

**Rare Plant Status Review: *Campylopodiella stenocarpa***  
**Proposed Deletion from California Rare Plant Rank 2B.2, G5 / S1?**

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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.

*Campylopodiella stenocarpa* (Wilson) P. Müller & J.-P. Frahm is an acrocarpous, costate moss that was traditionally placed in the family Dicranaceae but more properly belongs to the Leucobryaceae (Frahm 1991, 2007; Bonfim Santos and Stech 2017). It is being proposed for deletion from the CNPS Rare Plant Inventory (RPI) due to taxonomic questions and possibly not occurring in California. Its main area of distribution is in the mountains of southern Mexico and Central America (Frahm 1991, CNABH 2022, Tropicos 2022). In North America, it has been reported from the state of Missouri (Frahm 2007) and from the southern Sierra Nevada of California (Tulare County) (Norris and Shevock 2004). This species was added to the RPI in 2001 and is currently a California Rare Plant Rank (CRPR) 2B.2 taxon (CNPS 2022) with six widely scattered occurrences in the state (CNDDB 2022). In addition to the record cited above from the southern Sierra Nevada (EO #4), there are two occurrences in the Klamath Ranges of Trinity County (EO #s 1 & 3), one in the Cascade Range Foothills of Butte County (EO #2), one in the northern Sierra Nevada of El Dorado County (EO #6), and another in the South Coast Ranges of Monterey County (EO #5).

In their bryoflora of California, Norris and Shevock (2004) treated most of the Californian populations of *Campylopodiella stenocarpa* under a different species, *Atractylotaxus flagellaceus* ( $\equiv$  *Campylopodiella flagellacea*; see Frahm 1991, 2007). The current treatment of *A. flagellaceus* as a synonym of *C. stenocarpa* may have started with Anderson et al. (1990) and was then perpetuated by other sources, e.g. NatureServe (2022). However, recent molecular results confirm that both *C. stenocarpa* and *C. flagellacea* should be recognized as distinct species (Bonfim Santos and Stech 2017). If the Californian populations are considered as only one species, then the correct name would seem to be *C. flagellacea* because its basionym *Dicranum flagellaceum* Müller (1851) is older and thus has priority over *Trichostomum stenocarpum* Wilson (in Seemann 1856, the basionym of *C. stenocarpa*). *Campylopodiella flagellacea* has also been reported from Oregon (Harpel 2008, Exeter et al. 2016; Christy et al. 2019).

There is still much uncertainty about whether the Californian plants referred to *Campylopodiella stenocarpa* or *C. flagellacea* were correctly named. For example, the identification of the Tulare County material (EO #4, Norris 67935, CAS) was recently changed from *C. stenocarpa* to *Leptobryum pyriforme* (CNABH 2022). In a similar fashion, the Monterey County material (EO #5, Shevock 24793, CAS) was changed from *C. stenocarpa* to *Ditrichum schimperii* (CNABH 2022). Compared to Central American *C. flagellacea*, the Californian plants form more compact tufts, lack flagelliferous branches (from which the species name *flagellacea* was derived), and the sporophytes are still unknown (i.e., the specimens collected thus far are completely sterile).

Moved to Considered But Rejected category and deleted from Rare Plant Inventory on 2022-11-17

(Frahm 2007; Exeter et al. 2016; J. Shevock 2021, pers. comm.). While the Californian plants assigned to *Campylopodiella* are indeed rare or at least poorly known, the material itself is difficult to identify, and the previous determinations as *C. stenocarpa* or *C. flagellacea* are likely to be incorrect (J. Brooks 2022, pers. comm.). Further study to resolve these taxonomic questions is clearly needed. We thus recommend that *Campylopodiella stenocarpa* be deleted from the RPI and placed on the Considered But Rejected list. If our knowledge about *C. stenocarpa* substantially changes in future, we will re-evaluate its status at that time.

### Recommended Actions

CNPS: Change *Campylopodiella stenocarpa* from CRPR 2B.2 to CBR

CNDDDB: Delete *Campylopodiella stenocarpa* from G5 / S1?

### Original CNPS Inventory Record

*Campylopodiella stenocarpa* (Wils. in Seem.) P. Mull. & J.-P. Frahm

flagella-like atractylocarpus

Dicranaceae

USDA Plants Symbol: CAST49

Synonym(s)/Other Name(s): none

CRPR 2B.2

States: California (CA), Missouri (MO), Oregon (OR)

Counties: Butte (BUT), El Dorado (ELD), Monterey (MNT), Trinity (TRI), Tulare (TUL)

Quad name (code): Cone Peak (3612114), Del Loma (4012373), Helena (4012372), Kern Lake (3611834), Pollock Pines (3812075), Richardson Springs (3912177), Slate Mtn. (3812076)

General Habitat: Cismontane woodland

Elevation: 100 - 500 meters (330 - 1640 feet)

Life form: moss

Notes: Possibly threatened by road maintenance. Disjunct from Mexico and South America. See Syn. Musc. Frond 2:597 (1951) for original description, and The Bryologist 31:110 (1928) for revised nomenclature.

### Revised CNPS Inventory Record

*Campylopodiella stenocarpa* (Wilson) P. Müller & J.-P. Frahm

Changed from 2B.2 to CBR on 2022/11/17

CBR Reason: Does not occur in California?; plants previously identified as *C. stenocarpa* in California are *C. flagellacea*, *Ditrichum schimperi*, *Leptobryum pyriforme*, or yet to be determined. Further study needed.

Selected References:

Original Description: *The Botany of the Voyage of H.M.S. Herald*, p. 344 (1856) by B. Seemann

Revised taxonomy: *Nova Hedwigia* 45: 290 (1987)

### Literature Cited

Anderson, L.E., H.A. Crum, and W.R. Buck. 1990. List of the mosses of North America north of Mexico. *Bryologist* 93(4): 448–499.

Moved to Considered But Rejected category and deleted from Rare Plant Inventory on 2022-11-17

Bonfim Santos, M. and M. Stech. 2017. Testing hypotheses on suprageneric relationships and morphological evolution in the Leucobryaceae (Bryophyta). *Plant Systematics and Evolution* 303: 1383–1397.

Christy, J.A., D.H. Wagner, and D. Kofranek. 2019. *Checklist of mosses of Oregon*. Institute for Natural Resources, Portland, OR. Available at:  
[https://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/or\\_moss\\_checklist\\_mar\\_2019.pdf](https://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/or_moss_checklist_mar_2019.pdf)

[CNABH] Consortium of North American Bryophyte Herbaria. 2022. Website  
<https://bryophyteportal.org/portal/> [accessed September 2022].

[CNPS] California Native Plant Society, Rare Plant Program. 2022. *Rare Plant Inventory* (online edition, v9-01 1.5). Website <http://www.rareplants.cnps.org> [accessed September 2022].

[CNDDDB] California Department of Fish and Wildlife, Natural Diversity Database. 2022. RareFind 5 [Internet application] and CNDDDB Maps and Data, Version 5.2.14. Available at:  
<https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data> [Government Version, September 2022].

Exeter, R.L., J. Harpel, and D. Wagner. 2016. *Rare Bryophytes of Oregon*. USDI Bureau of Land Management, Salem District, Salem, OR. 378 p. Available at:  
<https://doi.org/10.5962/bhl.title.121822>

Frahm, J.-P. 1991. Dicranaceae: Campylopodioideae, Paraleucobryoideae. *Flora Neotropica* 54: 1–237.

Frahm, J.-P. 2007. *Campylopodiella*. Pp. 363–364 in Flora of North America Editorial Committee (eds). *Flora of North America*, vol. 27. Oxford University Press, New York.

Harpel, J.A. 2008. Species fact sheet: *Campylopodiella flagellacea*. USDA Forest Service, Region 6 (Pacific Northwest), Portland, OR.

Müller, K. 1851. *Synopsis muscorum frondosorum*, pars secunda. Alb. Foerstner, Berlin.

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

Norris, D.H. and J.R. Shevock. 2004. Contributions toward a bryoflora of California: I. A specimen-based catalogue of mosses. *Madroño* 51: 1–131.

Seemann, B. 1856. *The Botany of the Voyage of H.M.S. Herald*. Lovell Reeve, London.

Tropicos. 2022. Missouri Botanical Garden. Website <http://www.tropicos.org> [accessed September 2022].

### **Personal Communications**

*Campylopodiella stenocarpa*

Element Code: NBMUS84010

Moved to Considered But Rejected category and deleted from Rare Plant Inventory on 2022-11-17

Brooks, Jason R. 2022. California Academy of Sciences, Dept. of Botany, Research Associate. E-mail correspondence on *Campylopodiella* in California. Personal communication, 31 August 2022.

Shevock, James R. 2021. Moss expert and Research Associate of the California Academy of Sciences, San Francisco (CAS). E-mail correspondence concerning *Campylopodiella stenocarpa* in California. Personal communication, 20 February 2021.