PERFORMANCE REPORT

SECTION 6

ENDANGERED SPECIES ACT

FEDERAL AID PROJECT E-45-7

Reproductive Enhancement and Population Monitoring
of Black-capped Vireos in Blaine County

MAY 1, 2003 - APRIL 30, 2004

State of Oklahoma Project Number E-45-7

Project Type: Endangered Species Research

Project Title: Reproductive enhancement and population monitoring of Black-capped Vireos in Blaine County, Oklahoma.

Project Period: May 1, 2003 – April 30, 2004

Project objectives: Monitor the number and distribution of Black-capped Vireo territories in the Salt Creek Canyon area of Blaine County, Oklahoma. Initiate and maintain cowbird removal, using proven protocols, to reduce brood parasitism of vireo nests and increase seasonal fecundity of vireos.

GRZYBOWSKI, J.A. 2004. Reproductive enhancement and population monitoring of Black-capped Vireos in Blaine County, Oklahoma. Oklahoma Dept. Wildl. Conserv. Performance Rep., E-45-7.

ABSTRACT:

The objectives of this project were to obtain estimates of the numbers, age structure, reproductive success, and factors influencing reproductive success of Black-capped Vireos in Salt Creek Canyon and area, Blaine County, Oklahoma, and to enhance vireo reproductive success through removal of cowbirds from vireo breeding areas, and removal of cowbird eggs from parasitized nests.

In 2003, 17-18 males and 12-13 females were located. Of 17 males, 3-4 were aged as yearlings (18-24%). Fifteen nests were located. Of 12 that were observed with contents, four were parasitized (33%); all cowbird eggs or young were removed from active vireo nests. Of 12 active nests observed, six fledged vireo young and five were depredated; in the 12th nest, a late-season nesting, the young were found dead in the nest, reaching 7-days of age. Two broods were first located when fledged. The 12-13 females fledged 8 broods and 23-27 young, or 1.77-2.25 young per female, most likely (with 12 females) 1.91-2.25 young/female.

The methods of enhancing vireo reproductive success are removal of adult cowbirds from the area. Cowbirds were removed through trapping from 18 April through 18 July, 2003. This removal was also supplemented by shooting cowbirds present in he canyons. In 2003, 64 male cowbirds and 24 female cowbirds were removed from the canyon areas, 44 males and 9 females by trapping, 20 males and 15 females by shooting.

INTRODUCTION:

The Black-capped Vireo (*Vireo atricapillus*) has been designated an endangered species by the U.S. Fish Wildlife Service (USFWS; Ratzlaff, 1987). Populations in Oklahoma have declined substantially in recent times (Grzybowski et al. 1986), and this decline extends over most of the vireo's range in north-central and central Texas (USFWS 1991, Grzybowski 1995). Major factors in the decline are brood parasitism by Brown-headed Cowbirds (*Molothrus ater*) and alteration and loss of its shrubland habitat through fire suppression and subsequent maturation, various forms of agricultural conversion, and development projects (Grzybowski 1995).

In Oklahoma, the Black-capped Vireo is now known to exist in only three areas: (1) the Wichita Mountains Wildlife Refuge and portions of the adjacent Fort Sill Military Reservation, Comanche County; (2) canyons of Blaine County, primarily the Salt Creek area; and (3) cross-timbers scrub near Lake Stanley Draper in Cleveland County. The largest number of vireos occurs in the Wichita Mountains while only a few pairs have persisted in recent times at the Lake Stanley Draper site (Grzybowski 1995; V. Byre, pers. comm.).

The canyonlands of Blaine County were the location where Bunker (1910) first discovered the vireos in Oklahoma, collecting 48 vireos from 1901 to 1903, and locating many nests. His original descriptions of the deep canyon terrain closely match that for the upper reaches of Salt Creek. Vireos were next noted in Blaine County during 1955 when Jean Graber conducted her landmark study on the species (Graber 1957), although she did not make observations in the Salt Creek area. Vireos have been recorded in the cross-timbers above the escarpment, and were believed locally common in Blaine and eastern Dewey counties in the 1950's and 1960's (Graber 1961; Grzybowski et al. 1986). In 1963, Joel Cracraft collected a pair 6 mi. S and 6 mi. W of Okeene, Oklahoma, placing his birds at or near Salt Creek Canyon.

In 1985, an extensive survey of west-central Oklahoma disclosed the Salt Creek Canyon area as the northernmost breeding location for Black-capped Vireos in their current range (Grzybowski 1985). This group of birds has been monitored here since that time (Grzybowski 1992, 2002, Jones 1995). This work began under the auspices of the Nongame program of the Oklahoma Department of Wildlife Conservation and Section 6 funding from Region 2 of the USFWS. In 1990, the Oklahoma Chapter of The Nature Conservancy, in conjunction with the Oklahoma Department of Wildlife Conservation, and the Ecological Services office of the USFWS in Tulsa, initiated a recovery effort for the Blaine County Black-capped Vireo population. The work reported herein for 2003 is a continuation of this joint population monitoring and management effort.

METHODS:

The objectives for this segment of the project were to obtain estimates of the numbers, age structure, reproductive success, and factors effecting reproductive success of the Black-capped Vireos in the Salt Creek Canyon area, and to enhance vireo reproductive success through removal of cowbirds from the area, and removal of cowbird eggs from parasitized nests. The focal area for the work included the canyons at the upper reaches of Salt Creek, and a collection of draws and canyons just to the south, including, most notably, portions of Ruby Mills Canyon. The search zones included all areas where vireos had been observed since 1985 as well as any intervening scrubby habitat, and most adjacent canyons.

Description of Study Area:

A site description for Salt Creek Canyon and area is given in Jones (1995). Essentially, the areas include a series of eroded canyons of up to 65 m in contour change. Several strata of gypsum occur in the canyon walls and near the tops. As these are undercut by erosion, significant parts have broken off and slid down the steep slopes clearing swathes of vegetation. Although this natural clearing can result in the vegetation returning to scrubby deciduous forms suitable for vireos, much of the area is still overgrown primarily with stands of mature junipers (*Juniperus virginianus*). The primary deciduous woody species in these canyons are eastern redbud (*Cercis canadensis*), roughleaf dogwood (*Cornus drummondii*), chittamwood (*Bumelia lanuginosa*), hackberry (*Celtis* sp.), and American elm (*Ulmus americana*). While oaks of scrubby stature are frequently an important component of vireo habitat (Grzybowski et al. 1994), only a few small pockets containing oak occur in the canyons, these being of burr oak (*Quercus macrocarpa*) and shin oak (*Q. sinuata*)—species uncommon in the area at large.

Collection of Field Data:

A general survey of the Salt Creek Canyon areas was conducted from early to late May by the principal investigator. Areas were systematically searched primarily on foot in a manner that allowed the observer to be within hearing of most potential sites for at least 20 minutes. The range of suitable detection was generally considered to be 100-150 meters line-of-sight, although some birds have been detected as far away as 0.45 miles.

Although almost all vireos were initially detected by their vocalizations without any stimulation, recordings of vireo songs were used at most locations where no vireos were noted in attempts to elicit responses from potentially silent birds. Overall, the recordings were used judiciously, with no more that a few phrases given in a burst, and for fewer than ten bursts in any one area, most frequently fewer than five. As birds were located, efforts were made to separate other potential males by positioning the observer(s) so that they could follow a male's movements, or simultaneously hear separate males. Plumage characteristics of the cap, and any bands were also recorded. The birds so located provided a count representing an estimate of the population in the Salt Creek Canyon area.

All birds found were monitored at intervals through the remainder of the nesting season, a period that extended from mid-May through early August. Monitoring involved the determination of potential age, mated status, and the reproductive status during each

visit. The latter was accomplished by locating nests or young. Cowbird eggs and chicks were generally removed from active nests when found (if nest was in or potentially in an advanced stage, or return by observer was not likely before the cowbird egg or chick would further impact vireo reproductive success), or on a subsequent visit.

Cowbird Removal

Cowbird decoy traps were used. Cowbird decoy traps were used. These are basically aviaries about 12' X 8' X 6' with a funnel entrance at the top. Live cowbird decoys are placed in the trap, usually 3-4 males, and two females with food and water sources. The flocking tendencies of cowbirds, along with food (usually sunflower seeds), attract cowbirds into the trap through the funnel.

Cowbird trapping was initiated April 18. Four decoy traps were operated. These were placed at four locations; two near the main canyons, and two above smaller canyons just to the south. No traps were operated beyond July 18.

Cowbirds were also collected in the canyon areas with vireos through shooting. This process was enhanced by playing back tape recordings of the male cowbird's song, and the female's rattle call while the canyon areas were systematically walked during the early part of the vireo nesting season.

RESULTS:

Surveys and monitoring revealed 17-18 adult male and 12-13 adult female Black-capped Vireos in Blaine County during 2003 (Figure). Mating success was about 70%. Two of five banded males that were present in 2001 were observed also in 2002. These two birds and a third banded male were located in 2003. Three, possibly four, males (18-24%) were assessed as yearlings based upon the gray plumage in their napes.

Of the 17-18 males located, 13-14 had reproductive opportunities at some time during the breeding season. Two males apparently lost females from early-season matings. Non-overlap in detected nestings suggested that one of these females could simply have moved to another male. Other mate-swapping also may have occurred.

Fifteen vireo nests were located during the season. Three were not observed with contents, and all three were located while being built. Of the remaining 12 nests, four (33%) were parasitized [although an underestimation bias can exist in opportunistically sampled nests of host species (i.e., when not all nests are found during nest-building)].

Of the fifteen nests found, four were first discovered during nest-building, one during egg-laying, nine during incubation, and one already with nestlings. Three were never observed with contents, six fledged vireo young, and five were later depredated. The young in the remaining nest died after reaching a stage indicating 8+ days of development after hatching. Clearly, other nests not located were depredated as well and, more likely at earlier stages. Other undiscovered nests could have been parasitized and abandoned.

The 12-13 females fledged 23-27 vireo young. Seasonal fecundity was between 1.77-2.25 young per female. Because females can change mates, the more likely range of reproductive success for the 12 certain females was 1.91-2.25. This approximates the 2.00 young per female needed for average replacement, or perhaps slightly above. The 12-13 females noted this season was higher than the 8 noted in 2002, and at least ties with the highest yet noted in the canyons since the late 1980's (11-12 in 1995; see Grzybowski 2002).

Cowbird Removal

Cowbird traps, operated from 18 April through 18 July 2003, removed 44 male and 9 female cowbirds. An additional 20 male and 15 female cowbirds were collected directly from the canyons between late April and early June. Several were collected directly from occupied vireo territories. Among the four parasitized nests, three cowbird eggs and one cowbird chick were removed. Three of these nests fledged vireos, although all with reduced broods, in one case reduced to two young. Thus, cowbird removals and nest checks remain an integral part of enhancing reproductive success for these Blaine County vireos.

RECOMMENDATIONS:

1.) Landowner contact and monitoring of vireos should continue in the Salt Creek Canyon area.

2.) The basic need to increase reproductive success of the vireos to greater than 2.00 young/female is still evident. Cowbird trapping is an obvious recommendation as it will decrease the number of eggs female vireos have to lay and increase the number of young they produce. Removal of cowbirds directly from the canyons by shooting near arrival times of vireos may both target cowbirds actually affecting vireos and enhance success of early vireo nesting efforts.

3.) Removal of cowbird eggs from active nests allowed success in several other seasons; this strategy should continue to be used to enhance vireo reproductive success.

ACKNOWLEDGMENTS:

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This study was a joint cooperative venture from several conservation groups and natural resource agencies including The Oklahoma Nature Conservancy, the Ecological Services Office of the USFWS in Tulsa, and the Wichita Mountains Wildlife Refuge. Instrumental in this support were Mark Howery, Joe Kimball, Kevin Stubbs, Sam Waldstein, and Chris Hise. The Wichita Mountains Wildlife Refuge has also allowed continued use of a mobile cowbird trap, and a number of initial decoy cowbirds; Sam Waldstein, Joe Kimball and Chip Kimball were supportive and instrumental in this process. In addition, Kevin Stubbs and Chris Hise assisted in operating the cowbird traps and in collecting cowbirds directly from the canyons.

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APPROVED BY: Oklahoma Department of Wildlife Conservation

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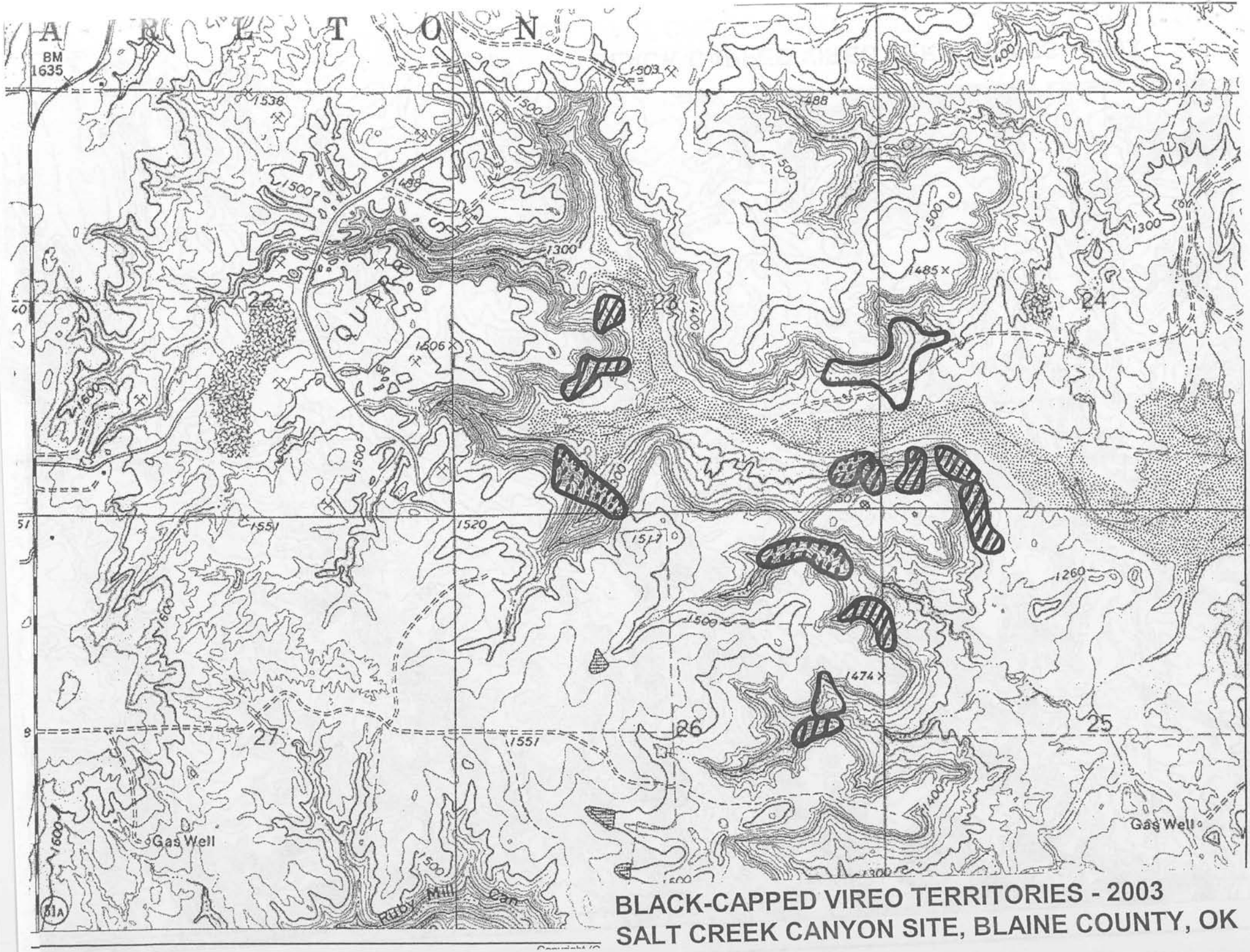
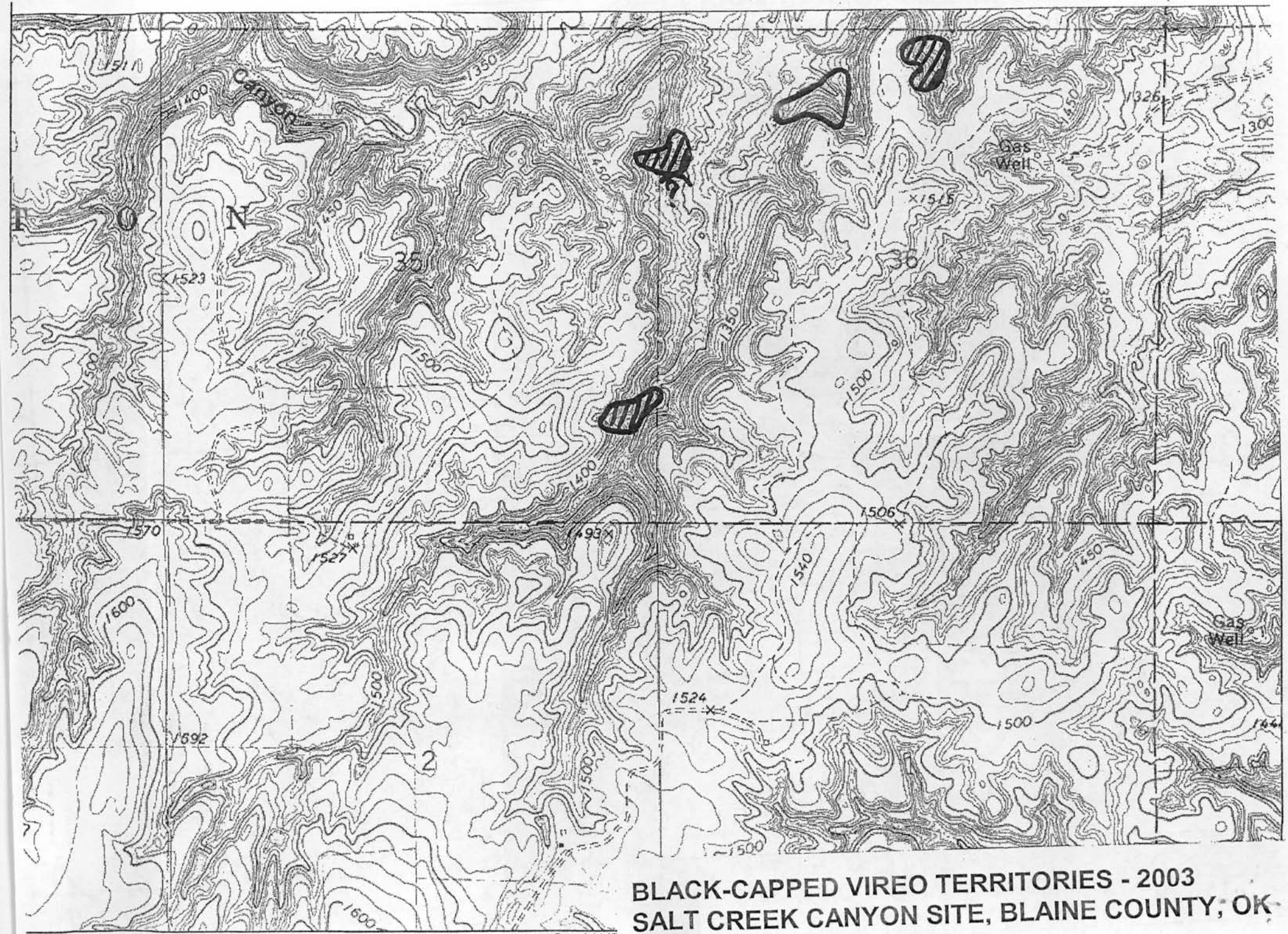
Figure 1. Locations of Black-capped Vireo territories in the Salt Creek Canyon area of Blaine County, Oklahoma during 2003. Territories hatched with solid lines represent mated males. Territories hatched with dashed lines indicates males mated for only part of the season.



BLACK-CAPPED VIREO TERRITORIES - 2003
SALT CREEK CANYON SITE, BLAINE COUNTY, OK



BLACK-CAPPED VIREO TERRITORIES - 2003
SALT CREEK CANYON SITE, BLAINE COUNTY, OK