

Rare Plant Status Review: *Selaginella scopulorum***Proposed Change from California Rare Plant Rank 3, G5T5? / S2S3 to 2B.3, G5 / S2S3**

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This species review is being expedited through a challenge cost share agreement between the California Native Plant Society and the USDA Forest Service, Pacific Southwest Region. 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.

Selaginella scopulorum Maxon is a perennial spike-moss in the Selaginellaceae. It has been recognized at species rank in both the *Flora of North America* and the *Jepson eFlora* (Valdespino 1993, Wilson and Rosatti 2012). It has been included in the CNPS Rare Plant Inventory since 1994, when it was added to California Rare Plant Rank (CRPR) 3 as *S. densa* var. *scopulorum* due to uncertainty about its distribution and number of occurrences in California (Skinner and Pavlik 1994). Since that time, additional collections and observations have been made, and collections data have become more readily available in online databases. Reed (1964) pointed out that *Selaginella densa* Rydb. is an illegitimate name and used *S. engelmannii* var. *scopulorum* for the plants referred here to *S. scopulorum*. The outdated name *S. densa* var. *scopulorum* is still used by several online sources (GBIF 2022, NatureServe 2022, NRCS 2022, POWO 2022).

Selaginella scopulorum is endemic and widely distributed in the mountains of western North America (Tryon 1955, 1971; Valdespino 1993). It is ranked as S1 in Texas, S2? in Utah, S2S3 in California, S3 in Alberta, S5 in British Columbia, and unranked (SNR) in all other western states (NatureServe 2022, as *S. densa* var. *scopulorum*). As of this writing, we have not been able to determine the original source of the Nevada record in NatureServe (2022); there is one presumably misidentified record in SEINET (2022) from the Nevada side of the Sierra Nevada mountains (based on the collection *Henderson 30*, RENO).

In California, *S. scopulorum* is restricted to the Klamath Ranges in the northwestern corner of the state (Valdespino 1993, Wilson and Rosatti 2022). NatureServe indicates that there are at least 200 populations of *S. scopulorum* in California. However, the basis for this statement is unknown, and the statement is erroneous (NatureServe 2022). As a CRPR 3 plant, its occurrences have not been mapped by the California Natural Diversity Database (CNDDDB). As a result of the present status review, there are currently 20 known occurrences of this species in California, mostly in the Klamath Ranges (19 occurrences) but also extending to the High Cascade Range (1) bioregion in Siskiyou and Trinity counties (Calflora 2022, CCH2 2022). Eighteen occurrences (90%) are historical (not revisited within the last 20 years), and two are recent. Nineteen occurrences (95%) are on National Forest lands, including the Klamath NF (14 occurrences), Shasta-Trinity NF (4), and one on the boundary between the Klamath and Rogue River-Siskiyou NFs. One occurrence on private land is an inholding within the Klamath NF. Fourteen occurrences (70%) are in federally designated Wilderness areas, including the Russian Wilderness (5 occurrences), the Marble Mountain Wilderness (4 occurrences), the Trinity Alps Wilderness (4), and the Siskiyou Wilderness (1). Data on population size, trends over time, and area of occupancy are lacking. Anecdotal observations by collectors suggest that *S. scopulorum*

may be locally frequent to common or abundant (CCH2 2022). Overall, however, it is rare in California (D. York 2022, pers. comm.). Threats are unknown although possibly negligible due to this species' preference for rocky, upper montane habitats well removed from human habitation.

Field-work is needed to rediscover historical occurrences, gather population data, assess site quality and threats, and search for additional occurrences. Two additional CCH2 (2022) records from Placer County, based on the collections *Wyrick s.n.* in 1975 (PUA) and *Mozingo 75-50* (RENO), are presumably misidentified.

Based on the available information, we recommend changing *Selaginella scopulorum* from CRPR 3 to 2B.3 in the CNPS Inventory and CNDDB. If knowledge on the distribution, threats, and rarity of *S. scopulorum* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Change *Selaginella scopulorum* from CRPR 3 to 2B.3

CNDDB: Change *Selaginella scopulorum* from G5T5? / S2S3 to G5 / S2S3

Draft CNPS Inventory Record (Changes to the original record are in green text)

Selaginella scopulorum Maxon

Rocky Mountain spike-moss

Selaginellaceae

USDA Plants Symbol: **SESC5**

Synonym(s)/Other Name(s): *Selaginella densa* var. *scopulorum*

CRPR 3 2B.3

Counties: Siskiyou (SIS), **Trinity (TRI)**

States: Arizona (AZ), California (CA), Colorado (CO), Idaho (ID), Montana (MT), Nevada (NV) **?,** New Mexico (NM), Oregon (OR), Texas (TX) **?,** Utah (UT), Washington (WA), Wyoming (WY)

Quad name (code): **Boulder Peak (4112351), Caribou Lake (4112218), Condrey Mtn. (4112288), Devils Punchbowl (4112376), Dewey Gulch (4112273), Dutch Creek (4112381), Eaton Peak (4112238), English Peak (4112342), Mount Eddy (4112234), Mt. Hilton (4012381), Scott Mountain (4112236), Seven Lakes Basin (4112224)**

General Habitat: ~~North Coast coniferous forest,~~ subalpine coniferous forest, upper montane coniferous forest

Micro Habitat: ~~decomposed~~ granitic, **metamorphic**, rocky, **volcanic**

Elevation: ~~1500–2200~~ **1430 - 2285** meters

Life form: perennial rhizomatous herb

Blooms: **July–Aug**

- Notes: **Move to List 2? Location, rarity, and endangerment information needed. See American Fern Journal 11:36 (1921) for original description, and Annals of the Missouri Botanical Garden 42:67–69 (1955) for revised nomenclature.**

- Taxonomy: *Selaginella densa* Rydb. is an illegitimate name; if recognizing this taxon at varietal rank, then the correct name is *S. engelmannii* Hieron. var. *scopulorum* (Maxon) C.F. Reed. Varieties reportedly intergrade in Rocky Mtns. but distinct elsewhere. Collections from the Sierra Nevada (PLA Co.) presumably misidentified.

Selected References:

- Original Description: *American Fern Journal* 11:36 (1921)
- Revised Nomenclature: *Annals of the Missouri Botanical Garden* 42:67-69 (1955), *Phytologia* 9: 497-500 (1964)

Literature Cited

Calflora. 2022. Information on wild California plants for conservation, education, and appreciation. Website <http://www.calflora.org/> [accessed August 2022].

[CCH2] Consortium of California Herbaria Portal 2. 2022. Data provided by the participants of the Consortium of California Herbaria and the California Phenology Thematic Collections Network (CAP-TCN). Regents of the University of California, Berkeley and Cal Poly, San Luis Obispo. Website <http://www.cch2.org/portal/index.php> [accessed August 2022].

[GBIF] Global Biodiversity Information Facility. 2022. Website <https://www.gbif.org> [accessed August 2022].

NatureServe. 2022. NatureServe Explorer. Website <https://explorer.natureserve.org> [accessed August 2022].

[NRCS] U.S. Department of Agriculture, Natural Resources Conservation Service. 2022. PLANTS Database. Website <http://plants.usda.gov/> [accessed August 2022].

[POWO] Plants of the World Online. 2022. Website <https://powo.science.kew.org/> [accessed August 2022]

Reed, C. R. 1964. *Selaginella densa* Rydb., an illegitimate name. *Phytologia* 9: 497–500.

SEINET. 2022. Website <https://swbiodiversity.org/seinet/> [accessed August 2022]

Skinner, M. W. and B. M. Pavlik. 1994. *California Native Plant Society's Inventory of Rare and Endangered Plants of California*, 5th edition. CNPS, Sacramento.

Tryon, R. M. 1955. *Selaginella rupestris* and its allies. *Annals of the Missouri Botanical Garden* 42: 1–99.

Tryon, R. M. 1971. The process of evolutionary migration in species of *Selaginella*. *Brittonia* 23: 89–100.

Valdespino, I. A. 1993. Selaginellaceae. Pp. 38–63 in Flora of North America Editorial Committee (eds.), *Flora of North America*, vol. 2. Oxford University Press, New York.

Wilson, P. and T. J. Rosatti. 2012. *Selaginella*. In Jepson Flora Project (eds.), *Jepson eFlora*. Available at: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=8877 [accessed August 2022].

Personal Communications

Selaginella scopulorum

Element Code: PPSEL010C2

Changed from CRPR 3 to CRPR 2B.3 on 2022-10-04

York, Dana A. 2022. Senior Environmental Manager, Caltrans (retired). Email correspondence concerning *Selaginella scopulorum* in the Klamath Mountains. Pers. comm. 10 August 2022.