

2014 BOBWHITE WHISTLE COUNT

Performance Report

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INTRODUCTION AND METHODS

To monitor changes in northern bobwhite abundance the spring whistle count was initiated in 1998. A total of 65 established routes were surveyed annually from 1998 - 2005. Prior to the 2006 survey, the distribution of routes was adjusted to provide better coverage of the entire state. This was accomplished by adding 16 new routes in areas not surveyed previously and eliminating 10 routes from areas where effort was clustered. Two more routes were added in 2011 to further improve sampling distribution. In 2014, observers were asked to survey 77 established routes during the 1-16 June survey period, starting at sunrise (Table 1). Due to weather constraints the survey period was extended 1 week to facilitate data collection. Each route consisted of 11 stops spaced at approximately 1 mile intervals. Observers listened for 5 minutes at each stop and recorded the total number of different bobwhites heard calling and total number of calls.

The index to bobwhite abundance was calculated as the mean number of different bobwhites heard per listening stop per route (M/S). To prevent observer bias impacting results, only routes that were sampled by the same observer in consecutive years were used to assess changes in regional and statewide indices. A folded F-test was used to determine if the variance differed between the 2013 and 2014 indices. If unequal variance existed ($P < 0.05$) then a Satterthwaite's adjustment was used to adjust the degrees of freedom prior to conducting a two sample t-test. If variance did not differ across years then a standard two sample t-test was used to draw comparisons. Additionally, a linear regression of the historical whistle count data was used to determine if bobwhite abundance had changed significantly from 1998 to 2014. All indices and analyses were calculated for each of the 7 small game regions (Figure 1).

Krieging is a technique that can be used to interpolate data between known points, providing extrapolation to areas not surveyed. This technique has limitations at smaller scales (e.g., within counties and townships) because no habitat variables are included (only count data),

but can be useful for large-scale interpretation of statewide data for regional comparisons. Kriegering was used by assigning the route-specific whistle index to the centroid of each route. Then all routes were used to extrapolate data throughout Kansas.

RESULTS

Observers surveyed 73 of the 77 assigned routes during 2014 for a statewide index of 1.90 calling males per stop. Among the 54 comparable routes, the statewide index to the breeding bobwhite population was 32% higher than in 2013 (Table 2) which was a statistically significant increase. While some regions had large increases in the observed indices, there were no statistically significant ($P < 0.10$) differences in the average number of calling males per stop at the regional level. Apparent changes at the regional level could have been solely due to variability associated with the sampling scheme.

While the density of breeding bobwhites has been up in eastern Kansas the last 3 years, there has been a significant declining trend in bobwhite abundance since the inception of this survey in 1998 in the Glaciated Plains and Osage Cuestas (Table 2, Figures 2). Bobwhite populations in the central and western regions have more stable trends, although populations fluctuate across years. The statewide index of calling males/stop has declined significantly ($P < 0.05$) over this time span at a rate of $-0.05/\text{year}$ (Table 2, Figure 2).

DISCUSSION

Spring whistle counts are considered an index to the breeding population. As such, they reflect a combination of overwinter survival and the previous breeding season production, if overwinter survival was high. The extreme drought observed in 2011 and 2012 continued to plague much of Kansas well into 2013. However, late summer rains across much of the state greatly improved conditions in late July and August. With the tenacious renesting behavior of quail, production appears to have been up across many areas of the state last fall with birds taking advantage of the improved conditions later in the summer. These increases were not

detected during our brood survey as many birds would still have been incubating eggs during that period. Kansas had a relatively mild winter which likely did not have major negative impacts on overwinter survival. The combination of good production conditions in late summer and the mild winter facilitated the statewide increases coming into the spring (Figure 2).

It is important to understand that annual changes to the breeding population do not necessarily reflect hunt quality for the upcoming season, but rather a combination of last year's productivity and overwinter survival. The fall bobwhite population predominantly depends on summer productivity and the size of the spring breeding population is a measure of production potential. A bobwhite population can increase nearly 300% from spring to fall when habitat and weather conditions are suitable for productivity. Starting with a larger breeding population creates the potential for a larger boom when conditions are right but doesn't guarantee it, under correct conditions fall densities in areas with lower breeding populations can surpass areas that had larger spring densities.

The hunting outlook at this time is unpredictable for Fall 2014. Several routes across the state showed great improvement from 2013 (Table 2), although at the regional level the Flint Hills region has the best breeding population densities for 2014 (Table 2, Figure 3). The rains last summer improved nesting conditions coming into the spring of 2014 for much of the state and the continued precipitation through late spring and summer has further improved vegetative cover. Heavy rainfall and hail can impact survival and reproduction and conditions through the remainder of July and August will have large impacts on the realized fall densities. More accurate predictions about fall densities will be available following the completion of the summer brood survey.

Table 1. Northern bobwhite survey routes and observers in Kansas, 2014.

Route	County(s)	Observer	Route	County(s)	Observer
1	Allen	Ross Uhrmacher*	40	Montgomery	Ed Miller
2	Atchinson/Doniphan	Tim Urban	41	Morris	Brent Konen
3	Barber	Charlie Swank	42	McPherson/Marion	Jeremy Amos
4	Barton	Charlie Swank*	43	Morton	Kraig Schultz
5	Bourbon	Justin Harbit	44	Morton	Kraig Schultz
6	Butler	Jeff Rue	45	Nemaha	Megan Smith
7	Chase	Jim Pitman	46	Neosho	Bryan Sorenson
8	Chautauqua	Darin Porter	47	Osage	Clint Bowman
9	Cherokee	David Shanholtzer	48	Osborne	Victoria Cikanek
10	Clark	Jon Zuercher	49	Ottawa	Victoria Cikanek*
11	Clay	Clint Thornton	50	Pawnee	Charlie Swank
12	Cloud	Matt Farmer*	51	Pawnee	Tom Bidrowski
13	Coffey	Bob Culbertson	52	Phillips	Alex Lyon*
14	Cowley	Kurt Grimm	53	Pottawatomie	Nathan Henry
15	Crawford	Logan Martin	54	Pratt	Todd Gatton
16	Douglas	Tim Urban	55	Rawlins	Kurt Meier
17	Elk	Pat Riese*	56	Reno	Kyle McDonald
18	Ellis	Jason Wagner*	57	Rice	Kyle McDonald*
19	Ellsworth	Matt Smith	58	Riley	Corey Alderson
20	Finney	Jake Danner*	59	Rush	Megan Rohweder*
21	Ford	Aaron Baugh	60	Russell	Victoria Cikanek
22	Greenwood	Pat Riese*	61	Saline	Matt Smith*
23	Harvey	Charlie Cope	62	Shawnee	Brad Rueschhoff
24	Hodgeman	Aaron Baugh	63	Sheridan	Wes Sowards
25	Hodgeman	Jake Danner*	64	Smith	Chris Lecuyer
26	Jefferson/Jackson	Tyler Warner*	65	Stafford	Karl Grover
27	Jewell	Luke Kramer*	66	Stanton	Kraig Schultz
29	Kingman	Craig Curtis	67	Sumner	Jeff Rue
30	Kiowa	Charlie Swank	68	Trego	Luke Winge*
31	Leavenworth	Andy Friesen	69	Wabaunsee	Brad Rueschhoff
32	Lincoln	Matt Smith	70	Washington	Clint Thornton
33	Linn	Jacob Coulter	71	Woodson	Justin Anderson*
34	Lyon	Clint Bowman	72	Hamilton	Daryl Fisher
35	Marshall	James Svaty	73	Grand Osage WA	Rob Riggan
36	McPherson	Brent Theede	74	Wilson WA	Scott Thomasson
37	Meade	Jon Zuercher	75	TuttleCreek WA	James Svaty
38	Miami	Andy Friesen	76	Perry WA	Andrew Page*
39	Mitchell	Luke Kramer*	77	Clinton WA Wakarusa	Jason Tarwater
			78	Clinton WA Deer Cr	Jason Tarwater

*New observer for 2014

Table 2. Regional Changes in calling Bobwhite males per stop (M/S), 2014.

Route	2013 M/S	2014 M/S	% Δ^a	Route	2013 M/S	2014 M/S	% Δ^a
<u>Flint Hills</u>				<u>Smoky Hills</u>			
06 Butler	3.90	3.55	-9	04 Barton ^b	0.90	2.09	132
07 Chase	0.82	1.09	33	12 Cloud ^b	1.33	4.45	234
08 Chautauqua	2.18	3.56	63	18 Ellis ^b	1.67	1.00	-40
11 Clay	2.36	3.09	31	19 Ellsworth	0.09	0.73	700
14 Cowley	5.00	5.82	16	24 Hodgeman	0.00	0.00	0
17 Elk ^b	NA	2.80	NA	25 Hodgeman ^b	1.64	0.64	-61
22 Greenwood ^b	NA	2.20	NA	27 Jewell ^b	1.45	0.82	-44
34 Lyon	0.91	NA	NA	32 Lincoln	0.91	0.27	-70
41 Morris	1.60	1.70	6	36 McPherson	0.50	1.27	155
42 McPherson_Marion	0.56	2.50	350	39 Mitchell ^b	0.91	0.73	-20
53 Pottawatomie	0.73	1.40	93	48 Osborne	0.18	0.91	400
58 Riley	3.36	2.36	-30	49 Ottawa ^b	1.36	1.00	-27
69 Wabaunsee	1.20	1.73	44	52 Phillips ^b	1.36	1.55	13
75 Tuttle Cr WA	2.64	1.82	-31	57 Rice ^b	2.40	2.09	-13
Region	2.21	2.69	22	59 Rush ^b	NA	1.00	NA
<u>Glaciated Plains</u>				60 Russell	0.45	2.36	420
02 Atchison_Doniphan	0.27	0.36	33	61 Saline ^b	0.73	2.27	213
16 Douglas	2.36	2.27	-4	64 Smith	0.45	0.67	47
26 Jefferson_Jackson ^b	3.10	6.91	123	68 Trego ^b	0.45	1.14	151
31 Leavenworth	0.11	0.14	29	70 Washington	2.27	2.64	16
35 Marshall	2.40	1.91	-20	74_WilsonWA	0.55	1.36	150
45 Nemaha	2.73	4.00	47	Region	0.60	1.13	88
62 Shawnee	3.67	2.00	-45	<u>South-Central Prairies</u>			
76 Perry Wa ^b	3.40	3.55	4	03 Barber	1.91	3.75	96
77 Clinton WA Wak	1.27	NA	NA	10 Clark	0.18	1.73	850
78 Clinton WA Deer Cr	0.22	NA	NA	23 Harvey	0.73	1.00	38
Region	1.92	1.78	-7	29 Kingman	0.67	1.25	88
<u>Osage Cuestas</u>				30 Kiowa	0.91	1.27	40
01 Allen ^b	4.36	1.89	-57	50 Pawnee	2.91	2.64	-9
05 Bourbon	0.90	0.82	-9	51 Pawnee	0.09	0.45	400
09 Cherokee	0.55	0.73	33	54 Pratt	1.00	1.82	82
13 Coffey	1.91	1.82	-5	56 Reno	3.27	3.64	11
15 Crawford	3.27	3.70	13	65 Stafford	1.73	1.50	-13
33 Linn	0.73	0.50	-31	67 Sumner	1.55	3.09	100
38 Miami	0.91	1.00	10	Region	1.36	2.01	48
40 Montgomery	2.91	2.80	-4	<u>Southern High Plains</u>			
46 Neosho	2.09	1.18	-43	20 Finney ^b	0.00	0.67	NA
47 Osage	1.64	NA	NA	21 Ford	0.60	1.50	150
71 Woodson ^b	2.27	2.73	20	37 Meade	0.40	0.90	125
72 Grand Osage WA	0.10	0.09	NA	43 Morton	1.73	4.91	184
Region	1.48	1.40	-5	44 Morton	2.45	7.56	208
<u>Northern High Plains</u>				66 Stanton	0.00	0.00	0
55 Rawlins	0.09	0.09	0	73_Hamilton	0.00	0.18	NA
63 Sheridan	0.09	0.10	10	Region	0.86	2.51	192
Region	0.09	0.10	5	STATEWIDE	1.39	1.84	32*

*Values are significant at a $P \leq 0.10$ level^a % Δ = percent change^b New observer in 2014; not included in regional or state averages

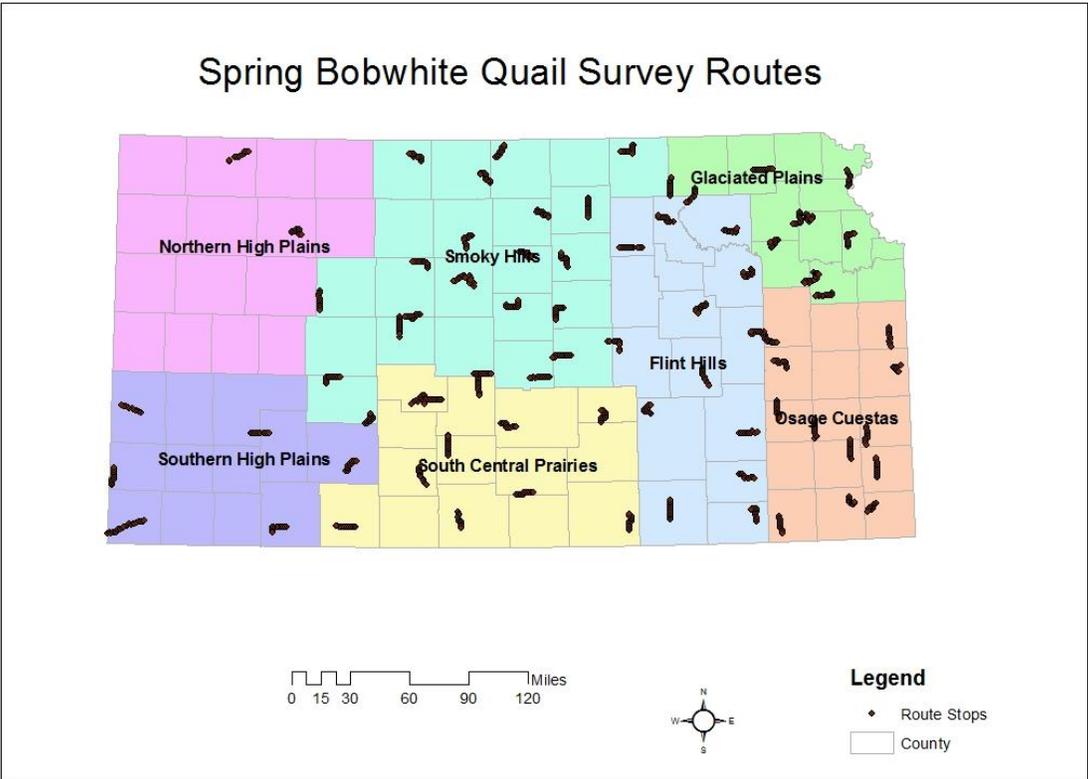


Figure 1. Locations of Bobwhite Survey listening stops within the 7 Kansas Small Game regions.

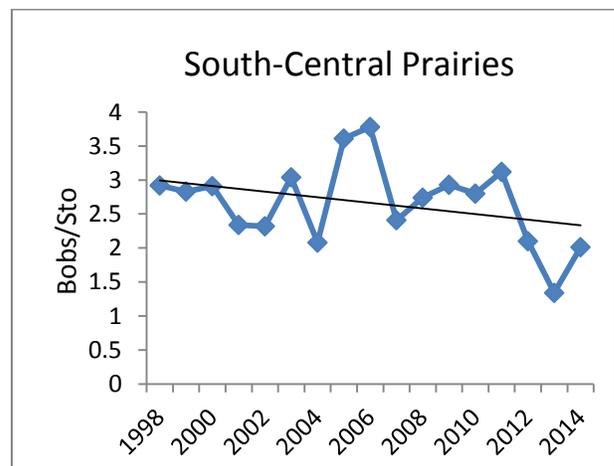
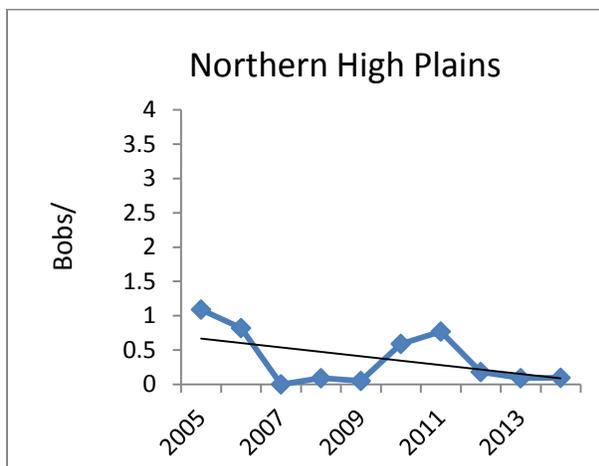
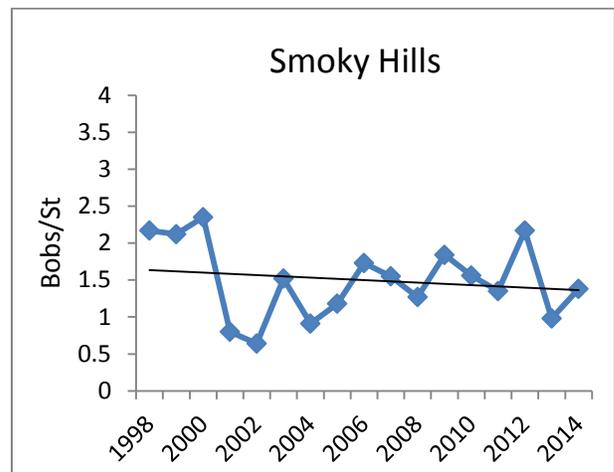
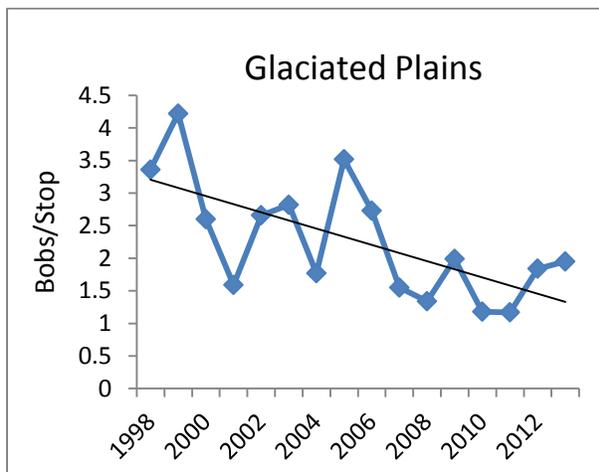
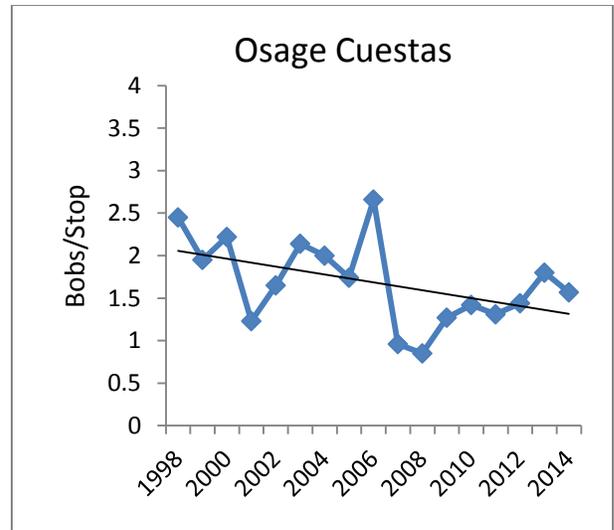
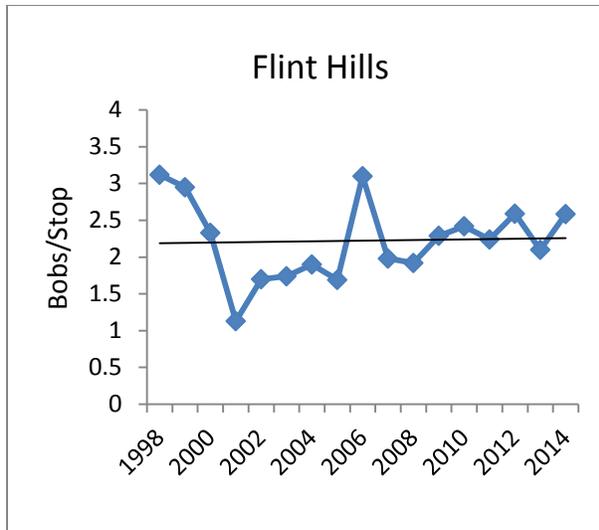


Figure 2. Mean number of northern bobwhites heard per survey stop within Kansas' 7 management regions and statewide, 1998-2014. These data can only be used to approximate long-term trends because the same set of routes was not surveyed in every year.

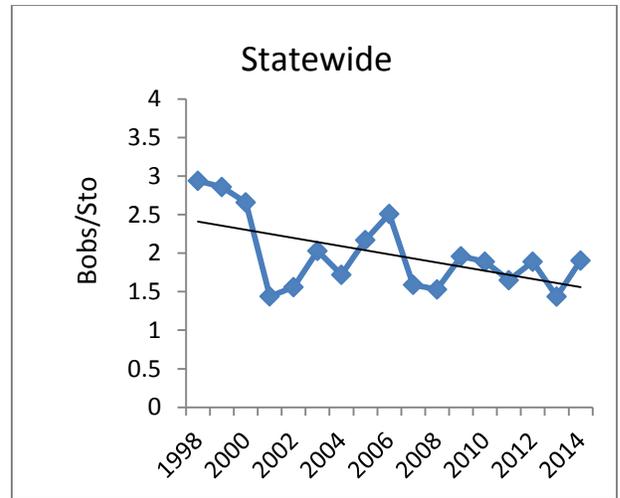
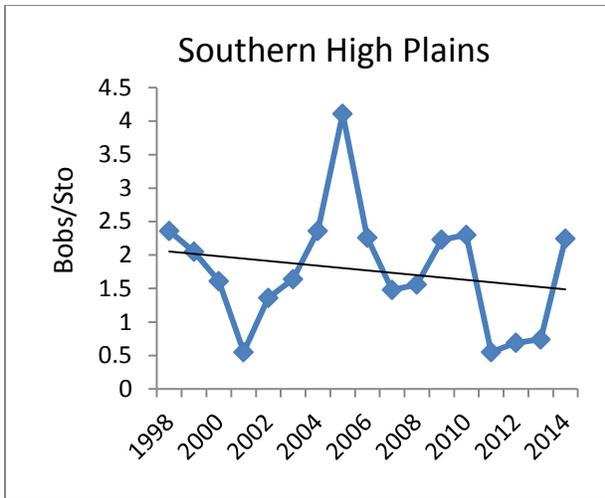


Figure 2. continued.

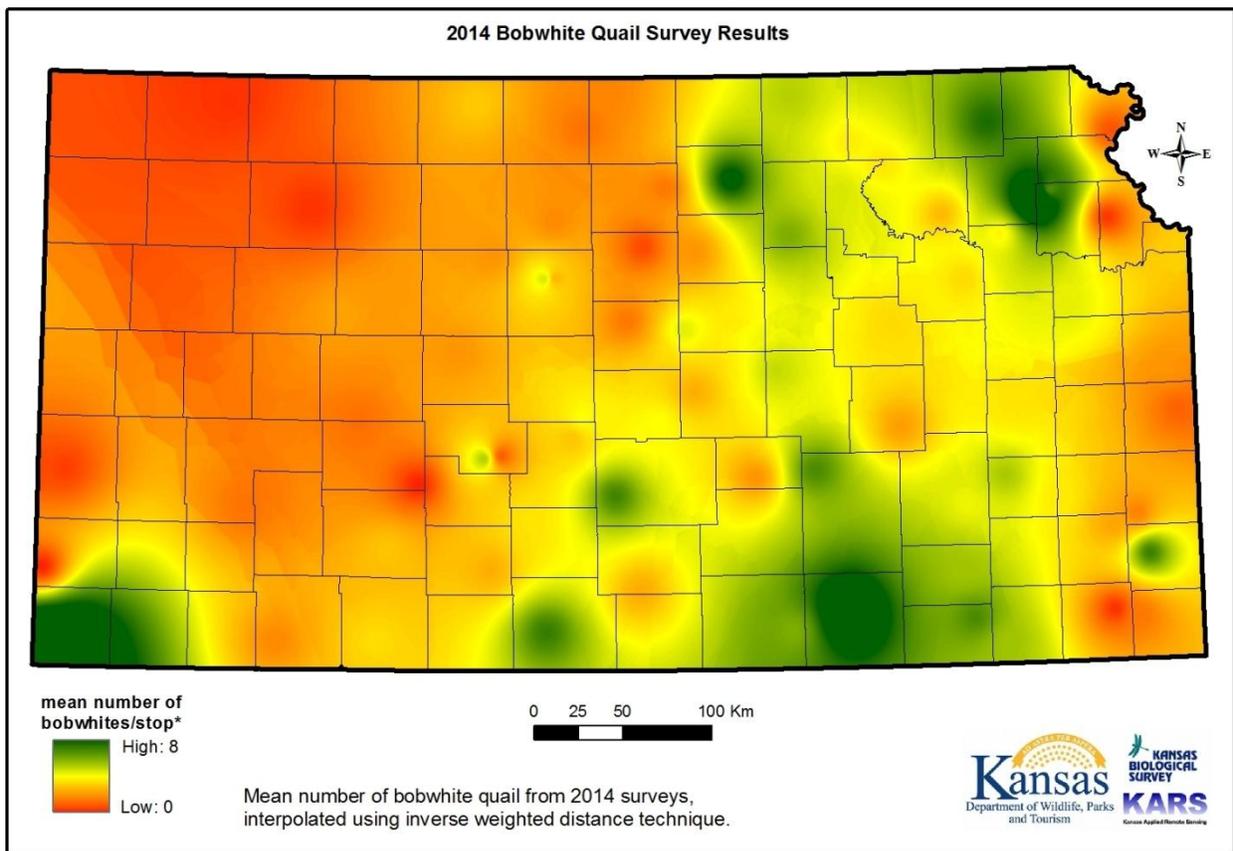


Figure 3. Bobwhite breeding population index interpolated from route-specific indices across Kansas, 2014.

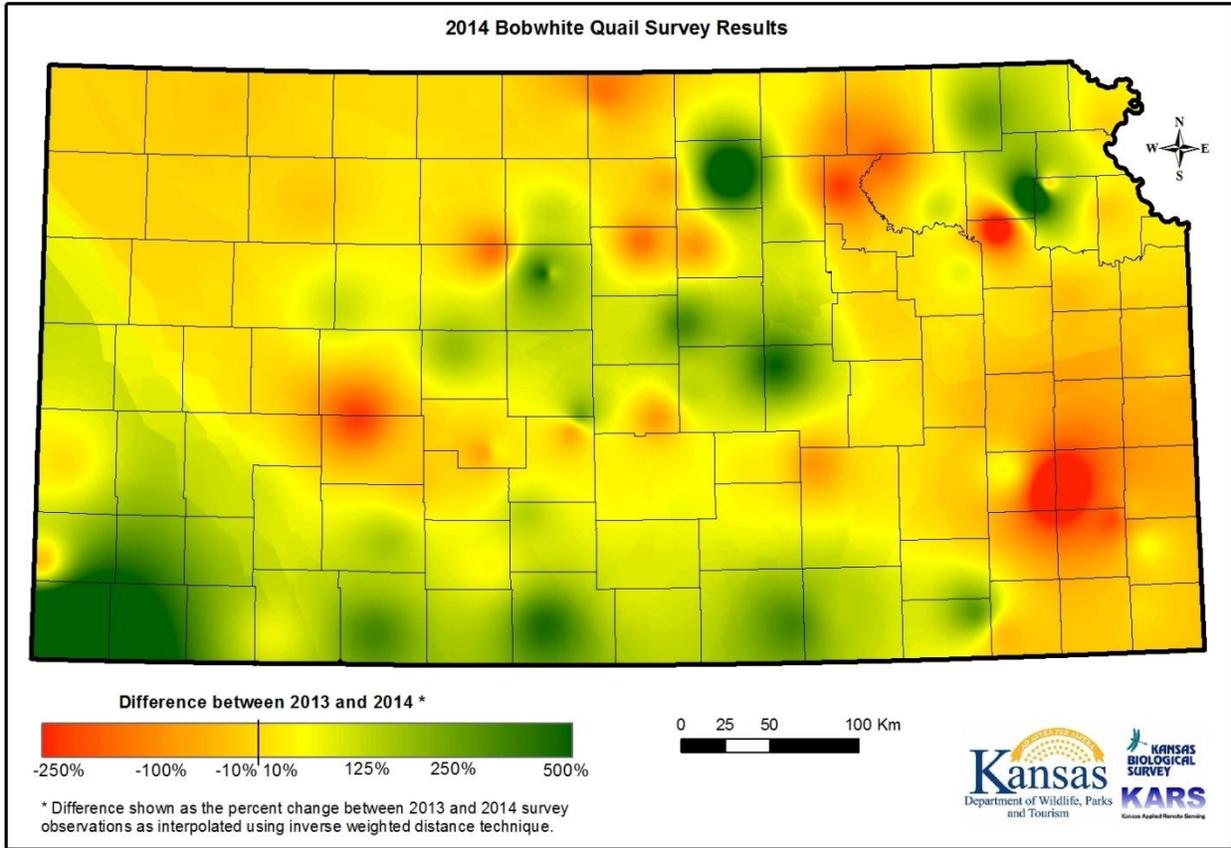


Figure 4. Relative change in Bobwhite breeding population index from 2013 to 2014 interpolated from route-specific indices across Kansas.