

HABITAT MANAGEMENT AND MONITORING PLAN
CRESTRIDGE ECOLOGICAL RESERVE



FINAL DRAFT

HABITAT MANAGEMENT AND MONITORING PLAN

for the

CRESTRIDGE ECOLOGICAL RESERVE

Prepared for

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

and

BACK COUNTRY LAND TRUST

Prepared by

Conservation Biology Institute



February 2002

FINAL DRAFT

HABITAT MANAGEMENT AND MONITORING PLAN

for the

CRESTRIDGE ECOLOGICAL RESERVE

Prepared by

Conservation Biology Institute
651 Cornish Drive
Encinitas, CA 92024
760.634.1590

Approved by:

Regional Manager

Date



TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1-1
1.1 Purpose of Management and Monitoring Plan	1-1
1.2 Property Location, History of Use, and Regional Ecological Significance	1-2
1.2.1 Location	1-2
1.2.2 History of Use	1-2
1.2.3 Regional Ecological Significance	1-5
1.3 MSCP Responsibilities	1-6
2.0 PROPERTY DESCRIPTION	2-1
2.1 Geographical Setting	2-1
2.2 Adjacent Land Use	2-1
2.3 Geology and Soils	2-2
2.4 Fire History	2-8
2.5 Cultural Features	2-12
3.0 HABITATS AND SENSITIVE SPECIES	3-1
3.1 Vegetation Communities	3-1
3.2 Plant Species	3-1
3.3 Animal Species	3-8
4.0 CONSERVATION MANAGEMENT GOALS AND OBJECTIVES	4-1
4.1 Threats and Potential Impacts	4-1
4.2 Biological Elements	4-3
4.3 Public Use Elements	4-7
4.4 Facility Maintenance Elements	4-8
5.0 MANAGEMENT AND MONITORING IMPLEMENTATION	5-1
5.1 Management	5-1
5.1.1 Exotic Plant Control	5-1
5.1.2 Exotic Animal Control	5-6
5.1.3 Fire Management	5-7
5.1.4 Erosion Control	5-8
5.1.5 Seed Collection and Storage	5-9
5.1.6 Habitat Enhancement and Restoration	5-9
5.1.7 Public Use	5-10
5.1.8 Facilities Maintenance	5-14
5.2 Monitoring	5-16
5.2.1 Sensitive Species Monitoring	5-16
5.2.2 Habitats and Ecological Processes Monitoring	5-20
5.2.3 Public Use Enforcement	5-22
5.2.4 Research Needs	5-22
5.3 Data Management and Reporting	5-23



<u>Section</u>	<u>Page</u>
5.3.1 Data Management	5-23
5.3.2 Reporting	5-23
5.4 Staffing	5-24
5.5 Budget	5-25
6.0 MANAGEMENT AND MONITORING PRIORITIES FOR 2002-2003	6-1
7.0 REFERENCES	7-1

APPENDICES

A Vegetation Communities and Plant Species

- A.1 Vegetation Communities
- A.2 List of Plant Species
- A.3 Sensitive Species
- A.4 Field Notes
- A.5 References

B Animal Species and Field Notes

- B.1 List of Vertebrates
- B.2 List of Invertebrates
- B.3 Sensitive Species
- B.4 Field Notes
- B.5 References

C Management Options for Selected Exotic Plant Species

D Framework Fire Management Plan

- D.1 General Operating Procedures
- D.2 Fire History and Fuel Types
- D.3 General Fire Management Guidelines and Objectives
- D.4 Wildland Fire Suppression
- D.5 Pre-Fire Treatment and Vegetation Management
- D.6 Research and Monitoring
- D.7 References

E Seed Collection, Storage, and Propagation Protocols

F Monitoring Protocols and Data Forms

- F.1 Vegetation Community Mapping and Monitoring
- F.2 Rare Plant Monitoring
- F.3 Invertebrate Data Form
- F.4 Upland Reptile Species Diversity Monitoring
- F.5 Bird Community Point Counts



F.6	MSCP Covered Species Compliance Actions
G	Property Analysis Record
H	Summary List of Management and Monitoring Tasks
I	Cultural Resources Management Plan Outline
J	Earth Discovery Institute

LIST OF TABLES

<u>Table</u>	<u>Page</u>
2-1	Recorded Fire Events at Crestridge
	2-11
3-1	Acreage by Vegetation Community
	3-2
3-2	Vegetation Mapping and Sensitive Plant Survey Schedule
	3-7
4-1	Analysis of Threats
	4-2
5-1	Priority Species and Resources Recommended for Long-term Monitoring and Management
	5-17

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1	Location of Crestridge Ecological Reserve
	1-3
2-1	Aerial Photo Base Map of Crestridge Ecological Reserve
	2-3
2-2	Soil Types of Crestridge Ecological Reserve
	2-5
2-3	Fire History of Crestridge Ecological Reserve
	2-9
3-1	Vegetation Communities of Crestridge Ecological Reserve
	3-3
3-2	Sensitive Plants at Crestridge Ecological Reserve
	3-5
3-3	Sensitive Animals at Crestridge Ecological Reserve
	3-9
5-1	Exotic Plants at Crestridge Ecological Reserve
	5-3



1.0 INTRODUCTION

1.1 PURPOSE OF MANAGEMENT AND MONITORING PLAN

The Crestridge Ecological Reserve is a nearly 2,400-acre Ecological Reserve as designated by the California Fish and Game Commission and a unit of the Multiple Species Conservation Program (MSCP) in San Diego County. The property is subject to a Conservation Bank Agreement with the California Department of Fish and Game (CDFG) and The Nature Conservancy (TNC). Designation as a reserve has protected Crestridge from the threat of development.

The goals of the MSCP are consistent with the goals of an Ecological Reserve. The MSCP provides special protection for the irreplaceable resources in San Diego County and guides development outside of biological resource core areas. Protection of these irreplaceable resources is vital to the general welfare of all residents. Central to the MSCP is the maintenance of ecosystems and vegetation communities that support sensitive species and fragile, irreplaceable resources. The MSCP's goal is to prevent future endangerment of the plants and animals that are dependent on these habitats.

The CDFG and MSCP both require the preparation of a habitat management and monitoring plan for the reserve that includes area-specific directives for the land and the species it supports, including species listed as "covered" under the take authorizations of the MSCP. Implementation protocols of the plan are intended to encourage the maintenance or improvement of the habitat quality of the reserve, while remaining adaptable to changing conditions on the reserve. The plan addresses the interface between adjacent developed lands and habitats in the reserve, appropriate land uses within the reserve, and enforcement standards for those uses that are compatible with the short- and long-term maintenance goals of the reserve.

The Back Country Land Trust (BCLT), under a management agreement with CDFG, will work with the CDFG to implement the Habitat Management and Monitoring Plan. In accordance with the plan, BCLT and CDFG will coordinate stewardship efforts for land management, monitoring, and maintenance. BCLT will also develop and implement volunteer and environmental education programs and encourage appropriate use of the land by the general public and the local community.

1.2 PROPERTY LOCATION, HISTORY OF USE, AND REGIONAL ECOLOGICAL SIGNIFICANCE

1.2.1 Location

The Crestridge Ecological Reserve is located in San Diego County, approximately 3 miles east of the City of El Cajon and due north of the community of Crest (Figure 1-1). The reserve is bounded on the north by Interstate 8, on the east by Harbison Canyon, on



the south by Mountain View and La Cresta roads, and on the southwest by La Cresta Road.

1.2.2 History of Use

The Crestridge property, also known locally as "Oakridge," was part of a Mexican land grant known as El Cajon de San Diego, or Rancho El Cajon. The name, "the box," referred to the pass between two hills. The original land grant consisted of 48,800 acres, the third largest land grant in San Diego County, and ultimately became the site of El Cajon, Lakeside, Santee, Bostonia, and Flinn Springs. The original boundaries of the rancho, roughly, were La Mesa on the west, Mt. Helix on the south, Camp Elliott on the north, and El Monte Park on the east (Moyer and Pourade 1969). The land was granted in September 1845 by Pio Pico to Maria Antonia Estudillo de Pedorena (Aviña 1976). Señora Pedorena and her family built houses and corrals for their stock and harvested large crops from the land (Pourade 1963). Miguel Pedorena died in 1850 and was buried in Old Town. His heirs began to dispose of their land during the Civil War (Moyer and Pourade 1969).

The Cornelius family owned much of the Rancho south of existing Interstate 8 in the early 20th century and raised beef and milk cows there, mostly on the area that is now an avocado grove and not part of the reserve. Mrs. Cornelius purchased the original water system for Crest from the army camp at Campo. The Cornelius's named the oak grove area "Mary Jane Park," in memory of their daughter who died as a child. Sometime before World War II, Colonel Ed Fletcher bought the "S" Tract of Rancho El Cajon from the Cornelius family. Fletcher used the property as a retreat for his family (Fletcher 1952). During World War II, the area was used by the Searchlight Battalion of soldiers. Officers' quarters and a recreation hall were built in the vicinity of the oak grove. Some of these structures remain today.

Mr. Buck Rickles worked for the Ed Fletcher Company, Inc. from 1963 to 1976 and raised his family on the property. Mr. Rickles supplied much of the information for this history of the property. He and Mr. Waller, who was the handyman for the Ed Fletcher Company, had cows, horses, and various other livestock, mostly in the area of the avocado grove, which is not now part of the reserve. Mr. Waller cleared the area that is now the annual grassland north of the oak grove on the reserve, erected fences, and used it to raise quarter horses. None of the rest of the property has been cleared.

During the late 1970s and 1980s, plans were approved for a residential development of more than 1,350 homes on the site. In 1989, the land was owned by Lawrence Malenfant, who planned an extensive community encompassing 2,000 homes, a golf course, lake, and sewer plant. He eventually went bankrupt. In the 1990s, Gatlin Development (Gatlin) planned to build 92 homes on about 450 acres and to designate about 1,500 acres as open space. This plan was approved by the County of San Diego.

In response to the development proposals, the citizens of Crest formed the Crest Open Space Supporters and the Back Country Land Trust to advocate conservation of the

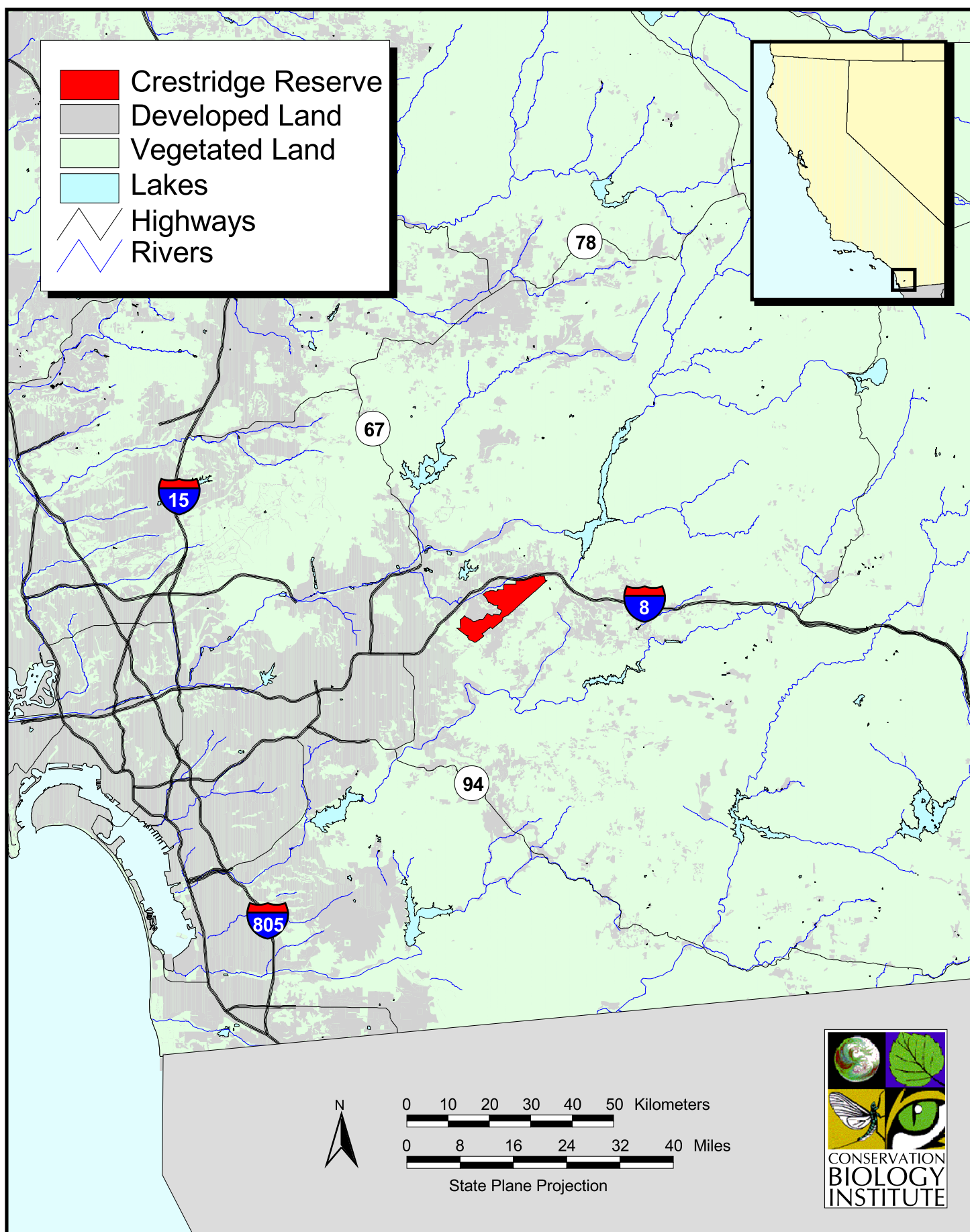


Figure 1-1. Location of Crestridge Ecological Reserve



property as open space and incorporation into the MSCP preserve system. The Endangered Habitats League also had a role in assuring conservation of the property.

In 1995, Gatlin established the Crestridge Conservation Bank on approximately 1,100 acres of the property, with the potential to add another approximately 1,400 acres to the bank. At the urging of the BCLT, other environmental groups, and the CDFG, TNC purchased the entire property, and in 1999 the Wildlife Conservation Board purchased the property from TNC. These properties now comprise the Crestridge Ecological Reserve, administered by the CDFG. TNC continues to sell mitigation credits, with the proceeds going toward additional acquisitions and an endowment for habitat management on the reserve.

1.2.3 Regional Ecological Significance

The Crestridge Ecological Reserve is a large island of habitat almost entirely surrounded by residential development. It is centrally located at the eastern edge of urban development between MSCP lands to the north of Interstate 8 and MSCP lands to the south of Interstate 8 and thus may function as a habitat linkage. Despite its proximity to urbanization, much of Crestridge shows relatively few signs of disturbance. Crestridge supports mature riparian woodlands and Engelmann oak woodlands, surrounded by coastal sage scrub and chaparral. These habitats provide nesting and foraging habitat for raptor species, including the black-shouldered kite (*Elanus leucurus*) and Cooper's hawk (*Accipiter cooperi*). The reserve supports a wide diversity of native butterflies and native plant species, including bunch grasses and sensitive herbaceous species. Crestridge supports the largest known populations of Lakeside ceanothus (*Ceanothus cyaneus*) and Hermes copper butterfly (*Lycaena hermes*). The coastal sage scrub habitat on the west end of the reserve may function as one of the "stepping stones" for coastal sage scrub birds, including the California gnatcatcher (*Polioptila californica californica*), in the Lakeside archipelago of coastal sage scrub.

The reserve is valued as open space by the surrounding community of Crest. Crestridge was also valued in prehistoric times, as evidenced by the existence of archeological sites on the reserve, including an ancient village.

1.3 MSCP RESPONSIBILITIES

Under the MSCP Plan, each conservation area must be managed to maintain and enhance habitat for covered species and other natural communities within the MSCP preserve system. The MSCP goal is to "manage" the reserve by allowing natural ecological processes to continue with minimal impact from humans. This responsibility bears with it the obligation to know the locations and condition of various resources on the reserve at all times, from season to season and year to year. Management entails careful observation and documentation to record how the natural communities respond to different levels and types of land uses, as much as it entails taking action. This plan and its implementation must evolve with our understanding of the resources and their responses to various environmental and man-induced conditions. For this reason, the



management and monitoring plan provides management options that may or may not be implemented, depending on the status of resources and the potential impacts of human management and adjacent land uses at any point in time.

This Habitat Management and Monitoring Plan for the Crestridge Ecological Reserve has been prepared to comply with the MSCP Guidelines for Preserve Management Activities (Section 6.3 of the Final MSCP Plan, Ogden 1998):

Area-specific management directives will be prepared by federal, state, and local agencies responsible for managing lands conserved as part of the preserve. Area-specific management directives will be developed using generally accepted practices and procedures for management of biological preserves. These directives will be developed and implemented to address species and habitat management needs in a phased manner for logical and discrete areas, once conserved as part of the preserve, including any species-specific management required as conditions of the take authorizations.

Both framework plans (generally) and area-specific management directives (specifically) will address the following management actions, as appropriate:

Preserve-level actions

- Fire management
- Public access control
- Fencing and gates
- Ranger patrol
- Trail maintenance
- Visitor/interpretive services
- Volunteer services
- Hydrological management
- Signage and lighting
- Trash and litter removal
- Access road maintenance
- Enforcement of property requirements

Species-level actions

- Removal of invasive species
- Nonnative predator control
- Species monitoring
- Habitat restoration
- Management for diverse age classes
- Use of herbicides and rodenticides
- Biological surveys
- Species management conditions



2.0 PROPERTY DESCRIPTION

2.1 GEOGRAPHICAL SETTING

The Crestridge Ecological Reserve is situated in southwestern San Diego County, approximately 3 miles east of the City of El Cajon and due north of the community of Crest. The reserve is bounded on the north by Interstate 8 (I-8), on the east by Harbison Canyon, on the south by Mountain View and La Cresta roads, and on the southwest by La Cresta Road.

Elevation ranges from 2,258 feet above mean sea level (msl) in the southeastern portion of the reserve to approximately 1,000 feet msl on lower slopes above Rios Canyon in the central portion of the property. Overall, rugged topography and steep slopes characterize the majority of the site. Relatively level terrain occurs primarily along the southern property boundary, just northeast of the end of Horsemill Road.

A number of blueline streams occur on Crestridge (Figure 2-1). Rios Canyon Creek and two unnamed drainages on either side of Ceanothus Slope flow north to Los Coches Creek. Two smaller, unnamed blueline streams drain into Rios Canyon from the south. A small portion of a blueline stream in the southeast portion of the reserve is a tributary to the larger drainage in Harbison Canyon. In addition to blueline streams, a natural spring occurs at about 1,700 feet elevation in the eastern portion of the reserve. This spring was not visited during the 2000 surveys (due to topography and dense vegetation) but appears from aerial photographs to support an oak woodland community.

According to the nearest weather station in El Cajon, administered by the Western Regional Climate Center, monthly average temperatures range from 54 to 76 degrees Fahrenheit, with an average minimum temperature of 41 degrees Fahrenheit in December and an average maximum temperature of 89 degrees Fahrenheit in August (for the period 1971-2000). Average annual rainfall for the period 1979-2000 is 12.67 inches at the El Cajon station, with minimum annual rainfall of 1.51 inches and maximum annual rainfall of 23.15 inches during this period.

2.2 ADJACENT LAND USE

The Crestridge Ecological Reserve is largely an island of natural communities surrounded by urban and agricultural communities and demarcated by roads. The long southern boundary is mostly bordered by residential development. The easternmost end of the property adjoins a patch of vacant land between the reserve and Harbison Canyon. Except for a small ravine, which may function as a corridor between Crestridge and Harbison Canyon, most of this land is very steep and effectively isolates Crestridge from Harbison Canyon. Interstate 8, Olde Highway 80, Flinn Springs County Park, and a few houses border the northern boundary of the reserve. Avocado groves and residential development along Rios Canyon Road largely separate the western and eastern portions of the reserve.



Aside from being isolated by roads and development, the primary threats from adjacent development are use of the site by offroad vehicles, landscaping (as point sources for exotic species introductions), and irrigation runoff. Irrigation runoff may facilitate invasion by Argentine ants (*Iridomyrmex humilis*) as well as cause erosion and affect the composition of plant communities onsite.

2.3 GEOLOGY AND SOILS

Seven soil series or formations are present on Crestridge (Figure 2-2). These include the Bosanko, Cieneba (including Cieneba-Fallbrook soils), Fallbrook (including Fallbrook-Vista soils), Las Posas, Visalia, and Vista series, and acid igneous rock land. Soil series are described below with respect to general structure and qualities, parental material, and location onsite.

Bosanko Series (Btc)

This series consists of well-drained, moderately deep clays that formed in material derived from acid igneous rock. Bosanko soils onsite occur in moderately sloping areas (5-9% slopes) and are characterized by a stony surface layer. Bosanko stony clays are typically <1 m deep over decomposed rock. Soil fertility is medium to high, runoff is slow to medium, and the erosion potential is slight to moderate (USDA-SCS 1973). Bosanko soils occur at the southeastern corner of the site.

Cieneba Series (ClG2, CmrG, CnE2, CnG2)

Cieneba soils include excessively drained, shallow coarse sandy loams. These soils formed in material weathered in place from granitic rock and occur in gently sloping to steep upland areas. Onsite, Cieneba soils occur in areas of 30-75% slopes. These soils are characterized by low fertility, rapid permeability, medium to rapid runoff, and high to very high soil erosion. Sheet and gully erosion may be evident. Cieneba very rocky coarse sandy loams (CmrG) are further characterized by very thin soils, rock outcrops over about 20% of the soil surface, and very large granodioritic boulders on about 30% of the surface (USDA-SCS 1973). Cieneba very rocky coarse sandy loams (CmrG) are one of the dominant soil types in the eastern portion of the site, occurring primarily on steep, north-facing slopes south and east of Flinn Springs County Park. Smaller pockets of this soil type occur in the central and western portions of the site. Cieneba coarse sandy loams (ClG2) are more restricted in distribution and occur primarily along the southern property boundary, east of the oak grove at the end of Horsemill Road.

Cieneba-Fallbrook rocky sandy loams (CnE2, CnG2) are included in the Cieneba series, but contain about 55% Cieneba coarse sandy loams and 40% Fallbrook sandy loams. Rock outcrops account for 5-10% of the soil surface, and large boulders cover 10% of the soil surface. These soils occur on slopes ranging from 9-65%. The Cieneba soil component consists of a 25 cm soil layer over weathered granitic rock. These soils have low fertility, moderately rapid permeability, medium to very rapid runoff, and moderate to very high erosion potential. The Fallbrook soil component consists of a thin surface

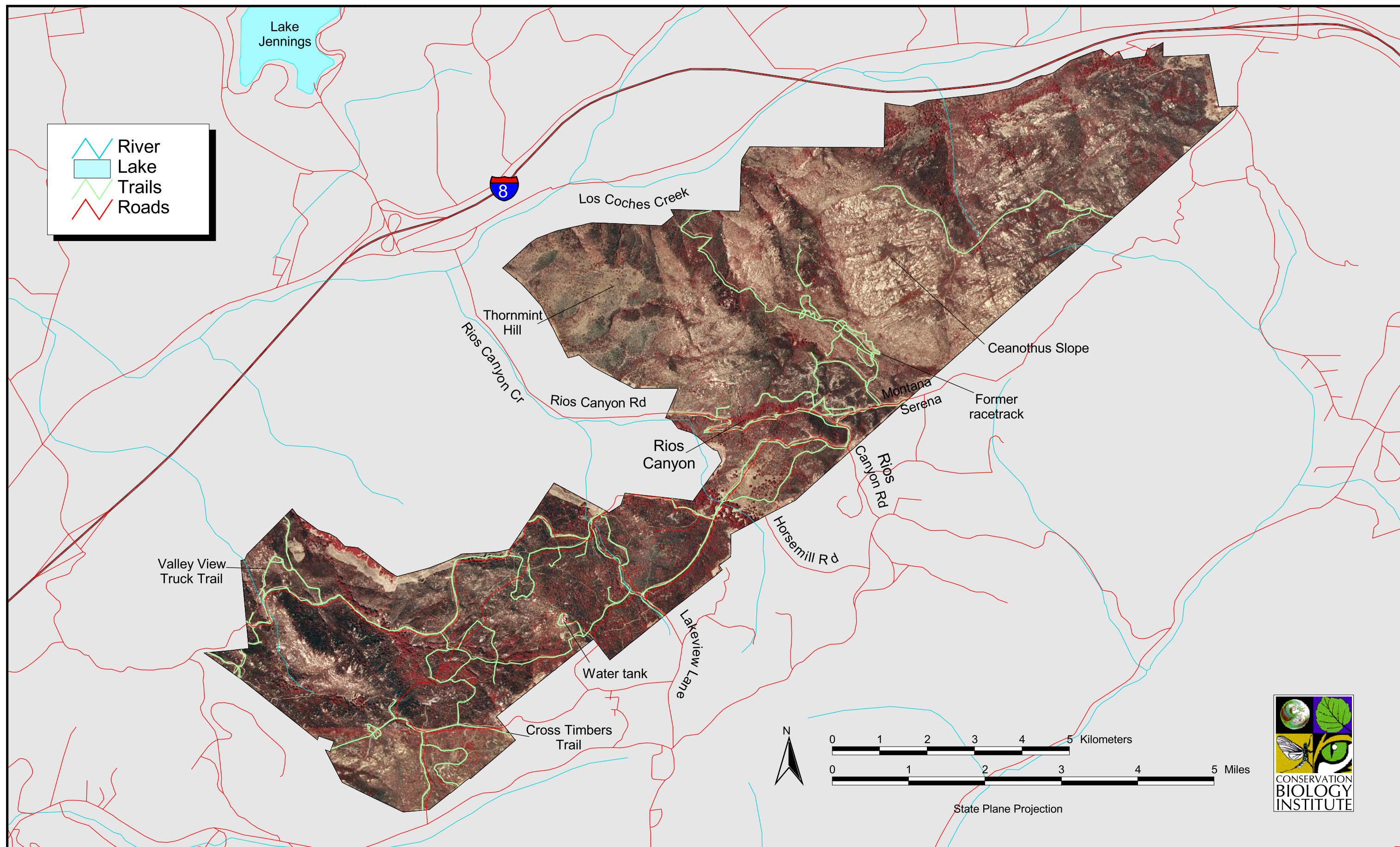


Figure 2-1. Aerial Photo Base Map of Crestridge Ecological Reserve

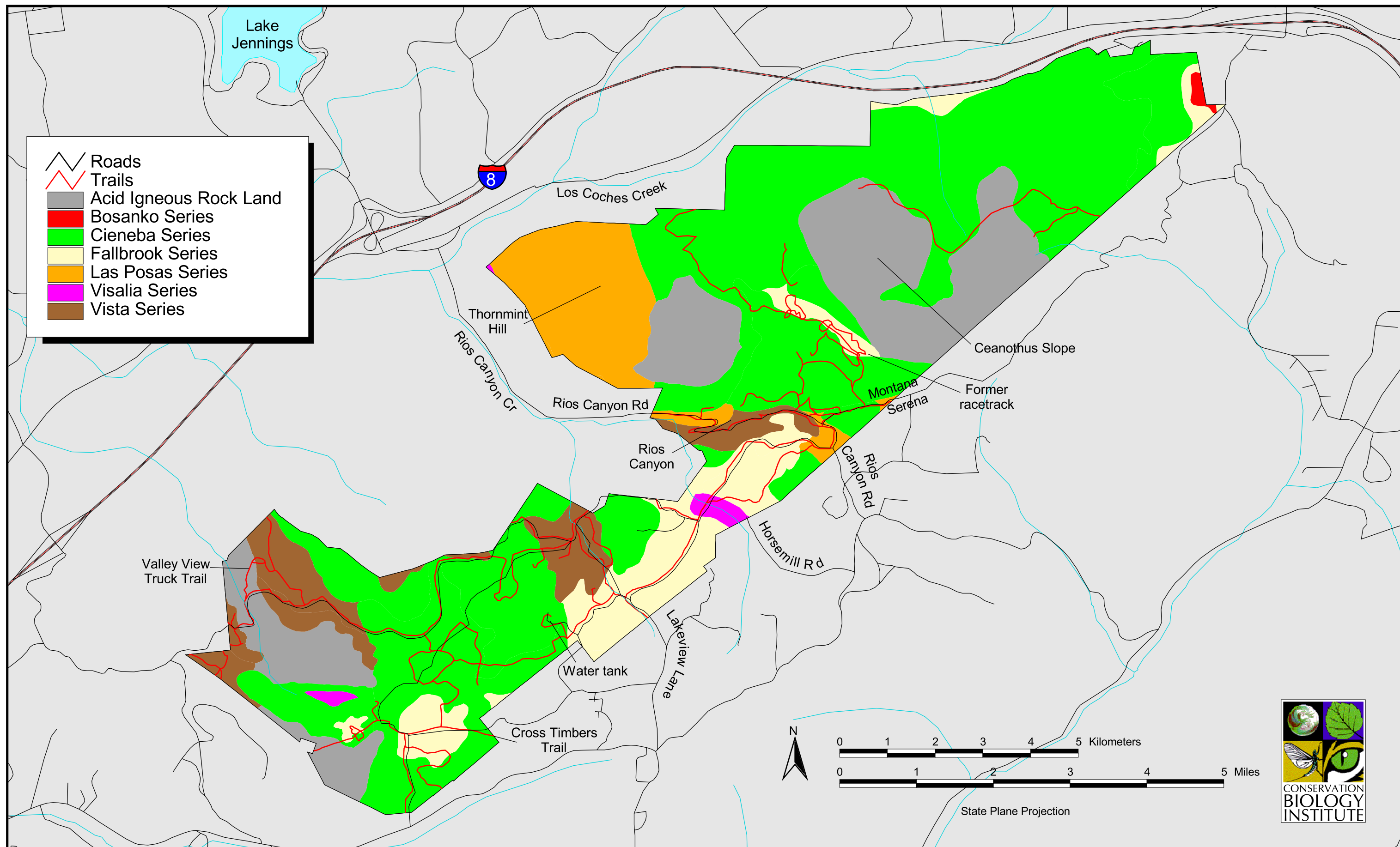


Figure 2-2. Soil Types of Crestridge Ecological Reserve



layer of sandy loam and a subsoil of sandy clay loam. These soils have medium fertility, slow to moderately slow permeability in the subsoil, medium to very rapid runoff, and moderate to very high erosion potential (USDA-SCS 1973). Cieneba-Fallbrook soils are important in the western part of the site. Cieneba-Fallbrook rocky sandy loams (CnE2) are also found in the east-central and eastern corners of the site, where they typically occur adjacent to and on lower slopes than Cieneba soils and acid igneous rock.

Fallbrook Series (FaC, FaC2, FaD2, FaE2, FeE, FeE2, FvE)

Fallbrook soils consist of well-drained, moderately deep, to deep sandy loams that formed in material weathered in place from granodiorite. These soils occur in upland areas onsite with slopes ranging from 5-30% and are typically 50-150 cm deep over rock. Fallbrook rocky sandy loams (FeE, FeE2) are further characterized by large boulders over 10-25% of the soil surface and rock outcrops over 10% of the soil surface. Soil fertility is low to medium, runoff is slow to rapid, and the erosion potential is slight to high. Fallbrook-Vista sandy loams (FvE) are about 50% Fallbrook sandy loams and 40% Vista sandy loams (USDA-SCS 1973). Fallbrook soils occur in localized patches in the western and west-central portions of the site. They are found in the grassland habitat just east of the oak grove at the end of Horsemill Road and on slopes north and northwest of this grove.

Las Posas Series (LrG, LpE2, LpD2)

The Las Posas series includes well-drained, moderately deep stony fine sandy loams with a clay subsoil. These soils occur in upland areas and form in material weathered from basic igneous rocks. The substratum of Las Posas soils is deeply weathered gabbro. Las Posas stony fine sandy loams (LrG) occur on steep slopes (30-65%) and are characterized by medium soil fertility, moderately slow subsoil permeability, rapid to very rapid runoff, and high to very high erosion potential. Las Posas fine sandy loams (LpE2) are not stony, occur on moderately steep slopes (15-30%), and are characterized by medium to rapid erosion and moderate to high erosion potential (USDA-SCS 1973). Las Posas soils are found only on south and west-facing slopes above Rios Canyon. In this location, Las Posas stony fine sandy loams (LrG) occur on upper slopes, while Las Posas fine sandy loams (LpE2) are restricted to lower slopes. This soil type is particularly significant as it is often associated with sensitive plant species.

Visalia Series (VaB, VaC)

The Visalia series includes moderately well-drained, very deep sandy loams derived from granitic alluvium. These soils occur on gently to moderately sloping portions of alluvial fans and floodplains. Visalia sandy loams onsite occur in areas of 2-9% slopes. Soil fertility is high, permeability is moderately rapid, runoff is slow to medium, and the erosion potential is slight to moderate, depending on the slope (USDA-SCS 1973). Visalia soils are restricted in distribution onsite, being found only in the oak grove at the end of Horsemill Road (VaB) and in a small patch in the western part of the site (VaC).



Vista Series (VsE, VvE, VvG)

The Vista series includes well-drained, moderately deep and deep coarse sandy loams derived from granodiorite or quartz diorite. These soils occur in upland areas with slopes ranging from 15-65%. Medium soil fertility, moderately rapid permeability, medium to rapid runoff, and a moderate to high erosion hazard potential characterize Vista coarse sandy loams (VsE). Vista rocky coarse sandy loams (VvG) are also characterized by medium soil fertility and moderately rapid permeability. In addition, these soils have rock outcrops over 10% of the soil surface and large boulders over 10-20% of the soil surface. These rocky coarse sandy loams, which occur on steeper slopes than the coarse sandy loams, are also characterized by rapid to very rapid runoff and high to very high erosion potential (USDA-SCS). Vista soils occur in relatively small patches in the western and west-central portions of the site.

Acid Igneous Rock Land (AcG)

Acid igneous rock land is a fast-draining formation that occurs on low hills and in areas of steep topography. Large boulders and rock outcrops cover 50-90% of the surface and are comprised of a variety of materials, including gabbro, basalt, or gabbro diorite. The soil layer is typically shallow and infertile and occurs over decomposed granite or basic igneous rock. Pockets of deeper soil can occur between the rocks. Runoff is rapid to very rapid, and the erosion potential is considered moderate to very high (USDA-SCS 1973). Acid igneous rock is prominent in the eastern part of the site, where it forms the steep, west-facing slopes above the former racetrack. In this location, the distribution of acid igneous rock correlates strongly with the distribution of the sensitive chaparral shrub species, Lakeside ceanothus (*Ceanothus cyaneus*). Another large outcropping of acid igneous rock occurs on south-facing slopes above Rios Canyon. Acid igneous rock also occurs on southwest-facing slopes above La Cresta Road, in the southwest portion of the site.

2.4 FIRE HISTORY

Crestridge has been subjected to repeated burning in recent times, and the frequency and interval between fires are likely reflected in the current vegetation onsite. Burn data for this site were obtained through the California Department of Forestry and Fire Protection (CDF) burn history database (CDF 2000) and cover the period from 1940 to 2000. It is possible that additional fires occurred on the reserve during this time period but were not recorded. The burn history data provide boundaries of individual fire events and the year of the event. These data do not provide information on fire intensity or season; both factors can influence post-fire vegetation recovery.

Ten fire events have been recorded at Crestridge (Figure 2-3). In general, fire frequency has been lowest in the east, highest in the west, and intermediate between the two in the central portion of the reserve. The most recent burns have occurred in the east-central portion of the reserve, followed by the northeast corner. The approximate acreages of these fires and their relative locations onsite are presented in Table 2-1.

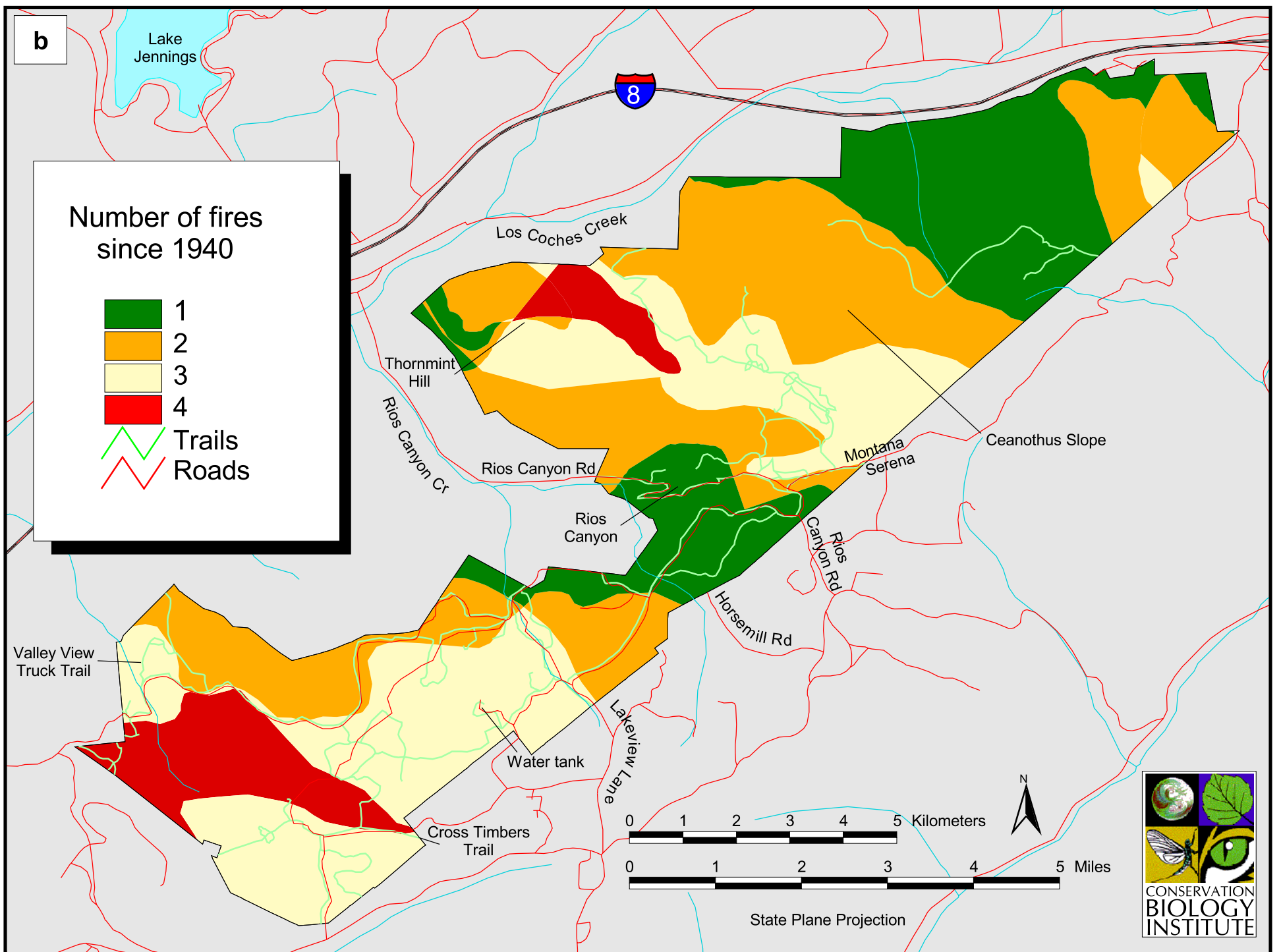
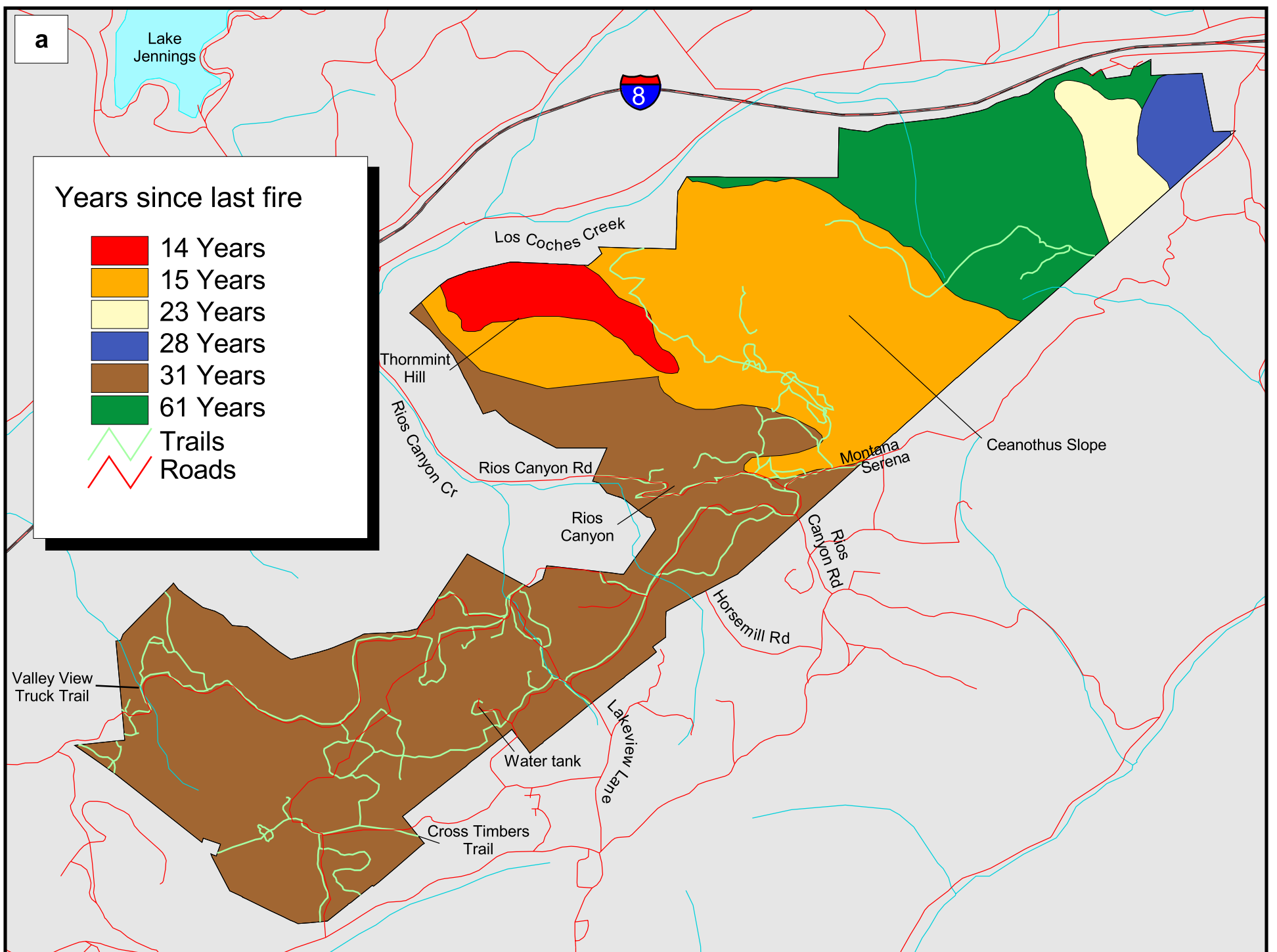


Figure 2-3a and b. Fire History of Crestridge Ecological Reserve



Table 2-1
Recorded Fire Events on Crestridge

Date of Fire	Approximate Acres Burned Onsite	General Area of Reserve
1940	1,300	Central and eastern
1950	950	Central and western
1953	650	Western
1958	350	Western corner
1965	650	Western, excluding north-facing slope along north boundary
1970	1,550	Central and western (Laguna fire)
1973	<50	Northeast corner
1978	50	Near northeast corner
1986	750	East-central
1987	80	North-central

Source: CDF fire history data (CDF 2000).

The following examples demonstrate some of the effects of fire on vegetation on Crestridge:

- The northeast portion of the reserve (e.g., north-facing slopes south of I-8) has only one recorded burn event (1940) and has experienced a fire-free interval of more than 60 years. Vegetation on these slopes consists of dense stands of southern mixed chaparral and well-developed oak woodlands.
- Steep, west-facing slopes in the east-central portion of the reserve last burned 15 years ago, whereas adjacent habitat to the east burned 61 years ago. Both areas support the sensitive plant, Lakeside ceanothus. Ceanothus on the west-facing slopes occurs in higher densities than areas to the east, but individual plants do not appear as large in this area.
- South and west-facing slopes above Rios Canyon have experienced two or three burns in the recorded time period, with the last burn occurring 14 years ago. In areas that burned twice, the interval between fires is 30 years (1940, 1970), with 31 years since the last fire. In areas that burned three times, the



fire intervals are 30 and 14 years (1940, 1970, 1986), respectively, with 15 years since the last fire. Areas on upper, west-facing slopes with the more frequent fires and fire intervals consist of coastal sage scrub with a high percentage of nonnative grasses. Conversely, lower slopes that have been subjected to less frequent fires and fire intervals consist of relatively intact sage scrub, except where they have been subjected to other disturbance factors (e.g., roads, trails, fuel breaks).

- The highest fire frequency occurs in the western portion of the reserve, where four fire events have been recorded, with 31 years since the last fire. The dominant vegetation association in these areas is chaparral. Timing and intensity of burns, in addition to fire frequency, have likely influenced the current shrub composition in this area. This area supports one of the highest concentrations onsite of the crown-sprouting species, scrub oak (*Quercus berberidifolia*).

Few areas of the Crestridge reserve show obvious evidence of recent burns. The exception is coastal sage scrub on south and west-facing slopes above Rios Canyon. In some portions of this area, shrub cover is noticeably sparser than elsewhere onsite, and the understory is dominated by nonnative weedy species. This effect appears to be magnified in areas that have experienced three (versus two) fire events.

2.5 CULTURAL FEATURES

Pursuant to the County of San Diego MSCP Framework Management Plan, all preserve lands will be inventoried for cultural resources, including historic structures, features, and landscaping, as well as historic and prehistoric archaeological sites, features, and artifacts. In addition, a management plan will be developed to provide for monitoring and protection of cultural resources. Protection and preservation of cultural resources must comply with County of San Diego ordinances (Title 4; Public Property, Division 1: Parks and Beaches, Article 2, Section 41.113) and applicable state and federal laws. The County's MSCP Framework Management Plan includes the following guidelines (County of San Diego 1997):

- A. Inventories shall include a record search at the South Coastal Information Center, San Diego State University, and an on-foot field survey, as well as pertinent archival and historical research.
- B. Specific management plans will be prepared to preserve and interpret cultural resources.
- C. All management activities within the preserve including, but not limited to, trail construction, placement of fencing and gates, and restoration of habitat will take into consideration potential impacts to cultural resources.
- D. No removal or modification of cultural resources shall occur without written approval by the Director of Parks and Recreation.



- E. Removal or disturbance of cultural resources shall not occur prior to completion of an approved mitigation program, such as data recovery or recordation. Preservation in place is the preferred mitigation measure.
- F. Condition and status of cultural resources shall be noted as part of routine monitoring activities, and remedial measures shall be taken if damage is noted.
- G. Site location information will be confidential and will be available only for qualified cultural resource staff and land managers. Site locations will not be shown on maps or divulged to the public.
- H. Interpretive programs for Native American heritage, local and regional history, and prehistory will be developed for the preserve. These may include lectures, walks, kiosks, signs, brochures, and displays, but will not include excavations, collecting of artifacts, or disclosure of confidential site locations unless an interpretive plan is developed and approved by the Director of Parks and Recreation. The plan will include supervision by a qualified archaeologist approved by the Director of Parks and Recreation.
- I. Any cultural materials collected from the preserves will be curated at a qualified curation facility.
- J. Native American tribal councils will be contacted and consulted for input.

A cultural resources management plan for Crestridge is being prepared pursuant to these guidelines. An outline for the plan is included as Appendix I.

Three prehistoric archaeological sites have been identified on the 1,173 acres of the reserve that have been surveyed for cultural resources (central and western parts of the reserve). This area was surveyed during the 1980s as part of a California Environmental Quality Act requirement when a portion of the reserve was originally proposed for development. One site (SDM-W-1121) is a village-like site consisting of extensive numbers of grinding features with interspersed midden and artifacts. The milling components include slicks, basins, and mortars, scattered over numerous large outcrops of bedrock. This site represents a rare association of bedrock milling and midden.

Site SDM-W-1122 consists of a series of milling areas with no definable midden or artifacts in association. Site SDM-W-1123 consists of a single bedrock outcrop with two milling components, including one mortar and one slick. The remainder of the property that has not been surveyed will be evaluated for archaeological resources. The BCLT has begun consultation with Native American groups to develop a fuller history of the site.

As discussed in Section 1.2.2, during World War II, the area was used by the Searchlight Battalion of soldiers. Officers' quarters and a recreation hall were built in the vicinity of the oak grove. Some of these structures remain today. The archaeological and historical land uses will be incorporated into a Cultural Resources Management Plan for the Crestridge Ecological Reserve. Examples of the types of management matrix and inventory of cultural resources that will be completed for the site are included in Appendix I.



3.0 HABITATS AND SENSITIVE SPECIES

3.1 VEGETATION COMMUNITIES

A generalized vegetation map of Crestridge was prepared in 1992 as part of the regional vegetation mapping for the MSCP. That map was generated from interpretation of 1990 aerial photographs (scale: 1" = 2000') and limited field verification. The purpose of the current vegetation mapping effort was to refine the earlier map, update vegetation changes due to fire or other disturbances, and provide a baseline for long-term monitoring comparisons.

Patricia Gordon-Reedy of the Conservation Biology Institute (CBI) and Fred Sproul, an independent biological consultant, mapped vegetation communities in spring 2000 using high resolution digital multispectral imagery captured by the Airborne Data Acquisition and Registration (ADAR) system (scale: approximately 1" = 328'). San Diego State University (SDSU) prepared the ADAR base maps used in vegetation mapping. Topography was overlain on these maps at a later date to assist in refining vegetation boundaries. Vegetation was mapped according to the modified Holland system of classification (Oberbauer 1996); using this system ensures compatibility with SANDAG's regional vegetation database. The California Natural Diversity Data Base (CNDDB) recently presented a refined list of California Terrestrial Natural Communities (CNDDB 1999) that is based on A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) and is consistent with the National Vegetation Classification System (FGDC 1997). The CNDDB encourages the use of this updated system; therefore, Holland vegetation categories have been preliminarily crosswalked to the CNDDB's updated vegetation classification, to the extent feasible.

Vegetation mapping was conducted primarily by direct observations and from vantage points using binoculars. A few areas in the eastern portion of the site were inaccessible and were mapped from the imagery alone. County of San Diego GIS staff digitized the vegetation boundaries, calculated acreages (Table 3-1), and produced a map of vegetation communities (Figure 3-1). These communities are described in Appendix A.1. A list of plant species was developed (Appendix A.2), and dominant species composition was recorded for nearly half of the vegetation polygons (Appendix A.4).

3.2 PLANT SPECIES

Patricia Gordon-Reedy of CBI and Fred Sproul, an independent biological consultant, conducted rare plant surveys in spring 2000 (see Table 3-2). Sensitive plant surveys also had been conducted on or near the Crestridge site as part of focused biological surveys for proposed development projects (e.g., RECON 1993, 1994; Sweetwater Environmental Biologists, Inc. 1994). Sensitive species surveys conducted in 2000 focused on establishing baseline conditions for management and monitoring of sensitive plant populations onsite. Toward this end, the current effort documented or verified locational information, estimated population size(s) for selected species, delineated population



boundaries, surveyed selected areas for sensitive species, and assessed threats to extant populations. Voucher specimens were not collected as part of this effort.

Table 3-1
Acreage by Vegetation Community

Vegetation Community	Acres
Coastal Sage Scrub	443.7
Southern Mixed Chaparral	1,757.8
Scrub Oak Chaparral	25.0
Nonnative (Annual) Grassland	14.8
Freshwater Seep	0.4
Coast Live Oak Riparian Woodland	7.9
Coast Live Oak Woodland	125.1
Eucalyptus Woodland	0.1
Disturbed Areas	11.8
Total	2,386.6

Sensitive plant surveys focused on locating, mapping, and estimating population size (where feasible) for MSCP covered species, i.e., those species for which special conservation and management measures are required by the MSCP take authorizations. Mapping was conducted on the ADAR imagery used for vegetation mapping. Population size was counted directly or estimated by visual observation. Other sensitive plant species were noted where observed but were not specifically surveyed for or mapped in this effort. Due to time limitations, focused sensitive plant surveys were conducted primarily in areas with a high potential to support endemic or otherwise restricted species (e.g., clay or gabbro soils; steep, rocky canyons).

Sensitive plant species detected on Crestridge are briefly described in Appendix A.3. Figure 3-2 presents locations of sensitive species mapped during this effort.

MSCP Covered Species

Two MSCP covered plant species were detected on Crestridge during the 2000 surveys: San Diego thornmint (*Acanthomintha ilicifolia*) and Lakeside ceanothus (*Ceanothus cyaneus*). Cleveland's goldenstar (*Muilla clevelandii*) was detected just offsite to the east.

Slender-pod jewelflower (*Caulanthus stenocarpus*) was also detected in one location on Crestridge. This species has undergone a taxonomic revision since originally being placed on the MSCP covered species list and is now considered a synonym of a more widespread, common taxon (*C. heterophyllus* var. *heterophyllus*). Therefore, this taxon was not mapped or recorded as a sensitive species.

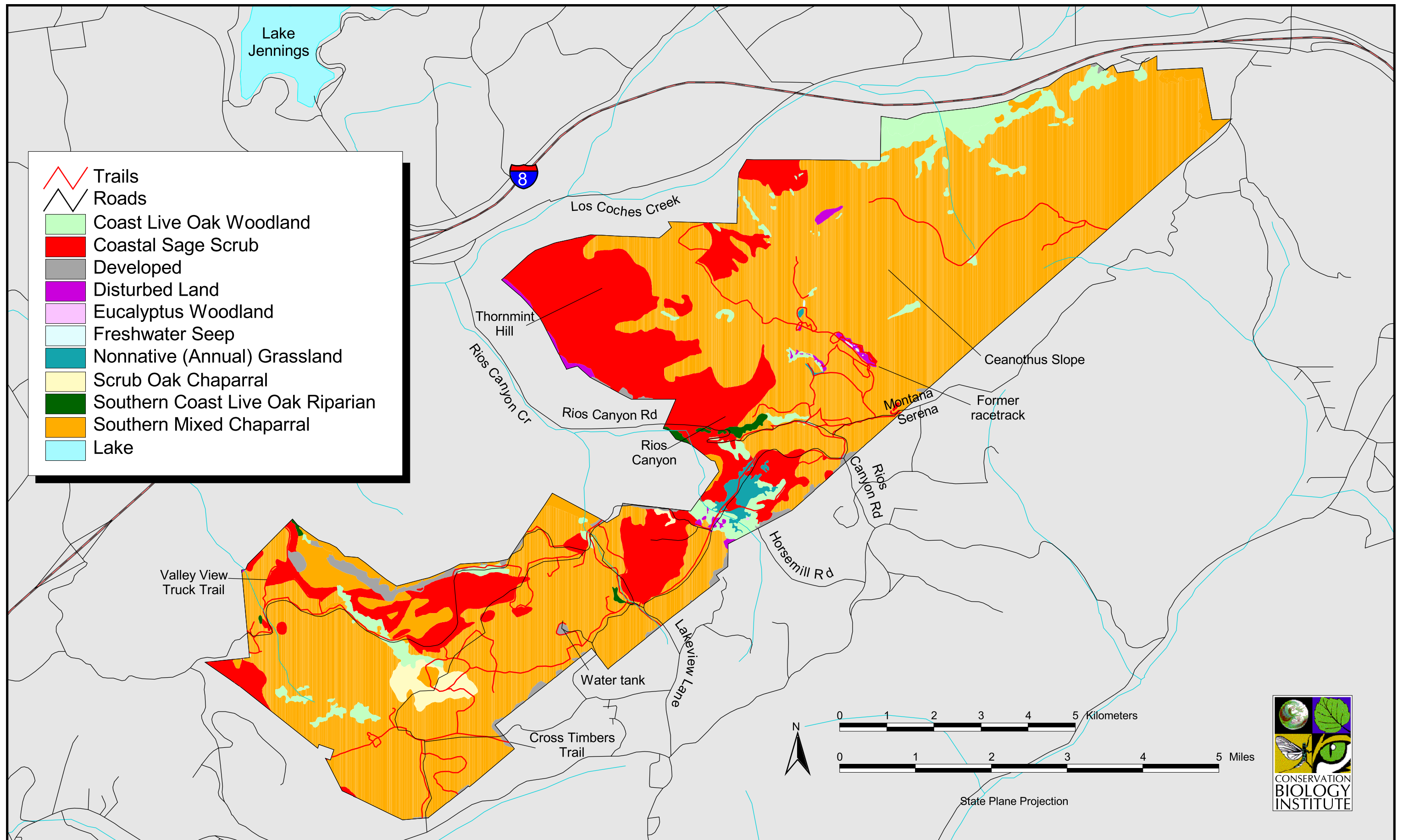


Figure 3-1. Vegetation Communities of Crestridge Ecological Reserve

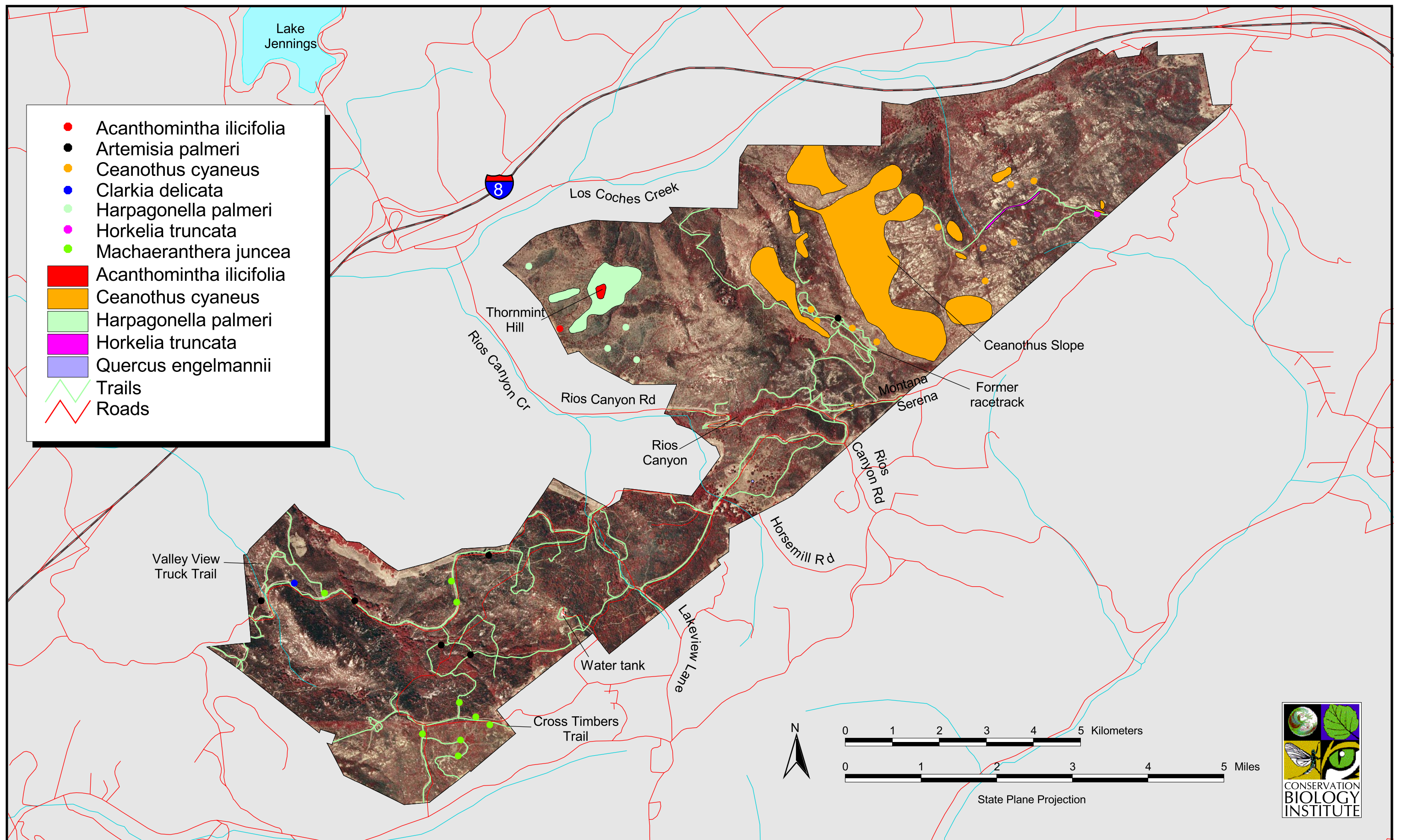


Figure 3-2. Sensitive Plants at Crestridge Ecological Reserve



Table 3-2
Vegetation Mapping and Sensitive Plant Survey Schedule

Survey Personnel	Survey Date	Survey Type	Survey Location
Patricia Gordon-Reedy Fred Sproul	4/17/00	Vegetation Mapping	Central (vicinity of Padre Dam water tower)
Patricia Gordon-Reedy Fred Sproul	4/19/00	Vegetation Mapping/ Sensitive Plants	Eastern (north-facing slopes south of I-8); central (vicinity of Horsemill Rd, slopes to east)
Patricia Gordon-Reedy Fred Sproul	4/25/00	Vegetation Mapping/ Sensitive Plants	Central and western (from water tower west to Wal-Mart overlook)
Patricia Gordon-Reedy Fred Sproul	4/26/00	Vegetation Mapping/ Sensitive Plants	Central and eastern (vicinity of Horsemill Rd and slopes to east, vicinity of 'racetrack'); western (slopes along La Cresta Drive, Las Coches Road, and east of Wal-Mart)
Patricia Gordon-Reedy Fred Sproul	4/28/00	Vegetation Mapping/ Sensitive Plants	Eastern (north-facing slopes south of I-8); central (slopes east of Rios Canyon Rd)
Fred Sproul	4/30/00	Vegetation Mapping/ Sensitive Plants	Eastern (from Dunbar Lane along southeast boundary to 'racetrack' overlook)
Patricia Gordon-Reedy Fred Sproul	5/8/00	Vegetation Mapping/ Sensitive Plants	Central (near oak grove); eastern (north of 'racetrack')
Patricia Gordon-Reedy Fred Sproul	5/9/00	Vegetation Mapping/ Sensitive Plants	Central (slopes east of Rios Canyon Rd)
Patricia Gordon-Reedy Fred Sproul	5/10/00	Vegetation Mapping/ Sensitive Plants	Central (slopes east of Rios Canyon Rd); western (rechecked selected areas west of the water tower)
Patricia Gordon-Reedy Fred Sproul	5/19/00	Sensitive Plants	Eastern (from Dunbar Lane to slopes overlooking I-8 to the north and 'racetrack' to the west)



3.3 ANIMAL SPECIES

Klein-Edwards Professional Services performed general and focused wildlife species surveys in and immediately adjacent to the Crestridge Ecological Reserve in 2000 and 2001. The purpose of these surveys was to identify invertebrate and vertebrate wildlife species that occur and utilize the reserve, whether as occasional visitors, as regular seasonal migrants, or as permanent residents. Observations and notes were taken on their activities onsite, including records of breeding or nesting success. These include federally and state listed wildlife species, as well as MSCP covered species, i.e., those species for which special conservation and management measures are required by the MSCP take authorizations. Repeated censuses of birds were initiated and performed along three specific routes within the reserve in an attempt to identify species diversity and determine relative abundance (Appendix F.5). The locations of certain sensitive and otherwise noteworthy wildlife species were mapped, and, in some cases, the species themselves were photographed. Wildlife species were identified in the field by sight, calls, tracks, scat, or other signs (Appendix B.1 and B.2).

Sensitive wildlife species observed and recorded within the boundaries of the Crestridge Ecological Reserve are briefly described in Appendix B.3. Figure 3-3 presents locations of sensitive species recorded onsite during these survey efforts. Field notes are included in Appendix B.4.

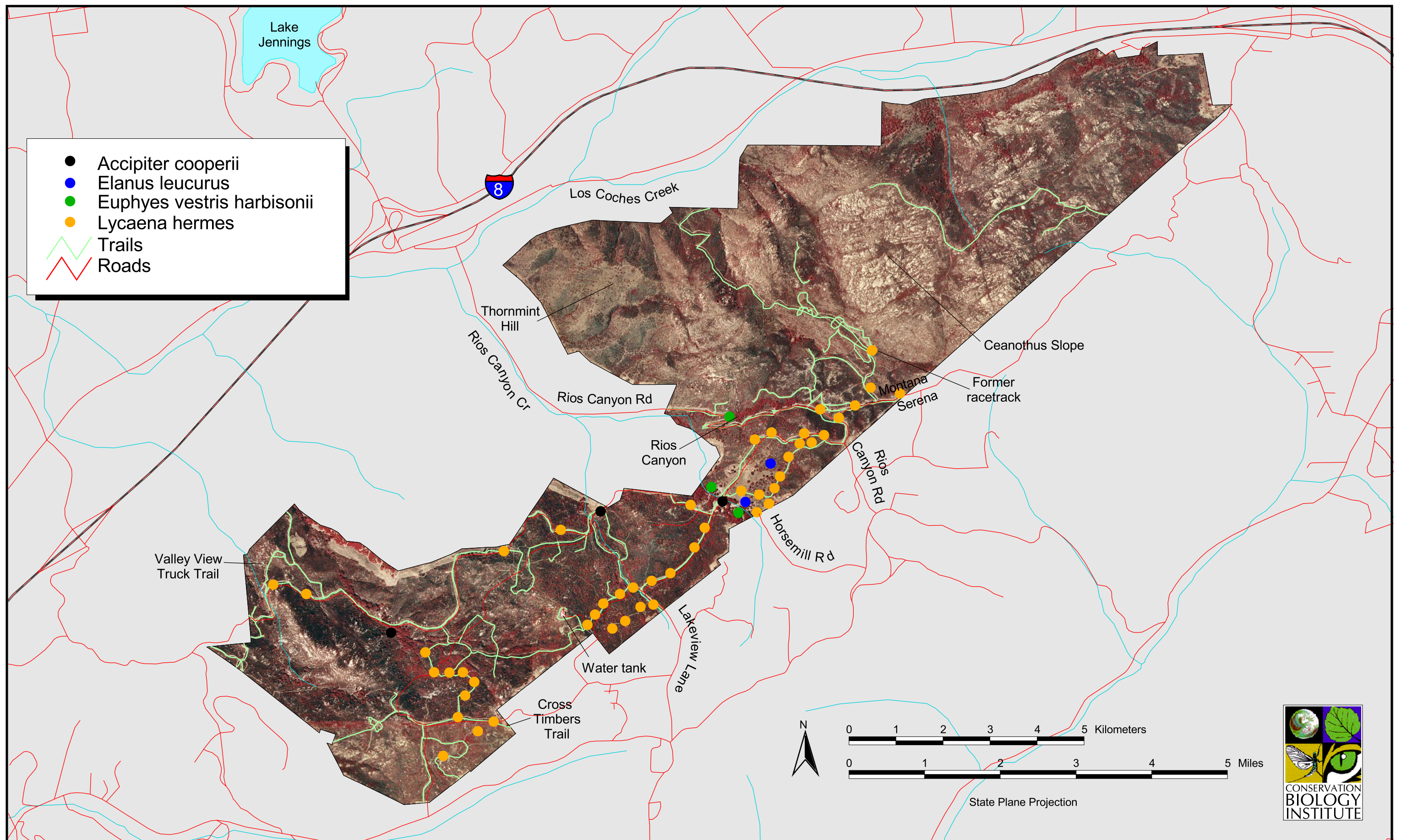


Figure 3-3. Sensitive Animals at Crestridge Ecological Reserve



4.0 CONSERVATION MANAGEMENT GOALS AND OBJECTIVES

4.1 THREATS AND POTENTIAL IMPACTS

The Crestridge Ecological Reserve is a large island of habitat almost entirely surrounded by residential development. It is located at the eastern edge of urban development between conserved MSCP lands to the north of Interstate 8 (I-8) and conserved MSCP lands to the south of I-8 and may function as a habitat linkage between these lands and conserved open space to the east. Thus, the primary challenge for management will be to maintain the current biodiversity of the reserve by containing edge effects from surrounding development and ensuring that the land remains as a viable habitat linkage.

Table 4-1 identifies the primary threats to habitats and sensitive species at Crestridge and the impacts that are expected to result from these threats. The most significant threats currently are caused by unauthorized offroad vehicles, resulting in trampling of habitat and soils, increased erosion, habitat loss, and roadkill. Over the long term, an altered fire regime, either through increased fire frequency or fire suppression, may reduce seral stages of vegetation communities, reduce species richness and biodiversity, and reduce the numbers and species of native pollinators. In addition, adjacent residences serve as point sources for exotic species introductions and are the source of irrigation runoff and altered hydrology. Roads and human activity in the area may ultimately result in displacement of corridors for wildlife.

This management plan is designed to address these threats and minimize potential impacts. Implementation of the management plan should maintain or enhance ecological "functions" of individual areas of the reserve and the reserve as a whole. While some of the biological goals are ecosystem or habitat-based, many of the objectives are specific to rare and endangered species to satisfy MSCP species-specific permit conditions. The MSCP covered species, as well as some other sensitive species onsite, are recommended for long-term monitoring to evaluate the effectiveness of management actions.

The following goals and objectives are intended to guide all management decisions on the Crestridge Ecological Reserve. They are derived from Table 3-5 of the MSCP Plan (Ogden 1998) as well as the Biological Goals, Standards, and Guidelines in the MSCP Resource Document (Ogden 1995). These goals and objectives are divided into Biological, Public Use, and Facility Maintenance Elements and form the basis for the management and monitoring actions described in Section 5. A biological goal is the statement of intended long-range results of management based on the feasibility of maintaining, enhancing, or restoring species populations and habitat. A public use goal is the statement of the desired type and level of public use compatible with the biological goals. Objectives are statements of the intended results of management actions that promote the biological, public use, or facility goals on the reserve. The management actions (Section 5) are intended to implement the objectives (CDFG 2001).



Table 4-1
Analysis of Threats

THREATS	IMPACTS
1. Public Use <ul style="list-style-type: none"> • Offroad vehicles* • Noise from offroad vehicles* • Equestrian use • Hiking 	<ul style="list-style-type: none"> • Habitat fragmentation (e.g., illegal trails)* • Habitat loss* • Trampling of habitat and soils* • Increased erosion* • Roadkill (e.g., lizards in trails)* • Reduction in disturbance-sensitive species • Exotic species dispersal • Littering and trash dumping • Reduction in native species richness and diversity • Reduction in numbers and species richness of native pollinators
2. Urban Edge <ul style="list-style-type: none"> • Fuelbreaks* • Landscaping* • Irrigation runoff • Noise • Lighting • Pets and children • Herbicides and pesticides 	<ul style="list-style-type: none"> • Altered soil moisture • Increased erosion • Point sources for exotic species introductions* • Reduction in disturbance-sensitive species • Increased exotic ant species and altered predator prey relationships • Littering and trash dumping* • Reduction in native species richness and biodiversity • Reduction in numbers and species richness of native pollinators
3. Habitat Fragmentation <ul style="list-style-type: none"> • Roads (onsite and offsite)* • Housing 	<ul style="list-style-type: none"> • Loss of habitat* • Displacement of wildlife corridors* • Reduction in area-dependent species • Altered predator prey relationships
4. Altered Fire Regime <ul style="list-style-type: none"> • Fire suppression* • Increased fire frequency 	<ul style="list-style-type: none"> • Reduced seral stage associates* • Reduction in native species richness and diversity, habitat conversion • Reduction in numbers and species richness of native pollinators

*Most significant threats and impacts (preliminary assessment).



4.2 BIOLOGICAL ELEMENTS

Goal 1: Maintain populations of MSCP covered species and other sensitive resources.

Objective 1 – Protect and maintain populations of MSCP covered plants and other sensitive plants (Lakeside ceanothus, San Diego thornmint, Cleveland's goldenstar, Engelmann oak). The primary threats to the conservation of sensitive plant species on Crestridge are invasive weed species and trampling and erosion caused by offroad vehicles. An altered fire regime, either through fire suppression or increased fire frequency, is a potential threat without appropriate fire management. For example, prescribed fire could be used to manage for a diverse age structure of Lakeside ceanothus to ensure reproduction and persistence of this species. In addition, under a regime of fire suppression, coastal sage scrub and chaparral habitats will become dense and closed and may reduce habitat for species such as thornmint.

Eliminating these threats will allow plant populations to complete their life cycles and will facilitate the persistence of these populations in the reserve. Monitoring the abundance of nonnative plants, followed by appropriate control methods, will be required, especially in areas where covered plant populations occur. In addition to eliminating threats, San Diego thornmint and Lakeside ceanothus populations should be augmented through seed collection and restoration to ensure that the genetic diversity of the onsite populations is not lost as a result of fire or other catastrophic events.

Objective 2 – Protect and maintain habitat (including host plants and nectar plants) for the Hermes copper, Harbison's dun skipper, and Quino checkerspot butterfly and pollinators of covered plant species. Many of the stressors that affect sensitive plants are also a threat to rare butterflies and other pollinators, particularly habitat loss (e.g., due to offroad vehicles) and fire suppression. It is unclear whether nonnative annual plant species may reduce habitat quality for the Quino checkerspot, e.g., by crowding out areas of *Plantago erecta*. Periodic fire may be desirable to reduce populations of nonnative species or to manage for a particular vegetation structure or composition. Prescribed burns should be phased to consider locations of the Hermes copper population onsite, i.e., to allow replacement habitat to regenerate without destroying the population.

Objective 3 – Protect and maintain coastal sage scrub breeding habitat for the California gnatcatcher and other sage scrub species (e.g., San Diego horned lizard, orange-throated whiptail, rufous-crowned sparrow). The coastal sage scrub habitat on Crestridge is mature, dense, and closed and currently does not appear to support California gnatcatchers, although gnatcatchers have been observed on the reserve in previous years and are known to occur west of the reserve (C. Edwards pers. comm.). Fire has been excluded from the central and western portions of the site, where coastal sage scrub occurs, for 14-31 years. Habitat quality for the gnatcatcher and other coastal sage scrub species would likely be enhanced through phased prescribed burns in these areas. Noise and habitat loss from offroad vehicles are an additional threat to these species. Offroad



vehicles and mountain bikes are a major hazard to lizards sunning in the dirt roads. The western patches of coastal sage scrub on the reserve are part of the Lakeside archipelago, a regional linkage comprised of patches of coastal sage scrub north and south of I-8. Maintenance of this coastal sage scrub and that in the interior of the reserve will help to facilitate multi-generational dispersal of gnatcatchers and rufous-crowned sparrows between the El Capitan coastal sage scrub north of Crestridge and scrub in the MSCP area south of Crestridge.

Objective 4 – Protect and maintain nesting and foraging habitat for MSCP-covered raptors and other raptor species. The oak woodlands on the northern and southern boundaries of the site and in Rios Canyon provide good nesting habitat for Cooper's hawks, red-shouldered hawks, black-shouldered kites, and other raptors. Nest disturbance during the breeding season is the primary threat to raptors at Crestridge. Seasonal closure of trails in areas with active raptor nests would enhance raptor nesting success in the area. Opening of the coastal sage scrub and chaparral communities through prescribed fire may enhance the habitat for raptor foraging.

Goal 2: Document the status of MSCP covered species and other sensitive resources in the reserve to help prioritize management actions and to assess the effectiveness of management actions.

Objective 1 – Monitor the populations of MSCP covered species and other sensitive species in the reserve and responses to management actions. Locations of covered species and other sensitive resources should be checked at least annually to document their continued conservation, track population status, identify potential threats, develop management recommendations, and gauge the effectiveness of management actions.

Goal 3: Monitor habitats and ecological processes to aid in identifying threats to ecosystem integrity or health and to guide adaptive management of the reserve.

Objective 1 – Monitor habitats to evaluate the physical condition of the habitat and any changes resulting from management measures and other factors. Reserve managers should be familiar with the structure and age classes of vegetation communities, and look for signs of senescence, disease, and pest infestations and lack of recruitment or reproduction. Managers should also evaluate recovery of the habitats after fire, fuel management, exotic plant control, and recreational uses.

Objective 2 – Monitor key ecological processes to provide an appropriate context for interpreting biological changes and responses to management measures. The extent, intensity, and periodicity of burns affects the structure and age classes of vegetation communities and can provide some insights into the need for fire management. A fire management plan should identify fire management units to facilitate maintenance of public safety and ecological function. Similarly, temperature and rainfall amounts and timing often have dramatic effects on species reproduction. The reserve manager should



use these data to interpret trends in species' population status. Stream hydrology data may also be used to evaluate the relationship between vegetation structure, species use, and flow patterns.

Objective 3 – Evaluate offsite areas as connection routes to Crestridge for large mammals, and ensure there are no constraints to animal movement within the reserve. The Crestridge Ecological Reserve is almost a habitat island that is nearly surrounded by roads and residential development. To maintain the integrity of the reserve, it is critical that it is connected to other habitat areas and that adjacent or new development does not interfere with wildlife movement in the area of the reserve. CBI is currently investigating potential wildlife movement corridors to Crestridge from adjacent areas as part of a separate CDFG grant.

Objective 4 – Monitor the indirect effects of adjacent land uses. Habitats on the edges of the reserve are susceptible to indirect impacts from nonnative landscaping that may invade the reserve, nonnative species such as house rats, house mice, and Argentine ants, and domestic pets that may prey on or compete with native species. The reserve edge also may be impacted by lights directed into the reserve or by persistent loud noises. The boundary of the reserve should be checked periodically for intrusive impacts and to identify and implement potential remedial actions. Fuel breaks may also serve as a substrate for invasive plants and should be monitored for new invasions.

Objective 5 – Monitor urban runoff within the reserve. Irrigation runoff from residential areas bordering the reserve may result in increased erosion and deposition of new substrates for colonization by weedy species (Hobbs and Atkins 1988; Saunders et al. 1991). Increased surface flows may also facilitate the invasion of exotic species, such as Argentine ants (Holway 1998). Increased surface moisture or underground seepage that results in increased soil moisture may also promote exotic plant establishment, facilitate invasion by Argentine ants, alter seed bank characteristics, and modify habitat for ground-dwelling fauna (Alberts et al. 1993; McIntyre and Lavorel 1994; Amor and Stevens 1976; Suarez et al. 1998; Saunders et al. 1991). Depending on the timing of any increased water supply, urban runoff may result in conditions that promote nonnative, exotic plant species (e.g., tamarisk) at the expense of native riparian tree species and may promote downcutting of streambeds. Runoff may also include pesticides that may be harmful to riparian resources.

Goal 4: Enhance and restore degraded habitats in the reserve.

Objective 1 – Implement habitat enhancement and restoration projects. Habitat degradation as a result of human activity and invasion by exotic species is a threat to habitat value for a variety of plant and animal species. Various habitat enhancement and restoration projects could be conducted on the reserve. As appropriate, develop specific enhancement or restoration plans for review and approval by the wildlife agencies. The wet meadow near the former racetrack area is a good candidate for enhancement once the offroad vehicle use is eliminated. There may also be opportunity to enhance habitat for



San Diego thornmint by reseeding areas where exotic plants have been removed. Recently burned areas could be reseeded with host and nectar plants for Quino checkerspot, if Crestridge is selected as a potential reintroduction site for the species.

Objective 2 – Abandon unnecessary trails and roads through the reserve to allow rehabilitation. Trails and other areas disturbed by offroad vehicle activity may promote increased runoff and soil erosion and may provide substrate for establishment of exotic species. These areas also provide access to otherwise undisturbed areas. Closing these areas to further human disturbance, along with actions to facilitate restoration, would improve the quality of the habitat for wildlife.

Objective 3 – Investigate the use of fire to enhance the quality of degraded vegetation communities, maintain a diverse age structure, and maintain and restore biotic and abiotic processes. Fire suppression for extended periods can lead to inappropriate age structure of the vegetation community. The fire management strategy at Crestridge should include reducing unplanned fire events through the use of maintained fire breaks and strategic prescribed burns, and experimenting with fire as part of a restoration process in currently degraded sage scrub and grassland habitats.

Objective 4 – Monitor the presence and extent of exotic species in the reserve and responses to management actions. Locations of exotic plants and animals should be checked at least annually to evaluate population size and potential threats to nearby resources and to gauge the effectiveness of management actions. Populations should be prioritized for management actions to maximize cost-effectiveness.

Goal 5: Implement research projects to address management issues.

Objective 1 – Facilitate the implementation of focused research projects. Effective management will ultimately be hindered by a lack of understanding of the basic biology of the resources and their responses to stressors and potential management actions. Implement focused monitoring and research projects that provide management-related information. Encourage and facilitate university-level research to address fundamental biological questions and unknowns.

Goal 6: Develop and coordinate a centralized data management system.

Objective 1 – Develop a centralized data management system for use in reserve management efforts. Effective management of the reserve will require a data management system that allows managers to store and query information collected over time. The data management system must support both spatial data and numerical data collected as part of management and monitoring efforts. This data management system should be used to track the responses of resources to management actions, provide summary reports to the wildlife agencies, and evaluate trends in population status of various species.



Objective 2 – Coordinate land management and resource allocations with other conserved areas. Effective management of the Crestridge Ecological Reserve will require an understanding of resource status and management needs in all parts of the MSCP preserve system. The centralized data management system must allow comparison of resource status and management activities among various portions of the MSCP preserve.

4.3 PUBLIC USE ELEMENTS

Goal 1: Enhance public appreciation of the value of the Crestridge reserve and conservation issues in general, consistent with biological objectives of the ecological reserve.

Objective 1 – Provide clearly marked public access points to the reserve and prohibit access at other locations. Public access should be controlled such that biological functions can be maintained throughout the reserve and public use impacts can be contained and monitored.

Objective 2 – Provide clearly identified trails for public use and safety. Restricting the locations of public use will assist in maintaining quality habitat for wildlife. Hikers and horses inadvertently disperse weed seeds, and areas of bare dirt provide substrate for establishment of exotic species.

Objective 3 – Identify cultural resources in the reserve and incorporate these resources into management objectives for biological resources. This management plan currently does not address cultural resources. Future work will be dedicated to researching and protecting the cultural history of the reserve.

Objective 4 – Identify appropriate passive uses of the reserve, and prohibit inappropriate recreational uses. Encourage uses that take advantage of the natural and scenic beauty of the reserve and that facilitate enjoyment of a wilderness experience. The California Fish and Game Commission identifies appropriate uses and restrictions for Ecological Reserves (Title 14, Chapter 11, Section 630). These include the following:

1. Protection of resources.
2. No commercial fishing, except by permit; limited to angling from shore.
3. No collecting, except by permit.
4. No motor vehicles, except on designated access roads and parking areas.
5. No swimming or wading, except by permit.
6. No boating, except by permit.
7. Hiking and riding on designated trails only.
8. No firearms, except by law enforcement personnel.
9. Ejection for violation of regulations.
10. Public entry can be restricted at the discretion of the CDFG.
11. No release or introduction of species, unless authorized by the commission.
12. No feeding of wildlife.



13. No pesticides, unless authorized by the commission.
14. No littering.
15. No grazing.
16. No falconry.
17. No aircraft, except by permit.
18. No pets, unless retained on a leash of less than 10 feet (3 m).
19. No fireworks or fires, except for management purposes.
20. No camping.
21. No vandalism.

Goal 2: Develop a public outreach and education program.

Objective 1 – Strengthen partnerships with other environmental and educational organizations to develop a public relations plan and public outreach and education program. Identify public agencies, nonprofit organizations, and educational groups that could work together to develop regional and local programs for public education.

Objective 2 – Encourage community involvement. Educating and involving the local residents surrounding the reserve will enhance the public's appreciation of conservation goals while facilitating appropriate public uses.

Objective 3 – Develop an education curriculum and stewardship program for high school students. Developing a sense of stewardship in young people through natural history education is critical to the success and persistence of the Crestridge Ecological Reserve and other MSCP preserves.

4.4 FACILITY MAINTENANCE ELEMENTS

Goal 1: Maintain facilities on the reserve to ensure that biological resource values are maintained and management activities are facilitated.

Objective 1 – Maintain facilities and infrastructure on the reserve. The existing infrastructure of gates and roads serves to restrict public access and allow fire suppression response. Maintenance of gates, fences, and roads will allow these functions to continue. Removal of derelict structures on the reserve will discourage use by trespassers and enhance the aesthetic values of the reserve.

Goal 2: Establish facilities to enhance the appreciation of and to encourage research on the natural resources of the reserve.

Objective 1 – Develop a nature interpretive center to relate the biological and educational goals of the reserve to the community and the public in general.

Objective 2 – Develop an educational laboratory to provide hands-on learning opportunities and a forum for community stewardship.



Goal 3: Remove litter and trash that may attract nonnative animals and reduce the aesthetic values of the reserve.

Objective 1 – Establish responsibilities for removing trash from the site and for regular garbage collection at specific locations.



5.0 MANAGEMENT AND MONITORING IMPLEMENTATION

The CDFG and BCLT are developing a Management Agreement that outlines roles and responsibilities for management and monitoring at Crestridge. They are also preparing a lease agreement that will provide the locations and specifications for future facilities on the reserve. The CDFG will continue to be responsible for enforcing uses and issuing citations at the reserve.

Recommended management and monitoring actions to achieve the goals and objectives in Section 4.0 are listed below. These are summarized in Appendix H. Management and monitoring actions considered a priority for implementation during 2002-2003 are listed in Section 6.0.

5.1 MANAGEMENT

5.1.1 Exotic Plant Control

The following exotic plant species are of primary concern for control or eradication. Some locations were mapped during the year 2000 surveys (Figure 5-1). Other exotic plant species observed onsite, but not mapped, are included in Appendix C.1. The primary objective in exotic plant control at Crestridge should be to monitor and control the abundance of invasive plant species, particularly around populations of sensitive plants and in riparian areas, using mechanical or chemical methods or prescribed burns. Appendix C provides details of the biology, threats, and management options for selected exotic plant species. Continued monitoring of exotic species populations, abundance, and locations will assist in determining which management options are most appropriate. CDFG will develop detailed measures for physical, biological, and chemical control; such measures are described further in *Invasive Plants of California's Wildlands* (Bossard et al. 2000).

1. **Eradicate tamarisk (*Tamarix* sp.) from Rios Canyon and other drainages.** The current infestation on the reserve is small and occurs within primarily native habitat. For these reasons, either digging or pulling plants or cutting the stem(s) and applying herbicide will best accomplish tamarisk control on Crestridge. Re-treat any resprouts within 4 to 12 months of the initial treatment (Carpenter 1998). Large mechanized equipment that may disturb native habitat should not be used.
2. **Eradicate pampas grass (*Cortaderia selloana*) from the reserve.** During the 2000 surveys, pampas grass was noted in only one location in the eastern portion of the Crestridge reserve, adjacent to a trail. This small infestation consisted of only a few plants. This species also occurs offsite, where it has been planted as a landscaping ornamental in adjacent residential developments. Although the small stand of pampas grass at Crestridge does not currently pose a major threat to



- native vegetation or sensitive plant species, it has the potential to expand its distribution due to its seed dispersal mechanism, presence of a seed propagule source in the vicinity, and the network of roads, trails, and other bare soil areas on the reserve. Pampas grass has been effectively controlled through both physical and chemical methods (see Appendix C). Flowering stalks should be bagged prior to removal to prevent seed dispersal.
3. **Remove young eucalyptus (*Eucalyptus* sp.) trees from the drainages.** Large, mature eucalyptus trees are not recommended for removal at this time because they appear to provide perches for red-shouldered hawks and other raptors. However, evidence of recruitment from these trees should be monitored, and the young saplings or suckers should be removed. Eucalyptus trees can be removed through either physical or chemical methods or a combination of both (Appendix C).
 4. **Eradicate African fountaingrass (*Pennisetum setaceum*) on the slopes above Rios Canyon and along roads within the reserve.** Small stands of African fountaingrass may be a threat to populations of sensitive plant species (e.g., San Diego thornmint, small-flowered morning-glory, Palmer's grappling hook). African fountaingrass also occurs offsite, with extensive stands observed on southwest-facing slopes above La Cresta Road and along La Cresta Boulevard. Hand removal would be an appropriate management tool for most stands of fountaingrass on Crestridge and would likely need to be used in conjunction with native plant revegetation to reduce subsequent colonization opportunities for the fountaingrass. Because of the potential for seed longevity in the soil and the offsite propagule sources in proximity to the reserve, long-term monitoring of the Crestridge reserve will be required to ensure that new infestations are controlled at an early stage. See Appendix C for a discussion of the large stand of fountaingrass above Flinn Springs County Park.
 5. **Manage tocalote (*Centaurea melitensis*) at levels that do not threaten sensitive species and their habitat, especially on the south and west-facing slopes above Rios Canyon (Thornmint Hill) and along the fuelbreak at the bottom of the slope.** Tocalote is best controlled through monitoring and spot eradication of plants in critical areas prior to widespread infestations. The use of herbicides (e.g., RoundUp Pro) has been highly effective in these cases, especially along trails. A 1.5-2% solution of RoundUp Pro is recommended for the weeds on Thornmint Hill (M. Kelly pers. comm.). Chemical control would be more efficient than mechanical control in this area, and there will usually be less resprouting using herbicide than with mechanical cutting. Where chemical control is not possible (e.g., using volunteers who are not trained in the safe use of herbicides), weed whips, brush cutters, loppers, hoes, etc. can be used to cut the weed as close to the ground as possible. As some plants will resprout from the below-ground root and many of these plants have seeds that germinate over a long period of time, control efforts should be done on a weekly to every other week

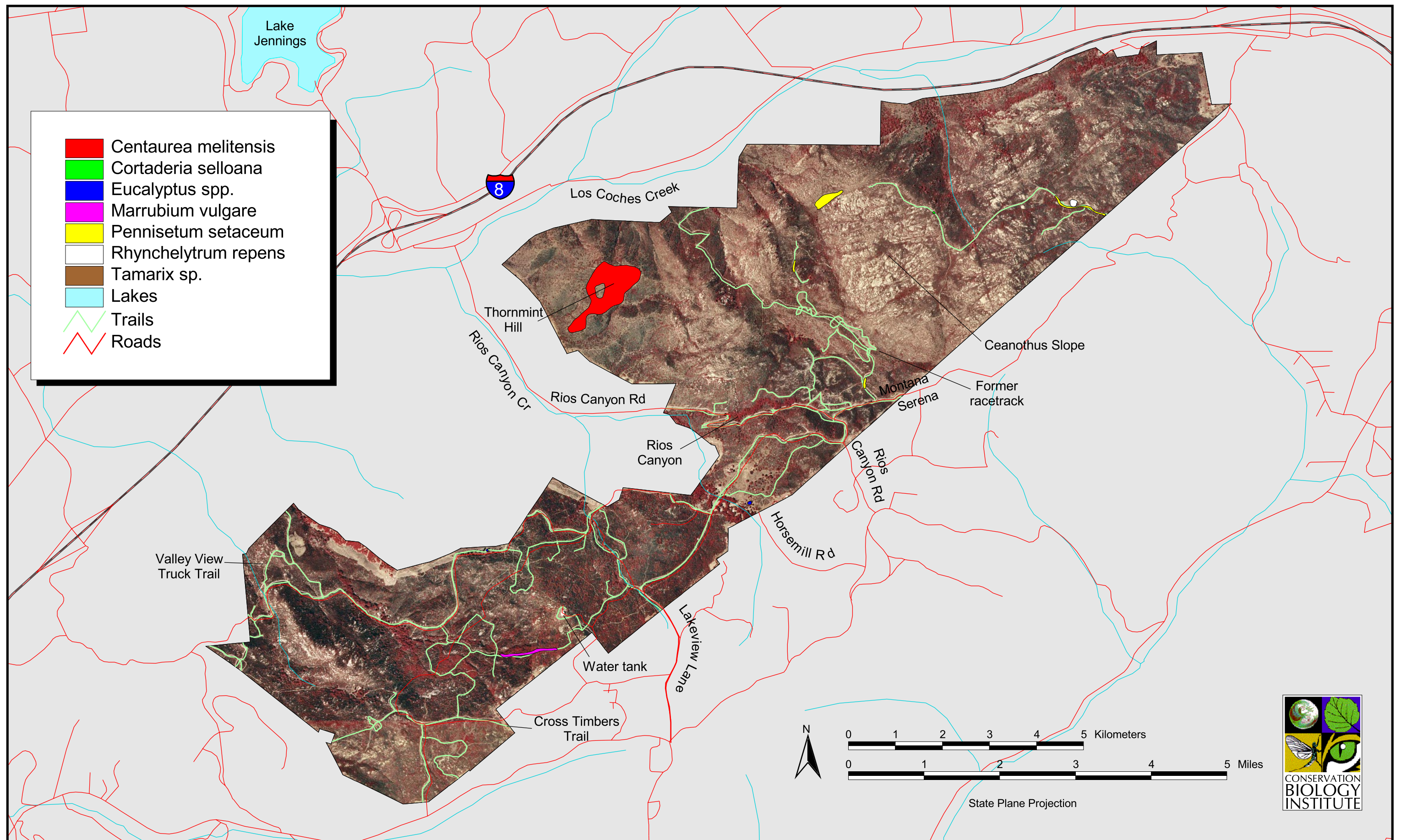


Figure 5-1. Exotic Plants at Crestridge Ecological Reserve



basis until they show signs of forming buds. During the blooming season, weekly visits are important to prevent any plants from setting seed.

Mowing is probably more appropriate along the base of the west-facing slope adjacent to Rios Elementary School. Plants should be cut below the lowest branches, and cutting should occur when the population has just started to bloom. If plants are mowed too early, regrowth, flowering, and seed production may occur.

6. **Manage purple falsebrome (*Brachypodium distachyon*) on the upper west and southwest-facing slopes above Rios Canyon at levels that do not threaten San Diego thornmint.** At this time, mowing along the base of the slope adjacent to Rios Elementary School and spot-treating with herbicide along the trail leading up to the thornmint population should be management priorities. Little information is available on control of purple falsebrome in wildland areas. Use of Fusillade, a grass-selective herbicide, should be tried (T. Smith pers. comm.), although this species has shown some resistance to herbicides in Mediterranean regions (Heap 2000). A fire management plan that reduces fire frequency in this area and allows for shrub regeneration may also be effective for controlling purple falsebrome.
7. **Remove individual horehound (*Marrubium vulgare*) plants and restore and manage habitat conditions to minimize the potential for new infestations.** Horehound was noted in only one location during the 2000 surveys: along an east-west oriented trail leading from the Padre Dam water tower to the western portion of the site. Equestrian use is common along this trail, and horehound has likely been spread through this area by horses. Its presence is indicative of localized, degraded conditions. Horehound can be controlled through both mechanical and chemical methods (Appendix C).
8. **Remove individual plants of Natal grass (*Rhynchelytrum repens*) along the southeast property boundary to prevent the spread of this species further into the reserve.** Natal grass occurs on a flat rock outcrop adjacent to a northwest-oriented trail. Vegetative material and flowering stalks should be removed from the reserve. If plants are in bloom during the removal process, flowering stalks should be bagged prior to removal, as described for pampas grass.
9. **Remove star thistle (*Centaurea solstitialis*) and small or immature exotic tree species in the vicinity of the proposed nature center.** These include palm trees, pepper trees, and eucalyptus trees. Mature specimens of these species are not a high priority for removal, but keep them from spreading.
10. **Control the exotic species in the annual grassland in the center of the reserve through a fire management and restoration program** (see Sections 5.1.3 and 5.1.6).



11. **Remove *Emex* plants from along the north side of Cross Timbers Truck Trail (near La Cresta Heights Road) and the cleared area bordering homes southeast of Rios Elementary School.**
12. **On an annual basis, map stands of exotic species and prioritize them for treatment.** See Appendix C.1 for a list of exotic species observed at Crestridge. Many of these are included on the California Exotic Pest Plant Council list as exotic pest plants of greatest ecological concern in California (CalEPPC 1999).

5.1.2 Exotic Animal Control

13. **Manage borer beetles infesting Engelmann oaks.** Tag Engelmann oaks that are infested with borer beetles, and monitor the beetles and health of trees. Serious infestation can damage or kill the trees. Work with the state Food and Agriculture Department and the U.S. Department of Agriculture to determine possible methods of biological control for the beetles.
14. **Note locations of Argentine ants and fire ants with respect to position in the reserve and adjacent land uses.** The Argentine ant and fire ant are exotic pests in southern California and have been shown to have detrimental effects on terrestrial communities. The exotic ants tend to follow drainages or areas of moist soils. Fire ants have been observed on Crestridge near the Rios Elementary School and in the oak grove near the center of the reserve. The ants have the potential to invade the reserve from adjacent urban areas. By mapping locations of Argentine ants and fire ants, evaluate whether runoff into the preserve from adjacent lands or other adjacent land uses may be contributing to exotic ant invasions. See monitoring recommendations (Section 5.2).
15. **Evaluate the need to remove boxed beehives from the reserve.** Beehives within the reserve are currently located near hiking trails and may pose liability issues from recreational users of the reserve. However, the domesticated bees may fill a niche that might otherwise be occupied by Africanized bees, if they occur in the area. Alternatively, the beehives may attract Africanized bees, which could compete with native pollinators. Note the presence and locations of domesticated and Africanized bees in the reserve. Determine which species inhabit the beehives. See monitoring recommendations (Section 5.2).
16. **Control pets in the reserve.** Dogs and cats and other domesticated animals living adjacent to the reserve are a potential predation threat to native species. Educate homeowners about keeping pets indoors at night and keeping pet food indoors or in a secured location that does not attract animals from the reserve. When walking dogs in the reserve, owners should keep their dogs on a leash, stay on the trails, and pick up after them (CDFG Title 14, Ch.11.630).



17. **Restrict the use of pesticides in the reserve.** Pesticides may be useful in controlling fire ants and exotic rodents, if they are found in the reserve. Use of pesticides requires a license and permits from CDFG.

5.1.3 Fire Management

A Framework Fire Management Plan is included as Appendix D. This document establishes the framework for working with the California Department of Forestry and Fire Protection (CDF) to develop a specific plan for wildland fire suppression, pre-fire treatment and vegetation management, post-fire rehabilitation, and prescribed burns at Crestridge.

The goals of the fire management plan at Crestridge are to (1) ensure the safety of the surrounding residential community, (2) maintain a "natural" fire cycle, and (3) control invasive weed species. The CDF strives to suppress all fires that threaten public safety. Pre-fire treatment of the land, in the form of fire breaks and fuel management, as well as enforcement of allowable land uses will help to prevent catastrophic wildland fires at Crestridge. Although fire is an integral part of the ecosystem processes on Crestridge, overly frequent fires may result in shifts in native species composition, a loss of certain native species, or habitat type conversions that favor nonnative species. Maintaining an appropriate fire cycle will assist in achieving a diverse age structure of vegetation communities and will prevent the habitat from becoming too mature and dense. This, in turn, will reduce the fuel load and thus reduce the chances of large uncontrollable fire events.

This habitat management plan for Crestridge recommends the following tasks for the BCLT and CDFG:

18. **Work with the CDF to prepare a fire management plan that identifies:**
 - Fire management objectives and general guidelines
 - Road maintenance requirements
 - Fire management units
 - Staging areas for trucks and equipment
 - Fuelbreaks
 - Pre-fire treatment
 - Prevention and suppression tactics, by fire management unit
 - Post-fire rehabilitation activities
 - Schedule for prescribed burns, by fire management unit
 - Sensitive resource areas to be avoided (both biological and cultural resources)
19. **Inform landowners about maintaining their own defensible space.** Landowners adjacent to the reserve are responsible for having an appropriate defensible space around their homes and other structures and a noncombustible roof, per the Bates Bill (Assembly Bill No. 337), which was approved in



September 1992. The East County Fire Prevention/Protection District is the responsible agency for communicating this information to landowners.

5.1.4 Erosion Control

Offroad vehicle traffic and, to a lesser extent, equestrian activities, have resulted in excessive erosion and formation of gullies along trails and in habitat associated with and below eroded trails. Runoff from offsite land uses can contribute to erosion problems, and badly eroded trails can be a public safety issue. Erosion may also expose or deposit new substrates for weed colonization (Hobbs and Atkins 1988).

- 20. Restrict or prohibit equestrian and mountain bike activity in areas where erosion is a problem.** Restrict equestrian and mountain bike activity to roads that are maintained by CDF (see Section 5.1.7). Close roads to equestrians and mountain bikes for 3 days following rainfall events greater than 1 inch.
- 21. Correct erosion problems adjacent to sensitive plant populations.** In the eastern part of the site, erosion may be impacting Ramona horkelia. Also, Las Posas (gabbro-derived) soils, which support San Diego thornmint and Palmer's grapplinghook on Thornmint Hill, are characterized by high to very high erosion potential. Identify erosion problems that have the potential to impact these populations, and install reinforcements to slow erosion.
- 22. Install checkdams in eroded drainages to catch debris and slow erosion.** Identify locations. In some areas, a CDFG permit may be required for this action.
- 23. Install water bars across dirt roads to control erosion.** Work with the CDF to identify locations where erosion problems can be minimized by maintaining roads and installing water bars.
- 24. Control water sources and urban runoff within the reserve.** The only feasible means of controlling residential runoff may be an educational program that informs residents of the detrimental effects of certain types of landscaping plants and watering regimes on adjacent biological resources and offers literature on alternatives such as xerophytic plantings and drip irrigation. Additional recommendations may be appropriate for new developments, such as requiring the use of French drains to minimize seepage on slopes, diverting runoff away from the reserve, and restricting irrigation and certain types of plantings adjacent to the reserve. Meet with residents to explain the impacts of urban runoff in the reserve. Especially investigate horse manure runoff into the drainage along Horsemill Road. Monitor sources of water adjacent to the reserve (see Section 5.2).



25. Ensure that water flow is not impeded upstream from San Diego sedge (*Carex spissa*) locations. San Diego sedge is the host plant for the Harbison's dun skipper.

5.1.5 Seed Collection and Storage

26. **Develop a seed collection program for Lakeside ceanothus and San Diego thornmint to ensure that the genetic diversity of the onsite populations is not lost as a result of fire, habitat degradation, or other catastrophic events.** Collect seed in conjunction with other management measures to maintain or improve habitat quality and in a manner that does not impact existing populations. Collected seed should represent the entire Crestridge population of the species. For Lakeside ceanothus, focus initially on seed collection within the area that has burned most recently (14 years) and that is most susceptible to adverse impacts from fire. Seed collection for Ramona horkelia is currently a lower priority than for Lakeside ceanothus and San Diego thornmint. A take authorization will be necessary for the collection of seeds of San Diego thornmint. See Appendix E for protocols for seed collection, storage, and propagation (from McMillan and CBI 2002).
27. **Store collected seed in a recognized seed collection facility.** For Lakeside ceanothus, seed from recently burned areas should be stored separately from seed from areas with the longer fire-free interval (61 years). Seed should be available for post-burn seeding, enhancement, or reintroduction efforts, as determined necessary. Seed should not be stored for longer than 3 years. See Appendix E.
28. **Collect soil samples that may harbor seeds of San Diego thornmint.** Take a number of soil samples from the core thornmint area, and identify the seed bank present, if possible, especially for thornmint and Palmer's grappling-hook seed. (Dr. Ellen Bauder at San Diego State University is probably one of the few people who can identify thornmint seed.) These soil samples could be planted, watered, and grown to see what germinates. This approach, recommended by Mike Kelly of Kelly & Associates, could help determine whether thornmint seed is still present in the seed bank. Growing up the samples could show what plants predominate and contribute to understanding competitive interactions. A take authorization will be necessary for the collection of soil samples.

5.1.6 Habitat Enhancement and Restoration

29. **Restore the wet meadow near the former racetrack.** The former racetrack area currently supports wetland species but has been degraded by offroad vehicle use that has altered the topography and likely promoted invasion of the wetland habitat by nonnative species. Recontour this area to remove offroad vehicle ruts and 'jumps,' and ensure that water drains to the north. Native wetland species are already present in this area, so revegetation (i.e., introduction of native plant



materials) may not be necessary. However, some weed control is necessary to reduce the cover of nonnative wetland species. Avoid genetic contamination by prohibiting the introduction of cultivars or native species from different geographic regions. Erect temporary signs to indicate habitat restoration.

30. Enhance the oak grove at the Crestridge entrance (between Horsemill Road and Lakeview Lane). The oak grove could be enhanced by taking the following steps:

- Remove the concrete slab in the open area of the grove to provide an opportunity for oak recruitment and regeneration as well as understory development.
- Rip the soil in the area of the old foundation to address soil compaction and removal of nonnative plants.
- Remove the rock planters to provide an opportunity for oak recruitment and regeneration as well as understory development, unless the rock walls are determined to be of historic significance.
- Remove nonnative species in the oak grove area, including Vinca, Indian fig cactus, and Mexican bird-of-paradise. Also remove St. Augustine grass along the creek, downslope and north of the oak grove.
- Close off roads underneath the oaks to prevent soil compaction and damage to tree roots. Allow the duff to remain in the oak grove, and prevent recreational users from raking away the duff.
- Replant bare areas where horses have crossed the creek. Replant these areas with native species, such as meadow rue (*Thalictrum polycarpum*), California fuchsia (*Epilobium canum*), and sticky monkeyflower (*Mimulus aurantiacus*).
- If an active oak regeneration program is deemed necessary, this would include acorn collection and seedling production for outplanting, soil preparation (e.g., augering planting holes, adding fertilizer), predator control (including protective devices for both vegetative growth and roots of seedlings), weed control, and reestablishment of a native understory (McCreary 1990; Pavlik et al. 1991).

31. Restore the annual grassland in the center of the reserve to native vegetation. This would likely entail a series of prescribed burns at the appropriate time of year, followed by active seeding and plantings.



-
32. **If deemed appropriate, reseed host plants and nectar plants in suitable habitat areas to expand potential Quino checkerspot habitat areas (e.g., Thornmint Hill).**

5.1.7 Public Use

33. **Control public access points.** Provide public access to the reserve exclusively at two locations: Lakeview Lane and Horsemill Road. The Management Agreement between BCLT and CDFG will address responsibility for controlling public access and enforcement authority. The following entities will have keys to the gates at Lakeview Lane and Horsemill Road: CDFG, BCLT, CDF, East County Fire Prevention/Protection District, San Diego County Sheriff, Padre Dam Municipal Water District (MWD), San Diego Gas and Electric (SDG&E), and selected researchers as authorized by CDFG and BCLT.
34. **Identify, map, and close off (at least) 15 other points of possible vehicular access by the public, using appropriate fencing and signs.**
35. **Map foot trails, and close off trails that are redundant and trails along the reserve boundary.** Do not allow any new trails to be created. Allow trails that CDF considers useful as fuel breaks to remain (see Fire Management Plan).
36. **Close or re-route trails that are near sensitive biological areas.** Trails that are not necessary for fire access or that may serve as fuel breaks should be closed or re-routed away from sensitive biological areas. Trails for fire access or fuel breaks should be allowed to remain, once these are identified in the Fire Management Plan. Trails near sensitive biological resources may result in soil disturbance and promote habitat invasion by nonnative species. These may include the following:
- Close the trail to the San Diego thornmint area, except for monitoring and docent-led tours. Restricting access to this area will also help protect potential habitat for the Quino checkerspot butterfly.
 - Minimize access in areas known to support the Hermes copper butterfly.
 - Minimize access within 30 m of Harbison's dun skipper locations (*Carex spissa* plants in the riparian areas).
 - Restrict public access to areas with active raptor nests during the breeding season.
37. **Close off trails that should be restored.** The roads cut for soil percolation testing (as part of the original proposed development project in the western portion of the reserve) should be closed off to allow for natural revegetation. The



progress of revegetation should be monitored to determine if soil ripping or active restoration efforts are needed to facilitate recovery.

38. **Restrict mountain bikes and equestrians to existing roads and truck trails through the reserve.** Do not allow mountain bikes and equestrians on narrow foot trails. Only pedestrians are allowed on the narrow foot trails.
39. **Establish a trailhead with kiosk and signs, and develop a trails map.**
40. **Identify public safety issues.** The Crestridge reserve manager is responsible for ensuring the safety of visitors by maintaining trails and strictly enforcing access and land use. Patrol and enforcement by the CDFG warden on a routine schedule will help ensure public safety and protection of the reserve.
41. **Establish a volunteer training program.** The BCLT should work with technical specialists to coordinate a regular series of volunteer training workshops. This will ensure a qualified work force to address management and monitoring issues. Following is a list of suggested training workshops and recommendations for technical specialists to lead each workshop or series of workshops:

<u>Workshop</u>	<u>Specialist</u>
• Nonnative invasive plant identification and removal, including restricted use of herbicides	Mike Kelly, John Ekhoﬀ
• Wildlife tracking	San Diego Tracking Team
• Water quality and streamflow monitoring	San Diego Stream Team
• Bird identification and monitoring	Claude Edwards
• Invertebrate identification and monitoring	Michael Klein
• Docent training	Various specialists

42. **Schedule volunteer work days.** BCLT will schedule volunteer days and recruit members of the community to assist with maintenance of the reserve. BCLT will coordinate day or weekend projects that require little or no training with volunteers to achieve reserve management objectives, such as debris and trash removal and trail maintenance. BCLT will also develop objectives for educating the local community about the reserve and will recruit and train volunteers for this purpose.
43. **Establish docent-led programs and nature walks.**
44. **Identify property owners along the reserve boundaries.** Using Wildlife Conservation Board and County of San Diego parcel records, develop a list of property owners and addresses, and contact property owners about Crestridge security issues and ecological goals of the reserve. Provide phone numbers for fire, sheriff, BCLT, and CDFG to all property owners on the reserve boundary.



45. **Publish a regular newsletter and website about reserve stewardship activities and issues.** BCLT currently publishes an organization-wide newsletter that includes activities at Crestridge. BCLT also has a web site for the Earth Discovery Institute (EDI) project at www.earthdiscovery.org, where there will be a page for biological and cultural resource management issues. Photos documenting Crestridge's natural resources will be posted on the website. The website and newsletter will also provide educational materials for neighbors of the reserve that contain information about how to avoid or control impacts of children, irrigation runoff, noise, landscaping, and use of herbicides and pesticides adjacent to the reserve. Request that street lights adjacent to the reserve use low pressure sodium illumination sources. Residences adjacent to the reserve should avoid use of spotlights into the reserve and shield light sources so that the lighting is focused downward. Encourage neighbors to keep pets and pet food indoors at night.
46. **Prepare a cultural resources management plan for Crestridge.** Dr. Susan Hector is preparing a cultural resources management plan for Crestridge that addresses use of the site by the Kumeyaay Indians and the relationship of San Diego's historic families to the land. An outline for the management plan is included in Appendix I.
47. **Partner with other San Diego County environmental/wildlife organizations** (e.g., San Diego Natural History Museum, resources agencies, San Diego State University Field Station, other land trusts) for cross promotion, education, interpretation, and docent training.
48. **Develop a habitat-based curriculum project.** Granite Hills High School (GHHS) is partnering with the Crestridge Ecological Reserve to develop a habitat-based, cross-disciplinary experiential curriculum and service learning program that will meet state content standards, comply with district service learning requirements, and support regional conservation goals. The program will foster civic responsibility through student involvement in the community. Students will learn first-hand about the natural and cultural resources of Crestridge and the relationship of these resources to their own community and quality of life. See Appendix J.
49. **Prohibit unauthorized motor vehicles (Title 14, Ch.11. 630).**
50. **Prohibit feeding of wildlife (Title 14, Ch.11. 630).**
51. **Prohibit unauthorized collection and introduction of plants and wildlife (Title 14, Ch.11. 630).**
52. **Prohibit dumping of dirt, trash, and garden refuse (Title 14, Ch.11. 630).**



-
53. **Prohibit firearms, pesticides, fireworks, and fire, except where authorized (Title 14, Ch.11. 630).**
 54. **Prohibit camping and vandalism (Title 14, Ch.11. 630).**
 55. **Pets must be retained on a leash of less than 10 feet (Title 14, Ch.11. 630).**
 56. **Prohibit horses and bikes in riparian areas.**
 57. **Promote use of weed-free hay for feeding horses in the community by creating a demand for suppliers of weed-free hay.** There are currently two sources of horse feed in the community. They should be encouraged to find and use a source of weed-free hay for users of Crestridge.
 58. **Assist the CDFG in patrolling for illegal uses in the reserve.** The CDFG is responsible for enforcement of reserve boundaries and public use and can issue citations for abusers of the regulations. BCLT should establish volunteer foot, equestrian, and bike patrols to assist, under CDFG direction.
 59. **Research future buildout plans for parcels east of Crestridge.** Work with the County of San Diego to determine the status of planning efforts with the goal of maintaining a habitat linkage between Crestridge and Harbison Canyon.

5.1.8 Facilities Maintenance

Fencing and Boundary Enforcement

60. **Contract with a land surveyor to officially map the reserve boundary.** Mark the boundary and inform neighbors of the legal boundary line of the reserve.
61. **Identify portions of the reserve boundary where fencing is needed.** Fencing should probably be installed or reinforced in areas adjacent to residential lots, roads, and other level areas. Fencing along steep, rocky areas (e.g., along the southeastern boundary) is probably not necessary. Fencing should be maintained as needed and should be checked at least annually.
62. **Establish property signs along the reserve boundary (3 signs every linear mile) and at each access point, identifying the area as an ecological reserve and providing directions for access and contact information.**
63. **Maintain all existing fences and locked gates, and establish a list of persons with keys to the reserve** (CDFG staff and warden, BCLT, CDF, East County Fire Prevention/Protection District, SDG&E, Padre Dam MWD, Sheriff, selected researchers).



Debris Removal and Building Restoration

64. **Remove unused ranching equipment and facilities.** For example, remove the fence in the annual grassland, fence west of the oak grove, the backstop west of the oak grove, fences along and across the drainages, pipes and metal debris adjacent to Horsemill Road, and old axle, outhouse, irrigation tubing, foundation, and sign posts in the proposed nature center area, etc. Evaluate the need to retain the old farm equipment and barn storage areas east of the warden's house. Remove the pens east of the warden's house.
65. **Evaluate the need to remove the white house just east of the oak grove, based on cultural history and potential future use.**
66. **Repair the warden's residence, as needed.**
67. **Remove litter at periodic intervals, and arrange for regular garbage pickup.** Place closed garbage cans and recycle bins at public entry points (Horsemill Road and Lakeview Lane). Remove trash from drainages, especially Rios Canyon.

Road and Trail Maintenance

68. **Work with the CDF to maintain roads to prevent erosion.**
Examples:
 - Lakeview Lane between the end of La Cresta Road and the oak grove
 - Along the bottom of the drainage south and west of Lakeview Lane
 - Along Rios Canyon Truck Trail
 - Along Cross Timbers Trail some distance west of the houses at the end of La Cresta Heights Road
69. **Maintain trails to prevent erosion.** Mulch trail surfaces to minimize erosion. Do not use materials for trail mulch that are a source of seed of invasive exotic species. Use native brush that has been cleared along dirt roads and chipped onsite. Install water bars where necessary to divert water off the trail. Water bars can be made from native rock obtained onsite, native logs, or 4x6 redwood timber. Set the water bar at a 60-degree angle across the trail, and extend it such that water is carried completely off the trail. Provide rock at the downslope end of the water bar to dissipate the flowing water.

Normal trail use will result in a berm along the edge (outslope) of the trail. This berm will prevent water from flowing off the trail and cause gullying down the center of the trail. Maintain the outslope (the berm at the edge of the trail) by pulling the berm back into the trail tread.

Do not allow trails to widen more than 4 ft. If trails continue to widen as a result of inappropriate use, they should be closed for restoration.



70. **Establish and maintain interpretive signs and trails signs.**
71. **Establish a site and develop plans for a trailhead and staging area for visitor parking.** The primary parking location for the public should be the cul-de-sac at Horsemill Road. Additional public parking (for scheduled events) could include the area west of the oak grove, near the old backstop. Minimal parking for staff and researchers could be allowed at the EDI field station. Handicap parking should be allowed at the EDI Bridge to Nature (nature center).
72. **Evaluate the need for powerline remediation.** Based on recommendations from the Wildlife Research Institute, the existing powerline across Crestridge may need remediation to mitigate for potential bird strikes.
73. **Purchase equipment for management, maintenance, and monitoring.** See the Property Analysis Record (PAR) in Appendix G.

Earth Discovery Institute

74. **Set up a lease arrangement with CDFG for the EDI Bridge to Nature and EDI field station.**
75. **Establish the EDI field station as a facility for hands-on environmental and cultural education and community service opportunities.** See Appendix J.
76. **Establish the EDI Bridge to Nature.** This structure will serve as an inspirational meeting place. It will be built through community volunteers and provide an outlet for their artistic expression. See Appendix J.

5.2 MONITORING

5.2.1 Sensitive Species Monitoring

The MSCP Plan (Ogden 1998) and Biological Monitoring Plan (Ogden 1996) require monitoring of the habitats and species conserved in the MSCP. Table 5-1 summarizes the biological monitoring requirements for the Crestridge Ecological Reserve. Monitoring will include presence/absence surveys, estimates of relative abundance, assessments of habitat quality and habitat use, and mapping of species distributions to determine population trends and identify threats, using the data forms in Appendix F. Monitoring should focus initially on those biological and ecological factors that appear to be most important to species persistence and that may be influenced by management measures. Demographic monitoring of some species may be warranted if populations indicate a decline. Monitoring results should be evaluated in conjunction with climate and fire history data, as appropriate. Monitoring of federally and state listed species will require the appropriate permits and memoranda of understanding.



Table 5-1
Priority Species and Resources Recommended for
Long-term Monitoring and Management

Scientific Name	Common Name	Annual Monitoring
Plants		
<i>Artemisia palmeri</i>	San Diego sagewort	Presence/absence
<i>Harpagonella palmeri</i>	Palmer's grappling hook	Presence/absence, pollinators
<i>Quercus engelmannii</i>	Engelmann oak	Recruitment, insect host and infestations (borer beetles, gall wasps)
<i>Acanthomintha ilicifolia</i>	San Diego thornmint	Population trends, seed collection, weed control, pollinators
<i>Ceanothus cyaneus</i>	Lakeside ceanothus	Population trends, age structure, seed collection, pollinators
<i>Horkelia truncata</i>	Ramona horkelia	Presence/absence, seed collection, pollinators
<i>Muilla clevelandii</i>	Cleveland's golden star	Population trends, reproductive strategies, pollinators
Animals		
<i>Lycaena hermes</i>	Hermes copper butterfly	Host and nectar plants, patch use, and population trends
<i>Euphyes vestris harbisoni</i>	Harbison's dun skipper	Host and nectar plants, patch use, and population trends
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	Habitat potential
<i>Elanus leucurus</i>	Black-shouldered kite	Presence/absence relative to habitat structure and area of reserve
<i>Accipiter cooperi</i>	Cooper's hawk	Nesting location relative to habitat structure and area of reserve



Table 5-1
Priority Species and Resources Recommended for
Long-Term Monitoring and Management
(continued)

Scientific Name	Common Name	Annual Monitoring
<i>Aquila chrysaetos</i>	Golden eagle	Foraging locations relative to habitat structure and area of reserve
<i>Polioptila californica californica</i>	California gnatcatcher	Banding and dispersal studies, population trends and location relative to habitat structure and area of reserve
<i>Aimophila ruficeps</i>	Rufous-crowned sparrow	Presence/absence and location relative to habitat structure/area of reserve
<i>Amphispiza belli belli</i>	Bell's sage sparrow	Presence/absence, location relative to habitat structure/area of reserve
<i>Phrynosoma coronatum blainvillei</i>	San Diego horned lizard	Presence/absence, location relative to habitat structure and area of reserve
<i>Cnemidophorus hyperythrus beldingi</i>	Orange-throated whiptail	Presence/absence, location relative to habitat structure and area of reserve
<i>Thamnophis couchi hammondi</i>	Two-striped garter snake	Presence/absence, location relative to habitat structure and area of reserve
<i>Crotalus ruber ruber</i>	Red diamond rattlesnake	Presence/absence, location relative to habitat structure and area of reserve
	Large and medium-sized mammals	Tracking -- access to the reserve
Vegetation Communities		
Native grassland		Location, extent, and weed control
Coastal sage scrub and chaparral		Age structure and density for fuel modification or prescribed burning
Oak woodlands		Recruitment
Wet meadow		Restoration, weed control



77. **Annually conduct presence/absence surveys for San Diego sagewort along drainages, and map locations (July - September).**
78. **Annually conduct presence/absence surveys for Palmer's grappling hook at Thornmint Hill (March - April).** Note insect pollinators when monitoring. Note the abundance of Palmer's grappling hook relative to the San Diego thornmint population on Thornmint Hill, as the grappling hook may be outcompeting the thornmint in this area.
79. **Annually survey Engelmann oaks for insect pest infestations and evidence of oak seedling recruitment.** Map locations of individual Engelmann oaks.
80. **Annually monitor the San Diego thornmint population at Thornmint Hill (April - June).** Estimate population density or relative abundance. Note insect pollinators when monitoring. Review and map the population boundaries relative to previous years. Note the site conditions, and identify potential threats or stressors (see Appendix F.2).
81. **Annually monitor the Lakeside ceanothus population on Ceanothus Slope (April - June).** Review population boundaries relative to previous years, and note age structure. Note insect pollinators when monitoring. Note the site conditions, and identify potential threats.
82. **Annually conduct presence/absence surveys for Ramona horkelia in the eastern part of the reserve (May - June).** Note insect pollinators when monitoring. Map site locations, note the site conditions, and identify potential threats.
83. **Re-survey selected areas for San Diego goldenstar (May).** San Diego goldenstar occurs in clay soils just beyond the easternmost Crestridge property boundary, where it was observed in relatively low numbers during the 2000 survey period. This species is an herbaceous perennial from a corm. In below-average rainfall years, many corms fail to produce vegetative and/or flowering material. Re-survey areas of appropriate soils in the eastern part of the property during years of average or above-average rainfall to determine whether San Diego goldenstar occurs on the Crestridge reserve. Note the site conditions, and identify potential threats.
84. **Annually census dwarf plantain (*Plantago erecta*), the host plant for the Quino checkerspot butterfly, for the butterfly in the northern section of the reserve near Rios Canyon Road and Rios Elementary School (Thornmint Hill).** The plantago population exceeds 1,000 plants situated within a flat open ridgetop, appropriate conditions for Quino adults and larvae. Monitor patches for post-diapause larvae of Quino checkerspot once per week from about the last week of January to the end of February. Monitor adjacent hilltops or ridgetops once per week for adults from March through mid-May.



85. **Annually monitor and census eggs and larvae of Hermes copper in May.** Monitor and census adults in June. Note inter-colony movement and relative abundance. Note and map host and nectar plants. See data form in Appendix F.3.
86. **Annually monitor San Diego sedge for evidence of overwintering larvae of Harbison's dun skipper.** Monitor adult Harbison's dun skippers in June for potential nectary plants in the current known locations. Note inter-colony movement and relative abundance. See data form in Appendix F.3.
87. **Annually note nesting and foraging areas for black-shouldered kites, Cooper's hawks, and golden eagles on the reserve, and record nest trees and locations on a map.** Record the period of time the birds are in the nest, and restrict access (within 100 m) during this period.
88. **Annually conduct presence/absence surveys for California gnatcatchers in coastal sage scrub (January-March).** Determine nesting and monitor productivity (April-July). Cooperate with the County of San Diego in banding and dispersal studies.
89. **Annually conduct bird point count surveys, using the forms and methods in Appendix F.5.**
90. **Monitor raptor populations at Crestridge, pending recommendations on protocols from the Wildlife Research Institute,**
91. **Continue monitoring herpetofauna, pending recommendations from U.S. Geological Survey (USGS) biologists.** Monitor status and trends in the populations every 5 years, based on USGS efforts on the west slope of Thornmint Hill (see Appendix F.4).
92. **Note the locations, relative to habitat structure and area of the reserve, of other sensitive species.** As part of field efforts, map locations and note habitat use by rufous-crowned sparrow, Bell's sage sparrow, San Diego horned lizard, orange-throated whiptail, coastal rosy boa, two-striped garter snake, and red diamond rattlesnake.
93. **Annually map presence and extent of exotic plant species, and evaluate responses to management actions.** Monitoring will address trends in species presence and abundance and evaluate the effectiveness of management actions to control invasions and removal.
94. **Monitor Argentine ants, fire ants, and Africanized bees.** Monitoring will address whether and where these species are in the reserve and whether their presence correlates with identifiable edge effects and declines in covered species presence or relative abundance. Monitoring will track the distribution of exotic



species over time and the effectiveness of specific management actions in controlling invasions.

95. **Monitor population levels and distribution of mule deer on the reserve.** Assess ratios of does, bucks, and fawns.

5.2.2 Habitats and Ecological Processes Monitoring

96. **Prepare an update of the vegetation map every 5 years, using current color-infrared aerial photography (i.e., 2005, 2010, etc.).** Use fire history maps to help in the update. Note the condition and dominant species of vegetation communities by vegetation polygon, as described in Appendix F.1. (See also Appendix A.4 for an example of how this technique was used on Crestridge.) Identify potential threats by vegetation polygon. For each polygon, note the general level of disturbance (e.g., percent composition of invasive species, percent of bare ground caused by trails or offroad vehicles, etc.), and responses to management actions. Incorporate these attribute data into the GIS for each vegetation polygon. Establish permanent photo points, and use photos to help document and record changes in communities. Potential photo vantage point locations include the water tower, warden's house, slope above the former racetrack, Rios Elementary School parking lot, Thornmint Hill, and locations along roads and trails in the reserve. Automated change detection analyses using digital imagery may be helpful in updating vegetation maps and monitoring habitat changes. The Geography Department at San Diego State University has developed a change detection data set by integrating multitemporal (2000 and 2001) IKONOS image data obtained through a NASA grant and vegetation mapping data developed by CBI.
97. **Monitor the structure and age classes of vegetation communities to assess recovery following fire.**
98. **Monitor habitats for signs of senescence, lack of recruitment or reproduction, disease, and pest infestations.**
99. **Annually monitor the indirect effects of adjacent land uses.** Note the presence of harmful lighting directed into the reserve, house mice and rats, and domestic pets off-leash. Check the boundary periodically for intrusive impacts.
100. **Identify sources of urban runoff adjacent to the reserve, and propose containment options to landowners.** Check the reserve boundary periodically for inappropriate runoff. Especially check runoff of horse manure into the drainage along Horsemill Road.
101. **Monitor wildlife movement to and from the reserve.** Identify most frequently used movement corridors for large mammals, and remove any impediments.



Install fences to direct movement and revegetate areas, if needed, to encourage use. As part of a separate CDFG grant, CBI will identify long-term monitoring locations based on investigations of potential movement corridors. These locations should be incorporated into the Crestridge monitoring efforts.

- 102. Track fires (extent, intensity, and periodicity of burns) on the reserve using CDF fire history data.**
- 103. Install a meteorological station on the reserve to monitor temperature, humidity, wind speed and direction, and rainfall.**
- 104. Monitor stream flow and water quality in Rios Canyon Creek.** Install staff gages in Rios Canyon Creek, and work with the San Diego Stream Team to monitor water quality. Note presence/absence of water in other drainages on site relative to time of year and rainfall amount.

5.2.3 Public Use Enforcement

- 105. Patrol public use of the reserve to ensure compliance with the rules and biological goals of the reserve and to assess level of use by area of the reserve.** Track trail use, and determine which trails are used more frequently than others. On an annual basis, inspect all of the trails to monitor and mitigate for impacts. This may include restoring the outslope of the trail, installing waterbars, and pruning along the edge of the trail.
- 106. Monitor presence and location of domestic animals in the reserve.**
- 107. Issue tickets to persons that violate reserve regulations (CDFG warden).**

5.2.4 Research Needs

Scientific research is an important component of adaptive management. The Crestridge Ecological Reserve provides many opportunities for research projects that would inform management decisions. The CDFG and BCLT should encourage partnerships with academic institutions to conduct applied research at Crestridge. Research projects could include but are not limited to the following.

- Response of vegetation communities to changes in fire regimes.
- Recovery of vegetation communities after fire.
- Response of vegetation communities to restoration efforts.
- Response of target species populations to changes in fire regimes.
- MSCP covered species population dynamics.
- Effectiveness of measures to control nonnative plant species.
- Fire management techniques and strategies.



- Population genetics studies of species present on the reserve (e.g., rare plants, butterflies).
- Effectiveness of measures to control exotic grasses through use of prescribed fire.
- Recovery of native species after prescribed fire.
- Why is the Hermes copper butterfly restricted to selected areas in San Diego County? What are the conditions at Crestridge that favor such a large population? For example, what are the soil conditions (chemical composition and mineral components) where the populations occur?
- Ecology of various pollinators important to endemic plant species.
- Oak regeneration studies.
- Use of Crestridge for California gnatcatcher dispersal, using marked birds.
- Large mammal (deer, mountain lion, bobcat, coyote, fox) use of Crestridge for dispersal, foraging, and reproduction.
- Use of Crestridge by bats -- where do they roost/forage?

5.3 DATA MANAGEMENT AND REPORTING

5.3.1 Data Management

- 108. Develop a data management system to incorporate baseline data collected for the preparation of this management and monitoring plan.** The data management system should be compatible with the subregional database structure being developed by the wildlife agencies and should include the baseline GIS data for annual updating. The base map used for this management plan can serve as the base map for updating spatial biological data.
- 109. Incorporate monitoring data collected to track the responses of resources to initial management actions.**
- 110. Evaluate the suitability of the data management system for management purposes, and refine the system as necessary.**
- 111. Maintain a record of habitat management and monitoring activities.** This record will assist in evaluating changes in resource status and responses to management actions. The record will also assist in updating the habitat management and monitoring plan, as needed. See Appendix F.6.

5.3.2 Reporting

- 112. Annually review resource status for the next year's reserve management activities.** Review the management needs for each year, and provide a list of proposed management actions, prioritized by resource, to the CDFG and BCLT for approval. Prioritize funding for next year's reserve management activities, and



-
- prepare a budget for the prioritized list of proposed management and monitoring actions for each year, for submittal to the CDFG and BCLT.
- 113. Coordinate with managers in other parts of the MSCP preserve to compare monitoring and management results.** Review the resource status and management and monitoring results at other preserves in the MSCP for perspective in evaluating management and monitoring needs at Crestridge.
 - 114. Provide an annual summary of management and monitoring activities at Crestridge.** Prepare a summary of management and monitoring activities to provide to the County of San Diego Department of Planning and Land Use for inclusion in their annual MSCP report, which is submitted to CDFG and U.S. Fish and Wildlife Service (see Appendix F.6). Also post this summary on the Crestridge Ecological Reserve website.
 - 115. Submit a report to the wildlife agencies every 3 years.** Summarize management activities, management priorities, restoration activities, and the ability to meet resource management goals, based on current funding status, every 3 years for submittal to the wildlife agencies. The report should also describe necessary updates to the habitat management and monitoring plan.

5.4 STAFFING

- 116. Hire a reserve manager to live onsite.** The reserve manager should be a qualified biologist who can identify and prioritize management and monitoring tasks and direct biologists and volunteers in implementing these tasks.
- 117. Establish an infrastructure of goals and responsibilities for Crestridge partners, including the following:**

Back Country Land Trust -- Incorporated in 1991 to preserve the rural nature of East San Diego County, BCLT has been involved in the preservation of more than 4,000 acres of scenic, cultural, and biologically significant lands. Until 2001, BCLT was entirely volunteer-operated. BCLT is a membership organization with more than 300 members. BCLT will work with the CDFG to oversee management of the 2,400-acre Crestridge Ecological Reserve and coordinate the construction and education programs of the Earth Discovery Institute.

California Department of Forestry -- CDF protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed value, thus providing social, economic, and environmental benefits to rural and urban citizens. CDF is working with the CDFG to develop a fire management plan for the reserve.



California Department of Fish and Game -- CDFG holds fee title to the Crestridge Ecological Reserve. CDFG has an agreement with BCLT to manage the reserve and supports the construction of the Earth Discovery Institute and educational programs at the reserve.

County of San Diego -- The County of San Diego is committed to implementing its MSCP subarea plan, of which the Crestridge Ecological Reserve is a part.

Earth Discovery Institute -- EDI is the name applied to the two structures to be built at the reserve, as well as the name for the educational and interpretive programs that will be conducted at the reserve. EDI will consist of the Field Station and the Bridge to Nature, designed by world-famous artist James Hubbell and architect Drew Hubbell. The buildings will be green-designed by Jim Bell, to be self-sustaining with renewable energy and water-efficient designs. The Field Station will be the station for monitoring the species on the reserve, according to the Habitat Management and Monitoring Plan, and will be staffed by a Lands Manager. Environmental education programs will be conducted in conjunction with the Environmental Science Academy at Granite Hills High School. Interpretive programs will be developed in collaboration with the local band of Kumeyaay Indians.

Hubbell & Hubbell -- Working as the artist/architects in the design and construction of the two facilities that will comprise the Earth Discovery Institute, the Hubbells have a long and successful history of using their projects as hands-on learning opportunities for volunteers. They plan to build the structures with sustainable technologies such as straw bale and photo voltaics.

5.5 BUDGET

- 118. Review the Property Analysis Report (PAR) in Appendix G to establish and prioritize a budget for Crestridge.**
- 119. Assess and prioritize the currently available funding for Crestridge.**
- 120. Identify potential funding sources.**
- 121. Prepare grant applications.**



6.0 MANAGEMENT AND MONITORING PRIORITIES FOR 2002-2003

Section 5 identified management and monitoring tasks for Crestridge. All of these tasks are summarized in Appendix H. The table below identifies management and monitoring priorities over the next 2-year period, the primary responsible party, and timeframe for implementation (1st quarter = January-March, 2d quarter = April-June, 3d quarter = July-September, 4th quarter = October-December). To facilitate reference, tasks are organized and numbered to correspond to tasks in Section 5.

TASK	RESPONSIBLE	TIME
Exotic Plant Control		
1. Remove tamarisk from Rios Canyon (few individuals).	CDFG, with volunteers	4th quarter 2002
2. Remove Pampas grass from the reserve (1 location).	CDFG, with volunteers	3d quarter 2002
4. Begin hand removal of African fountaingrass on the slopes above Rios Canyon.	CDFG, with volunteers	2002-2003
5. Begin chemical treatment of totalote on Thornmint Hill and along the fuelbreak at the bottom of the slope.	CDFG, with volunteers	2d quarter 2002 2d quarter 2003 (when thornmint is in bloom)
6. Begin chemical treatment of purple falsebrome on Thornmint Hill.	CDFG, with volunteers	2d quarter 2002 (when thornmint is in bloom)
12. Continue mapping stands of exotic species and prioritizing for treatment.	BCLT	2d quarter 2002
Fire Management		
18. Work with the CDF to prepare a fire management plan.	CDFG	2002-2003
19. Inform landowners about maintaining their own defensible space.	CDF and BCLT	1st quarter 2002
Public Use		
34. Identify, map, and control illegal vehicular access points.	BCLT and CDFG	1st quarter 2002



TASK	RESPONSIBLE	TIME
35-39. Map all trails within the reserve and identify trails that should be closed or have restricted access (redundant trails, trails near sensitive resources, trails needing restoration)	BCLT	2d quarter 2002
41. Establish a volunteer training program, with initial emphasis on exotic plant identification and control.	BCLT and CDFG	2d quarter 2002 2d quarter 2003
44. Identify property owners along the reserve boundaries, and contact each one about stewardship responsibilities and assistance in patrolling for illegal uses.	BCLT and CDFG	1st quarter 2002
46. Prepare cultural resources management plan.	BCLT	4th quarter 2003
49-56. Post regulations and enforce illegal uses in the reserve (prohibit motor bikes, feeding of wildlife, dumping of dirt, trash, and garden refuse, horses in riparian areas).	CDFG	1st quarter 2002
Facilities Maintenance		
60. Contract with a land surveyor to officially map the reserve boundary.	CDFG	2d quarter 2002
61. Identify portions of the reserve boundary where fencing is needed.	CDFG and BCLT	3d quarter 2002
62. Establish property signs along the reserve boundary (3 signs every linear mile) identifying the area as an ecological reserve, providing directions for access, and posting illegal uses and contact information.	CDFG	3d quarter 2002
63. Maintain fences and gates, and establish a list of persons with gate keys (CDFG staff and warden, BCLT, CDF, SDG&E, Padre Dam MWD, East County Fire District, Sheriff, selected researchers).	CDFG	1st quarter 2002
67. Arrange for regular garbage pickup.	BCLT	1st quarter 2002
71. Establish a site for visitor parking.	CDFG and BCLT	4th quarter 2002



TASK	RESPONSIBLE	TIME
Species Monitoring		
80. Survey for the San Diego thornmint population at Thornmint Hill.	CDFG	2d quarter 2002 2d quarter 2003
83. Re-survey selected areas for San Diego goldenstar.	CDFG	2d quarter 2002 2d quarter 2003
84. Re-survey dwarf plantain (<i>Plantago erecta</i>), the host plant for the Quino checkerspot butterfly, in the northern section of the reserve near Rios Canyon Road and Rios Elementary School (Thornmint Hill).	CDFG	1st quarter 2002 1st quarter 2003
85. Monitor and census eggs and larvae of Hermes copper in May.	CDFG	2d quarter 2002 2d quarter 2003
86. Monitor San Diego sedge for evidence of Harbison's dun skipper larvae.	CDFG	1st quarter 2002 1st quarter 2003
87. Map raptor nest sites.	BCLT and CDFG	1st quarter 2002 2d quarter 2002
Habitats and Ecological Processes Monitoring		
100. Identify sources of urban runoff adjacent to the reserve, and propose containment options to landowners.	BCLT	3d quarter 2002 3d quarter 2003
Public Use Enforcement		
105. Patrol public use of the reserve to ensure compliance with the rules and biological goals of the reserve and to assess level of use by area of the reserve.	BCLT and CDFG	2002-2003
107. Issue citations to persons that violate reserve regulations.	CDFG	2002-2003
Data Management		
108. Use the base map (digital or hard copy) created for this management plan to update trails, adjacent land owners, and biological information.	BCLT	4th quarter 2002
Staffing		
116. Hire a reserve manager to live onsite.	BCLT and CDFG	4th quarter 2002



TASK	RESPONSIBLE	TIME
117. Appoint a volunteer coordinator.	BCLT	2d quarter 2002
Budget		
118. Review the PAR to establish and prioritize a budget.	BCLT and CDFG	1st quarter 2002 1st quarter 2003
119. Assess and prioritize the currently available funding.	BCLT and CDFG	2d quarter 2002 2d quarter 2003



7.0 REFERENCES

- Abrams, L. and R.S. Ferris. 1951. Illustrated flora of the Pacific States: Washington, Oregon, and California. Vol. III: Geraniaceae to Scrophulariaceae. Stanford, CA: Stanford University Press. 866 pp.
- Alberts, A.C., A.D. Richman, D. Tran, R. Sauvajot, C. McCalvin, and D.T. Bolger. 1993. Effects of habitat fragmentation on native and exotic plants in southern California coastal Scrub. Pages 103-110 in Proceedings of the symposium: interface between ecology and land development in California, Keeley, J.E., editor. May 1-2, 1992; Occidental College, Los Angeles.
- Amor, R.L. and P.L. Stevens. 1976. Spread of weeds from a roadside into sclerophyll forests at Dartmouth, Australia. Weed Research 16:111-118.
- Atwood, J.L. 1980. The United States distribution of the California black-tailed gnatcatcher. Western Birds 11:65-78.
- Atwood, J.L. 1990. Status review of the California gnatcatcher (*Poliophtila californica*). Unpublished Technical Report, Manomet Bird Observatory, Manomet, MA.
- Aviña, R.H. 1976. Spanish and Mexican land grants in California. Arno Press, New York, NY. 137 pp.
- Baharav, D. 1975. Movement of the horned lizard *Phrynosoma solare*. Copeia 1975:649-657.
- Baum, B.R. 1967. Introduced and naturalized tamarisks in the United States and Canada (Tamaricaceae). Bailey 15:19-25.
- Beauchamp, R.M. 1986. A flora of San Diego County, California. National City, CA: Sweetwater River Press. 241 pp.
- Beebe, T., R. Boyd, P. Dunn, D. Fredrickson, C. Halpern, E. Harshman, M. Hemstrom, H. Horowitz, A. Jaramillo, B. Kelpsas, P. Lauterbach, P. McDonald, D. Minore, D. Robin, B. Sanders, B. Stein, and H. Weatherly. 1985. Pages 16-23 in The role of the genus *Ceanothus* in western forest ecosystems, Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. Report of a workshop held November 22-24, 1982, Oregon State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.
- Beier, P. 1993. Determining minimum habitat areas and habitat corridors for cougars. Conservation Biology 7:94-108.



- Bontrager, D. 1991. Habitat requirements, home range, and breeding biology of the California gnatcatcher (*Polioptila californica*) in south Orange County. Prepared for Santa Margarita Co. April. 19 pp.
- Bossard, C.C., J.M. Randall, and M.C. Hoshovsky (eds.). 2000. Invasive plants of California's wildlands. University of California Press, Berkeley, CA. 360 pp.
- Bostic, D.L. 1965. Home range of the teiid lizard, *Cnemidophorus hyperythrus beldingi*. The Southwestern Naturalist 10(4):278-281.
- California Department of Fish and Game (CDFG). 2001. A guide and annotated outline for writing land management plans. The Resources Agency, Sacramento, CA. 22 pp. September.
- California Department of Forestry and Fire Protection (CDF). 2000. Burn history data base. Digital files.
- California Exotic Plant Pest Council (CalEPPC). 1999. The CalEPPC list: exotic pest plants of greatest concern in California. 8 pp.
- California Native Plant Society (CNPS). 2001. Inventory of rare and endangered vascular plants of California. Special publication. Sixth edition. <http://www.CNPS.org/rareplants/inventory/6thEdition.htm>.
- California Natural Diversity Data Base (CNDDB). 1999. List of California terrestrial natural communities recognized by the Natural Diversity Data Base. Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base.
- Canadell, J. and P.H. Zedler. 1995. Underground structures of woody plants in Mediterranean ecosystems of Australia, California, and Chile. Pages 177-210 in Ecology and Biogeography of Mediterranean ecosystems in Chile, California, and Australia, Arroyo, M.T.K., P.H. Zedler, and M.D. Fox, editors. New York, NY: Springer Verlag.
- Carpenter, A.T. 1998. Element stewardship abstract (ESA) for *Tamarix ramosissima* Ledebour, *Tamarix pentandra* Pallas, *Tamarix chinensis* Loureiro, *Tamarix parviflora* De Candolle. Saltcedar, Salt cedar, Tamarisk. The Nature Conservancy, Arlington, VA.
- Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. 1985. The role of the genus *Ceanothus* in western forest ecosystems. Report of a workshop held November 22-24, 1982, Oregon State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.



- County of San Diego. 1997. Multiple Species Conservation Program County of San Diego Subarea Plan. May. 30 pp. + attachments.
- Davey, J.R. 1982. Stand replacement in *Ceanothus crassifolius*. M.S. thesis, California State Polytechnic University, Pomona.
- DeLoach, C.J. 1997. Saltcedar biological control: methodology, exploration, laboratory trials, proposals for field releases, and expected environmental effects. U.S. Department of Agriculture, Agricultural Research Service, Temple, TX. 32 pp.
- Dudley, T. 1998. Exotic plant invasions in California riparian areas and wetlands. *Fremontia* 26(4):24-29.
- Edwards, C. 2000. Consulting biologist. Personal communication with P. Gordon-Reedy. June.
- ERC Environmental and Energy Services (ERCE). 1991. Phase I report, Amber Ridge California gnatcatcher study. Prepared for Weingarten, Siegel, Fletcher Group, Inc. April. 26 pp.
- Federal Geographic Data Committee (FGDC). 1997. Vegetation Class Standard. Appendix 10.1: National vegetation classification standard (normative). Vegetation Committee of the Federal Geographic Data Committee.
- Faulkner, D. and M. Klein. 2001. San Diego's sensitive butterflies. A workshop focusing on 10 local species. February. 30 pp. + figs.
- Fletcher, E. 1952. Memoirs of Ed Fletcher. Pioneer Printers, San Diego, CA. 751 pp.
- Franklin, J., C. Halpern, B. Smith, and T. Thomas. 1985. The importance of *Ceanothus* species in U.S. forest ecosystems. Pages 2-15 in *The role of the genus Ceanothus in western forest ecosystems*, Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. Report of a workshop held November 22-24, 1982, Oregon State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.
- Frenkel, R.E. 1977. Ruderal vegetation along some California roadsides. University of California Publications in Geography, vol. 20. Berkeley, CA: University of California Press. 163 pp.
- Gratkowski, H.J. 1962. Heat as a factor in germination of seeds of *Ceanothus velutinus* var. *laevigatus* T. & G. PhD thesis, Oregon State University, Corvallis, OR. 131 pp.



- Hall, E.R. and K.R. Kelson. 1959. The mammals of North America. Ronald Press Company, New York, NY.
- Heap, I. 2000. International survey of herbicide-resistant weeds. *Brachypodium distachyon*. http://weedscience.com/details/brachypodium_distachyon5.htm. 2 pp.
- Hickman, J.C., editor. 1993. The Jepson manual: higher plants of California. Berkeley, CA: University of California Press. 1,400 pp.
- Hobbs, R.J. and L. Atkins. 1988. The effects of disturbance and nutrient addition on native and introduced annuals in the western Australian wheatbelt. *Australian Journal of Ecology* 13:171-179.
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Department of Fish and Game. 156 pp.
- Holway, D.A. 1998. Factors governing rate of invasion: a natural experiment using Argentine ants. *Oecologia* 115:206-212.
- Johnson, N.K. and J.A. Marten. 1992. Macrogeographic patterns of morphometric and genetic variation in the sage sparrow complex. *The Condor* 94(1):1-19.
- Keeley, J.E. 1986. Resilience of mediterranean shrub communities to fire. Pages 95-112 in *Resilience in Mediterranean-type ecosystems*, Dell, B., A.J.M. Hopkins, and B.B. Lamont, editors. The Netherlands: Dr. W. Junk Publishers.
- Keeley, J.E. 1991. Seed germination and life history syndromes in the California chaparral. *Botanical Review* 57:81-116.
- Keeley, J.E. 1994. Seed-germination patterns in fire-prone Mediterranean-climate regions. Chapter 10 in *Ecology and biogeography of Mediterranean ecosystems in Chile, California, and Australia*, Arroyo, M.T.K., P.H. Zedler, and M.D. Fox, editors. New York, NY: Springer-Verlag.
- Lathrop, E.W. and C.D. Osborne. 1990. From acorn to tree: ecology of the Engelmann oak. *Fremontia* 18(3):30-35.
- McCreary, D.D. 1990. Native oaks – the next generation. *Fremontia* 18(3):44-47.
- McIntyre, S. and S. Lavorel. 1994. Predicting richness of native, rare, and exotic plants in response to habitat and disturbance variables across a variegated landscape. *Conservation Biology* 8(2):521-531.
- McMillan, S. and Conservation Biology Institute (CBI). 2002. MSCP seed collection, storage, and propagation protocols. Appendix 4 in 2001 MSCP Rare Plant Survey



-
- and Monitoring Report. 54 pp. + appendices. Prepared for City of San Diego. February.
- McMillan, S. and Conservation Biology Institute (CBI). 2002. 2001 MSCP rare plant survey and monitoring report. 54 pp. + appendices. Prepared for City of San Diego. February.
- Moyer, C.C. and R.F. Pourade. 1969. Historic ranchos of San Diego. Union-Tribune Publishing Co., San Diego, CA. 115 pp.
- Munz, P.A. 1974. A flora of southern California. Berkeley, CA: University of California Press. 1,086 pp.
- Murphy, D.D. 1990. A report on the California butterflies listed as candidates for endangered status by the United States Fish and Wildlife Service. Prepared for California Department of Fish and Game. Contract No. C-1755. 60 pp.
- Neill, W.M. 1985. Status reports on invasive weeds: tamarisk. *Fremontia* 12(4):22-23.
- Oberbauer, T. 1996. Terrestrial vegetation communities in San Diego County based on Holland's descriptions.
- Ogden Environmental and Energy Services Co., Inc. (Ogden). 1992a. Baldwin Otay Ranch wildlife corridor studies. Prepared for the Otay Ranch Project Team. December. 106 pp.
- Ogden Environmental and Energy Services Co., Inc. (Ogden). 1992b. Task 3.5(a-4): status report on MSCP field surveys and data analysis.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1993. Population viability analysis for the California gnatcatcher within the MSCP study area. Prepared for the Clean Water Program, City of San Diego. February. 61 pp.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1995. Multiple Species Conservation Program (MSCP). Volume II: Appendix A – biological resources, *in* Public Review Draft Resource Document. Prepared for the City of San Diego. March.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1996. Biological monitoring plan for the Multiple Species Conservation Program. Prepared for the City of San Diego, California Department of Fish and Game, and U.S. Fish and Wildlife Service.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1998. Final MSCP Plan. Prepared for the City of San Diego. August.



- Padley, D. 1992. County of Orange deer telemetry study. Prepared for Environmental Sciences Associates, Inc. and submitted to the County of Orange.
- Parker, V.T. and V.R. Kelly. 1989. Seed banks in California chaparral and other Mediterranean climate shrublands. Pages 231-256 in Ecology of soil seed banks, Leck, M.A., V.T. Parker, and R.L. Simpson, editors. San Diego, CA: Academic Press, Inc.
- Pavlik, B.M., P.C. Muick, S. Johnson, and M. Popper. 1991. Oaks of California. Los Olivos, CA: Cachuma Press and the California Oak Foundation. 184 pp.
- Pourade, R.F. 1963. The silver dons. Vol. 3 of a series on the History of San Diego. Union-Tribune Publishing Company, San Diego, CA. 286. pp.
- Preston, K.L., P.J. Mock, M.A. Grishaver, E. Bailey, and D.F. King. 1998. California gnatcatcher territory behavior. Western Birds 29:242-257.
- Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, and D.F. DeSante. 1993. Handbook of field methods for monitoring landbirds. USDA Forest Service General Technical Report PSW-GTR-144. Pacific Southwest Forest and Range Research Station Berkeley, CA. 41 pp.
- Regional Environmental Consultants (RECON). 1987. Unpublished job report: home range, nest site, and territory parameters of the black-tailed gnatcatcher *Polioptila melanura californica* population on the Rancho Santa Fe Highlands study area. San Diego, CA.
- Regional Environmental Consultants (RECON). 1993. Biological technical report for the proposed Pacific Coast Plaza.
- Regional Environmental Consultants (RECON). 1994. Draft letter to Phil Adams of Gatlin Development Company. Pacific Coast Plaza and Jefferson Street Interchange California gnatcatcher surveys/Sigh property general biology survey (RECON number 2545B).
- Reiser, C.H. 1994. Rare plants of San Diego County. Imperial Beach, CA: Aquafir Press. 177 pp. + appendix.
- Roberts, F.M., Jr. 1995. Illustrated guide to the oaks of the southern Californian floristic province: the oaks of coastal southern California and northwestern Baja California, Mexico. Encinitas, CA: F.M. Roberts Publications. 112 pp.
- Saunders, D.A., R.J. Hobbs, and C.R. Margules. 1991. Biological consequences of ecosystem fragmentation: a review. Conservation Biology 5:18-32.



- Sawyer, J.O. and T. Keeler-Wolf. 1995. A manual of California vegetation. Sacramento, CA: California Native Plant Society. 471 pp.
- Scott, T.A. 1990. Conserving California's rarest white oak: the Engelmann oak. *Fremontia* 18(3):26-29.
- Sheley, R., J. Petroff, and M. Borman. 1999. Introduction to biology and management of noxious rangeland weeds. Corvallis, OR.
- Sisneros, D. 1991. Herbicide analysis: Lower Colorado River saltcedar vegetation management study. U.S. Department of the Interior, Bureau of Reclamation, Denver, CO. Report no. R-91-06. 167 pp.
- Skinner, M.W. and B.M. Pavlik, editors. 1994. California Native Plant Society's Inventory of rare and endangered vascular plants of California. Special publication no. 1, fifth edition. 336 pp.
- Smith, C.F. 1942. The fall food of brushfield pocket mice. *Journal of Mammalogy* 23:337-339.
- Stephenson, J.R. and G.M. Calcarone. 1999. Southern California mountains and foothills assessment: habitat and species conservation issues. General technical report GTR-PSW-172. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 402 pp.
- Suarez, A.V., D.T. Bolger, and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. *Ecology* 79(6):2,041-2,056.
- Sweetwater Environmental Biologists, Inc. 1994. Biological resources report for East County Square. Prepared for Gatlin Development. 56 pp. + appendices.
- Sweetwater Environmental Biologists, Inc. and McCollum Associates. 1995. Briefing document on the Crestridge conservation bank. Presented to the U.S. Fish and Wildlife Service and California Department of Fish and Game. 26 pp.
- Teskey, J.L. 1992. *Tamarix ramosissima*. In The fire effects information system (data base), Fischer, W.C., compiler. Missoula, MT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Intermountain Fire Sciences laboratory. Magnetic tapes.
- The Nature Conservancy (TNC). 2000. Wildland invasive species program. <http://tncweeds.ucdavis.edu/methods.html>.
- U.S. Department of Agriculture-Soil Conservation Service (USDA-SCS). 1973. Soil survey: San Diego area, California. Parts I and II + maps.



-
- U.S. Fish and Wildlife Service (USFWS). 1996. National list of vascular plant species that occur in wetlands: 1996 national summary (1996 national list). Ecology Section – National Wetlands Inventory. 209 pp.
- U.S. Fish and Wildlife Service (USFWS). 1998. Endangered and threatened wildlife and plants; determination of endangered or threatened status for four southwestern California plants from vernal wetlands and clay soils; final rule. Federal Register 63(197):54,975-54,994. October 13.
- U.S. Fish and Wildlife Service (USFWS). 2000. Draft recovery plan for the Quino checkerspot butterfly (*Euphydryas editha quino*). Portland, OR. x + 123 pp.
- Unitt, P. 1984. The birds of San Diego County. Memoir 13, San Diego Society of Natural History. 276 pp.
- Weaver, K.L. 1998. Coastal sage scrub variations of San Diego County and their influence on the distribution of the California gnatcatcher. Western Birds 29:392-405.
- Wiggins, I.L. 1980. Flora of Baja California. Stanford, CA: Stanford University Press.
- Wyatt, R. 1983. Pollinator-plant interactions and the evolution of breeding systems. Pages 51-95 in Pollination biology, Real, L., editor. Orlando, FL: Academic Press, Inc. 338 pp.
- Zammit, C.A. and P.H. Zedler. 1992. Size structure and seed production in even-aged populations of *Ceanothus greggii* in mixed chaparral. Journal of Ecology 81:499-511.
- Zedler, P.H. 1995. Fire frequency in southern California shrublands: biological effects and management options. Pages 101-112 in Brushfires in California wildlands: ecology and resource management, Keeley, J.E. and T. Scott, editors. Fairfield, WA: International Association of Wildland Fire.



APPENDICES

- A Vegetation Communities and Plant Species**
- B Animal Species and Field Notes**
- C Management Options for Selected Exotic Plant Species**
- D Framework Fire Management Plan**
- E Seed Collection, Storage, and Propagation Protocols**
- F Monitoring Protocols and Data Forms**
- G Property Analysis Record**
- H Summary List of Management and Monitoring Tasks**
- I Cultural Resources Management Plan Outline**
- J Earth Discovery Institute**



APPENDIX A

VEGETATION COMMUNITIES AND PLANT SPECIES



Lakeside ceanothus *Ceanothus cyaneus*
Photo by M.Klein/C.Edwards

- A.1 Vegetation Communities
- A.2 List of Plant Species
- A.3 Sensitive Species
- A.4 Field Notes
- A.5 References



APPENDIX A.1

VEGETATION COMMUNITIES

Scrub and Chaparral Communities

Coastal Sage Scrub (32500). Diegan coastal sage scrub occurs primarily in the central and western portions of the reserve, on all slope exposures. It occurs on flat or gently sloping areas adjacent to drainages, as well as on steep slopes. Dominant species include California sagebrush (*Artemisia californica*), laurel sumac (*Malosma laurina*), and California buckwheat (*Eriogonum fasciculatum*). Shifts in species dominance, or the presence of additional shrub species, appear to be related to slope and disturbance factors. For example, San Diego County viguiera (*Viguiera laciniata*) is a common constituent of scrub habitat on south and west-facing slopes, while white sage (*Salvia apiana*) is locally dominant in gabbro-derived (Las Posas) soils on south and west-facing slopes above Rios Canyon. Subdominant coastal sage scrub shrubs include broom baccharis (*Baccharis sarothroides*), bushrue (*Cneoridium dumosum*), holly-leaf redberry (*Rhamnus ilicifolia*), and yellow bush penstemon (*Keckiella antirrhinoides*). Small patches of coastal sage scrub are scattered throughout the eastern portion of the reserve, where they often occur within a matrix of chaparral. Many of these patches include chaparral species. In these cases, polygons were categorized as scrub only where scrub species were visually dominant within the patch.

In general, coastal sage scrub onsite is relatively undisturbed. Disturbed scrub was mapped in the vicinity of the former racetrack, an area in the eastern portion of the site that has been heavily disturbed by off-road vehicles. Off-road vehicle activity has resulted in both fragmentation and loss of scrub habitat in this area. Coastal sage scrub on west-facing slopes above Rios Canyon also shows signs of disturbance, which may be due to a combination of fire frequency, surface disturbance, and proximity to a source of invasive plant propagules. Two to three fire events have been recorded on these slopes, and several utility access roads and trails occur through the area. In addition, a fuel break along lower slopes is adjacent to residential development and may function as a conduit for invasive plant species. As a result, coastal sage scrub on these west-facing slopes supports a moderate to dense understory of nonnative species, including tocalote (*Centaurea melitensis*) on lower slopes and purple falsebrome (*Brachypodium distachyon*) on upper slopes. African fountain grass (*Pennisetum setaceum*) is beginning to invade this area, as well. For the most part, disturbance in this area is not severe enough to warrant a disturbed modifier. Invasive species should be monitored and managed in this area, however, to ensure that they do not threaten the native habitat or populations of sensitive species. Coastal sage scrub comprises 443.7 acres of vegetation onsite. Of this total, 0.5 acre has been categorized as disturbed due primarily to off-road vehicle activity.

Coastal sage scrub onsite can be classified into a number of coastal scrub series under the CNDDDB's most recent vegetation classification scheme (CNDDDB 1999). These include the California sagebrush scrub series (32.010.00), white sage scrub series (32.030.00),



California buckwheat scrub series (32.040.00), California sagebrush-California buckwheat scrub series (32.110.00), and Diegan coastal sage scrub series (32.200.00). Only a small portion of the scrub habitat onsite, however, can be further assigned into a CNDDDB association (e.g., California sagebrush, 32.010.01). Most of the coastal sage scrub on the reserve consists of combinations of species not yet recognized as associations. Examples include habitat dominated or co-dominated by laurel sumac or San Diego County viguiera. With the exception of white sage scrub, the CNDDDB (1999) does not consider any of the coastal scrub series onsite as high priorities for inventory (e.g., rare and worthy of consideration). Coastal sage scrub is, however, considered regionally sensitive due to both the acreage lost to urban expansion and the number of sensitive species that this habitat supports.

Southern Mixed Chaparral (37120). Southern mixed chaparral is the dominant vegetative association on Crestridge and is particularly widespread in the eastern and western portions of the reserve. It occurs on all slope exposures and in many areas is further characterized by the presence of very large and extensive rock outcroppings. This association is comprised of broad-leaved sclerophyllous shrubs to about 3 m in height (Holland 1986; Sawyer and Keeler-Wolf 1995). Species dominance varies throughout the reserve, but the most common shrub species include chamise (*Adenostoma fasciculatum*), Ramona lilac (*Ceanothus tomentosus*), laurel sumac, scrub oak, and mission manzanita (*Xylococcus bicolor*). Both Lakeside ceanothus and hoaryleaf ceanothus (*Ceanothus crassifolius*) are locally common to abundant in the eastern part of the reserve. Subdominant shrubs or occasional components of southern mixed chaparral include chaparral whitethorn (*Ceanothus leucodermis*), bigberry manzanita (*Arctostaphylos glauca*), San Diego mountain-mahogany (*Cercocarpus minutiflorus*), toyon (*Heteromeles arbutifolia*), Our Lord's candle (*Yucca whipplei*), and poison-oak (*Toxicodendron diversilobum*).

Very little disturbed southern mixed chaparral was mapped on Crestridge. In most cases, a disturbed modifier was used only where chaparral had been cleared recently for fuel breaks. In these areas, recent clearing appears to have resulted in an increase in annual species diversity, which is likely related to increased light conditions. Repeated and long-term clearing of chaparral, however, is expected to eventually result in decreased species diversity and promote invasion of nonnative species into the reserve. Southern mixed chaparral accounts for 1,757.8 acres of vegetation onsite. Of this total, 12.8 acres were described as disturbed.

Some of the southern mixed chaparral can be classified into existing CNDDDB chaparral series, such as the chamise-hoaryleaf ceanothus chaparral series (37.107.00), chamise-mission manzanita-woollyleaf ceanothus chaparral series (37.109.00), and scrub oak-chamise chaparral series (37.409.00). However, a significant portion of the chaparral onsite cannot be placed into existing series, based on species composition. Likewise, some (but not all) of the chaparral habitat onsite can be further assigned a CNDDDB association (e.g., chamise-hoaryleaf ceanothus, 37.107.01; chamise-mission manzanita, 37.109.01; chamise-mission manzanita-woollyleaf ceanothus, 37.109.02; chamise (woollyleaf ceanothus), 37.109.04; and scrub oak-chamise-(hoaryleaf ceanothus),



37.409.01). Much of the chaparral habitat onsite consists of combinations of species not yet recognized as associations. The CNDDDB (1999) considers at least one of the series onsite (chamise-mission manzanita-woollyleaf ceanothus chaparral, 37.109.00) to be a high priority for inventory (e.g., rare and worthy of consideration). In general, chaparral is not considered sensitive except where it supports populations of sensitive species.

Scrub Oak Chaparral (37900). Scrub oak chaparral is a dense, evergreen chaparral to about 6 m in height, dominated by scrub oak. Scrub oak chaparral typically occurs in more mesic areas than other chaparral associations, often at slightly higher elevations (Holland 1986). This habitat can occur on all slope exposures in deep or shallow soils that may be rocky. The understory layer is typically sparse to lacking (Sawyer and Keeler-Wolf 1995). Although scrub oak occurs throughout the reserve, scrub oak chaparral was mapped in only one location. A large stand of scrub oak chaparral occurs in the western portion of the reserve, on lower slopes south of and adjacent to the unnamed drainage through this area. The criterion for categorizing habitat as scrub oak chaparral was >50% percent cover of scrub oak. Scrub oak comprised about 70-80% of the shrub layer where it was identified as a distinct habitat onsite. Dense stands of laurel sumac superficially resembled scrub oak chaparral on the ADAR imagery. In these cases, field verification was required to determine species composition. Scrub oak chaparral comprises 25 acres of vegetation on Crestridge.

Scrub oak chaparral onsite corresponds to the CNDDDB scrub oak chaparral (37.407.02) association. The CNDDDB (1999) does not consider this association to be a high priority for inventory (e.g., rare and worthy of consideration), nor is it considered regionally sensitive except where it supports populations of sensitive species.

Grasslands and Other Herb Communities

Annual (Nonnative) Grassland (42200). Annual grassland is a relatively uncommon vegetation community on Crestridge. This association occurs primarily in areas of level topography in the central and central-eastern portions of the reserve and appears to be the result of disturbance. Annual grassland is characterized by a sparse to dense cover of low (<1 m) annual grasses and native and nonnative herbaceous species (Holland 1986; Sawyer and Keeler-Wolf 1995). Common nonnative grassland species on Crestridge include soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), oats (*Avena* spp.), long-beak filaree (*Erodium botrys*), and black mustard (*Brassica nigra*), among others. The largest expanse of annual grassland onsite occurs just east of the oak grove at the end of Horsemill Road. Grassland in this area may be a result of past clearing or grazing activities. Annual grassland in the vicinity of the previous racetrack appears to be related to soil disturbances associated with off-road vehicle activity. Annual grassland accounts for 14.8 acres of vegetation on the reserve.

Annual grassland onsite corresponds to the CNDDDB California annual grassland (42.040.00) series and, in part, to the slender oat-soft brome (42.040.01) association. The CNDDDB (1999) does not consider this association to be a high priority for inventory



(e.g., rare and worthy of consideration), nor is it considered regionally sensitive except where it supports populations of sensitive species.

Freshwater Seep (45400). Freshwater seep is also uncommon on Crestridge and was mapped only in the vicinity of the former racetrack. This vegetative association occurs in moist or wet soils, and many of the plants in this community are wetland indicators (USFWS 1996). Freshwater seep is typically dominated by low-growing (<1 m tall) herbaceous perennial species that form a continuous or open canopy (Holland 1986; Sawyer and Keeler-Wolf 1995). Species found in freshwater seep habitat on Crestridge include western ragweed (*Ambrosia psilostachya*), deergrass (*Muhlenbergia rigens*), sedge (*Carex* sp.), willow dock (*Rumex salicifolius*), Mariposa rush (*Juncus dubius*), Mexican rush (*Juncus mexicanus*), everlasting (*Gnaphalium* sp.), goldenrod (*Solidago* sp.), long-beak filaree, tocalote (*Centaurea melitensis*), soft chess, and Spanish-clover (*Lotus purshianus*).

Freshwater seep accounts for an estimated 0.4 acre on the reserve, and most of this acreage (95%) was mapped as disturbed. Intensive off-road vehicle activity through this habitat has resulted in fragmentation and promoted invasion by nonnative species through soil disturbance and the introduction of nonnative propagules. In addition, it appears that intentional mounding of soil in this area to enhance the off-road vehicle experience has filled some areas that were likely freshwater seep.

Freshwater seep onsite corresponds to the CNDDDB series of 'meadows and seeps not dominated by grasses' (45.000.00). Sedges are currently one of the more dominant native species in this habitat, which is possibly best characterized as a sedge association (45.110.00). Due to the level of disturbance, however, this association determination is considered tentative. None of the meadow and seep sedge or rush species present or likely to be present on Crestridge is considered a high inventory priority by the CNDDDB (1999). However, this association is likely a wetland and thus would be considered sensitive by the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (ACOE), CDFG, and local jurisdictions.

Forest and Woodland

Southern Coast Live Oak Riparian Forest (61310). This association is an open to locally dense riparian woodland dominated by coast live oak (*Quercus agrifolia*). It occurs in valley bottoms and outer floodplains along larger streams, in sandy soils or alluvium (Holland 1986; Sawyer and Keeler-Wolf 1995). On Crestridge, this association is restricted to well-developed but typically narrow drainages. Other riparian tree species, such as western sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), black willow (*Salix gooddingii*), and arroyo willow (*Salix lasiolepis*) also occur in this association. Engelmann oak (*Quercus engelmannii*) occurs in or adjacent to this association in a few locations onsite, and scattered eucalyptus trees are present as well. Riparian shrubs such as mulefat (*Baccharis salicifolia*) and the nonnative tamarisk (*Tamarix* sp.) occasionally occur in the understory. In well-developed stands of southern coast live oak riparian forest, poison-oak (*Toxicodendron diversilobum*) is a common



understory constituent, as is San Diego sagewort (*Artemisia palmeri*). The herbaceous layer sometimes includes species such as rushes, California polypody (*Polypodium californicum*), western ragweed, California goldenrod (*Solidago californica*), and San Diego sedge (*Carex spissa*), among others. Southern coast live oak riparian forest comprises 7.9 acres of vegetation on the reserve.

Southern coast live oak riparian forest on Crestridge corresponds to the CNDDB southern coast live oak riparian forest association (71.060.20). The CNDDB (1999) considers this association to be a high priority for inventory (e.g., rare and worthy of consideration). In addition, portions of this association may be considered a wetland, in which case they would be considered sensitive by the USFWS, ACOE, CDFG, and local jurisdictions. Coast live oak is not considered a wetland species (USFWS 1996).

Coast Live Oak Woodland (71160). Coast live oak woodland typically occurs on steep, north-facing slopes and shaded ravines or along raised stream banks and terraces, where it forms open to relatively closed canopy stands dominated by coast live oak (Holland 1986; Sawyer and Keeler-Wolf 1995). On Crestridge, this habitat occurs primarily on north and east-facing exposures and along drainages. Although coast live oak is the dominant tree species in this association, both Engelmann oak and scrub oak are subdominant species or occasional constituents of this habitat on slopes, while an occasional willow or sycamore occurs in woodlands along drainages. In the latter case, the riparian component is limited to only one or a few individuals and thus was not categorized as southern coast live oak riparian forest. In general, the shrub layer is poorly developed and consists of species from adjacent scrub or chaparral habitats. In one case, desert wild grape (*Vitis girdiana*) occurs within this habitat. San Diego sagewort is common at the edge of oak woodlands throughout the reserve. In those oak woodlands accessed directly, the herbaceous layer ranged from a moderate to sparse cover of herbaceous species or leaf litter. Oak woodlands on steep slopes often occur adjacent to large rock outcrops. The most well-developed stands of coast live oak woodland occur in the eastern portion of the reserve on north-facing slopes south of I-8 and throughout the site along the larger drainages. Coast live oak woodland accounts for 96.7 acres of vegetation on Crestridge. Of this total, 1.9 acres were classified as disturbed due to habitat degradation or fragmentation from off-road vehicle use or clearing for roads or fuel breaks.

Coast live oak woodland on Crestridge corresponds to the CNDDB coast live oak woodland association (71.060.19). The CNDDB (1999) does not consider this association to be a high priority for inventory. Oak woodlands are considered regionally sensitive, however, because of their limited acreage, high wildlife value, gradual loss to development, and lack of recruitment.

Coast Live Oak Woodland – Open (71161). Areas categorized as open coast live oak woodland are distinguished from closed-canopy woodlands by widely spaced trees within a matrix of other habitat types. Tree cover is generally less than about 50%, and Engelmann oak may assume a more co-dominant role than in the oak woodlands described above. The increased light allows for the development of shrub and



herbaceous layers, with species from adjacent scrub or chaparral habitats. Common shrub components of open oak woodland onsite include laurel sumac, holly-leaf redberry, poison-oak, climbing bush penstemon (*Keckiella cordifolia*), California sagebrush, white sage, and California buckwheat. Open coast live oak woodland was mapped just east of the oak woodland near Horsemill Road, where it occurs with an understory of grassland and coastal sage scrub species. It also occurs on north-facing slopes south of I-8 and east of Flinn Springs County Park, where it includes scattered coast live oak trees. Open coast live oak woodland accounts for 28.4 acres of vegetation onsite. Of this total, 1.5 acres are considered disturbed.

Open coast live oak woodland on Crestridge corresponds, in part, to the CNDDDB coast live oak woodland association (71.060.19) and, possibly, open Engelmann oak woodland (71.070.01). The CNDDDB (1999) considers the latter association to be a high priority for inventory. Open oak woodlands are also considered regionally sensitive.

Disturbed and Developed Areas

Disturbed (11300). This category includes areas that have been physically disturbed or invaded by nonnative species, such that few or no native plant species remain. Although a disturbed modifier can be applied to any native habitat, the actual designation of Disturbed Area refers to areas that are no longer recognizable as a native or naturalized vegetation association. Disturbed areas are often associated with human-related activities such as clearing or grazing. On Crestridge, disturbed areas are mapped in and near the oak grove at the end of Horsemill Road, in the fuel break on the lower, west-facing slopes above Rios Canyon, in and near the previous racetrack area, and on a west-facing slope southeast of Flinn Springs County Park. The latter site was inaccessible (viewed by binocular from several vantage points), but appears to support a large stand (ca. 2.5 acres) of African fountaingrass. Disturbed areas along the fuel break appear to be functioning as a conduit for weed invasions into the reserve. Disturbed areas near the racetrack are directly related to off-road vehicle activities. Disturbed areas are not included in the CNDDDB's natural communities classification (CNDDDB 1999).

Developed (12000). Developed areas include areas that have been graded or otherwise physically altered such that conditions no longer exist to support native vegetation. On the Crestridge site, the water tank in the west-central portion of the site and a graded pad in the northwest corner of the site are in this category. The edge of the property boundary has been graded in association with residences or orchards. There are old structures and foundations remaining in the oak grove, as well as agricultural outbuildings. Developed areas are not included in the CNDDDB's natural communities classification (CNDDDB 1999).



APPENDIX A.2

LIST OF PLANT SPECIES¹

CRESTRIDGE ECOLOGICAL RESERVE

Compiled by Patricia Gordon-Reedy (CBI) and Fred Sproul
Spring/Summer 2000

FERNS AND FERN ALLIES

Dryopteridaceae – Wood Fern Family

Dryopteris arguta Wood fern

Polypodiaceae – Polypody Family

Polypodium californicum California polypody

Pteridaceae – Brake Family

Adiantum jordanii California maiden-hair
*Aspidotis californica*⁶ California lace fern
Cheilanthes newberryi California cottonfern
Pellaea andromedifolia Coffee fern
Pellaea mucronata Bird's-foot fern
Pentagramma triangularis ssp. *triangularis* Silverback fern
Pentagramma triangularis ssp. *viscosa* Goldback fern

Selaginellaceae – Spike-moss Family

Selaginella bigelovii Bigelow's spike-moss
*Selaginella cinerascens*³ Ashy spike-moss

FLOWERING PLANTS - DICOTS

Aizoaceae – Fig-marigold Family

Carpobrotus chilensis^{4,6} Sea-fig
Carpobrotus aff. *edulis*⁴ Hottentot-fig

Anacardiaceae – Sumac Family

Malosma laurina Laurel sumac
Rhus ovata Sugar bush
*Schinus molle*⁴ Peruvian pepper tree
Toxicodendron diversilobum Western poison-oak

Apiaceae – Carrot Family

*Anthriscus caucalis*⁴ Bur-chervil
Apiastrum angustifolium Mock parsley
*Daucus pusillus*⁶ Rattlesnake weed



Foeniculum vulgare
Lomatium dasycarpum
Sanicula arguta
Sanicula bipinnatifida

Sweet fennel
Woolly-fruit lomatium
Sharp-tooth sanicle
Purple sanicle

Asclepiadaceae – Milkweed Family

Asclepias californicus

California milkweed

Asteraceae – Sunflower Family

Achillea millefolium
*Acourtia microcephala*⁵
Ambrosia psilostachya
Artemisia californica
*Artemisia palmeri*³
Baccharis salicifolia
Baccharis sarothroides
Brickellia californica
*Carduus pycnocephalus*⁴
*Centaurea melitensis*⁴
Centaurea solstitialis^{4,5}
Chaenactis artemisiifolia
Cirsium californicum
*Cirsium occidentale*⁶
Conyza canadensis^{4,5}
Encelia californica
Erigeron foliosus var. *foliosus*
Eriophyllum confertiflorum
Filago californica
Gnaphalium bicolor
Gnaphalium californicum
Gnaphalium canescens ssp. *beneolens*⁶
Gnaphalium canescens ssp. *microcephalum*⁶
Gutierrezia californica
Gutierrezia sarothrae
Hazardia squarrosa
*Hedypnois creticea*⁴
Helianthus gracilentus
Hemizonia fasciculata
Heterotheca grandiflora
*Hypochoeris glabra*⁴
Isocoma menziesii var. *menziesii*
*Lactuca serriola*⁴
Lasthenia californica
Lasthenia coronaria
Lessingia filaginifolia var. *filaginifolia*
*Machaeranthera juncea*³

Common yarrow
Sacapellote
Western ragweed
California sagebrush
San Diego sagewort
Mule-fat
Broom baccharis
California brickellbush
Italian thistle
Tocalote
Yellow star thistle
Artemisia pincushion
California thistle
Western thistle
Horseweed
California encelia
Leafy daisy
Golden-yarrow
California filago
Bicolored cudweed
California everlasting
Fragrant everlasting
White everlasting
California matchweed
Broom snake-weed
Saw-toothed goldenbush
Crete hedypnois
Slender sunflower
Fascicled tarweed
Telegraph weed
Smooth cat's-ear
Coastal goldenbush
Prickly lettuce
California goldfields
Southern goldfields
California-aster
Rush-like bristleweed



<i>Madia exigua</i>	Threadstem madia
<i>Microseris douglasii</i>	Small-flower microseris
<i>Microseris</i> sp.	Microseris
<i>Osmadenia tenella</i>	Osmadenia
<i>Pentachaeta aurea</i>	Golden-rayed pentachaeta
<i>Porophyllum gracile</i>	Odora
<i>Rafinesquia californica</i>	California chicory
<i>Senecio vulgaris</i> ⁴	Common groundsel
<i>Solidago californica</i>	California goldenrod
<i>Solidago</i> sp.	Goldenrod
<i>Sonchus asper</i> ssp. <i>asper</i> ^{4,6}	Prickly sow thistle
<i>Sonchus oleraceus</i> ⁴	Common sow thistle
<i>Stephanomeria exigua</i> ⁵	Small wreath-plant
<i>Stylocline gnaphaloides</i>	Everlasting nest straw
<i>Uropappus lindleyi</i>	Silver puffs
<i>Viguiera laciniata</i> ³	San Diego County viguiera
<i>Xanthium spinosum</i> ^{4,5}	Spiny cocklebur

Boraginaceae – Borage Family

<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Rancher's fiddleneck
<i>Cryptantha intermedia</i>	Nievas cryptantha
<i>Cryptantha micromeres</i>	Minute-flower cryptantha
<i>Cryptantha muricata</i>	Prickly cryptantha
<i>Cryptantha</i> sp.	Cryptantha
<i>Harpgonella palmeri</i> ³	Palmer's grappling hook
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	Slender pectocarya
<i>Plagiobothrys canescens</i>	Valley popcornflower

Brassicaceae – Mustard Family

<i>Brassica nigra</i> ⁴	Black mustard
<i>Caulanthus heterophyllus</i> var. <i>heterophyllus</i>	San Diego jewelflower
<i>Hirschfeldia incana</i> ^{4,6}	Short-podded mustard
<i>Lepidium nitidum</i>	Shining peppergrass
<i>Raphanus sativus</i>	Wild radish
<i>Rorippa nasturtium-aquaticum</i>	Water cress
<i>Sisymbrium altissimum</i> ⁴	Tumble mustard
<i>Sisymbrium orientale</i> ⁴	Hare's-ear cabbage
<i>Thysanocarpus laciniatus</i>	Southern fringedpod

Cactaceae – Cactus Family

<i>Opuntia</i> aff. <i>littoralis</i>	Coastal prickly-pear
<i>Opuntia ficus-indica</i> ^{4,6}	Indian-fig

Caprifoliaceae – Honeysuckle Family

<i>Lonicera subspicata</i> var. <i>denudata</i>	San Diego honeysuckle
<i>Sambucus mexicana</i>	Blue elderberry



Caryophyllaceae – Pink Family*Cerastium glomeratum*⁴*Silene antirrhina**Silene gallica*⁴*Silene laciniata* ssp. *major**Stellaria media*⁴

Mouse-ear chickweed

Snapdragon catchfly

Common catchfly

Southern pink

Common chickweed

Chenopodiaceae – Goosefoot Family*Chenopodium californicum**Chenopodium murale*⁶*Salsola tragus*^{4,6}

California goosefoot

Nettle-leaf goosefoot

Russian thistle

Cistaceae – Rock-rose Family*Helianthemum scoparium*

Peak rush-rose

Convolvulaceae – Morning-glory Family*Calystegia macrostegia**Convolvulus simulans*³

Morning-glory

Small-flowered morning-glory

Crassulaceae – Stonecrop Family*Crassula argentea*⁴*Crassula connata**Dudleya edulis**Dudleya lanceolata**Dudleya pulverulenta*

Jade plant

Pygmy weed

Ladies-fingers

Coastal dudleya

Chalk-lettuce

Cucurbitaceae – Gourd Family*Marah macrocarpus*

Wild cucumber

Cuscutaceae – Dodder Family*Cuscuta californica*

California dodder

Datiscaceae - Datisca Family*Datisca glomerata*

Durango root

Ericaceae – Heath Family*Arctostaphylos glauca**Xylococcus bicolor*

Bigberry manzanita

Mission manzanita

Euphorbiaceae – Spurge Family*Acalypha californica**Chamaesyce albomarginata**Eremocarpus setigerus**Euphorbia* sp.⁶

California copperleaf

Rattlesnake weed

Dove weed

Chinese caps



Fabaceae – Legume Family

Astragalus gambelianus
Lathyrus vestitus var. *alefeldii*
Lotus argophyllus
*Lotus hematus*⁶
Lotus purshianus var. *purshianus*
Lotus scoparius
Lupinus bicolor
Lupinus hirsutissimus
Lupinus truncatus
*Medicago polymorpha*⁴
Melilotus alba^{4,6}
*Melilotus indica*⁴
Trifolium ciliolatum
Trifolium wildenovii
Vicia ludoviciana var. *ludoviciana*

Gambel's locoweed
San Diego sweetpea
Silverleaf lotus
San Diego lotus
Spanish-clover
Deerweed
Miniature lupine
Stinging lupine
Collar lupine
California burclover
White sweetclover
Sourclover
Tree clover
Clover
Deerpea vetch

Fagaceae – Oak Family

Quercus agrifolia
Quercus berberidifolia
Quercus berberidifolia x *Q. engelmannii*
*Quercus engelmannii*³

Coast live oak
Scrub oak
Scrub oak-Engelmann oak hybrid
Engelmann oak

Gentianaceae – Gentian Family

Centaurium venustum

Canchalagua

Geraniaceae – Geranium Family

*Erodium botrys*⁴
*Erodium cicutarium*⁴
Erodium moschatum^{4,6}

Long-beak filaree
Red-stem filaree
White-stem filaree

Grossulariaceae – Gooseberry Family

Ribes indecorum

White flowering currant

Hydrophyllaceae – Waterleaf Family

Eriodictyon crassifolium
Eucrypta chrysanthemifolia
Phacelia cicutaria var. *hispida*
Phacelia parryi
Pholistoma membranaceum

Yerba Santa
Eucrypta
Caterpillar phacelia
Parry's phacelia
Pholistoma

Lamiaceae – Mint Family

*Acanthomintha ilicifolia*²
*Marrubium vulgare*⁴
*Monardella lanceolata*⁶
Salvia apiana

San Diego thornmint
Horehound
Coyote mint
White sage



<i>Salvia apiana</i> x <i>mellifera</i> ⁶	Hybrid white/black sage
<i>Salvia clevelandii</i>	Cleveland's sage
<i>Salvia columbariae</i> ssp. <i>columbariae</i>	Chia
<i>Salvia mellifera</i>	Black sage
<i>Scutellaria tuberosa</i>	Danny's skullcap
<i>Stachys ajugoides</i>	Hedge-nettle

Malvaceae – Mallow Family

<i>Malacothamnus fasciculatus</i>	Chaparral mallow
<i>Sidalcea malvaeflora</i> ssp. <i>sparsifolia</i>	Checker mallow

Myrtaceae – Myrtle Family

<i>Eucalyptus</i> sp. ⁴	Gum tree
------------------------------------	----------

Nyctaginaceae – Four O'Clock Family

<i>Mirabilis californica</i>	Wishbone bush
------------------------------	---------------

Onagraceae – Evening Primrose Family

<i>Camissonia bistorta</i>	California sun cup
<i>Camissonia californica</i>	False-mustard
<i>Camissonia</i> sp.	Sun cup
<i>Clarkia delicata</i> ⁶	Delicate clarkia
<i>Clarkia epilobioides</i>	Canyon godetia
<i>Clarkia purpurea</i>	Four-spot clarkia
<i>Epilobium canum</i>	California fuchsia

Oxalidaceae – Oxalis Family

<i>Oxalis pes-caprae</i> ^{4,6}	Bermuda buttercup
---	-------------------

Paeoniaceae – Peony Family

<i>Paeonia californica</i>	California peony
----------------------------	------------------

Papaveraceae – Poppy Family

<i>Eschscholzia californica</i>	California poppy
<i>Papaver californicum</i>	Fire poppy
<i>Platystemon californicus</i>	Cream cups

Plantaginaceae – Plantain Family

<i>Plantago erecta</i>	Dwarf plantain
------------------------	----------------

Platanaceae – Sycamore Family

<i>Platanus racemosa</i>	Western sycamore
--------------------------	------------------

Polemoniaceae – Phlox Family

<i>Eriastrum sapphirinum</i>	Sapphire woolly-star
<i>Gilia</i> aff. <i>australis</i>	Southern gilia



Linanthus dianthiflorus
*Navarretia atractylodes*⁶
Navarretia hamata ssp. *hamata*

Ground pink
Holly-leaved navarretia
Hooked skunkweed

Polygonaceae – Buckwheat Family

Chorizanthe aff. *procumbens*
Chorizanthe fimbriata
*Chorizanthe staticoides*⁵
Emex sp.^{4,6}
Eriogonum fasciculatum fasciculatum
Polygonum sp.⁵
Pterostegia drymarioides
*Rumex crispus*⁴
Rumex salicifolius

Prostrate spineflower
Fringed spineflower
Turkish rugging
Devil's thorn
Coastal California buckwheat
Smartweed
Granny's hairnet
Curly dock
Willow dock

Portulacaceae – Purslane Family

*Calandrinia ciliata*⁶
Claytonia perfoliata

Red maids
Miner's lettuce

Primulaceae – Primrose Family

*Anagallis arvensis*⁴
Dodecatheon clevelandii ssp. *clevelandii*

Scarlet pimpernel
Padre's shooting-star

Ranunculaceae – Buttercup Family

Clematis pauciflora
Delphinium cardinale
Delphinium parryi
Thalictrum fendleri var. *polycarpum*

Small-leaf virgin's-bower
Scarlet larkspur
Parry's larkspur
Meadow-rue

Rhamnaceae – Buckthorn Family

Ceanothus crassifolius
*Ceanothus cyaneus*²
Ceanothus leucodermis
Ceanothus oliganthus
Ceanothus tomentosus
Rhamnus crocea
Rhamnus ilicifolia

Hoaryleaf ceanothus
Lakeside ceanothus
Chaparral whitethorn
Hairy ceanothus
Ramona lilac
Spiny redberry
Holly-leaf redberry

Rosaceae – Rose Family

Adenostoma fasciculatum
Aphanes occidentalis
Cercocarpus minutiflorus
Heteromeles arbutifolia
*Horkelia truncata*³
Prunus ilicifolia

Chamise
Western lady's-mantle
San Diego mountain-mahogany
Toyon
Ramona horkelia
Holly-leaved cherry



Rubiaceae – Madder Family*Galium angustifolium* ssp. *angustifolium*

Narrow-leaved bedstraw

*Galium aparine*⁴

Goose grass

Rutaceae – Rue Family*Cneoridium dumosum*

Bushrue

Salicaceae – Willow Family*Populus fremontii* ssp. *fremontii*

Fremont cottonwood

Salix gooddingii

Black willow

Salix laevigata

Red willow

Salix lasiolepis

Arroyo willow

Scrophulariaceae – Figwort Family*Antirrhinum kelloggii*

Climbing snapdragon

Antirrhinum nuttallianum

Nuttall's snapdragon

Castilleja affinis

Coast paintbrush

Castilleja exserta

Purple owl's-clover

Collinsia heterophylla

Chinese houses

*Cordylanthus rigidus*⁶

Dark-tipped bird's-beak

Keckiella antirrhinoides var. *antirrhinoides*

Yellow bush penstemon

Keckiella cordifolia

Climbing bush penstemon

Linaria canadensis

Blue toadflax

Mimulus aurantiacus

San Diego monkeyflower

Mimulus cardinalis

Scarlet monkeyflower

Penstemon spectabilis

Showy penstemon

Scrophularia californica

California figwort

Solanaceae – Nightshade Family*Nicotiana glauca*⁴

Tree tobacco

*Solanum parishii*⁵

Parish's nightshade

Solanum xantii

Chaparral nightshade

Tamaricaceae – Tamarix Family*Tamarix* sp.⁴

Tamarisk

Urticaceae – Nettle Family*Urtica urens*^{4,6}

Dwarf nettle

Violaceae – Violet Family*Viola pedunculata*

Johnny-jump-up

Vitaceae – Grape Family*Vitis girdiana*

Desert wild grape



FLOWERING PLANTS - MONOCOTS

Cyperaceae – Sedge Family

Carex spissa

Carex triquetra

Eleocharis sp.

San Diego sedge

Triangular-fruit sedge

Spikerush

Iridaceae – Iris Family

Sisyrinchium bellum

California blue-eyed grass

Juncaceae – Rush Family

Juncus bufonius

Juncus dubius

Juncus mexicanus

Juncus textilis

Juncus xiphioides

Toad rush

Mariposa rush

Mexican rush

Basket rush

Iris-leaf rush

Liliaceae – Lily Family

Allium haematochiton

Allium peninsulare

Bloomeria crocea

*Calochortus splendens*⁵

*Calochortus weedii*⁶

Chlorogalum parviflorum

Dichelostemma capitatum ssp. *capitatum*

Muilla clevelandii^{2,5}

Yucca schidigera

Yucca whipplei

Red-skinned onion

Red-flowered onion

Common goldenstar

Splendid mariposa

Weed's mariposa

Small-flower soap-plant

Blue dicks

San Diego golden star

Mohave yucca

Our Lord's candle

Orchidaceae – Orchid Family

Piperia unalascensis

Slender spire piperia

Poaceae – Grass Family

Achnatherum coronatum

Agrostis pallens

*Avena barbata*⁴

Avena fatua^{4,6}

*Avena sativa*⁴

Bothriochloa barbinodis

*Brachypodium distachyon*⁴

*Bromus diandrus*⁴

*Bromus hordeaceus*⁴

Bromus madritensis ssp. *rubens*⁴

Calamagrostis koelerioides

*Cortaderia selloana*⁴

Giant needlegrass

Leafy bent

Slender oat

Wild oat

Cultivated oat

Cane bluestem

Purple falsebrome

Ripgut grass

Soft chess

Foxtail chess

San Diego reed grass

Pampas grass



<i>Hordeum</i> sp. ⁴	Barley
<i>Lamarchia aurea</i> ^{4,6}	Goldentop
<i>Leymus condensatus</i> (x <i>L. triticoides</i>)	Giant wild rye
<i>Melica frutescens</i>	Tall melic
<i>Melica imperfecta</i>	Coast range melic
<i>Muhlenbergia rigens</i>	Deergrass
<i>Nasella lepida</i>	Foothill needlegrass
<i>Nasella pulchra</i>	Purple needlegrass
<i>Pennisetum setaceum</i> ⁴	African fountain grass
<i>Polypogon monspeliensis</i> ⁴	Annual beardgrass
<i>Rhynchelytrum repens</i> ⁴	Natal grass
<i>Schismus barbatus</i> ^{4,6}	Mediterranean schismus
<i>Vulpia myuros</i> ⁴	Rattail fescue

¹Nomenclature follows Abrams and Ferris (1951), Beauchamp (1986), Hickman (1993), and Skinner and Pavlik (1994).

²MSCP covered species

³Other sensitive species

⁴Nonnative species

⁵Formerly reported from Crestridge; not detected onsite during year 2000 surveys.

⁶Reported by Klein-Edwards.



APPENDIX A.3

SENSITIVE PLANT SPECIES

Acanthomintha ilicifolia

San Diego Thornmint

USFWS: Threatened

CDFG: Endangered

CNPS: 1B, 2-3-2

MSCP covered species

San Diego thornmint is an aromatic, white-flowered herb in the mint family. This species typically flowers between April and June and is easily distinguished by its spiny floral bracts. San Diego thornmint is restricted in distribution to San Diego County and northern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1998). In San Diego County, the species is known from Carlsbad and San Marcos south to the Sweetwater River and Otay Mesa and east to Alpine (Beauchamp 1986; USFWS 1998). In the vicinity of Crestridge, large populations have been reported in the El Capitan area. The species is restricted to calcareous marine sediments (near the coast), clay, or gabbro-derived soils (Las Posas soils), and is associated with chaparral, coastal sage scrub, grasslands, or vernal pools (Hickman 1993; Skinner and Pavlik 1994; USFWS 1998).

Because of its annual habit, San Diego thornmint may experience yearly fluctuations in population size and spatial location. This species is insect-pollinated (e.g., bees, Wyatt 1983)--not self-pollinated--and is suspected to be fairly specific as to the insect pollinator. Further study should focus on bee flies (Family Bombyliidae), hover flies (Family Syrphidae), checkered beetles (Family Cleridae), Andrenid bees (Family Andrenidae), sweat bees (Family Halictidae), cuckoo, digger, and carpenter bees (Family Anthophoridae) and true bees (Family Apidae). It may rely on animal vectors, in part, for seed dispersal.¹

An estimated 52 historic populations of this species are known in the United States, of which 32 populations are extant. The USFWS (1998) estimates that these 32 populations support 150,000 to 170,000 individuals and occupy approximately 400 acres. According to the USFWS (1998), about 60% of the estimated individuals occur in four major populations (i.e., at least 3,000 individuals) that are found in the MSCP area. The San Diego thornmint population on Crestridge appears to represent a new location for this species, although it would not be classified as major by the USFWS, based on the population size observed in 2000.

¹ In the absence of direct evidence, assumptions regarding reproductive strategy, pollinators, and seed dispersal agents are based primarily on morphological characters or floral syndromes. These include (but are not necessarily limited to) flower and inflorescence structure and location, flower color, flower shape, flower depth, presence of nectar guides or rewards, pollen, and seed size and ornamentation (e.g., hairs, barbs, wings).



Known Threats. This species appears to be susceptible to both fire damage (USFWS 1998) and soil surface disturbance. Other threats to this species include habitat loss and degradation, trampling, vehicular traffic and road construction, illegal dumping, invasive exotic plants, collecting, edge effects, and, possibly, genetic isolation and herbivory (Skinner and Pavlik 1994; USFWS 1998).

Crestridge. San Diego thornmint was observed on south and west-facing slopes above Rios Canyon, where two discrete stands of plants were mapped. The larger stand consisted of approximately 450 individuals in 2000 and occurred on upper slopes in bare areas within coastal sage scrub. Scrub vegetation in this area occurs on gabbro-derived soils (Las Posas soils) and is dominated by stunted white sage (*Salvia apiana*). Thornmint plants tend to be clustered around white sage shrubs or occur in denser (but primarily native) herbaceous vegetation in open areas within the scrub. Annual or herbaceous perennial associates include dwarf plantain (*Plantago erecta*), small-flowered morning-glory (*Convolvulus simulans*), Palmer's grappling hook (*Harpagonella palmeri*), splendid mariposa (*Calochortus splendens*), and red-skin onion (*Allium haematochiton*). Purple falsebrome (*Brachypodium distachyon*) is present but not as dense in thornmint-occupied areas as in adjacent habitat upslope or to the north. Likewise, tocalote (*Centaurea melitensis*) is an abundant weed species adjacent to thornmint habitat and on lower slopes, but does not appear to have invaded thornmint habitat at this time. Although effective pollinators of San Diego thornmint are not known, dense concentrations of ground-nesting bees were observed around thornmint plants while in flower and appeared to be associated with the bare areas.

A smaller stand of San Diego thornmint was detected on lower, west-facing slopes, less than 10 m above a fuel break that separates the reserve from adjacent development. Approximately 55 plants were observed in this location. Although many of the plants observed were just beginning to bloom, a number of seedlings were present, as well. It is possible that additional seedlings were present but not detected during the survey period. This stand occurs in rocky, open areas within scrub habitat and is confined to gabbro soils. Common associated plant species include fascicled tarweed (*Hemizonia fasciculata*), splendid mariposa, red-skin onion, Palmer's grappling hook, and fringed spineflower (*Chorizanthe fimbriata*). Tocalote is a dominant weed in this area and may pose a threat to thornmint habitat in the future.

Ceanothus cyaneus

Lakeside Ceanothus

USFWS: Special Concern

CDFG: None

CNPS: List 1B, 3-2-2

MSCP covered species

Lakeside ceanothus is an evergreen shrub that can approach 5 m in height. A striking characteristic of this plant is its bright blue (cyan-colored) flowers. The center of distribution for Lakeside ceanothus appears to be in San Diego County, although it is known from Baja California, Mexico (Skinner and Pavlik 1994; Reiser 1994), and there



are recent reports from Riverside County as well (Skinner and Pavlik 1994). The MSCP Plan (Ogden 1995) identified 4-5 major populations of Lakeside ceanothus, with plants in the Crest area possibly constituting the largest of these populations. This species is generally found on dry slopes in chaparral or closed cone coniferous forest (Skinner and Pavlik 1994). This species appears further restricted onsite to acid igneous rock and Cienega soils (USDA-SCS 1973).

Michael Klein of Klein-Edwards Professional Services initiated a study at Crestridge in May and June 2001 on the potential pollinators of Lakeside ceanothus. Insects are assumed to be the primary pollinators due to the grouping and small size of the flowers, and they are likely to be specific to this species. There are many flowering plants available at the peak flowering time for ceanothus, and therefore these other plants are competing to attract insects to pollinate them. During the time of multiple competition, pollinating specialists are more likely than pollinating generalists. Further study should focus on skin and larder beetles (Family Dermestidae), blister beetles (Family Meloidae), cuckoo, digger, and carpenter bees (Family Anthophoridae), as well as bumblebees and honey bees (Family Apidae).

Although the exact fire response mechanism of Lakeside ceanothus is not known, fire is presumed to be an important factor in the life cycle of this species. For this reason, a discussion of the potential fire response of this species is presented below. Most *Ceanothus* species reproduce from seeds, which are persistent in the soil and exhibit some seed coat dormancy. Many *Ceanothus* species also have the ability to sprout from the root crown following fire, although sprouting is not the primary means of reproduction in this genus (Franklin et al. 1985). Lakeside ceanothus belongs to a subgenus (section) of *Ceanothus* (subgenus *Ceanothus*) wherein many of the species have retained the ability to sprout following fire (Conrad et al. 1985). No evidence of sprouting was observed on Lakeside ceanothus in the field.

Ceanothus species that are obligate or facultative seeders reproduce from seed following fire, and seed germination appears to be heat (rather than chemical) stimulated (Franklin et al. 1985; Parker and Kelly 1989; Keeley 1991, 1994). Fire is the most common and effective (but not only) heat source involved in germination (Franklin et al. 1985). Heating the seed allows the hilar fissure to open, thus allowing moisture to penetrate into the seed, but does not affect the seed coat itself (Gratkowski 1962 in Franklin et al. 1985). Mature plants of obligate seeders are typically killed by fire. The same fire event stimulates germination of seeds from a persistent seed bank, thus resulting in a new cohort or generation of plants.

Post-fire seedling survival may be influenced by drought, predation, and competition from herbaceous vegetation. Formation of a persistent seed bank over time is a critical component of population survival for obligate seeders. Fire frequency can influence population survival by directly or indirectly affecting the seed bank. If the interval between fires is too long, then seed longevity may be exceeded. There is, however, some evidence to suggest that seeds of some chaparral species may be viable for up to 100 years in the absence of fire (Parker and Kelly 1989). If the fire interval is too short, then



the even-aged stands of *Ceanothus* may not have reached sexual maturity or may not have adequately replenished the seed bank following the last burn event. Keeley (1986) estimates that 5-25 years may be required for seed banks of obligate seeders to be replenished following fire. Zammit and Zedler (1992) report that *Ceanothus greggii* reaches sexual maturity 6-8 years after fire, and seed production is maximized within 20 years of the last fire event. They also found that seed production is correlated with shrub height and does not necessarily decline with age. In other words, there may be mortality of individual *Ceanothus* plants over time due to the relatively short-lived nature of this genus compared to other chaparral shrubs, but those plants that do persist continue to produce seed (Zedler 1995). Year to year variability in seed production may result from climatic conditions (e.g., low rainfall may result in low seed set) or be influenced by pollinator abundance or the presence of flower or seed predators (Zammit and Zedler 1992). Important consumers of *Ceanothus* seeds include harvester ants (Parker and Kelly 1989), birds (Beebe et al. 1985; Davey 1982 in Parker and Kelly 1989), and rodents (Smith 1942 in Parker and Kelly 1989). Beebe et al. (1985) suggest that rodents may consume as much as 99% of the annual seed crop of *Ceanothus* on chaparral sites. Insect species are also known to heavily infest seeds of some *Ceanothus* species and can result in substantial seed losses (Beebe et al. 1985).

In addition to fire frequency, the reproductive success of an obligate seeder may be affected by intensity, duration, and season of fire (Parker and Kelly 1989). Some studies have indicated that fall burns may result in higher seed germination of some *Ceanothus* species, presumably because of the hotter temperatures that accompany burns in this season. In contrast, germination following spring burns may be delayed until the following winter or spring (Beebe et al. 1985). Presumably, a portion of the heat-stimulated seed would have been lost to predation, decay, competition, or other factors in the intervening period. Regardless of whether Lakeside ceanothus is an obligate or facultative seeder, fire is likely to be important in the reproduction and long-term survival of this species.

Known Threats. Lakeside ceanothus is threatened by altered fire regimes (both fire suppression and increased fire frequencies) and residential development.

Crestridge. Lakeside ceanothus occurs primarily in the eastern portion of the Crestridge reserve, on west-facing slopes and ridges in dense southern mixed chaparral. Many of the stands observed on Crestridge appeared to be even-aged and clumped in distribution, which would suggest reproduction through post-fire seed germination. No evidence of sprouting was observed on plants onsite. In addition, this species appeared to be growing in conditions more characteristic of obligate seeders than sprouters, such as xeric or nutrient-deficient sites (Keeley 1986). For example, some of the largest stands of Lakeside ceanothus on Crestridge occur on west-facing slopes or ridges and on acid igneous rock. Acid igneous rock consists primarily of rock outcrops; any associated soil is shallow and infertile (USDA-SCS 1973). Lakeside ceanothus also occurs on Cienega soils, which are characterized by low fertility (USDA-SCS 1973).



The majority of the mapped population of Lakeside ceanothus occurs in an area that was last burned 14 years ago. Some stands to the east (where individual plants appeared taller but in less dense stands) occur in an area that last burned 60 years ago. An important management objective for this species will be to extend the fire-free interval in the most recently burned area to allow seed bank replenishment prior to the next burn event.

Lakeside ceanothus was mapped on Crestridge during its flowering period. This allowed plants in otherwise inaccessible areas (e.g., steep slopes, dense vegetation) to be mapped from vantage points with binoculars. Population counts were obtained for some small stands that were accessed directly. In most areas, however, shrubs were too dense to count with any precision, and quantitative measures were not feasible due to site inaccessibility. The MSCP monitoring plan recognizes that population monitoring for this species would be best accomplished through habitat-based monitoring (rather than individual counts) and photo plot monitoring. In some areas, individual plants appeared to be experiencing die-off, as evidenced by dead branches. This die-off was more noticeable in areas that had experienced the most frequent fire (14 years ago) versus areas with the relatively long (60 years) fire-free interval.

Muilla clevelandii

San Diego Goldenstar

USFWS: Species of Concern

CDFG: None

CNPS: List 1B, 2-3-2

MSCP covered species

San Diego goldenstar is a yellow-flowered, herbaceous perennial from a corm. This species typically blooms in May and occurs in clay soils in chaparral, coastal sage scrub, grasslands, and vernal pools. San Diego goldenstar is found only in southwestern San Diego County and northwestern Baja California, Mexico (Skinner and Pavlik 1994; Wiggins 1980). In San Diego County, the species occurs from Carlsbad south to Otay Mesa and Marron Valley and has been reported from as far inland as Santee, Ramona, and the Alpine area (Ogden 1995; Reiser 1994).

San Diego goldenstar is presumably insect-pollinated (e.g., bees, Wyatt 1983). In addition, it may reproduce asexually by producing corm offsets. Seeds are presumably self-dispersed. Flowering may depend on climatic conditions, so this species may go undetected or underreported in years of below average rainfall.

Known Threats. Urbanization, road construction, vehicular traffic, and illegal dumping threaten this species throughout its range (Skinner and Pavlik 1994).

Crestridge. San Diego goldenstar was found just offsite, near the southeast corner of the property. In this location, it was growing in clay soils in disturbed southern mixed chaparral habitat. This location was recorded in field notes and on field maps but is not depicted on the sensitive species map for the Crestridge site. Because of the offsite location, plants were not censused during this survey.



Other Sensitive Species

Nine additional sensitive plant species were observed onsite during the 2000 survey period. With a few exceptions (noted below), these species were not mapped during the baseline surveys. These species are discussed below.

Artemisia palmeri

San Diego Sagewort

USFWS: None

CDFG: None

CNPS: List 4, 1-2-1

San Diego sagewort is a deciduous shrub that occurs in sandy soils in moist areas in coastal sage scrub or chaparral or, more commonly, along drainages or creeks in riparian or wetland habitat. This species occurs in San Diego County and Baja California, Mexico. It blooms between July and September (Skinner and Pavlik 1994) but is distinguishable at other times of the year on the basis of its distinctive foliage. Skinner and Pavlik (1994) indicate that this species is known from fewer than 20 occurrences in California, but it is likely more common than reported (Reiser 1994).

Known Threats. Information is needed to understand how San Diego sagewort responds to, or recovers from, disturbances such as fire damage or soil surface disturbance. It is possible that the shrubs can recover from the root crown following such disturbance. As with many other plants, threats to this species include habitat loss and degradation, trampling, lowering of water tables, vehicular traffic, road construction, illegal dumping, invasive exotic plants, collecting, edge effects, and possibly herbivory.

Crestridge. San Diego sagewort is common in most major drainages at Crestridge and occurs in several very small drainages as well. It is also found away from drainages, such as in the understory of coast live oak woodland on north-facing slopes, along roads, and at the edge of chaparral or scrub habitats. In these latter situations, however, the species generally occurs in mesic situations. San Diego sagewort was mapped (but not counted) in a number of locations on Crestridge. However, the current mapping of this species on Crestridge should not be considered comprehensive.

Examples of specific areas where San Diego sagewort was observed onsite include canyons and drainages between Cross Timbers Truck Trail and Valley View Truck Trail, downhill and west of the water tank; along the seasonal creek that flows northwestward through the oak riparian woodland along Valley View Truck Trail, and along the western portion of Rios Canyon Truck Trail, above the hairpin turns.



Clarkia delicata

Delicate Clarkia

USFWS: None

CDFG: None

CNPS: List 1B, R-E-D Code 2-2-2 (In Reiser 1994 – CNPS List 2, R-E-D Code 1-2-1)

Delicate clarkia (*Clarkia delicata*), also known as Campo clarkia, is an attractive member of the evening primrose family (*Onagraceae*) restricted to San Diego County and Baja California. It occurs in areas around the periphery of oak woodlands and cismontane chaparral, between 150 and 1300 m. Ecologically, this species prefers sites partially shaded by trees and large shrubs, in vernal mesic situations with substantial annual and herbaceous spring growth.

Known Threats. This species is threatened by road improvement and development (Skinner and Pavlik 1994). Additional threats may include habitat degradation, trampling, road and trail maintenance, illegal dumping, invasive exotic plants, collecting, and possibly herbivory.

Crestridge. Delicate clarkia has been documented at Flinn Springs and Harbison Canyon (Beauchamp 1986; Reiser 1994). It was observed in May 2001 along the western portion of Valley View Truck Trail on the northwestern boundary of Crestridge. Two plants were situated along the shaded north-facing road-cut, on the south side of the dirt road, beneath the firebreak separating the dense vegetation on the slope above.

Convolvulus simulans

Small-flowered Morning-glory

USFWS: None

CDFG: None

CNPS: List 4, 1-2-2

Small-flowered morning-glory is a pinkish-bluish flowered annual herb that occurs in clay soils in scrub and grassland habitats (Hickman 1993; Skinner and Pavlik 1994; Reiser 1994). This species blooms from March through June. It is relatively widespread, being found in Contra Costa, San Benito, Stanislaus, San Luis Obispo, Santa Barbara, Los Angeles, Kern, San Joaquin, Riverside, and San Diego counties, on San Clemente, Santa Catalina, and Santa Cruz islands, and in Baja California, Mexico. Reiser (1994) indicates that the species may occur in Orange County as well. Apparently, it is rare in southern California but more common elsewhere within California (Skinner and Pavlik 1994). Reiser (1994) describes the habitat of small-flowered morning-glory as 'friable clay soils that are typically devoid of shrubs' and further indicates that this species often occurs in association with San Diego thornmint.

Known Threats. Small-flowered morning-glory is declining in southern California due primarily to loss of habitat, resulting in extensive loss of the distinctive brittle and crumbly clay soils where this species is usually found.



Crestridge. Small-flowered morning-glory was detected on gabbro soils (Las Posas soils) in 'balds' within coastal sage scrub. This species was found in close association with the larger stand of San Diego thornmint (described above) on south-facing slopes above Rios Canyon. This location was mapped; however, population size information was not obtained during the 2000 survey period.

Harpagonella palmeri

Palmer's Grappling Hook

USFWS: Species of Concern

CDFG: None

CNPS: List 4, 1-2-1

Palmer's grappling hook is a spring blooming (March-April), white flowered annual herb that derives its name from its characteristic, hooked calyx spines. This species occurs in clay soils on dry slopes in chaparral, coastal sage scrub, and grassland habitats. Palmer's grappling hook has been reported from Orange, Riverside, and San Diego counties, San Clemente Island, Arizona, and Baja California and Sonora, Mexico. It is possibly extirpated in Los Angeles County (Hickman 1993; Skinner and Pavlik 1994).

Palmer's grappling hook has been observed being visited and presumably pollinated by bee flies (Family Bombyliidae). Presumably other flies, beetles, and bees also play a part in pollination.

Known Threats. This species is declining due to loss of habitat and habitat disturbance by urban development, roadway construction, and agriculture.

Crestridge. An extremely large population of Palmer's grappling hook was detected on south and west-facing slopes above Rios Canyon. This species occurs in association with San Diego thornmint and small-flowered morning-glory but is also found beyond the limits of those two species. The population on Crestridge was mapped, but population size data were not systematically obtained. However, visual estimates of selected areas and subsequent extrapolations to the larger area occupied by this species indicate that the 2000 population may have been in excess of 500,000 individuals.

Horkelia truncata

Ramona Horkelia

USFWS: None

CDFG: None

CNPS: List 1B, 3-1-2

Ramona horkelia is a white-flowered, late spring-blooming (May to June), tufted perennial herb. This species occurs in San Diego County and Baja California, Mexico, where it is found in dry clay soils in open chaparral and cismontane woodland (Hickman 1993; Skinner and Pavlik 1994). Skinner and Pavlik (1994) indicate that Ramona horkelia is known from fewer than 20 occurrences in California. This species has been



previously reported from slopes above Flinn Springs (Reiser 1994), although it was not specifically identified as being on the Crestridge site.

Known Threats. Little is known about management practices required for this species. Therefore, it should be closely monitored after fire, thinning of habitat, removal of exotic species, and trail maintenance activities.

Crestridge. *Ramona horkelia* was found in the eastern portion of Crestridge, where it occurs at the edge of dense chaparral, typically in open areas adjacent to or along trails. An estimated 300 plants were observed onsite. Focused surveys were not conducted for this species, however, and population size and extent may be much larger and more widespread than observed in 2000.

Machaeranthera juncea

Rush-like Bristleweed

USFWS: None

CDFG: None

CNPS: List 4, 1-1-1

Rush-like bristleweed is a yellow-flowered, summer and fall-blooming (June-October) perennial herb. This species occurs in San Diego County, Arizona, and Baja California and Sonora, Mexico (Hickman 1993; Skinner and Pavlik 1994). In San Diego County, it has been reported from Valley Center and Ramona south to near the U.S.-Mexican border. It typically occurs in chaparral or inland phases of coastal sage scrub, often in exposed, rocky locations (Hickman 1993; Skinner and Pavlik 1994; Reiser 1994). Rush-like bristleweed has been reported from slopes south of I-8 and adjacent to Flinn Springs County Park and from near Crest (Reiser 1994). This species is usually found in relatively small populations. Because it blooms late in the season and is relatively inconspicuous when not in bloom, it may be underreported (Reiser 1994).

This species is assumed to be insect-pollinated, although direct observations and data are lacking. The plants likely rely on wind for seed dispersal, although seeds may also be dispersed by birds and mammals.

Known Threats. Information is needed to understand how rush-like bristleweed responds to, or recovers from, disturbances such as fire damage or soil surface disturbance. Threats to this species may include habitat loss and degradation, trampling, illegal dumping, invasive exotic plants, collecting, edge effects, and possibly herbivory.

Crestridge. Bristleweed plants have been observed generally west of the water tank. These plants were scattered in open, disturbed areas of chaparral. This population was not counted or mapped. This species has been noted within and along the sides of some of the dirt trails and roads both north and south of Cross Timbers Truck Trail, along some of the trails descending into the dense vegetation northward toward Valley View Truck Trail, and along portions of Valley View Truck Trail. The species has also been noted



along trails west of Cross Timbers Truck Trail. The species typically occurs in small numbers at any given spot.

Pentachaeta aurea

Golden-rayed Pentachaeta

USFWS: None

CDFG: None

CNPS: 4, 1-2-2

Golden-rayed pentachaeta is a spring-blooming (March-June), yellow-flowered annual plant that occurs in open areas (Hickman 1993; Beauchamp 1986).

Known Threats. Beauchamp (1986) describes this species as “frequent” in San Diego County.

Crestridge. Golden-rayed pentachaeta was detected in open areas in coastal sage scrub on west-facing slopes above Rios Canyon. This population was not counted or mapped.

Quercus engelmannii

Engelmann Oak

USFWS: None

CDFG: None

CNPS: List 4, 1-2-2

Engelmann oak is a drought or late-deciduous tree to 18 m in height. Blue-green, oblong-shaped leaves and white-gray, heavily furrowed bark are characteristic of this species (Scott 1990; Pavlik et al. 1991; Hickman 1993; Roberts 1995). Engelmann oak currently inhabits the smallest range of any oak tree in the southwestern U.S. (Scott 1990). It occurs in Los Angeles, Orange, Riverside, and San Diego counties, on San Clemente Island (although only 1 tree remains in this location), and in Baja California, Mexico (Skinner and Pavlik 1994; Roberts 1995). However, over 90% of the existing stands occur in San Diego County (Pavlik et al. 1991). The major, remaining centers of distribution for this species are found around Black Mountain in San Diego County and around the Santa Rosa Plateau in Riverside County (Scott 1990; Pavlik et al. 1991; Roberts 1995). In San Diego County, the species occurs in both mountain and foothill areas and has been previously reported from Alpine (Beauchamp 1986; Reiser 1994). Engelmann oak is associated with chaparral, cismontane woodland, riparian woodland, and grassland habitats (Skinner and Pavlik 1994). It often occurs in deep, loamy clay soils, but can be found in rocky or shallow soils if some source of summer moisture is present (Pavlik et al. 1991).

Engelmann oak trees typically live from 50-150 years, although they have been known to occasionally reach 350 years of age. Adaptations of Engelmann oaks that assist in their establishment and survival are drought-tolerant acorns, the ability of acorns to germinate with little or no additional water uptake, and drought deciduousness of seedlings, among others (Lathrop and Osborne 1990). Engelmann oaks commonly hybridize with scrub



oaks (Hickman 1993; Roberts 1995). These hybrids appear to be better at surviving fire and drought than Engelmann oaks, so may displace the parental trees (Scott 1990; Pavlik et al. 1991).

Known Threats. Mature trees are very sensitive to fire due to their relatively thin outer bark. The heat of brush fires can kill mature Engelmann oaks down to the root crown, even if the bark is not actually charred. Conversely, Engelmann oak seedlings have a higher survival rate when subjected to fire (Scott 1990; Lathrop and Osborne 1990; Pavlik et al. 1991).

Crestridge. Engelmann oaks are relatively common on Crestridge. They occur in many oak woodlands onsite, including the oak woodland near Horsemill Road and adjacent grassland to the east, and oak woodlands on north-facing slopes south of I-8. In most of these areas, Engelmann oaks occur as a subdominant species to coast live oak. Engelmann oaks are also found in riparian areas, although they typically occur at the outer margins of the drainages, on slightly drier sites than either riparian tree species or coast live oaks. Engelmann oaks were not specifically mapped onsite. Where these oaks occurred as part of well-developed woodlands, they were noted as a constituent of those woodlands (see Appendix A4).

A large number of hybrid oaks (*Q. engelmannii* x *Q. berberidifolia*) were also noted on Crestridge but were not mapped. These often occurred away from denser woodland habitats, as in chaparral.

Selaginella cinerascens

Ashy Spike-moss

USFWS: None

CDFG: None

CNPS: None

Ashy spike-moss is a prostrate, mat-like plant that reproduces by spores rather than seed. It occurs in dry, open sites or under other plants and is most often associated with coastal scrub and chaparral (Hickman 1993; Skinner and Pavlik 1994). This species occurs in Orange and San Diego counties and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, this species has been reported in coastal locations from Camp Pendleton to the U.S.-Mexican border and inland to Escondido, Ramona, and Alpine (Beauchamp 1986; Reiser 1994).

Known Threats. This species is still fairly widespread, but threatened by loss of habitat due to development (Skinner and Pavlik 1994).

Crestridge. Ashy spike-moss was noted in only a few locations on Crestridge but is undoubtedly more common. This species was observed in openings in chaparral in the east-central portion of Crestridge (northwest of the previous racetrack area) and on open south and west-facing slopes above Rios Canyon, where it occurred in association with



both chaparral and coastal sage scrub. This species was not mapped during the 2000 survey period.

Viguiera laciniata

San Diego County Viguiera

USFWS: None

CDFG: None

CNPS: List 4, 1-2-1

San Diego County viguiera is a yellow-flowered shrub that blooms from February through June. This species occurs in San Diego County and in Baja California and Sonora, Mexico, and is associated with chaparral and coastal scrub (Hickman 1993; Skinner and Pavlik 1994). In San Diego County, this species is distributed primarily from about La Mesa south to the U.S.-Mexican border, although it does occasionally occur further north, particularly along the coast (Beauchamp 1986; Reiser 1994). San Diego County viguiera is often a dominant or co-dominant component of arid Diegan sage scrub habitat. It is frequent in the southwestern portion of the county (e.g., slopes surrounding Otay Mesa and Otay Lakes, Marron Valley, Jamul Mountains), but has been previously reported from Flinn Springs and Crest (Beauchamp 1986; Reiser 1994).

Known Threats. This species is still fairly widespread, but threatened by loss of habitat due to development (Skinner and Pavlik 1994).

Crestridge. San Diego County viguiera occurs on Crestridge in coastal sage scrub on south and west-facing slopes. This species is a dominant component of scrub habitat on south-facing slopes above Rios Canyon and a co-dominant species of scrub habitat on west-facing slopes above Rios Canyon. This species was not mapped during the 2000 survey period. It was, however, noted where it occurred as an important component of scrub habitat (Appendix A4).



SENSITIVE PLANT STATUS RANKINGS

Federal Status (U.S. Fish and Wildlife Service)

FE = Federally endangered

PE = Proposed for federal listing as endangered

FT = Federally threatened

PT = Proposed for federal listing as threatened

C = Candidate for federal listing

FSC * = Federal Species of Concern; formerly Category 2 or Category 3 candidate or proposed for federal listing

FSC † = Federal Species of Concern; proposed rule to list as endangered or threatened has been withdrawn

State Status (California Department of Fish and Game)

CE = State endangered

CT = State threatened

CNPS Status (California Native Plant Society)

List of Species Designation

1B = Rare or endangered in California and elsewhere (meets CDFG criteria for rare or endangered listing)

2 = Rare or endangered in California, more common elsewhere

3 = Plants about which more information is needed

4 = Plants of limited distribution

R-E-D Code

R - Rarity

1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low

2 = Occurrences confined to several populations or one extended population

3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported

E - Endangerment

1 = Not endangered

2 = Endangered in a portion of its range

3 = Endangered throughout its range

D - Distribution

1 = More or less widespread outside California

2 = Rare outside California

3 = Endemic to California



APPENDIX A.4

FIELD NOTES

Note: Polygon numbers are linked to spatial data in the GIS vegetation layer.

April 17, 2000

ADAR Image Mosaic Map – Crestridge Central

Patricia Gordon-Reedy/Fred Sproul

Survey Area – end of Kent Road – Padre Dam water tower road

Met Terry Stewart and Dave Lawhead of CDFG at site.

Access: Horsemill Road (no lock)
 Flinn Springs (walk up from County Park)
 Lakeview Lane (main CDFG gate with combo lock)
 Water Tower gate (walk up to water tower for good overview)

Don Caldwell – property owner in small canyon

Eric Fleet – game warden onsite – 619/440-1674; cell phone – 619/206-3086

John and Judy Krug – property owners in Del Rios Canyon – 619/561-8621

1. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Ceanothus tomentosus*, *Malosma laurina*, *Quercus berberidifolia*, *Xylococcus bicolor*, *Adenostoma fasciculatum*, and *Ceanothus leucodermis* (the latter species is typically not dominant; scattered throughout the area but conspicuous when in flower). Also: rock outcrops scattered through this polygon; some are quite large. Species dominance shifts throughout this polygon, but *Ceanothus tomentosus* and *Adenostoma fasciculatum* are abundant throughout. Both *Ceanothus* spp. were in bloom during the vegetation survey. This stand was mapped from various vantage points, including around the water tower and nearby roads.

2. Southern Mixed Chaparral (Polygon 129)

Dominant species: *Adenostoma fasciculatum*, *Ceanothus tomentosus*, *Xylococcus bicolor*. This stand is a circular inclusion within scrub oak chaparral. Dominant species were identified by binocular and the stand was mapped from the water tower vantage point. *Ceanothus tomentosus* was in bloom at this time.

3. Scrub Oak Chaparral (Polygon 128)

Dominant species: *Quercus berberidifolia*.

This stand is heavily dominated by *Quercus berberidifolia*, which was in bloom during the survey period and easy to identify from a distance. Percent cover of the scrub oak appears to be much greater than 50% (i.e., 70-80% of the shrub layer). This stand was identified by binocular and mapped from the water tower vantage point.

4. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Malosma laurina* (originally thought it was *Quercus berberidifolia* from a distance). This stand is heavily dominated by *Malosma laurina*. Percent cover appears to be greater than 50% (i.e., 60-70%). This stand was originally identified by binocular and mapped as scrub oak chaparral from the water tower vantage point.

5. Coast Live Oak Woodland (Polygon 140)

Dominant species: *Quercus agrifolia*.

This large stand of oaks is on the east-facing slope and was preliminarily mapped from the water tower vantage point. We will need to get closer to this stand to refine the polygon boundary and dominant species list.



6. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Quercus berberidifolia*, *Adenostoma fasciculatum*, *Malosma laurina*, *Ceanothus tomentosus* (with lesser amounts of *Ceanothus leucodermis*). This stand was mapped from the water tower vantage point.

Notes: there is some *Artemisia californica* present, but it is not dominant. This polygon has a lot of scrub oak, but not enough (i.e., not more than 50% of the shrub cover) to classify it as scrub oak chaparral.

6A. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Adenostoma fasciculatum*, *Quercus berberidifolia*, *Malosma laurina*.

This stand was mapped from the water tower vantage point.

Notes: This area will be continuous with polygon 6, but the species composition is somewhat different. In this case, the dominant species are listed in order of their dominance. *Ceanothus tomentosus* is uncommon or absent. *Artemisia californica* and *Salvia apiana* are present, but not considered dominant species. This polygon grades into coastal sage scrub on upper slopes.

7. Southern Coast Live Oak Riparian Forest (Polygon 104)

Dominant species: *Quercus agrifolia*, *Quercus engelmannii*, *Quercus engelmannii* x *Q. berberidifolia*, *Salix* spp. (aff. *gooddingii*, *lasiolepis*), *Eucalyptus* spp., *Toxicodendron diversilobum*, *Baccharis salicifolia*.

This stand was mapped from the water tower vantage point; the stand was visited for species identification.

Notes: Incised streambed (jurisdictional wetland – waters of the U.S.), intermittent stream.

8. Coast Live Oak Woodland (Polygons 101 and 102)

Dominant species: *Quercus agrifolia*. Polygon boundary was mapped from the water tower vantage point; the stand will need to be visited for species identification.

9. Coastal Sage Scrub (Polygon 96)

Dominant species: *Artemisia californica*. *Malosma laurina* is locally common to abundant. *Eriogonum fasciculatum* is present, but does not seem to be dominant. Rock outcrops present in this association. This stand was mapped from the water tower vantage point.

10. Coastal Sage Scrub (Polygon 118)

Dominant species: *Artemisia californica*, *Malosma laurina*. *Eriogonum fasciculatum* appears to be a subdominant component of this stand. *Salvia apiana* is present, but not dominant. Noted 1 very large *Rhus ovata*. This stand was mapped from adjacent roads.

Notes: This stand occurs on a south-facing slope; starts just up from drainage bottom (which is dominated by southern mixed chaparral), and continues upslope. Numerous rock outcrops are present.

11. Coastal Sage Scrub (Polygon 116)

Dominant species: *Eriogonum fasciculatum*, with lesser amounts of *Artemisia californica*, *Malosma laurina*. Small stand of scrub habitat surrounded by southern mixed chaparral. Rock outcrops present. This stand was mapped from adjacent road.

Note: *Quercus engelmannii* hybrids present in the area.

General Species List

Acalypha californica
Adenostoma fasciculatum
Antirrhinum sp.
Artemisia californica
Baccharis salicifolia
Baccharis sarothroides
Brassica nigra
Bromus diandrus
Bromus hordeaceus

Bromus madritensis ssp. *rubens*
Camissonia sp.
Carex triquetra
Carpobrotus aff. *edulis*
Castilleja sp.
Ceanothus leucodermis
Ceanothus tomentosus
Cercocarpus minutiflorus
Cheilanthes newberryi



<i>Chlorogalum parviflorum</i>	<i>Machaeranthera juncea</i>
<i>Chlorogalum</i> sp.	<i>Malosma laurina</i>
<i>Clematis pauciflora</i>	<i>Marah macrocarpus</i>
<i>Crassula connata</i>	<i>Marrubium vulgare</i>
<i>Cryptantha</i> sp.	<i>Melica imperfecta</i>
<i>Cuscuta</i> sp.	<i>Microseris</i> sp.
<i>Delphinium cardinale</i>	<i>Mirabilis californica</i>
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i> (= <i>D.</i> <i>pulchellum</i>)	<i>Navarretia</i> sp.
<i>Erigeron foliosus</i> var. <i>foliosus</i>	<i>Paeonia californica</i>
<i>Eriogonum fasciculatum</i>	<i>Pectocarya</i> sp.
<i>Eriophyllum confertiflorum</i>	<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>
<i>Erodium cicutarium</i>	<i>Piperia unalascensis</i>
<i>Eucalyptus</i> sp.	<i>Quercus agrifolia</i>
<i>Eucrypta chrysanthemifolia</i>	<i>Quercus berberidifolia</i>
<i>Euphorbia</i> sp./ <i>Chamaesyce</i> sp.	<i>Quercus engelmannii</i>
<i>Filago californica</i>	<i>Rhamnus crocea</i>
<i>Galium</i> spp.	<i>Rhus ovata</i>
<i>Gnaphalium californicum</i>	<i>Salix gooddingii</i>
<i>Gnaphalium</i> spp.	<i>Salix lasiolepis</i>
<i>Hazardia squarrosa</i>	<i>Salvia apiana</i>
<i>Hedypnois cretica</i>	<i>Sanicula bipinnatifida</i>
<i>Helianthemum scoparium</i>	<i>Scrophularia californica</i>
<i>Lamarckia aurea</i>	<i>Silene laciniata</i> ssp. <i>major</i>
<i>Lathyrus</i> sp.	<i>Solanum</i> sp. (white flowers)
<i>Linanthus dianthiflorus</i>	<i>Thalictrum polycarpum</i>
<i>Lotus scoparius</i>	<i>Toxicodendron diversilobum</i>
	<i>Xylococcus bicolor</i>

April 19, 2000

ADAR Image Mosaic Map – Crestridge East

Patricia Gordon-Reedy/Fred Sproul (afternoon only)

Survey Area – spent a few hours in the morning on the north side of the site (e.g., visually assessing habitat on north-facing slopes just south of Interstate 8). Started at northeast end of site and worked towards the west (but didn't get all the way to the west end). Most of the mapping was done from roads well north of I-8 and Old Hwy. 80 that offered good vantage points. This mapping is preliminary and will need to be refined. Need to particularly focus on dominant species lists for certain types.

Notes: Hours for Flinn Springs County Park are 9:30 to 5:00. Entry fee is \$2.00. Access at this point may be of some use for vegetation mapping, but more useful for rare plant surveys.

E1. Southern Mixed Chaparral (Polygons 2 and 3)

Dominant species: *Adenostoma fasciculatum*, *Quercus berberidifolia*. Lesser amounts of *Quercus agrifolia*. *Toxicodendron diversilobum* also present. Southern mixed chaparral is the dominant association on the north-facing slope, particularly in the northeast portion of the site. Thus, this polygon is quite large. Rock outcrops are common within or adjacent to this association, and range from large boulders to exposed bedrock. This stand was mapped (by binocular) from various vantage points on the north side of I-8.

E1-A. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Quercus berberidifolia*, *Ceanothus tomentosus*. *Ceanothus tomentosus* becomes a constituent of SMC on slopes roughly due south of Snow Drive (see Thomas Brothers p. 1233).



E2. Coast Live Oak Woodland (Polygons 4,5,11,12,13,14)

Dominant species: *Quercus agrifolia*. This association occurs on the north-facing slope, and is adjacent to large rock outcrops. Two separate polygons were mapped on slopes south of Viewside Lane (see Thomas Brothers page 1233), as well as 4 smaller stands on higher slopes to the west. Although coast live oaks occur between the 2 larger polygons, they lie within a matrix of southern mixed chaparral, so were not designated as a discrete oak woodland. This stand was mapped (by binocular) from various vantage points on the north side of I-8.

E2-A. Coast Live Oak Woodland (Polygon 8)

Dominant species: *Quercus agrifolia*. It appears that some *Quercus engelmannii* is present in this association. This stand occurs on the north-facing slope, and lies below a very large rock outcrop. Smaller rock outcrops also occur within this polygon. This stand was mapped (by binocular) from various vantage points on the north side of I-8.

Note: need to close off this polygon.

E3. Scrub Oak Chaparral (Polygon is offsite)

Dominant species: *Quercus berberidifolia*. Scattered *Quercus agrifolia*. Lower north-facing slope just above road. Grades into southern mixed chaparral above. This stand was mapped (by binocular) from various vantage points on the north side of I-8.

E-4. Coastal Sage Scrub (Polygon 78)

Dominant species: *Artemisia californica*, *Malosma laurina*.

This stand was mapped (by binocular) from various vantage points on the north side of I-8.

E-5. Coast Live Oak Woodland (Polygon 15)

Dominant species: *Quercus agrifolia*. Others?? Lower north-facing slope just above road. This stand was mapped (by binocular) from various vantage points on the north side of I-8.

Vegetation Mapping, ADAR image mosaic map – Crestridge central

Accessed site off of Horsemill Road. Continued with mapping from April 17th.

9. Coastal Sage Scrub

Note: Add *Eriogonum fasciculatum* as a subdominant in this habitat.

6. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Adenostoma fasciculatum*, *Quercus berberidifolia*. *Xylococcus bicolor* and *Malosma laurina* are subdominants. This area lies between Horsemill Road and Lakeview Road, on both sides of the dirt road. *Artemisia californica* and *Salvia apiana* occur along the road edges, but are not dominants. *Quercus berberidifolia* is dense in some locations, but still occurs intermixed with *Adenostoma fasciculatum* (towards the oak woodland) and *Malosma laurina* and other species towards Lakeview; thus, it was not called out as scrub oak chaparral. This area was mapped from the adjacent road and various vantage points; species were identified directly (not through binoculars).

12. Disturbed Southern Mixed Chaparral (Polygon 105)

Dominant species: unknown. This area appears to have been cleared (fuelbreak?). It consists of a narrow strip that lies just above a dirt road. Directly adjacent habitat is undisturbed southern mixed chaparral. This stand was mapped (by binocular) from CSS hill to the east.

13. Coastal Sage Scrub (Polygon 103)

Dominant species: *Artemisia californica*, *Malosma laurina*. This stand was mapped (by binocular) from CSS hill to the east.



14. Coastal Sage Scrub (Polygon 51)

Dominant species: *Artemisia californica*, *Malosma laurina*, and possibly, *Viguiera laciniata* (will need to check). This association is on the steep, west-facing slopes at north end of Rios Canyon. Coastal sage scrub appears to be the dominant association from the canyon to nearly the ridgeline on these slopes. Shrub cover is sparser towards mouth of the canyon, denser towards head of canyon. Very large rock outcrops characterize this area. This stand was mapped (by binocular) from a vantage point at the warden's house.

15. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Malosma laurina*. This association occurs above some very large rock outcrops and the coastal sage scrub (polygon 14). It occurs on upper elevation west-facing slopes toward the head of the canyon, then at lower and upper elevation south-facing slopes as the canyon curves to the east. This stand was mapped (by binocular) from a vantage point at the warden's house.

16. Coastal Sage Scrub (Polygons 41 and 51)

Dominant species: *Artemisia californica*, *Malosma laurina*. *Salvia apiana* is present, but not dominant. *Adenostoma fasciculatum* is also present in small amounts. This stand occurs on slopes directly below warden's house. It continues downslope to canyon bottom and up the opposite slope (see polygon 14). This stand was mapped by direct observation and by binocular from a vantage point at the warden's house.

16A. Coast Live Oak Woodland (Polygon 53)

Dominant species: Scattered coast live oaks (*Quercus agrifolia*) and scrub oaks (*Quercus berberidifolia*) within a matrix of coastal sage scrub (which is similar in composition to polygon 16, above). This stand was mapped by direct observation and by binocular from a vantage point at the warden's house.

Note: check classification from lower road.

17. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Ceanothus tomentosus*, *Malosma laurina*, and possibly, *Quercus berberidifolia*. *Rhus ovata* is present but not dominant. This association occurs on south-facing slopes above Rios Canyon. This stand was mapped by binocular from several vantage points (warden's house, dirt roads to the east). Large rock outcrops are common in this stand.

18. Coast Live Oak Woodland (Polygons 62 and 63)

Dominant species: *Quercus agrifolia*. Preliminary mapping of what appears to be a stand of coast live oak at the head of Rios Canyon. Stand may extend to the south; bare (disturbed?) areas common.

19. Southern Coast Live Oak Riparian Forest (Polygon 86)

Dominant species: *Quercus agrifolia*, *Salix gooddingii*, *Salix lasiolepis*. This stand lies adjacent to avocado groves, and only a small portion extends onto the site at this point. This stand was mapped by binocular from vantage points along dirt roads east of the warden's house.

20. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Quercus berberidifolia*, *Adenostoma fasciculatum*, *Malosma laurina*. This stand lies on east-facing slopes west of warden's house, at bottom of a slope just above avocado groves, and is replaced by coastal sage scrub at upper elevations. This stand was mapped by binocular from warden's house.

21. Coastal Sage Scrub (Polygon 41)

Dominant species: *Artemisia californica*. This small stand of CSS occurs within a matrix of southern mixed chaparral south of warden's house. This stand was mapped by binocular from the warden's house.

22. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Malosma laurina*, *Ceanothus tomentosus*, *Quercus berberidifolia*. The western boundary of this stand follows the bottom of the 'drainage' – check topographic map. This stand was mapped from the adjacent road.



23. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Ceanothus tomentosus*, *Quercus berberidifolia*, *Xylococcus bicolor*. *Arctostaphylos glauca* is present, but not dominant. Many of the *A. glauca* shrubs have brown leaves (disease?). This stand was mapped from a vantage point on the upper dirt road to the north.

24. Coastal Sage Scrub (Polygon 37)

Dominant species: *Artemisia californica*, *Malosma laurina*. This small stand of coastal sage scrub occurs in a matrix of southern mixed chaparral. It lies on or near the property boundary. This stand was mapped from the adjacent dirt road.

NOTE: *Plantago erecta* was found alongside the dirt road – at the point where it curves back around to the west. See vegetation maps. A western toad was also found in this location.

25. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Ceanothus tomentosus*. *Quercus berberidifolia* and *Xylococcus bicolor* are subdominants. Some *Arctostaphylos glauca* is present, but it is not dominant. *Cercocarpus minutiflorus* occurs in low-lying areas ('draws'). This association characterizes much of the southern mixed chaparral in south-central part of ADAR East (1" = 100 m). There is evidence of ORV use. On drier slopes, the chaparral appears to consist largely of *Adfa* and *Ceto*; additional species are present in areas with more moisture. This stand was mapped from vantage points along several dirt roads.

26. Coastal Sage Scrub (Polygon 35)

Dominant species: *Artemisia californica*, *Malosma laurina*. This small stand of coastal sage scrub occurs adjacent to a powerline stub road, and is surrounded by southern mixed chaparral. Some *Artemisia californica* occurs in the surrounding area outside of this polygon, but does not appear to be dominant in those areas. This stand was mapped from the adjacent stub road.

27. Coastal Sage Scrub (Polygon 34)

Dominant species: *Artemisia californica*, *Eriogonum fasciculatum*. This is a very small stand of coastal sage scrub that lies direct below and west of the stub road. It is almost continuous with polygon 26 (above). This stand was mapped from the adjacent stub road.

28. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Quercus berberidifolia*, *Malosma laurina*, *Xylococcus bicolor*. *Arctostaphylos glauca* is present but not dominant. Shrubs in this location show the same brown leaves. Also present are *Cercocarpus minutiflorus*, *Heteromeles arbutifolia*, and *Ceanothus tomentosus*. This stand was mapped from the adjacent dirt road.

NOTE: *Ceanothus cyaneus* is present along the dirt road toward the main stand coast live oak woodland along the drainage in this area.

General Species List

Allium peninsulare
Aphanes occidentalis
Apiastrum angustifolium
Arctostaphylos glauca
Artemisia palmeri
Camissonia bistorta
Castilleja exserta
Ceanothus cyaneus
Chorizanthe sp.
Clarkia epilobioides
Claytonia perfoliata
Cneoridium dumosum
Cryptantha aff. *intermedia*
Delphinium parryi

Dudleya pulverulenta
Encelia californica
Eschscholzia californica
Galium angustifolium ssp. *angustifolium*
Galium apiana
Gilia sp.
Gutierrezia aff. *californica*
Heteromeles arbutifolia
Lessingia filaginifolia var. *filaginifolia*
Lonicera subspicata var. *denudata*
Lupinus bicolor
Mimulus aurantiacus
Pellaea andromedifolia
Pentagramma triangularis ssp. *viscosa*



Plantago erecta
Platystemon californicus
Polypodium californicum
Porophyllum gracile
Sanicula arguta

Sidalcea malvaeflora
Stylocline gnaphalioides
Viguiera laciniata
Viola pedunculata

April 25, 2000

ADAR Mosaic Image – Crestridge Central

Patricia Gordon-Reedy with Fred Sproul

Started at water tower gate and worked westward towards Wal-Mart overlook

4. Southern Mixed Chaparral

Change the label of this polygon to Southern Mixed Chaparral. The red color is primarily tall *Malosma laurina*. Fred collected a different looking scrub oak (*Quercus berberidifolia*) at this location – very broad leaves. *Salix gooddingii*, *Salix lasiolepis*, *Artemisia palmeri* – in small draw in this area. This wetland was too small to map.

1-A. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Adenostoma fasciculatum*, *Malosma laurina*, *Quercus berberidifolia*. Subdominant species: *Ceanothus leucodermis*, *Xylococcus bicolor*. Some *Yucca whipplei* near ridges, but not a dominant species. *Toxicodendron diversilobum* is common around rocks. *Quercus agrifolia* is scattered on east-facing slope. Lots of rock outcrops on this east-facing slope above the coast live oak woodland.

2. Southern Mixed Chaparral (Polygon 129)

Dominant species: *Xylococcus bicolor*, *Malosma laurina*, *Quercus berberidifolia*, *Adenostoma fasciculatum*.

Note: *Artemisia californica* is common adjacent to the road.

29. Coast Live Oak Woodland (Polygon 130)

Dominant species: *Quercus agrifolia*. A few *Quercus engelmannii* are present, as well as one *Salix gooddingii*. *Quercus berberidifolia* is common in the understory.

Note: saw a butterfly which was possibly a Quino on the road near this location – see map.

10-A. Coastal Sage Scrub (Polygon 118)

Dominant species: *Artemisia californica*, *Malosma laurina*. This polygon follows the bottom of the drainage (SMC on the opposite slope). Use topography to refine mapping.

1-B. Southern Mixed Chaparral (Polygon 95)

Note: This polygon follows the drainage; crosses it a bit on the south-facing slope. Refine mapping using topography and aerial photography.

30. Coastal Sage Scrub (Polygon 117)

Dominant species: *Artemisia californica*, *Malosma laurina*.

Note: This is a small patch of CSS within Southern Mixed Chaparral. The CSS is in a relatively flat area. Refine mapping with the use of a topographic map and aerial photograph.

31. Southern Mixed Chaparral (Polygon 132)

Dominant species: *Adenostoma fasciculatum*, *Xylococcus bicolor*, *Quercus berberidifolia*. Northwest-facing slope.

Note: this area offers a good vantage point of the Coast Live Oak Woodland (polygon 29). Primarily *Quercus agrifolia*; 1 *Eucalyptus* tree is present.



32. Coast Live Oak Woodland (Polygon 119)

Dominant species: *Quercus agrifolia*, with lesser amounts of *Quercus engelmannii*. A few *Eucalyptus* are present along the road at the east end of this area. This woodland is on a north-facing slope above the avocado orchards and a dirt road. The area above the dirt road has been mechanically cleared at some point (fuel control?), which has resulted in a grassy understory dominated by *Bromus hordeaceus*, but with a lot of native herbaceous species (e.g., *Collinsia heterophylla*, *Papaver californicum*, *Clarkia purpurea*, *Clarkia epilobioides*, *Pholistoma membranacea*, *Lupinus truncatus*, *Sidalcea malvaeflorum*, etc.). Above this cleared area, the CLOW understory consists of coastal sage scrub species. *Artemisia palmeri* is also common in the CLOW understory.

33. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Adenostoma fasciculatum*, *Malosma laurina*, *Xylococcus bicolor*, *Artemisia californica*, *Quercus agrifolia*. Also present (but not dominant): *Quercus berberidifolia*, *Rhamnus crocea*, *Salvia apiana*. Noted 1 *Quercus engelmannii*.

No Number

Bottom of drainage near where road enters Coast Live Oak Woodland – the southwest-facing slopes are mostly Coastal Sage Scrub with *Adenostoma fasciculatum* on the opposite exposure. Difficult to map with our vantage point and image. Areas of flat topography – chamise; south-facing slopes – primarily CSS.

1-D. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Quercus berberidifolia*, *Toxicodendron diversilobum*, *Adenostoma fasciculatum*, *Xylococcus bicolor*, *Ceanothus leucodermis*, *Ceanothus tomentosus*. Also, scattered *Quercus agrifolia* and *Quercus engelmannii* hybrids (*Q. engelmannii* x *Q. berberidifolia*). This habitat occurs on slopes above the Coast Live Oak Woodland. Scrub oak (*Quercus berberidifolia*) is dense on this slope, but still occurs with a good mix of other species; thus, it was not called out as scrub oak chaparral.

Note: *Artemisia palmeri* occurs in scattered to dense stands along the dirt road through this area, adjacent to the CLOW. *Artemisia palmeri* seems to occur in or adjacent to most of the CLOWs (in drainages) that we have observed onsite.

ADAR Image Mosaic – Crestridge West

34. Southern Mixed Chaparral - Disturbed (Polygons 138 and 139)

Dominant species: *Artemisia californica*, *Eriogonum fasciculatum*, nonnative grasses.

Cleared area (fuel break) on either side of the dirt road. Although the vegetation is currently dominated by CSS species, the surrounding vegetation is southern mixed chaparral. This area may be too small to map.

35. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Xylococcus bicolor*, *Malosma laurina*, *Adenostoma fasciculatum*, *Ceanothus leucodermis*, *Quercus berberidifolia*. Also: some *Artemisia californica* and *Eriogonum fasciculatum* near the road – may be related to clearing activities.

36. Coastal Sage Scrub (Polygon 136)

Dominant species: *Artemisia californica*, *Malosma laurina*.

1-E. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Xylococcus bicolor*, *Adenostoma fasciculatum*, *Malosma laurina*, *Ceanothus leucodermis*. *Quercus berberidifolia* is a subdominant, and scattered *Quercus agrifolia* are also present.

37. Coastal Sage Scrub (Polygon 136)

Dominant species: *Artemisia californica*, *Malosma laurina*, and some *Eriogonum fasciculatum*.

The lower end of this polygon (between the chaparral) follows the bottom of the draw, then occurs on the south-facing slope. Check the topography to refine the mapping.



38. Southern Coast Live Oak Riparian Forest (Polygon 151)

Dominant species: *Salix gooddingii*, *Quercus agrifolia*. Scattered *Populus fremontii*, *Artemisia palmeri*

39. Coastal Sage Scrub (Polygons 152 and 153)

Dominant species: *Artemisia californica*, *Malosma laurina*.

Two polygons mapped on west-facing slope, within a matrix of Southern Mixed Chaparral.

40. Coastal Sage Scrub

Dominant species: *Artemisia californica*, *Malosma laurina*.

41. Coast Live Oak Woodland (Polygon 156)

Dominant species: *Quercus agrifolia*.

42. Coastal Sage Scrub (Polygon 159)

Dominant species: *Eriogonum fasciculatum*, *Malosma laurina*, *Artemisia californica*.

General Species List

<i>Achillea millefolium</i>	<i>Juncus dubius</i>
<i>Agrostis pallens</i>	<i>Keckiella antirrhinoides</i> var. <i>antirrhinoides</i>
<i>Allium peninsulare</i>	<i>Keckiella cordifolia</i>
<i>Ambrosia psilostachya</i>	<i>Lathyrus vestitus</i> var. <i>alefeldii</i>
<i>Amsinckia intermedia</i>	<i>Lessingia filaginifolia</i> var. <i>filaginifolia</i>
<i>Anagallis arvensis</i>	<i>Leymus condensatus</i> (x <i>L. triticoides</i>)
<i>Arabis</i> ???	<i>Linanthus dianthiflorus</i>
<i>Artemisia palmeri</i>	<i>Lupinus hirsutissimus</i>
<i>Avena</i> sp.	<i>Lupinus truncatus</i>
<i>Brickellia californica</i> var. <i>californica</i>	<i>Malacothamnus fasciculatus</i>
<i>Carex triquetra</i>	<i>Microseris</i> sp.
<i>Castilleja affinis</i>	<i>Muhlenbergia rigens</i>
<i>Caulanthus heterophyllus</i>	<i>Papaver californicum</i>
<i>Cercocarpus minutiflorus</i>	<i>Pennisetum setaceum</i>
<i>Chamaesyce albomarginata</i>	<i>Penstemon spectabilis</i>
<i>Chenopodium californicum</i>	<i>Phacelia cicutaria</i> ssp. <i>hispida</i>
<i>Clarkia epilobioides</i>	<i>Pholistoma membranaceum</i>
<i>Clarkia purpurea</i>	<i>Populus fremontii</i>
<i>Clematis pauciflora</i>	<i>Pterostegia drymarioides</i>
<i>Cneoridium dumosum</i>	<i>Rhamnus ilicifolia</i>
<i>Collinsia heterophylla</i>	<i>Ribes indecorum</i>
<i>Crassula connata</i>	<i>Rumex crispus</i>
<i>Cryptantha muricata</i> ??	<i>Scrophularia californica</i> ssp. <i>floribunda</i>
<i>Cuscuta</i> sp.	<i>Scutellaria tuberosa</i>
<i>Dodecatheon clevelandii</i> ssp. <i>clevelandii</i>	<i>Selaginella bigelovii</i>
<i>Dryopteris arguta</i>	<i>Senecio vulgaris</i>
<i>Dudleya lanceolata</i>	<i>Sidalcea malvaeflora</i> ssp. <i>sparsifolia</i>
<i>Dudleya pulverulenta</i>	<i>Silene laciniata</i>
<i>Eleocharis</i> sp.	<i>Sisymbrium altissimum</i>
<i>Erigeron foliosus</i> var. <i>foliosus</i>	<i>Solanum</i> aff. <i>xantii</i>
<i>Gnaphalium</i> sp.	<i>Trifolium ciliolatum</i>
<i>Gutierrezia sarothrae</i>	<i>Trifolium wildenovii</i>
<i>Hazardia squarrosa</i>	<i>Vicia ludoviciana</i>
<i>Helianthus gracilentus</i>	<i>Yucca schidigera</i>
<i>Hordeum</i> sp.	<i>Yucca whipplei</i>
<i>Hypochoeris glabra</i>	



April 26, 2000

Patricia Gordon-Reedy with Fred Sproul

Started at Oak Grove (Horsemill Road) and headed east.

Oak Grove (Polygons 43A and 49)

Dominant species: *Quercus agrifolia* with some *Quercus engelmannii*. Understory sparse to lacking; ranges from leaf litter only to a sparse cover of *Bromus hordeaceus*, *Hordeum* sp., *Galium aparine*, *Bromus diandrus*. No oak seedlings. Scattered *Salix gooddingii* right along the drainage near Horsemill Road. Also in drainage: *Nicotiana glauca*, *Rorippa nasturtium-aquaticum*, *Cirsium* sp.

ADAR Mosaic Image – Crestridge Central

43. Coast Live Oak Woodland (Polygons 55, 56, 57)

Dominant species: *Quercus agrifolia*. Scattered *Platanus racemosa*, but mostly in polygon 45. Understory: *Vitis girdiana*. Polygon mapped from adjacent road.

44. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Quercus berberidifolia*, *Malosma laurina*, *Ceanothus tomentosus*, *Quercus agrifolia*, *Arctostaphylos glauca*. Scattered *Artemisia californica*. Habitat is dense. Did not call it out as scrub oak chaparral because of the mix of species. Polygon mapped from adjacent roads (above and below polygon).

45. Southern Coast Live Oak Riparian Forest (Polygons 58 and 59)

Dominant species: *Quercus agrifolia*, with *Platanus racemosa* as a subdominant. *Populus fremontii*, *Salix gooddingii*, and *Salix lasiolepis* are also present, but scattered. Noted one *Tamarix* plant. Understory species include *Juncus* sp., *Toxicodendron diversilobum*, *Polypodium californicum*, *Ambrosia psilostachya*, *Solidago californica*, *Carex spissa* (along road), *Baccharis salicifolia* (uncommon).

Note: Occasional *Quercus engelmannii* on slopes above drainage. Polygon mapped from adjacent road.

14. Coastal Sage Scrub (Polygon 51)

Verified the presence of *Viguiera laciniata* through direct observation from adjacent road.

46. Coastal Sage Scrub (Polygon 53)

Dominant species: *Artemisia californica*, *Malosma laurina*. Also: scattered *Ceanothus tomentosus*, *Rhamnus ilicifolia*, *Xylococcus bicolor*, *Quercus engelmannii*, and *Eriogonum fasciculatum*. Despite the elements of chaparral, the vegetation is dominated by CSS species. Polygon mapped from adjacent road.

16-A. Coast Live Oak Woodland - Open (Polygon 53)

Dominant species: *Quercus agrifolia*.

This polygon is best characterized as an open CLOW. Coast live oak trees are relatively dense (but do not form a closed canopy) within a matrix of coastal sage scrub. Polygon mapped from adjacent road.

ADAR Mosaic Image – Crestridge East

47. Coastal Sage Scrub (Polygon 29)

Dominant species: *Artemisia californica*, *Malosma laurina*. This small polygon definitely contains chaparral elements, such as scattered *Ceanothus tomentosus* and *Adenostoma fasciculatum*. However, the CSS species appear to dominate.

This polygon occurs just east of the area disturbed by ORV's, on the lower west-facing slope.

Polygon mapped from adjacent disturbed area.

48. Southern Mixed Chaparral

Dominant species: *Adenostoma fasciculatum*, *Ceanothus cyaneus*, *Malosma laurina*. *Xylococcus bicolor* and *Yucca* sp. are present but not dominant. This habitat occurs on the upper west-facing slopes.



Polygon mapped from adjacent disturbed area and from slopes to the west.

49. Disturbed Habitat (Polygon 30)

Dominant species: *Erodium botrys*, *Centaurea melitensis*, *Bromus hordeaceus*. Disturbed portion of the freshwater seep area (50). Areas mapped as disturbed habitat may have lost their wetland functions due to ORV activity; mounded soil or otherwise disturbed soil surface; few or no wetland species.

50. Disturbed Freshwater Seep (Polygons 27, 28, 31, 32)

Dominant species: *Erodium botrys*, *Centaurea melitensis*, *Bromus hordeaceus*, *Ambrosia psilostachya* (FAC), *Muhlenbergia rigens* (FACW), *Lotus purshianus*, *Juncus dubius* (FACW), *Rumex salicifolius* (OBL), *Gnaphalium* sp., *Solidago* sp. (?), *Juncus mexicanus* (FACW). *Artemisia palmeri* is present at edge of adjacent scrub habitat.

This entire area is heavily disturbed by off-road vehicles and crossed by numerous ORV tracks. This linear area slopes downward to the north. It contains a mix of wetland and upland herbaceous species. Some patches are so disturbed that they support primarily nonnative upland herbs (e.g., *Erodium botrys*, *Centaurea melitensis*, *Bromus hordeaceus*) and are mapped as disturbed habitat (49). Lower-lying areas support native and nonnative wetland associates. Area appears to be wetter towards the north, drier towards the south. This area has potential for restoration. Restoration should include prohibiting ORV activity and ideally, contouring/lowering the central area. Polygon observed directly.

51. Disturbed Freshwater Seep (Polygon 20)

Dominant species: *Muhlenbergia rigens*, *Juncus mexicanus*, *Juncus dubius*, *Carex* sp., *Bromus mollis*, *Sidalcea malvaeflora*. This area is less disturbed than 49/50, but would still benefit from exclusion of off-road vehicles. Polygon observed directly.

52. Nonnative (Annual) Grassland (Polygon 22)

Dominant species: *Erodium botrys*, *Bromus hordeaceus*, *Bromus diandrus*, *Avena* sp. Area disturbed by off-road vehicles. Polygon observed directly.

52-A. Disturbed Habitat (Polygon 18)

Dominant species: *Pennisetum setaceum*.

Portion of slope appears to be dominated by *Pennisetum*; polygon mapped by binocular from slope to west.

53. Southern Mixed Chaparral (Polygon 3)

Add *Ceanothus crassifolius* to species list as a dominant. Also: *Ceanothus cyaneus* along trail. *Pennisetum setaceum* present along trail. Scattered *Arctostaphylos glauca* on east-facing slope.

Note: scattered oaks at bottom of drainage; *Ceanothus cyaneus* mostly in bud. Polygon mapped from adjacent trail.

ADAR Mosaic Image – Crestridge West

54. Coastal Sage Scrub (Polygon 159)

Dominant species: *Artemisia californica*, *Malosma laurina*, *Eriogonum fasciculatum*.

Polygon mapped from across La Cresta Drive.

55. Coastal Sage Scrub (Polygon 159)

Dominant species: *Artemisia californica*, *Malosma laurina*. *Rhamnus ilicifolia* present but not dominant. Very large boulders. Area mapped off of Las Coches Road, east of Wal-Mart.

56. Southern Mixed Chaparral (Polygon 95)

Typical SMC species plus *Quercus agrifolia*.

57. Southern Mixed Chaparral (Polygon 95)

Dominant species: *Toxicodendron diversilobum*, *Ceanothus tomentosus*, *Malosma laurina*.



58. Southern Coast Live Oak Riparian Forest (Polygon 148)

Dominant species: *Quercus agrifolia*, *Salix gooddingii*.

Several polygons mapped from adjacent development.

59. Southern Mixed Chaparral (Polygon 59)

Dominant species: *Ceanothus tomentosus*, *Malosma laurina*, *Rhamnus ilicifolia*. Also: *Heteromeles arbutifolia*, *Xylococcus bicolor*, *Quercus agrifolia*. Polygon mapped from adjacent development.

60. Coast Live Oak Woodland - Open (Polygon 160)

Dominant species: *Quercus agrifolia*, *Malosma laurina*, *Quercus berberidifolia*. Also: *Rhamnus ilicifolia*, *Toxicodendron diversilobum*, *Keckiella cordifolia*, *Artemisia californica*, *Salvia apiana*, *Eriogonum fasciculatum*. Polygon mapped from adjacent development. Classified as CLOW (rather than SMC) because of density of coast live oaks. Would be an open oak woodland rather than a closed oak woodland.

General Species List

Ambrosia psilostachya
Baccharis salicifolia
Camissonia californica
Carex spissa
Ceanothus crassifolius
Ceanothus cyaneus
Centaurea melitensis
Cirsium sp.
Cryptantha sp.
Eriodictyon crassifolium
Erodium botrys
Erodium cicutarium
Galium aparine
Gilia aff. *australis*
Gnaphalium californicum
Gutierrezia sarothrae
Heteromeles arbutifolia
Hypochoeris glabra
Juncus dubius
Juncus mexicanus
Lepidium nitidum
Lotus argophyllus
Lotus purshianus

Medicago polymorpha
Melica frutescens
Melilotus indicus
Muhlenbergia rigens
Nasella lepida
Nicotiana glauca
Pectocarya linearis ssp. *ferocula*
Phacelia parryi
Platanus racemosa
Prunus ilicifolia
Rhamnus ilicifolia
Rorippa nasturtium-aquaticum
Rumex crispus
Rumex salicifolius
Salvia columbariae ssp. *columbariae*
Sambucus mexicana
Schinus molle
Selaginella cinerascens
Solidago californica
Solidago sp.
Tamarix sp.
Viguiera laciniata
Vitis girdiana

April 28, 2000

ADAR Mosaic Image – Crestridge East

Patricia Gordon-Reedy with Fred Sproul

Vantage Point – north of Old Highway 80, across from Flinn Springs County Park. Mapping north-facing slope south of Old Highway 80 and I-8.

61. Coast Live Oak Woodland (Polygons 73 and 83)

Dominant species: *Quercus agrifolia*. Some *Quercus engelmannii* also present.

These polygons mapped by binocular from vantage point on hill north of Flinn Springs County Park.



62. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Ceanothus crassifolius*, *Quercus berberidifolia*, *Malosma laurina*. Also, scattered *Quercus agrifolia*, *Arctostaphylos glauca*, *Sambucus mexicana*, *Ceanothus leucodermis*. *Toxicodendron diversilobum* is common up the drainage.

Polygon mapped by binocular from vantage point on hill north of Flinn Springs County Park.

63. Coast Live Oak Woodland - Open (Polygons 74 and 81)

Dominant species: *Quercus agrifolia*.

Open oak woodland. Coast live oak is the dominant species, but occurs within a matrix of southern mixed chaparral. Polygon mapped by binocular from vantage point on hill north of Flinn Springs County Park.

64. Coastal Sage Scrub (Polygon 78)

Dominant species: *Artemisia californica*, *Baccharis sarothroides*, *Malosma laurina*. Occasional *Salvia apiana*. Sparse coastal sage scrub. Polygon mapped by binocular from hill north of Flinn Spgs County Pk.

ADAR Image Mosaic – Crestridge Central

65. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Quercus berberidifolia*, *Malosma laurina*, *Arctostaphylos glauca* (dominant on upper slopes). Also: *Adenostoma fasciculatum*, *Keckiella antirrhinoides*, *Xylococcus bicolor*.

This polygon mapped by binocular from vantage point on hill north of Flinn Springs County Park.

66. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Xylococcus bicolor*.

Continuation of polygon 65, but with shift in species composition on west- versus east-facing slopes.

This polygon mapped by binocular from vantage point on hill north of Flinn Springs County Park.

67. Coastal Sage Scrub (Polygon 51)

Dominant species: *Artemisia californica*, *Malosma laurina*. Also: *Eriogonum fasciculatum*, *Keckiella antirrhinoides*, *Salvia apiana*. Slopes east of Rios Canyon Road, above elementary school.

Polygon mapped by direct observation and by binocular from school parking lot.

68. Coastal Sage Scrub (Polygon 51)

Dominant species: *Artemisia californica*, *Vigueria laciniata*, *Malosma laurina*, *Eriogonum fasciculatum*. Also: *Cneoridium dumosum*, *Rhamnus crocea*, *Salvia apiana*.

Polygon mapped by direct observation from adjacent trails.

68-A. Note: *Harpagonella palmeri* is common along trail through coastal sage scrub habitat with *Plantago erecta*. Looks like an area of gabbro soils.

69. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Xylococcus bicolor*, *Malosma laurina*, *Eriogonum fasciculatum*. Also: some *Yucca whipplei*, *Artemisia californica*.

Polygon mapped by binocular and direct observation from adjacent trails.

70. Coastal Sage Scrub (Polygon 51)

Dominant species: *Artemisia californica*, *Malosma laurina*. There are some patches of *Salvia apiana*, *Vigueria laciniata*, and *Cneoridium dumosum*. Also, some grassy openings/inclusions (nonnative grasses) and bare areas, particularly along trails.

Note: may want to check fire history in this area.



General Species List

Harpagonella palmeri
Pentachaeta aurea
Plagiobothrys canescens
Plantago erecta

Sanicula binpinnatifida
Selaginella cinerascens
Uropappus lindleyi

April 30, 2000

ADAR Mosaic Image – Crestridge East

Fred Sproul

Site was accessed off of Dunbar Lane.

F-1. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*. Subdominants: *Xylococcus bicolor*, *Ceanothus tomentosus*.

F-2. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Adenostoma fasciculatum*, *Xylococcus bicolor*, *Ceanothus cyaneus*.

Notes: *Horkelia truncata* along trail (see map). Beehives within preserve – may need to consider liability issues (e.g., hives along hiking trails).

General Species List

Horkelia truncata
Nasella lepida

May 8, 2000

ADAR Mosaic Image - Crestridge Central

Patricia Gordon-Reedy/Fred Sproul

71. Nonnative (Annual) Grassland (Polygons 42 and 43)

Dominant species: *Erodium botrys*, *Bromus diandrus*. Also: *Brassica nigra*, *Bromus mollis*, *Avena sativa*. Occasional *Artemisia californica*. Polygon mapped by direct observation.

72. Coast Live Oak Woodland (Polygon 49)

Dominant species: *Quercus agrifolia*, *Quercus engelmannii*. Also: *Salix lasiolepis* along cut drainage through this area. Running water in drainage during survey period. Willows very scattered and only 1-2 trees wide. Oak grove much wider than that. Polygon mapped by direct observation.

73. Coast Live Oak Woodland - Open (Polygons 44 and 45)

Dominant species: *Quercus agrifolia*, *Quercus engelmannii*. Understory (or between trees) is nonnative grassland or coastal sage scrub species. Polygon mapped by direct observation.

74. *Ceanothus cyaneus*

Small stand along dirt road. 5-6 plants adjacent to *Schinus molle* in ravine (drainage).

ADAR Mosaic Image – Crestridge East

75. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Ceanothus crassifolius*, *Adenostoma fasciculatum*, *Quercus berberidifolia*.

Polygon mapped by direct observation from trail.



76. Coast Live Oak Woodland (Polygon 67)

Dominant species: *Quercus agrifolia*. Scattered oaks around rock outcrops, northeast-facing slope. Polygon mapped by direct observation from trail.

77. Southern Mixed Chaparral (Polygon 3)

Dominant species: *Quercus berberidifolia*, *Adenostoma fasciculatum*. Also: *Ceanothus tomentosus*, *Ceanothus crassifolius*, *Heteromeles arbutifolia*. Polygon mapped by direct observation from trail.

78. Coastal Sage Scrub (Polygon 72)

Dominant species: *Malosma laurina*, *Artemisia californica*.

Polygon mapped by direct observation from trail and by binocular from vantage point along trail.

79. *Ceanothus cyaneus*

Scattered over southwest-facing slope. Denser patches occur near top of slope; some 'good' patches in middle of slope; very scattered to occasional individuals towards bottom of slope. Lots of dead or senescent plants.

General Plant List

Avena sativa

Calamagrostis koelerioides

Ceanothus oliganthus

Salix laevigata

Silene laciniata

May 9, 2000

ADAR Mosaic Image – Crestridge Central

Patricia Gordon-Reedy/Fred Sproul

Started at school along Rios Canyon.

67. Coastal Sage Scrub

Add *Viguiera laciniata* to associate species list; concentrated along drainage above school

Acanthomintha ilicifolia

Population on south-facing slope in 'bald areas' in coastal sage scrub. Associated species: *Plantago virginica*, *Convolvulus simulans*, *Harpagonella palmeri*, *Calochortus splendens*, *Allium haematochiton*, *Brachypodium distachyon*. Acil plants tended to be clustered around shrubs (*Salvia apiana*) or in denser (but primarily native) herbaceous vegetation – particularly, *Convolvulus simulans*. Dropped out where *Centaurea melitensis* came in, or where slopes got rockier and drier. Dense concentrations of ground-nesting bees associated with bald areas. 1 polygon mapped – counted 438 individuals.

Access to balds is a concern. Would want to keep foot traffic out of this area.

Weed control – *Centaurea melitensis* has overtaken many of the open areas – weed control available for this species? Also, fire access.

Some *Pennisetum* in this area – may use a volunteer crew to hand-pull; but would need to revegetate (replant) cleared areas.

General Species List

Acanthomintha ilicifolia

Achnatherum coronatum

Adiantum jordani

Allium haematochiton

Anthriscus caucalis

Antirrhinum nuttallianum

Astragalus gambelianus

Bloomeria crocea

Bothriochloa barbinodis

Brachypodium distachyon

Carduus pycnocephalus

Carex spissa

Chorizanthe fimbriata

Convolvulus simulans



Datiscus glomerata
Delphinium parryi
Dryopteris arguta
Dudleya edulis
Eleocharis sp.
Eriastrum sapphirinum
Helianthus gracilentus
Hemizonia fasciculata
Jade plant
Juncus textilis
Juncus xiphioides
Lasthenia californica
Lasthenia coronaria
Linaria canadensis var. *texana*
Lomatium dasycarpum
Marah macrocarpus
Medicago polymorpha
Melica imperfecta

Melilotus indicus
Microseris aff. *douglasii*
Mimulus cardinalis
Nasella lepida
Nasella pulchra
Osmadenia tenella
Pellaea andromedifolia
Pellaea mucronata
Phacelia cicutaria
Phacelia parryi
Plantago virginica
Polypogon monspeliensis
Rafinesquia sp.
Rorippa nasturtium-aquaticum
Solanum xantii
Stachy ajugoides
Thysanocarpus laciniatus

Note: Fred saw long-nosed snake on south-facing slope north of and opposite Robert Fisher's herp array.

May 10, 2000

ADAR Mosaic Image – Crestridge Central

Patricia Gordon-Reedy/Fred Sproul

Slopes above (east of) Rios Canyon, accessed through Rios School

Acanthomintha ilicifolia

Small stand on lower, west-facing slope. Approximately 55 plants, mostly blooming with some still in seedling stage. May be additional seedlings not included in count. West-facing slope, within coastal sage scrub. Associated species: *Hemizonia fasciculata*, *Calochortus splendens*, *Allium haematochiton*, *Harpagonella palmeri*, *Chorizanthe fimbriata*. Stand is about 25 feet up from road on contour. Rocky, open areas within scrub habitat, on gabbro soils.

80. Coastal Sage Scrub

Dominant species: *Salvia apiana*, *Nasella lepida*, *Gutierrezia* sp. Also scattered *Malosma laurina*, *Heteromeles arbutifolia*. *Allium haematochiton* common in understory. White-sage dominated CSS (inland phase of CSS). South-facing slope, on gabbro soils. Saap is stunted. *Acanthomintha* 'habitat.'

ADAR Mosaic Image – Crestridge West

Caulanthus stenocarpus

Collected a *Caulanthus*-like crucifer in fuelbreak along road into oak woodland. About 30+ plants on south side of dirt road, about 10+ plants on north side of dirt road. Fruits pendant, not sessile, pedicels recurved, but not glabrous. Calyx purplish-red, flowers urn-shaped. No basal rosette, leaves entire to serrate.

Note: *Marrubium vulgare* occurs along east-west oriented dirt trail that begins just below end of water district road. This species is spread by horses (which use this trail). Plants should be hand-weeded (by volunteers?). Entire plant needs to be pulled out by roots rather than cutting at base.



General Species List

Antirrhinum kelloggii
Asclepias sp.
Camissonia californica
Caulanthus heterophyllus var. *heterophyllus*
Cerastium glomeratum
Chaenactis artemisiaefolia
Cryptantha aff. *Micromeres*
Gnaphalium californicum
Isocoma menziesii var. *menziesii*

Lactuca sp.
Madia exigua
Marrubium vulgare
Opuntia aff. *littoralis*
Scrophularia californica
Silene antirrhina
Sisymbrium altissimum
Sisymbrium orientale

May 19, 2000

ADAR Mosaic Image - Crestridge East

Patricia Gordon-Reedy/Fred Sproul
East End (walked in near Dunbar Lane)

Horkelia truncata – common along trail

Counted about 297 plants. Erosion along trailside; could put breaks (checkdams) along gully to catch debris and slow erosion; prohibit ORV traffic

Ceanothus cyaneus – mapped large polygons; counted individual plants where possible (see maps). Stands: 10+ (along trail); 4; 10 (below peak); 3; 4; ca. 15 (saddle and below); 25; 9; 13. Total, individuals = 93. Again, larger stands (polygons) were not counted – Cecy too dense. Also appears that there may be a lot of dead (senescent) individuals.

General Species List

Ceanothus oliganthus
Centaurium venustum
Chorizanthe aff. *procumbens*
Cortaderia selloana (Pampas grass along trail – see PG on map)
Lotus argophyllus

Navarretia hamata ssp. *hamata*
Pennisetum setaceum (along trail)
Rhynchelytrum repens (on rocks)

Coyote
Deer tracks



APPENDIX A.5

REFERENCES

- Abrams, L. and R.S. Ferris. 1951. Illustrated flora of the Pacific States: Washington, Oregon, and California. Vol. III: Geraniaceae to Scrophulariaceae. Stanford, CA: Stanford University Press. 866 pp.
- Beauchamp, R.M. 1986. A flora of San Diego County, California. National City, CA: Sweetwater River Press. 241 pp.
- Beebe, T., R. Boyd, P. Dunn, D. Fredrickson, C. Halpern, E. Harshman, M. Hemstrom, H. Horowitz, A. Jaramillo, B. Kelpsas, P. Lauterbach, P. McDonald, D. Minore, D. Robin, B. Sanders, B. Stein, and H. Weatherly. 1985. Pages 16-23 in The role of the genus *Ceanothus* in western forest ecosystems, Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. Report of a workshop held November 22-24, 1982, Oregon State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.
- California Native Plant Society (CNPS). 2001. Inventory of rare and endangered vascular plants of California. Special publication. Sixth edition. <http://www.CNPS.org/rareplants/inventory/6thEdition.htm>.
- California Natural Diversity Data Base (CNDDB). 1999. List of California terrestrial natural communities recognized by the Natural Diversity Data Base. Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base.
- Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. 1985. The role of the genus *Ceanothus* in western forest ecosystems. Report of a workshop held November 22-24, 1982, Oregon State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.
- Davey, J.R. 1982. Stand replacement in *Ceanothus crassifolius*. M.S. thesis, California State Polytechnic University, Pomona.
- Federal Geographic Data Committee (FGDC). 1997. Vegetation Class Standard. Appendix 10.1: National vegetation classification standard (normative). Vegetation Committee of the Federal Geographic Data Committee.
- Franklin, J., C. Halpern, B. Smith, and T. Thomas. 1985. The importance of *Ceanothus* species in U.S. forest ecosystems. Pages 2-15 in The role of the genus *Ceanothus* in western forest ecosystems, Conrad, S.G., A.E. Jaramillo, K. Cromack, Jr., and S. Rose, compilers. Report of a workshop held November 22-24, 1982, Oregon



-
- State University, Corvallis, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. General technical report PNW-182.
- Gratkowski, H.J. 1962. Heat as a factor in germination of seeds of *Ceanothus velutinus* var. *laevigatus* T. & G. PhD thesis, Oregon State University, Corvallis, OR. 131 pp.
- Hickman, J.C., editor. 1993. The Jepson manual: higher plants of California. Berkeley, CA: University of California Press. 1,400 pp.
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Department of Fish and Game. 156 pp.
- Keeley, J.E. 1986. Resilience of mediterranean shrub communities to fire. Pages 95-112 in *Resilience in Mediterranean-type ecosystems*, Dell, B., A.J.M. Hopkins, and B.B. Lamont, editors. The Netherlands: Dr. W. Junk Publishers.
- Keeley, J.E. 1991. Seed germination and life history syndromes in the California chaparral. *Botanical Review* 57:81-116.
- Keeley, J.E. 1994. Seed-germination patterns in fire-prone Mediterranean-climate regions. Chapter 10 in *Ecology and biogeography of Mediterranean ecosystems in Chile, California, and Australia*, Arroyo, M.T.K., P.H. Zedler, and M.D. Fox, editors. New York, NY: Springer-Verlag.
- Lathrop, E.W. and C.D. Osborne. 1990. From acorn to tree: ecology of the Engelmann oak. *Fremontia* 18(3):30-35.
- Munz, P.A. 1974. A flora of southern California. Berkeley, CA: University of California Press. 1,086 pp.
- Oberbauer, T. 1996. Terrestrial vegetation communities in San Diego County based on Holland's descriptions.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1995. Multiple Species Conservation Program (MSCP). Volume II: Appendix A – biological resources. Prepared for the City of San Diego.
- Parker, V.T. and V.R. Kelly. 1989. Seed banks in California chaparral and other Mediterranean climate shrublands. Pages 231-256 in *Ecology of soil seed banks*, Leck, M.A., V.T. Parker, and R.L. Simpson, editors. San Diego, CA: Academic Press, Inc.



-
- Pavlik, B.M., P.C. Muick, S. Johnson, and M. Popper. 1991. Oaks of California. Los Olivos, CA: Cachuma Press and the California Oak Foundation. 184 pp.
- Regional Environmental Consultants (RECON). 1993. Biological technical report for the proposed Pacific Coast Plaza.
- Regional Environmental Consultants (RECON). 1994. Draft letter to Phil Adams of Gatlin Development Company. Pacific Coast Plaza and Jefferson Street Interchange California gnatcatcher surveys/Sigh property general biology survey (RECON number 2545B).
- Reiser, C.H. 1994. Rare plants of San Diego County. Imperial Beach, CA: Aquafir Press. 177 pp. + appendix.
- Roberts, F.M., Jr. 1995. Illustrated guide to the oaks of the southern Californian floristic province: the oaks of coastal southern California and northwestern Baja California, Mexico. Encinitas, CA: F.M. Roberts Publications. 112 pp.
- Sawyer, J.O. and T. Keeler-Wolf. 1995. A manual of California vegetation. Sacramento, CA: California Native Plant Society. 471 pp.
- Scott, T.A. 1990. Conserving California's rarest white oak: the Engelmann oak. *Fremontia* 18(3):26-29.
- Skinner, M.W. and B.M. Pavlik, editors. 1994. California Native Plant Society's Inventory of rare and endangered vascular plants of California. Special publication no. 1, fifth edition. 336 pp.
- Smith, C.F. 1942. The fall food of brushfield pocket mice. *Journal of Mammalogy* 23:337-339.
- Sweetwater Environmental Biologists, Inc. 1994. Biological resources report for East County Square. Prepared for Gatlin Development. 56 pp. + appendices.
- U.S. Department of Agriculture-Soil Conservation Service (USDA-SCS). 1973. Soil survey: San Diego area, California. Parts I and II + maps.
- U.S. Fish and Wildlife Service (USFWS). 1996. National list of vascular plant species that occur in wetlands: 1996 national summary (1996 national list). Ecology Section – National Wetlands Inventory. 209 pp.
- U.S. Fish and Wildlife Service (USFWS). 1998. Endangered and threatened wildlife and plants; determination of endangered or threatened status for four southwestern California plants from vernal wetlands and clay soils; final rule. *Federal Register* 63(197):54,975-54,994. October 13.

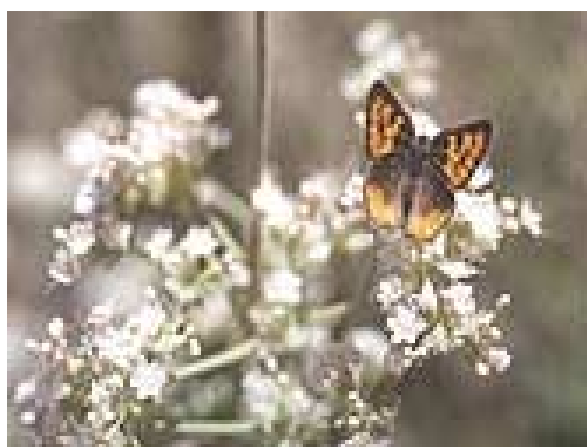


-
- Wiggins, I.L. 1980. Flora of Baja California. Stanford, CA: Stanford University Press.
- Wyatt, R. 1983. Pollinator-plant interactions and the evolution of breeding systems. Pages 51-95 in Pollination biology, Real, L., editor. Orlando, FL: Academic Press, Inc. 338 pp.
- Zammit, C.A. and P.H. Zedler. 1992. Size structure and seed production in even-aged populations of *Ceanothus greggii* in mixed chaparral. Journal of Ecology 81:499-511.
- Zedler, P.H. 1995. Fire frequency in southern California shrublands: biological effects and management options. Pages 101-112 in Brushfires in California wildlands: ecology and resource management, Keeley, J.E. and T. Scott, editors. Fairfield, WA: International Association of Wildland Fire.



APPENDIX B

ANIMAL SPECIES AND FIELD NOTES



Hermes copper *Lycaena hermes* on buckwheat
Photo by M.Klein/C.Edwards

- B.1 List of Vertebrates
- B.2 List of Invertebrates
- B.3 Sensitive Species
- B.4 Field Notes
- B.5 References



APPENDIX B.1
LIST OF VERTEBRATES¹
CRESTRIDGE ECOLOGICAL RESERVE

Compiled by Claude G. Edwards
September 2001

AMPHIBIANS

Hylidae – Treefrogs

<i>Hyla regilla</i>	Pacific treefrog
---------------------	------------------

REPTILES

Iguanidae – Iguanid Lizards

<i>Sceloporus occidentalis</i>	Western fence lizard (B)
<i>Sceloporus orcuttii</i>	Granite spiny lizard (B)
<i>Uta stansburiana</i>	Side-blotched lizard (B)
<i>Phrynosoma coronatum blainvillei</i> ²	San Diego horned lizard (B)

Teiidae – Whiptail Lizards

<i>Cnemidophorus hyperythrus beldingi</i> ²	Orange-throated whiptail (B)
<i>Cnemidophorus tigris multiscutatus</i>	Coastal western whiptail

Anguidae – Alligator Lizards

<i>Elgaria multicarinata webbi</i>	San Diego alligator lizard
------------------------------------	----------------------------

Boidae – Boas

<i>Lichanura trivirgata</i>	Rosy boa
-----------------------------	----------

Colubridae – Collubrid Snakes

<i>Hypsiglena torquata</i>	Night snake
<i>Lampropeltis getulus californiae</i>	Common kingsnake
<i>Masticophis lateralis lateralis</i>	California striped racer
<i>Thamnophis couchii hammondi</i>	Two-striped garter snake

Viperidae – Vipers

<i>Crotalus viridis helleri</i>	Southern Pacific rattlesnake
---------------------------------	------------------------------



BIRDS

Cathartidae – New World Vultures

Cathartes aura

Turkey vulture

Accipitridae – Hawks

Elanus leucurus

Black-shouldered kite

*Circus cyaneus*²

Northern harrier

Accipiter striatus

Sharp-shinned hawk

*Accipiter cooperi*²

Cooper's hawk (B)

Buteo lineatus

Red-shouldered hawk (B)

Buteo jamaicensis

Red-tailed hawk (B)

*Aquila chrysaetos*²

Golden eagle

Falconidae – Falcons

Falco sparverius

American kestrel

Odontophoridae – Quails

Callipepla californica

California quail (B)

Columbidae – Pigeons and Doves

Columba livia

Domestic pigeon

Zenaida macroura

Mourning dove (B)

Columbina passerina

Common ground-dove

Cuculidae – Cuckoos

Geococcyx californianus

Greater roadrunner

Tytonidae – Barn Owls

Tyto alba

Barn owl

Strigidae – True Owls

Bubo virginianus

Great horned owl

Caprimulgidae – Goatsuckers

Phalaenoptilus nuttallii

Common poorwill

Apodidae – Swifts

Aeronautes saxatalis

White-throated swift

Trochilidae – Hummingbirds

Archilochus alexandri

Black-chinned hummingbird (B)

Calypte anna

Anna's hummingbird (B)

Calypte costae

Costa's hummingbird (B)

Selasphorus sasin

Allen's hummingbird



Selasphorus rufus

Rufous hummingbird

Picidae – Woodpeckers

Melanerpes formicivorus

Acorn woodpecker (B)

Picoides nuttallii

Nuttall's woodpecker (B)

Picoides pubescens

Downy woodpecker

Colaptes auratus

Northern flicker

Tyrannidae – Tyrant Flycatchers

Sayornis nigricans

Black phoebe (B)

Sayornis saya

Say's phoebe

Empidonax difficilis

Pacific-slope flycatcher (B)

Myiarchus cinerascens

Ash-throated flycatcher (B)

Tyrannus vociferans

Cassin's kingbird (B)

Vireonidae – Vireos

Vireo huttoni

Hutton's vireo (B)

Corvidae – Jays and Crows

Apelocoma californica

Western scrub-jay (B)

Corvus brachyrhynchos

American crow (B)

Corvus corax

Common raven (B)

Hirundinidae – Swallows

Stelgidopteryx serripennis

Northern rough-winged swallow

Petrochelidon pyrrhonota

Cliff swallow (B)

Hirundo rustica

Barn swallow

Paridae – Titmice

Baeolophus inornatus

Oak titmouse (B)

Aegithalidae – Bushtits

Psaltirparus minimus

Bushtit (B)

Sittidae – Nuthatches

Sitta carolinensis

White-breasted nuthatch

Troglodytidae – Wrens

Salpinctes obsoletus

Rock wren

Catherpes mexicanus

Canyon wren

Thryomanes bewickii

Bewick's wren (B)

Troglodytes aedon

House wren (B)

Regulidae – Kinglets

Regulus calendula

Ruby-crowned kinglet



Sylviidae – Old World Flycatchers*Poliophtila caerulea*

Blue-gray gnatcatcher (B)

Turdidae – Thrushes*Sialia mexicana*

Western bluebird (B)

Catharus guttatus

Hermit thrush

Turdus migratorius

American robin

Timillidae – Babblers*Chamaea fasciata*

Wrentit (B)

Motacillidae – Pipits*Anthus rubescens*

American pipit

Sturnidae – Starlings*Sturnus vulgaris*

European starling (B)

Mimidae – Thrashers*Mimus polyglottus*

Northern mockingbird (B)

Toxostoma redivivum

California thrasher (B)

Bombycillidae – Waxwings*Bombycilla cedrorum*

Cedar waxwing

Ptilogonatidae – Silky Flycatchers*Phainopepla nitens*

Phainopepla (B)

Parulidae – Wood Warblers*Vermivora celata*

Orange-crowned warbler (B)

Dendroica petechia

Yellow warbler (B)

Dendroica coronata

Yellow-rumped warbler

Dendroica townsendi

Townsend's warbler

Oporornis tolmiei

MacGillivray's warbler

Geothlypis trichas

Common yellowthroat

Wilsonia pusilla

Wilson's warbler

Emberizidae – Towhees and American Sparrows*Pipilo maculatus*

Spotted towhee (B)

Pipilo crissalis

California towhee (B)

*Aimophila ruficeps*²

Rufous-crowned sparrow (B)

Spizella passerina

Chipping sparrow

Spizella atrogularis

Black-chinned sparrow

Chondestes grammacus

Lark sparrow

Zonotrichia atricapilla

Golden-crowned sparrow

Zonotrichia leucophrys

White-crowned sparrow

Passerella iliaca

Fox sparrow



<i>Melospiza lincolnii</i>	Lincoln's sparrow
<i>Melospiza melodia</i>	Song sparrow (B)
<i>Junco hyemalis</i>	Dark-eyed junco

Cardinalidae – Cardinals, Grosbeaks, and Buntings

<i>Pheucticus melanocephalus</i>	Black-headed grosbeak (B)
<i>Guiraca caerulea</i>	Blue grosbeak
<i>Passerina amoena</i>	Lazuli bunting (B)

Icteridae – Blackbirds and Orioles

<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Molothrus ater</i>	Brown-headed cowbird (B)
<i>Icterus cucullatus</i>	Hooded oriole (B)
<i>Icterus bullockii</i>	Bullock's oriole (B)

Fringillidae – Finches

<i>Carpodacus mexicanus</i>	House finch (B)
<i>Carduelis pinus</i>	Pine siskin
<i>Carduelis psaltria</i>	Lesser goldfinch (B)
<i>Carduelis lawrencei</i>	Lawrence's goldfinch
<i>Carduelis tristis</i>	American goldfinch

Passeridae – Old World Sparrows

<i>Passer domesticus</i>	House sparrow (B)
--------------------------	-------------------

MAMMALS

Didelphidae – New World Opossums

<i>Didelphis virginiana</i>	Virginia opossum
-----------------------------	------------------

Leporidae – Hares and Rabbits

<i>Sylvilagus audubonii</i>	Audubon's cottontail (B)
-----------------------------	--------------------------

Geomyidae – Pocket Gophers

<i>Thomomys bottae</i>	Botta's pocket gopher
------------------------	-----------------------

Muridae – Mice, Rats, and Voles

<i>Neotoma fuscipes</i>	Dusky-footed woodrat
-------------------------	----------------------

Sciuridae – Squirrels

<i>Spermophilus beecheyi</i>	California ground squirrel (B)
------------------------------	--------------------------------

Felidae – Cats

<i>Felis rufus</i>	Bobcat
--------------------	--------



Canidae – Dogs*Canis latrans*

Coyote (B)

Urocyon cinereoargenteus

Gray fox

Procyonidae - Racoons*Procyon lotor*

Raccoon

Cervidae - Deer and Elk*Odocoileus hemionus*²

Mule deer

(B) = Breeding Observed / Confirmed Onsite.¹ Nomenclature follows AOU (1999) and supplements and Laudenslayer et al. (1991).² MSCP covered species



APPENDIX B.2

LIST OF INVERTEBRATES

CRESTRIDGE ECOLOGICAL RESERVE

Compiled by Michael W. Klein
September 2001

INSECTS

Ephemeroptera – Mayflies

<i>Callibaetis</i> sp.	Mayfly
------------------------	--------

Odonata – Dragonflies and Damselflies

<i>Enallagma</i> sp.	Blue damselfly
<i>Cordulegaster dorsalis</i>	Pacific spiketail
<i>Libellula saturata</i>	Flame skimmer
<i>Libellula croceipennis</i>	Neon skimmer
<i>Aeshna multicolor</i>	Blue-eyed darner

Orthoptera – Grasshoppers, Crickets, and Katydid

<i>Arphia conspersa</i>	Orange pallid band-wing grasshopper
<i>Trimerotropis pallidipennis</i>	Pallid-winged grasshopper
<i>Microcentrum rhombifolium</i>	Broad-winged katydid
<i>Gammarotettix genitalis</i>	Southern California chaparral camel cricket
<i>Oecanthus</i> sp.	Tree cricket
<i>Gryllus</i> sp.	Field cricket

Hemiptera – True Bugs

Genus Miridae	Plant bug sp.
Family Tingidae	Lace bug
<i>Apiomerus crassipes</i>	Bee assassin
<i>Triatoma protracta</i>	Western cone-nose
<i>Lygaeus kalmii</i>	Common milkweed bug

Homoptera – Cicadas, Leafhoppers, and Allies

Family Cicadidae	Cicada
<i>Tibicinoides cupreosparus</i>	Red-winged grass cicada
<i>Platypedia laticapitata</i>	Wide-headed cicada
Family Cercopidae	Spittle bug
Family Cicadellidae	Leafhopper
Family Membracidae	Tree hopper
Family Psyllidae	Red-gum tree psyllid



Neuroptera – Nerve-winged Insects

Family Chrysopidae

Green lacewing

Family Myrmeleontidae

Antlion

Lepidoptera – Butterflies and Moths

Chionodes ochreostrigella

Microlep moth

Amydria sp.

Microlep moth

Melisopus latiferreanus

Microlep moth

Hyles lineata

White-lined spinx moth

Helicoverpa zea

Corn earworm

Agrotis ipsilon

Black cutworm

Euxoa auxiliaris

Army cutworm

Family Pyralidae

Snout moth

Hellula rogatalis

Snout moth

Jocara trabalis

Snout moth

Family Arctiidae

Tiger moth sp.

Halisidota maculata

Spotted halisidota

Trichoplusia ni

Cabbage looper

Autographa californica

Alfalfa looper

Catocala sp.

Underwing moth

Sabulodes aegrotata

Omnivorous looper

Family Geometridae

Geometrid moth

Glaucina sp.

Geometrid moth

Semiothisa neptaria

Geometrid moth

Papilio zelicaon

Anise swallowtail

Papilio rutulus

Western tiger swallowtail

Papilio eurymedon

Pale swallowtail

Pontia protodice

Checkered white

Pieris rapae

Cabbage white

Anthocharis sara sara

Pacific sara orange-tip

Anthocharis cethura

Desert orange-tip

Colias eurytheme

Orange sulphur

Eurema nicippe

Sleepy orange

Nathalis iole

Dainty sulphur

Lycaena hermes

Hermes copper

Satyrium sylvinus

Sylvan hairstreak

Satyrium auretteorum spadix

Gold-hunter's hairstreak

Satyrium tetra

Mountain mahogany hairstreak

Satyrium saepium

Hedgerow hairstreak

Callophrys dumetorum perplexing

Bramble hairstreak

Callophrys augustinus

Brown elfin

Strymon melinus

Gray hairstreak

Leptotes marina

Marine blue

Hemiargus ceraunus gyas

Edward's blue

Hemiargus isola alce

Reakirt's blue

Euphilotes batoides bernardino

Bernardino blue



<i>Plebejus acmon acmon</i>	Acmon blue
<i>Glaucopsyche lygadamus australis</i>	Southern blue
<i>Apodemia mormo virgulti</i>	Behr's metalmark
<i>Agraulis vanillae</i>	Gulf fritillary
<i>Speyeria coronis semiramis</i>	Semiramis fritillary
<i>Speyeria callippe comstocki</i>	Comstock's fritillary
<i>Chlosyne gabbii</i>	Gabb's checkerspot
<i>Nymphalis antiopa</i>	Mourning cloak
<i>Vanessa cardui</i>	Painted lady
<i>Vanessa annabella</i>	West coast lady
<i>Junonia coenia</i>	Common buckeye
<i>Adelpha bredowii</i>	California sister
<i>Coenonympha californica</i>	California ringlet
<i>Danaus gillipus</i>	Queen
<i>Erynnis tristis</i>	Mournful duskywing
<i>Erynnis funeralis</i>	Funereal duskywing
<i>Pyrgus albescens</i>	Western checkered skipper
<i>Euphyes vestris harbisoni</i>	Harbison's dun skipper
<i>Hylephila phyleus</i>	Fiery skipper
<i>Ochlodes agricola</i>	Rural skipper

Diptera – Gnats, Midges, and Flies

<i>Holorusia hespera</i>	Common crane fly
Family Culicidae	Mosquito sp.
Family Simuliidae	Black (buffalo) fly sp.
Family Rhagionidae	Snipe fly
Family Bibionidae	March fly
Family Asilidae	Robber fly
Family Dolichopodidae	Long-legged fly
Family Muscidae	Muscid fly
<i>Bombylius albicapillus</i>	Bee fly
<i>Bombylius major</i>	Large bee fly
<i>Bombylius lancifer</i>	Bee fly
<i>Conophorus fenestratus</i>	Bee fly
<i>Exoprosopa</i> sp.	Bee fly
<i>Hemipenthes sinuosa jaennickiana</i>	Black-winged bee fly
<i>Lepidanthrax</i> sp.	Bee fly
<i>Archytas apicifer</i>	Tachinid fly
Family Syrphidae	Syrphid flower fly sp.
<i>Parasarcophaga</i> sp.	Flesh fly sp.
<i>Trigonometopus</i> sp.	Lauxaniidae fly
<i>Phaenicia sericata</i>	Green bottle fly
<i>Calliphora</i> / <i>Paralucilia</i> sp.	Blue bottle fly



Coleoptera – Beetles

Paracotalpa ursina

Family Elateridae

Trichodes sp.

Hippodamia convergens

Coccinella novemnotata

Olla v-nigrum

Family Phalacridae

Phloeodes pustulosus

Meloidae zonitis

Lytta sp.

Eleodes sp.

Cratidus osculans

Serica sp.

Attagenus sp.

Anthrenus sp.

Mordella sp.

Saxinis knausi

Bear beetle

Click beetle

Checkered beetle

Convergent lady beetle

Nine-spotted ladybird

Ash gray ladybird

Shining flower beetle

Ironclad beetle

Blister beetle

Blister beetle

Stink beetle

Wooly darkling beetle

June beetle

Carpet beetle

Carpet beetle

Tumbling flower beetle

Knaus' saxinis

Hymenoptera – Ants, Wasps, and Bees

Iridomyrmex humilis

Pogonomyrmex californicus

Myrmecocystus melliger

Family Formicidae

Liometopum occidentale

Vespula pensylvanica

Polistes sp.

Polistes fuscatus aurifer

Family Sphecidae

Chalybion californicum

Pepsis sp.

Family Cynipidae

Sirex aureolatus

Subfamily Colletinae

Family Halictidae

Subfamily Andreninae

Subfamily Anthophorinae

Xylocopa varipuncta

Xylocopa californica

Ceratina sp.

Bombus vosnesenskii

Bombus edwardsi

Bombus crotchii

Apis mellifera

Argentine ant

California harvester ant

Honey ant

Formicid ant

Velvety tree ant

Yellow jacket

Polistes wasp

Golden Polistes wasp

Sphecid wasp

Blue mud wasp

Tarantula wasp

Gall wasp

Wood wasp

Plasterer bee

Sweat bee

Mining bee

Digger bee

Valley carpenter bee

California carpenter bee

Carpenter bee

Vosnesenski's bumblebee

Edward's bumblebee

Crotch's bumblebee

European honeybee



ARACHNIDS

Aranea – Spiders

Aphonopelmus sp.

Lycosa sp.

Agelenopsis operta

Cyclosa turbinata

Family Salticidae

Phidippus formisus

Family Thomisidae

Tarantula

Wolf spider sp.

Funnel spider

Trash-web spider

Jumping spider

Red jumping spider

Crab spider

Acari – Mites and Ticks

Family Tetranychidae

Rhipicephalus sanguineus

Spider mites

Brown dog tick

GASTROPODS

Stylommatophora – Snails and Slugs

Helix aspera

Brown garden snail



APPENDIX B.3

SENSITIVE ANIMAL SPECIES

Lycaena hermes

Hermes Copper

USFWS: Species of Concern

CDFG: None

The Hermes copper is restricted to San Diego County and northern Baja California (Faulkner and Klein 2001). Its current known range is from Poway south to northern Baja, between Interstate 15 and State Road 79 to the east. Its primary habitat is open coastal sage scrub and southern mixed chaparral where its larvae's only host plant, spiny redberry (*Rhamnus crocea*), is present, usually on west and south-facing slopes. New vegetative growth of redberry is toxic to the caterpillar, and therefore the plant should be at least 18 years old before it can be eaten. Flat-topped buckwheat is the primary nectaring plant, but the species has also been observed using slender sunflower (*Helianthus gracilentus*) and other plants in the Asteraceae family.

The adult flight period is from late May through early July, depending on elevation. Eggs are laid on spiny redberry and remain there over the winter. The eggs generally hatch during the first week of May, after which time the larvae feed on redberry foliage. Pupation begins on or about the third week of May.

Hermes copper butterflies form colonies of about 50 adults. The colonies appear to be independent from each other, with some inter-colony movement and breeding by only a few males.

Known Threats. The major threat to this butterfly is fire. Brushfire would destroy mature established spiny redberry plants. The recovering new vegetative growth would be toxic to the Hermes copper larvae. A recent report of a re-establishment of Hermes copper has been made at Mission Trails Regional Park. A brushfire consumed many acres of native vegetation in the area in 1982, destroying a known population of the butterfly. Hermes coppers were observed there again in June 2000, 18 years after the fire occurred (D. Faulkner pers. comm.). Brushfire management in portions of the Crestridge Ecological Reserve where Hermes copper occurs will need to be a high priority.

Crestridge. This species has been observed at approximately 35 colonies in the central portion of the reserve, where the habitat conditions are most appropriate. Specific locations onsite include areas north and south of Cross Timbers Truck Trail west of the end of La Cresta Heights Road, along portions of Valley View Truck Trail in the northwestern portion of the reserve, areas south and southeast of the water tank, along Lakeview Lane south of the oak grove, along portions of Rios Canyon Truck Trail, and around the previous racetrack area. There are additional areas of suitable conditions in the western and north-central portions of the reserve, but no colonies have been documented there to date.



Euphyes vestris harbisoni

Harbison's Dun Skipper

USFWS: Species of Concern

CDFG: None

Harbison's dun skipper is a local endemic subspecies that occurs in a series of scattered and disjunct colonies throughout western San Diego County. The original type location for Harbison's dun skipper is Flinn Springs County Park, adjacent to Crestridge. The northernmost record of this subspecies is Silverado Canyon in Orange County (Faulkner and Klein 2001); otherwise, the only known records are for San Diego County: Hellhole Creek, Fallbrook, Escondido, Blossom Valley, Elfin Forest, Poway, El Monte Oaks, Old Viejas Grade, Tecate Peak near Barrett Junction, Dulzura, and San Pasqual Academy (J. Brown pers. comm.; Faulkner and Klein 2001). Harbison's dun skipper is restricted to riparian areas, intermittent streams, and oak woodlands where its larval host plant, San Diego sedge (*Carex spissa*) is present.

The adult flight period of the dun skipper is from mid-May to mid-July. Males are usually observed patrolling an area up to approximately 30 m away from the drainage. Females are usually found on the sedge or in close proximity to the plant. After mating, the female lays eggs on the sedge and, after an approximately 10-day incubation period, the first instar larvae emerge and begin eating the sedge foliage. They will continue to feed until the weather turns cooler, at which time the caterpillar should have grown to a fourth instar, or mature, larvae. At this stage the larvae will attach two or three blades of the sedge together with silk, forming an overwintering shelter. During the first week of May, the larvae will emerge from its winter shelter and either complete its larval growth to a mature stage, or immediately pupate. Adult skippers generally emerge around the middle of May.

Known Threats. The greatest threats to this species are loss of riparian habitat and poor water quality (Faulkner and Klein 2001). The host plant, San Diego sedge, occurs in riparian environments and requires moist areas. All of the drainages flowing through the Crestridge Ecological Reserve have the potential for carrying and transporting a variety of water-borne substances, including herbicides and pesticides, from surrounding residences. These represent a potential threat to the survival of the sedge and the skipper.

Crestridge. Focused surveys in December 2000 confirmed the presence of four populations of overwintering larvae on its host plant, San Diego sedge, along Rios Canyon Creek. No adult Harbison's dun skippers were found during subsequent surveys along the same drainage in June 2001. However, the presence of larvae confirms that the skipper is present on the reserve.



Euphydryas editha quino

Quino Checkerspot Butterfly

USFWS: Endangered

CDFG: None

The Quino checkerspot butterfly was historically one of the most abundant butterflies in southern California (Murphy 1990), with a distribution that included portions of Los Angeles, Orange, Riverside, and San Diego counties and northern Baja California (Faulkner and Klein 2001). Currently, the San Diego populations are restricted to Otay Mountain, Brown Field, Otay Mesa, Jamul, and Jacumba (Faulkner and Klein 2001). The species prefers open coastal sage scrub, chaparral, juniper woodlands, forb lands, and native grassland, on clay soils and cryptogamic crusts (USFWS 2000).

The host plant for the larvae is dwarf plantain (*Plantago erecta*) at lower elevations and *Plantago patagonica* at elevations above 500 m. Pre-diapause larvae have been known to use owl's clover (*Castilleja exerta*) when its primary host plant is not available. The female lays eggs in the spring, and the larvae diapause through the summer, fall, and into mid-winter. Mature larvae pupate in late February or early March, and adults usually emerge in March and last through April, sometimes early May. Nectary species include popcorn flower (*Cryptantha* spp.), goldfields (*Lasthenia* spp.), fiddleneck (*Amsinckia intermedia*), chia (*Salvia columbariae*), and blue dicks (*Dichelostemma pulchella*).

Known Threats. This species apparently needs large, unfragmented areas of natural habitat to facilitate its natural metapopulation dynamics, which involve regional expansions and contractions of populations, with periodic recolonizations of satellite sites from core sites (Murphy 1990). Local populations that may become extirpated rely on recolonization from individuals dispersing from nearby populations. Habitat management practices must maintain open areas with low growing and sparse vegetation.

Crestridge. This species is not known from the Crest area and has not been recorded within the Crestridge reserve. The closest sighting was in the vicinity of Foster Canyon (former Boys and Girls Club property) north of San Vicente Reservoir, along Highway 67 (F. Sproul pers. comm.). Surveys were conducted at Crestridge for this species in spring 2001 and will be conducted again in spring 2002. Patches of dwarf plantain were found occurring on the southwest-facing slope on the hill adjacent to Rios Elementary School (Thornmint Hill). There was also a small patch east of Rios Canyon along the maintenance roads near the former racetrack.

Phrynosoma coronatum blainvillei

San Diego Coast Horned Lizard

USFWS: Species of Concern

CDFG: Species of Special Concern

MSCP covered species

The San Diego coast horned lizard occurs along the coastal slope of southern California at elevations below 2,500 m. Its habitat ranges from open, sandy areas to dense



chaparral, coastal sage scrub, grasslands, and open coniferous forests. The species' distribution is locally patchy and dependent on microhabitat characteristics (e.g., areas with loose sand) and the availability of its primary food item, *Pogonomyrmex* harvester ants (R. Fisher pers. comm.). Although little is known about the home range of this species, a close relative in Arizona (*P. solare*) typically establishes a well-defined home range (0.2 to 0.7 acre; Baharav 1975).

Known Threats. This species is impacted by off-road vehicle activity, ecological effects of introduced ant species, illegal collecting, and predation by cats and dogs. Horned lizards disappear where introduced Argentine ants (*Iridomyrmex humilis*) competitively exclude harvester ants (T. Case pers. comm.; Suarez et al. 1998). Argentine ant invasion is a significant edge effect in San Diego horned lizard habitat, as these ants can penetrate up to 200 m into native habitat from the urban edge or irrigated landscaping (Suarez et al. 1998).

Crestridge. San Diego coast horned lizards have been observed on the slopes adjacent to Rios Elementary School, in the south-central portion along the trails east of the warden's residence, along Lakeview Lane, along Valley View Truck Trail, Cross Timbers Truck Trail, and elsewhere.

Cnemidophorus hyperythrus beldingi

Belding's Orange-throated Whiptail

USFWS: None

CDFG: Species of Special Concern

MSCP covered species

The orange-throated whiptail is distributed throughout parts of Orange, Riverside, and San Diego counties and northern Baja California at elevations below 875 m. The species is most often associated with open sage scrub habitats with a vegetative cover of about 50%, but it also occurs in sparse grasslands, open chaparral, riparian scrub, and oak woodlands (V. Horchar pers. comm.). Densities can be relatively high where adequate food and habitat structure exist, with home range size ranging from 0.07 to 0.15 acre (Bostic 1965).

Known Threats. This species is negatively impacted by off-road vehicle activity, ecological effects of introduced ant species, and predation by cats and dogs. The termite *Reticulitermes hesperus* constitutes a significant portion of the whiptail's diet, so it is possible that invasive nonnative ant species such as the Argentine ant and fire ant (*Solenopsis invicta*) could significantly reduce or eliminate the termite prey base in smaller, edge-affected habitat patches (Suarez et al. 1998).

Crestridge. Orange-throated whiptails have been observed along dirt trails east of Rios Canyon in and near the former racetrack area, north and west of the oak grove in the south-central portion of the reserve, as well as along trails west of the water tank. They have also been observed along Valley View Truck Trail adjacent to the off-site avocado orchard.



Thamnophis couchi hammondi

Two-striped Garter Snake

USFWS: none

CDFG: Species of Special Concern

The two-striped garter snake occurs within most habitats of coastal California from Monterey County south to northwestern Baja California. It ranges from sea level to the foothills and into the mountains up to 2,200 m in elevation. This species is closely associated with permanent fresh water, such as streams that feature rocky beds or that are bordered by willows or other streamside growth, as well as ponds, lakes, wetlands, vernal pools, and oases. The species may forage underwater and in adjacent drier upland environments such as open sage scrub, grasslands, and woodlands. The two-striped garter snake is active between January and November and may be nocturnal during hot weather.

Known Threats. Threats include loss of habitat, hydrological modifications, and genetic isolation.

Crestridge. A two-striped garter snake was observed in May 2001 along Lakeview Lane just west of the oak grove.

Crotalus ruber ruber

Red Diamond Rattlesnake

USFWS: Species of Concern

CDFG: Species of Special Concern

The range of the northern red diamond rattlesnake is southwestern California and most of Baja California, Mexico. It occurs from the coastal slope to the foothills and mountains, up to 1250 m, and onto the desert slope. The species is commonly associated with heavy brush containing large rocks or boulders, in areas of coastal sage scrub, chaparral, thornscrub, and desert scrub. However, chamise and redshank (*Adenostoma sparsifolium*) vegetation associations may offer better structural conditions, serving as refuges and for food resources, than other habitats. The red diamond rattlesnake's life history is relatively unknown, but the species can be active year round, being more visible during peak mating season in April and May.

Coastal western whiptails (*Cnemidophorus tigris* ssp. *multiscutatus*) are a major food source of the juvenile rattlesnakes. Adults feed on such species as California ground squirrel (*Spermophilus beecheyi*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), cottontail rabbits (*Sylvilagus* spp.), and various birds. The only known predator is the red-tailed hawk (*Buteo jamaicensis*).

Known Threats. This species is threatened by collecting and killing as a result of public fears.



Crestridge. The red diamond rattlesnake was not observed at Crestridge during the 2000-2001 surveys but has the potential to occur there.

Elanus leucurus

Black-shouldered Kite

USFWS: None

CDFG: Fully Protected

The black-shouldered kite is a year-round resident over much of California west of the Sierra Nevada and deserts, south into northern Baja California. In San Diego County black-shouldered kites prefer to nest in riparian woodland, live oaks, or in groves of sycamores, where these border grassland and open fields. Kites hunt for food in any open grassy area and are often seen hovering even over weedy margins of highways (Unitt 1984). Their prey consists primarily of small rodents, but they also feed on terrestrial insects.

Known Threats. The major threat to this species within the boundaries of the reserve is disturbance of active nest sites. Habitat loss and pesticide contamination also limit this species' population sizes (Remsen 1978, Anderson and Hickey 1970).

Crestridge. Black-shouldered kites have been reported from the annual grassland north of the oak grove near the center of the reserve. They have been known to nest in the oak grove (B. Rickles pers. comm., M. Beck pers. comm.). They probably also utilize the undeveloped areas offsite to the east, along Horsemill Road.

Accipiter cooperi

Cooper's Hawk

USFWS: None

CDFG: Species of Special Concern

MSCP covered species

The Cooper's hawk ranges from southern Canada to Guatemala. It is a year-round resident over most of California, with additional numbers occurring as migrants and winter visitors. Cooper's hawks occupy oak, riparian, and eucalyptus woodlands, from the coast to the mountains. They also hunt over other habitats such as coastal sage scrub, chaparral, and suburban landscaping. Cooper's hawks nest in dense stands of oak or riparian woodland and have been reported nesting in exotic trees, such as eucalyptus. Their nesting period in San Diego County is between late-March and late-May (Unitt 1984).

Known Threats. The major threat to this species within the boundaries of the reserve is disturbance of active nest sites. Cooper's hawks are generally wary birds and sensitive to intruders in their breeding areas. Habitat loss and pesticide contamination also limit this species' population sizes (Remsen 1978, Anderson and Hickey 1970).



Crestridge. Cooper's hawks have been seen at all times of the year at Crestridge, primarily along heavily vegetated canyons. They have been observed, or suspected of, nesting at three different localities onsite: (1) two fledglings observed in the oak grove in the central portion of the reserve (C. Edwards, 23 June 2001), (2) nest observed in live oaks along Valley View Truck Trail on the northern boundary of the reserve (M. Klein, 16 June 2001), and (3) probable nest site in the oak riparian woodland just south of Valley View Truck Trail in the north-central portion of the reserve (one or two Cooper's hawks seen and heard in this area, C. Edwards, spring and summer surveys 2001).

Aquila chrysaetos

Golden Eagle

USFWS: None

CDFG: Species of Special Concern

MSCP covered species

The golden eagle is a year-round resident in San Diego County but is restricted in occurrence to areas sustaining undeveloped open terrain with grassland, pasture, sage scrub, and open woodland. It is a regular inhabitant of rugged foothills and backcountry terrain with scattered farms, grassland valleys, and rock outcrops, as well as lakes and rivers. For nesting, golden eagles require isolated sites including caves, ledges, and even large trees. They range widely in search of food, perhaps miles from an active nest site.

Known Threats. Human disturbance at active nest sites, loss of foraging habitat, shooting, lead poisoning, and electrocution on power poles (Snow 1973; Scott 1985, Johnsgard 1990) are known factors impacting golden eagle populations.

Crestridge. An adult eagle was observed at Crestridge, soaring over the former racetrack area (C. Edwards, 18 March 2001). The golden eagle is not expected to occur regularly at Crestridge, due to lack of suitable foraging habitat (D. Bittner pers. comm.). The closest active eagle pair to Crestridge is in the Sweetwater River drainage. Eagles historically nested at the cliffs above Flinn Springs, but were pushed out by housing developments in their foraging areas along the San Diego River north of I-8 and in Harbison Canyon.

Polioptila californica californica

California Gnatcatcher

USFWS: Threatened

CDFG: Species of Special Concern

MSCP covered species

The coastal subspecies of California gnatcatcher is restricted to the coastal slopes of southern California, from southern Ventura County south to El Rosario, Baja California Norte. It is closely associated with coastal sage scrub vegetation, particularly on gentle slopes within the maritime and coastal climate zones. In San Diego County, the California gnatcatcher occurs most commonly in coastal sage scrub vegetation with high proportions of California sage and flat-topped buckwheat and less commonly in



subassociations dominated by black sage, lemonade-berry (Atwood 1980, 1990; Bontrager 1991; Weaver 1998), or broom baccharis (Unitt 1984). Territory size requirements appear to vary with habitat quality, ranging from 2.5 to 45 acres in San Diego County (RECON 1987; ERCE 1991; ERCE unpublished data), with territory size increasing with distance from the coast (Ogden 1993; Preston et al. 1998). Gnatcatchers are able to disperse across suburban environments. It is postulated that gnatcatchers breed in and disperse across the small coastal sage scrub patches through Lakeside. The western end of the Crestridge Ecological Reserve provides coastal sage scrub habitat that may function as part of the gnatcatcher stepping stone linkage through Lakeside.

Known Threats. The primary cause of this species' decline is the cumulative loss and fragmentation of coastal sage scrub vegetation by urban and agricultural development. Gnatcatchers are subject to predation by a wide variety of vertebrate predators (Sockman 1997, Braden et al. 1997), including human subsidized predators (e.g., house cats, raccoons, ground squirrels, and scrub jays). Gnatcatchers are also subject to nest parasitism by brown-headed cowbirds (USFWS 1991, Ogden 1993, Braden et al. 1997). Maintenance of appropriate habitat structure through fire management is an important management issue for gnatcatchers.

Crestridge. Focused surveys for coastal California gnatcatchers in spring and summer 2001 failed to find any gnatcatchers onsite. Areas mapped as coastal sage scrub were specifically visited and searched without positive results. Most of the reserve has been visited, and the habitat types and quality identified and assessed for potential occurrence of California gnatcatcher. The most likely area where they may be found is in the westernmost portion of the site. Much of the sage scrub at Crestridge is quite dense and has not burned for at least 15 years, potentially reducing its suitability as gnatcatcher habitat.

On 14 November 2001, a single California gnatcatcher was identified by its call offsite in coastal sage scrub, approximately 0.25 mi west of the Crestridge boundary gate across Valley View Truck Trail (C. Edwards pers. comm.).

Aimophila ruficeps

Rufous-crowned Sparrow

USFWS: Species of Concern

CDFG: Species of Special Concern

MSCP covered species

The rufous-crowned sparrow is a common resident of open scrub habitats and brushy slopes with grassy patches. The southern California subspecies *canescens* occurs in California along the Coast Range from Sonoma County to Ventura County, and the western foothills of the Sierra Nevada Mountains, south through the Tehachapis, and in drier portions of the Transverse and Peninsular Ranges. It also occurs in portions of the coastal plain of southern California southward into Baja California. It often occurs on slopes that are steep, sparsely vegetated, and rocky or recently burned. In San Diego County, rufous-crowned sparrows nest in areas of sage scrub vegetation from the coastal



slope to the foothills and sparingly further east and in higher elevations. Their nesting period is between mid-March and early-June (Unitt 1984).

Known Threats. The species is vulnerable to degradation and fragmentation of coastal sage scrub habitat and may be sensitive to edge effects.

Crestridge. Rufous-crowned sparrows have been seen at several places at different times of the year. Specific locations include along Valley View Truck Trail along the northern and northwestern reserve boundary, west and southwest of La Cresta Heights Road, along trails north of the oak grove, along Rios Canyon Truck Trail, on slopes east of Rios Elementary School, and along trails west of the former racetrack. They were confirmed breeding and attending fledged young during surveys in 2001.

Amphispiza belli belli

Bell's Sage Sparrow

USFWS: Species of Concern

CDFG: Species of Special Concern

Bell's sage sparrows are generally uncommon to fairly common inhabitants of dense brushlands, ranging from the Cascade Mountains and southward into Baja California. They are locally uncommon in coastal sage scrub and open chaparral vegetation in San Diego County (Johnson and Marten 1992). Their distribution is rather spotty, and they are essentially sedentary. However, dispersing individuals have been reported away from presumed breeding areas (e.g., Cabrillo National Monument on Point Loma, C. Edwards pers. comm.).

Known Threats. Bell's sage sparrow is vulnerable to loss, degradation, and fragmentation of coastal sage scrub habitat.

Crestridge. Bird censuses performed in spring 2001 failed to reveal the presence of this species onsite. The eastern, more rugged areas of the reserve that support potentially appropriate vegetation should be surveyed for this species.

Odocoileus hemionus fuliginata

Southern Mule Deer

USFWS: None

CDFG: Game species

MSCP covered species

Mule deer are widespread throughout undeveloped portions of San Diego County, although they may be declining in the county. Deer require relatively large, undisturbed tracts of chaparral, coastal sage scrub, and mixed grassland/shrub habitats (Padley 1992). Considerations for conservation and management should include migration and dispersal corridors that minimize the potential for road kill.

Known Threats. Roads and habitat fragmentation are the primary threat to this species.



Crestridge. Mule deer are present on Crestridge, as documented by San Diego Tracking Team surveys. Adjacent residents have observed deer in the riparian habitats onsite (M. Beck pers. comm.). Buck Rickles (pers. comm.) believes there has been a small herd of 7 to 10 deer for several decades.

Felis concolor

Mountain Lion

USFWS: None

CDFG: Protected

MSCP covered species

The mountain lion has the largest geographical distribution of any mammal species in the western hemisphere, but it is restricted primarily to unpopulated regions in western North America (Hall and Kelson 1959). Recent state population estimates range from 2,500 to 5,000 individuals, with an increasing population trend. Mountain lions inhabit forest and shrubland habitats throughout California where deer, their primary prey, are found.

Known Threats. The primary threats to the mountain lion are loss and fragmentation of large expanses of suitable habitats and human-lion interactions typically resulting in the death of the individual lion involved. Road kill mortality is a frequent factor in more urbanized areas (Beier 1993; Ogden 1992a). Migration and dispersal corridors that minimize the potential for road kill are important for conservation and management of mountain lions. Mountain lion populations have increased dramatically in California due to a moratorium on hunting. This has increased potential for problem encounters between lions and humans in urban/wildland interface areas.

Crestridge. Mountain lions have been sighted at Crestridge historically (B. Rickles pers. comm.) and within the past few years (M. Beck pers. comm.).



APPENDIX B.4

FIELD NOTES

Michael Klein

May 20, 2000

Observer – Michael Klein of KEPS

Start / Conditions – 11:30, sunny, gentle NW breeze, 85°F

Stop / Conditions – 2:30, sunny, N breeze 8 mph, 92°F

It spent the time mostly to walk the road adjacent to the La Cresta Blvd entrance to the oak grove. I believe the road is called Rocky Creek Rd. I followed this to the west and northwest with the avocado grove off to my right. I then either picked up Twelve Oaks Trail or Valley View Trail. My purpose for walking this area was 1) to get familiar with some of the western sections of the property and 2) get to the areas I was at last June with Michael Beck looking at Hermes Coppers. The emergence of this butterfly is due any day now and I thought I would look for any pupa on its host plant, spiny red-berry (*Rhamnus crocea*). The day was warm and insect activity would be up but at the same time they would be very active and in some cases difficult to identify. I took some photographs of the resident manager's place from adjacent to the avocado grove. I also took photos of the oak grove and some of the valley area. This hopefully will begin to provide an idea of the size to Crestridge. There is an easy to walk road with the edges showing signs of non-native vegetation but the slopes are coastal sage scrub and chaparral with mixed chaparral interwoven throughout. There are Eucalyptus trees periodically along the road and about ½ mile along the road, you enter a pleasant oak woodland. There is signs of a drainage through the woodland and there are also a few Arroyo willows in the drainage. The main oak grove as always is very noisy with birds calling. I even heard young ravens begging for food. There were not amphibians observed but I was upland and if it was later in the day or around dusk, I might stumble upon western toads. Reptiles were about what was expected. Side-blotched lizards were the most numerous with one western fence lizard sighted and also one orange-throated whiptail. It was male in breeding condition and he was located along Rocky Creek Rd just after you pass the gate. I observed him besides some laurel sumac branches that had been cut down and were placed alongside the road.

Birds

Cooper's hawk	red-shouldered hawk	California quail	mourning dove
Anna's hummingbird	Costa's hummingbird	Nuttall's woodpecker	Pacific-slope flycatcher
cliff swallow	western scrub-jay	American crow	common raven
bush tit	Bewick's wren	house wren	wrentit
California thrasher	Phainopepla	Hutton's vireo	black-headed grosbeak
lazuli bunting	California towhee	spotted towhee	song sparrow
house finch	lesser goldfinch		

Mammals

common ground squirrel coyote (scat)

Herps

western fence lizard side-blotched lizard orange-throated whiptail

Invertebrates

multicolored darner dragonfly	pallid-winged grasshopper	lace bug sp.	spittle bug sp.
common white butterfly	mourning cloak butterfly	California sister	
Mormon metalmark	marine blue butterfly	Bernardino blue butterfly	
fiery skipper	Muscid fly	Syrphid fly	
<i>Bombylius lancifer</i> - Bee fly	<i>Conophorus fenestratus</i> - Bee fly		
Genus <i>Lepidanthrax</i> - Bombyliidae - Bee fly	Genus <i>Exoprosopa</i> - Bombyliidae - Bee fly		
<i>Archytas apicifer</i> - Tachinid fly	<i>Phaenicia sericata</i> - green bottle fly		
<i>Calliphora</i> / <i>Paralucilia</i> sp. - blue bottle fly			
Argentine ant	velvety tree ant	California harvester ant	
golden polistes wasp	blue mud wasp	European honeybee	



July 20, 2000

Observer – Michael Klein of KEPS

Start / Conditions – 09:30, sunny, gentle NW breeze, 87°F

Stop / Conditions – 12:30, sunny, NWN breeze 5 mph, 98°F

Purpose of this survey was to look for insect pollinators for San Diego Thornmint. Patricia Gordon-Neely mapped a stand of thornmint on the northern edge of the property near Flinn Springs. Access to the area is exiting Flinn Springs from Interstate 8. Take the jog right at the exit onto Pecan Park Rd. Turn right onto Rios Canyon Rd and take it to the entrance to Rios Elementary School. There is a trail behind the school that runs parallel to it as well as a trailer park and residences. The area is a coastal sage scrub habitat dominated with California sagebrush and buckwheat. There is Spiny Redberry, Broom Baccharis, Prickly Pear Cactus and Laurel Sumac. There is a ridgetop at an elevation 400' above the foot trail that parallels the development area. There is a trail leading up to the ridgetop that is easy to use. Approximately halfway up, there is a cleared area with thornmint and dried plantago. The conditions are appropriate for Quino Checkerspot and therefore it is recommended to survey this area next February through April to look for QCB. The thornmint is all dried and therefore inappropriate to look for pollinators. At 10:57, I observed a young Coast Horned Lizard at the edge of the clearing on the trail heading up to the ridgetop. The lizard was about 1 ½ inches in length. When I got to the trail that heads up to the ridgetop, I met one of the neighbors. Her name is Leslie and she commented how pleased her and her husband were that the area was going to be preserved. She mentioned to me that three years ago right where I was standing, they had a mountain lion. She also mention a good amount of bobcats were onsite.

Birds

Turkey vulture	mourning dove	Costa's hummingbird	western scrub-jay
American crow	common raven	bushtit	wrentit
northern mockingbird	Phainopepla	California towhee	Bullock's oriole
house finch	lesser goldfinch		

Mammals

Audubon's cottontail	coyote (scat)
----------------------	---------------

Herps

coast horned lizard

Invertebrates

pallid-winged grasshopper

cicada sp.

common white butterfly	cabbage white butterfly	Behr's metalmark
gulf fritillary	common hairstreak	nutbrown hairstreak
buckeye	Muscid fly	Syrphid fly
Genus <i>Exoprosopa</i> - Bombyliidae - Bee fly		<i>Archytas apicifer</i> - Tachinid fly
Family <i>Asilidae</i> - Robber fly sp.		Family <i>Sarcophagidae</i> - Flesh fly sp.
California harvester ant	Yellow jacket - <i>Vespid</i> sp.	<i>Pepsis</i> sp. - Tarantula wasp
golden polistes wasp	blue mud wasp	European honeybee
<i>Lycosa</i> sp. - Wolf Spider		



August 23, 2000

Observer – Michael Klein of KEPS

Start / Conditions – 19:30, clear, no breeze, 75°F

Stop / Conditions – 2200, clear, no breeze, 64°F

Purpose of this survey was to establish a late summer insect baseline for nocturnal activity. I set up a blacklighting station to provide the recourse for the data collecting. Highlights for me were at 1958 hrs hearing five packs of coyote howling as a communication to begin their nighttime activities. Also at 2108 hrs, I heard three poorwills in the field south of the warden's house. The evening was overall uneventful with pretty much the expected insect activity to the sheet. By the way, my station was just off of Horsemill Rd past the house adjacent to the oak grove. I was just in the field there with the station next to an Engelmann Oak. At about 2045 hrs, I had a moth that I am confident was a species of Underwing. I did not see it clearly or catch it because it never came to the sheet where the blacklight was shining onto it. I am confident of it being a species of Underwing because 1) it was fluttering fast near the ground and Underwings rest during the day at the base of oak trees in the ground, 2) it was approximately 3 inches in wing span and our oak Underwings are about this size and 3) it never came to the blacklight which is very typical of all species of Underwings. I made note of this because it is possible there is the Irene Underwing (*Catocala irene*) on the property. This species is becoming very rare in southern California for some unknown reason at present. Its host plant is willows and I purposely set up the station near some willows.

I decide to call it quits for the evening because at 2200 hrs the temperature had dropped to 64°F and therefore insect activity was becoming less and less. The more active insects will not mind the cooler temps because their wing flapping can keep their bodies warmer. The not so active insects, those that usually perch and wait for prey become less active and end up their evening basically resting instead of foraging and so would not be interested in setting on a blacklit sheet.

Birds

mourning dove	poorwill	western scrub-jay	American crow	bushtit
Bewick's wren	black phoebe	oak titmouse	California towhee	
lesser goldfinch				

Mammals

coyote (evening howling to start their nighttime activities)

Invertebrates

tree cricket	broad-winged katydid		
assassin bug sp.			
leafhopper sp.			
green lacewing	antlion		
black cutworm moth	army cutworm moth	cabbage looper moth	underwing sp.
omnivorous looper	mosquito sp. (male and female)		
Family <i>Sarcophagidae</i> –	Flesh fly sp.		
Convergent ladybird	ashy gray ladybird	click beetle sp.	stink beetle
June beetle (<i>Sericas</i> sp.)	carpet beetle (<i>Attagenus</i> sp.)		
California harvester ant	Yellow jacket – <i>Vespid</i> sp.	Spicid sp.	

The moths and wasps are not completely keyed out and when completed will be included in the database.



December 14, 2000

Observers – Michael Klein, KEPS; Maeve Hanley, County of SD; David Faulkner, SDNHM

Start / Conditions – 09:50, sunny, no breeze, 50°F

Stop / Conditions – 13:15, partly cloudy, NW breeze 6 mph, 63°F

Purpose of this survey was to look presence of overwintering Harbison dun skipper (*Euphyes vestris harbisoni*) larvae. I was aware of two locations where the butterfly's host plant San Diego sedge (*Carex spissa*) was located and wanted to at least verify presence or absence of *harbisoni*. We parked at the entrance to Crestridge from Horsemill Road. We went to the first *Carex* location, which is in the drainage adjacent to the oak grove. There is one patch of *Carex* there and David identified evidence of *harbisoni*. The blades were eaten and then two blades are 'sewn' together. The caterpillar is found within the blades. This first one was a 4th instar. Coordinates are 32° 49' 43" N 116° 51' 42" W. From there we went up to the location of the building that is just downhill from the warden's house. The building is no gone and there are some small piles of wood around the area. Maeve and I went down further into the creek and found a second patch of *Carex*. We crossed the creek and brush busted through some oaks and poison oak. We got to the patch and found evidence of this plant also being eaten. Maeve found two blades 'sewn' together. Carefully pulling the blades apart was a second 4th instar larvae. Coordinates are 32° 49' 46" N 116° 51' 42" W

From there we went with David to a location directly behind the second house that you come to after entering the property from Horsemill Rd. In the drainage there, were two patches of *Carex*. In one of the patches was one 4th instar larvae and in the second patch were up to eight 4th instar larvae. Coordinates are 32° 49' 40" N 116° 51' 45" W. We then walked up Lakeview Lane, which is the dirt road that enters the oak grove from the west. Along this road is spiny redberry (*Rhamnus crocea*), the host plant for Hermes copper (*Lycaena hermes*). This area is where Claude Edwards and I have documented over 150 *hermes* this past summer. We spent a little bit of time here looking for evidence of *hermes* eggs, which are laid on the outer branches of *Rhamnus*. We were not able to find any eggs at this time.

We then went to the other side of the oak grove past the warden's house over to Rios Canyon Road. While walking along this road we found two honey bee box locations. Both were active. David believed that both of the hives were not 'africanized' because we stood in the midst of them and the bees never bothered us. It was my recommendation on the 7th of December that the one hive that I was aware of was to be removed from the property. It is now my recommendation that both hives be removed. David agrees with my recommendation. He could not see any use of these hives except for commercial honey production. The concern is that these hives could be out competing the native pollinators. Removing these hives would hopefully allow the native pollinators to compete and do what they are supposed to do. We walked down Rios Canyon Road to the other location I was aware of where Claude Edwards and I found *Carex* three years ago. When we got to the site, we only looked at two patches and one of them had evidence of *harbisoni* and one larvae was found. Coordinates are 32° 50' 01" N 116° 51' 29" W. This brings the count to at least 12 larvae at four distinct locations.

Birds (number of birds in parenthesis)

Red-shouldered hawk (1)	Anna's hummingbird (4)	northern flicker (2)	Nuttall's woodpecker (2)
western scrub-jay (20)	American crow (30)	common raven (10)	oak titmouse (6)
bushtit (70)	wrentit (10)	Bewick's wren (1)	American robin (1)
ruby-crowned kinglet (4)	California thrasher (1)	yellow-rumped warbler (50)	
spotted towhee (5)	California towhee (6)	dark-eyed junco (200)	
white-crowned sparrow (100)		house finch (40)	lesser goldfinch (10)

Mammals

coyote (scat), gray fox (scat)

Herps

Side-blotched lizard, Pacific chorus frog

Invertebrates

pallid-winged grasshopper	Geometridae larvae	Yellow jacket – <i>Vespid</i>
field cricket	Bombyliidae – Bee fly	<i>sp.</i> European honeybee
Harbison dun skipper (12 5 th instar larvae)	California harvester ant	Iron-clad beetle



January 25, 2001

Observers – Michael Klein & Claude Edwards, KEPS; Michael White & Jerre Stallcup, CBI

Start / Conditions – 08:30, sunny to partly cloudy, no breeze, 50°F

Stop / Conditions – 12:00, partly cloudy, NW breeze 6 mph, 59°F

Purpose of this survey was to look for an access the status of the dwarf plantain (PE) (*Plantago erecta*) on the west-facing slope above Rios Elementary School. It was also to search for the San Diego thorn-mint (*Acanthomintha ilicifolia*) found last year on the same west-facing slopes. I was joined today by my business partner, Claude Edwards, who was conducting his bird surveys and is submitted as a separate report and Michael White and Jerre Stallcup of Conservation Biology Institute (CBI). We entered the Reserve from an access point adjacent to Rios Elementary and walked the existing trail south to where the trailer park begins to end. There is a trail that leads up the slope and takes you to the top of the hill next to the School. We went to the area of *Plantago* that I discovered last July. There was new growth PE with new growth onion growing. The PE was about ¼" tall but the patch from last grew from about 1,000 plants to well over 5,000 plants. Since it is too early for flower heads to be growing, I will revisit this area sometime in the middle of February. Also, if the rains continue to be good, I will be looking for any post-diapause Quino larvae. Michael White had a GPS system and recorded the location for mapping. From there we walked north along the slope looking for the thorn-mint but with no success. Claude and I will look for it again in March. We did happen to find another smaller patch of PE on the west-facing slope nearer to the thorn-mint location. Michael White also recorded this location on the GPS.

At that point we decided to go to the oak grove adjacent to the Horsemill Road entrance. I wanted to show the others the presence of overwintering Harbison dun skipper (*Euphyes vestris harbisoni*) larvae. We entered from Horsemill and noticed some papers thrown on the ground next to the first house. We made note that efforts to keep trash picked up is going to be difficult. We looked at the two houses that are by the entrance to Horsemill and made comments about a DFG decision to tear them down. It was felt that this should be deferred until they are checked for evidence of any bats that may be using them. I showed the others the drainage next to the one house and Mike found three blades of *Carex* that were sewn together. I gently pulled them apart and showed them a fourth instar dun skipper. Mike took some pictures with me holding the blades open. That ended the day's activities.

At this point, I want add some comments for the Management Plan. Having found evidence of a large patch of PE near Rios Elementary, I feel it is important to close off any public access to this area in the springtime. Even though it appears that there is little human activity, it should still be included in the Plan. For the Harbison dun skippers. I will be searching and mapping additional populations this summer, but it should be noted that a restriction zone of about 100 yd on either side of these locations should be incorporated. This is a safety zone for the adult males to actively forage without human disturbance.

Finally, for future recommendations to the Plan, monitoring for existing hermes copper butterflies needs to be done. It has been suggested that one or maybe two males with move within adjacent communities to maintain the genetic pool and that the communities do not freely move about. Observation as to why this happens can be a key to maintaining populations. There is also an unanswered question about this butterfly that we can begin documenting on Crestridge. The butterfly's host plant, spiny redberry (*Rhamnus crocea*) is common throughout cismontane southern California. Yet hermes is only found in a limited area within San Diego County. Identifying why this is would be a big step in the butterfly's population stability. I also want to re-emphasize the issue of fire management. For this butterfly, it has proven to be catastrophic to populations. The recent Viejas fire has most probably destroyed hundreds of these butterflies and it could take a minimum of twenty years before they might re-establish. That was the case with the Mission Valley fire in 1982 when Mission Trails was burned and long-standing populations of hermes copper's were destroyed. They were seen again this past June at Mission Trails Park. This was eighteen years. We need to take cautious steps in fire management planning when it comes to this butterfly.

Mammals

coyote (scat)

Herps

Pacific chorus frog

Invertebrates

pallid-winged grasshopper, field cricket, Harbison dun skipper (1 4th instar larvae)



March 8, 2001

Observers – Michael Klein

Start / Conditions – 10:30, sunny, NW breeze to 3 mph, 64°F

Stop / Conditions – 12:30, sunny, NW breeze to 4 mph, 66°F

Purpose of this survey was to look for an access the status of the dwarf plantain (PE) (*Plantago erecta*) on the west-facing slope above Rios Elementary School. It was also to search for the San Diego thorn-mint (*Acanthomintha ilicifolia*) found last year on the same west-facing slopes. After long periods of rain from my last visit in January, it is hoped that the PE would be growing well and hopefully show evidence of being eaten. If there is this evidence, then there is the potential to have Buckeye butterfly (*Junonia coenia*) or Quino checkerspot butterfly (*Euphydryas editha quino*) or even species of tiger moths. The grounds were still fairly wet but with evidence of the moisture seeping into the ground.

I entered the Reserve from an access point adjacent to Rios Elementary and walked the existing trail south to where the trailer park begins to end. There is a trail that leads up the slope and takes you to the top of the hill next to the School. The PE had not grown at all since the last time I visited it in January. The onion was everywhere and most of the plants were already flowering. Pecticaria was also everywhere and was dominating the ground. It was even out-competing the erodium. PE was still there and just as many plants but more difficult to see since it had not grown. It is possible that too much ground cover could make it unsuitable for Quino. Future visits need to be done to confirm this. The trail going up the slope was pretty slippery and there was recent evidence of a bike and dog walking. There was fresh dog scat with green bottle flies on it as well as deep inset footprints. The bike was evidenced by tire tread and a 'slick' indentation through a lot of the PE. This kind of impact is not good for trying to sustain the quality of the PE patch and it must be blocked off during the late winter and spring seasons. I then went further up the slope looking for the Thorn-mint and again with no success. The best time to look for this will be about the second to third week in April. I did not go up to the ridge top because there was not much insect activity since it was still a bit too wet. I would guess that in about a week it should be more active.

Birds

Anna's Hummingbird

Common Raven

Wrentit

California Thrasher

Song Sparrow

Lesser Goldfinch

California Quail

Western Scrub Jay

Cassin's Kingbird

Yellow-rumped Warbler

White-crowned Sparrow

House Finch

American Crow

Bushtit

Northern Mockingbird

California Towhee

Golden-crowned Sparrow (singing)

Mammals

coyote (scat)

Audubon's cottontail

Herps

Side-blotched lizard (breeding condition)

Invertebrates

pallid-winged grasshopper

field cricket

Sara Orangetip butterfly (1)

Southern Blue butterfly (1)

Tiger moth species (larvae) (2)

Black gnat

Green Bottle fly

Flesh fly

Harvester Ant

Wolf Spider



March 26, 2001

Observers – Michael Klein

Start / Conditions – 13:15, overcast, NW breeze to 3 mph, 67°F

Stop / Conditions – 16:30, hazy sun, NW with gusts to 8 mph, 71°F

Today's survey was to focus on the chaparral in the immediate east slopes adjacent to Rios Creek and see if I can find some trails that will take me to the Plantain patch near Rios Elementary School. At the same time I was looking for the Lakeside Ceanothus and any other patches of Plantain as well as any potential evidence of Quino Checkerspot Butterflies. I accessed the property from Rios Canyon Road at the south end near Horseshill Road. I walked the road parallel to the south edge of the preserve. About 300 yards into the preserve is a road that goes north into the chaparral. I found the upland end of Rios Creek. There is a grassy Oak Riparian area with a couple of Engelmann Oaks and Coast Live Oaks. I found some hills and looked for evidence of Plantain but found none. The SDG&E powerline easements have been recently plowed to allow for access. There was no evidence of habitat damage. The chaparral slopes that overlook the Rios Creek drainage are covered with chaparral habitat with some open areas where there is strong evidence of recent dirt bike activity. The bikes are having a significant impact on the chaparral and showing some decline of the quality of the scrub. At about 3:30pm I heard 2 bikes but could not get too close to where they were. There needs to be better monitoring of the eastern portion of the property to ensure that this activity is discouraged. I found my way to the saddle between two hills. This saddle has a trail that leads onto the northern edge of the Preserve but I was not able to see where this trail leads. I will in future visits check it out because I want to find another access to the Thornmint Hill. I found a few very good locations where Quino could use it except for the lack of host plant. They were plenty of annual flowers and open areas where the butterfly could be found. There was also Spiny Redberry (*Rhamnus crocea*) along a lot of these trails. My conclusion is that these are good for Hermes Copper and should be surveyed in June. I found this area pleasant but do not believe it is appropriate for public uses. There is mapped lots of Lakeside Ceanothus and therefore this area should be considered off limits to the general public for recreational uses. I do believe it is an excellent area for research and study. There are a couple of open areas disturbed from bike activity that could be restored to a more natural setting.

Birds

Red-tailed Hawk	Anna's Hummingbird	Mourning Dove	
California Quail	Northern Flicker	Common Raven	
Western Scrub Jay	Bushtit	Wrentit	Bewick's Wren
Rock Wren	Northern Mockingbird	California Thrasher	Oak Titmouse
Blue-gray Gnatcatcher	Yellow-rumped Warbler	California Towhee	Spotted Towhee
White-crowned Sparrow	House Finch		

Mammals

coyote (scat), Audubon's cottontail

Herps

Side-blotched lizard (breeding condition)

Invertebrates

field cricket
Sara Orangetip butterfly (8)
Desert Orangetip (1)
Painted Lady (22)
Brown Elf (1)
Southern Blue butterfly (2)
Funereal Duskywing (7)
Cutworm moth species (1)
Black gnat
Green Bottle fly
Black-wing Bee fly
Bee fly (*Bombylius* sp)
Flesh fly
Harvester Ant
European Honey bee
Wolf Spider



April 26, 2001

Observers – Michael Klein, Jerre Stallcup, Michael White, Fred Sproul

Start / Conditions – 08:30, overcast (marine layer), No breeze, 68°F

Stop / Conditions – 12:15, hazy sun, WNW with gusts to 8 mph, 76°F

The main purpose of today's survey is to find the San Diego Thorn-mint that Fred and Patricia found a year ago. Also, we wanted to look for the Monardella found by Claude last June and time permitting, look at the Lakeside Ceanothus. Morning was cooler than what we have had this week and a marine layer was settled in. This should burn off fairly quickly and hopefully make for a nice day. We accessed the area from Rios Elementary School and went over to the first location of the thorn-mint siting which was at the base of what we call Thorn-mint Hill. We were unable to find the few plants observed the year previously so we decided to go up the slope and look for the larger patch. This took us right through the area where I saw the Plantain for the past couple of months. Since I had not been to the area for a while the plantain was 3 – 4 inches tall and everywhere. Most of the plants were still in good condition. It was with a large field of onion (*Allium* sp.) as well as a large population of Palmer's grappling hook. We also found a few plants of Clay Bindweed (*Convolvulus simulans*), a rare plant. Pictures were taken to document the sighting. According to Fred, the Thorn-mint was just up slope of the plantain but within the large area of grappling hook. We spent over two hours with four pairs of eyes and did not find any plants. Fred commented that the grasses are much more extensive this year due to the rains than what they had the previous year. It is possible that the grasses have out competed the thorn-mint. I will continue to look for the plants. In the meantime, it was decided that Fred would take me to Slaughterhouse Canyon where a reliable population was and possible do my pollinator surveys from there.

We left the Rios School grounds and went up the hills to Crestridge ER to the location of the water tank. From there we walked a small trail to the location of the Monardella that Claude found last June. Again we were not successful but subsequently Claude went back there on Friday the 27th and found three plants. He did not have a flag with him at the time. He does plan to flag them for me on his next visit. Since we spent so much time trying to find the thorn-mint, we decided to call the day and have me follow Fred to Slaughterhouse Canyon. We drove up the area where we normally would enter and found out it is now under new ownership and no one is allowed into the Canyon. When I got home I left a message with Jerre explaining the problem. We will pursue other locations that are State or County owned lands and see if I can get permission to access those areas and perform my pollinator surveys. Outside of the bindweed and grappling hook, we all got very good looks at an adult Coast Horned Lizard on Thorn-mint Hill and an immature one on the dirt road over by the water tank. Both are mapped for monitoring purposes.

Thorn-mint Hill is a fairly pristine location. There are exotic plants and grasses that with enough manpower could begin doing weed removal, especially in the area of the thornmint, grappling hook and plantain. If this area can be weed-free it is a good possibility that it can be a good site for reintroduction of Quino checkerspot butterflies. In my professional opinion this has all of the components for Quino; a good large population of host plant, plenty of nectary plants and the hilltop approximately 100 yd away. It is my recommendation that this area be closed off to the general public. Foot traffic impacts as well as walking pets will have an effect on the thorn-mint and other sensitive plants there. Of course, it goes without saying that any motor bikes or mountain bikes need to be removed immediately. Since it is adjacent to homes and a school, monitoring will be very important to keep impacts down.

Birds

Anna's Hummingbird (3)	Costa's Hummingbird (1)	California Quail (10)
Mourning Dove (4)	Ash-throated Flycatcher (2)	Common Raven (5)
Wrentit (5)	Bushtit (10)	Northern Mockingbird (2)
California Thrasher (2)	European Starling (10)	Yellow-rumped Warbler (2)
Black-headed Grosbeak (1)	Lazuli Bunting (3)	California Towhee (5)
Spotted Towhee (2)	Lesser Goldfinch (10)	Lawrence's Goldfinch (5)
House Finch (20)		

Herps

Side-blotched lizard (2), Coast horned lizard (2)



Invertebrates

field cricket	Painted Lady (1,000+)	Honey Ant (<i>Myrmecocystus melliger</i>)
Orange Pallid Band-wing	Edward's Blue (1)	Polistes Wasp
Grasshopper (<i>Arphia conspersa</i>)	Behr's Metalmark (3)	Tarantula Wasp
Pale Swallowtail (1)	Common Crane Fly	Mining Bee (<i>Andrenidae</i> family)
Common White (2)	Flesh fly	European Honey bee
Cabbage White (1)	Syrphid Fly	
Orange Sulphur (1)	9-spot Labybird Beetle	
	Harvester Ant	

May 6, 2001

Observers – Michael Klein, Bob Parks

Start / Conditions – 10:15, sunny, north breeze to 3mph, 76°F

Stop / Conditions – 13:30, sunny, north to 6 mph, 86°F

Today's survey was to begin documenting Hermes Copper larvae. Based on its biology the eggs should have or should be hatching soon. Since there are no known photo documents of the caterpillars, I wanted to try and get them as early as possible. A good friend and excellent photographer, Bob Parks, joined me. Much of his photographic work shows up on the San Diego Natural History Museum's programs. We parked at Horsemill and walked through the oak grove and up Lakeview Road. We stopped along the road and would tap Spiny Redberry (*Rhamnus crocea*), the butterflies host plant. We were unable to find and caterpillars this time but, I will return in a week and again search the area. I felt this was a good spot to look for caterpillars because during the butterfly's flight season the past two years, Lakeview was an excellent spot to see adults. Bob and I did see treehopper nymphs as well as ants and even a 2nd instar geometrid moth. The mustard was very active with honeybees and bumblebees. While on Lakeview we were treated to a pair of courting Copper's Hawks flying above us. Also we were treated to an 18-inch 2-striped garter snake in the eroded part of the road on Lakeview. Bob got photos of it.

As we were coming back to the oak grove, a white volkswagon bug drove up to us on the road. They stopped and I told them they were on reserve land owned by the State and that they were illegally on the property. I also told them that the warden's place was just around the corner and I would report them. They noted that they had always driven the area and I told them that for the past two years it has been off limits by the State. They said they would turn around and go back. Bob and I continued to the oak grove and saw the bug parked under an oak tree next to Lakeview. When we came around the corner, Fred, the warden was there and writing them a ticket. He asked me to hang around while he wrote the ticket since he was not in uniform. Apparently they entered the property from down near Los Coches Road.

A note for the Management Plan: Bob commented to me about the bee boxes near the avocado orchard. His feeling was that they should be removed from the Reserve grounds and placed on the owner's property since it appears to be his intent to use those bees for pollinating the avocados. If they are not there for that, then they should be removed. It was obvious today with all of the flowering plants how aggressive honeybees are and were making it difficult for other bees to access pollen. Also, I was pleased to see the warden there and ticketing the guys but my concern is how they entered the property. We have apparently not found all of the access points and a further review should be done. Of course if access is through private property, it is difficult to block those areas. Also, knowing they came from down near Interstate 8, they crossed areas of riparian sections. It is hoped that we can try to keep the local residents aware of the laws for this property and they might be used to help in policing.

Birds

Anna's Hummingbird	Costa's Hummingbird	California Quail
Red-tailed Hawk	Copper's Hawk (courting pair)	Nuttall's Woodpecker
Cliff Swallow	Ash-throated Flycatcher	Pacific-slope Flycatcher
Common Raven	American Crow	Western Scrub Jay
House Wren	Bewick's Wren	Blue-gray Gnatcatcher
Wrentit	Bushtit	Oak Titmouse



California Thrasher
Lazuli Bunting
Lesser Goldfinch

European Starling
California Towhee
House Finch

Black-headed Grosbeak
Spotted Towhee

Herps

2-striped garter snake (1), Side-blotched lizard (4), Western whipped-tail lizard (2)

Invertebrates

Flame Skimmer Dragonfly
Pallid Band-wing
Grasshopper
Orange Pallid Band-wing
Grasshopper (*Arphia*
conspersa)
Assassin Bug
Spittle Bug
Treehopper species (nymphs)
Geometrid Moth species (2nd
instar)
Common White (8)

Orange Sulphur (4)
Sara Orangetip (3)
Painted Lady (20)
Southern Blue (1)
Marine Blue (3)
Reakirt's Blue (3)
Behr's Metalmark (6)
Gabb's Checkerspot (1)
Funereal Duskywing (2)
Common Crane Fly
Robber Fly
Flesh fly

Syrphid Fly
9-spot Labybird Beetle
Formicidae Ant species
Polistes Wasp
Edward's Bumblebee
Carpenter Bee
Carpenter Bee – Genus
Ceratina
European Honey bee
Red Jumping Spider

May 11, 2001

Observers – Michael Klein

Start / Conditions – 0815, marine layer, no breeze, 63°F

Stop / Conditions – 1500, clouds from the east, west to 7 mph, 82°F

Today's survey was to begin pollinator research on Lakeside Ceanothus (*Ceanothus cyaneus*). I went to the 'race track' to look for the ceanothus and find the most appropriate spot to set up a view site. As I walked the road at the southern edge of the property, I passed a small series of Oak trees and saw one shrub of *cyaneus* blooming. At the race track there was no *cyaneus* blooming. So, I decided to use this time to at least establish some baseline information as to which insects were utilizing the plant. So I went back to the one that was blooming and did my survey from there. Of note, was the other bee activity on the flowers when the honeybees were not present. As it has been noted in earlier reports, honeybees are aggressive insects and they will defend their sources of nectar and pollen from other insects and especially other competing bees. Based on earlier reports, I have recommended that the bee boxes be removed from the eastern end of the property (in the Rios Canyon area) so that the other resident bees have an equal chance to compete for nectar and pollen. At the same time it would most likely become clearer potential native pollinators to some of the native vegetation. Other interesting observations were the presence of blister beetles burying their heads into the Ceanothus flowers covering it with pollen and then moving onto another flower. This insect has a potential to be a pollinator of the plant but without other blooming plants it is inconclusive. The other very interesting beetle was the presence of a Dermestid (genus *Anthrenus*). These beetles are notorious feeders (in the larval stage) of insect collections at museums and carpets, etc. But as adults feed exclusively on pollen and nectar. The size of the flowers of *cyaneus* are perfect for the dermestids because of their very small size (2 – 3 mm). This insect is a strong candidate as a *cyaneus* pollinator. Finally, besides the honeybee gathering pollen and potentially pollinating, another bee, a Halictid, or sweat bee, possibly from the genus *Halictus*, actively gathering pollen and had pollen on mid and hind legs. Most definitely a potential pollinator and the next surveys will hopefully see if this is true.

Birds

Red-tailed Hawk
Costa's Hummingbird
Common Raven
California Thrasher
Spotted Towhee
Lazuli Bunting

California Quail
Mourning Dove
Wrentit
Phainopepla
Black-headed Grosbeak
Lesser Goldfinch

Anna's Hummingbird
Western Scrub-Jay
Bushtit
California Towhee
Blue Grosbeak

Invertebrates

Neon Skimmer Dragonfly

Pallid Band-wing
Grasshopper

Plant Bug (*Meridae* sp.)



Western Tiger Swallowtail (1)	Black Gnat	Tumbling Flower Beetle (<i>Mordella</i> sp.)
Checkered White (3)	Long-legged Fly (<i>Dolichopodidae</i> Family)	Sweat Bee (Family <i>Halictidae</i>)
Orange Sulphur (1)	Large Bee Fly (<i>Bombylius</i> sp.)	European Honey bee
Pacific Sara Orangetip (5)	Flesh fly	Crab Spider
Painted Lady (4)	Syrphid Fly	Brown Dog Tick
Behr's Metalmark (2)	Carpet Beetle (<i>Anthrenus</i> sp.)	
California Sister (1)		

May 25, 2001

Observers – Michael Klein

Start / Conditions – 1030, sunny, north @ 2mph, 74°F

Stop / Conditions – 1630, marine, north @ 6 mph, 78°F

This is the second visit for pollinator research on Lakeside Ceanothus (*Ceanothus cyaneus*). I went to the 'race track' to look for the ceanothus and find the most appropriate spot to set up a view site. On the eastside of the 'track' was a good amount of Ceanothus blooming, but I would have had to bust through some fairly thick chaparral to access them. I decided against that and continued to look. On the west side of the 'track' at about the halfway point were 5 Ceanothus shrubs in bloom. I set up my station here. The shrubs were in a close group so that potential movement of insects is more possible. Overall insect activity was way down from the last visit two weeks earlier. It is possible that the optimum pollination period is within the first two weeks of blooming. There was only one other bee, a Megachilid that visited the plants other than honeybees. There were no blister beetles this time but the Dermestid beetles were in the flowers and actively eating pollen. There were also shiny flower beetles this time and they are pollen feeders. Meridae plant bugs were again present but I believe these are potentially destructive to the plant instead of a possible pollinator. Based on this second visit, outside of honeybees, I would be leaning towards the Dermestid beetles as one of the primary pollinators. Unfortunately, I never observed them moving from shrub to shrub. They were however moving from raceme to raceme, which indicates a strong possibility for plant to plant movement. The other significant event of today was the presence of a large amount of insects. The list below will reflect that I had twenty-five (25) species of butterflies alone. I also had three species of moths. This is the largest concentration of butterflies I have ever had at one visit outside of Doane Pond and Laguna Meadows. Both of those are mountain environments, which has larger butterfly diversity exists because of a longer flowering season. But for an inland chaparral / mixed chaparral area to have this many butterflies in one sitting is unusual. This might be a number for a survey season. What this says is that Crestridge has lots of native vegetation providing for a large diversity of invertebrates. I believe that this reserve will have well over 200 species of invertebrates.

Birds

Red-tailed Hawk (1)	California Quail (10)	Anna's Hummingbird (2)
Costa's Hummingbird (2)	Mourning Dove (4)	Ash-throated Flycatcher (1)
Western Scrub-Jay (8)	American Crow (2)	Common Raven (5) Cliff Swallow (2)
N. Rough-winged Swallow (2)	Wrentit (5) Bushtit (20)	Bewick's Wren (1)
Canyon Wren (1)	California Thrasher (5)	Phainopepla (8) Rufous-crowned Sparrow (1)
California Towhee (20)	Spotted Towhee (2)	Black-headed Grosbeak (2)
House Finch (30)	Lesser Goldfinch (30)	

Herps

Western Fenced Lizard (2), Side-Blotched Lizard (4), Coast Horned Lizard (1)

Invertebrates

Neon Skimmer Dragonfly	Snout Moth (Family	Orange Sulphur (1)
Pallid Band-wing	Pyralidae)	Dainty Sulphur (2)
Grasshopper	Alfalfa Looper	Pacific Sara Orangetip (7)
Plant Bug (<i>Meridae</i> sp.)	Spotted Halisidota Moth	Comstock's Fritillary (4)
Wide-headed Cicada	Anise Swallowtail (1)	Painted Lady (15)
Spittle Bug	Pale Swallowtail (2)	West Coast Lady (1)
Tree Hopper (Family	Checkered White (11)	Common Buckeye (1)
Membracidae)	Cabbage White (2)	Mourning Cloak (1)



Behr's Metalmark (23)	Snipe Fly (Family	Checkered Beetle
Queen (1)	Rhagionidae)	Formicid Ant
California Ringlet (1)	March Fly (Family	Blue Mud Wasp
Gabb's Checkerspot (2)	Bibionidae)	Plasterer Bee
Gray Hairstreak (3)	Long-legged Fly	Sweat Bee (Family
Gold-hunter's Hairstreak (3)	(Dolichopodidae)	Halictidae)
Brown Elfin (4)	Large Bee Fly (<i>Bombylius</i>	Carpenter Bee
Southern Blue (5)	sp.)	Vosnesenski's Bumblebee
Bernardino Blue (1)	Flesh fly	Edward's Bumblebee
Acmon Blue (8)	Syrphid Fly	European Honey bee
Funereal Duskywing (1)	Carpet Beetle (<i>Anthrenus</i> sp.)	Jumping Spider (Family
Fiery Skipper (3)	Blister Beetle	Salticidae)
Rural Skipper (1)	Convergent Ladybird Beetle	Crab Spider
Black Gnat	Tumbling Flower Beetle	
	(<i>Mordella</i>)	



June 1, 2001

Observers – Michael Klein

Start / Conditions – 1130, marine layer, N - NW @ 5mph, 71°F

Stop / Conditions – 1700, sunny, north @ 7 mph, 87°F

This is the third visit for pollinator research on Lakeside Ceanothus (*Ceanothus cyaneus*). I went to the former 'racetrack' to look for the ceanothus and find the most appropriate spot to set up a view site. Most of the plants were well past bloom and as I observed them, there was no activity. I tapped some of the branches to see if anything was on them and again I got nothing. Since this was not a good location to do observations, I headed north and east along some of the trails to see if any Ceanothus was blooming along the trails. I ended up at a dead-end trail overlooking an east-central canyon. There were over 30 Lakeside Ceanothus plants here along the trail and still in respectable bloom. I decided to set up my station here. There was very little insect activity on any of the plants but I felt it was important to document this for a comparison. I am now more convinced that the optimum pollination period is within the first 2 weeks of blooming. Of note, I was not near honeybee hives and therefore they were almost non-existent. This might prove an interesting survey to see if other bees will take advantage of this. Unfortunately that did not happen. This area should be a good study area for next season and use it during the first two weeks of the blooming time. The other significant event of today was the presence of a large amount of insects. The list below will reflect that and I wish to point out that I had twenty-two (22) species of butterflies alone. Hermes Coppers are also flying and I noted three (3) distinct areas. Their numbers were low but the flight season is still early. My guess is that in the middle of the month these areas will be fairly active.

Birds

Turkey Vulture (1)	American Kestrel (1)	California Quail (10)
Anna's Hummingbird (3)	Costa's Hummingbird (4)	Mourning Dove (6)
Northern Flicker (1)	Ash-throated Flycatcher (2)	Western Scrub-Jay (10)
Common Raven (9)	Cliff Swallow (3)	Wrentit (11)
Bushtit (25)	Bewick's Wren (4)	Canyon Wren (1)
Blue-gray Gnatcatcher (1)	California Thrasher (6)	Phainopepla (10)
Rufous-crowned Sparrow (1)	California Towhee (15)	Spotted Towhee (4)
Black-headed Grosbeak (4)	Blue Grosbeak (2)	House Finch (50)
Lesser Goldfinch (20)		

Mammals

Common Ground Squirrel, Audubon's Cottontail, Gray Fox (scat)

Herps

Side-Blotched Lizard (6)

Invertebrates

Pallid Band-wing	Hermes Copper (7)	Syrphid Fly
Grasshopper	Gray Hairstreak (2)	Green Bottle Fly
Field Cricket	Hedge-row Hairstreak (4)	Robber Fly
Plant Bug (<i>Meridae</i> sp.)	Mt. Mahogany Hairstreak (3)	Shiny Flower Beetle
Red-winged Cicada	Marine Blue (38)	Harvester Ant
Spittle Bug	Southern Blue (4)	Red Velvet Ant
Pale Swallowtail (1)	Edward's Blue (13)	Sweat Bee (Family)
Checkered White (46)	Bernardino Blue (4)	<i>Halictidae</i>)
Cabbage White (2)	Acmon Blue (5)	Carpenter Bee
Dainty Sulphur (2)	Funereal Duskywing (1)	Vosnesenski's Bumblebee
Comstock's Fritillary (15)	Western Checkered Skipper	Edward's Bumblebee
Painted Lady (14)	(3)	European Honey bee
West Coast Lady (1)	Rural Skipper (8)	Crab Spider
Mourning Cloak (1)	Large Bee Fly (<i>Bombylius</i>	Red Mite
Behr's Metalmark (20)	sp.)	Brown Dog Tick
Gabb's Checkerspot (1)	Flesh fly	



June 9, 2001

Observers – Michael Klein, Graham Smith

Start / Conditions – 0945, sunny, no breeze, 72°F

Stop / Conditions – 1430, sunny, north @ 8 mph, 86°F

Today's survey is to begin mapping populations of Hermes Coppers (*Lyceana hermes*) on the property. The Hermes Copper is an endemic butterfly to San Diego County and in previous years good numbers of the butterfly have been observed here. Fred Thorne, an amateur lepidopterist, theorized Hermes having a unique behavior of maintaining distinct communities. Since the Crestridge Ecological Preserve has a large number of Hermes, we want to map each distinct population as part of the Management Plan to provide data for management to make informative decisions. I was joined today by Graham Smith, who is a resident of the Crest community and wants to learn more about the Preserve. I met him at the entrance to the Oak Grove by Horsemill Rd. Yolaine Stout of the Back Country Land Trust was there talking to Graham about a few projects that needed to be done on the property. Yolaine also showed Graham and I around the 'Grove' and pointed out some of the proposed buildings that are planned.

To start off the morning, we were greeted with a Hermes Copper patrolling around the buckwheat at the entrance to the Oak Grove at Horsemill Road. We decided to begin our mapping from the Oak Grove and move east along the access road next to the Warden's house to the upper entrance of Rios Canyon Road. From there we would walk Montana Serena into the gated community and up the hill just south of the Preserve. Once we would get to the top we are hoping that the other side would provide us access back onto the Preserve to survey some of the eastern portion of the property. We mapped a total of five (5) distinct Hermes' communities. All of which were along the trail to Rios Canyon Road and along Montana Serena to the road that takes you to the 'Race Track'. We were able to get to the eastern portion of the property with some assistance from one of the property owners, John Gibson. The east portions we accessed were too heavily vegetated with 10 – 20' chaparral. I concluded that the eastern and southern boundary of the reserve is not suitable Hermes habitat and would not be pursued further. The east and north portions would still need to be looked at but Mr. Gibson indicated that that portion was just as heavily vegetated.

Birds

Red-shouldered Hawk (pr)
Costa's Hummingbird
Ash-throated Flycatcher
Western Scrub-Jay
Cliff Swallow
Bewick's Wren
Northern Mockingbird
Spotted Towhee

California Quail
Mourning Dove
Pacific-slope Flycatcher
American Crow
Wrentit
House Wren
Phainopepla
House Finch

Anna's Hummingbird
Acorn Woodpecker
Black Phoebe
Common Raven
Bushtit
California Thrasher
California Towhee
Lesser Goldfinch

Mammals

Audubon's Cottontail

Herps

Side-Blotched Lizard (2), Coast-Horned Lizard (1), Orange-throated Whiptail (1)

Invertebrates

Flame Skimmer
Blue Damsel fly
Plant Bug (*Meridae* sp.)
Red-winged Cicada
Pale Swallowtail (1)
Western Tiger Swallowtail
(1)
Cabbage White (68)
Orange Sulphur (6)

Painted Lady (12)
California Sister (1)
Mourning Cloak (5)
Behr's Metalmark (10)
Hermes Copper (41)
Marine Blue (5)
Acmon Blue (3)
Funereal Duskywing (1)
Crane Fly

Bee Fly (*Bombylius* sp.)
Flesh fly
Syrphid Fly
Soft-winged Flower Beetle
Harvester Ant
Dauber Wasp (Family
Sphecidae)
Paper Wasp (Genus *Polistes*)
European Honey bee



June 16, 2001

Observers – Michael Klein, Alexandra (Lex) Bakarich

Start / Conditions – 0900, sunny, NE @ 3mph, 78°F

Stop / Conditions – 1415, sunny, NE @ 4 mph, 89°F

Today's survey is to continue mapping populations of Hermes Coppers (*Lyceana hermes*). Our focus today was through the 'Grove' walking the Valley View Truck Trail east along the Avocado Orchard and hopefully going to the NE corner of the reserve. It was a warm day and very little breeze. We did get as far a mid-way point to a ridge overlooking the chaparral floor. To start off the morning, we were greeted with a Hermes Copper patrolling around the buckwheat at the entrance to the Oak Grove at Horsemill Road. We had a population of Hermes from the moment we exited the 'Grove' by the orchard, heading north on the Trail. The butterflies were present for approximately 500' along the Trail. When we came to the bend in the Trail the Hermes stopped. We did not have another population until we crossed through a small oak grove with a north / south drainage. This second population was very active with males defending their respective territories. We had Hermes for approximately another 500'. As we came around a bend, the population stopped. We passed a few eucalyptus trees, one, which was infested with the red-gum psyllid and picked up a smaller third population of Hermes. We decided to turn around when we got to a ridge top overlooking the chaparral floor. Also of note is in the smaller oak / willow area we had a female Copper's Hawk observed. She was very secretive and began 'kecking' when we got too loud. This is indicative of nest sitting. For the location it is expected for this bird to be on a nest.

Birds

Red-tailed Hawk	Cooper's Hawk	Anna's Hummingbird
Costa's Hummingbird	Nuttall's Woodpecker	Acorn Woodpecker
Northern Flicker	Pacific-slope Flycatcher	Ash-Throated Flycatcher
Black Phoebe	Hutton's Vireo	Western Scrub-Jay
American Crow	Common Raven	Cliff Swallow
Wrentit	Oak Titmouse	Bushtit
Bewick's Wren	House Wren	Blue-gray Gnatcatcher
California Thrasher	Northern Mockingbird	Phainopepla
California Towhee	Spotted Towhee	Lark Sparrow
Black-headed Grosbeak	House Finch	Lesser Goldfinch
House Sparrow		

Mammals

Common Ground Squirrel

Herps

Western Whiptail (1), Side-Blotched Lizard (2), Orange-throated Whiptail (2)

Invertebrates

Mayfly (<i>Callibaetis</i> sp.)	Behr's Metalmark (2)	Knaus' Saxinis Beetle (red spots on side)
Pacific Spiketail Dragonfly	Hermes Copper (51)	Blister Beetle (Family <i>Meloidae</i>)
Bluet Damselfly	Sylvan Hairstreak (2)	Harvester Ant
Pallid Band-wing	Gold Hunter's Hairstreak (2)	Velvety Tree Ant
Grasshopper	Mountain Mahogany	Dauber Wasp (Family <i>Sphecidae</i>)
Field Cricket	Hairstreak (1)	Blue Mud Dauber
Common Milkweed Bug	Marine Blue (10)	Paper Wasp (Genus <i>Polistes</i>)
Wide-headed Cicada	Edward's Blue (45)	Digger Bee (Subfamily <i>Anthophorinae</i>)
Red-gum Psyllid	Bernardino Blue (15)	Valley Carpenter Bee
White-lined Sphinx Moth (1)	Acmon Blue (10)	Edward's Bumblebee
Corn Earworm Moth (1)	Funereal Duskywing (7)	European Honey bee
Checkered White (60)	Mournful Duskywing (1)	Tunnel Spider (Wolf Spider sp.)
Cabbage White (80)	Rural Skipper (5)	Trash Web Spider (<i>Cyclosa turbinata</i>)
Orange Sulphur (11)	Crane Fly	
Dainty Sulphur (4)	Bee Fly (<i>Bombylius</i> sp.)	
Semiramis fritillary (1)	Robber Fly	
Painted Lady (3)	Flesh fly	
West Coast Lady (1)	Syrphid Fly	
California Sister (2)	Iron Clad Beetle	
Mourning Cloak (3)		



February 2, 2002

Observers – Michael Klein, David Faulkner and 7 biologists from REC

Start / Conditions – 10:00, sunny, no breeze, 62°F

Stop / Conditions – 16:00, sunny, W breeze 6 mph, 61°F

Purpose of this survey was to teach REC biologists search images for identifying Harbison dun skipper (*Euphyes vestris harbisoni*), and to look for eggs for the hermes copper (*Lycaena hermes*). We entered the Reserve from Horsemill and walked over to the drainage behind the two buildings before entering the oak grove. I pointed out to them the typical conditions you look for in the winter. We went to one of the three San Diego sedge (*Carex spisa*) plants and showed them how the caterpillar bends the blades and sews them together. This particular plant had evidence of 6 larvae. I opened one of the blades for them to see the 4th instar larvae. I then opened a second one and the larvae was dead and brown, which is evidence of parasitism. One of the biologists saw something crawling inside the blade. There were two Brechanid wasps in there. I took one for the Crestridge collection and for species identification. Brechanid wasps are considered primary parasites of Lepidoptera.

From there we walked east into the open field and up to the trails near the warden's house. We went to Rios Canyon Drive and down to a couple of Lakeside ceanothus (*Ceanothus cyeanus*) scrubs. One of the biologists was a botanist and have never seen the ceanothus. They took pictures for their records and then proceeded back along the way to the trail where hermes had been seen the past three years. We looked at six spiny redberry (*Rhamnus crocea*) plants and found no evidence of any eggs. We then went back down into the oak grove and up Lakeview Lane where large populations of hermes have been observed for the past four years. We looked at six Rhamnus plants there and only found scale insects and no hermes eggs. Based on documented papers, hermes lay their eggs on the stem near or in the crotch area of the branches near the outer edge of the branch. Since we could not find any David and I are rethinking the location of the egg laying process. Also, we are planning on being onsite in the early emergence stage of the adult and hopefully will observe females ovipositing. We can then flag those branched for winter and spring observation.

Birds

Red-tailed Hawk	Red-shouldered Hawk	American Kestrel	Anna's Hummingbird
Nuttall's Woodpecker	Black Phoebe	Scrub Jay	American Crow
Common Raven	Wrentit	Oak Titmouse	Bushtit
Bewick's Wren	Ruby-crowned Kinglet	American Robin	California Thrasher
Cedar Waxwing	Hutton's Vireo	Yellow-rumped Warbler	Spotted Towhee
California Towhee	Song Sparrow	White-crowned Sparrow	Lesser Goldfinch
House Finch			

Herps

Alligator Lizard

Invertebrates

pallid-winged grasshopper	California ringlet	Harbison dun skipper (6 - 4 th instar larvae)
wood ant		



APPENDIX B.4

FIELD NOTES

Claude Edwards

10 October 1999 (0900 to 1100 hours)

Clear & sunny, warm, calm to light breezes, ± 80 to 88°F .

Observers: Claude Edwards, Mike Klein, Mike Beck and Don Hohimer

Wildlife Species That Were Seen And / Or Heard During The Hike

<u>Butterflies</u>	1 Mormon metalmark
<u>Amphibians and Reptiles</u>	
6 Pacific chorus frog	1 Western fence lizard
1 Side-blotched lizard	1 Western whiptail
<u>Birds</u>	
1 Cooper's hawk	12 Oak titmouse
2 Red-tailed hawk	5 Bushtit
10 California quail	2 House wren
1 Mourning dove	1 Bewick's wren
2 Anna's hummingbird	1 Hermit thrush
3 Acorn woodpecker	1 Wrentit
1 Nuttall's woodpecker	1 Northern mockingbird
1 Northern flicker	15 Yellow-rumped warbler
3 Black phoebe	5 Spotted towhee
3 Hutton's vireo	8 California towhee
25 Western scrub jay	10 White-crowned sparrow
20 American crow	20 House finch
4 Common raven	

Although this was not a focused survey for wildlife, these are the species that were encountered incidentally as we walked around the area onsite. Birdwise, fall migration is underway and some wintering species were in evidence. They will grow in abundance. The main purpose of this visit was to identify potential projects and activities that youth from the YCC program could engage in to upgrade and enhance the grounds and vegetation onsite. We visited areas from the main oak grove and the rehabilitated house.

Task to be scheduled and completed – Remove the St. Augustine grass that is aggressively growing and spreading along the creek, down-slope and north of the oak grove. The grass is thick-stemmed and forms a mat and has spread quickly over the past year since the patch was first noticed. It is relatively easy to pull and remove, from an area measuring roughly 25 x 10 feet. Once it is pulled out of the creek, it can be dried onsite and composted. The site can be monitored for any potential reappearance of grass. Protect and promote the retention of the fallen and accumulated oak leaf and stem litter, 'duff', on the ground underneath oak trees. The equestrian group has been seen raking away the duff and opening areas up to undesirable non-native weedy plants. Reuse and recycle wood and plant refuse, fallen branches and trimmed and removed undesirable plants by chipping and mulching them to form compost that can be distributed underneath the oaks, over disturbed areas, and on old roadbeds.

Remove non-native perennial plants such as Vinca and Indian fig cactus. Remove and recycle non-native annual plants before they go to seed. This should be done between the time they have freshly sprouted to when they are blooming. This eliminates their chance to re-establish themselves. Weed-whack and hand pull patches of these plants when opportunity permits. Remove, and perhaps sell, exotic plants such as palms and Mexican bird-of-paradise. Remove the dilapidated building within the middle of the oak grove and a dilapidated house nearby. These areas can be rehabilitated, benefiting of habitats and wildlife.



Remove and rehabilitate part of the dirt road loop through the oak grove. Wait for the next winter rains, break up the ground, cover with oak duff, block access to vehicles with signs (as well as 'speed-bumps' and troughs) and let nature take its course. The oak woodland should be allowed to renew itself by producing seedlings, being filled in with native annuals and shrubs and regain a wilder ambiance and character. Restrict and reduce the width and extend of the remaining portion of the dirt road to and around the oak grove. Establish a narrower road width by erecting a wood fence. Break up the ground, remove undesirable plants, leave it alone or replant with acorns, native annuals and shrubs, to rehabilitate the natural environment in these areas.

Promote the establishment of a public parking lot in the disturbed open area adjacent to the dilapidated house overlooking the north slope. Selectively remove and recycle undesirable non-native plants from along the entire course of the creek within the limits of the property. Prevent undesirable erosion and gullyng along the creek, especially on the north slope. This may be possible by planting native species along bare sections of embankments, placing logs and / or rocks into the creek, and reducing water velocity resulting in bank erosion and undercutting. Promote the use and transplantation of oak and wildlife-friendly plants like meadow rue (*Thalictrum*), California fuchsia (*Epilobium canum*), and bush or sticky monkeyflower (*Mimulus aurantiacus [puniceus]*).

28 February 2000

(0730 to 1015) [2.75 hrs]

Block # P-15 /// HARBISON CANYON / CREST

Central portion of the Crest Ridge Ecological Reserve

[from the end of Horsemill Road, along the Valley View Truck Trail,
Rocky Creek Road, and Lakeview Lane]

Overcast with intermittent light rain; light south and westerly breezes; $\pm 52-58^{\circ}\text{F}$.

Observer: Claude G. Edwards

turkey vulture
white-tailed kite
northern harrier
sharp-shinned hawk
Cooper's hawk
1 red-shouldered hawk
red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
mountain quail
California quail
8 mourning dove
1 greater roadrunner
barn owl
western screech-owl
great horned owl
white-throated swift
15 Anna's hummingbird
5 acorn woodpecker
red-naped sapsucker
red-breasted sapsucker
3 Nuttall's woodpecker
3 northern flicker
Say's phoebe
2 black phoebe

16 hermit thrush
western bluebird
5 American robin
European starling
14 California thrasher
white-breasted nuthatch
canyon wren
11 Bewick's wren
15 oak titmouse
12 bushtit
2 ruby-crowned kinglet
14 wren
house sparrow
American pipit
pine siskin
2 lesser goldfinch
purple finch
18 house finch
fox sparrow
2 song sparrow
Lincoln's sparrow
5 white-crowned sparrow
golden-crowned sparrow
12 dark-eyed junco
savannah sparrow
lark sparrow



loggerhead shrike
2 Hutton's vireo
10 western scrub-jay
45 American crow
8 common raven
cedar waxwing

sage sparrow
rufous-crowned sparrow
21 spotted towhee
24 California towhee
33 yellow-rumped warbler
western meadowlark

On this, the final day of the winter survey season for the San Diego County Bird Atlas, a total of twenty-eight (28) species from the original target bird list were observed onsite, mostly within Crest Ridge Survey Block F-5, but also a little bit in Survey Blocks F-6 and G-5. In addition, four add-on species were noted, 2 Costa's hummingbird (males singing), 1 Allen's hummingbird (male with wing-trills), 1 northern mockingbird, and 3 orange-crowned warbler, the latter two species identified by their territorial songs. This results in a grand total of thirty-two species of birds observed today. The misty rain and moist-to-muddy trails were impediments to visiting areas without getting water on my glasses and wetting my notepad. There are signs of decline and disrepair onsite along a short distance of the dirt entrance / access road from the end of Horsemill Road. These include the obvious aggressive vandalism of the heavy metal gate across the road, the overall deterioration and vandalism of the two 'historic' dwellings associated with the old Cornelius Ranch, to the illegal dumping of household and garden refuse. The road itself is being eroded and rutted from winter rains and vehicular activity. The nice old structure within the oak grove is also suffering from ongoing vandalism and misuse.

Upon parking at the end of Horsemill Road, there were numbers of American crows that were particularly noisy and communicative. One group would call in one area that was then followed by a different group calling out, as if in response, from a different location, which in turn was replied by a different group of birds from another location. Sometimes crows would reveal themselves from the dense oaks they were in to circle around or engage in mock chases. It got quite loud at times, although they seemed to be enjoying themselves. I don't believe this behavior had anything to do with nesting, but perhaps 'pre-courtship proclamations'. There wasn't much in the way of plants that were blooming. One species that was blooming nearly throughout the area surveyed was Mission Manzanita (*Xylococcus bicolor*). The inclement weather was not conducive for insect activity, however there was some species of bee or fly that I heard producing audible wing-buzzing around the blooming *Xylococcus*, but I never saw it. Maybe it's some species of bee fly or leaf-cutter bee that can access and utilize the small 'enclosed', urn or lantern-shaped, flowers.

Most of the dirt roads around the area seemed to be in good shape. I followed the Valley View Truck Trail out of the oak grove that borders on the Rios Canyon avocado ranch property west from the Crest Ridge caretaker's residence. This portion of the Truck Trail may be on ranch property and not part of the Ecological Reserve. There was clear evidence of motorbikes using this as a riding area, even traversing ground above the road where dense native vegetation has been cut and cleared away as a firebreak. I ascended a narrow dirt trail above / south of the Truck Trail, in CRER Survey Block F5, situated north-east of the onsite water tank. Portions of this dirt trail, which were fairly steep in sections, were rutted and being used by motorbikes. Other paths along the way, even some through extant vegetation, were also being used illegally by motorbikes. The main dirt road coming down into the oak grove from the end of La Cresta Blvd., Lakeview Lane, is similarly becoming more eroded, gullied, and muddy from recent rain and vehicular traffic. Portions of it need to be regraded and stabilized for safety. In addition, the broken metal gate across it also needs to be repaired / replaced. It's been several months since it was forcibly opened and damaged.



2 June 2000

0815 to 1430 hours

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Clear and sunny; calm to moderate W breezes; 74-92°F.

Observer: Claude G. Edwards

<u>CRER Survey Blocks Visited</u>		<u>E6</u>	<u>F5</u>	<u>F6</u>	
REPTILES	[2]				
	<i>Uta stansburiana</i>				
	side-blotched lizard	x	=	=	
	<i>Phrynosoma coronatum</i>				
	coast horned lizard	=	=	x	
BIRDS	[21]				
	<i>Buteo jamaicensis</i>				
	red-tailed hawk	x	=	=	
	<i>Callipepla californica</i>				
	California quail	x	=	=	
	<i>Zenaida macroura</i>				
	mourning dove	x	=	x	
	<i>Calypte anna</i>				
	Anna's hummingbird	x	x	x	
	<i>Calypte costae</i>				
	Costa's hummingbird	x	x	x	Fledgling @ F6
	<i>Colaptes auratus</i>				
	northern flicker	=	x	x	
	<i>Petrochelidon pyrrhonota</i>				
	cliff swallow	x	=	=	
	<i>Aphelocoma californica</i>				
	western scrub-jay	x	x	x	
	<i>Corvus corax</i>				
	common raven	x	x	x	Fledgling @ F6
	<i>Sayornis nigricans</i>				
	black phoebe	=	=	x	
	<i>Psaltirparus minimus</i>				
	bushtit	x	x	x	
	<i>Thryomanes bewickii</i>				
	Bewick's wren	x	x	x	
	<i>Chamaea fasciata</i>				
	wrentit	x	x	x	
	<i>Mimus polyglottos</i>				
	northern mockingbird	x	=	x	
	<i>Toxostoma redivivum</i>				
	California thrasher	x	x	x	
	<i>Phainopepla nitens</i>				
	phainopepla	x	x	x	
	<i>Pheucticus melanocephalus</i>				
	black-headed grosbeak	x	x	x	
	<i>Pipilo crissalis</i>				
	California towhee	x	x	x	
	<i>Pipilo maculatus</i>				
	spotted towhee	x	x	x	Fledgling @ E6
	<i>Aimophila ruficeps</i>				
	rufous-crowned sparrow	x	=	=	
	<i>Melospiza melodia</i>				
	song sparrow	x	x	x	



<i>Carpodacus mexicanus</i>				
house finch	x	x	x	
<i>Carduelis psaltria</i>				
lesser goldfinch	x	x	x	Fdg young @ E6 & F5
<i>Carduelis lawrencei</i>				
Lawrence's goldfinch	x	-	x	
MAMMALS [1]				
<i>Neotoma fuscipes</i>				
dusky-footed woodrat	=	=	nest	

A total of 24 species of vertebrate fauna were observed and identified on this, the first focused biological resources survey of the Crest Ridge Ecological Reserve, utilizing a survey system based on ¼-Sections, each Block measuring approximately ½-mile on each side. This system can be a useful format for data collected in the absence of using special technical equipment designed to determine one's location and survey route. The CRER Survey Blocks are identified by an alpha-numeric code based on letters A through J from east to west, and numbers 1 through 7 from north to south. The most difficult aspect of this system is determining where you are, in the field / on the ground, and determining when and where you are leaving one Survey Block and entering another. However, this can be answered by using a USGS topographic quadrangle map, in this case the Alpine Quad. This map shows topographic lines as well as old paved and dirt roads and trails, used in concert with a current Thomas Guide map which shows up-to-date roads as well as the location and names of proposed roads, even if they are not constructed yet. I have found this to be useful to me thus far.

This biological survey began at the gate across the main entrance road at La Cresta Boulevard. Ironically, it was torn down, apparently maliciously, when I got there. At this point, I was in Survey Block F-6. As the entrance road proceeds toward the main central oak grove, I would enter Block F-5 just before the right bend in the road. On this survey, I took a narrow dirt trail west by south-westward across the north-western corner of F-6, heading for the metal water tank in the hill situated in the north-western portion of Block E-6. Along this trail I crossed over four drainages, each supporting a narrow strip of riparian vegetation. Soon I ascended a slope and entered Block E-6, reaching the paved access road to the water tank. It was along this trail, and other trails I followed that I found numbers of Hermes coppers (*Lycaena hermes*) and a coast horned lizard (*Phrynosoma coronatum* ssp. *blainvillei*). As I worked my way along the trails I took detailed notes of the specific plant life / species that I encountered within each Survey Block. After reaching the water tank, I spent some time there taking a quick break, enjoying the view, reviewing my map, and getting a sense for the lay of the terrain in the general area. While on the summit of the hill I also noted active butterfly territorial behavior. There are a number of trails onsite that provide access to areas on the slope to the north and west that I have never been to. From there I headed north-eastward, passing back into the north-western-most corner of F-6 and into the south-western portion of Survey Block F-5. This route took me through two drainages, downstream portions of ones I crossed earlier, each supporting a strip of riparian vegetation. There are several side-roads and trails that I did not take and can be investigated later.



9 June 2000

0815 to 1400 hours

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Partly-cloudy, becoming to clear and sunny; calm to gusty W breezes; 65-85°F.

Observer: Claude G. Edwards

CRER Survey Blocks Visited

BIRDS [23]

	<u>G-4</u>	<u>H-4</u>	
<i>Cathartes aura</i> turkey vulture	x	=	
<i>Falco sparverius</i> American kestrel	x	=	w/ fledglings
<i>Callipepla californica</i> California quail	x	x	
<i>Zenaida macroura</i> mourning dove	x	x	
<i>Calypte anna</i> Anna's hummingbird	x	x	
<i>Calypte costae</i> Costa's hummingbird	x	x	w/ fledglings
<i>Picoides nuttallii</i> Nuttall's woodpecker	x	-	
<i>Myiarchus cinerascens</i> ash-throated flycatcher	x	x	
<i>Aphelocoma californica</i> western scrub-jay	x	x	
<i>Corvus brachyrhynchos</i> American crow	x	=	w/ fledglings
<i>Corvus corax</i> common raven	x	x	w/ fledglings
<i>Petrochelidon pyrrhonota</i> cliff swallow	x	x	
<i>Baeolophus inornatus</i> oak titmouse	x	x	
<i>Psaltiriparus minimus</i> bushtit	x	x	w/ fledglings
<i>Thryomanes bewickii</i> Bewick's wren	x	x	
<i>Chamaea fasciata</i> wren	x	x	
<i>Toxostoma redivivum</i> California thrasher	x	x	
<i>Phainopepla nitens</i> phainopepla	x	x	
<i>Pheucticus melanocephalus</i> black-headed grosbeak	x	=	
<i>Pipilo crissalis</i> California towhee	x	x	w/ fledglings
<i>Pipilo maculatus</i> spotted towhee	x	x	
<i>Aimophila ruficeps</i> rufous-crowned sparrow	x	x	w/ fledglings
<i>Carpodacus mexicanus</i> house finch	x	x	w/ fledglings



<i>Carduelis psaltria</i>			
lesser goldfinch	x	x	w/ fledglings
<i>Carduelis lawrencei</i>			
Lawrence's goldfinch	x	x	
MAMMALS [5]			
<i>Sylvilagus audubonii</i>			
Audubon's cottontail	x	=	
<i>Thomomys bottae</i>			
Botta's pocket gopher	x	=	mounds
<i>Neotoma fuscipes</i>			
dusky-footed woodrat	x	x	nests
<i>Canis latrans</i>			
coyote	x	x	scat
<i>Urocyon cinereoargenteus</i>			
gray fox	x	x	scat

Today I visited the south-central portion of the CRER, beginning from the end of the paved portion of Rios Canyon Road, accessed from Mountain View Road, in CRER Survey Block G-4. This is an area I had not yet been to before. Before I got started, a local resident and property owner, Rick Toner, came out to check who I was and what I was doing. After a short conversation, he went on his way and I continued with my survey. I hiked along the dirt Rios Canyon Truck Trail onsite, into Survey Block H-4, and proceeded eastward to a boundary gate along a side road marking the Reserve's southern boundary line. I didn't cover very much ground, but considering my survey effort was at a saturation level, I enjoyed identifying the plants and associated wildlife as I went. A major focus of this excursion was searching for the localized Hermes copper butterfly (*Lycaena hermes*). I found good numbers in the vegetation along my survey route. Additionally, I am making detailed lists of the plants that I find in each CRER Survey Block. Some plant species will be found in over a large area of the CRER while others may be found to be limited in range and extent.

16 June 2000

0730 to 1245 hours

Overcast, becoming hazy-sunny; calm to moderate W breezes; 68-88°F.

Observer: Claude G. Edwards

CRER Survey Blocks Visited

REPTILES [4]

	<u>E5</u>	<u>F5</u>	<u>G5</u>
<i>Sceloporus occidentalis</i>			
western fence lizard	x	x	=
<i>Uta stansburiana</i>			
side-blotched lizard	x	x	=
<i>Phrynosoma coronatum</i>			
coast horned lizard	x	=	=
<i>Cnemidophorus tigris</i>			
western whiptail	=	x	=

BIRDS [35]

<i>Buteo jamaicensis</i>			
red-tailed hawk	x	x	x
<i>Buteo lineatus</i>			
red-shouldered hawk	x	=	x
<i>Callipepla californica</i>			
California quail	x	x	=
<i>Zenaida macroura</i>			
mourning dove	=	=	x



<i>Tyto alba</i>				
barn owl	=	=	x	feather
<i>Geococcyx californianus</i>				
greater roadrunner	x	=	=	tracks
<i>Archilochus alexandri</i>				
black-chinned hummingbird	=	x	x	
<i>Calypte anna</i>				
Anna's hummingbird	x	x	x	
<i>Calypte costae</i>				
Costa's hummingbird	x	x	=	
<i>Picoides nuttallii</i>				
Nuttall's woodpecker	x	x	x	
<i>Empidonax difficilis</i>				
Pacific-slope flycatcher	x	x	=	
<i>Myiarchus cinerascens</i>				
ash-throated flycatcher	=	x	x	
<i>Vireo huttoni</i>				
Hutton's vireo	x	x	x	
<i>Aphelocoma californica</i>				
western scrub-jay	x	x	x	
<i>Corvus brachyrhynchos</i>				
American crow	x	x	x	
<i>Corvus corax</i>				
common raven	x	x	x	
<i>Petrochelidon pyrrhonota</i>				
cliff swallow	x	=	=	
<i>Baeolophus inornatus</i>				
oak titmouse	x	x	x	
<i>Psaltiriparus minimus</i>				
bushtit	x	x	x	
<i>Thryomanes bewickii</i>				
Bewick's wren	x	x	x	
<i>Troglodytes aedon</i>				
house wren	x	x	x	
<i>Poliophtila caerulea</i>				
blue-gray gnatcatcher	=	=	x	
<i>Chamaea fasciata</i>				
wrentit	x	x	x	
<i>Toxostoma redivivum</i>				
California thrasher	=	x	=	
<i>Phainopepla nitens</i>				
phainopepla	x	x	x	
<i>Vermivora celata</i>				
orange-crowned warbler	=	x	=	
<i>Pheucticus melanocephalus</i>				
black-headed grosbeak	x	x	=	
<i>Guiraca caerulea</i>				
blue grosbeak	=	=	x	
<i>Pipilo crissalis</i>				
California towhee				
<i>Pipilo maculatus</i>				
spotted towhee	x	x	x	
<i>Aimophila ruficeps</i>				
rufous-crowned sparrow	x	=	=	



<i>Icterus cucullatus</i>				
hooded oriole	x	=	=	
<i>Carpodacus mexicanus</i>				
house finch	x	x	x	
<i>Carduelis psaltria</i>				
lesser goldfinch	x	x	x	
<i>Carduelis lawrencei</i>				
Lawrence's goldfinch	x	=	=	
MAMMALS [5]				
<i>Sylvilagus audubonii</i>				
Audubon's cottontail	=	=	x	
<i>Neotoma fuscipes</i>				
dusky-footed woodrat	=	=	x	nest
<i>Spermophilus beecheyi</i>				
California ground squirrel	=	x	x	
<i>Canis latrans</i>				
coyote	x	x	=	scat
<i>Urocyon cinereoargenteus</i>				
gray fox	x	x	=	scat

This was my third focused survey of portions of the Crest Ridge Ecological Reserve (CRER). This time I headed westward through the 'Oak Grove' at the end of Horsemill Road and along part of the Reserve's boundary with the private Rios Canyon Ranch property, in CRER 'Survey Blocks' E-5, F-5, and G-5. This survey was an example of how the Survey Block method helped me to know and appreciate where I was onsite, where I was going, where I had been onsite previously, and where I might visit next. Along the Rios Canyon Ranch fenceline, the views to the north were impressive. Also impressive was realizing how much devastation occurred with the clearing away of the original native vegetation to plant all of the avocados and other fruit trees on the Rios Canyon Ranch property. My survey included following mostly-overgrown old dirt roads and trails across CRER. Some of them are steep and deeply eroded and not safe for casual hiking. This was a great way to better access and become familiar with the plant life and habitats onsite. Today I observed and identified 43 vertebrate wildlife species. As with most times, the presence of some species were determined by evidence or indications other than by direct visual recognition. The nests, footprints, and even feathers of some species aided in the confirmation of their presence onsite.

Friday, 14 July 2000

0930 to 1300 hours

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Variable clouds; light to moderate W breezes; $\pm 78-92^{\circ}\text{F}$.

Observer / reporter: Claude G. Edwards

BIRDS [26] (y = young birds heard / seen onsite)

<i>Accipiter cooperi</i>	
Cooper's hawk	1
<i>Buteo jamaicensis</i>	
red-tailed hawk	1-y
<i>Buteo lineatus</i>	
red-shouldered hawk	1
<i>Callipepla californica</i>	
California quail	11-y
<i>Zenaida macroura</i>	
mourning dove	9
<i>Calypte anna</i>	
Anna's hummingbird	2



<i>Picoides nuttallii</i>	
Nuttall's woodpecker	6
<i>Empidonax difficilis</i>	
Pacific-slope flycatcher	2
<i>Myiarchus cinerascens</i>	
ash-throated flycatcher	12
<i>Vireo huttoni</i>	
Hutton's vireo	2
<i>Aphelocoma californica</i>	
western scrub-jay	13
<i>Corvus corax</i>	
common raven	9-y
<i>Baeolophus inornatus</i>	
oak titmouse	8
<i>Psaltiriparus minimus</i>	
bushtit	90-y
<i>Thryomanes bewickii</i>	
Bewick's wren	15
<i>Chamaea fasciata</i>	
wrentit	26
<i>Toxostoma redivivum</i>	
California thrasher	7
<i>Phainopepla nitens</i>	
phainopepla	8
<i>Vermivora celata</i>	
orange-crowned warbler	5-y
<i>Pheucticus melanocephalus</i>	
black-headed grosbeak	1
<i>Pipilo crissalis</i>	
California towhee	21-y
<i>Aimophila ruficeps</i>	
rufous-crowned sparrow	10-y
<i>Molothrus ater</i>	
brown-headed cowbird	1
<i>Carpodacus mexicanus</i>	
house finch	19-y
<i>Carduelis psaltria</i>	
lesser goldfinch	37-y
<i>Carduelis lawrencei</i>	
Lawrence's goldfinch	2

This was my fourth focused survey of portions of the Crest Ridge Ecological Reserve (CRER). I proceeded westward on the Rios Canyon Truck Trail (hereafter TT) almost to its western terminus. Two mountain mahogany (= gray) hairstreak butterflies (*Satyrrium tetra*) were relocated and closely watched nectaring on California buckwheat (*Eriogonum fasciculatum*) along an east / west portion of the TT. They were found here on a previous visit to this TT. As is proceeds westward, the TT descends and crosses through patches of oak woodland along a steep drainage, Rios Canyon. A small amount of water was present, and in small sections, flowing, along the bottom. A widened portion along the TT, amidst large oaks can serve as a nice staging area for surveys, walks and presentations that may be offered onsite in the future. This area is also an appropriate area to survey for western screech owl and poor-will. As the TT continues west, I found a small patch of San Diego (=Palmer's) sagewort (*Artemisia palmeri*) on the south / cut slope side of the TT. This is a relatively common sensitive plant species associated with moist slopes and drainages. The TT approaches closely to the off-site avocado orchard of the adjacent private property at the upper hairpin turn. A narrow strip of riparian woodland vegetation is present along lower portion of the drainage, below and west of the lower hairpin turn. This vegetation features willows, sycamores, and



cottonwoods. This is another nice spot for a staging area for surveys, walks and presentations that may be offered in the future. This can be another good area for western screech owl and poor-will. Several orange-crowned warblers and rufous-crowned sparrows were detected, including begging young. Of the twenty-six bird species, nine were documented breeding onsite. Today I observed and identified seven invertebrate wildlife species. As with most times, the presence of some species were determined by evidence or indications other than by direct visual recognition.

30 July 2000

[0715 to 1245 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Clear; fog early over lower elevations; calm to light W breezes; $\pm 74-96^{\circ}\text{F}$.

Observers: Claude G. Edwards, accompanied by Daniel Aklufi

<u>CRER Survey Blocks Visited</u>		<u>D-6</u>	<u>E-6</u>	
REPTILES [2]				
<i>Uta stansburiana</i>				
side-blotched lizard	x	=		
<i>Cnemidophorus hyperythrus</i>				
orange-throated whiptail	=	x		
BIRDS [32]				
<i>Accipiter cooperi</i>				
Cooper's hawk	1	=		
<i>Buteo lineatus</i>				
red-shouldered hawk	3	1		fledglings
<i>Callipepla californica</i>				
California quail	=	2		
<i>Zenaida macroura</i>				
mourning dove	3	9		
<i>Tyto alba</i>				
barn owl	x	=		feather in D-6
<i>Archilochus alexandri</i>				
black-chinned hummingbird	3	=		
<i>Calypte anna</i>				
Anna's hummingbird	3	8		
<i>Calypte costae</i>				
Costa's hummingbird	5	11		
<i>Selasphorus sp.</i>				
rufous / Allen's hummingbird	=	6		
<i>Picoides nuttallii</i>				
Nuttall's woodpecker	2	=		
<i>Colaptes auratus</i>				
northern flicker	=	1		
<i>Empidonax difficilis</i>				
Pacific-slope flycatcher	=	1		
<i>Sayornis nigricans</i>				
black phoebe	1	=		
<i>Myiarchus cinerascens</i>				
ash-throated flycatcher	2	=		
<i>Vireo huttoni</i>				
Hutton's vireo	1	=		
<i>Petrochelidon pyrrhonota</i>				
cliff swallow	=	≥ 10		w/ fledglings



<i>Aphelocoma californica</i>			
western scrub-jay	18	3	w/ fledglings
<i>Corvus brachyrhynchos</i>			
American crow	=	2	
<i>Corvus corax</i>			
common raven	22	8	w/ fledglings
<i>Baeolophus inornatus</i>			
oak titmouse	3	8	
<i>Psaltiriparus minimus</i>			
bushtit	6	21	w/ fledglings
<i>Thryomanes bewickii</i>			
Bewick's wren	2	3	
<i>Chamaea fasciata</i>			
wrentit	5	17	
<i>Toxostoma redivivum</i>			
California thrasher	2	10	
<i>Phainopepla nitens</i>			
phainopepla	3	10	
<i>Passerina amoena</i>			
lazuli bunting	1	1	
<i>Pheucticus melanocephalus</i>			
black-headed grosbeak	=	1	
<i>Pipilo crissalis</i>			
California towhee	1	15	w/ fledglings
<i>Pipilo maculatus</i>			
spotted towhee	=	5	w/ fledglings
<i>Aimophila ruficeps</i>			
rufous-crowned sparrow	2	=	
<i>Carpodacus mexicanus</i>			
house finch	4	18	
<i>Carduelis psaltria</i>			
lesser goldfinch	6	20	
MAMMALS [2]			
<i>Neotoma fuscipes</i>			
dusky-footed woodrat	=	=	nest
<i>Canis latrans</i>			
coyote	x	x	scat
<i>Urocyon cinereoargenteus</i>			
gray fox	x	x	scat

Today's survey of the Crestridge Ecological Reserve (CER) was focused in the south-central portion accessed through the suburban neighborhood along La Cresta Heights Road, a short distance south of the hilltop water tank. Daniel and I parked near the end of Kent Drive, in CER Survey Block E-6. As we headed down to the trail, we met and spoke a short time with the Cvek's (pronounced 'sivek') who live at the end of the road. Our goal was to hike along the trails generally west of the water tank, and investigate the habitats and plant life. We observed or detected several other species of fauna onsite during this biological resource survey. These included side-blotched lizard, orangethroat whiptail, several mounded stick nests of dusky-footed woodrat, tracks and scat from coyote and gray fox, and also a variety of identifiable insects such as three types of pallid-wing grasshoppers (pallid, blue-winged, and red-winged), spittlebug, a cicada, a robberfly, flesh fly, a beefly, common white, California sister, Behr's Mormon metalmark, Bernardino blue, orange skipperling, European honeybee, tarantula wasp, golden polistes wasp, and yellowjacket.

The dominant habitat in the area is Southern Mixed Chaparral, as typified by the presence of plants such as goldenbacked fern, laurel sumac, sugarbush, poison-oak, acourtia, California sagebrush, broom baccharis,



golden-yarrow, sawtoothed goldenbush, slender sunflower, California-aster, wild honeysuckle, wild morning-glory, wild-cucumber, mission manzanita, wild sweetpea, deerweed, scrub-oak, Engelmann's oak, white-flowered currant, caterpillar phacelia, white sage, skunkweed, sapphire woolly-star, California buckwheat, Lakeside lilac, spiny redberry, chamise, toyon, bush monkeyflower, showy penstemon, California figwort, Whipple's yucca, and foothill needlegrass. Ephemeral wetlands mostly along shallow drainages and canyons contained mulefat, Fremont's cottonwood, arroyo willow, Goodding's black willow, and cattails, and annual beardgrass. Throughout the area where it had been disturbed, along dirt access and motorbike trails, etc., were tocalote, horseweed, short-podded mustard, Russian thistle, doveweed, tree tobacco, and annual grasses (oats, ripgut, foxtail brome, soft chess, goldentops). We also found more than fifty individuals of Palmer's sagewort (*Artemisia palmeri*), which is a sensitive plant associated with moist areas in sage scrub, chaparral, and oak woodland.

We wandered along several rutted dirt trails that criss-cross the terrain west of the water tank and north of the suburban community, marked as a rock quarry on the USGS topo map of the area. We headed north and reached a road that borders the north-central reserve boundary, in CRER Block D-6. We explored along the road and enjoyed the view of Rios Canyon and areas beyond, past the intervening avocado orchard. There were two motorbikers riding along the road here. After a while, we returned southwestward along the north boundary road which led to an oak woodland, near or at the corner of four Survey Blocks, C5 / C6 and D5 / D6. This would be a good place for a group staging area and for black-lighting. The 6"-long orangethroat whiptail was well-seen in disturbed sage scrub along the trail above the oaks. At least two fledgling red-shouldered hawks were present in these oaks, as well as a moulted barn owl feather. The day was getting hot and we slowly made our way back to the end of Kent Drive. As it turned out, this was the last visit to the site until the subsequent winter due to the heat and other projects. For the SD Bird Atlas, P-15 has 62 Summer Season Target Species, 59 species of which are equivalent to 90% 'Observed in the Block' in the Breeding Season. A minimum of 60% of the Target, 37 species, is the goal for 'Confirmed Breeding'. Today, we observed 32 species, including 2 by feathers only, and 2 add-ons, but only 4 confirmed as breeding.

24 January 2001

Observer: Claude G. Edwards

Southeast Block # P-14 /// LAKESIDE (0815 to 1130) [3.25 hours] &

Southwest Block # P-15 /// HARBISON CYN (0800 to 0815, 1130 to 1145) [0.5 hrs]

P14 / 15

turkey vulture
white-tailed kite
northern harrier
sharp-shinned hawk
Cooper's hawk
red-shouldered hawk
red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
mountain quail
California quail
2 / 1 mourning dove
greater roadrunner
barn owl
western screech-owl
great horned owl
white-throated swift
14 / 12 Anna's hummingbird

P14 / 15

22 / 1 hermit thrush
western bluebird
- / 20 American robin
- / 4 European starling
- / 2 northern mockingbird
17 / 1 California thrasher
white-breasted nuthatch
canyon wren
10 / 2 Bewick's wren
3 / 4 oak titmouse
15 / - bushtit
5 / 3 ruby-crowned kinglet
22 / 1 wrentit
house sparrow
American pipit
- / 1 pine siskin
2 / - lesser goldfinch
purple finch
4 / 30 house finch



- / 2 Costa's hummingbird

acorn woodpecker

red-naped sapsucker

red-breasted sapsucker

Nuttall's woodpecker

3 / - northern flicker

Say's phoebe

black phoebe

loggerhead shrike

Hutton's vireo

10 / 2 western scrub-jay

- / 10 American crow

5 / 2 common raven

cedar waxwing

3 / - fox sparrow

song sparrow

Lincoln's sparrow

10 / 15 white-crowned sparrow

3 / - golden-crowned sparrow

- / 20 dark-eyed junco

savannah sparrow

lark sparrow

sage sparrow

2 / - rufous-crowned sparrow

11 / 1 spotted towhee

35 / 6 California towhee

65 / 20 yellow-rumped warbler

western meadowlark

SD Atlas Block P-15 has 64 Target Species, 90% of which are equivalent to 58 species. Also, for the Atlas, I need to spend 14.0 more hours in P-15 in the Winter. Today, I recorded **22 species in adjacent portions of both Atlas Blocks P-14 and P-15**, although overall, P-14 added only 6 other species. I spent 1/2-hour in P-15 and 3.25 hours in P-14. I was trying to find a route from the west end of La Cresta Heights Road to the S.D.G.E. powerline alignment situated at the western end of the Crestridge Ecological Reserve (CRER). It is in this area that California gnatcatchers have been previously reported. It is also possible that they may occur on the south-facing slopes above La Crest Road. However, there is no easy, safe, or legal access to these slopes from the roadside.

The weather was a factor in the outcome of the survey. When I arrived, the skies were clear and sunny, light SW breezes, and cool, $\pm 48^{\circ}\text{F}$. There was a bank of clouds approaching from the west. By 0840, dark clouds overshadowed the entire area, accompanied by more vigorous SW breezes. The clouds broke up for a while, but became thick and threatening once again by 1030, bringing the first wave of sprinkles at 1130. Thankfully, I returned to my vehicle at 1145, before the next wave of rain reached the area. More rain is due today and heavier rain here on Friday. The trailhead I used began at the end of the southern fork of the western end of La Cresta Heights Road -- this is in the southwestern-most corner of Atlas Block P-15, CRER Survey Block E-6. The dirt trail proceeds westward from the houses and yards associated with the suburban community along La Cresta Heights Road. At an undefined point, it crosses into the southeastern-most portion of Atlas Block P-14, CRER Survey Block D-6. The dominant plant community throughout the area surveyed is Southern Mixed Chaparral, consisting of a mixture of coastal sage scrub and chaparral-associated plants. Rock outcrops were also common.

The access trail continues west and rises up the slope of an adjacent ridge. Just after reaching the slope summit, a side-trail splits off to the right / north, into a canyon. The trail more or less levels off on the ridge and crosses an area disturbed by repeated and recent motorbike activity. Several dirt trails radiate in different directions. Some of the trails are simply loops that connect back on themselves or interconnect with other trails. Only one of these continues westward. It was beside, and splits off to the right of, the third (westernmost) artificially created dirt mound. This trail, which is not shown on a USGS topo map, rises in elevation and eventually crosses over the summit of a low boulder-topped hill. This hill is seen as a small circle on the topo map, situated just south of / below a 1400-foot elevation interval, and a separate but adjacent ridge. From the hilltop, I had a spectacular view of surrounding lower ground onsite, as well as the El Cajon Valley and areas beyond. The trail proceeds to the north side of the summit and splits, one going NW and downhill into the canyon, and the other to the east. This soon loops around and connects back to the original trail up to the hilltop. The continuing portion of the east-to-west trail, indicated by a single dashed line on the map, could not be found on the ground or through the dense vegetation after a concerted effort to locate it. There are many narrow and newer trails in this area onsite that do not appear on the topo map.

Returning eastward on the trail past the motorbike-use area, I took the side-trail that descended the slope to the north. It was a narrow and rutted trail proceeding through dense vegetation. It bent NE-ward for a



while and later turned NW-ward, until it came to a 'T'. To the left, west, the next trail entered a small grove of live oaks. More motorbike activity has been going on here too. These trees are situated at the eastern end of the canyon between the hilltop and ridge to the south and the separate ridgeline to the north. I did not determine if the trail continues westward. The trail in the opposite direction descends the north-slope of the ridge, narrow, steep, and rutted, through dense vegetation, to a previously visited dirt trail on lower ground west of the water tank.

25 January 2001

Block # P-15 /// HARBISON CYN (0830 to 1100, 1115 to 1200) [**3.0 hrs**]

Observer: Claude G. Edwards, along with Michael Klein, Jerre Stallcup and Mike White

Mostly-sunny with a few scattered clouds; light to moderate S & W breezes; ± 54 - 58°F .

turkey vulture	<u>2 hermit thrush</u>
white-tailed kite	western bluebird
northern harrier	American robin
sharp-shinned hawk	<u>3 European starling</u>
Cooper's hawk	<u>7 California thrasher</u>
<u>2 red-shouldered hawk</u>	<u>1 white-breasted nuthatch</u>
red-tailed hawk	canyon wren
ferruginous hawk	<u>3 Bewick's wren</u>
golden eagle	<u>7 oak titmouse</u>
American kestrel	bushtit
mountain quail	<u>2 ruby-crowned kinglet</u>
<u>4 California quail</u>	<u>14 wrentit</u>
<u>2 mourning dove</u>	<u>4 house sparrow</u>
greater roadrunner	American pipit
barn owl	pine siskin
western screech-owl	<u>2 lesser goldfinch</u>
great horned owl	purple finch
white-throated swift	<u>22 house finch</u>
<u>9 Anna's hummingbird</u>	fox sparrow
<u>2 acorn woodpecker</u>	<u>2 song sparrow</u>
red-naped sapsucker	Lincoln's sparrow
red-breasted sapsucker	<u>20 white-crowned sparrow</u>
<u>2 Nuttall's woodpecker</u>	<u>1 golden-crowned sparrow</u>
northern flicker	<u>6 dark-eyed junco</u>
<u>1 Say's phoebe</u>	savannah sparrow
<u>2 black phoebe</u>	<u>5 lark sparrow</u>
loggerhead shrike	sage sparrow
Hutton's vireo	<u>7 rufous-crowned sparrow</u>
<u>16 western scrub-jay</u>	<u>4 spotted towhee</u>
<u>12 American crow</u>	<u>13 California towhee</u>
<u>6 common raven</u>	<u>105 yellow-rumped warbler</u>
cedar waxwing	western meadowlark

SD Atlas Block P-15 has 64 Target Species, 90% of which are equivalent to 58 species. Also, for the Atlas, I need to spend 14.0 more hours in P-15 in the Winter. Today, I recorded **31 species**, and I spent 2.25 more hours onsite. I have now recorded 35 species of birds within the Block and spent 2.5 total hours, 11.5 hours to invest in the field. Today's survey covered two different areas within the Block, and on the Crest Ridge Ecological Reserve. The majority of the time was spend focusing on the vegetation and bird life on the south and west-facing slopes east and above the Rios Elementary School and adjacent mobile home park. This area is in the northern portion of Rios Canyon, situated in the northwestern portion of the Block. The dominant plant community was coastal sage scrub and adjacent areas of suburbia. Several dirt



trails provide access onto slopes and ridges in this portion of the Block. The second area that was visited was in the oak woodland at the end of Horsemill Road, in the southwestern portion of the Block. We went there to find examples of larval nests of the Harbison's dun skipper, a rare butterfly that uses San Diego sedge (*Carex spissa*) as its larvae's host plant. We found such a plant with a silken nest. Mike Klein carefully tore it apart, revealing the ½-inch long greenish larvae within. Very interesting.

28 January 2001

(0900 to 1045) [1.75 hrs]

Block # P-15 /// HARBISON CANYON

Rios Canyon Road, from Pecan Park Lane to the Crest Ridge Reserve boundary

Partly-cloudy; westerly breezes calm to light; ±50-64°F.

Observer: Claude G. Edwards

turkey vulture
white-tailed kite
northern harrier
sharp-shinned hawk
Cooper's hawk
4 red-shouldered hawk
3 red-tailed hawk
ferruginous hawk
golden eagle
American kestrel
mountain quail
California quail
28 mourning dove
greater roadrunner
barn owl
western screech-owl
great horned owl
white-throated swift
37 Anna's hummingbird
Costa's hummingbird
12 acorn woodpecker
red-naped sapsucker
red-breasted sapsucker
9 Nuttall's woodpecker
2 northern flicker
Say's phoebe
7 black phoebe
loggerhead shrike
Hutton's vireo
76 western scrub-jay
12 American crow
6 common raven
cedar waxwing

7 hermit thrush
western bluebird
American robin
36 European starling
26 northern mockingbird
California thrasher
1 white-breasted nuthatch
canyon wren
11 Bewick's wren
12 oak titmouse
76 bushtit
6 ruby-crowned kinglet
6 wren
25 house sparrow
American pipit
pine siskin
10 lesser goldfinch
purple finch
182 house finch
fox sparrow
26 song sparrow
3 Lincoln's sparrow
65 white-crowned sparrow
golden-crowned sparrow
10 dark-eyed junco
savannah sparrow
lark sparrow
sage sparrow
rufous-crowned sparrow
13 spotted towhee
10 California towhee
125 yellow-rumped warbler
western meadowlark

Bird Atlas Block P-15 has 64 Target Species, 90% of which are equivalent to 58 species. Today, I recorded **35 species.**, which included 5 add-ons, **6 common ground-dove**, **3 common yellowthroat**, **1 Cassin's kingbird** and **15 chipping sparrow**, for a 3-visit total of 43 species [68%]. Also, for the Atlas, after two previous surveys, I needed to spend 9.5 more hours in P-15 in the Winter. After today, I am down to **6.75 more hours**. Today's focus was to survey the entire public, developed portion of Rios Canyon Road. This was done for several reasons: 1) I had never done it before, 2) to contrast conditions along the



lower portion of the canyon with undisturbed areas along the upper portions on the Crestridge Ecological Reserve, 3) to see what it was like to walk it, rather than drive it, and take note of habitats and circumstances along the way, and 4) to simply observe and document the bird life that utilized the habitats along the way for the Bird Atlas. The ground wherever I went was still moist, if not muddy, from recent rains. There was a goodly amount of runoff along roadways, culverts, and stream courses. The birds seemed to respond positively to this, being rather varied and relatively numerous. There were even a couple of surprises.

No time was spent actually within undisturbed native vegetation on slopes, but a little time was given to checking the more vigorous woodland vegetation along stream courses where I could legally and safely access them. Many of the private properties I passed had noisy dogs behind fences in an obvious effort to thwart trespassers, not to mention signs. It took me about an hour to carefully survey going uphill to the Reserve gate, but only 20 minutes to return back downhill, not actively checking and censusing the birds. Habitats noted along the lower portion of Rios Canyon, and Rios Canyon Road, included generally narrow, but steeply-sided drainages mostly vegetated with coast live oak (riparian) woodland and intermittent patches of willow-sycamore riparian woodland, small areas of coastal sage scrub, suburban yards and exotic plantings, eucalyptus woodland, cleared / open ground, telephone poles, and various types of fences.

The most outstanding discovery of the day was the unexpected occurrence of at least six Common Ground-Doves, observed at 10 a.m. in mixed Coastal Sage Scrub and Riparian vegetation, on the south side of the road opposite the driveway for the L.R. Bailey Arabian horse ranch, at 14518 Rios Canyon Road. This location is more than half-way the distance south-eastward from the bottom of the road. These birds may be associated with the adjacent Rios Canyon Ranch avocado orchard covering the slopes above the road, as they are frequently found elsewhere in San Diego County. The other interesting and enjoyable observation of the day was a flock of at least 15 Chipping Sparrows that were found foraging on the ground and in dense riparian vegetation on the south side of the road a short distance downhill, closer to Ruis Road. Although not rare or out of season, I do not encounter them regularly in my surveys.

Scrub-jays were particularly numerous and conspicuous in the area, as were northern mockingbirds and house finches. Perhaps this was because of the availability of mixed vegetation associated with drainages, providing cover, food, and water. Other relatively conspicuous birds were Anna's hummingbird, bushtit, European starling, yellow-rumped warbler, white-crowned sparrow, and spotted towhee, but not in extraordinary numbers. There is undisturbed coastal sage scrub vegetation on the south-facing slope above the boundary gate to the Crestridge Ecological Reserve. This habitat looks worthwhile focusing a search for California gnatcatcher. I had previously walked and surveyed onsite down to this point, last summer, from the other end of the road.

22 February 2001

(0845 to 1245 hours)

Valley View Truck Trail to the western end of the Crest Ridge Ecological Reserve

SD Bird Atlas Block # P-14 = LAKESIDE and Block # Q-14 = SINGING HILLS

Hazy-sun, light W breezes, $\pm 56^{\circ}\text{F}$.; becoming mostly-cloudy, gusty W breezes, $\pm 64^{\circ}\text{F}$.

Observer: Claude G. Edwards

P14 / Q14

turkey vulture
white-tailed kite
northern harrier
sharp-shinned hawk
Cooper's hawk

1 / = red-shouldered hawk

red-tailed hawk
ferruginous hawk

P14 / Q14

3 / = hermit thrush
western bluebird
American robin
European starling
northern mockingbird

13 / 1 California thrasher

white-breasted nuthatch
3 / = canyon wren



golden eagle
American kestrel
mountain quail
California quail
3 / = mourning dove
greater roadrunner
barn owl
western screech-owl
great horned owl
white-throated swift
14 / 1 Anna's hummingbird
Costa's hummingbird
acorn woodpecker
red-naped sapsucker
red-breasted sapsucker
Nuttall's woodpecker
= / 2 northern flicker
Say's phoebe
1 / = black phoebe
loggerhead shrike
Hutton's vireo
6 / = western scrub-jay
American crow
5 / = common raven
cedar waxwing

14 / 3 Bewick's wren
2 / = oak titmouse
24 / 2 bushtit
4 / = ruby-crowned kinglet
19 / 5 wren
house sparrow
1 / = American pipit
pine siskin
lesser goldfinch
purple finch
12 / = house finch
2 / = fox sparrow
song sparrow
Lincoln's sparrow
4 / = white-crowned sparrow
golden-crowned sparrow
dark-eyed junco
savannah sparrow
lark sparrow
sage sparrow
10 / = rufous-crowned sparrow
15 / 3 spotted towhee
27 / 3 California towhee
86 / 12 yellow-rumped warbler
western meadowlark
2 / = Lawrence's goldfinch

Summary: Today's survey resulted in twenty-four (24) species of birds being observed, all but one of which were found in the "Lakeside" Bird Atlas Block, P-14. The survey included portions of Crest Ridge 'Survey Blocks' A5, A6, B6, C6, and C7. The latter 'Survey Block' is situated in Bird Atlas Block Q-14, "Singing Hills" (see attached map). The westernmost end of the Ecological Reserve is coincidental with a north-to-south electrical powerline alignment.

Purpose and Results: Besides accessing the Crestridge Ecological Reserve from the west for the first time, the main goal of today's survey was to search for California gnatcatchers, as well as potentially appropriate gnatcatcher habitat, within the boundaries of the Ecological Reserve. A total of 4.0 hours were spent in the field, approximately 2.0 hours onsite. The survey was performed before the arrival of two winter storms over the next few days, bringing more rain. No California gnatcatchers were seen or heard during this survey visit.

Access and Description: Access to the western end of the Crestridge Ecological Reserve was from along the dirt Valley View Truck Trail, beginning beside the Von's Market in the WalMart shopping center located south of Interstate-8 at the Los Coches Road exit. It was a fairly easy hike, traversing undisturbed terrain covered with Coastal Sage Scrub vegetation. An undetermined portion of the terrain and vegetation is currently under protective management by The Environmental Trust (619-461-8333). Posted signs indicating the boundaries of the 'protected' areas were found attached to prostrate telephone poles along the sides of the Truck Trail. The first such signs were placed immediately adjacent to two recently-constructed houses on the ridgetop just west and downhill of the powerline alignment, and the western boundary of the Ecological Reserve, in the east-central portion of CRER Block B6. Surrounding the houses, part of the ridgetop has been cleared of the original vegetation, and leveled off to form various pads, apparently to the limits of their property boundaries. Access to these houses is from along Vista De Montemar, which proceeds north from La Cresta Road. Another, previously existing, house is situated along the crest of the ridge to the west, part-ways along the Truck Trail. The site is at the north end of Lotus Lane, also north from La Cresta Road.



The closed heavy metal gate across the lower end of the Truck Trail had been usurped and circumvented by people riding motorbikes, illegally accessing the area along the Truck Trail and beyond. This illegal and destructive activity continues across portions of the Ecological Reserve. There appears to be no obstacle or restriction to these activities in the area. The destructive effects of the motorbikes included ruts and paths up and down the upslope side of the Truck Trail, damaging associated Sage Scrub vegetation, and creating and promoting a network of dirt trails that extended over the surrounding terrain west and south of the Truck Trail. Uphill and east of the two houses, the Truck Trail splits into two trails. Valley View Truck Trail continues more or less northeastward, passing through another metal gate, which was open. The other trail, shown as Cross Timbers Trail in the Thomas Map Guide, continues to the east and enters the Crest Ridge Reserve in the vicinity of two 5-foot tall vertical plastic stakes, but no gate, just west of the powerline alignment. Other dirt roads run underneath or parallel with the powerlines. They in turn connect with newer, narrower, and otherwise unmapped trails and paths within the western end of the Reserve, and Crestridge' Survey Block' C6 (see attached map). This survey included the trail around the ridge in the southwest corner of Survey Block C6, just to the edge of C7, and just above Vista De Montemar, which are mostly off-site of the Ecological Reserve. Access to survey the Coastal Sage Scrub vegetation on the south-facing slopes onsite, above La Cresta Road, can be from Vista De Montemar. Overall, the Sage Scrub vegetation is relatively tall and dense in character.

Very interesting, in terms of becoming familiar with the topography onsite and gaining access to various portions of the Crestridge Ecological Reserve, a narrow and unmapped motorbike trail was followed eastward and upslope to a boulder-topped ridgeline in the southeastern corner of Survey Block C6. This particular location was reached and visited during a recent survey originating from the end of La Cresta Heights Road. Successfully reaching this point essentially connected trailheads between the bottom of Valley View Truck Trail and the west end of La Cresta Heights Road, and by association, the hilltop water tank a short distance to the east. Returning directly back to the Von's market from the ridge took only 45 minutes to hike, without going particularly fast or spending much time looking at or for birds. There are other trails and roads to follow and hike to gain better knowledge and awareness of the terrain and vegetation onsite, as well as determining census routes for focused inventories of birds and other wildlife. Birdwise, everything that was observed today consisted of year-round residents or winter-season visitors. Some of the species were engaged in territorial singing, preceding the breeding period, including mourning dove, California thrasher, canyon wren, Bewick's wren, wrentit, rufous-crowned sparrow, and spotted towhee. There were no surprises.

18 March 2001

[0900 to 1500 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Clear & sunny; calm to moderate NW breezes; $\pm 66-76^{\circ}\text{F}$.

Observer: Claude G. Edwards

AMPHIBIANS & REPTILES [2]

Pseudacris regilla

Pacific chorus frog

heard 'singing'

Uta stansburiana

side-blotched lizard

5

BIRDS [26]

SH = Suitable breeding Habitat; SM = Singing Male; PR = Pairs observed;

TB = Territorial Behavior; CB = Courtship Behavior

Aquila chrysaetos

golden eagle

1 – adult, over E slopes & mountain; SH

Callipepla californica

California quail

25

SH, SM

Zenaida macroura

mourning dove

20

SM, PR



<i>Aeronautes saxatalis</i>		
white-throated swift	>15	SH
<i>Calypte anna</i>		
Anna's hummingbird	10	SM, TB, CB
<i>Selasphorus rufus</i>		
rufous hummingbird	4	migrants
<i>Colaptes auratus</i>		
northern flicker	2	SH
<i>Vireo huttoni</i>		
Hutton's vireo	3	SH, SM
<i>Aphelocoma californica</i>		
western scrub-jay	19	PR
<i>Corvus corax</i>		
common raven	10	PR, CB, TB
<i>Baeolophus inornatus</i>		
oak titmouse	17	SH, SM
<i>Psaltiriparus minimus</i>		
bushtit	45	SH, PR
<i>Thryomanes bewickii</i>		
Bewick's wren	13	SH, SM
<i>Regulus calendula</i>		
ruby-crowned kinglet	8	winter/migrants
<i>Poliophtila caerulea</i>		
blue-gray gnatcatcher	6	SH, SM, PR
<i>Catharus guttatus</i>		
hermit thrush	1	winter/migrant
<i>Turdus migratorius</i>		
American robin	4	visitors
<i>Chamaea fasciata</i>		
wrentit	42	SH, SM
<i>Toxostoma redivivum</i>		
California thrasher	15	SH, SM
<i>Vermivora celata</i>		
orange-crowned warbler	23	SH, SM
<i>Dendroica coronata</i>		
yellow-rumped warbler	50	winter/migrants
<i>Pipilo crissalis</i>		
California towhee	36	SM, PR
<i>Pipilo maculatus</i>		
spotted towhee	15	SH, SM
<i>Carpodacus mexicanus</i>		
house finch	22	SH, SM, PR, CB
<i>Carduelis lawrencei</i>		
Lawrence's goldfinch	1	SH
<i>Carduelis psaltria</i>		
lesser goldfinch	6	SH, SM, PR
MAMMALS [3]		
<i>Neotoma fuscipes</i>		
dusky-footed woodrat	stick nest	
<i>Canis latrans</i>		
coyote	scat on trails	
<i>Urocyon cinereoargenteus</i>		
gray fox	scat on trails	
INVERTEBRATES [6]		
<i>Trimerotropis pallidipennis</i>	pallid-winged grasshopper	



Family <i>Bombyliidae</i>	bee fly
<i>Anthocharis sara sara</i>	Sara orange-tip butterfly [≥ 15]
Family <i>Pyrallidae</i>	pyralid moth
<i>Eleodes</i> sp.	stink beetle
<i>Cratidus osculans</i>	woolly darkling beetle

Today's survey was conducted with the intended goal of 1) exploring areas I had not visited before, 2) determine areas that were visited for the potential of occurrence of the California gnatcatcher (*Polioptila californica*) onsite, and 3) to search potential routes for bird census routes. I searched areas along and associated with the dirt Rios Canyon Truck Trail, along almost its entire length onsite, as well as trails and habitat areas to the north. Although I did not specify my routes or locations within my devised Crestridge Survey Blocks, the areas that I visited were within Blocks G-3, H-3, F-4, G-4, and H-4. These areas included what have been termed "Ceanothus Slope" and the "Racetrack Area", and are generally north of the end of Horsemill Road, northeast of the warden's residence, east and uphill of the developed off-site portion of Rios Canyon, and southeast of Flinn Springs County Park. Much of the Rios Canyon Truck Trail, and spur trails up to power poles, had been just previously graded, most likely by S.D.G.E. Fresh motorbike tracks were superimposed over the graded dirt, a sign of illegal off-road activity.

The dominant habitat over the majority of the areas visited is Southern Mixed Chaparral, as typified by the presence of plants such as laurel sumac, California sagebrush, broom baccharis, golden-yarrow, sawtoothed goldenbush, mission manzanita, deerweed, scrub-oak, white sage, California buckwheat, Ramona lilac, spiny redberry, chamise, mountain-mahogany, bush-rue, and Whipple's yucca. Many of these, and other plants, were in bloom, with more blossoms to follow. On my way west along the Truck Trail after reaching the metal boundary gate at the end of Montaña Serena, I took a trail that proceeded north and uphill beside an oak tree [in the NW part of CRER Survey Block H-4 – see map]. After cresting a rise I continued left at a fork. I planned to take the trail to the right and uphill later.

The trail continued \pm level to the NW and then W, dropping slightly behind a low ridge through a nice semi-open area with oaks, grass, and herbaceous plants. Another trail diverged to the NE over a nearby slope from this point. The trail I was hiking on rose up and met another trail atop a different portion of the low ridge. To the right this trail led to and stopped on a small hill, to the left it continued along the ridge and ended on a ridgecrest a short distance further to the W, passing yet another trail that dropped sharply and proceeded S back toward the Rios Canyon T.T. [in the N part of CRER Block G-4]. All of these trails had been accessed and used by motorbikes, as well as horseback riders. These trails barely appear on an old topographic map of the region. I backtracked along the trail and took the upper trail at the fork, at first to the NE. It soon headed NW and \pm level along a higher ridge. There were several interconnected and criss-crossing trails in the area that were obviously resulting from long-time motorbike use. As it turned out, this was the southern edge of the former "Racetrack Area". Among the SMC vegetation covering the slopes and ridges I found some taller and brighter green shrubs that I recognized as a type of Ceanothus upon closer inspection. None were in bloom but compared to the common and widespread Ramona lilac (*Ceanothus tomentosus*) the newer bark was relatively pale, the leaves were relatively thin and smooth with a slightly paler undersurface, and with little or no serrated edges. I surmised these to be the rare LAKESIDE LILAC (*Ceanothus cyaneus*).

I was in the right area for them to be present but had never seen them before. They were certainly different, appearing more like chaparral whitethorn/white-barked ceanothus (*Ceanothus leucodermis*), but more upright and narrow. I noted more than ten plants on the ridges and slopes where I was hiking and the so-called "Ceanothus Slope" was mapped as being east and above me on the adjacent mountainside. At about 1125 hours, as I paused to investigate the vegetation and terrain, I noticed a group of five ravens circling and making noise above me. I realized they were harassing a large raptor, larger than themselves. I scanned them through my binoculars and realized it was an adult Golden Eagle (*Aquila chrysaetos*). The ravens were chasing and diving at the eagle as it circled slowly several times, generally above the "Racetrack Area" and eventually drifting off to the east over the nearby higher mountains onsite. As it did so, the ravens gave up harassing it. This was my first eagle on the Crestridge Reserve and at a location appropriate for the species.



I continued westward on the trail, headed for a mountain to the west, situated above and N of the Truck Trail [in the SW portion of CRER Block G-3]. The trail rose and fell with the topography and led to the NW, and if I had continued on it, would have led to Flinn Springs County Park. I also wandered a short distance on a much narrower old road/trail along the eastern flank of the mountain, with an impressive overview of the terrain I had been hiking through the day. Next, I backtracked once again and proceeded N on another trail, stopping along the E flank of a lower intervening mountain. This was along a rugged and steep canyon that drains N toward Old Highway 80. Along these trails I was also seeing several Sara orange-tip butterflies (*Anthocharis sara*) and several undetermined daytime-flying 'Pyralid moths' (Family *Pyralidae*).

By early afternoon I was headed back southward, purposely hiking through the "Racetrack Area" to see the extent of the dirt roads and trails resulting from off-road vehicular activity. I was surprised and discouraged to encounter a group of six young people in their upper-teens and lower-20's riding and conversing around four motorbikes and a small pickup truck! I wondered to myself, 'how did they get here' and 'by which route and access point'? I failed to ask them the questions as I walked past and greeted them. Where is there a 'caretaker' or 'ranger' when you need one, or, is the person living in the refurbished house onsite really doing his job'? As I eventually made my way back to the Rios Canyon Truck Trail, I came to the conclusion that the entire area mapped in YELLOW in the eastern portion of the Reserve was not appropriate for the occurrence of California gnatcatcher. The Southern Mixed Chaparral vegetation is too tall and dense for them. Based on the conditions that I observed, if they WERE to appear in this part of the Reserve, they would be out-of-habitat wanderers. Coincidentally, I DID observe their congener, the blue-gray gnatcatcher (*Poliophtila caerulea*), but this area is good for them.

I hiked W along the Truck Trail as far as the lower hairpin turn. I was trying to figure out what it would be like to use this as a bird census route. Based on access, easy of coverage, and traversing different habitats, It may be worthwhile to formalize a census route along the Truck Trail. As I approached the trail-head gate at the end of the paved portion of the Rios Canyon Road, I met David and Yolaine Stout coming in for a hike. As we talked, a trio of the motorbike riders came up and attempted to depart the Reserve. They exited the site from along the dirt trail proceeding past / east of the "caretaker's residence", presumably to Horsemill Road. As a result of this survey, I observed 31 species of fauna, 26 of which were birds. None were confirmed breeding, but several were noted engaged in territorial singing and aggressive behavior.

20 March 2001

[1145 to 1630 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCKS P-14, P-15 & Q-14

Partly-cloudy, hazy-sun; moderate W & NW breezes; $\pm 82^{\circ}\text{F}$.

Observer: Claude G. Edwards

Areas visited within the Crestridge Ecological Reserve that are situated in **Atlas Block P-15** were limited to the suburban neighborhood at the west end of La Cresta Heights Road, a short distance along Cross Timbers Trail west of the end of the road, as well as a short distance on the Valley View Truck Trail along the northern perimeter of the Reserve. Areas within **Atlas Block Q-14** consisted of habitats and trails southwest of the end of La Cresta Heights Road. Areas visited within **Atlas Block P-14** extended over habitats and trails northwest of La Cresta Heights Road, and on westerly portions of the Valley View Truck Trail, to just beyond the northwest extreme of the Reserve.

Bird Atlas Blocks

REPTILES [2]

Uta stansburiana

side-blotched lizard

P-14 P-15 Q-14

x x =

Phrynosoma coronatum blainvillei

San Diego coast horned lizard

= = 1



BIRDS [33]

SH = Suitable breeding Habitat; SM = Singing Male; PR = Pairs observed;
TB = Territorial Behavior; CB = Courtship Behavior

<i>Accipiter cooperi</i>				
Cooper's hawk	1	=	=	SH
<i>Buteo jamaicensis</i>				
red-tailed hawk	2	1 - - - -	1	SH
<i>Zenaida macroura</i>				
mourning dove	2	2	=	SM, PR
<i>Geococcyx californianus</i>				
greater roadrunner	1	=	=	SH, SM
<i>Calypte anna</i>				
Anna's hummingbird	15	3	4	SM, TB, CB
<i>Calypte costae</i>				
Costa's hummingbird	1	=	=	SH, SM
<i>Selasphorus sp.</i>				
Allen's/rufous hummingbird	=	1	=	migrant
<i>Picoides nuttallii</i>				
Nuttall's woodpecker	1	=	=	SH
<i>Colaptes auratus</i>				
northern flicker	3	=	=	SH
<i>Vireo huttoni</i>				
Hutton's vireo	3	=	=	SH, SM
<i>Aphelocoma californica</i>				
western scrub-jay	10	2	4	SH, PR
<i>Corvus corax</i>				
common raven	7	2 - - - -	2	PR, CB
<i>Baeolophus inornatus</i>				
oak titmouse	4	=	=	SH, SM
<i>Psaltiriparus minimus</i>				
bushtit	16	5	4	SH, PR
<i>Thryomanes bewickii</i>				
Bewick's wren	19	2	4	SH, SM
<i>Troglodytes aedon</i>				
house wren	2	=	=	SH, SM
<i>Catharus guttatus</i>				
hermit thrush	6	=	=	winter/migrants
<i>Turdus migratorius</i>				
American robin	=	1	=	visitor
<i>Chamaea fasciata</i>				
wrentit	22	1	5	SH, SM
<i>Toxostoma redivivum</i>				
California thrasher	6	1	3	SH, SM
<i>Vermivora celata</i>				
orange-crowned warbler	5	1	1	SH, SM
<i>Dendroica coronata</i>				
yellow-rumped warbler	8	3	2	winter/migrants
<i>Pipilo crissalis</i>				
California towhee	11	2	6	SM, PR
<i>Pipilo maculatus</i>				
spotted towhee	5	2	2	SH, SM
<i>Aimophila ruficeps</i>				
rufous-crowned sparrow	4	=	2	SH, SM
<i>Zonotrichia leucophrys</i>				
white-crowned sparrow	=	5	=	winter/migrants



<i>Passerella iliaca</i>				
fox sparrow	2	=	=	winter/migrants
<i>Melospiza lincolnii</i>				
Lincoln's sparrow	=	1	=	winter/migrants
<i>Junco hyemalis</i>				
dark-eyed junco	5	2	=	winter/migrants
<i>Icterus cucullatus</i>				
hooded oriole	=	1	=	SH
<i>Carpodacus mexicanus</i>				
house finch	7	10	4	SM, PR
<i>Carduelis psaltria</i>				
lesser goldfinch	5-FY	6	2	SM, PR
MAMMALS [4]				
<i>Neotoma fuscipes</i>				
dusky-footed woodrat	x	=	x	stick nests
<i>Lynx rufus</i>				
bobcat	1	=	=	adult on T.T.
<i>Canis latrans</i>				
coyote	x	x	x	scat on trails
<i>Urocyon cinereoargenteus</i>				
gray fox	x	=	x	scat on trails
INVERTEBRATES [6]				
<i>Trimerotropis pallidipennis</i>				pallid-winged grasshopper
Family <i>Bombyliidae</i>				bee flies
<i>Anthocharis sara sara</i>				Sara orange-tip [3]
<i>Junonia coenia</i>				common buckeye [1]
<i>Apodemia mormo virgulti</i>				Behr's metalmark [5]
<i>Erynnis funeralis</i>				funereal duskywing [2]
Family <i>Pyrallidae</i>				pyralid moths
<i>Paracotalpa ursa</i>				bear (scarab) beetle

Today's survey was conducted with three goals, 1) to explore areas that I had not visited before, 2) to determine areas onsite that were potentially appropriate for the occurrence of the California gnatcatcher (*Poliophtila californica*), and 3) to search potential routes for bird census surveys.

Overview: I accessed the Reserve from the west end of La Cresta Heights Road, surveying along dirt roads and trails through habitats southwest of the suburban neighborhood along the Road. From there I headed north to Valley View Truck Trail and hiked through the northwestern portion of the Reserve to beyond the powerline alignment, as far as the heavy metal gate just off-site. I retraced my route on Valley View Truck Trail, then continued eastward a short distance along the boundary between the Crest Ridge Ecological Reserve and the Rios Canyon Ranch. From there I returned back to Cross Timbers Trail, which leads back the end of La Cresta Heights Road. For the purpose of my own survey efforts onsite, the areas I visited coincide with my Crest Ridge (CRER) Survey Blocks C-5 through E-5, B-6 through E-6, and D-7 (see attached map). These areas include portions of SD County Bird Atlas Blocks P-14, P-15, and Q-14. Like my survey on Sunday, March 18, the dominant habitat over the majority of the areas visited today was Southern Mixed Chaparral. Many of the plants were in bloom. I also encountered patches of Live Oak Woodland, Scrub Oak Chaparral, and Coastal Sage Scrub, as shown on the vegetation habitat map of the Reserve.

Discussion: South of the dirt Cross Timbers Trail that proceeds west from La Cresta Heights Road, the Southern Mixed Chaparral (SMxC) habitat was tall and dense. The area is worthwhile visiting in late-May and June to search for Hermes Copper butterfly as appropriate larvae host and nectar plants are present. There are several well-established trails that provide access and intersect one another. Most of these trails do not appear on topographic or habitat maps I have. In the central portion of this area there are relatively wide, disturbance-related, openings in the brush replaced/vegetated by low grasses, annual herbs, and some



wildflowers. At least three trails descend south-facing slopes to the Reserve boundary and adjacent private properties bordering on the north side of La Cresta Road. The Reserve boundaries are not marked by any kind of signage or staking. I noted the presence of Chaparral Whitethorn, or White-barked Lilac (*Ceanothus leucodermis*) along the trails inspired by my observations of the three other *Ceanothus* species onsite on the 18th. Based on the available vegetation and the ruggedness of the terrain, the entire area is not appropriate for the occurrence of California Gnatcatchers. A number of dirt trails traverse generally lower ground between Cross Timbers Trail and the Valley View Truck Trail, and provide additional access to other areas to the west and east. The dominant habitats are SMxC and Scrub Oak Chaparral with some Live Oak Woodland occurring along the canyon bottom which flows northwestward. Coastal Sage Scrub habitat is conspicuous on the slopes associated with Valley View T.T., intermixed with SMxC. The Truck Trail proceeds generally westward through part of the previously mentioned Live Oak Woodland and continues along the northern flank of a mountain situated in the northwestern portion of the Reserve. The Truck Trail is relatively easy to walk. By the time the Truck Trail crosses underneath an alignment of powerlines, I could assume and determine that I was near the western end of the Reserve.

Based on the vegetation map of the Crestridge Ecological Reserve, none of the areas that I previously accessed and visited on February 22nd, in hopes of finding California Gnatcatchers, are onsite. These areas consist of higher ground accessed by various dirt roads and trails that proceed through Coastal Sage Scrub, Mixed Chaparral, and disturbed vegetation situated around a number of powerline towers. Presumably these areas are under the "care and management" of the Environmental Trust. They didn't seem to be doing such a good job of management of the area based on the evidence of illegal and inappropriate motorbike activity I observed during that field trip and survey. Incidentally, I did not find any California Gnatcatchers on that survey, nor did I feel the vegetation was appropriate for them. In the other direction, eastward on the Valley View Truck Trail, it turns northward and then east-to-west. In this area it passes through Coastal Sage Scrub habitat and then proceeds along the fenceline marking the boundary between the Reserve and the Rios Canyon Ranch avocado orchard. Along the way I noted a few Engelmann oaks on the uphill side of the road, as well as a few Eucalyptus trees. I turned around a short distance down the road after I got my bearings.

31 March 2001

[0730 to 1430 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Foggy-overcast, clearing to hazy-sun; calm to moderate W & NW breezes; ± 66 to 82°F .

Observers: Claude G. Edwards, accompanied by Daniel Aklufi

Overview: As with the two previous surveys, the emphasis of this visit was to 1) determine areas potentially appropriate for the occurrence of California gnatcatcher (*Poliophtila californica*) onsite, and 2) to decide on potential routes for focused bird census surveys. This survey began at the paved end of Rios Canyon Road. We hiked to the "Racetrack Area", and from there we investigated trails and habitats in the vicinity of the "caretaker's residence" and the "Oak Grove". Afterwards, we went west along Valley View Truck Trail to the region that was visited before. We did not find any CaGn, nor did the CSS areas we investigated look appropriate for them.

AMPHIBIANS [1]

<i>Pseudacris regilla</i>		
Pacific chorus frog	4+	@ Oak Grove
<i>Sceloporus occidentalis</i>		
western fence lizard	1	
<i>Uta stansburiana</i>		
side-blotched lizard	10+	
<i>Phrynosoma coronatum blainvillei</i>		
San Diego coast horned lizard	1	@ Racetrack area



<i>Gerrhonotus multicarinatus</i>		
southern alligator lizard	1	adult, Valley View T.T.
BIRDS [46]		
SH = Suitable breeding Habitat; SM = Singing Male; PR = Pairs observed; TB = Territorial Behavior; CB = Courtship Behavior		
<i>Cathartes aura</i>		
turkey vulture	1	SH?
<i>Accipiter cooperi</i>		
Cooper's hawk	2	SH
<i>Buteo lineatus</i>		
red-shouldered hawk	4	PR, CB
<i>Buteo jamaicensis</i>		
red-tailed hawk	3	SH
<i>Falco sparverius</i>		
American kestrel	2	SH, SM, PR?
<i>Callipepla californica</i>		
California quail	20	SH, SM, PR?
<i>Zenaida macroura</i>		
mourning dove	10	SH, SM, PR
<i>Geococcyx californianus</i>		
greater roadrunner	4	SH, SM
<i>Archilochus alexandri</i>		
black-chinned hummingbird	1	migrant
<i>Calypte anna</i>		
Anna's hummingbird	15	SH, SM, TB, CB
<i>Calypte costae</i>		
Costa's hummingbird	3	SH, SM
<i>Selasphorus sp.</i>		
Allen's/rufous hummingbird	1	migrant
<i>Picoides nuttallii</i>		
Nuttall's woodpecker	3	SH, SM
<i>Colaptes auratus</i>		
northern flicker	2	SH
<i>Empidonax difficilis</i>		
Pacific-slope flycatcher	5	migrants, SH, SM
<i>Sayornis nigricans</i>		
black phoebe	1	SH, SM
<i>Vireo huttoni</i>		
Hutton's vireo	2	SH, SM
<i>Aphelocoma californica</i>		
western scrub-jay	13	SH, PR
<i>Corvus brachyrhynchos</i>		
American crow	25	SH, PR, CB, TB
<i>Corvus corax</i>		
common raven	18	PR, CB
<i>Baeolophus inornatus</i>		
oak titmouse	9	SH, SM
<i>Psaltiriparus minimus</i>		
bushtit	35	SH, PR
<i>Sitta carolinensis</i>		
white-breasted nuthatch	3	SH, SM
<i>Catherpes mexicanus</i>		
canyon wren	1	SH, SM
<i>Thryomanes bewickii</i>		
Bewick's wren	16	SH, SM



<i>Troglodytes aedon</i>		
house wren	5	SH, SM
<i>Regulus calendula</i>		
ruby-crowned kinglet	1	migrant
<i>Poliophtila caerulea</i>		
blue-gray gnatcatcher	3	SH, SM
<i>Catharus guttatus</i>		
hermit thrush	12	migrant
<i>Turdus migratorius</i>		
American robin	4	migrant?, SH
<i>Chamaea fasciata</i>		
wrentit	29	SH, SM, PR
<i>Toxostoma redivivum</i>		
California thrasher	13	SH, SM
<i>Vermivora celata</i>		
orange-crowned warbler	14	SH, SM
<i>Dendroica coronata</i>		
yellow-rumped warbler	28	migrants
<i>Dendroica townsendi</i>		
Townsend's warbler	1	migrant
<i>Wilsonia pusilla</i>		
Wilson's warbler	1	migrant
<i>Pipilo crissalis</i>		
California towhee	31	SH, SM, PR
<i>Pipilo maculatus</i>		
spotted towhee	13	SH, SM
<i>Aimophila ruficeps</i>		
rufous-crowned sparrow	3	SH, SM
<i>Spizella atrogularis</i>		
black-chinned sparrow	2	SH, SM
<i>Zonotrichia leucophrys</i>		
white-crowned sparrow	2	migrants
<i>Passerella iliaca</i>		
fox sparrow	9	migrants
<i>Melospiza lincolnii</i>		
Lincoln's sparrow	1	migrant
<i>Icterus bullockii</i>		
Bullock's oriole	1	migrant, SH
<i>Carpodacus mexicanus</i>		
house finch	42	SH, SM, PR, CB
<i>Carduelis psaltria</i>		
lesser goldfinch	10	SH, SM, PR
<i>Sylvilagus audubonii</i>		
Audubon's cottontail	1	

INVERTEBRATES [15]

<i>Trimerotropis pallidipennis</i>	pallid-winged grasshopper
Family Bombyliidae	bee flies
<i>Papilio rutulus</i>	western tiger swallowtail [1]
<i>Anthocharis sara sara</i>	Sara orange-tip [10]
<i>Vanessa cardui</i>	painter lady [8]
<i>Apodemus mormo virgulti</i>	Behr's metalmark [4]
<i>Callophrys augustus iroides</i>	brown elfin [3]
<i>Callophrys dumetorum perplexa</i>	perplexing hairstreak [1]
<i>Glaucopsyche lygadamus australis</i>	southern blue [20]
<i>Erynnis funeralis</i>	funereal duskywing [12]



<i>Eleodes</i> sp.	stink beetle
<i>Iridomyrmex humilis</i>	Argentine ant
<i>Pogonomyrmex californicus</i>	California harvester ant
<i>Bombus</i> sp.	bumblebee
<i>Apis mellifera</i>	European honeybee

Discussion: Mr. Aklufi and I were headed for the former racetrack area to see if we could find any Lakeside Lilac (*Ceanothus cyaneus*) in bloom and generally become more familiar with the area. If *Ceanothus* plants were in bloom, I wanted to photograph them. From there, we were going to backtrack and take the dirt trail proceeding toward the warden's residence and that led down to the popular "Oak Grove", situated at the end of Horsemill Road. Our plan included checking Coastal Sage Scrub habitat in the vicinity for any evidence of California Gnatcatchers (CaGn). Upon entering the Crestridge Ecological Reserve at the paved end of Rios Canyon Road, Mr. Aklufi and I noticed a newly-excavated trench across the dirt trail that circumvents the entrance gate at this location. Someone had tried to create an obstacle to access. I also noticed what appeared to be recently-laid tractor tracks that I had not seen there before. The tracks actually began from the end of the paved Rios Canyon Road and stopped short of the gate. Apparently, someone was trying to gain access onto Reserve land. This location is not signed or posted. As we hiked east down to and along the dirt Rios Canyon Truck Trail, we saw more of the tractor tracks, but we dismissed them presuming they were associated with S.D.G.E. grading necessary access to powerline poles along the road. Along the way, we took note of the plant life and birds that were vocalizing. I even found a perched sleeping Southern Blue butterfly, which I photographed. We found our way to the former Racetrack area, passing a few clumps of non-native purple fountain grass (*Pennisetum setaceum*) along the trail. When we arrived at the former Racetrack, we were surprised to see that there were more fresh tractor tracks there as well. In fact, it appeared that someone had literally driven the tractor to this location to create and enhance dirt ramps and humps for use by motorbike riders! I was incredulous --- who did this and when? I took several photographs of examples of this new disturbance, which I will make available to CBI and CDFG. The only species of *Ceanothus* we found blooming were the wide and numerous, blue-flowered, Ramona Lilac (*Ceanothus tomentosus*) and the white-flowered Hoary-leaved *Ceanothus* (*Ceanothus crassifolius*). We also found a clump of San Diego Sagewort (*Artemisia palmeri*) plants, which are to be mapped and accounted for later. For the record, we also noted a singing Blue-gray Gnatcatcher (*Polioptila caerulea*) along Rios Canyon T.T., near the side trail leading to the "Racetrack", and also adjacent to the "Racetrack" area, both in Southern Mixed Chaparral vegetation. I had observed them there on 16 March. We also found a small Coast Horned Lizard (*Prynosoma coronatum*) along one of the trails. As we returned next to the access gate at Rios Canyon Road, we heard the sounds of at least two motorbikes in the distance, riding in the area of the "Racetrack". Then, to our dismay, we also heard the sound of an automobile coming from 'onsite'! We saw and were soon met by a man and woman driving up from along the Rios Canyon T.T. in a brown Jeep (CA Lic # ♥ CRWLN) referring to a map as they went. They smiled and nodded to us as they passed and exited the Reserve along the circumventing trail around the gate. I photographed them! Yikes!

From there we went west and investigated the trails and habitats generally east and uphill of the "caretaker's residence" and the "Oak Grove". The trail is on a ridge and splits, one proceeding more to the west than the other. First we checked the more westerly trail which eventually leads below and past the "caretaker's residence". The trail is more or less level for a distance and passes through some Coastal Sage Scrub habitat, as well as Live Oak Woodland. Along the way we found two different sets of active beebboxes, as well as at least three eucalyptus trees. We turned back before reaching the warden's residence, which was active with several people. We then took the more easterly side-trail which descended the slope and traversed Southern Mixed Chaparral and Coastal Sage Scrub habitats. Although the CSS vegetation itself is healthy and in good condition, dominated by the typical plant components, California Sagebrush (*Artemisia californica*), California [flat-topped] Buckwheat (*Eriogonum fasciculatum*), Deerweed (*Lotus scoparius*), and White Sage (*Salvia apiana*), it is mature, tall and dense, averaging 3 to 5 feet in height, and taller with the associated Laurel Sumac (*Malosma laurina*) plants. The trail is partly rutted. We did not detect CaGn here and do not consider the CSS appropriate for them. We exited the CSS and followed a narrow trail, past an old property line fence, and through the lower portion of the small grassland habitat east of the "Oak Grove". We entered the oaks and took a short break. The oak woodland was busy with



bird activity and vocalizations, as well as those of a few Pacific Chorus Frogs (*Pseudacris regilla*) calling from along the narrow creek. We continued on, heading west along the Valley View Truck Trail bordering on the Rios Canyon Ranch avocado orchard, on the northern perimeter of the Reserve. I wanted to go as far west along the trail as I had hiked east during my previous survey on March 20, when I accessed the Reserve from the end of La Cresta Heights Road. There was a pleasant and unexpected amount of butterfly activity along the trail, as we had noticed since our day began. The most numerous and conspicuous varieties were, in decreasing order of [perceived] abundance, Southern Blue (*Glaucopsyche lygadamus australis*), Funereal Dusky-wing (*Erynnis funeralis*), Sara Orange-tip (*Anthocharis sara sara*), and Painted Lady (*Vanessa cardui*). In all, we saw 8 different species of butterfly. We passed along the northern flank of a hill, just west of the Oak Grove, mapped as vegetated by Coastal Sage Scrub habitat, along with a small amount of Scrub Oak Chaparral and Southern Mixed Chaparral. As we hiked past it, to the west, we took a good look at the available vegetation. Like the other CSS areas that I have become familiar with onsite, the hill appeared to be vegetated with mature, tall and dense, CSS habitat. Although I did not specifically survey the hill on this visit with the aid of a CaGn recording, the area appears to be inappropriate for them. We finally reached a portion along the Valley View Truck Trail that I had visited on March 20. The location was coincidental with the presence of several eucalyptus trees and several oak trees, alongside the Rios Canyon Ranch avocado orchard. At this point we turned around and retraced our route, back through the Oak Grove, and back to the Rios Canyon Road trailhead. It took us just over an hour to hike back, with a few pauses along the way.

6 April 2001

[0800 to 1045 and 1440 to 1840 hours = 6.75 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCKS P-14 and P-15

Unseasonable wintry day with variable, mostly-cloudy to overcast skies;

light to moderately-gusty S & SW breezes; ± 52 to 62°F .

Observers: Claude G. Edwards

Overview: Today was a concerted effort to investigate and determine details of the westerly of two focused bird census routes being proposed on the Crestridge Ecological Reserve for the current breeding season. This survey began at the western end of La Cresta Heights Road and encompassed much of the western portion of the Reserve. An effort was also made to assess the quality of the Coastal Sage Scrub habitat along Valley View Truck Trail for the occurrence of California gnatcatcher, and to identify the plant-life in the habitats along the roads and trails.

Atlas Block

BIRDS [36]

SH = Suitable breeding Habitat; SM = Singing Male; PR = Pairs observed;

TB = Territorial Behavior; CB = Courtship Behavior, FY = Feeding Young, y – young detected

	P-15	P-14	Status
<i>Accipiter cooperi</i> Cooper's hawk	1	=	SH
<i>Callipepla californica</i> California quail	-	5	SH, SM
<i>Zenaida macroura</i> mourning dove	7	10	SH, SM, PR
<i>Archilochus alexandri</i> black-chinned hummingbird	=	3	SH, CB
<i>Calypte anna</i> Anna's hummingbird	6	22	SH, SM, CB
<i>Colaptes auratus</i> northern flicker	1	=	SH
<i>Sayornis nigricans</i> black phoebe	=	1	SH



<i>Vireo huttoni</i>			
Hutton's vireo	=	1	SH, SM
<i>Aphelocoma californica</i>			
western scrub-jay	2	15	SH, PR
<i>Corvus brachyrhynchos</i>			
American crow	=	1	SH
<i>Corvus corax</i>			
common raven	1	10	PR, CB
<i>Baeolophus inornatus</i>			
oak titmouse	1	15	SM, PR, <u>FY</u>
<i>Psaltiriparus minimus</i>			
bushtit	6	30	SH, PR
<i>Thryomanes bewickii</i>			
Bewick's wren	1	20	SH, SM
<i>Troglodytes aedon</i>			
house wren	=	4	SH, SM
<i>Regulus calendula</i>			
ruby-crowned kinglet	=	3	migrants
<i>Poliophtila caerulea</i>			
blue-gray gnatcatcher	=	1	SH, SM
<i>Catharus guttatus</i>			
hermit thrush	3	12	migrants
<i>Chamaea fasciata</i>			
wrentit	1	26	SH, SM
<i>Sturnus vulgaris</i>			
European starling	1	=	SH
<i>Mimus polyglottus</i>			
northern mockingbird	4	=	SH, SM
<i>Toxostoma redivivum</i>			
California thrasher	1	20	SH, SM
<i>Vermivora celata</i>			
orange-crowned warbler	1	22	SH, SM
<i>Dendroica coronata</i>			
yellow-rumped warbler	4	15	migrants
<i>Oporornis tolmiei</i>			
MacGillivray's warbler	=	1	migrant
<i>Pipilo crissalis</i>			
California towhee	2	25	SM, PR, <u>FY</u>
<i>Pipilo maculatus</i>			
spotted towhee	3	18	SH, SM
<i>Aimophila ruficeps</i>			
rufous-crowned sparrow	=	7	SH, SM
<i>Zonotrichia leucophrys</i>			
white-crowned sparrow	35	5	migrants
<i>Passerella iliaca</i>			
fox sparrow	1	4	migrants
<i>Melospiza lincolnii</i>			
Lincoln's sparrow	=	1	migrant
<i>Junco hyemalis</i>			
dark-eyed junco	15	10	migrants
<i>Icterus cucullatus</i>			
hooded oriole	4	=	SH, SM
<i>Molothrus ater</i>			
brown-headed cowbird	1	=	SH, SM



<i>Carpodacus mexicanus</i> house finch	15	6	SH, SM, PR
<i>Carduelis psaltria</i> lesser goldfinch	2	4	SH, SM, PR
<i>Canis latrans</i> coyote	=	>5	yelping

Discussion: Much progress was made in terms of deciding and confirming where to lay the route for repeatable bird censuses. This is a more scientific method for collecting data on the variety of birds, and also to determine relative population density of birds. This is one of two such bird census routes devised within the Reserve, each consisting of ten census points and measuring approximately 2550 meters, or 8500 feet, in length. This route alignment crosses through four types of habitats mapped onsite, Southern Mixed Chaparral, Scrub-Oak Chaparral, Coastal Sage Scrub, and Oak Woodland. Based on this visit, it is possible to expect between 30 and 40 species of birds to be observed during each focused census. As the season progresses, it will be possible to directly observe and report on which species breed and raise their young onsite. The chilly and windy weather probably reduced some bird activity and vocalizations. The same was true for the almost total lack of insect activity, which was reduced to a small number of persistent honey bees attempting to visit flowers for nectar, and cold-suppressed harvester ants forming a slow-motion corridor across one of the dirt roads. There were no flies, no butterflies, or moths. Even my effort to coax prospective gnatcatchers out of potentially appropriate habitat was impeded by the weather. Of the thirty-six (36) species of birds that were seen and or heard along the route alignment, two species were confirmed breeding onsite, oak titmouse and California towhee, based on the sounds of begging young. Several winter visitors are still present and filtering through the Reserve and incoming summer season migrants are showing up. Only 30 minutes were spent in Block P-15, entering and exiting the survey area in Block P-14. The majority of the time, 6.25 hours, were spent in Block P-14.

10 April 2001

[0920 to 1435 hours]

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

Unseasonable wintry day beginning with overcast skies, clearing to mostly-cloudy; light to moderately-gusty SW & W breezes; ± 52 to 56°F .

Observers: Claude G. Edwards

Overview: This was the follow-up visit to confirm in the field conditions and landmarks of the easterly of two focused bird census routes proposed on the Crestridge Ecological Reserve for the current breeding season. The first part of the day began at the end of Rios Canyon Road to check the first four census points. Subsequently, the remainder of the census route was visited from the end of Horsemill Road. This bird census route proceeds through the central portion of the Reserve. An effort was also made to identify the plant-life present in the habitats along the roads and trails.

Atlas Block	P-15	Status
AMPHIBIANS & REPTILES [2]		
<i>Pseudacris regilla</i> Pacific chorus frog	2	territorial singing
<i>Gerrhonotus multicarinatus</i> southern alligator lizard	1	adult avoiding the cold
BIRDS [40]		
SH = Suitable breeding Habitat; SM = Singing Male; PR = Pairs observed; TB = Territorial Behavior; CB = Courtship Behavior, FY = Feeding Young, NB = Nest Building, ON = Occupied nest, JV = Juvenile detected, FL = Fledgling detected,		
<i>Accipiter cooperi</i> Cooper's hawk	3	SH, PR?, CB?



<i>Buteo jamaicensis</i> red-tailed hawk	1	SH
<i>Buteo lineatus</i> red-shouldered hawk	2	SH, CB
<i>Falco sparverius</i> American kestrel	3	<u>FY, FL (1)</u>
<i>Callipepla californica</i> California quail	12	SH, SM, PR?
<i>Zenaida macroura</i> mourning dove	4	SH, SM, PR
<i>Calypte anna</i> Anna's hummingbird	12	SH, SM, CB
<i>Melanerpes formicivorus</i> acorn woodpecker	1	SH
<i>Picoides nuttallii</i> Nuttall's woodpecker	3	SH
<i>Colaptes auratus</i> northern flicker	2	SH, SM
<i>Sayornis nigricans</i> black phoebe	2	SH
<i>Empidonax occidentalis</i> Pacific-slope flycatcher	4	SH, SM
<i>Vireo huttoni</i> Hutton's vireo	1	SH, SM
<i>Aphelocoma californica</i> western scrub-jay	15	SH, PR
<i>Corvus brachyrhynchos</i> American crow	25	<u>ON, FY, JV (≥ 5)</u>
<i>Corvus corax</i> common raven	9	PR, CB
<i>Baeolophus inornatus</i> oak titmouse	14	SM, PR, <u>FY (≥ 4)</u>
<i>Psaltiriparus minimus</i> bushtit	32	<u>SH, PR, NB</u>
<i>Thryomanes bewickii</i> Bewick's wren	10	SH, SM
<i>Troglodytes aedon</i> house wren	7	SH, SM
<i>Regulus calendula</i> ruby-crowned kinglet	1	migrant
<i>Catharus guttatus</i> hermit thrush	7	migrants
<i>Turdus migratorius</i> American robin	5	migrants, SH?
<i>Chamaea fasciata</i> wrentit	33	SH, SM
<i>Mimus polyglottus</i> northern mockingbird	1	SH, SM
<i>Toxostoma redivivum</i> California thrasher	15	SH, SM
<i>Vermivora celata</i> orange-crowned warbler	10	SH, SM
<i>Dendroica coronata</i> yellow-rumped warbler	13	migrants



<i>Oporornis tolmiei</i>		
MacGillivray's warbler	2	migrant
<i>Wilsonia pusilla</i>		
Wilson's warbler	2	migrants
<i>Pipilo crissalis</i>		
California towhee	22	SM, PR, CB, <u>FY</u>
<i>Pipilo maculatus</i>		
spotted towhee	19	SM, PR, CB, TB
<i>Zonotrichia leucophrys</i>		
white-crowned sparrow	10	migrants
<i>Passerella iliaca</i>		
fox sparrow	5	migrants
<i>Melospiza melodia</i>		
song sparrow	2	SH, SM
<i>Melospiza lincolnii</i>		
Lincoln's sparrow	4	migrant
<i>Junco hyemalis</i>		
dark-eyed junco	6	migrants
<i>Molothrus ater</i>		
brown-headed cowbird	1	SH, SM
<i>Carpodacus mexicanus</i>		
house finch	27	SM, PR, CB
<i>Carduelis psaltria</i>		
lesser goldfinch	9	SH, SM, PR

Discussion: I arrived onsite at the end of Rios Canyon Road to find fresh evidence of 'Off Highway Vehicle' activity onsite. Unknown individuals riding motorbikes, and even a car or truck, have driven onsite in recent days and proceeded to the Racetrack area, based on tire tracks left in the still-wet mud along the dirt roads. I even heard a motorbike onsite today from a distance away. It was good to see the heavy metal gates reinstalled at the ends of La Crests and Horsemill Roads, but illegal vehicular activity persists. Some of the unnecessary side-trails and paths along more established roads, as well as through habitat, need to be blocked off to deter additional such transgressions. Another rainy day has just passed by, giving me the opportunity to follow and confirm conditions along the second of two proposed bird census route across portions of the Crestridge Ecological Reserve. Each census route consists of ten census points situated approximately 255 meters, or 850 feet, apart. The alignment of this census route proceeds through five or six habitat types mapped onsite, Southern Mixed Chaparral, Coastal Sage Scrub, Non-Native Grassland, open and closed Live Oak Woodland, and Live Oak Riparian Woodland. Based on this visit, it is possible to expect between 30 and 40 species of birds to be detected and observed during each focused census. As the season progresses, it will be possible to directly observe and report on wildlife species that may be reproducing onsite. Already, nesting success is being observed and documented.

The chilly, windy, and wet weather of the past two weeks has likely reduced some bird activity and vocalizations. The same was true for the almost total lack of insect activity, which was reduced to a small number of persistent honey and bumble bees, as well as two species of butterflies, namely California ringlet (*Coenonympha tullia ssp. californica*) and southern blue (*Glaucopsyche lygadamus ssp. australis*) that were observed sunning and visiting flowers for nectar in the afternoon. No specific effort was made to search prospective habitat for California gnatcatchers this time.



27 April 2001

Western Reserve Route #1

SAN DIEGO COUNTY BIRD ATLAS

P-14 - LAKESIDE Block

Focused Point Count Bird Census

(0815 to 1245 = 4.5 hours) Observer / Reporter: Claude G. Edwards

2 Cooper's hawk	3 blue-gray gnatcatcher
1 red-shouldered hawk	2 American robin
22 California quail	50 wren
22 <u>mourning dove</u> - NB	4 northern mockingbird
1 black-chinned hummingbird	34 California thrasher
10 Anna's hummingbird	4 cedar waxwing
2 Costa's hummingbird	15 orange-crowned warbler
1 rufous hummingbird	1 yellow-rumped warbler
2 Nuttall's woodpecker	9 Wilson's warbler
7 Pacific-slope flycatcher	4 black-headed grosbeak
4 ash-throated flycatcher	11 lazuli bunting
7 western scrub-jay	38 <u>spotted towhee</u> - FY
15 <u>common raven</u> - JV	24 <u>California towhee</u> - FY
3 Hutton's vireo	8 rufous-crowned sparrow
12 oak titmouse	2 white-crowned sparrow
12 bushtit	8 house finch
39 Bewick's wren	22 <u>lesser goldfinch</u> - JV
2 house wren	

This was the first of a series of focused bird surveys performed along a transect measuring $\pm 5,500$ meters [$\pm 8,500$ feet] beginning a short distance beyond the west end of La Cresta Heights Road. The survey route traverses four of the major types of habitat that have been mapped onsite, Southern Mixed Chaparral, Scrub Oak Chaparral, Live Oak Riparian Woodland, and Coastal Sage Scrub. The survey route ends adjacent to the tall metal powerline tower situated along Valley View Truck Trail, near the northwestern end of the Reserve. A standardized 'U.S.G.S. Point Count Data Form 2000' that was provided by the California Department of Fish and Game, was used to collect the bird survey data. This type of data form was similar to forms that I have used on bird surveys that I performed several years ago at the request of the Cleveland National Forest, on habitats recovering from various brushfires on terrain in the vicinity of Pine Valley.

As a result of this survey, a total of thirty-five [35] species of birds were seen and/or heard. Of these, five species were outgoing wintering and migratory birds that will not remain to nest onsite (Rufous Hummingbird, Cedar Waxwing, Yellow-rumped Warbler, Wilson's Warbler, and White-crowned Sparrow). Of the remaining resident or incoming spring and summer birds that are expected to nest onsite, five were observed nest-building (NB), feeding young (FY), or with juveniles (JV). Even though a focused effort has been undertaken to search for California gnatcatcher (CAGN) within the boundaries of the Crestridge Reserve, none have yet been detected or observed. At the conclusion of this survey, areas of coastal sage scrub vegetation situated within the northwestern and north-central portions of the Reserve, north of and contiguous with Valley View Truck Trail, were carefully investigated for CAGN. None were seen or heard in these areas. The search for the occurrence of this species onsite is an ongoing effort.

However, a robust 2-foot long **Rosy Boa** (*Lichanura trivirgata* ssp. *roseofusca*) was discovered and photographed sunning along a dirt road immediately below and east of the metal powerline towers situated near the northwestern extreme of the Reserve – *see attached map and photographs derived from slides*. This road provides access for maintenance of the powerlines. Evidence of inappropriate off-highway vehicle activity was observed along this road and onto Valley View Truck Trail (VVT), and may be a point of entry for motorbikes and vehicles from the suburban neighborhood to the north. Additionally, a 6-inch long **Orangethroat Whiptail** (*Cnemidophorus hyperythrus* ssp. *beldingi*) was observed actively foraging within coastal sage scrub vegetation along the VVT in the north-central portion of the Reserve. I



have found this species several times on the Reserve. I had no luck relocating the native **Rein Orchid** (*Piperia [Habernaria] unalascensis*, which was discovered by Fred Sproul and several others on a visit to the Reserve on April 26. On the other hand, I did successfully refind at least three **Mustang Mint** (*Monardella lanceolata*) plants. I originally found them in 2000. These were not refound by Fred and company. The plants were situated underneath small plants and shrubs along the edges of a side trail south of a dirt trail connecting between the end of Kent Road, south of and below the water tank, and Lakeview Lane, north of the main entrance gate into the Reserve. The *monardella* plants were small, still in the process of growing, and without flowers. I expect to find additional plants on later visits to the site.

5 May 2001

Central Reserve Route #1

Block P-15 – HARBISON CANYON

(0700 to 1030 = 3.5 hours)

Observer / Reporter: Claude G. Edwards

12 California quail	1 northern mockingbird
16 mourning dove	13 California thrasher
5 Anna's hummingbird	1 phainopepla
1 Costa's hummingbird	3 orange-crowned warbler
3 western scrub-jay	4 Wilson's warbler
16 American crow – FY, FL	1 MacGillivray's warbler
8 common raven	7 black-headed grosbeak
4 cliff swallow	1 lazuli bunting
3 Hutton's vireo	16 spotted towhee
4 oak titmouse	18 California towhee
14 bushtit	1 rufous-crowned sparrow
13 Bewick's wren	1 song sparrow
3 house wren	23 house finch
34 wrentit	12 lesser goldfinch

This was the second in a series of focused bird surveys performed on the Reserve, the first along this alignment. a $\pm 5,500$ meter-long transect, and for the first time beginning along Rios Canyon Truck Trail, beside the oak tree situated at the side trail leading to the former "Racetrack" area. This survey route passes through at least six (6) different types of habitat that have been mapped within the boundaries of the Reserve, Southern Mixed Chaparral, Coast Live Oak Woodland, Coastal Sage Scrub, Open Live Oak Woodland-Open, Annual Grassland, and Disturbed Habitat. The survey route ends along a side trail west of the bend along Lakeview Lane, and just south of a small area of Riparian Woodland along a narrow drainage. This is between the La Cresta Road / Lakeview Lane entrance gate and the Oak Grove. For this survey, and for the time being, I was provided with a different survey form that would enable me to generate information in a manner that was more consistent with bird surveys performed at sites within the San Diego National Wildlife Refuge and sites within the Multi-Species Conservation Program. This form was basically the same as the previous, but divides my survey times differently and on the back, requests a focused effort to be made to determine the presence of California gnatcatchers along the route, whether in the appropriate coastal sage scrub habitat or not.

As a result of this survey, a total of twenty-eight [28] species of birds were seen and/or heard. Of these, two were migratory species that will not remain to nest onsite (MacGillivray's Warbler and Wilson's Warbler). Of the remaining resident or incoming spring and summer birds that are expected to nest onsite, only American crow was determined to actually be doing so at this time. A purposeful attempt was made to search for California gnatcatchers (CAGN) onsite during this survey. Although the survey route passes through mapped coastal sage scrub habitat, CAGN were not found. The sage scrub vegetation is relatively tall and mature, and although comprised of the appropriate and expected mix of plant species. The search for the occurrence of this species onsite is an ongoing effort. The interesting news and observation



associated with today's outing had to do with two interesting plants, one species listed as sensitive and afforded a measure of protection, and one species that is easily overlooked and under-appreciated, but not considered rare or scarce. As many as **fifteen (15) Mustang Mint** (*Monardella lanceolata*) plants were located, scrutinized, and photographed, along a narrow dirt path that proceeded south of an east-to-west trail connecting between Kent Drive and Lake View Lane. These were reconfirmed onsite at this location on April 27. Most of the plants were still small, up to five inches tall, and none were blooming. Several photographs were taken, but they will need to be documented in bloom. After some searching, **three Rein Orchid** (*Piperia* [=Habernaria] *unalascensis*) plants were found on the shaded west side of the dirt trail below and east of Kent Drive, where a single plant was found by Fred Sproul on April 26. The plants were in bloom, mostly hidden among trail-side vegetation. Several photographs were taken to document their presence onsite. This is not a rare species, merely cryptic and easily missed or overlooked in their field.

11 May 2001

(0700 to 1130 = 4.5 hours)

Bird Census Route Scouting

1) Rios Canyon Road and 2) slopes and vegetation

along and above lower Rios Canyon Truck Trail

Overcast skies, clearing to hazy-sun; calm to light W breezes, ± 62 to 76°F .

	<u>1</u>	<u>2</u>
red-shouldered hawk	1	-
red-tailed hawk	-	1
California quail	1	2
mourning dove	21	2
common ground-dove	9 – SM	-
white-throated swift	6	-
black-chinned hummingbird	2	-
Costa's hummingbird	-	1
Anna's hummingbird	12	2
acorn woodpecker	5	-
Nuttall's woodpecker	3	-
ash-throated flycatcher	5	-
black phoebe	3	-
Pacific-slope flycatcher	5	1
<u>western scrub-jay</u>	10	4 – FL
<u>American crow</u>	8 – FL	-
common raven	-	2
oak titmouse	2	3
<u>bushtit</u>	45 – FL	6 – FL
Bewick's wren	7	4
house wren	6	2
wrentit	2	4
American robin	2	-
northern mockingbird	10	-
California thrasher	1	-
cedar waxwing	30	-
phainopepla	2	2
European starling	1	-
Hutton's vireo	1	-
orange-crowned warbler	4	3
yellow warbler	2	-
yellow-rumped warbler	1	-
Wilson's warbler	1	-
		winter visitor / migrant
		winter visitor / migrant
		spring migrant



lazuli bunting	1	3
spotted towhee	8	4
<u>California towhee</u>	14 – FL	5
rufous-crowned sparrow	-	2
black-chinned sparrow	1	-
song sparrow	8	-
hooded oriole	4	-
brown-headed cowbird	1	-
<u>house finch</u>	56 – FL	-
lesser goldfinch	8	4
<u>house sparrow</u>	23 – FL	-
44 total species	40	19

This was an ill-fated attempt to perform a point-count bird census across steep and rugged slopes north of Rios Canyon Road, beginning from the lower, or western, portion of Rios Canyon Truck Trail, and heading generally northwestward toward Rios Canyon Elementary School. The goal and main value of such a survey route would be to visit areas vegetated with Coastal Sage Scrub habitat, home of the California gnatcatcher. However, based on this scouting efforts, it was determined that a census route would not be feasible, or even safe, to begin from the Rios Canyon Truck Trail because of the difficulty of accessing and passing over steep terrain covered with tall and dense vegetation, canyons, rocks, and partly blocked off by a barbed wire fence originating from the last, or easternmost, private property along the north side of Rios Canyon Road. Instead, a census route must originate from the northwest side, adjacent to Rios Canyon Elementary School. Even though this was not an actual census survey, it is still a record of the variety of bird species that occur on or in the immediate vicinity of the Crestridge Ecological Reserve. I parked my truck in the lot adjacent to the school and walked the length of Rios Canyon Road. As I did so, I performed an informal bird survey along Rios Canyon Road. Most of these are year-round residents that are expected to nest onsite, and six species were observed feeding young or accompanied by independent young. One species, the **common ground-dove** (*Columbina passerina*) occurs here in an unusual and unexpected location, based on what is currently known about the species in San Diego County. They were previously noted in the same area on 28 January 2001. At least an hour had elapsed from the time I completed the first 'station' along the Rios Canyon Truck Trail, at 0844 hours, to when I reached the summit of a rock-strewn hill to the north, at approximately 0950 hours. Looking down at where I had climbed confirmed the impracticality of establishing this survey route in this way. There are no trails or paths over these south-facing slopes that may simplify and streamline access, and there is the great potential for encountering a rattlesnake, or of experiencing a fall from loose ground and rocks. It took more than 30 minutes to descend the slope back to the Truck Trail, and then walk all the way back along Rios Canyon Road.

27 May 2001

Western Reserve Route – Survey #2

Focused Point Count Bird Census

Dense fog, with intermittent light mist; calm to light W breezes, ± 3 -6 mph; ± 58 to 60°F .
(0730 to 1245 = 5.25 hours) Observer / Reporter: Claude G. Edwards

18 California quail	2 house wren
28 mourning dove	32 wrentit
7 Anna's hummingbird	1 northern mockingbird
4 Costa's hummingbird	31 California thrasher
3 northern flicker	3 orange-crowned warbler
4 Pacific-slope flycatcher	12 black-headed grosbeak
1 ash-throated flycatcher	4 lazuli bunting
10 western scrub-jay	48 spotted towhee
8 common raven	25 California towhee
1 Hutton's vireo	3 rufous-crowned sparrow



7 oak titmouse
36 bushtit
12 Bewick's wren

1 hooded oriole
9 house finch
11 lesser goldfinch

This was the second time I performed a focused census of the birds along this route, situated in SD Bird Atlas Block P-14. The weather consisted of heavy marine layer with dense fog and intermittent mist. Although it may have been considered inappropriate to survey for birds, it ended up being quite an interesting and worthwhile effort. Everything was newly moistened by the coastal low clouds and fog. As a result of this survey, a total of twenty-six [26] species of birds were seen and/or heard along the route. None were actually determined to be nesting and breeding onsite. No California gnatcatchers were detected along the route as a result of the concurrent focused effort to survey for them. Also, due to the weather, no additional search for CAGN was performed following the survey.

Very interesting was the discovery of eight attempted nest-sites by red-tailed hawk, on the westerly of the two large metal powerline towers, situated along Valley View Truck Trail at survey station #10. None were in use and it is not known if they have been successfully used in the past. Most were incomplete arrangements of sticks placed at the crossbars on the NE corner of the tower. The largest and most complete nests were the second from the top and the second from the bottom, respectively. Several plant species were in conspicuous bloom, including *Adenostoma fasciculata*, *Artemisia palmeri*, *Chaenactis gabriuscula*, *Chorizanthe fimbriata*, *Delphinium parryi*, *Eriogonum fasciculatum*, *Eriophyllum confertiflorum*, *Gnaphalium californicum*, *Keckiella cordifolia*, *Lonicera subspicata*, *Lotus scoparius*, *Malacothamnus fasciculatus*, *Mimulus aurantiacus*, *Penstemon spectabilis*, *Salvia apiana*, and *Silene laciniata*, among others.

A total of 30 minutes in Block P-15, at the end of La Cresta Heights Rd, I also noted the following.

4 California quail	2 Bewick's wren	1 spotted towhee
6 mourning dove	3 wren	8 California towhee - FY
2 Anna's hummingbird	6 northern mockingbird - FY	1 hooded oriole
1 northern flicker	1 black-headed grosbeak	19 house finch
1 American crow		5 lesser goldfinch

1 June 2001

Central Reserve Route – Survey #2

Focused Point Count Bird Census

Fog, clearing to hazy-sun; calm to light W breezes; ± 62 to 76°F .

(0650 to 1220 = 5.5 hours) Observer / Reporter: Claude G. Edwards

34 California quail **JV**

12 mourning dove
11 Anna's hummingbird
4 Costa's hummingbird
1 acorn woodpecker
1 black phoebe
1 Pacific-slope flycatcher
9 ash-throated flycatcher
6 western scrub-jay

31 American crow **JV**

5 common raven **JV**

4 cliff swallow **JV**

4 oak titmouse

22 bushtit **JV**

28 Bewick's wren

8 house wren

42 wren

20 California thrasher

10 phainopepla **JV**

6 black-headed grosbeak

1 lazuli bunting

45 spotted towhee **JV**

34 California towhee **JV**

3 rufous-crowned sparrow

5 song sparrow

2 brown-headed cowbird **PR, PN**

40 house finch **JV**

14 lesser goldfinch **JV**

2 Lawrence's goldfinch



This was the second time I performed a focused census of the birds along this route, beginning along Rios Canyon Truck Trail and ending just off Lake View Lane a short distance north of the central access gate leading to the Oak Grove. The route is situated within San Diego County Bird Atlas Block P-14. The weather consisted of “June gloom” moderate marine-layer fog and light mist. As a result of this survey, **twenty-nine [29] species of birds** were seen and/or heard along the route. **At least eleven [11] species were determined to be nesting onsite**, with numerous juveniles and food-carrying observed. No California gnatcatchers were detected along the route.

After the conclusion of the survey I investigated adjacent trails and vegetation to the west and south of the last survey station. At 1025 I discovered two **Rein Orchid** (*Piperia [Habernaria] unalascensis*) plants, hidden amidst dense vegetation approximately 10 feet south of the dirt trail west/beyond the last survey station. The orchids were situated on the eastern side of the easterly of two dry, northeastward-oriented drainages that merged where the trail crossed them. This site is essentially downstream of the location of the three previously-discovered *Piperia* plants. The plants were secluded underneath the cover of *Quercus agrifolia*, and chaparral-associated plants including *Adenostoma fasciculatum*, *Ceanothus leucodermis*, *Chlorogalum pomeridianum*, *Galium angustifolium*, *Galium nuttallii*, *Lomatium* sp., and *Lonicera subspicata*. One of the plants stood ± 16 inches tall and the other stood ± 24 inches tall. Both plants were in bloom and the taller plant showed had several seed pods forming. The plants were photo-documented before leaving the area at 1035. Along the way I found a Side-blotched Lizard (*Uta stansburiana*) along the trail. I crossed the drainages and continued uphill and south along a rutted trail to where it connected with the side-trail east and below Kent Drive. From there I headed to the site of the **Monardella** plants that I originally found in 2000 and reconfirmed earlier this year. Between ± 1045 to 1130 I closely and carefully checked, surveyed, and photographed the **Monardella lanceolata, or Mustang Mint**, along the narrow side-trail south of the trail between Kent Drive and Lake View Lane. They were still small, but I counted at least eighteen [18] plants, three of which were in bloom. The clustered flowers are lavender with tiny purple dots on the narrow petals. The narrow, essentially hairless, foliage, is intensely minty-smelling. The plants and their trail are being overwhelmed and covered up by associated plants including *Chlorogalum pomeridianum*, *Eriophyllum confertiflorum*, *Navaretia hamata*, and *Salvia apiana*. As I prepared to leave, I discovered a 4-inch long Coast Horned Lizard (*Phrynosoma coronatum* ssp. *blainvillei*) near the south end of the side-trail. At ± 1140 , I found a 6-inch long Coast Horned Lizard along the east-west trail approximately 150 feet to the east. I returned to Lake View Lane at 1145, noting the presence of checkered white (*Pontia protodice*) and Behr’s metalmark (*Apodemia mormo* ssp. *virgulti*) butterflies, but no Hermes coppers.

8 June 2001

(0700 to 1230 = 5.5 hours)

Focused Point Count Bird Census

Coastal Sage Scrub Slopes Of Rios Canyon – Survey #1

Overcast, clearing to hazy-sun; calm to light W breezes; ± 62 -86°F.

Observer: Claude G. Edwards, accompanied by Graham Smith

1 red-tailed hawk	12 wren	
2 California quail	<u>4 northern mockingbird</u>	JV
3 mourning dove	5 California thrasher	
3 Anna’s hummingbird	2 lazuli bunting	
4 Costa’s hummingbird	11 spotted towhee	
<u>4 western scrub-jay</u>	16 California towhee	
<u>1 American crow</u>	9 rufous-crowned sparrow	
<u>4 common raven</u>	1 black-chinned sparrow	
<u>2 bushtit</u>	<u>1 hooded oriole</u>	JV
2 Bewick’s wren	<u>26 house finch</u>	JV
1 house wren	<u>21 lesser goldfinch</u>	JV



The Rios Canyon Census Route consists of only four census points, or 'stations'. As with the other census routes established elsewhere on the Crestridge Ecological Reserve, the census stations are situated approximately 550 meters / 850 feet apart, across Coastal Sage Scrub habitat occurring on mostly undisturbed, rugged, ridges and slopes, above and generally north of Rios Canyon Road. The high and steep-sided slopes are difficult to visit and survey, with few established dirt trails. The few trails in this area are currently used mostly by motorbike riders.

Rios Canyon Census Route Station #1 is situated ± 30 feet south of a dirt trail approximately half-way upslope along the ridge east of Rios Canyon Elementary School. The census site is located ± 15 feet below a large laurel sumac bush. This locality overlooks an impressive brush-clad canyon.

Census Station #2 is situated SSE of #1, approximately half-way upslope above an established trailer park. The census site is located ± 15 feet below a medium-sized laurel sumac, and ± 30 feet above a group of standing dead yucca stems. This locality overlooks brush-cover slopes and nearby canyon.

Census Station #3 is situated approximately half-way up, along the lower portion of a curved ridge located further to the SE. There are brush-covered slopes all around this site.

Census Point #4 is situated in an open patch within the sage scrub on the lower portion of a steep and high ridge further to the SE. This area had been previously disturbed and the vegetation has recovered but there is evidence the ground was once disturbed.

An attempt to establish a five-station bird census route that included the lower portion of Rios Canyon Truck Trail failed because of difficult terrain, no safe and legal access, and dangerous conditions. A lot of time and efforts would have been wasted merely to traverse the terrain and vegetation to get from one proposed census station to another. As it is, the shortened survey route still takes a lot of time to complete since the census points are situated at mid-slope locations that must be reached by hiking up and down the intervening terrain and vegetation.

A total of twenty-six [26] species of birds were observed, eight [8] of which were confirmed breeding onsite. It seems reasonable that this area might support a population of California gnatcatchers, but none had been reported prior to this survey and none were found in the area during this effort. Time will tell if they are in fact revealed to be present. **Observed in the area after the survey was completed were 1 black-chinned hummingbird, 3 Cassin's kingbirds, 1 canyon wren, 4 phainopeplas, and 1 American goldfinch.**

15 June 2001

Western Reserve Route – Survey #3

Focused Point Count Bird Census

(0645 to 1145 = 5.0 hours) Clear and sunny; calm to light W breezes; ± 70 -86°F.

Observer: Claude G. Edwards, accompanied by Bill Kuni and John Porter

1 Cooper's hawk - adult		10 Bewick's wren	
5 mourning dove		3 <u>house wren</u>	FY, FL
3 black-chinned hummingbird		37 <u>wrentit</u>	FY
11 <u>Anna's hummingbird</u>	JV	1 northern mockingbird	
5 <u>Costa's hummingbird</u>		13 California thrasher	
1 <i>Selasphorus</i> sp. ♂	MI	10 phainopepla	
2 Pacific-slope flycatcher		5 <u>orange-crowned warbler</u>	FY, FL
1 black phoebe		3 <u>black-headed grosbeak</u>	JV
6 <u>ash-throated flycatcher</u>	FY, JV	1 lazuli bunting	
5 <u>western scrub-jay</u>	JV	30 <u>spotted towhee</u>	FY
6 <u>common raven</u>	JV	17 <u>California towhee</u>	FY, JV



1 Hutton's vireo		1 rufous-crowned sparrow	
4 <u>oak titmouse</u>	FY	15 house finch	
16 <u>bushy</u>	FY, JV	22 <u>lesser goldfinch</u>	JV

Today's survey was another in the series of the weekly focused point-count censuses that I have been performing on the Crestridge Ecological Reserve to identify the variety of birds and other wildlife along a prescribed route, and also to determine which species were breeding onsite. This survey had the extra feature of being an opportunity to check the western portion of the Reserve for the Hermes Copper Butterfly (*Lycaena [Hermelycaena] hermes*), which is active and observable in June. As a result of the survey, **twenty-eight [28] species of birds were identified, including fourteen [14] species confirmed breeding onsite, noted as FY - feeding young, FL - fledgling, and JV - juvenile, and one [1] southbound migrant – already!** During the course of the survey, **at least eighty-seven [87] Hermes Coppers were observed** along portions of the western census route, beginning between census stations 2 and 3, and around census station 3 [>27 individuals], between stations 3 and 4 and around station 4 [>30 individuals], between stations 4 and 5 [>15 individuals], around census station 9 [>10 individuals], and up to and around station 10 [>5 individuals]. Many individual coppers were observed in plain view perched on laurel sumac and California buckwheat, either with their wings partly open to reveal the brown-and-gold patterning above, or closed-winged, showing only the uniform yellow with black spots below. We were impressed to note their distinctive tail. We also observed them engage in fast whirling chase-flights that may have been related to territorial defense or courtship. We could not discriminate between males and females. Portions of the route did not support conditions for the species and thus none were noted. Also observed along the way were checkered white (*Pieris protodice*), marine blue (*Leptotes marina*), acmon blue (*Plebejus acmon*), Behr's metalmark (*Apodemia mormo* ssp. *virgulti*) as well as a 4-inch long coast horned lizard, at station 6. Also noteworthy, yellow-flowered Weed's mariposa lily (*Calochortus weedii*) was conspicuous in bloom throughout the area.

16 June 2001

(0730-1330 = 6.0 hours)

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

HARBISON CANYON BLOCK

Route Scouting Of The Eastern Portion

Clear and sunny; calm to light W breezes; $\pm 78-84^{\circ}\text{F}$.

Observer: Claude G. Edwards, with Graham Smith

1 turkey vulture	2 common raven	3 California thrasher
4 mourning dove	2 oak titmouse	2 black-headed grosbeak
5 Anna's hummingbird	5 bushy	5 spotted towhee
2 Costa's hummingbird	6 Bewick's wren	6 California towhee
6 western scrub-jay	1 blue-gray gnatcatcher	10 house finch
8 wren		

checkered white	hedgerow hairstreak	Behr's metalmark
dainty sulphur	mountain mahogany hairstreak	

This was my first attempt to visit the eastern end of the Crestridge Ecological Reserve.



23 June 2001

Central Reserve Route – Survey #3

Focused Point Count Bird Census

Partly-cloudy, become clear & sunny; calm to light W breezes; ± 70 to 85°F .

(0715 to 1145 = 4.5 hours) Observer / Reporter: Claude G. Edwards

2 <u>Cooper's hawk</u>	JV	1 Hutton's vireo	
2 red-shouldered hawk		4 cliff swallow	
1 red-tailed hawk		18 <u>oak titmouse</u>	JV
2 California quail		34 <u>bush tit</u>	JV
11 mourning dove		8 Bewick's wren	
1 greater roadrunner		8 <u>house wren</u>	JV
10 <u>Anna's hummingbird</u>	JV	30 wren tit	
18 <u>Costa's hummingbird</u>	JV	4 California thrasher	
1 acorn woodpecker		5 black-headed grosbeak	
1 Nuttall's woodpecker		3 <u>lazuli bunting</u>	JV
1 northern flicker		24 spotted towhee	
1 black phoebe		15 <u>California towhee</u>	JV
3 Pacific-slope flycatcher		3 <u>rufous-crowned sparrow</u>	JV
5 ash-throated flycatcher		38 <u>house finch</u>	JV
15 western scrub-jay		8 lesser goldfinch	
23 <u>American crow</u>	JV		
10 <u>common raven</u>	JV		

Today's survey was the third performed along this route, to identify the variety of birds and other wildlife, and also to determine which species were breeding onsite. This survey was also an opportunity to check the central Reserve for Hermes Coppers (*Lycaena [Hermelycaena] hermes*), which are active and observable in June. As a result of the survey, **thirty-two [32] species of birds were identified, including twelve [12] species confirmed breeding onsite, noted as JV – juvenile**. Overall, the variety of birds observed and number of individuals seems to be falling compared to a month or two ago. As the nesting season passes its peak period, territorial males back off on singing and defending their space. It is not easy to detect offspring being produced for some species, as their calls and actions can go unnoticed. Those species that are seasonal migrants to the region and breed in the area may disperse away from their territories as soon as their young fledge from the nest.

During the course of the survey, **at least eighty-eight [88] Hermes Coppers were observed** along portions of the central census route, beginning between census stations 2 and 3 [3 individuals], between stations 3 and 4 and around station 4 [>10 individuals], between stations 4 and 5, and around station 5 [>20 individuals], between stations 5 and 6 [>15 individuals], along Lake View Lane south of the oak woodland and up to station 8 [>15 individuals] between stations 8 and 9 and around #9 [>10 individuals] and between stations 9 and 10 and around #10 [>15 individuals]. This is near the peak period of activity for the Hermes copper. Their activity is expected to end in early-July. Many of the coppers were watched as they perched in plain view, sometimes with their wings partly open showing the brown-and-gold patterning above, or closed-winged, showing only the uniform yellow underwings marked with black spots. They were observed in fast whirling chase-flights that may have been related to territorial defense and/or courtship, or simply patrolling along the trails between favored perches or food sources. It is definitely a challenge to perform the census and watch the coppers too. The thought occurred to me that at least some of the copper-occupied areas were limited to linear territories where nectar-producing buckwheat (*Eriogonum fasciculatum*) was present. What do they do and how do they behave and set up territories in areas where there are no buckwheat bushes, or their larvae's host plant, spiny redberry (*Rhamnus crocea*) for that matter? Very exciting was the confirmation that two juvenile Cooper's hawks successfully left their nest in the Oak Grove. The nest was placed in a large coast live oak (*Quercus agrifolia*) and apparently not noticed until June 17. Mike Klein found another active Cooper's hawk nest on June 16, in a clump of live oaks situated in the north-central portion of the Reserve, reached by Valley View Truck Trail. Also, several scat of Coast Horned Lizard were found along Lakeview Lane between census stations 8 and 9.



29 June 2001

(0715 to 0945 = 2.5 hours)

Focused Point Count Bird Census

Coastal Sage Scrub Slopes Of Rios Canyon – Survey #2

Clear & sunny; calm to light N & W breezes; $\pm 68-74^{\circ}\text{F}$.

Observer: Claude G. Edwards

1 red-shouldered hawk		3 Bewick's wren	
1 red-tailed hawk	JV	19 wren	
4 California quail		11 northern mockingbird	FY, JV
8 mourning dove		8 California thrasher	JV
2 white-throated swift		1 phainopepla	
8 Anna's hummingbird	JV	4 lazuli bunting	JV
7 Costa's hummingbird	JV	22 spotted towhee	FY, JV
2 black phoebe		18 California towhee	FY, JV
2 ash-throated flycatcher		17 rufous-crowned sparrow	FY, JV
4 Cassin's kingbird	JV	59 house finch	FY, JV
1 western scrub-jay		16 lesser goldfinch	FY, JV
5 common raven	JV	10 house sparrow	JV

The Rios Canyon Census Route consists of only four census points, or 'stations', situated ± 550 meters apart. The route proceeds more or less southeastward across Coastal Sage Scrub-covered ridges and slopes beginning east and uphill of Rios Canyon Elementary School. **A total of twenty-four [24] species of birds were observed, fourteen [14] of which were confirmed breeding onsite and in the immediate vicinity.** However, even after additional searching on some of the associated slopes following the point-count survey, no California gnatcatchers were found. Also, no Hermes copper butterflies were found during and after the survey, even though available habitat appears appropriate and supports abundant blooming California buckwheat and spiny redberry, many shrubs with fruit. They may be at the end of their flight period.

6 July 2001

(0730 to 1030 hours)

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

1) Rios Canyon Road and 2) slopes and vegetation along lower Rios Canyon Truck Trail

Hazy-overcast with intermittent mist/drizzle, muggy, calm breezes; ± 76 to 80°F .

Observer / Reporter: Claude G. Edwards

	1	2	Breeding Status
red-shouldered hawk	6		JV - juvenile
red-tailed hawk	2		JV
American kestrel	1		
California quail	10	5	
mourning dove	32	11	JV
common ground-dove	9	6	MM – multiple singing males (3-4)
Anna's hummingbird	12	2	JV
Costa's hummingbird	1	6	JV
acorn woodpecker	6		FY – feeding young, JV
Nuttall's woodpecker	9	4	
northern flicker		1	
Pacific-slope flycatcher	11	2	
black phoebe	6		FY, JV
ash-throated flycatcher	1	4	FY, JV



<u>Cassin's kingbird</u>	6		JV
<u>western scrub-jay</u>	14	7	JV
<u>American crow</u> 55	5		FY, JV
<u>common raven</u>	6	6	JV
oak titmouse	11	4	
<u>bushtit</u>	27	12	FY, JV
canyon wren		1	
Bewick's wren	6	4	
house wren	3	2	
<u>western bluebird</u>	6		ON – occupied nest, FY, FL - fledglings
wrentit	5	6	
<u>northern mockingbird</u>	13		FY
California thrasher		1	
<u>European starling</u>	8		FY, JV
<u>phainopepla</u>	2	6	JV
<u>orange-crowned warbler</u>	8	2	FY, FL
<u>yellow warbler</u>	7	1	FY, FL
<u>black-headed grosbeak</u>	6		FY, JV
<u>lazuli bunting</u>	5	4	JV
<u>spotted towhee</u>	15	8	FY, JV
<u>California towhee</u>	16	6	FY, JV
rufous-crowned sparrow		3	
song sparrow	4		
<u>brown-headed cowbird</u>	2		PR - pair, PN – presumed nesting
<u>hooded oriole</u>	8		JV
<u>Bullock's oriole</u>	6		JV
<u>house finch</u>	65	20	JV
<u>lesser goldfinch</u>	12	15	FY, JV
<u>house sparrow</u>	20		FY, JV
Also Noted			
western whiptail	1		8" long, below 1st pole
California ground squirrel obsv			
gray fox	scat		

The weather was dreary and gray, and the thick cloud cover and mist made survey conditions messy. Since I had not checked along Rios Canyon Road in a while, and the time was optimum to observe avian breeding activity, I decided to perform an informal survey here instead of the usual census route. As a result, a total of forty-three (43) species of birds were observed during this survey, twenty-nine (29) of which were confirmed or presumed to be breeding. Some of the more interesting observations include: One of the two fledged immature **red-tailed hawks** was heard calling from steep and rocky terrain above the lower portion of the Rios Canyon Truck Trail, where they were presumed to have nested. The other was well-seen perched atop of pole along the Truck Trail. Although breeding has not been absolutely confirmed, the continued presence of several singing male **common ground-doves** is a strong indication that they are in fact nesting in the area. The western extreme of their occurrence is in mixed oaks and brush at approximately 14553 Rios Canyon Road. The eastern extreme of their occurrence is onsite within the boundaries of the Crestridge Ecological Reserve, just east of the confluence of Rios Canyon creek and the tributary creek from the south which drains the slope below the caretaker's residence. No females were noted on this visit.

Several **acorn woodpeckers** were conspicuous along the central portion of Rios Canyon Road, including at least two birds that were begging for food. Excavated cavities in wooden poles along the road may be the work of this species. The biggest surprise was an active nest of a family of **western bluebirds** situated in a wooden roadside pole where Rios Canyon Road bends slightly, just west of where the ground-doves were found. A pair of adults were observed bringing food to the pole and entering into a nest-hole where as many as four begging young were heard and seen. Both **orange-crowned** and **yellow warblers** were



detected by the rapid, chipping, begging-notes of young birds. Singing adults were also heard in the area. A pair of **brown-headed cowbirds** traveling and vocalizing together was a sure sign that they were in the area to seek and take advantage of unwitting foster parents. **House sparrows** were numerous and conspicuous within the urbanized portions along Rios Canyon Road. Begging fledged young were seen chasing adult birds for food.

14 July 2001

(0830 to 1400 = 5.5 hours)

SAN DIEGO COUNTY BIRD ATLAS – BLOCK P-15

1) Along the eastern portion of the Rios Canyon Truck Trail, 2) terrain and vegetation along trails west of the Racetrack, and 3) to and around the former Racetrack

Overcast skies, clearing to hazy-sun; calm to moderate W breezes, ± 68 to 86°F .

	1	2	3	Total	Status
turkey vulture	=	=	1	1	
Cooper's hawk	=	1	=	1	
California quail	3	=	6	6	
mourning dove	3	4	3	13	
common poorwill	=	1	=	1	
<u>Costa's hummingbird</u>	10	16	8	34	JV
<u>Anna's hummingbird</u>	5	2	1	8	JV
Nuttall's woodpecker	3	1	=	4	
northern flicker	=	1	=	1	
<u>ash-throated flycatcher</u>	=	4	3	7	JV
<u>black phoebe</u>	3	1	=	4	JV
<u>Pacific-slope flycatcher</u>	=	2	=	2	JV
Hutton's vireo	=	1	=	1	
<u>western scrub-jay</u>	1	11	5	17	JV
<u>common raven</u>	4	=	4	8	JV
<u>cliff swallow</u>	=	8	=	8	JV
oak titmouse	1	1	2	4	
<u>bushy tit</u>	15	36	=	51	JV
canyon wren	=	=	2	2	
<u>Bewick's wren</u>	4	12	5	21	JV
<u>house wren</u>	=	7	=	7	JV
<u>blue-gray gnatcatcher</u>	=	6	4	10	JV
<u>western bluebird</u>	7	=	=	7	JV
wrentit	6	16	11	33	
northern mockingbird	=	1	1	2	
<u>California thrasher</u>	4	17	8	29	JV
<u>phainopepla</u>	1	3	14	18	JV
orange-crowned warbler	=	2	=	2	
<u>black-headed grosbeak</u>	1	=	3	4	JV
<u>lazuli bunting</u>	1	1	=	2	JV
<u>spotted towhee</u>	8	10	15	33	JV
<u>California towhee</u>	6	12	9	27	JV
rufous-crowned sparrow	=	3	=	3	
<u>brown-headed cowbird</u>	=	=	1	1	JV
<u>house finch</u>	15	13	19	47	JV
<u>lesser goldfinch</u>	6	7	3	16	JV
Lawrence's goldfinch	1	1	=	2	



A total of **thirty-seven [37] species** of birds were seen and/or heard on this interesting survey, and **twenty-two [22] of these were confirmed breeding** with the detection of begging young, as well as the presence of fledged offspring. However, no California gnatcatchers were detected, though searched for. Today's more or less informal bird survey was conducted to visit and investigate portions of the Crestridge Ecological Reserve that are not accessed or revealed during the central bird census route. Breeding activity onsite and in the region had reached a crescendo, and this was an effort to capture some important and fleeting observations and data. Also observed or detected were Audubon cottontail, gray fox, as well as western tiger swallowtail, checkered white, dainty sulphur, mountain-mahogany hairstreak, hedgerow hairstreak, marine blue, Behr's metalmark, and funeral duskywing.

Beginning at the end of Rios Canyon Road, the June-gloomy skies were becalming, but for observing butterflies, they were more of a hindrance. There are several birds actively feeding young, or with fledged young following parents as they foraged through vegetation in the area. The clouds were clearing away as I walked to the trail leading to the Racetrack area. At first, it was notably quiet of bird songs, but some began to vocalize as the sun came out. Plant-wise in the area along the Truck Trail, Lakeside lilac (*Ceanothus tomentosus*) and poison-oak (*Toxicodendron diversilobum*) are dropping their leaves, while Cleveland's sage (*Salvia clevelandii*) plants are still blooming and being utilized and defended by territorial Costa's hummingbirds. Annual plants are mostly dead and dry, and deerweed (*Lotus scoparius*) is now dormant and leafless. California buckwheat (*Eriogonum fasciculatum*) is blooming abundantly but also shedding its leaves. On the other hand, chamise (*Adenostoma fasciculatum*), laurel sumac (*Malosma laurina*), heart-leafed bush-penstemon (*Keckiella cordifolia*), wild morning-glory (*Calystegia macrostegia*), and soap-plant (*Chlorogalum parviflorum*), are mostly past the peak of their bloom period. Dark-tipped bird's-beak (*Cordylanthus rigidus*) plants are green and blooming, as well as sacapellote (also known as perezia or purpleheads), telegraphweed (*Heterotheca grandiflora*) and twiggy wreathplant (*Stephanomeria virgata*). Some of the broom matchweed (*Gutierrezia sarothrae*), golden-yarrow (*Eriophyllum confertiflorum*), peak rush-rose (*Helianthemum scoparium*), and coast bush monkeyflower (*Mimulus aurantiacus*) plants were also still blooming, but some were past. Coast goldenbush (*Isocoma menziesii*) plants are developing flower buds.

One of the highlights of the day was flushing a **male common poorwill** (*Phalaenoptilus nuttallii*) from along the trail proceeding north past and below the ascending trail to the Racetrack. This species is rarely encountered since it actively hunts insect prey at dusk. As it flew into the adjacent brush, its large white tail-corners were well seen. Meanwhile, an **adult Cooper's hawk** flew past overhead eastbound. Along the trail numerous spiny redberry (*Rhamnus crocea*) bushes are heavy with characteristic small, shiny red, and succulent berries. However, it is now past the flight period of adult Hermes coppers, although appropriate plants and conditions for their continued presence are still in abundance. At approximately 0940, a **blue-gray gnatcatcher** (*Poliophtila caerulea*) was heard along the trail in dense chaparral to the north. The trail proceeds over a low ridge and bends west through vegetation appropriate for the occurrence of Hermes coppers, worthwhile checking in June 2002. The trail crosses a swale that proceeds away to the north and west, widening and soon supporting an open grove of thirty or so coast live oak trees (*Quercus agrifolia*) surrounded by southern mixed chaparral vegetation. The area had been visited and impacted by previous human visitors, but otherwise looked natural and relatively undisturbed. It turned out to be fairly busy with birds. While investigating this area, I observed and confirmed that **Pacific-slope flycatcher, house wren, and blue-gray gnatcatcher were breeding and fledging young. At three or four juvenile blue-grays were carefully scrutinized, a very exciting and satisfying experience.**

Next, I went up to the former Racetrack area to check on conditions there. Among the highlights, at least in terms of confirmation, I tracked down an unfamiliar persistent chip-note emanating from shrubbery situated in the northern portion of the Racetrack. It turned out to be a fledgling brown-headed cowbird! I tried 'pishing' into the shrubbery where the distinctive sound was coming from. In response, several house finches, spotted and California towhees, phainopeplas, lesser goldfinches, wrentits, and blue-gray gnatcatchers, called back and revealed themselves in a nervous and agitated manner suggesting that they had nests or fledglings nearby. Many of the adult birds were carrying food in their beaks. In fact, some of their offspring came into view as well. It was quite a sight. Soon, the fledgling cowbird came into view and calling, confirming its identity. After a short while longer, I figured out who its 'foster parents' were, a



pair of blue-gray gnatcatchers! Another pair of gnatcatchers was seen and heard in chaparral vegetation a short distance to the northwest. It appears that this species is more prevalent in this portion of the Reserve.

Typically late-bloomers, California fuchsia (*Epilobium* [formerly *Zauschneria*] *canum*) had festive red flowers. Based on the available vegetation, this portion of the Reserve is another place to search for Hermes coppers come next year. Also interesting was the odd association between marine blues (*Leptotes marina*) and laurel sumac bushes. Numerous blues were observed around sumac plants at many places that were visited today. It is unknown what the connection or attraction is, although they were observed and studied at length. On my way out from the Racetrack, several scat of coast horned lizard (*Phrynosoma coronatum* ssp. *blainvillei*) were found along the trail. One of the scat was crushed to reveal the compressed remains of harvester ant exoskeletons. No live lizards were seen however.

20 July 2001

Western Reserve Route – Survey # 4

Focused Point Count Bird Census

Fog and scattered clouds, clearing to hazy-sun; calm to light W breezes, $\pm 0-8$ mph; ± 60 to 88°F .

(0745 to 1230 = 4.75 hours) Observer / Reporter: Claude G. Edwards

1 red-shouldered hawk		<u>16 bushtit</u>	JV
2 California quail		1 canyon wren	
<u>12 mourning dove</u>	JV	<u>10 Bewick's wren</u>	JV
<u>2 black-ch hummingbird</u>	JV	<u>44 wrentit</u>	JV
<u>5 Anna's hummingbird</u>	JV	2 northern mockingbird	
<u>11 Costa's hummingbird</u>	JV	<u>46 California thrasher</u>	JV
<u>6 Nuttall's woodpecker</u>	JV	<u>12 phainopepla</u>	JV
4 northern flicker		1 orange-crowned warbler	
<u>1 black phoebe</u>	JV	<u>4 black-headed grosbeak</u>	JV
2 Cassin's kingbird		21 spotted towhee	
<u>20 western scrub-jay</u>	JV	<u>18 California towhee</u>	JV
2 American crow		<u>1 hooded oriole</u>	JV
<u>12 common raven</u>	JV	24 house finch	
6 cliff swallow		<u>7 lesser goldfinch</u>	JV
<u>4 Hutton's vireo</u>	JV	1 Lawrence's goldfinch	
<u>10 oak titmouse</u>	JV		

This was one of the final breeding-season related census performed along this route for 2001. A total of thirty-one [31] species of birds were detected along the route. An impressive, but expectable, nineteen [19] of these were heard and/or seen attending to begging young or as fledged offspring. This result notwithstanding, the birds seemed overall more subdued and less vocal. Some migratory species are already vacating the vicinity or have become significantly less vocal and visible. Other species are similarly quieter and less obvious than earlier in the season, the presence of begging and fledged offspring has become more noticeable. Although searched for, no California gnatcatchers were detected. Several species of butterflies were also noted, including checkered white (*Pontia protodice*), Behr's metalmark (*Apodemia mormo virgulti*), marine blue (*Leptotes marina*), Lorquin's admiral (*Limenitis lorquini*), and common buckeye (*Junonia coenia*). Prior to the census, a great horned owl feather was found at the west end of La Cresta Heights Road in P-15. Apparently, they are active in the area.

Botanically, the current condition of certain plants were noted along the way. California brickellbush (*Brickellia californica*), California-aster (*Lessingia filaginifolia*), and saw-toothed goldenbush (*Hazardia squarrosa*) were preparing to come into bloom. San Diego sagewort (*Artemisia palmeri*), broom matchweed (*Gutierrezia sarothrae*), twiggy wreathplant (*Stephanomeria virgata*), fringed indian pink (*Silene laciniata*), white sage (*Salvia apiana*), California buckwheat (*Eriogonum fasciculatum*), and dark-tipped bird's-beak (*Cordylanthus rigidus*) were widely and conspicuously blooming. Laurel sumac



(*Malosma laurina*), leafy daisy (*Erigeron foliosus*), California everlasting (*Gnaphalium californicum*), and bush monkeyflower (*Mimulus aurantiacus*) were past their prime. Other plants like sugarbush (*Rhus ovata*), white-flowered currant (*Ribes indecorum*), and chaparral whitethorn (*Ceanothus leucodermis*), were already dropping their leaves in response to the heat and seasonal lack of water. Deerweed (*Lotus scoparius*) were essentially devoid of flowers and leave, reduced to green and reddish bare stems.

Another interesting plant observation along some of the trails in this portion of the Crestridge Ecological Reserve were several individuals of the **Rush-like Bristleweed** [*Machaeranthera juncea*] (Greene) Shinnery, formerly known as *Haplopappus junceus*. I had originally encountered this species onsite on July 6 and subsequently received assistance in identifying them by botanist Craig Reiser. As summarized by Mr. Reiser in his reference 'Rare Plants Of San Diego County' (1994), this member of the Sunflower and Daisy family is on the CNPS List 4, R-E-D Code 1-1-1, blooms June through October, and ranges in San Diego County and Baja California, Mexico. Habitat for this species is described by Mr. Reiser consists of "xeric, low-growing Chamise Chaparral or Diegan Coastal Sage Scrub is the preferred habitat of this inconspicuous subshrub. Usually Rush-like Bristleweed grows in exposed locales with rocky substrate that does not foster much annual understory. According to The Jepson Manual of Higher Plants of California (1993) *Machaeranthera juncea* occurs on dry hillsides, <1000m elevation, from the Peninsular Range in southern California to southern Arizona, and northern Mexico. Mr. Reiser also says this is an inconspicuous species which flowers late and is probably under-reported. He goes on to say that "this shrub is slowly declining in San Diego County as urban expansion reaches into the foothill region. Numerous undiscovered populations likely exist for this species. Provisionally, it is recommended that substantial portions of sizeable populations be protected." A physical description in Jepson (pages 309 and 317) consists of the following features and details: [The Rush-like Bristleweed is a] Perennial. The STEMS are spreading to erect, 4 to 10 dm (\pm x to x feet), sometimes woody at the base. They are sparsely strigose (with stiff, straight, sharp, appressed [pressed against the stems] hairs). Slightly glandular (minute bumps) near [flower] heads, nearly leafless above base. The LEAVES are 1 to 2 cm long and less than or equal to 4 mm wide. They are generally linear (\pm long and narrow), and are pinnately lobed or serrate (slightly toothed on both sides). The lobes and teeth are bristle-tipped (or even slightly hooked). The upper leaves are reduced and generally entire, glabrous or sometimes tomentose (smooth to hairy). The INFLORESCENCE (flower heads) Are radiate (central disk flowers surrounded by marginal ray flowers); Are solitary or in cymes (branched, the central flowers bloom before the peripheral or lower flowers). Peduncles (stalk of an entire inflorescence) are long, with overlapping bracts grading into the phyllaries. Involucre (a group of bracts more or less held together as a unit) 5-8 mm, 10-12 mm wide, hemispheric. Phyllaries (bracts subtending a flower head) are in 5-6 series, linear, bristle-tipped, and glandular. The (petal-like) RAY FLOWERS number 15 to 25. Ligules (strap-like or blade-like outer portion of the corolla) are 5 to 6 mm long, and yellow. The (central) DISK FLOWERS number 25 to 40 (and are further described, but relatively obscure or unimportant to novice observers and non-botanists). Several photographs were taken of this species at different locations onsite.

12 September 2001

1) Cross Timbers Truck Trail, dirt trails through chaparral to the north, and 2) along Valley View Truck Trail to the Oak Grove

Fog, clearing to hazy-sun; breezes calm, changing to light breezes from the west; \pm 76 to 88°F.

(0900 to 1400 = 5.0 hours) Observers: Claude G. Edwards, with Graham Smith, and John Taylor

side-blotched lizard
red-shouldered hawk
Anna's hummingbird
black phoebe

common raven
oak titmouse
bushtit
Bewick's wren

orange-crowned warbler
spotted towhee
California towhee
house finch



Hutton's vireo
western scrub-jay
California thrasher

house wren
wrentit

lesser goldfinch
coyote - adult

red gum lerp psyllid
cabbage white
checkered white
California sister

gray hairstreak
Berh's metalmark
woodland skipper

tarantula wasp
green sweat bee
yellowjacket
European honeybee

This was my first overall visit back to the Crestridge Reserve since mid-July, when I concluded the focused bird surveys performed along the two established census routes. For the time being, I am visiting various localities within the Reserve to observe and comment on conditions at this time of the year. We parked one vehicle at the end of Horsemill Road and began our hike from the end of La Cresta Heights Road, intending to hike the look between those two places. Overall, familiar native and non-native vegetation is going dormant, passing the peak period of blooming, engaged in setting and dispersing their seeds, and shedding foliage. There is very little surface water onsite and soils at most places we went to were dry. The one exception was a short portion of the creek flowing into the southern edge of the Reserve adjacent to Horsemill Road. However, the water in the creek did not reach the access road to the onsite caretaker's residence. We found several Rush-like Bristleweed (*Machaeranthera juncea*) plants along Cross Timbers Truck Trail, as well as along the adjacent dirt trail to the north, and also along Valley View Truck Trail headed toward the northern Reserve boundary. Most of the plants were past bloom and exhibiting fluffy-topped seed heads. Many of the seeds were loose and falling away from the plants. We also found several San Diego sagewort (*Artemisia palmeri*) plants along dry drainages within the dense chaparral vegetation north of Cross Timbers Truck Trail. Most of the plants were weepy-looking with leaves drying and wilting along their stems. Several more of these plants were also found along the bottom of the main westward-flowing drainage within this portion of the Reserve, west and downhill of the prominent hilltop water tank. The majority of the hike was uneventful, with the main focus of our observations identifying and learning the names of the plants that we found along the way. An adult coyote was seen fleeing into the avocado orchard along Valley View T.T. No California gnatcatchers were detected.

03 October 2001

Cross Timbers Truck Trail To The Ridgetop At The Southwest Portion Of The Site

Hazy-sun; calm to moderate W breezes; ± 66 to 76°F .

(0930 to 1230 = 3.0 hours) Observers: Claude G. Edwards, Graham Smith, and John Taylor

red-shouldered hawk
Hutton's vireo
California thrasher
Anna's hummingbird
oak titmouse
orange-crowned warbler
black phoebe
bushtit
spotted towhee
western scrub-jay
Bewick's wren
California towhee
American crow
house wren
house finch
common raven
wrentit
lesser goldfinch



pale swallowtail
milkweed bug-
Behr's metalmark
European honeybee
Red & black spider

This was my first visit to the Crestridge Reserve since mid-July, and my first non-Point Count survey since late last winter. A change of focus will be turned to visiting all trails, roads, and habitat areas within accessible portions of the Reserve. Also, documentation of conditions of the habitats and plant-life as summer wanes and the autumn season arrives. Overall, familiar vegetation is going dormant, past bloom, setting seeds, and shedding foliage. There is no surface water present onsite and soils everywhere are dry. Numbers of rush-like bristleweed (*Machaeranthera juncea*) [>30 plants] were present and identified within and alongside portions of Cross Timbers Truck Trail, the meandering trails through the chaparral to the north, and along a small portion of Valley View Truck Trail. They are mostly past-bloom, mostly setting and dispersing seeds, and becoming parched and shedding their sparse foliage. We were able to find populations of San Diego sagewort (*Artemisia palmeri*) [>30 plants] along undisturbed and disturbed canyons and drainages in the chaparral north of Cross Timbers Truck Trail, where we had found them before. Their foliage is drying and falling away, leaving their otherwise unremarkable stems behind. Surveys and these plants are best performed when they are green and lively.

The shiny succulent fruit of the holly-leaved redberry (*Rhamnus ilicifolia*) taste very much the same as those of their cousin the spiny redberry (*R. crocea*) with which I became more familiar this year. They are not large, with a few seeds, and definitely an acquired taste, but still sweet. Very nice was the sight of tarantula wasps apparently nectaring from the white blossoms of narrow-leaved milkweed on 5-foot tall plants in the grassland east of the oak grove.

1 American kestrel	5 oak titmouse	1 California thrasher
6 Anna's hummingbird	5 bushtit	25 yellow-rumped warbler
1 Nuttall's woodpecker	1 rock wren	6 spotted towhee
2 Cassin's kingbird	5 Bewick's wren	6 California towhee
8 western scrub-jay	1 house wren	1 savannah sparrow
4 common raven	10 wrentit	10 white-crowned sparrow
1 barn swallow	1 northern mockingbird	15 house finch
1 pale swallowtail	1 western fence lizard	2 Audubon's cottontail
>20 Behr's metalmark	1 side-blotched lizard	Pacific kangaroo-rat - tracks
1 red jumping-spider	3 coast horned lizard	

On this outing we investigated the trails and vegetation in the southwestern portion of the Reserve, within the higher terrain along the western end of Cross Timbers Truck Trail. I had not been to this area since early spring 2001. By this date, the yellow-rumped warblers and white-crowned sparrow have returned to the area for the winter. Other birds like the barn swallow and savannah sparrow were passing through on migration. Overall, the chaparral-dominated vegetation was mostly past its peak bloom period, with many of the plants setting seeds and shedding foliage, or merely wilting and withering their leaves away. The soil everywhere was dry. This is an area frequented by motorbike riders. None were present during our visit but evidence of their activities was seen along the trails used and created by them in the flatter portions of the higher terrain. This is important since we found three small, 2-3 inch-long, coast horned lizards foraging or hiding along the trails leading to the 'motorbike area' (there's no better name to call this area). The presence of off-highway vehicles in this area could directly injure and kill horned lizards that would be present along the trails.

Also found along the trails, in areas with soft, silty sand, were fresh footprints and 'tail-dragging' indicative of Pacific kangaroo-rat (*Dipodomys agilis*). Linear and swirling lines in soft sand associated with small, narrow, footprints, is evidence that kangaroo-rats are present. This is the only species of kangaroo-rat that ranges into our area. However, various holes leading underground along the trails could not be confirmed



as belonging to the kangaroo-rats. One of the surprising observations was a striking red-and-black terrestrial spider that we initially identified as a red velvet-ant. The entire upperparts were scarlet red with black on the legs and on its lower portions. None of us knew what it was. Other interesting observations were found amidst the large rocks at the crest of the summit of the higher ground just above / north of the west end of Cross Timbers Truck Trail. A pale swallowtail butterfly (*Papilio eurymedon*) was hill-topping around the rocky summit. Also, a rock wren (*Salpinctes obsoletus*), an uncommonly seen species onsite, was closely associated with the granitic boulders.

On the other hand, Behr's metalmark (*Apodemia mormo* ssp. *virgulti*) were common and widespread around California buckwheat wherever we went. It seemed odd to me to see honeybees actively nectaring on the discoid flowers of broom baccharis. As we descended eastward from the rocky summit, on a different trail, we found several scattered rush-like bristleweed (*Machaeranthera juncea*) plants. They totalled as many as twenty plants, but their identity was obscured by the lack of flowers. Some of them were setting and dispersing seeds and shedding their sparse foliage. These are additional plants not previously located onsite before. There were also several spiny redberry (*Rhamnus crocea*) plants in the area, indicating that this would be a worthwhile area to check for Hermes copper next June. From there, we returned back to the end of La Cresta Heights Road where we parked our vehicle.

14 November 2001

The Environmental Trust lands west of the Crestridge Ecological Reserve

(0900 to 1300 = 4.0 hours) Clear and sunny; calm to light W & S breezes; $\pm 64^{\circ}\text{F}$.

Observers: Claude G. Edwards, accompanied by Graham Smith, and John Taylor

painted lady	California thrasher
side-blotched lizard	wrentit
red-tailed hawk	yellow-rumped warbler
Anna's hummingbird	spotted towhee
black phoebe	California towhee
common raven	rufous-crowned sparrow
bushtit	white-crowned sparrow
Bewick's wren	house finch
hermit thrush	lesser goldfinch
<u>California gnatcatcher</u> - heard calling	American goldfinch

Today I visited the sage scrub covered slopes managed by The Environmental Trust, situated generally south of and above the Vons shopping mall located along I-8 at Los Coches Road. I have not visited this area in several months. Although it is not within the boundaries of the Crestridge Reserve, it includes protected open space supporting contiguous native habitats along the western boundary of the Reserve. A generally good quality dirt road provides access to this area beginning beside the Vons market. It proceeds in a semi-circular manner, heading southward and then eastward, before reaching the higher ridge-tops where several private homes indicate the approximate limits of the protected open space lands. This area is also adjacent to prominent parallel power-lines that stretch over the area from north to south. Enroute, the access road connects with several dirt side trails and roads that traverse the nearby slopes and ridges to the south and west.

I met up with John Taylor and Graham Smith approximately half-way up, on the ridge west of the home perched above the road. We soon continued on our way following the road more or less to the east. We identified and discussed the habitats and plants that we found along the way. We noticed that there wasn't much in the way of birds or other wildlife. We soon reached a more or less level section along the road, north of several private homes. At this location several telephone poles are lying along the road, marking the limits of the open space. Some have signs stating that the area is managed by The Environmental Trust. On the north side of the road is a canyon vegetated with mature coastal sage scrub. This vegetation also occurs on adjacent terrain in the nearby vicinity. At 11:30 a.m., I heard a California gnatcatcher calling as



it moved through the vegetation in the canyon. This is the first observation of California gnatcatcher I have had since beginning my surveys on the Crestridge Ecological Reserve!

Although I attempted to follow the bird and entice it with a taped recording of gnatcatcher vocalizations, it did not respond and I could not refind or see it. This is approximately ¼-mile west of the Reserve. It is possible that this is a dispersing individual from occupied habitat areas to the south and west of the Crestridge Reserve. I have not yet observed one onsite. Along the lower portion of the dirt access road, the first of several dirt side trails began inconspicuously at the first left bend above the gate. Motorbikes and mountain bikes have driven over and disturbed the dirt shoulder at this location. As it turned out, it was actually an abandoned older dirt road that proceeds east-to-west across a north-facing slope overlooking the I-8 Freeway. Tire ruts on the disturbed dirt shoulder are the only indication of the old road being there. The old road is mostly overgrown with mature sage scrub, but there is a narrow meandering trail through the vegetation created and/or maintained by the bike traffic. The old road proceeded west to a low rise overlooking more coastal sage scrub on terrain beyond to the west, on the south side of the freeway. I found the rufous-crowned sparrows here. The road continued further west toward more low hills and private property cleared of scrub vegetation. From the low rise, a different dirt trail ascended a steep slope to the south, probably connecting to the dirt access road further uphill. The sage scrub vegetation in this area may be worthwhile checking later for California gnatcatcher and Hermes copper in their season.

Returning eastward on the old abandoned road, I found that it forked and proceeded around the slope to the south, parallel and above the current dirt access road. It was covered with a sparse mixture of sage scrub and weedy ruderal vegetation. They eventually merged before the next left bend. As the access road continued uphill to the south, it was intersected by another dirt trail that merged from the ridgeline to the west. This is just before the next left bend along the access road. The trail forked and headed in different directions, north and south along the ridgeline, and west back over to the previously noted sage scrub area. To the north, the trail ran along the low ridge. The view from there was impressive and it seemed like a good location to come back observe butterfly 'hilltopping' behavior next spring. From the top of the ridge, the trail connected with the previously mentioned trail that ascended the slope above the low rise. To the south, the trail rose up to the higher ridge on which several private homes are situated, southward of the access road. Here is where I saw two guys who turned out to be John and Graham. I caught up with them and chatted a while. This might also turn out to be a good spot to observe butterfly 'hilltopping'. We soon continued on our way up the access road.

We proceeded up the road and eventually, after crossing onto the Crestridge property, reached and paused underneath the powerline alignment on the higher ground to the east. This is as far as we went. Given the midday hour, I felt it was past the best time to focus on searching for gnatcatchers, or other birds. From there we decided to return back downhill.



APPENDIX B.5

REFERENCES

- American Ornithologists' Union (AOU). 1999. Check-list of North American birds. Prepared by the Committee on Classification and Nomenclature of the AOU. Plus supplements.
- Anderson, D.W. and J.W. Hickey. 1970. Eggshell changes in certain North American birds. Pages 514-540 in K.H. Voous (ed.), Proc. (XVth) Inter. Ornith. Congress. E.J. Brill, Leiden, Netherlands.
- Atwood, J.L. 1980. The United States distribution of the California black-tailed gnatcatcher. *Western Birds* 11:65-78.
- Atwood, J.L. 1990. Status review of the California gnatcatcher (*Polioptila californica*). Unpublished Technical Report, Manomet Bird Observatory, Manomet, MA.
- Baharav, D. 1975. Movement of the horned lizard *Phrynosoma solare*. *Copeia* 1975:649-657.
- Beier, P. 1993. Determining minimum habitat areas and habitat corridors for cougars. *Conservation Biology* 7:94-108.
- Bontrager, D. 1991. Habitat requirements, home range, and breeding biology of the California gnatcatcher (*Polioptila californica*) in south Orange County. Prepared for Santa Margarita Co. April. 19 pp.
- Bostic, D.L. 1965. Home range of the teiid lizard, *Cnemidophorus hyperythrus beldingi*. *The Southwestern Naturalist* 10(4):278-281.
- Braden, G.T., R.L. McKernan, and S.M. Powell. 1997. Effects of nest parasitism by the brown-headed cowbird on nesting success of the California gnatcatcher. *Condor* 99:858-865.
- ERC Environmental and Energy Services (ERCE). 1991. Phase I report, Amber Ridge California gnatcatcher study. Prepared for Weingarten, Siegel, Fletcher Group, Inc. April. 26 pp.
- Faulkner, D. and M. Klein. 2001. San Diego's sensitive butterflies. A workshop focusing on 10 local species. February. 30 pp. + figs.
- Hall, E.R. and K.R. Kelson. 1959. The mammals of North America. Ronald Press Company, New York, NY.



- Johnsgard, P.A. 1990. Hawks, eagles, and falcons of North America. Smithsonian Institution Press, Washington, DC. 403 pp.
- Johnson, N.K. and J.A. Marten. 1992. Macrogeographic patterns of morphometric and genetic variation in the sage sparrow complex. *The Condor* 94(1):1-19.
- Laudenslayer, Jr., W.F., W.E. Grenfell, Jr., and D.C. Zeiner. 1991. A check-list of the amphibians, reptiles, birds, and mammals of California. *Calif. Fish and Game* 77(3):109-141.
- Murphy, D.D. 1990. A report on the California butterflies listed as candidates for endangered status by the United States Fish and Wildlife Service. Prepared for California Department of Fish and Game. Contract No. C-1755. 60 pp.
- Ogden Environmental and Energy Services Co., Inc. (Ogden). 1992a. Baldwin Otay Ranch wildlife corridor studies. Prepared for the Otay Ranch Project Team. December. 106 pp.
- Ogden Environmental and Energy Services Co., Inc. (Ogden). 1992b. Task 3.5(a-4): status report on MSCP field surveys and data analysis.
- Ogden Environmental and Energy Services, Inc. (Ogden). 1993. Population viability analysis for the California gnatcatcher within the MSCP study area. Prepared for the Clean Water Program, City of San Diego. February. 61 pp.
- Padley, D. 1992. County of Orange deer telemetry study. Prepared for Environmental Sciences Associates, Inc. and submitted to the County of Orange.
- Preston, K.L., P.J. Mock, M.A. Grishaver, E. Bailey, and D.F. King. 1998. California gnatcatcher territory behavior. *Western Birds* 29:242-257.
- Regional Environmental Consultants (RECON). 1987. Unpublished job report: home range, nest site, and territory parameters of the black-tailed gnatcatcher *Poliophtila melanura californica* population on the Rancho Santa Fe Highlands study area. San Diego, CA.
- Remsen, J.V., Jr. 1978. Bird species of special concern in California. Calif. Dept. of Fish and Game, Sacramento, CA. Wildl. Manage. Admin. Rep. No. 78-1. 54 pp.
- Scott, T.A. 1985. Human impacts on the golden eagle population of San Diego County from 1928 to 1981. Masters Thesis, San Diego State University. 100 pp.
- Snow, C. 1973. Technical note: habitat management series for unique or endangered species. Report #7 Golden Eagle (*Aquila chrysaetos*). Bureau of Land Management, U.S. Department of the Interior, Denver Service Center, Denver, CO. 52 pp.



-
- Sockman, K.W. 1997. Variation in life-history traits and nest-site selection affects risk of nest predation in the California gnatcatcher. *Auk* 114:324-332.
- Suarez, A.V., D.T. Bolger, and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. *Ecology* 79(6):2,041-2,056.
- Unitt, P. 1984. The birds of San Diego County. Memoir 13, San Diego Society of Natural History. 276 pp.
- U.S. Fish and Wildlife Service (USFWS). 1991. Endangered and threatened wildlife and plants; proposed rule to list the coastal California gnatcatcher as Endangered. *Federal Register* 56:47,053-47,060.
- U.S. Fish and Wildlife Service (USFWS). 2000. Draft recovery plan for the Quino checkerspot butterfly (*Euphydryas editha quino*). Portland, OR. x + 123 pp.
- Weaver, K.L. 1998. Coastal sage scrub variations of San Diego County and their influence on the distribution of the California gnatcatcher. *Western Birds* 29:392-405.



APPENDIX C

MANAGEMENT OPTIONS FOR SELECTED EXOTIC PLANT SPECIES



Annual grassland below warden's house
Photo by M.Klein/C.Edwards



MANAGEMENT OPTIONS FOR SELECTED EXOTIC PLANT SPECIES

Invasive weed species pose one of the greatest threats to the overall health of ecosystems. These species can dominate and cause permanent damage to vegetation communities by altering natural processes and reducing biodiversity (BLM 1999, TNC 2000). Invasive weeds can destroy wildlife habitat; displace many threatened, endangered, or sensitive species; and result in reduced plant and animal diversity where they form monocultures.

Invasive weeds vary in the level of change they can exert on natural ecosystems. Weeds can be native or nonnative, invasive or noninvasive, and noxious or not noxious. Legally, a noxious weed is any plant designated by federal, state, or local governments as injurious to public health, agriculture, recreation, wildlife, or property (BLM 1999, Sheley et al. 1999 in BLM 1999). Federal noxious weed species, as designated by the U.S. Department of Agriculture, are subject to federally funded prevention, eradication, or containment efforts (CalEPPC 1999). None of the species found on Crestridge are considered noxious weeds by federal standards, but three are on the California Department of Food and Agriculture's "C" list of noxious weeds (see Appendix C.1). Several weed species at Crestridge are ranked as highly aggressive invaders of natural habitats at the state level, and state policies call for eradication or containment efforts for these species (CalEPPC 1999). Still other weed species onsite are more widespread and potentially difficult to eradicate completely, or pose lesser threats to wildland areas, although they may still displace native species.

Invasive or potentially invasive weed species detected at Crestridge that may pose threats to native species include tamarisk (*Tamarix* spp.), Pampas grass (*Cortaderia selloana*), eucalyptus (*Eucalyptus* spp.), African fountaingrass (*Pennisetum setaceum*), tocalote (*Centaurea melitensis*), purple falsebrome (*Brachypodium distachyon*), horehound (*Marrubium vulgare*), and Natal grass (*Rhynchelytrum repens*). These species are discussed below with respect to their goals for management, distribution at Crestridge, status, biology, threats, and management options. This information is intended to allow development of species-specific adaptive weed management strategies. Detailed measures for physical, biological, and chemical control are described further in *Invasive Plants of California's Wildlands* (Bossard et al. 2000).

At Crestridge, weed control should begin in areas supporting sensitive species and in areas with few weeds, rather than larger, denser source populations of weeds. Use techniques that minimize damage to native plants and disturbance to the soil, relying heavily on hand removal by volunteers. Consistent and comprehensive long-term monitoring of weeds and quick response to control new invasions is the best adaptive management approach to weed control. With pressures from new developments in the area and increased pedestrian and equestrian use, weed control will be a continuing and increasingly difficult battle, especially if large populations become established at Crestridge in the future.



For those invasive species discussed below, additional infestations may be present onsite that were not detected during the year 2000 survey period. In addition, there may be other weed species onsite or in the vicinity that are not currently considered a threat to native vegetation or species but that may become problematic in the future.

***Tamarix* sp.**

Tamarisk, Salt Cedar

Goals. Eradicate tamarisk from Crestridge. Monitor drainages for new infestations.

Distribution Onsite. Tamarisk was observed only in Rios Canyon, although it may be present onsite in low numbers (or as seedlings or saplings) in other drainages, as well. Only a few individuals were observed in this location.

Status. Tamarisk is on List A-1 of the California Exotic Pest Plant Council's (CalEPPC) list of exotic pest plants of greatest ecological concern in California. List A includes species that are documented as aggressive invaders that displace natives and disrupt natural habitats. List A-1 is a sub-list that includes widespread pests that are invasive in more than three Jepson regions (CalEPPC 1999). Tamarisk is also listed as a problem exotic plant in California wetlands, where it is a serious documented threat to sensitive species or ecosystems (Dudley 1998).

Biology. Four invasive species of tamarisk have been identified in California (*T. ramosissima*, *T. chinensis*, *T. gallica*, and *T. parviflora*) (Brossard et al. 2000), and all are shrubs or small trees. The genus *Tamarix* is notoriously hard to identify to specific level. In addition, there may be interspecific hybridization between different taxa (Baum 1967, DeLoach 1997). Tamarisk at Crestridge was not identified to specific level. The following descriptions of biology and management options are expected to apply to all shrub or small tree species of tamarisk known to occur in the area.

Tamarisk is a relatively long-lived (50-100 years) species that typically forms dense, often monotypic stands where it becomes well established. Tamarisk is fast growing and can potentially reach heights of 5-6 m and produce flowers at the end of the first year of growth (Neill 1985, Sisneros 1991). More typically, however, flowering occurs in the third year of growth or later (Teskey 1992). Flowers are whitish or pinkish. They are produced most abundantly between April and August, but may be found at virtually any time of the year (Carpenter 1998). Tamarisk can reproduce both sexually and asexually. This taxon is primarily an outcrosser, but does have some potential for self-pollination. Insects are the primary pollinating agents (Hoddenbach 1989). Vegetative growth occurs by sprouting from the root crown and rhizomes. This mechanism allows tamarisk to reestablish quickly following fire or other disturbances (Bossard et al. 2000). In addition, adventitious roots can sprout from submerged or buried stems (Kerpez and Smith 1987).

Tamarisk is a prolific seeder, producing large quantities of short-lived seeds. Seeds are produced during an extended period of seed production that may last for 5 months or



more (Busch 1992, DiTomaso 1996), and typically occurs from late May through October (DiTomaso 1996). Seeds are often produced in two peaks (late spring, late summer) (Busch 1992). Estimates vary for the number of seeds produced per individual, but range from 50,000 to 100,000,000 per reproductive cycle (Busch 1992, DiTomaso 1996).

Seeds are modified for both wind- and water-dispersal (Kerpez and Smith 1987, Brotherson and Field 1987, Sisneros 1991). Seeds appear to be most viable between June and November. They can germinate on saturated soils or in water, and approximately 50 percent of seeds typically germinate within 24 hours of imbibing water (Merkel and Hopkins 1957, Kerpez and Smith 1987). Seed viability is relatively short, with seeds requiring appropriate moisture conditions within a few weeks of dispersal for successful germination (DiTomaso 1996).

Seedling establishment typically occurs in seasonally saturated soils (Brotherson and Field 1987), and water is critical in the earliest stages of seedling development. Seedlings can survive inundations for several weeks, but are susceptible to flooding within the first few months of germination (DiTomaso 1996). Once established, tamarisk can survive without surface saturation (Brotherson and Field 1987, DeLoach 1989).

Tamarisk is a pioneer or colonizing species that establishes in gaps or disturbed areas within riparian habitat. Once established, this species persists until removed by human manipulation or natural events such as flood scouring (Inglis et al. 1996). The two most common native trees displaced by tamarisk invasions are cottonwoods and willows (DeLoach 1989). Tamarisk tolerates a wider range of environmental conditions than either of these species. It also has the ability to alter environmental conditions over time (e.g., increase salinity, lower water table). This species has the ability to resprout profusely after fire, as well as increase both its flowering and seed production (Kunzmann et al. 1988, Hoddenbach 1989). These fire response mechanisms have facilitated its spread in certain regions. Tamarisk has been most successful in displacing native riparian tree species along regulated rivers in arid regions of the southwest U.S., but can also be problematic in coastal riparian habitats.

Threats. Tamarisk is a concern because it can displace native riparian tree species, resulting in both reduced plant species diversity and wildlife habitat values. Once established, this species can be very difficult to eradicate. It also has the ability to alter ecosystem processes, so that habitat may eventually become unsuitable for native species even after tamarisk is removed. For example, it may increase the salinity of the surface soil or lower surface water tables. Leaf litter can increase the frequency of fire. Because so few tamarisk plants occur at Crestridge, the potential for control of this species and maintenance of riparian habitat values is high if management actions are implemented soon.

Management Options. Tamarisk can be controlled by a variety of methods. The treatment selected will depend on a variety of factors, including size of the infestation, herbicide restrictions in the area to be treated, the presence or absence of desirable



vegetation or open water, adjacent land uses, and the availability and cost of labor (Carpenter 1998). The most common methods of treatment include (1) application of foliar herbicides to intact plants; (2) physical removal of above-ground stems (e.g., mowing, burning, cutting), followed by application of foliar herbicides; (3) cutting stems close to the ground, followed by application of herbicides to cut trunks; (4) application of herbicide to basal bark; and (5) digging or pulling plants (Carpenter 1998). Biological control, which is the intentional use of undomesticated organisms (e.g., insects) to control weeds by reducing their vigor, reproductive capacity, or density (DeLoach 1997), has been considered a potential alternative to more traditional methods of controlling tamarisk. The U.S. Department of Agriculture (USDA), in cooperation with several foreign governments, has conducted an extensive testing program on appropriate biological control agents for tamarisk (DeLoach 1997, Bossard et al. 2000). Two species have been recommended for field release in the United States, including a mealybug from Israel and a leaf beetle from China. However, biological control is more appropriate for large infestations rather than the small, localized stands that currently exist on Crestridge.

The current infestation at Crestridge is small and occurs within primarily native habitat. For these reasons, either digging or pulling plants or cutting the stem(s) and applying herbicide will best accomplish tamarisk control on Crestridge. With the latter method, individual plants should be cut as close to the ground as possible, and herbicide applied immediately to the perimeters of the cut stems. A number of herbicides are available to treat tamarisk, including triclopyr (e.g., Garlon4 or PathfinderII) and imazapyr (Arsenal). Treatment is most effective in the fall. The effectiveness of treatment can be maximized when stems are cut within 5 cm of the soil surface, herbicide is applied within 1 minute of cutting, and herbicide is applied all around the perimeter of the cut stems. It will be important to retreat any resprouts within 4 to 12 months of the initial treatment (Carpenter 1998). It will also be important to monitor wetland areas onsite for new infestations, and eradicate them as soon as possible.

Cortaderia selloana **Pampas Grass**

Goals. Eradicate Pampas grass from Crestridge. Monitor the reserve for new infestations.

Distribution Onsite. Pampas grass was noted in only one location in the eastern portion of the Crestridge reserve, adjacent to a trail. This small infestation consisted of only a few plants. This species also occurs offsite, where it has been planted as a landscaping ornamental in adjacent residential developments.

Status. Pampas grass is on List A-1 of the CalEPPC's list of exotic pest plants of greatest ecological concern in California. List A includes species that are documented as aggressive invaders that displace natives and disrupt natural habitats. List A-1 is a sub-list that includes widespread pests that are invasive in more than three Jepson regions (CalEPPC 1999).



Biology. Pampas grass is a large, coarse-leaved, clumped grass that can approach 4 m in height (Bailey 1949, Hickman 1993). It is distinguished, in part, from Andean or Jubata grass by its light violet to silvery white plumose panicles and narrow, blue-green leaves (Peterson 1988, HNIS 1997). In San Diego County, Pampas grass typically blooms from September through December (Beauchamp 1986). Plants are either pistillate (female) or hermaphroditic (male and female on the same plant, but predominantly male [staminate]) (Connor 1965, 1973 in HNIS 1997, Costas-Lippmann 1979 in HNIS 1997). Seed set is dependent on the presence of both pistillate and hermaphroditic plants in proximity to one another (Baker 1986 in HNIS 1997).

Pampas grass seeds are wind-dispersed and appear to germinate on a variety of bare soil substrates. Seeds of various *Cortaderia* spp. have been documented as being wind-dispersed up to 25 km from the parent plant (Anonymous 1998). This species does not appear to be successful in colonizing or spreading in dense grassland habitats (Costas-Lippmann 1976 in HNIS 1997). Seed longevity of this species is not known; however, seeds of the related Andean pampas grass do not appear to be long-lived (e.g., 2% germination after 5 months) (HNIS 1997).

Threats. Pampas grass is a concern because it competes with native vegetation in naturally and artificially disturbed areas. Once established, it can exert a variety of adverse effects on native resources. For example, (1) it outcompetes native plants for light, water, and nutrients, thereby resulting in lower plant species diversity; (2) it may promote increased fire frequency due to the buildup of dry material (e.g., dead leaves, leaf bases, flowering stalks), and (3) it may provide habitat for nonnative wildlife species.

Although the small stand of Pampas grass at Crestridge does not currently pose a major threat to native vegetation or sensitive plant species, it has the potential to expand its distribution due to its seed dispersal mechanism, presence of a seed propagule source in the vicinity, and the network of roads, trails, and other bare soil areas that currently exist on the reserve.

Management Options. Pampas grass has been effectively controlled through both physical and chemical methods. Physical removal is most effective for small plants or small infestations but can be labor intensive (Peterson 1988). Using this method, seedlings or small plants should be pulled or dug out, whereas larger plants typically need to be removed with a pick and shovel. In both cases, it is important to remove the entire root crown to prevent resprouting. Furthermore, plant material should be removed completely from the site to avoid resprouting (if left on the ground) and to reduce biomass that may prevent revegetation by native species (Peterson 1988, HNIS 1997).

Chemical treatments, or a combination of physical and chemical control methods, may be more practical for severe infestations or large plants (Peterson 1988). Glyphosate herbicides (e.g., Roundup, Rodeo) have been successful in controlling both seedlings and larger plants. These short-lived herbicides are sprayed directly on the foliage. It is important to avoid non-target plant species, however, as glyphosate is a broad-spectrum herbicide (Peterson 1988). Large plants should be cut or trimmed just above the ground



prior to spraying. The herbicide should then be applied once the plant is resprouting to ensure that it is actively growing. Reducing the foliage prior to spraying minimizes the amount of herbicide used and maximizes the plant coverage by the herbicide (HNIS 1997, NPS 2000). It is important that sprayed plants are left in the ground until the roots have died off (New Zealand Department of Conservation 2000). Plants (including the root crown) should then be dug up and removed from the site. It may be necessary to re-treat the plant (e.g., there may be resprouts from the root crown) or any newly established seedlings in proximity to the parent plant (HNIS 1997).

The highest priority for Pampas grass removal will be adult plants. In a given season, plants should be removed prior to flowering (Kerbavaz 1985). When removing flowering plants, the plumes should first be cut off, then bagged and removed from the site to minimize seed dispersal (Peterson 1988). Cut, immature flowering stalks have been shown to produce some mature seed (Madison 1994). Because of the proximity of a seed source, it will be necessary to monitor Crestridge for new infestations.

***Eucalyptus* spp.**

Eucalyptus

Goals. Remove young eucalyptus trees from drainages onsite. Remove eucalyptus trees that pose a threat to natural resources from upland areas. This may include trees that do not support nesting raptors but do significantly increase Argentine ant penetration into the reserve.

Distribution Onsite. Eucalyptus trees are scattered throughout the Crestridge reserve. A small stand of trees occurs just east of the oak grove at the end of Horsemill Road, along the southern property boundary. Eucalyptus trees are planted along a dirt road in the western part of the site and occur onsite or just offsite in association with agricultural and residential areas. Eucalyptus trees also occur in riparian habitat. It is these latter areas that are of greatest concern, because of the potential for eucalyptus to reproduce and spread under moist conditions. Not all eucalyptus trees onsite were mapped. Mapping was limited to those trees considered to pose the greatest threats to native species diversity (see below).

Status. Blue gum (*Eucalyptus globulus*) is the only eucalyptus currently listed as a problem weed. This species is on List A-1 of the CalEPPC's list of exotic pest plants of greatest ecological concern in California. List A includes species that are documented as aggressive invaders that displace natives and disrupt natural habitats. List A-1 is a sub-list that includes widespread pests that are invasive in more than three Jepson regions (CalEPPC 1999). Blue gum is also listed as a problem exotic plant in California wetlands, where it poses a moderate threat to native species or ecosystems (Dudley 1998).

Biology. Eucalyptus is a fast growing, broadleaved, evergreen tree or shrub that can approach 45 m in height (Hickman 1993). Eucalypts are quite variable with respect to



bark color and texture, leaf shape and color, color and yield of oil, flower shape and color, and fruiting characteristics. Juvenile leaves are often different in shape, color, and arrangement than adult leaves. Numerous, showy stamens are characteristic of flowers. Sepals and flowers are fused into a deciduous bud cap, and fruits are fire-resistant, woody capsules that open at the top (Dallman 1998). Seeds are small and numerous (Hickman 1993) and are typically distributed by wind and gravity, although secondary dispersal can occur via floods, erosion, and birds. Seeds can disperse while still on the tree or after fruits have fallen from the tree. Most seeds are dispersed within 30 m of the parental plant (Jacobs 1955 in Bean and Russo 1989). Most eucalypts reproduce easily from seed, particularly in the presence of adequate water (Boyd 1985, McClintock 1988 in Bulmann 1988). Seeds typically germinate within about a month of dispersal given suitable conditions but may also remain dormant for several years under dry conditions (Jacobs 1955 in Bean and Russo 1989).

Eucalyptus flowers are outcrossing and protandrous (e.g., flowers shed their pollen prior to stigma receptivity). Insects are considered the primary pollinating agents, while birds and small mammals are considered incidental or occasional pollinators (Boland et al. 1980 in Bean and Russo 1989).

Eucalyptus trees form a lignotuber¹, which functions for both food storage and regeneration. When trees are burned or cut, they produce new shoots from these lignotubers (Penfold and Willis 1961 in Bean and Russo 1989). Trees can also regenerate following environmental stress (e.g., drought, frost), insect damage, or fire from leaf buds, accessory shoots, and proventitious bud strands (Bean and Russo 1989).

Eucalyptus trees produce allelopathic toxins that can suppress understory growth and inhibit germination of eucalyptus seeds beneath parental plants. Allelopathic toxins are present in the leaves of mature trees and can be transferred to the soil surface through leaf litter or from fog drip off of leaves still on the tree (Del Moral and Muller 1969 in Bean and Russo 1989).

Eucalyptus trees are extremely flammable due to the high oil content in leaves, limbs, and shredded bark. The large volume of fuel that is produced each year compounds their flammability. In addition, eucalyptus litter burns under both cool and dry conditions (Boyd 1985).

Threats. Eucalyptus trees pose the greatest threat to native habitat and species diversity in riparian areas, where moist soil conditions promote seed germination and rapid spread. Under such conditions, eucalypts can displace native species by colonizing gaps or disturbed areas. They also inhibit understory development (and germination of native species) through the production of allelopathic compounds. Eucalyptus trees in upland areas typically do not pose the same threat of spreading and displacing native vegetation,

¹ A lignotuber is a swollen, woody structure at the base of the trunk from which the plant can resprout following fire or other damage. Lignotubers are analogous to root crowns (Canadell and Zedler 1995 in Dallman 1998).



unless they occur in moist locations. Conversely, they can provide important wildlife habitat (e.g., raptor nesting areas). Recently, eucalyptus trees have been implicated in promoting the spread of the nonnative Argentine ant into conserved areas. Argentine ants are generally tied to a water source (Erickson 1971, Holway 1998, and others), but may extend further into xeric or undisturbed habitat in the presence of eucalyptus trees, which provide a nectar source (LaPierre and Wright 2000).

Management Options. Removal of eucalyptus trees is recommended in all riparian areas. Removal of certain trees in upland areas may be warranted, as well, depending on location relative to the urban/wildland interface and potential for the tree(s) to promote Argentine ant penetration into the reserve. In the latter case, decisions for tree removal will need to balance potential threats against existing wildlife habitat value.

Eucalyptus trees can be removed through either physical or chemical methods or a combination of both. In most cases, multiple treatments are required because of the many mechanisms these trees have to survive injury. Stump removal may be the most effective means of physical treatment, although it is relatively costly. For this reason, it may be most appropriate where removal involves only a few trees. Stump removal equipment is now available that results in little or no soil damage. Stump removal removes the trunk to 0.7 m below ground and should be followed by herbicide treatments to prevent regrowth. Other mechanical control methods include cutting the trees repeatedly, pulling out seedlings and saplings (appropriate for plants up to about 2.5 cm in diameter), and burning. Inappropriately timed burning, however, can result in the spread of eucalyptus trees (Bean and Russo 1989).

Chemical treatments can be effective in controlling eucalyptus if carefully and repeatedly applied or if applied in conjunction with physical methods of control. Appropriate dosages and timing of applications are critical to the success of chemical treatments. Refer to Bean and Russo (1989) and Bossard et al. (2000) for a detailed review of appropriate herbicides, including dosages, application methods, and timing of application. Methods of herbicide application include foliar spraying or direct application to cut stumps or cuts (frills) in the bark. Direct application appears to be more effective than spraying. The herbicides ammate, 2,4-D, and picloram have been demonstrated to result in a high degree of eucalyptus mortality, although only with repeat treatments. Roundup (2% solution) has shown some effectiveness in controlling sprouting foliage. Herbicide treatment of cut trees may require at least 3 years of follow-up treatment (Bean and Russo 1989). Wood of dead eucalyptus trees should be removed from the site.

Pennisetum setaceum **African Fountaingrass**

Goals. Eradicate African fountaingrass on slopes above Rios Canyon and along roads within the reserve. Revegetate these areas with native species, as necessary, and monitor the site for future infestations. Eliminate or revegetate (if determined to be practicable)



or otherwise manage the large stand of fountaingrass on west-facing slopes above Flinn Springs County Park to prevent its spread.

Distribution Onsite. African fountaingrass occurs primarily in the eastern portion of the Crestridge reserve, along trails or roads. One fairly extensive stand (about 2.5 acres) was observed by binocular on west-facing slopes southeast of Flinn Springs County Park. This stand occurs within a matrix of southern mixed chaparral and could not be accessed directly. Smaller invasions of African fountaingrass (e.g., a few plants) were noted on west-facing slopes above Rios Canyon Road but were not mapped. These plants occur in proximity to populations of sensitive plant species (e.g., San Diego thornmint, small-flowered morning-glory, Palmer's grappling hook). African fountaingrass also occurs offsite, with extensive stands observed on southwest-facing slopes above La Cresta Road and along La Cresta Boulevard. In the former location, plants may have been hydroseeded onto slopes for erosion control.

Status. African fountaingrass is on List A-1 of CalEPPC's list of exotic pest plants of greatest ecological concern in California. List A includes species that are documented as aggressive invaders that displace natives and disrupt natural habitats. List A-1 is a sub-list that includes widespread pests that are invasive in more than three Jepson regions (CalEPPC 1999).

Biology. African fountaingrass is a showy, tufted perennial grass with lax, purplish spike-like flowering heads that range from 8-30 cm long (Hickman 1993, CDFA 2000b). This species, which can approach 1.5 m in height, is a fibrous rooted plant that lacks rhizomes. It typically blooms from January through November. African fountaingrass is capable of reproducing apomictally (i.e., embryos develop without fertilization), but also reproduces through limited cross-pollination. New plants develop strictly from seed (as opposed to vegetative growth). Seeds require several months to mature and remain on the plant during this period (fall through early to mid-spring). Most seeds germinate in late spring or early summer, although some evidence indicates that seeds may survive for up to 6 years in the soil seed bank. Individual plants have been documented as living up to 20 years or more. Seeds are dispersed by a variety of methods, including wind, water, human activities, and animals (CDFA 2000b).

Threats. African fountaingrass can outcompete native plant species in disturbed situations. In addition, this species recovers quickly from fire and often increases in density after burns. Once established, it can potentially alter ecosystem processes, such as fire frequency, in areas subjected to burns (CDFA 2000b).

African fountaingrass occurs primarily in two types of situations on Crestridge: (1) along trails or roads where the species has the potential to spread into gaps in adjacent, natural vegetation and (2) in previously burned habitat where it may increase in density and extent with subsequent burns, thereby threatening populations of sensitive plant species. In both situations, infestations are currently small and should be controllable, as detailed below. A third situation exists onsite wherein a relatively large stand of fountaingrass occurs within a matrix of dense chaparral. This stand does not appear to pose direct



threats to adjacent vegetation or sensitive plant species; however, it could increase in extent in the event of fire.

Management Options. Early detection and hand removal of individual plants are considered effective controls for African fountaingrass (CDFA 2000b), particularly where invasions are limited. Hand removal would be an appropriate management tool for most stands of fountaingrass at Crestridge, but would likely need to be used in conjunction with native plant revegetation to reduce subsequent colonization opportunities for the fountaingrass. Because of the potential for seed longevity in the soil, and the offsite propagule sources in proximity to the site, long-term monitoring of Crestridge will be required to ensure that new infestations are controlled at an early stage.

Control may be more difficult for the large stand of fountaingrass on west-facing slopes above Flinn Springs County Park. Accessibility of this site and scale of both removal and subsequent revegetation efforts need to be considered prior to initiating or formulating a weed control plan in this area. Monitoring of this area to determine whether the infestation is stable, increasing, or declining should be conducted prior to determining an acceptable treatment. In some cases, particularly where the infestation is stable or declining and is not directly threatening specific resources, no treatment may be an acceptable alternative. See Bossard et al. (2000) for suggested methods of chemical control.

Centaurea melitensis

Tocalote

Goals. Manage tocalote at levels that do not threaten sensitive species and their habitat.

Distribution Onsite. Tocalote is found in disturbed areas and along roads throughout Crestridge. The most extensive distribution of this species, however, occurs on south- and west-facing slopes above Rios Canyon (Thornmint Hill). In this location, tocalote is common to abundant along both the fuelbreak at the bottom of the slope (which may be the point of introduction for this species) and on adjacent, upper slopes where it is growing with or in proximity to populations of sensitive plant species (e.g., San Diego thornmint, small-flowered morning-glory, Palmer's grappling hook). In some cases, tocalote forms nearly monotypic stands in these areas.

Status. Tocalote is on List B of CalEPPC's list of exotic pest plants of greatest ecological concern in California. List B includes wildland pest plants of lesser invasiveness. However, tocalote is sometimes misidentified as the closely related and highly invasive yellow starthistle (*Centaurea solstitialis*). As a result, the CalEPPC recognizes that tocalote may be a more serious invader than indicated by its current ranking (CalEPPC 1999).

Biology. Tocalote is an erect winter annual (sometimes biennial) with spiny yellow flowers. This species typically blooms from April through June (Beauchamp 1986) and



is insect-pollinated (Proctor et al. 1996, CDFA 2000a). Individual plants approach 1 m in height, possess a shallow taproot, and are characterized by grayish-greenish foliage and winged stems. Tocalote reproduces entirely by seeds (achenes). Seeds are small (2-3 mm) and modified for animal-dispersal. Despite these modifications, most seeds are likely gravity-dispersed and fall near the parental plant or are effectively dispersed short distances by wind. Human activities, animals, water, and soil movement can significantly increase dispersal distances. Seed production can be high in this species. Plants have been documented as producing up to 60 seeds per flowering head and up to 100 flowering heads per plant (CDFA 2000a).

Seed longevity of tocalote is not known. Seed of the related yellow starthistle has been reported to survive for about 2-3 years, although there are cases of seed survival for up to 10 years, depending on environmental conditions (CDFA 2000a). Tocalote seed germination typically occurs after the first fall rains, at which time plants produce basal rosettes. Seedlings are particularly susceptible to drought, so fall/winter climatic patterns can influence population size in the following growing season. Flowering stems develop in late spring or early summer following fall germination. Germination of tocalote appears to be reduced in the presence of wild oat (*Avena* spp.) litter, which may exert allelopathic effects (CDFA 2000a).

Threats. Tocalote is a common nonnative plant in many wildland areas of San Diego County and is not typically subject to management considerations. On Crestridge, however, this species poses a potential threat to populations of sensitive plant species on slopes above Rios Canyon. In this location, tocalote occurs in widespread and locally dense patches. Bauder (unpubl. data) notes that tocalote significantly reduces seed production of San Diego thornmint. Where tocalote occurs at lower densities, sensitive species such as Palmer's grappling hook are found growing with this species. At higher densities, however, sensitive plant species do not occur with tocalote. Baseline data are not available to suggest whether the population of tocalote in this area is expanding, stable, or declining, or whether it has adversely affected populations of sensitive plant species. It is likely, however, that the earlier germinating tocalote is an effective competitor for resources (e.g., moisture, sunlight, space) or shades out the later-germinating sensitive species.

Management Options. Tocalote is best controlled through monitoring and spot eradication of plants in critical areas prior to widespread infestations. The use of herbicides (e.g., RoundUp Pro) has been highly effective in these cases, especially along trails. A 1.5-2% solution of RoundUp Pro is recommended for the weeds on Thornmint Hill (M. Kelly pers. comm.). Chemical control would be more efficient than mechanical control in this area, and there will usually be less resprouting using herbicide than with mechanical cutting. Where chemical control is not possible (e.g., using volunteers who are not trained in the safe use of herbicides), weed whips, brush cutters, loppers, hoes, etc. can be used to cut the weed as close to the ground as possible. As some plants will resprout from the below-ground root and many of these plants have seeds that germinate over a long period of time, control efforts should be done on a weekly to every other



week basis until they show signs of forming buds. During the blooming season, weekly visits are important to prevent any plants from setting seed.

In some areas at Crestridge, however, tocalote is too widespread to be easily eradicated by herbicide treatment. Alternative methods of control include grazing, cultivation, mowing, and burning (CDFA 2000a). Where mowing is used to control tocalote, plants should be cut below the lowest branches, and cutting should occur when the population has just started to bloom. This may be appropriate along the base of the west slope above Rios Canyon, adjacent to Rios Elementary School. If plants are mowed too early, regrowth, flowering, and seed production may occur (M. Kelly pers. comm.). Prescribed burns are effective only after the majority of native annual plants have dried, but before tocalote has produced seed (e.g., early summer). Burning at other times would promote the spread of tocalote. With either method, repeat treatments may be necessary for 2-3 years, and continual monitoring of the area would be required (CDFA 2000a).

Complete eradication of tocalote is probably not feasible, nor should it be the management objective in this area. Rather, management efforts should focus on preventing tocalote colonization in San Diego thornmint habitat, then on reducing population size in other habitat areas occupied by sensitive plant species. Prior to implementing control strategies for tocalote, both sensitive plant and tocalote populations should be monitored to determine whether population size/extent is expanding, stable, or declining. At this time, mowing along the base of the slope adjacent to Rios Elementary School and spot-treating with herbicide along the trail leading up to the thornmint population should be management priorities.

Brachypodium distachyon **Purple Falsebrome**

Goals. Manage purple falsebrome at levels that do not threaten coastal sage scrub habitat or sensitive species and their habitat.

Distribution Onsite. Purple falsebrome is abundant in areas of burned coastal sage scrub on upper west- and southwest-facing slopes above Rios Canyon (Thornmint Hill). The association of this species with fire is not known; however, the density of purple falsebrome in this area suggests that a habitat type conversion from scrub to grassland may be in progress, particularly if this area burns again in the near future. Purple falsebrome currently occurs in proximity to San Diego thornmint habitat, although it has not yet significantly invaded this habitat.

Status. Purple falsebrome is on the annual grass list of CalEPPC's list of exotic pest plants of greatest ecological concern in California. The annual grass list is a preliminary list of abundant and widespread annual grasses in California that pose significant threats to wildlands (CalEPPC 1999).



Biology. Purple falsebrome is an annual grass to about 40 cm in height. Stems are decumbent to erect. Spikelets are sessile to short-pedicelled and 6-20 flowered. Each lemma tapers into a straight, rigid awn that is 4-11 mm long (Crampton 1974, Hickman 1993). Plants are bisexual, with hermaphroditic florets, and inbreeding is characteristic of the genus (Watson and Dallwitz 1999). Like all grasses, purple falsebrome is wind-pollinated.

Threats. Purple falsebrome is a common nonnative plant in many wildland areas of San Diego County and is not typically subject to management considerations. On Crestridge, however, this species poses a potential threat to both coastal sage scrub habitat and populations of sensitive plant species on slopes above Rios Canyon. Many nonnative grasses, including purple falsebrome, have the ability to alter ecosystem processes such as fire frequency. The result can be habitat type conversions if fire intervals are too close to allow regeneration of native shrubs. In addition, purple falsebrome may potentially outcompete or displace sensitive plant species. This species currently occurs in high densities near, but not within, San Diego thornmint habitat. It is not known whether purple falsebrome is a poor competitor on the gabbro-derived (Las Posas) soils occupied by the thornmint or whether it simply has not spread onto these soils in any significant numbers yet.

Management Options. Little information is available on control of purple falsebrome in wildland areas. This species has shown some resistance to herbicides in Mediterranean regions (Heap 2000), but herbicides are not likely to be practical given the widespread distribution of this species at Crestridge and its proximity to sensitive species. A fire management plan that reduces fire frequency in this area and allows for shrub regeneration would likely be the most effective management option for controlling purple falsebrome at this time.

Complete eradication of purple falsebrome is probably not feasible, nor should it be the management objective. Rather, management efforts should focus on preventing purple falsebrome expansion into San Diego thornmint habitat, then on reducing population size in coastal sage scrub (including, but not limited to, habitat occupied by other sensitive plant species). Prior to implementing control strategies for purple falsebrome, both sensitive plant and falsebrome populations should be monitored to determine whether population size/extent is expanding, stable, or declining.

At this time, mowing along the base of the slope adjacent to Rios Elementary School and spot-treating with herbicide along the trail leading up to the thornmint population should be management priorities.

Marrubium vulgare **Horehound**

Goals. Remove individual plants, and restore and manage habitat conditions to minimize the potential for new infestations. Monitor equestrian trails for new infestations.



Distribution Onsite. Horehound was noted in only one location at Crestridge: along an east-west oriented trail leading from the Padre Dam water tower to the western portion of the site. Equestrian use is common along this trail, and horehound has likely been spread through this area by horses.

Status. Horehound is not currently on CalEPPC's list of exotic pest plants of greatest ecological concern in California. This species was formerly included on CalEPPC List 2 (wildland weeds of secondary importance) (CalEPPC 1995) but presumably has been down-listed because it lacks the ability to dominate native communities.

Biology. Horehound is an herbaceous perennial plant with erect, branched, tomentose stems. Flowers are white and bilateral, while calyces are 10-lobed with recurved or hooked lobe tips (Hickman 1993). Flowers are presumably insect-pollinated and seeds are likely gravity-dispersed.

Threats. Horehound is not expected to invade intact natural habitat, nor is it currently threatening sensitive plant populations. Its presence onsite, however, is indicative of localized, degraded conditions.

Management Options. Horehound can be controlled through both mechanical and chemical methods. Spraying with glyphosate herbicides (e.g., Roundup, Rodeo) has been effective in other areas of California, as has manual removal that pulls up entire plants (BLM 1997, NPS 1997). Removal of plants should be followed by efforts to improve habitat quality, thereby reducing the potential for future invasions. This may include revegetation of trail edges with native plant species, erosion control measures, and limiting equestrian access. If equestrian activity is not limited, then continual monitoring of equestrian trails should be implemented to detect new infestations.

Rhynchelytrum repens **Natal Grass**

Goals. Remove individual plants to prevent the spread of this species further into the reserve. Monitor the reserve for new infestations.

Distribution Onsite. Natal grass was noted in only one location at Crestridge, along the southeast property boundary. In this location, Natal grass occurs on a flat rock outcrop adjacent to a northwest-oriented trail.

Status. Natal grass is not included on CalEPPC's list of exotic pest plants of greatest ecological concern in California (CalEPPC 1999), presumably because it lacks the ability to dominate native communities.

Biology. Natal grass is a short-lived, tufted perennial grass that approaches 1 m in height. The stem is decumbent to erect, and inflorescences are 8-17 cm long (Hitchcock and Chase 1951, Hickman 1993, Watson and Dallwitz 1999). This summer-blooming



(June-September) species has a distinctive panicle, or flowering stalk, which is initially rosy purple, then fades to pink, and finally becomes silvery with age (Hitchcock and Chase 1951, Beauchamp 1986). Plants are bisexual, with hermaphroditic florets. Seeds are small and ellipsoid (Watson and Dallwitz 1999). Seed longevity or dispersal mechanisms are not known; however, the florets of Natal grass are likely gravity, wind, and, possibly, animal-dispersed. Fire response of this species is not known.

Threats. The threats to native vegetation or sensitive plant species from Natal grass are unknown. This species is not considered an invasive wildland pest plant in California, although it is considered a significant weed species in other regions of the world (Watson and Dallwitz 1999). Natal grass is reportedly short-lived, so the current stand may not persist over the long term. Although Natal grass is not considered an aggressive invader, it does have the potential to disperse further into the reserve via disturbed areas or along trails. Increased extent or occurrences of this species could result in localized decreases in native plant species diversity.

Management Options. No information was available on control of Natal grass. Presumably, effective control could be achieved with mechanical removal. Vegetative material and flowering stalks should be removed from the reserve. If plants are in bloom during the removal process, flowering stalks should be bagged prior to removal, as described above for Pampas grass.

REFERENCES

- Amor, R.L. and P.L. Stevens. 1976. Spread of weeds from a roadside into sclerophyll forests at Dartmouth, Australia. *Weed Research* 16:111-118.
- Anderson, B.W. 1995. Salt cedar, revegetation, and riparian ecosystems in the Southwest. Pages 1-16 *in* Proceedings of the California Exotic Pest Plant Control Council, Lovitch, J., J. Randall, and M. Kelly, editors.
- Anonymous. 1998. Scourge of the forest. *Bush Telegraph Newsletter* 2(2).
- Bailey, L.H. 1949. *Manual of cultivated plants*. New York, NY: MacMillan Publishing Company. 1,116 pp.
- Baker, H.G. 1986. Patterns of plant invasion in North America. Pages 44-57 *in* Ecology and biology of biological invasions of North America and Hawaii, Mooney, H.A. and J.A. Drake, editors. New York, NY: Springer-Verlag.
- Bauder, E. Unpublished data. Cited in Bossard et al. 2000.
- Baum, B.R. 1967. Introduced and naturalized tamarisks in the United States and Canada (Tamaricaceae). *Baileya* 15:19-25.



- Bean, C. and M.J. Russo. 1989. Element stewardship abstract (ESA) for *Eucalyptus globulus* (Tasmanian blue gum). The Nature Conservancy, Arlington, VA.
- Beauchamp, R.M. 1986. A flora of San Diego County, California. National City, CA: Sweetwater River Press. 241 pp.
- Boland, P.J., M. Booker, and J.W. Turnbull. 1980. Eucalyptus seed. Division of Forest Research, CSIRO, Canberra, Australia. 191 pp.
- Bossard, C.C., J.M. Randall, and M.C. Hoshovsky (eds.). 2000. Invasive plants of California's wildlands. University of California Press, Berkeley, CA. 360 pp.
- Boyd, D. 1985. Status reports on invasive weeds: eucalyptus. *Fremontia* 12(4):19-20.
- Brotherson, J.D. and D. Field. 1987. *Tamarix*: impacts of a successful weed. *Rangelands* 9:110-112.
- Bulmann, T.L. 1988. The *Eucalyptus* in California. *Fremontia* 16(1):9-12.
- Bureau of Land Management (BLM). 1997. Fort Ord public lands (BLM) vegetation management program for horehound – war on weeds. Information Center for the Environment. <http://endeavor.des.ucdavis.edu/weeds/ProjectDescription>.
- Bureau of Land Management (BLM). 1999. Bureau of Land Management's weeds website. <http://www-a.blm.gov/weeds/>.
- Busch, D.E. 1992. Analyses of the structure and function of lower Colorado River riparian plant communities. PhD dissertation, Department of Biological Sciences, University of Nevada, Las Vegas. 241 pp.
- California Department of Food and Agriculture (CDFA). 2000a. Noxious weed data sheet: *Centaurea melitensis* (Malta starthistle or tocalote). Encycloweedia: notes on identification, biology, and management of plants defined as noxious weeds by California law. 6 pp.
- California Department of Food and Agriculture (CDFA). 2000b. Noxious weed data sheet: *Pennisetum setaceum* (crimson fountain grass). Encycloweedia: notes on identification, biology, and management of plants defined as noxious weeds by California law. 4 pp.
- California Exotic Plant Pest Council (CalEPPC). 1995. The CalEPPC list: exotic pest plants of greatest concern in California. 3 pp.
- California Exotic Plant Pest Council (CalEPPC). 1999. The CalEPPC list: exotic pest plants of greatest concern in California. 8 pp.



- Canadell, J. and P.H. Zedler. 1995. Underground structures of woody plants in Mediterranean ecosystems of Australia, California, and Chile. Pages 177-210 in *Ecology and Biogeography of Mediterranean ecosystems in Chile, California, and Australia*, Arroyo, M.T.K., P.H. Zedler, and M.D. Fox, editors. New York, NY: Springer Verlag.
- Carpenter, A.T. 1998. Element stewardship abstract (ESA) for *Tamarix ramosissima* Ledebour, *Tamarix pentandra* Pallas, *Tamarix chinensis* Loureiro, *Tamarix parviflora* De Candolle. Saltcedar, Salt cedar, Tamarisk. The Nature Conservancy, Arlington, VA.
- Connor, H.E. 1965. Breeding systems in New Zealand grasses. V. Naturalized species of *Cortaderia*. New Zealand Journal of Botany 3:17-23.
- Connor, H.E. 1973. Breeding systems in *Cortaderia* (Gramineae). Evolution 27:663-678.
- Costas-Lippmann, M.A. 1976. Ecology and reproductive biology of the genus *Cortaderia* in California. PhD dissertation, University of California, Berkeley.
- Costas-Lippmann, M.A. 1979. Embryogeny of *Cortaderia selloana* and *C. jubata* (Gramineae). Botanical Gazette 140(4):393-397.
- Crampton, B. 1974. Grasses in California. California Natural History Guides: 33. Berkeley, CA: University of California Press. 178 pp.
- Dallman, P.R. 1998. Plant life in the world's Mediterranean climates. Berkeley, CA: University of California Press and Sacramento, CA: California Native Plant Society. 257 pp.
- Del Moral, R. and C.H. Muller. 1969. Fog drip: a mechanism of toxin transport from *Eucalyptus globulus*. Bulletin of the Torrey Botanical Club 96(4):467-475.
- DeLoach, C.J. 1989. Saltcedar, a weed of western North American riparian areas: a review of its taxonomy, biology, harmful and beneficial values, and its potential for biological control. Final report, volume I. U.S. Bureau of Reclamation. Contract no. 7-AG-30-04930. 296 pp.
- DeLoach, C.J. 1997. Saltcedar biological control: methodology, exploration, laboratory trials, proposals for field releases, and expected environmental effects. U.S. Department of Agriculture, Agricultural Research Service, Temple, TX. 32 pp.
- DiTomaso, J.M. 1996. Identification, biology, and ecology of saltcedar. Saltcedar Management Workshop, June 12, 1996. 5 pp.



- Dudley, T. 1998. Exotic plant invasions in California riparian areas and wetlands. *Fremontia* 26(4):24-29.
- Erickson, J.M. 1971. The displacement of native ant species by the introduced Argentine ant *Iridomyrmex humilis* (Mayr). *Psyche* 78:257-266.
- Frenkel, R.E. 1977. Ruderal vegetation along some California roadsides. University of California Publications in Geography, vol. 20. Berkeley, CA: University of California Press. 163 pp.
- Graf, W.L. 1982. Tamarisk and river-channel management. *Environmental Management* 6(4):283-296.
- Harmful Non-Indigenous Species (HNIS) Database. 1997. HNIS report for *Cortaderia jubata*. Hawaiian Ecosystems at Risk project, University of Hawaii, Department of Botany/CPSU, Honolulu, HI. 13 pp.
- Heap, I. 2000. International survey of herbicide-resistant weeds. *Brachypodium distachyon*. http://weedscience.com/details/brachypodium_distachyon5.htm. 2 pp.
- Hickman, J.C., editor. 1993. The Jepson manual: higher plants of California. Berkeley, CA: University of California Press. 1,400 pp.
- Hitchcock, A.S. and A. Chase. 1951. Manual of the grasses of the United States. U.S. Department of Agriculture, miscellaneous publication no. 200. Washington, DC: United States Government Printing Office. 1,051 pp.
- Hobbs, R.J. and L. Atkins. 1988. The effects of disturbance and nutrient addition on native and introduced annuals in the western Australian wheatbelt. *Australian Journal of Ecology* 13:171-179.
- Hoddenbach, G. 1989. Tamarisk control. Pages 116-125 in Tamarisk control in the southwestern United States, Kunzmann, M.R., R.R. Johnson, and P. Bennett, technical coordinators. Tucson, AZ: National Park Service, cooperative National Park resources studies unit, School of Renewable Natural Resources. Special report no. 9.
- Holway, D.A. 1998. Factors governing rate of invasion: a natural experiment using Argentine ants. *Oecologia* 115:206-212.
- Inglis, R., C. Deuser, and J. Wagner. 1996. The effects of tamarisk removal on diurnal groundwater fluctuations. U.S. Department of the Interior, National Park Service. Technical report NPS/NRWRD/NRTR-96/93. 30 pp. + appendices.



- Jacobs, M.R. 1955. Growth habits of the eucalypts. Forestry and Timber Bureau, Canberra, Australia. 262 pp.
- Kerbavaz, J.H. 1985. Status report on invasive weeds: pampas grass. *Fremontia* 12(4):18-20.
- Kerpez, T.A. and N.S. Smith. 1987. Saltcedar control for wildlife habitat improvement in the southwestern United States. U.S. Department of the Interior, U.S. Fish and Wildlife Service, resource publication 169. 16 pp.
- Kunzmann, M.R., R.R. Johnson, and P. Bennett, technical coordinators. 1988. Tamarisk control in the southwestern United States; 1987 September 2-3; Tucson, AZ. Tucson, AZ: National Park Service, cooperative National Park resources studies unit, School of Renewable Natural Resources. Special report no. 9.
- LaPierre, L. and P. Wright. 2000. Preliminary report: survey of ant species and other arthropods associated with the San Fernando Valley spineflower with a discussion of potential pollinators and seed dispersers, Ahmanson Ranch, Ventura County, CA. Prepared for the Ahmanson Land Company, West Covina, CA. 7 pp.
- Madison, J.H. 1994. Pampas eradication program – P.E.P. – part two. *Cal EPPC News* 2(2):4-6.
- McClintock, E. 1988. Page 11 in *The Eucalyptus in California*, Bulmann, T.L. *Fremontia* 16(1):9-12.
- Merkel, D.L. and H.H. Hopkins. 1957. Life history of salt cedar (*Tamarix gallica* L.). *Transactions of the Kansas Academy of Science* 60:360-369.
- National Park Service (NPS). 1997. Alien plant control in Lava Beds National Monument. Information Center for the Environment.
<http://endeavor.des.ucdavis.edu/weeds/ProjectDescription>.
- National Park Service (NPS). 2000. Andean Pampas/Jubata grass.
<http://www.nps.gov/redw/pampas.htm>. 2 pp.
- Neill, W.M. 1985. Status reports on invasive weeds: tamarisk. *Fremontia* 12(4):22-23.
- New Zealand Department of Conservation. 2000. Pampas grass.
<http://www.doc.govt.nz/cons/pests/fact46.htm>. 3 pp.
- Penfold, A.R. and J.L. Willis. 1961. The eucalypts, botany, cultivation, chemistry, and utilization. NY, NY: Interscience Publishers, Limited: World Crop Books and Leonard Hill Books. 551 pp.



-
- Peterson, D.L. 1988. Element stewardship abstract for *Cortaderia jubata*, Pampas grass. The Nature Conservancy, Arlington, VA. 6 pp.
- Proctor, M., P. Yeo, and A. Lack. 1996. The natural history of pollination. Portland, OR: Timber Press. 479 pp.
- Sheley, R., J. Petroff, and M. Borman. 1999. Introduction to biology and management of noxious rangeland weeds. Corvallis, OR.
- Sisneros, D. 1991. Herbicide analysis: Lower Colorado River saltcedar vegetation management study. U.S. Department of the Interior, Bureau of Reclamation, Denver, CO. Report no. R-91-06. 167 pp.
- Smith, S.D. and D.A. Devitt. 1997. Physiological ecology of saltcedar: why is it a successful invader? Saltcedar Management Workshop, June 12, 1996. 2 pp.
- Teskey, J.L. 1992. *Tamarix ramosissima*. In The fire effects information system (data base), Fischer, W.C., compiler. Missoula, MT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Intermountain Fire Sciences laboratory. Magnetic tapes.
- The Nature Conservancy (TNC). 2000. Wildland invasive species program. <http://tncweeds.ucdavis.edu/methods.html>.
- Watson, L. and M.J. Dallwitz. 1999. Grass genera of the world: descriptions, illustrations, identification, and information retrieval; including synonyms, morphology, anatomy, physiology, phytochemistry, cytology, classification, pathogens, world and local distribution, and references. <http://biodiversity.uno.edu/delta/>.



APPENDIX C.1

LIST OF NONNATIVE PLANT SPECIES^{1,2} CRESTRIDGE ECOLOGICAL RESERVE

Compiled by Patricia Gordon-Reedy, Fred Sproul,
Claude Edwards, and Michael Klein

FLOWERING PLANTS - DICOTS

CalEPPC List³

Aizoaceae – Fig-marigold Family

Carpobrotus chilensis

Sea-fig

Carpobrotus aff. *edulis*

Hottentot-fig

A-1

Anacardiaceae – Sumac Family

Schinus molle

Peruvian pepper tree

B

Apiaceae – Carrot Family

Anthriscus caucalis

Bur-chervil

Apocynaceae – Dogbane Family

Vinca major

Periwinkle

B

Asteraceae – Sunflower Family

Carduus pycnocephalus

Italian thistle

B*

Centaurea melitensis

Tocalote

B

Centaurea solstitialis

Yellow star thistle

A-1*

Conyza canadensis

Horseweed

Hedypnois cretica

Crete hedypnois

Hypochoeris glabra

Smooth cat's-ear

Lactuca serriola

Prickly lettuce

Senecio vulgaris

Common groundsel

Sonchus asper ssp. *asper*

Prickly sow thistle

Sonchus oleraceus

Common sow thistle

Xanthium spinosum

Spiny cocklebur

Brassicaceae – Mustard Family

Brassica nigra

Black mustard

B

Hirschfeldia incana

Short-podded mustard

Need more info

Sisymbrium altissimum

Tumble mustard

Sisymbrium orientale

Hare's-ear cabbage

Cactaceae – Cactus Family

Opuntia ficus-indica

Indian-fig



CalEPPC List³

Caryophyllaceae – Pink Family

Cerastium glomeratum

Mouse-ear chickweed

Silene gallica

Common catchfly

Stellaria media

Common chickweed

Chenopodiaceae – Goosefoot Family

Salsola tragus

Russian thistle

Need more info*

Crassulaceae – Stonecrop Family

Crassula argentea

Jade plant

Fabaceae – Legume Family

Medicago polymorpha

California burclover

Melilotus alba

White sweetclover

Melilotus indica

Sourclover

Gentianaceae – Gentian Family

Centaureum venustum

Canchalagua

Geraniaceae – Geranium Family

Erodium botrys

Long-beak filaree

Erodium cicutarium

Red-stem filaree

Erodium moschatum

White-stem filaree

Lamiaceae – Mint Family

Marrubium vulgare

Horehound

Myrtaceae – Myrtle Family

Eucalyptus sp.

Gum tree

A-1

Oxalidacea – Oxalis Family

Oxalis pes-caprae

Polygonaceae – Buckwheat Family

Emex sp.

Devil's thorn

Rumex crispus

Curly dock

Primulaceae – Primrose Family

Anagallis arvensis

Scarlet pimpernel

Rubiaceae – Madder Family

Galium aparine

Goose grass



CalEPPC List³

Solanaceae – Nightshade Family

<i>Nicotiana glauca</i>	Tree tobacco	Need more info
-------------------------	--------------	----------------

Tamaricaceae – Tamarix Family

<i>Tamarix</i> sp.	Tamarisk	A-1
--------------------	----------	-----

Urticaceae – Nettle Family

<i>Urtica urens</i>	Dwarf nettle	
---------------------	--------------	--

FLOWERING PLANTS - MONOCOTS

Poaceae – Grass Family

<i>Avena barbata</i>	Slender oat	Annual grass
<i>Avena fatua</i>	Wild oat	Annual grass
<i>Avena sativa</i>	Cultivated oat	
<i>Brachypodium distachyon</i>	Purple falsebrome	Annual grass
<i>Bromus diandrus</i>	Ripgut grass	Annual grass
<i>Bromus hordeaceus</i>	Soft chess	
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail chess	A-2
<i>Cortaderia selloana</i>	Pampas grass	A-1
<i>Hordeum</i> sp.	Barley	
<i>Lamarchia aurea</i>	Goldentop	
<i>Pennisetum setaceum</i>	African fountain grass	A-1
<i>Polypogon monspeliensis</i>	Annual beardgrass	
<i>Rhynchelytrum repens</i>	Natal grass	
<i>Schismus barbatus</i>	Mediterranean grass	Annual grass
<i>Vulpia myuros</i>	Rattail fescue	

¹ Nomenclature follows Abrams and Ferris (1951), Beauchamp (1986), Hickman (1993), and Skinner and Pavlik (1994).

² This list is not meant to include every nonnative species at Crestridge, but rather represents those nonnative species observed during field surveys in 2000 and 2001. This list should be updated annually.

³ CalEPPC List: exotic pest plants of greatest ecological concern in California (CalEPPC 1999).

List A- most invasive wildland pest plants; documented as aggressive invaders that displace natives and disrupt natural habitats.

A-1: widespread pests that are invasive in more than 3 Jepson regions

A-2: regional pests invasive in 3 or fewer Jepson regions

List B- wildland pest plants of lesser invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be widespread or regional.

Need more information: plants for which current information does not adequately describe nature of threat to wildlands, distribution or invasiveness.

Annual grasses: a preliminary list of annual grasses that pose significant threats to wildlands.

* California Department of Food and Agriculture "C" list of noxious weeds; includes weeds that are so widespread that the agency does not endorse state or county-funded eradication or containment efforts except in nurseries or seed lots.



APPENDIX D

FRAMEWORK FIRE MANAGEMENT PLAN



Spiny redberry *Rhamnus crocea*
Photo by M.Klein

- D.1 General Operating Procedures
- D.2 Fire History and Fuel Types
- D.3 General Fire Management Guidelines and Objectives
- D.4 Wildland Fire Suppression
- D.5 Pre-Fire Treatment and Vegetation Management
- D.6 Research and Monitoring
- D.7 References



FRAMEWORK FIRE MANAGEMENT PLAN

This document establishes the framework for the California Department of Fish and Game (CDFG) to work with the California Department of Forestry and Fire Protection (CDF) and local fire agencies to develop and implement a specific plan for wildland fire prevention, wildland fire suppression, pre-fire treatment, and post-fire treatment at the Crestridge Ecological Reserve. The actions identified in this framework are necessary to complete a fire management plan for Crestridge. The fire management plan should be developed consistent with the Habitat Management Plan for the reserve. Development of the fire management plan is a high priority management action for 2002-2003.

The fire management plan for Crestridge should be developed and implemented within the context of the California Fire Plan (CDF 1996), Pre-Fire Management Plan for the San Diego Unit (CDF 2001), Natural Resources Protection Guidebook (Border Agency Fire Council 1998), and the Cooperative Fire Protection Agreement Operating Plan (CDF/CDFG 2001). These three plans define the objectives, assets at risk, implementation guidelines, and components of a fire management plan, as summarized below.

1. The California Fire Plan (CDF 1996) states that the overall goal of fire management planning is to "reduce total costs and losses from wildland fire in California by protecting assets at risk through focused pre-fire management prescriptions and increasing initial attack success." According to CDF, assets at risk include life and safety; air quality; rangeland; recreation on public wildlands; structures; timber; water and watersheds; wildlife, habitat, plants, and ecosystem health; and other resource assets, cultural and historic resources, and unique scenic areas.
2. The Pre-Fire Management Plan for the San Diego Unit (CDF 2001) outlines two strategies for implementation:
 - a. The plan identifies Communities at Risk for application of pre-fire programs, which may include chipping, hand clearing, pile burning, small-scale burns, community fuel breaks, and enhanced weed abatement programs. In the immediate vicinity of the Crestridge Ecological Reserve, Flinn Springs, Harbison Canyon, and La Cresta are identified as Communities at Risk.
 - b. The plan will use Vegetation Management Programs (VMP), large-scale burns, strategically placed remote fuel breaks, and improvements to fire defense to break up areas with old, decadent fuels that will readily support development of large fires. The goal of this strategy is to create a mosaic pattern of fuels that would prevent large fuel-driven fires.



3. The Cooperative Fire Protection Agreement Operating Plan (CDF/CDFG 2001) between CDF and CDFG outlines the procedures and special management considerations for fire protection on CDFG lands.

D.1 GENERAL OPERATING PROCEDURES

D.1.1 Contacts for Crestridge

The CDF will notify the CDFG of all known fires on or threatening the Crestridge Ecological Reserve. This notification will be via the Emergency Contact Center (ECC) to the CDFG. The Senior Biologist for the Land Management and Monitoring Program (currently Terri Stewart) at the CDFG is the primary contact person for wildland fires on the reserve, as well as road maintenance activities, fuel management, and prescribed burns. In the event of a wildfire, the CDFG Senior Biologist will be responsible for contacting the Back Country Land Trust (BCLT) reserve manager. See Attachment 1 for emergency contact numbers.

D.1.2 CDF Access and Conditions

The CDF is responsible for suppressing wildland fires at Crestridge and, where agreements exist, for maintaining fire access roads for both prevention and protection purposes. See Attachment 2 for CDF/CDFG Operating Plan. CDF will use all available access points to the reserve, as necessary, and thus will install CDF locks at all access locations. The following conditions apply to CDF's authorization to access the Crestridge Ecological Reserve during non-emergency situations:

- Every effort will be made to minimize impacts to threatened or endangered species and their habitats as a result of road maintenance, pre-fire treatment, or vegetation management activities (see Section D.5.3).
- CDF must verbally notify the CDFG's contact person (currently Terri Stewart) 48 hours prior to initiation of projects in the reserve involving mechanized equipment for land modifications (e.g., road maintenance, vegetation management). This condition applies to both CDF employees and CDF contractors.

D.1.3 Annual Inter-Agency Training

Once a fire management plan is developed for Crestridge, the CDFG, BCLT reserve manager, CDF, and local fire agencies will meet annually to review and update the plan, discuss new issues, exchange ideas for improving implementation, and identify priorities for the coming year. This annual review will include one or more site visits to evaluate current conditions on the reserve.



D.1.4 Community and Homeowner Education

Public Information Officers from the CDF, East County Fire Prevention/Protection District, other local fire agencies, and CDFG, in cooperation with BCLT, will work together on a community and homeowner education program. This program will include inspecting the defensible space of homeowners adjacent to the Crestridge Ecological Reserve. Every homeowner adjacent to the reserve is responsible for having an appropriate defensible space and a noncombustible roof, per the Bates Bill (Assembly Bill No. 337), which was approved in September 1992.

The defensible space must include a Fuel Modification Zone within a minimum of 100 ft of the structure to meet County of San Diego fire safety requirements (San Diego County Fire Chief's Association 1997). The defensible space may be greater than 100 ft (30 m) due to slope. For existing structures, the defensible space may encroach into the reserve if this requirement cannot be met on the homeowner's property. The County of San Diego would purport to design new planning applications so that fire clearance would not encroach into previously designated open space areas. The Fuel Modification Zone should consist of irrigated landscaping or drought-tolerant, preferably nonnative, fire resistant plants when on private property adjacent to the reserve (see Habitat Management and Monitoring Plan). Areas within 30 ft (9 m) of both sides of all access roadways should be included in the Fuel Modification Zone.

D.2 FIRE HISTORY AND FUEL TYPES

D.2.1 Fire History

Fire frequency, intensity, patch size, and season of fire determine the fire regime. These factors are important in developing a fire management plan. Burn data were obtained through the CDF burn history database (CDF 2000), which covers the period from 1940 to 2000. It is possible that additional fires occurred on the reserve during this time period but were not recorded. The burn history data provide boundaries of individual fire events and the year of the event. These data do not provide information on fire intensity or season; both factors can influence post-fire vegetation recovery.

Ten fire events have been recorded at Crestridge (Figure D-1). In general, fire frequency has been lowest in the east, highest in the west, and intermediate between the two in the central portion of the reserve. The most recent burns have occurred in the east-central portion of the reserve, followed by the northeast corner, the west and west-central area, then the eastern part of the reserve. The approximate acreages of these fires and their relative locations onsite are presented in Table D-1. Some areas have burned more than once.



D.2.2 Fuel Types

The vegetation community types on Crestridge are listed in Table D-2 and shown in Figure D-2. The majority of the reserve (92%) is covered by chaparral and coastal sage scrub, which are considered to have high fuel loads in the absence of recent fire.

Table D-1
Recorded Fire Events on Crestridge, 1910-2000

Date of Fire	Approximate Acres Burned Onsite	General Area of Reserve
1940	1,300	Central and eastern
1950	950	Central and western
1953	650	Western
1958	350	Western corner
1965	650	Western, excluding north-facing slope along north boundary
1970	1,550	Central and western (Laguna fire)
1973	<50	Northeast corner
1978	50	Near northeast corner
1986	750	East-central
1987	80	North-central

Source: CDF fire history data (CDF 2000).

Table D-2
Acreage on Crestridge by Vegetation Classification

Vegetation Classification	Acres
Coastal Sage Scrub	443.7
Southern Mixed Chaparral	1,757.8
Scrub Oak Chaparral	25.0
Nonnative (Annual) Grassland	14.8
Freshwater Seep	0.4
Coast Live Oak Riparian Woodland	7.9
Coast Live Oak Woodland	125.1
Eucalyptus Woodland	0.1
Disturbed Areas	11.8
Total	2,386.6

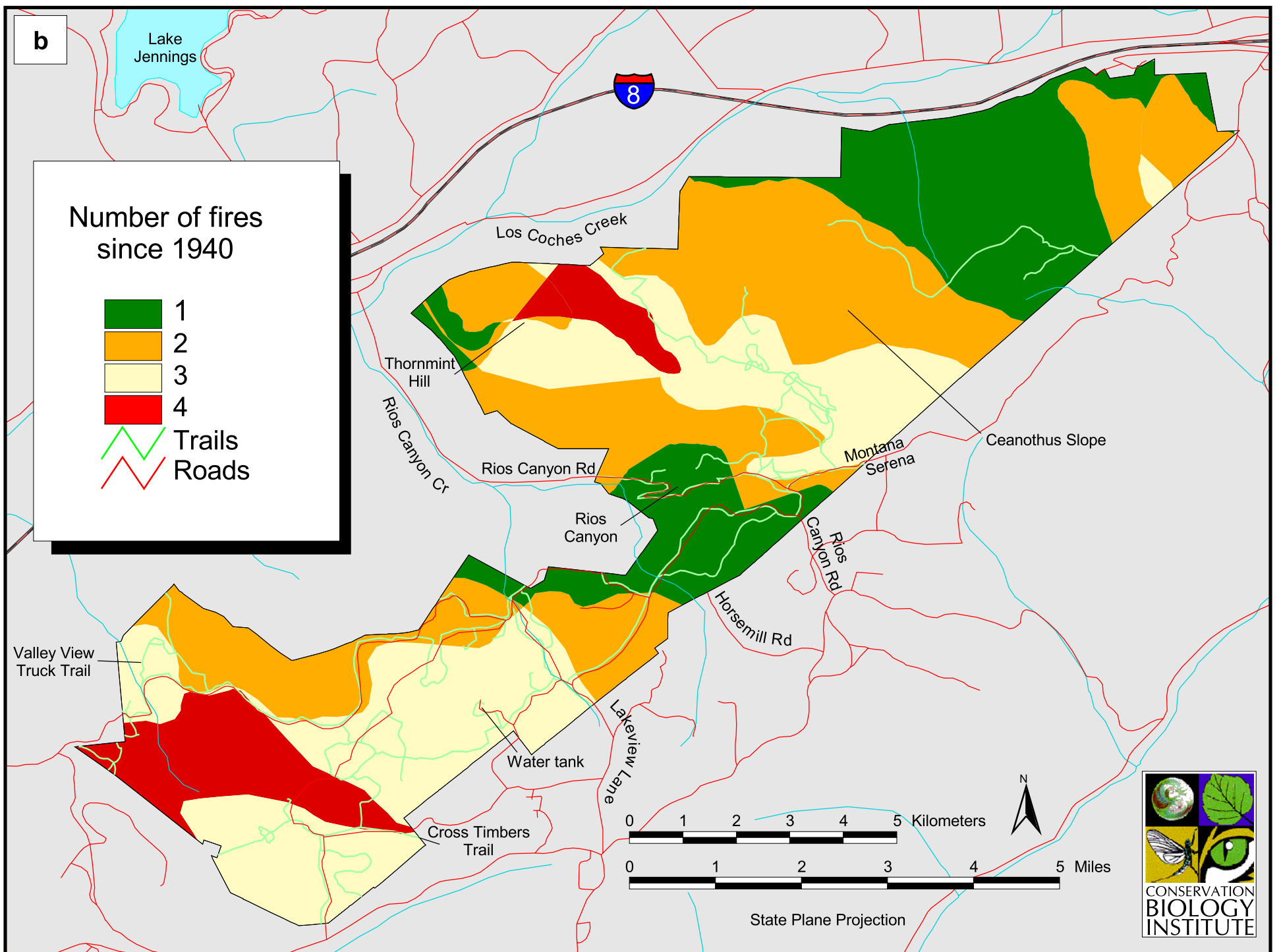
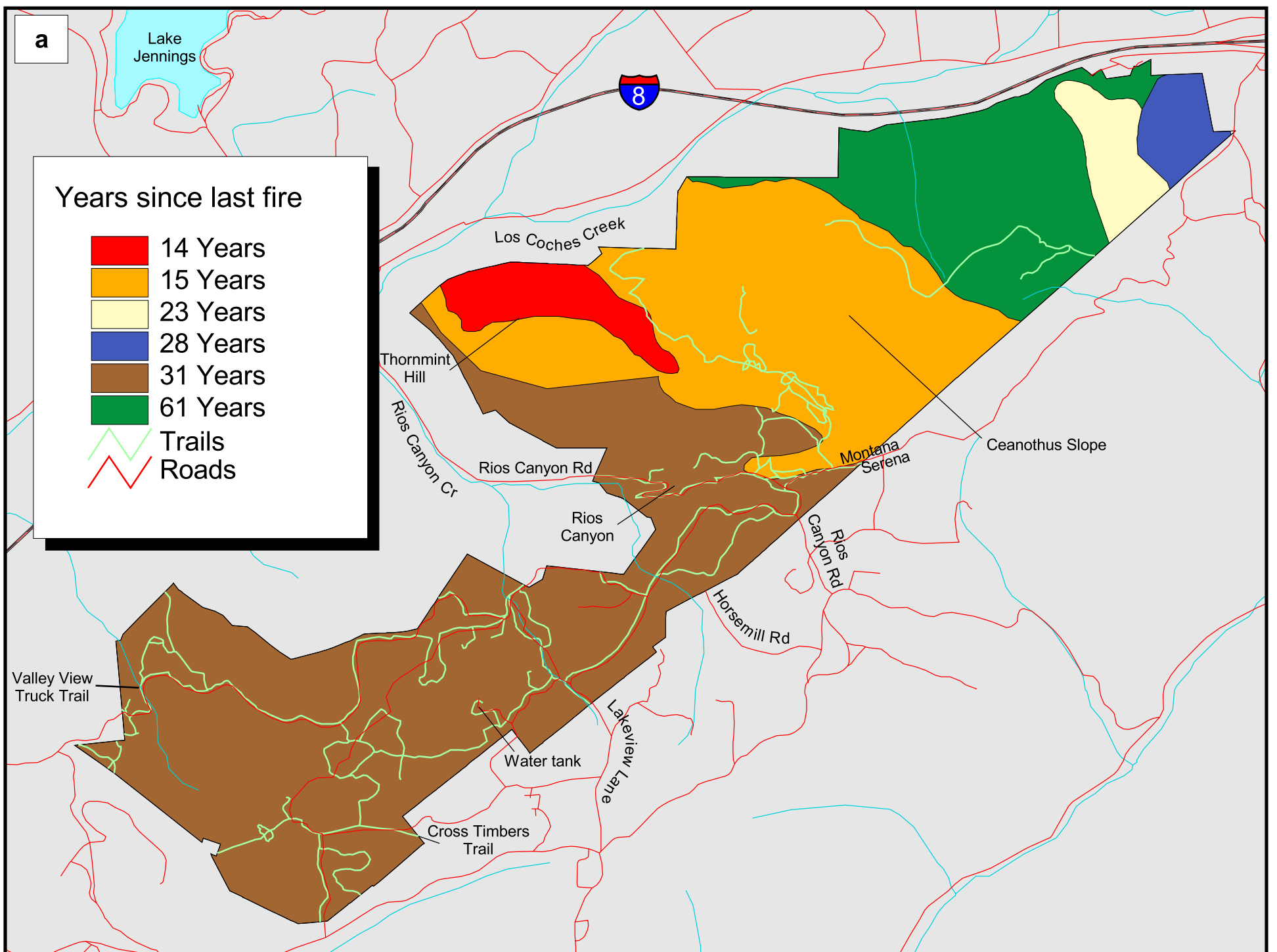


Figure D-1a and b. Fire History of Crestridge Ecological Reserve

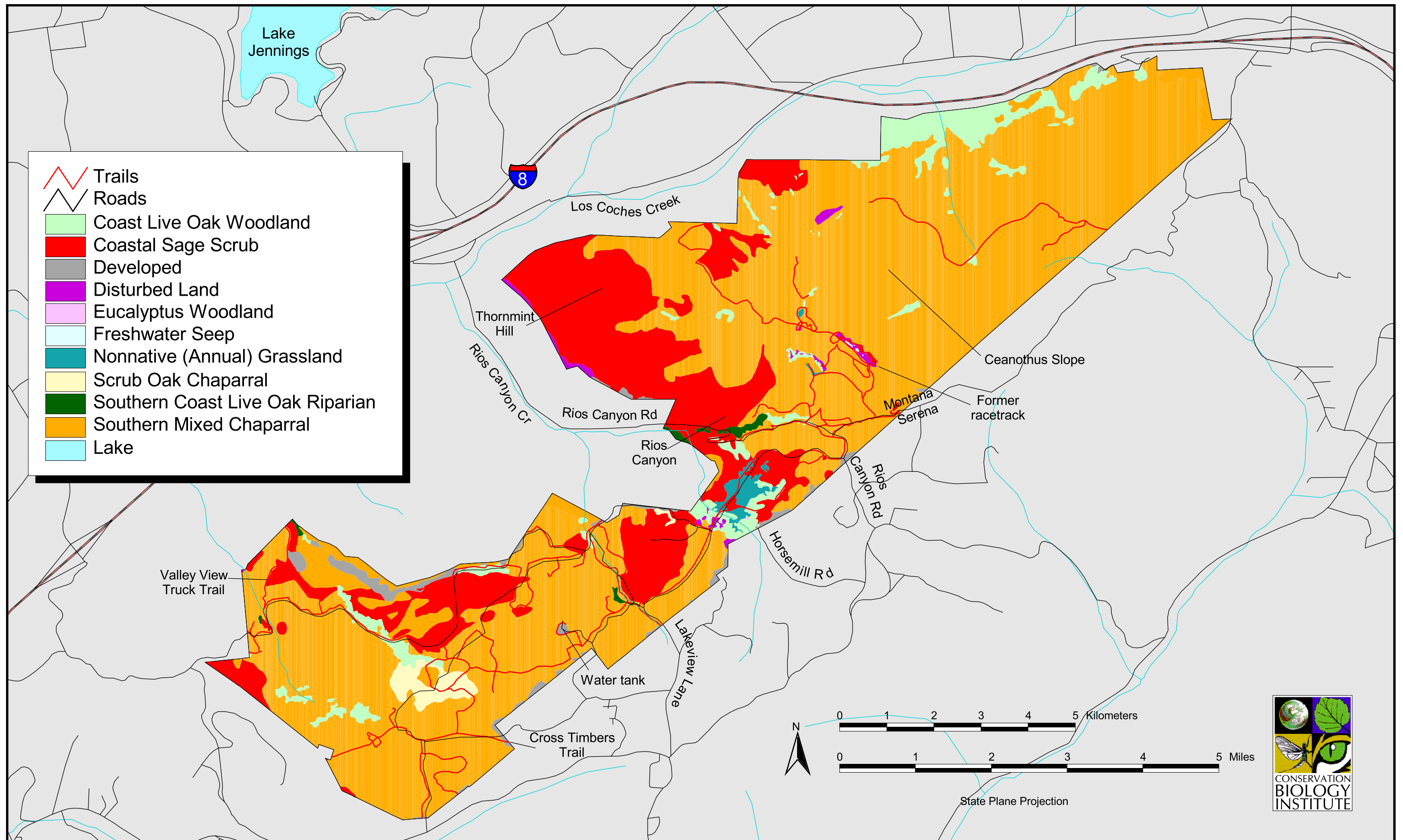


Figure D-2. Vegetation Communities of Crestridge Ecological Reserve



D.3 GENERAL FIRE MANAGEMENT GUIDELINES AND OBJECTIVES

The following objectives should guide development and implementation of a fire management plan for the Crestridge Ecological Reserve. The fire management plan should be consistent with the goals and objectives of the Habitat Management Plan for the reserve as well as the California Fire Plan, the San Diego Unit Pre-Fire Management Plan, and the CDF/CDFG Operating Plan. Wildland fire suppression priorities and pre-fire treatments for specific areas of the reserve are outlined in Sections D.4 and D.5, respectively.

D.3.1 Wildland Fire Suppression

The CDFG representative will be available onsite during a wildland fire to provide technical advice about ecological issues and to explore alternative fire suppression methods to minimize adverse impacts to biological and cultural resources. The CDFG representative will not interfere with fire suppression efforts to protect lives and real property. The following objectives are applicable during wildland fire suppression, except in instances of threat to life or real property.

1. Use fire suppression methods that cause the least amount of resource damage, commensurate with effective suppression based on threat (i.e., minimum impact suppression techniques). To this end, CDF will make use of existing roads and natural fuel breaks whenever possible, even when this strategy will result in more acreage being burned.
2. Avoid dropping retardant within 200 m of any riparian areas.
3. Avoid bulldozer and handline use in riparian areas. When deemed necessary, fire lines within riparian areas will be constructed as close as feasibly possible to a 90-degree angle to the riparian zone to minimize impact.
4. Avoid bulldozer use within 100 m of cultural resource sites and sensitive plant sites.
5. Avoid cutting of mature trees except when they pose a direct threat to fire line integrity or the safety of firefighters and the public.
6. Avoid piling vegetation trimmings in natural habitat areas. Rather, place them along roads or previously disturbed areas, or haul them offsite.

D.3.2 Pre-Fire Treatment and Vegetation Management

Implementation of fire management measures as specified in the Fire Management Plan must comply with all federal and state environmental regulations. This may require



preparation of environmental impact documentation (e.g., per the California Environmental Quality Act) and permit applications to satisfy air quality and visibility requirements (e.g., for prescribed burns), as appropriate. The following are general objectives for pre-fire treatment and vegetation management. Implementation of measures for specific areas of the reserve is discussed in Section D.5.

1. Develop and map Fire Management Units (FMU) for the reserve.
2. Develop specific objectives and fire management prescriptions for each FMU, targeting appropriate levels of vegetation cover and composition for specific vegetation communities, specific prescriptions for areas important to target species, and special prescriptions for disturbed areas and areas with exotic species. Also consider soil type (Figure D-3).
3. Avoid bulldozer use within 100 m of cultural resource sites and sensitive plant sites.
4. Avoid piling vegetation trimmings in natural habitat areas. Rather, place them along roads or previously disturbed areas, or haul them offsite.
5. Avoid use of prescribed fire during the breeding season for avian species onsite.
6. Conduct prescribed burns to simulate natural wildland fire effects on plant community types and seral stages, to protect habitat of targeted species, and to meet fire control objectives in high risk areas.
7. During prescribed burns or other vegetation management activities, leave isolated habitat areas to act as refugia for retreating wildlife. Control patch size burned and the availability of unburned islands to maximize reoccupation by plants and wildlife.
8. Prevent the catastrophic loss of oak trees due to excessive fuel accumulation.
9. Keep fire frequency at a level to maintain vegetative health, minimize loss of soil nutrients, and ensure regeneration of oak stands by favoring sapling recruitment. Conduct post-fire monitoring to determine what low or moderate fire frequencies or intensities favor sapling recruitment.
10. Whenever feasible, use prescribed fire timing, intensity, and frequency to control noxious weeds. Burns should be timed to kill the exotic plant seed before it gets into the seed bank (when it is still on the plant and not on the ground).
11. Reduce exotic grass cover in the annual grassland in the central part of the reserve in preference to native perennial grasses.

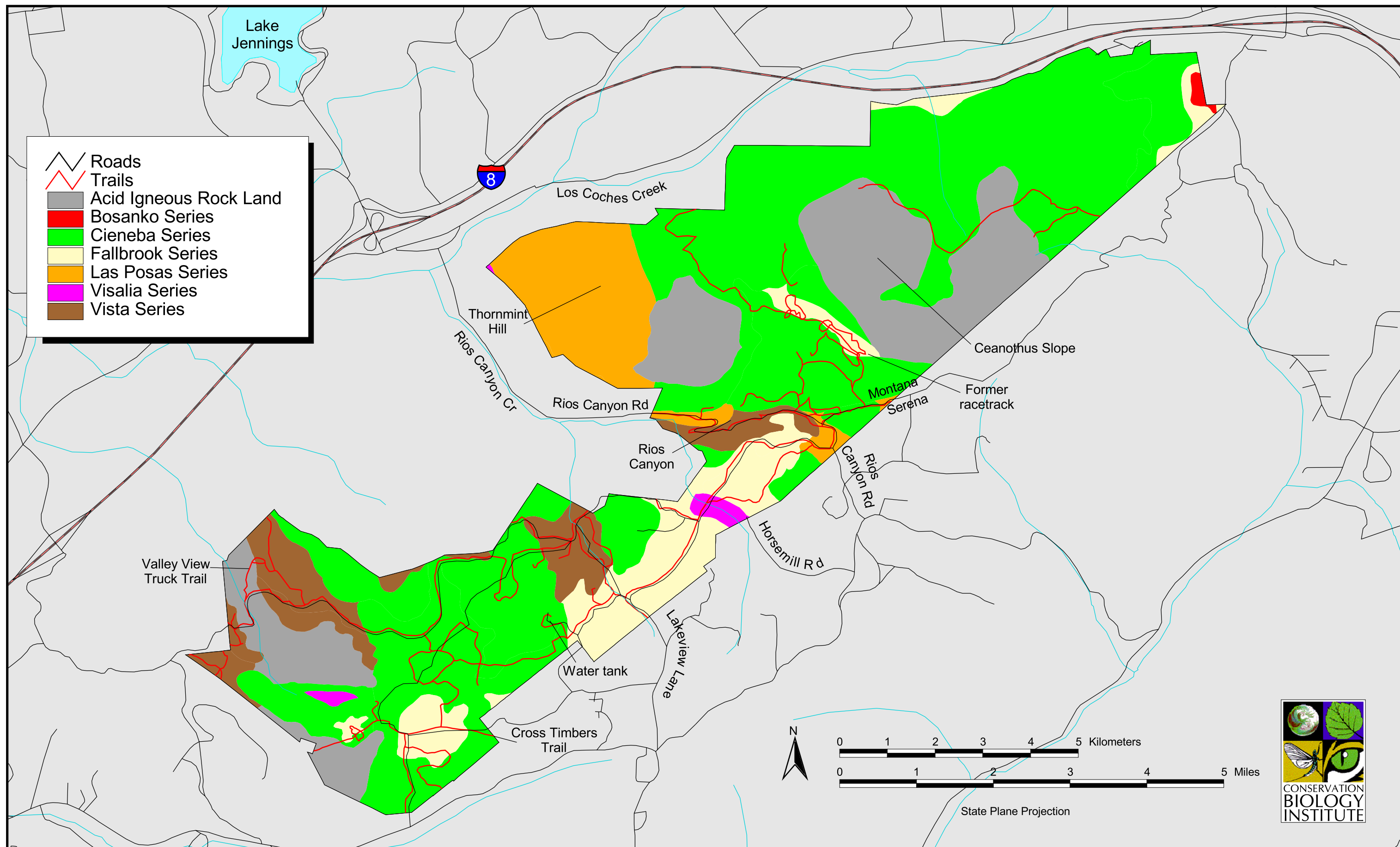


Figure D-3. Soil Types of Crestridge Ecological Reserve



D.4 WILDLAND FIRE SUPPRESSION

As the Crestridge Ecological Reserve is surrounded by residential areas, public safety is the priority fire issue at the reserve. The CDF strives to suppress all fires that threaten public safety, with the overall goal of reducing total wildfire costs and losses (CDF 1996). The California Fire Plan (CDF 1996) has five strategic objectives to meet this goal:

1. Create wildfire protection zones that reduce the risks to citizens and firefighters.
2. Assess all wildland fire service providers to determine who is responsible, who is responding, and who is paying for wildland fire emergencies.
3. Analyze alternatives to reduce total costs and losses by increasing fire protection system effectiveness.
4. Monitor the cost-effectiveness of the wildland fire protection system.
5. Translate the analyses into public policies.

Pre-fire treatment of the land, in the form of road maintenance, firebreaks, and fuel management, as well as enforcement of allowable land uses, will help to prevent fires at Crestridge (see Section D.5).

D.4.1 Fire Management Units

The CDF and CDFG, in cooperation, will map and describe individual Fire Management Units (FMU) at Crestridge (Table D-3). These have not yet been defined. The boundary of each FMU will be determined by its potential to contain a wildland fire, e.g., roads, trails, ridgetops, drainages, key vegetation community changes or breaks in fuel continuity, and other natural or physical barriers to wildland fire. Appropriate fire protection treatments will be defined for each FMU.

D.4.2 Fire Suppression Priorities

The fire suppression tactical priority is that all wildland fires occurring within a FMU should be contained to that specific FMU and not be allowed to encroach upon another FMU if possible. The CDF and CDFG, in cooperation, will identify the fire suppression priority for each FMU (Table D-4). See also the Natural Resources Protection Guidebook for Fire Management and Law Enforcement Officers (Border Agency Fire Council 1998) and the Wildland Fire Situation Analysis for examples of fire suppression priorities and pre-fire treatment measures.



Table D-3
Description of Fire Management Units (FMU) at Crestridge Ecological Reserve
(to be prepared by CDF and CDFG)

FMU	Acres	Vegetation Communities	Description

Table D-4
Fire Suppression Priorities and Pre-Fire Treatment at Crestridge Ecological Reserve, by Fire Management Unit (FMU)
(to be prepared by CDF and CDFG)

FMU	Acres	Vegetation Communities	Fire Suppression Priority ¹	Pre-Fire Treatment/ Vegetation Mgmt

¹Fire Suppression Priority:

Aggressive -- unit will receive immediate containment and control using all available resources.

Standard -- unit will receive a standard tactical fire response. The fire will not be allowed to escape or spread to an adjacent unit. Minimal disruption to natural resources.

D.4.3 Post-fire Remediation Activities

The CDFG, in cooperation with CDF and local fire agencies, will develop short-term (immediately post-fire) and long-term (revegetation and rehabilitation) strategies for mitigating impacts during wildland fire suppression so that there is no permanent loss of natural resource values. The strategies will adhere to the following guidelines:

1. Rehabilitate firelines and bladed areas disturbed by mechanical activity by ripping compacted swales, spreading bulldozer berms, installing water bars, mulching, making minor road repairs, or other appropriate activity.



2. Apply mulches that do not contain exotic plant material (use onsite material, if available).
3. Reshape the control line to match the natural contour of the land where there has been major disturbance. Maintain natural drainage patterns.
4. Revegetate along trails, if needed.
5. Identify hazard trees with flagging (trees that have been burned that are near hiking trails and pose a threat to public safety).
6. Remove all flagging, litter, and equipment.
7. Conduct a post-incident action analysis to benefit from lessons learned during wildfire suppression.

D.5 PRE-FIRE TREATMENT AND VEGETATION MANAGEMENT

Pre-fire treatment of habitats, in the form of road maintenance, firebreaks, and fuel management, as well as enforcement of allowable land uses, allows greater flexibility in avoiding impacts to sensitive habitats during wildland fire suppression. Pre-fire treatment also will help to prevent fires at Crestridge.

Prescribed burning is one method of managing fuel buildup, as long as it is performed in a manner that accounts for the fire frequency sensitivity of chaparral and coastal sage scrub species. Prescribed burning will be completed according to state requirements for the use of fire as a fuel reduction tool. Use of prescribed burns has the following objectives:

1. Reduce costs to the community and the state by breaking up fuel continuity that contributes to large conflagrations.
2. Simulate natural wildfire effects on plant community types and seral stages to protect habitat of targeted species and to meet fire control objectives in high risk areas. The need for fire to manage MSCP covered species has to be carefully determined. Fires that occur too often will have an adverse affect on many chaparral and coastal sage scrub species. Fire intervals under conditions of fire suppression may actually simulate natural fire frequencies.
3. Enhance wildlife habitat by fostering a patchy mosaic of successional stages and age classes on a regional scale. Patches that are too small may result in the loss of some species that require uniform habitat.



4. Reduce damage to watersheds due to erosion and downstream water quality deterioration caused by wildfires.
5. Reduce the hazardous effect of smoke on air quality during a wildfire.

The patchy mosaics created by fire management will lower the age classes of vegetation, thereby lessening fuel load and duff buildup. CDFG and CDF will prepare a table of areas proposed for use of prescribed fire (Table D-5). CDF plans to use fire management activities at Crestridge as a tool for use in public relations.

Table D-5
Prescribed Fire Schedule at Crestridge Ecological Reserve
(to be prepared by CDF and CDFG)

Unit	Acres	Vegetation Communities	Last Burn	Year	Season

D.5.1 Road Maintenance, Access Roads, and Staging Locations

The existing dirt roads within the reserve authorized, by written agreement, for CDF maintenance may include Rios Canyon Road, Valley View Truck Trail, Lakeview Lane, Cross Timbers Trail (formerly the Cornelius Truck Trail), and McClain Truck Trail. Maintenance includes grading the existing width of the road, repairing ruts and erosion gullies, and hand-clearing vegetation within 3 m of the existing road width. Cleared vegetation will either be hauled off the site, mulched onsite and used for revegetation, or burned onsite where appropriate.

The CDF and CDFG will prepare a map showing both onsite and offsite access roads and staging locations.

D.5.2 Fuelbreak Locations

The CDFG, in cooperation with CDF, will prepare a map showing existing and new fuelbreak locations.



Existing Fuelbreaks. The following existing roads may serve as effective fuelbreaks:

- Rios Canyon Road
- Valley View Truck Trail
- Lakeview Lane
- Cross Timbers Trail (formerly Cornelius Truck Trail)
- McClain Truck Trail.

New Fuelbreaks. The CDFG, in cooperation with CDF, will consider the following for establishing new fuelbreaks:

1. Develop a list of new fuelbreaks, e.g.,
 - a. Along south boundary of reserve, next to water tower (irregular fuel break).
 - b. North-south break at the narrow central area of the reserve to separate the reserve into east and west sections.
2. Flag sensitive biological and cultural resources that should be avoided along the fuelbreak.
3. Design the location of new fuelbreaks according to Best Management Practices to prevent soil erosion and nonpoint source pollution.
4. Where necessary, use water bars or other method to reduce the severity of water flow on fuelbreaks and thereby prevent soil erosion.
5. Unless other means of clearing are agreed to in writing by CDFG, clear fuelbreaks by hand. Cut and grub the vegetation and chip it or burn it onsite, or use it as mulch in revegetation or restoration efforts.
6. Along roads, e.g., at the bottom of the slope behind Rios Elementary School, mow herbaceous vegetation to a height of 0.3-0.5 m. Clean any equipment used to thin or clear vegetation prior to its use onsite to avoid introducing weed propagules.
7. Monitor the effectiveness of fuelbreak management techniques and adapt the least impacting methods accordingly.

D.5.3 Sensitive Areas to Be Avoided

During all management activities, the following sensitive areas will be identified on a map as areas to be avoided by heavy equipment. These areas also will be flagged in the field for conservation.

1. San Diego thornmint populations



2. Redberry plants
3. Cultural resources near the oak grove (and others, as identified)
4. Lakeside ceanothus

D.5.4 Fuel Treatment to Protect Biological Values

Fuel treatment methods to protect biological values are either by strategically placed fuelbreaks or prescribed fire units to break up the flammable vegetative fuels so that key biological resources can be safely protected from high intensity wildland fire. Recommended treatments within the reserve include hand-cutting and chipping or piling, mechanical crushing, prescribed fire, or a combination of all three treatments to reduce liability. CDFG and CDF will prepare a table of FMUs that will require some form of pre-fire treatment and vegetation management on the Crestridge Ecological Reserve to protect life and property (Table D-4).

D.5.5 Air Quality

Air pollution abatement affects the timing and feasibility of prescribed fire efforts. The San Diego Air Pollution Control District (APCD) requires smoke management planning to control this pollution source. The APCD requires a burning permit and smoke management plan that includes emissions reduction techniques and mitigation measures that identify the most favorable wind and weather conditions under which to conduct controlled burns.

D.5.6 Checklist for Prescribed Burns

The necessary steps prior to conducting a prescribed burn and the schedule for implementing the required steps are shown in Table D-6.

D.5.7 Post-fire Remediation Activities

The CDFG, in cooperation with CDF and local fire agencies, will develop short-term (immediately post-fire) and long-term (revegetation and rehabilitation) strategies for mitigating impacts during prescribed burns so that there is no permanent loss of natural resource values. The strategies will adhere to the following guidelines:

1. Rehabilitate firelines and bladed areas disturbed by mechanical activity by ripping compacted swales, spreading bulldozer berms, installing water bars, mulching, making minor road repairs, or other appropriate activity.
2. Apply mulches that do not contain exotic plant material (use onsite material, if available).



Table D-6
Planning Process Checklist for Prescribed Burn
(Timeline to be completed by CDF and CDFG)

Action Items 9-12 Months Before Burn	Date Completed
Select burn site that meets agency's goals.	
Sign up landowners.	
Conduct environmental review (wildlife, archaeology).	
Confer with USFWS.	
Confer with CDFG.	
Action Items 6-9 Months Before Burn	Date Completed
Develop burn plan and obtain burn permit.	
Develop contingency plans.	
Get burn plan approved by CDF.	
Construct hand lines or dozer lines around perimeters.	
Designate secondary control lines and safety zones.	
Contact SDG&E.	
Action Items 3-6 Months Before Burn	Date Completed
Develop list of required resources and volunteer help.	
Involve Information Officer.	
Develop smoke management plan.	
Obtain approval from APCD.	
Develop contact list for prescribed burn opportunities.	
Work with trainees to provide opportunities.	
Action Items 1-3 Months Before Burn	Date Completed
Set up portable weather station (MicroRAWS).	
Set up fuel stick.	
Take fuel moisture samples every 10 days (live and dead).	
Set up photo points and photograph before and after burn.	
Develop Incident Action Plan.	
Develop large briefing map.	
Do fire predictions calculations.	
Organize staff duties: phones, weather, biological, rovers.	
Designate landing zone for medical emergency.	
Complete handlines and interior edge preparation.	
Develop test burn site.	
Issue entry permits and gate keys.	
Determine public access closures.	
Identify radio and cell phone blind spots.	
Prepare fire behavior predictions.	
Conduct pre-burn vegetation transects.	
Survey for nesting birds within the unit.	



Table D-6
Planning Process Checklist for Prescribed Burn
(continued)

Action Items Last Week Before Burn	Date Completed
Send notifications to neighbors.	
Send press release to local media.	
Order radios from communication section.	
Complete ICS forms and briefing package (Incident Action Plan).	
Put Drop Point signs in place.	
Prepare drip torches, extra parts, and fuel.	
Prepare Prescribe Burn signs.	
Put portable toilets in place.	
Inventory burn cache.	
Establish placement for weather personnel.	
Establish placement for lookout personnel.	
Plan for fluids, food, and coffee.	
Phone neighbors day before and day of burn.	
Call APCD day before and day of burn.	
Fax copy of Incident Action Plan to Emergency Contact Center..	
Set up Check-in.	
Contact local fire agencies (done by ECC).	
Post Prescribe Burn signs.	
Conduct operational briefing.	
Organize staging area.	
Review Go-No Go checklist.	
Do test burn.	
Action Items After Burn	Date Completed
Do post-burn analysis and survey for dead animals.	
Do short report after burn: <ul style="list-style-type: none">• What we did• What we burned• How many acres• What didn't burn and why	
Conduct operational debriefing as a learning tool.	

Source: Orange County Fire Authority.



3. Reshape the control line to match the natural contour of the land where there has been major disturbance. Maintain natural drainage patterns.
4. Revegetate along trails, if needed.
5. Identify hazard trees with flagging (trees that have been burned that are near hiking trails and pose a threat to public safety).
6. Remove all flagging, litter, and equipment.
7. Conduct a post-burn action analysis to benefit from lessons learned during prescribed burns.

D.6 RESEARCH AND MONITORING

The fire management program must include a combination of research projects and long-term monitoring to better understand species and community responses to fire. Scientific research and monitoring are important to support adaptive management decision-making. Research and monitoring may include the following studies.

1. Evaluate the effectiveness of the buffer around wildlife habitat for wildfire and prescribed fire planning.
2. Conduct studies to help establish ecological/vegetation management and restoration objectives for each FMU.
3. Study the effects of fire intensity, timing, and return interval on stimulating or retarding the spread of nonnative plants.
4. Monitor post-fire erosion and habitat recovery as related to fire pattern and intensity, including monitoring community composition and compositional changes after fire and monitoring for the potential invasion of nonnative species.
5. Photograph prescribed burn areas and the recovery process to document response.
6. Implement fire mapping and record-keeping to support decision-making for resource management. Document prescribed fire costs by acreage and fuel-type for future planning.
7. Monitor fire behavior and smoke dispersal on all fires.
8. Study dormant seed banks to assess vegetation changes resulting from the interruption of natural fire regimes.



9. Study the effects of fire on water quality, such as turbidity and pH.
10. Establish post-fire recovery plots to identify new infestations of exotic weeds associated with fire.
11. Evaluate shrub age structure and cover before prescribed burns and for several years after the burn. This evaluation may be conducted through the establishment of permanent transects in each FMU.

D.7 REFERENCES

- Bates. 1992. Very high fire hazard severity zones. Assembly Bill No. 337.
- Border Agency Fire Council. 1998. Natural resources protection guidebook for fire management and law enforcement officers, San Diego County, California. Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Forest Service. 105 pp. June.
- California Department of Forestry and Fire Protection/California Department of Fish and Game. 2002. Cooperative fire protection agreement operating plan.
- California Department of Forestry and Fire Protection. 1996. California fire plan: a framework for minimizing costs and losses from wildland fires. March. 104 pp.
- California Department of Forestry and Fire Protection. 2001. San Diego Unit Pre-fire management plan.
- California Native Grass Association. 2000. Using prescribed fire for grassland restoration and vegetation management. A CNGA Training Workshop, Winters, CA. October 23-24.
- MCB Camp Pendleton Fire Planning Work Group. 1998. Wildland Fire Management Plan Update. Addendum to Camp Pendleton Multiple Land Use Management Plan. Prepared for Assistant Chief of Staff, Environmental Security under Contract No. N68711-95-7605/0020 with Southwest Division Naval Facilities Engineering Command. October.
- San Diego County Wildland/Urban Interface Task Force. 1997. San Diego County Fire Chief's Association wildland/urban interface development standards. Originally developed by the Orange County Wildland/Urban Interface Task Force Subcommittee on Open Space Management, July 1994.
- The Nature Conservancy. 2000. Draft ecological fire management plan for the Nature Reserve of Orange County. Prepared for Board of Directors, Nature Reserve of Orange County. 86 pp. August.



ATTACHMENT 1
EMERGENCY CONTACT NUMBERS
CRESTRIDGE ECOLOGICAL RESERVE

Contact	Cell Phone	Pager
Kelly Zombro, CDF	619.990.2007	619.290.7718
Thom Porter, CDF	619.851.0445	619.290.9526
Jim Barta, CDF	619.548.3739	619.290.7881
Emergency Communications Center	619.593.2271	
CDFG Senior Biologist (Terri Stewart)		
East County Fire Prevention/Protection District		
BCLT reserve manager*		

*Until an onsite reserve manager is assigned, Michael Beck will serve as the BCLT contact person.



ATTACHMENT 2 COOPERATIVE FIRE PROTECTION AGREEMENT OPERATING PLAN

(to be finalized by CDFG and CDF)



APPENDIX E

SEED COLLECTION, STORAGE, AND PROPAGATION PROTOCOLS



View from water tower
Photo by M.White



SEED COLLECTION, STORAGE, AND PROPAGATION PROTOCOLS

(excerpted from McMillan and CBI 2002)

E.1 SEED COLLECTION

Published recommendations for native seed collection vary considerably, especially concerning rare and endangered species (Emery 1988; Hartman and Kester 1997; Mortlock 1998). The following guidelines apply to collection of seed from San Diego thornmint and Lakeside ceanothus at Crestridge (see also Falk and Holsinger 1991).

Seeds of rare or endangered plants should be collected by a qualified biologist or under the supervision of a biologist with experience in seed maturation and seed collection. The timing of seed collection is very important, especially when seed is limited. Seeds should be collected after the fruit has ripened completely to ensure seed viability. In many species, ripening is quickly followed by seed loss and dispersal. There are a number of private seed collection and seed propagation companies in southern California, but these companies do not usually employ biologists to collect the seed.

The MSCP covered species are considered the most threatened plant taxa in southern California and northwest Baja California. The potential for seed storage, propagation, and reintroduction for all of the covered plant species is excellent. Most of these species have been cultivated from seed under greenhouse conditions and successfully established in revegetation projects in southern California. Those that have not been cultivated from seed appear to have good potential based on the cultivation of related species (Hanson pers. comm.).

San Diego thornmint populations could be adversely impacted by just a small amount of seed collection. Seeds of this species should be collected only if they are going to be used for restoration and enhancement of the population at Crestridge. The Crestridge population should not be revegetated with seed from another thornmint population.

If the thornmint population becomes extirpated at Crestridge, and a restoration plan is developed to restore the species, the seed should be collected from the most genetically related population. If genetic information is available at that time, then these data should be used to determine which population is most closely related. If genetic information is unavailable, it should be assumed that the closest geographic population (probably at El Capitan) is the most closely related. In some cases, there may be more than one population that is close geographically, and in this case, seed should be collected from all of the proximal populations.



To protect the genetics of each population, seed collection amounts should be conservative.

- Seeds should not be collected from more than 5% of the individuals at each population in any given year. If the population has less than 20 plants, then only a portion of the seeds on each plant should be collected. In this case, seeds should be partially collected from multiple individuals as opposed to collecting 100% of the seeds from one plant.
- When partially collecting seeds from plants, no more than 25% of the seeds on any individual should be collected.

If seed is partially collected from multiple plants, then the genetics will be maximized, while the impacts to the genetics of the entire population will be minimized. Multiyear collection of rare plant seeds increases the chance that seed collection will have negative impacts on the genetics of the plant populations. Therefore, seeds should not be collected over multiple years unless previous propagation and revegetation efforts have failed. In the case of failed propagation and revegetation efforts, seed should not be collected again until there is adequate proof that the propagation and revegetation programs have the potential for success. Propagation and revegetation programs should be revised to address the failure of seed production and seedling survival before any more seed collection is allowed.

Seed that is rare (such as the thornmint population at Crestridge) should be propagated under greenhouse conditions to maximize the collected seed. With greenhouse propagation and proper restoration and enhancement methods, multiyear collection can usually be avoided.

E.2 SEED STORAGE

Seeds can be stored for 1 to 3 years while restoration and enhancement is conducted on the reintroduction site. The seed can be used for propagation either onsite or in a greenhouse, to be reintroduced in later generations. The following guidelines should be used when establishing a short-term seed storage facility.

- Thoroughly dry the seeds to prevent mold and to insure reasonable longevity. Place fresh seeds in a warm (85°-100°F) dry place that is protected from dew for several weeks.
- Separate seeds with pulps as soon as possible by soaking in water overnight. Once the seeds have soaked, a sieve can be used to rub the fruit against to separate the pulp from the seeds.
- Clean the seeds of chaff (leaves, twigs, empty pods, etc.) before storage.



- Store seeds in envelopes or paper bags for optimum air circulation. Never store seeds in plastic bags or containers unless the seeds are completely dried.
- Label bags (species name, collector's name, date of collection, location of collection), and place in a sealed container with several crystals of moth larvicide for a couple of days to kill any seed-eating insects or their eggs.
- Keep the storage facility cool and dry, maintaining stable temperatures and humidity. Temperature should be kept at 50°-60°F with 50% humidity or less, and the facility should have adequate air circulation. Normal refrigeration will lengthen seed storage.

E.3 SEED PROPAGATION

Seed Treatment

The seeds of some plant species require special treatments to improve the ability to germinate. Based on the literature reviewed, none of the treatments discussed below has been used on any of the MSCP covered species. However, some of these treatments may prove beneficial in future germination attempts.

1. Scarification. Mechanical scarification may be required for some species to rupture the seed coat and allow for the initiation of seed germination (Stidhand et al. 1980). Scarification can be accomplished using sandpaper, a file, a pin, or a knife. Large seeds are easily scarified mechanically, while small seed may require hot water treatment (see below).
2. Hot water. For small to medium-sized seeds, hot water treatment can be more effective than scarification (Emery 1988). Water should be 180°-200°F, and the seeds should be left to cool and soak in the water for 12 to 24 hours. Seeds should be sowed after treatment and should not be stored again.
3. Charate. The char from burned plant stems and leaves has been shown to be good at neutralizing the germination inhibitors in seeds of several herbaceous species (Keeley and Keeley 1982; Horton and Kraebel 1955). Charate can be prepared by burning the stems of native woody plant species and then grinding the stems into a powder. This powder is then mixed with the seeds on the germination bed.
4. Fire. Some species have thick seed coats that are ruptured only for germination when subjected to the affects of fire (Went et al. 1952). Seeds should be sowed in a slightly moist bed with a layer of dry kindling on top. The kindling is burned, and once the seedbed cools, the bed should be watered thoroughly. Species of *Arctostaphylos* and *Ceanothus* have been shown to benefit from fire treatment (Keeley 1995).



5. Acid. Acid treatments can also be used to break down especially thick seed coats. Seeds can be placed in sulfuric acid (H_2SO_4) and soaked at room temperature for a period of a few minutes to several hours, depending on the species (Mirov 1945). The length of time required will vary from species to species (or between seed batches) and should be determined empirically. Following treatment, the seeds should be washed thoroughly before sowing. Acid treatment has been used to improve germination rates in species of *Ceanothus* (Quick and Quick 1961).
6. Mulch. Mulch treatment can often hasten the microbial breakdown or softening of the seed coat. This method is what often occurs in the wild and can be a much slower process (Emery 1988). Sown seeds should be covered with a thin layer (1"-2") of old composted shavings from native plant material and kept moist. After germination, the plants should be transplanted into the native habitat.
7. Water. For some species, the germination-inhibiting chemicals in the seed coat can be leached out by simply soaking the seeds in tap water for various lengths of time just prior to sowing. The length of time depends on the species, but changing the water every 12 to 24 hours will hasten the leaching process.
8. Cold Stratification. Cold stratification may be required with seeds that have internal dormancy because it helps to simulate cold winter conditions (Went et al. 1952). Cold stratification can be accomplished with a normal refrigerator at a temperature of 35°-41°F; with a few species, freezing the seeds at 28°-32°F is required. Seed must be kept moist during the treatment and should be checked often to determine if the seeds are starting to germinate. Depending on plant species, cold stratification can last from a few days to several months.
9. Photochemical Treatment. Some species have seeds that are light-sensitive and must receive light during germination. The intensity and duration of the light, as received by the seed's photoreceptors, interact with the available moisture and temperature to control germination (Cruden 1974). Photochemical dormancy is most pronounced in freshly harvested seeds and usually disappears over time. When germinating seeds indoors to break photochemical dormancy, use a cool, white fluorescent light source for 8 hours per day. Seeds that require light should not be covered when sown, but merely watered-in.

Seed Production in the Greenhouse

To minimize the impacts of seed collection on each of the rare plant populations, seed quantities should be increased using greenhouse propagation. The potential number of seeds per flower for thornmint is 4, and the potential number for ceanothus is 3.



However, the potential number of seeds per individual is more than 100 seeds per plant. But germination and survival rates in the wild are much lower than under controlled conditions in the lab or greenhouse. Pollination can usually be achieved in the greenhouse using native and non-native pollinators or hand pollination, resulting in high seed production under greenhouse conditions (Hanson pers. comm.). For most species, seed amounts can be exponentially increased in just a few generations without any additional impacts to the natural donor populations. A small amount of seed collected in 1 year can be turned into a large amount of seed in just a couple of years.

Seed Reintroduction

Before seeds are reintroduced, the habitat at the restoration or enhancement site should be prepared for sowing. Rare and endangered seed should not be sowed into habitat that is disturbed by weed invasion, off-road activity, grazing, or other disturbance factors. The areas for seed reintroduction should provide open viable soil with less than 5% weed cover. This will allow for high rates of germination and low rates of non-native plant competition. In some cases, native plant control will be required to provide adequate open habitat for the target rare plant species.

The field germination of sowed rare plant seeds can also be improved by hand-watering the sowed areas. Given the climate of southern California, rainfall can often be too unpredictable to insure high rates of germination and survival, and supplementary watering can improve this.

Perennial species such as ceanothus will benefit from germination and development under greenhouse conditions. Once the plants are healthy and established, they can be transplanted into the restored or enhanced native habitat.

E.4 REFERENCES

- Cruden, R.W. 1974. The adaptive nature of seed germination in *Nemophila menziesii*. *Aggr. Ecology* 55:1295-1305.
- Emery, D.E. 1988. *Seed Propagation of Native California Plants*. Santa Barbara Botanical Garden, Santa Barbara, CA.
- Falk, D.A. and K.E. Holsinger. 1991. *Genetics and Conservation of Rare Plants*. Center for Plant Conservation. Oxford University Press, New York, NY.
- Hanson, B. 2002. Personal communication with Bruce Hanson, Recon, on February 2.
- Hartman, H.T. and D.E. Kester. 1997. *Plant Propagation: Principles and Practices* (6th edition). Prentice Hall, Upper Saddle River, NJ.



-
- Horton, J.S. and C.J. Kraebel. 1955. Development of vegetation after fire in the chamise chaparral of Southern California. *Ecology* 36:244-262.
- Keeley, S.C. and J.E. Keeley. 1982. The role of allelopathy, heat, and charred wood on the germination of chaparral herbs. *Proceedings of Symposium on Dynamics and Management of Mediterranean-type Ecosystems*. USDA Forest Service General Technical Report PSW-58.
- Keeley, J.E. 1995. Seed germination and life history syndromes in the California chaparral. *Botanical Review* 57:81B116.
- McMillan, S. and Conservation Biology Institute (CBI). 2002. MSCP seed collection, storage, and propagation protocols. Appendix 4 in 2001 MSCP Rare Plant Survey and Monitoring Report. Prepared for the City of San Diego. February.
- Mirov, N.T. 1945. Additional data on collecting and propagating the seeds of California wild plants. USDA Forest Service, California Forest and Range Experiment Station, Forest Research Notes No. 21.
- Mortlock, W. 1998. Native seed storage for revegetation. Flora Bank Program, Australia. www.florabank.org.
- Quick, C.R. and A.S. Quick. 1961. Germination of *Ceanothus* seed. *Madroño* 16:23B30.
- Stidhand, N.D., R.M. Ahring, J. Powell, and P.L. Claypool. 1980. Chemical scarification, moist prechill, and thiourea effects on germination of 18 shrubs. *Journal of Range Management* 33:115-118.
- Went, F.W., G. Juhren, and M.C. Juhren. 1952. Fire and biotic factors affecting germination. *Ecology* 33:351-364.



APPENDIX F

MONITORING PROTOCOLS AND DATA FORMS



Coastal sage scrub west of Rios Canyon Road
Photo by M.Klein/C.Edwards

- F.1 Vegetation Community Mapping and Monitoring
- F.2 Rare Plant Monitoring
- F.3 Invertebrate Data Form
- F.4 Upland Reptile Species Diversity Monitoring
- F.5 Bird Community Point Counts
- F.6 MSCP Covered Species Compliance Actions



APPENDIX F.1

VEGETATION COMMUNITY MAPPING AND MONITORING

Vegetation communities should be monitored to provide information for identifying and prioritizing management actions, tracking the response of communities to management actions, assessing systematic vegetation community patterns that may be an expression of human-induced stresses, and evaluating vegetation patterns that may help explain observed distributions and abundance of wildlife species.

Vegetation community monitoring data will be used to evaluate the following questions:

1. What is the distribution of vegetation communities, seral phases, and levels of disturbance, and how do these change over time?
2. How are changes in vegetation communities related to changes in distributions of sensitive species?

At 5-year intervals, the reserve manager should refine the Crestridge vegetation map to show changes in the boundaries or attributes of vegetation community polygons. It may be desirable to refine maps more frequently if vegetation community changes occur more frequently (e.g., by fire or recreational activities). Vegetation map updates should be on the following schedule: 2005, 2010, 2015, 2020, etc.

The objectives of refining the vegetation community mapping every 5 years are to:

1. Document changes in the distribution or characteristics of habitats that may trigger reserve management actions.
2. Document changes in habitats that may correlate with factors such as reserve configuration, adjacent land uses, fire, etc.

The reserve manager should utilize the most recent suitable imagery to refine the map (e.g., color infrared photography from the SANDAG consortium in 2005). Unless the wildlife agencies have recommended a different classification system, the modified Holland classification should be used. Automated change detection analyses using digital imagery may be helpful in updating vegetation maps and monitoring habitat changes.

In addition to mapping vegetation community polygons, the reserve manager will describe relevant attributes for each polygon, such as the dominant species for each area, the health or condition of the patch, and the general level of disturbance (e.g., percent composition of invasive species, percent of bare ground caused by trails or off-road vehicles, evidence of grazing or tilling, etc.--see field form). The purpose of the community classification and mapping is to develop not just a map of communities but also a map of community features that are relevant for habitat management activities.



Observer:_____.

Date:_____.

Polygon#:_____.

Veg Community:

Dominant native species (% cover):

Non-native species composition (% cover):

Disturbance factors and intensity:

Sensitive species observed or potential:

Comments:

Polygon#:_____.

Veg Community:

Dominant native species (% cover):

Non-native species composition (% cover):

Disturbance factors and intensity:

Sensitive species observed or potential:

Comments:



APPENDIX F.2

RARE PLANT MONITORING

Two types of monitoring programs are recommended for different species of rare plants on Crestridge (Section 5.2): presence/absence and population trends. Both types involve assessing condition and health of the population to inform management decisions.

Presence/absence Monitoring

Periodic (at least annually) monitoring of the locations supporting San Diego sagewort, Palmer's grappling hook, Ramona horkelia, and Engelmann oak is an integral part of habitat management at Crestridge. This monitoring should include the following components:

1. Is the population being avoided by recreational land uses?
2. Have management actions been effective in maintaining or enhancing the population?
3. What is the condition or health of the population? For example, note the level of disturbance, degree of recruitment, abundance of exotics, etc.

Monitoring Status and Trends of Annual Herbaceous Species

Monitoring of San Diego thornmint and Cleveland's golden star (if present) at Crestridge should be structured to address the following questions:

1. What are the status and trends of these species?
2. What are the site conditions that may influence spatial patterns in the population dynamics of these species?

A meaningful monitoring objective for annual herbaceous species is to assess changes in density of the individuals in the population. Density provides a useful metric for management purposes, in that it can be directly related to changes in non-native plant cover. Total population size can be projected from density estimates, if the area occupied by the population is known. In addition, sampling effort can be allocated to obtain reasonable confidence intervals about density estimates that will allow temporal changes or spatial differences to be compared statistically with known power.

This protocol is a variation of the methods described in the MSCP Biological Monitoring Plan (Ogden 1996) and is recommended for use in monitoring San Diego thornmint and Cleveland's golden star (if present) at Crestridge. This protocol uses the relevé quadrat survey method (Braun-Blanquet 1932) and has been used in monitoring conducted by Scott McMillan for the City of San Diego (McMillan and CBI 2002). This monitoring should be conducted annually at Crestridge.



Determine the number of quadrats by the population size and distribution of the population. Distribute quadrat plots across the observed range of rare plant densities at each locality (i.e., stratified sampling based on visual estimates of density). Place quadrats in areas with low, medium, and high densities of the target rare plant species and at varied distances from the center of the population.

Quadrats should not be permanently marked but rather should be redistributed throughout the population each monitoring period. Reallocating sampling units each monitoring period will provide an assessment of the change in the average condition of the area from one sampling period to the next, instead of the change in condition of the fixed quadrat locations. In addition, permanent quadrats can result in more foot traffic disturbance from repeated visits in the monitored areas, thus contributing to an increase in non-native plant cover. It is likely that the results of monitoring permanent quadrat locations would be influenced by the repeated presence of the field investigator, rather than changes associated with natural variability or other stresses.

Recommended quadrat size for these species is 1 m². In each quadrat, count the number of rare plant species, and estimate the percent cover of native and non-native species. In very small populations, all individuals should be counted and the quadrats can be used to estimate native and non-native cover. This approach allows the density of the target plant species and the average cover of native and non-native species to be estimated for the monitored population.

In addition to counting numbers of individuals of a rare plant species, estimate percent of individuals in vegetation, flower, and fruit for each quadrat. Also record the slope and slope aspect (slope direction) for each quadrat, and the percent native cover, non-native cover, and bare ground. Describe the habitat surrounding the population, noting specific management problems and disturbances.

Flag the monitored populations in the field, and map the perimeter of each population using a GPS (Global Positioning System) unit for better geographic accuracy and improved relocation of each population. Knowing the exact boundary of each population will make it easier to detect changes in the size and shape of the population. This will also allow calculation of the total area for each population which, in combination with knowing the plant densities, will allow for a more accurate estimate of the total population size.

Monitoring Status and Trends of Shrub Species

Lakeside ceanothus should be monitored annually to address the following questions:

1. Is the population being avoided by recreational land uses?
2. Have management actions been effective in maintaining or enhancing the population?
3. What is the condition or health of the population? For example, note the level of disturbance, degree of recruitment, abundance of exotics, etc.



In addition, the estimated cover extent of Lakeside ceanothus should be assessed every 5 years as part of the vegetation community mapping updates (see Appendix F.1). This involves calculating changes in areal extent of the population based on delineation of the population boundary.

APPENDIX F.2

RARE PLANT DENSITY MONITORING DATA FORM

General Locality:

Surveyors:

Species:

USGS Quad:

Date

QUAD (1 sq.m)	1	2	3	4	5	6	7	mean
Count								
% Flowering								
% Fruiting								
% Vegetative								
Slope								
Aspect								
% Native Cover								
% Nonnative Cover								
% Bare Ground								
Soil Types								
Dominants								
Associates								
Notes on habitat quality:								
Notes on disturbances:								
Other management issues:								

Appendix F.3

Invertebrate Data Form

Date of Observation:	Name of Observer:
<div style="display: flex; justify-content: space-around; align-items: center;"> MM DD YY </div>	

Weather Conditions:	Circle One				
	Clear	Partly Cloudy	Overcast	Drizzle/Rain	
Temp: F(arenheit) or C(elcius)					
Wind: (direction and speed MPH or KTS)					

Species Common Name:
Species Scientific Name:

Location Information:

County: _____ City / Community: _____

Quad Map Name: T ____ R ____ 1/4 of Section ____ T ____ R ____ 1/4 of Section ____

Elevation: _____ Lat / Long _____

[illegible][illegible]



APPENDIX F.4

UPLAND REPTILE SPECIES DIVERSITY MONITORING

Upland reptile species diversity will continue to be monitored on the west slope of Thornmint Hill, at the sites established by the USGS in 2000. The site will be monitored every other year, or at a frequency determined appropriate after further USGS data analysis of census results. Monitoring will address the following question:

What are the status and trends of the herpetofauna species at Thornmint Hill?

A minimum of five pit fall arrays will be monitored. Arrays will be opened for a minimum 5-day interval and checked daily. One 10-day sampling period or two 5-day sampling periods will occur in May/June, and one 5-day sampling period will occur in August/September. All data will be collected on standardized forms (see following data forms).

F.4-1 Herpetofauna Data Sheet

Date _____	Date _____	Date _____	Date _____
Site Name _____	Site Name _____	Site Name _____	Site Name _____
Array Number _____	Array Number _____	Array Number _____	Array Number _____
Bucket Number _____	Bucket Number _____	Bucket Number _____	Bucket Number _____
Snake Trap # _____	Snake Trap # _____	Snake Trap # _____	Snake Trap # _____
Species _____	Species _____	Species _____	Species _____
Sex M / F / A / J / ?	Sex M / F / A / J / ?	Sex M / F / A / J / ?	Sex M / F / A / J / ?
Wt (gms.) _____	Wt (gms.) _____	Wt (gms.) _____	Wt (gms.) _____
Length (mm/cm) _____	Length (mm/cm) _____	Length (mm/cm) _____	Length (mm/cm) _____
Marks _____	Marks _____	Marks _____	Marks _____
Toeclip number _____	Toeclip number _____	Toeclip number _____	Toeclip number _____
Recap? yes / no / ?	Recap? yes / no / ?	Recap? yes / no / ?	Recap? yes / no / ?
Collector _____	Collector _____	Collector _____	Collector _____
Disposition released / dead/ escaped	Disposition released / dead/ escaped	Disposition released / dead/ escaped	Disposition released / de escaped
<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>

Date _____	Date _____	Date _____	Date _____
Site Name _____	Site Name _____	Site Name _____	Site Name _____
Array Number _____	Array Number _____	Array Number _____	Array Number _____
Bucket Number _____	Bucket Number _____	Bucket Number _____	Bucket Number _____
Snake Trap # _____	Snake Trap # _____	Snake Trap # _____	Snake Trap # _____
Species _____	Species _____	Species _____	Species _____
Sex M / F / A / J / ?	Sex M / F / A / J / ?	Sex M / F / A / J / ?	Sex M / F / A / J / ?
Wt (gms.) _____	Wt (gms.) _____	Wt (gms.) _____	Wt (gms.) _____
Length (mm/cm) _____	Length (mm/cm) _____	Length (mm/cm) _____	Length (mm/cm) _____
Marks _____	Marks _____	Marks _____	Marks _____
Toeclip number _____	Toeclip number _____	Toeclip number _____	Toeclip number _____
Recap? yes / no / ?	Recap? yes / no / ?	Recap? yes / no / ?	Recap? yes / no / ?
Collector _____	Collector _____	Collector _____	Collector _____
Disposition released / dead/ escaped	Disposition released / dead/ escaped	Disposition released / dead/ escaped	Disposition released / de escaped
<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>	<div>Tissue sampl yes / no</div>

F.4-2 Herpetofauna Vegetation Sheet

Site Name: _____ Caller: _____ Recorder: _____
 Array #: _____ Location: _____
 Slope: (N-S) _____ (E-W) _____ Loc. Date: _____ Trans. Date _____

Incidentals:

N	Canopy Height (m)	Tree	Tree	Shrub	Species Shrub	Shrub	Species Herb	Species Herb	Species Herb	Substrate	Leaf litter height(cm)
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											

F.4-2 Herpetofauna Vegetation Sheet

Site Name: _____ Caller: _____ Recorder: _____
 Array #: _____ Location: _____
 Slope:(N-S) _____ (E-W) _____ Loc. Date: _____ Trans. Date _____

Incidentals:

N	Canopy Height (m)	Tree	Tree	Shrub	Species Shrub	Shrub	Species Herb	Species Herb	Species Herb	Substrate	Leaf litter height(cm)
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											
61											
62											
63											
64											
65											
66											
67											
68											
69											
70											
71											
72											
73											
74											
75											
76											
77											
78											
79											
80											
81											
82											
83											
84											
85											
86											
87											
88											
89											
90											
91											
92											
93											
94											
95											
96											
97											
98											
99											
100											



APPENDIX F.5

BIRD COMMUNITY POINT COUNTS

Bird community monitoring will address the following question, using point counts:

What are the status and trends of bird species along two census routes in the reserve?

Claude Edwards conducted point count monitoring along two census routes (western and central) at Crestridge during 2001 (Figure F.5). Data from these censuses have been provided to CDFG. Point counts along these two routes should continue annually, according to the methods described in Ralph et al. (1993). Each route consists of ten census points situated approximately 255 m (850 ft) apart. These census points should be flagged, recorded on a GPS unit, and mapped. Point counts require the observer to record all the birds seen or heard within 50 m of a fixed point, within a given period of time, and to describe the vegetation at each census point (see data forms). The observer should be skilled in identification, including a knowledge of the songs and calls of birds.

Western Route

BEGIN: The trail north from Cross Timbers Trail, west of the end of La Cresta Heights Road.

END: Along Valley View Truck Trail, about 40 ft east of a metal powerline tower.

Point #1 At the junction of Cross Timbers Trail and the dirt trail proceeding to the north. Southern mixed chaparral.

Point #2 On the trail beside an oak shrub at right, below a left bend beyond the first bend. Southern mixed chaparral.

Point #3 Approximately 15 ft west of the second merging of two trails. Scrub oak chaparral.

Point #4 Approximately 75 ft east of the right bend approaching the oak woodland. Southern mixed chaparral, scrub oak chaparral, live oak woodland.

Point #5 At the intersection of the dirt trail and Valley View Truck Trail. Southern mixed chaparral, coastal sage scrub.

Point #6 To the west along Valley View Truck Trail, at a canyon at right beside a large boulder. Southern mixed chaparral, coastal sage scrub.

Point #7 Beyond the oak woodland, beside three young oaks at left and low rocks at right. Southern mixed chaparral, live oak woodland.



- Point #8 Further west just past a distinct left bend, beside several rocks at right. Southern mixed chaparral.
- Point #9 At a slight right bend past the second left bend beyond the side trail heading northwest, beside old wood and metal fenceposts. Southern mixed chaparral.
- Point #10 Approximately 40 ft east of the metal powerline tower along Valley View Truck Trail. Southern mixed chaparral.

Central Route

- BEGIN Along Rios Canyon Truck Trail beside an oak at the trail to the former racetrack area.
- END Along a trail south and west of the bend along Lakeview Lane, south of a drainage.
- Point #1 Rios Canyon Truck Trail at an oak tree next to the trail north to the former racetrack area. Southern mixed chaparral.
- Point #2 Around the bend of the trail to the left, returning toward the Rios Canyon Road gate. Southern mixed chaparral, disturbed.
- Point #3 On the trail to the west of the Rios Canyon Road gate, beside a laurel sumac bush to the right, about 30 ft before an oak to the left. Southern mixed chaparral.
- Point #4 Along an abandoned road/trail northeast of the warden's residence, within laurel sumac bushes at a left bend, before a right bend and a steeper descending section. Coastal sage scrub.
- Point #5 Along the abandoned road/trail, approximately 50 ft south of an old fenceline. Coastal sage scrub, open coast live oak woodland.
- Point #6 Within low sage scrub surrounded by grassland, about 35 ft west of a left bend, east of the warden's access road and outside of the oak grove. Nonnative grassland, coastal sage scrub, and coast live oak woodland.
- Point #7 At the west edge of the oak grove, between the two old rock and mortar gate columns. Southern mixed chaparral.
- Point #8 Lakeview Lane, about 175 ft past rock outcrops and about 175 ft below a eucalyptus tree. Southern mixed chaparral, coastal sage scrub.
- Point #9 Along Lakeview Lane, approximately 150 ft northeast of a 3-trunked oak and about 50 ft away from a semi-hidden large boulder in the vegetation, both to the right. Southern mixed chaparral, coastal sage scrub.



Point #10 On the narrow trail south of the side trail west of the bend along Lakeview Lane, at an overgrown trail to the right, approximately 50 ft south of a drainage with eucalyptus. Southern mixed chaparral, riparian.

Reference

Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, D.F. DeSante. 1993. Handbook of field methods for monitoring landbirds. USDA Forest Service, Pacific Southwest Research Station. General Technical Report PSW-GTR-144. 41 pp.

pg. _____ of _____

--	--

--	--	--	--	--	--	--

--	--	--	--

--	--

--	--

--	--	--	--

Year

Observer:	Point coordinates:
-----------	--------------------

[illegible]

ENTERED PROOFED

F.5-2 POINT COUNT VEGETATION FORM

Point #: _____ **Date: /01** _____ **Collector:** _____ **Photo #:** _____
Plot Radius: 100m **Substrate:** _____
Water: standing? Y or N running? Y or N
Aspect: _____ **Slope:** % _____
Road: Y or N **Road Width:** m _____ **% Road:** % _____ **Road Type:** paved / dirt / gravel

	Trees/ Shrubs	Herb/ Grass	Lawn	Build.	Pave.	Dirt/ Rock	Water
General % Cover:							

	Chap	CSS	Grass	Oak	Rip	Ag	Urban
Habitat % Cover:							
Dominant Species:							
Native % Cover:							
Maximum Veg Height (m):							

Type of Urban:
 Low Resid.
 High Resid.
 Rural Resid.
 Bus./Shop.
 Indust.
 Other _____

Adjacent Land Use: _____
Comments: _____

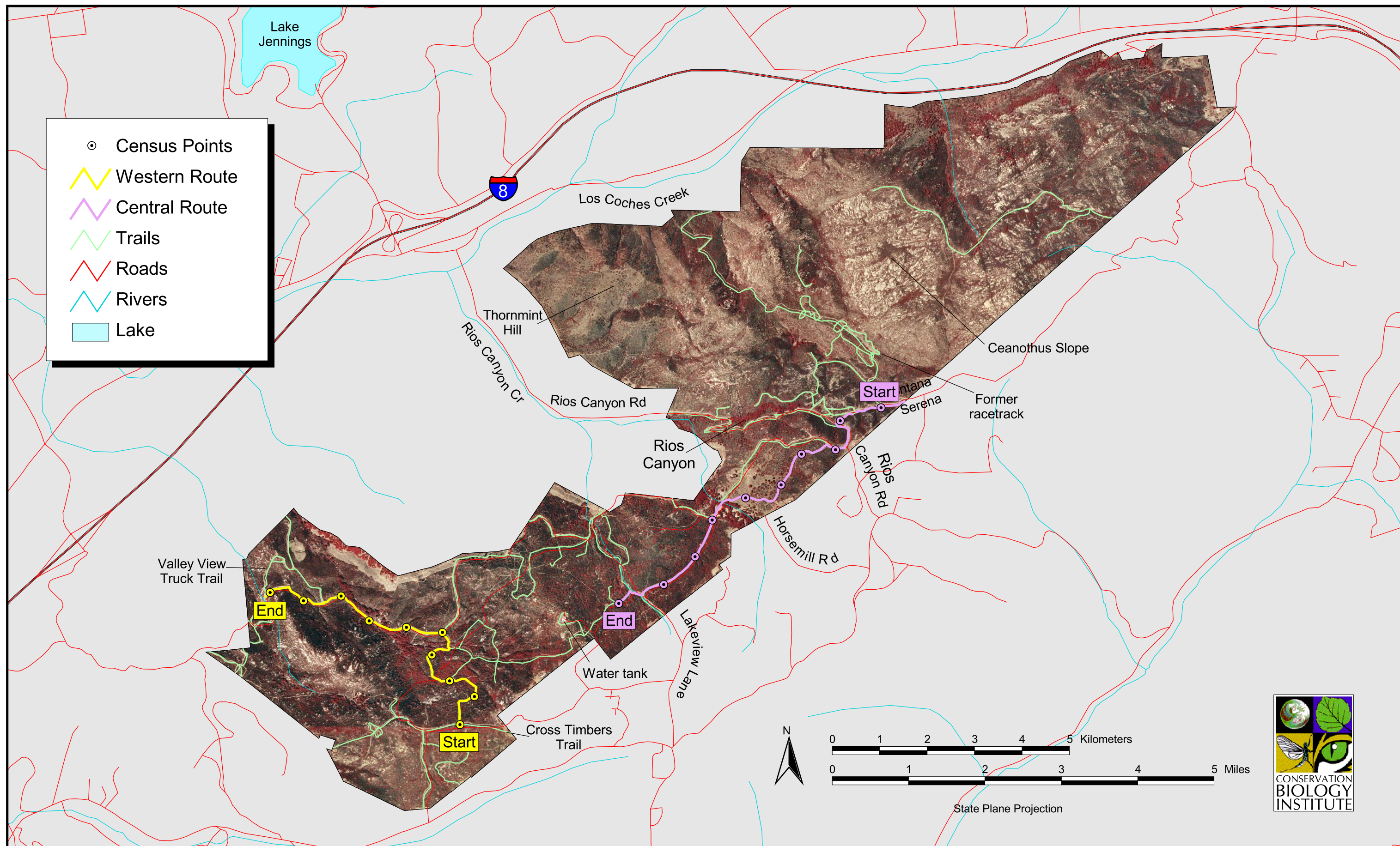


Figure F-5 Bird Census Routes at the Crestridge Ecological Reserve



APPENDIX F.6

MSCP COVERED SPECIES* COMPLIANCE ACTIONS

Year 2002

Take Authorization Holder: County of San Diego

San Diego Thornmint

Acanthomintha ilicifolia

(narrow endemic, County Group A)

Major Populations: Sycamore Canyon, South Poway (P-13), 4S Ranch (P-2), El Capitan, Alpine, Otay Lakes, Sky Mesa Ranch, Asphalt Inc., McGinty Mtn (P-17), Jamul Mtns West (P-30)

Other Populations: (other populations not listed as major populations in the Standards and Guidelines or Table 3-5)

Avoidance Requirements: Subarea plans must specify measures to ensure that impacts to narrow endemic species are avoided to the maximum extent practicable.

Management Requirements: Baseline surveys. Area-specific management directives for preserve areas must include specific guidelines for managing edge effects. Edge effects may include (but are not limited to) trampling, dumping, vehicular traffic, competition with invasive species, parasitism by cowbirds, predation by domestic animals, noise, collecting, recreational activities, and other human intrusion. Refer to area-specific management directives.

Monitoring Requirements: Annual site-specific monitoring of health and condition at all preserve areas supporting the species. Quantitative population monitoring required at P-2, P-13, P-17, and P-30.

Take authorization holders to fill in information below and attach pertinent reports on management and monitoring:

1. Conserved Location: Crestridge Ecological Reserve

Avoidance Actions Implemented: (e.g., no impact to population, or closed trail to avoid population, etc.)

Management Actions and Date Implemented: (list actions and date implemented)

Monitoring Actions and Date Implemented: (list actions and date implemented)

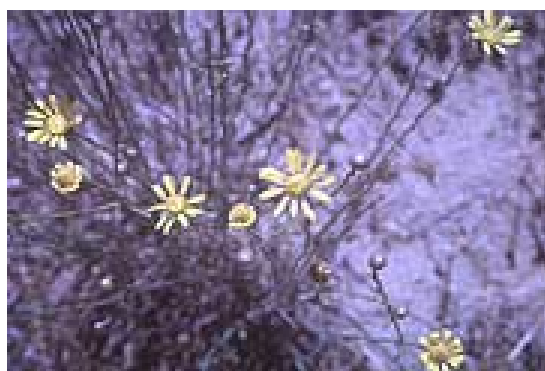
Condition/Health of Population: (describe level of disturbance, degree of recruitment, condition/health of population, abundance of exotics, etc.)

* Only for covered species with site-specific permit conditions.



APPENDIX G

PROPERTY ANALYSIS RECORD (PAR)



Rush-like Bristleweed *Machaeranthera juncea*
Photo by M.Klein/C.Edwards

Note: only relevant pages from the PAR computer data sheets are included.



PROPERTY ANALYSIS RECORD

Prepared by Center for Natural Lands Management
February 20, 2000

Scenario 1 CNLM as manager and holder of endowment (5% capitalization rate)

Funding Requirements		Costs
Initial and Capital Costs		\$274,878
Held in Trust (Endowment)		\$2,490,120
Total Contribution		\$2,764,998
Funding Breakdown		Costs
Annual endowment earnings available after inflation for management (5% capitalization rate)		\$124,506
Annual stewardship on a per acre basis (current dollars)		\$52

Scenario 2 CDFG as manager and holder of endowment (2.5% capitalization rate)

Funding Requirements		Costs
Initial and Capital Costs		\$205,642
Held in Trust (Endowment)		\$4,894,720
Total Contribution		\$5,100,362
Funding Breakdown		Costs
Annual endowment earnings available after inflation for management (2.5% capitalization rate)		\$122,368
Annual stewardship on a per acre basis (current dollars)		\$52

SUMMARY

PROPERTY ANALYSIS RECORD

CRESTRIDGE ECOLOGICAL RESERVE

Prepared by Center for Natural Lands Management
February 20, 2000

Tasks	Initial Costs (1st year)	Ongoing Costs (Annual)
Construction and Maintenance	\$24,970	\$2,525
Biological Surveys	\$37,442	\$37,442
Habitat Restoration	\$4,864	\$4,864
Habitat Maintenance	\$11,543	\$3,972
Water Management	\$1,395	\$995
Public Services	\$25,712	\$23,379
General Maintenance	\$1,140	\$1,036
Reporting	\$13,797	\$6,864
Office Maintenance	\$8,022	\$3,352
Field Equipment	\$22,280	\$4,686
Operations	\$53,662	\$3,662
Contingency and Administration	\$70,051	\$31,729
TOTAL	\$274,878	\$124,506
Initial Financial Requirements	Rate (%)	Total Costs
Initial and capital revenue		\$0
Initial and capital management costs		\$204,827
Initial and capital contingency expense	10.00	\$20,483
Total initial and capital management costs		\$225,310
I and C administrative costs of total I and C management costs	22.00	\$49,568
Total initial and capital costs		\$274,878
Net initial and capital management and administrative costs		\$274,878
Annual Ongoing Financial Requirements		
Ongoing costs		\$92,776
Ongoing contingency expense	10.00	\$9,278
Total ongoing management costs		\$102,054
Ongoing administrative costs of total ongoing management costs	22.00	\$22,452
Total ongoing costs		\$124,506
Endowment Requirements for Ongoing Stewardship		
Endowment to provide income of \$124,506		\$2,490,120
Endowment per acre is \$1,049		
Ongoing management costs based on 5% of endowment per year		
Ongoing management funding is \$124,506 per year, resulting in \$52 per acre per year		
TOTAL CONTRIBUTION		\$2,764,998



APPENDIX H

SUMMARY LIST OF MANAGEMENT AND MONITORING TASKS



View from water tower
Photo by M.White



SUMMARY LIST OF MANAGEMENT AND MONITORING TASKS

Recommended management and monitoring actions are summarized below. Management and monitoring actions considered a priority for implementation during 2002-2003 are listed in Section 6.0.

Exotic Plant Control

1. Eradicate tamarisk from Rios Canyon and other drainages.
2. Eradicate Pampas grass from the reserve.
3. Remove young eucalyptus trees from the drainages.
4. Eradicate African fountaingrass on the slopes above Rios Canyon and along roads within the reserve.
5. Manage tocalote at levels that do not threaten sensitive species and their habitat, especially on the south and west-facing slopes above Rios Canyon (Thornmint Hill) and along the fuelbreak at the bottom of the slope.
6. Manage purple falsebrome on the upper west and southwest-facing slopes above Rios Canyon at levels that do not threaten San Diego thornmint.
7. Remove individual horehound plants and restore/manage habitat conditions to minimize the potential for new infestations.
8. Remove individual plants of Natal grass along the southeast property boundary to prevent the spread of this species further into the reserve.
9. Remove star thistle and small or immature exotic tree species in the vicinity of the proposed nature center.
10. Control the exotic species in the annual grassland in the center of the reserve through a fire management and restoration program.
11. Remove Emex plants from along north side of Cross Timbers Truck Trail (near La Cresta Heights Road) and cleared area bordering homes south of Rios Elementary School.
12. On an annual basis, map stands of exotic species and prioritize them for treatment.



Exotic Animal Control

13. Manage borer beetles infesting Engelmann oaks.
14. Note locations of Argentine ants and fire ants with respect to position in the reserve and adjacent land uses.
15. Evaluate the need to remove beehives from the reserve.
16. Control pets in the reserve.
17. Restrict the use of pesticides in the reserve.

Fire Management

18. Work with the CDF to prepare a fire management plan that identifies:
 - Road maintenance requirements
 - Fire management units
 - Staging areas
 - Fuelbreaks
 - Sensitive resource areas to be avoided (both biological and cultural resources)
 - Fire suppression tactics, by fire management unit
 - Post-fire suppression activities
 - Schedule for prescribed burns, by fire management unit
19. Inform landowners about maintaining their own defensible space (the East County Fire Prevention/Protection District is the responsible agency).

Erosion Control

20. Restrict or prohibit equestrian and mountain bike activity in areas where erosion is a problem.
21. Correct erosion problems adjacent to sensitive plant populations.
22. Install checkdams in eroded drainages to catch debris and slow erosion.
23. Install water bars across dirt roads to control erosion.
24. Control water sources and urban runoff within the reserve.
25. Ensure that water flow is not impeded upstream from San Diego sedge (*Carex spissa*) locations.



Seed Collection and Storage

26. Develop a seed collection program for Lakeside ceanothus and San Diego thornmint to ensure that the genetic diversity of the onsite populations is not lost as a result of fire, habitat degradation, or other catastrophic events.
27. Store collected seed in a recognized seed collection facility.
28. Collect soil samples that may harbor seeds of San Diego thornmint.

Habitat Enhancement and Restoration

29. Restore the wet meadow near the former racetrack.
30. Enhance the oak grove at the Crestridge entrance (between Horsemill and Lakeview).
31. Restore the annual grassland in the center of the reserve to native vegetation.
32. If deemed appropriate, reseed host plants and nectar plants in suitable habitat areas to expand potential Quino checkerspot habitat areas.

Public Use

33. Control public access points.
34. Identify, map, and close off (at least) 15 other points of possible vehicular access by the public, using appropriate fencing and signs.
35. Map foot trails, and close off trails that are redundant and trails along the reserve boundary.
36. Close or re-route trails that are near sensitive biological areas.
37. Close off trails that should be restored.
38. Restrict mountain bikes and equestrians to existing roads and truck trails through the reserve.
39. Establish a trailhead with kiosk and signs, and develop a trails map.
40. Identify public safety issues.
41. Establish a volunteer training program.



-
42. Schedule volunteer work days.
 43. Establish docent-led programs and nature walks.
 44. Identify property owners along the reserve boundaries.
 45. Publish a regular newsletter and website about reserve stewardship activities and issues.
 46. Prepare a cultural resources management plan for Crestridge.
 47. Partner with other San Diego County environmental/wildlife organizations (e.g., San Diego Natural History Museum, resource agencies, San Diego State University Field Station, other land trusts) for cross promotion, education, interpretation, and docent training.
 48. Develop a habitat-based curriculum project.
 49. Prohibit unauthorized motor vehicles.
 50. Prohibit feeding of wildlife.
 51. Prohibit unauthorized collection and introduction of plants and wildlife.
 52. Prohibit dumping of dirt, trash, and garden refuse.
 53. Prohibit firearms, pesticides, fireworks, and fire, except where authorized (Title 14, Ch.11. 630).
 54. Prohibit camping and vandalism (Title 14, Ch.11. 630).
 55. Pets must be retained on a leash of less than 10 feet (Title 14, Ch.11. 630).
 56. Prohibit horses and bikes in riparian areas.
 57. Promote use of weed-free hay for feeding horses in the community by creating a demand for suppliers of weed-free hay.
 58. Assist the CDFG in patrolling for illegal uses in the reserve.
 59. Research future buildout plans for parcels east of Crestridge.



Facilities Maintenance

Fencing and Boundary Enforcement

- 60. Contract with a land surveyor to officially map the reserve boundary.
- 61. Identify portions of the reserve boundary where fencing is needed.
- 62. Establish property signs along the reserve boundary (3 signs every linear mile) and at each access point, identifying the area as an ecological reserve, providing directions for access, and contact information.
- 63. Maintain all existing fences and locked gates, and establish a list of persons with keys to the reserve (CDFG staff and warden, BCLT, CDF, SDG&E, Padre Dam MWD, East County Fire Prevention/Protection District, Sheriff, selected researchers).

Debris Removal and Building Restoration

- 64. Remove unused ranching equipment and facilities.
- 65. Evaluate the need to remove the white house just east of the oak grove, based on cultural history and potential future use.
- 66. Repair the warden residence.
- 67. Remove litter at periodic intervals, and arrange for regular garbage pickup.

Road and Trail Maintenance

- 68. Work with the CDF to maintain roads to prevent erosion.
- 69. Maintain trails to prevent erosion.
- 70. Establish and maintain interpretive signs and trails signs.
- 71. Establish a site and develop plans for a trailhead and staging area for visitor parking.
- 72. Evaluate the need for powerline remediation.
- 73. Purchase equipment for management, maintenance, and monitoring.



Earth Discovery Institute (EDI)

- 74. Set up a lease arrangement with CDFG for the EDI Bridge to Nature and EDI field station.
- 75. Establish the EDI field station as a facility for hands-on environmental and cultural education and community service opportunities.
- 76. Establish the EDI Bridge to Nature.

RESERVE MONITORING

Species Monitoring

- 77. Annually conduct presence/absence surveys for San Diego sagewort along drainages, and map locations (July - September).
- 78. Annually conduct presence/absence surveys for Palmer's grappling hook at Thornmint Hill (March - April).
- 79. Annually survey Engelmann oaks for insect pest infestations and evidence of oak seedling recruitment.
- 80. Annually monitor the San Diego thornmint population at Thornmint Hill (April - June).
- 81. Annually monitor the Lakeside ceanothus population on Ceanothus Slope (April - June).
- 82. Annually conduct presence/absence surveys for Ramona horkelia in the eastern part of the reserve, and map locations (May - June).
- 83. Re-survey selected areas for San Diego goldenstar (May).
- 84. Annually census dwarf plantain (*Plantago erecta*), the host plant for the Quino checkerspot butterfly, in the northern section of the reserve near Rios Canyon Road and Rios Elementary School (Thornmint Hill). Look for post-diapause larvae January - February. Survey for adults March - April.
- 85. Annually monitor and census eggs and larvae of Hermes copper in May.
- 86. Annually monitor San Diego sedge for evidence of overwintering larvae of Harbison's dun skipper. Survey for adults in June.



87. Annually note nesting and foraging areas for black-shouldered kites, Cooper's hawks, and golden eagles on the reserve, and record nest trees and locations on a map.
88. Annually conduct presence/absence surveys for California gnatcatchers in coastal sage scrub (January - March).
89. Annually conduct bird point count surveys, using the forms and methodologies in Appendix F.5.
90. Monitor raptor populations at Crestridge, pending recommendations on protocols from the Wildlife Research Institute.
91. Continue monitoring herpetofauna, pending recommendations from USGS.
92. Note the locations, relative to habitat structure and area of the reserve, of other sensitive species.
93. Annually map presence and extent of exotic plant species and evaluate responses to management actions.
94. Monitor Argentine and fire ants and Africanized bees.
95. Monitor population levels and distribution of mule deer on the reserve.

Habitats and Ecological Processes Monitoring

96. Prepare an update of the vegetation map every 5 years, using current color-infrared aerial photography (i.e., 2005, 2010, etc.).
97. Monitor the structure and age classes of vegetation communities to assess recovery following fire.
98. Monitor habitats for signs of senescence, lack of recruitment or reproduction, disease, and pest infestations.
99. Annually monitor the indirect effects of adjacent land uses.
100. Identify sources of urban runoff adjacent to the reserve, and propose containment options to landowners.
101. Monitor wildlife movement to and from the reserve.
102. Track fires (extent, intensity, and periodicity of burns) on the reserve using CDF fire history data.



103. Install a meteorological station on the reserve to monitor temperature and rainfall.
104. Monitor stream flow and water quality in Rios Canyon Creek.

Public Use Enforcement

105. Patrol public use of the reserve to ensure compliance with the rules and biological goals of the reserve and to assess level of use by area of the reserve.
106. Monitor presence and location of domestic animals in the reserve.
107. Issue tickets to persons that violate reserve regulations (CDFG warden).

Research Needs

- Response of vegetation communities to changes in fire regimes.
- Recovery of vegetation communities after fire.
- Response of target species populations to changes in fire regimes.
- MSCP covered species population dynamics.
- Effectiveness of measures to control nonnative plant species.
- Fire management techniques and strategies.
- Population genetics studies of species present on the reserve (e.g., rare plants, butterflies).
- Effectiveness of measures to control exotic grasses through use of prescribed fire.
- Recovery of native species after prescribed fire.
- Why is the Hermes copper butterfly restricted to selected areas in San Diego County? What are the conditions at Crestridge that favor such a large population? For example, what are the soil conditions (chemical composition and mineral components) where the populations occur?
- Ecology of various pollinators important to endemic plant species.
- Oak regeneration studies.
- Use of Crestridge for gnatcatcher dispersal, using marked birds.
- Large mammal use of Crestridge for dispersal; for foraging and reproduction, etc.

DATA MANAGEMENT AND REPORTING

Data Management

108. Develop a data management system to incorporate baseline data collected for the preparation of this management and monitoring plan.



-
109. Incorporate monitoring data collected to track the responses of resources to initial management actions.
 110. Evaluate the suitability of the data management system for management purposes, and refine the system as necessary.
 111. Maintain a record of habitat management and monitoring activities.

Reporting

112. Annually review resource status for the next year's reserve management activities.
113. Coordinate with preserve managers in other parts of the MSCP preserve to compare monitoring and management results.
114. Provide an annual summary of management and monitoring activities at Crestridge.
115. Submit a report to the wildlife agencies every 3 years.

STAFFING

116. Hire a reserve manager to live onsite.
117. Establish an infrastructure of goals and responsibilities for Crestridge partners, and appoint a volunteer coordinator.

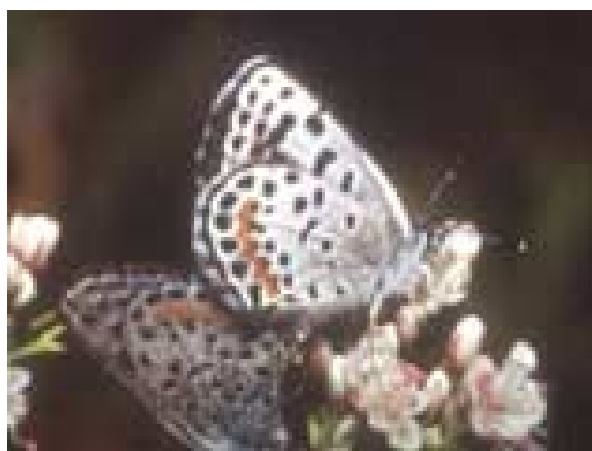
BUDGET

118. Review the Property Analysis Report (PAR) in Appendix G to establish and prioritize a budget for Crestridge.
119. Assess and prioritize the currently available funding for Crestridge, including sale of mitigation bank credits.
120. Identify potential funding sources.
121. Prepare grant applications.



APPENDIX I

CULTURAL RESOURCES MANAGEMENT PLAN OUTLINE



Bernardino blue butterflies mating
Photo by M.Klein



CULTURAL RESOURCES MANAGEMENT PLAN OUTLINE

Prepared by Susan Hector
November 2001

Identifying evidence of historic and prehistoric human use of a landscape is as important to management of a nature preserve as identification of sensitive plants and animals. Human beings are an integral part of the world's ecology. During prehistory, humans altered the environment, and their cultural development was altered by that same environment. The integration of human and environment was seamless, particularly for hunter-gatherers. It is not possible to understand the biological resources of a region without understanding the cultural ecology of that same area.

In recognition of this fact, the County of San Diego incorporated management of cultural resources into the MSCP Framework Management Plan (FMP). The FMP requires that an inventory of historic and prehistoric cultural resources be accomplished and provides for management and protection of those resources.

The following outline describes the cultural resources management plan for the Crestridge Ecological Reserve.

I. Cultural background: prehistory and history

(for example, the history of Cornelius Ranch)

II. Consultation with Native American groups

Information and concerns obtained through consultation will be incorporated into the management plan.

III. Cultural Resource Inventory

- A. Record Search at San Diego Museum of Man and San Diego State University's South Coastal Information Center (SCIC)
- B. Archival and historical research
- C. Survey (directed or complete)

In the late 1970s, a field survey of 1,178 acres was accomplished as part of the original EIR. The remaining approximately 1,000 acres within the reserve have not been surveyed for cultural resources. This survey can focus on specific development plans for trails, etc.

- D. Record the three sites found in the late 1970s.

These have not been officially recorded yet. The consultant received the SDM-W- numbers but did not complete and file site record forms with the State of California.

- E. Record the location where Michael Beck found the Elko point.



IV. Discussion of cultural resource types found within the reserve

- A. Prehistoric Milling sites
- B. Prehistoric stone artifact production and use sites
- C. Prehistoric Village sites
- D. Historic sites and features (including structures)

V. Site specific management plans

Three prehistoric sites were found during the field survey of the late 1970s. Of these, two contain milling features and may not require active management. However, one site, the village site referred to in the EIR as SDM-W-1121, will require additional consideration.

- A. Purpose of the project and land acquisition
- B. Long-term objectives and possible impacts to cultural resources that may result from future projects in the reserve

Biological management and restoration projects should be threaded into the cultural resources management plan.
- C. Process that will be used to review future projects (internal: BCLT and external: County of SD)
- D. Site evaluations and management for each site

Each site will need to have specific management recommendations. A successful approach is to place each resource into one of three management categories. In summary, Category 1 sites require the most protection; category 2 sites may be next to active use areas; and category 3 sites are in areas that are not accessible. Site SDM-W-1121, the Village site, will need Category 1 management and will require the most detailed management recommendations. These should include:

- Work with entities that have utility easements to restrict access and eliminate additional damage to the site.
- Record and map the site features completely as a baseline evaluation.
- Fence and sign the site to restrict access.
- Protect sensitive portions of the site; there are several alternatives.
 - Restrict active use of this area (this choice may interfere with other priority actions).
 - Cap the site deposits with sterile soil as protection (this is not a simple or inexpensive approach).
 - Identify areas of impact and conduct a mitigation program (not preferred because mitigation collections result in destruction of a portion of the site; however, controlled collection and excavation



may be preferable to destruction through active use of the site area).

- Monitor the condition of the site in the long term (since this area has been in active use for many years, the impact may be stabilized; monitoring to prevent increased impacts may be an appropriate approach).
- Other options

E. Develop a monitoring and stewardship program for the reserve.

This program can use trained volunteers. San Diego County Archaeological Society (SDCAS) has a monitoring protocol, which is appropriate for use at the reserve. The plan should state what will be done if damage to a cultural resource is observed; for example, that further restrictions on access to the area may be needed, or that revegetation of the site area is a priority.

VI. Interpretive programs

Interpretive programs should be developed for the cultural resources, and should address

- Native American settlement in the area
- Local and regional history
- Prehistory of San Diego

Because the locations of archaeological sites need to be confidential, any maps or information about the sites used in the interpretive program should not reveal or show site locations.

Following are examples of the types of management matrix and inventory of cultural resources that will be completed for the site.



Cultural Resources Management Matrix
Crestridge Ecological Reserve
(to be completed)

Resource Type	Quantity	Shelter	Hide	Avoid	Repair	Interpret
Bedrock milling						
Lithic scatter						
Etc.						

Cultural Resources Inventory
Crestridge Ecological Reserve
(to be completed)

Primary #	SDI #	Temporary #	Resource Type	Action
P-##-#####	CA-SDI-#####		Bedrock milling	a
			Lithic scatter	f
Etc.				

- a = Avoid site, but monitor annually.
b = Avoid site, revegetate, install split rail fence and warning sign if near trail.
c = Install chain link fence, consult architectural expert to determine restoration needs, actively manage site.
d = Construct shelter for site.
e = Locate site if trail construction or grading occurs.
f = Consult archaeologist if trail construction or grading occurs.
g = Secure site for safety reasons.



APPENDIX J

EARTH DISCOVERY INSTITUTE



View east from water tower
Photo by M.White



EARTH DISCOVERY INSTITUTE

The Earth Discovery Institute (EDI) is not only a facility but also a program for students and visitors to the Crestridge Ecological Reserve to experience the patterns and rhythms of nature. The artist/architect team that will design and direct building of the institute, James Hubbell and Drew Hubbell, envision the institute as an important adjunct to the schools of the region. Their vision is to provide a place where visitors can connect their everyday lives with nature and the processes between science and nature as well as learn about sustainable environments.

The institute is comprised of two facilities:

- EDI Bridge to Nature
- EDI Field Station

EDI Bridge to Nature

The Hubbell team envisions the EDI Bridge to Nature as a structure and gardens designed to take the students abruptly out of their everyday world to a world where nature is not to be analyzed but to be absorbed: "The marriage of the student to nature is guided by all the arts, poetry and myths, using visual experiences, sound and pattern, form and light." The artistic structure will be a "gateway" created and situated to take advantage of the natural artistry of the reserve so as to blend with the natural environment.

EDI Field Station

The EDI Field Station will be an approximately 4,650 sq. ft. building of straw bale, rammed earth, polystyrene block, adobe, and timber. It will include a solar-powered fountain, water power, solar power, wind tower, cooling tower, composting bin, gray water recycling, rain water collection, and holding ponds. The Field Station will house a multi-purpose room, computer lab, library, arts and crafts area, offices for staff and researchers, reception area, storage area, restrooms, and mechanical/electrical room. The Field Station will be the central location for the Habitat-Based Curriculum Project coordinated through Granite Hills High School.

Habitat-Based Curriculum Project

This program will develop over 3 years. In Year 1 (2001-2002), all Granite Hills High School (GHHS) biology students will be introduced to Crestridge through required field trips. Trained docents will offer short and long-term conservation-based volunteer opportunities to students. Biology faculty will loosely tie the fieldwork to the curriculum through an introductory and follow-up classroom lecture.



In Year 2 (2002-2003) the faculty team will offer junior-level classes in each of four disciplines tied directly to field trips to Crestridge (art, language arts, science, and history). Activities tied to field trips, both in faculty and docent-led visits, will reflect the cross-disciplinary aspects of the curriculum by meeting a learning objective of each. These learning objectives will be reinforced by habitat-based service learning projects.

In Year 3 (2003-2004), an Environmental Education Academy will open at GHHS.

Curricula will include, but not be limited to:

- San Diego World in Harmony (County of San Diego)
- Regional Water Quality Testing Program (San Diego County Water Authority)
- The Leopold Education Project; Conserving Earth's Biodiversity (E.O. Wilson and D. Perlman)
- Investigating the Oak Community (K. Antunez de Mayolo)
- Natural History of Southern California, A Lab Guide (Radford)
- Conservation Biology (Stanford University)
- Science and Civics: Sustaining Wildlife (Project Wild)

Students' academic and service learning activities will include removal of nonnative species, inventorying of plant and animal species, measuring water quality, and identifying potential threats to sensitive plants and wildlife. Students will also learn how to use palm pilots for recording data and global positioning systems for mapping.