

2.0 CHAPARRAL

2.1 OVERVIEW OF THE CHAPARRAL VEGETATION COMMUNITY

Chaparral is the most abundant and widespread vegetation community in the MSPA with 709,024 acres in all MUs, of which 406,270 acres are conserved (Table V2C.2-1; Figure V2C.2-1, or view an online map at: https://portal.sdmmp.com/map_vegetation.php?taxaid=SDMMP_vegcom_3).

Chaparral vegetation is composed of a variety of evergreen, sclerophyllus, 1- to 4-meter-tall, drought- and fire-tolerant shrubs (Quinn and Keeley 2006). The shrubs are well adapted to long, hot, dry summers, and unpredictable winter rainfall of the mediterranean climate region of San Diego County. Chaparral shrubs typically grow on steep, rocky, dry slopes with granitic and mafic or metavolcanic soils, although these shrubs also occur in more mesic conditions, on sandy soils or shallower slopes. Chaparral vegetation is often dense with an understory of shorter-lived small shrubs and forbs and small openings with bare soil. Fire is a natural process in chaparral ecosystems, and is required for germination of some shrub species while other shrubs recover by stump sprouting. The MSP Roadmap focuses on chaparral communities in the western part of San Diego County, including coastal plains, valleys, and foothills, but not the mountains. These communities include southern mixed chaparral (granitic southern mixed chaparral and mafic southern mixed chaparral), northern mixed chaparral, chamise chaparral, scrub oak chaparral, southern maritime chaparral, and coastal sage-chaparral transition (Oberbauer et al. 2008).

There are 15 chaparral alliances in the MSPA that crosswalk to the broader vegetation communities listed above (SANDAG 2012). The southern mixed chaparral community includes some of the most abundant chaparral alliances: *A. fasciculatum*-*Xylococcus bicolor*, *Arctostaphylos glandulosa*, and *Ceanothus tomentosus* (Sproul et al. 2011; SANDAG 2012). The chamise chaparral community with the *A. fasciculatum* alliance is second most abundant, followed by the scrub oak chaparral community with the *Quercus (berberidifolia x acutidens)* and *Q. (berberidifolia x acutidens)*-*A. fasciculatum* alliances. Southern maritime chaparral is a low and fairly open chaparral found in the coastal fog belt (Oberbauer et al. 2008). It is dominated by sensitive MSP plant species, including *Ceanothus verrucosus* and *Arctostaphylos glandulosa* ssp. *crassifolia*. Southern maritime chaparral occurs in weathered sands. The coastal sage-chaparral transition community is an intermediate between coastal scrub and chaparral communities

and is usually a post-fire successional community (Oberbauer et al. 2008). It is a mix of sclerophyllous species, woody chaparral species, and drought-deciduous, malacophyllous sage scrub species. *A. fasciculatum* and *Artemisia californica* are codominants.

Table V2C.2-1. Total acres of chaparral and acres of chaparral on Conserved Lands by MSP Management Units.

MU	Total Acres	Acres on Conserved Lands
1	195	16
2	1,579	436
3	52,635	29,270
4	70,473	35,162
5	56,188	27,827
6	33,408	14,764
7	895	693
8	49,511	15,910
9	141,785	97,002
10	140,373	95,223
11	161,982	89,966
Grand Total	709,024	406,270

For more information on chaparral, go to the MSP Portal Chaparral vegetation summary page: (https://portal.sdmmp.com/view_species.php?taxaid=SDMMP_vegcom_3).

2.2 SPECIES USING CHAPARRAL VEGETATION

Chaparral vegetation communities support a rich diversity of plant and animal species, some of which are only found in chaparral and others that use a variety of vegetation types. There are 50 MSP species that inhabit or use chaparral, 9 of which are chaparral VF species that will be managed through management of chaparral vegetation (Table 2VC.2-1). The remaining 41 SL, SO, SS, VF species from other vegetation types, and VG species will benefit incidentally from chaparral vegetation management.

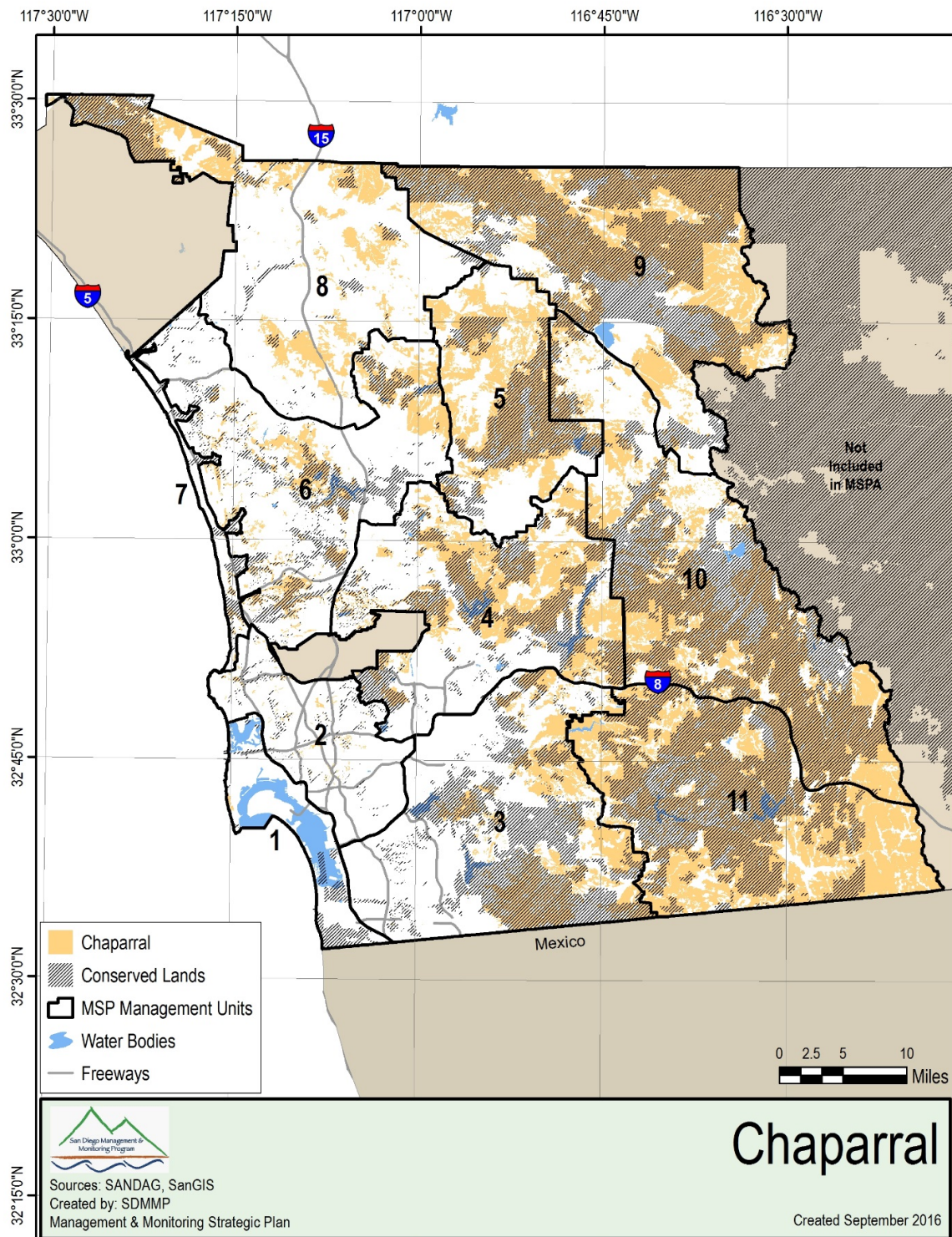


Figure V2C.2-1. Distribution of chaparral vegetation in the MSPA.

2.3 THREATS TO CHAPARRAL VEGETATION

An altered fire regime, with a shortened fire return interval of less than 30 years (Keeley et al. 2011) can threaten chaparral through vegetation type conversion from chaparral to nonnative annual grassland (Keeley and Brennan 2012). Extremely large human-caused Santa Ana wind-driven wildfires occurred in the MSPA in late October 2003 and 2007 (see Vol. 2B, Sec. 1.0). In 2003, 4 fires burned simultaneously for a combined total of 369,619 acres and, again in 2007, 8 fires burned concurrently over 314,508 acres. Across the MUs, 95,076 acres (26%) of land that burned in 2003 also burned in 2007. During 2003 and 2007, 250,616 acres of chaparral burned once and over 41,251 acres burned in both years. Compared with the historical fire frequency, much of the County has burned too frequently since 2000, especially in the inland valleys and foothills. Areas that have burned less frequently than the historical record include higher mountain slopes at the east edge of the MSPA in MUs 10 and 11; areas of MUs 6 and 8; and fragments within the urban matrix in MUs 2, 3, and 6.

Loss of habitat to urban development is another threat to chaparral vegetation communities in the MSPA. Chaparral near urban development may also experience disturbances such as habitat alteration, as well as other disturbances from the creation of road and trails (Sauvajot et al. 1998). Climate change is projected to lead to a warming climate with more frequent, intense, and prolonged droughts in California (Diffenbaugh et al. 2015). Chaparral shrubs are adapted to semi-arid conditions, although there can be considerable shrub mortality during intensive and prolonged droughts (Kelly and Goulden 2008; Keeley et al. 2009). Regional changes in climate have been attributed to elevational shifts in chaparral shrub species in the Santa Rosa Mountains of southern California (Kelly and Goulden 2008). The mechanism involves shrub mortality during drought at lower elevations with warmer, drier conditions and warmer minimum temperatures at higher elevations allowing shrubs to move upslope into more mesic areas that were formerly too cold.

2.4 MANAGEMENT AND MONITORING APPROACH

This section provides the rationale for management and monitoring objectives for chaparral vegetation and for MSP species assigned to the chaparral VF group. An altered fire regime and changing climate contributing to type conversion of chaparral to nonnative grassland are the greatest threats that need to be monitored and potentially managed in chaparral vegetation communities. The approach is based on an adaptive management framework, in which a science-

based, information-gathering process informs, refines, and improves the effectiveness of a management strategy and of the management actions to implement that strategy.

The management goal for chaparral vegetation is to maintain, enhance, and restore chaparral on Conserved Lands that supports or has the potential to support VF species and to incidentally benefit a diverse array of other species so that the vegetation community has high ecological integrity, and these species are resilient to environmental stochasticity, catastrophic disturbances, and threats to persist over the long term (>100 years).

The monitoring objectives are to establish and implement a long-term vegetation monitoring program to assess the distribution, composition, structure, ecological integrity, habitat associations, and threat risks of burned and unburned chaparral vegetation in a mosaic of coastal sage scrub and grassland vegetation communities across the MSPA (see Vol. 2C.1 and Vol. 1, Sec. 2A for further details on the monitoring plan). The purpose of the monitoring program is to track ecological integrity in chaparral communities over time in response to multiple, potentially interacting threats such as an altered fire regime, changing climate, and invasive nonnative plant species.

For the 2017–2021 planning cycle, the focus will be to gather information to characterize chaparral vegetation communities, habitat conditions, and threats in order to identify and prioritize management needs in future planning cycles. The monitoring plan will utilize a sampling design that incorporates ecological integrity classes mapped across the entire MSPA using remote imagery. Permanent sampling plots will be established along north-to-south and east-to-west gradients across the MSPA to capture the full range of environmental conditions and vegetation community characteristics. To further characterize spatial variation, a subset of sampling plots will also be monitored on a rotating basis. The monitoring program will provide information to determine whether management is needed to restore or enhance sites that support or have potential to support MSP species, high biodiversity, and important ecosystem functions. Prioritization and implementation of management actions is planned for the 2022–2026 planning cycle after monitoring the chaparral VF species to gather data on their distributions, status, habitat associations, threat risks, and management needs.

Monitoring chaparral VF species is delayed until the 2022–2026 planning cycle, as these species are considered more stable at this time than species from other vegetation communities.

2.4.1 General Approach Objectives

Below is a summary of the management and monitoring objectives for chaparral vegetation. For the most up-to-date goals, objectives, and actions, go to the MSP Portal:

https://portal.sdmmp.com/tracker.php?Target=veg+community&Species=SDMMP_vegcom_3&MonMgtObjType=&ActionStatus=&ManagementUnit=&ObjectiveType=&Year=&Preserve=&Short=Long&submit=Submit.

There are currently 3 objectives included for chaparral vegetation monitoring in the MSP Roadmap 2017–2021 planning cycle. Objectives to establish the long-term monitoring program include developing a monitoring plan (see Vol. 1, Sec. 2A and Vol. 2, Sec. 2C for further details on the monitoring plan) that includes permanent sampling plots with a rotating panel of plots to expand spatial sampling. The sampling design will be informed by mapping integrity classes at the landscape scale based upon remote imagery (satellite imagery, high-resolution aerial photographs, and LIDAR). One year of pilot monitoring will be conducted to test the ecological integrity classifications and evaluate the monitoring protocols and sampling design. Data from the pilot monitoring will be used to finalize the vegetation monitoring plan. After the plan is finalized, there will be 3 years of monitoring to gather information on annual variability in chaparral vegetation community attributes and to increase the spatial distribution with the rotating panel of sample plots. Monitoring data will then be analyzed to identify management needs for chaparral communities across the MSPA and to determine the frequency of future monitoring.

2.4.2 Species-Specific Approach Objectives

There are 9 chaparral VF species: 7 plants, 1 amphibian, and 1 bird (Table V2C.2-2). The coastal southern maritime chaparral alliance supports 3 chaparral VF species: Del Mar manzanita, Nuttall's scrub oak, and wart-stemmed ceanothus. Three chaparral VF species have small, restricted distributions in the MSPA: Rainbow manzanita at the northern border, Lakeside ceanothus in the center, and Otay manzanita at the southern border. Other chaparral VF species with a broader range in the MSPA include felt-leaved monardella, California newt, and Bell's sparrow. For more information on the chaparral VF species, see their species profiles (links to profiles in Table V2C.2-2).

Table V2C.2-2. Chaparral associated MSP species.

Scientific Name	Common Name	Management Category	Summary Page Link
Plants			
<i>Acanthomintha ilicifolia</i>	San Diego thorn-mint	SO	https://portal.sdmmp.com/view_species.php?taxaid=32426
<i>Ambrosia pumila</i>	San Diego ambrosia	SO	https://portal.sdmmp.com/view_species.php?taxaid=36517
<i>Arctostaphylos glandulosa</i> ssp. <i>Crassifolia</i>	Del Mar manzanita	VF	https://portal.sdmmp.com/view_species.php?taxaid=183557
<i>Arctostaphylos otayensis</i>	Otay manzanita	VF	https://portal.sdmmp.com/view_species.php?taxaid=23507
<i>Arctostaphylos rainbowensis</i>	Rainbow manzanita	VF	https://portal.sdmmp.com/view_species.php?taxaid=507811
<i>Baccharis vanessae</i>	Encinitas baccharis	SO	https://portal.sdmmp.com/view_species.php?taxaid=183764
<i>Bloomeria clevelandii</i>	San Diego goldenstar	SS	https://portal.sdmmp.com/view_species.php?taxaid=509575
<i>Calochortus dunnii</i>	Dunn's mariposa lily	VG	https://portal.sdmmp.com/view_species.php?taxaid=42844
<i>Ceanothus cyaneus</i>	Lakeside ceanothus	VF	https://portal.sdmmp.com/view_species.php?taxaid=28461
<i>Ceanothus verrucosus</i>	Wart-stemmed ceanothus	VF	https://portal.sdmmp.com/view_species.php?taxaid=28518
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	SL	https://portal.sdmmp.com/view_species.php?taxaid=21019
<i>Clinopodium chandleri</i>	San Miguel savory	SL	https://portal.sdmmp.com/view_species.php?taxaid=565077

Scientific Name	Common Name	Management Category	Summary Page Link
Comarostaphylis diversifolia ssp. Diversifolia	Summer-holly	VG	https://portal.sdmmp.com/view_species.php?taxaid=23640
Cylindropuntia californica var. californica	Snake cholla	VF	https://portal.sdmmp.com/view_species.php?taxaid=913470
Dicranostegia orcuttiana	Orcutt's bird's-beak	SL	https://portal.sdmmp.com/view_species.php?taxaid=834156
Dudleya blochmaniae	Blochman's dudleya	SL	https://portal.sdmmp.com/view_species.php?taxaid=502165
Dudleya brevifolia	Short-leaved dudleya	SL	https://portal.sdmmp.com/view_species.php?taxaid=502166
Dudleya variegata	Variegated dudleya	SS	https://portal.sdmmp.com/view_species.php?taxaid=502182
Dudleya viscida	Sticky dudleya	SS	https://portal.sdmmp.com/view_species.php?taxaid=502185
Ericameria palmeri ssp. Palmeri	Palmer's goldenbush	VF	https://portal.sdmmp.com/view_species.php?taxaid=527914
Erysimum ammophilum	Coast wallflower	SL	https://portal.sdmmp.com/view_species.php?taxaid=22928
Ferocactus viridescens	San Diego barrel cactus	VF	https://portal.sdmmp.com/view_species.php?taxaid=19801
Fremontodendron mexicanum	Mexican flannelbush	SL	https://portal.sdmmp.com/view_species.php?taxaid=21581
Hazardia orcuttii	Orcutt's hazardia	SL	https://portal.sdmmp.com/view_species.php?taxaid=502882
Lepechinia cardiophylla	Heart-leaved pitcher sage	SL	https://portal.sdmmp.com/view_species.php?taxaid=32553
Lepechinia ganderi	Gander's pitcher sage	VG	https://portal.sdmmp.com/view_species.php?taxaid=32555
Monardella hypoleuca ssp.	Felt-leaved monardella	VF	https://portal.sdmmp.com/view_species.php?taxaid=524318

Scientific Name	Common Name	Management Category	Summary Page Link
Lanata			
<i>Monardella stoneana</i>	Jennifer's monardella	SL	https://portal.sdmmp.com/view_species.php?taxaid=832834
<i>Monardella viminea</i>	Willow monardella	SL	https://portal.sdmmp.com/view_species.php?taxaid=833060
<i>Nolina cismontana</i>	Chaparral nolina	SL	https://portal.sdmmp.com/view_species.php?taxaid=507567
<i>Nolina interrata</i>	Dehesa nolina	SO	https://portal.sdmmp.com/view_species.php?taxaid=42992
<i>Packera ganderi</i>	Gander's ragwort	SO	https://portal.sdmmp.com/view_species.php?taxaid=565357
<i>Pinus torreyana</i> ssp. Torreyana	Torrey pine	VF	https://portal.sdmmp.com/view_species.php?taxaid=183392
<i>Quercus dumosa</i>	Nuttall's scrub oak	VF	https://portal.sdmmp.com/view_species.php?taxaid=19323
<i>Quercus engelmannii</i>	Engelmann Oak	VF	https://portal.sdmmp.com/view_species.php?taxaid=19329
<i>Rosa minutifolia</i>	Small-leaved rose	SS	https://portal.sdmmp.com/view_species.php?taxaid=504824
<i>Tetracoccus dioicus</i>	Parry's tetracoccus	SS	https://portal.sdmmp.com/view_species.php?taxaid=28420
Invertebrates			
<i>Euphydryas editha</i> quino	Quino checkerspot butterfly	SL	https://portal.sdmmp.com/view_species.php?taxaid=779299
Amphibians			
<i>Taricha torosa torosa</i>	Coast range newt	VF	https://portal.sdmmp.com/view_species.php?taxaid=208226
Reptiles			
<i>Aspidoscelis hyperythra</i>	Orange-throated whiptail	VG	https://portal.sdmmp.com/view_species.php?taxaid=914116
<i>Crotalus ruber</i>	Red diamond rattlesnake	VG	https://portal.sdmmp.com/view_species.php?taxaid=174316

Scientific Name	Common Name	Management Category	Summary Page Link
Phrynosoma blainvillii	Blainville's horned lizard (Coast horned lizard, San Diego horned lizard)	VF	https://portal.sdmmp.com/view_species.php?taxaid=208819
Birds			
Accipiter cooperii	Cooper's hawk	VG	https://portal.sdmmp.com/view_species.php?taxaid=175309
Aquila chrysaetos Canadensis	Golden eagle	SO	https://portal.sdmmp.com/view_species.php?taxaid=175408
Artemisiospiza belli belli	Bell's sparrow	VF	https://portal.sdmmp.com/view_species.php?taxaid=998052
Mammals			
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	VG	https://portal.sdmmp.com/view_species.php?taxaid=900826
Odocoileus hemionus fuliginata	Southern mule deer	SS	https://portal.sdmmp.com/view_species.php?taxaid=898459
Plecotus townsendii pallescens	Townsend's big-eared bat	SO	https://portal.sdmmp.com/view_species.php?taxaid=203457
Puma concolor	Mountain lion	SL	https://portal.sdmmp.com/view_species.php?taxaid=552479
Taxidea taxus	American badger	SL	https://portal.sdmmp.com/view_species.php?taxaid=180565

MSP monitoring or management objectives for chaparral VF species have been delayed to the 2022–2026 MSP Roadmap planning cycle.

2.5 CHAPARRAL REFERENCES

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