

Added to California Rare Plant Rank 1B.3 of the CNPS Inventory on June 24, 2013**Rare Plant Status Review: *Erythranthe calcicola*
Proposed New Add to California Rare Plant Rank 1B.3, G2 / S2**

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Background

Erythranthe calcicola is an annual herb in the Phrymaceae that is known from the northern Mojave Desert of eastern California and from southwestern Nevada. It was recently described by Fraga (2012) and is not included in *The Jepson Manual, Second Edition*, but will be included in the upcoming *Flora of North America, Vol. 17* treatment of Phrymaceae. *Erythranthe calcicola* occurs nearly exclusively on carbonate (limestone) substrate, which is indicated in its scientific and common name. It was originally identified as *E. montioides*; however, *E. calcicola* is morphologically distinct from all other taxa that have been previously identified as *E. montioides*, and is also distinguished based on molecular studies analyzing nuclear ribosomal ITS and three non-coding chloroplast regions. It differs from *E. montioides* sensu stricto in having a yellow or white corolla that is 6-13 mm long (vs. always yellow and 10-20 mm long), glandular pubescent herbage (vs. glabrous to puberulent with eglandular trichomes), and prominent calyx costa (vs. weak calyx costa). *Erythranthe calcicola* is also similar to *E. rubella*, which is inferred to share a close relationship with this species; however, they are distinguished in leaf shape and calyx morphology. *Erythranthe calcicola* has lanceolate to ovate leaves (vs. linear to elliptic) and a calyx that is widely campanulate to cylindrical with ciliate margins (vs. a narrowly cylindrical calyx with glabrous margins). The flower morphology of *E. calcicola* suggests that it has a mixed mating system and can self-pollinate with some frequency. Its corollas have been observed to fall off mid-day and are presumed to be one-day flowers. *Erythronium calcicola* is known to flower from April to June and is most commonly fruiting in May and June (Fraga 2012).

Erythranthe calcicola occurs in creosote bush scrub, Joshua tree woodland, and juniper woodland. It primarily occurs on talus slopes on substrates that are derived from carbonate rock. *Erythranthe calcicola* is known from an approximate elevation of 915 to 2,165 meters in California. Species associates include the following: *Antirrhinum kingii*, *Ambrosia dumosa*, *Artemisia tridentata*, *Atriplex confertifolia*, *Chylismiella pterosperma*, *Coleogyne ramosissima*, *Diplacus bigelovii*, *Ephedra nevadensis*, *Ephedra viridis*, *Eriogonum fasciculatum*, *Ericameria linearifolia*, *Grayia spinosa*, *Juniperus osteosperma*, *Krascheninnikovia lanata*, *Larrea tridentata*, *Linanthus filiformis*, *Nama demissum*, *Phacelia fremontii*, *Pinus monophylla*, *Sphaeralcea ambigua*, *Stipa speciosa*, *Xylorhiza tortifolia*, and *Yucca brevifolia* (Fraga 2012).

Erythranthe calcicola is known only from approximately fifteen occurrences in California, mostly from Inyo County, with one occurrence from Mono County. *Erythranthe calcicola* occurs in several mountain ranges in the northern Mojave Desert of California, including: Funeral Mountains, Inyo Mountains, Last Chance Range, Panamint Mountains, and White Mountains. It is also rare in Nevada, where known from

approximately eight occurrences from Bare Mountain, Pinwater Range, Sheep Range, Silver Peak Range, Spotted Range, and Spring Mountains (Fraga 2012). Of the California occurrences of *E. calcicola*, nearly half (seven) are historical (occurrences not 'seen' in the past twenty years are considered historical by the CNDDDB). The historical occurrences should be sought after in attempts to determine their current status. The recent occurrences of *E. calcicola* in California range from only a few individuals to over two-hundred, and are very localized (N. Fraga pers. comm. 2013). All of its occurrences in California are known from Federal lands, with ten to twelve occurrences in Death Valley National Park, three on Bureau of Land Management, and two in Inyo National Forest. Due to its past identification as *E. montioides*, its annual and diminutive habit, remote habitat and range, and presumably one-day deciduous corollas, it is possible that *E. calcicola* has been overlooked and that additional occurrences exist; its potential habitat should be surveyed.

Erythranthe calcicola should be evaluated for Threatened status by the Nevada Native Plant Society, and also considered for ranking by the Nevada Natural Heritage Program. Several historical occurrences in Nevada are on a military test site, and an occurrence at Spring Mountains is near a road that appears to get heavy OHV use (N. Fraga pers. comm. 2013).

Possible threats to *E. calcicola* in California include disturbance from historic mining operations and the presence of non-native plants (Fraga 2012, N. Fraga pers. comm. 2013). However, most of its occurrences are in Death Valley National Park and/or on steep slopes away from roads and trailsides, and therefore seem to have few threats (N. Fraga pers. comm. 2013).

Based on the available information, CNPS and CNDDDB recommend adding *Erythranthe calcicola* to California Rare Plant Rank (CRPR) 1B.3 of the CNPS Inventory. Although the documented threats to *E. calcicola* are minimal, its relatively small distribution, very localized and reduced population sizes, and historical status of nearly half of its occurrences indicate that a threat rank of 0.2 instead of 0.3 may be warranted. However, we would like to wait for additional data from future surveys before making a higher threat rank determination.

Recommended Actions

CNPS: Add to CRPR 1B.3

CNDDDB: Add to G2 / S2

Draft CNPS Inventory Record

Erythranthe calcicola N.S. Fraga & D. A. York

limestone monkeyflower

Phrymaceae

CRPR 1B.3

Nevada

Inyo, Mono

Chloride City (346B) 3611668, Echo Canyon (323B) 3611646, Emigrant Pass (325C) 3611732, Waucoba Canyon (371B) 3611788, Emigrant Canyon (325B) 3611742, Nelson Range (349C) 3611756, Cerro Gordo Peak (350D) 3611757, Wildrose Peak (325D) 3611731, Panamint (302D) 3611711, Laws (413A) 3711843, Waucoba Spring (391C) 3711718, ~~Wildrose Peak (325D) 3611731~~, Joshua Flats (391B) 3711728, Last Chance Mtn. (410C) 3711736, Waucoba Mtn. (329D) 3711811

Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland / usually carbonate, usually talus slopes; elevation 915 to 2,165 meters.

Annual herb. Blooms April-June.

Many occurrences historical; needs field surveys. Possibly threatened by historic mining and non-native plants. Previously identified as *E. montioides*. Similar to *E. rubella*. Not in *TJM* 2. See *Aliso* 30(1):49-68 (2012) for original description.