

Staff Summary for October 13-16, 2026

10. Veiny Monardella**Today's Item****Information** ☐**Action** ☒

Consider and potentially act on the petition, the Department's evaluation report, and comments received to determine whether listing veiny monardella (*Monardella venosa*) as threatened or endangered under the California Endangered Species Act (CESA) may be warranted.

Summary of Previous/Future Actions

- | | |
|---|----------------------------|
| • Received petition | August 29, 2025 |
| • Transmitted petition to Department | September 8, 2025 |
| • Approved Department's request for 30-day extension | December 10-11, 2025 |
| • Received Department's petition evaluation report | July 9, 2026 |
| • Today potentially determine petitioned action may be warranted | October 13-16, 2026 |

Background

On August 29, 2025, the Commission received a petition from John C. Hunter, Ph.D. to list veiny monardella as endangered (Exhibit 1).

Veiny monardella is an annual plant in the mint family, restricted to clay or clay-rich soils in grasslands and oak woodlands. It is found in the Chico and Yuba City areas of Butte County, as well as a disjunct population in Tuolumne County, with four documented occurrences, only two of which are extant.

California Fish and Game Code Section 2073.5 requires that the Department evaluate the petition and submit a written evaluation with a recommendation to the Commission; the Commission publicly received the Department's evaluation report (exhibits 2 and 3) at its August 2026 meeting. The evaluation report delineates each of the categories of information required for a petition, evaluates the sufficiency of the available scientific information for each of the required components, and incorporates additional relevant information that the Department possessed or received during the review period. Based on the information contained in the petition and other relevant information, the Department concludes that there is sufficient information to indicate the petitioned action may be warranted.

At today's meeting, the Commission will receive a presentation on the Department's petition evaluation, receive a presentation from the petitioner, and hold a public hearing to receive testimony. After public comment, the commission may reach a decision on whether listing may be warranted, close the public hearing and continue the meeting on the petition for the purpose of deliberation, or continue both the public hearing and the meeting on the petition to a subsequent date.

If the Commission determines the listing may be warranted pursuant to Section 2074.2 of the California Fish and Game Code, the Department will undertake a one-year status review before the Commission can make a final decision on listing. The Commission's listing regulation and CESA require that the petition contain specific scientific information related to

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the status of the species. Under CESA and case law interpreting it, the Commission must accept a petition when the petition contains sufficient information to lead a reasonable person to conclude there is a substantial possibility that the requested listing could occur. The requested listing is tied to the species' status, that is, whether the species' continued existence is in serious danger or is threatened by a number of factors, and in no way relates to economic consequences that might result from listing.

If the Commission determines the petitioned action may be warranted, veiny monardella will become a candidate species for listing - as either threatened or endangered - pursuant to Fish and Game Code Section 2074.2. Candidate species are protected during the remainder of the listing process pursuant to Fish and Game Code Section 2085.

Significant Public Comments (N/A)

Recommendation

Commission staff: Determine that listing veiny monardella may be warranted; direct staff to issue a notice reflecting this finding and indicating that veiny monardella is a candidate species for listing as endangered.

Department: Accept the petition for further consideration under CESA.

Exhibits

1. [Petition, received August 29, 2025.](#)
2. [Department memo, received July 9, 2026](#)
3. [Department petition evaluation report, dated June 2026](#)
4. [Department presentation](#)

Motion

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the California Fish and Game Code, finds that the petition to list veiny monardella (*Monardella venosa*) as an endangered species does provide sufficient information to indicate that the petitioned action may be warranted based on the information in the record before the Commission, and directs staff to issue a notice reflecting this finding and indicating that veiny monardella is a candidate for endangered species status.

OR

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the California Fish and Game Code, finds that the petition to list veiny monardella (*Monardella venosa*) as an endangered species does not provide sufficient information to indicate that the petitioned action may be warranted based on the information in the record before the Commission.

Notice of Petition

For action pursuant to Section 670.1, Title 14, California Code of Regulations and Division 3, Chapter 1.5, Article 2 of the California Fish and Game Code (Sections 2070 et seq.) relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED

Veiny monardella (*Monardella venosa*)

II. RECOMMENDED ACTION

Listing as endangered

This petition is to list the veiny monardella (*Monardella venosa*) as endangered pursuant to the California Endangered Species Act (California Fish and Game Code Sections 2050 et seq.: CESA). This petition demonstrates that the veiny monardella is eligible for and warrants listing under CESA based on the factors specified in the statute and its implementing regulations. A species is an “endangered species” when it is “in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease” (California Fish and Game Code Section 2062).

The attached information supporting this petition provides sufficient information to demonstrate that the listing of veiny monardella as an endangered species under CESA clearly may be warranted; i.e., the amount of information presented would lead a reasonable person to conclude that there is a substantial possibility that listing could occur.

I respectfully request the Department of Fish and Wildlife and the Fish and Game Commission make such recommendations and findings pursuant to their respective authorities (California Fish and Game Code Sections 2073.5 and 2074.2).

III. AUTHOR OF PETITION

John C. Hunter, Ph.D.

I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature:



Date: August 29, 2025

Supporting Information for Veiny Monardella (*Monardella venosa*) Petition to the California Fish and Game Commission

Prepared by John C. Hunter, Ph.D.

August 29, 2025

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Executive Summary

This document provides the scientific information required by California Fish and Game Code Section 2072.3 to demonstrate that adding veiny monardella (*Monardella venosa*) to the list of endangered species under the California Endangered Species Act (CESA) may be warranted.

Population Trend. Veiny monardella is believed to have declined substantially because of loss and degradation of occupied habitat, but its current population is not known.

Range. The range of veiny monardella encompasses approximately 4,578 square kilometers (1,767 square miles) at 60–410 meters (195–1,345 feet) in elevation in Butte, Sutter, Tuolumne, and Yuba counties.

Distribution. Veiny monardella has four documented occurrences (occupied sites) in the California Natural Diversity Database (CNDDDB), and two of these occurrences have likely been extirpated.

Abundance. For both occurrences that are presumed extant in the CNDDDB, numbers of plants have been estimated and range from 2,500 to nearly 500,000 plants. The area of occupied habitat can also be a useful indicator of abundance and it is estimated to be less than 20 hectares (48 acres).¹

Life History. Veiny monardella is an annual plant in the Lamiaceae (the mint family).

Kind of Habitat Necessary for Survival. Veiny monardella grows in grassland and woodland vegetation typically on clay-rich soils.

Factors Affecting the Ability to Survive and Reproduce. Seven different threats to occurrences have been identified. The primary threats are from agricultural and developed land uses, invasive plants, and climate change.

Degree and Immediacy of Threat. Without protective measures, there is a moderate to high likelihood that veiny monardella will be extirpated from much of its range or become extinct because:

- Ongoing threats have eliminated or impacted all occurrences, both remaining occurrences are threatened, and the severity of some threats is increasing.
- The species is known from just four sites, and only two occurrences remain, which increases its vulnerability to extirpation or extinction from random events and human actions.
- Both sites occupied by veiny monardella are unprotected and not managed for its conservation, which leaves the species highly vulnerable to extirpation at these sites.

Impact of Existing Management Efforts. To date, management of veiny monardella has been very limited. Some research has been conducted on its ecology, but it has no legal protections that mandate contributions to its recovery or full mitigation of impacts, its occurrences are not being monitored, and none of its known occupied habitat has been preserved and managed for the species conservation.

Suggestions for Future Management. Suggestions for future management include listing veiny monardella as endangered under CESA and conserving its remaining occurrences. Twelve suggestions are provided for future management actions.

References and a **detailed distribution map** are also provided.

¹ Estimate is the sum of the mapped area of occurrences not likely to be extirpated, all of which are “specific” occurrences with precisely mapped locations. This is an overestimate.

The scientific information in the following sections demonstrates that adding veiny monardella (*Monardella venosa*) to the list of endangered species under the California Endangered Species Act (CESA) may be warranted.

Based on much of the same information, NatureServe, in collaboration with the California Department of Fish and Wildlife (CDFW) and the California Native Plant Society (CNPS), has concluded that veiny monardella is critically imperiled. Similarly, CNPS, in collaboration with CDFW, has concluded that it is rare or endangered and seriously threatened (CNPS 2025; CDFW 2024a).

NatureServe defines “Critically Imperiled” (Global Conservation Status 1 [G1]) as being at a very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (NatureServe 2012a). NatureServe designates species as G1 based on a score calculated from variables whose values are determined in collaboration with CDFW and CNPS (NatureServe 2012b).

CNPS and CDFW define the rank of “rare or endangered” (California Rare Plant Rank [CRPR] 1B) as plant species which are rare, threatened, or endangered in California and elsewhere (CNPS 2024, CDFW 2024a). These plant species are rare throughout their range, with the majority, like veiny monardella, also being endemic to California. Most of the plant species that are CRPR 1B have declined significantly over the last century. CNPS has concluded that a subset of CRPR 1B plant species (rank 1B.1) is “seriously threatened in California” (the highest level of threat) because over 80 percent of their occurrences are threatened or the species otherwise has a high degree and immediacy of threat (CNPS 2024). CNPS uses staff botanists and a committee of agency, academic, other professional, and amateur botanists to assign and periodically reevaluate these rankings in collaboration with CDFW. Please note that CDFW identifies all CRPR 1B species as taxa that may meet the requirements for CESA listing (CDFW 2024a).

To make their conclusions, CNPS and NatureServe use the best available scientific information regarding population trend, range, distribution, abundance, life history, habitat, threats, and management efforts, much of which CDFW has compiled in the California Natural Diversity Database (CNDDB) (CDFW 2024b).

To provide sufficient scientific information to support this petition, a summary of the relevant information compiled, maintained, and distributed by CDFW, CNPS, and NatureServe is provided below; this information is augmented by information from:

- Datasets developed and maintained by the California Consortium of Herbaria (CCH), California Governor’s Office of Land Use and Climate Innovation, California Invasive Plant Council (Cal-IPC), and Natural Resource Conservation Service (NRCS), GreenInfo Network (GIN), and U.S. Geological Survey (USGS)
- Aerial imagery
- Scientific and other technical literature

Information regarding each topic required by California Fish and Game Code Section 2072.3 is provided in a separate section below in the same order as in the code.

A. Population Trend

Information available from the CNDDDB (CDFW 2024b), land cover mapping (USGS 2021), and aerial imagery (Google Earth 2025) indicates that veiny monardella has had a decreasing population trend because of loss and degradation of occupied habitat at three or more of the four sites where the species has been observed (occurrences or occupied sites).^{2,3} However, its current population trend is not known.

CNDDDB records that indicate a decrease include:

- Two occurrences where the species is considered possibly extirpated (Occurrences 1 and 3). Both these sites are partially or almost entirely in agricultural or developed land cover.

Land cover mapping that indicates a decrease includes:

- One occurrence where the species is likely extirpated (Occurrence 3). This is an imprecisely located (nonspecific) occurrence with 96 percent of its mapped area in agricultural or developed land cover and where the species has not been observed since 1879. (In the CNDDDB, this occurrence is considered possibly extirpated.)

Aerial imagery that indicates a decrease includes:

- One precisely located (specific) occurrence where a graded feature extends into its mapped area (Occurrence 4). (In the CNDDDB, this occurrence is presumed to be extant.)

Furthermore, extensive, range-wide historical and ongoing human-caused changes to grasslands and woodlands (which provide habitat for veiny monardella) suggest that the species may have had additional, undocumented habitat losses, population reductions, or both. These human-caused changes not only include conversion of natural lands to agricultural and developed land and disturbance by a dramatically increased human population, but also the introduction of livestock and invasive plant species (Burcham 1957, Minnich 2008). Most of these changes occurred before the distribution of veiny monardella was well documented and thus their impacts are undocumented.

² An occurrence (also referred to as an element occurrence) is a specific location where a plant included in the CNDDDB (a plant element) has been known to occur, and that has practical conservation value. In general, any location with an observation of the plant will be turned into an occurrence since the location a plant is found is also where reproduction and important life history events take place (CDFW 2020).

³ USGS land cover mapping is more recent than most information in the CNDDDB and is described further in Section G, “Factors Affecting the Ability to Survive and Reproduce (Threats).”

B. Range

Veiny monardella is a California endemic of the northern and central Sierra Nevada Foothills (Sanders et al. 2012). Its range comprises approximately 4,578 square kilometers (1,767 square miles) at 60–410 meters (195–1,345 feet) in elevation in Butte, Sutter, Tuolumne, and Yuba counties (CDFW 2024b, CNPS 2025).⁴

As calculated, this range is comparable to the “extent of occurrence” (EOO) that is used by the International Union for the Conservation of Nature (IUCN) as an indicator of extinction risk (IUCN 2024, Bachman et al. 2011).⁵ The rationale for using EOO as an indicator of extinction risk is that many human-caused threats and natural events are more likely to cause similar effects at sites that are closer together than those further apart.

C. Distribution

Veiny monardella is known from four sites that were documented between 1854 and 1935 (CDFW 2024b). The species has a disjunct distribution with three occurrences in the northern portion of its range, between Marysville and Chico, and the fourth occurrence near New Mellones Dam in Tuolumne County. Of these occurrences, two (Occurrences 1 and 3) are “nonspecific” occurrences, whose locations were not precisely recorded when they were documented in the nineteenth century, and both of these occurrences have since been extirpated (CDFW 2024b). The remaining occurrences are near the southern end of Neal Road in Butte County in the north (Occurrence 5) and near New Mellones Dam in Tuolumne County in the south (Occurrence 4).

Because no additional occurrences of *veiny monardella* have been found during the past 90 years, and the species’ range is not in an isolated area, there may be few or possibly even no extant, undocumented occurrences. Any undocumented occurrences would likely be exposed to similar threats as documented sites because most grasslands and woodlands that may provide habitat for *veiny monardella* are exposed to similar threats. Also, like most documented occurrences, undocumented occurrences would likely be unprotected, because most grasslands and woodlands in the range of *veiny monardella* are unprotected and to date botanical surveys have been more extensive on protected than unprotected lands.

The species’ distribution is mapped in Section L, “Detailed Distribution Map.”

D. Abundance

The number of *veiny monardella* plants has been counted for both the Butte County and Tuolumne County occurrences (CDFW 2024b). At the Tuolumne County occurrence, approximately 2,500 plants were observed in 1998 (CDFW 2024b). At the Butte County occurrence, more than 3,000

⁴ The extent of the species’ range was calculated as the minimum convex polygon encompassing all occurrences documented in the CNDDb, including extirpated occurrences and occurrences with nonspecific locations.

⁵ The IUCN consists of approximately 1,400 governmental and non-governmental organizations from more than 170 countries.

plants were seen in 1992 (CDFW 2024b), and throughout the 1990s, several thousand plants were observed (Castro unpublished data, cited in Hanson 2012). More recently, in 2023, the number of plants was estimated to be nearly 500,000 (Green 2025). The dramatic difference in the number of plants observed at this site in the 1990s and 2023 likely reflects both differences in numbers of plants and in the observers and the basis of their estimates.

In general, the size of plant populations is difficult to estimate because of seasonal and interannual fluctuations in numbers, challenges in distinguishing one individual from another, and the vast size differences among individuals.

In contrast, area of occupied habitat is less problematic to estimate and is a useful indicator of abundance. The mapped area of CNDDDB occurrences represents the maximum extent of occupied habitat because (1) it encompasses all occupied habitat that has been documented, and (2) only a portion of it is occupied.⁶ Both sites occupied by veiny monardella are mapped as “specific” occurrences, which have precisely mapped locations (CDFW 2024b). They are approximately 2 hectares and 18 hectares (5 acres and 43 acres) in size with a combined area of approximately 20 hectares (48 acres).

As calculated, area of occupied habitat is similar to “area of occupancy” (AOO) that is used by the IUCN as an indicator of extinction risk (IUCN 2024).⁷ The rationale for using AOO as an indicator of extinction risk is that species occupying more or larger areas are less likely to have all occupied areas affected by a specific threat than a species occupying fewer, smaller areas. Also, there is a generally positive relationship between AOO and population size.

E. Life History

This section provides the species’ nomenclature, a description of its morphology, and a summary of available, relevant information on its reproduction and growth.

Nomenclature and Taxonomy

The Jepson eFlora currently recognizes *Monardella venosa* (Torr.) A.C. Sanders & Elvin as the scientific name of veiny monardella and *Monardella douglasii* Benth. subsp. *venosa* (Torr.) Jokerst, *Monardella candicans* Benth. var. *venosa* Torr., *Monardella douglasii* var. *venosa* (Torr.) Jeps., and *Monardella douglasii* var. *parryi* Jeps. as synonyms for it (Jepson Flora Project 2024).

⁶ There are both ecological and methodological reasons why the species does not occupy the entire mapped area of an occurrence. Species only occupy areas to which their seed disperse and that are suitable for germination, growth, and survival, and for rare species such areas may account for only a small portion of an “occupied” site. Also, in the CNDDDB, even specific occurrences include areas that are unsuitable as habitat. For example, many specific occurrences are point locations buffered by 80 m (262 ft), and the resulting 2-hectare (5-acre) area is usually much larger than the area occupied by the species. Furthermore, occupied sites documented in the CNDDDB often have not been visited by a botanist for more than 10 or 20 years (or even longer), and during that time interval, habitat loss may have occurred.

⁷ IUCN guidelines are to calculate AOO using presence in cells of a grid of 4 kilometer² (1.5 mile²) cells, which is a coarser scale than used here (IUCN 2024).

Species Description

Veiny monardella is in the Lamiaceae (the mint family). Below is a description of its morphology based on the treatment of the taxa and the mint family in the Jepson eFlora (Sanders et al. 2012, Wilken and Wetherwax. 2013).

- Habit—veiny monardella is an annual herb that can be either branched or unbranched. The plant is dotted with glands and has a characteristic scent
- Stem—the stems are stout, measuring 15–40 centimeters (cm) (6–16 inches) in height.
- Leaf—the leaves are arranged oppositely along the stem and are petioled (having a leaf stalk). The leaves range from 1.5 to 5.0 cm (0.6–2.0 inches) in length and are linear-oblong to lanceolate or oblanceolate in shape. The leaves are hairy, giving them a slightly rough texture.
- Inflorescence—the flowers are arranged in compact clusters that are 2.0–3.0 cm (0.8–1.2 inches) wide. Each flower cluster is subtended by bracts that are widely ovate (egg-shaped) and purple in color. These bracts measure 1.5–3.0 cm (0.6–1.2 inches) in length. The veins of the bracts are slender, and the areas between the veins are transparent to translucent. Hairs between the veins are sparse or absent, contributing to the smooth appearance of the bracts.
- Flower—the flowers have a five-lobed calyx and a weakly bilateral corolla. The upper lip of the corolla is erect and two-lobed, while the lower lip is recurved and three-lobed. The corolla is purple, hairy, and measures 1.1–1.2 cm (0.43–0.47 inches) in length. There are four stamens, which are epipetalous (attached to the petals) and exserted (extending beyond the corolla). The ovary is superior (positioned above the point of attachment of other floral parts), four-lobed to the base, with two chambers. Each chamber contains two ovules. The style is single and unequally two-lobed at the tip.
- Fruit—the fruit consists of four nutlets, a common characteristic of the mint family. These nutlets develop after the flowers have been pollinated and are the plant's primary means of seed dispersal.

Reproduction and Growth

As noted above, veiny monardella is an annual plant. It germinates following fall rains and blooms during May–July (CNPS 2025). Veiny monardella is capable of self-pollination but cross-pollination by insects results in greater reproductive output (i.e., more seeds) (Hanson 2012). Its dispersal mechanisms have not been documented, however, the morphology of its fruit and seeds suggests that dispersal is primarily by gravity and thus mainly over short distances. The predation and persistence of its seed in the soil have not been documented.

F. Kind of Habitat Necessary for Survival

Grasslands and oak woodlands provide habitat for veiny monardella (CNPS 2025). In these vegetation types, it grows on clay or clay-rich soils.

At the Butte County site, the species has been described as growing on dark grey, deeply cracking, clay soil (CDFW 2024b). That description of the soil corresponds well to Carhart clay, an extensive soil at that site (University of California Davis et al. No Date). At the Tuolumne County site, the species has been described as growing on a flat area with a grey-black vertisol (a clay-rich soil that shrinks and swells with changes to its water content and develops cracks when dry) (CDFW 2024b). This area may be a small inclusion of a distinct soil because none of the major soils mapped at this site are vertisols (University of California Davis et al. No Date).

At the Butte County and Tuolumne County sites, a large number of species have been reported as co-occurring with veiny monardella including wild oats (*Avena* species), yellow star-thistle (*Centaurea solstitialis*), common spikeweed (*Centromadia pungens*), medusahead (*Elymus caput-medusae*), blue wild-rye (*Elymus glaucus*), rye grass (*Festuca perennis*), cut-leaved crane's bill (*Geranium dissectum*), hogwallow starfish (*Hesperervax caulescens*), California barley (*Hordeum brachyantherum* subsp. *californicum*), rough cat's-ear (*Hypochaeris radicata*), Tehama navarretia (*Navarretia heterandra*), and Kellogg's yampah (*Perideridia kelloggii*) (CCH 2024, CDFW 2024b, Green 2025, Hanson 2012).

At the Butte County site, nonnative forbs and grasses accounted for most of the species and cover of vegetation in quadrats containing veiny monardella, and forbs accounted for much more cover than grasses (Hanson 2012).

G. Factors Affecting the Ability to Survive and Reproduce (Threats)

This section describes the factors (threats) resulting from human actions that have been, or likely will be, substantially reducing the survival and reproduction of veiny monardella, primarily by degrading or eliminating occupied habitat.⁸ Prominent range-wide threats include conversion of habitat to agricultural or developed uses, climate change, and the spread of invasive species. Each of these threats is described in a separate section below. They are not, however, the only threats affecting veiny monardella. Botanists have also observed other threats at specific sites (CDFW 2024b). In the CNDDB, botanists have reported five different threats affecting occurrences:

- Agriculture—elimination of habitat or other adverse impacts due to agricultural development or agriculture-related activities (one occurrence)

⁸ Numerous factors affect the ability of a plant to reproduce, grow, and survive, including interactions with pollinators, dispersal agents, seed predators, diseases, herbivores, and fungal symbiotes; availability of habitats with suitable conditions and sufficient resources; and events such as fires that can cause mortality but also provide opportunities for establishment and growth. This section focuses on those factors resulting from human actions that have been, or likely will be, substantially reducing reproduction and survival.

- Dam/inundation—elimination or alteration of habitat due to the construction of a dam or berm (one occurrence)
- Development—construction of houses, businesses, and other developed land uses (one occurrence)
- Grazing—incompatible grazing by livestock (two occurrences)
- Mining—degradation of habitat by mining activities (one occurrence)

Each of the two occurrences that in the CNDDDB are presumed to be extant are affected by three of these threats (CDFW 2024b).

When considering these data, it is important to acknowledge that the CNDDDB does not fully document the threats affecting occurrences. First, threat observations have not been provided for every documented occurrence; for example, the only documentation for some sites is the label of an herbarium specimen with little or no site information. Second, threat observations are not necessarily comprehensive and are not based on a systematic assessment. Third, many CNDDDB records are now decades old: although veiny monardella’s Butte County occurrence was last observed in 2023, for its Tuolumne County occurrence, the most recent site information in the CNDDDB is from 1998. Therefore, threats are likely underreported in CNDDDB records and may have changed at some occurrences, particularly unprotected ones, since they were last visited.

Agricultural and Developed Land Uses

Expansion of agricultural and developed land uses presents a major threat to veiny monardella, not only because these land uses have been directly eliminating habitat, but also because they have been fragmenting and increasing threats to the remaining habitat. In fact, many types of threats listed in the CNDDDB are caused primarily by nearby agricultural and developed land uses (e.g., biocides, erosion/runoff, and vandalism/dumping). Occurrences fragmented by (and those near) agricultural and developed land uses are likely being impacted through any of several mechanisms (Collinge 2009, Honnay et al. 2005, Aquilar et al. 2019, Hansen et al. 2005, Ramalho et al. 2014).

Agriculture and development have impacted at least two of the four sites where veiny monardella has been observed and has been considered a threat to at least one other occurrence. One occurrence of veiny monardella that is now considered “possibly extirpated” in the CNDDDB was located at a site that has been almost entirely converted to agricultural and developed land uses (Table 1) (CDFW 2024b, USGS 2021). The Tuolumne County occurrence (Occurrence 4) has been impacted by what appears to be an airstrip for small planes constructed between 1998 and 2003 (Google Earth 2025). This graded feature ends within the mapped area of the occurrence, but it is not classified as development in the National Land Cover Database (USGS 2021). Development also has been recorded as a threat to the occurrence in Butte County (Occurrence 5). This site has an agricultural zoning designation, but it is near a road and an area with industrial zoning, and in the past, it has been considered for a wastewater treatment facility (CDFW 2024b, California Governor’s Office of Land Use and Climate Innovation 2025).

Historically, agricultural and developed land uses also may have had impacts on veiny monardella that are not documented in the CNDDDB because extensive conversion of natural vegetation to agricultural and developed uses occurred before and during the period when the distribution of veiny monardella was documented, and thus the impacts of that land cover conversion would be largely undocumented.

Table 1. Loss and Degradation of Habitat Occupied by Veiny Monardella Caused by Agricultural and Developed Land Uses

Agricultural-Developed Land ¹			
Occurrence Precision / CNDDDB No. ²	Percentage of Occurrence Area (%) ³	Within 100 m of Occupied Habitat?	Notes
<i>Specific</i>			
4	—	N	Graded linear feature within mapped area of occurrence
5	—	N	Development a threat in the CNDDDB; considered for inundation for wastewater treatment
<i>Nonspecific</i>			
1	8	U	“Possibly Extirpated” in the CNDDDB
3	96	U	“Possibly Extirpated” in the CNDDDB

Sources: CDFW 2024b, Google 2025, USGS 2021

Key: CNDDDB = California Natural Diversity Database, m = meters, N = no, No. = number, U = unknown

Notes:

¹ – Based on the 2021 National Land Cover Database (USGS 2021), which was developed from 2016 imagery.

² – CNDDDB occurrence numbers are not necessarily sequential.

³ – Most mapping of CNDDDB occurrences predates 2016, and thus, does not account for recent changes in land cover within occurrence boundaries. When mapped, specific occurrences contain little or no agricultural or developed land uses, the primary exception being roads. When mapped, nonspecific occurrences often include agricultural or developed land uses because nonspecific occurrences do not represent the precise location of occupied habitat, but rather a larger area within which the location of occupied habitat is only imprecisely known.

Climate Change

Climate change directly and indirectly threatens veiny monardella by altering growing conditions, water availability, and frequency and intensity of disturbances, and by altering interactions of the plant with pollinators, dispersers, fungal symbionts, seed predators, herbivores, and competitors.⁹ These consequences of climate change may also magnify the impacts of other threats.

The magnitude of climate change impacts on veiny monardella is uncertain but may be substantial, particularly because of the species’ rarity, habitat specificity, and distribution in just two relatively small and isolated areas that will be exposed to dramatic changes. Veiny monardella’s vulnerability to climate change has not been directly assessed.¹⁰ However, in a state-wide assessment of the vulnerability of vegetation to climate change, Thorne et al. (2016) concluded that the vegetation types providing habitat for veiny monardella have moderate to moderate-high

⁹ The CNDDDB does not include climate change in its standardized list of types of threats, and therefore, in the CNDDDB, climate change is not identified as a threat to any species.

¹⁰ “Vulnerability” to climate change is a product of exposure and sensitivity to changes in climate.

vulnerability to climate change.¹¹ Furthermore, in an analysis of California’s endemics, Loarie et al. (2008) predicted that under some scenarios climate change will reduce the number of endemic plant species growing in what is currently the range of veiny monardella.

Invasive Species

In the CNDDDB, invasive plant species are not identified as a threat to occurrences of veiny monardella (CDFW 2024b). However, invasive species are a significant, range-wide threat.

Invasive species, such as medusahead (*Elymus caput-medusae*) and yellow star-thistle (*Centaurea solstitialis*), already co-occur with and impact veiny monardella (CCH 2024, CDFW 2024b). An experiment by Hanson (2012) conducted on the Butte County occurrence demonstrated these on-going impacts. In this experiment, pairs of plots were located in areas with veiny monardella and in one of these plots, all nonnative species were removed. In nonnative removal plots, veiny monardella had approximately three times the seed production of plots with the nonnative species.

Furthermore, dozens of invasive species that substantially impact ecosystem processes and vegetation are spreading in the range of veiny monardella in the vegetation types that provide its habitat (Cal-IPC 2025).¹² Not only can infestations of these invasive species extirpate veiny monardella from sites by their direct effects on conditions or resources, but also by reducing its population size and thus making veiny monardella more vulnerable to extirpation from other causes (Seabloom et al. 2006, Gilbert and Levine 2013).

H. Degree and Immediacy of Threat

Without additional management actions, there is a moderate to high likelihood that veiny monardella will be extirpated from much of its range or become extinct because:

- Ongoing threats have already eliminated or impacted at least three of the four occurrences of veiny monardella, most occurrences are threatened, and the severity of some threats is increasing.
- The species is presumed extant at only two of the four documented sites, which increases its vulnerability to extirpation or extinction from random events and human actions.
- Although a portion of one occurrence (Occurrence 4) has partial protection from some threats, neither site occupied by veiny monardella is preserved and managed for

¹¹ Habitat types recorded in the CNPS Rare Plant Inventory are categories in the Holland vegetation classification and were matched to the corresponding categories in Thorne et al. 2016 using Holland 1986 and Sawyer et al. 2009, Appendix 3, The National Vegetation Classification Hierarchy as Applied to California Vegetation. “Moderate-high” vulnerability is used as a synonym of “mid-high” vulnerability in Thorne et al. 2016.

¹² The Cal-IPC Invasive Plant Inventory (Cal-IPC 2025) was reviewed for invasive plants in the same Jepson subregion(s) where veiny monardella occurs with a “high” or “moderate” impact rating that affect general vegetation types that may provide habitat for veiny monardella.

conservation of this species, which leaves the species highly vulnerable to extirpation at these sites.

Each of these three reasons is described further in a separate section below.

Ongoing and Increasing Threats

As described previously and reported in the CNDDDB, multiple threats have been affecting most veiny monardella occurrences. These threats have already eliminated or degraded habitat at three of the four known occurrences:

- Two occurrences are classified as possibly extirpated in the CNDDDB (Occurrences 1 and 3) and the mapped area of one of these occurrences (Occurrence 3) is almost entirely in developed or agricultural land cover (CDFW 2024b, USGS 2021).
- Construction of an airstrip has eliminated natural vegetation and recontoured a portion of the mapped area of one of the two occurrences that in the CNDDDB are presumed to be extant (Occurrence 4).

Also, the viability of both occurrences that are presumed extant in the CNDDDB may have been reduced by invasive plants and climate change.

In sum, three of the four known occurrences of veiny monardella have already been eliminated or substantially degraded by the threats described in Section G, “Factors Affecting Ability to Survive and Reproduce (Threats),” and some of these threats are still impacting both remaining occurrences of veiny monardella.¹³ Furthermore, impacts from climate change and invasive species are likely to increase.

Small Number and Size of Occupied Sites

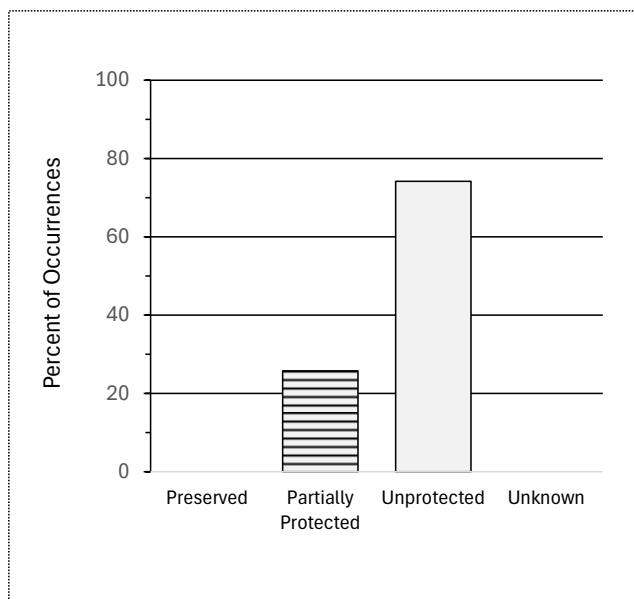
Species existing at small numbers of sites that are small in area or have few individuals are more vulnerable to extinction than species with more extensive distributions or larger population sizes. The smaller the number of occupied sites the greater the consequences for the species of site-specific random events or human actions. Also, occupied sites that are smaller in area or have fewer individuals are more vulnerable to extirpation by random events and human actions (Matthies et al. 2004, Vörös et al. 2025).

As described previously, veiny monardella has a restricted distribution of only two extant occurrences, one of which (Occurrence 4) occupies a relatively small area (2 hectares [5 acres]). (See Section D, “Abundance.”) Therefore, veiny monardella is highly vulnerable to extinction from site-specific random events and human actions.

¹³ Occurrences are considered substantially degraded if a specific occurrence and a portion of its mapped area is in agricultural or developed land cover.

Lack of Protection and Management

No occurrence of veiny monardella has been preserved. Figure 1 displays the percentages of presumed extant occurrences that are preserved, partially protected (i.e., on public lands managed for multiple uses), unprotected, and have unknown protection status.¹⁴ A portion of the Tuolumne County occurrence (Occurrence 4), which is near New Mellones Dam, is on land managed by the U.S. Bureau of Reclamation. Although this land is not managed for the conservation of its biodiversity, it is partially protected from some threats (e.g., conversion of habitat to developed land cover). The remainder of this occurrence and the Butte County occurrence (Occurrence 5) are unprotected (CDFW 2024b, GIN 2024a, b; Figure 1). At unprotected sites (and at partially protected sites), ongoing threats are rarely addressed and management actions to conserve species are rarely implemented. Consequently, unprotected occurrences of veiny monardella are highly vulnerable to extirpation, and because most of the mapped area of the two occurrences of veiny monardella is unprotected, the species is highly vulnerable to extinction.



Source: CDFW 2024b, GIN 2024a, b

Figure 1. Protection of Occurrences Presumed Extant

I. Impact of Existing Management Efforts

To date, management of veiny monardella has been very limited, has not sufficiently addressed the threats described in Section G, “Factors Affecting the Ability to Survive and Reproduce (Threats),” and consequently has not resulted in significant conservation of the species. Below, this management is summarized by general type of action: legal protection, preservation and seed banking, management and monitoring, restoration, and surveys and research.

¹⁴ This is based on USGS Gap Analysis Project (GAP) codes for conservation status as mapped by GIN with “preserved” corresponding to GAP Codes 1 and 2 (areas permanently protected from conversion of natural land cover and managed for biodiversity), “partially protected” corresponding to GAP Code 3 (areas permanently protected from conversion of natural land cover but managed for multiple uses, which may include resource extraction), and “unprotected” corresponding to GAP Code 4 (GIN 2024a, b; USGS No Date). Specific occurrences mapped in two status categories were proportionally assigned to both categories. Nonspecific occurrences were considered to have unknown status unless their entire mapped area was in only one status category. Occurrences that are likely extirpated were not included.

Legal Protection

Veiny monardella has no legal protections that mandate avoidance or full mitigation of impacts, consultations with regulatory agencies, or contributions to the species' recovery. It is not listed under CESA or the federal Endangered Species Act. It also is not covered by any natural community conservation plans (NCCPs) or habitat conservation plans (HCPs).

However, because CDFW has designated veiny monardella a CRPR 1B.1 species, it should be treated as a special-status species during environmental review under the California Environmental Quality Act (CEQA) (i.e., as a species that may meet the requirements for CESA listing [CDFW 2024a]). Although CEQA requires lead agencies to adopt feasible avoidance, minimization, and mitigation measures to reduce impacts of nonexempt projects, it does not require that impacts on special-status species be avoided, fully mitigated, or even reduced to a less-than-significant level (if impacts are considered significant and unavoidable).

Preservation and Seed Banking

No occurrences of veiny monardella have been preserved. However, a portion of one occurrence is on land managed by the U.S. Bureau of Reclamation and thus is partially protected (i.e., GAP Code 3) (GIN 2024a, b).

Seeds of veiny monardella have been collected and placed in long-term storage at California/Rancho Santa Ana Botanic Garden and at University of California Botanical Garden at Berkeley (CNPS 2025).

Management and Monitoring

As described above, neither occurrence of veiny monardella is on land that is managed for biodiversity. However, a portion of Occurrence 4 at New Mellones Dam in Tuolumne County is on land managed by the U.S. Bureau of Reclamation for multiple uses (CDFW 2024b, GIN 2024a, b). On land managed for multiple uses, managers often seek to maintain habitats and routinely implement measures to avoid and minimize impacts to them.

Managers also frequently monitor habitats or even species to guide their actions. Although Occurrence 5 has not been monitored by the landowner, botanists have monitored this occurrence in multiple years (Hanson 2012, CDFW2024b). Occurrence 4, however, has not been monitored by the U.S. Bureau of Reclamation (CDFW 2024b).¹⁵

Restoration

Efforts have not been made to restore or create habitat occupied by veiny monardella.¹⁶

¹⁵ Based on a review of publicly available information.

¹⁶ Based on a review of publicly available information.

Surveys and Research

Surveys have been conducted to confirm the continued existence of Occurrence 5 in Butte County but not Occurrence 4 in Tuolumne County, which has not been surveyed by a botanist during the past 20 years (CDFW 2024b, CNPS 2025).

Some research has been conducted on the species' pollination, interactions with other species, and its habitat requirements (Hanson 2012), but not on other aspects of its ecology or on its genetic diversity.¹⁷ Understanding of the species' ecology is based on a combination of this research, observations by botanists, and understanding of the ecology of related and similar species.

J. Suggestions for Future Management

Successful conservation of veiny monardella requires additional legal protection, preservation and seed banking, management and monitoring, restoration, and surveys and research. Suggestions for each of these general types of management actions are provided below.

Legal Protection

- List the species under CESA and prepare a recovery plan pursuant to California Fish and Game Code Section 2079.1.
- Include veiny monardella as a focal species in any regional conservation investment strategy (RCIS) and as a covered species in any NCCP developed within its range.

Preservation and Seed Banking

- Preserve occupied sites in perpetuity.

Management and Monitoring

- Develop and implement site-specific management plans for ensuring the long-term viability of veiny monardella populations. These plans should include practices for monitoring, criteria for evaluating management, and potential management actions.
- Manage extant populations to prevent the spread of invasive species and to eradicate existing infestations.
- Implement grazing practices that are compatible with or contribute to persistence of veiny monardella.
- Coordinate and share information among organizations working to conserve veiny monardella, including CDFW and CNPS.
- Coordinate with and support private landowners implementing conservation practices in occupied habitat (e.g., invasive plant removal).

¹⁷ Based on a review of publicly available information.

Restoration

- Establish additional populations at sites with suitable habitat, with a preference given to sites that will be provided with long-term protection and targeted monitoring and management of the species.

Surveys and Research

- Conduct surveys to improve data on distribution and abundance and to search potentially suitable habitat for additional, undocumented populations of veiny monardella.
- Document genetic diversity in and among the two occurrences to inform conservation.
- Investigate the species' population ecology to inform conservation and management (e.g., its seedbank dynamics).

K. Availability and Sources of Information

This document is based on available sources of information (i.e., publications and publicly distributed data) and communications with experts. This section provides a reference for each of these sources of information.

References

- Aguilar, R., E. J. Cristóbal-Pérez, F. J. Balvino-Olvera, M. de Jesús Aguilar-Aguilar, N. Aguirre-Acosta, L. Ashworth, J. A. Lobo, S. Martén-Rodríguez, E. J. Fuchs, G. Sanchez-Montoya, and G. Bernardello. 2019. Habitat fragmentation reduces plant progeny quality: a global synthesis. *Ecology Letters* 22:1163–1173.
- Bachman, S., J. Moat, A. W. Hill, J. de la Torre, and B. Scott. 2011. Supporting Red List threat assessments with GeoCAT: geospatial conservation assessment tool. *ZooKeys* 150:117–126.
- Burcham, L. T. 1957. *California Range Land: An Historico-Ecological Study of the Range Resource of California*. Division of Forestry, Department of Natural Resources, State of California, Sacramento, California.
- California Consortium of Herbaria (CCH). 2024. CCH2: *Specimen Data from the Consortium of California Herbaria*. Available at: <https://cch2.org/portal>. Accessed 6 September 2024.
- California Department of Fish and Wildlife (CDFW). 2020. *California Natural Diversity Database (CNDDB) Management Framework*. Sacramento, California. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=181808&inline>. Accessed 29 August 2024.
- . 2024a. *Special Vascular Plants, Bryophytes, and Lichens List*. October. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline>. Accessed 11 November 2024.
- . 2024b. *California Natural Diversity Database*. Version 5.3.0. Sacramento, California. Accessed 30 August 2024.

- California Governor's Office of Land Use and Climate Innovation. 2025. *California Statewide Zoning North*. Available at: <https://data.ca.gov/dataset/california-statewide-zoning-north>. Accessed 16 February 2025.
- California Invasive Plant Council (Cal-IPC). 2025. *The Cal-IPC Inventory*. Available at: <https://www.cal-ipc.org/plants/inventory/>. Accessed 5 August 2025.
- California Native Plant Society (CNPS). 2024. *Rare Plant Inventory Glossary*. Available at: <https://rareplants.cnps.org/Home/Glossary>. Accessed 22 March 2024.
- . 2025. *Rare Plant Inventory. Version 9.5: Taxon details Monardella venosa veiny monardella*. Rare Plant Program, Sacramento, California. Available at: <https://www.rareplants.cnps.org>. Accessed 17 August 2025.
- Collinge, S. K. 2009. *Ecology of Fragmented Landscapes*. Johns Hopkins Press, Baltimore, Maryland.
- Gilbert, B. and J. M. Levine. 2013. Plant invasions and extinction debts. *Proceedings of the National Academy of Sciences* 110 (5):1744–1749.
- Google Earth Pro 7.3.6.01201 (64-bit) (Google Earth) 2025. *Aerials of Yosemite Junction, California and surrounding area from 1998 through 2024*. Accessed January 2025.
- Green, Kaitlyn. 2025. Rare Plant Data Coordinator, California Native Plant Society. *Email correspondence regarding recent survey form for Monardella venosa*. Personal communication 20 February 2025.
- GreenInfo Network (GIN). 2024a. *Conservation Easement Database (CCED)*. Version 2024a. Available at: <https://data.cnra.ca.gov/dataset/california-conservation-easement-database>. Accessed 28 August 2024.
- . 2024b. *Conservation Protected Areas Database (CPAD)*. Version 2024a. Available at: <https://data.cnra.ca.gov/dataset/california-protected-areas-database>. Accessed 28 August 2024.
- Hansen, A. J., R. L. Knight, J. M. Marzluff, S. Powell, K. Brow, P. H. Gude, and K. Jones. 2005. Effects of exurban development on biodiversity: patterns, mechanisms, and research needs. *Ecological Applications* 15:1893-1905.
- Hanson, T. M. 2012. *Research on the ecology and Life History of a Rare California Endemic Mint, Monardella venosa*. Master's Thesis. California State University Chico. Chico, California.
- Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game, Sacramento, California.
- Honnay, O., H. Jacquemyn, B. Bossuyt, and M. Hermy. 2005. Forest fragmentation effects on patch occupancy and population viability of herbaceous plant species. *New Phytologist* 166:723–736.
- International Union for the Conservation of Nature (IUCN). 2024. *Guidelines for Using the IUCN Red List Categories and Criteria*. Version 16. Prepared by the IUCN Standards and Petitions Committee. Available at: <https://www.iucnredlist.org/documents/RedListGuidelines.pdf>. Accessed 27 February 2025.

- Jepson Flora Project (eds.). 2024. *Jepson eFlora*. Available at: <https://ucjeps.berkeley.edu/eflora/>. Accessed 9 September 2024.
- Loarie, S. R., B. E. Carter, K. Hayhoe, S. McMahon, R. Moe, C. A. Knight, and D. D. Ackerly. 2008. Climate change and the future of California's endemic flora. *PLoS One* 3(6):e2502. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0002502#pone.0002502.s008>. Accessed 3 January 2025.
- Matthies, D., I. Bräuer, W. Maibom, and T. Tschardt. 2004. Population size and the risk of local extinction: empirical evidence from rare plants. *Oikos* 105:481–488.
- Minnich, R. A. 2008. *California's Fading Wildflowers: Lost Legacy and Biological Invasions*. University of California Press, Berkeley, California.
- Ramvalho, C. E., E. Laliberte, P. Pot, and R. J. Hobbs. 2014. Complex effects of fragmentation on remnant woodland plant communities of a rapidly urbanizing biodiversity hotspot. *Ecology* 95: 2466–2478.
- NatureServe. 2012a. *NatureServe Conservation Status Assessments: Factors for Evaluating Species and Ecosystem Risk*. Revised Edition. Available at: https://www.natureserve.org/sites/default/files/natureserveconservationstatusfactors_apr12.pdf. Accessed 10 August 2024.
- . 2012b. *NatureServe Conservation Status Assessments: Methodology for Assigning Ranks*. Revised Edition. Available: https://www.natureserve.org/sites/default/files/publications/files/natureserveconservationstatusmethodology_jun12.pdf. Accessed 10 August 2024.
- Sanders, A. C., M. A. Elvin, and M. S. Brunell. 2012. *Monardella venosa*. In Jepson Flora Project (eds.) *Jepson eFlora*. Available at: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=91109. Accessed 9 September 2024.
- Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation*. Second Edition. California Native Plant Society Press, Sacramento, California.
- Seabloom, E. W., J. W. Williams, D. Slayback, D. M. Stoms, J. H. Viers, and A. P. Dobson. 2006. Human impacts, plant invasion, and imperiled plant species in California. *Ecological Applications* 16:1338–1350.
- Thorne, J. H., R. M. Boynton, A. J. Holguin, J. A. Stewart, and J. Bjorkman. 2016. *A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation*. California Department of Fish and Wildlife, Sacramento, California. Available at: https://www.researchgate.net/profile/Joseph-Stewart-3/publication/296639897_A_climate_change_vulnerability_assessment_of_California's_terrestrial_vegetation/links/56d72def08aee1aa5f75c693/A-climate-change-vulnerability-assessment-of-Californias-terrestrial-vegetation.pdf. Accessed 24 September 2024.
- U.S. Geological Service (USGS). 2021. *National Land Cover Database 2021*. Available at: <https://www.mrlc.gov/data?f%5B0%5D=category%3ALand%20Cover&f%5B1%5D=category%3AUrban%20Imperviousness&f%5B2%5D=region%3Aconus>. Accessed 28 August 2024.

———. No date. *GAP Status Code Frequently Asked Questions (FAQ)*. Available at: <https://www.usgs.gov/programs/gap-analysis-project/gap-status-code-frequently-asked-questions-faq>. Accessed 24 August 2024.

University of California Davis, University of California Agriculture and Natural Resources, and Natural Resource Conservation Service (NRCS). No Date. *SoilWeb*. Available at: <https://casoilresource.lawr.ucdavis.edu/gmap/>. Accessed 1 May 2025.

Vörös, W. A., I. Hensen, S. Träger, C. Rosche, J. Müller, C. Römermann, A. Baasch, and M. Lehnert. 2025. From herbarium specimens to contemporary surveys: tracing the extinction dynamics and performance of endangered plant species in central Germany. *Flora* 325:doi.org/10.1016/j.flora.2024.152664.

Wilken, D. H. and M. Wetherwax. 2013. Family description, key to genera *Lamiaceae (Labiatae)*. In Jepson Flora Project (eds.) *Jepson eFlora*. Revision 1. Available: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=166. Accessed 13 July 2025.

L. Detailed Distribution Map

Figure 2 provides a detailed map of the distribution of veiny monardella that displays:

- Locations where the species has been documented, labelled with their CNDDDB occurrence numbers
- Natural, agricultural, and developed land cover

Please note that the species may occur at unknown, undocumented sites that are not displayed on this map.

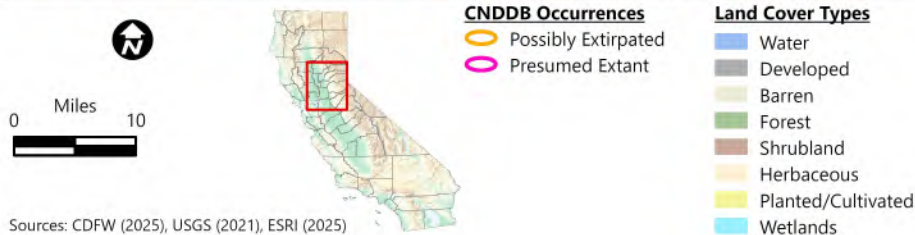
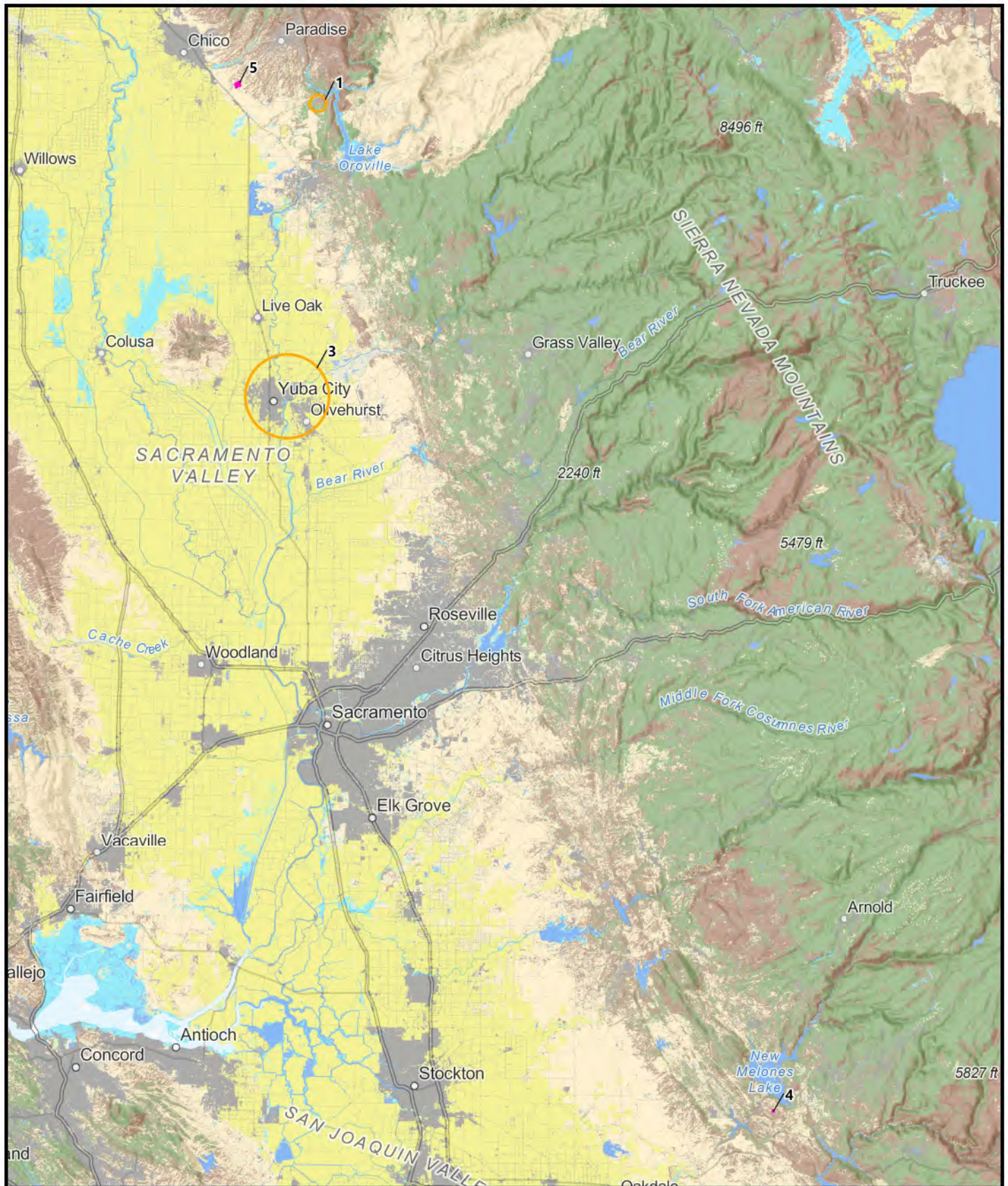


Figure 2
Monardella venosa
Distribution

Abbreviations and Acronyms

1B.1	CRPR Rank of seriously threatened in California
AOO	area of occupancy
Cal-IPC	California Invasive Plant Council
CCH	California Consortium of Herbaria
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cm	centimeters
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
EOO	extent of occurrence
ft	feet
G1	Global Conservation Status Rank 1, Critically Imperiled
GAP	Gap Analysis Project
GIN	GreenInfo Network
HCP	habitat conservation plan
m	meters
NCCP	natural community conservation plan
NRCS	Natural Resource Conservation Service
RCIS	regional conservation investment strategy
USGS	U.S. Geological Survey

MEMORANDUM

Date: July 9, 2026

To: Melissa Miller-Henson, Executive Director
Fish and Game Commission

From: Meghan Hertel, Director

Subject: Initial Evaluation of the Petitions to List 19 Plant Species as Threatened or Endangered Under the California Endangered Species Act

The California Department of Fish and Wildlife (Department) has completed its initial evaluation of the petitions to list 19 plant species as threatened or endangered under the California Endangered Species Act (CESA), Fish and Game Code section 2050 et seq. The Fish and Game Commission (Commission) received the petitions from Dr. John C. Hunter on August 29, 2025. Pursuant to Fish and Game Code section 2073, the Commission referred the petitions to the Department on September 8, 2025. On December 10, 2025, the Commission approved a Department request for a 30-day extension to further analyze the petitions and complete its evaluation reports in accordance with Fish and Game Code section 2073.5, subdivision (b).

The Department completed the attached petition evaluation reports as required by Fish and Game Code section 2073.5. The Department's petition evaluation reports delineate the categories of information required in a petition, evaluate the sufficiency of the available scientific information, and incorporate additional relevant information that the Department possessed or received during the review period. Based upon the information contained in the petitions, and other relevant information in the Department's possession, the Department has determined that 18 of the 19 petitions do not contain sufficient scientific information to indicate that the petitioned actions may be warranted. The Department recommends that the Commission reject the following 18 petitions from further consideration pursuant to CESA:

- Abbott's bushmallow (*Malacothamnus abbottii*)
- Alkali-sink goldfields (*Lasthenia chrysantha*)
- Bearded popcornflower (*Plagiobothrys hystriculus*)
- California beaked-rush (*Rhynchospora californica*)
- Carquinez goldenbush (*Isocoma arguta*)



- Diamond-petaled California poppy (*Eschscholzia rhombipetala*)
- Ferris' milkvetch (*Astragalus tener* var. *ferrisiae*)
- Guggolz's harmonia (*Harmonia guggolziorum*)
- Legenere (*Legenere limosa*)
- Lesser saltscale (*Atriplex minuscula*)
- Lime Ridge navarretia (*Navarretia gowenii*)
- Mount Burdell jewelflower (*Streptanthus anomalus*)
- Pajaro manzanita (*Arctostaphylos pajaroensis*)
- Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*)
- Rincon Ridge ceanothus (*Ceanothus confusus*)
- Shasta orthocarpus (*Orthocarpus pachystachyus*)
- Slough thistle (*Cirsium crassicaule*)
- Small pincushion navarretia (*Navarretia myersii* subsp. *deminuta*)

In addition, the Department has determined that the veiny monardella (*Monardella venosa*) petition, when combined with other relevant information in the Department's possession, contains sufficient scientific information to indicate that the petitioned action may be warranted and recommends that the Commission accept the veiny monardella petition for further consideration pursuant to CESA.

If you have any questions or need additional information, please contact Isabel Baer, Branch Manager, Habitat Conservation Planning Branch at (916) 203-3193 or by email at NativePlants@wildlife.ca.gov.

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CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

California Endangered Species Act



Petition Evaluation for Veiny Monardella (*Monardella venosa*)

Report to the Fish and Game Commission
June 2026

Suggested citation: California Department of Fish and Wildlife (CDFW). 2026. Petition evaluation for veiny monardella (*Monardella venosa*). A report to the Fish and Game Commission, California Natural Resources Agency, Sacramento, CA, USA.

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LIST OF ABBREVIATIONS, ACRONYMS, AND TERMS

CESA – California Endangered Species Act
 CNDDDB – California Natural Diversity Database
 CNPS – California Native Plant Society
 Commission – California Fish and Game Commission
 CRPR – California Rare Plant Rank
 Department – California Department of Fish and Wildlife
 subsp. – subspecies
 var. – variety

EXECUTIVE SUMMARY

This petition evaluation for veiny monardella (*Monardella venosa*) has been prepared by the California Department of Fish and Wildlife (Department) in response to the petition to list veiny monardella as endangered under the California Endangered Species Act (CESA). The purpose of this petition evaluation is to provide a recommendation to the Fish and Game Commission (Commission) on whether the petition provides sufficient information to indicate the petitioned action may be warranted.

Veiny monardella is an annual plant in the mint family (Lamiaceae) that blooms May through July. The petition describes veiny monardella as being known from four occurrences with two of the occurrences extirpated. The petition describes veiny monardella as occurring in the northern and central Sierra Nevada Foothills in grasslands and oak woodlands on clay or clay-rich soils. At the two extant occurrences, the petition provides an abundance estimate of 2,500 individuals in 1998 at one occurrence and nearly 500,000 individuals in 2023 at the other occurrence. The petition provides information to suggest a declining population trend. The petition lists several threats to veiny monardella including agricultural and developed land uses, climate change, and invasive species. The petition mentions that extirpation from much of its range or extinction of the species may occur because: most occurrences are threatened and the severity of some threats is increasing, the species is presumed extant at only two of four occurrences, and neither extant occurrence is preserved or managed for conservation of the species. Existing management efforts were reviewed and suggestions for future management actions were discussed in the petition. Information sources and a distribution map were also provided in the petition.

The Department has determined that on its face the petition does not sufficiently address each of the required petition components listed in Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1):

- Life history
- Range
- Distribution
- Detailed distribution map
- Kind of habitat necessary for survival
- Abundance
- Population trend
- Factors affecting the ability to survive and reproduce
- Degree and immediacy of threat
- Impact of existing management efforts
- Suggestions for future management

- Availability and sources of information

However, Fish and Game Code section 2073.5 states that “the Department shall evaluate the petition on its face and in relation to other relevant information the Department possesses or receives.” The Department has additional information in its possession related to veiny monardella which, when combined with the petition, provides sufficient information to indicate that the petitioned action may be warranted. Therefore, the Department recommends that the Commission accept the petition for further consideration pursuant to CESA.

1 INTRODUCTION

1.1 Petition Evaluation Overview

This petition evaluation serves as the basis for the California Department of Fish and Wildlife's (Department) recommendation to the California Fish and Game Commission (Commission) on whether the petition to list veiny monardella (*Monardella venosa*) as endangered under the California Endangered Species Act (CESA) should be accepted and considered. The recommendation is based on the sufficiency of scientific information in the petition, as well as other relevant information that was reviewed by the Department during the evaluation period.

A petition to list a species under CESA must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant" (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)).

Once a petition is submitted to the Commission, the Department has 90 days (120 days with extension) to prepare a petition evaluation that assesses each of the petition components and makes a recommendation to the Commission as to whether there is sufficient scientific information to indicate that the petitioned action to list the species under CESA may be warranted (Fish & G. Code, § 2073.5, subds. (a)-(b)). Once completed by the Department, the petition evaluation is delivered to the Commission and placed on the agenda for receipt at the next available meeting of the Commission. At that time, the petition evaluation will be made available to the public for a 30-day public comment period prior to the Commission taking any action on the petition. The Commission then considers the petition, the Department's petition evaluation and recommendation, written comments received, and oral testimony, and will then make a finding at the next available meeting of the Commission as to whether the petition provides "sufficient information to indicate that the petitioned action may be warranted" (Fish & G. Code, § 2074.2, subd. (e)(2)). The standard for accepting a petition for consideration and assessing sufficiency of information is addressed in *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597.

If the Commission determines that the petitioned action may be warranted, the species becomes a candidate for CESA listing and proceeds to the status review stage of the CESA listing process. The Department then prepares a peer-reviewed report that advises

the Commission on whether the petitioned action is warranted, based upon the best scientific information available (Fish & G. Code, § 2074.6). Finally, the Commission determines whether the petitioned action to list the species as threatened or endangered is warranted, based on the Department's status review and other information in the administrative record (Fish & G. Code, § 2075.5).

1.2 CESA Petition History

On August 29, 2025, Dr. John C. Hunter submitted a petition to the Commission to list veiny monardella as endangered under CESA. On September 8, 2025, the Commission referred the petition to the Department for evaluation. At its meeting on October 8, 2025, the Commission officially acknowledged receipt of the petition. At its meeting on December 10, 2025, the Commission granted the Department's request for a 30-day extension of the period to review the petition and prepare this petition evaluation.

1.3 Federal Status

Veiny monardella has no status under the Federal Endangered Species Act (16 U.S.C. § 1531 et seq.). In 1993, the U.S. Fish and Wildlife Service provided notice that it was possibly appropriate to propose listing veiny monardella as endangered or threatened, but sufficient data was not then available to support a listing proposal (58 Fed.Reg. 51144 (Sep. 30, 1993)).

1.4 Additional Species Status Designations

1.4.1 NatureServe Conservation Status Ranks

NatureServe's conservation status ranks consist of a global conservation status rank (global rank, G rank) describing the status of a given species over its entire distribution, and a subnational conservation status rank (subnational rank, S rank) describing the status of a given subspecies or variety over its state distribution (Master et al. 2012). NatureServe has assigned veiny monardella a global rank of G1 and a subnational rank of S1, indicating that the full species is critically imperiled both globally and within California, with a very high risk of extinction due to one or more of the following: very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (CNDDDB 2020, 2025).

1.4.2 California Rare Plant Rank

The California Native Plant Society (CNPS) works in collaboration with botanical experts throughout the state, including Department biologists, to assign rare plants a California Rare Plant Rank (CRPR) reflective of their rarity status (CNDDDB and CNPS

2020). CNPS has assigned veiny monardella a CRPR of 1B.1 (CNPS 2025). Plants with a CRPR of 1B are considered rare, threatened, or endangered throughout their range with the majority endemic to California (CNDDB and CNPS 2020). The threat code extension of “.1” indicates that the species is seriously threatened in California with over 80% of occurrences threatened and a high degree and immediacy of threat (CNDDB and CNPS 2020).

2 SPECIES DESCRIPTION AND TAXONOMY

2.1 Species Description

Veiny monardella is a member of the mint family (Lamiaceae). It is an annual plant that is 15 to 40 cm (5.9 to 15.7 in) tall with a stout stem (Elvin and Sanders 2009). Leaves are 15 to 50 mm (0.6 to 2 in) long, linear-oblong to lanceolate-oblong in shape, and hairy (Elvin and Sanders 2009). The inflorescence (grouping of flowers) is 20 to 30 mm (0.8 to 1.2 in) wide and is subtended by bracts that are the most diagnostic feature of the species (Elvin and Sanders 2009). Bracts are 15 to 30 mm (0.6 to 1.2 in) long and widely ovate in shape with slender purple veins separating transparent to translucent areas between the veins (Elvin and Sanders 2009). Hairs between veins are sparse or absent. Individual flowers are 11 to 12 mm (0.43 to 0.47 in), hairy, and purple with exserted stamens (Elvin and Sanders 2009).

2.2 Species Taxonomy

Veiny monardella was first collected by David Douglas in 1833 with the specimen record noting the collection location as simply “California” with no additional locality given (CCH 2025). Veiny monardella was formally described by John Torrey in 1856 as *Monardella candicans* var. *venosa* (Torrey 1856). In 1925, it was treated as part of *M. douglasii* but in 1943 was pulled out as a distinct variety of *M. douglasii*, named *M. douglasii* var. *venosa* (Epling 1925; Jokerst 1992). In 1992, *M. douglasii* var. *venosa* was reclassified as *M. douglasii* subsp. *venosa* before being elevated to a full species, *M. venosa*, by Mark Elvin and Andrew Sanders in 2009 (Jokerst 1992; Elvin and Sanders 2009). Elvin and Sanders recognized that there is a close relationship between *M. douglasii* and *M. venosa* but that *M. venosa* is morphologically distinct from *M. douglasii* (Elvin and Sanders 2009). In addition, Elvin and Sanders found that there have been no collections that had intermediate characters between *M. venosa*, *M. douglasii*, or *M. candicans* (Elvin and Sanders 2009). The currently accepted name for veiny monardella is *Monardella venosa* (Sanders et al. 2012).

3 SUMMARY OF PETITION COMPONENTS

Pursuant to Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1), the Department evaluated whether the petition contained information on each of the following petition components:

- Life history
- Range
- Distribution
- Detailed distribution map
- Kind of habitat necessary for survival
- Abundance
- Population trend
- Factors affecting the ability to survive and reproduce
- Degree and immediacy of threat
- Impact of existing management efforts
- Suggestions for future management
- Availability and sources of information

The Department did not receive new information from the public during the petition evaluation period (Fish & G. Code, § 2073.4). Pursuant to Fish and Game Code section 2073.5, the Department evaluated the petition to determine whether there is, or is not, sufficient information to indicate that the petitioned action may be warranted. A summary of the relevant information from the petition for each of the petition components is presented below. For each petition component, the Department has also presented an assessment of the information provided in the petition and a summary of any relevant information in the Department's possession. Overall sufficiency of the petition is determined by looking at the information in the petition as a whole and is further discussed in the "Sufficiency of Scientific Information and Recommendation to the Commission" section of this petition evaluation. The Department has grouped similar petition components together and renamed components to create a more cohesive and readable document.

3.1 Life History

This section summarizes the information in the petition regarding the species' life history (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section E on pages 5 and 6 of the petition provides information on the life history of veiny monardella.

The petition provides a physical description of veiny monardella, with descriptions of its habit, stems, leaves, flowers, and fruits. The petition describes veiny monardella as an annual plant that blooms May through July and is capable of self-pollination but insect pollination results in greater reproductive output. The petition also states that the dispersal mechanisms of the species have not been documented but based on fruit and seed morphology, it is likely that seed dispersal is primarily by gravity with seeds dispersed short distances.

3.1.1 Department Assessment

The Department considers the information provided in the petition on the life history of veiny monardella to be adequate for assessing this petition component.

3.2 Range and Distribution

This section summarizes the information in the petition regarding the species' range and distribution and provides a detailed distribution map (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). A species' range for the purposes of CESA and this petition evaluation is the species' range within California (Cal. Forestry Assn. v. Cal. Fish and Game Com. (2007) 156 Cal.App.4th 1535, 1551). Range describes the general geographical area in which a species occurs. Distribution describes the actual sites where individuals and populations of the species occur within the species' range. Section B on page 4 of the petition provides information on the range of veiny monardella. Section C on page 4 of the petition provides information on its distribution. Section L, Figure 2 on page 19 of the petition provides a distribution map, which has been provided as Figure 1 of this petition evaluation.

The petition describes veiny monardella as a California endemic of the northern and central Sierra Nevada Foothills. The petition states that veiny monardella's range comprises approximately 4,578 square kilometers (1,767 square miles), and that it occurs in Butte, Sutter, Tuolumne, and Yuba counties at elevations of 60 to 410 m (195 to 1,345 ft). The petition states that veiny monardella is known from four sites that were documented between 1854 and 1935, with two of those occurrences considered extirpated. Three occurrences are noted in the petition as being from the northern portion of its range between Marysville and Chico, with the fourth occurrence being from near New Melones Dam in Tuolumne County. The petition also mentions that there may be a few undocumented occurrences of veiny monardella but no additional occurrences have been found during the past 90 years.

3.2.1 Department Assessment

Range and distribution of veiny monardella are presented in the petition based primarily on data from the California Natural Diversity Database (CNDDB); however, no discussion is provided on the completeness of the information presented including whether the CNDDB data represents the complete range and distribution of the species, whether additional information on range and distribution is available for the species that is not reflected in the CNDDB data, or whether any survey efforts have been made to confirm or ascertain the full range and distribution of the species.

The Department has some additional, readily available information not presented in the petition. The Department has been gathering information on veiny monardella since 2023 and as a result has detailed historical and current survey data on the single occurrence currently known to be extant. Department staff visited this population in 2023, 2025, and 2026 to assess the species distribution, abundance, habitat, and threats and reached out to botanists who observed the species in the 1990s to acquire past survey data. This additional, readily available information in the Department's possession compensates for deficiencies in data in the petition for these topics. The information presented in the petition, considered alongside readily available information from the Department, is adequate for assessing the range and distribution of veiny monardella.

3.3 Habitat

This section summarizes the information in the petition regarding the kind of habitat necessary for species survival (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section F on page 7 of the petition provides information on the kind of habitat necessary for veiny monardella survival.

The petition states that veiny monardella occurs in grasslands and oak woodlands on clay or clay-rich soils. The petition also includes a list of plant species that grow with veiny monardella.

3.3.1 Department Assessment

The Department considers the information provided in the petition on the kind of habitat necessary for veiny monardella survival to be sufficient.

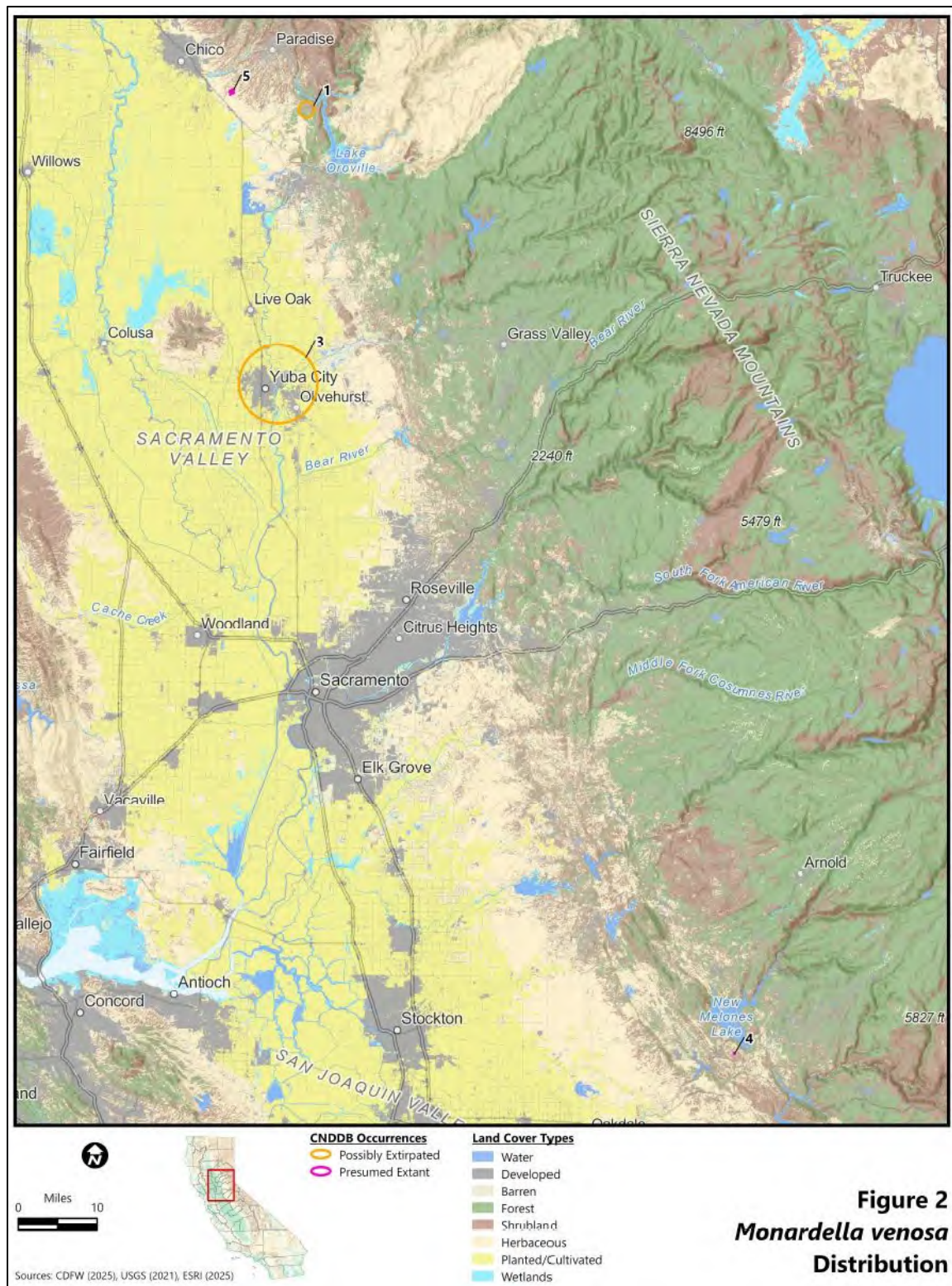


Figure 1. Map of the range and distribution of veiny monardella as provided in Figure 2 of the petition. Occurrences from the California Natural Diversity Database (CNDDDB) are labeled with CNDDDB occurrence numbers. Some occurrences consist of multiple polygons.

3.4 Abundance and Population Trend

This section summarizes the information in the petition regarding the species' abundance and population trend (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section D on page 4 and 5 of the petition provides information on the abundance of veiny monardella. Section A on page 3 of the petition provides information on the population trend of veiny monardella.

The petition summarizes information on the abundance of veiny monardella at two CNDDDB occurrences and indicates that one of the occurrences had 2,500 individuals in 1998 and the other occurrence had nearly 500,000 individuals in 2023. The occurrences are approximately 2 hectares (5 acres) and 18 hectares (43 acres) in size based on CNDDDB polygon data. The petition states that based on information from the CNDDDB, land cover mapping from the U.S. Geological Survey, and aerial imagery from Google Earth, veiny monardella has had a decreasing population trend because of loss and degradation of occupied habitat at three or more of the four sites where the species has been observed. The petition lists two occurrences that are possibly extirpated in the CNDDDB, one occurrence that is likely extirpated based on land cover mapping, and another occurrence that is likely decreasing based on aerial imagery. The petition states that the species may have had additional, undocumented habitat losses, population reductions, or both that occurred before the distribution of veiny monardella was well documented.

3.4.1 Department Assessment

Abundance of veiny monardella is provided in the petition based primarily on population estimates reported in the CNDDDB; however, no discussion is provided on the completeness of the information including whether there have been efforts to estimate population sizes at all occurrences and whether the population estimates are based on complete or partial surveys of the occurrences. Area of occupied habitat is estimated in the petition as an indicator of abundance using CNDDDB polygon data which the Department considers to be an inappropriate use of CNDDDB data. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data and should not be used to determine area occupied by the species.

Population trend of veiny monardella is determined in the petition to be declining based on: 1) the number of CNDDDB occurrences that are designated as possibly extirpated; 2) the use of CNDDDB polygon data overlayed on land cover mapping to report the extent of any overlap between the CNDDDB polygon data with development or agriculture, and 3) the historical and ongoing changes to grasslands and woodlands. No discussion is provided on the completeness of the information including whether any recent efforts have been made to update information on the presence and condition of veiny

monardella occurrences or how many of those possible extirpations and likely degradation/loss of habitat were historical or recent. The petition uses CNDDDB polygon data overlaid on land cover mapping to report on the extent of overlap between CNDDDB polygons with development or agriculture to determine additional occurrences that may be experiencing a declining population trend. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data, and the petition does not indicate if development or agriculture shown on aerial imagery overlapped with the portion of the CNDDDB polygon that was previously occupied by the species or within areas that were once appropriate habitat for the species. In addition, the statements in the petition about changes to grasslands and woodlands likely causing additional, undocumented habitat losses, population reductions, or both to veiny monardella are too general and do not specifically identify impacts to habitat likely to have contained veiny monardella.

The Department has some additional, readily available information not presented in the petition. The Department has been gathering information on veiny monardella since 2023 and as a result has detailed historical and current survey data on the single occurrence currently known to be extant. Department staff visited this population in 2023, 2025, and 2026 to assess the species distribution, abundance, habitat, and threats and reached out to botanists who observed the species in the 1990s to acquire past survey data. This additional, readily available information in the Department's possession compensates for deficiencies in data in the petition for these topics. The information presented in the petition, considered alongside readily available information from the Department, is sufficient for assessing the abundance and population trend of veiny monardella.

3.5 Threats

This section summarizes the information in the petition regarding the factors affecting the ability of the species to survive and reproduce, and the degree and immediacy of threats (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section G on pages 7 through 10 of the petition provides information on factors affecting the ability of veiny monardella to survive and reproduce (threats). Section H on pages 10 through 12 of the petition provides information on the degree and immediacy of threats to veiny monardella.

The petition lists several prominent range-wide threats to veiny monardella: agricultural and developed land uses, climate change, and invasive species. The petition also mentions that dam/inundation, grazing, and mining have been observed by botanists as additional threats affecting occurrences based on CNDDDB data. The petition describes agricultural and developed land uses as major threats to veiny monardella because these land uses have been directly eliminating, fragmenting, and increasing threats to the

remaining habitat. The petition notes that according to the CNDDDB and according to the petitioner's interpretation of land cover mapping showing agriculture and development in relation to CNDDDB occurrences of veiny monardella, two of the four occurrences have been impacted by agriculture and development with another occurrence threatened by these activities.

The petition states that climate change directly and indirectly threatens veiny monardella by altering growing conditions, water availability, and frequency and intensity of disturbances. The petition also notes that climate change can alter interactions of the plant with pollinators, dispersers, fungal symbionts, seed predators, herbivores, and competitors. The petition states that the magnitude of climate change impacts on veiny monardella is uncertain but may be substantial, particularly because of the species' rarity, habitat specificity, and distribution in relatively small and isolated areas that will be exposed to dramatic changes.

The petition states that invasive species have not been identified as a threat to veiny monardella in the CNDDDB, but invasive species are likely a significant, range-wide threat to the species. The petition lists several invasive plant species that co-occur with veiny monardella and mentions an experiment where invasive species were removed from an area with veiny monardella resulting in increased veiny monardella seed production. The petition states that infestations of invasive species can directly affect the conditions or resources veiny monardella relies on, thereby reducing abundance and making the species more vulnerable to extirpation from other causes.

3.5.1 Department Assessment

Factors affecting the ability of veiny monardella to survive and reproduce, and the degree and immediacy of threats, are presented in the petition based primarily on threat data reported in the CNDDDB. Threats listed in the CNDDDB can be representative of various types of threat data, including current threats, future threats, past threats, threats affecting a small portion of the site, threats in one year but not another, etc. The petition also presents climate change and invasive species as threats to veiny monardella that are not listed in the CNDDDB. None of these threats are described in adequate detail in relation to veiny monardella and the petition does not provide information on the degree and immediacy of these threats for the species.

The petition uses CNDDDB polygon data overlaid on land cover mapping to see if there is any overlap between the CNDDDB polygon data with development or agriculture to determine additional occurrences that may be experiencing threats. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data, and the petition does not indicate if development or agriculture shown on aerial imagery overlapped with the portion of the CNDDDB polygon that was previously

occupied by the species or within areas that were once appropriate habitat for the species. Further discussion is needed on the use of aerial imagery to provide an accurate reflection of the degree of threat that development and agriculture are currently having on veiny monardella.

The petition also mentions a small number of extant occurrences and lack of protection and management, as additional reasons why veiny monardella is likely to be extirpated from much of its range or become extinct. The petition has not shown that veiny monardella distribution and number of sites have been fully assessed. The petition also does not discuss what the unprotected lands with veiny monardella are being used for and how that land use is threatening, or potentially threatening, the species.

The Department has some additional, readily available information not presented in the petition. The Department has been gathering information on veiny monardella since 2023 and as a result has detailed historical and current survey data on the single occurrence currently known to be extant. Department staff visited this population in 2023, 2025, and 2026 to assess the species distribution, abundance, habitat, and threats and reached out to botanists who observed the species in the 1990s to acquire past survey data. This additional, readily available information in the Department's possession compensates for deficiencies in data in the petition for these topics. The information presented in the petition, considered alongside readily available information from the Department, is sufficient for assessing the factors affecting the ability of veiny monardella to survive and reproduce (threats) and the degree and immediacy of threats.

3.6 Existing Management

This section summarizes the information in the petition regarding the impact of existing management efforts on the species (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section I on pages 12 through 14 of the petition provides information on the impact of existing management efforts on veiny monardella.

The petition states that management of veiny monardella has been very limited, has not sufficiently addressed threats to the species, and consequently has not resulted in significant conservation of the species. The petition describes the impact of several management categories including legal protection, preservation and seed banking, management and monitoring, restoration, and surveys and research.

The petition describes veiny monardella as having no legal protections but notes that the species has a CRPR of 1B.1 and should be treated as a special-status species during environmental review under the California Environmental Quality Act.

The petition states that no occurrences of veiny monardella are on land managed for biodiversity. The petition mentions that seeds of veiny monardella have been collected and placed in long-term storage at California/Rancho Santa Ana Botanic Garden and at University of California Botanical Garden at Berkeley.

The petition notes that a portion of one occurrence of veiny monardella is on land managed by the U.S. Bureau of Reclamation for multiple uses, and that land managers often seek to maintain habitats and routinely implement avoidance and minimization measures for the habitats. The petition mentions another occurrence of veiny monardella that has been monitored over multiple years by botanists.

The petition states that no efforts have been made to restore or create habitat occupied by veiny monardella. The petition discusses how surveys have been conducted to confirm the continued existence of one occurrence in the last 20 years. The petition also states that some research has been conducted on the species pollination, interactions with other species, and habitat requirements, but not on other aspects of its ecology or on its genetic diversity, and therefore understanding of the species' ecology is partially based on observations by botanists and understanding of the ecology of related and similar species.

3.6.1 Department Assessment

The Department considers the information provided in the petition on impact of existing management efforts on veiny monardella to be adequate for assessing this petition component.

3.7 Future Management

This section summarizes the information in the petition regarding suggestions for future management (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section J on pages 14 and 15 of the petition provides suggestions for future management of veiny monardella.

The petition provides a list of suggestions for future management including:

- list the species under CESA and prepare a recovery plan for it,
- include the species as a focal species in regional conservation investment strategies and natural community conservation plans,
- preserve occupied sites in perpetuity,
- develop and implement site-specific monitoring and management plans,
- manage extant populations to prevent the spread of invasive species and eradicate existing infestations,

- implement compatible grazing practices,
- coordinate and share information among organizations working to conserve the species,
- coordinate with and support private landowners implementing conservation practices in occupied habitat,
- establish additional populations,
- conduct surveys to improve data on distribution and abundance,
- document genetic diversity, and
- investigate the species' population ecology to inform conservation and management.

3.7.1 Department Assessment

The Department considers the information provided in the petition on suggestions for future management of veiny monardella to be adequate for assessing this petition component.

3.8 Availability and Sources of Information

This section summarizes the information in the petition regarding availability and sources of information (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section K on pages 15 through 18 of the petition provides the sources of information used in the veiny monardella petition. Digital copies of references cited were also provided to the Commission and Department.

3.8.1 Department Assessment

The Department received digital copies of references cited in the petition and considers this to be adequate to address the availability and sources of information mentioned in the petition for veiny monardella.

4 OTHER RELEVANT INFORMATION AVAILABLE TO THE DEPARTMENT

Pursuant to Fish and Game Code section 2073.5, the Department also evaluates petitions in relation to other relevant information the Department possesses or receives. The Department evaluated readily available information relating to veiny monardella that is available from the Department's Native Plant Program, document library, and the CNDDDB, including data housed in the CNDDDB's unprocessed data layer. Regional Department staff were contacted to determine if additional information on the species was readily available and in the possession of Department staff. Any relevant information from these sources is mentioned within the sufficiency assessment section for each petition component.

To the extent the Department was able to review other relevant information in its possession as it relates to the petition, the Department concluded that none of the additional information constitutes countervailing information that wholly undercuts the conclusions in the petition at this juncture in the listing process. If the Commission accepts the petition for consideration, all reasonable attempts will be made by the Department to notify affected and interested parties and to solicit data and comments on the petitioned action (Fish & G. Code, § 2074.4). At that time, the Department will commence a review of the status of the species and produce a written peer-reviewed report, based upon the best scientific information available to the Department, which indicates whether the petitioned action is warranted (Fish & G. Code, § 2074.6).

5 SUFFICIENCY OF SCIENTIFIC INFORMATION AND RECOMMENDATION TO THE COMMISSION

The Department evaluated the petition components set forth in Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1) for sufficiency of information pursuant to Fish and Game Code section 2073.5. Based upon the information contained in the petition and other relevant information, the Department determined there is sufficient information to indicate that the petitioned action may be warranted (Fish & G. Code § 2073.5).

LITERATURE CITED

- CCH (Consortium of California Herbaria). 2025. Consortium of California Herbaria portal 2. Query for *Monardella venosa* collections. Available from: <https://cch2.org/portal/> (Accessed: 1 October 2025).
- CNDDDB (California Natural Diversity Database). 2020. California Natural Diversity Database (CNDDDB) Management Framework. California Department of Fish and Wildlife, Sacramento, CA, USA.

- CNDDDB (California Natural Diversity Database). 2025. RareFind 5 [internet]. Government version- dated October 2025. California Department of Fish and Wildlife, Sacramento, CA, USA.
- CNDDDB (California Natural Diversity Database), and CNPS (California Native Plant Society). 2020. The CNDDDB and CNPS cooperative relationship and rare plant status review process. Sacramento, CA, USA. Available from: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=175695&inline> (Accessed: 2 August 2024).
- CNPS (California Native Plant Society). 2025. Rare plant inventory (online edition, v9.5.1): *Monardella venosa*. Available from: <https://rareplants.cnps.org/Plants/Details/1146> (Accessed: 2 October 2025).
- Elvin, M., and A. Sanders. 2009. Nomenclatural changes for *Monardella* (Lamiaceae) in California. *Novon* 19:315–343.
- Epling, C. 1925. Monograph of the genus *Monardella*. *Annals of the Missouri Botanical Garden* 12:1–107.
- Jokerst, J. 1992. Nomenclatural changes in California *Monardella* (Lamiaceae). *Phytologia* 72:9–16.
- Master, L., D. Faber-Langendoen, R. Bittman, G. Hammerson, B. Heide, L. Ramsay, K. Snow, A. Teucher, and A. Tomaino. 2012. NatureServe conservation status assessments: factors for evaluating species and ecosystem risk. NatureServe, Arlington, VA, USA.
- Sanders, A., M. Elvin, and M. Brunell. 2012. *Monardella venosa* in Jepson Flora Project, editor. Jepson eFlora. Available from: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=91109 (Accessed: 15 April 2026)
- Torrey, J. 1856. Report on the botany of the expedition. Page 123 in Part V. Route near the thirty-fifth parallel, explored by Lieutenant A. W. Whipple, topographical engineers, in 1853 and 1854. Reports of explorations and surveys, to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean. Washington, D.C., USA.



Petition Evaluation for Veiny Monardella

**Presentation to the California Fish and
Game Commission**

October 13, 2026

Kristi Lazar

Native Plant Program,
Habitat Conservation Planning Branch



Presentation Overview

- Petition Evaluation Overview
- Review Key Petition Components
- Department Recommendation



Photo credit: Kristi Lazar (CDFW)

Petition Evaluation Overview

Fish and Game Code section 2073.5 states that: “The Department shall evaluate the petition on its face and in relation to other relevant information the Department possesses or receives” and provide a recommendation to the Commission whether there is (or is not) sufficient information to indicate that the petitioned action may be warranted.



Petition Components Overview

Sufficient in petition:

- Life History
- Distribution Map
- Kind of Habitat Necessary for Survival
- Impact of Existing Management Efforts
- Suggestions for Future Management

Insufficient in petition:

- Range
- Distribution
- Abundance
- Population Trend
- Factors Affecting the Ability to Survive and Reproduce
- Degree and Immediacy of Threat



Life History



Photo credit: Kristi Lazar (CDFW)

- Veiny monardella (*Monardella venosa*)
- Annual plant
- Mint family (Lamiaceae)
- Clusters of purple flowers
- Distinct bracts with “windowpanes”

Habitat Necessary for Survival



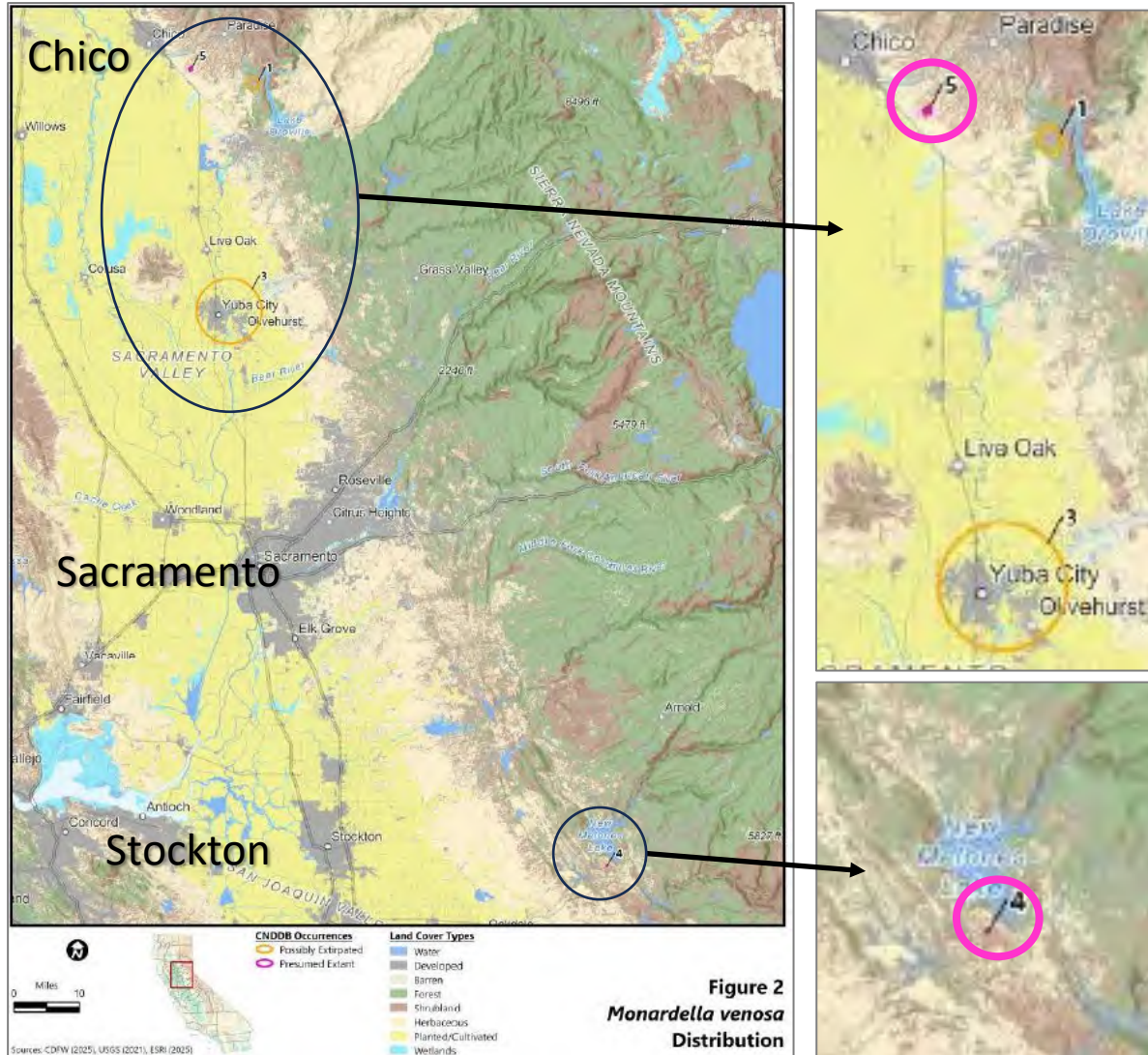
Photo credit: Kristi Lazar (CDFW)

Veiny monardella habitat

- Grasslands and oak woodlands
- Clay or clay-rich soils
- Small inclusions of gray-black vertisol soils (clay-rich soils that shrink and swell with changes in water content)



Range and Distribution



- Restricted to the Chico and Yuba City areas (Butte County) and the New Melones Lake area (Tuolumne County)
- Four element occurrences (EOs):
 - 2 EOs are extirpated
 - 2 EOs are presumed extant
- Figure is from the petition and shows California Natural Diversity Database (CNDDDB) occurrences

Abundance and Population Trend

- Tuolumne County EO:
 - 2,500 plants in 1998
- Butte County EO:
 - 3,000+ in 1992
 - Several thousand in the 1990s
 - 500,000 in 2023
- Area of occupied habitat:
 - 20 hectares (48 acres)
- Population decline based on extirpation of two historic EOs, reduced area occupied at one extant EO, possible extirpation of Tuolumne County EO



Photo credit: Kristi Lazar (CDFW)

Factors Affecting Survival and Reproduction

- Range-wide threats:
 - Agricultural and developed land uses
 - Climate change
 - Invasive species
- Other threats:
 - Dam/inundation
 - Grazing
 - Mining



Photo credit: Kristi Lazar (CDFW)



Degree and Immediacy of Threat

- Immediate threats:
 - Invasive plant species
- Potential future threats:
 - Development
 - Climate change
 - Grazing



Photo credit: Kristi Lazar (CDFW)

Veiny monardella interspersed with invasive annual grasses during Department surveys in 2025

Existing Management

- No legal protections
- No occurrences are on land managed for biodiversity
- No efforts to restore or create habitat for the species
- Landowner at one occurrence amenable to surveys and interested in a conservation easement but funding has been challenging to secure



Photo credit: Kristi Lazar (CDFW)

Department scientific aid, Jake Jacobsen,
performing veiny monardella surveys in 2025

Department Recommendation

Based on the information contained in the petition, and other relevant information in the Department's possession, the Department determined there is sufficient information to indicate that the petitioned action may be warranted.

The Department recommends that the Commission accept and consider the petition.



Thank You | Questions



Photo credit: Kristi Lazar (CDFW)

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Summary

- Annual plant in the mint family.
- Restricted to clay or clay-rich soils in grasslands and oak woodlands.
- Known from Chico/Yuba City areas of Butte County and a disjunct population in Tuolumne County.
- Four occurrences (two extant).
- Most imminent threat is invasive plant species. Development may threaten in the future.
- No legal protections and no occurrences are being managed.
- The Department recommends the Commission list veiny monardella as endangered under CESA.



Photo credit: Kristi Lazar (CDFW)



Petition Components: Insufficiency Example

Range and distribution was insufficient in petition due to lack of discussion on:

- Completeness of data
- Efforts to document full distribution
- Large gap between northern and southern extents

The Department had supplemental information that clarified the range and distribution

See Petition Evaluation report for additional details on petition insufficiencies

