

**Vandenberg monkeyflower (*Diplacus vandenbergensis*)**

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



**Photo credit: Denise Knapp**

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

**February 2022**

## **5-YEAR REVIEW**

### **Vandenberg monkeyflower (*Diplacus vandenbergensis*)**

#### **GENERAL INFORMATION**

**Species:** Vandenberg monkeyflower (*Diplacus vandenbergensis*)

**FR citation:** 79 FR 50844-50854

**Date listed:** August 26, 2014

**Classification:** Endangered

#### **BACKGROUND**

**Most recent status review:**

The U.S. Fish and Wildlife Service (Service) has not completed any prior status reviews of Vandenberg monkeyflower.

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

Initiation of 5-Year Status Reviews of 66 species in California and Nevada. Notice of initiation of reviews; request for information (85 FR 4692-4694), January 27, 2020.

**Critical Habitat Designation:**

The Service designated critical habitat for Vandenberg monkeyflower in 2015 (80 FR 48142-48170).

**State Listing:**

The state of California has not listed Vandenberg monkeyflower under the California under the California Endangered Species Act (CESA).

**Recovery Plan:**

The Service has not yet completed a Recovery Plan for Vandenberg monkeyflower.

#### **ASSESSMENT**

**Methodology used to complete the review:**

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a 5-year review is to assess each listed species to evaluate whether or not the species' status has changed and it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The Service's Ventura Fish and Wildlife Office conducted a Species Status Assessment (SSA) for the Vandenberg monkeyflower (Service 2022), which it used to inform this 5-year review. The SSA represents our evaluation of the best available scientific information, including habitat and demographic needs and current and future condition of the species. Independent peer reviewers and partner representatives reviewed the SSA report.

### *Updated Information and Species Status*

Vandenberg monkeyflower is an herbaceous annual in the Phrymaceae (or lopseed) family. New information about the species, since it was listed in 2014 is included in the SSA report. This report provides a summary of the factors influencing viability of the species, its' current status, and potential future conditions of the species under two plausible scenarios.

Vandenberg monkeyflower is endemic to southwestern Santa Barbara County, California. Its distribution is edaphically tied to southeastern portion of the Burton Mesa landform, which is a generally wedge-shaped, consolidated dune sheet. The species is known from 31 occurrences grouped into three populations. Two of the 31 occurrences are likely extirpated. We now estimate the species range to be 5,177 hectares (12,791 acres). Vandenberg monkeyflower needs canopy openings in Burton Mesa maritime chaparral habitat, loose sandy soils derived from the Burton Mesa dune sheet, adequate annual precipitation, appropriately timed first seasonal rains, suitable temperature regimes, insect pollinators, and contiguous stands of Burton Mesa maritime chaparral habitat.

### *Threats*

When the species was listed in 2014, the primary threats to Vandenberg monkeyflower were habitat loss from development (including military, state, and residential); utility and pipeline maintenance, presence and expansion of invasive, non-native species; anthropogenic fire; recreation and other human activities; and climate change. All of these identified threats continue to affect the species. Since the time of listing, our understanding of the potential effects of future climate change has improved. We now expect increased temperatures, increased variation in precipitation with extended droughts, and increased non-native grasses to result from climate change. These climate change effects are expected to affect the species phenology, timing of life history transitions, survival and reproduction, and the quality of its' habitat.

### *Recovery Criteria*

A recovery plan for Vandenberg monkeyflower has not yet been prepared.

### *Synthesis*

Vandenberg monkeyflower has a relatively small geographic range with similar landscape features throughout, that are all tied to the Burton Mesa landform and distinct Burton Mesa maritime chaparral habitat. The main threats to Vandenberg monkeyflower have not changed since time of listing and include development, utility and pipeline maintenance, invasive species, anthropogenic fire, recreation and other human activities, and climate change. All these threats continue to act on the species and many of them do so in synergistic ways that create feedback loops that intensify the adverse effects, particularly non-native, invasive species and fire.

The available abundance data for occurrences indicate that the overall numbers of individuals counted are small. These range in the hundreds to few thousand. Small occurrences such as these have a high risk of extirpation because they are more vulnerable to stochastic events. Any loss of

occurrences results in reduced abundance at the population scale. The current threats, particularly widespread infestation of invasive veldt grass (*Ehrharta calycina*) and climate change effects associated with increased temperatures and severe drought are adversely affecting population resiliency. We expect threats, particularly those from nonnative, invasive species and climate change, to increase in the future and forecast that the resiliency of populations will likely be reduced in the near future under the two plausible scenarios evaluated in the SSA. Such reduced population resiliency will likely lead to extirpations, which will then further reduce redundancy and representation for the species and increasing overall extinction risk.

## CONCLUSION

The evaluation of threats affecting the species under the factors in 4(a)(1) of the Endangered Species Act and current understanding of distribution and abundance were conducted using the best available scientific information in the SSA (Service 2022). With consideration of the species' limited geographic distribution and range, and the identified threats, we conclude that Vandenberg monkeyflower still meets the definition of an endangered species. Therefore, we recommend no status change at this time.

## RESULTS

### Recommended Classification:

- Downlist to Threatened**
- Uplist to Endangered**
  - Delist** (*Indicate reasons for delisting per 50 CFR 424.11*):
    - Extinction*
    - Recovery*
    - Original data for classification in error*
- No change is needed**

## RECOMMENDATIONS FOR FUTURE ACTIONS

1. Collect seed to increase the amount contained in the *ex situ* conservation seed bank collection established for the species.
2. Develop and implement an efficient, consistent, and comprehensive annual Vandenberg monkeyflower monitoring plan in coordination with the Service that will be used to monitor each of the three populations. The plan will streamline monitoring activities to ensure uniform data collection methods and techniques across populations to yield statistically significant results, suitable for trend analyses, and includes annual abundance censuses and mapping of occupied areas.
3. Research and conduct experimental invasive weed management treatments to determine the most effective approaches to address veldt grass infestations.

4. Develop and implement site-specific management plans designed to ameliorate threats at each population in coordination with the Service. The management plans should include invasive weed treatments and eradication strategies, other vegetation management actions intended to create and maintain open spaces within Burton Mesa maritime chaparral stands, and other activities to promote conservation and recovery of the species and its' habitat.
5. Research the species reproductive biology to evaluate seed viability, pollination system, phenology and seed production, and optimal ecological factors that favor Vandenberg monkeyflower growth and population expansion.
6. Conduct experimental outplanting research to determine the most effective methods and techniques to augment existing populations and establish new Vandenberg monkeyflower populations in areas that may provide climate change refugia for species and aid in recovery.

**FIELD OFFICE APPROVAL:**

**Field Supervisor, Ventura Fish and Wildlife Office**

Approve \_\_\_\_\_ Date 3/4/2022  
Acting for Stephen P. Henry, Field Supervisor

**REFERENCES**

[Service] U.S. Fish and Wildlife Service. 2022. Species Status Assessment for the Vandenberg monkeyflower (*Diplacus vandenbergensis*). Version 1.0. August 2022. Ventura, California.