PHEASANT CROWING SURVEY - 2016

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STATEWIDE WILDLIFE RESEARCH AND SURVEYS

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KANSAS PHEASANT CROWING SURVEY – 2016
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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 to project hunter success and monitor population change through time.

METHODS

The survey period was from April 25 through May 15, 2016. 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 2016 survey and comparisons to the 2015 data are presented in Table 1. Of the 65 established routes, all were assigned for 2016 (routes in Osage and Coffey counties are run only in even-numbered years) and successfully completed. Personnel assigned to these surveys are noted in Table 2. 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 differences between years.

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 from 2015 to 2016 is also included (Figure 4).

RESULTS

Range-wide
The 2015 PCSI was 11.83 crows per stop across all 65 surveyed routes. Among the 46 comparable routes (sampled both years), there was an increase ($P = 0.048$) in the statewide mean from 2015 (30%). The PCSI increased or remained the same on 26 of the comparable routes and decreased on the remaining 20 routes relative to 2015 (Table 1).

Osage Cuestas: Only sampled in even years. No crows were recorded on either of these routes this year. **Flint Hills:** All 7 routes were completed. The regional PCSI was 3.53, resulting in no significant change from 2015 ($P = 0.55$). **Glaciated Plains:** All 6 routes were completed. The regional PCSI was 1.23, resulting in no significant change from 2015 ($P = 0.83$). **Northern**

High Plains: all 12 routes were completed. The regional PCSI was 11.77, resulting in no significant change from 2015 (*P* =0.12). **Smoky Hills:** All 20 routes were completed, resulting in a regional PCSI of 11.44, and no significant change from 2015 (*P* =0.36). **Southern High Plains:** All 7 survey routes were completed. The regional PCSI was 30.09, resulting in a statistically significant increase of 171% from 2015 (*P* = 0.099). **South-Central Prairies:** All 11 routes were completed. The regional PCSI was 11.17 resulting in a statistically significant increase of 21% from 2014 (*P* = 0.093)

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.

In 2015, spring initially started off dry but precipitation through April was better and greatly improved nesting conditions throughout much of the pheasant range of western Kansas. While the improved precipitation was short lived and conditions weren't perfect, improvements to the vegetative cover were enough to create favorable conditions for nesting and brooding hens, and as a result, reproductive success was improved compared to the previous 3 years. This success has been reflected in a statistically significant PCSI increase over parts of the western and central portion of the state (Figure 4). The majority of the areas surveyed in the eastern half of the state witnessed an apparent decrease, although statistically insignificant, which often follows average and above average rainfall in these regions as it reaches levels that reduce chick survival. Among the comparable values there was statewide increase of 30% for the 2016 PCSI (Figure 1).

Overall, the spring PCSI in Kansas went from the highest recorded value in 2011, through a precipitous decline through 2014. Fortunately, the PCSI has shown significant improvements in each of the last 2 years (Figure 1). Extreme drought plagued the primary KS pheasant range from 2011-2014, causing severe population declines. However, drought conditions have improved throughout much of the state, allowing for increases in the reproductive output of the Kansas pheasant population. Due to the extreme population decline, multiple breeding seasons will be necessary to fully recover the population. Optimal breeding conditions for pheasants are near average precipitation and temperatures, while extreme climatic events such as flooding, hail, or drought generally cause declines. Drought events are part of western Kansas' historical climate, and will likely occur in the future, causing natural fluctuations in pheasant populations through time. Managing for quality habitat, such as properly managed Conservation Reserve Program (CRP) tracts and pheasant-friendly agriculture practices, are the best tool that wildlife managers and wildlife enthusiasts have for sustaining and improving long-term populations.

Kansas still supports a healthy population of pheasants across the primary range. As weather has improved, pheasant populations have demonstrated their ability to recover quickly, with indices in some areas increasing > 300% in a single year (Table 1). As conditions continue to improve, birds will disperse to occupy adequate habitat. Spring rains have created excellent nesting cover and should produce good brood habitat across the primary pheasant range in 2016, but conditions from late-June through August will dictate survival. Fall pheasant populations are highly dependent on production and survival of young of the year. 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. Regional changes in pheasant crow counts in Kansas from 2015 to 2016.

Flint Hills

Route	2015 C/S	2016 C/S	% Δ
Butler-Marion	1.64	1.45	-11
Cowley-Sumner	11.55	5.55	-52
Dickinson-Clay	9.70	7.55	-22
McPherson-Marion	3.40	5.82	71
Morris	0.91	0.60	-34
Riley	2.09	3.55	70
Wabaunsee	0.00	0.18	NA
Region Mean	**4.18**	**3.53**	**-16**

Glaciated Plains

Route	2015 C/S	2016 C/S	% Δ
Brown-Nemaha	1.36	1.09	-20
Jackson-Jefferson	1.45	0.73	-50
Marshall**	2.45	2.20	-10
Perry WA	2.09	3.00	43
Shawnee	0.33	0.10	-70
Tuttle Creek WA**	1.91	0.36	-81
Region Mean	**1.31**	**1.23**	**-6**

Northern High Plains

Route	2015 C/S	2016 C/S	% Δ
Cheyenne**	18.5	23.08	25
Decatur	19.67	20.50	4
Gove SW	4.60	5.90	28
Graham**	21.91	21.36	-2
Logan SE	2.36	5.55	135
Norton**	7.91	22.00	178
Rawlins-Thomas	9.45	20.18	113
Scott**	NA	19.30	NA
Sheridan**	11.30	4.00	-65
Sherman**	NA	17.09	NA
Thomas**	17.73	23.36	32
Wichita-Greeley	4.82	6.70	39
Region Mean	**8.18**	**11.77**	**44**

Southern High Plains

Route	2015 C/S	2016 C/S	% Δ
Finney**	12.00	45.64	280
Ford	25.64	33.00	29
Gray	4.36	18.30	319
Kearny-Hamilton**	NA	12.91	NA
Morton-Stanton	0.36	1.45	300
Seward-Haskell	10.73	31.18	191
Stevens	14.45	66.50	360
Region Mean	**11.11**	**30.09**	**171***

Smoky Hills

Route	2015 C/S	2016 C/S	% Δ
Barton	17.18	13.64	-21
Cloud	3.73	1.09	-71
Ellis	10.09	12.00	19
Ellsworth**	3.36	4.90	46
Hodgeman	10.64	13.20	24
Lincoln**	15.00	19.82	32
McPherson**	8.64	6.64	-23
Mitchell	14.50	12.30	-15
Ness-Lane	3.82	6.27	64
Osborne	19.09	17.45	-9
Ottawa**	10.00	11.45	15
Phillips**	5.00	5.00	0
Republic	16.82	15.55	-8
Rice	8.45	7.09	-16
Rooks	12.64	10.36	-18
Rush	26.73	27.00	1
Smith**	9.82	16.00	63
Trego	8.45	10.27	22
Washington	4.09	3.73	-9
Wilson WA	11.09	10.18	-8
Region Mean	**11.44**	**11.44**	**0**

South-Central Prairies

Route	2015 C/S	2016 C/S	% Δ
Clark	2.91	8.73	200
Comanche	1.18	1.27	8
Edwards	5.45	8.36	53
Harper	5.38	9.80	82
Kingman-Reno	6.10	5.36	-12
Pawnee	8.90	9.80	10
Pawnee (Irrig.)	24.22	27.18	12
Pratt	7.63	10.45	37
Reno	12.18	17.82	46
Sedgwick-Harvey	2.27	1.78	-22
Stafford-Barton	19.27	14.45	-25
Region Mean	**8.68**	**10.46**	**21***
Statewide	**8.56**	**11.17**	**30***

*Note: C/S = Mean Crows per Station; % Δ = percent change; * = significant change (P ≤ 0.10)*

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

Osage Cuestas region is only surveyed biennially thus info is excluded from inter-annual comparison

Table 1. Pheasant crow survey routes and observers in Kansas, 2016.

Route	Observer	Route	Observer
Barton	Gene Schneweis	Norton	Luke Winge~
Brown-Nemaha	Tyler Warner	*Osage*	*Matt Peek*
Butler-Marion	Charles Cope	Osborne	Toby Marlier
Cheyenne	Kevin Klag~	Ottawa	James Svaty~
Clark	Jon Zuercher	Pawnee	Charlie Swank
Cloud	Luke Kramer	Pawnee (Irrig)	Tom Bidrowski
*Coffey***	*Alex Lyon*	Perry WA	Andrew Page
Comanche	Matt Hanvey	Phillips	Mark Shaw~
Cowley-Sumner	Kurt Grimm	Pratt	Charlie Swank
Decatur	Daniel Howard	Rawlins-Thomas	Wes Sowards
Dickinson-Clay	Clint Thornton	Reno	Kyle McDonald
Edwards	Charlie Swank	Republic	Rob Unruh
Ellis	Mike Nyhoff	Rice	Steven Adams
Ellsworth	James Svaty~	Riley	Corey Alderson
Finney	Kurtis Meier~	Rooks	Michael Zajic
Ford	Aaron Baugh	Rush	Jason Wagner
Gove SW	Owen Johnson	Scott	Abe Lollar~
Graham	Eric Wiens~	Sedgwick-Harvey	Charles Cope
Gray	Manuel Torres	Seward-Haskell	Jeff Sutton
Harper	Craig Curtis	Shawnee	Brad Rueschhoff
Hodgeman	Aaron Baugh	Sheridan	Kevin Klag~
Jackson-Jefferson	Tyler Warner	Sherman	Wes Sowards~
Kearny-Hamilton	Kurtis Meier~	Smith	Luke Kramer~
Kingman-Reno	Kyle McDonald	Stafford-Barton	Charlie Swank
Lincoln	James Svaty~	Stevens	Kraig Schultz
Logan SE	Randy Rodgers	Thomas	Kevin Klag~
Marshall	Nathan Henry	Trego	Kent Hensley
McPherson	Jason Black	Tuttle Creek WA	Nathan Henry~
McPherson-Marion	Jeff Rue	Wabaunsee	Brad Rueschhoff
Mitchell	Chris Lecuyer	Washington	Megan Smith
Morris	Brent Konen	Wichita-Greeley	Anna Walkowiak-Esch
Morton-Stanton	Kraig Schultz	Wilson WA	Scott Thommason
Ness-Lane	Randy Rodgers		

Note: ~ new observer for route, Osage and Coffee only run on even years

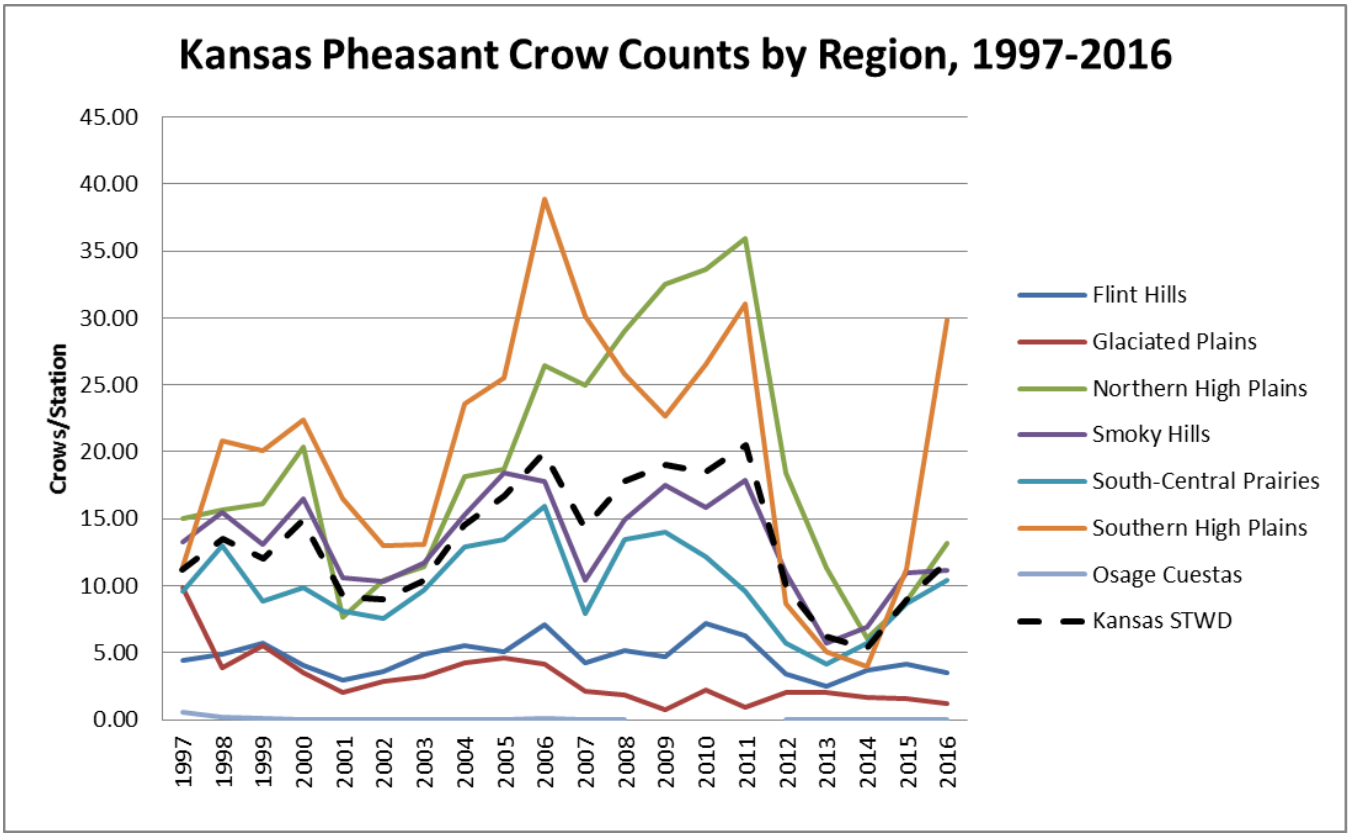

Figure 1. Regional trends for pheasant crow survey index in Kansas, 1997-2016.

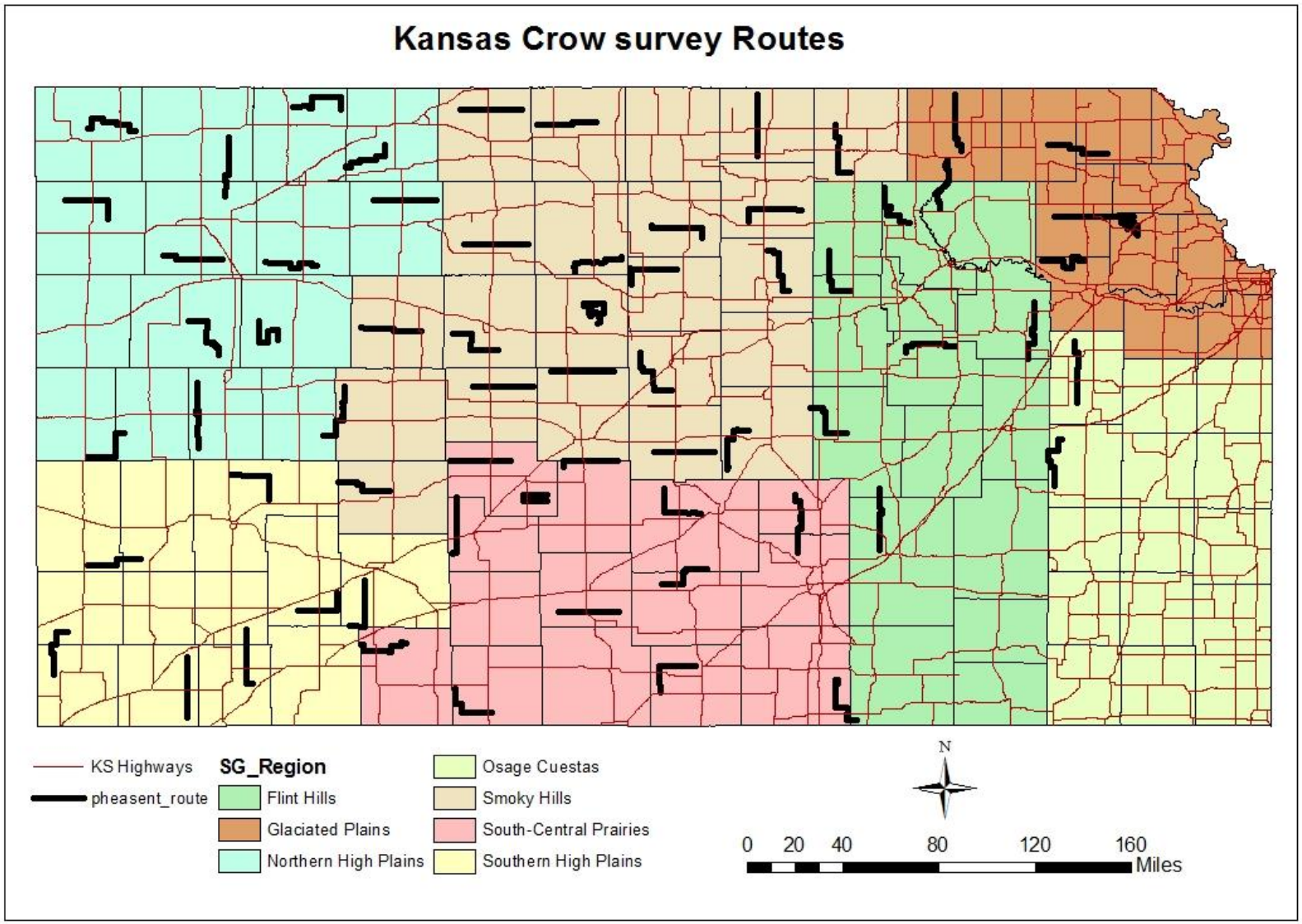

Figure 2. Pheasant crow survey routes and management region boundaries, 2016.

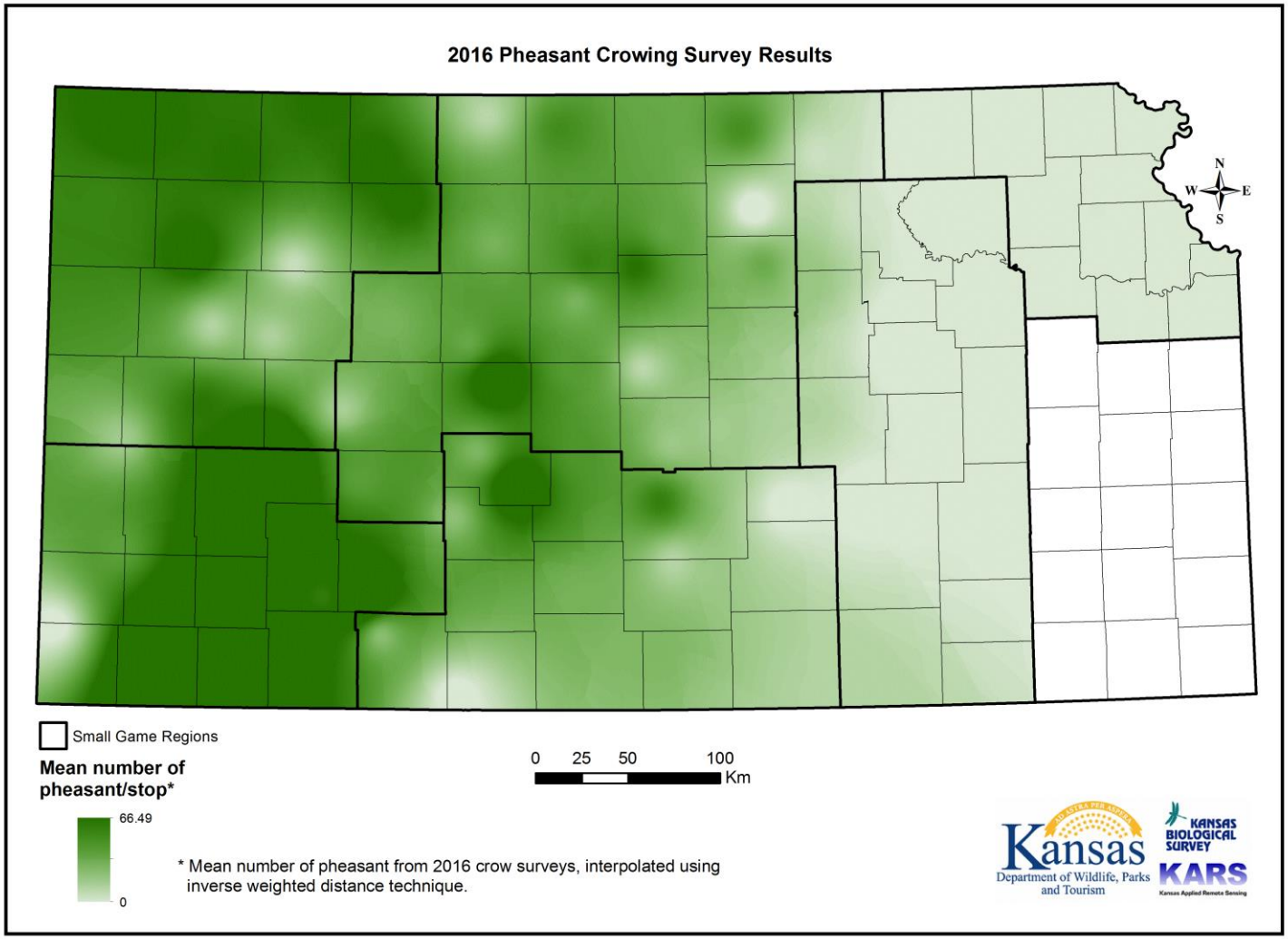

Figure 3. Pheasant breeding population index (crows per station) interpolated from route-specific indices across pheasant range in Kansas, using Inverse Distance Weighting technique, 2016.

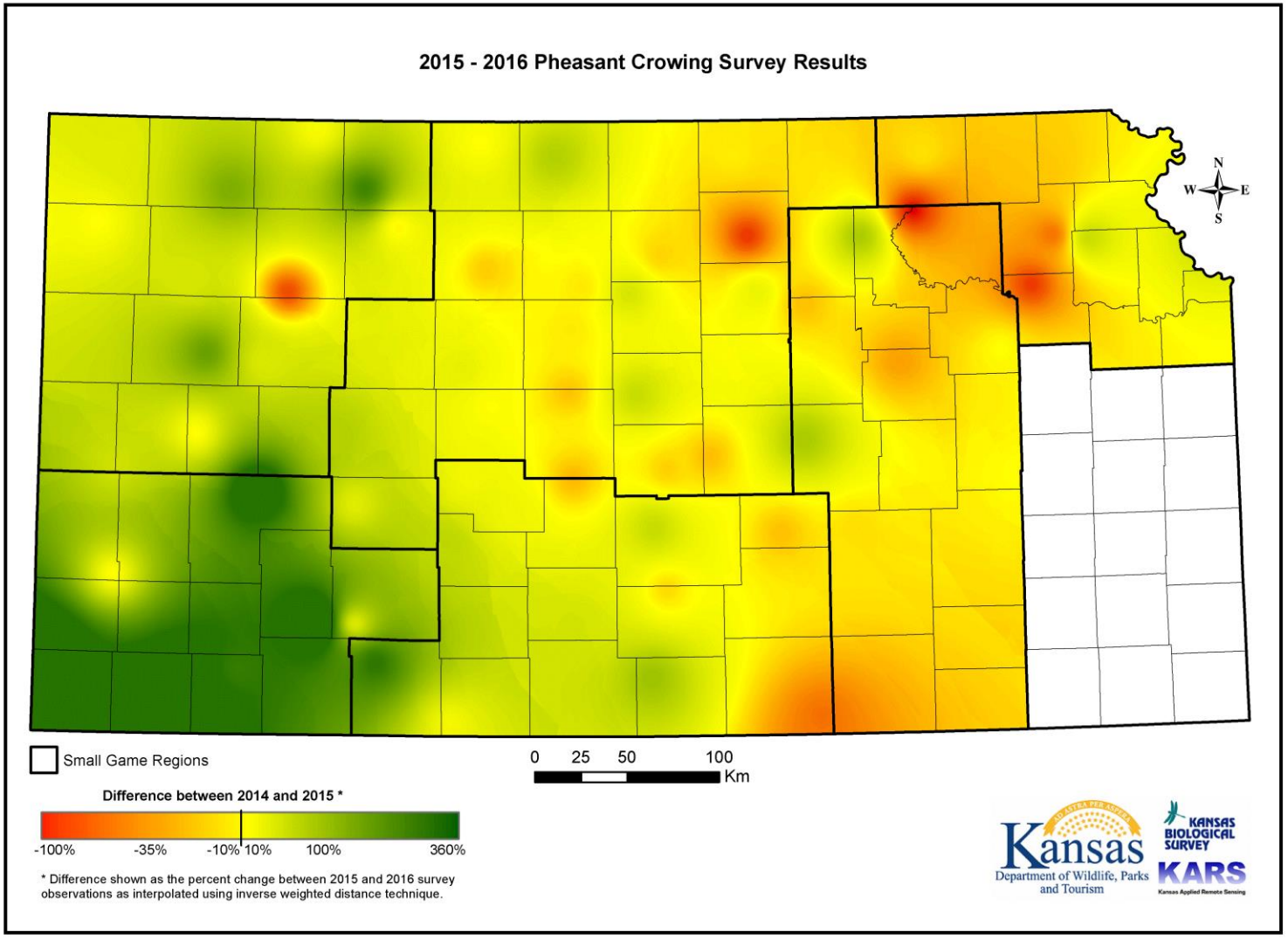

Figure 4. Percent change (2015 to 2016) in pheasant breeding index (crows per station) interpolated across pheasant range in Kansas.