Rare Plant Status Review: *Cryptantha pterocarya* var. *stenoloba*
Proposed Addition to California Rare Plant Rank 2B.1, G5T2/S1

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This status review is being expedited through an agreement between the California Native Plant Society and the Center for Plant Conservation (CPC), with contributions from the state of California, CPC, and the California Plant Rescue initiative. Aside from being advanced as part of this agreement, the process, content, and information provided herein is not altered, modified, or developed differently in any way or form compared to other status reviews developed by CNPS.

Background and Taxonomy

Cryptantha pterocarya (Torr.) Greene var. *stenoloba* I.M. Johnst. (narrow-lobed cryptantha) is an annual herb in the Boraginaceae that is known from the eastern Mojave Desert bioregion in California, southern Nevada, and northwestern Arizona. First described in 1939, *C. pterocarya* var. *stenoloba* is one of four varieties of *C. pterocarya* recognized in California in the *Jepson eFlora* (Simpson et al. 2021). *Cryptantha pterocarya* was treated in the *Jepson Manual* (Kelley and Wilken 1993), but no varieties were treated at that time. *Cryptantha* is not yet treated by *Flora of North America North of Mexico*.

Variety *stenoloba* is distinct enough from other varieties of *C. pterocarya* that it could be recognized at the species level in the future (Mabry et al. 2016). This distinction was also noted by Ivan Johnston on the holotype stating "It has the one wingless and the three broadly winged nutlets of typical *C. pterocarya*, but differs conspicuously in its very elongate narrower calyx-lobes" (*B. Maguire & H.L. Blood 4466* [holotype GH]).

Ecology

Cryptantha pterocarya var. *stenoloba* flowers and fruits for a short period after adequate winter rains in March and April and has an ecological preference for sandy soils usually associated with stabilized sand dunes. It has been found at 155–365 m in elevation. Species associates include: *Ambrosia dumosa*, *Chaenactis stevioides, Croton californicus,* other varieties of *Cryptantha pterocarya, Encelia farinosa, Ephedra trifurca, Eriastrum harwoodii* (CRPR 1B.2), *Hesperocallis undulata, Hilaria rigida, Johnstonella costata* (4.2), *Larrea tridentata,* and *Psorothamnus emoryi* (CNPS 2022, CCH2 2022).

Distribution and Abundance

The first collection of *Cryptantha pterocarya* var. *stenoloba* for California was made in Rice Valley, Riverside County in March 2009 (*D. Bell 113*, RSA) where it was found to be occasional and scattered in the stabilized sand dunes of the valley floor. The second collection of this variety in California was made just a few weeks later in the Whipple Mountains (J. André 10546), the specimen label notes it as growing occasionally in sandy soils. Additional collections of this taxon in the stabilized sand dunes of Rice Valley both in Riverside and San Bernardino Counties were made in 2010, 2011, and 2013 (*D. Bell 752, 2177A*; *J. André 24395, 24800*) (CCH2 2022). Sanders collected a specimen approximately 30 miles to the south of Rice Valley in eastern Chuckwalla Valley, where it was also growing in sandy soils of stabilized sand dunes in 2010 (*A. Sanders 37401*) (CCH2 2022).

Cryptantha pterocarya var. *stenoloba* was initially proposed by the first author as a California Rare Plant Rank 1B taxon. It is known from seven occurrences in California and is possibly even rarer in Nevada. However, it is apparently common in Arizona. According to J. André (pers. comm. 2022), *C. pterocarya* var. *stenoloba* is "locally common along the Colorado River in Arizona – sufficiently so that [he] would not consider this a candidate for CRPR 1B." *Cryptantha pterocarya* var. *stenoloba* has an infraspecific global rank of T2 (Imperiled), but this rank was last updated in March 2000 and is indicated as needing review (NatureServe 2022). This taxon appears to be restricted to sandy soils of stabilized sand dunes. The majority of occurrences in California are in relatively close proximity to each other within the greater Rice Valley area between the Arica Mountains and the Whipple Mountains. In California, all occurrences of *Cryptantha pterocarya* var. *stenoloba* are entirely on lands managed by the Bureau of Land Management (BLM). While quantitative data appears not to be available for this taxon, population numbers for California's records have been described as occasional or scarce (CCH2 2022). "A thorough review of historic herbarium vouchers of *C. pterocarya* from sandy habitats within this region will likely turn up several collections that need to be annotated from *C.* [*pterocarya*] var. *pterocarya* to *C.* [*pterocarya* var.] *stenoloba*" (André pers. comm. 2022).

Status and Threats
All known occurrences of *Cryptantha pterocarya* var. *stenoloba* in California, Arizona, and Nevada "appear to lie within areas immediately threatened by urban sprawl along the Colorado River, or solar energy development and ORV activity on BLM lands" (André pers. comm. 2022). Additional threats include encroachment from invasive species such as *Brassica tournefortii*, *Erodium cicutarium*, and *Schismus barbatus*, as well as sheep grazing. However, field surveys have not been conducted systematically across the taxon's range or in potential habitat, so the full extent of its distribution and threats are not known. More field work is needed to evaluate its abundance, distribution, and level of endangerment.

Summary
Based on the available information, CNPS and CNDDB recommend adding *Cryptantha pterocarya* var. *stenoloba* to 2B.1 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *C. pterocarya* var. *stenoloba* changes in the future, we will re-evaluate its status at that time.

Recommended Actions
CNPS: Add *Cryptantha pterocarya* var. *stenoloba* to 2B.1
CNDDB: Add *Cryptantha pterocarya* var. *stenoloba* to G5T2 / S1

Draft CNPS Inventory Record
Cryptantha pterocarya (Torr.) Greene var. *stenoloba* I.M. Johnst.
narrow-lobed cryptantha
Boraginaceae
USDA Plants Symbol: CRPTS
Synonyms: none
CRPR 2B.1
Counties: Riverside, San Bernardino
Quads: Grommet 3411416, Rice 3411417, Arica Mountains 3411418, Gene Wash 3411432, Roosevelt Mine 3311457

General habitat: Desert dunes
Microhabitat: Rocky, granitic, sandy, gravelly
Elevation: 155–365 meters
Life form: annual herb.
Blooms: March to April
Threats: Threatened by urbanization, solar energy development, vehicles, non-native plants, and grazing.
Taxonomy: Differs from other varieties of *C. pterocarya* in its narrow, elongate calyx lobes.
Selected References:

- Original description: *Journal of the Arnold Arboretum* 20: 391 (1939).
- Taxonomic treatment: *Phytotaxa* 253: 97–130.

Literature Cited

[CNPS] California Native Plant Society, Rare Plant Program. 2022. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.0). Website https://www.rareplants.cnps.org [accessed 21 April 2022].

[CCH2] Consortium of California Herbaria Portal 2. 2022. Data provided by the participants of the Consortium of California Herbaria and the California Phenology Thematic Collections Network (CAP-TCN). Regents of the University of California, Berkeley and Cal Poly, San Luis Obispo. Website http//:www.cch2.org/portal/index.php [accessed February 2022].

Johnston, I.M. 1939. Studies in the Boraginaceae XIII. *Journal of the Arnold Arboretum* 20: 391. (Original description.)

Kelley, W. A. and D. H. Wilken 1993. *Cryptantha* (Boraginaceae). in Hickman, J. C. (ed.), *The Jepson manual: Higher plants of California*. University of California Press, Berkeley, CA. Website: https://ucjeps.berkeley.edu/cgi-bin/get_JM_treatment.pl?7177,7386 [accessed April 2022].

Mabry, M.E., R.A Dowdy, J. P. Simpson, J.P. Rebman and M. G. Simpson. 2016. Taxonomy of the winged popcorn flower: *Cryptantha pterocarya* (Boraginaceae). *Phytotaxa* 253 (2): 97-130.

NatureServe. 2022. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Website http://explorer.natureserve.org [accessed 20 May 2022].

Simpson, M. G., K. E. Hasenstab-Lehman, M. E. Mabry, and R. B. Kelley. 2021. *Cryptantha*. In: Jepson Flora Project (eds.), *Jepson eFlora*. Website http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=19622 [accessed April 2022].

Personal Communications

André, Jim. 2022. Email correspondence regarding distribution of and threats to *Cryptantha pterocarya* var. *stenoloba*. Personal communication 22 April 2022.