Western Riverside County
Multiple Species Habitat Conservation Plan
Biological Monitoring Program

2021 Rare Plant Survey Report

San Diego button-celery (*Eryngium aristulatum* var. *parishii*)
Photo: Marisa Grillo

April 2022

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NOTE TO READER:

This report is an account of survey activities conducted by the Biological Monitoring Program for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June 2004. Reserve assembly is ongoing and is expected to take 20 or more years to complete. The Conservation Area includes lands acquired under the terms of the MSHCP and other lands that have conservation value in the Plan Area (called public or quasi-public lands in the MSHCP). In this report, the term "Conservation Area" refers to these lands as they were understood by the Monitoring Program at the time the surveys were conducted.

The Monitoring Program monitors the status and distribution of the 146 species covered by the MSHCP within the Conservation Area to provide information to Permittees, land managers, the public, and the Wildlife Agencies [i.e., the California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game) and the U.S. Fish and Wildlife Service]. Monitoring Program activities are guided by defined conservation objectives for each Covered Species, other information needs identified in MSHCP Section 5.3 or elsewhere in the document, and the information needs of the Permittees. A list of the lands where data collection activities were conducted in 2021 is included in Section 8.0 of the Western Riverside County Regional Conservation Authority (RCA) Annual Report to the Wildlife Agencies.

The primary author of this report was the 2021 Botany Program Lead, Marisa Grillo. This report should be cited as:

Biological Monitoring Program. 2022. Western Riverside County MSHCP Biological Monitoring Program 2021 Rare Plant Survey Report. Prepared for the Western Riverside County Multiple Species Habitat Conservation Plan. Riverside, CA. Available online: https://www.wrc-rca.org/species-surveys/.

While we have made every effort to accurately represent our data and results, it should be recognized that data management and analysis are ongoing activities. Any reader wishing to make further use of the information or data provided in this report should contact the Monitoring Program to ensure that they have access to the best available or most current data.

Please contact the Monitoring Program Administrator with questions about the information provided in this report. Questions about the MSHCP should be directed to the Executive Director of the RCA. Further information on the MSHCP and the RCA can be found at www.wrc-rca.org.

Contact Information:

Executive Director
RCA/Riverside County
Transportation Commission
4080 Lemon Street, 3rd Floor
P.O. Box 12008
Riverside, CA 92502
Ph: (951) 787-7141

Monitoring Program Administrator
Western Riverside County MSHCP
Biological Monitoring Program
1835 Chicago Ave., Suite C
Riverside, CA 92507
Ph: (951) 320-2168

INTRODUCTION

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) includes 63 rare plants as Covered Species (Dudek & Associates 2003). For most of these species, the MSHCP requires the confirmation of a number of occurrences, often at specified sites, within the Conservation Area. Unless a given species-specific conservation objective has requirements that are more rigorous, the Biological Monitoring Program is obligated to survey for the distribution of covered plant species at least once every eight years, with the goal of verifying occupancy at ≥75% of the sites listed in the species objective. Some covered plant species also have a species objective that requires demonstration of a specific level of conservation. These species are not considered adequately conserved under the MSHCP until the terms of the species objectives (usually a specified number of locations with a minimum number of individuals of the species in question) have been met.

Two of the covered rare plant species currently have additional surveys that are not covered in this report. Engelmann oak (*Quercus engelmannii*) recruitment surveys are ongoing throughout the Plan Area. We are also conducting a habitat management study for Brand's phacelia (*Phacelia stellaris*). Survey summaries for both projects can be found in Section 8.0 of the 2021 Regional Conservation Authority (RCA) Annual Report found at https://www.wrc-rca.org/document-library/annual-reports.

We consolidated historic distribution information for covered plant species for the MSHCP from a variety of sources including herbarium records, field notes, gray literature, and species databases (Dudek & Associates 2001; CNDDB 2006). We reviewed the data and corrected the most obvious geo-referencing errors (e.g., locations outside the Plan Area, duplicate occurrences). Our aim was to reconcile the points aggregated in the historical database with the species-specific objectives set forth by the MSHCP (Dudek & Associates 2003). Please see Appendix A for the Monitoring Program's interpretation of the species occurrence objectives for rare plant species.

After refining the historic distribution information, we attempted to field-verify occurrence records for each of the 63 covered plant species to ascertain whether species objectives were being met and to determine future long-term monitoring needs. This was the primary focus for the first eight years (2005-2012) of the permit, referred to as the "inventory phase." We are now in the "monitoring phase" of the program and have shifted our focus to monitoring Covered Species at verified locations at least once every eight years, as stipulated by the MSHCP. In addition to monitoring verified occurrences, we continue to search for new occurrences as reserve lands are acquired or as additional information about habitat suitability is obtained. Please see Appendix B for the current status of rare plant species objectives.

In 2021, we conducted targeted surveys for 24 rare plant species at 25 objective locations with the following goals:

Goals and Objectives

1. Meet MSHCP Species Objectives and improve knowledge of covered plant species distribution within the Conservation Area.

a. Verify historical locations and document new locations of covered plant species in the Conservation Area.
b. Monitor continuing presence of covered plant species at confirmed locations at least once every eight years.

2. Improve knowledge of covered plant species' ecology and habitat suitability needs.
    a. Collect species-specific information at observation sites such as species abundance, phenology, and population size.
    b. Collect habitat information at survey sites to determine covariates associated with species presence.

3. Continue to test and refine the protocol for covered plant species surveys.

METHODS

Protocol Development

We based our initial surveys on the Relevé protocol developed by the California Native Plant Society (CNPS 2004). Since those first surveys in 2005 we have modified the protocol to better match the objectives of our surveys, improve efficiency of data collection, and maximize the usefulness of data collected to balance between monitoring requirements and available resources. Rare plant protocol modifications included switching from point-based Relevés to grid-based area searches in 2008, characterizing occurrence sites by dominant species rather than making a complete species list, and discontinuing the collection of covariate data regarding vegetation structural layers and substrate composition.

Survey Methods

We chose targeted species for the survey season according to the following priorities: time elapsed since last observation, species sensitivity, and acquisition of new land or information that could assist us in locating populations that are difficult to detect. We are currently in the monitoring phase of the program and thus divided our time between reconfirming aging observation records (monitoring surveys) and searching for unconfirmed historical occurrences and other unmet species objectives (inventory surveys). Focused rare plant surveys began either when species were identifiable at sentinel sites (via sentinel site surveys), or at times similar to recent, local observation records. We also used the average flowering seasons listed in the Jepson Manual (Hickman 1993) and the observed phenology's of commonly co-occurring species to help us determine the best times to begin our rare plant surveys. We conducted surveys for covered plant species throughout most of the spring, summer, and fall.

Sentinel Surveys

We established permanent species-specific survey sites, called sentinel sites, which helped inform us of the appropriate time to conduct focused surveys. We chose sites based on accessibility and population robustness. Not all species had sentinel sites and some species had more than one. Sentinel surveys were brief and enabled us to decide if it was appropriate to conduct further surveys for targeted species. Populations

occurring at sentinel sites may also require full monitoring surveys every eight years to collect the covariate data we record for meeting species objectives.

Monitoring Surveys

Monitoring surveys are required for Covered Species every eight years unless otherwise indicated in the MSHCP document. The purpose of monitoring surveys is to document the continued presence of confirmed populations, in particular, those occurrences that meet defined species objectives, and to identify localities that contain a minimum number of individuals as detailed in species-specific objectives. We created polygons in ArcGIS representing the locations of the required occurrences as described by the MSHCP document. Some of these locations are very precise, while others are generalized over a large region.

During monitoring surveys, we used GPS coordinates collected in previous surveys to relocate targeted species occurrences, searching the vicinity of the occurrences and adjacent habitat. Some species had multiple occurrences that fell within an objective polygon and satisfied a single objective requirement. In those cases, we attempted to monitor all of the known occurrences within the polygon, time allowing. However, we considered the monitoring objective met if we reconfirmed only one of those occurrences. We did not conduct a complete census of species distribution across the Plan Area, although we endeavored to inventory all occurrences as we became aware of them. We collected covariate data (e.g., substrate, site impacts, co-occurring species) to help us better understand species ecology and management needs, as well as alert us to declining populations.

Inventory Surveys

Inventory surveys were conducted to discover new populations and confirm records of historical occurrences. We prioritized surveying historical occurrences that met defined species objectives. Surveys involved thoroughly searching all appropriate habitat for species of interest within sampling stations. We created sampling stations by superimposing a 250 m × 250 m grid layer over the entire Conservation Area in ArcGIS (ESRI 2022) and giving each grid cell a unique identifying name (i.e., Station ID). This allowed us to document whether we had searched all appropriate conserved habitat for Covered Species. We considered habitat appropriate if it was similar to the descriptions in the Species Account (Dudek & Associates 2003), Jepson Manual (Hickman 1993), and previous observations by Monitoring Program staff. We also sampled less favorable habitat, but with less intensity, as we did not wish to overlook target species by making assumptions regarding habitat requirements.

We first searched stations that contained species records from the MSHCP Historical Database and then, if we did not detect the targeted species, we expanded the effort to surrounding stations that contained suitable habitat. We do not consider an undetected species a true absence in a given survey area; however, if many attempts are made to locate the occurrence over several seasons and over a range of environmental conditions, we may determine that the species is unlikely to be detected at a given site. Our resources will then be directed toward conducting more productive surveys, until and unless additional information is acquired which might aid in successful detection.

Training

We instructed surveyors in identification of common plant families and targeted covered plant species and the habitat types where they occur. Surveyors studied photographs and herbarium specimens of target species and closely related or potentially confusing species. Surveyors were required to become familiar with key identifying features of each species using the dichotomous keys found in The Jepson Manual (Hickman 1993), reviewing materials (e.g., slideshows, guidebooks) of rare plant species available on the Monitoring Program server, and online resources including Jepson eFlora (Jepson Flora Project, 2022) and the Calflora website (Calflora, 2022). Prior to the Covid-19 pandemic, we would also study herbarium specimens at the UCR Herbarium as part of training but were unable to this year due to health and safety concerns. Surveyors were then accompanied in the field to known locations of target species to determine if they could correctly identify targeted covered plant species before they were allowed to survey independently. Additionally, surveyors were required to photograph identifying features of rare plants observed in the field for confirmation of identity by the plant taxa lead. Inexperienced personnel did not conduct surveys alone, and only botany crewmembers confirmed the identifications of Covered Species located during surveys.

COVID-19: Due to the Covid-19 pandemic, extra safety considerations were put in place to ensure the safety of our biologists while conducting monitoring program activities. When working on the same survey, biologists wore masks and maintained a distance of six feet or more whenever possible. These procedures were consistent with the other departmental Covid-19 safety procedures, state and local health department recommendations, and recommendations from the Centers for Disease Control and Prevention.

Data Analysis

Rare plant surveys consisted of documenting presence of covered plant species to meet species objectives as required by the MSHCP, and as outlined briefly below. We did not perform a complete census of species, nor did we use a sampling design that allowed for statistical analyses, such as trend or covariate correlations. The covariate data we collected were observational, assisted in alerting us to possible threats to plant populations, and provided a "snapshot" of the habitat in which plant species are likely to be found.

The species-specific objectives listed in the MSHCP specify a certain number of locations, occurrences, records, or localities for each species, and often include a list of areas where the species should be found (Appendix A). For distributional objectives, the MSHCP uses, but does not define, the terms: location, locality, and occurrence. Throughout the species accounts, when referring to distributional objectives, those three terms are often used interchangeably. We define "occurrence" and "occurrence objective" as the unit to describe a group of individuals meeting the criteria for one location in the Species Objective. When species objectives have a one-to-one relationship between number of occurrences and locations where they are expected, we have a very clear idea of what constitutes an occurrence. For example, Species Objective 2 for *Mimulus clevelandii* requires that we "include within the MSHCP Conservation Area the two known [occurrences] of this species on Santiago Peak in the Santa Ana Mountains

and on the northern slopes of the Agua Tibia Mountains." Other species objectives require a specified number of known occurrences to be included in the Conservation Area without listing each specific site where the species will be conserved. For example, Species Objective 2 for *Penstemon californicus* requires that we "include within the MSHCP Conservation Area at least 15 occurrences in Aguanga, Blackburn Canyon, and the San Jacinto Mountains." When distinct locations for each occurrence are not specified, we are unable to apply a single definition of "occurrence." Instead, we define "occurrence" on a case-by-case basis, factoring in, when available, the typical spatial distribution of the species, general ecology, geography, and conservation intent. In addition, we use a combination of a close reading of the MSHCP Species Account and Fish and Wildlife Service Biological Opinion (USFWS 2004), as well as the original data points shown in the MSHCP Historical Database, to delineate, to the best of our abilities, the known occurrences to which the objectives refer. In the case where populations are somewhat continuous and it is difficult to delineate separate occurrences we use what we call the "quarter-section rule," described below.

Under the MSHCP, there are 19 species that are not considered adequately conserved until a specific conservation objective goal has been met or a Memorandum of Understanding has been executed with the Forest Service. These 19 plant species are presented in Table 9-3, Volume I of the MSHCP (Dudek & Associates 2003). We refer to these specific conservation objective goals as "demonstrate-conservation objectives" or "Table 9-3 conservation objectives". For demonstrate-conservation objectives, the MSHCP uses the term "locality" and defines its minimum dimensions as one-quarter section. Using a shapefile of the Public Land Survey System, we interpret this quarter-section rule to mean that occurrences located in different quarter-sections can be considered different occurrences or localities.

To satisfy a demonstrate-conservation objective, a minimum number of individuals is typically required, unless a smaller population has been demonstrated to be self-sustaining. To avoid over-counting, we use the highest number of individuals counted in a single day to determine the total number of individuals at a locality. A few species have demonstrate-conservation objectives that only require a specific number of localities without regard to the number of individuals at each locality.

The 19 species are beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*), California muhly (*Muhlenbergia californica*), chickweed oxytheca (*Sidotheca caryophylloides*), Cliff cinquefoil (*Potentilla rimicola*), Coulter's matilija poppy (*Romneya coulteri*), Fish's milkwort (*Polygala cornuta* var. *fishiae*), graceful tarplant (*Holocarpha virgata* ssp. *elongata*), Mojave tarplant (*Deinandra mohavensis*), Parry's spine flower (*Chorizanthe parryi* var. *parryi*), peninsular spine flower (*Chorizanthe leptotheca*), Plummer's mariposa lily (*Calochortus plummerae*), rainbow manzanita (*Arctostaphylos rainbowensis*), small-flowered microseris (*Microseris douglasii* var. *platycarpha*), California bedstraw (*Galium californicum* ssp. *primum*), Cleveland's bush monkeyflower (*Mimulus clevelandii*), lemon lily (*Lilium parryi*), ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), shaggy-haired alumroot (*Heuchera hirsutissima*), and sticky-leaved dudleya (*Dudleya viscida*). Those species underlined need to have a Memorandum of Understanding executed with the Forest Service before the species is classified as a Covered Species by the MSHCP.

Once the specific conservation objective goal for a plant species in Table 9-3 of the MSHCP has been met, it becomes a Covered Species with its species objectives addressed like all the other Covered plant species. Then, monitoring occurs at least once every eight years. However, if the specific conservation goal is not met within the eight-year period, that plant species is no longer a Covered Species Adequately Conserved.

RESULTS

Targeted Surveys

Between 01 April and 02 September 2021, we conducted 66 rare plant surveys (*3 inventory surveys and 63 monitoring surveys*) at 63 unique survey grids, targeting 24 Covered Species and 46 occurrences listed in the Species Objectives. Not all targeted species were detected during the survey season. Targeted species were detected during 89% (n = 63) of surveys confirming 87% (n = 46) of targeted species occurrences (Figures. 1-3, Appendix C).

Demonstrate-Conservation Objectives Species[1]

There are 19 plant species under this classification. Thirteen of these rare plant species have species-specific objectives requiring a number of occurrences with minimum population sizes before they are considered adequately conserved under the MSHCP (Table 1, below). Ten of these species have met their demonstrate-conservation objectives and as such, these species are classified as Covered Species by the MSHCP, triggering the monitoring requirements per each species objectives identified in Species Accounts in Volume 2 of the MSHCP. The demonstrate-conservation objective requirements for three species have not yet been met: cliff cinquefoil (*Potentilla rimicola*) and California muhly (*Muhlenbergia californica*) have never been met because all but one of the known occurrences are located outside the Plan Area; Mojave tarplant (*Deinandra mohavensis*) has been surveyed and observed in abundance in recent years, but the species objective requires further interpretation before we can determine whether the objective has been met. The requirement reads "at least four localities…occupying at least 100 acres", however this species tends to grow in a linear pattern along drainages, not in large patches that can be measured in acreage.

The remaining six species will not become classified as considered adequately conserved under the MSHCP until an MOU is executed with the Forest Service. As of December 31, 2021, an MOU has not been executed with the Forest Service for any of these six species.

[1] Table 9-3 in Volume I of the MSHCP.

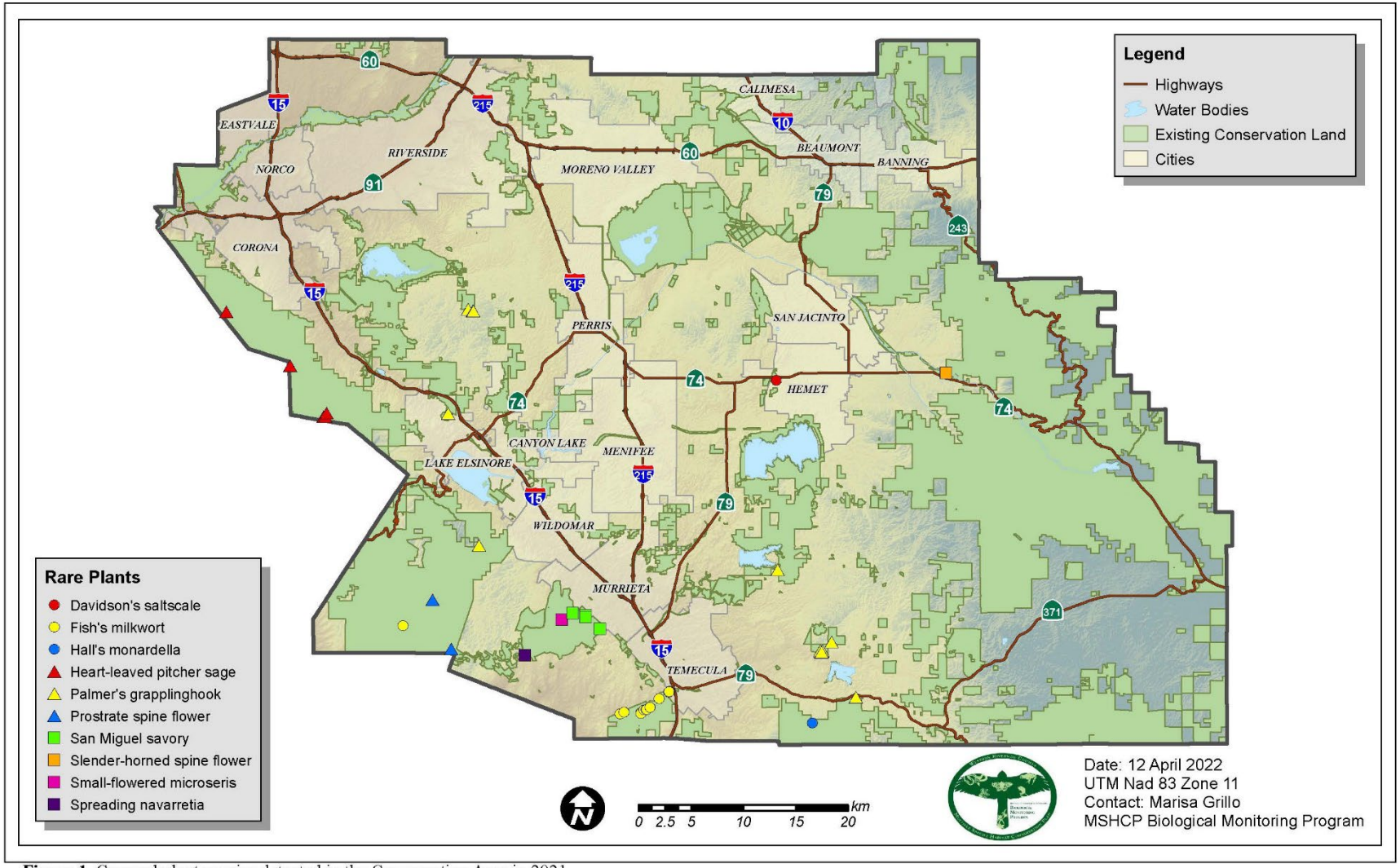

Figure 1. Covered plant species detected in the Conservation Area in 2021.

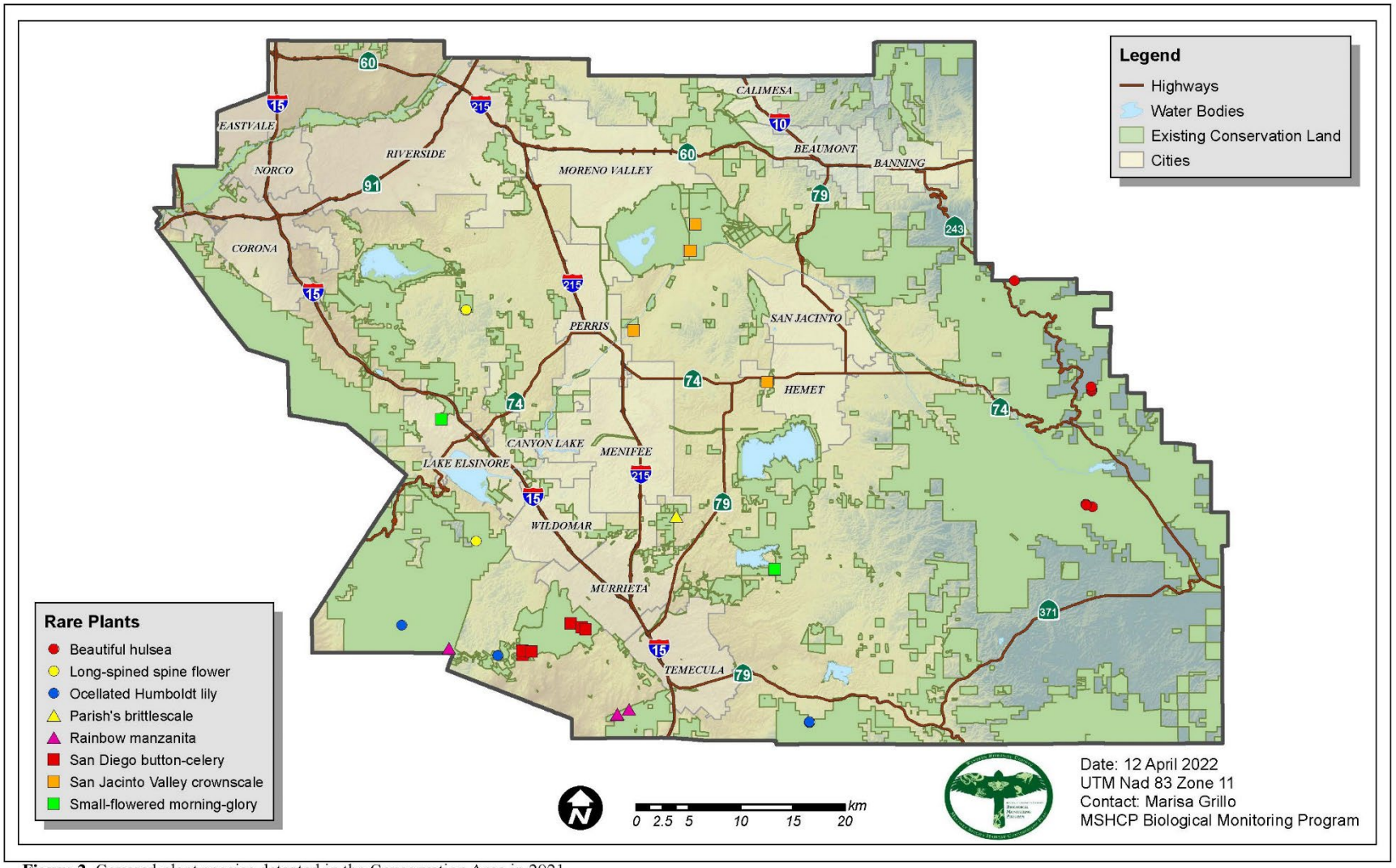

Figure 2. Covered plant species detected in the Conservation Area in 2021.

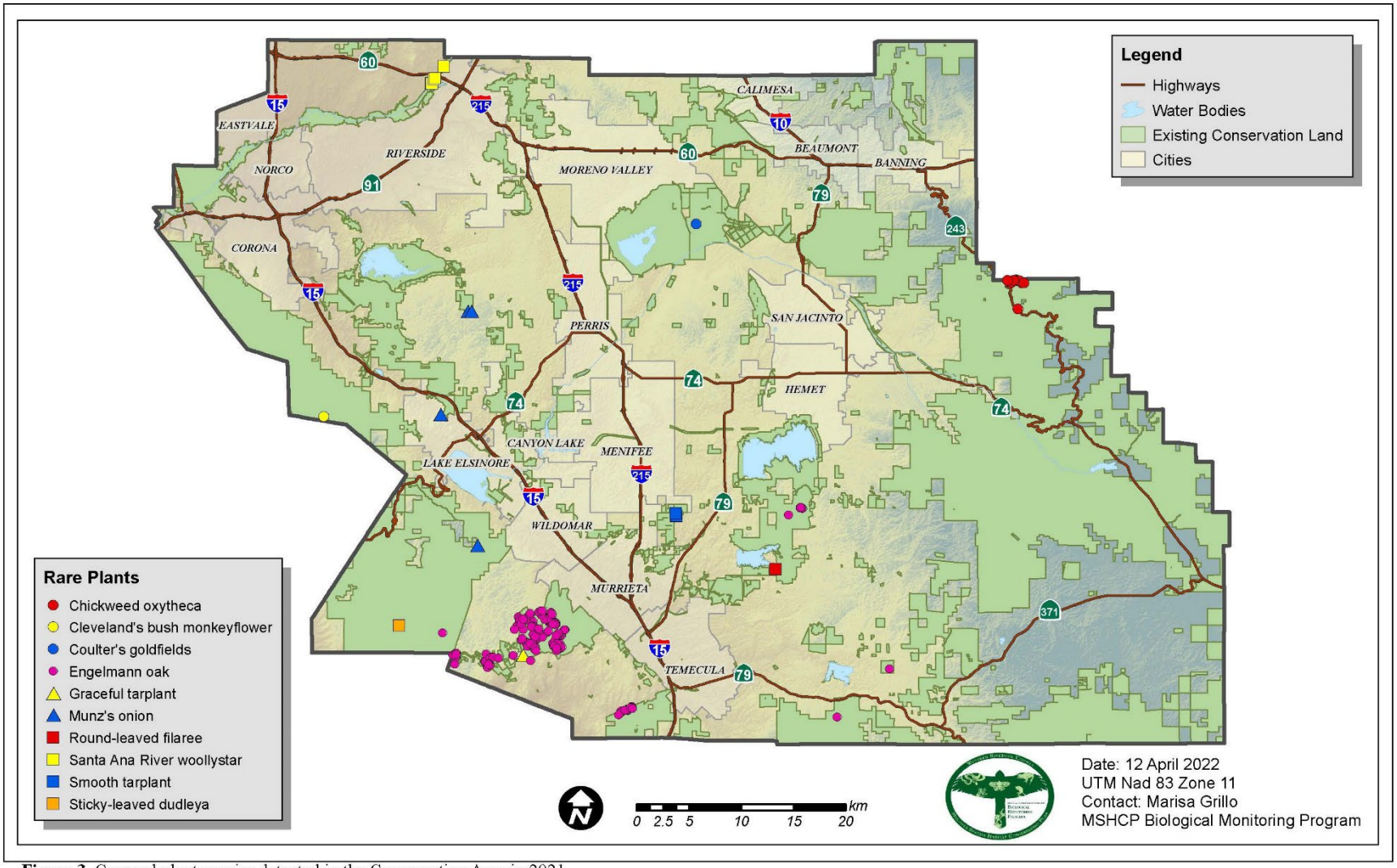

Figure 3. Covered plant species detected in the Conservation Area in 2021.

Table 1. Summary of MSHCP Table 9-3 Demonstrate-Conservation Objectives[1] These species are considered adequately conserved only when 100% of required localities have met minimum population size requirements within an 8-year monitoring period. **Bold** text indicates the requirement for this species is currently met.

Species	Objective Requirements		Confirmed Localities	
	Localities	*Min. Population*	*Thru 2021*	*Met*
Beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*)	16	50	16	**Yes**
California muhly (*Muhlenbergia californica*)	10	50	0	No
Chickweed oxytheca (*Sidotheca caryophylloides*)	10	1000	10	**Yes**
Cliff cinquefoil (*Potentilla rimicola*)	5	any	1	No
Coulter's matilija poppy (*Romneya coulteri*)	30	any	30	**Yes**
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	10	50	10	**Yes**
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	10	1000	10	**Yes**
Mojave tarplant (*Deinandra mohavensis*)	4	100 acres‡	0	No‡
Parry's spine flower (*Chorizanthe parryi* var. *parryi*)	10	1000	10	**Yes**
Peninsular spine flower (*Chorizanthe leptotheca*)	10	1000	10	**Yes**
Plummer's mariposa lily (*Calochortus plummerae*)	6	500	6	**Yes**
Rainbow manzanita (*Arctostaphylos rainbowensis*)	10	50	10	**Yes**
Small-flowered microseris (*Microseris douglasii* var. *platycarpha*)	10	1000	10	**Yes**

‡ *Interpretation of 100 acres required.*

[1] *Table does not include species that have a Forest Service MOU requirement.*

Incidental Observations

Monitoring Program staff incidentally observed 13 rare plant species during surveys for other species (Table 2). These observations confirmed 18 rare plant occurrence objectives and includes two occurrences documented for the first time. Incidental observation data is used as applicable to meet monitoring conservation objectives.

Table 2. Occurrence objectives confirmed by incidental observation in 2021 and their locations. Occurrences observed for the first time are *italicized*.

Species	Monitoring Program ID[1]	Locations (Property Names)
Beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*)	HVCA-21, HVCA-30	Thomas Mtn, Idyllwild
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	PCFI-10	San Mateo Cyn
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	HVEL-13	Avocado Mesa
Long-spined spine flower (*Chorizanthe polygonoides* var. *longispina*)	CPLO-20	Elsinore Peak
Munz's onion (*Allium munzii*)	ALMU-09	Elsinore Peak
Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	LHOC-03	Agua Tibia
Palmer's grapplinghook (*Harpagonella palmeri*)	HAPA-11, HAPA-12, HAPA-20	Vail Lake, Elsinore Peak
Rainbow manzanita (*Arctostaphylos rainbowensis*)	ARRA-05, ARRA-06	San Mateo Cyn, Gavilan Mtn
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*)	ACNO-03, ACNO-04	SJR SW to Perris, Upper Salt Creek
Small-flowered microseris (*Microseris douglassii* var. *platycarpha*)	MDPL-06	Vail Lake
Slender horned spineflower (*Dodecahema leptoceras*)	DOLE-03	San Jacinto River
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	*CPLA-38*	*French Valley*
Spreading navarretia (*Navarretia fossalis*)	*NAFO-15*	*Santa Rosa Plateau*

[1] *Refer to Appendix A for the species' monitoring program ID definition.*

DISCUSSION

In 2021, we focused on species objectives with population size requirements that had exceeded the eight-year monitoring interval. We were able to keep ten species with population size requirements in compliance with the requirements of the MSHCP. We also focused on species that had expired occurrences (exceeded monitoring interval) and less than the 75% minimum occupancy of occurrences (distributional objectives). Whenever possible, we surveyed for multiple target species concurrently but this method relies on Covered Species having similar phenology and occurring in the same locations.

The surveys to meet the demonstrate-conservation objectives for chickweed oxytheca began in 2020 but were not completed until 2021. The demonstrative-conservation objective (i.e., Species Objective 3) for this species requires ten localities with a minimum number of one thousand individuals at each location (Table 1). All known locations of chickweed oxytheca were reconfirmed in 2020 (meeting the distributional objectives) but two locations did not meet the minimum number of individuals required for the demonstrate-conservation objectives. These two locations were revisited in 2021 where we were able to find enough plants to meet the species objective requirements. Due to the less than average precipitation in 2021, we started surveys for chickweed oxytheca about three weeks earlier than we did in 2020.

Four of the demonstrate-conservation objective localities for Fish's milkwort were reconfirmed this year. The demonstrative-conservation objective for this species (i.e. Species Objective 3) requires ten localities with a minimum of at least 50 individuals at each location (Table 1). These localities were all located along the Santa Margarita River (accessed through the Santa Margarita Ecological Reserve).

We conducted four surveys to meet the MSHCP Table 5-8 objective for heart-leaved pitcher sage (*Lepechinia cardiophylla*) but were only successful in reconfirming the species at three locations (Appendix B). Many populations of this species straddle the county line and we have been unable to locate it at many of the required locations within Riverside County.

A small population of Parish's brittlescale was observed incidentally for the first time this year on RCA-owned conserved land (i.e. Mc Elhinney/Stimmel) (Appendix B). Seeds were collected by the Management Team for possible seed amplification and future conservation. Smooth tarplant was also incidentally found at the same site for the first time.

All three known occurrences of San Miguel savory (*Clinopodium chandleri*, formerly known as *Satureja chandleri*) were reconfirmed in 2021. The MSHCP Table 5-8 objective requires seven locations but there are only six locations based on CNDDB records, one of which is not in conservation. At this time, it is only possible to have detections at three locations of the required, known seven locations.

The distribution of the round-leaved filaree (*California macrophylla*, previously *Erodium macrophyllum*) occurrence at the Metropolitan Water District Southwestern Riverside County Multi-Species Reserve expanded in 2021. This species was previously known to only occur north of Lake Skinner within the reserve but a small population was also found in an area southeast of the lake.

Despite the lack of precipitation, San Diego button-celery was very abundant across the four locations on the Santa Rosa Plateau Ecological Reserve (SRPER). A small population was also incidentally found on an RCA property (i.e., Murrieta 180) just south of the SRPER for the first time.

All three known populations of San Jacinto Valley crownscale were reconfirmed in 2021, in collaboration with the United States Fish and Wildlife status review. These known populations occur at the San Jacinto River, Mystic Lake, and Upper Salt Creek. The invasion and spread of stinknet (*Oncosiphon piluliferum*) is threatening two of the populations in upper Salt Creek and the San Jacinto River (i.e. RCA properties Carlsbad Dev, Kaelin #2, and Wilhelm Ranch). Effective treatments are being tested at these sites to manage the stinknet without harming the covered crownscale.

Recommendations

A small population of Parish's brittlescale was observed for the first time in the MSHCP Reserve in 2021 (RCA's Mc Elhinney/Stimmel property). However, this population is not in any of the locations described in the MSHCP objectives and has never been found in the described locations. We recommend that the distributional objective (Species Objective 3) is reviewed and revised to include the location of this new population.

Despite Covid-19 restrictions, we have networked with other conservation professionals in our area via virtual meetings and symposiums to learn more about ecological factors that may influence rare plant populations. This information will help guide future monitoring efforts and aid in achieving species objectives.

Efforts to improve data collection in the field and data management in the office should be continued. Continued collaborative efforts with other agencies, and educational opportunities that increase our knowledge of Covered Species should be pursued as time and resources allow.

ACKNOWLEDGEMENTS

We thank the land managers in the MSHCP Plan Area, who in the interest of conservation and stewardship facilitate Monitoring Program activities on the lands for which they are responsible. Funding for the Biological Monitoring Program is provided by the Western Riverside County Regional Conservation Authority and the California Department of Fish and Wildlife. Program Staff who conducted rare plant surveys in 2021 were Karyn Drennen, Tara Graham, Marisa Grillo (Botany Program Lead), Cristina Juran, Kalee Koeslag (Riverside County Parks), Nathan Pinckard, Esperanza Sandoval, Ana Sawyer (Riverside County Parks), Nicole Tomes-Orlale, and Taylor Zagelbaum.

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Appendix A. Rare Plant Species Occurrence Objectives.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*; HVCA)					
Objective 2: Include within the MSHCP Conservation Area at least 12 of the known occurrences at Lake Fulmor, Pine Cove, Idyllwild, Mountain Center, Pine Meadow and Lake Hemet. Objective 3: Within the MSHCP Conservation Area, confirm 16 localities (locality in this sense is not smaller than one quarter section) with no fewer than 50 individuals each (unless a smaller population has been demonstrated to be self-sustaining). Note: Many historical records are not in access, or do not occur in listed locations. We have all locations and more than 12 historical occurrences confirmed, however there are not 12 confirmed within the listed locations. Pine Meadow is synonymous with Garner Valley. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	HVCA-01	Lake Fulmor	SBNF	Hist DB	
	HVCA-02	Lake Fulmor	James Resv	Hist DB	Not in conservation
	HVCA-03	Lake Fulmor	SBNF	Hist DB	S of Lk Fulmor
	HVCA-04	Pine Cove	SBNF	Hist DB	
	HVCA-05	Pine Cove	SBNF	Hist DB	
	HVCA-06	Idyllwild	Idyllwild Park	Hist DB	Possibly outside conservation.
	HVCA-07	Idyllwild	SBNF	BMP	
	HVCA-08	Idyllwild	SBNF	BMP	
	HVCA-09	Idyllwild	SBNF	BMP	
	HVCA-10	Mountain Center	SBNF	BMP	
	HVCA-11	Mountain Center	SBNF	Hist DB	
	HVCA-12	Mountain Center	SBNF	Hist DB	
	HVCA-13	Pine Meadow	SBNF	Hist DB	Garner Valley.
	HVCA-14	Pine Meadow	SBNF	Hist DB	Garner Valley.
	HVCA-15	Lake Hemet	SBNF	Hist DB	Nearest Lake Hemet.
	HVCA-16	243 @ Blk Mtn Rd	SBNF	BMP	
	HVCA-17	243 @ Stone Crk CG	SBNF	Hist DB	
	HVCA-18	Dark Canyon	SBNF	Hist DB	
	HVCA-19	Dark Canyon	Mt SJ State Park	Hist DB	
	HVCA-20	Palm View Peak	SBNF	Hist DB	
	HVCA-21	Thomas Mtn	SBNF	Hist DB	
	HVCA-22	Thomas Mtn	SBNF	CCB	
	HVCA-23	Thomas Mtn	SBNF	CCB	
	HVCA-24	Thomas Mtn	SBNF	CCB	
	HVCA-25	Thomas Mtn	SBNF	Hist DB	
	HVCA-26	Pine Cove	SBNF	SBNF	Logan Creek

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*; HVCA)					
	HVCA-27	Marion Mtn Trail	SBNF	BMP	
	HVCA-28	Thomas Mtn	SBNF	SBNF	
	HVCA-29	Morris Ranch Rd	SBNF	SBNF	
	HVCA-30	Idyllwild	SBNF	SBNF	Near Saunders / Southridge
Brand's phacelia (*Phacelia stellaris*; PHST)					
Objective 2: Include within the MSHCP Conservation Area at least the two known localities of this species along the Santa Ana River at Fairmont Park and in the Santa Ana Wilderness Area. Note: According to the Biological Opinion, the only remaining occurrence in the Plan Area is about a mile southwest of Fairmont Park (PHST-02).	PHST-01 PHST-02	Fairmont Park SA Wilderness	Fairmont Park Santa Ana River Park	CCH Hist DB	Extirpated occurrence.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
California beardtongue (*Penstemon californicus*; PECA)					
Objective 2: Include within the MSHCP Conservation Area at least 15 occurrences in Aguanga, Blackburn Canyon and the San Jacinto Mountains (including Garner Valley, Pyramid Peak, and Kenworthy Ranger Station). Note: There are not 15 unique records for this species. There are 9 CNDDB polygons, 2 of which are in unsuitable habitat. Of the remaining 7 CNDDB polygons, 5 are occupied with this species. We have also found an additional occurrence not in the CNDDB, bringing the total to 6 confirmed occurrences.	PECA-01	Aguanga		CNDDB (EO 7)	Poorly geo-referenced. 1882.
	PECA-02	Blackburn Cyn		CNDDB (EO 6)	Wrong habitat.
	PECA-03	Garner Valley	SBNF, Morris Ranch	CNDDB (EO 2)	
	PECA-04	Garner Valley	SBNF, SW Quinn Flat	CNDDB (EO 3)	Edit polygon.
	PECA-05	Garner Valley	SBNF, Fobes Ranch	CNDDB (EO 4)	
	PECA-06	Garner Valley	SBNF, Quinn Flat	CNDDB (EO 11)	
	PECA-07	Garner Valley	SBNF, Morris/Goff	CNDDB (EO 12)	
	PECA-08	Pyramid Peak		Hist DB	Not in Plan Area.
	PECA-09	Kenworthy Station	SBNF, Morris Ranch	CNDDB (EO 1)	
	PECA-10	NW of Kenworthy	SBNF, Morris Ranch	CNDDB (EO 10)	
	PECA-11	Garner Valley	SBNF, SW Hwy 74	BMP	Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
California bedstraw (*Galium californicum* ssp. *primum*; GCPR)					
Objective 2: Include within the MSHCP Conservation Area at least four of the known occurrences of this species in the vicinity of Alvin Meadows between Pine Cove and Idyllwild in the San Jacinto Mountains. Note: There are only 3 CNDDB records, but many Forest Service data points. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	GCPR-01	Alvin Meadow	SBNF	CNDDB (EO 4)	
	GCPR-02	Alvin Meadow	SBNF	CNDDB (EO 3)	
	GCPR-03	Alvin Meadow	SBNF	CNDDB (EO 1)	
	GCPR-04	Alvin Meadow	SBNF	SBNF, BMP	3 CNDDB records.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
California black walnut (*Juglans californica* var. *californica*; JUCA)					
Objective 2: Include within the MSHCP Conservation Area at least seven known occurrences of this species within the Santa Ana Mountains, at Lake Skinner, at the Santa Rosa Plateau and one east of Pedley. Note: As described, there are only 5 historical ("known") occurrences to conserve, 2 of which are within the Conservation Area. Including previously undocumented occurrences, we have found 9 occurrences within all listed areas except the Santa Ana Mountains, and 5 additional occurrences in areas not listed.	JUCA-01	Santa Ana Mtns	CNF, Hagador Cyn	Hist DB	Not in conservation.
	JUCA-02	Santa Ana Mtns	Lake Elsinore	Hist DB	Not in conservation.
	JUCA-03	Lake Skinner	French Valley	CCH	Not in conservation.
	JUCA-04	Lake Skinner	MSR		Not "known".
	JUCA-05	Lake Skinner	MSR		Not "known".
	JUCA-06	Lake Skinner	Johnson Ranch		Not "known".
	JUCA-07	Lake Skinner	AD 161		Not "known".
	JUCA-08	Lake Skinner	Johnson Ranch		Not "known".
	JUCA-09	Santa Rosa Plateau	SRP - Adobe Area	CCH	Santa Rosa Rch HQ.
	JUCA-10	East of Pedley	SARiver- City	Hist DB	Near Fairmont Park.
	JUCA-11	East of Pedley	SARiver- City		Not "known".
	JUCA-12	East of Pedley	SARiver- State		Not "known".
	JUCA-13	Chino State Park	Chino SP		Alternate.
	JUCA-14	Ironwood/Badlands	Riverside Clark		Alternate.
	JUCA-15	Lake Mathews	MWD Lake Mathews		Alternate.
	JUCA-16	Estelle	RCHCA Estelle		Alternate.
	JUCA-17	SMER	SMER		Alternate.
	JUCA-18	Sedco Hills	TET Sedco Hills	BMP	
	JUCA-19	Sycamore Cyn Pk			

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
California muhly (*Muhlenbergia californica*; MUCA)					
Objective 2: Include within the MSHCP Conservation Area the known locations at Sage, Aguanga, Estelle Mountain, Prado Dam, Temescal Canyon, and Sitton Peak. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) containing at least 50 clumps (unless a smaller population has been demonstrated to be self-sustaining). Note: There are no records for this species within the Plan Area. The unpublished data cited in the Species Account could not be located.	MUCA-01 MUCA-02 MUCA-03 MUCA-04 MUCA-05 MUCA-06 MUCA-07 MUCA-08 MUCA-09 MUCA-10	Sage Aguanga Estelle Mountain Prado Dam Temescal Canyon Sitton Peak TBD TBD TBD TBD			
California Orcutt grass (*Orcuttia californica*; ORCA)					
Objective 2: Include within the MSHCP Conservation Area at least three of the known locations of California Orcutt grass at the Santa Rosa Plateau, at Skunk Hollow and in the upper Salt Creek drainage west of Hemet. Note: The known occurrence in Upper Salt Creek is in a vernal pool located on private property.	ORCA-01 ORCA-02 ORCA-03	Santa Rosa Plateau Skunk Hollow Upper Salt Creek	Santa Rosa Plateau Skunk Hollow Stowe & California	CNDDB (EO 16, 18) CNDDB (EO 24) CCH	Mesa de Burro. Managed by CNLM. Not in conservation.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Chickweed oxytheca (*Oxytheca caryophylloides*; OXCA)					
Objective 2: Include within the MSHCP Conservation Area at least five of the known locations within the San Jacinto Mountains. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) managed with 1,000 individuals each (unless a smaller population has been demonstrated to be self-sustaining). Note: Synonym: *Sidotheca caryophylloides.* Of 8 occurrences referenced in the species account, only 4 are within conservation. Three of the 4 records within conservation are dated from 1924. Additional records from SBNF.	OXCA-01	SBNF, S Jacinto Mtns	Black Mountain Trail	BMP	
	OXCA-02	SBNF, S Jacinto Mtns	Black Mountain Trail	BMP	
	OXCA-03	SBNF, S Jacinto Mtns	Black Mountain	BMP	
	OXCA-04	SBNF, S Jacinto Mtns	Black Mtn Truck Trail	SBNF	
	OXCA-05	SBNF, S Jacinto Mtns	SW of Black Mtn	SBNF	
	OXCA-06	SBNF, S Jacinto Mtns	James Resv/ Lk Fulmor	Hist DB	
	OXCA-07	SBNF, S Jacinto Mtns	SW of Lake Fulmor	BMP	
	OXCA-08	SBNF, S Jacinto Mtns	SE of Lake Fulmor	BMP	
	OXCA-09	SBNF, S Jacinto Mtns	Black Mtn Truck Trail	BMP	
	OXCA-10	SBNF, S Jacinto Mtns	Azalea Trail Dark Cyn	Hist DB	
	OXCA-11	SBNF, S Jacinto Mtns	Indian Vista 4S21	SBNF	
	OXCA-12	SBNF, S Jacinto Mtns	Black Mtn Turnoff	Hist DB	
	OXCA-13	SBNF, S Jacinto Mtns	W of Stone Creek Cmp	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Cleveland's bush monkeyflower (*Mimulus clevelandii*; MICL)					
Objective 2: Include within the MSHCP Conservation Area the two known localities of this species on Santiago Peak in the Santa Ana Mountains and on the northern slopes of the Agua Tibia Mountains. Note: Synonym: *Diplacus clevelandii.* There are no issues with the interpretation of these objectives.	MICL-01 MICL-02 MICL-03	Santiago Peak Agua Tibia Mtns Trabuco Peak	CNF, Santa Ana Mtns CNF, Agua TibiaMtns CNF, Santa Ana Mtns	Hist DB Hist DB BMP	 Additional location.
Cliff cinquefoil (*Potentilla rimicola*; PORI)					
Objective 2: Include within the MSHCP Conservation Area the two known localities of this species in Dark Canyon and near Deer Spring. Objective 3: Within the MSHCP Conservation Area, confirm five localities (locality in this sense is not smaller than one quarter section). Note: Both historical records were documented observations from the same day (July 27, 1924). It is possible that they are duplicates of a single observation. There are no other records for this species within the plan area.	PORI-01 PORI-02 PORI-03 PORI-04 PORI-05	Dark Canyon Deer Springs TBD TBD TBD	Mt SJ State Pk Mt SJ State Pk	CNDDB (EO 3) CNDDB (EO 4)	 Duplicate record?

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*; LGCO)					
Objective 2: Include within the MSHCP Conservation Area at least 20 of the known occurrences of this species, including the three Core Areas: the San Jacinto Wildlife Area and the southern shores of Mystic Lake, the middle segment of the San Jacinto River and a portion of the Alberhill locality. Note: 2 of 3 core areas are not in conservation. Large, continuous populations make it difficult to interpret distinct occurrences and many CNDDB polygons are too close to call seperate populations. We overlaid a Public Land Survey Systems shapefile with historical CNDDB records to define occurrences at the SJWA. (See the Program interpretation of the "Quarter Section Rule" in the "Notes" section). Additional occurrences have been observed in locations not listed.	LGCO-01	SJWA/Mystic Lake	SJWA	CNDDB (EO 49)	03S02W20
	LGCO-02	SJWA/Mystic Lake	SJWA	CNDDB (EO 8)	03S02W21
	LGCO-03	SJWA/Mystic Lake	SJWA	CNDDB (EO 10)	03S02W29
	LGCO-04	SJWA/Mystic Lake	SJWA	CNDDB (EO 9)	03S02W28
	LGCO-05	SJWA/Mystic Lake	SJWA	CNDDB (EO 48, 12)	03S02W31
	LGCO-06	SJWA/Mystic Lake	SJWA	CNDDB (EO 10, 12)	03S02W32
	LGCO-07	SJWA/Mystic Lake	SJWA	CNDDB (EO 47)	03S02W33
	LGCO-08	SJWA/Mystic Lake	SJWA		03S02W35
	LGCO-09	SJWA/Mystic Lake	SJWA	CNDDB (EO 13)	04S02W06
	LGCO-10	SJWA/Mystic Lake	SJWA	CNDDB (EO 13)	04S02W05
	LGCO-11	San Jacinto River		CNDDB (EO 15-20)	Not in conservation.
	LGCO-12	Alberhill		CNDDB (EO 57)	Not in conservation.
	LGCO-13	Hemet	Warren Rd Partners	CNDDB (EO 44)	
	LGCO-14	Hemet	Wilhelm Ranch	Hist DB	
	LGCO-15	Salt Creek Channel	Salt Creek Channel		
	LGCO-16	McElhinney-Stimmel	McElhinney-Stimmel		
	LGCO-17	Wilson Valley	Winchester 700		
	LGCO-18	Mockingbird Reserv	Mockingbird Reservoir	CNDDB (EO 11)	
	LGCO-19	Murrieta		CNDDB (EO 22)	
	LGCO-20	Lake Elsinore	Flood Control	Hist DB	
	LGCO-21	SJWA/Mystic Lake	SJWA	BMP	03S02W34
	LGCO-22	Hemet	RCTC	Hist DB	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Coulter's matilija poppy (*Romneya coulteri*; ROCO)					
Objective 2: Within the MSHCP Conservation Area, confirm 30 localities (locality in this sense is not smaller than one quarter section). Note: Specific locations and population sizes are not required.	ROCO-01	Santa Ana Mtns	CNF	CNF	
	ROCO-02	Santa Ana Mtns	CNF	CNF	
	ROCO-03	Santa Ana Mtns	CNF	CNF	
	ROCO-04	Santa Ana Mtns	CNF	CNF	
	ROCO-05	Santa Ana Mtns	CNF	CNF	
	ROCO-06	Santa Ana Mtns	CNF	CNF	
	ROCO-07	Santa Ana Mtns	CNF	BMP	
	ROCO-08	Santa Ana Mtns	CNF	CNF	
	ROCO-09	Santa Ana Mtns	CNF	CNF	
	ROCO-10	Santa Ana Mtns	CNF	CNF	
	ROCO-11	Gavilan Hills/Estelle	RCHCA Estelle	BMP	
	ROCO-12	Gavilan Hills/Estelle	RCHCA Estelle	CNF	
	ROCO-13	Gavilan Hills/Estelle	RCHCA Estelle	CNF	
	ROCO-14	Gavilan Hills/Estelle	RCHCA Estelle	CNF	
	ROCO-15	Santa Ana Mtns	CNF	CNF	
	ROCO-16	Santa Ana Mtns	CNF	CNF	
	ROCO-17	Santa Ana Mtns	CNF	CNF	
	ROCO-18	Santa Ana Mtns	CNF	BMP	
	ROCO-19	Santa Ana Mtns	CNF	CNF	
	ROCO-20	Santa Ana Mtns	CNF	CNF	
	ROCO-21	Glen Eden	Glen Eden	BMP	
	ROCO-22	Santa Ana Mtns	CNF	CNF	
	ROCO-23	Santa Ana Mtns	CNF	BMP	
	ROCO-24	Rice Canyon	Bishop	BMP	
	ROCO-25	Walker Canyon	Long Beach Eq.	BMP	
	ROCO-26	Alberhill	Tri Valley	CNF	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Coulter's matilija poppy (*Romneya coulteri*; ROCO)					
	ROCO-27	Alberhill	Tri Valley	CNF	
	ROCO-28	Walker Canyon	BLM	CNF	
	ROCO-29	Alberhill	Tri Valley	BMP	
	ROCO-30	Santa Ana Mtns	CNF	CNF	
	ROCO-31	Santa Ana Mtns	CNF	CNF	
	ROCO-32	Santa Ana Mtns	CNF	CNF	
	ROCO-33	Santa Ana Mtns	CNF		
	ROCO-34	Lk Mathews/Estelle	RCHCA		
	ROCO-35	Estelle	CDFW		
	ROCO-36	Cajalco & Temescal	RCRCD	BMP	
	ROCO-37	Ortega Hwy Loop	CNF	BMP	
	ROCO-38	Santa Ana Mountains	CNF		
	ROCO-39	El Cariso Truck Trail	CNF	BMP	
	ROCO-40	Temescal Wash	Toscana Terramor	BMP	
	ROCO-41	Rice Canyon	La Laguna		
	ROCO-42	Rice Cyn	CNF		
	ROCO-43	Estelle	Reynolds		
	ROCO-44	Estelle	Reynolds		
	ROCO-45	Estelle	Reynolds		
	ROCO-46	Estelle	Reynolds		
	ROCO-47	Walker Canyon	TBD	Parks	Not yet in conservation

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Davidson's saltscale (*Atriplex serenana* var. *davidsonii*; ASDA)					
Objective 2: Include within the MSHCP Conservation Area the three known localities of Davidson's saltscale at Salt Creek, the San Jacinto River and the San Jacinto Wildlife Area. Note: There are no issues with the interpretation of these objectives.	ASDA-01 ASDA-02 ASDA-03	Salt Creek San Jacinto River SJWA	Wilhelm/Warren/RCTC SJWA	CCH CCH CCH	 Not in conservation.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Engelmann oak (*Quercus engelmannii*; QUEN)					
Objective 2: Include within the MSHCP Conservation Area at least 33 known occurrences of this species, including the core locations at the Santa Rosa Plateau and in the Santa Ana Mountains. Objective 3: Within the MSHCP Conservation Area, maintain recruitment at a minimum of 80 percent of the conserved populations as measured by the presence/absence of seedlings and/or saplings across any consecutive five years. Note: The distribution of historical records for this species at SRP (large woodlands) makes it difficult to quantify a number of occurrences here and deciding what is a "known" occurrence seems arbitrary. Many records are outside of conservation. We have based our occurrence counts here on historical records, where possible, and on the "Quarter Section Rule" (generally counting quarter sections as separate occurrences for contiguous populations). Several quarter sections contain multiple historical records.	QUEN-01	Estelle Mountain	RCHCA Estelle	Hist DB	
	QUEN-02	Potrero	Potrero	Hist DB	
	QUEN-03	Potrero	Potrero	BMP	
	QUEN-04	Potrero		BMP	
	QUEN-05	Santa Rosa Hills	RCA, Bautista	BMP	
	QUEN-06	Rawson Cyn	MSR, Shipley Resv	Hist DB	
	QUEN-07	Rawson Cyn	MSR	Hist DB	
	QUEN-08	Santa Ana Mtns	CNF	Hist DB	
	QUEN-09	Santa Ana Mtns	CNF	Hist DB	
	QUEN-10	Santa Ana Mtns	CNF	BMP	
	QUEN-11	Santa Ana Mtns	CNF	BMP	
	QUEN-12	Santa Ana Mtns	CNF	BMP	
	QUEN-13	Tenaja Corridor	Tenaja Corridor	Hist DB	
	QUEN-14	Tenaja Corridor	Tenaja Corridor	Hist DB	
	QUEN-15	Tenaja Corridor	Tenaja Corridor	BMP	
	QUEN-16	Tenaja Corridor	Tenaja Corridor	Hist DB	
	QUEN-17	Tenaja Corridor	Tenaja Corridor	BMP	
	QUEN-18	Tenaja Corridor	Tenaja Corridor	Hist DB	
	QUEN-19	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-20	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-21	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	QUEN-22	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	QUEN-23	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-24	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	QUEN-25	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-26	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Engelmann oak (*Quercus engelmannii*; QUEN)					
	QUEN-27	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	QUEN-28	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-29	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-30	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	QUEN-31	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	QUEN-32	Santa Margarita ER	Santa Margarita ER	BMP	
	QUEN-33	Santa Margarita ER	Santa Margarita ER	BMP	
	QUEN-34	Santa Margarita ER	Santa Margarita ER	Hist DB	
	QUEN-35	Santa Margarita ER	Santa Margarita ER	BMP	
	QUEN-36	Agua Tibia Mtns	CNF	Hist DB	
	QUEN-37	Dripping Springs	CNF	BMP	
	QUEN-38	Wilson Creek	RCA, Wilson Creek	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Fish's milkwort (*Polygala cornuta* var. *fishiae*; PCFI)					
Objective 2: Include within the MSHCP Conservation Area at least three of the known localities (Santa Rosa Plateau, Santa Margarita Ecological Preserve, and San Mateo Canyon). Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with at least 50 individuals (ramets or genets) each (unless a smaller population has been demonstrated to be self-sustaining). Note: There are no issues with the interpretation of these objectives. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	PCFI-01	Santa Rosa Plateau	SRP, Cole Cyn	BMP	
	PCFI-02	Santa Rosa Plateau	SRP, M de Colorado	BMP	
	PCFI-03	Santa Rosa Plateau	De Luz Ck, Tenaja	BMP	
	PCFI-04	Santa Rosa Plateau	Avocado Mesa, Tenaja	BMP	
	PCFI-05	Santa Margarita ER	Santa Margarita ER	BMP	
	PCFI-06	Santa Margarita ER	Santa Margarita ER	BMP	
	PCFI-07	Santa Margarita ER	Santa Margarita ER	Hist DB	
	PCFI-08	Santa Margarita ER	Santa Margarita ER	BMP	
	PCFI-09	Santa Margarita ER	Santa Margarita ER	BMP	
	PCFI-10	San Mateo Canyon	CNF, Fishermans Cmp	Hist DB	
	PCFI-11	San Mateo Canyon	CNF, Tenaja Cyn	BMP	
	PCFI-12	Santa Ana Mtns	CNF, Oak Flats	BMP	Alternate.
	PCFI-13	Santa Ana Mtns	CNF, Indian Truck	BMP	Alternate.
	PCFI-14	Santa Ana Mtns	CNF, Tin Mine Cyn	BMP	Alternate.
	PCFI-15	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
	PCFI-16	Santa Margarita ER	Santa Margarita ER	Hist DB	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*; HVEL)					
Objective 2: Include within the MSHCP Conservation Area at least eight of the known locations, including four occurrences located on Santa Rosa Plateau and four occurrences in the San Mateo Canyon Wilderness Area. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with 1,000 individuals each (unless a smaller population has been demonstrated to be self-sustaining). Note: There are only 7 unique historical records: 3 in the San Mateo Wilderness, 1 in the Tenaja Corridor, and 3 at the Santa Rosa Plateau. San Mateo: 2 records old and vague - 1959 & 1965 "west of Murrieta", 2 records duplicate of single record that sounds like a waif 1994 "locally scarce".	HVEL-01	Santa Rosa Plateau	Sylvan Mdws SRP	Hist DB	
	HVEL-02	Santa Rosa Plateau	Tenaja Truck Tr SRP	Hist DB	
	HVEL-03	Santa Rosa Plateau	Waterline Rd SRP	Hist DB	
	HVEL-04	Santa Rosa Plateau	Monument Hill Rd SRP	BMP	
	HVEL-05	San Mateo Cyn WA	Oak Flat CNF	Hist DB	Old, vague. Likely duplicate of SRP.
	HVEL-06	San Mateo Cyn WA	San Mateo River CNF	Hist DB	Possible waif.
	HVEL-07	San Mateo Cyn WA	CNF @ La Cresta	Hist DB	Old, vague. Likely duplicate of SRP.
	HVEL-08	San Mateo Cyn WA	CNF Tenaja	BMP	
	HVEL-09	Tenaja Corridor	CNF Rd TNC	BMP	
	HVEL-10	Tenaja Corridor	Avocado Mesa TNC	CCH, Hist DB	
	HVEL-11	Santa Rosa Plateau	Hidden Valley SRP	BMP	
	HVEL-12	Santa Rosa Plateau	Mesa de Colorado SRP	BMP	
	HVEL-13	Avocado Mesa	Herrmann	BMP	
	HVEL-14	Avocado Mesa	Monte Cristo	BMP	
	HVEL-15	Santa Rosa Plateau	Punta Mesa	BMP	
	HVEL-16	Santa Rosa Plateau	Punta Mesa	BMP	
	HVEL-17	De Luz Rd	Skorpanich	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Hall's monardella (*Monardella macrantha* ssp. *hallii*; MMHA)					
Objective 2: Include within the MSHCP Conservation Area at least the five known locations of this species: Cahuilla Mountain and an occurrence southwest of Pine Cove in the San Jacinto Mountains, two occurrences on the north slope of the Agua Tibia Mountains and Santiago Peak in the Santa Ana Mountains. Note: There is only one historical point and one occurrence found in Agua Tibia. There are 2 occurrences each at Cahuilla Mountain and San Jacinto Mountains.	MMHA-01	Cahuilla Mtn		CNDDB (EO 40)	
	MMHA-02	San Jacinto Mtns	SBNF Chimney Flats	Hist DB	
	MMHA-03	Agua Tibia Mtns	CNF Agua Tibia	CNDDB (EO 38)	Only one record here.
	MMHA-04	Agua Tibia Mtns	CNF Agua Tibia		Only one record here.
	MMHA-05	Santiago Peak	CNF Santa Ana Mtns	CNDDB (EO 42)	Edit polygon.
Hammitt's clay-cress (*Sibaropsis hammittii*; SIHA)					
Objective 2: Include within the MSHCP Conservation Area the Core Area for this species, including at least the one known locality near Elsinore Peak and suitable habitat adjacent to these occurrences. Note: There are no issues with the interpretation of these objectives.	SIHA-01	Elsinore Peak	CNF	Hist DB	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Heart-leaved pitcher sage (*Lepechinia cardiophylla*; LECA)					
Objective 2: Include within the MSHCP Conservation Area at least six known populations in the Santa Ana Mountains (within the vicinity of Sierra Peak, Indian Truck Trail, Bald Peak, Trabuco Peak, Horsethief Trail, Pleasants Peak, and the ridge between Ladd Canyon and East Fork Canyon). Note: Most historical populations straddle the Orange County line. We have been unable to confirm some of these within Riverside County.	LECA-01	Sierra Peak	CNF, Santa Ana Mtns	CNDDB (EO 2)	
	LECA-02	Sierra Peak	CNF, Santa Ana Mtns	CNDDB (EO 3)	
	LECA-03	Indian Truck Trail	CNF, Santa Ana Mtns	CNDDB (EO 6)	
	LECA-04	Indian Truck Trail	CNF, Santa Ana Mtns	CNDDB (EO 15)	
	LECA-05	Bald Peak	CNF, Santa Ana Mtns	CNDDB (EO 4)	
	LECA-06	Trabuco Peak	CNF, Santa Ana Mtns	CNDDB (EO 7)	Half in OC
	LECA-07	Horsethief Trail	CNF, Santa Ana Mtns	CNDDB (EO 10)	Half in OC
	LECA-08	Pleasants Peak	CNF, Santa Ana Mtns	CNDDB (EO 13)	
	LECA-09	Ladd/ East Fork Cyns	CNF, Santa Ana Mtns	CNDDB (EO 5)	Mostly in OC
	LECA-10	Skyline Dr	CNF, Santa Ana Mtns	BMP	
	LECA-11	Main Div@ Mayhew	CNF, Santa Ana Mtns	BMP	
Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*; CWIN)					
Objective 2: Include within the MSHCP Conservation Area at least two of the known localities (hills west of Crown Valley and Vail Lake) and possibly a third locality (Sierra Peak area of the Santa Ana Mountains) of the species. Note: There are no issues with the interpretation of these objectives.	CWIN-01	Crown Valley	MSR	CNDDB (EO 8)	
	CWIN-02	Vail Lake		CNDDB (EO 20)	Not in conservation.
	CWIN-03	Sierra Peak	CNF	CNDDB (EO 13)	
	CWIN-04	Warm Springs	Winchester 700	BMP	Additional. Make polygon.
	CWIN-05	Main Divide	CNF	BMP	Additional occurrence.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Jaeger's milk-vetch (*Astragalus pachypus* var. *jaegeri*; APJA)					
Objective 2: Include within the MSHCP Conservation Area the seven known localities (18 occurrences) of this species at Aguanga Valley, San Jacinto Mountains, Potrero Creek, Sage, Temecula Canyon, and the core location at Vail Lake and the base of the Agua Tibia Mountains. Note: Several historical occurrences are very near to others and are probably duplicates. We are attempting to confirm the 7 localities. Vail Lake not currently in access. Temecula Cyn record is extremely old and vague. The Sage locality appears to be an incorrect georeference for the Sage Road occurrence.	APJA-01 APJA-02 APJA-03 APJA-04 APJA-05 APJA-06 APJA-07	Aguanga Valley San Jacinto Mtns Potrero Creek Sage Temecula Cyn Vail Lake Agua Tibia Mtns	CNF, Agua Tibia Rousse Ridge Potrero 5 Star Cap/Wilson Vly SMER Vail Lake Dripping Spgs, CNF	CNDDB (EO 9) CCH CNDDB (EO 3) CNDDB (EO 6) CNDDB (EO 5) CNDDB (EO 1) CNDDB (EO 2)	 Sage Road, not town. Vague record from 1880. Not in conservation.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Johnston's rock cress (*Arabis johnstonii*; ARJO)					
Objective 2: Include within the MSHCP Conservation Area the two Core Areas for this species, including at least 17 of the known occurrences in Garner Valley and Mountain Springs and suitable habitat adjacent to these occurrences. Note: Synonym: *Boechera johnstonii.* Mountain Springs should be Mountain Center, which is in the vicinity of Garner Valley (a single Core Area). Historical points appear to be either poorly georeferenced duplicates or to fall within 7 CNDDB polygons. One CNDDB polygon is not in conservation. We have confirmed 6 unique CNDDB historical occurrences in conservation, and we have found one additional occurrence not in the historical records.	ARJO-01	Garner Valley	SBNF	CNDDB (EO 8)	
	ARJO-02	Garner Valley	SBNF	CNDDB (EO 7)	
	ARJO-03	Garner Valley	SBNF	CNDDB (EO 6)	
	ARJO-04	Garner Valley	SBNF	CNDDB (EO 5)	
	ARJO-05	Garner Valley	SBNF	CNDDB (EO 3)	
	ARJO-06	Garner Valley	SBNF	CNDDB (EO 2)	
	ARJO-07	Garner Valley	SBNF	CNDDB (EO 1)	CNDDB polygon wrong.
	ARJO-08	Garner Valley	SBNF	BMP	Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Lemon lily (*Lilium parryi*; LIPA)					
Objective 2: Include within the MSHCP Conservation Area at least six localities (seven occurrences) within the San Jacinto Mountains. Note: There are no issues with the interpretation of these objectives.	LIPA-01	Hall Cyn, Lk Fulmor	SBNF, San Jacinto Mtns	CNDDB (EO 11)	Point not in conservation.
	LIPA-02	Black Mtn Ck	SBNF, San Jacinto Mtns	CNDDB (EO 13)	
	LIPA-03	Fuller Mill Creek	SBNF, San Jacinto Mtns	CNDDB (EO 9)	
	LIPA-04	Fuller Mill Creek	SBNF, San Jacinto Mtns	CNDDB (EO 9)	
	LIPA-05	Dark Canyon	Mt San Jacinto State Pk	CNDDB (EO 6)	
	LIPA-06	Dark Canyon	SBNF, San Jacinto Mtns	CNDDB (EO 7)	
	LIPA-07	Little Round Valley	Mt San Jacinto State Pk	CNDDB (EO 56)	
	LIPA-08	Deer Springs Camp	Mt San Jacinto State Pk	CNDDB (EO 57)	
	LIPA-09	PCT near Marion Mtn	Mt San Jacinto State Pk	CNDDB (EO 61)	
	LIPA-10	North Fork SJR	SBNF, San Jacinto Mtns	CNDDB (EO 12)	
	LIPA-11	Stone Creek	SBNF, San Jacinto Mtns	CNDDB (EO 8)	
	LIPA-12	Stone Ck Cpgd	Mt San Jacinto State Pk	CNDDB (EO 69)	
	LIPA-13	Marion Mtn Tr	SBNF, San Jacinto Mtns	BMP	
	LIPA-14	Ernie Maxwell Trail	SBNF, San Jacinto Mtns	BMP	
	LIPA-15	Stone Creek	Mt San Jacinto State Pk	CNDDB (EO 8)	
	LIPA-16	Black Mtn Truck Trl	SBNF, San Jacinto Mtns	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Little mousetail (*Myosurus minimus*; MYMI)					
Objective 2: Include within the MSHCP Conservation Area at least five of the known locations of this species, including Harford Springs County Park on the Gavilan Plateau and the three core locations: one along Salt Creek west of Hemet and two on the Santa Rosa Plateau. Note: There are only 4 locations listed.	MYMI-01 MYMI-02 MYMI-03 MYMI-04 MYMI-05 MYMI-06	Harford Springs Salt Creek Salt Creek Santa Rosa Plateau Santa Rosa Plateau Nuevo	Harford Springs Warren Rd Partners RCTC, Dilworth Mesa de Burro SRP Mesa de Colorado SRP Carlsbad	CNDDB (EO 10) CNDDB (EO 21) Hist DB CNDDB (EO 12, 13) CNDDB (EO 15) BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Long-spined spine flower (*Chorizanthe polygonoides* var. *longispina*; CPLO)					
Objective 2: Include within the MSHCP Conservation Area at least 32 locations of this species, including the two core locations at Lake Matthews and in the Agua Tibia Mountains. Note: This species does not require "known" locations other than presence in two "core locations". There are many new occurrences in the CNDDB, some of which are from Monitoring Program collections, and others that can be added to this list as resources allow for additional survey efforts.	CPLO-01	Lake Mathews	MWD Estelle Resv	CNDDB (EO 22)	
	CPLO-02	Lake Mathews	MWD Estelle Resv	CNDDB (EO 29)	
	CPLO-03	Lake Mathews	MWD Estelle Resv	Hist DB	
	CPLO-04	Lake Mathews	MWD Estelle Resv	CNDDB (EO 28)	
	CPLO-05	Lake Mathews	MWD Estelle Resv	Hist DB	
	CPLO-06	Lake Mathews	MWD Estelle Resv	CNDDB (EO 25, 26)	
	CPLO-07	Lake Mathews	MWD Estelle Resv	CNDDB (EO 24)	
	CPLO-08	Lake Mathews	MWD Estelle Resv	CNDDB (EO 23)	
	CPLO-09	Lake Mathews	MWD Estelle Resv	CNDDB (EO 21)	
	CPLO-10	Lake Mathews	MWD Estelle Resv	CNDDB (EO 20)	
	CPLO-11	Agua Tibia	CNF, S Dorland area	CNDDB (EO 32)	
	CPLO-12	Agua Tibia	CNF, Dorland area	CNDDB (EO 32)	
	CPLO-13	Agua Tibia	CNF, Woodchuck	CNDDB (EO 33)	
	CPLO-14	Agua Tibia	CNF, S Woodchuck	CNDDB (EO 34)	
	CPLO-15	Agua Tibia	CNF, Dripping Spgs	CNDDB (EO 35)	
	CPLO-16	Agua Tibia	CNF, Dripping Spgs	CNDDB (EO 40)	
	CPLO-17	Harford Springs	Harford Springs	CNDDB (EO 19)	
	CPLO-18	Motte Reserve	Motte Reserve	CNDDB (EO 18)	
	CPLO-19	Alberhill	TriValley	CNDDB (EO 17)	
	CPLO-20	Elsinore Peak	CNF, Elsinore Pk	Hist DB	
	CPLO-21	San Mateo Cyn	CNF, Oak Flats	CNDDB (EO 14)	
	CPLO-22	San Mateo Cyn	CNF, W of Tenaja Falls	CNDDB (EO 15, 31)	
	CPLO-23	Santa Ana Mtns	CNF, Los Alamos Tr		
	CPLO-24	Santa Rosa Plateau	W Sylvan, SRP		
	CPLO-25	Santa Rosa Plateau	E Sylvan, SRP		
	CPLO-26	Santa Rosa Plateau	Waterline Rd, SRP	CNDDB (EO 13)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Long-spined spine flower (*Chorizanthe polygonoides* var. *longispina*; CPLO)					
	CPLO-27	Santa Rosa Plateau	Waterline Rd, SRP	CNDDB (EO 13)	
	CPLO-28	Wildomar	Clark	BMP	
	CPLO-29	Wildomar	Schleuniger/Delgado	BMP	
	CPLO-30	Wildomar	BLM	BMP	
	CPLO-31	Menifee	McElhinney-Stimmel	CNDDB (EO 16)	
	CPLO-32	Menifee	McElhinney-Stimmel		
	CPLO-33	Warm Springs	Winchester 700, RCA	CNDDB (EO 41)	
	CPLO-34	Warm Springs	Winchester 700, RCA		
	CPLO-35	Bella Vista	AD 161	CNDDB (EO 12)	
	CPLO-36	Lake Skinner	MSR	BMP	
	CPLO-37	Skinner North Shore	MSR	BMP	
	CPLO-38	Skinner North Shore	MSR	Hist DB	
	CPLO-39	Lake Skinner East	MSR	Hist DB	
	CPLO-40	Lake Skinner East	MSR	Hist DB	
	CPLO-41	Oak Mountain	Oak Mountain		
	CPLO-42	Oak Mountain	Oak Mountain		
	CPLO-43	Garner Valley	SBNF, Garner Vly		
	CPLO-44	Garner Valley	SBNF, Garner Vly		
	CPLO-45	Garner Valley	SBNF, Garner Vly	Hist DB	
	CPLO-46	Garner Valley	SBNF, Garner Vly	CNDDB (EO 08)	
	CPLO-47	Paloma Valley	Anheuser Busch	CNDDB (EO 41)	
	CPLO-48	Lake Skinner	El Sol	BMP	
	CPLO-49	Paloma Valley	Anheuser Busch	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Many-stemmed dudleya (*Dudleya multicaulis*; DUMU)					
Objective 2: Include within the MSHCP Conservation Area at least 26 of the known occurrences of manystemmed dudleya, including the occurrences at Estelle Mountain, Temescal Canyon, the Santa Ana Mountains, Gavilan Hills, Alberhill Creek, and Prado Basin. Note: Historical records contain duplicates, some are old and vague, and many are not in conservation. Locations listed in the Biological Opinion and historical database were also reviewed. It appears that there are at most 12 valid records in or near the Conservation Area at this time.	DUMU-01	Estelle Mountain	RCA - Paul	CNDDB (EO 9)	
	DUMU-02	Estelle Mountain	Estelle/Mathews Resv	CNDDB (EO 54)	
	DUMU-03	Estelle Mountain	Estelle/Mathews Resv	Hist DB	
	DUMU-04	Temescal Canyon	Dawson Cyn	CNDDB (EO 56)	Not in conservation.
	DUMU-05	Temescal Canyon	W of Indian Cyn	CNDDB (EO 35)	
	DUMU-06	Temescal Canyon	Horsethief Cyn	CNDDB (EO 7, 24)	Not in conservation.
	DUMU-07	Santa Ana Mountains	Sierra Peak, CNF	CNDDB (EO 191)	
	DUMU-08	Santa Ana Mountains	Bedford Cyn, CNF	Hist DB	Not in conservation.
	DUMU-09	Santa Ana Mountains	NW Lk Elsinore	Hist DB	Not in conservation.
	DUMU-10	Santa Ana Mountains	Vicinity La Paz Cyn, CNF	CNDDB (EO104,186,	Not in conservation.
	DUMU-11	Santa Ana Mountains	Oak Flats, CNF	CNDDB (EO 103)	
	DUMU-12	Gavilan Hills	Estelle/Mathews Resv	Hist DB	
	DUMU-13	Gavilan Hills	Estelle/Mathews Resv	Hist DB	
	DUMU-14	Alberhill Creek		Hist DB	Not in conservation.
	DUMU-15	Alberhill	TriValley	CNDDB (EO 6)	
	DUMU-16	Prado Basin	91 fwy Corona	CNDDB (EO 14)	Not in conservation.
	DUMU-17	Prado Basin	Corona	CNDDB (EO 33)	Not in conservation.
	DUMU-18	Estelle Mountain	Estelle/Mathews Resv	BMP	Alternate.
	DUMU-19	Vail Lake	Vail Lake	CNDDB (EO 132)	Biological opinion.
	DUMU-20	Arroyo del Toro	North Peak	Hist DB	Biological opinion.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Mojave tarplant (*Deinandra mohavensis*; DEMO)					
Objective 2: Include within the MSHCP Conservation Area at least five of the known localities (represented by seven records) within the San Jacinto Mountains and Foothills and northeast of Vail Lake. Objective 3: Include within the MSHCP Conservation Area at least four localities (locality in this sense is not smaller than one quarter section) occupying at least 100 acres. Note: Determination of 100 occupied acres under analysis.	DEMO-01	San Jacinto Mtns	SBNF, Diam. Zen	CNDDB (EO 7, 17)	
	DEMO-02	San Jacinto Mtns	SBNF, Oak Flat	Hist DB	
	DEMO-03	San Jacinto Mtns	SBNF	CNDDB (EO 10)	Suspected waif.
	DEMO-04	San Jacinto Mtns	SBNF, Coldwater Ck	CNDDB (EO 30)	
	DEMO-05	San Jacinto Mtns	SBNF, Herkey Ck	CNDDB (EO 25)	
	DEMO-06	San Jacinto Mtns	SBNF, Fobes/Quinn	CNDDB (EO 27)	
	DEMO-07	NE of Vail Lake	Sunland / Geller	Hist DB	
	DEMO-08	San Jacinto Mtns	SBNF, Chimney Flats	BMP	
	DEMO-09	Garner Valley	SBNF, Lake Hemet	CNDDB (EO 26)	
	DEMO-10	Potrero	BLM		
	DEMO-11	Potrero	BLM		
	DEMO-12	Potrero	BLM		
	DEMO-13	Potrero	BLM		
Mud nama (*Nama stenocarpum*; NAST)					
Objective 2: Include within the MSHCP Conservation Area two of the three known occurrences of this species along the San Jacinto River near Gilman Springs Road. Note: There are no issues with the interpretation of these objectives.	NAST-01	San Jacinto River	SJWA/Mystic Lake	CNDDB (EO 11)	
	NAST-02	San Jacinto River	SJWA/Mystic Lake	Hist DB	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Munz's mariposa lily (*Calochortus palmeri* var. *munzii*; CPMU)					
Objective 2: Include within the MSHCP Conservation Area 10 of the known locations within the San Jacinto Mountains, including Garner Valley. Note: We have confirmed several occurrences that are not "known locations" in our historical database, but are in the San Jacinto Mountains and Garner Valley.	CPMU-01	Fobes Canyon	SBNF	Hist DB	
	CPMU-02	Fobes Ranch Rd	SBNF	Hist DB	Alternate.
	CPMU-03	Keen Station/74	SBNF		Alternate.
	CPMU-04	San Jacinto Rvr S	SBNF	Hist DB	
	CPMU-05	Quinn Flat	SBNF	Hist DB	
	CPMU-06	Ramona Trail/74	SBNF	Hist DB	
	CPMU-07	Morris Ranch Rd	SBNF		Alternate.
	CPMU-08	Hop Patch Rd	SBNF		Alternate.
	CPMU-09	Thomas Mtn	SBNF		Alternate.
	CPMU-10	Santa Rosa Sum	SBNF	Hist DB	
	CPMU-11	Alvin Mdw	SBNF	CNDDB (EO 2)	
	CPMU-12	Strawberry Valley	Idyllwild Park	CNDDB (EO 1)	Not in Conservation.
	CPMU-13	74/White Post	SBNF	Hist DB	
	CPMU-14	74/ Keen Summit	SBNF	Hist DB	
	CPMU-15	May Valley Rd	SBNF	Hist DB	
	CPMU-16	K Flat	SBNF	CNDDB (EO 4)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Munz's onion (*Allium munzii*; ALMU)					
Objective 2: Include within the MSHCP Conservation Area at least 13 localities within Temescal Valley and the southwestern portion of Plan Area, including the following Core Areas: Harford Springs Park, privately owned EO 5 population in Temescal Valley, Alberhill, DiPalma Rd, Estelle Mountain, Domenigoni Hills, Lake Skinner, Bachelor Mountain, Elsinore Peak, Scott Road, North Peak, and northeast of Alberhill (EO 16). Note: There are no issues with the interpretation of these objectives.	ALMU-01	Harford Springs	Harford Springs	CNDDB (EO 2)	
	ALMU-02	EO5	RCHCA Estelle	CNDDB (EO 5)	Not in Temescal Valley.
	ALMU-03	Alberhill	TriValley	CNDDB (EO 6)	
	ALMU-04	Di Palma Rd	RCRCD Sycamore CE	CNDDB (EO 3,7,8)	Along old De Palma Rd.
	ALMU-05	Estelle Mountain	RCHCA Estelle	CNDDB (EO 9)	
	ALMU-06	Domenigoni Hills	MSR	CNDDB (EO 10)	
	ALMU-07	Lake Skinner	MSR	CNDDB (EO 11)	
	ALMU-08	Bachelor Mtn	MSR	CNDDB (EO 12)	
	ALMU-09	Elsinore Peak	CNF Elsinore Pk	CNDDB (EO 13)	
	ALMU-10	Scott Road	McElhinney-Stimmel	CNDDB (EO 14)	
	ALMU-11	North Peak	North Peak #2	CNDDB (EO 15)	
	ALMU-12	NE of Alberhill	Reynold's #2	CNDDB (EO 16)	
	ALMU-13	French Valley	AD 161	CNDDB (EO 4)	13th locality unspecified.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Nevin's barberry (*Berberis nevinii*; BENE)					
Objective 2: Include within the MSHCP Conservation Area the known locations for Nevin's barberry in the San Timoteo/Badlands area, Jurupa Hills and Agua Tibia/Vail Lake area. Note: The San Timoteo Cyn occurrence appears to be in San Bernardino County from records found, near county line but not near Conservation Area. The Jurupa Hills occurrence is known to be extirpated by development.	BENE-01 BENE-02 BENE-03	San Timoteo Cyn Jurupa Hills Agua Tibia/Vail Lake	 Oak Mtn, Drip Spg	Species8, CCH Dudek CNDDB (EO 31, 38)	San Bernardino County. Extirpated by development.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*; LHOC)					
Objective 2: Include within the MSHCP Conservation Area at least four of the known locations at Arroyo Seco Canyon in the Agua Tibia Wilderness Area and Fisherman's Camp in Tenaja Canyon and the historic occurrences known from Castro Canyon, Horsethief Canyon, Elsinore Mountains; and Corona between Tin Mine Canyon and Santiago Peak, Skyline Drive populations. Note: There are 5 locations described. Castro Canyon is invalid because it is in San Diego County. "Horsethief Canyon, Elsinore Mountains" is a single CCH voucher description; and "between Tin Mine Canyon and Santiago Peak on Skyline Drive" is another CCH voucher description; (it should be Sierra Peak, not Santiago Peak).	LHOC-01	Arroyo Seco	CNF, Agua Tibia Mtns	Hist DB	
	LHOC-02	Arroyo Seco	CNF, Agua Tibia Mtns	Hist DB	
	LHOC-03	Agua Tibia	CNF, Agua Tibia Mtns	Hist DB	
	LHOC-04	Fisherman's Camp	CNF, Santa Ana Mtns	CCH	
	LHOC-05	Tenaja Cyn	CNF, Santa Ana Mtns	CCH	
	LHOC-06	Castro Canyon	CNF, Agua Tibia Mtns		San Diego County.
	LHOC-07	Horsethief Cyn	CNF, Santa Ana Mtns	CCH	Horsethief Cyn, Elsinore
	LHOC-08	Skyline/ Tin Mine	CNF, Santa Ana Mtns	Hist DB, CCH	Poor georeference.
	LHOC-09	Hagador Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-10	Bear Spring/Holy Jim	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-11	Indian Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-12	Indian Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-13	Indian Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-14	San Mateo Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-15	Nickel Cyn	CNF, Santa Ana Mtns	BMP	Additional occurrence.
	LHOC-16	De Luz Creek	Riv Co Parks, TNC	BMP	Additional occurrence.
	LHOC-17	Long Canyon	CNF, Agua Tibia Mtns	BMP	Additional occurrence.
	LHOC-18	Rice Cyn	Laguna Donation	BMP	
	LHOC-19	Rice Cyn	CNF, Santa Ana Mtns	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Orcutt's brodiaea (*Brodiaea orcuttii*; BROR)					
Objective 2: Include within the MSHCP Conservation Area the watershed of the vernal pool complexes at the Santa Rosa Plateau, at Miller Mountain and along the San Jacinto River in order to maintain hydrologic conditions. Note: All CNDDB records provided at beginning of Plan have been removed from CNDDB database because occurrences were misidentified *B. santarosae* and *B. filifolia.* There is one new record (2003) in the CCH database near the San Diego county line in Temecula, but it is not in the Conservation Area. Excepting the Temecula occurrence, this species appears to occur only in San Diego County.	BROR-01	Miller Mountain		CNDDB (EO 69)	No longer in CNDDB.
	BROR-02	SRP		CNDDB (EO 8)	No longer in CNDDB.
	BROR-03	SRP		CNDDB (EO 10)	No longer in CNDDB.
	BROR-04	SRP		CNDDB (EO 11)	No longer in CNDDB.
	BROR-05	SRP		CNDDB (EO 12)	No longer in CNDDB.
	BROR-06	SRP		CNDDB (EO 93)	No longer in CNDDB.
	BROR-07	San Jacinto River		CCH	B. filifolia.
	BROR-08	Temecula	near SMER	CCH	Not in conservation.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Palmer's grapplinghook (*Harpagonella palmeri*; HAPA)					
Objective 2: Include within the MSHCP Conservation Area at least 24 of the known occurrences of this species at Temescal Wash, Alberhill, Lake Elsinore, Antelope Valley, Bachelor Mountain, Vail Lake, Lake Mathews, Harford Springs Park, Cleveland National Forest, Skunk Hollow, Lake Skinner and Vail Lake. Note: Antelope Valley is an unknown area in the vicinity of Murrieta near Clinton Keith. Vail Lake listed twice. Many scattered historical records make it difficult to discern what should be considered a "known" occurrence. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	HAPA-01	Temescal Wash	CNF, Indian Truck	Hist DB	
	HAPA-02	Temescal Wash	Sycamore Crk CE	Hist DB	
	HAPA-03	Alberhill	TriValley	Hist DB	
	HAPA-04	Lake Elsinore	CNF, Elsinore	Hist DB	
	HAPA-05	Antelope Valley		Hist DB	Not in conservation.
	HAPA-06	Antelope Valley	McElhinney-Stimmel	Hist DB	Unknown area in Murrieta.
	HAPA-07	Antelope Valley	Winchester 700A	Hist DB	Unknown area in Murrieta.
	HAPA-08	Bachelor Mtn		Hist DB	Not in conservation.
	HAPA-09	Bachelor Mtn	MSR	Hist DB	
	HAPA-10	Bachelor Mtn	MSR	Hist DB	
	HAPA-11	Vail Lake	BLM, Oak Mountain	Hist DB	Near Vail Lake.
	HAPA-12	Vail Lake	BLM, Oak Mountain	Hist DB	Near Vail Lake.
	HAPA-13	Lake Mathews	MWD Lk Mathews	Hist DB	
	HAPA-14	Lake Mathews	MWD Lk Mathews	Hist DB	
	HAPA-15	Lake Mathews	MWD Lk Mathews		
	HAPA-16	Lake Mathews	MWD Lk Mathews	Hist DB	
	HAPA-17	Harford Springs	Harford Springs	Hist DB	
	HAPA-18	Cleveland NF	Agua Tibia Mtns	Hist DB	
	HAPA-19	Cleveland NF	Agua Tibia Mtns	Hist DB	
	HAPA-20	Cleveland NF	Elsinore Peak	Hist DB	
	HAPA-21	Skunk Hollow	AD 161	Hist DB	
	HAPA-22	Lake Skinner	MSR	Hist DB	
	HAPA-23	Lake Skinner	MSR	Hist DB	
	HAPA-24	Lake Skinner	MSR	Hist DB	
	HAPA-25	Bundy Canyon	Clark RCA		Alternate location.
	HAPA-26	Wildmoar	Schleuniger	BMP	Alternate location.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Palmer's grapplinghook (*Harpagonella palmeri*; HAPA)					
	HAPA-27	Lake Skinner	MSR	Hist DB	
Palomar monkeyflower (*Mimulus diffusus*; MIDI)					
Objective 2: Include within the MSHCP Conservation Area at least 18 of the known locations on the Santa Rosa Plateau; in the vicinity of Sage; French Valley; east of Lake Skinner; and in the San Jacinto, Agua Tibia and Santa Ana Mountains. Note: Synonym: *Erythranthe diffusa.* Historical records appear to have many duplicates. Records may be complicated by "lumping " species with Mimulus palmeri.	MIDI-01	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	SRP Checklist. No records.
	MIDI-02	Sage	St. John's Grade	CCH	1920s. Not in conservation.
	MIDI-03	French Valley		Dudek	No historical records.
	MIDI-04	East of Skinner	MSR	CCH	
	MIDI-05	San Jacinto Mtns	Black Mountain Rd		Not "known".
	MIDI-06	San Jacinto Mtns	Thomas Mtn Rd		Alternate.
	MIDI-07	Agua Tibia Mtns	Woodchuck Rd #1	CCH	
	MIDI-08	Agua Tibia Mtns	Woodchuck Rd #2		Alternate.
	MIDI-09	Agua Tibia Mtns	Dripping Springs	Hist DB	
	MIDI-10	Santa Ana Mtns	Bedford Motorway	Hist DB	
	MIDI-11	Santa Ana Mtns	Coldwater Trail		Alternate.
	MIDI-12	Santa Ana Mtns	Decker Cyn Rd		Alternate.
	MIDI-13	Santa Ana Mtns	Elsinore Peak	Hist DB	
	MIDI-14	Santa Ana Mtns	San Mateo Cyn	Hist DB	
	MIDI-15	Tenaja Corridor	State/SRP	CCH	Alternate.
	MIDI-16	Garner Valley	Fobes Spring SBNF	BMP	Alternate.
	MIDI-17	San Jacinto Mtns	Rouse Ridge Rd	BMP	Alternate.
	MIDI-18	Bautista Canyon	Blackburn Canyon	BMP	Alternate.
	MIDI-19	Tule Valley	Winch 700 Anza	BMP	
	MIDI-20	Anza Borrego	BLM	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Parish's brittlescale (*Atriplex parishii*; ATPA)					
Objective 2: Include within the MSHCP Conservation Area the three known populations of the Parish's brittlescale in the upper Salt Creek drainage west of Hemet. Note: The only occurrence thought to be extant is EO11 near Wilhelm Ranch and possibly EO12 on private property. The third CNDDB polygon is at Ramona Expressway not Salt Creek.	ATPA-01 ATPA-02 ATPA-03 ATPA-04	Upper Salt Creek Salt Creek San Jacinto River Paloma Valley	Wilhelm Ranch Salt Creek Channel S of Ramona Exp McElhinney-Stimmel	CNDDB (EO 11) CNDDB (EO 12) CNDDB (EO 2) BMP	 Not in Conservation. Not in Conservation. Parks
Parish's meadowfoam (*Limnanthes gracilis* var. *parishii*; LGPA)					
Objective 1: Include within the MSHCP Conservation Area at least one known location on the Santa Rosa Plateau. Note: Synonym: *Limnanthes alba* ssp. *parishii.* There are no issues with the interpretation of these objectives.	LGPA-01 LGPA-02	Santa Rosa Plateau May Valley	SRP, Mesa de Colorado SBNF	CNDDB (EO 32) CNDDB (EO 44, 45)	 Additional record.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Parry's spine flower (*Chorizanthe parryi* var. *parryi*; CPPA)					
Objective 2: Include within the MSHCP Conservation Area twenty (20) occurrences of Parry's spine flower, including locations throughout the Vail Lake area and in the vicinity of Lake Mathews, Gavilan Hills, Antelope Valley, Rawson Canyon, Santa Rosa Hills, Reche Canyon, Wilson Valley, Juniper Flats, Gilman Hot Springs Road and Diamond Valley Lake. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with at least 1,000 individuals (unless a smaller population has been demonstrated to be self-sustaining). Note: Antelope Valley is an unknown location in the vicinity of Murrieta near Clinton Keith. Locations are described, but "known" occurrences not required. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section. The objective does not require that the 20 occurrences be "known" nor does it require that all 20 come from the 11 listed locations. Therefore, it is reasonable to include any 20 occurrences found, with at least one occurrence in each described location.	CPPA-01	Vail Lake	Vail Lake	Dudek	Record in Wilson Valley-Sage.
	CPPA-02	Lake Mathews	MWD	CNDDB (EO 27)	
	CPPA-03	Gavilan Hills	Harford Springs	CNDDB (EO 6)	
	CPPA-04	Antelope Valley	BLM, Iodine Springs		
	CPPA-05	Antelope Valley	Rullo		
	CPPA-06	Antelope Valley	McElhinney Stimmel		
	CPPA-07	Antelope Valley	McElhinney Stimmel		
	CPPA-08	Antelope Valley	Winchester	CNDDB (EO 39)	
	CPPA-09	Antelope Valley	Winchester 700		
	CPPA-10	Rawson Cyn	MSR, Crowne Valley	CNDDB (EO 12)	
	CPPA-11	Rawson Cyn	MSR, Rawson Rd	CNDDB (EO 13)	
	CPPA-12	Rawson Cyn	MSR, Shiply Rd	CNDDB (EO 14)	
	CPPA-13	Santa Rosa Hills	Goodhart	CNDDB (EO 10)	
	CPPA-14	Reche Canyon	Cty Parks, Box Spgs	CNDDB (EO 23)	Nearest in conservation.
	CPPA-15	Wilson Valley	BLM, Wilson Vly	CCH	
	CPPA-16	Wilson Valley	Wilson Creek		
	CPPA-17	Juniper Flats	Higgins	CNDDB (EO 22)	
	CPPA-18	Gilman Hot Springs		CNDDB (EO 21)	
	CPPA-19	Diamond Valley Lk	MSR	CCH	
	CPPA-20	Bachelor Mtn	MSR, Bachelor Mtn		Alternate.
	CPPA-21	Shipley Road	MSR, Shipley Road	Dudek	Alternate.
	CPPA-22	Shipley Road	MSR, Shipley Road		Alternate.
	CPPA-23	East of Lake Skinner	MSR, E of Skinner		Alternate.
	CPPA-24	South of Lk Skinner	MSR, S of Skinner		Alternate.
	CPPA-25	Bogart County Park	Bogart County Park	CCH	Alternate.
	CPPA-26	Potrero	BLM, Potrero		Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Payson's jewelflower (*Caulanthus simulans*; CASI)					
There are no occurrence objectives described for this species. Note: There are no issues with the interpretation of these objectives.	CASI-01	Tule Peak Road	Winchester 700		
	CASI-02	Durasno Valley	JPR, Walker, BLM		
	CASI-03	Iron Spring Canyon	BLM		
	CASI-04	East of Tripp Flats	SBNF		
	CASI-05	Burnt Valley	BLM		
	CASI-06	Anza Borrego	BLM		

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Peninsular spine flower (*Chorizanthe leptotheca*; CHLE)					
Objective 2: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with at least 1,000 individuals (unless a smaller population has been demonstrated to be self-sustaining). Note: Locations are not specified. See the "Quarter Section Rule" in the "Notes" section.	CHLE-01	Corona Cyn	Corona Cyn Donation	Hist DB	
	CHLE-02	Mellor Creek	SBNF		
	CHLE-03	Valle Vista	SBNF	Hist DB	less than 1000
	CHLE-04	Alvin Meadow	SBNF		
	CHLE-05	Rouse Road	SBNF		
	CHLE-06	Bautista Creek	SBNF, 60S10E12		
	CHLE-07	Bautista Creek	SBNF, 60S20E07		
	CHLE-08	Bautista Creek	SBNF, 60S20E18		
	CHLE-09	Bautista Creek	SBNF, 60S20E20		
	CHLE-10	Fobes & 74	SBNF		
	CHLE-11	Near Morris R Rd	SBNF		
	CHLE-12	Garner Valley	SBNF		
	CHLE-13	Reed Valley	Rivera/Hizon/Ferido		
	CHLE-14	Juan Diego Flats	SBNF	Hist DB	
	CHLE-15	Hwy 371	BLM		
	CHLE-16	Dripping Springs	CNF, Agua Tibia	Hist DB	
	CHLE-17	Tule Peak Rd	Anza Knolls		
	CHLE-18	Bowers Road	JPR	Hist DB	
	CHLE-19	Jojoba Hills Aguanga	Wilson Creek	BMP	
	CHLE-20	Misty Meadow Dr	BLM		
	CHLE-21	Potrero	BLM		
	CHLE-22	Garner Valley	SBNF	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Plummer's mariposa lily (*Calochortus plummerae*; CAPL)					
Objective 2: Include within the MSHCP Conservation Area at least eight of the known occurrences (near Hemet Lake within Garner Valley within the San Jacinto Mountains, the Jurupa Hills, Reche Canyon, along Highway 74 in the San Jacinto Mountains and west of Oak Glen Conservation Camp within the San Bernardino Mountains) of Plummer's mariposa lily. Objective 3: Within the MSHCP Conservation Area, confirm six localities (locality in this sense is not smaller than one quarter section) of at least 500 individuals each (unless a smaller population has been demonstrated to be self-sustaining). Note: The Lake Hemet occurrence was determined to be *Calochortus palmeri* var. *munzii* and removed from the CNDDB. There are not 8 valid records within conservation in the 5 locations listed in Objective 2. However, we have confirmed at least 8 "known" records if we include the additional locations cited in the Species Account and Biological Opinion. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	CAPL-01	Lake Hemet	SBNF	CNDDB (EO 1)	C. palmeri munzii.
	CAPL-02	Jurupa Hills	Teledyne, BLM	Hist DB	
	CAPL-03	Reche Cyn			Source records not found.
	CAPL-04	Hwy 74	SBNF	CNDDB (EO 2, 3)	Met by CAPL-15 & 16.
	CAPL-05	Oak Glen	Bogart Park	CNDDB (EO 9)	Fire in 2016.
	CAPL-06	Badlands N	Riverside Clark	CCH	In Species Account.
	CAPL-07	Badlands S	Schmeling Jk Rabbit	CNDDB (EO 56)	In Species Account.
	CAPL-08	Skinner	MSR	CCH	In Species Account.
	CAPL-09	Oak Glen Cons Camp	Banning City, BLM	CNDDB (EO 7, 9)	
	CAPL-10	Reche Canyon	Box Spgs Cty Parks	CCH	In Biological Opinion.
	CAPL-11	Potrero	Potrero State, BLM		
	CAPL-12	Oak Flat, SJ Mtns	SBNF		
	CAPL-13	Bee Cyn, SJMtns	SBNF		
	CAPL-14	Chimney Flat, SJM	SBNF	Hist DB	
	CAPL-15	Hwy 74	SBNF		Alternate for Hwy 74.
	CAPL-16	Hwy 74	SBNF		Alternate for Hwy 74.
	CAPL-17	Rouse Ridge	SBNF	CCH	
	CAPL-18	Banning Bench	City of Banning	CNDDB (EO 4)	Species Account

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Prostrate navarretia (*Navarretia prostrata*; NAPR)					
Objective 1: Include within the MSHCP Conservation Area at least the one known occurrence of this species on the Santa Rosa Plateau. Note: There are 2 known occurrences on the Santa Rosa Plateau.	NAPR-01 NAPR-02	Santa Rosa Plateau Santa Rosa Plateau	SRP, Mesa de Burro SRP, M de Colorado	CNDDB (EO 6) CNDDB (EO 7)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Prostrate spine flower (*Chorizanthe procumbens*; CHPR)					
Objective 2: Include within the MSHCP Conservation Area at least 14 of the known locations (in the Santa Ana Mountains, in the Agua Tibia Mountains including the Core Area at Dorland Mountain, west of Beaumont, and the vicinity of French Valley). Note: In the Agua Tibia Mountains, many historical points are too close together to count as separate locations. There are only 8 valid historical records according to the Biological Opinion; the Beaumont and French Valley occurrences are likely misidentified according to Andrew Sanders (UCR Herbarium). The Santa Rosa Plateau is cited in the Biological Opinion and is in the foothills of the Santa Ana Mountains.	CHPR-01	Santa Ana Mtns	CNF, Mn Div/ Ortega	Hist DB	
	CHPR-02	Santa Ana Mtns	CNF, Decker Cyn	Hist DB	
	CHPR-03	Santa Ana Mtns	CNF, Oak Flats	Hist DB	
	CHPR-04	Santa Ana Mtns	CNF, above Falls	Hist DB	Remote access.
	CHPR-05	Santa Ana Mtns	CNF, W Los Alamos	Hist DB	
	CHPR-06	Santa Ana Mtns	CNF, E Los Alamos	BMP	Alternate.
	CHPR-07	Santa Ana Mtns	CNF, Tenaja	Hist DB	
	CHPR-08	Dorland Mtn N	CNF, 80S01W19	Hist DB	
	CHPR-09	Dorland Mtn S	CNF, 80S10W30	Hist DB	
	CHPR-10	Agua Tibia Mtns	CNF, 80S10W29	BMP	Alternate.
	CHPR-11	Beaumont	tbd	Dudek	Bad observation deleted from sources.
	CHPR-12	French Valley	tbd	Dudek	Poor accuracy.
	CHPR-13	Santa Rosa Plateau	Santa Rosa Plateau	Biological Opinion	
	CHPR-14	SMER	SMER		Alternate.
	CHPR-15	SMER	SMER		Alternate.
	CHPR-16	SMER	SMER		Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Rainbow manzanita (*Arctostaphylos rainbowensis*; ARRA)					
Objective 2: Include within the MSHCP Conservation Area the 15 known localities of Rainbow manzanita: San Mateo Canyon Wilderness, Gavilan Mountain, Santa Margarita Ecological Reserve, Santa Rosa Plateau and the Temecula, Wildomar, Margarita Peak and Pechanga areas. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with more than 50 individuals each (unless a smaller population has been demonstrated to be self-sustaining). Note: There are 15 occurrences required within 8 listed locations. Geography for this species is not accurate. Gavilan Mtn is just west of SMER and is not in conservation. This species not known in City of Wildomar, however, portions of SRP and CNF fall within USGS 7.5' quad map named "Wildomar". Margarita Peak is in San Diego County. Agua Tibia is a known locality and is listed in the Biological Opinion, but not in the Species Objectives. It is adjacent to the Pechanga Reservation.	ARRA-01	San Mateo Cyn	CNF	CNDDB (EO 24)	
	ARRA-02	San Mateo Cyn	CNF	CNDDB (EO 18)	
	ARRA-03	San Mateo Cyn	CNF	BMP	
	ARRA-04	San Mateo Cyn	CNF	CNDDB (EO 20)	
	ARRA-05	San Mateo Cyn	CNF	BMP	
	ARRA-06	Gavilan Mountain	SMER	CNDDB (EO 10)	NE of Gavilan Mtn.
	ARRA-07	Gavilan Mountain	SMER	BMP	East of Gavilan Mtn.
	ARRA-08	SMER	SMER	CCH	
	ARRA-09	SMER	SMER	BMP	
	ARRA-10	SRP	SRP	CNDDB (EO 16)	
	ARRA-11	SRP	SRP	CNDDB (EO 17)	
	ARRA-12	SRP	SRP	Hist DB	
	ARRA-13	SRP	SRP	CNDDB (EO 12)	
	ARRA-14	SRP	SRP	Hist DB	
	ARRA-15	SRP	SRP	CNDDB (EO 15)	
	ARRA-16	SRP	SRP / De Luz	CNDDB (EO 22)	
	ARRA-17	Temecula	Rancho Rd Escarp	CNDDB (EO 8)	2 here
	ARRA-18	Wildomar			USGS quad, not city.
	ARRA-19	Margarita Peak			San Diego County
	ARRA-20	Pechanga	BLM	BMP	
	ARRA-21	Pechanga	CNF	CNDDB (EO 25)	Agua Tibia near Pechanga Resv.
	ARRA-22	Tenaja Corridor	Tenaja Corridor	CNDDB (EO 14)	SM Cyn on Basemap.
	ARRA-23	Tenaja Corridor	Tenaja Corridor	BMP	SM Cyn on Basemap.
	ARRA-24	Carancho Road	State/TNC PQP	CCH	
	ARRA-25	SRP/Punta Mesa	SRP	CNDDB (EO15)	
	ARRA-26	SRP/Punta Mesa	SRP	CNDDB (EO15)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Round-leaved filaree (*Erodium macrophyllum*; ERMA)					
Objective 2: Include within the MSHCP Conservation Area eight out of the 10 known localities of round-leaved filaree: four occurrences in the Gavilan Hills region, one at Lake Mathews, one along Temescal Wash near Lee Lake, one at Diamond Valley Lake and one in the foothills of the Agua Tibia Mountains. Note: Synonym: *California macrophylla*. The Gavilan Hills records are close together and may include duplicates. The Lake Mathews record is located within the lake. Alternate is a Gavilan Hills record on the south shore of the lake. The Temescal Wash record is not in conservation. The Diamond Valley record is at Lake Skinner.	ERMA-01	Gavilan Hills	RCHCA Estelle	Hist DB	
	ERMA-02	Gavilan Hills	RCHCA Estelle	Hist DB	
	ERMA-03	Gavilan Hills	Dos Lagos		Alternate.
	ERMA-04	Gavilan Hills			4th for area TBD.
	ERMA-05	Lake Mathews	MWD, Lake Mathews	Hist DB	Also Gavilan Hills.
	ERMA-06	Temescal Wash		Hist DB	Not in conservation.
	ERMA-07	Diamond Valley Lk	MSR, Lake Skinner	Hist DB	Record at Skinner.
	ERMA-08	Foothills Agua Tibia	Oak Mountain	Hist DB	
	ERMA-09	Paloma Valley	McElhinney-Stimmel	Biol. Opinion	
	ERMA-10	French Valley	AD 161	Hist DB	Alternate, Species Acct.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
San Diego ambrosia (*Ambrosia pumila*; AMPU)					
Objective 2: Include within the MSHCP Conservation Area at least two of the three known locations of this species: Alberhill Creek at Nichols Road and Skunk Hollow. Note: The Alberhill Creek at Nichols Road population is not within the Conservation Area. The Alberhill Creek at Lake Street population is listed in the Species Account and is within the Conservation Area.	AMPU-01 AMPU-02 AMPU-03	Nichols Road Skunk Hollow Lake Street	 AD 161 TriValley	CNDDB (EO 44) CNDDB (EO 22) Dudek	Not in conservation. CNLM- surveys/data. Species Account.
San Diego button-celery (*Eryngium aristulatum* var. *parishii*; EAPA)					
Objective 1: Include within the MSHCP Conservation Area at least four known locations on the Santa Rosa Plateau. Note: There are no issues with the interpretation of these objectives.	EAPA-01 EAPA-02 EAPA-03 EAPA-04	Santa Rosa Plateau Santa Rosa Plateau Santa Rosa Plateau Santa Rosa Plateau	SRP, Mesa de Colorado SRP, Mesa de Colorado SRP, Mesa de Burro SRP, Mesa de Burro	CNDDB (EO 7) CNDDB (EO 8) CNDDB (EO 62) CNDDB (EO 66)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
San Jacinto Mountains bedstraw (*Galium angustifolium* ssp. *jacinticum*; GAJA)					
Objective 2: Include within the MSHCP Conservation Area at least eight of the known locations of this species: Lake Fulmor, Dark Canyon and the Black Mountain area. Note: There are not 8 "known" location records, nor 8 listed. We have included additional species observations in the locations described to reach 8 occurrences.	GAJA-01	Lake Fulmor	SBNF	CNDDB (EO 2)	
	GAJA-02	Dark Canyon	Mt SJ State Park	CNDDB (EO 3)	
	GAJA-03	Black Mountain	SBNF	CNDDB (EO 1)	
	GAJA-04	Dark Canyon	SBNF	Hist DB	
	GAJA-05	Dark Canyon	SBNF	Hist DB	
	GAJA-06	Dark Canyon	SBNF		Additional occurrences.
	GAJA-07	Dark Canyon	Mt SJ State Park		Additional occurrences.
	GAJA-08	Dark Canyon	Mt SJ State Park		Additional occurrences.
	GAJA-09	Idyllwild	SBNF		Additional location.
	GAJA-10	Mountain Center	SBNF		Additional location.
	GAJA-11	Herkey Creek	SBNF		Additional location.
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*; ACNO)					
Objective 2: Include within the MSHCP Conservation Area the Alberhill Creek locality as well as the three Core Areas, located along the San Jacinto River from the vicinity of Mystic Lake southwest to the vicinity of Perris and in the upper Salt Creek drainage west of Hemet. Note: There are no issues with the interpretation of these objectives.	ACNO-01	Alberhill Creek		CNDDB (EO 16)	Not in conservation.
	ACNO-02	SJR from Mystic Lk	SJWA	CNDDB (EO 5)	Vicinity of Mystic Lake.
	ACNO-03	SJR SW to Perris	KB Coastal 3/Carlsbad	CNDDB (EO 18)	Vicinity of Perris.
	ACNO-04	Upper Salt Creek	Wilhelm/RCTC Hemet	CNDDB (EO 9)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
San Miguel savory (*Satureja chandleri*; SACH)					
Objective 2: Include within the MSHCP Conservation Area at least seven of the known locations of San Miguel savory on the Santa Rosa Plateau; in the vicinity of Tenaja guard station and three miles south of Murrieta near De Luz Road in the Santa Ana Mountains; and three miles southwest of Murrieta near Warner's Ranch. Note: Synonym: *Clinopodium chandleri* . There are only 6 unique locations, one of which is not within the Conservation Area, another is a vague record from 1965, and a third is a bad locality according to the Species Account. It is only possible to meet 3 (possibly 4) Occurrence Objectives at this time.	SACH-01	Santa Rosa Plateau	SRP, Tenaja Rd	CNDDB (EO 20)	
	SACH-02	Santa Rosa Plateau	SRP, Miller Cyn	CNDDB (EO 21)	Duplicate points.
	SACH-03	Tenaja Guard Stn		CNDDB (EO 11)	Not in conservation.
	SACH-04	West of Murrieta	CNF, San Mateo Cyn	Species 8	Duplicate of SACH-03, EO11.
	SACH-05	De Luz Road	SRP, De Luz Rd	CNDDB (EO 22)	
	SACH-06	De Luz Road		CNDDB (EO 7)	Not in conservation.
	SACH-07	Warner Ranch		CNDDB (EO 9)	Not in conservation.
	SACH-08	Murrieta		CNDDB (EO 06)	Not in conservation.
	SACH-09	Sage Road		CNDDB (EO 12)	Removed from CNDDB.
Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*; EDSA)					
Objective 2: Include within the MSHCP Conservation Area at least three localities of this species along the Santa Ana River near the San Bernardino County border. Note: There are only 2 historical records, but "known" records are not required.	EDSA-01	Santa Ana River	Riv Cty Flood Control	CNDDB (EO 22)	
	EDSA-02	Santa Ana River	Riv Cty Flood Control	CNDDB (EO 24)	
	EDSA-03	Santa Ana River	City of Riverside	BMP	Only 2 historical records.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Shaggy-haired alumroot (*Heuchera hirsutissima*; HEHI)					
Objective 2: Include within the MSHCP Conservation Area the two known localities of this plant in the San Jacinto Mountains: one locality lies on the western slopes of the San Jacinto Mountains above the San Jacinto River and the other locality is in a gully behind Tahquitz Rock. Note: Only one historical record within Plan Area.	HEHI-01 HEHI-02 HEHI-03	San Jacinto Pk Tahquitz Rock San Jacinto Pk	San Jacinto State Park San Jacinto State Park	CNDDB (EO 9) CNDDB (EO 4) BMP	 Outside plan area. Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Slender-horned spine flower (*Dodecahema leptoceras*; DOLE)					
Objective 2: Include within the MSHCP Conservation Area at least 11 of the known locations of this species, including Temescal Canyon, Bautista Canyon, upper San Jacinto River, Agua Tibia Wilderness Area, Alberhill, Alberhill Creek east of Lake Elsinore, Railroad Canyon, Vail Lake, Kolb Creek, and east of State Street south of Hemet. Note: Requires 11 but only lists 10. 4 locations are currently not in the Conservation Area. The Alberhill Creek and Railroad Canyon points appear to be duplicates of a CNDDB record based on a 1901 collection at Lake Elsinore. The Temescal Canyon occurrence was observed in 2017 outside of conservation. If we remove the Alberhill, Alberhill Creek, Railroad Cyn and State Street occurrences, (which are old and questionable records) and add a previously unknown observation at the San Jacinto River, we are left with 8 occurrences. 3 of these remaining occurrences are not currently in conservation, but are possibly extant, should property be acquired in the future.	DOLE-01	Temescal Canyon	Glen Eden	CNDDB (EO 16)	Not in conservation.
	DOLE-02	Bautista Canyon	SBNF	CNDDB (EO 17)	
	DOLE-03	San Jacinto River	Meadows Lone Cone	Hist DB	
	DOLE-04	Agua Tibia Wildns	CNF, Agua Tibia	CNDDB (EO 23)	
	DOLE-05	Alberhill		Hist DB	1901, Elsinore record.
	DOLE-06	Alberhill Ck		Hist DB	1901, Elsinore record.
	DOLE-07	Railroad Cyn		Hist DB	1901, Elsinore record.
	DOLE-08	Vail Lake		CNDDB (EO 25)	Not in conservation.
	DOLE-09	Kolb Creek		CNDDB (EO 24)	Not in conservation.
	DOLE-10	East of State St		CNDDB (EO 13)	Not in conserv. 1937.
	DOLE-11	San Jacinto River	SBNF	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Small-flowered microseris (*Microseris douglasii* var. *platycarpha*; MDPL)					
Objective 2: Include within the MSHCP Conservation Area at least eight of the known locations at Lake Matthews, in the Cleveland National Forest, at Lake Skinner and at Vail Lake. Objective 3: Within the MSHCP Conservation Area, confirm 10 localities (locality in this sense is not smaller than one quarter section) with at least 1,000 individuals (unless a smaller population has been demonstrated to be self-sustaining). Note: Historical observations are scattered making it difficult to define individual "known locations". There appears to be about 7 occurrences within conservation in the locations described, but there are additional occurrences not listed. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	MDPL-01	Lake Mathews	Estelle/MWD	Hist DB	
	MDPL-02	Lake Mathews	Estelle/MWD	Hist DB	
	MDPL-03	Cleveland NF	CNF, Elsinore Peak	CCH	
	MDPL-04	Lake Skinner	MSR	CCH	
	MDPL-05	Lake Skinner	MSR	CCH	
	MDPL-06	Vail Lake	BLM, Oak Mountain	CCH	
	MDPL-07	Vail Lake	BLM, Oak Mountain	Hist DB	
	MDPL-08	McElhinney-Stimmel	McElhinney-Stimmel	Hist DB	Alternate location.
	MDPL-09	McElhinney-Stimmel	McElhinney-Stimmel		Alternate location.
	MDPL-10	Alberhill	Tri Valley	CCH	Alternate location.
	MDPL-11	French Valley	Winchester 700		Alternate location.
	MDPL-12	Santa Rosa Plateau	SRP, Mesa de Burro	CCH	Alternate location.
	MDPL-13	Skunk Hollow	AD 161		Alternate location.
	MDPL-14	Sycamore Creek	RCRCD Sycamore CE		Alternate location.
	MDPL-15	Skinner	El Sol	BMP	
	MDPL-16	Paloma Valley	Anheuser Busch	CCH	
	MDPL-17	Paloma Valley	Anheuser Busch	CCH	
	MDPL-18	Santa Rosa Plateau	Santa Rosa Plateau	CCH	Tenaja Truck Rd. Waifs.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Small-flowered morning-glory (*Convolvulus simulans*; COSI)					
Objective 2: Include within the MSHCP Conservation Area at least eight of the known localities (including Vail Lake, Lake Skinner, Lake Mathews, Temescal Canyon, Alberhill, Santa Rosa Plateau, Santa Ana Mountains, and Skunk Hollow) of this species. Note: The Santa Ana Mtns record is a poorly georeferenced duplicate of Temescal Cyn record (based on CCH accession number.) Paloma Valley in Biol. Opinion.	COSI-01	Vail Lake	Oak Mountain	Hist DB	North of Vail Lake.
	COSI-02	Lake Skinner	MSR	Hist DB	
	COSI-03	Lake Mathews	MWD Estelle Mtn Res	Hist DB	
	COSI-04	Temescal Cyn	RCRCD Sycamore	Hist DB	Dup. Santa Ana Mtns.
	COSI-05	Alberhill	Tri Valley	Hist DB	
	COSI-06	Santa Rosa Plateau	Santa Rosa Plateau	Hist DB	
	COSI-07	Santa Ana Mtns		Hist DB	Dup. Temescal Cyn
	COSI-08	Skunk Hollow	AD 161	Hist DB	West of Skunk Hollow.
	COSI-09	Paloma Valley	McElhinney-Stimmel	Dudek	Biological Opinion.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Smooth tarplant (*Centromadia pungens*; CPLA)					
Objective 2: Include within the MSHCP Conservation Area at least 27 of the known occurrences of this species at Antelope Valley; Temescal Canyon; Lake Elsinore; Murrieta Creek; French Valley; Lakeview Mountains; Lake Skinner; Diamond Valley Lake; Sycamore Canyon Park; Alberhill Creek; Lake Mathews; the Santa Ana River; and the core locations at the San Jacinto Wildlife Area, the middle segment of the San Jacinto River and upper Salt Creek. Note: Synonym: C*entromadia pungens* ssp. *laevis*. There are not 27 unique occurrences within the 15 locations given. We are attempting to confirm 27 occurrences with at least one in each of the locations described. Antelope Valley is an unknown location in the vicinity of Murrieta. See the Program interpretation of the "Quarter Section Rule" in the "Notes" section.	CPLA-01	Antelope Valley	AD 161, CNLM	Dudek	Source record unknown.
	CPLA-02	Temescal Canyon		CNDDB (EO 30)	
	CPLA-03	Lake Elsinore		CNDDB (EO many)	Not in conservation.
	CPLA-04	Murrieta Creek	Flood Control	CNDDB (EO many)	Not in conservation.
	CPLA-05	French Valley	Winch 700, Richmond	CCH	
	CPLA-06	Lakeview Mtns		CNDDB (EO 22-29)	Not in conservation.
	CPLA-07	Lake Skinner	MSR	CNDDB (EO 52)	
	CPLA-08	Diamond Vly Lake		CNDDB (EO many)	Extirpated by reservoir.
	CPLA-09	Sycamore Canyon Prk	Sycamore Canyon Prk	CNDDB (EO 4)	
	CPLA-10	Alberhill Creek		CNDDB (EO 31)	
	CPLA-11	Lake Mathews		CNDDB (EO 62)	
	CPLA-12	Santa Ana River	Hidden Vly, Flood Ctl	Dave Bramlet	
	CPLA-13	SJWA	SJWA, 03S02W29	CNDDB (EO 15)	Extirpated by pond.
	CPLA-14	SJWA	SJWA, 03S02W32	CNDDB (EO 16)	
	CPLA-15	SJWA	SJWA, 03S02W33	CNDDB (EO17,19)	
	CPLA-16	SJWA	SJWA, 03S02W34	CNDDB	
	CPLA-17	SJWA	SJWA, 03S02W35	CNDDB	
	CPLA-18	SJWA	SJWA, 04S02W06	CNDDB (EO 71)	
	CPLA-19	SJWA	SJWA, 04S02W05	CNDDB	
	CPLA-20	San Jacinto River		CNDDB (EO 11,12)	
	CPLA-21	San Jacinto River	KB Coastal 3/Carlsbad	CNDDB (EO 13)	Find data record.
	CPLA-22	Upper Salt Creek	Wilhelm Ranch	CNDDB (EO 34)	
	CPLA-23	Salt Creek Channel	Flood Control	CNDDB (EO 43)	Alternate for Diamond Vly.
	CPLA-24	San Timoteo Cyn			Alternate.
	CPLA-25	San Timoteo Cyn	State / Hurd		Alternate.
	CPLA-26	San Timoteo Cyn	Norton Younglove	CNDDB (EO 6)	Alternate.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Smooth tarplant (*Centromadia pungens*; CPLA)					
	CPLA-27	Harford Springs	Harford Springs	CNDDB (EO 8)	Alternate.
	CPLA-28	Potrero Creek	Potrero	CCH	Alternate.
	CPLA-29	SJWA	SJWA, 04S02W05	CCH	Alternate.
	CPLA-30	Salt Creek Channel	Flood Control	CCH	Alternate
	CPLA-31	Upper Salt Creek	Warren Rd		
	CPLA-32	Upper Salt Creek	Wilhelm Ranch		
	CPLA-33	Upper Salt Creek	Kaelin		
	CPLA-34	Upper Salt Creek	Dilworth		
	CPLA-35	Upper Salt Creek	Percival		
	CPLA-36	San Timoteo Cyn	Oak Valley	BMP	
	CPLA-37	SJWA	SJWA, 03S02W27	BMP	
	CPLA-38	French Valley	McElhinney-Stimmel	BMP	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Spreading navarretia (*Navarretia fossalis*; NAFO)					
Objective 2: Include within the MSHCP Conservation Area at least 13 of the known locations of spreading naverretia at the Skunk Hollow, the Santa Rosa Plateau and core locations: the San Jacinto Wildlife Area, floodplains of the San Jacinto River from the Ramona Expressway south to Railroad Canyon, and upper Salt Creek west of Hemet. Note: There are no issues with the interpretation of these objectives.	NAFO-01	Skunk Hollow	Skunk Hollow, CNLM	CNDDB (EO 43)	
	NAFO-02	Santa Rosa Plateau	Santa Rosa Plateau	CNDDB (EO 44)	
	NAFO-03	SJWA	SJWA office	CNDDB (EO 33)	
	NAFO-04	SJWA	SJWA east of Davis	CNDDB (EO 27)	
	NAFO-05	SJWA	SJWA east of Davis	CNDDB (EO 36)	
	NAFO-06	SJWA	SJWA west of Davis	CNDDB (EO 38)	
	NAFO-07	SJWA	SJWA west of Davis	CNDDB (EO 37)	
	NAFO-08	SJWA	SJWA @ Ramona Exp	CNDDB (EO 28)	
	NAFO-09	San Jacinto River		CNDDB (EO 22)	Not in conservation.
	NAFO-10	San Jacinto River	Flood Control	CNDDB (EO 23)	Not in conservation.
	NAFO-11	San Jacinto River	KB Coastal #3	CNDDB (EO 39)	
	NAFO-12	San Jacinto River	KB SJR Donation	CNDDB (EO 17)	2.1km from EO 17
	NAFO-13	Upper Salt Creek	RCTC Hemet	CNDDB (EO 24)	
	NAFO-14	Wildomar	Schlueniger		Alternate.
	NAFO-15	Santa Rosa Plateau	Santa Rosa Plateau	BMP	
Sticky-leaved dudleya (*Dudleya viscida*; DUVI)					
Objective 2: Include within the MSHCP Conservation Area the three populations within the San Mateo Wilderness Area of the Santa Ana Mountains. Note: There are no issues with the interpretation of these objectives.	DUVI-01	San Mateo Wilderness	CNF, San Mateo Creek	CNDDB (EO 21)	
	DUVI-02	San Mateo Wilderness	CNF, San Mateo Creek	CNDDB (EO 20)	
	DUVI-03	San Mateo Wilderness	CNF, San Mateo Creek	CNDDB (EO 13)	

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Thread-leaved brodiaea (*Brodiaea filifolia*; BRFI)					
Objective 2: Include within the MSHCP Conservation Area the Core Areas located at Goetz Road (EO1), Perris Valley airport (EO2), Tenaja Road (EO3), Mesa de Colorado (EO5), Hemet vernal pools (EO 26), South SJWA (EO27), Squaw Mountain (EO29), Santa Rosa ranch (EO30), Slaughterhouse (EO31), North SJWA (EO43) and Redondo Mesa (EO 52). Note: The Conservation Summary states that 12 localities will be conserved but only 11 are listed in Objective 2. The 12th is included here. 3 occurrences are misidentified occurrences of newly described B. santarosae and should be removed from this species objective.	BRFI-01	Goetz Rd		CNDDB (EO 1)	
	BRFI-02	Perris Vly Airport	Conaster CE	CNDDB (EO 2)	
	BRFI-03	Tenaja Rd	Santa Rosa Plateau	CNDDB (EO 3)	B. santarosae
	BRFI-04	Mesa de Colorado	Santa Rosa Plateau	CNDDB (EO 5)	
	BRFI-05	Hemet Vernal Pools	Dilworth	CNDDB (EO 26)	
	BRFI-06	South SJWA	SJWA	CNDDB (EO 27)	
	BRFI-07	Squaw Mountain		CNDDB (EO 29)	B. santa rosae
	BRFI-08	Santa Rosa Rch	Santa Rosa Plateau	CNDDB (EO 30)	
	BRFI-09	Slaughterhouse	Santa Rosa Plateau	CNDDB (EO 31)	Redraw polygon.
	BRFI-10	North SJWA	SJWA	CNDDB (EO 43)	
	BRFI-11	Redondo Mesa		CNDDB (EO 52)	B. santarosae
	BRFI-12	Railroad Canyon	EVMWD	CNDDB (EO 25)	Conservation Summary.
	BRFI-13	East of Davis	SJWA	BMP	Alternate
Vail Lake ceanothus (*Ceanothus ophiochilus*; CEOP)					
Objective 2: Include within the MSHCP Conservation Area at least three core locations in the vicinity of Vail Lake and the Agua Tibia Wilderness area. Note: There are no issues with the interpretation of these objectives.	CEOP-01	Vail Lake		CNDDB (EO 1)	Not in conservation.
	CEOP-02	Agua Tibia Mtns		CNDDB (EO 2)	
	CEOP-03	Agua Tibia Mtns		CNDDB (EO 3)	
	CEOP-04	Agua Tibia Mtns			"Known" not required.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Vernal barley (*Hordeum intercedens*; HOIN)					
Objective 2: Include within the MSHCP Conservation Area at least four locations (including three core locations) of vernal barley: the San Jacinto Wildlife Area, the middle segment of the San Jacinto River from Ramona Expressway south to Railroad Canyon, the upper Salt Creek drainage west of Hemet, and the occurrence near Nichols Road at Alberhill. Note: There are no issues with the interpretation of these objectives.	HOIN-01 HOIN-02 HOIN-03 HOIN-04	SJWA SJRiver Upper Salt Creek Alberhill	SJWA Flood Control RCTC Hemet, Wilhelm TriValley	Hist DB Hist DB Hist DB Hist DB	
Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*; TWWR)					
Objective 2: Include within the MSHCP Conservation Area at least four of the known locations along the San Jacinto River from the vicinity of the Ramona Expressway and San Jacinto Wildlife Area and along the northern shore of Mystic Lake. Note: The occurrence record south of the Ramona Expwy is not in conservation. The sole observation by BMP was at the site of a broken water pipe. Attempts to recreate the conditions have not resulted in subsequent observations.	TWWR-01 TWWR-02 TWWR-03 TWWR-04	San Jacinto River Ramona Expwy SJWA Mystic Lake	 SJWA SJWA SJWA	CNDDB (EO 1) CNDDB (EO 3) CNDDB (EO 2) CNDDB (EO 4)	Not in conservation.

Species Name, Species Objectives, Species Notes	Monitoring Program ID	Location	Property Name	"Known" Source	Location Note
Yucaipa onion (*Allium marvinii*; ALMA)					
There are no occurrence objectives described for this species. Note: There are no issues with the interpretation of these objectives.	ALMA-01 ALMA-02	Potrero Potrero South		CNDDB (EO 2) BMP	

Notes:

Text in table column 1, "Species Objectives", is quoted verbatim from the MSHCP Species Account (Dudek & Associates 2003), regardless of clerical errors.

Thirteen covered plant species have additional species objectives that require demonstration of a specific level of conservation. We call these "Demonstrate-Conservation" objectives. These species are not considered adequately conserved under the MSHCP until the terms of these additional objectives (usually a specified number of localities with a minimum number of individuals) have been met. These objectives also specify that a locality must be "not smaller than one quarter section".

We have superimposed the USGS Township and Ranges map onto populations that cover large areas, and where the boundaries of individual populations are difficult to distinguish, in order to quantify a number of occurrences. We call this the "Quarter Section Rule."

Acronyms used:

BLM	Bureau of Land Management
CCH	Consortium of California Herbaria
CE	Conservation Easement
CNDDB	California Natural Diversity Database
CNF	Cleveland National Forest
CNLM	Center for Natural Lands Management
EO	Element Occurrence
EVMWD	Elsinore Valley Municipal Water District
Hist DB	Historical Database
MSR	Southwestern Riverside County Multi-Species Reserve
MWD	Metropolitan Water District
RCA	Regional Conservation Authority
RCHCA	Riverside County Habitat Conservation Agency
RCRCD	Riverside-Corona Resource Conservation District
RCTC	Riverside County Transportation Commission
SA Mtns	Santa Ana Mountains
SAR	Santa Ana River
SBNF	San Bernardino National Forest
SJ Mtns	San Jacinto Mountains
SJR	San Jacinto River
SJWA	San Jacinto Wildlife Area
SMER	Santa Margarita Ecological Reserve
SRP	Santa Rosa Plateau
TBD	To Be Determined

Appendix B. Status of Rare Plant Species Objectives (2014-2021).

Summary of distributional objectives for covered plant species. Distributional conservation goals are considered met when 75% of the known locations listed in the species accounts have confirmed occurrences within the past eight years. Objectives that are met are in **bold text**. The status of species that have additional conservation requirements can be found in Table 1.

	Objective	Confirmed Occurrences	
Species Name	**Occurrences Required**	**2014-2021**	**% of Required**
Beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*)	12	10	**83%**
Brand's phacelia (*Phacelia stellaris*)	2	1	50%
California beardtongue (*Penstemon californicus*)	15	5	33%
California bedstraw (*Galium californicum* ssp. *primum*)	4	2	50%
California black walnut (*Juglans californica* var. *californica*)	7	0	0%
California muhly (*Muhlenbergia californica*)	6	0	0%
California Orcutt grass (*Orcuttia californica*)	3	2	67%
Chickweed oxytheca (*Sidotheca caryophylloides*)	5	5	**100%**
Cleveland's bush monkeyflower (*Diplacus clevelandii*)	2	2	**100%**
Cliff cinquefoil (*Potentilla rimicola*)	2	1	50%
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)	20	10	50%
Davidson's saltscale (*Atriplex serenana* var. *davidsonii*)	3	1	33%
Engelmann oak (*Quercus engelmannii*)	33	28	**85%**
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	3	3	**100%**
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	8	3	38%
Hall's monardella (*Monardella macrantha* ssp. *hallii*)	5	3	60%
Hammitt's clay-cress (*Sibaropsis hammittii*)	1	1	**100%**
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	6	3	50%
Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*)	2	1	50%
Jaeger's milk-vetch (*Astragalus pachypus* var. *jaegeri*)	7	4	57%

	Objective	Confirmed Occurrences	
Species Name	**Occurrences Required**	**2014-2021**	**% of Required**
Johnston's rock cress (*Boechera johnstonii*)	17	6	35%
Lemon lily (*Lilium parryi*)	6	5	**83%**
Little mousetail (*Myosurus minimus*)	5	4	**80%**
Long-spined spine flower (*Chorizanthe polygonoides* var. *longispina*)	32	26	**81%**
Many-stemmed dudleya (*Dudleya multicaulis*)	26	3	12%
Mojave tarplant (*Deinandra mohavensis*)	5	5	**100%**
Mud nama (*Nama stenocarpum*)	2	1	50%
Munz's mariposa lily (*Calochortus palmeri* var. *munzii*)	10	6	60%
Munz's onion (*Allium munzii*)	13	11	**85%**
Nevin's barberry (*Berberis nevinii*)	3	1	33%
Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	4	3	**75%**
Orcutt's brodiaea (*Brodiaea orcuttii*)	3	0	0%
Palmer's grapplinghook (*Harpagonella palmeri*)	24	20	**83%**
Palomar monkeyflower (*Erythranthe diffusa*)	18	2	11%
Parish's brittlescale (*Atriplex parishii*)	3	0	0%
Parish's meadowfoam (*Limnanthes alba* ssp. *parishii*)	1	1	**100%**
Parry's spine flower (*Chorizanthe parryi* var. *parryi*)	20	10	50%
Plummer's mariposa lily (*Calochortus plummerae*)	8	6	**75%**
Prostrate navarretia (*Navarretia prostrata*)	1	1	**100%**
Prostrate spine flower (*Chorizanthe procumbens*)	14	5	36%
Rainbow manzanita (*Arctostaphylos rainbowensis*)	15	13	**87%**
Round-leaved filaree (*California macrophylla*)	8	3	38%
San Diego ambrosia (*Ambrosia pumila*)	2	0	0%
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	4	4	**100%**

	Objective	Confirmed Occurrences	
Species Name	**Occurrences Required**	**2014-2021**	**% of Required**
San Jacinto Mountains bedstraw (*Galium angustifolium* ssp. *jacinticum*)	8	5	63%
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*)	4	3	**75%**
San Miguel savory (*Clinopodium chandleri*)	7	3	43%
Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*)	3	3	**100%**
Shaggy-haired alumroot (*Heuchera hirsutissima*)	2	0	0%
Slender-horned spine flower (*Dodecahema leptoceras*)	11	3	27%
Small-flowered microseris (*Microseris douglasii* var. *platycarpha*)	8	4	50%
Small-flowered morning-glory (*Convolvulus simulans*)	8	6	**75%**
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	27	15	56%
Spreading navarretia (*Navarretia fossalis*)	13	6	46%
Sticky-leaved dudleya (*Dudleya viscida*)	3	1	33%
Thread-leaved brodiaea (*Brodiaea filifolia*)	12	6	50%
Vail Lake ceanothus (*Ceanothus ophiochilus*)	3	2	67%
Vernal barley (*Hordeum intercedens*)	4	2	50%
Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)	4	0	0%

Appendix C. Results of the 2021 Rare Plant Surveys.

Summary of occurrence objectives attempted and confirmed in 2021. Asterisks (*) indicate species that have additional requirements which may or may not have been met (Table 1). The monitoring program ID and property names for surveys where the species was not observed are *italicized.*

Species Name	Survey Type	Grids Searched	Monitoring Program ID	Property Name	# of Occurrences
Chickweed oxytheca* (*Oxytheca caryophylloides*; OXCA)	Monitoring	9	OXCA-01, OXCA-02, OXCA-07	SBNF, S Jacinto Mtns	15
Davidson's saltscale (*Atriplex serenana* var. *davidsonii;* ASDA)	Inventory	1	ASDA-01	Salt Creek	1
Fish's milkwort* (*Polygala cornuta* var. *fishiae*; PCFI)	Monitoring	7	PCFI-05, PCFI-06, PCFI-07, PCFI-08	Santa Margarita ER	10
Hall's monardella (*Monardella macrantha* ssp. *hallii;* MMHA)	Monitoring	1	MMHA-03	Agua Tibia Mtns	1
Hammit's clay-cress (*Sibaropsis hammittii;* SIHA)	Monitoring	1	*SIHA-01*	*Elsinore Peak*	0
Heart-leaved pitcher sage (*Lepechinia cardiophylla;* LECA)	Monitoring	5	*LECA-02*, LECA-03, LECA-05, LECA-08	*Sierra Peak*, Indian Truck Trail, Bald Peak, Pleasants Peak	4
Long-spined spine flower (*Chorizanthe polygonoides var. longispina;* CPLO)	Monitoring	1	CPLO-17	Harford Springs	2
Many-stemmed dudleya (*Dudleya multicaulis*, DUMU)	Monitoring	1	*DUMU-15*	*Alberhill*	0
Munz's onion (*Allium munzii;* ALMU)	Monitoring	3	ALMU-01, ALMU-03	Harford Springs, Alberhill	3
Ocellated Humboldt lily (*Lilium humboldtii ssp. ocellatum;* LHOC)	Monitoring	1	LHOC-04	Fisherman's Camp	1

Species Name	Survey Type	Grids Searched	Monitoring Program ID	Property Name	# of Occurrences
Palmer's grapplinghook (*Harpagonella palmeri;* HAPA)	Monitoring	5	HAPA-03, HAPA-17, HAPA-19, HAPA-27	Alberhill, Harford Springs, Cleveland NF, Lake Skinner	6
Palomar monkeyflower (*Mimulus diffusus;* MIDI)	Monitoring	1	*MIDI-13*	*Santa Ana Mtns*	0
Parish's brittlescale (*Atriplex parishii;* ATPA)	Inventory	1	ATPA-04	Paloma Valley	1
Prostrate spine flower (*Chorizanthe procumbents;* CHPR)	Monitoring	3	CHPR-05, CHPR-07, CHPR-13	Santa Ana Mtns, Santa Rosa Plateau	2
Round-leaved filaree (*Erodium macrophyllum;* ERMA)	Inventory	1	ERMA-07	Diamond Valley Lk	1
San Diego button-celery (*Eryngium aristulatum* var. *Parishii;* EAPA)	Monitoring	5	EAPA-01, EAPA-02, EAPA-03, EAPA-04	Santa Rosa Plateau	5
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior;* ACNO)	Monitoring	3	ACNO-02	SJR from Mystic Lk	3
San Miguel savory (*Clinopodium chandleri;* SACH)	Monitoring	3	SACH-01, SACH-02, SACH-05	Santa Rosa Plateau, De Luz Road	4
Santa Ana River woollystar (*Eriastrum densifolium* spp. *sanctorum;* EDSA)	Monitoring	4	EDSA-01, EDSA-02, EDSA-03	Santa Ana River	5
Shaggy-haired alumroot (*Heuchera hirsutissima;* HEHI)	Monitoring	2	*HEHI-03*	*San Jacinto Pk*	0

Species Name	Survey Type	Grids Searched	Monitoring Program ID	Property Name	# of Occurrences
Small-flowered morning-glory (*Convolvulus simulans;* COSI)	Monitoring	2	COSI-02, COSI-05	Lake Skinner, Alberhill	2
Small-flowered microseris* (*Microseris douglasii* var. *platycarpha;* MDPL)	Monitoring	1	*MDPL-03*	*Cleveland NF*	0
Smooth tarplant (*Centromadia pungens* ssp. *laevis;* CPLA)	Monitoring	1	*CPLA-22*	*Upper Salt Creek*	0
Sticky-leaved Dudley (*Dudleya viscida;* DUVI)	Monitoring	1	DUVI-03	San Mateo Wilderness	1