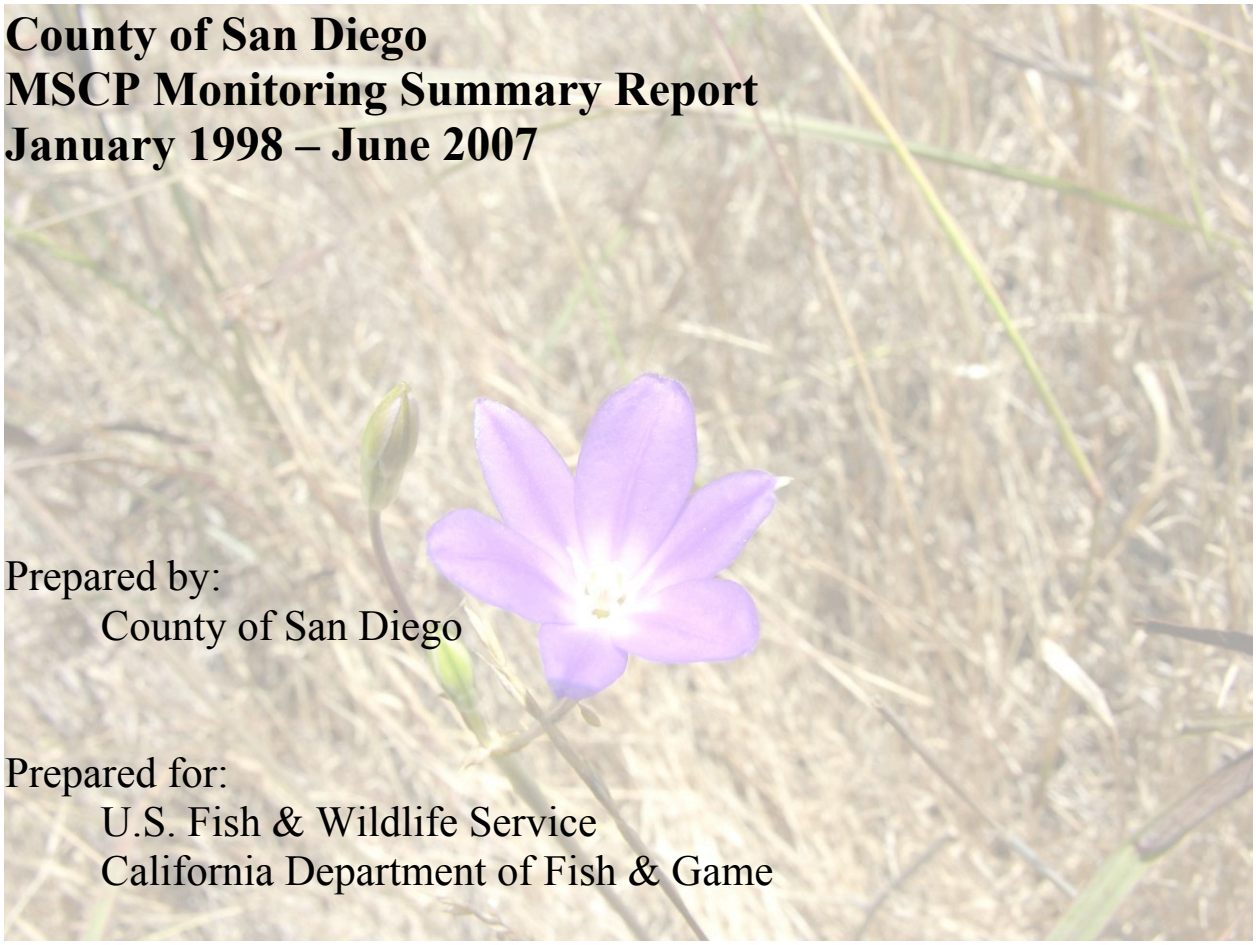

County of San Diego
MSCP Monitoring Summary Report
January 1998 – June 2007

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County of San Diego

Prepared for:

U.S. Fish & Wildlife Service

California Department of Fish & Game

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1 Introduction

The purpose of this report is to summarize the biological monitoring efforts of the County of San Diego (County) within its South County Multiple Species Conservation Program (MSCP) Subarea Plan for each species over the past 9 1/2 years. This report will also provide a general outline of the County's planned monitoring activities for the next three years in compliance with Section 14.5 of the Implementing Agreement entered into among the County of San Diego, U.S. Fish and Wildlife Service and the California Department of Fish and Game dated March 17, 1998 (Implementing Agreement). The County has previously described past monitoring efforts in annual reports and survey reports (e.g., Local Assistance Grant reports). Monitoring data was input into the County's Biological Observation Database and is available through BIOS and SanGIS for analysis by the Wildlife Agencies who have the primary responsibility for coordinating the monitoring program, analyzing data, and providing information and technical assistance to take authorization holders as provided for by the Final MSCP Plan.

1.1 Scope of Information Presented

The County is obligated to monitor habitat preservation and destruction (i.e., gains and losses), habitat quality, and certain covered species. Only the latter two elements are discussed in this report.

This report focuses on data collected by County staff, its consultants, or volunteers. This includes efforts funded by Local Assistance Grants that were funded by the California Department of Fish and Game and coordinated by the County. In some instances, other agencies or individuals have surveyed lands for which the County has a responsibility to monitor; these data are reported here to the extent they are known. For the most part, information is presented that pertains to lands that the County is required to monitor under the MSCP, but there are cases where the County has performed surveys on lands managed by other participants, which are reported here as well.

1.2 Summary of County Monitoring Responsibilities

The MSCP Implementing Agreement (Section 14.5) states that the "*County will be responsible for the biological monitoring of its own, specified public lands, as well as mitigation lands obtained by it in fee title or easement, and lands acquired by it for the MSCP using the regional funding program or other local sources.*"

The scope of these monitoring efforts are guided by the following documents:

- Implementing Agreement[1]: Chapter 14
- Final MSCP Plan[2]: Table 3-5, Sections 5.4.1 and 5.5 and 6.3.1 and 6.3.2 and 6.4.1
- County Subarea Plan[3]: Sections 1.6 and 1.7
- Ogden's Biological Monitoring Plan (Ogden BMP) [4]
- Area-specific Management Directives (ASMDs) developed for County properties (according to Table 3-5 of the Final MSCP Plan and the County's Framework Management Plan[5])
- Ongoing adaptive methods discussed through the MSCP Monitoring Committee (a sub-committee to the Habitat Management Technical Committee)
- Habitat Management Plans developed for the Santa Fe Valley, 4S Ranch, and other private open space, and the Resource Management Plan for Otay Ranch.

In some instances, regional monitoring points recommended by the Ogden BMP may fall in areas where multiple agencies own(ed) land (e.g., McGinty Mountain, San Vicente Highlands and Boulder Oaks). Some of these areas have management and/or monitoring agreements between agencies that will help address issues of responsibility. In other cases, coordination between agencies is a necessary next step in order to achieve a coordinated and effective regional monitoring program.

ASMDs are to direct management and monitoring actions on preserves owned by or dedicated to the County within the MSCP. 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. Species management and monitoring conditions are described in Table 3-5 of the Final MSCP Plan.

1.3 Status of the County's Biological Monitoring Efforts

The general biological monitoring methods required under Table 3-5 are summarized below. Ogden's BMP elaborates methods, schedules, and distribution of many of these monitoring activities; many are deferred until an (ASMD) is developed for a preserve area.

During the first ten years of this 50-year program, the County has acquired over 50% of its open space commitment as set forth in the Implementing Agreement and Subarea Plan. Once a contiguous area of 300 acres is preserved, an ASMD is prepared which includes 2 years of biological surveys, cultural surveys and delineation of proposed trail alignments to provide for public access. In the species summaries that follow, notes are included for years when lands

[1] Implementing Agreement by and between United States Fish and Wildlife Service, California Department of Fish and Game, County of San Diego. March 17, 1998

[2] Final Multiple Species Conservation Program, MSCP Plan. August 1998.

[3] County of San Diego. October 22, 1997 (adopted). Multiple Species Conservation Program: County of San Diego Subarea Plan.

[4] Ogden. January 25, 1996. Biological Monitoring Plan for the Multiple Species Conservation Program.

[5] County of San Diego. August 31, 2001. Framework Management Plan. (available online at: http://dplu-mscp.sdcounty.ca.gov//3_ia/FrameworkMgmtPlanText.pdf)

were purchased or dedicated. Section 4 also summarizes the nature, extent, and acquisition history of several preserve areas.

Although elements of the Ogden BMP are currently being revised, the County understands that there are many monitoring tasks that can, and should, be done now. While it is expected that further revisions to the Ogden BMP will be made and by the Wildlife Agencies that may change methods and sampling strategies, near-term efforts will still provide valuable data, especially where they capture baseline data about populations and the current condition of their habitat.

The current status of monitoring efforts, funded through California Department of Fish and Game Local Assistance Grants, is as follows:

- **Rare Plants** – Kathryn McEachern (US Geological Survey (USGS)) completed a revision to the rare plant monitoring. Significant changes to monitoring methodologies were recommended with a shift away from highly quantitative sampling for highly variable species and a greater emphasis on measuring conditions and threats to the population and surrounding habitat. A framework was developed to create adaptive management programs for plant species and was completed for 3 species (*Ambrosia pumila*, *Dudleya variegata*, and *Dudleya blochmaniae* ssp. *brevifolia*).
- **Habitat Monitoring** – Janet Franklin *et al*. (San Diego State University (SDSU)) are developing a monitoring plan that will address monitoring habitat quality for coastal sage scrub, chaparral, and grasslands.
- **Animals** –USFWS has begun working with the permittees to revise the monitoring plan for animals that require species-specific monitoring.

In addition to the monitoring efforts prescribed in conjunction with MSCP, the County has also undertaken the following efforts that increase understanding of biodiversity in San Diego County:

- The County has also provided technical and/or financial support to the San Diego Natural History Museum's atlas projects: Bird Atlas[6], Mammal Atlas[7], and Plant Atlas[8].
- Photo monitoring points established for monitoring habitat conditions and post-fire recovery.
- Local Assistance Grants from the Department of Fish & Game for Baseline bat surveys[9]

[6] Unitt, Philip (ed.). 2004. San Diego County Bird Atlas. San Diego Natural History Museum.
[7] This effort is in progress. Information is available online at: http://www.sdnhm.org/mammalatlas/
[8] This effort is in progress. Information is available online at: http://www.sdnhm.org/plantatlas/
[9] Drew C. Stokes, Cheryl S. Brehme, Stacie A. Hathaway, and Robert N. Fisher (U.S. GEOLOGICAL SURVEY WESTERN ECOLOGICAL RESEARCH CENTER). 2005. Bat Inventory of the Multiple Species Conservation Program Area in San DiegoCounty, California, Final Report.

1.4 Species not monitored by the County of San Diego

Some MSCP covered species are not monitored by the County except by incidental observations. In summary, 33 species (17 of 46 plants and 16 of 39 animals) are not expected to be monitored at this time. Table 1-1 summarized species not monitored at this time by the County and briefly describes why they are not monitored. Preservation of lands in the future and adoption of North and East County MSCP Plans may necessitate monitoring of these species in the future.

Table 1-1. Species not actively monitored by the County of San Diego at this time. Detailed accounts are not provided in Section 3 unless noted with an asterix (*) after the latin name.

	Common Name	*Latin Name*	Reason
PLANTS			
1	Coastal agave	*Agave shawii*	Extant populations are on lands managed by other agencies.
2	Aphanisma	*Aphanisma blitoides*	Not known to exist on lands monitored by the County.
3	Coastal Dunes Milkvetch	*Astragalus tener* var. *titi*	Not known to exist on lands monitored by the County.
4	Nevin's barberry	*Berberis nevinii*	Not known to exist on lands monitored by the County.
5	Fire redgrass	*Calamagrostis koelerioides*	Taxonomic changes indicate that this species is not sensitive and therefore does not warrant monitoring through this program.
	Dunn's mariposa lily	*Calochortus dunnii*	Not known to exist on lands monitored by the County.
6	California mustard	*Caulanthus heterophylles* var *heterophyllus*	Taxonomic changes indicate that this species is not sensitive and therefore does not warrant monitoring through this program.
7	Salt marsh bird's beak	*Cordylanthus maritimus* ssp. *maritimus*	Not known to exist on lands monitored by the County.
8	Del Mar Mesa sandaster	*Corethrogyne filaginifolia* var. *linifolia*	Not known to exist on lands monitored by the County.
9	Snake cholla	*Cylindropuntia californica var. californica*	Not known to exist on lands monitored by the County – locations not yet preserved.
10	Short-leaf dudleya	*Dudleya blochmaniae* ssp. *brevifolia*	Not known to exist on lands monitored by the County.
11	Sticky dudleya	*Dudleya viscida*	Not known to exist on lands monitored by the County – locations not yet preserved.
12	Palmer's goldenbush	*Ericameria palmeri var. palmeri*	Not known to exist on lands monitored by the County – locations not yet preserved.
13	Prostrate/Nuttall's lotus	*Lotus nuttallianus*	Not known to exist on lands monitored by the County.
14	Jennifer's monardella	*Monardella stoneana (*Formerly part of *M. viminea)*	Not known to exist on lands monitored by the County.
15	Torrey pine	*Pinus torreyana ssp. torreyana*	Entire population is managed by State Parks.
16	Desert/Small-leave rose	*Rosa minutifolia*	Not known to exist on lands monitored by the County.

	Common Name	*Latin Name*	Reason
17	Purple nightshade	*Solanum xanti* (formerly *S. tenuilobatum*)	Taxonomic changes indicate that this species is not Sensitive and therefore does not warrant monitoring through this program.
MAMMALS			
18	American badger	*Taxidea taxus*	This species was included mainly for preserve design purposes. Incidental sightings will be noted and incorporated into management of preserves.
INVERTEBRATES			
19	Wandering salt marsh skipper	*Panoquina errans*	Salt marsh habitat not known to exist on lands monitored by the County.
AMPHIBIANS & REPTILES			
20	Arroyo toad	*Bufo californicus* *	Monitoring is not prescribed on lands currently monitored by the County.
21	California red-legged frog	*Rana aurora draytoni*	Not known to exist on lands monitored by the County.
BIRDS			
22	San Diego cactus wren	*Campylorhynchus brunneicapillus sandiegensis* *	No nesting habitat is present on lands currently monitored by the County.
23	Snowy plover	*Charadrius alexandrinus nivosus*	No nesting habitat is present on lands monitored by the County.
24	Reddish egret	*Egretta rufescens*	Habitat types not currently conserved on lands monitored by County.
25	Bald eagle	*Haliaeetus leucocephalus*	No active roost sites known to occur on lands monitored by the County.
26	Belding's savannah sparrow	*Passerculus sandwichensis beldingi*	Does not occur on lands monitored by the County.
27	Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	Does not occur on lands monitored by the County.
28	California brown pelican	*Pelecanus occidentalis californicus*	No known locations on County responsibility areas.
29	White-faced ibis	*Plegadis chihi*	No known locations on County responsibility areas.
30	Light-footed clapper rail	*Rallus longirostris levipes*	Majority of populations are on lands managed by other agencies; only one individual noted on County-owned land.
31	Western bluebird	*Sialia mexicana*	Species is common and was included mainly for preserve design and to focus on oak woodland protection.
32	California least tern	*Sterna antillarum browni*	Not known to occur on lands monitored by the County.
33	Elegant tern	*Sterna elegans*	Not known to occur on lands monitored by the County.

2 County Monitoring Efforts

2.1 Habitat-based monitoring

It has generally been agreed upon by all MSCP participants that a new approach is needed for "Habitat-based monitoring." To address this, San Diego State University (Franklin et al.) is currently designing a monitoring strategy for vegetation that will meet the habitat monitoring goals envisioned by the MSCP. Once a sound habitat-monitoring plan has been developed, the County of San Diego will begin implementing it on lands for which it has monitoring responsibilities. Eight (8) species within the South County Subarea require only habitat-based monitoring efforts (Table 3).

Table 2-1. Species for which only habitat-based monitoring is required and the County has a responsibility to monitor. Detailed accounts are not included for these species unless monitoring efforts in addition to habitat-based monitoring are required or unless noted with an asterix (*).

	CommonName	LatinName
PLANTS		
1	Thread-leaf brodiaea	*Brodiaea filifolia* *
2	Sticky dudleya	*Dudleya viscida*
ANIMALS		
3	Thornes hairstreak butterfly	*Mitoura thornei*
4	Rufous-crowned sparrow	*Aimophila ruficeps canescens*
5	Canada goose	*Branta canadensis*
6	Mountain plover	*Charadrius montanus*
7	Peregrine falcon	*Falco peregrinus anatum*
8	Long-billed curlew	*Numenius americanus*

The Ogden BMP prescribed "habitat-based" monitoring methods for sampling vegetation along gradients of human disturbance. An implicit hypothesis associated with this methodology was that vegetation disturbance would be greatest near the urban edge, and that this would be detectable. These methods have been tested to various extents by the City of San Diego, the County of San Diego and faculty at San Diego State University. Based on this testing, the MSCP participants have chosen not to implement these methodologies and are working to revise habitat-based monitoring methodologies.

Research conducted by San Diego State University faculty at Mission Trails Regional Park revealed many flaws, namely that the methodology could not distinguish between 'core' and 'transition' plots[10]. This result, combined with the difficulty encountered in locating suitable coastal sage scrub habitats that satisfied the disturbance gradient criteria and were adjacent to urban edge, suggests that the strategy for habitat monitoring may not be warranted and/or viable. This, along with two following factors, led Stow et al. to believe the methodology is flawed: (1)

[10] Stow, D., L. Coulter, A. Johnson, and A. Petersen, in press. Monitoring Habitat Reserves Using High Spatial Resolution Image Data, Proceedings of the Ninth Biennial Remote Sensing Applications Conference, San Diego, California, April 8-12, 2002

the time cost for completing the entire sampling, surveying, and data base coding is estimated at 150 to 175 hours per sampling site, and (2) sampling plots are not likely to be representative of the rest of the reserve in which they are located and as a network of sampling sites, not representative of the entire MSCP subregion. Furthermore, the aerial extent of all 29 proposed sampling sites combined is only 0.018% of the MSCP subregion. Stow et al. go on to provide many suggestions for a better habitat-monitoring program with a strong emphasis on remote sensing, however an implementable study design and methodology for habitat monitoring of MSCP lands is currently not available. The intensity of the current methods may cause disturbances in the vegetation communities being sampled.

The County also performed an experiment[11] at 4S Ranch funded by a Local Assistance Grant to use ADAR imagery to detect changes (i.e., disturbance) in the vegetation community. Although this was successful in many respects, it also showed that this method would not be economically viable.

2.2 Corridor monitoring

Two species, the **Mountain lion** (*Felis concolor*) and **Southern mule deer** (*Odocoileus hemionus*), require only corridor monitoring. Neither of these species is sensitive, but they serve as indicators that large-scale landscape linkages are being used by wildlife. The Ogden BMP also recommends including the following species in corridor monitoring: bobcat (*Lynx rufus*), coyote (*Canis latrans*), California gnatcatcher (*Polioptila californica californica*), and coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*). The County has been participating in the San Diego Tracking Team (SDTT), a largely volunteer effort, whose members conduct monitoring at the various corridor study sites (Table 2-2). The County has provided technical and administrative support to this group and has participated in several of their studies.

Within the County Subarea, six corridor monitoring sites were recommended in the Ogden BMP. Of those, only 2 (L-1 and L-12) occur on lands for which the County is currently responsible for monitoring. In 2002, CBI conducted a study[12] that collected animal movement data at the various corridor sites recommended by the Ogden BMP and also recommended a redistribution of several of those sites. Their final report[13] provides an excellent overview of corridor monitoring efforts and recommendations.

In addition, the County conducted a California gnatcatcher movement study[14] in the "Lakeside Linkage" site (L-12 from the Ogden BMP) to determine if California gnatcatchers were moving across Interstate 8. The study found 7 pairs of birds in the vicinity (5 south of the highway and 2 north of the highway). One banded juvenile was detected crossing the highway during the study.

[11] Batchelor, Jason and Ross Martin. March 2002. Lusardi Creek/4S Ranch: Multispectral Change Detection Techniques Using Landsat Thematic Mapper Data and Airborne Data Acquisition and Registration (ADAR) Data.
[12] Conservation Biology Institute. January 2002. Wildlife Corridor Monitoring Study for the Multiple Species Conservation Program.
[13] Conservation Biology Institute. January 2003. Review of Regional Habitat Linkage Monitoring Locations.
[14] Varanus Biological Services and Campbell BioConsulting. June 2003. Report of Coastal California Gnatcatcher Juvenile Dispersal across Interstate-8 at the MSCP Southern Lakeside Archipelago Lands San Diego County, California.

Table 2-2. San Diego Tracking Team survey point descriptions.

TRANSECT NUMBER	Transect Name	Location	Initiated	Rotation/Status
1	Sabre Spring to Mercy Property	Penasquitos Canyon	96 summer	every survey
2	I15 Bridges West to Big Curve South	Penasquitos Canyon	96 summer	every survey
3	La Tortola Creek Crossing East to Big Bend	Penasquitos Canyon	96 summer	every survey
4	Mystery Tree Loop	Penasquitos Canyon	96 summer	every survey
5	Black Mountain Bridge West to 1 Mile Marker	Penasquitos Canyon	96 summer	Summer & Winter
6	South Side PQ 1 Mile to 2.5 Mile Market	Penasquitos Canyon	96 summer	redone as 6001, inactive (Fall & Spring)
7	South Side PQ 2.5 Mile to Waterfall	Penasquitos Canyon	96 summer	(Summer & Winter)
8	North Side PQ Waterfall East to 1.5 Mile Marker	Penasquitos Canyon	96 summer	Fall & Spring
9	North Side PQ 1.5 Mile Marker East to Ranch House	Penasquitos Canyon	96 summer	(Summer & Winter)
10	South Side PQ 1.5 Mile Marker East to 2.5	Penasquitos Canyon	96 summer	(Summer & Winter)
11	South Side PQ 0.5 Mile Marker East to 1.5 Marker	Penasquitos Canyon	96 summer	(Fall & Spring)
12	South Side PQ El Cuervo Adobe East to 0.5 Mile Marker	Penasquitos Canyon	96 summer	every survey
13	North Side PQ 2.5 Mile Marker East to Waterfall	Penasquitos Canyon	96 summer	(Summer & Winter)
14	North Side PQ 1.5 Mile Marker East to 2.5 Mile Marker	Penasquitos Canyon	96 summer	Fall & Spring
15	North Side La Cantina Secret Crossing East to Gorge Crossing	Penasquitos Canyon	96 summer	(Fall & Spring)
16	West End Parking Lot Over Knoll Trail	Penasquitos Canyon	96 summer	every survey
17	The Merge Loop	Penasquitos Canyon	96 summer	every survey
18	Lopez Ridge Wildlife Tunnel	Penasquitos Canyon	96 summer	every survey
19	Lopez Canyon Kiosk East	Penasquitos Canyon	96 summer	Fall & Spring
20	Lopez Canyon Kiosk Cobble Trail	Penasquitos Canyon	96 summer	Fall & Spring
21	Del Mar Mesa-Deer Canyon-McGonigle Canyon Bike	Del Mar Mesa	97 summer	every survey
22	Penasquitos Lagoon Transect	Penasquitos Lagoon	99 winter	every survey
23	Scripps Poway Parkway Wildlife Tunnel **(MSCP)**	Poway/Sycamore Canyon	99 spring	every survey, burned
24	Crest	Crest	99 spring	burned
25	Lake Hodges Sycamore Creek (SDRP)	Lake Hodges	99 spring	every survey
26	Mt. Woodson North Watertank East (MWWT)	Ramona	00 winter	every survey
27	Mt. Woodson North Watertank West (MWWT)	Ramona	00 winter	every survey
28	Ellie Lane (MWWT) (de-activated)	Poway/Iron Mountain	00 winter	Deactivated

TRANSECT NUMBER	Transect Name	Location	Initiated	Rotation/Status
29	Iron Mountain (MWWT)	Poway/Iron Mountain	00 winter	burned, every survey
30	MTRP SR 52 Tunnel	Mission Trails Regional Park	99 fall	burned
31	MTRP Oak Canyon SR 52 Bridge	Mission Trails Regional Park	99 fall	burned, every survey
32	MTRP Spring Canyon Overpass	Mission Trails Regional Park	99 fall	burned, every survey
33	Sycamore Canyon Open Space Preserve (MWWT)	Poway/Sycamore Canyon	00 winter	burned, every survey, all revised 5/02
34	Lake Sutherland (MWWT)	Ramona	00 spring	every survey
35	Black Mountain Open Space, East End Ridgeline	Del Mar Mesa	00 fall	Deactivated
36	Black Mountain Open Space, Montana Mirador Boundary West	Del Mar Mesa	00 summer	Deactivated
37	Santa Maria Grasslands at Fund for Animals (MWWT)	Ramona	01 winter	every survey, changed 4/02
38	Mt. Calavera Loop (Carlsbad)	Carlsbad	01 spring	every survey
39	Melrose Culvert (Carlsbad)	Carlsbad	01 spring	every survey
40	Box Canyon 1 (OFF LIMITS)	Carlsbad	01 spring	Off-Limits, never activated
41	Box Canyon 2 (OFF LIMITS)	Carlsbad	01 spring	Off-Limits, never activated
42	Hwy 67 Culverts (MWWT) **(MSCP)**	Poway/Sycamore Canyon	01 fall	burned
43	Spring Canyon (Otay) **(MSCP)**	Otay	01 fall	on hold
44	Otay Mesa R. and Corporate Ctr. Dr. Culvert **(MSCP)**	Otay	01 fall	on hold
45	Dennery Canyon **(MSCP)**	Otay		on hold, never activated
46	Lusardi Creek West End **(MSCP)**	Del Mar Mesa	02 winter	on hold
47	Hollenbeck Canyon **(MSCP)**	Hollenbeck Canyon	02 spring	on hold
48	Crest North **(MSCP)**	Crest	02 spring	burned, Fall & Spring
49	Holly Springs Wildlife Corridor (Carlsbad)	Carlsbad	03 summer	on hold, needs permission
50	Carlsbad Highlands (Carlsbad)	Carlsbad	03 summer	every survey
51	Rose Canyon	University City	03 fall	every survey
52	Lower Sage Trails	Daley Ranch/Escondido	04 summer	burned
53	Upper Sage Trails	Daley Ranch/Escondido	04 summer	burned
54	Scripps Poway Parkway at Pomerado	Poway	05 winter	intermittant
55	CNLM Dank Tank Access Road	Encinitas	05 fall	begin fall 05
56	CNLM Rancho Santa Fe Tunnel	Encinitas	05 fall	begin fall 05

The Wildcat Canyon Road Enhancement Project proposes improvements to Wildcat Canyon Road to reduce traffic hazards in an area that functions as a major regional wildlife corridor in rural San Diego County. A wildlife movement study[15] was undertaken by County DPW as part of a road construction project. This site is not done in association with regional habitat linkage monitoring; however, these data may be useful in demonstrating wildlife movement through the MSCP Preserve System. The methods and results of the pre-construction survey are briefly described below (post-construction surveys began Fall 2006).

The study design includes data collection for approximately a year and a half prior to construction and employs transect, tracking station, and roadkill surveys to characterize wildlife movement for 14 mammal species (mountain lion, coyote, bobcat, gray fox, opossum, raccoon, badger, long-tailed weasel, ringtail, striped skunk, spotted skunk, mule deer, black-tailed jackrabbit, and dusky-footed woodrat) within one treatment area and two control areas. During preconstruction data collection, the Cedar Fire of October 2003 burned the entire study area. Data were collected before and after the fire. Survey results were analyzed using geographic information systems and a variety of statistical methods.

Preconstruction surveys identified thirteen directional movement trends for the selected species. Additionally, 14 roadkill clusters were identified along the length of the road; one of which corresponds with the proposed location of a 12-foot by 14-foot under crossing. Roadkill clusters are directly attributable to landscape features such as drainages and ridgelines that facilitate wildlife movement across hazardous stretches of the road.

Animal activity responded similarly over time in all sample locations. For mule deer, activity levels were higher in the control areas than the treatment area. Coyote activity varied the most of all focal species and was highest in the interior control areas. Activity levels of these three species did not vary significantly throughout the year, with or without the pre-fire data included. Mule deer were more frequently detected along transects, while coyotes were more frequently detected at tracking stations.

[15] EDAW, Inc. July 20, 2005. Wildcat Canyon Road Enhancement Project Before-After-Control-Impact Study, Final Preconstruction Report (Volumes I – III).

2.3 PLANT MONITORING

The following pages summarize background information and monitoring data for each of the plant species covered by the MSCP for which specific monitoring efforts are required by the County of San Diego. The following information is given for each species:

Species name: Species are arranged in alphabetical order by Latin name (following current taxonomy used by San Diego Natural History Museum) with the common name given in quotation marks. Common synonyms for Latin names are also provided.

Photograph: photos are provided when available and not copyrighted.

Priority (Ogden; MSCP; SDSU): These species have been ranked in several documents to indicate their prioritization for conservation. The same scale was used for all efforts: 1 is high, 2 is moderate, and 3 is low. These were done for the Ogden BMP[16], the original MSCP resource evaluation[17] (*R indicates further research is warranted), and SDSU habitat monitoring revision[18].

Timing: Blooming period is given as well as the classification of the plant (shrub, annual, perennial, etc.).

MSCP Management Goals (Table 3-5): Management goals from the MSCP Subregional Plan[19] are repeated from Table 3-5 of that plan.

Monitoring Methods (Table 3-5): Monitoring methods required by the MSCP Subregional Plan[19] are repeated from Table 3-5 of that plan.

Species information: Information is summarized here from a variety of sources regarding the species known distribution, occurrence on different preserves, population sizes, and permit requirements.

Draft Adaptive Management Goals: Based on the above information, an adaptive management goal was drafted by the County to summarize the elements important to the survival and recovery of each species. This was then used to draft an interim set of recommendations to monitor each species in an adaptive management framework.

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[16] Ogden. January 25, 1996. Biological Monitoring Plan for the Multiple Species Conservation Program.

[17] Ogden Environmental and Energy Services Co. and the Biological Task Force for Preserve Design, San Diego County, California. November 1992. Biological Goals, Standards, and Guidelines for Multiple Species Preserve Design (Appendix A-9) *in* Public Review Draft, Resource Document, Multiple Species Conservation Program (MSCP), Volume II: Appendix A – Biological Resources. March 1, 1995.

[18] Department of Biology, San Diego State University: Dr. Helen M. Regan, Lauren A. Hierl, Dr. Janet Franklin, and Dr. Douglas H. Deutschman. January 2006. Draft MSCP Covered Species Prioritization For Task B of Local Assistance Grant #P0450009

[19] Final Multiple Species Conservation Program, MSCP Plan. August 1998.

Monitoring Frequency: A general recommendation (generally following that in the Ogden BMP) was made to on the frequency of monitoring for each species. This is an interim recommendation based on the priority of the species and its temporal variability.

Draft Monitoring Methods: Interim methods for monitoring are suggested for the species as a whole, with notes focused on the role of the County in these efforts. These are based on all of the above information with a focus on monitoring for adaptive management purposes.

After these basic elements, available data is summarized for each species. These data are grouped by location (usually the preserve name) and then the year in the following format:

- **Location**
  - Year

If the location given corresponds to a monitoring point in the Ogden BMP that is noted in parentheses. Data summaries are usually grouped to note where data are available and where only locations are known.

Data provided summarize information for each site. More detailed data are available in GIS databases (e.g., Biological Observation Database), reports, and field notes. These sources are referred to in the text and most are available electronically.

2.3.1 Acanthomintha ilicifolia, "San Diego Thornmint"

Priority (Ogden; MSCP; SDSU): **1; 2; 1**
Timing: **Spring; annual herb**

MSCP Management Goals (Table 3-5): Protect from edge effects (Otay Resort Site SPA specifically mentioned as well). Avoid or minimize impacts to all major populations.
Monitoring Methods (Table 3-5): Site specific (4 populations) & Management Plan/Directive

Species information: Major populations (>1000 individuals) are all in County subarea: Sycamore Cyn, Lake Hodges, El Capitan, Jamul Mts, Asphalt Inc in Lakeside, Sky Mesa Ranch, McGinty Mtn, and Otay Lakes. MSCP database had 25 occurrences in subarea; significant portion of species' range. Approx 30 sites totaling 150,000 indiv. Population numbers fluctuate annually. Also known from Wright's Field, Crestridge, and could be at Lusardi Creek (possibly only remnant of "Lake Hodges" population).

Draft Adaptive Management Goals: Maintain all preserved major populations by controling invasive weeds and trespass.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Transect counts/ photo plots to detect trends at 2 stable sites. General site surveys at additional 2 rotating sites per year for threats (invasives, disturbance). Map aerial extent of all populations surveyed each time to detect expansion or contraction of area occupied.

Monitoring data are available for the following sites:

- **McGinty Mountain (P-17)**
  - Photo plot monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2003, 2004, and 2005 at McGinty1 and McGinty2 Photo Plots. No significant change in vegetation was detected over this time frame; although there was some difficulty in interpreting potential changes due to differences in picture quality between years.
  - 2001
    - Population estimated at over 2300 individuals at 8 locations on TET and TNC lands. Observations are recorded in the Biological Observation Database. Site photos are also available.
  - 2005 – County transferred land to USFWS

- **Hollenbeck Canyon**
  - 2000 - Property acquired.
  - 2001
    - Estimated 1000's of plants on Bosanko clay meadows. Two populations (300 and 547+ individuals) mapped at this site. Observations are recorded in the Biological Observation Database.
- **Sycamore Canyon / Goodan Ranch (P-13 at South Poway/Sycamore Canyon)**
  - 2005
    - Mapped over 18,000 on Goodan Ranch. 44 data points are recorded in the Biological Observation Database.
    - Census of about 10,000 plants in 5 metapopulations (by Friends of Sycamore/Goodan). Data points reported to County and are being entered in Biological Observation Database. Reports available electronically.
  - 2006
    - Surveys repeated and transects established (Friends of Sycamore/Goodan). Reports are available electronically.
  - 2007
    - Surveys repeated. Population perimeters were mapped using GPS, population size estimated, and survey data recorded for one population on MSCP Rare Plant Field Survey Form. Overall population estimates are about 4500 individuals for the whole preserve area; the survey area is roughly equivalent to the 2005 surveys. Data are recorded in the Biological Observation Database.
- **Wright's Field**
  - Back Country Land Trust acquired this site in 2000 (western half) and 2003 (eastern half). Several surveys have been conducted since acquisition by various botanists including San Diego Natural History Museum.
  - 2007
    - Inspected site for suitability for pollinator study on *Acanthomintha* to be done for Local Assistance Grant.
    - Two populations located in early stages of growth composed of approximately 5 and 30 individuals. Data entered in Biological Observation database. MSCP Rare Plant Survey Form used to collect data on southern population. Site photos available.

This species is also known to occur within the County subarea at:

- **Santa Fe Valley Open Space (P-2 at Lake Hodges)**
  - Reported in the southwestern area (McCrink Ranch). Although this population was identified in the Ogden BMP, no extant population is known. The Final EIR for Santa Fe Valley Specific Plan report that the population was believed to be extirpated as of the 1992 surveys but is known for historic locations in the southwestern portion of the Specific Plan. Dedication of open space on the McCrink Ranch portion has not yet been completed.
- **Jamul Mountains West (P-30)**
  - This site is recommended in the Ogden BMP but has not yet been preserved and is, therefore, currently not being monitored.

- **Alpine area**
    - Several populations reported on non-preserved land north of Interstate 8. Points mapped in CNDDB.
- **Crestridge Ecological Reserve** (managed by DFG)
    - Conservation Biology Institute mapped 55 individuals here in 2000 (data in Biological Observation Database)

2.3.2 Ambrosia pumila, "San Diego Ambrosia"

Priority (Ogden; MSCP; SDSU): **2; 1*R; 1**
Timing: **Mar - Aug (visible); blooms in summer; perennial rhyzomatous herb**

MSCP Management Goals (Table 3-5): Monitor transplants, address edge effects.
Monitoring Methods (Table 3-5): Site specific (major populations) & Management Plan/Directive

Species information: Only two pops known (Mission Trails Regional Park, SDNWR). Must maintain >= 90% of population at MTRP to be covered. Major population is >500. Populations currently in PAMA - SD River, Sweetwater River (SDNWR), and Santa Fe Valley (Starwood).

Draft Adaptive Management Goals: Maintain existing and transplanted populations by managing to control invasive species, trampling, and excessive erosion.

Monitoring Frequency: Every 2 years

Draft Monitoring Methods: Monitor populations for threats every 2 years; estimate population size (# of ramets) and map aerial extent.

The only known monitoring site in the South County MSCP Subarea is:

- **Santa Fe Valley (Starwood/Crosby)**
    - 2000 – open space dedicated.
    - HMP reports "small population" within open space south of San Dieguito River.
    - 2001 – 2006 – Site monitored by Helix Environmental. Estimated population to be about 450 ramets during this period (Sally Trnka, 2007, personal comm.).
    - 2007 – Observed population and estimated population size between 400 and 500 ramets. Main threats include runoff from the adjacent golf course, potential trampling from hikers on adjacent Coast to Crest Trail, and invasive annual plants. There is a potential to expand this population into new areas in this preserve. Data sheet and photos available.

2.3.3 Arctostaphylos glandulosa ssp. *crassifolia*, "Del Mar Manzanita"

Priority (Ogden; MSCP; SDSU): **3; 3*R; 1**
Timing: **Jan - Dec (blooms Jan-Mar); shrub**

MSCP Management Goals (Table 3-5):
Autecology/natural history, and reduce fire risk.
Monitoring Methods (Table 3-5): Site specific

Species information: Original 12 occurrences all from Lake Hodges segment in Santa Fe Valley SP (447 indiv; approx 5-6% of US population - Roberts 1993). More recent locations found in western Metro-Lakeside-Jamul segment (Rancho Santa Fe/Fairbanks Ranch).

Draft Adaptive Management Goals: Maintain current populations by management to control edge effects, promote germination of seeds and maintain diverse age class structure, and reduce risk of catastrophic fires.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor populations over ~10 individuals for threats and age structure (height or trunk area). Surveys can be staggered, but should survey every 5 years or post-fire. Evaluate all populations every 10 years for fire history (consider prescribed fire).

Data are available for the following sites:

- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - Propagation of 863 plants and 1200 seeds in open space area has been monitored from 2001 – 2006. Met success criteria in 2007. Helix estimated 312 surviving in year 5 of monitoring. Extensive detail available in revegetation reports (County Permit LPR 99-006).
  - USFWS had estimated 1800 individuals present on entire Starwood site prior to impacts. About 250 were lost during transplantation. Therefore, approximately 1550 individuals should remain on the Starwood site.
  - 2007 – County staff performed population and habitat assessment. MSCP Rare Plant Monitoring Form data available, as well as photos.
- **Santa Fe Valley (Golem)**
  - Open space dedicated in 2000.
  - HMP reports this species present in the eucalyptus woodland.
- **Lusardi Creek**
  - 2001
    - Mapped 2 colonies on the east side of this preserve, consisting of about 80 individuals. Data entered in Biological Observation Database.

2.3.4 Baccharis vanessae, "Encinitas Baccharis"

Priority (Ogden; MSCP; SDSU): **3; 3*R; 1**
Timing: **Fall (shrub)**

MSCP Management Goals (Table 3-5): Autecology/natural history, reduce fire risk, maintain male/female plant ratios.
Monitoring Methods (Table 3-5): Site specific (1 population) & Management Plan/Directive

Species information: MSCP database had 35 occurrences in subarea. 2 of 3 major populations in subarea (4S Ranch & Iron Mountain). Also known from South of Crestridge, near Harbison Canyon (CNDDB OCC#24), and Santa Fe Valley (NE portion of specific plan area). Several occurrences by Olivenhain Reservoir and Rancho Cielo. Species resprouts after fire. Location at Iron Mtn currently unknown.

Draft Adaptive Management Goals: Maintain existing populations by managing habitat, especially fire, and maintaining ability of this species to reproduce.

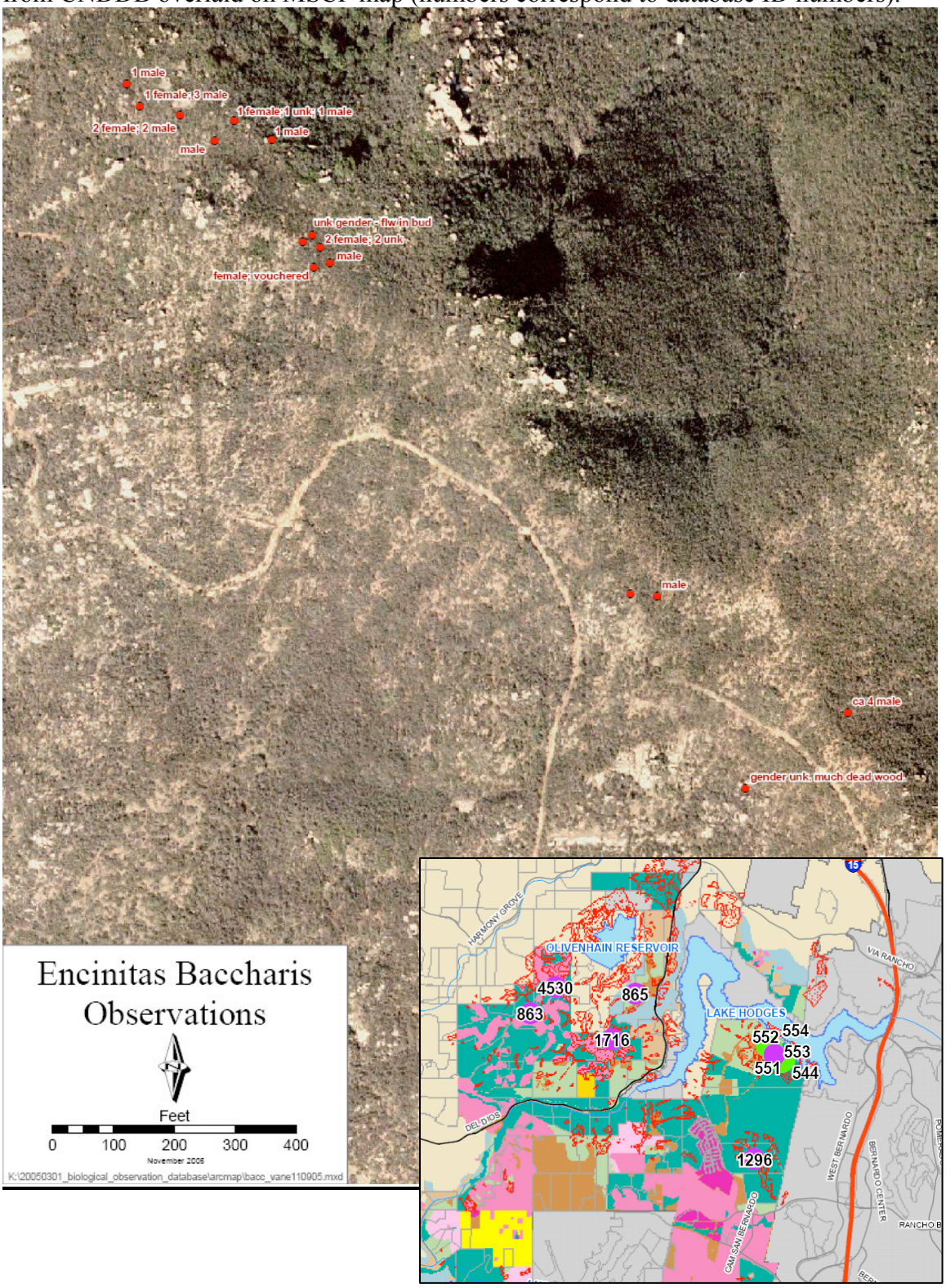
Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Census population at 4S Ranch every 5 years or post-fire, noting number of males and females. Other sites should confirm presence at least every 10 years.

Data are available for the following sites:

- **4S Ranch North – Ralph's Preserve (P-1 at 4S Ranch)**
  - 1999 – open space dedicated over the majority of this population.
  - 2005
    - Census performed - found 34 individuals (18 males, 10 female, 6 unknown). Data entered in Biological Observation database (see Figure 3). Methods involved recording GPS point for each group of individuals within about 5m of one another and recording number of individuals, including gender. Most plants found on tops of slopes (East & North-facing), usually below large granitic boulders.

Figure 3. Census of ***Baccharis vanessae*** on 4S Ranch (Ralph's Preserve). Number of individuals and gender of plant reported at each point. Inset map is of other known locations from CNDDB overlaid on MSCP map (numbers correspond to database ID numbers).



2.3.5 Bloomeria clevelandii, "San Diego goldenstar"

Bloomeria clevelandii by US Fish & Wildlife Service.

Synonym = *Muilla clevelandii*

Priority (Ogden; MSCP; SDSU): **2; 3*R; 2**
Timing: **Apr-Jun; perennial bulb**

MSCP Management Goals (Table 3-5): Monitoring transplanted populations, edge effects for this species.
Monitoring Methods (Table 3-5): Site specific (4 populations)

Species information: 4S Ranch population to be transplanted. 8 of 11 populations expected to be conserved. || Major population >1000 indiv. || Known from a number of locations in City of San Diego (4+), Chula Vista (1). In subarea known from: East Otay Mesa (Village 13, Upham, amendment area), San Vicente (County), 4S Ranch (County), Alpine area, San Miguel (USFWS), Proctor Valley, Jamul Creek, Otay Lakes South (County), Lusardi Creek (County).

Draft Adaptive Management Goals: Maintain existing and transplanted populations by managing for invasive species and trespass.

Monitoring Frequency: Every 2 years

Draft Monitoring Methods: Monitor for threats and estimate population size at 3 sites every 2 years on a rotating basis. (probably about 1 County site every 2 years)

Monitoring data are available for the following sites:

- **4S Ranch**
  - 2001
    - Reported 2 colonies – one was "relatively small" the other was unknown due to phenology [most of these were likely *Bloomeria crocea* based on subsequent surveys of this site]. Data are recorded in Biological Observation Database.
  - 2004
    - Land dedicated as open space.
  - 2005
    - Recorded approximately 60 individuals in 3 colonies on the southwestern site within this preserve area. Point data are recorded in the Biological Observation Database and in survey summary. Site conditions and threats also assessed. Artichoke thistle is a potential threat.

- **Otay Valley Regional Park**
  - 2001
    - Found 2 colonies totaling approximately 3,175 individuals southeast of Otay Lake; points were entered in Biological Observation Database.
  - CNDDB records show this species to occur along Harvest Road as well.
- **San Vicente Highlands**
  - 2001
    - Recorded 12 occurrences totaling over 800 individuals along Foster Canyon and entered points in Biological Observation Database.

Other sites included for monitoring in the Ogden BMP within the unincorporated area include:

- P-15 at Sycamore Canyon – cannot verify this location in CDDDB or other databases; however it is known from recent surveys along Foster Canyon (San Vicente Highlands)
- P-32 on East Otay Mesa – Some lands have been preserved in Otay Valley Regional Park, but many private open space lands have not yet been dedicated.
- P-35 in northeast San Ysidro Mountains – this land is managed by DFG.

This species is also present at the following locations within the subarea:

- **Crestridge Ecological Reserve** (observed just offsite near SE corner)
- **Upham Vernal Pool site** (APN 644-100-05) on Otay Mesa. CNDDB data point here for this species.
- **Otay Ranch Village 13** – reported to occur here, but open space not yet dedicated.
- **Alpine area**- reported locations in CNDDB.
- **San Miguel Mountain** – site managed by USFWS Refuges.
- **Proctor Valley** – reported here, but most lands still privately held.
- **Jamul Creek** – several points recorded in CNDDB in this valley; most still privately owned.

2.3.6 Brodiaea filifolia, "Thread-leaf brodiaea"

Priority (Ogden; MSCP; SDSU): **--; 2*R; --**
Timing: **April - May; perennial bulb**

MSCP Management Goals (Table 3-5): None given.
Monitoring Methods (Table 3-5): Habitat-based

Species information: Was not thought to occur in MSCP area. Location known at 4S Ranch South and along Artesian Trail.

Draft Adaptive Management Goals: Maintain existing populations by controlling trespass and invasive weeds on preserved lands where this species exists.

Monitoring Frequency: Every 2 years

Draft Monitoring Methods: Monitor threats around existing populations every 2 years. Confirm presence and count number of individuals.

Monitoring data are available for the following sites:

- **4S Ranch South**
  - 2004 – Open space dedicated
  - 2005
    - Seven field visits were made of this preserve area by DPLU staff.
    - Observed a small (1m x 2m) exclosure of barbed wire and chicken wire. John Minchin from Dudek constructed this to protect *Brodiaea filifolia* transplant site – he reported to DPLU that the *Brodiaea filifolia* had bloomed within the exclosure the last 4 years but was not observed blooming in 2005. According to John Minchin, 1 plant was detected in the Santa Fe Valley development footprint and was transplanted, along with salvaged soil and corms. More individuals were found in a roadway later, along with *Muilla clevelandii*, and were planted along deserted roadways with a revegetation project (old trails are visible in historical aerial photos). The project met success criteria in 2005. (Note: HMP for 4S Ranch reported 2 individual plants within the development area that were transplanted by DFG. The MSCP Biological Opinion states that 9 bulbs were transplanted.)
    - Four (4) individuals observed (outside the exclosure) on extreme southwest of site. Location recorded in Biological Observation Database.
  - 2006
    - Site surveyed in August to assess condition. Noted increasing presence of Artichoke thistle.

Also reported within subarea from Lake Hodges Segment in the vicinity of Artesian Road and Artesian Trail (reported in CNDDB and several recent projects).

2.3.7 Brodiaea orcuttii, "Orcutt's brodiaea"

Priority (Ogden; MSCP; SDSU): **2; 3*R; 3**
Timing: **April - May; perennial bulb**

MSCP Management Goals (Table 3-5): Protect from edge effects.
Monitoring Methods (Table 3-5): Site specific (4 populations) & Management Plan/Directive

Species information: San Vicente population is "critical population" and must be 100% conserved. Also known from Santa Fe Valley (Bernardo Lakes and McCrink).

Draft Adaptive Management Goals: Maintain existing populations by controlling trespass and invasive weeds on preserved lands where this species exists.

Monitoring Frequency: Every 2 years

Draft Monitoring Methods: Monitor threats around existing populations every 2 years. Confirm presence and count/estimate number of individuals.

Monitoring data are available for the following sites:

- **OtayValley Regional Park**
  - 2001
    - Reported 8 colonies, totaling 162 individuals south of Otay Lakes. Four (4) locations are recorded in the Biological Observation Database totaling 13 individuals.
- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - A "few individuals" adjacent to vernal pools in open space.[20]
  - 2005
    - DPLU staff visited vernal pool site to assess condition. Native annuals and bulbs were not in bloom. Reported site to be in fair condition and threats included Artichoke thistle and potential trespass from homes being built adjacent to vernal pool preserve (fence in poor condition).
  - 2007
    - DPLU staff visited the site on 5 occasions. Fence appears to be in good condition and Artichoke thistle is under control in vernal pool area (although some remain outside this area). Searched for *Brodiaea* but only *B. terrestris* was observed; perhaps few individuals bloomed this year due to low rainfall.

[20] Helix Environmental Planning, Inc. June 28, 2004. Starwood – Santa Fe Valley, Final Habitat Management Plan, Third Amendment, TM 5073; Log No. ER 95-08-007.

- **Santa Fe Valley (Bernardo Lakes)**
    - Reported as present in Northwest corner of open space.[21]
    - 2004 – 2006
        - Site visits by staff to assess site conditions (at least one per year). Main threat identified at the site was presence of Artichoke thistle. *Brodiaea* was not detected during visits, but surveys were not within the area where it was reported.
    - 2007
        - Site visit in April to area previously reported. No individuals detected, but appropriate habitat was observed; *Brodiaea orcuttii* was not observed blooming here at this time. Site data and photos available.

Monitoring sites within the unincorporated area are also prescribed at the following locations by Ogden BMP:

- **East Otay Mesa (P-32)**
    - This area has not yet been preserved (as of 2006).
- **Otay Mountain (P-32 at Cedar Canyon)**
    - BLM owns this site.

[21] Affinis. February 1998. Habitat Management Plan for the Bernardo Lakes Project (TM 5070 RPL3R, AD-95-015, SP 95-001).

2.3.8 Ceanothus cyaneus, "Lakeside-lilac"

Priority (Ogden; MSCP; SDSU): **2; 3; 2**
Timing: **Apr - Jun (bloom); shrub**

MSCP Management Goals (Table 3-5): Autecology/natural history, reduce fire damage (incl. prescribed fires).
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Narrow endemic. Found at Crestridge and Harbison Canyon, San Vicente Highlands and Boulder Oaks area, west side of Otay Mtn, Dehesa, McGinty Mtn, and along Wildcat Canyon Rd.

Draft Adaptive Management Goals: Maintain existing populations by managing fire regime.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor aerial photos every 5 years for signs of disturbance, including fires. Monitor fire history at major populations (>100 individuals). Post-fire surveys (2-3 yrs) to confirm regeneration.

Monitoring data are available for the following site:

- **Boulder Oaks**
  - 2003
    - Boulder Oaks acquired.
    - Mapped 24 points representing at least 85 individuals along Foster Canyon Trail; recorded in the Biological Observation Database.
    - Site burned in Cedar Fire.
  - Photo plot monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2003, 2004, and 2005 at San Vicente Photo Plot. Changes noted included: (1) an apparently new trail within the plot between 2004 and 2005 (this was not near species points and could be due to increased resolution); and (2) vegetation regrowth after 2003 fires.
- **Crestridge Ecological Reserve**
  - A significant population occurs at this site and in the surrounding areas (e.g., Harbison Canyon Linkage). Point locations recorded by CBI are included in the Biological Observation Database (10 locations, at least 25 individuals).

A pollination study (funded by Local Assistance Grant) is currently underway for this species (starting Spring 2007).

2.3.9 Ceanothus verrucosus, "Wart-stem-lilac"

Priority (Ogden; MSCP; SDSU): **1; 3; 3**
Timing: **Nov - Jun (bloom); shrub**

MSCP Management Goals (Table 3-5): Increase populations, autecology, natural history, reduce fire damage (incl. prescribed fire). New populations to be evaluated to include in preserve.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot & Management Plan/Directive

Species information: Reveg plans must include in appropriate habitats. Main concentration occurs around Lake Hodges - common component of chaparral locally, sometimes dominant species.

Draft Adaptive Management Goals: Maintain existing populations by managing fire regime. Increase populations by incorporation into revegetation efforts where appropriate.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor aerial photos every 5 years for signs of disturbance, including fires. Monitor fire history at major populations (>100 individuals). Post-fire surveys (2-3 yrs) to confirm regeneration.

Monitoring data are available for the following sites:

- **Santa Fe Valley**
  - Photo plot monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2003, 2004, and 2005 at Santa Fe Valley 1 & 2 Photo Plots.
      - Santa Fe Valley 1 – the only change noted was fuel management adjacent to the private road between 2003 and 2004. Other comparisons were obscured by differences in image quality.
      - Santa Fe Valley 2 – No significant changes to this population were noted. However, grading within an adjacent take-authorized area were noted between the 2003 and 2004 photos.
    - Photographs were taken in the field (December 2004 and December 2006) of a dense stand on Shaw property (owned by TET). No differences were detected, although differences in image quality and phenology made comparisons somewhat difficult.
  - 2001
    - Reported 33 colonies totaling over 1500 individuals (not all colonies were counted)[22]. Data are recorded in Biological Observation Database.

[22] County of San Diego. April 30, 2002. Sensitive Plant Monitoring Final Report. State of California, Department of Fish and Game, Standard Agreement No. P9950025.

- 2004 – 2006
    - Site visits to several locations (Starwood/Crosby, Shaw, and Golem) confirmed several large stands of this species (sometimes as a dominant) with no obvious threats to its persistence.
- **Tijuana River Valley Regional Park** – Several populations present on mesa tops east of Smugglers' Gulch.[23]

[23] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.3.10 Cordylanthus orcuttianus, "Orcutt's bird's beak"

Priority (Ogden; MSCP; SDSU): **1; 2*R; 1**
Timing: **Mar-Sep; annual herb**

MSCP Management Goals (Table 3-5): None given.
Monitoring Methods (Table 3-5): Site specific (4 populations) & Management Plan/Directive

Species information: Otay populations to be conserved (3 of 4). Found in Otay River Valley (County and others) and SE of Otay Lakes (State-land). Conditions to be included in amendments to MSCP. || Monitoring point suggested at Goat Canyon/Spooners Mesa - recent surveys revealed none.

Draft Adaptive Management Goals: Maintain existing populations by managing protected habitat.

Cordylanthus orcuttiianus by US Fish & Wildlife.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor for threats and estimate population size (number of individuals and/or area). Monitor annually at 1 stable population (Otay River, City of San Diego) and rotate surveys (or reconaissance) between 3 other sites each year.

Monitoring data are available for the following sites:

- **Tijuana River Valley (P-32 Goat Canyon/Spooner's Mesa)**
  - Two occurrences are reported in CNDDB for Imperial Beach Quad, both of which are over 20 years old.
  - 2004 – None encountered during focused surveys by EcoSystems Restoration Associates.[24]

[24] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.3.11 Cupressus forbesii, "Tecate cypress"

Priority (Ogden; MSCP; SDSU): **3; 3; 1**
Timing: **Jan - Dec; tree**

MSCP Management Goals (Table 3-5): Maintain or increase populations, autecology/natural history, reduce fire risk.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Located mainly on BLM lands on Otay Mountain.

Draft Adaptive Management Goals: Maintain or increase existing population on Otay Mountain by managing ecosystem for natural fire regime.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor aerial photos every 5 years for signs of disturbance. Evaluate age structure every 10 years based on fire history maps. [Coordinate monitoring with that for Thornes hairstreak]

- **O'Neal Canyon**
  - Photo plot monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at O'Neal Canyon Photo Plot. Disturbances were noted to Tecate cypress, which is visible in many of the photos, due to fires and other disturbances. Between 1997 and 2000 there appeared several areas of new disturbance (and fewer trees) in O'Neal Canyon and on the south end (broadened trail in SW quad and loss of part of dense stand of trees in SE quad). 2005 photo showed significant regrowth of trees and rehabilitation of several disturbed patches, and only one small area with new noticeable disturbance.
    - Fire history for this site reveals that this area has had at least 8 fires since the first recorded in 1919. Most of these were on the northern and southern borders of this actual plot. Larger fires included the 1982 (Otay #9) fire which burned the southern half of the property; the 1996 (Otay #322) fire that burned all but a small NW portion of the property; and the 2003 (Otay/Mine) fire that burned the entire property. Presuming records have been kept since the 1919 fire, larger fires on different areas of this plot have been spaced by 63 (1919-1982), 14 (1919-1996), and 7 (1996-2003) years. Currently CALFIRE is actively suppressing all fires on Otay Mountain (P Famalaro, 2007, pers. comm.).

2.3.12 Deinandra conjugens, "Otay tarplant"

SYNONYM = *Hemizonia conjugens*


Deinandra conjugens by John Martin, USFWS.

Priority (Ogden; MSCP; SDSU): **1; 3*R; 1**
Timing: **Summer; annual**

MSCP Management Goals (Table 3-5): Monitoring and adaptive management (including population fluctuations), and edge effects.
Monitoring Methods (Table 3-5): Site specific (5 populations) & Management Plan/Directive

Species information: Narrow endemic. Coverage require avoidance in Otay River Valley linked to active recreation areas in Otay Ranch RMP/GDP. Proctor Valley population in amendment area. || MSCP database had 129 occurrences in subarea; largest = Rancho San Miguel (223,000), Proctor Valley (10,000), Dennery Cyn/Cal Terraces (15,000), Rice Cyn (50,000), Poggi Cyn (11,000). Other populations at Otay River Valley, Wolf Cyn, Jamacha Hills, Sal Creek area, Long Cyn, North Shore of Sweetwater Reservoir, Spring Cyn, Otay Mesa, and Otay Ranch.

Draft Adaptive Management Goals: Maintain existing distribution and suitable habitat, including natural disturbance regimes. Expand existing populations on to preserved lands with Diablo clay.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor threats around existing populations annually. Confirm presence and estimate number of individuals. Maintain permanent plots at Rancho San Miguel & Proctor Valley; monitor 3 other sites annually on rotating basis.

Most locations for this species are on lands managed by other agencies (USFWS Refuges or City of San Diego) or outside the unincorporated area (City of San Diego, City of Chula Vista).

Other sites reported within County Subarea:

- Otay Landfill where it was observed along roadways near Otay Landfill by DPW staff (ca. 2004). This site has not been dedicated for conservation and, therefore, is not monitored at this time.
- Johnson Canyon – CNDDB description of population. Potentially on parcel (646-040-23) acquired by County in 2004. Baseline surveys have not yet been completed.

2.3.13 Dudleya variegata, "Variegated dudleya"

Priority (Ogden; MSCP; SDSU): **1; 2; 2**
Timing: **Mar - Jun (blooms around May); perennial succulent corm**

MSCP Management Goals (Table 3-5): Species-specific monitoring and species specific measures for edge effects (including recreation).
Monitoring Methods (Table 3-5): Site specific (5 populations) & Management Plan/Directive

Species information: Narrow endemic. Populations on Otay Mtn are in amendment areas - strategies must be proposed for protection. || Other populations known in subarea from Santa Fe Valley (Shaw, Starwood, and Lusardi Creek), 4S Ranch South, Goodan Ranch, Sweetwater Reservoir, Dictionary Hill, San Miguel (USFWS Refuge), Otay Lakes area, Otay Mesa, and Jamul Creek.

Draft Adaptive Management Goals: Maintain existing populations by managing for invasive species and trespass.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor for threats (invasive plants and trespass) and estimate population size. Monitor Otay Lakes South population annually and 4 other populations on a rotating basis (each should be monitored every 5 years).

Monitoring data are available for the following sites:

- **4S Ranch South**
  - 2001
    - Observed 3 locations totaling over 40 individuals (one population of about 40, the other two were not estimated). Data are recorded in Biological Observation Database.
  - 2005
    - Known locations from 2001 survey were revisited and documented by GPS points – recorded in Biological Observation Database. Located 4 colonies, the largest of which consisted of about 100 individuals; others contained 2, 12 and 84 individuals. (Total is about 200 individuals)
    - Survey plots were established at this site and performed according to draft methodologies developed by USFWS Refuge staff (Grid Plots). Detailed data available in a spreadsheet. Summary: survey of 10% of the area detected 81 individuals with an average of 2.7 ± 2.9 individuals per $1m^2$ (reported with 95% confidence interval).

        - Site conditions assessed. Main threats include Artichoke thistle (large source population in agricultural fields to the west), non-native grasses (potentially), and future edge effects from homes being constructed adjacent to site. Site is fenced and in generally good condition with little evidence of trespass.
    - 2006
        - Site conditions assessed. Artichoke thistle and non-native grasses persist and expanded somewhat. Trail constructed (per plans) in open space. No signs of edge effects from occupied residences.
    - 2007
        - Largest population revisited and recorded data on MSCP Rare Plant Survey Form. Estimated population size at 500 individuals.
- **Lusardi Creek**
    - 2001
        - Reported 5 colonies with a total of approximately 835 individuals. Data recorded in the Biological Observation Database.
    - 2005
        - Known locations from 2001 survey were revisited and documented by GPS points – recorded in Biological Observation Database. Located 3 colonies totaling 72 individuals.
        - Survey plots were established on this site and performed according to draft methodologies developed by USFWS Refuge staff (Grid Plots). Grid plot survey of 10% of the area detected 82 individuals with an average of 4.10 ± 2.15 individuals per $1m^2$. Field data and photos available.
    - 2007
        - Revisited survey plot site and recorded data on MSCP Sensitive Plant Survey Form. Estimated population size to be 30 individuals.

- **Santa Fe Valley (Shaw)**
    - 2001
        - Reported 3 colonies totaling approximately 295 individuals. Data are recorded in the Biological Observation Database.
    - 2005
        - Known locations from 2001 survey were revisited and recorded in Biological Observation Database. Located 4 colonies totaling about 106 individuals.
- **Sycamore Canyon / Goodan Ranch (P-15 at Sycamore Canyon)**
    - 2005
        - Incidental sightings at 2 locations totaling about 20 plants were reported. Data are available electronically.
        - Recorded 2 locations totaling 20 individuals in the Biological Observation Database.
        - *This survey point should be re-evaluated as a monitoring site, potentially replacing it with sites in Lusardi Creek or 4S Ranch.*

    - 2007
        - Incidental sighting during *Acanthomintha* surveys. Recorded about 50 individuals. Data recorded in Biological Observation database.
- **Sunroad Centrum – East Otay Mesa**
    - 2001 – Reported one colony with "several hundred individual plants" and six more locations totaling 11 individuals in the northwest portion of the preserve.[25]

Other recommended survey points from the Ogden BMP are the responsibility of other agencies:

- P-18 is located on USFWS Refuge land on San Miguel Mountain
- P-28 is located in the City of Chula Vista on Otay River West
- P-31 in lower Salt Creek is in the City of Chula Vista
- P-34 in Marron Valley is owned by the City of San Diego

[25] Berg, Steve. July 11, 2001. Letter report re: Sunroad Centrum *Dudleya variegata* surveys.

2.3.14 *Eryngium aristulatum* ssp. *parishii,* "San Diego button-celery"

San Diego button-celery by Greg Mason (USFWS).

Priority (Ogden; MSCP; SDSU): **--; 2; 2**
Timing: **Spring; perennial herb**

MSCP Management Goals (Table 3-5): Address edge effects (species specific).
Monitoring Methods (Table 3-5): ASMD (wetlands)

Species information: City Narrow Endemic. SDNWR will manage for recovery. Four populations subject to edge effects (Proctor Valley, Otay River Valley, Del Mar Mesa, Spring Canyon). Also on Starwood (Santa Fe Valley, High Society Way). || 222 occurences known from MSCP area, 49 within subarea; major populations at Otay Mesa (OVRP along Harvest Road, Upham site), near Otay Lakes, and in Proctor Valley (State)

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Verify presence and estimate abundance for this species.

- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - Small population in 3 vernal pools within open space.[26]
  - 2005
    - DPLU staff visited vernal pool site to assess condition. Reported site to be in fair condition and threats included Artichoke thistle and potential trespass from homes being built adjacent to vernal pool preserve (fence in poor condition).
  - 2007
    - *Eryngium* was observed in 9 of the 20 pools inspected. Detected in the following pools: 2, 3, 6, 8, 12, 15, 16, 18, 19 (pool numbers are from Starwood Habitat Management Plan). Population estimates were made in 3 pools totaling of over 100 individuals (2 in VP16, 100+ in VP18, and 7 in VP2).

[26] Helix Environmental Planning, Inc. June 28, 2004. Starwood – Santa Fe Valley, Final Habitat Management Plan, Third Amendment, TM 5073; Log No. ER 95-08-007.

        - DPLU staff visited the site on 4 occasions. Fence appears to be in good condition and Artichoke thistle is under control in vernal pool area (although some remain outside this area).

- **Sunroad Centrum**
    - This is a vernal pool restoration site and part of the J-22 pools.
    - 1993 – 65 individuals observed.[27]
    - 2007 – Established survey point and observed 10 individuals in the one vernal pool observed. Other vernal pools not observed, so it is likely that more individuals were present at this site. Survey data and photos available.

See map under *Pogogyne nudiuscula* for OVRP (Harvest Road) and Upham sites.

[27] Reported in: REC Consultants, Inc. December 2003. Sunroad Centrum Vernal Pool Management Plan.

2.3.15 Ferocactus viridescens, "Coast barrel cactus"

Priority (Ogden; MSCP; SDSU): **3; 3; 3**
Timing: **Jan - Dec; shrub-succulent**

MSCP Management Goals (Table 3-5): Protect from edge effects and unauthorized collection, fire mgmt/control to protect freq fires.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Abundant species protected at various levels.

Draft Adaptive Management Goals: Maintain existing populations through habitat protection and management of preserved lands (trespass, invasive weeds, unauthorized collection, and excessive fire damage).

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Observe photo plots for disturbance every 5 years. Presence of large populations should be verified every 5 - 10 years.

Monitoring data are available for the following sites:

- **4S Ranch**
  - Photo Plots
    - Repeat field photographs from 2005 & 2007 reveal no significant changes to the population or general site conditions at a population of approximately 50 individuals.
  - 2001
    - Recorded 31 locations representing approximately 430 individuals. Data are recorded in Biological Observation Database.
  - 2005
    - Site inspections by DPLU staff. Several populations observed throughout open space with no obvious threats or signs of illegal collecting. Data points are recorded in Biological Observation Database.
  - 2007
    - Remapped several populations of *Ferocactus*. Data points recorded in Biological Observation Database.
- **Lusardi Preserve**
  - 2001
    - Recorded this species at 49 locations representing approximately 136 individuals. Data points are recorded in Biological Observation Database.
  - 2005

        - Site inspections by DPLU staff. Several populations observed throughout open space with no obvious threats or signs of illegal collecting. Data points are recorded in Biological Observation Database.
- **O'Neal Canyon (Otay Mountain)**
    - Photo Plot Monitoring
        - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at O'Neal Canyon Photo Plot. Between 1997 and 2000 there appeared several areas of new disturbance (and fewer trees) in O'Neal Canyon and on the south end (broadened trail in SW quad and loss of part of dense stand of trees in SE quad). Specific locations of *Ferocactus* are unknown within this plot, so it is currently difficult to assess potential damage to this species.
- **Otay Valley Regional Park**
    - 2001
        - Recorded 18 locations representing at least 109 individuals around Otay Lakes. Data points are recorded in Biological Observation Database. (site called Otay Lakes South)
- **Otay Ranch**
    - Photo Plot Monitoring
        - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at Otay Ranch 1 Photo Plot. A significant change in green vegetation was observed between 2004 and 2005 photographs, but this appears to be a difference in plant phenology.
    - 2001
        - Recorded 13 locations representing at least 54 individuals. Data points are recorded in Biological Observation Database. (site called Otay Lakes North)
- **Santa Fe Valley**
    - Photo Plot Monitoring
        - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at Santa Fe Valley 2 & 3 Photo Plots.
            - Santa Fe Valley 2 – No significant changes to this population were noted. However, grading within an adjacent take-authorized area were noted between the 2003 and 2004 photos.
            - Santa Fe Valley 3 – No significant changes to this population were noted. Vegetation cover appeared relatively constant over time.
    - 2001
        - Recorded 15 locations representing at least 394 individuals. Data are recorded in the Biological Observation Database.
    - 2004
        - Site inspections at Bernardo Lakes by DPLU staff.
    - 2005
        - Site inspections at Bernardo Lakes by DPLU staff.

- **Tijuana River Valley Regional Park**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at Tijuana Park 1 Photo Plot. No significant changes around this population were noted.
  - 2004
    - Seven populations in SW corner of TRVRP on south-facing slopes in Maritime succulent scrub.[28]
- **Sunroad Centrum**
  - 2003
    - Approximately 100 individuals observed on the project site.[29] At least 47 individuals were to be salvaged and transplanted into the preserve area.
  - 2007
    - Several transplant sites were examined during DPLU site visit. Except for one location, most transplanted individuals appear to have survived. Data was entered in Biological Observation Database and field notes.

[28] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.
[29] REC Consultants, Inc. December 2003. Sunroad Centrum Barrel Cactus Transplantation Plan.

2.3.16 Lepechinia cardiophylla, "Heart-leaf pitcher sage"

Priority (Ogden; MSCP; SDSU): **2; 3; 2**
Timing: **Spring?; shrub**

MSCP Management Goals (Table 3-5): Protect from edge effects, increase populations, autecology/natural history/fire risk.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Iron Mtn 100% conserved. Two CNDDB points near Iron Mountin: one near Poway/ unincorporated border and another (recently submitted by J Buegge) along Ellie Lane Trail in unincorporated area on non-preserved land.

Draft Adaptive Management Goals: Maintain existing populations by management for edge effects (invasives, trampling, and frequent fires). Establish new populations by transplantation into appropriate habitat.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor disturbance around known populations from aerial photos. Field surveys for other threats every 10 years. Monitor response to fire within 3 years of fire. Note new populations during field surveys.

Monitoring data area available from the following areas within the subarea:

- **Iron Mountain**
  - 2007
    - This site has not yet been preserved; therefore, monitoring is not required at this time.
    - Incidental sighting of one population of about 100 individuals along the Ellie Lane Trail (within the unincorporated area). Individuals are 4-5 feet tall and appear healthy after 2003 Cedar Fire. Voucher specimen (JB1#1447) was collected and submitted to the San Diego Natural History Museum.

2.3.17 Lepechinia ganderi, "Gander's pitcher sage"

Priority (Ogden; MSCP; SDSU): **2; 3; 2**
Timing: **Spring?; shrub**

MSCP Management Goals (Table 3-5): Edge effects, increase populations, autecology/natural history, and fire risk.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot & Management Plan/Directive

Species information: 100% conserved. One pop in major amendment (Otay Mtn). || Known from San Miguel Mtn (USFWS), Callahan Mtn (USFWS), Otay Mtn (BLM & others; numerous locations, including O'Neal Canyon former TET property).

Draft Adaptive Management Goals: Maintain existing populations by management for edge effects (invasives, trampling, and frequent fires). Establish new populations by transplantation into appropriate habitat.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor disturbance around known populations from aerial photos. Field surveys for other threats every 10 years on several (3?) populations (Otay and San Miguel). Monitor response to fire within 3 years of fire.

- **O'Neal Canyon (Otay Mountain)**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at O'Neal Canyon Photo Plot. No significant disturbances were noted around the species point (CNDDB), other than fires. On the entire plot disturbances were noted between 1997 and 2000 photos where there appeared several areas of new disturbance in O'Neal Canyon and on the south end (broadened trail in SW quad and loss of part of dense stand of trees in SE quad). 2005 photo showed significant regrowth of trees and rehabilitation of several disturbed patches, and only one small area with new noticeable disturbance.

2.3.18 Monardella hypoleuca ssp. lanata, "Felt-leaved rock-mint"

Priority (Ogden; MSCP; SDSU): **3; --; 3**
Timing: **Spring (flowering); shrub**

MSCP Management Goals (Table 3-5): Edge effects, uncontrolled access.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot & Management Plan/Directive

Species information: Narrow endemic.Critical pops: Sycuan Peak and Iron Mtn. Persistence depends, in part, on conservation outside MSCP. || Known populations at Sequan Peak (critical population; DFG), San Vicente Highlands @ Foster Truck Trail (critical population; County), McGinty (USFWS), Crestridge (DFG), San Miguel Mtn (USFWS), Alpine (several locations), Otay Mtn near peak (BLM).

Draft Adaptive Management Goals: Maintain existing populations by management for edge effects (invasives, trampling).

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor disturbance around known populations from aerial photos. Field surveys for other threats every 10 years. Note new populations during field surveys.

Monitoring data are available for the following sites:

- **Crestridge**
  - One data point was recorded during baseline surveys of this area. This is recorded in the Biological Observation Database.
- **Barnett Ranch**
  - 2002 – land acquired
  - 2003
    - Baseline surveys of Barnett Ranch detected this species. One individual on the eastern edge of the property in coastal sage scrub.
  - Survey protocols will be incorporated into ASMD for this preserve.
- **Boulder Oaks**
  - 2003 – acquired by County of San Diego
  - 2007 – population observed during baseline surveys[30]
- **McGinty Mountain**

[30] Jones & Stokes. March 30, 2007. Biological Resources Letter Report for the Boulder Oaks Project (Project No. 517426).

- Photo Plot Monitoring
  - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at McGinty 1 & 2 Plots.
    - McGinty 1 – No significant change in vegetation cover was noted.
    - McGinty 2 – No significant change in vegetation cover was noted.
- 2001
  - Recorded 4 individuals at 4 locations; data points are recorded in Biological Observation Database. This species was reported to be diffuse throughout McGinty Mountain Preserve area.

- **Iron Mountain**
  - May 2007 - Incidental observations around Iron Mountain (along Ellie Lane Trail and Iron Mountain Trail) indicate that this species is doing well after the 2003 Cedar Fire. At least 100 individuals were observed along each trail segment in open areas on north-facing slopes. Some individuals had inflorescences remaining from the previous years and there were many seedlings observed. These data were recorded and submitted to CNDDB in June 2007.

2.3.19 Monardella viminea, "Willowy monardella"

Synonym = *Monardella linoides* ssp. *viminea*

Priority (Ogden; MSCP; SDSU): **1; 1*R; 2**
Timing: **Spring; sub-shrub**

MSCP Management Goals (Table 3-5): Edge effects.
Monitoring Methods (Table 3-5): Site specific (2 populations) & Management Plan/Directive

Species information: Occurs in drainages so is protected by wetland permitting. || MSCP database had 6 occurrences. Major populations at Otay Mountain, Marron Valley, and Sycamore Canyon (partly into subarea). || Current records from: Sycamore Cyn (city and County), Lopez Cyn, Otay Lakes, Otay Lakes South (Conserved subj to agreement).

Draft Adaptive Management Goals: Maintain existing populations by maintaining suitable habitat along creeks.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor threats (especially invasive plants) and census plants. Perform annually at larger population (probably Marron Valley or Sycamore Cyn) and one other site (rotate annually between other known populations. Also search for new locations (1/year).

Note: site P-33 from the BMP is monitored by the City of San Diego. The population in Cedar Canyon and Marron Valley monitored by the City of San Diego is morphologically distinct and has been determined to be a new species - *Monardella stoneana*. The City has monitored this site annually since 2000.

Monitoring data are available for the following sites:

- **Otay Valley Regional Park**
  - The MSCP reported 300 individuals in this drainage.[31]
  - 2001
    - Recorded 4 colonies totaling about 12 individuals southeast of Otay Lake (west of Little Cedar Canyon); data points are recorded in Biological Observation Database.
  - Subsequent collection should be made to determine if this is *M. viminea* or *M. stoneana*.
- **Sycamore Canyon / Goodan Ranch (P-14)**

[31] County of San Diego. 2002. Sensitive Plant Report.

- There may be more individuals located along this canyon in other jurisdictions. For example, the City of San Diego has been monitoring a population in Sycamore Canyon (at Rancho Encantada) annually since 2000.
- 2005
  - Census of about 21 individuals in this area (done by Friends of Sycamore/Goodan). Data has been entered into Biological Observation Database. Field data and photos are also available.
- 2006
  - Friends of Sycamore/Goodan reported to have "found plants with last year's markers and set 2 new markers. All had grasses growing up through the plant." Recorded at least 10 individuals at 6 locations.

2.3.20 Navarretia fossalis, "Prostrate navarretia"

Priority (Ogden; MSCP; SDSU): **--; 1; 1**
Timing: **Spring; annual herb**

MSCP Management Goals (Table 3-5): Edge effects, conserve/maintain surrounding habitat for pollinators and hydrology.
Monitoring Methods (Table 3-5): ASMD (wetlands)

Species information: Federal wetland regulations apply. SR 125 impacts must be mitigated. SDNWR populations managed for recovery. || Fewer than 30 populations exist in US. Known from following complexes within subarea: Sunroad Centrum (J22; in County), Proctor Valley (R1), Sweetwater Res (S1-3), Otay Landfill (K2), and also Santa Fe Valley (High Society Wy). Those outside subarea: Cal Terraces (J2), Robinhood Ridge (J5), South Otay Mesa (J13), Anderson (J14), City SD land (J16-17), J28w (historic), Otay Ranch (J29-31), BB complex, and Ramona (south of airport).

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing to minimize disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Verify presence and estimate cover or abundance for this species at 2 or more pools per year.

Known only from the following locations where County has management and/or monitoring responsibilities:

- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - Small populations in 2 vernal pools within open space.[32]
  - 2005
    - DPLU staff visited vernal pool site to assess condition. Reported site to be in fair condition and threats included Artichoke thistle and potential trespass from homes being built adjacent to vernal pool preserve (fence in poor condition).

[32] Helix Environmental Planning, Inc. June 28, 2004. Starwood – Santa Fe Valley, Final Habitat Management Plan, Third Amendment, TM 5073; Log No. ER 95-08-007.

- 2007
  - All 20 vernal pools were inspected but *Navarretia* was not detected. However, detection of this species was unlikely due to phenology and low number of pools observed.
  - DPLU staff visited the site on 4 occasions. Fence appears to be in good condition and Artichoke thistle is under control in vernal pool area (although some remain outside this area).

- **Sunroad Centrum**
  - 2003
    - Approximately 12 individuals reported from J-22 complex pools in 1993.[33]
  - 2007
    - Surveyed several vernal pools at this site and did not detect this species; however, species presence was unlikely due to the low amount of rainfall this year. The site appeared to be in good condition with a high diversity of native flora and fauna.

[33] Reported in: REC Consultants, Inc. December 2003. Sunroad Centrum Vernal Pool Management Plan.

2.3.21 Nolina interrata, "Dehesa beargrass"

Priority (Ogden; MSCP; SDSU): **2; 3; 1**
Timing: **Jan - Dec; long-lived perennial herb**

MSCP Management Goals (Table 3-5): Edge effects, maintain surrounding habitat for pollinators.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot & Management Plan/Directive

Species information: Narrow endemic. McGinty Mtn (USFWS, 100%), Sequan Peak (CDFG, 50%) protected. Also on Dehesa Peak (mostly private) and Dehesa Valley (mostly private). Biological Opinion: all known occurrences withing 6 sq mi within subarea plan; 3 major populations in subarea; MSCP database had 34 occurrences - 19 in Metro-Lakeside-Jamul segment, 14 in South County segment.

Draft Adaptive Management Goals: Maintain existing populations by controling invasive species, managing for natural fire regimes, and maintaining surrounding habitat to provide for pollinators.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor large populations (>50 individuals) for threats by detecting disturbance on aerial photographs (supplement with field data on invasive species every 10 years). Monitor fire history for all known populations every 10 years.

Monitoring data are available for the following sites:

- **McGinty Mountain**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at McGinty 1 & 2 Plots.
      - McGinty 1 – No significant change in vegetation cover was noted.
      - McGinty 2 – No significant change in vegetation cover was noted.
  - 2001
    - Recorded 84 GPS coordinates "along periphery of population" and estimated the population to be at least 1,000 individuals. Data points are recorded in the Biological Observation Database. Photos are also available.
  - 2006
    - Interagency monitoring group tested monitoring protocols at this site for the rare plant monitoring revision. Data available from City of San Diego and/or USFWS Refuges.

2.3.22 Orcuttia californica, "California Orcutt grass"

Priority (Ogden; MSCP; SDSU): **--; 1; 1**
Timing: **Spring; annual grass**

MSCP Management Goals (Table 3-5): Edge effects, maint surrounding habitat for pollinators.
Monitoring Methods (Table 3-5): ASMD (wetlands)

Species information: Narrow endemic. USFWS to work with Border Patrol. Known from: Ramona K-mart pool conserved outside MHPA in the City of San Diego and Miramar. || MSCP database 8 occurrences in MSCP, one of which is in subarea on Otay Mesa at Sunroad (persistence unknown).

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Verify presence and estimate cover or abundance for this species at all known sites annually.

This species has not been verified in recent years but is reported within the South County MSCP Subarea on Otay Mesa (**Sunroad Centrum** open space). This site was dedicated in November 2003. A general site inspection was conducted in 2007, but this species was not detected; however the low number of pools observed made detection unlikely. In 2007 the site appeared to be in good condition with a high diversity of native flora and fauna.

2.3.23 Packera ganderi, "Gander's butterweed"

SYNONYM = *Senecio ganderi*

Priority (Ogden; MSCP; SDSU): **2; 3; 2**
Timing: **Mar - May (bloom); perennial herb**

MSCP Management Goals (Table 3-5): Edge effects to this species, and autecology/natural history.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Narrow endemic. Sequan Peak (50%; CDFG), McGinty Mtn (90-100%; USFWS, CDFG, TNC) preserved. El Capitan population is critical (must be 100% conserved) [CNDDB record is on Forest Service land outside MSCP]. Also present at Black Mountain (City of San Diego).

Draft Adaptive Management Goals: Maintain current distribution by managing for invasive species and trespass.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor large populations (>20 individuals) for threats by detecting disturbance on aerial photographs every 5 years. Verify species locations and monitor threats in field every 10 years.

Monitoring data are available for the following sites:

- **McGinty Mountain**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at McGinty 1 & 2 Plots.
      - McGinty 1 – No significant change in vegetation cover was noted.
      - McGinty 2 – No significant change in vegetation cover was noted.
  - 2001
    - Recorded 18 locations and estimated population to be over 180 individuals. Data are recorded in the Biological Observation Database.
- **O'Neal Canyon**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at O'Neal Canyon Photo Plot. CNDDB point recorded in SW quadrant of this plot. Between 1997 and 2000 there appeared several areas of new disturbance (and fewer trees) in O'Neal Canyon and on the south end (broadened trail in SW quad and loss of part of dense stand of trees in SE quad). 2005 photo showed significant regrowth of trees and rehabilitation of several disturbed patches, and only one small area with new noticeable disturbance.

2.3.24 Pogogyne abramsii, "San Diego mesa-mint"

Priority (Ogden; MSCP; SDSU): **--; 2; 2**
Timing: **Spring; annual herb**

MSCP Management Goals (Table 3-5): Edge effects, maint pollinator habitat, and main pool watershed areas.
Monitoring Methods (Table 3-5): ASMD

Species information: City narrow endemic. Wetlands protections apply. Three major populations occur on Miramar. Montgomery Field (conserved and managed by City of SD). SDNWR managed for recovery. || MSCP database listed 62 occurrences in MSCP, none from subarea. || Known from Santa Fe Valley (High Society Way). Possibly also on Otay Ranch properties or south of Otay Lakes.

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Verify presence and estimate cover or abundance for this species at 5 or more sites annually.

Monitoring data are available for the following sites:

- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - Small population in 3 vernal pools within open space.[34]
  - 2005
    - DPLU staff visited vernal pool site to assess condition. Reported site to be in fair condition and threats included Artichoke thistle and potential trespass from homes being built adjacent to vernal pool preserve (fence in poor condition).
  - 2007
    - All 20 vernal pools were inspected, but *Pogogyne* was not detected. This may be due to low rainfall this year and early warm weather.
    - DPLU staff visited the site on 4 occasions. Fence appears to be in good condition and Artichoke thistle is under control in vernal pool area (although some remain outside this area).

[34] Helix Environmental Planning, Inc. June 28, 2004. Starwood – Santa Fe Valley, Final Habitat Management Plan, Third Amendment, TM 5073; Log No. ER 95-08-007.

2.3.25 Pogogyne nudiuscula, "Otay mesa-mint"

Pogogyne nudiuscula by Ken Bowles.

Priority (Ogden; MSCP; SDSU): **--; 1; 1**
Timing: **Spring; annnual herb**

MSCP Management Goals (Table 3-5): Edge effects, maintain pollinator habitat, and maintain pool watershed areas.
Monitoring Methods (Table 3-5): ASMD

Species information: City narrow endemic. SDNWR manage for recovery. Otay RMP includes protection. MSCP database indicated 89 occurrences in MSCP, 75 within subarea. || Known from Upham site (private), and Otay Valley Regional Park (County).

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

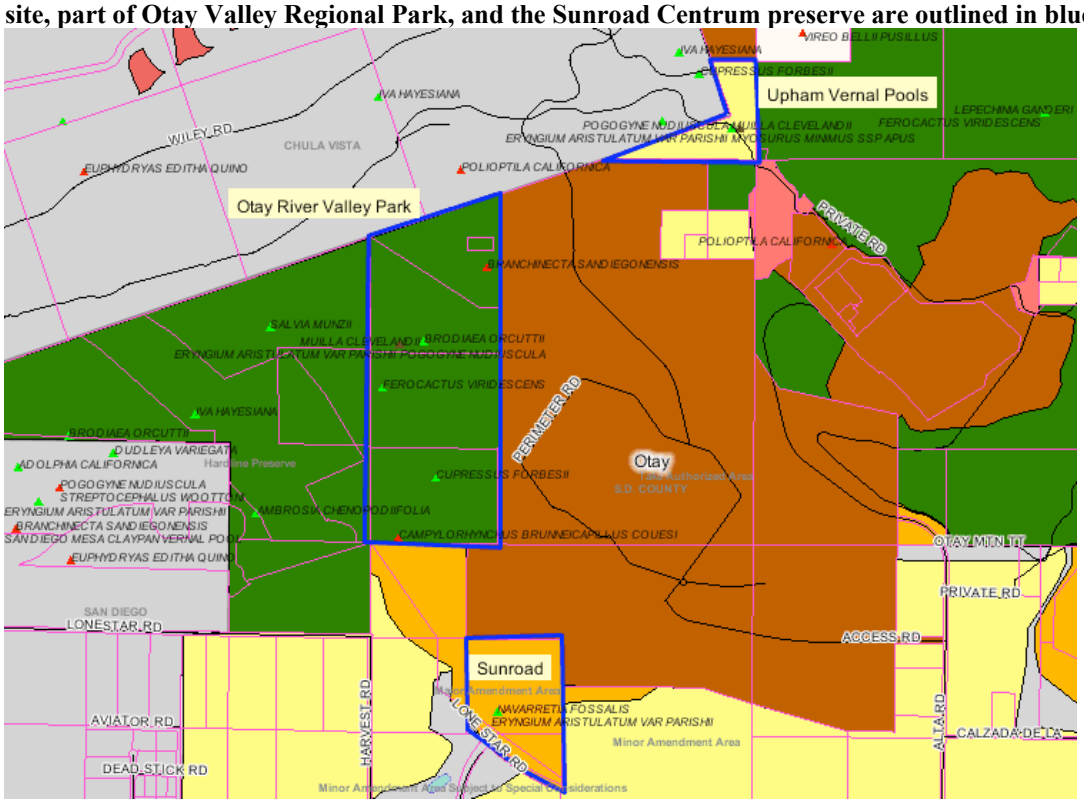
Draft Monitoring Methods: Vernal pool monitoring plan. Verify presence and estimate cover or abundance for this species at all known sites annually.

No focused monitoring efforts have not been done for this species to date.

Known locations within the South County MSCP Subarea include:

- **Upham Vernal Pool site**
    - CNDDB records show this species to be present at this site along with Little mousetail and San Diego button-celery. Site was to be managed by TET but is still privately owned by Upham Trust. See figure below.
- **Otay Valley Regional Park**
    - CNDDB records show this to be on preserved land along Harvest Road (APN 646-040-24) near the Sunroad site. See figure below.

Figure 1. Map of Otay Mesa area with MSCP designations and CNDDB species points. Upham Vernal Pool site, part of Otay Valley Regional Park, and the Sunroad Centrum preserve are outlined in blue.



2.3.26 Satureja chandleri, "San Miguel savory"

Priority (Ogden; MSCP; SDSU): **2; --; 3**
Timing: **Mar - May (bloom); small shrub**

MSCP Management Goals (Table 3-5): Autecology/natural history, reduce fire risk.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Reported (in CNDDB) NE of San Vicente Reservoir, Proctor Valley (USFWS), Otay Mountain near peak (BLM). Also reported at Rancho Jamul (Jamul Mts; DFG/County) (San Diego MSCP Rare Plant Monitoring Review, 2006).

Draft Adaptive Management Goals: Maintain current distribution by managing for natural fire regime.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor large populations (>20 individuals) for threats by detecting disturbance on aerial photographs every 5 years. Monitor fire history for all known populations every 10 years. Verify species locations and monitor threats in field every 10 years.

Monitoring data are available for the following sites:

- **McGinty Mountain**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at McGinty 1 & 2 Plots.
      - McGinty 1 – No significant change in vegetation cover was noted.
      - McGinty 2 – No significant change in vegetation cover was noted.
  - 2001
    - Focused surveys for rare plants did not detect this species at this site.
- **Boulder Oaks**
  - 2003 – acquired by County of San Diego
  - 2007 – Observed on site during baseline surveys.[35]

[35] Jones & Stokes. March 30, 2007. Biological Resources Letter Report for the Boulder Oaks Project (Project No. 517426).

2.3.27 Tetracoccus dioicus, "Parry's tetracoccus"

Priority (Ogden; MSCP; SDSU): **2; 3; 3**
Timing: **Apr - May (bloom); shrub**

MSCP Management Goals (Table 3-5): Edge effects to this species.
Monitoring Methods (Table 3-5): Habitat-based & Photo Plot

Species information: Fourteen populations (of 33) already protected. Critical pop: Dehesa. || CNDDB locations at McGinty Mtn (USFWS), Dehesa (private), Sequan Peak (DFG),

Draft Adaptive Management Goals: Maintain current distribution by managing for invasive species and trespass.

Monitoring Frequency: Every 5 years

Draft Monitoring Methods: Monitor large populations (>50 individuals) for threats by detecting disturbance on aerial photographs every 5 years. Verify species locations and monitor threats in field every 10 years.

Monitoring data are available for the following sites:

- **McGinty Mountain**
  - Photo Plot Monitoring
    - Aerial photographs examined from 1995, 1997, 2000, 2002, 2004, and 2005 at McGinty 1 & 2 Plots.
      - McGinty 1 – No significant change in vegetation cover was noted.
      - McGinty 2 – No significant change in vegetation cover was noted.
  - 2001
    - Reported to occur along with *Nolina interrata*. No specific data points are recorded, but he noted it as a component of the chaparral here. No population estimates were given.

2.4 ANIMAL MONITORING

The following pages summarize background information and monitoring data for each of the MSCP covered animal species for which specific monitoring efforts are required by the County of San Diego. The following information is given for each species:

Species name: Species are arranged in alphabetical order by latin name (following current taxonomy used by San Diego Natural History Museum) with the common name given in quotation marks. Common synonyms for latin names are also provided.

Photograph: photos are provided when available and not copyrighted.

Priority (Ogden; MSCP; SDSU): These species have been ranked in several documents to indicate their prioritization for conservation. The same scale was used for all efforts: 1 is high, 2 is moderate, and 3 is low. These were done for the Ogden BMP[36], the original MSCP resource evaluation[37] (*R indicates further research is warranted), and SDSU habitat monitoring revision[38].

Timing: If specified protocol survey periods are available, these are given. In lieu of these, different periods of activity are given when this species might be best detected.

MSCP Management Goals (Table 3-5): Management goals from the MSCP Subregional Plan[39] are repeated from Table 3-5 of that plan.

Monitoring Methods (Table 3-5): Monitoring methods required by the MSCP Subregional Plan[19] are repeated from Table 3-5 of that plan.

Species information: Information is summarized here from a variety of sources regarding the species known distribution, occurrence on different preserves, population sizes, and permit requirements.

Draft Adaptive Management Goals: Based on the above information, an adaptive management goal was drafted by the County to summarize the elements important to the survival and recovery of each species. This was then used to draft an interim set of recommendations to monitor each species in an adaptive management framework.

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[36] Ogden. January 25, 1996. Biological Monitoring Plan for the Multiple Species Conservation Program.
[37] Ogden Environmental and Energy Services Co. and the Biological Task Force for Preserve Design, San Diego County, California. November 1992. Biological Goals, Standards, and Guidelines for Multiple Species Preserve Design (Appendix A-9) *in* Public Review Draft, Resource Document, Multiple Species Conservation Program (MSCP), Volume II: Appendix A – Biological Resources. March 1, 1995.
[38] Department of Biology, San Diego State University: Dr. Helen M. Regan, Lauren A. Hierl, Dr. Janet Franklin, and Dr. Douglas H. Deutschman. January 2006. Draft MSCP Covered Species Prioritization For Task B of Local Assistance Grant #P0450009
[39] Final Multiple Species Conservation Program, MSCP Plan. August 1998.

Monitoring Frequency: A general recommendation (generally following that in the Ogden BMP) was made to on the frequency of monitoring for each species. This is an interim recommendation based on the priority of the species and its temporal variability.

Draft Monitoring Methods: Interim methods for monitoring are suggested for the species as a whole, with notes focused on the role of the County in these efforts. These are based on all of the above information with a focus on monitoring for adaptive management purposes.

After these basic elements, available data is summarized for each species. These data are grouped by location (usually the preserve name) and then the year in a similar format to plants (by site and then by year) or in a table sorted by location then date. Many of the data come from the San Diego Bird Atlas; although specific locations are provided in the Biological Observation Database, they are often general in the tables (e.g., Thomas Brothers Pages).

If the location given corresponds to a monitoring point in the Ogden BMP that is noted in parentheses.

2.4.1 Accipiter cooperi, "Cooper's hawk"

Priority (Ogden; MSCP; SDSU): **--; 3*R; 3**
Timing: **Jan - Dec**

MSCP Management Goals (Table 3-5): 300' impact avoidance around nests, minimize disturbance in oak woodlands/forests.
Monitoring Methods (Table 3-5): Habitat-based & Management Plan/Directive (site-specific nest territories)

Species information: Preserve oak woodlands/forests in MLJ Segment adequate for nesting and foraging.
Draft Adaptive Management Goals: Maintain oak woodlands and forests by managing for disturbance (trails, active recreation, noise), especially around nest sites.

Draft Monitoring Methods: Monitor oak woodlands/forests for threats from disturbance (heavily used trails, active recreation) during routine patrols. Map active nests observed during preserve inventories or when observed during other biological surveys. Monitor habitat availability through Habitrak and periodic vegetation mapping of preserves.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for Cooper's hawk points within MSCP.

Location name Or Thomas Bros Page	Date	Number	Source	Notes
Crestridge	6/4/1997	2	SDNHM	None Entered
1169	6/9/1998	1	SDNHM	Nest with 1 large nestling (much long white down
1191	6/11/2000	1	SDNHM	In eucalyptus tree.
1212	5/15/1997	10	SDNHM	Represents a compilation of data gathered during A
1212	3/16/1998	4	SDNHM	Pair - male adult, female still in juvenile plumag
1212	6/25/1998	3	SDNHM	Nest confirmed by Ranger Patty Heyden.
1231	5/26/1997	4	SDNHM	None Entered
1231	6/16/1997	6	SDNHM	None Entered
1232	5/20/1999	1	SDNHM	None Entered
1234	4/17/2001	1	SDNHM	None Entered
1272	3/16/1998	1	SDNHM	Female; on three occasions about 2 weeks ago, male
1293	4/5/1998	2	SDNHM	None Entered
1334	5/28/2001	1	SDNHM	None Entered

From 2001 – 2003 the Wildlife Research Institute collected data for an NCCP/MSCP Raptor Monitoring Report[40]. Cooper's Hawk was the third most common raptor observed and was seen in 21 of the 44 locations.

[40] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).

2.4.2 Agelaius tricolor, "Tricolored blackbird"

Priority (Ogden; MSCP; SDSU): **--; 1; 1**
Timing: **breeding season (March – June)**

MSCP Management Goals (Table 3-5): Impact avoidance to breeding colonies, edge effects for this species.
Monitoring Methods (Table 3-5): Management Plan/Directive

Species information: Breeding colonies move seasonally. Wetland protections. Forage in grasslands/ag/turf. Requre project surveys and avoid nesting areas during breeding season.

Draft Adaptive Management Goals: Maintain productivity of breeding colonies by minimizing human disturbance to nesting areas during breeding season.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Maintain knowledge of known breeding locations by monitoring breeding activity at known locations every 3 years (should also estimate population size) and surveying at least one additional potential breeding site every 3 years in order to detect new/unknown breeding colonies (this may include baseline surveys).

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for Tri-colored blackbird points within MSCP.

Location or Thomas Bros page	Date	Number	Source	Notes
Lindo Lake	4/23/1997	200	SDNHM (M.B. Stowe)	None Entered
Lindo Lake	6/4/1998	100	SDNHM (M.B. Stowe)	None Entered
Lindo Lake	6/10/1998	100	SDNHM (M.B. Stowe)	None Entered
Lindo Lake	4/22/1999	90	SDNHM (M.B. Stowe)	None Entered
Lindo Lake	5/10/2000	--	SDNHM (M.B. Stowe)	No number given; Lindo Lake.
Crestridge	6/10/1998	2	SDNHM	None Entered

Monitoring data are available for the following sites:

- **Lindo Lake**
  - 2004
    - Confirmation of persistence of colony by William J. Hamilton III (Professor of Ecology at UC Davis). Accompanied by Thomas Oberbauer and Jeremy Buegge of DPLU.

Figure 2. Lindo Lake with tule islands.

2.4.3 Aquila chrysaetos, "Golden eagle"

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 2**
Timing: **Nesting beings with first heavy rains; eggs laid Feb - Apr; fledge ~ June**

MSCP Management Goals (Table 3-5): Sites with nests avoid human disturbance while nest active (incl 4000' avoidance area), and monitor nest sites for use/success.
Monitoring Methods (Table 3-5): Habitat-based & Management Plan/Directive (site-specific nest territories)

Species information: Most active nests outside MSCP. || 15 pairs breed in MSCP area (WRI Raptor Monitoring Report, 2005). Known locations in subarea include: Iron Mountain, 4S Ranch/Del Dios, El Cajon Mountain (East County), Bandy Canyon, Dulzura, Foster's, O'Neal Canyon, Cedar Crrek, Copper Canyon, San Miguel Mtn.

Draft Adaptive Management Goals: Maintain active nests by preventing human disturbance.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor status of active nests by surveying nest territories for presence every 3 years (rotate between 5 nest sites per year) and inspect at least 1 nest annually for use and breeding success.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for Golden eagle points within MSCP.

Location or Thomas Bros page	Date	Number	Source	Notes
1131	6/24/2000	3	SDNHM	1 fledgling; the female was the bird that was sick
1149	1/22/1998	1	SDNHM	Adults
1149	1/22/1998	1	SDNHM	Adults
1213	3/18/1998	2	SDNHM	None Entered
1213	3/18/1998	2	SDNHM	Carrying food; suspect nesting on cliff.
1292	4/8/2001	2	SDNHM	Two adults, seen at separate times, both being har…
1313	3/5/2000	2	SDNHM	Pair on ground with just-killed rabbot, flew off …
1313	1/13/2001	1	SDNHM	None Entered
1314	5/13/1999	2	SDNHM	None Entered
1334	4/8/1999	3	SDNHM	None Entered

From 2001 – 2003 the Wildlife Research Institute collected data for an NCCP/MSCP Raptor Monitoring Report[41]. A summary of the report for Golden Eagles:

15 of 31 formerly occurring pairs remain in San Diego MSCP.
These 15 pairs represent 30% of the breeding pairs in the county.
7 of 15 are in "serious jeopardy of being extirpated within 5-10 years."
3 of 15 nest core sites are on private lands.
12 of 15 nest core sites are on public lands.

Observation data are available for Golden eagle core nest sites in the following areas where the County has management or monitoring responsibilities:

- **San Vicente Highlands**
    - 2002 – Golden Eagle reported by USGS observed during pond turtle surveys.

Other nest sites are still in private ownership and not yet preserved:

- 4S Ranch – Ralph's Preserve
    - Nest site not yet dedicated to the preserve.
- El Cajon Mountain
    - This site appears to be outside the MSCP.
- Bandy Canyon
- Dulzura
- Fosters

[41] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).

2.4.4 Athene cunicularia hypugea, "Burrowing owl"

SYNONYM = ***Speotyto cunicularia hypugea***

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 1**
Timing: **year-round residents; breed Mar - June**

MSCP Management Goals (Table 3-5): Habitat enhancement, manage for ground squirrels, monitor nest for use/success, predator control, 300' impact avoidance around occupied burrows.
Monitoring Methods (Table 3-5): 10 grassland locations & ASMD

Species information: Project surveys and avoidance measures required. Major consideration in major amendment areas. Habitat enhancement opportunities in Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa (NE of Brown Field), Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. Wildlife Agencies will enhance and manage land to allow relocation. Projects must survey for burrowing owls and follow measures in MSCP. May also occur in Minor Amendment Area SW of Lake Hodges. || PERMIT CONDITION: "No incidental take authorized within the County of San Diego MHPA." || Bird Atlas: main occupied areas in San Diego County include North Island NAS, Imperial Beach Auxiliary Landing Field, and East Otay Mesa (mostly in private ownership), Warner Valley, and Borrego Valley.

Draft Adaptive Management Goals: Conserve grassland habitats and increase population on preserved lands through habitat enhancement and management for ground squirrels and against predators (cats, foxes, etc).

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: In order to manage for this species, monitor active nest sites for use and success (~1/3 of sites annually). Record incidental sightings and attempt to locate active burrows. Detection of predators will be accomplished during routine patrols.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for burrowing owl points within MSCP.

Location or Thomas Bros page	Date	Number	Source	Notes
1352	4/15/2000	11	SDNHM	Standing at burrows within 200-300 feet of the US/
1352	7/3/2000	9	SDNHM	None Entered

Recent projects on Otay Mesa within the unincorporated area have revealed a number of burrowing owl sites. In cooperation with USFWS and CDFG, these owls were moved to nearby lands that were preserved within Chula Vista from the Travel Plaza site near the future border crossing site. More burrowing owls are known to exist further east near the base of Otay Mountain in what is currently a privately owned major amendment area.

One point is recorded in the Biological Observation Database from East Otay Mesa; one burrowing owl was recorded on February 23, 2001, by EDAW in a survey of the Rancho Vista del Mar property.[42]

From 2001 – 2003 the Wildlife Research Institute detected burrowing owl at 3 of the 44 monitoring locations for an NCCP/MSCP Raptor Monitoring Report[43].

- **Sunroad Centrum**
  - 2003 – Open space dedicated in November.
  - 2007
    - Site visit revealed evidence of 2 natural burrows above Johnson Canyon and one potential burrow in abandoned steel pipe. Locations of natural burrows entered in Biological Observation Database. Other field data and photos available. The site appeared to be in good condition with a high diversity of native flora and fauna.

[42] REC Consultants, Inc. (unknown date) Bio Report.
[43] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).

2.4.5 Branchinecta sandiegoensis, "San Diego fairy shrimp"

Priority (Ogden; MSCP; SDSU): **--; --; 1**
Timing: **Dec - Apr (wet season); 14 days after rain**

MSCP Management Goals (Table 3-5): Edge effects for this species.
Monitoring Methods (Table 3-5): ASMD (wetlands)

Species information: Wetland protections apply. Otay RMP provides protections. Additional important lands on Miramar (not a part). || Within subarea known from Santa Fe Valley (High Society Way) and possibly East Otay Mesa.

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Note presence of species.

Known locations within the South County MSCP Subarea include:

- **Santa Fe Valley (Starwood/Crosby)**
  - 2000 – open space dedicated.
  - HMP reports it as a "common constituent" of vernal pools within open space.
  - 2005
    - DPLU staff visited vernal pool site and reported that fairy shrimp were present.
  - 2007
    - DPLU staff visited vernal pool basins are in good condition. Pools were dry and no samples were taken to detect fairy shrimp.
- **Sunroad Centrum**
  - Vernal pool restoration site.
  - 2003 – Open space dedicated. Species present[44].
  - 2007
    - Site visit performed to assess general site condition and detect sensitive species. The site appeared to be in good condition with a high diversity of native flora and fauna. However, vernal pools were dry at this time so fairy shrimp could not be detected (no soil samples were taken). Site data and photos available.

[44] Reported in: REC Consultants, Inc. December 2003. Sunroad Centrum Vernal Pool Management Plan.

2.4.6 Bufo microscaphus californicus, "Arroyo toad"

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 2**
Timing: **Mar 15 - July 1 (breeding); night or day**

MSCP Management Goals (Table 3-5): Wetland protections. Mimimize upland impacts w/in 1km. ASMD address: control non-native predators, protect low-gradient sandy washes, and preserve foraging/sheltering habitat within 1km of breeding sites; control human impacts (education, patrol, etc).
Monitoring Methods (Table 3-5): Site specific (7 locations) & ASMD

Species information: Important habitat areas listed: SD River (below El Cap), San Vicente Creek (btwn Sweetwater/Loveland Reservoirs), Dulzura Creek, San Pasqual Valley (Lake Hodges to Boden Cyn), Otay Riv, Jamul Cr, Cedar Cr, Sycamore Cr. || MSCP database had 15 occurrences in subarea - Otay River, Sweetwater River (between Sweetwater and Loveland Reservoirs), San Vicente Creek, and Cottonwood Creek in Marron Valley.

Draft Adaptive Management Goals: Maintain breeding habitat in occupied streams (San Diego River (below El Cap), San Vicente Creek (between Sweetwater/Loveland Reservoirs), Dulzura Creek, San Pasqual Valley (Lake Hodges to Boden Cyn), Otay River, Jamul Creek, Cedar Creek, Sycamore Creek by maintaining breeding pools and controling non-native predators. Maintain appropriate upland habitat near breeding habitats for foraging/sheltering.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Monitor stream reaches annually for breeding habitat, presence of tadpoles, and upland habitat. Establish 3 permanent reaches (Dulzura Creek on Rancho Jamul, Sweetwater on Refuge, San Pasqual near Boden) and rotate between 4 other sites annually. [USGS]

The BMP prescribed 7 monitoring sites for arroyo toad; of these, 5 are within the unincorporated area. The County is not currently responsible for performing monitoring in these locations. The following is a summary of these sites.

- **Kimball Valley – San Vicente Reservoir to Daney Canyon (T-1)**
  - Land not preserved – privately held.
  - Lands here are owned either privately or by the City of San Diego. However, there is a section of the creek recently (~2004; Monte Vista Ranch) purchased by The Nature Conservancy around Daney Canyon. [Note: Daney Canyon (from USGS map) is also called Santa Maria Creek Aqueduct (Thomas Brothers page 1192, E1 South).]
- **San Vicente Creek – Daney Canyon to Wildcat Canyon Road (T-2)**
  - Land not preserved – privately held.
  - The land in this stream reach is mostly owned by Monte Vista Oaks LLC (TNC recently purchased much of the remainder of the property).

- **Sloan Canyon – Singing Hills Golf Course to Loveland Reservoir (T-3)**
  - Land not preserved – privately held.
  - Land is mostly privately held and not preserved. Short reach of Sweetwater River here is owned by DFG (Sequan Peak preserve).
  - 2002 - USGS "Bats, Toads, and Turtles" study done through a Local Assistance Grant to the County surveyed this area. Arroyo toads were not detected.
- **Rancho San Diego – Hwy 94 to Willow Glen (T-4)**
  - Land is mostly privately held or owned by USFWS Refuges.
- **Sweetwater River – Sweetwater Reservoir to Highway 94 (T-5)**
  - Land is owned by either USFWS Refuges or Sweetwater Authority.
  - 2002 - USGS "Bats, Toads, and Turtles" study done through a Local Assistance Grant to the County surveyed this area (Jamul Creek). Arroyo toads were not detected.

The USGS report[45] recommended conducting night surveys for this species in other areas.

The Biological Observation Database contains 152 records for this species within the MSCP, representing at least 189 individuals. These data are from recent USGS surveys and historical records from the San Diego Natural History Museum.

[45] Meyer, Kathie, Ed Ervin, Melanie Madden-Smith, and Robert Fisher. 2002. Arroyo Toad and Western Pond Turtle in the San Diego MSCP Area.

2.4.7 Buteo regalis, "Ferruginous hawk"

Priority (Ogden; MSCP; SDSU): **--; 3; 3**
Timing: **Winter**

MSCP Management Goals (Table 3-5): None given.
Monitoring Methods (Table 3-5): Grassland raptor survey (10 grassland locations).

Species information: Uncommon migrant; forages in grasslands and agricultural fields; not known to nest in MSCP. Additional grassland protection is a priority and primary factor in design of major amendment areas. || Reported from Otay Mesa, Proctor Valley area, Santa Fe Valley, Lake Hodges, San Pasqual Valley, Santa Ysabel, and Ramona Grasslands (last 2 sites outside MSCP).

Draft Adaptive Management Goals: Maintain extensive grasslands as winter foraging grounds.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Maintenance of extensive grasslands will be accomplished through recording habitat losses and preservation, as well as periodic vegetation map updates. Also record sightings during grassland raptor surveys conducted every 3 years.

From 2001 – 2003 the Wildlife Research Institute did not detect Ferruginous hawk at any of the 44 monitoring locations for an NCCP/MSCP Raptor Monitoring Report[46]. It was only detected in the Ramona Grasslands (outside the South County MSCP Subarea Plan).

Biological report[47] prepared for Tijuana River Valley Regional Park reported that it was not detected there during surveys and was unlikely to occur there.

[46] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).
[47] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.8 *Buteo swainsoni,* "Swainson's hawk"

Priority (Ogden; MSCP; SDSU): **--; 3; --**
Timing: **Spring migrant**

MSCP Management Goals (Table 3-5): None given.
Monitoring Methods (Table 3-5): Grassland raptor survey (10 grassland locations).

Species information: Extremely rare migrant; forages in grasslands and agricultural fields. Additional grassland protection is a priority and primary factor in design of major amendment areas.

Draft Adaptive Management Goals: Maintain extensive grasslands and agricultural areas as spring foraging grounds.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Maintenance of extensive grasslands will be accomplished through recording habitat losses and preservation, as well as periodic vegetation map updates. Also record sightings during grassland raptor surveys conducted every 3 years.

From 2001 – 2003 the Wildlife Research Institute did not detect Swainson's hawk at any of the 44 monitoring locations for an NCCP/MSCP Raptor Monitoring Report[48]. According to this report, Swainson's hawks "only pass through during migration, are infrequently documented, and when they are, they are usually not within the MSCP. Some of the SH migrants seen are in the Ramona area and large numbers (over 5,200) have been recently documented migrating along the desert front to the east of the MSCP during the spring."

Biological report[49] prepared for Tijuana River Valley Regional Park reported that it was not detected there during surveys and was unlikely to occur there.

[48] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).
[49] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.9 Campylorhynchus brunneicapillus sandiegensis, "San Diego cactus wren"

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 1**
Timing: **year-round resident; Jan 1 - Mar 15 (breeding)**

MSCP Management Goals (Table 3-5): Restoration, active/adaptive management, monitor populations in preserve, edge effects.
Monitoring Methods (Table 3-5): Site specific (31 locations) & Management Plan/Directive

Species information: Populations: Lake Hodges/San Pasqual, Lake Jennings, S. Sweetwater Res/San Miguel Ranch, Sal Crk/Otay Mesa (critical). Restoration important. Otay RMP requires mitigation @ 1:1. Bird atlas reports 4 major concentrations: Camp Pendleton (70 pair), Lake Hodges/San Pasqual (90), Lake Jennings (25), and Sweetwater/Otay (80).

Draft Adaptive Management Goals: Maintain and restore habitat (cactus thickets) on preserved lands. Protect populations against edge effects (trespass, noise, non-native predators, frequent fires).

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Map distribution and acreage of cactus thickets every 10 years. Monitor ~1/4 of cactus thickets annually for occupancy, population count, and threats (human activity, predators, and fire). [could also monitor subset every 3 years] Protocol requires 2-3 repeat visits in AM (~30h total).

There are not any currently known populations of San Diego cactus wren within the MSCP where the County is responsible for monitoring. Old records reported it within Tijuana River Valley Regional Park, but recent surveys[50] did not detect it or appropriate habitat. The major concentrations of cactus wren populations in coastal San Diego County are managed and monitored by other agencies.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database. In summary for the MSCP area, there were 22 points recorded representing at least 77 individuals.

[50] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.10 Circus cyaneus, "Northern harrier"

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 3**
Timing: **Winter visitor and rare summer resident/breeder.**

MSCP Management Goals (Table 3-5): Manage agriculture/disturbed lands within 4 miles of breeding sites, avoid impacts around active nests (900'), maintain winter foraging areas (Proctor Valley, Sweetwater Reservoir area, San Miguel Ranch, Otay Ranch east of Wueste Rd, Lake Hodges, and San Pasqual Valley).
Monitoring Methods (Table 3-5): Habitat-based & Management Plan/Directive (nest sites)

Species information: Active nesting areas: Tijuana River Valley, South San Diego Bay/Sweetwater Marsh, Proctor Valley (historical nesting location). Tolerate habitat patchiness, exhibit nest area fidelity, and forage within 4 miles of nests.

Draft Adaptive Management Goals: Maintain winter foraging areas by preventing habitat loss. Protect active nests from disturbance from human activity.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Maintenance of foraging areas will be monitored by tracking habitat losses and preservation, with particular attention in Proctor Valley, Sweetwater Reservoir area, San Miguel Ranch, Otay Ranch east of Wueste Rd, Lake Hodges, and San Pasqual Valley. To protect active nests, record active nest locations during baseline surveys and incidental sightings; also record sightings during grassland raptor surveys done every 3 years.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for Northern harrier points within MSCP.

Location or Thomas Bros page	Date	Number	Source	Notes
1169	6/9/1998	4	SDNHM	Two fledglings sitting together at length in willo…
1312	3/20/1999	3	SDNHM	None Entered
1334	4/8/1999	1	SDNHM	None Entered
1352	5/16/1999	3	SDNHM	None Entered
1291	6/2/1999	1	SDNHM	None Entered
1291	6/16/1999	1	SDNHM	None Entered
1352	7/31/1999	5	SDNHM	All observed had deep dark cinnamon back and under…
1169	3/3/2000	1	SDNHM	None Entered
1169	3/12/2000	1	SDNHM	None Entered

Location or Thomas Bros page	Date	Number	Source	Notes
1332	4/15/2000	2	SDNHM	Male carrying sticks to female at nest site on gro…
1332	5/6/2000	2	SDNHM	Male observed escorting a Red-tailed Hawk away fro…
1332	6/3/2000	1	SDNHM	None Entered
TOTAL		***25***		

From 2001 – 2003 the Wildlife Research Institute reported Northern Harriers from 25 of the 44 sampling areas for an NCCP/MSCP Raptor Monitoring Report[51].

Monitoring data are available for the following sites:

- **Tijuana River Valley Regional Park**
  - 2003 – Reported[52] as "Abundant in winter hunting in fields north of Monument Rd., atop Spooner's Mesa and in coastal marshes west of TRVRP"
- **Sunroad Centrum**
  - 2003 – Reported[53] as having potential to occur at this site.
  - 2003 – Open space dedicated in November.
  - 2007 – One individual observed foraging in preserve area.

Incidental sightings are known from a variety of locations including Barnett Ranch, Santa Fe Valley (McCrink Ranch – observed foraging) and Iron Mountain.

[51] Wildlife Research Institute. 2005. Final Report - NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003).
[52] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.
[53] Reported in: REC Consultants, Inc. December 2003. Sunroad Centrum Resource Conservation Plan.

2.4.11 Clemmys marmorata pallida, "Southwestern pond turtle"

Southwestern pond turtle by US Geological Survey.

Priority (Ogden; MSCP; SDSU): **--; 1; 3**
Timing: **??**

MSCP Management Goals (Table 3-5): Maintain/manage 1500' around known locations in preserve. In avoidance areas: minimize human impacts, control/remove detrimental non-native species, and implement habitat restoration/enhancement.
Monitoring Methods (Table 3-5): Habitat-based & Management Plan/Directive

Species information: Wetland protections apply. Documented in Lusardi Creek, Sweetwater River, and Otay River Valley. Inhabits slow-moving rivers, ponds, and small lakes. Predators include: bullfrogs, bass, catfish, dogs, cats, raccoons, and skunks. Other threats include human collection and competition with exotic turtles.

Draft Adaptive Management Goals: Maintain and/or restore habitat around known locations in preserves by minimizing human impacts, controling harmful non-native species (bullfrogs, turtles, and bass), and implement habitat restoration/enhancement.

Monitoring Frequency: Every 10 years

Draft Monitoring Methods: To detect species presence (and presence of non-native turtles), trap at appropriate sites, giving first priority to streams with known populations. Trap as part of baseline surveys when land is preserved and every 10 years thereafter if appropriate habitat exists. Survey for non-native predators every 3 years where SWPT is present to assess threat to species.

Data on the current distribution of this species are sparse. A study of the MSCP area by USGS in 2002 detected this species at only 2 locations (see below).

Monitoring data are available for the following sites:

- **Sloan Canyon – Singing Hills Golf Course to Loveland Reservoir (T-3)**
  - Land is mostly privately held and not preserved. Short reach of Sweetwater River here is owned by DFG (Sequan Peak preserve). No monitoring is required by the County at this time.
  - 2002 - Southwestern pond turtles were detected.[54]
- **4S Ranch South**
  - 2002 - Southwestern pond turtles were detected.[54]

[54] "Bats, Toads, and Turtles" study done through a Local Assistance Grant

- 2002-2003 – Seven records of Southwestern pond turtle were recorded in the Biological Observation Database from USGS surveys.

This species has also been reported within the MSCP at Santa Fe Valley (McCrink Ranch). The Habitat Management Plan[55] reports that this species was detected at one location in the northeast portion of this site along the San Dieguito River. This open space has not yet been dedicated.

It is also of note that the County is working with USGS and CDFG to identify potential habitat enhancement opportunities in Boulder Oaks. This may also include enhancement at 4S Ranch South or Penasquitos Canyon Preserve. This work is scheduled to begin in 2007.

[55] Helix Environmental Planning, Inc. January 10, 2003. McCrink Ranch Habitat Management Plan.

2.4.12 Cnemidophorus hyperythrus, "Orange-throated whiptail"

Priority (Ogden; MSCP; SDSU): **focal; 2; 3**
Timing: **May/Jun & Aug/Sep**

MSCP Management Goals (Table 3-5): Edge effects.
Monitoring Methods (Table 3-5): Site specific (pit traps at 12 locations)

Species information: Habitat linkages important. Large concentrations known from around Jamul, Santee, Alpine, Otay Mesa, Rancho San Diego, Miramar NAS, and Escondido. Usually associated with open sage scrub with vegetative cover of about 50%, but also in disturbed areas, chaparral, riparian scrub, and oak woodlands. Threats include habitat loss and degradation, off-road vehicle activity, overgrazing, and predation by feral pets.

Draft Adaptive Management Goals: Conserve adequate amount of habitat with contiguous linkages between core areas. Manage conserved habitat to protect against edge effects (invasive species, off-road vehicle activity, predators).

Draft Monitoring Methods: Amount of habitat will be monitored by recording habitat losses and preservation. Edge effects will be monitored through routine patrols (for trespass and feral animals), invasive plant monitoring, and other habitat quality monitoring in habitat types. Incidental sightings will be recorded, including results from pitfall traps during baseline surveys.

The Ogden BMP prescribes the following monitoring locations for this species that may need to be monitored now or in the future:

- **San Vicente Highlands (H-13, Northwest San Vicente Reservoir)**
  - 2002-2003 –Pit-fall traps detected Orange-throated whiptail.[56]
- **Tijuana River Valley Regional Park (H-21, Spooner's Mesa)**
  - 2002
    - Pitfall traps detected Orange-throated whiptail.[57]
- **Lakeside/Crest (H-16)**
  - This area it still largely in private ownership.
- **McGinty Mountain (H-17)**
  - Largely managed by USFWS Refuges.
- **Rancho San Diego (H-18)**
  - Largely manager by CDFG.
- **East Otay Mesa (H-27)**
  - This area it still largely in private ownership.

The Biological Observation Database has hundreds of records for this species, mainly from USGS reports. It has also been reported in several preserve areas, including 4S Ranch, Barnett Ranch, and Santa Fe Valley (Starwood) open space.

[56] Merkel & Associates, Inc. December 11, 2002. San Vicente Biological Resources Report.
[57] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.13 Empidonax trailii extimus, "Southwestern willow flycatcher"

Priority (Ogden; MSCP; SDSU): **--; 1*R; 1**
Timing: **May 15 - July 17 (breeding); dawn - 10 AM**

MSCP Management Goals (Table 3-5): Provide appropriate successional habitat, upland buffers around known populations, cowbird control, edge effects for this species. Clearing must avoid breeding season.
Monitoring Methods (Table 3-5): Habitat-based & ASMD

Species information: Require project surveys and mitigation. Wetland protections apply. Known to breed in San Dieguito, San Diego, and Tijuana Rivers. MSCP Database had no occurrences within subarea.

Draft Adaptive Management Goals: Maintain appropropriate habitat and control non-native predators (cowbirds, house cats, rats) near appropriate breeding habitat or known locations.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Habitat availability to be evaluated by monitoring stream reaches (SD, San Dieguito, TJ) for appropriate vegetation structure every 3 years (repeat and/or rotating locations). To protect breeding habitat, monitor appropriate breeding habitat to detect presence/absence of SWWF, cowbird population estimate, other predators, and threats of invasive plant species.

This winter migrant is present in a few of the main river corridors within coastal San Diego County where riparian forests occur. Management for this species is mainly addressed by managing riparian resource and trapping brown-headed cowbirds where necessary.

The only known location within MSCP where the County is responsible for monitoring is Tijuana River Valley Regional Park where 3 unpaired migrants were observed after extensive surveys; however, no breeding population is known to occur there.[58]

[58] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.14 Phrynosoma coronatum, "Coast horned lizard"

Priority (Ogden; MSCP; SDSU): **focal; 2; 3**
Timing: **May/Jun & Aug/Sep**

MSCP Management Goals (Table 3-5): Edge effects, maintain native ant species, discourage Agrentine ants.
Monitoring Methods (Table 3-5): Site specific (pit traps at 12 locations)

Species information: Habitat linkages important. Reported in several preserve areas, including 4S Ranch, Santa Fe Valley (several locations), Iron Mountain, Hollenbeck Canyon, Rancho Jamul, Little Cedar Canyon, and San Diego National Wildlife Refuge.

Draft Adaptive Management Goals: Conserve adequate amount of habitat with contiguous linkages between core areas. Manage conserved habitat to protect against edge effects (invasive species especially Argentine ants, off-road vehicle activity, predators).

Draft Monitoring Methods: Amount of habitat will be monitored by recording habitat losses and preservation. Edge effects will be monitored through routine patrols (for trespass and feral animals), invasive plant monitoring, and other habitat quality monitoring in habitat types [including harvester ant nests]. Incidental sightings will be recorded, including results from pitfall traps during baseline surveys.

The Ogden BMP prescribes the following monitoring locations for this species:

- **Iron Mountain (H-13, Northwest San Vicente Reservoir)**
  - 2002-2003 – Pit-fall traps detected Coast horned lizard.[59]
- **Lakeside/Crest (H-16)**
  - This area it still largely in private ownership.
- **McGinty Mountain (H-17)**
  - Largely managed by USFWS Refuges.
- **Rancho San Diego (H-18)**
  - Largely managed by CDFG.
- **Tijuana River Valley Regional Park (H-21, Spooner's Mesa)**
  - 2002 – Pitfall traps did not detect San Diego horned lizard.[60]
- **East Otay Mesa (H-27)**
  - This area it still largely in private ownership.

The County's Biological Observation Database contains 222 records for this species within the MSCP, mainly from USGS and San Diego Natural History Museum sources.

[59] Merkel & Associates, Inc. December 11, 2002. San Vicente Biological Resources Report.
[60] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

2.4.15 Polioptila californica californica, "California gnatcatcher"

Priority (Ogden; MSCP; SDSU): **focal; 1*R; 2**
Timing: **Feb 15 - Aug 30 (breeding); 6 AM - 12 PM**

MSCP Management Goals (Table 3-5): Edge effects, minimize disturbance during nesting period, fire protection against unplanned fires, maintain/improve habitat quality (incl. Veg structure).
Monitoring Methods (Table 3-5): ASMD (31 locations)

Species information: No clearing during breeding season (Mar1 - Aug 15). Three of 5 major populations (from Population Viability Analysis[61]) occur in County subarea: Lake Hodges, Otay/San Ysidro, and San Miguel/Lower Sweetwater.

Draft Adaptive Management Goals: Conserve 62% of potential habitat in appropriate configurations to maintain a viable population of this species. Protect preserved habitat from edge effects, breeding season disturbance, and unplanned/destructive fires. Preserved habitat should be improved or maintained for this species.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Status and trend of this species has been monitored by County-wide point-count surveys coordinated by USFWS. The County will continue to participate in these efforts. Edge effects and habitat quality will be monitored during point-count surveys, other habitat-based surveys in coastal sage scrub, and through monitoring of fire frequency County-wide.

USFWS has coordinated a multi-agency sampling effort for this species throughout the MSCP during the Spring of 2002 and 2004. County staff participated in these surveys. Records from these surveys were compiled by USFWS. It is expected that USFWS will continue to coordinate efforts for the monitoring of this species.

In addition to these efforts, the County of San Diego, through a Local Assistance Grant, sponsored a study tracking movement of California gnatcatchers across Interstate 8 in the Lakeside Archipelago in 2002. Seven (7) California gnatcatchers were banded in this study and of those, one was found to have dispersed across I-8 to the south.

This species has also been detected in the following preserve areas:

- Tijuana River Valley Regional Park – "Six pairs recorded within suitable habitat in the bluffs surrounding the mesas at the S end of the TRVRP" (TRVRP Draft EIR, 2002).
- 4S Ranch – 20 points reported in HMP.

[61] Mock, Patrick. Revised February 1993. Population Viability Analysis for the California Gnatcatcher within the MSCP Study Area.

- Lusardi Creek Preserve – Two points recorded in the Biological Observation Database.
- Santa Fe Valley – Reported at Starwood, Maranatha, McCrink Ranch, and Bernardo Lakes.
- Woodridge – CNLM reports 2 – 4 pairs present there since 2000.
- Other preserved areas with appropriate coastal sage scrub are likely to support California gnatcatcher.

The County's Biological Observation Database also contains data from incidental sightings, data collected for the San Diego County Bird Atlas, and some consultant data.

2.4.16 Streptocephalus woottoni, "Riverside fairy shrimp"

Priority (Ogden; MSCP; SDSU): **--; 3 *R; 1**
Timing: **Dec - April (wet season; start 14 days after rains)**

MSCP Management Goals (Table 3-5): Wetland protections apply. Otay RMP provides protections. Additional important lands on Miramar (not a part). ASMD address: edge effects for this species.
Monitoring Methods (Table 3-5): ASMD (wetlands)

Species information: Found in deeper, long-duration ponds. || Reported from subarea plan only in Sunroad pools on Otay Mesa south of Johnson Canyon.

Draft Adaptive Management Goals: Protect vernal pools by minimizing destruction and managing for minimizing disturbances within vernal pool watersheds and controlling invasive plants.

Monitoring Frequency: Every 1 years

Draft Monitoring Methods: Vernal pool monitoring plan. Estimate population size in known pools and conduct focused surveys in other pools where it this has potential habitat.

For areas in MSCP where the County has the responsibility to monitor, this species has the potential to occur on the Sunroad Centrum site. This species has not been detected on site, but potential habitat exists in the agricultural pond onsite.[62] This is part of the J-22 vernal pool complex. This site will continue to be monitored per the monitoring plan.[63]

[62] REC Consultants, Inc. December 2003. Sunroad Centrum Vernal Pool Management Plan.
[63] Pacific Southwest Biological Services, in conjunction with REC Consultants, Inc. December 2003. Harvest Road Property, Eastern Otay Mesa, County of San Diego, California, Fairy Shrimp Translocation & Five-Year Mitigation Monitoring Plan.

2.4.17 Vireo bellii pusillus, "Least Bell's vireo"

Priority (Ogden; MSCP; SDSU): **--; 2; 2**
Timing: **Apr 10 - July 31; dawn - 11 AM**

MSCP Management Goals (Table 3-5): Require project surveys and mitigation. ASMD address: provide appropriate successional habitat, upland buffers around known populations, cowbird control, edge effects for species. Clearing avoid nesting period.
Monitoring Methods (Table 3-5): Habitat-based & Management Plan/Directive

Species information: MSCP database had 145 occurrences, largest populations along Sweetwater River and Jamul-Dulzura Creek.

Draft Adaptive Management Goals: Maintain appropropriate habitat and control non-native predators (cowbirds, house cats, rats) near appropriate breeding habitat or known locations.

Monitoring Frequency: Every 3 years

Draft Monitoring Methods: Maintenance of appropriate habitat will be monitored by surveying stream reaches (Sweetwater, Jamul-Duzura) for appropriate veg structure every 3 years (fixed and/or rotating locations). Predators will be monitored during routine patrols and by monitoring near appropriate breeding habitat to detect LBV presence/absence, estimate cowbird [and other predator] population, and threats of invasive plant species.

From 1997 to 2001, participants in the San Diego Bird Atlas recorded observation of sensitive bird species. These data are recorded in the Biological Observation Database and are summarized below for least Bell's vireo points within MSCP.

Thomas Bros page	Date	Number	Source	Notes
1350	6/15/1997	10	SDNHM	None Entered
1271	4/2/1998	6	SDNHM	None Entered
1271	4/4/1998	6	SDNHM	None Entered
1169	6/9/1998	1	SDNHM	None Entered
1271	6/27/1998	2	SDNHM	None Entered
1271	4/22/1999	1	SDNHM	None Entered
1312	7/4/1999	2	SDNHM	None Entered
1273	7/5/1999	2	SDNHM	None Entered
1313	4/5/2000	2	SDNHM	None Entered
1312	4/15/2000	2	SDNHM	None Entered
1169	4/29/2000	1	SDNHM	None Entered
1169	5/3/2000	1	SDNHM	In same area as 4/29.
1169	5/7/2000	3	SDNHM	None Entered
1131	5/11/2000	2	SDNHM	None Entered

Thomas Bros page	Date	Number	Source	Notes
1292	4/22/2001	2	SDNHM	None Entered
1292	4/22/2001	2	SDNHM	None Entered
1291	6/7/2001	--	SDNHM	No number given.
1312	6/14/2001	4	SDNHM	None Entered

County surveys for this have mainly consisted of those related to specific projects (e.g., parks and roads). Monitoring and management for this species will be addressed in ASMD's as they are developed.

Concentrations of least Bell's vireo are known from the following locations:

- Tijuana River Valley Regional Park – Reported as "Present and abundant. Breeding in riparian areas."[64]

[64] Greystone Environmental Consultants, Inc. 2005. Biological Technical Report: Tijuana River Regional Park Trails Enhancement and Habitat Restoration Project.

3 Interim Monitoring Schedule (2007 – 2011)

Until further details are available from the MSCP monitoring revision efforts, the County proposes to follow the following interim monitoring schedule as resources are available.

Species	**Location**	**2007**	**2008**	**2009**	**2010**	**2011**
Burrowing owl	OVRP		x		x	
Burrowing owl	Sunroad Centrum	Yes		x		x
California gnatcatcher	various		x			x
Cooper's hawk	Iron Mtn - San Vicente	x	x	x	x	x
Golden Eagle	El Capitan			presence		
Golden Eagle	Iron Mtn - San Vicente			presence		presence
Grassland raptors	Iron Mtn - San Vicente			x		
Grassland raptors	OVRP or vicinity		x			
Grassland raptors	TJVRP			x		
Least Bell's vireo	Santa Fe - Starwood		x			x
Least Bell's vireo	TJVRP		x			x
Riverside fairy shrimp	Sunroad Centrum	No - pools dry	x		x	
San Diego Fairy Shrimp	Santa Fe - Starwood	No - pools dry	x	x	x	x
San Diego fairy shrimp	Sunroad Centrum	No - pools dry	x		x	
Southwestern pond turtle	4S Ranch South		x			x
Southwestern pond turtle	Iron Mtn - Boulder Oaks	x	x	x		
Southwestern willow flycatcher	Santa Fe - Starwood		x			x
Southwestern willow flycatcher	TJVRP		x			x
Tricolored blackbird	Lindo Lake	One visit			x	
Tricolored blackbird	potential location		x			x
Acanthomintha ilicifolia	Santa Fe - Lusardi			x		
Acanthomintha ilicifolia	Sycamore Canyon	Yes				
Acanthomintha ilicifolia	Wright's Field	Yes				
Ambrosia pumila	Santa Fe - Starwood	Yes		x		x
Arctostaphylos glandulsoa ssp. crassifolia	all	x				
Arctostaphylos glandulsoa ssp. crassifolia	Santa Fe - Golem		x			

Arctostaphylos glandulsoa ssp. crassifolia	Santa Fe - Lusardi			x		
Arctostaphylos glandulsoa ssp. crassifolia	Santa Fe - Starwood	Yes	pathology test			
Baccharis vanessae	4S Ranch - Ralphs				x	
Baccharis vanessae	Rancho Cielo		x			
Bloomeria clevelandii	4S Ranch South	Yes				
Bloomeria clevelandii	Iron Mtn - San Vicente					x
Bloomeria clevelandii	OVRP or Lusardi		x			
Brodiaea filifolia	4S Ranch South	Yes		x		x
Brodiaea orcuttii	OVRP		x		x	
Brodiaea orcuttii	Santa Fe - Bernardo Lakes	Yes		x		x
Brodiaea orcuttii	Santa Fe - Starwood	Yes		x		x
Ceanothus cyaneus	Iron Mtn - San Vicente				x	
Ceanothus verrucosus	Santa Fe			x		
Cordylanthus orcuttianus	TJVRP		x			
Cupressus forbesii	Oneal Canyon				x	
Dienandra conjugens	OVRP		x			
Dudleya variegata	4S Ranch South	Yes			x	
Dudleya variegata	Santa Fe - Lusardi	Yes		x		
Dudleya variegata	Santa Fe - Shaw				x	
Dudleya variegata	Sunroad Centrum		x		x	
Dudleya variegata	Sycamore canyon			x		
Eryngium aristulatum ssp. parishii	OVRP		x		x	
Eryngium aristulatum ssp. parishii	Santa Fe - Starwood	Yes		x		x
Eryngium aristulatum ssp. parishii	Sunroad Centrum	Yes	x		x	
Ferocactus viridescens	4S Ranch South & Christopherhill				x	
Ferocactus viridescens	Otay Ranch				x	
Ferocactus viridescens	Santa Fe Valley				x	
Ferocactus viridescens	Sunroad Centrum	Yes	x	x		
Ferocactus viridescens	TJVRP				x	
Lepechinia ganderi	Oneal Canyon	Yes-photo	location		x	
Monardella hypoleuca ssp. lanata	Iron Mtn - San Vicente				x	
Monardella hypoleuca ssp. lanata	Barnett Ranch				x	

Monardella viminea	new locations		x		x	
Monardella viminea	OVRP		x		x	
Monardella viminea	Sycamore Canyon	Yes		x		x
Navarretia fossalis	Santa Fe - Starwood	Yes		x		x
Navarretia fossalis	Sunroad Centrum		x		x	
Orcuttia californica	Sunroad Centrum		x		x	
Packera ganderi	Oneal Canyon				x	
Pogogyne abramsii	Santa Fe - Starwood	Yes		x		x
Pogogyne nudiuscula	OVRP		x		x	
Satureja chandleri	Iron Mtn - San Vicente				x	

4 Monitoring Methods and Locations

The following sections describe the methodologies used in monitoring species within the MSCP. Some are very general, but others allow a more precise repetition of methods.

4.1 Transects

There are a variety of transects used for sampling plants and animals. Of the surveys carried out to date there is only one standardized method that has been applied by Mike Kelly in monitoring *Acanthomintha ilicifolia*.

> Establish 1m x 10m transect and mark corners with rebar stakes (mark one corner with a zero point metal tag). Start transect tape from the zero point corner. Monitor transect when target species is in bloom and measure the percent cover within each of the ten square meters along the transect for: bare ground/litter, non-native plants, native plants, and target species. Also record the number of individuals for the target species within each square meter.
>
> Second, perform a point-intercept every 10cm along the 10m transect tape. (Note: Mike Kelly noted that this generated a lot of data and would recommend decreasing the interval to 100cm.) At each point, drop a real or imaginary vertical line from the tape and record the following: bare ground/litter, species (identify if possible, otherwise record class such as annual grass, fern, etc.).
>
> As an additional option, install rebar stakes around the perimeter of each (sub)population and mark them with metal tags indicating "population perimeter." These points should be reckoned with a GPS unit. A complete census of individuals (usually an estimate) can be done for each (sub)population.

Future transect methods should be documented for consistent surveying.

4.2 Grid Plots

Methods for this survey types were adapted from those developed by A. Davenport and D. Griffin (Biological Science Technician) for the San Diego National Wildlife Refuge monitoring of *Dudleya variegata*, *Muilla clevelandii*, and *Dienandra conjugens*. The following methods were used by DPLU staff during 2005 to survey *Dudleya variegata* at 4S Ranch South and Lusardi Creek Preserve. (*Muilla clevelandii* was also present in the 4S Ranch South plot but could not be detected at the time of sampling.) This method, as a quantitative measure, was abandoned in favor of more habitat- and threat-based monitoring recommended during for the Plant Monitoring revision.

Stratified Random Sampling:

- Locate plots based on presence of the focal species. Sample plots measured 10m x 30m and were permanently marked in the field with rebar stakes and pink plastic markers on the northwest corner. State plane coordinates were recorded using sub-meter GPS unit at northwest corner of plot. Record bearing of 30m transect tape.
- Each plot was subdivided into 300, 1m x 1m cells, and cells were numbered 1 to 300 beginning with the upper left corner ("cell #1") and eventually going to the lower right hand corner ("cell #300"). Note which corner is "upper left."

- Choose 30 cells randomly for sampling (random numbers were generated using a free service on the Internet).
- In the field, use a 100m measuring tape to mark the perimeter of the plot and a smaller tape and/or surveyor's flagging to locate 1m subdivisions within the plot.
- Locate the pre-chosen random cell locations and use a 1m x 1m frame to estimate percent cover, census counts, complete lists of species, etc. within the cell. Record all species if possible to identify (this may take more time and the monitoring group should discuss if classes would be more appropriate). Count target species within each $1m^2$.
    - For *Dudleya variegata*, each flowering stem was traced back to its origin (as best as possible) and this origin was counted as an individual if located within the square meter plot. [Future considerations: count number of flowering stems or sample in rosette or bolting stage.] Data sheet provides for differentiating number of flowering plants, number of flowers, or other stages of plant growth – all plants were in flower so no differentiation was made and counting number of flowers seemed impractical.

Non-Random Sampling: in addition to a random sample plot, a non-random method was used in some areas outside the 10m x 30m plot. The 1m x 1m frame was placed on a non-randomly chosen occurrence of the focal plant and the same data recording methods were used as for randomly located plots. The random sample(s) ultimately provides plant data within a "macro habitat", while the non-random sample(s) provide data on a "micro habitat" level, which eventually allows comparisons between larger occurrences and actual locations.

For **Analysis** of the initial year(s) of data we have calculated **Descriptive Statistics** for basic characteristics of the study plots (e.g., mean, standard deviation, 95% confidence intervals, etc.) Eventually additional analysis would include methods to compare between years, plots, species, etc.

Sample Time: USFWS estimated roughly 15 to 45 minutes was needed to install a plot, and another 1.5 to 6 hours to sample the plot. Our experience agreed with this (sampling taking about 2 hours with 2-4 people).

4.3 Point Counts

There is no standardized method currently in use for this type of survey. This generally is used for monitoring avian species and consists of counting species from a vantage point for a defined period of time. Time of day, time spent, and methods of detection will vary depending on target species and research questions.

One example of this method used for MSCP monitoring was by WRI for monitoring raptors.

4.4 Photo Plots

The analysis of photo plots by DPLU for certain species uses the methodology generally described in the Ogden BMP. DPLU staff are examining aerial photographs available on the GIS-based application (from years available) to examine the degree of habitat loss or disturbance

around known populations of target species. Species points are displayed on a reference map to detect proximity of disturbance to known locations.

A pilot program method was developed that supplements aerial photograph interpretation with aerial photographs and field photographs at the same locations. This project has only been partially implemented using existing photographs of these populations as a basis.

4.5 Pitfall Traps

This methodology is described in the BMP (p. 5-26). It has only been carried out at a few locations for County sampling. More specific methods are available from USGS.

4.6 Tracking

This has been largely carried out by the San Diego Tracking Team, which is currently developing a more standardized methodology. Methods are also described in detail for the wildlife movement study done by DPW for the Before-After-Control-Impact study. All of these methods follow the general methods described in the Ogden BMP (p. 4-1).

4.7 Presence/Absence Surveys

There are a variety of species-specific protocols developed by USFWS to determine presence or absence of a species. Presence can be determined by searching the appropriate habitat at the appropriate time and detecting the species. Absence data, however, are more difficult to determine and require more careful and complete searching by qualified biologists to determine that a species is actually "absent." It is recommended that USFWS protocols be used when available.

5 Preserve Locations and Descriptions

The following is list of major preserves managed or overseen by the County of San Diego.

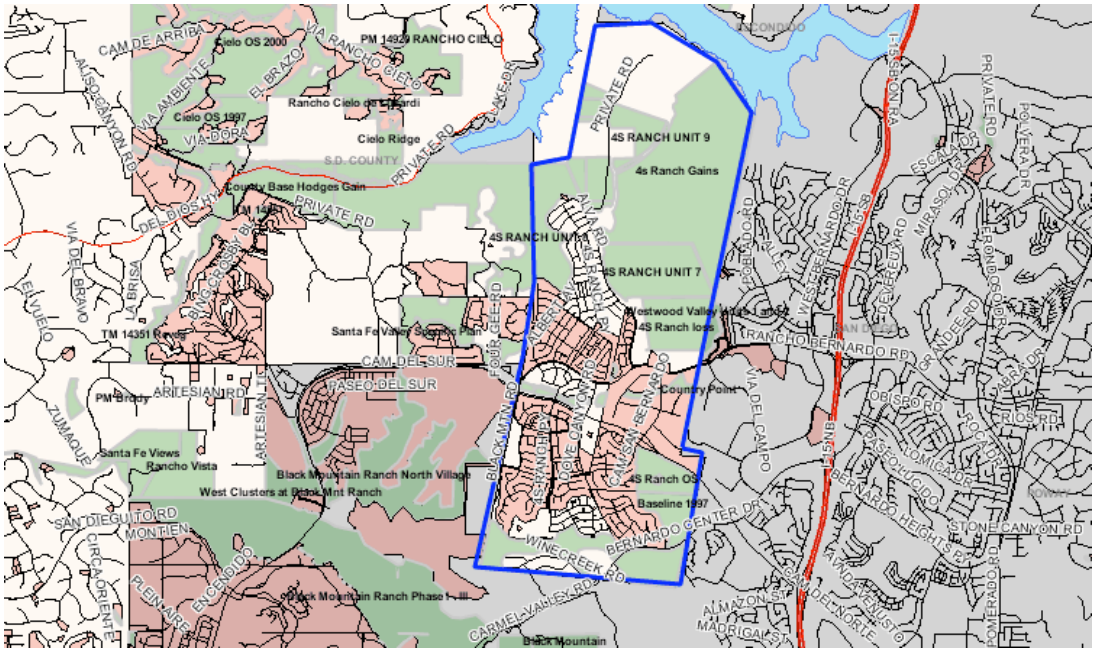
5.1 4S Ranch Preserve

Ralph's Preserve is the northern portion of this preserve. It is managed by Joaquin Meza and consists of 547 acres. Biological monitoring is not required by their Habitat Management Plan. Most of this section was dedicated in 1999, but the northern end has not yet been dedicated.

4S Ranch South consists of the remaining 1065 acres of open space associated with this project. 4S Ranch HOA is responsible for habitat stewardship. The majority of this land was dedicated in 2004.

This site also includes Christopherhill, which was managed by The Environmental Trust until 2003. The County accepted ownership and management responsibilities of this site in 2006 through bankruptcy proceeding for The Environmental Trust. This 68-acre site was dedicated in 1996 for a project in the area.

The County is responsible for monitoring and most adaptive management in this area.

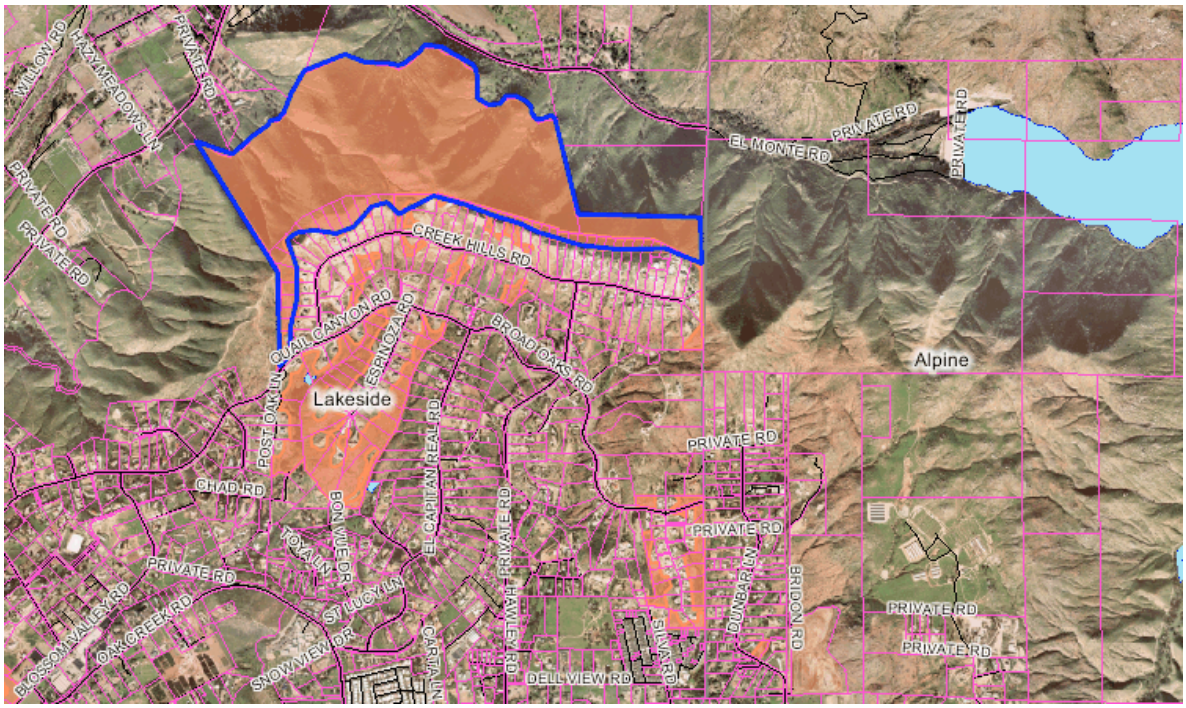


5.2 *Barnett Ranch*

This site is 728 acres located southeast of Ramona. This site was acquired by the County in 2002 and is managed by the Department of Parks and Recreation. An ASMD was prepared in 2006.

5.3 *Blossom Valley Open Space*

This site consists of 286 acres in Blossom Valley, 2 miles east of Lake Jennings and 1 mile west of El Capitan Reservoir dam. The site was dedicated to Center for Natural Lands Management (CNLM) in 2004 and is managed by CNLM. An extensive Post-fire Monitoring and Management Strategy (May 2005) has been prepared for this property. The annual budget for this property is $41,347 provided for by an initial capital fund and an endowment of $561,932.



5.4 *Del Dios Highlands*

This property totals 451 acres and is located north of Lake Hodges and the town of Del Dios. Of this, 110 acres are in the South County MSCP Subarea (Polo properties acquired in 2004) and 341 acres are in the North County MSCP (Derbas properties acquired in 2002-2004). An ASMD is anticipated for this property in 2007/08.

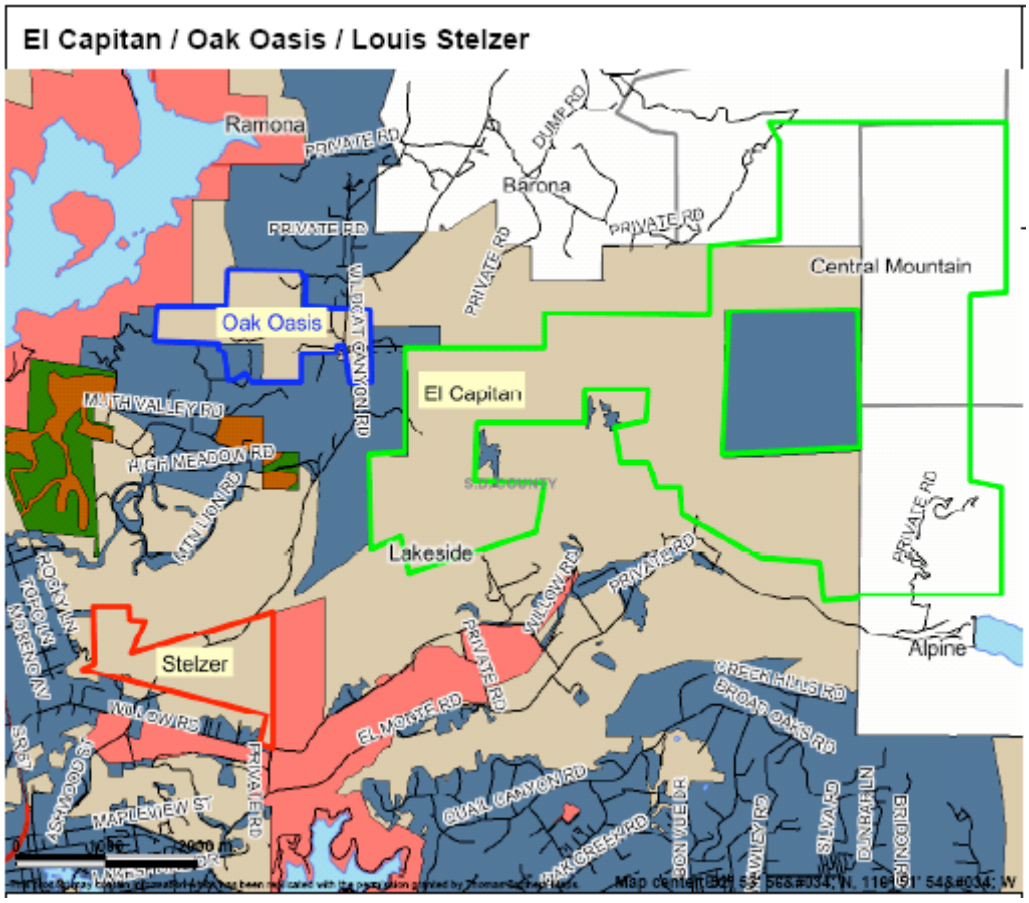
5.5 *El Capitan / Oak Oasis / Louis Stelzer Open Space Preserve*

These three open space preserves total 3,547 acres and are all located west of El Capitan Reservoir in Lakeside. An ASMD is anticipated for this property in 2008/09.

El Capitan Preserve totals 2,839 acres and is located west of El Capitan Reservoir. Approximately 2,400 acres of this preserve is within the MSCP boundaries, the remaining area lies east of the MSCP boundary. This preserve is owned by BLM, but managed by the County by agreement.

Oak Oasis Preserve is a 398-acre park owned by the County since 1971. It is mainly mixed chaparral and oak woodland located between Sycamore Canyon and El Capitan Preserve.

Louis Stelzer Preserve is a 373-acre property has been owned by the County since 1973, with 59 acres added in 2002.



5.6 *Hollenbeck Canyon*

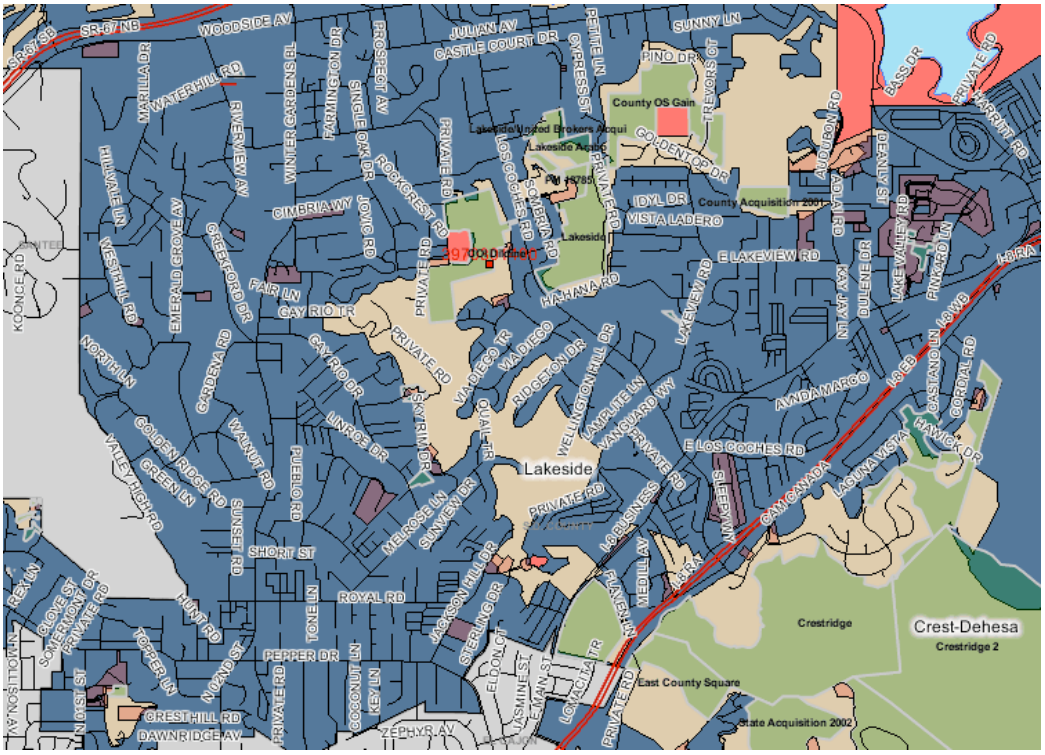
This property is 605 acres and was acquired by the County in 2000 and is managed by DFG thorough an agreement with County Parks. It is located off of Highway 94 in Jamul.

5.7 *Holly Oaks Park*

This 128-acre property was dedicated to the County in two parts – one in 1995 and the other in 2000. It is south of Ramona in the Metro-Lakeside-Jamul segment.

5.8 *Lakeside Linkage*

Acquisitions here started around 1999 with about 102 acres. As of 2006, it totaled about 135 acres. These properties form an important linkage of coastal sage scrub for the movement of California gnatcatchers throughout this area. There are several privately owned and managed areas of open space here as well (e.g., Woodridge). An ASMD is anticipated for this are in 2007/08.



5.9 *Lower Otay Reservoir Site*

This 200-acre site is located just south of Lower Otay Reservoir and is owned by BLM but managed by the County for open space purposes. (APN 647-130-12)

5.10 *Lusardi Creek Open Space*

This 192-acre site is part of the Santa Fe Valley Specific Plan Area. It was purchased in 1999 and 2000 for conservation purposes. An ASMD is anticipated for this property in 2007/08.

5.11 McGinty Mountain

McGinty Mountain is located in Jamul. The County had owned a small piece of land in this area but recently transferred it to USFWS. The Grant deed transferring McGinty Mountain Park to USFWS recorded December 2, 2005 (Doc No. 2005-1038614). USFWS Refuges generally manages the land in this area. Lands are owned by USFWS, State of California, The Nature Conservancy, and The Environmental Trust. Lands owned by The Environmental Trust are being incorporated into the USFWS Refuge system.

5.12 O'Neal Canyon

This 758-acre site was owned by The Environmental Trust until their bankruptcy in 2005. It is located adjacent to the BLM Otay Wilderness Study Preseve and south of Lower Otay Lake. The site was set aside as mitigation for about 11 different projects in the City of Chula Vista, City of San Diego, and City of Oceanside, all prior to the adoption of MSCP. The bankruptcy was not resolved at the time this report was prepared and the manager of this property had not yet been resolved.

5.13 Otay Ranch

As part of the Otay Ranch General Plan Amendment, a Resource Management Plan (Phase I) was approved to comprehensively address preservation, enhancement, and management of sensitive natural and cultural resources on the 22,899-acre Otay Ranch Property. The total preserve is anticipated to be 12,541 acres. As lands are developed, preserve areas are dedicated to the Preserve Owner Manager (POM) which is a joint effort between the County of San Diego and the City of Chula Vista. Management of lands is funded by an assessment district in the Otay Ranch development. As of 2006, 514 acres have been dedicated and accepted by the POM. There are also some areas purchased by US Fish & Wildlife for conservation purposes.

5.14 Otay Valley Regional Park

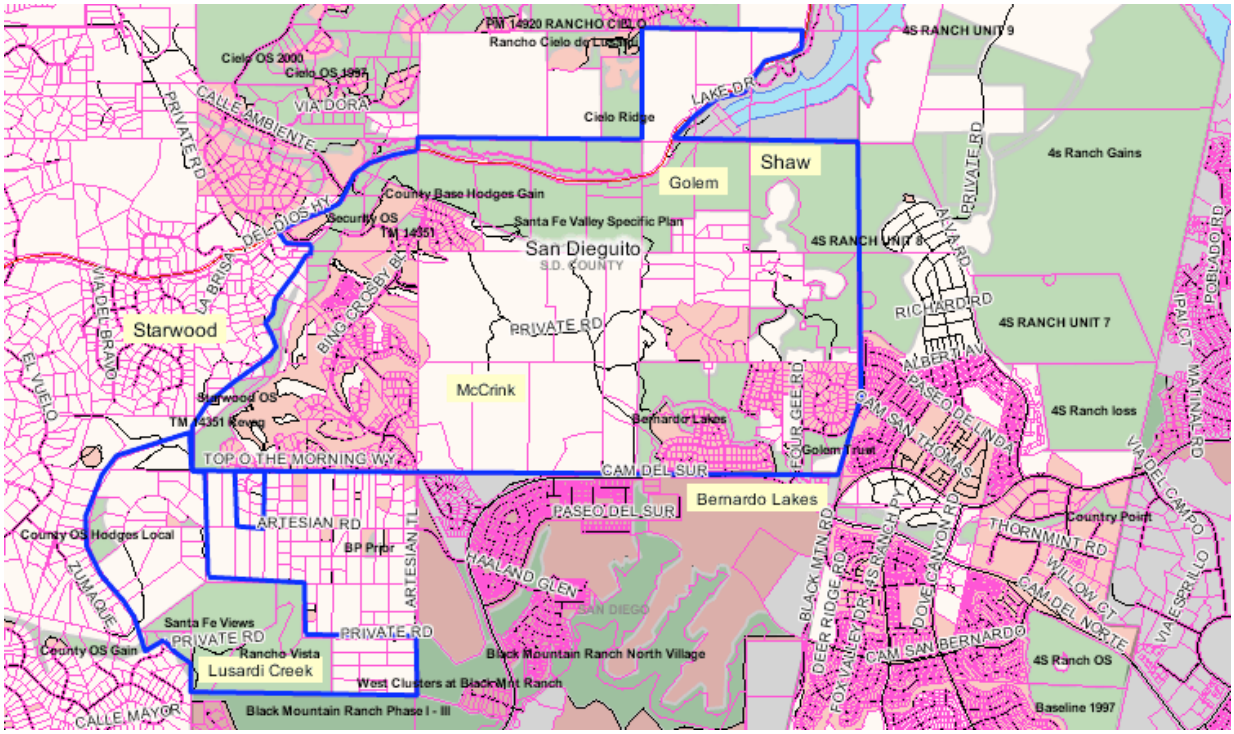
This planning area includes Otay River Valley and all drainages in to the valley west of the Otay Reservoirs. The Otay Valley Regional Park is being planned through a Joint Exercise of Powers Agreement between the County of San Diego, City of San Diego and City of Chula Vista. The County started acquiring significant areas in 2001 and by 2006 had acquired 512 acres.

5.15 Santa Fe Valley Specific Plan Area

There are a number of HMPs for separate projects in this area. Most propose to fund habitat management through HOA funds. After all the HMPs are completed, an ASMD is planned to consolidate management of the entire area, perhaps encompassing 4S Ranch as well.

Existing HMPs include:

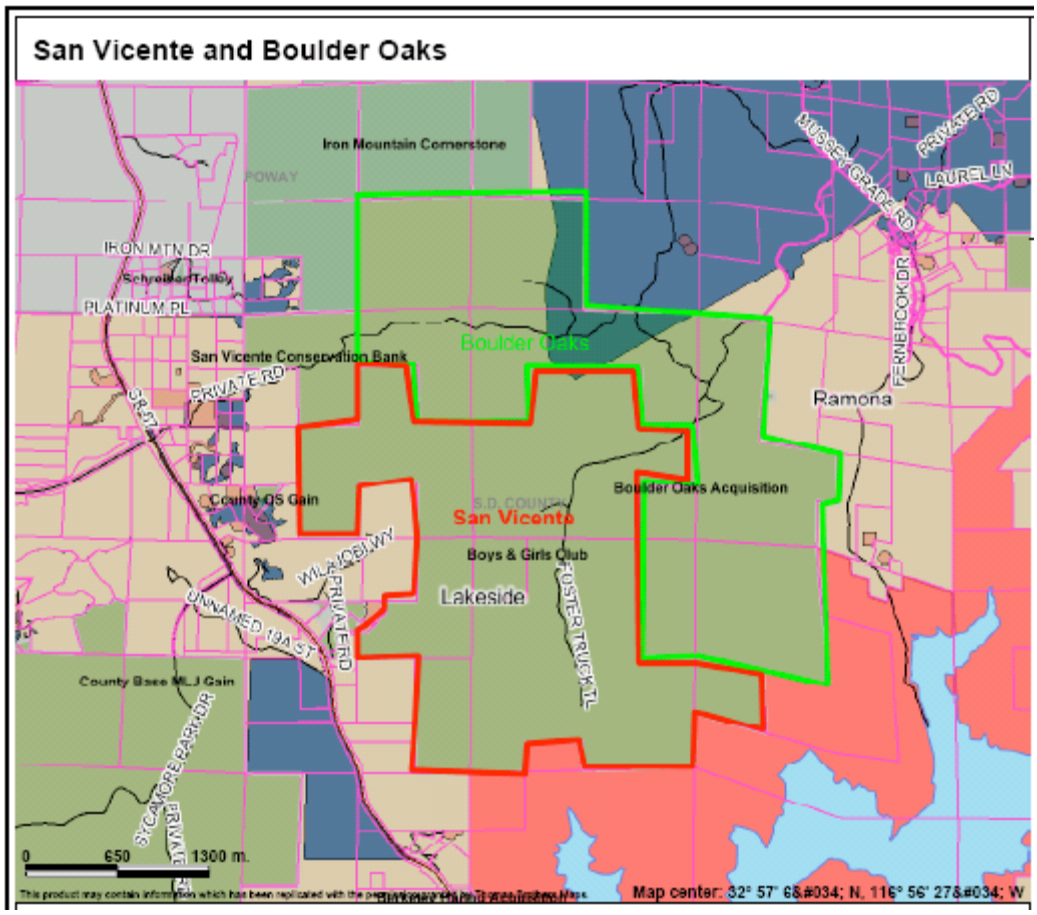
- Bernardo Lakes – 227.1 acres, No current habitat manager.
  - Habitat manager formerly TET; working with HOA to hire new manager; HOA contact – Valerie Gullicksen 760-599-9151.
  - Dedicated to County in 1998.
  - Funding: $46,312.74/year through HOA dues
- Golem (Salviati) - 154 acres, No current habitat manager
  - Conservation Easement recorded to County May 8, 2000.
  - Habitat manager formerly TET. Still owned by TET.
  - Funding for preserve management is to be paid for by the HOA at $26,368 annually.
- Lusardi Creek – 192.6 acres; County of San Diego
  - Acquired in 1999 and 2000 by the County.
  - Some development was proposed in SFV Specific Plan.
- Maranatha Christian School – 117.34 acres, Habitat manager unknown
  - HMP prepared by Cynthia Jones
  - Not yet dedicated
  - Funding: $25,392/year by Maranatha Christian School
- McCrink Ranch – 269.9 acres, Habitat manager not yet selected
  - Not yet dedicated
  - Funding: $18,000 start-up costs; $65,252/year by developer or HOA
- Shaw - 413 acres
  - Dedicated in 1998 to The Environmental Trust. CDFG accepted through bankruptcy in 2007.
  - Associated TM approved in 2005. HMP not yet prepared.
- Starwood – 169.8 acres, contact - Joe Kulick (858-756-6300)
  - Dedicated to County in fee title November 2000.
  - Funding: $6000 – 10,000/year



5.16 San Vicente & Boulder Oaks

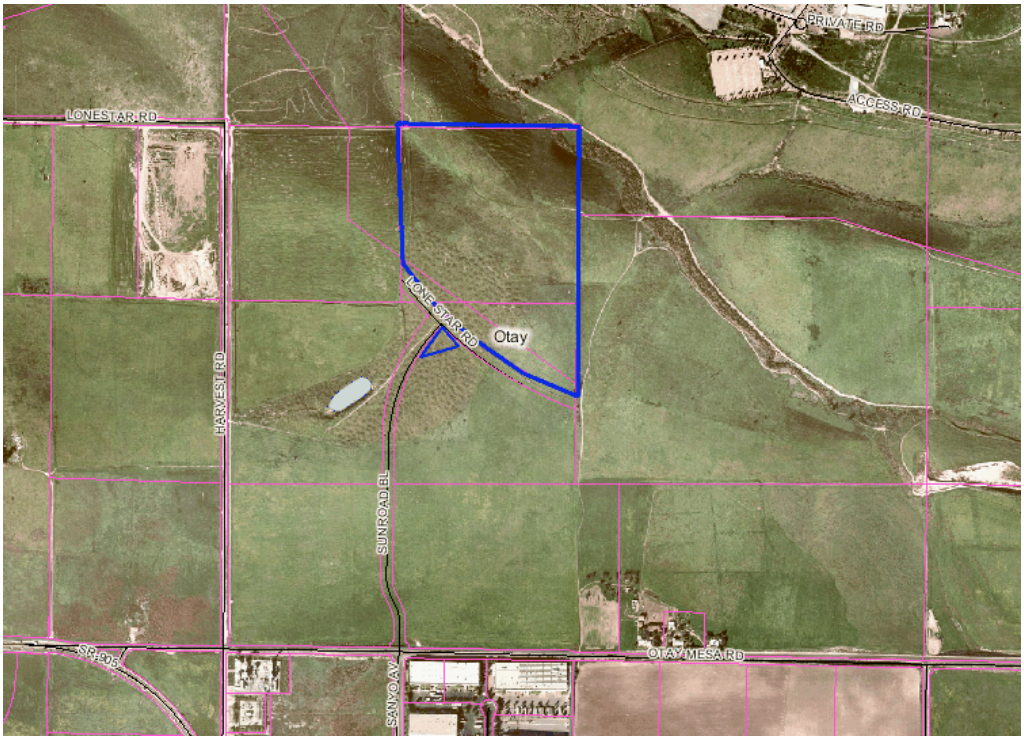
This open space preserve is composed of approximately 4.5 square miles north of San Vicente Reservoir. Most of the open space is owned by the County and CDFG. The San Vicente Conservation Bank is also located here, which was operated by The Environmental Trust until 2003; CDFG took over management of this bank in 2006 through the bankruptcy proceedings for The Environmental Trust.

The County currently owns 1,314 acres from a variety of acquisitions and donations (Boulder Oaks, Reams-Thompson, and Berkley-Herring). It is located directly across Highway 67 from Sycamore Canyon /Goodan Ranch Open Space Park. An ASMD was prepared for the 1,375-acre San Vicente Property in 2006. An ASMD is anticipated for the Boulder Oaks property in 2007/08.



5.17 Sunroad Centrum

This property consists of 51.3 acres in East Otay Mesa (APN 646-080-26 etc.). This is mitigation for the adjacent project (TM 5139) and a conservation easement was dedicated to the County on November 20, 2003 (#2003-1392967). REC is the interim habitat manager for the 5-year habitat restoration activities (ca. 2004 – 2009) until a permanent habitat manager assumes ownership and management responsibilities on this site. Annual funding is provided for in the amount of $8,994 by an endowment of $225,190. There is a vernal pool restoration site in this area.



5.18 Sycamore Canyon / Goodan Ranch

This 2,228-acre property has been owned by the County since the 1960's and about 90 acres added since 2003, mostly as mitigation lands. This park is located west of Highway 67 and south of Poway Road. An ASMD is anticipated for this property in 2008/09.

5.19 Tijuana River Valley Regional Park

This County park is currently 1,660 acres and is located on the Mexican border, mostly south of the Tijuana River. Acquisitions started in 1981 with 20 acres. From 1990 to 1997 the County acquired another 863 acres, bringing the total to approximately 883 acres at the beginning of the MSCP. In 1998 and 1999 the County acquired another 330 acres. The remaining 507 acres have been acquired since 2000. An ASMD was prepared for this property in 2007.

5.20 Woodridge

This site consists of 53 acres of open space set aside by KB Homes in 1999. The property was deeded to CNLM in 1999 and they also manage the property. This property is located approximately 2 miles southeast of the intersection of Highway 67 and Mapleview Road. It is best accessed along Pino Drive. This property is largely coastal sage scrub and is part of the Lakeside Archipelago. Habitat management is funded by a $381,040-endowment and has an annual budget of $12,000 to $15,000.