

**Added to California Rare Plant Rank 1B.2 of the CNPS Inventory on
December 31, 2013**

**Rare Plant Status Review: *Monardella sinuata* ssp. *sinuata*
Proposed New Add to California Rare Plant Rank 1B.2, G2 / S2**

Aaron E. Sims (CNPS) and Roxanne Bittman (CNDDDB)
November 21, 2013

Changes made to the original document appear in blue text.

Background

Monardella sinuata Elvin & A.C. Sanders subsp. *sinuata* is an annual herb in the Lamiaceae that is known from coastal areas of Morro Bay in San Luis Obispo County south to Surf in Santa Barbara County. It was recently described by Elvin and Sanders (2009) and is included in *The Jepson Manual, Second Edition* (Sanders et al. 2012; available online at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=91105); the Lamiaceae treatment in the *Flora of North America* is not yet available. *Monardella sinuata* subsp. *sinuata* (and subsp. *nigrescens*, which is concurrently being evaluated for addition to the CNPS Inventory) has long been mistakenly called *M. undulata* Benth., a species that is currently a California Rare Plant Rank (CRPR) 4.2 taxon in the CNPS Inventory (2013; available online at <http://www.rareplants.cnps.org/detail/643.html>). Based on Elvin and Sanders (2009), *M. undulata* is now delineated into three subspecies, all of which are included in the CNPS Inventory (2013): subsp. *arguelloensis* (CRPR 1B.1), subsp. *crispa* (CRPR 1B.2, synonym *M. crispa*), and subsp. *undulata* (CRPR 1B.2, synonyms *M. frutescens* and *M. undulata* var. *frutescens*). Additionally, what is still included in the CNPS Inventory as *M. undulata* at the species level is currently representative of the two newly described taxa, *M. sinuata* subsp. *nigrescens* and subsp. *sinuata*. Therefore, *M. undulata* s.l. is simultaneously being proposed for deletion from the CNPS Inventory at this time.

The sheets with the type specimen of *M. undulata* contain more than one taxon, and the original description includes characters that apply to two different perennial species (Elvin and Sanders 2009). In his original description of *M. undulata*, Bentham (1834) described a plant that has a perennial or suffrutescent base or trunk, and refers to some characters that correspond with *M. crispa*, such as having procumbent basal stems (Elvin and Sanders 2009). Although *M. sinuata* has clear similarities with the other undulate-leaved *Monardella* taxa with which it has been typically associated, “it is more similar and appears to be more closely allied with *M. breweri*, *M. douglasii*, and other annual *Monardella* species, based on its leaf and bract morphology, pubescence, stature (herbaceous stems), the presence of glands on the tips of the upper petals, and especially its annual habit” (Elvin and Sanders 2009). The subspecific epithet of *M. sinuata* subsp. *sinuata* refers to its sinuous leaf edges. *Monardella sinuata* subsp. *sinuata* is very similar to *M. undulata* subsp. *undulata* (J. Chesnut pers. comm. 2013; D. Keil pers. comm. 2013). It differs from *M. undulata* in its annual versus subshrub to shrub habit, and in its main stem generally branching below the middle versus main stem branching above the middle in *M. undulata* (Sanders et al. 2012). However, the

first year growth of *M. undulata* subsp. *undulata* is very difficult (or perhaps impossible) to tell from *M. sinuata* subsp. *sinuata*, and it really only comes down to being annual versus subshrub (D. Keil pers. comm. 2013). Also, third generation plants of *M. sinuata* subsp. *sinuata* grown from seed seem to lack any real morphological differences from *M. undulata* subsp. *undulata* in the Morro Bay area of San Luis Obispo County; “the plants are annuals or very short-lived perennials with a semi-woody lower stem and dense and low spreading branching pattern” (J. Chesnut pers. comm. 2013). Nevertheless, *M. sinuata* subsp. *sinuata* and each of the three subspecies of *M. undulata* (sensu Elvin and Sanders 2009) should probably be included in the CNPS Inventory (D. Keil pers. comm. 2013). *Monardella sinuata* subsp. *sinuata* differs from subsp. *nigrescens* (the only other subspecies of *M. sinuata*) in having lighter calyx and bract tips, and lighter bract veins (all of which are dark to black in subsp. *nigrescens*). It also differs from subsp. *nigrescens* in having narrower, longer bracts, smaller glomerules (10-25 mm versus 10-35 mm wide for subsp. *nigrescens*), and in being geographically separated (a southern distribution from San Luis Obispo County to Santa Barbara County versus a northern distribution from Monterey County to the San Francisco Bay Area for subsp. *nigrescens*). *Monardella sinuata* subsp. *sinuata* is known to flower from April through September (Elvin and Sanders 2009; CalPhotos 2013; CNDDDB 2013; Consortium of California Herbaria 2013).

Monardella sinuata subsp. *sinuata* is restricted to sandy soils in coastal strand, coastal dune scrub, openings of coastal scrub, chaparral, and in coast live oak woodland (Elvin and Sanders 2009). It is known from an approximate elevation of sea level to 300 meters (Elvin and Sanders 2009).

Monardella sinuata subsp. *sinuata* is currently known from approximately 35 occurrences throughout the coast of San Luis Obispo and Santa Barbara counties. It is presumed extirpated in Ventura County, where only known from two historical collections in areas that have minimal suitable habitat remaining (Elvin and Sanders 2009); one is from two miles north of Camarillo (*French 311, UC1124596*) and the other is from Las Posas Road in Camarillo (*Howe 4924, SD98840*) (Consortium of California Herbaria 2013). There is an undated collection from “St. Simeón” (presumably San Simeon, San Luis Obispo County) (*Gambel s.n., GH400661*) (Consortium of California Herbaria 2013), which would be a northern range extension for this taxon (Elvin and Sanders 2009). This collection is intermediate between subsp. *sinuata* and subsp. *nigrescens* in bract characters, and “[s]ome other subspecies *sinuata* plants from the Morro Bay area also tend toward some aspects of the northern subspecies in that they exhibit some darkening of the tips of the calyces, slightly darkening bract veins, and a more compact habit relative to the plants from Santa Barbara County. However, they still fit better within subspecies *sinuata* and we include them here” (Elvin and Sanders 2009). If the intermediate plant that was collected by Gambel actually was from San Simeon it is presumed extirpated from there; there are no other collections of *M. sinuata* known from San Simeon (Elvin and Sanders 2009; Consortium of California Herbaria 2013), and it is unlikely to occur there presently (M. Walgren pers. comm. 2013). However, it is important to remember that San Simeon Point was once Baywood fine sands coastal dune scrub habitat prior to the planting of pine, eucalyptus, and cypress,

and there is indication that the rare *Chorizanthe pungens* var. *pungens* was once there; not eliminating the possibility for *M. sinuata* subsp. *sinuata* to have once been there also (D. Keil pers. comm. 2013; M. Walgren pers. comm. 2013).

There are several records of *M. undulata* in the Consortium of California Herbaria (2013) from southern San Luis Obispo County that could be either *M. sinuata* subsp. *sinuata* or *M. undulata* subsp. *undulata* (D. Keil pers. comm. 2013), and it is impossible to know without annotations (M. Elvin and A. Sanders pers. comm. 2012). Based on examination of OBI specimens it appears that they would all be *M. undulata* subsp. *undulata*, and it is also suspected that the old records of *M. sinuata* from these areas are actually first year *M. undulata* subsp. *undulata* (D. Keil pers. comm. 2013). If historical records from southern San Luis Obispo County truly are *M. sinuata* subsp. *sinuata* (as annotated by Elvin and Sanders 2009), it is likely extirpated from there. Historical sites from Nipomo, Oceano, and Arroyo Grande are likely lost to development, and historical records from Price Canyon are likely lost to veldt grass (*Ehrharta calycina*) conversion (J. Chesnut pers. comm. 2013). Extensive botanical surveys of the Price Canyon area by J. Chesnut (pers. comm. 2013) and other dune-experienced botanists have resulted in no observations of *M. sinuata* subsp. *sinuata* (D. Keil pers. comm. 2013). The plants from Indian Knob appear to be annual and therefore *M. sinuata* subsp. *sinuata*; however, Julie Vanderwier did not find these plants in her flora of Indian Knob (D. Keil pers. comm. 2013), and it is unknown whether it persists there.

Monardella sinuata subsp. *sinuata* (and *M. undulata* subsp. *undulata*) is apparently not going to survive veldt grass invasion; “they require reduced competition on older sands, and the veldt out-competes them (J. Chesnut pers. comm. 2013), and “[it] is losing out to veldt grass in the Los Osos area” (D. Keil pers. comm. 2013). [In addition to veldt grass, it is threatened by foot traffic and trampling by horses in the Los Osos area \(M. Walgren pers. comm. 2013\).](#) *Monardella sinuata* subsp. *sinuata* is also threatened by off-highway vehicles and unauthorized bike trails, particularly at Burton Mesa (CNDDDB 2013). Furthermore, due to its coastal distribution, it is threatened by coastal development, habitat loss, and fragmentation, which has likely already led to the extirpation of at least seven occurrences, and which threatens many other taxa that have a similar distribution (CNPS 2013). Lastly, it is also possibly threatened by climate shifts, which is expected to have significant adverse effects to this taxon based on its similar circumstances to many federally listed species (M. Elvin pers. comm. 2013).

Based on the available information, CNPS and CNDDDB recommend adding *Monardella sinuata* subsp. *sinuata* to CRPR 1B.2 of the CNPS Inventory. If additional information on the distribution and rarity status of this taxon becomes available in the future, it will be re-evaluated at that time.

Recommended Actions

CNPS: Add to 1B.2

CNDDDB: Add to G2 / S2

Draft CNPS Inventory Record

Monardella sinuata Elvin & A.C. Sanders ssp. *sinuata*

southern curly-leaved monardella

Lamiaceae

CRPR 1B.2

San Luis Obispo, Santa Barbara, Ventura*

Newbury Park (113B)* 3411828, Santa Paula (140D)* 3411931, Goleta (143A) 3411947, Zaca Creek (169B) 3412062, Los Alamos (170A) 3412063, Lompoc (170B) 3412064, Surf (171A) 3412065, Orcutt (195C) 3412074, Casmalia (196D) 3412075, Pismo Beach (221B) 3512026, Oceano (221D)* 3512015, Morro Bay South (247D) 3512037, San Simeon (271B)?* 3512162

Coastal dunes, coastal scrub (openings), chaparral, cismontane woodlands / sandy; elevation 0 to 300 meters.

Annual herb. Blooms April-September.

~~Several~~ ~~Seven~~ historical occurrences are presumed extirpated by urbanization and non-native plants. **Seriously threatened by veldt grass (*Ehrharta calycina*) invasion.** Also threatened by development, habitat loss, habitat fragmentation, **vehicles, foot traffic, and recreational activities** ~~and non-native plants~~. Possibly threatened by climate shifts. Previously included in *M. undulata*. Similar to *M. breweri* and *M. douglasii*. See Novon 19(3):315-345 (2009) for original description.

Literature Cited

Bentham, G. 1834. *Monardella*. Pp. 331-333 in *Labiatarum Genera et Species*. James Ridgeway and Sons, London.

California Native Plant Society (CNPS). 2013. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Available online at: <http://www.rareplants.cnps.org>.

California Natural Diversity Database (CNDDDB). 2013. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento.

CalPhotos. 2013. CalPhotos: Plants. Regents of the University of California, Berkeley. Accessed on 7 November 2013. Available online at: <http://calphotos.berkeley.edu/flora/>.

Consortium of California Herbaria. 2013. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley. Accessed on 11 September 2013. Available online at: <http://ucjeps.berkeley.edu/consortium/>.

Elvin, M.A. and A.C. Sanders. 2009. Nomenclatural changes for *Monardella* (Lamiaceae) in California. Novon 19(3): 315-345.

Sanders, A.C., M.A. Elvin, and M.S. Brunell. 2012. *Monardella*. Pp. 842-850 in Baldwin, B.G, D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.), *The*

Element Code: ?

Jepson Manual: vascular plants of California, second edition. University of California Press, Berkeley, Los Angeles, London.

Sent to CW, M. Brunell, A. Sanders on 11/21/2013