

6.0 SOUTHERN INTERIOR CYPRESS FOREST

6.1 OVERVIEW OF THE SOUTHERN INTERIOR CYPRESS FOREST VEGETATION COMMUNITY

Southern interior cypress forest is dominated by three different cypress species and occurs in isolated stands in the southern Sierra Nevada, Peninsular Ranges, and Santa Ana Mountains in the United States with a few stands in northern Baja California, Mexico (Oberbauer et al. 2008). Southern interior cypress forest in the Sierra Nevada supports Piute cypress (*Hesperocyparis nevadensis*). The range of Tecate cypress (*H. forbesii*) is restricted to 4 disjunct populations in the United States, including a stand in the northern Santa Ana Mountains in Orange County and three stands in San Diego County at Otay Mountain, Guatay Mountain, and Tecate Peak (Sproul et al. 2011). Scattered Tecate cypresses extend 150 kilometers south into northern Baja California, Mexico (Minnich 1987). The Cuyamaca cypress is the rarest of California cypress species and occurs as two isolated populations; the first at Cuyamaca Peak in San Diego County, and the second in Baja California, Mexico (Fanjon 2013).

Southern interior forest vegetation community supporting Tecate cypress (*Hesperocyparis forbesii*), a MSP VF species, has a very limited distribution in the MSPA (Table V2C.6-1; Figure V2C.6-1, or view an online map at: [https://portal.sdmmp.com/map_vegetation.php?taxaid=SDMMP vegcom 9](https://portal.sdmmp.com/map_vegetation.php?taxaid=SDMMP_vegcom_9)). It occurs only in MU3 on 2,800 acres of which 2,723 acres (97%) are conserved (SANDAG 2012). Cuyamaca cypress encompasses approximately 50 acres on Cuyamaca Mountain on lands owned and managed by Cuyamaca State Park and U.S. Forest Service and is not an MSP species.

The *Hesperocyparis forbesii* alliance (synonym = *Callitropsis forbesii* alliance) includes Tecate cypress as the dominant species in the tree layer and may occur within a matrix of chaparral shrubs (Sproul et al. 2011). Dominant shrubs include *Adenostoma fasciculatum*, *Arctostaphylos* spp., *Ceanothus* spp., *Chamaebatia australis*, *Dendromecon rigida*, *Malosma laurina*, *Quercus acutidens*, and *Xylococcus bicolor*. Tecate cypresses are typically <10 meters tall and have open to intermittent canopy, depending on stand age. This alliance occurs on dry, open and often north-facing slopes, ridgetops, and ravines. Tecate cypresses have serotinous

cones and are dependent on fire to open cones and release seeds for large-scale reproduction (Sawyer et al. 2009)

For more information on southern interior cypress forest, go to the MSP Portal Southern Interior Cypress Forest vegetation summary page: [https://portal.sdmmp.com/view_species.php?taxaid=SDMMP vegcom 9](https://portal.sdmmp.com/view_species.php?taxaid=SDMMP_vegcom_9).

Table V2C.6-1. Total acres of southern interior cypress forest and acres on Conserved Lands by MSP Management Units.

MU	Total Acres	Acres on Conserved Lands
1	0	0
2	0	0
3	2,800	2,723
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
Grand Total	2,800	2,723

6.2 MSP SPECIES USING SOUTHERN INTERIOR CYPRESS FOREST VEGETATION

Seven MSP species are associated with southern interior cypress forest. Tecate cypress and Thorne’s hairstreak are VF species that will benefit from the management of southern interior cypress forest vegetation (Table V2C.6-2). The remaining 5 SL, SO and VG species could benefit incidentally from southern interior cypress forest vegetation management.

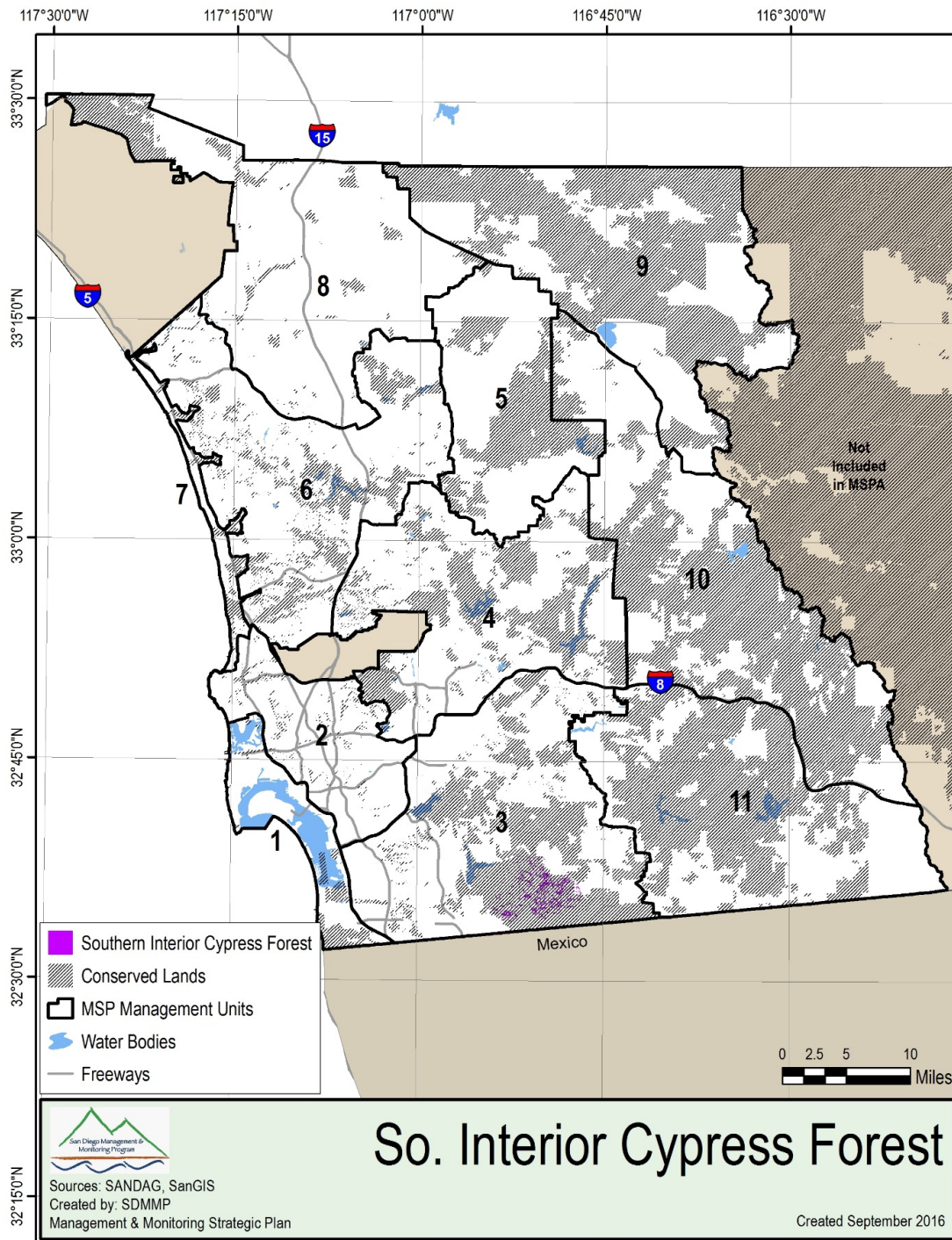


Figure V2C.6-1. Distribution of southern interior cypress forest vegetation in the MSPA.

6.3 THREATS TO SOUTHERN INTERIOR CYPRESS FOREST VEGETATION

The biggest threat to southern interior cypress forest supporting Tecate cypress is fire return intervals of less than 35–40 years (Markovchick-Nicholls 2007; Rodriguez-Buritica et al. 2010). During wildfires, most Tecate cypress trees are destroyed and, if they burn again in less than 35 years, there is insufficient time for replacement trees to mature and produce sufficient seed for the population to persist. Current fire return intervals are shorter than historic intervals in significant portions of Tecate cypress stands on Otay Mountain (see Vol. 2B, Sec. 1.0), with most of the population burning in 2003 or 2007. Another wildfire in the next few decades could threaten the population. There have also been reports of Tecate cypress mortality from the 2011–2016 prolonged and intensive drought. A warming climate is projected to increase the frequency, intensity, and duration of droughts, which could threaten future Tecate cypress populations.

6.4 MANAGEMENT AND MONITORING APPROACH

This section provides the rationale for management and monitoring objectives for southern interior cypress forest vegetation and associated MSP species. The management and monitoring approach is based on an adaptive management framework intended to refine and improve the effectiveness of the management strategy over time. See Vol. 1, Sec. 2.0 for further details on the overall MSP management and monitoring approach.

The management goal for southern interior cypress forest vegetation is to maintain and enhance southern interior cypress forest supporting Tecate cypress on Conserved Lands in the MSPA so that the vegetation community has high ecological integrity and is resilient to environmental stochasticity; threats; and catastrophic disturbances, such as altered fire regime and climate change. With the achieved management goal, the southern interior cypress forest vegetation community is likely to persist over the long term (>100 years).

The management and monitoring approach is to first gather information on the current status of Tecate cypress, including determining the extent of mortality from drought. Tree mortality will be mapped using high-resolution aerial imagery and LIDAR. Once this has been accomplished, a long-term Southern Interior Cypress Vegetation Monitoring Plan will be developed for stands with Tecate cypress to

determine changes in vegetation community composition, structure, and ecological integrity; environmental conditions; and threats over time. The monitoring plan will include a conceptual model; specific monitoring questions; a standardized monitoring protocol; a statistically valid sampling design with sampling locations; a plan for analyzing and managing data; a monitoring schedule; and reporting requirements. The conceptual model will be used to identify covariates to collect in assessing environmental conditions and threats to identify and prioritize management needs in future planning cycles.

The monitoring plan will be implemented and data gathered and combined with the tree mortality mapping to develop a Southern Interior Cypress Forest Vegetation Management Plan for stands supporting Tecate cypress. The management plan will identify and prioritize management needs to maintain, enhance, and restore Tecate cypress stands to ensure recovery from multiple threats, to maintain high ecological integrity, and to support MSP species. The Southern Interior Cypress Forest Management Plan will prioritize the location and type of management actions needed, specify BMPs, develop a management timeline, and provide guidelines for monitoring the effectiveness of management actions. Upon completion of the management plan, high-priority management actions will be completed and monitored for effectiveness according to the timeline prepared for each MSP planning cycle. Long-term vegetation monitoring will continue on a scheduled basis and the results will be used to update and refine the management plan at periodic intervals.

6.4.1 General Approach Objectives

Below is a summary of the management and monitoring objectives for southern interior cypress forest 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_9&MonMgtObjType=&ActionStatus=&ManagementUnit=&ObjectiveType=&Year=&Preserve=&Short=Long&submit=Submit.

One objective is included for southern interior cypress forest in the 2017–2021 planning cycle to map current mortality of Tecate cypress across the species range in MU3. In the 2022–2026 planning cycle, a monitoring plan will be developed and

implemented to gather information important to management. A management plan will be prepared and implemented in a future planning cycle.

6.4.2 Species-Specific Approach Objectives

Descriptions of the management and monitoring approach and rationale, and goals, objectives, and actions for at-risk MSP species associated with Tecate cypress are presented in the corresponding species sections and species profiles accessible on each species' summary page (see links in Table V2C.6-2).

Tecate cypress is a VF species and will be the focus of the southern interior cypress forest tree mortality mapping in this planning cycle. It will be included in the Southern Interior Cypress Forest Vegetation Monitoring and Management Plans in future planning cycles. Thorne's hairstreak is also a southern interior cypress forest VF species. Monitoring and management objectives for this species are delayed to future planning cycles and will be incorporated into southern interior cypress forest monitoring and management objectives.

Table V2C.6-2. Southern interior cypress forest associated MSP species.

Scientific Name	Common Name	Management Category	Summary Link
Plants			
Dicranostegia orcuttiana	Orcutt's bird's-beak	SL	https://portal.sdmmp.com/view_species.php?taxaid=834156
Fremontodendron mexicanum	Mexican flannelbush	SL	https://portal.sdmmp.com/view_species.php?taxaid=21581
Hesperocyparis forbesii	Tecate cypress	VF	https://portal.sdmmp.com/view_species.php?taxaid=822589
Lepechinia ganderi	Gander's pitcher sage	VG	https://portal.sdmmp.com/view_species.php?taxaid=32555
Monardella stoneana	Jennifer's monardella	SL	https://portal.sdmmp.com/view_species.php?taxaid=832834
Invertebrates			
Callophrys thornei	Thorne's hairstreak butterfly	VF	https://portal.sdmmp.com/view_species.php?taxaid=777843

6.5 SOUTHERN INTERIOR CYPRESS FOREST REFERENCES

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