

2022 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 routes were established and surveyed annually from 1998 - 2005. Prior to the 2006 survey, the distribution of routes was adjusted to provide better coverage of the entire state, and thus a more accurate representation of bobwhite densities. This was accomplished by adding 16 new routes in areas not previously surveyed and eliminating 10 routes from areas where effort was clustered. Since then routes have occasionally been added or removed as necessary to supply the most representative data within staff availability. In 2021, observers were asked to survey 78 established routes during the 1-16 June survey period, starting at sunrise (Table 1). 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 was used to draw inter-annual comparisons. Additionally, a linear regression of the statewide M/S estimate since the 1998 establishment of the survey to evaluate longterm trend in this index. All indices and analyses were calculated for each of the 7 small game regions (Figure 1).

Inverse Distance Weighting is a mapping technique that can be used to interpolate data between survey points, providing estimates 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 is useful for large-scale interpretation of statewide data for regional

comparisons. Inverse Distance Weighting was used by assigning the route-specific whistle index to the centroid of each route. All sampled routes were used to extrapolate data throughout Kansas.

RESULTS

Observers surveyed 77 of the assigned routes during 2022 for a statewide index of 2.74 calling males per stop. Among the 70 comparable routes, the 2022 statewide index to the breeding bobwhite population was 7% higher than in 2021 (Table 2) which was not a statistically significant change. There was a statistically significant ($P < 0.10$) increases in the average number of calling males per stop in the Smoky Hills (20%) and South Central Prairies (21%) regions from 2020 to 2021 (Table 2). There were no regions that showed statistically significant ($P < 0.10$) decreases in the average number of calling males per stop this year.

The statewide calling males/stop index has shown an increase at a rate of 0.025 calling males/year over 25 years (Figure 2, Statewide), however this is not a significant rate of increase ($P > 0.05$). The rate of change has been highly impacted by large fluctuations in the indices through time associated with the boom and bust cycles of bobwhite quail. The current index is slightly above average following an extended population boom associated with habitat improvements as conditions improved from the 2011-14 drought. While recent statewide increases are welcomed, the Glaciated Plains and Osage Cuestas regions of eastern Kansas (Figure 2), that were historically considered strongholds for bobwhite, continue to struggle. These regions saw slight declines again this year and are back below long-term average. Despite the indices improvements in recent years the long-term average in the Glaciated Plains region still indicates a long-term declining trend associated with habitat loss during the timeframe. Bobwhite populations in the central and western regions have displayed more stable to increasing long term trends.

DISCUSSION

Spring whistle counts are considered an index to the breeding population. As such, they reflect a combination of the previous breeding season's production and overwinter survival. Vegetation response coming out of the drought in 2014 created conditions that were good to excellent for production which have been maintained for several consecutive years. Quail abundance responded as a result, increasing to high densities. The weedy conditions produced from this event have begun to mature and we are likely returning to more pre-drought habitat and associated quail densities as indicated by index lower than the 5 year average. However, densities have remained strong compared to long term average (Figure 2). Kansas had a relatively mild winter of 2021/22, with limited potential to impact overwinter survival. There were a few storm events with heavier snowfall that had potential to have localized impacts.

While the population trajectory is still increasing across much of the state, largescale population declines began well before the inception of this survey in 1998. Historically, the eastern regions (Glaciated Plains and Osage Cuestas) produced the highest densities of bobwhites in the state. Both regions remain below the other major quail regions, and the Glaciated Plains continues to indicate an overall decline in bobwhite abundance. Weather conditions and habitat recovery over the last several years have provided high quality conditions for quail across the state, but long-term landscape level changes (e.g., reduced quality and quantity of habitat) that caused populations to decline still exist and will likely contribute to future population declines. This will likely be exasperated by changes in the conservation programs in the Farm Bill, most notably CRP. Recent population increases have given us an opportunity to promote conservation practices that benefit quail and other grassland wildlife and capitalize on revitalized interest in managing for upland game birds.

It is important to understand that annual changes to the breeding population do not predict quality of the upcoming hunting season. The fall bobwhite population will predominantly depend 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 conditions through the summer months. Localized bobwhite populations can increase nearly 300% from spring to fall when conditions are suitable for production. Entering spring with a larger breeding population creates the potential for a larger population increase 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. Likewise, areas with high spring densities can have low fall densities in the event of poor conditions.

The hunting outlook currently is unpredictable for fall 2022. Several routes across the state showed large changes from 2020, with densities increasing across much of the Central regions of Kansas (Table 2), and the statewide population index remained above average for this survey (Table 2, Figure 3). While conditions were very dry coming into the spring some timely rainfall greatly improved nesting conditions for quail. We have experienced extremely hot dry weather this summer that may impact chick survival. 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, 2022.

Route	County(s)	Observer	Route	County(s)	Observer
1	Allen	Jason Deal	41	Morris	Brent Konen
2	Atchinson/Doniphan	Tyler Warner	42	McPherson/Marion	Jeremy Amos
3	Barber	Logan Shoup	43	Morton	Kraig Schultz
4	Barton	Logan Shoup	44	Morton	Kraig Schultz
5	Bourbon	Justin Harbit	45	Nemaha	Ben Couchman
6	Butler	Jeff Rue	46	Neosho	Travis Ratliff
7	Chase	Kent Fricke	47	Osage	Matt Peek
8	Chautauqua	Evan Orr*	48	Osborne	Jeff Prendergast
9	Cherokee	David Shanholtzer	49	Ottawa	Pat Riese
10	Clark	Jon Zuercher	50	Pawnee	Logan Shoup
11	Clay	Clint Thornton	51	Pawnee	Tom Bidrowski
12	Cloud	Matt Farmer	52	Phillips	Eric Wiens
13	Coffey	Alex Lyon	53	Pottawatomie	Bryon Brown
14	Cowley	Kurt Grimm	54	Pratt	Todd Gatton
15	Crawford	Logan Martin	55	Rawlins	Kevin Klag
16	Douglas	Tim Urban	56	Reno	Keith Murrow
17	Elk	Victoria Cikanek	57	Rice	Steve Adams
18	Ellis	Andy Nelson	58	Riley	Corey Alderson
19	Ellsworth	James Svaty	59	Rush	Jason Wagner
20	Finney	Jared King*	60	Russell	Megan Rohweder
21	Ford	Aaron Baugh	61	Saline	Pat Riese
22	Greenwood	Victoria Cikanek	62	Shawnee	Darin Porter
23	Harvey	Charlie Cope	63	Sheridan	Abby McGuire
24	Hodgeman	Aaron Baugh	64	Smith	Chris Lecuyer
25	Hodgeman	Jared King*	65	Stafford	Wes Sowards
26	Jefferson/Jackson	Tyler Warner	66	Stanton	Kraig Schultz
27	Jewell	Brandon Tritch	67	Sumner	Jeff Rue
29	Kingman	Jon Beckman	68	Trego	Kent Hensley*
30	Kiowa	Logan Shoup	69	Wabaunsee	Darin Porter
31	Leavenworth	Andy Friesen	70	Washington	Clint Thornton
32	Lincoln	James Svaty	71	Woodson	Jordon Wooderson
33	Linn	Jacob Coulter	72	Grand Osage WA	Rob Riggins
34	Lyon	Luke Bering*	73	Hamilton	Kurt Meier
35	Marshall	Megan Smith	74	Wilson WA	Scott Thomasson
36	McPherson	Jason Black	75	TuttleCreek WA	Nathan Henry
37	Meade	Jon Zuercher	76	Perry WA	Andrew Page
38	Miami	Andy Friesen	77	Clinton WA	Justin Hamilton
39	Mitchell	Brandon Tritch	79	Edwards R9	Lucas Kramer
40	Montgomery	Seth Lundgren*	80	El Dorado WA	Tyler Burt

*New observer for 2022

Table 2. Regional Changes in calling Bobwhite males per stop (M/S), 2022.

Route	2021 M/S	2022 M/S	% Δ ^a	Route	2021 M/S	2022 M/S	% Δ ^a
<u>Flint Hills</u>				<u>Smoky Hills</u>			
06 Butler	6.55	5.00	-24	04 Barton	5.36	5.45	2
07 Chase	2.09	0.64	-70	12 Cloud	2.22	NA	NA
08 Chautauqua ^b	3.82	3.33	-13	18 Ellis	2.91	2.36	-19
11 Clay	3.73	4.36	17	19 Ellsworth	2.09	1.82	-13
14 Cowley	5.18	4.18	-19	24 Hodgeman	0.45	1.09	140
17 Elk	4.27	4.82	13	25 Hodgeman ^b	2.00	3.00	50
22 Greenwood	4.73	3.45	-27	27 Jewell	2.09	2.91	39
34 Lyon ^b	4.50	3.45	-23	32 Lincoln	1.91	2.36	24
41 Morris	1.55	1.91	24	36 McPherson	3.63	4.09	13
42 McPherson_Marion	3.55	4.00	13	39 Mitchell	2.36	3.00	27
53 Pottawatomie	5.91	6.55	11	48 Osborne	0.82	2.45	200
58 Riley	4.27	3.91	-9	49 Ottawa	1.82	1.91	5
69 Wabaunsee	3.33	5.50	65	52 Phillips	2.36	2.36	0
75 Tuttle Cr WA	2.27	5.55	144	57 Rice	3.00	3.80	27
Region	3.95	4.16	5	59 Rush	3.91	4.18	7
<u>Glaciated Plains</u>				60 Russell	3.82	5.73	50
02 Atchison_Doniphan	0.73	1.00	38	61 Saline	1.00	1.91	91
16 Douglas	2.45	2.55	4	64 Smith	1.90	1.82	-4
26 Jefferson_Jackson	2.36	2.55	8	68 Trego ^b	2.90	0.30	-90
31 Leavenworth	0.30	0.36	21	70 Washington	1.91	1.33	-30
35 Marshall	3.22	4.56	41	74 WilsonWA	4.18	5.82	39
45 Nemaha	2.82	1.45	-48	Region	2.53	3.02	20*
62 Shawnee	5.86	3.00	-49	<u>South-Central Prairies</u>			
76 Perry WA	3.73	4.00	7	03 Barber	5.09	6.64	30
77 Clinton WA Wak	0.56	0.60	8	10 Clark	0.64	1.09	71
Region	2.45	2.23	-9	23 Harvey	0.63	0.10	-84
<u>Osage Cuestas</u>				29 Kingman	1.00	0.73	-27
01 Allen	1.82	1.64	-10	30 Kiowa	3.27	5.00	53
05 Bourbon	0.63	0.56	-11	50 Pawnee	6.27	7.45	19
09 Cherokee	0.64	0.90	41	51 Pawnee	2.50	2.40	-4
13 Coffey	1.45	1.09	-25	54 Pratt	2.36	3.90	65
15 Crawford	2.18	2.44	12	56 Reno ^b	2.55	2.64	4
33 Linn	0.45	0.45	0	65 Stafford	1.20	2.73	127
38 Miami	1.55	1.10	-29	67 Sumner	4.55	3.82	-16
40 Montgomery ^b	3.18	3.09	-3	79 Edwards	5.10	6.10	20
46 Neosho	1.80	0.73	-60	Region	2.93	3.55	21*
47 Osage	2.64	2.55	-3	<u>Southern High Plains</u>			
71 Woodson	2.60	2.90	12	20 Finney ^b	3.9	2.78	-29
72 Grand Osage WA	0.22	1.55	598	21 Ford	0.55	1.30	138
Region	1.45	1.44	-1	37 Meade	3.57	1.33	-63
<u>Northern High Plains</u>				43 Morton	3.45	0.55	-84
55 Rawlins	0.18	0.64	250	44 Morton	2.45	1.18	-52
63 Sheridan	0.18	1.18	550	66 Stanton	0.18	0.80	340
Region	0.18	0.91	400	73 Hamilton	3.36	3.09	-8
				Region	2.26	1.38	-39
				STATEWIDE	2.57	2.75	7

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

^a % Δ = percent change

^b New observer in 2022; not included in regional or state averages

NA = Not available, route not completed; NE = % change Not Estimable, Denominator = zero;

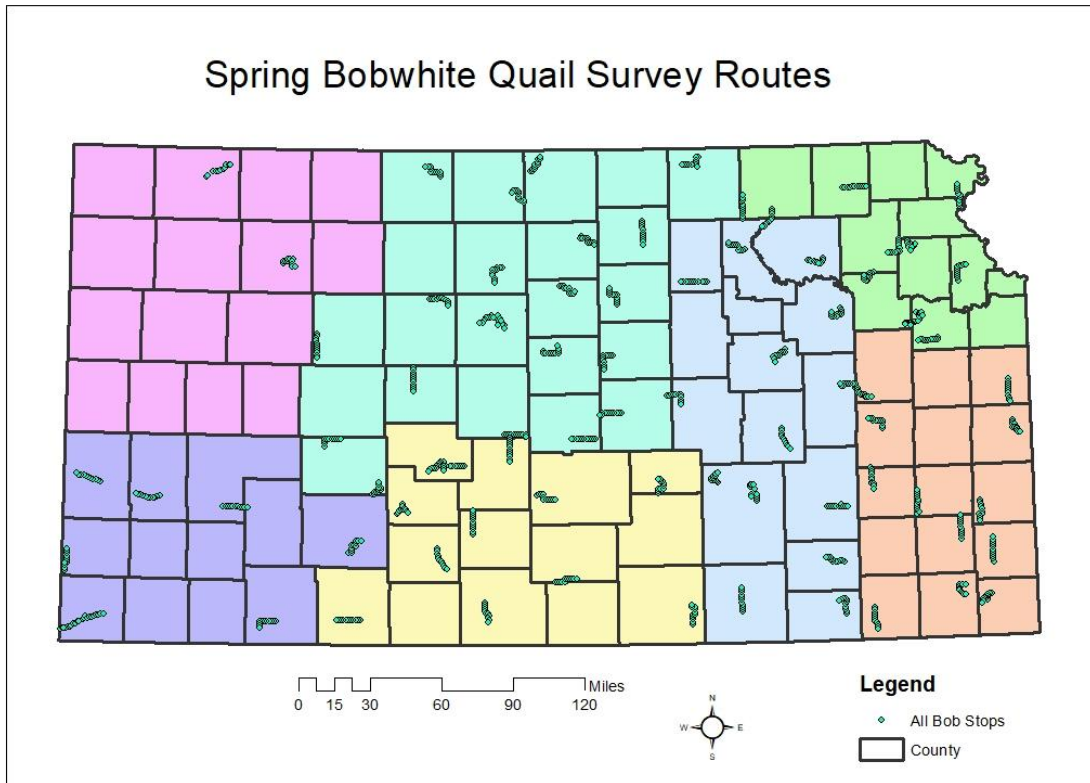


Figure 1. Locations of Bobwhite Survey listening stops within the 7 Kansas Small Game regions.

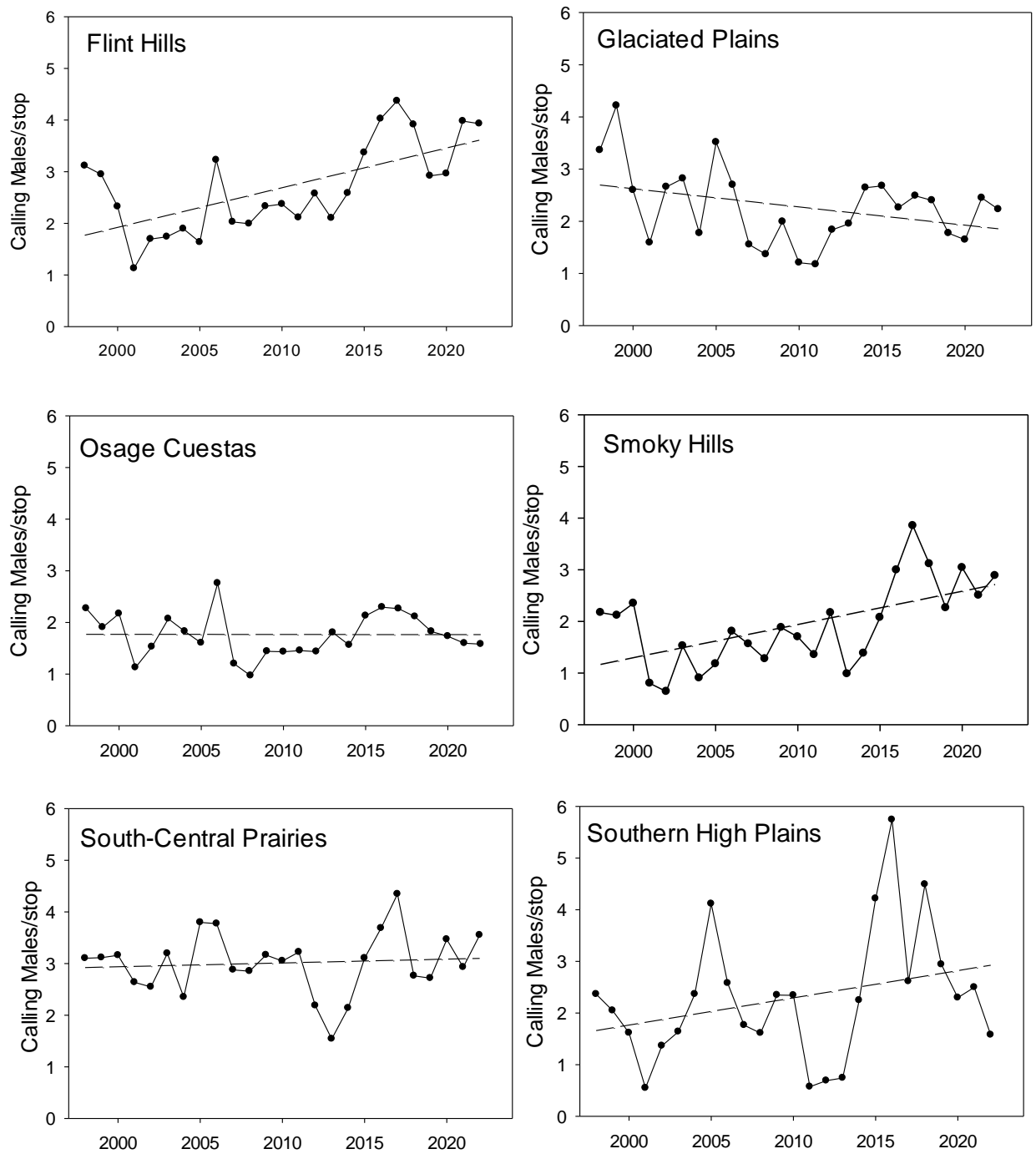


Figure 2. Mean number of northern bobwhites heard per survey stop within Kansas' 7 management regions and statewide, 1998-2021. These data can only be used to approximate long-term trends because the same set of routes was not surveyed in every year.

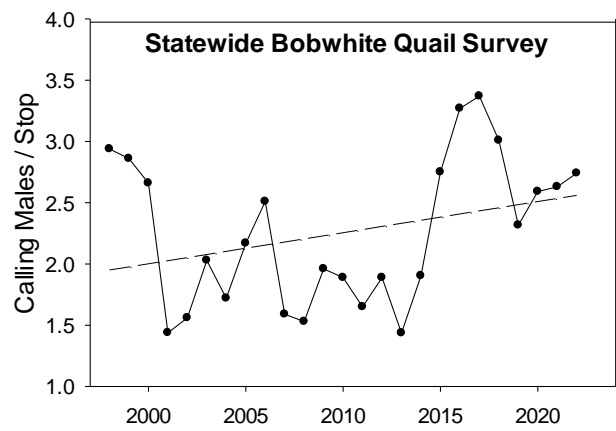
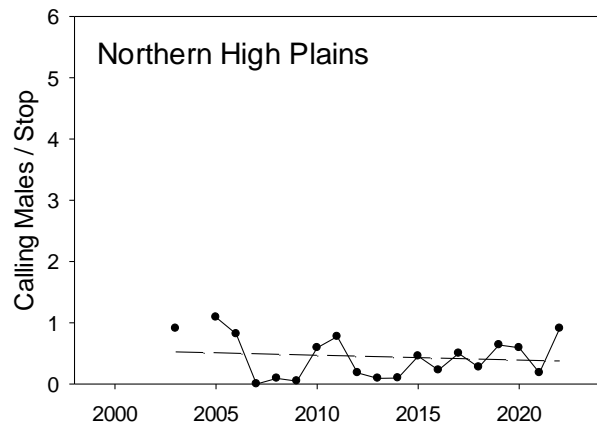


Figure 2. continued

2022 Bobwhite Whistle Survey

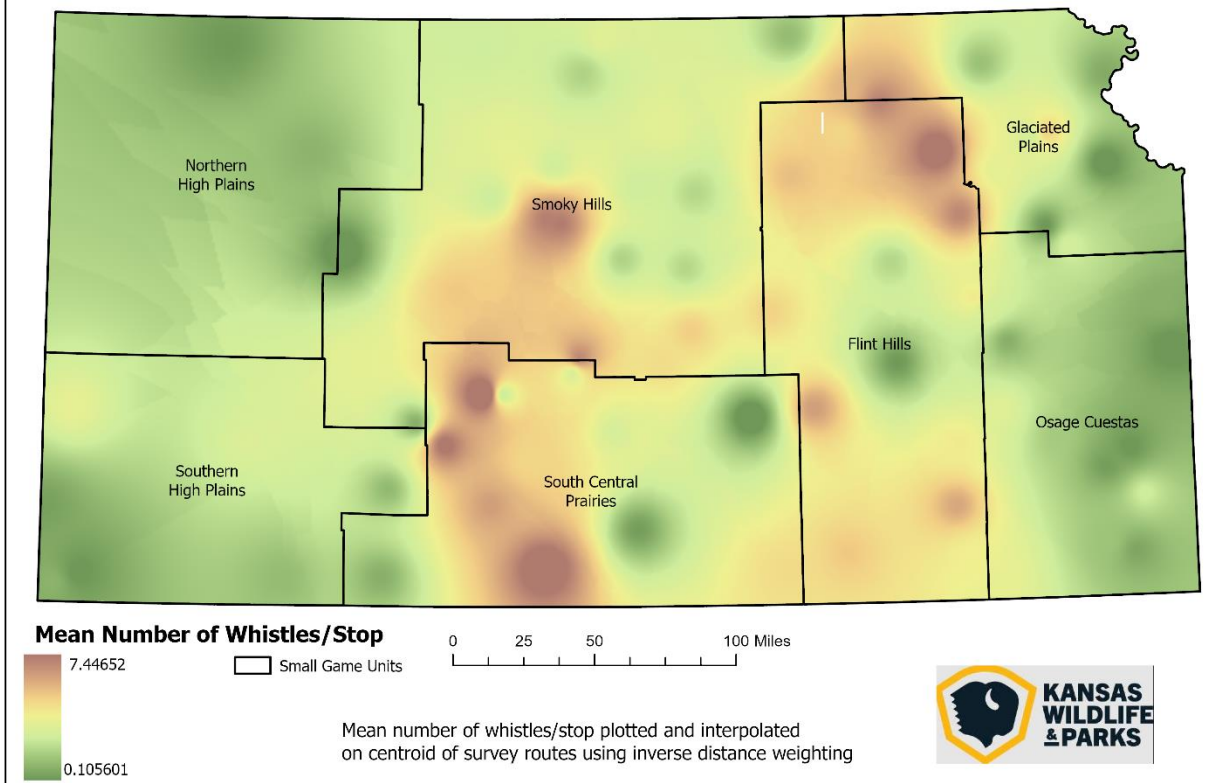


Figure 3. Bobwhite breeding population index interpolated from route-specific indices across Kansas, 2022.

2022 Bobwhite Whistle Survey

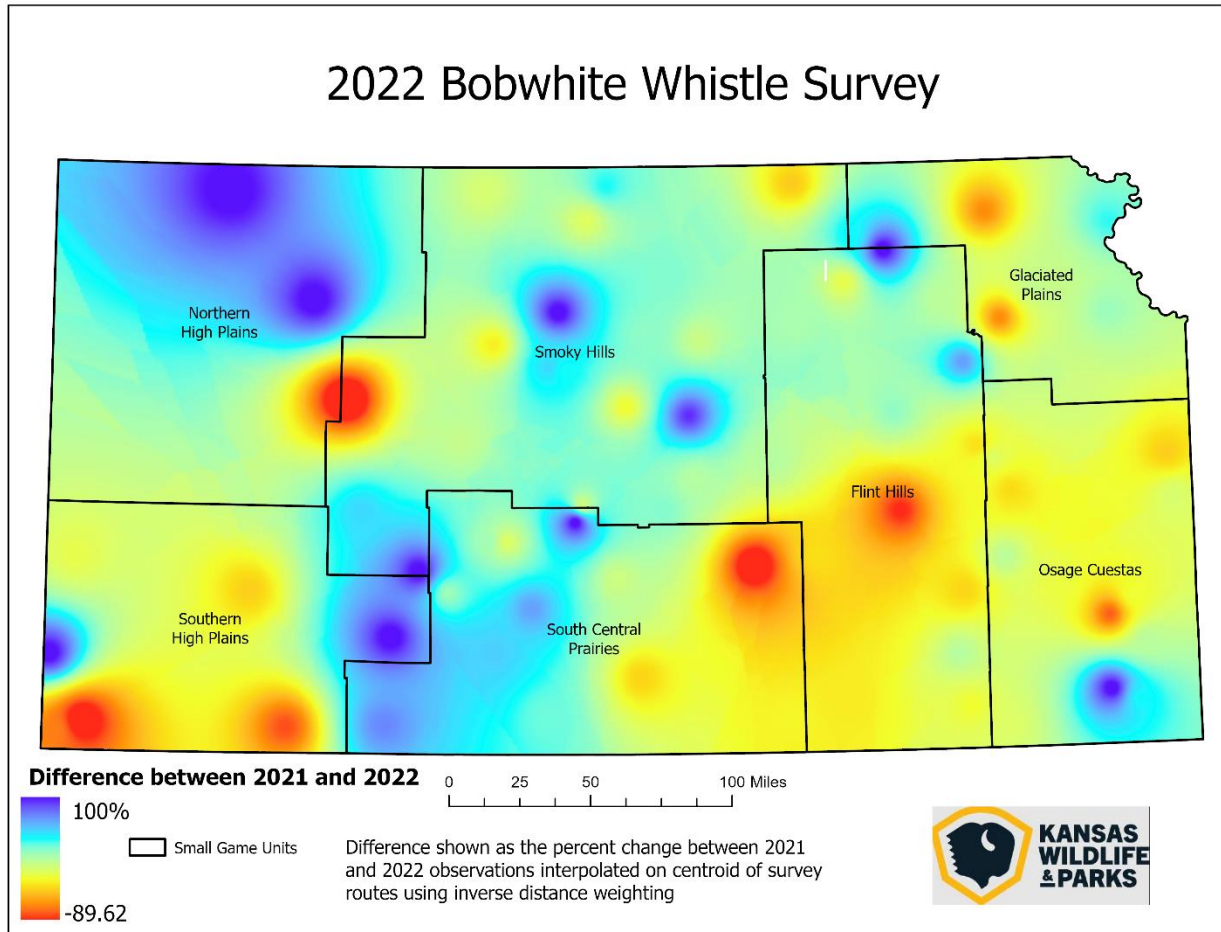


Figure 4. Relative change in Bobwhite breeding population index from 2021 to 2022 interpolated from route-specific indices across Kansas.