

FINAL PERFORMANCE REPORT



Federal Aid Grant No. F13AP00196 (E-80-R-1)

**Assessing Black-capped Vireo Response to Wildfire
in Southwestern Oklahoma**

Oklahoma Department of Wildlife Conservation

March 15, 2013 through March 14, 2014

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State: Oklahoma

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Grant Program: Endangered Species Act Traditional Section 6

Grant Title: Assessing Black-capped Vireo Response to Wildfire in Southwestern Oklahoma.

Grant Dates: March 15, 2013 - March 14, 2014

Principal Investigator: Joseph A. Grzybowski, University of Central Oklahoma

BACKGROUND:

Fire plays a major role in driving ecosystem structure and processes and many threatened and endangered species occupy fire-dependent ecosystems, including high profile species such as the Kirtland's Warbler (*Setophaga kirtlandii*) and Red-cockaded Woodpecker (*Picoides borealis*) (Hunter et al. 2001). The Black-capped Vireo (*Vireo atricapilla*) occupies fire-dependent shrublands in Oklahoma, Texas and northern Mexico (Grzybowski 1995, Wilkins et al. 2006) and most often occurs in early successional vegetation that is created or maintained by disturbances such as fires (Graber 1961, Benson and Benson 1990, USFW 1991). Previous research at several study sites in Texas (Tazik et al. 1993, Cimprich 2002, Dufault 2004) and Oklahoma (Grzybowski 1989, Grzybowski 1990) indicate that Black-capped Vireos move into sites with recent fire histories; however, such responses have not been quantified or placed into management planning or landscape-level planning for maintaining vireo populations.

The 2011 wildfires on and surrounding the Wichita Mountains in southwestern Oklahoma provide a unique and valuable opportunity to assess habitat-specific demographic responses of Black-capped Vireos to a wide range of fire effects. Because numerous other animal species occupy the general habitat conditions used by the vireo, this research is applicable to management and conservation to a broader suite of species. During the past ~25 years, Grzybowski and associates have gathered substantial data regarding the distribution, abundance, and general behavior of the Black-capped Vireo in the Wichita Mountains (e.g., Grzybowski et al. 1994, Grzybowski 1990, Grzybowski 2005). Thus, preliminary data already exist as a basis of comparison to examine the responses of vireos to recent fires and habitat changes. Black-capped Vireos show a strong tendency toward philopatry and vireos typically display short dispersal distances. The fire events of 2011 were extensive and potentially changed the vegetation structure and characteristics over nearly half of the area that was occupied by Black-capped Vireos in Oklahoma in 2010 and 2011. The effects of this dramatic, short-term disturbance on vireo breeding populations is unknown, but may trigger a much higher incidence of dispersal that is seen in typical years. Through this project, we will examine the response of the Black-capped Vireo population in the Wichita Mountains region to habitat-altering wildfire in terms of altered distribution and habitat use. Data that are collected with regard to habitat use

will add to a larger effort to develop a management tool that allows land managers to determine the types, levels, intensities, and locations of fire and fuel management activities that will minimize their negative effects and enhance their positive effects on vireo habitat and populations.

Through this project, we collected data on the response of Black-capped Vireos to recent fires on private lands in the Wichita Mountains region. We chose specific sites to sample within the broader study area based on their fire history, pre-fire vegetation phases, and landowner cooperation. We collected field data regarding vegetation and vireo responses to fire, and will use these data to verify and refine vegetation phase classifications that can quantify transitions between the vegetative states. These data will be applied to mixed models that can predict vireo responses as a function of the post-fire vegetation, time since fire, and weather conditions. This report summarizes the first year of what is planned to be a three-year study of the dispersal and post-fire distribution of Black-capped Vireos in the region surrounding the Wichita Mountains Wildlife Refuge.

OBJECTIVE:

The objective of this grant is to document and quantify the responses of Black-capped Vireos to the recent wild fires that have occurred in the Wichita Mountains region.

RESULTS AND DISCUSSION:

In May and June of 2013, we searched private lands for the presence of Black-capped Vireos and potential Black-capped Vireo habitat. The initial search and survey was primarily a cursory effort to identify areas that contained potential vireo habitat, and to listen in habitat areas near roads for singing male Black-capped Vireos. The primary intended search zone focused on areas of Kiowa and Comanche counties west and north of the federal lands on the Wichita Mountains Wildlife Refuge and Fort Sill Military Reservation that contain a large and growing population of Black-capped Vireos. Additional areas in Caddo, and Greer counties also were examined because they supported potentially suitable habitat and/or supported Black-capped Vireos historically. In areas with deciduous scrubland habitat near roads, we attempted to listen for singing Black-capped Vireos. A few contacts were made with private landowners along the western edge of the Wichita Mountains outside of the Wildlife Refuge, and these properties were surveyed. During the course of the 2013 surveys, we identified areas upon which to focus the search effort during the 2014 breeding season.

Specific areas searched:

- 1.) The area of scrubland habitat in southeastern Caddo County and northeastern Comanche County that extends both north and south of I-44 for several miles.
- 2.) The rocky outcrops that exist north, west and immediately east of the Fort Sill Military Reservation and the Wichita Mountains Wildlife Refuge. This area extends from Medicine Park in the east, to the outcrops north of the Refuge in Comanche County, to the Slick Hills in southern Caddo County, to the outcrops in Kiowa County north of and along highway 62 and to the Quartz Mountain State Park complex in eastern Greer County.

Black-capped Vireos were found at three specific private land locations (see Figures 1 - 3):

- 1.) Immediately south of Lake Lawtonka in Medicine Park, Comanche County;
- 2.) Just over the west boundary fence of the Refuge in Comanche County where highway 49 exits the Refuge;
- 3.) A northwestern extension of the Wichita Mountains jutting in southeastern Kiowa County northwest of the Refuge

Much of the woody-cover area that was searched in Caddo, Greer and Comanche counties has matured beyond the stage of suitability for Black-capped Vireos. Most of the outcrop areas in Comanche County north of the Refuge could not be searched specifically; however many contained taller oaks that are unlikely to be suitable as vireo habitat. One area with potential habitat north of the Refuge was unoccupied; however the hills along Lake Lawtonka supported at least two male Black-capped Vireos on territories.

Among the outcrops in Kiowa County, many contained no oak vegetation. Some were largely barren of any woody vegetation or were very sparsely vegetated with the woody vegetation consisting primarily of patches of hackberry, skunkbush and juniper along ephemeral drainages. Among the areas that contained suitable-appearing oak habitat were the outcrops just south of Snyder (although no vireos were heard from roads or right-of-ways), and the taller hills closer to and southeast of Quartz Mountain (in Kiowa County). One area of Quartz Mountain State Park (Greer County) along the roadway leading to the lodge contained suitable appearing habitat; however, no vireos were heard. These areas will be revisited in 2014, and, where needed and possible, property access obtained.

SIGNIFICANT DEVIATIONS: There were no significant deviations.

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Figure 1. Medicine Park/Lake Lawtonka Black-capped Vireo Detections, Comanche County, 2013

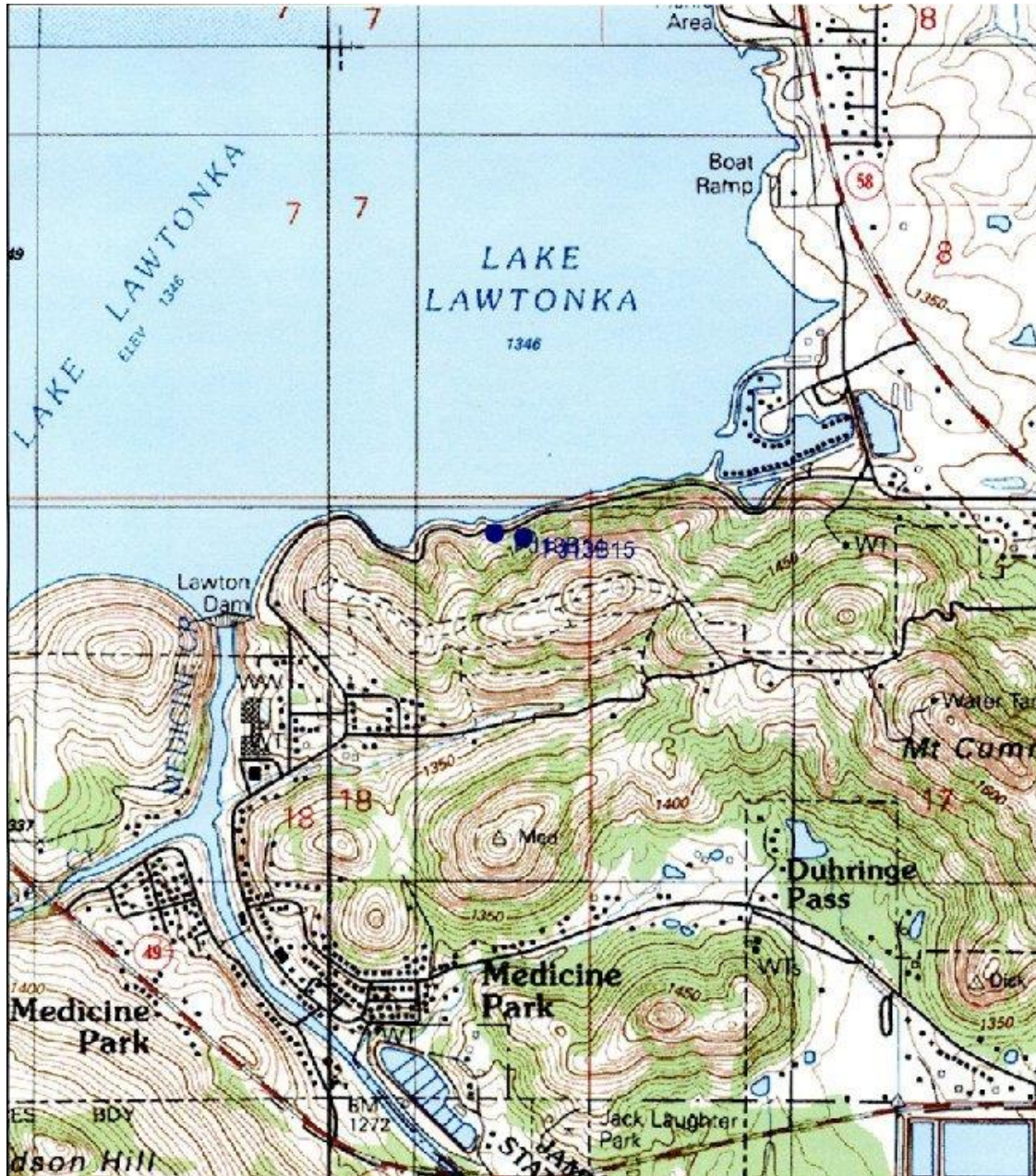


Figure 2. Black-capped Vireo Detections in Granite Outcrops West of the Wichita Mountains Wildlife Refuge, Comanche County, 2013

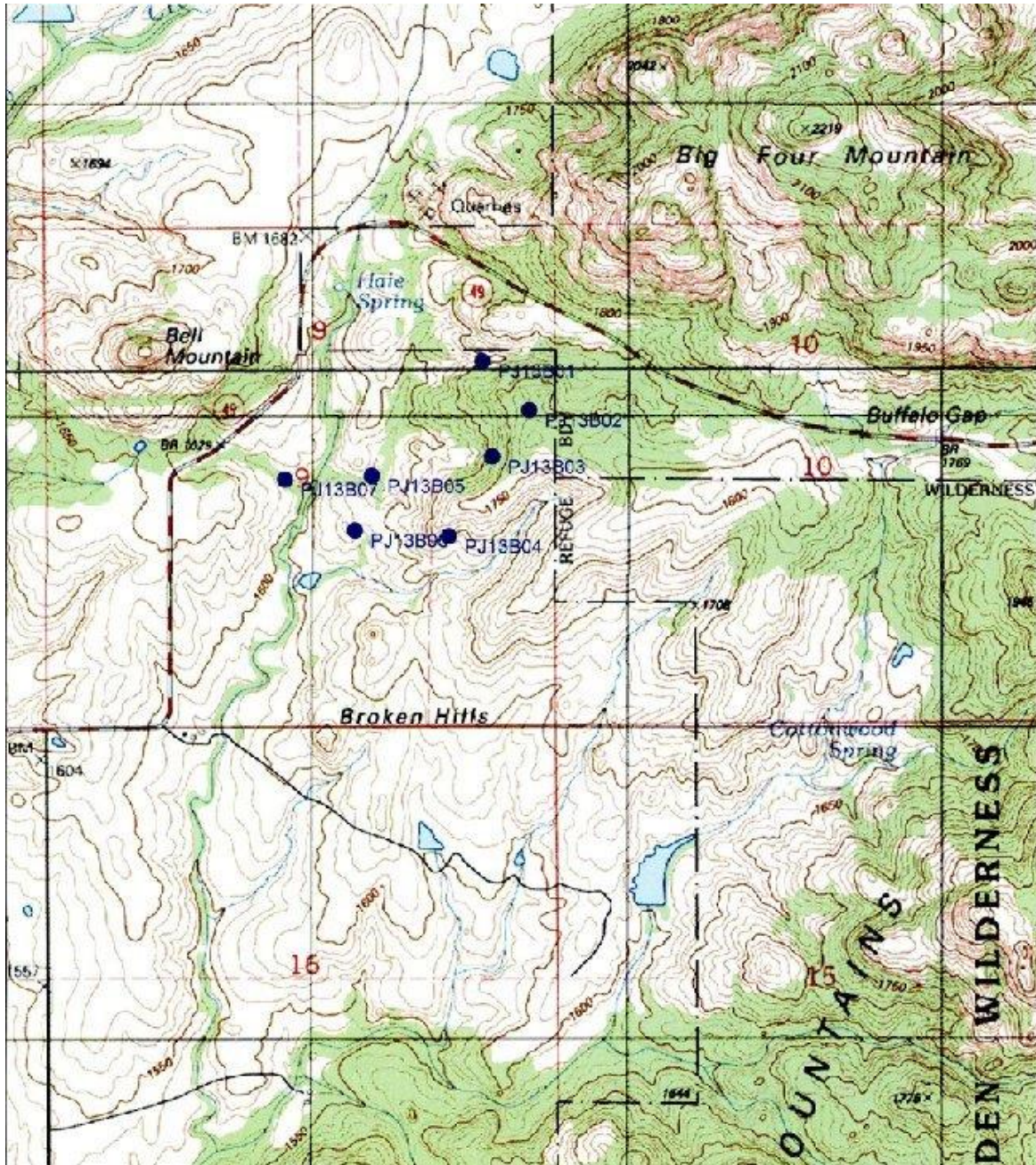
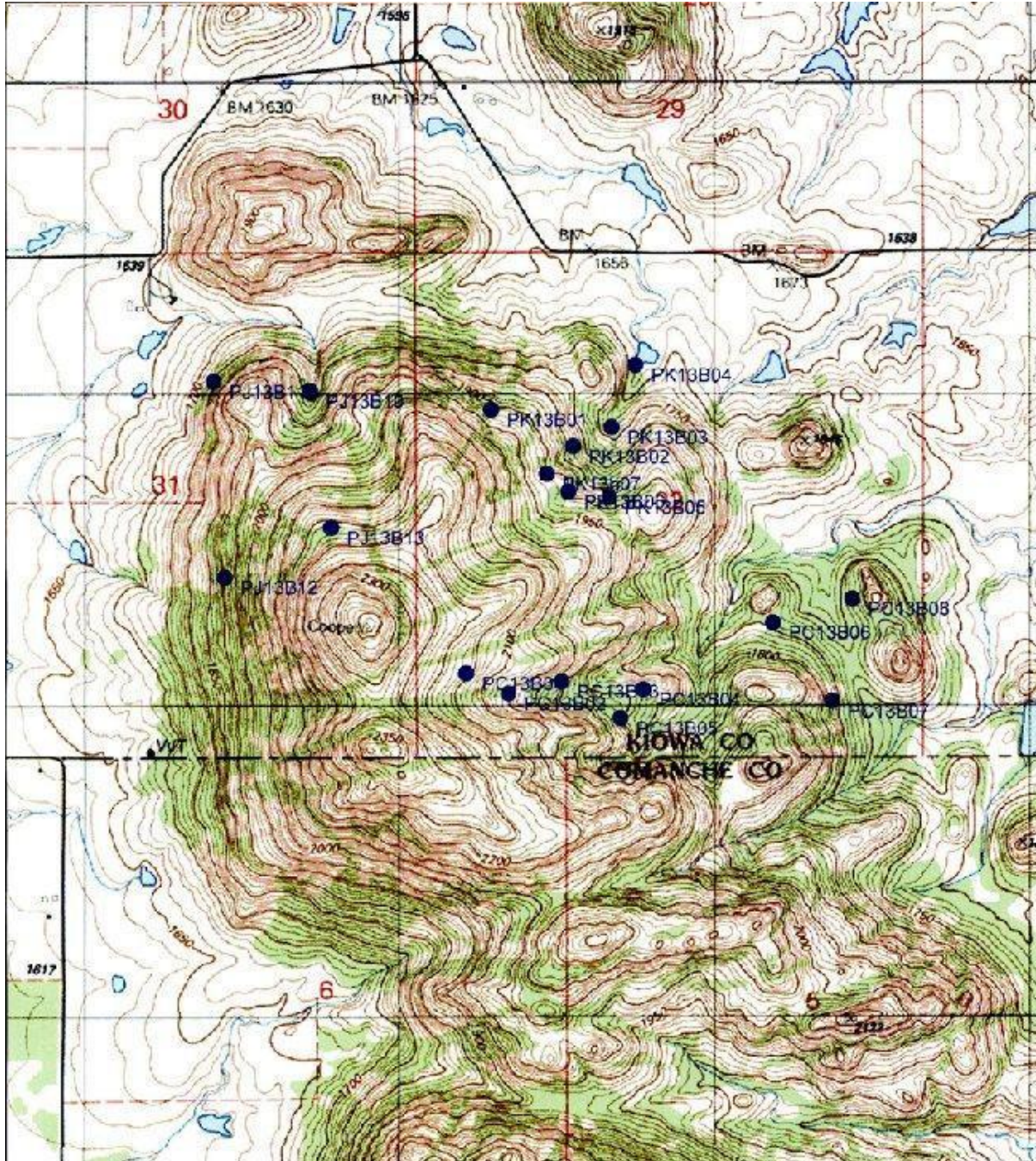


Figure 3. Black-capped Vireo Detections in Granite Outcrops Northwest of the Wichita Mountains Wildlife Refuge, Southeastern Kiowa County, 2013.



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