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
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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.
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.

Literature Cited


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