PHEASANT CROWING SURVEY - 2022

PERFORMANCE REPORT
STATEWIDE WILDLIFE RESEARCH AND SURVEYS

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KANSAS PHEASANT CROWING SURVEY – 2022
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INTRODUCTION

The Kansas Department of Wildlife, Parks, and Tourism (KDWPT) collects breeding population data for pheasant (*Phasianus colchicus*) by conducting crow counts throughout the pheasant range in the state. Measurable wild pheasant populations do not occur in south-east Kansas (Osage Cuestas Region). Pheasants are an extremely important wildlife resource for Kansas, and these indices help monitor population change through time.

METHODS

The survey period was from April 25 through May 15, 2021. Pheasant routes are ~20 mile transects, with at least 2 miles between each of the 11 stops. At stops, observers listen for 2 minutes and count all the audible 2-note (syllable) crows heard from male pheasants. The Pheasant Crow Survey Index (PCSI) is the mean number of crows per 2-minute stop for each route. The first stop begins 45 minutes before sunrise and continues through the last stop. Noise interference is taken into consideration, and data are censored if the observer feels noise is severely inhibiting their ability to count crows.

The results of the 2022 survey and comparisons to the 2021 data are presented in Table 1. All 64 established routes assigned for 2022 and 61 of the 64 were successfully completed. Range wide and regional trends since the survey's 1997 initiation are shown in Figure 1. Location of routes within the state are shown in Figure 2.

Data Analysis
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. A two-tailed test with an alpha level 0.10 was used to identify statistically significant differences between years at regional and statewide scales. Routes that do not have consistent observers are removed from analysis of inter-annual comparisons to remove observer bias in analysis.

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 PCSI to the centroid of each route. All sampled routes were used to extrapolate data throughout Kansas' pheasant range (Figure 3). For comparison, the interpolated percent change of the PCSI the previous year's survey is also included where observers are consistent (Figure 4).

RESULTS

Range-wide
The 2022 PCSI was 9.38 crows per stop across all 61 surveyed routes. Among the 56 comparable routes (sampled both years by same observer), there was no significant change ($P = 0.326$) in the statewide mean from 2021 (7%). The PCSI decreased on 30 of the comparable routes and increased or remained the same on the remaining 26 routes relative to 2021 (Table 1).

Flint Hills: Of the 7 established routes 6 were completed. The regional PCSI was 1.58, indicating no significant change from 2021 ($P = 0.813$). **Glaciated Plains:** Of the 6 established routes 5 were completed. The regional PCSI was 0.42, indicating no significant change from 2021 ($P = 0.465$). **Northern High Plains:** Of the 12 established routes 11 were completed. The regional PCSI was 10.98, indicating no significant change from 2021 ($P = 0.186$). **Smoky Hills:** Of 20 established routes, 19 were

completed, the regional PCSI was 10.24, indicating no significant change from 2021 ($P = 0.985$). **Southern High Plains:** Of the 7 established survey routes 7 were completed in this region. The regional PCSI was 10.18, indicating no significant change from 2021 ($P = 0.258$). **South-Central Prairies:** All 12 routes were completed this year. The regional PCSI was 12.08 indicating a significant increase from 2021 ($P = 0.099$).

DISCUSSION

The spring pheasant survey results can represent two important life stages for pheasant populations. Spring surveys can indicate over-winter survival for a population. During extended harsh conditions, winter can be a bottleneck for some upland game populations. However, unlike states in the northern portion of the pheasant range, Kansas rarely has winter weather that is extreme enough to have significant impacts on survival. When overwinter survival is high, spring surveys also reflect the previous breeding season success (i.e., production) for the population. Spring crow counts usually do not predict fall populations well, but rather indicate breeding population potential and habitat suitability over time.

In 2021, spring weather seemed ideal with ample moisture to support habitat and needs of chicks through the primary nesting season. Later in summer the dry conditions that plagued most of the great plains settled into Kansas as well. Initially we expected that this should not have negatively affected production because timing was after primary nesting season for pheasants. However, the summer brood survey indicated there were declines rather than increases as expected. This leads to questions about the ability of pheasants to quickly respond to improved conditions, like they did historically, under current landscape conditions. CRP enrollments continue to decline after another round of expirations outpaced enrollment. CRP enrollment in the state is now roughly half of what it was at its peak. As agriculture has continued to intensify, this habitat has become more important to maintaining pheasant populations. Losses of this residual nesting cover as CRP transitions back into cropland or hay production further reduces productive potential, particularly when dry springs limit annual nesting cover. These losses have been exacerbated by changes to the policies governing the emergency use of remaining CRP to allow increased acreage and frequency for emergency use. There are a few practices, such as cover crops, that have a positive impact on populations, but loss of existing habitat is largely outpacing any minimal gains. The declines in the brood survey seem to be at least in part due to survey conditions as the crow index remained unchanged from last year.

Despite the recent decline in Kansas pheasant numbers, populations remain viable across the primary range. Fall pheasant populations are highly dependent on production and survival of young of the year. While habitat conditions were poor coming into this breeding season, recent precipitation has greatly improved conditions across much of the range. The timing of this rainfall was late enough that it is difficult to speculate what production to expect. Brood survey data will be collected in late July and August and summarized in early September. Fall population estimates will be much more accurate once this data is available.

Table 1. Pheasant crow survey routes and observers in Kansas, 2022.

Route	Observer	Route	Observer
Barton	Gene Schneweis	Norton	Luke Winge
Brown-Nemaha	Tyler Warner	Osborne	Chris Lecuyer
Butler-Marion	Charles Cope	Ottawa	Pat Riese
Cheyenne	Abigal McGuire	Pawnee	Logan Shoup
Clark	Jon Zuercher	Pawnee (Irrig)	Tom Bidrowski
Cloud	Brandon Tritsch	Perry WA	Andrew Page
Comanche	Matt Hanvey	Phillips	Mark Shaw
Cowley-Sumner	Vickie Cikanek~	Pratt	Logan Shoup
Decatur	Daniel Howard	Rawlins-Thomas	Kevin Klag
Dickinson-Clay	Clint Thornton	Reno	Keith Murrow
Edwards	Logan Shoup	Republic	Rob Unruh
Ellis	Megan Rohweder~	Rice	Steve Adams
Ellsworth	James Svaty	Riley	Corey Alderson
Finney	Kurtis Meier	Rooks	Joe Lambert
Ford	Aaron Baugh	Rush	Jason Wagner
Gove SW	Matt Schmidt	Scott	Abe Lollar
Graham	Eric Wiens	Sedgwick-Harvey	Charles Cope
Gray	Jared King~	Seward-Haskell	Lazar Kelly
Harper	Jon Beckman	Shawnee	Darin Porter
Hodgeman	Aaron Baugh	Sheridan	Abigal McGuire
Jackson-Jefferson	Tyler Warner	Sherman	Abigal McGuire
Kearny-Hamilton	Kurtis Meier	Smith	Brandon Tritsch
Kingman-Reno	Keith Murrow	Stafford-Barton	Logan Shoup
Lincoln	James Svaty	Stevens	Kraig Schultz
Logan SE	Sean Coleman~	Thomas	Kevin Klag
Marshall	Megan Smith	Trego	Luke Kramer~
McPherson	Jason Black	Tuttle Creek WA	Nathan Henry
McPherson-Marion	Jeff Rue	Wabaunsee	Darin Porter
Mitchell	Chris Lecuyer	Washington	Megan Smith
Morris	Brent Konen	Wichita-Greeley	Kevin Luman
Morton-Stanton	Kraig Schultz	Wilson WA	Scott Thomason
Ness-Lane	Andy Nelson		

Note: ~ new observer for route;

Table 2. Regional changes in pheasant crow counts in Kansas from 2021 to 2022.

Flint Hills

Route	2021 C/S	2022 C/S	% Δ
Butler-Marion**	0.45	NA	NA
Cowley-Sumner**	2.09	7.00	235
Dickinson-Clay	4.09	5.18	27
McPherson-Marion	1.80	2.18	21
Morris	0.55	0.09	-83
Riley	1.00	0.45	-55
Wabaunsee	0.09	0.00	-100
Region Mean	**1.51**	**1.58**	**5**

Glaciated Plains

Route	2021 C/S	2022 C/S	% Δ
Brown-Nemaha	0.56	0.45	-18
Jackson-Jefferson	0.56	0.45	-18
Marshall	0.60	0.82	36
Perry WA	0.82	0.36	-56
Shawnee	0.00	0.00	0
Tuttle Creek WA**	0.80	NA	NA
Region Mean	**0.51**	**0.42**	**-17**

Northern High Plains

Route	2021 C/S	2022 C/S	% Δ
Cheyenne	7.09	8.36	18
Decatur	22.36	20.00	-11
Gove SW	7.60	11.45	51
Graham	22.00	14.82	-33
Logan SE**	5.18	NA	NA
Norton	27.27	19.82	-27
Rawlins-Thomas	7.91	8.18	3
Scott	14.33	18.73	31
Sheridan	8.64	5.82	-33
Sherman	12.18	5.09	-58
Thomas	7.18	4.55	-37
Wichita-Greeley	4.09	4.00	-2
Region Mean	**12.79**	**10.98**	**-14**

Southern High Plains

Route	2021 C/S	2022 C/S	% Δ
Finney	17.09	22.91	34
Ford	16.30	15.50	-5
Gray**	NA	6.09	NA
Kearny-Hamilton	5.45	9.73	78
Morton-Stanton	1.55	1.55	0
Seward-Haskell	3.73	1.85	-50
Stevens	7.55	9.57	27
Region Mean	**8.61**	**10.18**	**18**

Smoky Hills

Route	2021 C/S	2022 C/S	% Δ
Barton	9.18	7.91	-14
Cloud	1.30	0.33	-74
Ellis**	10.45	19.55	87
Ellsworth	2.80	3.18	14
Hodgeman	22.64	18.18	-20
Lincoln	8.18	10.00	22
McPherson	8.82	6.18	-30
Mitchell	13.09	9.18	-30
Ness-Lane	19.91	16.91	-15
Osborne	17.20	13.60	-21
Ottawa	4.73	10.09	113
Phillips	6.50	6.18	-5
Republic	NA	9	NA
Rice	5.45	12.00	120
Rooks	17.09	20.20	18
Rush	20.45	16.64	-19
Smith	12.09	11.55	-5
Trego**	9.09	19.55	115
Washington	1.00	0.64	-36
Wilson WA	4.00	11.36	184
Region Mean	**10.26**	**10.24**	**0**

South-Central Prairies

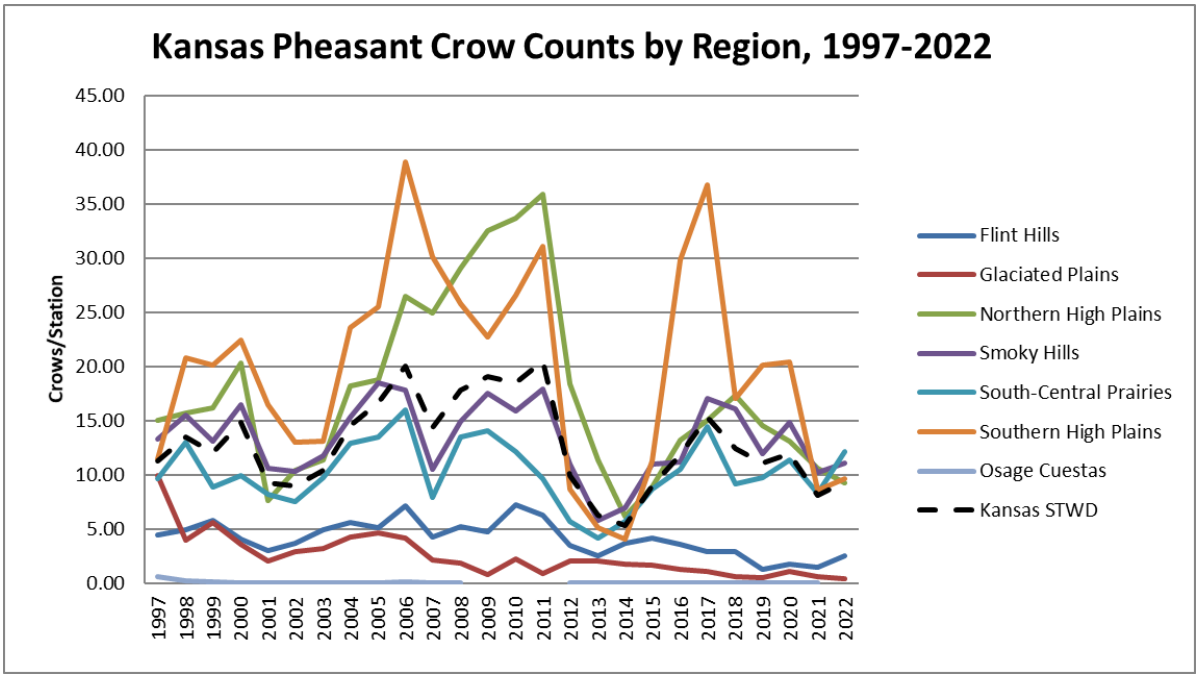
Route	2021 C/S	2022 C/S	% Δ
Clark	2.18	8.82	304
Comanche	0.27	0.18	-33
Edwards	10.73	29.45	175
Harper	2.82	3.18	13
Kingman-Reno	2.91	2.36	-19
Kiowa	10.36	27.91	169
Pawnee	30.64	25.73	-16
Pawnee (Irrig.)	19.27	18.55	-4
Pratt	7.36	6.45	-12
Reno	2.09	6.90	230
Sedgwick-Harvey	0.29	0.29	0
Stafford-Barton	9.91	15.18	53
Region Mean	**8.24**	**12.08**	**47***

Statewide	**8.49**	**9.13**	**7**

*Note: C/S = Mean Crows per Station; % Δ = percent change; * = significant change (P ≤ 0.10), NA = Not available, NE = Not estimable*

**Route not included in regional or state means, info. is presented for descriptive purposes only

Figure 1. Regional trends for pheasant crow survey index in Kansas, 1997-2022.



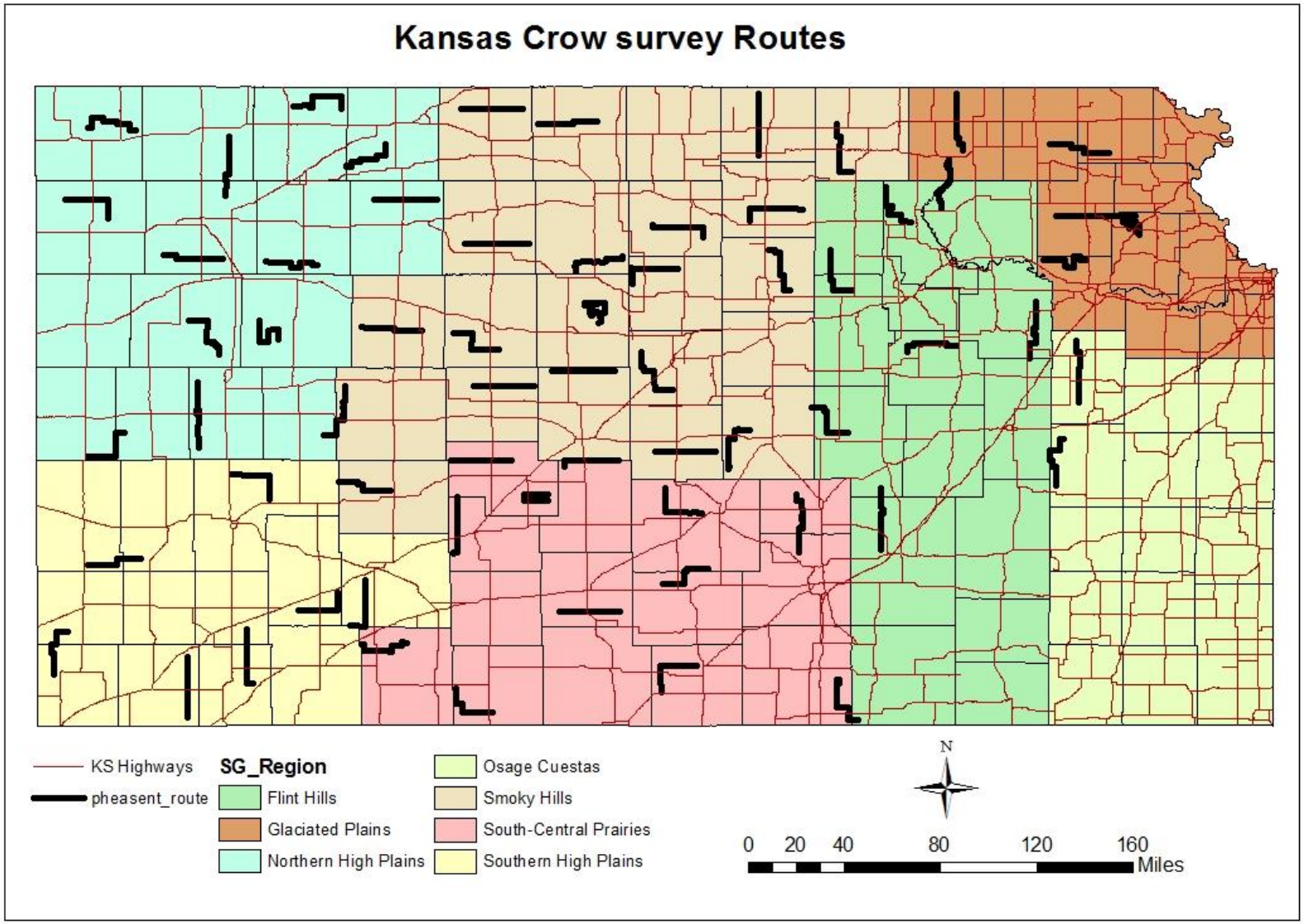


Figure 2. Current pheasant crow survey routes and management region boundaries.

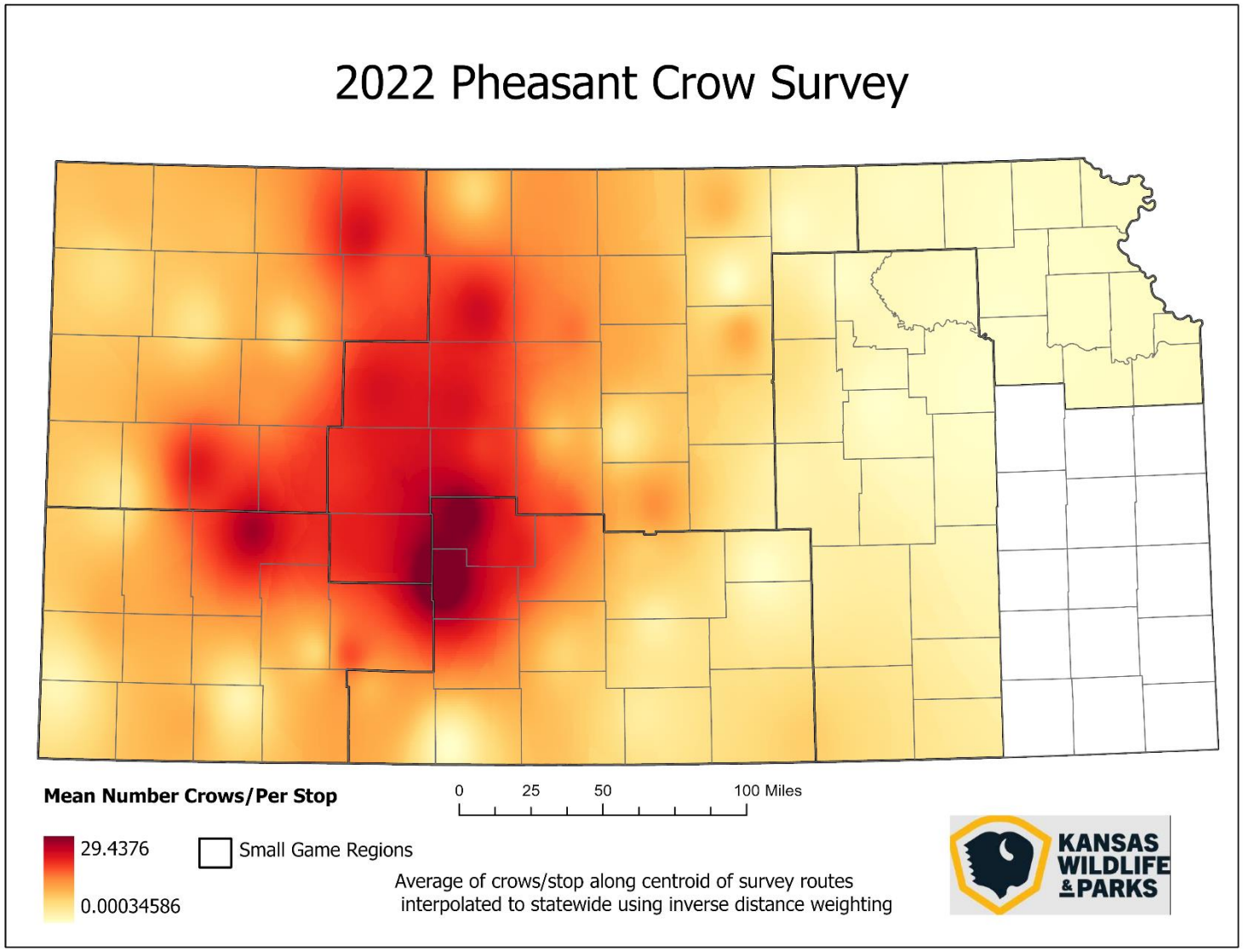


Figure 3. Pheasant breeding population index (crows per station) interpolated from route-specific indices across pheasant range in Kansas, using Inverse Distance Weighting technique, 2022.

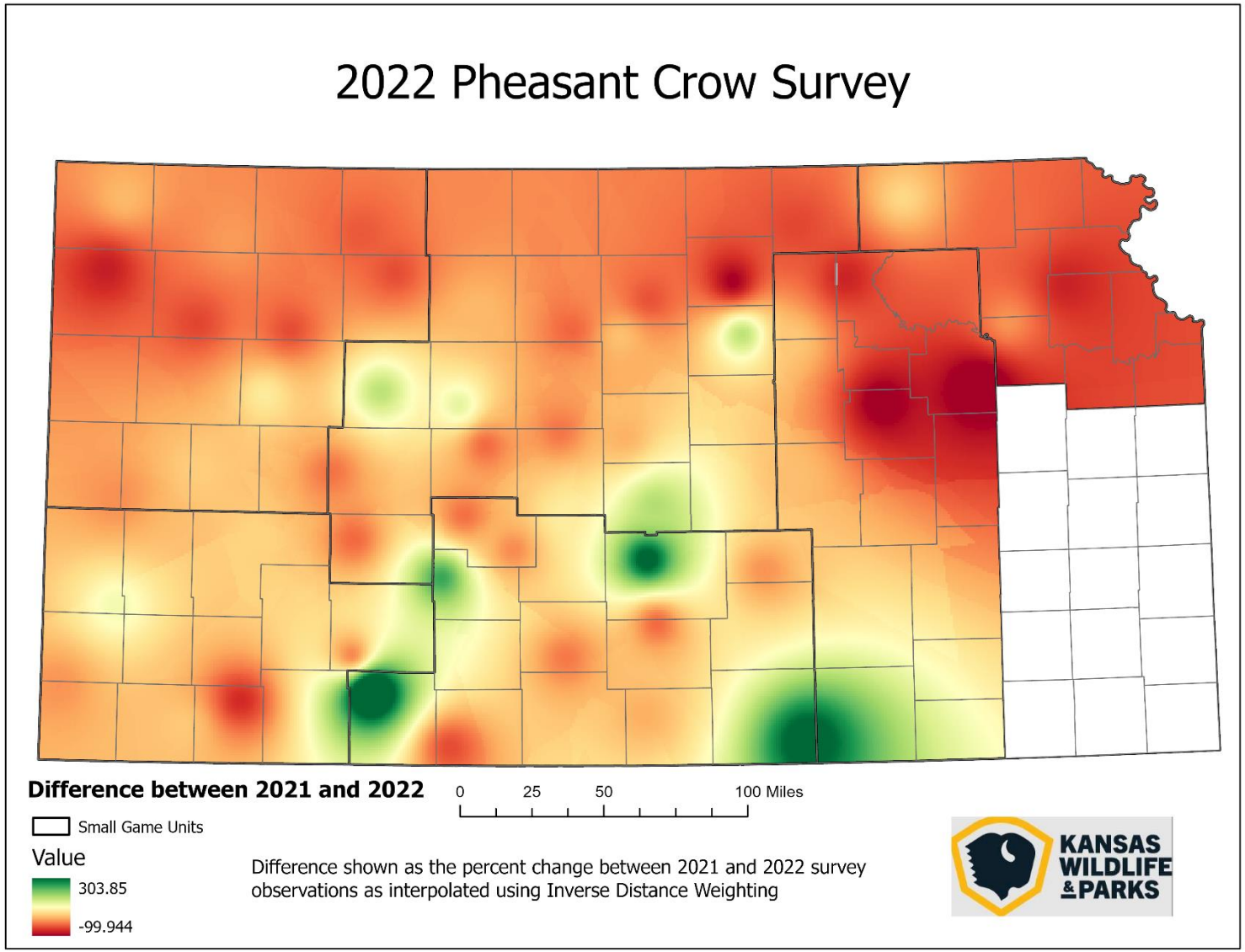


Figure 4. Percent change (2021 to 2022) in pheasant breeding index (crows per station) interpolated across pheasant range in Kansas.