

**Added to California Rare Plant Rank 1B.3 of the CNPS Inventory on July 18, 2017****Rare Plant Status Review: *Castilleja lassenensis*  
Proposed Addition to California Rare Plant Rank 1B.3, G3 / S3**

Kaitlyn Green (CNPS), Aaron E. Sims (CNPS), and Roxanne Bittman (CNDDDB)  
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Changes made to the original document are in blue text.

**Background**

*Castilleja lassenensis* Eastw. is a perennial herb in the Orobanchaceae presumably only known from the vicinity of Lassen Volcanic National Park in northern California. It is not included in *The Jepson Manual* (Chuang and Heckard 1993) or *The Jepson Manual, Second Edition* (Wetherwax et al. 2012); the Orobanchaceae treatment in the *Flora of North America* is not yet published. *Castilleja lassenensis* was originally described in 1940 by A. Eastwood, but was considered to be a synonym of *C. lemmonii* (a common taxon) in all major floristic treatments since. During a study looking at a new species from Southern Oregon, *C. collegiorum*, Egger and Malaby (2015) examined many *Castilleja* specimens from the field, herbariums, and photographs from Mt. Lassen. It became evident to Egger and Malaby that the plants previously annotated as *C. lemmonii* in the northern most portion of the range showed consistent differences from those in the central and southern Sierra Nevada populations; concluding that they warrant treatment as two separate species. *Castilleja lassenensis* can be differentiated from *C. lemmonii* by the beak and tube of corollas, with entirely white or white with pale salmon margins on beak (vs. greenish on the upper surface with blood red margins on beak), lower lip pale green to yellow-green with white distal teeth (vs. lower lip greenish with violet-purple distal teeth), stigmas pale green (vs. greenish to dark bluish-purple), and proximal half of calyces pale green becoming violet-purple only on the distal half (vs. calyces usually at least pale violet-purple throughout in *C. lemmonii*). In addition to the physical differences in coloration, *C. lassenensis* is presumed to be endemic to the volcanic substrates around Mt. Lassen, with *C. lemmonii* found primarily in granitic substrates in the Sierra Nevada (Egger and Malaby 2015).

*Castilleja lassenensis* occurs in volcanic substrate in subalpine coniferous forests as well as meadows and seeps at an approximate elevation of 955-3,120 meters, and is known to bloom from June to September.

*Castilleja lassenensis* is known from an estimated 2726 occurrences comprised of 6564 records/collections. Of the 2726 occurrences, 2224 of them are considered historical (occurrences not seen in over 20 years are considered historical by the CNDDDB). All but five occurrences are located in the Lassen Volcanic National Park or Lassen National Forest; the remaining five have an unknown landownership. Presumably due to its treatment as a synonym of *C. lemmonii* in *The Jepson Manual*, only the type specimen of *C. lassenensis* (Jussel s.n., CAS187874) is included in the Consortium of California Herbaria (2017), and all other records of it are labeled as *C. lemmonii*. A small number of specimens labeled *C. lemmonii* in the Consortium of California Herbaria have past annotation information indicating they were previously determined to be *C. lassenensis*. All other records we've included as *C. lassenensis* from the Consortium of California

Herbaria was done using the geographic distinction from Egger and Malaby's (2015) recognition that it only occurs on the flanks of Mt. Lassen. This points to the need for the participants of the Consortium of California Herbaria to include all past annotations in their accessions, and for this data to always be present in CCH.

Additional surveys are needed in order to truly determine the status of this species and how far its range might extend. Steve Buckley of Lassen Volcanic National Park (pers. comm. 2017), indicates that he is not even sure as to whether they only have *C. lassenensis* at the park, or whether *C. lemmonii* also occurs there: "The challenge is we cannot go back and look at older specimens because the distinguishing characters are floral and it would be difficult to definitively say anything about their identity..." and "[a]ll of our [LVNP] specimens have been identified as being *C. lemmonii*." Buckley first arrived at the Park in August, and plans to do field surveys for it this summer. [David Tank out of University of Idaho continues to study the phylogeny of \*Castilleja\*. His PhD graduate student, Sarah Jacobs, is near completion of her dissertation work on the delimitation and diversification dynamics of several species complexes in \*Castilleja\*. Although Sarah included samples of both \*C. lemmonii\* and \*C. lassenensis\* in her study, and both came out separate, there is not enough evidence to conclude that \*C. lassenensis\* constitutes a genetically unique taxon. Further study with a direct focus on \*C. lassenensis\* is needed in order to make an informed decision on its taxonomic status. Nevertheless, D. Tank agrees with the work of Mark Egger, and insofar as he knows, \*C. lassenensis\* appears to be a regionally distinct species that is disjunct from \*C. lemmonii\*, and only occurs within the vicinity of Mount Lassen \(D. Tank pers. comm. 2017\).](#)

There are no documented threats to *Castilleja lassenensis*. Buckley (pers. comm. 2017) suspects that climate change might be its biggest threat, though knowing more about its distribution will help confirm that determination.

Based on the available information, CNPS and CNDDDB recommend adding *Castilleja lassenensis* to California Rare Plant Rank 1B.3 of the CNPS Inventory. We recommend a threat rank of .3 as no threats are currently documented for this species, and approximately 80% of its occurrences are on federally managed lands. If knowledge on the distribution, threats, and rarity status of *C. lassenensis* changes in the future, we will re-evaluate its status at that time.

### **Recommended Actions**

CNPS: Add *Castilleja lassenensis* to CRPR 1B.3

CNDDDB: Add *Castilleja lassenensis* to G3 / S3

### **Draft CNPS Inventory Record**

*Castilleja lassenensis* Eastw.

Lassen paintbrush

Orobanchaceae

CRPR 1B.3

Lassen, Plumas, Shasta, Tehama

Westwood East (623C) 4012038, Swain Mountain (624A) 4012141, Chester (624C)

4012132, Mt. Harkness (625A) 4012143, Reading Peak (625B) 4012144, Lassen Peak

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(626A) 4012145, Mineral (626D) 4012135, Swains Hole (643A) 4012163, Prospect Peak (643D) 4012153, [Thousand Lakes Valley \(644A\) 4012165](#)), Manzanita Lake (644D) 4012155, Burney (662B) 4012186

Subalpine coniferous forest, meadows and seeps/ volcanic; elevation 955-3,120 meters. Perennial herb. Blooms June to September.

[Previously CBR as being a synonym of \*C. lemmonii\*; a common taxon.](#) Similar to *C. lemmonii*; differentiated by floral coloration and in being endemic to volcanic substrates on the flanks of Mt. Lassen versus growing primarily in granitic substrates in the Sierra Nevada. See [Leaflets of Western Botany 2:241-245 \(1940\) for original description](#), and [Phytoneuron 2015-33:1-13 \(2015\) for taxonomic treatment](#)~~original description~~.

### Literature Cited

Chuang T.I., Heckard L.R. 1993. *Castilleja*. Pp 1016-1024. in The Jepson Manual: Higher Plants of California. University of California Press, Berkeley.

Consortium of California Herbaria. 2016. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley. Website <http://ucjeps.berkeley.edu/consortium/> [accessed 16 February 2017].

Eastwood, A. 1940. Studies in *Castilleja*. 1. *Castilleja* in the Marble Mountains, Siskiyou County, California. 2. Miscellaneous new species. Leaflet. W. Bot. 2: 241-245.

Egger, J.M. and S. Malaby. 2015. *Castilleja collegiorum* (Orobanchaceae), a new species from the Cascade Mountains of southern Oregon, and the status of *Castilleja lassenensis* Eastw. *Phytoneuron* 2015-33: 1-13.

Weatherwax M., Chuang T.I., Heckard L.R. 2012. *Castilleja*. Pp. 956-964. in Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.), The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley, CA.