

CEANOTHUS OPHIOCHILUS
(VAIL LAKE CEANOTHUS)

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



Vail Lake ceanothus and habitat
Photo by U.S. Fish and Wildlife Service 2024

U.S. Fish and Wildlife Service
Palm Springs and Southern Nevada Fish and Wildlife Office
Palm Springs, California

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5-YEAR REVIEW

Ceanothus ophiochilus (Vail Lake ceanothus)

GENERAL INFORMATION

Species: Vail Lake ceanothus (*Ceanothus ophiochilus*), a plant species

Date listed under the Endangered Species Act: October 13, 1998 (Service 1998)

Classification: Threatened

Recovery Plan: We have not prepared a recovery plan for this species.

Recovery Priority Number: 8C (Species with a moderate degree of threat, high recovery potential, and in conflict with development)

Critical Habitat Designation: We have not designated critical habitat for this species.

State of California classification: Endangered (CNDDDB 2025, p. 5)

BACKGROUND

Under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), the U.S. Fish and Wildlife Service (Service), referred to as “we” in this document, maintain lists of endangered and threatened wildlife and plant species (referred to as the List) in the Code of Federal Regulations (CFR) at 50 CFR 17.11 (for wildlife) and 17.12 (for plants). Section 4(c)(2)(A) of the Act requires us to review each listed species' status at least once every 5 years.

Most Recent Status Review: Service 2020. Vail Lake ceanothus (*Ceanothus ophiochilus*) 5-year Review: Summary and Evaluation. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. 19 pp.

Federal Register Notice Announcing this Status Review: On October 16, 2024, we published a Federal Register notice announcing initiation of this 5-year review and the opening of a 60-day comment period to receive information (Service 2024, p. 83513). We also conducted outreach to support recovery planning for this species. In response to both outreach efforts, we received comments from the Western Riverside County Regional Conservation Authority, the U.S. Forest Service, and the California Department of Fish and Wildlife.

REVIEW ANALYSIS

Species Overview and Habitat: Vail Lake ceanothus is an evergreen shrub species in the buckthorn family (Rhamnaceae). This species grows in chaparral habitat and is known from three occurrences in southwestern Riverside County, California (Figure 1).

SUMMARY OF NEW INFORMATION SINCE 2020

Element occurrence (EO) 2 (Figure 1) was confirmed as “present” in 2022 (Biological Monitoring Program 2024, pp. 23–24) and during a 2024 site visit (Crawford 2024, pers. obs.), but no other species-specific surveys or studies have been conducted since our last 5-year review. We consider EOs 1 and 3 presumed extant (presumed present) (Service 2013, p. 40).

In 2013, threats to the species included development, fire and fire management, hybridization and introgression, and climate change. In 2020, we summarized new climate change information and the reduced threat of development at EO 1 but concluded that our 2013 5-factor analysis remained accurate (Service 2020, pp. 2–4). We have no new information about species' threats.

While Vail Lake ceanothus has not been studied since 2020, studies of other California ceanothus have provided information about related species. For example, Zailaa *et al.* (2025, pp. 14–15) reported that *Ceanothus* species in subgenus *Cerastes*¹ had greater water storage capacity compared to other *Ceanothus* species due to specialized leaf anatomy. For a related species (*Ceanothus perplexans*), Backus *et al.* (2023, pp. 7–10) modeled abundance under future climate and fire frequency scenarios.

Regional-level ecosystem assessments and conservation strategies for southern California can also support Vail Lake ceanothus conservation. For example, Rojas *et al.* (2021, pp. 7–10) identified areas in southern California that may function as refugia from future stressors. Preston *et al.* (2022, pp. 43–45, 68–69) assessed the condition of species and ecosystems of the western San Diego County regional preserve system, including other federally-listed shrub species and chaparral ecosystems. Finally, Hennessy *et al.* (2024, pp. 81–113, Appendix B) developed a conservation strategy for southern California montane forests, with strategies and tactics for community engagement, stressor reduction, landscape connectivity and ecosystem functioning.

CONCLUSION

Vail Lake ceanothus remains extant or presumed extant at three occurrences in southwestern Riverside County. Our 2013 and 2020 5-year reviews remain accurate assessments of the species' status and threats. We conclude that Vail Lake ceanothus remains a federally threatened species and recommend no status change.

¹ Species in this subgenus different from other *Ceanothus* because they (1) have thicker leaves; (2) have corky appendages at the base of their leaves (stipules); and (3) are post-fire obligate seeders, meaning that seeds need fire to germinate (Burge *et al.* 2015, p. 950; Keeley *et al.* 2024, p. 6).

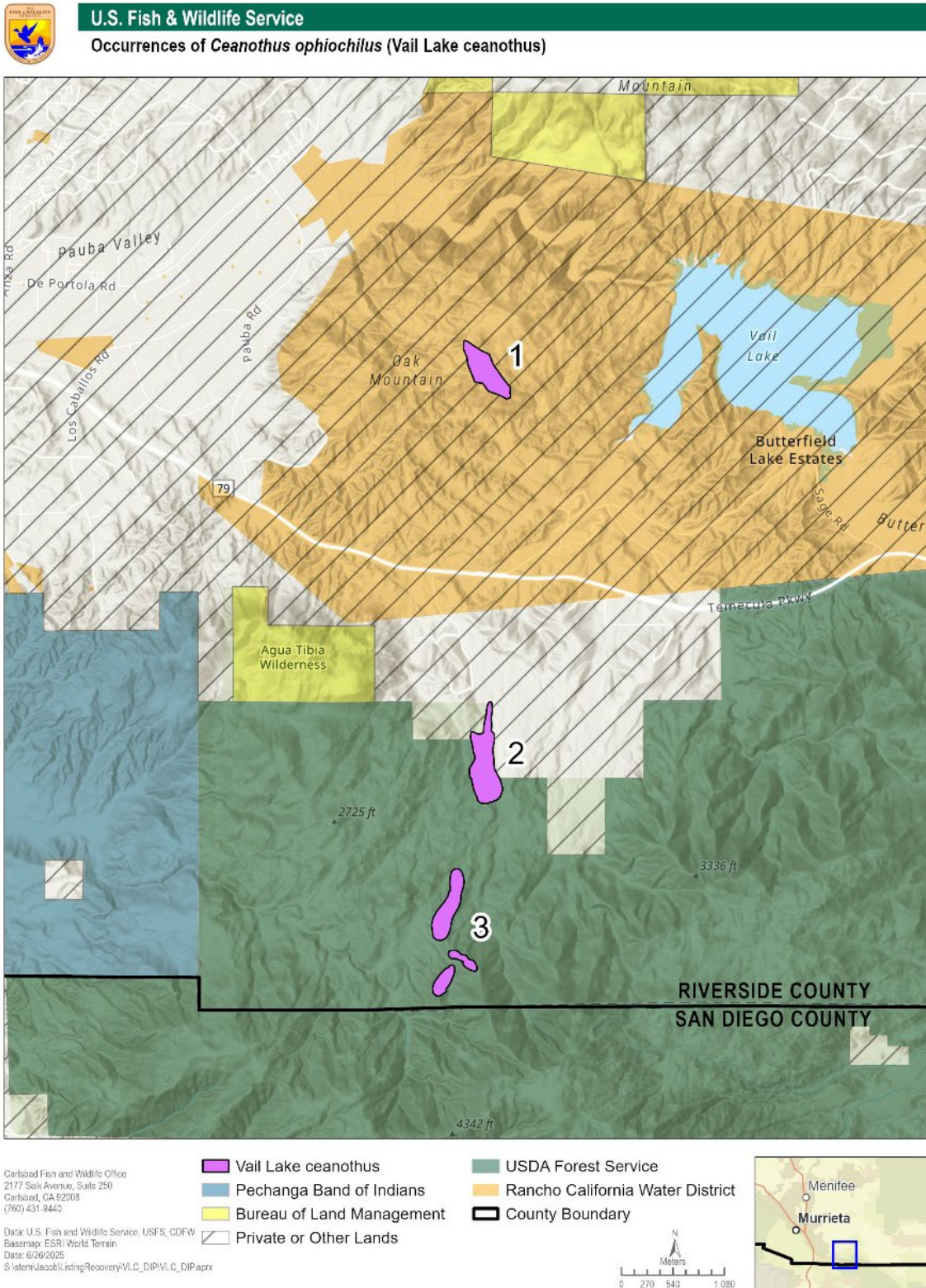


Figure 1. Current distribution of the three vail lake ceanothus occurrences in Riverside County, California.

RECOMMENDATIONS FOR FUTURE ACTIONS

We recommend that the following actions be completed over the next 5 years to enhance Vail Lake ceanothus habitat and manage threats, in cooperation with partners:

1. Conserve and manage occupied or suitable habitat. Work with local, State, and Federal partners to acquire habitat from willing sellers or to establish conservation easements. Identify and leverage funding (for example, section 6).
2. Minimize nonnative plant introductions. As needed, treat nonnative plant species that have a high risk of becoming invasive.
3. Conserve genetic diversity in Vail Lake ceanothus.
 - a. Study population genomics to assess genetic diversity within occurrences and gene flow among occurrences. Sample putative hybrids to determine the current level and extent of hybridization of Vail Lake ceanothus with *C. crassifolius*. Recommend genetic management strategies if needed (for example, Ottewell *et al.* 2016, entire).
 - b. Conserve genetic diversity off-site by collecting and conserving seed in conservation seed banks. If needed, use other methods of plant tissue preservation and propagation.
4. Survey potential suitable habitat for additional Vail Lake ceanothus occurrences or extensions of known occurrences. Map the extent of putative hybrid plants.
5. Model habitat suitability and abundance under projected climate scenarios to assess species' long-term population viability (for example, Backus *et al.* 2023, entire).
 - a. Evaluate climate change adaptation frameworks (e.g., Resist-Accept-Direct, Resist-Accommodate-Transform, and others) to develop potential management strategies.
 - b. Evaluate suitable habitat for potential conservation translocation efforts to establish new occurrences of Vail Lake ceanothus.

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Personal Observations

Crawford, M. 2024. Fish And Wildlife Biologist, U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office. Personal observation of Vail Lake *ceanothus* at EO 2, March 7, 2024.

FIELD OFFICE APPROVAL

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