Final
Species and Habitat Distributions of Black-Capped Vireos and Golden-Cheeked Warblers, 2011 Breeding/Nesting Season

Prepared for:

Camp Stanley Storage Activity
Boerne, Texas

September 2011

TABLE OF CONTENTS

ATTACHMENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AOU	American Ornithological Union
AR	Army Regulation
BCVI	Black-capped vireo (*Vireo atricapilla*)
BHCO	Brown-headed cowbird (*Molothrus ater*)
CSSA	Camp Stanley Storage Activity
DoD	Department of Defense
ESA	Endangered Species Act
GCWA	Golden-cheeked warbler (*Dendrocia chrysoparia*)
GPS	Global positioning system
INRMP	Integrated Natural Resources Management Plan
MBTA	Migratory Bird Treaty Act
mph	miles per hour
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
Parsons	Parsons Infrastructure and Technology Group Inc.
PBO	Programmatic Biological Opinion
TAC	Texas Administrative Code
TPWD	Texas Parks and Wildlife Department
TPW	Texas Parks and Wildlife
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SECTION 1
INTRODUCTION

1.1 PURPOSE AND NEED

In accordance with conditions set forth in the Camp Stanley Storage Activity (CSSA) Programmatic Biological Opinion (PBO) (USFWS 2007), CSSA conducts biennial enumeration surveys (occurring every two years) for two special status bird species. This document reports the results of surveys at CSSA conducted by Parsons Infrastructure and Technology Group, Inc. (Parsons) for the black-capped vireo (*Vireo atricapilla*) and golden-cheeked warbler (*Dendrocia chrysoparia*). The purpose of the surveys was to document distribution of species and habitat of these endangered species at CSSA. Results of this report will be distributed to the U.S. Fish and Wildlife Service (USFWS) Austin Ecological Services Field Office for consideration in various ongoing assessments of recovery status for the golden-cheeked warbler and the black-capped vireo. In addition, results will be distributed to the Texas Parks and Wildlife Department (TPWD) for updating the TPWD-administered Natural Diversity Database. Specific regulatory frameworks and site conditions that support the need for biennial enumeration surveys are discussed below.

1.1.1 Regulatory Framework

1.1.1.1 Endangered Species Act

Passed in 1973 and reauthorized in 1988, the Endangered Species Act (ESA) regulates a wide range of activities affecting plants and animals designated as endangered or threatened. By definition, an endangered species is an animal or plant listed by regulation as being in danger of extinction. A threatened species is any animal or plant that is likely to become endangered within the near future. A species must be listed in the Federal Register as endangered or threatened for the provisions of the Act to apply.

The ESA prohibits the following activities involving endangered species:

- Importing into or exporting from the United States.
- Taking (includes harassing, harming, pursuing, hunting, shooting, wounding, trapping, killing, capturing, or collecting) within the United States and its territorial seas.
- Taking on the high seas.
- Possessing, selling, delivering, carrying, transporting, or shipping any such species unlawfully taken within the United States or on the high seas.
- Delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of a commercial activity.
- Selling or offering for sale in interstate or foreign commerce.

The black-capped vireo was listed as a Federal endangered species October 6, 1987 (52 FR 37420 – 37423). The golden-cheeked warbler was listed as a Federal endangered species on December 12, 1990 (55 FR 53153 53160). There are no critical habitat designations for the black-capped vireo or golden-cheeked warbler.

1.1.1.2 Army Regulation 200-3

The biennial surveys are in compliance with Chapter 11 of Army Regulation (AR) 200-3, *Environmental Quality - Natural Resources – Land, Forest, and Wildlife Management*, which implements requirements of the ESA within the Army, as well as fulfilling compliance commitments specified in the CSSA Integrated Natural Resource Management Plan (INRMP) (CSSA 2007) and reporting requirements set forth in the Programmatic Biological Opinion for CSSA operations, maintenance activities, and natural resource management program elements (USFWS 2007).

1.1.1.3 5-year Status Reviews

As mandated by the ESA, the listing statuses for the black-capped vireo and golden-cheeked warbler were assessed under five year reviews (USFWS 2007). The review for the black-capped vireo stated that many of the recovery criteria have been met as outlined in the black-capped vireo recovery plan (USFWS 1991) and recommended the downlisting of the black-capped vireo from "endangered" to "threatened." As of the date of this report, the endangered listing status for the black-capped vireo remains in place. As for the golden-cheeked warbler, no status change recommendations were included in this species' status review.

1.1.1.4 State Laws and Regulations

In 1973, the Texas legislature authorized the TPWD to establish a list of endangered animals in the state. Endangered species are those species that the Executive Director of the TPWD has named as being "threatened with statewide extinction." Threatened species are those species that the TPWD Commission has determined are likely to become endangered in the future. Laws and regulations pertaining to endangered or threatened animal species are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code and Sections 65.171 – 65.176 of Title 31 of the Texas Administrative Code (TAC).

The State of Texas considers the black-capped vireo as a threatened species under the authority of TAC Title 31. Under the same authority, the State of Texas considers the golden-cheeked warbler as endangered.

1.1.1.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 implemented the 1916 convention between the U.S. and Great Britain for the protection of birds migrating between the U.S. and Canada. Similar conventions between the U.S. and Mexico (1936), Japan (1972) and the former U.S.S.R (1976) further expanded the scope of international protection of migratory birds. Each new treaty has been incorporated into the MBTA as an amendment and the provisions of the new treaty are implemented domestically. These four treaties and their enabling legislation, the MBTA, established Federal responsibilities for the protection of nearly all species of migratory birds, their eggs, and nests.

Incidental take of migratory birds during Department of Defense (DoD) military readiness activities is addressed by a regulation promulgated by the Secretary of the Interior and published in the Federal Register on February 28, 2007. Under this regulatory framework, an activity conducted at CSSA for military readiness training would be considered an adverse effect if, over a reasonable period of time, the activity diminishes the capacity for a migratory

bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem. In total, 836 species of birds are protected by the MBTA, 58 of which are currently hunted legally as game birds.

1.1.2 Site Conditions

CSSA is within the current range for both the black-capped vireo and golden-cheeked warbler, and suitable habitat occurs within the CSSA boundary. As discussed in Section 3 of this report, suitable habitat for the black-capped vireo was occupied in 2005, although negative determinations of presence were reported in 2007, 2009, and 2011. Management and surveys continue for this species because of possible displacement from intense development activities on adjacent properties to the west of the facility and also because of confirmed nesting activity on Camp Bullis. Habitat at CSSA is considered occupied by the golden-cheeked warbler, with sightings in 2005, 2007, 2009, and 2011. Various factors that may have affected bird populations at CSSA are discussed in Section 4.2 of this report.

1.2 RESULTS SUMMARY

Surveys conducted in 2005 confirmed the presence of both the golden-cheeked warbler and the black-capped vireo at CSSA (CSSA 2005). Subsequent surveys in 2007 did not detect any black-capped vireos; however, surveyors detected 18 individual golden-cheeked warblers occupying an estimated 14 golden-cheeked warbler territories. Survey results for 2009 reported 15 golden-cheeked warblers were detected in habitat areas. Some of these detections were mated pairs, formulating an estimated total of 13 golden-cheeked warbler territories. No black-capped vireo detections occurred at CSSA during the 2009 surveys, although suitable habitat was found at various locations in the East Pasture, North Pasture, and Inner Cantonment.

Survey results for 2011 are summarized below (detailed findings are discussed in Section 3). Twenty-six detections of golden-cheeked warblers were reported in 2011, and no black-capped vireos were detected. Habitat conditions for the black-capped vireo continue to improve onsite, particularly in areas within the Inner Cantonment and along fence lines throughout the facility.

1.3 PROJECT LOCATION

The surveys were conducted at CSSA, Boerne, Texas (Figure 1.1 – Project Location). CSSA is located in northern Bexar County (Camp Bullis and Van Raab U.S. Geological Survey [USGS] Quadrangles). The installation occupies 4,004 acres, bounded to the north by Dietz-Elkhorn/Old County Road, to the west by Ralph Fair Road, and to the south and east by Camp Bullis Military Training Reservation. Directions to the facility follow:

- From Austin:
  South on Interstate 35S for 62 miles, West on Loop 1604W for 17.5 miles, West on Interstate 10W/US87 for 15 miles. Exit 550 Ralph Fair Road.
- From San Antonio:
  North on Interstate 10W/US87 for 20 miles. Exit 550 Ralph Fair Road.

The installation is typical of the Balcones Canyon lands portion of the Edwards Plateau, encompassing a complex of karst features including: limestone hills, drainages, valleys, intermittent streams, springs, and karst cave features. Elevations range between approximately 1,200 feet to 1,400 feet above mean sea level.

1.4 BLACK-CAPPED VIREO SPECIES DESCRIPTION

1.4.1 Species Description and Regulatory Status

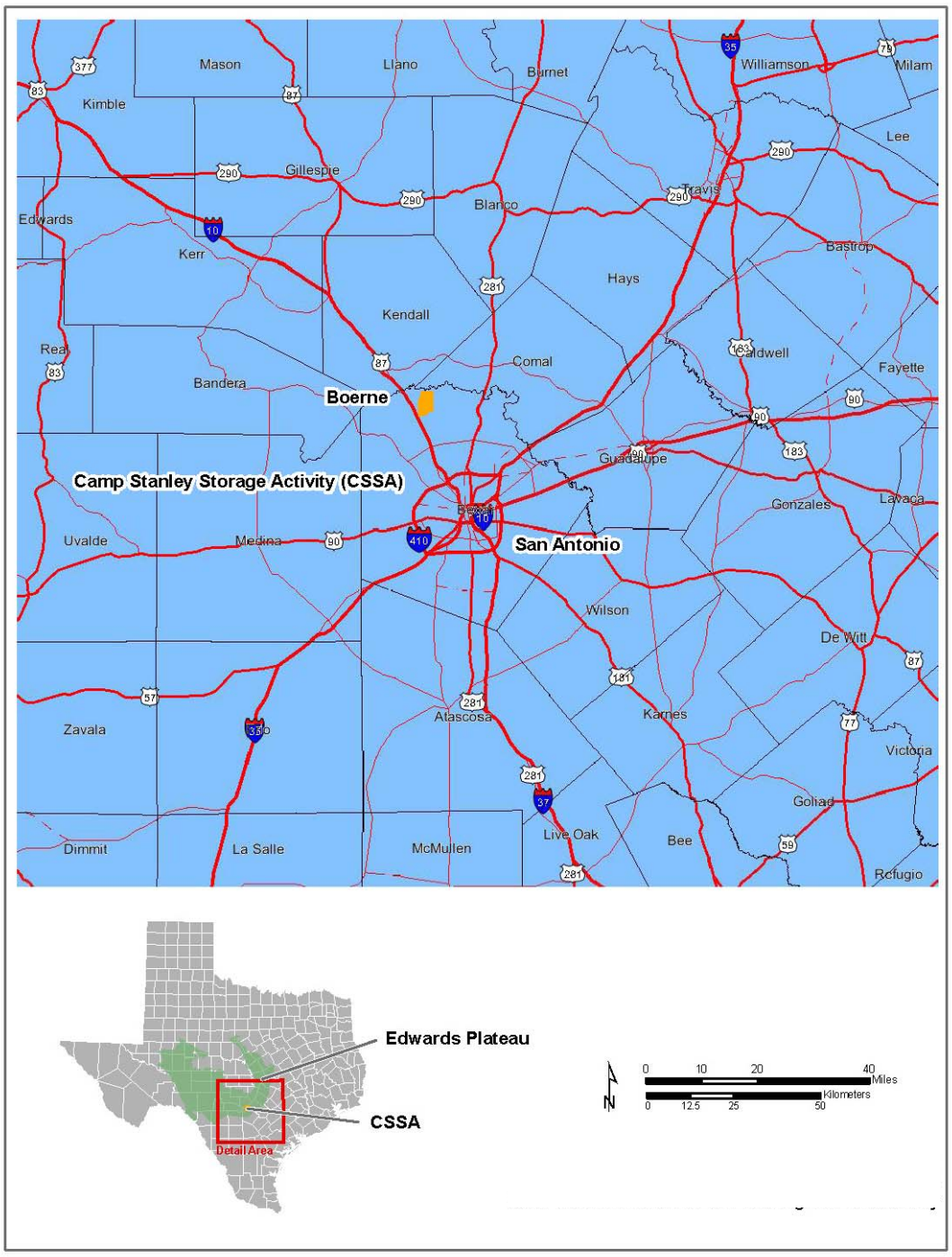
The black-capped vireo is a small (3.9 to 4.7 inches [10 to 12 cm]), insect-eating, migratory songbird of the Vireonidae family. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and upper half of the head is black with a partial white eye-ring. The iris is brownish-red and the bill black. The plumage of the female is duller than the male. Females have a dark slate gray head.

The black-capped vireo was listed as a Federal endangered species October 6, 1987 (52 FR 37420 – 37423); it is also state-listed as endangered (TAC 65.171 – 65.176). There is no critical habitat designated for this species.

1.4.2 Life History and Ecology

Black-capped vireos arrive in Texas from mid-March to mid-April, while those in Oklahoma arrive approximately 10 days later. They nest from Oklahoma south through central Texas to the Edwards Plateau, then south to the northern portion of Mexico (Figure 1.2). Vegetation species in breeding habitat can be variable across the breeding range; however, the low to mid successional vegetation structure across the breeding range is generally consistent. The shrub vegetation is mostly deciduous and generally extends from the ground to about six feet above ground and covers about 30 to 60% of the total area. Open grassland separates the clumps of shrubs. In the eastern portion of the vireo's range, the shrub layer is often combined with an open, sparse to moderate tree canopy. Perch trees intermixed within a shrubland may be important for territorial defense by males, as they have been observed foraging in higher perch trees than females (Houston, unpublished thesis, 2008). Black-capped vireos may live for more than five years, and usually return year after year to the same general area. Migration to their wintering grounds on Mexico's western coast begins in July, and they are gone from Texas by mid-September (USFWS 1991, Wilkins 2006, USFWS 2007).

Figure 1.1 Location of CSSA



1.4.3 Population Status and Distribution

At the time of listing, the population status of black-capped vireos was largely established from survey efforts that yielded a known population of 191 pairs (Marshall *et al.* 1985).

Extrapolating from their surveys, Marshall *et al.* (1985) estimated that there were more than 20 pairs of black-capped vireos in Oklahoma, 188 to 374 pairs in Texas, and 48 to 131 pairs in Mexico. By 1996, about 1,803 males were reported in the U.S. (USFWS 2007); by 2005, the known U.S. population was 5,996 males (Wilkins *et al.* 2006). Including the breeding range in Mexico, the current known population is at 6,269 (USFWS 2007).

To date, about 75% of the known population in the breeding range is found on four well-surveyed areas – Fort Hood Military Reservation (Texas), Kerr Wildlife Management Area (Texas), Wichita Mountains Wildlife Refuge (Oklahoma), and Fort Sill Military Reservation (Oklahoma). Together, these facilities cover approximately 162,000 hectares (400,000 acres)– an area representing only 1% of the total area of rangeland in the Texas/Oklahoma range of the species. The remaining 25% of the known population is the product of documented occurrences from at least 52 other properties, many of which are on private lands with only recent survey access (USFWS 2007).

Figure 1.2 Breeding and Wintering Range of Black-Capped Vireos

1.4.4 Threats

At the time of listing, the identified major threats to the black-capped vireo included habitat loss through land use conversion, grazing and browsing by domestic and wild herbivores, and brood parasitism by brown-headed cowbirds. The threat of vegetation succession, originally considered minor, appears to have been underestimated at the time of listing, although the extent of the effects on the black-capped vireo is not known. While the relative importance of individual threats appears to have changed since listing, these remain the primary threats to the species (Wilkins *et al.* 2006).

1.5 GOLDEN-CHEEKED WARBLER SPECIES DESCRIPTION

1.5.1 Species Description and Regulatory Status

The golden-cheeked warbler is a small (4.5 to 5 inches [11.4 – 12.7 cm] long), insectivorous, migratory songbird of the Parulidae family. Adult males have black on the crown, nape, back, throat, and upper breast. The wings are black with two white wing bars. The cheeks are a bright golden-yellow with a black eyeline. The underparts are white streaked with black on the flanks. Adult females are similar to males, but duller; the crown and back are olive-green with some black streaking; the throat is pale and upper breast streaked with black (Oberholser 1974, Farrand 1983, Curson et al. 1994).

The golden-cheeked warbler was listed on December 12, 1990 (55 FR 53153 – 53160), and is state-listed as endangered (TAC 65.171 – 65.176). There is no critical habitat designated for this species.

1.5.2 Life History and Ecology

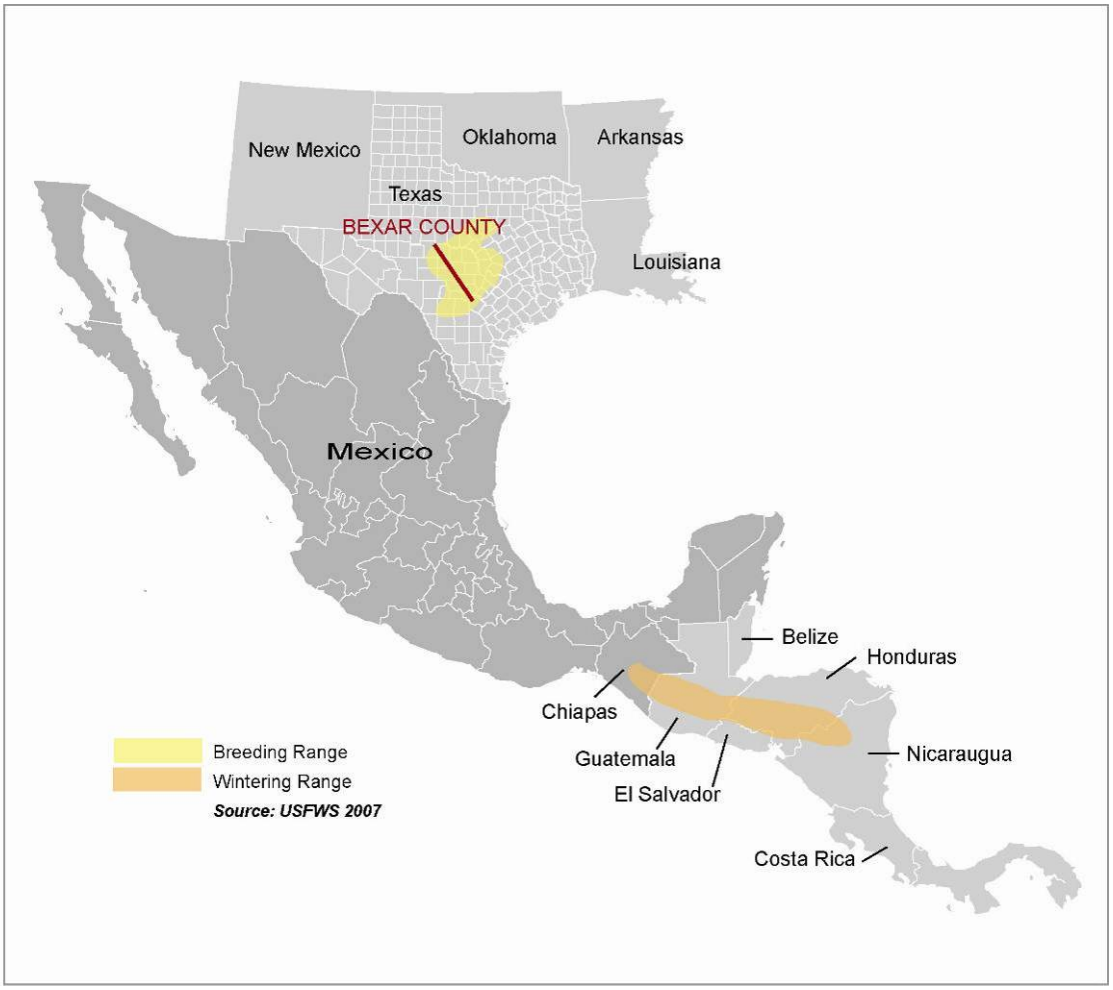
Wahl *et al.* (1990) characterized golden-cheeked warbler breeding habitat as closed-canopy Ashe juniper-oak woodlands. Although the species composition of woody vegetation varies greatly within suitable warbler breeding habitat, Ashe juniper is typically (often, but not always) the dominant species and occurs at all sites inhabited by nesting golden-cheeked warblers. Ladd (1985), for example, found that the most common trees at ten sites occupied by golden-cheeked warblers (in order of frequency of occurrence or "relative dominance") were Ashe juniper, Texas oak, scaly bark oak, cedar elm, Plateau live oak, little walnut, hackberry, and Texas ash. Ashe juniper comprised 10% to 83% of total trees at 27 sites scattered throughout the breeding distribution of the golden-cheeked warbler (Ladd 1985, Wahl *et al.* 1990).

Kroll (1980) studied winter habitat of the golden-cheeked warbler in Honduras. At the study site, elevation about 1,500 m, pines (*Pinus oocarpa*) dominated the overstory. Oaks, particularly *Quercus oleoides*, comprised 63%, and sweetgum (*Liquidambar styraciflua)* another 21% of total understory trees and shrubs at this site. Other collection localities and observation sites on the migration corridor and winter range have also been pine-oak woodlands (Land 1962, Braun *et al.* 1986). Rappole et al. (2000) found that wintering warblers occupy 'humid lower montane oak pine forest' habitat. Within these habitats, the principle canopy tree was *Pinus oocarpa* and the principle mid-story tree species were from the group of elloptical-leaved oak species know as 'encino'oaks.

1.5.3 Population Status and Distribution

The golden-cheeked warbler breeding range is closely associated with the Edwards Plateau, Lampasas Cut-plain, and Llano Uplift regions of central Texas. Breeding is known to occur presently in 25 central Texas counties; distribution within those counties is patchy and localized (Ladd and Gass 1999). Golden-cheeked warblers winter in the highlands of southern Mexico (Chiapas) and Central America. From July to October, golden-cheeked warblers migrate southward through the coniferous-oak woodlands of the Sierra Madre Oriental of Coahuila, Nuevo Leon, Tamaulipas, Queretaro, Veracruz, and Chiapas (Perrigo *et al.* 1990). Records indicate that golden-cheeked warblers winter between 1,500 and 2,600 meters (5,000 and 8,550 feet) in the pine-oak woodlands of the Sierra de las Minas of Guatemala, in the highlands of Honduras, El Salvador, and northern Nicaragua, and in the Sierra Madre of Chiapas, Mexico (Land 1962, Pulich 1976, Braun *et al.* 1986, Rappole et al. 2000).

Figure 1.3 Breeding and Wintering Range of Golden-Cheeked Warblers



1.5.4 Threats

Habitat loss and fragmentation is the primary threat and reason for declines of golden-cheek warblers (USFWS 1991). Destruction of oak-juniper woodlands through land clearing

and disease is a major limiting factor. Encroaching urban/suburban development near golden-cheeked warbler habitat has been shown to increase threats such as nest parasitism by brown-headed cowbirds and nest predation by rat snakes, western scrub-jays, eastern fox squirrels, and other predators (Coldren 1998, Engels 1995, Sperry 2007, Reidy et al. 2008).

SECTION 2
METHODS

2.1 SURVEY METHODS

The USFWS established procedures for determining presence/absence of golden-cheeked warblers and black-capped vireos (USFWS 2002). These protocols formed the basis for the survey method used at CSSA.

2.1.1 Survey Season Schedule

Six visits were conducted at the installation. The first visit involved habitat analysis and golden-cheeked warbler surveys. Table 2.1 shows the calendar for the 2011 survey season.

Table 2.1 Schedule for the 2011 Golden-Cheeked Warbler and Black-Capped Vireo Survey Season

Site Visit Number	Date	Purpose
1	13 April 2011	GCWA survey, Habitat Analysis
2	20 April 2011	GCWA, BCVI survey
3	11 May 2011	GCWA, BCVI survey
4	25 May 2011	GCWA, BCVI survey
5	15 June 2011	GCWA, BCVI survey

2.1.2 Potential and Core Habitat Determination

For the purposes of the CSSA natural resource program, potential habitat is defined as: "areas with suitable habitat characteristics based on life-history descriptions that appear suitable for occupation by either golden-cheeked warblers or black-capped vireos." See Sections 1.4 for life history description for the black-capped vireo and Section 1.5 for the life history description for the golden-cheeked warbler. Determinations of potential habitat at CSSA were also based on previous habitat mapping (Parsons 2005), aerial photography (Parsons 2002), sighting location of golden-cheeked warblers and black-capped vireos at CSSA, and field observations.

Core Habitat

Core habitat designations are based on actual species detections and are defined by a 200-meter buffer surrounding the actual bird detection location. Each core habitat designation expires after three years. Each buffer is divided into two components:

- Level 1 Core Habitat: a 10-acre buffer with a radius of 114 meters around the bird detection.
- Level 2 Core Habitat: an area defined by an outer ring around the Level 1 buffer extending for 86 meters

Restrictions within Habitat Designations

Clarification of habitat designations for CSSA decision makers is vital to maintain compliance with the CSSA PBO while the facility fulfills its military mission. In order to facilitate the CSSA Environmental Management Office communication of restrictions associated with bird detections to CSSA range operators, operations and management personnel, and support contractors, the following framework is applied based on bird survey results:

- Level 1 Core Habitat: Year-round restrictions, no clearing of vegetation is permitted in these areas, disturbance of these areas is avoided
- Level 2 Core Habitat: Seasonal restrictions, clearing of vegetation is permitted outside of the bird season lasting from 15 February through 31 July for golden-cheeked warblers and 15 March through 15 August for black-capped vireos.
- Potential Habitat (Level 3): Avoidance of clearing activities when possible. As unoccupied habitat, vegetation removal is permitted throughout the year.

The 2011 bird detection results are discussed and presented on figures in Section 4.

2.1.3 Meandering Transect Establishment and Survey Duration

Meandering transects were walked in potential habitat areas, and were sufficient to meet the minimum 4-hours per 100-acre requirement. Transects were adjusted throughout the survey season to increase the likelihood of a black-capped vireo or golden-cheeked warbler detection. Figure 2.1 is a map of survey transects. Survey time for each surveyor was set at a minimum of 4 hours per 100 acres of suitable habitat.

2.1.4 Survey Start and End Times

Surveys began approximately 30 minutes before sunrise, and terminated by 1:00 PM. Table 2.2 lists sunrise times and start times for each survey date.

Table 2.2 Sunrise and Survey Start Times and Maximum Survey Duration

Survey Date	Sunrise Time	Survey Start Time	Maximum Survey Duration (Hours)
13 April 2011	0633	0600	7:00
20 April 2011	0721	0700	6:00
11 May 2011	0709	0630	6:30
25 May 2011	0651	0630	6:30
15 June 2011	0643	0615	6:45
6 July 2011	0636	0600	7:00

2.1.5 Weather Condition Requirements

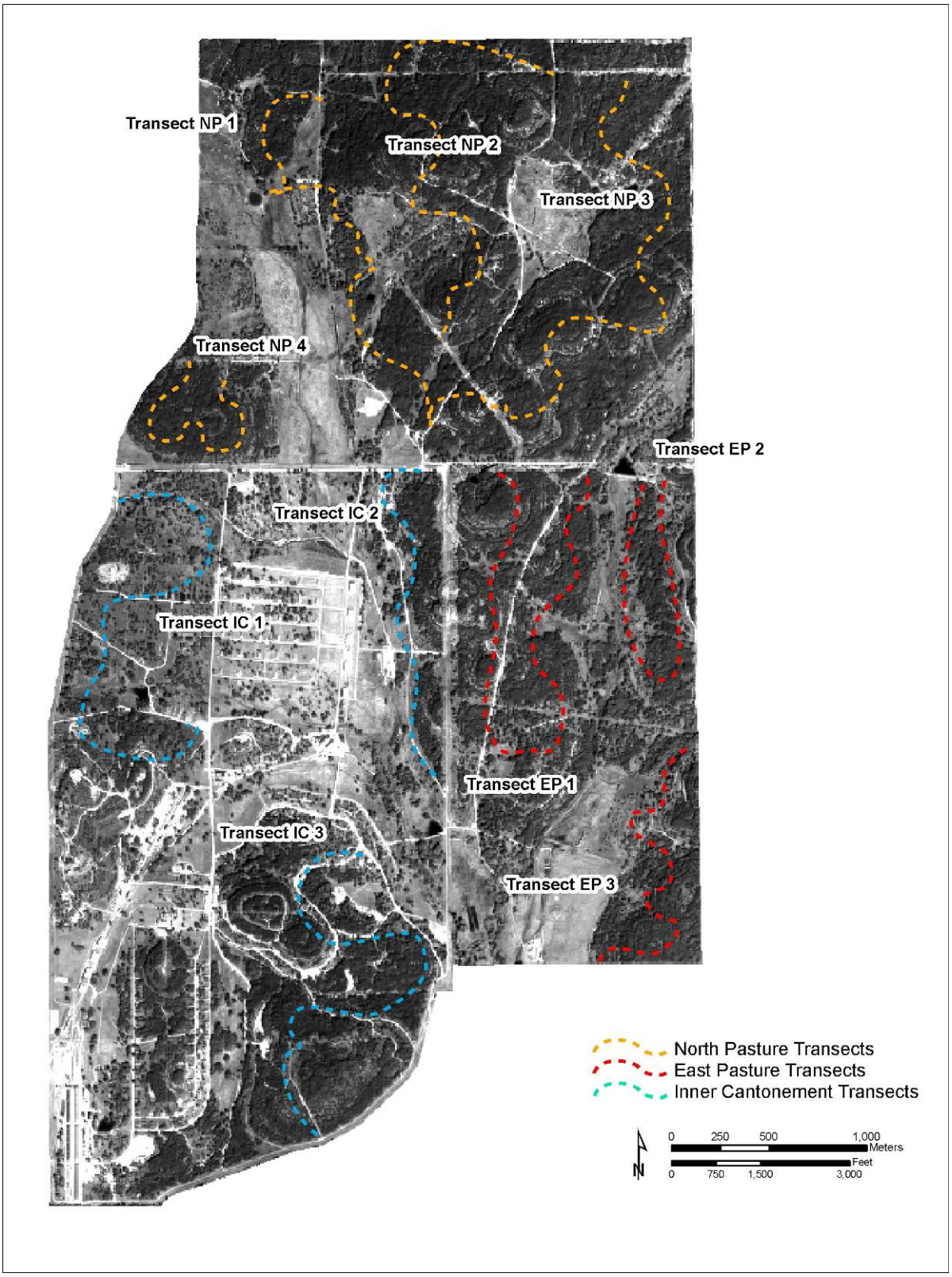
Weather conditions strongly influence songbird vocalizations and flight activity (Robbins 1981). Therefore, weather conditions were assessed prior to a survey day to maximize the likelihood of black-capped vireo or golden-cheeked warbler detections. To

maximize potential detections, surveys were conducted only if certain weather conditions were present. These weather conditions included:

- Less than 25 percent chance of rain for the survey time period on a given survey day, based on weather forecasts; and
- Wind speeds under 12 miles per hour (mph).

Regional weather patterns in Central Texas are highly variable in spring and summer months. Three survey days were cancelled and rescheduled with CSSA for the following Monday. This decision was made by 5:00 am, and was based on forecast information from the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) and phone conversations with CSSA security personnel.

Figure 2.1 Locations of Bird Survey Transects



2.1.6 Field Data Recording

At each detection of golden-cheeked warblers and black-capped vireos, the following data were collected:

- Weather conditions (wind speed, temperature, precipitation, cloud cover);
- Habitat characterizations (vegetation, vertical habitat structure including species and canopy heights, slope and aspect of the topography;
- Global positioning system (GPS) location of the observer, plus distance and bearing to the detection (UTM NAD83 Zone 14N coordinate system);
- Sex of the observed bird (if possible); and,
- Behavioral characteristics pertaining to breeding status or defense of territory;

Additional data collected in the field included:

- Non-target bird observations to update the existing bird inventory for CSSA (Parsons 2005, 2007). Each surveyor kept a running tally list of observed birds without specific location data.
- Signs of predation factors. Because of documented parasitism of black-capped vireo nests throughout Central Texas by brown-headed cowbirds (*Molothrus ater*), cowbird observations were recorded. Other signs of predation from known predators were also recorded, including feline and canine scat.

At the end of each survey day field forms, digital photographs, and GPS data were collected by Parsons staff and all digital data were downloaded to the CSSA Environmental Server for storage and distribution.

2.2 EQUIPMENT LIST

The following items were carried by all survey personnel:

- Binoculars with high quality optics;
- Field notebook, pencil, write in the rain paper;
- Field forms;
- Digital camera;
- GPS unit;
- Compass; and,
- Field safety kit composed of a first aid kit, list of emergency contact numbers, and cell phone.

2.3 SURVEY PERSONNEL

The survey crew consisted of the following members:

- ***Taylor Houston***, Survey crew leader / Bird survey task manager – Ten years experience with threatened and endangered species issues on DoD and other federal lands.

- ***Paul Fushille***, Field Biologist – 14 seasons of golden-cheeked warbler and black-capped vireo surveys in Central Texas.
- ***Cynthia Sperry,*** Field Biologist – Seven seasons of golden-cheeked warbler and black-capped vireo surveys in Central Texas.

SECTION 3
PREVIOUS SURVEYS

3.1 1992 – 1993 SURVEYS

December 1992, Stewardship Services conducted a habitat evaluation for CSSA. Potential habitat areas were mapped for both the golden-cheeked warbler and black-capped vireo. In the spring and summer survey season of 1993, Stewardship Services detected one male golden-cheeked warbler and a pair of black-capped vireos at CSSA (Stewardship Services 1993).

3.2 USFWS PROTOCOL SURVEYS FOR ESA-LISTED BIRDS

In 2005, CSSA began a survey program for ESA-listed bird species following USFWS survey protocols (USFWS 2005). These surveys have been conducted biennially since 2005, in accordance with CSSA's Programmatic Biological Opinion. Results from the initial 2005 survey included 19 individual detections of golden-cheeked warblers distributed in 15 territories. One detection of a black-capped vireo was recorded in 2005 in the East Pasture. In 2007, 18 individual detections for golden-cheeked warblers were recorded. Of these detections, 15 golden-cheeked warblers were detected through both visual sightings and audible calls, while three golden-cheeked warbler detections were through counter singing. Some of these detections were mated pairs, formulating an estimated total of 14 golden-cheeked warbler territories.

3.2.1 Vegetation Community Mapping

Vegetation community types were mapped and characterized during the 2005 surveys. The vegetation communities at CSSA consist of grasslands, woodlands, and savannas. Each vegetation community can be further divided into community types. Seven vegetation community types were mapped during the 2005 survey (Figure 3.3). Table 3.3 lists each vegetation community type with calculated areas. Definitions of vegetation communities are based on classification schemes provided by USFWS (Underwood 2005, personal communication), which are derived from NRCS and Diamond *et al.* (1988). Vegetation community types at Camp Stanley include:

- ***Juniper-Live Oak Woodlands*** Composed of woody species ranging between 3-10 meters, with a canopy closure of 71 – 100%. Ashe juniper dominate with a heavy Live oak component.
- ***Juniper Woodlands*** Composed of woody species ranging between 3-10 meters, with a canopy closure of 71 – 100%. Ashe juniper dominate.
- ***Live Oak-Juniper Woodlands*** Composed of woody species ranging between 3-10 meters, with a canopy closure of 71 – 100%. Live oaks dominate with a heavy Ashe juniper component. Other oaks in addition to persimmon, cedar elms also as components.
- ***Juniper Dominant Shrublands*** Ashe juniper dominates and is under 3 meters high.

- ***Live Oak Dominant Shrublands*** Live oaks and shin oaks under 3 meters high, with other shrubs and low tree species such as flame-leaf sumac, persimmon, and agarita.
- ***Herbaceous Bluestem and Short Grass Prairie*** Woody species compose less than 25% of ground cover, dominated by herbaceous vegetation**.**
- ***Mixed Oak Savanna*** Woody species, composed primarily of live oak, shin oak, persimmon, and ashe juniper, form 25 – 50% cover.

Table 3.3 Vegetation Community Types at CSSA

Community	Type	TOTAL Installation		East Pasture		North Pasture		Inner Cantonment	
		Acres	%	Acres	%*	Acres	%*	Acres	%*
Woodlands	Live Oak-Ashe Juniper	693.6	17.3	179.9	4.5	232.8	5.8	280.9	7.0
	Ashe Juniper-Live Oak	821.6	20.5	187.6	4.7	450.1	11.2	183.9	4.6
	Ashe Juniper Dominant	130.4	3.3	40	1.0	87.8	2.2	2.6	0.1
	TOTAL WOODLANDS	*1645.6*	*41.1*	*407.5*	*10.2*	*770.7*	*19.2*	*467.4*	*11.7*
Shrublands	Ashe Juniper Dominant	173	4.3	22.1	0.6	107.8	2.7	43.1	1.1
	Live Oak Dominant	312.6	7.8	75.2	1.9	105.4	2.6	132	3.3
	TOTAL SHRUBLANDS	*485.6*	*12.1*	*97.3*	*2.4*	*213.2*	*5.3*	*175.1*	*4.4*
Herbaceous	Blue Stem and Short Grass Prairies	600	15.0	172.2	4.3	271.8	6.8	156	3.9
	Periodically Mowed Areas*	600	15.0	78.4	2.0	0	0.0	521.6	13.0
	TOTAL HERBACEOUS	*1200*	*30.0*	*250.6*	*6.3*	*271.8*	*6.8*	*677.6*	*16.9*
Savanna	Mixed-Live Oak Savanna	597.2	14.9	32.9	0.8	124.8	3.1	439.5	11.0
Water	Ponds	2.8	0.1	0	0.0	1.2	0.0	1.6	0.0
Urban	Buildings	30.1	0.8	3.2	0.1	0	0.0	26.9	0.7
	Roads**	42.1	1.1	8.6	0.2	28.5	0.7	5	0.1
	TOTAL URBAN	*72.2*	*1.8*	*11.8*	*0.3*	*28.5*	*0.7*	*31.9*	*0.8*
TOTAL		*4004*	*100*						

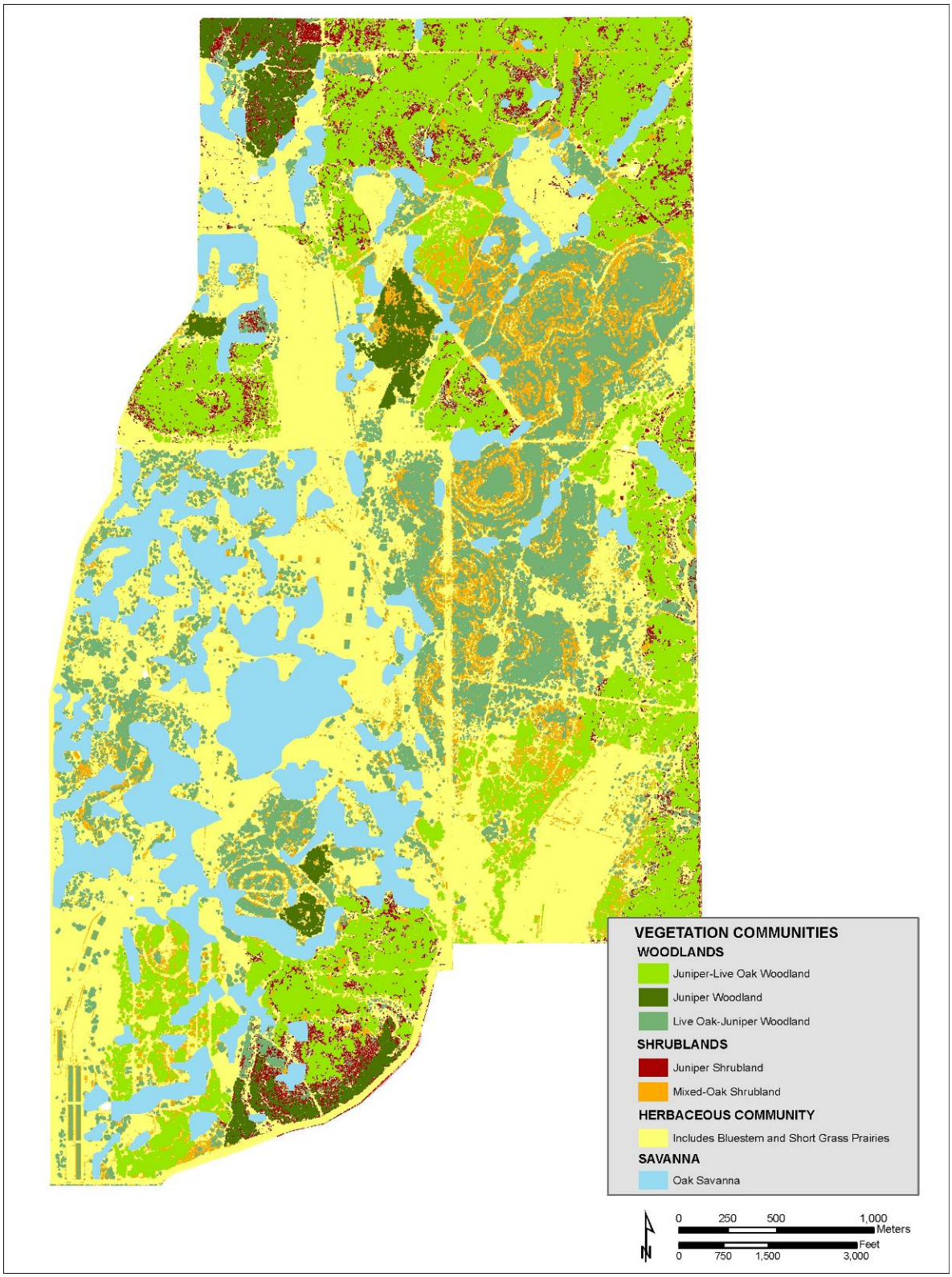
*Percent of total installation acreage (4004 acres)

3.3 SURVEYS ON CAMP BULLIS

Adjacent to CSSA, Camp Bullis implements a robust survey regime for black-capped vireos and golden-cheeked warblers. Annual surveys are conducted along fixed transects, with point count stations along each transect (Cooksey 2005, personal communication). A small population of golden-cheeked warblers on Camp Bullis decreased between 1991 and 1997, but increased significantly during 1999 and 2000. As of 2001 the population of golden-cheeked warblers was holding at approximately 230 individuals (Fischer and Guilfoyle 2001). The population of black-capped vireos has also increased on Camp Bullis, perhaps due to a range fire that created suitable early successional habitat (Baccus 2005, personal communication).

In both 2010 and 2011, occupied habitat increased by 500 acres; therefore, Camp Bullis occupied habitat has increased by 1,000 acres in the past two years (Cannizo 2011, personal communication).

Figure 3.1 Vegetation Community Types at CSSA



SECTION 4
SURVEY RESULTS

4.1 2011 RESULTS

4.1.1 Distributions

Twenty-six golden-cheeked warblers were detected in habitat areas that are typical of the species during the 2011 surveys. Twenty-two of the detections were singing males defending territories; therefore, 22 golden-cheeked warbler territories were estimated for the 2011 season. No black-capped vireo detections occurred at CSSA during the 2011 surveys, although suitable habitat is found at various locations in the East Pasture, North Pasture, and Inner Cantonment.

Table 4.1 lists each location and provides locations and habitat descriptions. Figure 4.1 shows the 2011 bird detection results. Figure 4.2 shows all core habitat in effect from 2011 through September of 2012, Figure 4.2 shows all core habitat in effect from October 2012 through September 2014.

4.1.2 Habitat

For the purposes of CSSA's natural resource management program, habitat for ESA listed bird species can be classified as either "core habitat" or "potential habitat." Core habitat is defined as a 200-meter buffer centered on an actual bird detection. Potential habitat is defined by vegetation community type and abiotic factors such as slope and canopy structure. The extent of core habitat has been updated based on the distribution of species observed in the 2011 survey season. Core habitat is valid for three years; therefore, areas mapped in 2009 as core habitat are considered valid through 2012 and are included in the 2011 core habitat calculation. The 2011 core habitat mapped in 2011 will be valid through 2014. Table 4.2 lists the amount and type of habitat (core and potential). Core habitat at CSSA for golden-cheeked warblers and black-capped vireos amounts to 825.0 acres (20.6% of the total installation area). This percentage of core habitat relative to the total installation area represents a total increase of 2.5% since the 2007 core habitat calculation.

4.1.3 2011 Observed Birds

An observed bird list for the 2011 survey season was compiled by surveyors. Attachment A lists a total of 75 species observed during the 2011 season. Taxonomic and nomenclature changes are updated through the 50th supplement to the AOU Check-list of North American Birds, 7th Edition (Banks, *et al.* 2007).

Table 4.1 2011 Distribution of Detections

Detection Number	Species	Date	Time	Coordinates*		Weather Conditions	Vegetation Community
				Northing	Easting		
1	GCWA, male	4/13/2011	820	3288960	538615	Moderate south winds gusting at 8mph, 25% cloud cover, 76 degrees (F)	Oak-Juniper Woodland
2	GCWA, male	4/13/2011	829	3289129	538604	Moderate south winds gusting at 8mph, 25% cloud cover, 73 degrees (F)	Oak-Juniper Woodland
3	GCWA, male	4/13/2011	858	3289179	538321	Moderate SE winds gusting at 15mph, 80% cloud cover. 74 degrees (F)	Oak-Juniper Woodland
4	GCWA, male	4/13/2011	925	3288894	538313	Moderate SE winds gusting at 15mph, 80% cloud cover. 76 degrees (F)	Oak-Juniper Woodland
5	GCWA, fenale	4/13/2011	1055	3288789	537683	Moderate SE winds gusting at 15mph, 80% cloud cover. 71 degrees (F)	Oak-Juniper Woodland
6	GCWA, female	4/13/2011	1055	3288718	538701	Light south winds gusting at 9mph, 100% cloud cover, 77.5 degrees (F)	Oak-Juniper Woodland
7	GCWA, male	4/20/2011	815	3288527	538335	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
8	GCWA, male	4/20/2011	815	3287912	537810	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
9	GCWA, male	4/20/2011	1115	3287527	537747	Light NW winds at 4 mph, 25% cloud cover. 71 degrees (F).	Oak-Juniper Woodland
10	GCWA, male	4/20/2011	1245	3287839	538788	Light NW winds at 4 mph, 25% cloud cover. 79 degrees (F).	Oak-Juniper Woodland
11	GCWA, male	5/11/2011	810	3287514	538978	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Woodland
12	GCWA, female	5/11/2011	1125	3287493	538558	Light NW winds gusting at 10mph. 25% cloud cover. 87 degrees (F)	Oak-Juniper Woodland
13	GCWA, male	5/25/2011	725	3287307	537990	Light NW winds gusting at 10mph. 25% cloud cover. 79 degrees (F)	Oak-Juniper Woodland
14	GCWA, female	6/15/2011	845	3286973	537716	Light N winds at 3 mph. 50% cloud cover. 82 degrees (F)	Oak-Juniper Woodland
15	GCWA, female	6/15/2011	1000	3286919	538214	Light N winds at 3 mph. 50% cloud cover. 90 degrees (F).	Oak-Juniper Woodland
16	GCWA, male	4/13/2011	858	3287170	538549	Moderate SE winds gusting at 15mph, 80% cloud cover. 74 degrees (F)	Oak-Juniper Woodland
17	GCWA, male	4/13/2011	925	3286721	538088	Moderate SE winds gusting at 15mph, 80% cloud cover. 76 degrees (F)	Oak-Juniper Woodland
18	GCWA, female	5/11/2011	1125	3286567	538327	Light NW winds gusting at 10mph. 25% cloud cover. 87 degrees (F)	Oak-Juniper Woodland
19	GCWA, male	5/25/2011	725	3286222	538263	Light NW winds gusting at 10mph. 25% cloud cover. 79 degrees (F)	Oak-Juniper Woodland
20	GCWA, male	4/13/2011	829	3286033	537937	Moderate south winds gusting at 8mph, 25% cloud cover, 73 degrees (F)	Oak-Juniper Woodland
21	GCWA, male	4/13/2011	820	3285971	538084	Moderate south winds gusting at 8mph, 25% cloud cover, 76 degrees (F)	Oak-Juniper Woodland
22	GCWA, male	4/20/2011	1115	3285773	538368	Light NW winds at 4 mph, 25% cloud cover. 71 degrees (F).	Oak-Juniper Woodland
23	GCWA,	4/20/2011	1245	3287148	536338	Light NW winds at 4 mph, 25% cloud	Oak-Juniper

	male					cover. 79 degrees (F).	Woodland
24	GCWA, male	5/11/2011	810	3288724	536822	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Woodland
25	GCWA, male	4/20/2011	815	3284325	537381	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
26	GCWA, male	4/20/2011	815	3283825	537061	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland

Table 4.2 Updated Golden-cheeked Warbler and Black-capped Vireo Core and Potential Habitat at CSSA

Species	Habitat Level	TOTAL Installation		East Pasture		North Pasture		Inner Cantonment	
		Acres	%	Acres	%*	Acres	%*	Acres	%*
BCVI	Core	0	0 %	0	0 %	0	0.0 %	0	0.0 %
	Potential	109.9	2.7 %	43.5	1.1 %	41.8	1.0 %	24.6	0.6 %
GCWA	Core	825.0	20.6 %	140.0	3.5 %	613.8	15.3 %	62.2	1.5 %
	Potential	778.1	19.5 %	160	4.0 %	507.4	12.7 %	110.7	2.8 %

*Percent of total installation acreage (4004 acres)

Table 4.2 Summary of Core Habitat Acreage, 2005 - 2011

Species	Acreage Across Installation					
	2005-2007		2007-2009		2009-2011	
	Acres	%*	Acres	%*	Acres	%*
BCVI	31	0.7 %	0	0 %	0	0 %
GCWA	723	18.1 %	622	15.5 %	825	20.6 %

*Percent of total installation acreage (4004 acres)

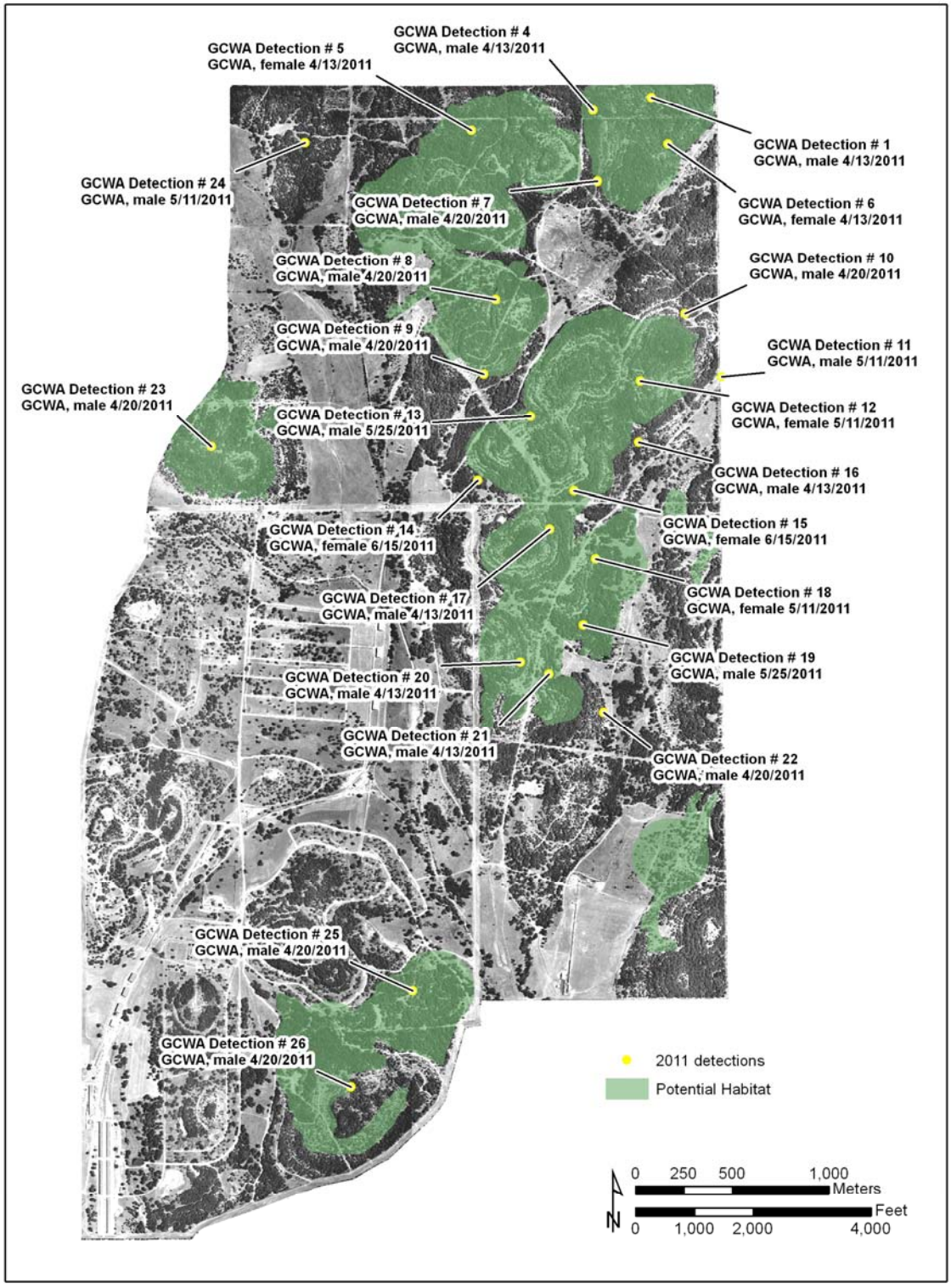


Figure 4.1 2011 Survey Results: Endangered Bird Detections

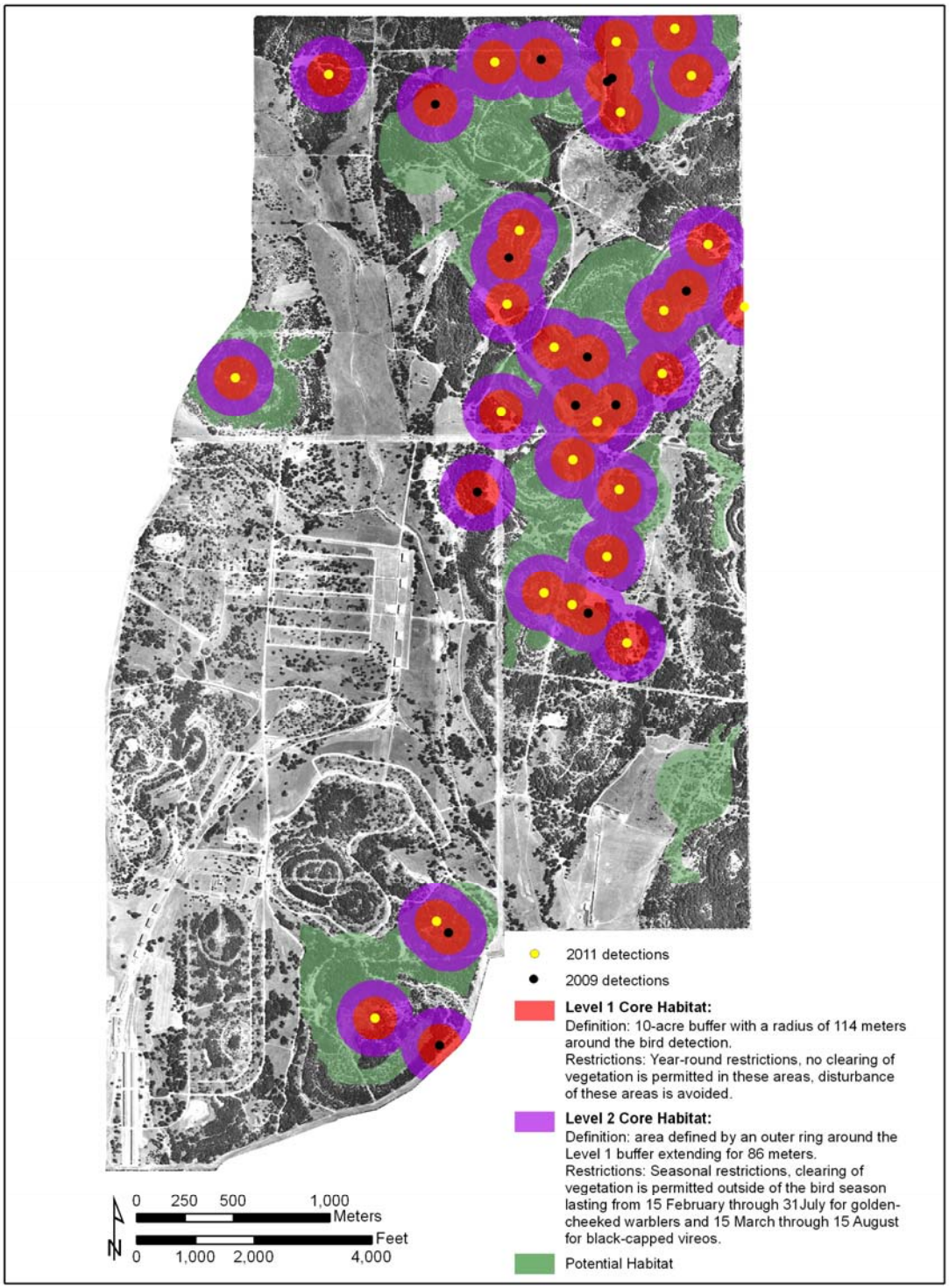


Figure 4.2 Core Habitat, Restrictions In Place from 2011 through September 2012

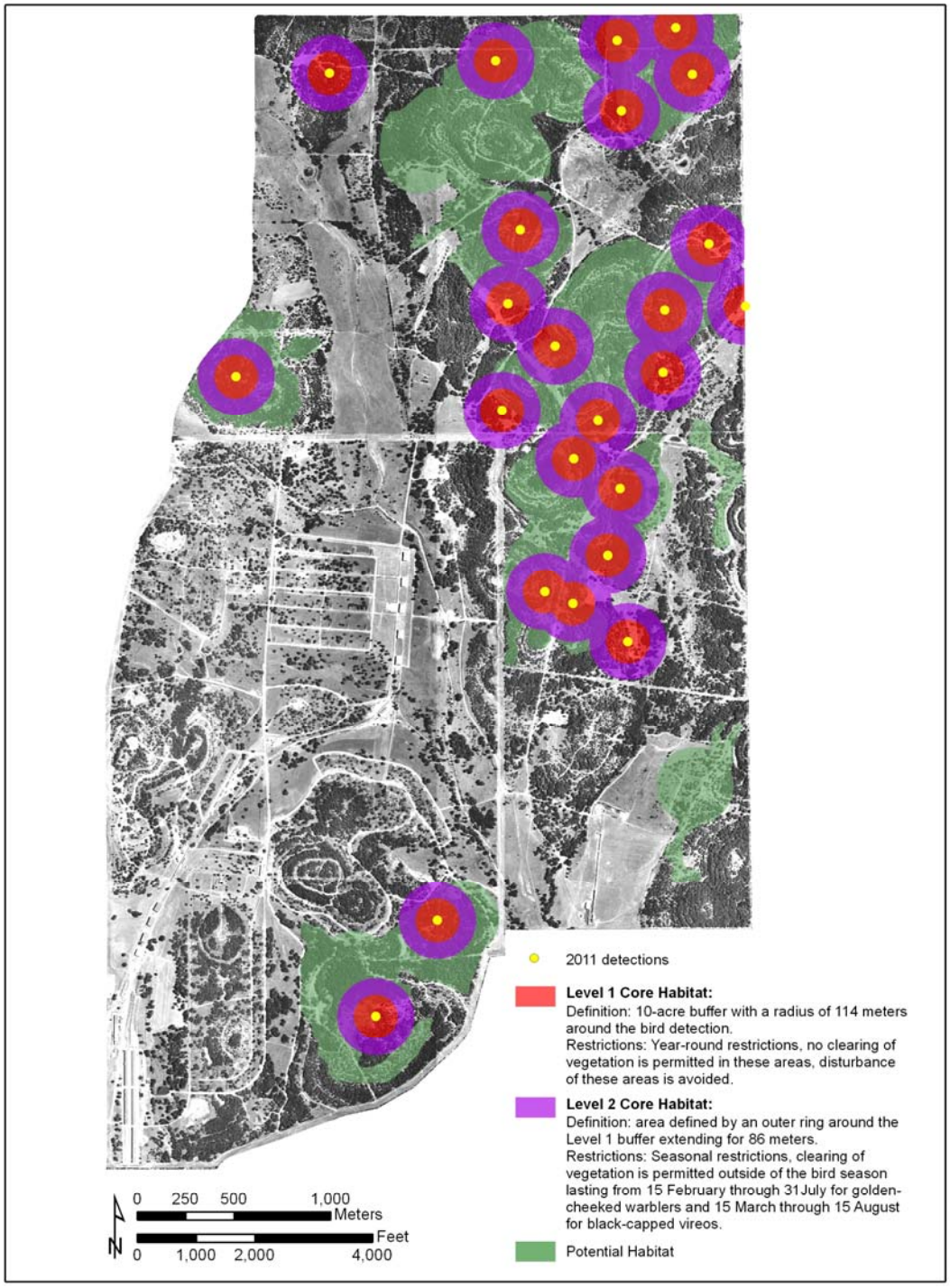


Figure 4.3 Core Habitat, Restrictions In Place from October 2012 through September 2013

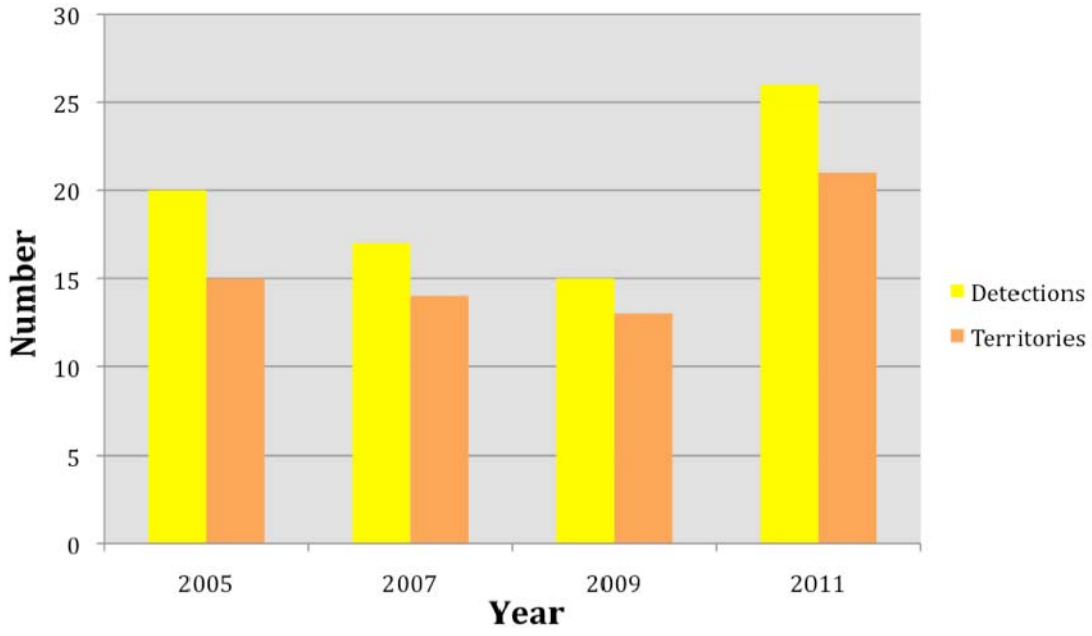
4.2 SYNTHESIS WITH PAST RESULTS

4.2.1 Golden-Cheeked Warbler and Black-Capped Vireo Enumeration and Territory Comparison, 2005 – 2011

The 2011 survey season represents a large increase in the number of golden-cheeked warblers at CSSA, reversing a trend since 2005, where the 2009 enumerated individuals at CSSA declined from 20 to 15. Estimating the number of territories recorded since 2005 provides a more realistic index of bird use of CSSA because males and females of the same pair bond were counted in the total enumeration surveys. In 2005, 15 territories were estimated at CSSA, compared to the 13 estimated in 2009, this represents a 14% decline between 2005 and 2009. In 2011, 21 territories were estimated, which represents a 47% increase in the number of territories at CSSA since 2009.

Despite the intense and prolonged drought conditions throughout Central Texas, habitat removal and fragmentation on adjacent lands (primarily to the west of Ralph Fair Road), and parasitism primarily by brown-headed cowbirds, the number of golden-cheeked warblers at CSSA has increased since 2005.

Figure 4.4 Golden-cheeked Warbler Detections and Territories 2005-2011



4.2.2 Overall Bird Species Richness

Since the initial survey effort in 2005, 116 individual species have been observed. These species are represented by 36 families. Overall avian species richness has apparently declined since 2005, with an initial 90 species observed in 2005, 80 species observed in 2007, 75 species observed in 2009, and 81 species in 2011. This represents a 10% decline in species richness between 2005 and 2011; however, each of 10 new species also were observed in 2011.

Factors affecting the avian biodiversity could include (1) intense and prolonged drought conditions throughout Central Texas, (2) habitat removal and fragmentation on adjacent lands (primarily to the west of Ralph Fair Road), and (3) parasitism primarily by brown-headed cowbirds. Activities at CSSA are unlikely to factor into the apparent decline of avian diversity at CSSA because similar declines have been observed throughout conservation lands in Central Texas (Travis County Audubon Society, 2009) and the small amount of habitat removed as permitted in the CSSA PBO has occurred primarily outside of the breeding season for passerines.

4.3 MANAGEMENT RECOMMENDATIONS AND OPPORTUNTITIES

In order to continually meet CSSA military mission requirements, CSSA Environmental Management personnel are actively engaged in remediation activities and planning of future remediation activities. In some instances, habitat for ESA-listed species must be removed for compliance with Texas Commission for Environmental Quality and U.S. Environmental Protection Agency orders. Some habitat removal may be allowed under the existing USFWS PBO Incidental Take Statement. For habitat removal requirements that exceed annual permitted habitat removal authorizations, CSSA will enter into individual Section 7 ESA consultations with the USFWS Austin Ecological Services Field Office.

Further, in accordance with Sikes Act provisions for natural resource management on military properties, CSSA's INRMP will be updated in consultation with TPWD and USFWS. The updated INRMP will include multi-year bird survey results, updated military mission requirements, and revised habitat coverages and vegetation community types. The update of habitat coverages and vegetation community types will include changes from vegetation clearing, natural succession, and habitat changes due to wildland fires (September 2011).

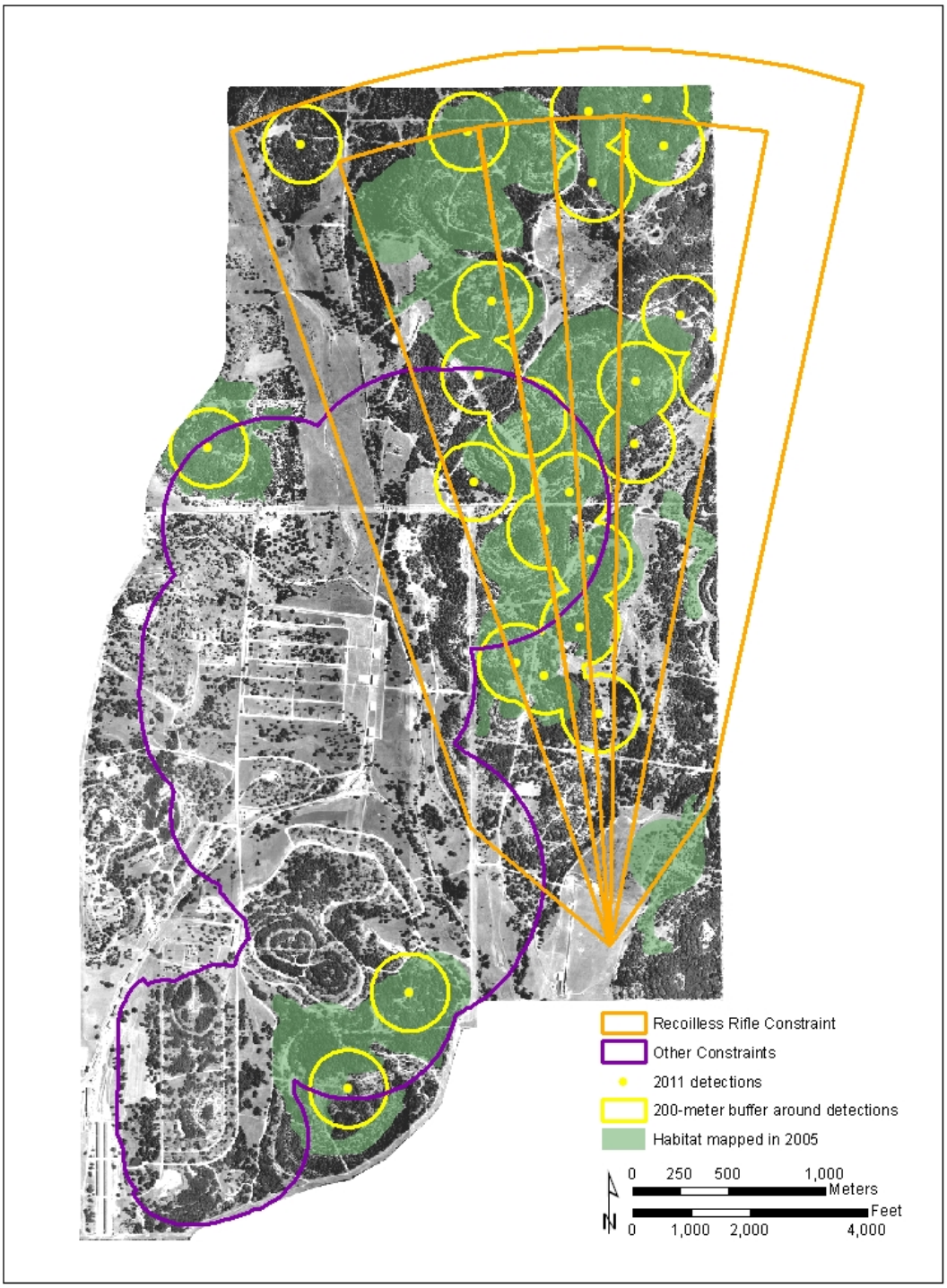


Figure 4.5 CSSA Constrained Areas and 2011 Bird Detections

SECTION 5
REFERENCES

Banks, R. C., C. Cicero, J. L. Dunn, A. W. Kratter, P.C. Rasmussen, J.V. Remsen, J.D. Rising, D. F. Stotz. 2005. 46th Supplement to the American Ornithologists' Union Check-list of North American Birds. The Auk. 122(3): 1026 – 1031.

Diamond, D. D., D. H. Riskind, and S. L. Orzell. 1988. A framework for plant community classification and conservation in Texas. Texas Journal of Science 39(3):203-221.

Fischer, R.A., and M.P. Guilfoyle. 2001. "Recommendations for Long Term Monitoring of the Endangered Golden-cheeked Warbler on Camp Bullis, TX," U.S. Army Engineer Research and Development Center, Conservation Assistance Program, Vicksburg, Mississippi.

Graber, J. W. 1961. Distribution, Habitat Requirements, and Life History of the Black-capped Vireo (*Vireo atricapillus*). Ecological Monographs 31. pp 313-336.

Grzybowski, J.A. 1995. "Black-capped Vireo (*Vireo atricapillus*)," Birds of North America. In A. Poole and F. Gill, eds., The Birds of North America, Inc. Philadelphia, Pennsylvania.

Guilfoyle M.P. 2002. Black-capped Vireo and Golden-cheeked Warbler Populations Potentially Impacted by USACE Reservoir Operations. U.S. Army Engineer Research and Development Center, EMRPP, Vicksburg, Mississippi.

International Bird Census Committee. 1970. An International Standard for a Mapping Method in a Bird Census Work. Audubon Field Notes. Volume 25, Number 6: pp. 722-726.

Ladd, C. and Gass, L. 1999. Golden-cheeked Warbler (*Dendroica chrysoparia*). Birds of North America. In A. Poole and F. Gill, eds., The Birds of North America, Inc. Philadelphia, Pennsylvania.

Parsons. 2005. Health and Safety Plan. Volume 1-5 of the CSSA Environmental Encyclopedia. Camp Stanley Storage Activity. Boerne, Texas.

Robbins, C.S. 1981. Bird activity levels related to weather. pp. 301-310. in C.J. Ralph and J.M Scott (eds.). Estimating numbers of terrestrial birds. Studies in Avian Biology No. 6. Cooper Ornithological Society. Lawrence, Kansas.

Sibley, D.A. 2003. The Sibley Field Guide to Birds of Eastern North America. Alfred A. Knopf, New York, New York.

Stewardship Services. 1993. Threatened and Endangered Bird Survey and Habitat Mapping at CSSA, Boerne, Texas. Prepared for Camp Stanley Storage Activity.

TPWD 2002. Golden-cheeked Warbler. Factsheet, available for internet download from http://www.tpwd.state.tx.us/

Travis County Audubon Society. Online access for Christmas Bird Counts (CBC). Accessed August 1, 2009. *http://www.travisaudubon.org/*

Underwood, M. 2005. Southwest Region 2 Ecological Services Field Office, Austin, Texas. U.S. Fish and Wildlife Service. Personal communication, September 2005.

USFWS 1991. Black-capped Vireo (*Vireo atricapillus*) Recovery Plan. Southwest Region. USFWS Ecological Field Office. Albuquerque, New Mexico.

USFWS 1992. Golden-cheeked Warbler (*Dendroica chrysoparia*) Recovery Plan. Southwest Region. USFWS Ecological Field Office. Albuquerque, New Mexico.

USFWS 2002. Minimum Procedures for Determining the Presence/Absence of Golden cheeked Warblers and Black-capped Vireos.

ATTACHMENT A
2011 UPDATED OBSERVED BIRD LIST

116 species represented by 36 families have been observed at CSSA during the 2005, 2007, 2009, and 2011 bird survey seasons. These species, grouped in taxonomic order, are listed in Table B-1. The 2011 survey effort resulted in 81 species observations, an increase from the 75 individual species reported in 2009. No new species (species that have not been previously identified at CSSA) were reported in 2011. Taxonomic and nomenclatural changes have been updated through the 50th supplement (Auk, 2007) to the AOU *Check-list of North American Birds (7th ed.)*.

Table A-1 Compiled list of birds observed at Camp Stanley Storage Activity Area from Spring/Summer 2005 - 2011

Family	Species Name		Year of Observation			
	Common Name	Scientific Name	2005	2007	2009	2011
Anatidae	Blue-winged Teal	*Anas discors*			**x**	**x**
	Black-bellied Whistling Duck	*Dendrocygna autumnalis*	x	x	x	x
Meleagrididae	Wild Turkey	*Meleagris gallopavo*	x	x	x	x
Odontophoridae	Northern Bobwhite	*Colinus virginianus*	x	x	x	x
Pelecanidae	American White Pelican	*Pelecanus erythrorhynchos*		x		
Ardeidae	Great Egret	*Ardea alba*		x		
	Great Blue Heron	*Ardea herodias*	x	x		x
	Cattle Egret	*Bubulcus ibis*	x	x		x
Cathartidae	Turkey Vulture	*Cathartes aura*	x	x	x	x
	Black Vulture	*Coragyps atratus*	x	x	x	x
Accipitridae	Cooper's Hawk	*Accipiter cooperii*	x	x	x	x
	Sharp-shinned Hawk	*Accipiter striatus*			**x**	**x**
	Swainson's Hawk	*Buteo brachyurus*		x		
	Red-tailed Hawk	*Buteo jamaicensis*	x	x	x	x
	Red-shouldered Hawk	*Buteo lineatus*	x	x	x	x
	Broad-winged Hawk	*Buteo platypterus*		x	x	x

Family	Species Name		Year of Observation			
	Common Name	**Scientific Name**	**2005**	**2007**	**2009**	**2011**
	Crested Caracara	*Caracara cheriway*	x	x		x
	Northern Harrier	*Circus cyaneus*	x	x		x
	American Kestrel	*Falco sparverius*		x		x
	Mississippi Kite	*Ictinia mississippiensis*		x		
Charadriidae	Killdeer	*Charadrius vociferus*	x	x	x	x
Scolopacidae	Spotted Sandpiper	*Actitis macularius*	x	x	x	x
	Semipalmated Sandpiper	*Calidris pusilla*		x		
Columbidae	Inca Dove	*Columbina inca*			**x**	**x**
	Common Ground-Dove	*Columbina passerina*			**x**	**x**
	White-winged Dove	*Zenaida asiatica*	x	x	x	x
	Mourning Dove	*Zenaida macroura*	x	x	x	x
Cuculidae	Yellow-billed Cuckoo	*Coccyzus americanus*	x	x	x	x
	Greater Roadrunner	*Geococcyx californianus*	x	x	x	x
Strigidae	Great Horned Owl	*Bubo virginianus*	x			
	Eastern Screech-Owl	*Megascops asio*	x			x
Caprimulgidae	Chuck-will's-widow	*Caprimulgus carolinensis*		x		
	Common Nighthawk	*Chordeiles minor*	x	x		
Apodidae	Chimney Swift	*Chaetura pelagica*	x	x	x	x
Trochilidae	Black-chinned Hummingbird	*Archilochus alexandri*	x	x	x	x
Picidae	Ladder-backed Woodpecker	*Picoides scalaris*	x	x	x	x
Tyrannidae	Olive-sided Flycatcher	*Contopus cooperi*			**x**	**x**
	Eastern Wood-Pewee	*Contopus virens*	x			
	Least Flycatcher	*Empidonax minimus*	x		x	x
	Willow Flycatcher	*Empidonax traillii*			**x**	**x**
	Ash-throated Flycatcher	*Myiarchus cinerascens*	x	x	x	x
	Great Crested Flycatcher	*Myiarchus crinitus*	x			

Family	Species Name		Year of Observation			
	Common Name	**Scientific Name**	**2005**	**2007**	**2009**	**2011**
	Vermilion Flycatcher	*Pyrocephalus rubinus*		x	x	x
	Eastern Phoebe	*Sayornis phoebe*	x	x	x	x
	Scissor-tailed Flycatcher	*Tyrannus forficatus*	x	x	x	x
	Western Kingbird	*Tyrannus verticalis*	x	x	x	x
Laniidae	Loggerhead Shrike	*Lanius ludovicianus*	x		x	x
Vireonidae	Black-capped Vireo	*Vireo atricapilla*	x			
	Bell's Vireo	*Vireo bellii*	x	x		
	White-eyed Vireo	*Vireo griseus*	x	x	x	x
	Red-eyed Vireo	*Vireo olivaceus*			**x**	**x**
	Blue-headed Vireo	*Vireo solitarius*	x		x	x
Corvidae	Western Scrub-Jay	*Aphelocoma californica*	x	x	x	x
	Common Raven	*Corvus corax*		x	x	x
Hirundinidae	Barn Swallow	*Hirundo rustica*		x	x	x
	Cave Swallow	*Petrochelidon fulva*		x	x	x
	Cliff Swallow	*Petrochelidon pyrrhonota*	x	x	x	x
	Purple Martin	*Progne subis*	x	x	x	x
Paridae	Black-crested Titmouse	*Baeolophus atricristatus*	x	x	x	x
	Carolina Chickadee	*Poecile carolinensis*	x	x	x	x
Remizidae	Verdin	*Auriparus flaviceps*		x		
Troglodytidae	Bewick's Wren	*Thryomanes bewickii*	x	x	x	x
	Carolina Wren	*Thryothorus ludovicianus*	x	x	x	x
	House Wren	*Troglodytes aedon*	x			
Regulidae	Ruby-crowned Kinglet	*Regulus calendula*	x	x	x	x
Sylviidae	Blue-gray Gnatcatcher	*Polioptila caerulea*	x	x	x	x
Turdidae	Hermit Thrush	*Catharus guttatus*	x		x	x
	Eastern Bluebird	*Sialia sialis*	x	x	x	x

Family	Species Name		Year of Observation			
	Common Name	**Scientific Name**	**2005**	**2007**	**2009**	**2011**
	American Robin	*Turdus migratorius*	x			
Mimidae	Gray Catbird	*Dumetella carolinensis*	x			
	Northern Mockingbird	*Mimus polyglottos*	x	x	x	x
Sturnidae	European Starling	*Sturnus vulgaris*	x	x	x	x
Bombycillidae	Cedar Waxwing	*Bombycilla cedrorum*				
Parulidae	Golden-cheeked Warbler	*Dendroica chrysoparia*	x	x	x	x
	Yellow-rumped Warbler	*Dendroica coronata*	x	x		
	Blackburnian Warbler	*Dendroica fusca*	x			
	Yellow Warbler	*Dendroica petechia*	x		x	x
	Black-throated Green Warbler	*Dendroica virens*	x	x		
	Common Yellowthroat	*Geothlypis trichas*	x			
	Yellow-breasted Chat	*Icteria virens*	x			
	Black-and-white Warbler	*Mniotilta varia*	x	x	x	x
	Mourning Warbler	*Oporornis philadelphia*	x			
	American Redstart	*Setophaga ruticilla*	x	x		
	Orange-crowned Warbler	*Vermivora celata*	x	x	x	x
	Tennessee Warbler	*Vermivora peregrina*	x			
	Nashville Warbler	*Vermivora ruficapilla*	x	x	x	x
	Canada Warbler	*Wilsonia canadensis*	x			
	Wilson’s Warbler	*Wilsonia pusilla*	x			
Emberizidae	Cassin's Sparrow	*Aimophila cassinii*	x			
	Rufous-crowned Sparrow	*Aimophila ruficeps*	x	x	x	x
	Grasshopper Sparrow	*Ammodramus savannarum*	x	x	x	x
	Black-throated Sparrow	*Amphispiza bilineata*			**x**	**x**
	Lark Sparrow	*Chondestes grammacus*	x	x	x	x
	Lincoln's Sparrow	*Melospiza lincolnii*	x	x		

Family	Species Name		Year of Observation			
	Common Name	**Scientific Name**	**2005**	**2007**	**2009**	**2011**
	Savanna Sparrow	*Passerculus sandwichensis*		x		
	Eastern Towhee	*Pipilo erythrophthalmus*			**x**	**x**
	Spotted Towhee	*Pipilo maculatus*	x	x	x	x
	Vesper Sparrow	*Pooecetes gramineus*	x		x	x
	Clay-colored Sparrow	*Spizella pallida*	x	x	x	x
	Chipping Sparrow	*Spizella passerina*	x	x	x	x
	Field Sparrow	*Spizella pusilla*	x	x		
	White-crowned Sparrow	*Zonotrichea leucophrys*			**x**	**x**
	White-throated Sparrow	*Zonotrichia albicollis*	x	x		
Cardinalidae	Northern Cardinal	*Cardinalis cardinalis*	x	x	x	x
	Blue Grosbeak	*Passerina caerulea*	x	x	x	x
	Painted Bunting	*Passerina ciris*	x	x	x	x
	Summer Tanager	*Piranga rubra*	x	x	x	x
	Dickcissel	*Spiza americana*		x		
Icteridae	Orchard Oriole	*Icterus spurius*	x			
	Brown-headed Cowbird	*Molothrus ater*	x	x	x	x
	Great-tailed Grackle	*Quiscalus mexicanus*	x	x	x	x
	Common Grackle	*Quiscalus quiscula*	x			
	Eastern Meadowlark	*Sturnella neglecta*	x		x	x
Fringillidae	House Finch	*Carpodacus mexicanus*	x	x	x	x
	Lesser Goldfinch	*Spinus psaltria*	x	x	x	x
Passeridae	House sparrow	*Passer domesticus*	x	x	x	x
TOTAL		***Total by year***	***90***	***80***	***75***	***81***
		Total 2005 - 2011	***116***			

ATTACHMENT B
PAST SURVEY RESULTS 2005 - 2009

Table B-1 2005 Golden-Cheeked Warbler and Black-Capped Vireo Detections

Detection Number	Species	Date	Time	Coordinates*		Weather Conditions	Vegetation Community
				Northing	Easting		
1	GCWA, male	3/28/2005	1025	537766	3288770	Moderate south winds gusting at 8mph, 25% cloud cover, 64 degrees (F)	Oak-Juniper Woodland
2	GCWA, male	3/28/2005	1105	537925	3288797	Moderate south winds gusting at 8mph, 25% cloud cover, 64 degrees (F)	Oak-Juniper Woodland
3	GCWA, male	4/4/2005	0833	538667	3288940	Moderate SE winds gusting at 15mph, 80% cloud cover. 60 degrees (F)	Juniper Woodland
4	GCWA, male	4/4/2005	0835	538567	3288645	Moderate SE winds gusting at 15mph, 80% cloud cover. 60 degrees (F)	Juniper Woodland
5	GCWA, male	4/4/2005	1049	538490	3288901	Moderate SE winds gusting at 15mph, 80% cloud cover. 71 degrees (F)	Oak-Juniper Woodland
6	GCWA, male	4/4/2005	1100	538397	3286530	Light south winds gusting at 9mph, 100% cloud cover, 77.5 degrees (F)	Oak-Juniper Woodland
7	GCWA, male	4/11/2005	1015	536867	3283925	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
8	GCWA, male	4/11/2005	1045	536950	3284071	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
9	GCWA, male	4/11/2005	1133	538282	3287366	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Shrubland
10	GCWA, female	4/11/2005	1140	538307	3287536	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Shrubland
11	GCWA, male	4/11/2005	1150	538608	3287581	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Shrubland
12	GCWA, female	5/2/2005	0900	536357	3287255	Light N winds at 3 mph. 50% cloud cover. 71 degrees (F)	Oak Savanna
13	GCWA, female	5/2/2005	1130	537288	3288300	Light N winds at 3mph. 50% cloud cover. 78 degrees (F).	Juniper Woodland
14	GCWA, male	5/2/2005	1200	538102	3287023	Light N winds, 2-5mph. Cloud cover 50%. 72 degrees (F)	Oak-Juniper Woodland
15	GCWA, female	5/2/2005	1200	538161	3287075	Light N winds, 2-5mph. Cloud cover 50%. 72 degrees (F)	Oak-Juniper Woodland
16	GCWA, male	5/9/2005	1230	537941	3286074	Light winds at 3 mph. 50% cloud cover. 80 degrees (F)	Oak-Juniper Woodland
17	BCVI, male	5/9/2005	0940	538716	3285023	Light E winds, 0-5 mph. 100% cloud cover, periodic light rain. 70 degrees (F)	Oak Shrubland
18	GCWA, male	5/23/2005	0930	538234	3286397	Light winds at 2 mph. 25% cloud cover. 77 degrees (F)	Oak-Juniper Woodland
19	GCWA, female	5/23/2005	1200	537404	3284237	Light winds at 2 mph. 25% cloud cover. 80 degrees (F)	Oak-Juniper Woodland
20	GCWA, male	5/23/2005	1200	537501	3284334	Light winds at 2 mph. 25% cloud cover. 80 degrees (F)	Oak-Juniper Woodland

*Coordinate System: UTM Zone 14N / NAD 83

Table B-2 2007 Golden-cheeked Warbler Detections

Detection Number	Species	Date	Time	Coordinates*		Weather Conditions	Vegetation Community
				Northing	Easting		
1	GCWA, male	4/16/2007	0730	3287469.6	538634.7	Moderate south winds gusting at 10mph, 33% cloud cover, 70 degrees (F)	Oak-Juniper Woodland
2	GCWA, male	4/16/2007	0755	3287317.8	538298.5	Moderate south winds gusting at 10mph, 33% cloud cover, 72 degrees (F)	Oak-Juniper Woodland
3	GCWA, male	4/16/2007	0920	3286974.3	538298.5	Moderate SE winds gusting at 15mph, 80% cloud cover. 60 degrees (F)	Juniper Woodland
4	GCWA, male	4/16/2007	0945	3287216.6	538096.0	Moderate SE winds gusting at 15mph, 80% cloud cover. 60 degrees (F)	Juniper Woodland
5	GCWA, male	4/23/2007	0820	3288001.1	537886.3	Moderate SE winds gusting at 15mph, 100% cloud cover. 77 degrees (F)	Oak-Juniper Woodland
6	GCWA, male	4/23/2007	1130	3287744.4	537702.0	Light south winds gusting at 9mph, 100% cloud cover, 85 degrees (F)	Oak-Juniper Woodland
7	GCWA, male	5/7/2007	0900	3286651.8	537980.3	Light north winds gusting at 10mph, 50% cloud cover, 72 degrees (F)	Oak-Juniper Woodland
8	GCWA, male	5/7/2007	0930	3286528.9	538139.4	Light north winds gusting at 10mph, 60% cloud cover, 75.5 degrees (F)	Oak-Juniper Woodland
9	GCWA, male	5/7/2007	1010	3286214.4	538190.0	Light NW winds gusting at 10mph. 80% cloud cover. 82 degrees (F)	Oak-Juniper Shrubland
10	GCWA, female	5/7/2007	1015	3286196.3	538356.3	Light NW winds gusting at 10mph. 80% cloud cover. 82 degrees (F)	Oak-Juniper Shrubland
11	GCWA, male	5/7/2007	1215	3286073.4	538327.4	Light N winds gusting at 5 mph. 60% cloud cover. 86 degrees (F)	Oak-Juniper Shrubland
12	GCWA, female	5/7/2007	1225	3285835.5	538960.1	Light N winds at 5 mph. 60% cloud cover. 89 degrees (F)	Oak Savanna
13	GCWA, female	5/7/2007	1245	3284653.3	538978.2	Light N winds at 6mph. 50% cloud cover. 89 degrees (F).	Juniper Woodland
14	GCWA, male	5/7/2007	1300	3284349.6	538913.1	Light N winds, 6mph. Cloud cover 50%. 90 degrees (F)	Oak-Juniper Woodland
15	GCWA, female	7/16/2007	1020	3283919.0	537024.5	Light N winds, 10mph. Cloud cover 30%. 88 degrees (F)	Oak-Juniper Woodland
16	GCWA, male	7/23/2007	1100	3287361.2	538613.0	Light winds at 6 mph. 60% cloud cover. 92 degrees (F)	Oak-Juniper Woodland
17	GCWA male	7/23/2007	1115	3284164.9	537400.4	Light E winds, 0-5 mph. 100% cloud cover, periodic light rain. 70 degrees (F)	Oak Shrubland
18	GCWA, male	7/23/2007	1150	3288926.0	538587.3	Light winds at 2 mph. 25% cloud cover. 77 degrees (F)	Oak-Juniper Woodland

*Coordinate System: UTM Zone 14N / NAD 83

Table B-3 2009 Golden-cheeked Warbler Detections

Detection Number	Species	Date	Time	Coordinates*		Weather Conditions	Vegetation Community
1	GCWA, male	4/13/2009	820	537766	3288770	Moderate south winds gusting at 8mph, 25% cloud cover, 76 degrees (F)	Oak-Juniper Woodland
2	GCWA, male	4/13/2009	829	537925	3288797	Moderate south winds gusting at 8mph, 25% cloud cover, 73 degrees (F)	Oak-Juniper Woodland
3	GCWA, male	4/13/2009	858	538667	3288940	Moderate SE winds gusting at 15mph, 80% cloud cover. 74 degrees (F)	Oak-Juniper Woodland
4	GCWA, male	4/13/2009	925	538567	3288645	Moderate SE winds gusting at 15mph, 80% cloud cover. 76 degrees (F)	Oak-Juniper Woodland
5	GCWA, fenale	4/13/2009	1055	538490	3288901	Moderate SE winds gusting at 15mph, 80% cloud cover. 71 degrees (F)	Oak-Juniper Woodland
6	GCWA, female	4/13/2009	1055	538397	3286530	Light south winds gusting at 9mph, 100% cloud cover, 77.5 degrees (F)	Oak-Juniper Woodland
7	GCWA, male	4/20/2009	815	536867	3283925	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
8	GCWA, male	4/20/2009	815	536950	3284071	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
9	GCWA, male	4/20/2009	1115	537596	3288090	Light NW winds at 4 mph, 25% cloud cover. 71 degrees (F).	Oak-Juniper Woodland
10	GCWA, male	4/20/2009	1245	537368	3288537	Light NW winds at 4 mph, 25% cloud cover. 79 degrees (F).	Oak-Juniper Woodland
11	GCWA, male	5/11/2009	810	538282	3287366	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Woodland
12	GCWA, female	5/11/2009	1125	538307	3287536	Light NW winds gusting at 10mph. 25% cloud cover. 87 degrees (F)	Oak-Juniper Woodland
13	GCWA, male	5/25/2009	725	538608	3287581	Light NW winds gusting at 10mph. 25% cloud cover. 79 degrees (F)	Oak-Juniper Woodland
14	GCWA, female	6/15/2009	845	536357	3287255	Light N winds at 3 mph. 50% cloud cover. 82 degrees (F)	Oak-Juniper Woodland
15	GCWA, female	6/15/2009	1000	537288	3288300	Light N winds at 3 mph. 50% cloud cover. 90 degrees (F).	Oak-Juniper Woodland
16	GCWA, male	4/13/2009	858	538667	3288940	Moderate SE winds gusting at 15mph, 80% cloud cover. 74 degrees (F)	Oak-Juniper Woodland
17	GCWA, male	4/13/2009	925	538567	3288645	Moderate SE winds gusting at 15mph, 80% cloud cover. 76 degrees (F)	Oak-Juniper Woodland
18	GCWA, female	5/11/2009	1125	538307	3287536	Light NW winds gusting at 10mph. 25% cloud cover. 87 degrees (F)	Oak-Juniper Woodland
19	GCWA, male	5/25/2009	725	538608	3287581	Light NW winds gusting at 10mph. 25% cloud cover. 79 degrees (F)	Oak-Juniper Woodland
20	GCWA, male	4/13/2009	829	537925	3288797	Moderate south winds gusting at 8mph, 25% cloud cover, 73 degrees (F)	Oak-Juniper Woodland
21	GCWA, male	4/13/2009	820	537766	3288770	Moderate south winds gusting at 8mph, 25% cloud cover, 76 degrees (F)	Oak-Juniper Woodland

22	GCWA, male	4/20/2009	1115	537596	3288090	Light NW winds at 4 mph, 25% cloud cover. 71 degrees (F).	Oak-Juniper Woodland
23	GCWA, male	4/20/2009	1245	537368	3288537	Light NW winds at 4 mph, 25% cloud cover. 79 degrees (F).	Oak-Juniper Woodland
24	GCWA, male	5/11/2009	810	538282	3287366	Light NW winds gusting at 10mph. 25% cloud cover. 72 degrees (F)	Oak-Juniper Woodland
25	GCWA, male	4/20/2009	815	536867	3283925	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland
26	GCWA, male	4/20/2009	815	536867	3283925	Light north winds gusting at 2mph, 50% cloud cover, 68.5 degrees (F)	Oak-Juniper Woodland

*Coordinate System: UTM Zone 14N / NAD 83