

**Rare Plant Status Review: *Claytonia crawfordii***  
**Proposed Addition to California Rare Plant Rank 1B.2, G1 / S1**  
Aaron E. Sims (CNPS), Ellen Dean (CNPS), and Katie Ferguson (CNDDDB)  
9 September 2021

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

*Claytonia crawfordii* T. R. Stoughton is a perennial herb in Montiaceae that is a Sierra Nevada endemic, currently only known from Tuolumne County, California. Having been described in 2018, it is not included in *The Jepson Manual* (Chambers 1993), the *Jepson eFlora* (Miller and Chambers 2012), or *Flora of North America North of Mexico* (Miller 2004). The species was first discovered at the Jepson Herbarium in 2015 during review of herbarium specimens of *C. obovata*. One specimen (L. R. Heckard 4741), identified as *C. obovata* based on leaf shape, differed from that species in several features. “It was noted in the annotation that certain other morphological features (such as the evidently elongate peduncles) did not fit the description of *C. obovata*, a species that would be well out of range in the Sierra Nevada near Long Barn, California. This specimen was mentioned by Stoughton et al. (2017) as belonging to a putatively new taxon closely allied with either *C. obovata* or *C. peirsonii*, based on its leaf shape and venation, respectively, but that more research was needed” (Stoughton et al. 2018). Although genetic data are lacking, based on the unique ecologies and wide distances between *C. obovata*, *C. peirsonii*, and *C. crawfordii*, along with morphological data on leaf shape, Stoughton et al. (2018) maintain that it is most reasonable to treat the easily diagnosable, *C. crawfordii*, at the species level.

Most similar to *C. obovata* (CRPR 4.3), *C. crawfordii* is differentiated in having a relatively elongate peduncle (vs. short or non-existent in *C. obovata*), narrower basal and cauline leaves (see Fig. 3 in Stoughton et al. 2018), and raised secondary veins on the adaxial leaf surfaces (see Fig. 4 in Stoughton et al. 2018) that are reminiscent of the *C. peirsonii* species complex (Stoughton et al. 2018). See Table 1 (Appendix I) for additional characters used to differentiate *C. crawfordii* from *C. obovata* as well as other taxa in the *Claytonia lanceolata* species complex in California.

*Claytonia crawfordii* is named for Larry and Suzanne Crawford who welcomed Stoughton into their home and rekindled his passion for sharing botanical knowledge with others (Stoughton et al. 2018).

### Ecology

Occurs in highly exposed, relatively treeless areas among volcanic rocks, mostly on north-facing slopes just below ridgeline (Stoughton et al. 2018). *Claytonia crawfordii* has been observed in barren areas within a broader matrix of mixed conifer and *Quercus kelloggii* forest alongside *Lomatium stebbinsii* (CRPR 1B.1) and *Sanicula tuberosa* (K. Ferguson pers. comm. 2021). Other associates include *Ceanothus arcuatus*, *C. fresnensis*, *Allium obtusum* var. *conspicuum*, *Pinus jeffreyi*, *Calocedrus decurrens*, *Eriophyllum lanatum*, and *Arctostaphylos patula* (Calflora

2021, K. Ferguson pers. comm. 2021). It blooms from April to May and occurs at an approximate elevation of 1,540 to 1,920 meters (5,050 to 6,300 feet) (Stoughton et al. 2018, Calflora 2021, CalPhotos 2021, Ferguson pers. comm. 2021, Google LLC 2021).

### **Distribution and Abundance**

*Claytonia crawfordii* is currently known from only four occurrences and is endemic to the central High Sierra Nevada bioregion of Tuolumne County, California. Its occurrences are clustered in three general localities: the headwaters of Beaver Creek, vicinity of Long Barn/Bald Mountain, and Crandall Peak. All but one of its occurrences are recent, with the single historical record being based on a voucher specimen collected near Crandall Peak in 1990 (*Peggy Carkeet s.n.*, OSC) (Stoughton et al. 2018). Three of the four occurrences are in Stanislaus National Forest and the remaining occurrence (record #1) is on Sierra Pacific Industries land. Two occurrences include population information: 29 individuals were observed on 13 May 2020 at record #1, with 99% in fruit and 1% in vegetative condition (A. Taylor field survey form, K. Ferguson pers. comm. 2021); approximately 20 individuals were observed on 19 April 2021 at record #3, mostly in fruit with a few in flower (M. Henwood pers. comm. 2021).

### **Status and Threats**

The single record of *Claytonia crawfordii* on Sierra Pacific Industries land notes that portions of the population are growing adjacent to a proposed timber harvest unit and would be incorporated into harvest planning and CalFire approval. The other occurrences on Stanislaus NF have no current threats known. Climate change and its effects leading to severe drought and lack of snow accumulation could be a threat to this species.

### **Summary**

Based on the available information, CNPS and CNDDDB recommend adding *C. crawfordii* to 1B.2 of the CNPS Inventory. A threat rank of 0.2 is recommended based on 25% of its occurrences being threatened or possibly threatened and in having very small to unknown population sizes. If knowledge on the distribution, threats, and rarity status of *C. crawfordii* changes in the future, we will re-evaluate its status at that time.

### **Recommended Actions**

CNPS: Add *Claytonia crawfordii* to 1B.2

CNDDDB: Add *Claytonia crawfordii* to G1 / S1

### **Draft CNPS Inventory Record**

*Claytonia crawfordii* T.R.Stoughton

Crawford's spring beauty

Montiaceae

CRPR 1B.2

Tuolumne

Liberty Hill 3812031, Strawberry 3812021, Crandall Peak 3812022

Upper montane coniferous forest / volcanic, rocky, openings; elevation 1,540 to 1,920 meters (5,050 to 6,300 feet)

Perennial herb. Blooms April to May.

Threats: Possibly threatened by logging.

References:

- Original description: *American Journal of Botany* 105(3): 536-548 (2018).

### Literature Cited

Calflora. 2021. Information on wild California plants for conservation, education, and appreciation. Website <http://www.calflora.org/> [accessed 24 August 2021].

CalPhotos. 2021. CalPhotos: Plants. Regents of the University of California, Berkeley. Website <http://calphotos.berkeley.edu/flora/> [accessed 24 August 2021].

Chambers, K. L. 1993. *Claytonia* L. (Portulacaceae). Pp 898–900 in Hickman, J. C. (ed.), *The Jepson manual: Higher plants of California*. University of California Press, Berkeley, CA.

Google LLC. 2021. Google Earth Pro (Version 7.3.2.5776) [Software]. Available at <https://www.google.com/earth/>.

Miller, J. M. 2004. *Claytonia* Linnaeus, in Flora of North America Editorial Committee (eds.), *Flora of North America North of Mexico, Volume 4*. Website [http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=107275](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=107275) [accessed 24 August 2021].

Miller, J. M. and K. L. Chambers. 2012. *Claytonia lanceolata*. In: Jepson Flora Project (eds.), *Jepson eFlora*. Website [http://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=19622](http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=19622) [accessed 24 August 2021].

Stoughton, T. R., D. D. Jolles, and R. L. O’Quinn. 2017. The western spring beauties, *Claytonia lanceolata* (Montiaceae): A review and revised taxonomy for California. *Systematic Botany* 42(2): 283-300. (Taxonomic treatment.)

Stoughton, T. R., R. Kriebel, D. D. Jolles, and R. L. O’Quinn. 2018. Next-generation lineage discovery: A case study of tuberous *Claytonia* L. *American Journal of Botany* 105(3): 536-548.

### Personal Communications

Ferguson, Katie. 2021. CNDDDB Botanist, California Department of Fish and Wildlife. Email correspondence including field survey form for *Claytonia crawfordii*. 9 June 2021.

Henwood, Maeve J. 2021. Botanist, Sierra Pacific Industries. Email including information about one of the *Claytonia crawfordii* sites off of Bald Mountain. 26 August 2021.

**APPENDIX I – TABLES AND FIGURES**

**Table 1:** Selected characters used to differentiate taxa in the *Claytonia lanceolata* species complex in California. Taxa are listed in same order of appearance as the taxonomic key provided in Stoughton et al. (2017), with the exception of the more recently described *C. crawfordii*. Light gray cells indicate duplicate entries to assist with making comparisons. (Table developed using characters from Stoughton et al. 2017 and 2018.)

Scientific name	Cauline leaves	Adaxial leaf surface	Inflorescence	Geology	Range
<i>C. panamintensis</i>	2-4, opposite at least proximally, 1-nerved  elliptic to oblanceolate, distinctly petiolate	dark green (often at least weakly beet-red abaxially)	1-3, terminal and often also axillary, pedunculate, unibracteate, bracts 1-3 mm long	marble, sandstone, shale/slate	Panamint Mountains east to Spring Mountains of southern Nevada
<i>C. serpenticola</i>	2–4, alternate to subopposite, 1-nerved  gen. > 5 x longer than wide, blades narrowly elliptic to lance linear	gen. greenish 1° veins at base, blades gen. similar in color on ab/adaxial surfaces	1-3, terminal and often also axillary, pedunculate, unibracteate, bract 1-2 mm long	gabbro, peridotite, serpentinite or shale	Klamath-Siskiyou, North Coast Ranges
<i>C. lanceolata</i>	2, opposite, 3-nerved  gen. < 5 x as long as wide, ovate to lance ovate to lance linear	gen. greenish 1° veins at base, blades gen. similar in color on ab/adaxial surfaces	1(2), terminal (rarely also axillary), pedunculate, unibracteate, bracts 1-5 mm long	granite, rhyolite	Klamath-Siskiyou, central and northern Sierra Nevada
<i>C. obovata</i>	2(3), opposite, gen. 3-nerved with parallel veins equal in length, lateral veins converging with midrib at apex	gen. reddish 1° veins, not raised	1(2), terminal (rarely also axillary), sessile to short-pedunculate, unibracteate, bracts 1–3 mm long	graywacke, limestone, shale or gabbro, peridotite, serpentinite	Klamath-Siskiyou, North Coast Ranges

Scientific name	Cauline leaves	Adaxial leaf surface	Inflorescence	Geology	Range
<i>C. peirsonii</i> ssp. <i>bernardinus</i>	2-4, opposite at least proximally, 1-nerved  often $\geq 6 \times$ longer than wide, linear to lanceolate, sessile	gen reddish, sunken 1° veins; 2° veins of cauline leaves weakly if at all raised	1-3, terminal and often also axillary, sessile to short-pedunculate, unibracteate, bracts 1-3 mm long	limestone, marble	San Bernardino Mountains
<i>C. peirsonii</i> ssp. <i>yorkii</i>	2-4, opposite at least proximally, 1-nerved  < 6 x longer than wide, gen. weakly pigmented on abaxial surfaces (reddish to purplish pigmentation often absent in stem and pedicels)	gen reddish, sunken 1° veins; 2° veins gen. noticeably raised	1-3, terminal and often also axillary, sessile to short-pedunculate, unibracteate, bract 1-3 mm long	rhyolite	southern Sierra Nevada
<i>C. peirsonii</i> ssp. <i>peirsonii</i>	2-4, opposite at least proximally, 1-nerved  < 6 x longer than wide (gen. < 3.5 x as long as wide), variously shaped but gen. not oblanceolate, sessile	gen. reddish, sunken 1° veins (sometimes branched); 2° veins gen. noticeably raised	1-3, terminal and often also axillary, sessile to short-pedunculate, unibracteate, bracts 1-3 mm long	gneiss, granite, schist	San Gabriel Mountains
<i>C. peirsonii</i> ssp. <i>californacis</i>	2-4, opposite at least proximally, 1-nerved  < 6 x longer than wide (gen. > 3.5 x as long as wide), gen. oblanceolate to elliptic, sessile	gen. reddish, sunken 1° veins; 2° veins gen. noticeably raised	1-3, terminal and often also axillary, sessile to short-pedunculate, unibracteate, bracts 1-3 mm long	limestone, marble	San Bernardino Mountains
<i>C. crawfordii</i>	2(3?), opposite, gen. 3-nerved with parallel veins equal in length, lateral veins converging with midrib at apex  narrower in width than <i>C. obovata</i>	2° veins gen. noticeably raised	1-3, terminal (rarely also axillary), elongate peduncle	volcanic	central Sierra Nevada

**Sources:**

*Claytonia crawfordii*

Element Code: ?  
Added to CRPR 1B.2 on 2021-10-14

Stoughton, T. R., D. D. Jolles, and R. L. O'Quinn. 2017. The western spring beauties, *Claytonia lanceolata* (Montiaceae): A review and revised taxonomy for California. *Systematic Botany* 42(2): 283-300.

Stoughton, T. R., R. Kriebel, D. D. Jolles, and R. L. O'Quinn. 2018. Next-generation lineage discovery: A case study of tuberous *Claytonia* L. *American Journal of Botany* 105(3): 536-548.