

**2011 CALIFORNIA GNATCATCHER  
HABITAT ASSESSMENT & PROTOCOL SURVEY  
OF  
POTENTIAL HABITAT WITHIN  
SANTA SUSANA FIELD LABORATORY  
AREA IV AND THE NORTHERN BUFFER ZONE**



**GRIFFITH WILDLIFE BIOLOGY**

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## EXECUTIVE SUMMARY

The Santa Susana Field Laboratory in southeastern Ventura County, California, contains coastal sage scrub habitat of the type preferred by the federally threatened Coastal California gnatcatcher (*Polioptila californica ssp. californica*). As indicated in Figure 1 of the Biological Opinion for the Santa Susana Field Laboratory Area IV Radiological Survey issued by the United States Fish and Wildlife Service, approximately 151 acres in Area IV and the contiguous undeveloped Northern Buffer Zone (NBZ) to the north and west were identified as potentially suitable habitat for the gnatcatcher. A habitat reconnaissance survey was subsequently conducted in areas initially identified as suitable habitat. During this reconnaissance, direct field observation determined that less than 100 of the 151 acres were suitable gnatcatcher habitat. The survey area for the presence-absence gnatcatcher protocol surveys was focused within the suitable habitat. Further, a cumulative list of all birds incidentally observed during the reconnaissance and protocol surveys was compiled.

No California gnatcatchers or California gnatcatcher nests were detected during the protocol surveys.

Fifty-six (56) species of birds were incidentally observed, though none were state or federal endangered, threatened, or candidate species. Four species of regional concern (noted as declining but no legal protections in place) were noted as follows:

- Four California Species of Special Concern birds
  - Northern harrier (*Circus cyaneus*)
  - Cooper's hawk (*Accipiter cooperii*)
  - Horned lark (*Eremophila alpestris*) (if it was the California horned lark *E. a. actia*)
  - Rufous-crowned sparrow (*Aimophila ruficeps*) (if it was the southern California rufous-crowned sparrow *A. r. canescens*)

## INTRODUCTION

The Santa Susana Field Laboratory is located in southeastern Ventura County, California (Figure 1). A 151-acre area within Area IV and the undeveloped NBZ to the west and north was identified by the United States Fish and Wildlife Service (USFWS) in the Biological Opinion for the Santa Susana Field Laboratory Area IV Radiological Study Project as containing sage scrub habitat potentially suitable for the federally threatened coastal California gnatcatcher (*Polioptila californica ssp. californica*) (Figure 2). In 2010 and 2011, Griffith Wildlife Biology (GWB) was retained by Envicom Corporation to conduct a habitat reconnaissance survey to determine what portions within these 151 acres contained gnatcatcher-quality coastal sage scrub and ecotonal grassland-coastal sage and chamise chaparral-coastal sage habitat, then conduct focused gnatcatcher presence-absence protocol surveys within the identified gnatcatcher habitat (GWB 2010). In addition, a cumulative list of all birds incidentally observed during the reconnaissance and protocol surveys was compiled.

### California Gnatcatcher (*Polioptila californica*)

The California gnatcatcher (*Polioptila californica*) is a small, gray and black songbird that inhabits scrub plant communities from coastal southern California to the tip of the Baja California Peninsula. Three subspecies are recognized. The northernmost nominate race, the coastal California gnatcatcher (*Polioptila californica californica*), is a resident of coastal sage scrub and adjacent ecotonal habitats from southern Ventura County southward to northwestern Baja California, Mexico near El Rosario at approximately 30 degrees North latitude. It is generally found at elevations below 500 m (Atwood and Bontrager 2001). The species was originally described as distinct in 1881 but was subsequently lumped with the black-tailed gnatcatcher (*Polioptila melanura*) until Atwood (1988) concluded that it was specifically distinct based on differences in ecology, behavior, and distribution. This finding was adopted by the American Ornithologist's Union (AOU 1989). The subspecies was listed as threatened by the USFWS in March 1993 due to habitat loss and fragmentation occurring in conjunction with urban and agricultural development and brood parasitism by the brown-headed cowbird (*Molothrus ater*) (58 FR 16742). Loss of historical habitat is estimated to be 70-90% (Michael Brandman Associates 1991, USFWS 1997). Critical habitat composed of 13 units encompassing 207,890 ha or 513,707 acres (12% Federal, 5% local and State, 83% private) was designated by the USFWS in 2000 (Krofta 2000). The life history, management, and research priorities for the California gnatcatcher are presented in Atwood and Bontrager (2001).



Male gnatcatcher on nest.



Gnatcatcher eggs.

The coastal California gnatcatcher occurs almost exclusively in coastal sage scrub (CSS) (Woods 1928, Atwood and Bontrager 2001), although they are sometimes found in adjacent chaparral, riparian, grassland, or disturbed habitats with which CSS is ecotonal (USFWS 1997, Campbell et al. 1998). Coastal sage scrub is a distinctive vegetation type with several subassociations including Venturan, Riversidian, and Diegan in Southern California (Atwood 1993), the southern limit of which coincides with the southern limit of the range of *P. c. californica* and several other birds, plants, terrestrial insects, land mammals, reptiles, and scorpions at about 30 degrees north latitude in Baja California (Atwood 1991). Coastal sage scrub is composed of relatively small (<2m) mostly summer-deciduous shrubs and succulent plants, including California sagebrush (*Artemisia californica*), various species of sage (*Salvia spp*), flat-topped buckwheat (*Eriogonum fasciculatum*), sunflower (*Encelia californica*), prickly pear and cholla cactus (*Opuntia spp*) and various species of goldenbush (*Haplopappus spp*), often interspersed with larger shrubs such as Mexican elderberry (*Sambucus mexicana*), toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*) and lemonade berry (*Rhus integrifolia*) (O'Leary 1990, Holland 1986). The plant composition of gnatcatcher territories may vary widely, but California sagebrush is the dominant or co-dominant shrub (by percent cover) in 85% or more of territories (Griffith and Griffith 1997, Atwood and Bontrager 2001).

Coastal sage scrub dominated by black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and lemonadeberry (*Rhus integrifolia*) supports few or no gnatcatchers, especially in coastal areas (Atwood and Bontrager 2001). Gnatcatcher use of adjacent and mixed/ecotonal habitats (chaparral, grassland, riparian, and disturbed) is well documented and may be critical for dispersal, foraging, and shelter, especially during drought or inclement weather (USFWS 1997, Griffith and Griffith 1997).

Coastal sage scrub habitat has been in noted decline since the 1940s and is now considered the most endangered habitat type in the continental United States due to past and planned urbanization and agricultural activities (Grinnell and Miller 1944, Westman 1981 and 1987, Michael Brandman Associates 1991). Only about 20% of the remaining coastal sage scrub habitat in southern California occurs on public lands, of which more than 60% (approximately 52,500 acres) is on military reservations, according to the California Department of Fish and Game (CDFG 1993).

The breeding season of the California gnatcatcher extends from about 15 February, when the breeding plumage black cap of the male becomes apparent, through 30 August, when the cap disappears (although in some cases, remnants of the cap are discernable well into fall) (Atwood and Bontrager 2001). By mid to late summer, unmarked hatch-year gnatcatchers are not reliably distinguishable in the field from adults by differences in plumage, vocalization, or behavior. Hatch-year gnatcatchers typically form pair bonds and defend territories by October, some as early as July (Atwood and Bontrager 2001).

The peak of gnatcatcher nesting activity is mid-March to mid-May at Marine Corps Base Camp Pendleton (Griffith and Griffith 1997) and elsewhere (Atwood and Bontrager 2001). Annual changes in the timing of breeding plumage and first nests (plus or minus 14 days or so) may be related to precipitation and temperature (Atwood and Bontrager 2001).

Both adults participate in nest building. Incubation of 3-5 eggs requires 14 days. The young fledge at 12-16 days of age and are capable of independence within 3-4 weeks, although they may remain associated with the family group for several months. Before nesting, breeding pairs are vocal and relatively easy to detect. During incubation, pairs are often less vocal, more secretive, and more difficult to detect. Adults feeding nestlings and fledglings, family groups, and juveniles are vocal, visible, and relatively easy to detect.

Gnatcatchers are extremely fecund. Pairs may attempt 10 nests and raise 3 broods during a single breeding season (Atwood and Bontrager 2001). At Camp Pendleton in 1993-1994, about 70% of nests were successful, producing 3.5 young per nest; 84%-98% of pairs were successful (produced at least 1 fledgling); and 13%-17% of pairs attempted double-brooding (Griffith and Griffith 1997). Other sites report nest success rates of 32%-74%, 1.6 to 4.4 young per pair, and double-brooding rates of 15%-52% (Atwood and Bontrager 2001). Gnatcatchers are known to have higher success rates, more young per nest, and increased survivorship in larger, higher quality habitat adjacent to riparian habitat, as opposed to in small, poor-quality, islands of habitat (Atwood et al. 1998, GWB 2008).

Cowbird brood parasitism impacts gnatcatcher productivity, especially in areas near cowbird foraging areas (dairies) and near host-rich and cowbird-preferred riparian habitat (Braden 1992, Bontrager et al. 1995, Griffith and Griffith 2000). Only 2% of gnatcatcher eggs hatch after a parasitism event (Braden et al. 1997). No gnatcatcher fledglings are known from parasitized nests. Gnatcatchers may be scarce or absent from some areas containing suitable habitat due to persistent and prolonged cowbird parasitism (Atwood 1993), but since the peak of gnatcatcher nesting occurs before the major dispersal of cowbirds from wintering flocks to breeding habitat in mid April, and because cowbirds prefer host-rich riparian habitat over coastal sage scrub, cowbird parasitism does not appear to be driving the species to extinction (Griffith and Griffith 1993 and 2001, Braden et al. 1997). In Riverside County, Braden et al. (1997) and Griffith and Griffith (1993) reported parasitism rates increasing from zero to 47% (n=107) and 71% (n=7), respectively, before and after cowbird dispersal from wintering flocks into coastal sage scrub habitat in April and May.



Gnatcatcher habitat.



Gnatcatcher nest with cowbird egg.

California gnatcatchers have benefited from cowbird control, sometimes as a result of trapping performed on behalf of the endangered Least Bell's vireo (*Vireo bellii ssp. pusillus*) (USFWS 1998, Griffith and Griffith 2000). In Orange County, California, gnatcatcher nest parasitism rates of 59% (n=17) before cowbird trapping were reduced to less than 1% (n>200) after trapping was initiated (for the vireo) (Miner et al. 1998). Atwood (1990) recorded a 20% parasitism rate (n=5) among the gnatcatcher at Camp Pendleton in 1980. Cowbird control has been performed annually at Camp Pendleton since 1983 (40 traps base-wide since 1988) (GWB 2004). No parasitism of the California gnatcatcher has been observed on base since 1980 (n>200) (Tutton 1991, Griffith and Griffith 1997, Atwood et al. 1999, GWB 2004, GWB 2006).

Gnatcatchers suffer winter mortality associated with prolonged periods of rainfall and cold (Mock 1998, Atwood and Bontrager 2001). After such periods, gnatcatcher populations can be reduced by as much as 54% (ERCE 1990, Atwood et al. 1998, Erickson and Miner 1998). As a result of their fecundity and potential for high weather-related mortality, gnatcatcher numbers can fluctuate significantly between years even in stable habitat (Atwood and Bontrager 2001).

## STUDY AREA

The study area included coastal sage scrub and ecotonal sage scrub blended with chamise and or grassland habitats within the 151-acre reconnaissance area (gnatcatcher habitat subjected to focused survey totaled less than 100 acres) (Figure 2). The best habitat occurred on the east-facing slopes in the western portion of the survey area. Essentially, all areas containing one or more components of sage scrub including but not limited to California sagebrush (*Artemisia californica*), various other sages (*Salvia spp*), and buckwheat (*Eriogonum spp*), and that were not pure oak woodland or chamise chaparral or recently burned areas vegetated solely with grass and annuals or recently brushed areas, were surveyed. Between 2010 and 2011, roughly half of the suitable habitat onsite was brushed to allow for scanning. Because sage scrub is adapted to re-sprouting after fires, and because the ground and roots were not disturbed, this clearing activity will have only short-term effect; probably within about 3-5 years the habitat will once again be capable of supporting gnatcatchers.

## METHODS

The surveys were conducted per the survey protocol (USFWS 1997). In brief the protocol requires: 6 replicate surveys at least one week apart from 15 March to 30 June, from dawn to 1200 hours, during fair weather and good survey conditions. A tape of the gnatcatcher song was played to solicit responses and verify absence. The start/stop data for time, temperature, cloud cover, and wind speed for each replicate survey are listed in Table 1.

A comprehensive list of incidentally observed bird species was compiled during the focused bird surveys. Reporting is per AOU taxonomic order.

All surveys were performed by J. T. Griffith under the authority of USFWS Endangered Species Permit # TE-758175 and a Memorandum of Understanding between Griffith Wildlife Biology and the California Department of Fish and Game.

## RESULTS

Focus Species No California gnatcatcher individuals or pairs or nests were detected.

Cumulative Bird List A total of 56 bird species were detected during the recon and protocol surveys (Table 2).

Birds of Regional Concern (declining but no legal protections in place) Four California Species of Special Concern (CSC: CDFG 2003) birds including Northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), horned lark (*Eremophila alpestris*) (if it was the California horned lark *E. a. actia*), and rufous-crowned sparrow (*Aimophila ruficeps*) (if it was the southern California rufous-crowned sparrow *A. r. canescens*) (Table 2).

## DISCUSSION AND CONCLUSIONS

The Santa Susana Field Laboratory site contains coastal sage scrub and ecotonal sage scrub habitats suitable for the California gnatcatcher. Six replicate protocol surveys were performed between 15 March and 19 April 2011 per the protocol. The surveys were exhaustive and comprehensive and the California gnatcatcher is considered absent from the survey area in the 2011 breeding season.

## RECOMMENDATIONS (gnatcatcher specific)

1. To the extent feasible, limit direct and indirect impacts to the coastal sage and ecotonal sage scrub habitats on site.
2. Repeat gnatcatcher presence-absence protocol surveys in future years if habitat impacts are expected.

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Figure 1. Santa Susana Field Laboratory, Ventura County, California, project location.

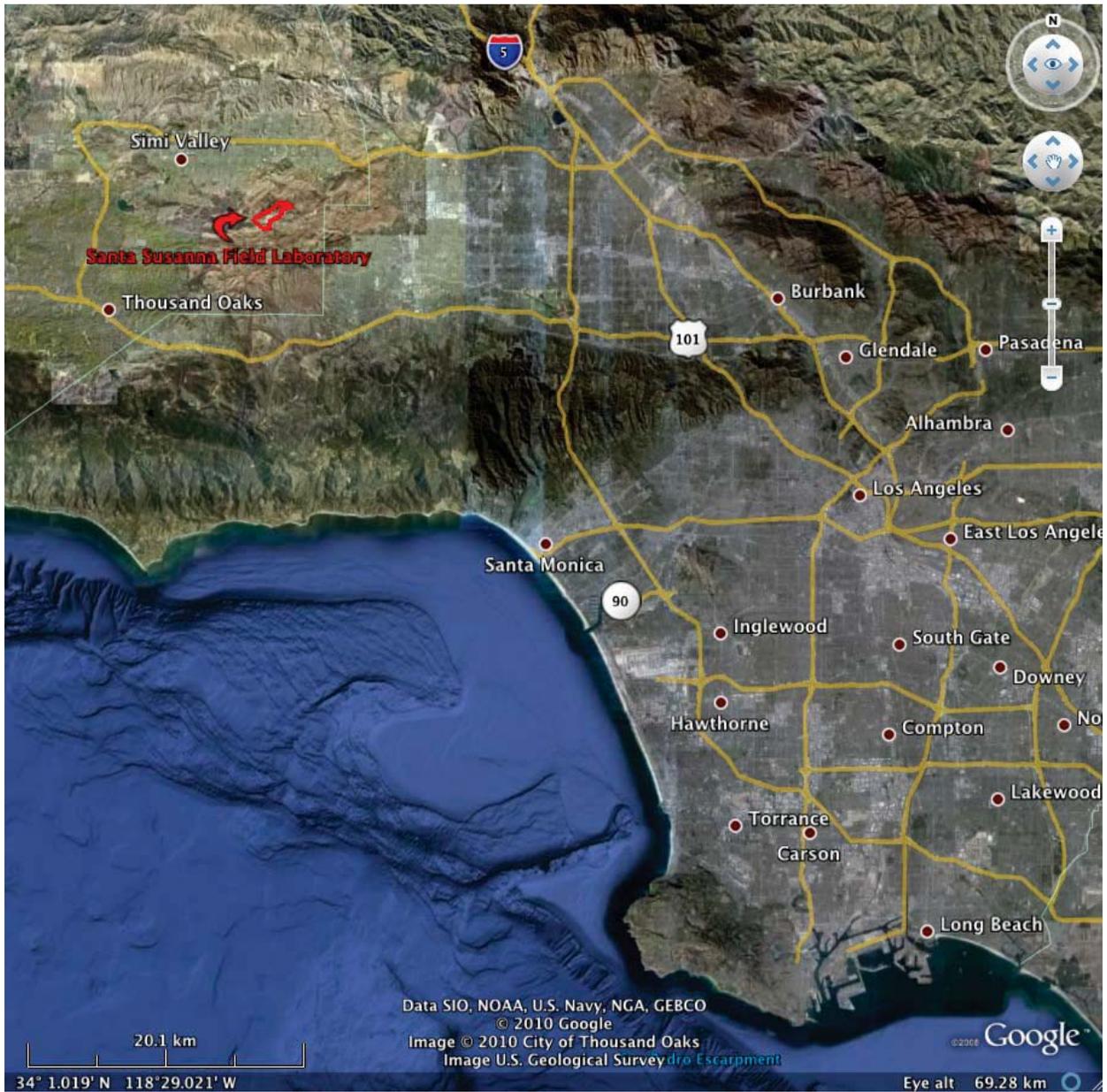
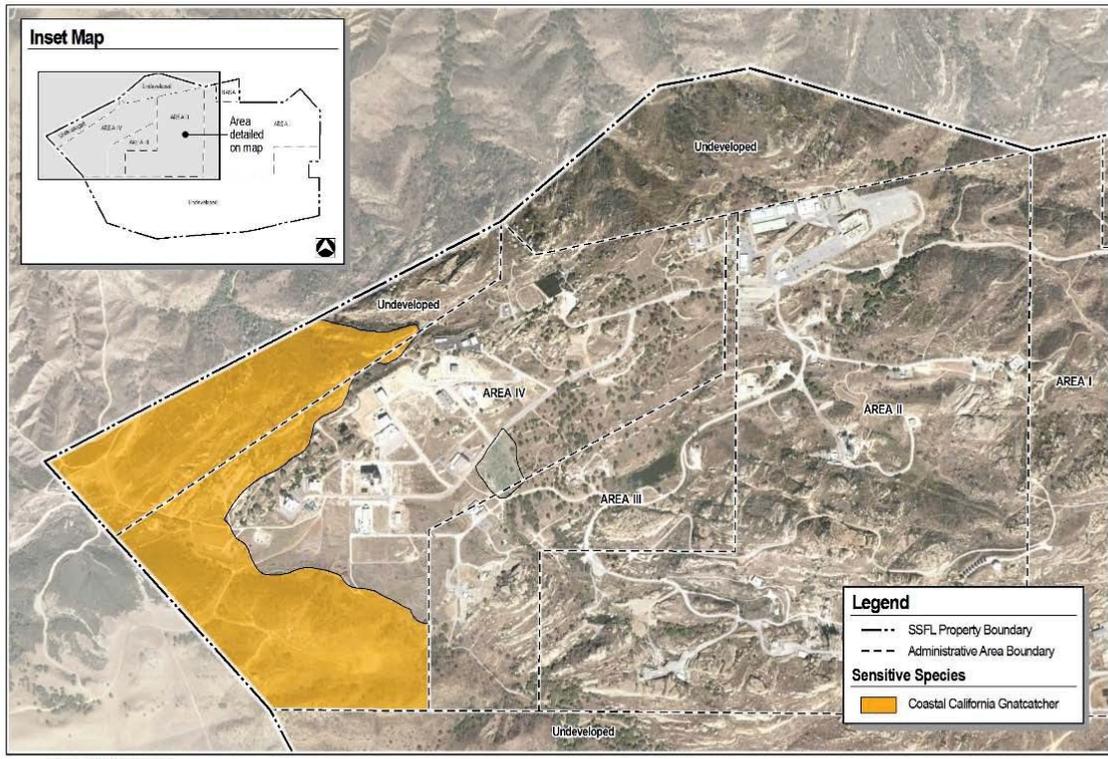
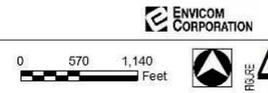


Figure 2. Santa Susana Field Laboratory potential habitat for the coastal California gnatcatcher.



SANTA SUSANA FIELD LABORATORY AREA IV RADIOLOGICAL STUDY - BIOLOGICAL ASSESSMENT

### Potential Habitat for Coastal California Gnatcatcher



Source: Envicom Corporation

Table 1. Dates, times, and conditions of California gnatcatcher protocol surveys at Santa Susana Field Laboratory, Ventura County, California, in 2011.

Date	Time		Temperature		Cloud Cover		Wind avg mph	
	Start	Stop	Start	Stop	Start	Stop	Start	Stop
3/15	730	930	56	66	80	70	0	0-1
3/22	730	930	46	48	30	20	2	2
3/29	800	1030	56	62	0	0	0	2
4/5	720	930	55	63	0	0	0	0
4/12	750	1030	56	66	0	0	1-2	0-1
4/19	730	945	55	56	100	100	0-1	0

All surveys conducted by John T. Griffith (ES #TE-758175).

Survey Protocol Requirements:

California Gnatcatcher                      6 surveys at least one week apart from 15 March to 30 June.

Survey location:

Santa Susanna Field Laboratory  
 Ventura County, CA  
 USGS 7.5 minute Qu Calabasas

Table 2. Cumulative list of avian species incidentally observed during habitat reconnaissance and focused protocol surveys at Santa Susana Field Laboratory, Ventura County, California, in 2011.

Turkey vulture		Oak titmouse	
Northern harrier	CSC2	Common bushtit	
Cooper's hawk	CSC 3	Rock wren	
Red-tailed hawk		Bewick's wren	
American kestrel		House wren	
California quail		Canyon wren	
Rock dove		Blue-gray gnatcatcher	
Mourning dove		Wrentit	
Greater roadrunner		Northern mockingbird	
White-throated swift		California thrasher	CSC A
Black-chinned hummingbird		European starling	
Anna's hummingbird		Orange-crowned warbler	
Allen's hummingbird		Yellow-rumped warbler	
Acorn woodpecker		Black-headed grosbeak	
Nuttall's woodpecker		Spotted towhee	
Northern flicker		California towhee	
Pacific slope flycatcher		Rufous-crowned sparrow	
Black phoebe		Song sparrow	
Say's phoebe		White-crowned sparrow	
Ash-throated flycatcher		Savannah sparrow	
Cassin's kingbird		Lark sparrow	
Horned lark	CSC A	Red-winged blackbird	
Tree swallow		Western meadowlark	
Cliff swallow		Hooded oriole	
Barn swallow		House finch	
Scrub jay		Lesser goldfinch	
American crow		American goldfinch	
Common raven		House sparrow	
		56 species	

No State or Federal Endangered, Threatened, or Candidate Species

4 California Species of Special Concern (CSC, CA Dept. of Fish & Game 2003 )

Note: horned lark and rufous-crowned sparrow observed are likely the listed subspecies per date, location, and appearance, but identification is not definitive.