

**Added to California Rare Plant Rank 1B.2 of the CNPS Inventory on  
September 13, 2013**

**Rare Plant Status Review: *Linanthus bernardinus***  
**Proposed Addition to California Rare Plant Rank 1B.2, G2 / S2**  
Danny Slakey (CNPS), Aaron E. Sims (CNPS) and Kristi Lazar (CNDDDB)  
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### **Background**

*Linanthus bernardinus* is an annual herb in the Polemoniaceae that is endemic to the Sawtooth Range in San Bernardino County. It was first described by Fraga and Bell (2012), so it was not included in *The Jepson Manual, Second Edition* (Patterson and Porter 2012) or *The Jepson Manual* (Patterson 1993); the *Flora of North America (FNA)* treatment for Polemoniaceae is not yet available. It was discovered from a single specimen at the Rancho Santa Ana (RSA) herbarium that had been misidentified as *Leptosiphon breviculus* (Fraga and Bell 2012). Closer inspection of the specimen placed it in the genus *Linanthus*, but it could not be identified to species. Subsequent field and herbarium studies showed that the plant was similar to both *Linanthus killipii* (California Rare Plant Rank - CRPR 1B.2) and *L. orcuttii* (CRPR 1B.3; Fraga and Bell 2012 mention a close affinity with *L. orcuttii* subsp. *pacificus*, but the subspecies of *L. orcuttii* are not recognized by Patterson and Porter 2012 and are no longer recognized by the CNPS Rare Plant Program). However, *Linanthus bernardinus* differs from the other two taxa in plant habit, corolla length, seed color, seed texture, shape of the nectary guide, and flower color. The morphological and habitat differences that separate the three taxa are outlined in Table 1 (Appendix I). While there is some degree of overlap between the species in most of these morphological characters, *L. bernardinus* possesses a unique combination of characters not found in the other two taxa. *Linanthus orcuttii* occurs in mountain ranges of San Diego County, with occurrences at least about 85 km from the range of *L. bernardinus*. *Linanthus killipii* occurs closer by, with only a 20 km disjunction from *L. bernardinus*. *Linanthus bernardinus* blooms from March to May.

*Linanthus bernardinus* occurs in Joshua tree woodland as well as in pinyon and juniper woodland. It has an affinity for certain microhabitats, including small depressions on gentle slopes, or on hillocks surrounded by large granite boulders (Fraga and Bell 2012). It grows at elevations between 1190 and 1340 meters.

There are currently 11 known occurrences of *L. bernardinus*. Of those, seven occurrences are at least partially within the Pioneertown Mountains Preserve (Wildlands Conservancy), two are within the UC Burns Pinyon Ridge Reserve, and two have an unknown landowner (Fraga and Bell 2012, CNDDDB 2013). Despite being protected, all known occurrences of *L. bernardinus* are small, with only two occurrences containing more than 100 individuals. However, populations of annual plants can often fluctuate widely from year to year. All of the known occurrences are recent, meaning they have been documented in the past 20 years. In fact, 9 of the 11 occurrences were documented in 2010 or more recently. Several of the occurrences of *L. bernardinus*

have already been included in the CNDDDB, either as *L. killipii* (EO# 25) or *L. orcuttii* (EO# 25 and 33); these will be moved to *L. bernardinus* in the CNDDDB. An additional specimen, *Elvin 4738*, was collected between the ranges of *L. killipii* and *L. bernardinus*, and is currently treated as *L. orcuttii* in the CNDDDB (EO#32) and the Consortium of California Herbaria (CCH 2013). However, it is actually *Linanthus jonesii* (D. Bell pers. comm. 2013); the CNDDDB will be updated, and comments will be entered into the CCH to recommend this annotation. Additional habitat for *L. bernardinus* exists within the Sawtooth Range, including a parcel owned by the Bureau of Land Management (BLM) in the eastern Sawtooth Range (D. Bell pers. comm. 2013). Bell (pers. comm. 2013) intends to return to the BLM property to search for additional occurrences in the future.

*Linanthus bernardinus* is threatened by competition from exotic annual grasses, and potentially threatened by development, renewable energy projects and foot traffic. In good rain years and following fires, exotic annual grasses such as *Bromus tectorum* and *Bromus rubens* can be dominant in the Pioneertown area. There is some development pressure on the eastern along the eastern edge of the Sawtooth Range, which should be searched for additional occurrences. A wind energy project was proposed several miles north of the Sawtooth Range, but the project was stopped. Additionally, a few occurrences are found along small hiking and equestrian trails, and could be subject to trampling (D. Bell pers. comm. 2013).

Although most occurrences of *L. bernardinus* are on protected lands, its small population sizes and highly localized distribution could make it vulnerable to extirpation. Based on the available information, CNPS and CNDDDB recommend adding *Linanthus bernardinus* to California Rare Plant Rank 1B.2 of the CNPS Inventory.

### Recommended Actions

CNPS: Add *Linanthus bernardinus* to 1B.2

CNDDDB: Add *Linanthus bernardinus* to G2 / S2

### New CNPS Inventory Record

*Linanthus bernardinus* N.S. Fraga & D.S. Bell

Pioneertown linanthus

Polemoniaceae

CRPR 1B.2

San Bernardino

Yucca Valley North (103B) 3411624, Rimrock (104A) 3411625

Joshua tree woodland, pinyon and juniper woodland; elevation 1190 – 1340 meters.

Annual herb. Blooms March to May.

Known only from the Sawtooth Range. Threatened by non-native plants. Potentially threatened by wind and solar energy development. Possibly threatened by development and foot traffic. Similar to *L. killipii* and *L. orcuttii*. Not in *TJM 2*. See *Aliso* 30(2):97-102 (2012) for original description.

### Literature Cited

Fraga, N.S. and D.S. Bell. 2012. A new species of *Linanthus* (Polemoniaceae) from San Bernardino County, California. *Aliso* 30(2):97-102.

Patterson, R. 1993. *Linanthus*. Pp. 840-844 in Hickman, J.C. (ed.), *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley.

Patterson, R. and J.M. Porter. 2012. *Linanthus*. Pp. 1058-1060 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* (2nd ed.). University of California Press, Berkeley and Los Angeles. Available online at [http://ucjeps.berkeley.edu/cgi-bin/get\\_IJM.pl?key=8871](http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?key=8871).

### Appendix I

Species	<i>L. bernardinus</i>	<i>L. killipii</i>	<i>L. orcuttii</i>
Habit	erect	tufted	Erect
Height (cm)	(1.5)2-9	1-5	1-15
Corolla total length (mm)	13-25	7-15	8-23
Corolla tube length (mm)	6-14	4-8	5-15
Corolla limb color	white or pale lavender	white or bright pink	white or bright pink yellow, maroon, or purple
Corolla tube color	maroon to purple	yellow	purple
Nectar guide pattern shape	ellipse	ellipse	chevron (V-shape) red brown to dark red brown
Seed color	light brown	dark brown	brown
Seed coat texture	small amount of mucilage when wet	not gelatinous when wet	not gelatinous when wet
Habitat	desert	montane	montane

Table 1. Morphological and habitat differences among *L. bernardinus*, *L. killipii*, and *L. orcuttii*. Data were taken from Fraga and Bell (2012) as well as Patterson and Porter (2012).