1.12 Orcutt's Spineflower (*Chorizanthe orcuttiana*) – Category SL

Management Units with Known Occurrences

Orcutt's spineflower occurs in sandy openings within 5 kilometers of the coast in maritime chaparral and Diegan coastal sage scrub plant communities in San Diego County (Bauder 2000; Lawson 2011). Within the MSPA on Conserved Lands, there are 2 occurrences of Orcutt's spineflower in MU7 and 2 known occurrences in MU6, with 1 potentially extant occurrence (see Table of Occurrences). The MU7 occurrence is small (<500 individuals) and is located at Torrey Pines State Reserve along Gully Trail. In MU6, 6 plants were last detected in 2005 at Oak Crest Park in Encinitas (Bauder and Sakrison 2010; Bauder, Sakrison, and Truesdale 2010) though none were detected in 2009. In 2015, surveys were performed in Sorrento Hills, Gonzales Canyon, and Crest Canyon (D. Hogan, pers. comm.). There were 125 plants detected in Sorrento Hills and 1,200 plants detected in Gonzales Canyon. The population is unknown in Crest Canyon. Orcutt's spineflower has long-lived seeds (Bauder, Sakrison, and Snapp-Cook 2010) so there may be a viable seed bank remaining in the soil that could result in reemergence of the Oakcrest Park occurrence under suitable growing conditions (T. Oberbauer, pers. comm.). Historically, Orcutt's spineflower was found at a second location at Torrey Pines State Reserve, but it has not been seen there since 1987 (Bauder 2000; USFWS 2007). Outside the MSPA, there are 3 locations of Orcutt's spineflower on Point Loma at the U.S. Naval Base (Bauder and Sakrison 2010; Bauder, Sakrison, and Truesdale 2010).

Management Categorization Rationale

Orcutt's spineflower 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). This species' entire range is within San Diego County and there is limited suitable habitat remaining. Only 1 small known occurrence and 1 potentially extant occurrence are found on Conserved Lands in the MSPA. The species is vulnerable due to its annual life cycle, low genetic diversity, and high risk of threats.

Threats to Orcutt's spineflower include invasive nonnative plants, an altered fire regime, overgrown native vegetation, irrigation runoff, and trampling (Bauder 2000; USFWS 2007; Bauder and Sakrison 2010; Bauder, Sakrison, and Truesdale

2010). A genetic study of the Point Loma occurrences found that there is fine-scale genetic heterogeneity within and among patches, while large-scale genetic variability is low (Bauder, Sakrison, and Truesdale 2010). The results indicate there is little gene flow among patches, and selfing rather than outcrossing is the dominant form of reproduction. Small, isolated occurrences with low genetic diversity are particularly vulnerable to inbreeding and extirpation from stochastic events and catastrophic disturbances.

Management and Monitoring Approach

The overarching goal for Orcutt's spineflower is to maintain or enhance existing occurrences and reestablish historical 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 bluff and coastal sage scrub communities.

Extensive studies and habitat management have been conducted at the 3 Orcutt's spineflower occurrences on U.S. Naval lands at Point Loma (Bauder 2000; Bauder and Sakrison 2010; Bauder, Sakrison, and Truesdale 2010), which can be used as a model for managing other occurrences with similar conditions on Conserved Lands. The Point Loma occurrences were limited in distribution and abundance by invasive nonnative ice plant (*Carpobrotus* spp.) and *Acacia* spp. shrubs. These 3 occurrences are in fairly close proximity and thought to represent one large historically contiguous occurrence (USFWS 2007). The occurrences expanded with the removal of these plants and the underlying duff (Bauder and Sakrison 2010; Bauder, Sakrison, and Truesdale 2010). Because Orcutt's spineflower seeds are believed to be long lived in soil seed banks, it is likely that the removal of nonnative ice plant and *Acacia* spp. shrubs in unoccupied suitable habitat resulted in germination of seeds remaining in the soil (Bauder, Sakrison, and Truesdale 2010). The U.S. Navy has begun collecting Orcutt's spineflower seed and storing it at Rancho Santa Ana Botanic Gardens following the Rancho Santa Ana Botanic Gardens seed collection guidelines (Wall 2009).

For the 2017–2021 planning cycle, the management and monitoring approach for Orcutt's spineflower is to:

(1) Conduct annual surveys of all Orcutt's spineflower occurrences on conserved lands (see Table of Occurrences) using the regional rare plant

IMG monitoring protocol to determine current status and collect covariate habitat and threats data to assess management needs.

(2) Conduct routine management actions as identified through the IMG monitoring at Orcutt's spineflower occurrences on Conserved Lands (see Table of Occurrences). Depending on the type and level of threat, management should only be conducted as needed, not necessarily every year, and using BMPs with precautions to do no harm.

(3) Continue efforts begun in 2015 to survey historical Orcutt's spineflower locations to determine current 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.

(4) Continue BMPs initiated in 2015 to establish 4 new occurrences of Orcutt's spineflower at sites in MUs 6 and/or 7 and maintain these occurrences through at least 2018.

(5) Prepare a section for Orcutt's spineflower in the MSP Seed Collection, Banking, and Bulking Plan to preserve genetic diversity and rescue occurrences in case of catastrophic disturbance. The plan should incorporate best science and management practices (Wall 2009; Royal Botanic Gardens, Kew 2016) and recommendations from the 2014 genetic study to provide guidance for collecting and storing seeds over the long term at a permanent, established conservation seed bank (e.g., Institute for Conservation Research Native Plant Seed Bank, Rancho Santa Ana Botanic Garden Seed Conservation Program) and for providing a source of seeds for management purposes. The plan should include recommendations for collecting and storing seeds for conservation banking; management-oriented research; rescuing occurrences after catastrophic disturbances; and seed bulking and outplanting to augment extant occurrences or to establish new occurrences with consideration of genetic implications for population sustainability. Begin implementing high-priority actions for Orcutt's spineflower 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 Orcutt's spineflower in the MSP Rare Plant Management Plan to maintain large occurrences (>1,000 plants) and expand ≥3 small occurrences on Conserved Lands (see Table of Occurrences) based upon an assessment of data on occurrence status, habitat, and threats. Minimum criteria for enhancement are to reduce invasive annual nonnative plants and thatch to ≤ 20% absolute cover within the occurrence's maximum occupied extent and a surrounding buffer area equal to 25% of this extent. Include recommendations from the MSP Seed Collection, Banking, and Bulking Plan, relevant BMPs, and for monitoring the effectiveness of management actions. Begin implementation of the highest-priority management actions for Orcutt's spineflower identified in the MSP Rare Plant Management Plan, and monitor the effectiveness of implementation.

For details and the most up-to-date goals, objectives, and actions, go to the MSP Portal Orcutt's Spineflower summary page: https://portal.sdmmp.com/view_species.php?taxaid=21019

Orcutt's Spineflower References

Bauder, E. T., and J. Sakrison. 2010. Chorizanthe orcuttiana (Orcutt's spineflower) Final Report (2010). Unpublished report prepared for Department of the Navy (Naval Facilities Engineering Command, Southwest) (contract #s N68711-04-LT-A0058; N68711-05-LTA0051).

Bauder, E. T., J. Sakrison, and J. Snapp-Cook. 2010. Chorizanthe orcuttiana (Orcutt's spineflower) Final Report (2010). Unpublished report prepared for Department of the Navy (Naval Facilities Engineering Command, Southwest) (contract # N68711-98-LT88010).

Bauder, E. T., J. Sakrison, and H. D. Truesdale. 2010. Chorizanthe orcuttiana (Orcutt's spineflower) Final Report (2010). Unpublished report prepared for Department of the Navy (Naval Facilities Engineering Command, Southwest) (contract # N68711-02-LT00041).

Bauder, Ellen. 2000. Recovery and Management of Orcutt's Spineflower (Chorizanthe orcuttiana) Final Report. Prepared for the California Department of Fish and Game.

Hogan, D. 2015. Email to Kris Preston on 5-8-15 reporting new populations of Orcutt's spineflower found during April 2015 surveys with link to KPBS radio feature on the survey results.

Lawson, D. M. 2011. Multi-species conservation in the context of global change. Unpublished Doctoral Dissertation submitted to University of California, Davis and San Diego State University. 132 pp.

Royal Botanic Gardens, Kew. 2001. *Field Manual for Seed Collectors: Seed Collecting for the Millennium Seed Bank Project, Royal Botanic Gardens, Kew*.

USFWS (U.S. Fish and Wildlife Service). 2007. *Chorizanthe orcuttiana (Orcutt's spineflower) Five Year Review: Summary and Evaluation*. Prepared by the U.S. Fish and Wildlife Service Carlsbad Fish and Wildlife Office.

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