

**Added to California Rare Plant Rank 1B.2 of the CNPS Inventory on
February 10, 2014**

Rare Plant Status Review: *Polemonium eddyense*
Proposed New Addition to California Rare Plant Rank 1B.2, G1 / S1
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Changes made to the original document appear in blue text.

Background

Polemonium eddyense is a perennial herb in the Polemoniaceae that is endemic to Mt. Eddy in the Klamath Ranges of Northern California. *Polemonium eddyense* was just recently described as a segregate of *Polemonium chartaceum* (California Rare Plant Rank, CRPR, 1B.3) by Stubbs and Patterson (2013), so it is not included in *The Jepson Manual* (Wilken 1993) and *The Jepson Manual, Second Edition* (Timme and Wilken 2012). The *Flora of North America* treatment of Polemoniaceae is not yet available. Prior to the original description of *P. eddyense*, *P. chartaceum* was known only from the White Mountains, the Sweetwater Mountains, and Mt. Eddy in the Klamath Ranges. *Polemonium chartaceum* has undergone several taxonomic revisions: it was described from the White Mountains by Mason (1925), and has been treated differently by several authors: as a variety of *P. confertum* by Jepson (1943), and as a possible variety of *P. elegans* by Davidson (1950), among others. More recently, *P. chartaceum* has been recognized as a distinct species by Grant (1989), Wilken (1993), and Timme and Wilken (2012). Pritchett and Patterson (1998) performed a morphometric analysis of the alpine California *Polemoniums* (*P. chartaceum* and *P. eximium*) as well as two putatively close relatives (*P. elegans* and *P. viscocum*); they were the first to suggest that *P. chartaceum* from the Klamath Ranges is distinct from the southern *P. chartaceum*. Pritchett and Patterson's (1998) morphological analysis and molecular data from de Geofroy et al. (1996) and Irwin et al. (2012) all suggested that the Klamath Range plants merited recognition as a distinct species. Stubbs (2012) and Stubbs and Patterson (2013) separated *P. eddyense* from *P. chartaceum* in the Sweetwater and White Mountains based on *P. eddyense*'s greater stigma exertion, longer styles, different calyx lobe shape, and heavier seeds. Molecular data from the ITS region showed that *P. eddyense* evolved much earlier than *P. chartaceum* and *P. eximium*, suggesting that *P. eddyense* is a relict species (Stubbs and Patterson 2013). *Polemonium eddyense* blooms from June to August (Consortium of California Herbaria, CCH 2013; CNDDDB 2013).

Polemonium eddyense is restricted to alpine boulder and rock fields of Mt. Eddy, where it grows on serpentine soils. Substrate is another factor that separates *P. eddyense* from *P. chartaceum*, as the latter grows among volcanic and granitic rocks where it occurs in the White and Sweetwater Mountains. Several collections of *P. eddyense* were made from nearby locations in subalpine coniferous forest, but surveys and research by Pritchett (1994) suggest that these locations were in error. *Polemonium eddyense* is known from an approximate elevation of 2,480 ~~2,650~~ to 2,750 meters.

There are only two known occurrences of *Polemonium eddyense*, both of which are on the Shasta-Trinity National Forest and are recently documented. One occurrence is located on the peak of Mt. Eddy and surrounding slopes, and includes a colony on the unnamed peak just east of Mt. Eddy (*P. chartaceum* EO#2 in the CNDDDB); the other occurrence is on an unnamed peak about 1 mile northwest of Mt. Eddy (*P. chartaceum* EO#1 in the CNDDDB). The two occurrences have approximately 386 and 190 individuals, respectively, based on detailed counts made in 1990 and 1991 (D. Pritchett pers. comm. 1994). Pritchett (1994) has searched the peaks and ridges close to Mt. Eddy for the plant, but areas of potential habitat include steep talus slopes and sites where rock climbing gear is required, so additional occurrences could still be found (D. Pritchett pers. comm. 1994). Two collections from outside of the two known occurrences have been made, both from the vicinity of Mt. Eddy: at Dobkins Lake (*D.H. Johnson UC538028*) and at Scott Mountain (*J.G. Lemon 10, GH*). Pritchett (1994) tried to relocate both of these occurrences, but concluded that the locations on the herbarium labels were in error. Dobkins Lake is surrounded by *Pinus monticola* forest, a habitat that is much different from Mt. Eddy. At its peak, Scott Mountain is a bald of ultramafic rock surrounded by coniferous forest, but below the treeline (Pritchett 1994). Mt. Eddy is part of the Scott Mountains, and the place name may have been misapplied for that reason (Pritchett 1994). Other early collections by Lemon at Scott Mountain have led to confusion, providing further support for the idea of an error in the label (Pritchett 1994).

As a result of the original description of *P. eddyense*, *P. chartaceum* is now known from 12, rather than 14 occurrences. *Polemonium chartaceum* is currently a CRPR 1B.3 taxon and no change in its rank is recommended, but its profile in the Inventory will be updated to reflect its narrower geographic range and habitat preferences.

Polemonium eddyense should be considered fairly well-protected, owing to its occurrence on U.S. Forest Service lands and the occurrence of 21 other CNPS-ranked rare plant taxa on Mt. Eddy (Stubbs and Patterson 2013). As of 1994, there was no evidence of grazing on the mountain (Pritchett 1994). Foot traffic from hikers could impact some individuals growing in or along hiking trails and near the summit of Mt. Eddy as it is a popular hiking destination (second author pers. observation 2013). However, many of the plants occur in unstable talus or in areas where access requires technical climbing gear (D. Pritchett pers. comm. 1994, J. Nelson pers. comm. 2013). Climate change could also pose a serious long-term threat to *P. eddyense*, as it is already growing at the upper end of an elevational gradient (D. Pritchett pers. comm. 1994).

Based on the available information, CNPS and CNDDDB recommend adding *Polemonium eddyense* to CRPR 1B.2. Although there are no imminent threats to *P. eddyense*, the low number of occurrences and small population sizes suggest that a threat rank of .2 is appropriate.

Recommended Actions

CNPS: Add *Polemonium eddyense* to CRPR 1B.2

CNDDDB: Add *Polemonium eddyense* to G1 / S1

New CNPS Inventory Record

Polemonium eddyense Stubbs

Mount Eddy sky pilot

Polemoniaceae

CRPR 1B.2

Siskiyou, Trinity

Mount Eddy (699C) 4112234

Alpine boulder and rock fields / serpentinite or peridotite, rocky; elevation 2480 2650 to 2750 meters.

Perennial herb. Blooms June to August.

Known only from the Klamath Ranges. Included in *P. chartaceum* in *TJM* (1993) and *TJM 2*. See *Fremontia* 22(2):24-26 (1993) and *Madroño* 45(3):200-209 (1998) for information about biosystematic study, and *Madroño* 60(3):243-248 (2013) for original description.

Current CNPS Inventory Record

Polemonium chartaceum Mason

Mason's sky pilot

Polemoniaceae

CRPR 1B.3

Nevada

Inyo, Mono, Siskiyou, Trinity

Juniper Mtn. (431B) 37118F2, Mt. Barcroft (431C) 37118E2, White Mtn. Peak (432A) 37118F3, Chalfant Valley (432D) 37118E3, Boundary Peak (450D) 37118G3, Mt. Patterson (488A) 38119D3, Mount Eddy (699C) 41122C4, Scott Mountain (700C)? 41122C6, South China Mtn. (700D) 41122C5

Alpine boulder and rock field, subalpine coniferous forest / rocky, serpentinite, granitic, or volcanic; elevation 1800 to 4270 meters.

Perennial herb. Blooms June to August.

Disjunct occurrences in SIS and TRI counties may be taxonomically distinct from transmontane plants; currently under study. On watch list in NV. Probably related to both *P. eximium* and *P. elegans*. See *Fremontia* 22(2):24-26 (1993) and *Madroño* 45(3):200-209 (1998) for information about ongoing biosystematic study.

Available online at <http://www.rareplants.cnps.org/detail/663.html>.

Revised CNPS Inventory Record

Polemonium chartaceum Mason

Mason's sky pilot

Polemoniaceae

CRPR 1B.3

Nevada

Inyo, Mono

Juniper Mtn. (431B) 37118F2, Mt. Barcroft (431C) 37118E2, White Mtn. Peak (432A) 37118F3, Chalfant Valley (432D) 37118E3, Boundary Peak (450D) 37118G3, Mt. Patterson (488A) 38119D3

Alpine boulder and rock field, subalpine coniferous forest / rocky, granitic, or volcanic; elevation 3290 to 4270 meters.

Perennial herb. Blooms June to August.

On watch list in NV. Formerly included plants from the Klamath Ranges, which are now recognized as *P. eddyense*. Possibly related to both *P. eximium* and *P. elegans*. See *A Manual of the Flowering Plants of California*, p. 783 (1925) by W.L. Jepson for original description, and *Madroño* 60(3):243-248 (2013) for revised circumscription.

Literature Cited

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