QUAIL, PHEASANT, & TURKEY BROOD SURVEY - 2007

PERFORMANCE REPORT
STATEWIDE WILDLIFE RESEARCH AND SURVEYS

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

Grant W-39-R-14

Kansas Department of Wildlife and Parks

Mike Hayden
Secretary

Prepared by

Randy Rodgers
Wildlife Research Biologist

Joe Kramer, Director
Fisheries and Wildlife Division

Mike Mitchener, Chief
Wildlife Section

September 2007

PERMISSION TO QUOTE

This is an annual progress report that may contain information that is subject to future modification or revision. 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

QUAIL, PHEASANT, AND TURKEY BROOD SURVEY RESULTS – 2007

Prepared by Randy Rodgers, Wildlife Biologist

Dates for the 2007 Summer Brood Survey were from July 15 through August 25. Tables 1 & 2, and Figures 1 & 4 summarize the bobwhite data collected by Kansas Department of Wildlife and Parks personnel. Tables 3 & 4, and Figures 2 & 5 summarize the pheasant information. Turkey brood data are summarized in tables 5 & 6, and Figure 3. Expanded turkey data collection, equivalent to that collected for quail and pheasant, was collected for the first time in 2007. Long-term graphs of rangewide and regional survey trends for quail and pheasants are located on pages 10 and 11, respectively. Survey-region maps are located on page 12.

Temperatures during the survey period were generally average for this time of year. Precipitation during the survey was also average or just below average across the state.

BOBWHITE

A total of 1,744 bobwhites, including 936 young in 109 broods, were reported during the survey period. A weekly average of 110.0 observers spent 2,211 observer-days in the field. Comparable figures from 2006 were 3,194 bobwhites, 1,906 young in 235 broods, an average of 107.8 observers, and 2,287 observer-days in the field. Seven broods were not classified by age. Adult bobwhites observed this year included 485 cocks and 321 hens, compared to 709 cocks and 548 hens, respectively, in 2006.

The statewide quail-per-observer-day index (0.79) was significantly lower (-44%, P = 0.014) than the 2006 index (1.40). The 2007 index was 39.8% lower than the 2002–2006 5-year mean (1.31), and 50.0% less than the 1997–2006 10-year average (1.58). Changes in our bobwhite production indices varied widely by region. The 2006 quail index in the western region (0.66) was lower than in 2006, but not significantly (-16%, P = 0.300). The quail-per-observer-day index for the northcentral region was little changed (0.92, -3%) from 2006, but this index trended somewhat higher (1.82, +32%) in the northeast (only approaching statistical significance P = 0.124). The quail-per observer index was down sharply in the southcentral (0.82, -61%), Flint Hills (0.41, -73%), and southeast regions (0.48, -72%), all significantly (P = 0.014). These indices reached all-time lows this year in both the Flint Hills and Southeast regions, continuing a pattern of steep decline (Figure 4).

The weather event that played the greatest role in the quail decline clearly was the period of intense, heavy rains and flooding that occurred in southeast Kansas and in eastern sections of southcentral Kansas in late June and early July. The negative effect this event had on production is perhaps most evident in the fact that indices for young quail were down even more sharply than were adult bobwhite indices. The mechanisms for these production losses were likely very high rates of nest abandonment and chick mortality. Declines in indices for adults in those same regions were more likely related to overwinter losses, particularly in that region of southeast Kansas that was covered for 2 weeks with a thick layer of sleet and ice in February. Heavy rains that occurred in southcentral and parts of northcentral and northeast Kansas in late May might also have diminished potential bobwhite production moderately, but these occurred early enough that significant renesting was possible. In the western survey region, the severe end-of-the-year blizzard and persistent deep snowpack that lasted through February almost certainly devastated local quail populations, but had much more modest effects east of

the snow line. Indices for adults in the western region were significantly lower. However, indices for young quail, although not statistically significant ($P > 0.10$) due to data variability, trended higher suggesting proportionally good production in the west.

While the bobwhite hatching histogram (Fig. 1) showed a peak during the normal end-of-June period, very little hatching was evident in May, early June, or in late July and early August. Too few quail broods were observed this year to discern any trend in brood size relative to hatching date.

PHEASANT

KDWP personnel reported 3,770 pheasants this year, including 2,911 young in 592 broods. In 2006, 4,239 pheasants were reported with 3,022 young in 616 broods. Ten broods were not classified by age. Adult pheasant observations this year included 346 cocks and 507 hens, compared to 559 cocks and 658 hens in 2006. A weekly average of 75.2 observers spent 1,448 observer-days in the field this year compared to 76.2 and 1,595, respectively, in 2006.

The statewide pheasants-per-observer-day index was essentially unchanged (2.60, -2%, $P = 0.232$) relative to 2006. The 2007 index was 10.0% less than the 2002–2006 5-year mean (2.89) and 10.0% less than the 1997–2006 10-year mean (2.90). The pheasants-per-observer-day index for the northwest region trended lower (6.06, -16%), but this decline was not significant ($P = 0.232$) and probably reflects the absence this year of one observer who turned in many birds last year. The overall pheasant index increased sharply in the southwest region (5.69, +54%, $P = 0.014$), but it was particularly notable that the index for young pheasants increased 104% compared to 2006. The overall pheasant index decreased significantly (3.46, -27%, $P = 0.023$) in northcentral Kansas, but field reports suggest this decline was very patchy with some areas having good production. Areas of poorer production appeared more prevalent in eastern sections of the northcentral region. The pheasants-per-observer-day index also declined significantly (0.27, -47%, $P = 0.086$) in the northeast region and currently is at a near-record low. The southcentral region trended modestly upward (1.03, +17%), but this increase was not statistically significant ($P = 0.300$).

The extreme winter conditions experienced in January and February in far western Kansas resulted in greater than normal pheasant losses where heavy snowcover persisted for 2 months. Overall, however, these losses did not prove as severe as originally feared. The moisture that came with the heavy snows and abundant spring rains created excellent conditions for the wheat crop. Wheat greened up and put on significant growth with an early warm spell in March creating good nesting conditions when pheasant hens were ready to nest. A late hard freeze set development of the wheat crop back, ultimately delaying harvest about two weeks and giving nesting hens additional time to hatch their clutches and for chicks to reach adequate size where they could evade harvest machinery. The greater-than-normal stature of the wheat at harvest increased cutting height, also increasing the probability that chicks would survive passage of the combines. These factors accounted for what appears to have been good pheasant production in most of western Kansas and good hunting prospects. Unfortunately, the late freeze caused more-severe injury to the wheat crop in central and eastern Kansas. That, and heavy late-May rains and flooding, apparently diminished pheasant production potential in eastern sections of the northcentral and southcentral regions as well as in northeast Kansas.

Generally good production this year has contributed to what appears to be increasing pheasant population trends in both the northwest and southwest regions (Figure 5), despite drought conditions that have prevailed much of the time since 2000. The northcentral regional indices continue to fluctuate around a basically-stable trend, but trends in the southcentral region and particularly in the northeast region are declining. The improvements in western Kansas have essentially counterbalanced losses in the southcentral and northeast, making for a generally stable rangewide trend.

The pheasant hatching histogram (Fig. 2) indicated a hatching peak during mid-June, a bit later than normal. However, a higher-than-normal proportion of the hatch occurred in April and May, offsetting the late peak. On a statewide basis, brood size (4.92) was unchanged from 2006 with a significant increase (P = 0.037) occurring in southwest Kansas and a decrease in the northeast that only approached significance (P = 0.173). Overall brood size was below average. Low brood sizes obtained for broods hatched in early and mid-May appeared to be generated this year by numerous observations of single, nearly grown birds in those age classes. This may have been caused by break up of early-hatched broods or by difficult observation conditions due to the exceptionally heavy cover prevalent in much of the state, rather than poor brood survival.

TURKEY

This marks the first year that the same data traditionally collected for quail and pheasant was also collected for turkey, although data for young turkeys was provided in the 2006 report. A weekly average of 110.0 observers spent 2,211 observer-days in the field during the 2007 survey period compared to 107.8 and 2,287, respectively, in 2006. KDWP personnel observed and reported a total of 6,082 turkeys during the 2007 survey period, including 2,989 young turkeys in 458 broods, 1,432 gobblers, and 1,661 hens. Thirty-nine broods were not classified by age. Comparable figures for 2006 included 4,987 young turkeys in 580 broods. It is worthy of note that the total number of turkey observations exceeded those for pheasant and bobwhite combined.

A statewide index of 2.75 turkeys-per-observer-day was reported with the greatest values reported in the northwest (4.46) and northcentral (4.40) regions. Observations of young turkeys were little changed in the northwest, southwest, and northcentral survey regions. However, observations of young turkeys were sharply lower in the southeast (0.51, -66%, P = 0.014), southcentral (1.44, -54%, P = 0.023), and northeast (1.49, -39%, P = 0.037) regions. These declines probably primarily reflect brood losses, but also nest abandonment that occurred as a result of the extremely heavy rains and flooding in late June and early July. The heavy rains and flooding that occurred in late May in parts of the southcentral, northcentral and northeast survey regions probably also increased nest abandonment and brood mortality. The young-per-hen index (1.80) was lowest in regions hit by the heavy rains and flooding, particularly the southeast (0.53).

These extreme weather events probably account for the unusual late-June peak of hatch for turkeys. While we do not have a historical database for the timing of turkey hatching in Kansas, this peak is probably about a month later than normal (Fig. 3). While brood size is reported in table 6, this value requires some subjective judgement due to the species' common tendency toward gang brooding. Consequently, no attempt to statistically test changes in brood size was made.

Table 1. Distribution of BOBWHITE observations by survey region – 2007.

Survey Region	Observers Per Week	Observer Days	Uncl. Quail	Cocks	Total Hens	Hens With Young	Young	Broods
1-W	19.50	359		65	32	9	140	18
2-NC	18.67	329		60	47	16	195	21
3-SC	17.67	361	2	91	53	4	149	14
4-FH	13.67	302		47	36	4	42	5
5-NE	15.33	278		86	82	43	339	43
6-SE	25.17	582		136	71	8	71	8
STWD	110.00	2,211	2	485	321	84	936	109

Table 2. Change in BOBWHITE indices - 2006 to 2007.

		Survey Regions						
Index	Year	1-W	2-NC	3-SC	4-FH	5-NE	6-SE	STWD
Bobwhite Per	2006	0.79	0.95	2.09	1.52	1.38	1.68	1.40
Observer	2007	0.66	0.92	0.82	0.41	1.82	0.48	0.79
Day	% Change	-16	-3	***-61***	***-73***	32	***-72***	***-44***
Cocks Per	2006	0.30	0.19	0.39	0.31	0.26	0.39	0.31
Observer	2007	0.18	0.18	0.25	0.16	0.31	0.23	0.22
Day	% Change	***-40***	-4	***-35***	***-50***	19	***-40***	***-29***
Hens Per	2006	0.23	0.14	0.33	0.27	0.19	0.29	0.24
Observer	2007	0.09	0.14	0.15	0.12	0.29	0.12	0.15
Day	% Change	***-61***	2	***-56***	***-56***	***55***	***-58***	***-40***
Young Per	2006	0.24	0.62	1.36	0.86	0.94	1.00	0.83
Observer	2007	0.39	0.59	0.41	0.14	1.22	0.12	0.42
Day	% Change	62	-4	***-70***	***-84***	30	***-88***	***-49***
Broods Per	2006	0.05	0.06	0.17	0.11	0.11	0.13	0.10
Observer	2007	0.05	0.06	0.04	0.02	0.15	0.01	0.05
Day	% Change	0	6	***-77***	***-85***	41	***-89***	***-51***
Brood	2006	5.33	10.64	7.98	8.04	8.67	7.82	8.11
Size	2007	7.78	9.29	10.64	8.40	7.88	8.88	8.59
	% Change	46	-13	***33***	4	-9	13	6

Changes in ***bold italics*** denote a significant change ($P < 0.10$) between years.

Table 3. Distribution of PHEASANT observations by survey region – 2007.

Survey Region	Observers Per Week	Observer Days	Uncl. Pheasants	Cocks	Total Hens	Hens With Young	Young	Broods
1-NW	6.00	94		30	58	48	482	91
2-SW	14.83	287	6	151	217	142	1258	275
3-NC	17.00	305		91	135	74	829	153
4-SC	18.67	401		50	71	30	293	61
5-NE	18.67	361		24	26	10	49	12
STWD	75.17	1,448	6	346	507	304	2,911	592

Table 4. Change in PHEASANT indices - 2006 to 2007.

		Survey Regions					
Index	Year	1-NW	2-SW	3-NC	4-SC	5-NE	STWD
Pheasant Per Observer Day	2006	7.18	3.69	4.77	0.88	0.52	2.66
	2007	6.06	5.69	3.46	1.03	0.27	2.60
	% Change	-16	***54***	***-27***	17	***-47***	-2
Cocks Per Observer Day	2006	0.60	0.86	0.36	0.13	0.08	0.35
	2007	0.32	0.53	0.30	0.12	0.07	0.24
	% Change	***-47***	***-39***	-17	-4	-17	***-32***
Hens Per Observer Day	2006	0.82	0.68	0.66	0.17	0.11	0.41
	2007	0.62	0.76	0.44	0.18	0.07	0.35
	% Change	-25	11	***-33***	4	***-35***	-15
Young Per Observer Day	2006	5.75	2.15	3.75	0.57	0.34	1.89
	2007	5.13	4.38	2.72	0.73	0.14	2.01
	% Change	-11	***104***	***-28***	28	***-60***	6
Broods Per Observer Day	2006	1.10	0.53	0.70	0.12	0.06	0.39
	2007	0.97	0.96	0.50	0.15	0.03	0.41
	% Change	-12	***81***	***-28***	27	-45	5
Brood Size	2006	5.25	4.01	5.35	4.64	5.69	4.91
	2007	5.30	4.57	5.42	4.80	4.08	4.92
	% Change	1	***14***	1	4	-28	0

Changes in ***bold italics*** denote a significant change ($P < 0.10$) between years.

Table 5. Distribution of TURKEY observations by survey region – 2007.

Survey Region	Observers Per Week	Observer Days	Uncl. Turkey	Gobblers	Total Hens	Hens With Young	Young	Broods
1-NW	10.83	160		148	121	55	445	57
2-SW	18.17	352		72	75	40	261	42
3-NC	15.83	317		311	299	106	784	110
4-SC	22.17	484		247	357	118	699	120
5-NE	18.83	346		259	274	76	517	80
6-SE	24.00	553		395	535	48	283	49
STWD	110.00	2,211	0	1,432	1,661	443	2,989	458

Table 6. Change in TURKEY production indices - 2006 to 2007.

		Survey Regions						
Index	Year	1-NW	2-SW	3-NC	4-SC	5-NE	6-SE	STWD
Turkey Per Observer Day	2006							
	2007	4.46	1.16	4.40	2.69	3.03	2.19	2.75
	% Change							
Gobblers Per Observer Day	2006							
	2007	0.93	0.20	0.98	0.51	0.75	0.71	0.65
	% Change							
Hens Per Observer Day	2006							
	2007	0.76	0.21	0.94	0.74	0.79	0.97	0.75
	% Change							
Young Per Observer Day	2006	2.99	0.74	2.74	3.17	2.45	1.51	2.18
	2007	2.78	0.74	2.47	1.44	1.49	0.51	1.35
	% Change	-7	0	-10	***-54***	***-39***	***-66***	***-38***
Young Per Hen	2006							
	2007	3.68	3.48	2.62	1.96	1.89	0.53	1.80
	% Change							
Brood Size	2006	9.37	6.45	9.29	9.20	9.42	6.73	8.60
	2007	7.81	6.21	7.13	5.83	6.46	5.78	6.53
	% Change	-17	-4	-23	-37	-31	-14	-24

Changes in ***bold italics*** denote a significant change ($P < 0.10$) between years. Brood size is difficult to reliably determine due to gang-brooding behavior and, consequently, this index was not statistically tested.

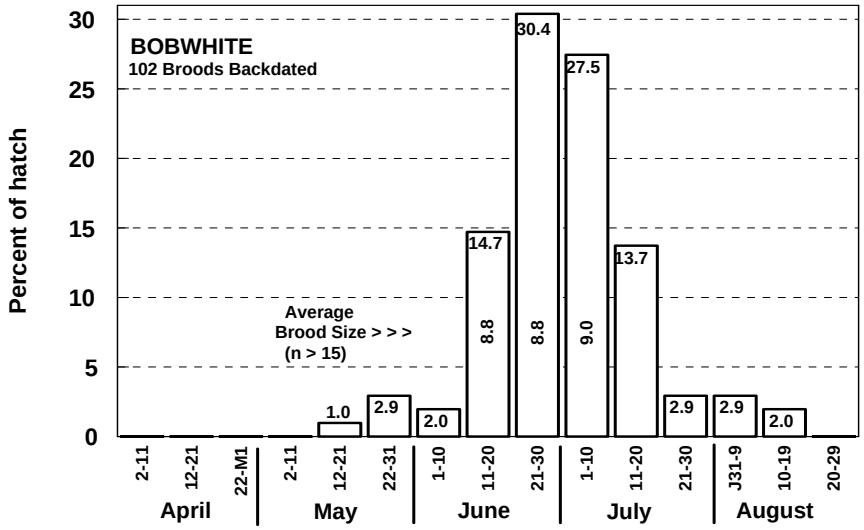


Figure 1. Statewide bobwhite hatching dates --2007.

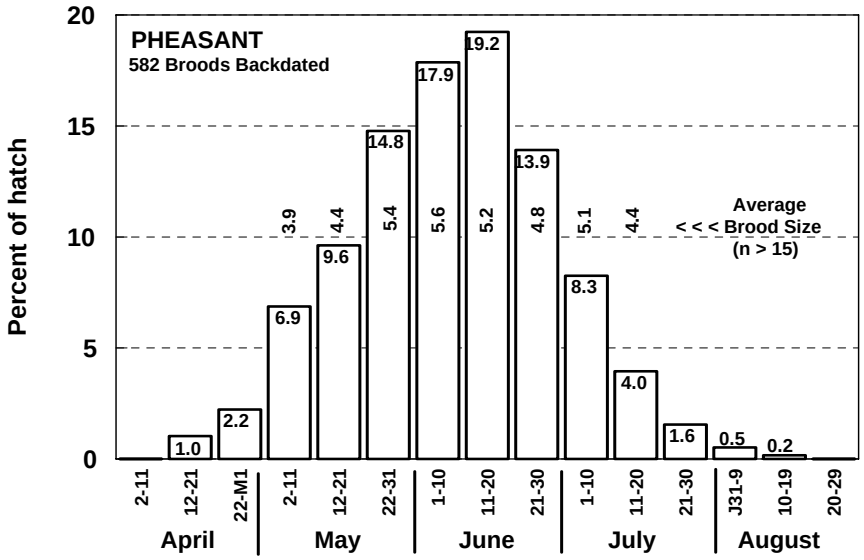


Figure 2. Rangewide pheasant hatching dates --2007.

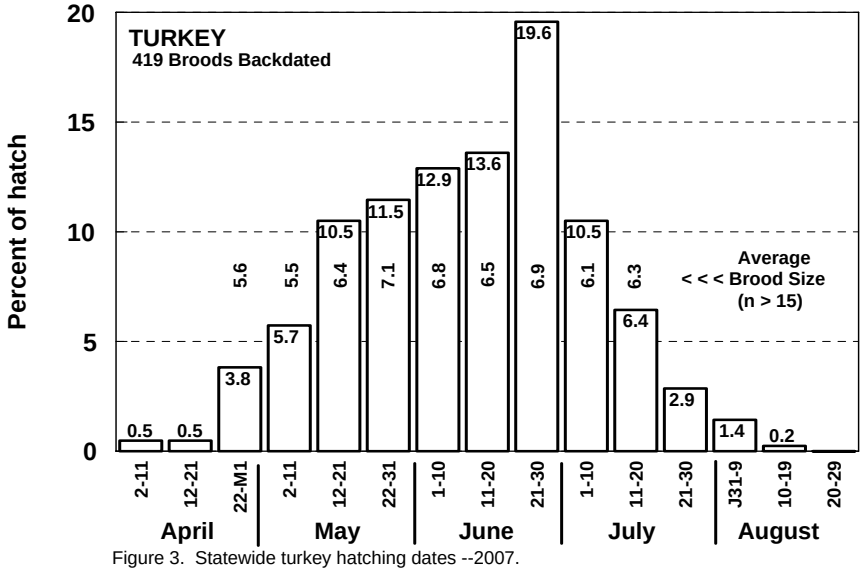


Figure 3. Statewide turkey hatching dates --2007.

Figure 4. Kansas BOBWHITE brood survey indices. *Note that scales differ*.

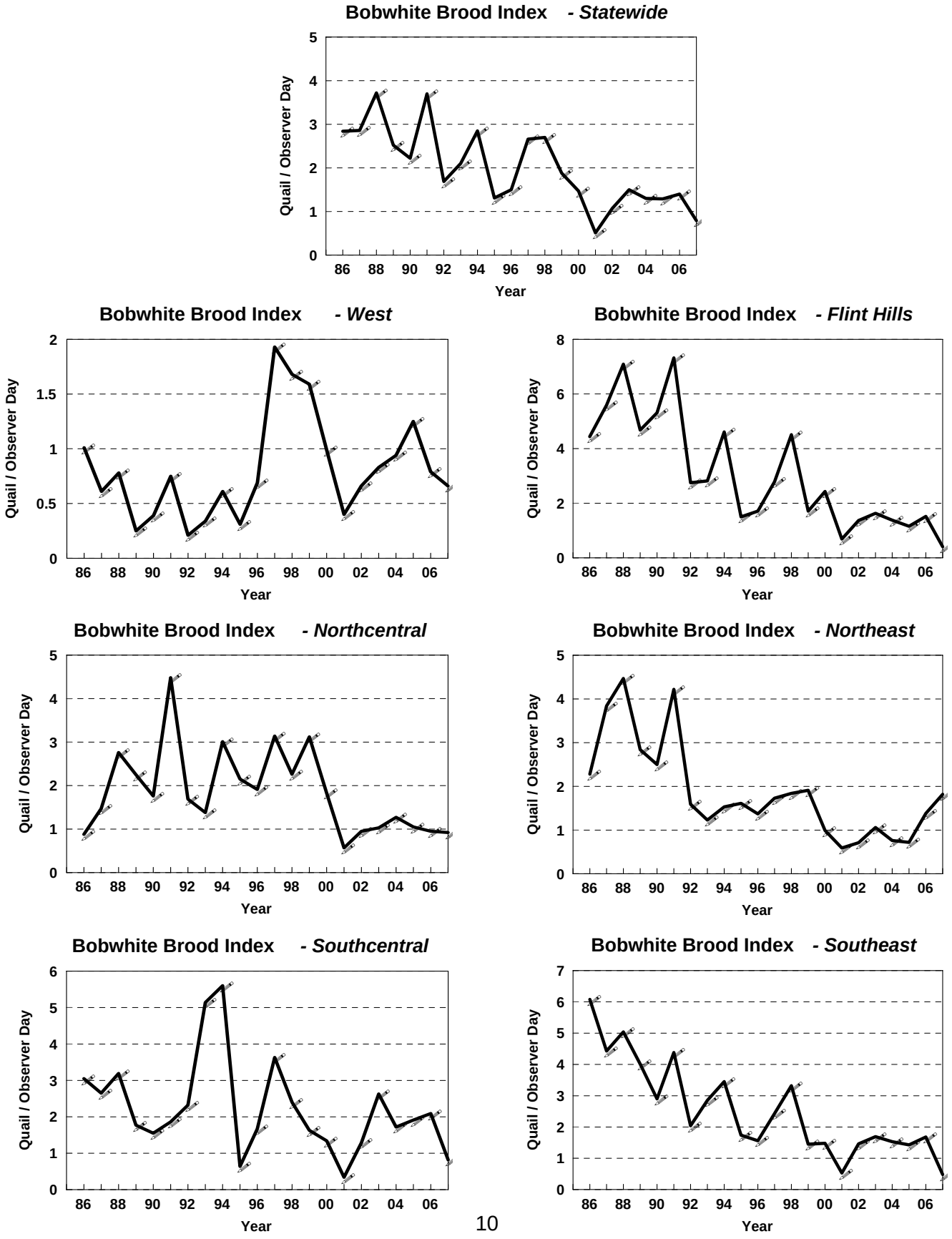
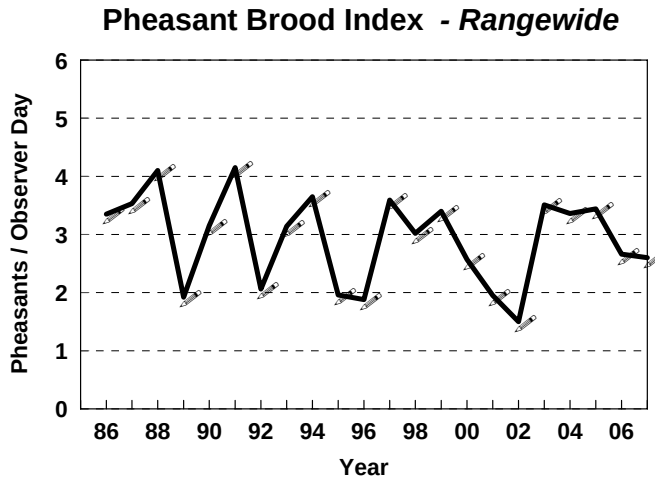
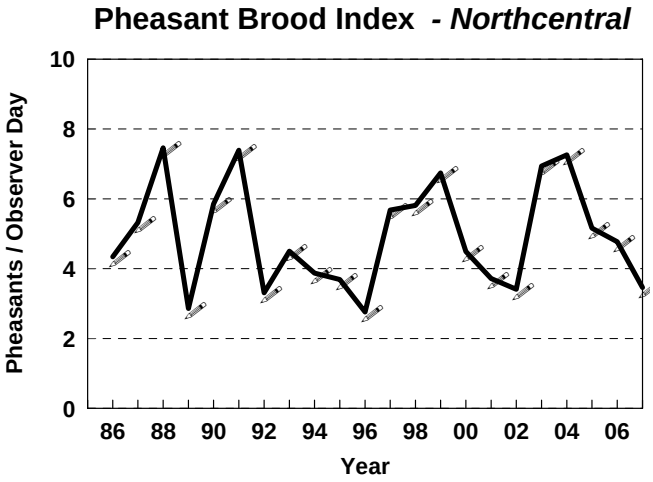
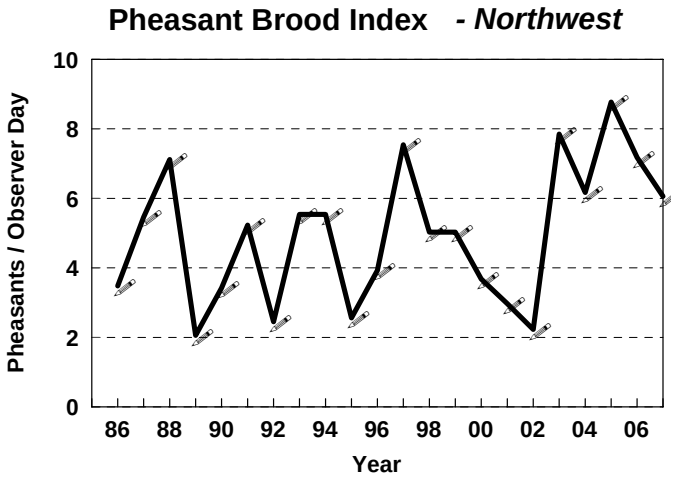
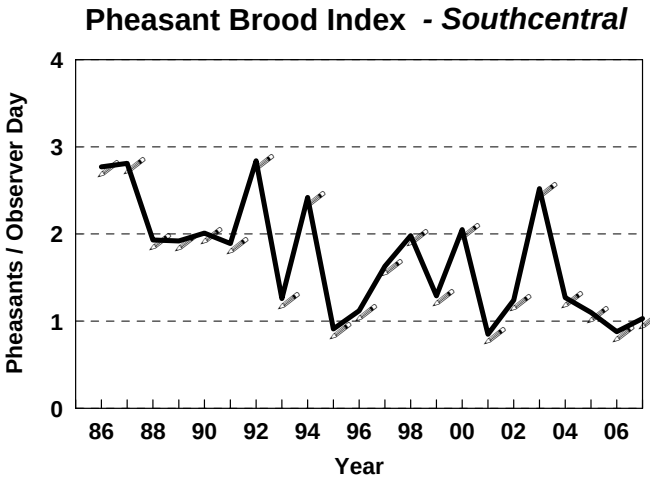


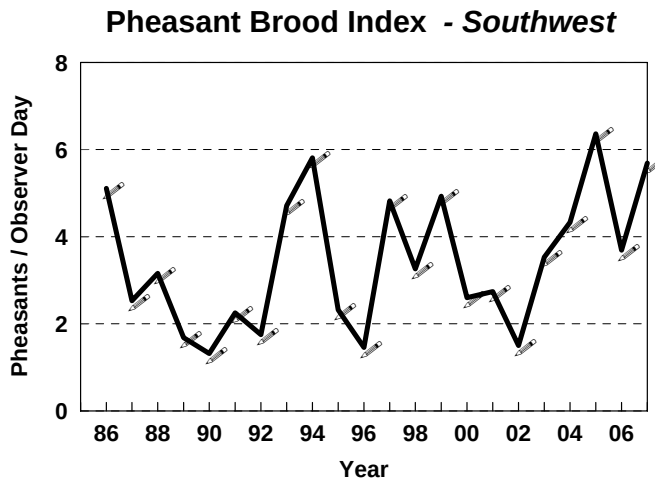
Figure 5. Kansas PHEASANT brood survey indices. *Note that scales differ*.

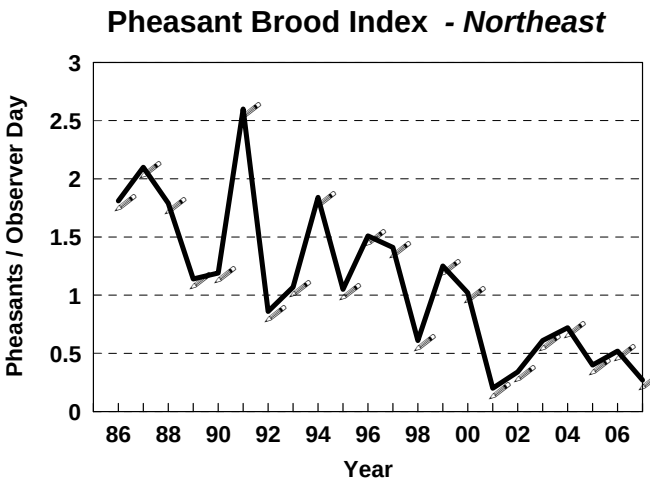


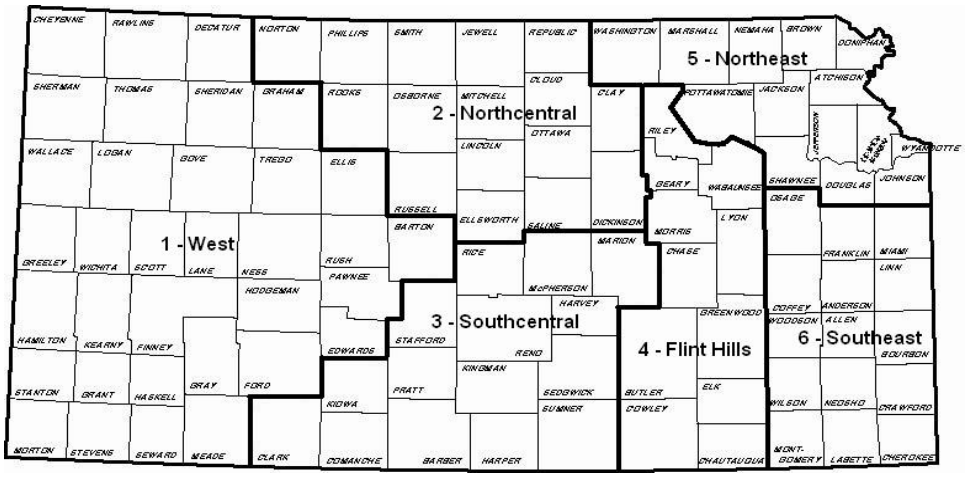




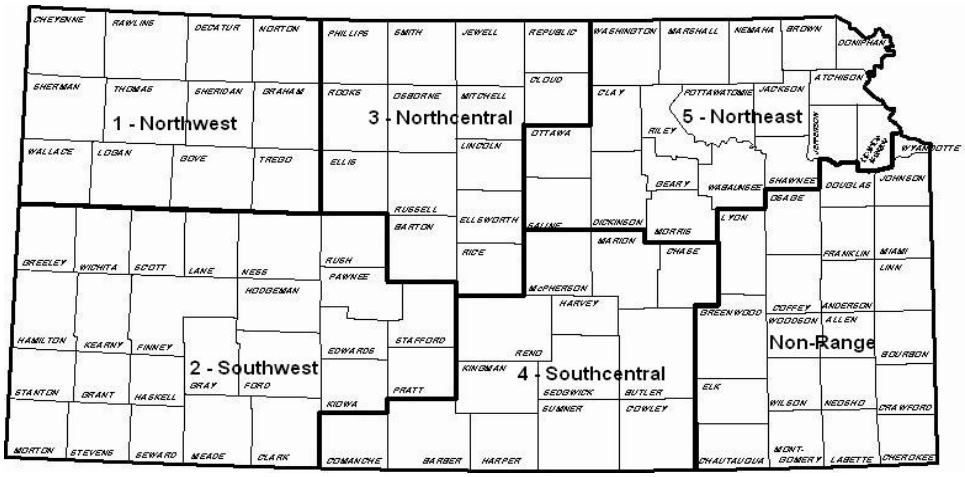




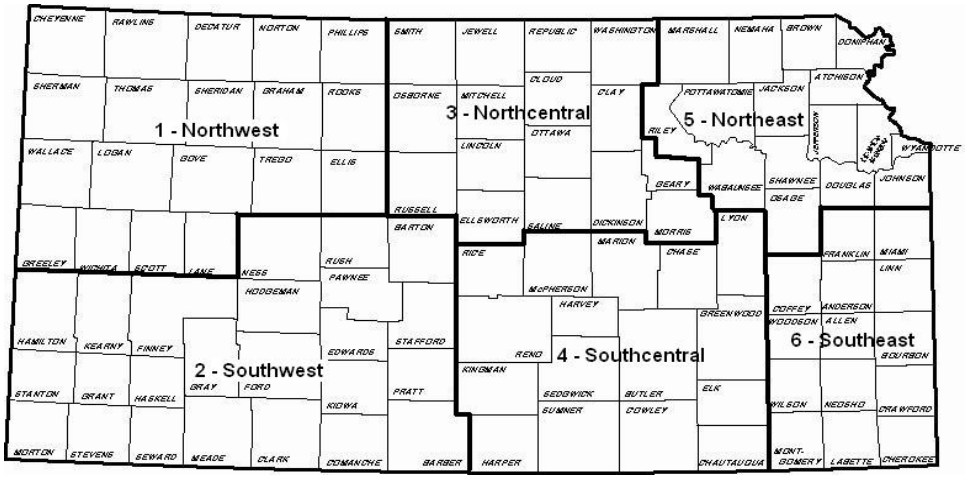




Kansas QUAIL survey regions.



Kansas PHEASANT survey regions.



Kansas TURKEY survey regions