

**Added to 1B.3 in the CNPS Inventory on July 16, 2014**

**Rare Plant Status Review: *Calystegia vanzuukiae***  
**Proposed Addition to California Rare Plant Rank 1B.3, G2Q / S2**  
 Danny Slakey (CNPS), Aaron E. Sims (CNPS) and Roxanne Bittman (CNDDDB)  
 June 10, 2014

**Background**

*Calystegia vanzuukiae* is a perennial rhizomatous herb in the Convolvulaceae that only grows in the foothills of El Dorado and Placer Counties. It was first described by Brummitt and Namoff (2013), and therefore was not included in earlier publications, such as *The Jepson Manual* (Brummitt 1993) and *The Jepson Manual, Second Edition* (Brummitt 2012). However, *C. vanzuukiae* will likely be added to the Jepson eFlora Project (2014). The *Flora of North America* treatment is not yet available. *Calystegia vanzuukiae* is currently thought to be a stabilized hybrid between *Calystegia stebbinsii* and *Calystegia occidentalis*, but further investigation is needed. Chloroplast data show a close relationship to *C. stebbinsii*, while nuclear data show a closer relationship to *C. occidentalis*, consistent with the idea of a hybrid origin (Brummitt and Namoff 2013). *Calystegia vanzuukiae*, like *C. stebbinsii*, is restricted to serpentine and gabbro soils, but the former has fewer, wider leaf divisions, as well as the unique character of having flowers with toothed and untoothed bracteoles on the same plant. Also, the two plants have an approximately 20 km disjunction, with *C. stebbinsii* occurring to the southwest of *C. vanzuukiae*. The plant with the morphology most similar to *C. vanzuukiae* is actually *Calystegia occidentalis* subsp. *occidentalis*. *Calystegia vanzuukiae* is distinguished from *C. occidentalis* subsp. *occidentalis* by its narrower, more deeply divided leaves, and often-toothed bracteoles. *Calystegia occidentalis* subsp. *fulcrata* also shares the character of toothed bracteoles with *C. vanzuukiae*, but has wider leaflets and occurs 110 km to the south of *C. vanzuukiae* (Brummitt and Namoff 2013). Despite the likely hybrid origin of *C. vanzuukiae*, there was no evidence of introgression, as all the populations seen by Brummitt and Namoff (2013) were very uniform. *Calystegia vanzuukiae* flowers from May until August.

At the time Brummitt and Namoff (2013) published the original description of *C. vanzuukiae*, the plant was thought to grow near populations of *C. occidentalis* subsp. *occidentalis*, but with at least a half mile between populations of the two taxa. However, further investigation by S. Namoff, A. Walker, L. Janeway, and D. Ayres (pers. comm. 2014) showed that the two taxa co-occur at the Traverse Creek Botanical Special Interest Area in El Dorado County, about 10 km south of the nearest occurrence of *C. vanzuukiae*. For example, *Janeway 9092* from serpentine soil at the botanical area keys out to *C. occidentalis* subsp. *occidentalis*, while other plants from the area more closely align with *C. vanzuukiae* (L. Janeway and S. Namoff pers. comm. 2014; Consortium of California Herbaria, CCH, 2014). The uniformity of *C. vanzuukiae* specimens apparently no longer applies throughout the entire range of the species. Before this discovery, *C. occidentalis* subsp. *occidentalis* was not thought to grow on serpentine, at least in this vicinity (Brummitt and Namoff 2013). In light of this discovery, S. Namoff (pers. comm. 2014) states that, even though reproductive isolation between the two taxa is not complete, adaptation of *C. vanzuukiae* to ultramafic soils is likely. She therefore advocates for inclusion on California Rare Plant Rank (CRPR) 1B

Sent to: SN, D. Ayres, V. Lyon, S. Namoff, A. Walker on 06/10/2014

of the CNPS Inventory. However, she also acknowledges the possibility that the *C. vanzuukiae* form could merely be a plastic response of *C. occidentalis* to the harsh serpentine environment.

*Calystegia vanzuukiae* grows in chaparral and cismontane woodlands of the central Sierra Nevada foothills. It has only been found growing on serpentine or gabbro soils, and is therefore thought to be restricted to those soil types (Brummitt and Namoff 2013). It occurs between about 500 and 1180 meters in elevation.

There are currently ten known occurrences of *Calystegia vanzuukiae*. Of those, five are definitely on the Tahoe National Forest and an additional two occurrences may be on the Tahoe National Forest as well. An occurrence from the Traverse Creek Botanical Special Interest Area is on the El Dorado National Forest, and an additional specimen from Otter Creek is likely also on the El Dorado National Forest. Eight of the ten occurrences are located in Placer County, and two are from El Dorado County. Only two occurrences are historical (occurrences not seen in the past 20 years are considered historical by the CNDDDB). It is unlikely that very many additional specimens of *C. vanzuukiae* would be found in herbaria. Brummitt and S. Namoff thoroughly examined the specimens at some of the major California herbaria, including those at University of California Davis, UC and Jepson Herbaria, Rancho Santa Ana Botanic Garden, UC Riverside, and the California Academy of Sciences, and were only able to find four additional specimens of the plant (S. Namoff pers. comm. 2014). Only a few additional specimens of *C. occidentalis* from Placer and El Dorado Counties are included in the CCH (2014), and none of these were noted to occur on serpentine or gabbro soils.

Threats to *Calystegia vanzuukiae* are not well-known, except at the type locality along the Western States Trail. At this location, exploratory drilling for gold was considered by the U.S. Forest Service in 2013 (Lyon 2013). The status of that mining operation is currently unknown. Exploratory drilling at the site would likely only harm a few plants within the extensive occurrence, but if gold was discovered at the site, gold mining operations could pose a greater threat to the type locality (K. VanZuuk pers. comm. 2014). In addition to the potential threat from mining at the type locality, several other threats could stem from the pending construction of a staging area within about a mile of the type locality. Although there would be no direct impacts, there could be an increase in use of the Western States Trail, increasing the risk of introduction of nonnative species. Several noxious weeds, including *Centaurea solstitialis* and *Taeniatherum caput-medusae*, have already been found at the site, and increased use could result in further introductions of nonnative plants. Additionally, off-highway vehicle users entering at the staging area could ride off-trail and damage the occurrence, so a fence may be erected to keep users on trails (K. VanZuuk pers. comm. 2014).

Based on the available information, CNPS and CNDDDB recommend adding *Calystegia vanzuukiae* to California Rare Plant Rank 1B.3. Although intergradation with *C. occidentalis* may occur at one site, the best evidence currently supports taxonomic recognition of *C. vanzuukiae*. If more information on this plant becomes available in the future, CNPS and CNDDDB will re-evaluate it at that time.

### Recommended Actions

CNPS: Add *Calystegia vanzuukiae* to 1B.3

CNDDDB: Add *Calystegia vanzuukiae* to G2Q / S2

### New CNPS Inventory Record

*Calystegia vanzuukiae* Brummitt & Namoff

VanZuuk's morning-glory

Convolvulaceae

CRPR 1B.3

El Dorado, Placer

Foresthill (541D) 3912017, Dutch Flat (541A) 3912027, Garden Valley (526D) 3812077,

Georgetown (526A) 3812087

Chaparral, cismontane woodland / gabbro, serpentinite; elevation 500 to 1180 meters

Perennial rhizomatous herb; blooms May to August.

Known only from the Central Sierra Nevada foothills. Potentially threatened by mining, vehicles, and non-native plants. Probably a stabilized hybrid between *C. stebbinsii* and *C. occidentalis* ssp. *occidentalis*. See *Aliso* 31(1):15-18 (2013) for original description.

### Literature Cited

Brummitt, R.K. 1993. *Calystegia*. Pp. 517-521 in Hickman, J.C. (ed.), *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley.

\_\_\_\_\_. 2012. *Calystegia*. Pp. 655-658 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* (2nd ed.). University of California Press, Berkeley and Los Angeles.

Brummitt, R.K. and S.M. Namoff. 2013. *Calystegia vanzuukiae* (Convolvulaceae), a remarkable new species from Central California. *Aliso* 31(1): 15-18. (original description).

Consortium of California Herbaria (CCH). 2014. 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 15 May 2014].

Jepson Flora Project (eds.). 2014. *Jepson eFlora*. Website <http://ucjeps.berkeley.edu/IJM.html> [accessed 9 May 2014].

Lyon, V. 2013. Draft Decision Memo for Bunker Mine Plan of Operation. USDA Forest Service, American River Ranger District, Tahoe National Forest. 8 July 2013.