FINAL BASELINE BIODIVERSITY REPORT
RAMONA GRASSLANDS PRESERVE

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Acronyms

°F	Fahrenheit
AMSL	above mean sea level
ASMDs	area specific management directives
station	avian point count station
Cal-IPC	California Invasive Plant Council
CDFG	California Department of Fish and Game
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
ft	feet
GIS	geographic information system
I-15	Interstate 15
km	kilometers
m	meters
mi	miles
Monitoring Plan	North County MSCP Framework Resource Management Plan
MSCP	Multiple Species Conservation Program
North County MSCP	North County Multiple Species Conservation Program
PAMA	pre-approved mitigation area
Preserve	Ramona Grasslands Preserve
RDM	Residual Dry Matter
SR-67	State Route 67
SR-78	State Route 78
Trails Master Plan	County's Trails Program Community Trails Master Plan
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WRI	Wildlife Research Institute

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Summary

ICF Jones & Stokes conducted a baseline biological inventory study at the Ramona Grasslands Preserve (Preserve) that included the following: (1) vegetation survey with habitat community mapping, rare plant, and California Invasive Plant Council (Cal-IPC) invasive plant species mapping components, (2) butterfly surveys, (3) herpetofauna survey including pitfall arrays, (4) ornithological survey including diurnal point counts and nocturnal surveys, (5) mammal survey including small mammal trapping, camera stations for medium to large mammals, and bat surveys.

This report summarizes all survey methodologies and data collected during the 2009 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 North County Multiple Species Conservation Program (North County MSCP).

The Preserve includes approximately 3,492.7[1] acres of native and naturalized habitats including eucalyptus woodland, non-native woodland, disturbed habitat, developed lands, open water, agriculture, Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, chamise chaparral, scrub oak chaparral, valley needle grassland, non-native grassland, alkali marsh, coastal and valley freshwater marsh, emergent wetland, southern coast live oak riparian forest, mule fat scrub, southern willow scrub, open coast live oak woodland, and dense coast live oak woodland. In addition to the vegetation communities listed above, vernal pools and vernal swales occur within the grasslands. During the 2009 surveys, focused vernal pool surveys were not conducted as these resources were thoroughly studied in 2005 and 2006 (CBI 2007).

The current survey effort documented 23 habitat types and 626 species within the Preserve. Specifically, the surveys detected 409 plant species, and 217 wildlife species. Of these species, 16 plants are considered special status including four plant species that are proposed to be covered by the North County MSCP; 40 special-status wildlife species were detected during the surveys of which 14 are proposed to be covered by the North County MSCP.

[1] The assessor's parcel data list the Preserve to be 3,521 acres; however, calculations generated from the GIS data show the Preserve as 3,492.7 acres. Therefore, this report references the property as 3,492.7 acres.

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Chapter 1
Introduction

1.1 Purpose of the Project

Baseline biological resources surveys were conducted within the County of San Diego (County) Department of Parks and Recreation (DPR) Ramona Grasslands Preserve (Preserve) (Figures 1 and 2). The purpose of these surveys was to identify and map existing biological resources. This information will be utilized to develop 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.

1.2 Multiple Species Conservation Program Context

The majority of the Preserve is located in the North County Multiple Species Conservation Program (North County MSCP) planning area (Figure 3). A portion of the northwest area of the Preserve is located within the boundary of the South County MSCP, specifically within the Metro-Lakeside-Jamul segment (Figure 3). However, the entire Preserve will be managed under the North County MSCP. It should be noted that the North County MSCP has not been approved by the resource agencies (California Department of Fish and Game and U.S. Fish and Wildlife Service) and is currently in draft form. A key feature of the North County MSCP is the focus of proposed conservation areas that are identified in the plan as pre-approved mitigation areas (PAMA). As proposed, 80% of the natural habitats within the North County MSCP planning area are proposed for conservation. Within the PAMAs, the plan identifies planning segments including core areas, special areas, and linkages between core areas.

The Preserve is identified within the North County MSCP as containing a core habitat area and a linkage area that connects to habitat east of State Route 67 (SR-67). The northern portion that lies within the South County MSCP is also identified as containing a core habitat area. The Preserve also connects to San Pasqual Valley to the north and tenuously to the southeast across SR-67 (where it becomes a linkage) toward Barnett Ranch and the Iron Mountain preserve areas complex.

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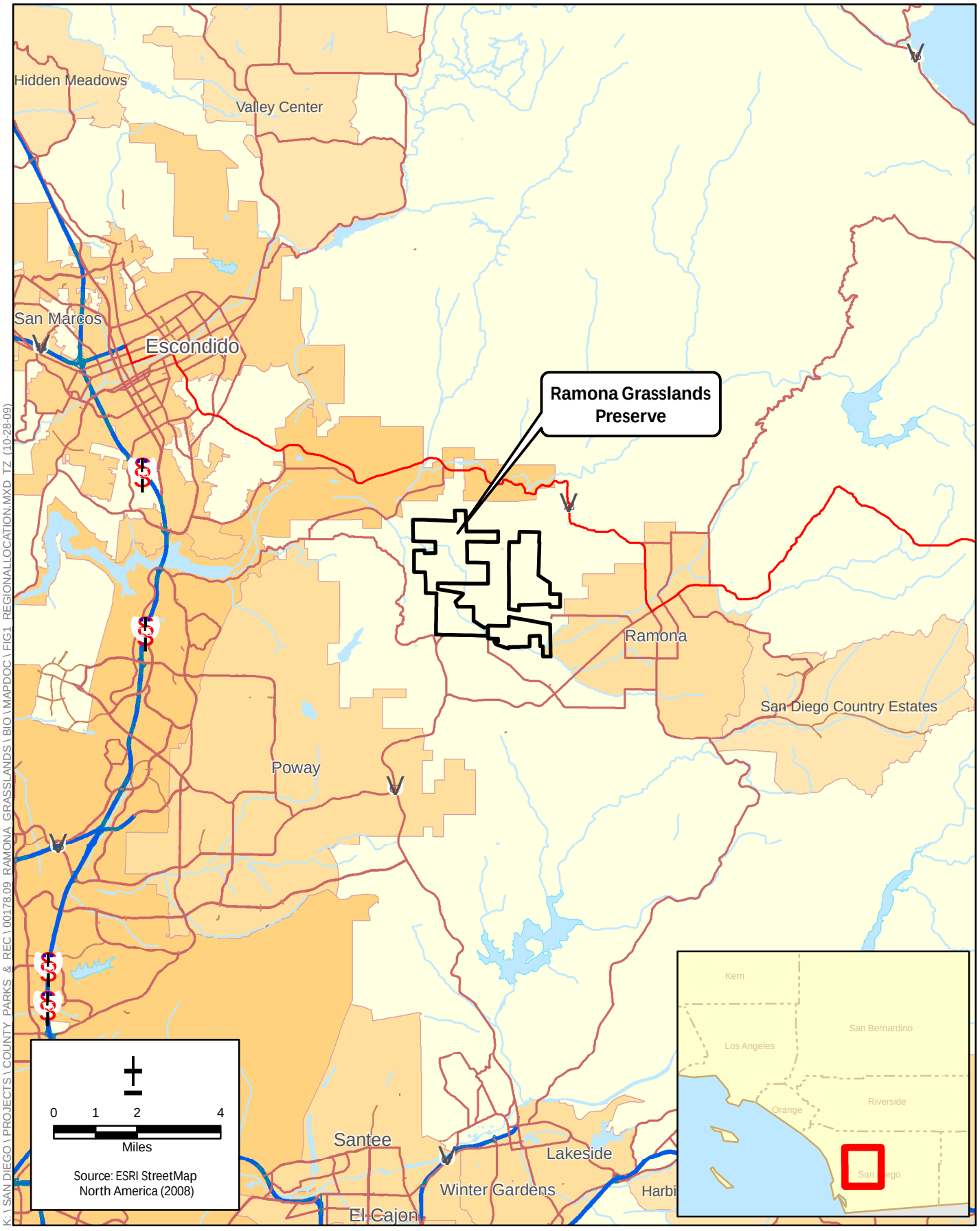

Figure 1
Regional Map
Ramona Grasslands

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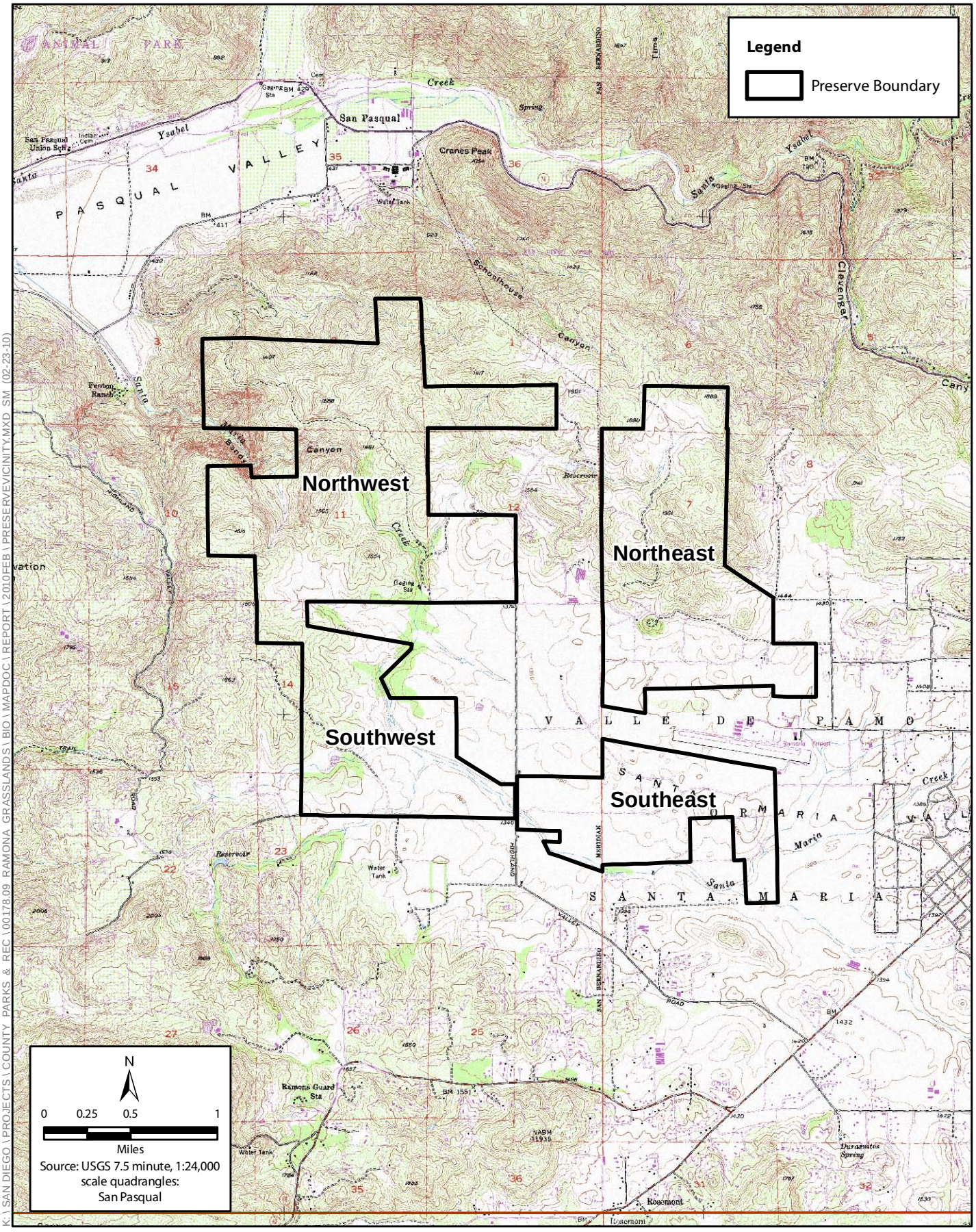

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Figure 2
Preserve Vicinity Map
Ramona Grasslands

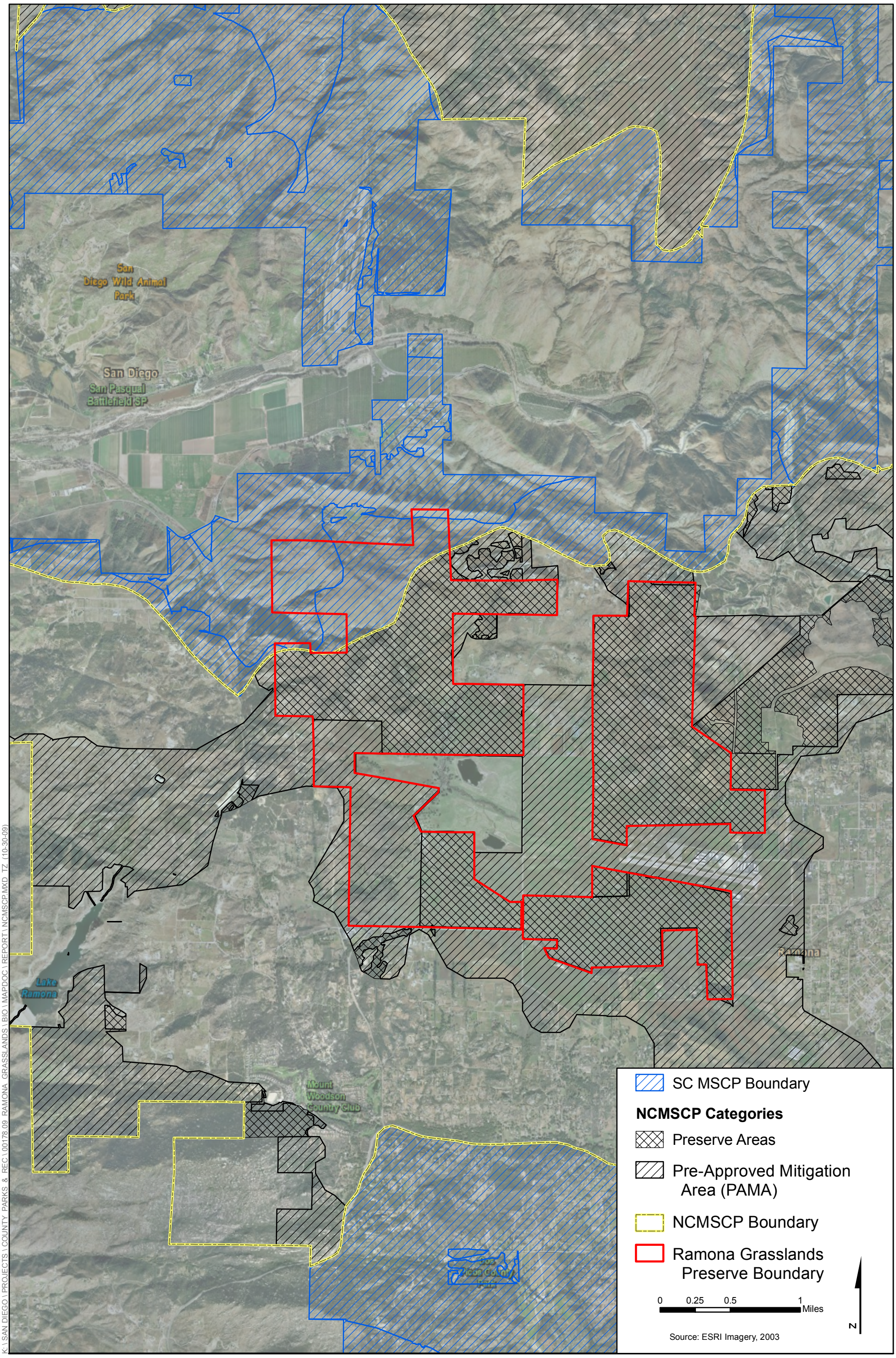

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Figure 3
MSCP Designations and Conserved Lands
Ramona Grasslands

Chapter 2
Study Area Description

2.1 Project Location

The Preserve is located in northern San Diego County approximately 6 miles east of Interstate 15 (I-15), approximately 1.5 miles south of State Route 78 (SR-78), approximately 1.4 miles north of SR-67, and approximately 2.0 miles west of downtown Ramona, California (Figures 1 and 2). The Preserve is primarily just west of the Ramona Airport and east and north of Highland Valley Road. Rangeland Road bisects the southern portion of the Preserve and continues north providing vehicular access to a residential development that borders the northern portion of the Preserve.

2.2 Geographical Setting

The Preserve is within the Santa Maria Valley, which consists of a broad basin surrounded by gentle hills and rocky rises ranging in elevation from approximately 410 meters (m) (1,350 feet [ft]) above mean sea level (AMSL) along the valley floor to over 518 m (1,700 ft) AMSL in the rocky hills of the northern sections of the Preserve. The Preserve comprises four properties referred to as: northwest area, southwest area, northeast area and southeast area of the Preserve (Figure 2). The northwestern area of the Preserve is west of Rangeland Road and is generally north of the Ramona Water District property. It is characterized by rocky hills bisected by Bandy Canyon, through which the Santa Maria Creek flows. The southwest area of the Preserve is generally south and west of the Ramona Water District property and consists of rolling hills with rocky outcrops and areas of oak woodlands that transition into the lower topography grasslands to the south. The southern boundary is Highland Valley Road and Santa Maria Creek also flows through this area. The northeast area of the Preserve is located east of Rangeland Road and north of the Ramona Airport. It is characterized by rocky chaparral-covered hillsides in the north and lower topography grasslands in the south. The southeast area of the Preserve is east of Rangeland Road and south of the Ramona Airport. This area consists of low, rolling hills supporting grasslands and rocky outcrops. The Santa Maria Creek channel follows the southern boundary.

2.3 Geology and Soils

The Santa Maria Valley is located within the western zone of the Peninsular Ranges Batholith. Granodiorite outcrops from this uplifted structure occur across the grasslands of the Santa Maria Valley and dominate the hilltops, where relatively deep, well-drained soils of decomposed granodiorites slope away from them. Lower-lying areas tend to support heavier clay soils, with shallow or surface expression of clay hardpans, and these soils sometimes develop characteristic vernal pool/mima mound topography. Gabbro outcrops can also be found scattered throughout the grasslands and influence plant associations. Several general soil associations are represented within the Preserve: acid igneous, Bonsall, Bonsall-Fallbrook,

Bonsanko, Cieneba, Cieneba-Fallbrook, Fallbrook, Las Posas, Placentia, Ramona, Tujunga, Visalia, and Vista (Figure 4) (USDA 1973). The characteristic features of these associations are described below.

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% 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. This soil type is mapped primarily on a large hill near the central portion of the northwest area.

The ***Bonsall*** soil series (BmC) is characterized by moderately well-drained, shallow to moderately deep sandy loams that have a heavy clay loam subsoil with slopes from 2 to 15%. These soils are mapped in the lower elevation areas of the southern areas.

The ***Bonsall-Fallbrook*** soil series (BnB) is characterized as a complex of sandy loams with slopes from 2 to 50%. This series is a mixture of soils with about 50% Bonsall sandy loam and 45% Fallbrook sandy loam. These soils appear in undulating uplands, where the Bonsall soils occupy the swales and Fallbrook soils occupy the low mounds and ridges. This soil series is mapped in the southeastern corner of the southwest area, the southern portion of the northeast area, and in the northern portion of southeast area.

The ***Bosanko*** soil series (BsC) is characterized as well-drained, moderately deep clays from materials derived from acid igneous rock with slopes from 2 to 30%. These soils are found on uplands that are undulating to hilly. This series is mapped on the southeast area as well as in the southeastern portion of the southwest area.

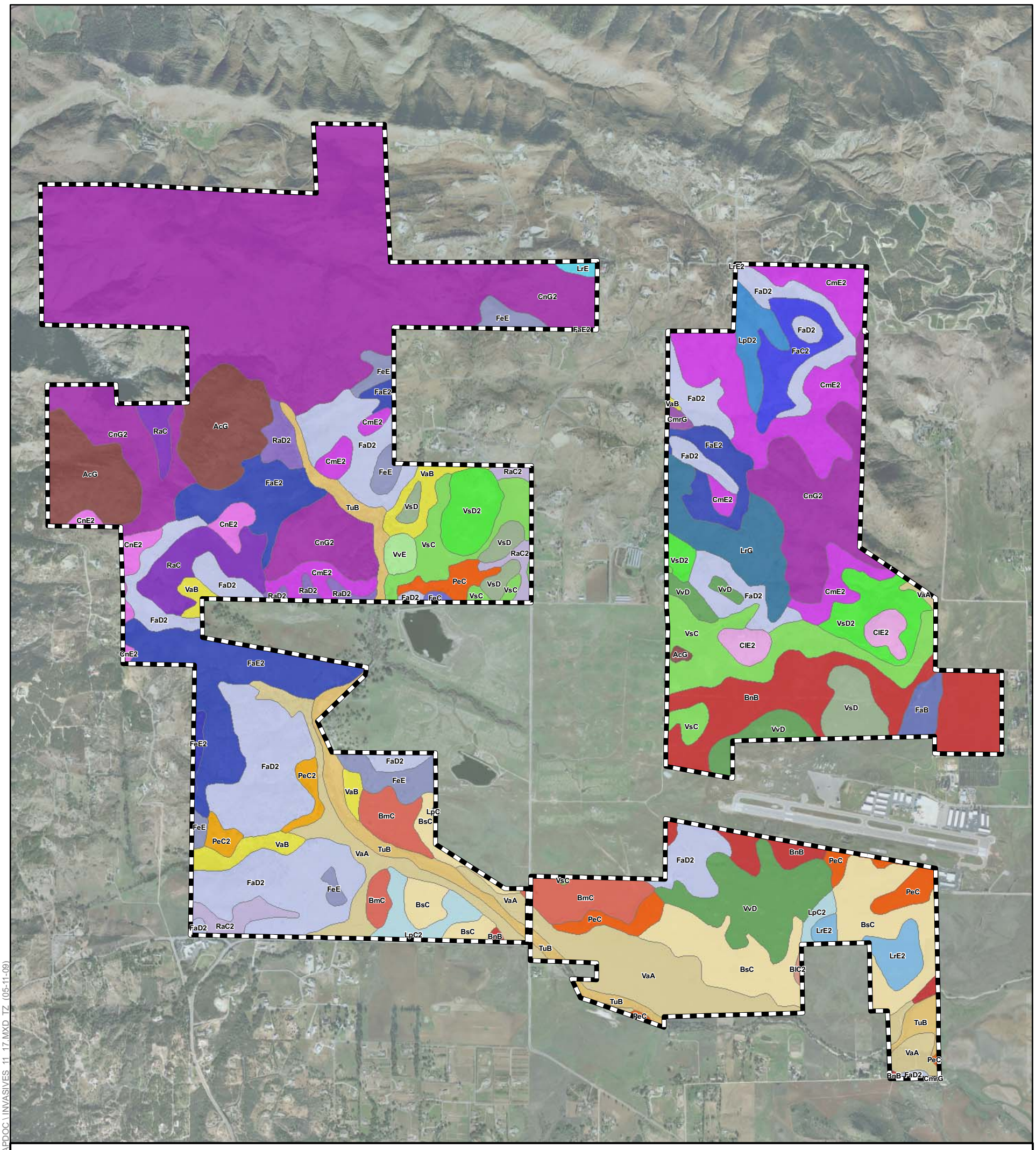
The ***Cieneba*** soil series (ClD2, ClE2, CmE2, CmrG) is characterized as coarse sandy and rocky sandy loams with slopes from 5 to 75%. They are typically described as excessively drained shallow soils that are weathered in place from granite outcrops found in the adjacent uplands. These soils are mapped primarily in the northern sections of the northern areas.

The ***Cieneba-Fallbrook*** soil series (CnE2, CnG2) is characterized as a soil complex with about 55% Cieneba coarse sandy loam and 40% Fallbrook sandy loam, with slopes of 9 to 65%. This soil is mapped on the northern areas.

The ***Fallbrook*** soil series (FaB, FaC2, FaD2, FaE2, FeC, FeE, FeE2) is characterized as sandy to rocky sandy loams with slopes from 2 to 30%. These soils are typically moderately deep and well drained, and are weathered in place from granodiorite. This soil is mapped in scattered patches throughout the Preserve.

The ***Las Posas*** soil series (LpC, LpC2, LpD2) is characterized as fine sandy loams and stony fine sandy loams with clay subsoil with 2 to 65% slopes. These soils are well-drained, moderately deep, and are formed from materials weathered from basic igneous rocks. This soil is mapped in scattered patches throughout the Preserve. Las Posas soils are considered mafic and are known to support sensitive plants population within the County of San Diego. However, within the Preserve no special status plant populations were observed on these soils.

The ***Placentia*** soil series (PeC, PeC2) is characterized as moderately well-drained sandy loams that have sandy clay subsoil, with 0 to 9% slopes. They are moderately well-drained soils made from granitic alluvium and are found on old alluvial fans. This soil is mapped in scattered patches throughout the Preserve.



Preserve Boundary

Soil Types

- AcG - Acid igneous rock land
- BlC2 - Bonsall sandy loam
- BmC - Bonsall sandy loam
- BnB - Bonsall-Fallbrook sandy loams
- BsC - Bosanko clay
- ClE2 - Cieneba coarse sandy loam
- CmE2 - Cieneba rocky coarse sandy loam
- CmrG - Cieneba very rocky coarse sandy loam
- CnE2 - Cieneba-Fallbrook rocky sandy loams
- CnG2 - Cieneba-Fallbrook rocky sandy loams
- FaB - Fallbrook sandy loam
- FaC2 - Fallbrook sandy loam
- FaD2 - Fallbrook sandy loam
- FaE2 - Fallbrook sandy loam
- FeC - Fallbrook rocky sandy loam
- FeE - Fallbrook rocky sandy loam
- FeE2 - Fallbrook rocky sandy loam
- LpC - Las Posas fine sandy loam
- LpC2 - Las Posas fine sandy loam
- LpD2 - Las Posas fine sandy loam
- LrE - Las Posas stony fine sandy loam
- LrE2 - Las Posas stony fine sandy loam
- LrG - Las Posas stony fine sandy loam
- PeC - Placentia sandy loam
- PeC2 - Placentia sandy loam
- RaC - Ramona sandy loam
- RaC2 - Ramona sandy loam
- RaD2 - Ramona sandy loam
- TuB - Tujunga sand
- VaA - Visalia sandy loam
- VaB - Visalia sandy loam
- VsC - Vista coarse sandy loam
- VsD - Vista coarse sandy loam
- VsD2 - Vista coarse sandy loam
- VvD - Vista rocky coarse sandy loam
- VvE - Vista rocky coarse sandy loam

0 1,000 2,000 Feet

1 " = 2,000 '

N

Source: SanGIS Soils, 2002; ESRI Imagery, 2003

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Figure 4
Soils Map
Ramona Grasslands Preserve

The ***Ramona*** soil series (RaB, RaC, RaD2) is characterized as well-drained, very deep sandy loams that have a sandy clay loam subsoil with slopes of 0 to 30%. They are formed from granitic alluvium and are found on terraces and alluvial fans. This soil is mapped in patches on the northern areas.

The ***Tujunga*** soil series (TuB) is characterized as deep, excessively drained sands derived from granitic alluvium with slopes of 0 to 5%. This soil is mapped along the Santa Maria Creek on the southern and northwest areas.

The ***Visalia*** soil series (VaA, VaB) is characterized as sandy or coarse sandy loams with slopes from 0 to 15%. These are moderately well-drained soils derived from granitic alluvium and are typically found in alluvial flood plains and fans. This soil is mapped in areas of lower topography throughout the Preserve.

The ***Vista*** soil series (VsC, VsD, VsD2, VvD, VvE) is characterized as rocky coarse sandy loams with slopes of 5 to 65%. These are well-drained, moderately deep to deep soils derived from granodiorite or quartz diorites. Patches of this soil are mapped throughout the Preserve.

2.4 Climate

A semi-permanent, high-pressure cell located over the Pacific Ocean dominates San Diego climate. This cell drives the dominant onshore circulation, maintaining clear skies for much of the year. Summers at the Preserve are typically warm and dry, while winters are mild with occasional rain (NOAA 2010).

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 Ramona, the closest such station to the Preserve. Data collected at the station indicate that the area experiences a normal mean temperature of approximately 62 degrees Fahrenheit (°F), with a mean maximum temperature of 77°F and a mean minimum of 46°F. In a normal year, precipitation at the Preserve averages 16 inches and falls mostly in the winter and spring.

2.5 Hydrology

The Preserve occupies a significant portion of the Santa Maria Creek subbasin of the San Dieguito River watershed (Figure 5). The Santa Maria Creek and its tributaries drain from the mountains east of Ramona, across the Preserve, and through Bandy Canyon to its confluence with Santa Ysabel Creek. Below this confluence, the San Dieguito River flows into Lake Hodges. The Santa Maria Creek exhibits intermittent flow in response to winter rainfall, although surface flow in the creek may persist late in the summer during heavy rainfall years. Water is also perennial at the far western end of the valley. The majority of the other drainages shown in Figure 5 have been previously identified as potential stream courses (blue line) by USGS on the San Pasqual quadrangle (USGS 1983). All of the drainages mapped with the exception of Santa Maria Creek are ephemeral, have a defined bed and bank and would likely be considered jurisdictional by federal and state agencies.

2.6 Fire History

The landscape within the Preserve is of oak woodlands and chaparral surrounding non-native grasslands, which are maintained by cattle grazing and infrequent fires. Repeated short-interval fires in chaparral and sage scrub habitats tend to result in type-conversions to annual grasslands with few trees or shrubs (Minnich and Dezzani 1998, Keeley 2001). The hills surrounding the Preserve have burned repeatedly (approximately every decade in the past 50 years [SanGIS 2009]), and increasing fire ignitions correlated with human population growth may conceivably increase the extent of the grasslands over time via type-conversion of shrub habitats (Keeley and Fotheringham 2001). The 2007 Witch Fire burned a substantial portion of the Preserve and prior to this, smaller portions of the Preserve were burned during the Clevenger and Rangeland Fires in 1975 and an unnamed fire in 1970 (Figure 6).

2.7 Trails and Roads

Because most of the Preserve has been ranched, there is an existing network of dirt ranch roads that provide access either by vehicle or foot to most areas. These roads are well maintained and are used primarily for maintenance and care of livestock on the Preserve. There are also older, less frequently maintained roads, such as those in the northern portion of the northeast area, that are only accessible via four wheel drive vehicle or by foot. There is one paved road that crosses the eastern side of the northwest area. This road provides adjacent residents access to their properties. Approximately 14.8 miles of ranch roads (paved and dirt) occur within the Preserve (Figure 7).

Schoolhouse Canyon

Santa Maria Creek

Escondido
Cleveland National Forest
San Pasqual Battlefield SP
San Diego
Rockwood Canyon
Santa Ysabel Creek
Clevenger Canyon
San Dieguito River
Ramona
Santa Maria Creek
Warren Canyon
Poway
Rattlesnake Creek
San Vicente Creek

Preserve Boundary

Streams

Source: SANDAG StreamsNHD, 2000;
ESRI Imagery, 2003

0 1,000 2,000 Feet

1 " = 2,000 '

N

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Figure 5
Hydrology Map
Ramona Grasslands

Preserve Boundary

Fires

Clevenger Canyon, 1955

Clevenger, 1975

Clevenger, 1985

Clevenger, 1988

Clevenger, 1993

Highland Valley Rd, 1987

Rangeland, 1975

Unnamed, 1911

Unnamed, 1913

Unnamed, 1919

Unnamed, 1967

Unnamed, 1970

Unnamed, 2007

Witch, 2007

Source: SANGIS Fire_Burn_History, 2007; ESRI Imagery, 2003

0 1,000 2,000 Feet

1" = 2000'

N

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Figure 6
Fire History Map
Ramona Grasslands

Preserve Boundary

Roads

Dirt Road

Paved Road

Trail

0 1,000 2,000 Feet

1 "=2,000 '

N

Source: ESRI Aerial Imagery, 2003

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Figure 7
Trails Map
Ramona Grasslands

Chapter 3
Methods

ICF Jones & Stokes conducted a baseline biological inventory study at the Preserve that included the following: (1) vegetation survey with habitat community mapping, rare plant, and Cal-IPC invasive plant species mapping components, (2) butterfly surveys, (3) herpetofauna survey including pitfall arrays, (4) ornithological survey including diurnal point counts and nocturnal surveys, (5) mammal survey including small mammal trapping, camera stations for medium to large mammals, and bat surveys.

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. The scientific binomial from the cited reference is included with the first mention of a species in the body of this report.

3.1 Vegetation Communities/Habitats

3.1.1 Vegetation Communities Mapping

Vegetation communities were mapped on a "1 inch equals 200 feet" (1:2400) scale aerial photograph of the Preserve in the field and later digitized into a geographic information system (GIS) coverage using ArcGIS software. Mapping included the entire 3,492.7-acre Preserve and vegetation communities were categorized using standard County classifications (Holland 1986 as modified by Oberbauer 2005). During the 2009 surveys, ICF Jones & Stokes botanists specifically updated existing vegetation community data from previous surveys (CBI 2007) and expanded the vegetation community coverage as needed to ensure coverage of the entire Preserve. Surveyors traversed the study area via meandering transects in an effort to accurately categorize vegetation communities. In addition, 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).

3.2 Plants

Prior to conducting any fieldwork, searches of available literature and databases were conducted to determine special-status species previously observed, detected, or with potential to occur within the Preserve as well as the physical characteristics of the Preserve and surrounding areas (Appendix A). Available data that were reviewed included: the California Natural Diversity Database (CNDDB) database (CDFG 2009 Ramona, San Pasqual, Escondido, Poway, San Vicente Reservoir, El Cajon Mountain, Mesa Grande, Rodriguez Mountain, and Valley Center quadrangles); California Native Plant Society (CNPS) Online Plant Inventory (CNPS 2009); the U.S. Department of Agriculture

(USDA) soil survey of the area (USDA 1973); and U.S. Geological Service (USGS) topographic maps to identify potential stream courses and other notable topographic features. For the purpose of this project, special-status plant species include all species listed or proposed for listing by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), any species listed as 1B through 4 by the CNPS, any species on the County list (Groups A, B, C, and D), and any species proposed to be covered under the North County MSCP.

3.2.1 Floristic Surveys

Rare plant survey priority areas were determined once the literature search and the vegetation mapping were completed. Priority areas include unique features within the Preserve that have a high potential to support rare plant species. These features include clay soils, alkali soils, gabbro soils, vernal pool basins, and unique habitat features such as the north-facing slopes adjacent to coast live oak woodland habitat. During each rare plant survey, ICF Jones & Stokes botanists traversed the study area via meandering transects in an effort to identify the locations of any special-status species readily detectable. 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) (Appendix B).

3.3 Wildlife

Surveys were conducted to document the wildlife species currently using the Preserve and to assess the potential occurrence of special-status wildlife species not detected during the surveys (Appendices C and D). The CNDDB database was reviewed to create a list of wildlife with potential to occur on site (CDFG 2009; Ramona, San Pasqual, Escondido, Poway, San Vicente Reservoir, El Cajon Mountain, Mesa Grande, Rodriguez Mountain, and Valley Center quadrangles). Using a checklist of all species in the region with special status, species were added to the list of potentially occurring species based on professional knowledge and judgment, experience with prior projects in the area, review of previous studies conducted within the Preserve, ICF Jones & Stokes internal databases, and published and unpublished references. The potential for each of these species to occur on the Preserve or in the immediate vicinity is addressed in Appendix C. In evaluating the potential for occurrence, a pool of references and resources was utilized for information on species distribution, habitat requirements, disturbance tolerance, threats and causes of declines, and other features of their conservation biology. Special-status wildlife species include all species listed or proposed for listing by the USFWS and CDFG, any species on the County list (Group I and II) and any species proposed to be covered under the North County MSCP.

3.3.1 Invertebrates

Butterflies

ICF Jones & Stokes biologists conducted a habitat assessment for the federally endangered Quino checkerspot (*Euphydryas editha quino*) and general butterfly diversity surveys utilizing similar methods as outlined in the USFWS protocol for Quino surveys (USFWS 2002a). Although the Preserve is outside of the "adult focused survey area" for Quino as designated by the USFWS, the primary and secondary host plant species for Quino occur on the Preserve, the designated survey

area is within 5 miles of the Preserve, and prior to the 2009 flight season, Quino were observed within approximately 6 miles of the Preserve (USFWS 2009). Therefore, general surveys were conducted using the field methods outlined in the protocol to increase the likelihood that Quino would be detected if it occurs within the Preserve. These methods are also effective for documenting springtime butterfly diversity.

Butterfly diversity surveys were timed to occur during the middle of the 2009 Quino adult flight season based on the reference population data from the USFWS monitoring information web page (USFWS 2009). The surveys focused on areas with high potential for Quino such as the locations with Quino primary host plants (dot-seed plantain [*Plantago erecta*]), and the secondary host plants (purple owl's-clover [*Castilleja exserta*], dark-tip bird's beak [*Cordylanthus rigidus*], and Chinese houses [*Collinsia* spp.]). The majority of the biologists involved in the surveys possess USFWS recovery permits for Quino. Surveys were conducted generally according to methods outlined in the USFWS protocol (USFWS 2002a). The methods differed from the protocol on the number of surveys, which was limited to three, and also on the extent of the survey area, which was limited to habitat with the highest potential for detecting Quino, rather than 100% coverage of all non-excluded areas.

All butterfly species detected during the surveys were identified and counted, and the data collection forms are presented in Appendix E. Survey personnel, dates, and weather conditions are presented in Table 1 below. Butterflies identified during other biological surveys are included in the wildlife list in Appendix D.

Table 1. Personnel, Date, Time, and Conditions of the Butterfly Surveys on the Preserve in 2009

Date	Survey Number	Start–End Time	Temperature (Start/Stop)	Wind Speed (mph)	% Cloud Cover	Name of Surveyors*
2/26/09	Habitat Assessment	1000–1600	68/65°F	0–2	0–10	A. Borcher, E. Alfaro
3/3/09	Habitat Assessment	0900–1530	68/70°F	0–3	0–15	A. Borcher, E. Alfaro, B. Primrose
3/10/09	1	0900–1545	60/68°F	0–3	0	A. Borcher, E. Alfaro, B. Primrose, G. Kinoshita
3/11/09	1	0915–1600	55/62°F	0–2	60–80	A. Borcher, E. Alfaro, G. Kinoshita
3/17/09	2	0930–1530	65/70°F	0–2	0	A. Borcher, E. Alfaro, G. Kinoshita
3/18/09	2	0945–1530	70/72°F	0–2	0	A. Borcher, E. Alfaro, K. Mozumder
3/24/09	3	1145–1600	74/75°F	0–4	0	A. Borcher, D. Allen
3/25/09	3	1045–1545	70/67°F	0–1	0	A. Borcher, K. Mozumder

*= All surveyors posses USFWS permit to survey for Quino

Other Invertebrates

In addition to butterflies, other invertebrates were identified either during other surveys (e.g. rare plant surveys, vegetation mapping, etc.) or after being captured in the pitfall traps associated with the herpetological array sampling. All invertebrates that could not be identified in the field were photographed, and those photographs were provided to a local entomologist for identification.

3.3.2 Herpetofauna

ICF Jones & Stokes conducted surveys for herpetofauna (amphibians and reptiles) within the Preserve from March through July 2009. Terrestrial herpetological surveys were conducted using pitfall trap arrays as outlined in "Herpetological Monitoring Using a Pitfall Trapping Design in Southern California" (Stokes et al. 2001) with one variation. 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 variation from the Stokes et al. design utilizes wire mesh box traps instead of some of the pit fall traps.

The design recommended by Stokes et al. for sampling arrays utilizes a three-arm drift fence array with seven pitfall traps and three funnel traps. Our array design replaced the three pitfall traps at the ends of the arms with aboveground wire mesh box traps in order to increase the potential for catching snake species. Five feet of additional drift fencing was installed along the sides of the box traps and extended out towards the array from the corners of the box traps nearest the array. A flat wooden board was placed on top of the box trap to provide shade and encourage entry into the traps. With the exception of the use of box traps, this study's array design was consistent with that recommended by Stokes et al., and recommendations for array materials and trap construction were followed. As the site temperatures were not expected to be excessive during the trapping period, biologists constructed funnel traps with no pitfall trap retreat underneath, as described in the above referenced protocol.

Six sites were selected to construct arrays, which were scattered throughout the Preserve. Array locations were selected based on access, vegetation community, soils, topography, and avoidance of known special-status resources (including cultural resources and occupied Stephens' kangaroo rat habitat). Arrays were constructed in a variety of habitats including oak woodland, coastal sage scrub, non-native grassland, chamise chaparral, and mixed chaparral (Figure 8, Table 2)). Locations were mapped using GIS technologies.

All areas immediately surrounding the arrays were actively searched for herptiles during the array monitoring. Additionally, active searches for herptiles were conducted in other areas of the Preserve. Active searches included looking under rocks, shrubs and logs, and the periphery of vegetated water features (i.e. Santa Maria Creek, stock ponds, and unnamed drainages). All herptiles observed during active searches and other wildlife surveys were identified to species and recorded. Method of observation (arrays or active surveys) is presented for each species in the results section.

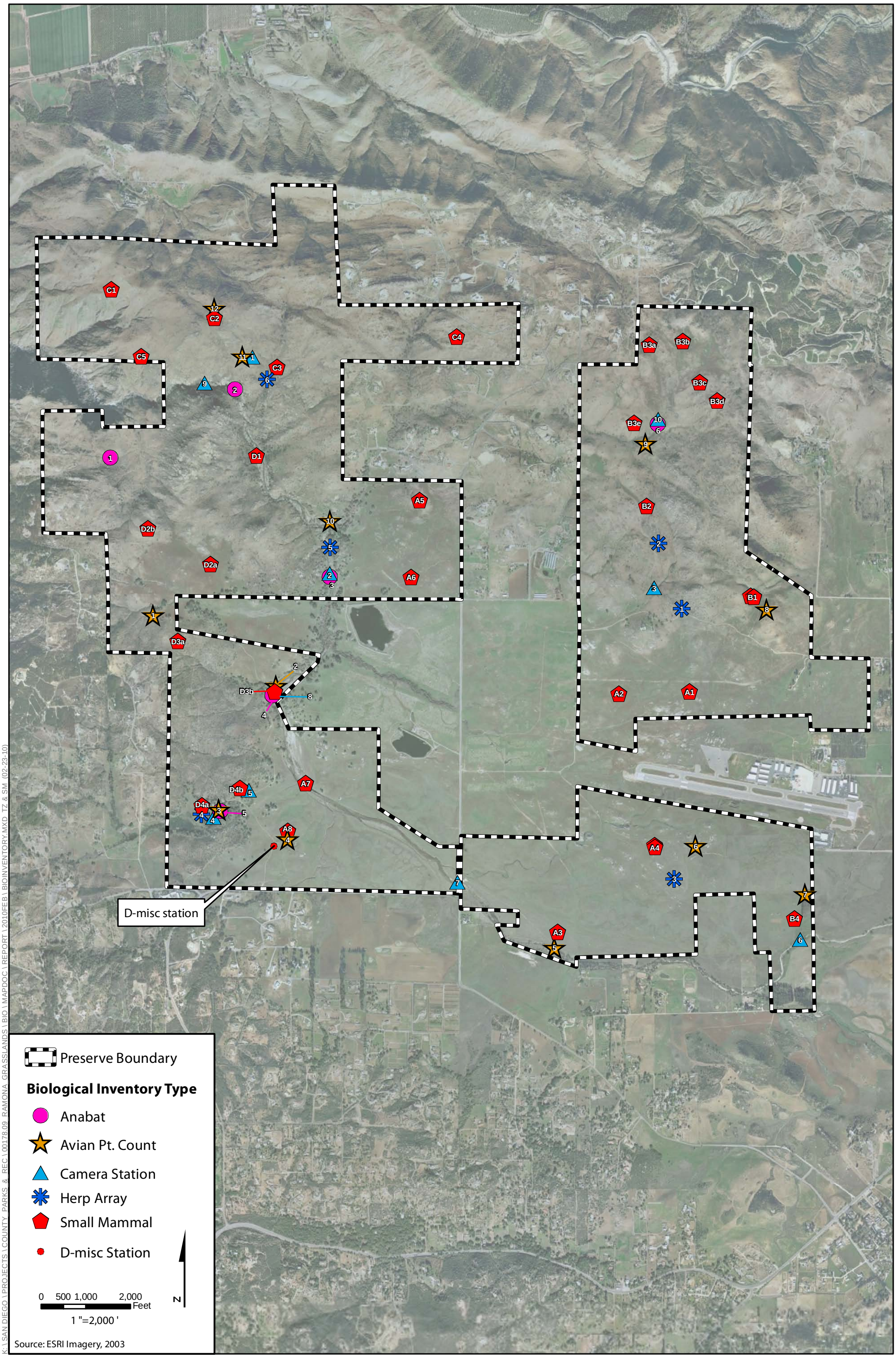

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Figure 8
Biogical Inventory Locations
Ramona Grasslands

Table 2. Array Description

Array Number	Physical Description	Vegetative Community
1	Vegetated south-facing slope with some rock outcrops. Large expanse of hills and ridges vegetated with coastal sage scrub, southern mixed chaparral and chamise chaparral to the north and west. Access road, small hills and large patches of non-native grassland to the east and south.	Coastal sage scrub/Southern mixed chaparral
2	Relatively flat land on a small plateau surrounded by hills and ridgelines vegetated with coastal sage scrub, southern mixed chaparral and chamise chaparral. Densely vegetated, gravelly soil with some small rock outcrops.	Chamise chaparral/Southern mixed chaparral
3	Flat land in a wide expanse of small rolling hills vegetated with non-native grassland and large rock outcrops.	Non-native grassland
4	Relatively flat land in an area with small rolling hills vegetated with mostly non-native grassland. Approximately 20 m west of large pond surrounded by coast live oak woodland and riparian forest. Some rock outcrops approximately 50 m to the east and south.	Non-native grassland
5	Flat sandy land with non-native grass and sparse native coastal sage scrub shrubs under large oak trees adjacent to the Santa Maria Creek. Small rocky hills to the north and east.	Coast live oak woodland
6	Vegetated south-facing slope approximately 5 m from ephemeral drainage supporting large oak trees. Surrounded by southern mixed chaparral to the north, south and west, coast live oak woodland to the south and scrub oak chaparral to the east.	Southern mixed chaparral

Monitoring Arrays

Array traps were sampled on four consecutive days once a month beginning in March and continuing through July (Table 3). 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 is 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.

Table 3. Dates and Personnel for the Pitfall Sampling on the Preserve in 2009

Date	Name of Biologists
3/23/09 – 3/27/09	A. Borcher, K. Mozumder
4/20/09 – 4/24/09	A. Borcher, K. Mozumder
5/18/09 – 5/22/09	A. Borcher, K. Mozumder
6/22/09 – 6/26/09	A. Borcher, K. Mozumder
7/27/09 – 7/31/09	A. Borcher, K. Mozumder

Arroyo Toad Surveys

The Santa Maria Creek supports a known population of arroyo toad (*Bufo californicus*), a federally endangered species (Hollingsworth et al. 2006). Protocol presence/absence surveys were not performed in 2009. Instead of the six surveys recommended in the presence/absence protocol, three nocturnal surveys were conducted during peak breeding activity periods to document locations where breeding activity was taking place in 2009 (Table 4). Breeding was confirmed through observations of calling males and identifying egg masses and tadpoles. The nocturnal surveys were conducted with the aid of flashlights and headlamps (Nightrider Trail Rat—a rechargeable 10 watt 6 volt Halogen headlamp). Surveys consisted of listening and inspecting the areas with the highest quality habitat found within Santa Maria Creek. Other aquatic organisms and other species/conditions that may have an effect on the ability of the area to support arroyo toad were also documented during the surveys. During the course of the survey efforts, one arroyo toad reference population (Kimball Valley along San Vicente Creek) was periodically monitored to document any variation in the activity patterns compared to those observed in Santa Maria Creek.

Table 4. Dates and Personnel for the Nocturnal Arroyo Toad Surveys on the Preserve in 2009

Date	Name of Biologists
3/19/09	D. Allen, K. Mozumder
4/01/09	K. Fischer, C. Dunn, A. Borcher, K. Klutz, K. Mozumder
5/04/09	K. Mozumder, A. Borcher, B. Primrose

Other Herpetofaunal Methods

Dip netting for the purpose of sampling aquatic herptiles was performed in any pooled or slow-flowing waterways within the Preserve. The majority of the sampling was within or adjacent to Santa Maria Creek. Other areas included stock ponds and unnamed stream channels in the grasslands that held pooled water. A handheld net was pulled through the water to capture herptiles, which were identified and released into the same pool or stream.

3.3.3 Birds

Diurnal Point Counts

Avian use of the study area was documented through the use of 12 avian point count stations (stations) sampled once a month for 6 months beginning in March and concluding in August (Table 5) (Figure 8). Point counts provide a repeatable, quantitative sampling method for a broad spectrum of birds and were complementary to the general reconnaissance effort, strengthening the reference information developed on relative abundance of birds.

Table 5. Dates and Personnel for the Point Counts on the Preserve in 2009

Date	Name of Biologist
3/24/09 – 3/25/09	K. Fischer
4/28/09 – 4/29/09	K. Fischer
5/26/09 – 5/27/09	K. Fischer
6/24/09 – 6/26/09	K. Fischer
7/28/09 – 7/29/09	K. Fischer
8/26/09 – 8/27/09	K. Fischer

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 roads 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 viewshed from each point was photographed in the four cardinal compass directions.

Counts were conducted at each station once a month (March through August). 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 10 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 allows for 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 was 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 is 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 offsite, 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 a nest. Thus young raptors, which often spend several transitional days immediately adjacent to the nest, were not counted until they had been 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 are heard only with regard to whether or not they are 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 only detected aurally.
- When a flock was only heard, the number definitely heard was recorded, but when a flock was seen and individuals were not able to 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 that the stations are comparable in this regard.
- No individual birds were discarded (not counted) due to lack of identification, unless they were 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 were counted in the totals and other statistics for individuals but not the totals or statistics for species, except where they clearly represent a species otherwise unrecorded. Thus, "raptor sp." would not add to the overall species total if raptors were also recorded to the species level. However, "raptor sp." (1) would be counted in the total species number for the particular counts on which they occur when no other raptors were recorded and identified to species during that count and (2) would add to the total abundance of birds in any relevant totals.

"Fly-by" (also called "fly-over") birds generally were not 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, if the birds were judged to be foraging or hunting while in flight over the study area, the observations were included in the calculations. These birds were using the study area in the same way that a bird foraging from a perch makes use of the study area. For the current work, most observations of swifts, swallows, and raptors (including turkey vultures) were included.

The point counts were designed as two-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 this 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 were provided for any species based on the current results.

Nocturnal Surveys

Monthly nocturnal bird surveys were conducted for six months for nighttime birds at the Preserve (Table 6). Methods included a combination of walking and slowly driving roads, looking and listening for birds. A moderately powerful headlamp was used to aid identifications. Tape playback of owl calls was intermittently used in an attempt to illicit responses from birds.

Table 6. Dates and Personnel for the Nocturnal Bird Surveys on the Preserve in 2009

Date	Name of Biologists
3/26/09	K. Fischer, C. Dunn
4/20/09	K. Fischer, E. Alfaro
5/28/09	K. Fischer, D. Allen
6/25/09	K. Fischer
7/30/09	K. Fischer
8/27/09	K. Fischer

3.3.4 Mammals

The goal of the mammal surveys was to document what species are currently using the Preserve for survival and for passage through to other areas of the County. Mammal species were documented through general surveys, small mammal trapping, camera stations, and Anabat sampling. The goal of the small mammal trapping was to document the small mammal species using different habitats on the Preserve. The camera stations documented the medium to large mammal species that are using the Preserve. Anabat sampling was used to document the use of the Preserve by bat species.

Stephens' kangaroo rat (*Dipodomys stephensi*, SKR) is a federally endangered species that is known to occur on the Preserve. Historically, extensive surveys have been conducted documenting the population of Stephens' kangaroo rat that occurs on the southeast and southwest areas, and the southern portion of the northeast area (CBI 2007). These surveys determined that the majority of suitable and occupied SKR habitat was on the mostly well-drained, hilly topography near the center of the Preserve (grasslands), with smaller isolated pockets scattered in other areas of the Preserve. The 2007 Witch Fire consumed many acres of the Preserve's vegetation and much of the burned vegetation has not been quick to grow back. This presented an opportunity for the potential expansion of SKR on the Preserve as this species prefers open habitat.

Small Mammal Trapping

On June 9, 2009, ICF Jones & Stokes biologists Phillip Richards and Kailash Mozumder visited the Preserve and assessed the physical conditions, vegetative community distribution, vegetative cover, and accessibility for planning the trapping program for small mammals. For the purposes of this project, small mammals include species in the shrew, squirrel, pocket gopher, heteromyid, mouse, rat, and vole families. Combining the results of the visual inspection with a review of recent vegetation mapping and aerial photographs, sample areas were determined. Sample areas were selected based on four criteria: 1) sampling of different vegetative communities; 2) geographic distribution across the Preserve; 3) sampling of unique features (e.g., wash or ecotone); and 4) areas were not specifically avoided due to the presence of existing data (e.g., such as areas known to be occupied by SKR).

Small mammal trapping on the Preserve consisted of four weeks of trapping with each sample area trapped for four nights. A total of 28 sample areas were trapped. Based on logistical factors, such as distance and terrain between sample areas and number of small mammals captured, the number of traps used per week ranged from 145 to 200 traps. In total, the Preserve trapping program produced 2,890 trap nights (i.e., number of traps multiplied by the number of nights).

The number of traps per sample area ranged from 10 to 50 sequentially numbered 12-inch Sherman live traps. Of the 28 sample areas, 19 utilized a grid pattern while the remaining nine utilized a meandering "sign" (e.g., scat, burrows, dusting baths, etc) set transect. Distribution of traps in a grid pattern was generally used for areas with uniform site characteristics while meandering transects were generally used to sample areas with variable characteristics. For grids, traps were positioned at equal distances (i.e., 10 m [30 ft] or 15 m [49 ft] apart). In contrast, for the meandering transect, traps were generally spaced about 10 m (30 ft) or 15 m (49 ft) apart, but were positioned where small rodent sign was apparent. If rodent sign was not apparent, traps were placed near the base of shrubs. The locations of traps were recorded using a recreational grade GPS receiver (Garmin brand, WAAS enabled).

For each week of trapping, traps were initially set and baited on Mondays. In general, traps were opened before dusk and closed during the dawn trap check (the only exception was Week 2, night 4, when traps were opened at midnight then closed at dawn). For the majority of sample areas, traps were systematically checked around midnight (between 2245 and 0300) and again around dawn (between 0430 and 0930). Some sample areas— not located within or immediately adjacent to suitable Stephens' kangaroo rat habitat— were checked once around dawn (between 0430 and 0930). Table 7 summarizes the dates, personal, and conditions for the trapping program. Table8 summarizes the characteristics associated with each sample area including the following: grid vs. transect, spacing, number of traps, trap sequence, trap night total, physical description, and associated vegetative community. The location of each sample area is depicted on Figure 8.

Table 7. Personnel, Date, Time, and Conditions of the Small Mammal Trapping Program at the Preserve in 2009

Week	Sample Areas	Personnel	Date Checked	Times Checked	Conditions
1	A1	Phillip Richards	7/7/09	Midnight	Clear; 53°-46°F; Wind Calm; Moon Visible
	A2			Dawn	Fog to Clear; 55°-62°F; Wind Calm; No Moon Visible
	A3		7/8/09	Midnight	Clear; 46°F; Wind Calm; Moon Visible
	A4			Dawn	Clear; 55°-62°F; Wind Calm; No Moon Visible
	A5	Debbie De Le Torre	7/9/09	Midnight	Clear; 60°-46°F; Wind Calm; Moon Visible
	A6			Dawn	Fog to Clear; 44°-64°F; Wind Calm; No Moon Visible
	A7		7/10/09	Midnight	Clear; 57°-48°F; Wind Calm; Moon Visible
	A8			Dawn	Clear; 50°-73°F; Wind Calm; No Moon Visible
2	B1	Phillip Richards	7/14/09	Midnight	Clear; 68°-55°F; Wind Calm; Moon Visible
	B2			Dawn	Clear; 64°-80°F; Wind Calm; Moon Visible
	B3a		7/15/08	Midnight	Clear; 68°-55°F; Wind Calm; Moon Visible
	B3b			Dawn	Partly Cloudy; 64°-78°F; Wind Calm; Moon Visible
	B3c	Cindy Dunn	7/16/08	Midnight	Clear; 66°-57°F; Wind Calm; Moon Visible
	B3d			Dawn	Clear; 69°-82°F; Wind Calm; Moon Visible
	B3e		7/17/08	Midnight	N/A – traps set at midnight
	B4			Dawn	Clear; 66°-82°F; Wind Calm; Moon Visible Early
3	C1	Phillip Richards	7/21/09	Midnight	N/A – No potential SKR habitat so dawn check only
				Dawn	Clear; 64°-86°F; Wind Calm; No Moon Visible
	C2		7/22/09	Midnight	N/A – No potential SKR habitat so dawn check only
	C3			Dawn	Clear; 62°-82°F; Wind Calm; No Moon Visible
	C4	David Bole	7/23/09	Midnight	N/A – No potential SKR habitat so dawn check only
	C5			Dawn	Clear; 60°-75°F; Wind Calm; No Moon Visible
			7/24/09	Midnight	N/A – No potential SKR habitat so dawn check only
				Dawn	Cloudy to Clear; 60°-73°F; Wind Calm; No Moon Visible
4	D1	Phillip Richards	7/28/09	Midnight	Clear; 60°-57°F; Wind Calm; No Moon Visible
	*D2a			Dawn	Cloudy to Clear; 57°-68°F; Wind Calm; No Moon Visible
	D2b		7/29/09	Midnight	Clear; 60°-55°F; Wind Calm; No Moon Visible
	D3a			Dawn	Cloudy to Partly Cloudy; 59°-68°F; Wind Calm; No Moon
	D3b	David Bole	7/30/09	Midnight	Clear; 55°F; Wind Calm; Moon Visible Late
	*D4a			Dawn	Cloudy to Clear; 59°-68°F; Wind Calm; No Moon Visible
	D4b		7/31/09	Midnight	Clear; 68°-62°F; Wind Calm; Moon Visible
	!D-misc			Dawn	Cloudy to Partly Cloudy; 62°-69°F; Wind Calm; No Moon

* = D2a and D4a were located in potential SKR habitat (defined primarily by sparsely vegetated areas) so were the only sample areas checked at midnight and dawn during Week 4. The remaining sample areas for Week 4 were not located in potential SKR habitat so were only checked at dawn.

! = D-misc represents 10 traps set between midnight and dawn for one night on July 29, 2009 after observing kangaroo rats on dirt road in suitable SKR habitat.

Table 8. Trapline Description

Sample Area	Type / Spacing	Number of Traps	Trap Sequence	Trap Nights/ Notes	Physical Description	Vegetative Community
A1	Grid/ 10 m	20	A31–A50	80/ No Notes	Flat land; soils mostly loam; mix of bare ground and dry grasses and herbs; no shrubs or trees	Non-native grassland
A2	Grid/ 15 m	30	A1–A30	120/ No Notes	Flat land; soils mostly loam; mix of bare ground and dry grasses and herbs; no shrubs or trees	Non-native grassland
A3	Grid/ 15 m	30	151–180	120/ Due to presence of buffalo, all traps moved from drainage to field after first night	Night 1: riparian drainage; sandy soils; non-native grassland terraces Nights 2–4: Flat land; soils mostly loam; dense dry non-native grasses; no shrubs or trees; percent bare ground low	Night 1: Mix of mule fat and southern willow scrub Nights 2–4: Non-native grassland
A4	Grid/ 10 m	20	181–200	80/ No Notes	Flat land; nearby rock outcrops; soils mostly loam; dense dry non-native grasses and herbs; percent bare ground low; no shrubs or trees	Non-native grassland
A5	Grid/ 15 m	30	51–80	120/ No Notes	Hilltop and hillside; soils mostly loam with a few scattered rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is low; percent bare ground is high	Mostly Diegan coastal sage scrub with non-native grassland
A6	Grid/ 15 m	20	81–100	80/ No Notes	Flat land; soils mostly loam; mix of bare ground and dry non-native grasses and herbs; no shrubs or trees	Non-native grassland
A7	Grid/ 15 m	30	101–130	120/ No Notes	Wash densely vegetated with a mix of *Baccharis salicifolia* (on sandy soils) and wetland herbs (on silty soils); adjacent terraces are flat with mostly bare ground but does support some dried non-native grasses and herbs	Mule fat scrub and non-native grassland
A8	Grid/ 10 m	20	131–150	80/ No Notes	Small hill/rock outcrop; soils mostly loam; relatively dense stand of California buckwheat (*Eriogonum fasciculatum*)	Diegan coastal sage scrub
B1	Grid/ 15 m	50	151–200	150/ Traps 176–200 only used for first two nights	Mix of moderately sloped hills and flat land; soils mostly loam; hills support shrubs in early stage of burn recovery, thus, shrub cover is low; flat land supports dried non-native grasses and herbs; overall percent bare ground is high	Southern mixed chaparral, Diegan coastal sage scrub, and non-native grassland

Sample Area	Type / Spacing	Number of Traps	Trap Sequence	Trap Nights/ Notes	Physical Description	Vegetative Community
B2	Grid/ 15 m	50	101–150	150/ Traps 101–125 only used for first two nights	Steep hillsides; soils mostly loam with numerous rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is low; moderate densities of dried non-native grasses and herbs; overall percent bare ground is high	Southern mixed chaparral and open southern mixed chaparral
B3a	Transect/ 15 m	10	51–60	40/ No Notes	Gentle slope; soils mostly loam; vegetation in early stage of burn recovery, thus, shrub cover is low with a high percentage of bare ground	Southern mixed chaparral and open southern mixed chaparral
B3b	Transect/ 15 m	10	61–70	40/ No Notes	Relatively flat; soils mostly loam; vegetation consists of mix dried non-native grasses and herbs; overall percent bare ground is high	Non-native grassland
B3c	Transect/ 15 m	10	71–80	40/ No Notes	Mild slope; soils mostly loam with scattered rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is moderate with a high percentage of bare ground	Southern mixed chaparral and non-native grassland
B3d	Transect/ 15 m	10	81–90	40/ No Notes	Moderately sloped; soils mostly loam with scattered rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is moderate with a high percentage of bare ground	Southern mixed chaparral
B3e	Transect/ 15 m	10	91–100	30/ Traps 96–100 only used for first two nights	Moderately sloped; soils mostly loam with scattered rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is moderate with a high percentage of bare ground	Diegan coastal sage scrub
B4	Grid/ 15 m	50	A1–A50	200/ No Notes	Mostly very dense non-native grasses; soils mostly loam; few traps w/in drainage consisting of willows and loose sand	Mostly non-native grassland with some southern willow scrub
C1	Transect/ 15 m	50	51–100	200/ No Notes	Mix of slope, ridgeline, and dirt road; soils mostly loam with infrequent rock outcrops; vegetation in early stage of burn recovery, thus, shrub cover is low with a high percentage of bare ground	Open southern mixed chaparral and Diegan coastal sage scrub
C2	Grid/ 10 m	20	151–170	80/ No Notes	Relatively flat; soils mostly loam; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Southern mixed chaparral

Sample Area	Type / Spacing	Number of Traps	Trap Sequence	Trap Nights/ Notes	Physical Description	Vegetative Community
C3	Grid/ 10 m	30	171–200	120/ No Notes	Uneven terrain with drainage features; soils mostly loam, but one drainage feature having a sandy bed; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Scrub oak chaparral
C4	Grid/ 10 m	30	A1–A30	120/ No Notes	Gently sloped hillside; soils mostly loam with scattered rock outcrops; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Southern mixed chaparral
C5	Transect/ 15 m	50	101–150	200/ No Notes	Hillside and ridgeline; soils mostly loam with numerous rock outcrops; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Open southern mixed chaparral
D1	Grid/ 15 m	30	A1–A30	120/ No Notes	Shallow canyon; soils a mix of loam in upland and sand within wash; dense canopy cover in woodlands with mixed understory (e.g., bare ground, non-native grasses, poison oak); percent cover of shrub re-growth is moderate; overall percent bare ground is high	Southern mixed chaparral, coast live oak woodland, and southern willow scrub
D2a	Grid/ 15 m	20	51–70	80/ No Notes	Relatively flat land; soils mostly loam; vegetation consists of a mix of non-native grasses and herbs; overall percent bare ground is moderate to low	Non-native grassland
D2b	Grid/ 15 m	20	71–90	80/ No Notes	Hilltop and moderately sloped hillside; soils range from loam to sandy loam with numerous rock outcrops; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Southern mixed chaparral
D3a	Grid/ 15 m	20	91–110	80/ No Notes	Gently sloped hillsides; soils mostly loam; vegetation in early stage of burn recovery with moderate percent cover of shrub re-growth; overall percent bare ground is high	Southern mixed chaparral

Sample Area	Type / Spacing	Number of Traps	Trap Sequence	Trap Nights/ Notes	Physical Description	Vegetative Community
D3b	Grid/ 15 m	30	111–140	120/ No Notes	Broad wash and adjacent gently sloped hillsides; soils in wash are sandy while soils associated with adjacent hillsides are mostly loam with scattered rock outcrops; vegetation within the wash consists of moderate densities of mule fat (*Baccharis salicifolia*) and salt grass (*Distichlis spicata*); vegetation on adjacent hillsides comprising oaks with a mixed understory of non-native grasses and bare ground	Coast live oak woodland and mule fat scrub
D4a	Transect/ 15 m	20	141–160	80/ No Notes	Lowland upslope from pond; soils a mix of loam and silty loam; vegetation a mix of non-native grasses with moderate percent bare ground and dense herbs (i.e., yerba mansa [*Anemopsis californica]*) with no bare ground; no trees or shrubs present	Non-native grassland
D4b	Transect/ 15 m	30	161–190	120/ No Notes	Moderately sloped hillside; soils mostly loam with scattered rock outcrops; in chaparral-the percent cover of shrub re-growth is moderate; in oak woodland-canopy cover is relatively dense with a mixed understory of bare ground and non-native grasses; overall percent bare ground is moderate	Southern mixed chaparral and coast live oak woodland
D-misc	Transect/ 2-4 m	10	A31–A40	10/ Traps set between midnight and dawn for one night on 7/29/09 after observing kangaroo rats on dirt road in suitable SKR habitat	Dirt road on flat land; soils mostly loam; surrounding vegetation comprising mostly dense non-native grasses	Non-native grassland

On one occasion (July 29, 2009), after observing kangaroo rats foraging on a dirt road located within the southwest portion of the Preserve in suitable SKR habitat, 10 additional traps were set at midnight and checked at dawn. All 10 traps were removed from the Preserve at the dawn check.

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 F). 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.

Medium to 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.

Camera Tracking Survey

Remote camera stations were used to help document the presence of medium and large mammals within the Preserve (Figure 8). These stations allow for the detection of species that are rarely encountered because of their nocturnal or crepuscular activity patterns. Within the Preserve, ten camera tracking stations were set up at locations that are judged to have a high potential for movement of medium and large mammals (e.g., along game trails, abandoned roadways, and existing ranch roads) (Table 9).

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. Camera station sampling included a spring, summer and fall survey. Digital images were interpreted and all animals were identified to the species level.

Table 9. Camera Sampling Location Description

Camera Station Number	Physical Description	Vegetative Community
1	Convergence of two access roads located along the ridgeline north of Santa Maria Creek in the northwestern area of the Preserve.	Southern Mixed Chaparral
2	Water gauge located along Santa Maria Creek that provides an easy location for animals to cross. Located in the northwestern area of the Preserve.	Dense Coast Live Oak Woodland/Southern Coast Live Oak Riparian Forest
3	Small drainage feature with associated game trails leading from a more heavily disturbed/grazed area to more intact chaparral in the northeastern area of the Preserve.	Southern Mixed Chaparral/Disturbed Southern Mixed Chaparral
4	Heavily used game trail located adjacent to the pond within the southwestern area of the Preserve.	Southern Coast Live Oak Riparian Forest

Camera Station Number	Physical Description	Vegetative Community
5	Shaded rock outcrop overlooking large open area of non-native grassland in the southwestern area of the Preserve.	Open Coast Live Oak Woodland
6	Sandy portion of Santa Maria Creek located in the southeastern area of the Preserve.	Southern Willow Scrub
7	Bridge crossing at Highland Valley Road.	Mule Fat Scrub/Emergent Wetland
8	Edge of a dense oak woodland opening up at the intersection with Santa Maria Creek. Located in the southwestern area of the Preserve.	Dense Coast Live Oak Woodland/ Mule Fat Scrub
9	Located just above San Pasqual Valley, this sampling site is along one of the lowest portions of Santa Maria Creek within the northwestern area of the Preserve.	Southern Willow Scrub
10	Located in the northeastern area of the Preserve. The sampling location is surrounded by non-native grassland and the site was selected as it is one of the only water sources in this area of the Preserve.	Southern Willow Scrub/Non-Native Grassland

Mammal Track and Sign Survey

Sections of existing ranch roads were carefully examined for tracks and sign (scat, scrapings, etc.) of medium and large mammals throughout the survey season. These track and sign surveys were conducted concurrently with all other surveys scheduled within the Preserve. Surveys were primarily conducted during the day; however, periodic nighttime surveys were performed. Daytime surveys involved hiking accessible ranch roads 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.

Bats

Passive surveys using Anabat II bat detectors (Anabats; Titley Electronics, New South Wales, Australia) were conducted within the Preserve. Anabat II bat detectors 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). All recorded bat echolocation calls were identified to species and an index of relative bat activity was generated by taking the number of bat call 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 2009. During these monitoring sessions, a total of four passive Anabat units were placed in the Preserve to monitor bats for three consecutive nights. Six locations were sampled (Table 10, Figure 8).

Table 10. Anabat Sampling Location Description

Array Number	Name	Physical Description
1	Cave	This sampling location was an old mining cave located on the western side of the northwestern area of the Preserve south of Santa Maria Creek. An old overgrown access road cuts its way through the southern mixed chaparral that dominates this portion of the Preserve.
2	Lower Santa Maria Creek	This sampling location was selected for its ability to provide good foraging and drinking opportunities for bats. Located just above San Pasqual Valley, this sampling site is along one of the lowest portions of Santa Maria Creek within the northwestern area of the Preserve. The surrounding vegetation is dominated by disturbed southern mixed chaparral adjacent to coast live oak woodland.
3	Upper Santa Maria Creek	This sampling location was selected for its proximity to dense coast live oak woodland, and the presence of a long standing water source. This location is in the northwestern area of the Preserve. There is an old water gauge and dam along this portion of the creek.
4	Oak woodland	This sampling location was located on the edge of dense coast live oak woodland immediately adjacent to Santa Maria Creek in the southwestern area of the Preserve
5	Pond	This is a permanent water source located in the southwestern area of the Preserve. This site was selected as it is an excellent foraging/drinking site for bats.
6	Stock pond	Located in the northeastern area of the Preserve. The sampling location is surrounded by non-native grassland and the site was selected as it is one of the only water sources in this area of the Preserve. It provides both foraging and drinking opportunities for bats.

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Chapter 4
Results and Discussion

4.1 Vegetation Communities/Habitats

As detailed in Chapter 3, the 2009 surveys updated the existing vegetation community data for areas previously studied at the Preserve (CBI 2007) and expanded the mapping as necessary to ensure coverage over the entire Preserve. Vegetation communities and land cover types present on the Preserve include: eucalyptus woodland, non-native woodland, disturbed habitat, developed lands, open water, agriculture, Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, chamise chaparral, scrub oak chaparral, valley needle grassland, non-native grassland, alkali marsh, coastal and valley freshwater marsh, emergent wetland, southern coast live oak riparian forest, mule fat scrub, southern willow scrub, open coast live oak woodland, and dense coast live oak woodland (Figure 9, Table 11). In addition to the vegetation communities listed above, vernal pools and vernal swales occur within the grasslands. During the 2009 surveys, focused vernal pool surveys were not conducted as these resources were thoroughly studied in 2005 and 2006 (CBI 2007).

A description of the vegetation communities and associated dominant plant species detected during the surveys are found below. A complete list of plant species observed within the Preserve is provided as Appendix B.

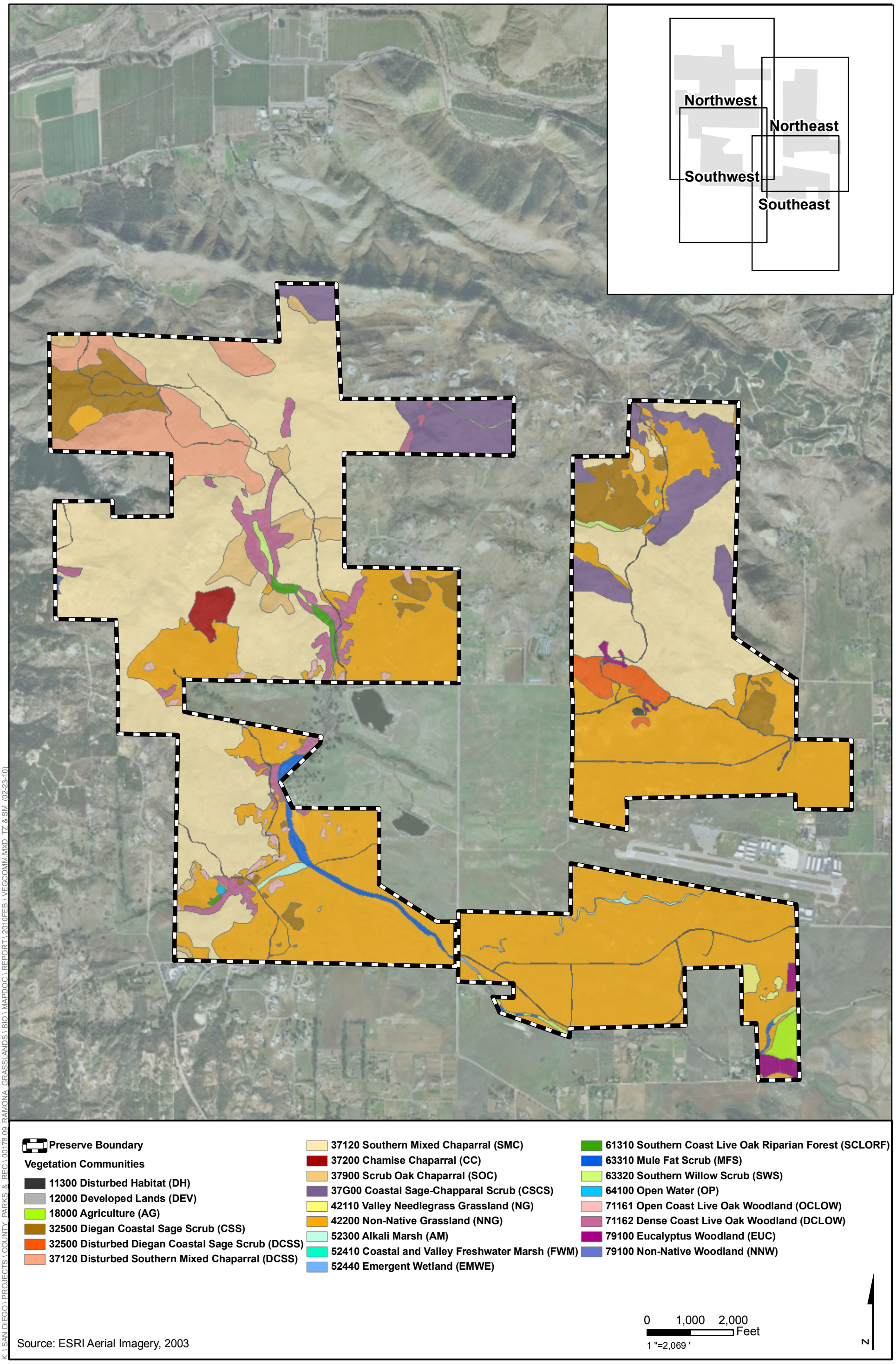
Table 11. Vegetation Communities and Land Cover Types within the Preserve

Vegetation Community/Land Cover Type (Holland/Oberbauer Code)	Code on Figure 9	Acres
Scrub and Chaparral		
Diegan Coastal Sage Scrub (32500)	CSS	151.02
Disturbed Diegan Coastal Sage Scrub (32500)	DCSS	32.42
Coastal Sage-Chaparral Scrub (37G00)	CSCS	194.79
Southern Mixed Chaparral (37120)	SMC	1250.19
Disturbed Southern Mixed Chaparral (37120)	DSMC	157.80
Chamise Chaparral (37200)	CC	18.81
Scrub Oak Chaparral (37900)	SOC	57.80
Subtotal		*1862.84*
Grasslands		
Valley Needlegrass Grassland (42110)	NG	8.16
Non-Native Grassland (42200)	NNG	1399.85
Subtotal		*1408.01*

Vegetation Community/Land Cover Type (Holland/Oberbauer Code)	Code on Figure 9	Acres
Wetlands		
Open Water (13100)	OW	0.84
Alkali Marsh (52300)	AM	8.81
Coastal and Valley Freshwater Marsh (52410)	FWM	0.04
Emergent Wetland (52440)	EMWE	0.97
Southern Coast Live Oak Riparian Forest (61310)	SCLORF	9.37
Mule Fat Scrub (63310)	MFS	23.26
Southern Willow Scrub (63320)	SWS	14.32
Subtotal		*57.62*
Woodlands		
Non-Native Woodland (1100)	NNW	1.02
Eucalyptus Woodland (11000)	EUC	16.62
Open Coast Live Oak Woodland (71161)	OCLOW	18.83
Dense Coast Live Oak Woodland (71162)	DCLOW	84.04
Subtotal		*120.51*
Other Land Cover Types		
Disturbed Habitat (11300)	DH	23.73
Agriculture (18000)	AG	14.96
Developed Lands (12000)	DEV	1.36
Subtotal		*40.04*
TOTAL		3489.02

4.1.1 Eucalyptus Woodland (11000)

Eucalyptus woodlands on the Preserve consist of monoculture stands of gum trees (*Eucalyptus* spp.). The stands along the eastern edge of the southeast area appear to have been planted as the trees are evenly spaced in rows. The eucalyptus woodland on the northeast area is near the abandoned residence and just to the north of the residence.



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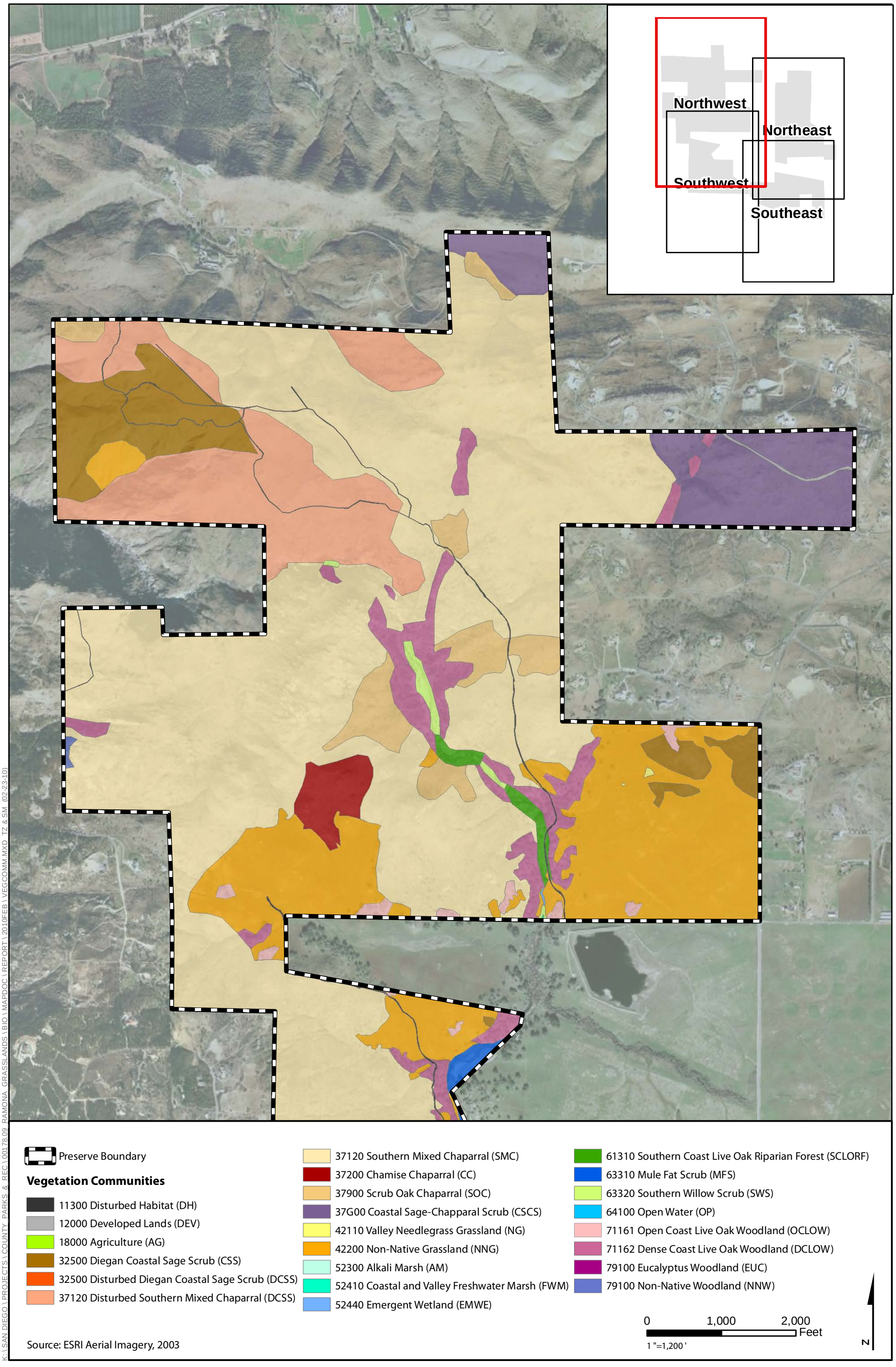
ICF INTERNATIONAL

Figure 9
Vegetation Communities/Habitats
Ramona Grasslands



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ICF Jones & Stokes
an ICF International Company

Figure 9a
Vegetation Communities/Habitats
Ramona Grasslands

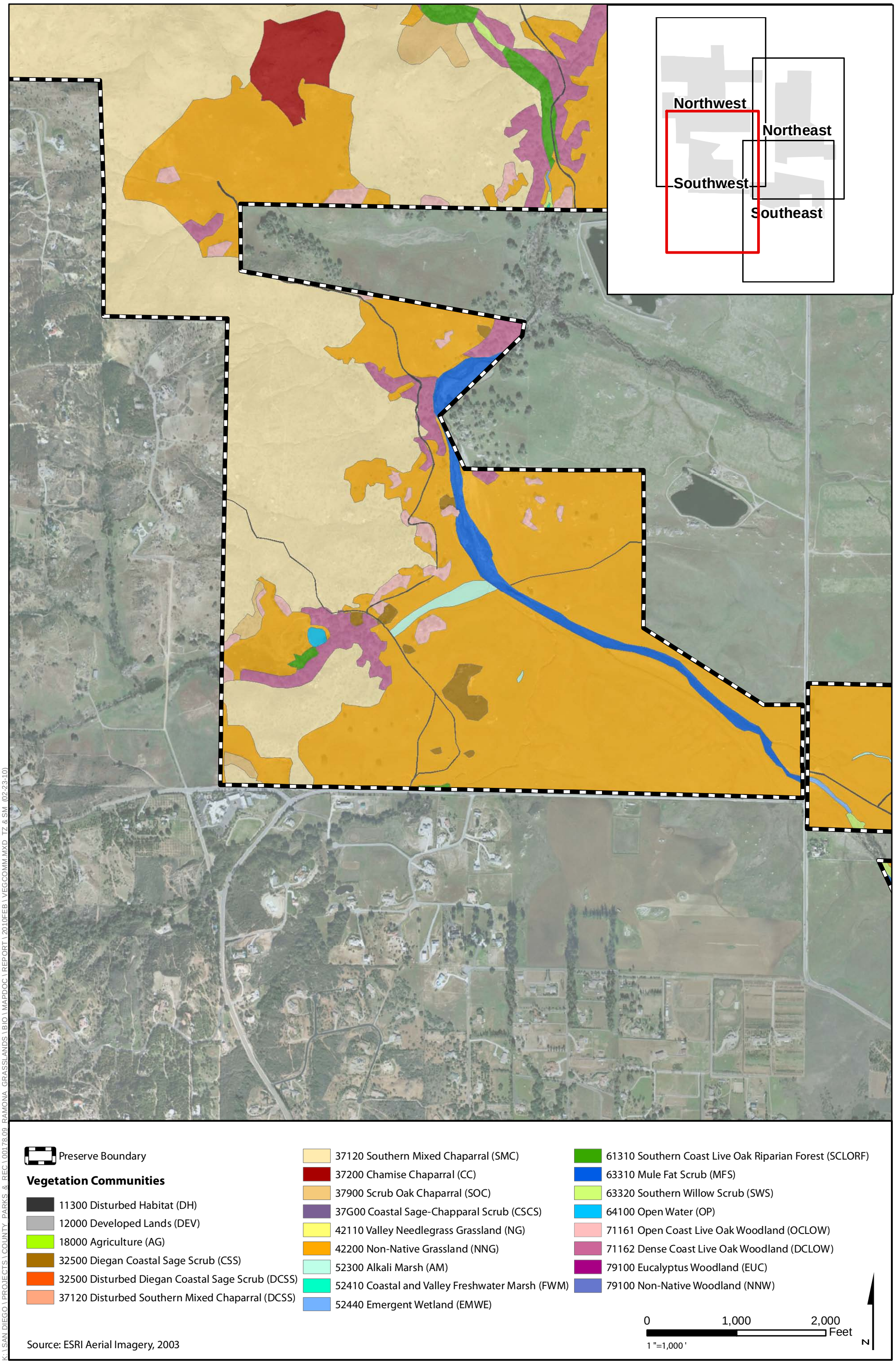

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Figure 9b
Vegetation Communities/Habitats
Ramona Grasslands

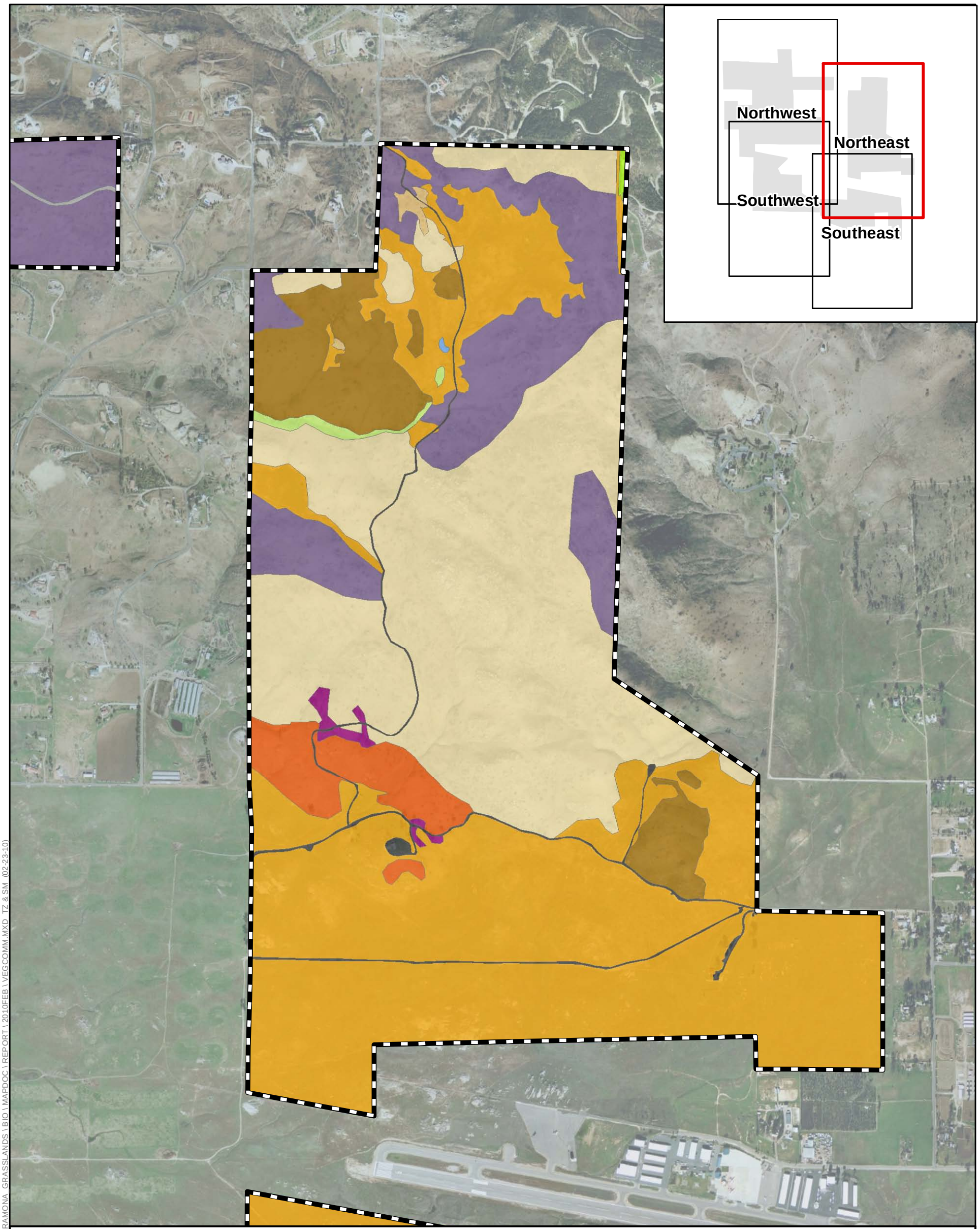

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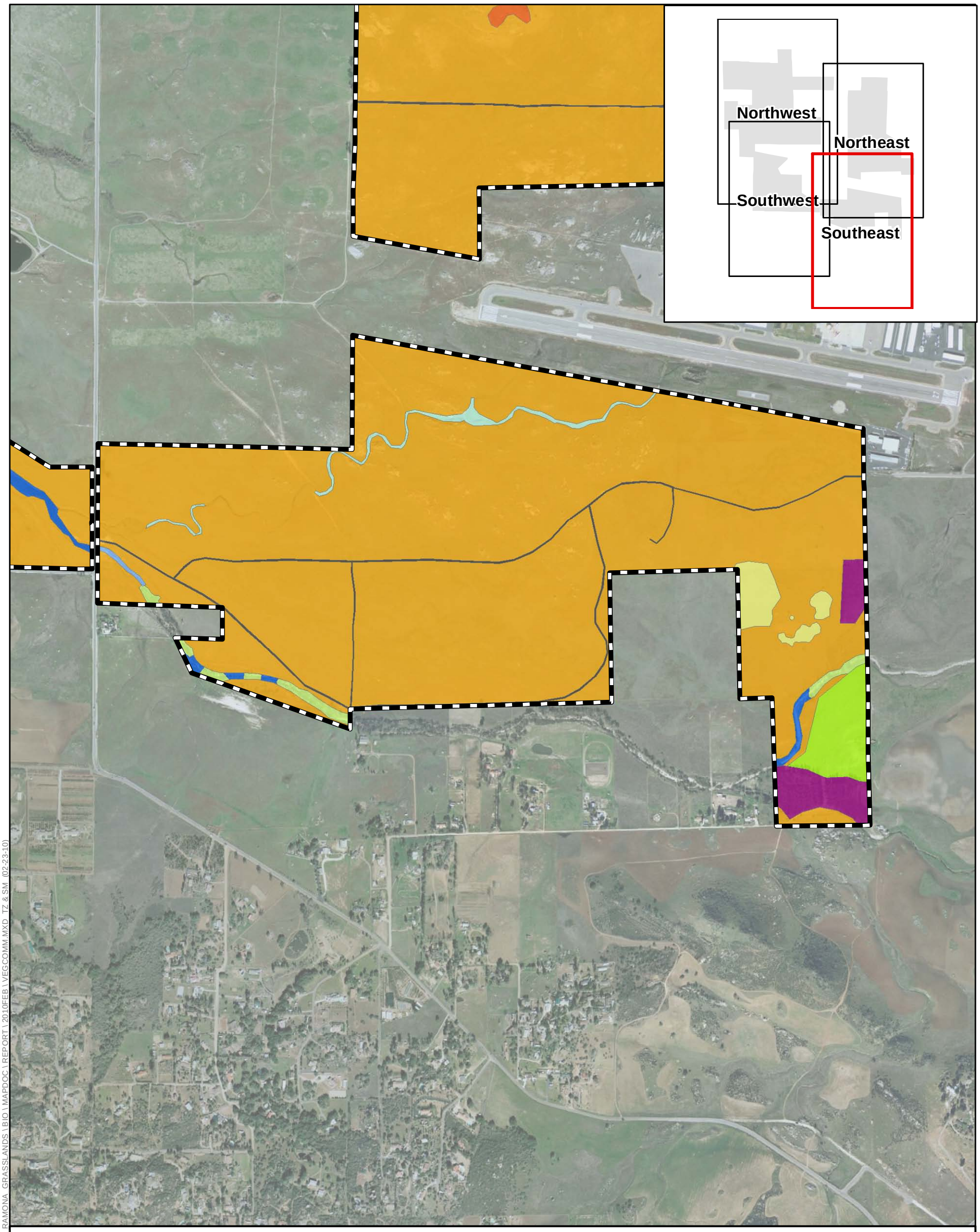
Figure 9 c
Vegetation Communities/Habitats
Ramona Grasslands



Preserve Boundary

Vegetation Communities

- 11300 Disturbed Habitat (DH)
- 12000 Developed Lands (DEV)
- 18000 Agriculture (AG)
- 32500 Diegan Coastal Sage Scrub (CSS)
- 32500 Disturbed Diegan Coastal Sage Scrub (DCSS)
- 37120 Disturbed Southern Mixed Chaparral (DCSS)
- 37120 Southern Mixed Chaparral (SMC)
- 37200 Chamise Chaparral (CC)
- 37900 Scrub Oak Chaparral (SOC)
- 37G00 Coastal Sage-Chapparal Scrub (CSCS)
- 42110 Valley Needlegrass Grassland (NG)
- 42200 Non-Native Grassland (NNG)
- 52300 Alkali Marsh (AM)
- 52410 Coastal and Valley Freshwater Marsh (FWM)
- 52440 Emergent Wetland (EMWE)
- 61310 Southern Coast Live Oak Riparian Forest (SCLORF)
- 63310 Mule Fat Scrub (MFS)
- 63320 Southern Willow Scrub (SWS)
- 64100 Open Water (OP)
- 71161 Open Coast Live Oak Woodland (OCLOW)
- 71162 Dense Coast Live Oak Woodland (DCLOW)
- 79100 Eucalyptus Woodland (EUC)
- 79100 Non-Native Woodland (NNW)

Source: ESRI Aerial Imagery, 2003

0 1,000 2,000 Feet

1 "=1,000 '

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Figure 9d
Vegetation Communities/Habitats
Ramona Grasslands

4.1.2 Non-Native Woodland (11000)

Non-native woodland is a community made up of non-native trees planted for ornamental or agricultural purposes, but appears to be abandoned. Within the Preserve, a small patch of non-native woodland occurs on the western side of the northwest area and consists of citrus trees (*Citrus* sp.), avocado (*Persea americana*), and fan palms (*Washingtonia robusta*).

4.1.3 Disturbed Habitat (11300)

Disturbed habitat within the Preserve consists primarily of ranch roads. These areas consist of mostly bare ground.

4.1.4 Developed Lands (12000)

Developed land typically consists of existing paved roads, buildings, and other infrastructure. On the Preserve, the only area mapped as developed is a paved road that crosses through the edge of the eastern side of the northwest area and provides access to adjacent residences.

4.1.5 Open Water (13100)

Open water refers to a body of water such as a lake or a pond. On the Preserve, open water consists of a stock pond located on the southwest area. This pond held water throughout the 2009 surveys and appears to be utilized by cattle year-round. No riparian vegetation such as cattails or willows (*Salix* sp.) surrounds the pond.

4.1.6 Agriculture (18000)

Agriculture consisted of a fenced pasture in the corner of the southeast area where cattle were more intensively grazed than the remainder of the Preserve.

4.1.7 Diegan Coastal Sage Scrub (32500)

Diegan coastal sage scrub is typically characterized by low, woody subshrubs that grow up to 1 m (3 ft) in height (Holland 1986). Dominant species within the coastal sage scrub found on the Preserve include California buckwheat (*Eriogonum fasciculatum*), coastal sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), and black sage (*Salvia mellifera*). Other species noted on site include non-native grasses such as slender wild oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), and fescue (*Vulpia myuros*). Diegan coastal sage scrub occurs in scattered patches throughout the Preserve generally on northwestern facing slopes. Currently, these areas are best described as small unburned patches mostly dominated by California buckwheat that cattle often graze through. There are two larger areas mapped as Diegan coastal sage scrub on the northeast area. These areas were burned in the 2007 Witch Fire and are slowly returning to a coastal sage scrub community. The abundance of non-native species and the sparse distribution of typically dominant shrub species are the characteristics that distinguish disturbed Diegan coastal sage scrub from undisturbed Diegan coastal sage scrub. Disturbed Diegan coastal sage scrub is found on the northeast area in an area where non-native grasses formed approximately 80% of the ground cover and coastal sage scrub species were present in patches. This area was burned and has signs of disturbance from

cattle grazing. The wildlife species observed using the sparse shrubby areas were different from those that would use grasslands; therefore, the area is currently functioning as poorly developed coastal sage scrub.

4.1.8 Coastal Sage-Chaparral Scrub (37G00)

Coastal sage-chaparral scrub consists of a mixture of herbaceous and shrubby species that forms a community with features of both coastal sage scrub and chaparral (Holland 1986). Within the Preserve, this community appears to be a post-fire successional community. Dominant species include spiny redberry (*Rhamnus crocea*), chamise (*Adenostema fasciculatum*), black sage, California buckwheat, coastal sagebrush, foxtail chess, slender wild oat, deerweed, golden bush (*Hazardia squarrosa*), white sage (*Salvia apiana*), and short-pod mustard (*Hirchfeldia incana*). Coastal sage-chaparral scrub occurs on slopes in the northern peripheries of the northwest area and more extensively on the northern slopes of the northeast area.

4.1.9 Southern Mixed Chaparral (37120)

Southern mixed chaparral is a broad-leaved sclerophyll shrub community forming dense often impenetrable vegetation dominated by chamise, mission manzanita (*Xylococcus bicolor*), lilac (*Ceanothus oliganthus*), and scrub oak (*Quercus berberidifolia*) (Holland 1986). Other species observed during the field surveys included Ramona lilac (*Ceanothus tomentosus*), laurel sumac (*Malosma laurina*), Mexican elderberry (*Sambucus mexicanus*), poison oak (*Toxicodendron diversilobum*), sugar bush (*Rhus ovata*), and toyon (*Heteromeles arbutifolia*). Southern mixed chaparral is the dominant scrub community on the western areas and also occurs on the slopes in the central portion of the northeast area. The abundance of non-native species and the sparse distribution of typically dominant shrub species are the characteristics that distinguish disturbed southern mixed chaparral from undisturbed southern mixed chaparral. On the northwest area, the area mapped as disturbed is not recovering from the Witch Fire as successfully as the surrounding habitat. There is a much greater abundance of non-native grasses.

4.1.10 Chamise Chaparral (37200)

Chamise chaparral is a 1–3 m (3–6 ft) tall chaparral dominated by chamise and is well adapted to repeated fires (Holland 1986). Mature stands of chamise chaparral are densely interwoven shrubs with little herbaceous understory or litter. A patch of chamise chaparral occurs in the southern portion of the northwest area.

4.1.11 Scrub Oak Chaparral (37900)

Scrub oak chaparral is a dense, evergreen chaparral to 6 m (20 ft) tall, dominated by scrub oak, and can have a thick canopy that reaches the ground (Holland 1986). There are few understory plants and typically the understory consists of a substantial accumulation of leaf litter (Holland 1986). Other species associated with this community include chaparral whitethorn (*Ceanothus leucodermis*), toyon, and sugar bush. This community can be found scattered on north-facing slopes on the northern and southwest areas.

4.1.12 Valley Needlegrass Grassland (42110)

Valley needlegrass grassland in southern California is typically characterized by native grass species in the genus *Nasella* (Holland 1986). Native grasslands usually occur in upland areas with little or no history of agricultural development. Small, isolated native grasslands occur on clay lenses, or in small pre-Pleistocene deposits of dense clay materials. Native and non-native annuals occur in the gaps between the perennials (Holland 1986). The largest area of valley needlegrass grassland was mapped in the southeast area with a few smaller polygons in the northwest area.

4.1.13 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 (Holland 1986). 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]).

Non-native grassland habitat characteristics within the Preserve have been heavily influenced by historical and current land uses, including cattle grazing. In addition, vegetative structure on the clay soils tends to be quite different from that on loamy soils. However, existing grassland community composition patterns are confounded by spatial patterns of grazing in the Preserve. Existing fences, rock outcrops, water sources, and topography tend to concentrate cattle activity more in some areas than others, resulting in a mosaic of grazing intensities and habitat disturbance. Some areas far from water sources, and especially those on the clay soils at the eastern end of the southeast area, are lightly grazed resulting in a dense cover of invasive non-native annuals and accumulated thatch. Dominant plants observed within the clay grasslands include small flowered bindweed (*Convolvulus simulans*), California large-leaf filaree (*California macrophylla*), dwarf plantain (*Plantago erecta*), foxtail chess, slender wild oat, rip gut (*Bromus diandrus*), common tarweed (*Deinandra fasciculatum*), and graceful tarplant (*Holocarpha virgata* ssp. *elongata*). Dominant plants within the loamy grassland areas include saltgrass (*Distchlis spicata*), filaree (*Erodium* sp.), rip gut, slender wild oat, and foxtail chess.

4.1.14 Alkali Marsh or Alkali Playas (52300)

Alkali marsh is characterized by standing water or saturated soil present during most or all of the year where high evaporation and low input of fresh water increases the salt content in the marsh (Holland 1986). This habitat type can be found within the Santa Maria Creek floodplain, mostly north of the creek in the southwest area of the Preserve. Associated plant species include yerba mansa (*Anemopsis californica*), sedges (*Carex* spp.), rushes (*Juncus* spp.), southern cattail (*Typha domingensis*), and saltgrass. During the 2009 surveys, some areas that were previously mapped as freshwater marsh (EDAW 2009, RBF 2006) were mapped as alkali marsh. The areas were mapped as alkali marsh due to the presence of species more consistent with Holland's description of alkali marsh rather than freshwater marsh including salt grass, Mexican rush and yerba mansa. However, Holland's description of alkali marsh explains that there are similarities between freshwater and alkali marsh and that the two communities can intergrade. The area should remain mapped as alkali marsh based on the species composition observed in 2009.

4.1.15 Coastal and Valley Freshwater Marsh (52410)

Freshwater marsh communities occur in areas permanently inundated or flooded by fresh water and lacking significant current from water movement (Holland 1986). Prolonged saturation in these areas creates deep, peaty soils (Holland 1986). Freshwater marshes are usually located in the coastal valleys near river mouths and around the margins of lakes and springs. Freshwater marsh is dominated by perennial, emergent monocots, such as *Typha* spp. and *Schoenoplectus* spp., typically ranging from 1.2 to 1.5 m (4 to 5 ft) tall (Holland 1986). Plants observed within this community on the Preserve include salt heliotrope (*Heliotropium curassavicum*), rip gut, foxtail, amaranthus (*Amaranthus* sp.), and goosefoot (*Chenopodium* sp.). A small patch of freshwater marsh occurs in Santa Maria Creek in the southern edge of the northwest area. Previous surveys have identified additional areas of freshwater marsh or seep (RBF 2006). For the 2009 surveys, these areas were mapped as non-native grassland due to the dominance of annual non-native grasses rather than perennial herbs. Holland's description of freshwater seep states characteristic species include sedges and rushes. These species were not observed in 2009 at a level of abundance to define the habitat as freshwater seep. The change of vegetation type between 2006 and 2009 may be due to lower than average levels of rainfall in the corresponding time period.

4.1.16 Emergent Wetland (52440)

Emergent wetland usually consists of pockets of slow moving water on the margins of streams that lack the well-developed, larger marsh or riparian plant species associations. This habitat provides valuable cover for amphibians, mammals, and birds. Plants associated with this habitat included cattail (*Typha* spp.), viscid bulrush (*Schoenoplectus acutus* var. *occidentalis*), and sedges. Emergent wetland occurs along Santa Maria Creek in the southern portion of the northwest area, in the western portion of the southeast area, and also in a small patch in the northern section of the northeast area.

4.1.17 Southern Coast Live Oak Riparian Forest (61310)

Southern coast live oak riparian forest is found in bottomlands and outer floodplains along larger streams, on fine-grained rich alluvium (Holland 1986). It consists of a dense evergreen riparian forest dominated by coast live oak (*Quercus agrifolia*) (Holland 1986). There are two patches of southern coast live oak riparian forest within the Santa Maria Creek channel on the northwest area, one patch in the western portion of the southwest area adjacent to the stock pond, and a small patch adjacent to Highland Valley Road on the south side of the southwest area.

4.1.18 Mule Fat Scrub (63310)

Mule fat scrub is described as a depauperate, tall, herbaceous riparian scrub dominated by mule fat (*Baccharis salicifolia*) (Holland 1986). Mule fat scrub is usually found in intermittent stream channels with fairly coarse substrate and moderate depth to the water table and requires frequent flooding (Holland 1986). If frequent flooding does not occur, mule fat scrub commonly succeeds to cottonwood or sycamore dominated riparian forests or woodlands (Holland 1986). Mule fat scrub occurs within the Santa Maria Creek channel on the southern areas.

4.1.19 Southern Willow Scrub (63320)

Southern willow scrub is found on loose, sandy, or fine gravelly alluvium deposited near stream channels (Holland 1986). This habitat was once extensive along the major rivers of coastal southern California, but has been greatly reduced by urbanization, flood control, and streambed improvements (Holland 1986). Southern willow scrub is described as dense, broad-leafed, winter-deciduous riparian thickets dominated by several *Salix* species, with sub-dominants such as mule fat that is often too dense to support a well developed herbaceous understory (Holland 1986). Fremont cottonwoods (*Populus fremontii*) and western sycamores (*Platanus racemosa*) are scattered in the scrub as seedlings or saplings. Southern willow scrub occurs in three patches in the Santa Maria Creek on the northwest area and several more patches along the Santa Maria Creek on the southeast area. It can also be found in a drainage in the northern portion of the northeast area.

4.1.20 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 (Holland 1986). The understory can be variable, with shrubs recruited from surrounding chaparral and sage scrub communities forming dense, impenetrable stands, or it can be more open with scattered shrubs with a more herbaceous understory (Holland 1986). Typical understory species include toyon, chamise, and lilacs (*Ceanothus* spp.). There are scattered patches of open coast live oak woodland throughout the Preserve, usually on the peripheries of areas with dense coast live oak woodland.

4.1.21 Dense Coast Live Oak Woodland (71162)

Dense coast live oak woodland consists of a closed canopy of coast live oak trees, usually with trees in denser groupings than in open coast live oak woodland. Understory vegetation is made up of more shade tolerant shrubs and herbs such as toyon, various native ferns (*Polypodium* sp., *Cheilanthes* spp.), or a thick layer of litter. Dense coast live oak woodland occurs along the Santa Maria Creek in the western areas and in the western hills of the southwest area. There are also scattered patches of this community where soils and hydrology allow this community to develop.

4.2 Plants

The following section discusses special-status plant species observed 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 detected include ashy spike-moss (*Selaginella cinerascens*), San Diego thornmint (*Acanthominta ilicifolia*), California adder's tongue (*Ophioglossum californicum*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), Coulter's saltbush (*Atriplex coulteri*), Parish's brittlescale (*Atriplex parishii* var. *parishii*), southern tarplant (*Centromadia parryi* ssp. *australis*), Palmer's sagewort (*Artemisia palmeri*), graceful tarplant (*Holocarpha virgata* ssp. *elongata*), rush chaparral-star (*Xanthisma junceum*), field bindweed (*Convolvulus simulans*), San Diego milkvetch (*Astragalus oocarpus*), Engelmann oak (*Quercus engelmannii*), California large-leaf filaree (*California macrophylla*), vernal barely (*Hordeum intercedens*), and Ramona spineflower (*Chorizanthe leptotheca*) (Figure 10).

4.2.1 Special-Status Plant Species Observed

Ashy Spike-Moss (*Selaginella cinerascens*)

CNPS List 4, San Diego County List D

Ashy spike-moss is typically found in undisturbed chaparral and Diegan coastal sage scrub (Reiser 1994). The species prefers undisturbed soils (Reiser 1994). This species is a common understory element within the chaparral habitats containing exposed rock outcrops and open soils in the northeast and northwest portions of the Preserve. Due to the abundance of this species within the Preserve, point locations were not mapped.

San Diego Thornmint (*Acanthomintha ilicifolia*)

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

San Diego thornmint is an annual wildflower typically found on friable clay soils in grassy openings within chaparral. A small population of San Diego thornmint was observed within the non-native grassland habitat south of the Ramona Airport in the southeastern portion of the Preserve (Figure 10). This population occurs on heavy, friable clay soils. Approximately 30 individuals of this species were observed in 2009. It is assumed that the population is typically larger in years of average to above average rainfall.

California Adder's Tongue (*Ophioglossum californicum*)

CNPS List 4, San Diego County List D

California adder's tongue is a rhizomatous herb closely associated with vernal pools, seeps, and vernally moist locales within open chaparral and grasslands (Reiser 1994, CNPS 2009). Within the Preserve, this species was found in a moist swale in the northeast area.

Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)

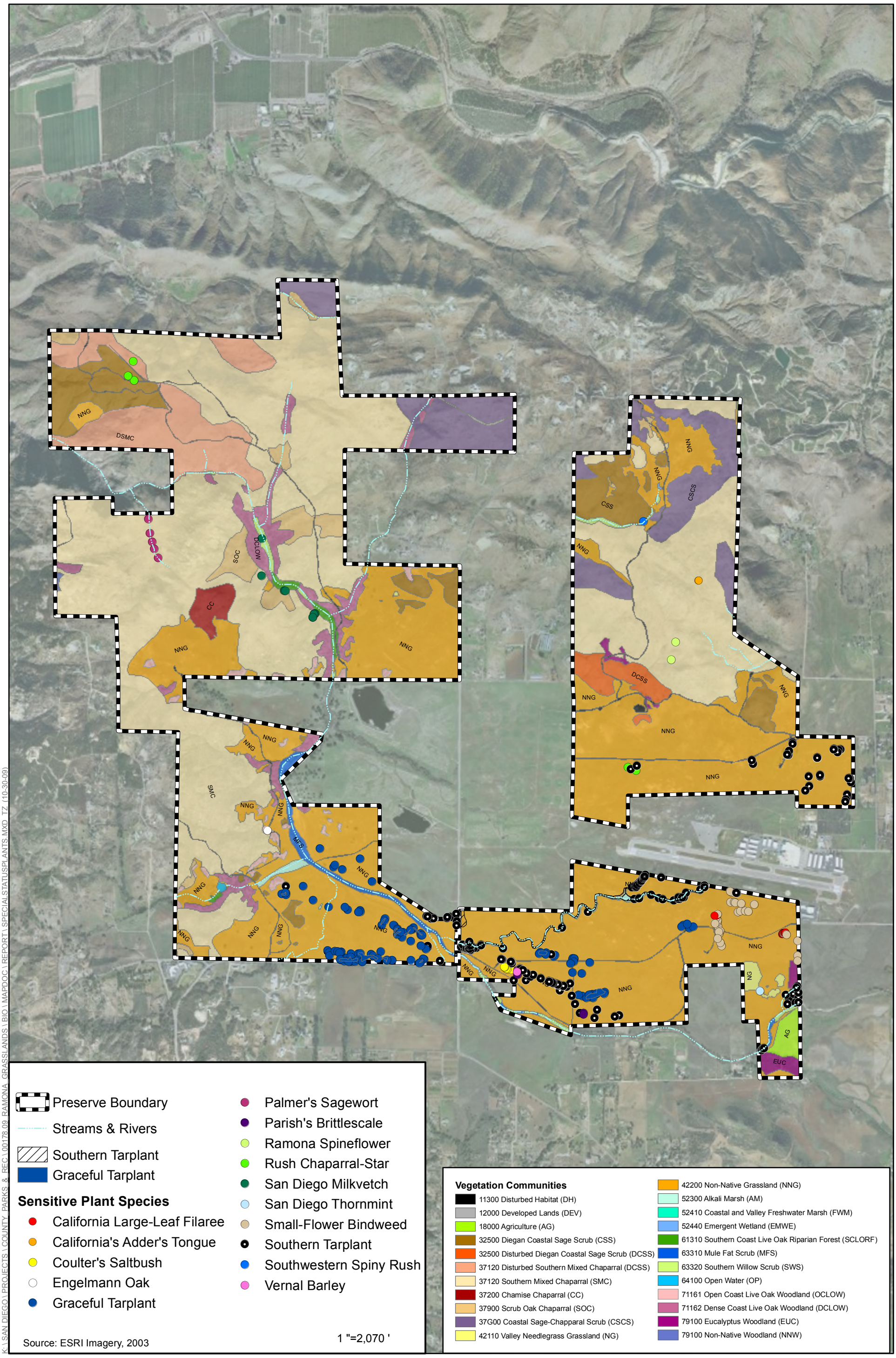
CNPS List 4, San Diego County List D

Southwestern spiny rush is a rhizomatous herb found in seeps, meadows, salt marsh, and coastal dunes, usually occurring in wetlands, but occasionally found in non-wetlands (CNPS 2009). Potential habitat includes areas where water can pond along substantial seasonal drainages (Reiser 1994). Southwestern spiny rush was observed within an ephemeral drainage in the northeast area (Figure 10).

Coulter's Saltbush (*Atriplex coulteri*)

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

Coulter's saltbush is a perennial herb typically found on coastal bluffs and dunes and in coastal scrubs but can occur in valley and foothill grasslands with alkaline or clay soils (Reiser 1994, CNPS 2009). This species was found on alkali flats within the southeast area.



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0 500 1,000 2,000 Feet

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Figure 10
Special Status Plant Species
Ramona Grasslands

Parish's Brittlescale (*Atriplex parishii* var. *parishii*)

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

Parish's brittlescale is an annual herb found in playas or vernal pools associated with alkali sinks and freshwater wetlands (CNPS 2009). This species was found on alkali flats within the southeast area.

Southern Tarplant (*Centromadia parryi* ssp. *australis*)

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

Southern tarplant is an annual herb typically associated with marshes, valley grassland, vernal pools, and other alkaline locations and is usually found in areas surrounded by non-native weeds (CNPS 2009). On the Preserve, this species was dominant within the swale and vernal pool features on the southwest, southeast, and northeast areas.

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

CNPS List 4, San Diego County List D

Palmer's sagewort is a deciduous shrub typically found along creeks and drainages near the coast and inland within mesic chaparral conditions (Reiser 1994, CNPS 2009). On the Preserve, this species was found along Santa Maria Creek within the northwest area.

Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)

CNPS List 4, San Diego County List D

Graceful tarplant is an annual herb that is typically found within annual and perennial grasslands but can occur within coastal sage scrub and chaparral (Reiser 1994, CNPS 2009). Within the Preserve, this species was found frequently in areas of non-native grassland on the southeast and southwest areas.

Rush Chaparral-Star (*Xanthisma junceum*) (Also known as *Machaeranthera juncea*)

CNPS List 4, San Diego County List D

Rush chaparral-star is a perennial herb associated with low growing chamise chaparral and Diegan sage scrub communities (CNPS 2009). It prefers exposed locales with rocky substrates (Reiser 1994). On the Preserve, this species was found on the northern slopes of the northwest area.

Small-Flower Bindweed (Also known as Small-Flowered Mourning-Glory) (*Convolvulus simulans*)

CNPS List 4, San Diego County List D

Small-flower bindweed is an annual herb typically found on clay soils devoid of shrubs, and also in openings in chaparral, sage scrub, and grassland (Reiser 1994, CNPS 2009). On the Preserve, it was found in openings with clay soils in non-native grassland on the southeast area.

San Diego Milkvetch (*Astragalus oocarpus*)

CNPS List 1B, San Diego County List A

San Diego milkvetch is a perennial herb typically found at the edges of cismontane chaparral along the periphery of meadows. Other plant species associated with San Diego milkvetch include manzanita (*Arctostaphylos* sp.), chamise, and other woody shrubs. On the Preserve, San Diego milkvetch was observed on the northwest area on the periphery of the coast live oak woodland overstory. This population represents a significant western extension of the known range of San Diego milkvetch. Typically, San Diego milkvetch occurs within the eastern portion of San Diego County (near Ranchita or McCain Valley) at elevations higher than the Preserve.

Engelmann Oak (*Quercus engelmannii*)

CNPS List 4, San Diego County List D, North County MSCP Covered Species

Engelmann oak is commonly found in the foothills between 500 and 4,000 ft (152 and 1,219 m). Growing to 40 ft tall (12 m), this tree has flat, grey-blue-green leaves and tolerates less water than coast live oak. Larger oaks are sometimes found growing in savannah grasslands but it may also occur as a shrubby element within chaparral. Engelmann oaks are still relatively abundant throughout their range in southern California. One Engelmann oak occurs on the southwest area.

California Large-Leaf Filaree (*California macrophylla*)

CNPS List 1B, San Diego County List B

California large-leaf filaree is an annual herb found in cismontane woodlands and valley and foothill grasslands in open habitat on friable clay soils (CNPS 2009). On the Preserve, several populations were observed in the clay soils on the southeast area.

Vernal Barley (*Hordeum intercedens*)

CNPS List 3, San Diego County List C

Vernal barely is an annual grass that typically occurs in coastal dunes, coastal scrub, valley and foothill grassland, and vernal pools. On the Preserve, vernal barley was observed in alkali soils on the southeast area.

Ramona Spineflower (*Chorizanthe leptotheca*)

CNPS List 4, San Diego County List D

Ramona spineflower is a small annual that is found within dry openings in chamise chaparral, coastal sage scrub, or lower montane coniferous forest (Reiser 1994, CNPS 2009). Species were observed on the south-facing slopes of the northeast area in the openings in the burned chaparral.

4.2.2 Special-Status Plant Species with High Potential to Occur

Payson's Caulanthus (Also known as Payson's Jewelflower) (*Caulanthus simulans*)

CNPS List 4, San Diego County List D

Payson's caulanthus is an annual herb associated with chaparral and coastal sage scrub communities (CNPS 2009). This species was not observed on the Preserve in 2009 but is considered to have a high potential to occur on site due to the abundance of suitable habitat on site.

Spreading Navarretia (*Navarretia fossalis*)

Federally Threatened, CNPS List 1B, San Diego County List A, MSCP Covered Species (North and South County)

Spreading navarretia is a wetland plant that is typically found in chenopod scrub, shallow freshwater marshes, playas, and vernal pools. Spreading navarretia was documented just east of the Preserve in 2005 (CNDDB 2009) and suitable habitat for this special-status species occurs throughout a large portion of the grassland habitats. The 2009 rainy season was below average and this species was not detected during the focused rare plant surveys. The 2010 rainy season has been normal to above average. Therefore, updated focused surveys were initiated in March 2010. No individuals of this species were detected within the Preserve during the 2010 surveys.

Little Mousetail (*Myosurus minimus*)

CNPS List 3, San Diego County Group C

Little mousetail typically grows in the deeper portions of vernal pool basins (Reiser 1994). This species sprouts immediately after the surface water has evaporated and the stature of plants and population densities are strongly tied to yearly rainfall levels (Reiser 1994). Little mousetail is considered to have a high potential to occur in the vernal pools and vernal swales that occur within the lower grasslands. This species has been historically documented in the Ramona grasslands. Updated focused surveys for this species were initiated in March 2010. No individuals of this species were detected within the Preserve during the 2010 surveys.

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

CNPS List 1B, San Diego County Group A

Delicate clarkia is an annual wildflower that is typically found on the periphery of oak woodland habitats and within cismontane chaparral. High density population of delicate clarkia are known to occur immediately west of the Preserve. Due to the presence of suitable habitat on site and Preserve's close proximity to extant populations, delicate clarkia has a high potential to occur on site.

4.2.3 Invasive Species

There are several instances of invasive plant species occurring within and around the Preserve, including artichoke thistle (*Cynara cardunculus*), giant reed (*Arundo donax*), tamarisk (*Tamarix ramosissima*), tocalote (*Centaurea melitensis*), castor bean (*Ricinis communis*), and cocklebur

(*Xanthium strumarium*) (Figure 11). During the 2009 surveys, several occurrences of these species were documented and in addition, several offsite locations were noted but not shown on Figure 11. These offsite occurrences represent potential vectors by which these invasive plants can re-enter the Preserve, and consideration should be made in managing these populations as part of Preserve maintenance.

Artichoke thistle was detected in several locations in the southwest area and southeast area. Total numbers of individuals observed are approximately 59, with the largest grouping consisting of 38 individuals. Giant reed was only detected off site, just west of the northwest area along Santa Maria Creek and is not shown in Figure 11. Tamarisk was found in seven locations within the Preserve and three locations just off site (not shown on Figure 11). On the Preserve, there were six occurrences along Santa Maria Creek within the northwest area and one along the southern edge of the southwest area. These occurrences represent single individuals. Tocalote was present in the southeast area. These points represent areas where this species was dense with approximately an acre total of coverage by this species. Off the Preserve, there was one location west of the northwest area within Santa Maria Creek. Castor bean and cocklebur were both detected off site, just west of the northwest area.

4.3 Wildlife

In total, 217 wildlife species were detected during focused surveys, general surveys, pitfall trapping, avian point counts, camera sampling, and Anabat sampling. Forty of these species are considered special-status species by either the federal, state, or local government.

4.3.1 Invertebrates

Fifty-two species of invertebrates including butterflies, skippers, moths, spiders, bees, beetles, worms, scorpions, and centipedes were identified during the 2009 surveys of the Preserve (Appendix D). Species were observed during focused butterfly diversity surveys, herpetological pitfall trapping, and during other active surveys. In addition, San Diego fairy shrimp (*Branchinecta sandiegonensis*) is known to occur in the vernal pools on the southeast area (CBI 2007) and the southwest area (Mooney & Associates 2005). No focused surveys were conducted for fairy shrimp in 2009; however, this species presence can be assumed.

Butterflies

In total, 23 butterfly species were observed in 2009 on the Preserve (Table 12). Twenty-two butterfly species were observed during the 2009 butterfly diversity surveys and one additional species was observed during other surveys. No Quino or any other special-status butterfly species was observed on the Preserve. Quino has moderate potential to occur based on the presence of primary host plants (dot-seed plantain) and secondary host plants (purple owl's-clover, dark-tip bird's beak, and Chinese houses), and proximity to recently documented Quino. During the 2009 flight season, Quino were documented closer than the historical sighting of approximately 6 miles. Quino were observed approximately 4.3 miles southeast of the Preserve on the Rancho Cañada Preserve (formerly Monte Vista Ranch) south of the intersection of San Vicente Road and Wildcat Canyon Road (USFWS 2009).

Legend

Preserve Boundary

Invasive Plant Species

- Artichoke Thistle
- Tamarisk
- Tocalote

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1 "=2,000 '

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Source: ESRI Imagery, 2003

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Figure 11
Invasive Plant Species
Ramona Grasslands

Table 12. Butterfly Species Observed or Captured During 2009 Surveys

Scientific Name	Common Name	Survey Type
Papillo zelicaon	Anise Swallowtail	FS
Papillo rutulus	Western Tiger Swallowtail	FS
Papillo eurymedon	Pale Swallowtail	FS
Pontia protodice	Checkered (Common) White	FS
Anthocharis cethura	Desert Orangetip	FS
Anthocaris sara	Pacific (Sara's) Orangetip	FS
Colias eurytheme	Orange Sulfur	FS
Colias harfordii	Hartford's Sulfur	FS
Nathalis iole	Dainty Sulfur	FS
Callophrys affinis perplexa	Westerngreen (Perplexing) Hairstreak	FS
Callophyrys augustinus	Brown Elfin	FS
Brephidium exile	Western Pygmy-Blue	FS
Everes amyntula	Western Tailed-Blue	FS
Glaucopsyche lygdamus	Silvery Blue	FS
Icaricia acmon	Acmon Blue	FS
Apodemia mormo virgulti	Behr's Metalmark	FS
Nymphalis antiopa	Mourning Cloak	FS
Vanessa cardui	Painted Lady	FS
Vanessa annabella	West Coast Lady	FS
Junonia coenia	Common Buckeye	FS
Erynnis brizo	Sleepy Duskywing	FS
Erynnis funeralis	Funereal Duskywing	FS
Heliopetes ericetorum	Northern White-Skipper	OS

Legend:
Survey Type: FS= Focused Butterfly Survey, OS= Other Survey

Other Invertebrates

Twenty-nine other invertebrate species were detected during the herpetological array sampling and/or observed during other fieldwork (Appendix D). These species were identified in the field, or photographed and provided to a local entomologist to identify. No invertebrate species were collected.

4.3.2 Herpetofauna

In total, six amphibian species and 21 reptile species were captured in the sampling arrays and/or observed during active surveys. Nine of the 27 herptile species observed are considered special-status species by either federal, state, or local agencies. These species' occurrences on the Preserve are discussed in more detail in Section 4.3.5.

Amphibians

During the 2009 sampling at the Preserve, six amphibian species were observed (Table 13, Appendix D). Four species were captured in the sampling array and observed during active surveys and two species were only observed during active surveys. Special-status species observed consist of arroyo toad (*Bufo californicus*) and western spadefoot (*Spea hammondii*). Special-status species occurrences on the Preserve are discussed below and in more detail in Section 4.3.5.

Table 13. Amphibian Species Observed or Captured During 2009 Surveys

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type
Bufo boreas	Western Toad			AS, ARY #2, 4
Bufo californicus	Arroyo Toad	FE	SDC Group I, MSCP	AS
Pseudacris cadaverina	California Chorus Frog			AS
Pseudacris regilla	Pacific Chorus Frog			AS, ARY #4, 5
Spea hammondii	Western Spadefoot	CSC	SDC Group II, MSCP	AS, ARY #5
**Rana catesbeiana*	Bullfrog			AS

Legend:
*=non-native species
Special Status: FE= Federally Endangered CSC = California Species of Special Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species
Survey Type: AS= Active Survey, ARY= Sampling Array

Adult and tadpole arroyo toad were observed within Santa Maria Creek west of Rangeland Road during focused surveys in March and April, 2009. Historically, this species is known to breed within Santa Maria Creek on the western areas. Surveys conducted in 2009 confirmed breeding within Santa Maria Creek within the western areas. These sections of the creek contain high quality habitat as defined by the habitat assessment protocol detailed in the Marine Corps Base Camp Pendleton Arroyo Toad Monitoring Protocol (Atkinson et al 2002). This model uses three physical characteristics to assess the potential to support breeding arroyo toads: 1) channel substrate type being predominantly composed of sand; 2) the presence of flat sandy terraces immediately adjacent to channel; and 3) having a watercourse of braided channels.

The western spadefoot adult was captured in Array #5 during the April sampling. Adult western spadefoots were also observed during arroyo toad surveys in Santa Maria Creek (both east and west of Rangeland Road). Additionally, western spadefoot tadpoles were observed in a small pool south of Santa Maria Creek in the southeastern corner of the Preserve. This species is presumed to be breeding in pools or streams of or in proximity to Santa Maria Creek within the Preserve. Other streams and isolated pools (including vernal pools) within the Preserve and adjacent to the Preserve are presumed to provide additional breeding habitat.

Common native species identified included western toad (*Bufo boreas*), pacific chorus frog (*Pseudacris regilla*), and California chorus frog (*Pseudacris cadaverina*). The western toad was captured in Arrays #2 and #4, and observed during the arroyo toad surveys near Santa Maria Creek west of Rangeland Road. Pacific chorus frog adults and juveniles were both captured in Arrays #4 and #5. Pacific chorus frog tadpoles were observed throughout Santa Maria Creek, in an unnamed

stream south of the Airport that connects with Santa Maria Creek, and in the cattle pond in the northeastern corner of the Preserve. Adult and tadpole California chorus frogs were detected in the rocky areas of Santa Maria Creek west of Rangeland Road.

One common non-native species, bullfrog (*Rana catesbeiana*), was also observed. Adult and juvenile bullfrogs were detected both in Santa Maria Creek west of Rangeland Road and in the pond on the southwest area. This species was abundant in high numbers and is a threat to native wildlife in the immediate vicinity.

Reptiles

During the 2009 sampling at the Preserve, 21 reptile species were observed (Table 14, Appendix D). Seven species were captured only in the sampling arrays, five were observed during other surveys, and nine were captured in a sampling array and observed during active surveys. Ten lizards and 11 snake species were detected with seven species having special status. Special-status species observed consist of San Diego horned lizard (*Phrynosoma coronatum blainvillii*), Coronado skink (*Eumeces skiltonianus interparietalis*), Belding's orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), coastal western whiptail (*Cnemidophorus tigris stejnegeri*), coastal rosy boa (*Charina trivirgata roseofusca*), two-striped garter snake (*Thamnophis hammondii hammondii*), and red diamond rattlesnake (*Crotalus ruber ruber*). These species' occurrences on the Preserve are discussed in more detail in Section 4.3.5.

Based on the presence of potentially suitable habitat, several additional reptile species may also occur on the Preserve. Special-status species with potential consist of California legless lizard (*Anniella pulchra*), California glossy snake (*Arizona occidentalis occidentalis*), San Diego ringneck snake (*Diadophis punctatus similis*) and coastal patch-nosed snake (*Salvadora hexalepsis virgultea*).

Table 14. Reptile Species Observed or Captured During 2009 Surveys

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type
Elgaria multicarinata	Southern Alligator Lizard			AS, ARY #6
Phrynosoma coronatum blainvillii	San Diego Horned Lizard	CSC	SDC Group II, MSCP	AS, ARY #6
Sceloporus orcutti	Granite Spiny Lizard			AS, ARY #5
Sceloporus occidentalis	Western Fence Lizard			AS, ARY #1, 2, 4, 5, 6
Uta stansburiana	Side-blotched Lizard			AS, ARY #1, 2, 3, 4, 5
Eumeces gilberti	Gilbert's Skink			ARY #4
Eumeces skiltonianus interparietalis	Coronado Skink	CSC	SDC Group II	ARY #3, 5
Cnemidophorus hyperythrus beldingi	Belding's Orange-throated Whiptail	CSC	SDC Group II, MSCP	AS, ARY #1, 2, 6
Cnemidophorus tigris stejnegeri	Coastal Western Whiptail		SDC Group II	AS, ARY #2, 6
Xantusia henshawi	Granite Night Lizard			AS
Charina trivirgata roseofusca	Coastal Rosy Boa		SDC Group II	AS

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type
Lampropeltis getula	Common Kingsnake			ARY #6
Masticophis flagellum	Coachwhip			ARY #3
Masticophis lateralis	Striped Racer			ARY #6
Pituophis catenifer	Gopher Snake			AS, ARY #1
Rhinocheilus lecontei	Longnose Snake			ARY #1
Thamnophis hammondii hammondii	Two-striped Garter Snake	CSC	SDC Group I, MSCP	AS, ARY #4, 5
Crotalus mitchellii	Speckled Rattlesnake			AS
Crotalus oreganus helleri (*Crotalus viridis*)	Western (Southern Pacific) Rattlesnake			AS, ARY #6
Crotalus ruber ruber	Red Diamond Rattlesnake	CSC	SDC Group II, MSCP	AS
Hypsiglena torquata	Night Snake			ARY #5

Legend:
Special Status: CSC= California Species of Special Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species
Survey Type: AS= Active Survey, ARY= Sampling Array

4.3.3 Birds

Avian species richness (total species detected) was found to be high at the Preserve. In total, 100 bird species were detected with 82 bird species during the point counts and 18 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 associated with the diverse habitat types found on site. These species include mallard (*Anas platyrhynchos*), ring-necked duck (*Aythya collaris*), great egret (*Ardea alba*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), solitary sandpiper (*Tringa solitaria*), willet (*Tringa semipalmata*), barn owl (*Tyto alba*), white-throated swift (*Aeronautes saxatalis*), Anna's hummingbird (*Calypte anna*), Costa's hummingbird (*Calypte costae*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), Pacific-slope flycatcher (*Empidonax difficilis*), ash-throated flycatcher (*Myiarchus cinerascens*), California horned lark (*Eremophila alpestris actia*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), rock wren (S*alpinctes obsoletus*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), blue-gray gnatcatcher (*Polioptila caerulea*), western bluebird (*Sialia mexicana*), spotted towhee (*Pipilo maculates*), California towhee (*Pipilo crissalis*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), lark sparrow (*Chondestes grammacus*), song sparrow (*Melospiza melodia*), blue grosbeak (*Passerina caerulea*), lazuli bunting (*Passerina amoena*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*).

The Preserve has a great diversity of raptors (birds of prey), including 11 observed raptor species: turkey vulture (*Cathartes aura*), Cooper's hawk, red-shouldered hawk, red-tailed hawk, ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), American kestrel, barn owl, western screech-owl (*Megascops kennicottii*), great horned owl (*Bubo virginianus*), and burrowing owl (*Athene cunicularia*). These birds are using the Preserve for foraging and some species breed on site. One active Cooper's hawk nest was observed in the eucalyptus trees along the eastern edge of the southeast area. One active red-tailed hawk nest was observed along the western edge of the northeast area. American kestrels were observed using at least one artificial nest box along the southern fence line of the southeast area. Several stick nests were observed around the Preserve. The large number of American crows and common ravens that roost in the eucalyptus trees along the eastern and southeastern corner of the southeast area appear to have discouraged many raptors from using these areas. Those stands of trees historically have supported a large number of raptor nests with diverse species (WRI 2007). The red-shouldered hawk, golden eagle, barn owl, and western screech-owl can all be assumed nesting somewhere on the Preserve. Further discussion of the use of the Preserve by special-status raptors is found in Section 4.3.5.

Historically, coastal California gnatcatchers (*Polioptila californica californica;* CAGN) occurred at the Preserve, with the most recent sighting occurring in 2002 (BIOS 2009); however, recovery from the 2007 Witch Fire has been slow for coastal sage scrub and the habitat on site is not yet appropriate for the species (Appendix F; Photo 7). No CAGN were detected during any surveys conducted on the Preserve in 2009. Several remnant isolated patches of California buckwheat dominated coastal sage scrub do occur on the southwest area. One of these patches was adjacent to an avian point count station and others were regularly passed by during the monthly point count surveys. Even though focused CAGN surveys were not conducted, if an individual had been present, it would most likely have been detected. All of the biologists conducting all of our surveys are familiar with their call.

Currently, there is no realistic potential for least Bell's vireo (*Vireo bellii pusillus*) to occur at the Preserve beyond brief visits. The riparian habitat on site lacks the dense understory and developed overstory required by this species for breeding (Appendix F, Photos 3 and 5). Any potentially suitable habitat was passed through or by during the monthly point count surveys in case a vireo did take up residency. No least Bell's vireos were detected during any surveys conducted on the Preserve in 2009. A large population does occur downstream in San Pasqual Valley so there is potential for migrating individuals to pass through the Preserve. All of the biologists conducting all of our surveys are familiar with their call.

There is low potential for southwestern willow flycatcher (*Empidonax traillii extimus*) to occur at the Preserve beyond rare and brief visits, due to lack of suitable habitat. One sighting in June 2005 confirmed that the site is used as a migratory passage for the species (Lovio 2007). The riparian habitat on site is more of a secondary riparian system, and this species is typically found in mature and extensive stands of riparian 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 survey work.

Within the Preserve there is a high potential for white-tailed kite to occur. White-tailed kites have historically nested on the Preserve (WRI 2007); however, no individuals or nests were observed during the 2009 surveys. The most recent documented observation was in 2006 (WRI 2007). Additional species with high potential to occur on the Preserve are detailed in Chapter 4.3.6.

Four non-native or invasive species were detected during the surveys: wild turkey (*Meleagris gallopavo*), rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), and brown-headed cowbird (*Molothrus ater*). Five wild turkeys were detected in August on the southwest area. Three rock pigeons were detected during the point count surveys. Neither of these species poses a threat to the native avian species present on the Preserve. There were 49 sightings of European starling at six avian point count stations. This species nested in the oak trees adjacent to Station 8 on the northwest area. Given the large expanse of the Preserve, this species does not currently pose a significant threat to the native avian species on the Preserve. The majority of the observations come from individuals passing through the Preserve to other developed areas or of repeated observation of a nesting site. Brown-headed cowbird, an obligate brood parasite, was present only as a migrant and wanderer on the Preserve. Four sightings of individuals, mainly males, were recorded on or over the Preserve. No juveniles were detected indicating that this species may not parasitize nests on the Preserve or if there is parasitism, it is in low numbers.

Point Counts

As detailed in Section 3.3.3, 10-minute avian point counts were conducted at 12 stations monthly from March through August 2009 (Figure 8). ICF Jones & Stokes wildlife biologist Kylie Fischer conducted all of the counts.

A total of 100 bird species were detected during the survey of the Preserve: 82 bird species were detected during the point counts and 18 were detected during other fieldwork (Table 15). The most regularly encountered and/or most numerous bird species were mallard, mourning dove, acorn woodpecker, ash-throated flycatcher, American crow, common raven, house wren, bushtit, European starling, spotted towhee, California towhee, lazuli bunting, western meadowlark, house finch, and lesser goldfinch.

Tables 16 and 17 provide quantitative summaries of the results for species and individuals. Station 10 shows the highest number of observations. This station is on the northwest area and is within the oak woodland, with chaparral on the surrounding slopes. Station 12 has the lowest number of observations. This station is in the northern portion of the northwest area surrounded by recovering chaparral. Stations 10, 3, and 5 have higher numbers of observations (range: 180 to 218) and higher species diversity (range: 31 to 44) than the remaining nine stations (observations range: 62 to 168; species range: 15 to 30). This can be attributed to that fact that Stations 10, 3, and 5 occur in areas with a mix of mature oak woodland and upland habitats.

Table 15. Avian Species Detected at the Preserve in 2009

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Anas platyrhynchos	Mallard			PC	CO
Anas cyanoptera	Cinnamon Teal			PC	
Anas clypeata	Northern Shoveler			PC	
Aythya collaris	Ring-necked Duck			PC	
Bucephala albeola	Bufflehead			PC	
Oxyura jamaicensis	Ruddy Duck			PC	
**Meleagris gallopavo*	Wild Turkey			PC	?
Callipepla californica	California Quail			PC	pr
Podilymbus podiceps	Pied-billed Grebe			OS	
Ardea herodias	Great Blue Heron		SDC Group II	OS	
Ardea alba	Great Egret			OS	
Egretta thula	Snowy Egret			PC	
Bubulcus ibis	Cattle Egret			PC	
Nycticorax nycticorax	Black-crowned Night-Heron			OS	
Cathartes aura	Turkey Vulture		SDC Group I	OS	
Accipiter cooperii	Cooper's Hawk		SDC Group I	PC	CO
Buteo lineatus	Red-shouldered Hawk		SDC Group I	PC	pr
Buteo jamaicensis	Red-tailed Hawk			PC	CO
Buteo regalis	Ferruginous Hawk		SDC Group I	OS	
Aquila chrysaetos	Golden Eagle	FPS	SDC Group I, MSCP	PC	pr
Falco sparverius	American Kestrel			PC	CO
Charadrius vociferus	Killdeer			PC	pr
Tringa solitaria	Solitary Sandpiper			PC	
Tringa melanoleuca	Greater Yellowlegs			PC	
Tringa semipalmata	Willet			PC	
Limnodromus scolopaceus	Long-billed Dowitcher			OS	
**Columba livia*	Rock Pigeon			PC	
Zenaida macroura	Mourning Dove			PC	pr
Geococcyx californianus	Greater Roadrunner			OS	pr
Tyto alba	Barn Owl		SDC Group II	OS	pr
Megascops kennicottii	Western Screech-Owl			OS	pr
Bubo virginianus	Great Horned Owl			OS	?

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Athene cunicularia hypugea	Burrowing Owl	CSC	SDC Group I, MSCP	OS	
Chordeiles acutipennis	Lesser Nighthawk			OS	
Phalaenoptilus nuttallii	Common Poorwill			OS	pr
Aeronautes saxatalis	White-throated Swift			PC	pr
Archilochus alexandri	Black-chinned Hummingbird			PC	pr
Calypte anna	Anna's Hummingbird			PC	CO
Calypte costae	Costa's Hummingbird			PC	CO
Melanerpes formicivorus	Acorn Woodpecker			PC	pr
Picoides nuttallii	Nuttall's Woodpecker			PC	pr
Colaptes auratus	Northern Flicker			PC	?
Empidonax difficilis	Pacific-slope Flycatcher			PC	pr
Sayornis nigricans	Black Phoebe			PC	pr
Sayornis saya	Say's Phoebe			PC	?
Pyrocephalus rubinus	Vermilion Flycatcher	CSC	SDC Group I	OS	
Myiarchus cinerascens	Ash-throated Flycatcher			PC	pr
Tyrannus vociferans	Cassin's Kingbird			PC	pr
Tyrannus verticalis	Western Kingbird			PC	pr
Lanius ludovicianus	Loggerhead Shrike	CSC	SDC Group I	PC	?
Vireo huttoni	Hutton's Vireo			PC	
Vireo gilvus	Warbling Vireo			PC	
Aphelocoma californica	Western Scrub-Jay			PC	pr
Corvus brachyrhynchos	American Crow			PC	CO
Corvus corax	Common Raven			PC	pr
Eremophila alpestris actis	California Horned Lark		SDC Group II	PC	pr
Tachycineta thalassina	Violet-green Swallow			PC	pr
Stelgidopteryx serripennis	Northern Rough-winged Swallow			PC	
Petrochelidon pyrrhonota	Cliff Swallow			PC	
Hirundo rustica	Barn Swallow			PC	
Baeolophus inornatus	Oak Titmouse			PC	pr
Psaltriparus minimus	Bushtit			PC	pr
Sitta carolinensis	White-breasted Nuthatch			PC	pr
Salpinctes obsoletus	Rock Wren			PC	CO

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
Catherpes mexicanus	Canyon Wren			PC	pr
Thryomanes bewickii	Bewick's Wren			PC	pr
Troglodytes aedon	House Wren			PC	CO
Regulus calendula	Ruby-crowned Kinglet			PC	
Polioptila caerulea	Blue-gray Gnatcatcher			PC	
Sialia mexicana	Western Bluebird		SDC Group I	PC	CO
Catharus ustulatus	Swainson's Thrush			OS	
Chamaea fasciata	Wrentit			PC	pr
Mimus polyglottos	Northern Mockingbird			PC	pr
**Sturnus vulgaris*	European Starling			PC	CO
Phainopepla nitens	Phainopepla			PC	pr
Vermivora celata	Orange-crowned Warbler			PC	
Dendroica petechia	Yellow Warbler	CSC	SDC Group II	OS	
Dendroica coronata	Yellow-rumped Warbler			PC	
Geothlypis trichas	Common Yellowthroat			PC	?
Wilsonia pusilla	Wilson's Warbler			PC	
Pipilo maculatus	Spotted Towhee			PC	CO
Pipilo crissalis	California Towhee			PC	pr
Aimophila ruficeps canescens	So. Calif. Rufous-crowned Sparrow		SDC Group I, MSCP	PC	pr
Spizella atrogularis	Black-chinned Sparrow			PC	?
Chondestes grammacus	Lark Sparrow			PC	CO
Passerculus sandwichensis	Savannah Sparrow			PC	
Ammodramus savannarum	Grasshopper Sparrow	CSC	SDC Group I, MSCP	PC	pr
Melospiza melodia	Song Sparrow			PC	?
Zonotrichia leucophrys	White-crowned Sparrow			PC	
Pheucticus melanocephalus	Black-headed Grosbeak			PC	
Passerina caerulea	Blue Grosbeak			PC	pr
Passerina amoena	Lazuli Bunting			PC	pr
Agelaius phoeniceus	Red-winged Blackbird			PC	
Agelaius tricolor	Tricolored Blackbird	CSC	SDC Group I, MSCP	PC	
Sturnella neglecta	Western Meadowlark			PC	pr
Euphagus cyanocephalus	Brewer's Blackbird			OS	

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Survey Type	Breeding Status
**Molothrus ater*	Brown-headed Cowbird			PC	?
Icterus bullockii	Bullock's Oriole			PC	pr
Carpodacus mexicanus	House Finch			PC	pr
Carduelis psaltria	Lesser Goldfinch			PC	pr

Legend

*=Non-native or Invasive species

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

Survey Type: PC = detected during point count, OS = Observed during other fieldwork

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)

Table 16. Avian Point Counts–Totals for Individuals*

	Point Count Stations													
Month	1	2	3	4	5	6	7	8	9	10	11	12	Total # of Individuals	*Mean # of Individuals*
March	22	42	33	15	43	9	15	7	16	35	14	9	**260**	*21.7*
April	26	25	30	95	44	18	6	30	24	29	32	11	**370**	*30.8*
May	20	16	43	16	27	10	9	15	27	31	22	12	**248**	*20.7*
June	20	12	25	14	23	18	21	15	22	52	19	11	**252**	*21.0*
July	18	17	31	15	25	9	7	3	17	26	18	14	**200**	*16.7*
August	14	30	23	13	18	4	9	2	11	45	10	5	**184**	*15.3*
Total # of Individuals	**120**	**142**	**185**	**168**	**180**	**68**	**67**	**72**	**117**	**218**	**115**	**62**	**1514**	
Mean # of Individuals	*20.0*	*23.7*	*30.8*	*28.0*	*30.0*	*11.3*	*11.2*	*12.0*	*19.5*	*36.3*	*19.2*	*10.3*		*25.6*

* See Section 3.3.3 regarding the exclusion of individuals recorded as "fly-bys."

Table 17. Avian Point Counts–Totals for Species*

	Point Count Stations													
Month	1	2	3	4	5	6	7	8	9	10	11	12	Total # of Species	*Mean # of Species*
March	10	17	16	5	11	3	9	5	9	16	10	7	**45**	*9.8*
April	14	14	14	13	12	7	4	8	14	16	16	7	**54**	*11.6*
May	13	7	14	7	16	3	5	9	13	18	14	8	**46**	*13.3*
June	10	7	14	7	11	7	3	8	14	17	12	7	**43**	*12.3*
July	12	11	17	6	10	5	5	3	8	17	10	5	**42**	*11.6*
August	10	14	15	8	11	3	7	3	6	17	7	5	**42**	*11.4*
Total # of Species	**24**	**28**	**41**	**23**	**31**	**15**	**15**	**15**	**28**	**44**	**30**	**23**		
Mean # of Species	*11.5*	*11.7*	*15.0*	*7.7*	*11.8*	*4.7*	*5.5*	*6.0*	*10.7*	*16.8*	*11.5*	*6.5*		*9.9*

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

Two occurrences of unknown blackbird species were excluded from the calculation of total species. These birds were seen in flight and the lighting and circumstances did not allow the observer to see any identifying characteristics beyond the type of bird. Two observations of an unknown woodpecker species were excluded from the calculation of total species. These occurrences were of an individual heard drumming in the distance but no vocalizations were emitted to enable the observer to identify the species. Two 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 the type of bird. Six 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.

Nocturnal Surveys

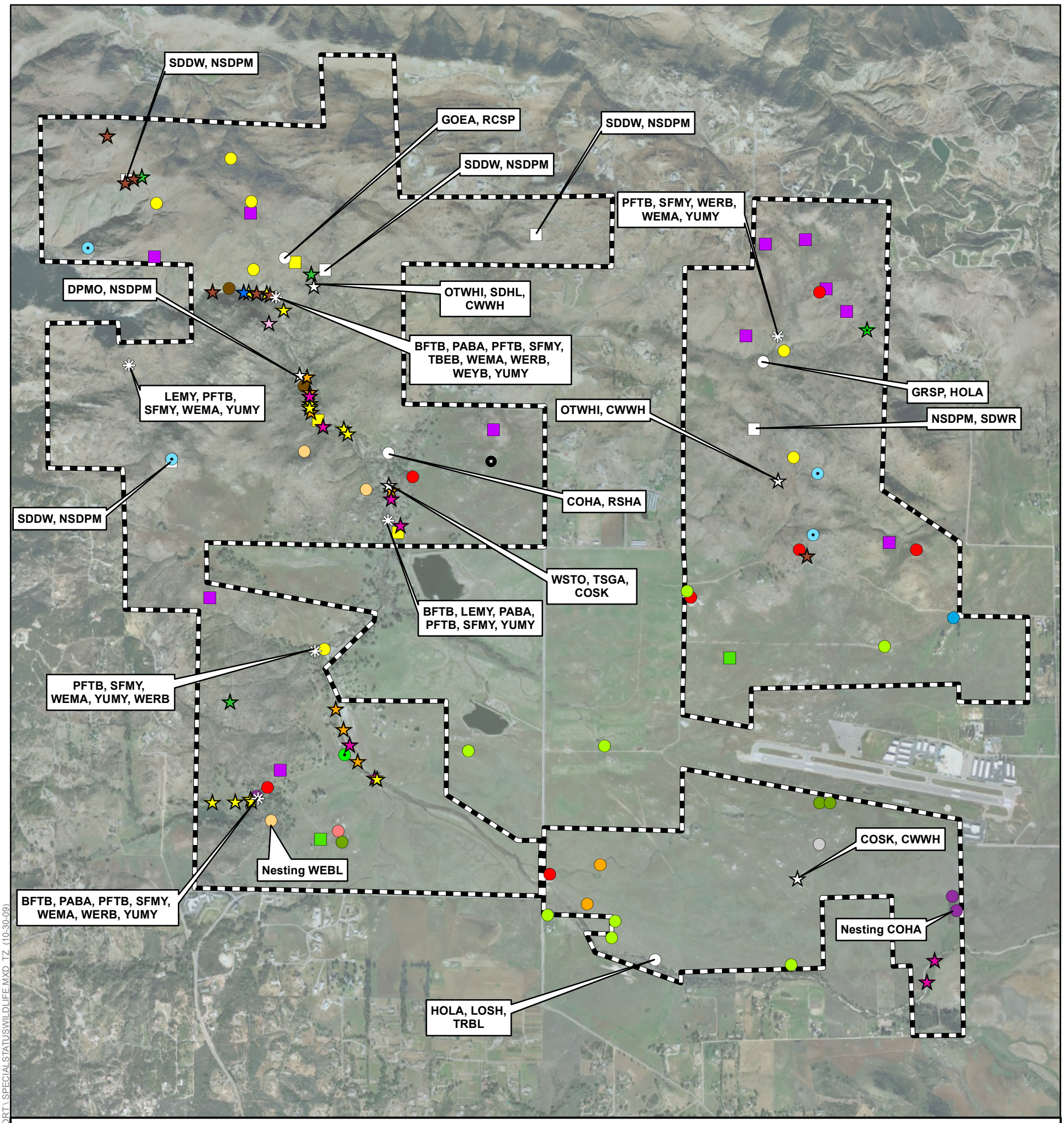
The nocturnal bird surveys documented four nocturnal species and a fifth species was detected during nighttime herpetofauna surveys: barn owl, great horned owl, western screech-owl, lesser nighthawk (*Chordeiles acutipennis*), and common poorwill (*Phalaenoptilus nuttallii*). One great horned owl was detected on the northwest area during a nighttime arroyo toad survey. Western screech-owls were detected in four areas: two on the northwest area and two on the southwest area. At least one lesser nighthawk was detected aurally in the open chaparral on the southwest area. Common poorwills were detected on the northwest area. Barn owls were detected in eight areas and on all four areas (Figure 12). In the evenings this species was detected foraging in the open grasslands. Although not considered a nocturnal species, burrowing owl individuals were observed foraging across the grasslands on the southern and northeast areas during evening hours.

4.3.4 Mammals

In total, 37 mammal species were detected during general surveys, mammal trapping, camera station sampling, and Anabat sampling (Appendix D). Of these, 15 species have special-status with federal, state, and/or local governments.

Small Mammals

In total, 12 small mammal species were recorded at the Preserve during small mammal trapping and other surveys (Tables 18 through 22). These species were detected through capture, direct observation, or sign. The trapping results indicate that the Preserve has good abundance and species diversity of small mammals with 1,067 captures and ten species (Tables 18 through 21). Two additional species were only detected in a herpetological pitfall array (Table 22). Four species have special status with federal, state, and local governments and include Dulzura pocket mouse (*Chaetodipus californicus femoralis*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), SKR, and San Diego desert woodrat (*Neotoma lepida intermedia*). Further discussion of the use of the Preserve by special-status small mammal species is found in Section 4.3.5. One goal of the small mammal trapping was to determine if SKR were expanding into adjacent habitats since the 2007 Witch Fire. The trapping program showed that this species has expanded its use of the Preserve as SKR was captured west of Santa Maria Creek in the southwestern portion of the Preserve.



Preserve Boundary

Bats

- Multiple Species Detected (see callouts)*
- Big Free-tailed Bat (BFTB)
- Long-eared Myotis (LEMY)
- Pallid Bat (PABA)
- Pocketed Free-tailed Bat (PFTB)
- Small-footed Myotis (SFMY)
- Townsend's Big-eared Bat (TBEB)
- Western Red Bat (WERB)
- Western Mastiff (WEMA)
- Western Yellow Bat (WEYB)
- Yuma Myotis (YUMY)

* = See "Call Outs", Species identified during the sampling of the biological inventory study areas (Arrays, Point Count Stations, Small Mammal Trap Locations, Anabat & Camera Stations) (See Figure 8).

Reptiles & Amphibians

- Multiple Species Detected (see callouts)
- Rosy Boa (ROBO)
- Arroyo Toad (ARTO)
- Coronado Skink (COSK)
- Orange Throat Whiptail (OTWHI)
- Red Diamond Rattlesnake (CRRU)
- San Diego Horned Lizard (SDHL)
- Two-stripe Garter Snake (TSGA)
- Western Spadefoot Toad (WSTO)
- Coastal Western Whiptail (CWWH) *

Mammals

- Multiple Species Detected (see callouts)
- Northwestern San Diego Pocket Mouse (NSDPM)
- Southern Mule Deer (SMDE)
- Stephen's Kangaroo Rat (STKR)
- Dulzura Pocket Mouse (DPMO) *
- San Diego Desert Woodrat (SDDW) *

Birds

- Multiple Species Detected (see callouts)
- Barn Owl (BAOW)
- Burrowing Owl (BUOW)
- California Horned Lark (HOLA)
- Cooper's Hawk (COHA)
- Ferruginous Hawk (FEHA)
- Golden Eagle (GOEA)
- Grasshopper Sparrow (GRSP)
- Great Blue Heron (GBHE)
- Red Shouldered Hawk (RSHA)
- Rufous Crowned Sparrow (RCSP)
- Turkey Vulture (TUVU)
- Vermilion Flycatcher (VEFL)
- Western Bluebird (WEBL)
- Yellow Warbler (YEWA)
- Tricolored Blackbird (TRBL) *
- Loggerhead Shrike (LOSH) *

0 500 1,000 2,000 Feet

N

1 "=2,000 '

Source: ESRI Imagery, 2003

K:\ SAN DIEGO\ PROJECTS\ COUNTY_PARKS_&_REC\ 00178.09_RAMONA_GRASSLANDS\ BIO\ MAPDOC\ REPORT\ SPECIALSTATUSWILDLIFE.MXD TZ (10-30-09)

ICF INTERNATIONAL

Figure 12
Sensitive Wildlife Species
Ramona Grasslands

Table 18. Trapline Capture Summary for Week 1

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Sample Area								Total
				A1	A2	*A3	A4	A5	A6	A7	A8	
Spermophilus beecheyi nudipes	California Ground Squirrel								1 esc			1 esc
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II					2 ♂ 3 ♀				2 ♂ 3 ♀
Dipodomys stephensi	Stephens' Kangaroo Rat	FE, ST	SDC Group I, MSCP		2 ♀							2 ♀
Reithrodontomys megalotis	Western Harvest Mouse					1 ♂ 1 ♀				1 ♀		1 ♂ 2 ♀
Peromyscus maniculatus gambelii	American Deer Mouse				1 ♂ 1 ♀				3 ♀	2 ♀	5 ♀	1 ♂ 11 ♀
Total				**0**	**4**	**2**	**0**	**5**	**4**	**3**	**5**	**23**

Legend:

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

Special Status: FE= Federal Endangered, ST= State Threatened, CSC= California Species of Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

*A3 = Note that all captures occurred on first night of trapping within a drainage; however, due to the presence of unpredictable buffalo, traps were moved out of wash into adjacent field dominated with non-native grasses. No animal captures occurred in the grassland at this sample area the following three nights.

Table 19. Trapline Capture Summary for Week 2

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Sample Area								Total
				B1	B2	B3a	B3b	B3c	B3d	B3e	B4	
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II	25 ♂ 19 ♀	30 ♂ 26 ♀ 2 esc	4 ♀	1 ♂	5 ♂ 12 ♀	5 ♂ 1 ♀	10 ♂ 5 ♀		76 ♂ 67 ♀ 2 esc
Dipodomys simulans (=*Dipodomys agilis simulans*)	Dulzura Kangaroo Rat			6 ♂ 7 ♀	23 ♂ 30 ♀	2 ♂ 2 ♀		4 ♂ 1 ♀	5 ♂ 8 ♀	3 ♂ 7 ♀ 1 esc		43 ♂ 55 ♀ 1 esc
Peromyscus fraterculus (=*Peromyscus eremicus fraterculus*)	Northern Baja Mouse				25 ♂ 13 ♀			1 ♀	3 ♂ 2 ♀	1 ♂		29 ♂ 16 ♀
Peromyscus maniculatus gambelii	American Deer Mouse			1 ♂ 3 ♀	6 ♂ 14 ♀		1 ♀	1 ♂	1 ♂ 1 ♀	1 ♂ 3 ♀	1 ♂	11 ♂ 22 ♀
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SDC Group II		1 ♂							1 ♂
Total				**61**	**170**	**8**	**2**	**24**	**26**	**31**	**1**	**323**

Legend:
♂ = male, ♀ = female, and esc = escaped prior to determining sex
Special Status: CSC= California Species of Concern, SDC= County of San Diego Sensitive Animal

Table 20. Trapline Capture Summary for Week 3

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Sample Area C1	C2	C3	C4	C5	Total
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II	21 ♂ 16 ♀	6 ♂ 2 ♀ 1 esc	18 ♂ 9 ♀	36 ♂ 18 ♀	23 ♂ 21 ♀ 1 esc	104 ♂ 66 ♀ 2 esc
Dipodomys simulans (=*Dipodomys agilis simulans*)	Dulzura Kangaroo Rat			15 ♂ 22 ♀ 1 esc	15 ♂ 14 ♀	13 ♂ 23 ♀ 1 esc	11 ♂ 10 ♀	16 ♂ 22 ♀	70 ♂ 91 ♀ 2 esc
Peromyscus fraterculus (=*Peromyscus eremicus fraterculus*)	Northern Baja Mouse			38 ♂ 20 ♀ 2 esc	1 ♀		4 ♂ 2 ♀	29 ♂ 22 ♀	71 ♂ 45 ♀ 2 esc
Peromyscus maniculatus gambelii	American Deer Mouse			16 ♂ 6 ♀	3 ♂ 4 ♀	11 ♂ 3 ♀	7 ♂ 2 ♀	11 ♂ 7 ♀	48 ♂ 22 ♀
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SDC Group II	3 ♂ 2 esc		2 ♂ 8 ♀	1 ♂	5 ♂ 6 ♀	11 ♂ 14 ♀ 2 esc
Total				**162**	**46**	**88**	**91**	**163**	**550**

Legend:
♂ = male, ♀ = female, and esc = escaped prior to determining sex
Special Status: CSC= California Species of Concern, SDC= County of San Diego Sensitive Animal

Table 21. Trapline Capture Summary for Week 4

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Sample Area								Total
				D1	D2a	D2b	D3a	D3b	D4a	D4b	*D-misc	
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II	3 ♂ 3 ♀ 1 esc		3 ♂	1 ♂ 1 ♀			1 ♂ 2 ♀		8 ♂ 6 ♀ 1 esc
Chaetodipus californicus femoralis	Dulzura Pocket Mouse	CSC	SDC Group II	11 ♂ 9 ♀ 1 esc								11 ♂ 9 ♀ 1 esc
Dipodomys stephensi	Stephens' Kangaroo Rat	FE, ST	SDC Group I, MSCP								1 ♀	1 ♀
Dipodomys simulans (=*Dipodomys agilis simulans*)	Dulzura Kangaroo Rat			1 ♂ 6 ♀		6 ♂ 10 ♀	6 ♂ 6 ♀			2 ♀		13 ♂ 24 ♀
Reithrodontomys megalotis	Western Harvest Mouse			1 ♂ 2 ♀								1 ♂ 2 ♀
Peromyscus californicus insignis	California Mouse			1 ♂		4 ♂ 5 ♀		14 ♂ 8 ♀		4 ♂ 10 ♀ 1 esc		23 ♂ 23 ♀ 1 esc
Peromyscus fraterculus (=*Peromyscus eremicus fraterculus*)	Northern Baja Mouse			4 ♂ 2 ♀		13 ♂ 10 ♀						17 ♂ 12 ♀
Peromyscus maniculatus gambelii	American Deer Mouse			5 ♂♀				5 ♀	1 ♀	1 ♂ 2 ♀		6 ♂ 8 ♀
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SDC Group II			2 ♂ 1 ♀ 1 esc						2 ♂ 1 ♀ 1 esc
Total				**50**	**0**	**55**	**14**	**27**	**1**	**23**	**1**	**171**

Legend:

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

Special Status: FE= Federal Endangered, ST= State Threatened, CSC= California Species of Concern, SDC= County of San Diego Sensitive Animal, MSCP= North County Multiple Species Conservation Program Covered Species

*D-misc = represents 10 traps set between midnight and dawn for one night on July 29, 2009 after observing kangaroo rats on dirt road in suitable SKR habitat.

Table 22. Small Mammals Detected through Other Survey Methods

Scientific Name	Common Name	Vegetation Communities	Method of Detection
Spermophilus beecheyi nudipes	California Ground Squirrel	all communities	visual, sign
Thomomys bottae	Botta's Pocket Gopher	all communities	captured in pitfall array
Microtus californicus	California Vole	grassland	captured in pitfall array

Medium and Large Mammals

Evaluation of the images captured at the ten camera stations resulted in the identification of 11 medium to large mammal species using the Preserve (Table 23). See Figure 8 for camera station locations. Nine of these species were also detected through tracks, sign, and nocturnal surveys (Table 23). Movement of larger animals appeared to be concentrated along easily traveled routes with good visibility such as roads, ridges, and along Santa Maria Creek. Most sign of smaller animals was within natural communities with cover, especially chaparral. One of these species, southern mule deer (*Odocoileus hemionus fuliginata*), is a special-status species. Further discussion of the use of the Preserve by special-status medium and large mammal species is found in Section 4.3.5.

Other special-status species not detected but judged to have high potential to occur based on previously documented observations include mountain lion (*Felis concolor*) (CBI 2007).

Table 23. Medium and Large Mammals Detected at the Preserves in 2009

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Vegetation Communities	Method of Detection
**Didelphis virginiana*	Virginia Opossum			riparian associated communities	visual, sign, camera station
Sylvilagus audubonii	Desert Cottontail			all communities	visual, sign, camera station
Canis latrans	Coyote			all communities	visual, sign, camera station
**Canis familiaris*	Domestic Dog			all communities	visual, sign, camera station
Procyon lotor	Common Raccoon			riparian associated communities	visual, sign, camera station
Mustela frenata latirostra	Long-tailed Weasel			all communities	visual, sign, camera station
Mephitis mephitis holzneri	Striped Skunk			riparian associated communities	sign, camera station
Lynx rufus	Bobcat			chaparral	visual, sign,

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Vegetation Communities	Method of Detection
					camera station
***Equus caballus*	Domestic Horse			all communities	visual, sign, camera station
Odocoileus hemionus fuliginata	Southern Mule Deer		SDC Group II	dense chaparral	sign, camera station
****Bos taurus*	Domestic Cattle			all communities	visual, sign, camera station

Legend:
*=non-native species
** = non-native species used by cattle rancher on the Preserve.
***= non-native species but cattle are purposely used on the Preserve as a management tool to promote habitat for sensitive biological resources
Special Status: CSC= California Species of Special Concern, SDC= County of San Diego Sensitive Animal

Bats

A total of 14 bat species were detected during the three seasons of bat monitoring (spring, summer, and fall of 2009) (Table 24). The bat species most frequently detected were Yuma myotis (*Myotis yumanensis*), Mexican free-tailed bat (*Tadarida brasiliensis*), and canyon bat (*Parastrellus hesperus*). Species detected infrequently consisted of long-eared myotis (*Myotis evotis*), western yellow bat (*Lasiurus xanthinus*), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), and big free-tailed bat (*Nyctinomops macrotis*). Eight species were detected during all three seasons of monitoring, one species was only detected in spring and summer, two species were only detected in summer and fall, and two species were detected only in fall (Table 24). A moderate number of bat species appear to occur within the Preserve. The Preserve's habitats are fairly diverse and contain features important to bats in the southern California landscape such as riparian vegetation, oak woodland, and scrub vegetation (Krutzsch 1948, Stokes et al 2005). Ten bat species are considered special-status species by state and local government (Table 24). Further discussion of the use of the Preserve by special-status bat species is found in Section 4.3.5.

Table 24. Number of Bat Detections per Season

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Spring	Summer	Fall	Total
Myotis californicus	California Myotis			102	252	4	358
Myotis ciliolabrum	Small-footed Myotis		SDC Group II	133	87	2	222
Myotis evotis	Long-eared Myotis		SDC Group II		5	2	7
Myotis yumanensis	Yuma Myotis		SDC Group II	1569	1059	1718	4346
Lasiurus blossevillii	Western Red	CSC	SDC Group II	4	17	1	22

Scientific Name	Common Name	Federal and State Special Status	Local Government Special Status	Spring	Summer	Fall	Total
	Bat						
Lasiurus xanthinus	Western Yellow Bat	CSC				1	1
Parastrellus hesperus	Canyon Bat			206	236	500	942
Eptesicus fuscus	Big Brown Bat			378	21	1	400
Corynorhinus townsendii	Townsend's Big-eared Bat	CSC	SDC Group II, MSCP			2	2
Antrozous pallidus	Pallid Bat	CSC	SDC Group II, MSCP	4	2		6
Tadarida brasiliensis	Mexican Free-tailed Bat			566	597	34	1197
Nyctinomops femorosaccus	Pocketed Free-tailed Bat	CSC	SDC Group II	216	96	22	334
Nyctinomops macrotis	Big Free-tailed Bat	CSC	SDC Group II		3	2	5
Eumops perotis	Western Mastiff Bat	CSC	SDC Group II	11	12	3	26

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

Seven of the 14 bat species were detected at all six sampling locations (Table 25). This shows widespread use of the Preserve by bats. Two species, the Townsend's big-eared bat and the western yellow bat, were detected in only one location (lower Santa Maria Creek) and both of these observations occurred in fall. This suggests that the Townsend's big-eared bat and the western yellow bat only use the Preserve in a transitory nature during migration.

Table 25. Bat Species Observations

Scientific Name	Common Name	Cave (1*)	Lower Santa Maria Creek (2)	Upper Santa Maria Creek (3)	Oak Woodland (4)	Pond (5)	Stock Pond (6)
Myotis californicus	California Myotis	X	X	X	X	X	X
Myotis ciliolabrum	Small-footed Myotis	X	X	X	X	X	X
Myotis evotis	Long-eared Myotis	X		X			
Myotis yumanensis	Yuma Myotis	X	X	X	X	X	X
Lasiurus blossevillii	Western Red Bat		X		X	X	
Lasiurus	Western Yellow		X				

Scientific Name	Common Name	Cave (1*)	Lower Santa Maria Creek (2)	Upper Santa Maria Creek (3)	Oak Woodland (4)	Pond (5)	Stock Pond (6)
xanthinus	Bat						
Parastrellus hesperus	Canyon Bat	X	X	X	X	X	X
Eptesicus fuscus	Big Brown Bat	X	X	X	X	X	X
Corynorhinus townsendii	Townsend's Big-eared Bat		X				
Antrozous pallidus	Pallid Bat		X	X		X	
Tadarida brasiliensis	Mexican Free-tailed Bat	X	X	X	X	X	X
Nyctinomops femorosaccus	Pocketed Free-tailed Bat	X	X	X	X	X	X
Nyctinomops macrotis	Big Free-tailed Bat		X	X		X	
Eumops perotis	Western Mastiff Bat	X	X		X	X	X

*Corresponds to location numbers on Figures 8 and 12

4.3.5 Special-Status Wildlife Species Observed

In total, 40 special-status wildlife species were detected during the 2009 survey at the Preserve (Figure 12). Two special-status amphibian species were detected and include arroyo toad and western spadefoot. Seven special-status reptile species were detected and include San Diego horned lizard, Coronado skink, Belding's orange-throated whiptail, coastal western whiptail, coastal rosy boa, two-striped garter snake, and northern red diamond rattlesnake. Sixteen special-status bird species were detected and include great blue heron (*Ardea herodias*), turkey vulture, Cooper's hawk, red-shouldered hawk, ferruginous hawk, golden eagle, barn owl, burrowing owl, vermillion flycatcher (*Pyrocephalus rubinus*), loggerhead shrike (*Lanius ludovicianus*), California horned lark, western bluebird, yellow warbler (*Dendroica petechia*), southern California rufous-crowned sparrow, grasshopper sparrow (*Ammodramus savannarum*), and tricolored blackbird (*Agelaius tricolor*). Fifteen special-status mammal species were detected and include 10 bat species and Dulzura pocket mouse, northwestern San Diego pocket mouse, Stephens' kangaroo rat, San Diego desert woodrat, and southern mule deer. See Figure 12 for locations of special-status species detected during surveys of the Preserve. See Appendix G for additional conservation analysis information for burrowing owl, ferruginous hawk, golden eagle, SKR, and vernal pools/fairy shrimp.

Invertebrates

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

Herpetofauna

Arroyo Toad (*Bufo californicus*)

Federally Endangered, San Diego County Group I, North County MSCP Covered Species

The arroyo toad is endemic to the coastal plains, mountains, and desert slopes of central and southern California and northwestern Baja California from near sea level to about 2,400 m (8,000 ft). Within these areas, the arroyo toad is found in both perennial and intermittent rivers and streams with shallow, sandy to gravelly pools adjacent to sand or fine gravel terraces. This species has evolved in a system that is inherently dynamic, with marked seasonal and annual fluctuations in rainfall and flooding. Breeding habitat requirements are highly specialized. Specifically, arroyo toads require shallow slow-moving stream and riparian habitats that are naturally disturbed on a regular basis, primarily by flooding (USFWS 2000).

The breeding period occurs from late January or February to early July, although it can be extended in some years depending on weather conditions. Breeding in mountainous habitats may commence later (May–June) and last longer (to August) than in the coastal portion of the range. Breeding occurs in quiet, clear backwaters of streams as waters recede from the floods of the wet season. When water temperatures reach 57°F (14°C), adult males advertise with a soft, high- whistled trill. Males call from suitable breeding habitat at night. Receptive females seek out calling males based on the size of the male and the sound of his call. Little is known about movements or other behavior in the non-breeding season (USFWS 2000). Adult arroyo toads spend most of the year in burrows in upland habitat near washes and streams. Non-breeding habitat includes sage scrub, mixed chaparral, and oak woodland.

Adult and tadpole arroyo toad were observed within Santa Maria Creek west of Rangeland Road within the western areas. These sections of the creek contain high quality habitat as defined by the habitat assessment protocol detailed in the Marine Corps Base Camp Pendleton Arroyo Toad Monitoring Protocol (Atkinson et al 2002). This model uses three physical characteristics to assess the potential to support breeding arroyo toad: 1) channel substrate type being predominantly composed of sand; 2) the presence of flat sandy terraces immediately adjacent to channel; and 3) having a watercourse of braided channels.

Western Spadefoot (*Spea* [=*Scaphiopus*] *hammondii*)

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

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 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. For successful breeding to occur 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 by western spadefoot, 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, even adjacent to roads, resulting from landscape modification.

As detailed above, an adult of this species was observed in Array #5 and several individuals were observed in Santa Maria Creek during focused arroyo toad surveys. In addition, tadpoles of this species were observed in a small pool south of the creek in the southeastern corner of the Preserve. The sandy substrate associated with Santa Maria Creek provides ideal burrowing habitat while the pools in and within proximity to the Creek are appropriate for breeding. Based on the number of individuals observed during arroyo toad surveys, the abundance of appropriate breeding pools, and the presence of foraging habitat along Santa Maria Creek, this species is presumed to be abundant within the Preserve.

San Diego Horned Lizard (*Phyrnosoma coronatum blainvillii*)

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

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 its prey; however, 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)*. The San Diego horned lizard was captured in Array #6 located in the northwestern portion of the Preserve and was observed in the northwest and southwest areas of the Preserve. This species has potential to occur throughout the scrub and chaparral habitats on the Preserve.

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). Its 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 Gorgonio Pass in Riverside County south to San Quentin, Mexico (Jennings and Hayes 1994). On the Preserve, this species was captured in Array #3 and #5 and observed in the northwest and southeastern areas of the Preserve. Given the variety and abundance of habitats that provide moist areas or are in proximity to moist areas on the Preserve, this species has the potential to occur throughout the Preserve.

Belding's Orange-Throated Whiptail (*Cnemidophorus hyperythrus beldingi*)

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

The Belding's 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 (*Eriogonum fasciculatum*) 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 whiptail foraging and thermoregulatory behavior. Orange-throated whiptails appear to be dietary specialists with most (> 85%) of their prey being termites (Dudek 2000). The decline of orange-throated whiptails is likely due to loss of habitat to agriculture and urban development. On the Preserve, this species was captured at Arrays #1, #2, and #6, and observed during active surveys in the chaparral and scrub habitats. This species is presumed to be abundant within the Preserve.

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. On the Preserve, this species was captured at Arrays #2 and #6 (Figure 12). This species is presumed to be abundant within the Preserve.

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. On the Preserve, this species was observed in a rocky area on the northwest area, south of Santa Maria Creek.

Two-Striped Garter Snake (*Thamnophis hammondii hammondii*)

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

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). Two-striped garter snake will also inhabit large riverbeds such as those of the Santa Ana and Santa Clara Rivers if riparian vegetation is available, and even will 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. On the Preserve, this species was captured in Arrays #4 and #5, and observed on several occasions during active surveys in Santa Maria Creek and near the pond in the southwestern corner of the southwest area. This species is presumed to be abundant near perennial water within the Preserve.

Red Diamond Rattlesnake (*Crotalus ruber ruber*)

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

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 cacti, 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 steeper rocky hillsides have significantly decreased the amount of appropriate habitat for this species (Jennings and Hayes 1994). This species was observed in the rocky coastal sage chaparral scrub in the northeast area. This species has potential to occur throughout the oak, scrub, and chaparral habitats on the Preserve.

Birds

Great Blue Heron (*Ardea Herodias*)

San Diego County Group II

The great blue heron is a large water bird that can be found in any type of wetland and is typically a colonial breeder that nests in trees near water (Unitt 2004); however, breeding has been documented by isolated pairs and in the absence of trees. Great blue herons will nest in bushes, on the ground, or in artificial structures (Butler 1992, Unitt 2004). This species is non-migratory in southern California but is migratory in other parts of its range (Unitt 2004). Great blue herons forage diurnally in estuaries and beaches but are also commonly seen on dry land (Unitt 2004, K. Fischer Personal Observation). The observation in 2009 was of a lone individual in March moving through the Preserve. A breeding colony does occur at the Wild Animal Park in San Pasqual Valley and this bird may have been using the Preserve for foraging. This species is common within the County.

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 and ranch lands and often occur along roadsides where carrion is common. They nest in crevices among granite boulders (Unitt 2004). The turkey vultures' 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. There is suitable breeding habitat for this species on the Preserve; however, no nests were observed in 2009. This species is common in the undeveloped areas of east San Diego County.

Cooper's Hawk (*Accipiter cooperii*)

San Diego County Group I, North County 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 consistently throughout the point counts at Stations 3, 7, and 10 and in March, April, and May. One nest was detected within the eucalyptus trees at the eastern edge of the southeast area (Station 7, southernmost observation) (Figure 12). Breeding can be assumed in the oak woodlands adjacent to Stations 3 and 10. This species is widespread throughout the County.

Red-shouldered Hawk (*Buteo lineatus*)

San Diego County Group I

The red-shouldered hawk was once an uncommon breeder of lowland riparian woodlands but has been thriving in urban environments with large trees such as eucalyptus (Unitt 2004). On the west coast, this species is found in California and northern Baja California and is common throughout San Diego County. Red-shouldered hawks were regularly detected at Stations 4 and 10 and in March, April, June, July, and August. This species is widespread throughout the County.

Ferruginous Hawk (*Buteo regalis*)

San Diego County Group I

The ferruginous hawk is an uncommon winter visitor to San Diego County that is mostly found foraging in open grasslands (Unitt 2004). Development of the grasslands they forage over caused the decline in this species (WRI 2007). The Preserve is a prime wintering location for ferruginous hawks (WRI 2007). Four were detected on February 25, 2009, on the southeast area and other individuals were sporadically recorded during other surveys in February.

Golden Eagle (*Aquila chrysaetos*)

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

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). Historically, a golden eagle pair breeds and forages at the Preserve (WRI 2007). During the 2009 surveys, the pair

was observed on numerous occasions throughout the season. No active nests were confirmed but there is suitable habitat for breeding on the northwest area.

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 (Unitt 2004). 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). Barn owls were detected all over the Preserve and were the most widespread owl species that was detected during nocturnal surveys. One family group was detected near the southwestern edge of the southeast area of the Preserve but most likely breeds throughout the Preserve. This species is widespread throughout the County.

Burrowing Owl (*Athene cunicularia*)

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

Burrowing owls are found in prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, desert floors, and some artificial open areas (Unitt 2004). This species requires large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. The barn owl uses rodent or other burrows for roosting and nesting cover and also is known to use pipes, culverts, and nest boxes where burrows are scarce. As with other grassland species, the burrowing owl population in San Diego County is on the decline due to loss of habitat to development and habitat fragmentation (Unitt 2004). Burrowing owls naturally and artificially occur at the Preserve (WRI 2007). In 2005, relocated owls were introduced to enhanced habitat south of the southeast area on Wildlife Research Institute (WRI) property. These owls did successfully breed in low numbers. In 2009, burrowing owls were detected diurnally near the southern edge of the Preserve where WRI installed artificial burrows. Breeding is likely occurring in some of these burrows. No protocol surveys were conducted for the species, but general surveys through suitable habitat did not reveal any new occupied burrows within the Preserve's boundary. During nocturnal surveys, burrowing owls were detected foraging on the southern and northeast areas. This species is limited to three other breeding populations on the coastal side of the local mountains (Unitt 2004).

Vermillion Flycatcher (*Pyrocephalus rubinus*)

State Species of Special Concern, San Diego County Group I

The vermillion flycatcher is a rare species to San Diego County that has only been documented breeding in one location on the coastal side of the local mountains (Unitt 2004). This species is typically associated with the desert riparian plant community, and San Diego County represents the southwestern edge of its breeding range (Unitt 2004, Shuford and Gardali 2008). In February 2009, one individual was observed on a barbed-wired fence on the northeast area. This bird was transitory and was not observed again.

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 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. One loggerhead shrike was observed in August at Station 5. The bird was foraging at the southwest area. This species is widespread throughout the County.

California Horned Lark (*Eremophila alpestris actia*)

San Diego County Group II

The California horned lark is a resident of a variety of open habitats, usually where trees and large shrubs are absent (Zeiner et al. 1990). This species primarily breeds in open fields and grasslands and is found along the coastal slope of San Diego County east to Jacumba (Unitt 2004). Continuing threats to this species include habitat destruction and fragmentation. California horned larks were observed at Stations 5 and 6 in April, May, and June. This species is widespread throughout the County.

Western Bluebird (*Sialia mexicana*)

San Diego County Group II

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, and scrubs, and during the winter it can be found in the desert. Western bluebirds breed in western North America from southern British Columbia south to central Mexico, east to western Montana, and west to Texas, but are absent from the Great Basin (Guinan et al. 2000). They can also winter outside their 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).

Western bluebirds were observed on the Preserve in February, March, April, and August. A pair was observed building a nest at Station 3. Individuals were also detected in the oak woodland at the northwest area (Figure 12). This species is still fairly common in San Diego County (Unitt 2004).

Yellow Warbler (*Dendroica petechia*)

State Species of Special Concern, San Diego County Group II

The yellow warbler is a small insectivorous migratory passerine that inhabits lowland and foothill mature riparian woodlands (Unitt 2004, Dudek 2000). Preferred plant species include cottonwoods (*Populous* spp.), willows (*Salix* spp.), and other small trees and shrubs typically found in open-canopy riparian woodlands. Yellow warblers are usually on their breeding grounds from late March to mid-

October. Destruction and degradation of riparian habitat and brood parasitism by the brown-headed cowbird led to the decline of this species (Unitt 2004). Cowbird trapping has caused an increase in the San Diego County population of yellow warblers (Unitt 2004). At least one singing yellow warbler was detected in the oak woodland on the northwest area in April (Figure 12). This species is currently considered fairly common in San Diego County (Unitt 2004).

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

San Diego County Group I, North County 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). Southern California rufous-crowned sparrows are declining due to loss of appropriate habitat and their sensitivity to habitat fragmentation (Unitt 2004). Southern California rufous-crowned sparrows were incidentally detected during other surveys or while surveyors were traveling to the count point stations and were recorded at Stations 2, 9, 11, and 12 in March through August. This species is still found throughout San Diego County in large numbers (Unitt 2004).

Grasshopper Sparrow (*Ammodramus savannarum*)

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

The grasshopper sparrow is endemic to native grasslands and only the subspecies *Ammodramus savannarum perpallidus* has been collected in California (Unitt 2004). Native grasslands are a quickly diminishing resource in San Diego County and a low number of individuals will continue to persist in areas with non-native grass species (Unitt 2004). Urban development is the leading threat to this species. Grasshopper sparrows have been documented in the vicinity prior to the Cedar Fire (Unitt 2004). Three singing grasshopper sparrows were detected in April and June 2009: one on the southwest area and two on the southeast area (Figure 12). This species is known to occur in Ramona.

Tricolored Blackbird (*Agelaius tricolor*)

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

Tricolored blackbirds are the most intensively gregarious bird species in California, with males and females normally remaining in large flocks together year round (Unitt 2004). The species is nearly restricted to California, and apparently makes only relatively short-distance seasonal movements. They nest in dense colonies in marshes and occasionally in moist thickets, agricultural fields, or sewage treatment plants (Unitt 2004). They will readily use restored or created wetlands; they may use a site for many years, or just one season, with productivity of young varying greatly from year to year. They often commute in flocks for some distance between nesting areas and feeding areas, and the latter can be in varied wetlands, including sewage treatment plants, or in open areas such as agricultural fields and even stock yards or short grasslands. A nesting colony is known to occur at the Ramona Water District Ponds (Unitt 2004). In 2009, a large flock (approximately 46 birds) was

observed foraging on the southeast area near Station 5. There are only 20 to 30 known breeding colonies remaining in San Diego County (Unitt 2004).

Mammals

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 on site and the species was detected at all six sampling locations indicating widespread use of the Preserve by this species. There were 222 detections of this species during all three sampling seasons. The Preserve most likely supports a breeding population of this species.

Long-eared Myotis (*Myotis evotis*)

San Diego County Group II

Long-eared myotis is found in western North America from British Columbia south through California to Baja Mexico (BCI 2008). This species prefers coniferous forests in higher altitudes and will roost in caves, rock crevices, under tree bark, or in buildings (BCI 2008). This species' use of the Preserve was limited to near the cave (sampling location #1, Figure 8) and the upper Santa Maria Creek (sampling location #3, Figure 8) and there were only seven detections in summer and fall. The Preserve has some value to this species but does not appear to be a core use or breeding area for the species.

Yuma Myotis (*Myotis yumanensis*)

San Diego County Group II

The Yuma myotis is found throughout much of the western U.S. and 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 have 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. Yuma myotis was detected at all six sampling locations, during all three sampling sessions and in very high number (4,346 total observations). The Preserve most likely supports a breeding population of this species.

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* spp.) 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 the roosting and foraging needs of the western red bat could be supported by the Preserve. The species was detected at three of the sampling locations: lower Santa Maria Creek(sampling location #2, Figure 8), oak woodland (sampling location #4, Figure 8), and the pond (sampling location #5, Figure 8). The species was detected in low numbers (22 total observations) during all three seasons.

Western Yellow Bat (*Lasiurus xanthinus)*

State Species of Special Concern

The western yellow bat is an uncommon species that in California is only known from Los Angeles and San Bernardino Counties south to the Mexican border (CDFG 2005). This species roosts in trees, especially palm trees in desert environments, and forages over water and among trees in riparian areas (CDFG 2005). Their flight pattern appears to be slow and steady but they can be fast and maneuverable if needed (CDFG 2005). One individual was detected in fall at the lower Santa Maria Creek (sampling location #2, Figure 8).

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

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

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. The bats 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). Two individuals were detected in fall at the lower Santa Maria Creek (sampling location #2, Figure 8).

Pallid Bat (*Antrozous pallidus*)

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

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, 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. Pallid bats were detected at three sampling locations: lower and upper Santa Maria Creek (sampling location #2 and 3, Figure 8) and at the pond (sampling location #5, Figure 8). There were a total of six detections in spring and summer.

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 data indicate widespread use of the Preserve by pocketed free-tailed bats as this species was detected at all six sampling locations during all three sampling seasons. A total of 334 detections were recorded.

Big Free-tailed Bat (*Nyctinomops macrotis*)

State Species of Special Concern, San Diego County Group II

Big free-tailed bats are typically found in desert and arid grasslands with rocky outcrops, 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 was detected in low numbers (five total detections) at three of the sampling locations: lower and upper Santa Maria Creek (sampling location #2 and 3, Figure 8) and at the pond (sampling location #5, Figure 8). The species was detected only in summer and fall.

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 United States. 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 was detected at five of the six sampling locations (1, 2, 4, 5, and 6, Figure 8) in low numbers (26 total observations) during all three sampling seasons.

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 2009 trapping program on the Preserve, 9 of the 1,067 animals captured were Dulzura pocket mice. All capture locations were associated with sample area D1.

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. During the 2009 trapping program on the Preserve, 337 of the 1,067 animals captured were northwestern San Diego pocket mice. Northwestern San Diego pocket mice were detected at 17 separate sampling locations including: A5, B1, B2, B3a, B3b, B3c, B3d, B3e, C1-C5, D1, D2b, D3a, and D4b.

Stephens' Kangaroo Rat (*Dipodomys stephensi*)

Federal Endangered, State Threatened, San Diego County Group I, North County MSCP Covered Species

The Stephens' kangaroo rat is found almost exclusively in open grasslands or sparse shrublands with cover of less than 50% during the summer. The species typically avoids dense grasses (for example, non-native bromes [*Bromus* spp.]) and is more likely to inhabit areas where the annual forbs disarticulate in the summer and leave more open areas. Soil type also is an important habitat factor. As a fossorial (burrowing) animal, the species typically is found in sandy and sandy loam soils with a low clay to gravel content, although there are exceptions where they can utilize the burrows of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*). This species tends to avoid rocky soils. Slope is a factor in occupation; the species tends to use flatter slopes (i.e., < 30%), but may be found on steeper slopes in trace densities (i.e., < one individual per hectare). Furthermore, the species may use steeper slopes for foraging, but not for burrows. In general, the highest abundances of species occur on gentle slopes less than 15%. During the 2009 trapping program on the Preserve, only three of the 1,067 animals captured were Stephens' kangaroo rats. Positive sample locations included A2 and D-misc. These animals were processed by a biologist permitted to handle Stephens' kangaroo rat.

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 2009 trapping program on the Preserve, 32 of the 1,067 animals captured were San Diego desert woodrats. Positive sample locations included B2, C3, C5 and D2b.

Southern Mule Deer (*Odocoileus hemionus fuliginata*)

San Diego County Group II, MSCP Covered Species (South County)

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. Some sign of southern mule deer was seen at the Preserve, and a few deer were photographed during camera sampling. Southern mule deer was visually observed in the northwestern area at camera stations 1 and 2. There was not as much deer activity as would be expected in a preserve this size.

4.3.6 Special-Status Wildlife Species with High Potential to Occur

Invertebrates

San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)

Federally Endangered, San Diego County Group I, MSCP Covered Species (North and South County)

San Diego fairy shrimp are small invertebrates that are found in small shallow vernal pools (USFWS 2002b). This species is found in southwestern coastal California and extreme northwestern Baja California, Mexico, with all known localities below 700 m (2,300 ft) and within 65 kilometers (km) (40 miles [mi]) of the Pacific Ocean, from Santa Barbara County south to northwestern Baja California (USFWS 1997, 2002b). The species can also occur in road ruts and ditches that provide suitable conditions for the species. Water temperature is an important factor for this fairy shrimp. The water must not get too hot (above 86°F [30°C]) or too cold (below 41°F [4°C]) for this species to occur (USFWS 2002b). San Diego fairy shrimp are known to occur in the vernal pools on the southeast area (CBI 2007) and on the southwestern area (Mooney & Associates 2005). Due to the presence of available data on San Diego fairy shrimp within the Preserve, focused surveys were not conducted in 2009. However, fairy shrimp surveys were conducted in 2010 in association with the updated surveys for spreading navarretia and little mousetail. The 2010 wet season fairy shrimp surveys confirmed the presence of San Diego fairy shrimp in some of the vernal pools located in the

southeastern portion of the Preserve; however, fairy shrimp were not observed in 2010 in the pools located in the southwestern portion of the Preserve.

Herpetofauna

California Legless Lizard (*Anniella pulchra pulchra*)

State Species of Special Concern, San Diego County Group II

The California (or silvery) legless lizard is a small slender lizard that ranges from the southern edge of the San Joaquin River southward to the Mexican border (CDFG 2005). This species is sometimes confused for a snake but upon close observation, the presence of eyelids indentifies the animal as a lizard. Legless lizards are common in a variety of vegetation communities including coastal dune, valley-foothill, chaparral, and coastal scrub (CDFG 2005). This lizard lives mostly underground, burrowing in loose sandy soil, and is tolerant of low temperatures, so it can be found foraging in loose soil, sand, and leaf litter on cool days and during the cooler times of day (morning and evening). The decline of this species is due to loss of habitat due to agriculture and development and the introduction of non-native plant species such as ice plant (California Herps 2008). Although this species was not observed during the 2009 surveys, it has high potential to occur in the oak, scrub, and chaparral habitats occurring on the Preserve.

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. Although this species was not observed during the 2009 surveys, it has high potential to occur in all the natural habitats occurring on the Preserve.

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). This species' decline is likely due to conversion of habitat to development, agriculture, or non-native plant species. Although this species was not observed during the 2009 surveys, it has high potential to occur in all the natural habitats occurring on the Preserve.

Birds

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). It typically forages in open, undisturbed habitats and nests in the top of a dense oak, willow, or other large tree (Unitt 2004). The white-tailed kite population is on the decline mostly due to urban sprawl; however, this species is still considered fairly widespread throughout the foothills of San Diego County (Unitt 2004). White-tailed kites have historically nested on the Preserve (WRI 2007); however, no individuals or nests were observed during the 2009 surveys. The most recent documented observation was in 2006 (WRI 2007).

Bald Eagle (*Haliaeetus leucocephalus*)

State Endangered, State Fully Protected Species, San Diego County Group I

The bald eagle is a rare annual winter visitor to San Diego County (Unitt 2004). Populations crashed due to widespread pesticide use, especially DDT, and shooting (Unitt 2004). It eats mainly fish and carrion, and observations are typically tied to water bodies (i.e., Lake Henshaw) (Unitt 2004). The bald eagle has occasionally been seen wintering at the Preserve (2004, 2005 and 2006) (WRI 2007).

Northern Harrier (*Circus cyaneus*)

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

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 are not known to breed at the Preserve; however, they are known to occasionally forage and winter there (2004, 2005 and 2006) (WRI 2007).

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 as it has been documented during surveys in 2004 moving through the Preserve (WRI 2007).

Northern Goshawk (*Accipiter gentilis*)

State Species of Special Concern

The northern goshawk is an extremely rare visitor to southern California with one of three breeding records in the region observed in San Diego County (Unitt 2004). This species nests in old growth forests and foraging habitat varies with abundance of prey (Shuford and Gardali 2008). This species is a rare winter vagrant and a very rare visitor to the grasslands found on the Preserve (WRI 2007).

Peregrine Falcon (*Falco peregrinus*)

State Endangered, State Fully Protected Species, San Diego County Group I

The peregrine falcon formerly bred over most of North America but in San Diego County there are only five nesting locations that have been documented and all of these are along the coast (Unitt 2004). Already declining populations crashed in the 1950s and 1960s due to extensive use of pesticides, which polluted food chains and concentrated to toxic levels in many top predators including this species (USFWS 1999). Nesting was historically limited to tall cliffs and similar inaccessible situations with very limited human disturbance, but some individuals have adapted to artificial situations such as towers, high bridges, and tall buildings in urban areas (Unitt 2004, USFWS 1999). Peregrine falcons mostly forage along shorelines and open water with high densities of prey species such as ducks and shorebirds (White et al. 2002). Secondarily, the species will utilize areas with high numbers of pigeons and game birds, such as in urban and some agricultural areas (White et al 2002, USFWS 1999). During migration, individuals will pass through almost all habitats. The peregrine falcon has been recorded at the Preserve during migration in 2004 and 2006 (WRI 2007). As the Preserve does not provide suitable nesting habitat, observations would be transitory in nature.

Prairie Falcon (*Falco mexicanus*)

State Species of Special Concern, San Diego County Group I

Prairie falcons forage over open terrain and nest in canyons, cliffs, escarpments, and rock outcrops (Dudek 2000). They prefer annual grasslands, alpine meadows, perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. The species requires sheltered cliff ledges for cover and nesting. In California, the prairie falcon is an uncommon permanent resident and migrant that ranges from southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada. The largest threat to prairie falcons is disturbance at the nest site. This species is a rare breeder in San Diego County but the numbers have remained relatively stable (Unitt 2004). This species has high potential to occur within the Preserve during migration and has been documented during historical surveys in 2003 through 2006 (WRI 2007).

Merlin (*Falco columbarius*)

San Diego County Group II

The merlin is most often seen in grasslands but has the potential to occur in any vegetation community 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 as it has been detected at the Preserve in previous winters (2004 and 2006) (WRI 2007).

Southwestern Willow Flycatcher (*Empidonax trailli extimus*)

Federally Endangered, State Endangered, San Diego County Group I, North County MSCP Covered Species

The southwestern willow flycatcher is a small, insectivorous, migratory bird that is usually found foraging in dense riparian vegetation. This species is known to breed in southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, far western Texas, perhaps southwestern Colorado, and extreme northwestern Mexico (USFWS 1995). When listed by the USFWS in 1995, there were only 577 individuals known throughout its entire range. Fewer than 90 pairs have been documented in San Diego County (Unitt 2004). The decline of this species was mostly due to disturbance and removal of riparian vegetation, water diversions and groundwater pumping, food availability and nesting, mismanagement of livestock, and recreational development.

Southwestern willow flycatchers are also considered semicolonial in that breeding territories are clumped close together. A metapopulation can use up to 15 km for immigration and emigration to maintain population stability (Unitt 2004, USFWS 2004). Southwestern willow flycatchers usually arrive on their breeding grounds in southern California beginning in early May and remain through at least late July. Timing of departure of locally breeding birds is difficult to determine due to extremely secretive behavior at that time along with more abundant migrants of other subspecies passing through the area. Migrants of subspecies other than *E.t. extimus* are very widespread, and uncommon to fairly common as they pass through southern California. Their occurrence is mainly from late May through mid-June, and again from late July through September. Definitive identification of a willow flycatcher as the southwestern subspecies usually occurs between June 14 and July 17 (Unitt 1987). A migrant willow flycatcher was detected moving through the Preserve in June 2005 (Lovio 2007).

Least Bell's Vireo (*Vireo belli pusillus*)

Federally Endangered, State Endangered, San Diego County Group I, North County MSCP Covered Species

Historically, the least Bell's vireo was a common to locally abundant species found in lowland riparian habitats from northern California to coastal southern California. Loss of riparian habitats and the effects of brown-headed cowbird parasitism have resulted in a large decline in the population. The population was estimated at 300 pairs in 1986 when listed by the USFWS. Currently, the population is limited to mid- to southern California. The majority of the population is found in San Diego County. Since listing, least Bell's vireo numbers have increased six-fold. In 1998, the population was estimated at 2,000 pairs (Kus 2002). Nests are typically placed within 1 meter (m) of the ground in dense shrubby riparian habitat.

Least Bell's vireo has moderate to low potential to occur on the Preserve in its current state. There is not much suitable breeding habitat on the Preserve to support the species. If the riparian scrubs within Santa Maria Creek develop a dense understory and a more developed overstory, this species may one day inhabit the Preserve. A historically large population persisted in San Pasqual Valley, northeast of the Preserve (K. Fischer pers. obs.); however, the Witch Fire of 2007 destroyed many acres of this species' preferred habitat.

Coastal California Gnatcatcher (*Polioptila californica californica*)

Federally Threatened, State Species of Special Concern, San Diego County Group I, North County MSCP Covered Species

The coastal California gnatcatcher is a small resident insectivorous species whose occurrence is strongly associated with sage scrub habitats found throughout southern California into northern Baja California, Mexico. Although California gnatcatchers have a close association with sage scrub, this species has also been documented using coastal sage-chaparral scrub, chamise chaparral, and other habitat types such as the ecotone between coastal sage scrub and grasslands (Campbell et al. 1998, Bontrager 1991, K. Fischer pers. obs.). Habitat destruction, fragmentation, and modification have led to this species' decline (USFWS 1993). Loss resulting from agriculture and urban development were leading causes until 2003 when the Cedar Fire destroyed almost 28% of the remaining habitat that the USFWS believed to be suitable for the coastal California gnatcatcher (Bond and Bradley 2003). The fires throughout the County in October 2007 also decimated many acres of coastal sage scrub occupied by California gnatcatchers. The extent of damage to the California gnatcatcher population is unknown at this time.

Coastal California gnatcatchers have historically been detected at the Preserve (1999) and adjacent to the Preserve (1998, 2001, 2002) (BIOS 2009). Currently, most of the coastal sage scrub is not appropriate for this species and if it is appropriate, it is isolated from other patches. This species has potential to occur in the future as it previously inhabited the area, but current conditions do not support suitable habitat for the species. As the coastal sage scrub recovers and California gnatcatchers inhabit the nearby coastal sage scrub, this species will have high potential to occur at the Preserve.

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

San Diego County Group I, North County MSCP Covered Species

The Bell's sage sparrow is a resident species that is usually found in chaparral and coastal sage scrub in southern California and 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). The subspecies Bell's sage sparrow, *A. b. belli*, occurs along the coastal lowlands, inland valleys, and in the lower foothills of the local mountains in southern California and south into Baja California (Dudek 2000). The decline of 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). Bell's sage sparrows were not observed during the 2009 surveys, but there is high potential for the species to occur as it has been recorded in the immediate vicinity (Unitt 2004).

Mammals

Mountain Lion (*Puma concolor*)

San Diego County Group II, North County 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 occupy 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 to sustain themselves, requiring at least 850 square miles to remain stable (Dudek 2000). Habitat fragmentation, loss of large areas of undeveloped land, road kills, indiscriminate shootings, animal control measures, and loss of natural prey base have led to the decline of this species. The Preserve and the surrounding open space provide habitat for mountain lion to use for foraging and cover, and the species has been documented on the Preserve during previous surveys (CBI 2007).

4.3.7 Invasive Species

Native species are often at a disadvantage after exotic species or non-native predators are introduced. Non-native animal species have few natural predators or other ecological controls on their population sizes, and they thrive under conditions created by humans. These species may aggressively outcompete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals, particularly cats, can prey on small native wildlife species. Feral animals are not a current problem at the Preserve. With the increased use of the Preserve by hikers and their dogs and horseback riders, increased interactions between domestic animals and native animals are expected. Twelve non-native animal species were documented during the current survey effort including red swamp crayfish (*Procambarus clarkia*), common pillbug (*Armadillidium vulgare*), honey bee (*Apis mellifera*), bullfrog (*Rana catesbeiana*), wild turkey (*Meleagris gallopavo*), rock pigeon (*Columba livia*), European starling (*Strurnus vulgaris*), brown-headed cowbird (*Molothrus ater*), Virginia opossum (*Didelphis virginiana*), domestic dog (*Canis familiaris*), domestic horse (*Equus caballus*) and domestic cattle (*Bos Taurus*) . Domestic cattle is a non-native species that occurs on the Preserve; however, for the purpose of this Preserve, this species is not considered invasive as there are leases with cattle ranchers that allow these cattle to graze on the Preserve and cattle grazing is also used as an adaptive management tool to conserve sensitive biological resources on site.

4.4 Wildlife Movement

Wildlife movement corridors are areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetative cover provide corridors for wildlife movement. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations.

The Preserve is identified within the North County MSCP as a core habitat area (Area 13) and a linkage that connects San Pasqual Valley to the north with Barnett Ranch and Iron Mountain preserve areas to the south. The Preserve serves as an important corridor for wildlife movement between these areas. The major wildlife movement feature located within the Preserve is Santa Maria Creek. Santa Maria Creek provides access and concealment to wildlife species of all sizes. Larger mammals such as coyotes regularly move on, off of, and across the Preserve, to and from adjacent open space. There is a crossing under Rangeland Road that connects the two southern areas. In 2009, numerous mammal species were documented utilizing this crossing including striped skunk (*Mephitis mephitis*

holzneri), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata latirostra*), and Virginia opossum.

Wildlife movement along Santa Maria Creek should be monitored to ensure that this corridor is allowing functional movement of wildlife across the Preserve. Along the western portion of the Preserve the Santa Maria Creek traverses offsite of the Preserve and then back onto the Preserve. At this location there is a divider consisting of a barbed wire fence which could potentially obstruct wildlife movement between the northwest area and the southwest area on the Preserve. The portion of the creek between the Preserve passes through property owned by the Ramona Municipal Water District. Camera stations were not setup on lands owned by the Ramona Municipal Water District and it is unknown if the barbed wire fence is impacting wildlife movement. However, camera station #2 located just downstream of this area did detect southern mule deer. Monitoring the usage of this corridor should identify if there are any changes over time and measures to increase usage on the Preserve side of the fences will need to be taken into consideration at that time.

Chapter 5
Conclusions and MSCP Management and Monitoring Recommendations

The majority of the Preserve is located in the North County Multiple Species Conservation Program (North County MSCP) planning area. A portion of the northwest area of the Preserve is located within the boundary of the South County MSCP, specifically within the Metro-Lakeside-Jamul segment. However, the entire Preserve will be managed under the North County MSCP. The Preserve is identified within the North County MSCP as containing conserved core habitat and linkage habitat. Due to the importance of the Preserve within the North County MSCP, ongoing monitoring and adaptive management should be implemented to assess the status and trends of biological resources within the Preserve. The North County MSCP includes general biological monitoring intended to evaluate whether the preserve system is meeting conservation targets for covered plant and animal species and their habitats, identify threats to covered species and their habitats, and help identify management needs. The Draft North County MSCP Framework Resource Management Plan (Framework Resource Management Plan) contains specific management and monitoring recommendations that will be used to develop Area Specific Management Directives for preserves that fall within the plan area such as the Ramona Grasslands Preserve.

The Framework Resource Management Plan requires that preserve areas implement Phase I and Phase II management and monitoring measures. It should be noted that prior to the finalization of ASMDs, preserve areas are proposed to be managed following the general guidelines in the Framework Resource Management Plan.

Phase I measures include:

1. Addressing interim management needs;
2. Conducting baseline inventory of target species (high priority species and invasive non-native species);
3. Providing an inventory of management needs; and
4. Developing Area Specific Management Directives (ASMDs) and a compliance monitoring strategy.

Phase II requirements are to begin after baseline inventories are complete and ASMDs are developed. Phase II involves the ongoing management and monitoring of preserve lands and consists of the following:

5. Implementation of ASMDs
    - Ongoing management and monitoring of preserve areas following ASMDs established during Phase I.
6. Species Distribution Surveys/Status Monitoring
    - Repeated at least once every 5 years (i.e., once during Years 6–10, once during Years 11–15, etc.).

7. Wildlife Corridor Monitoring

    - Wildlife migration corridors will be monitored to ensure they are being utilized by California gnatcatchers and certain mammal species.

It should be noted that the Framework Resource Management Plan does not currently detail the exact methods that should be implemented when conducting species distribution surveys (covered species monitoring); although the plan does suggest that the methods are consistent with the monitoring methods that are being implemented by the South County MSCP. The South County MSCP monitoring methods include utilizing the USFWS Animal Monitoring Protocol and the USGS Plant Monitoring Protocol. The Animal Monitoring Protocol covers the following species: coastal 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 South County MSCP-covered plant species.

In this chapter, we will present specific management recommendations for the habitat types documented within the Preserve and the various taxonomic groups assessed during this survey effort. As detailed previously, the current survey effort documented 23 habitat types and 626 species within the Preserve. Specifically, the surveys detected 409 plant species and 217 wildlife species. Of these species, 16 plants are considered special status including five plant species that are proposed to be covered by the North County MSCP; 40 special-status wildlife species were detected during the surveys of which 14 are proposed to be covered by the North County MSCP.

5.1 Vegetation Communities/Habitats

5.1.1 Management and Monitoring

The goal of habitat monitoring within the North County MSCP is to maintain an ongoing inventory of the distribution and quality of vegetation communities. To achieve this, the Framework Resource Management Plan requires that preserve managers implement the CNPS's Vegetation Rapid Assessment Protocol. This protocol consists of rapid assessment plots where data are gathered on native and non-native plant species composition, vegetation disturbance, soil type, and other variables. Sampling sites should be identified using random sampling within stratified vegetation types and enough sites should be sampled within each major vegetation type so as to gain a statistically significant representation of vegetation community distribution and quality within a preserve area. Aerial photo interpretation will aid in extrapolating data to unsampled areas. Habitat monitoring is required once every 5 years.

In addition to the habitat monitoring discussed above, specific monitoring measures and management strategies are required for a variety of conserved habitats within the North County MSCP. This section will address these additional challenges and their management strategies that are required for plant species within 1) riparian, marsh, and meadow habitats; 2) coastal sage scrub, chaparral, and grassland habitats; 3) oak woodland and coniferous forest habitats; and 4) vernal pool habitats. Riparian, marsh, and meadow habitats identified within the Preserve include alkali marsh, coastal and valley freshwater marsh, emergent wetland, southern coast live oak riparian forest, mule fat scrub, and southern willow scrub. Coastal sage scrub, chaparral, and grassland habitats identified within the Preserve include

Diegan coastal sage scrub, southern mixed chaparral, chamise chaparral, scrub oak chaparral, coastal sage-chaparral scrub, valley needlegrass grassland, and non-native grasslands. Oak woodland and coniferous forest habitats documented within the Preserve include open coast live oak woodland, dense coast live oak woodland, and southern coast live oak riparian forest. Lastly, vernal pools and vernal swales occur throughout the grasslands located on the southern areas. The additional habitat monitoring requirements that are applicable within the Preserve are presented below.

Riparian, Marsh, and Meadow Habitats

For riparian, marsh, and meadow habitats within the Preserve, hydrology maintenance and invasive species protection have been identified by the Framework Resource Management Plan as crucial components to the long-term protection of these habitats (Tables 26 and 27). The tables below outline the risks/threats and management and monitoring recommendations for these issues as stated in the Framework Resource Management Plan.

Table 26. Hydrology within Riparian, Marsh, and Meadow Habitats

Risks/Threats	Management Guidelines	Monitoring Guidelines
Water sources may accumulate contaminants (e.g. toxins, nutrients, solid waste) as a result of urban/agricultural runoff, construction, or trash dumping. These contaminants can be toxic to riparian species, or can have an impact on water quality. Alteration of hydrologic regimes from urban development and irrigated agriculture can have an effect on channel processes (e.g. erosion rates, sediment transport) and surface flows. Many riparian species are adapted to habitat conditions created by specific hydrologic regimes and when hydrologic regimes are altered, the species composition of riparian, marsh, and meadow communities may change.	Educate nearby residents about landscaping alternatives that deliver less runoff to watersheds (e.g. xerophytic plantings, drip irrigation) and household chemicals that should not be released into watersheds. Ensure that construction/ development projects occurring in upland areas adjacent to riparian habitat take all measures to prevent spills, runoff, or dumping of any materials into riparian zones.	The County of San Diego Watershed Protection Program monitors water quality throughout San Diego County. Monitoring sites are sampled annually between May and September. The water quality parameters analyzed vary by site depending upon the types of pollutants that are likely to be delivered from nearby land use. Parameters analyzed include: dissolved oxygen, pH, bacteria, nitrates, ammonia, phosphates, pesticides, herbicides, oil, copper, zinc, lead, and nickel. Where high levels of a specific pollutant are found, an effort is made to identify the source. The data resulting from the watershed protection program's efforts should be analyzed to identify water quality concerns within the Preserve. Visual assessment of channel conditions should be conducted during appropriate seasons. Where channel conditions are considered poor (e.g., unstable banks) follow up surveys

Risks/Threats	Management Guidelines	Monitoring Guidelines
Stream banks are highly susceptible to erosion due to human uses (e.g., biking and hiking).	Where necessary, take measures to stabilize banks and control erosion. Conversely, there may be situations where existing erosion control structures should be removed in order to create a more natural stream/riparian ecosystem. Limit use of land adjacent to streams through signage, trail management, and patrolling.	should be conducted to determine if additional actions are necessary. Incorporate additional sources of information related to water quality such as the annual reports produced by the San Diego Municipal Stormwater Co-permitees Urban Runoff Monitoring Program. These reports include data related to watersheds throughout the County of San Diego and include information regarding ecological health of watersheds based upon macroinvertebrate sampling, mass loading, storm drain outfall, and toxic hotspots.

Table 27. Invasive Plant Species within Riparian, Marsh and Meadow Habitats

Risks/Threats	Management Guidelines	Monitoring Guidelines
Non-native plants identified in the Preserve such as pampas grass, arundo, artichoke thistle, and tamarisk compete with native species and in high numbers can have a significant impact on hydrology by clogging channels and increasing flooding.	Control programs should target known source populations of invasive non-native plant species in an effort to significantly reduce their numbers or eradicate them from a local area where they exert negative impacts on native species. Non-native invasive plant species may be controlled by manual removal, herbicide application, grazing, a combination of these methods, or other methods.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species and implement management guidelines. Where measures have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program and whether it should be modified or repeated to achieve better results.

Coastal Sage Scrub, Chaparral, and Grassland Habitats

For coastal sage scrub, chaparral, and grassland habitats, fire management and invasive species protection have been identified as the crucial factors that will require management and monitoring to ensure the long-term conservation values of these habitats (Framework Resource Management Plan guidelines for resource management of these habitats are shown in Tables 28 and 29). A fire management plan will be prepared for the Preserve but some general guidelines are included in Table 28. Cattle grazing will be used to manage the grasslands to maintain habitat suitability for SKR and vernal pools. A portion of the Preserve has been divided into grazing units in order to effectively manage the grazing level (Figure 13). The updated Resource Management Plan will include grazing management units for the remaining areas of the Preserve.

The core habitat areas for SKR are north of the southern edge of grazing unit 2A and all portions of 2B except for the chaparral habitat within this the unit. Management Unit 3A supports SKR within the northern portion of the unit in areas of loamy grasslands, but this is considered a small and isolated population, separate from the larger populations within the Preserve. Management Units 3C and 3D are directly connected to unit 2A and populations within these areas can be potentially replenished from the larger core populations if conditions are favorable. However, these Management Units (3C and 3D) and 3B are not being managed for SKR instead these areas are being managed for vernal pools and the proliferation of native plant species.

It is understood from reviewing past studies that Management Units 2A, 2B, and 3A are to be managed to maintain suitable grassland structure for SKR and foraging raptors. Ideally, habitat within these grazing units should include 20-30 percent bare ground and a greater than two to one ratio of forb cover to grass cover (Spencer 2003), with a residual dry matter (RDM) of 1,500 pounds (lbs)/acre to less than 1,000 lbs/acre within these areas. Although it should be noted that previous studies have found SKR in areas with an RDM of 2,000 lbs/acre and it is thought that they can tolerate an RDM as high as 3,000 lbs/acre (Spencer and Montgomery 2007). Cattle should be allowed

Table 28. Fire within Coastal Sage Scrub, Chaparral, and Grassland Habitats

Risks/Threats	Management Guidelines	Monitoring Guidelines
Fire suppression can impact the amount of biological diversity in chaparral. Early successional stages have the greatest diversity of species. Frequent fires with short intervals may cause type conversion from shrublands to annual grasslands. Large fires can severely impact sensitive species and habitats. Plant species may be left without adequate refugia to maintain their populations until recovery can occur.	Cattle grazing is an accepted method of managing fuel load in habitats and will be used at the Preserve. Currently there are leases with cattle ranchers to allow their cattle to graze on certain areas of the Preserve. Prescribed fires may be used as a form of habitat management; however, this may cause visual impacts to the nearby Ramona Airport. This should only be used at the Preserve with planning with the airport. In addition, prescribed fire should only be used if it does not eliminate important populations of rare species; there is no risk to nearby residents; and that unburned habitat can be left to provide a seed bank for post-fire recovery.	Fire history maps maintained by the California Department of Forestry and Fire Protection (CDF) should be reviewed at least once every 10 years to determine if Preserve lands are within natural fire return intervals and for estimation of fuel age class. Inspect fuel management zones on wildland-urban interfaces (in conjunction with fire agencies) to assure adequate fire buffers between homes and Preserve. Conduct post-fire monitoring at a minimum within the first 3 years following significant fires; the first two growing seasons after the fire is preferable. Elements to include in monitoring include sensitive plant populations, existing or potential erosion threats (to life, property, or natural resources), and animal movement. More details regarding post-fire monitoring are provided in the fire management plan being developed for the Preserve.
Large fires can severely impact sensitive species and habitats. Plant species may be left without adequate refugia to maintain their populations until recovery can occur. There is a high risk for severe fire in more mature chaparral communities. Unusually hot fires caused by unnaturally high fuel loads and old class stands of brush (from fire suppression, drought, or disease) can damage soils causing unusual amounts of erosion, removing the soil seed bank and thereby the community's means of natural recovery.	Human-caused ignition sources (e.g., house fires, yard fires, chimney embers, firecrackers) should be controlled through public outreach and enforcement to prevent unnatural fire frequency. Cattle grazing can be used to lower the vegetative fuel load.	
Erosion is often increased after fires due direct exposure of soil to the elements. Erosion and runoff may also be accelerated in some areas due to altered chemical properties of the soil from exposure to extreme temperatures, reducing the organic content of the soil among other changes.	Where necessary, take measures to stabilize eroded areas and control erosion. Limit use of land adjacent to eroded areas through signage, trail management, and patrolling.	

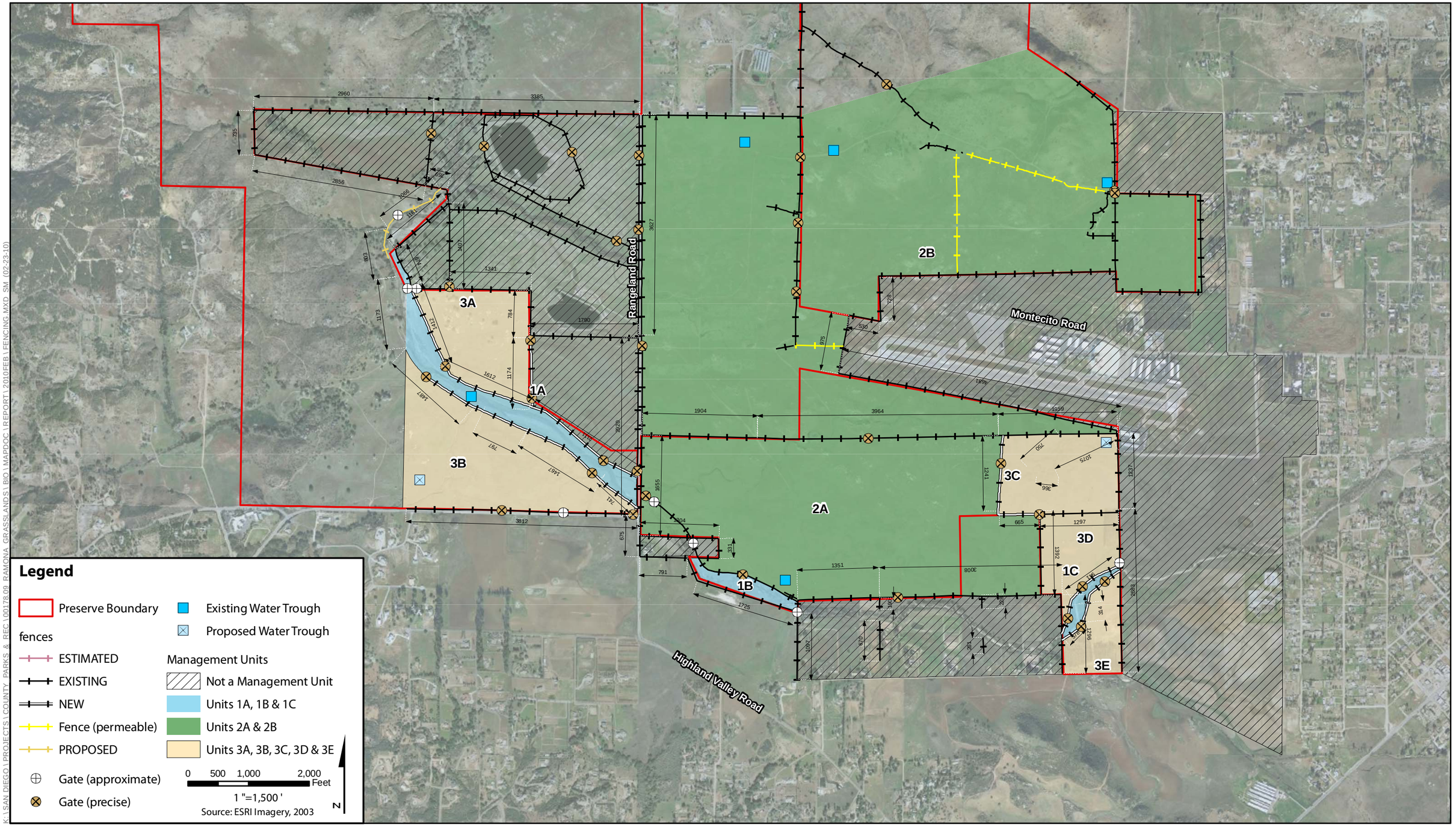


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Figure 13
Fencing and Grazing
Ramona Grasslands

Table 29. Invasive Plant Species within Coastal Sage Scrub, Chaparral, and Grasslands Habitats

Risks/Threats	Management Guidelines	Monitoring Guidelines
High densities of non-native annual grasses and forbs can compete with native plants, including sensitive species and host plants for a variety of insects which may serve as important pollinators or be sensitive themselves.	Educate nearby residents and preserve users about measures they could take to reduce the level of invasive species (e.g., use landscaping alternatives that deliver less runoff to watersheds, such as xerophytic plantings and drip irrigation) and about the potential impacts of using non-native, invasive plant species for landscaping. Control of non-native weeds, including annual grasses and forbs, should be accomplished by a combination of methods (i.e., integrated pest management) including cutting, herbicides, razing, prescribed fire, and revegetation. Managed grazing can be an effective method to reduce the density of non-native grasses and forbs. Precautions must be taken to ensure that threats to habitat are minimized and benefits are maximized. For example: using pulses of grazing or a deferred rest rotation; exclusion of grazing in wetland areas; and holding cattle for several days between grazing areas to prevent spread of weeds. Seeding with native species can help re-establish healthy populations of native plants, including host plants.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species, or where populations of covered species may soon be invaded. Where measures have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program. In traditional use areas, consult with Native Americans on appropriate methods to control invasive species.

to graze within these areas during most of the year, particularly during the fall months when native seed has set, and during the early winter months when non-native annual grasses typically start their new growth. Typically, this should occur between the months of November through March, although this will depend on rainfall and temperatures, as well as the number of cattle to be grazed in these areas.

Cattle should then be moved out of these areas during the later spring, when native species will be most active. Through this strategy, earlier germinating non-natives can be grazed out of these areas and by moving the cattle to other areas, native species can begin to become more dominant when competition is reduced. Grazing intensity within the Preserve has been between 10 to 20 acres per Animal Unit per Month (AUM) over the past few years. Increasing the grazing intensity through decreasing the number of acres per AUM depending on growing conditions along with the timing of the grazing will reduce RDM in these areas, but these areas will need to be monitored and adaptive management strategies will need to be employed to take into account seasonal irregularities and the possibility of unexpected vegetation growth patterns. If seasonal rains being earlier or later, then the

grazing schedule should be adjusted accordingly. If it is a dry year, a decrease in AUM will be the best strategy to reduce the impact of grazing upon native species, while continuing active management depending on environmental conditions to gradually reduce RDM.

For Units 3B, 3C, and 3D, the desired RDM level is between 1,500 lbs/acre to 700 lbs/acre as well as a reduction in the abundance and cover of invasive non-native annual species, a reduction in the amount of thatch, and an increase in the abundance and cover of native species. Cattle grazing should start to occur after native seed has set, adjusting the number of cattle as needed, and removing them before filling of vernal pools in the fall/winter months. Native seed set within the grasslands is between May and June, and the filling of vernal pools depends on when the first rains occur during the fall season. Management of these areas will involve grazing these areas during this period and maintaining it until RDM levels are achieved and removing the cattle at the appropriate time of the season, while being flexible with the number of grazing animals inside these areas. Managing these smaller units will also be a challenge in that will require some extra monitoring due to their size to prevent more impacts than intended, but it would still be worthwhile to try and reduce vegetation with at least a few animals.

Oak Woodlands and Coniferous Forest

For oak woodlands and coniferous forest, non-native invasive species control and fire management have been identified by the Framework Resource Management Plan as crucial components to the long-term conservation of these habitats (Table 30 and Table 31). In addition, diseases and pest species that can affect the local oak species are discussed in Table 30.

Table 30. Non-native Plant Species and Potential Diseases within Oak Woodlands and Coniferous Forest

Risks/Threats	Management Guidelines	Monitoring Guidelines
Sudden oak death syndrome is a major concern in northern California and if the disease spreads to San Diego County, a plan to control the disease will need to be developed and implemented	Work with County Department of Agriculture, Weights and Measures, to develop a control strategy for sudden oak death syndrome before it reaches San Diego County, if and when spread to San Diego County appears imminent.	Work with County Department of Agriculture, Weights and Measures, to monitor spread of sudden oak death syndrome. Samples of diseased materials are regularly tested in the Department of Agriculture, Weights and Measures, plant pathology lab. If there are positive instances of sudden oak death syndrome, begin formulating a control strategy.
Goldspotted oak borer is a pest that is found in San Diego County that attacks three species of oak, of which one (coast live oak) is found on the Preserve. This pest bores into mature oaks and over several years, an infestation can kill the tree. Widespread tree mortality would impact the health of the ecosystem on the Preserve.	Logs from killed trees or green infested trees should not be removed from the area without careful treatment. Transporting infested wood may represent a significant pathway for introducing this species into non-infested areas. Within infested areas, covering oak wood with thick, clear plastic sheeting or exposing cut wood to direct	Monitor the condition of the oaks on the Preserve for signs of an infestation. Notify the correct agencies for additional guidance should an infestation be discovered.

Risks/Threats	Management Guidelines	Monitoring Guidelines
	sunlight may kill goldspotted oak borer larvae and pupae. Chipping wood into 2.5 cm pieces is the best method to drastically reduce the species survival in cut logs.	
Presence of non-native plant species can result in unnatural hydrological regimes in riparian oak woodlands.	Educate nearby residents about landscaping practices that deliver less runoff to watersheds, such as xerophytic plantings and drip irrigation.	In traditional use areas, consult with Native Americans on appropriate methods to control invasive species. Identify source populations of non-native invasive species. Determine where the distribution of non-native invasive species overlaps with covered species.

Table 31. Fire Management Measures for Oak Woodlands and Coniferous Forest Habitats

Risks/Threats	Management Guidelines	Monitoring Guidelines
Frequent fires and infrequent fires can affect recruitment of new trees and alter species composition, including dominant species. Large fires can severely impact sensitive species and habitat. Plant species may be left without adequate refugia to maintain their populations until recovery of native vegetation can occur. Unusually hot fires caused by unnaturally high fuel loads (from fire suppression, drought, or disease) can damage soils causing unusual amounts of erosion, removing the soil seed bank and thereby the community's means of natural recovery.	In some cases, prescribed fires may be used as a form of habitat management. However, prescribed fires may cause visual impacts to the nearby Ramona Airport. This should only be used at the Preserve with planning with the airport. In addition, prescribed fire should only be used if it does not eliminate important populations of rare, narrow endemic species; there is no risk to nearby residents; and that refugia of unburned habitat can be left for wildlife to escape the fire. Human-caused ignition sources (e.g., house fires, yard fires, chimney embers, firecrackers) should be controlled through public outreach and enforcement to prevent unnatural fire frequency.	Review fire maps maintained by CDF at least once every 10 years to determine if preserve lands are within natural fire return intervals. Inspect fuel management zones on urban-wildland interfaces (in conjunction with Fire Agencies) to assure adequate fire buffers between homes and wildlands. Conduct post-fire monitoring within the first 3 years following significant fires; the first two growing seasons after the fire is preferable. Elements to include in monitoring include sensitive plant populations, existing or potential erosion threats (to life, property, or natural resources), and animal movement. (More details regarding post-fire monitoring are provided in the fire management plan being developed for the Preserve.)

Vernal Pools

As detailed in the North County MSCP, the only known vernal pools within the planning area are within or near the community of Ramona. These include the pools within the Preserve and a complex of pools near downtown Ramona. The Framework Resource Management Plan requires that the management of these vernal pools be consistent with the Ramona Vernal Pool Conservation Study, Ramona, California (TAIC and EDAW Inc 2005). Management recommendations for vernal pools are outlined in Table 32.

Table 32. Management Recommendations for Vernal Pools

Risks/Threats	Management Guidelines	Monitoring Guidelines
Non-native grasses can become too dense and will crowd out vernal pool plant species	Maintain an RDM level between 1,500 lbs/acre to 700 lbs/acre in grazing units 3B, 3C, and 3D.	Annually monitor RDM values to determine if they are within acceptable ranges.
Pools can become highly degraded by various stressors such as cattle grazing at the wrong time of year, over-grazing, agricultural practices, and off-road vehicle use.	Allow cattle grazing during the appropriate time of year when the pools are not inundated with water. Explore other methods of weed control. Methods can include artificially filling vernal pools to drown out some grasses, use cattle grazing to remove vegetative growth prior to the plants going to seed, salvage vernal pool indicator species from weed infested pools, solarize overrun pools, and subsequently re-seed with the salvaged material. Some of the lower functioning pools could potentially be enhanced through basin recontouring and reintroduction of species historically recorded but no longer found in a particular pool.	Monitor vegetation community composition and target species per the Framework Resource Management Plan.
A decrease in genetic diversity in isolated pools	Protect the vernal pools containing vernal pool indicator species. Do not restrict access of dispersal vectors or pollinators. Where necessary, enhance upland habitat with a variety of native plants to provide resources for appropriate pollinator species. Maintain migration routes (wetlands swales) for amphibians and other species that will allow natural genetic flow.	Annually monitor to ensure obstacles (e.g., fencing and trails) are not prohibiting access by dispersal vectors and pollinators.
Hydrological integrity can become compromised if the watershed is disturbed	Buffer vernal pool watersheds from incompatible uses through the use native plants and fencing. Fencing should not limit the movement of dispersal vectors or pollinators, and it should not block access for	Annually monitor the integrity of the watershed and determine if any factors are compromising the watershed.

Risks/Threats	Management Guidelines	Monitoring Guidelines
	appropriate passive recreation. Prevent fragmentation or diversion of vernal pool watersheds from fencing or trails. Maintain hydrological integrity through exotic species removal and biomass reduction. Regularly clear trash and prevent dumping. Ensure that grazing will be used at appropriate levels, locations, seasonality, and quantities to control biomass in the watershed while avoiding direct impacts to vernal pool basins. If monitoring results indicate that grazing is harmful to vernal pool species then grazing should be discontinued. Livestock feces should be removed from watersheds of vernal pools.	
Only allow compatible uses, such as hiking, biking, equestrian, or nature study and when appropriate cattle grazing, in or adjacent to vernal pools	Maintain appropriate grazing regimes where it is beneficial to vernal pool ecosystems and practical for ranchers. Grazing can reduce the cover of exotic species, increase the relative cover of native species, and generally improve vernal pool hydrology relative to inundation duration. Exclusion of cattle from vernal pool basins during the wet season is highly recommended. Align hiking trails so vernal pools can be viewed and enjoyed, but from a distance. Trampling from pedestrians around the margins or through vernal pools during the aquatic phase can be very damaging. Trails for biking and equestrian uses should minimize encroachment into vernal pool watersheds and should never be placed within 30 feet of vernal pool basins. The trails should be constructed in a way to avoid watershed fragmentation.	Monitor the Preserve as needed to ensure only compatible uses are conducted within close proximity to any vernal pools.

Cattle grazing will be used to manage the grasslands to maintain habitat suitability for vernal pools as discussed above under *Coastal Sage Scrub, Chaparral, and Grassland Habitats*. Certain areas of the Preserve have been divided into grazing units in order to effectively manage the grazing level (Figure 13). Units 3B, 3C, and 3D are being managed for vernal pools and the proliferation of native plant species. Managed cattle grazing will assist in achieving this goal by preventing non-native annual grasses from becoming too dense and thatch from building up. For Units 3B, 3C, and 3D, the desired

RDM level is between 1,500 lbs/acre to 700 lbs/acre as well as a reduction in the abundance and cover of invasive non-native annual species, a reduction in the amount of thatch, and an increase in the abundance and cover of native species. Cattle grazing should start to occur after native seed has set, adjusting the number of cattle as needed, and removing them before filling of vernal pools in the fall/winter months. Native seed set within the grasslands is between May and June, and the filling of vernal pools depends on when the first rains occur during the fall season. Management of these areas will involve grazing these areas during this period and maintaining it until RDM levels are achieved and removing the cattle at the appropriate time of the season, while being flexible with the number of grazing animals inside these areas. Managing these smaller units will also be a challenge in that will require some extra monitoring due to their size to prevent more impacts than intended, but it would still be worthwhile to try and reduce vegetation with at least a few animals.

5.2 Plants

5.2.1 Management and Monitoring

The current survey effort documented five North County MSCP covered plant species (Table 33). The monitoring of San Diego thornmint, Parish's brittlescale, Coulter's brittlescale, southern tarplant, and Engelmann oak shall be assessed per the methods described in the Framework Resource Management Plan which are habitat based. The species-specific monitoring sections of the Framework Resource Management Plan are under development. Some specific management issues for covered plant species are outlined in Table 34.

Table 33. Covered Plant Species detected within the Preserve and their Associated Habitat Community

Common Name	Scientific Name	Habitat Type(s)
San Diego Thornmint	*Acanthomintha ilicifolia*	Coastal sage scrub, chaparral, and grassland
Coulter's Saltbush	*Atriplex coulteri*	Coastal sage scrub and chaparral
Parish Brittlescale	*Atriplex parishii*	Vernal pools
Southern Tarplant	*Centromadia parryi australis*	Vernal pools
Engelmann Oak	*Quercus engelmannii*	Oak woodlands

Table 34. General Management Issues for Covered Plant Species

Risks/Threats	Covered Species	Management Guidelines	Monitoring Guidelines
High densities of non-native annual grasses and forbs can crowd out native species and affect hydrological regimes that species rely upon for survival.	San Diego Thornmint, Coulter's Saltbush, Engelmann Oak, Parish Brittlescale, Southern Tarplant	Control of non-native weeds, including annual grasses and forbs, should be accomplished by a combination of methods (i.e., integrated pest management) including cutting, herbicides, razing, prescribed fire, and revegetation.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species, or where populations of covered species may soon be invaded. Where measures

Risks/Threats	Covered Species	Management Guidelines	Monitoring Guidelines
		Maintain an RDM level between 1,500 lbs/acre to 700 lbs/acre in grazing units 3B, 3C, and 3D to mange area for vernal pool species.	have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program.
Frequent fires with short intervals may cause type conversion from shrublands to annual grasslands. Large fires can severely impact sensitive species and habitats. Plant species may be left without adequate refugia to maintain their populations until recovery can occur. Unusually hot fires can damage soils causing unusual amounts of erosion, removing the soil seed bank and thereby the community's means of natural recovery.	San Diego Thornmint, Coulter's Saltbush	Cattle grazing is an accepted method of lowering fuel load and will be used at the Preserve. Currently there are leases with cattle ranchers to allow their cattle to graze on the Preserve. Human-caused ignition sources (e.g., house fires, yard fires, chimney embers, firecrackers) should be controlled through public outreach and enforcement to prevent unnatural fire frequency.	Inspect fuel management zones on wildland-urban interfaces (in conjunction with fire agencies) to assure adequate fire buffers between homes and the Preserve. Conduct post-fire monitoring at a minimum within the first 3 years following significant fires; the first two growing seasons after the fire is preferable. Elements to include in monitoring include sensitive plant populations and existing or potential erosion threats. More details regarding post-fire monitoring will be provided in the fire management plan being developed for the Preserve.
Sudden oak death syndrome is a major concern in northern California and if the disease spreads to San Diego County, a plan to control the disease will need to be developed and implemented.	Engelmann Oak	Work with County Department of Agriculture, Weights and Measures, to develop a control strategy for sudden oak death syndrome before it reaches San Diego County, if and when spread to San Diego County appears imminent.	Work with County Department of Agriculture, Weights and Measures, to monitor spread of sudden oak death syndrome. Samples of diseased materials are regularly tested in the Department of Agriculture, Weights and Measures, plant pathology lab. If there are positive instances of sudden oak death syndrome, begin formulating a control strategy.

5.3 Wildlife

5.3.1 Management

The current survey effort documented 14 North County MSCP covered wildlife species (Table 35). Covered species will be monitored in conformance with the Framework Resource Management Plan and could include species specific surveys, vegetation community monitoring and wildlife corridor monitoring. The vegetation community level management guidelines provide resource management actions that can benefit these species and are detailed in Section 5.1. The species-specific monitoring sections of the Framework Resource Management Plan are under development. Table 36 outlines species management issues for covered wildlife species.

Please see *Coastal Sage Scrub, Chaparral, and Grassland Habitats* under Section 5.1.1 for a discussion of management the Preserve for SKR.

Table 35. Covered Species detected within the Preserve and their Associated Habitat Community

Common Name	Scientific Name	Habitat Community for which the Species is associated
Arroyo Toad	*Bufo microscaphus californicus*	Riparian, Marsh, and Meadow
Western Spadefoot	*Scaphiopus hammondii*	Vernal Pools
San Diego Horned Lizard	*Phrynosoma coronatum blainvillii*	Coastal sage scrub, chaparral, and grassland
Orange-throated Whiptail	*Cnemidophorus hyperythrus*	Coastal sage scrub, chaparral, and grassland
Two-striped Garter Snake	*Thamnophis hammondii hammondii*	Riparian, Marsh, and Meadow
Red Diamond Rattlesnake	*Crotalus ruber ruber*	Coastal sage scrub, chaparral, and grassland
Golden Eagle	*Aquila chrysaetos*	Coastal sage scrub, chaparral, and grassland
Burrowing Owl	*Athene cunicularia hypugea*	Coastal sage scrub and grassland
Southern California Rufous-crowned Sparrow	*Aimophila ruficeps canescens*	Coastal sage scrub and chaparral
Grasshopper Sparrow	*Ammodramus savannarum*	Grassland
Tricolored Blackbird	*Agelaius tricolor*	Riparian, Marsh, and Meadow
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Coastal sage scrub and chaparral
Pallid Bat	*Antrozous pallidus*	Coastal sage scrub and chaparral
Stephens' Kangaroo Rat	*Dipodomys stephensi*	Coastal sage scrub and grassland

Table 36. General Management Issues for Covered Wildlife Species

Risks/Threats	Covered Species	Management Guidelines	Monitoring Guidelines
Predation by invasive/non-native species such as Bullfrogs or brown-headed cowbirds.	Arroyo Toad	Control programs should target known source populations of invasive species in an effort to significantly reduce their numbers or eradicate them from a local area where they exert negative impacts on native species. Aquatic invasive animals may be controlled by trapping, electrofishing, and other methods. Brown-headed cowbird populations may be controlled by trapping adults, removing eggs from host nests, and other methods.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species, or what populations of covered species may soon be invaded. Where measures have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program and whether it should be modified or repeated to achieve better results.
Predation of covered species by animal populations that have been enhanced by urbanization (e.g. raccoons, skunks, cats, and dogs).	Arroyo Toad, Western Spadefoot, San Diego Horned Lizard, Orange-throated Whiptail, Two-striped Garter Snake, Red Diamond Rattlesnake, Golden Eagle, Burrowing Owl, Southern California Rufous-crowned Sparrow, Grasshopper Sparrow, Tricolored Blackbird	Nearby residents and Preserve users should be educated about measures they could take to reduce the level of invasive species (e.g., don't set pets (turtles, frogs) free, keep pets from straying into Preserve, and cover trash cans).	
Non-native argentine ant populations benefit from artificial year-round water sources (e.g., irrigation, urban runoff, gray-water percolation). Argentine ants compete with native ants and often displace them from suitable habitats, which can have significant impacts on food webs.	San Diego Horned Lizard, Orange-throated Whiptail	Although this is not a current problem on the Preserve, due diligence should occur to prevent infestation. Inspect any plants being brought into a preserve area for Argentine ants.	

Risks/Threats	Covered Species	Management Guidelines	Monitoring Guidelines
Non-native grass cover can become too dense and will exclude covered wildlife species from the grasslands.	Stephens' Kangaroo Rat, Burrowing Owl	Management Units 2A, 2B, and 3A are to be managed to maintain suitable grassland structure for SKR and foraging raptors. Ideally, habitat within these grazing units should include 20-30 percent bare ground and a greater than two to one ratio of forb cover to grass cover (Spencer 2003), with a residual dry matter (RDM) of 1,500 pounds (lbs)/acre to less than 1,000 lbs/acre within these areas.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species, or where populations of covered species may soon be invaded. Where measures have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program.
High densities of invasive non-native plant species can affect hydrological regimes that species rely upon for survival	Arroyo Toad, Western Spadefoot, Two-stripe Garter Snake	Control of invasive non-native weeds, including annual grasses and forbs, should be accomplished by a combination of methods (i.e., integrated pest management) including cutting, herbicides, razing, prescribed fire, and revegetation.	Identify source populations of invasive non-native species. Determine where the distribution of invasive non-native species overlaps with affected covered species, or where populations of covered species may soon be invaded. Where measures have been taken to control a non-native population, establish a monitoring program to determine the effectiveness of the control program.

5.4 Invasive Non-Native Plant Species Removal Control

Within the North County MSCP, invasive non-native plant species control is primarily monitored and implemented at the vegetation community level. As discussed in Section 5.1, specific management and monitoring measures are required within conserved core habitats.

5.4.1 Plants

Table 37 documents the Cal-IPC plants that were observed on the Preserve during the current survey effort. However, most of these plants are not currently occupying the Preserve in a manner that would be detrimental to the conserved habitats on site. The invasive non-native plant species

locations that have the potential to affect core conserved habitats were presented in Figure 11 and were discussed in more detail in Chapter 4.

Table 37. Cal-IPC Plants observed within the Preserve

Common Name	Scientific Name	Cal-IPC Ranking
African Brass-buttons	*Cotula coronopifolia*	Limited
Annual Beard Grass	*Polypogon monspeliensis*	Limited
Bermuda Grass	*Cynodon dactylon*	Moderate
Bermuda-buttercup	*Oxalis pes-caprae*	Moderate
Black Mustard	*Brassica nigra*	Moderate
Broad-leaved Peppergrass	*Lepidium latifolium*	High
Castor-bean	*Ricinus communis*	Limited
Curly Dock	*Rumex crispus*	Limited
Cut-leaved Geranium	*Geranium dissectum*	Moderate
European Olive	*Olea europaea*	Limited
Field Charlock	*Sinapis arvensis*	Limited
Field Mustard	*Brassica rapa*	limited
Fountain Grass	*Pennisetum setaceum*	Moderate
Foxtail Chess	*Bromus madritensis*	High
Giant Reed	*Arundo donax*	High
Glaucous Foxtail Barley	*Hordeum murinum*	Moderate
Greater Periwinkle	*Vinca major*	Moderate
Hyssop Loosestrife	*Lythrum hyssopifolium*	Limited
Italian Ryegrass	*Lolium multiflorum*	Moderate
Italian Thistle	*Carduus pycnocephalus*	Moderate
Kentucky Bluegrass	*Poa pratensis*	Limited
Kikuyu Grass	*Pennisetum clandestinum*	Limited
London Rocket	*Sisymbrium irio*	Moderate
Mediterranean Barley	*Hordeum marinum*	Moderate
Mexican Fan Palm	*Washingtonia robusta*	Moderate
Radish	*Raphanus sativus*	Limited
Red-stemmed Filaree	*Erodium cicutarium*	Limited
Ripgut Brome	*Bromus diandrus*	Moderate
River Red Gum	*Eucalyptus camaldulensis*	Limited
Short-pod Mustard	*Hirschfeldia incana*	Moderate
Slender Oat	*Avena barbata*	Moderate
Smooth Cat's-ear	*Hypochaeris glabra*	Limited
Soft Chess	*Bromus hordeaceus*	Limited
Tocalote	*Centaurea melitensis*	Moderate
Toothed Medick	*Medicago polymorpha*	Limited
Tournefort's Mustard	*Brassica tournefortii*	High
Tree Tobacco	*Nicotiana glauca*	Moderate

Common Name	Scientific Name	Cal-IPC Ranking
White Horehound	*Marrubium vulgare*	Limited
Wild Oat	*Avena fatua*	Moderate
Woolly Mullein	*Verbascum thapsus*	Limited

When invasive non-native plant control is implemented within a preserve, the Framework Resource Management Plan requires that the following measures be followed.

- Prioritize areas for exotic species control based on aggressiveness of invasive species and degree of threat to the native vegetation (Figure 11).
- Eradicate species based on biological desirability and feasibility.
- Use an integrated pest management approach, i.e., use the least biologically intrusive control methods, at the most appropriate period of the growth cycle to achieve the desired goals.
- Consider both mechanical and chemical methods of control. Only herbicides compatible with biological goals should be used. Only licensed pest control advisers are permitted to make specific pest control recommendations.
- In Traditional Use areas, consult with Native Americans on appropriate methods to control invasive non-native plant species.
- Properly dispose of all exotic plant materials that are removed from preserve lands (e.g., in offsite facilities).
- Revegetate exotic weed removal areas with species appropriate to biological goals, as appropriate.
- Identify where active revegetation (as opposed to passive recruitment) will be necessary in the RMP.

5.4.2 Wildlife

Management recommendations identified within the Framework Resource Management Plan to control invasive wildlife species include:

Feral and Domestic Animal Control

Feral and domestic animals are currently not a problem on the Preserve but as the use of the Preserve by day visitors increase the potential for interactions between domestic and native animals.

- Document evidence of feral or domestic animal use in the Preserve.
- Establish an education program for homeowners regarding responsible pet ownership. The program should encourage (a) keeping pets indoors, especially at night; (b) having pets neutered or spayed to reduce unwanted reproduction and long-range wanderings; (c) belling of cats to reduce their effectiveness as predators; (d) discouraging release of unwanted pets into the wild (e.g., frogs); and (e) keeping dogs on leashes when walking them on trails in preserve areas.

- Fence areas between selected areas of the Preserve and adjacent housing to keep pets out of particularly sensitive areas.

Brown-headed Cowbird Trapping Program

- Document and monitor the extent of brown-headed cowbird parasitism on target species nests in the Preserve.
- If necessary, establish a brown-headed cowbird trapping program to increase nesting success of target species affected by cowbird parasitism. A brown-headed cowbird trapping program includes maintaining traps during peak nesting season (typically March 15 through July 31) typically at the edge of the riparian and adjacent habitats. These traps are baited with at least five live cowbirds that will attract other cowbird individuals. The traps are visited daily to maintain humane conditions for birds in the enclosure and to remove non-target species.

Bullfrog Trapping Program

In addition to the recommendations mentioned above, it is also recommended to control the population of bullfrogs on the Preserve. The abundance of adult bullfrogs found throughout the arroyo toad habitat within Santa Maria Creek poses a significant long-term threat to the persistence of this breeding population. It is our recommendation that an intensive eradication effort be implemented throughout the Preserve and within the adjacent properties that contain large stock ponds (specifically the property located between the southwest and northwest areas that is operated by the Ramona Municipal Water District) that are currently serving as a source for this invasive predator.

5.5 Restoration Opportunities

As detailed in Chapter 4, the Preserve is currently dominated by native or naturalized vegetation communities. Preserving and maintaining these communities are vital to long-term conservation goals of the North County MSCP. Passive and active restoration of the degraded (or disturbed habitats and areas mapped as agriculture) portions of the Preserve is recommended.

5.6 Fire Management

General fire management recommendations for the various habitat types that occur within the Preserve were presented above. A Vegetation Management Plan is being developed for the Preserve and will include specific fire management recommendations.

5.7 Wildlife Linkages and Corridors

The primary function of wildlife corridors is to provide migration routes between core biological areas. In some cases wildlife corridors may also serve as habitat for various life history requirements (e.g., foraging, reproduction, growth). Target species for corridor use include large

mammals such as coyotes and southern mule deer. Corridor use by mammals will be monitored as described below.

A program to monitor corridor use by mammals is established within the existing South County MSCP area (Conservation Biology Institute 2003). A similar program will be developed for the North County MSCP area. To monitor corridor use, stations will be established at corridor pinch points (narrow segments along corridors frequently located at road underpasses). At these stations, track identification, scat identification, and video observation methods will be utilized to determine use by target mammal species.

The primary wildlife corridor present within the Ramona Grasslands Preserve is Santa Maria Creek. As a part of the long term management of the Preserve monitoring for wildlife movement along select portions of the creek will take place at five year intervals. From a management perspective, it is important to identify areas along this movement corridor that may serve as pinch points. These pinch points are areas where movement may be restricted by one or more features such as road crossings, fences, dense vegetation, or incised narrow portions of the creek. These features are important places to monitor for wildlife movement because they have the potential to block or deter animals as they move across the Preserve. Additionally these areas are important because a relatively small amount of management action (e.g., vegetation trimming) has the potential to greatly increase the use of the preserve by numerous wildlife species.

The largest features within the Preserve that have the potential to restrict wildlife movement are roads and fences. Rangeland Road is the largest and only paved road that can be seen as a movement barrier between different portions of the Preserve. The intersection of Rangeland Road and Santa Maria Creek is a pinch point where animal movement from one side of the Preserve to the other is funneled under the existing concrete bridge. This area should be monitored to ensure that sediment deposits and vegetative cover do not get to a point where they are restricting the use of this underpass. Wing fencing may be useful in this area; however, the topography of the land currently serves as a natural funnel towards this feature. Another consideration at this location would be to plant large mature oaks on either side of the road to provide shelter and encourage animals to utilize this underpass rather than crossing over Rangeland Road.

The other location where wildlife movement along Santa Maria Creek should be monitored is at the divider between the north and south west areas. In this area, the creek passes through property owned by the Ramona Water District and the presence of the barbed wire fencing on either side may restrict the use of this corridor. Monitoring the usage of the corridor should identify if there are any changes over time and measures to increase usage on the Preserve side of the fences will need to be taken into consideration at that time.

5.8 Additional Management Recommendations

5.8.1 Public Access

A Public Access Plan for the Preserve is in development and that plan will include recommendations specific to the Preserve. According to the Draft North County MSCP Framework Resource Management Plan, public access is appropriate in selected areas of the Preserve to allow entry for passive recreational purposes and to promote understanding and appreciation of the natural and

cultural resources. Excessive or uncontrolled access; however, can result in vandalism to conserved resources including habitat degradation through trampling and erosion (e.g., along trails) and disruption of breeding and other critical wildlife functions at certain times of the year.

Passive recreational activities (e.g., hiking, bird watching, equestrian use, bicycling) are anticipated within the Preserve and are generally compatible with North County MSCP conservation goals. In general, passive activities only pose a significant threat to biological or cultural resources when the level of recreational use becomes too intense in areas where sensitive species or resources are located. The Public Access Plan will analyze trail alignment alternatives to avoid and minimize these typed of impacts.

5.8.2 Fencing

Fencing plays an important role in the use of the landscape by humans, domestic animals, and wildlife. Fencing can restrict grazing and control human access, particularly by off-highway vehicles. Fencing can direct wildlife to road undercrossings and prevent road kills. However, fencing also can also have an impact on cultural resources, restrict normal wildlife movement, restrict access to food and water, and guide wildlife onto roads.

The Framework Resource Management Plan identifies the following fencing management measures to be implemented by preserve managers:

- Dismantle existing fencing inside the Preserve, except where needed to:
    - Restrict grazing; use of 4-foot-high, 4- or 5-strand barbed wire fencing may be needed to restrict livestock from riparian areas. Currently, the riparian areas along Santa Maria Creek in the southeast and southwest areas are fenced with 4-strand barbed wire. The riparian habitat in the northwest area is not fenced. Grazing units in the southern areas are fenced with 4-strand barbed wire. The northeast area is freely grazed by the cattle on this property with barbed wire fencing along some of the borders.
    - Limit road kills; fencing should be used to funnel wildlife away from at-grade road crossings and toward the undercrossing at Santa Maria Creek and Rangeland Road; fencing at the wildlife undercrossing should be a minimum of 8-feet high for southern mule deer to funnel into the undercrossing.
    - Protect particularly sensitive species or habitats; use perimeter fencing in areas where there is greater exposure to adverse effects such as vernal pools.
    - Restrict human access; limit human access to trails using natural vegetation, topography, signs, and limited fencing.
- Design and locate fences within the Preserve so they do not impede wildlife movement or have an impact on cultural resources.

5.8.3 Trails and Access Roads

Ensure passive recreational use of the Preserve is consistent with the protection and enhancement of biological and cultural resources. Future passive recreational facilities should be managed to promote the maintenance of habitat value surrounding these facilities and reduce impacts to the

conserved resources. A Public Access Plan is being developed in accordance with the Framework Resource Management Plan and will include the following measures:

- Prohibit recreational activities that require construction of new facilities or roads into areas shown as preserve, and minimize new facilities or roads within the PAMA.
- Use County trail design standards from the County Trails Program. Develop design standards for new trail construction that address the avoidance of sensitive plant or animal populations, unique habitats, cultural resources, and erosive soils.
- Establish methods to regulate use of the Preserve to established hours and uses.
- Emphasize the use of "fire-safe" native plants in landscaping along preserve edges. Prohibit the use of invasive exotics, and adopt an exotic plant control plan.
- Require lighting use restrictions consistent with existing County lighting guidelines within 200 feet of the Preserve. Direct lighting in adjacent areas away from the Preserve.
- Close redundant trails through sensitive habitat areas. Realign trails or dirt roads that are causing excessive erosion.

In addition to the measures detailed above, the following measures from the County's Trails Program Community Trails Master Plan (Trails Master Plan) have been incorporated into the Public Access Plan:

- All activities involved with trail design, construction, use, and maintenance will incorporate appropriate methods that reduce potential impact on cultural resources and the Preserve environment.
- Trail tread will be constructed with native soil (or decomposed granite if necessary) and trail width will be minimized to reduce impacts to critical habitat and cultural or biological resources.
- Site design objectives will include avoidance and/or minimization of impacts to biological and cultural resources within the Preserve.
- Access, non-native predators, non-native species, illumination, point source drain water, non-point source runoff, and noise will be taken into consideration during planning and construction of trails.
- Sufficient signs and appropriate barriers will be located to clearly identify access to the Preserve.
- Barriers suitable to the location such as vegetation, boulders, and/or limited fencing, will also be employed to indicate the approved trail way and prevent unauthorized access into restricted areas.
- Signs should explain the rules of the preserve and trail system.
- Trails are for day use only and therefore; do not include lighting.

5.8.4 Signage and Education

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules of the

Preserve (firearms use, protection of archaeological resources, etc.) are most effective at staging areas and trail heads. Signs for educational nature trails should be posted at appropriate locations. These signs could highlight natural resources such as vernal pools, oak woodlands, chaparral, Santa Maria Creek, and the wildlife species that use these resources. On Rangeland Road near wildlife corridors such as the Santa Maria Creek, signs could be used to reduce road kills.

5.8.5 Litter/Trash Removal

As discussed in Section 5.1, implement a litter and trash removal program throughout the Preserve to ensure that contaminants do not negatively affect the conserved resources within the Preserve.

5.8.6 Illegal Off-road Activity

Off road activities can pose a significant detrimental effect on the conserved resources within the Preserve by reducing air quality, causing soil erosion and sedimentation into local waters, creating noise pollution, and causing habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use is not compatible in Preserve areas. The fences and gates should be maintained to prevent illegal access and extra diligence should be used in areas near residential development (e.g., the northern portion of the northeast area).

5.8.7 Hydrological Management

Specific hydrological management measures are provided above in Section 5.1 and Table 26.

5.8.8 Emergency and Safety Issues

Safety measures will be implemented within the Preserve as needed. These measures may include installing safety signs and identifying emergency evacuation procedures such as vehicular access and helicopter landing areas. The Preserve will not be open at night, so safety lighting will not be necessary.

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Chapter 6
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Appendix A

Special-Status Plant Species Potential to Occur

Special-Status Plant Species Potential To Occur

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
San Diego thornmint (*Acanthomintha ilicifolia*)	FT SE, CNPS List 1B SDC Group A MSCP (N)	Grassy openings in chaparral and coastal sage scrub, valley and foothill grassland, vernal pools. Prefers friable or broken clay soils. Below 900 m (2952 ft).	Apr-Jun	Yes	High	Detected on site.
California adolphia (*Adolphia californica*)	CNPS List 2 SDC Group B MSCP (N)	Coastally influenced chaparral, coastal scrub, valley and foothill grassland. Below 300 m (942 ft).	Dec-May	No	Low	The Preserve is outside the known range for this species.
San Diego ambrosia (*Ambrosia pumila*)	FE CNPS List 1B SDC Group A MSCP (S)	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools, often in disturbed areas. Can occur in creek beds, seasonally dry drainages, and floodplains; 20-415 m.	Apr-Oct	No	Moderate	This species would have been easily detectable during the 2009 surveys.
Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)	FE CNPS List 1B SDC Group A MSCP (N, S)	Coastally influenced low- growing chaparral with eroding sandstone as substrate; 0-365 m.	Dec-Jun	No	Low	Suitable soils do not occur within the Preserve. The Preserve is also outside the known range for this species.
Rainbow manzanita (*Arctostaphylos rainbowensis*)	CNPS List 1B SDC Group A MSCP (N)	Chaparral; 225-670 m.	Dec-Mar	No	Moderate	Suitable habitat occurs on site but the Preserve is located south of the known range of Rainbow manzanita.
San Diego sagewort (*Artemisia palmeri*)	CNPS List 4 SDC Group D	Occurs along creeks and drainages near the coast; but inland it occurs in mesic chaparral conditions. Below 600 m (1969 ft).	(Feb) May-Sep	Yes	High	Detected on site.
Dean's milkvetch (*Astragalus deanei*)	CNPS List 1B SDC Group A	Open shrubby slopes. Associated with coastal sage scrub, chaparral, and sandy washes; 250-300 m (820-984 ft).	Feb-May	No	Moderate	Suitable habitat occurs on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
San Diego milkvetch (*Astragalus oocarpus*)	CNPS List 1B SDC Group A	Openings in chaparral and oak woodland; 600-1500 m (1968-4921 ft).	May-Aug	Yes	High	Detected on site.
Coulter's saltbush (*Atriplex coulteri*)	CNPS list 1B SDC Group A MSCP (N)	In San Diego, sea-bluff habitat is preferred by this rare species but it has been found in Otay Mesa (Reiser 1994). Alkaline or clay soils, open sites and, coastal scrub. Below 50 m (164 ft).	Mar-Oct	Yes	High	Detected on site.
South coast saltbush (*Atriplex pacifica*)	CNPS list 1B SDC Group A	Coastal bluff scrub, coastal dunes, coastal scrub, playas; 0-140 m.	Mar-Oct	No	Moderate	Suitable habitat occurs on site.
Parish's brittlescale (*Atriplex parishii*)	CNPS list 1B SDC Group A MSCP (N)	Chenopod scrub, playas, vernal pools; 25-1900 m.	Jun-Oct	Yes	High	Detected on site.
Encinitas baccharis (*Baccharis vanessae*)	FE SE CNPS List 1B SDC Group A MSCP (N, S)	Coastal mixed chaparral, central coast and foothills. 60–335 m (197-1099 ft).	Aug-Nov	No	Moderate	Suitable habitat occurs on site.
San Diego goldenstar (*Bloomeria clevelandii*)	CNPS List 1B SDC Group A MSCP (N, S)	Coastal sage scrub, chaparral, grasslands typically near vernal pools. Below 465 m (1525 ft).	(Mar) Apr-May	No	Moderate	Suitable habitat occurs on site.
Orcutt's brodiaea (*Brodiaea orcuttii*)	CNPS List 1B SDC Group A MSCP (N, S)	Moist grasslands, near streams and the periphery of vernal pools. Below 1600m (5249ft).	May-Jul	No	Moderate	Suitable habitat occurs on site.
Round-leaved filaree (*California macrophylla)*	CNPS List 1B SDC Group B	Cismontane woodland, valley and foothill grassland on clay soils. Below 1200 m (3937 ft).	Mar-May	Yes	High	Detected on site.
Dunn's mariposa lily (*Calochortus dunnii*)	SR CNPS List 1B SDC Group A	Rocky openings in chaparral or grassland/chaparral ecotone. Seems to be restricted to metavolcanic and gabbroic soils; 380-1830 m.	Apr-Jun	No	Moderate	Suitable habitat occurs on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
Lewis's evening-primrose (*Camissonia lewisii*)	CNPS List 3 SDC Group C	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; 0-300 m.	Mar-May	No	Moderate	Suitable habitat occurs on site.
Payson's Caulanthus (*Caulanthus simulans*)	CNPS List 4 SDC Group D	Chaparral and coastal sage scrub communities.	April-Jun	No	High	Suitable habitat occurs on site.
Lakeside ceanothus (*Ceanothus cyaneus*)	CNPS List 1B SDC Group A MSCP (S)	Closed-cone coniferous forest, dense chaparral. Dry shrubby slopes. Usually below 400 m (1312 ft).	Apr-Jun	No	Moderate	Suitable habitat occurs on site. However, the Preserve is several miles north of the known range of Lakeside ceanothus.
Wart-stem-lilac (*Ceanothus verrucosus*)	CNPS List 2 SDC Group B MSCP (N, S)	Coastally influenced chaparral; 1-380.	Dec-May	No	Low	The Preserve is outside the known range of wart-tem-lilac.
Southern tarplant (*Centromadia parryi* ssp. *australis*)	CNPS List 1B SDC Group A MSCP (N)	Marshes and swamps, valley and foothill grassland, vernal pools; 0-427.	May-Nov	Yes	High	Detected on site.
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	CNPS List 1B SDC Group A	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland. Below 400 m (1312 ft).	Apr-Sep	No	Moderate	Suitable habitat occurs on site but this species was not observed during focused surveys.
Ramona Spineflower (*Chorizanthe leptotheca*)	CNPS List 4 SDC Group D	Found within dry openings in chamise chaparral, coastal sage scrub or lower montane coniferous forest.	April-July	Yes	High	Detected on site.
Orcutt's spineflower (*Chorizanthe orcuttiana*)	FE SE CNPS List 1B SDC Group A MSCP (N)	Coastal chaparral openings in chamise, with loose sandy substrate.	Mar-May	No	Low	The Preserve is outside the known range of Orcutt's spineflower.
Long spined-spine flower (*Chorizanthe polygonoides* var. *longispina*)	CNPS List 1B SDC Group A	Clay lenses, largely devoid of shrubs. Occasionally seen on the periphery of vernal pool habitat and the periphery of montane meadows near vernal seeps. Below 1400m (4593 ft).	Apr-Jul	No	Moderate	Suitable habitat occurs on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
Delicate clarkia (*Clarkia delicata*)	CNPS List 1B SDC Group A	Oak woodlands and chaparral. 235-1000m (770-3280 ft).	Apr-Jun	No	High	This species was not detected during focused survey within the Preserve but is still considered to have high potential to occur on site. The CNDDB reports this species as occurring just south of the Preserve.
Summer holly (*Comarostaphylis diversifolia* var. *diversifolia*)	CNPS List 1B SDC Group A MSCP (N)	Southern mixed chaparral, usually on mesic north-facing slopes. Almost the entire population occurs west of Interstate 15; 100-550m (328-1804 ft).	Apr-June	No	Moderate	Suitable habitat occurs on site.
Small-flowered bindweed (*Convolvulus simulans*)	CNPS LIST 4 SDC Group D	Clay soils in chaparral, coastal sage scrub and grassland habitats.	Mar-June	Yes	High	Detected on site.
Variegated dudleya (*Dudleya variegata*)	CNPS List 1B SDC Group A MSCP (S)	Openings in chaparral, cismontane woodland, and coastal sage scrub, isolated rocky substrates in open grasslands, and vernal pools and mima mounds. Below 300 m (984 ft).	Apr-Jun	No	Moderate	Suitable habitat occurs on site.
Palmer's goldenbush (*Ericameria palmeri ssp. palmeri*)	CNPS List 2 SDC Group B MSCP (S)	Coastal drainages, in mesic chaparral sites, or rarely in coastal sage scrub. Below 600m (1969 ft).	(Jun) Sep-Nov	No	Moderate	Suitable habitat occurs on site.
San Diego button-celery (*Eryngium aristulatum var. parishii*)	FE SE CNPS List 1B SDC Group A MSCP (N, S)	Vernal pools or mima mound areas with vernally moist conditions coastal sage scrub, valley and foothill grassland. Below 150 m (492 ft).	Apr-Jun	No	Moderate	Suitable habitat occurs on site.
San Diego barrel cactus (*Ferocactus viridescens*)	CNPS List 2 SDC Group B MSCP (N, S)	Coastal sage scrub with sandy or rocky areas. Mostly below 150 m.	May-Jun	No	Low	The Preserve is outside the known range of San Diego barrel cactus.
Mission canyon cup (*Githopsis diffusa* ssp. *filicaulis*)	CNPS List 3 SDC Group C	Isolated sandy openings in chaparral. 450-700 m (1476-2297 ft). There are only five sightings for the species in California (CNPS 2007).	Apr-Jun	No	Low	Suitable habitat (sandy soils within chaparral) does not occur on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
San Diego gumpant (*Grindelia hirsutula var. hallii*)	CNPS List 1B SDC Group A	Meadows, chaparral, dry slopes, open pine/oak woodlands. 185–1700 m (606-5577 ft).	Jul-Oct	No	Moderate	Suitable habitat occurs on site.
Palmer's grappling-hook (*Harpagonella palmeri*)	CNPS List 4 SDC Group D	Xeric chaparral, coastal sage scrub, and grasslands 450 m (1476 ft).	Mar-May	No	Moderate	Suitable habitat occurs on site
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	CNPS List 4 SDC Group D	Chaparral, coastal sage and grasslands.	Jun-Oct	Yes	High	Detected on site.
Vernal barley (*Hordeum intercedens*)	CNPS List 3 SDC Group C	Vernal pools, alkali playas.	Mar-May	Yes	High	Detected on site.
Ramona horkelia (*Horkelia truncata*)	CNPS List 1B SDC Group A	Open chamise chaparral, chaparral. 400-1300m (1312-4265ft). Known in CA from fewer than 20 occurrences and it has been documented in the San Pasqual Quad (CNPS 2007).	May-Jun	No	Moderate	Suitable habitat occurs on site.
San Diego marsh-elder (*Iva hayesiana*)	CNPS List 2 SDC Group B	Marshes and swamps, playas, creeks or intermittent streambeds. Below 500 m (1640 ft).	Apr-Oct	No	Moderate	Suitable habitat occurs on site.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	CNPS List 4 SDC Group D	Seeps, meadows, salt-marsh, and coastal dunes, usually occurring in wetlands, but occasionally found in non-wetlands.	Jun-Sept	Yes	High	Detected on site.
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	CNPS List 1B SDC Group A MSCP (S)	Chaparral and cismontane woodland. 600–1200 m (1969-3937 ft). The only reported San Diego County locale is in the San Vicente Reservoir Quad (CNPS 2007, Reiser 1994).	Apr-Jul	No	Moderate	Suitable habitat occurs on site.
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	CNPS List 1B SDC Group A	Openings in chaparral and sage scrub, generally well away from the coast in Southern California in the foothill elevations. Below 885m (2900 ft).	Jan-Jul	No	Moderate	Suitable habitat occurs on site.
Creamy blazing star (*Mentzelia tridentata*)	CNPS List 1B	Mojavean desert scrub; 700-1160 m.	Mar-May	No	Low	Suitable habitat does not occur on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
Felt-leaved monardella (*Monardella hypoleuca* var. *lanata*)	CNPS List 1B SDC Group A MSCP (N, S)	Chaparral understory. 300-1000m (984-3280 ft).	Jun-Aug	No	Moderate	Suitable habitat occurs on site.
Willowy monardella (*Monardella viminea*)	FE SE CNPS List 1B SDC Group A MSCP (N, S)	Riparian scrub/forest, usually at sandy locales in seasonally dry washes. Below 400 m (1312 ft).	Jun-Aug	No	Moderate	Suitable habitat occurs on site.
Little mousetail (*Myosurus minimus ssp. apus*)	CNPS List 3 SDC Group C	Vernal pools. Below 640 m (2100 ft).	Mar-Jun	Yes	High	Not detected in 2009 but was detected historically within the Ramona Grasslands.
Spreading navarretia (*Navarretia fossalis*)	FT CNPS List 1B SDC Group A MSCP (N)	Vernal pools and vernal swales. 30-1300 m (98-4265 ft).	Apr-Jun	Yes (not in 05-06)	High	Not detected in 2009 but was detected historically within the Ramona Grasslands
California adder's tongue (*Ophioglossum californicum*)	CNPS List 4 SDC Group D	Vernal pools, seeps, and vernally moist locales within open chaparral and grasslands.	Jan-Mar	Yes	High	Detected on site.
Gander's ragwort (*Packera [Senecio] ganderi*)	SR CNPS List 1B SDC Group A MSCP (N)	Very rare plant usually found in the chaparral understory, often beneath chamise. 400-1200 m (1312-3937 ft).	Apr-Jun	No	Moderate	Suitable habitat occurs on site.
San Diego mesa mint (*Pogogyne abramsii*)	FE SE CNPS List 1B SDC Group A MSCP (S)	Vernal pools; 90-200 m.	Mar-Jul	No	Moderate	Suitable habitat occurs on site.
Nuttall's scrub oak (*Quercus dumosa*)	CNPS List 1B SDC Group A MSCP (N)	Coastal chaparral with a generally open canopy cover. Below 200 m (656 ft).	Feb-Apr	No	Low	Suitable habitat does not occur on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
Engelmann oak (*Quercus engelmannii*)	CNPS List 4 SDC Group D	Found in the foothills between 500 and 4,000 ft (152 and 1,219 m). Larger oaks are sometimes found growing in savannah grasslands but it may also occur as a shrubby element within chaparral.	July-Sept	Yes	High	Detected on site.
Moreno currant (*Ribes canthariforme*)	CNPS List 1B SDC Group A	Chamise chaparral, chaparral, riparian scrub. 500-1200 m (1640-3937 ft).	Feb-Apr	No	Moderate	Suitable habitat occurs on site. Although the Preserve is outside the known range for Moreno currant.
San Miguel savory (*Satureja chandleri*)	CNPS List 1B SDC Group A MSCP (N)	Rocky slopes with chamise chaparral, chaparral, coastal sage; 520-690m (1706-2263 ft).	Mar-Jul	No	Moderate	Suitable habitat occurs on site.
Ashy spike-moss (*Selaginella cinerascens*)	CNPS List 4 SDC Group D	Undisturbed chaparral and Diegan coastal sage scrub.	N/A	Yes	High	Detected on site.
California groundsel (*Senecio aphanactis*)	CNPS List 2 SDC Group B	Chaparral, dry alkaline flats in chaparral, cismontane woodlands and coastal sage scrub. Below 800 m (2624 ft).	Jan-Apr	No	Low	Suitable habitat does not occur on site.
Purple stemodia (*Stemodia durantifolia*)	CNPS List 2 SDC Group B	Sandy dry canyon bottoms or drainages. Below 300 m (984 ft)	Jan-Dec	No	Moderate	Suitable habitat occurs on site.
Parry's tetracoccus (*Tetracoccus dioicus*)	CNPS List 1B SDC Group A MSCP (N, S)	Chaparral, chamise chaparral, coastal sage scrub. Below 1000 m (3280 ft).	Apr-May	No	Moderate	Suitable habitat occurs on site.
Velvet false lupine (*Thermopsis californica* var. *semota*)	CNPS List 1B SDC Group A	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland; 1000-1870 m.	Mar-Jun	No	Low	The Preserve is outside the known range of velvet false lupine.
Rush chaparral-star (*Xanthisma junceum*)	CNPS List 4 SDC Group D	Low growing chamise chaparral and Diegan sage scrub communities.	Mar-July	Yes	High	Detected on site.

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Blooming Period	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale
Legend: **Status:** **Federal** FE - listed as endangered under the federal Endangered Species Act. FT - listed as threatened under the federal Endangered Species Act. **State** SE - listed as endangered under the California Endangered Species Act. ST – listed as threatened under California Endangered Species Act. SR – listed as rare under California Endangered Species Act. **California Native Plant Society (CNPS)** 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** 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 **Multiple Species Conservation Program Covered Species (MSCP)** N – North County S – South County **References** Special Status information from CDFG 2009. Nomenclature and plant descriptions from Abrams 1923 and 1944, Abrams and Ferris 1960, Beauchamp 1986, CNPS 2009, Hickman 1993, Lightner 2006, McAuley 1996, Munz 1974, Reiser 1994, Roberts 1989, Skinner and Pavlik 1994.						

Appendix B

Vascular Plant Species Detected

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
LYCOPHYTES			
Isoetaceae — Quillwort Family			
Isoetes howellii	Howell's Quillwort		
Selaginellaceae — Spike-Moss Family			
Selaginella bigelovii	Bigelow's Spike-Moss		
Selaginella cinerascens	Mesa Spike-Moss	CNPS 4	SDC Group D
OPHIOGLOSSOID FERNS			
Ophioglossaceae — Adder's Tongue Family			
Ophioglossum californicum	California Adder's Tongue	CNPS 4	SDC Group D
LEPTOSPORANGIATE FERNS			
Dryopteridaceae — Wood Fern Family			
Dryopteris arguta	Coastal Wood Fern		
Marsileaceae — Marsilea Family			
Marsilea vestita ssp. vestita	Hairy Clover Fern		
Pilularia americana	American Pillwort		
Polypodiaceae — Polypody Family			
Polypodium californicum	California Polypody		
Pteridaceae — Brake Family			
Adiantum jordanii	California Maidenhair		
Cheilanthes newberryi	California Cotton Fern		
Pellaea mucronata var. mucronata	Bird's Foot Cliff-Brake		
Pentagramma triangularis	Goldenback Fern		
ANGIOSPERMS: MAGNOLIIDS- PIPERALES			
Saururaceae — Lizard's Tail Family			
Anemopsis californica	Yerba Mansa		
ANGIOSPERMS: MONOCOTS			
Agavaceae — Agave Family			
Hesperoyucca whipplei	Chaparral Candle		
Alliaceae — Onion Family			
Allium praecox	Early Onion		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Arecaceae — Palm Family			
**Washingtonia sp.*	Mexican Fan Palm		
Cyperaceae — Sedge Family			
Carex subfusca	Rusty Sedge		
Carex triquetra	Triangular-fruit Sedge		
Cyperus eragrostis	Tall Flatsedge		
Eleocharis sp.	Spike-Rush		
Eleocharis macrostachya	Pale Spike-Rush		
Schoenoplectus acutus var. occidentalis	Viscid Bulrush		
Schoenoplectus californicus	California Bulrush		
Schoenoplectus pungens	Common Threesquare		
Scirpus sp.	Bulrush		
Hyacinthaceae — Hyacinth Family			
Chlorogalum parviflorum	Small-flower Soap-Plant/Amole		
Chlorogalum pomeridianum	Wavy-leaf Soap-Plant/Amole		
Iridaceae — Iris Family			
Sisyrinchium bellum	Blue-eyed Grass		
Juncaceae — Rush Family			
Juncus acutus ssp. leopoldii	Southwestern Spiny Rush	CNPS 4	SDC Group D
Juncus arcticus var. mexicanus	Mexican Rush		
Juncus bufonius	Toad Rush		
Juncus dubius	Mariposa Rush		
Juncus effusus var. austrocalifornicus	Pacific Rush		
Juncus xiphioides	Iris-leaf Rush		
Juncaginaceae— Arrow-Grass Family			
Lilaea scilloides	Flowering Quill Wort		
Liliaceae — Lily Family			
Calochortus sp.	Mariposa Lily		
Melanthiaceae — Bunch Flower or Camas Family			
Zigadenus venenosus var. venenosus	Death Camas		
Poaceae — Grass Family			
**Agropyron desertorum*	Desert Crested Wheatgrass		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
**Arundo donax*	Giant Reed		
**Avena barbata*	Slender Wild Oat		
**Avena fatua*	Wild Oat		
**Bromus diandrus*	Ripgut Grass		
**Bromus hordeaceus*	Soft Chess		
**Bromus madritensis ssp. madritensis*	Compact Brome		
**Cortaderia selloana*	Selloa Pampas Grass		
**Crypsis schoenoides*	Prickle Grass		
**Cynodon dactylon*	Bermuda Grass		
Deschampsia danthonioides	Annual Hairgrass		
Distichlis spicata	Saltgrass		
**Elytrigia pontica ssp. pontica*	Turkish Wheatgrass		
**Gastridium ventricosum*	Nit Grass		
**Hainardia cylindrica*	Barbgrass		
Hordeum intercedens	Vernal Barley	CNPS 3	SDC Group C
**Hordeum marinum ssp. gussoneanum*	Mediterranean Barley		
**Hordeum murinum ssp. glaucum*	Glaucous Barley		
**Lamarckia aurea*	Golden-top		
Leymus condensatus	Giant Wild-Rye		
Leymus triticoides	Beardless Wild Wilde-Rye		
**Lolium sp.*	Ryegrass		
**Lolium perenne*	Perennial Ryegrass		
Melica imperfecta	Coast Range Melic		
Muhlenbergia rigens	Deergrass		
Nassella pulchra	Purple Needlegrass		
**Pennisetum clandestinum*	Kikuyu Grass		
**Pennisetum setaceum*	African Fountain Grass		
Phalaris sp.	Canary Grass		
Phalaris lemmonii	Lemmon's Canary Grass		
**Phalaris minor*	Little-seed Canary Grass		
**Phalaris paradoxa*	Paradox Canary Grass		
**Piptatherum miliaceum*	Smilo Grass		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
**Poa annua*	Annual Bluegrass		
**Poa pratensis ssp. pratensis*	Kentucky Bluegrass		
Poa secunda ssp. secunda	One-sided Bluegrass		
**Polypogon monspeliensis*	Annual Beard Grass		
**Vulpia bromoides*	Six-weeks Fescue		
Vulpia microstachys	Gray's Fescue		
**Vulpia myuros*	Rat-tail Fescue		
Themidaceae — Brodiaea Family			
Brodiaea terrestris ssp. kernensis	Dwarf Brodiaea		
Dichelostemma capitatum ssp. capitatum	Blue Dicks		
Muilla maritima	Common Muilla		
Typhaceae — Cattail Family			
Typha domingensis	Southern Cattail		
Typha latifolia	Broad-leaf Cattail		
ANGIOSPERMS: EUDICOTS			
Adoxaceae — Adoxa Family			
Sambucus mexicana	Blue Elderberry		
Amaramthaceae - Amaranth Family			
Amaranthus sp.	California Amaranth		
Atriplex coulteri	Coulter's Saltbush	CNPS 1B	SDC Group A, MSCP (N)
Atriplex parishii var. parishii	Parish's Brittlescale	CNPS 1B	SDC Group A, MSCP (N)
Atriplex prostrata	Spearscale		
**Atriplex semibaccata*	Australian Saltbush		
**Chenopodium album*	Lamb's Quarters		
Chenopodium californicum	California Goosefoot		
Chenopodium fremontii	Fremont's Goosefoot		
**Dysphania ambrosioides*	Mexican Tea		
**Salsola tragus*	Prickly Russian-Thistle, Tumbleweed		
Anacardiaceae - Sumac or Cashew Family			
Malosma laurina	Laurel Sumac		
Rhus ovata	Sugar Bush		
Rhus trilobata	Skunkbrush		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Toxicodendron diversilobum	Western Poison-Oak		
Apiaceae — Carrot Family			
Apiastrum angustifolium	Mock-Parsely		
**Apium graveolens*	Common Celery		
**Daucus carota*	Carrot, Queen Anne's Lace		
Daucus pusillus	Rattlesnake Weed		
Lomatium sp.	Lomatium		
Sanicula arguta	Sharp-tooth Sanicle		
Tauschia arguta	Southern Tauschia		
Apocynaceae — Dogbane Family			
Asclepias californica	California/Round-Hood Milkweed		
Asclepias eriocarpa	Kotolo, Indian Milkweed		
Sarcostemma hirtellum	Trailing Townula		
**Vinca major*	Greater Periwinkle		
Asteraceae — Sunflower Family			
Centromadia parryi ssp. australis	Southern Tarplant	CNPS 1B	SDC Group A, MSCP (N)
Achyrachaena mollis	Blow-Wives		
Acourtia microcephala	Sacapellote		
Ambrosia psilostachya	Western Ragweed		
**Anthemis cotula*	Mayweed, Stinkweed, Dog-Fennel		
Artemisia californica	Coastal Sagebrush		
Artemisia douglasiana	Douglas Mugwort		
Artemisia dracunculus	Tarragon, Dragon Sagewort		
Artemisia palmeri	Palmer's Sagewort	CNPS 4	SDC Group D
Baccharis pilularis	Chaparral Broom, Coyote Brush		
Baccharis salicifolia	Mule-Fat, Seep-Willow		
Bebbia juncea var. aspera	Rush Sweetbush		
**Bidens pilosa var. pilosa*	Spanish Needles		
Brickellia californica	California Brickellbush		
**Carduus sp.*	Italian Thistle		
**Carthamus tinctorius*	Safflower		
**Centaurea melitensis*	Tocalote		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Chaenactis artemisiifolia	White Pincushion		
Chaenactis glabriuscula var. glabriuscula	Yellow Pincushion		
**Chrysanthemum coronarium*	Garland/Crown Daisy		
**Cichorium intybus*	Mediterranean Chicory		
Cirsium sp.	California Thistle		
**Cirsium undulatum*	Wavy-leaf Thistle		
**Cnicus benedictus*	Blessed Thistle		
Conyza canadensis	Horseweed		
Corethrogyne filaginifolia	San Diego Sand Aster		
**Cotula australis*	Australian Brass-Buttons		
**Cotula coronopifolia*	African Brass-Buttons		
**Cynara cardunculus*	Artichoke Thistle, Cardoon		
Deinandra fasciculata	Fascicled Tarweed		
Deinandra kelloggii	Kellogg Tarplant		
Encelia californica	California Encelia		
Erigeron foliosus var. foliosus	Leafy Daisy		
Eriophyllum confertiflorum var. confertiflorum	Long-stem Golden-Yarrow		
**Filago gallica*	Narrow-leaf Filago		
**Gazania linearis*	Treasure Flower		
Gnaphalium californicum	California Everlasting		
Gnaphalium leucocephalum	White-head Cudweed		
Grindelia camporum	Rayless Gumplant		
Gutierrezia californica	California Matchweed		
Gutierrezia sarothrae	Broom Matchweed/Snakeweed		
Hazardia squarrosa var. squarrosa	Sawtooth Goldenbush		
**Hedypnois cretica*	Crete Hedypnois		
Helianthus annuus	Western Sunflower		
Helianthus gracilentus	Slender Sunflower		
Heterotheca grandiflora	Telegraph Weed		
Heterotheca sessiliflora ssp. echioides	Bristly Goldenaster		
Holocarpha virgata ssp. elongata	Graceful Tarplant	CNPS 4	SDC Group D
**Hypochaeris glabra*	Smooth Cat's Ear		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Isocoma menziesii var. menziesii	Spreading Goldenbush		
**Lactuca serriola*	Prickly Lettuce		
Lasthenia gracilis	Common Goldfields		
Layia platyglossa	Tidy Tips		
Lessingia glandulifera var. glandulifera	Valley Lessingia		
Machaeranthera juncea	Rush Chaparral-Star	CNPS 4	SDC Group D
**Matricaria matricarioides*	Common Pineapple-Weed		
Osmadenia tenella	Osmadenia		
**Picris echioides*	Bristly Ox-Tongue		
Porophyllum gracile	Odora		
Pseudognaphalium biolettii	Bicolor Cudweed		
Pseudognaphalium canescens	Everlasting Cudweed		
Psilocarphus brevissimus var. brevissimus	Woolly Marbles		
Senecio californicus	California Butterweed		
**Senecio vulgaris*	Common Groundsel		
**Silybum marianum*	Milk Thistle		
Solidago sp.	Goldenrod		
**Sonchus asper ssp. asper*	Prickly Sow-Thistle		
Stephanomeria exigua	Deane's Small Wreath-Plant		
Stephanomeria virgata ssp. pleurocarpa	Tall Wreath-Plant		
Stylocline sp.	Nest-Straw		
Uropappus lindleyi	Silver Puffs		
Xanthium strumarium	Cocklebur		
Boraginaceae — Borage Family			
Amsinckia menziesii	Rancher's Fiddleneck		
Cryptantha	Common Cryptantha		
Cryptantha intermedia	Nievitas Cryptantha		
Pectocarya	Pectocarya		
Pectocarya linearis ssp. ferocula	Slender Pectocarya		
Plagiobothrys acanthocarpus	Adobe Popcornflower		
Plagiobothrys collinus var. californicus	California Popcornflower		
Plagiobothrys nothofulvus	Rusty Popcornflower		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Plagiobothrys undulatus	Coast Popcornflower		
Brassicaceae — Mustard Family			
**Brassica nigra*	Black Mustard		
**Brassica rapa*	Turnip, Field Mustard		
**Brassica tournefortii*	Wild Turnip		
Caulanthus heterophyllus var. heterophyllus	San Diego Jewelflower		
**Hirschfeldia incana*	Short-pod Mustard		
**Lepidium sp.*	Peppergrass		
Lepidium latipes var. latipes	Dwarf Peppergrass		
Lepidium nitidum var. nitidum	Shining Peppergrass		
Lepidium oblongum var. insulare	Veiny Peppergrass		
**Raphanus sativus*	Wild Radish		
Rorippa nasturtium-aquaticum	Water-Cress		
**Sinapis arvensis*	Charlock		
**Sisymbrium irio*	London Rocket		
Cactaceae — Cactus Family			
Opuntia littoralis	Coast Prickly-Pear		
Campanulaceae - Bellflower Family			
Downingia cuspidata	Toothed Downingia		
Caprifoliaceae — Honeysuckle Family			
Lonicera subspicata	Southern Honeysuckle		
Caryophyllaceae — Pink Family			
**Cerastium glomeratum*	Mouse-ear Chickweed		
**Silene gallica*	Common Catchfly		
Silene laciniata	Southern Pink		
**Spergula sp.*	Stickwort		
**Stellaria media*	Common Chickweed		
Stellaria nitens	Shining Chickweed		
Cistaceae — Rock-Rose Family			
Helianthemum scoparium	Peak Rush-Rose		
Convolvulaceae — Morning-Glory Family			
Calystegia macrostegia	Southern California Morning-Glory		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Calystegia macrostegia ssp. intermedia	South Coast Morning-Glory		
**Convolvulus arvensis*	Field Bindweed		
Convolvulus simulans	Small-flower Bindweed	CNPS 4	SDC Group D
Cuscuta californica var. breviflora	Short-flower Chaparral Dodder		
Cuscuta californica var. californica	Chaparral Dodder		
Cressa truxillensis	Alkali Weed		
Crassulaceae — Stonecrop Family			
Crassula aquatica	Water Pygmyweed		
Crassula connata	Pygmyweed		
Dudleya edulis	Ladies' Fingers		
Dudleya lanceolata	Lance-leaf Dudleya		
Dudleya pulverulenta	Chalk Dudleya		
Cucrbitaceae — Gourd Family			
Cucurbita foetidissima	Calabazilla		
Cucurbita palmata	Coyote Melon		
Marah macrocarpus var. macrocarpus	Manroot, Wild-Cucumber		
Ericaceae — Heath Family			
Xylococcus bicolor	Mission Manzanita		
Euphorbiaceae — Spurge Family			
Acalypha californica	California Copperleaf		
**Chamaesyce maculata*	Spotted Spurge		
Chamaesyce sp.	Sandmat		
Croton setigerus	Doveweed		
Euphorbia spathulata	Reticulate-seed Spurge		
**Ricinus communis*	Castor Bean		
Fabaceae - Legume Family			
Astragalus oocarpus	San Diego Milkvetch	CNPS 1B	SDC Group A
**Caesalpinia gilliesii*	Bird-of-paradise Shrub		
**Lathyrus odoratus*	Sweet Pea		
Lotus argophyllus var. argophyllus	Silver-leaf Lotus		
Lotus sp.	Lotus		
Lotus purshianus var. purshianus	Spanish-Clover		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Lotus scoparius var. scoparius	Coastal Deerweed		
Lotus strigosus	Bishop's/Strigose Lotus		
Lupinus bicolor	Miniature Lupine		
Lupinus hirsutissimus	Stinging Lupine		
Lupinus succulentus	Arroyo Lupine		
Lupinus truncatus	Collar Lupine		
**Medicago polymorpha*	California Burclover		
**Melilotus albus*	White Sweetclover		
**Melilotus indicus*	Indian Sweetclover		
**Melilotus officinalis*	Yellow Sweetclover		
Pickeringia montana var. montana	Chaparral-Pea		
Trifolium ciliolatum	Tree Clover		
Trifolium depauperatum var. truncatum			
Trifolium microcephalum	Maiden Clover		
Trifolium variegatum	White-tip Clover		
Trifolium willdenovii	Valley Clover		
**Vicia benghalensis*	Purple Vetch		
**Vicia sativa ssp. nigra*	Narrow-leaf Vetch, Common Vetch		
**Vicia villosa ssp. varia*	Hairy Vetch		
**Vicia villosa ssp. villosa*	Winter Vetch		
Fagaceae — Oak Family			
Quercus agrifolia	Coast Live Oak, Encina		
Quercus berberidifolia	Scrub Oak		
Quercus engelmannii	Engelmann's/Mesa Blue Oak	CNPS 4	SDC Group D
Gentianaceae — Gentian Family			
Centaurium venustum	Canchalagua		
Geraniaceae — Geranium Family			
California macrophylla	California Large-leaf Filaree	CNPS 1B	SDC Group B
**Erodium botrys*	Long-Beak Filaree/Storksbill		
**Erodium brachycarpum*	Short-Beak Filaree/Storksbill		
**Erodium cicutarium*	Red-Stem Filaree/Storksbill		
Erodium texanum	Desert Filaree/Storksbill		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Geranium carolinianum	Carolina Geranium		
**Geranium dissectum*	Cut-leaf Geranium		
Grossulariaceae — Gooseberry Family			
Ribes indecorum	White-flower Currant		
Heliotropaceae — Heliotrope Family			
Heliotropium curassavicum	Salt Heliotrope		
Hydrophyllaceae — Waterleaf Family			
Emmenanthe penduliflora	Whispering Bells		
Eucrypta chrysanthemifolia	Common Eucrypta		
Nemophila menziesii var. integrifolia	Small-flower Baby Blue Eyes		
Phacelia sp.	Phacelia		
Phacelia cicutaria	Caterpillar Phacelia		
Phacelia distans	Wild-Heliotrope		
Phacelia imbricata	Imbricate Phacelia		
Phacelia parryi	Parry'sPhacelia		
Phacelia ramosissima var. latifolia	Branching Phacelia		
Pholistoma auritum	Arizona Fiesta Flower		
Pholistoma membranaceum	White Fiesta Flower		
Lamiaceae — Mint Family			
Acanthomintha ilicifolia	San Diego Thornmint	FT, SE, CNPS 1B	SDC Group A, MSCP (N,S)
**Lamium amplexicaule*	Henbit		
**Marrubium vulgare*	Horehound		
Monardella lanceolata	Mustang Mint		
Pycnanthemum californicum	Mountain Mint		
Salvia apiana	White Sage		
Salvia columbariae	Chia		
Salvia mellifera	Black Sage		
Scutellaria tuberosa	Danny's Skullcap		
Stachys ajugoides var. rigida	Hedge-Nettle		
Trichostema lanatum	Woolly Bluecurls		
Trichostema lanceolatum	Vinegar Weed		
Lythraceae — Loosestrife Family			

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
**Lythrum hyssopifolia*	Grass Poly		
Malvaceae — Mallow Family			
Malacothamnus densiflorus	Many-flower Bushmallow		
Malacothamnus fasciculatus	Chaparral Bushmallow		
**Malva parviflora*	Cheeseweed		
**Malva sylvestris*	High Mallow		
Malvella leprosa	Alkali Mallow		
Sidalcea malviflora ssp. sparsifolia	Checker-Bloom		
Myrtaceae — Myrtle Family			
**Eucalyptus sp.*	Gum		
Nyctaginaceae — Four O'clock Family			
Mirabilis laevis	Coastal Wishbone Plant		
Oleaceae — Olive Family			
**Olea europaea*	Olive		
Onagraceae — Evening-Primrose Family			
Camissonia bistorta	California Sun Cup		
Camissonia californica	False-Mustard		
Camissonia hirtella	Field Sun Cup		
Camissonia robusta	Robust Sun Cup		
Camissonia strigulosa	SandysoilL Sun Cup		
Clarkia epilobioides	Canyon Godetia		
Clarkia purpurea ssp. quadrivulnera	Four-spot Clarkia		
Clarkia similis	Canyon Clarkia		
Epilobium canum ssp. canum	California Fuchsia, Zauschneria		
Epilobium ciliatum ssp. ciliatum	Willow Herb		
Epilobium pygmaeum	Smooth Boisduvalia		
Oenothera elata ssp. hookeri	Great Marsh Evening-Primrose		
Orobanchaceae — Broom-Rape Family			
Castilleja densiflora ssp. gracilis	Parish's Owl's-Clover		
Castilleja exserta	Purple Owl's-Clover		
Cordylanthus rigidus	Dark-tip Bird's Beak		
Oxalidaceae — Oxalis Family			

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
**Oxalis pes-caprae*	Bermuda-Buttercup		
Paeoniaceae — Peony Family			
Paeonia californica	California Peony		
Papaveraceae — Poppy Family			
Dicentra chrysantha	Golden Ear-Drops		
Eschscholzia californica	California Poppy		
Papaver californicum	Fire Poppy		
Platystemon sp.	Cream Cups		
Phrymaceae — Hopseed Family			
Mimulus aurantiacus	Monkey Flower		
Mimulus brevipes	Slope Semiphore		
Mimulus guttatus	Seep Monkey Flower		
Plantaginaceae — Plantain Family			
Antirrhinum coulterianum	Coulter's Snapdragon		
Antirrhinum nuttallianum	Nuttall's Snapdragon		
Callitriche heterophylla	Bolander's Water-Starwort		
Collinsia sp.	Chinese Houses		
Keckiella antirrhinoides var. antirrhinoides	Yellow Bush Penstemon		
Limosella acaulis	Southern Mudwort		
Linaria canadensis	Large Blue Toadflax		
Penstemon centranthifolius	Scarlet Bugler		
Penstemon spectabilis	Showy Penstemon		
Plantago elongata	Prairie Plantain		
Plantago erecta	Dot-Seed Plantain		
**Plantago major*	Common Plantain		
Plantago ovata	Woolly Plantain		
**Plantago virginica*	Dwarf Plantain		
**Veronica anagallis-aquatica*	Water Speedwell		
Veronica peregrina ssp. xalapensis	Mexican/Purslane Speedwell		
Platanaceae — Plane Tree or Sycamore Family			
Platanus racemosa	Western Sycamore		
Polemoniaceae — Phlox Family			

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Eriastrum filifolium	Thread-leaf Woolly-Star		
Gilia angelensis	Grassland Gilia		
Gilia clivorum	Purple-spot Gilia		
Linanthus dianthiflorus	Farinose Ground Pink		
Navarretia hamata	Hooked Skunkweed		
Polygonaceae — Buckwheat Family			
Chorizanthe fimbriata	Fringed Spineflower		
Chorizanthe leptotheca	Ramona Spineflower	CNPS 4	SDC Group D
Chorizanthe procumbens	Prostrate Spineflower		
Eriogonum elongatum var. elongatum	Tall Buckwheat		
Eriogonum fasciculatum var. fasciculatum	Coast California Buckwheat		
Eriogonum fasciculatum var. polifolium	Mountain Buckwheat		
**Polygonum arenastrum*	Common Knotweed, Doorweed		
Pterostegia drymarioides	Granny's Hairnet, G. C. P.		
**Rumex crispus*	Curly Dock		
Rumex salicifolius	Willow Dock		
Portulacaceae — Purslane Family			
Calandrinia ciliata	Red Maids		
Claytonia parviflora	Utah Miner's-Lettuce		
Claytonia perfoliata	Miner's-Lettuce		
**Portulaca oleracea*	Common Purslane		
Primulaceae — Primrose Family			
**Anagallis arvensis*	Scarlet Pimpernel		
Centunculus minimus	Common Chaffweed		
Dodecatheon clevelandii	Padre's Shooting Star		
Ranunculaceae — Buttercup Family			
Clematis lasiantha	Pipestem Virgin's Bower		
Clematis sp.	Yerba De Chiva		
Delphinium parryi	Parry's Larkspur		
Ranunculus californicus	California Buttercup		
Thalictrum fendleri var. fendleri	Fendler's Meadow-Rue		
Resedaceae — Mignonette Family			

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
**Reseda odorata*	Garden/Sweet Mignonette		
Rhamnaceae — Buckthorn Family			
Ceanothus crassifolius	Thick-Leaf-Lilac		
Ceanothus leucodermis	Chaparral Whitethorn		
Rhamnus crocea	Spiny Redberry		
Rhamnus ilicifolia	Holly-leaf Redberry		
Rosaceae — Rose Family			
Adenostoma fasciculatum	Chamise		
Heteromeles arbutifolia	Toyon, Christmas Berry		
Potentilla glandulosa ssp. glandulosa	Sticky Cinquefoil		
Potentilla gracilis	Nuttall's Cinquefoil		
Prunus ilicifolia	Islay, Holly-leaf Cherry		
Rosa californica	California Rose		
Rubus ursinus	California Blackberry		
Rubiaceae — Madder or Coffee Family			
Galium angustifolium ssp. angustifolium	Narrow-leaf Bedstraw		
Galium aparine	Common Bedstraw, Goose Grass		
Galium nuttallii ssp. nuttallii	San Diego Bedstraw		
Rutaceae — Rue or Citrus Family			
Cneoridium dumosum	Coast Spice Bush, Bush-Rue		
Salicaceae — Willow Family			
Populus fremontii ssp. fremontii	Western Cottonwood		
Salix gooddingii	Goodding's Black Willow		
Salix laevigata	Red Willow		
Salix lasiolepis	Arroyo Willow		
Saxifragaceae — Saxifrage Family			
Jepsonia parryi	Coast Jepsonia		
Lithophragma affine	Woodland Star		
Saxifraga californica	California Saxifrage		
Scrophulariaceae — Figwort Family			
Scrophularia californica ssp. floribunda	California Bee Plant/Figwort		
**Verbascum blattaria*	Moth Mullein		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Solanaceae — Nightshade Family			
Datura wrightii	Western Jimpson Weed		
**Nicotiana glauca*	Tree Tobacco		
Physalis crassifolia	Greene's Ground-Cherry		
Solanum americanum	White Nightshade		
Solanum xanti	Chaparral Nightshade		
Tamaricaceae — Tamarisk Family			
**Tamarix ramosissima*	Tamarisk/Salt-Cedar		
Urticaceae — Nettle Family			
Urtica dioica	Hoary Nettle		
**Urtica urens*	Dwarf Nettle		
Violaceae — Violet Family			
Viola pedunculata	Johnny Jump-Up		
Zygophyllaceae — Caltrop Family			
**Tribulus terrestris*	Puncture Vine		

Legend

*=Non-native species

Special Status:

Federal
FE – listed as endangered under the federal Endangered Species Act.
FT – listed as threatened under the federal Endangered Species Act.

State
SE – listed as endangered under the California Endangered Species Act.
ST – listed as threatened under California Endangered Species Act.
SR – listed as rare under California Native Plant Protection Act.

California Native Plant Society (CNPS)
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 (SDC Group)
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

Multiple Species Conservation Program Covered Species (MSCP)
N – North County
S – South County

Appendix C

Special-Status Wildlife Species Potential to Occur

Special-Status Wildlife Species Potential to Occur

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
INVERTEBRATES						
San Diego Fairy Shrimp (*Branchinecta sandiegoensis*)	FE SDC Group I MSCP (N,S)	Vernal pools. All known localities are below 701m (2,300 ft) and are within 64km (40 miles) of the Pacific Ocean.	Yes	High	Species detected on Cagney during historical surveys.	Northwestern tip of road is within designated critical habitat for this species.
Riverside Fairy Shrimp (*Streptocephalus woottoni*)	FE SDC Group I MSCP (S)	Vernal pools. It occurs from Los Angeles County to Baja California. In San Diego County, all populations are within 15 kilometers of the coast.	No	None	Not detected during historical focused surveys.	
AMPHIBIANS						
Arroyo Toad (*Bufo californicus*)	FE CSC SDC Group I MSCP (N, S)	Exposed shallow pools with a sand or gravel base are used for breeding. Breeding pools must occur in the vicinity (ca. 10-100 m) of a braided sandy channel with shorelines or central bars made of stable, sandy terraces.	Yes	Present	Adult and tadpole arroyo toads were observed within Santa Maria Creek west of Rangeland Road on Oak Country and Gildred.	
Western Spadefoot (*Spea (=Scaphiopus) hammondii*)	CSC SDC Group II MSCP (N)	Temporary rainpools with water temperatures between 9°C and < 30°C that last at least 3 weeks.	Yes	Present	Captured in Array #5. Also observed in Santa Maria Creek (both east and west of Rangeland Road) and tadpoles were observed in a small pool south of Santa Maria Creek in the southeastern corner of the Preserve.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
REPTILES						
Southwestern Pond Turtle *(Actinemys (=Clemmys) marmorata pallid*)	CSC SDC Group I MSCP	Requires slack- or slow-water aquatic habitat as well as aerial and aquatic basking sites. Also requires an upland oviposition site on an unshaded slope with clay soils, in the vicinity of the aquatic site.	No	Low	No suitable habitat is within or adjacent to the road buffer.	
San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)	CSC SDC Group II MSCP (N, S)	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging.	Yes	Present	Captured in Array #6 and observed on Gildred.	
Coronado Skink (*Eumeces skiltonianus interparietalis*)	CSC SDC Group II	Forest, open woodland and grassy areas. Usually found under leaf litter, logs or rocks.	Yes	Present	Captured in Array #3 in the grasslands in the southeastern corner of the Preserve on Cagney.	
Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingii*)	CSC SDC Group II MSCP (N, S)	The habitat characteristics are poorly understood, however historically it was found in floodplains or terraces along streams. Closely tied to coastal sage scrub plants and some chaparral plants.	Yes	Present	Captured at Arrays #1, #2 and #6, and observed during active surveys in the chaparral and scrub habitats.	
Coastal Western Whiptail (*Cnemidophorus tigris multiscutatus*)	SDC Group II	Found in open brushland in semiarid habitats.	Yes	Present	Captured at Arrays #2 and #6, and observed on several occasions in the chaparral and scrub habitats.	
Coastal Rosy Boa (*Charina trivirgata roseofusca*)	SDC Group II	Inhabits rocky areas in coastal sage scrub, chaparral, and desert environments.	Yes	Present	Observed in the rocky area on the Gildred south of Santa Maria Creek.	
Coast Patch-nosed Snake (*Salvadora hexalepis virgultea*)	CSC SDC Group II	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	No	High	Suitable habitat exists within the Preserve.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Two-striped Garter Snake (*Thamnophis hammondii*)	CSC SDC Group I MSCP (N)	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	Yes	Present	Captured in Array #4 and #5, and observed on several occasions during active surveys in Santa Maria Creek and near the pond in the southwestern corner of Oak Country.	
Red Diamond Rattlesnake (*Crotalus ruber ruber*)	CSC SDC Group II MSCP (N)	Occurs from sea level to 914m (3000ft) in chaparral, woodland, and arid desert habitats with rocky areas and dense vegetation.	Yes	Present	Observed in the rocky coastal sage chaparral scrub in the northeastern portion of the Preserve on Davis Eagle.	
San Diego Ringneck Snake (*Diadophis punctatus similis*)	SDC Group II	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests and woodlands.	No	High	Suitable habitat is found on the Preserve.	
BIRDS						
Great Blue Heron (*Ardea Herodias*)	SDC Group II	Found in any type of wetland and is typically a colonial breeder that nests in trees near water.	Yes	Breeding – None Foraging - Present	A transient individual was detected in 2009.Otehr heron and egret species were often observed foraging within Santa Maria Creek.	
Green Heron (*Butorides virescens*)	SDC Group II	Common in wetland thickets throughout much of North America. Generally a solitarily nester but are known to sometimes nest socially in loose colonies. Usually forages for fish by wading at water's edge or in very shallow water.	No	Breeding – None	The habitat on the Preserve is not dense enough to support his species.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
White-faced Ibis (*Plegadis chihi*)	SDC Group I MSCP (S)	Forages in marshes, swamps, ponds and rivers, mostly in freshwater habitats. Nests in emergent vegetation or low trees and shrubs over shallow water; sometimes on ground on small islands.	No	Breeding – None Foraging - Low	There is no suitable nesting habitat on the Preserve; however, there is some potential for individuals to forage in Santa Maria Creek.	
Turkey Vulture (*Cathartes aura*)	SDC Group I	Forage over woodland and nearby open country. Nest in crevices among granite boulders.	Yes	Breeding – Moderate Foraging - Present	This species was observed foraging over the Preserve. There is some potential for this species to use the habitat on Gildred for nesting but this has not been documented.	
White-tailed Kite (*Elanus caeruleus*)	FPS (nesting) SDC Group I	Open grasslands, agricultural areas, wetlands, and oak woodlands. Their primary source of food is the California vole. It typically forages in open undisturbed habitats and nests in the top of a dense oak, willow or other large tree.	Yes	Breeding – High Foraging - High	Species has historically been detected breeding on the Preserve; however, no individuals were detected in 2009.	
Bald Eagle (*Haliaeetus leucocephalus*)	SE SDC Group I MSCP (S)	Found near bodies of water.	Yes	Breeding - None Migration/Wintering – High	This species has historically been detected within the Preserve during migration; however, no individuals were detected in 2009.	
Northern Harrier (*Circus cyaneus*)	CSC (nesting) SDC Group I MSCP (N, S)	Grasslands and marshes. Nests are on the ground and typically concealed within a marsh or other dense vegetation.	Yes	Breeding – None Foraging - High	Historically observed foraging over the Preserve; however, breeding has not been documented. No individuals were detected in 2009.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Sharp-shinned Hawk (*Accipiter striatus*)	SDC Group I	Found in San Diego County during the winter in a variety of habitats.	Yes	Breeding - None Migration/Wintering - High	This species has been documented using the Preserve during migration; however, no individuals were detected in 2009.	
Cooper's Hawk (*Accipiter cooperii*)	SDC Group I MSCP (S)	Oak groves and mature stands of riparian woodland. This species has adapted well to development and is abundant in urban canyons with eucalyptus trees.	Yes	Breeding – Present	This species is currently breeding on the Preserve.	
Northern Goshawk (*Accipiter gentilis*)	CSC	Extremely rare visitor to Southern California with one of three breeding records in the region observed in San Diego County. Nests in old growth forests and foraging habitat varies with abundance of prey.	Yes	Breeding - None Migration/Wintering - High	This species has been documented as a winter vagrant and a very rare visitor at the Preserve; however, no individuals were detected in 2009.	
Red-shouldered Hawk (*Buteo lineatus*)	SDC Group I	Lowland riparian woodland. This species has adapted well to development and is abundant in areas with eucalyptus trees.	Yes	Breeding – Present	This species was detected in 2009 and is presumed to breed on the Preserve.	
Ferruginous Hawk (*Buteo regalis*)	SDC Group I MSCP (S)	Winter visitor to Ca., with the bulk of breeding range in the Great Basin to the east; small numbers breed in the northeast corner of the state; hunts in open country from low perches.	Yes	Breeding – None Migration/Wintering - Present	The Preserve supports a dense wintering population of this species.	
Golden Eagle (*Aquila chrysaetos*)	FPS SDC Group I MSCP (N, S)	Nest on cliff ledges or trees on steep slopes. Forage in grasslands, sage scrub or broken chaparral.	Yes	Breeding – High Foraging - Present	This species forages on the Preserve and is probably breeding; however, a nest location was not observed in 2009.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Merlin (*Falco columbarius*)	SDC Group II	Will forage over a variety of habitats; however, species does not breed in California.	Yes	Breeding – None Migration/Wintering - High	This species has historically been observed in low numbers on the Preserve during winter. No individuals were detected in 2009.	
Peregrine Falcon (*Falco peregrinus*)	SE SDC Group I MSCP (S)	Will forage over a variety of habitats however only breed near water, typically with the nest placed on a cliff ledge.	Yes	Breeding – None Migration/Wintering - High	This species has historically been observed in low numbers on the Preserve during winter months. No individuals were detected in 2009.	
Prairie Falcon (*Falco mexicanus*)	SDC Group I	Nest on cliffs or bluffs and forage in open desert or grasslands. In San Diego County, nest at least 23 miles from the coast (Unitt 2004).	Yes	Breeding – None Migration/Wintering – High	This species has historically been observed in low numbers on the Preserve during winter months. No individuals were detected in 2009.	
Barn Owl (*Tyto alba*)	SDC Group II	Nest in buildings, nest boxes, at the base of the leaves in palm trees, and in cavities in native trees.	Yes	Breeding – Present	This species forages on and is presumed to breed on the Preserve. Nests were not directly observed in 2009.	
Burrowing Owl (*Athene cunicularia*)	CSC SDC Group I MSCP (N, S)	Prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, desert floors, and some artificial, open areas. They require large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. They use rodent or other burrows for roosting and nesting cover and also known to use pipes, culverts, and nest boxes where burrows are scarce.	Yes	Breeding – High Foraging - Present	This species was observed foraging over the Preserve. Nesting probably occurs just off site on the WRI property. No active burrows were detected within the Preserve boundary.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Long-eared Owl (*Asio otus*)	CSC SDC Group I	Rare residents of oak woodlands and broad riparian forests. Ideal nesting habitat has a closed canopy and open lands adjacent for foraging.	No	Breeding – Moderate	Known to historically occur in Bandy Canyon (Unitt 2004); however, during numerous surveys of the woodlands on the Preserve, this species was not detected.	
Southwestern Willow Flycatcher (*Empidonax trailii extimus*)	FE SE SDC Group I MSCP (N, S)	Breeds in riparian woodlands along rivers, streams, or other wetlands. They usually nest within close proximity of water or very saturated soil.	Yes	Breeding – None Migration - High	A migrant willow flycatcher was historically detected on the Preserve; however, there is no suitable breeding habitat for this species.	
Vermillion Flycatcher (*Pyrocephalus rubinus*)	CSC SDC Group I	Found in scrub, desert, cultivated lands, and riparian woodlands. Often perched on the lowest branches of isolated trees.	Yes	Breeding – Low Migration/Wintering - Present	This species has been observed at the Preserve during historical surveys and in 2009. Individuals were observed during migration near an abandoned house on Davis Eagle.	
Loggerhead Shrike (*Lanius ludovicianus*)	CSC SDC Group I	Found near grassland, open sage scrub and chaparral, and desert scrub. They nest in dense vegetation adjacent to their open foraging habitats.	Yes	Breeding - High Foraging - Present	This species was detected in 2009 on Oak Country. There is suitable foraging and breeding habitat on the Preserve; however, no nests were directly observed.	
Least Bell's Vireo (*Vireo bellii pusillus*)	FE SE SDC Group I MSCP (N, S)	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	No	Breeding - Low Migration - High	Currently there is no suitable breeding habitat on the Preserve but there is potential for individuals to occur during migration.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
California Horned Lark (*Eremophila alpestris actia*)	SDC Group II	Grasslands, recently disturbed habitat where seeds and insects are easy to find.	Yes	Present	This species was detected on Cagney during the 2009 surveys.	
San Diego Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*)	CSC SDC Group I MSCP (N, S)	Cactus thickets.	No	None	No cactus thickets are present on the Preserve.	
Coastal California Gnatcatcher (*Polioptila californica californica*)	FT CSC SDC Group I MSCP (N, S)	Prefer open scrubby habitats such as coastal sage scrub and some forms of chaparral.	Yes	Low	Currently the coastal sage scrub within the Preserve is not suitable for this species; however, in the future there would be high potential to occur as this species has been detected on/adjacent to the Preserve historically.	
Western Bluebird (*Sialia mexicana*)	SDC Group II MSCP (S)	Foothills and mountains in meadows near groves of oaks and pines. This species is a cavity nester.	Yes	Present	This species was detected on Oak Country and Gildred in 2009.	
Yellow Warbler (*Dendroica petechia brewsteri*)	CSC SDC Group II	Mature riparian woodlands.	Yes	Present	This species was detected on Gildred in 2009.	
Yellow-breasted Chat (*Ictera virens*)	CSC SDC Group I	Dense riparian woodland.	No	None	No suitable habitat is present within the Preserve.	
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	SDC Group I MSCP (N, S)	Fairly common, widespread and generally fairly conspicuous resident of rocky grassland and patchy shrub habitats, often including areas with disturbance from fire, trash, soil compaction and non-native vegetation.	Yes	Present	This species was detected on the Preserve in 2009.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Bell's Sage Sparrow (*Amphispiza belli belli*)	SDC Group I MSCP (N)	Open chaparral and sage scrubs.	No	High	Suitable habitat is present on the Preserve and the species has been detected in the vicinity (Unitt 2004); however, no individuals were detected in 2009.	
Grasshopper Sparrow (*Ammodramus savannarum*)	CSC SDC Group I MSCP (N)	Structurally diverse grassland usually with native grasses.	Yes	Present	This species was detected on Cagney and Oak Country.	
Tricolored Blackbird (*Agelaius tricolor*)	CSC (nesting colony) SDC Group I MSCP (N, S)	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	Yes	Breeding – Low Foraging - Present	This species has been detected breeding at the Ramona Water District Ponds (Unitt 2004) but there is no breeding habitat on the Preserve. Observed foraging on Oak Country.	
MAMMALS						
Mexican Long-tongued Bat (*Choeronycteris mexicana*)	CSC SDC Group II	Likes desert canyons, arid mountain ranges. Roosts by day in caves, mines or buildings. Records indicate only a summer resident in San Diego County (CDFG 2005).	No	Roosting – None Foraging – Very low	Suitable foraging habitat present on site.	
Small-footed Myotis (*Myotis ciliolabrum*)	SDC Group II	Not much information available, but has been spotted under rock slabs and in crevices, mine tunnels, under loose tree bark, and in buildings.	Yes	Present	Detected at all six sampling locations. 222 detections during all three sampling seasons.	
Long-eared Myotis (*Myotis evotis*)	SDC Group II	Brush, woodland and forest habitats from sea level to 9000 ft. Lives in coniferous forests in mountain areas, roosts in small colonies in caves, buildings and under tree bark.	Yes	Present	Detected near the cave and the upper Santa Maria Creek. There were 7 detections in summer and fall.	
Fringed Myotis (*Myotis thysanodes*)	CDC SDC Group II	Lives in oak and juniper forests, desert scrub. Roosts in caves, abandoned mines, or buildings.	No	Roosting – None Foraging - Low	Suitable foraging habitat present on site.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Long-legged Myotis (*Myotis volans*)	SDC Group II	Likes forested mountainous areas, sometimes desert lowlands. Roosts in tree hollows and under bark, in crevices and buildings.	No	Roosting – None Foraging - Low	Suitable foraging habitat present on site.	
Yuma Myotis (*Myotis yumanensis*)	SDC Group II	Always found near lakes, creeks or ponds. Roosts by day under building sidings or shingles. Nursery colonies choose caves, mines, buildings or under bridges.	Yes	Present	Detected at all six sampling locations, during all three sampling sessions and in very high number (4346 total observations).	
Western Red Bat (*Lasiurus blossevillii*)	CSC SDC Group II	Usually among dense foliage, in forests and wooded areas, making long migrations from the northern latitudes to warmer climes for winter, sometimes hibernates in tree hollows or woodpecker holes.	Yes	Present	Detected at three of the sampling locations: lower Santa Maria Creek, oak woodland and the pond. Detected in low numbers (22 total observations) during all three seasons.	
Spotted Bat (*Euderma maculatum*)	CSC SDC Group II	Mostly in foothills, mtns., & desert regions of So. Cal.; desert, grasslands, mixed conifer forest; Roosts – rock crevices, caves, cliffs.	No	Roosting – None Foraging - Low	Suitable foraging habitat present within the road buffer.	
Western Yellow Bat (*Lasiurus xanthinus*)	CSC	Rare visitor to San Diego County. Found in wooded areas and desert scrub. Roosts in foliage, particularly in palm trees.	Yes	Present	One individual was detected in fall at the lower Santa Maria Creek sampling location.	
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	CSC SDC Group II MSCP (N)	Throughout Cal. in all but sub-alpine & alpine habitats yearlong; most abundant in mesic habitats; Roosts – caves, mines, tunnels, buildings, or other man-made structures.	Yes	Present	Two individuals were detected in fall at the lower Santa Maria Creek sampling location.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Pallid Bat (*Antrozous pallidus*)	CSC SDC Group II MSCP (N)	Throughout So. Cal. from coast to mixed conifer forest; grasslands, shrublands, woodlands, & forest; most common in open, dry habitats w/ rocky areas for roosting; yearlong resident in most of range. Roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows.	Yes	Present	Detected at three sampling locations: lower and upper Santa Maria Creek and at the pond. There were a total of 6 detections in spring and summer.	
Pocketed Free-tailed Bat (*Nyctinomops (=Tadarida) femorosaccus*)	CSC SDC Group II	Lives in deserts and sage scrub, roosts in rocky crevices.	Yes	Present	Detected at all 6 sampling locations during all three sampling seasons. A total of 334 detections were recorded.	
Big Free-tailed Bat (*Nyctinomops (=Tadarida) macrotis*)	CSC SDC Group II	Inhabits arid, rocky areas; roosts in crevices in cliffs. Has been recorded in urban locations in San Diego County (CDFG 2005. Species is rare in California (CDFG 2005).	Yes	Present	Detected in low numbers (5 total detections) at three of the sampling locations: lower and upper Santa Maria Creek and at the pond. The species was detected only in summer and fall.	
Western Mastiff Bat (*Eumops perotis californicus*)	CSC SDC Group II	Primarily a cliff-dwelling species for breeding. Found foraging in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	Yes	Present	Detected at five of the six sampling locations in low numbers (26 total observations) during all three sampling seasons.	
San Diego Black-tailed Jackrabbit (*Lepus californicus bennettii*)	CSC SDC Group II MSCP (N)	Mostly found on the coastal side of our local mountains in open habitats, usually avoiding dense stands of chaparral or woodlands.	No	Low	The species has not been detected on the Preserve during numerous historical surveys.	
Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)	CSC SDC Group II	Coastal and montane regions in grassland, sage scrub, and chaparral slopes.	Yes	Present	21 captured during small mammal trapping.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map
Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)	CSC SDC Group II	Coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities.	Yes	Present	337 captured during small mammal trapping.	
Stephens' Kangaroo Rat (*Dipodomys stephensi*)	FE ST SDC Group I MSCP (N)	Occurs in flat or gently rolling, often degraded, annual grassland.	Yes	Present	2 captured during small mammal trapping .	
San Diego Desert Woodrat (*Neotoma lepida intermedia*)	CSC SDC Group II	Variety of shrub and desert habitats primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	Yes	Present	32 captured during small mammal trapping.	
Ramona Grasshopper Mouse (*Onychomys torridus ramona*)	CSC SDC Group II	Grasslands and sparse coastal sage scrub habitats.	No	Moderate	Suitable habitat exists and the survey area is located within the range of the species.	
American badger (*Taxidea taxus*)	CSC SDC Group II MSCP (N, S)	Inhabit a diversity of habitats with principal requirements of sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred.	No	Very low	There have been historical reports of this species on the Preserve; however, the species was not detected in 2005, 2006 or 2009.	
Mountain Lion (*Puma (=Felis) concolor*)	SDC Group II MSCP (N, S)	Rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral, as well as riparian areas.	Yes	High	The Preserve supports suitable habitat for this species and it has been detected on the Preserve during previous surveys.	
Southern Mule Deer (*Odocoileus hemionus fuliginata*)	SDC Group II MSCP (S)	Oak woodlands, open scrub and young chaparral, low-elevation pine forests, riparian areas, and along the margins of meadows and grasslands.	Yes	Present	Animals and sign observed during the 2009 surveys.	

Common Name (*Scientific Name*)	Sensitivity Code & Status	Habitat Preference/Requirements	Detected within the Preserve? (Historical and/or current observations)	Potential to Occur	Rationale	Notes Re: Map

LEGEND:

STATUS:

Federal

FE - listed as endangered under the federal Endangered Species Act.

FT - listed as threatened under the federal Endangered Species Act.

State

SE - listed as endangered under the California Endangered Species Act.

FPS – fully protected species in California.

CSC - species of special concern in California.

San Diego County Group (SDC Group)

I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.

II = includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

Multiple Species Conservation Program Covered Species (MSCP)

N – North County

S – South County

References

Special Status information from CDFG 2008. Nomenclature and invertebrate descriptions from Hogan 2005, and USFWS 1997. Nomenclature and vertebrate descriptions from AOU 1998 and supplements (AOU 2000, 2002, 2003, 2004, 2005, 2006), CDFG 2005, Collins and Taggart 2002, Stephenson and Calcarone 1999, Baker *et al.* 2003, and Unitt 2004.

Appendix D

Wildlife Species Detected

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
INVERTEBRATES			
Gordian Worms and Horsehair Worms			
Gordius sp.	Horsehair Worm		
Arachnids			
Paruroctonus silvestrii	Stripe-tailed Scorpion		
Pardosa sp.	Wolf Spider		
Phidippus sp.	Jumping Spider		
Aphonopelma reversum	California Olive Brown Tarantula		
Latrodectus hesperus	Western Black Widow		
Steatoda grossa	False Widow		
Malacostracids			
**Armadillidium vulgare*	Common Pillbug		
Centipedes			
Scolopendra polymorpha	Tiger Centipede		
Decapods			
**Procambarus clarkii*	Red Swamp Crayfish		
Centipedes			
Strigamia sp.	Soil Centipede		
Millipedes			
	Millipede		
Insects			
Aeshna multicolor	Blue-eyed Darner		
Anax junius	Common Green Darner		
Erythemis collocata	Western Pondhawk		
Plathemis lydia	Common Whitetail		
Trimerotropis pallidipennis	Pallid-winged Grasshopper		
Ceuthopjilus californicus	Camel Cricket		
Stenopelmatus fuscus	Dark Jerusalem Cricket		
Coccinella novemnotata	nine-spotted Ladybug Beetle		
Phloeodes pustulosus	Common Ironclad Beetle		
Eleodes armatus	Armored Darkling Beetle		
Eleodes osculans	Woolly Darkling Beetle		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Okanagana sp.	Cicada		
**Apis mellifera*	Honey Bee		
Pepsis / Hemipepsis sp.	Tarantula Hawk Wasp		
Moths, Skippers and Butterflies			
Papilio zelicaon	Anise Swallowtail		
Papilio rutulus	Western Tiger Swallowtail		
Papilio eurymedon	Pale Swallowtail		
Pontia protodice	Checkered White		
Anthocharis cethura	Desert Orangetip		
Anthocharis sara	Pacific Orangetip		
Colias eurytheme	Orange Sulphur		
Colias harfordii	Harford's Sulphur		
Nathalis iole	Dainty Sulphur		
Callophrys affinis	Western Green Hairstreak		
Callophrys agustinus	Brown Elfin		
Brephidium exile	Western Pygmy-Blue		
Everes amyntula	Western Tailed-Blue		
Glaucopsyche lygdamus	Silvery Blue		
Icaricia acmon	Acmon Blue		
Apodemia virgulti	Behr's Metalmark		
Nymphalis antiopa	Mourning Cloak		
Vanessa cardui	Painted Lady		
Vanessa annabella	West Coast Lady		
Junonia coenia	Common Buckeye		
Erynnis brizo	Sleepy Duskywing		
Erynnis funeralis	Funereal Duskywing		
Heliopetes ericetorum	Northern White-Skipper		
Melitta gloriosa	Glorious Squash Vine Borer		
Hyles lineata	White-lined Sphinx Moth		
Apantesis ornata	Ornate Tiger Moth		
VERTEBRATES			
Fish			

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Gambusia affinis	Western Mosquitofish		
Amphibians			
Bufo boreas	Western Toad		
Bufo californicus	Arroyo Toad	FE, CSC	SDC Group I, MSCP (N,S)
Pseudacris cadaverina	California Chorus Frog		
Pseudacris regilla	Pacific Chorus Frog		
Spea hammondii	Western Spadefoot	CSC	SDC Group II, MSCP (N)
**Rana catesbeiana*	Bullfrog		
Reptiles			
Elgaria multicarinata	Southern Alligator Lizard		
Phrynosoma coronatum blainvillii	San Diego Horned Lizard	CSC	SDC Group II, MSCP (N,S)
Sceloporus occidentalis	Western Fence Lizard		
Sceloporus orcutti	Granite Spiny Lizard		
Uta stansburiana	Side-blotched Lizard		
Eumeces gilberti	Gilbert's Skink		
Eumeces skiltonianus interparietalis	Coronado Skink	CSC	SDC Group II
Cnemidophorus hyperythrus beldingi	Belding's Orange-throated Whiptail	CSC	SDC Group II, MSCP (N,S)
Cnemidophorus tigris multiscutatus	Coastal Western Whiptail		SDC Group II
Xantusia henshawi	Granite Night Lizard		
Charina trivirgata roseofusca	Coastal Rosy Boa		SDC Group II
Lampropeltis getula	Common Kingsnake		
Masticophis flagellum	Coachwhip		
Masticophis lateralis	Striped Racer		
Pituophis catenifer	Gopher Snake		
Rhinocheilus lecontei	Longnose Snake		
Thamnophis hammondii	Two-striped Garter Snake	CSC	SDC Group I, MSCP (N)
Crotalus mitchellii	Speckled Rattlesnake		
Crotalus oregonus	Western Rattlesnake		
Crotalus ruber ruber	Northern Red Diamond Rattlesnake	CSC	SDC Group II, MSCP (N)
Hypsiglena torquata	Night Snake		
Birds			
Anas platyrhynchos	Mallard		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Anas cyanoptera	Cinnamon Teal		
Anas clypeata	Northern Shoveler		
Aythya collaris	Ring-necked Duck		
Bucephala albeola	Bufflehead		
Oxyura jamaicensis	Ruddy Duck		
**Meleagris gallopavo*	Wild Turkey		
Callipepla californica	California Quail		
Podilymbus podiceps	Pied-billed Grebe		
Ardea herodias	Great Blue Heron		SDC Group II
Ardea alba	Great Egret		
Egretta thula	Snowy Egret		
Bubulcus ibis	Cattle Egret		
Nycticorax nycticorax	Black-crowned Night-Heron		
Cathartes aura	Turkey Vulture		SDC Group I
Accipiter cooperii	Cooper's Hawk		SDC Group I, MSCP (S)
Buteo lineatus	Red-shouldered Hawk		SDC Group I
Buteo jamaicensis	Red-tailed Hawk		
Buteo regalis	Ferruginous Hawk		SDC Group I, MSCP (S)
Aquila chrysaetos	Golden Eagle	FPS	SDC Group I, MSCP (N,S)
Falco sparverius	American Kestrel		
Charadrius vociferus	Killdeer		
Tringa solitaria	Solitary Sandpiper		
Tringa melanoleuca	Greater Yellowlegs		
Tringa semipalmata	Willet		
Limnodromus scolopaceus	Long-billed Dowitcher		
**Columba livia*	Rock Pigeon		
Zenaida macroura	Mourning Dove		
Geococcyx californianus	Greater Roadrunner		
Tyto alba	Barn Owl		SDC Group II
Megascops kennicottii	Western Screech-Owl		
Bubo virginianus	Great Horned Owl		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Athene cunicularia hypugea	Burrowing Owl	CSC	SDC Group I, MSCP (N, S)
Chordeiles acutipennis	Lesser Nighthawk		
Phalaenoptilus nuttallii	Common Poorwill		
Aeronautes saxatalis	White-throated Swift		
Archilochus alexandri	Black-chinned Hummingbird		
Calypte anna	Anna's Hummingbird		
Calypte costae	Costa's Hummingbird		
Melanerpes formicivorus	Acorn Woodpecker		
Picoides nuttallii	Nuttall's Woodpecker		
Colaptes auratus	Northern Flicker		
Empidonax difficilis	Pacific-slope Flycatcher		
Sayornis nigricans	Black Phoebe		
Sayornis saya	Say's Phoebe		
Pyrocephalus rubinus	Vermilion Flycatcher	CSC	SDC Group I
Myiarchus cinerascens	Ash-throated Flycatcher		
Tyrannus vociferans	Cassin's Kingbird		
Tyrannus verticalis	Western Kingbird		
Lanius ludovicianus	Loggerhead Shrike	CSC	SDC Group I
Vireo huttoni	Hutton's Vireo		
Vireo gilvus	Warbling Vireo		
Aphelocoma californica	Western Scrub-Jay		
Corvus brachyrhynchos	American Crow		
Corvus corax	Common Raven		
Eremophila alpestris actia	California Horned Lark		SDC Group II
Tachycineta thalassina	Violet-green Swallow		
Stelgidopteryx serripennis	Northern Rough-winged Swallow		
Petrochelidon pyrrhonota	Cliff Swallow		
Hirundo rustica	Barn Swallow		
Baeolophus inornatus	Oak Titmouse		
Psaltriparus minimus	Bushtit		
Sitta carolinensis	White-breasted Nuthatch		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Salpinctes obsoletus	Rock Wren		
Catherpes mexicanus	Canyon Wren		
Thryomanes bewickii	Bewick's Wren		
Troglodytes aedon	House Wren		
Regulus calendula	Ruby-crowned Kinglet		
Polioptila caerulea	Blue-gray Gnatcatcher		
Sialia mexicana	Western Bluebird		SDC Group II, MSCP (S)
Catharus ustulatus	Swainson's Thrush		
Chamaea fasciata	Wrentit		
Mimus polyglottos	Northern Mockingbird		
**Sturnus vulgaris*	European Starling		
Phainopepla nitens	Phainopepla		
Vermivora celata	Orange-crowned Warbler		
Dendroica petechia	Yellow Warbler	CSC	SDC Group II
Dendroica coronata	Yellow-rumped Warbler		
Geothlypis trichas	Common Yellowthroat		
Wilsonia pusilla	Wilson's Warbler		
Pipilo maculatus	Spotted Towhee		
Pipilo crissalis	California Towhee		
Aimophila ruficeps canescens	So. Calif. Rufous-crowned Sparrow		SDC Group I, MSCP (N,S)
Spizella atrogularis	Black-chinned Sparrow		
Chondestes grammacus	Lark Sparrow		
Passerculus sandwichensis	Savannah Sparrow		
Ammodramus savannarum	Grasshopper Sparrow	CSC	SDC Group I, MSCP (N)
Melospiza melodia	Song Sparrow		
Zonotrichia leucophrys	White-crowned Sparrow		
Pheucticus melanocephalus	Black-headed Grosbeak		
Passerina caerulea	Blue Grosbeak		
Passerina amoena	Lazuli Bunting		
Agelaius phoeniceus	Red-winged Blackbird		
Agelaius tricolor	Tricolored Blackbird	CSC	SDC Group I, MSCP (N,S)

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Sturnella neglecta	Western Meadowlark		
Euphagus cyanocephalus	Brewer's Blackbird		
**Molothrus ater*	Brown-headed Cowbird		
Icterus bullockii	Bullock's Oriole		
Carpodacus mexicanus	House Finch		
Carduelis psaltria	Lesser Goldfinch		
Mammals			
**Didelphis virginiana*	Virginia Opossum		
Myotis californicus	California Myotis		
Myotis ciliolabrum	Small-footed Myotis		SDC Group II
Myotis evotis	Long-eared Myotis		SDC Group II
Myotis yumanensis	Yuma Myotis		SDC Group II
Lasiurus blossevillii	Western Red Bat	CSC	SDC Group II
Lasiurus xanthinus	Western Yellow Bat	CSC	
Parastrellus hesperus	Canyon Bat		
Eptesicus fuscus	Big Brown Bat		
Corynorhinus townsendii	Townsend's Big-eared Bat	CSC	SDC Group II, MSCP (N)
Antrozous pallidus	Pallid Bat	CSC	SDC Group II, MSCP (N)
Tadarida brasiliensis	Mexican Free-tailed Bat		
Nyctinomops femorosaccus	Pocketed Free-tailed Bat	CSC	SDC Group II
Nyctinomops macrotis	Big Free-tailed Bat	CSC	SDC Group II
Eumops perotis	Western Mastiff Bat	CSC	SDC Group II
Sylvilagus audubonii	Desert Cottontail		
Spermophilus beecheyi	California Ground Squirrel		
Thomomys bottae	Botta's Pocket Gopher		
Chaetodipus californicus femoralis	Dulzura Pocket Mouse	CSC	SDC Group II
Chaetodipus fallax fallax	Northwestern San Diego Pocket Mouse	CSC	SDC Group II
Dipodomys simulans	Dulzura Kangaroo Rat		
Dipodomys stephensi	Stephens' Kangaroo Rat	FE, ST	SDC Group I, MSCP (N)
Reithrodontomys megalotis	Western Harvest Mouse		
Peromyscus californicus	California Mouse		
Peromyscus fraterculus	Baja Mouse		

Scientific Name	Common Name	Federal & State Special Status	Local Government Special Status
Peromyscus maniculatus	Deer Mouse		
Neotoma lepida intermedia	San Diego Desert Woodrat	CSC	SDC Group II
Microtus californicus	California Vole		
**Canis familiaris*	Domestic Dog		
Canis latrans	Coyote		
Procyon lotor	Northern Raccoon		
Mustela frenata	Long-tailed Weasel		
Mephitis mephitis	Striped Skunk		
Lynx rufus	Bobcat		
**Equus caballus*	Domestic Horse		
Odocoileus hemionus fuliginata	Southern Mule Deer		SDC Group II, MSCP (S)
**Bos taurus*	Domestic Cattle		

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened
CSC = Species of Special Concern
FPS = California Fully Protected Species

San Diego County Group (SDC Group)
I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.
II = includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

Multiple Species Conservation Program Covered Species (MSCP)
N – North County
S – South County

Appendix E
Butterfly Survey Forms

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLAND Survey Segment: COLLARED

Surveyor: ANDREW BORCHER Date: 2/26/09 Survey #: 7

Additional Surveyors: ERIKA ALFARO

Time		% Cloud	Sky Condition			Wind (mph)	Temperature
Start	10:00	0	clear	patchy	cloudy	0-1	68
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	4:00 PM	10	clear	patchy	cloudy	0-2	65

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: Shells

Nectar Plants:

Calcil, uro pend, euc chry, Plagro, Chryptantha, Pla ere

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	I		Orange sulfur		
Anise swallowtail			Painted lady	~~IIII~~ I	
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	~~IIII~~ IIII	
Cerranus blue			Southern blue	IIII	
Checkered white	I		Southern dogface		
Common buckeye	I		Spring white	III	
Dainty sulfur			Striated queen		
Desert orange-tip	I		Variable checkerspot		
Funereal duskywing	~~IIII~~ IIII		West coast lady	II	
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland Survey Segment: Gildridge

Surveyor: EA Date: 2/26 Survey #: 1

Additional Surveyors: AB

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	@ 10:00	0%	(clear)	patchy	cloudy	0-2	67
	4pm	15%	clear	(patchy)	cloudy	0-2	65
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop			clear	patchy	cloudy		

Habitat Onsite (circle): ~~hilltop~~, (veg openings), bare ground, flat land, ~~steep slope~~, plateau, ~~ridgeline~~, ~~rock outcrop~~, other

Veg Type Surveyed (circle): CSS, (SMC), CSCS, ~~NNG~~, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: plan ova

Nectar Plants: Plagiobothrys
Lasthenia

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur		
Anise swallowtail	/		Painted lady	~~HH~~ I	
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	III	
Cerranus blue			Southern blue		
Checkered white	/		Southern dogface		
Common buckeye			Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	II		West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS Survey Segment: GILDRED OAK COUNTRY

Surveyor: ANDREW BOESCHER Date: 3/3/09 Survey #: 2

Additional Surveyors: BRENT PRIMROSE, ERIKA ALPARO

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:00	15	clear	patchy	cloudy	0-2 mph	63
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:30		clear	patchy	cloudy	1-3	70°

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: flowering

Nectar Plants: Phacelia parryi, Lasthenia cal, Dic cap, Linanthus dia, Cam bist, Lin cand

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue	III	3	Orange sulfur		
Anise swallowtail	I	1	Painted lady	II	2
Behr's metalmark			Pale swallowtail	II	2
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	IIII	4
Cerranus blue			Southern blue		
Checkered white	III	3	Southern dogface		
Common buckeye	I	1	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	I	1	West coast lady	II	2
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland Survey Segment: Davis Eagle/Cagne

Surveyor: EA AB GK BP Date: 3-10-09 Survey #: 1

Additional Surveyors:

Time		% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:00	0%	(clear)	patchy	cloudy	0-2	60 F
			(clear)	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			(clear)	patchy	cloudy		
Stop	3:45	0%	(clear)	patchy	cloudy	2-3	68 F

Habitat Onsite (circle): (hilltop), veg openings, bare ground, (flat land), (steep slope), plateau, (ridgeline), (rock outcrop), other

Veg Type Surveyed (circle): (CSS), (SMC), CSCS, (NNG), DH, MSS

Host Plants(circle): (Plantago), Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: Plantago in good condition. in bloom

Nectar Plants: Gnabic blue dicks lat spl
Hir inc lin can cryptantha mim aur
Vio ped Eucrypta mir loe Sil gal

Quino Observed (location, comments, coordinates, photo #):

none

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue	/	1	Orange sulfur		
Anise swallowtail			Painted lady	~~||||~~ ~~||||~~ ~~||||~~ ||||	19
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	~~||||~~	5
Cerranus blue			Southern blue		
Checkered white	~~||||~~		6	Southern dogface		
Common buckeye	/	1	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	||||	4	West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur	/	1	White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS Survey Segment: DAVIS EAGLE

Surveyor: ANDREW BORCHER Date: 3/10/09 Survey #: ~~3~~ 1

Additional Surveyors: EA, BP, GK

Time		% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:00	0	(clear)	patchy	cloudy	0-1mph	60°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	(clear)	patchy	cloudy	1-2mph	68°

Habitat Onsite (circle): (hilltop), (veg openings), bare ground, flat land, steep slope, plateau, (ridgeline), (rock outcrop), other

Veg Type Surveyed (circle): (CSS), (SMC), (CSCS), NNG, DH, MSS BURNED IN 2007

Host Plants(circle): (Plantago), Castilleja, Cordylanthus, Collinsia, Antirrhinum
Condition/Comments:

Nectar Plants: Dodi, chryptantha, Esch cal, pectocarya, phac dist, Lm dra

Quino Observed (location, comments, coordinates, photo #):

NONE

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	I	1	Orange sulfur		
Anise swallowtail			Painted lady	III	3
Behr's metalmark	I	1	Pale swallowtail		
Brown elfin	II	2	Perplexing hairstreak	I	1
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	IIII	4
Cerranus blue			Southern blue		
Checkered white	II	2	Southern dogface		
Common buckeye	I	1	Spring white	~~IIII~~ ~~IIII~~	10
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	II	2	West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch			~~Dreamy~~ dusky	I	
Mourning cloak			Sleepy		
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS Survey Segment: DAVIS Eagle

Surveyor: Brant Primrose Date: 3/19/09 Survey #: 31

Additional Surveyors: EA, GK, AB

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:00	0	clear	patchy	cloudy	0-1 mph	60°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	clear	patchy	cloudy	1-2 mph	68°

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS Burned in 2007

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments:

Nectar Plants: Lotus scoparius, cryptantha, Esch cal

Quino Observed (location, comments, coordinates, photo #):

NONE

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	HHT		Orange sulfur		
Anise swallowtail			Painted lady	IIII	
Behr's metalmark	II		Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	HHT I	
Cerranus blue			Southern blue		
Checkered white			Southern dogface		
Common buckeye			Spring white	II	
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	HHT		West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland Survey Segment: Gildred

Surveyor: EA Date: 3-11-09 Survey #: ~~3~~ 1

Additional Surveyors: AB SK

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:15	60	clear	(patchy)	cloudy	0-2	55 F
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	4pm	85	clear	patchy	(cloudy)	0-2	62

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, (ridgeline), (rock outcrop), other

Veg Type Surveyed (circle): CSS, (SMC), CSCS, NNG, DH, MSS

Host Plants(circle): (Plantago), Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: Plantago in bloom. good condition

Nectar Plants:

Cryptantha lasthenia Senecio cal sen vul Mir lae Esc cal Pectocarya

Quino Observed (location, comments, coordinates, photo #):

none.

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur		
Anise swallowtail			Painted lady	𝍸 II	7
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	III	4
Cerranus blue			Southern blue	I	1
Checkered white	𝍸 II	7	Southern dogface		
Common buckeye			Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	𝍸	5	West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

OAK COUNTRY

Project/Location: RAMONA GRASSLANDS Survey Segment: GLOVED

Surveyor: AB Date: 3/11/09 Survey #: 3

Additional Surveyors: EA, GK

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	6:30	60	clear	patchy	cloudy	0-2 mph	55°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	4:00	80	clear	patchy	cloudy	0-2 mph	62°

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS BURNED IN 2007

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: Pla ere flowering majority, Castilleja just coming up

Nectar Plants: Lin cand, chrysanthu, cal cil, cal heter, scro cal, Las cal, Esch cal

Quino Observed (location, comments, coordinates, photo #):

NONE

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur		
Anise swallowtail			Painted lady	IIII	5
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	IIII	5
Cerranus blue			Southern blue		
Checkered white	1	1	Southern dogface		
Common buckeye	1	1	Spring white	III	3
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	IIII 1	6	West coast lady		
Gabb's checkerspot			Western tailed blue	IIII	4
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch			Dreamy dusky	1	1
Mourning cloak					
Northern white skip	1				

Quino Checkerspot Butterfly Survey Form

Project/Location: RANCHO GRASSLANDS Survey Segment: DAVIS EAGLE

Surveyor: ANDREW BOECHER Date: 3/17/09 Survey #: 2 of 2

Additional Surveyors: ERIKA ALPARO, GLEN KINOSHITA

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:30	0	(clear)	patchy	cloudy	0-1 mph	65°
			clear	patchy	cloudy		
End	12:30	0	(clear)	patchy	cloudy	1-3 mph	72°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop			clear	patchy	cloudy		

Habitat Onsite (circle): (hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): (Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments:

Nectar Plants: Cla dia, Mir lac, chryp, Pha parr, Rectocarya

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	𝍸 𝍸 |	9	Orange sulfur		
Anise swallowtail	1	1	Painted lady	𝍸 1	6
Behr's metalmark			Pale swallowtail		
Brown elfin	1	1	Perplexing hairstreak	1	1
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet	8		Red admiral		
California sister			Sara's orangetip	𝍸 𝍸	10
Cerranus blue			Southern blue		
Checkered white	𝍸 11	7	Southern dogface		
Common buckeye			Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	𝍸 𝍸	10	West coast lady	1	1
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt	1	1
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip	1				

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland Survey Segment: Dan's Eagle

Surveyor: EA Date: 3-17-09 Survey #: 1 & 2

Additional Surveyors: GK AB

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:20	0%	clear	patchy	cloudy	02	65
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:30	0%	clear	patchy	cloudy	02	70

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum wp 54 (PE) 55 (PE), 56 (PE) 57 (PE)

Condition/Comments: Plaere (58) PE 59, 60

Nectar Plants: ~~Hir~~ inc Pha dis
cre dum
Cryptantha Pha par Mar mac
Mim aur

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue	IIII II	7	Orange sulfur		
Anise swallowtail			Painted lady	IIII III IIII IIII II	29
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak	II	2
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	IIII III	9
Cerranus blue			Southern blue		
Checkered white	IIII IIII IIII IIII III	43	Southern dogface		
Common buckeye	II		Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	IIII IIII II	12	West coast lady	IIII IIII IIII II	22
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur	I	1	White checkered skipp	I	1
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip	-		-		-

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland Survey Segment: Oak Oasis / Gildred

Surveyor: EA Date: 3-18-09 Survey #: ~~1~~ 2

Additional Surveyors: AB KM

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	9:45	0%	clear	patchy	cloudy	~~7~~ 0-2	70F
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:30	0%	clear	patchy	cloudy	0-2	72

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: PE-61 (WP) PE 62 CE 63 PE PE-64 PE 65 CE-66 PE-67 PE 68 71 69 72-73 CE 70

Nectar Plants: Evo bra, Hap gla, Gil wan, Cne dum, Evo bot, Pse cal, Pha par, Sen cal, Cry int, Las gla, Cea/eu, Mar mac

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue	7	7	Orange sulfur		
Anise swallowtail			Painted lady	15	15
Behr's metalmark	1	1	Pale swallowtail		
Brown elfin			Perplexing hairstreak	1	1
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	14	14
Cerranus blue			Southern blue		
Checkered white	24	24	Southern dogface		
Common buckeye	1	1	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	12	12	West coast lady	7	7
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp	3	3
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip	-	-	-	-	-

Quino Checkerspot Butterfly Survey Form

Project/Location: Ramona Grassland   Survey Segment: Gilford

Surveyor: KM   Date: 3/18/09   Survey #: 2

Additional Surveyors: AB, EA

Time		% Cloud	Sky Condition			Wind (mph)	Temperature
Start	1:00pm	0	(clear)	patchy	cloudy	0-2	75°F
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	(clear)	patchy	cloudy	0-1	76°F

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): (Plantago), (Castilleja), Cordylanthus, Collinsia, Antirrhinum

Condition/Comments:

Nectar Plants:
Phacelia, Horsemint, Erodium, Crypt, Gambis, Fiddleneck, Cream cups

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur		
Anise swallowtail			Painted lady	𝍸 𝍸 I	11
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister	I	1	Sara's orangetip	𝍸 III	8
Cerranus blue			Southern blue		
Checkered white	𝍸 IIII	9	Southern dogface		
Common buckeye			Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	𝍸 IIII	9	West coast lady	III	3
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue	III	3
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS — Survey Segment: GIDDRED

Surveyor: ANDREW BOECHER — Date: 3/18/09 — Survey #: 2 of 2

Additional Surveyors: KAILASH MAZUMDER, EA

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	1:00	0	(clear)	patchy	cloudy	0-2 mph	75°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	(clear)	patchy	cloudy	0-1 mph	76°

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: flowering, stalks

Nectar Plants:

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur		
Anise swallowtail			Painted lady	III	3
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak		
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister	I	1	Sara's orangetip	HH HH	10
Cerranus blue			Southern blue		
Checkered white	HH	5	Southern dogface		
Common buckeye			Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	III	3	West coast lady	I	1
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS Survey Segment: DAVIS EAGLE

Surveyor: ANDREW BORCHER Date: 3/24/09 Survey #: 3

Additional Surveyors: DOUG ALLEN

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	11:45	0	(clear)	patchy	cloudy	0-2mph	74°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	4:00	0	(clear)	patchy	cloudy	1-4 mph	75°

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, (SMC), (CSCS), (NNG), DH, MSS

Host Plants(circle): (Plantago), (Castilleja), (Cordylanthus), Collinsia, Antirrhinum

Condition/Comments: flowering just coming up

Nectar Plants: Cryptantha, Phacelia parri, Mirabilis laevis, Lasthenia californica, Cal cil, Gilia, Pha dis, Pectocarya

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	~~IIII~~	5	Orange sulfur		
Anise swallowtail			Painted lady	~~IIII~~ III	8
Behr's metalmark			Pale swallowtail	I	1
Brown elfin			Perplexing hairstreak	III	3
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	~~IIII~~ ~~IIII~~	10
Cerranus blue			Southern blue		
Checkered white	~~IIII~~ ~~IIII~~ II	12	Southern dogface		
Common buckeye	~~IIII~~ ~~IIII~~	10	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17	West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: RAMONA GRASSLANDS Survey Segment: DAVIS EAGLE

Surveyor: DOUG ALLEN Date: 3/24/09 Survey #: 3

Additional Surveyors: ANDREW BORCHER

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	11:45	0	clear	patchy	cloudy	0-2	74°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop			clear	patchy	cloudy		

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments:

Nectar Plants:

Quino Observed (location, comments, coordinates, photo #):

0

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue	IIII	7	Orange sulfur		
Anise swallowtail			Painted lady		18
Behr's metalmark			Pale swallowtail		9
Brown elfin			Perplexing hairstreak		3
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip		9
Cerranus blue			Southern blue		
Checkered white		17	Southern dogface		
Common buckeye		3	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing		5	West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		2
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

TOTAL 68

Quino Checkerspot Butterfly Survey Form

Project/Location: RAYMOND GRASSLAND Survey Segment: GILDRED

Surveyor: ANDREW BORCHER Date: 3/26/09 Survey #: 3

Additional Surveyors: KM

	Time	% Cloud	Sky Condition			Wind (mph)	Temperature
Start	10:45	0	clear	patchy	cloudy	0-1mph	70°
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	clear	patchy	cloudy	0-1mph	67

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago, Castilleja, Cordylanthus, Collinsia, Antirrhinum

Condition/Comments: flowering

Nectar Plants: Chrysanthemum, Pectocarya, Senecio californica, Linaria canadensis

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed					
Name	Tally	Total	Name	Tally	Total
Acmon Blue	//// /	6	Orange sulfur	///	3
Anise swallowtail	/	1	Painted lady	////	5
Behr's metalmark			Pale swallowtail	/	1
Brown elfin			Perplexing hairstreak	///	3
Cabbage white			Pygmy blue	/	1
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister	/		Sara's orangetip	////	5
Cerranus blue		1	Southern blue	/	1
Checkered white	///	3	Southern dogface		
Common buckeye	//// //	7	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing	//// ///	8	West coast lady	//	2
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak	/	1			
Northern white skip					

Quino Checkerspot Butterfly Survey Form

Project/Location: ~~Gilbert~~ Survey Segment: Gilbert

Surveyor: KM Date: 3/25/09 Survey #: 3

Additional Surveyors: AB

Time		% Cloud	Sky Condition			Wind (mph)	Temperature
Start	10:45	0	clear (circled)	patchy	cloudy	0-3	70°F
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
			clear	patchy	cloudy		
Stop	3:45	0	clear (circled)	patchy	cloudy	0-1	67°F

Habitat Onsite (circle): hilltop, veg openings, bare ground, flat land, steep slope, plateau, ridgeline, rock outcrop, other

Veg Type Surveyed (circle): CSS, SMC, CSCS, NNG, DH, MSS

Host Plants(circle): Plantago (circled), Castilleja (circled), Cordylanthus, Collinsia, Antirrhinum

Condition/Comments:

Nectar Plants: Bic lup, Eus cal, Cam bis, Gilia, Lotho do, Pha par, Torsechia, Lup har, whispering bells, pyp cal, Lm can, Lus cal, Lindley, Cryp int, Vul myr, Scut, Lomatia, Viopedun, gut, Sen cal, Gal het, Lup tru

Quino Observed (location, comments, coordinates, photo #):

Butterflies Observed

Name	Tally	Total	Name	Tally	Total
Acmon Blue			Orange sulfur	III	3
Anise swallowtail			Painted lady		
Behr's metalmark			Pale swallowtail		
Brown elfin			Perplexing hairstreak	II	2
Cabbage white			Pygmy blue		
California patch			Quino checkerspot		
California ringlet			Red admiral		
California sister			Sara's orangetip	~~IIII~~ II	7
Cerranus blue			Southern blue		
Checkered white	IIII	4	Southern dogface		
Common buckeye	~~IIII~~ ~~IIII~~ ~~IIII~~	15	Spring white		
Dainty sulfur			Striated queen		
Desert orange-tip			Variable checkerspot		
Funereal duskywing			West coast lady		
Gabb's checkerspot			Western tailed blue		
Gray hairstreak			Western tiger swallowt		
Harford's sulphur			White checkered skipp		
Hermes copper			Unknown blue		
Lorquin's admiral			Unknown lady		
Monarch					
Mourning cloak					
Northern white skip					

Appendix F
Photo Book

Photo 1. Oak woodland, Santa Maria Creek and surrounding upland habitats looking north.

Photo 2. Rocky portion of Santa Maria Creek looking northwest.

Photo 3. Santa Maria Creek looking northwest.

Photo 4. Sandy bench along Santa Maria Creek looking north.

Photo 5. Santa Maria Creek in southeast corner of Preserve looking west.

Photo 6. Western spadefoot breeding habitat adjacent to Santa Maria Creek in southeast corner of Preserve looking southwest.

Photo 7. Burned coastal sage scrub on Davis Eagle looking northwest.

Photo 8. Burned chamise chaparral recovering west of Santa Maria Creek looking west.

Photo 9. Grassland with open oak woodland in background looking west.

Photo 10. Grassland with rock outcrops looking west.

Photo 11. Fresh water pond in southwest corner of the Preserve looking southwest.

Photo 12. California large-leaf filaree observed south of the airport in cracked clay soils.

Photo 13. Ramona spineflower observed in southern mixed chaparral opening.

Photo 14. Parish's brittlescale observed in alkaline soil openings in grassland.

Photo 15. California king snake captured in herpetological array #6 wire box trap.

Photo 16. Two striped garter snake eating a fish near Santa Maria Creek.

Photo 17. Arroyo toad observed in Santa Maria Creek.

Photo 18. Arm of herpetological array #6 showing a pitfall, funnel and wire box trap.

Photo 19. Coronado skinks captured in herpetological array #3 in grassland.

Photo 20. Spotted night snake captured in herpetological array #5 in a pit fall trap.

Photo 21. Cooper's hawk.

Photo 22. Golden eagle observed near the ranger station northwest of the airport.

Photo 23. Bobcat observed south of Santa Maria Creek looking upslope to the south.

Photo 24. Dulzura kangaroo rat captured in herpetological array #6 wire box trap.

Photo 25. Remote camera station photo of a coyote next to Santa Maria Creek.

Photo 26. Remote camera station photo of a striped skunk in grassland.

Photo 27. Remote camera station photo of a long-tailed weasel under Rangeland Road.

Photo 28. Remote camera station photo of two snowy egrets on dam in Santa Maria Creek.

Photo 29. Remote camera station photo of wild turkeys at the dam in Santa Maria Creek.

Photo 30. Remote camera station photo of a red-tailed hawk on dam in Santa Maria Creek.

Appendix G
Conservation Analysis

Ramona Grasslands Preserve:
Public Access and Conservation of Biological Species of Concern

Conceptual approaches 1, 2 and 3 to provide public access within the Preserve have been developed based on public input and Guiding Principles that were developed largely from applicable goals in the Draft North County Multiple Species Conservation Program (NCMSCP) and the Community Trails Master Plan of the San Diego County Trails Program. Conceptual Approach 1 uses primarily existing trails and roads. Conceptual Approach 2 is perimeter Preserve trail access only. Conceptual Approach 3 includes a primary focus of increasing connectivity of existing trails on the Preserve, as well as connectivity to trails off site and is the approach with the most intense potential trail development (Figure 1). As detailed on Figure 1, the trail system associated with Conceptual Approach 3 will primarily consist of existing roads and trails that will be enhanced by adding new trails to increase connectivity and access across the Preserve. Conceptual Approach 3 includes three types of trail connectivity levels: Level 1 primarily consists of existing trails and ranch roads; Level 2 adds trail loops and enhances connectivity from the southwest to the northwest portions of the Preserve; and Level 3 adds additional loop access to the northeastern portion of the Preserve and access across the southeastern portion of the Preserve connecting to trails off site.

At the request of the wildlife agencies (USFWS & CDFG), this conservation analysis will provide a discussion of the potential direct and indirect impacts associated with the construction and use of these trails to biological resources specifically identified by the wildlife agencies in a meeting attended by the project team, USFWS, CDFG, and North County MSCP County staff on March 25, 2010. Biological resources evaluated in this document include Stephens' kangaroo rat (*Dipodomys stephensi*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), vernal pools and San Diego fairy shrimp (*Branchinecta sandiegonensis*).

The conservation analysis has been based on Conceptual Approach 3, as that approach is a combination of all the conceptual approaches. This does not imply that Conceptual Approach 3 is the preferred alternative for trail development.

Stephens' Kangaroo Rat (*Dipodomys stephensi*)

Federal Endangered, State Threatened, San Diego County Group I, North County MSCP Covered Species

The Stephens' kangaroo rat is found almost exclusively in open grasslands or sparse shrublands with vegetative cover of less than 50% during the summer. The species typically avoids dense grasses (for example, non-native bromes [*Bromus* spp.]) and is more likely to inhabit areas where the annual forbs disarticulate in the summer and leave more open areas. Soil type is also an important habitat factor. As a fossorial (burrowing) animal, the species typically is found in sandy and sandy loam soils with a low clay to gravel content, although there are exceptions when they utilize the burrows of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*). This species tends to avoid rocky soils. Slope is a factor in occupation; the species tends to use flatter slopes (i.e., < 30%), but may be found on steeper slopes in trace densities (i.e., < one individual per hectare). Furthermore, the species may use steeper slopes for foraging, but not for burrows. In general, the highest abundances of species occur on gentle slopes less than 15%.

During the 2009 small mammal trapping program on the Preserve, only three of the 1,067 small mammals captured were Stephens' kangaroo rats. However, the intent of the 2009 trapping program was to determine the overall small mammal diversity across the Preserve, not to determine where SKR occurs within the Preserve. Previous studies (CBI 2007; Spencer and Montgomery 2007) have documented that the loamy grasslands that occur east and north of Santa Maria Creek contain the Preserve's core population of SKR (Figure 2). The 2009 trapping effort detected SKR along an existing access road west of the Santa Maria Creek (Figure 2). This sighting presumably represents an expansion of the core population into the grasslands west of the Santa Maria Creek. This expansion was likely facilitated by the 2007 Witch Fire that burned a large portion of the Preserve.

The two core SKR management areas delineated in Figure 2 have been identified during previous studies as focal sites for monitoring SKR populations and habitat, and for instituting vegetation management measures when conditions suggest this is necessary. Vegetation management (e.g., managed grazing or prescribed burns) is most likely to benefit the population if applied strategically within these core management areas, rather than in outlying areas where conditions may remain unsuitable even with management, or where suitable habitat is distributed in smaller and more isolated patches. Thus, although SKR are found outside these core areas (especially during periods of SKR population expansion), vegetation management outside the core areas is less likely to contribute to overall SKR population viability or long-term persistence, since SKR in such locations will apparently always be vulnerable to extirpation during poor (e.g., wet) years (CBI 2007).

For the purpose of this trail impact analysis all grasslands that occur on the Preserve were presumed to be potentially suitable for SKR.

Direct Impacts

As detailed on Figure 2 direct impacts to suitable SKR habitat (i.e., grassland habitats) will occur as a result of implementing the proposed trail system. However, it should be noted that most of the trails that will be utilized in the trail system consist of either existing trails or existing dirt roads. Direct impacts caused by trail construction would consist of minor ground disturbance by removing vegetation to define a trail alignment. Trail improvements will be done primarily with small equipment, such as a D-2 dozer, and all burrows will be avoided. Major trail maintenance will typically take place in the spring, after the peak rainy season using a combination of hand and equipment work. Overall, if a biological monitor is onsite during trail construction and major trail maintenance to ensure all burrows are avoided, direct impacts to SKR on the Preserve would be considered less than significant. In fact, the removal of vegetation and the opening of the grassland canopy for trail use could potentially act as a habitat enhancement feature for SKR. As detailed above SKR prefers areas within less than 50% vegetative cover and typically avoids areas with dense vegetative cover.

Indirect Impacts

Indirect impacts associated with trail use are not expected as SKR are only active at night when the trail system within the Preserve will be closed to the public.

Conclusion

The proposed establishment, maintenance, and management of the Ramona Grasslands Preserve would (1) create a permanent preserve that provides sufficient burrow and foraging habitat for this

species, (2) provide for restoration and/or enhancement within the Preserve to increase suitable habitat, and (3) would maintain the largest known population of this species in the Ramona area.

The proposed Preserve design conserves the majority of the suitable and occupied habitat in the area for this species and the proposed trail alignments take advantage of existing roads and trails to minimize additional impacts to suitable/occupied habitats.

As discussed above, impacts to this species from trail use are not expected as SKR are only active at night when the trail system within the Preserve will be closed to the public. However, trail construction has the potential to result in both direct and indirect impacts to this species. Significant impacts to SKR resulting from trail construction could be minimized or completely avoided through implementation of the following measures:

- Biological monitoring during trail construction and major trail maintenance to ensure avoidance of occupied burrows;
- Continued grazing within the Preserve to maintain and enhance SKR habitat as part of a larger vegetation management plan;
- Development and implementation of a fire management plan (including prescribed burns) to maintain and enhance SKR habitat within the Preserve; and
- Continued maintenance to control the spread of invasive exotic plant species within the Preserve.

Golden Eagle (Aquila chrysaetos)

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

Golden eagles nest on cliff ledges or trees on steep slopes and forage in grasslands, sage scrub, or broken chaparral (Unitt 2004).

The development of grasslands they forage over has taken a toll on the numbers of this species present in San Diego County (WRI 2007). A territory averages 36 square miles so removal of foraging habitat will have significant impacts on this species (Unitt 2004). Historically, a golden eagle pair breeds just off site of the Preserve and they are known to forage at the Preserve (WRI 2007). During the 2009 surveys, the pair was observed on numerous occasions throughout the season. No active nests were confirmed on the Preserve, but active foraging behavior was observed within the Preserve.

Direct Impacts

As detailed above, the grassland habitat within the Preserve contains suitable foraging habitat for golden eagle. Assuming implementation of Conceptual Approach 3, new trail construction (6 feet wide) within the grassland areas will directly impact approximately 1.30 acres of the total of 1,408 acres of foraging habitat (Figure 3). However, the linear clearing of this small amount of grassland habitat for the proposed trail system will not significantly impact foraging opportunities for the golden eagle at the Preserve, and new portions of open trail may increase the opportunity to spot prey within the habitat. As shown on Figure 3, vast quantities of intact grassland habitat (i.e., raptor foraging habitat) occur within the Preserve, which will not be impacted by trail construction or use, and will continue to support prey species for golden eagles.

Indirect Impacts

Potential indirect impacts could occur as a result of the proposed trail system. As detailed on Figure 3, the breeding location for a golden eagle pair occurs outside of but adjacent to the northwest corner of the Preserve. Due to the distance between the potential trail location and the golden eagle nest site, use of the existing trail is not expected to indirectly impact breeding behavior. The potential indirect impacts to the golden eagle associated with the trail alignment and its potential to encourage off-trail activity could be mitigated through signage, the planting of cactus thickets along the trail, phasing the opening of this portion of the trail to ensure vegetation has recovered from fire effects to its former density, and seasonal trail closures.

Conclusion

The proposed establishment, maintenance, and management of the Ramona Grasslands Preserve would (1) create a permanent preserve that provides sufficient habitat for the golden eagle in large, contiguous patches, (2) provide for the long-term protection and management of golden eagle habitat within the Preserve, and (3) would maintain important foraging habitat for the known breeding pair of eagles in the area.

The proposed Preserve design conserves the majority of the suitable foraging habitat and maintains a buffer from the known breeding location. In addition, the proposed trail alignments take advantage of existing roads and trails to minimize additional impacts to suitable foraging habitat for the golden eagle.

As discussed above, impacts to this species from trail construction are not expected because trails would avoid known breeding locations, and impacts to foraging habitat would be small. However, trail use has the potential to result in indirect impacts to this species. Potential significant impacts to golden eagle resulting from trail use could be minimized or completely avoided through implementation of the following measures:

- Installation of fencing, signage or other barriers to avoid off-trail disturbance to known breeding locations, foraging habitat, and preferred perch spots,
- Implementation of seasonal closures of trail sections (as necessary/appropriate),
- Development and implementation of passive and/or active restoration of abandoned trails and other areas that may encourage off-trail activities,
- Development and implementation of a fire management plan to maintain and enhance foraging habitat within the Preserve, and
- Continued maintenance to control the spread of invasive exotic plant species within the Preserve.

Ferruginous Hawk (*Buteo regalis*)

San Diego County Group I

The ferruginous hawk is an uncommon winter visitor to San Diego County that is mostly found foraging in open grasslands (Unitt 2004). The Preserve is a prime wintering location for ferruginous hawks (WRI 2007). Approximately 22 ferruginous hawks were observed wintering in the Preserve in 2005; only 8 were observed in 2006 and it is estimated that on average the Preserve supports 15-17 wintering ferruginous hawks (WRI 2007). In addition, four hawks were detected by ICF on

February 25, 2009, in the southeast area of the Preserve and other individuals were sporadically recorded during other surveys by ICF in February 2009 (Figure 3).

Direct Impacts

As detailed above, the grasslands within the Preserve provide wintering and foraging habitat for ferruginous hawks. Assuming implementation of Conceptual Approach 3, new trail construction (6 feet wide) within the grassland areas will directly impact approximately 1.30 acres of the total of 1,480 acres of this habitat (Figure 3). In spite of the linear clearing of a small amount of grassland habitat for the proposed trail system, it will not significantly impact foraging or wintering habitat within the Preserve. As shown on Figure 3, vast quantities of intact grassland habitat (i.e., raptor foraging habitat) occur within the Preserve, which will not be impacted by trail construction or use, and will continue to provide suitable foraging and wintering habitat for ferruginous hawks.

Indirect Impacts

Breeding ferruginous hawks are sensitive to human disturbance (White and Thurow 1985); however, wintering ferruginous hawks seem to occur in areas that support a good prey base, regardless of human presence and surrounding uses (Plumpton and Andersen 1997). As detailed above the majority of the trails that will be utilized within the Preserve are either existing trails or existing dirt roads and have historically supported similar uses as the proposed trail system would have. Large continuous blocks of grassland habitat occur within the Preserve that would be avoided and these areas will provide suitable foraging and wintering opportunities for the ferruginous hawk. However, construction and use of trails (depending on actual locations and intensity of use) could result in potential indirect impacts to ferruginous hawks if the species is continuously flushed and resting and foraging is disrupted.

Conclusion

The proposed establishment, maintenance, and management of the Ramona Grasslands Preserve would (1) create a permanent preserve that provides sufficient wintering and foraging habitat for ferruginous hawks and (2) provide for the long-term protection, maintenance, and management of wintering and foraging habitat for ferruginous hawks within the Preserve.

The proposed Preserve design conserves the majority of the suitable foraging and wintering habitat. In addition, the proposed trail alignments take advantage of existing roads and trails to minimize additional impacts to suitable habitat for ferruginous hawks.

As discussed above, direct impacts to this species from trail construction and use are not expected to significantly impact foraging/wintering habitat. However, trail construction and use have the potential to result in some indirect impacts to this species. Potentially significant impacts to ferruginous hawks resulting from trail construction and use could be minimized or completely avoided through implementation of the following measures:

- Implementation of seasonal closures of trail sections (as necessary/appropriate),
- Development and implementation of passive and/or active restoration of abandoned trails and other areas that may encourage off-trail activities,
- Continued grazing within the Preserve to maintain and enhance wintering and foraging habitat for ferruginous hawks,

- Development and implementation of a fire management plan to maintain and enhance foraging habitat within the Preserve, and
- Continued maintenance to control the spread of invasive exotic plant species within the Preserve.

Burrowing Owl (Athene cunicularia)

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

Burrowing owls are found in prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, desert floors, and some artificial open areas (Unitt 2004). This species requires large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. The burrowing owl uses rodent or other burrows for roosting and nesting cover and also is known to use pipes, culverts, and nest boxes where burrows are scarce. As with other grassland species, the burrowing owl population in San Diego County is on the decline due to loss of habitat to development and habitat fragmentation (Unitt 2004). Burrowing owls naturally and artificially occur at the Preserve (WRI 2007). In 2005, relocated owls were introduced to enhanced habitat directly south of the Wildlife Research Institute (WRI) property. These owls successfully bred in low numbers. In 2009, burrowing owls were detected diurnally near the southern edge of the Preserve where WRI installed artificial burrows. Breeding is likely occurring in some of these burrows. No protocol surveys were conducted for the species, but general surveys through suitable habitat did not reveal any new occupied burrows within the Preserve's boundary. During nocturnal surveys, burrowing owls were detected foraging on the southern and northeast areas of the Preserve.

Direct Impacts

The proposed trail system will directly impact suitable foraging and breeding habitat for burrowing owls (Figure 3) but would be designed to avoid occupied burrows. In addition, due to the relatively small impact and the amount of suitable habitat within the Preserve, significant direct impacts are not expected to occur as a result of the proposed trail improvements.

Burrowing owls are active during both the night and day, hunt primarily at dusk and dawn, and are less active in the middle of the day. While threats to this species include loss of habitat from development, burrowing owls have demonstrated a high level of tolerance for human disturbance and degradation of habitat. Therefore, significant direct impacts are not anticipated to occur as a result of trail use within the Preserve.

Indirect Impacts

Indirect impacts associated with the trail design and use within the Preserve could potentially restrict the expansion of the breeding burrowing owl population within the Preserve. However, large continuous blocks of grassland habitat will be conserved within the Preserve and these areas will provide suitable foraging and breeding opportunities for the burrowing owl. As detailed above, an adaptive management program has allowed a breeding population of burrowing owls to persist on the Preserve. It is recommended that this adaptive management program be expanded to include all suitable habitat within the Preserve to offset any significant indirect impacts that may occur to burrowing owls.

Conclusion

The proposed establishment, maintenance, and management of the Ramona Grasslands Preserve would (1) create a permanent preserve that provides sufficient burrow and foraging habitat for this species, (2) provide for restoration and/or enhancement within the Preserve to increase suitable habitat, and (3) would maintain the largest known population of this species in the Ramona area.

The proposed Preserve design conserves the majority of the suitable and occupied habitat in the area for this species and the proposed trail alignments take advantage of existing roads and trails to minimize additional impacts to suitable/occupied habitats.

As discussed above, direct impacts to this species from trail construction or use are not expected. However, construction and use of trails have the potential to indirectly impact the burrowing owl. Significant impacts to burrowing owls could be minimized or completely avoided through implementation of the following measures:

- Biological monitoring during trail construction and major trail maintenance to ensure avoidance of occupied burrows,
- Continued grazing within the Preserve to maintain and enhance burrowing owl habitat,
- Installation of fencing, signage or other barriers to avoid off-trail disturbance near occupied burrows, and
- Development and implementation of a Preserve-wide adaptive management program for burrowing owls, which should include:
    - Continued maintenance to control the spread of invasive exotic plant species within the Preserve,
    - Establishment of additional artificial burrows, and
    - Fire management to maintain and enhance burrowing owl habitat within the Preserve.

Vernal Pools & the San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)

Federally Endangered, San Diego County Group I, North County MSCP Covered Species

San Diego fairy shrimp are small invertebrates that are found in shallow vernal pools (USFWS 2002b). This species is found in southwestern coastal California and extreme northwestern Baja California, Mexico, with all known localities below 700 m (2,300 ft) and within 65 kilometers (km) (40 miles [mi]) of the Pacific Ocean, from Santa Barbara County south to northwestern Baja California (USFWS 1997, 2002b). The species can also occur in road ruts and ditches that provide suitable conditions for the species. Water temperature is an important factor for the fairy shrimp. The water must not get too hot (above 86oF [30oC]) or too cold (below 41oF [4oC]) for this species to occur (USFWS 2002b). San Diego fairy shrimp are known to occur in the vernal pools in the southeast area and the southwest area of the Preserve (CBI 2007). The locations of these pools are presented on Figure 4. Surveys conducted by ICF during the 2009/2010 rainy season confirmed presence of fairy shrimp in the pools located south of Ramona Airport in the southeastern portion of the Preserve.

Direct Impacts

The majority of the proposed trail improvements would occur within existing roads and trails that were found not to support vernal pools or the San Diego fairy shrimp. Trails proposed near areas known to support vernal pools and San Diego fairy shrimp, such as the southeastern portion of the Preserve, would be designed to avoid both the vernal pool and its watershed. Avoiding vernal pools and associated watersheds could result in the establishment of new trails in lieu of utilizing existing roads and trails.

Indirect Impacts

Indirect impacts to vernal pools and/or San Diego fairy shrimp associated with trail construction or use within the Preserve is not expected to occur. Fencing and signage will be installed as necessary to ensure the proposed trail system will not indirectly impact vernal pools or San Diego fairy shrimp.

Conclusion

The proposed establishment, maintenance, and management of the Ramona Grasslands Preserve would (1) protect and manage vernal pools and known populations of San Diego fairy shrimp, (2) provide for restoration and/or enhancement of vernal pool habitat within the Preserve (3) would maintain the largest known population of this species in the Ramona area.

The proposed Preserve design conserves all mapped vernal pool basins and watersheds and the proposed trail alignments take advantage of existing roads and trails to minimize additional impacts to suitable/occupied habitats. Where necessary to avoid impacts to vernal pools, new trails are proposed in lieu of utilizing existing roads and trails.

As discussed above, direct impacts to this species from trail construction are not anticipated as all vernal pool basins and watersheds would be avoided. However, trail construction has the potential to result in indirect impacts to this species and trail use has the potential to result in both direct and indirect impacts to this species. Significant impacts to San Diego fairy shrimp resulting from trail construction and use could be minimized or completely avoided through implementation of the following measures:

- Biological monitoring during trail construction and major trail maintenance to ensure avoidance of vernal pool basins and watersheds;
- Continued grazing within areas of the Preserve known to support vernal pools (with potential seasonal restrictions);
- Development and implementation of a fire management plan to maintain and enhance vernal pool habitat within the Preserve;
- Development and implementation of a vernal pool restoration/enhancement/creation plan for the Preserve; and
- Continued maintenance to control the spread of invasive exotic plant species within the Preserve.

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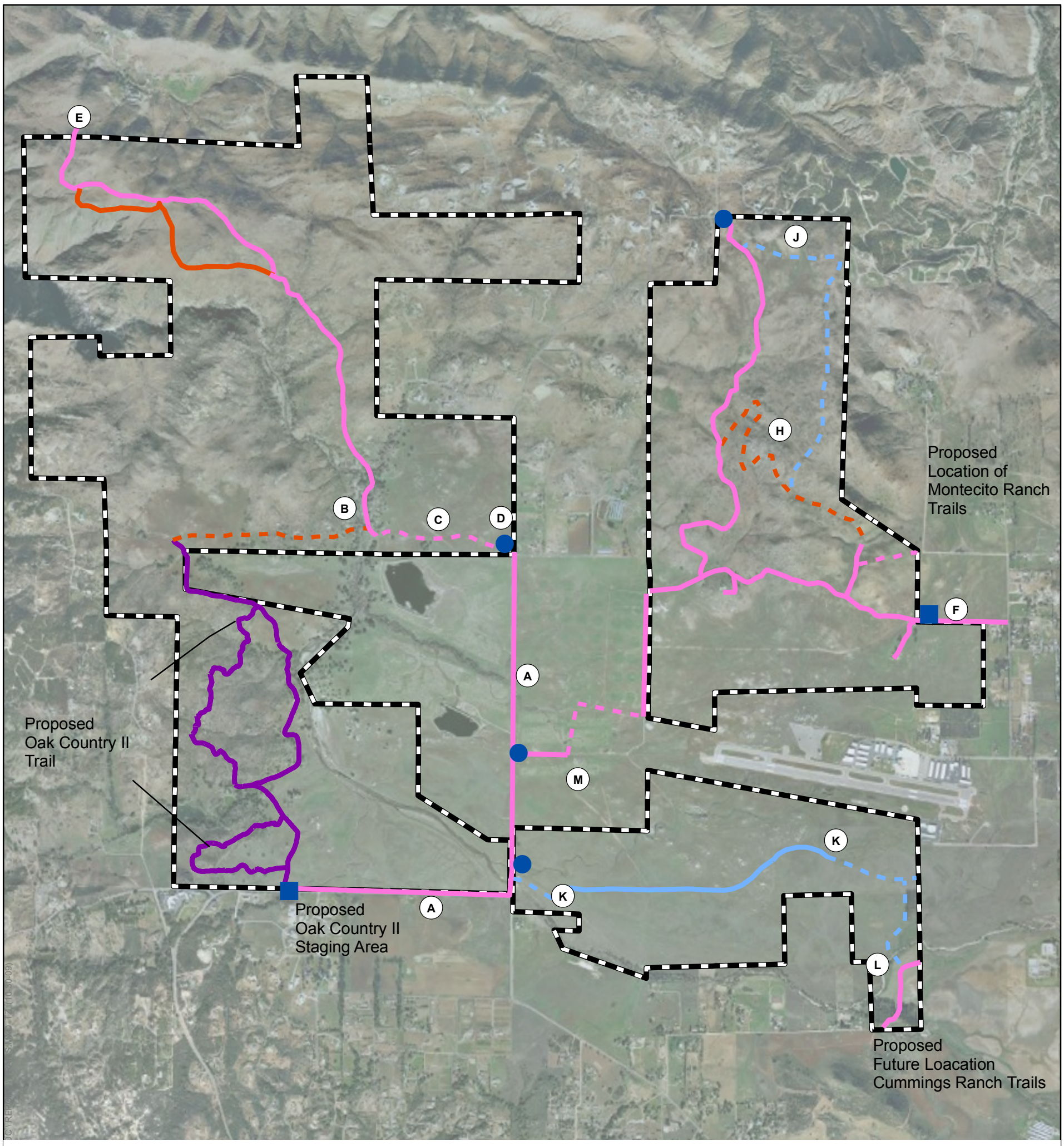

Proposed Trail Plan

- Level 1: uses some existing paths, with limited connectivity
- Level 1
- Level 2: adds loops, enhances SW-NW connectivity
- Level 2
- Level 3: more access inNE portion: adds access in SE
- Level 3
- Oak Country II

solid = proposed trail/pathway along existing path/right-of-way
dashed = proposed trail connection (new construction) in Preserve

Staging Area (with parking) Trailhead (no parking)

(A) Pathway along right-of-way

(B) Creek crossing at exisitng dam (may need seasonal closure)

(C) Construct new connection from staging area to Old Survey Road 97

(D) Potential Trailhead

(E) Potential connection to Coast-toCrest Trail via Old Survey Road 97: needs off-site connection

(F) Potential staging area; link to proposed Montecito Ranch trails

(H) Possible trail to observation point or peak

(J) Segment for Kearny's Route interpretation

(K) Use most of existing east-west path; need new connecting segments from western and eastern boundaries to comply with deed restricdtion on mitigation parcels

(L) New connection to proposed Cumming Ranch trails

(M) Deed grants access along existing RMWD road

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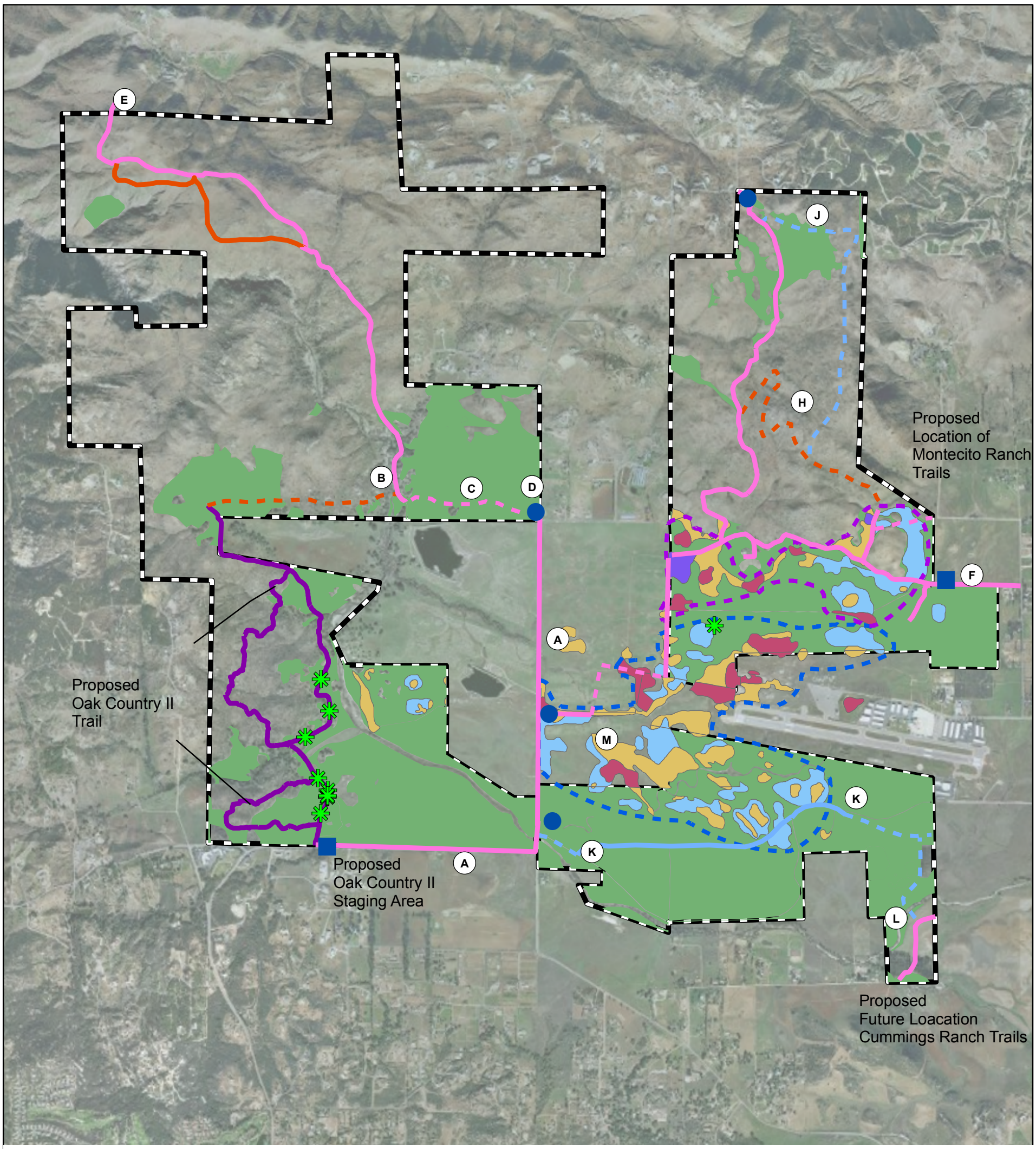
Figure 1
Trail Plan
Ramona Grasslands



Stephen's Kangaroo Rat (2009 & 2010)

Core SKR Management Areas

Area 1

Area 2

SKR Habitat Assessment (CBI 2007)

Low

Moderate

Trace

Unoccupied

SKR Presence/Absence Unknown

Level 1: uses some existing paths, with limited connectivity

Level 1

Level 2: adds loops, enhances SW-NW connectivity

Level 2

Level 3: more access inNE portion: adds access in SE

Level 3

Oak Country II

solid = proposed trail/pathway along existing path/right-of-way
dashed = proposed trail connection (new construction) in Preserve

Staging Area (with parking)

Trailhead (no parking)

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(H) Possible trail to observation point or peak

(J) Segment for Kearny's Route interpretation

(K) Use most of existing east-west path; need new connecting segments from western and eastern boundaries to comply with deed restricdtion on mitigation parcels

(L) New connection to proposed Cumming Ranch trails

(M) Deed grants access along existing RMWD road

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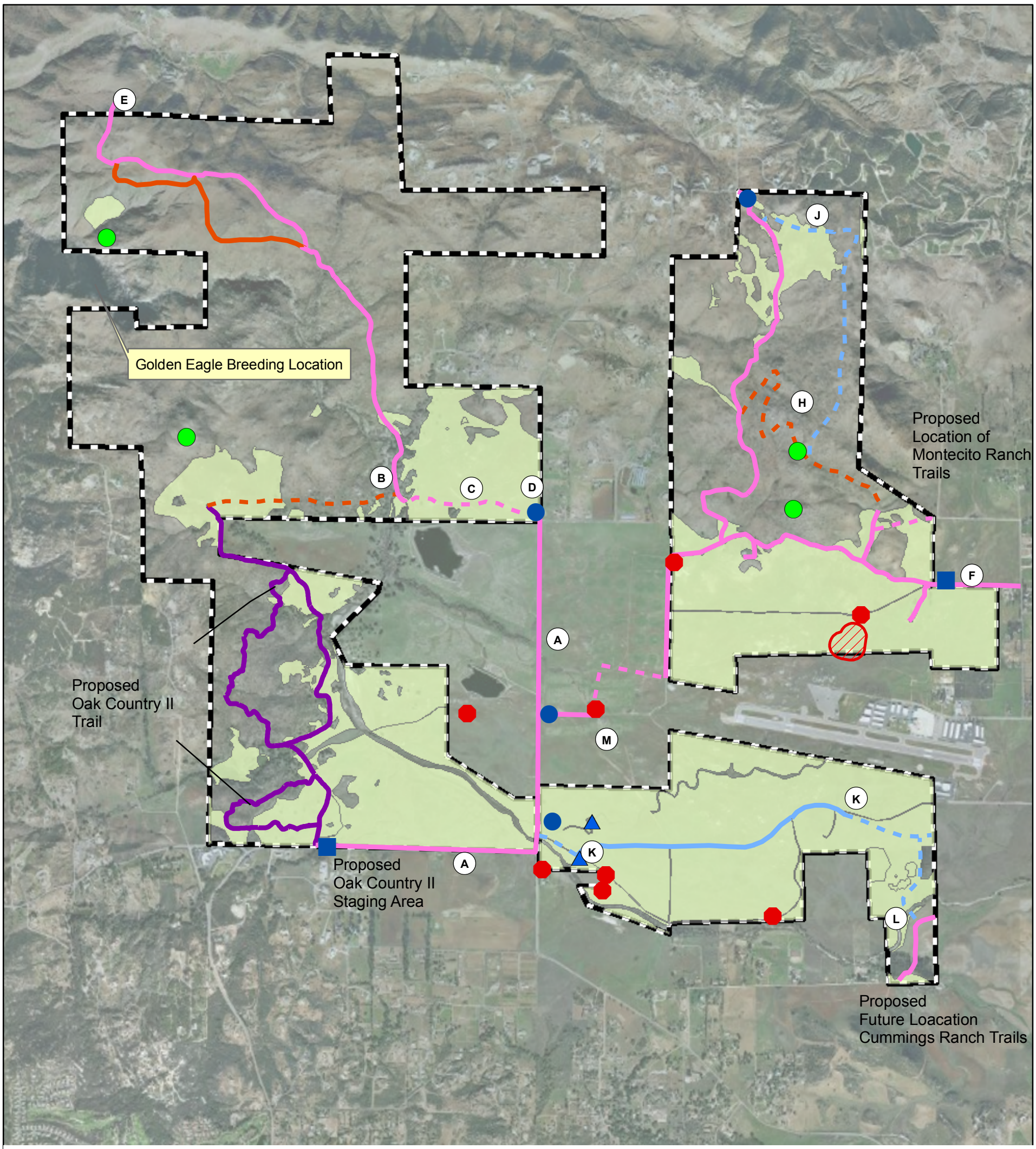
Figure 2
SKR Habitat Assessment
Ramona Grasslands



Burrowing Owl (BUOW)

Ferruginous Hawk (FEHA)

Golden Eagle (GOEA)

Level 1: uses some existing paths, with limited connectivity

Level 1

Level 2: adds loops, enhances SW-NW connectivity

Level 2

Level 3: more access inNE portion: adds access in SE

Level 3

Oak Country II

Burrowing Owl (CNDDB)

Raptor Foraging Habitat

solid = proposed trail/pathway along existing path/right-of-way
dashed = proposed trail connection (new construction) in Preserve

Staging Area (with parking)

Trailhead (no parking)

(A) Pathway along right-of-way

(B) Creek crossing at exisitng dam (may need seasonal closure)

(C) Construct new connection from staging area to Old Survey Road 97

(D) Potential Trailhead

(E) Potential connection to Coast-toCrest Trail via Old Survey Road 97: needs off-site connection

(F) Potential staging area; link to proposed Montecito Ranch trails

(H) Possible trail to observation point or peak

(J) Segment for Kearny's Route interpretation

(K) Use most of existing east-west path; need new connecting segments from western and eastern boundaries to comply with deed restricdtion on mitigation parcels

(L) New connection to proposed Cumming Ranch trails

(M) Deed grants access along existing RMWD road

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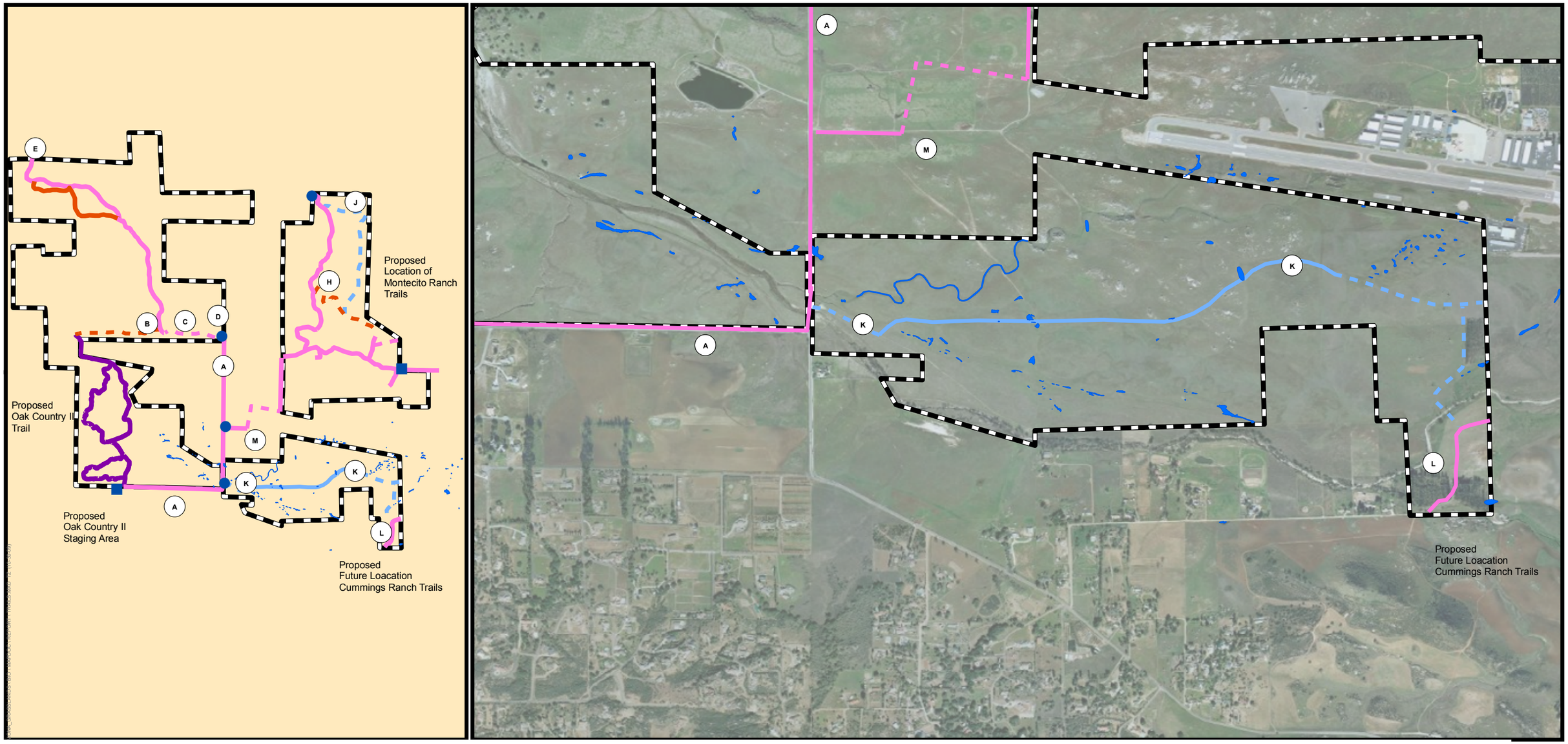
Figure 3
Raptor Habitat Assessment
Ramona Grasslands



Vernal Pool and Fairy Shrimp Locations

Proposed Trail Plan

- Level 1: uses some existing paths, with limited connectivity
- Level 1
- Level 2: adds loops, enhances SW-NW connectivity
- Level 2
- Level 3: more access inNE portion: adds access in SE
- Level 3
- Oak Country II

Staging Area (with parking) Trailhead (no parking)

solid = proposed trail/pathway along existing path/right-of-way
dashed = proposed trail connection (new construction) in Preserve

- A — Pathway along right-of-way
- B — Creek crossing at exisitng dam (may need seasonal closure)
- C — Construct new connection from staging area to Old Survey Road 97
- J — Segment for Kearny's Route interpretation
- K — Use most of existing east-west path; need new connecting segments from western and eastern boundaries to comply with deed restricdtion on mitigation parcels
- L — New connection to proposed Cumming Ranch trails
- M — Deed grants access along existing RMWD road
- D — Potential Trailhead
- E — Potential connection to Coast-toCrest Trail via Old Survey Road 97: needs off-site connection
- F — Potential staging area; link to proposed Montecito Ranch trails
- H — Possible trail to observation point or peak

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Figure 4
Vernal Pool and SD Fairy Shrimp Locations
Ramona Grasslands