

1.4 San Diego Ambrosia (*Ambrosia pumila*) – Category SO

Management Units with Known Occurrences

San Diego ambrosia is distributed from western Riverside and San Diego Counties south into Baja California, Mexico, in floodplain terraces and watershed margins of vernal pools and alkali playas (Munz 1974; Reiser 1994). The majority of occurrences are in San Diego County where there are 14 occurrences on Conserved Lands in MUs 3, 4, 6, and 8 (see Occurrence Table or online map: <http://arcg.is/2kFzHkV>). In MU3, the San Diego National Wildlife Refuge has a moderate-sized translocated occurrence and 2 small occurrences (<500 individuals), in which 1 site had a dramatic reduction in population size within 2 years. In MU4, there is a formerly very large occurrence (>200,000 individuals) at Mission Trails Regional Park that recently (in 2015) has numbered <30,000 individuals. Mission Trails Regional Park also supports 3 groupings of plants considered as 1 small occurrence and a small translocated occurrence. In MU6, there are 3 known extant occurrences, some of which have limited information on current status. These include an unknown occurrence at Black Mountain Road, small occurrences at Los Peñasquitos Canyon Open Space Preserve and Hodges Reservoir Open Space, and a moderate-sized occurrence at Santa Fe Valley Crosby Estates. There are 2 occurrences of unknown size in MU8 at Groves Open Space and Jeffreys Ranch. Two new occurrences were found in 2015 in both MU3 and MU6 as well. Plants were also salvaged and planted near Black Mountain Road in 1999, but it is unknown whether this occurrence is still extant.

Management Categorization Rationale

San Diego ambrosia should be managed as a Species Management Focus Category SO Species due to a moderate risk of loss of significant occurrences from Conserved Lands in the MSPA and because managing vegetation alone will not ensure persistence of the species (see Vol. 1, Table 2-4). This risk assessment is based upon the substantial decline of the largest occurrence, the large proportion of small occurrences, and a high risk of threats.

A conceptual model has been developed for San Diego ambrosia that identifies threats, monitoring targets, and management actions (Hierl et al. 2007). McEachern et al. (2006) has also developed a monitoring and management plan. An important threat is invasive annual plants (McEachern et al. 2006; Hierl et al.

2007; USFWS 2010; City San Diego 2012; Martin 2013). This species is also vulnerable to loss of genetic diversity as it can reproduce asexually and there is very little gene flow between nearby occurrences so that large occurrences are required to maintain genetic diversity (McGlaughlin and Friar 2006). The large Par 4 occurrence is genetically diverse while the Kumeyaay Lake occurrence has relatively low genetic diversity and may be a result of reduced occurrence size from invasive nonnative grasses. San Diego ambrosia appears to be a poor competitor and benefits from disturbance that opens up habitat for colonization (McEachern et al. 2006). San Diego ambrosia has poor seed production and viability and may depend on clonal growth, which further limits genetic diversity and may impact the ability of this species to respond to environmental change (see review in USFWS 2010).

In the past, occurrences were impacted by trampling from hikers, bikers, equestrians, and off-highway vehicle activity (USFWS 2010). This risk has been reduced at some occurrences because of recent fencing, signage, and enforcement (City San Diego 2009, 2011; B. Miller, pers. comm.). The species also appears to tolerate some level of disturbance such as periodic mowing and trampling (T. Oberbauer, pers. comm.). Feral pigs inhabit the upper San Diego River, and if they moved downstream could negatively impact San Diego ambrosia occurrences in MU4.

Management and Monitoring Approach

The overarching goal for San Diego ambrosia is to maintain or enhance existing San Diego ambrosia occurrences to ensure multiple conserved occurrences with self-sustaining populations to increase resilience to environmental and demographic stochasticity, maintain genetic diversity, and ensure persistence over the long term (>100 years) in chaparral vegetation communities.

The management approach for San Diego ambrosia is to maintain and enhance occurrence in MUs 3, 4, 6, and 8 so that, over the long term, they are large enough ($\geq 10,000$ ramets during years of suitable growing conditions) to maintain genetic diversity (McEachern et al. 2006) and be more resilient to environmental changes. The small occurrences (<500 individuals) should be expanded to increase genetic diversity and improve chances of long-term viability. Best methods for managing invasive plants have been initiated (Kelly and Burrascano 2007; Hasselquist et al. 2009; City of San Diego 2013) and this work should continue until the BMPs are fully tested. BMPs should also be developed for expanding occurrences if invasive

plant control alone is not sufficient. Depending on feasibility, either a seed or vegetative cutting bank should be established to provide propagules for occurrence expansion and establishment, to maintain genetic diversity, and to rescue occurrences after catastrophic disturbance.

For the 2017–2021 planning cycle, the management and monitoring approach for San Diego ambrosia is to:

- (1) Annually inspect San Diego ambrosia occurrences on Conserved Lands (see Occurrence Table) using the regional rare plant IMG monitoring protocol to record abundance and collect habitat and threats covariate data to determine management needs. Conduct routine management actions identified and use BMPs with precautions to do no harm.
- (2) Prepare a section for San Diego ambrosia in the MSP Rare Plant Management Plan that prioritizes management actions to maintain large occurrences and expand ≥ 3 small occurrences on Conserved Lands based upon an assessment of data on occurrence status, habitat, threats, genetic data, and results of existing restoration efforts. Implement highest-priority management actions identified in the MSP Rare Plant Management Plan and monitor the effectiveness of implementation.
- (3) Prepare a section for San Diego ambrosia in the MSP Seed Collection, Banking, and Bulking Plan to preserve genetic diversity and rescue occurrences in case of catastrophic disturbance. Implement the MSP Seed Collection, Banking, and Bulking Plan to collect and store seed at a permanent seed bank and to provide propagules as needed for management-oriented research, existing population enhancement, and establishment of new occurrences.

For details and the most up-to-date goals, objectives, and actions, go to the MSP Portal San Diego Ambrosia summary page: https://portal.sdmmp.com/view_species.php?taxaid=36517.

San Diego Ambrosia References

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