Rare Plant Status Review: *Atriplex gypsophila*
Proposed Addition to California Rare Plant Rank 1B.3, G2G3 / S2S3
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30 May 2024
Changes to the original text are in blue font

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
Atriplex gypsophila R. E. Preston is an annual herb in the Chenopodiaceae (now sometimes placed in the Amaranthaceae) known from the Inner South Coast Ranges of Fresno County, California. It is a recently described species that previously was identified as either *A. coronata* var. *vallicola*, a CRPR 1B.2 taxon that is tracked by the CNDDB, or *A. coronata* var. *coronata*, a CRPR 4.2 taxon that is not tracked (Preston 2023, Zacharias and Keil 2023, CNDDB 2024, O'Dell 2024 pers. comm.). *Atriplex gypsophila* is not included in *The Jepson Manual* (Taylor and Wilken 1993), *Jepson eFlora* (Zacharias and Keil 2023) or *Flora of North America* (Welsh 2004). *Atriplex gypsophila* is similar to *A. coronata* var. *coronata* in overall habit, leaf shape, and leaf orientation, but it is more diminutive overall and lacks the revolute leaf margins found in var. *coronata* (Preston 2023). In addition, the diaspores of *A. gypsophila* (often called fruiting bracts, which enclose the fruits and seeds) are smaller (2–3.5 mm long, 2–3.5 mm wide) than those of *A. coronata* var. *coronata* (4–5 mm long, 4–6.5 mm wide) (Preston 2023). Due to the size of the diaspores, plants of *A. gypsophila* key to *A. coronata* var. *vallicola* in all available floras (Preston 2023). They differ from that taxon in leaf and diaspore morphology; *A. gypsophila* has longer, broader leaves and flabellate diaspores (vs shorter, narrower leaves and cuneate diaspores in var. *vallicola*) (see illustrations and comparison tables in Preston 2023). The distribution of *A. gypsophila* abuts but does not overlap the distributions of the other two taxa, and the landscape where it is found (described below) is quite unlike the habitat of most other annual *Atriplex* species in California, which grow in alkaline soils on valley floors (Preston 2023). "The specific epithet "gypsophila" refers to the gypsum-rich soils to which this species appears to be endemic" (Preston 2023).

Ecology
"Habitat for *A. gypsophila* can be characterized as clay barrens or badlands, consisting of areas of low plant cover with clay or clay loam soils commonly embedded with gypsum crystals, gravel, or fossils (gastropods, shark teeth)" (Preston 2023). It is found at elevations of 600 to 2,526 feet (Preston 2023, Calflora 2024, CCH2 2024, CNDDB 2024, O'Dell 2024 pers. comm., Preston 2024 pers. comm.). Associated species include *Atriplex polycarpa*, *Bromus rubens*, *Deinandra kelloggii*, *Eriogonum ordii*, *Erodium cicutarium*, *Mentzelia affinis*, *Monolepis nuttalliana*, *Monolopia stricta*, *Plantago ovata*, and *Schismus barbatus* (Preston 2023, CCH2 2024, CNDDB 2024, Preston 2024 pers. comm.). It flowers from late April to June (Preston 2023).

Distribution and Abundance

"*Atriplex gypsophila* is endemic to the Panoche Hills, Tumey Hills, Ciervo Hills, and northern Big Blue Hills of the interior South Coast Ranges of central California" (Preston 2023); it is located in western Fresno and eastern San Benito counties (Preston 2023, Calflora 2024, CCH2 2024, CNDDB 2024, O'Dell 2024 pers. comm., Preston 2024 pers. comm.). As detailed in the location table, there are 30 likely occurrences that have been vetted by R. Preston and R. O'Dell (Preston 2023, Calflora 2024, CCH2 2024, CNDDB 2024, O'Dell 2024 pers. comm., Preston 2024 pers. comm.). Twenty-five of the 30 locations are currently tracked by the CNDDB under the name *A. coronata* var. *vallicola* (CNDDB EOs 45, 49, 50, 51, 52, 57, 58, 62, 63, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 118; CNDDB 2024). Of the remaining five occurrences, one was originally identified as *A. coronata* var. *vallicola* but had not yet been incorporated into the CNDDB, one had been identified as both *A. coronata* var. *vallicola* and var. *coronata*, and the other three were originally identified as *A. coronata* var. *coronata* (Calflora 2024). Five of the occurrences are historical (not seen in the past 20 years), while the other 25 are recent (Calflora 2024, CCH2 2024, CNDDB 2024). Nine occurrences are on private land or land of unknown ownership, 15 are solely on Bureau of Land Management (BLM) land, and six are on land that spans both private ownership and BLM land (Calflora 2024, CNDDB 2024). Twenty-one of the occurrences have population estimates: six have between 50 and 99 plants, seven have between 100 and 499, three have between 500 and 999, three have between 1000 and 4999, one has 13,000, and record 5 (CNDDB EO 52) is very large with more than 31,000 plants (Calflora 2024, CNDDB 2024).

As detailed in the pink rows at the bottom of the location table, there are three occurrences of annual *Atriplex* in eastern Fresno County that are excluded from this analysis, because they may or may not be *A. gypsophila* (Calflora 2024, CCH2 2024, CNDDB 2024, O'Dell 2024 pers. comm., Preston 2024 pers. comm.). One occurrence at Orligalita Creek identified as *A. coronata* var. *vallicola* (CNDDB EO 46) is described as occurring in alkaline scalds with associates that sound like those of var. *vallicola*. Another, collected by Vern Yadon, requires confirmation of the location. The third is located east of Coalinga, much further south than the other locations. In addition to these excluded records, there are records of *A. coronata* var. *coronata* in the Kettleman Hills that continue to the town of Avenal that have not been examined by the specialist who described this species (CCH2 2024, Calflora 2024); for the time being, these records are not included in the location table (O'Dell 2024 pers. comm., Preston 2024 pers. comm.). Therefore, the number of known occurrences of *A. gypsophila* could increase in the future. However, even with this potential increase in occurrence number, it is still lower than the generally 50 or fewer viable occurrences known for most CRPR 1B taxa. The fact that this species has been identified and tracked as *A. coronata* var. *vallicola* (formerly *A. vallicola*) since the 1974 edition of the *CNPS Inventory of Rare and Endangered Plants of California* (CNPS 2024) means that many rare plant surveys have already been conducted within its distribution range.

Forum comment by Rob Preston:
"I was able to travel down to the Kettleman Hills last weekend and examined a couple of Atriplex populations, including one that is documented southwest of Kettleman City by Keil 303067 (OBI barcode 121506), as A. coronata. I can confirm that this collection is actually A. gypsophila. Also, Ryan recently sent specimens from a population north of Avenal to DAV that I can confirm are A. gypsophila. There is also another A. coronata specimen from Avenal Landfill (Holland s.n., OBI121507) that also appears to be A. gypsophila. There are two Dean Taylor

specimens of A coronata in CCH2 from north of Hwy 41, but I have not seen these specimens and don't know their current whereabouts. They are also likely to be A. gypsophila. The current range should, therefore, include the Kettleman Hills, at least as far south as Hwy 41. There is additional potential habitat for the species south of Hwy 41, but that area is not easily accessed and is undercollected."

Status and Threats
Atriplex gypsophila does not yet have any conservation status (CNPS 2024, NatureServe 2024). However, 25 of the 30 occurrences have been tracked in California under the name *A. coronata* var. *vallicola* (CRPR 1B.2, G4T3/S3) (CNDDB 2024, CNPS 2024). Threats previously recorded for these occurrences are cattle and sheep grazing and construction (powerlines, pipelines, and roads) (CNDDB 2024). The list of associated species indicates that another potential threat is competition with non-native plants (Preston 2023, CCH2 2024, CNDDB 2024, Preston 2024 pers. comm.). Due to the relatively small number of occurrences that are in relatively remote locations with few potential threats, the specialist who described this new species nominated it for a California Rare Plant Rank of 1B.3 (Preston 2023).

With the recognition of *A. gypsophila* as a plant with 25 occurrences previously tracked as *A. coronata* var. *vallicola* in the CNDDB, var. *vallicola* is now known from 50 instead of 75 CNDDB occurrences (CNDDB 2024). The majority of CRPR 1B taxa are known from 50 or fewer viable occurrences with occurrence ranks of Good or Excellent. Over half (31) of the remaining occurrences of var. *vallicola* have an Unknown (U), Poor (D), or Fair (C) occurrence rank, while only 19 are ranked Good (B) or Excellent (A). In addition, less than half (22) of the 50 occurrences are considered recent (observed in the past 20 years), while the other 28 are considered historical. Based on these data, we propose retaining *A. coronata* var. *vallicola* as a CRPR 1B.2 taxon.

Summary
Based on the available information, CNPS and CNDDB propose adding *Atriplex gypsophila* to California Rare Plant Rank 1B.3 of the CNPS Inventory. If knowledge on the distribution, threats, or rarity status of *Atriplex gypsophila* changes in the future, it may be re-evaluated at that time. As there is a significant decrease in the number of occurrences and distribution of *A. coronata* var. *vallicola*, we propose retaining its status of CRPR 1B.2 in the CNPS Inventory and CNDDB at this time.

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

Draft CNPS Inventory Record – *Atriplex gypsophila*
Atriplex gypsophila R.E. Preston
Common name: gypsum-loving crownscale
Family: Chenopodiaceae
USDA Plants Symbol: none
Synonym(s)/Other Name(s): none
CRPR: 1B.3
Counties: Fresno, San Benito

States: California
Quad name (code): Chounet Ranch (3612066), Ciervo Mtn. (3612045), Joaquin Rocks (3612034), Lagua Seca Ranch (3612077), Levis (3612054), Lillis Ranch (3612044), Mercy Hot Springs (3612067), Monocline Ridge (3612055), Tumey Hills (3612056)
General Habitat: Chenopod scrub, valley and foothill grassland
Microhabitat Details: Clay barrens or badlands with low plant cover; soil is clay or clay loam commonly embedded with gypsum crystals, gravel, or fossils (gastropods, shark teeth).
Microhabitat: Clay
Elevation: 185-770 meters (600 to 2,525 feet)
Life form: annual herb
Blooms: April to June
Threats: Potentially threatened by inappropriate grazing (cattle and sheep), trampling, construction (powerlines, pipelines, and roads); possibly threatened by competition with non-native plants.
Taxonomy: Previously identified as *A. coronata* var. *vallicola*; separated from that taxon by having longer, broader leaves and flabellate diaspores (vs shorter, narrower leaves and cuneate diaspores in var. *vallicola*).
Selected References:
- CNPS Status Review: Proposed Addition to California Rare Plant Rank 1B.3, G2G3/S2S3 (2024)
- Original Description: *Madroño* 70(2): 104–113 (2023)

Revised CNPS Inventory Record – *Atriplex coronata* var. *vallicola* (changes in green text)
Notes
Taxonomy: ~~Plants previously attributed to A. coronata var. vallicola from Carrizo Plain, SLO Co., are now assigned to A. flavida; a newly described rare taxon.~~
The following newly described rare plants were previously attributed to *A. coronata* var. *vallicola*: *A. flavida* from Carrizo Plain, SLO Co. and *A. gypsophila* [Note: text link this to plant details page after added to the RPI] from the interior South Coast Ranges in western FRE Co.
Selected References [Note to update references for *A. c. vallicola* and *A. flavida* too]:
- Taxonomic Treatment: *Phytoneuron* 65:1–7 (2018) (*A. flavida*)
- Taxonomic Treatment: *Madroño* 70(2): 104–113 (2023) (*A. gypsophila*)

Literature Cited

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Personal Communications

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Preston, Robert. 2024. Research Associate Jepson Herbarium, author of many treatments in the *Jepson eFlora*, and author of *A. gypsophila*. Email correspondence about the distribution, locations, and occurrences of *A. gypsophila*. Personal communications 12 April, 2 May, and 7 May 2024.