

**Deleted from California Rare Plant Rank 4.3 of the CNPS Inventory on
September 20, 2016**

Rare Plant Status Review: *Mimulus microphyllus*

Proposed Deletion from California Rare Plant Rank 4.3, G3G4Q / S3S4

Aaron E. Sims (CNPS), Roxanne Bittman (CNDDDB), and Kristi Lazar (CNDDDB)

August 10, 2016

Background

Mimulus microphyllus Benth. is an annual herb in the Phrymaceae that has been included as a plant of limited distribution in the CNPS Inventory since the 2nd edition (Smith et al. 1980). It is currently recognized as *Erythranthe microphylla* (Benth.) G.L. Nesom (Barker et al. 2012), but is referenced as *Mimulus microphyllus* throughout the remainder of this document for consistency and clarity. Throughout its inclusion in the print editions of the CNPS Inventory, *M. microphyllus* was indicated as being endemic to California, occurring only in Kern County (Smith et al. 1980; Smith and York 1984; Smith and Berg 1988; Skinner and Pavlik 1994; RPSAC and Tibor 2001), but is now recognized as occurring from 46 counties throughout California and also being widespread outside of the state. It is not known whether the status of *M. microphyllus* was merely overlooked for being updated in the CNPS Inventory in the past, or whether new technologies, such as the Consortium of California Herbaria (2016), have only recently brought about the ability to adequately review its overall status throughout the state, but it appears to be a combination of both of these factors. According to G. Nesom (pers. comm. 2016), *M. microphyllus* has always been a very common species that is in no way rare. Bentham (1846) originally described *M. microphyllus* from Oregon, but the description was not available for review by CNPS in the past. Now, thanks to resources such as BHL (2016), its original description is viewable and downloadable online as a PDF, and can be referenced to further validate Nesom's assertion and the long-known distribution of *M. microphyllus* outside of California. In *The Jepson Manual* and *The Jepson Manual, Second Edition*, Thompson (1993 and 2012) treated *M. microphyllus* as a synonym of *M. guttatus*. In 2012, Barker et al. and Nesom (2012) acknowledged *Mimulus microphyllus* as being distinct from *M. guttatus* and recircumscribed it to *Erythranthe microphylla*. Nesom (2013a, 2014b) later clearly differentiated the two species based on growth-form, with *E. microphylla* being a non-rhizomatous annual and *E. guttata* strictly being a rhizomatous perennial.

In the past, assessing the rarity status of California Rare Plant Rank (CRPR) 4 plants has been problematic. The detailed manner with which CNPS maps and analyzes preliminary occurrences to evaluate CRPR 1B and 2B plants becomes extremely time consuming when applied to plants with a hundred or more occurrences, as is the case with many CRPR 4 taxa. Some plants have remained on CRPR 4 without evaluation for deletion, while others have yet to have been reviewed for addition, simply because CNPS and CNDDDB have not had the staff and resources to evaluate their rarity status at the same level of detail as CRPR 1B or 2B species. Current technologies, along with the advancement of newly available public database repositories, have allowed CNPS

and CNDDDB to develop new tools that allow us to estimate a rough number of occurrences for these more common plant taxa.

Our new general procedure for determining an approximate number of occurrences for CRPR 4 plants starts with georeferenced herbarium records and field observations included in GBIF (2016), and then calculates the number of records that overlap over a distance of 3/8 mile from one another. California Rare Plant Rank 1B and 2B plants are mapped in CNDDDB specifically with occurrences separated by 1/4 mile being counted as separate, individual occurrences. For CRPR 4 plants, CNPS has decided to use a 3/8 mile separation distance (1/4 mile plus an additional 1/8 mile) to take into account the uncertainty involved in georeferencing specimens as well as uncertainty regarding spatial accuracy and population sizes of those occurrences. It has been well-documented that collection records without coordinates on their labels are georeferenced by various individuals using different strategies and tools, and quality control is inconsistent. In addition, specimens may have been collected from the late 1800's or as recent as last month, with spatial accuracy being quite variable over that time frame. Most specimen records are lacking information on population size as well so it's not possible to determine whether an occurrence is made up of a few individual plants covering a mere meter of ground, or having thousands of individuals that span 100 meters or more. CNPS feels that the use of 3/8 of a mile distance to auto-delineate potential occurrences based on georeferenced records is an adequate method to get a rough assessment of the rarity status of CRPR 4 taxa.

Using the above methods and tools, CNPS estimates that *Mimulus microphyllus* is currently known from approximately 272 occurrences, spanning 212 USGS 7.5' quadrangles and 46 counties throughout California (see Map 1 of Appendix 1). It is also known from Nevada, Oregon, Washington, and Idaho, and British Columbia, Canada (Nesom 2013b, 2014a). In the case of *M. microphyllus*, all GBIF (2016) records are currently based on herbarium records, with no field observational data included. The attached "Locations_MimulusMicrophyllus" spreadsheet contains two worksheet tabs: one titled "Localities_All" that includes all georeferenced records, and another titled "Localities_Non-dups" that includes representative records that make up a single approximated occurrence (omitting duplicate records from the same collector, collector number, and date, as well as records that are within 3/8 of a mile from one another). It's important to re-emphasize the point that our analysis to approximate the number of occurrences of *M. microphyllus* only includes previously georeferenced occurrences. The Consortium of California Herbaria (2016) currently includes 25 records of *Mimulus microphyllus* / *Erythranthe microphylla* that are not georeferenced, and without further assessment it is unknown whether one or more of these records may actually make up additional potential occurrences. However, since currently known from at least approximately 272 occurrences, we feel that *M. microphyllus* is justifiably known as common and widespread throughout California.

Based on its high approximate occurrence number and widespread range, *Mimulus microphyllus* is too common to continue being considered of limited distribution in California, and CNPS and CNDDDB recommend deleting it from California Rare Plant

Rank 4.3 of the CNPS Inventory. It will be placed on the Considered But Rejected list as previously being included in the Inventory, but being too common for inclusion at this time.

Recommended Actions

CNPS: Delete *Mimulus microphyllus* from California Rare Plant Rank 4.3

CNDDDB: Delete *Mimulus microphyllus* from G3G4Q / S3S4 in the CNDDDB (include in NatureServe as G5 / S4)

Current CNPS Inventory Record

Mimulus microphyllus Benth.

small-leaved monkeyflower

Phrymaceae

CRPR 4.3

Kern

Meadows and seeps (mesic); elevation 1770 – 2450 meters.

Annual herb. Blooms May – August

See *M. guttatus* in *The Jepson Manual* (1993) and *TJM 2*.

Available online at <http://www.rareplants.cnps.org/detail/1094.html>

Revised CNPS Inventory Record

Mimulus microphyllus

Considered But Rejected: Previously CRPR 4.3; more common than originally thought.

Literature Cited

Barker, W.R., G.L. Nesom, P.M. Beardsley, and N.S. Fraga. 2012. A taxonomic conspectus of Phrymaceae: a narrowed circumscription for *Mimulus*, new and resurrected genera, and new names and combinations. *Phytoneuron* 2012-39: 1-60.

Bentham, G. 1846. Scrophulariaceae. *Prodromus Systematis Naturalis Regni Vegetabilis* 10: 371–372. (Original description.)

[BHL] Biodiversity Heritage Library. 2016. Website <http://www.biodiversitylibrary.org/> [accessed 5 August 2016].

[CNDDDB] California Natural Diversity Database (CNDDDB). 2016. RareFind 5 [Internet]. California Department of Fish and Wildlife [Government Version, August 2016].

Consortium of California Herbaria. 2016. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley. Website <http://ucjeps.berkeley.edu/consortium/> [accessed 5 August 2016].

[GBIF] Global Biodiversity Information Facility, GBIF. 2016. Data provided by the participants of the Global Biodiversity Information Facility. GBIF Secretariat. Website www.gbif.org [accessed July 2016].

Nesom, G.L. 2014a. Commentary: speciation on a local geographic scale in *Mimulus*. *Phytoneuron* 2014-72: 1-4.

_____. 2014b. Further observations on relationships in the *Erythranthe guttata* group (Phrymaceae). *Phytoneuron* 2014-93: 1-8.

_____. 2013a. Observations on habit and duration in populations of *Erythranthe microphylla* and *E. guttata* (Phrymaceae). *Phytoneuron* 2013-68: 1-8

_____. 2012. Taxonomy of *Erythranthe* sect. *Simiola* (Phrymaceae) in the USA and Mexico. *Phytoneuron* 40: 1-123.

_____. 2013b. The taxonomic status of *Mimulus sookensis* (Phrymaceae) and comments on related aspects of biology in species of *Erythranthe*. *Phytoneuron* 2013-69: 1-18.

[RPSAC] Rare Plant Scientific Advisory Committee and D.P. Tibor (ed.). 2001. California Native Plant Society's Inventory of Rare and Endangered Plants of California. Special Publication No. 1 (Sixth Edition). California Native Plant Society, Sacramento. 387 pp.

Skinner, M.W. and B.M. Pavlik (eds.). 1994. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (Fifth Edition). California Native Plant Society, Sacramento. 338 pp.

Smith, J.P., Jr. and K. Berg (eds.). 1988. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (Fourth Edition). California Native Plant Society, Sacramento. 168 pp.

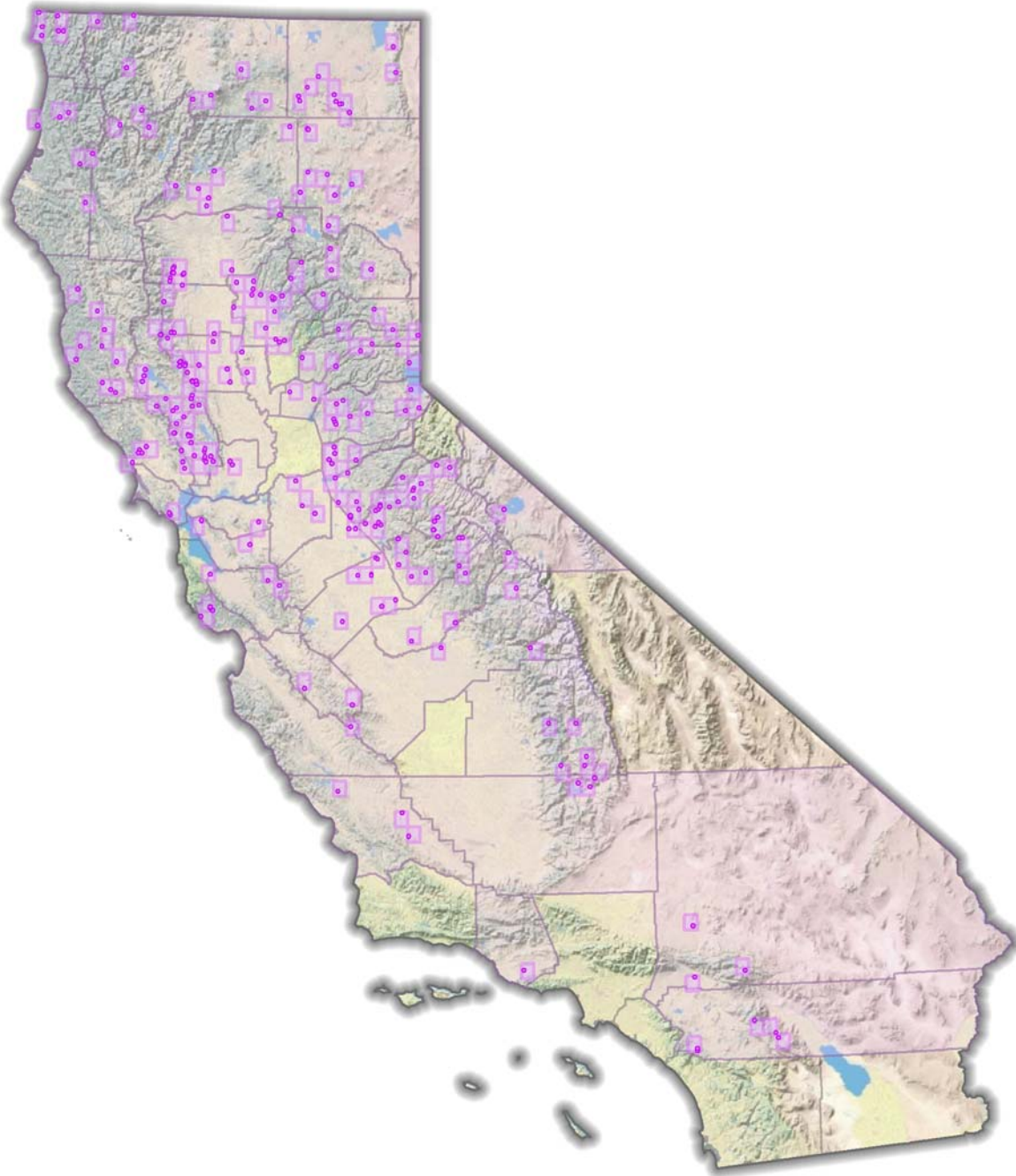
_____, R.J. Cole, and J.O. Sawyer, Jr. 1980. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (2nd Edition). California Native Plant Society, Berkeley. 115 pp.

_____ and R. York. 1984. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (3rd Edition). California Native Plant Society, Berkeley. 174 pp.

Thompson, D.M. 1993. *Mimulus*. Pp. 1037-1046 in Hickman, J.C. (ed.), *The Jepson manual: higher plants of California*. University of California Press, Berkeley.

_____. 2012. *Mimulus*. Pp. 988-998 in Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.), *The Jepson manual: vascular plants of California, second edition*. University of California Press, Berkeley and Los Angeles.

Appendix I - Maps



Copyright:© 2013 National Geographic Society, i-cubed

Map 1. Distribution of *Mimulus microphyllus* / *Erythranthe microphylla* in California based on GBIF (2016) data.