

2015 BOBWHITE WHISTLE COUNT

Performance Report

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KANSAS DEPARTMENT OF WILDLIFE, PARKS, and TOURISM

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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 2015, observers were asked to survey 76 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. Given that samples are taken on permanently established routes, samples are not independent and thus a paired-sample t-test is used to draw inter-annual 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).

Kriging 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 75 of the 76 assigned routes during 2015 for a statewide index of 2.75 calling males per stop. Route 77 at Tuttle Creek was not able to be completed due to extreme flooding during the survey period. Among the 63 comparable routes, the 2015 statewide index to the breeding bobwhite population was 41% higher than in 2014 (Table 2) which was a statistically significant increase. There were statistically significant ($P < 0.10$) increases in the average number of calling males per stop in both the Flint Hills (29%), Smoky Hills (51%), and South-Central Prairies (50%) regions from 2014 to 2015 (Table 2). The average number of calling males per stop was greater in all 4 remaining regions in 2015; however these increases were not statistically significant ($P < 0.10$). Non-significant changes at the regional level could have been solely due to variability associated with the sampling scheme.

While recent statewide increase are welcomed, there has been a declining trend in bobwhite abundance since the inception of this survey in 1998, particularly in the Glaciated Plains and Osage Cuestas regions located in the eastern portion of the state (Figures 2). Bobwhite populations in the central and western regions have more stable trends, although populations can fluctuate across years. The statewide index of calling males/stop has declined at a rate of -0.03/year (Figure 2), however this is no longer a statistically significant decline ($P < 0.05$).

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 2011-2014 severely depressed quail populations across much of the state. Early summer rains in 2014 greatly improved

conditions for quail nesting and brood rearing last year. Production appears to have increased across many areas of the state last fall with birds taking advantage of the improved conditions. Kansas had a relatively mild winter which likely did not have widespread negative impacts on overwinter survival. The combination of good production conditions in late summer and the mild winter facilitated the statewide increases coming into this 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. This survey is an index to the spring breeding population and is a measure of production potential, but fall populations are ultimately determined by weather and available habitat through the summer months. 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 good 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 2015. Several routes across the state showed great improvement from 2014 (Table 2), and the population index is higher than it has been in several years for most regions of the state (Table 2, Figure 3). The precipitation last summer improved nesting conditions coming into the spring of 2015 and heavy April and May precipitation should provide enough soil moisture to support vegetation through the brooding season. Heavy rainfall and hail can impact survival and reproduction, there has already been several of these localized events 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 in September.

Table 1. Northern bobwhite survey routes and observers in Kansas, 2015.

Route	County(s)	Observer	Route	County(s)	Observer
1	Allen	Jason Deal*	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	Zackary Cordes*
7	Chase	Rich Schultheis*	46	Neosho	Jeremy Stenstrom*
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	Manuel Torres*	59	Rush	Jason Wagner*
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	Anna Walkowiak*	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	Eric Wiens*
34	Lyon	Clint Bowman	72	Hamilton	Daryl Fisher
35	Marshall	Megan Smith*	73	Grand Osage WA	Rob Rigglin
36	McPherson	Kyle McDonald*	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	Scott Purdon*

*New observer for 2015

Table 2. Regional Changes in calling Bobwhite males per stop (M/S), 2015.

Route	2014 M/S	2015 M/S	% Δ ^a	Route	2014 M/S	2015 M/S	% Δ ^a
<u>Flint Hills</u>				<u>Smoky Hills</u>			
06 Butler	3.55	4.90	38	04 Barton	2.09	1.55	-26
07 Chase ^b	1.09	2.30	111	12 Cloud	4.45	3.50	-21
08 Chautauqua	3.56	5.20	46	18 Ellis	1.00	3.30	230
11 Clay	3.09	2.64	-15	19 Ellsworth	0.73	1.09	50
14 Cowley	5.82	7.00	20	24 Hodgeman	0.00	0.27	NA
17 Elk	2.80	4.36	56	25 Hodgeman ^b	0.64	0.00	-100
22 Greenwood	2.20	4.09	86	27 Jewell	0.82	1.55	89
34 Lyon	NA	1.82	NA	32 Lincoln	0.27	2.70	890
41 Morris	1.70	2.55	50	36 McPherson ^b	1.27	2.18	71
42 McPherson_Marion	2.50	3.00	20	39 Mitchell	0.73	0.40	-45
53 Pottawatomie	1.40	0.27	-81	48 Osborne	0.91	2.82	210
58 Riley	2.36	4.00	69	49 Ottawa	1.00	2.00	100
69 Wabaunsee	1.73	1.70	-2	52 Phillips	1.55	1.27	-18
75 Tuttle Cr WA	1.82	NA	NA	57 Rice	2.09	5.30	153
Region	2.79	3.61	29*	59 Rush	1.00	2.27	127
<u>Glaciated Plains</u>				60 Russell	2.36	2.55	8
02 Atchison_Doniphan	0.36	0.36	0	61 Saline	2.27	1.27	-44
16 Douglas	2.27	3.67	61	64 Smith	0.67	1.50	125
26 Jefferson_Jackson	6.91	4.09	-41	68 Trego	1.14	1.64	43
31 Leavenworth	0.14	0.55	282	70 Washington	2.64	3.18	21
35 Marshall	1.91	1.82	-5	74_WilsonWA	1.36	3.27	140
45 Nemaha ^b	4.00	3.00	-25	Region	1.44	2.18	51*
62 Shawnee	2.00	4.38	119	<u>South-Central Prairies</u>			
76 Perry Wa	3.55	5.36	51	03 Barber	3.75	4.30	15
77 Clinton WA Wak ^b	NA	0.88	NA	10 Clark	1.73	3.73	116
Region	2.54	3.07	21	23 Harvey	1.00	0.64	-36
<u>Osage Cuestas</u>				29 Kingman	1.25	2.90	132
01 Allen ^b	1.89	3.64	93	30 Kiowa	1.27	2.73	114
05 Bourbon	0.82	1.64	100	50 Pawnee	2.64	3.64	38
09 Cherokee	0.73	0.45	-38	51 Pawnee	0.45	1.45	220
13 Coffey	1.82	1.45	-20	54 Pratt	1.82	3.67	102
15 Crawford	3.70	2.36	-36	56 Reno	3.64	4.64	28
33 Linn	0.50	0.67	33	65 Stafford	1.50	3.55	137
38 Miami	1.00	3.40	240	67 Sumner	3.09	2.00	-35
40 Montgomery	2.80	3.73	33	Region	2.01	3.02	50*
46 Neosho ^b	1.18	2.75	133	<u>Southern High Plains</u>			
47 Osage	NA	1.91	NA	20 Finney ^b	0.67	4.40	560
71 Woodson ^b	2.73	1.91	-30	21 Ford	1.50	0.45	-70
72 Grand Osage WA	0.09	0.40	340	37 Meade	0.90	0.91	1
Region	1.43	1.76	23	43 Morton	4.91	10.82	120
<u>Northern High Plains</u>				44 Morton	7.56	10.55	40
55 Rawlins	0.09	0.73	700	66 Stanton	0.00	0.00	0
63 Sheridan	0.10	0.18	82	73_Hamilton	0.18	2.36	1200
Region	0.10	0.45	350	Region	2.51	4.18	67
				STATEWIDE	1.95	2.75	41*

*Values are significant at a $P \leq 0.10$ level

^a% Δ = percent change

^bNew observer in 2014; not included in regional or state averages

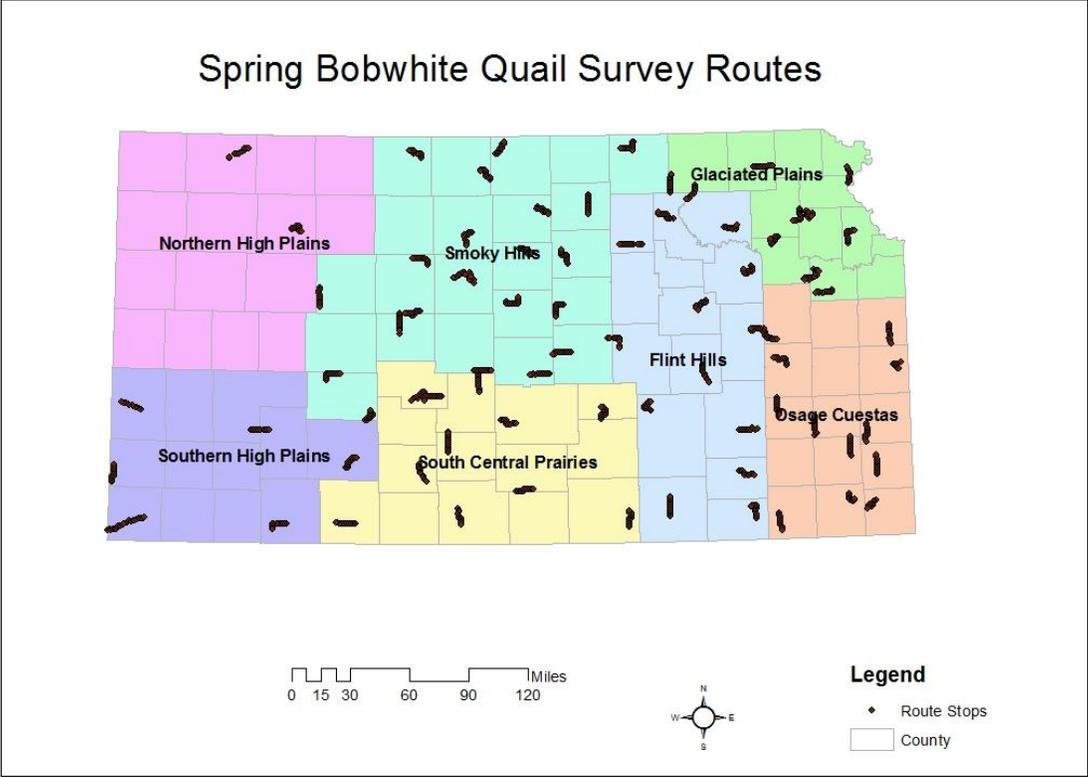


Figure 1. Locations of Bobwhite Survey listening stops within the 7 Kansas Small Game regions.

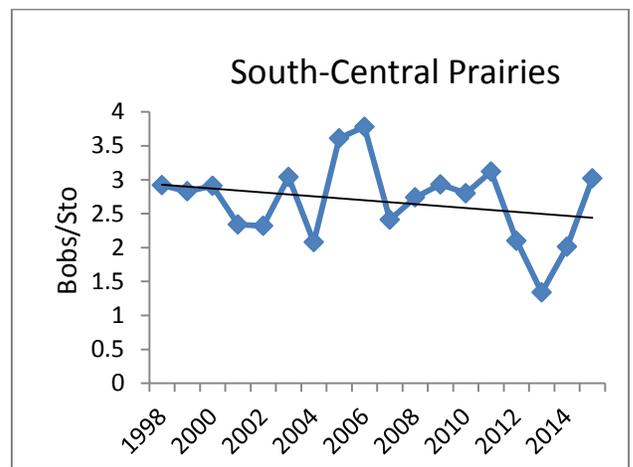
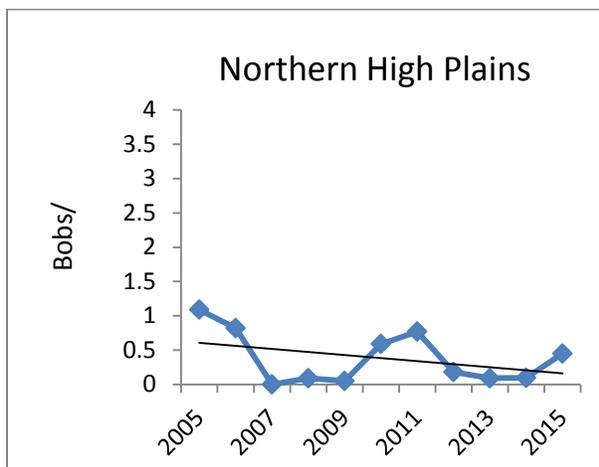
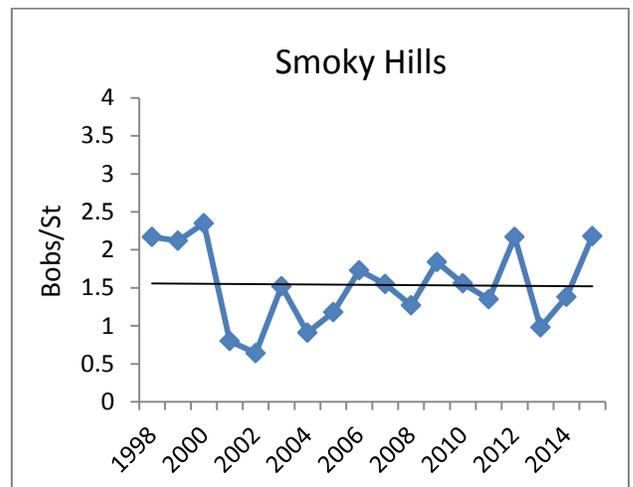
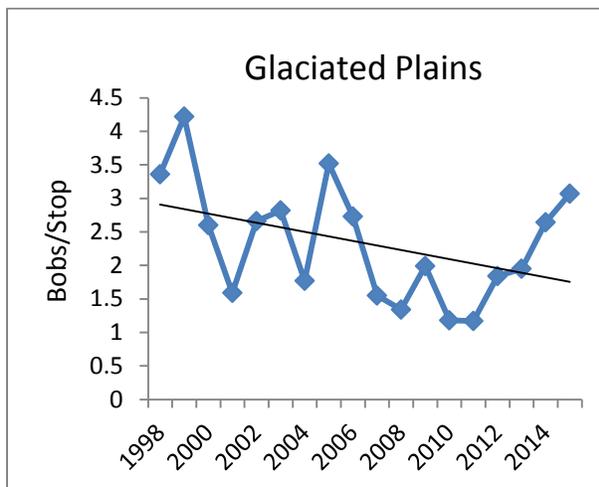
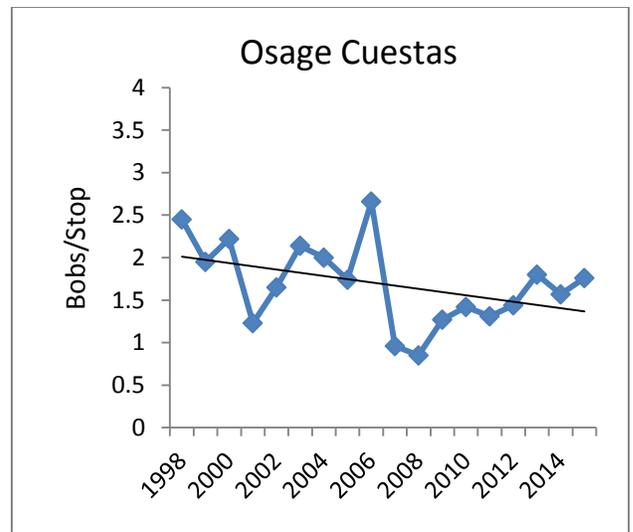
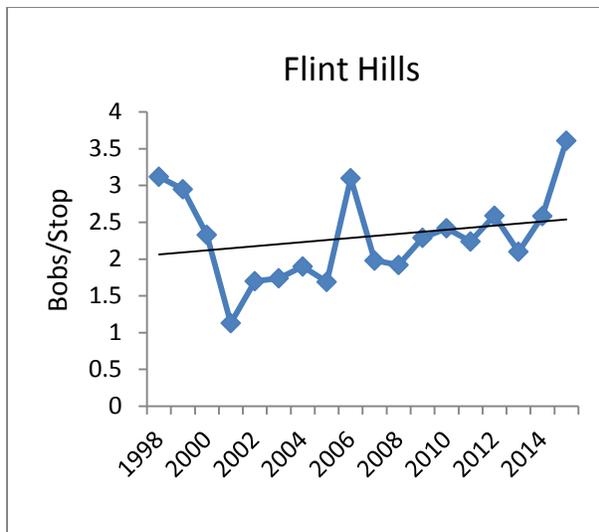


Figure 2. Mean number of northern bobwhites heard per survey stop within Kansas' 7 management regions and statewide, 1998-2015. These data can only be used to approximate long-term trends because the same set of routes was not surveyed in every year.

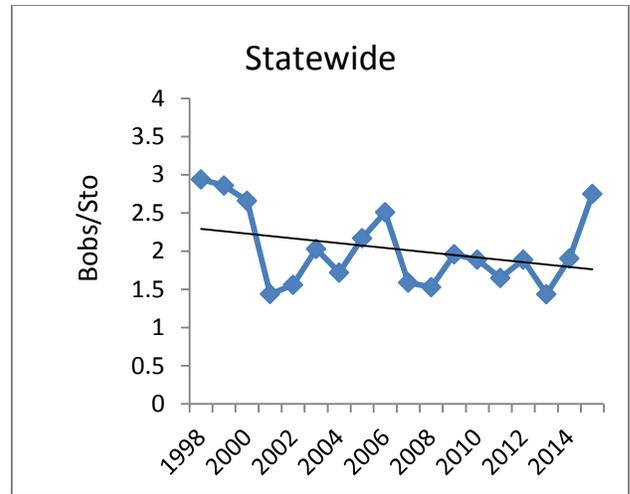
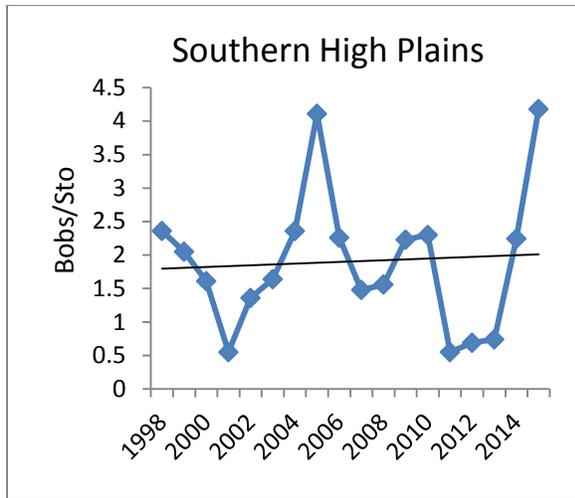


Figure 2. continued.

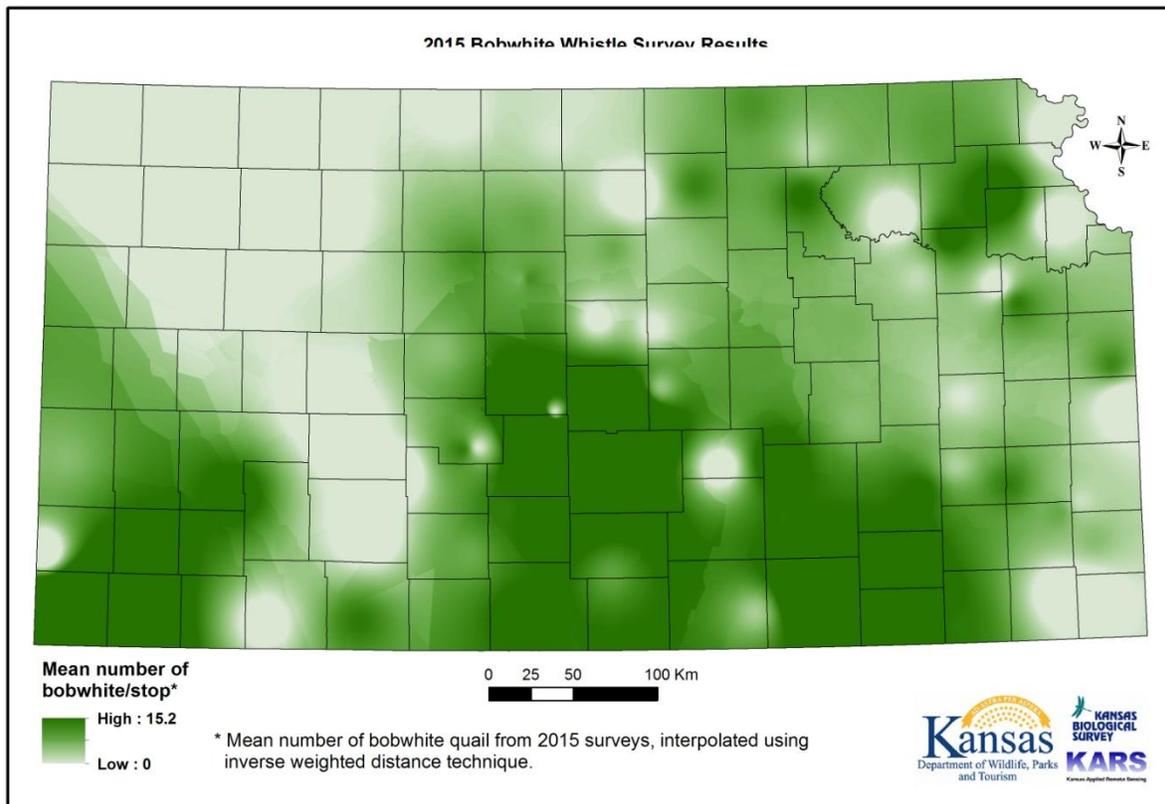


Figure 3. Bobwhite breeding population index interpolated from route-specific indices across Kansas, 2015.

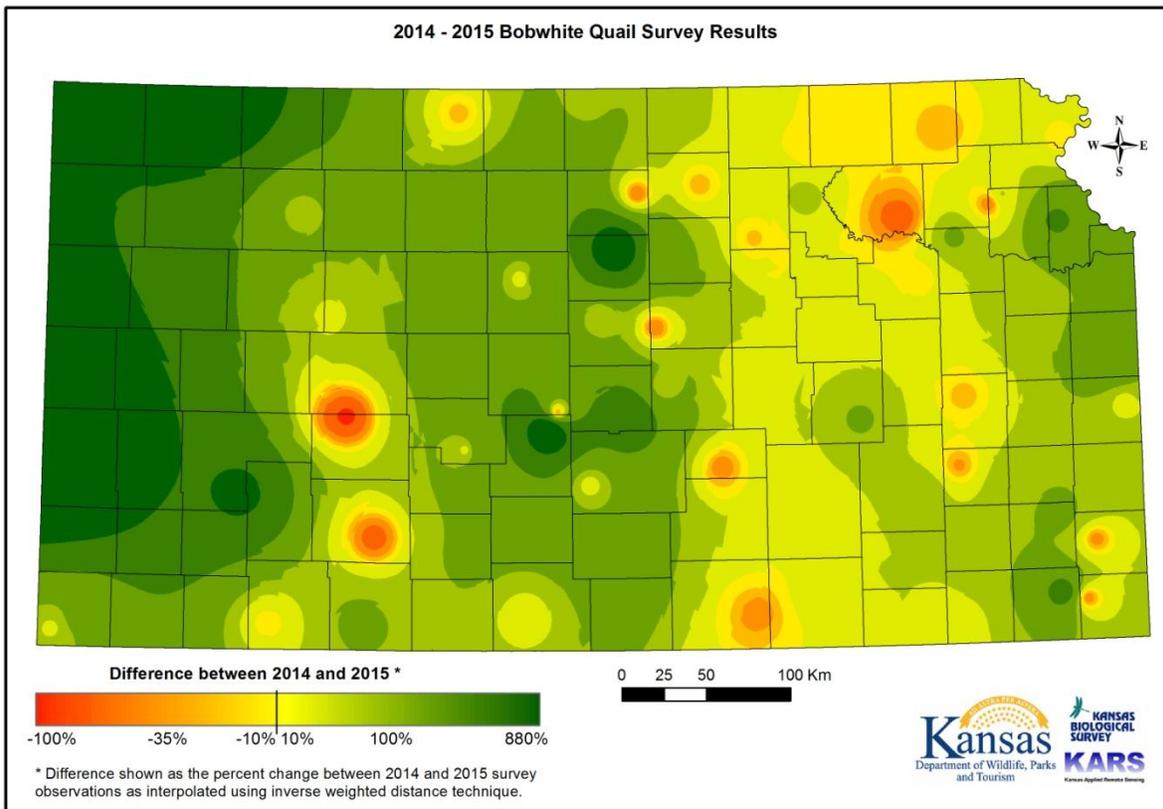


Figure 4. Relative change in Bobwhite breeding population index from 2014 to 2015 interpolated from route-specific indices across Kansas.