

PHEASANT CROWING SURVEY - 2023

PERFORMANCE REPORT STATEWIDE WILDLIFE RESEARCH AND SURVEYS

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KANSAS PHEASANT CROWING SURVEY – 2023

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Prepared by: Jeff Prendergast

INTRODUCTION

The Kansas Department of Wildlife, Parks, and Tourism (KDWP) 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, 2023. 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 2023 survey and comparisons to the 2022 data are presented in Table 1. All 64 established routes were assigned for 2023 and 62 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 2023 PCSI was 5.91 crows per stop across all 62 surveyed routes. Among the 57 comparable routes (sampled both years by same observer), there was a significant decrease ($P < 0.001$) in the statewide mean from 2022 (36%). The PCSI decreased on 38 of the comparable routes and increased or remained the same on the remaining 19 comparable routes relative to 2022 (Table 1).

Flint Hills: All 7 of the established routes were completed. The regional PCSI was 2.17, indicating no significant change from 2022 ($P = 0.276$). **Glaciated Plains:** All 6 of the established routes were completed. The regional PCSI was 0.45, indicating no significant change from 2022 ($P = 0=.836$). **Northern High Plains:** Of the 12 established routes 11 were completed. The regional PCSI was 7.12, indicating no significant change from 2022 ($P = 0.106$). **Smoky Hills:** All 20 of the established routes

were completed, the regional PCSI was 7.16, indicating a significant decrease from 2022 ($P = 0.005$).

Southern High Plains: All 7 of the established survey routes were completed in this region. The regional PCSI was 6.53, indicating no significant change from 2022 ($P = 0.162$). **South-Central Prairies:** Of the 12 established routes 11 were completed this year. The regional PCSI was 7.12 indicating a significant decrease from 2022 ($P = 0.032$).

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 the latter part of 2021 drought that had been plaguing much of the great plains settled into Kansas and continued through 2022. Nesting conditions entering the 2022 breeding season were poor given the lack of late season growth in 2021 and poor wheat conditions coming out of winter. This was exasperated by reduction in cover due to emergency use activities in 2021 on Conservation Reserve Program (CRP) grounds. Brood surveys in 2022 indicated production was poor and spring crow counts corroborate those declines. The dry conditions throughout 2022 led to limited cover again for the 2023 nesting season and much of CRP was released for emergency use again. As agriculture has continued to intensify, CRP habitat has become more important to maintaining pheasant populations in Kansas. CRP enrollments continue to decline after another round of expirations outpaced enrollment. CRP enrollment in the state is now less than half of what it was at its peak. 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. Negotiations for the 2023 Farm Bill have begun and conservation agencies and organizations are making a push for improved policies to make CRP and other conservation programs more effective. While Kansas pheasant populations remain viable across the primary range and are likely to persist into the foreseeable future, populations density and stability in the near term are likely to be greatly impacted by this legislation. Pheasant populations can have major impacts on rural economics and conservation funding and thus remains a priority of KDWP.

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 was too late to have dramatic impact on the available nesting cover but will improve the survival of chicks that are hatched where nesting cover did exist. 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, 2023.

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	Jeff Sutton~	Pawnee (Irrig)	Tom Bidrowski
Cloud	Brandon Tritsch	Perry WA	Andrew Page
Comanche	Matt Harvey	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	Cale Hedges~
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	Brian Hanzlick~
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	Conner Rolan~	Washington	Megan Smith
Morris	Brent Konen	Wichita-Greeley	Jared King
Morton-Stanton	Kraig Schultz	Wilson WA	Scott Thomason
Ness-Lane	Andy Nelson		

Note: ~ new observer for route;

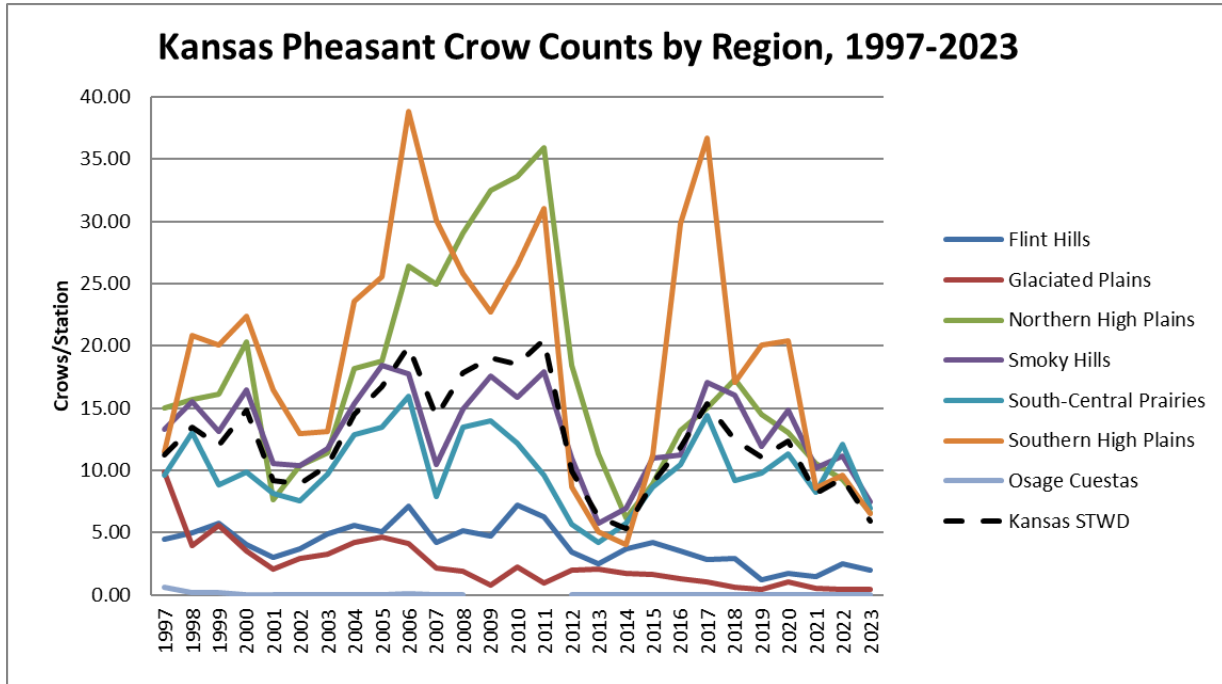
Table 2. Regional changes in pheasant crow counts in Kansas from 2022 to 2023.

Flint Hills				Smoky Hills			
Route	2022 C/S	2023 C/S	% Δ	Route	2022 C/S	2023 C/S	% Δ
Butler-Marion	NA	0.60	NA	Barton	7.91	5.00	-37
Cowley-Sumner	7.00	6.73	-4	Cloud	0.33	1.70	410
Dickinson-Clay	5.18	4.00	-23	Ellis	19.55	10.18	-48
McPherson-Marion	2.18	1.18	-46	Ellsworth	3.18	1.82	-43
Morris	0.09	0.27	200	Hodgeman	18.18	5.73	-69
Riley	0.45	0.82	80	Lincoln	10.00	7.09	-29
Wabaunsee	0.00	0.00	NE	McPherson	6.18	10.55	71
Region Mean	2.48	2.17	-13	Mitchell**	9.18	9.27	1
				Ness-Lane	16.91	3.64	-78
				Osborne	13.60	12.20	-10
Glaciated Plains				Ottawa	10.09	5.55	-45
Route	2022 C/S	2023 C/S	% Δ	Phillips	6.18	6.18	0
Brown-Nemaha	0.45	0.18	-60	Republic	9	10.36	15
Jackson-Jefferson	0.45	0.09	-80	Rice	12.00	7.27	-39
Marshall	0.82	1.27	56	Rooks**	20.20	10.70	-47
Perry WA	0.36	0.73	100	Rush	16.64	12.45	-25
Shawnee	0.00	0.00	0	Smith	11.55	6.45	-44
Tuttle Creek WA	NA	0.55	NA	Trego	19.55	11.91	-39
Region Mean	0.42	0.45	9	Washington	0.64	0.73	14
				Wilson WA	11.36	10.00	-12
				Region Mean	10.71	7.16	-33*
Northern High Plains				South-Central Prairies			
Route	2022 C/S	2023 C/S	% Δ	Route	2022 C/S	2023 C/S	% Δ
Cheyenne	8.36	7.00	-16	Clark**	8.82	0.09	-99
Decatur	20.00	5.73	-71	Comanche	0.18	NA	NA
Gove SW	11.45	0.91	-92	Edwards	29.45	14.27	-52
Graham	14.82	6.27	-58	Harper	3.18	0.45	-86
Logan SE	NA	NA	NA	Kingman-Reno	2.36	3.09	31
Norton	19.82	17.18	-13	Kiowa	27.91	7.09	-75
Rawlins-Thomas	8.18	5.91	-28	Pawnee	25.73	17.82	-31
Scott	18.73	6.09	-67	Pawnee (Irrig.)	18.55	15.73	-15
Sheridan	5.82	5.09	-13	Pratt	6.45	4.73	-27
Sherman	5.09	7.00	38	Reno	6.90	7.73	12
Thomas	4.55	2.55	-44	Sedgwick-Harvey	0.29	0.18	-36
Wichita-Greeley	4.00	14.64	266	Stafford-Barton**	15.18	5.64	-63
Region Mean	10.98	7.12	-35	Region Mean	12.96	7.12	-45*
Southern High Plains				Statewide	9.25	5.95	-36*
Route	2022 C/S	2023 C/S	% Δ				
Finney	22.91	10.36	-55				
Ford	15.50	14.70	-5				
Gray	6.09	7.90	30				
Kearny-Hamilton	9.73	4.45	-54				
Morton-Stanton	1.55	1.55	0				
Seward-Haskell	1.85	2.82	52				
Stevens	9.57	3.90	-59				
Region Mean	9.60	6.53	-32				

Note: C/S = Mean Crows per Station; % Δ = percent change; * = significant change ($P \leq 0.10$), 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, 1997-2023.



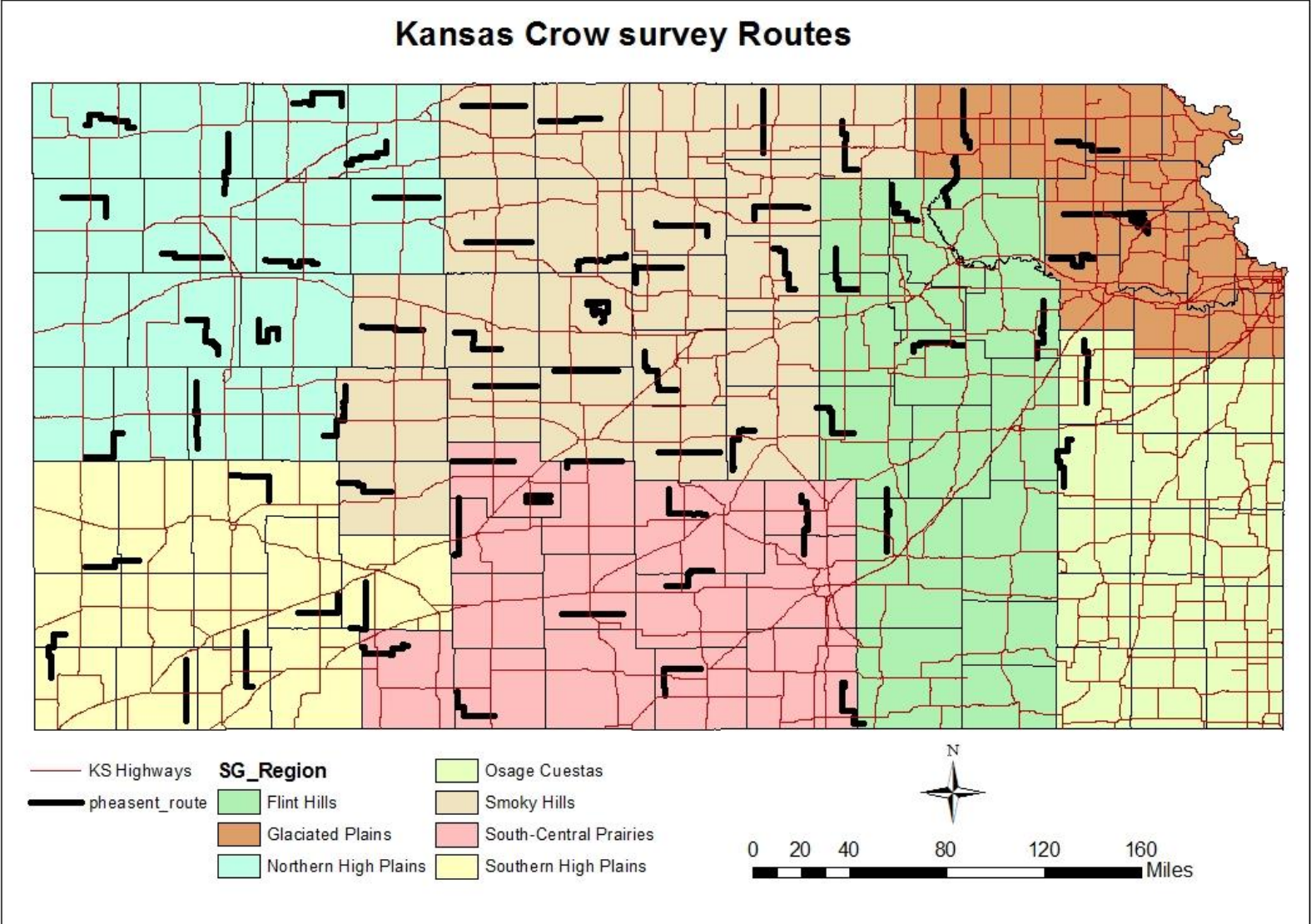


Figure 2. Current pheasant crow survey routes and management region boundaries.

2023 Crow Survey

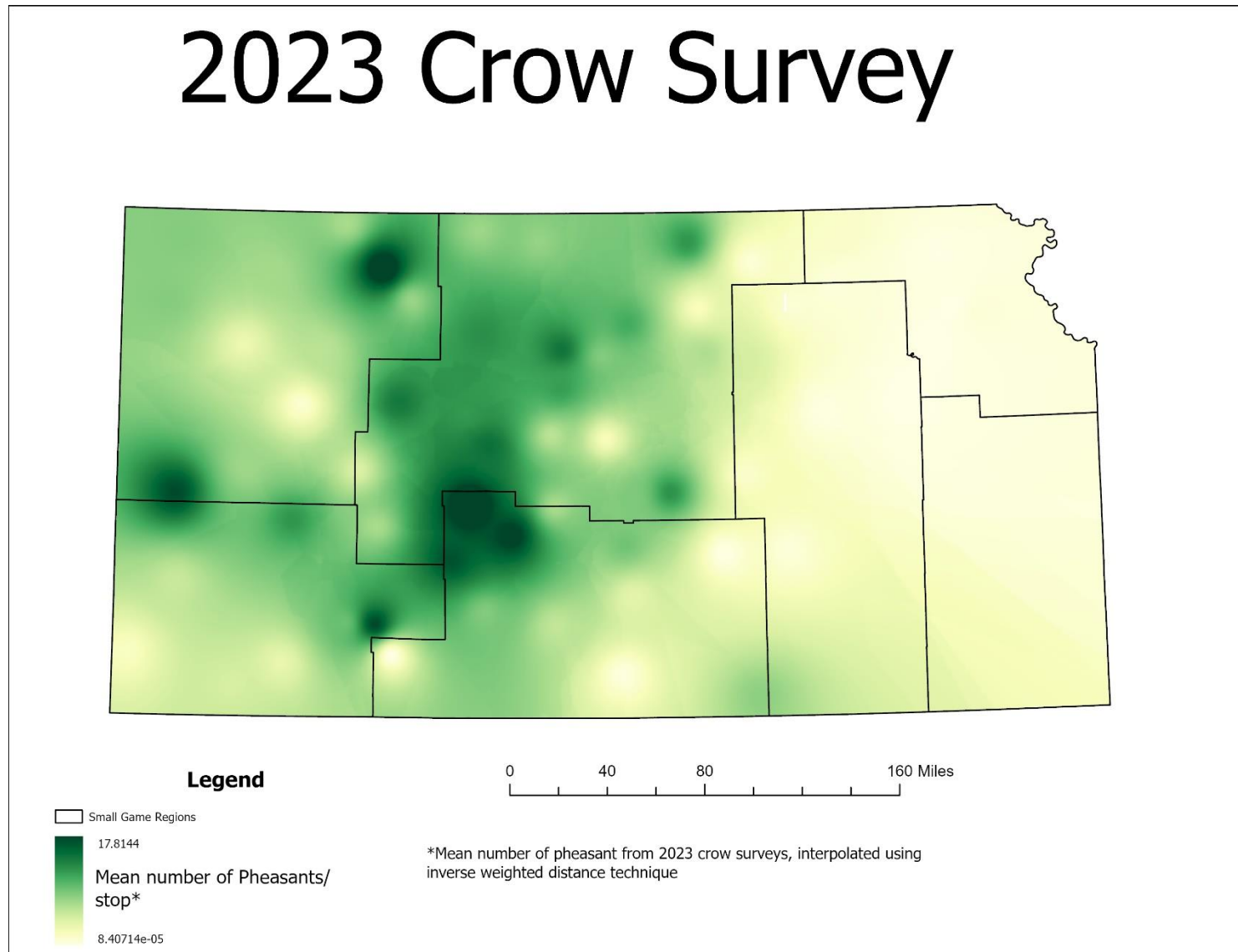


Figure 3. Pheasant breeding population index (crows per station) interpolated from route-specific indices across pheasant range in Kansas, using Inverse Distance Weighting technique, 2023.

2022-2023 Crow Survey Change

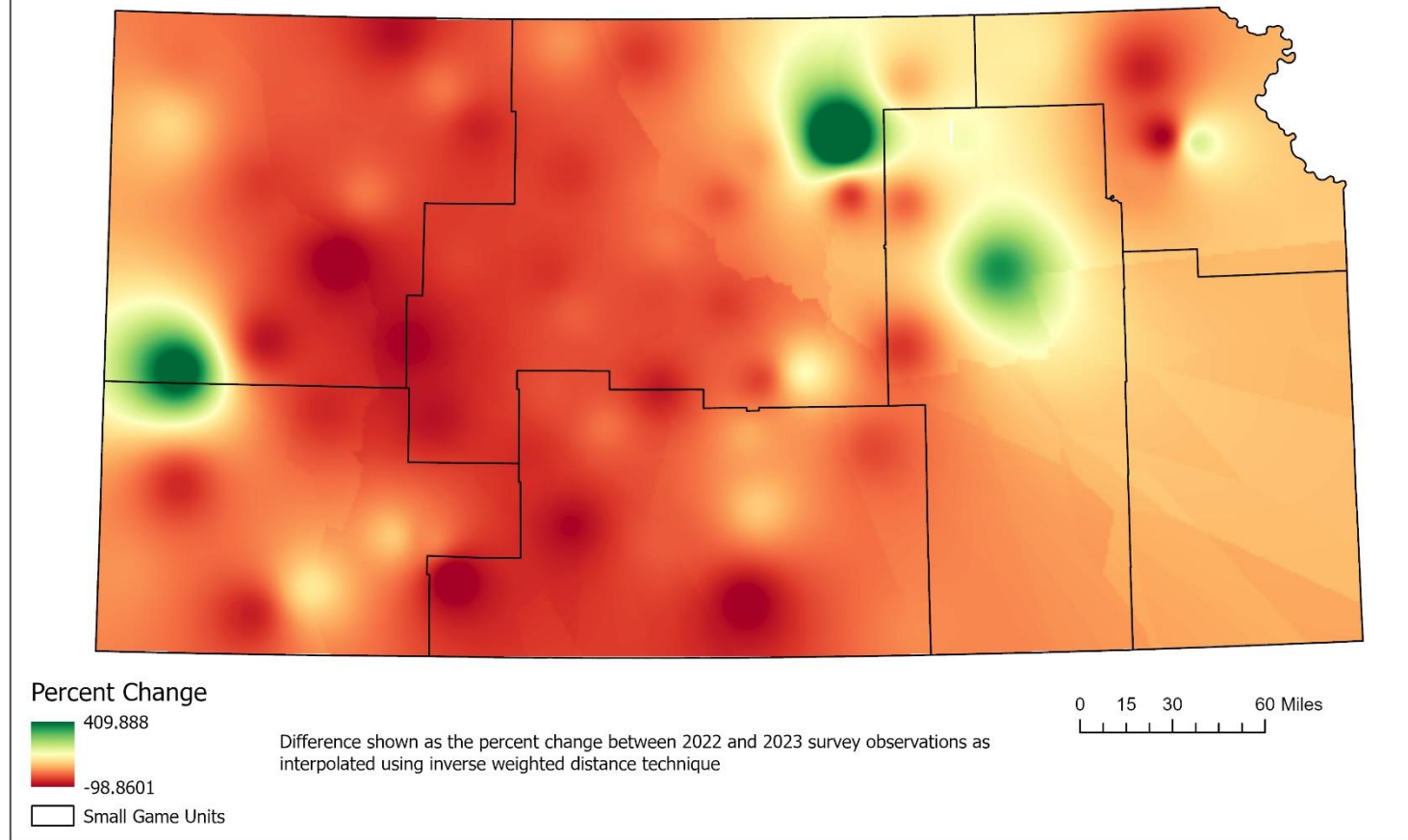


Figure 4. Percent change (2022 to 2023) in pheasant breeding index (crows per station) interpolated across pheasant range in Kansas.