

Added to California Rare Plant Rank 2B.1 of the CNPS Inventory on 4 September 2020**Rare Plant Status Review: *Orthocarpus bracteosus*
Proposed Addition to California Rare Plant Rank 2B.1, G3 / S1**

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Changes made to the original document are in blue text.

Background and Taxonomy

Orthocarpus bracteosus Benth. is an annual herb in the Orobanchaceae that is naturally known from northern California, north to Oregon, Washington, and British Columbia, Canada. It also occurs in Maryland and New York, where it's considered to be exotic (NatureServe 2020). *Orthocarpus bracteosus* is included in the *Jepson eFlora* (Wetherwax et al. 2012) and the Orobanchaceae treatment in the *Flora of North America* has not been published. The majority of collections of *O. bracteosus* from California are more than 40 years old, but a large population was recently discovered by Natalie Pyrooz on August 9, 2019, in Westwood, Lassen County, near Lassen National Forest. This recent discovery brought attention to the rarity of this species in California, and identified the need for this species to be reviewed for inclusion in the CNPS Inventory. *Orthocarpus bracteosus* is most similar to *O. luteus* and can be differentiated in having a white to purple corolla (vs. golden-yellow), that is generally 12-20 mm (vs. 10-15 mm), beak tip strongly hooked (vs. beak tip obscurely hooked), lower corolla lip deeply pouched (vs. lower corolla lip moderately pouched), and no teeth (vs. 3 incurved teeth in *O. luteus*) (Wetherwax et al. 2012). The specific epithet *bracteosus* refers to well developed or conspicuous bracts; within *Orthocarpus* bracts are an early dividing characteristic within the dichotomous key (Charters 2020).

Ecology

In California, *Orthocarpus bracteosus* occurs in meadows and seeps, and is known from an approximate elevation of 1,030 to 1,850 ~~1,000 to 2,000~~ meters, with a blooming period from June to September ~~August~~ (CCH1 2020, Google LLC 2020, Wetherwax et al. 2012 ~~Pyrooz pers. comm. 2019~~). Potential associated species include: *Orthocarpus hispidus*, *Trifolium* sp., and *Juncus* sp. (JEPS74940, CCH1 2020).

Distribution and Abundance

Orthocarpus bracteosus is known in California from ~~seven~~ ~~nine~~ occurrences within Plumas, Siskiyou, Modoc, and Lassen counties. All but one of the ~~seven~~ ~~nine~~ occurrences (~~~90%~~) are considered historical (occurrences not seen in over 20 years are considered historical by CNDDDB). One occurrence is located in the Modoc National Forest, ~~another is located in the Shasta-Trinity National Forest~~, and the remaining ~~six~~ ~~seven~~ are on land of unknown ownership. An additional record from Modoc National Forest based on a collection in "open pine forest on stony reddish clays derived from volcanics" (*Savage 1553*) is discounted as a likely misidentification since *O. bracteosus* is only known from seep and meadow habitat. A 1978 collection by Jokerst from a seep at the edge of a meadow "five miles east of Weed" (*Jokerst 159*, CHSC28801) was mapped on the north side of Mt. Shasta and thought to occur within Shasta-Trinity National Forest. However, according to J. Kierstead (pers. comm. 2020), this collection was more likely made from the meadow system north of Highway 97 near Big Springs

Road intersection, and appears to be privately owned. Preston (pers. comm. 2020), on the other hand, thinks that the “east” in Jokerst’s collection is more likely a typo, and that it was actually collected west of Weed along Stewart Springs Road, where there are meadows and springs. Based on a collection by Jokerst made the previous day (September 2, 1978) of *Cordylanthus tenuis* subsp. *viscidus* from an “area several miles w of Weed” (Jokerst 152, CHSC28795), we propose following R. Preston’s hypothesis and mapping the Jokerst specimen west of Weed along Stewart Springs Road.

The two oldest collections from 1877 and 1880 from Plumas County (*Unknown s.n.* JEPS16386 and *Austin s.n.* SD7032, respectively) are possibly extirpated due to development and habitat conversion to farmland in the areas they were collected ~~are found~~ (Pyrooz pers comm. 2019, CCH1 2020).

Two collections from Riverside and Santa Barbara counties (SEINET12766525, SD216528) have been discounted because they are well outside of the expected range and are likely to be misidentified (Pyrooz pers comm. 2019, CCH1 2020). These vouchers were also collected in early- and mid-April, whereas *O. bracteosus* has a later blooming start of June.

Status and Threats

In California, possible threats to *Orthocarpus bracteosus* due to the nature of its preferred habitat requirements include grazing, habitat conversion development, invasive species, and hydrological alterations (Pyrooz, N. pers comm. 2019). “The occurrence found in Westwood in 2019 is in a county park and in a meadow which does not appear to get a high amount of recreational use. While it does not seem currently threatened, a change in land ownership or habitat conversion could become a problem” (Pyrooz, N. pers comm. 2019). *Orthocarpus bracteosus* is not ranked in Oregon and is considered Imperiled (S2) in Washington and Critically Imperiled (S1) in British Columbia, Canada (NatureServe 2020).

Summary

Based on the available information, CNPS and CNDDDB recommend adding *Orthocarpus bracteosus* to California Rare Plant Rank 2B.1 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *O. bracteosus* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Orthocarpus bracteosus* to CRPR 2B.1

CNDDDB: Add *Orthocarpus bracteosus* to G3 / S1

Draft CNPS Inventory Record

Orthocarpus bracteosus Benth.

rosy orthocarpus

Orobanchaceae

CRPR 2B.2

Plumas(?), Lassen, Modoc, Siskiyou

Oregon, Washington; British Columbia, Canada

Crescent Mills (605C)(?) 4012018, Westwood East (623C) 4012038, Chester (624C)(?)

4012132, Westwood West (624D) 4012131, Lane Reservoir (676D) 4112017, Canby (693A)

4112047, ~~Hotlum (699A)~~ 4112243, City Of Mount Shasta (699D) 4112233, [Weed \(699B\)](#)
[4112244](#), Davis Creek (708A) 4112063

Meadows and seeps; elevation [1,030-1,850](#) ~~1,000-2,000~~ meters.

Annual herb. Blooms June to ~~September~~ [August](#).

Possibly threatened by grazing, [habitat alteration, non-native plants development](#), and hydrological alterations. [See *Scrophularineae Indicae* 13 \(1835\) for original description.](#)

Literature Cited

Charters, M. 2020. Botanical Names. Website

<http://www.calflora.net/botanicalnames/index2.html> [accessed 14 July 2020].

[CCH1] Consortium of California Herbaria. 2020. Website

<https://ucjeps.berkeley.edu/consortium/> [accessed 14 July 2020].

NatureServe. 2020. NatureServe Explorer: An online encyclopedia of life [web application].

NatureServe, Arlington, Virginia. Website <http://explorer.natureserve.org/> [accessed 14 July 2020].

Wetherwax, M., T. I. Chuang, L. R. Heckard. 2012. *Orthocarpus*. In: Jepson Flora Project (eds.), Jepson eFlora. Website <http://ucjeps.berkeley.edu/IJM.html> [accessed 14 July 2020].

Personal Communications

Pyrooz, Natalie. 2020. US Forest Service, Lassen National Forest. CNPS Inventory New Addition/List Upgrade Data Form, CNPS Inventory Status Change Request. Email regarding new addition form. Original form dated 21 October 2019, email 16 July 2020.