

**2011 BOBWHITE WHISTLE COUNT**

**Performance Report**

**A Contribution in Part of Pittman-Robertson  
Federal Aid in Wildlife Restoration  
Grant W-39-R-17**

**KANSAS DEPARTMENT OF WILDLIFE, PARKS, and TOURISM**

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**July 2011**

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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. In 2011, observers were asked to survey 73 established routes during the 1-16 June survey period, starting at sunrise (Table 1). Due to weather constraints the survey period was extended 2 weeks for just a few routes. Two routes were added this year at Wilson Wildlife Area in Russell County and Grand Osage Wildlife Area in Labette County (Figure 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.

The index to bobwhite abundance was calculated as the mean number of different bobwhites heard per listening stop. A folded F-test was used to determine if the variance differed between the 2010 and 2011 indices. If unequal variance existed ( $P < 0.05$ ) then a Satterthwaite's adjustment was used to adjust the degrees of freedom prior to conducting a two sample t-test. If variance did not differ across years then a standard two sample t-test was used to draw comparisons. Additionally, a linear regression of the historical whistle count data was used to determine if bobwhite abundance had changed significantly from 1998 to 2011. All indices and analyses were calculated for each of the 7 small game regions (Figure 1).

Krieging 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 may 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 (Figure 3).

## **RESULTS**

Observers surveyed all 73 assigned routes during 2011. The 2011 statewide index to the breeding bobwhite population was relatively unchanged from spring 2010 (Table 2). Only one statistically significant ( $P < 0.05$ ) change was observed in the Southern High Plains (Table 2). Apparent changes observed in the other regions could have been solely due to variability associated with the sampling scheme.

From 1998 to 2011, bobwhite abundance has declined significantly in eastern Kansas in the Glaciated Plains and Osage Cuestas (Table 2, Figures 1 and 2). Bobwhite populations in central and western regions have more stable trends, although populations fluctuate across years. The statewide index has declined significantly ( $P < 0.05$ ) over this time span (Table 2, Figure 2).

## **DISCUSSION**

Production was near average in 2010 in every region of the state except south-west and winter conditions were relatively mild in all but eastern Kansas. Winter weather in north-eastern Kansas has been harsh in recent years, impacting quail populations there. Continued issues of introduced plant species, limited early successional habitat, tree invasion, etc. have continued to influence a decline in quail populations throughout all of eastern Kansas. While the majority of the regions show stable trends for the last decade, the combination of all statewide data continues to show a significant declining trend. This is due to the extreme declines in the Glaciated Plains and Osage Cuestas (eastern Kansas), which were historically strongholds for bobwhites within the state.

It is important to understand that annual changes to the breeding population do not necessarily reflect hunt quality for the upcoming season, but rather reflect a combination of last year's productivity and overwinter survival. The fall bobwhite population depends not only on the size of the spring breeding population but to a greater extent on the level of productivity. A bobwhite population can increase nearly 300% from spring to fall when habitat and weather conditions are suitable for productivity.

At the time of this report, the hunting outlook for this fall is favorable in the central, north-central, and eastern parts of the state. Vegetative conditions were good in these areas. In particular, the eastern 1/3 of the state has very good breeding conditions, and higher productivity than recent years is expected. In south-western and south-central areas of Kansas the vegetative conditions have been negatively impacted by a prolonged drought and high temperatures throughout much of the breeding season. Quail populations in these areas are not expected to have high or even average productivity this year. However, more accurate predictions about the upcoming hunting season will be available after the August brood count data have been collected.

Table 1. Northern bobwhite survey routes and observers in Kansas, 2011.

Route	County(s)	Observer	Route	County (s)	Observer
1	Allen	Jeff Prendergast	39	Mitchell	Aaron Deters
2	Atchinson/Doniphan	Randy Whiteaker	40	Montgomery	Ed Miller
3	Barber	Mike Mitchener <sup>a</sup>	41	Morris	Brent Konen
4	Barton	Curran Salter	42	McPherson/Marion	Brian Sorensen
5	Bourbon	Justin Harbit	43	Morton	Kraig Schultz
6	Butler	Jeff Rue	44	Morton	Kraig Schultz
7	Chase	Jim Pitman	45	Nemaha	Darren Brown
8	Chautauqua	Darin Porter	46	Neosho	J.R. Glenn
9	Cherokee	David Jenkins <sup>a</sup>	47	Osage	Clint Bowman <sup>a</sup>
10	Clark	Jon Zuercher	48	Osborne	Luke Kramer
11	Clay	Clint Thornton	49	Ottawa	Pat Riese
12	Cloud	Pat Riese	50	Pawnee	Charlie Swank
13	Coffey	Bob Culbertson	51	Pawnee	Dave Dahlgren <sup>a</sup>
14	Cowley	Kurt Grimm	52	Phillips	Marc Gray
15	Crawford	Allen Reed <sup>a</sup>	53	Pottawatomie	Blake Klema
16	Douglas	Brad Rueschhoff	54	Pratt	Todd Gatton
17	Elk	Rick Tush	55	Rawlins	Josh Williams
18	Ellis	Dave Dahlgren <sup>a</sup>	56	Reno	Steve Adams
19	Ellsworth	Matt Smith	57	Rice	Steve Adams
20	Finney/Gray	Chasen Gann <sup>a</sup>	58	Riley	Corey Alderson
21	Ford	Aaron Baugh	59	Rush	Jeremy Salter
22	Greenwood	Rick Tush	60	Russell	Matt Smith
23	Harvey	Charlie Cope	61	Saline	Pat Riese
24	Hodgeman	Aaron Baugh	62	Shawnee	Brad Rueschhoff
25	Hodgeman	Justin Hamilton	63	Sheridan	Matt Bain
26	Jefferson/Jackson	Randy Whiteaker	64	Smith	Chris Lecuyer <sup>a</sup>
27	Jewell	Aaron Deters	65	Stafford	Karl Grover
29	Kingman	Craig Curtis <sup>a</sup>	66	Stanton	Kraig Schultz
30	Kiowa	Charlie Swank	67	Sumner	Jeff Rue
31	Leavenworth	Andy Friesen	68	Trego	Jason Hawman
32	Lincoln	Luke Kramer	69	Wabaunsee	Brad Rueschhoff
33	Linn	Karl Karrow	70	Washington	Clint Thornton
34	Lyon	Clint Bowman	71	Woodson	Jeff Prendergast
35	Marshall	James Svaty	72	Hamilton	Daryl Fisher
36	McPherson	Brent Theede	73	Grand Osage WA <sup>b</sup>	Rob Riggan
37	Meade	Jon Zuercher	74	Wilson WA <sup>b</sup>	Scott Thomasson
38	Miami	Andy Friesen			

<sup>a</sup> New observer 2011

<sup>b</sup> New Route 2011

Note: Route 28 in Kearny County was dropped in 2010 due to road conditions and replaced by Route 72.

Table 2. Mean number of different bobwhites heard whistling at each stop within the 7 Kansas bobwhite management regions.

Region	<i>n</i> <sup>a</sup>	2010	2011	Apparent 1-year Change (%)	<i>P</i> <sup>b</sup>	Trend (1998-2011)
Glaciated Plains	7	1.18	1.17	-0.9%	0.99	Declining <sup>**</sup>
Osage Cuestas	12	1.42	1.31	-8.4%	0.68	Declining <sup>**</sup>
Flint Hills	14	2.42	2.24	-8.0%	0.73	Stable
Smoky Hills	21	1.56	1.35	-15.6%	0.38	Stable
South-Central Prairies	10	2.80	3.12	10.3%	0.67	Stable
Northern High Plains	2	0.59	0.77	23.3%	0.87	Stable
Southern High Plains	7	2.30	0.55	-318.2%	0.07	Stable
Statewide	73	1.89	1.65	-14.6%	0.25	Declining <sup>**</sup>

<sup>a</sup> Number of routes within the region.

<sup>b</sup> Bobwhite abundance was considered to be significantly different than the previous year when  $P < 0.10$ .

<sup>\*\*</sup>  $P < 0.05$

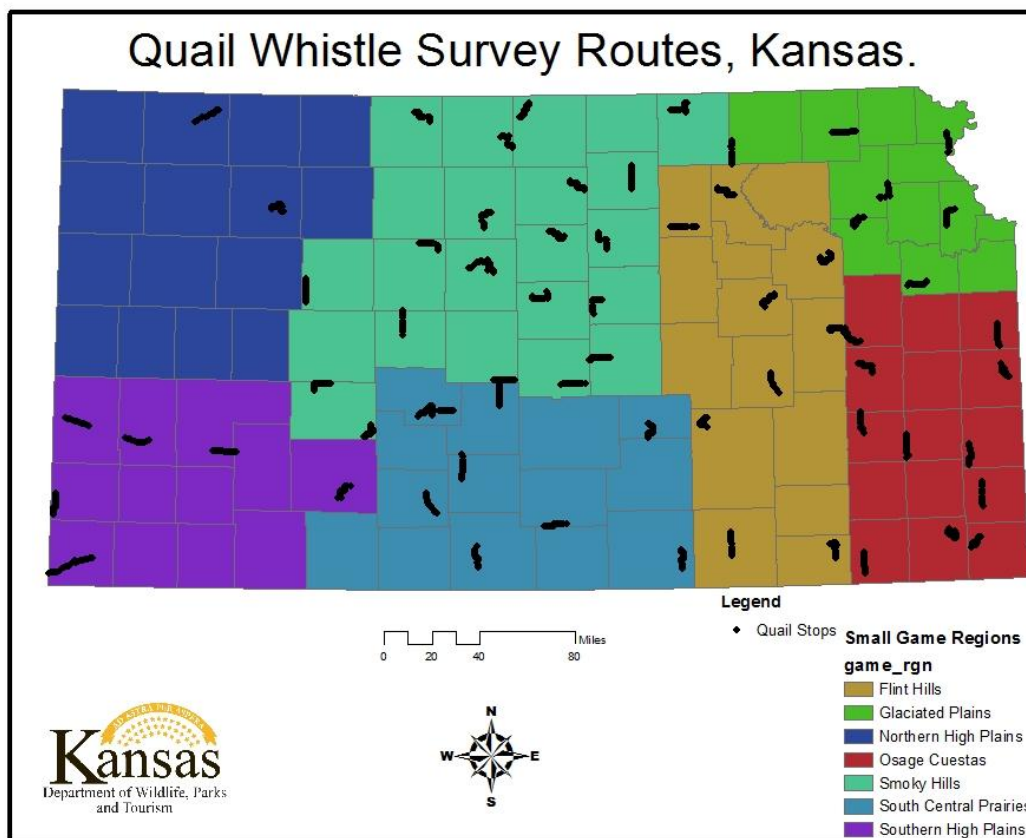
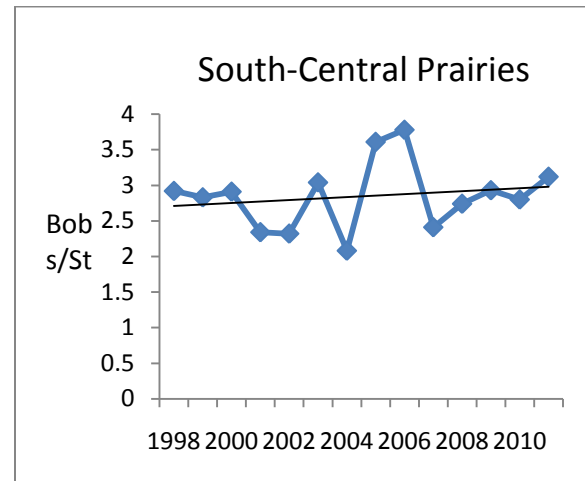
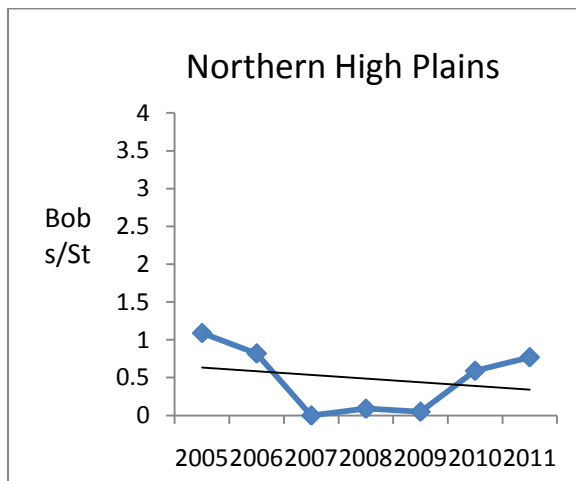
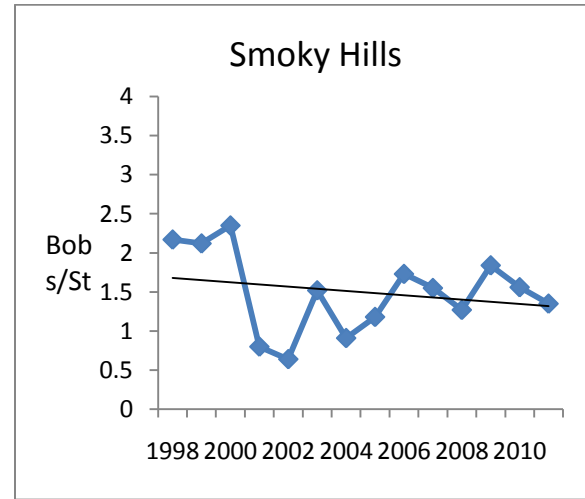
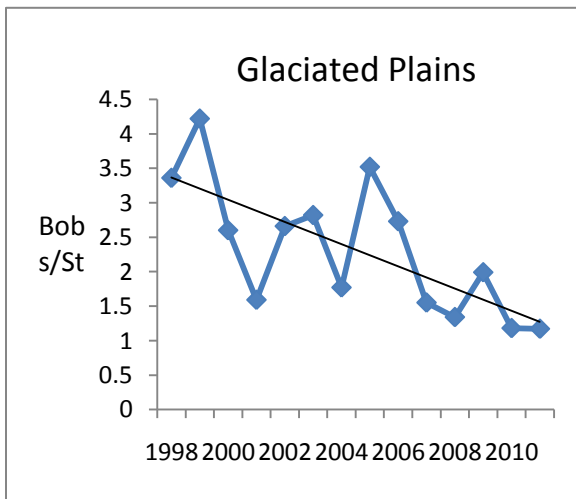
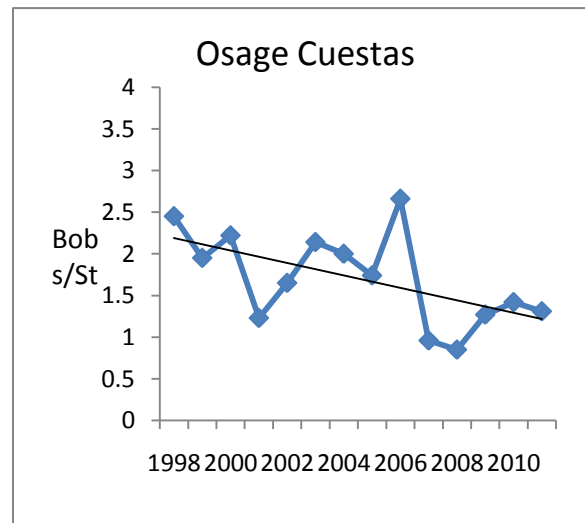
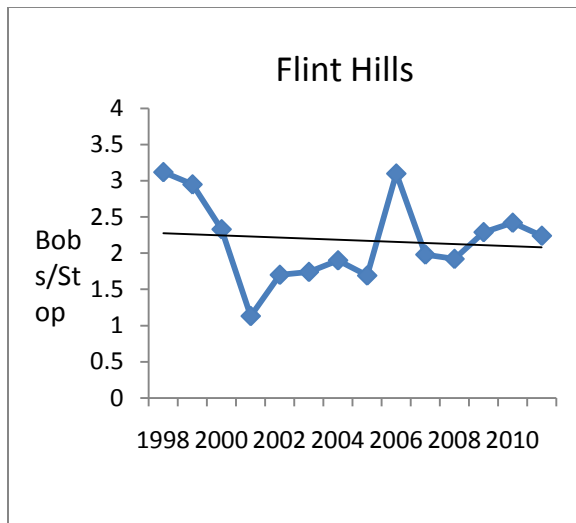


Figure 1. Small Game survey regions and quail routes in Kansas.



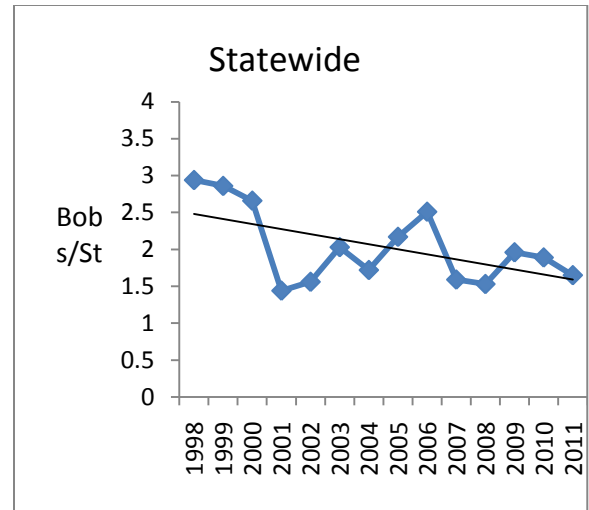
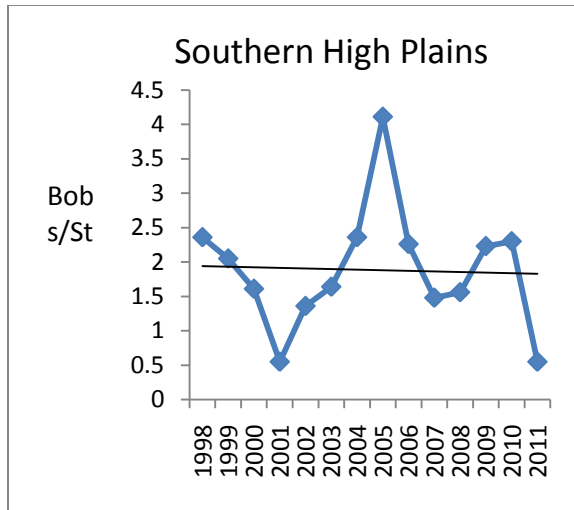


Figure 2. Mean number of northern bobwhites heard per survey stop within Kansas' 7 management regions and statewide, 1998-2011. These data can only be used to approximate long-term trends because the same set of routes was not surveyed in every year.

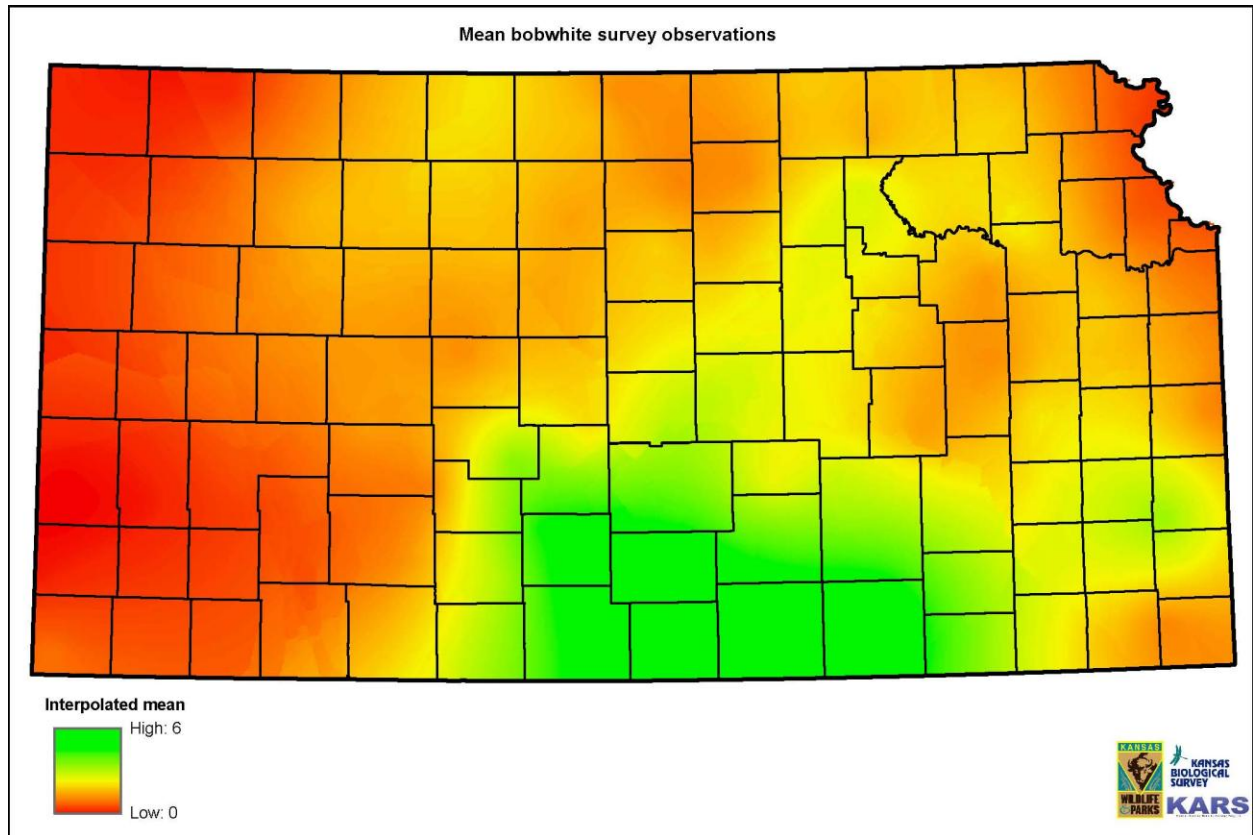


Figure 3. Bobwhite quail breeding population index interpolated from route-specific indices across Kansas, using Kriging technique, 2011.