Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*)

5-Year Review:
Summary and Evaluation

Photo: Neal Kramer

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

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GENERAL INFORMATION:

Species: Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*)
Date listed: June 22, 1992
FR citation(s): 57 FR 27848
Classification: Endangered

Critical Habitat Designation:

No critical habitat has been designated.

State Listing:

Listed as threatened by the State of California in 1987 (CNDDB 2025a, p. 11).

BACKGROUND:

Species overview:

Monterey gilia is an annual forb occurring in coastal dune systems along Monterey Bay and at inland locations within openings of maritime chaparral. Locations are characterized by sandy substrate and low amounts of competing vegetation. The general range of the species is bordered by Pebble Beach to the south, highway 68 to the east and Sunset State Beach to the north. The primary threats to the species are currently development and habitat conversion from non-native species and woody vegetation.

Most recent status review:

[Service] U.S. Fish and Wildlife Service. 2020. Monterey Gilia (*Gilia tenuiflora* ssp. *arenaria*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office. Ventura, CA. 15 pp.

We did not recommend a change to the status of Monterey gilia in the 2020 5-year review (Service 2020, pp. 12-13).

FR Notice citation announcing this status review:

[Service] U.S. Fish and Wildlife Service. 2024. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews of 59 Pacific Southwest Species. October 16, 2024.

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 October 16, 2024 (89 FR 83510). We also conducted a literature review and contacted local

botanists, consultants, land trusts, and private landowners. We received information regarding location and abundance from the California Department of Fish and Wildlife (CDFW), California State Parks, City of Marina, Bureau of Land Management, U.S. Army Corps of Engineers, University of California Santa Cruz, Fred Watson, and Denise Duffy and Associates.

Distribution and Habitat

Monterey gilia is known from coastal dune systems of dune scrub and coastal sage scrub, open areas within maritime chaparral along the southern portion of Monterey Bay, and inland throughout areas occupied by the former Fort Ord. Substrate is primarily composed of sand with some soil development and litter accumulation (Service 1998, pp. 38-39). Total vegetative cover is low where Monterey gilia occurs, reflecting an intolerance to competition with non-native invasive species or densely vegetated chaparral and scrub vegetation types (Service 2008, p. 10). Generally, the species may be found in areas where recent disturbance has reduced competing vegetation (e.g. dune blow out, fire in chaparral) or semi-persistent but low magnitude disturbance (e.g. windblown deposits in dunes, foot trails in chaparral) is present. Since listing, the known range has expanded inland throughout the former Fort Ord and examples of suspected overlap and intergrades with slender flowered gilia (*Gilia tenuiflora* ssp. *tenuiflora*), a closely related subspecies, have been observed in the eastern portions of the range (Service 2008, pp. 10-11).

Abundance

The Service has used California Natural Diversity Data Base (CNDDB) occurrences to describe locations of Monterey gilia since the recovery plan was published (Service 1998, p. 38). The CNDDB groups all mapped features of a species within 0.25 mile of each other as a single occurrence. As a result, occurrences may merge or split over time as new information expands or shrinks the spatial extent of known occurrences. This can make direct comparison across years difficult. In general, the number of known occurrences of Monterey gilia has increased since listing, largely due to surveys identifying new occurrences within the former Fort Ord (Service 2008, p. 8), surveys resulting from state and federal permitting processes, and citizen mapping. There were 23 occurrences listed in the 1998 recovery plan (Service 1998, pp. 72-74). Target abundance goals were estimated for 12 of those occurrences (Service 1998, p.92; Table 1). There are currently 29 occurrences of Monterey gilia in the CNDDB (CNDDB 2025b). Of these, four are considered extirpated and the remaining 25 occurrences are presumed extant.

Abundance data was provided by California State Parks, Naval Support Activity Monterey Dunes, City of Marina, and sections of the former Fort Ord where activities associated with the closure and reuse plan are ongoing (CSP 2024, DDA 2025a, DDA 2025b, Harris and Terracon 2024, Harris and Terracon 2025, NSA 2024, and Watson 2024). These data are used to populate known abundance in Table 1 for the most recent year that data are available.

The Recovery Plan provided target abundances for occurrences that were considered essential for recovery of the species in 1998 (Service 1998, p. 92). Table 1 lists those occurrences and the most recent abundance data available since the 2020 5-year review.

Table 1. CNDDB occurrences with target abundance estimates considered in the 1998 Recovery Plan. Current abundance estimates are based on monitoring reports or spatial data where available.

CNDDB Occurrence #	Site Name	Target Abundance	Abundance (Data Year)	Notes
1	Spanish Bay Golf Course	1,000	No Data	Occurs on private property. Nearby occurrence was extant in 2020.
2	Naval Postgraduate School	10,000 to 40,000	5,619 (2024)	Under management and monitoring for Monterey gilia and Monterey spineflower. 5,050 ft^2 lost due to boardwalk construction mistake (NSA 2024).
3	Tioga Avenue	20,000	1,200-1,300 (2016)	Threat of development. Presence has been observed nearly annually between 2017 and 2023 (Watson 2024).
4	Marina State Beach	1,000	55,627 (2024)	Annual monitoring by state parks (CSP 2024). This includes data from Marina State Beach and Fort Ord Dunes State Park which share CNDDB #4.
5	Salinas River State Beach	10,000	46,885 (2024)	Annual monitoring by state parks (CSP 2024).
20	Former Fort Ord	10,000 to 40,000	4,290 (2019, 2021)	Described as Fort Ord in Recovery plan but now occupies land owned by California State University Monterey Bay and Marina Municipal Airport. Mapped by Denise Duffy and Associates in 2019 and 2021 (DDA 2025a). Abundance data does not reflect comprehensive surveys throughout occurrence and combines data from two years.

Table 1. CNDDB occurrences with target abundance estimates considered in the 1998 Recovery Plan. Current abundance estimates are based on monitoring reports or spatial data where available.

CNDDB Occurrence #	Site Name	Target Abundance	Abundance (Data Year)	Notes
21	Former Fort Ord	1,000	15,363 (2023)	Mapped by Denise Duffy and Associates in 2023 (DDA 2025a).
23	Reservation/ Seaside	1,000	Extirpated	Former mitigation site that likely failed due to lack of maintenance. Not observed in 2020. Believed to be extirpated. Does not contain appropriate habitat.
27	South of Salinas NWR (Marina dunes in recovery plan)	1,000	No Data	Extant in 2020. Adjacent new observations may expand this occurrence (Watson 2024).
29	Mulligan Hill and Salinas River lagoon	1,000	No Data	Beach surveyed in 2020 with no individuals observed. May occur on adjacent private property.
30	Watertower Hill and Moss Landing	1,000	362 (2024)	Data represents results from State Beach monitoring west of the Old Salinas River (CSP 2024). No data for area defined by CNDDB.
31	Imjin Road	1,000	1,062 (2020) 816 (2021)	Mapped by Denise Duffy and Associates in 2020 and 2021 (DDA 2025a).

There are also restoration data from the projects associated with the closure and reuse plan within the former Fort Ord. However, these data include only those areas that have undergone restoration and are spatially and temporally distinct from one another. This means that the monitoring from those projects is designed to reflect the success of a particular restoration project and not for assessing trends in abundance across the entire occurrence. The data from those reports indicate a trend towards pre-disturbance conditions with annual stochastic variability similar to reference sites (Harris and Terracon 2025, pp. 16-17).

Threats

The threats to Monterey gilia have been described in the listing rule (Service 1992, 57 FR 27848), recovery plan (Service 1998, p. 40), 2008 5-year review (Service 2008, pp. 11-15), and 2020 5-year review (Service 2020, pp. 7-10). The current threats to Monterey gilia are:

1. Habitat loss from development;
2. Invasive plant species;
3. Habitat conversion to shrub dominated vegetation communities;
4. Effects of climate change (increasing variability in precipitation).

The evaluation of threats to Monterey gilia in the 2020 5-year review remain an accurate assessment (Service 2020, pp. 7-10). Notably, habitat loss from development remains an active and current threat as municipalities within Monterey County expand. The effects of development are loss of habitat, loss of individuals, and habitat fragmentation. Degradation of habitat (e.g. dumping, mowing) associated with development has resulted in unpermitted impacts to Monterey gilia. The California Department of Fish and Wildlife has issued 6 violations of take of Monterey gilia and issued 2 incidental take permits affecting Monterey gilia since 2020 (R. Kwan-Davis 2025 pers. com.). Development is expected to continue with associated negative impacts to Monterey gilia during the next 5-year period and beyond. The USFWS has issued 4 informal consultations, 3 formal consultations, and 1 emergency consultation that include Monterey gilia since 2020 (K. Sinclair 2025 pers. com.). Monterey gilia was included in the Fort Ord Multi-Species Habitat Conservation Plan before it was abandoned and has been included in the South of Tioga Ave Low Effect Habitat Conservation Plan.

Invasive plant species, habitat conversion to shrub dominated vegetation communities, and effects of climate change are also persistent threats. Invasive plants colonize open areas within coastal dune and chaparral habitat, outcompete Monterey gilia for light and water, and inhibit the natural processes that create open spaces where Monterey gilia grows. Invasion is typically greatest in areas where current land use promotes the introduction of nonnative seed, typically accidently by people or livestock. In natural areas where disturbance is low, Monterey gilia habitat may degrade over time as areas of open, sandy substrate become colonized by shrub dominated vegetation communities, typically composed of native vegetation. Like invasive species, the shrub dominated communities outcompete Monterey gilia for resources. Climate change is likely affecting precipitation patterns by increasing temporal variability in precipitation amounts such that expected historical patterns may no longer be considered “normal”. This may affect germination, survivorship, and reproductive output of Monterey gilia.

Evaluation of Recovery Criteria:

Recovery criteria for Monterey gilia were included in the “Recovery Plan for Seven Coastal Plants and the Myrtle’s Silverspot Butterfly” (Service 1998, entire). General criteria for all species covered in the Recovery Plan were (Service 1998, p. iii):

- Protection of habitat presently occupied by the species, with long-term commitments to conserving the species and the native vegetation.

- In protected habitat, successful control of invasive non-native plants (and snails) and successful management of lesser problems, including grazing, pedestrians, and off-road vehicles. Management success must be demonstrated through ten years of biological monitoring. The time is needed to observe the effectiveness of management in dry and wet years.

General downlisting criteria were established for all plants in the recovery plan (Service 1998, pp. 89-90). Monterey gilia was not individually listed under the heading "Downlisting Criteria for the Plants" alongside the other plants (Service 1998, p. 89). However, we assume that this omission was in error. We have evaluated the species status in relation to these criteria in previous status reviews and do so here. The downlisting criteria for Monterey gilia are:

1. Habitat occupied by the species that is needed to allow delisting has been secured, with long-term commitments and, if possible, endowments to fund conservation of the native vegetation.
2. Management measures are being implemented to address the threats of invasive species and other problems, including grazing, pedestrians, and off-road vehicles at some sites.
3. Monitoring reveals that management actions are successful in reducing threats of invasive non-native species.
4. Additional restored habitat has been secured, with evidence of either natural or artificial long-term establishment of additional populations, and long-term commitments (and endowments, where possible) to fund conservation of the native vegetation.

Delisting criteria were also developed for Monterey gilia to be considered once downlisting criteria have been met. Delisting criteria require that suitable habitat is protected with demonstrable reductions or control of threats, existing populations have been secured within the known range, and reintroductions in restored habitat have occurred. Successful reintroductions are those that have been demonstrated to be naturally reproducing with supporting habitat that is not excessively maintained or "gardened." Any evaluation of delisting must be based on 15 years of monitoring data in order to include above and below average precipitation years (Service 1998, p. 90). Specific delisting criteria can be summarized as (Service 1998, p. 92):

1. Habitat throughout the range is protected from encroachment of non-native species, recreational activity (including off-road vehicles and horses), and development;
2. Habitat has been restored to native vegetation at proper densities to allow natural colonization by this plant;
3. Habitat and occurrences are monitored sufficiently to assure that local threats are spotted promptly;
4. Abundance of Monterey gilia is high enough to ensure viability of the species with target abundance levels as described in Table 1.

Habitat for Monterey gilia is protected from development throughout much of the coastal range and the portions of the former Fort Ord that are managed by the Bureau of Land Management. However, many occurrences still occur on private land and are subject to development such as within Sand City and Marina. Additional habitat needs protection from development, particularly in those expanding municipalities, and associated management and monitoring. Existing

protected habitat also needs long term management and monitoring to determine whether habitat management and/or restoration is effective at reducing competition from invasive species and shrub encroachment, and whether management actions result in stable or increasing populations. California State Parks, Bureau of Land Management, U.S. Army Corps of Engineers, University of California Santa Cruz all have active management and monitoring programs that have been in progress for varying amounts of time with varying levels of success. Establishment of new populations, either with the goal of population expansion or resulting from off site mitigation requirements, have not been successful. Techniques to achieve this are necessary to offset habitat loss from development and to ensure the persistence of species throughout the historical range. The available data suggest the downlisting criteria have not been met. We do not assess delisting criteria because the downlisting criteria have not been met.

Conclusion:

The current threats to Monterey gilia are habitat loss from development, invasive plant species, habitat conversion to shrub dominated vegetation communities, and variability in precipitation associated with climate change (Service 2020, pp. 7-10). We find that Monterey gilia continues to be in danger of extinction throughout all of its range due to continued developmental pressure and instances of unpermitted take of the species, population abundance being below target goals, failed historical mitigation attempts and, thus, remains an endangered species.

RECOMMENDATIONS FOR FUTURE ACTIONS:

The following actions are recommended:

1. Reevaluate the current population distribution and target population goals to determine areas of high priority for conservation.

2. Establish and/or coordinate monitoring throughout the species' range to determine long term trends in abundance.

3. Identify areas in critical need of restoration and/or invasive species management.

4. Identify areas that could be used for mitigation to offset development or to expand populations into areas of suitable habitat within the species' historical range.

5. Introduce Monterey gilia into areas with suitable habitat that are already managed for conservation. Reintroduce Monterey gilia to habitat that has been restored. Monitor the abundance and habitat conditions at all introduction and reintroduction locations.

6. Establish *ex situ* seed banks for long term preservation of Monterey gilia.

7. Conduct genetic analyses and collect morphological data where overlap between closely related subspecies occur.

Lead Field Supervisor, Fish and Wildlife Service

Approved by

CATHERINE DARST Digitally signed by CATHERINE DARST
Date: 2025.07.28 15:17:17 -07'00'

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[CNDDB] California Natural Diversity Database. 2025b. Element occurrence reports of *Gilia tenuiflora* spp. *arenaria*. California Department of Fish and Game, Natural Heritage Division.

[CSP] California State Parks. 2024. Data from 2024 Annual Surveys. Provided as a geospatial file and spreadsheet. Transmitted to Todd Lemein October 2024.

[DDA] Denise Duffy and Associates. 2025a. Data from spatial surveys for the City of Marina ITP conducted between 2006 and 2023. Transmitted to Todd Lemein March 2025.

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Personal Communications

K. Sinclair. 2025 Email from Karen Sinclair to Todd Lemein regarding the number of informal and formal consultations issued by USFWS since 2020. July 22, 2025.

R. Kwan-Davis. 2025. Email from Ruby Kwan-Davis to Todd Lemein regarding the number of ITP and violations issued for Monterey gilia. July 15, 2025.