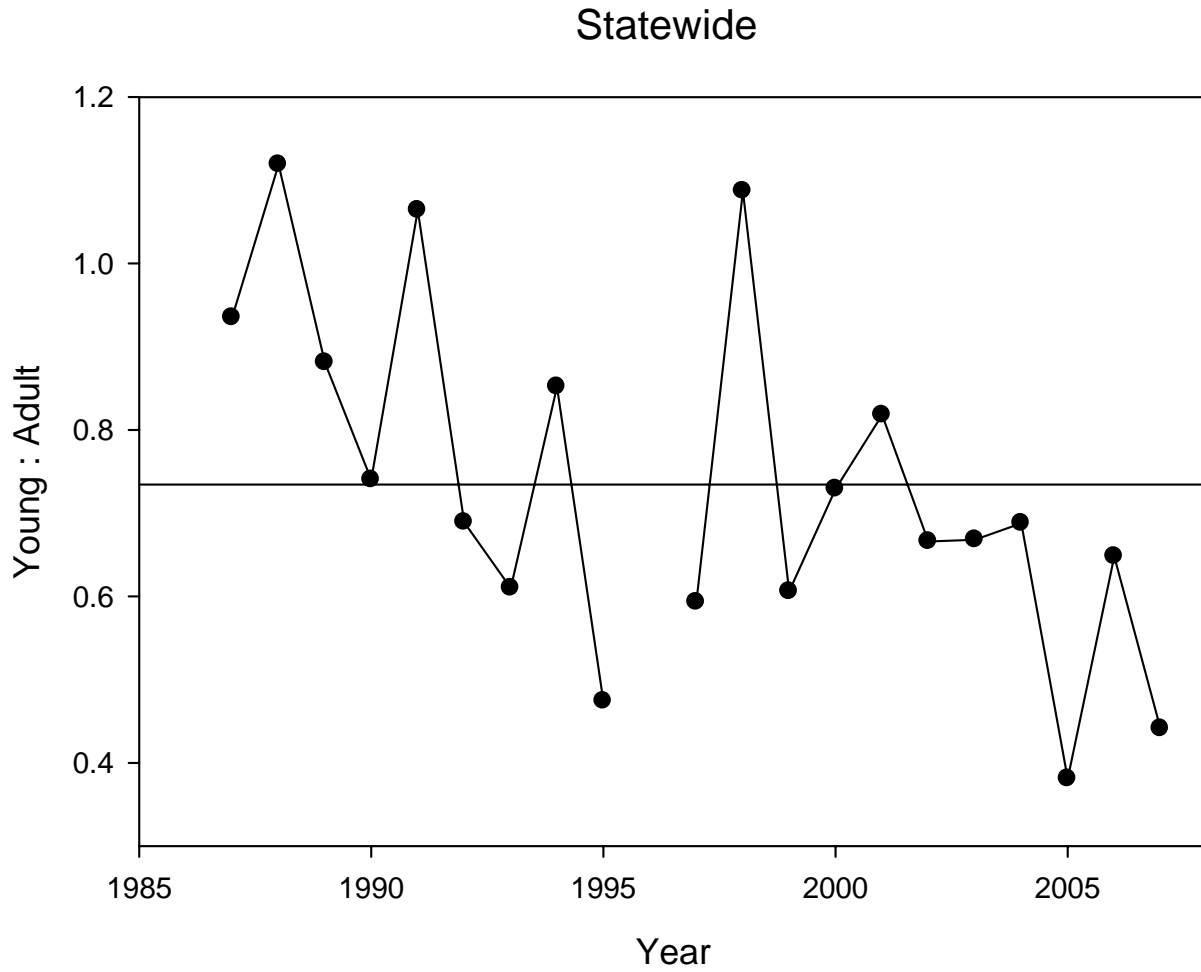


Figure 2. Statewide wild turkey production index (young:adult ratio) for Kansas derived from July rural mail carrier survey data. The horizontal line is the long-term average production index.



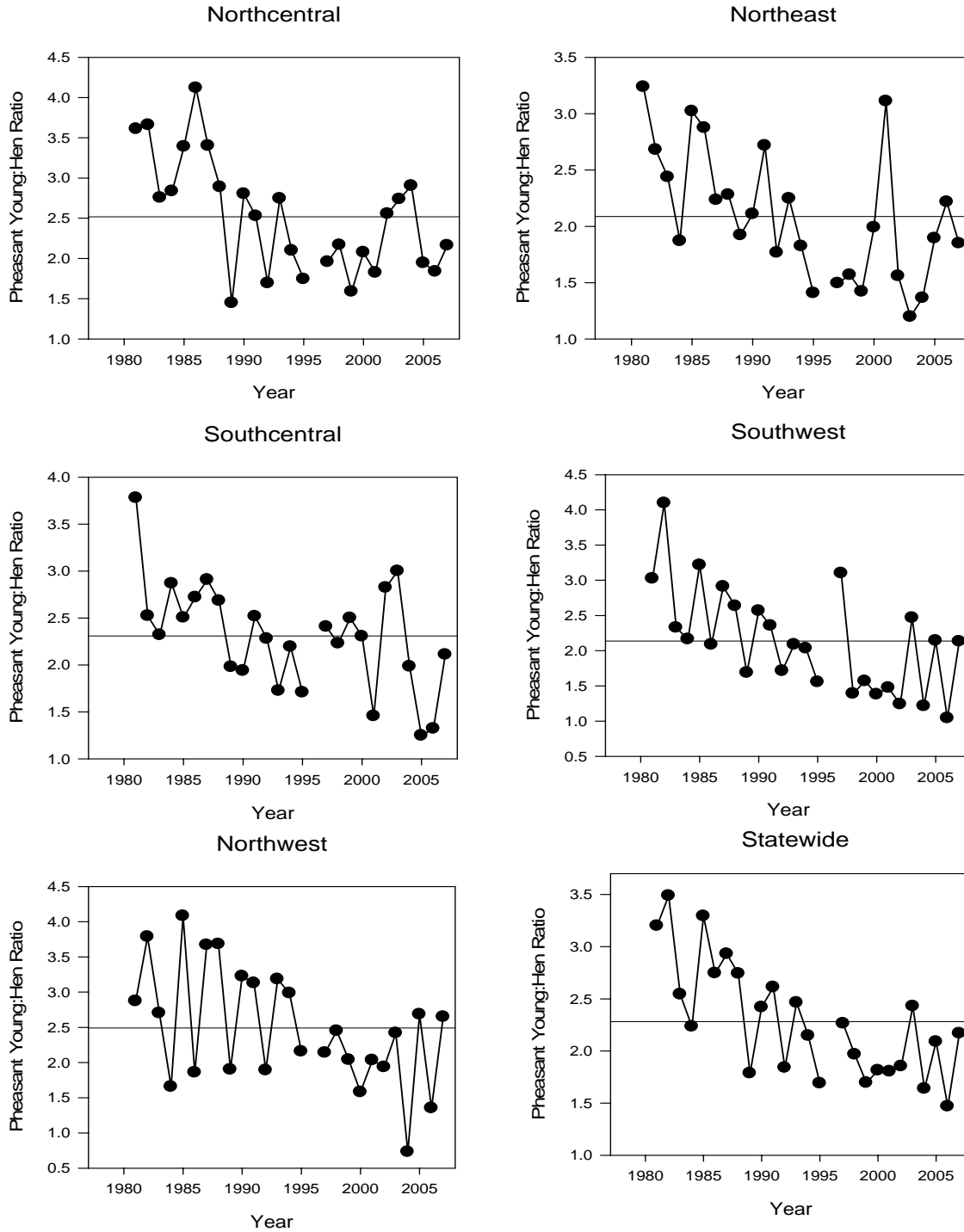


Figure 3. Regional and statewide ring-necked pheasant production indices (young:hen ratios) in Kansas derived from July rural mail carrier survey data. The horizontal line is the long-term average production index. Southeast region excluded because it is primarily non-range.

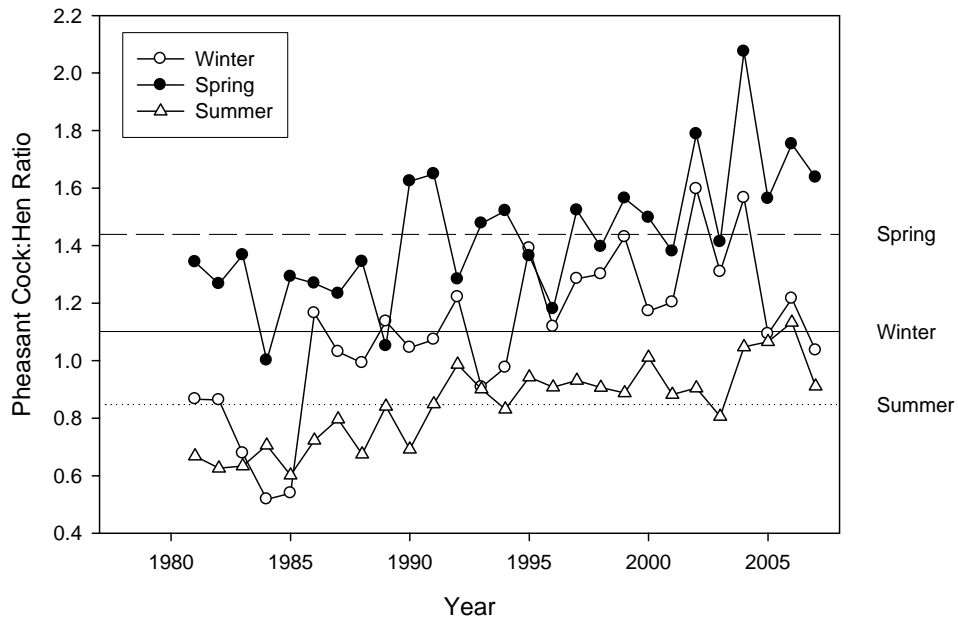


Figure 4. Statewide index to the sex ratio (Cocks:Hens) of Kansas ring-necked pheasants derived from the rural mail carrier survey data. The horizontal lines represent the long-term average cock:hen ratio for the winter, spring, and summer survey periods.

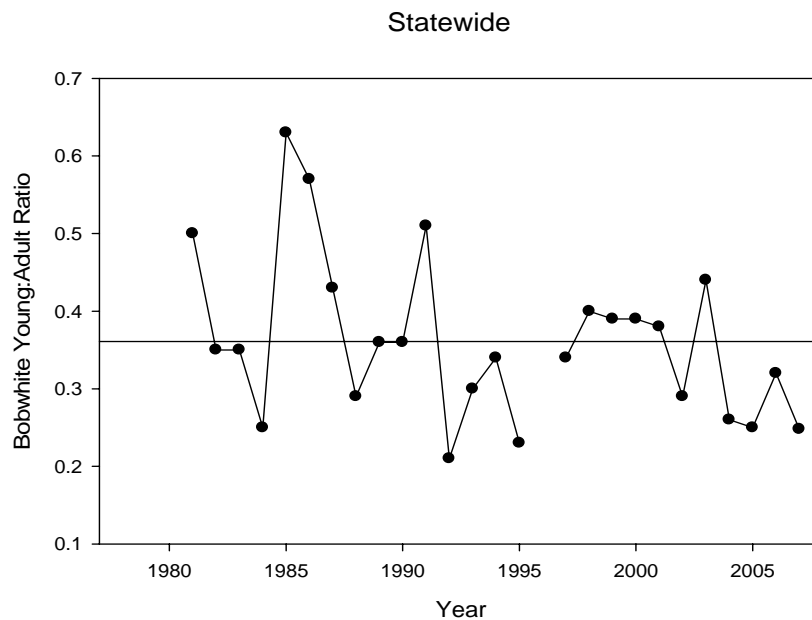


Figure 5. Statewide northern bobwhite production index (young:adult ratio) for Kansas derived from July rural mail carrier survey data. The horizontal line is the long-term average production index.

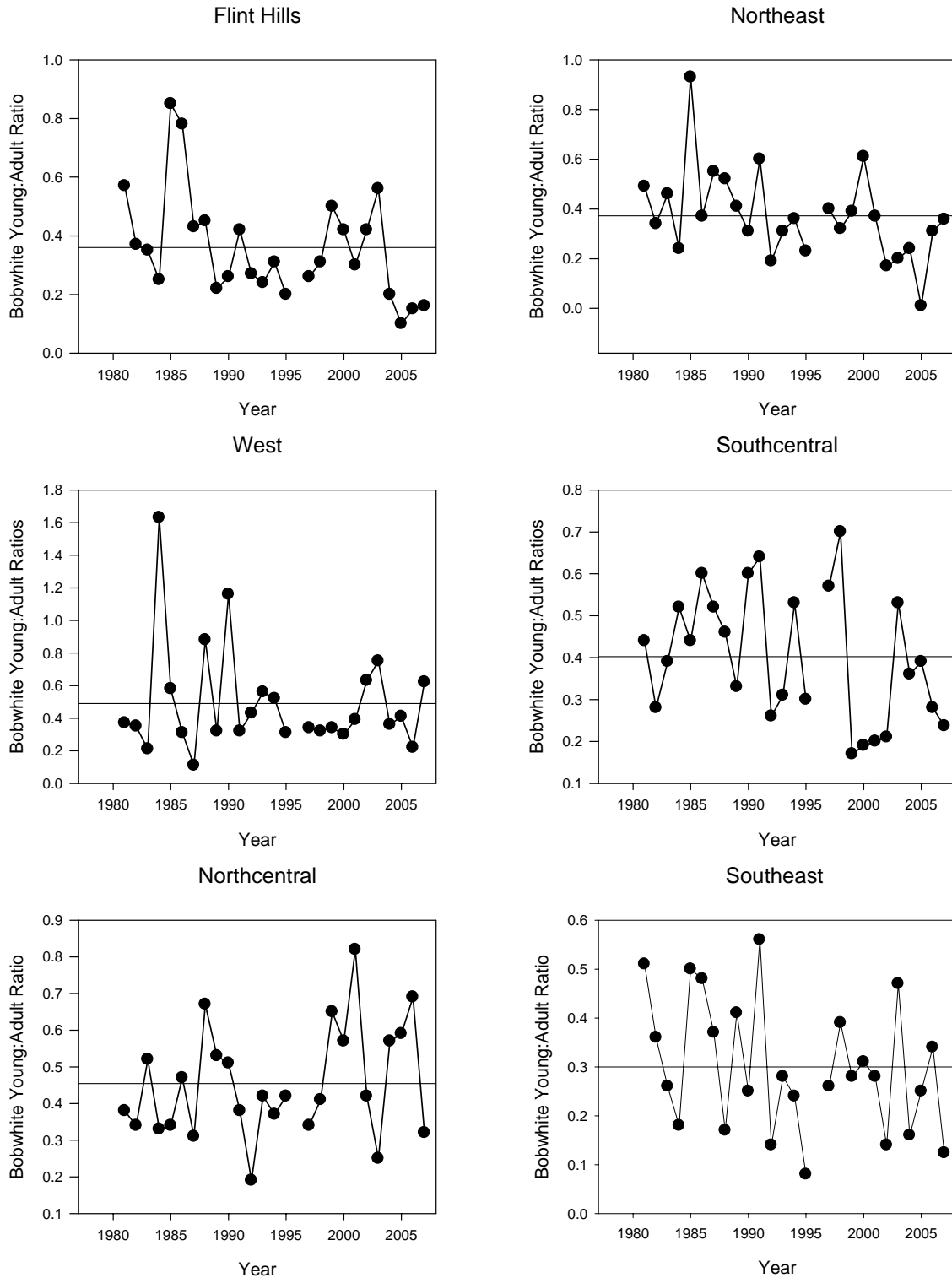


Figure 6. Regional northern bobwhite production indices (young:adult ratios) in Kansas derived from July rural mail carrier survey data. The horizontal line is the long-term average production index.

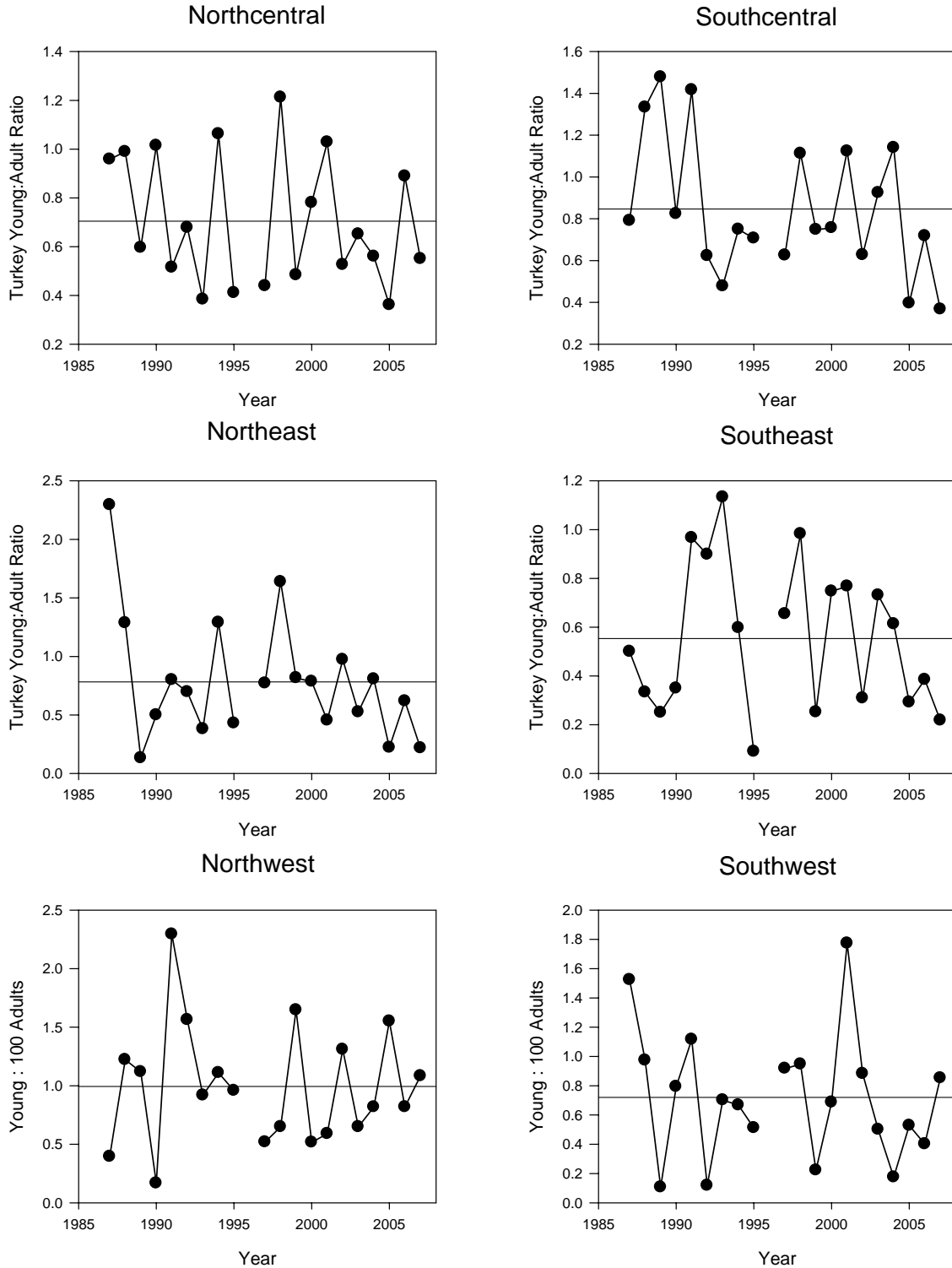


Figure 7. Regional wild turkey production indices (young:adult ratios) in Kansas derived from July rural mail carrier survey data. The horizontal line is the long-term average production index.