

1.25 Willowy Monardella (*Monardella viminea*) – Category SL

Management Units with Known Occurrences

Willowy monardella is a narrow endemic in central San Diego County (USFWS 2012a) with small isolated occurrences in 3 watersheds north of Kearny Mesa (Elvin and Sanders 2003). It is found in coastal sage scrub and riparian scrub in sandy washes and on adjacent banks with ephemeral water flow where water only flows for 24 to 48 hours following rain events. The soil requirements include coarse sandy grains and sediments, and cobble deposits (Scheid 1985). Willowy monardella needs semi-open canopies with limited herbaceous understory.

This species has only 8 known occurrences on Conserved Lands in the MSPA, with only 1 of those 8 occurrences being a large occurrence (≥ 100 plants since 2004). That large occurrence is at Sycamore Canyon, while the 7 small occurrences (< 100 plants since 2004) are found in Sycamore, West Sycamore, Spring, Lopez, and Flander's Canyons in MUs 4 and 6 (see Table of Occurrences or online map: <http://arcg.is/2kFPS21>). The small willowy monardella population is declining with several recent extirpations (USFWS 2012a). Outside the MSPA, willowy monardella is found on MCAS Miramar in Sycamore, San Clemente, West Sycamore, Spring, Elanus, and Murphy Canyons and their tributaries (USFWS 2012b). There is also a transplanted occurrence on private lands in Carroll Canyon (USFWS 2011, 2012b). Native occurrences of this species have been extirpated from Carroll and Cemetery Canyons (USFWS 2012a).

Management Categorization Rationale

Willowy monardella should be managed as a Species Management Focus Category SL Species due to a high risk of loss from Conserved Lands in the MSPA and because managing the general vegetation community alone will not ensure persistence of the species (see Vol. 1, Table 2-4). It is at a high risk of loss as there are only 8 occurrences in a restricted distribution, limited suitable habitat, and isolated occurrences with a small number of plants vulnerable to loss of genetic diversity and extirpation as a result of environmental and demographic stochasticity or catastrophic disturbance (see Vol. 3, App. 1, Species Profiles). Willowy monardella occurrences also face a high degree of threat and have declined significantly since 2002 (USFWS 2012a).

Given the limited distribution and abundance of willowy monardella on Conserved Lands, the species is more vulnerable to natural catastrophes and stochastic demographic, genetic, and environmental events. A significant threat to willowy monardella is altered hydrology, as a result of urbanization, that causes severe erosion and undercutting and the washing away of plants (Kelly and Burrascano 2007; City of San Diego 2009; City of San Diego 2000–2003, 2005–2012). Invasive nonnative plant species and erosion are impacting all occurrences in the MSPA for which there is information on threats (see Table of Occurrences). Five of the 6 occurrences on Conserved Lands burned during the 2003 Cedar wildfire. An altered fire regime could affect occurrence demographics and exacerbate threats posed by invasive plant species and erosion. There is also potential for impacts from feral pigs that have recently invaded the San Diego River watershed and could spread downstream into tributary canyons where willowy monardella occurs. As a perennial herb, there are indications this species is also vulnerable to the effect of prolonged drought, which may be contributing to the decline (City of San Diego 2003, 2004; USFWS 2012a).

Management and Monitoring Approach

The overarching goal for willowy monardella is to maintain or enhance existing occurrences and establish new occurrences, as needed, 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 coastal sage scrub vegetation communities.

For the 2017–2021 planning cycle, the management and monitoring approach is to:

- (1) Inspect willowy monardella occurrences annually on Conserved Lands (see Table of Occurrences) 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 through the IMG monitoring.
- (2) Complete the study begun in 2016 to characterize the population genetic structure, gene flow, and genetic diversity for willowy monardella occurrences (see Table of Occurrences).

- (3) Conduct an evaluation of hydrological processes at willowy monardella occurrences following a fire to determine risks from erosion and flooding, and prepare a report with prioritized management recommendations to reduce risk to population persistence and sustainability. Implement the highest-priority management actions identified in the willowy monardella post fire hydrological evaluation and monitor effectiveness of implementation.
- (4) Survey historical willowy monardella locations to determine occurrence status; survey and delineate potentially suitable habitat for new occurrences; survey existing occurrences to identify the potential for enhancement and expansion; and at all sites collect data on occurrence status, habitat, and threats and determine management needs.
- (5) Prepare a section for willowy monardella in the MSP Seed Collection, Banking, and Bulking Plan that incorporates best science and management practices (Royal Botanic Gardens, Kew 2001; Wall 2009) to preserve genetic diversity and rescue occurrences in case of catastrophic disturbance. Begin implementing high-priority actions for willowy monardella in the MSP Seed Collection, Banking, and Bulking Plan to collect and store seeds at a permanent seed bank and to provide propagules as needed for management-oriented research, existing population enhancement, and establishment of new occurrences.
- (6) Prepare a section for willowy monardella in the MSP Rare Plant Management Plan that prioritizes management actions to maintain the large occurrence and enhance ≥ 3 small occurrences on Conserved Lands (see Table of Occurrences) based upon an assessment of data on occurrence status, habitat, and threats. Begin implementing highest-priority management actions identified for willowy monardella in the MSP Rare Plant Management Plan and monitor effectiveness of implementation.

For details and the most up-to-date goals, objectives, and actions, go to the MSP Portal Willowy Monardella summary page: https://portal.sdmmp.com/view_species.php?taxaid=833060.

Willow Monardella References

- City of San Diego. 2009. "City of San Diego Rare Plant Monitoring Data 1999–2009."
<https://www.sandiego.gov/sites/default/files/legacy/planning/programs/mscp/pdf/monitor/monitoringsummary1999to2009.pdf>.
- City of San Diego. 2010. City of San Diego Rare Plant Monitoring Data.
- City of San Diego. 2011. City of San Diego Rare Plant Monitoring Data.
- City of San Diego. 2012. City of San Diego Rare Plant Monitoring Data.
- Elvin, M. A., and A. C. Sanders. 2003. A New Species of *Monardella* (Lamiaceae) from Baja California, Mexico, and Southern California, United States. *Novon* 13:425–432.
- Kelly, M., and C. Burrascano. 2007. Lopez Canyon Willow Monardella Project 2001 to July 2006. *Canyon News* 21:1–6.
- Royal Botanic Gardens, Kew. 2001. *Field Manual for Seed Collectors: Seed Collecting for the Millennium Seed Bank Project*, Royal Botanic Gardens, Kew.
- Scheid, G. A. 1985. *Habitat Characteristics of Willow Monardella, Monardella Linoides spp. Viminea, in San Diego County*. Rept. Submitted to Caltrans; San Diego State University.
- USFWS (U.S. Fish and Wildlife Service). 2011. Endangered and Threatened Wildlife and Plants: Revised Endangered Status, Revised Critical Habitat Designation, and Taxonomic Revision for *Monardella Linoides* Ssp. *Viminea*; Proposed Rule. In *Federal Register* 76:33880–921.
- USFWS. 2012a. Endangered and Threatened Wildlife and Plants: Revised Endangered Status, Revised Critical Habitat Designation, and Taxonomic Revision for *Monardella Linoides* Ssp. *Viminea*; Final Rule. In *Federal Register* 77:13394–447.

USFWS. 2012b. *Monardella Viminea (Willow Monardella): Five Year Review Short Form Summary*. Prepared by U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office.

Wall, M. 2009. *Seed Collection Guidelines for California Native Plant Species*. Prepared for Rancho Santa Ana Botanic Garden.