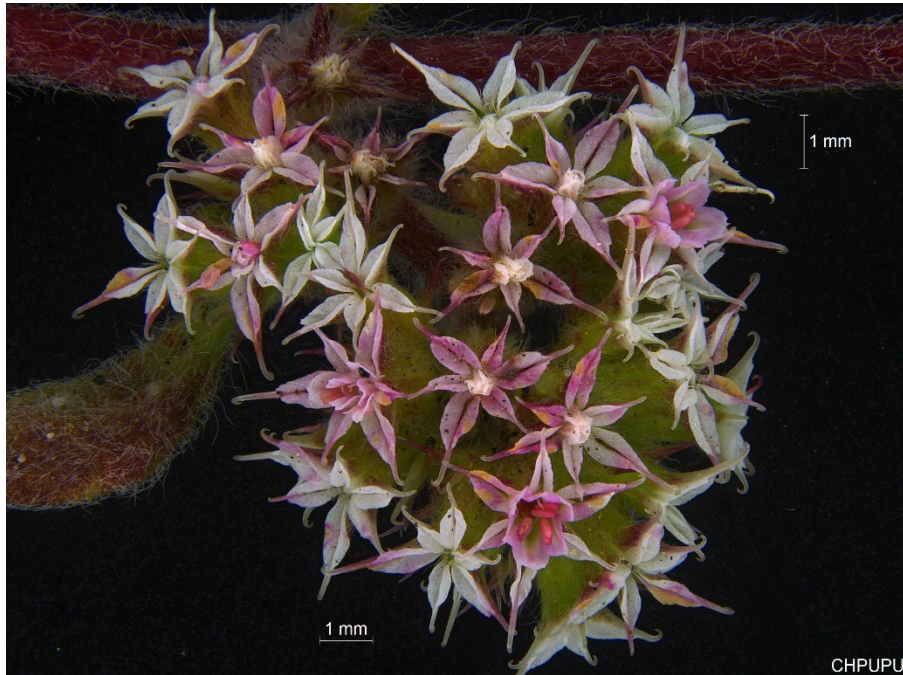


**Monterey spineflower (*Chorizanthe pungens* var. *pungens*)**

**5-Year Review:  
Summary and Evaluation**



CHPUPU  
Photo: Todd Lemein

**U.S. Fish and Wildlife Service  
Ventura Fish and Wildlife Office  
Ventura, California**

July 2024

## **GENERAL INFORMATION:**

**Species:** Monterey spineflower (*Chorizanthe pungens* var. *pungens*)

**Date listed:** 4 February 1994

**FR citation(s):** 59 FR 5499-5510

**Classification:** Threatened

### **Critical Habitat Designation**

We first designated critical habitat for Monterey spineflower in 2002 on 18,829 acres (ac) in Santa Cruz and Monterey counties (Service 2002, 67 FR 37498). The Homebuilders Association of Northern California challenged the final critical habitat rules in 2005. We designated final revised critical habitat in 2008 (Service 2008, 73 FR 1525), which resulted in a decrease of 7,774 ac to a total of 11,055 ac. The change in designated acreage was due to a revision of the primary constituent elements, reduction of included land under private ownership that had been developed, and removal of areas with soil types not known to support Monterey spineflower (Service 2008, 73 FR 1529). The 2008 final designation describes the primary constituent elements for Monterey spineflower as “a vegetation structure arranged in a mosaic with openings between the dominant elements (e.g., scrub, shrub, oak trees, or clumps of herbaceous vegetation) that changes in spatial position as a result of physical processes such as windblown sands and fire and that allows sunlight to reach the surface of the following sandy soils: coastal beaches, dune land, Baywood sand, Ben Lomond sandy loam, Elder sandy loam, Oceano loamy sand, Arnold loamy sand, Santa Ynez fine sandy loam, Arnold-Santa Ynez complex, Metz complex, and Metz loamy sand.” (Service 2008, 73 FR 1532).

### **State Listing:**

Not listed.

## **BACKGROUND:**

### **Species overview:**

Monterey spineflower (*Chorizanthe pungens* var. *pungens*) is a small annual plant, typically prostrate, that may form dense mats. Individual plants have spreading stems 2 to 6 inches long with clusters of generally dense flowers appearing white to pink. Plants are typically found in open areas between perennial vegetation where sandy soil limits competition from other plants. Monterey spineflower occurs in Santa Cruz and Monterey Counties.

### **Most recent status review:**

[Service] U.S. Fish and Wildlife Service. 2020. Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) 5-Year Review: Summary and Evaluation. Ventura, California. 16 pages.

We recommended no status change to Monterey spineflower in the 2020 5-Year review.

### **FR Notice citation announcing this status review:**

[Service] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews of 47 Species in California, Nevada, and Oregon. Federal Register 88:56042–56044.

## ASSESSMENT:

### Information acquired since the last status review:

The U.S. Fish and Wildlife Service's (Service) Ventura Fish and Wildlife Office (VFWO) conducted this 5-year review. We announced the review through a Federal Register notice on August 17, 2023 (84 FR 36116). We did not receive any information from the public in response to our Federal Register Notice announcing this 5-year review. We conducted a literature review, reviewed current restoration reports, conducted field visits, and coordinated with state and federal agencies. We received survey data since the 2020 5-year review from: (1) portions of the former Fort Ord where restoration, development, and unexploded ordnance removal is occurring (DDA 2024, USACE 2024a, USACE 2024b, USACE 2024c); (2) Naval Support Activity Monterey (NSA 2024a); and (3) Resource Conservation District of Monterey County (RCDMC 2023).

### Distribution and habitat:

Monterey spineflower occurs throughout southern Santa Cruz and northern Monterey Counties primarily in dune systems adjacent to Monterey Bay and in sandy openings in chaparral throughout the former Fort Ord. Monterey spineflower may also be found in areas characterized by grasses where competition is low. Low competition is maintained through periodic disturbances that create the open space needed for the species' establishment. Erosion, wind, and ocean-based transport of sand can result in rearrangement of dune morphology that create areas of low competition that facilitate Monterey spineflower establishment in coastal dune habitat. At inland sites in chaparral habitat, analogous openings in vegetation may be created by wildlife, fire, recreation, and development or maintenance of existing infrastructure. The majority of occurrences of Monterey spineflower are found north of Point Lobos, east to Salinas and Prunedale, and north into southern Santa Cruz County near Aptos. A northern outlier occurs east of Scotts Valley, and there is an extreme southern occurrence near San Simeon from an 1842 collection that is presumed extirpated. There are two historical inland occurrences in San Lucas and Soledad. The San Lucas occurrence is likely extirpated (CNDDDB 2024a, data) and the exact location of the Soledad occurrence is uncertain. However, Monterey spineflower was separately identified near Soledad on private land in 1994 and was still present, though diminished in size in 2013 (CNDDDB 2024a, data).

Monterey spineflower is an annual species in the buckwheat family (Polygonaceae). The species is typically prostrate with branching stems 2 to 6 inches. The inflorescence is characterized by pink to white margins of the involucre and perianth lobes. The inflorescence, stems, and leaves are hairy, and the stems and leaves are slightly succulent. Robust spineflower (*Chorizanthe robusta* var. *robusta*) and diffuse spineflower (*C. diffusa*) may co-occur with Monterey spineflower. Robust spineflower differs from Monterey spineflower by typically growing upright 10 to 60 cm (4 to 24 in) and having white involucre margins and perianth lobes. Diffuse spineflower may be differentiated from both Monterey spineflower and robust spineflower through a distinct yellow tinted inflorescence throat that contrasts with white involucre margins and perianth lobes. Additionally, the involucre margins of diffuse spineflower are wider and more rounded than either Monterey spineflower or robust spineflower (Reveal et al. 2022, website).

**Abundance:**

At the time of listing, we knew of Monterey spineflower occurrences in sand dunes along the coast between Manresa State Beach and the Monterey Peninsula, in Manzanita Park in the Prunedale Hills, throughout the former Fort Ord, and in historical collections from Soledad and San Simeon (Service 1994, 59 FR 5500). We estimated the population size to be approximately 2 million individuals across seven occurrences (Service 1998, p. iii). Between the time of listing in 1994 and the publication of the Recovery Plan in 1998, the number of occurrences had increased to 26 (Service 1998, pp. 66-67). By 2009, 29 occurrences had been described (Service 2009, pp. 5, 18). Currently, the California Natural Diversity Database (CNDDDB) lists 51 occurrences with no changes since the 2020 5-year review (CNDDDB 2024a, data). Unprocessed data from the CNDDDB online field survey form shows 11 submissions not currently in the CNDDDB (CNDDDB 2024b, data). Ten of these submissions are likely to provide updated information for existing occurrences and each show that the occurrences are extant. One submission may become a new occurrence at the northeastern range of the species in the Santa Cruz Mountains. Unpublished data from Caltrans suggests that the species may be more common in the eastern portion of its known range east of Prunedale (Caltrans 2004, data). These locations are also not represented in the CNDDDB. The available information suggests the species is more widespread than was known at listing.

We evaluated aerial imagery to estimate the number of occurrences that had apparent loss of habitat or an increase in fragmentation due to development or that appeared to have been severely degraded by land conversion in the 2020 5-year review (Table 1). A review of current imagery suggests there has been little change.

**Table 1.** Number of occurrences listed by level of estimated disturbance from low to high: (1) assumed present; (2) loss of habitat, increase in fragmentation; (3) land conversion, assumed absent. Based on data within the California Natural Diversity Database and clear changes in land use based on aerial photographs.

	Number of Occurrences	Percent
Assumed present	23	45
Loss of habitat, increase in fragmentation	19	37
Land conversion, assumed absent	9	18

Of the 51 CNDDDB occurrences, 21 (41 percent) occur on land that is owned and managed by an entity with conservation objectives (e.g. California State Parks, Elkhorn Slough Foundation, The Nature Conservancy, federal lands, and others). The remaining 30 occurrences (59 percent) occur on mostly private land.

Population data on each of the occurrences is sparse, and continuous data is only available for Naval Support Activity (NSA) Monterey and portions of the former Fort Ord. Data provided by NSA Monterey suggest an annually fluctuating population that can vary from less than 100

individuals to over 15,000 individuals (NSA 2024a, p. 6). Large fluctuations like this are likely natural due to annual variations in weather affecting seed set in any given year (Fox et al. 2006, pp. 166-169). The former Fort Ord military base in Monterey County is the largest occurrence of Monterey spineflower and encompasses two Critical Habitat Units; 3 (Marina), and 8 (Fort Ord). The Marina unit is characterized by coastal dune habitat, and the Fort Ord unit is characterized by maritime chaparral habitat. Remediation, closure, development, and restoration activities described in the U.S. Army Corps of Engineers' closure and reuse plan (USACE 1997, entire) and regulated by the Service's programmatic biological opinion (Service 2017, entire) are ongoing. Monitoring of Monterey spineflower currently occurs in response to ongoing remediation and restoration projects and is not comprehensive over the entire occurrence. Not all areas undergoing remediation and restoration are in the same year or phase of monitoring, making comparisons between units, within the occurrence, or between the entire Fort Ord occurrence and other occurrences difficult (for example, see USACE 2024a, entire). Areas that are being restored or monitored for Monterey spineflower presence are done so in response to ground disturbing projects. This means that the monitoring designs are designed to evaluate the effects of a given action on the locally occurring Monterey spineflower rather than to track population trends within the larger occurrence where the action occurs. Current reports suggest that restoration is generally meeting success criteria (USACE 2024a, pp. 176-179), although there are instances of Monterey spineflower declining compared to observations of reference sites increasing (USACE 2024b, pp. 5-6; 13-14). We cannot evaluate population trends with the current data from the former Fort Ord because it has not been designed for that purpose. For the remaining occurrences, data has been sparse since 1994, precluding the evaluation of population trends for those occurrences as well.

### **Threats:**

At the time of listing, we described habitat destruction due to residential and golf course development, agricultural land conversion, sand mining, military activities, encroachment by alien plant species, recreation, and dune stabilization projects as threats to the species (59 FR 5499, 5504). We recognized these same threats in the 1998 Recovery Plan, placing emphasis on the threat of iceplant (*Carpobrotus* spp.) invasion and dune stabilization (Service 1998, p. 22). Restoration programs were implemented on protected lands in dune habitat between the 1998 Recovery Plan and 2009 5-year review that reduced the severity of iceplant invasion and dune stabilization during that period.

The 2009 5-year review recognized development, agricultural land conversion, invasive species and habitat succession, sand mining, and recreation as the main threats to the Monterey spineflower (Service 2009, pp. 8-11). Development throughout the species' range had continued since listing and resulted in loss of habitat and increased habitat fragmentation (Service 2009, pp. 7-8). By 2009, military activities had largely ceased, and the former Fort Ord occurrences were subjected to disturbance from activities outlined in the closure and reuse plan, programmatic biological opinion, and draft habitat conservation plan (HCP) (USACE 1997, entire; Service 2017, entire; ICF 2019, entire; Service 2009, p.8). Although invasive species control had been implemented within some occurrences in dune habitat, in the 2009 5-year review we highlighted the lack of control of invasive species at inland sites as a growing threat to the species in openings of maritime chaparral. In the 2009 5-year review, we described impacts to Monterey spineflower habitat from European dune grass (*Ammophila arenaria*), jubata grass (*Cortaderia*

*jubata*), French broom (*Genista monspessulana*), wild oats (*Avena* spp.), and bromes (*Bromus* spp.) in addition to invasive species noted in the final listing rule for Monterey spineflower (Service 2009, pp. 10-11).

In the 2020 5-year review, we discussed the threats of development, agricultural land conversion, invasive species and habitat succession, sand mining, and recreation (Service 2020, entire). The review concluded that development as well as invasive species and habitat succession are the greatest threats to Monterey spineflower. The threat assessment in the 2020 5-year review remains current, with the exception that the potential benefit expected of the former Fort Ord HCP has been lost (Service 2020, pp. 9-11). The application for an HCP for the former Fort Ord was rescinded by the Fort Ord Reuse Authority in 2020. An HCP that included Monterey spineflower would have provided a coherent plan for minimization and mitigation, which will now be evaluated individually as projects arise. This reduces the chance that a unified plan for the recovery of the species on the former Fort Ord will be established. Development that negatively affects Monterey spineflower has continued outside of the former Fort Ord as well. There have been 17 formal consultations on development with a determination of “likely to adversely affect” the species (Service 2024, data). Impacts to Monterey spineflower were minimized or mitigated as part of the consultations, but the number of formal consultations demonstrates the continued developmental pressure on the species and its habitat. Additionally, there was a loss of habitat and individuals in dune habitat managed by the Navy where a contractor incorrectly cleared a path for boardwalk construction (NSA 2024a, pp. 5-6; NSA 2024b, pp. 3-8). The area is being restored, but this demonstrates that the species may be impacted by development even where impacts are not intended or expected. Development and invasive species remain the greatest threats to Monterey spineflower recovery.

#### **Evaluation of Recovery Criteria:**

The Recovery Plan for Seven Coastal Plants and the Myrtle’s Silverspot Butterfly (Service 1998, entire) includes recovery criteria for Monterey spineflower. The recovery plan provides generalized criteria for all plants with respect to delisting, as well as specific criteria for each plant species (Service 1998, pp. 90-94). We clarified the recovery criteria in 2019 to ensure that the delisting criteria are articulated clearly and consistently. The clarified criteria are:

1. The Fort Ord disposal and reuse process has led management agencies to develop, fund, and implement permanent protection plans for the species’ habitat (roughly 60 percent of Fort Ord) including permanent iceplant suppression programs.
2. Beach-dune occurrences on State Park and private lands throughout its current range from Santa Cruz to the Monterey Peninsula are covered under a permanent protection plan.
3. Populations in the protected areas are stable or increasing over a 15-year period, which will include wet and drought years.

#### *Evaluation of Recovery Criteria*

1. The Fort Ord Reuse Authority rescinded their application for a state incidental take permit and federal HCP in 2020. The 1997 Habitat Management Plan guides

development and use of the former Fort Ord in the absence of a permanent protection plan and projects are evaluated as they arise. As a result, there is no unified plan for the permanent protection, monitoring, or management of Monterey spineflower throughout the former Fort Ord.

2. A majority of beach dune occurrences occur on protected land (California State Parks), but there is no permanent or range-wide protection or monitoring plan.
3. There is no range wide monitoring program that has 15 years of data by which to evaluate population trends. Population data is sparse throughout the range, and areas that do have some amount of continuous data are usually smaller portions of large parcels, such as the former Fort Ord (Service 2020, p. 8). Data that have been collected within an occurrence, but not part of a monitoring plan designed to represent the entire occurrence, should not be used to evaluate the stability of Monterey spineflower throughout the whole occurrence.

The recovery criteria for Monterey spineflower have not been met. Permanent management and monitoring plans have not been created nor funded at either the former Fort Ord or on public and private dune habitat. Without a consistent monitoring plan, we lack the ability to characterize population trends throughout the range. The available information suggests that the species is more widespread than at listing, but because range-wide, continuous data are not available, we cannot evaluate whether the current known occurrences are increasing, decreasing, or stable. Development and invasive species remain primary threats to Monterey spineflower, while other threats such as sand mining, recreation, or military activities have decreased or are no longer relevant. Development has continued and is not expected to decrease. Invasive species programs are implemented on State Park lands and on the former Fort Ord as funding is available, but are not guaranteed into the future.

#### **Conclusion:**

After reviewing the best available scientific information, and the evaluation of threats affecting the species under the factors in 4(a)(1) of the Act, we conclude that Monterey spineflower (*Chorizanthe pungens* var. *pungens*) remains a threatened species because of persistent threats to populations primarily from development and invasive species. The recovery criteria have not been met and the lack of range wide and consistent population data inhibit the ability to evaluate population trends through time.

#### **RECOMMENDATIONS FOR FUTURE ACTIONS:**

In the 2020 5-year review, we recommended the following actions, which remain valid for this 5-year review:

- A range wide monitoring program should be created in order to evaluate occurrences of Monterey spineflower that are deemed essential to the recovery of the species.
- Monitoring of Monterey spineflower populations on California State Beaches and the former Fort Ord should begin with the goal of having continuous long-term monitoring that will meet the intent of the stated recovery criteria.

- Restoration and reintroduction should be attempted in coastal dune systems where past disturbance or invasive species have inhibited establishment of Monterey spineflower.
- The taxonomy of the varieties of *Chorizanthe pungens* and *Chorizanthe robusta* should be reevaluated to determine if revisions are necessary or warranted.
- The recovery criteria should be revisited to evaluate the importance of having protected populations in the interior north (Santa Cruz) and central (Prunedale Hills) portions of this taxon's range.

**Lead Field Supervisor, Fish and Wildlife Service**

**Approved** \_\_\_\_\_

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