

Kept as CRPR 1B.1 in the CNPS Inventory on July 26, 2011

Rare Plant Status Review:

Proposed Deletion of *Caulanthus amplexicaulis* var. *barbarae* from Rank 1B.1 based on *Flora of North America* and *The Jepson Manual, 2nd Edition* Treatments

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Changes made to original document appear in blue text.

Background

The two varieties of *Caulanthus amplexicaulis*, var. *barbarae* and var. *amplexicaulis*, were treated as a monotypic species, *C. amplexicaulis*, in both the *Flora of North America* (FNA), Vol. 7 (available online at: http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250094875), and *The Jepson Manual, Second Edition* (TJM 2) (available online at: http://ucjeps.berkeley.edu/tjm2/review/treatments/brassicaceae_all.html#18392). *Caulanthus amplexicaulis* var. *barbarae* was originally treated as *Streptanthus amplexicaulis* var. *barbarae* by J. T. Howell in *Leaflets of Western Botany* 9: 223 (1962), and was later recognized as *Caulanthus amplexicaulis* var. *barbarae* by Munz in *A California Flora and Supplement* (1968) and by R. E. Buck in *The Jepson Manual* (1993) and *Systematics of Caulanthus* (PhD thesis 1995). In 2001, Pepper and Norwood (*Amer. J. Bot.* 88: 1479-1489) found that *C. amplexicaulis* is monophyletic relative to other *Streptanthus* and *Caulanthus* taxa, and that both var. *barbarae* and var. *amplexicaulis* formed a distinct are monophyletic based on one nuclear sequence and one chloroplast sequence, but that they occur without reproductive barriers (FNA, Vol. 7). The aforementioned references (Buck 1993 and 1995, Pepper and Norwood 2001) were cited in the species account of *C. amplexicaulis* in FNA, Vol. 7, however, the varieties were lumped and treated as a monotypic species in FNA, Vol. 7 (and subsequently in TJM 2), presumably based on their apparent lack of reproductive barriers in addition to the following hypothesis: "Some other species of *Caulanthus* show comparable or even greater variation in sepal color, and it might be more practical to treat var. *barbarae* as a color form" (FNA, Vol. 7).

Since numerous plant subspecies and varieties are known to occur without reproductive barriers in California (*Arctostaphylos mewukka* ssp. *truei* intergrades with ssp. *mewukka*, *Clarkia biloba* ssp. *brandegeae* intergrades with ssp. *biloba*, *Calochortus weedii* var. *intermedius* intergrades with var. *weedii*, *Chaenactis douglasii* var. *alpina* intergrades with var. *douglasii*, etc.; CNPS Inventory 2011) and Pepper and Norwood (2001) found both that each variety of *Caulanthus amplexicaulis* is monophyletic, we feel that var. *barbarae* still warrants recognition. Furthermore, just because *C. amplexicaulis* var. *amplexicaulis* and var. *barbarae* cross readily and produce fertile progenies under experimental greenhouse conditions (Pepper and Norwood 2001), it does not imply that they are reproductively isolated in nature; under natural conditions they are both well separated geographically and ecologically (Dieter Wilken pers. comm. 2011). Lastly, Pepper and Norwood (2001) note that *C. amplexicaulis* var.

barbarae “has an exceedingly limited distribution...” with “[s]everal of the populations [] potentially threatened by road building and maintenance, off-road vehicle activity, mining, and other pressures”, and “it should be granted a conservation status appropriate to an ecologically and phylogenetically distinct evolutionary unit.”

Based on the available information, CNPS and CNDDDB recommend that *Caulanthus amplexicaulis* var. *barbarae* be kept as a rank 1B.1 taxon in the CNPS Inventory, in contrary to its treatment in FNA, Vol. 7, and TJM 2.

Recommended Actions

CNPS: Keep as CNPS 1B.1

CNDDDB: Keep as CNDDDB G4T1 / S1

Revised Inventory Record

Caulanthus amplexicaulis Wats. var. *barbarae* (J.T. Howell) Munz

Santa Barbara jewel-flower

Brassicaceae

Rank 1B.1

Santa Barbara

Figueroa Mtn. (168B) 34119F8, Los Olivos (169A) 34120F1, Bald Mountain (193C) 34119G8, Zaca Lake (194D) 34120G1

Closed-cone coniferous forest, Chaparral, Cismontane woodland / Serpentinite; elevation 470-1220 meters.

Annual herb. Blooms May to July.

Known from fewer than 5 occurrences in the San Rafael Mtns. Potentially threatened by road construction and maintenance, fire suppression, non-native plants, vehicles, mining, and grazing. Possibly threatened by foot traffic and recreational activities. A synonym of *C. amplexicaulis* in *TJM 2*. See *Leaflets of Western Botany* 9:223 (1962) for original description and *American Journal of Botany* 88:1479-1489 (2001) for taxonomic treatment.