

FINAL PERFORMANCE REPORT



FEDERAL AID GRANT NO. F09AP00231 (E-70-R-1)

**CURRENT DISTRIBUTION AND STATUS OF THE LESSER
PRAIRIE CHICKEN OF OKLAHOMA**

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

February 1, 2009 through January 31, 2012

FINAL REPORT

STATE: Oklahoma

GRANT NUMBER: F09AP00231
Formerly E-70-R-1

GRANT PROGRAM: Endangered Species Act Section 6

GRANT TITLE: Current Distribution and Status of the Lesser Prairie-Chicken in Oklahoma

GRANT PERIOD: February 1, 2009 – January 31, 2012

PRINCIPLE INVESTIGATORS: Lena C. Larsson, Donald H. Wolfe, Michael A. Patten,
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A. ABSTRACT

Starting in the autumn of 2009, G. M. Sutton Avian Research Center personnel laid out survey routes in 11 counties that are part of the Lesser Prairie-Chicken's historical range in northwestern Oklahoma in order to conduct a systematic survey across its recent range. At one-mile intervals along these routes, an observer would stop and assess, within a half-mile radius, the average habitat suitability for the Lesser Prairie-Chicken. Habitat was evaluated at 5146 points along 220 routes. During the active lekking season between March and May, stopping points in primary (suitable) and secondary (marginal) habitat were surveyed for the presence of Lesser Prairie-Chickens. In total, 72 leks and 12 sightings of birds off leks were recorded during the two lekking seasons surveyed.

B. INTRODUCTION

The Lesser Prairie-Chicken is a cryptic prairie grouse that is restricted to shrublands and mixed-grass prairie habitats in northwestern Oklahoma, southwestern Kansas, southeastern Colorado, the Texas panhandle, and eastern New Mexico. This species appears to occur at a low density across its range and generally is difficult to detect because of its cryptic coloration and secretive behavior. It is, however, detected more easily during the breeding season when males congregate at display grounds, called leks, to attract females. Their vocalizations on leks can be heard, when conditions are favorable, at distances of up to one mile. Although never numerous in historic times, this species' population size and geographic range have decreased over the past half century. In 1995, the U. S. Fish and Wildlife Service was petitioned to list the Lesser Prairie-Chicken as threatened under the Endangered Species Act. In 1998, a finding of warranted but precluded was issued and the prairie-chicken was added to the list of federal candidate species. During this time, state and federal natural resource agencies within the five-state range of the species formed the Lesser Prairie-Chicken Interstate Working Group to pool resources and encourage the conservation of this species.

The Interstate Working Group developed a Status Assessment and Conservation Strategy for the Lesser Prairie-Chicken that called for, among other actions, an assessment of the current

population status in each state, as well as an evaluation of the currently occupied habitat. The last assessment of the distribution of the Lesser Prairie-Chicken in Oklahoma was conducted in 1999. That survey documented the presence of Lesser Prairie-Chickens in portions of six northwestern Oklahoma counties, but its completeness was constrained by the relatively short lekking season for Lesser Prairie-Chickens (when the species is most easily surveyed) and by the limited access to much of the species' habitat because nearly all of the habitat on which the Lesser Prairie-Chicken occurs in Oklahoma is privately owned. Some of the best habitat occurs on large ranches with relatively little road access; therefore, it is difficult to estimate the prairie-chicken's complete geographic range.

Over the past ten years, additional information has been collected regarding the range of habitats used by Lesser Prairie-Chickens. There has been substantial effort directed toward enhancing habitat conditions on private land by the U.S. Fish and Wildlife Service, the Oklahoma Department of Wildlife Conservation, the U. S. Department of Agriculture and the Sutton Avian Research Center. The Lesser Prairie-Chicken appears to reach its greatest abundance in low, open shrublands dominated by Sand Sagebrush (*Artemisia filifolia*) and Sand Shinnery Oak (*Quercus havardii*); however, mixed-grass prairie and Conservation Reserve Program fields are occupied as well, and the species uses agricultural fields outside of the nesting season.

The purpose of this project was to conduct a systematic survey for the Lesser Prairie-Chicken in order to provide a current assessment of its geographic range in Oklahoma. Previous distribution assessments need to be updated with more recent information and observations. This information can be used to evaluate where habitat enhancements, technical assistance and private landowner outreach efforts should be focused. We surveyed accessible areas that are part of the Lesser Prairie-Chicken's historical range, and assessed by us to possibly include suitable habitat, in order to determine whether they are currently occupied by the species. An additional aspect of this project was to examine the habitat conditions in the Oklahoma Lesser Prairie-Chicken range.

Local residents, ranchers, and land managers can have information about Lesser Prairie-Chicken populations that are unknown to researchers and wildlife conservation personnel. In an effort to obtain sightings of the Lesser Prairie-Chicken beyond those already known by project personnel, the Sutton Center set up an interactive webpage through which anyone may submit prairie-chicken sightings. This webpage is accessible at: http://www.suttoncenter.org/pages/lesser_prairie_chicken_observations.

The page includes an interactive mapping feature that allows individuals to pin point or approximate the locations of their sightings and to determine their latitude and longitude coordinates. The webpage also requests other information about each prairie-chicken sighting including the name and contact information for the observer, the date of the observation, the number of birds seen, the behavior of the birds and a description of the surrounding habitat. The webpage was completed in January 2010.

C. PROJECT OBJECTIVE

Conduct a systematic survey for the Lesser Prairie-Chicken in northwestern Oklahoma.

D. APPROACH

In preparation for the first field season in March 2010, we developed protocols for assessing habitat quality and conducting listening surveys (Appendix 1). The technicians were provided record sheets with a map of each route and its stopping points (Appendix II). Listening surveys were conducted in early morning hours, when males display at leks, from mid-March through mid-May of 2010 and 2011. All detections of Lesser Prairie-Chickens were mapped.

A geographical database was developed (digitized in ArcGIS version 9.3) that provides the survey routes, the stopping points, the locations of Lesser Prairie-Chicken leks and sightings, and the detection dates. The average habitat suitability for the Lesser Prairie-Chicken within a half-mile radius of each stopping location was quantified by means of a general habitat suitability index (HSI), scored as 1 = primary or suitable, 2 = secondary or marginal, 3 = unsuitable. The general guidelines to evaluate the habitat are outlined in appendix 1, and less experienced technicians were trained by our lead technician, who has over a decade of field experience working with the Lesser Prairie-Chicken. The HSI, year, and month of the habitat evaluation were recorded in a related table to the stopping points in the geographical database, as was additional lek and sighting information (number of birds, observer, and location precision).

Habitat assessments were conducted ahead of the listening surveying in the field season of 2011. Because the lekking behavior occurs during a limited time frame, those stopping points where the habitat was deemed unsuitable were not surveyed. We were, therefore, able to survey more routes and cover a larger geographical area.

E. RESULTS AND DISCUSSION

We completed a total of 220 survey routes during the grant period, which included parts or the majority of the following counties: Cimarron, Texas, Beaver, Harper, Woods, Ellis, Woodward, Dewey, Roger Mills, Beckham, and Custer counties (Figure 1, larger version attached as PDF). Most survey routes were 23 miles in length, with habitat evaluation points/listening stops at every mile (24 stops per route). Some routes varied slightly in length due to road availability (an average of 23.4 stops/route). In total, 5,143 stopping points were evaluated for habitat suitability along these 220 survey routes (Table 1). Across all points a majority of habitat was judged to be marginal for the needs of the Lesser Prairie-Chicken. Eastern redcedar (*Juniperus virginiana*) encroachment was noted to negatively affect habitat suitability evaluations in the southeastern portion of the species' historical range (i.e., large parts of Roger Mills, Dewey, and Woodward Counties). Agriculture has affected the former range of Lesser Prairie-Chicken in Texas County. Avoidance of wind turbines by the Lesser Prairie-Chicken has not been quantified explicitly, so we did not evaluate habitat impacted by wind farms as unsuitable if the habitat was otherwise suitable or marginal; hence, we listened for Lesser Prairie-Chicken leks at stopping points in the vicinity of wind energy developments.

At stopping points that were considered "primary" (suitable) or "secondary" (marginal) for Lesser Prairie-Chicken occupancy, field personnel listened for 5 minutes for the presence of

prairie-chickens. In total, 72 Lesser Prairie-Chicken leks were recorded. Additional leks that were observed during Sutton Center's field work with Lesser Prairie-Chicken 1999-2009 in Ellis County were also included in the geographical database (Figure 1).

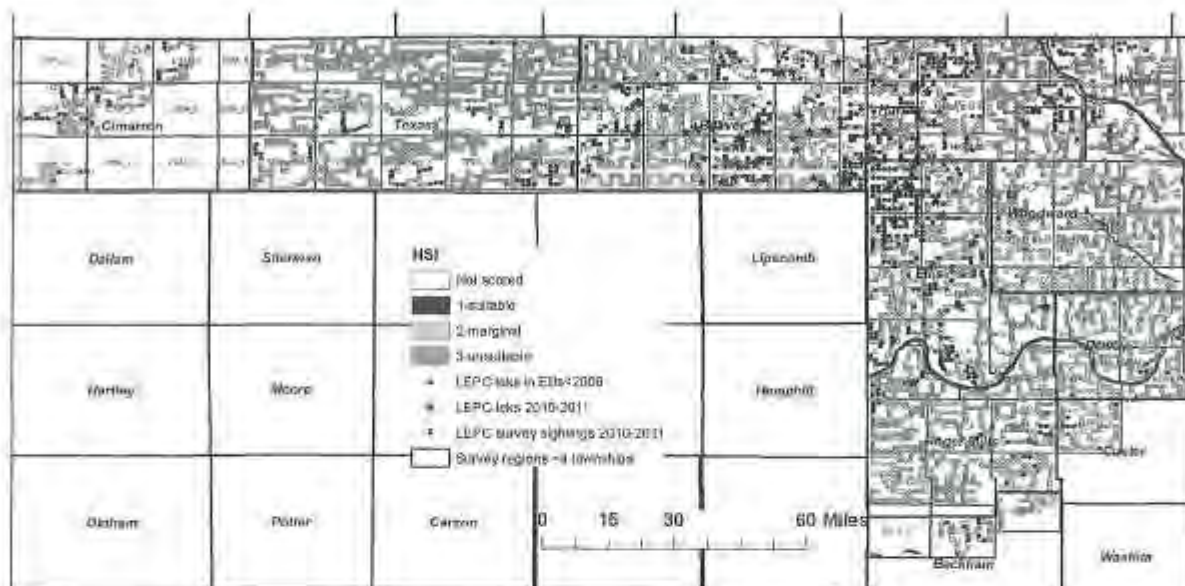


FIGURE 1. Geographical area with stopping points marked according to habitat suitability index (HSI), and recent leks of the Lesser Prairie-Chicken based on Sutton Avian Research Center's surveys in northwestern Oklahoma.

TABLE 1. Score evaluations for general Lesser Prairie-Chicken habitat within half mile radius of each stopping point.

Habitat Suitability	No. of stopping points
1 Primary	812
2 Secondary	2239
3 Unsuitable	2092
Grand total	5143

An additional route was digitized where public road access was limited but where we were granted land access. Therefore 22 stopping points (beyond the 5143) were assessed for habitat suitability in southern Ellis County – specifically parts of Packsaddle Wildlife Management Area and north thereof. This addition was done after 15 May 2011, so the survey did not include listening for birds.

There were four routes where the habitat was evaluated but the assigned field personnel were not able to complete the listening survey during the 2011 lekking season due to uncooperative weather conditions.

All routes, listening points, and leks that were found during the systematic survey have been digitized, and those data have been submitted to ODWC.

F. SIGNIFICANT DEVIATIONS

None

G. COST

H. PREPARED BY:



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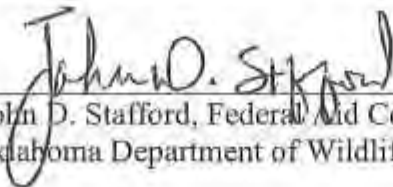
Michael A. Patten, Associate Professor
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I. DATE: 9 April 2012

J. APPROVED BY:



Wildlife Division Administration
Oklahoma Department of Wildlife Conservation



John D. Stafford, Federal Aid Coordinator
Oklahoma Department of Wildlife Conservation

APPENDIX I - Protocol for conducting LPCH surveys:

General:

- We will conduct surveys in Beaver County, northern Beckham County, parts of Cimarron County, northwestern Custer County, western Dewey County, Ellis County, Harper County, Roger Mills County, Texas County, western Woods County, and Woodward County. Habitat suitability will be assessed before listening surveys. Those stopping points that have an average HSI score of 1 or 2 are to be revisited in the time period when birds are active at leks.
- Listening surveys will begin in mid March, and will be conducted through mid May, unless earlier stoppage is deemed necessary.
- If there are questions about survey routes, or if problems are encountered on routes, contact Lena or Don.
- Each survey route should take three hours or less.
- All field personnel will conduct surveys 6 mornings per week, as weather allows, from mid March through mid May.
- For every FOUR whole townships (=REGION), THREE survey routes will be identified, each being 23 miles (24 stops) in length. The routes may be fewer or of different lengths (some regions differ in size and public roads may be limited).
- A data form for each survey route will be prepared by Don and/or Lena and distributed to field personnel.
- One survey should be done each day by one observer. For a few selected routes, a second observer will complete the same route on a different day to determine the amount of consistency between observers.
- All surveys should be started FORTY-FIVE minutes before sunrise, with an **absolute late start time** of sunrise.
- Routes should end at 1.5 hours after sunrise, but habitat evaluations should be completed. Listening stops not completed by 1.5 hours after sunrise should be completed at a later date.
- Listening stops will be at 1-mile intervals.
- Surveys should not be done if there is steady rain or winds exceeding 20 Kilometers per hour at the start.
- Basic familiarity with county maps and the usage of township maps will be expected. For reference, please see the standard township map with section numbers below:

		Range					
		6	5	4	3	2	1
		7	8	9	10	11	12
Township		18	17	16	15	14	13
		19	20	21	22	23	24
		30	29	28	27	26	25
		31	32	33	34	35	36

Survey Route Instructions:

- Be at the first stop by 45 minutes before sunrise, preferably by 1 hour before sunrise. Allow ample commute time to the beginning of the route.
- If there is steady rain or winds exceeding 20 km/hour at the beginning of the survey, do not conduct the survey that day. If sustained winds reach 30 km/hour later during the survey, or if winds are gusting enough that your ability to hear is severely impaired, cease the survey, and complete it a different day. The habitat evaluations should be continued (thus, all remaining stops with a habitat ranking of 3 will not need to be revisited).
- At the first stop (beginning of route) record start time, temperature, wind speed, and amount of cloud cover.
- Routes will be 23 miles, with stops at every mile (24 stops total). Distance for some routes may vary.
- At each stop, move approximately 100 meters from the road intersection (or to the nearest hilltop).
- At EACH stop, record the general habitat suitability (HSI; 1 = Primary or suitable; 2 = Secondary or marginal; 3 = unsuitable) for a ½ mile radius surrounding the point. Please use the following criteria for aiding in your habitat evaluation (keep in mind that these are only guidelines to aid in your evaluation):
 - o Shrub cover: 1 = >20% shrub canopy cover; 2 = 10-20% shrub cover; 3 = <10% shrub cover.
 - o Grass cover: 1 = >50%; 2 = 25-50%; 3 = >25%.
 - o Grass height (average): 1 = >20 cm; 2 = 10-20 cm; 3 = <10 cm.
 - o Trees, height > 2 m: 1 = none or few; 2 = some or concentrated in small proportion of area; 3 = many.
 - o Agriculture: 1 = < 30%, 2 = 30-70%, 3 = >70%.
 - o Fences: 1 = low (fences on full sections or greater); 2 = moderate (fences on ¼ sections); 3 = high (fences on smaller than ¼ sections).
 - o Power lines: 1 = low (distribution lines on none or few section lines); 2 = moderate (lines on all section lines); 3 = high (distribution lines or transmission lines in interior of section(s)).
 - o Roads: 1 = low (section lines or less); 2 = moderate (section lines and few interior roads); 3 = section lines and many interior roads).
 - o Oil/gas wells: 1 = none visible within ½ mile radius; 2 = low density (<2 visible within ½ mile radius); 3 = high (>2 visible within ½ mile radius).
 - o Wind turbines: within ½ mile radius, downgrade otherwise primary habitat with habitat score 1 to HSI = 2. Note WFI – 1 (wind farm impact) after score. Do not change marginal habitat scoring 2 or if turbines are > ½ mile distant in otherwise primary habitat, but note WFI.
 - o Other vertical structures: 1 = none visible within ½ mile radius; 2 = low (<2 visible within ½ mile radius); 3 = high (> 2 visible within ½ mile radius).
- If your habitat score at a given stop is 3, then move to the next stop (be sure to record habitat score at EACH stop, regardless of whether listening was conducted).
- If your habitat score at a given stop is 1 or 2, then listen (outside, with vehicle engine off) for FIVE minutes.
- If a lek is heard or seen, record your lat/long and the bearing to the lek, mark its approximate location on the map, and record the township, range, and section for the lek. IF POSSIBLE, please attempt to get lat/long and bearing from 2 additional points, at least 100 meters apart, so that triangulations can be done.
- If birds are visible on the lek, count (or estimate) the number of birds (do not worry about sexing the birds). Also, please note if any Ring-necked Pheasants are seen on or near leks.
- At each stop, please note if there is traffic noise, pump-jack noise, or other factors that may affect listening.
- Any other special note or observations should be recorded in the "notes" section of the data form.
- All LPCH seen, whether on routes or while driving to or from routes should be noted in detail (TRS, lat/long, etc.)

APPENDIX II – Record sheet for Sutton Center’s Oklahoma Lesser Prairie-Chicken survey

LPCCH SURVEY - Ellis County Region 9

Route no. 2

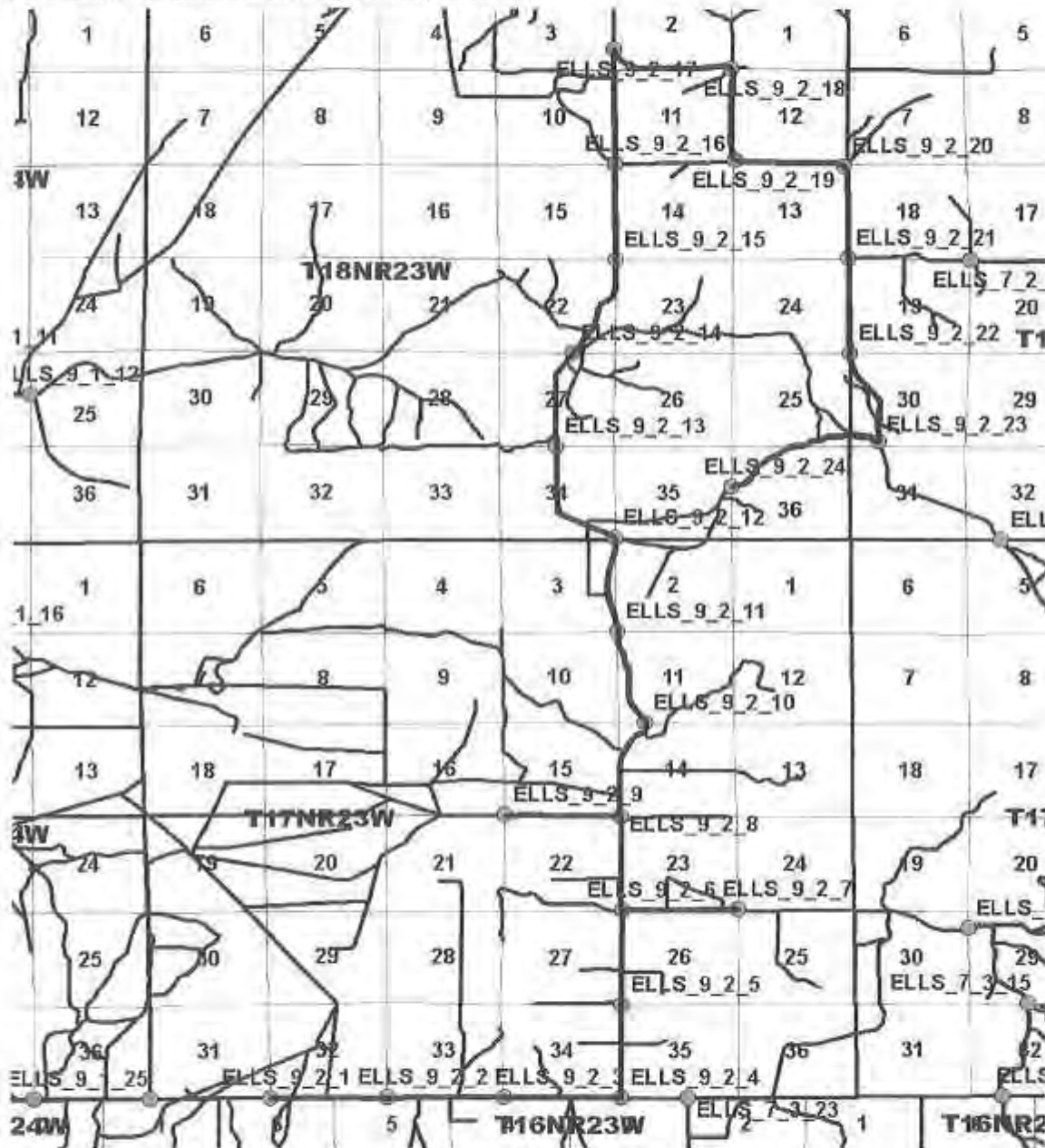
Date _____ Start Time _____ End Time _____ Obs _____

Initial windspeed _____ Temp _____ Cloud cover _____

(note how/if conditions change significantly at stop #)

Habitat description:

- Primary (1)
- Secondary (2)
- Unsuitable (3)



Stop #	Habitat score
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Leks/Birds observed (TRS = township/range/section; mark site on map):

- Lat/Long: _____ Bearing: _____ TRS: _____ # birds: _____
- Lat/Long: _____ Bearing: _____ TRS: _____ # birds: _____
- Lat/Long: _____ Bearing: _____ TRS: _____ # birds: _____
- Lat/Long: _____ Bearing: _____ TRS: _____ # birds: _____

Notes

