

**BASELINE BIOLOGICAL RESOURCES  
EVALUATION**

**FOR THE  
EL CAPITAN PRESERVE**

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# Executive Summary

ICF Jones & Stokes conducted a baseline biodiversity study of the County of San Diego's (County's) El Capitan Preserve (Preserve) to provide the Department of Parks and Recreation with biological data to develop a Resource Management Plan (RMP) including Area Specific Management Directives (ASMDs). To provide a baseline evaluation of biological resources, the following studies were conducted by ICF Jones & Stokes: (1) vegetation community mapping; (2) rare plant surveys; (3) pitfall trap arrays to sample amphibians, reptiles, and small mammals; (4) avian point counts; (5) nocturnal bird surveys; (6) small mammal trapping; (7) acoustic sampling and roost surveys for bats; (8) a track and sign survey for medium-to-large mammals; and (9) a camera station survey for medium-to-large mammals. This report summarizes all survey methodologies and data collected during the 2008 survey period (February through October). This report also includes recommendations for adaptive management, including management and monitoring of vegetation communities and sensitive plants, control of invasive non-native plants, and management and monitoring of sensitive wildlife species, including species covered by the South County Multiple Species Conservation Program (MSCP).

The Preserve includes approximately 2611.0 acres<sup>1</sup> of native/naturalized habitats including southern mixed chaparral, open coast live oak woodland, coast live oak woodland, southern coast live oak riparian woodland, riparian scrub, freshwater seep, and non-native grasslands as well as developed areas, all of which are within the adopted MSCP. The undeveloped portion of the Preserve is mapped as Pre-approved Mitigation Area (PAMA) and is considered an MSCP Preserve.

The current surveys documented eight land cover types and 466 species within the Preserve. The surveys detected 312 plant species, 56 bird species, 32 mammal species (13 bats, eleven small mammals, and eight medium and large bodied mammals), 24 herpetiles (three amphibians and 21 reptiles), and 42 invertebrate species. A total of 36 sensitive species were detected, of which eight are MSCP-covered species (six wildlife and two plants).

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<sup>1</sup> The assessor's parcel data list the Preserve to be 2,759.0 acres; however, calculations generated from the GIS data show the Preserve as 2,611.0. Therefore, this report references the Preserve as 2,611.0 acres.

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# Chapter 1

## Introduction

Baseline biological resources surveys were conducted within the County of San Diego's (County) El Capitan Preserve (Preserve). The purpose of these surveys was to identify and map existing resources and to provide the Department of Parks and Recreation with information for the development of a Resource Management Plan including Area Specific Management Directives (ASMDs). These ASMDs will provide the management framework for monitoring and managing the Preserve's resources.

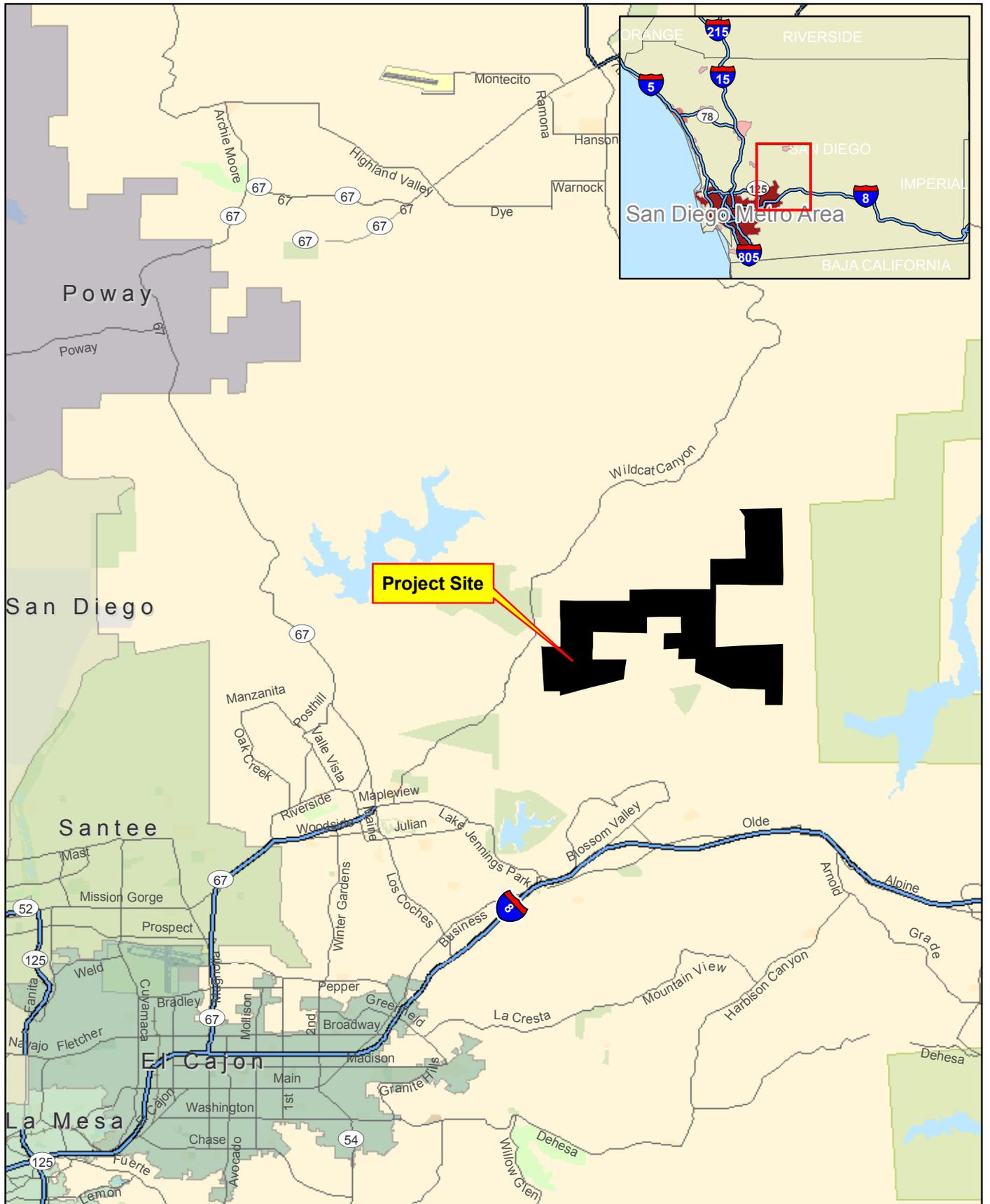
The Preserve is located approximately 3.0 miles northeast of Lakeside and 0.8 mile west of El Capitan Reservoir. The 2,611.0-acre<sup>1</sup> Preserve is located in the upper San Diego River watershed, with the northern portion of the Preserve draining towards San Vicente Reservoir, the eastern portion of the Preserve draining to El Capitan Reservoir and the western and southern portions of the Preserve draining towards the San Diego River (Figures 1 and 2). The Preserve is accessed via Blue Sky Ranch Road and Pata Ranch Road. Both of these access points are along the western boundary. Sparse rural residences occur along the western and southern boundary and open space lands surround the Preserve to the north and east. The Cleveland National Forest occurs directly adjacent to the eastern-most boundary. Elevations within the Preserve range from approximately 162 meters (m) [530 feet (ft)] above mean sea level (AMSL) in the southeast corner to 1,024 m (3,360 ft) AMSL atop the highest peak.

To provide a baseline evaluation of biological resources, the following studies were conducted by ICF Jones & Stokes: (1) vegetation community mapping; (2) rare plant surveys; (3) pitfall trap arrays to sample amphibians, reptiles, and small mammals; (4) avian point counts; (5) nocturnal bird surveys; (6) small mammal trapping; (7) acoustic sampling and roost surveys for bats; (8) a track and sign survey for medium-to-large mammals; and (9) a camera station survey for medium-to-large mammals.

In addition to methods and results for all the work conducted, this report provides brief recommendations and options to preserve and enhance the biological resources present on the Preserve.

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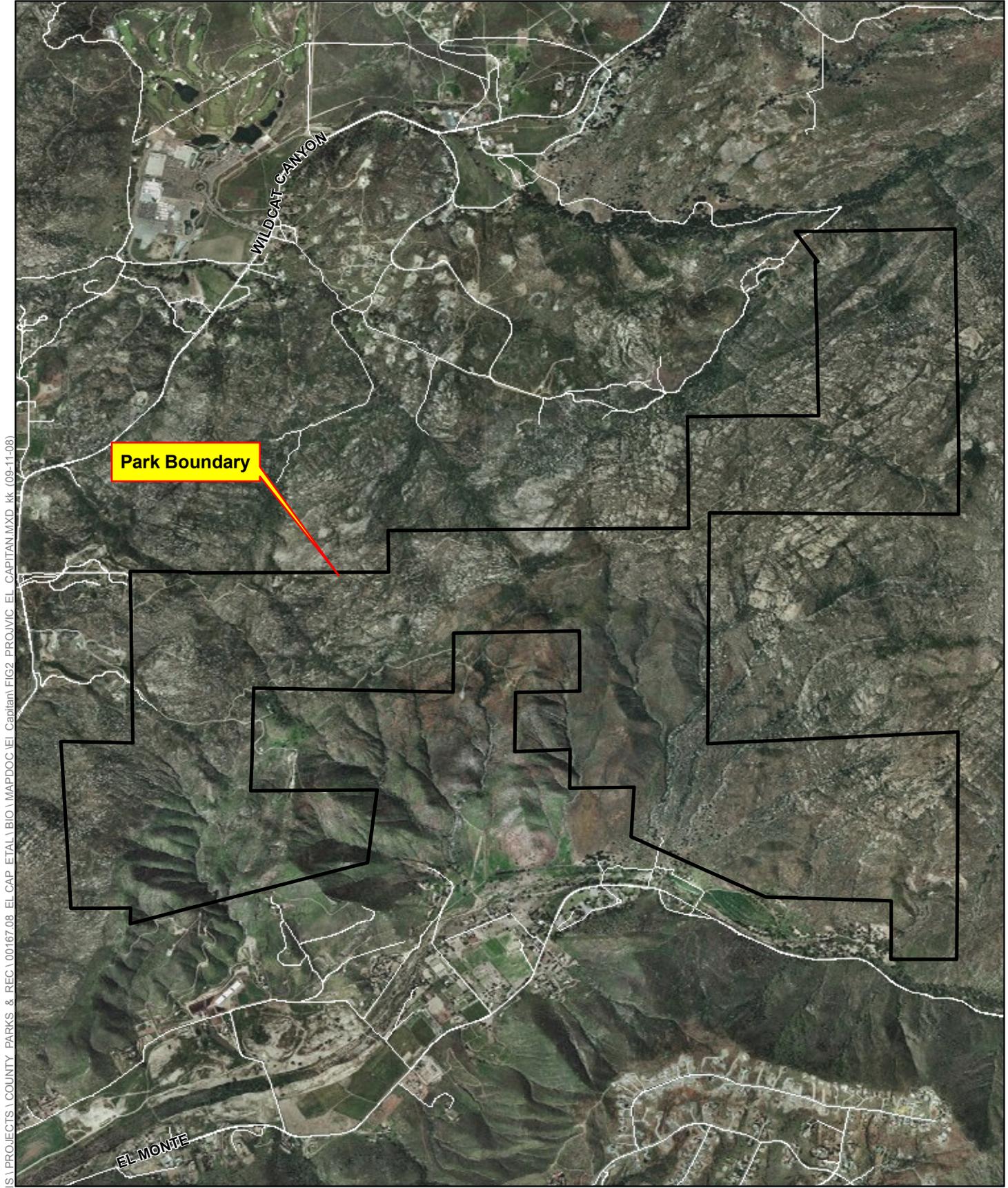
<sup>1</sup> The assessor's parcel data list the Preserve to be 2,759.0 acres; however, calculations generated from the GIS data show the Preserve as 2,611.0. Therefore, this report references the Preserve as 2,611.0 acres.



SOURCE: ESRI Streetmap USA (2006)



Figure 1  
 Regional Location  
 El Capitan Preserve



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SOURCE: ESRI Imagery

## **2.1 Physical and Climatic Conditions**

### **2.1.1 Geography**

The natural setting within the Preserve is characterized by steep coastal foothills with ridgelines separated by numerous small canyons, ravines, and drainages. Specifically, the Preserve is situated north of the San Diego River, west of El Capitan Reservoir, and east of San Vicente Reservoir. Several blue-line streams occur within the Preserve. Elevation ranges from 244 m (800 ft) AMSL along the southern foothills to 1,024 m (3,360 ft) AMSL on the western portion of El Cajon Mountain. Elevation drops to approximately 305 m (1,000 ft) AMSL in the drainages and to 162 m (530 ft) AMSL in areas adjacent to the San Diego River. The closest sources of fresh water are the San Diego River and El Capitan Reservoir although one freshwater seep does occur immediately adjacent to Blue Sky Road within the north eastern portion of the Preserve.

### **2.1.2 Geology and Soils**

Within the Preserve, several general soil associations are represented: Acid igneous rock land, the Cieneba series, Friant series, Huerhuero series, Las Posas series, Riverwash, and Stony land (Figure 3) (USDA 1973).

*Acid igneous rock land* is rough broken terrain. The topography ranges from low hills to very steep mountains. Large boulders and rock outcrops cover 50 to 90 percent of the total area. The soil material is loam to loamy coarse sand in texture and is very shallow over decomposed granite or basic igneous rock. Within the Preserve this soil type supports southern mixed chaparral, freshwater seep and coast live oak woodland.

The *Cieneba* soil series is characterized as excessively drained, very shallow to shallow coarse sandy loams and is usually found on slopes ranging from 5 to 75 percent. It is found on uplands at elevations ranging from 61–914 m (200–3,000 ft). It is usually 25.4 to 50.8 centimeter (cm) [10 to 20 inches (in)] thick and medium acidic. The topsoil ranges from brown to dark brown in color and

coarse sandy loam to sandy loam in texture. The layer below this consists of weathered granodiorite. Runoff is high to very high and the erosion hazard is very high. Boulders and rock outcrops are present. Specific soil types found in the Preserve consist of Cieneba rocky coarse sandy loam (9 to 30 percent slopes, eroded), Cieneba very rocky coarse sandy loam (30 to 75 slopes), and Cieneba-Fallbrook rocky sandy loams (30 to 65 percent slopes, eroded). The Cieneba-Fallbrook soil complex is about 55 percent Cieneba coarse sandy loam and 40 percent Fallbrook sandy loam. Within the Preserve these soil types support southern mixed chaparral and coast live oak woodland.

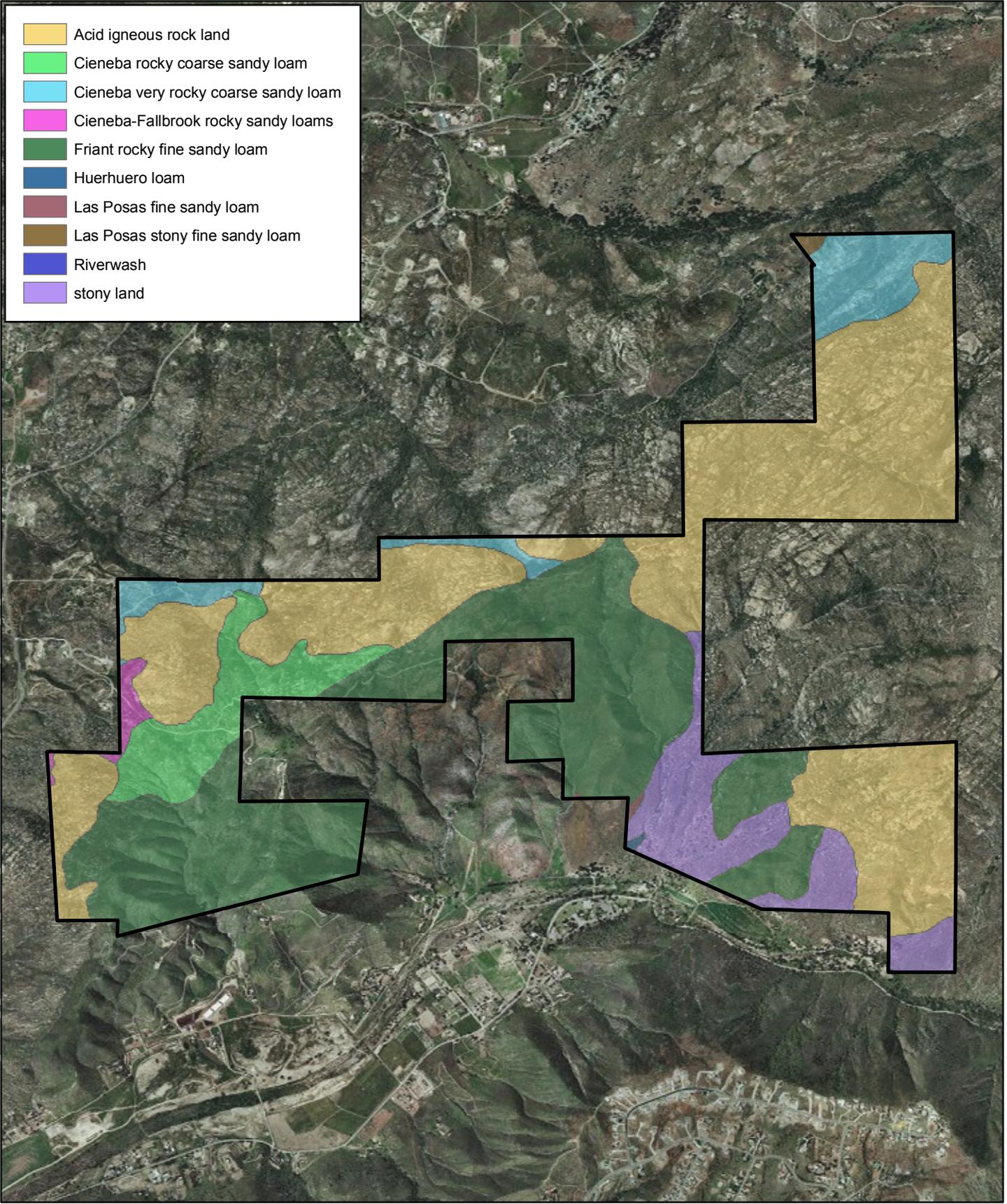
The *Friant* soil series is characterized by very shallow to shallow, fine sandy loams and are usually found on mountainous uplands at elevations ranging from 152–1,067 m (500-3,500 ft). The surface layer is usually 30 cm (12 in) thick and slightly acidic. The layer below this consists of metasedimentary rock. Boulders and rock outcrops are present. The specific soil type found in the Preserve is Friant rocky fine sandy loam (30 to 70 percent slopes). Within the Preserve this soil type supports southern mixed chaparral and non-native grassland.

The *Huerhuero* soil series consists of moderately well drained loams that have a clay subsoil. These soils developed in sandy marine sediment and are typically found on slopes ranging from 2 to 30 percent with elevation ranging from 3 m to 122 m (10 to 400 ft). In a representative profile the surface layer is brown and pale-brown, strongly acid and medium acid loam about 30.48 cm (12 in) thick. The upper part of the subsoil is brown, moderately alkaline clay and extends to a depth of about 104.14 cm (41 in). Below this, and extending to a depth of more than 152.4 cm (60 in), is a brown, mildly alkaline clay loam and sandy loam (USDA 1973). The specific soil type found in the Preserve is Huerhuero loam (9 to 15 percent slopes, eroded). Within the Preserve this soil type supports southern mixed chaparral.

The *Las Posas* soil series is characterized by well-drained, moderately deep stony fine sandy loams with clay subsoil and is usually found on slopes ranging from 2 to 65 percent. It is found on uplands at elevations ranging from 61– 914 m (200-3000 ft). The surface layer is usually 10.2 cm (4 in) thick and neutral. The topsoil is reddish-brown in color and stony fine sandy loam in texture. The subsoil is reddish-brown and red, neutral, light clay and clay loam, and is more than 73.7 cm (29 in) thick. The substratum is yellowish-red, deeply weathered gabbro soil. Runoff is medium to very rapid and the erosion hazard is moderate to very high. The specific soil types found in the Preserve consist of Las Posas stony fine sandy loam (30 to 65 percent) and Las Posas fine sandy loam (15 to 30 percent, eroded). Within the Preserve this soil type supports southern mixed chaparral.

*Riverwash* occurs in a small area within the stream banks along the San Diego River. Riverwash is a term used to collectively refer to unconsolidated sands, gravels, and cobbles that occur in intermittent or ephemeral stream courses. This soil is often barren due to scour from storm events. This soil type occurs exclusively along the river bottom. Within the Preserve this soil type supports open Englemann oak woodland.

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SOURCE: ESRI Imagery

*Stony land* occurs at the base of cliffs or below steep rocky slopes. The material consists of many stones, in many places there are large boulders [0.9 to 1.8 m (3 to 6 ft)] in diameter on the surface. Within the Preserve this soil type supports open coast live oak woodland and southern mixed chaparral.

### 2.1.3 Climate

A semi-permanent, Pacific high-pressure cell, located over the Pacific Ocean, dominates San Diego County's climate. This cell drives the dominant on-shore circulation, maintaining clear skies for much of the year. Summers in the Preserve area are typically warm and dry, while winters are mild with occasional rain (USDA 1973).

The Western Regional Climate Center, a collaborative project of the National Oceanic and Atmospheric Agency and the Desert Research Institute, maintains a climatic station in El Cajon – the closest such station to the Preserve. Data collected at the station indicate that the area experiences a normal mean temperature of approximately 65 degrees Fahrenheit (°F), with a mean maximum temperature of 77.8°F and a mean minimum of 52.4°F. The El Cajon area tends to experience more sunshine than the coastal regions of southern California due to its inland location. In a normal year, precipitation on the Preserve averages 15 inches and falls mostly in the winter and spring (San Diego County Flood Control District 2007).

A predominant feature of the local climate is the sea-breeze/land-breeze cycle. During the daytime, particularly in the summer, on-shore winds move inland with speeds of approximately seven to ten miles per hour (mph). Easterly land breezes of approximately two to four mph often occur at night. Surrounding rugged terrain, which induces turbulence into the airflow, modifies the influence of this cycle. This cycle is also periodically affected by land airflow that dominates weather patterns. The most widely recognized of these are the Santa Ana conditions, during which strong, hot and dry easterly winds prevail for two- or three-day periods.

### 2.1.4 Fire Cycles

The Preserve properties are dominated by southern mixed chaparral, which is naturally maintained by infrequent fires. If the natural fire cycle is suppressed, the chaparral can become senescent, declining in both health and diversity. If the fire frequency is increased, vegetation could shift towards disturbed grassland habitats or opportunistic pioneering shrub communities. The fire cycles within the area are affected by actions within and adjacent to the Preserve property. Surrounding development and brush management actions associated with urban development have altered the fire cycles throughout most of western San Diego County. According to the County fire burn data, the entire Preserve burned in the 2003 Cedar Fire; the Preserve has not burned in any other recent fires (SanGIS 2008) (Figure 4).

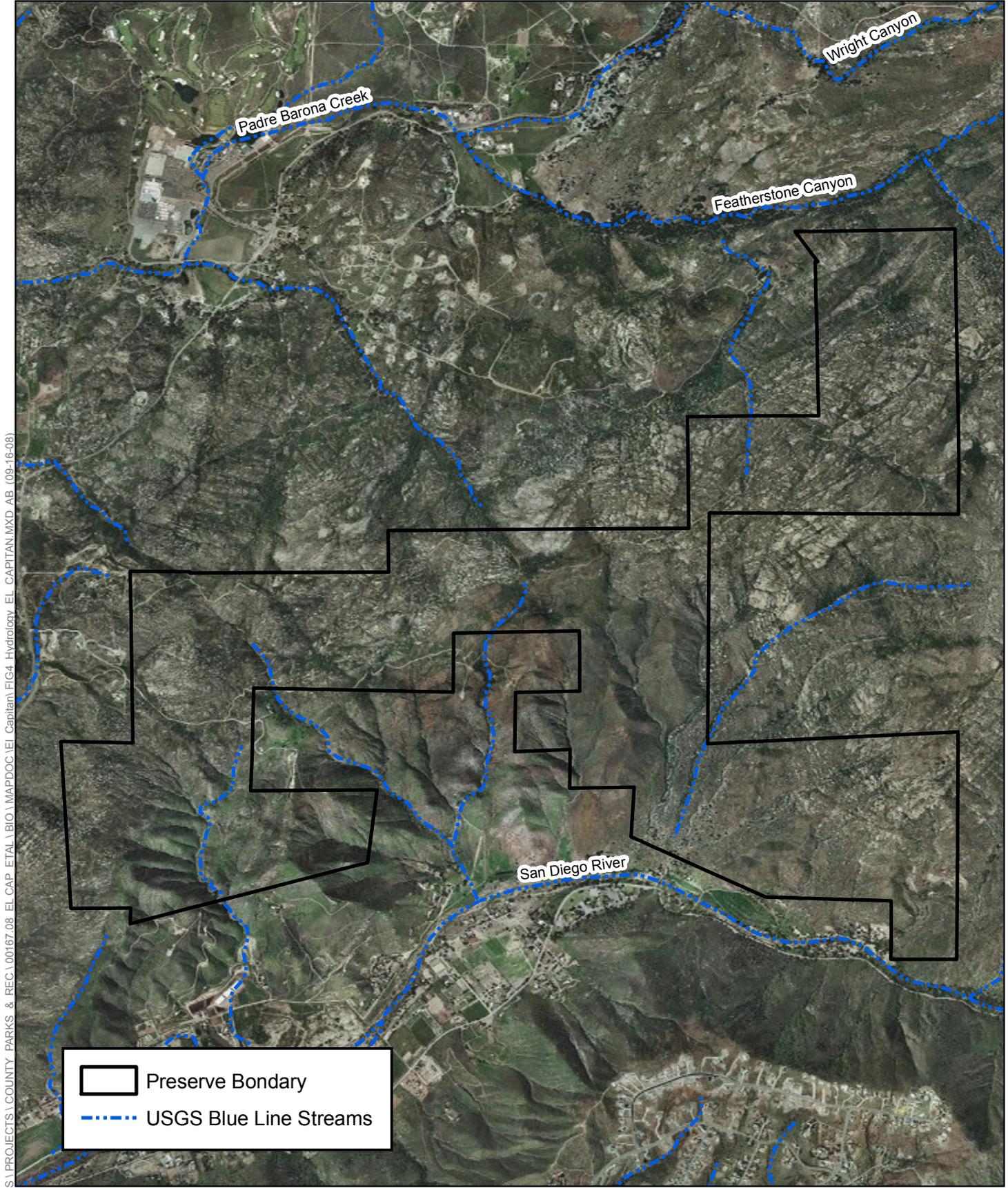
## **2.1.5 Hydrology**

The Preserve is situated within the San Diego River Watershed. Designated beneficial uses for the San Diego River and its tributaries include municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; contact and non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; and rare, threatened, or endangered species habitat (California Regional Water Quality Control Board San Diego Region 2003).

Five intermittent blue-line streams occur within the Preserve. Of these, four are tributaries to the San Diego River, two pairs of which converge into single tributaries. A single tributary to Padre Barona Creek occurs in the northern portion of the Preserve (Figure 4).

## **2.1.6 Trails**

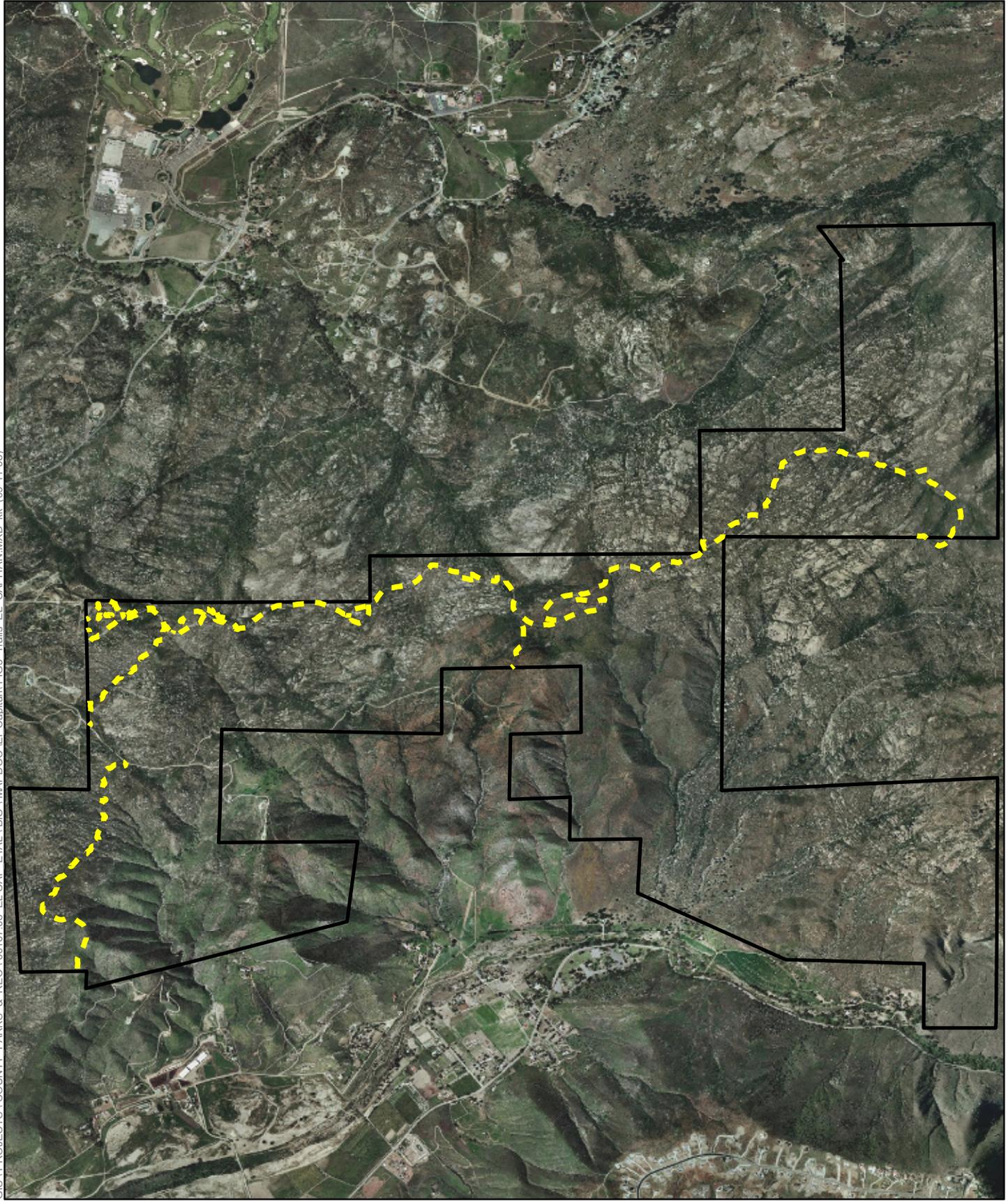
The Preserve contains approximately 8.2 miles of trails (Figure 5). The trails within the Preserve are accessed from Blue Sky Ranch Road and Pata Ranch Road.



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SOURCE: ESRI Imagery

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SOURCE: ESRI Imagery



Figure 5  
Trail Map  
El Capitan Open Space Preserve

Place names in this report follow both specific names and standards used for mapping by the U.S. Geological Survey (USGS) (e.g., “Fosters Canyon” rather than Foster’s Canyon). The following sources are followed for taxonomy and nomenclature, including both scientific and standardized English names: Rebman and Simpson (2006) for plants; Arnett (2000) for higher taxonomic categories of invertebrate animals; generally Opler and Wright (1999) or Hogue (1993) for invertebrate species; Collins and Taggart (2002) for amphibians and reptiles; American Ornithologist’s Union (1998 and supplements) for birds; and Baker et al. (2003) for mammals. Where this information differs from MSCP names, we provide the MSCP information parenthetically. For clarity and to differentiate standardized, sourced, English names for species from descriptions (e.g., Yellow Warbler and not any other warbler that is yellow), we follow most published sources of standardized names by capitalizing them; we also include the scientific binomial from the cited reference with the first mention of a species in the body of this report.

### 3.1 Vegetation

Prior to conducting surveys for the project, searches of available literature and databases were conducted to determine special-status species previously detected or with potential to occur in the Preserve as well as the physical characteristics of the site and surrounding areas. Available data that were reviewed included the California Natural Diversity Database (CDFG 2008), the U.S. Department of Agriculture (USDA) soil survey of the area (USDA 1973), and USGS topographic maps to identify potential stream courses and other notable topographic features.

Surveys were conducted to categorize and map the plant communities within the Preserve, map special-status plants, and document all flora observed within the Preserve (Table 1). During each rare plant survey ICF Jones & Stokes botanists traversed the study area by meandering transects in an effort to accurately categorize vegetation communities and to identify the locations of any special-status species readily detectable. During these surveys, all plants species detected were recorded (Appendix A).

Vegetation communities were mapped on a “one-inch equals 400 feet” (1:4800) scale aerial photograph of the Preserve in the field and later digitized into a geographic information system (GIS) coverage using ArcGIS software. Vegetation communities were mapped using standard County classifications (Holland 1986 as modified by Oberbauer 2005). All plant species observed were noted, and plants that could not be identified in the field were identified later using taxonomic keys including Beauchamp (1986) and Hickman (1993), or verified with herbarium specimens at the San Diego Natural History Museum (Appendix A).

**Table 1.** Vegetation Mapping and Floristic Inventory Surveys

Survey Personnel	Date
Korey Klutz	03/05/2008
Korey Klutz, Andrew Borchert, Kailash Mozumder	03/10/2008
Korey Klutz	04/24/2008
Korey Klutz, Phillip Richards	05/02/2008
Korey Klutz	05/15/2008
Korey Klutz	05/16/2008
Korey Klutz, Ian Cain	06/18/2008

Locations of special-status plant populations were mapped using either sub-meter accurate global positioning system (GPS) or recreational grade GPS receivers [accurate from 1 to 5m (3 to 16 ft)]. Groups of individuals were mapped as single points with attribute data including total individuals observed.

## 3.2 Invertebrates

### 3.2.1 Quino Checkerspot Butterfly

ICF Jones & Stokes biologists conducted focused surveys for the federally endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*, Quino) from March 5 through April 21, 2008. All biologists involved in the Quino surveys possessed U.S. Fish & Wildlife Service (USFWS) recovery permits. Surveys were conducted on a roughly weekly basis under acceptable weather conditions as defined in the USFWS protocol (USFWS 2002). Approximately 2,006 acres of dense southern mixed chaparral or riparian vegetation and developed trail structures including a restroom near the Preserve’s western entrance were excluded from the survey area because they were determined to be too dense in cover or otherwise did not provide potentially suitable habitat for Quino. Each survey visit involved slowly walking transects throughout the area of the Preserve with highest potential for Quino detection. These areas were considered

to have the highest potential for Quino larval host plant populations and/or are on ridgelines or hilltops. The survey visits were conducted at an average rate of 15 acres per hour. Surveyors stopped periodically to scan adjacent areas for moving butterflies. All butterfly species observed were identified and recorded in the wildlife table (Appendix B). Full details of the Quino survey are provided in the attached Quino Checkerspot Butterfly Survey Report (Appendix C).

### **3.2.2 Other Invertebrates**

In addition to butterflies, several other invertebrates were either identified during active surveys or after being captured in the pitfall traps associated with the herpetile arrays. All unidentifiable invertebrates were photographed, and those photographs were provided to a local entomologist for identification. All identified invertebrates are listed in the wildlife table in Appendix B.

## **3.3 Herpetofauna**

ICF Jones & Stokes conducted surveys for herpetofauna (amphibians and reptiles) within the Preserve from March through July 2008. Terrestrial herpetological surveys were conducted using pitfall trap arrays as outlined in the USGS's "Herpetological Monitoring Using a Pitfall Trapping Design in Southern California" (Stokes et al. 2001). This design uses a standardized array of pitfall traps, funnel traps, and drift fencing to perform long-term research over a wide geographic area with replicates among site localities, habitats, and environments.

The optimal design for drift fencing includes a three-arm array with seven pitfall traps and three funnel traps. This study's array design was consistent with this optimal design, and recommendations for array materials and trap construction were followed. As the site temperatures were not excessive during the trapping period, biologists constructed funnel traps with no pitfall trap retreat underneath, as described in the above referenced protocol.

Four sites were selected for the array construction and were scattered throughout the Preserve. Array location was selected based on access, vegetation community, soils, and topology. Arrays were constructed in a variety of habitats including north- and south-facing slopes supporting southern mixed chaparral, coastal sage chaparral scrub near dense oak woodland and south-facing southern mixed chaparral (Figure 6). Locations were mapped using GIS technologies.

All areas immediately surrounding the arrays were actively searched for herpetiles during the array monitoring. Active searching included looking under shrubs and logs. All herpetiles captured or observed during active searches and other wildlife surveys were recorded and are included in the wildlife tables in Appendix B.

### **3.3.1 Monitoring Arrays**

Array traps were sampled on four consecutive days once a month beginning in March and continuing through July. The traps were opened on a Monday afternoon, sampled Tuesday through Friday, and closed Friday.

Array traps were checked during early morning hours to ensure that animals were released before daytime temperatures reached levels that could result in mortality. All animals were identified to species and immediately released at the point of capture. Biologists did not handle animals other than to photograph and release them from traps. Because the trapping effort's purpose was to generate an inventory of species present within the Preserve (i.e., not to assess population sizes or dynamics), individuals were not marked, weighed, or otherwise measured.

Data were recorded on paper and entered into an Excel spreadsheet. Recorded information included species and trap number. All trap data are included in Appendix B.

### **3.3.2 Other Herpetofaunal Methods**

Dip netting for the purpose of tadpole identification was performed in any pooled or slow-flowing waterways within the Preserve. A handheld net was pulled through the water to capture tadpoles, which were identified and released into the same pool or stream.

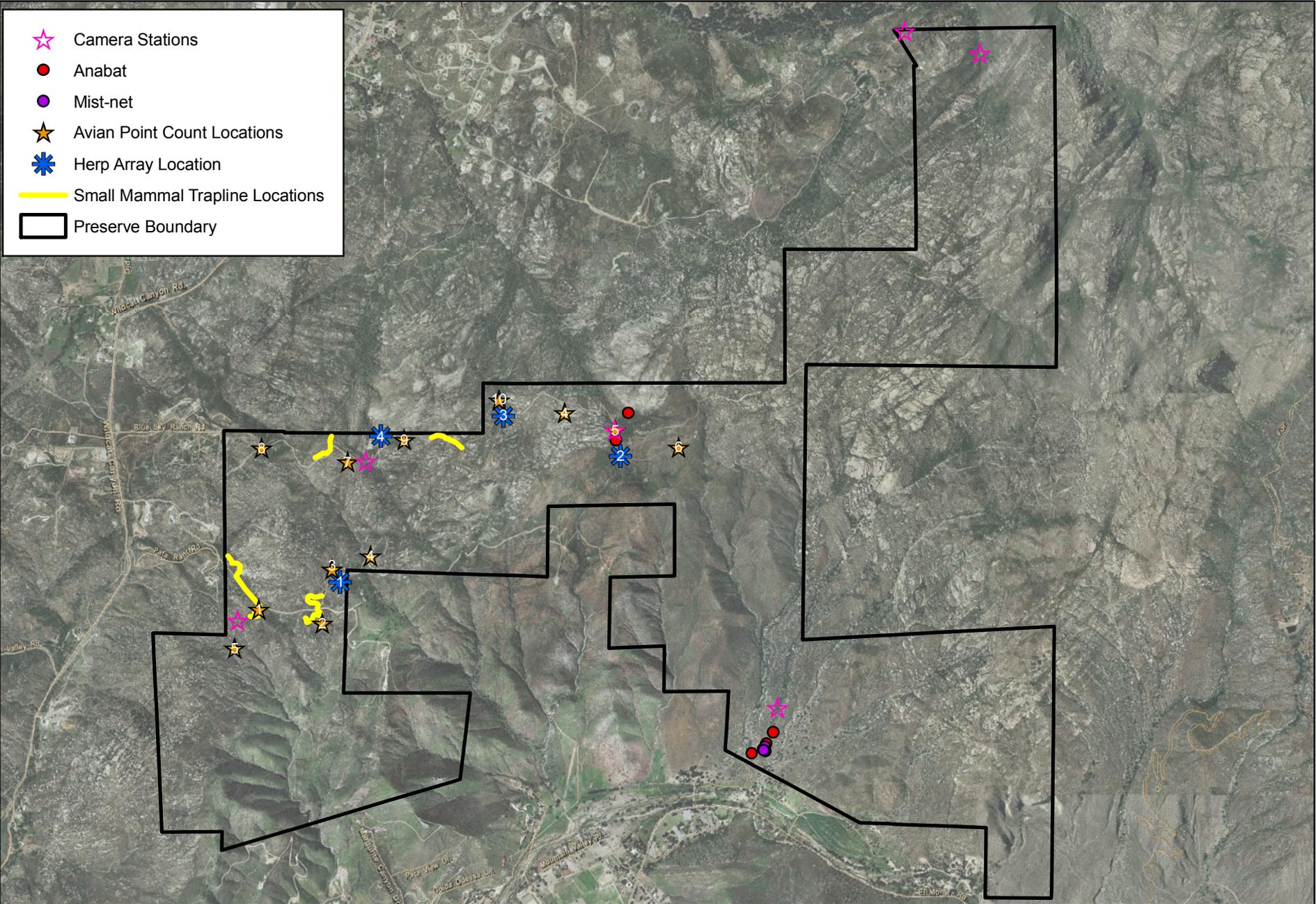
Based on site conditions of the Preserve, ICF Jones & Stokes concluded that focused breeding surveys for Arroyo Toad (*Bufo californicus*) would not be a productive use of survey effort as there is no potentially suitable breeding habitat. This assessment was based on the lack of primary constituent elements of Arroyo Toad habitat such as sandy low-gradient open-wash habitat with slow moving or pooling water (USFWS 1999). Sandy low-gradient open-wash habitat is absent within the Preserve. Thus, the species is considered absent.

## **3.4 Birds**

### **3.4.1 Diurnal Point Count Survey**

Avian use of the study area was formally documented through the use of twelve point count stations sampled once a month for six months beginning in April and concluding in September (Figure 6). Point counts provide a repeatable, quantitative sampling method for a broad spectrum of birds that is complementary to the general reconnaissance effort, strengthening the reference information developed on relative abundance of birds.

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SOURCE: ESRI Imagery

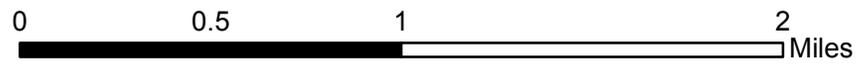


Figure 6  
Biological Inventory Locations  
El Capitan Preserve

With sufficient sample size and accuracy, data generated can be evaluated against many hypotheses, even at some later time. At larger time and/or spatial scales the data produced on species richness and turnover can contribute to information on connectivity and response to disturbances. The data set may increase in value over time through its function as reference data contributing to investigation and calibration of both local and larger scale changes.

Point count methods followed recommendations provided in Ralph et al. (1995) for extensive (i.e., station independent) surveys. See that source for detailed discussion of the basis for, and further details on, the methods presented here. A summary of methods, including additions beyond the recommendations, is provided below.

Stations were placed non-randomly to maximize sampling of the study area and to minimize coverage of outside areas. No particular features (e.g., plant community, slope or aspect) were selected for or avoided, primarily due to the broad objectives of the study. Stations were generally located at or near existing trails to facilitate access. Prior to the first counts, all stations were mapped in the field, located using GPS, marked for later identification, and photographed. The view-shed from each point was also photographed in the four cardinal compass directions.

Counts were conducted at each station once a month (April through September). The following recommendations, drawn directly from Ralph et al. (1995), were followed:

- Stations were located at least 250 m (820 ft) apart to ensure independence (i.e., no or minimal overlapping of individual birds detected).
- Counts were conducted at each station for ten minutes (stratified into periods of 3, 2 and 5 minutes) and started quickly upon reaching the point.
- All detected birds were counted except for any judged to have been counted at a previous station.
- Both seen and heard individuals were recorded as long as clearly identified.
- Birds were recorded within each time stratum as: (1) within a 50 m (164 ft) radius from the station, (2) outside the 50 m (164 ft) radius, or (3) flying over. This will allow rudimentary density estimates (without weighting for detectability).
- Individuals were counted at the location where first detected and time of first detection, even when not identified until they had moved or a new time period had begun.
- Adverse weather conditions were avoided (e.g., dense fog, strong winds, extended rain).
- Stations were counted in the same order each time, starting at approximately the same time relative to sunrise, and finishing within 4 hours after sunrise. Note that counting stations in the same order each time is recommended as the preferred method where the primary purpose of the data is for comparison with future data sets at the same study area. For the current work

this was judged to be a higher priority than maximizing comparability with point counts investigating regional issues, which are best counted by randomizing the order of stations within sites and the order of sites within a day.

Additional point count methods used beyond those provided in Ralph et al. (1995) include:

- No attempts were made to attract birds, such as through use of taped vocalizations or “pishing” (imitating avian scold or alarm calls).
- Prior to the initial point counts, the observer practiced distance estimations by locating an object roughly 40 to 60 m (131 to 197 ft) away, assigning it as beyond or closer than 50 m (164 ft). This was done several times on several different days, in different directions, and on varied terrain, but always in open shrub lands similar to that in which the stations were located.
- Birds noted only in flight were additionally recorded as either utilizing the landscape (e.g., actively foraging swallows and raptors, and raptors using thermal updrafts) or not (e.g., birds commuting between distant habitat patches off-site, such as cormorants over an upland site, or birds migrating high overhead).
- Birds were only counted when they had clearly fledged and moved away from their nest. Thus young raptors, which often spend several transitional days immediately adjacent to the nest, were not counted they were detected in a part of the tree or cliff where they were not expected to have reached by walking or climbing.
- Vocalization type was typically used to categorize birds that were heard only with regard to whether or not they were assumed to be flying over or perched. Thus flight calls for a particular species were used to categorize a bird as in flight, making it important to separate calls accurately by type for species heard only.
- When a flock was only heard, only the number definitely heard was recorded, but when a flock was seen and individuals could not be precisely counted, a best estimate was used. Note that with or without this method, point count censusing assumes that at each station an observer has a good opportunity to see and hear birds and (for comparison among stations) that stations are comparable in this regard.
- No individual birds were ‘discarded’ (not counted) due to lack of identification, unless they are at the level of simply, “unidentified bird” (e.g., an unrecognized call). Instead they were retained at the highest level of identification supported (e.g., “hummingbird sp.”). Variability among surveyors in such treatment can substantially affect estimates of abundance for some groups, or for overall avian abundance.

Numerous issues that may substantially affect how data are recorded or later interpreted from avian point counts are typically not addressed in published work

on suggested methods, in published results, or both. To aid future comparability while also allowing current point counts to provide censusing of a broad spectrum of bird species and behaviors, the following additional discussion of methods is provided.

Birds recorded but not identified to the level of species are counted in the totals and other statistics for individuals but not the totals or statistics for species, except where they clearly represented species otherwise unrecorded. Thus, “raptor sp.” would not add to the overall species total if raptors were also recorded to the species level. However, individual “raptor sp.” would (1) be counted in the total species number for the particular counts on which they occurred, when no other raptors were recorded and identified to species on that count and (2) add to the total abundance of birds in any relevant totals.

“Fly-by” (also called “fly-over”) birds were not generally added to the totals calculated for numbers of individuals or species. This is standard practice for point count analysis (Ralph et al. 1995). The rationale is that such birds are neither making any use of nor influencing the study area. However, totals here do include small numbers of birds judged to be foraging or hunting while in flight over the study area, as they are anticipated to be making use of the study area in the same way that a bird foraging from a perch at the same distance from the observer is making use of the study area. For the current work, most observations of swifts, swallows, and raptors (including Turkey Vultures) are included.

The point counts were designed as ‘2-interval’ counts (referring to distance, not time), using the terminology of Bibby et al. (2000; pp. 101-102). A radius of 50 m (164 ft) was set, and all birds recorded were categorized as inside or outside of the resulting circle. This allows a calculation of density with an adjustment for detectability, but one must guess in applying the detectability adjustment, as this format does not allow testing of how detectability for a given species attenuates across distance (e.g., half normal to a fixed limit). Because the sample size is limited and fragmentation and disturbance make generalizations about distribution across the site tenuous, no density-based estimates of total abundance are provided for any species based on the current results.

### **3.4.2 Nocturnal Bird Survey**

Nocturnal bird surveys were conducted for nighttime birds at the Preserve. Methods include a combination of walking and slowly driving roads, looking and listening for birds. A moderately powerful headlamp was used to aid identifications.

## **3.5 Small Mammal Trapping**

On March 3 and 5, 2008, ICF Jones & Stokes’ biologists Phillip Richards and Korey Klutz assessed the physical conditions, vegetative community distribution,

vegetative cover, and accessibility for planning the trapping program for small mammals within the Preserve. For the purposes of this project, “small mammals” include species in the shrew, squirrel, pocket gopher, heteromyid, mouse, rat, and vole families.

Due to budgetary and logistical constraints the design of the trapping program for the Preserve needed to also consider the sampling of three other County Parks/Preserves during the same field effort (Stelzer and El Monte County Parks and Oakoasis Preserve). The locations of trap lines and the number of traps planned during the sampling program were primarily based on the following variables: access constraints (e.g., roads and trails), drive time to and from each Park/Preserve and the habitat diversity within all four Parks/Preserves. Specifically, the trapping plan was designed to assess the small mammal diversity within representative habitats found within the four Parks/Preserves and due to logistics, the initial trapping effort was only conducted on three of the four Parks/Preserves (Stelzer County Park and Oakoasis and El Capitan Preserves).

The initial small mammal trapping effort consisted of four traplines totaling 200 traps across the Park/Preserve complex. Upon completion and review of the initial trapping data it was determined that one trapline would be added at El Monte Park and two traplines at El Capitan Preserve. The additional traplines at the Preserve were deemed important because they provided additional data for the large expanse of the Preserve.

In 2008, a total of four traplines were set on El Capitan Preserve, two for a four night session and two for a three night session for a total of 550 trap nights. During the initial sampling, traplines 2 and 3 were set and baited during the afternoon of July 14, 2008 and traps were systematically checked in the early morning between 0430 and 0845 from July 15 through July 18, 2008 (Table 2).

During subsequent trapping, traplines 6 and 7 were set and baited during the afternoon of October 27, 2008 and traps were systematically checked in the early morning between 0555 and 0730 from October 28 through October 30, 2008 (Table 2). Trapline 2 was located along the southwestern side of the Preserve along Pata Ranch Road and consisted of 50 traps (Figure 6, Table 3). Trapline 3 was located along the Preserve’s southwestern boundary near Pata Ranch Road (and approximately 0.25 mile west of trapline 2) and consisted of 50 traps (Figure 6, Table 3). Trapline 6 was located in the northwestern portion of the Preserve along the dirt access road off of Blue Sky Ranch Road and consisted of 25 traps (Figure 6, Table 3). Trapline 7 was located in the northwestern portion of the Preserve along the dirt access road off of Blue Sky Ranch Road and consisted of 25 traps (Figure 6, Table 3).

Specific trapline locations were selected based on three criteria: 1) sampling of different vegetative communities, 2) geographic distribution across the Park/Preserve complex, and 3) sampling of unique features (e.g., washes). Sequentially numbered 12-inch Sherman live traps were set at dusk, approximately 5 to 10 m (16 to 33 ft) apart. Traps were set and placed where potential small rodent captures were judged to be most probable. Where rodent sign was not apparent, traps were placed near the base of shrubs. The location of

each trap was recorded using a recreational grade GPS receiver (Garmin brand, WAAS enabled). Mixed birdseed was used as bait, and a few seeds were trailed out from the mouth of the trap, usually toward a game trail, burrow, or open area. All traps were checked and closed at dawn.

When animals were captured, each animal was transferred from the trap into a cloth bag. The animals were removed by their napes and identified to species. The sex and reproductive condition of each animal was recorded (i.e., testes scrotal, not scrotal, vagina perforate, not perforate). Any mites, ticks, or other parasites were noted. Digital photos were taken of some specimens (Appendix D). Once the data were recorded onto data sheets, each animal was released where captured. This whole process took several minutes for each capture. The released animals were observed until they moved to the safety of a burrow or clump of vegetation.

**Table 2.** Personnel, Date, Time, and Conditions of the Preserve Small Mammal Trapping

Trapline	Personnel	Date Checked	Time Checked	Conditions
2	Phillip Richards Cindy Dunn	7/15/08	0552	Partly Cloudy; 64°F; Wind 0-1; No Moon Visible; Moderate-High Humidity
		7/16/08	0557	Clear; 68°F; Wind 0; No Moon Visible; Moderate-High Humidity
	Phillip Richards James Hickman	7/17/08	0557	Clear; 64°F; Wind 0; No Moon Visible; Moderate-High Humidity
		7/18/08	0426	Cloudy; 59°F; Wind 0; No Moon Visible; Moderate-High Humidity
3	Phillip Richards Cindy Dunn	7/15/08	0643	Partly Cloudy; 64°F; Wind 0-1; No Moon Visible; Moderate-High Humidity
		7/16/08	0649	Clear; 68°F; Wind 0-1; No Moon Visible; Moderate-High Humidity
	Phillip Richards James Hickman	7/17/08	0635	Clear; 64°F; Wind 0; No Moon Visible; Moderate-High Humidity
		7/18/08	0522	Cloudy; 61°F; Wind 0-2; No Moon Visible; Moderate-High Humidity
6	Doug Allen Cindy Dunn	10/28/08	0554	Clear; 71°F; Wind 0-1; No Moon Visible; Moderate Humidity
		10/29/08	0556	Clear; 76°F; Wind 0; No Moon Visible; Moderate Humidity
		10/30/08	0555	Partly Cloudy; 74°F; Wind 1-3; No Moon Visible; Moderate Humidity
7	Doug Allen Cindy Dunn	10/28/08	0645	Clear; 71°F; Wind 0-1; No Moon Visible; Moderate Humidity
		10/29/08	0650	Clear; 71°F; Wind 0; No Moon Visible; Moderate Humidity
		10/30/08	0640	Partly Cloudy; 74°F; Wind 1-3; No Moon Visible; Moderate Humidity

**Table 3.** Trapline Description

<b>Trapline</b>	<b>Trap Nights</b>	<b>Number of Traps</b>	<b>Trap Sequence</b>	<b>Physical Description</b>	<b>Vegetative Community</b>
2	4	50	51 - 100	At base of large hill and along ridgeline; soils mostly loamy with numerous rocky outcrops; relatively dense shrub cover	Southern mixed chaparral
3	4	50	101 - 150	At base of large hill and along ridgeline; soils mostly loamy with scattered rocky outcrops; relatively dense shrub cover with a few oaks	Mostly southern mixed chaparral and some coast live oak woodland
6	3	25	1-25	Along an abandoned dirt road on south-facing slope; soils mostly decomposed granite with scattered small boulders; relatively dense scrub cover.	Southern mixed chaparral
7	3	25	26-50	At base of large hill and along minor ridgeline; soils loamy coarse sand and decomposed granite; open scrub cover.	Southern mixed chaparral

## 3.6 Medium and Large Mammals

For the purposes of this project, “medium and large mammals” include all mammals in the hare, rabbit, beaver, canid, procyonid, mustelid, skunk, cat, and cervid families.

### 3.6.1 Camera Tracking Stations

Remote camera stations were used to help document the presence of medium and large mammals within the Preserve. These stations often allow for the detection of species that are rarely encountered because of their nocturnal or crepuscular activity patterns. Within the Preserve, six camera tracking stations were set up at locations that were judged to have a high potential for movement of medium and large mammals (e.g., along game trails, abandoned roadways, and hiking trails; Figure 6).

Each station consisted of one Moultrie infrared digital game camera. These cameras were programmed to record an image every time the motion sensor was triggered. Each image includes an information tag that records the date, time, temperature, camera id, and moon phase. Once in place the cameras were periodically checked and all recorded images were downloaded to a portable hard drive. This method allowed the cameras to record continuously throughout the

study period (June 10 – September 4, 2008). The digital images were then interpreted and all animals were identified to the species level (Appendix D).

### **3.6.2 Mammal Track and Sign Survey**

Throughout the survey season, sections of existing trails and roads were carefully examined for tracks and sign (scat, scrapings, etc.) of medium and large mammals. These surveys were primarily conducted during the day; however, periodic nighttime surveys were also performed. Daytime surveys involved hiking accessible trails and periodic inspections of hilltops, ridges, drainages, and game trails. Nighttime surveys involved a combination of driving, hiking and listening within the Preserve. When feasible, handheld lights were used to identify any wildlife or wildlife sign observed during the survey. Finally, mammal tracks and sign were also carefully evaluated when detected during other fieldwork.

## **3.7 Bats**

Two types of bat surveys were conducted in this study: passive and active, which consisted of a combination of techniques including acoustic surveys, mist-netting, and roost surveys.

### **3.7.1 Passive Surveys**

Passive surveys using Anabat II bat detectors (Titley Electronics, New South Wales, Australia) were conducted within the Preserve. Anabat II bat detectors (Anabats) are utilized to detect and record bat echolocation signals (O'Farrell et al. 1999). These calls are then analyzed and most can be identified to the species level by a biologist experienced with bat vocalization identification. Passive Anabats are designed to automatically turn on and off at set times (i.e. sunset and sunrise), and automatically record bat echolocation signals to a compact flash card. Bat echolocation calls are then downloaded from the compact flash card to a computer and analyzed in the laboratory using specialized software designed for the Anabat system called 'Analook' (version 3.3q). An attempt was made to identify all recorded bat echolocation calls and an index of relative bat activity was generated by taking the number of batcall files recorded divided by the number of Anabat nights (number of Anabats times number of recording nights) multiplied by a factor of 10 to reduce use of fractional numbers.

Passive Anabats were used to survey for bats in the Preserve during three monitoring sessions: spring, summer, and fall 2008. During the three monitoring sessions, a total of two passive Anabat units were placed in the Preserve to monitor bats for three consecutive nights.

### **3.7.2 Active Surveys**

One active foraging bat survey was conducted using an Anabat bat detector, listening for audible bat echolocation calls, and using mist-nets in an attempt to document additional bat species foraging in the Preserve. The survey was conducted near a group of abandoned mines at the south end of the Preserve on August 28, 2008 (Figure 6).

## 4.1 Vegetation

Vegetation communities present within the Preserve consist of southern coast live oak riparian forest, riparian scrub, southern mixed chaparral, open coast live oak woodland, coast live oak woodland, non-native grassland, freshwater seep and disturbed habitat (Figures 7a-f, Table 4). A description of the vegetation communities and the dominant plant species detected during the survey are found below. A complete list of plant species observed within the Preserve is provided as Appendix A.

**Table 4.** Vegetation Communities within the Preserve

<b>Vegetation/Land Cover Type</b>	<b>Acreage</b>
Southern Coast Live Oak Riparian Forest	1.7
Southern Mixed Chaparral	2,466.0
Non-native Grassland	23.0
Coast Live Oak Woodland	15.8
Riparian Scrub	4.1
Open Coast Live Oak Woodland	87.0
Freshwater Seep	0.5
Disturbed Habitat	13.1
<b>Totals</b>	<b>2,611.2</b>

### 4.1.1 Southern Mixed Chaparral (37300)

Southern mixed chaparral is a broad-leaved sclerophyll shrub community forming dense often impenetrable vegetation dominated by Chamise (*Adenostoma fasciculatum*), Mission Manzanita (*Xylococcus bicolor*), Ramona

Lilac (*Ceanothus oliganthus*), Scrub Oak (*Quercus berberidifolia*), and Manzanita (*Arctostaphylos glauca*). Other species observed during the field surveys included Mexican Elderberry (*Sambucus mexicanus*), Poison Oak (*Toxicodendron diversilobum*), Lakeside Ceanothus (*Ceanothus cyaneus*), Rhus (*Rhus trilobata*), Felt-leaved Monardella (*Monardella hypoleuca* ssp. *lanata*), and Toyon (*Heteromoles arbutifolia*).

#### **4.1.2 Non-Native Grassland (42200)**

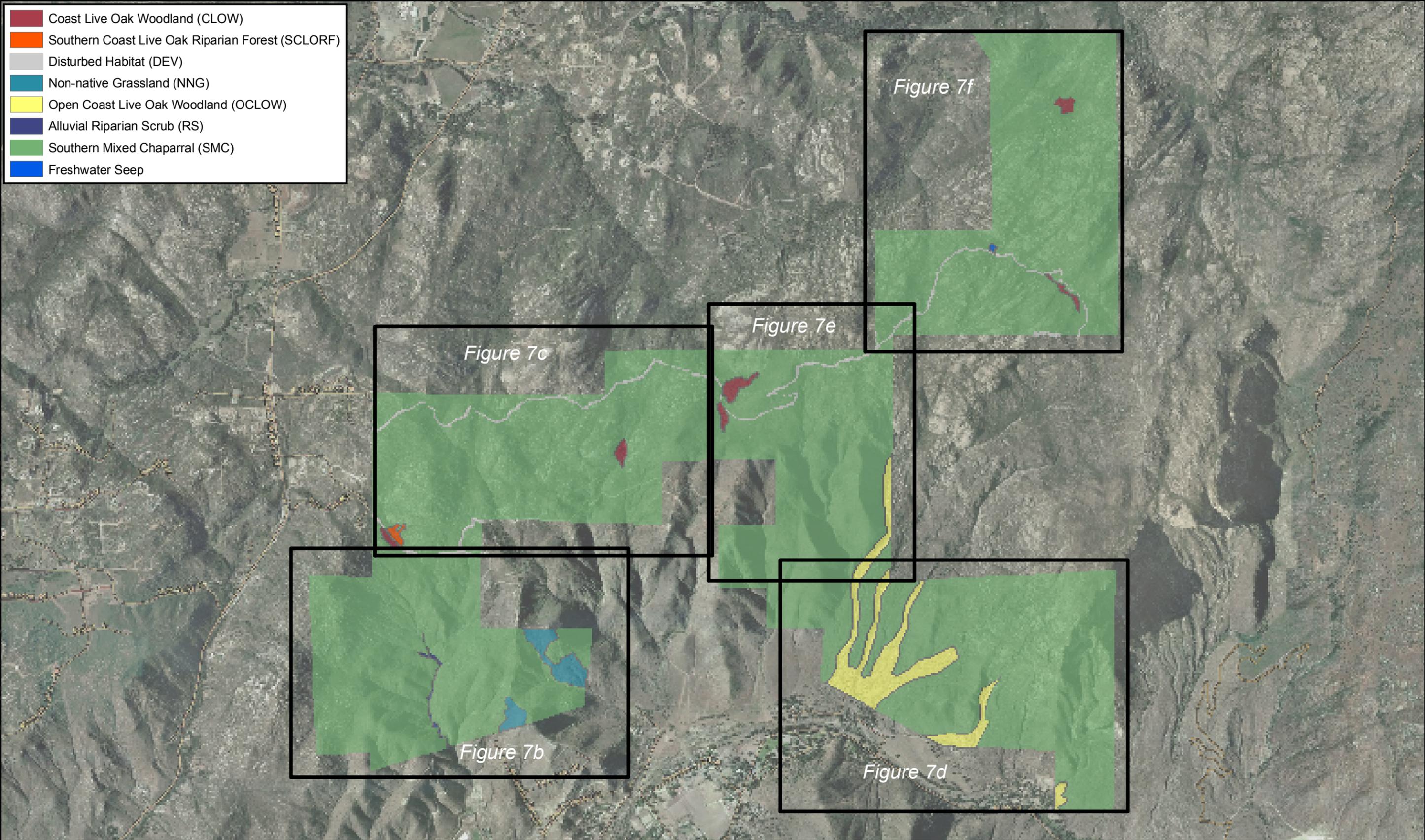
Non-native grassland is characterized by a dense to sparse cover of annual grasses reaching up to 1 m (3 ft), which may include numerous native wildflowers, particularly in years of high rainfall. These annuals germinate with the onset of the rainy season and set seeds in the late spring or summer. This community is usually found on fine-textured soils that proceed from moist or waterlogged in the winter to very dry during the summer and fall (Holland 1986). Non-native grasslands, in many circumstances, have replaced native grasslands as a result of disturbance (directly manmade [e.g., mechanical disturbance, grazing] or natural [i.e. altered fire cycles]). Although on the Preserve this community has likely replaced Diegan coastal sage scrub. Most of the areas mapped as non-native grassland would typically be dominated by shrub species and it is likely that the 2003 Cedar Fire has converted these shrublands to annual grasslands.

#### **4.1.3 Southern Coast Live Oak Riparian Forest (61310)**

Southern coast live oak riparian forest is a dense evergreen sclerophyllous riparian forest dominated by Coast Live Oak (*Quercus agrifolia*). According to Holland (1986), it is richer in herbs and poorer in understory shrubs than other riparian communities. It typically occurs in bottom lands and outer floodplains along larger streams, on fine-grained, rich alluvium. Southern coast live oak riparian forest occurs just east of Wildcat Canyon Road. Characteristic species include Mule-fat (*Baccharis salicifolia*), Mexican Elderberry, Poison Oak, Stinging Nettle (*Urtica urens*), and Umbrella Sedge (*Cyperus involucratus*).

#### **4.1.4 Coast Live Oak Woodland (71160)**

Coast live oak woodland consists of a moderately dense canopy of Coast Live Oak trees that reach 10-25 m (33-82 ft) in height. The shrub layer is typically poorly developed but may include Toyon, Laurel Sumac or Mexican Elderberry. On site this community had a dense layer of Poison Oak within the understory. Other species observed included Palmer's Sagebrush (*Artemisia palmeri*), Rhus, and White Flowering Currant (*Ribes indecorum*).



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SOURCE: ESRI Imagery

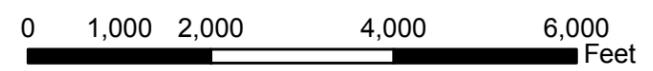


Figure 7a  
Overview Vegetation Communities  
El Capitan Preserve

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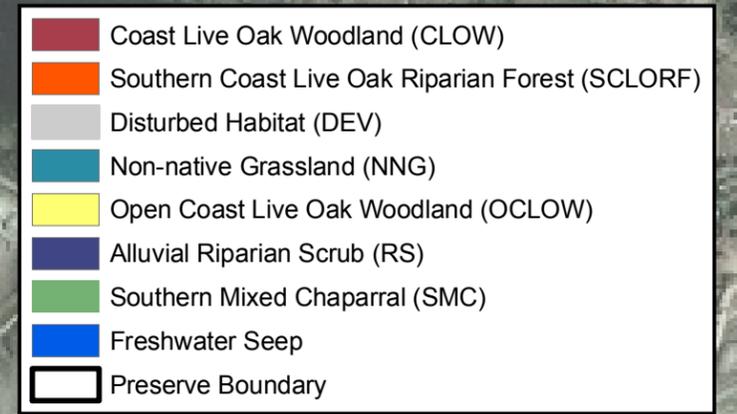
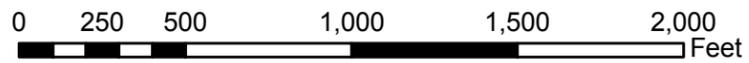
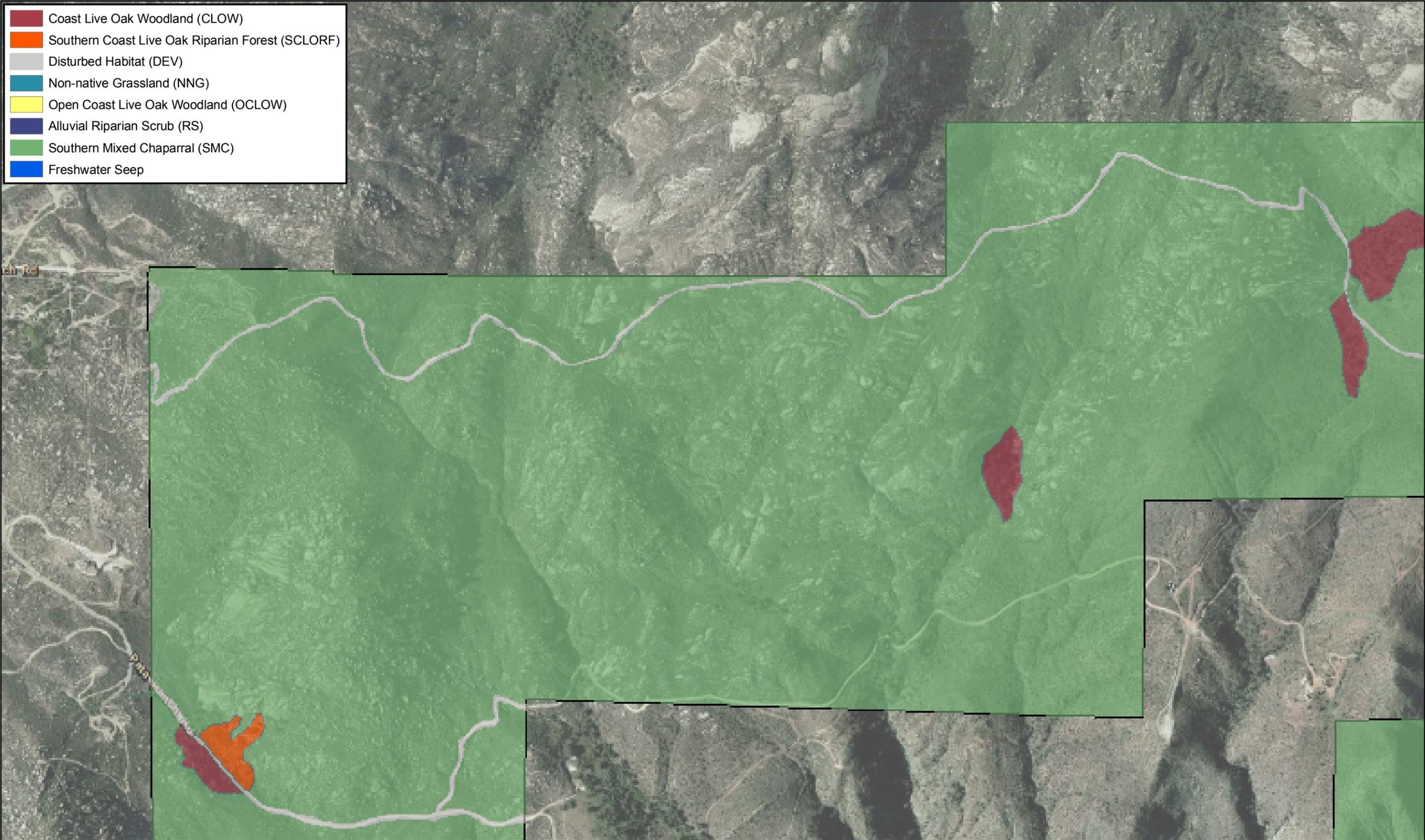


Figure 7b  
Vegetation Communities  
El Capitan Preserve



- Coast Live Oak Woodland (CLOW)
- Southern Coast Live Oak Riparian Forest (SCLORF)
- Disturbed Habitat (DEV)
- Non-native Grassland (NNG)
- Open Coast Live Oak Woodland (OCLOW)
- Alluvial Riparian Scrub (RS)
- Southern Mixed Chaparral (SMC)
- Freshwater Seep

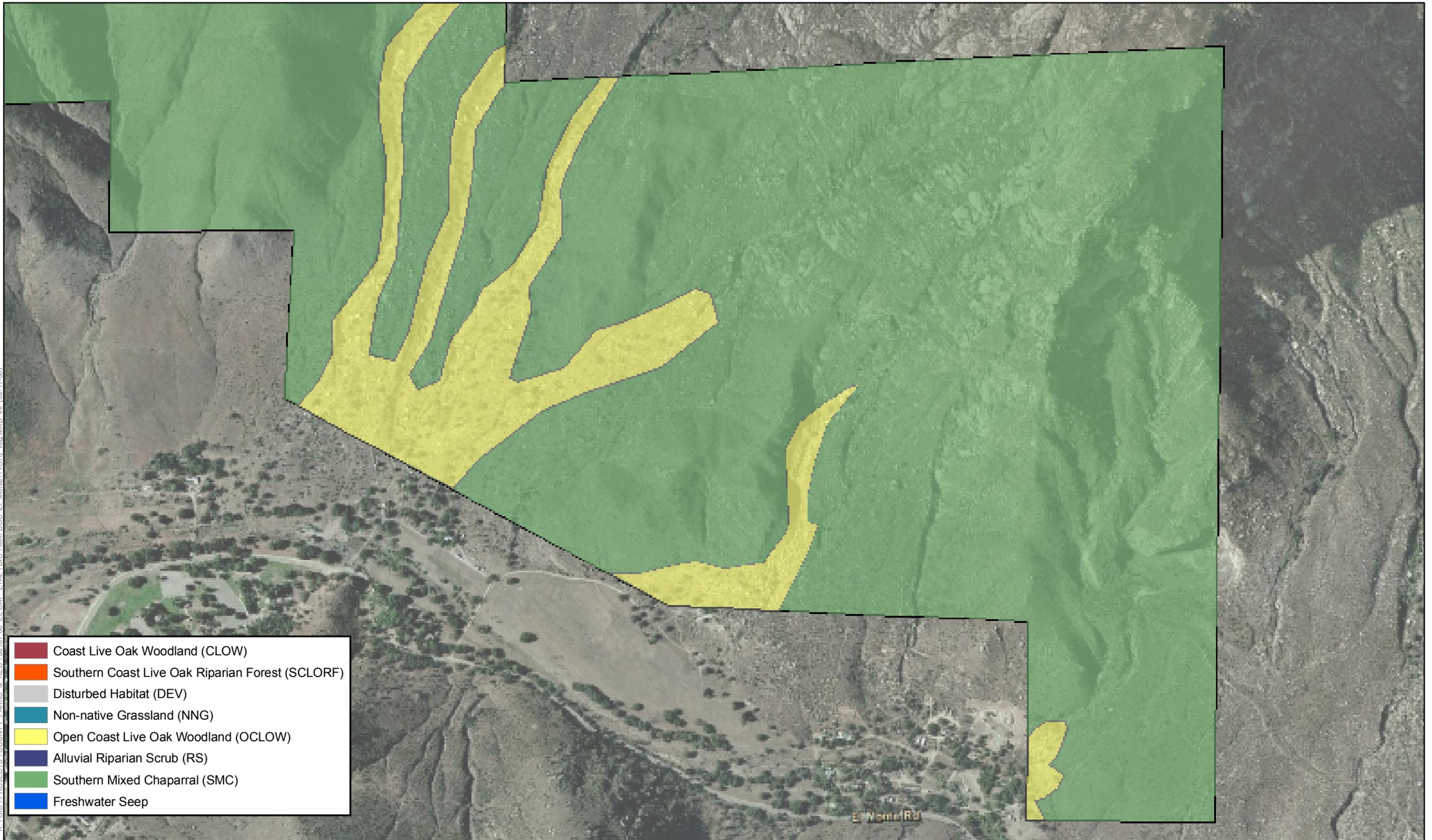
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SOURCE: ESRI Imagery



Figure 7c  
Vegetation Communities  
El Capitan Preserve

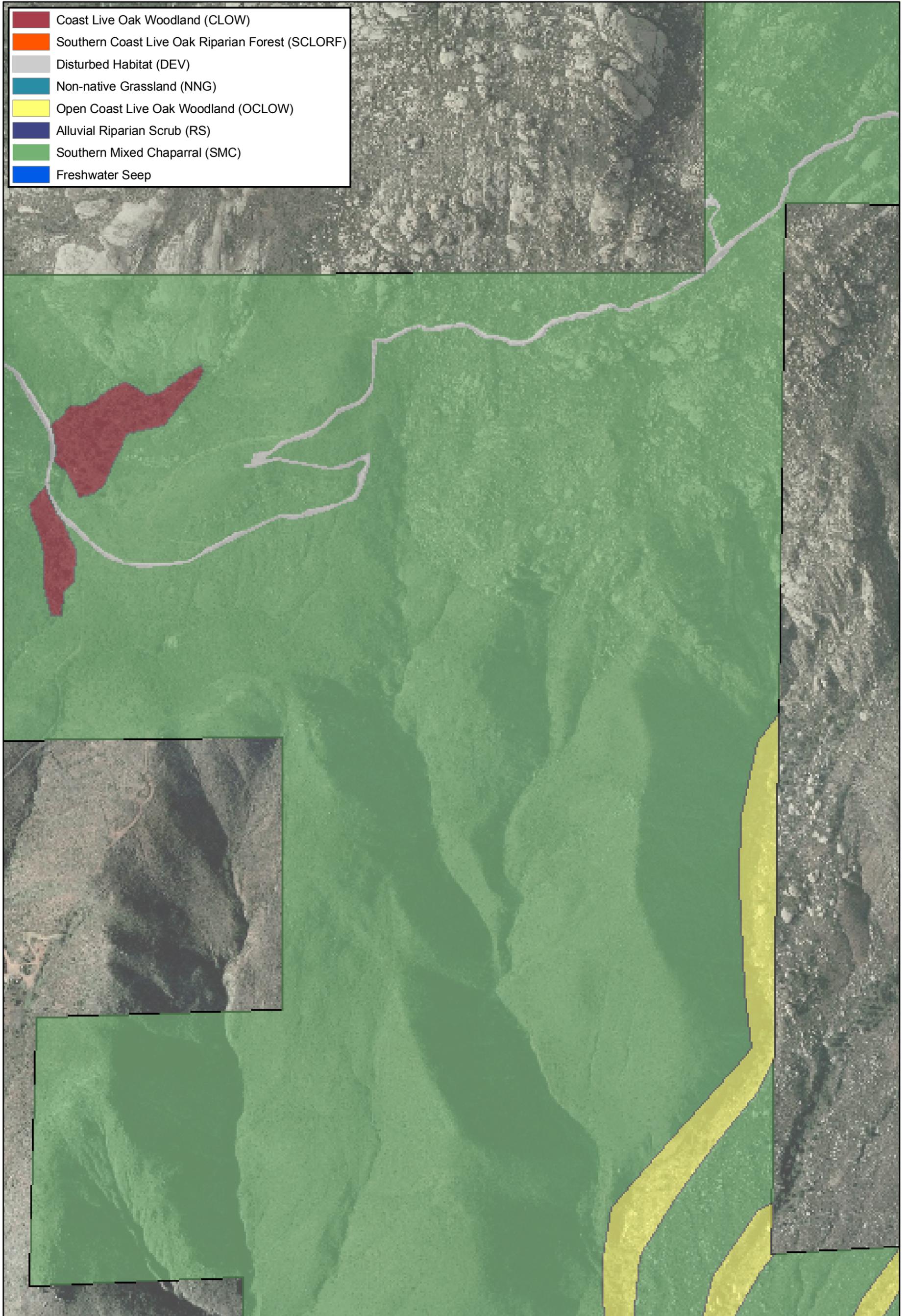
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SOURCE: ESRI Imagery



Figure 7d  
Vegetation Communities  
El Capitan Preserve



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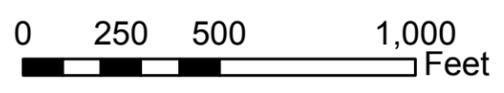
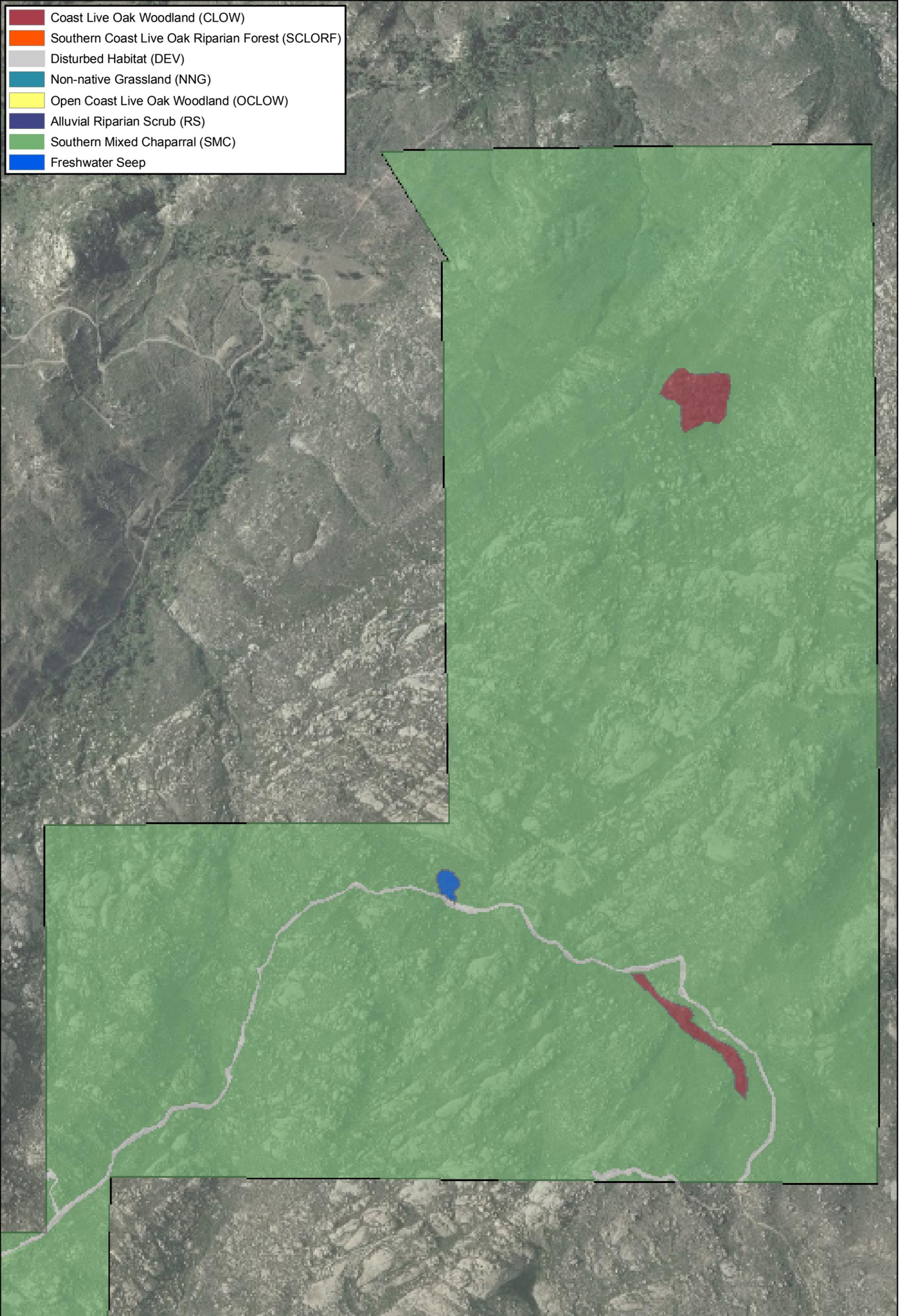


Figure 7e  
Vegetation Communities  
El Capitan Preserve



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Figure 7f  
Vegetation Communities  
El Capitan Preserve

#### **4.1.5 Riparian Scrub (63000)**

Riparian scrub consists of poorly developed, tall, herbaceous riparian scrub loosely dominated by Mule-fat. Other species observed within this community included Chaparral Broom (*Baccharis sarothroides*), Stinging Nettle, Sand Bar Willow (*Salix exigua*), Mexican Elderberry, and Arroyo Willow (*Salix lasiolepis*).

#### **4.1.6 Open Coast Live Oak Woodland (71161)**

Open coast live oak woodland consists of an open canopy of Coast Live Oak trees that reach 10-25 m (33-82 ft) in height. Other species observed within this community included Engelmann Oak (*Quercus engelmannii*), Toyon, Laurel Sumac, and Mexican Elderberry.

#### **4.1.7 Freshwater Seep (45400)**

Freshwater seeps occur where ground water is pushed to the surface typically by impermeable granitic bedrock. On site this vegetation community is found in the northeastern portion of the Preserve. Dominant plants observed include Cattail (*Typha* sp.), Mexican Rush (*Juncus mexicanus*), Western Azalea (*Rhododendron occidentale*), California Huckleberry (*Vaccinium ovatum*), and Bulrush (*Schoenoplectus* sp.).

#### **4.1.8 Disturbed Habitat (11300)**

Disturbed habitat within the Preserve consists of two dirt roads. One road located in the northern portion of the site is primarily used as a footpath and Pata Ranch Road that bisects the center portion of the Preserve is used to access residential buildings surrounding the Preserve.

#### **4.1.9 Special-Status Plant Species**

The following section discusses special-status plant species observed or considered to have a high potential to occur within the Preserve. A special-status plant species is one listed by federal or state agencies as threatened or endangered; considered to be of special status by one or more special interest groups, such as the California Native Plant Society (e.g., CNPS List 1, 2, 3, and 4 Plant Species); or is included on the County's Sensitive Plant list (Group A, B, C, or D Listed Plants).

Special-status plant species that were detected within the Preserve consist of: Lakeside Ceanothus (*Ceanothus cyaneus*), San Diego Sunflower (*Viguiera*

*laciniata*), Felt-leaved Monardella (*Monardella hypoleuca ssp. lanata*), Ramona Horkelia (*Horkelia truncata*), Moreno Currant (*Ribes canthariforme*), Palmer's Sagebrush (also known as San Diego sagewort) (*Artemisia palmeri*), Engelmann Oak (*Quercus engelmannii*), San Diego Marsh Elder (*Iva hayesiana*), and Palmer's Grappling Hook (*Harpagonella palmeri*).

## Special-Status Plant Species Observed

### Lakeside Ceanothus (*Ceanothus cyaneus*)

*CNPS List 1B, San Diego County Group A, MSCP Covered Species*

Lakeside Ceanothus is known from an extremely small range (southern Ramona to the foothills of Lakeside). Typically, this *Ceanothus* occurs in dense, almost impenetrable chaparral with a mix of Chamise and other shrubs such as Manzanita. On the Preserve Lakeside Ceanothus is found within the rocky southern mixed chaparral located along the southwestern and northeastern most portions of the Preserve (Figure 8).

### San Diego Sunflower (*Viguiera laciniata*)

*CNPS List 4, San Diego County Group D*

San Diego Sunflower is associated with arid Diegan coastal sage scrub at a variety of elevations. In San Diego County, its distribution is primarily south of Highway 78 to the international border. This species occurs sporadically along the south facing slopes within the southern portion of the Preserve (Figure 8).

### Felt-leaved Monardella (*Monardella hypoleuca ssp. lanata*)

*CNPS List 1B, San Diego County Group A, MSCP Covered Species*

Felt-leaved Monardella is typically found within the understory of mature chaparral. Felt-leaved Monardella was primarily found in dark, semi-friable soils within the northeastern portion of the Preserve (see Figure 8). Although this species was only documented within the northeastern portion of the Preserve, given the extensive amount of suitable habitat and the wide distribution of documented individuals, it is estimated that over 1,000 individuals occur within the Preserve.

**Ramona Horkelia (*Horkelia truncata*)**

*CNPS List 1B, San Diego County Group A*

Ramona Horkelia is typically associated with Chamise chaparral. Approximately 1,000 individuals of Ramona Horkelia were found within the northeastern portion of the Preserve. Specifically, these plants were found associated with wet areas adjacent to the existing trails system (see Figure 8).

**Moreno Currant (*Ribes canthariforme*)**

*CNPS List 1B, San Diego County Group A*

Moreno Currant is typically found in rocky mixed chaparral. Approximately 20 individuals of this species were observed in the northeastern portion of the Preserve (Figure 8). Given the extensive amount of suitable habitat present on site, it is likely that the Preserve supports additional populations not documented in this survey effort.

**Palmer's Sagebrush (also known as San Diego Sagewort) (*Artemisia palmeri*)**

*CNPS List 4, San Diego County Group D*

Palmer's Sagebrush is typically found along creeks and drainages near the coast and within inland chaparral. Within the Preserve this species is found primarily along the western portion of the Preserve; a single location was also documented within the northeastern portion of the Preserve (Figure 8).

**Engelmann Oak (*Quercus engelmannii*)**

*CNPS List 4, San Diego County Group D*

Engelmann Oak is commonly found in the foothills between 152 and 1,219 m (500 and 4,000 ft). Growing to 12 m tall (40 ft), this tree has flat, grey-blue-green leaves and tolerates less water than Coast Live Oak. Larger Engelmann Oaks are sometimes found growing in savannah grasslands but this species may also occur as a shrubby element within chaparral. Engelmann Oaks are still relatively abundant throughout their range in southern California. All Engelmann Oaks on the Preserve were found within the open coast live oak woodland located along the southern portion of the Preserve.

**San Diego Marsh Elder (*Iva hayesiana*)**

*CNPS List 2, San Diego County Group B*

San Diego Marsh Elder is associated with intermittent streambeds, seeps and sandy alluvial embankments. This species was a dominant understory shrub within the southern willow scrub in Lusardi Creek.

### **Palmer's Grappling Hook (*Harpagonella palmeri*)**

*CNPS List 4, San Diego County Group D*

Palmer's Grappling Hook is associated with clay soils within coastal sage scrub. On site this species is found on clay soils atop the mesa within the eastern portion of the Preserve.

## **Special-Status Plant Species not Observed but with a High Potential to Occur**

### **Gander's Ragwort (*Packera ganderi*)**

*CNPS List 1B, San Diego County Group A*

Gander's Ragwort is a localized endemic ragwort in San Diego County that is typically found in heavy leaf litter within chaparral. This species was not observed within the Preserve but the CNDDDB reports an account of this species along the eastern slope of El Cajon Mountain.

### **San Diego Thorn-Mint (*Acanthomintha ilicifolia*)**

*Federally Endangered, State Endangered, CNPS List 1B, San Diego County Group A, MSCP Covered Species*

San Diego Thorn-Mint is typically associated with friable clay soils. This species was not observed during the surveys but it is considered to have a high potential to occur as suitable habitat and soils occur within the southern portion of the Preserve. Furthermore, access constraints along the southern portion of the Preserve may have contributed to the current negative survey results.

### **San Diego Goldenstar (*Bloomeria (Muilla) clevelandii*)**

*CNPS List 1B, San Diego County Group A, MSCP Covered Species*

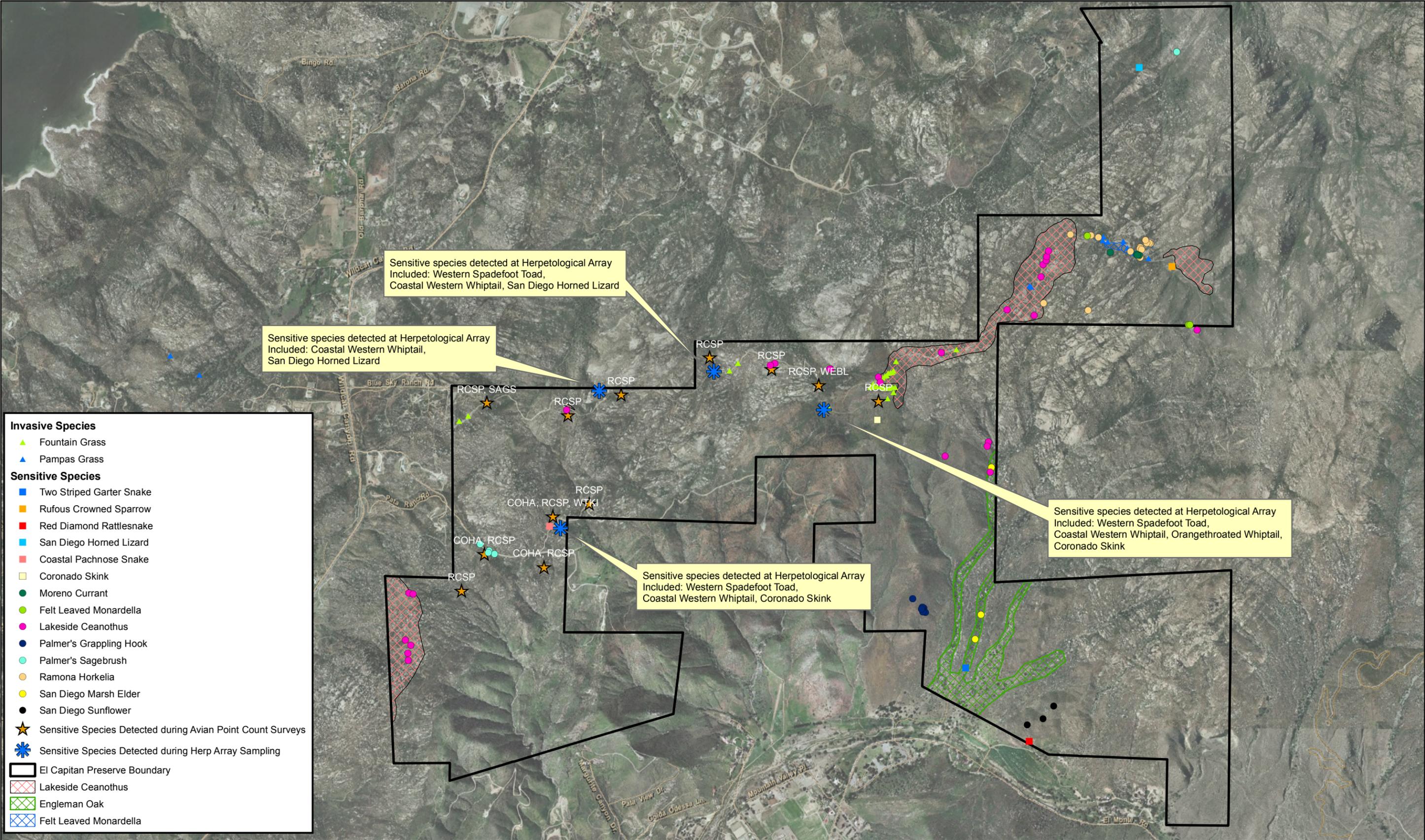
San Diego Goldenstar is typically associated with clay soils in a variety of vegetation communities including native grasslands, vernal pools, Diegan coastal sage scrub and southern mixed chaparral. This species was not observed during the surveys but is still considered to have a high potential to occur as suitable habitat and soils occur on the Preserve. Furthermore, access constraints along the southern portion of the Preserve likely contributed to the current negative survey results.

### **Delicate Clarkia (also known as Campo Clarkia) (*Clarkia delicata*)**

*CNPS List 1B, San Diego County Group A*

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K:\GIS\PROJECTS\COUNTY\_PARKS & REC\100167.08 EL CAP ETAL\BIO\1MAPDOC\basins\FIG8 Sensitive.MXD kk (09-11-08)



SOURCE: ESRI Imagery



Figure 8  
Special Status Plant & Wildlife Species  
El Capitan Preserve

Delicate Clarkia is an annual wildflower that is typically found on the periphery of oak woodlands and within cismontane chaparral. This species was not observed within the Preserve but was documented just south of the Preserve boundary within the San Diego River.

#### 4.1.10 Invasive Plant Species

In general the upland areas within the Preserve are dominated primarily by native or naturalized plant species. However, large clumps of Pampas Grass (*Cortaderia selloana*) and Fountain Grass (*Pennisetum setaceum*) occur along the main trail within the northeastern portion of the Preserve (Figure 8).

## 4.2 Invertebrates

All invertebrates identified on the Preserve below the level of family are included in the wildlife table in Appendix B. No special-status invertebrate species are reported within the Preserve by the CNNDB (CDFG 2008).

### 4.2.1 Butterflies

Butterfly species observed during the 2008 focused Quino Checkerspot Butterfly surveys included Desert Orangetip (*Anthocharis cethura*), Sara's Orangetip (*Anthocharis sara*), Behr's Metalmark (*Apodemia mormo virgulti*), Perplexing Hairstreak (*Callophrys affinis perplexa*), Brown Elfin (*Callophrys augustinus*), Orange Sulfur (*Colias eurytheme*), Funereal Duskywing (*Erynnis funeralis*), Southern Blue (*Glaucopsyche lygdamus australis*), Acmon Blue (*Icaricia acmon*), Common Buckeye (*Junonia coenia*), Pale Swallowtail (*Papilio eurymedon*), Western Tiger Swallowtail (*Papilio rutulus*), Anise Swallowtail (*Papilio zelicaon*), Cabbage White (*Pieris rapae*), Checkered/Common White (*Pontia protodice*), Spring White (*Pontia sisymbrii*), White Checkered Skipper (*Pyrgus albescens*), West Coast Lady (*Vanessa annabella*), Red Admiral (*Vanessa atalanta*), and Painted Lady (*Vanessa cardui*) (Appendix B).

No Quino or any other special-status butterfly species were observed on the Preserve. Full details of the Quino survey are provided in the attached Quino Checkerspot Survey Report (see Appendix C). While not detected, both Quino and Hermes Copper (*Lycaena hermes*) have potential to occur within the Preserve based on the presence of their primary host plants, Dwarf Plantain (*Plantago erecta*) and Spiny Redberry (*Rhamnus crocea*), respectively.

### 4.2.2 Other Invertebrates

Twelve other invertebrate species were detected during the herpetological array and/or observed during other fieldwork (Appendix B). These species were

identified in the field, or photographed and provided to a local entomologist to identify. No invertebrate species were collected.

### **4.2.3 Special-Status Invertebrate Species**

#### **Special-Status Invertebrate Species Observed**

No special-status butterfly species or other invertebrate species were detected during any surveys.

#### **Special-Status Invertebrate Species not Observed but with a High Potential to Occur**

No special-status invertebrate species have high potential to occur at the Preserve.

## **4.3 Amphibians**

The following three amphibian species were captured in the pitfall traps during the 2008 sampling at the Preserve: Western Spadefoot (*Spea hammondi*), Pacific Chorus Frog (*Pseudacris regilla*) and Western Toad (*Bufo boreas*) (Appendix B). The Western Spadefoot was captured in arrays 1, 3 and 4 during every sampling month except July. The majority of the Western Spadefoot captures occurred in array 1. Although no tadpoles of this species were observed, they are presumed to be breeding in pools or streams within the Preserve or near the Preserve boundary.

One other native amphibian species, California Chorus Frog (*Pseudacris cadaverina*), was detected during active searches. It is also presumed to be breeding in small pools associated with several unnamed drainages that occur within the Preserve.

Other amphibians with potential to occur include Arboreal Salamander (*Aneides lugubris*), Garden Slender Salamander (*Batrachoseps major major*), and Common Ensatina (*Ensatina eschscholtzi*).

### 4.3.1 Special-Status Amphibian Species

#### Special-Status Amphibian Species Observed

##### Western Spadefoot (*Scaphiopus [=Spea] hammondi*)

*State Species of Special Concern, San Diego County Group II*

The Western Spadefoot range covers the central portion of northern California, the Great Valley, and Coast Ranges from San Francisco to Baja California (Lemm 2006). Although they spend the great majority of their life outside water, they require temporary rain pools with water temperatures between 48° and 86° F (9° and 30° C) lasting upwards of three weeks. These pools must also lack predators of eggs and tadpoles such as introduced fishes, bullfrogs, and crayfishes (Jennings and Hayes 1994). Vernal pools are sometimes occupied, but in all cases the species must have access to soils suitable for digging to allow estivation during the dry season. Tolerance of disturbance is high where conditions are otherwise suitable, and the species is sometimes found in pools resulting from landscape modification by man, even adjacent to roads. Western Spadefoot individuals were captured in arrays 1, 3 and 4 and were captured in March, April, May and June.

#### Special-Status Amphibian Species not Observed but with a High Potential to Occur

No special-status amphibian species have high potential to occur.

## 4.4 Reptiles

During the 2008 sampling at the Preserve, 20 reptile species were detected (Table 5, Appendix B). Ten species were captured in arrays and ten were observed or detected during other surveys. Ten lizard and ten snake species were detected with eight species having special status. Sensitive species detected consist of San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*), Coronado Skink (*Eumeces skiltonianus interparietalis*), Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*), Coastal Western Whiptail (*Cnemidophorus tigris stejnegeri*), Coastal Rosy Boa (*Charina trivirgata roseofusca*), Coast Patch-nosed Snake (*Salvadora hexalepis vigultea*), Two-striped Garter Snake (*Thamnophis hammondi*), and Red Diamond Rattlesnake (*Crotalus ruber*). These species' occurrences on the Preserve are discussed in more detail in Section 4.4.1.

Based on the presence of potentially suitable habitat, several additional reptile species may also occur on the Preserve. Sensitive species with potential consist of California Legless Lizard (*Anniella pulchra*) and San Diego Ringneck Snake

(*Diadophis punctatus similis*). Other common species with potential include Western Banded Gecko (*Coleonyx variegatus*), Western Racer (*Coluber mormon*), Longnose Snake (*Rhinocheilus lecontei*), Western Blind Snake (*Leptotyphlops humilis*), Western Blackhead Snake (*Tantilla planiceps*), Night Snake (*Hypsiglena torquata*), and Lyre Snake (*Trimorphodon biscutatus*).

**Table 5.** Reptile Species Observed or Captured During 2008 Surveys

<b>Taxonomic Name</b>	<b>Common Name</b>	<b>Special Status</b>
<i>Elgaria multicarinata</i>	Southern Alligator Lizard	
<i>Phrynosoma coronatum blainvillii</i>	San Diego Horned Lizard	CSC, MSCP, CSDS Group II
<i>Sceloporus occidentalis</i>	Western Fence Lizard	
<i>Sceloporus orcutti</i>	Granite Spiny Lizard	
<i>Uta stansburiana</i>	Side-blotched Lizard	
<i>Eumeces gilberti</i>	Gilbert's Skink	
<i>Eumeces skiltonianus interparietalis</i>	Coronado Skink	CSC, CSDS Group II
<i>Cnemidophorus hyperythrus beldingi</i>	Orange-throated Whiptail	CSC, MSCP, CSDS Group II
<i>Cnemidophorus tigris stejnegeri</i>	Coastal Western Whiptail	CSDS Group II
<i>Xantusia henshawi</i>	Granite Night Lizard	
<i>Charina trivirgata roseofusca</i>	Coastal Rosy Boa	CSDS Group II
<i>Lampropeltis getula</i>	Common Kingsnake	
<i>Masticophis flagellum</i>	Coachwhip	
<i>Masticophis lateralis</i>	Striped Racer	
<i>Pituophis catenifer</i>	Gopher Snake	
<i>Salvadora hexalepis vigultea</i>	Coastal Patch-nosed Snake	CSC, CSDS Group II
<i>Thamnophis hammondi</i>	Two-striped Garter Snake	CSC, CSDS Group I
<i>Crotalus mitchellii</i>	Speckled Rattlesnake	
<i>Crotalus oreganos helleri</i> [ <i>Crotalus viridis</i> ]	Southern Pacific Rattlesnake	
<i>Crotalus ruber ruber</i>	Red Diamond Rattlesnake	CSC, CSDS Group II

Legend:

Special Status: CSC= California Species of Special Concern, MSCP= Multiple Species Conservation Program Covered Species, CSDS= County of San Diego Sensitive Animal

## 4.4.1 Special-Status Reptile Species

### Special-Status Reptile Species Observed

#### **San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)**

*State Species of Special Concern, MSCP Covered Species, San Diego County Group II*

The San Diego Horned Lizard is a large lizard that historically was found in Kern, Los Angeles, Santa Barbara, and Ventura counties southward to Baja California, Mexico. Horned Lizards inhabit a variety of vegetation communities including coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest (Stebbins 2003). Loose, fine soils with a high sand content, an abundance of prey and open areas with limited overstory typify suitable habitat for this species (Jennings and Hayes 1994). The San Diego Horned Lizard's insectivorous diet consists mostly of native Harvester Ants (*Pogonmyrmex* sp.) which make up over 90% of their prey items, but it is an opportunistic feeder that will take other insects including termites, beetles, flies, wasps, and grasshoppers (Stebbins 2003, Jennings and Hayes 1994). This species has disappeared from about 45% of its former range and a number of factors have led to this decline including habitat fragmentation and degradation, loss of native prey to exotic species, and extensive collection for the curio trade (Jennings and Hayes 1994). The specialized diet of Harvester Ants has made Horned Lizards especially vulnerable to extirpation since the introduction of Argentine Ants (*Linepithema humile*). San Diego Horned Lizards were captured in array 2, 3 and 4 and were captured in March, April and May.

#### **Coronado Skink (*Eumeces skiltonianus interparietalis*)**

*State Species of Special Concern, San Diego County Group II*

The Coronado Skink is a medium-sized secretive lizard that is typically found in the moister areas of coastal sage, chaparral, oak woodlands, pinon-juniper, riparian woodlands and pine forests (Jennings and Hayes 1994). Their prey includes small invertebrates found in leaf litter or dense vegetation at the edges of rocks and logs. The Coronado Skink is found along the coastal plain and Peninsular Ranges west of the deserts from approximately San Geronio Pass in Riverside County south to San Quentin, Mexico (Jennings and Hayes 1994). This species was captured in array 1 in April.

#### **Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*)**

*State Species of Special Concern, MSCP Covered Species, San Diego County Group II*

The Orange-throated Whiptail is a medium-sized lizard that ranges from Southern California (specifically Corona del Mar in Orange County and Colton in San Bernardino County) southward to the tip of Baja California, Mexico.

Historically, most populations of the Orange-throated Whiptail were found on floodplains or terraces along streams in brushy areas with loose soil and rocks (McGurty 1980). Habitat types they are known to use include chaparral, non-native grassland, coastal sage scrub, juniper woodland, and oak woodland. California Buckwheat is an important indicator of appropriate habitat for Orange-throated Whiptails (Dudek 2000). This plant species is a colonizer of disturbed, sandy soils and usually indicates open shrub spacing that is required for foraging and thermoregulatory behavior. Orange-throated Whiptails appear to be dietary specialists with most (> 85%) of its prey being comprised of termites (Dudek 2000). The decline of Orange-throated Whiptails is likely due to loss of habitat to agriculture and urban development. This species was captured in arrays 2 and 3 and was captured in May, June and July.

### **Coastal Western Whiptail (*Cnemidophorus tigris multiscutatus*)**

#### *San Diego County Group II*

Coastal Western Whiptail is a medium-sized slender lizard that is found in arid and semiarid desert to open woodlands where the vegetation is sparse so running is easy (Stebbins 2003). Its range includes coastal Southern California and western Baja California. The decline of Coastal Western Whiptails is likely due to loss of habitat to agriculture and urban development. This species was captured numerous times throughout the trapping program in all four arrays and was captured during all five months of sampling.

### **Coastal Rosy Boa (*Charina trivirgata roseofusca*)**

#### *San Diego County Group II*

Coastal Rosy Boas are heavy-bodied snakes that inhabit arid scrublands, semi-arid and rocky shrublands, rocky deserts, canyons, and other rocky areas (Stebbins 2003). This species eats rodents, small birds, lizards, small snakes, and amphibians and kills its prey by constriction. Coastal Rosy Boas occur in southwestern California from the coastal slopes of the San Gabriel and San Bernardino mountains, and across the peninsular ranges into the desert in San Diego County (Stebbins 2003). Threats to this species include habitat degradation and fragmentation from urban development. This species was observed in October along the access road from Blue Sky Ranch Road.

### **Coast Patch-nosed Snake (*Salvadora hexalepis virgutea*)**

#### *State Species of Special Concern, San Diego County Group II*

The Coast Patch-nosed Snake is a medium-sized, slender snake that is a habitat generalist that makes use of whatever vegetative cover is available and thrives in most environments. It is also a generalist in its diet, opportunistically feeding on anything it can overpower including small mammals, lizards, and the eggs of lizards and snakes. The species ranges from Creston in San Luis Obispo County southward into Baja California (Stebbins 2003). The decline of this species is

likely due to conversion of habitat to development, agriculture or non-native plant species. This species was observed during surveys of the Preserve.

### **Two-striped Garter Snake (*Thamnophis hammondi*)**

*State Species of Special Concern, San Diego County Group I*

Two-striped Garter Snake occurs west of the deserts and Central Valley from Salinas, Monterey County, south into Baja California, and at elevations from sea level up to about 2,438 m (8,000 ft) in the San Jacinto Mountains (Jennings and Hayes 1994). It is often in water and rarely found far from it, though it is also known to inhabit intermittent streams having rocky beds bordered by willow thickets or other dense vegetation (Jennings and Hayes 1994). They will also inhabit large riverbeds such as those of the Santa Ana and Santa Clara Rivers if riparian vegetation is available, and even occur in artificial impoundments if both aquatic vegetation and suitable prey items (small amphibians and fish) are present (Jennings and Hayes 1994). Declines are attributable directly to loss of riparian habitats. This species was observed during surveys of the Preserve.

### **Red Diamond Rattlesnake (*Crotalus ruber ruber*)**

*State Species of Special Concern, San Diego County Group II*

The Red Diamond Rattlesnake is a large, heavy-bodied rattlesnake that has a wide tolerance for varying environments and can be found in a variety of vegetation types, but it is most commonly seen in areas with heavy brush and cactus, rocks or boulders (Stebbins 2003). The known range extends from San Bernardino County along the coastal and desert slopes southward to Baja California. Adult Red Diamond Rattlesnakes eat mostly squirrels and rabbits but lizards, specifically the Western Whiptail, are a significant food source for juveniles (Jennings and Hayes 1994). Urban development and the trend towards planting orchards on the steeper rocky hillsides have significantly decreased the amount of appropriate habitat for this species (Jennings and Hayes 1994). This species was observed during surveys of the Preserve.

## **Special-Status Reptile Species not Observed but with a High Potential to Occur**

### **San Diego Ringneck Snake (*Diadophis punctatus similis*)**

*San Diego County Group II*

The San Diego Ringneck Snake is a small, thin snake that prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands (Stebbins 2003). It is secretive in its behavior, usually found under the cover of rocks, wood, bark, boards, and other surface debris. Ringneck snakes eat small salamanders, tadpoles, small frogs, small snakes, lizards, worms, slugs, and insects. This species' range includes

San Diego County along the coast and into the Peninsular range, southwestern San Bernardino County, and barely south into northern Baja California (Stebbins 2003). Threats to this species include habitat degradation and fragmentation from urban development. This species has high potential to occur throughout the Preserve.

## 4.5 Birds

Avian species richness (total species detected) was found to be moderate at the Preserve. In total, 56 bird species were detected including 53 species during the point counts and three during other fieldwork. These included year-round residents, winter-only species, breeding species that migrate to the Neotropics, and species that are strictly migratory through the Preserve, neither breeding nor wintering there.

The Preserve's avifauna is a mixture of species that are closely associated with chaparral recovering from fire, boulder and rock outcrops, and intermittent oak woodlands. These species include California Quail (*Callipepla californica*), Black-chinned Hummingbird (*Archilochus alexandri*), Costa's Hummingbird (*Calypte costae*), Anna's Hummingbird (*Calypte anna*), Ash-throated Flycatcher (*Myiarchus cinerascens*), Bushtit (*Psaltriparus minimus*), Rock Wren (*Salpinctes obsoletus*), Canyon Wren (*Catherpes mexicanus*), Bewick's Wren (*Thryomanes bewickii*), Wrentit (*Chamaea fasciata*), California Thrasher (*Toxostoma redivivum*), Spotted Towhee (*Pipilo maculatus*), California Towhee (*Pipilo crissalis*), Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*), Black-chinned Sparrow (*Spizella atrogularis*), Lazuli Bunting (*Passerina amoena*), House Finch (*Carpodacus mexicanus*), and Lesser Goldfinch (*Carduelis psaltria*).

The Preserve has a good diversity of raptors (birds of prey), including five raptor species observed: Turkey Vulture (*Cathartes aura*), White-tailed Kite (*Elanus leucurus*), Cooper's Hawk (*Accipiter cooperii*), Red-tailed Hawk (*Buteo jamaicensis*), and Barn Owl (*Tyto alba*). These birds are using the Preserve for foraging and some species have potential to breed on site; however, no active raptor nests were observed.

Seven special-status species were detected during the point counts – Turkey Vulture, White-tailed Kite, Barn Owl, Western Bluebird (*Sialia mexicana*), Southern California Rufous-crowned Sparrow and Bell's Sage Sparrow (*Amphispiza belli belli*). Turkey Vulture and White-tailed Kite were observed foraging over the site. The Barn Owl was not detected at the Preserve until August 2008 in the oak woodland near avian point location 5. One Western Bluebird and one Bell's Sage Sparrow were observed in May. These birds may have been moving through the area as they were not detected during other sampling periods. Southern California Rufous-crowned Sparrows are found throughout the recovering chaparral at the Preserve. In addition, Golden Eagle (*Aquila chrysaetos*) was not directly observed by ICF Jones & Stokes biologists; however, local residents and two park rangers informed biologists of sightings

and probable breeding on the cliff face near El Capitan Reservoir. Figure 8 depicts the locations of special-status birds detected during surveys of the Preserve. For a more detailed description of the species and their status at the Preserve, please see Section 4.5.3.

The Preserve supports several areas of oak woodland but there is no reasonable potential for Southwestern Willow Flycatcher (*Empidonax traillii extimus*) or Least Bell's Vireo (*Vireo bellii pusillus*) to occur at the Preserve beyond rare and brief visits, due to lack of suitable habitat. It is likely that other subspecies of Willow Flycatcher pass through the Preserve in spring and fall, though they were not recorded during the current work.

As most of the Preserve supports southern mixed chaparral, there is low potential for Coastal California Gnatcatchers (*Polioptila californica californica*) to breed on site. Historically, the species has been found in the vicinity, so there is potential for the species to occur at the Preserve during rare and brief visits. Any area of coastal sage found at the Preserve currently is not appropriate for this species.

## 4.5.1 Point Count Results

As detailed in Section 3.4, ten-minute avian point counts were conducted at eleven stations monthly from April through September 2008 (Figure 6). ICF Jones & Stokes' Wildlife Biologist Kylie Fischer conducted all of the counts.

A total of 56 bird species were detected during the survey of the Preserve - 53 bird species during the point counts and three during other fieldwork (Table 6). The most numerous and/or regularly encountered bird species were California Quail, Mourning Dove, Anna's Hummingbird, Ash-throated Flycatcher, American Crow, Bushtit, Rock Wren, Canyon Wren, Bewick's Wren, Wrentit, Spotted Towhee, California Towhee, Southern California Rufous-crowned Sparrow, Black-chinned Sparrow, House Finch, and Lesser Goldfinch. Most of the species identified in Table 6 as confirmed breeders and probable breeders were regularly detected during the point counts.

**Table 6:** Avian Species Observed during 2008 Baseline Surveys at El Capitan Preserve

Scientific Name	Common Name	Observed or Detected	Special Status	Breeding Status
<i>Callipepla californica</i>	California Quail	X		pr
<i>Cathartes aura</i>	Turkey Vulture	O	CSDS Group I	
<i>Elanus leucurus</i>	White-tailed Kite	X	CFP, CSDS Group I	
<i>Accipiter cooperii</i>	Cooper's Hawk	X	MSCP, CSDS Group I	?
<i>Buteo jamaicensis</i>	Red-tailed Hawk	X		

Scientific Name	Common Name	Observed or Detected	Special Status	Breeding Status
<i>Zenaida macroura</i>	Mourning Dove	X		pr
<i>Geococcyx californianus</i>	Greater Roadrunner	X		
<i>Tyto alba</i>	Barn Owl	O	CSDS Group II	
<i>Phalaenoptilus nuttallii</i>	Common Poorwill	O		
<i>Aeronautes saxatalis</i>	White-throated Swift	X		
<i>Archilochus alexandri</i>	Black-chinned Hummingbird	X		pr
<i>Calypte anna</i>	Anna's Hummingbird	X		pr
<i>Calypte costae</i>	Costa's Hummingbird	X		pr
<i>Melanerpes formicivorus</i>	Acorn Woodpecker	X		
<i>Picoides nuttallii</i>	Nuttall's Woodpecker	X		?
<i>Colaptes auratus</i>	Northern Flicker	X		
<i>Empidonax difficilis</i>	Pacific-slope Flycatcher	X		
<i>Sayornis saya</i>	Say's Phoebe	X		
<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher	X		pr
<i>Tyrannus vociferans</i>	Cassin's Kingbird	X		
<i>Tyrannus verticalis</i>	Western Kingbird	X		
<i>Aphelocoma californica</i>	Western Scrub-Jay	X		pr
<i>Corvus brachyrhynchos</i>	American Crow	X		?
<i>Corvus corax</i>	Common Raven	X		?
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	X		
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	X		
<i>Baeolophus inornatus</i>	Oak Titmouse	X		pr
<i>Psaltirparus minimus</i>	Bushtit	X		pr
<i>Sitta carolinensis</i>	White-breasted Nuthatch	X		pr
<i>Salpinctes obsoletus</i>	Rock Wren	X		CO
<i>Catherpes mexicanus</i>	Canyon Wren	X		CO
<i>Thryomanes bewickii</i>	Bewick's Wren	X		CO
<i>Troglodytes aedon</i>	House Wren	X		pr
<i>Regulus calendula</i>	Ruby-crowned Kinglet	X		
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	X		pr
<i>Sialia mexicana</i>	Western Bluebird	X	MSCP, CSDS Group II	
<i>Chamaea fasciata</i>	Wrentit	X		CO
<i>Mimus polyglottos</i>	Northern Mockingbird	X		
<i>Toxostoma redivivum</i>	California Thrasher	X		pr

Scientific Name	Common Name	Observed or Detected	Special Status	Breeding Status
* <i>Sturnus vulgaris</i>	European Starling	X		?
<i>Phainopepla nitens</i>	Phainopepla	X		pr
<i>Vermivora celata</i>	Orange-crowned Warbler	X		
<i>Wilsonia pusilla</i>	Wilson's Warbler	X		
<i>Pipilo maculatus</i>	Spotted Towhee	X		CO
<i>Pipilo crissalis</i>	California Towhee	X		CO
<i>Aimophila ruficeps canscens</i>	Southern California Rufous-crowned Sparrow (=California Rufous-crowned Sparrow)	X	MSCP, CSDS Group I	CO
<i>Spizella atrogularis</i>	Black-chinned Sparrow	X		CO
<i>Amphispiza belli belli</i>	Bell's Sage Sparrow	X	CSDS Group I	
<i>Melospiza melodia</i>	Song Sparrow	X		?
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak	X		
<i>Passerina amoena</i>	Lazuli Bunting	X		pr
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	X		
* <i>Molothrus ater</i>	Brown-headed Cowbird	X		?
<i>Icterus bullockii</i>	Bullock's Oriole	X		
<i>Carpodacus mexicanus</i>	House Finch	X		pr
<i>Carduelis psaltria</i>	Lesser Goldfinch	X		pr

## Legend

\*=Non-native or invasive species

Observed or Detected: X = detected during point count, O = Observed during other fieldwork, FB = overhead or fly-by only, PC = Personal communication

Special Status: FE= Federally Endangered, FT=Federally Threatened, SE= State Endangered, CSC= California Species of Special Concern, CFP= California Fully Protected, MSCP= Multiple Species Conservation Program Covered Species, CSDS=County of San Diego Sensitive Animal

Breeding Status: CO = Confirmed breeding, pr = Probable breeder, ? = Possible breeder Rating is based on number of observations and period of observation (i.e. was the species identified throughout the breeding season or only during certain times of the year)

Tables 7 and 8 provide quantitative summaries of the results for species and individuals. Abundance ranges from 108 observations at station UEC-6 to 147 at station LEC-5. The greatest number of species were detected at station UEC-5 (33 species) and the lowest number was at station UEC-6 (18 species). Higher species diversity is attributed to the proximity to oak woodlands within the Preserve.

Three observations of unknown hummingbird species were excluded from the calculation of total species. These were most likely female and/or juvenile Black-chinned, Anna's or Costa's Hummingbirds that were seen in flight and the lighting and circumstances did not allow the observer to see any identifying characteristics beyond type of bird.

Included in the species calculations is one sighting of an unknown blackbird species. This bird was seen in flight and the lighting and circumstances did not allow the observer to see any identifying characteristics beyond type of bird. Five observations of unknown species were excluded from the species data but were included as bird observations. The biologist was confident that these observations were not of a bird that had already been documented during the point count.

**Table 7.** Avian Point Counts–Totals for Individuals\*

Month	Point Count Stations												Total # of Individuals	Mean # of Individuals
	LEC-1	LEC-2	LEC-3	LEC-4	LEC-5	UEC-1	UEC-2	UEC-3	UEC-4	UEC-5	UEC-6	UEC-7		
April	25	30	26	22	21	18	26	27	24	30	22	24	295	24.6
May	28	21	19	20	23	26	32	23	21	26	27	21	287	23.9
June	17	24	31	21	29	26	23	23	20	23	15	20	272	22.7
July	19	15	24	52	30	26	22	32	18	19	22	19	298	24.8
August	19	21	13	17	21	21	21	17	15	17	10	20	212	17.7
September	18	21	29	19	23	21	21	17	16	11	12	12	220	18.3
<b>Total # of Individuals</b>	<b>126</b>	<b>132</b>	<b>142</b>	<b>151</b>	<b>147</b>	<b>138</b>	<b>145</b>	<b>139</b>	<b>114</b>	<b>126</b>	<b>108</b>	<b>116</b>	<b>1584</b>	
<i>Mean # of Individuals</i>	<i>21.0</i>	<i>22.0</i>	<i>23.7</i>	<i>25.2</i>	<i>24.5</i>	<i>23.0</i>	<i>24.2</i>	<i>23.2</i>	<i>19.0</i>	<i>21.0</i>	<i>18.0</i>	<i>19.3</i>		<i>22.0</i>

\* See Section 3.4.1 regarding the exclusion of individuals recorded as “fly-bys”.

**Table 8.** Avian Point Counts–Totals for Species\*

Month	Point Count Stations												Total # of Species	Mean # of Species
	LEC-1	LEC-2	LEC-3	LEC-4	LEC-5	UEC-1	UEC-2	UEC-3	UEC-4	UEC-5	UEC-6	UEC-7		
April	15	17	15	12	17	10	14	13	13	18	9	14	36	13.9
May	16	14	12	13	15	13	14	13	11	15	13	10	34	13.3
June	10	12	16	10	15	12	12	13	12	14	8	9	30	11.9
July	12	8	14	14	12	11	11	14	10	10	11	11	32	11.5
August	10	11	8	8	11	10	10	9	7	9	5	11	26	10.4
September	10	10	12	10	10	9	9	12	8	10	8	6	25	10.7
<b>Total # of Species</b>	<b>32</b>	<b>28</b>	<b>30</b>	<b>25</b>	<b>29</b>	<b>23</b>	<b>26</b>	<b>27</b>	<b>20</b>	<b>33</b>	<b>18</b>	<b>24</b>		
<i>Mean # of Species</i>	<i>12.2</i>	<i>12.0</i>	<i>12.8</i>	<i>11.2</i>	<i>13.3</i>	<i>10.8</i>	<i>11.7</i>	<i>12.3</i>	<i>10.2</i>	<i>12.7</i>	<i>9.0</i>	<i>10.2</i>		<i>11.9</i>

\* Birds not identified to species were excluded from the calculation. “Fly-by” species were included in the calculations.

## 4.5.2 Nocturnal Survey Results

The nocturnal bird surveys documented two nocturnal species using the Preserve – Barn Owl and Common Poorwill (*Phalaenoptilus nuttallii*). A Barn Owl was detected during a nocturnal survey in August. This bird was not seen earlier in the season so is most likely not breeding at the area of the Preserve where it was detected. Common Poorwills were regularly detected during nocturnal surveys. There are other areas of the Preserve that have potential to support these and other nocturnal species but due to lack of access and safety of travel at night, these areas were not surveyed. The Preserve provides high potential for three additional nocturnal species: Great Horned Owl (*Bubo virginianus*), Western Screech-owl (*Megascops kennicottii*) and Lesser Nighthawk (*Chordeiles acutipennis*). These species could be present in small numbers, though they were not detected during the surveys. Great Horned Owl and Western Screech-owl may be absent from the Preserve due to the open, fragmentary structure of the woodlands due to the 2003 fire, drought, or other factors.

## 4.5.3 Special-Status Bird Species

### Special-Status Bird Species Observed

#### Turkey Vulture (*Cathartes aura*)

##### *San Diego County Group I*

Turkey Vultures are often seen foraging over woodlands and nearby open country (Unitt 2004). They prefer dry, open country, ranch lands and often occur along roadsides where carrion is common. They nest in crevices among granite boulders (Unitt 2004). The Turkey Vulture's range has been retracting from the coast due to human disturbance, loss of foraging habitat and pesticide contamination (Unitt 2004). Turkey Vultures were observed foraging over the Preserve. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

#### White-Tailed Kite (*Elanus caeruleus*)

##### *State Fully Protected Species (nesting), San Diego County Group I*

The White-tailed Kite is found in lower elevations in open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California Vole (*Microtus californicus sanctidiegi*) (Unitt 2004). The White-tailed Kite typically forages in open undisturbed habitats and nests in the top of a dense oak, willow or other large tree (Unitt 2004). The decline of this species is mostly due to urban sprawl; however, this species is still considered fairly widespread throughout the foothills of San Diego County (Unitt 2004). A White-

tailed Kite was observed foraging over the Preserve. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

### **Cooper's Hawk (*Accipiter cooperii*)**

#### *San Diego County Group I, MSCP Covered Species*

The Cooper's Hawk is a resident of riparian deciduous habitats and oak woodlands but in recent times has become adapted to urban park environments (Unitt 2004). They hunt their primary source of food, passerines, in broken woodlands and forest margins and they are also known to take fish and mammals. The Cooper's Hawk population declined due to hunting and loss of habitat; however, this species is making a comeback through its adaptation to the urban environment (Unitt 2004). Cooper's Hawk was detected along the three point count stations adjacent to Pata Ranch Road in April, June and July. The Preserve provides suitable foraging and breeding habitat, even though breeding was not confirmed. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

### **Barn Owl (*Tyto alba*)**

#### *San Diego County Group II*

The Barn Owl is the owl species that is most tolerant to urban development (Unitt 2004). It will nest in buildings, nest boxes, at the base of the leaves in palm trees, and in cavities in native trees. Even though this species is tolerant of human development, dense housing communities do not provide suitable nesting habitat and increased traffic has had a negative effect on the species (Unitt 2004). The Barn Owl was not detected at the Preserve until August in the oak woodland near herpetological sampling array 2. This bird was most likely transitory. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

### **Western Bluebird (*Sialia mexicana*)**

#### *San Diego County Group II, MSCP Covered Species*

The Western Bluebird is a stocky blue bird with a chestnut chest and is considered common in the foothills and mountains of San Diego County. This species can usually be found in montane coniferous and oak woodlands (Unitt 2004). It can also occur in areas with scattered trees, open forests, scrubs and during the winter in the desert. Western Bluebirds breed in western North America from southern British Columbia south to central Mexico, east to western Montana and west Texas, but are absent from the Great Basin (Guinan et al. 2000). It can also winter outside its breeding range in central California and along the lower Colorado River (Guinan et al. 2000). Western Bluebird numbers are declining due to loss of nesting cavities to logging, fire suppression, and competition with non-native species such as European Starling and House

Sparrow (*Passer domesticus*) (Unitt 2004). One Western Bluebird was observed in May. This bird may have been moving through the area as the species was not detected during other sampling periods. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

### **Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)**

#### *San Diego County Group I, MSCP Covered Species*

The Southern California Rufous-crowned Sparrow is a resident species that is closely associated with coastal sage scrub, steep rocky hillsides, burned chaparral, and openings in mature chaparral (Unitt 2004). Preferring open habitat, with approximately 50% shrub cover, this species seeks cover in shrubs, rocks, grass, and forb patches (Dudek 2000, Unitt 2004). The Southern California subspecies is restricted to semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California (Dudek 2000). Rufous-crowned Sparrows are declining due to loss of appropriate habitat and are sensitive to habitat fragmentation (Unitt 2004). Southern California Rufous-Crowned Sparrows were detected throughout the recovering chaparral at the Preserve. As this species is still found throughout San Diego County in large numbers (Unitt 2004), the individuals detected do not represent a regionally significant population.

### **Bell's Sage Sparrow (*Amphispiza belli belli*)**

#### *San Diego County Group I*

The Bell's Sage Sparrow is a resident species that is usually found in chaparral and coastal sage scrub in southern California into Baja California. This mostly ground-dwelling species prefers open chaparral and sage scrub and is one of the first species to inhabit recently burned habitat (Unitt 2004). This subspecies occurs along the coastal lowlands, inland valleys, and in the lower foothills of the local mountains in southern California into Baja California (Dudek 2000). The decline in this species can be attributed to fire suppression, invasion by exotic plant species, loss of habitat to agriculture and urban development, and population isolation due to habitat fragmentation (Unitt 2004, Dudek 2000). One Bell's Sage Sparrow was observed in May. This bird may have been moving through the area as the species was not detected during other sampling periods. This species is still common in the undeveloped areas of east San Diego County thus the sighting within the Preserve is not regionally significant.

## **Special-Status Bird Species not Observed but with a High Potential to Occur**

### **Northern Harrier (*Circus cyaneus*)**

*State Species of Special Concern, MSCP Covered Species, San Diego County Group I*

The Northern Harrier is associated with open grassland and marshes. This species typically forages in open, undisturbed habitat and nests on the ground in areas of dense low-growing vegetation to help conceal the nest. Nesting harriers are now considered rare and the known breeding population in San Diego County is estimated at 25 to 75 pairs (Unitt 2004). As with other ground nesting grassland birds, the Northern Harrier population is on the decline due to urban sprawl (Unitt 2004). Northern Harriers have been documented foraging at the nearby Stelzer County Park (IFC J&S 2008). As this species has been documented in the vicinity and as the Preserve provides suitable foraging habitat, this species is considered to have high potential to forage within the Preserve. The Preserve provides minimal suitable breeding habitat for this species and if it was breeding at the Preserve in 2008, this would have been detected.

### **Golden Eagle (*Aquila chrysaetos*)**

*State Fully Protected Species, MSCP Covered Species, San Diego County Group I*

Golden Eagles nest on cliff ledges or trees on steep slopes and forage in grasslands, sage scrub, or broken chaparral (Unitt 2004). Development of the grasslands they forage over has taken a toll on the numbers of this species present in San Diego County. A territory averages 36 square miles so removal of foraging habitat will have significant impacts on this species (Unitt 2004). Golden Eagle was not directly observed by ICF Jones & Stokes biologists; however, local residents and two park rangers informed biologists of sightings and probable breeding on the cliff face near El Capitan Reservoir.

### **Sharp-shinned Hawk (*Accipiter striatus*)**

*San Diego County Group II*

Sharp-shinned Hawks breed in young coniferous forests with high canopies. This species has not been documented breeding in San Diego; however, some summer sightings have been recorded (Unitt 2004). It is considered a fairly common migrant and winter resident, except in areas with deep snow (Dudek 2000). The known population breeding within California is very small and is vulnerable to impacts from falconry and logging. This species has high potential to occur as a migrant within the Preserve.

### **Merlin (*Falco columbarius*)**

#### *San Diego County Group II*

The Merlin is most often seen in grasslands but has the potential to occur in any habitat type except dense woodland (Unitt 2004). This species is a rare winter visitor to San Diego County that feeds mostly on small birds and can be found where small birds flock (Unitt 2004). This species has high potential to occur as a migrant within the Preserve.

### **Loggerhead Shrike (*Lanius ludovicianus*)**

#### *State Species of Special Concern, San Diego County Group I*

Loggerhead Shrikes are found near grassland, open sage scrub and chaparral, and desert scrub (Unitt 2004). They nest in dense vegetation adjacent to their open foraging habitats. Shrikes prefer to sit on an exposed tree limb or utility line looking for prey. They attack their prey from either a hovering flight above, or from their perch. The Loggerhead Shrike population in San Diego County is on the decline due to loss of habitat to development and habitat fragmentation (Unitt 2004). The species is still found throughout the County on the coastal plain and into the desert. This species has high potential to occur as there is appropriate foraging and nesting habitat at the Preserve.

## **4.6 Small Mammal Trapping**

In total, eleven small mammal species were recorded at the Preserve during small mammal trapping and other surveys (Tables 9 and 10). These species were detected through capture, direct observation or sign. The trapping results indicate that the Preserve has good abundance and species diversity in small mammals with 117 captures from seven species (Table 9). The species detected are commonly found in the habitats found on the Preserve. Sensitive species captured consist of Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*) and San Diego Desert Woodrat (*Neotoma lepida intermedia*). The occurrence of these species on the Preserve is discussed in more detail in Section 4.6.1. Other sensitive species with potential to occur include Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*).

**Table 9.** El Capitan Preserve Trapline Capture Summary

Scientific Name	Common Name	Special Status	Trapline Number/Captures				Total
			2	3	6	7	
<i>Chaetodipus californicus femoralis</i>	Dulzura Pocket Mouse	CSC, CSDS Group II	1 ♂	1 ♂	3 ♂		5 ♂
			1 ♀	1 ♀		1 ♀	3 ♀
<i>Dipodomys simulans</i> (= <i>Dipodomys agilis simulans</i> )	Dulzura Kangaroo Rat		6 ♂	11 ♂	3 ♂	5 ♂	25 ♂
			5 ♀	7 ♀	2 ♀	3 ♀	17 ♀
<i>Peromyscus californicus insignis</i>	California Mouse		1 ♂		3 ♂		4 ♂
			3 ♀	1 ♀	8 ♀	3 ♀	15 ♀
<i>Peromyscus fraterculus</i> (= <i>Peromyscus eremicus fraterculus</i> )	Northern Baja Mouse		6 ♂	6 ♂	2 ♂	5 ♂	19 ♂
			5 ♀	5 ♀	3 ♀	2 ♀	15 ♀
<i>Peromyscus maniculatus gambelii</i>	American Deer Mouse		3 ♂				3 ♂
			1 ♀	2 ♀			3 ♀
<i>Neotoma macrotis</i> (= <i>Neotoma fuscipe macrotis</i> )	Large-eared Woodrat (=Dusky-footed)				2 ♀	2 ♀	
<i>Neotoma lepida intermedia</i>	San Diego Desert Woodrat	CSC, CSDS Group II	1 ♂				1 ♂
			1 ♀	3 ♀			4 ♀
				1 esc			1 esc
<b>Total</b>			<b>34</b>	<b>38</b>	<b>26</b>	<b>19</b>	<b>117</b>

Legend:

♂ = male, ♀ = female, released = released prior to determining sex, and esc = escaped prior to determining sex

Special Status: CSC= California Species of Concern, CSDS= County of San Diego Sensitive Animal

**Table 10.** Small Mammals Detected at the Preserve through Other Survey Methods

Scientific Name	Common Name	Special Status	Vegetation Communities	Method of Detection
<i>Notiosorex crawfordi</i>	Desert Shrew		chaparral	captured in pitfall array
<i>Spermophilus beecheyi nudipes</i>	California Ground Squirrel		all communities	visual, sign, camera station
<i>Thomomys bottae</i>	Botta's Pocket Gopher		chaparral	sign, captured in pitfall array
<i>Microtus californicus</i>	California Vole		chaparral	captured in pitfall array

## 4.6.1 Special-Status Small Mammal Species

### Special-Status Small Mammal Species Observed

#### Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)

*State Species of Special Concern, San Diego County Group II*

Dulzura Pocket Mouse is mainly active on the ground, but also climbs shrubs and small trees when feeding (CDFG 2005). This species can become torpid by day at any time of the year, and is inactive in cold wet weather. It breeds in spring to early summer and occurs from sea level to approximately 2,408 m (7,900 ft) AMSL (CDFG 2005). This species prefers dense chaparral and is less common in dry grassland and desert scrub. During the 2008 trapping program on the Preserve, 8 of the 117 animals captured were Dulzura Pocket Mouse.

#### San Diego Desert Woodrat (*Neotoma lepida intermedia*)

*State Species of Special Concern, San Diego County Group II*

San Diego Desert Woodrat requires large amounts of water, which it obtains from fleshy plants such as *Yucca* species and Prickly Pear Cactus (*Opuntia* sp.). It usually makes a stick house under one of these food plants, or may den among rocks (CDFG 2005). House materials include cacti, sticks, bones and a variety of debris. Houses provide insulation against excessive heat as well as protection from predators. This species breeds in late winter or spring, occurs from sea level to approximately 2,591 m (8,500 ft) AMSL in deserts and coastal sage scrub, and prefers areas with rocky outcrops and plentiful succulents (CDFG 2005). During the 2008 trapping program on the Preserve, six of the 117 animals captured were San Diego Desert Woodrat.

## **Special-Status Small Mammal Species not Observed but with a High Potential to Occur**

### **Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)**

*State Species of Special Concern, San Diego County Group II*

The Northwestern San Diego Pocket Mouse is typically found in coastal sage scrub, sage scrub/grassland ecotones, and chaparral (Dudek 2000). It inhabits open, sandy areas of both the Upper and Lower Sonoran areas of southwestern California and northern Baja California (Dudek 2000). This species is sensitive to habitat fragmentation and degradation, which has led to its decline. One Northwestern San Diego Pocket Mouse was captured at the nearby El Monte Park. Due to the proximity of this occurrence and the suitability of the habitat within the Preserve, there is high potential for this species to occur at the Preserve.

## **4.7 Medium and Large Mammals**

### **4.7.1 Camera Tracking Stations**

Evaluation of the images captured at the six camera stations resulted in the identification of the following six species of medium to large mammals: Desert Cottontail (*Sylvilagus audubonii*), Coyote (*Canis latrans*), Common Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Bobcat (*Lynx rufus*), and Southern Mule Deer (*Odocoileus hemionus fuliginata*) (Table 11, Appendix B). See Figure 6 for camera station locations. During the course of this survey, three of the six camera stations were stolen. These incidents resulted in a decreased number or lack of detections for species thought, or known to occur within the Preserve.

### **4.7.2 Track and Sign Surveys**

A total of eight medium and large mammals were detected in the Preserve through direct observation, tracks, sign, and nocturnal surveys consisting of: Desert Cottontail, Domestic Dog (*Canis familiaris*), Coyote, Striped Skunk, Common Raccoon, Bobcat, Domestic Horse (*Equus caballus*), and Southern Mule Deer (Table 11, Appendix B). Movement of larger animals appeared to be concentrated along easily traveled routes with good visibility such as roads and ridges. Most signs of smaller animals were within natural communities with cover, especially chaparral.

Due to the proximity to large amounts of open space and the presence of potentially suitable habitat, the following species may also utilize the Preserve: Brush Rabbit (*Sylvilagus bachmani*), Common Gray Fox (*Urocyon*

*cinereoargenteus*), Long-tailed Weasel (*Mustela frenata*), Black-tailed Jackrabbit (*Lepus californicus*), Western Spotted Skunk (*Spilogale gracilis*), Opossum (*Didelphis virginiana*), and Mountain Lion (*Puma concolor*).

No clear evidence of regular or important, larger-scale dispersal across the site was found though such movement may well occur. Certainly it can be assumed that larger mammals regularly move on, off of, and across the Preserve, to and from adjacent open space.

**Table 11.** Medium and Large Mammals Detected During 2008 Surveys

Scientific Name	Common Name	Special Status	Vegetation Communities	Method of Detection
<i>Sylvilagus audubonii</i>	Desert Cottontail		all communities	visual, sign, camera station
* <i>Canis familiaris</i>	Domestic Dog		all communities	visual, sign
<i>Canis latrans</i>	Coyote		all communities	visual, sign, camera station
<i>Mephitis mephitis</i>	Striped Skunk		oak woodland	sign, camera station
<i>Procyon lotor</i>	Common Raccoon		oak woodland	sign, camera station
<i>Lynx rufus</i>	Bobcat		all communities	sign, camera station
* <i>Equus caballus</i>	Domestic Horse		all communities	sign
<i>Odocoileus hemionus fuliginata</i>	Southern Mule Deer	MSCP, CSDS Group I	all communities	visual, sign, camera station

Legend:

\*=non-native species

Special Status: MSCP= Multiple Species Conservation Program Covered Species, CSDS= County of San Diego Sensitive Animal

### 4.7.3 Special-Status Medium and Large Mammal Species

#### Special-Status Medium and Large Mammal Species Observed

##### Southern Mule Deer (*Odocoileus hemionus fuliginata*)

*San Diego County Group II, MSCP Covered Species*

Southern Mule Deer are common across the western U.S. in a variety of habitats from forest edges to mountains and foothills (Whitaker 1996). Southern Mule Deer prefer edge habitats, rarely travel or forage far from water and are most active around dawn and dusk. Southern Mule Deer individuals were observed and also were photographed by the camera stations.

## **Special-Status Medium and Large Mammal Species not Observed but with a High Potential to Occur**

### **San Diego Black-tailed Jackrabbit (*Lepus californicus*)**

*State Species of Special Concern, San Diego County Group I*

The San Diego Black-tailed Jackrabbit is a large, long-legged hare, with distinctive long ears and a blackish tail (Whitaker 1996). The Black-tailed Jackrabbit inhabits a wide range of habitats, including deserts, irrigated croplands, high mountains to 2,500 m (8,202 ft) AMSL, and is commonly found in the western U.S. to Mexico and Baja California. The San Diego population is found mostly on the coastal side of the local mountains in open habitats, usually avoiding dense stands of chaparral or woodlands (Stephenson and Calcarone 1999). This species has been declining due to urban development, habitat loss, and fragmentation leading to population isolation (Dudek 2000). This Preserve supports suitable habitat for this species.

### **Mountain Lion (*Puma concolor*)**

*San Diego County Group II, MSCP Covered Species*

Mountain Lions prefer rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral (Dudek 2000). Riparian areas also provide protective habitat connections for movement between fragmented habitats. This species is widespread in North and South America and occupies a broad variety of habitats from the northern limit of the Canadian forests to Patagonia in South America. Populations of this species require large areas (at least 850 square miles) to sustain themselves (Dudek 2000). Habitat fragmentation, loss of large areas of undeveloped land, road kills, indiscriminate shootings, animal control measures, and loss of a natural prey base have led to the decline of this species. This Preserve and the surrounding open space provide habitat for Mountain Lions to use for foraging and cover. As there is a large amount of open space surrounding the Preserve, potential for this species to move through the Preserve is high.

## 4.8 Bats

A total of 13 bat species were detected using passive Anabats during the three seasons of bat monitoring (Table 12, Appendix B). The most active bat species detected were the California Myotis (*Myotis californicus*), Canyon Bat (*Parastrellus hesperus*), and Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*). Species detected infrequently included the Western Red Bat (*Lasiurus blossevillii*), Pallid Bat (*Antrozous pallidus*), and Big Free-tailed Bat (*Nyctinomops macrotis*). There were a number of bats detected during all three monitoring sessions including the Small-footed Myotis (*Myotis ciliolabrum*), Canyon Bat, Townsend's Big-eared Bat (*Corynorhinus townsendii*), Mexican Free-tailed Bat (*Tadrida brasiliensis*), Pocketed Free-tailed Bat, and Western Mastiff Bat (*Eumops perotis*). The Western Red Bat, Hoary Bat (*Lasiurus cinereus*), and Big Free-tailed Bat were only detected during the spring, and the Pallid Bat only during the summer.

No additional bat species were detected with an Anabat during the single active foraging bat survey conducted on August 28, 2008. A single Townsend's Big-eared Bat was observed roosting just inside one of the mine entrances (mine with metal door at entrance), and an adult male Small-footed Myotis, in breeding condition, was captured in a mist-net in front of one of the mines. The mines are located near the bat sampling location along the southern boundary of the Preserve.

Multiple Western Mastiff Bats were heard overhead early in the evening of August 28, 2008 as they produced audible echolocation calls. This observation suggests there is a colony of this species nearby, presumably somewhere along the face of El Cajon Mountain, where there is an extensive amount of rocky cliff habitat.

A large number of bat species appear to be supported by the Preserve. The Preserve is fairly diverse and contains habitat features important to bats in the southern California landscape such as riparian vegetation, oak woodland, scrub vegetation, abandoned mines, and an extensive amount of exposed rock (Krutzsch 1948, Stokes et al. 2005). The occurrence of rare and sensitive species such as the Pallid Bat and Townsend's Big-eared Bat indicate the Preserve's importance to bat populations in this part of the County. The large amounts of rocky cliff habitat (El Cajon Mountain) provide numerous and extensive roosting opportunities for bats, particularly cliff-dwelling species such as the Western Mastiff Bat. The abandoned mines provide roosting opportunities for cave-dwelling species such as the Townsend's Big-eared Bat. The presence of these habitat features adjacent to a major river (San Diego River) make this Preserve one of the most important pieces of preserved land for bats in all of San Diego County.

**Table 12.** Bat Species detected at the Preserve in 2008

Bat Species		Special Status	Relative Activity Index*			Average Activity Index**
Scientific Name	Common Name		Spring	Summer	Fall	
<i>Myotis californicus</i>	California Myotis		220.00	68.89	1.67	96.85
<i>Myotis ciliolabrum</i>	Small-footed Myotis	CSDS Group II	30.56	16.67	8.33	18.52
<i>Myotis yumanensis</i>	Yuma Myotis	CSDS Group II	18.33	nd	8.33	8.89
<i>Lasiurus blossevillii</i>	Western Red Bat	CSC, CSDS Group II	1.11	nd	nd	0.37
<i>Lasiurus cinereus</i>	Hoary Bat		5.00	nd	nd	1.67
<i>Parastrellus hesperus</i>	Canyon Bat		116.67	181.11	58.33	118.70
<i>Eptesicus fuscus</i>	Big Brown Bat		13.33	4.44	nd	5.93
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	CSC, CSDS Group II	2.22	1.11	1.67	1.67
<i>Antrozous pallidus</i>	Pallid Bat	CSC, CSDS Group II	nd	2.22	nd	0.74
<i>Tadarida brasiliensis</i>	Mexican Free-tailed Bat		107.78	22.22	15.00	48.33
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat	CSC, CSDS Group II	110.00	22.22	71.67	67.96
<i>Nyctinomops macrotis</i>	Big Free-tailed Bat	CSDS Group II	3.89	nd	nd	1.30
<i>Eumops perotis</i>	Western Mastiff Bat	CSC, CSDS Group II	0.56	4.44	11.67	5.56

Legend:

nd = not detected

\* Number of bat passes per Anabat night X 10

\*\* Average of seasonal measures of relative activity for each bat species detected

Special Status:

CSC= California Species of Special Concern, CSDS= County of San Diego Sensitive Animal

## 4.8.1 Special-Status Bat Species

The following eight sensitive bat species were detected during the 2008 surveys: Small-footed Myotis, Yuma Myotis, Western Red Bat, Townsend's Big-eared Bat, Pallid Bat, Pocketed Free-tailed Bat, Big-free Tailed Bat, and Western

Mastiff Bat. This Preserve provides suitable roosting and foraging opportunities for a number of sensitive bat species and appears to be extremely important for bats in the region.

## **Special-Status Bat Species Observed**

### **Small-footed Myotis (*Myotis ciliolabrum*)**

#### *San Diego County Group II*

The Small-footed Myotis is found throughout most of western North America, from southwestern Canada south into Mexico (BCI 2008). There is not much information on the habitat requirements of this species, but it has been documented under rock slabs and in crevices, mine tunnels, under loose tree bark, and in buildings (BCI 2008). This species hibernates in caves, typically in small groups. Reasons for decline are poorly understood as there has been little research conducted on this species. Both suitable roosting and foraging habitat for the Small-footed Myotis occur in the Preserve.

### **Yuma Myotis (*Myotis yumanensis*)**

#### *San Diego County Group II*

The Yuma Myotis is found throughout much of the western U.S. and up into Canada (BCI 2008). The species is always found near lakes, creeks or ponds where the species forages over the water. Typically, individuals skim low over the water and snatch up flying insects but they can forage in other mesic areas. The species roosts by day usually in buildings or bridges but has also been documented using mines or caves (BCI 2008). Yuma Myotis are threatened by loss of riparian habitat and the decline in permanent water sources in the southwest. Both suitable roosting and foraging habitat for the Yuma Myotis occur in the Preserve.

### **Western Red Bat (*Lasiurus blossevillii*)**

#### *State Species of Special Concern, San Diego County Group II*

Western Red Bats are found from southern Canada, throughout the U.S., all the way down to South America (BCI 2008). Several species in the genus *Lasiurus* are commonly referred to as "tree bats" because they roost only in tree foliage. The Western Red Bat is a typical tree bat, with a close association with cottonwoods (*Populus* sp.) and riparian areas (BCI 2008). Like all tree bats, this species is solitary, coming together only to mate and to migrate. Western Red Bats typically forage along forest edges, in small clearings, or around street-lights where they prefer moths (BCI 2008). Although largely undocumented, this species' decline appears to be in part due to the loss of lowland riparian forests in

the Southwest. Both suitable roosting and foraging habitat for the Western Red Bat occur in the Preserve.

### **Townsend's Big-eared Bat (*Corynorhinus townsendii*)**

*State Species of Special Concern, San Diego County Group II*

Townsend's Big-eared Bat occurs throughout the drier portions of California (Zeiner et al. 1990). It is non-migratory and hibernates from approximately October through April. A wide variety of natural communities are occupied but mesic sites are preferred. They capture a variety of prey while in flight, which is slow and maneuverable, and they are capable of hovering (Zeiner et al. 1990). The species is known to roost predominantly in caves but will use lava tubes, mines, tunnels, buildings, and other man-made structures (BCI 2008). They are extremely sensitive to disturbance at their roosting sites and have suffered severe population declines throughout much of the U.S. (BCI 2008). The Townsend's Big-eared Bat is likely roosting in the mines at the Preserve. The species also forages over the Preserve.

### **Pallid Bat (*Antrozous pallidus*)**

*State Species of Special Concern, San Diego County Group II*

Pallid bats are widely distributed in the southwestern U.S. and northern Mexico (BCI 2008). They are locally common across most of California except in the far northwest and in higher portions of the Sierra Nevada. Habitats utilized include a wide variety of grasslands, shrublands, woodlands, and forests, including mixed conifer forest (Zeiner et al. 1990). They appear to be most common in open, dry, rocky lowlands and they roost in caves, mines, as well as crevices in rocks, buildings and trees. This is a colonial species that forages low over open ground, often picking up beetles and other species of prey off the ground (Zeiner et al. 1990). Flight is slow and maneuverable, and they are able to take a wide variety of prey, including large, hard-shelled insects (Zeiner et al. 1990). They have separate night and day roosts, hibernate in winter, and the sexes segregate in summer. Both suitable roosting and foraging habitat for the Pallid Bat occur in the Preserve.

### **Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)**

*State Species of Special Concern, San Diego County Group II*

Pocketed Free-tailed Bats are rarely found in southwestern California. These bats live in arid desert areas and roost in crevices high on cliff faces in rugged canyons (BCI 2008). Nursery colonies are relatively small and usually include fewer than 100 individuals. This species primarily forages on large moths, especially over water. The regional status and species trends are unclear, but it is likely vulnerable to disturbance, especially at roosts, and perhaps also to threats to food supply from man-made toxins. The Pocketed Free-tailed Bat is likely roosting in the mines at the Preserve. The species also forages over the Preserve.

### **Big Free-tailed Bat (*Nyctinomops macrotis*)**

#### *San Diego County Group II*

Big Free-tailed Bats are typically found in desert and arid grasslands with rocky out-crops, canyons, or cliffs (BCI 2008). This species roosts on cliffs and occasionally in buildings. Isolated populations can be found throughout the southwestern U.S. into Mexico. The regional status and species trends are unclear, but it is likely vulnerable to disturbance, especially at roosts, and perhaps also to threats to food supply from man-made toxins. The Big Free-tailed Bat is likely roosting on the cliffs and foraging over the Preserve.

### **Western Mastiff Bat (*Eumops perotis*)**

#### *State Species of Special Concern, San Diego County Group II*

Western Mastiff Bats are the largest native bats in the U.S. This subspecies occurs from the western foothills of the Sierra Nevada and the coastal ranges (south of San Francisco Bay) southward into Mexico (BCI 2008). In southern California, they are found throughout the coastal lowlands up to drier mid-elevation mountains, but avoid the Mohave and Colorado deserts (Zeiner et al. 1990). Habitats include dry woodlands, shrublands, grasslands, and occasionally even developed areas. This big bat forages in flight and most prey species are relatively small, low to the ground, and weak-flying. For roosting, Western Mastiff Bats appear to favor rocky, rugged areas in lowlands where abundant suitable crevices are available for day roosts (BCI 2008). Roost sites may be in natural rock or in tall buildings, large trees or elsewhere. The reasons for this species' decline are poorly understood but probably are related to disturbance, habitat loss, and perhaps widespread use of pesticides. The Western Mastiff Bat is likely roosting in the mines at the Preserve. The species also forages over the Preserve.

### **Special-Status Bat Species not Observed but with a High Potential to Occur**

There are no additional special-status bat species with high potential to occur at the Preserve.

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## Chapter 5

# Conclusions and Management Recommendations

The current surveys documented eight land cover types and 466 species that were detected throughout the Preserve. The surveys detected 312 plant species, 56 bird species, 32 mammal species (13 bats, 11 small mammals, and eight medium and large bodied mammals), 24 herpetiles (three amphibians and 21 reptiles), and 42 invertebrate species. This list includes 36 sensitive species of which eight are MSCP-covered species (six wildlife and two plants).

Specific management recommendations are provided for the various taxonomic groups assessed during this survey effort. In addition to these management recommendations we also recommend implementing the monitoring protocols addressed in the Biological Monitoring Plan (Monitoring Plan) for the MSCP (Ogden 1996) as appropriate within the Preserve. The Monitoring Plan identifies three types of MSCP biological monitoring including 1) habitat monitoring, 2) corridor monitoring, and 3) covered species monitoring.

**Habitat monitoring** is designed to focus on three areas including 1) permanent habitat loss as a result of development; 2) temporary habitat changes as a result of natural events (e.g., fires and flooding); and 3) loss of habitat value as a result of edge effects or other human related impacts.

**Corridor monitoring** within the Monitoring Plan is designed to assess utilization of key habitat linkages within the MSCP. Specifically the use of animal sign (track and scat) and visual sightings shall be used to determine presence of focal species.

**Cover species monitoring** within the Monitoring Plan is designed to identify 1) short term threats to species persistence and 2) longer-term trends that may suggest declining populations. Specifically, the covered species monitoring will 1) document protection of covered species; 2) document changes in preserved populations; 3) include collection of new biological data; 4) include evaluation of impacts of land uses; and 5) include evaluation of management activities within the preserve.

The MSCP Monitoring Plan identifies 29 monitoring sites throughout the plan area. None of these sites are located within the Preserve; however, monitoring of MSCP-covered species is required.

It should be noted that that the Monitoring Plan is in the process of being revised by the USFWS (Animal Monitoring Protocol) and the USGS (Plant Monitoring Protocol). The revised Animal Monitoring Protocol covers the following species: California Gnatcatcher, Coastal Cactus Wren, Light-footed Clapper Rail, Tricolored Blackbird, Southwestern Willow Flycatcher, Burrowing Owl, California Least Tern, Thorne's Hairstreak, Wandering Skipper, and San Diego and Riverside Fairy Shrimp. The revised Plant Monitoring Protocol covers all of the MSCP covered plant species.

## 5.1 Flora

It is recommended that the County maintain an updated vegetation community map to be used as a tool for adaptive management within the Preserve. The purpose of the ongoing mapping effort should be to document changes in the vegetation communities within the Preserve that could affect quality and usage by wildlife. Vegetation mapping/monitoring should also address habitat value for special-status plant species. Special-status plant species detected during the 2008 surveys consisted of Lakeside Ceanothus, San Diego Sunflower, Felt-leaved Monardella, Ramona Horkelia, Moreno Currant, Palmer's Sagebrush, Engelmann Oak, San Diego Marsh Elder and Palmer's Grappling Hook. Of these species only Lakeside Ceanothus and Felt Leaved Monardella are MSCP covered species. Periodic botanical surveys are recommended to monitor the special-status plant species detected in the Preserve. Such surveys would ideally occur during years of average or above-average rainfall in order to maximize detection.

MSCP monitoring requirements for Lakeside Ceanothus and Felt-leaved Monardella include implementing habitat-based monitoring and photo plot monitoring. The Monitoring Plan also requires ASMDs to include specific management measures to address the autecology and natural history of this species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire. In addition monitoring the Lakeside Ceanothus and Felt-leaved Monardella populations within the Preserve will adhere to the revised Plant Monitoring Protocol currently in preparation by USGS.

Vegetation monitoring for habitat value should be focused to identify adverse changes and their effects on the vegetation over time. This includes dramatic changes such as fire, as well as slower but equally important effects such as invasion by non-natives or slow decline of existing species. The Preserve should be managed for the benefit of special-status species and MSCP-covered species without substantive efforts to alter or restrict the natural course of ecosystem development and dynamics. To the extent feasible, natural wildfire cycles should not be suppressed as many of the plant species that occur within the Preserve (e.g., Lakeside Ceanothus) rely on periodic burns to maintain healthy populations. However, the Preserve is in close proximity to rural residential development to the west and southeast and it is recommended that a fire management plan be completed. This Plan should make specific

recommendation regarding fuel modification zones along the perimeter of the Preserve in these areas.

As described in section 4.1.10 native and naturalized plant species primarily dominate the vegetation communities within the Preserve. However, it is recommended that patches of Pampas Grass and Fountain Grass found within the northeastern portion of the Preserve be removed (Table 13). Removal of these invasive species will increase the habitat quality within the surrounding habitats.

**Table 13.** Non-native Plants with Highest Priority for Control on the Preserve

Species	Cal-IPC Status
Pampas Grass ( <i>Cortaderia selloana</i> )	High
Fountain Grass ( <i>Pennisetum setaceum</i> )	Moderate

## 5.2 Invertebrates

Several common butterflies and invertebrates were observed within the Preserve during the 2008 surveys. Although no Quino Checkerspot Butterfly or other special-status butterflies were observed on the Preserve in 2008, there is potential for their occurrence. Quino as well as many other common butterflies are known to exhibit “hilltopping” behavior. This behavior was observed on the Preserve at various rock outcrops at high points on the hills. Therefore, planned trails and public vistas should not be installed, or should be installed with minimal disturbance, on the highest points of hills.

Centipedes, tarantulas, scorpions, ants, wasps, bees, and other venomous invertebrates are common within the Preserve. Ticks are also likely to occur. Signs should be posted to alert Preserve users of their presence, recommending avoidance and providing information on what to do in case of a bite or sting.

## 5.3 Herpetofauna

The Preserve supports several special-status herpetofauna species that will likely be encountered by the public on the roads and trails and off trails in the natural communities. These include Red Diamond Rattlesnake, Western Spadefoot, Western Skink, Orange-throated Whiptail and San Diego Horned Lizard, which are commonly found on roads and trails and may burrow within loose sand along the roads. Orange-throated Whiptail and San Diego Horned Lizard are both MSCP-covered species. Signs should be posted to inform Preserve users to stay on roads and trails and to avoid wildlife when encounters occur in order to reduce negative effects on the species listed above and other special-status herpetiles. It should also be clear to Preserve users that animal collecting is prohibited.

MSCP monitoring requirements for the Orange-throated Whiptail and the San Diego Horned Lizard include implementing site specific trapping for presence/absence. The herpetological pitfall arrays installed as a part of this study will be sampled periodically to monitor the Orange-throated Whiptail and San Diego Horned Lizard populations at the Preserve.

Many of the reptiles, most notably Granite Night Lizard, are dependent on the rock features of the Preserve. These features are vulnerable to disturbance and damage by rock climbing, as well as those who would vandalize the exfoliating rock, potentially resulting in loss of important microhabitat features. Monitoring should be performed to confirm damage is not occurring due to rock climbing, collecting, or vandalism.

Rattlesnakes occur within the Preserve and are often observed on or near roads and trails. Signs should be posted to alert Preserve users of rattlesnake presence, recommending avoidance and providing information on what to do in case of a bite.

## 5.4 Birds

Avian diversity on the Preserve reflects a healthy integrity. A total of 57 bird species was documented on the Preserve; these include the following three MSCP-covered species: Western Bluebird, Southern California Rufous-crowned Sparrow, and Cooper's hawk. MSCP monitoring requirements for Western Bluebird, Southern California Rufous-crowned Sparrow, and Cooper's Hawk include implementing habitat-based monitoring for each species. The Monitoring Plan also requires site specific nest monitoring for the Cooper's Hawk.

The most extensive vegetation community on the Preserve is chaparral and the most important features at the Preserve for birds are the oak woodlands and drainages and also boulders for ground and crevice nesting species. This is evidenced by the numerous sightings of rock wrens (30 observations) and canyon wrens (56 observations). Native habitats are vulnerable, as bird habitat, from alteration from additional fires at short intervals, and from increased development in the surrounding areas.

Over the long-term, it will be important to ensure the continued viability of the oak woodland through recruitment of new trees. Thus the health of this community at the Preserve should be evaluated periodically to ensure recruitment and lack of disease in the oaks and the ability to support a diversity of both plants and wildlife.

Both quantitative and qualitative monitoring of bird populations by qualified personnel is recommended. Quantitative monitoring can consist, for example, of maintaining the avian point counts. If necessary for budgetary reasons, they could be conducted at less frequent intervals (e.g., every other month), or only periodically (e.g., every other year). The accumulation of data over time will

prove extremely valuable to identify trends in bird populations both at the Preserve and across the region.

Qualitative monitoring can range from informal efforts, such as compiling a bird checklist for the Preserve and soliciting new or interesting observations, to intensive efforts such as encouraging research use of the Preserve. It is important to recognize that the avifauna of the Preserve will naturally change over time, due to regional effects, climate change, and natural turnover. Without monitoring, there is potential for the Preserve to be managed for resources no longer present, or in conflict with resources present but unrecognized.

## 5.5 Small Mammals

Habitat fragmentation is a leading cause in the decline of small mammal populations in species with low mobility (Vander Haegen et al. 2001). Patches of habitat occupied by sensitive species should be connected to wildlife corridors (such as riparian areas) to allow individuals to disperse and not become isolated and vulnerable. Future plans for the Preserve should address the potential isolation and genetic flow effects it may have on small mammal populations.

The small mammal species captured or observed at the Preserve are associated with shrub- and grass-dominated habitats. Habitat conservation is the primary way to protect small mammal populations from decline. Habitats found on the Preserve should not be degraded through activities such as off-road or off-trail use, conversion to other vegetation types, or the spraying of insecticides for insect control (i.e., ants or mosquitoes). Insectivorous mammal species are sensitive to the use of insecticides and if these methods are proposed for use in control of pest insect species, other alternatives should be explored.

## 5.6 Medium and Large Mammals

The Preserve is surrounded by a large amount of open space, and has the potential to serve as an important corridor for wildlife movement. Maintaining/improving movement connections across Wildcat Canyon Road will be an important consideration over time, especially if traffic volumes increase. Some of the existing culverts that cross underneath the road may be improved to allow for increased wildlife movement.

Southern Mule Deer was the only MSCP-covered mammal species detected during the field surveys. MSCP monitoring requirements for Southern Mule Deer include monitoring suitable habitat and wildlife corridor sites within the MSCP. As detailed above, the Preserve has the potential to serve as an important corridor for wildlife movement between adjacent open space areas. Monitoring for medium and large mammals will include periodic sampling at the camera stations used during this study.

Due to the proximity to residential development, species such as domestic dog and cats are likely to be found utilizing the Preserve. Both of these species have the potential to negatively impact the native species by introducing disease, or simply causing the native species to avoid portions of the Preserve. Future management decisions should consider the removal of any feral populations of cats/dogs, and restricting access for these species within the Preserve.

Domestic dogs on leash are allowed on the Preserve. It is recommended that the County amend signage to state that dog owners should remove all feces in order to minimize potential vector born disease transmission to the local coyote population. In addition, feces bags and disposal bins should be provided at trailheads to encourage the public to remove feces.

## 5.7 Bats

The following items are recommended to maintain and increase the habitat suitability for bats within the Preserve.

- Protect abandoned mines as bat roosts – the sensitive Townsend’s Big-eared Bat is highly dependent on caves and mines for roosting, and was observed roosting in at least one of the mines on site. The mines located on the Preserve provide fairly well protected and unique roosting opportunities for this species in the area. Since these mines are fairly isolated, their importance to this bat species cannot be underestimated. Any efforts to close these mines should be preceded by pre-closure bat surveys to ensure mines are not inhabited by bats. Mines being used by bats warrant protection by installing a bat-friendly gate – a structure that allows bats to freely access the mine while keeping people out.
- Protect rocky habitats – Rocky outcrops and cliffs are one of the most significant habitats on the property being used by bats. We recommend prohibiting recreational rock climbing activities on the Preserve unless focused roost surveys are conducted in areas designated as appropriate climbing areas.

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Appendix A

**Vascular Plant Species Observed within  
the El Capitan Preserve in 2008**



Scientific Name	Common Name	Status
<b>Selaginellaceae - Spike-Moss Family</b>		
<i>Selaginella bigelovii</i>	Bigelow's spike-moss	
<i>Selaginella cinerascens</i>	Mesa spike-moss	
<b>Dennstaedtiaceae - Bracken Family</b>		
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	Western bracken	
<b>Polypodiaceae - Polypody Family</b>		
<i>Polypodium californicum</i>	California polypody	
<b>Pteridaceae - Brake Family</b>		
<i>Adiantum jordanii</i>	California maidenhair	
<i>Cheilanthes covillei</i>	Coville's lip fern	
<i>Pellaea andromedifolia</i>	Coffee fern	
<i>Pellaea mucronata</i> var. <i>mucronata</i>	Bird's foot cliff-brake	
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	California goldenback fern	
<b>Aizoaceae - Fig-Marigold Family</b>		
* <i>Carpobrotus edulis</i>	Hottentot-fig	
<b>Amaranthaceae - Amaranth Family</b>		
* <i>Amaranthus albus</i>	White tumbleweed	
<b>Anacardiaceae - Sumac or Cashew Family</b>		
<i>Malosma laurina</i>	Laurel sumac	
<i>Rhus ovata</i>	Sugar bush	
<i>Rhus trilobata</i>	Skunkbrush, pubescent basketbush	
<i>Toxicodendron diversilobum</i>	Western poison-oak	
<b>Apiaceae (Umbelliferae) - Carrot Family</b>		
<i>Apiastrum angustifolium</i>	Mock-parsley	
* <i>Apium graveolens</i>	Common celery	
<i>Daucus pusillus</i>	Rattlesnake weed	
* <i>Foeniculum vulgare</i>	Sweet fennel	
<i>Lomatium dasycarpum</i> ssp. <i>dasycarpum</i>	Woolly-fruit lomatium	
<i>Lomatium lucidum</i>	Shiny lomatium	
<i>Sanicula arguta</i>	Sharp-tooth sanicle	
<i>Sanicula bipinnatifida</i>	Purple sanicle	
<i>Sanicula crassicaulis</i>	Pacific sanicle	
<i>Sanicula tuberosa</i>	Turkey pea sanicle	
<i>Tauschia arguta</i>	Southern tauschia	

Scientific Name	Common Name	Status
<b>Apocynaceae - Dogbane Family</b>		
<i>*Vinca major</i>	Greater periwinkle	
<b>Asteraceae (Compositae) - Sunflower Family</b>		
<i>Ambrosia confertiflora</i>	Weak-leaf bur-sage	
<i>Ambrosia psilostachya</i>	Western ragweed	
<i>Artemisia californica</i>	Coastal sagebrush	
<i>Artemisia douglasiana</i>	Douglas mugwort	
<i>Artemisia dracuncululus</i>	Tarragon, dragon sagewort	
<i>Artemisia palmeri</i>	Palmer's sagewort	CNPS List 4, CSDS Group D
<i>Baccharis pilularis</i>	Chaparral broom, coyote brush	
<i>Baccharis salicifolia</i>	Mule-fat, seep-willow	
<i>Baccharis sarothroides</i>	Broom baccharis	
<i>Brickellia californica</i>	California brickellbush	
<i>*Centaurea melitensis</i>	Tocalote	
<i>Chaenactis artemisiifolia</i>	Artemisia pincushion	
<i>Chaenactis glabriuscula</i> var. <i>glabriuscula</i>	Yellow pincushion	
<i>*Chrysanthemum coronarium</i>	Garland/crown daisy	
<i>*Cirsium vulgare</i>	Bull thistle	
<i>*Conyza bonariensis</i>	Flax-leaf fleabane	
<i>Conyza canadensis</i>	Horseweed	
<i>Deinandra fasciculata</i>	Fascicled tarweed	
<i>Erigeron foliosus</i>	Leafy daisy	
<i>Filago californica</i>	California filago	
<i>*Filago gallica</i>	Narrow-leaf filago	
<i>Gnaphalium bicolor</i>	Bicolor cudweed	
<i>Gnaphalium californicum</i>	California everlasting	
<i>Gnaphalium canescens</i>	Fragrant everlasting	
<i>Gnaphalium luteo-album</i>		
<i>Gutierrezia sarothrae</i>	Broom matchweed/snakeweed	
<i>Hazardia squarrosa</i> var. <i>grindelioides</i>	Sawtooth goldenbush	
<i>*Hedypnois cretica</i>	Crete hedypnois	
<i>Helianthus gracilentus</i>	Slender sunflower	
<i>Heterotheca grandiflora</i>	Telegraph weed	
<i>*Hypochaeris glabra</i>	Smooth cat's ear	
<i>*Hypochaeris radicata</i>	Hairy cat's ear	
<i>Isocoma menziesii</i>	goldenbush	
<i>Iva hayesiana</i>	San diego marsh-elder	CNPS List 2, CSDS Group B

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>
* <i>Lactuca serriola</i>	Prickly lettuce	
<i>Lasthenia californica</i>	Common goldfields	
<i>Lasthenia coronaria</i>	Southern goldfields	
<i>Lessingia filaginifolia</i> var. <i>filaginifolia</i>	California-aster	
<i>Rafinesquia californica</i>	California chicory	
* <i>Senecio vulgaris</i>	Common groundsel	
* <i>Silybum marianum</i>	Milk thistle	
<i>Solidago californica</i>	California goldenrod	
* <i>Sonchus</i> sp.	Sow-thistle	
* <i>Sonchus asper</i> ssp. <i>asper</i>	Prickly sow-thistle	
* <i>Sonchus oleraceus</i>	Common sow-thistle	
<i>Stephanomeria virgata</i>	Virgate wreath-plant	
* <i>Taraxacum officinale</i>	Common dandelion	
<i>Uropappus lindleyi</i>	Silver puffs	
<i>Viguiera laciniata</i>	San diego sunflower	CNPS List 4, CSDS Group D
<i>Xanthium strumarium</i>	Cockelbur	
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Rancher's fiddleneck	
<i>Cryptantha intermedia</i>	Nievitans cryptantha	
<i>Harpegonella palmeri</i>	Palmer's grappling-hook	CNPS List 4, CSDS Group D
<i>Heliotropium curassavicum</i>	Salt heliotrope	
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	Slender pectocarya	
<i>Plagiobothrys nothofulvus</i>	Rusty popcornflower	
<b>Brassicaceae (Cruciferae) - Mustard Family</b>		
* <i>Brassica nigra</i>	Black mustard	
* <i>Brassica rapa</i>	Turnip, field mustard	
<i>Caulanthus heterophyllus</i> var. <i>heterophyllus</i>	San diego jewelflower	
<i>Descurainia pinnata</i> ssp. <i>glabra</i>		
<i>Descurainia pinnata</i> ssp.		
<i>Descurainia pinnata</i> ssp. <i>menziesii</i>		
* <i>Hirschfeldia incana</i>	Short-pod mustard	
<i>Lepidium nitidum</i>	Shining peppergrass	
* <i>Raphanus sativus</i>	Wild radish	
<i>Rorippa nasturtium-aquaticum</i>	Water-cress	
* <i>Sisymbrium irio</i>	London rocket	
<i>Thysanocarpus curvipes</i> [T. c. var. <i>elegans</i> ]	Lacepod, fringe-pod	
<b>Cactaceae - Cactus Family</b>		
<i>Opuntia littoralis</i>	Coast prickly-pear	

Scientific Name	Common Name	Status
<b>Caprifoliaceae [incl. Adoxaceae] - Honeysuckle Family</b>		
<i>Lonicera subspicata</i> var. <i>denudata</i>	Southern honeysuckle	
<i>Sambucus mexicana</i>	Blue elderberry	
<b>Caryophyllaceae - Pink Family</b>		
* <i>Silene gallica</i>	Common catchfly	
<i>Silene laciniata</i> ssp. <i>major</i>	Southern pink	
* <i>Spergularia bocconii</i>	Buccone's sand-spurry	
<b>Chenopodiaceae - Goosefoot Family</b>		
<i>Atriplex canescens</i> ssp. <i>canescens</i>	Four-wing saltbush/shadscale	
* <i>Atriplex semibaccata</i>	Australian saltbush	
* <i>Chenopodium ambrosioides</i>	Mexican tea	
<b>Cistaceae - Rock-Rose Family</b>		
<i>Helianthemum scoparium</i>	Peak rush-rose	
<b>Convolvulaceae - Morning-Glory Family</b>		
<i>Calystegia macrostegia</i>	Morning-glory	
* <i>Convolvulus arvensis</i>	Bindweed, orchard morning-glory	
<b>Crassulaceae - Stonecrop Family</b>		
<i>Crassula connata</i>	Pygmy weed	
<i>Dudleya edulis</i>	Ladies' fingers	
<i>Dudleya lanceolata</i>	Dudleya	
<i>Dudleya pulverulenta</i>	Dudleya	
<b>Cucurbitaceae - Gourd Family</b>		
<i>Cucurbita digitata</i>	Finger-leaf gourd	
<i>Cucurbita foetidissima</i>	Calabazilla	
<i>Cucurbita palmata</i>	Coyote melon	
<i>Marah macrocarpus</i> var. <i>macrocarpus</i>	Manroot, wild-cucumber	
<b>Cuscutaceae - Dodder Family</b>		
<i>Cuscuta californica</i>	Dodder	
<b>Ericaceae - Heath Family</b>		
<i>Arctostaphylos glauca</i>	Manzanita	
<i>Rhododendron occidentale</i>	Western azalea	
<i>Vaccinium ovatum</i>	California huckleberry	
<i>Xylococcus bicolor</i>	Mission manzanita	
<b>Euphorbiaceae - Spurge Family</b>		
<i>Acalypha californica</i>	California copperleaf	
<i>Chamaesyce albomarginata</i>	Rattlesnake spurge	
<i>Croton californicus</i>	California croton	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>
<i>Eremocarpus setigerus</i>	Doveweed	
<b>Fabaceae (Leguminosae) - Legume Family</b>		
<i>Lathyrus vestitus</i> var. <i>alefeldii</i>	San diego sweet pea	
<i>Lotus argophyllus</i> var. <i>argophyllus</i>	Silver-leaf lotus	
<i>Lotus hamatus</i>	Grab lotus	
<i>Lotus scoparius</i> var. <i>brevialatus</i>	Deerweed	
<i>Lotus strigosus</i>		
<i>Lupinus bicolor</i>	Miniature lupine	
<i>Lupinus hirsutissimus</i>	Stinging lupine	
<i>Lupinus succulentus</i>	Arroyo lupine	
<i>Lupinus truncatus</i>	Collar lupine	
* <i>Medicago polymorpha</i>	California burclover	
* <i>Melilotus indica</i>	Indian sweetclover	
<i>Trifolium willdenovii</i>	Valley clover	
<b>Fagaceae - Oak Family</b>		
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	Coast live oak, encina	
<i>Quercus berberidifolia</i>	Scrub oak	
<i>Quercus chrysolepis</i>	Canyon live oak	
<i>Quercus engelmannii</i>	Engelmann's/mesa blue oak	CNPS List 4, CSDS Group D
<i>Quercus kelloggii</i>	California black oak	
<i>Quercus wislizenii</i> var. <i>frutescens</i>	Scrub live oak	
<b>Fouquieriaceae - Ocotillo Family</b>		
<i>Fouquieria splendens</i> ssp. <i>splendens</i>	Ocotillo	
<b>Gentianaceae - Gentian Family</b>		
<i>Centaurium venustum</i>	Canchalagua	
<b>Geraniaceae - Geranium Family</b>		
* <i>Erodium botrys</i>	Long-beak filaree/storksbill	
* <i>Erodium brachycarpum</i>	Short-beak filaree/storksbill	
* <i>Erodium cicutarium</i>	Red-stem filaree/storksbill	
* <i>Erodium moschatum</i>	White-stem filaree/storksbill	
<i>Erodium texanum</i>	Desert filaree/storksbill	
* <i>Geranium carolinianum</i>	Carolina geranium	
<b>Grossulariaceae - Gooseberry Family</b>		
<i>Ribes canthariforme</i>	Moreno currant	CNPS List 1B, CSDS Group A
<i>Ribes indecorum</i>	White flower currant	
<b>Hydrophyllaceae - Waterleaf Family</b>		
<i>Emmenanthe penduliflora</i>	Whispering bells	
<i>Eriodictyon crassifolium</i>	Yerba santa	

Scientific Name	Common Name	Status
<i>Eriodictyon trichocalyx</i> var. <i>trichocalyx</i>	Yerba santa	
<i>Eucrypta chrysanthemifolia</i> var. <i>chrysanthemifolia</i>		
<i>Nemophila menziesii</i> var. <i>menziesii</i>	Baby blue eyes	
<i>Phacelia distans</i>	Wild-heliotrope	
<i>Phacelia grandiflora</i>		
<i>Phacelia parryi</i>		
<i>Pholistoma auritum</i>	Fiesta flower	
<i>Pholistoma membranaceum</i>		
<b>Lamiaceae (Labiatae) - Mint Family</b>		
* <i>Marrubium vulgare</i>	Horehound	
<i>Monardella hypoleuca</i> ssp. <i>lanata</i>	Felt-leaf monardella	CNPS List 1B, MSCP, CSDS Group A
<i>Salvia apiana</i>	White sage	
<i>Salvia clevelandii</i>	Fragrant sage	
<i>Salvia columbariae</i>	Chia	
<i>Salvia mellifera</i>	Black sage	
<i>Scutellaria tuberosa</i>	Danny's skullcap	
<i>Stachys ajugoides</i> var. <i>rigida</i>	Hedge-nettle	
<i>Trichostema lanatum</i>	Woolly bluecurls	
<i>Trichostema lanceolatum</i>	Vinegar weed	
<b>Malvaceae - Mallow Family</b>		
<i>Malacothamnus fasciculatus</i>	Chaparral bushmallow	
<b>Myrtaceae - Myrtle Family</b>		
* <i>Eucalyptus</i> sp.	Gum	
<b>Nyctaginaceae - Four O'clock Family</b>		
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	Coastal wishbone plant	
<b>Onagraceae - Evening-Primrose Family</b>		
<i>Camissonia bistorta</i>	California sun cup	
<i>Camissonia californica</i>	False-mustard	
<i>Clarkia epilobioides</i>	Canyon godetia	
<i>Clarkia purpurea</i>	Large clarkia	
<i>Clarkia similis</i>	Canyon clarkia	
<i>Epilobium canum</i> ssp. <i>canum</i>	California fuschia, zauschneria	
<i>Oenothera elata</i> ssp. <i>hookeri</i>	Great marsh evening-primrose	
<b>Oxalidaceae - Oxalis Family</b>		
<i>Oxalis albicans</i>	California wood-sorrel	
* <i>Oxalis pes caprae</i>	Bermuda-buttercup	
<b>Paeoniaceae - Peony Family</b>		

Scientific Name	Common Name	Status
<i>Paeonia californica</i>	California peony	
<b>Papaveraceae [incl. Fumariaceae] - Poppy Family</b>		
<i>Dendromecon rigida</i>	Bush poppy	
<i>Dicentra chrysantha</i>	Golden ear-drops	
<i>Eschscholzia californica</i>	California poppy	
<i>Papaver californicum</i>	Fire poppy	
<i>Platystemon californicus</i>	Cream cups	
<b>Plantaginaceae - Plantain Family</b>		
<i>Plantago erecta</i>	Plantain	
* <i>Plantago lanceolata</i>	English plantain, rib-grass	
* <i>Plantago major</i>	Common plantain	
* <i>Plantago ovata</i>	Woolly plantain	
<b>Platanaceae - Plane Tree or Sycamore Family</b>		
<i>Platanus racemosa</i>	Western sycamore	
<b>Polemoniaceae - Phlox Family</b>		
<i>Allophylum gilioides</i>	Straggling false-gilia	
<i>Eriastrum densifolium</i>	Chaparral woolly-star	
<i>Eriastrum sapphirinum</i>	Woolly-star	
<i>Linanthus dianthiflorus</i>	Farinose ground pink	
<i>Navarretia hamata</i> ssp. <i>hamata</i>	Hooked skunkweed	
<b>Polygonaceae - Buckwheat Family</b>		
<i>Chorizanthe fimbriata</i> var. <i>laciniata</i>	Lacinate spineflower	
<i>Chorizanthe procumbens</i>	Prostrate spineflower	
<i>Eriogonum fasciculatum</i>	California buckwheat	
* <i>Rumex crispus</i>	Curly dock	
<b>Portulacaceae - Purselane Family</b>		
<i>Calandrinia ciliata</i>	Red maids	
<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	Miner's-lettuce	
<b>Primulaceae - Primrose Family</b>		
* <i>Anagallis arvensis</i>	Scarlet pimpernel, poor man's weatherglass	
<i>Dodecatheon clevelandii</i> ssp. <i>clevelandii</i>	Padre's shooting star	
<b>Ranunculaceae - Buttercup Family</b>		
<i>Clematis ligusticifolia</i>	Yerba de chiva	
<i>Delphinium parryi</i> ssp. <i>parryi</i>	Parry's larkspur	
<b>Rhamnaceae - Buckthorn Family</b>		
<i>Ceanothus crassifolius</i>	Thick-leaf/hoary-leaf-lilac	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>
<i>Ceanothus cyaneus</i>	Lakeside ceanothus	CNPS List 1B, MSCP, CSDS Group A
<i>Ceanothus leucodermis</i>	Chaparral whitethorn	
<i>Ceanothus oliganthus</i>		
<i>Ceanothus tomentosus</i>	Ramona-lilac	
<i>Rhamnus californica ssp. californica</i>	California coffeeberry	
<i>Rhamnus crocea</i>	Spiny redberry	
<i>Rhamnus ilicifolia</i>	Holly-leaf redberry	
<i>Rhamnus pilosa</i>	Hairy-leaf redberry, buckthorn	
<b>Rosaceae - Rose Family</b>		
<i>Adenostoma fasciculatum</i>	Chamise	
<i>Cercocarpus betuloides var. betuloides</i>	Birch-leaf mountain-mahogany	
<i>Cercocarpus minutiflorus</i>	San diego mountain-mahogany	
<i>Heteromeles arbutifolia</i>	Toyon, christmas berry	
<i>Horkelia truncata</i>	Ramona horkelia	CNPS List 1B, CSDS Group A
<i>Potentilla glandulosa ssp. glandulosa</i>	Sticky cinquefoil	
<i>Prunus ilicifolia ssp. ilicifolia</i>	Islay, holly-leaf cherry	
<i>Rosa californica</i>	California rose	
<i>Rubus ursinus</i>	California blackberry	
<b>Rubiaceae - Madder or Coffee Family</b>		
<i>Galium angustifolium ssp. angustifolium</i>	Narrow-leaf bedstraw	
* <i>Galium aparine</i>	Common bedstraw, goose grass	
<i>Galium nuttallii ssp. nuttallii</i>	San diego bedstraw	
<b>Rutaceae - Rue or Citrus Family</b>		
<i>Cneoridium dumosum</i>	Coast spice bush, bush-rue	
<b>Salicaceae - Willow Family</b>		
<i>Populus fremontii ssp. fremontii</i>	Western cottonwood	
<i>Salix exigua</i>	Narrow-leaf willow	
<i>Salix gooddingii</i>	Goodding's black willow	
<i>Salix laevigata</i>	Red willow	
<i>Salix lasiolepis</i>	Arroyo willow	
<b>Saururaceae - Lizard's Tail Family</b>		
<i>Anemopsis californica</i>	Yerba mansa	
<b>Saxifragaceae - Saxifrage Family</b>		
<i>Jepsonia parryi</i>	Coast jepsonia	
<i>Lithophragma affine</i>	Woodland star	
<b>Scrophulariaceae - Figwort Family</b>		
<i>Antirrhinum coulterianum</i>	Coulter's snapdragon	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>
<i>Antirrhinum nuttallianum</i> ssp. <i>nuttallianum</i>	Nuttall's snapdragon	
<i>Castilleja exserta</i> ssp. <i>exserta</i>	Purple owl's-clover	
<i>Collinsia concolor</i>	Southern chinese houses	
<i>Cordylanthus rigidus</i>	Dark-tip bird's beak	
<i>Keckiella antirrhinoides</i> var. <i>antirrhinoides</i>	Yellow bush penstemon	
<i>Keckiella cordifolia</i>	Climbing bush penstemon	
<i>Linaria canadensis</i>	Large blue toadflax	
<i>Mimulus aurantiacus</i>	Coast monkey flower	
<i>Mimulus brevipes</i>	Slope semiphore	
<i>Mimulus cardinalis</i>	Scarlet monkey flower	
<i>Mimulus congdonii</i>	Monkey flower	
<i>Mimulus guttatus</i>	Seep monkey flower	
<i>Pedicularis densiflora</i>	Indian warrior	
<i>Penstemon spectabilis</i> var. <i>spectabilis</i>	Showy penstemon	
<b>Solanaceae - Nightshade Family</b>		
<i>Datura wrightii</i>		
* <i>Nicotiana glauca</i>	Tree tobacco	
* <i>Solanum nigrum</i>	Black nightshade	
<i>Solanum parishii</i>	Parish's nightshade	
<b>Styracaceae - Storax Family</b>		
<i>Styrax officinalis</i> var. <i>redivivus</i>	Snowdrop bush	
<b>Tamaricaceae - Tamarisk Family</b>		
* <i>Tamarix ramosissima</i>	Tamarisk, salt-cedar	
<b>Urticaceae - Nettle Family</b>		
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary nettle	
* <i>Urtica urens</i>	Dwarf nettle	
<b>Violaceae - Violet Family</b>		
<i>Viola pedunculata</i>	Johnny jump-up	
<b>Vitaceae - Grape Family</b>		
<i>Parthenocissus vitacea</i>	Woodbine	
<i>Vitis girdiana</i>	Desert wild grape	
<b>Agavaceae - Agave Family</b>		
<i>Yucca schidigera</i>	Mohave yucca	
<i>Yucca whipplei</i>	Our lord's candle	
<b>Alliaceae - Onion Family</b>		
<i>Allium peninsulare</i> var. <i>peninsulare</i>	Red-flower onion	
<i>Allium praecox</i>	Early onion	

Scientific Name	Common Name	Status
<b>Cyperaceae - Sedge Family</b>		
<i>Carex spissa</i>	San diego sedge	
<i>Cyperus erythrorhizos</i>	Red-root flatsedge	
<i>Cyperus esculentus</i>	Yellow nutsedge	
<i>Eleocharis macrostachya</i>	Pale spike-sedge	
<i>Scirpus</i> sp.	bulrush	
<b>Hyacinthaceae - Hyacinth Family</b>		
<i>Chlorogalum parviflorum</i>	Soap-plant, amole	
<b>Iridaceae - Iris Family</b>		
<i>Sisyrinchium bellum</i>	Blue-eyed-grass	
<b>Juncaceae - Rush Family</b>		
<i>Juncus bufonius</i> var. <i>bufonius</i>	Toad rush	
<i>Juncus textilis</i>	Basket rush	
<b>Liliaceae - Lily Family</b>		
<i>Calochortus splendens</i>	Splendid mariposa lily	
<i>Calochortus weedii</i> var. <i>weedii</i>	Weed's mariposa lily	
<i>Lilium pardalinum</i> ssp. <i>pardalinum</i>	Leopard lily	
<b>Poaceae (Gramineae) - Grass Family</b>		
<i>Achnatherum coronatum</i>	Giant stipa	
<i>Aristida purpurea</i>	Red three-awn	
* <i>Avena barbata</i>	Slender wild oat	
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	
* <i>Bromus diandrus</i>	Ripgut grass	
* <i>Bromus hordeaceus</i>	Soft chess	
* <i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail chess	
<i>Calamagrostis koelerioides</i>	San diego reedgrass	
* <i>Gastridium ventricosum</i>	Nit grass	
* <i>Hordeum murinum</i> ssp. <i>leporinum</i>	Hare barley	
* <i>Lamarckia aurea</i>	Golden-top	
<i>Leymus condensatus</i>	Giant wild rye	
<i>Leymus triticoides</i>	Beardless wild ryegrass	
* <i>Lolium multiflorum</i>	Italian ryegrass	
<i>Melica imperfecta</i>	Coast range melic	
<i>Muhlenbergia rigens</i>	Deergrass	
<i>Nassella lepida</i>	Foothill needlegrass	
<i>Nassella pulchra</i>	Purple needlegrass	
* <i>Pennisetum setaceum</i>	African fountain grass	
* <i>Schismus barbatus</i>	Mediterranean schismus	

Scientific Name	Common Name	Status
<i>*Vulpia myuros var. myuros</i>		
<i>Vulpia octoflora</i>	Slender fescue	
<b>Themidaceae - Brodiaea Family</b>		
<i>Bloomeria crocea ssp. crocea</i>	Common goldenstar	
<i>Dichelostemma capitatum ssp. capitatum</i>	Blue dicks	
<i>Muilla maritima</i>	Common muilla	
<b>Typhaceae - Cattail Family</b>		
<i>Typha</i> sp.	Southern cattail	

**Legend:**

\*=non-native species

**Status:**

**CNPS List – California Native Plant Society**

- 1B – Rare, threatened or endangered in California and elsewhere
- 2 – Rare, threatened or endangered in California but more common elsewhere
- 3 – May be rare but more research needed to determine true status
- 4 – Limited distribution and are uncommon but not presently rare or endangered

**San Diego County Group (CSDS)**

- A – Rare, threatened or endangered in California and elsewhere
- B – Rare, threatened or endangered in California but more common elsewhere
- C – Maybe quite rare, but more information is needed to determine their status
- D – Limited distribution and are uncommon but not presently rare or endangered

**MSCP – Multiple Species Conservation Program Covered Species**

**References**

Scientific and common names are from Hickman (1993) and Skinner and Pavlik (1994). Additional common plant names are taken from Abrams (1923, 1944), Abrams and Ferris (1960), Beauchamp (1986), McAuley (1996), Munz (1974), Skinner and Pavlik (1994) and Simpson and Rebman (2006).



Appendix B

**Wildlife Species Detected at  
El Capitan Preserve in 2008**



## Wildlife Species Detected at El Capitan Preserve in 2008

Scientific Name	Common Name	Method of Detection	Special Status
<b>INVERTEBRATES</b>			
<b><i>Butterflies</i></b>			
<i>Anthocharis cethura</i>	Desert Orangetip	X	
<i>Anthocharis sara</i>	Sara's Orangetip	X	
<i>Apodemia mormo virgulti</i>	Behr's Metalmark	X	
<i>Callophrys affinis perplexa</i>	Perplexing Hairstreak	X	
<i>Callophrys augustinus</i>	Brown Elfin	X	
<i>Colias eurytheme</i>	Orange Sulfur	X	
<i>Erynnis funeralis</i>	Funereal Duskywing	X	
<i>Glaucopsyche lygdamus australis</i>	Southern Blue	X	
<i>Icaricia acmon</i>	Acmon Blue	X	
<i>Junonia coenia</i>	Common Buckeye	X	
<i>Papilio eurymedon</i>	Pale Swallowtail	X	
<i>Papilio rutulus</i>	Western Tiger Swallowtail	X	
<i>Papilio zelicaon</i>	Anise Swallowtail	X	
* <i>Pieris rapae</i>	Cabbage White	X	
<i>Pontia protodice</i>	Checkered/Common White	X	
<i>Pontia sisymbrii</i>	Spring White	X	
<i>Pyrgus albescens</i>	White Checkered Skipper		
<i>Vanessa annabella</i>	West Coast Lady	X	
<i>Vanessa atalanta</i>	Red Admiral	X	
<i>Vanessa cardui</i>	Painted Lady	X	
<b><i>Other Invertebrates</i></b>			
<i>Anuroctonus sp.</i>	Burrowing Scorpion	T	
<i>Aphonopelma eutylenum</i>	Tarantula	T	
<i>Apis mellifera</i>	European Honey Bee	X	
<i>Armadillidium vulgare</i>	Pill Bug	XT	
<i>Calosoma pustulosus</i>	Common Calosoma	T	
<i>Centrophilus californicus</i>	Camel Cricket	T	
<i>Cratidus osculans</i>	Wooly Darkling Beetle	T	
<i>Paruroctonus silvestrii</i>	Common California Scorpion	T	
<i>Dasyneura sp.</i>	Red Velvet-Ant	XT	

Scientific Name	Common Name	Method of Detection	Special Status
<i>Eleodes sp.</i>	Stink Beetle	XT	
<i>Gryllus sp.</i>	Field Cricket	T	
<i>Hemipepsis sp.</i>	Tarantula Hawk	X	
<i>Hyles lineata</i>	White-Lined Spinx Moth	X	
<i>Latrodectus hesperus</i>	Black Widow	XT	
<i>Okanagana sp.</i>	Cicada	X	
<i>Pardosa sp.</i>	Wolf Spider	XT	
<i>Phidippus johnsoni</i>	Jumping Spider	T	
<i>Phloeodes pustulosis</i>	Ironclad Beetle	T	
<i>Scolopendra polymorpha</i>	Centipede	T	
<i>Stenopelmatus sp.</i>	Jerusalem Cricket	T	
<i>Trimerotropis pallidipennis</i>	Pallid-Winged Grasshopper	XT	
<i>Tylobolus sp.</i>	Millipede	XT	
<b>HERPETILES</b>			
<i>Bufo boreas</i>	Western Toad	XT	
<i>Pseudacris cadaverina</i> [ <i>Hyla cadaverina</i> ]	California Chorus Frog	X	
<i>Pseudacris regilla</i> [ <i>Hyla regilla</i> ]	Pacific Chorus Frog	XT	
<i>Spea hammondi</i> [ <i>Scaphiopus hammondi</i> ]	Western Spadefoot	T	CSC, CSDS Group II
<i>Elgaria multicarinata</i>	Southern Alligator Lizard	T	
<i>Phrynosoma coronatum blainvillii</i>	San Diego Horned Lizard	XT	CSC, MSCP, CSDS Group II
<i>Sceloporus occidentalis</i>	Western Fence Lizard	T	
<i>Sceloporus orcutti</i>	Granite Spiny Lizard	XT	
<i>Uta stansburiana</i>	Side-blotched Lizard	XT	
<i>Eumeces gilberti</i>	Gilbert's Skink	T	
<i>Eumeces skiltonianusinterparietalis</i>	Coronado Skink	XT	CSC, CSDS Group II
<i>Cnemidophorus hyperythus beldingi</i>	Orange-throated Whiptail	XT	CSC, MSCP, CSDS Group II
<i>Cnemidophorus tigris stejnegeri</i>	Coastal Western Whiptail	XT	CSDS Group II
<i>Xantusia henshawi</i>	Granite Night Lizard	X	
<i>Charina trivirgata roseofusca</i>	Coastal Rosy Boa	X	CSDS Group II
<i>Lampropeltis getula</i>	Common Kingsnake	X	
<i>Masticophis flagellum</i>	Coachwhip	X	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Method of Detection</b>	<b>Special Status</b>
<i>Masticophis lateralis</i>	Striped Racer	XT	
<i>Pituophis catenifer</i>	Gopher Snake	X	
<i>Salvadora hexalepis vigultea</i>	Coastal Patch-nosed Snake	X	CSC, CSDS Group II
<i>Thamnophis hammondi</i>	Two-striped Garter Snake	X	CSC, CSDS Group I
<i>Crotalus mitchellii</i>	Speckled Rattlesnake	X	
<i>Crotalus oreganus helleri</i>	Southern Pacific Rattlesnake	X	
<i>Crotalus ruber</i>	Red Diamond Rattlesnake	X	CSC, CSDS Group II
<b>BIRDS</b>			
<i>Callipepla californica</i>	California Quail	X	
<i>Cathartes aura</i>	Turkey Vulture	X	CSDS Group I
<i>Elanus leucurus</i>	White-tailed Kite	X	CFP, CSDS Group I
<i>Accipiter cooperii</i>	Cooper's Hawk	X	MSCP, CSDS Group I
<i>Buteo jamaicensis</i>	Red-tailed Hawk	X	
<i>Zenaida macroura</i>	Mourning Dove	X	
<i>Geococcyx californianus</i>	Greater Roadrunner	X	
<i>Tyto alba</i>	Barn Owl	X	CSDS Group II
<i>Phalaenoptilus nuttallii</i>	Common Poorwill	X	
<i>Aeronautes saxatalis</i>	White-throated Swift	X	
<i>Archilochus alexandri</i>	Black-chinned Hummingbird	X	
<i>Calypte anna</i>	Anna's Hummingbird	X	
<i>Calypte costae</i>	Costa's Hummingbird	X	
<i>Melanerpes formicivorus</i>	Acorn Woodpecker	X	
<i>Picoides nuttallii</i>	Nuttall's Woodpecker	X	
<i>Colaptes auratus</i>	Northern Flicker	X	
<i>Empidonax difficilis</i>	Pacific-slope Flycatcher	X	
<i>Sayornis saya</i>	Say's Phoebe	X	
<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher	X	
<i>Tyrannus vociferans</i>	Cassin's Kingbird	X	
<i>Tyrannus verticalis</i>	Western Kingbird	X	
<i>Apelocoma californica</i>	Western Scrub-Jay	X	
<i>Corvus brachyrhynchos</i>	American Crow	X	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Method of Detection</b>	<b>Special Status</b>
<i>Corvus corax</i>	Common Raven	X	
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	X	
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	X	
<i>Baeolophus inornatus</i>	Oak Titmouse	X	
<i>Psaltriparus minimus</i>	Bushtit	X	
<i>Sitta carolinensis</i>	White-breasted Nuthatch	X	
<i>Salpinctes obsoletus</i>	Rock Wren	X	
<i>Catherpes mexicanus</i>	Canyon Wren	X	
<i>Thryomanes bewickii</i>	Bewick's Wren	X	
<i>Troglodytes aedon</i>	House Wren	X	
<i>Regulus calendula</i>	Ruby-crowned Kinglet	X	
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher	X	
<i>Sialia mexicana</i>	Western Bluebird	X	MSCP, CSDS Group II
<i>Chamaea fasciata</i>	Wrentit	X	
<i>Mimus polyglottos</i>	Northern Mockingbird	X	
<i>Toxostoma redivivum</i>	California Thrasher	X	
* <i>Sturnus vulgaris</i>	European Starling	X	
<i>Phainopepla nitens</i>	Phainopepla	X	
<i>Vermivora celata</i>	Orange-crowned Warbler	X	
<i>Wilsonia pusilla</i>	Wilson's Warbler	X	
<i>Pipilo maculatus</i>	Spotted Towhee	X	
<i>Pipilo crissalis</i>	California Towhee	X	
<i>Aimophila ruficeps canscens</i>	Southern California Rufous-crowned Sparrow (=California Rufous-crowned Sparrow)	X	MSCP, CSDS Group I
<i>Spizella atrogularis</i>	Black-chinned Sparrow	X	
<i>Amphispiza belli belli</i>	Bell's Sage Sparrow	X	CSDS Group I
<i>Melospiza melodia</i>	Song Sparrow	X	
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak	X	
<i>Passerina amoena</i>	Lazuli Bunting	X	
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	X	
* <i>Molothrus ater</i>	Brown-headed Cowbird	X	
<i>Icterus bullockii</i>	Bullock's Oriole	X	

Scientific Name	Common Name	Method of Detection	Special Status
<i>Carpodacus mexicanus</i>	House Finch	X	
<i>Carduelis psaltria</i>	Lesser Goldfinch	X	
<b>MAMMALS</b>			
<i>Myotis californicus</i>	California Myotis	X	
<i>Myotis ciliolabrum</i>	Small-footed Myotis	XT	CSDS Group II
<i>Myotis yumanensis</i>	Yuma Myotis	X	CSDS Group II
<i>Lasiurus blossevillii</i>	Western Red Bat	X	CSC, CSDS Group II
<i>Lasiurus cinereus</i>	Hoary Bat	X	
<i>Parastrellus hesperus</i>	Canyon Bat	X	
<i>Eptesicus fuscus</i>	Big Brown Bat	X	
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	X	CSC, CSDS Group II
<i>Antrozous pallidus</i>	Pallid Bat	X	CSC, CSDS Group II
<i>Tadarida brasiliensis</i>	Mexican Free-tailed Bat	X	
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat	X	CSC, CSDS Group II
<i>Nyctinomops macrotis</i>	Big Free-tailed Bat	X	CSC, CSDS Group II
<i>Eumops perotis</i>	Western Mastiff Bat	X	CSC, CSDS Group II
<i>Notiosorex crawfordii</i>	Desert Shrew	XSC	
<i>Sylvilagus audubonii</i>	Desert Cottontail	XSC	
<i>Spermophilus beecheyi</i>	California Ground Squirrel	XSC	
<i>Thomomys bottae</i>	Botta's Pocket Gopher	TS	
<i>Chaetodipus californicus femoralis</i>	Dulzura Pocket Mouse	T	CSC, CSDS Group II
<i>Dipodomys simulans</i>	Dulzura Kangaroo Rat	T	
<i>Peromyscus californicus</i>	California Mouse	T	
<i>Peromyscus fraterculus</i>	Northern Baja Mouse	T	
<i>Peromyscus maniculatus gambelii</i>	American Deer Mouse	T	
<i>Neotoma macrotis</i> (= <i>Neotoma fuscipe macrotis</i> )	Large-eared Woodrat (=Dusky-footed)	T	
<i>Neotoma lepida intermedia</i>	San Diego Desert Woodrat	T	CSC, CSDS Group II
<i>Microtus californicus</i>	California Vole	X	

<b>Scientific Name</b>	<b>Common Name</b>	<b>Method of Detection</b>	<b>Special Status</b>
<i>*Canis familiaris</i>	Domestic Dog	XSC	
<i>Canis latrans</i>	Coyote	XSC	
<i>Procyon lotor</i>	Common Raccoon	SC	
<i>Mephitis mephitis</i>	Striped Skunk	SC	
<i>Lynx rufus [Felis rufus]</i>	Bobcat	SC	
<i>*Equus caballus</i>	Domestic Horse	XSC	
<i>Odocoileus hemionus fuliginata</i>	Southern Mule Deer	XSC	MSCP, CSDS Group II

Legend:

\*= non-native or invasive species

Observed or Detected: X = detected, T = trapped or captured, C = camera station, S = sign

Special Status: FE= Federally Endangered, FT=Federally Threatened, SE= State Endangered, CSC= California Species of Special Concern, CFP= California Fully Protected, MSCP= Multiple Species Conservation Program Covered Species, CSDS=County of San Diego Sensitive Animal

Appendix C

# **Quino Checkerspot Butterfly Survey Report**

**QUINO CHECKERSPOT BUTTERFLY  
SURVEY REPORT  
FOR EI CAPITAN PRESERVE  
CALIFORNIA**

**Prepared for:**

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**Prepared by:**

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November 2008

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## I. SUMMARY

Surveys were conducted in the spring of 2008 for the 2611-acre El Capitan Preserve in San Diego County, California. Surrounding land uses include undeveloped portions of the Barona Indian Reservation and San Diego Audubon Society land to the north, undeveloped privately-owned land and the Cleveland National Forest to the east, rangeland and undeveloped privately-owned land to the south and west.

El Capitan Preserve supports coastal sage chaparral scrub, southern mixed chaparral, coast live oak woodland, and non-native grassland. The entire Preserve was burned during the 2003 Cedar fire. The majority of the habitat on the Preserve has either returned to pre-fire dense chaparral or appears it will eventually return to dense chaparral. Areas appropriate for Quino only occur in less than 25 percent of the Preserve.

Due to the large size of the Preserve and budget constraints surveys were not conducted at the protocol level. Instead, the entire preserve was evaluated, and more time and consideration was given to the areas with the highest probability of supporting Quino.

A total of five weekly surveys were conducted over the course of the flight season (March 5 - April 21, 2008). Quino checkerspot butterflies were not detected during the five focused surveys. Potential host plants observed on site include dwarf plantain (*Plantago erecta*) and purple owl's-clover (*Castilleja exserta ssp. exserta*). A total of eighteen butterfly species, including funereal duskywing (*Erynnis funeralis*), brown elfin (*Callophrys augustinus*), cabbage white (*Pieris rapae*), Anise swallowtail (*Papilio zelicaon*), red admiral (*Vanessa atalanta*) and southern blue (*Glaucopsyche lygdamus australis*), were observed during the surveys.

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## II. INTRODUCTION

ICF Jones & Stokes conducted surveys to determine presence/absence of the Quino checkerspot butterfly (*Euphydryas editha quino*) (Quino) and to identify appropriate habitat within the El Capitan Preserve (Preserve), located between Wildcat Canyon Road and El Capitan Reservoir northeast of the City of Lakeside in San Diego County (Figures 1 and 2). A total of five weekly surveys were conducted between March 5 and April 21, 2008 in accordance with the U.S. Fish and Wildlife Service Year 2002 Protocol (USFWS 2002).

A habitat assessment conducted on the property on March 5, 2007, determined that non-excluded areas, as defined by the U.S. Fish and Wildlife Service (USFWS 2002), occur on the property. Excluded areas, not recommended for Quino surveys, are defined as:

- Orchards, developed areas or in-fill parcels largely dominated by non-native vegetation;
- Active/in-use agricultural fields without natural or remnant inclusions of native vegetation; or
- Closed-canopy forest or riparian area, dense chaparral and small openings completely enclosed within a closed-canopy or dense chaparral area.

The excluded areas on site consist of dense southern mixed chaparral or riparian vegetation and developed trail structures including a restroom near the Preserve's western entrance. This report documents the results of the 2008 focused surveys conducted in all the non-excluded areas comprising approximately 605 acres.

### Physical Characteristics

The Preserve is located above Barona valley to the north, El Cajon Mountain peak and El Capitan reservoir to the east, the San Diego river Basin to the south and Wildcat Canyon to the west. The Preserve consists of several rocky peaks and hills above valleys on varying-grade slopes strewn with large granitic boulders. The Preserve is dominated by dense chaparral, but also supports other vegetation communities including coastal sage chaparral scrub, oak woodland and nonnative grassland. The Preserve also includes several graded dirt roads and trails, and dirt staging area and restroom. The entire Preserve burned in the 2003 Cedar Fire.

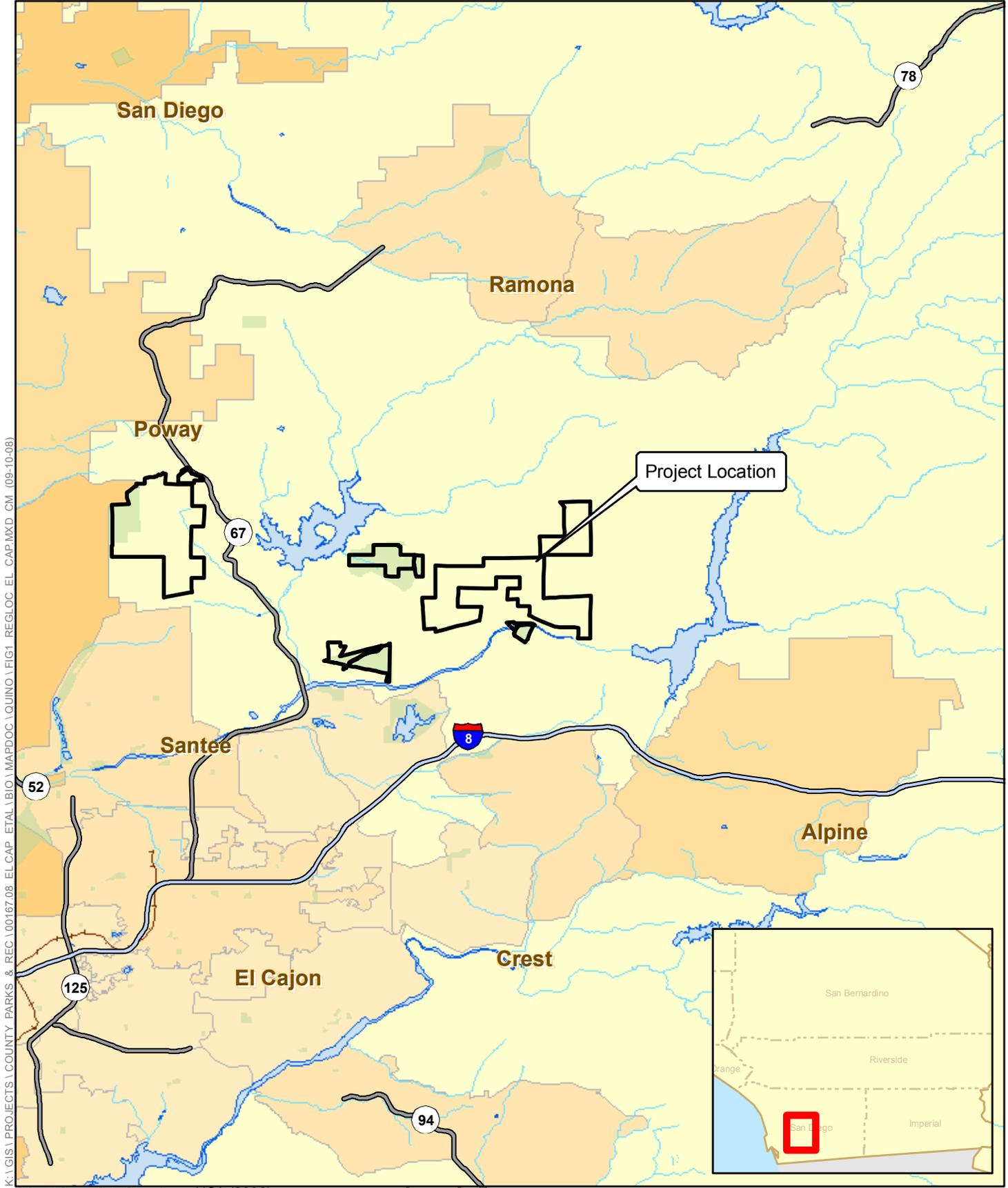
Surrounding land uses include undeveloped Barona Indian Reservation and San Diego Audubon Society land to the north, undeveloped privately-owned land and the Cleveland National Forest to the east, ranchland and undeveloped privately-owned land to the south and west.

The Preserve ranges in elevation between 600 feet in the southeast corner above El Monte Road, to 1800 feet near the west entrance, to 3360 feet at the highest point in the northeast portion, to

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1560 along the northern boundary in Barona Valley. In general, the Preserve is characterized by rocky slopes leading up to two large peaks including Silverdome that occurs north of the middle portion of the preserve within San Diego Audobon Society land and El Cajon Mountain that occurs just east of the Preserve within the Cleveland National forest. Both of these peaks and lands immediately surrounding them consist of large granitic boulders that cover between 50 and 100 percent of the ground. Even the lower slopes throughout the preserve are largely covered with boulders and dense chaparral. There are several densely vegetated north-to-south trending steep valleys that eventually lead down to the San Diego River basin south of the Preserve. The majority of the unnamed drainages within the Preserve drain directly into the San Diego River, except the few in the northern and western portion that drain into Wildcat Canyon Creek.

Seven soil types from four soil series, as defined by the U.S. Department of Agriculture, are mapped within the Preserve (Bowman 1973). This includes Cieneba rocky coarse sandy loam (9 to 30 percent slopes), Cieneba very rocky coarse sandy loam (30 to 75 percent slopes), Cieneba-Fallbrook rocky sandy loams (30 to 65 percent slopes), Friant rocky fine sandy loam (30 to 70 percent slopes), Huerhuero loam (9 to 15 percent slopes), Las Posas fine sandy loam (15 to 30 percent slopes) and Las Posas stony fine sandy loam (30 to 65 percent slopes). In addition the U.S. Department of Agriculture mapped stony land and acid igneous rock land within the preserve. (Bowman 1973)



K:\GIS\PROJECTS\COUNTY PARKS & REC\100167\08\_EL\_CAP\_ETAL\BIO\MAPDOC\QUINO\FIG1\_REGLOC\_EL\_CAP.MXD\_CM (09-10-08)

SOURCE: ESRI Streetmap USA (2006)

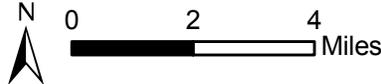
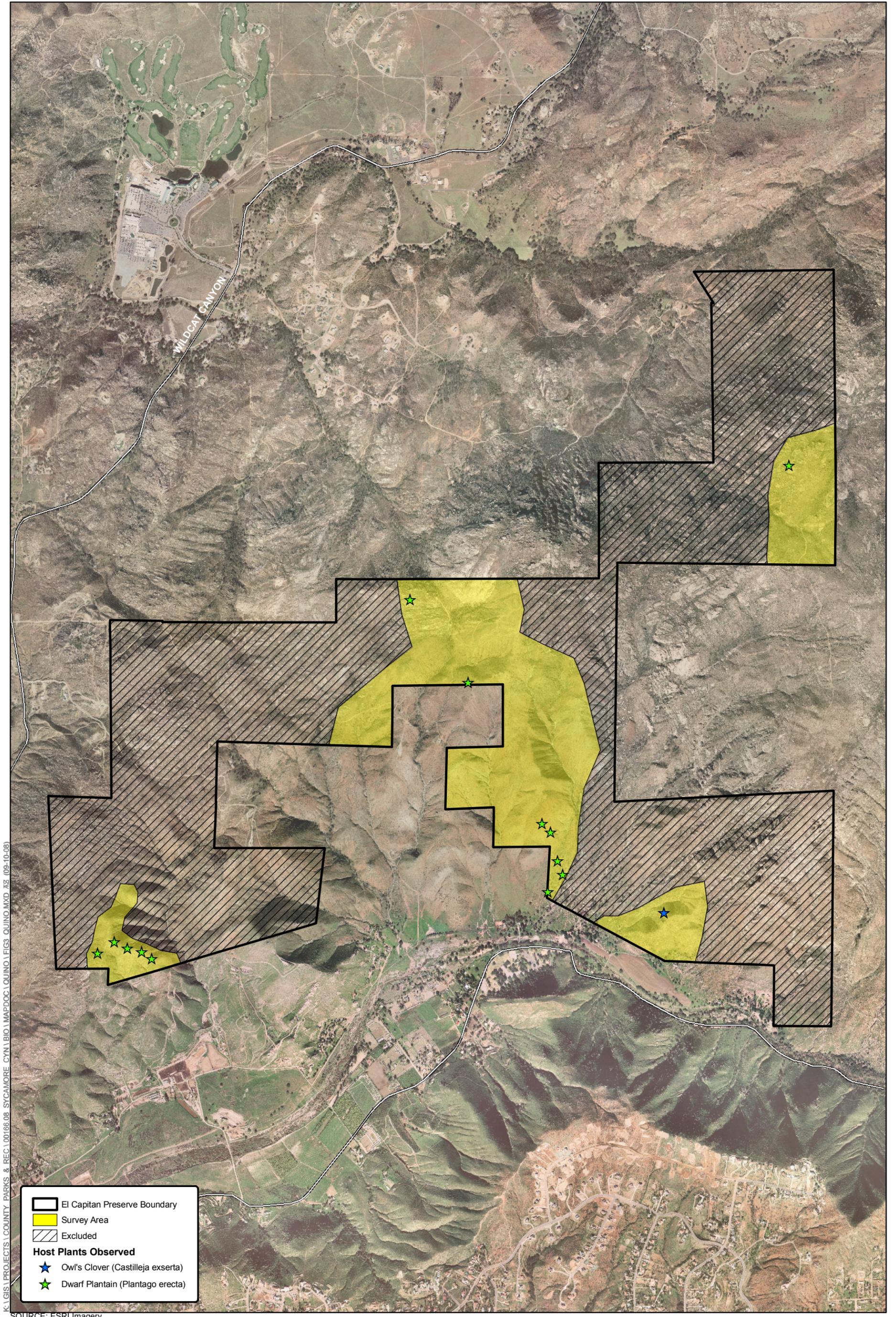


Figure 1  
Regional Location  
El Capitan Open Space





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### III. METHODS

Andrew Borchert (Permit No. TE-092162-0), Korey Klutz (Permit No. TE-036065-0), Kailash Mozumder (Permit No. TE-168926-0), Autumn Sartain (Permit No. TE-161486-0) and H. Heather (Permit No. TE-038109-0), of ICF Jones & Stokes conducted surveys for adult Quino between March 5 and April 21, 2008. These surveys were conducted on a roughly weekly basis under acceptable weather conditions as defined in the U.S. Fish and Wildlife Service protocol (Table 1) (USFWS 2002). Approximately 1406 acres of dense vegetation, and developed lands were excluded from the survey. Each survey involved slowly walking transects throughout non-excluded portions of the property. Surveys focused on areas with the highest potential to support Quino. These areas included hill tops, ridgelines and exposed slopes that supported host plants. This approach was used to collect the best information possible given budget constraints. The surveys were conducted at an average rate of 15 acres per hour. Surveyors stopped periodically to scan adjacent areas for moving butterflies. All eighteen butterfly species observed were identified and recorded (Table 2). Copies of daily field notes are provided as an attachment to this report (Attachment 1).

**Table 1. Survey Dates and Conditions**

Date	Survey Number	Start-End Time	Temperature (Start/Stop, °F)	Wind Speed (mph)	% Cloud Cover	Name of Surveyor
3/5/08	Habitat Assessment	1300-1600	58°F	1-3	75	A. Borchert, K. Klutz, K. Mozumder
3/24/08	Habitat Assessment/1	0745-1530	58/75°F	0-6	0	A. Borchert, K. Klutz, K. Mozumder
4/3/08	2	1415-1630	64°F	1-4	15	A. Borchert, K. Mozumder
4/11/08	3	0930-1530	65/78°F	0-5	0	K. Mozumder, H. Haney, A. Sartain
4/15/08	4	0900-1600	64/76°F	0-3	0	A. Borchert, K. Klutz, K. Mozumder
4/21/08	5	1230-1630	70/68°F	2-6	0	A. Borchert

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**Table 2. Butterflies Observed at the Sycamore Canyon/Goodan Ranch Preserve**

Scientific Name	Common Name
<i>Anthocharis cethura</i>	Desert orangetip
<i>Anthocharis sara</i>	Sara's orangetip
<i>Apodemia mormo virgulti</i>	Behr's metalmark
<i>Callophrys affinis perplexa</i>	Perplexing hairstreak
<i>Callophrys augustinus</i>	Brown elfin
<i>Colias eurytheme</i>	Orange sulfur
<i>Erynnis funeralis</i>	Funereal duskywing
<i>Glaucopsyche lygdamus australis</i>	Southern blue
<i>Icaricia acmon</i>	Acmon Blue
<i>Junonia coenia</i>	Common buckeye
<i>Papilio eurymedon</i>	Pale swallowtail
<i>Papilio rutulus</i>	Western tiger swallowtail
<i>Papilio zelicaon</i>	Anise swallowtail
<i>Pieris rapae</i>	Cabbage white
<i>Pontia protodice</i>	Checkered/Common white
<i>Vanessa annabella</i>	West coast lady
<i>Vanessa atalanta</i>	Red admiral
<i>Vanessa cardui</i>	Painted lady

## Reference Site

ICF Jones & Stokes biologist's visited the USFWS Rancho Jamul Quino reference site on a regular basis throughout the 2008 flight season. These visits were part of a 2008 USFWS previous observation site study throughout Quino's known range. Visits occurred on a weekly basis and included documented weather conditions, all flying adult Quino observed and general host plant and nectar source conditions. All information from the reference site collected during the 2008 season presented in this report was provided to USFWS throughout the season to assist in determining the adult flight season.

The Rancho Jamul reference site is located approximately 2.5 miles east of State Route 94 between Jamul and Dulzura in southern San Diego County. The site was burned during the Harris Fire in October 2007. The habitat currently supports coastal sage scrub with scattered burned individual shrubs that is traversed by a dirt road and trails.

The reference site was visited from January 30 through April 10, 2008. The majority of the surveys were conducted under acceptable weather conditions as defined in the USFWS protocol (USFWS 2002). Each visit involved slowly walking transects throughout the site. Surveyors stopped periodically to scan adjacent areas for moving butterflies. Adult and/or immature Quino were identified and recorded.

**Table 3. Rancho Jamul Reference Site Dates, Conditions and Observations**

Date	Start-End Time	Temperature (Start/Stop, °F)	Wind Speed (mph)	% Cloud Cover	Name of Surveyor	Quino Observations
1/30/08	1130-1330	53°F	0-2	50	A. Borchert, K. Mozumder, K. Klutz	1 larva
2/19/08	1000-1130	70°F	0-2	0	A. Borchert, K. Klutz, A. Anderson	1 larva
2/29/08	1015-1200	52/61°F	1-3	100-0	A. Borchert, K. Mozumder, K. Klutz, H. Haney	4 larvae
3/19/08	1245-1345	68°F	2-4	0	A. Borchert, K. Mozumder, K. Klutz	14 adults
3/28/08	0920-1030	64°F	0-1	15	A. Borchert	10 adults
4/4/08	0920-1015	66°F	0-1	0	A. Borchert	6 adults
4/10/08	0920-1020	68°F	0-1	0	A. Borchert	2 adults
4/11/08	1400-1600	77°F	0-1	0	K. Klutz	None

Quino larvae were first observed in late January, but long periods of cool weather in February and March likely prolonged development until the observation of flying adults in mid-March.

---

Subsequently, adult Quino were observed flying at the reference site through March and the first half of April with the peak in abundance near the beginning of the flight season. By April 11, 2008, Quino were no longer observed at the site. The results of our reference site surveys are consistent with other reference sites in the area reported on the USFWS Quino monitoring website (USFWS 2008).

Although no Quino were observed during the surveys at the Preserve, the reference site visits confirmed Quino were actively flying during the majority of the survey dates. Surveys at the Preserve continued beyond the adult Quino flying season at the reference site due to the higher elevation and overall condition of the host plants.

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## IV. RESULTS

Eighteen butterfly species were observed during the five protocol surveys at the Preserve including duskywing, brown elfin, cabbage white, anise swallowtail, red admiral and southern blue (Table 2). No adult or immature Quino were detected. Potential host plants observed on the Preserve include dwarf plantain (*Plantago erecta*), woolly plantain (*Plantago ovata*), and purple owl's-clover (*Castilleja exserta ssp. exserta*). Potential nectar sources present and in bloom during the surveys include popcorn flower (*Cryptantha* spp.), deerweed (*Lotus scoparius*), goldfields (*Lasthenia californica*), and ground pink (*Linathus dianthiflorus*).

The majority of the vegetation communities within the Preserve are too dense to support Quino. However, several areas were identified that have potential to support Quino. The majority of these areas were generally on hilltops or grassy areas on the lower slopes near the southern boundaries of the Preserve. These areas consist of small patches (less than 100 square feet) and have moderate potential for supporting Quino checkerspot butterflies.

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## V. CERTIFICATION

We certify that the information in this survey report and attached exhibits fully and accurately represent our work.



---

Korey Klutz (Permit No. TE036065)  
Biologist  
*primary reviewer and field surveys*



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Andrew Borchert (Permit No. TE092162)  
Biologist  
*author and field surveys*



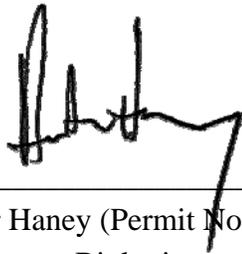
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Brant Primrose (Permit No. TE-161486)  
Biologist  
*field surveys*



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Autumn Sartain (Permit No TE-161486)  
Biologist  
*field surveys*



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Heather Haney (Permit No. TE-038109)  
Biologist

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## VI. REFERENCES

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- Bowman, Roy H.. 1973. *Soil Survey of the San Diego Area, California*. United States Department of Agriculture
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**ATTACHMENT 1**

**FIELD NOTES**

EL CAPITAN

3/5/08

4. BUREN

1:00

Hub assess

Butterflies

Cochy III  
Palc I  
So Blue III  
Dusky II

Flowers

Leas cal  
Cast-ers  
Cal cil  
Tri Wil  
Dach  
Mar max  
Lot agro  
Tan dha  
Lup drom  
Lup hir  
Chryse  
Rib mid  
Cea tom  
Cea / tew  
Pca Cal  
Aca mid  
Sommol

Wildlife

S Ja Cyn win  
No FI RCSP  
Wren  
Ca To  
Ca BU  
\* Nc Sk  
Co Box  
To UU

3-5-08

EI Cap

- Initial Account

K. Morimoto, A. Borchert, K. K. Cole, P. Richards

Access to this park is via road's opposite  
On the west 2 entry points. Road very narrow  
time consuming

Done in as far as possible + habitat road  
hills looky for change + water suitable  
habitat for grass. More rocky land

GPS of a population of *Lepidochelys* scottii

Flowers

Silver leaf tree, Coastal grass

Dandelion  
basal

cas exs  
blue ad!

Tri wil  
Pod. clo.

Mar mac

cup for

cup his

EI Cap Coastal 3-5-08

lots of large rock trees w/ extensive  
cracks for roosting bats. Crane trails not  
too strong. Percent of covered above  
roads, stream. Need to locate  
water features.

Wildlife - Western Skink, UTA, Female

CANW WREN CABU

RCSP CALT COKA

NOFL TUVU

B. Macfarlane

Lady

Pod. S. callidul

F. P. ...

S. ...

|||||

|

|||

|

Other wildlife

Ho wt  
Mc do  
Co to  
Co Ro  
Co Di  
B csp  
Sp to  
Bc bn  
Terc HA?  
Bc Sp  
RT Ha

Wc wing  
Shilbl  
Gr Niz  
Er spray  
Tree Fro

Er fas  
Phl cur  
Pm par  
\*Er cgr  
Cust-ers  
Bc sd  
41

Mar col  
Er sp  
Wren sp  
Nrc gl

Plants

Scott  
Lup hr  
Pen dais  
\*1 fork  
Dc carp  
Arc cgl  
Abc fas  
Art cool  
Ites whi  
Itel sco  
Tot sco  
Ena low  
Gua cal  
Loi sco  
Den rig  
Cea bn  
Cea low  
Vann wv  
Eec bar  
Pm illi  
Rhw us  
Zul ok  
\*Roes m  
Cea apl  
Eut cal  
Pst-ers  
Itat cur  
Aha cur  
den int  
bro mad  
era thw  
Nrc ind  
Fl op  
Wl mnd  
Pen set  
Ave bar  
Er are  
Corta sp  
Son over

Msl fas  
\*Aim hup  
\*Art fal  
Dud flw  
Er con  
Er cal  
All sp.  
Tascilla  
fal nuc  
Cea cal  
Gyp gla  
\*Lup cal  
Cous con  
Rhw ova  
Flk ent  
Lof wro  
Mund gut?  
Lufyres sp  
Plyw sp  
\*Bib. Pion  
Tax div  
Hel gra  
\*Wyan  
Rhw cal  
Mpl low  
Itat sp  
Cane  
Berbes ind  
Duc scap  
Ever chry  
Mar mnd  
que hup  
Cea dli  
Cea cal  
Lup fac  
Pm fac  
Pen sge  
Lw thw  
Rsch cal  
Dud HA  
Lws cal /41

EL CAPITAN

ROUND SUMMER

- First hoop slay

Butterflies

Fan dusky 111  
faint heavy HT HT HT HT  
Wc lady 6/1  
Bekeye 11  
Pipiters HT 11  
Falc silver HT  
Bm EKF 1  
Cub wht-11  
S. blue HT

3/24/08  
A. Borenter  
START 7:45  
58° Sunny  
No wind

End 3:30  
Sunny  
75°  
Wind 2-6 mph

Plants  
Pha par  
Clump sp  
Red bed  
Dic. cyp  
Ex. cal  
Losa cal  
Lom. ca

EL CAPITAN

QUINDSURVEY

Pink lady HTT ||  
Buckeye ||  
S Dine ||  
As OHP ||||  
Purplex ||||  
WV Lady ||  
Pike Smeal ||||  
Red abnorm ||||

Other wildlife

Co Hn  
Sp TO  
Ca to  
BL SP  
MT Hn  
TU UU

7/3/08  
A. Boreman  
START 2:15  
Partly Cloudy  
64° - 0° 3mph

End 4:30  
Mostly Sunny  
64° 1-4 mph

El Capitan 4-3-08

K. Mozinter

Butterfly Survey

w/ A. Borchert

Upper

wind

Pomp

Start

60% CC

wind 1-3 mph

C

12:30

End

4:30

Flowerly plants

Chica

Butterflies

WC Lady

||

Dic cup

Backeye

||||

low exs

Sarahs

||

Exc col

C white

|

No one

Bees

|

Cryptids

Anise Sw

||

Limothus

was col

Phygadeuon

Florida gnat clypeus w/ hole at

Pha pa

plantago, lots of Drosophila

Pha Hut

Defending territory, SW corner of pond

Lup tree

Lup h

Other

Patch nose snake

- GP Snake

in Ken Spots

4/11/02 El Cap

K. Mozumbar w/

Quino Survey

H. Hoag, A. Searles

Start 9:30

65°F

0-1 mpa

3:50

78

0-5

Flowers Black

B. Hoag

Plata

Scrubs

~~W. O.~~

Erolium

B. Keyes

~~W. O.~~

Con. arx

Luph

4/10/08

ANA-Otay

Quino Survey

Painted lady  
Saras orange tip  
white  
sulphur  
blue  
furred duckwing

wildlife

RNBZ  
LEGO  
NHTA  
CORR  
SPTD  
CUT  
RTHA  
COYE  
MDDO  
HOFA  
BUSH  
NUMO  
PMDO  
GHTB  
ATFL  
WREN  
w/ 100% sun

flowers

blue eye  
Steph-wishbone bush  
\* Cas eye  
lot sco  
d. Mg  
morning glory  
hair inc  
\* pa eye - dried out  
starlet  
sunflower  
blue dc

w/ H. Honey

Sant  
9:15 am - 3:30 am  
~ 62°  
100% sun  
wind 0-5

Quino Survey

Painted lady  
Saras orange tip  
white  
sulphur  
blue  
furred duckwing

flowers

blue eye  
Steph-wishbone bush  
\* Cas eye  
lot sco  
d. Mg  
morning glory  
hair inc  
\* pa eye - dried out  
starlet  
sunflower  
blue dc

4/11/08

El Cap

Quino Survey

Saras orange tip  
Bucyeye  
so. blue  
white  
furred duckwing  
Painted lady  
Behrs  
sulphur

wildlife

SPTD  
BCSP  
CAUR  
CAGU  
CORA  
LEGO  
ITA STARS  
BUSH  
WREN  
ATFL  
ANHU

flowers

\* pa eye  
blue duck  
morning glory  
hair inc  
\* Cas eye  
lot sco

w/ H. Honey  
K. Mo-Zunder

9:30 am - 3:30 am  
~ 65°  
100% sun  
wind 0-5

Saras orange tip  
Bucyeye  
so. blue  
white  
furred duckwing  
Painted lady  
Behrs  
sulphur

flowers

\* pa eye  
blue duck  
morning glory  
hair inc  
\* Cas eye  
lot sco

4/15/08  
A. Borester  
START 9:00  
Partly Cloudy  
64° 0-1 mph

End 4:00  
1-3 mph  
76° Sunny

EL CAP

Quind Survey

CRB witt 1  
Burkeye AH 1  
Suras O-rp AH 1  
Pf. Lady 1  
Aberc. Chip AH 1  
West swal 1  
Red ~~swal~~ 1  
Pale swal 1  
Chk wnt 1  
WC Lady 1

Other Wildlife

Cu to  
Co. R  
wren  
In Bu  
AT Fly  
to wnt  
SP to

Cord sp  
Cuck  
Sbr rarer  
West whp  
King snake  
Cort spiny  
SP ruf  
RO ruf

Flowers

Phac  
Caul  
Bic  
Mn  
Hed  
Sul  
Able  
Chmp  
Dent  
Mim  
Pia  
Bch  
Cest  
Caul  
Vig

Harm  
Crook  
Sil  
Mn  
Hed  
Sul  
Able  
Chmp  
Dent  
Mim  
Pia  
Bch  
Cest  
Caul  
Vig

Cum cal  
Mim bore



Russ collect  
67/Mussy Grade  
pet farm Mussy Grade  
turnout 7:15  
Sean Johnston  
(619) 987-7263

ZSB.08

Joan on Jean  
I can clearly see your notes

W 619 440-4864

1961 636 3993

1619 602-7172

512 797 4284

700 294-7297

951 693-9597

4/21/08  
A. Borewater  
START 12:30  
700 Clear  
2-5 mph

END 4:30  
680 Clear  
3-6 mph

EL CAP

~~Upper Bridge~~

Quino survey

Behr's 112  
Orange sulfur 1  
Buckeye • 112  
Car Sister 1  
So blue 11  
Swat's strip 111  
Pt. lady 111  
Pike swat 11  
Fern dusky 111

Other white

60 Sn

CN Qu

AT fly

WREN



Appendix D  
**Photographs**





**Photo 1. Looking south towards El Cajon Mountain**



**Photo 2. Looking east showing southern mixed chaparral and oak woodland habitats**



**Photo 3. Western Spadefoot captured in herpetological array 1**



**Photo 4. Ramona Horkelia observed in southeastern portion of Preserve**



**Photo 5. Moreno Currant observed along trail in northeastern portion of Preserve**



**Photo 6. Speckled Rattlesnake observed during active herpetological surveys**



**Photo 7. Dulzura Kangaroo Rat captured in herpetological array**



**Photo 8. California Mouse captured during small mammal trapping**



**Photo 9. Herpetological array 4**



**Photo 10. Common Raccoon tracks**



Photo 11. Striped Skunk detected while foraging near an oak woodland



**Photo 12. Male Southern Mule Deer detected in the oak woodland on the southeastern end of the Preserve**



Photo 13. Coyote traveling along an access road on the northeastern corner of the Preserve



**Photo 14. Bobcat detected near a water source on the northeastern end of the Preserve**