

Added to California Rare Plant Rank 1B.1 of the CNPS Inventory on June 12, 2019

**Rare Plant Status Review: *Chorizanthe aphanantha*
Proposed Addition to California Rare Plant Rank 1B.1, G1 / S1**

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Changes made to the original document are in blue text.

Background and Taxonomy

Chorizanthe aphanantha K.M.Nelson & D.J.Keil is a newly described annual herb in the Polygonaceae known from serpentine soils in the Irish Hills of the San Luis Range of central-western San Luis Obispo County. It was described in 2018 and is therefore not included in the *Jepson eFlora* (Reveal and Rosatti 2014) or *Flora of North America North of Mexico* (Reveal 2005). It is similar to and confused with *C. breweri*, which it co-occurs with. *Chorizanthe aphanantha* is distinguished from *C. breweri* “by its compact, rather than sprawling habit; the green rather than red color of its herbage at the time of flowering; its much smaller, white, monomorphic perianth lobes, rather than white to pink, dimorphic lobes; bracts with straight, ascending, rather than recurved spine tips; smaller and smooth rather than transversely corrugated mature involucre; and basal leaf blades that are glabrous to minutely strigose, thin, and ovate to elliptic (occasionally mucronate) with obscure veins, rather than thick, leathery, reniform, and apically notched to [more or less] obcordate with pronounced veins. It differs from the recently described *C. minutiflora* R.Morgan, Steyer, & Reveal by its sparser and shorter pubescence, entire versus erose perianth lobes, nine rather than three stamens, ovate to elliptic rather than oblanceolate basal leaves, and flat rather than undulating leaf margins. It is distinguished from the morphologically similar *C. procumbens* Nutt. by its ovate to elliptic rather than oblong to oblanceolate leaf blades, its sparser and shorter pubescence, the presence of a narrow scarious margin on the involucral teeth, smaller flowers, and distinct rather than basally connate filaments.” (Nelson et al. 2018; see this publication for more in-depth details of taxonomic relationships and a key that distinguishes *C. aphanantha* from other *Chorizanthe* species in the San Luis Range).

Chorizanthe aphanantha was discovered in 2017 during a spring botanical survey of the Waddell Ranch, which is not previously known to have been botanically surveyed. It was initially collected and keyed to *C. procumbens* by Kristen Nelson; however, further inspection revealed novel, inconsistent characters, and it was later confirmed to be an undescribed species by David Keil. “The specific epithet *aphanantha* is derived from the Greek *aphanes* (unseen, invisible, obscure, secret) and *anthos* (flower), referring to plants characterized by very inconspicuous flowers.” (Nelson et al. 2018).

Ecology

Chorizanthe aphanantha occurs in openings among coastal scrub and chaparral in rocky to gravelly soils and outcrops that are derived from serpentine. “It was documented growing in partial shade and in full sun on flat to moderately-sloped areas” and “was frequently associated with the locally common *C. breweri*” (Nelson et al. 2018). *Chorizanthe aphanantha* is known from an approximate elevation of 100 to 370 meters, and primarily blooms from mid to late May. However, in some years it may flower as early as April or as late as (Nelson et al. 2018).

Sent to: CW, A. Colwell, R. Hill, B. Langle, K. Nessen, N. Rajakaruna, M. Ritter, T. Rosatti, J. Yost on 05/07/2019

Dominant species that occur with *C. aphanantha* on scrub covered, south-facing slopes include *Hesperoyucca whipplei*, *Artemisia californica*, and *Salvia mellifera*, along with less common individuals of *Acmispon junceus* var. *junceus* and *Diplacus aurantiacus*. Chaparral stands where *C. aphanantha* occurs are dominated by *Adenostoma fasciculatum*, *Ceanothus cuneatus* var. *ramulosus*, and *Quercus durata*, with other less common associates including *Heteromeles arbutifolia*, *Pickeringia montana*, and, in some cases, *Arctostaphylos obispoensis* (Nelson et al. 2018).

According to Nelson et al. (2018), in conjunction with reviewing the CNPS Online Inventory, several other rare or endangered serpentine-endemic plant taxa are reported to be known to occur within the Irish Hills Natural Reserve and nearby areas of the San Luis Range, including: *Arctostaphylos obispoensis* (4.3), *Calochortus obispoensis* (1B.2), *C. clavatus* var. *clavatus* (4.3), *Carex obispoensis* (1B.2), *Chorizanthe breweri* (1B.3), *C. palmeri* (4.2), *Cirsium fontinale* var. *obispoense* (1B.2), *Dudleya abramsii* subsp. *murina* (1B.3), and *Monardella palmeri* (1B.2) (current California Rare Plant Ranks are shown in parentheses; CNPS 2019). “Most of these species were observed on the Waddell Ranch property and in other sites in the Irish Hills, occupying habitats similar to those of *Chorizanthe aphanantha*” (see Nelson et al. 2018 for additional habitat and ecological information).

Distribution and Abundance

Chorizanthe aphanantha is known from a single occurrence from Irish Hills Natural Reserve in the Irish Hills portion of the San Luis Range in San Luis Obispo County. A portion of its occurrence is located on land that was formerly privately owned by the Waddell family, called Waddell Ranch, which is now part of the Irish Hills Natural Reserve. A year after its discovery, focused botanical surveys for *C. aphanantha* were conducted by K. Nelson in May and early June of 2018 to document its geographical range. Wherever found, individuals and populations of *C. aphanantha* were documented using a Trimble hand-held GPS with sub-meter accuracy. Nelson (2018) mapped 25 points and 11 polygons of *C. aphanantha*, and mapped 17 line features of where it occurred along trails, conducting individual count estimates at each record. *Chorizanthe aphanantha* makes up two general populations that are close enough to each other to be considered a single occurrence. We only included herbarium records from Nelson et al. (2018) in the “Localities” section of the attached “NewAdd_ChorizantheAphanantha” spreadsheet for efficiency, since the voucher records represent the general range of the species as a whole.

Chorizanthe aphanantha was observed growing as sparsely scattered individuals or occasionally as dense patches. It’s estimated to have a total population size of approximately 24,000 individuals, occupying an estimated area of about 2 hectares within a total area of 242 hectares (Nelson 2018; Nelson et al. 2018).

The occurrence is recent, having been documented in 2017 and 2018. In addition to field surveys in 2017 and 2018, Nelson et al. (2018) searched collections of *Chorizanthe* in the Robert F. Hoover Herbarium (OBI) for potential mis-identified specimens of *C. aphanantha*, and no misidentified specimens were discovered. They also visited several other serpentine sites in the San Luis Obispo area, with no further occurrences being found. Though currently only known to occur in the Irish Hills, it is possible that a few additional occurrences exist in nearby serpentine

islands in San Luis Obispo or adjacent counties. However, it seems unlikely that a significant number of additional occurrences of *Chorizanthe aphanantha* will be discovered.

Status and Threats

The Waddell Ranch property where *C. aphanantha* was first found went from being privately owned to being placed in permanent conservation status under new management of the City of San Luis Obispo in January of 2017, along with the rest of the Irish Hills Natural Reserve. Past known land use on Waddell Ranch and adjacent areas included livestock grazing, chromite mining, and public recreation, with the latter consisting of a network of recreational trails throughout city-owned portions of the Irish Hills, where *C. aphanantha* was found. *Chorizanthe aphanantha* primarily occurs at the edge of chaparral shrub and often along trail margins, with no plants found under dense shrub cover, indicating that it appears tolerant of low to moderate levels of this type of disturbance (Nelson et al. 2018).

Although the area where *C. aphanantha* occurs is now under permanent conservation, Nelson et al. (2018) note that “uncertainty of future impacts to the population such as prolonged drought, catastrophic wildfire, or unintended anthropogenic impacts remain, and the fact that the species has just one known occurrence, justify consideration for inclusion in the Inventory of Rare and Endangered Plants of California.”

Summary

Based on the available information, CNPS and CNDDDB recommend adding *Chorizanthe aphanantha* to California Rare Plant Rank 1B.1 of the CNPS Inventory. Although not apparently under any direct threat, we recommend a threat rank of .1 based on it being known from only one occurrence, and therefore potentially threatened by unforeseen stochastic events. If knowledge on the distribution, threats, and rarity status of *C. aphanantha* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Chorizanthe aphanantha* to CRPR 1B.1

CNDDDB: Add *Chorizanthe aphanantha* to G1 / S1

Draft CNPS Inventory Record

Chorizanthe aphanantha K.M.Nelson & D.J.Keil

Irish Hills ~~secret~~ spineflower

Polygonaceae

CRPR 1B.1

San Luis Obispo

Pismo Beach (221B) 3512026, San Luis Obispo (246C) 3512036

Chaparral (edges, openings), coastal scrub / serpentinite, rocky to gravelly; elevation 100 - 370 meters.

Annual herb. Blooms May to June.

Similar to and co-occurs with *C. breweri*; differentiated in having perianth 1.5-1.7 mm long (vs. 2-5 mm) and involucre green at flowering (vs. red to purple at flowering in *C. breweri*). See *Madroño* 65(4):184-191 (2018) for original description and taxonomic key.

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Literature Cited

[CNPS] California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 03 May 2019].

Nelson, K. M. 2018. Results of focused botanical surveys for Irish Hills spineflower (*Chorizanthe aphanantha*) completed in the Irish Hills Natural Reserve, City of San Luis Obispo, California. Terra Verde Environmental Consulting report submitted to Robert Hill, Natural Resources Manager, City of San Luis Obispo. 15 pp.

Nelson, K. M., D. J. Keil, and R. A. Hill. 2018. *Chorizanthe aphanantha* (Polygonaceae: Eriogonoideae), a new serpentine-endemic species from the San Luis Range of western San Luis Obispo County, California. *Madroño* 65(4): 184-191. (Original description.)

Reveal, J. L. 2005. *Chorizanthe*. Pp. 445–470 in Flora of North America Editorial Committee, (eds.), *Flora of North America North of Mexico*, Vol. 5. Oxford University Press, New York, NY and Oxford.

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