

Added to 1B.1 in the CNPS Inventory on January 3, 2013**Rare Plant Status Review: *Castilleja ambigua* var. *meadii*****Proposed New Add to Rank 1B.1, G4T1 / S1**

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Changes made to the original document appear in blue text.

Background

Castilleja ambigua var. *meadii* is an annual hemiparasitic herb in the Orobanchaceae family that is endemic to a small area of the Atlas Peak plateau in Napa County. It is not included in *The Jepson Manual* (TJM 1993) or *The Jepson Manual, Second Edition* (TJM 2); the *Flora of North America* (FNA) treatment for Orobanchaceae is not yet available. *Castilleja ambigua* is a widely-distributed, morphologically variable species that is distributed from southern California to southwestern British Columbia (Egger et al. 2012, TJM 2). Three other infraspecific taxa, all of which are CNPS-ranked (*ambigua*, Rank 4.2; *humboldtiensis*, Rank 1B.2; and *insalutata*, Rank 1B.1), are also recognized at the subspecific level in TJM 2, but are treated as varieties by Egger (2008). For consistency, we consider all infraspecific taxa varieties rather than subspecies in this status review, and also recommend changing the subspecies of *C. ambigua* in the CNPS Inventory to varieties, following Egger (2008). Variety *meadii* is unique within the species in having a “wispy” growth form, linear (vs. lanceolate to broadly lanceolate) leaf and bract lobes, and upright (vs. decumbent) habit (Egger et al. 2012). Varieties *humboldtiensis* and *insalutata* are strictly coastal taxa, while var. *meadii* only grows inland. Variety *ambigua* is more adaptable, occurring in a wide variety of habitats both along the coast and inland (Egger et al. 2012). *Castilleja ambigua* var. *meadii* was placed within *C. ambigua* based on morphological similarity; a phylogenetic study on the group is currently underway by D. Tank at the University of Idaho (Egger et al. 2012), and the data produced so far provides very strong evidence that *C. ambigua* var. *meadii* should be elevated to species status (D. Tank pers. comm. 2012). Populations of *C. ambigua* var. *ambigua* have been found in the Foss Valley, (Ruygt 1598, 4432), approximately 3 km from a population of var. *meadii*, but the two apparently do not intergrade (Egger et al. 2012; Consortium of California Herbaria, CCH, 2012). The original description of *C. ambigua* var. *meadii* by Egger et al. (2012) was published in *Phytoneuron*, an electronic-only journal. New rules adopted in the International Code of Botanical Nomenclature (ICBN) on January 1, 2012 permit valid publications in electronic-only journals with an ISSN number (Nesom 2012), so the publication is considered valid. *Castilleja ambigua* var. *meadii* flowers from April to May.

Castilleja ambigua var. *meadii* has specific habitat restrictions, which also separate it from the other varieties. It only occurs in wet areas, such as vernal pools, seasonally wet meadows, and along the edges of ephemeral streams (Egger et al. 2012). These areas are found within larger chaparral and cismontane woodland communities. Where it occurs, the soils are thin, gravelly, and high in clay content. The soils and underlying

bedrock are of volcanic origin (Egger et al. 2012). *Castilleja ambigua* var. *meadii* occurs between 450 and 475 meters in elevation (Egger et al. 2012).

Egger et al. (2012) provide details on five separate colonies of *C. ambigua* var. *meadii*. However, three of those colonies are close enough to be considered a single occurrence since they are all within a quarter of a mile apart (CNDDDB 2012), so there are actually only three known occurrences of the plant (see occurrence number 1 in the “Localities” section of the attached “NewAdd_CastillejaAmbiguaMeadii” spreadsheet). The three occurrences only span an area about 2 km x 0.5 km. One of the colonies in occurrence number 1 has already been extirpated, presumably due to encroachment from invasive weeds (Egger et al. 2012). Two of the three occurrences are on Mead Ranch and are protected under a conservation easement with the Land Trust of Napa County (LTNC). The third occurrence is on an adjacent property; it is partially protected under a conservation easement between LTNC and a previous landowner that is now honored by the current landowner (Egger et al. 2012). The two Mead Ranch occurrences are recent, while the other occurrence has not been documented since 1987 (occurrences not “seen” in the past 20 years are considered historical by the CNDDDB). More occurrences of *C. ambigua* var. *meadii* should be sought after on adjacent properties and in the Howell Mountain area (Egger et al. 2012).

Although threats to *C. ambigua* var. *meadii* are mostly speculative, it should be considered highly threatened. Despite the fact that it is known only from conservation easements, one colony has already been extirpated, presumably by invasive weeds, which possibly threaten other colonies within the easements. Furthermore, most of the land in the Atlas Peak area is privately-owned, and therefore pressure to develop vineyards also poses a possible threat to other, potentially undiscovered occurrences. Also, vernal pools, where *C. ambigua* var. *meadii* is often found, are a particularly threatened habitat type in California: over 90% of the state’s vernal pools have already been lost (EPA 2012).

Based on the available information, CNPS and CNDDDB recommend adding *Castilleja ambigua* var. *meadii* to California Rare Plant Rank 1B.1. If current records are later found to be an under-representation of its actual distribution and frequency, CNPS and CNDDDB will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Castilleja ambigua* var. *meadii* to California Rare Plant Rank 1B.1

CNDDDB: Add *Castilleja ambigua* var. *meadii* to G4T1 / S1

CNPS & CNDDDB: Change name of *C. ambigua* ssp. *ambigua* to var. *ambigua*, *C. ambigua* ssp. *humboldtiensis* to var. *humboldtiensis*, *C. ambigua* ssp. *insalutata* to var. *insalutata*

Draft CNPS Inventory Record

Castilleja ambigua Hook. & Arn. var. *meadii* J.M. Egger & J.A. Ruygt
Mead’s owl’s-clover

Orobanchaceae

Rank 1B.1

Napa

Cappell Valley (499B) 3812242, Yountville (500A) 3812243

Vernal pools, meadows and seeps / clay, gravelly, volcanic; elevation 450 – 475 meters.

Annual hemiparasitic herb. Blooms April to May.

Known only from the Atlas Peak area; needs field surveys. Threatened by non-native plants. Potentially threatened by vineyard development. Not in *TJM* 2. See

Phytoneuron 2012-68:1-12 (2012) for original description.