Element Code: ?

Added to California Rare Plant Rank 1B.3 of the CNPS Inventory on November 4, 2019

Rare Plant Status Review: *Atriplex flavida*
Proposed Addition to California Rare Plant Rank 1B.3, G2G3 / S2S3
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Changes made to the original document are in blue text.

Background and Taxonomy
Atriplex flavida (S. C. Sand. & G. L. Chu) D. J. Keil & D. W. Taylor is an annual herb in the Chenopodiaceae known only from San Luis Obispo County, California. Having recently been described in 2018, it is not included in *The Jepson eFlora* (Zacharias 2013) or *Flora of North America* (Welsh 2003). The taxonomic history for *A. flavida* has been a mix of combining and splitting the distribution of plants in San Luis Obispo County into its own species. In 1970, Hoover applied the name *A. vallicola* to the distribution of plants currently known as *A. flavida*, due to its similarity. Later, Taylor expressed doubt to the extent of the similarity and noted the population in Carrizo Plain to be an undescribed species in the 1993 *Jepson Manual* treatment. In 2000, *A. vallicola* was treated as a variety of *A. coronata* by Welsh, changing the name to *A. coronata* var. *vallicola*, the name currently being used in the CNPS Inventory for plants from Fresno, Kinds, Kern, Merced, San Benito, and Tulare counties in addition to San Luis Obispo County. An alternative name of *Obione flavida* was published in 2017 by Zhu and Sanderson, but Keil and Taylor do not agree with splitting *Obione* out as a separate genus and instead offer *A. flavida*. *Atriplex flavida* is most similar to *A. coronata*; some specimens of *A. flavida* are still annotated as *A. vallicola* or *A. coronata* var. *vallicola*. *Atriplex flavida* is distinguished from all *A. coronata* varieties in having an overall yellow-green color (vs. an overall gray-green color), staminate flowers having 3(4) stamens (vs. staminate flowers having (4)5 stamens), fruiting bracteoles 2.8-3.8 mm long (vs. 2-6 mm across all *A. coronata* varieties, with var. *vallicola* being 2-2.5 mm long) and 2.6-3.2 mm wide (vs. 3-7 mm), obovate to obovate-deltoid in profile (vs. broadly cuneate to semicircular), broadly cuneate at base (vs. broadly obtuse to truncate), smooth to more or less prominently tuberculate on both surfaces (vs. smooth or obscurely to prominently tuberculate), and in having fruiting bracteoles with middle tooth of distal margin generally more prominent than other teeth (vs. not larger than other teeth in *A. coronata* varieties) (Keil and Taylor 2018). The specific epithet *flavida* refers to the yellow color of the plant (Charters 2019).

Ecology
Atriplex flavida occurs in alkaline soils in chenopod scrub, valley and foothill grassland, and vernal pools (Keil and Taylor 2019) at an approximate elevation of 585 to 605 meters, and is known to bloom from March to July (CCH1 2019). Potential associates include *Spergularia marina, Lasthenia ferrisiae, Lepidium dictyotum, Allenrolfea occidentalis*, and *Atriplex spinifera* (CCH1 2019; OBI54279, OBI28847, OBI28748), and additional associates include *Distichlis spicata, Cressa truxillensis, Suaeda nigra, Frankenia salina, Atriplex coronata* var. *coronata*, *A. fruticulosa*, and *Deschampsia danthonioides* (R. Preston pers. comm. 2019).

Distribution and Abundance
Atriplex flavida is currently known from 24 ~~20~~ occurrences and is endemic to the Carrizo Plain around Soda Lake, San Luis Obispo County, California. Of the 24 ~~20~~ occurrences, 10 ~~6~~ (~42% ~~30%~~) are considered historical (occurrences not seen in over 20 years are considered historical

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by CNDDB). Fifteen occurrences are located on the Carrizo Plain National Monument, and the remaining nine ~~five~~ are located on lands of private or unknown ownership.

The following 20 ~~16~~ occurrences of *A. coronata* var. *vallicola* in the CNDDB from the Carrizo Plain overlap with specimen and observation locations now known to be *A. flavida* and will be transferred thereto: EOs 1, 2, 3, 7, 10, 27, 28, 29, 30, 60, 66, 67, 68, 69, 70, 71, 72, 77, 78, 79. This means that *A. coronata* var. *vallicola* is now known from a total 86 ~~90~~ occurrences instead of 106. There are an additional 12 ~~16~~ occurrences of *A. coronata* var. *vallicola* from the Carrizo Plain that do not wholly or partially correspond to known records of *A. flavida*; *A. coronata* var. *vallicola* may not be present within Carrizo Plain, but without proper annotation of specimens this cannot be said for certain (Taylor pers. comm. 2019). These 12 ~~16~~ occurrences of var. *vallicola* are highlighted in light green at the bottom of the "Localities" tab of the attached "AtriplexFlavida_20190910_addition" Excel spreadsheet and require verification prior to accepting them as additional occurrences of *A. flavida*. With at least 70 ~~74~~ remaining occurrences of *A. coronata* var. *vallicola*, its ranking of 1B.2 will not be affected at this time. Conversely, these 12 ~~16~~ putative additional occurrences of *A. flavida* would make it known from a total of 36 occurrences instead of 24 ~~20~~, but does not change our recommendation of adding it to 1B.3.

According to Keil and Taylor (2018) there is indication from specimen labels that in favorable years populations sizes might approach 10^5 individuals. Some CNDDB occurrences previously treated as *A. coronata* var. *vallicola* have population counts ranging from as few as 5 plants ranging up to 1,660 plants. Other CNDDB occurrences simply provide a percent coverage ranging from 0.2% over less than an acre, and 1% over more than 5 acres (CNDDB 2019).

Status and Threats

Most of the known occurrences of *A. flavida* are located within the Carrizo Plain National Monument and should be protected. The remaining five occurrences are on privately owned land, much of which has been converted to cannabis cultivation in recent years, so agricultural development poses a threat (Keil and Taylor 2018). Keil and Taylor (2018) recommend a California Rare Plant Rank of 1B.3 for *A. flavida*, and "[w]hen evaluated using IUCN (2000) Red List criteria, *A. flavida* qualifies as Endangered (EN) – High risk of extinction in the wild, based on extent of occurrence estimated to be less than ~100 km^2." According to Keil and Taylor (2018), all taxa within the *Pusillae* Complex, including *A. flavida*, are endangered, with one species, *A. tularensis*, being presumed extinct (last seen in 1923). "In essence, the *Pusillae* comprise a radiation centered in the southerly San Joaquin Valley, a geographic region where very little native habitat remains from conversion to irrigated, intensive agriculture (Preston 2010)." (Keil and Taylor 2018).

Based on the CNDDB (2019) occurrences previously considered to be *A. coronata* var. *vallicola*, additional threats to *A. flavida* include vehicles, grazing, non-native plants, road construction, foot traffic, and agriculture.

Summary

Based on the available information, CNPS and CNDDB recommend adding *Atriplex flavida* to California Rare Plant Rank 1B.3 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *A. flavida* changes in the future, we will re-evaluate its status at that time.

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Recommended Actions
CNPS: Add *Atriplex flavida* to CRPR 1B.3
CNDDB: Add *Atriplex flavida* to G2G3 / S2S3

Draft CNPS Inventory Record
Atriplex flavida (S. C. Sand. & G. L. Chu) D. J. Keil & D. W. Taylor
Carrizo Plain crownscale
Chenopodiaceae
CRPR 1B.3
San Luis Obispo
Panorama Hills (217B) 3511926, Painted Rock (218A) 3511927, Chimineas Ranch (218B) 3511928, Simmler (243C) 3511938, California Valley (244D) 3512031
Chenopod scrub, valley and foothill grassland, vernal pools / alkaline; elevation 585-605 meters. Annual herb. Blooms March to July.
Threatened by agricultural development. Possibly threatened by vehicles, grazing, non-native plants, road construction, and foot traffic. Formerly included in *A. coronata* var. *vallicola*; differentiated from all *A. coronata* varieties in having an overall yellow-green color (vs. gray-green), 3(4) stamens (vs. (4)5 stamens), and longer fruiting bracteoles in addition to other characters. *See Genera and a New Evolutionary System of World Chenopodiaceae* (2017) by Chu and Sanderson for original description, and *Phytoneuron* 65:1-7 (2018) for taxonomic treatment and revised nomenclature.

Literature Cited
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