

NOMENCLATURAL CHANGES IN THE BRYACEAE (BRYOPSIDA) FOR NORTH AMERICA III.

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ABSTRACT

The family *Roelliaceae* is newly described for the western North American monotypic endemic *Roellia roellii*. The new section *Gemmabryum* section *Tuberibryum* is described and typified by *Gemmabryum violaceum*. *Bryum* section *Cladodium* is transferred to *Ptychostomum*, and *Bryum* section *Caespitibryum* is transferred to *Gemmabryum*. Nine species are transferred to the genera *Gemmabryum*, *Leptostomopsis* and *Plagiobryoides* for the Flora of North America. *Phytologia* 91(3): 494-500 (December, 2009).

KEY WORDS: mosses, North America, Bryaceae, Roelliaceae

This paper represents the final installment of nomenclatural changes in the moss family Bryaceae for the Bryophyte Flora of North America (BFNA) project. New genera and combinations were described in the previous two papers (Spence 2005; Spence 2007) and in Spence and Ramsay (2005). Since the publication of the last installment, new species have been documented from the BFNA region, and the classification of the family has been finalized, necessitating new sectional names and transfers. In addition, due to its unusual morphology and complex peristome, the enigmatic western North American endemic *Roellia roellii* (Brotherus *in* Röhl) Andrews *ex* Crum is placed in its own family.

Roellia Kindberg, 1897

Roellia roellii has had a long confused history since it was first described. Brotherus originally described it as *Mnium roellii*, as it is morphologically similar to members of the Mniaceae. Following this,

E.G. Britton moved it to *Bryum* as *B. lucidum*. However, this name was already taken by another earlier species, so Holzinger described it as *Bryum sandbergii* in 1895. Other names the species has been given include *Mnium simplex*, *Roellia simplex*, and *Roellia lucida*, all Kindberg names. The oldest basionym is *Mnium roellii* Brotherus & Röhl. Crum transferred the species to *Roellia* Kindberg in 1967 (Crum 1967). The complete synonymy is found below.

Mnium roellii Brotherus in Röhl, Bot. Centralbl. 44: 420. 1890.; *Roellia roellii* (Brotherus in Röhl) Andrews ex H. Crum, The Bryol. 70: 107. 1967.

Bryum lucidum Britton, Bull. Torrey Bot. Club 16: 34. 114. f. 1--17. 1891, hom. Illeg.; *Mnium lucidum* Brotherus, Hedwigia 32: 293.

1893; *Roellia lucida* Kindberg, Eur. N. Amer. Bryin. 2: 345. 1897.

Bryum simplex Kindberg in Macoun, Cat. Canad. Pl., Musci 133. 1892, hom. Illeg.; *Mnium simplex* Kindberg, Rev. Bryol 23: 22. 1896;

Roellia simplex Kindberg, Eur. N. Amer. Bryin. 2: 346. 1897;

Rhodobryum simplex Paris, Index. Bryol. 1121. 1898.

Bryum sandbergii Holzinger, Contr. U.S. Natl. Herb. 3:271. 1895;

Roellia sandbergii (Holzinger) Paris, Index Bryol. (ed. 2) 4: 223.1905.

The species is unusual in several respects. First, although superficially similar to *Rhodobryum*, it lacks the stolons of that genus, and also does not produce micronemata on the stem. The leaves are large, pale green, and the surface is finely wrinkled. The laminal cells are extremely large, but otherwise conform to the *Rhodobryum*-type areolation. The most unusual features are those of the peristome (Shaw 1985), which has a unique formula of 4:2:10–14 and up to 6 nodose cilia. Because of its morphology, intermediate between the Bryaceae and Mniaceae, and several unique characters of both the gametophyte and sporophyte, it is best placed in its own family, near the Mniaceae. Vitt (1993) has mapped the distribution of the species in North America. It is restricted to cool or cold temperate oceanic subalpine and low alpine environments, where it occurs on litter under shrubs and trees (Spence 1986).

Roelliaceae J.R. Spence **fam. nov.**

Plantae ad species Mniacearum accedentes; caulibus rosulatis, micronematibus nullis, macronematibus sparsis, foliis obovatis, tenuiter rugosis, marginibus distalibus serratis, cellulis laminae magnis, 90–150 × 30–50 µm limbidio nullo, costa in sectione transversali strato stereidarum reducto vel nullo, structuris asexualibus reproductivis nullis; dioicae; capsulis cylindricis, peristomio perfecto, in formulam 4:2:10–14 disposito, ciliis nodosis 3–6, sporis parvis 10–15 µm.

Plants with affinities to the Mniaceae; stems rosulate, micronemata lacking, macronemata sparse; leaves obovate, finely rugose, distal margins serrate, laminal cells large, 90–150 × 30–50 µm, limbidium lacking, costa cross-section with reduced or absent stereid band, asexual reproductive structures lacking; dioicous; capsules cylindrical, peristome perfect, formula 4:2:10–14, with 3–6 nodose cilia, spores small, 10–15 µm.

Type genus: *Roellia* Kindberg, Gen. Eur. & North Amer. Bryin. 37. 1897.

Gemmabryum J.R. Spence & H.P. Ramsay, 2005

The group of tuber-bearing *Gemmabryum* species, informally known as the *Erythrocarpa sensu* Crundwell and Nyholm (1964), requires a valid sectional name. All sectional names used for this group of species are apparently invalid.

Gemmabryum section *Tuberibryum* J.R. Spence, **sect. nov.**

Caules aequaliter foliati, foliis laxè positis, in statu sicco leviter tortis, tuberibus rhizoidalibus vulgaribus, sphaericis vel pyriformibus vel raro stellatis, (40–) 60–200 (–250) µm in latitudine maxima, cellulis planis vel tumescentibus, dioicae vel raro synoicae, capsulis pyriformibus vel cylindricis, peristomio maximam partem perfecto, sporis parvis 10–20 µm.

Stems evenly foliate, leaves loosely set, slightly twisted when dry; rhizoidal tubers common, spherical to pyriform or rarely stellate, (40–) 60–200 (–250) μm in widest dimension, cells flat to bulging; dioicous or rarely synoicous; capsules pyriform to cylindrical, peristome mostly perfect, spores small, 10–20 μm .

Type species: *Gemmabryum violaceum* (Crundwell & Nyholm) J.R. Spence.

The discovery and verification of rhizoidal tubers in *Bryum caespiticium* (Zolotov 2002) combined with the elongate distal laminal cells, shorter proximal cells and lack of a leaf limbidium, suggest that the species is better placed in *Gemmabryum* than in *Ptychostomum*, where I originally placed it and its allies. Tubers are unknown in *Ptychostomum*. There are 5-6 species in the section typified by *B. caespiticium*, two others of which also occur in North America. The section is transferred to *Gemmabryum* along with the three species found in North America.

Gemmabryum section *Caespitibryum* (Podpera) J.R. Spence, **comb. nov.** Basionym: *Bryum* subsect. *Caespitibryum* Podp., Rozpr. České Akad. Věd, TY. 2, Vědy Mat. PYír. 10(2): 52. 1901; *Bryum* section *Caespitibryum* (Podpera) J.J. Amann, Fl. Mouss. Suisse 2: 226. 1918

Gemmabryum badium (Bruch ex Bridel) J.R. Spence, **comb. nov.** Basionym: *Bryum caespiticium* var. *badium* Bruch ex Bridel, Bryol. Univ. 1: 850. 1827.

Gemmabryum caespiticium (Hedwig) J.R. Spence, **comb. nov.** Basionym: *Bryum caespiticium* Hedwig, Sp. Musc. Frond. 1801.

Gemmabryum kunzei (Hornschuch) J.R. Spence, **comb. nov.** Basionym: *Bryum kunzei* Hornschuch, Flora 2(1): 90. 1819.

Ptychostomum Hornschuch, 1822

Ptychostomum includes two major groups, the type subgenus and *Cladodium*, which is here transferred to *Ptychostomum* from *Bryum*.

Ptychostomum subgenus ***Cladodium*** (Bridel) J.R. Spence, **comb. nov.**
Basionym: *Cladodium* Bridel, Bryol. Univ. 1: 620. 1826.

Leptostomopsis (Müll. Hal.) J.R. Spence & H.P. Ramsay, 2005.

The recent discovery of *Brachymenium niveum* Bescherelle in the Bryophyte Flora of North America region, which will be documented elsewhere (Spence in prep.), requires a transfer to *Leptostomopsis* to which it belongs.

Leptostomopsis nivea (Bescherelle) J.R. Spence, **comb. nov.**
Basionym: *Brachymenium niveum* Bescherelle, J. Bot. (Morot) 15: 383. 1901.

Plagiobryoides J.R. Spence, 2005

Recent field work and herbarium studies have documented the presence of several species in North America that are morphologically close to *Plagiobryoides incrassatolimbata* (Cardot) J.R. Spence. *Plagiobryoides* is characterized by very large and lax laminal cells and capsules that often have a long well-developed hypophysis. Although the type, *P. incrassatolimbata*, has a unique multi-stratose border, it is otherwise very similar to the other species listed below. Recently, I have also found that some species produce extremely large rhizoidal tubers, with diameters of nearly 0.5 mm. The following five species are transferred to the genus. Originally, I had transferred the widespread pantropical *Bryum cellulare* to *Plagiobryum* for the Flora of Australia, as it is closer to that genus than to *Bryum*. However, it is better placed in *Plagiobryoides*, emphasizing the significant sporophytic differences between that genus and *Plagiobryum*.

Plagiobryoides brachyneura (Kindberg) J.R. Spence, **comb. nov.** Basionym: *Bryum brachyneuron* Kindberg, Ottawa Naturalist 5: 179. 1892.

Plagiobryoides cellularis (Hooker) J.R. Spence, **comb. nov.** Basionym: *Bryum cellulare* Hooker, Sp. Musc. Frond., Suppl. 3: 1(1): 214: a. 1827.

Plagiobryoides limbata (Müll. Hal.) J.R. Spence, **comb. nov.** Basionym: *Bryum limbatum* Müll. Hal., Syn. Musc. Frond. 2: 573. 1851.

Plagiobryoides renauldii (Röll ex Renaud & Cardot) J.R. Spence, **comb. nov.** Basionym: *Bryum renauldii* Röll ex Renaud & Cardot, Bull. Soc. Roy. Bot. Belgique 38(1): 13. 1900.

Plagiobryoides vinosula (Cardot) J.R. Spence, **comb. nov.** Basionym: *Brachymenium vinosulum* Cardot, Rev. Bryol. 38: 6. 1911.

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