MISSOURI BOTANICAL GARDEN

A SYNOPSIS OF THE LIVERWORT FLORA OF NORTH AMERICA NORTH OF MEXICO

Author(s): Raymond E. Stotler and Barbara Crandall-Stotler

Source: *Annals of the Missouri Botanical Garden*, DECEMBER 2017, Vol. 102, No. 4 (DECEMBER 2017), pp. 574-709

Published by: Missouri Botanical Garden Press

Stable URL: https://www.jstor.org/stable/10.2307/26573065

REFERENCES
Linked references are available on JSTOR for this article:
https://www.jstor.org/stable/10.2307/26573065?seq=1&cid=pdf-reference#references_tab_contents
You may need to log in to JSTOR to access the linked references.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at https://about.jstor.org/terms

Missouri Botanical Garden Press is collaborating with JSTOR to digitize, preserve and extend access to *Annals of the Missouri Botanical Garden*

JSTOR

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

A SYNOPSIS OF THE LIVERWORT FLORA OF NORTH AMERICA NORTH OF MEXICO[1,2]

Raymond E. Stotler[3,4,†] *and Barbara Crandall-Stotler*[3,4]

ABSTRACT

A phylogenetic arrangement of the 130 liverwort genera, comprising 582 species, that occur in North America north of Mexico is followed by an alphabetical synopsis of genera, species, subspecies, and varieties currently recognized. The treatment of each taxon includes pertinent synonyms, excluded names, and explanatory comments regarding currently accepted changes in taxon names and authors. Such updating has required making nine new combinations, as follows: *Fuscocephaloziopsis connivens* (Dicks.) Váňa & L. Söderstr. var. *bifida* (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov.; *F. connivens* (Dicks.) Váňa & L. Söderstr. var. *compacta* (Warnst.) Stotler & Crand.-Stotl., comb. nov.; *F. pleniceps* (Austin) Lindb. var. *sphagnorum* (C. Massal.) Stotler & Crand.-Stotl., comb. nov.; *Isopaches bicrenatus* (Schmidel ex Hoffm.) H. Buch var. *immersus* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl., comb. nov.; *Mesoptychia badensis* (Gottsche ex Rabenh.) L. Söderstr. & Váňa var. *apiculata* (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov.; *Neoorthocaulis hyperboreus* (R. M. Schust.) L. Söderstr., De Roo & Hedd. subsp. *helophilus* (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov.; *Schistochilopsis grandiretis* (Lindb. ex Kaal.) Konstant. subsp. *proteidea* (Arnell) Stotler & Crand.-Stotl., comb. nov.; *Tritomaria capitata* (Hook.) Stotler & Crand.-Stotl., comb. nov.; *T. laxa* (Lindb.) Stotler & Crand.-Stotl., comb. nov. The basionym citations for these new combinations can be found in the text treatments of these taxa. Thirty-four new heterotypic synonyms, distributed among 27 accepted taxa, have been proposed, primarily as a consequence of nomenclatural updating (see Appendix 1 for a list). Type species are indicated for all genera and basionyms are included, where appropriate. Distributional data, based primarily on literature reports, are also provided for each infrageneric taxon.

Key words: Classification, distribution, hepatics, Marchantiophyta, nomenclature.

Since our initial checklist (Stotler & Crandall-Stotler, 1977), there have been innumerable changes in the accepted names of liverworts, as well as countless additions to the North American flora due to range extensions and newly described taxa. Additionally, molecular phylogenetic studies or "genosystematics" have resulted in a substantial number of changes in the placement of taxa, as seen in the phylogenetic classification presented here. Although our arrangement of genera mostly agrees with the scheme found in Crandall-Stotler et al. (2009b), some modifications that reflect phylogenetic studies done since 2009 have been incorporated. Obviously, major changes will continue to appear as we learn more about the putative relationships of these fascinating plants.

This synopsis does not treat the infrageneric ranks of subgenus, section, or subsection so that species names can be listed alphabetically under their respective genera. And, although Article 4 of the International Code of Nomenclature for Algae, Fungi, and Plants (ICN; McNeill et al., 2012) allows for five infraspecific ranks, we treat only subspecies and varieties in this list, ignoring the lesser ranks of subvarieties, forms, and subforms. Additionally, as per Article 26 (McNeill et al., 2012) the first infraspecific taxon that includes the type of the species repeats the specific epithet unaltered, not followed by an author citation; these are autonyms or automatic names. Abbreviations of author names for taxa follow Brummitt and Powell (1992), which has become the botanical standard that is updated by the International Plant Names Index (IPNI; <http://www.ipni.org/index.html>).

Note that we use the term author rather than authority because it is nomenclaturally exact. In fact, the word "authority" does not even occur in the ICN, nor is it as precise. In his writing "On *Cephalozia*," Spruce (1882:

[1] This is dedicated in memory of our mentor, Margaret Hannah Fulford (1904–1999), who taught us that taxonomic decisions must be based on a comprehensive knowledge of the group being studied. Defining the rank at which a group of similar individuals is recognized is a judgment call, or, as she quoted her colleague Henry Allen Gleason (1882–1975), "a species is whatever a competent taxonomist says it is."

[2] We are most appreciative for the support and encouragement of many colleagues during the preparation of this contribution. Special thanks are extended to John McNeill, Edinburgh Botanical Garden, for his advice on complex nomenclatural issues, and to Mary Stiffler and Victoria McMichael, Peter Raven Library, Missouri Botanical Garden, for their help in providing hard-to-find literature. In addition, we acknowledge with gratitude Anders Hagborg, Matt von Konrat, and an anonymous reviewer for their very thorough reviews and most helpful comments. The financial support of the National Science Foundation (grant #EF-053170) is also gratefully acknowledged.

[3] Department of Plant Biology, Southern Illinois University, Carbondale, Illinois 62901-6509, U.S.A.

[4] Research Associate, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.
crandall@siu.edu

doi: 10.3417/2016027

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

36) perhaps put it best as he admonished Thomas Taylor: "When I pointed out to him that he had sometimes distributed false specimens of *J*[*ungermannia*] *reclusa* [Taylor], he excused himself by audaciously asserting that 'it was very hard to expect an author to know his own species.'" Simply put, the author of the taxon may not be the authority of that taxon!

The use of "in" associated with authors is given only when precise bibliographic reference is essential, such as "*Lophozia holmenianum* Inoue & Steere in Steere & Inoue, J. Hattori Bot. Lab. 44: 285. 1978." It has no nomenclatural bearing. In contrast, the use of "ex" is of nomenclatural significance and is used when an author validly publishes a name ascribed to another author (Art. 46.5 in McNeill et al., 2012). For example, the name *Riccia albida* written on a herbarium packet by W. Sullivant was never formally published by him. Austin (1869: 231) validly published the species name as "*Riccia albida*, Sulliv., in Herb., 1853." Since he ascribed that name to Sullivant, the correct author citation is *Riccia albida* Sull. ex Austin or simply *Riccia albida* Austin. The citations "*Riccia albida* Sulliv." and "*Riccia albida* Sulliv., in Austin" by Schuster (1992b: 682) are both incorrect. Nomenclaturally, names that have not been validly published in accordance with the ICN (McNeill et al., 2012) do not exist and are excluded. All references to conserved names ("nom. cons.") and rejected names ("nom. rej.") follow the appendices to the Melbourne Code, which were printed as a separate volume (Wiersema et al., 2015).

In accordance with Principle III of the ICN (McNeill et al., 2012), the date of effective publication is critical in order to apply the Principle of Priority. Several new taxa were described by Austin in the Proceedings of the Academy of Natural Sciences of Philadelphia and were published "Dec. 1869," which is the date on the reprint as pointed out by Stafleu and Mennega (1992: 214), and it is to be cited as such. Various authors, including Geissler and Bischler (1987), have incorrectly written "'1869' 1870" for this work. While the date appearing on a publication must be accepted, there are exceptions that establish some other date. For example, the treatment of the Hepaticae by Schiffner in Die Natürlichen Pflanzenfamilien (Engler & Prantl, 1893–1909) is cited to have been issued "10. Oktober 1893 (p. 1–96)" and "15. Januar 1895 (pp. 97–144)," but both parts were preprinted in September 1893, which is the date to be cited (see Stafleu & Cowan, 1985: 151).

In the alphabetical list of taxa, currently accepted names are listed in boldface type; those not in boldface are not accepted as validly published or are regarded as synonyms. We have included only those synonyms essential to correlate a previously used name with the currently accepted name. Taxonomic synonyms (i.e., heterotypic synonyms) are denoted by the equal sign [=], whereas nomenclatural synonyms (i.e., homotypic synonyms) are denoted by the equivalent sign [≡]. Synonyms not listed herein may be sought in our earlier list (Stotler & Crandall-Stotler, 1977) or in more recent floristic works. Note, however, that accuracy could be an issue. For each entry listed here, either as a synonym or excluded name, a reference is provided. Unless detailed taxon studies have been done that include the study of nomenclatural types, it is not possible to be sure that a particular name is indeed a taxonomic synonym of another. In his 6-volume work, *The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian*, Schuster (1966, 1969, 1974, 1980a, 1992a, 1992b) basically copied the synonymy listed by Frye and Clark (1937, 1943, 1945, 1946, 1947) in their *Hepaticae of North America*, frequently adding additional synonyms. For example, compare the list of over 30 synonyms for *Reboulia hemisphaerica* (L.) Raddi in Frye and Clark (1937: 84–85) with Schuster (1992b: 152–153). His list follows the Frye and Clark list sequentially, but with two additional names provided. Regrettably, mistakes in Frye and Clark were perpetuated; e.g., *Grimaldia madeirensis* [sic] Lindenb., listed in synonymy for *R. hemisphaerica*, should have been listed under *Plagiochasma rupestre* (J. R. Forst. & G. Forst.) Steph. var. *rupestre* as shown by Bischler (1978: 269). Additionally, neither Frye and Clark (1937, 1943, 1945, 1946, 1947) nor Schuster (1966, 1969, 1974, 1980a, 1992a, 1992b) cited parenthetically the author(s) of earlier epithet-bringing names (Art. 49, McNeill et al., 2012). That practice makes it difficult to trace the basionym, i.e., the name upon which a taxon was based. In other instances the authors listed were incorrect in Frye and Clark and were not corrected by Schuster in his 6-volume work. For example, *Aytonia elongata* (= *Plagiochasma rupestre* [syn. fide Bischler, 1979: 313]) should have read *A. elongata* (Lindenb. & Gottsche) Kuntze, not *A. elongata* Underw. as in both Frye and Clark (1937: 57) and Schuster (1992b: 293). While these are minor details, they nonetheless detract from accuracy, which we hope to improve upon in this work.

Systematic Concepts and Molecules

Systematic change is continual, especially since supplementary molecular evidence steadily becomes available. Each new data set can result in unique groupings or alignments and provide support for novel relationships. In numerous cases taxon splitting is proposed, whereas in other cases the merging of taxa is suggested. An excellent example of taxon splitting can be seen in the genus *Lophozia* (Dumort.) Dumort. While Schuster (1969, 1988) recognized a single genus partitioned into several subgenera and sections, this "taxon" is now recognized by most hepaticologists to be a polyphyletic complex that has recently been segregated into 14 to 16 more narrowly defined genera, aligned among three

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

families in two different suborders. Support for this rank inflation can be seen in the molecular phylograms of Konstantinova and Vilnet (2009), Söderström et al. (2010), and Vilnet et al. (2008, 2010). It is interesting to note that the genus *Leiocolea* (Müll. Frib.) H. Buch (= *Lophozia* subg. *Leiocolea* Müll. Frib.) proved to be not only very distinct from the genus *Lophozia*, but in fact closely allied with *Mesoptychia* (Lindb.) A. Evans, resulting in its placement in Mesoptychiaceae (Crandall-Stotler et al., 2009a: 46), which, because of a refinement of the genus *Jungermannia* L. s. str., was soon merged into the Jungermanniaceae (Crandall-Stotler et al., 2009b: 168). Since then, Váňa et al. (2012) have synonymized *Leiocolea* with *Mesoptychia* in the Jungermanniaceae.

At other times, molecular data have resulted in the combining or merging of taxa. Sometime after Engel and Schuster (1984) united the genera *Chiloscyphus* Corda and *Lophocolea* (Dumort.) Dumort. based on morphological evidence, molecular analyses initially corroborated that *Chiloscyphus polyanthos* (L.) Corda, the type species of *Chiloscyphus*, was nested in the genus *Lophocolea* (He-Nygrén & Piippo, 2003; Hentschel et al., 2006a, 2006b). However, with increased taxon sampling, a factor that cannot be overstressed, *Chiloscyphus* was later shown to be paraphyletic (Hentschel et al., 2007c). It has since been argued by Söderström et al. (2013a, 2013b) that instead of reducing *Lophocolea* and several other morphologically distinct genera (e.g., *Pachyglossa* Herzog & Grolle, *Clasmatocolea* Spruce, and *Leptoscyphus* Mitt.) to *Chiloscyphus*, the well-supported monophyletic lineages recognized by Hentschel et al. (2007c) as subgenera should be recognized as genera. The clade that includes *Lophocolea bidentata* (L.) Dumort. (= *Chiloscyphus latifolius* (Nees) J. J. Engel & R. M. Schust.), the type species of *Lophocolea*, excludes the type species of *Chiloscyphus* and is regarded here as evidence to maintain recognition of the genus *Lophocolea*. This, along with additional molecular evidence, prompted Söderström et al. (2013a) to not only recognize *Lophocolea* as well as other Lophocoleoid taxa at the rank of genus, but to erect the new genus *Cryptolophocolea* L. Söderstr., Crand.-Stotl., Stotler & Váňa and to treat *Chiloscyphus* in a very narrow sense to now include only a few species.

A critical task of the systematist is determining the appropriate rank of a clade. A review of various molecular papers shows that opinions can vary considerably. Should a particular node correspond to a family, a subfamily, a genus, or a species? For example, in a recent paper by Feldberg et al. (2010a) the authors merge Adelanthaceae and Jamesoniellaceae into a single family with two major clades that are regarded as subfamilies Adelanthoideae and Jamesonielloideae. One could argue that these subfamily nodes could just as easily be interpreted to indicate family rank. At the same time, *Jamesoniella* (Spruce) F. Lees, *Cryptochila* R. M. Schust., and *Roivainenia* Perss. were merged with *Syzygiella* Spruce (Feldberg et al., 2010a), although the phylogram suggests that both *Cryptochila* and *Roivainenia* could still be maintained at the rank of genus; it is a judgment call. The same scenario can be shown with the genus *Jubula* Dumort. What Guerke (1978) recognized as species, Pätsch et al. (2010) recognized as subspecies. Nodes that they consider to indicate subspecies, we recognize as species. Our classification scheme in some regard reflects inflated taxonomic ranks, which we feel more accurately expresses the inherent diversity of this extremely ancient lineage of land plants.

Molecular data have also documented the occurrence of cryptic species where diversity is not reflected in morphology. A study of *Porella platyphylla* (L.) Pfeiff. and *P. platyphylloidea* (Schwein.) Lindb. by Therrien et al. (1998) supported three genetic groups without any consistent morphological differences. The elater distinctions between these two species discussed in Schuster (1980a: 696, 703) were shown to be erroneous because all morphologies were documented within a single capsule of the type specimen of *P. platyphylloidea* (Therrien et al., 1998: 12, fig. 12). Because morphological evaluation revealed no diagnostic features, they were regarded as a single species. Similarly, the *P. platyphylla* accessions incorporated in the study by Hentschel et al. (2007a) resolved a European and North American clade with one North American sample nested in the European clade. They likewise considered both clades as *P. platyphylla*. Our reliance on morphological discrimination has clearly resulted in merging genetically distinct lineages. Recently, Kadereit et al. (2012) argued that cryptic taxa should be formally named. We, like most taxonomists, are reluctant to do so since populations presently could not be named reliably without molecular data, and in the case of *P. platyphylla*, not even on a geographical basis. Even though Kreier et al. (2010) included two accessions of "*Ptilidium* sp. nov." from Nepal in their phylogenetic study of *Ptilidium* Nees, they did not formally name this shared haplotype of *P. ciliare* (L.) Hampe. While phylogenists desire to name every clade, taxonomists require that taxa be visually separated. At least for the present, names are tied to nomenclatural types (see Principle II and Art. 8, McNeill et al., 2012), which are either specimens or illustrations, and it is the morphology of the type that defines the taxon. The taxonomic decisions we present in this synopsis have evolved through an integration of morphological and molecular data and are, of course, subject to change as new knowledge in both areas develops.

Phylogenetic Arrangement of Genera Found in North America

Phylum: Marchantiophyta Stotler & Crand.-Stotl. in A. J. Shaw & B. Goffinet, Bryoph. Biol.: 63. 2000.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Class: Haplomitriopsida Stotler & Crand.-Stotl., Bryologist 80: 425. 1977.

Subclass: Treubiidae Stotler & Crand.-Stotl., Taxon 57: 290. 2008.

Order: Treubiales Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 499. 1972.

1. Treubiaceae Verd., Man. Bryol.: 427. 1932. A family of two genera, with one occurring in our flora.

Apotreubia S. Hatt. & Mizut.

Subclass: Haplomitriidae Stotler & Crand.-Stotl., Taxon 57: 290. 2008.

Order: Calobryales Hamlin, Rec. Domin. Mus. 7: 315. 1972.

2. Haplomitriaceae Dědeček, Arch. Přír. Proskoumání Čech 5(4): 71. 1884. A monogeneric family.

Haplomitrium Nees, nom. cons.

Class: Marchantiopsida Cronquist, Takht. & W. Zimm., Taxon 15: 132–133. 1966, as "Marchantiatae."

Subclass: Blasiidae He-Nygrén, Juslén, Ahonen, Glenny & Piippo, Cladistics 22: 27. 2006.

Order: Blasiales Stotler & Crand.-Stotl. in A. J. Shaw & B. Goffinet, Bryoph. Biol.: 63. 2000.

3. Blasiaceae H. Klinggr., Höh. Crypt. Preuss.: 14. 1858. A family of two genera, one of which occurs in our flora.

Blasia L.

Subclass: Marchantiidae Engl. [Unterklasse "Marchantiales"] in A. Engler & K. Prantl, Nat. Pflanzenfam. I (3): 1. 1893.

Order: Sphaerocarpales Cavers, New Phytol. 9: 81. 1910.

4. Sphaerocarpaceae Heeg, Verh. K. K. Zool.-Bot. Ges. Wien 41: 573. 1891. A family of two genera, both of which occur in our flora.

Geothallus Campb.
Sphaerocarpos Boehm.

5. Riellaceae Engl., Syllabus, Grosse Ausgabe: 45. 1892. A monogeneric family.

Riella Mont.

Order: Lunulariales D. G. Long, Edinburgh J. Bot. 63: 259. 2006.

6. Lunulariaceae H. Klinggr., Höh. Crypt. Preuss.: 9. 1858. A monogeneric family that may be an exotic in our flora.

Lunularia Adans.

Order: Marchantiales Limpr. in Cohn, Krypt.-Fl. Schlesien 1: 239, 336. 1876 [1877].

7. Marchantiaceae Lindl., Nat. Syst. Bot. (ed. 2): 412. 1836. A monogeneric family, with the transfer of *Bucegia* Radian and *Preissia* Corda to *Marchantia* L. by Long et al. (2016).

Marchantia L.

8. Aytoniaceae Cavers, New Phytol. 10: 42. 1911. A family of five genera, all of which are represented in our flora.

Asterella P. Beauv., nom. cons.
Cryptomitrium Austin ex Underw.
Mannia Opiz, nom. cons.
Plagiochasma Lehm. & Lindenb., nom. cons.
Reboulia Raddi, nom. cons.

9. Cleveaceae Cavers, New Phytol. 10: 42. 1911. A family of five genera, three of which occur in our flora.

Clevea Lindb.
Peltolepis Lindb.
Sauteria Nees

10. Conocephalaceae Műll. Frib. ex Grolle, J. Bryol. 7: 207. 1972. A monogeneric family.

Conocephalum Hill, nom. cons.

11. Corsiniaceae Engl., Syllabus, Grosse Ausgabe: 44. 1892. A family of three genera, with one in our flora.

Corsinia Raddi

12. Oxymitraceae Műll. Frib. ex Grolle, J. Bryol. 7: 215. 1972. A monogeneric family.

Oxymitra Bisch. ex Lindenb.

13. Ricciaceae Rchb., Bot. Damen: 255. 1828. A family of two genera, both of which occur in our flora.

Riccia L.
Ricciocarpos Corda

14. Targioniaceae Dumort., Anal. Fam. Pl.: 68, 70. 1829. A monogeneric family.

Targionia L.

15. Dumortieraceae D. G. Long, Edinburgh J. Bot. 63: 260. 2006. A monogeneric family.

Dumortiera Nees

Class: Jungermanniopsida Stotler & Crand.-Stotl., Bryologist 80: 425. 1977.

Subclass: Pelliidae He-Nygrén, Juslén, Ahonen, Glenny & Piippo, Cladistics 22: 27. 2006.

Order: Pelliales He-Nygrén, Juslén, Ahonen, Glenny & Piippo, Cladistics 22: 27. 2006.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

16. Pelliaceae H. Klinggr., Höh. Crypt. Preuss.: 13. 1858. A family of three genera, two of which occur in our flora.

Apopellia (Grolle) Nebel & D. Quandt
Pellia Raddi, nom. cons.
Order: Fossombroniales Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 500. 1972.
Suborder: Calyculariineae He-Nygrén, Juslén, Ahonen, Glenny & Piippo, Cladistics 22: 27. 2006.

17. Calyculariaceae He-Nygrén, Juslén, Ahonen, Glenny & Piippo, Cladistics 22: 27. 2006. A monogeneric family.

Calycularia Mitt.
Suborder: Fossombroniineae R. M. Schust. ex Stotler & Crand.-Stotl. in A. J. Shaw & B. Goffinet, Bryoph. Biol.: 63. 2000.

18. Petalophyllaceae Stotler & Crand.-Stotl., Novon 12: 335. 2002. A family of two genera, one of which occurs in our flora.

Petalophyllum Nees & Gottsche ex Lehm.

19. Fossombroniaceae Hazsl., Magyar Bir., Moh.-Fl.: 20, 36. 1885, nom. cons. A monogeneric family.

Fossombronia Raddi
Order: Pallaviciniales W. Frey & M. Stech, Nova Hedwigia 81: 64. 2005.
Suborder: Pallaviciniineae R. M. Schust., Phytologia 56: 65. 1984.

20. Moerckiaceae K. I. Goebel ex Stotler & Crand.-Stotl., Nova Hedwigia Beiheft 131: 54. 2007. A family of two genera, one of which occurs in our flora.

Moerckia Gottsche

21. Pallaviciniaceae Mig., Krypt.-Fl. Deutschl., Moose: 423. 1904. A family of eight genera, with only one occurring in our flora.

Pallavicinia Gray, nom. cons.
Subclass: Metzgeriidae Barthol.-Began, Phytologia 69: 465. 1990 [1991].
Order: Pleuroziales Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 505. 1972.

22. Pleuroziaceae Müll. Frib., Lebermoose 1: 404. 1909. A monogeneric family.

Pleurozia Dumort. [includes *Eopleurozia* R. M. Schust.]
Order: Metzgeriales Chalaud, Ann. Bryol. 3: 41. 1930.

23. Metzgeriaceae H. Klinggr., Höh. Crypt. Preuss.: 10. 1858. A family of three genera, one of which occurs in our flora.

Metzgeria Raddi [includes *Apometzgeria* Kuwah.]

24. Aneuraceae H. Klinggr., Höh. Crypt. Preuss.: 11. 1858. A family of four genera, two of which occur in our flora.

Aneura Dumort. [includes *Cryptothallus* Malmb.]
Riccardia Gray, nom. cons.
Subclass: Jungermanniidae Engl. [Unterklasse "Jungermanniales"] in A. Engler & K. Prantl, Nat. Pflanzenfam. I (3): 1. 1893.
Order: Porellales Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 505. 1972.
Suborder: Porellineae R. M. Schust., J. Hattori Bot. Lab. 26: 229. 1963.

25. Porellaceae Cavers, New Phytol. 9: 292. 1910, nom. cons. A family of two genera, both of which occur in our flora.

Ascidiota C. Massal.
Porella L.
Suborder: Radulineae R. M. Schust., J. Hattori Bot. Lab. 26: 229. 1963.

26. Radulaceae Müll. Frib., Lebermoose 1: 404. 1909. A monogeneric family.

Radula Dumort., nom. cons.
Suborder: Jubulineae Müll. Frib., Lebermoose 1: 403. 1909.

27. Frullaniaceae Lorch in G. Lindau, Krypt.-Fl. Anf. 6: 174. 1914. A monogeneric family.

Frullania Raddi

28. Jubulaceae H. Klinggr., Höh. Crypt. Preuss.: 40. 1858. A family of two genera, one of which occurs in our flora.

Jubula Dumort., nom. cons.

29. Lejeuneaceae Cavers, New Phytol. 9: 291. 1910. [Note that Cavers is the correct author for this name, even though it was incorrect when published because it included *Jubula*, the type of the earlier named Jubulaceae. With the exclusion of *Jubula* from the family, Lejeuneaceae Cavers becomes correct because it is based on the name-bringing stem of the legitimate family name *Lejeunea* Lib. (McNeill et al., 2012: Art. 52.3).] This is the largest family of liverworts, with nearly 80 genera currently recognized. While the greatest diversity of this family occurs in the tropics, 17 genera are found in our flora, with most restricted to southern Florida.

Acrolejeunea (Spruce) Steph., nom. cons.
Caudalejeunea (Steph.) Schiffn.
Ceratolejeunea (Spruce) J. B. Jack & Steph.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Cheilolejeunea (Spruce) Steph., nom. cons. [includes *Leucolejeunea* A. Evans and *Euosmolejeunea* (Spruce) Steph.]

Cololejeunea (Spruce) Steph. [includes *Aphanolejeunea* A. Evans]

Diplasiolejeunea (Spruce) Schiffn.

Drepanolejeunea (Spruce) Steph.

Frullanoides Raddi [includes the North American species that were previously placed in *Brachiolejeunea* (Spruce) Schiffn.]

Harpalejeunea (Spruce) Schiffn.

Lejeunea Lib., nom. cons. [includes *Crossotolejeunea* (Spruce) Schiffn., *Hygrolejeunea* (Spruce) Schiffn., and *Taxilejeunea* (Spruce) Steph., nom. cons.]

Leptolejeunea (Spruce) Steph.

Lopholejeunea (Spruce) Steph., nom. cons.

Mastigolejeunea (Spruce) Steph.

Microlejeunea (Spruce) Steph.

Myriocoleopsis Schiffn.

Neurolejeunea (Spruce) Schiffn.

Rectolejeunea A. Evans

Order: Ptilidiales Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 501. 1972.

30. Ptilidiaceae H. Klinggr., Höh. Crypt. Preuss.: 37. 1858. A monogeneric family.

Ptilidium Nees

Order: Jungermanniales H. Klinggr., Höh. Crypt. Preuss.: 16. 1858.

Suborder: Myliineae J. J. Engel & Braggins ex Crand.-Stotl., Váňa & Stotl., in Syst. Bot. 40: 37. 2015.

31. Myliaceae Schljakov, Novosti Sist. Nizsh. Rast. 12: 308. 1975. A monogeneric family.

Mylia Gray [includes *Leiomylia* J. J. Engel & Braggins]

Suborder: Cephaloziineae Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 503. 1972. (= Cephaloziineae R. M. Schust., J. Hattori Bot. Lab. 36: 391. 1972 [1973]).

32. Adelanthaceae Grolle, J. Hattori Bot. Lab. 35: 327. 1972. [includes Jamesoniellaceae He-Nygrén, Juslén, Ahonen, Glenny & Piippo = Jungermanniaceae Dumort. subfam. Jamesonielloideae Inoue.] A family of 10 genera, with one in our flora.

Syzygiella Spruce [includes *Jamesoniella* (Spruce) F. Lees; see Feldberg et al. (2010b: 142)]

33. Cephaloziaceae Mig., Krypt.-Fl. Deutschl., Moose: 465. 1904. A family of nine genera, four of which occur in our flora.

Cephalozia (Dumort.) Dumort.

Fuscocephaloziopsis Fulford [includes *Cephalozia* sect. *Pachycaules* R. M. Schust., *Cephalozia* sect. *Catenulatae* R. M. Schust., *Cephalozia* sect. *Lunulifoliae* R. M. Schust., *Cephalozia* subg. *Haplocephalozia* R. M. Schust., *Pleurocladula* Grolle (≡ *Pleuroclada* Spruce, nom. illeg., later homonym), and *Schofieldia* J. D. Godfrey (see Váňa et al., 2013e: 8–9)]

Nowellia Mitt.

Odontoschisma (Dumort.) Dumort. [includes *Cladopodiella* H. Buch (see Váňa et al., 2013e: 12)]

34. Anastrophyllaceae L. Söderstr., De Roo & Hedd., Phytotaxa 3: 48. 2010. This family was segregated from Scapaniaceae s.l. by Söderström et al. (2010) and is currently circumscribed to include 21 genera, 16 of which are reported in our flora.

Anastrepta (Lindb.) Schiffn.

Anastrophyllum (Spruce) Steph. [includes *Schizophyllopsis* Váňa & L. Söderstr.]

Barbilophozia Loeske

Biantheridion (Grolle) Konstant. & Vilnet

Crossocalyx Meyl.

Gymnocolea (Dumort.) Dumort.

Isopaches H. Buch

Neoorthocaulis L. Söderstr., De Roo & Hedd.

Orthocaulis H. Buch

Plicanthus R. M. Schust. [includes *Chandonanthus* Mitt., p.p.]

Rivulariella D. H. Wagner

Schljakovia Konstant. & Vilnet

Schljakovianthus Konstant. & Vilnet

Sphenolobopsis R. M. Schust. & N. Kitag.

Sphenolobus (Lindb.) Berggr.

Tetralophozia (R. M. Schust.) Schljakov [includes *Chandonanthus* Mitt., p.p.]

35. Cephaloziellaceae Douin, Bull. Soc. Bot. France, Mém. 29: 1, 5, 13. 1920. [includes Chonecoleaceae R. M. Schust. ex Grolle.]

Cephaloziellaceae is a family of 10 genera, six of which occur in our flora. Konstantinova et al. (2009) recognized *Dichiton* Mont., but we do not consider that taxon to be distinct from *Cephaloziella*.

Cephaloziella (Spruce) Schiffn., nom. cons.

Chonecolea Grolle

Cylindrocolea R. M. Schust.

Obtusifolium S. W. Arnell.

The family placement of this genus is problematic. Formerly recognized as a species of *Lophozia*, this monotypic genus was reinstated when the molecular analyses of Vilnet et al. (2008, 2010, 2012) showed it was not related to *Lophozia*. It often resolves as an isolated lineage between the Anastrophyllaceae and Scapaniaceae, but with a sister relationship to the Cephaloziellaceae when representatives of this family are included in the analysis (e.g., De Roo et al., 2007;

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Shaw et al., unpublished data). As a consequence, Váňa et al. (2013b) tentatively placed the genus in Cephaloziellaceae, which we follow herein, but future studies may prove that it should be placed in its own family.

Oleolophozia L. Söderstr., De Roo & Hedd.

Established in 2010 (Söderström et al., 2010) to include only *Lophozia perssonii* H. Buch & S. W. Arnell, this genus also shows ambiguous relationships with Cephaloziellaceae (De Roo et al., 2007) and has been tentatively placed there by Váňa et al. (2013d).

Protolophozia (R. M. Schust.) Schljakov

36. Scapaniaceae Mig., Krypt.-Fl. Deutschl., Moose: 479. 1904. [includes the Diplophyllaceae Potemkin and part of the Lophoziaceae Cavers.] A family of 14 genera, 11 of which occur in our flora.

Diplophyllum (Dumort.) Dumort., nom. cons.
Douinia (C. E. O. Jensen) H. Buch [includes *Macrodiplophyllum* (H. Buch) Perss., p.p.]
Lophozia (Dumort.) Dumort.
Lophoziopsis Konstant. & Vilnet
Pseudotritomaria Konstant. & Vilnet
Saccobasis H. Buch
Scapania (Dumort.) Dumort., nom. cons. [includes *Macrodiplophyllum* (H. Buch) Perss., p.p.]
Schistochilopsis (N. Kitag.) Konstant.
Tritomaria Schiffn. ex Loeske [includes *Heterogemma* (Jørg.) Konstant. & Vilnet and *Trilophozia* (R. M. Schust.) Bakalin]

Suborder: Jungermanniineae R. M. Schust. ex Stotler & Crand.-Stotl. in A. J. Shaw & B. Goffinet, Bryoph. Biol.: 64. 2000.

37. Acrobolbaceae E. A. Hodgs., Rec. Domin. Mus. 4: 177. 1962. A family of six genera found mostly in the southern hemisphere, with only one occurring in our flora.

Acrobolbus Nees

38. Calypogeiaceae Arnell in Holmberg, Skand. Fl. 2a.: 189. 1928. A family of five genera, two of which occur in our flora.

Calypogeia Raddi, nom. cons.
Eocalypogeia (R. M. Schust.) R. M. Schust.

39. Geocalycaceae H. Klinggr., Höh. Crypt. Preuss.: 34. 1858. A monogeneric family.

Geocalyx Nees

40. Antheliaceae R. M. Schust., J. Hattori Bot. Lab. 26: 236. 1963. A family of three genera, all of which occur in our flora.

Anthelia (Dumort.) Dumort.
Hygrobiella Spruce
Lophochaete R. M. Schust.

41. Jungermanniaceae Rchb., Bot. Damen: 256. 1828. [includes Mesoptychiaceae Inoue & Steere.] A family of five genera, four of which occur in our flora.

Eremonotus Lindb. & Kaal. ex Pearson [includes *Anomomarsupella* R. M. Schust.]
Jungermannia L.
Liochlaena Nees
Mesoptychia (Lindb.) A. Evans [includes *Leiocolea* (Müll. Frib.) H. Buch.]

42. Arnelliaceae Nakai, Chosakuronbun Mokuroku [Ord. Fam. Trib. Nov.]: 200. 1943. A monogeneric family.

Arnellia Lindb.

43. Harpanthaceae Arnell in Holmberg, Skand. Fl. 2 (a): 147. 1928. A monogeneric family.

Harpanthus Nees

44. Gyrothyraceae R. M. Schust., Trans. Brit. Bryol. Soc. 6: 87. 1970. A monogeneric family.

Gyrothyra M. Howe

45. Endogemmataceae Konstant., Vilnet & A. V. Troitsky, Folia Cryptog. Estonica 48: 132. 2001. A monogeneric family.

Endogemma Konstant., Vilnet & A. V. Troitsky

46. Gymnomitriaceae H. Klinggr., Höh. Crypt. Preuss.: 16. 1858. A family of nine genera, four of which occur in our flora.

Gymnomitrion Corda, nom. cons. [includes *Apomarsupella* R. M. Schust.]
Marsupella Dumort.
Nardia Gray
Prasanthus Lindb.

47. Solenostomataceae Stotler & Crand.-Stotl., Edinburgh J. Bot. 66: 190. 2009. A family of five genera, two of which occur in our flora.

Cryptocolea R. M. Schust.
Solenostoma Mitt. [includes *Plectocolea* (Mitt.) Mitt., *Metasolenostoma* Bakalin & Vilnet, and *Protosolenostoma* (Amakawa) Bakalin & Vilnet]

Suborder: Lophocoleineae Schljakov, Bot. Zhurn. (Moscow & Leningrad) 57: 504. 1972. (= Geocalycineae R. M. Schust.)

48. Blepharostomataceae W. Frey & M. Stech, Nova Hedwigia 87: 263. 2008. [Molecular data support the removal of *Blepharostoma* from the Pseudolepicoleaceae as proposed by Frey and Stech (2008).] A monogeneric family.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Blepharostoma (Dumort.) Dumort.

49. Trichocoleaceae Nakai, Chosakuronbun Mokuroku [Ord. Fam. Trib. Nov.]: 201. 1943. A family of three genera, one of which occurs in our flora.

Trichocolea Dumort., nom. cons.

50. Plagiochilaceae Müll. Frib. & Herzog in Müller, Leberm. Eur.: 877. 1956. A family of nine genera, two of which occur in our flora.

Pedinophyllum (Lindb.) Lindb.
Plagiochila (Dumort.) Dumort., nom. cons.

51. Lophocoleaceae Vanden Berghen in Robyns, Fl. Gén. Belgique, Bryoph. 1.: 208. 1956. A family of 21 genera, four of which occur in our flora.

Chiloscyphus Corda
Cryptolophocolea L. Söderstr., Crand.-Stotl., Stotler & Váňa [includes *Lophocolea* subg. *Connatae*]
Leptoscyphus Mitt.
Lophocolea (Dumort.) Dumort.

52. Mastigophoraceae R. M. Schust., J. Hattori Bot. Lab. 36: 345. 1972 [1973]. A family of two genera, one of which occurs in our flora.

Mastigophora Nees, nom. cons.

53. Herbertaceae Müll. Frib. ex Fulford & Hatcher, Bryologist 61: 284. 1958. A family of two genera, one of which occurs in our flora.

Herbertus Gray.

54. Lepidoziaceae Limpr. in Cohn, Krypt.-Fl. Schlesien 1: 310. 1876 [1877]. A family of 30 genera, five of which occur in our flora.

Bazzania Gray, nom. cons.
Dendrobazzania R. M. Schust. & W. B. Schofield.
Kurzia G. Martens.
Lepidozia (Dumort.) Dumort., nom. cons.
Telaranea Spruce ex Schiffn.

Alphabetical List of the Liverworts of North America North of Mexico

Acrobolbus Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 5, 25–27. Apr. 1844. TYPE: *Acrobolbus wilsonii* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 5. 1844. [37. ACROBOLBACEAE.]

Although Nees cited "*Jungermannia Wilsonii* Taylor in schedis," that name had not yet been published, hence, there is no basionym or parenthetical author.

There are 28 species of *Acrobolbus* recognized worldwide, with *Tylimanthus* Mitt. and *Marsupidium* Mitt. currently being included as synonyms within it (Briscoe et al., 2015). Primarily a southern hemisphere taxon, this genus has only a single species occurring in our flora and another in Europe.

Acrobolbus ciliatus (Mitt.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 86. Sep. 1893 [preprint]. Basionym: *Gymnanthe ciliata* Mitt., J. Proc. Linn. Soc. 5: 100. 1861.

The first report of *Acrobolbus* from North America was by Sharp (1936: 1) who described *A. rhizophyllus* Sharp from Tennessee. Thirty years later Kitagawa (1966: 141) recognized this species to be a disjunct taxon conspecific with the Asian *A. ciliatus*.

Distribution. This species is restricted to the Aleutian Islands and the southern Appalachians in North America. It also occurs in the Himalayas, Taiwan, and Japan.

Acrolejeunea (Spruce) Steph., Bot. Gaz. 15: 286. Nov. 1890, nom. cons. Basionym: *Lejeunea* subg. *Acrolejeunea* ("*Acro-Lejeunea*") Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 74, 115. Apr. 1884. TYPE: *Lejeunea torulosa* (Lehm. & Lindenb.) Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 117. 1884. Basionym: *Jungermannia torulosa* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 50. 1832. ≡ *Acrolejeunea torulosa* (Lehm. & Lindenb.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 86. Sep. 1893 [preprint]. [29. LEJEUNEACEAE.]

In his monograph, Gradstein (1975) recognized 15 species of this pantropical genus, one of which occurs in our flora.

Acrolejeunea heterophylla (A. Evans) Grolle & Gradst., J. Hattori Bot. Lab. 38: 332. 1974. Basionym: *Ptychocoleus heterophyllus* A. Evans, Amer. J. Bot. 5: 144. 1918.

In our checklist (Stotler & Crandall-Stotler, 1977) we incorrectly recognized this species in the genus *Ptychocoleus* Trevis. [≡ *Frullanoides* Raddi by lectotypification (Gradstein, 1974: 328).]

Distribution. This species is found in Florida and the lowlands of Central America.

Anastrepta (Lindb.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 85. Sep. 1893 [preprint]. Basionym: *Jungermannia* sect. *Anastrepta* Lindb. in Lindb. & Arnell, Kongl. Svenska Vetenskapsakad. Handl. 23(5): 40. 1–30 Dec. 1889. TYPE: *Anastrepta orcadensis* (Hook.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 85. 1893 [preprint]. Basionym: *Jungermannia orcadensis* Hook., Brit. Jungermann. pl. 71. 1815. [34. ANASTROPHYLLACEAE.]

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Anastrepta is a monotypic genus.

Anastrepta orcadensis (Hook.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 85. 1893 [preprint]. Basionym: *Jungermannia orcadensis* Hook., Brit. Jungermann. pl. 71. 1815.

Distribution. This species is Oceanic from Alaska to British Columbia in North America but fairly widespread in Europe and in Asia.

Anastrophyllum (Spruce) Steph., Hedwigia 32: 139. May–June 1893. Basionym: *Jungermannia* subg. *Anastrophyllum* Spruce, J. Bot. 14: 235. 1876. TYPE: *Anastrophyllum donnianum* (Hook.) Steph., Hedwigia 32: 140. 1893, as "*donianum*." Basionym: *Jungermannia donniana* Hook., Brit. Jungermann. pl. 39. 1813. [34. ANASTROPHYLLACEAE.]

The circumscription of this worldwide genus has been greatly modified and now includes 20 usually montane-tropical species, of which five occur in our flora. Note that we include the genus *Schizophyllopsis* Váňa & L. Söderstr. in *Anastrophyllum* (Spruce) Steph. See the discussion under *A. sphenoloboides* R. M. Schust.

Anastrophyllum alpinum Steph., Sp. Hepat. 6: 103. 1917.

Long et al. (2006) excluded *Anastrophyllum joergensenii* Schiffn. from North America. Our Alaskan taxon is *A. alpinum* Steph., a species distinct from *A. joergensenii*.

Distribution. This species is known only from Alaska in North America; it is also known from Scotland, western China, and the Himalayas, according to Long et al. (2006).

Anastrophyllum assimile (Mitt.) Steph., Hedwigia 32: 140. 1893. Basionym: *Jungermannia assimilis* Mitt., J. Proc. Linn. Soc., Bot. 5: 93. 1861.

Distribution. This species is known from the Northwest Territories west to Alaska and south to Alberta and Washington; it is also known from Europe and Asia.

Anastrophyllum cavifolium (H. Buch & S. W. Arnell) Lammes ≡ **Orthocaulis cavifolius** H. Buch & S. W. Arnell

Anastrophyllum donnianum (Hook.) Steph., Hedwigia 32: 140. 1893, as "*donianum*." Basionym: *Jungermannia donniana* Hook., Brit. Jungermann. pl. 39. 1813.

In our checklist (Stotler & Crandall-Stotler, 1977: 409), we incorrectly spelled the epithet "*donianum*."

Distribution. This species is from Alaska and British Columbia, northern Europe, the Himalayas, Tibet, and China.

Anastrophyllum hellerianum (Nees ex Lindenb.) R. M. Schust. ≡ **Crossocalyx hellerianus** (Nees ex Lindenb.) Meyl.

Anastrophyllum joergensenii Schiffn., Hedwigia 49: 396. 1910. —EXCLUDED. [For discussion, see **A. alpinum**.]

Anastrophyllum michauxii (F. Weber) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 289. 1932 [1933]. Basionym: *Jungermannia michauxii* F. Weber, Hist. Musc. Hepat. Prodr.: 76. 1815.

In our checklist (Stotler & Crandall-Stotler, 1977: 409) we followed Grolle (1976: 177) and credited this binomial to A. Evans. According to Koponen et al. (1977: 48), Buch (1932: 284, 289) appears to be the first author to effect transfer of *Jungermannia michauxii* to *Anastrophyllum*.

Distribution. This species is circumpolar, found in Alaska to Washington and Wyoming and in boreal regions of eastern North America from Labrador to North Carolina and Tennessee; it is also in Europe and Asia.

Anastrophyllum minutum (Schreb.) R. M. Schust. var. *minutum* ≡ **Sphenolobus minutus** (Schreb.) Berggr. var. **minutus.**

Anastrophyllum minutum (Schreb.) R. M. Schust. var. *grandis* (Gottsche ex Lindb.) R. M. Schust. = **Sphenolobus minutus** (Schreb.) Berggr. var. **minutus**.

Anastrophyllum minutum (Schreb.) R. M. Schust. var. *weberi* (Mart.) Kartt. ≡ **Sphenolobus minutus** (Schreb.) Berggr. var. **weberi** (Mart.) Schiffn.

Anastrophyllum saxicola (Schrad.) R. M. Schust., as "*saxicolus*" ≡ **Sphenolobus saxicola** (Schrad.) Steph.

Anastrophyllum sphenoloboides R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 741. 1969. ≡ *Schizophyllopsis sphenoloboides* (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 152: 49. 2013 ≡ *Schizophyllum sphenoloboides* (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 81: 16. 2013, nom. illeg. (McNeill et al., 2012: Art. 53.1).

Anastrophyllum subg. *Schizophyllum* R. M. Schust. was elevated to generic status by Váňa et al. (2013c, 2013f), ultimately under the replacement name *Schizophyllopsis* Váňa & L. Söderstr. The genus comprised five species, with *S. sphenoloboides* (R. M. Schust.) Váňa & L. Söderstr. designated as the generitype. Molecular

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

analyses of Vilnet et al. (2010), however, resolve with strong support (posterior probability [PP] = 1.0) two accessions of *S. sphenoloboides* in the *Anastrophyllum* clade. Although this is the only species of *Schizophyllopsis* that has been included in molecular studies, we herein synonymize *Schizophyllopsis* Váňa & L. Söderstr. with *Anastrophyllum* (Spruce) Steph. since *S. sphenoloboides* (R. M. Schust.) Váňa & L. Söderstr. is its generitype.

Distribution. This species is known from Alaska, Ellesmere Island, Labrador, and Greenland; in Europe it is known only from northern Scandinavia and the Kola Peninsula, and in Asia from arctic Siberia and central Japan.

Anastrophyllum tenue Harry Williams ≡ **Crossocalyx tenuis** (Harry Williams) Schljakov.

Aneura Dumort., Commentat. Bot.: 115. Nov.–Dec. 1822. TYPE: *Aneura pinguis* (L.) Dumort., Syll. Jungerm. Europ.: 86. 1831. Basionym: *Jungermannia pinguis* L., Sp. Pl. 2: 1136. 1753. [24. ANEURACEAE.]

When the genus *Aneura* was named (Dumortier, 1822), a brief generic description was followed by a list of four undescribed specific epithets, including "*pinguis*." However, there were no species descriptions nor reference to a previously published species description, rendering "*Aneura pinguis* (L.) Dumort.," Comment. Bot.: 115. 1822, a not validly published designation according to Article 38.1 (McNeill et al., 2012). The combination *A. pinguis* (L.) Dumort. was first validly published in 1831, as cited.

There are 20 or more species of *Aneura*, a genus in which cryptic speciation is prevalent. For example, in a recent paper, Wachowiak et al. (2007) reported three cryptic species in *A. pinguis* (L.) Dumort. from Poland based upon a very small sample size of 19 specimens. We recognize three species in our flora.

Aneura maxima (Schiffn.) Steph., Sp. Hepat. 1: 270. 1899. Basionym: *Riccardia maxima* Schiffn., Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl. 67: 178. 1898. —EXCLUDED.

This species was accepted by Schuster (1992a: 569) and others as the correct name for what Inoue and Miller (1985) had described as *Aneura sharpii* from eastern North America. We have reinstated *A. sharpii* based on unpublished molecular data (D. Long, pers. comm.), which show that *A. maxima* (Schiffn.) Steph. is restricted to Europe and likely does not occur in North America.

Aneura mirabilis (Malmb.) Wickett & Goffinet, Bot. J. Linn. Soc. 156: 8. 2008. Basionym: *Cryptothallus mirabilis* Malmb., Ann. Bryol. 6: 122. 1933.

The genus *Cryptothallus* Malmb. was shown by Wickett and Goffinet (2008) to be a highly derived mycoheterotrophic form of *Aneura*.

Distribution. This species is found in Greenland and northern and central Europe.

Aneura pinguis (L.) Dumort., Syll. Jungerm. Europ.: 86. 1831, var. **pinguis**. Basionym: *Jungermannia pinguis* L., Sp. Pl. 2: 1136. 1753.

Distribution. This species is cosmopolitan; in our flora it is known from Alaska to Greenland south to California and Florida. It is also found in Central and South America, Europe, Asia, Africa, Australia, and New Zealand.

Aneura pinguis var. **angustior** (Hook.) Dumort., Syll. Jungerm. Europ.: 86. 1831. Basionym: *Jungermannia pinguis* var. β *angustior* Hook., Brit. Jungermann. pl. 46. 1816.

Schuster (1992a: 567) recognized "*Aneura pinguis* var. *angustior* (Hook.) Schust., comb. nov.," which is an isonym to be disregarded since that combination had been made earlier by Dumortier (1831: 86). Schuster (1992a: 567) referred to this phenotype as being confined to northern regions and not always distinguished from variety *pinguis*. It may well be that it represents a cryptic species.

Distribution. This species in found in Alaska, Greenland, Newfoundland, and Great Britain.

Aneura sharpii Inoue & N. G. Mill., Bull. Natl. Sci. Mus., Tokyo, B 11: 96. 1985. (See discussion under *Aneura maxima*.)

The Asiatic *Aneura pellioides* (Horik.) Inoue (basionym: *Riccardia pellioides* Horik., Bot. Mag. (Tokyo) 51: 429. 1937) is a synonym of *A. maxima* and not of *A. sharpii*.

Distribution. This species is found in eastern North America, from Iowa and Illinois to Louisiana, and from Vermont and Maine to South Carolina.

Anomomarsupella cephaloziellioides R. M. Schust. = **Eremonotus myriocarpus** (Carrington) Lindb. & Kaal. ex Pearson.

Anthelia (Dumort.) Dumort., Rec. Observ. 18. 1835. Basionym: *Jungermannia* L. sect. *Anthelia* Dumort., Syll. Jungerm. Europ.: 63. 1831. TYPE: *Anthelia julacea* (L.) Dumort., Recueil Observ. Jungerm.: 18. 1835. Basionym: *Jungermannia julacea* L., Sp. Pl. 2: 1135. 1753. [40. ANTHELIACEAE.]

Anthelia is a circumarctic genus of two species, both of which occur in our flora.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Anthelia julacea (L.) Dumort., Recueil Observ. Jungerm.: 18. 1835. Basionym: *Jungermannia julacea* L., Sp. Pl. 2: 1135. 1753.

Distribution. This species in found in the west from Alaska south to British Columbia, Washington, and Oregon to Montana, and in the east from Greenland south to Quebec. It is common in Scandinavia, south throughout Great Britain, France, Spain, and Italy to Turkey; it is also known from India, the Himalayas, eastern Siberia, China, and Japan.

Anthelia juratzkana (Limpr.) Trevis., Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat. 4: 416 [34]. 1877. Basionym: *Jungermannia juratzkana* Limpr., Krypt.-Fl. Schlesien 1: 289. 1877.

Distribution. This is a bipolar, arctic-alpine taxon that ranges from Alaska to California and Colorado in the west and from Greenland and Ellesmere Island to Maine and New Hampshire in the east. It is widespread in Europe and Asia, and is also known from southern South America, New Guinea, and New Zealand.

Aphanolejeunea A. Evans = **Cololejeunea** (Spruce) Steph.

Aphanolejeunea contractiloba (A. Evans) R. M. Schust. ≡ **Cololejeunea contractiloba** A. Evans.

Aphanolejeunea cornutissima R. M. Schust. ≡ **Cololejeunea cornutissima** (R. M. Schust.) Stotler & Crand.-Stotl.

Aphanolejeunea clavatopapillata (Steph.) M. E. Reiner ≡ **Cololejeunea clavatopapillata** Steph.

Aphanolejeunea diaphana (A. Evans) R. M. Schust. [non Herzog] var. *diaphana* ≡ **Cololejeunea diaphana** A. Evans.

Aphanolejeunea diaphana (A. Evans) R. M. Schust. [non Herzog] var. *cristulata* (R. M. Schust.) R. M. Schust. = **Cololejeunea diaphana** A. Evans.

Aphanolejeunea ephemeroides R. M. Schust. = **Cololejeunea sintenisii** (Steph.) Pócs.

Aphanolejeunea minuta R. M. Schust. ≡ **Cololejeunea minuscula** Pócs.

Aphanolejeunea tuberculata (A. Evans) R. M. Schust. = **Cololejeunea clavatopapillata** Steph.

Apomarsupella R. M. Schust. = **Gymnomitrion** Corda (syn. fide Shaw et al., 2015: 39).

Apomarsupella revoluta (Nees) R. M. Schust. ≡ **Gymnomitrion revolutum** (Nees) H. Philib.

Apometzgeria Kuwah. = **Metzgeria** Raddi (syn. fide Schuster, 1992a: 665).

Apometzgeria pubescens (Schrank) Kuwah. ≡ **Metzgeria pubescens** (Schrank) Raddi.

Apopellia (Grolle) Nebel & D. Quandt, Taxon 65: 230. 2016. Basionym: *Pellia* subg. *Apopellia* Grolle, J. Bryol. 12: 427. 1983. TYPE: *Apopellia endiviifolia* (Dicks.) Nebel & D. Quandt, Taxon 65: 230. 2016. ≡ *Pellia endiviifolia* (Dicks.) Dumort., Recueil Observ. Jungerm.: 27. 1835. Basionym: *Jungermannia endiviifolia* Dicks., Fasc. Pl. Crypt. Brit. 4: 19. 1801. [16. PELLIACEAE.]

In a comprehensive molecular phylogenetic study of the Pelliaceae, *Pellia* was resolved into two well-supported clades, one including only taxa of *Pellia* subg. *Pellia* and the other, only those of *Pellia* subg. *Apopellia*. Since several morphological differences also consistently separate these two lineages, they are considered distinct at the generic level, and *Pellia* subg. *Apopellia* is elevated to generic rank.

Apopellia is a genus of three species, two of which occur in North America.

Apopellia alpicola (R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat) Nebel & D. Quandt, Taxon 65: 230. 2016. Basionym: *Pellia alpicola* R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat, Phytotaxa 76: 39. 2013.

The designation "*Pellia endiviifolia* (Dicks.) Dumort. subsp. *alpicola* R. M. Schust.," J. Hattori Bot. Lab. 70: 145. 1991, was not validly published because the herbarium of type specimen deposit was not designated (Art. 40.7, McNeill et al., 2012). Since the basionym had not been validly published, "*Pellia alpicola* (R. M. Schust.) Damsh.," Lindbergia 31: 98. 2006 [2007], was also not validly published

Distribution. This species is verified only from arctic-alpine areas of northwest Canada, including the Northwest Territories, the Yukon, British Columbia, and Alberta. It is often reported as *Pellia endiviifolia* (≡ *Apopellia endiviifolia*); see discussion under that taxon.

Apopellia endiviifolia (Dicks.) Nebel & D. Quandt, Taxon 65: 230. 2016. Basionym: *Jungermannia endiviifolia* Dicks., Fasc. Pl. Crypt. Brit. 4: 19. 1801. ≡ *Pellia endiviifolia* (Dicks.) Dumort., Recueil Observ. Jungerm.: 27. 1835. —EXCLUDED.

Since the publication of the last checklist for North America (Stotler & Crandall-Stotler, 1977), two new species have been segregated out of *Pellia endiviifolia* s.l., namely, *P. alpicola* R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat and *P. megaspora* R. M. Schust. All three species have now been transferred to *Apopellia* (Grolle) Nebel & D. Quandt. According to Schütz et al. (2016), *A. endiviifolia* s. str. is found in Europe, North

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Africa, and isolated localities in Asia, but does not occur in North America. Populations of this complex from the arctic-alpine zone of western North America are referred to *A. alpicola*, while those from eastern North America and more southern localities of western North America are referred to *A. megaspora* (Schütz et al., 2016: 228).

Apopellia megaspora (R. M. Schust.) Nebel & D. Quandt, Taxon 65: 231. 2016. Basionym: *Pellia megaspora* R. M. Schust., J. Bryol. 11: 419. 1981.

Distribution. In the west, this species is confirmed from California, Oregon, and New Mexico, and in eastern North America in the boreal zone from Labrador to Minnesota; elsewhere it is confirmed only from Siberia.

Apotreubia S. Hatt. & Mizut., Bryologist 69: 491. 1966 [3 Jan. 1967]. TYPE: *Apotreubia nana* (S. Hatt. & Inoue) S. Hatt. & Mizut., Bryologist 69: 492. 1967. Basionym: *Treubia nana* S. Hatt. & Inoue, J. Hattori Bot. Lab. 11: 99. 1954. [1. TREUBIACEAE.]

Apotreubia is a genus with four species, one of which occurs in our flora.

Apotreubia hortoniae R. M. Schust. & Konstant., Phytotaxa 76: 33. 2013.

The designation "*Apotreubia hortoniae* R. M. Schust. & Konstant.," J. Hattori Bot. Lab. 78: 55. 1995, with the original spelling "*hortonae*" was not validly published because the place of deposit of the type specimen was not given (Art. 40.7, McNeill et al., 2012). That error was corrected by Konstantinova et al. (2013), who provided the missing citation as well as a full and direct reference to a validating description that is unequivocally associated with Schuster and Konstantinova as per Article 46.3, Note 2, Ex. 21 (McNeill et al., 2012).

Distribution. This species is known only from Alaska and British Columbia.

Apotreubia nana (S. Hatt. & Inoue) S. Hatt. & Mizut., Bryologist 69: 492. 1966 [1967]. Basionym: *Treubia nana* S. Hatt. & Inoue, J. Hattori Bot. Lab. 11: 99. 1954. —EXCLUDED.

This taxon was reported from British Columbia by Schofield (1962), but those records as well as plants from Alaska should be referred to *Apotreubia hortoniae* (see Schuster & Konstantinova, 1995).

Arnellia Lindb., Finland 1887(33): [3]. 10 Feb. 1887. TYPE: *Arnellia fennica* (Gottsche & Rabenh.) Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk.-Akad. Handl. Ser. 2. 23: 35. ante 7 Dec. 1889. Basionym: *Jungermannia fennica* Gottsche & Rabenh., Hepat. Eur.: 418. 1868. [42. ARNELLIACEAE.]

Arnellia is a monospecific genus.

Arnellia fennica (Gottsche & Rabenh.) Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk.-Akad. Handl., n.s. 23(5): 35. 1889. Basionym: *Jungermannia fennica* Gottsche & Rabenh., Hepat. Eur.: 418. 1868.

Although the author for this epithet is often cited as "Gottsche in Rabenhorst," Gottsche and Rabenhorst were co-editors of that series from Decas 21 (1862) onward according to Stafleu and Cowan (1983: 463), and both should be cited as the authors, as in Index Hepaticarum (Geissler & Bischler, 1987: 74). In our previous checklist (Stotler & Crandall-Stotler, 1977: 409) we cited only Gottsche.

Distribution. This species is known in North America from Alaska to British Columbia, east to South Dakota, Manitoba, and Ontario, and north to Ellesmere Island and Greenland. It occurs in northern Scandinavia to northern Russia and south to the Balkans and French and Italian Alps, and in Siberia and the Russian Far East, including Sakhalin.

Ascidiota C. Massal., Nuovo Giorn. Bot. Ital., n.s. 5: 256. Apr. 1898. TYPE: *Ascidiota blepharophylla* C. Massal., Nuovo Giorn. Bot. Ital., n.s. 5: 257. 1898. [25. PORELLACEAE.]

This genus was not mentioned by Schiffner (1893) or regarded as distinct from *Madotheca* (= *Porella*) by Stephani (1910: 298) or subsequent workers. Schuster (1958: 48), however, recognized it as distinct from *Porella* when he reported it from unglaciated regions of Alaska. The molecular study by Hentschel et al. (2007a) supports generic status.

Ascidiota is a monotypic genus described from plants first collected in China.

Ascidiota blepharophylla C. Massal. subsp. **alaskana** Steere & R. M. Schust., Bull. Torrey Bot. Club 87: 213. 1960.

A very strong argument is presented by Persson (1962: 6–7) to disregard the recognition of this subspecies.

Distribution. This species is known only from Alaska.

Asterella P. Beauv. in F. Cuvier, Dict. Sci. Nat. 3: 257. 30 Jan. 1805, nom. et type cons. TYPE: *Asterella tenella* (L.) P. Beauv., Dict. Sci. Nat. 3: 258. 1805. Basionym: *Marchantia tenella* L., Sp. Pl. 2: 1137. 1753. [8. AYTONIACEAE.]

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Asterella is a large genus with as many as 80 species (Engel, 1990: 184; Bischler, 1998: 63) or as few as 14 species (Damsholt, 2009: 722). According to Long (2006: 23) 45 to 50 species is a realistic estimate of the species number. Seven species occur in our flora.

Asterella bolanderi (Austin) Underw., Bot. Gaz. 20: 61. 1895. Basionym: *Fimbraria bolanderi* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 230. 1869.

Distribution. This species is restricted to California, with a questionable report from Texas.

Asterella bolanderi subsp. *acrogyna* R. M. Schust. ≡ **Reboulia hemispherica** subsp. **acrogyna** R. M. Schust. (R. M. Schust.)

Asterella californica (Hampe ex Austin) Underw., Bot. Gaz. 20: 60. 1895. Basionym: *Fimbraria californica* Hampe ex Austin, Hepat. Bor.-Amer. Exsicc.: 33. 1873.

When Austin (1873) published his entry "135. *Fimbriaria Californica*" he cited "Hampe, *e specimine in* Herb. Sulliv. — *F. Lescurii*, Aust. Mst. 1865." The binomial was ascribed to Hampe and validly published by Austin with a brief diagnosis. It should be cited as Hampe ex Austin. Typically, the author citation given for *Asterella californica* has been (Hampe) Underw., no doubt because Underwood (1895: 60) wrote "*Asterella Californica* (Hampe), nom. nov." in his treatment. However, for the basionym *Fimbriaria californica* he wrote "Hampe MS *n.n.* in Aust. Hep. Bor.-Am. 135," referring to that Austin publication.

Distribution. This species is from Oregon south through California to Arizona and Baja, Mexico.

Asterella echinella (Gottsche) Underw., Bot. Gaz. 20: 62. 1895. Basionym: *Fimbraria echinella* Gottsche, Mexik. Leverm.: 271. 1863.

Romualdo M. del Rosario (1964) treated *Asterella echinella* as a subspecies ("*A. elegans* (Spreng.) Trevis. subsp. *echinella* (Gottsche) del Rosario, comb. nov.") in his master's thesis at the University of Kansas. This transfer was erroneously incorporated into our checklist (Stotler & Crandall-Stotler, 1977: 409) based upon that and a specimen annotated by del Rosario, seen by us in US. However, that combination was never validly published (R. McGregor, pers. comm.).

Distribution. This species is from Arkansas to Texas and south to Mexico and Honduras.

"*Asterella elegans* (Spreng.) Trevis. subsp. *echinella* (Gottsche) Del Ros.," nom. inval. (McNeill et al., 2012: Art. 6.2) ≡ **Asterella echinella** (Gottsche) Underw.

Asterella gracilis (F. Weber) Underw. ≡ **Mannia gracilis** (F. Weber) D. B. Schill & D. G. Long

Asterella lindenbergiana (Corda ex Nees) Lindb. ex Arnell, Lebermoosstudien Nördlichen Norwegen: 2. 1892. Basionym: *Fimbraria lindenbergiana* Corda ex Nees, Naturgesch. Eur. Leberm. 4: 283. 1838.

In our checklist (Stotler & Crandall-Stotler, 1977: 409) the entry *Asterella lindenbergiana* (Corda) Lindb. followed the incorrect author citation in Frye and Clark (1937: 80). First, the parenthetical author should be Corda ex Nees because Nees ascribed the name to Corda when he published the name *Fimbraria lindenbergiana* (Nees von Esenbeck, 1838: 266, 283). Second, although Lindberg (1879: 1) later published the name "*Asterella lindenbergii* (Cord.)," that cannot be considered a validly published new combination since the epithet was spelled "*lindenbergii*." It was Arnell (1892: 2) that correctly published the binomial, which he ascribed to S. O. Lindberg. Thus the correct citation is *A. lindenbergiana* (Corda ex Nees) Lindb. ex Arnell.

Distribution. This species is from western North America from Alaska to British Columbia and Alberta, Washington, Oregon, and Montana; it is also in Mexico and northern South America, and throughout western Europe.

Asterella ludwigii auct. = **Mannia gracilis** (F. Weber) D. B. Schill & D. G. Long.

Asterella ludwigii (Schwägr.) Underw. ex A. Evans = **Mannia triandra** (Scop.) Grolle.

Asterella palmeri (Austin) Underw., Bot. Gaz. 20: 63. 1895. Basionym: *Fimbraria palmeri* Austin, Bull. Torrey Bot. Club 6: 47. 1875.

Distribution. This species is from California, New Mexico, and Guadalupe Island, Mexico.

Asterella saccata (Wahlenb.) A. Evans, Contr. U.S. Natl. Herb. 20: 276. 1920. Basionym: *Marchantia saccata* Wahlenb., Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesammten Naturk. 5: 296. 1811.

Distribution. This is an arctic-alpine species found in Alaska south to Washington and east to Minnesota, Greenland, and Canada; it is also known from Europe and Asia.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Asterella tenella (L.) P. Beauv., Dict. Sci. Nat. 3: 258. 1805. Basionym: *Marchantia tenella* L., Sp. Pl. 2: 1137. 1753.

Distribution. This species is restricted to eastern North America, from the Gulf Coastal Plain to Quebec and Ontario, westward to Nebraska and Texas. Reports from Europe and Asia are erroneous (Long, 2006: 229).

Athalamia Falc., Ann. Mag. Nat. Hist. Ser. 2. 1: 375. May 1848. TYPE: *Athalamia pinguis* Falc., Ann. Mag. Nat. Hist. Ser. 2. 1: 375. 1848. —EXCLUDED.

In recent times the genus *Athalamia* had been defined to include the genus *Clevea* (Shimizu & Hattori, 1954). However, that grouping was found to be polyphyletic, and *Clevea* has now been set apart from *Athalamia* by Rubasinghe et al. (2011a). [9. CLEVEACEAE.]

Currently, *Athalamia* is recognized as a monotypic genus, found only around the Tibetan Plateau (Rubasinghe, 2011).

Athalamia hyalina (Sommerf.) S. Hatt. ≡ **Clevea hyalina** (Sommerf.) Lindb.

"Athalamia hyalina (Sommerf.) S. Hatt. var. californica (M. Howe) R. M. Schust.," Hepat. Anthocerotae N. Amer. 6: 139. 1992, nom. inval.

Schuster (1992b: 139) failed to indicate the place of valid publication of the basionym for his new combination *Athalamia hyalina* var. *californica* and hence it was not validly published (McNeill et al., 2012: Art. 41.5). Regardless, we follow Doyle and Stotler (2006) and do not recognize this infraspecific taxon.

Athalamia pygmaea R. M. Schust. = **Clevea spathysii** (Lindenb.) Müll. Frib.

Barbilophozia Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. July 1907. TYPE: *Barbilophozia barbata* (Schmidel ex Schreb.) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. Basionym: *Jungermannia barbata* Schmidel ex Schreb., Spic. Fl. Lips.: 107. 1771. [34. ANASTROPHYLLACEAE.]

In the protologue of *Jungermannia barbata*, Schreber ascribed the binomial to Schmidel. This genus was removed from Lophoziaceae by Söderström et al. (2010) and segregated along with other several elements of that family into the Anastrophyllaceae. They likewise elevated *Orthocaulis* back to generic rank, recognized the genera *Schljakovia* and *Schljakovianthus*, and named the new genus *Neoorthocaulis*.

Barbilophozia now comprises four or at most five species (Vilnet et al., 2010), all of which occur in our flora. We follow Söderström et al. (2010: 50) and retain *B. sudetica* within this genus rather than recognizing the newly described genus *Pseudolophozia* of Konstantinova and Vilnet (2009: 66).

Barbilophozia atlantica (Kaal.) Müll. Frib. ≡ **Orthocaulis atlanticus** (Kaal.) H. Buch.

Barbilophozia attenuata (Mart.) Loeske ≡ **Neoorthocaulis attenuatus** (Mart.) L. Söderstr., De Roo & Hedd.

Barbilophozia barbata (Schmidel ex Schreb.) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. Basionym: *Jungermannia barbata* Schmidel ex Schreb., Spic. Fl. Lips.: 107. 1771.

The binomial *Jungermannia barbata* was ascribed to Schmidel by Schreber, but there is no evidence that Schmidel wrote the description, so the correct author citation is Schmidel ex Schreber.

Distribution. This species is widespread throughout North America from Alaska to Colorado, Montana, and New Mexico in the west and Greenland to North Carolina, west to Michigan, Wisconsin, and Minnesota in the east. It is common in Scandinavia and throughout Europe and in Asia from Turkey to northern Siberia and Japan.

Barbilophozia binsteadii (Kaal.) Loeske ≡ **Neoorthocaulis binsteadii** (Kaal.) L. Söderstr., De Roo & Hedd.

Barbilophozia cavifolia (H. Buch & S. W. Arnell) Stotler & Crand.-Stotl. ≡ **Orthocaulis cavifolius** H. Buch & S. W. Arnell.

Barbilophozia floerkei (F. Weber & D. Mohr) Loeske ≡ **Neoorthocaulis floerkei** (F. Weber & D. Mohr) L. Söderstr., De Roo & Hedd.

Barbilophozia hatcheri (A. Evans) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. Basionym: *Jungermannia hatcheri* A. Evans, Bull. Torrey Bot. Club 25: 417. 1898.

Distribution. This species is found in the west from British Columbia and Alberta south to California, Colorado, and Wyoming, and in the east from Greenland and Ellesmere Island south to New England and New York, west to Michigan and Minnesota, disjunct to North Carolina. It is widespread in central and northern Europe, and from Siberia and the Himalayas to Japan. It also occurrs in Patagonia and Antarctica.

Barbilophozia hatcheri (A. Evans) Loeske var. *grandiretis* H. Buch ex Lammes = **Barbilophozia rubescens** (R. M. Schust. & Damsh.) Kartt. & L. Söderstr.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Barbilophozia hyperborea (R. M. Schust.) Stotler & Crand.-Stotl. ex Potemkin ≡ **Neoorthocaulis hyperboreus** (R. M. Schust.) L. Söderstr., De Roo & Hedd. subsp. **hyperboreus.**

Barbilophozia kunzeana (Huebener) Müll. Frib. ≡ **Schljakovia kunzeana** (Huebener) Konstant. & Vilnet.

Barbilophozia lycopodioides (Wallr.) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. Basionym: *Jungermannia lycopodioides* Wallr., Fl. Crypt. Germ. 1: 76. 1831.

Distribution. This species is found from Alaska to Utah and New Mexico in the west and Greenland and Labrador to New England in the east. It is common throughout Europe and in Asia from Japan and Kamchatka.

Barbilophozia quadriloba (Lindb.) Loeske var. *quadriloba* ≡ **Schljakovianthus quadrilobus** (Lindb.) Konstant. & Vilnet var. **quadrilobus.**

Barbilophozia quadriloba (Lindb.) Loeske var. *collenchymatica* (R. M. Schust.) Stotler & Crand.-Stotl. ≡ **Schljakovianthus quadrilobus** (Lindb.) Konstant. & Vilnet var. **collenchymaticus** (R. M. Schust.) Konstant. & Vilnet.

Barbilophozia quadriloba (Lindb.) Loeske var. *glareosa* (Jørg.) Lammes ≡ **Schljakovianthus quadrilobus** (Lindb.) Konstant. & Vilnet var. **glareosus** (Jørg.) Konstant. & Vilnet.

Barbilophozia rubescens (R. M. Schust. & Damsh.) Kartt. & L. Söderstr., Ann. Bot. Fenn. 29: 120. 1992. Basionym: *Lophozia rubescens* R. M. Schust. & Damsh., Phytologia 63: 325. 1987. = *Barbilophozia hatcheri* (A. Evans) Loeske var. *grandiretis* H. Buch ex Lammes, Ann. Bot. Fenn. 14: 70. 1977 (syn. fide Konstantinova et al., 2009: 41).

Distribution. This species is known only from South Greenland in our flora and from Nordic regions and northwestern Russia.

Barbilophozia sudetica (Nees ex Huebener) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 50. 2010. Basionym: *Jungermannia sudetica* Nees ex Huebener, Hepaticol. Germ. 142. 1834. ≡ *Lophozia sudetica* (Nees ex Huebener) Grolle, Trans. Brit. Bryol. Soc. 6: 262. 1971. ≡ *Pseudolophozia sudetica* (Nees ex Huebener) Konstant. & Vilnet, Arctoa 18: 66. 2009. = *Lophozia sudetica* (Nees ex Huebener) Grolle var. *anomala* (Schljakov) Schljakov, Novosti Sist. Nizsh. Rast. 13: 228. 1976, syn. nov. = *Lophozia debiliformis* R. M. Schust. & Damsh. var. *debiliformis*, Phytologia 63: 326. 1987 (syn. fide Söderström et al., 2010: 50). = *Lophozia debiliformis* R. M. Schust. & Damsh. var. *concolor* R. M. Schust. & Damsh., Phytologia 63: 326. 1987 (syn. fide Söderström et al., 2010: 50). = *Protolophozia debiliformis* (R. M. Schust. & Damsh.) Konstant., Novosti Sist. Nizsh. Rast. 30: 112. 1995, syn. nov. = *Pseudolophozia debiliformis* (R. M. Schust. & Damsh.) Konstant. & Vilnet, Arctoa 18: 66. 2009, syn. nov.

Distribution. This species is known from Alaska to California in the west and from Greenland and Ellesmere Island to Quebec and New York in the east. It is found throughout Europe and in Asia from Turkey, the Himalayas, Siberia, and Japan.

Bazzania Gray, Nat. Arr. Brit. Pl. 1: 704, 775. 1 Nov. 1821, as "*Bazzanius*," nom. et orth. cons. TYPE: *Bazzania trilobata* (L.) Gray, Nat. Arr. Brit. Pl. 1: 704. 1821. Basionym: *Jungermannia trilobata* L., Sp. Pl. 2: 1133. 1753. [54. LEPIDOZIACEAE.]

This primarily tropical, southern hemisphere genus includes over 100 species worldwide with seven represented in our flora.

Bazzania ambigua (Lindenb.) Trevis., Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat. 4: 414 [32]. 1877. Basionym: *Mastigobryum ambiguum* Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat. 217. 1845.

Although this species had been included under the synonyms of *Bazzania tricrenata* (Wahlenb.) Lindb. by many authors, Evans (1923: 59) pointed out that Lindenberg based the species on two specimens, one from Massachusetts and the other from the Pacific Northwest. Since Lindenberg used the latter specimen for his illustrations of this species, Evans typified the taxon with that specimen, and stated that the Massachusetts material was probably referable to *B. denudata* (Torr. ex Gottsche, Lindenb. & Nees) Trevis.

Distribution. This species is found in Alaska, British Columbia, Washington, Oregon, and Idaho.

Bazzania denudata (Torr. ex Gottsche, Lindenb. & Nees) Trevis., Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat. 4: 414 [32]. 1877. Basionym: *Mastigobryum denudatum* Torr. ex Gottsche, Lindenb. & Nees, Syn. Hepat. 216. 1845.

Distribution. This species is circumpolar; it is found in western North America from Alaska south to

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

California and Alberta and in the east from Greenland south to Tennessee and west to Ohio and Kentucky; it is also in central Europe.

Bazzania flaccida (Dumort.) Grolle, Lindbergia 1: 200. 1972. Basionym: *Pleuroschisma flaccidum* Dumort., Syll. Jungerm. Europ. 71. 1831.

Frye and Clarke (1946: 670) listed the basionym, *Pleuroschisma flaccidum*, as a synonym of *Bazzania tricrenata*.

Distribution. Hong (2002) reported this species from the Queen Charlotte Islands, British Columbia (now known as Haida Gwaii); it is otherwise fairly common in temperate, subcontinental Europe.

Bazzania nudicaulis A. Evans, Bryologist 26: 62. 1923.

Distribution. This species is endemic to the southern Appalachians from Virginia to Tennessee.

Bazzania pearsonii Steph., Hedwigia 32: 212. 1893.

Distribution. This species is found in Alaska and British Columbia, the British Isles, and Asia.

Bazzania tricrenata (Wahlenb.) Lindb. in Brotherus, Musci Fenniae Exs., Fasc. 2: [2], Helsinki. 1872, var. **tricrenata**. Basionym: *Jungermannia tricrenata* Wahlenb., Fl. Carpat. Princ.: 364. 1814.

The "comb. nov." by Lindberg in Brotherus (1872) cited above predates that of Trevisan (Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat. 4: 415. 1877), who has typically been listed as the combining author for *Bazzania tricrenata*.

Distribution. This species is circumboreal, from the Arctic south to northern California and Idaho and in the east from Newfoundland south through Quebec to North Carolina and Tennessee; it is disjunct in Mexico and Guatemala. It is common throughout boreal montane Europe, Asia Minor, the Himalayas, China, Korea, and Japan.

Bazzania tricrenata var. **fulfordiae** W. S. Hong, Bryologist 91: 331. 1988.

Distribution. This variety is known only from British Columbia (Hong, 1988: 331).

Bazzania trilobata (L.) Gray, Nat. Arr. Brit. Pl. 1: 704. 1821, var. **trilobata.** Basionym: *Jungermannia trilobata* L., Sp. Pl. 2: 1133. 1853.

Distribution. This species is found in Alaska and British Columbia on the West Coast and throughout eastern North America from Labrador south to Florida and west to Minnesota and Arkansas; it is widespread in western Europe and eastern Asia.

Bazzania trilobata var. **depauperata** (Müll. Frib.) Grolle, Lindbergia 1: 197. 1972. Basionym: *Pleuroschisma trilobatum* (L.) Dumort. var. *depauperatum* Müll. Frib., Lebermoose: 266. 1913.

Distribution. This variety is found in New York to North Carolina west to Illinois; it is also in central Europe.

Biantheridion (Grolle) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Jamesoniella* sect. *Biantheridion* Grolle, Trans. Brit. Bryol. Soc. 4: 662. 1964. TYPE: *Biantheridion undulifolium* (Nees) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Jungermannia schraderi* Mart. ω var. *undulifolia* Nees, Naturgesch. Eur. Leberm. 1: 306. 1833. [34. ANASTROPHYLLACEAE.]

Biantheridion is a monotypic genus.

Biantheridion undulifolium (Nees) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Jungermannia schraderi* Mart. var. *undulifolia* Nees, Naturgesch. Eur. Lebermoose 1: 306. 1833. ≡ *Jamesoniella undulifolia* (Nees) Müll. Frib., Lebermoose: 758. 1916. ≡ *Crossogyna undulifolia* (Nees) Schljakov, Novosti Sist. Nizsh. Rast. 12: 312. 1975.

Distribution. This species is known from Baffin Island and Greenland in our flora; it is also found in central and northern Europe and in Asia from Siberia and Kamchatka.

Blasia L., Sp. Pl. 2: 1138. 1 May 1753. TYPE: *Blasia pusilla* L., Sp. Pl. 2: 1138. 1753. [3. BLASIACEAE.]

Blasia is a monotypic genus.

Blasia pusilla L., Sp. Pl. 2: 1138. 1753.

Distribution. This species is found in the west from Alaska to British Columbia, California, and New Mexico and in the east from Greenland and Newfoundland south to North Carolina; it is also in Wisconsin, Minnesota, Iowa, and Illinois. It is common throughout Europe and Asia.

Blepharostoma (Dumort.) Dumort., Recueil Observ. Jungerm.: 18. 1835. Basionym: *Jungermannia*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

sect. *Blepharostoma* Dumort., Syll. Jungerm. Europ.: 65. 1831. TYPE: *Blepharostoma trichophyllum* (L.) Dumort., "*trichophylla.*" Basionym: *Jungermannia trichophylla* L., Sp. Pl. 2: 1135. 1753. [48. BLEPHAROSTOMATACEAE.]

Blepharostoma is a Laurasian genus of four species, two of which occur in our flora.

Blepharostoma arachnoideum M. Howe, Mem. Torrey Bot. Club 7: 140. 1899.

Wagner (2011) published an account documenting the morphological characters that distinguish this species from *Blepharostoma trichophyllum*.

Distribution. This species is endemic to western North America from British Columbia south to California and Nevada.

Blepharostoma trichophyllum (L.) Dumort., Recueil Observ. Jungerm.: 18. 1835, subsp. **trichophyllum**. Basionym: *Jungermannia trichophylla* L., Sp. Pl. 2: 1135. 1753.

Steere and Inoue (1978: 269) provided a good argument to dispel recognition of two subspecies, but they are recognized as distinct by Damsholt (2013).

Distribution. This species is transcontinental in North America, from Alaska south to California, New Mexico, and Montana in the west and from Greenland south to South Carolina, Tennessee, Illinois, and Iowa in the east. It is widespread in Europe and Asia.

Blepharostoma trichophyllum subsp. **brevirete** (Bryhn & Kaal.) R. M. Schust., Bull. Natl. Mus. Canada 164: 16. 1959. Basionym: *Blepharostoma trichophyllum* (L.) Dumort. var. *brevirete* Bryhn & Kaal., Rep. Second Norweg. Arctic Exped. 2(11): 46. 1906.

Distribution. This subspecies is found in Alaska to Greenland south to Alberta and east to Quebec. It is also in central and northern Europe and Asia.

Brachiolejeunea (Spruce) Schiffn., Hepat. (Eng.-Prantl): 128. 1893. Basionym: *Lejeunea* subg. *Brachiolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 129. 1884. —EXCLUDED.

The species of this genus that were previously known from our flora have been transferred to *Frullanoides* Raddi (see van Slageren, 1985).

Brachiolejeunea bahamensis A. Evans ≡ **Frullanoides bahamensis** (A. Evans) van Slageren.

Brachiolejeunea corticalis (Lehm. & Lindenb.) Schiffn. ≡ **Frullanoides corticalis** (Lehm. & Lindenb.) van Slageren.

Bucegia romanica Radian ≡ **Marchantia romanica** (Radian) D. G. Long, Crand.-Stotl., L. L. Forrest & J. C. Villarreal.

Calycularia Mitt., J. Proc. Linn. Soc., Bot. 5: 122. 27 Mar. 1861. TYPE: *Calycularia crispula* Mitt., J. Proc. Linn. Soc., Bot. 5: 122. 1861. [17. CALYCULARIACEAE.]

Calycularia is a genus now regarded to contain but two species (fide Konstantinova & Mamontov, 2010: 117).

Calycularia crispula Mitt., J. Proc. Linn. Soc., Bot. 5: 122. 27 Mar. 1861. —EXCLUDED.

According to Konstantinova and Mamontov (2010: 127) reports of this species in our flora by Steere and Inoue (1978), Davison and Smith (1992), and Schofield et al. (2004) belong to *Calycularia laxa*. *Calycularia crispula* is restricted to Mexico, Costa Rica, Southeast Africa, and Asia.

Calycularia laxa Lindb. & Arnell, Kongl. Svenska Vetensk.-Akad. Handl. 23(5): 68. 1889.

Distribution. This species is known from Alaska to British Columbia, the European Arctic, and Siberian Asia south to Korea and Japan.

Calypogeia Raddi, Jungermanniogr. Etrusca: 31. 1818, nom. cons. TYPE: *Calypogeia fissa* (L.) Raddi, Jungermanniogr. Etrusca: 31. 1818. Basionym: *Mnium fissa* L., Sp. Pl.: 1109. 1753. [38. CALYPOGEIACEAE.]

Calypogeia was correctly spelled *Calypogeja*, in accord with the original orthography of Raddi (1818) in our checklist (Stotler & Crandall-Stotler, 1977: 410). Grolle (1979a) published a proposal to conserve the orthographic variant *Calypogeia*, which was accepted (Wiersema et al., 2015: 121).

Calypogeia is a genus of about 30 species worldwide, with nine in our flora.

Calypogeia azurea Stotler & Crotz, Taxon 32: 74. 1983.

This species is not common in North America (see the discussion under *Calypogeia trichomanis*).

Distribution. This species is found in California (Doyle 8638!), Oregon, and probably north to Alaska and also eastern Canada. It is also fairly

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

widespread in northern Europe and the Russian Far East.

"*Calypogeia cyanophora* R. M. Schust. ex Bonner," Index Hepaticarum, Pars III: 485. 1963, nom. nud., nom. inval. (McNeill et al., 2012: Art. 38).

In our checklist (Stotler & Crandall-Stotler, 1977: 418) we equated this name with *Calypogeia trichomanis*, but later study of authentic material (*Schuster 26505a*, F) revealed that it is actually *C. peruviana*. It should not be associated with the name *C. azurea* or the rejected name *C. trichomanis*.

Calypogeia fissa (L.) Raddi, Jungermanniogr. Etrusca: 33. 1818. Basionym: *Mnium fissum* L., Sp. Pl. 1: 1114. 1753, nom. cons. —EXCLUDED. [See *Calypogeia neogaea* (R. M. Schust.) Bakalin.]

Calypogeia fissa is common in Europe and is also found in Northern Africa, Turkey, and the Himalayas. Our plants should be referred to *C. neogaea*.

Calypogeia fissa (L.) Raddi subsp. *neogaea* R. M. Schust. ≡ **Calypogeia neogaea** (R. M. Schust.) Bakalin.

Calypogeia integristipula Steph., Sp. Hepat. 3: 394. 1908.

Distribution. This species is found in the west from Alaska to the Yukon south to California, and in the east from Greenland to Newfoundland south to New York, Michigan, and Minnesota. It is common in Europe and in Asia from Siberia to Japan.

Calypogeia muelleriana (Schiffn.) Müll. Frib., Beih. Bot. Centralbl. 10: 217. 1901, subsp. **muelleriana**. Basionym: *Kantius muellerianus* Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 48 [n.s. vol. 20]: 344. 1900, as "*Kantia muelleriana*."

This is the most widespread species of *Calypogeia* in North America, with most collections formerly identified as *C. trichomanis* actually belonging here.

Distribution. This subspecies is found in the west from Alaska and the Yukon to British Columbia and California, and from Greenland and Labrador to Quebec south to Georgia and across the continent in the northernmost United States. It is common in Europe from southern Scandinavia to the British Isles, Portugal, and Spain, to northern Italy and the Czech Republic to Siberia.

Calypogeia muelleriana subsp. **blomquistii** R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 187. 1969.

Distribution. This subspecies is imperfectly known. Schuster (1969: 189) stated that it is a rare taxon restricted to the southern Appalachians and the Ouachita Mountains of Arkansas. He also cited a specimen from Massachusetts.

Calypogeia neesiana (C. Massal. & Carestia) Müll. Frib. in Loeske, Verh. Bot. Vereins Prov. Brandenburg 47: 320. 1905 [1906]. Basionym: *Kantius trichomanis* (L.) Lindb. β *neesianus* C. Massal. & Carestia, Nuovo Giorn. Bot. Ital. 12: 351. 1880, as "*Kantia neesiana*."

Koponen et al. (1977: 50) argued that the 1905 [1906] new combination (comb. nov.) was "invalid since Loeske did not accept its specific status" and that the correct citation might be Müll. Frib. in Loeske, Hedwigia 47: 165, 1908. That fact does not seem relevant, however, since Loeske is not the author of this binomial, K. Müller is.

Distribution. This species is known from Alaska south to British Columbia, Washington, California, Idaho, and Wyoming, from the Northwest Territories to Greenland, and in the east from Newfoundland to Tennessee and Georgia. It is common throughout Europe and in Asia from Siberia to Sakhalin and Japan.

Calypogeia neogaea (R. M. Schust.) Bakalin, Proc. VII Int. Sci. Conf. Petropavlovsk-Kamchatsky, Nov. 28–29, 2006: 9. 2007 [in Russian]. Basionym: *Calypogeia fissa* (L.) Raddi subsp. *neogaea* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 169. 1969.

Calypogeia fissa (L.) Raddi, Jungermanniogr. Etrusca: 33. 1818 (Basionym: *Mnium fissum* L., Sp. Pl. 2: 1114. 1753.), likely does not occur in North America and specimens identified as such likely belong to *C. neogaea*. Schuster (1969: 169) in fact stated that "typical" *C. fissa* was either absent or exceedingly rare in our flora. This scenario is reminiscent of our recognition of the European *C. arguta* Nees & Mont. in Nees, Naturgesch. Eur. Leberm. 3: 24. 1838, and the North American *C. sullivantii* Austin, Hepat. Bor.-Amer. Exsicc.: 19. 1873 (= *C. arguta* var. *sullivantii* (Austin) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 687. 1946), as sibling species.

Distribution. This species is from California, and in eastern North America from Texas, Arkansas, and southern Illinois to Florida and north to New York and New England. Konstantinova et al. (2009: 10) reported it from three locations in the Russian Far East, and Bakalin (2012d: 96) added it from Sakhalin.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Calypogeia peruviana Nees & Mont. in Mont., Ann. Sci. Nat., Bot., sér. 2, 9: 47. 1838.

Bonner (1963: 503) and others have cited Nees (Naturgesch. Eur. Leberm. 3: 26. 1838) as the author of this name rather than Nees & Montagne. However, according to *Taxonomic Literature* (Stafleu & Cowan, 1981: 559) the description, which was ascribed to Nees and Montagne but published by Montagne, was issued in January 1838, whereas the diagnosis in volume 3 of Nees (Naturgesch. Eur. Leberm.) was not issued until April 1838 (Stafleu & Cowan, 1981: 711). See also *Calypogeia trichomanis*.

Distribution. This species is found in the southeastern United States from the Carolinas and east Tennessee to Florida and west to Mississippi. It is also in Central America, the West Indies, and South America.

Calypogeia sphagnicola (Arnell & J. Perss.) Warnst. & Loeske, Verh. Bot. Vereins Prov. Brandenburg 47: 320. 1905 [1906]. Basionym: *Kantius sphagnicola* Arnell & J. Perss., Rev. Bryol. 29: 26. 1902, as "*Kantia sphagnicola*."

Distribution. This species is found in the west from Alaska, the Yukon, and Northwest Territories to British Columbia and Alberta, and in the east from Greenland and Quebec south to Virginia and west to Minnesota. It is found from Scandinavia through the British Isles, Portugal, and Spain east to Turkey and northern Russia. It is also reported from the Russian Far East, Japan, and from New Zealand, Tasmania, and Tierra del Fuego.

Calypogeia suecica (Arnell & J. Perss.) Müll. Frib., Beih. Bot. Centralbl. 17: 224. 1904. Basionym: *Kantius suecicus* Arnell & J. Perss., Rev. Bryol. 29: 29. 1902, as "*Kantia suecica*."

Distribution. This species is found from British Columbia and California and in the east from Newfoundland and Quebec to Minnesota, Michigan, New York, and New England south to South Carolina, Tennessee, and Georgia. It is common throughout Europe, Siberia, and the Russian Far East.

Calypogeia sullivantii Austin, Hepat. Bor.-Amer. Exsicc.: 19. 1873.

Distribution. This species is found from Nova Scotia south to Florida and west to Ohio, Illinois, Kentucky, and Arkansas.

Calypogeia trichomanis (L.) Corda, Naturalientausch 12: 653. 1829. Basionym: *Mnium trichomanis* L., Sp. Pl. 2: 1114. 1753, nom. rej.

The name *Mnium trichomanis* L. (= *Calypogeia trichomanis* (L.) Corda) is a "nomina utique rejicienda" or rejected name listed in the International Code of Botanical Nomenclature (Wiersema et al., 2015: 423) and is not to be used. Plants labeled as such rarely, if ever, represent *C. azurea* Stotler & Crotz and are most likely referable to *C. muelleriana* (Schiffn.) Müll. Frib., or, if they are from the southeastern United States and have blue oil bodies, *C. peruviana* Nees & Mont. We have confirmed *C. azurea* from the Pacific Northwest; it might also occur in eastern Canada. *Calypogeia azurea* is a distinct species, not simply a replacement name for *C. trichomanis*.

Caudalejeunea (Steph.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 119, 129. Sep. 1893 [preprint]. Basionym: *Lejeunea* subg. *Caudalejeunea* Steph., Hedwigia 29: 19. Jan.–Feb. 1890. TYPE: *Caudalejeunea lehmanniana* (Gottsche) A. Evans, Bull. Torrey Bot. Club 34: 553. 1908. Basionym: *Lejeunea lehmanniana* Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 325. 1845. [29. LEJEUNEACEAE.]

Caudalejeunea is a genus of 10 to 15 species, one of which occurs in our flora.

Caudalejeunea lehmanniana (Gottsche) A. Evans, Bull. Torrey Bot. Club 34: 554. 1907. Basionym: *Lejeunea lehmanniana* Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 325. 1845.

Distribution. This species is found in Florida, tropical America, and West Africa.

Cephalozia (Dumort.) Dumort., Rec. Observ. Jungerm.: 18. 1835. Basionym: *Jungermannia* sect. *Cephalozia* Dumort., Syll. Jungerm. 60. 1831. TYPE: *Cephalozia bicuspidata* (L.) Dumort. Basionym: *Jungermannia bicuspidata* L., Sp. Pl. 2: 1132. 1753. [33. CEPHALOZIACEAE.]

In the molecular phylogenetic studies of Vilnet et al. (2012) and Feldberg et al. (2013, 2016), accessions of *Cephalozia* are resolved into two well-defined lineages that are now recognized by most authors to comprise two genera, namely, *Cephalozia* and *Fuscocephaloziopsis* Fulford. *Cephalozia*, as redefined, includes *Metahygrobiella* (Váňa et al., 2013e), which is nested within it (Feldberg et al., 2013). Vilnet et al. (2012) initially applied the name *Pleurocladula* Grolle to the second *Cephalozia* clade because *Pleurocladula* and *Schofieldia* J. D. Godfrey are nested within it, and *Pleurocladula* is an older name than *Schofieldia*. The resolution of *C. infuscata* R. M. Schust. [≡ *F. biloba*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

(Herzog) Fulford] in the *Pleurocladula* clade (Feldberg et al., 2013) prompted Váňa et al. (2013e) to transfer all species relegated to *Pleurocladula* by Vilnet et al. (2012) to *Fuscocephaloziopsis*. In contrast, Potemkin and Sofronova (2013) proposed a very broad circumscription of the genus *Cephalozia* to include *Nowellia* Mitt., *Metahygrobiella* R. M. Schust., and all elements placed in *Fuscocephaloziopsis* in Váňa et al. (2013e), citing a lack of morphological discontinuity among lineages to support their concept. We accept the narrower concept of the genus as presented in Váňa et al. (2013e).

This genus now comprises 26 species, five of which occur in our flora.

Cephalozia affinis Lindb. ex Steph. ≡ **Fuscocephaloziopsis affinis** (Lindb. ex Steph.) Váňa & L. Söderstr.

Cephalozia ambigua C. Massal., Malpighia 21: 310. 1907. ≡ *Cephalozia bicuspidata* (L.) Dumort. subsp. *ambigua* (C. Massal.) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 723. 1974.

Distribution. This is a subarctic-alpine taxon known from Alaska and the northern Pacific coast of western North America and from Greenland and Ellesmere Island south to Quebec and New England, Michigan, and Minnesota. It is also in the British Isles, the Alps, northern Europe, and in Siberia and the Russian Far East.

Cephalozia asperifolia C. E. O. Jensen, Meddel. Gronland 15: 371. 1898, nom. illeg., later homonym (McNeill et al., 2012: Art. 53.1) = **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes.

Cephalozia bicuspidata (L.) Dumort., Recueil Observ. Jungerm.: 18. 1835. Basionym: *Jungermannia bicuspidata* L. Sp. Pl. 2: 1132. 1753. = *Cephalozia bicuspidata* (L.) Dumort. subsp. *lammersiana* (Huebener) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 730. 1974. Basionym: *Jungermannia lammersiana* Huebener, Flora 15: 306. 1832 (syn. fide Paton, 1999: 97).

Distribution. This species is transcontinental in the high Arctic to the taiga, into the deciduous forest of North America from Alaska to Greenland south to Georgia and west to Kansas and Colorado to California. It is also in high elevations from Mexico to Colombia, and is very common in northern Europe to North Africa and also in Asia. Schuster (1974: 715) discounted the reports from Florida.

Cephalozia bicuspidata (L.) Dumort. subsp. *ambigua* (C. Massal.) R. M. Schust. ≡ **Cephalozia ambigua** C. Massal.

Cephalozia bicuspidata (L.) Dumort. subsp. *lammersiana* (Huebener) R. M. Schust. = **Cephalozia bicuspidata** (L.) Dumort.

Cephalozia bicuspidata (L.) Dumort. subsp. *otaruensis* (Steph.) S. Hatt. = **Cephalozia hamatiloba** Steph.

Cephalozia catenulata (Huebener) Lindb. ≡ **Fuscocephaloziopsis catenulata** (Huebner) Váňa & L. Söderstr.

Cephalozia connivens (Dicks.) Lindb. ≡ **Fuscocephaloziopsis connivens** (Dicks.) Váňa & L. Söderstr.

Cephalozia connivens (Dicks.) Lindb. var. *bifida* R. M. Schust. ≡ **Fuscocephaloziopsis connivens** (Dicks.) Váňa & L. Söderstr. var. **bifida** (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov.

Cephalozia connivens (Dicks.) Lindb. var. *compacta* (Warnst.) Nicholson ≡ **Fuscocephaloziopsis connivens** (Dicks.) Váňa & L. Söderstr. var. **compacta** (Warnst.) Stotler & Crand.-Stotl., comb. nov.

Cephalozia hamatiloba Steph., Bull. Herb. Boissier, sér. 2, 8(6): 427. 1908. = *Cephalozia otaruensis* Steph., Sp. Hepat. 6: 434. 1924 (syn. fide Long, 2005: 98). = *Cephalozia bicuspidata* (L.) Dumort. subsp. *otaruensis* (Steph.) S. Hatt., J. Hattori Bot. Lab. 21: 95. 1959.

In their recent checklist for Japan, Katagiri and Furuki (2012: 194) recognized *Cephalozia hamatiloba* and *C. otaruensis* as distinct species.

Distribution. This species is disjunct from North and South Carolina to Southeast Asia and the Russian Far East, including Sakhalin.

Cephalozia lacinulata (J. B. Jack ex Gottsche & Rabenh.) Spruce, Cephalozia: 45. 1882. Basionym: *Jungermannia lacinulata* J. B. Jack ex Gottsche & Rabenh., Hepat. Eur.: No. 624. 1877.

Distribution. This species is found in Ontario, Michigan, Wisconsin, and Minnesota, and is reported from South Carolina by Schuster (1974: 811). It is also in central Europe, Siberia, and Japan.

Cephalozia leucantha Spruce ≡ **Fuscocephaloziopsis leucantha** (Spruce) Váňa & L. Söderstr.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Cephalozia loitlesbergeri Schiffn. ≡ **Fuscocephaloziopsis loitlesbergeri** (Schiffn.) Váňa & L. Söderstr.

Cephalozia lunulifolia (Dumort.) Dumort. ≡ **Fuscocephaloziopsis lunulifolia** (Dumort.) Váňa & L. Söderstr.

Cephalozia macounii (Austin) Austin, Hepat. Bor.-Amer. 14. Exs. 55. 1873. Basionym: *Jungermannia macounii* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 222. 1869.

Distribution. This species is found in British Columbia east to Ontario and New England; it is also in northern and central Europe and Asia.

Cephalozia macrostachya Kaal. subsp. *macrostachya* ≡ **Fuscocephaloziopsis macrostachya** (Kaal.) Váňa & L. Söderstr. subsp. **macrostachya.**

Cephalozia macrostachya Kaal. subsp. *australis* R. M. Schust. ≡ **Fuscocephaloziopsis macrostachya** (Kaal.) Váňa & L. Söderstr. subsp. **australis** (R. M. Schust.) Váňa & L. Söderstr.

Cephalozia otaruensis Steph. = **Cephalozia hamatiloba** Steph.

Cephalozia pachycaulis R. M. Schust. ≡ **Fuscocephaloziopsis pachycaulis** (R. M. Schust.) Váňa & L. Söderstr.

Cephalozia pleniceps (Austin) Lindb. var. *pleniceps* ≡ **Fuscocephaloziopsis pleniceps** (Austin) Váňa & L. Söderstr. var. **pleniceps.**

Cephalozia pleniceps (Austin) Lindb. var. *caroliniana* R. M. Schust. ≡ **Fuscocephaloziopsis pleniceps** (Austin) Váňa & L. Söderstr. var. **caroliniana** (R. M. Schust.) Váňa & L. Söderstr.

Cephalozia pleniceps (Austin) Lindb. var. *sphagnorum* (C. Massal.) Jørg. ≡ **Fuscocephaloziopsis pleniceps** (Austin) Lindb. var. **sphagnorum** (C. Massal.) Stotler & Crand.-Stotl., comb. nov.

Cephaloziella (Spruce) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 98. Sep. 1893 [preprint], nom. cons. *Cephalozia* subg. *Cephaloziella* Spruce, Cephalozia 23, 62. Oct.–Dec. 1882, nom. cons. TYPE: *Cephaloziella divaricata* (Sm.) Schiffn., Krypt.-Fl. Brandenburg, Leber- & Torfm. 3: 320. 1902. Basionym: *Jungermannia divaricata* Sm., Engl. Bot. 10: 719. 1800. ≡ *Cephalozia divaricata* (Sm.) Dumort., Bull. Soc. Roy. Bot. Belgique 13: 89. 1874. [35. CEPHALOZIELLACEAE.]

Schuster (1980a: 35) wrongly credited the name *Cephaloziella* to (Spr.) Steph., and although he listed *Jungermannia divaricata* Sm. as the type, he incorrectly stated that it was a synonym of *C. byssacea* (Roth) Warnst., nom. rej. (App. V: 424, Wiersema et al., 2015).

The number of species recognized in this most difficult genus ranges from "about 40 species worldwide" (Gradstein & Costa, 2003: 61) to about 125 (Paton, 1999: 136). Twenty-four species with 11 varieties are recognized for North America north of Mexico. The genus has a worldwide distribution, ranging from the Arctic to Antarctica. In fact, the first liverwort reported from continental Antarctica was *Cephaloziella* (vide Bednarek-Ochyra et al., 2000: 16).

Cephaloziella arctica Bryhn & Douin ex Müll. Frib. = **Cephaloziella varians** (Gottsche) Steph.

Cephaloziella arctica Bryhn & Douin var. *alpina* R. M. Schust. = **Cephaloziella varians** (Gottsche) Steph.

Cephaloziella arctogena (R. M. Schust.) Konstant., Arctoa 3: 126. 1994. Basionym: *Cephaloziella rubella* (Nees) Warnst. var. *arctogena* R. M. Schust., Meddel. Gronland 199: 314. 1974.≡ *Cephaloziella rubella* (Nees) Warnst. subsp. *arctogena* (R. M. Schust.) R. M. Schust. & Damsh., Beih. Nova Hedwigia 92: 212. 1988.

Distribution. This species is known from Alaska and Greenland, but is now also known from Norway, the Murmansk region of Russia, and Siberia.

Cephaloziella aspericaulis Jørg., Bergens Mus. Skr. 16: 197. 1934. ≡ *Cephaloziella byssacea* (Roth) Warnst. var. *aspericaulis* (Jørg.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 102, nom. illeg.; nom. rej.

We recognize *Cephaloziella aspericaulis* as a distinct species, as does Damsholt (2013). Additionally, although Konstantinova et al. (2009: 42) reduced *C. divaricata* var. *scabra* to it, we recognize that as a distinct taxon as also did Hong (1986) and Doyle and Stotler (2006).

Distribution. This species is known only from Greenland, Scandinavia, and Russia.

Cephaloziella biloba (Lindb. ex Spruce) Müll. Frib. = **Cephaloziella hampeana** (Nees) Schiffn. ex Loeske.

Cephaloziella brinkmanii Douin, Mém. Soc. Bot. France 29: 75. 1920, as "*brinkmanni.*"

Douin (1920: 75) gave no specimen information for this new species other than "États-Unis," although the original material was apparently from Canada, based upon a specimen collected by A. H. Brinkman. In keeping with Article 60.12 (McNeill et al., 2012), the corrected spelling of the epithet is "*brinkmanii*," not

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

"*brinkmanni*" as originally spelled by Douin (1920: 75). Schofield (1968a: 157) included it in his checklist and stated that it was known only from Yoho National Park, British Columbia. Hong (1986: 159) based his treatment of this species upon Brinkman 704 (YU) from Lake O'Hara, an alpine region at 2115 m in Yoho National Park, British Columbia. This is the same specimen cited by Frye and Clark (1945: 531).

Distribution. This is a rare species endemic to British Columbia.

Cephaloziella byssacea (Roth) Warnst., Krypt.-Fl. Brandenburg, Leber- & Torfm. 1(2): 224. 1902. Basionym: *Jungermannia byssacea* Roth, Tent. Fl. Germ. 3: 307. 1799, nom. rej.

The name *Jungermannia byssacea* is a "nomina utique rejicienda" or rejected name listed in the ICN (Wiersema et al., 2015: 424) and is not to be used. Plants identified as *Cephaloziella byssacea* are most likely referable to *C. divaricata*.

Cephaloziella byssacea (Roth) Warnst. var. *aspericaulis* (Jørg.) R. M. Schust., nom. illeg. [≡ **Cephaloziella aspericaulis** Jørg.].

Cephaloziella byssacea (Roth) Warnst. var. *asperifolia* Macvicar, nom. illeg. [= **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes].

Cephaloziella byssacea (Roth) Warnst. var. *polystratosa* R. M. Schust. & Damsh., nom. illeg. [≡ **Cephaloziella polystratosa** (R. M. Schust. & Damsh.) Konstant.].

Cephaloziella byssacea (Roth) Warnst. var. *scabra* (M. Howe) R. M. Schust., nom. illeg. [= **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes].

Cephaloziella dentata (Raddi) Steph., Bull. Herb. Boissier 5: 78. 1897. Basionym: *Jungermannia dentata* Raddi, Jungermanniogr. Etrusca: 21. 1818.

In our checklist (Stotler & Crandall-Stotler, 1977: 410) we followed Grolle (1976: 187) citing *Cephaloziella dentata* (Raddi) Migula, but it was later pointed out (Grolle & Long, 2000: 122) that Stephani had actually made that combination prior to Migula. Schofield (1968a) cited this species from British Columbia without specific locality, whereas Hong (1986: 161) remarked that it was not available for study and that the occurrence of it in North America was doubtful since it has a center of distribution in the Mediterranean area. Unless *C. dentata* is confirmed for western North America, it should be excluded from our flora.

Distribution. This species is reported from British Columbia. In her British flora, Paton (1999: 152) stated "our rarest *Cephaloziella* sp." but cited its occurrence in several countries in Europe.

Cephaloziella divaricata (Sm.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 99. Sep. 1893 [preprint], var. **divaricata**. Basionym: *Jungermannia divaricata* Sm., Engl. Bot. 10: 719. 1800.

This is the correct name for plants with the name *Cephaloziella byssacea* (nom. rej.) and also for plants identified as *C. starkei* (Funck ex Nees) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 48 [n.s. vol. 20]: 341. 1900. (Basionym: *Jungermannia starkei* Funck ex Nees, Naturgesch. Eur. Leberm. 2: 215. 1836.) Unfortunately, even though *C. byssacea* had been effectively rejected for several years (Zijlstra, 1999: 563), Schuster (2002b: 127) has persisted in using this incorrect name.

Distribution. This variety is found in North America and ranges from Alaska south to California and Arizona in the west and from Greenland to Tennessee and Georgia in the east, but is lacking in high Arctic regions; elsewhere it is a widespread circumarctic to circumboreal and subantarctic species.

Cephaloziella divaricata (Sm.) Schiffn. var. *asperifolia* (Taylor) Damsh. = **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes.

Cephaloziella divaricata (Sm.) Schiffn. var. *polystratosa* (R. M. Schust. & Damsh.) Potemkin. ≡ **Cephaloziella polystratosa** (R. M. Schust. & Damsh.) Konstant.

Cephaloziella divaricata var. **scabra** (M. Howe) Haynes, Bryologist 12: 68. 1909. Basionym: *Cephalozia divaricata* (Sm.) Schiffn. var. *scabra* M. Howe, Mem. Torrey Bot. Club 7: 129. 1899. = *Cephaloziella byssacea* (Roth) Warnst. var. *asperifolia* (C. E. O. Jensen) Macvicar, Stud. Handb. Brit. Hepat.: 275. 1912. Basionym: *Cephalozia asperifolia* C. E. O. Jensen, Meddel. Gronland 15: 371. 1898, nom. illeg.; later homonym (McNeill et al., 2012: Art. 53) = *Cephaloziella divaricata* (Sm.) Schiffn. var. *asperifolia* (Taylor) Damsh., Ill. Fl. Nord. Liverw. & Hornw.: 548. 2002. Basionym: *Jungermannia asperifolia* Taylor, London J. Bot. 5: 277. 1846 = *Cephaloziella byssacea* var. *scabra* (M. Howe) R. M. Schust., Amer. Midl. Naturalist 42: 548. 1949, nom. illeg., nom. rej. = *Cephaloziella starkei* var. *scabra* (M. Howe) L. Clark & Frye, Publ. Puget Sound Biol. Sta. 6: 106. 1928., syn. nov. = *Cephaloziella holzingeri* Douin, Mém. Soc. Bot. France 29: 73. 1920 (synonym of *C. byssacea* var. *scabra* fide Schuster, 1953: 497). = *Cephaloziella scabrifolia* Douin & Schiffn., Mém. Soc. Bot. France 29: 66. 1920, syn. nov.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

The citation of "(Taylor) Macvicar" for the epithet "*asperifolia*" that is frequently seen is incorrect. When Macvicar (1912: 275) relegated this taxon to a variety he stipulated "non *Jung. asperifolia* Tayl." with his new combination and he wrote "(Jens.)" as the parenthetical author. These are heterotypic taxa. According to Bonner (1963), the C. E. O. Jensen type of *Cephalozia asperifolia* is from Greenland, whereas *Cephalozia asperifolia* (Taylor) Trevis. (Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat. 4: 417. 1877) based upon *Jungermannia asperifolia* Taylor is from Madeira. Futhermore, *Cephalozia asperifolia* C. E. O. Jensen is an illegitimate name, being a later homonym of *Cephalozia asperifolia* (Taylor) Trevis. Regardless, when Macvicar named this variety, he included "*Cephalozia divaricata* (Sm.) Schiffn. var. *scabra* Howe" in synonymy, which must be the correct name because of priority at that rank. In fact, it is problematic whether the Greenland plants are the same as the plants from Madeira, i.e., the Taylor material. *Cephaloziella holzingeri* Douin and *Cephaloziella scabrifolia* Douin & Schiffn., which are now regarded as synonyms of *Cephaloziella divaricata* var. *scabra*, were excluded from North America in our previous checklist (Stotler & Crandall-Stotler, 1977: 419), but this was incorrect because they were both described from North American material.

Distribution. This is a widespread variety with basically the same range as *Cephaloziella divaricata* var. *divaricata*.

Cephaloziella elachista (J. B. Jack ex Gottsche & Rabenh.) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 48 [n.s. vol. 20]: 338. 1900. Basionym: *Jungermannia elachista* J. B. Jack ex Gottsche & Rabenh., Hepat. Eur. 574. 1873. = *Cephaloziella grimsulana* (J. B. Jack ex Gottsche & Rabenh.) Lacout. var. *angustiloba* (Douin) Jørg., Bergens Mus. Skr. [= Norg. Leverm.] 16: 194. 1934, syn. nov. Basionym: *Cephaloziella angustiloba* Douin, Mém. Soc. Bot. France 29: 70, 77. 1920.

Schuster (1980a: 67) treated *Cephaloziella grimsulana* var. *angustiloba* as a form of *C. elachista*. In our checklist (Stotler & Crandall-Stotler, 1977: 410) we credited Jack with the authorship of the epithet "*elachista*," but it was actually validly published by Gottsche and Rabenhorst (1873) and ascribed to J. B. Jack.

Distribution. This species is restricted to the eastern part of North America, but is widespread in Europe.

Cephaloziella elegans (Heeg) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 48 [n.s. vol. 20]: 336. 1900. Basionym: *Cephalozia elegans* Heeg, Rev. Bryol. 20: 82. 1893. ≡ *Cephaloziella rubella* (Nees) Warnst. var. *elegans* (Heeg) R. M. Schust.

This species was treated as *Cephaloziella rubella* (Nees) Warnst. var. *elegans* (Heeg) R. M. Schust. in our previous checklist (Stotler & Crandall-Stotler, 1977: 419) and by Schuster (1980a: 128).

Distribution. This is a boreal species reported from Alaska and eastern North America from Ontario south to Vermont and west to Iowa and Minnesota. It is also found in Europe, northern Russia, and Siberia.

Cephaloziella gracillima (Douin) Douin = **Cephaloziella stellulifera** (Taylor ex Carrington & Pearson) Croz.

Cephaloziella grimsulana (J. B. Jack ex Gottsche & Rabenh.) Lacout., Hépat. France: 52. 1905. Basionym: *Jungermannia grimsulana* J. B. Jack ex Gottsche & Rabenh., Hepat. Eur., 526. 1872.

In our checklist (Stotler & Crandall-Stotler, 1977: 410) we credited the name "*grimsulana*" to Jack, but it was actually validly published by Gottsche and Rabenhorst (1872) and ascribed to J. B. Jack.

Distribution. This species is known in North America only from Alaska, Greenland, and Ellesmere Island to New Brunswick, but it is of fairly widespread occurrence in Europe into Asia.

Cephaloziella grimsulana (J. B. Jack ex Gottsche & Rabenh.) Lacout. var. *angustiloba* (Douin) Jørg. = **Cephaloziella elachista** (J. B. Jack ex Gottsche & Rabenh.) Schiffn.

Cephaloziella hampeana (Nees) Schiffn. ex Loeske, Moosfl. Harz.: 92. 1903. Basionym: *Jungermannia hampeana* Nees, Naturgesch. Eur. Leberm. 3: 560. 1838. = *Cephaloziella biloba* (Lindb. ex Spruce) Müll. Frib., Lebermoose: 174. 1913. Basionym: *Cephalozia biloba* Lindb. ex Spruce, Cephalozia: 66. 1882 (syn. fide Müller, 1956: 1032, as *Cephalozia biloba*).

In Stotler and Crandall-Stotler (1977: 410) Lindberg was cited as the author of the epithet "biloba," but Spruce (1882: 66) actually published this name, ascribing it to Lindberg. We included *Cephaloziella biloba* as part of the North American flora (Stotler & Crandall-Stotler, 1977: 410) based upon treatments by Frye and Clark (1945: 523) and Polunin (1947: 498), having overlooked the fact that Müller (1913: 174) had reduced "*Cephalozia biloba* Lindberg bei Spruce" (with no mention of his "*Cephaloziella biloba* (Lindbg.) K. M.") to *Cephaloziella hampeana*. The

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

type specimen of *Cephaloziella biloba* is from near Helsinki, and the distribution cited in Müller (1913: 176) included Finland, Norway, and the American Arctic. It is curious that *Cephaloziella biloba* is not even mentioned, either as a recognized species or as a synonym, in any of the following treatments: Koponen et al. (1977), Schuster (1980a), Grolle and Long (2000), and Damsholt (2009). Schuster (1951: 46) did, however, include *Cephaloziella biloba* in his table of the Hepaticae in the Canadian eastern Arctic, with reference to Polunin as "x?" Obviously, the type of *Cephaloziella biloba* should be reevaluated and compared with the type of *Cephaloziella hampeana*.

Distribution. This species is transcontinental and is found in the temperate-boreal forests of North America from Alaska south to California and Arizona and in the east from Greenland and Ellesmere Island to Baffin Island, south to North Carolina and west to Michigan, Minnesota, and Kansas. It is very common in Scandinavia into central and southern Europe from the British Isles to Spain, Italy, Romania, and into southwest Russia. In Asia it is reported from Turkey, Siberia, the Russian Far East, and Japan.

Cephaloziella holzingeri Douin = **Cephaloziella divaricata** var. **scabra** (M. Howe) Haynes.

Cephaloziella hyalina Douin, Mém. Soc. Bot. France 29: 77. 1920, var. **hyalina**.

Both Frye and Clark (1945: 539) and Schuster (1980a: 49) accepted the reduction of *Cephaloziella rambolitanensis* Douin from France (Douin, 1916) to *C. hyalina* Douin from Florida by Douin (1920). If these heterotypic taxa are combined, *C. rambolitanensis* has priority and is the correct name. Earlier, Haynes and Evans (1925) included *C. rambolitanensis* but not *C. hyalina* for North America, but later Buch et al. (1937) and Evans (1940) listed only *C. hyalina*, in both cases without comment. However, as Müller (1947) pointed out, *C. rambolitanensis* was cultivated from "Keimkörnern" (gemmae) of *C. gracillima* (= *C. stellulifera*) by Douin. Based upon his discussion, we exclude *C. rambolitanensis* from North America and do not consider it a synonym of *C. hyalina*.

Distribution. This species is restricted to the Gulf Coastal Plain from Arkansas and Texas east to Florida and North Carolina. Schuster (1980a: 52) also stated that it occurs rarely northward to Ohio and New York.

Cephaloziella hyalina var. **rappii** (Douin) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 56. 1980. Basionym: *Cephaloziella rappii* Douin, Mém. Soc. Bot. France 29: 77. 1920.

Distribution. This variety is endemic to central Florida.

Cephaloziella integerrima (Lindb.) Warnst., Krypt.-Fl. Brandenburg, Leber- & Torfm. 1(2): 232. 1902. Basionym: *Cephalozia integerrima* Lindb., Acta Soc. Sci. Fenn. 10: 502. 1875. ≡ *Dichiton integerrimum* (Lindb.) H. Buch, Suomen Maksasammalet: 52. 1936.

Konstantinova et al. (2009: 13) treated this as a species in the genus *Dichiton*, which we do not recognize. Though *Dichiton* is an older generic name, *Cephaloziella* is conserved against it. Schuster (1988) stated that earlier reports of this species from continental North America were based upon errors and that it is confirmed only from Greenland and Europe. Potemkin (1995: 325) reported it from Alaska.

Distribution. This species is found in Alaska, Greenland, and Europe.

Cephaloziella lorenziana Douin = **Cephaloziella varians** (Gottsche) Steph.

Cephaloziella mammillifera R. M. Schust. & Damsh., Phytologia 63: 327. 1987. = *Cephaloziella varians* (Gottsche) Steph. var. *scabra* (S. W. Arnell) Damsh., Ill. Fl. Nord. Liverw. & Hornw.: 570. 2002. Basionym: *Cephaloziella arctica* var. *scabra* S. W. Arnell, Bot. Not. 1950: 86. 1950. (syn. fide Damsholt, 2013: 480.)

Note that because of the papillae and teeth on the dorsal leaf surface, S. W. Arnell (1950: 86) named his variety "*scabra*," stating that it was a parallel form of "*C. Starkei* var. *scabra* Howe." He did not transfer the variety *scabra* of M. Howe from *Cephaloziella starkei to C. arctica*.

Distribution. This species is found in South Greenland and possibly in the Scandinavian Mountains in Europe.

Cephaloziella massalongoi (Spruce) Müll. Frib., Lebermoose 191. 1913, as "*massalongi*." Basionym: *Cephalozia massalongoi* Spruce, Cephalozia: 71. 1882, as "*massalongi*."

When Spruce (1882: 71) chose to name this taxon after C. Massalongo, he rendered the epithet by replacing the final "o" with an "i," which was then followed by K. Müller (see above) when he transferred it to *Cephaloziella*. However, the epithet should be correctly cited as "*massalongoi*" under Article 60.12 (McNeill et al., 2012).

Distribution. This species is known from British Columbia in the west, and Vermont and Tennessee in the east. It is more widespread in Europe.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Cephaloziella minima (Austin ex Pearson) Douin = **Cephaloziella rubella** (Nees) Warnst. var. **sullivantii** (Austin) Müll. Frib.

Cephaloziella obtusilobula R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 108. 1980.

Distribution. This species is a southern Appalachian endemic.

Cephaloziella patulifolia (Steph.) Douin, Mém. Soc. Bot. France 29: 70. 1920. Basionym: *Cephalozia patulifolia* Steph., Sp. Hepat. 3: 339. 1908.

Cephalozia patulifolia Steph. was described from a California collection of H. Bolander (Stephani, 1908: 339). Although Stephani remarked that Howe's *Cephaloziella divaricata* var. *scabra* might belong here, that taxon is still regarded as distinct. Hong (1986: 161) included *Cephaloziella patulifolia* as a species not available for study, and Doyle and Stotler (2006) made no mention of it in their California catalogue. However, until the original material from California is evaluated, this problematic species must be included in our flora.

Distribution. This species is apparently known only from the Californian type.

Cephaloziella phyllacantha (C. Massal. & Carestia) Müll. Frib., Lebermoose: 194. 1913. Basionym: *Anthelia phyllacantha* C. Massal. & Carestia, Nuovo Giorn. Bot. Ital. 12: 340. 1880.

Distribution. This species is reported only from British Columbia and South Greenland in North America, but is fairly common in Europe.

Cephaloziella polystratosa (R. M. Schust. & Damsh.) Konstant., Bot. Zhurn. (Moscow & Leningrad) 85(10): 127. 2000. Basionym: *Cephaloziella byssacea* (Roth) Warnst. var. *polystratosa* R. M. Schust. & Damsh., Phytologia 63: 327. 1987. ≡ *Cephaloziella divaricata* (Sm.) Schiffn. var. *polystratosa* (R. M. Schust. & Damsh.) Potemkin, Arctoa 2: 95. 1993.

Distribution. This species is reported from Greenland and Russia.

Cephaloziella rambolitanensis Douin, Revue Générale de Botanique 28: 281, pl. 15. 1916. —EXCLUDED. [See *Cephaloziella hyalina*.]

Cephaloziella rappii Douin = **Cephaloziella hyalina** Douin var. **rappii** (Douin) R. M. Schust.

Cephaloziella rubella (Nees) Warnst., Krypt.-Fl. Brandenburg, Leber- Torfm. 1(2): 231. 1902, var. **rubella**. Basionym: *Jungermannia rubella* Nees, Naturgesch. Eur. Leberm. 2: 236. 1836.

Distribution. This variety is widespread, from Greenland to Alaska south through the eastern United States and in New Mexico and Arizona in the west. It is also widespread in Europe.

Cephaloziella rubella (Nees) Warnst. var. *arctogena* R. M. Schust. ≡ **Cephaloziella arctogena** (R. M. Schust.) Konstant.

Cephaloziella rubella (Nees) Warnst. subsp. *arctogena* (R. M. Schust.) R. M. Schust. & Damsh. ≡ **Cephaloziella arctogena** (R. M. Schust.) Konstant.

Cephaloziella rubella var. **bifida** (Schmidel ex Hoffm.) Douin, Mém. Soc. Bot. France 29: 83. 1920. Basionym: *Jungermannia bifida* Schmidel ex. Hoffm., Deutschl. Fl. (Hoffm.): 12 (addenda). 1795 [1796]. ≡ *Cephalozia bifida* Lindb., Musc. Scand.: 4. 1879. ≡ *Cephaloziella bifida* (Schmidel ex. Hoffm.) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 48 [n.s. vol. 20]: 340. 1900.

Distribution. This species is reported to occur sporadically in northeastern parts of the United States and in Ontario. It likewise occurs in Europe.

Cephaloziella rubella (Nees) Warnst. var. *elegans* (Heeg) R. M. Schust. ≡ **Cephaloziella elegans** (Heeg) Schiffn.

Cephaloziella rubella var. **pulchella** (C. E. O. Jensen) R. M. Schust., Amer. Midl. Naturalist 49: 491. 1953. Basionym: *Cephalozia pulchella* C. E. O. Jensen, Rev. Bryol. 20: 67. 1893. ≡ *Cephaloziella pulchella* (C. E. O. Jensen) Douin, Mém. Soc. Bot. France 29: 84. 1920.

In our checklist (Stotler & Crandall-Stotler, 1977: 419) we reduced this variety to *Cephaloziella rubella* (Nees) Warnst. var. *rubella* but reinstate it here since both Schuster (1980a) and Damsholt (2013) recognized it.

Distribution. This variety is reported from Minnesota, Greenland, and northern Europe.

Cephaloziella rubella var. **sullivantii** (Austin) Müll. Frib., Leberm. Eur. 6: 1031. 1956. Basionym: *Jungermannia sullivantii* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 221. 1869. = *Cephaloziella minima* (Austin ex Pearson) Douin, Mém. Soc. Bot. France 29: 72. 1920. Basionym: *Cephalozia minima*

This content downloaded from 146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Austin ex Pearson, Geol. Nat. Hist. Surv. Canada, Ser. 3: 11. 1890. (syn. fide Schuster, 1980a: 133).

We incorrectly listed Austin as the describing author of *Cephalozia minima* in our checklist (Stotler & Crandall-Stotler, 1977: 411), but Pearson (1890: 11) validly published the name, which he ascribed to Austin.

Distribution. This variety is found in eastern North America from Ontario south to South Carolina and west to Ohio, Michigan, and Minnesota; it is also in western temperate Europe.

Cephaloziella scabrifolia Douin & Schiffn. = **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes.

Cephaloziella spinicaulis Douin, Mém. Soc. Bot. France 29: 62. 1920.

Distribution. Schuster (1980a: 104) refers to this species as a relict Appalachian–east Asiatic element, with specimens cited from Connecticut, Virginia, North Carolina, and Tennessee, as well as from Japan and Korea.

Cephaloziella spinigera (Lindb.) Warnst., Hedwigia 53: 224. 1913. Basionym: *Cephalozia spinigera* Lindb., Musci Scand.: 4. 1879 [1880]. = *Cephaloziella subdentata* Warnst., Krypt.-Fl. Brandenburg, Leber- & Torfm. 1(2): 234. 1902 (syn. fide Schuster, 1980a: 68).

Although Schuster (1980a: 68) credited the combination of *Cephaloziella spinigera* to Jørgensen (Bergens Mus. Skr. 16: 189. 1934), Warnstorf had effected the new combination in 1913.

Distribution. This species is found in western North America from Alaska to British Columbia and in the east from Greenland to New York, west to Minnesota. It is found in Europe east through Siberia.

Cephaloziella starkei var. *scabra* (M. Howe) L. Clark & Frye = **Cephaloziella divaricata** (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes.

Cephaloziella stellulifera (Taylor ex Carrington & Pearson) Croz., Rev. Bryol. 30(2): 31. 1903. Basionym: *Jungermannia stellulifera* Taylor ex Carrington & Pearson, Hep. Brit. Exsicc. n. 32. 1878. = *Cephaloziella gracillima* (Douin) Douin, Mém. Soc. Sci. Nat. Cherbourg 35: 257. 1906 (syn. fide Schuster, 1980a: 166). Basionym: *Cephalozia stellulifera* (Taylor ex Carrington & Pearson) Croz. var. *gracillima* Douin, Bull. Soc. Bot. France 52: 259. 1905. ≡ *Cephalozia gracillima* (Douin) Steph., Sp. Hepat. 3: 324. 1908.

In our checklist (Stotler & Crandall-Stotler, 1977: 419) we incorrectly listed *Cephaloziella stellulifera* (Tayl.) Schiffn. as an excluded species and placed *C. stellulifera* var. *gracillima* Douin as a synonym of *C. gracillima* (Douin) Douin. These taxa are now regarded as conspecific and since *C. stellulifera* has priority, it is the correct name. Valid publication of the epithet "*stellulifera*" was effected by Carrington and Pearson and ascribed to Taylor (vide Geissler & Bischler, 1987: 168). The inclusion of this name in Gottsche et al. (1844: 134) was merely citation as a synonym and does not constitute valid publication. Schiffner (1905) is generally cited as the combining author of *C. stellulifera*, but the combination was actually published earlier by Crozals (1903). Although he acknowledged Schiffner for identifying his specimens of *Cephaloziella*, Crozals (1903) must be regarded as the combining author.

Distribution. This species is restricted to the northeastern portion of North America, but is widespread in Europe.

Cephaloziella subdentata Warnst. = **Cephaloziella spinigera** (Lindb.) Warnst.

Cephaloziella turneri (Hook.) Müll. Frib., Lebermoose: 202. 1913. Basionym: *Jungermannia turneri* Hook., Brit. Jungermann. pl. 29. 1816.

Distribution. This species is restricted to the Pacific Northwest in North America; it is a Mediterranean-Atlantic species in Europe.

Cephaloziella uncinata R. M. Schust., Meddel. Gronland 199: 316. 1974, var. **uncinata**.

It is curious that in his North American flora, Schuster (1980a: 155) treated *Cephaloziella uncinata* but made no mention of any varieties. However, several varieties are still recognized by Damsholt (2013: 485). Among these is "*Cephaloziella uncinata* R. M. Schust. var. *mammillosa* R. M. Schust. & Damsh.," Beih. Nova Hedwigia 92: 223. 1988, which was never validly published. A Latin diagnosis was not provided with the original description and naming (Schuster, 1988), as required by Article 39 (McNeill et al., 2012). Damsholt (2013: 487) later provided the necessary Latin description, but failed to specify the herbarium of deposit of the type specimen, so the name remains invalid (Art. 40.7).

Distribution. This circumarctic variety occurs from Alaska to Greenland in North America and in Norway, northern Russia, and Siberia.

Cephaloziella uncinata var. **brevigyna** R. M. Schust. & Damsh., Phytologia 65: 327. 1987.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This variety is found in South Greenland.

Cephaloziella uncinata var. **sphagnicola** R. M. Schust., Meddel. Gronland 199: 323. 1974.

Distribution. This variety is known only from the type specimen from West Greenland.

Cephaloziella varians (Gottsche) Steph., Wiss. Ergebn. Schwed. Südpolar-Exped. 1901–1903 4(1): 4. 1905. Basionym: *Jungermannia varians* Gottsche, Int. Polarforsch, Deutsch. Exped. 2: 452. 1890. ≡ *Cephalozia varians* (Gottsche) Steph., Voy. Belgica, Hépat. 5. 1901. = *Cephaloziella arctica* Bryhn & Douin ex Müll. Frib., Lebermoose 2: 159. 1913. Müller (1913: 159) effected valid publication of this binomial, ascribing it to Bryhn and Douin (syn. fide Ochyra & Váňa, 1989: 197). = *Cephaloziella arctica* Bryhn & Douin ex Müll. Frib. var. *alpina* (Douin) R. M. Schust., Bull. Nat. Mus. Canada 122: 31. 1951. Basionym: *Cephaloziella alpina* Douin, Rev. Gén. Bot. 28: 269. 1916 (syn. fide Konstantinova et al., 2009: 42). = *Cephaloziella varians* (Gottsche) Steph. var. *arctica* (Bryhn & Douin ex Müll. Frib.) Damsh, Ill. Fl. Nord. Liverw. & Hornw.: 570. 2002 (syn. fide Konstantinova et al., 2009: 42). = *Cephaloziella lorenziana* Douin, Mém. Soc. Bot. France 29: 70. 1920, syn. nov.

In our checklist (Stotler & Crandall-Stotler, 1977: 419) *Cephaloziella lorenziana* was treated as an excluded name, but its exclusion was incorrect because Douin (1920) cited only "États-Unis" for this species. However, based upon the reduction of *C. lorenziana* to *C. arctica* (= *C. varians*) by Schuster (1980a: 145), we here make this a new synonym.

Distribution. This species is found in North America from Alaska south to British Columbia, Colorado, and California and east to Greenland, southward to New England, Michigan, and Minnesota; elsewhere it is a widespread bipolar species.

Ceratolejeunea (Spruce) J. B. Jack & Steph., Hedwigia 31: 16. 1892. Basionym: *Lejeunea* subg. *Cerato-Lejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 198. 1884. TYPE: *Ceratolejeunea cubensis* (Mont.) Schiffn., in Engler & Prantl, Nat. Pflanzenfam. 1, 3: 125. 1893. Basionym: *Lejeunea cubensis* Mont., Hist. Phys. Cuba, Bot. Pl. Cell: 481. 1842 [fide Grolle, 1983a: 10]. [29. LEJEUNEACEAE.]

Considerable confusion has existed over the authorship of this generic name and its type. Dauphin (2003: 22) pointed out that it had been variously cited as *Ceratolejeunea* (Spruce) Steph., *Ceratolejeunea* (Spruce) Schiffn., and *Ceratolejeunea* Jack & Steph., which Dauphin (2003) adopted. The taxon was first described as *Lejeunea* subg. *Cerato-Lejeunea* by Spruce in 1884. Grolle (1983a) interpreted that the publication of *C. grandiloba* by Jack and Stephani (1892) constituted a "descriptio generic-specifica" of a monotypic genus under Article 38.5 (McNeill et al., 2012), thereby rendering it a validly published genus. Following Article 41.4, the new generic name is considered a new combination, so the correct citation is *Ceratolejeunea* (Spruce) J. B. Jack & Steph., and the type of the genus remains that of the subgenus. The type has been variously indicated as *C. plumula* (Spruce) Steph. (Evans, 1920), *C. cornuta* (Lindenb.) Steph. (Fulford, 1945; Vanden Berghen, 1948; Schuster, 1980a), *C. cubensis* (Mont.) Schiffn. (Grolle, 1983a), and *C. grandiloba* J. B. Jack & Steph. (Dauphin, 2003). The designation by Evans (1920) is rejected as purely mechanical (McNeill et al., 2012: Art. 10.5b), and the designations of *C. cornuta* and *C. grandiloba* are rejected because they were not explicitly included by Spruce in his subgenus (McNeill et al., 2012: Art. 10.2). The lectotypification by Grolle (1983a) is appropriate and accepted herein.

Ceratolejeunea is a pantropical genus of 30 species with four in our flora.

Ceratolejeunea ceratantha (Nees & Mont.) Schiffn., Bot. Jahrb. 23: 582. 1897. Basionym: *Lejeunea ceratantha* Nees & Mont. in Montagne, Ann. Sci. Nat. sér. 2. Bot., 14: 335. 1840.

Distribution. This species is found in Florida, the Caribbean, the Guianas, and Brazil.

Ceratolejeunea confusa R. M. Schust., J. Elisha Mitchell Sci. Soc. 72: 313. 1956. —EXCLUDED.

Although we included this species in our checklist (Stotler & Crandall-Stotler, 1977: 411), according to Dauphin (2003: 40) it is restricted to Costa Rica, Trinidad, Chocó, and Amazonia.

Ceratolejeunea cubensis (Mont.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 185. Sep. 1893 [preprint]. Basionym: *Lejeunea cubensis* Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 481. 1842.

Distribution. This species is found in Florida and throughout tropical America.

Ceratolejeunea guianensis (Nees & Mont.) Steph., Sp. Hepat. 5: 416. 1913. Basionym: *Lejeunea guianensis* Nees & Mont. in Montagne, Ann. Sci. Nat., Bot., sér. 2, 14: 335. 1840.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

This species was listed as excluded in our checklist (Stotler & Crandall-Stotler, 1977: 419) and not treated for North America by Schuster (1980a), but Dauphin (2003: 61) cited a specimen collected by R. Schuster from Levy County, Florida.

Distribution. This species is found in Florida, Cuba, and the Amazon basin.

Ceratolejeunea laetefusca (Austin) R. M. Schust., J. Elisha Mitchell Sci. Soc. 72: 306. 1956. Basionym: *Lejeunea laetefusca* Austin, Bot. Bull. 1: 36. 1876, as "*laete-fusca*."

Although the original spelling for the basionym was written "*Lejeunea laete-fusca*" by Austin (1876: 36), following Article 60.9 (McNeill et al., 2012) the use of the hyphen is to be treated as an orthographic error to be corrected by deletion.

Distribution. This species is found in the southeastern United States and throughout the Neotropics.

Ceratolejeunea rubiginosa Steph., Hedwigia 34: 237. 1895. —EXCLUDED.

We included this in our checklist (Stotler & Crandall-Stotler, 1977: 411) based upon Fulford (1945: 399), but according to Dauphin (2003: 77) this species is restricted to the Caribbean, Costa Rica, and Cocos Island. Two specimens were cited by both Fulford (1945) and later by Schuster (1980a: 916) from Florida. One of these, namely *Small & Carter 1431* (NY), is treated by Dauphin (2003: 37) as *Ceratolejeunea ceratantha*; the other, *Small & Wilson 1527* (NY), is included under *C. cubensis* by Dauphin (2003: 49).

Chandonanthus Mitt. in Hooker, Handb. N. Zeal. Fl. 2: 753. 1867. —EXCLUDED.

The species of this genus that were previously known from our flora have been transferred to either *Plicanthus* R. M. Schust. or *Tetralophozia* (R. M. Schust.) Schljakov.

Chandonanthus hirtellus (F. Weber) Mitt. ≡ **Plicanthus hirtellus** (F. Weber) R. M. Schust.

Chandonanthus filiformis Steph. ≡ **Tetralophozia filiformis** (Steph.) Urmi.

Chandonanthus setiformis (Ehrh.) Lindb. ≡ **Tetralophozia setiformis** (Ehrh.) Schljakov.

Cheilolejeunea (Spruce) Steph., Bot. Gaz. 15: 284. Nov. 1890, nom. cons. Basionym: *Lejeunea* subg. *Cheilolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 79, 251. Apr. 1884. TYPE: *Cheilolejeunea decidua* (Spruce) Evans, Bull. Torrey Bot. Club 32: 188. 1905. Basionym: *Lejeunea* (*Cheilolejeunea*) *decidua* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 253. = *Cheilolejeunea adnata* (Kunze ex Lehm.) Grolle, J. Bryol. 9: 529. 1977. Basionym: *Jungermannia adnata* Kunze ex Lehm., Nov. Stirp. Pug. 6: 46. 1834. [29. LEJEUNEACEAE.]

As Grolle (1979c) pointed out, the use of *Cheilolejeunea* by Stephani in Hedwigia (March–April 1890a) cannot be considered as valid publication of that genus name because the genus was not provided with a description and two species were included. However, a later Stephani publication in *Botanical Gazette* (November 1890b) does constitute valid publication of the genus name under Article 38.5 (McNeill et al., 2012) because, in this publication, it is a monotypic genus with a "descriptio generic-specifica" of *Cheilolejeunea kurzii* Steph. As with *Ceratolejeunea*, that new generic name, however, is to be treated as based upon the Spruce (1884) generic name following Article 41.4 (McNeill et al., 2012), even though *Lejeunea* subg. *Cheilo-Lejeunea* was not indicated or mentioned in the protologue of Stephani. Although Evans (1906) had designated *Cheilolejeunea aneogyna* (Spruce) A. Evans as the type species for the genus, Grolle (1979c: 337) showed that species to be in conflict with accepted concepts of *Cheilolejeunea* and transferred that species to the genus *Trachylejeunea* (Spruce) Steph., later designating *Cheilolejeunea decidua* (Spruce) A. Evans as the new lectotype (Grolle, 1983a: 10). Schuster (1980b) rejected the Grolle (1979c) lectotypification of *Cheilolejeunea*, and instead continued to regard *Cheilolejeunea aenogyna* (Spruce) A. Evans as the type species of the genus. However, as discussed by Söderström et al. (2015) and as listed in Wiersema et al. (2015: 121), *Cheilolejeunea decidua* (Spruce) A. Evans is the accepted type species of the genus. *Cheilolejeunea* is now considered to include *Euosmolejeunea* (Spruce) Steph. (Basionym: *Lejeunea* subg. *Euosmolejeunea* Spruce) and *Leucolejeunea* A. Evans. In a publication by Wilson et al. (2007) it was suggested that *Leucolejeunea* should be reduced to *Cheilolejeunea*. Shortly after, the African *Leucolejeunea* species were transferred to *Cheilolejeunea* by Malombe (2009) when he formally reduced *Leucolejeunea* to *Cheilolejeunea*. In the recent molecular study of the genus by Ye and Zhu (2010), the type species of both *Cheilolejeunea* and *Leucolejeunea* were sequenced, and the two genera were shown to be congeneric.

Cheilolejeunea is a genus of approximately 150 species, with 10 in our flora.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Cheilolejeunea adnata (Kunze ex Lehm.) Grolle, J. Bryol. 9: 529. 1977, var. **adnata**. Basionym: *Jungermannia adnata* Kunze ex Lehm., Nov. Stirp. Pug. 6: 46. 1834. = *Cheilolejeunea decidua* (Spruce) A. Evans, Bull. Torrey Bot. Club 32: 188. 1905 (syn. fide Grolle, 1977: 530). Basionym: *Lejeunea decidua* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 257. 1884.

The correct parenthetical author citation for *Cheilolejeunea adnata* is "(Kunze ex Lehm.)" since Lehmann (1834: 46) ascribed the specific epithet of the basionym to Kunze when he described that species. When Gradstein and Ilkiu-Borges named *C. adnata* var. *autoica* from French Guiana, it automatically created the autonym *C. adnata* var. *adnata*.

Distribution. This variety is found in southern Florida and the West Indies into eastern South America.

Cheilolejeunea clausa (Nees & Mont.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 863. 1980. Basionym: *Lejeunea clausa* Nees & Mont. in Montagne, Ann. Sci. Nat., Bot., sér. 2, 14: 337. 1840.

Although Stephani (1890a: 80) has been credited with transferring *Lejeunea clausa* to the genus *Cheilolejeunea*, in his treatment this species was technically combined in *Lejeunea* subg. *Cheilolejeunea*.

Distribution. This species is found along the outer Gulf Coastal Plain from Florida to Louisiana and is widespread in the Neotropics and South America.

Cheilolejeunea clypeata (Schwein.) W. Ye & R. L. Zhu, J. Bryol. 32: 280. 2010. Basionym: *Jungermannia clypeata* Schwein., Spec. Fl. Amer. Crypt.: 12. 1821. ≡ *Leucolejeunea clypeata* (Schwein.) A. Evans, Torreya 7: 227. 1907 (syn. fide Ye & Zhu, 2010: 280).

Distribution. This species is restricted to the eastern United States from Oklahoma south to Texas and east to Florida, New York, and New England.

Cheilolejeunea conchifolia (A. Evans) W. Ye & R. L. Zhu, J. Bryol. 32: 280. 2010. Basionym: *Archilejeunea conchifolia* A. Evans, Mem. Torrey Bot. Club 8: 128. 1902. ≡ *Leucolejeunea conchifolia* (A. Evans) A. Evans, Torreya 7: 229. 1907.

Distribution. This species is endemic to the eastern United States from Virginia to Florida and west along the Coastal Plain into Texas.

Cheilolejeunea decidua (Spruce) A. Evans = **Cheilolejeunea adnata** (Kunze ex Lehm.) Grolle.

Cheilolejeunea discoidea (Lehm. & Lindenb.) Kachroo & R. M. Schust., J. Linn. Soc. Bot. 56: 509. 1961. Basionym: *Jungermannia discoidea* Lehm. & Lindenb., Nov. Stirp. Pug. 6: 47. 1834. = *Cheilolejeunea myriantha* (Nees & Mont.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 871. 1980. Basionym: *Lejeunea myriantha* Nees & Mont. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 365. 1845 (syn. fide Gradstein & Costa, 2003: 125). = *Euosmolejeunea parvula* A. Evans, Amer. J. Bot. 5: 141. 1918 (syn. fide Schuster, 1980a: 871).

"*Cheilolejeunea parvula* (A. Evans) R. M. Schust." appeared in our earlier checklist (Stotler & Crandall-Stotler, 1977: 411) based upon the treatment of Breil (1970: 459). Although Schuster (1955: 120) treated *Euosmolejeunea* (Spruce) Steph. as a subgenus of *Cheilolejeunea* (Spruce) Steph., he did not make this combination as attributed by Breil (1970). The combination was also not validly published by Breil (1970) because he did not cite the basionym (Art. 41.5, McNeill et al., 2012).

Distribution. This species is found in the coastal regions of North Carolina south to Florida and west to Alabama. It is also common in tropical America.

Cheilolejeunea evansii (M. S. Taylor) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 876. 1980. Basionym: *Euosmolejeunea evansii* M. S. Taylor, Ann. Bryol. 11: 155. 1938.

Distribution. This species is endemic to a narrow region within the Blue Ridge Mountains of North and South Carolina.

Cheilolejeunea myriantha (Nees & Mont.) R. M. Schust. = **Cheilolejeunea discoidea** (Lehm. & Lindenb.) Kachroo & R. M. Schust.

"*Cheilolejeunea parvula* (A. Evans) R. M. Schust. ex Breil," nom. inval. (Art. 41.5, McNeill et al., 2012) = **Cheilolejeunea discoidea** (Lehm. & Lindenb.) Kachroo & R. M. Schust.

Cheilolejeunea polyantha A. Evans, Mem. Torrey Bot. Club 8: 141. 1902, var. **polyantha**.

Distribution. This species is endemic to central and south Florida.

Cheilolejeunea polyantha var. **caduciloba** R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 887. 1980.

Distribution. This variety is endemic to central and south Florida.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Cheilolejeunea rigidula (Nees ex Mont.) R. M. Schust., Castanea 36: 102. 1971. Basionym: *Lejeunea rigidula* Nees ex Mont., Ann. Sci. Nat., Bot., sér. 2, 14: 336. 1840. = *Euosmolejeunea duriuscula* (Nees) Steph. Basionym: *Lejeunea duriuscula* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 364. 1845.

Although A. Evans was cited as the combining author for *Euosmolejeunea duriuscula* in Stotler and Crandall-Stotler (1977), Söderström et al. (2015b) have shown that the correct citation should be *E. duriuscula* (Nees) Steph. as indicated by Bonner (1965: 151).

Distribution. This species is found in the coastal regions of North Carolina south to Florida and west to Texas. It is also widespread in Central and South America.

Cheilolejeunea unciloba (Lindenb.) Malombe, Acta Bot. Hung. 51: 325. 2009. Basionym: *Lejeunea unciloba* Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 331. 1845. ≡ *Leucolejeunea unciloba* (Lindenb.) A. Evans, Torreya 7: 228. 1907.

Distribution. This species is found from Rhode Island south along the outer coastal plain to Florida and west to eastern Texas; it is also in Mexico, Peru, Brazil, and South Africa.

Cheilolejeunea xanthocarpa (Lehm. & Lindenb.) Malombe, Acta Bot. Hung. 51: 326. 2009. Basionym: *Jungermannia xanthocarpa* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 5: 8. 1833. ≡ *Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A. Evans, Torreya 7: 229. 1907.

Distribution. This pantropical taxon is widespread in South America and the West Indies into Florida. It is also in central and southern Africa and Asia.

Chiloscyphus Corda in Opiz, Naturalientausch 12: 651. Sep. 1829, as "*Cheilocyphos*," nom. et orth. cons. TYPE: *Chiloscyphus polyanthos* (L.) Corda in Opiz, Naturalientausch 12: 651. 1829. Basionym: *Jungermannia polyanthos* L., Sp. Pl. 2: 1131. 1753. [51. LOPHOCOLEACEAE.]

While various authors have synonymized *Lophocolea* with *Chiloscyphus*, substantial evidence from a combination of morphological and molecular studies supports their recognition as distinct genera. *Chiloscyphus* as treated here follows Söderström et al. (2013a) and comprises but a few temperate species, two of which occur in our flora. See the discussion under *Lophocolea* for more details.

Chiloscyphus apalachicola (R. M. Schust.) J. J. Engel & R. M. Schust. ≡ **Lophocolea apalachicola** R. M. Schust.

Chiloscyphus appalachianus (R. M. Schust.) J. J. Engel & R. M. Schust. ≡ **Lophocolea appalachiana** R. M. Schust.

Chiloscyphus coadunatus (Sw.) J. J. Engel & R. M. Schust. var. *coadunatus* = **Lophocolea cuspidata** (Nees) Limpr.

Chiloscyphus coadunatus (Sw.) J. J. Engel & R. M. Schust. var. *rivularis* (Raddi) Frisvoll, Elvebakk, Flatberg & Økland = **Lophocolea bidentata** (L.) Dumort.

Chiloscyphus cuspidatus (Nees) J. J. Engel & R. M. Schust. ≡ **Lophocolea cuspidata** (Nees) Limpr.

Chiloscyphus gemmiparus A. Evans ≡ **Rivulariella gemmipara** (A. Evans) D. H. Wagner.

Chiloscyphus latifolius (Nees) J. J. Engel & R. M. Schust. = **Lophocolea bidentata** (L.) Dumort.

Chiloscyphus martianus (Nees) J. J. Engel & R. M. Schust. ≡ **Cryptolophocolea martiana** (Nees) L. Söderstr., Crand.-Stotl. & Stotler subsp. **martiana.**

Chiloscyphus minor (Nees) J. J. Engel & R. M. Schust. ≡ **Lophocolea minor** Nees.

Chiloscyphus muricatus (Lehm.) J. J. Engel & R. M. Schust. ≡ **Lophocolea muricata** (Lehm.) Nees.

Chiloscyphus pallescens (Ehrh. ex Hoffm.) Dumort., Syll. Jungerm. Europ.: 67. 1831, var. **pallescens**. Basionym: *Jungermannia pallescens* Ehrh. ex Hoffm., Fl. Allemagne 2: 87. 1795.

Distribution. This variety is found in the west from Alaska to California, Utah, New Mexico, Colorado, and Wyoming, and in the east from Quebec and Ontario to North Carolina, west to South Dakota, Nebraska, and Arkansas. It is widespread in Europe and also occurs in Sakhalin and Japan.

Chiloscyphus pallescens var. **fragilis** (Roth) Müll. Frib., Ber. Deutsch. Bot. Ges. 59: 429. 1942. Basionym: *Jungermannia fragilis* Roth, Tent. Fl. Germ. 3: 370. 1800.

Distribution. This variety is found in the west from Alaska south to California and Utah and in the east from Newfoundland south through Quebec and Ontario to North Carolina and Tennessee, west to Minnesota and Iowa.

Chiloscyphus polyanthos (L.) Corda in Opiz, Naturalientausch 12: 651. 1829, var. **polyanthos**. Basionym: *Jungermannia polyanthos* L., Sp. Pl. 2: 1131. 1753.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Linnaeus (1753: 1131) spelled the epithet with an "os," but Schuster (1980a: 249) and Hong (1993: 596), for example, incorrectly reverted to a "us" ending, although Schuster (1988: 227) later corrected this error.

Distribution. This variety is found in the west from Alaska south to California, Arizona, Wyoming, and Saskatchewan, and from Greenland, Newfoundland, and Labrador south to North Carolina and Tennessee, west to Missouri and Minnesota in the east. It is widespread in Europe, North Africa, Siberia, the Himalayas, and Japan.

Chiloscyphus polyanthos var. **rivularis** (Schrad.) Nees, Naturgesch. Eur. Leberm. 2: 374. 1836. Basionym: *Jungermannia pallescens* var. *rivularis* Schrad., Syst. Samm. Cryptog. Gew. 2: 7. 1797. ≡ *Chiloscyphus rivularis* (Schrad.) Hazsl., Magyar Bir. Moh-fl.: 47. 1885.

Distribution. This variety is found in Alaska to California, New Mexico, and Colorado in the west and Newfoundland to North Carolina, west to Minnesota, Oklahoma, and Arkansas in the east.

Chiloscyphus profundus (Nees) J. J. Engel & R. M. Schust. ≡ **Lophocolea heterophylla** (Schrad.) Dumort. subsp. **heterophylla.**

Chiloscyphus profundus (Nees) J. J. Engel & R. M. Schust. subsp. *cladogynus* (R. M. Schust.) J. J. Engel = **Lophocolea heterophylla** subsp. **cladogyna** R. M. Schust.

Chonecolea Grolle, Rev. Bryol. Lichénol. Ser. 2. 25: 294. Mar. 1956 [1957]. TYPE: *Chonecolea doellingeri* (Nees) Grolle, Rev. Bryol. Lichénol. 25: 295. 1956. Basionym: *Jungermannia doellingeri* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 104. 1844. [35. CEPHALOZIELLACEAE.]

In a recent molecular study by Patzak et al. (2016), four accessions of *Chonecolea*, including two species, are resolved as a monophyletic lineage nested within the Cephaloziellaceae. As a consequence, the genus is transferred to the Cephaloziellaceae, with the Chonecoleaceae placed in synonymy.

This is a genus of six species, one of which occurs in our flora.

Chonecolea doellingeri (Nees) Grolle, Rev. Bryol. Lichénol. 25: 295. 1956. Basionym: *Jungermannia doellingeri* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 104. 1844.

Distribution. This species is found in Florida and the Neotropics.

Cladopodiella H. Buch, Memoranda Soc. Fauna Fl. Fenn. 1: 89. 1927. = **Odontoschisma** (Dumort.) Dumort.

Long recognized as morphologically intermediate between *Cephalozia* and *Odontoschisma* (Schuster, 1974), the genus *Cladopodiella* has been shown in the molecular phylogenetic studies of Vilnet et al. (2012) and Aranda et al. (2014) to be polyphyletic, with both species separately nested in the genus *Odontoschisma*. Váňa et al. (2013c) synonymized the genus with the older named *Odontoschisma*, and Aranda et al. (2014) subsequently erected two new sections in *Odontoschisma* to accommodate them.

Cladopodiella fluitans (Nees) H. Buch ≡ **Odontoschisma fluitans** (Nees) L. Söderstr. & Váňa.

Cladopodiella francisci (Hook.) Jørg. ≡ **Odontoschisma francisci** (Hook.) L. Söderstr. & Váňa.

Clevea Lindb., Fauna Fl. Fenn. Förh. 9: 289. 30 June–10 Aug. 1868. TYPE: *Clevea hyalina* (Sommerf.) Lindb., Not. Sällsk. pro Fauna et Flora Fennica 9: 291, 1868. Basionym: *Marchantia hyalina* Sommerf., Magazin Naturvidensk. (Christiana) II. Ser., I, fasc. 2: 234. 1833. [9. CLEVEACEAE.]

This genus has long been considered to be a synonym of *Athalamia* (e.g., Stotler & Crandall-Stotler, 1977), but a recent molecular analysis by Rubasinghe et al. (2011a) showed the two genera to be distinct.

Clevea is a genus of three species, two of which occur in our flora.

Clevea hyalina (Sommerf.) Lindb., Not. Sällsk. pro Fauna et Flora Fennica 9: 291. 1868. Basionym: *Marchantia hyalina* Sommerf., Magazin Naturvidensk. (Christiana) II. Ser., I, fasc. 2: 234, 1833. ≡ *Athalamia hyalina* (Sommerf.) S. Hatt. = *Athalamia hyalina* (Sommerf.) S. Hatt. var. *californica* (M. Howe) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 139. 1992, nom. inval. (Art. 41.5, McNeill et al., 2012), syn. nov. Basionym: *Clevea hyalina* var. *californica* M. Howe, Mem. Torrey Bot. Club 7: 38. 1899. = *Clevea nana* (Lindenb.) Crand.-Stotl. & D. G. Long, Phytotaxa 252: 79. 2016 (syn. fide Grolle, 1980: 325). Basionym: *Fimbraria nana* Lindenb., Nov. Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.), 109. 1829.

Schuster (1992b: 133) treated *Fimbraria nana* Lindenb. as a synonym of *Athalamia hyalina* (Sommerf.) S. Hatt. (≡ *Clevea hyalina*), but stated in a footnote that it most likely was *Asterella gracilis* [≡ *Mannia gracilis*]. Grolle (1980 [1981]: 325), however, had already documented, after studying the type specimen of *F. nana* Lindenb., that it was indeed *Athalamia hyalina* (≡ *C. hyalina*). He also pointed out that the epithet *nana* has

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

priority over *hyalina*, but this epithet could not be transferred to *Athalamia* because the name *Athalamia nana* (Shimizu & S. Hatt.) S. Hatt. (= *C. pusilla* (Steph.) Rubasinghe & D. G. Long) already existed. Long et al. (2016) noted that since *Athalamia nana* had been synonymized to *C. pusilla* in Rubasinghe et al. (2011b), there was no blocking name in *Clevea* and concluded that the epithet *nana*, based on *F. nana* Lindenb., should replace *hyalina* as the earliest epithet available for the taxon (McNeill et al., 2012: Art. 11.4; see Long et al., 2016). However, these authors (Long et al., 2016) were unaware that Borovichev and Bakalin (2013) had earlier recognized *Athalamia nana* (Shimizu & S. Hatt.) S. Hatt. as distinct from *C. pusilla* and transferred it to *Clevea*, making the combination *C. nana* (Shimizu & S. Hatt.) Borovich. & Bakalin, the basionym of which is *Gollaniella nana* Shimizu & S. Hatt. This action has created a blocking name for the epithet "*nana*" in *Clevea*, and therefore, the correct name must be *C. hyalina* (Sommerf.) Lindb., not *C. nana* (Lindenb.) Crand.-Stotl. & D. G. Long, as recently corrected by Long and Crandall-Stotler (2016).

Distribution. This arctic-alpine species is found from Alaska south to California, Utah, and Colorado, and from Greenland to Quebec and Vermont, west to Minnesota and northeastern Iowa. It is also found from Scandinavia through central Europe, to northern Africa and in central Asia.

Clevea spathysii (Lindenb.) Müll. Frib., Hedwigia 79: 75. 1940. Basionym: *Marchantia spathysii* Lindenb., Syn. Hep. Eur.: 104. 1829. ≡ *Athalamia spathysii* (Lindenb.) S. Hatt., J. Hattori Bot. Lab. 12: 54. 1954. = *Athalamia pygmaea* R. M. Schust., Phytologia 57: 411. 1985 (syn. fide Rubasinghe, 2011: 131). = *Clevea rousseliana* (Mont.) Leitg. ex Steph., Sp. Hepat. 1: 68. 1898. Basionym: *Plagiochasma rousselianum* Mont., Ann. Sci. Nat., Bot., sér. 2, 10: 334. 1838 (syn. fide Müller, 1940a: 258).

Shields (1954: 19) reported the Mediterranean taxon *Clevea rouseliana* (= *C. spathysii*) from northeastern New Mexico, and Schuster (1992b: 145) wrote that the specimen reported as *C. rousseliana* might actually be *Athalamia pygmaea*. Rubasinghe (2011) has confirmed that both of these taxa should be synonymized with *C. spathysii* and has verified the occurrence of this taxon in California and Texas.

Distribution. This species is known from the type (Texas) and a single population in Arizona, and perhaps a location in New Mexico (Schuster, 1992b: 145). It is also known from Africa, South America, and the Mediterranean areas of Europe.

Cololejeunea (Spruce) Steph., Hedwigia 30: 208. 1891. Basionym: *Lejeunea* subg. *Cololejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 79, 291. Apr. 1884. TYPE: *Cololejeunea calcarea* (Lib.) Steph., Bot. Gaz. 17: 171. 1892. Basionym: *Lejeunea calcarea* Lib., Ann. Gén. Sci. Phys. 16: 373. 1820. [Includes *Aphanolejeunea* A. Evans.] [29. LEJEUNEACEAE.]

All recent molecular data show *Cololejeunea* and *Aphanolejeunea* to be congeneric; e.g., see Pócs and Bernecker (2009).

This is a very large, primarily tropical genus of about 350 species, with 13 in our flora.

Cololejeunea biddlecomiae (Austin ex Pearson) A. Evans, Mem. Torrey Bot. Club 8: 168. 1902. Basionym: *Lejeunea biddlecomiae* Austin ex Pearson, Geol. Nat. Hist. Surv. Canada: 5. 1890.

The basionym of *Cololejeunea biddlecomiae* was described by Pearson (1890: 5), with the name ascribed to "Aust. MSS.," in which case the correct author citation is "Austin ex Pearson" or simply "Pearson" according to Article 46.5, Ex. 27 (McNeill et al., 2012).

Distribution. This species is found in eastern North America from Nova Scotia and Ontario south to Georgia and west to Kansas, Oklahoma, and Arkansas.

Cololejeunea cardiocarpa (Mont.) A. Evans, Mem. Torrey Bot. Club 8: 172. 1902. Basionym: *Lejeunea cardiocarpa* Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 476. 1842.

The correct author citation for *Cololejeunea cardiocarpa* is (Mont.) A. Evans as it appears in Gradstein and Costa (2003) and elsewhere. The combinations of various species into "*Colo-Lejeunea*" by Stephani (1890a) are considered to be at the rank of subgenus since the paper is titled "Die Gattung *Lejeunea* im Herbarium Lindenberg." Evans' (1902: 172) mention of *C. cardiocarpa* (Mont.) in his discussion of *C. macounii* is sufficient for valid publication of that combination since it was prior to 1953 (McNeill et al., 2012, Art. 41.3). Schuster (1959: 54) obviously was unaware of this when he proposed a "comb. n." of this binomial.

Distribution. This species is found in the Gulf Coastal Plain from Virginia south to Florida and west to Alabama. In Latin America it is found from the Antilles west to Mexico, and Brazil north to Venezuela.

Cololejeunea clavatopapillata Steph., Hedwigia 34: 246. 1895, as "*clavato-papillata*." ≡ *Aphanolejeunea clavatopapillata* (Steph.) M. E. Reiner, Trop. Bryol. 10: 35. 1995a. = *Aphanolejeunea tuberculata*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

(A. Evans) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1290. 1980 (syn. fide Reiner-Drehwald, 1995a: 35). Basionym: *Cololejeunea tuberculata* A. Evans, Bryologist 18: 84. 1915.

Distribution. This species is found in Florida, Latin America, and Africa.

Cololejeunea contractiloba A. Evans, Amer. J. Bot. 5: 131. 1918. ≡ *Aphanolejeunea contractiloba* (A. Evans) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1314. 1980.

Distribution. This species is found in Florida, Georgia, Alabama, Mississippi, and Louisiana; it is also in the Guianas according to Pócs and Bernecker (2009).

Cololejeunea cornutissima (R. M. Schust.) Stotler & Crand.-Stotl., Bryologist 80: 411. 1977. Basionym: *Aphanolejeunea cornutissima* R. M. Schust., Bryologist 59: 217. 1956.

Pócs and Bernecker (2009: 4) published "*Cololejeunea cornutissima* (R. M. Schust.) Pócs, comb. nov.," apparently unaware that the species had already been transferred to *Cololejeunea* (Stotler & Crandall-Stotler, 1977: 411, 427).

Distribution. This species is restricted to Florida.

Cololejeunea diaphana A. Evans, Bull. Torrey Bot. Club 32: 184. 1905. ≡ *Aphanolejeunea diaphana* (A. Evans) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1294. 1980, nom. illeg. (Art. 53.1, McNeill et al., 2012) = *Aphanolejeunea diaphana* A. Evans (R. M. Schust.) var. *cristulata* (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1298. 1980 (syn. fide Pócs & Bernecker, 2009: 5). Basionym: *Cololejeunea diaphana* A. Evans var. *cristulata* R. M. Schust., J. Elisha Mitchell Sci. Soc. 72: 112. 1956 = *Cololejeunea subdiaphana* Jovet-Ast, Rev. Bryol. Lichénol. 16: 28. 1947 (syn. fide Schuster, 1980a: 1294).

Aphanolejeunea diaphana (A. Evans) R. M. Schust. is a later homonym of *A. diaphana* Herzog, Nat. Hist. Juan Fernandez 2: 748. 1942.

Distribution. This species is found in Florida and the Antilles; it is also found in Asia.

Cololejeunea diaphana A. Evans var. *cristulata* R. M. Schust. = **Cololejeunea diaphana** A. Evans.

Cololejeunea ephemeroides (R. M. Schust.) Stotler & Crand.-Stotl. = **Cololejeunea sintenisii** (Steph.) Pócs.

Cololejeunea macounii (Spruce) A. Evans, Mem. Torrey Bot Club 8: 171. 1902. Basionym: *Lejeunea macounii* Spruce in Underwood, Bull. Torrey Bot. Club 17: 259. 1890.

The basionym of *Cololejeunea macounii* was published by R. Spruce in Underwood (1890), making Spruce the correct author of that epithet, not "Spruce ex Underwood."

Distribution. This species is found in British Columbia; it is also found in Asia.

Cololejeunea minuscula Pócs, Polish Bot. J. 54: 7. 2009. nom. nov. for *Aphanolejeunea minuta* R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1310. 1980.

It was necessary for Pócs and Bernecker (2009) to provide a "nom. nov." for this taxon when they transferred it to *Cololejeunea* since Stephani had published *C. minuta* (Mitt.) Steph. when he transferred *Lejeunea minuta* Mitt. to *Cololejeunea* (Bull. Herb. Boissier 5: 79. 1897).

Distribution. This species is found in Florida; it is also found in Peru.

Cololejeunea minutissima (Sm.) Steph. subsp. *minutissima* ≡ **Myriocoleopsis minutissima** (Sm.) R. L. Zhu, Y. Yu & Pócs subsp. **minutissima.**

Cololejeunea minutissima (Sm.) Steph. subsp. *myriocarpa* (Nees & Mont.) R. M. Schust. ≡ **Myriocoleopsis minutissisma** subsp. **myriocarpa** (Nees & Mont.) R. L. Zhu, Y. Yu & Pócs.

Cololejeunea ornata A. Evans, Bryologist 41: 73. 1938.

Distribution. This species is found in Tennessee, South Carolina, and Florida; it is disjunct in Japan.

Cololejeunea setiloba A. Evans, Bryologist 16: 51. 1913.

Distribution. This species is found in Florida west to Alabama and Louisiana.

Cololejeunea sicifolia (Gottsche ex A. Evans) Pócs & Bernecker, Polish Bot. J. 34: 8. 2009. Basionym: *Aphanolejeunea sicifolia* Gottsche ex A. Evans, Bull. Torrey Bot. Club 38: 277. 1911, as "*sicaefolia*."

Note that although the original spelling of the species epithet of this taxon was "*sicaefolia*," according to Article 60.8 of the ICN (McNeill et al., 2012), this spelling must be corrected to "*sicifolia*" in accord with Rec. 60G.1. When Pócs and Bernecker (2009: 8) transferred this species to *Cololejeunea* they followed Evans (1911: 277)

This content downloaded from 146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

and incorrectly cited *Lejeunea sicifolia* Gottsche in Stephani (1888) as the basionym, but this name was not validly published here because it was not explicitly assigned to the genus *Lejeunea* (see Söderström et al., 2015b), and the basionym must, therefore, be *Aphanolejeunea sicifolia* Gottsche ex A. Evans. Schuster (1992a: 1300, 1302, 1308) made mention of this species in his treatment of *Aphanolejeunea*, but he did not treat it as a part of our flora. Likewise, we had excluded it in our checklist (Stotler & Crandall-Stotler, 1977: 418). However, Dauphin et al. (2011) recently included it in their checklist of Florida liverworts and hornworts, based on two specimens collected by Rapp in the early 1900s. Its current occurrence in Florida is dubious, but the species is known to occur in Latin America.

Distribution. This species is of dubious occurrence in Florida, but is known from the West Indies and French Guiana.

Cololejeunea sintenisii (Steph.) Pócs, in Dauphin et al., Crypt. Bryol. 29: 235. 2008. (non *C. sintenisii* Steph., Hedwigia 27: 291. 1888, nom. inval., Art. 35.1 [McNeill et al., 2012]). Basionym: *Aphanolejeunea sintenisii* Steph., Sp. Hepat. 5: 861. 1916. = *Aphanolejeunea ephemeroides* R. M. Schust., J. Elisha Mitchell Sci. Soc. 71: 130. 1955 (syn. fide Pócs & Bernecker, 2009: 9). ≡ *Cololejeunea ephemeroides* (R. M. Schust.) Stotler & Crand-Stotl., Bryologist 80: 411. 1977.

Note that Pócs and Bernecker (2009) indicate that the basionym of *Cololejeunea sintenisii* is *Lejeunea* (*Cololejeunea*) *sintenisii* Steph., but this name was never explicitly assigned to the genus *Lejeunea*, rendering it not validly published (McNeill et al., 2012: Art. 35.2).

Distribution. This species is found in Florida, tropical South America, Africa, Asia, and Australia.

Cololejeunea subcristata A. Evans, Bryologist 20: 24. 1917.

Distribution. This species is known only from southern Florida.

Cololejeunea subdiaphana Jovet-Ast = **Cololejeunea diaphana** A. Evans.

Cololejeunea tuberculata A. Evans = **Cololejeunea clavatopapillata** Steph.

Conocephalum Hill, Gener. Nat. Hist. ed. 2. 2: 118. 1773, as "*Conicephala*," nom. et orth. cons. TYPE: *Conocephalum conicum* (L.) Dumort., Comment. Bot.: 115. 1822, as "*Conocephalus conicus*." Basionym: *Marchantia conica* L., Sp. Pl. 2: 1138. 1753. [10. CONOCEPHALACEAE.]

As recently as the 1988 Berlin Code (Greuter et al., 1988), *Conocephalum* Wiggers was still listed as a conserved name, with *Conicephala* J. Hill as a rejected name against it. Therefore, in our checklist (Stotler & Crandall-Stotler, 1977) we cited *Conocephalum* Wigg., nom. cons., for this genus. However, after the Berlin Code, the nomenclatural committee for bryophytes deliberated the issue of orthographic variants and concluded that the earlier name published by Hill should be considered a variant. *Conocephalum* Hill with the type *C. conicum* (L.) Dumort. is now the conserved name as published in the ICN (Wiersema et al., 2015: 215).

Because of cryptic speciation the exact number of species in this genus is problematic. There are at least three species, with *Conocephalum salebrosum* Szweyk., Buczk. & Odrzyk. widespread in North America, Europe, and Asia, while *C. conicum* occurs in Europe, and *C. japonicum* (Thunb.) Grolle is restricted to Asia.

Conocephalum conicum (L.) Dumort., Comment. Bot.: 115. 1822. Basionym: *Marchantia conica* L., Sp. Pl. 2: 1138. 1753. —EXCLUDED.

This species has not been confirmed for our flora since it was excluded by Szweykowski et al. (2005); see the discussion of *Conocephalum salebrosum* below. The correct author for *Conocephalum conicum* is (L.) Dumort. rather than (L.) Underw. or (L.) Lindb., which we had in our previous checklist (Stotler & Crandall-Stotler, 1977: 411). Although Grolle (1983b) had indicated that (L.) Underw. was the proper citation, he also referenced the Proskauer (1958: 126) lectotypification of *Marchantia conica* and *Conocephalum* by a single Micheli element. Therefore, *Conocephalum* and *Conocephalus* became homotypic and could be considered orthographic variants. The nomenclatural committee for Bryophyta agreed that "(L.) Dumort." is therefore the correct author, which appears in appendix III of the ICN (Wiersema et al., 2015: 215). Also, Schuster (1992b: 95) cited both *Fegatella japonica* Steph. and *Conocephalum japonicum* Underw. as synonyms of *Conocephalum conicum*, probably following Frye and Clark (1937: 89), but both of these names belong under *Conocephalum japonicum*.

Conocephalum salebrosum Szweyk., Buczk. & Odrzyk., Pl. Syst. Evol. 253: 146. 2005.

This is the correct name for the commonly found species of *Conocephalum* throughout North America, not *C. conicum*. It is a somewhat smaller plant than *C. conicum*; the thalli are dull rather than shiny, and the grooves of the thallus are more conspicuous than the air pores, whereas in *C. conicum* they are less conspicuous than the air pores. The

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

report of *C. conicum* from Arctic Alaska by Potemkin (1995: 326) likely belongs here. Although Szweykowski et al. (2005) confirmed *C. conicum* only in Europe and *C. salebrosum* as being the very widespread taxon, there are still some unanswered questions. For example, material studied from Illinois fits the morphological criteria of *C. salebrosum*, but the sequence data are very distinct from it and instead are similar to *C. conicum* (Forrest et al., 2006: 323).

Distribution. This is a widespread Holarctic species found throughout North America, Europe, and Asia.

Corsinia Raddi, Opusc. Sci. 2: 354. 1818. TYPE: *Corsinia marchantioides* Raddi, nom. illeg. = *Corsinia coriandrina* (Spreng.) Lindb., Hepaticol. Utveckl.: 30. 1877 (ante 5 Mai). Basionym: *Riccia coriandrina* Spreng., Anleit. Kenntn. Gew. 3: 320. 1804. [11. CORSINIACEAE.]

Corsinia is a monotypic genus.

Corsinia coriandrina (Spreng.) Lindb., Hepaticol. Utveckl.: 30. 1877. Basionym: *Riccia coriandrina* Spreng., Anleit. Kenntn. Gew. 3: 320. 1804.

Distribution. This species is found in East Texas and Louisiana; it is also known from Argentina, Mediterranean Europe, and North Africa.

Crossocalyx Meyl., Bull. Soc. Vaud. Sci. Nat. 60: 266. 1939. TYPE: *Crossocalyx hellerianus* (Nees ex Lindenb.) Meyl., Bull. Soc. Vaud. Sci. Nat. 60: 266. 1939. Basionym: *Jungermannia helleriana* Nees ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.) [= Syn. Hep. Eur.]: 64. 1829. [34. ANASTROPHYLLACEAE.]

Note that Schuster (1949: 575) placed this genus in synonymy of *Anastrophyllum*, but the molecular studies of De Roo et al. (2007) support its recognition at the generic level.

Crossocalyx is a genus with two species, both of which occur in our flora.

Crossocalyx hellerianus (Nees ex Lindenb.) Meyl., Bull. Soc. Vaud. Sci. Nat. 60: 266. 1939. Basionym: *Jungermannia helleriana* Nees ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 64. 1829. ≡ *Anastrophyllum hellerianum* (Nees ex Lindenb.) R. M. Schust.

In our checklist (Stotler & Crandall-Stotler, 1977), we incorrectly spelled the epithet "*helleranum*" rather than "*hellerianum*" and also indicated the author for this epithet as Nees, following Schuster (1949: 575). It was, however, Lindenberg (1829: 64) who validly published this name, which he cited as "*N. ab E. in litt*."

Distribution. This taiga species is found in the west from Alaska south to British Columbia and Washington, and in the east from Newfoundland south to Georgia and Tennessee, and west to Michigan and Minnesota. It is common throughout Europe, east to Siberian Asia and Japan.

Crossocalyx tenuis (Harry Williams) Schljakov, Novosti Sist. Nizsh. Rast. 15: 246. 1978. Basionym: *Anastrophyllum tenue* Harry Williams, Bryologist 71: 34. 1968.

Distribution. This calcicole is endemic to Ontario.

Crossotolejeunea (Spruce) Schiffn. = **Lejeunea** Lib.

Crossotolejeunea bermudiana A. Evans ≡ **Lejeunea bermudiana** (A. Evans) R. M. Schust.

Cryptocolea R. M. Schust., Amer. Midl. Naturalist 49: 414. Mar. 1953. TYPE: *Cryptocolea imbricata* R. M. Schust., Amer. Midl. Naturalist 49: 417. 1953. [47. SOLENOSTOMATACEAE.]

Cryptocolea is a monotypic genus.

Cryptocolea imbricata R. M. Schust., Amer. Midl. Naturalist 49: 417. 1953.

Distribution. *Cryptocolea imbricata* is an arctic species known from Alaska, the Lake Superior region of Minnesota and Michigan, Ellesmere Island, Greenland, Sweden, and eastern Siberia.

Cryptolophocolea L. Söderstr., Crand.-Stotl., Stotler & Váňa, Phytotaxa 97: 39. 2013. TYPE: *Cryptolophocolea ciliolata* (Nees) L. Söderstr., Crand.-Stotl., Stotler & Váňa, Phytotaxa 97: 39. 2013. Basionym: *Jungermannia ciliolata* Nees, Enumer. Pl. Javae: 68, 1830. ≡ *Lophocolea ciliolata* (Nees) Gottsche, Bot. Zeit. 16, Beil.: 38. 1858. ≡ *Chiloscyphus ciliolatus* (Nees) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 413, 1984 [1985]. [51. LOPHOCOLEACEAE.]

Based on molecular evidence (Hentschel et al., 2006b), Söderström et al. (2013a) elevated *Chiloscyphus* subg. *Connati* (Lindenb.) J. J. Engel "*Connatae*" to generic rank, with the new name *Cryptolophocolea* because "Connatae" is a morphological term and cannot be used at generic rank (Art. 20.2, McNeill et al., 2012).

Cryptolophocolea is a genus of approximately 31 species, with one in our flora.

Cryptolophocolea martiana (Nees) L. Söderstr., Crand.-Stotl. & Stotler subsp. **martiana**, Phytotaxa 112: 20. 2013. Basionym: *Lophocolea martiana* Nees in Gottsche, Lindenberg & Nees, Syn.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Hepat.: 152. 1845. ≡ *Chiloscyphus martianus* (Nees) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 419, 1984 [1985].

Distribution. This subspecies is found in the coastal regions of the United States from Louisiana to Florida and is widespread in the South American tropics, the West Indies, and Mexico south to Brazil. It is also found in Africa.

Cryptomitrium Austin ex Underw., Bull. Illinois State Lab. Nat. Hist. 2: 36. Oct. 1884. TYPE: *Cryptomitrium tenerum* (Hook.) Austin ex Underw., Bull. Illinois State Lab. Nat. Hist. 2: 36. 1884. Basionym: *Marchantia tenera* Hook. in Kunth, Syn. Pl. 1: 45. 1822. [8. AYTONIACEAE.]

According to Stafleu and Cowan (1979: 695), pages 7–65 of this Kunth publication were written by W. J. Hooker, hence "Hook. in Kunth" is correct for precise bibliographic citation.

Cryptomitrium is a genus of three species with only one in our flora.

Cryptomitrium tenerum (Hook.) Austin ex Underw., Bull. Illinois State Lab. Nat. Hist. 2: 36. 1884. Basionym: *Marchantia tenera* Hook. in Kunth, Syn. Pl. 1: 45. 1822.

We have seen the Underwood publication listed as November 10, 1883, but this is the date given in the prefatory note. The date on the cover is 1884 and a note in the actual journal states October 1884 as the date of issue for this article. In our checklist (Stotler & Crandall-Stotler, 1977: 411), we indicated Austin as the author of the genus name as well as for the species because Underwood ascribed the names to Austin, but the descriptions were written by Underwood based upon manuscript notes of Austin's that he obtained after the death of Austin (Underwood, 1884: 2).

Distribution. This species is found in western North America from Washington south to California, Mexico, and South America.

Cryptothallus mirabilis Malmb. ≡ **Aneura mirabilis** (Malmb.) Wickett & Goffinet.

Cylindrocolea R. M. Schust., Bull. Natl. Sci. Mus., n.s. 12: 666. Sep. 1969. TYPE: *Cylindrocolea chevalieri* (Steph.) R. M. Schust., Bull. Natl. Sci. Mus., n.s. 12: 666. 1969. Basionym: *Alobiella chevalieri* Steph., Sp. Hepat. 3: 351. 1908. [35. CEPHALOZIELLACEAE.]

This is a pantropical genus with about 12 to 15 species; there are three in our flora.

Cylindrocolea andersonii R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 33. 1980, as "*andersoni*."

The correction of the original spelling is in accord with Article 60.12 of the ICN (McNeill et al., 2012).

Distribution. This species is known only from the type in North Carolina.

Cylindrocolea obliqua (Douin) R. M. Schust. = **Cylindrocolea planifolia** (Steph.) R. M. Schust.

Cylindrocolea planifolia (Steph.) R. M. Schust., Nova Hedwigia 22: 164. 1971. Basionym: *Cephaloziella planifolia* Steph., Hedwigia 32: 317. 1893. = *Cylindrocolea obliqua* (Douin) R. M. Schust., Nova Hedwigia 22: 167. 1971 (syn. fide Gradstein & Costa, 2003: 65). Basionym: *Cephaloziella obliqua* Douin, Mém. Soc. Bot. France 29: 59. 1920.

Distribution. This species is found in Florida and tropical America.

Cylindrocolea rhizantha (Mont.) R. M. Schust. Nova Hedwigia 22: 175. 1971 [1972]. Basionym: *Jungermannia rhizantha* Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 454. 1842.≡ *Cephaloziella rhizantha* (Mont.) Steph., Hedwigia 32: 318. 1893.

Note that *Cephaloziella rhizantha* (Mont.) R. M. Schust. (Bryologist 59; 130. 1956) is an isonym to be disregarded.

Distribution. This species is found from Louisiana to Florida and north to South Carolina. It is also common in tropical South America.

Dendrobazzania R. M. Schust. & W. B. Schofield, Bryologist 85: 233. 4 Aug. 1982. TYPE: *Dendrobazzania griffithiana* (Steph.) R. M. Schust. & W. B. Schofield, Bryologist 85: 234. 1982. Basionym: *Mastigobryum griffithianum* Steph., Sp. Hepat. 3: 509. 1908. [54. LEPIDOZIACEAE.]

Kitagawa and Grolle (1986: 272) questioned the generic status of *Dendrobazzania*, making comparisons of *D. griffithiana* with *Bazzania praerupta* (Reinw., Blume & Nees) Trevis. (≡ *Jungermannia praerupta* Reinw.). They agreed with Mizutani (1967: 82) who felt that it might be just a variety of the highly malleable *B. praerupta* and basing their opinion on observation of a critical specimen that is intermediate between the two "species."

Dendrobazzania is a monotypic genus.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Dendrobazzania griffithiana (Steph.) R. M. Schust. & W. B. Schofield, Bryologist 85: 234. 1982. Basionym: *Mastigobryum griffithianum* Steph., Sp. Hepat. 3: 509. 1908.

Distribution. This species is found in Haida Gwaii (formerly the Queen Charlotte Islands) of British Columbia and the Himalayas.

Diplasiolejeunea (Spruce) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 118, 121. Sep. 1893 [preprint]. Basionym: *Lejeunea* subg. *Diplasiolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 80, 301. Apr. 1884. TYPE: *Diplasiolejeunea pellucida* (C. F. W. Meissn. ex Spreng.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 118, 121. 1893 [preprint]. Basionym: *Jungermannia pellucida* C. F. W. Meissn. ex Spreng., Syst. Veg. 4(2): 325. 1827. [29. LEJEUNEACEAE.]

Diplasiolejeunea is a pantropical genus with 65 to 70 species; there is only one in our flora.

Diplasiolejeunea rudolphiana Steph., Hedwigia 35: 79. 1896.

Distribution. This species is found in Florida, the West Indies, Central and South America, and Africa disjunct to Vietnam.

Diplophyllum (Dumort.) Dumort., Rec. Observ. 15. 1835, nom. cons. Basionym: *Jungermannia* sect. *Diplophyllum* Dumort., Syll. Jungerm. Europ.: 44. 1831. TYPE: *Diplophyllum albicans* (L.) Dumort., Recueil Observ. Jungerm.: 16. 1835, as "*albicas*." Basionym: *Jungermannia albicans* L., Sp. Pl. 2: 1133. 1753. [36. SCAPANIACEAE.]

Diplophyllum is a genus of about two dozen species, with six in our flora.

Diplophyllum albicans (L.) Dumort., Recueil Observ. Jungerm.: 16. 1835. Basionym: *Jungermannia albicans* L., Sp. Pl. 2: 1133. 1753.

Distribution. This species is found in the Yukon and Alaska south to Washington and Oregon, and from Greenland and coastal regions of Newfoundland, Nova Scotia, and Quebec south to Maine. It is also found in Great Britain and Scandinavia through central Europe to Portugal, east to Greece and Turkey, and Hawaii, Japan, Kamchatka, and Korea.

Diplophyllum andrewsii A. Evans, Bryologist 25: 28. 1922.

Distribution. This species is found in the Appalachian Mountains of Virginia, North and South Carolina, Georgia, Tennessee, and Kentucky; it is disjunct in Japan.

Diplophyllum apiculatum (A. Evans) Steph., Sp. Hepat. 4: 110. 1910. Basionym: *Diplophylleia apiculata* A. Evans, Bot. Gaz. 34: 372. 1902.

Note that *Diplophylleia* (Rchb.) Trevis. is a synonym of *Diplophyllum* (Dumort.) Dumort., nom. cons. (non Lehm. 1818, nom. rej.).

Distribution. This species is endemic to eastern North America, from Quebec and Ontario south through New England to North Carolina and Tennessee, and west to Arkansas, Oklahoma, Kansas, and Minnesota.

"*Diplophyllum apiculatum* (A. Evans) Steph. var. *taxifolioides* R. M. Schust.," Hepat. Anthocerotae N. Amer. 3: 214. 1974 was not validly published, due to a holotype with two gatherings cited (Art. 40.3; McNeill et al., 2012).

Diplophyllum imbricatum (M. Howe) Müll. Frib. ≡ **Douinia imbricata** (M. Howe) Konstant. & Vilnet.

Diplophyllum microdontum (Mitt.) H. Buch ≡ **Scapania microdonta** (Mitt.) Müll. Frib.

Diplophyllum obtusatum (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 215. 1974. Basionym: *Diplophyllum apiculatum* (A. Evans) Steph. var. *obtusatum* R. M. Schust., Amer. Midl. Naturalist 49: 432. 1953.

Distribution. This species is known only from Newfoundland, Ontario, Minnesota, North Carolina, and Tennessee.

Diplophyllum obtusifolium (Hook.) Dumort., Recueil Observ. Jungerm. 16. 1835, subsp. **obtusifolium**. Basionym: *Jungermannia obtusifolia* Hook., Brit. Jungermann. pl. 26. 1816.

When Váňa (Váňa et al., 2013a: 29) named *Diplophyllum obtusifolium* subsp. *domesticum* (Gottsche) Váňa (Basionym: *Jungermannia domestica* Gottsche, Hedwigia 33: 6. 1894), it automatically created the autonym subspecies *obtusifolium*.

Distribution. Diplophyllum obtusifolium subsp. *obtusifolium* is known from Alaska south through British Columbia to California, and from Greenland and Vermont in the east. It is common throughout Europe and Asia. The subspecies named by Váňa is antipodal,

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

occurring in New Zealand, Australia, Marion Island, and Chile.

Diplophyllum plicatum Lindb. ≡ **Douinia plicata** (Lindb.) Konstant. & Vilnet.

Diplophyllum taxifolium (Wahlenb.) Dumort., Recueil Observ. Jungerm. 16. 1835, var. **taxifolium**. Basionym: *Jungermannia taxifolia* Wahlenb., Fl. Lapp.: 389. 1812.

Distribution. This transcontinental variety is found from Alaska south to British Columbia and California, Idaho, and Montana, east to Greenland and from Labrador south to North Carolina and Tennessee, and west to Minnesota. It is also found throughout Europe into Turkey, Japan, Korea, and Sakhalin.

Diplophyllum taxifolium var. **macrostictum** H. Buch, Commentat. Biol. 3(1): 23. 1928, as "*macrosticta*."

Distribution. This variety is found in Greenland, Minnesota, and the southern Appalachians. In Asia it is from Kamchatka and Sakhalin, and it is also found in Scandinavia.

Diplophyllum taxifolium var. **mucronatum** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 203. 1974.

Distribution. This variety is known only from the type in North Carolina.

Douinia (C. E. O. Jensen) H. Buch, Commentat. Biol. 3(1): 13. 1928. Basionym: *Diplophylleia* subg. *Douinia* C. E. O. Jensen, Danmarks Mosser 1: 145. 1915. TYPE: *Douinia ovata* (Dicks.) H. Buch, Commentat. Biol. 3(1): 14. 1928. Basionym: *Jungermannia ovata* Dicks., Fasc. Pl. Crypt. Brit. 3: 11. 1793. (Includes *Macrodiplophyllum* (H. Buch) Perss., p.p.) [36. SCAPANIACEAE.]

As discussed in Crandall-Stotler et al. (2009b: 167) the reduction of *Macrodiplophyllum* to either *Diplophyllum* (Dumort.) Dumort. by Schuster (1974) or *Scapania* (Dumort.) Dumort. subg. *Macrodiplophyllum* (H. Buch) Potemkin by Potemkin (2002) is not supported by molecular data. In fact, the type species of the genus (*M. plicatum* (Lindb.) Perss.) was resolved as sister to *Douinia* by Yatsentyuk et al. (2004). More recently, Vilnet et al. (2010) suggested placement of *M. imbricatum* and *M. plicatum* into the genus *Douinia*, but not *M. microdontum*, which aligned in molecular analyses with *Scapania*. Since then, Konstantinova et al. (2013: 31) transferred *M. imbricata* and *M. plicata* to *Douinia*, which we follow here.

Douinia is a genus of three species, all of which occur in our flora

Douinia imbricata (M. Howe) Konstant. & Vilnet, Phytotaxa 76: 31. 2013. Basionym: *Scapania imbricata* M. Howe, Bull. New York Bot. Gard. 2: 104. 1901. ≡ *Macrodiplophyllum imbricatum* (M. Howe) H. Perss., Svensk Bot. Tidskr. 43: 508. 1949. ≡ *Diplophyllum imbricatum* (M. Howe) Müll. Frib., Bull. l'Herbier Boissier 3: 36. 1903.

Distribution. This species is found in Alaska south to British Columbia and in Kamchatka. Steere and Inoue (1978: 301) pointed out that when Howe named this species he assumed that the type locality was in the Yukon Territory and that the likelihood of it being found there was slight because of the preference of this taxon for oceanic habitats. It was actually found in the British Columbia side of Chilcoot Pass.

Douinia ovata (Dicks.) H. Buch, Commentat. Biol. 3(1): 14. 1928. Basionym: *Jungermannia ovata* Dicks., Fasc. Pl. Crypt. Brit. 3: 11. 1793. ≡ *Harpalejeunea ovata* (Dicks.) Schiffn., Hepaticae [preprint Engler-Prantl] 127. 1893. Basionym: *Jungermannia ovata* Dicks., Fasc. Pl. Crypt. Brit. 3: 11. 1793.

As discussed in detail by Grolle (1989a), *Jungermannia ovata* Dicks. must be considered as the basionym for two very different taxa, namely *Douinia ovata* (Dicks.) H. Buch and *Harpalejeunea ovata* (Dicks.) Schiffn., making them homotypic synonyms. The type specimen of *J. ovata* Dicks. is compatible with *Douinia*, but very different from *Harpalejeunea* (Spruce) Schiffn., and therefore is the accepted name for this taxon, with *H. ovata* (Dicks.) Schiffn. considered a synonym. In order to preserve current concepts of *Harpalejeunea*, Grolle (1989a) named *H. ancistrodes* (Spruce) Schiffn. to replace *H. ovata* (Dicks.) Schiffn. as the generitype of *Harpalejeunea* and proposed that *H. ovata* auct. be replaced with *H. molleri* (Steph.) Grolle. For additional comments, see the treatment of *Harpalejeunea*.

Distribution. This species is found from Alaska to Oregon and California and in southernmost Greenland; it is also in the Atlantic coastal areas of Britain and Europe.

Douinia plicata (Lindb.) Konstant. & Vilnet, Phytotaxa 76: 31. 2013. Basionym: *Diplophyllum plicatum*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lindb., Acta Soc. Sci. Fenn. 10: 235. 1872. ≡ *Macrodiplophyllum plicatum* (Lindb.) Perss., Svensk Bot. Tidskr. 43: 507. 1949. ≡ *Scapania plicata* (Lindb.) Potemkin, Ann. Bot. Fenn. 36: 281. 1999.

Distribution. This species is found from Alaska south to British Columbia and California and in the Russian Far East.

Drepanolejeunea (Spruce) Steph., Hedwigia 30: 209. 1891. Basionym: *Lejeunea* subg. *Drepanolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 76, 186. Apr. 1884. TYPE: *Drepanolejeunea hamatifolia* (Hook.) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 118, 121. Sep. 1893 [preprint]. Basionym: *Jungermannia hamatifolia* Hook., Brit Jungermann. pl. 51. 1813. [29. LEJEUNEACEAE.]

Drepanolejeunea is a large pantropical genus of about 100 species; there are only two in our flora.

Drepanolejeunea appalachiana R. M. Schust., J. Elisha Mitchell Sci. Soc. 83: 219. 1967.

Distribution. This species is found in Virginia to North and South Carolina, Georgia, and Tennessee; it is also in Puerto Rico.

Drepanolejeunea mosenii (Steph.) Bischl., Rev. Bryol. Lichénol. 35: 118. 1967. Basionym: *Leptolejeunea mosenii* Steph., Sp. Hepat. 5: 372. 1913. = *Drepanolejeunea sabaliana* R. M. Schust., J. Elisha Mitchell Sci. Soc. 83: 215. 1967 (syn. fide Reiner-Drehwald, 1995b: 22).

Distribution. This species is in coastal Mississippi to Florida and in tropical South America from northeast Argentina and Brazil north.

Drepanolejeunea sabaliana R. M. Schust. = **Drepanolejeunea mosenii** (Steph.) Bischl.

Dumortiera Nees in Reinw., Blume & Nees, Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. [Hep. Java] 12: 410. 1824 (ante 28 Oct.). TYPE: *Dumortiera hirsuta* (Sw.) Nees, Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 12: 195. 1824. Basionym: *Marchantia hirsuta* Sw., Prodr.: 145. 1788. [15. DUMORTIERACEAE.]

Only a single highly variable species with two or more subspecies is now recognized for this genus, although recent studies (Forrest et al., 2011) suggest that additional species exist. *Dumortiera* is principally pantropical, found in eastern North America and from northern Argentina northward in Latin America. It also occurs in Africa and Eurasia, south to New Zealand.

Dumortiera hirsuta (Sw.) Nees, Fl. Bras. Enum. Pl. 1: 307. 1833, subsp. **hirsuta**. Basionym: *Marchantia hirsuta* Sw., Prod.: 145. 1788.

According to Schuster (1992b), the two typically recognized subspecies of *Dumortiera hirsuta* differ in chromosome number and dorsal thallus surface morphology, with $n = 9$ in *D. hirsuta* subsp. *hirsuta* and $n = 18$ in *D. hirsuta* subsp. *nepalensis* (Taylor) R. M. Schust. Akiyama et al. (2003) have shown, however, that monoploid and diploid plants may grow intermixed and have identical thallus morphologies. Several genetic lineages have been identified within *D. hirsuta* (Akiyama et al., 2003; Forrest et al., 2011), but what names should be applied to them has not yet been resolved.

Distribution. This subspecies is found in the southeastern United States west to Arkansas and Missouri; it is also in Latin America, Europe, and Eurasia.

Dumortiera hirsuta subsp. **nepalensis** (Taylor) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 386. 1992. Basionym: *Hygrophila nepalensis* Taylor, Trans. Linn. Soc. London 17: 392. 1837. ≡ *Dumortiera hirsuta* (Sw.) Nees var. *nepalensis* (Taylor) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 93. 1937.

Schuster (1992a: 386) overlooked this Frye and Clark name in his list of synonyms. This epithet has traditionally been applied to populations that bear crowded papillae on the dorsal thallus surface. A recent molecular analysis by Forrest et al. (2011) has shown, however, that this morphological expression occurs in two widely separated clades of the genus and may be diagnostic of more than one taxonomic unit. Whether this name should be applied to North American populations will require further study of nomenclatural types.

Distribution. This subspecies is reported from the southeastern United States west to Louisiana and north to extreme southern Illinois; worldwide distribution is problematic.

Dumortiera hirsuta var. *nepalensis* (Taylor) Frye & L. Clark ≡ **Dumortiera hirsuta** subsp. **nepalensis** (Taylor) R. M. Schust.

Endogemma Konstant., Vilnet & A. V. Troitsky, Folia Cryptog. Estonia 48: 132. 2011. TYPE: *Endogemma caespiticia* (Lindenb.) Konstant., Vilnet & A. V. Troitsky, Folia Cryptog. Estonia 48: 132. 2011. Basionym: *Jungermannia caespiticia* Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 67. 1829. [45. ENDOGEMMATACEAE.]

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

This monotypic genus, known for its production of endogenous gemmae, was established on the basis of molecular evidence that verified its isolation from other taxa in *Jungermannia* and *Solenostoma* (Vilnet et al., 2011).

Endogemma caespiticia (Lindenb.) Konstant., Vilnet & A. V. Troitsky, Folia Cryptog. Estonia 48: 132. 2011. Basionym: *Jungermannia caespiticia* Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 67. 1829. ≡ *Solenostoma caespiticium* (Lindenb.) Steph., Bull. Herb. Boissier (ser. 2) 1: 495. 1901, as "*caespiticia*."

Distribution. This species is found in Alaska and British Columbia disjunct to New York; it is widespread in northern Europe and Siberia.

Eocalypogeia (R. M. Schust.) R. M. Schust., Fragm. Florist. Geobot. 40: 861. 11 Dec. 1995. Basionym: *Metacalypogeia* subg. *Eocalypogeia* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 107. 21 Nov. 1969. TYPE: *Eocalypogeia schusteriana* (S. Hatt. & Mizut.) R. M. Schust., Fragm. Florist. Geobot. 40: 861. Basionym: *Metacalypogeia schusteriana* S. Hatt. & Mizut., Misc. Bryol. Lichenol. 4: 121. 1967 [38. CALYPOGEIACEAE.]

Eocalypogeia is a genus of two species, with one in our flora.

Eocalypogeia schusteriana (S. Hatt. & Mizut.) R. M. Schust., Fragm. Florist. Geobot. 40: 861. 1995. Basionym: *Metacalypogeia schusteriana* S. Hatt. & Mizut., Misc. Bryol. Lichenol. 4: 121. 1967.

Distribution. This species is known from Alaska, the Northwest Territories, Greenland, Nova Scotia, and the Gaspé Peninsula.

Eremonotus Lindb. & Kaal. ex Pearson, Hepat. Brit. Isl.: 200. 1900. TYPE: *Eremonotus myriocarpus* (Carrington) Lindb. & Kaal. ex Pearson, Hepat. Brit. Isl.: 201. 1900. Basionym: *Jungermannia myriocarpa* Carrington, Trans. & Proc. Bot. Soc. Edinburgh 13: 466. 1879. [41. JUNGERMANNIACEAE.]

Eremonotus is a monotypic genus.

Eremonotus myriocarpus (Carrington) Lindb. & Kaal. ex Pearson, Hepat. Brit. Isl.: 201. 1900. Basionym: *Jungermannia myriocarpa* Carrington, Trans. & Proc. Bot. Soc. Edinburgh 13: 466. 1879. = *Anomomarsupella cephaloziellloides* R. M. Schust., Nova Hedwigia 17: 79. 1969 (syn. fide Damsholt, 1977: 132).

Distribution. This species is known from British Columbia and Washington in the west according to Faubert et al. (2012: 13) and from Greenland, Labrador, and Quebec in the east. This taxon is also widespread throughout northern and central Europe and in Siberia, the Russian Far East, and Japan.

Euosmolejeunea (Spruce) Steph. = **Cheilolejeunea** (see discussion under *Cheilolejeunea*).

Euosmolejeunea clausa (Nees & Mont.) A. Evans ≡ **Cheilolejeunea clausa** (Nees & Mont.) R. M. Schust.

Euosmolejeunea duriuscula (Nees) Steph. = **Cheilolejeunea rigidula** (Nees ex Mont.) R. M. Schust.

Euosmolejeunea evansii M. S. Taylor ≡ **Cheilolejeunea evansii** (M. S. Taylor) R. M. Schust.

Fimbraria nana Lindenb. = **Clevea hyalina** (Sommerf.) Lindb.

Fossombronia Raddi, Jungermanniogr. Etrusca: 29. 1818. TYPE: *Fossombronia angulosa* (Dicks.) Raddi, Jungermanniogr. Etrusca: 29. 1818. Basionym: *Jungermannia angulosa* Dicks., Fasc. Pl. Crypt. Brit. 1: 7. 1785. [19. FOSSOMBRONIACEAE.]

This cosmopolitan genus contains over 100 species, with 10 in our flora.

Fossombronia alaskana Steere & Inoue, Bryologist 77: 66. 1974.

Distribution. This species is found in Greenland, Labrador, and Alaska west to the Russian Far East, Siberia, and Korea.

Fossombronia brasiliensis Steph. = **Fossombronia porphyrorhiza** (Nees) Prosk.

Fossombronia cristula Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 228. 1869. ≡ *Fossombronia foveolata* Lindb. var. *cristula* (Austin) R. M. Schust., Hepat. Anthocerotae N. Amer. 5: 383. 1992.

Fossombronia akiensis Horik. and *F. australinipponica* Horik. were shown to be synonyms of the Asian *F. japonica* Schiffn. by Krayesky et al. (2005). All three of these names were incorrectly listed as synonyms of *F. foveolata* Lindb. var. *cristula* (Austin) R. M. Schust. by Schuster (1992a: 384).

Distribution. This species is endemic to the eastern United States from New York and New Jersey to North Carolina, west through West Virginia, Ohio, Indiana, Illinois, and Michigan.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Fossombronia foveolata Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 13: 382. 1874.

Fossombronia angulosa of Austin and other American authors was included in the synonymy of *F. brasiliensis* Steph. (= *F. porphyrorhiza* (Nees) Prosk.) by Schuster (1992a: 408). Bray (2001) showed *F. angulosa* of auct. amer. to be *F. foveolata* Lindb. rather than *F. brasiliensis*.

Distribution. This species is from Newfoundland through Quebec and Ontario, south to Florida, west to Louisiana and Texas, and north to Minnesota. It is widespread throughout Europe.

Fossombronia foveolata Lindb. var. *cristula* (Austin) R. M. Schust. ≡ **Fossombronia cristula** Austin.

Fossombronia lamellata Steph., Hedwigia 33: 9. 1894. —EXCLUDED.

Fossombronia lamellata Steph. and its synonym *F. tuberifera* K. I. Goebel, treated in Schuster (1992a), are excluded from North America. We have found that the North American plants referred to by Schuster (1992a) and Evans (1917a: 19) do not correspond with the type material of *F. lamellata* from Brazil (G-22176!).

Fossombronia longiseta (Austin) Austin, Hepat. Bor.-Amer. Exsicc.: 118. 1873. Basionym: *Androcryphia longiseta* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 228. 1869.

Schuster (1992a: 392) synonymized the Indian *Fossombronia kashyapii* S. C. Srivast. & Udar and the Australian *F. vermiculata* G. A. M. Scott & D. C. Pike under *F. longiseta* (Austin) Austin. However, study of the type specimen of *F. kashyapii* proved that it is actually a synonym of *F. himalayensis* Kashyap (syn. fide Krayesky et al., 2005: 14). We have not yet studied the type of *F. vermiculata* to evaluate it, but it seems certain that *F. longiseta* is restricted to the New World.

Distribution. This species is found in western North America from British Columbia south to California, Arizona, and Baja California, and into central Mexico.

Fossombronia marshii J. R. Bray & Stotler, Phytologia 92: 230. 2010.

Distribution. This species is known only from Arkansas.

Fossombronia porphyrorhiza (Nees) Prosk., Bryologist 58: 197. 1955. Basionym: *Jungermannia porphyrorhiza* Nees, Fl. Bras. Enum. Pl. 1: 343. 1833. = *Fossombronia brasiliensis* Steph., Sp. Hepat. 1: 382. 1900 (syn. fide Gradstein & Costa, 2003: 245).

Distribution. This species is from Texas east to Florida; it is also widespread in the West Indies and Central and South America.

Fossombronia pusilla (L.) Nees, Naturgesch. Eur. Leberm. 3: 319. 1838. Basionym: *Jungermannia pusilla* L., Sp. Pl. 2: 1136. 1753.

Reports of this species in eastern North America are incorrect, as pointed out by Schuster (1992a: 423), but the species has been confirmed to occur in California (Doyle & Stotler, 2006).

Distribution. This species is found in the western United States, Australia, Asia, Europe, and North Africa.

Fossombronia salina Lindb. ex A. Evans, Rhodora 3: 9–10. 1901.

Although considered a synonym of *Fossombronia brasiliensis* (= *F. porphyrorhiza*) by Schuster (1992a: 405), we tentatively recognize this species based on personal study of its type.

Distribution. This species is found from Massachusetts and Connecticut south to Florida, primarily in swampy lowlands.

Fossombronia texana Lindb., Hepat. Hibernia 10: 533. 1875.

Distribution. This species is found from Missouri to Arkansas and Oklahoma into Texas; it also occurs in Mexico and the West Indies.

Fossombronia wondraczekii (Corda) Dumort. ex Lindb., Helsingfors Dagblad (273): 2. 1873. Basionym: *Jungermannia wondraczekii* Corda in Sturm, Deutschl. Fl., Abt. II, Cryptog. 19–20: 30. 1830.

The listing of the Australian *Fossombronia forsythii* Steph. as a synonym of *F. wondraczekii* by Schuster (1992a: 373) has not been confirmed.

Distribution. This species is reported from Oregon, as well as Quebec and Ontario, south through New England to Pennsylvania and West Virginia, and west to Illinois and Minnesota. It is widespread in Europe and into Turkey. Reports from Asia have not been confirmed.

Frullania Raddi, Jungermanniogr. Etrusca: 9. 1818. TYPE: *Frullania minor* Raddi, nom. illeg. ≡

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Frullania tamarisci (L.) Dumort., Recueil Observ. 13. 1835. Basionym: *Jungermannia tamarisci* L., Sp. Pl. 2: 1134. 1753. [27. FRULLANIACEAE.]

Uribe-M. and Gradstein (2003) indicated that the type of *Frullania* should be *F. dilatata* (L.) Dumort., based on its designation by Evans (1918, 1920) that predated the designation of *F. tamarisci* as the generitype by Frye and Clark (1947). However, the designations by Evans (1918, 1920) in these publications have been disallowed as being largely mechanical (McNeill et al., 2016) and are superseded by the later designation of Frye and Clark (1947) (McNeill et al., 2012: Art. 10.5b).

Frullania is a cosmopolitan genus of over 200 species, with 29 in our flora.

Frullania appalachiana R. M. Schust., Phytologia 53: 366. 1983.

Distribution. This species is restricted to North and South Carolina and Tennessee.

Frullania arietina Taylor ex Gottsche, Lindenb. & Nees = **Frullania rio-janeirensis** (Raddi) Ångstr.

Frullania asagrayana Mont., Ann. Sci. Nat., Bot., sér. 2, 18: 13. 1842. ≡ *Frullania tamarisci* (L.) Dumort. subsp. *asagrayana* (Mont.) S. Hatt. in Hara, Fl. E. Himalaya 1: 528. 1966.

Sullivant (1856: 697) incorrectly changed the Montagne spelling from "Asagrayana" to "Grayana," which has frequently appeared in the literature. That is contrary to Article 60.1 (McNeill et al., 2012), which states that "the original spelling of a name or epithet is to be retained" and the Sullivant orthographical variant is to "be corrected to the validly published form of that name" following Article 61.4 (McNeill et al., 2012). In our checklist (Stotler & Crandall-Stotler, 1977: 412), we followed the concept of Hattori (1972) and considered *Frullania asagrayana* and *F. nisquallensis* Sull. as subspecies of *F. tamarisci* L., but we later showed that these taxa should be considered distinct at the rank of species (Crandall-Stotler et al., 1987). One of the conclusions of a molecular study by Hentschel et al. (2009) was rejection of our hypothesis of specific rank for this taxon (Crandall-Stotler et al., 1987) in favor of the subspecies hypothesis elaborated in Hattori (1972). However, that conclusion was reversed a year later in a more expanded molecular study of *Frullania* (Heinrichs et al., 2010b) that showed the taxa to be distinct species.

Distribution. This species is endemic to eastern North America from Newfoundland south to Georgia and west through Ontario, Minnesota, and south to Arkansas.

Frullania bolanderi Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 226. 1869.

Distribution. This species is from Newfoundland and Nova Scotia to New England, west through Ohio to Minnesota and Iowa. It is found in the Pacific Northwest from British Columbia to California. It is also in Sakhalin and eastern Asia and is rare in Scandinavia.

Frullania brittoniae A. Evans, Trans. Connecticut Acad. Arts 10: 15. 1897. ≡ *Frullania muscicola* Steph. subsp. *brittoniae* (A. Evans) R. M. Schust. & S. Hatt., J. Hattori Bot. Lab. 49: 165. 1981.

Schuster (1992a) pointed out that he and S. Hattori had once considered *Frullania brittoniae* to be a subspecies of the Asiatic *F. muscicola*, but, in the absence of intermediates, retained *F. brittoniae* as a species. He did not, however, formally synonymize the subspecies, which we now do.

Distribution. This North American endemic is found from New England to Florida and west to Texas, Kansas, and Minnesota.

Frullania californica (Austin ex Underw.) A. Evans, Trans. Connecticut Acad. Arts 10: 25. 1897. Basionym: *Frullania* [*asa*]*grayana* Mont. var. *californica* Aust. ex Underw., Bull. Illinois State Lab. Nat. Hist. 2: 67. 1884.

Although Evans (1897: 25) listed Austin parenthetically as the author, it was actually Underwood (1884: 67) who validly published the name "Var. Californica Aust. MS." Although he ascribed the name to Austin, there is no evidence that Austin wrote the validating description (McNeill et al., 2012: Art. 46.5). Recognition of this taxon at species rank is supported by the molecular study by Heinrichs et al. (2010b).

Distribution. This species is found from British Columbia south through California, to Guadalupe Island off the west coast of Mexico.

Frullania catalinae A. Evans, Trans. Connecticut Acad. Arts 10: 11. 1897.

Distribution. This species is endemic to coastal California.

Frullania caulisequa (Nees) Mont., Ann. Sci. Nat., Bot., sér. 2, 12: 51. 1839. Basionym: *Jungermannia caulisequa* Nees, Fl. Bras. Enum. Pl. 1: 373. 1833. = *Frullania obcordata* (Lehm. & Lindenb.) Lehm. & Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 447. 1845 (syn. fide Yuzawa,

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

1988: 445). Basionym: *Jungermannia obcordata* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 6: 51. 1834.= *Frullania gymnotis* Nees & Mont., Ann. Sci. Nat., Bot., sér. 2, 19: 257. 1843 (syn. fide Gradstein & Costa, 2003: 86).

Yuzawa (1988) cited Nees as the combining author for *Frullania caulisequa*, but Montagne (1839: 51) transferred *Jungermannia caulisequa* to the genus *Frullania* prior to Nees in Gottsche et al. (1845: 448) and hence is the correct author to cite for this combination. The treatment of *F. obcordata* as a synonym of *F. caulisequa* was supported by the molecular study of Hentschel et al. (2009), and based on the Principle of Priority, the correct name for this taxon is *F. caulisequa* (Nees) Mont.

Distribution. This species is widespread from northern South America and Central America through the West Indies, into Florida, west to Louisiana, and north along the Coastal Plain to North Carolina and Virginia.

Frullania chilcootiensis Steph., Bot. Jahrb. Syst. 8: 98. 1887.

Distribution. This species is known only from the type collection in Alaska.

Frullania cobrensis Gottsche ex Steph., Hedwigia 33: 142. 1894.

Distribution. This species is endemic to Florida and Cuba.

Frullania compacta Gottsche ex Steph., Sp. Hepat. 4: 493. 1911. —EXCLUDED.

Study of the type specimen of *Frullania compacta* led to the reduction of it to *F. brasiliensis* (Stotler, 1970), which has yet to be found in our flora. Schuster (1992a: 70) referred a specimen identified as *F. compacta* by A. Evans to *F. cucullata* Lindenb. & Gottsche, but cited two of his own southern Florida collections to represent *F. compacta*. Based upon his treatment, however, it is most likely that those collections likewise represent *F. cucullata*.

Frullania cucullata Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 782. 1847.

Yuzawa and Koike (1989: 356) pointed out that the stylus of *Frullania intumescens* (Lehm. & Lindenb.) Lehm. & Lindenb. has a large basal appendage that lies beneath the underleaves, which was overlooked by Stotler (1970). Until such a time that that character can be documented in the type material of *F. cucullata*, which had been reduced to *F. intumescens*, this species should be reinstated. Yuzawa and Koike (1989: 358) have similarly reestablished *F. closterantha* Spruce, which had also been synonymized with *F. intumescens* by Stotler (1970).

Distribution. According to Schuster (1992a: 75), this species "occur[s] as a great rarity in the southern tip of Florida"; it is otherwise found throughout Central America.

Frullania davurica Hampe subsp. *jackii* (Gottsche) S. Hatt. ≡ **Frullania jackii** Gottsche.

Frullania donnellii Austin, Bull. Torrey Bot. Club 6: 301. 1879.

Distribution. This species is endemic to the southeastern United States along the Coastal Plain from North Carolina to Florida and west through Alabama and Mississippi.

Frullania eboracensis Lehm., Nov. Stirp. Pug. 8: 14. 1844, subsp. **eboracensis**.

Lehmann (1844) described *Frullania eboracensis* prior to the publication of "*Frullania eboracensis* Gottsche" in Gottsche et al. (1845: 423). According to the late P. Geissler (pers. comm.) there is absolutely no indication that Gottsche authored this entry in Lehmann's *Pugillus* (1844) nor did Lehmann ascribe that binomial to Gottsche. The same can be said for *F. virginica* Lehm., which likewise appeared in that publication (Lehmann, 1844: 19). Many of the new names that Lehmann coauthored in his *Pugillus* series do not have the authors listed by the name in the text, but simply "n. sp." It is in the index to the series that the actual authors are given. For both *F. eboracensis* and *F. virginica* (see below), only "Herb. Lehm." appears.

Distribution. A single location of this subspecies is reported in Alaska (Steere & Inoue, 1978: 328); elsewhere it is found from Quebec south to Georgia, west to Manitoba and Minnesota, and south to Oklahoma and Arkansas.

Frullania eboracensis subsp. **parvistipula** (Steph.) R. M. Schust., Hepat. Anthocerotae N. Amer. 5: 142. 1992. Basionym: *Frullania parvistipula* Steph., Sp. Hepat. 4: 397. 1910.

When Schuster (1992a: 142) proposed treatment of the Eurasian *Frullania parvistipula* Steph. as a subspecies of *F. eboracensis* Lehm., he indicated that this taxon might occur in Alaska. Hentschel et al. (2009: 154) recognized two North American accessions (locations not given) that matched the description of "*parvistipula*" and adopted the subspecies concept of Schuster. Earlier, Grolle and Long (2000) and Konstantinova et al. (2009: 43) maintained *F. parvistipula* as a species distinct from *F. eboracensis*.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This subspecies is found in Europe, Asia, and possibly Alaska.

Frullania eboracensis subsp. **virginica** (Lehm.) R. M. Schust., Hepat. Anthocerotae N. Amer. 5: 147. 1992. Basionym: *Frullania virginica* Lehm., Nov. Stirp. Pug. 8: 19. 1844.

The author for *Frullania virginica* typically had been considered to be Gottsche in Lehmann, but Lehmann is the correct author for this name (see *F. eboracensis* subsp. *eboracensis*).

Distribution. This species is confined to the southeastern United States from Virginia to Georgia and west through Tennessee to Arkansas and Louisiana.

Frullania ericoides (Nees) Mont., Ann. Sci. Nat., Bot., sér. 2, 12: 51. 1839. Basionym: *Jungermannia ericoides* Nees, Fl. Bras. Enum. Pl. 1: 346. 1833.

Montagne (1839: 51) transferred *Jungermannia ericoides* Nees to the genus *Frullania* prior to Nees in Gottsche et al. (1845: 417) and hence is the correct author to cite for this combination. *Frullania squarrosa* (Mont.) Nees in Gottsche et al. (1845: 416) was placed into synonymy of *F. ericoides* by Grolle (1968: 541), which was inadvertently overlooked by us in our checklist (Stotler & Crandall-Stotler, 1977).

Distribution. This species is from Rhode Island, Connecticut, and New York, west to Iowa and Oklahoma, and south to Texas and Florida. It is common in tropical South America into the West Indies and Central America, tropical Africa, and tropical Asia from India to China and Japan.

Frullania franciscana M. Howe, Erythea 2: 99. 1894.

Distribution. This species is endemic along the Pacific Coast, from Alaska south through British Columbia, Washington, Oregon, and into California.

Frullania gibbosa Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 411. 1845.

Distribution. This species is found in Florida, the West Indies, and Central and South America.

Frullania gymnotis Nees & Mont. = **Frullania caulisequa** (Nees) Mont.

Frullania hattoriana J. D. Godfrey & G. Godfrey, J. Hattori Bot. Lab. 48: 321. 1980.

Distribution. This species is known only from British Columbia.

Frullania inflata Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 424. 1845, var. **inflata**.

Distribution. This taxon is from New England to Florida, west to Texas and Minnesota. It is also in Europe, Siberia, and the Russian Far East.

Frullania inflata var. **communis** R. M. Schust., Phytologia 57: 372. 1985.

Distribution. This taxon is from New England to Florida, west to Texas, New Mexico, and Arizona, and north to South Dakota.

Frullania inflata var. *stylifera* R. M. Schust. ≡ **Frullania stylifera** (R. M. Schust.) R. M. Schust.

Frullania jackii Gottsche, Hepat. Eur.: 294. 1863. ≡ *Frullania davurica* Hampe subsp. *jackii* (Gottsche) S. Hatt., Bull. Natl. Sci. Mus., Tokyo, B 2: 21. 1976.

Although Hattori (1976: 21) proposed the reduction of *Frullania jackii* to subspecific rank (*F. davurica* Hampe subsp. *jackii* (Gottsche) S. Hatt.), the molecular study of Hentschel et al. (2009) supports recognition of them as separate, closely related species. Schuster (1992a: 16) referred to the inclusion of this species in North America by Schuster and Steere (1958: 193) as being "of dubious validity."

Distribution. This species is possibly in Alaska; it is also known from southeastern, central, and northern Europe east to southwest Russia, the Caucasus, and Turkey.

Frullania kunzei (Lehm. & Lindenb.) Lehm. & Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 449. 1845. Basionym: *Jungermannia kunzei* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 6: 50. 1834.

Distribution. This species is found in the southeastern United States from Virginia and North Carolina south to Florida and west to Texas, Oklahoma, and Kansas. It is common in northern South America and the West Indies.

"*Frullania kunzei* (Lehm. & Lindenb.) Lehm. & Lindenb. var. *maritima* R. M. Schust.," J. Hattori Bot. Lab. 70: 145. 1991, nom. inval. (McNeill et al., 2012: Art. 40.7).

Frullania muscicola Steph. subsp. *brittoniae* (A. Evans) R. M. Schust. & S. Hatt. ≡ **Frullania brittoniae** A. Evans.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Frullania nisquallensis Sull., Mem. Amer. Acad. Arts, n.s. 4: 175. 1849. ≡ *Frullania tamarisci* (L.) Dumort. subsp. *nisquallensis* (Sull.) S. Hatt. in Hara, Fl. E. Himalaya 1: 528. 1966 [See discussion under *F. asagrayana* above].

Distribution. This species is found along the Pacific Coast in western North America from southeastern Alaska to northern California, and in Siberia, the Russian Far East, and Sakhalin.

Frullania oakesiana Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 226. 1869, subsp. **oakesiana**.

This autonym was created when Schuster named the Asian taxon *Frullania oakesiana* Austin subsp. *takayuensis* (Steph.) R. M. Schust. Basionym: *Frullania takayuensis* Steph., Sp. Hepat. 4: 399. 1910.

Distribution. This circumboreal species is found from Newfoundland to North Carolina and Tennessee, west to Michigan, Wisconsin, and Minnesota. It is also of restricted distribution in northern Europe and in the Russian Far East.

Frullania obcordata (Lehm. & Lindenb.) Lehm. & Lindenb. = **Frullania caulisequa** (Nees) Mont.

Frullania plana Sull., Mem. Amer. Acad. Arts, n.s. 4: 175. 1849.

Distribution. This species is endemic to eastern North America from Massachusetts through New York south to Ohio, Kentucky, Tennessee, and Georgia. It is disjunct in the Ozark Mountains of Arkansas.

Frullania rio-janeirensis (Raddi) Ångstr., Öfvers. Kongl. Vetensk.-Akad. Förh. 33: 88. 1876. Basionym: *Frullanoides rio-janeirensis* Raddi, Critt. Bras.: 14. 1822.

Although Spruce has generally been credited as the author of *Frullania rio-janeirensis*, Ångström (1876: 88) effectively published the combination *F. rio-janeirensis* several years prior to Spruce (1884: 23). ≡ *Frullania arietina* Taylor ex Gottsche, Lindenb. & Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 413. 1845 (syn. fide Yuzawa, 1991: 252). In our checklist (Stotler & Crandall-Stotler, 1977: 412) we had Taylor as the author for *F. arietina*, but this name was actually validly published by Gottsche, Lindenberg & Nees and ascribed to Taylor.

Distribution. This species is found in Florida, the West Indies, and South and Central America.

Frullania riparia Hampe ex Lehm., Nov. Stirp. Pug. 7: 14. 1838.

Distribution. This species is found from New England to Florida and west to Minnesota and Texas through New Mexico, Arizona, and Mexico. It is also in Europe and Asia.

Frullania sabaliana R. M. Schust., Phytologia 53: 365. 1983.

Schuster (1983: 365) described *Frullania sabaliana* as a species with close affinities to *F. inflata* Gottsche.

Distribution. This species is known only from Florida.

Frullania selwyniana Pearson, Geol. Nat. Hist. Surv. Canada, Ser. 3: 1. 1890.

An account of the ecology and the recovery of this rare species is given in Janssens and Greenlee (2009).

Distribution. This species is endemic to eastern North America from Quebec and Ontario through New England and west to Ohio, Michigan, Wisconsin, and Minnesota.

Frullania squarrosa (Mont.) Nees = **Frullania ericoides** (Nees) Mont.

Frullania stylifera (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 5: 210. 1992. Basionym: *Frullania inflata* Gottsche var. *stylifera* R. M. Schust., Phytologia 53: 366. 1983.

Distribution. This species is known only from the type location in Minnesota.

Frullania tamarisci (L.) Dumort., Recueil Observ. Jungerm.: 13. 1835. Basionym: *Jungermannia tamarisci* L., Sp. Pl. 2: 1134. 1753.

The presence of this taxon in our flora has been confirmed only for Nova Scotia and Maine by Heinrichs et al. (2010b). The reports from Mississippi and Arkansas by Schuster (1992a: 58) are in error, and most of his other reports likely are as well.

Distribution. This species is common throughout Europe, but in North America this species is restricted to the extreme northeastern United States and Canada.

Frullania tamarisci (L.) Dumort. subsp. *asagrayana* (Mont.) S. Hatt. ≡ **Frullania asagrayana** Mont.

Frullania tamarisci (L.) Dumort. subsp. *nisquallensis* (Sull.) S. Hatt. ≡ **Frullania nisquallensis** Sull.

Frullania tamarisci (L.) Dumort. subsp. *tamarisci* ≡ **Frullania tamarisci** (L.) Dumort.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Frullania taxodiocola R. M. Schust., Phytologia 53: 364. 1983.

Distribution. This species is known only from the type locality in Florida.

Frullania virginica Lehm. ≡ **Frullania eboracensis** Lehm. subsp. **virginica** (Lehm.) R. M. Schust.

Frullanoides Raddi, Critt. Bras.: 13. 1822. TYPE: *Frullanoides densifolia* Raddi, Crittog. Bras.: 14. 1822. [29. LEJEUNEACEAE.]

Seven species have been recognized in this genus, with two in our flora.

Frullanoides bahamensis (A. Evans) van Slageren, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 544: 81. 1985. Basionym: *Brachiolejeunea bahamensis* A. Evans, Bull. Torrey Bot. Club 35: 383. 1908.

Distribution. This species is found in Florida and the northern Caribbean.

Frullanoides corticalis (Lehm. & Lindenb.) van Slageren, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 544: 84. 1985. Basionym: *Jungermannia corticalis* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 50. 1832. ≡ *Brachiolejeunea corticalis* (Lehm. & Lindenb.) Schiffn., Hedwigia 33: 180. 1894.

Distribution. This species is found in Florida and the coastal regions of the West Indies, northern South America, and southeastern Brazil.

Fuscocephaloziopsis Fulford, Mem. New York Bot. Gard. 11: 353. 1968. TYPE: *Fuscocephaloziopsis pulvinata* (Steph.) Fulford, Mem. New York Bot. Gard. 11: 355. 1968. Basionym: *Alobiella pulvinata* Steph., Sp. Hepat. 3: 356. 1908. [33. CEPHALOZIACEAE.]

Originally defined to include two species of Latin American Cephaloziaceae, this genus now includes 19 species, including 17 previously placed in *Cephalozia*, *Pleurocladula*, or *Schofieldia*. See the discussion under *Cephalozia*.

Of the 19 species currently recognized in the genus, 11 occur in North America.

Fuscocephaloziopsis affinis (Lindb. ex Steph.) Váňa & L. Söderstr., Phytotaxa 112: 8. 2013. Basionym: *Cephalozia affinis* Lindb. ex Steph., Sp. Hepat. 3: 291. 1908.

This problematic species has been recognized in recent years by most authors, including Grolle and Long (2000) and Damsholt (2009), but because it can be separated from *Cephalozia lunulifolia* only when fertile it has often been treated as a synonym of it (Konstantinova et al., 2009: 42) or, as Paton suggested (1999: 111), an autoicous phase of that species. However, the analyses of Vilnet et al. (2012) support the recognition of *C. affinis* as distinct from *C. lunulifolia*.

Distribution. This species is only confirmed for Minnesota in North America; it is known elsewhere from Norway, Sweden, Finland, and the Himalayas. The reports from California and Washington by Frye and Clark (1945: 489) are regarded to be in error. In fact, it is not even mentioned in the Doyle and Stotler California catalogue (2006), and Hong (2002: 132) listed the report from Washington as *Cephalozia lunulifolia*.

Fuscocephaloziopsis albescens (Hook.) Váňa & L. Söderstr., Phytotaxa 112: 9. 2013, var. **albescens**. Basionym: *Jungermannia albescens* Hook., Brit. Jungermann. pl. 72. 1815. ≡ *Pleurocladula albescens* (Hook.) Grolle, J. Bryol. 10: 269. 1979, var. *albescens*. ≡ *Cephalozia albescens* (Hook.) Dumort., Recueil Observ. Jungerm.: 18. 1835.

Distribution. This variety is found in the west from Alaska to British Columbia and Alberta south to Washington and Montana, and from Greenland to Quebec in the east. A report from California was excluded by Doyle and Stotler (2006: 174).

Fuscocephaloziopsis albescens var. **islandica** (Nees) Váňa & L. Söderstr., Phytotaxa 112: 9. 2013. Basionym: *Jungermannia islandica* Nees, Naturgesch. Eur. Leberm. 2: 5, 29. 1836. ≡ *Pleurocladula albescens* (Hook.) Grolle var. *islandica* (Nees) L. Söderstr. & Váňa, Lindbergia 27: 43. 2002.

Konstantinova et al. (2009: 50) considered *Pleurocladula islandica* (Nees) Grolle to be a synonym of *P. albescens* (Hook.) Grolle, but we follow Söderström et al. (2002: 43) and maintain it at the rank of variety.

Distribution. This variety is found from Greenland and Baffin Island to Quebec. It is also in northern Europe south to Switzerland.

Fuscocephaloziopsis catenulata (Huebner) Váňa & L. Söderstr., Phytotaxa 112: 9. 2013. Basionym: *Jungermannia catenulata* Huebener, Hepaticol. Germ.: 169. 1834. ≡ *Cephalozia catenulata* (Huebener) Lindb., Contr. Fl. Crypt. As. 10: 262. 1872.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is common in the boreal forests of North America from British Columbia and Alberta to Idaho and California, and from Newfoundland to Quebec, south to Florida and west to Louisiana, Kansas, and Minnesota. In Europe, it is found from Scandinavia through the British Isles to northern Italy, the Black Sea, and Russia into Asia.

Fuscocephaloziopsis connivens (Dicks.) Váňa & L. Söderstr., Phytotaxa 112: 9. 2013, var. **connivens**. Basionym: *Jungermannia connivens* Dicks., Fasc. Pl. Crypt. Brit. 4: 19. 1801. ≡ *Cephalozia connivens* (Dicks.) Lindb., Contr. Fl. Crypt. As. 10: 238. 1872.

Distribution. This variety is found from Alaska to Greenland, south to Florida and west to Texas and Minnesota; it is also found throughout northern and central Europe to Spain and east to northern Asia and Japan.

Fuscocephaloziopsis connivens var. **bifida** (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Cephalozia connivens* (Dicks.) Lindb. var. *bifida* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 809. 1974.

Distribution. This variety is known only from Florida and North Carolina.

Fuscocephaloziopsis connivens var. **compacta** (Warnst.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Cephalozia compacta* Warnst., Krypt.-Fl. Brandenburg, Leber- & Torfmoose: 217. 1903.

Neither Paton (1999: 115) nor Konstantinova et al. (2009: 42) recognize this variety, whereas both Schuster (1974: 807) and Damsholt (2009: 516) do.

Distribution. This variety is reported in North America from Maine, Massachusetts, Michigan, and Minnesota and in Europe from Austria, Germany, Denmark, and Sweden.

Fuscocephaloziopsis leucantha (Spruce) Váňa & L. Söderstr., Phytotaxa 112: 10. 2013. Basionym: *Cephalozia leucantha* Spruce, Cephalozia: 68. 1882. ≡ *Pleurocladula leucantha* (Spruce) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Distribution. This species is found from Alaska and the Yukon to British Columbia and Washington and Greenland to Quebec, Vermont, New York, and Minnesota. It is also from Scandinavia to the British Isles and central Europe east to Siberia, Sakhalin, and Japan.

Fuscocephaloziopsis loitlesbergeri (Schiffn.) Váňa & L. Söderstr., Phytotaxa 112: 10. 2013. Basionym: *Cephalozia loitlesbergeri* Schiffn., Oesterr. Bot. Z. 62: 10: 1912. ≡ *Pleurocladula loitlesbergeri* (Schiffn.) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Distribution. This species is found in Greenland to Quebec, New England, Michigan, and Minnesota. It is also from Scandinavia to central Europe and the Russian Far East.

Fuscocephaloziopsis lunulifolia (Dumort.) Váňa & L. Söderstr., Phytotaxa 112: 10. 2013. Basionym: *Jungermannia lunulifolia* Dumort., Syll. Jungerm. Europ.: 61. 1831. ≡ *Cephalozia lunulifolia* (Dumort.) Dumort., Recueil Observ. Jungerm.: 18. 1835. ≡ *Pleurocladula lunulifolia* (Dumort.) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Cephalozia affinis Lindb. ex Steph. (Sp. Hepat. 3: 291. 1908) is often regarded as a monoicous phase of this species (see Schuster, 1974: 793; Paton, 1999: 111).

Distribution. This species is found from Alaska and the Yukon, British Columbia, and Alberta to California and Nevada, and from Greenland to Ontario south to Florida, west to Missouri, Kansas, and Minnesota. It is widespread throughout Europe and in Siberia, the Russian Far East, China, and Japan.

Fuscocephaloziopsis macrostachya (Kaal.) Váňa & L. Söderstr., Phytotaxa 112: 10. 2013, subsp. **macrostachya**. Basionym: *Cephalozia macrostachya* Kaal., Rev. Bryol. 29: 8. 1902. ≡ *Pleurocladula macrostachya* (Kaal.) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Distribution. This subspecies is found in the northeastern United States from Greenland to New England and New York, and from Virginia to Florida, west to Texas. It is also widespread throughout western and central Europe.

Fuscocephaloziopsis macrostachya subsp. **australis** (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 112: 10. 2013. Basionym: *Cephalozia macrostachya* Kaal. subsp. *australis* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 754. 1974.

Distribution. This subspecies is known only from North Carolina and Mississippi.

Fuscocephaloziopsis monticola (J. D. Godfrey) Váňa & L. Söderstr., Phytotaxa 112: 11. 2013. Basionym: *Schofieldia monticola* J. D. Godfrey,

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Bryologist 79: 315. 1976. ≡ *Pleurocladula monticola* (J. D. Godfrey) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012. ≡ *Cephalozia monticola* (J. D. Godfrey) Potemkin & Sofronova, Arctoa 22: 190. 2013.

Distribution. This species is found in British Columbia and Washington in North America; it is also found in Kamchatka Peninsula, Russia.

Fuscocephaloziopsis pachycaulis (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 112: 11. 2013. Basionym: *Cephalozia pachycaulis* R. M. Schust., Bryologist 96: 623. 1993. ≡ *Pleurocladula macrostachya* (Kaal.) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Distribution. This species is known from Alaska, Siberia, and the Russian Far East.

Fuscocephaloziopsis pleniceps (Austin) Váňa & L. Söderstr., Phytotaxa 112: 11. 2013, var. **pleniceps**. Basionym: *Jungermannia pleniceps* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 222. 1869. ≡ *Cephalozia pleniceps* (Austin) Lindb. var. *pleniceps*, Meddeland. Soc. Fauna Fl. Fennica 9: 158. 1883. ≡ *Pleurocladula pleniceps* (Austin) Konstant., Vilnet & A. V. Troitsky, Arctoa 21: 125. 2012.

Distribution. This variety is in the west from Alaska and the Yukon south to California, Wyoming, Nevada, and New Mexico, and in the east from Greenland to Ontario, New England, and New York. It is in Europe from Scandinavia and Russia south to the British Isles, France, and Italy, and in Siberia and the Russian Far East.

Fuscocephaloziopsis pleniceps var. **caroliniana** (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 112: 11. 2013. Basionym: *Cephalozia pleniceps* (Austin) Lindb. var. *caroliniana* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 780. 1974.

Distribution. This variety is known only from the type in North Carolina.

Fuscocephaloziopsis pleniceps var. **sphagnorum** (C. Massal.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Cephalozia symbolica* (Gottsche & Rabenh.) Breidl. var. *sphagnorum* C. Massal., Malpighia 21: 306. 1907. ≡ *Cephalozia pleniceps* (Austin) Lindb. var. *sphagnorum* (C. Massal.) Jørg., Bergens Mus. Skr. 16: 266. 1934.

The status of this variety is questionable, but it is recognized by Schuster (1974) and Damsholt (2002).

Distribution. This variety is known from Minnesota, New York, and central Europe.

Geocalyx Nees, Naturgesch. Eur. Leberm. 1: 97. 15 Sep.–15 Dec. 1833. TYPE: *Geocalyx graveolens* (Schrad.) Nees, Naturgesch. Eur. Leberm. 1: 397. 1833. Basionym: *Jungermannia graveolens* Schrad., Syst. Samm. Cryptog. Gew. 2: 6. 1797. [39. GEOCALYCACEAE.]

This is a genus of two species, with one in our flora.

Geocalyx graveolens (Schrad.) Nees, Naturgesch. Eur. Leberm. 1: 397. 1833. Basionym: *Jungermannia graveolens* Schrad., Syst. Samm. Cryptog. Gew. 2: 6. 1797.

Distribution. This species is found from Alaska to California and from Labrador to North Carolina and Tennessee; it is also found throughout Europe from Scandinavia to the Azores and Madeira.

Geothallus Campb., Bot. Gaz. 21: 13. Jan. 1896. TYPE: *Geothallus tuberosus* Campb., Bot. Gaz. 21: 13. 1896. [4. SPHAEROCARPACEAE.]

Geothallus is a monotypic genus.

Geothallus tuberosus Campb., Bot. Gaz. 21: 13. 1896.

Distribution. This species is endemic to southern California.

Gymnocolea (Dumort.) Dumort., Rec. Observ. Jungerm. 17. 1835. Basionym: *Jungermannia* sect. *Gymnocolea* Dumort., Syll. Jungerm. Europ.: 52. 1831. TYPE: *Gymnocolea inflata* (Huds.) Dumort., Rec. Observ. Jungerm. 17. 1835. Basionym: *Jungermannia inflata* Huds., Fl. Angl. (ed. 2): 511. 1778. [34. ANASTROPHYLLACEAE.]

This is a genus of about seven species, with three in our flora.

Gymnocolea acutiloba (Schiffn.) Müll. Frib. ≡ **Gymnocolea inflata** (Huds.) Dumort. subsp. **acutiloba** (Schiffn.) R. M. Schust. & Damsh. ex L. Söderstr. & Váňa.

Gymnocolea borealis (Frisvoll & Moen) R. M. Schust., Lindbergia 12: 7. 1986. Basionym: *Lophozia borealis* Frisvoll & Moen, Lindbergia 6: 138. 1980. ≡ *Leiocolea borealis* (Frisvoll & Moen) L. Söderstr., Norrl. Bladleverm.: 32. 1981.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is known only from Greenland and Scandinavia.

Gymnocolea fascinifera Potemkin, Arctoa 2: 76. 1993.

Distribution. This species is known from Alaska and the Yamal Peninsula in Russia.

Gymnocolea inflata (Huds.) Dumort., Recueil Observ. Jungerm.: 17. 1835, subsp. **inflata**. Basionym: *Jungermannia inflata* Huds., Fl. Angl. (ed. 2): 511. 1778. = *Gymnocolea inflata* (Huds.) Dumort. var. *heterostipa* (Carrington & Spruce) Müll. Frib., Lebermoose: 743. 1910 (syn. fide Söderström et al., 2002: 44). Basionym: *Cephalozia heterostipa* Carrington & Spruce, Cephalozia: 55. 1882.

Distribution. This transcontinental subspecies is found from Greenland and Baffin Island to Alaska, south to California, and in the east, south to North Carolina and Tennessee. It is widely distributed in Europe and in Turkey, Siberia, and Japan.

Gymnocolea inflata subsp. **acutiloba** (Schiffn.) R. M. Schust. & Damsh. ex L. Söderstr. & Váňa, Lindbergia 27: 43. 2002. Basionym: *Lophozia inflata* (Huds.) M. Howe var. *acutiloba* Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 53: 111. 1905.

Although Schiffner (1908: 187) described *Lophozia acutiloba* (Kaal.) Schiffn. as a species based on *Jungermannia acutiloba* Kaal., he had earlier included it as *L. inflata* var. *acutiloba* Kaal in a published list that he authored. However, the name *J. acutiloba* Kaal. is illegitimate, being a later homonym of *J. acutiloba* Hook. & Taylor (see Grolle & Long, 2000: 118). At either rank, the epithet *acutiloba* must, therefore, be treated as a new name, with Schiffn. as the sole author. Since the publication of *L. inflata* var. *acutiloba* Schiffn. predates that of *L. acutiloba* Schiffn., the former must serve as the basionym for *Gymnocolea inflata* subsp. *acutiloba*. [≡ *G. acutiloba* (Schiffn.) Müll. Frib., Lebermoose: 745. 1910. ≡ *G. inflata* (Huds.) Dumort. var. *acutiloba* (Schiffn.) Arnell in Hartman's Handbok i Skandinaviens Flora Vol. 2a: 108. 1928 (syn. fide Söderström et al., 2002: 44)].

Distribution. This subspecies is found in Alaska and Greenland; it is also in central and northern Europe, west to Great Britain, and in Turkey.

Gymnocolea inflata (Huds.) Dumort. var. *acutiloba* (Schiffn.) Arnell ≡ **Gymnocolea inflata** subsp. **acutiloba** (Schiffn.) R. M. Schust. & Damsh. ex L. Söderstr. & Váňa.

Gymnocolea inflata (Huds.) Dumort. var. *heterostipa* (Carrington & Spruce) Müll. Frib. = **Gymnocolea inflata** subsp. **inflata.**

Gymnocolea inflata (Huds.) Dumort. var. *inflata* ≡ **Gymnocolea inflata** subsp. **inflata.**

Gymnomitrion Corda in Opiz, Naturalientausch 12: 651. Sep. 1829, nom. cons. TYPE: *Gymnomitrion concinnatum* (Lightf.) Corda, Deutschl. Fl., Abt. II, Cryptog. 19–20: 23. 1830. Basionym: *Jungermannia concinnata* Lightf., Fl. Scot. 2: 786. 1777. [46. GYMNOMITRIACEAE.]

The genus *Apomarsupella*, described by Schuster on the basis of *Anomoclada* Spruce–type branching, is now considered synonymous with *Gymnomitrion* (Shaw et al., 2015).

This genus is currently comprised of 27 species, with 10 in our flora.

Gymnomitrion adustum Nees, Naturgesch. Eur. Leberm. 1: 120. 1833. —EXCLUDED.

The reports from eastern and western Canada were deleted by Váňa et al. (2010a: 17).

Gymnomitrion alpinum (Gottsche ex Husn.) Schiffn., Oesterr. Bot. Z. 53: 280. 1903. Basionym: *Sarcocyphos alpinus* Gottsche ex Husn., Hepaticol. Gall.: 13. 1875. ≡ *Marsupella alpina* (Gottsche ex Husn.) Bernet, Cat. Hép. Suisse: 29. 1888.

In our checklist (Stotler & Crandall-Stotler, 1977: 414) we followed Grolle (1976: 210) with "(Mass. & Carest.) H. Bern." as the author of *Marsupella alpina*. The correct author of the basionym, however, is Gottsche ex Husn.

Distribution. This species is found in western North America (Alaska) and Japan.

Gymnomitrion apiculatum (Schiffn.) Müll. Frib. ≡ **Marsupella apiculata** Schiffn.

Gymnomitrion brevissimum (Dumort.) Warnst., Hedwigia 53: 196. 1913. Basionym: *Acolea brevissima* Dumort., Syll. Jungerm. Europ.: 76. 1831. ≡ *Marsupella brevissima* (Dumort.) Grolle, J. Jap. Bot. 40: 213. 1965.

Distribution. This species is found from Alaska to British Columbia, Washington, and Alberta, and in Greenland. It is also in Scandinavia into central Europe, Siberia, the Russian Far East, the Indian subcontinent, and China.

Gymnomitrion commutatum (Limpr.) Schiffn., Magyar Bot. Lapok 13: 304. 1914 [1915]. Basionym: *Sarcocy-*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

phos commutatus Limpr., Jahresber. Schles. Ges. Vaterl. Cult. 57: 312. 1889. ≡ *Marsupella commutata* (Limpr.) Bernet, Cat. Hép. Suisse: 29. 1888.

Distribution. This species is found along the central Pacific Coast in North America to Alaska and the Yukon, and in South Greenland and Japan.

Gymnomitrion concinnatum (Lightf.) Corda, Deutschl. Fl., Abt. II, Cryptog. 19–20: 23. 1830. Basionym: *Jungermannia concinnata* Lightf., Fl. Scot. 2: 786. 1777.

Distribution. This transcontinental species is found from Alaska south to British Columbia, Washington, Montana, and Colorado, and in the east from Greenland south to New England. It is also found throughout Europe into Turkey, the Himalayas, and Siberia to Japan.

Gymnomitrion corallioides Nees, Naturgesch. Eur. Leberm. 1: 118. 1833.

Distribution. This transcontinental species is found from the Yukon and Alaska south to Colorado and New Hampshire, and in Greenland. It is also found throughout Europe and in Siberia and the Japanese Alps.

Gymnomitrion laceratum (Steph.) Horik., Acta Phytotax. Geobot. 13: 212. 1943. Basionym: *Acolea lacerata* Steph., Sp. Hepat. 6: 78. 1917.

Note that the name *Sphenolobus laceratus* Steph. is the basionym for *Marsupella lacerata* (Steph.) Váňa. = *Gymnomitrion bolivianum* (Steph.) Váňa, Novon 20: 225. 2010 (syn. fide Váňa et al., 2010a: 19; see also Váňa et al., 2010b: 225). Basionym: *Anastrophyllum bolivianum* Steph., Biblioth. Bot. 87: 186. 1916.

Distribution. This species is of local occurrence in Tennessee but is widespread, with reports in Japan, tropical East and South Africa, South America, and Mexico.

Gymnomitrion mucrophorum R. M. Schust., Bryologist 98: 243. 1995.

Damsholt (2010) recently reported this species from eastern Greenland.

Distribution. This species is known only from Alaska and Greenland.

Gymnomitrion obtusum Lindb., Morgonbladet (Helsinki) (30): 337. 1877.

In our checklist (Stotler & Crandall-Stotler, 1977: 412) we cited the author of this name as (Lindb.) Pears. following Grolle (1976: 196) but have found from Váňa et al. (2010a: 25) that Lindberg had validly published this binomial on February 6, 1877, in the Helsinki, Finland, morning newspaper.

Distribution. This species is found from Alaska to British Columbia, Washington, and Oregon, and in Greenland. It is also of scattered occurrence throughout Europe and is known from the Himalayas in Asia.

Gymnomitrion pacificum Grolle, Trans. Brit. Bryol. Soc. 5: 92. 1966.

The reports of *Gymnomitrion crenulatum* Gottsche ex Carrington from western Canada and perhaps Baffin Island belong here, as pointed out in our checklist (Stotler & Crandall-Stotler, 1977: 427).

Distribution. This species is found in southern Alaska to British Columbia and Japan.

Gymnomitrion revolutum (Nees) H. Philib., Rev. Bryol. 17: 34. 1890, subsp. **revolutum**. Basionym: *Sarcocyphos revolutus* Nees, Naturgesch. Eur. Leberm. 2: 419. 1836, as "*Sarcocyphus*." ≡ *Marsupella revoluta* (Nees) Trevis., Rendiconti Ist. Lombardo Sci., Cl. Sci. Mat. 7: 783. 1874. ≡ *Apomarsupella revoluta* (Nees) R. M. Schust., J. Hattori Bot. Lab. 80: 82. 1996.

Distribution. This subspecies is found in Greenland, the Baffin Islands, and western Canada. It is also in Scandinavia, the Alps and Tatra Mountains, and in Asia from the Himalayas to China and Japan.

Gyrothyra M. Howe, Bull. Torrey Bot. Club 24: 201. 24 Apr. 1897. TYPE: *Gyrothyra underwoodiana* M. Howe, Bull. Torrey Bot. Club 24: 202. 1897. [44. GYROTHYRACEAE.]

Gyrothyra is a monotypic genus.

Gyrothyra underwoodiana M. Howe, Bull. Torrey Bot. Club 24: 202. 1897.

Distribution. This species is endemic to the Pacific Coast of North America from Alaska south to California.

Haplomitrium Nees, Naturgesch. Eur. Leberm. 1: 109. 15 Sep.–15 Dec. 1833, nom. cons. TYPE: *Haplomitrium hookeri* (Lyell ex Sm.) Nees, Naturgesch. Eur. Leberm. 1: 111. 1833. Basionym: *Jungermannia hookeri* Lyell ex Sm., Engl. Bot. 36: pl. 2555. 1814. [2. HAPLOMITRIACEAE.]

Haplomitrium is a genus of eight or nine species, with one in our flora.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Haplomitrium hookeri (Lyell ex Sm.) Nees, Naturgesch. Eur. Leberm. 1: 111. 1833, var. **hookeri**. Basionym: *Jungermannia hookeri* Sm., Engl. Bot. 36: pl. 2555. 1814.

Note that *Haplomitrium hookeri* (Sm.) Nees var. *minutum* (E. O. Campb.) Barthol.-Began is restricted to New Zealand.

Distribution. This variety is found in British Columbia, Oregon, and Colorado, and from Greenland to Maine and New Hampshire. It is also in Iceland, Great Britain, central and northern Europe, and the Himalayas.

Harpalejeunea (Spruce) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 119, 126. Sep. 1893 [preprint]. Basionym: *Lejeunea* subg. *Harpalejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 76, 164. 1884. TYPE: *Harpalejeunea ancistrodes* (Spruce) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 127. 1893, as "*ancystrodes*." Basionym: *Lejeunea ancistrodes* Spruce, Trans. Proc. Bot. Soc. Edinburgh 15: 169. 1885. [29. LEJEUNEACEAE.]

Harpalejeunea is a pantropical genus of about 24 species, with two in our flora.

Harpalejeunea molleri (Steph.) Grolle subsp. **integra** (R. M. Schust.) Damsh., Ill. Fl. Nord. Liverw. & Hornw.: 615. 2002. Basionym: *Harpalejeunea ovata* auct. non (Dicks.) Schiffn. subsp. *integra* R. M. Schust., J. Elisha Mitchell Sci. Soc. 83: 199. 1967.

Following the study by Grolle (1989a), Damsholt (2002: 615) transferred *Harpalejeunea ovata* auct. subsp. *integra* R. M. Schust. to *H. molleri*. Previously, Schuster (1999: 287), who did not accept the Grolle lectotypification and rejected the use of *H. molleri*, transferred his subspecies *integra* to *H. subacuta* A. Evans, but "*Harpalejeunea subacuta* A. Evans subsp. *integra* (R. M. Schust.) R. M. Schust.," J. Hattori Bot. Lab. 87: 292. 1999, was not validly published because the basionym was not cited (McNeill et al., 2012: Art. 41.1).

Harpalejeunea molleri subsp. *molleri* is restricted to western Europe, from Norway and Ireland south to Corsica, Madeira, the Canary Islands, and the Azores and a third subspecies, *H. molleri* subsp. *subacuta* (A. Evans) Damsh., is known from Puerto Rico.

Distribution. This subspecies is found from Mississippi to Kentucky, east to Virginia and North Carolina, and south to Florida.

Harpalejeunea ovata auct. = **Harpalejeunea molleri** (Steph.) Grolle.

Harpalejeunea ovata (Dicks.) Schiffn. ≡ **Douinia ovata** (Dicks.) H. Buch.

Harpalejeunea ovata auct. subsp. *integra* R. M. Schust. ≡ **Harpalejeunea molleri** subsp. **integra** (R. M. Schust.) Damsh.

Harpalejeunea stricta (Lindenb. & Gottsche) Steph., Hedwigia 29: 70. 1890. Basionym: *Lejeunea stricta* Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 756. 1847.

Distribution. This species is found in Florida and Mexico.

"*Harpalejeunea subacuta* A. Evans subsp. *integra* (R. M. Schust.) R. M. Schust.," nom. inval. (Art. 41.1, McNeill et al., 2012). = **Harpalejeunea molleri** subsp. **integra** (R. M. Schust.) Damsh.

Harpanthus Nees, Naturg. Eur. Leberm. 2: 351. Feb.–Mar. 1836. TYPE: *Harpanthus flotovianus* (Nees) Nees, Naturg. Eur. Leberm. 2: 353. 1836. Basionym: *Jungermannia flotoviana* Nees, Flora 16: 408. 1833. [43. HARPANTHACEAE.]

All three species of this genus occur in our flora.

Harpanthus drummondii (Taylor) Grolle, Oesterr. Bot. Z. 112: 274. 1965. Basionym: *Chiloscyphus drummondii* Taylor, London J. Bot. 5: 283. 1846.

Distribution. This species is found in eastern North America from Ontario and New England south to the Carolinas and west to Michigan and Wisconsin. It is disjunct in west-central Canada (Caners, 2013).

Harpanthus flotovianus (Nees) Nees, Naturg. Eur. Leberm. 2: 353. 1836. Basionym: *Jungermannia flotoviana* Nees, Flora 16: 408. 1833.

Damsholt (2002, 2009) recognized four varieties of this species, but we do not recognize these varieties.

Distribution. This species is found in the west from Alaska to British Columbia and Washington, Alberta, and Montana, and in the east from Greenland to Quebec and New England. It is also widespread in Europe and eastern Asia.

Harpanthus scutatus (F. Weber & D. Mohr) Spruce, Trans. & Proc. Bot. Soc. Edinburgh 3: 209. 1850. Basionym: *Jungermannia scutata* F. Weber & D. Mohr, Bot. Taschenb. 1: 408. 1807.

Distribution. This species is found from Labrador and Newfoundland to North and South Carolina and west to Tennessee, Kentucky, Illinois, Wisconsin,

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Minnesota, and Iowa. It is widespread throughout Europe and is recorded from Japan.

Herbertus Gray, Nat. Arr. Brit. Pl. 1: 678, 705. 1 Nov. 1821. TYPE: *Herbertus aduncus* (Dicks.) Gray, Nat. Arr. Brit. Pl. 1: 678, 705. 1821. Basionym: *Jungermannia adunca* Dicks., Fasc. Pl. Crypt. Brit. 3: 12, pl. 8, f. 8. 1893.

Species determinations in *Herbertus* are so problematic that many species previously recognized in the American flora (Schofield, 1968a; Stotler & Crandall-Stotler, 1977; Hong et al., 1993) are herein either synonymized or excluded. [53. HERBERTACEAE.]

Herbertus is a genus of about 25 to 30 species, with six in our flora.

Herbertus aduncus (Dicks.) Gray, Nat. Arr. Brit. Pl. 1: 705. Basionym: *Jungermannia adunca* Dicks., Fasc. Pl. Crypt. Brit. III: 12. 1793.

After a complex and highly confused nomenclatural history, Schuster (1966) defined *Herbertus aduncus* s.l. to comprise three geographically separated subspecies, namely, *H. aduncus* subsp. *aduncus* from Japan and the Pacific Northwest of North America, *H. aduncus* subsp. *tenuis* from the eastern United States, and *H. aduncus* subsp. *hutchinsiae* from oceanic Europe. This treatment was incorporated in our checklist (Stotler & Crandall-Stotler, 1977) and has been followed by most subsequent authors (vide Hong et al., 1993; Juslén, 2006). A 4-locus DNA barcoding study by Bell et al. (2012), however, provides convincing evidence that these taxa should be recognized as discrete species rather than subspecies, as we now do in this synopsis.

Distribution. This species is usually considered restricted in North America to the Pacific Northwest, from Alaska to Oregon, but is reported by Juslén (2006: 415) to occur also in New York, Virginia, and North Carolina, as well as in Asia and the Himalayan region.

"*Herbertus aduncus* (Dicks.) Gray subsp. *hutchinsiae* (Gottsche & Rabenh.) R. M. Schust.," nom. inval., basionym not cited. ≡ **Herbertus hutchinsiae** (Gottsche & Rabenh.) A. Evans.

Herbertus aduncus (Dicks.) Gray subsp. *schusteri* (H. A. Mill. & E. B. Scott) H. A. Mill. = **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus aduncus (Dicks.) Gray subsp. *tenuis* (A. Evans) H. A. Mill. & E. B. Scott ≡ **Herbertus tenuis** Evans.

Herbertus arcticus (Inoue & Steere) Schljakov ≡ **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus delavayi Steph., Hedwigia 34: 43. 1895.

This Himalayan species was synonymized to *Herbertus sendtneri* by Hattori (1966: 504) and Juslén (2006: 430), but it is recognized as distinct from *H. sendtneri* by Feldberg and Heinrichs (2005) and Feldberg et al. (2007). At the same time, Feldberg and Heinrichs (2005) synonymized *H. borealis* Crundw. from the British Isles with *H. delavayi*, but this reduction is not supported by the DNA barcoding evidence of Bell et al. (2012). The addition of *H. delavayi* to the North American flora is based on Feldberg et al. (2007), in which a single specimen from the Queen Charlotte Islands (now Haida Gwaii), British Columbia (*Schofield 83644*, UBC #B99192, as *H. sakuraii*), is resolved in the *H. delavayi* clade.

Distribution. In North America, this species is only from Haida Gwaii; it is also from the British Isles, Bhutan, and Yunnan Province, China.

Herbertus dicranus (Taylor ex Gottsche, Lindenb. & Nees) Trevis., Mem. Reale Ist. Lombardo Sci. Ser. 3, Cl. Sci. Mat. 4: 397. 1877. Basionym: *Sendtnera dicrana* Taylor ex Gottsche, Lindenb. & Nees, Syn. Hepat.: 239. 1845. = *Herbertus hutchinsiae* (Gottsche & Rabenh.) A. Evans subsp. *schusteri* H. A. Mill & E. B. Scott, Rev. Bryol. Lichénol. 29: 29. 1960 (syn. fide Juslén, 2006: 421). = *Herbertus aduncus* (Dicks.) Gray subsp. *schusteri* (H. A. Mill. & E. B. Scott) H. A. Mill., Nova Hedwigia 4: 366. 1962 (syn. fide Juslén, 2006: 421). = *Herbertus himalayanus* (Steph.) Herzog, Ann. Bryol. 12: 80. 1939 (syn. fide Juslén, 2006: 421). = *Herbertus sakuraii* (Warnst.) S. Hatt. subsp. *sakuraii*, J. Hattori Bot. Lab. 2: 6. 1947 [1948] (syn. fide Hodgetts, 2003: 140). Basionym: *Schisma sakuraii* Warnst., Hedwigia 57: 69. 1915. = *Herbertus arcticus* (Inoue & Steere) Schljakov, Novosti Sist. Nizsh. Rast. 19: 209. 1982 (syn. fide Konstantinova et al., 2009: 44). Basionym: *Herbertus sakuraii* (Warnst.) S. Hatt. subsp. *arcticus* Inoue & Steere, J. Hattori Bot. Lab. 44: 266. 1978.

Based on the treatment of Miller (1965: 314), in our previous checklist (Stotler & Crandall-Stotler, 1977: 420), both *Herbertus hutchinsiae* subsp. *schusteri* and *H. aduncus* subsp. *schusteri*, which are now placed here, were listed as synonyms of *H. aduncus* (Dicks.) Gray subsp. *aduncus*. Although Juslén (2006) credits Hodgetts (2003: 140) with the synonymy of *H. himalayanus*, Hodgetts (2003) does not reference this species in his synonym list, even though Inoue (1977: 5) had included it as a synonym of *H. sakuraii*, which Hodgetts (2003) does synonymize with *H. dicranus*. This synonymy has also been confirmed by the molecular studies of Feldberg and

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Heinrichs (2005). As a consequence, many of the species previously recognized from the Pacific Northwest have been either reduced to, or identified as, *H. dicranus*, an extremely polymorphic, predominately Asiatic species.

Distribution. This species is found in the Pacific Northwest of North America, from Alaska to Oregon; it is also widely distributed in Hawaii, eastern and southern Asia, the Himalayan region, and eastern Africa.

Herbertus hawaiiensis H. A. Mill., J. Hatt. Bot. Lab. 28: 317. 1965. —EXCLUDED.

This species was first determined to be part of the North American flora by Miller (1967: 274), based on two specimens collected by W. B. Schofield on Moresby Island, British Columbia. These and one additional collection were likewise identified as *Herbertus hawaiiensis* by Hong et al. (1993: 43), but in his unpublished, online treatment of *Herbertus* for the *Bryophyte Flora of North America*, Schofield (2007) indicated that all North American specimens previously determined as *H. hawaiiensis* are referable to *H. dicranus*.

Herbertus himalayanus (Steph.) Herzog = **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus hutchinsiae (Gottsche & Rabenh.) A. Evans, Bull. Torrey Bot. Club 44: 214. 1917. Basionym: *Sendtnera adunca* var. β *hutchinsiae* Gottsche & Rabenh., Hep. Europ. Exsicc. No. 210. 1862. —EXCLUDED.

This species is still recognized as a European endemic (vide Bell & Long, 2012). Specimens from the Pacific Northwest that were referred by Evans (1917b) to *Herbertus hutchinsiae* (Gottsche & Rabenh.) A. Evans are generally considered to be *H. aduncus*.

Herbertus hutchinsiae (Gottsche & Rabenh.) A. Evans subsp. *schusteri* H. A. Mill & E. B. Scott = **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus sakuraii (Warnst.) S. Hatt. subsp. *sakuraii* = **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus sakuraii (Warnst.) S. Hatt. subsp. *arcticus* Inoue & Steere = **Herbertus dicranus** (Taylor ex Gottsche, Lindenb. & Nees) Trevis.

Herbertus sendtneri (Nees) Lindb. in Lindberg & Lackström, Hepat. Scand. [Exs.], Fasc. I, no. 4 [in note under *H. aduncus*]. 1874. Basionym: *Schisma sendtneri* Nees, Naturgesch. Eur. Leberm. 3: 575. 1838.

Although Evans (1917b: 212) has been credited as the combining author, this binomial had already been effectively published by Lindberg. Whether this species actually occurs in North America is problematic. Schofield (1984, 1989, 2007), Hong et al. (1993), and Bell and Long (2012) include it, but Juslén (2006) does not. On the basis of molecular data, Feldberg et al. (2004, 2007) and Heinrichs et al. (2010a) propose the distribution of *Herbertus sendtneri* to include the Neotropics, Gough Island, central Europe, and eastern Asia, and Bell et al. (2012) verify its occurrence in the Himalayas. However, no North American collections have ever been included in molecular studies. Until proven otherwise, we continue to recognize this species as an element of the North American flora.

Distribution. This species is found in North America and is reported from British Columbia and Alaska; it is also known from Europe, Macaronesia, the Himalayan region, southeast Asia, the Neotropics, and Gough Island.

Herbertus stramineus (Dumort.) Trevis., Mem. Reale Ist. Lombardo Sci. Ser. 3, Cl. Sci. Mat. 4: 396. 1877. Basionym: *Schisma stramineum* Dumort., Syll. Jungerm. Europ.: 77. 1831.

Whether this species actually occurs in North America is equivocal. Miller (1968) and Schofield (1968a) reported it from British Columbia, but Hong et al. (1993) and most recently Schofield (2007) exclude it. Conversely, specimens from unglaciated Alaska that were initially published as *Herbertus aduncus* by Schuster (1957) might be referable to *H. stramineus* (vide Schuster, 1966: 710). As documented by Grolle (1975a: 484), the holotype of *H. stramineus* matches the concept of *H. aduncus* of various authors, such as Macvicar (1926: 348) and Müller (1954: 563), but not the type of *H. aduncus* (Dicks.) Gray, so it is possible that the material cited by Schuster (1957) is actually *H. stramineus*. Steere and Inoue (1978), however, refer these same specimens to *H. sakuraii* (Warnst.) S. Hatt. subsp. *arcticus* Inoue & Steere (vide Steere & Inoue, 1978: 266), which has since been reduced to *H. dicranus*.

Distribution. This species is found in North America and is reported from Alaska; it is also from northern Europe and the British Isles.

Herbertus tenuis A. Evans, Bull. Torrey Bot. Club 44: 219. 1917. ≡ *Herbertus aduncus* (Dicks.) Gray subsp. *tenuis* (A. Evans) H. A. Mill. & E. B. Scott, Nova Hedwigia 4: 366. 1962.

Although *Herbertus tenuis* is usually recognized as a subspecies of *H. aduncus*, DNA barcoding supports recognition of it as a distinct species (Bell et al., 2012).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is endemic to the montane areas of the eastern United States, from New York to Georgia.

Heterogemma capitata (Hook.) Konstant. & Vilnet ≡ **Tritomaria capitata** (Hook.) Stotler & Crand.-Stotl.

Heterogemma laxa (Lindb.) Konstant. & Vilnet ≡ **Tritomaria laxa** (Lindb.) Stotler & Crand.-Stotl.

Hygrobiella Spruce, Cephalozia: 74. 1882. TYPE: *Hygrobiella laxifolia* (Hook.) Spruce, Cephalozia: 74. 1882. Basionym: *Jungermannia laxifolia* Hook., Brit. Jungermann. pl. 59. 1816. [40. ANTHELIACEAE.]

Hygrobiella is a monotypic genus.

Hygrobiella laxifolia (Hook.) Spruce, Cephalozia: 74. 1882. Basionym: *Jungermannia laxifolia* Hook., Brit. Jungermann.: pl. 59. 1816.

Both Frye and Clark (1943: 187) and Schuster (1974: 660) mention *Hygrobiella laxifolia* (Hook.) Spruce var. *clavuligera* (Gottsche, Lindenb. & Nees) Pearson, which appeared in Pearson (1890: 12). That new combination by Pearson was taken from the Gottsche et al. (1845: 147) entry of *Jungermannia laxifolia* β *clavuligera* in Greenland, based on a specimen in the Flotow herbarium collected by Martin Vahl. This name has not appeared in any other literature and we do not recognize it here.

Distribution. This species is found in the west from Alaska to British Columbia, Alberta, Washington, Oregon, Idaho, and Montana, and in the east it is known from Greenland, Labrador, and Newfoundland to Quebec. It is also found in central and northern Europe.

Hygrolejeunea alaskana R. M. Schust. & Steere ≡ **Lejeunea alaskana** (R. M. Schust. & Steere) Inoue & Steere.

Isopaches H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 287. 1932 [1933]. TYPE: *Isopaches bicrenatus* (Schmidel ex Hoffm.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 288. 1932 [1933]. Basionym: *Jungermannia bicrenata* Schmidel ex Hoffm., Deutschl. Fl., Theil 2 (Hoffm.): 11 (addenda), 1795 [1796]. [34. ANASTROPHYLLACEAE.]

Isopaches has been regarded as a subgenus of *Lophozia* since that placement was made by Schuster (1951: 56). Molecular data (De Roo et al., 2007: 310), however, support its recognition at generic rank as Buch (1932) proposed. In fact, the genus is not even in the same family as *Lophozia*, having been placed into the family Anastrophyllaceae by Söderström et al. (2010: 48).

Isopaches is a genus of four species, three of which occur in our flora.

Isopaches alboviridis (R. M. Schust.) Schljakov, Novosti Sist. Nizsh. Rast. 16: 205. 1979. Basionym: *Lophozia alboviridis* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 487. 1969.

Distribution. This species is found in Alaska, Greenland, northwestern Russia, and the Russian Far East.

Isopaches bicrenatus (Schmidel ex Hoffm.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 288. 1932 [1933], var. **bicrenatus**. Basionym: *Jungermannia bicrenata* Schmidel ex Hoffm., Deutschl. Fl., Theil 2 (Hoffm.): 11 (addenda), 1795 [1796]. ≡ *Lophozia bicrenata* (Schmidel ex Hoffm.) Dumort., Recueil d'Observ. Jung.: 17. 1835.

Distribution. This variety is transcontinental from Alaska to British Columbia, east to Greenland, Labrador, and Minnesota, and south to Mississippi. It is also known from the Scandinavian countries through the British Isles, western and central Europe, and Siberia.

Isopaches bicrenatus var. **immersus** (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Lophozia bicrenata* (Schmidel ex Hoffm.) Dumort. var. *immersa* R. M. Schust. & Damsh., Phytologia 63: 326. 1987.

Distribution. This variety is known only from the type in South Greenland.

Isopaches decolorans (Limpr.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 288. 1932 [1933]. Basionym: *Jungermannia decolorans* Limpr., Jahresber. Schles. Ges. Vaterl. Cult. 57: 116. 1880. ≡ *Lophozia decolorans* (Limpr.) Steph., Sp. Hepat. 2: 147. 1902 (syn. fide Konstantinova et al., 2009: 46).

Distribution. This species is known only from British Columbia in North America and from the European Alps to Norway and northern Russia.

Jamesoniella (Spruce) F. Lees, London Cat. Brit. Mos. Hepat., ed. 2: 25. 1881. = **Syzygiella** Spruce (see discussion under *Syzygiella*).

Note that as indicated in Greuter et al. (1993: 575), the correct combining author citation for *Jamesoniella* is F. Lees, as indicated here. The Bryophyte Nomenclature Committee has studied this issue, and they concluded that F. Lees was the author of the catalogue and

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

must be credited with elevating the taxon to generic rank.

Jamesoniella autumnalis (DC.) Steph. ≡ **Syzygiella autumnalis** (DC.) K. Feldberg, Váňa, Hentschel & Heinrichs.

Jamesoniella autumnalis (DC.) Steph. var. *heterostipa* (A. Evans) Frye & L. Clark = **Syzygiella autumnalis** (DC.) K. Feldberg, Váňa, Hentschel & Heinrichs.

Jamesoniella autumnalis (DC.) Steph. var. *myriocarpa* (Brinkm.) Frye & L. Clark = **Syzygiella autumnalis** (DC.) K. Feldberg, Váňa, Hentschel & Heinrichs.

Jamesoniella autumnalis (DC.) Steph. var. *nipponica* (S. Hatt.) S. Hatt. ≡ **Syzygiella nipponica** (S. Hatt.) K. Feldberg, Váňa, Hentschel & Heinrichs.

Jamesoniella undulifolia (Nees) Müll. Frib. ≡ **Biantheridion undulifolium** (Nees) Konstant. & Vilnet.

Jubula Dumort., Commentat. Bot.: 112. July–Dec. 1822, nom. cons. TYPE: *Jungermannia hutchinsiae* Hook., type cons., Brit. Jungermann. pl. 1. 1812. [28. JUBULACEAE.]

Jubula is a genus of seven species, with one in our flora.

Jubula pennsylvanica (Steph.) A. Evans, Rhodora 7: 55. 1905, subsp. **pennsylvanica**. Basionym: *Frullania pennsylvanica* Steph., Hedwigia 22: 147. 1883.

When Guerke named the Latin American *Jubula pennsylvanica* (Steph.) A. Evans subsp. *bogotensis* (Steph.) W. R. Guerke, it created the autonym subspecies *pennsylvanica*. The 2-locus analysis of Pätsch et al. (2010) resolved *J. pennsylvanica* as a monophyletic lineage within *Jubula*, but because of limited sequence variation for the loci used, these authors chose to reduce all species of *Jubula* to subspecific rank under *J. hutchinsiae* (Hook.) Dumort., with the exception of *J. blepharophylla* Grolle, which was not studied. We contend that morphological distinctions among the lineages clearly support the recognition of the *J. pennsylvanica* clade at the species level and that additional analyses of more variable loci are needed for definitive resolution of species within this genus.

Distribution. This species is endemic to eastern North America from Nova Scotia south to South Carolina and Georgia, and west through Alabama, Tennessee, Kentucky, and Ohio to Missouri, Arkansas, and eastern Texas.

Jungermannia L., Sp. Pl. 2: 1131, 1136. 1 May 1753, as "*Jungermahnia*." TYPE: *Jungermannia lanceolata* L., Sp. Pl. 2: 1131. 1753, nom. rej. = *Jungermannia atrovirens* Dumort., Syll. Jungerm. Europ.: 51. 1831. [41. JUNGERMANNIACEAE.].

For lectotypification of *Jungermannia lanceolata*, see Grolle (1966: 189). The name *J. lanceolata* is a "*nomina utique rejicienda*" or rejected name listed in the ICN (app. V, Wiersema et al., 2015: 424) and is not to be used. In our checklist (Stotler & Crandall-Stotler, 1977) we followed Váňa (1973a) and treated *Jungermannia* in a broad sense to include 19 North American species, comprising three subgenera. As a consequence of comprehensive molecular analyses (e.g., Hentschel et al., 2007b; Shaw et al., 2015), these species are now distributed among four genera in three different families.

This genus is now considered to comprise eight species, with five in our flora.

Jungermannia atrovirens Dumort., Syll. Jungerm. Europ.: 51. 1831. ≡ *Solenostoma atrovirens* (Dumort.) Müll. Frib., Hedwigia 81: 117. 1942, nom. illeg., later homonym (McNeill et al., 2012: Art. 53) [non *S. atrovirens* Steph., Spec. Hep. 2: 55. 1901]. = *Solenostoma triste* (Nees) Müll. Frib., Hedwigia 81: 117. 1942 (syn. fide Konstantinova et al., 2009: 51). Basionym: *Jungermannia tristis* Nees, Naturgesch. Eur. Leberm. 2: 461. 1836. ≡ *Jungermannia lanceolata* var. *atrovirens* (Dumort.) Damsh., Ill. Fl. Nord. Liverw. & Hornw.: 201. 2002.

Distribution. This species is found from Alaska to British Columbia, California, Colorado, and Montana, and in the east in the St. Lawrence Valley from Quebec to Nova Scotia. It is also found in central and northern Europe and Asia. Damsholt and Váňa (1977: 24) excluded this species from Greenland.

Jungermannia borealis Damsh. & Váňa, Lindbergia 4: 5. 1977. = *Jungermannia oblongifolia* sensu R. M. Schust. (non (Müll. Frib.) H. Buch, A. Evans & Verd.), Bull. Nat. Mus. Canada 122: 24. 1951 (syn. fide Damsholt & Váňa, 1977: 5). = *Solenostoma oblongifolium* sensu R. M. Schust. (non (Müll. Frib.) Müll. Frib.), Hepat. Anthocerotae N. Amer. 2: 936. 1969 (syn. fide Damsholt & Váňa, 1977: 5).

Distribution. This species is found from Alaska to British Columbia and in southwest Greenland; in Europe it is found from the Czech Republic to the West Caucasus, Scandinavia, and Scotland.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Jungermannia caespiticia Lindenb. ≡ **Endogemma caespiticia** (Lindenb.) Konstant., Vilnet & A. V. Troitsky.

Jungermannia confertissima Nees ≡ **Solenostoma confertissimum** (Nees) Schljakov.

Jungermannia crenuliformis Austin ≡ **Solenostoma crenuliforme** (Austin) Steph.

Jungermannia evansii Váňa = **Solenostoma obscurum** (A. Evans) R. M. Schust.

Jungermannia exsertifolia Steph., Sp. Hepat. 6: 86. 1917, subsp. **cordifolia** (Dumort.) Váňa, Folia Geobot. Phytotax. 8: 268. 1973. Basionym: *Aplozia cordifolia* Dumort., Bull. Soc. Roy. Bot. Belgique 13: 62. 1874. ≡ *Solenostoma cordifolium* (Dumort.) Steph., Bull. Herb. Boissier, sér. 2, 1: 499. 1901, as "*cordifolia*." Basionym: *Aplozia cordifolia* Dumort., Bull. Soc. Roy. Bot. Belgique 13: 62. 1874. = *Jungermannia exsertifolia* Steph. subsp. *cordifolia* (Dumort.) Váňa var. *pendletonii* (Pearson) Váňa, Folia Geobot. Phytotax. 8: 271. 1973, syn. nov. Basionym: *Aplozia pendletonii* Pearson, Bryologist 23: 50. 1920. ≡ *Jungermannia pendletonii* (Pearson) A. Evans, Proc. Calif. Acad. Sci. (ser. 4) 13: 122. 1923.

The entry for *Solenostoma cordifolium* with (Hook.) Steph. as the authors in Schuster (1969: 939) is incorrect since the basionym *Jungermannia cordifolia* Hook. is an illegitimate later homonym.

Doyle and Stotler (2006: 196) did not treat this variety but did include *Jungermannia pendletonii* in their list of synonyms as being equivalent to *J. exsertifolia* subsp. *cordifolia* var. *pendletonii*. This variety is known only from the type specimen from Sissons (Mount Shasta), California. Konstantinova et al. (2009: 44) regard *J. exsertifolia* subsp. *cordifolia* as a distinct species, *J. eucordifolia* Schljakov, which we do not follow here. *Jungermannia exsertifolia* Steph. subsp. *exsertifolia* is restricted to Japan, Korea, and China.

Distribution. This subspecies is found from Alaska to British Columbia and California in the west, and Greenland, Labrador south to New England, New York, and the Great Lakes region in the east. It is widely distributed in Europe as well as the Russian Far East.

Jungermannia exsertifolia Steph. subsp. *cordifolia* (Dumort.) Váňa var. *pendletonii* (Pearson) Váňa = **Jungermannia exsertifolia** Steph. subsp. **cordifolia** (Dumort.) Váňa.

Jungermannia evansii Váňa = **Solenostoma obscurum** (A. Evans) R. M. Schust.

Jungermannia fossombronioides Austin ≡ **Solenostoma fossombronioides** (Austin) R. M. Schust.

Jungermannia gracillima Sm. ≡ **Solenostoma gracillimum** (Sm.) R. M. Schust.

Jungermannia hyalina Lyell ≡ **Solenostoma hyalinum** (Lyell) Mitt.

Jungermannia karl-muelleri Grolle subsp. *karl-muelleri* = **Jungermannia pumila** With.

Jungermannia karl-muelleri Grolle subsp. *heteroica* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl., as "*heteroicum*" = **Jungermannia pumila** With.

Jungermannia lanceolata L., nom. rej.

The name *Jungermannia lanceolata* L. is listed as a nomina utique rejicienda or rejected name in the ICN (app. V, Wiersema et al., 2015: 424). Plants labeled as such are most likely referable to *Liochlaena lanceolata* Nees (= *J. leiantha* Grolle).

Jungermannia lanceolata auct. non L. ≡ **Liochlaena lanceolata** Nees.

Jungermannia lanceolata var. *atrovirens* (Dumort.) Damsh. ≡ **Jungermannia atrovirens** Dumort.

Jungermannia leiantha Grolle = **Liochlaena lanceolata** Nees.

Jungermannia oblongifolia sensu R. M. Schust. [non (Müll. Frib.) H. Buch, A. Evans & Verd.] = **Jungermannia borealis** Damsh. & Váňa.

Jungermannia oblongifolia (Müll. Frib.) H. Buch, A. Evans & Verd. = **Jungermannia pumila** With.

Jungermannia obovata Nees ≡ **Solenostoma obovatum** (Nees) C. Massal.

Jungermannia obovata Nees subsp. *minor* (Carrington) Damsh. ≡ **Solenostoma obovatum** (Nees) C. Massal.

Jungermannia polaris Lindb., Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 23: 560. 1867. ≡ *Jungermannia pumila* With. subsp. *polaris* (Lindb.) Damsh., Ill. Flora Nordic Liverworts & Hornworts: 206. 2002. ≡ *Solenostoma pumilum* (With.) Müll. Frib. subsp. *polaris* (Berggr.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 918. 1969, nom. illeg., basionym not properly cited (syn. fide Damsholt & Váňa, 1977: 13).

Both Schuster (1969: 918) and Damsholt (2002: 206) considered *Jungermannia polaris* as a subspecies of *J. pumila*, but we follow Váňa (1973b: 285) and recognize it as a distinct species.

Distribution. This species is found in the west from British Columbia to California, and in the east from Greenland and Ellesmere Island south to Quebec and the Great Lakes region of Michigan and Minnesota. It is also found in central and northern Europe.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Jungermannia pumila With., Arr. Brit. Pl. (ed. 3): 883. 1796. ≡ *Solenostoma pumilum* (With.) Müll. Frib. subsp. *pumilum*, Hedwigia 81: 117. 1942 (syn. fide Konstantinova et al., 2009: 51). = *Solenostoma pumilum* (With.) Müll. Frib. subsp. *anomalum* R. M. Schust. & Damsh., Meddel. Gronland 199: 165. 1974 (syn. fide Damsholt & Váňa, 1977: 13). = *Solenostoma oblongifolium* (Müll. Frib.) Müll. Frib., Hedwigia 81: 117. 1942 (syn. fide Damsholt & Váňa, 1977: 11). Basionym: *Aplozia oblongifolia* Müll. Frib., Die Lebermoose: 558. 1909, as "*Haplozia*." = *Solenostoma oblongifolium* (Müll. Frib.) Müll. Frib. subsp. *heteroicum* R. M. Schust. & Damsh., Meddel. Gronland 199: 167. 1974 (syn. fide Damsholt & Váňa, 1977: 11). = *Jungermannia oblongifolia* (Müll. Frib.) H. Buch, A. Evans & Verd., Ann. Bryol. 10: 4. 1938 (syn. fide Damsholt & Váňa, 1977: 11). = *Jungermannia karl-muelleri* Grolle subsp. *karl-muelleri*, Oesterr. Bot. Z. 111: 190. 1964 (syn. fide Damsholt & Váňa, 1977: 11). = *Jungermannia karl-muelleri* Grolle subsp. *heteroica* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl., Bryologist 80: 413. 1977, as "*heteroicum*." (syn. fide Damsholt & Váňa, 1977: 11, as *S. oblongifolium* subsp. *heteroicum*). Basionym: *Solenostoma oblongifolium* (Müll. Frib.) Müll. Frib. subsp. *heteroicum* R. M. Schust. & Damsh., Meddel. Gronland 199: 167. 1974

Distribution. This species is found from British Columbia and Alberta to Colorado and California, and from Greenland and Ellesmere Island south to Quebec and Ontario, through New England to North Carolina, and west to Tennessee, through Illinois and Iowa, to Minnesota. It is common in central and northern Europe and in Japan.

"*Jungermannia pumila* With. subsp. *polaris* (Berggr.) R. M. Schust.," nom. inval. (Art. 41.5, McNeill et al., 2012) ≡ **Jungermannia polaris** Lindb.

Jungermannia pyriflora Steph. subsp. *pyriflora* ≡ **Solenostoma pyriflorum** Steph.

Jungermannia pyriflora Steph. subsp. *purpurea* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl. = **Solenostoma confertissimum** (Nees) Schljakov.

Jungermannia pyriflora Steph. subsp. *purpurea* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl. var. *innovata* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl. = **Solenostoma confertissimum** (Nees) Schljakov.

Jungermannia rubra Gottsche ex Underw. ≡ **Solenostoma rubrum** (Gottsche ex Underw.) R. M. Schust.

Jungermannia schusterana J. D. Godfrey & G. Godfrey ≡ **Solenostoma schusterianum** (J. D. Godfrey & G. Godfrey) Váňa, Hentschel & Heinrichs.

Jungermannia sphaerocarpa Hook. var. *sphaerocarpa* ≡ **Solenostoma sphaerocarpum** (Hook.) Steph. var. **sphaerocarpum.**

Jungermannia sphaerocarpa Hook. var. *nana* (Nees ex Flot.) Frye & L. Clark ≡ **Solenostoma sphaerocarpum** (Hook.) Steph. var. **nanum** (Nees ex Flot.) Müll. Frib.

Jungermannia subelliptica (Lindb. ex Heeg.) Levier = **Solenostoma obovatum** (Nees) C. Massal.

Jungermannia subulata A. Evans ≡ **Liochlaena subulata** (A. Evans) Schljakov.

Kurzia G. Martens, Flora 53: 417. 10 Dec. 1870. TYPE: *Kurzia crenacanthoidea* G. Martens, Flora 53: 417. 1870. [54. LEPIDOZIACEAE.]

Kurzia is a genus of about 40 species, with four in our flora.

Kurzia makinoana (Steph.) Grolle, Rev. Bryol. Lichénol. 32: 171. 1963. Basionym: *Lepidozia makinoana* Steph., Bull. Herb. Boissier 5: 94. 1897.

Schuster (1969: 49) followed Hattori and Mizutani (1958: 88) and initially treated this as a synonym of *Microlepidozia sylvatica* (A. Evans) Jørg. (= *Kurzia sylvatica*), but in a later publication he recognized it as a "clearly distinct" species (Schuster, 1980c: 375). Konstantinova et al. (2009: 46), however, still regard *K. sylvatica* as a synonym of *K. makinoana*.

Distribution. This species is found in coastal Washington and British Columbia to the southern tip of Alaska; it is also in Japan and Taiwan.

Kurzia pauciflora (Dicks.) Grolle, Rev. Bryol. Lichénol. 32: 171. 1963. Basionym: *Jungermannia pauciflora* Dicks., Fasc. Pl. Crypt. Brit. 2: 15. 1790. ≡ *Microlepidozia pauciflora* (Dicks.) Schljakov, Novosti Sist. Nizsh. Rast. 13: 226. 1976.

Kurzia pauciflora (Dicks.) Grolle is the accepted name for plants that have long been referred to *Microlepidozia setacea* (Weber) Joerg. [≡ *K. setacea* (Weber) Grolle] by both North American and European authors. After studying original collections and descriptions, Grolle (1963b) concluded that the basionym, *Jungermannia setacea* Weber, was a dubious name and names based on it should be replaced by *K. pauciflora* (Dicks.) Grolle. As discussed below, Isoviita (1979) later showed, in fact, that the type of *J. setacea* Weber was likely a moss. Unfortunately, Schuster (1969) retained

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

the customary usage of *M. setacea* and so this name still persists in North American literature.

Distribution. This species is found from Alaska to British Columbia and from Baffin Island south to New Jersey and west to Ohio and Michigan. It is widespread in central and western Europe, into Scandinavia and Russia.

Kurzia setacea auct. = **Kurzia pauciflora** (Dicks.) Grolle.

"*Kurzia setacea* (Weber) Grolle," Rev. Bryol. Lichénol. 32: 171. 1963, nom. illeg., nomenclaturally superfluous (McNeill et al., 2012: Art. 52). Basionym: *Jungermannia setacea* Weber, Spic. Fl. Goett.: 155. 1778. ≡ *Hypnum jungermannioides* Brid., Muscol. Recent. Suppl. 2: 255. 1812. ≡ *Platydictya jungermannioides* (Brid.) H. A. Crum, Michigan Bot. 3: 60. 1964. ≡ *Amblystegium jungermannioides* (Brid.) A. J. E. Sm., J. Bryol. 11: 605. 1981 [1982].

Isoviita (1979) pointed out that *Jungermannia setacea* Weber is an invalid name that is homotypic with the moss *Hypnum jungermannioides* Brid., based upon the designation of a neotype. He also stated that there was nothing to indicate that *J. setacea* of G. H. Weber was even a liverwort. That name now has no status whatsoever in hepatic nomenclature. Although Damsholt (2002: 440) used the name *Kurzia pauciflora* in his flora with *J. setacea* Weber, nom. dubium, as a synonym, that designation is incorrect.

Kurzia sylvatica (A. Evans) Grolle, Herzogia 3: 77. 1973. Basionym: *Lepidozia sylvatica* A. Evans, Rhodora 6: 186. 1904.

When Grolle (1963b) initially revived the older generic name *Kurzia* to replace *Microlepidozia* (Spruce) Jørg., he did not transfer this species, no doubt because Hattori and Mizutani (1958: 88) had reduced it to *M. makinoana* (Steph.) S. Hatt. That reduction has not been supported and has largely been ignored.

Distribution. This species is found in North America from Alaska through British Columbia to California, and Nova Scotia south through New England to Florida and west to Texas, Tennessee, and Kentucky. It is also common in Europe.

Kurzia trichoclados (Müll. Frib.) Grolle, Rev. Bryol. Lichénol. 32: 171. 1963. Basionym: *Lepidozia trichoclados* Müll. Frib., Hedwigia 38: 197. 1899.

Distribution. This species is recorded as new for North America from the Queen Charlotte Islands (now known as Haida Gwaii) and Vancouver Island by Hong (1988: 327) but is widespread in Europe; it is also reported from Thailand (Paton, 1999: 65).

Leiocolea (Müll. Frib.) H. Buch = **Mesoptychia** (Lindb.) A. Evans (see discussion under *Mesoptychia*).

Leiocolea badensis (Gottsche ex Rabenh.) Jørg. ≡ **Mesoptychia badensis** (Gottsche ex Rabenh.) L. Söderstr. & Váňa var. **badensis.**

Leiocolea bantriensis (Hook.) Jørg. ≡ **Mesoptychia bantriensis** (Hook.) L. Söderstr. & Váňa.

Leiocolea collaris (Nees) Schljakov ≡ **Mesoptychia collaris** (Nees) L. Söderstr. & Váňa.

Leiocolea gillmanii (Austin) A. Evans ≡ **Mesoptychia gillmanii** (Austin) L. Söderstr. & Váňa.

Leiocolea heterocolpos (Thed. ex Hartm.) H. Buch var. *heterocolpos* ≡ **Mesoptychia heterocolpos** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **heterocolpos.**

Leiocolea heterocolpos (Thed. ex Hartm.) H. Buch var. *arctica* (S. W. Arnell) Mårtensson ≡ **Mesoptychia heterocolpos.** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **arctica** (S. W. Arnell) L. Söderstr. & Váňa.

Leiocolea heterocolpos (Thed. ex Hartm.) H. Buch var. *harpanthoides* (Bryhn & Kaal.) R. M. Schust. ex S. W. Arnell ≡ **Mesoptychia heterocolpos** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **harpanthoides** (Bryhn & Kaal.) L. Söderstr. & Váňa.

Leiocolea holmeniana (Inoue & Steere) Konstant. ≡ **Mesoptychia holmeniana** (Inoue & Steere) L. Söderstr. & Váňa.

Leiocolea rutheana (Limpr.) Müll. Frib. ≡ **Mesoptychia rutheana** (Limpr.) L. Söderstr. & Váňa var. **rutheana.**

Leiomylia J. J. Engel & Braggins = **Mylia** Gray, nom. et orth. cons. (see discussion under *Mylia*).

Leiomylia anomala (Hook.) J. J. Engel & Braggins ≡ **Mylia anomala** (Hook.) Gray.

Lejeunea Lib., Ann. Gén. Sci. Phys. 6: 373. 1820, as "*Lejeunia*," nom. et orth. cons. TYPE: *Lejeunea serpillifolia* Lib., Ann. Gén. Sci. Phys. 6: 374. 1820, non *Jungermannia serpillifolia* Scop. 1772, nec *J. serpyllifolia* Dicks. 1801, nom. illeg. = *Lejeunea patens* Lindb. (syn. fide Long, 1979: 243). [29. LEJEUNEACEAE.]

This genus includes *Crossotolejeunea* (Spruce) Schiffn., *Hygrolejeunea* (Spruce) Schiffn., and *Taxilejeunea* (Spruce) Steph.

This is a large genus of approximately 300 species, 21 of which occur in our flora.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lejeunea adpressa Nees in Gottsche, Lindenberg & Nees, Syn. Hep.: 380. 1845. = *Lejeunea longifissa* Steph. (syn. fide Reiner-Drehwald, 2009: 333). = *Lejeunea caespitosa* auct. amer. (syn. fide Reiner-Drehwald, 2009: 329).

This species was reported from Florida by Evans (1918) and Schuster (1957) as *Lejeunea longifissa* Steph., but in our checklist (Stotler & Crandall-Stotler, 1977: 427) we accepted *L. longifissa* Steph. as a synonym of *L. caespitosa* Lindenb., as proposed by Jones (1972). This synonymy was also accepted by Schuster (1980a: 1019). Reiner-Drehwald and Schäfer-Verwimp (2008) have shown that *L. caespitosa* Lindenb. is actually conspecific with *L. capensis* Gottsche, a species known from Africa and tropical America. Further, in 2009 Reiner-Drehwald determined that *L. longifissa* Steph. is conspecific with the earlier named *L. adpressa* Nees, and that American authors had misapplied the name *L. caespitosa* to this taxon.

Distribution. This species is found in Florida and the West Indies and is widespread throughout tropical America and Africa.

Lejeunea alaskana (R. M. Schust. & Steere) Inoue & Steere, J. Hattori Bot. Lab. 44: 330. 1978. Basionym: *Hygrolejeunea alaskana* R. M. Schust. & Steere, Bull. Torrey Bot. Club 85: 190. 1958.

Distribution. Although thought to be endemic to northern Alaska, this species was recently reported from the Russian Far East (Bakalin et al., 2012).

Lejeunea americana (Lindb.) A. Evans = **Lejeunea flava** Nees.

Lejeunea aphanes Spruce, J. Bot. 19: 36. 1881. = *Lejeunea filipes* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 275. 1884 (syn. fide Schäfer-Verwimp & Reiner-Drehwald, 2009: 366). = *Lejeunea autoica* R. M. Schust., J. Hattori Bot. Lab. 25: 6. 1962 (syn. fide Reiner-Drehwald, 2000: 86).

Distribution. In North America, this species is known from only two collections in Florida; it is widespread in Latin America.

Lejeunea autoica R. M. Schust. = **Lejeunea aphanes** Spruce.

Lejeunea bermudiana (A. Evans) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1105. 1980. Basionym: *Crossotolejeunea bermudiana* A. Evans, Bull. Torrey Bot. Club 33: 132. 1906.

Dauphin et al. (2011) treats both "*Lejeunea bermudiana* subsp. *microgyna* R. M. Schust.," Hep. Anthoc. North. Amer. 4: 1111. 1980, nom. inval. (McNeill et al., 2012: Art. 39.1) and "*Lejeunea microgyna* (R. M. Schust.) R. M. Schust.," J. Hattori Bot. Lab. 72: 274. 1992, nom. inval. (basionym not validly published) as synonyms of *L. bermudiana* (A. Evans) R. M. Schust.

Distribution. This species is found in the southeastern coastal United States from North Carolina to Florida, west to Mississippi and from one locale in Tennessee. It is also from Bermuda.

"*Lejeunea bermudiana* (A. Evans) R. M. Schust. subsp. *microgyna* R. M. Schust.," nom. inval. (McNeill et al., 2012: Art. 39.1). = **Lejeunea bermudiana** (A. Evans) R. M. Schust.

Lejeunea blomquistii R. M. Schust., J. Elisha Mitchell Sci. Soc. 78: 64. 1962.

Distribution. This species is known from only two locations, one in North Carolina and one in Georgia.

Lejeunea bullata Tayl. ≡ **Microlejeunea bullata** (Taylor) Steph.

Lejeunea caespitosa auct. amer. non Lindenb. = **Lejeunea adpressa** Nees.

Lejeunea caespitosa Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hep.: 382. 1845. = **Lejeunea capensis** Gottsche in Gottsche, Lindenberg & Nees, Syn. Hep.: 374. 1845 (syn. fide Reiner-Drehwald & Schäfer-Verwimp, 2008: 392). —EXCLUDED.

Distribution. This species is not known from North America; it is present in Latin America, including Mexico, and in sub-Saharan Africa.

Lejeunea calcicola R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 404. 1957, var. **calcicola.**

Distribution. This variety is endemic to Florida and Alabama.

Lejeunea calcicola var. **mexicana** R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 408. 1957. —EXCLUDED.

We incorrectly included *Lejeunea calcicola* var. *mexicana* in our checklist (Stotler & Crandall-Stotler, 1977: 413), but this variety is restricted to Mexico (Schuster, 1980a: 1019).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lejeunea cancellata Nees & Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 472. 1842. = *Lejeunea cladiophora* (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 996. 1980 (syn. fide Grolle, 1985: 197). Basionym: *Taxilejeunea cladiophora* R. M. Schust., J. Elisha Mitchell Sci. Soc. 81: 37. 1965.

Distribution. This species is found in Florida, Cuba, Brazil, and Argentina.

Lejeunea cardotii Steph., as "*cardoti*" = **Microlejeunea globosa** (Spruce) Steph.

Lejeunea caroliniana R. M. Schust. = **Lejeunea glaucescens** Gottsche var. **acrogyna** R. M. Schust.

Lejeunea cavifolia (Ehrh.) Lindb., Revis. crit. icon.: 43. 1871. Basionym: *Jungermannia cavifolia* Ehrh., Beitr. Naturk. 4: 45.

Distribution. This species is found from Quebec and Nova Scotia south to North Carolina, Tennessee, West Virginia, and Pennsylvania, and west along the Great Lake areas of Michigan, Wisconsin, Minnesota, and Ontario. It is also found throughout southern and central Europe to England, Ireland, and Scandinavia, and east to northern Russia. In Asia it is known from Turkey and Siberia.

Lejeunea cavifolia sensu Frye & L. Clark = **Lejeunea flava** (Sw.) Nees.

Lejeunea cladiophora (R. M. Schust.) R. M. Schust. = **Lejeunea cancellata** Nees & Mont.

Lejeunea cladogyna A. Evans, Amer. J. Bot. 5: 134. 1918.

Distribution. This species is known from Louisiana and Mississippi to Florida and southern Georgia; it is also known from the Neotropics.

Lejeunea deplanata Nees in Gottsche, Lindenb. & Nees, Syn. Hepat.: 368. 1845. = *Rectolejeunea maxonii* A. Evans, Bull. Torrey Bot. Club 39: 609. 1912 (syn. fide Reiner-Drehwald, 2010: 524). ≡ *Lejeunea maxonii* (A. Evans) Xiao L. He, Ann. Bot. Fenn. 34: 71. 1997. —EXCLUDED.

According to Reiner-Drehwald (2010: 528), *Rectolejeunea maxonii* sensu Schuster (1980a: 1131) is not referable to this taxon and is of questionable identity.

Distribution. This species is not known from North America, but it is of widespread occurrence in montane habitats of Latin America.

Lejeunea dimorphophylla R. M. Schust. = **Microlejeunea epiphylla** Bischl.

Lejeunea flava (Sw.) Nees, Naturg. Eur. Leberm. 3: 277. 1838, subsp. **flava**. Basionym: *Jungermannia flava* Sw., Prodr. Fl. Ind. Occid.: 144. 1788.

Four additional subspecies have been recognized, but only *Lejeunea flava* subsp. *flava* occurs in North America.

Distribution. This subspecies occurs in the Gulf Coastal Plain of North America from Texas to Florida, north into North Carolina and southeastern Virginia. It is also in the West Indies, Central America, northern South America, western Africa into Ireland, and from Japan to Java, Australia, and New Zealand.

Lejeunea floridana A. Evans, Bull. Torrey Bot. Club 32: 185. 1905.

Distribution. This species is found in Florida west to Alabama; it is also in the West Indies.

Lejeunea glaucescens Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat. 3: 378. 1845, var. **glaucescens**. = *Lejeunea glaucescens* Gottsche var. *obsoleta* R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 395. 1957 (syn. fide Dauphin et al., 2011: 795).

Distribution. This species is found in Florida and Louisiana; it is also in tropical South America, the Bahamas, and Bermuda.

Lejeunea glaucescens var. **acrogyna** R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 400. 1957.

Distribution. This variety is known only from the Piedmont area of North Carolina.

Lejeunea glaucescens var. *obsoleta* R. M. Schust. = **Lejeunea glaucescens** var. **glaucescens.**

Lejeunea laetevirens Nees & Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 469. 1842.

Distribution. This species is in the southeastern United States from Florida north to West Virginia; it is widespread in northern South America, the West Indies, and Central America.

Lejeunea lamacerina (Steph.) Schiffn., Hedwigia 41: 278. 1902, subsp. **gemminata** R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 168. 1957. = *Lejeunea patens* auct. amer. (syn. fide Schuster, 1957: 162).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

According to Schuster (1957), *Lejeunea patens* Lindb. is restricted to western Europe and the Atlantic Islands. North American specimens, treated as *L. patens* by many North American authors (i.e., *L. patens* auct. amer.) must instead be referred to *L. lamacerina* subsp. *gemminata*. Although Schuster (1980a: 972) changed the spelling of *L. lamacerina* subsp. *gemminata* R. M. Schust. to "*geminata*," the original spelling must be retained (McNeill et al., 2012: Art. 60.1). Analyses by Heinrichs et al. (2013: fig. S1) support the recognition of this subspecies as distinct from *L. lamacerina* (Steph.) Schiffn. subsp. *lamacerina*, which is restricted to Europe.

Distribution. This subspecies is found in eastern North America from Newfoundland and Nova Scotia through New England, south to Virginia, North Carolina, Tennessee, and Georgia, and west to Kentucky and Illinois.

Lejeunea longifissa Steph. = **Lejeunea adpressa** Nees.

Lejeunea minutiloba A. Evans var. **minutiloba**, Bull. Torrey Bot. Club 44: 525. 1917.

Distribution. This variety is found in the Coastal Plain from Louisiana to Florida. It is also in the West Indies.

Lejeunea minutiloba A. Evans var. **heterogyna** R. M. Schust., J. Elisha Mitchell Sci. Soc. 73: 425. 1957.

Distribution. This variety is endemic to Florida.

Lejeunea obtusangula Spruce, Trans. Proc. Bot. Soc. Edinburgh 15: 221. 1884. ≡ *Taxilejeunea obtusangula* (Spruce) A. Evans, Bull. Torrey Bot. Club 38: 215. 1911.

Distribution. This species is found from central Florida south into the West Indies; it is widespread throughout the Neotropics.

Lejeunea patens Lindb., Acta Soc. Sci. Fenn. 10: 482. 1875. = *Lejeunea serpyllifolia* (Dicks.) Lib. —EXCLUDED.

According to Schuster (1957: 185), *Lejeunea patens* Lindb. does not occur in North America.

Lejeunea patens auct. amer. = **Lejeunea lamacerina** subsp. **gemminata** R. M. Schust.

Lejeunea phyllobola Nees & Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 471. 1842. ≡ *Rectolejeunea phyllobola* (Nees & Mont.) A. Evans, Bull. Torrey Bot. Club 33: 15. 1906. = *Lejeunea brittoniae* (A. Evans) Grolle, Bryophyt. Biblioth. 48: 81. 1995 (syn. fide Reiner-Drehwald, 2000: 103). Basionym: *Rectolejeunea brittoniae* A. Evans, Bull. Torrey Bot. Club 38: 209. 1911.

Reiner-Drehwald and Grolle (2012: 472) stated that *Lejeunea evansiana* (R. M. Schust.) Schäf.-Verw. is an invalid name (≡ *Rectolejeunea evansiana* R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1127 [nom. inval.]) and likely belongs here as well.

Distribution. This species is found from Florida into the West Indies and from Costa Rica into Mexico.

Lejeunea rigidula Nees ex Mont. ≡ **Cheilolejeunea rigidula** (Nees ex Mont.) R. M. Schust.

Lejeunea ruthii (A. Evans) R. M. Schust., J. Hattori Bot. Lab. 25: 23. 1962, var. **ruthii**. Basionym: *Microlejeunea ruthii* A. Evans, Mem. Torrey Bot. Club 8: 161. 1902.

Although originally described in the currently recognized genus *Microlejeunea* (Spruce) Steph., this species lacks the ocelli that are considered diagnostic of *Microlejeunea* (Dong et al., 2013). It is, therefore, retained in *Lejeunea* by Söderström et al. (2015b).

Distribution. This species is found from southern Ohio and West Virginia south to northern Georgia.

Lejeunea ruthii var. **alata** R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1063. 1980.

Distribution. This species is known only from the type from North Carolina.

Lejeunea serpyllifolia (Dicks.) Lib. = **Lejeunea patens** Lindb. —EXCLUDED.

Lejeunea serpyllifolia auct. amer. = **Lejeunea lamacerina** subsp. **gemminata** R. M. Schust.

Lejeunea setiloba Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 281. 1884. —EXCLUDED.

According to Schuster (1980a: 1009), this species occurs from Cuba to Brazil but has not yet been found in North America.

Lejeunea sharpii (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 991. 1980. Basionym: *Taxilejeunea sharpii* R. M. Schust., J. Elisha Mitchell Sic. Soc. 81: 41. 1965.

Distribution. This species is known only from Tennessee.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lejeunea spiniloba Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 770. 1847. ≡ *Rectolejeunea spiniloba* (Lindenb. & Gottsche) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1149. 1980.

Distribution. This species is known from Florida, Louisiana, Cuba, and Mexico.

Lejeunea trinitensis Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 381. 1845. = *Rectolejeunea pililoba* (Spruce) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1153. 1980 (syn. fide Grolle, 1989b: 250). Basionym: *Lejeunea pililoba* Spruce, J. Linn. Soc. Bot. 30: 346. 1894 [1895].

Distribution. This species is found in northern South America into Honduras and from the West Indies into Florida.

Lejeunea ulicina (Taylor) Gottsche, Lindenb. & Nees subsp. *ulicina* ≡ **Microlejeunea ulicina** (Taylor) Steph.

Lejeunea ulicina (Taylor) Gottsche, Lindenb. & Nees subsp. *bullata* (Taylor) R. M. Schust. ≡ **Microlejeunea bullata** (Taylor) Steph.

Lepidozia (Dumort.) Dumort., Rec. Observ. Jungerm.: 19. 1835, nom. cons. Basionym: *Pleuroschisma* sect. *Lepidozia* Dumort., Syll. Jungerm. Europ.: 69. 1831. TYPE: *Lepidozia reptans* (L.) Dumort., Rec. Observ. Jungerm.: 19. 1835. Basionym: *Jungermannia reptans* L., Sp. Pl. 2: 1133. 1753. [54. LEPIDOZIACEAE.]

This is a genus of about 130 species, with four in our flora.

Lepidozia filamentosa (Lehm. & Lindenb.) Gottsche, Lindenb. & Nees, Syn. Hepat.: 206. 1845. Basionym: *Jungermannia filamentosa* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 6: 29. 1834.

In our checklist (Stotler & Crandall-Stotler, 1977: 413) we had "Lindenb." as the combining author, but the combination was made in Gottsche et al. (1845: 206). Although the entry here reads "*Lepidozia filamentosa* L. et Lg.," the "L. et Lg." refers to the authors of the basionym, not to the authors making the new combination.

Distribution. This species is found in western North America from Alaska to British Columbia. It is also reported from South America, New Zealand, and Japan.

Lepidozia groenlandica Lehm., Nov. Stirp. Pug. 10: 7. 1857.

According to Schuster (1969: 19), this taxon has not been collected in Greenland since its naming, and in fact, there are no *Lepidozia* reported to occur in Greenland by Damsholt (2013). Lehmann (1857) indicated that this new species, collected by Wormskjold in West Greenland, resembled *Jungermannia oligophylla* Lehm. & Lindenb. from Tierra del Fuego, a species now regarded as *Neolepidozia oligophylla* (Lehm. & Lindenb.) Fulford & J. Taylor. Until the type of this taxon is studied, its status remains dubious.

Distribution. This species is known only from the type collection made by Wormskjold in West Greenland.

Lepidozia reptans (L.) Dumort., Recueil Observ. Jungerm.: 19. 1835. Basionym: *Jungermannia reptans* L., Sp. Pl. 2: 1133. 1753.

Distribution. This species is found in the west from Alaska, the Yukon and the Northwest Territories to California, Montana, and New Mexico, and in the east from Newfoundland south to North Carolina and Tennessee, west to Indiana, Michigan, Wisconsin, Minnesota, and Iowa. It is also in northern and central Europe, the Azores and Macaronesia, and in Turkey, the Himalayas, Siberia, China, Sakhalin, and Japan.

Lepidozia sandvicensis Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hep.: 201. 1845.

Distribution. This species is found in Alaska and the Hawaiian Islands.

Leptolejeunea (Spruce) Steph., Hedwigia 30: 270. 1891. Basionym: *Lejeunea* subg. *Leptolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 76, 193. Apr. 1884. TYPE: *Leptolejeunea vitrea* (Nees) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 126. 1893. Basionym: *Jungermannia vitrea* Nees, Enum. Pl. Crypt. Jav. 56. 1830. [29. LEJEUNEACEAE.]

This is a pantropical genus of about 25 species, with one in our flora.

Leptolejeunea elliptica (Lehm. & Lindenb.) Besch., Rev. Bryol. 19: 14. 1892. Basionym: *Jungermannia elliptica* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 5: 13. 1833. = *Leptolejeunea subacuta* Steph. ex A. Evans, Proc. Wash. Acad. Sci. 8: 149. 1906 (syn. fide Schuster, 1967: 224). ≡ *Leptolejeunea elliptica* (Lehm. & Lindenb.) Besch. subsp. *subacuta* (Steph. ex A. Evans) R. M. Schust., Hep. Anthocerot. N. Amer. 4: 1215. 1980.

Initially Schuster (1967) synonymized the Asiatic *Leptolejeunea subacuta* Steph. ex A. Evans with *L.*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

elliptica, indicating that the two species scarcely can be distinguished. In 1980 he segregated the Asiatic populations as a distinct subspecies of *L. elliptica* (Schuster, 1980a: 1215). Söderström et al. (2015b), however, do not recognize either *L. subacuta* or this subspecies.

Distribution. This species is of local occurrence in southern Florida; it is widespread in the West Indies and throughout Central and South America; it is also known from Asia.

Leptoscyphus Mitt., Hooker's J. Bot. Kew Gard. Misc. 3: 358. 1851. TYPE: *Leptoscyphus liebmannianus* (Lindenb. & Gottsche) Mitt., Hooker's J. Bot. Kew Gard. Misc. 3: 358. 1851. Basionym: *Jungermannia liebmanniana* Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 668. 1847, as "*liebmaniana*." [51. LOPHOCOLACEAE.]

For whatever reason, references to collections of F. M. Liebmann were consistently spelled as "Liebman" (with one "n") throughout the *Synopsis Hepaticarum* by Gottsche, Lindenberg, and Nees (1844–1848). Each entry with a species named in his honor was therefore always spelled with a single "n," but these should be corrected to "nn" in compliance with the ICN, Article 60.7 (McNeill et al., 2012), because his name was not deliberately Latinized but the final consonant was omitted.

This is a genus of approximately 40 species, one of which occurs in our flora.

Leptoscyphus cuneifolius (Hook.) Mitt., Hooker's J. Bot. Kew Gard. Misc. 3: 358. 1851, subsp. **cuneifolius**. Basionym: *Jungermannia cuneifolia* Hook., Brit. Jungermann. Part 16: pl. 64. 1814.

Vanderpoorten et al. (2010) confirmed the status of this species as an element of *Leptoscyphus* in their recircumscription of the genus. A second subspecies, *L. cuneifolius* subsp. *fragilis* (J. B. Jack & Steph.) Grolle, is restricted to northern South America.

Distribution. This subspecies is found in eastern North America from Virginia, North Carolina, and Tennessee; it is also in the West Indies, Central and South America, and in western Europe from Norway, Great Britain, Ireland, Madeira, and the Azores.

Leucolejeunea A. Evans = **Cheilolejeunea** (see discussion under *Cheilolejeunea*).

Leucolejeunea clypeata (Schwein.) A. Evans ≡ **Cheilolejeunea clypeata** (Schwein.) W. Ye & R. L. Zhu.

Leucolejeunea conchifolia (A. Evans) A. Evans ≡ **Cheilolejeunea conchifolia** (A. Evans) W. Ye & R. L. Zhu.

Leucolejeunea unciloba (Lindenb.) A. Evans ≡ **Cheilolejeunea unciloba** (Lindenb.) Malombe.

Leucolejeunea xanthocarpa (Lehm. & Lindenb.) A. Evans ≡ **Cheilolejeunea xanthocarpa** (Lehm. & Lindenb.) Malombe.

Liochlaena Nees in Gottsche, Lindenberg & Nees, Syn. Hepat. 150. 14–16 Aug. 1845. TYPE: *Liochlaena lanceolata* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 150. 1845. [41. JUNGERMANNIACEAE.]

The study by Hentschel et al. (2007b) supported the recognition of *Liochlaena* as a genus distinct from both *Solenostoma* and *Jungermannia*.

This is a genus of two species, both of which occur in our flora.

Liochlaena lanceolata Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 150. 1845. = *Jungermannia leiantha* Grolle, Taxon 15: 187. 1966.

As discussed in our previous checklist (Stotler & Crandall-Stotler, 1977: 427), the name *Jungermannia lanceolata* L., deemed a nomen ambiguum because it had been widely misapplied, was replaced by the new name, *J. leiantha* Grolle. Molecular phylogenetic studies by Hentschel et al. (2007b) have resolved this taxon in a clade to which the name *Liochlaena* Nees has been applied. Based on the Principle of Priority, *L. lanceolata* Nees is now the accepted name for this species. Note that although *J. lanceolata* L. is a rejected name (Wiersema et al., 2015: 424), since it was not cited as a synonym by Nees, *L. lanceolata* Nees is a validly published name.

Distribution. This species is from southern Alaska south to California, Idaho, Montana, and Utah, and is widespread in the east from Labrador and Newfoundland south to Georgia, west through Tennessee and Kentucky to Illinois, Kansas, and Minnesota. It is also widespread in Europe.

Liochlaena subulata (A. Evans) Schljakov, Pechen. Mkhi Severa SSSR 4: 71. 1981. Basionym: *Jungermannia subulata* A. Evans, Trans. Connecticut Acad. Arts 8: 258. 1891 [1892].

Distribution. Although verified by Váňa (1973c) to occur in Minnesota and Missouri, this taxon is more widespread in Europe and Asia. The type collection is from Hawaii.

Lophochaete R. M. Schust., J. Hattori Bot. Lab. 23: 197. 1960 [1961]. TYPE: *Lophochaete fryei*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

(Perss.) R. M. Schust. Basionym: *Lepicolea fryei* Perss., Bryologist 49: 47. 1946. [40. ANTHELIACEAE.]

The genus *Lophochaete* R. M. Schust. was validly published by Schuster (1960: 201), but he included in it the type of the earlier published genus, *Pseudolepicolea* Fulf. & J. Taylor. As a result, *Lophochaete* has generally been considered a heterotypic synonym of *Pseudolepicolea* (e.g., Stotler & Crandall-Stotler, 1977; Grolle, 1983a; Grolle & Long, 2000; Crandall-Stotler et al., 2009b). In the molecular studies of Shaw et al. (2015), however, while *P. quadrilaciniata* (Sull.) Fulf. & J. Taylor, the type of *Pseudolepicolea*, is resolved in the suborder Lophocoleineae, *P. trollii* (Herz.) Grolle & Ando (≡ *L. trollii* (Herz.) R. M. Schust.) is resolved in the Antheliaceae (suborder Jungermanniineae). These results suggest that *Lophochaete* and *Pseudolepicolea* should be recognized as separate genera, as proposed by Schuster (2000: 133), but judgment concerning the generic status of *Lophochaete* was deferred since molecular data were not available for the type species, *L. fryei* (≡ *P. fryei*) (Shaw et al., 2015: 34). New (as yet unpublished) molecular data show *L. fryei* nested with *L. trollii* in the Antheliaceae (B. Shaw, pers. comm.), and consequently we now recognize *Lophochaete* as distinct from *Pseudolepicolea*.

Lophochaete is a small genus of two or three species, one of which occurs in North America.

Lophochaete fryei (Perss.) R. M. Schust., J. Hattori Bot. Lab. 23: 201. 1960 [1961]. Basionym: *Lepicolea fryei* Perss., Bryologist 49: 47. 1946. ≡ *Pseudolepicolea fryei* (Perss.) Grolle & Ando, Hikobia 3: 180. 1963.

Distribution. This species is found in Alaska and Nunavut, on the west coast of Hudson Bay; it is also in northern Siberia.

Lophocolea (Dumort.) Dumort., Rec. Observ. Jungerm.: 17. 1835. Basionym: *Jungermannia* sect. *Lophocolea* Dumort., Syll. Jungerm. Europ.: 59. 1831. TYPE: *Lophocolea bidentata* (L.) Dumort. Basionym: *Jungermannia bidentata* L., Sp. Pl. 2: 1132. 1753. [51. LOPHOCOLEACEAE.]

As now defined, this genus includes *Chiloscyphus* subg. *Fragilifolia* (R. M. Schust.) J. J. Engel & R. M. Schust., as "*Fragilifolius*"; *Chiloscyphus* subg. *Lophocolea* (Dumort.) J. J. Engel & R. M. Schust.; *Chiloscyphus* subg. *Microlophocolea* (Spruce) J. J. Engel & R. M. Schust., as "*Microlophocoleus*"; and *Chiloscyphus* subg. *Spinoscyphus* J. J. Engel (syn. fide Söderström et al., 2013a: 37).

Engel and Schuster (1984 [1985]) synonymized *Lophocolea* as a subgenus of *Chiloscyphus*, a view rejected by Grolle (1995: 14), but seemingly supported by the molecular analyses of He-Nygrén and Piippo (2003) and Hentschel et al. (2006a, 2006b) in which *C. polyanthos* (L.) Corda, the type species of *Chiloscyphus*, resolved nested in *Lophocolea*. With increased taxon sampling, however, other morphologically distinct genera were also resolved within a broadly defined, paraphyletic *Chiloscyphus*, including *Pachyglossa* Herzog & Grolle, *Clasmatocolea* Spruce, and *Leptoscyphus* Mitt. (Hentschel et al., 2007c). Instead of reducing all of these genera to *Chiloscyphus*, well-supported monophyletic lineages that have been recognized as subgenera by Hentschel et al. (2007c) could just as well be recognized as genera. The large clade that includes *L. bidentata* (L.) Dumort. (= *C. latifolius* (Nees) J. J. Engel & R. M. Schust.), the type species of *Lophocolea*, excludes the type species of *Chiloscyphus*. This reinterpretation of molecular evidence has led to renewed recognition and recircumscription of *Lophocolea* as a genus by Söderström et al. (2013a). At the same time, species with opposite leaves that are connate with the underleaves (= *Lophocolea* subg. *Connatae* (Lindenb.) Piippo) have been transferred to the new genus *Cryptolophocolea* L. Söderstr., Crand.-Stotl., Stotler & Váňa (see Söderström et al., 2013a: 39).

Lophocolea as now delimited comprises approximately 130 species, with seven occurring in North America.

Lophocolea apalachicola R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 195. 1980. ≡ *Chiloscyphus apalachicola* (R. M. Schust.) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 410. 1984 [1985], as "*apalachicolus.*"

Distribution. This species is restricted to Alabama and Florida.

Lophocolea appalachiana R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 524. 1980. ≡ *Chiloscyphus appalachianus* (R. M. Schust.) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 410. 1984 [1985], syn. nov.

Distribution. This species is a montane endemic of the Appalachians of North Carolina and Tennessee.

Lophocolea bidentata (L.) Dumort., Recueil Observ. Jungerm.: 17. 1835. Basionym: *Jungermannia bidentata* L., Sp. Pl. 2: 1132. 1753. = *Chiloscyphus latifolius* (Nees) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 418. 1984 [1985] (syn. fide Konstantinova et al., 2009: 43). Basionym:

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lophocolea latifolia Nees, Naturgesch. Eur. Leberm. 2: 234. 1836. = *Chiloscyphus coadunatus* (Sw.) J. J. Engel & R. M. Schust. var. *rivularis* (Raddi) Frisvoll, Elvebakk, Flatberg & Økland, Norsk Institutt for Naturforskning (NINA) Temahefte 4: 93. 1995 (syn. fide Konstantinova et al., 2009: 43). Basionym: *Jungermannia bidentata* var. β *rivularis* Raddi, Jungermanniogr. Etrusca: 26. 1818.

The nomenclatural history of *Lophocolea bidentata* is complicated. When Engel and Schuster (1984 [1985]) transferred *L. bidentata* to *Chiloscyphus*, that combination was blocked by *C. bidentatus* Steph., so they made the new combination *C. latifolius* (basionym: *L. latifolia* Nees), which appeared to be the earliest available name for this taxon. In 1987, Gradstein and Váňa treated *L. cuspidata* (Nees) Limpr. as a synonym of the Latin American species *L. coadunata* (Sw.) Mont. along with *L. bidentata*. In *Chiloscyphus*, *C. coadunatus* (Sw.) J. J. Engel & R. M. Schust. is an earlier homonym for *C. latifolius* (Nees) J. J. Engel & R. M. Schust., and so authors who accepted the Gradstein and Váňa (1987) synonymy and the congeneric status of *Lophocolea* and *Chiloscyphus* then considered *L. bidentata* to be equal to *C. coadunatus*. Although many European authors (e.g., Paton, 1999; Grolle & Long, 2000) have regarded *L. cuspidata* to be conspecific with *L. bidentata*, North American authors regard them as separate species (e.g., Stotler & Crandall-Stotler, 1977; Schuster, 1980a). This latter view has now been supported by molecular phylogenetic evidence (see Hentschel et al., 2006a; Glenny et al., 2009; Engel & He, 2010; Engel et al., 2010) and is accepted herein.

Distribution. This species is reported in North America from Alberta and British Columbia south to Idaho, Washington, and Oregon, and from Ontario south through New England to Georgia and west to New York, Pennsylvania, West Virginia, Kentucky, Indiana, and Mississippi. It is widespread in Europe, and is also reported from Latin America, northern Africa, the Himalayas, New Guinea, and New Zealand. Some of these reports may, however, actually refer to *Lophocolea coadunata*.

Lophocolea coadunata (Sw.) Mont. in d'Orbigny, Voy. Amér. Mérid. 7, Bot. 2: 76. 1839. Basionym: *Jungermannia coadunata* Sw., Fl. Ind. Occid. 3: 1850. 1806. ≡ *Chiloscyphus coadunatus* (Sw.) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 413. 1984 [1985], var. *coadunatus*. = *Lophocolea cuspidata* (Nees) Limpr., Krypt-Fl. Schlesien 1: 303. 1876 [1877] (syn. fide Gradstein & Váňa, 1987: 413). Basionym: *Lophocolea bidentata* (L.) Dumort. var. β *cuspidata* Nees, Naturgesch. Eur. Leberm. 2: 327. 1836. = *Lophocolea cuspidata* (Nees) Limpr. var. *alata* (Gottsche, Lindenb. & Nees) Müll. Frib., Lebermoose: 803. 1911, syn. nov. Basionym: *Lophocolea bidentata* (L.) Dumort. var. γ *alata* Gottsche, Lindenb. & Nees, Syn. Hep. 2: 159. 1845.

The Latin American species *Chiloscyphus coadunatus* var. *coadunatus* has been accepted as a synonym of *Lophocolea cuspidata* (Gradstein & Váňa, 1987: 413; Konstantinova et al., 2009: 43). Since the name *L. coadunata* (Sw.) Mont. predates *L. cuspidata* (Nees) Limpr., it is the accepted name for this taxon. See *L. bidentata* for further discussion related to recognition of this species.

Distribution. This species is found from Alaska south to Montana and California, and from New England and New York south to West Virginia and South Carolina and west through Tennessee to Arkansas. It is common throughout Europe, Africa, India, China, and Japan.

Lophocolea cuspidata (Nees) Limpr. var. *alata* (Gottsche, Lindenb. & Nees) Müll. Frib. = **Lophocolea coadunata** (Sw.) Mont.

Lophocolea cuspidata (Nees) Limpr. var. *cuspidata* = **Lophocolea coadunata** (Sw.) Mont.

Lophocolea heterophylla (Schrad.) Dumort., Recueil Observ. Jungerm.: 17. 1835, subsp. **heterophylla**. Basionym: *Jungermannia heterophylla* Schrad., J. Bot. (Schrader) 1: 66. 1802. = *Chiloscyphus profundus* (Nees) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 421. 1984 [1985] (syn. fide Konstantinova et al., 2009: 43). Basionym: *Lophocolea profunda* Nees, Naturgesch. Eur. Leberm. 2: 346. 1836.

When Engel and Schuster (1994) transferred *Lophocolea heterophylla* to *Chiloscyphus*, that combination was blocked by *C. heterophyllus* Steph., so they made the new combination *C. profundus* (basionym: *L. profunda* Nees), which was the earliest available name for this taxon.

Distribution. This subspecies is transcontinental in North America from Alaska, British Columbia, and Washington to California, Arizona, Utah, and Wyoming, and Greenland and Newfoundland south to northern Florida. It is also very common throughout temperate Europe, North Africa, and Asia.

Lophocolea heterophylla subsp. **cladogyna** R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 223. 1980. ≡ *Chiloscyphus profundus* (Nees) J. J. Engel & R. M. Schust. subsp. *cladogynus* (R. M. Schust.) J. J. Engel, Phytologia 83: 46. 1997 [1998].

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This subspecies is endemic to the southeastern coastal plain of North Carolina and south to Florida.

Lophocolea martiana Nees ≡ **Cryptolophocolea martiana** (Nees) L. Söderstr., Crand.-Stotl. & Stotler subsp. **martiana.**

Lophocolea minor Nees, Naturgesch. Eur. Leberm. 2: 330. 1836. ≡ *Chiloscyphus minor* (Nees) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 419. 1984 [1985].

Distribution. This species is found from Alaska and the Yukon Territory to British Columbia and Alberta, south to California, Arizona, New Mexico, Colorado, and Wyoming, and from Ontario and Quebec south to Virginia and Tennessee and west to Illinois, Minnesota, and Kansas. It is widespread in Europe from Scandinavia to the Azores but is absent in Great Britain and Ireland; it is also found in Africa, Siberia, Turkey, the Himalayas, China, and Japan.

Lophocolea muricata (Lehm.) Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 169. 1845. Basionym: *Jungermannia muricata* Lehm., Linnaea 4: 363. 1829. ≡ *Chiloscyphus muricatus* (Lehm.) J. J. Engel & R. M. Schust., Nova Hedwigia 39: 419. 1984 [1985].

Distribution. This species is rare in the southern Appalachians of North and South Carolina. It is widespread throughout the southern hemisphere in Latin America, Africa, and Oceania.

Lopholejeunea (Spruce) Steph., Bot. Gaz. 15: 285. 1890, as "*Lopho-Lejeunea*," nom. cons. Basionym: *Lejeunea* subg. *Lopholejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 74, 119. 1884, as "*Lopho-Lejeunea*." TYPE: *Lopholejeunea sagrana* (Mont.) Steph., Hedw. 30: 202. 1891, as "*sagraeana*." Basionym: *Phragmicoma sagrana* Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 464. 1842, as "*sagraeana*." = *Lopholejeunea subfusca* (Nees) Schiffn., Bot. Jahrb. Syst. 23: 593. 1897 (syn. fide Gradstein, 1994: 118). Basionym: *Jungermannia subfusca* Nees, Enum. Pl. Crypt. Jav.: 36. 1830. [29. LEJEUNEACEAE.]

This is a pantropical genus of about 30 species, with two in our flora.

Lopholejeunea muelleriana (Gottsche) Schiffn. = **Lopholejeunea nigricans** (Lindenb.) Schiffn.

Lopholejeunea muelleriana (Gottsche) Schiffn. subsp. *floridana* R. M. Schust. = **Lopholejeunea nigricans** (Lindenb.) Schiffn.

Lopholejeunea muelleriana (Gottsche) Schiffn. subsp. *puertoricensis* R. M. Schust. = **Lopholejeunea nigricans** (Lindenb.) Schiffn.

Lopholejeunea nigricans (Lindenb.) Schiffn., Consp. Hepat. Arch. Ind.: 293. 1898. Basionym: *Lejeunea nigricans* Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat. part 3: 316. 1845. = *Lopholejeunea muelleriana* (Gottsche) Schiffn., Bot. Jahrb. Syst. 23: 599. 1897 (syn. fide Gradstein, 1994: 113). Basionym: *Lejeunea muelleriana* Gottsche, Mex. Leverm.: 184. 1863.

Gradstein (1994) does not recognize any infraspecific taxa under *Lopholejeunea nigricans* and also reduces *L. muelleriana* subsp. *floridana* and subspecies *puertoricensis* to *L. nigrans* (syn. fide Gradstein, 1994: 114).

Distribution. In North America this species is found in Florida and North Carolina, but is widespread in the West Indies and Central and South America.

Lopholejeunea subfusca (Nees) Schiffn., Bot. Jahrb. 23: 593. 1897. Basionym: *Jungermannia subfusca* Nees, Enum. Pl. Crypt. Jav.: 36. 1830. = *Lopholejeunea sagrana* (Mont.) Steph. Hedw. 30: 202. 1891, as "sagraeana." Basionym: *Phragmicoma sagrana* Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 464. 1842, as "*sagraeana*."

Distribution. In North America this species is reported only from Florida; it is widespread in the American tropics from Brazil and Bolivia north to Mexico and the West Indies. It is also in central Africa, Malaysia, and Indonesia.

Lophozia (Dumort.) Dumort., Recueil Observ. Jungerm.: 17. 1835. Basionym: *Jungermannia* sect. *Lophozia* Dumort., Syll. Jungerm. Europ.: 53. 1831. TYPE: *Lophozia ventricosa* (Dicks.) Dumort., Recueil Observ. Jungerm.: 17. 1835. Basionym: *Jungermannia ventricosa* Dicks., Fasc. Pl. Crypt. Brit. 2: 1790. [36. SCAPANIACEAE.]

Following the current recognition of the segregates *Barbilophozia*, *Heterogemma* (= *Tritomaria* p.p.), *Isopaches*, *Leiocolea* (= *Mesoptychia*), *Lophoziopsis*, *Neorthocaulis*, *Obtusifolium*, *Oleolophozia*, *Orthocaulis*, *Protolophozia*, *Schistochilopsis*, *Schljakovia*, and *Schljakovianthus* as genera distinct from *Lophozia*, this genus is now considered to contain only about 16 species, 10 of which occur in our flora.

Lophozia alboviridis R. M. Schust. ≡ **Isopaches alboviridis** (R. M. Schust.) Schljakov.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lophozia alpestris (Schleich. ex F. Weber) A. Evans, Rhodora 3: 181. 1901, nom. rej. Basionym: *Jungermannia alpestris* Schleich. ex F. Weber, Hist. Musc. Hepat. Prodr.: 80. 1815, nom. rej.

The name *Jungermannia alpestris* is a "nomina utique rejicienda" or suppressed name listed in the ICN (Wiersema et al., 2015: 424) and is not to be used. Plants labeled as such are most likely referable to *Mesoptychia collaris* (Nees) L. Söderstr. & Váňa.

Lophozia alpestris (Schleich. ex F. Weber) A. Evans, nom. rej. subsp. *polaris* R. M. Schust. ≡ **Lophoziopsis polaris** (R. M. Schust.) Konstant. & Vilnet.

Lophozia ascendens (Warnst.) R. M. Schust., Bryologist 55: 180. 1952. Basionym: *Sphenolobus ascendens* Warnst., Hedwigia 57: 63. 1915 [1916].

Distribution. This circumpolar species is found in eastern North America from Nova Scotia south to New England and west to New York, Michigan, Wisconsin, and Minnesota. It is also found in Scandinavia south throughout Europe and from Siberia to Sakhalin and Japan in Asia.

Lophozia badensis (Gottsche ex Rabenh.) Schiffn. var. *apiculata* R. M. Schust. ≡ **Mesoptychia badensis** (Gottsche ex Rabenh.) L. Söderstr. & Váňa var. **apiculata** (R. M. Schust.) Stotler & Crand.-Stotl.

Lophozia badensis (Gottsche ex Rabenh.) Schiffn. var. *badensis* ≡ **Mesoptychia badensis** (Gottsche ex Rabenh.) L. Söderstr. & Váňa var. **badensis.**

Lophozia bantriensis (Hook.) Steph. ≡ **Mesoptychia bantriensis** (Hook.) L. Söderstr. & Váňa.

Lophozia bicrenata (Schmidel ex Hoffm.) Dumort. var. *bicrenata* ≡ **Isopaches bicrenatus** (Schmidel ex Hoffm.) H. Buch var. **bicrenatus.**

Lophozia bicrenata (Schmidel ex Hoffm.) Dumort. var. *immersa* R. M. Schust. & Damsh. ≡ **Isopaches bicrenatus** (Schmidel ex Hoffm.) H. Buch var. **immersus (**R. M. Schust. & Damsh.) Stotler & Crand.-Stotl.

Lophozia capitata (Hook.) Macoun ≡ **Tritomaria capitata** (Hook.) Stotler & Crand.-Stotl.

Lophozia ciliata Damsh., L. Söderstr. & H. Weibull, Lindbergia 25: 3. 2000.

Bakalin (2011: 301) considered this to be a synonym of *Lophozia ascendens* and pointed out that the study by De Roo et al. (2007) showed that this cannot belong to the subgenus *Protolophozia* R. M. Schust. Regardless of subgeneric placement, De Roo et al. (2007: 307) showed *L. ciliata* and *L. ascendens* are not conspecific. Konstantinova et al. (2009: 19) have also regarded *L. ciliata* to be a distinct species of *Lophozia*. Caners (2011: 77) recently reported it from western Canada.

Distribution. This species is found in Oregon and Alberta; it is also in Scandinavia.

Lophozia collaris (Nees) Dumort. ≡ **Mesoptychia collaris** (Nees) L. Söderstr. & Váňa.

Lophozia debiliformis R. M. Schust. & Damsh. var. *debiliformis* = **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Lophozia debiliformis R. M. Schust. & Damsh. var. *concolor* R. M. Schust. & Damsh. = **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Lophozia decolorans (Limpr.) Steph. ≡ **Isopaches decolorans** (Limpr.) H. Buch.

Lophozia ehrhartiana (F. Weber) Inoue & Steere = **Lophozia ventricosa** (Dicks.) Dumort.

Lophozia elongata Steph. ≡ **Protolophozia elongata** (Steph.) Schljakov.

Lophozia excisa (Dicks.) Dumort. var. *excisa* ≡ **Lophoziopsis excisa** (Dicks.) Konstant. & Vilnet var. **excisa.**

Lophozia excisa (Dicks.) Dumort. var. *elegans* R. M. Schust. ≡ **Lophoziopsis excisa** (Dicks.) Konstant. & Vilnet var. **elegans** (R. M. Schust.) Konstant. & Vilnet.

Lophozia excisa (Dicks.) Dumort. var. *infuscata* R. M. Schust. & Damsh. ≡ **Lophoziopsis excisa** (Dicks.) Konstant. & Vilnet var. **infuscata** (R. M. Schust. & Damsh.) Konstant. & Vilnet.

Lophozia excisa (Dicks.) Dumort. var. *succulenta* R. M. Schust. & Damsh. ≡ **Lophoziopsis excisa** (Dicks.) Konstant. & Vilnet var. **succulenta** (R. M. Schust. & Damsh.) Konstant. & Vilnet.

Lophozia floerkei (F. Weber & D. Mohr) Schiffn. ≡ **Neoorthocaulis floerkei** (F. Weber & D. Mohr) L. Söderstr., De Roo & Hedd.

Lophozia gillmanii (Austin) R. M. Schust. var. *gillmanii* ≡ **Mesoptychia gillmanii** (Austin) L. Söderstr. & Váňa.

Lophozia gillmanii var. *ciliolata* R. M. Schust. = **Mesoptychia gillmanii** (Austin) L. Söderstr. & Váňa.

Lophozia grandiretis (Lindb. ex Kaal.) Schiffn. ≡ **Schistochilopsis grandiretis** (Lindb. ex Kaal.) Konstant. subsp. **grandiretis.**

Lophozia grandiretis (Lindb. ex Kaal.) Schiffn. var. *parviretis* R. M. Schust. = **Schistochilopsis**

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

grandiretis (Lindb. ex Kaal.) Konstant. subsp. **grandiretis.**

Lophozia groenlandica sensu R. M. Schust. (non (Nees) Macoun) = **Lophozia schusteriana** Schljakov.

Lophozia groenlandica (Nees) Macoun = **Lophozia wenzelii** (Nees) Steph. var. **groenlandica** (Nees) Bakalin.

Lophozia guttulata (Lindb. & Arnell) A. Evans = **Lophozia ventricosa** (Dicks.) Dumort. var. **longiflora** (Nees) Macoun.

Lophozia heterocolpos (Thed. ex Hartm.) M. Howe var. *arctica* (S. W. Arnell) R. M. Schust. & Damsh. ≡ **Mesoptychia heterocolpos** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **arctica** (S. W. Arnell) L. Söderstr. & Váňa.

Lophozia heterocolpos (Thed. ex Hartm.) M. Howe var. *harpanthoides* (Bryhn & Kaal.) R. M. Schust. ≡ **Mesoptychia heterocolpos** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **harpanthoides** (Bryhn & Kaal.) L. Söderstr. & Váňa.

Lophozia heterocolpos (Thed. ex Hartm.) M. Howe var. *heterocolpos* ≡ **Mesoptychia heterocolpos** (Thed. ex Hartm.) L. Söderstr. & Váňa var. **heterocolpos.**

Lophozia heteromorpha R. M. Schust. & Damsh. = **Lophozia murmanica** Kaal.

Lophozia holmenianum Inoue & Steere ≡ **Mesoptychia holmeniana** (Inoue & Steere) L. Söderstr. & Váňa.

Lophozia hyperarctica R. M. Schust., nom. inval. (McNeill et al., 2012: Art. 41.2) ≡ **Schistochilopsis grandiretis** (Lindb. ex Kaal.) Konstant. subsp. **grandiretis.**

Lophozia hyperborea (R. M. Schust.) R. M. Schust. subsp. *hyperborea* ≡ **Neoorthocaulis hyperboreus** (R. M. Schust.) L. Söderstr., De Roo & Hedd. subsp. **hyperboreus.**

Lophozia hyperborea (R. M. Schust.) R. M. Schust. subsp. *helophila* R. M. Schust. & Damsh. ≡ **Neoorthocaulis hyperboreus** (R. M. Schust.) L. Söderstr., De Roo & Hedd. subsp. **helophilus** (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov.

Lophozia incisa (Schrad.) Dumort. var. *incisa* ≡ **Schistochilopsis incisa** (Schrad.) Konstant. var. **incisa.**

Lophozia incisa (Schrad.) Dumort. var. *inermis* Müll. Frib. ≡ **Schistochilopsis incisa** (Schrad.) Konstant. var. **inermis** (Müll. Frib.) Konstant.

Lophozia incisa (Schrad.) Dumort. subsp. *opacifolia* (Culm. ex Meyl.) R. M. Schust. & Damsh. ≡ **Schistochilopsis incisa** (Schrad.) Konstant. var. **opacifolia** (Culm. ex Meyl.) Bakalin.

Lophozia latifolia R. M. Schust. = **Lophoziopsis propagulifera** (Gottsche) Konstant. & Vilnet.

Lophozia laxa (Lindb.) Grolle ≡ **Tritomaria laxa** (Lindb.) Stotler & Crand.-Stotl.

Lophozia longidens (Lindb.) Macoun subsp. *longidens* ≡ **Lophoziopsis longidens** (Lindb.) Konstant. & Vilnet.

Lophozia longidens (Lindb.) Macoun subsp. *arctica* R. M. Schust. ≡ **Lophoziopsis rubrigemma** (R. M. Schust.) Konstant. & Vilnet.

Lophozia longiflora (Nees) Schiffn. var. *longiflora* ≡ **Lophozia ventricosa** (Dicks.) Dumort. var. **longiflora** (Nees) Macoun.

Lophozia longiflora (Nees) Schiffn. var. *guttulata* (Lindb. & Arnell) Schljakov ≡ **Lophozia ventricosa** (Dicks.) Dumort. var. **longiflora** (Nees) Macoun.

Lophozia murmanica Kaal. in Bryhn, Rep. Second Norweg. Arctic Exped. 11: 34. 1906. = *Lophozia heteromorpha* R. M. Schust. & Damsh. in Schuster, Hepat. Anthocerotae N. Amer. 2: 507. 1969 (syn. fide Damsholt, 2002: 108).

Distribution. This species is found in Alaska, Greenland, and in northernmost Norway, northern Russia, and the Kola Peninsula.

Lophozia obtusa (Lindb.) A. Evans ≡ **Obtusifolium obtusum** (Lindb.) S. W. Arnell.

Lophozia opacifolia Culm. ex Meyl. ≡ **Schistochilopsis incisa** (Schrad.) Konstant. var. **opacifolia** (Culm. ex Meyl.) Bakalin.

Lophozia pacifica Bakalin, Bryologist 114: 302. 2011.

Distribution. This species is known only from mountain tundra in Washington.

Lophozia pellucida R. M. Schust. var. *pellucida* ≡ **Lophoziopsis pellucida** (R. M. Schust.) Konstant. & Vilnet.

Lophozia pellucida R. M. Schust. var. *minor* R. M. Schust. = **Lophoziopsis pellucida** (R. M. Schust.) Konstant. & Vilnet.

Lophozia perssonii H. Buch & S. W. Arnell ≡ **Oleolophozia perssonii** (H. Buch & S. W. Arnell) L. Söderstr., De Roo & Hedd.

Lophozia polaris (R. M. Schust.) R. M. Schust. & Damsh. var. *polaris* ≡ **Lophoziopsis polaris** (R. M. Schust.) Konstant. & Vilnet.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lophozia polaris (R. M. Schust.) R. M. Schust. & Damsh. var. *sphagnorum* (R. M. Schust.) R. M. Schust. & Damsh. ≡ **Lophoziopsis polaris** (R. M. Schust.) Konstant. & Vilnet var. **sphagnorum** (R. M. Schust.) Konstant. & Vilnet.

Lophozia propagulifera (Gottsche) Steph. ≡ **Lophoziopsis propagulifera** (Gottsche) Konstant. & Vilnet.

Lophozia rubescens R. M. Schust. & Damsh. ≡ **Barbilophozia rubescens** (R. M. Schust. & Damsh.) Kartt. & L. Söderstr.

Lophozia rubrigemma R. M. Schust. ≡ **Lophoziopsis rubrigemma** (R. M. Schust.) Konstant. & Vilnet.

Lophozia rutheana (Limpr.) M. Howe ≡ **Mesoptychia rutheana** (Limpr.) L. Söderstr. & Váňa var. **rutheana.**

Lophozia savicziae Schljakov, Novosti Sist. Nizsh. Rast. 10: 299. 1973. = *Lophozia ventricosa* (Dicks.) Dumort. var. *grandiretis* (H. Buch & S. W. Arnell) R. M. Schust. & Damsh., Meddel. Gronland 199: 118. 1974 (syn. fide Konstantinova et al., 2009: 48). ≡ *Lophozia silvicola* H. Buch var. *grandiretis* H. Buch & S. W. Arnell in Arnell, Svensk Bot. Tidskr. 44: 82. 1950.

Distribution. In North America, this species is reported from Greenland, Alaska, and California (Bakalin 2011, 2012a). It is also known from northwestern Europe to the Russian Far East.

Lophozia schusteriana Schljakov, Novosti Sist. Nizsh. Rast. 12: 320. 1975. = *Lophozia groenlandica* sensu R. M. Schust. (Bull. Natl. Mus. Canada 164: 37. 1959), non (Nees) Macoun (Cat. Canad. Pl., Lich. Hepat.: 19. 1902) (syn. fide Konstantinova et al., 2009: 47).

Distribution. This species is found in Alaska, British Columbia, the Yukon Territory, and Alberta to California, Arizona, New Mexico, Colorado, and Wyoming, but is also known from Nunavut, Greenland, Newfoundland, and Michigan.

Lophozia silvicola H. Buch, Rep. 18. Scand. Naturalist Congr. 228. 1929. Basionym: *Lophozia ventricosa* (Dicks.) Dumort. var. *silvicola* (H. Buch) E. W. Jones ex R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 570. 1969.

The correct author citation for *Lophozia ventricosa* (Dicks.) Dumort. var. *silvicola* is (H. Buch) E. W. Jones ex R. M. Schust., as pointed out in Koponen et al. (1977: 53, No. 76). Although Jones (1958: 359) proposed "*L. ventricosa* (Dicks.) Dumort. var. *silvicola* (Buch) E. W. Jones, *comb. nov.*," his combination was not validly published because he failed to cite the basionym (McNeill et al., 2012: Art. 41.1), which Schuster later provided (1969: 570). The molecular studies of De Roo et al. (2007) and Vilnet et al. (2008) support recognition of this taxon as a distinct species.

Distribution. This species is fairly widespread, from Alaska south to California, through northern Canada to Greenland, south to Tennessee and North Carolina; it is also in Europe from Scandinavia and Great Britain west to the Russian Far East.

Lophozia silvicoloides N. Kitag., J. Hattori Bot. Lab. 28: 276. 1965.

This species was cited as a synonym of *Lophozia ventricosa* var. *silvicola* (H. Buch) E. W. Jones ex R. M. Schust. in our checklist (Stotler & Crandall-Stotler, 1977: 422) following Schuster (1969: 570). Recent molecular studies have reinstated this taxon as a distinct species with 100% bootstrap support (Vilnet et al., 2007: 1310).

Distribution. This species is in North America only in Alaska; it is also known from Siberia, the Russian Far East, and Japan.

Lophozia subapiculata R. M. Schust. & Damsh. = **Lophozia ventricosa** (Dicks.) Dumort. var. **ventricosa.**

Lophozia sudetica (Nees ex Huebener) Grolle var. *sudetica* ≡ **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Lophozia sudetica (Nees ex Huebener) Grolle var. *anomala* (Schljakov) Schljakov = **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Lophozia ventricosa (Dicks.) Dumort., Recueil Observ. Jungerm.: 17. 1835, var. **ventricosa.** Basionym: *Jungermannia ventricosa* Dicks., Fasc. Pl. Crypt. Brit. 2: 14. 1790. = *Lophozia ehrhartiana* (F. Weber) Inoue & Steere, J. Hattori Bot. Lab. 44: 281. 1978 (syn. fide Konstantinova et al., 2009: 46). Basionym: *Jungermannia ehrhartiana* F. Weber, Hist. Musc. Hepat. Prodr.: 81. 1815. = *Lophozia subapiculata* R. M. Schust. & Damsh., Meddel. Gronland 199: 104. 1974 (syn. fide Bakalin, 2011: 305).

Distribution. This species is found from Greenland to Ontario, south to the mountains of Tennessee, west to Minnesota, and was recently reported from California by Bakalin (2012a); it is also known from Great Britain, Scandinavia, and Siberia.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Lophozia ventricosa (Dicks.) Dumort. var. **confusa** R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 581. 1969.

This variety is not recognized by Söderström et al. (2015a) but is recognized by Damsholt (2013: 93).

Distribution. This species is found in Alaska, Greenland, and Ellesmere Island.

Lophozia ventricosa (Dicks.) Dumort. var. *grandiretis* (H. Buch & S. W. Arnell) R. M. Schust. & Damsh. = **Lophozia savicziae** Schljakov.

Lophozia ventricosa (Dicks.) Dumort. var. *guttulata* (Lindb. & Arnell) Bakalin = **Lophozia ventricosa** (Dicks.) Dumort. var. **longiflora** (Nees) Macoun.

Lophozia ventricosa (Dicks.) Dumort. var. **longiflora** (Nees) Macoun, Cat. Canad. Pl., Lich. Hepat.: 17. 1902. ≡ *L. longiflora* (Nees) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 51: 257. 1903. Basionym: *Jungermannia longiflora* Nees, Naturgesch. Eur. Leberm. 2: 7. 1836. = *Lophozia guttulata* (Lindb. & Arnell) A. Evans, Proc. Wash. Acad. Sci. 2: 302. 1900 (syn. fide Paton, 1999: 191). Basionym: *Jungermannia guttulata* Lindb. & Arnell, Kongl. Svenska Vetensk. Acad. Handl., n.s. 23(5): 51. 1889 ≡ *Lophozia longiflora* (Nees) Schiffn. var. *guttulata* (Lindb. & Arnell) Schljakov, Pechen. Mkhi Severa SSSR 3: 3. 1980.

Paton (1999: 191) and Damsholt (2002: 86) regarded *Lophozia guttulata* as a synonym of *L. longiflora*, which was reduced to a variety of *L. ventricosa* by Vilnet et al. (2008: 411) and Konstantinova et al. (2009: 47). More recently, Bakalin (2011) and Söderström et al. (2013d) have recognized *L. guttulata* as distinct from *L. ventricosa*. Although Söderström et al. (2013d: 30) consider *L. guttulata* and *L. longiflora* to be synonyms, they refer to the taxon as *L. guttulata*, even though *L. longiflora* has taxonomic priority (see also Söderström et al., 2016). Unpublished molecular data (J. Shaw, pers. comm.) confirm, however, that both *L. longiflora* and *L. guttulata* are conspecific with *L. ventricosa*, as accepted herein.

Distribution. This variety is found from Alaska south to California and east to Colorado and from Newfoundland and Quebec south through New England and west along the Great Lakes through Michigan, Wisconsin, and Minnesota. It is also from Scandinavia south to the Alps, in Great Britain and Ireland, and in Russia east to Siberia, Sakhalin, Korea, and Japan.

Lophozia ventricosa (Dicks.) Dumort. var. **rigida** R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 586. 1969.

Distribution. This variety is known only from Greenland.

Lophozia ventricosa (Dicks.) Dumort. var. *silvicola* (H. Buch) E. W. Jones ex R. M. Schust. ≡ **Lophozia silvicola** H. Buch.

Lophozia wenzelii (Nees) Steph., Bull. Herb. Boissier, sér. 2, 1: 1144. 1901, var. **wenzelii**. Basionym: *Jungermannia wenzelii* Nees, Naturgesch. Eur. Leberm. 2: 95. 1836. = *Lophozia wenzelii* (Nees) Steph. var. *groenlandica* (Nees) Bakalin, Arctoa 10: 213. 2001 (syn. fide Damsholt, 2013: 102). Basionym: *Jungermannia groenlandica* Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 114. 1844. ≡ *Lophozia groenlandica* (Nees) Macoun, Cat. Canad. Pl., Lich. Hepat.: 19. 1902, non sensu R. M. Schust. (Bull. Natl. Mus. Canada 164: 37. 1959).

Distribution. This variety is found in the west in Alaska, the Yukon, the Northwest Territories, British Columbia, and California, and in the east from Greenland, Quebec, Maine, and New Hampshire. It is also widespread in boreal Europe and Asia.

Lophozia wenzelii (Nees) Steph. var. *groenlandica* (Nees) Bakalin = **Lophozia wenzelii** (Nees) Steph. var. **wenzelii.**

Lophozia wenzelii var. **lapponica** H. Buch & S. W. Arnell, Sv. Bot. Tidskr. 44: 81. 1950.

Distribution. This species is found in the Northwest Territories, California, Greenland, and Quebec; in Europe, it is found from Scandinavia and northern Russia.

Lophoziopsis Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. TYPE: *Lophoziopsis excisa* (Dicks.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Jungermannia excisa* Dicks., Fasc. Pl. Crypt. Brit. 3: 11. 1793. [36. SCAPANIACEAE.]

In molecular phylogenetic studies, *Lophozia* is resolved into two strongly supported lineages, with *Tritomaria* nested between them (Vilnet et al., 2010). Morphologically, the two lineages differ primarily in gemma color, with the *L. ventricosa* clade (= *Lophozia* s. str.) having green gemmae, and the other lineage having red gemmae. This second lineage was segregated from *Lophozia* as the genus *Lophoziopsis* by Konstantinova and Vilnet in 2009.

Lophoziopsis is a genus of seven species, with six in our flora.

Lophoziopsis excisa (Dicks.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010], var. **excisa**.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Basionym: *Jungermannia excisa* Dicks., Pl. Crypt. Brit. Fasc. 3: 11. 1793. ≡ *Lophozia excisa* (Dicks.) Dumort., Recueil d'Observ. Jungerm.: 17. 1835.

Distribution. In North America, this variety is transcontinental in boreal zones from Greenland to Alaska, south to California in the west and into the mountains of Tennessee in the east; it is also widespread in northern Europe, extending into Siberia, and in Antarctica and Tierra del Fuego.

Lophoziopsis excisa var. **elegans** (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Lophozia excisa* (Dicks.) Dumort. var. *elegans* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 522. 1969.

Distribution. This variety is known only from western Greenland.

Lophoziopsis excisa var. **infuscata** (R. M. Schust. & Damsh.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Lophozia excisa* (Dicks.) Dumort. var. *infuscata* R. M. Schust. & Damsh., Meddel. Gronland 199(1): 94. 1974.

Distribution. This variety is found in Greenland, but it is also reported from the Seward Peninsula, Alaska (Potemkin, 1995).

Lophoziopsis excisa var. **succulenta** (R. M. Schust. & Damsh.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Lophozia excisa* (Dicks.) Dumort. var. *succulenta* R. M. Schust. & Damsh., Meddel. Gronland 199(1): 96. 1974.

Distribution. This variety is found in Greenland, but it is also reported from the Seward Peninsula, Alaska (Potemkin, 1995).

Lophoziopsis longidens (Lindb.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010], subsp. **longidens**. Basionym: *Jungermannia longidens* Lindb., Helsingfors Dagblad 1876(323): 2. 1876. ≡ *Lophozia longidens* (Lindb.) Macoun, Cat. Canad. Pl., Lich. Hepat. 7: 18. 1902.

Distribution. This species is known from British Columbia to Montana and from Greenland through New England to New York and Minnesota; it is widespread in Europe, northern Asia, and the Himalayas.

Lophoziopsis longidens (Lindb.) Konstant. & Vilnet subsp. **arctica** (R. M. Schust.) Váňa & L. Söderstr., Phytotaxa 97: 28. 2013. Basionym: *Lophozia longidens* subsp. *arctica* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 539. 1969.

Distribution. This subspecies is known only from western Greenland.

Lophoziopsis pellucida (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Lophozia pellucida* R. M. Schust., Canad. J. Bot. 39: 978. 1961. = *Lophozia pellucida* R. M. Schust. var. *minor* R. M. Schust., Canad. J. Bot. 39: 984. 1961, syn. nov. ≡ *Lophoziopsis pellucida* (R. M. Schust.) Konstant. & Vilnet var. *minor* (R. M. Schust.) L. Söderstr. & Váňa, Phytotaxa 97: 28. 2013.

We agree with Bakalin (2011: 308) and do not recognize *Lophoziopsis pellucida* var. *minor* as distinct from *L. pellucida* var. *pellucida*.

Distribution. This species is found in Alaska, Alberta, northern Nunavut, and Greenland; it is also in northern Russia and Scandinavia.

Lophoziopsis perssonii (H. Buch & S. W. Arnell) Konstant. & Vilnet ≡ **Oleolophozia perssonii** (H. Buch & S. W. Arnell) L. Söderstr., De Roo & Hedd.

Lophoziopsis polaris (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010], var. **polaris**. Basionym: *Lophozia alpestris* auct. non (Schleich. ex F. Weber) A. Evans subsp. *polaris* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 614. 1969. ≡ *Lophozia polaris* (R. M. Schust.) R. M. Schust. & Damsh., Meddel. Gronland 199(1): 131. 1974.

Grolle (1971) designated *Lophozia alpestris* (Schleich. ex F. Weber) A. Evans (basionym: *Jungermannia alpestris* Schleich. ex F. Weber) a nomina ambigua, and it is now listed in the ICN as a rejected name (see Wiersema et al., 2015: 424). Grolle (1971) further determined that the type of this epithet in the Weber herbarium [SPA] is *Leiocolea collaris* (Nees) Schljakov (≡ *Mesoptychia collaris* (Nees) L. Söderstr. & Váňa).

Distribution. This species is found in Alaska, Nunavut, and Greenland; it is also known from northern Scandinavia, Russia, and Siberia.

Lophoziopsis polaris var. **sphagnorum** (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Lophozia alpestris* auct. subsp. *polaris* R. M. Schust. f. *sphagnorum* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 619. 1969. ≡ *Lophozia polaris* (R. M. Schust.) R. M.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Schust. & Damsh. var. *sphagnorum* (R. M. Schust.) R. M. Schust. & Damsh., Meddel. Gronland 199 (1): 134. 1974.

Distribution. This variety is known only from Greenland.

Lophoziopsis propagulifera (Gottsche) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Jungermannia propagulifera* Gottsche, Int. Polarforsch., Deutsch. Exped. 2: 451. 1890. ≡ *Lophozia propagulifera* (Gottsche) Steph., Exped. Antarct Belge, Bot. 3, 4. 1901. = *Lophozia latifolia* R. M. Schust., Bryologist 56: 258. 1953 (syn. fide Bakalin, 2005: 100).

The status of *Lophozia latifolia* versus *L. propagulifera* is problematic. Damsholt (2013) still considers *L. latifolia*, recognized from North America and northern Europe, as distinct from *L. propagulifera*, from South Georgia, Antarctica, and Tierra del Fuego. However, Söderström et al. (2016) accept Bakalin's (2005) synonymy, as do we.

Distribution. This species is found in Alaska and the Northwest Territories south to California, as well as Greenland, Labrador, and Minnesota; it is known from northern Russia and Spitsbergen in Europe and from the southern hemisphere polar zone.

Lophoziopsis rubrigemma (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010]. Basionym: *Lophozia rubrigemma* R. M. Schust., Hepat. Anthocerotae N. Amer. II: 621. 1969. = *Lophozia longidens* (Lindb.) Macoun subsp. *arctica* R. M. Schust., Hepat. Anthocerotae N. Amer. II: 539. 1969 (syn. fide Konstantinova et al., 2009: 47).

Distribution. The species is found in North America from Alaska, Nunavut, and Greenland; it is also reported from Sweden and northern Russia.

Lunularia Adans., Fam. Pl. 2: 15. July–Aug. 1763. TYPE: *Lunularia cruciata* (L.) Dumort. ex Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 9: 298. 1868. Basionym: *Marchantia cruciata* L., Sp. Pl. 2: 1137. 1753. [Dumort. Commentat. Bot.: 116. 1822, nom. inval., nom. nud. (McNeill et al., 2012: Art. 38.1a).] [6. LUNULARIACEAE.]

This is a monotypic genus typically confined to greenhouses or nursery yards, but it is found in a few natural habitats in California.

Lunularia cruciata (L.) Dumort. ex Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 9: 298. 1868. Basionym: *Marchantia cruciata* L., Sp. Pl. 2: 1137. 1753.

Distribution. This species is native to the Mediterranean region, but is now widespread around the world; in North America, it is established in scattered natural sites in California.

Macrodiplophyllum imbricatum (M. Howe) Perss. ≡ **Douinia imbricata** (M. Howe) Konstant. & Vilnet.

Macrodiplophyllum microdontum (Mitt.) Perss. ≡ **Scapania microdonta** (Mitt.) Müll. Frib.

Macrodiplophyllum plicatum (Lindb.) Perss. ≡ **Douinia plicata** (Lindb.) Konstant. & Vilnet.

Mannia Opiz, Naturalientausch 12: 646. Sep. 1829, nom. cons. [This is a substitute name for *Grimaldia* Raddi, nom. illeg. (McNeill et al., 2012: Art. 53.1), non Schrank.]. TYPE: *Mannia androgyna* (L.) A. Evans, Chron. Bot. 4: 224. 1938. Basionym: *Marchantia androgyna* L., Sp. Pl. 2: 1138. 1753. = *Mannia michelii* Opiz, Naturalientausch 12: 646. Sep. 1829, nom. illeg. = *Grimaldia dichotoma* Raddi, nom. illeg. [8. AYTONIACEAE.]

Mannia is a genus with nine species, seven of which occur in North America. See Zijlstra (1990: 291) for details on the typification of *Mannia*.

Mannia californica (Gottsche in Underwood) L. C. Wheeler, Bryologist 37: 88. 1934 [1935]. Basionym: *Grimaldia californica* Gottsche in Underwood, Bot. Gaz. 13: 114. 1888.

In Underwood's (1888) treatment of this species, he footnotes a validating description provided by Gottsche, so the proper author citation for *Grimaldia californica* is Gottsche.

Distribution. This species is found in California and New Mexico in the west, and Arkansas, Texas, and North Carolina in the east; it is also identified by Schill et al. (2010) from central Europe, India, China, and Namibia.

Mannia fragrans (Balb.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 62. 1937, subsp. **fragrans**. Basionym: *Marchantia fragrans* Balb., Mém. Acad. Sci. Turin, Sci. Phys. 7: 76. 1804.

Recognition of *Mannia fragrans* subsp. *orientalis* R. M. Schust. (= *M. barbifrons* Shimizu et S. Hatt.) by Söderström et al. (2016) establishes the autonym. Several varieties of *M. fragrans* have been named (e.g., see Damsholt, 2013: 548f), but they are not recognized by most workers.

Distribution. This species is found from Colorado to California, Arizona, and New Mexico in the west, and in

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

eastern North America from Greenland and Quebec to Alabama and Texas; it is also in central and eastern Europe and Asia.

Mannia gracilis (F. Weber) D. B. Schill & D. G. Long, Bryologist 113: 173. 2010. Basionym: *Marchantia gracilis* F. Weber, Hist. Musc. Hepat. Prodr.: 105. 1815. ≡ *Asterella gracilis* (F. Weber) Underw., Bot. Gaz. 20: 61. 1895. = *Asterella ludwigii* auct. non (Schwägr.) Underw. ex A. Evans.

A combination of molecular and morphological evidence supports the transfer of *Asterella gracilis* to the genus *Mannia* (Schill et al., 2010).

Distribution. This species is widespread in North America, in Alaska, northern Canada, and the mountains from California to British Columbia, Wyoming, and Montana, and in Greenland, Minnesota, Michigan, and Ontario. It is also found throughout Europe to Siberia and Japan.

Mannia paradoxa R. M. Schust., Phytologia 57: 410. 1985.

The taxonomic status of this species is dubious, as noted by Söderström et al. (2016).

Distribution. This species is known only from the type from New Mexico.

Mannia pilosa (Hornem.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 64. 1937. Basionym: *Marchantia pilosa* Hornem., Fl. Dan. 8(24): 7. pl. 1426. 1810.

Distribution. This species is found in Alaska east to Greenland, Ellesmere Island, south to Wisconsin and Minnesota; in Europe, it is found from Scandinavia to northern Russia and also in the Alps and Tatra Mountains.

Mannia sibirica (Müll. Frib.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 66. 1937. Basionym: *Grimaldia pilosa* (Hornem.) Lindb. var. *sibirica* Müll. Frib., Lebermoose: 265. 1907.

Distribution. This species is known from Alaska, Greenland, Minnesota, and Iowa in North America; it is also known from Norway west to Siberia in Europe.

Mannia triandra (Scop.) Grolle, J. Bryol. 8: 487. 1975. Basionym: *Marchantia triandra* Scop., Fl. Carniol. (ed. 2): 354. pl. 63. 1772.

Asterella ludwigii Underw. (*A. ludwigii* (Schwägr.) Underw. ex A. Evans) was listed as a synonym of *A. gracilis* (F. Weber) Underw. by Schuster (1992b: 228), but it is actually a synonym of *Mannia triandra*; it is *A. ludwigii* auct. pl. that is equivalent to *A. gracilis* (≡ *Mannia gracilis*). This was documented earlier in our checklist (Stotler & Crandall-Stotler, 1977: 426). The basionym, *Marchantia ludwigii* Schwägr., is a synonym of *Mannia triandra* as pointed out by Grolle (1975a: 488); see also Bischler-Causse (1993: 112) and Long (2006: 228). This is another case where the practice of including parenthetical authors makes obvious the occurrence of a basionym.

Distribution. This species is found from southern Quebec, Vermont, and New York, west to Iowa, and in the southern Appalachians; it is also widespread in Europe.

Marchantia L., Sp. Pl. 2: 1137. 1 May 1753. TYPE: *Marchantia polymorpha* L., Sp. Pl. 2: 1137. 1753. [≡ *Marchantia polymorpha* L. subsp. *polymorpha* as treated here; see Bischler-Causse & Boisselier-Dubayle (1991: 362) for lectotypification.] [7. MARCHANTIACEAE.]

Molecular phylogenetic analyses (Villarreal A. et al., 2015) have shown that *Bucegia* Radian and *Preissia* Corda are nested in *Marchantia*, and consequently, both of these genera have now been placed in synonymy with *Marchantia* (Long et al., 2016).

Marchantia is a genus of approximately 30 species, five of which occur in our flora.

Marchantia alpestris (Nees) Burgeff = **Marchantia polymorpha** L. subsp. **montivagans** Bischl. & Boissel.-Dub.

Marchantia aquatica (Nees) Burgeff = **Marchantia polymorpha** L. subsp. **polymorpha.**

Marchantia domingensis auct. amer. [non Lehm. & Lindenb.] = **Marchantia inflexa** Nees & Mont.

Marchantia domingensis Lehm. & Lindenb. = **Marchantia paleacea** Bertol. subsp. **paleacea.**

Marchantia inflexa Nees & Mont., Ann. Sci. Nat., Bot., sér. 2, 9: 43. 1838. ≡ *Marchantia papillata* Raddi subsp. *inflexa* (Nees & Mont.) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 354. 1992. Basionym: *Marchantia inflexa* Nees & Mont., Ann. Sci. Nat., Bot., sér. 2, 9: 43. 1838.

As discussed by Bischler (1984: 91), Evans (1917c) and succeeding North American authors mistakenly applied the name *Marchantia domingensis* to this taxon, leading to the inclusion of *M. domingensis* as an element of the North American flora (e.g., Stotler & Crandall-Stotler, 1977). Based on her study of type specimens,

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Bischler (1984: 55) concluded, however, that *M. domingensis* Lehm. & Lindenb. is a synonym of *M. paleacea* Bertol., not *M. inflexa* as indicated by Evans (1917c: 269). *Marchantia inflexa* is here recognized as an accepted species, following Bischler (1984) and Bischler-Causse et al. (2005), rather than as a subspecies of *M. papillata* as treated by Schuster (1992b: 354).

Distribution. This species is found in Tennessee south to Florida and west to Arkansas, Oklahoma, Texas, and Arizona. It is common in the West Indies and Latin America.

Marchantia latifolia Gray = **Marchantia polymorpha** L. subsp. **ruderalis** Bischl. & Boissel.-Dub.

Marchantia paleacea Bertol., Opusc. Sci. 1: 242. 1817, subsp. **paleacea**. = *Marchantia domingensis* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 6: 22. 1834 (syn. fide Bischler-Causse et al., 2005: 240).

Distribution. This species is found in Arizona, Texas, and Oklahoma, east to Tennessee and Florida. It is common in Central America and the West Indies. It is also found throughout the Mediterranean region of Europe and in eastern Asia.

Marchantia papillata Raddi subsp. *inflexa* (Nees & Mont.) R. M. Schust. ≡ **Marchantia inflexa** Nees & Mont.

Marchantia polymorpha L., Sp. Pl. 2: 1137. 1753, subsp. **polymorpha**. = *Marchantia aquatica* (Nees) Burgeff, Genet. Stud. Marchantia: 33. 1943 (syn. fide Bischler-Causse, 1993: 44). Basionym: *Marchantia polymorpha* L. f. *communis* α *aquatica* Nees, Naturgesch. Eur. Leberm. 4: 65. 1838.

Electrophoretic studies of the *Marchantia polymorpha* complex by Bischler-Causse and Boisselier-Dubayle (1991) resulted in the recognition of three subspecies of *M. polymorpha*, namely *M. polymorpha* subsp. *polymorpha*, *M. polymorpha* subsp. *ruderalis* Bischl. & Boissel.-Dub., and *M. polymorpha* subsp. *montivagans* Bischl. & Boissel.-Dub. It is the subspecies *ruderalis* that corresponds to what was formerly called *M. polymorpha* s. str., while the subspecies *polymorpha* corresponds to the former species *M. aquatica* and the subspecies *montivagans* to the former species *M. alpestris* (Bischler-Causse & Boisselier-Dubayle, 1991). The geographical range of each subspecies is incompletely known and the subspecies are hardly distinct morphologically, although they are ecologically differentiated. For an excellent pictorial account of the three subspecies of *M. polymorpha*, go to <http://rbg-web2.rbge.org.uk/bbs/Activities/liverworts/Marchantia%20polymorpha.pdf>.

Distribution. This subspecies is confirmed electrophoretically only from Europe (Bischler-Causse et al., 2005: 229); however, Schuster (1992b: 337) reports *Marchantia aquatica* from scattered localities in New England and New York.

Marchantia polymorpha subsp. **montivagans** Bischl. & Boisselier, J. Bryol. 16: 364. 1990. = *Marchantia alpestris* (Nees) Burgeff, Genet. Stud. Marchantia: 33. 1943 (syn. fide Bischler-Causse, 1993: 48). Basionym: *Marchantia polymorpha* f. *alpestris* Nees, Naturgesch. Eur. Leberm. 4: 70. 1838.

According to Bischler-Causse and Boisselier-Dubayle (1991: 364) this subspecies corresponds roughly to what was formerly referred to as *Marchantia alpestris*.

Distribution. This subspecies is found from Alaska south to British Columbia, Alberta, and California, and in Greenland, Ellesmere Island, Quebec, and Vermont. It is more common in Europe and central Asia.

Marchantia polymorpha subsp. **ruderalis** Bischl. & Boissel.-Dub., J. Bryol. 16: 364. 1990. = *Marchantia latifolia* Gray, Nat. Arr. Brit. Pl. 1: 682. 1821, syn. nov.

Schuster (1992b: 324) recognized *Marchantia latifolia* as a synonym of *M. polymorpha*, while Damsholt (2009: 749) has treated *M. latifolia* as distinct from *M. polymorpha* subsp. *ruderalis* and *M. alpestris*. He reported the taxon from the Northwest Territories (Damsholt, 2006: 99) and later cited it as being transcontinental in North America (Damsholt, 2009: 752). We follow the Bischler/Boisselier concept and recognize the taxon as *M. polymorpha* subsp. *ruderalis*. According to Bischler-Causse and Boisselier-Dubayle (1991: 364), this subspecies corresponds roughly to what most authors have referred to as *M. polymorpha*.

Distribution. This subspecies is widespread in temperate zones of northern North America; it is also found throughout Europe and Asia, but is not yet verified electrophoretically from Latin America (Bischler-Causse et al., 2005: 229).

Marchantia quadrata Scop., Fl. Carniol., ed. 2: 355. 1772. ≡ *Preissia quadrata* (Scop.) Nees subsp. *quadrata*, Naturgesch. Eur. Leberm. 4: 135. 1838. = *Preissia quadrata* (Scop.) Nees subsp.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

hyperborea R. M. Schust., Phytologia 57: 410. 1985, syn. nov.

The status of *Preissia quadrata* subsp. *hyperborea* is equivocal. Isozyme studies by Boisselier-Dubayle and Bischler (1997: 82) revealed substantial polymorphism among sampled populations of *P. quadrata* from western Canada to central Europe, Nepal, and China, and further confirmed that monoicy is of random occurrence in the species and not correlated with any specific genotype. As a consequence, Grolle and Long (2000: 113, 30) did not recognize the subspecies *hyperborea*, for which the major diagnostic character is its monoicous sexual condition (Schuster, 1992b). On the other hand, Damsholt (2013: 580) and Söderström et al. (2016) still recognize *P. quadrata* subsp. *hyperborea* as a distinct taxon. Considering the evidence currently at hand, however, we concur with Grolle and Long (2000) and place this taxon in synonymy with *Marchantia quadrata* (≡ *P. quadrata* (Scop.) Nees subsp. *quadrata*).

Distribution. This species is widespread in northern areas of North America, from Alaska east to Greenland and Newfoundland, south to Arkansas and Ohio; it is also common in Europe, China, and the Himalayas.

Marchantia romanica (Radian) D. G. Long, Crand.-Stotl., L. L. Forrest & J. C. Villarreal, Phytotaxa 252: 78. 2016. Basionym: *Bucegia romanica* Radian, Bull. Herb. Inst. Bot. Bucarest 3/4: 4. 1903.

Distribution. This species is known only from Alaska, British Columbia, Alberta, and the Carpathian Mountains of western Europe.

Marsupella Dumort., Commentat. Bot. 114. July–Dec. 1822. TYPE: *Marsupella emarginata* (Ehrh.) Dumort. Basionym: *Jungermannia emarginata* Ehrh., Hannover. Mag. 1784: 9. 1784. [46. GYMNOMITRIACEAE.]

Marsupella is a genus of about 26 species, with 14 in our flora.

Marsupella adusta (Nees) Spruce ≡ **Gymnomitrion adustum** Nees.

Marsupella alpina (Gottsche ex Husn.) Bernet ≡ **Gymnomitrion alpinum** (Gottsche ex Husn.) Schiffn.

Marsupella apiculata Schiffn., Oesterr. Bot. Z. 53: 249. 1903. ≡ *Gymnomitrion apiculatum* (Schiffn.) Müll. Frib., Hedwigia 81: 113. 1942.

Distribution. This arctic-alpine species is known from Alaska across Canada to Greenland; it is also found in Europe from the Alps, Scotland, Scandinavia, and western Russia, and in eastern Asia, Siberia, and the Russian Far East.

Marsupella aquatica (Lindenb.) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 44 [n.s. vol. 16]: 267. 1896. Basionym: *Jungermannia emarginata* Ehrh. var. β *aquatica* Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 75. 1829. ≡ *Marsupella emarginata* (Ehrh.) Dumort. var. *aquatica* (Lindenb.) Dumort., Bull. Soc. Roy. Bot. Belgique 13: 126. 1874.

Schuster (1974) and Damsholt (2013) recognize this taxon as a variety of *Marsupella emarginata*, but molecular data (Vilnet et al., 2010) support its status as a distinct species.

Distribution. This species is found from Alaska, Greenland, and Newfoundland south to New England. In Europe it is found from Scandinavia to eastern Russia, Italy, Spain, and Portugal.

Marsupella arctica (Berggr.) Bryhn & Kaal., Rep. Second Norweg. Arctic Exped. 11: 26. 1906. Basionym: *Sarcocyphos emarginatus* var. *arcticus* Berggr., Kongl. Svenska Vetensk.-Akad. Handl. (n. ser.) 13: 96. 1875.

Distribution. This species is found in Alaska and in eastern North America from Greenland and Newfoundland to Quebec and New England. It is also in Spain and Portugal north to Scandinavia and eastern Russia, Siberia, the Russian Far East, and China.

Marsupella boeckii (Austin) Lindb. ex Kaal., Nyt Mag. Naturvidensk. 33: 409. 1893. Basionym: *Sarcocyphos boeckii* Austin, Bull. Torrey Bot. Club 3: 9. 1872.

Distribution. This species is in western Canada and from Greenland south to Quebec and Maine. It is widespread from central Europe, Scandinavia, and Siberia, extending into the Russian Far East, eastern Asia, and the Indian subcontinent.

Marsupella boeckii (Austin) Lindb. ex Kaal. var. *stableri* (Spruce) R. M. Schust. ≡ **Marsupella stableri** Spruce.

Marsupella bolanderi (Austin) Underw., Zoë 1: 365. 1890. Basionym: *Sarcocyphos bolanderi* Austin, Bull. Torrey Bot. Club 3: 9. 1872.

Distribution. This species is endemic to the western United States, from Washington to California.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Marsupella brevissima (Dumort.) Grolle ≡ **Gymnomitrion brevissimum** (Dumort.) Warnst.

Marsupella commutata (Limpr.) Bernet ≡ **Gymnomitrion commutatum** (Limpr.) Schiffn.

Marsupella condensata (Ångstr. ex C. Hartm.) Lindb. ex Kaal., Nyt Mag. Naturvidensk. 33: 420. 1893. Basionym: *Gymnomitrion condensatum* Ångstr. ex C. Hartm., Handb. Skand. Fl. (ed. 10): 128. 1871.

Distribution. This species is found in Alaska, British Columbia, the Yukon, and Greenland in North America; it is also in Iceland, northern and central Europe, and China.

Marsupella emarginata (Ehrh.) Dumort., Recueil Observ. Jungerm.: 24. 1835, subsp. **emarginata**. Basionym: *Jungermannia emarginata* Ehrh., Hannover Mag.: 1784: 9. 1784. = *Marsupella ustulata* (Huebener) Spruce ex Pearson, Hepat. Brit. Isl. 1: 382. 1901, nom. illeg., later homonym (McNeill et al., 2012: Art. 53.1) (syn. fide Váňa et al., 2010a: 34). Basionym: *Jungermannia ustulata* Huebener, Hepaticol. Germ.: 132. 1834.

Distribution. This transcontinental species is found from Alaska south to California, Colorado, and Wyoming in the west and in the east from Greenland and Ellesmere Island south to Nova Scotia, Quebec, and throughout New England, to New York, North and South Carolina, Georgia and Tennessee, to Michigan and Minnesota. It is also in central and western South America and throughout northern and central Europe, North Africa, western Asia, and the Russian Far East.

Marsupella emarginata subsp. **tubulosa** (Steph.) N. Kitag., Mem. Coll. Sci. Kyoto Imp. Univ., Ser. B, Biol. 27: 76. 1960. Basionym: *Marsupella tubulosa* Steph., Bull. Herb. Boiss. 5: 99. 1897. —EXCLUDED.

This subspecies is restricted to Siberia, the Russian Far East, China, and eastern Asia (see Váňa et al., 2010a: 37).

"*Marsupella emarginata* (Ehrh.) Dumort. subsp. *tubulosa* (Steph.) N. Kitag. var. *latiloba* R. M. Schust.," nom. inval. = *Marsupella emarginata* (Ehrh.) Dumort. subsp. *emarginata* (syn. fide Váňa et al., 2010a: 37).

"*Marsupella emarginata* subsp. *tubulosa* var. *latiloba*" was not validly published because the holotype was not specified (McNeill et al., 2012: Art. 40.3).

Marsupella emarginata (Ehrh.) Dumort. var. *aquatica* (Lindb.) Dumort. ≡ **Marsupella aquatica** (Lindenb.) Schiffn.

Marsupella funckii (F. Weber & D. Mohr) Dumort., Recueil Observ. Jungerm. 24. 1835. Basionym: *Jungermannia funckii* F. Weber & D. Mohr, Bot. Taschenbuch: 422. 1807.

Distribution. In North America, this species is known only from high elevations in Tennessee; it is widespread in Europe to Asia Minor and also in Siberia and the Russian Far East.

Marsupella paroica R. M. Schust., Bryologist 60: 145. 1957.

Distribution. This species is found in Virginia, North and South Carolina to Georgia and Tennessee, and is disjunct in Ontario and Minnesota; it is also listed from Mexico by Váňa et al. (2010a: 41).

Marsupella revoluta (Nees) Trevis. ≡ **Gymnomitrion revolutum** (Nees) H. Philib.

Marsupella sparsifolia (Lindb.) Dumort., Bull. Soc. Roy. Bot. Belgique 13: 128. 1874, subsp. **sparsifolia.** Basionym: *Sarcocyphos sparsifolius* Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 9: 280. 1868.

The naming of *Marsupella sparsifolia* subsp. *childii* R. M. Schust. ex Váňa & L. Söderstr. automatically creates the autonym.

Distribution. This species is found in western Canada, Greenland, and scattered localities in Quebec, New England, and Michigan. It is also in Scandinavia and central Europe and in southern Africa, Australia, and New Zealand.

Marsupella sphacelata (Giesecke ex Lindenb.) Dumort., Recueil Observ. Jungerm. 24. 1835. Basionym: *Jungermannia sphacelata* Giesecke ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 76. 1829.

Distribution. This species is widespread from Alaska to British Columbia and Alberta to Idaho and California, and in the east from Greenland to Newfoundland, Quebec, and Ontario, through New England and south to North Carolina, Tennessee, and Georgia. It is widespread in both Europe and Japan.

Marsupella spiniloba R. M. Schust. & Damsh., Phytologia 63: 326. 1987.

Distribution. This species is found in Alaska, Greenland, and northern and eastern Europe.

Marsupella sprucei (Limpr.) Bernet, Cat. Hép. Suisse: 33. 1888. Basionym: *Sarcocyphos sprucei*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Limpr., Flora: 64: 72. 1881. ≡ *Marsupella ustulata* (Huebener) Spruce ex Pearson var. *sprucei* (Limpr.) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 30. 1974. = *Marsupella sprucei* var. *ustulata* (Spruce) Damsh., Ill. Flora Nord. Liverw. Hornw.: 262. 2002. Basionym: *Marsupella ustulata* Spruce, Rev. Bryol. 8: 100. 1881. = *Marsupella sprucei* var. *neglecta* (Limpr.) Damsh., Ill. Flora Nord. Liverw. Hornw.: 262. 2002 (syn. fide Váňa et al., 2010a: 46). Basionym: *Sarcocyphos neglectus* Limpr., Jahresber. Schles. Ges. Vaterl. Cult. 58 "1880": 180. 1881.

Schuster (1974: 30) contended that *Marsupella sprucei* (Limpr.) Bernet is a variety of *M. ustulata* (Huebener) Spruce ex Pearson, but Grolle (1975b: 50) pointed out that the basionym for this combination (*Jungermannia ustulata* Huebener) is actually a synonym of *M. emarginata* subsp. *emarginata*. At the same time, *M. ustulata* Spruce is a synonym of *M. sprucei* (Limpr.) Bernet (Grolle, 1975b: 51). It is important to note that *M. ustulata* (Huebener) Spruce ex Pearson and *M. ustulata* Spruce refer to two different taxon types that in fact are different from each other.

Distribution. This transcontinental species is found in Canada, east to Greenland, and south to the northwestern and northeastern United States; it is also found throughout Europe, Siberia, the Russian Far East, New Zealand, the Subantarctic Islands, and southern South America.

Marsupella stableri Spruce, Rev. Bryol. 8: 96. 1881. ≡ *Marsupella boeckii* (Austin) Lindb. ex Kaal. var. *stableri* (Spruce) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 107. 1974.

We followed Schuster (1974: 102) in our checklist (Stotler & Crandall-Stotler, 1977) and placed *Marsupella stableri* Spruce in synonymy of *M. boeckii* (Austin) Lindb. ex Kaal.; however, Váňa et al. (2010a: 47) recognize *M. stableri* as a distinct species.

Distribution. This species is found in Haida Gwaii (formerly Queen Charlotte Islands), British Columbia, and oceanic Europe.

Marsupella ustulata (Huebener) Spruce ex Pearson var. *ustulata* = **Marsupella emarginata** (Ehrh.) Dumort. subsp. **emarginata.**

Marsupella ustulata (Huebener) Spruce ex Pearson var. *sprucei* (Limpr.) R. M. Schust. ≡ **Marsupella sprucei** (Limpr.) Bernet.

Mastigolejeunea (Spruce) Steph., Hedwigia 30: 206. 1891. Basionym: *Lejeunea* subg. *Mastigolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 74, 100. 1884. TYPE: *Mastigolejeunea auriculata* (Wilson & Hook.) Steph., Bot. Gaz. 17: 171. 1892. Basionym: *Jungermannia auriculata* Wilson & Hook., Musci Amer., S. States: 170. 1841. [29. LEJEUNEACEAE.]

Mastigolejeunea is a pantropical genus of about 15 species, with one in our flora.

Mastigolejeunea auriculata (Wilson & Hook.) Steph., Bot. Gaz. 17: 171. 1892. Basionym: *Jungermannia auriculata* Wilson & Hook., Musci Amer., S. States: 170. 1841.

Distribution. This species is known from the coastal plain area of Florida, Louisiana, Mississippi, Alabama, and Georgia; it is also widespread in South America and the West Indies.

Mastigophora Nees, Naturgesch. Eur. Leberm. 3: 89. 1838, nom. cons. TYPE: *Mastigophora woodsii* (Hook.) Nees, Naturgesch. Eur. Leberm. 3: 95. 1838. Basionym: *Jungermannia woodsii* Hook., Brit. Jungermann. pl. 66. 1814. [52. MASTIGOPHORACEAE.]

Mastigophora is a genus of six species, with one in our flora.

Mastigophora woodsii (Hook.) Nees, Naturgesch. Eur. Leberm. 3: 95. 1838. Basionym: *Jungermannia woodsii* Hook., Brit. Jungermann. pl. 66. 1814.

Distribution. This species is reported from Haida Gwaii (formerly Queen Charlotte Islands), British Columbia; it is also known from Ireland, Scotland, Japan, Taiwan, and the Himalayas.

Mesoptychia (Lindb.) A. Evans, Ottawa Naturalist 17: 15. 1903. Basionym: *Jungermannia* sect. *Mesoptychia* Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23(5): 39. 1889. TYPE: *Mesoptychia sahlbergii* (Lindb. & Arnell) A. Evans, Ottawa Naturalist 17: 15. 1903. Basionym: *Jungermannia sahlbergii* Lindb. & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23(5): 40. 1889. (Includes *Leiocolea* (Müll. Frib.) H. Buch., Memoranda Soc, Fauna Fl. Fenn. 8: 288. 1932 [1933]. Basionym: *Lophozia* subg. *Leiocolea* Müll. Frib., Die Lebermoose in Rabenhorst's Kryptogamenfl. Deutschl. ed. 2. 6(1): 711. 25 Aug. 1910. TYPE: *Leiocolea muelleri* (Nees ex Lindenb.) Jørg., Bergens Mus. Skr. 16: 163. 1934. Basionym: *Jungermannia muelleri* Nees ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14 (suppl.): 39. 1829). [41. JUNGERMANNIACEAE.]

Note that Lindberg is the sole author of "sect. b. *Mesoptychia*," not Lindberg and Arnell, as seen, for example, in Váňa et al. (2012). Several molecular studies have

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

shown *Mesoptychia sahlbergii* to be nested within *Leiocolea* (Müll. Frib.) H. Buch, which prompted Váňa et al. (2012) to combine these two genera. *Mesoptychia*, being the older name, has priority over *Leiocolea* (Müll. Frib.) H. Buch.

Previously recognized as a monotypic genus, *Mesoptychia* is now regarded to contain 17 species, nine of which occur in our flora.

Mesoptychia badensis (Gottsche ex Rabenh.) L. Söderstr. & Váňa, Phytotaxa 65: 52. 2012, var. **badensis.** Basionym: *Jungermannia badensis* Gottsche ex Rabenh., Hep. Eur.: 95. 1859. ≡ *Leiocolea badensis* (Gottsche ex Rabenh.) Jørg., Bergens Mus. Skr. 16: 164. 1934 (syn. fide Váňa et al., 2012: 52). ≡ *Lophozia badensis* (Gottsche ex Rabenh.) Schiffn., Fl. Tirol 5: 35. 1902.

Distribution. This species is found from British Columbia and Alberta into Montana and west to Washington, and from Greenland and Ellesmere Island south into New England and New York, south to Tennessee, and in Michigan, Wisconsin, and Minnesota south to Iowa and Arkansas. It is widespread in Europe and in Asia Minor and Siberia.

Mesoptychia badensis var. **apiculata** (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Lophozia badensis* (Gottsche ex Rabenh.) Schiffn. var. *apiculata* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 415. 1969.

Distribution. This variety is found in Alaska and Greenland.

Mesoptychia bantriensis (Hook.) L. Söderstr. & Váňa, Phytotaxa 65: 52. 2012, subsp. **bantriensis**. Basionym: *Jungermannia bantriensis* Hook., Brit. Jungermann.: pl. 41. 1813. ≡ *Leiocolea bantriensis* (Hook.) Jørg., Bergens Mus. Skr. 16: 164. 1934. ≡ *Lophozia bantriensis* (Hook.) Steph., Bull. Herb. Boissier, sér. 2, 10: 1150. 1901, as "*bantryensis*".

Mesoptychia bantriensis subsp. *wallfischii* (Ştefănuţ) L. Söderstr. & Váňa is known only from Europe.

Distribution. This species is found from Alaska south through British Columbia and Alberta to Washington, Oregon, and California, and from Greenland and Ellesmere Island south to Quebec and Ontario. It is widespread in Scandinavia, south through central Europe to northern Spain and Italy, and east into Siberian Asia.

Mesoptychia collaris (Nees) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012. Basionym: *Jungermannia collaris* Nees in Mart., Fl. Crypt. Erlang.: XV. 1817. ≡ *Leiocolea collaris* (Nees) Schljakov, Novosti Sist. Nizsh. Rast. 13: 228. 1976. ≡ *Lophozia collaris* (Nees) Dumort., Recueil Observ. Jungerm.: 17. 1835. = *Lophozia alpestris* (Schleich. ex F. Weber) A. Evans, Rhodora 3: 181. 1901. Basionym: *Jungermannia alpestris* Schleich. ex F. Weber, Hist. Musc. Hepat. Prodr.: 80. 1815, nom. rej. (Wiersema et al., 2015: 424).

Damsholt (2009: 118) incorrectly used *Lophozia alpestris* for this species, which Konstantinova et al. (2009 [2010]: 46) correctly cited as a synonym for *Leiocolea collaris*.

Distribution. This species is found from British Columbia to California east to Saskatchewan and Colorado, and from Greenland and Ellesmere Island south to New England and Minnesota. It is widespread throughout Europe into Asia.

Mesoptychia gillmanii (Austin) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012. Basionym: *Jungermannia gillmanii* Austin, Bull. Torrey Bot. Club 3: 12. 1872. ≡ *Leiocolea gillmanii* (Austin) A. Evans, Bryologist 38: 83. 1935. ≡ *Lophozia gillmanii* (Austin) R. M. Schust., Amer. Midl. Naturalist 49: 335. 1953, as "*gillmani*." = *Lophozia gillmanii* (Austin) R. M. Schust. var. *ciliolata* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 385. 1969, as "*gillmani*," syn. nov.

Note that the designation *Lophozia gillmanii* R. M. Schust., Amer. Midl. Naturalist 45: 45. 1951, as "*gillmani*," was not validly published because no basionym citation was provided (McNeill et al., 2012: Art. 41.1).

Distribution. This species is found from Alaska and the Yukon south to British Columbia, Washington, and Oregon, east to Alberta and Montana, and from Greenland south through Quebec and Ontario into New England and west along the Great Lakes to Minnesota. It is also known from western Europe and northern Asia.

Mesoptychia heterocolpos (Thed. ex Hartm.) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012, var. **heterocolpos**. Basionym: *Jungermannia heterocolpos* Thed. ex Hartm., Handbok Skand. Fl. ed. 3, 2: 328. 1838. ≡ *Leiocolea heterocolpos* (Thed. ex Hartm.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 284. 1933. ≡ *Lophozia heterocolpos* (Thed. ex Hartm.) M. Howe, Mem. Torrey Bot. Club 7: 108. 1899.

Hartman ascribed this species to the collector K. F. Thedenius, who also published this binomial (Kongl. Vetensk. Acad. Handl. 1838: 52, 72. 1839), but the Thedenius treatment was issued later than the flora and

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Hartman is credited with authorship. The copy we saw read "För År 1838" but was clearly dated 1839. Grolle (1976: 206) cited "*J. heterocolpos* Thed. in Hartm.," but later in both Grolle (1983b: 410) and Grolle and Long (2000: 107) it was cited "Thed. ex Hartm." without comment. In *Index Hepaticarum* (Geissler & Bischler, 1987: 86) it is cited "Thed." with the inclusion "[also *in*: Hartmann (sic), Handb. Skand. Fl. (ed. 3): 328 (1838)]." Thedenius (1838: 52) entered "* *J. heterocolpos* Thed. 254" in his index of names and on page 72 wrote "254. *Jungermannia heterocolpos* Thed. in litt." [in correspondence], followed by a diagnosis, including figures, for the new species. The correspondence alluded to by Thedenius was no doubt that of Hartman in 1838.

Distribution. This species is found from Alaska south to California, and from Greenland and Ellesmere Island south to New England, Wisconsin, and Minnesota. It is widespread in northern Europe and south through Ireland, Great Britain to northern Italy, and into southwest Russia, Siberia, and Asia.

Mesoptychia heterocolpos var. **arctica** (S. W. Arnell) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012. Basionym: *Leiocolea arctica* S. W. Arnell, Svensk Bot. Tidskr. 44: 374. 1950. ≡ *Leiocolea heterocolpos* (Thed. ex Hartm.) H. Buch var. *arctica* (S. W. Arnell) Mårtensson, Kungl. Svenska Vetenskapsakad. Avh. Naturskyddsärenden 12: 43. 1955. ≡ *Lophozia heterocolpos* (Thed. ex Hartm.) M. Howe var. *arctica* (S. W. Arnell) R. M. Schust. & Damsh., Meddel. Gronland 199: 74. 1974.

Distribution. This variety is found in Alaska, Greenland, Sweden, and northern Russia.

Mesoptychia heterocolpos var. **harpanthoides** (Bryhn & Kaal.) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012. Basionym: *Lophozia harpanthoides* Bryhn & Kaal., Rep. Second Norweg. Arctic Exped. 11: 33. 1906. ≡ *Leiocolea heterocolpos* (Thed. ex Hartm.) H. Buch var. *harpanthoides* (Bryhn & Kaal.) R. M. Schust. ex S. W. Arnell, Ill. Moss Fl. Fennoscandia I. Hepat. 112. 1956. ≡ *Lophozia heterocolpos* (Thed. ex Hartm.) M. Howe var. *harpanthoides* (Bryhn & Kaal.) R. M. Schust., Bull. Natl. Mus. Canada 164: 28. 1959.

Distribution. This variety is known from Alaska, Greenland, and Ellesmere Island; it is also in northern Russia, Sweden, and in Novaya Zemlya in Asia.

Mesoptychia holmeniana (Inoue & Steere) L. Söderstr. & Váňa, Phytotaxa 65: 53. 2012. Basionym: *Lophozia holmeniana* Inoue & Steere, J. Hattori Bot. Lab. 44: 285. 1978, as "*holmenianum*." ≡ *Leiocolea holmeniana* (Inoue & Steere) Konstant., Arctoa 9: 33. 2000, as "*holmenianum*" (syn. fide Váňa et al., 2012: 54).

Distribution. This species is found in Alaska.

Mesoptychia polymorpha Stotler, Crand.-Stotl. & Bakalin, Polish J. Bot. 58: 82. 2013, subsp. **polymorpha.**

The recent naming of *Mesoptychia polymorpha* subsp. *pakistanica* Bakalin & Vilnet automatically creates the autonym.

Distribution. Presently, this subspecies is known only from the summer fog belt in the coastal region of central California.

Mesoptychia rutheana (Limpr.) L. Söderstr. & Váňa, Phytotaxa 65: 54. 2012, var. **rutheana**. Basionym: *Jungermannia rutheana* Limpr., Jahresber. Schles. Ges. Vaterl. Cult. 61: 207. 1884. ≡ *Leiocolea rutheana* (Limpr.) Müll. Frib. in Gams, Kl. Kryptogamenfl. Mitteleuropas I: 40. 1940. ≡ *Lophozia rutheana* (Limpr.) M. Howe, Bull. N. Y. Bot. Garden 2: 102. 1901.

Distribution. This species is found from Alaska and the Yukon south to Alberta and Manitoba, and from Greenland south through Newfoundland and Ontario to New York and Minnesota. It is widespread in Scandinavian Europe south into northern Germany and England and east into Siberia.

Mesoptychia rutheana var. **laxa** (Schiffn. ex Burrell) L. Söderstr. & Váňa, Phytotaxa 65: 54. 2012. Basionym: *Lophozia schultzii* Schiffn. var. *laxa* Schiffn. ex Burrell, J. Bot. 49: 217. 1911. ≡ *Leiocolea rutheana* (Limpr.) Müll. Frib. var. *laxa* (Schiffn. ex Burrell) Paton, J. Bryol. 18: 823. 1995. ≡ *Lophozia gillmanii* (Austin) A. Evans var. *laxa* (Schiffn.) R. M. Schust., Amer. Midl. Naturalist 45: 47. 1951. — EXCLUDED.

Damsholt (2013: 128) treated this variety and suggested that it likely occurs in Greenland, but to date it has been verified only from Europe.

Mesoptychia sahlbergii (Lindb. & Arnell) A. Evans, Ottawa Naturalist 17: 15. 1903. Basionym: *Jungermannia sahlbergii* Lindb. & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23(5): 40. 1889.

Entered on page 39 of *Musci Asiae Boreal* under *Jungermannia* is "b. *Mesoptychia* Lindb. n. sect." with Lindberg as the sole author, whereas on page 40 the entry "63. *J. Sahlbergii* n. sp." must be attributed to both Lindberg and Arnell because a specific author was not given.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found in Alaska and the Yukon to Ellesmere Island; it is also in Siberia.

Metacalypogeia schusteriana S. Hatt. & Mizut. ≡ **Eocalypogeia schusteriana** (S. Hatt. & Mizut.) R. M. Schust.

Metzgeria Raddi, Jungermanniogr. Etrusca 34. 1818. TYPE: *Metzgeria furcata* (L.) Corda, Naturalientausch 12: 654. 1829. Basionym: *Jungermannia furcata* L., Sp. Pl. 2: 1136. 1753. (Includes *Apometzgeria* Kuwah.) [23. METZGERIACEAE.]

Metzgeria is a genus of about 100 species, with nine in our flora.

Metzgeria angusta Steph., Bull. Herb. Boissier 7: 944. 1899. ≡ **Metzgeria albinea** Spruce, Bull. Soc. Bot. France 36: 201. 1899, var. **angusta** (Steph.) D. P. Costa & Gradst., Bryologist 103: 757. 2000. —EXCLUDED.

Schuster (1992a: 750) suggested that reports of *Metzgeria angusta* from North America were likely misidentifications of *M. myriopoda*. Following a study of type specimens, Costa and Gradstein (2000: 257) reduced *M. angusta* Steph. to a variety of the tropical taxon, *M. albinea* Spruce, and they also verified that this taxon does not occur in North America.

Metzgeria conjugata Lindb., Acta Soc. Sci. Fenn. 10: 495. 1875, subsp. **conjugata**.

Schuster (1992a: 744) recognized three geographically segregated subspecies of *Metzgeria conjugata*, namely subspecies *conjugata* (widespread; type Ireland, fide Kuwahara [1985]), subspecies *simplex* (Lorb. ex Müll. Frib.) R. M. Schust. (central Europe; type Germany, fide Kuwahara [1985]), and subspecies *japonica* (S. Hatt.) Kuwah. (Asia; type Japan, fide Kuwahara [1985]). Váňa (2002) pointed out that *M. simplex* Lorb. ex Müll. Frib. was named based upon Lorbeer's studies that showed *M. conjugata* to be diploid ($n = 18$), whereas *M. simplex* was haploid ($n = 9$) and that the subspecies "*japonica*" was named because it likewise had a chromosome number of $n = 9$. These have been variously treated in recent publications either as subspecies of a single species or as distinct species. Kuwahara (1984) recognized *M. conjugata* subsp. *japonica* and *M. lindbergii* Schiffn. as synonyms of *M. conjugata* var. *minor* Schiffn., which he had elevated to species level (*M. minor* (Schiffn.) Kuwah.). Grolle and Long (2000) recognized *M. conjugata* and *M. simplex* as distinct species in their European checklist but noted that *M. simplex* might be conspecific with *M. lindbergii*, *M. japonica* (S. Hatt.) Kuwah., and *M. conjugata* var. *minor*. Konstantinova et al. (2009 [2010]) likewise recognized two species but synonymized *M. simplex* only with *M. lindbergii* (type Java, fide Kuwahara [1985]).

Unfortunately, the recent molecular study by Fuselier et al. (2009) did not resolve this dilemma. Two main *Metzgeria conjugata* lineages are resolved in it, a boreal North American lineage and a European/southeastern North American lineage that in turn consists of two sister clades, one from central Europe and the other a North American/European mix. There are no morphological features that differ consistently among the three clades, but it was postulated that the North American/European lineage might correspond to *M. conjugata* subsp. *conjugata* and the boreal North American lineage to *M. simplex* (see Fuselier et al., 2009: 754). However, given that the DNA differences among the three clades are small and that there are no consistent morphological features that distinguish them, we prefer to maintain them taxonomically as subspecies of *M. conjugata*. We consider the well-defined clade of boreal, mostly western North American accessions to be *M. conjugata* subsp. *japonica*, and the clade containing accessions from southeastern North America and Europe to be *M. conjugata* subsp. *conjugata*. The third clade of accessions from Serbia, Bohemia, Bosnia, Slovakia, Germany, and Austria is closely allied with the *M. conjugata* subsp. *conjugata* clade and perhaps represents *M. conjugata* subsp. *simplex*.

Distribution. *Metzgeria conjugata* subsp. *conjugata* is widespread in eastern North America and Europe; Kuwahara (1986) reports one collection from Colombia.

Metzgeria conjugata subsp. **japonica** (S. Hatt.) Kuwah., J. Hattori Bot. Lab. 20: 135. 1958. Basionym: *Metzgeria conjugata* var. *japonica* S. Hatt., J. Hattori Bot. Lab. 15: 80. 1955.

It is likely that boreal populations of *Metzgeria conjugata* from western and northern North America belong to this subspecies. See the discussion under *M. conjugata* subsp. *conjugata*. Plants in this subspecies are typically smaller, with smaller thallus wing cells and fewer rows of costal cells than those of *M. conjugata* subsp. *conjugata*. See Schuster (1992a: 744) for a key to the subspecies.

Distribution. This subspecies is found in northern boreal habitats, from Alaska south to Washington, east to Vermont; it is also found in Japan and eastern Asia.

Metzgeria conjugata subsp. **simplex** (Lorb. ex Müll. Frib.) R. M. Schust., Hepat. Anthocerotae N. Amer. Vol. V: 744. 1992. Basionym: *Metzgeria simplex* Lorb. ex Müll. Frib. (syn. fide Grolle & Long, 2000: 115). —EXCLUDED.

We agree with Schuster (1992a: 744) that this subspecies is restricted to central Europe; see discussion under *Metzgeria conjugata* subsp. *conjugata*.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Metzgeria consanguinea Schiffn., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 60(2): 271. 1893. = *Metzgeria temperata* Kuwah., J. Hattori Bot. Lab. 40: 219. 1976 (syn. fide Hill et al., 2008: 35, 142). = *M. fruticulosa* auct. p.p. non (Dicks.) A. Evans (syn. fide Paton, 1999: 550).

Kuwahara (1966: 230) indicated that plants previously identified as *Metzgeria fruticulosa* from northeast Asia actually belonged to *M. consanguinea*; however, in 1976 he restricted *M. consanguinea* to the southern hemisphere and proposed a new species, *M. temperata*, for Japanese and North American populations. So (2004) and Costa (2008) verified that *M. consanguinea* is pantropical, with populations in the Neotropics occurring as far north as Mexico, and Hill et al. (2008) synonymized *M. temperata* with *M. consanguinea*, thereby extending its distribution into the northern hemisphere. For further discussion, see *M. violacea* (Ach.) Dumort.

Distribution. This species is found in eastern North America in the Appalachians of Virginia, Tennessee, and North Carolina; it is also known from Latin America, Britain, and western Europe, Africa, Asia, and Australasia.

Metzgeria crassipilis (Lindb.) A. Evans, Rhodora 11: 188. 1909. Basionym: *Metzgeria furcata* subsp. *crassipilis* Lindb., Acta Soc. Fauna Fl. Fenn. 1: 42. 1877 [1878].

Distribution. This species is found in eastern North America, from Nova Scotia to North Carolina; it is also reported from Mexico and Colombia. The listing from Japan by Schuster (1992a: 719) is based on his proposed synonymy of *Metzgeria novocrassipilis* Kuwah. with *M. crassipilis*.

Metzgeria fruticulosa (Dicks.) Evans non (O. F. Mull.) A. Evans = **Metzgeria violacea** (Ach.) Dumort.

Metzgeria fruticulosa auct. p.p. non (Dicks.) Evans = **Metzgeria consanguinea** Schiffn.

Metzgeria furcata (L.) Corda, Naturalientausch 12: 654. 1829, var. **furcata**. Basionym: *Jungermannia furcata* L., Sp. Pl. 2: 1136. 1753.

Most bryologists have cited the author for *Metzgeria furcata* as (L.) Dumortier, but the correct combining author is Corda. Schuster (1992a: 684) did not regard *M. furcata* var. *furcata* to be a part of our flora, but Fuselier et al. (2009) reported two populations from Vermont that are genetically identical to European populations. A recent dispersal event is postulated to be responsible for this disjunction.

Distribution. In North America, this species is definitively known only from Vermont; it is widespread in Europe.

"*Metzgeria furcata* (L.) Corda var. *setigera* R. M. Schust.," nom. inval. (McNeill et al., 2012: Art. 40.7) ≡ **Metzgeria setigera** R. M. Schust. ex Crand.-Stotl. & L. Söderstr.

Metzgeria furcata (L.) Corda subsp. *subundulata* Austin ex Lindb. = **Metzgeria subundulata** (Austin ex Lindb.) Kuwah.

Metzgeria furcata (L.) Corda ζ **ulvula** Nees, Naturgesch. Eur. Leberm. 3: 489. 1838. —EXCLUDED.

According to Schuster (1992a), most collections of *Metzgeria furcata* from eastern North America belong to this variety, exceptions being collections from high elevations of the southern Appalachians, which he designated as *M. furcata* var. *setigera*. In the molecular analysis of Fuselier et. al. (2009), however, all accessions from North America are resolved in a single well-supported clade, except for the two Vermont accessions that resolve with *M. furcata* var. *furcata*. The large North American clade is separated from the *M. furcata* var. *furcata* clade by 54 substitutions and is now recognized as *M. setigera* (Söderström et al., 2015b). For further discussion, see *M. setigera*.

Distribution. This variety is often not recognized as distinct from *Metzgeria furcata* var. *furcata*; it is restricted to Europe.

Metzgeria furcata (L.) Corda var. *ulvula* sensu R. M. Schust. (1992a) = **Metzgeria setigera** R. M. Schust. ex Crand.-Stotl. & L. Söderstr.

Metzgeria leptoneura Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 555. 1885, var. **leptoneura**.

Distribution. This species is in North America from Alaska to British Columbia in the west and the southern Appalachians in the east; it is also found in Europe, Africa, South America, Asia, Australia, New Zealand, and the Pacific Islands.

Metzgeria leptoneura var. **polychaeta** R. M. Schust. ex L. Söderstr., Phytotaxa 202: 70. 2015.

Distribution. This variety is currently known only from the type collection from Sevier Co., Tennessee.

Metzgeria myriopoda Lindb., Acta Soc. Fauna Fl. Fenn. 1(2): 9. 1877 [1878].

Distribution. This species is found in the southeastern United States, the West Indies, and South America.

Metzgeria pubescens (Schrank) Raddi, Jungermanniogr. Etrusca: 46. 1818. Basionym: *Jungermannia*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

pubescens Schrank, Prim. Fl. Salisb.: 231. 1792. ≡ *Apometzgeria pubescens* (Schrank) Kuwah., Rev. Bryol. Lichénol. 34: 214. 1966.

The synonymy of *Apometzgeria* with *Metzgeria* by Schuster (1992a) has been supported by the molecular analyses of Forrest et al. (2006) and Fuselier et al. (2011). In addition, the studies of Fuselier et al. (2011) confirm *M. pubescens* is restricted to the Holarctic.

Distribution. This species is found in western North America from Alaska south to Oregon, Idaho, and Montana, and in the east in mountains from Maine to North Carolina; it is also in Europe, Asia, and the Himalayas.

Metzgeria subundulata (Austin ex Lindb.) Kuwah., Bryologist 86: 276. 1983. Basionym: *Metzgeria furcata* subsp. *subundulata* Austin ex Lindb., Acta Soc. Fauna Fl. Fenn 1: 42. 1877 [1878]. —EXCLUDED.

Kuwahara (1983) elevated *Metzgeria furcata* subsp. *subundulata* to species rank, indicating that the type was from Texas. Schuster (1992a: 751) argued that the specimen label of Texas, Wright in H-SOL was erroneous and should have read Cuba since that is the only location cited in Lindberg's protologue (Lindberg, 1877: 42). We agree with Schuster's view and likewise exclude *M. subundulata* from our flora.

Distribution. This species is most likely in the West Indies.

Metzgeria temperata Kuwah. = **Metzgeria consanguinea** Schiffn.

Metzgeria uncigera A. Evans, Ann. Bot. (London) 24: 276. 1910.

Distribution. This species is found in the coastal plain of the southeastern United States and in Arkansas (Davison & Robison, 2012); it is also reported from the West Indies.

Metzgeria violacea (Ach.) Dumort., Recueil Observ. Jungerm.: 26. 1835. Basionym: *Jungermannia violacea* Ach. in F. Weber & D. Mohr, Beitr. Naturk. 1: 77. 1805. = *Metzgeria fruticulosa* (Dicks.) A. Evans, Ann. Bot. 24: 293. 1910 (syn. fide Grolle & So, 2003: 232). Basionym: *Riccia fruticulosa* Dicks., Fasc. Pl. Crypt. Brit. [1]: 8. 1785.

Schuster (1992a: 750) restricted *Metzgeria violacea* to the southern hemisphere and *M. fruticulosa* to western Europe, therein excluding both species from North America, while more recently, Grolle and So (2003) showed *M. violacea* to be conspecific with *M. fruticulosa*. Doyle and Stotler (2006: 129) documented the occurrence of *M. violacea* in California, and Grolle and So (2003: 233) cited a Schuster specimen from North Carolina (listed by Schuster [1992a: 708] as *M. temperata*), to be *M. violacea*. Paton (1999) mentions that *M. violacea* (= *M. fruticulosa*) was underrecorded in the British Isles because of earlier confusion with *M. temperata* (= *M. consanguinea*) but indicates that the two species are easily distinguished, as initially discussed in Paton (1977). Similar confusion between *M. consanguinea* and *M. violacea* is also likely in North America, especially with specimens previously identified as *M. fruticulosa*; neither of the currently accepted names for taxa in this complex can be automatically applied without critical specimen study.

Distribution. This species has been verified in North America from the Pacific Northwest; it is also known from western Europe and Chile.

Microlejeunea (Spruce) Steph., Hedwigia 27: 61. 1888. TYPE: *Microlejeunea ulicina* (Taylor) Steph., Bot. Gaz. 17: 171. 1892. Basionym: *Jungermannia ulicina* Taylor, Trans. Bot. Soc. Edinburgh 1: 115. 1844. [29. LEJEUNEACEAE.]

This genus was considered to be a synonym of *Lejeunea* by Stotler and Crandall-Stotler (1977) and Schuster (1962a, 1980c), but several molecular studies (e.g., Dong et al., 2013; Heinrichs et al., 2013) support its recognition as a distinct genus.

Microlejeunea is a genus of about 30 species of tropical to temperate regions, with four in our flora.

Microlejeunea bullata (Taylor) Steph., Hedwigia 29: 90. 1890. Basionym: *Lejeunea bullata* Taylor, London J. Bot. 5: 398. 1846. ≡ *Lejeunea ulicina* (Taylor) Gottsche, Lindenb. & Nees subsp. *bullata* (Taylor) R. M. Schust., J. Hattori Bot. Lab. 25: 55. 1962.

We credited A. Evans (1902: 164) for the transfer of the epithet "*bullata*" to *Microlejeunea* in our checklist (Stotler & Crandall-Stotler, 1977: 422), as did Schuster (1980a: 1074), but Stephani (1890a: 90) had effected that combination some 12 years earlier.

Distribution. This species is found in the southeastern United States, from Virginia west to Louisiana and south to Florida; it is widespread in the Neotropics.

Microlejeunea cardotii Steph. = **Microlejeunea globosa** (Spruce) Steph.

Microlejeunea epiphylla Bischl. in Bischler, Bonner & Miller, Nova Hedwigia 5: 378. 1963. = *Lejeunea dimorphophylla* R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 1080. 1980 (syn. fide Dauphin et al., 2011: 799).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

When Schuster (1980a: 1080) described *Lejeunea dimorphophylla*, he placed *Microlejeunea epiphylla* Bischl. in synonymy "with much diffidence." Since the name *L. epiphylla* Mitt. already existed, it was necessary for him to propose a new name. However, in the genus *Microlejeunea*, *M. epiphylla* is the correct name.

Distribution. This species is found in coastal areas of Florida and North Carolina; it is also known from the Caribbean.

Microlejeunea globosa (Spruce) Steph., Sp. Hepat. 5: 821. 1915. Basionym: *Lejeunea globosa* Spruce, Bull. Soc. Bot. France 36 (Suppl.: Congrès Bot. 1889: CXCIII. 1889 [1890]. = *Microlejeunea cardotii* Steph., Bot. Gaz. 17: 172. 1892, as "*Micro-Lejeunea cardoti*" (syn. fide Reiner-Drehwald, 1994: 226). ≡ *Lejeunea cardotii* (Steph.) J. M. Coult., Barnes & Arthur, Bot. Gaz. 17: 431. 1892.

Distribution. This species is found in North America from coastal areas of Florida and Louisiana; it is found in Latin America and from Mexico, Brazil, Paraguay, and Argentina.

Microlejeunea ruthii A. Evans ≡ **Lejeunea ruthii** (A. Evans) R. M. Schust. var. **ruthii.**

Microlejeunea ulicina (Taylor) Steph., Hedwigia 29: 88. 1890. Basionym: *Jungermannia ulicina* Taylor, Trans. & Proc. Bot. Soc. Edinburgh 1: 115. 1844. ≡ *Lejeunea ulicina* (Taylor) Gottsche, Lindenb. & Nees, Syn. Hep. 387. 1845.

Distribution. This species is found in eastern North America from Nova Scotia to South Carolina; it is also in western Europe and the British Isles.

Moerckia Gottsche in Rabenhorst, Hepat. Eur. Exsicc. 121. 1860, as "*Mörckia*." TYPE: *Moerckia hibernica* (Hook.) Gottsche, in Rabenhorst, Hepat. Eur. Exsicc. 121. 1860. Basionym: *Jungermannia hibernica* Hook., Brit. Jungermann. pl. 78 & Suppl. pl. IV. 1816. [20. MOERCKIACEAE.]

This is a genus with three species, all of which occur in North America.

Moerckia blyttii (Mørch) Brockm., Arch. Vereins Freunde Naturgesch. Mecklenburg 17: 190. 1863. Basionym: *Jungermannia blyttii* Mørch, Fl. Dan. 12: 6. 1830.

The authorship (editor) of Volume 12, Fasc. XXXIV of *Flora Danica*, which included the entry "MMIV. *Jungermannia Blytii* Mörck," is J. W. Hornemann. However, Hornemann not only ascribes the name to Mörck, but "*Mörck* Mnscpt." immediately follows the validating description in the protologue for tab. MMIV, therein providing internal evidence that Mørch wrote the description and is the actual author of the name. Following IPNI, the author abbreviation Moerch, which had usually been associated with this name, is used for O. J. N. Moerch, another Danish botanist who worked on Spermatophytes, hence the change of author citation from Moerch to Mørch. Later, it was Hans Joachim Heinrich Brockmüller that transferred *J. blyttii* to the genus *Moerckia* (fide Crandall-Stotler & Stotler, 2007: 55) and not a person named Brockmann, which is commonly seen in the literature.

Distribution. This species is found from British Columbia, Alberta, and Washington in the west and Greenland and Newfoundland in eastern North America; it is also from northern Europe, montane regions of central and southern Europe, northern Asia, and Japan.

Moerckia flotoviana (Nees) Schiffn., Oesterr. Bot. Z. 51: 41, 43. 1901. Basionym: *Cordaea flotoviana* Nees, Diar. Bot. Ratisb. 2: 408. 1833.

It should be noted that many authors have synonymized *Moerckia flotoviana* with *M. hibernica*, but the two species are unquestionably distinct, as shown in the comprehensive type specimen study by Crandall-Stotler and Stotler (2007).

Distribution. *Moerckia flotoviana* is the most widespread of *Moerckia* species, occurring in North America from Alaska to British Columbia and from Newfoundland to New York and Minnesota; it is widespread in Europe and in Siberian Asia.

Moerckia hibernica (Hook.) Gottsche, Hepat. Eur.: 121. 1860. Basionym: *Jungermannia hibernica* Hook., Brit. Jungermann. pl. 78 & Suppl. pl. IV. 1816.

Nearly all reports of this species in the literature are incorrect and should be referred to *Moerckia flotoviana* (see Crandall-Stotler & Stotler, 2007).

Distribution. In North America, *Moerckia hibernica* has been confirmed to occur only in Alaska and British Columbia in the Pacific Northwest; it is also found in Ireland and the Scottish Highlands.

Mylia Gray, Nat. Arr. Brit. Pl. 1: 693. 1 Nov. 1821, as "*Mylius*," nom. et orth. cons. TYPE: *Mylia taylorii* (Hook.) Gray, Nat. Arr. Brit. Pl. 1: 693. 1821. Basionym: *Jungermannia taylorii* Hook., Brit.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Jungermann. pl. 57. 1813. = *Leiomylia* J. J. Engel & Braggins, Taxon 54: 671. 2005. TYPE: *Leiomylia anomala* (Hook.) J. J. Engel & Braggins, Taxon 54: 671. 2005. Basionym: *Jungermannia anomala* Hook., Brit. Jungermann. pl. 34. 1813. [31. MYLIACEAE.]

Molecular studies of De Roo et al. (2007) and Shaw et al. (2015) have verified that *Mylia taylorii* and *Leiomylia anomala* are closely related sister taxa of a monophyletic lineage, supporting the return of *L. anomala* to the genus *Mylia*, as proposed by Söderström et al. (2016).

Mylia is a genus of three species, with two in our flora.

Mylia anomala (Hook.) Gray, Nat. Arr. Brit. Pl. 1: 693. 1821. Basionym: *Jungermannia anomala* Hook., Brit. Jungermann. pl. 34. 1813. ≡ *Leiomylia anomala* (Hook.) J. J. Engel & Braggins, Taxon 54: 671. 2005.

Distribution. This species is found from Greenland south through Newfoundland, Nova Scotia, Quebec, New England to New Jersey, Pennsylvania, and West Virginia, west to Michigan and Wisconsin; in western North America it is found from Alaska and the Yukon south through British Columbia, Washington, and Alberta. It is also common in northern and central Europe eastward to Siberia and Kamchatka.

Mylia taylorii (Hook.) Gray, Nat. Arr. Brit. Pl. 1: 693. 1821. Basionym: *Jungermannia taylorii* Hook., Brit. Jungermann. pl. 57. 1813.

Distribution. This species is found from Alaska to British Columbia and Washington and from Greenland south through Newfoundland, Nova Scotia, Quebec, Ontario, and into New England, New York, and the Appalachians of North Carolina and Tennessee. It is also found in northern and central Europe and the Azores, and in Nepal, China, Sikkim, and Japan.

Myriocoleopsis Schiffn., Hedwigia 81: 234. 1944. TYPE: *Myriocoleopsis fluviatilis* (Steph.) Reiner & Gradst., J. Bryol. 19: 639. 1997. Basionym: *Cololejeunea fluviatilis* Steph., Hedwigia 34: 248. 1895. = *Myriocoleopsis puiggarii* Schiffn., Hedwigia 81: 235. 1944 (syn. fide Reiner-Drehwald & Gradstein, 1997: 639). [29. LEJEUNEACEAE.]

This genus has recently been added to the North American flora by the transfer of *Cololejeunea minutissima* to it (Yu et al., 2014).

Myriocoleopsis is a genus of four species, one of which occurs in our flora.

Myriocoleopsis minutissima (Sm.) R. L. Zhu, Y. Yu & Pócs, Phytotaxa 183: 293. 2014, subsp. **minutissima**. Basionym: *Jungermannia minutissima* Sm., Engl. Bot. 23: 1633. 1806. ≡ *Cololejeunea minutissima* (Sm.) Steph., Bot. Gaz. 17: 171. 1892.

Distribution. This species is found from Virginia and Tennessee to Texas and south to Florida. It is also known from Bermuda, South America, western Europe, and Australasia.

Myriocoleopsis minutissisma subsp. **myriocarpa** (Nees & Mont.) R. L. Zhu, Y. Yu & Pócs, Phytotaxa 183: 294. 2014. Basionym: *Lejeunea myriocarpa* Nees & Mont. in Sagra, Hist. Phys. Cuba, Bot., Pl. Cell: 473. 1842. ≡ *Cololejeunea minutissima* (Sm.) Steph. subsp. *myriocarpa* (Nees & Mont.) R. M. Schust., J. Elisha Mitchell Sci. Soc. 71: 232. 1955.

Distribution. This subspecies is from southern Florida, the West Indies, and Mexico.

Nardia Gray, Nat. Arr. Brit. Pl. 1: 694. 1 Nov. 1821, as "*Nardius*," nom. et orth. cons. TYPE: *Nardia compressa* (Hook.) Gray, Nat. Arr. Brit. Pl. 1: 784. 1821. Basionym: *Jungermannia compressa* Hook., Brit. Jungermann. pl. 58. 1813. [46. GYMNOMITRIACEAE.]

The indication by Schuster (1969: 845) that *Nardia scalaris* is the generitype is incorrect (Wiersema et al., 2015: 124).

Nardia is a genus of 17 species, nine of which occur in our flora.

Nardia breidleri (Limpr.) Lindb., Helsingf. Dagbl. 1880 (311): 2. 15 Nov. 1880. Basionym: *Alicularia breidleri* Limpr., Jahresber. Schles. Ges. Vaterl. Cult. 57: 311. 1880.

Distribution. This species is known from Montana, Alberta, the Pacific Northwest, and Greenland; it is also widespread in the montane areas of Europe, Siberia, and Japan.

Nardia compressa (Hook.) Gray, Nat. Arr. Brit. Pl. 1: 694. 1821. Basionym: *Jungermannia compressa* Hook., Brit. Jungermann. pl. 58. 1813.

Distribution. This species is found from the Aleutian Islands south to Washington and Montana, and in Greenland. It is also known from Europe and Asia.

Nardia geoscyphus (De Not.) Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 13: 371. 1874, var. **geoscyphus**. Basionym: *Alicularia geoscyphus* De Not., Mem. Reale Accad. Sci. Torino, Ser. 2, 18: 486. 1859.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found from Alaska to California and Colorado in the west, and Greenland through Newfoundland to Pennsylvania in the east. It is also widespread in Europe, northern Asia, and Japan.

Nardia geoscyphus var. **bifida** R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 871. 1969.

This variety is not recognized by Söderström et al. (2016) but is treated by Damsholt (2013).

Distribution. This variety is found in Greenland and is known only from the type.

Nardia hiroshii Amakawa, J. Hattori Bot. Lab. 21: 283. 1959.

This species, previously known only from Japan and the Kuril Islands, was newly reported from North America by Bakalin (2012b). Váňa (1976: 397) had reduced it to *Nardia unispiralis* Amakawa, and although Bakalin (2012b: 97) agreed that they are closely related, he cited unispiral versus bispiral elaters, underleaf size, and rhizoid distribution as distinctions to separate them. J. Váňa (pers. comm.), however, had studied the type specimens of both species and commented that unispiral and bispiral elaters are not necessarily constant in *Nardia* species and that the underleaf disparity mentioned is a variable difference. Furthermore, he stated that both species closely resemble some forms of *N. japonica* Steph. and are easily confused with it. He also pointed out that Amakawa had described *N. hiroshii* based on two sterile specimens so that the elaters were unknown in the type and that *N. unispiralis* was described from a single specimen that had unispiral elaters. This species is not recognized by Söderström et al. (2016), but *N. unispiralis* is.

Distribution. This species is found in California, Japan, and the Kuril Islands.

Nardia insecta Lindb., Helsingf. Dagbl. 1878(315): 2. 18 Nov. 1878.

Distribution. This species is reported from Alaska, Washington, and Wyoming in the west (Hong & Váňa, 2000) and from Nova Scotia to New York in the east; it is also known from Iceland and scattered localities in Europe, from France west to Russia and the Balkans.

Nardia japonica Steph., Bull. Herb. Boissier 5: 101. 1897.

Distribution. This species is reported from Alaska and British Columbia south to California; it is also known from Japan and eastern Siberia.

Nardia lescurii (Austin) Underw., Bull. Illinois State Lab. Nat. Hist. 2: 115. 1884. Basionym: *Alicularia lescurii* Austin, Hepat. Bor.-Amer. Exsicc. 4. 1873.

Distribution. This species is an endemic of southeastern North America.

Nardia scalaris Gray, Nat. Arr. Brit. Pl. 1: 694. 1821, var. **scalaris**.

Distribution. This species is found in western North America from Alaska and the Yukon Territory south to Oregon and Colorado, and in the east from Greenland south to Tennessee. It is also widespread in Europe and Japan.

Nardia scalaris Gray subsp. *botryoidea* R. M. Schust. ≡ **Nardia scalaris** Gray var. **botryoidea** (R. M. Schust.) Váňa.

Nardia scalaris var. **botryoidea** (R. M. Schust.) Váňa, Phytotaxa 76: 38. 2013. Basionym: *Nardia scalaris* Gray subsp. *botryoidea* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 862. 1969.

Distribution. This variety is from Tennessee, known definitively only from the type.

Neoorthocaulis L. Söderstr., De Roo & Hedd., Phytotaxa 3: 49. 2010. TYPE: *Neoorthocaulis attenuatus* (Mart.) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 49. 2010. Basionym: *Jungermannia quinquedentata* Huds. δ *attenuata* Mart., Fl. Crypt. Erlang.: 177. 1817. [34. ANASTROPHYLLACEAE.]

Neoorthocaulis is a new genus of four species segregated from *Orthocaulis* H. Buch, all of which occur in North America.

Neoorthocaulis attenuatus (Mart.) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 49. 2010. Basionym: *Jungermannia quinquedentata* Huds. δ *attenuata* Mart., Fl. Crypt. Erlang.: 177. 1817. ≡ *Lophozia attenuata* (Mart.) Dumort., Rec. d'Observ.: 17. 1835. ≡ *Barbilophozia attenuata* (Mart.) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. ≡ *Orthocaulis attenuatus* (Mart.) A. Evans, Ann. Bryol. 10: 4. 1938.

Distribution. This species is found in North America from Alaska to Colorado in the west, and Baffin Island south to Tennessee in the east; it is widespread throughout Europe, and in Turkey, Taiwan, and Japan.

Neoorthocaulis binsteadii (Kaal.) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 49. 2010. Basionym: *Jungermannia binsteadii* Kaal., Skr. Videnskr.-Selsk. Christiana, Math.-Naturvidensk. Kl. 1898 (9): 9. 1898. ≡ *Lophozia binsteadii* (Kaal.) A.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Evans, Ottawa Nat. 17: 22. 1903. ≡ *Barbilophozia binsteadii* (Kaal.) Loeske, Hedwigia 49: 13. 1909. ≡ *Orthocaulis binsteadii* (Kaal.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1932 [1933].

Distribution. This species is found from Alaska to British Columbia and Alberta in the west, and Greenland to Nova Scotia in the east; in Europe it is known from Scandinavia, northern Poland, Russia, and Siberia.

Neoorthocaulis floerkei (F. Weber & D. Mohr) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 50. 2010. Basionym: *Jungermannia floerkei* F. Weber & D. Mohr, Bot. Taschenb.: 410. 1807. ≡ *Lophozia floerkei* (F. Weber & D. Mohr) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 85. 1893. ≡ *Barbilophozia floerkei* (F. Weber & D. Mohr) Loeske, Verh. Bot. Vereins Prov. Brandenburg 49: 37. 1907. ≡ *Orthocaulis floerkei* (F. Weber & D. Mohr) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1932 [1933].

Distribution. This species is from the Aleutian Islands south to the mountains of New Mexico in the west, and from Ellesmere Island south to New England in the east; it is also in the montane regions of Europe.

Neoorthocaulis hyperboreus (R. M. Schust.) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 50. 2010, subsp. **hyperboreus**. Basionym: *Lophozia floerkei* (F. Weber & D. Mohr) Schiffn. var. *hyperborea* R. M. Schust., Bull. Natl. Mus. Canada 164: 21. 1959. ≡ *Lophozia hyperborea* (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 282. 1969. ≡ *Barbilophozia hyperborea* (R. M. Schust.) Stotler & Crand.-Stotl. ex Potemkin, Novosti Sist. Nizsh. Rast. 28: 148. 1992. ≡ *Orthocaulis hyperboreus* (R. M. Schust.) Konstant., Novosti Sist. Nizsh. Rast. 30: 112. 1995.

In Stotler and Crandall-Stotler (1977: 426) "*Lophozia hyperborea* (Schust.) Schust., Hepat. Anthocerotae N. Amer. 2: 282. 1969" was cited as the basionym rather than the earlier published *Lophozia floerkei* (F. Weber & D. Mohr) Schiffn. var. *hyperborea* R. M. Schust. Potemkin (1992: 148) corrected this error in the basionym citation.

Distribution. This species is known from Alaska, Greenland, and Ellesmere Island.

Neoorthocaulis hyperboreus subsp. **helophilus** (R. M. Schust.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Lophozia hyperborea* (R. M. Schust.) R. M. Schust. subsp. *helophila* R. M. Schust. & Damsh., Phytologia 63(3): 325. 1987.

Distribution. This subspecies is known only from Greenland.

Neurolejeunea (Spruce) Schiffn., Hepat. (Engl.-Prantl): 131. Sep. 1893. Basionym: *Lejeunea* subg. *Neurolejeunea* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 84. 1884. TYPE: *Neurolejeunea seminervis* (Spruce) Schiffn., Hepat. (Engler-Prantl): 131. 1893. Basionym: *Lejeunea seminervis* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 84. 1884. [29. LEJEUNEACEAE.]

Neurolejeunea is a Neotropical genus of four species, with one in our flora.

Neurolejeunea breutelii (Gottsche) A. Evans, Bull. Torrey Bot. Club 34: 13. 1907. Basionym: *Lejeunea breutelii* Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 324. 1845.

Distribution. This species is found in the Gulf Coastal Plain of Mississippi and Florida; it is also common in the West Indies, Central America, and Brazil.

Nowellia Mitt. in Godman, Nat. Hist. Azores: 321. Sep.–Dec. 1870. TYPE: *Nowellia curvifolia* (Dicks.) Mitt. in Godman, Nat. Hist. Azores: 321. 1870. Basionym: *Jungermannia curvifolia* Dicks., Fasc. Pl. Crypt. Brit. 2: 15. 1790. [33. CEPHALOZIACEAE.]

Nowellia is a genus of 10 species with one in our flora.

Nowellia curvifolia (Dicks.) Mitt. in Godman, Nat. Hist. Azores: 321. 1870. Basionym: *Jungermannia curvifolia* Dicks., Fasc. Pl. Crypt. Brit. 2: 15. 1790.

Distribution. This species is widely distributed in eastern North America, from Quebec to Arkansas and the coastal plain of South Carolina; it is also found in montane habitats of Mexico and Central America, and throughout Europe and East Asia.

Obtusifolium S. W. Arnell, Ill. Moss Fl. Fennosc. Hep.: 309. 1956. TYPE: *Obtusifolium obtusum* (Lindb.) S. W. Arnell, Ill. Moss Fl. Fennosc. Hep.: 133. 1956. Basionym: *Jungermannia obtusa* Lindb., Musci Scand. 7. 1879. [35. CEPHALOZIELLACEAE.]

Buch (1942: 289) divided the genus *Barbilophozia* Loeske into six subgenera, but none of these names were validly published because he failed to provide Latin diagnoses. Among these was the monotypic subgenus *Obtusifolium*, which Arnell (1956: 133, 309) later elevated to generic rank; although a Latin description is lacking in Arnell's treatment on page 133, it is provided in the addendum on page 309, thus validating the name as a genus.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Obtusifolium obtusum (Lindb.) S. W. Arnell, Ill. Moss Fl. Fennosc. Hep.: 309. 1956. Basionym: *Jungermannia obtusa* Lindb., Musci Scand. 7. 1879. ≡ *Lophozia obtusa* (Lindb.) A. Evans, Proc. Wash. Acad. Sci. 2: 303. 1900. ≡ *Schistochilopsis obtusa* (Lindb.) Potemkin, Arctoa 12: 65. 2003.

Distribution. This arctic-alpine species is found in western North America from Alaska south to the Sierra Nevada Range in California, and from Greenland, Newfoundland, Maine, and Michigan in the east. It is also known from the mountains of central and northern Europe and Japan.

Odontoschisma (Dumort.) Dumort., Recueil Observ. Jungerm.: 19. 1835. Basionym: *Pleuroschisma* sect. *Odontoschisma* Dumort., Syll. Jungerm. Europ.: 68. 1831. TYPE: *Odontoschisma sphagni* (Dicks.) Dumort., Recueil Observ. Jungerm.: 19. 1835. Basionym: *Jungermannia sphagni* Dicks., Fasc. Pl. Crypt. Brit. 1: 6. 1785. = *Cladopodiella* H. Buch, Memoranda Soc. Fauna Fl. Fenn. 1: 89. 1927 (syn. fide Váňa et al., 2013c: 12; also see discussion under *Cladopodiella*). [33. CEPHALOZIACEAE.]

Odontoschisma is a genus of 21 species with six in our flora.

Odontoschisma denudatum (Mart.) Dumort., Recueil Observ. Jungerm.: 19. 1835, subsp. **denudatum**. Basionym: *Jungermannia scalaris* Schmid. ex Schreb. var. β *denudata* Mart., Fl. Crypt. Erlang.: 183. 1817. ≡ *Jungermannia denudata* (Mart.) Nees in Martius, Fl. Crypt. Erlang.: XIV. 1817. = *Odontoschisma gibbsiae* A. Evans, Bot. Gaz. 36: 341. 1903 (syn. fide Gradstein & Ilkiu-Borges, 2015: 43). = *Odontoschisma denudatum* (Mart.) Dumort. var. *laevissimum* R. M. Schust., Amer. Midl. Naturalist 49: 523. 1953, as "*laevissima*" (syn. fide Gradstein & Ilkiu-Borges, 2015: 44).

Martius (1817: 183) actually described *Jungermannia scalaris* var. *denudata*, but Nees referred to this variety as a species of *Jungermannia* in his "*Lectori salutem*" that preceded the preface of that flora. The basionym should be the varietal name, which must be credited to Martius, who was the describing author, as also accepted by Grolle and Long (2000).

Distribution. This species is reported from British Columbia as *Odontoschisma gibbsiae* A. Evans; it is widespread in eastern North America, from New Brunswick and Minnesota south to Florida and the Gulf Coast. It is also widespread in Europe, the British Isles, northern Asia, and Japan, and occasional at high elevations in Mexico, Cuba, and Colombia.

Odontoschisma denudatum (Mart.) Dumort. var. *laevissimum* R. M. Schust., as "*laevissima*" = **Odontoschisma denudatum** (Mart.) Dumort. subsp. **denudatum.**

Odontoschisma elongatum (Lindb.) A. Evans, Rhodora 14: 13. 1912. Basionym: *Odontoschisma denudatum* f. *elongatum* Lindb., Helsingfors Dagblad 1874(45): 2. 1874.

Distribution. This arctic to subarctic or alpine species is found in the west from Alaska and the Yukon south to British Columbia, and in northeastern North America from Greenland, Newfoundland to New Hampshire, and Michigan. It is also found in Scandinavia, Scotland, the Alps, Siberia, and the Russian Far East.

Odontoschisma fluitans (Nees) L. Söderstr. & Váňa, Phytotaxa 112: 12. 2013. Basionym: *Jungermannia fluitans* Nees in Funck, Flora 6: 30. 1823. ≡ *Cladopodiella fluitans* (Nees) H. Buch in Kalliola, Ann. Bot. Soc. Zool.-Bot. Fennicae Vanamo 2: 109. 1932.

In our checklist (Stotler & Crandall-Stotler, 1977) we had "(Nees) Jørg." as the author for *Cladopodiella fluitans*. However, as documented by Koponen et al. (1977: 51), H. Buch had effected that combination two years prior to E. Jørgensen.

Distribution. This species is found in the west in British Columbia and Washington; in the east it is known from Baffin Island, Newfoundland, Quebec, and Nova Scotia south to New England and West Virginia and west to New York, Michigan, and Minnesota. It is found in Europe from Scandinavia to the British Isles and the central European Alps, and in Turkey, Siberian Asia, and Japan.

Odontoschisma francisci (Hook.) L. Söderstr. & Váňa, Phytotaxa 112: 12. 2013. Basionym: *Jungermannia francisci* Hook., Brit. Jungermann. pl. 49. 1816, as "*franciscii*." ≡ *Cladopodiella francisci* (Hook.) Jørg., Bergens Mus. Skrift. n.s. 16: 274. 1934.

Distribution. This species is found in Greenland, Baffin Island, Newfoundland, Quebec, and Nova Scotia south to New England and west to New York. It is also in Scandinavia, throughout central Europe, and the British Isles south to Spain.

Odontoschisma gibbsiae A. Evans = **Odontoschisma denudatum** subsp. **denudatum.**

Odontoschisma macounii (Austin) Underw., Bull. Illinois State Lab. Nat. Hist. 2: 92. 1884. Basionym: *Sphagnoecetis macounii* Austin, Bull. Torrey Bot. Club 3: 13. 1872.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found from Alaska and the Yukon to Ellesmere Island and Greenland, south to British Columbia in the west and Ontario, Michigan, and Minnesota in the east. It is also found in Scotland, Fennoscandia, northern Russia, and central Europe, and in Asia in the Russian Far East.

Odontoschisma prostratum (Sw.) Trevis. = **Odontoschisma sphagni** (Dicks.) Dumort.

Odontoschisma sphagni (Dicks.) Dumort., Recueil Observ. Jungerm.: 19. 1835. Basionym: *Jungermannia sphagni* Dicks., Fasc. Pl. Crypt. Brit. 1: 6. 1785. = *Odontoschisma prostratum* (Sw.) Trevis., Mem. Reale Ist. Lombardo Sci. Ser. 3, Cl. Sci. Mat. 4: 419. 1877 (syn. fide Aranda et al., 2014: 1016). Basionym: *Jungermannia prostrata* Sw., Prod. Fl. Ind. Occid.: 143. 1788.

The first molecular evidence supporting the conspecificity of *Odontoschisma prostratum* and *O. sphagni* was presented by Vilnet et al. (2012), although earlier authors had suggested that the two might be just slightly different morphological and ecological expressions of a single species (e.g., Schuster, 1974). The expanded molecular phylogenetic study of Aranda et al. (2014) resolved multiple accessions of both species intermixed in a single, strongly supported clade, and on this basis synonymized *O. prostratum* with the earlier named *O. sphagni*.

Distribution. Once considered restricted to peaty soils in localized habitats, this species is now recognized to occur on moist soil or rocks as well; it is widespread from Alaska and the Yukon south to Montana, and throughout eastern North America from Greenland south to Florida and west to Michigan and Texas. It is also widespread in Europe, from Scandinavia south to Spain and the Balkans.

Oleolophozia L. Söderstr., De Roo & Hedd., Phytotaxa 3: 50. 2010. [35. CEPHALOZIELLACEAE.]

Oleolophozia is a monospecific genus.

Oleolophozia perssonii (H. Buch & S. W. Arnell) L. Söderstr., De Roo & Hedd., Phytotaxa 3: 51. 2010. Basionym: *Lophozia perssonii* H. Buch & S. W. Arnell in Buch, Bot. Not. 1944: 382. 1944. ≡ *Lophoziopsis perssonii* (H. Buch & S. W. Arnell) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010].

Distribution. This species is reported from Alaska and East Greenland; elsewhere it is in western and northern Europe.

Orthocaulis H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 293. 1932 [1933]. TYPE: *Orthocaulis atlanticus* (Kaal.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1932 [1933]. Basionym: *Jungermannia atlantica* Kaal., Skr. Videnskr.-Selsk. Christiana, Math.-Naturvidensk. Kl. 1898(9): 11. 1898. [34. ANASTROPHYLLACEAE.]

As currently circumscribed, *Orthocaulis* is a genus of two species, both of which occur in North America.

Orthocaulis atlanticus (Kaal.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1932 [1933]. Basionym: *Jungermannia atlantica* Kaal., Skr. Videnskr.-Selsk. Christiana, Math.-Naturvidensk. Kl. 1898(9): 11. 1898. ≡ *Lophozia atlantica* (Kaal.) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 49: 239. 1901. ≡ *Barbilophozia atlantica* (Kaal.) Müll. Frib., Rabenh. Krypt. Fl. ed. 3(6): 639. 1954.

Distribution. This species is known from Greenland, Labrador, and montane areas of New England; in Europe it is widespread in Scandinavia and from scattered localities in the British Isles, France, and Switzerland.

Orthocaulis attenuatus (Mart.) A. Evans ≡ **Neoorthocaulis attenuatus** (Mart.) L. Söderstr., De Roo & Hedd.

Orthocaulis binsteadii (Kaal.) H. Buch ≡ **Neoorthocaulis binsteadii** (Kaal.) L. Söderstr., De Roo & Hedd.

Orthocaulis cavifolius H. Buch & S. W. Arnell, Memoranda Soc. Fauna Fl. Fenn. 26: 71. 1951. ≡ *Anastrophyllum cavifolium* (H. Buch & S. W. Arnell) Lammes, Ann. Bot. Fenn. 14: 46–48. 1977. ≡ *Sphenolobus cavifolius* (H. Buch & S. W. Arnell) Müll. Frib., Rabenh. Krypt.-Fl. Deutschl ed. 3: 6. 1954. ≡ *Lophozia cavifolia* (H. Buch & S. W. Arnell) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 330. 1969. ≡ *Barbilophozia cavifolia* (H. Buch & S. W. Arnell) Stotler & Crand.-Stotl., Bryologist 80: 426. 1977.

Distribution. This species is found in Greenland, and Scandinavia to Asian Siberia.

Orthocaulis floerkei (F. Weber & D. Mohr) H. Buch ≡ **Neoorthocaulis floerkei** (F. Weber & D. Mohr) L. Söderstr., De Roo & Hedd.

Orthocaulis hyperboreus (R. M. Schust.) Konstant. ≡ **Neoorthocaulis hyperboreus** (R. M. Schust.) L. Söderstr., De Roo & Hedd. subsp. **hyperboreus.**

Orthocaulis longiflorus Herzog ≡ **Protolophozia longiflora** (Herzog) L. Söderstr. & Váňa.

Oxymitra Bisch. ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(Suppl. 1):

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

124. 1829. TYPE: *Oxymitra paleacea* Bisch. ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(Suppl. 1): 124. 1829. [12. OXYMITRACEAE.]

In our checklist (Stotler & Crandall-Stotler, 1977: 415) we had Bischoff as the author for the generic name and the epithet, but both were named by Lindenberg who ascribed them to Bischoff.

Oxymitra is a genus of two species, one of which occurs in North America.

Oxymitra androgyna M. Howe = **Oxymitra incrassata** (Brot.) Sérgio & Sim-Sim.

Oxymitra incrassata (Brot.) Sérgio & Sim-Sim, J. Bryol. 15: 662. 1989. Basionym: *Riccia incrassata* Brot., Fl. Lusit. 2: 428. 1804. = *Oxymitra androgyna* M. Howe, Bryologist 17: 93. 1914 (syn. fide Sérgio & Sim-Sim, 1989: 662). = *Oxymitra paleacea* Bisch. ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 124. 1829 (syn. fide Sérgio & Sim-Sim, 1989: 662).

As Schuster (1992b: 403) pointed out in a footnote, "If the type [of *Riccia incrassata*] can be located and will prove identical with *O. paleacea*, the correct name of this species [*O. paleacea*] will need to be *O. incrassata* (Brot.)." Sérgio and Sim-Sim (1989) designated a neotype from Portugal for the F. Brotero name *R. incrassata* and included both *Oxymitra androgyna* M. Howe and *O. paleacea* Bisch. ex Lindenb. as synonyms.

Distribution. This species is found in Kansas, Oklahoma, and Texas south to Mexico and tropical South America; it is also in southern Europe and North Africa.

Oxymitra paleacea Bisch. ex Lindenb. = **Oxymitra incrassata** (Brot.) Sérgio & Sim-Sim.

Pallavicinia Gray, Nat. Arr. Brit. Pl. 1: 775. 1 Nov. 1821, as "*Pallavicinius*," nom. et orth. cons. TYPE: *Pallavicinia lyellii* (Hook.) Carruth., J. Bot. 3: 302. 1 Oct. 1865. Basionym: *Jungermannia lyellii* Hook., Brit. Jungermann.: pl. 77. 1816. [21. PALLAVICINIACEAE.]

Pallavicinia is a genus of approximately 15 species, one of which occurs in North America.

Pallavicinia lyellii (Hook.) Carruth., J. Bot. 3: 302. 1865. Basionym: *Jungermannia lyellii* Hook., Brit. Jungermann.: pl. 77. 1816.

In the publication of S. F. Gray (1821), the name "324. *Herbertus*" was mistakenly printed instead of the name "*Pallavicinius*" on page 684, a mistake that was corrected by Gray on page 775, in the "Additions and Corrections" section. Because of this mistake, however, Gray did not explicitly associate the name *Jungermannia lyellii* Hook. with *Pallavicinius*. Carruthers (1865: 302), although citing Gray as the combining author, was actually the first author to associate the epithet *lyellii* with *Pallavicinius*, and hence must be regarded as the author of the combination.

Distribution. This species is known from one collection in California (Doyle & Stotler, 2006: 129), but is widespread in eastern North America from Newfoundland to Florida and westward to Michigan and Texas; it is also of frequent occurrence in Mexico, the West Indies, South America, and Europe. Reports from Asia and Australasia likely refer to other species (see Schuster, 1992a: 498).

Pedinophyllum (Lindb.) Lindb., Hepat. Hibernia [= Acta Soc. Sci. Fenn. 10 (Nov–Dec)]: 504. 1 May–23 Aug. 1875. Basionym: *Plagiochila* subg. *Pedinophyllum* Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 13: 366. 1874. TYPE: *Pedinophyllum pyrenaicum* (Spruce) Lindb., Hepat. Hibernia: 504. 1875. Basionym: *Plagiochila pyrenaica* Spruce, Hep. Pyren. [Exsicc.] n. 9. 1847. [50. PLAGIOCHILACEAE.]

Pedinophyllum is a genus of three species, with one in North America.

Pedinophyllum interruptum (Nees) Kaal., Nyt Mag. Naturvidensk. 33: 190. 1893. Basionym: *Jungermannia interrupta* Nees, Naturgesch. Eur. Leberm. 1: 165. 1833.

Distribution. This species is rare in North America and is confirmed in Massachusetts, Connecticut, and Ohio; it is more widespread in central and southern Europe.

Pellia Raddi, Jungermanniogr. Etrusca: 38. 1818, nom. cons. TYPE: *Pellia fabroniana* Raddi, nom. illeg. ≡ *Pellia epiphylla* (L.) Corda in Opiz, Naturalientausch 12: 654. 1829. Basionym: *Jungermannia epiphylla* L., Sp. Pl. 2: 1135. 1753. [16. PELLIACEAE.]

Pellia is a genus of four species, all of which occur in North America.

Pellia alpicola R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat ≡ **Apopellia alpicola** (R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat) Nebel & D. Quandt.

Pellia appalachiana R. M. Schust. ex L. Söderstr., A. Hagborg & von Konrat, Phytotaxa 76: 39. 2013.

Because the herbarim of type specimen deposit was not designated, "*Pellia appalachiana* R. M. Schust.," J. Hattori Bot. Lab. 70: 145. 1991, was not validly

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

published (McNeill et al., 2012: Art. 40.7). This error was recently corrected by Söderström et al. (2013c: 39).

Distribution. This species is known only from the southeastern United States, including North and South Carolina, Georgia, and northern Alabama.

Pellia columbiana Krajina & Brayshaw, Bryologist 54: 60. 1951.

In Stotler and Crandall-Stotler (1977), *Pellia columbiana* was treated as a synonym of *P. neesiana*, as had been proposed by Proskauer (1962: 218). Subsequently, Schuster (1981, 1992a) segregated the *P. columbiana* element as "*Pellia neesiana* (Gottsche) Limpr. subsp. *columbiana* (Krajina & Brayshaw) R. M. Schust.," J. Bryol. 11: 419. 1981, but this combination was not validly published because the basionym was not cited (McNeill et al., 2012: Art. 41.1). We follow Schütz et al. (2016: 231) and choose to recognize *P. columbiana* as a distinct species on the basis of several distinguishing morphological characters.

Distribution. This species is currently known only from British Columbia.

Pellia epiphylla (L.) Corda in Opiz, Naturalientausch 12: 654. 1829, var. **epiphylla**. Basionym: *Jungermannia epiphylla* L., Sp. Pl. 2: 1135. 1753.

Distribution. This species is widespread and common in eastern North America from Labrador to Mississippi, and in the west is reported from Alaska south to Wyoming; it is also widespread in Europe.

Pellia epiphylla var. **borealis** (Lorb.) Schljakov, Novosti Sist. Nizsh. Rast. 13: 225. 1976. Basionym: *Pellia borealis* Lorb., Jahrb. Wiss. Boy. 80: 698. 1934. ≡ *Pellia epiphylla* subsp. *borealis* (Lorb.) Messe, Bull. Soc. Roy. Bot. Belgique 114: 13. 1981. —EXCLUDED.

This taxon is known only from central and northern Europe.

Pellia megaspora R. M. Schust. ≡ **Apopellia megaspora** (R. M. Schust.) Nebel & D. Quandt.

Pellia neesiana (Gottsche) Limpr., Hedwigia 15: 18. 1876. Basionym: *Pellia epiphylla* f. *neesiana* Gottsche, Hedwigia 6: 69. 1867.

Distribution. This species is widespread from Alaska to California and Greenland south to Georgia; it is also common in Europe and Asia.

"*Pellia neesiana* (Gottsche) Limpr. subsp. *columbiana* (Krajina & Brayshaw) R. M. Schust.," J. Bryol. 11: 419. 1981, nom. inval. (McNeill et al., 2012: Art. 41.1) ≡ **Pellia columbiana** Krajina & Brayshaw, Bryologist 54: 60. 1951.

Peltolepis Lindb., Morgonbladet (Helsingfors) 1876 (106): [1]. 9 May 1876. TYPE: *Peltolepis grandis* (Lindb.) Lindb., Bot. Not. 1877: 74. 18 May 1877. Basionym: *Sauteria grandis* Lindb., Morgonbladet (Helsingfors) 1875(76): 1. 1875. [9. CLEVEACEAE.]

Bischler (1998: 55) placed the genus *Peltolepis* Lindb. in the Monosoleniaceae Inoue, but recent evidence, including molecular data (Rubasinghe et al., 2011a), support its inclusion in the Cleveaceae where most authors have placed it (e.g., Stotler & Crandall-Stotler, 1977; Schuster, 1992b).

Peltolepis is a genus of one or two species, with one species known from North America.

Peltolepis grandis (Lindb.) Lindb. = **Peltolepis quadrata** (Saut.) Müll. Frib.

Peltolepis quadrata (Saut.) Müll. Frib., Hedwigia 79: 74. 1940. Basionym: *Sauteria quadrata* Saut., Flora 43: 351. 1860. = *Peltolepis grandis* (Lindb.) Lindb., Bot. Not. 1877: 74. 1877 (syn. fide Müller, 1940b: 73). Basionym: *Sauteria grandis* Lindb., Morgonbladet (Helsinki) 76: 1. 1875.

Schuster and Damsholt (1974: 354) and Schuster (1988: 241) continued to use the name *Peltolepis grandis* in treatments of Greenland hepatics, perhaps following Frye and Clark (1937: 54), even though Müller (1940b) had stated that it was identical to *P. quadrata* when he made that new combination. This had been universally accepted and in fact was correct in Schofield (1968a: 161), Stotler and Crandall-Stotler (1977: 423), and Steere and Inoue (1978: 338). Schuster later corrected this error (1992b: 115).

Distribution. This species is found in Alaska and British Columbia, disjunct to Greenland and Ellesmere Island; also in Iceland, Scandinavia, the arctic-alpine regions of central Europe, and from Siberia to northern Japan in Asia.

Petalophyllum Nees & Gottsche ex Lehm., Nov. Stirp. Pug. 8: 29. Apr. 1844. TYPE: *Petalophyllum preissii* Lehm., Nov. Stirp. Pug. 8: 30. 1844. [18. PETALOPHYLLACEAE.]

Petalophyllum is a genus of five species, one of which occurs in North America.

Petalophyllum americanum C. H. Ford & Crand.-Stotl., Novon 12: 335. 2002. = *Petalophyllum ralfsii* auct. amer., non *Petalophyllum ralfsii* (Wilson) Nees & Gottsche ex Lehm., Nov. Stirp. Pug. 8:

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

30. 1844. Basionym: *Jungermannia ralfsii* Wilson in Sm. & J. C. Sower. Eng. Bot. Suppl. 4. tab. 2874. 1843.

When Evans (1919: 57) reported the occurrence of *Petalophyllum* in North America, he referred it to the European species *P. ralfsii*, a tradition followed by subsequent workers, including Stotler and Crandall-Stotler (1977) and Schuster (1992a). A comparative study of numerous specimens, including the type of *P. ralfsii*, with numerous specimens from North America, however, showed that the North American plants differed consistently from *P. ralfsii* in both morphology and ecology. Consequently, Crandall-Stotler et al. (2002: 335) segregated the North American plants into the new species, *P. americanum*.

Distribution. This species is known only from scattered localities in central Texas, southern Arkansas, and southern Louisiana.

Petalophyllum ralfsii (Wilson) Nees & Gottsche ex Lehm. —EXCLUDED.

See discussion under *Petalophyllum americanum*.

Plagiochasma Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 13. Feb.–Mar. 1832, nom. cons. TYPE: *Plagiochasma cordatum* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 13. 1832. [8. AYTONIACEAE.]

Plagiochasma is a genus of 16 species, six of which have been reported from North America.

Plagiochasma crenulatum Gottsche, Mexik. Leverm.: 266. 1863.

Distribution. This species was not generally recognized to be a part of the North American flora, but Bischler-Causse et al. (2005: 192) indicate that this species is known from central Alabama and southern Arizona. It is also common in Mexico and Central America.

Plagiochasma cuneatum A. Evans, Amer. J. Bot. 19: 627. 1932.

Distribution. This species is found only in Texas in North America; it is common in Mexico and Central America.

Plagiochasma intermedium Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 513. 1846.

Distribution. This species was recorded by Schuster (1992b: 284) from North Carolina; it is otherwise known from Mexico and Central America to Venezuela.

Plagiochasma landii A. Evans, Bull. Torrey Bot. Club 42: 298. 1915.

Distribution. This species is known from the Big Bend area of Texas; it is otherwise known from scattered localities in Mexico, Guatemala, and Costa Rica.

Plagiochasma rupestre (J. R. Forst. & G. Forst.) Steph., Bull. Herb. Boissier 6: 783. 1898, var. **rupestre**. Basionym: *Aytonia rupestris* J. R. Forst. & G. Forst., Char. Gen. Pl., ed. 2: 148, pl. 74. 1776.

The naming of *Plagiochasma rupestre* var. *volkii* by Bischler (1978: 289) automatically creates the varietal autonym, which is the only variety of the species that occurs in North America.

Distribution. This species is known from Texas west to Arizona and north to Colorado and Oklahoma; it is common throughout Latin America as well as Europe, southwest Asia, Australia, and New Zealand.

Plagiochasma wrightii Sull. in A. Gray, Manual Bot. North. U.S. (ed. 2): 688. 1856.

Distribution. This species is common in the southwestern United States, north into Kansas and Missouri, and is reported from one locality in North Carolina; it is widespread in Mexico.

Plagiochila (Dumort.) Dumort., Rec. Observ. Jungerm.: 14. 1835, nom. cons. Basionym: *Radula* sect. *Plagiochila* Dumort., Syll. Jungerm. Europ.: 42. 1831. TYPE: *Plagiochila asplenioides* (L.) Dumort., Rec. Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia asplenioides* L., Sp. Pl. 2: 1131. 1753. [50. PLAGIOCHILACEAE.]

Plagiochila is a genus of 400 to 450 species, with 26 in our flora.

Plagiochila acanthophylla Gottsche subsp. *japonica* (Sande Lac.) Inoue = **Plagiochila sciophila** Nees ex Lindenb.

Plagiochila acanthophylla Gottsche subsp. *japonica* (Sande Lac.) Inoue var. *ciliigera* (R. M. Schust.) Inoue = **Plagiochila sciophila** Nees ex Lindenb.

Plagiochila acanthophylla Gottsche subsp. *ciliigera* (R. M. Schust.) R. M. Schust. = **Plagiochila sciophila** Nees ex Lindenb.

Plagiochila appalachiana Inoue, J. Hattori Bot. Lab. 40: 415. 1976. ≡ *Plagiochila yokogurensis* Steph. subsp. *fragilifolia* R. M. Schust.

When Inoue (1976) elevated *Plagiochila yokogurensis* Steph. subsp. *fragilifolia* R. M. Schust. to species rank he

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

provided this replacement name because of the blocking name *P. fragilifolia* Pearson. The Japanese *P. yokogurensis* Steph. subsp. *yokogurensis*, which is a synonym of *P. parvifolia* Lindbenb. according to So and Grolle (2000a: 230), has not been reported in our flora.

Distribution. This species is found in the eastern United States from Virginia to South Carolina.

Plagiochila arctica Bryhn & Kaal., Rep. Second Norweg. Arctic Exped. 11: 41. 1906, var. **arctica**. ≡ *Plagiochila asplenioides* (L.) Dumort. subsp. *arctica* (Bryhn & Kaal.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 378. 1980.

Distribution. This circumarctic species is found from Alaska south to British Columbia and Greenland; it is also in the Russian Far East, through Siberia to Scandinavia and Europe.

Plagiochila arctica var. **intermedia** R. M. Schust., Amer. Midl. Naturalist 62: 152. 1959.

Although Steere and Inoue (1978: 317) wrote "we do not believe that var. *intermedia* can actually be separated from var. *arctica*," they did not formally reduce it.

Distribution. According to Schuster (1980a: 380) this species is known only from Alaska.

Plagiochila arctica Bryhn & Kaal. var. *subarctica* (Jørg.) Inoue ≡ **Plagiochila porelloides** (Torr. ex Nees) Lindenb. var. **subarctica** (Jørg.) Lammes.

Plagiochila aspleniformis R. M. Schust., Amer. Midl. Naturalist 63: 51. 1960.

Distribution. This species is endemic to Florida.

Plagiochila asplenioides (L.) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia asplenioides* L., Sp. Pl. 2: 1131. 1753.

Almost all of the reports of *Plagiochila asplenioides* in our flora should be referred to *P. porelloides*, which is the most common species in eastern North America. Prior to the more recent recognition of *P. porelloides*, *P. asplenioides* was treated in the broad sense and recorded from throughout the Holarctic in North America, Europe, and Asia. All Asian records are now referred to other species and the reports of *P. asplenioides* from India are very doubtful.

Distribution. This species is found in northwestern North America from Alaska to British Columbia and Washington; it is also in western and central Europe to the Russian Far East.

Plagiochila asplenioides (L.) Dumort. subsp. *arctica* (Bryhn & Kaal.) R. M. Schust. ≡ **Plagiochila arctica** Bryhn & Kaal. var. **arctica.**

"*Plagiochila asplenioides* (L.) Dumort. var. *grandiretis* R. M. Schust.," Hepat. Anthocerotae N. Amer. 4: 372. 1980, nom. inval. (McNeill et al., 2012: Art. 39.1).

Plagiochila asplenioides (L.) Dumort. var. *obcampanulata* R. M. Schust. = **Plagiochila porelloides** (Torr. ex Nees) Lindenb.

Plagiochila asplenioides (L.) Dumort. subsp. *porelloides* (Torr. ex Nees) Lindb. ex Kaal. ≡ **Plagiochila porelloides** (Torr. ex Nees) Lindenb.

Plagiochila austinii A. Evans, Rhodora 16: 68. 1914, as "*austini*."

The correct spelling of this epithet honoring C. F. Austin is formed by adding "ii" in compliance with Article 60.12 of the ICN (McNeill et al., 2012: 60).

Distribution. This North American taxon is known from Nova Scotia south to Kentucky, Tennessee, and North Carolina.

Plagiochila caduciloba H. L. Blomq., Bryologist 42: 114. 1939.

Distribution. This southern Appalachian endemic is known from Georgia, Tennessee, North Carolina, and South Carolina.

Plagiochila columbiana A. Evans, Bot. Gaz. 21: 189. 1896.

Distribution. Schuster (1980a: 383) cited only the District of Columbia and North Carolina and referred to the Frye and Clark (1945: 442) reports from Pennsylvania and Virginia as doubtful.

Plagiochila corniculata auct. = **Plagiochila exigua** (Taylor) Taylor.

Plagiochila diffusa Steph. = **Plagiochila micropteryx** Gottsche.

Plagiochila dubia Lindenb. & Gottsche var. *dubia* = **Plagiochila patula** (Sw.) Lindenb.

Plagiochila dubia Lindenb. & Gottsche var. *integrifolia* R. M. Schust. = **Plagiochila patula** (Sw.) Lindenb.

Plagiochila echinata R. M. Schust., Amer. Midl. Naturalist 62: 341. 1959. ≡ *Plagiochila euryphyllon* Carl subsp. *echinata* (R. M. Schust.) Inoue, J. Hattori Bot. Lab. 25: 97. 1962.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Plagiochila euryphyllon Carl subsp. *euryphyllon* is a mostly Asiatic taxon that has been synonymized with *P. sciophila* Nees ex Lindenb. (syn. fide So & Grolle, 1999: 173).

Distribution. This species is endemic to the southern Appalachians from Tennessee to North Carolina and South Carolina.

Plagiochila euryphyllon Carl subsp. *echinata* (R. M. Schust.) Inoue [North America] ≡ **Plagiochila echinata** R. M. Schust.

Plagiochila euryphyllon Carl subsp. *euryphyllon* [Asiatic] = **Plagiochila sciophila** Nees ex Lindenb.

Plagiochila exigua (Taylor) Taylor, London J. Bot. 5: 265. 1846. Basionym: *Jungermannia exigua* Taylor, Trans. Bot. Soc. Edinburgh 1: 179. 1843 [1844].

Note that "*Plagiochila corniculata* (Dumort.) Dumort.," nom. illeg., is an illegitimate designation because it was superfluous when published (McNeill et al., 2012: Art. 52.1) as discussed by Grolle (1983b: 443). In addition, this "name" has been misapplied by both American and European authors for specimens of *P. exigua*; i.e., *P. corniculata* auct. [non (Dumort.) Dumort.] = *P. exigua* (syn. fide Paton, 1999: 426).

Distribution. This species is found in the southern Appalachians of Virginia, North Carolina, and Tennessee and in the Caribbean and South America. It is widespread in Great Britain, Norway, and from France and Switzerland south to Italy and Spain. It is also in Macaronesia, eastern and southern Africa, and temperate and subtropical Asia.

Plagiochila floridana A. Evans, Bot. Gaz. 21: 190. 1896.

Distribution. This species is restricted to the Gulf Coastal Plain from Florida to Mississippi.

Plagiochila gracilis Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 632. 1847. = *Plagiochila schofieldiana* Inoue, Bull. Nat. Sci. Mus., n.s. 15: 181. 1972 (syn. fide Grolle & So, 2000: 10).

Distribution. This species is found from Alaska to British Columbia; it is also very common in Asia from India to the Philippines and from China to Japan.

Plagiochila hypnoides Willd. ex Lindenb. = **Plagiochila montagnei** Nees.

Plagiochila invisa (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 513. 1980. Basionym: *Plagiochila ludoviciana* Sull. var. *invisa* R. M. Schust., Amer. Midl. Naturalist 63: 101. 1960, as "*invisus*."

Distribution. This species is known only from Florida.

Plagiochila japonica Sande Lac. subsp. *ciliigera* R. M. Schust. = **Plagiochila sciophila** Nees ex Lindenb.

Plagiochila ludoviciana Sull. = **Plagiochila raddiana** Lindenb.

Plagiochila ludoviciana Sull. var. *invisa* R. M. Schust. ≡ **Plagiochila invisa** (R. M. Schust.) R. M. Schust.

Plagiochila micropteryx Gottsche in Triana & Planchon, Ann. Sci. Nat., Bot. sér. 5, 1: 107. 1864. = *Plagiochila diffusa* Steph., Bull. Herb. Boissier, sér. 2, 1: 870. 1902 (syn. fide Inoue, 1989: 38).

Although the reduction of *Plagiochila diffusa* to *P. micropteryx* has been generally accepted, Heinrichs et al. (2004: 494) recognized it as a species in *Plagiochila* sect. *Vagae*.

Distribution. This species is found in southern Florida and the Greater Antilles.

Plagiochila miradorensis Gottsche, Mexik. Leverm.: 31. 1863, var. **miradorensis**.

Distribution. This species is found in the outer coastal plain from North Carolina to Florida, west to Louisiana, Texas, and Mexico.

Plagiochila miradorensis var. **convoluta** R. M. Schust., Amer. Midl. Naturalist 63: 113. 1960.

Distribution. This variety is known only from the type from Jackson Co., Mississippi.

Plagiochila montagnei Nees in Nees & Montagne, Ann. Sci. Nat., Bot., sér. 2, 5: 53. 1836. = *Plagiochila hypnoides* Willd. ex Lindenb., Spec. Hep. (fasc. 2–4): 37. 1840 (syn. fide Heinrichs & Gradstein, 2000: 170).

Distribution. This species is only known from Florida in our flora, but is widespread in the West Indies, Mexico, and South America from Colombia south to Peru and Brazil.

Plagiochila ovalifolia Mitt., Trans. Linn. Soc. London, Bot. 3: 193. 1891.

This species is morphologically quite similar to *Plagiochila porelloides* (Bakalin, 2012a: 203) but is

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

recognized as a distinct species by So (2001) and Söderström et al. (2016).

Distribution. This species is reported to occur in Oregon (Bakalin, 2012a); it is otherwise known only from eastern Asia.

Plagiochila patula (Sw.) Nees & Mont. ex Lindenb., Sp. Hepat. (fasc. 1): 21. 1839. Basionym: *Jungermannia patula* Sw., Fl. Ind. Occid.: 3. 1806. = *Plagiochila dubia* Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 630. 1847 (syn. fide Heinrichs et al., 2002: 225). = *Plagiochila dubia* Lindenb. & Gottsche var. *integrifolia* R. M. Schust., Amer. Midl. Naturalist 63: 35. 1960, syn. nov.

When Lindenberg (1839) transferred this species to *Plagiochila*, he ascribed the combination to Nees and Montagne, but he was the combining author.

Distribution. This species is found in the Gulf Coastal Plain from Florida north to North Carolina and west to Louisiana; it is also in the West Indies and Central America.

Plagiochila porelloides (Torr. ex Nees) Lindenb., Sp. Hepat. (fasc. 2–4): 61. 1840, var. **porelloides**. Basionym: *Jungermannia porelloides* Torr. ex Nees, Naturgesch. Eur. Leberm. 1: 170. 1833. ≡ *Plagiochila asplenioides* (L.) Dumort. subsp. *porelloides* (Torr. ex Nees) Lindb. ex Kaal., Nyt Mag. Naturvidensk. 33: 273. 1893. = *Plagiochila satoi* S. Hatt. var. *satoi*, Bot. Mag. (Tokyo) 57: 361. 1943 (syn. fide So & Grolle, 2000b: 24). = *Plagiochila satoi* S. Hatt. var. *magna* W. B. Schofield & W. S. Hong in Hong, Bryologist 95: 144. 1992, syn. nov. = *Plagiochila asplenioides* (L.) Dumort. var. *obcampanulata* R. M. Schust., Amer. Midl. Nat. 62: 139. 1959, syn. nov.

The "new combination" of *Plagiochila asplenioides* (L.) Dumort. subsp. *porelloides* (Torr. ex Nees) R. M. Schust. (Hepat. Anthocerotae N. Amer. 4: 365. 1980) is an isonym to be disregarded since this combination had already been validly published by Kaalaas in 1893. As discussed by Stotler and Crandall-Stotler (1977), in many floras and manuals for North America, the name *Plagiochila asplenioides* auct. [non (L.) Dumort.] has been misapplied for this taxon.

Distribution. This species is found from Alaska south to Montana, Colorado, California, Arizona, and New Mexico, and throughout all of eastern North America from Greenland south to the Gulf Coastal Plain and west to Minnesota, Missouri, and Arkansas. It is widespread in boreal Europe and also in northern China.

Plagiochila porelloides (Torr. ex Nees) Lindenb. var. **subarctica** (Jørg.) Lammes, Fl. Fenn. 6: 54. 1977. Basionym: *Plagiochila asplenioides* (L.) Dumort. var. *subarctica* Jørg., Bergens Mus. Skr. [Norges Leverm.] 16: 173. 1934. ≡ *Plagiochila arctica* Bryhn & Kaal. var. *subarctica* (Jørg.) Inoue, Bull. Natl. Sci. Mus., n.s. 7: 358. 1964.

Konstantinova (Konstantinova & Potemkin, 1996: 140) reduced this latter taxon to the rank of form, which we do not recognize.

Distribution. This variety is found in Alaska, Ellesmere Island, and Greenland; it is also in Norway, Siberia, and the Russian Far East.

Plagiochila punctata (Taylor) Taylor, London J. Bot. 5: 261. 1846. Basionym: *Jungermannia punctata* Taylor, Trans. Bot. Soc. Edinburgh 1: 179. 1843 [1844].

This species was recently added to our flora by Davison et al. (2006: 242).

Distribution. This species is found in Tennessee; and in the Neotropics, Africa, and Europe.

Plagiochila raddiana Lindenb., Sp. Hepat. (fasc. 1): 9. 1839. = *Plagiochila ludoviciana* Sull. in Gray, Amer. J. Sci. Arts (ser. 2) 1: 73. 1846 (syn. fide Heinrichs & Gradstein, 2000: 175).

See comments below on *Plagiochila undata* Sull. subsp. *undata* for more information on the authorship citation of *P. ludoviciana*.

Distribution. This species is found from the outer coastal plain of North Carolina to Florida and west to eastern Texas, with localized populations recorded from southeastern Tennessee. It is also known from the West Indies, Central America, and South America.

Plagiochila retrorsa Gottsche, Mexik. Leverm.: 67. 1863. = *Plagiochila sharpii* H. L. Blomq. subsp. *sharpii*, Bryologist 43: 90. 1940 (syn. fide Rycroft et al., 2001: 24).

Distribution. This species is found in the southeastern United States from extreme southern Illinois east to Tennessee and North Carolina. It is also known from Central America, Portugal, the Azores, and Madeira.

Plagiochila satoi S. Hatt. var. *satoi* = **Plagiochila porelloides** (Torr. ex Nees) Lindenb.

Plagiochila satoi S. Hatt. var. *magna* W. B. Schofield & W. S. Hong = **Plagiochila porelloides** (Torr. ex Nees) Lindenb.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Plagiochila schofieldiana Inoue = **Plagiochila gracilis** Lindenb. & Gottsche.

Plagiochila sciophila Nees ex Lindenb., Sp. Hepat. (fasc. 2–4): 100. 1840. = *Plagiochila acanthophylla* Gottsche, Bot. Zeitung (Berlin) 16, Beil.: 38. 1858 (syn. fide Inoue, 1984: 125). = *Plagiochila acanthophylla* Gottsche subsp. *japonica* (Sande Lac.) Inoue, J. Hattori Bot. Lab. 25: 100. 1962 (syn. fide Inoue, 1984: 126). = *Plagiochila acanthophylla* Gottsche subsp. *ciliigera* (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 435. 1980 (syn. fide Inoue, 1984: 127). = *Plagiochila acanthophylla* Gottsche subsp. *japonica* (Sande Lac.) Inoue var. *ciliigera* (R. M. Schust.) Inoue, J. Hattori Bot. Lab. 25: 100. 1962 (syn. fide Inoue, 1984: 127). = *Plagiochila japonica* Sande Lac. subsp. *ciliigera* R. M. Schust., Amer. Midl. Naturalist 62: 354. 1959 (syn. fide Inoue, 1984: 126). = *Plagiochila euryphyllon* Carl subsp. *euryophyllon*, Ann. Bryol. 2 (suppl.2): 106. 1931.

While the Asiatic *Plagiochila euryphyllon* Carl subsp. *euryphyllon* has been reduced to *P. sciophila* (syn. fide So & Grolle, 1999: 173), the North American *P. euryphyllon* Carl subsp. *echinata* (R. M. Schust.) Inoue is recognized as a distinct species, *P. echinata* (see above).

Distribution. In our flora this species is known only from the Arkansas Ozark Mountains (as *Plagiochila acanthophylla* Gottsche subsp. *ciliigera* R. M. Schust.), but this species is very widespread in Asia.

Plagiochila semidecurrens (Lehm. & Lindenb.) Lindenb., Sp. Hepat. (fasc. 5): 142. 1843, var. **semidecurrens**. Basionym: *Jungermannia semidecurrens* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 21. 1832. = *Plagiochila sharpii* H. L. Blomq. subsp. *yakusimensis* (S. Hatt.) R. M. Schust., Amer. Midl. Naturalist 62: 274. 1959 (syn. fide Inoue, 1984: 98). Basionym: *Plagiochila semidecurrens* (Lehm. & Lindenb.) Lindenb. var. *yakusimensis* S. Hatt., J. Hattori Bot. Lab. 3: 29. 1948.

Distribution. This species is found in western North America; and in East Asia and the Himalayas.

Plagiochila semidecurrens var. **alaskana** (A. Evans) Inoue, J. Hattori Bot. Lab. 28: 216. 1965. Basionym: *Plagiochila alaskana* A. Evans, Bull. Torrey Bot. Club 41: 590. 1915.

Distribution. This variety is found in Alaska to British Columbia and Oregon.

Plagiochila sharpii H. L. Blomq. subsp. *sharpii* = **Plagiochila retrorsa** Gottsche.

Plagiochila sharpii H. L. Blomq. subsp. *yakusimensis* (S. Hatt.) R. M. Schust. = **Plagiochila semidecurrens** (Lehm. & Lindenb.) Lindenb. var. **semidecurrens.**

Plagiochila sullivantii Gottsche ex A. Evans, Bot. Gaz. 21: 191. 1896, var. **sullivantii**.

Distribution. This species is endemic to the southern Appalachians of Virginia and West Virginia to North Carolina.

Plagiochila sullivantii var. **spinigera** R. M. Schust., Amer. Midl. Naturalist 62: 323. 1959.

Distribution. This variety is known only from two collections in North Carolina (Schuster, 1980a: 422).

Plagiochila undata Sull. in Gray, Amer. J. Sci. Arts Ser. 2, 1: 73. 1846, subsp. **undata**.

This species was validly published in a review of Sullivant's *Musci Alleghanienses* written by Asa Gray (1846), but since he makes it clear that the descriptions were copied from Sullivant's exsiccatae, the correct author citation of this species, as in the case of *Plagiochila ludoviciana* Sull., is "Sull. in Gray." A full explanation of this authorship is provided in Stafleu and Cowan (1986: 89).

Distribution. This species is found from Tennessee and North Carolina south to Florida and west to Arkansas and Louisiana.

Plagiochila undata subsp. **crispata** (Gottsche) R. M. Schust., Amer. Midl. Naturalist 63: 122. 1960. Basionym: *Plagiochila crispata* Gottsche, Mexik. Leverm.: 167. 1863. —EXCLUDED.

We inadvertently included this Central American subspecies in our checklist (Stotler & Crandall-Stotler, 1977: 416).

Plagiochila virginica A. Evans, Bull. West Virginia Agric. Exp Sta. 24: 497. 1892, var. **virginica**.

Distribution. This species is found in the eastern United States from West Virginia and Virginia to Georgia and northeastern Mississippi.

Plagiochila virginica var. **caroliniana** R. M. Schust., Amer. Midl. Naturalist 63: 15. 1960.

Distribution. This variety is found in the southern Appalachians from Tennessee and Virginia to North Carolina.

Plagiochila virginica var. **euryphylla** R. M. Schust., Amer. Midl. Naturalist 63: 21. 1960.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This variety is known only from the type from Transylvania Co., North Carolina.

Plagiochila yokogurensis Steph. subsp. *fragilifolia* R. M. Schust. = **Plagiochila appalachiana** Inoue.

Plectocolea (Mitt.) Mitt. = **Solenostoma** Mitt.

Pleuroclada Spruce = *Pleurocladula* Grolle = **Fuscocephaloziopsis** Fulford.

The name *Pleuroclada* Spruce was used in Stotler and Crandall-Stotler (1977), but it was considered to be sufficiently similar to *Pleurocladia* A. Braun that it was deemed an illegitimate later homonym (McNeill et al., 2012: Art. 53.5). Grolle (1979b: 269) published *Pleurocladula* as a substitute or replacement name.

Pleurocladula Grolle = **Fuscocephaloziopsis** Fulford.

As a consequence of their molecular studies, Vilnet et al. (2012) expanded the circumscription of *Pleurocladula* to include *Schofieldia* J. D. Godfrey and nine species of *Cephalozia*. Later, Váňa et al. (2013e) placed *Pleurocladula* in synonymy with *Fuscocephaloziopsis*. See discussion under *Cephalozia*.

Pleurocladula albescens (Hook.) Grolle var. *albescens* ≡ **Fuscocephaloziopsis albescens** (Hook.) Váňa & L. Söderstr. var. **albescens.**

Pleurocladula albescens (Hook.) Grolle var. *islandica* (Nees) L. Söderstr. & Váňa ≡ **Fuscocephaloziopsis albescens** (Hook.) Váňa & L. Söderstr. var. **islandica** (Nees) Váňa & L. Söderstr.

Pleurocladula islandica (Nees) Grolle ≡ **Fuscocephaloziopsis albescens** (Hook.) Váňa & L. Söderstr. var. **islandica** (Nees) Váňa & L. Söderstr.

Pleurozia Dumort., Recueil Observ. Jungerm.: 15. 1835. TYPE: *Pleurozia sphagnoides* Dumort., Bull. Soc. Roy. Bot. Belgique 13: 178, t. 2, fig. 14. 15 Sep. 1874. = *Pleurozia gigantea* (F. Weber) Lindb. [22. PLEUROZIACEAE.]

Dumortier (1835) included two species under his brief description of *Pleurozia*, but without citation of authors or descriptions, so neither name was validly published, although the genus was, as discussed by Grolle et al. (2005). The first species to be validly published in the genus was *P. sphagnoides* Dumort., published by Dumortier in 1874, when he provided both a description and an illustration, as cited above.

Pleurozia is a genus of 11 species, one of which occurs in North America.

Pleurozia purpurea Lindb., Hepaticol. Utveckl.: 8, 16, 21, 33, 50. 1877.

Distribution. This species is found in Alaska and British Columbia. In Europe it is known from Ireland, Scotland, the Faroe Islands, and Norway; it is also known from Taiwan and the Himalayas.

Plicanthus R. M. Schust., Nova Hedwigia 74: 484. 2002. TYPE: *Plicanthus giganteus* (Steph.) R. M. Schust., Nova Hedwigia 74: 484. 2002. Basionym: *Chandonanthus giganteus* Steph., Spec. Hep. 6: 348. 1922. [34. ANASTROPHYLLACEAE.]

A recent segregate from *Chandonanthus* Mitt., *Plicanthus* includes four species, with one in our flora.

Plicanthus hirtellus (F. Weber) R. M. Schust., Nova Hedwigia 74: 492. 2002. Basionym: *Jungermannia hirtella* F. Weber, Hist. Musc. Hepat. Prodr. 50. 1815. ≡ *Chandonanthus hirtellus* (F. Weber) Mitt. in Seemann, Fl. Vitiensis: 405. 1873.

Distribution. This species is found in North America and is known from British Columbia; it is also in Polynesia, Australia, and Africa.

Porella L., Sp. Pl. 2: 1106. 1 May 1753. TYPE: *Porella pinnata* L., Sp. Pl. 2: 1106. 1753. [25. PORELLACEAE.]

Porella is a cosmopolitan genus of about 60 species according to Hentschel et al. (2007a), with 10 occurring in North America.

Porella bolanderi (Austin) Pearson, Geol. Nat. Hist. Surv. Canada, Ser. 3: 7. 1890. Basionym: *Madotheca bolanderi* Austin, Bull. Torrey Bot. Club 3: 14. 1872.

Distribution. This species is endemic to western North America; it is known from Vancouver Island, Oregon, California, and Utah.

Porella cordaeana (Huebener) Moore, Proc. Roy. Irish Acad. 2: 618. 1876. Basionym: *Jungermannia cordaeana* Huebener, Hepaticol. Germ.: 291. 1834.

Distribution. This species is found in North America from Alaska south to Colorado and New Mexico; it is also known from Europe, northern Africa, and Asia.

Porella fauriei (Steph.) S. Hatt., J. Jap. Bot. 20: 109. 1944. Basionym: *Madotheca fauriei* Steph., Sp. Hepat. 4: 315. 1910, as "*faurieri*." ≡ *Porella vernicosa* Lindb. subsp. *fauriei* (Steph.) Hara, Res. Rep. Kôchi Univ. 4(12): 26. 1956.

In our checklist (Stotler & Crandall-Stotler, 1977: 416) we inadvertently catalogued this as "*P. vernicosa* var.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

fauriei" rather than "subspecies *fauriei*." We now recognize it as a distinct species in accord with the molecular analysis of Hentschel et al. (2007a). Note that since the species was named after Faurie, the epithet must be corrected from "faurieri" to "fauriei" (McNeill et al., 2012: Art. 60C-1a).

Distribution. This species is found in the Aleutian Islands; and in Japan, South Korea, Sakhalin, and the Kuril Islands. It is also reported by Hong (1983:154) from Oregon, but this is doubtful.

Porella gracillima Mitt., Trans. Linn. Soc. London, Bot. 3: 202. 1891, subsp. **urogea** (C. Massal.) S. Hatt. & M. X. Zhang, J. Jap. Bot. 60: 323. 1985. Basionym: *Madotheca urogea* C. Massal., Mem. Accad. Agr. Art. Comm. Verona 73: 28. 1897. ≡ *Porella urogea* (C. Massal.) S. Hatt., J. Hattori Bot. Lab. 32: 349. 1969.

The earlier combination "*Porella urogea* (C. Massal.) P. C. Chen, in Chen & Wu," Observ. Fl. Hwangshan.: 10. 1965, was not validly published because the basionym was not cited (McNeill et al., 2012: Art. 41.1). In Söderström et al. (2016), this taxon is recognized at the species level, but in the molecular analysis of Hentschel et al. (2007a), plants from the Great Smoky Mountains National Park, identified as this taxon, resolved in the *P. gracillima* clade.

Distribution. This subspecies is currently known in North America from a single location in the Smoky Mountains, but it is widespread in Asia.

Porella japonica (Sande Lac.) Mitt., Trans. Linn. Soc. London, Bot. 3: 202. 1891, subsp. **appalachiana** R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 682. 1980.

Only the subspecies *appalachiana* of *Porella japonica* is found in our flora; *P. japonica* subsp. *japonica* (basionym: *Madotheca japonica* Sande Lac.) occurs in eastern Asia and the Himalayas.

Distribution. This subspecies is known only from the escarpment gorges of North Carolina and South Carolina.

Porella navicularis (Lehm. & Lindenb.) Pfeiff., Fl. Niederhessen 2: 235. 1855. Basionym: *Jungermannia navicularis* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 6: 38. 1834.

In our checklist (Stotler & Crandall-Stotler, 1977: 413) we followed Frye and Clark (1946: 727) and cited Lindberg as the combining author for this binomial, but it was published earlier by Pfeiffer, who is the correct author.

Distribution. This species is common from Alaska south to California, with reports from Idaho, Montana, and Wyoming.

Porella pinnata L., Sp. Pl. 2: 1106. 1753.

Distribution. This species is common in eastern North America, from Quebec south to Florida and west to Missouri and Texas; it is also known from Cuba and oceanic parts of western Europe.

Porella platyphylla (L.) Pfeiff., Fl. Niederhessen 2: 234. 1855. Basionym: *Jungermannia platyphylla* L., Sp. Pl. 2: 1134. 1753. = *Porella platyphylloidea* (Schwein.) Lindb., Morgonbladet (Helsinki) 1876(287): 1. 1876. Basionym: *Jungermannia platyphylloidea* Schwein., Spec. Fl. Amer. Crypt.: 9. 1821.

The study of *Porella platyphylla* and *P. platyphylloidea* in North America by Therrien et al. (1998) supported the occurrence of three genetic groups without any reliable morphological differentiation. The elater distinctions between these species, discussed by Schuster as the most reliable character to identify them (1980a: 696, 703), were shown to be erroneous, since Therrien et al. (1998) documented both morphologies within a single capsule of the type specimen of *P. platyphylloidea*. Since no morphological character definitively separated the genotypes, they were treated as a single species, *P. platyphylla*. In the molecular phylogenetic study of Hentschel et al. (2007a), the accessions of *P. platyphylla* are resolved in two sister clades in a monophyletic lineage, one comprised of European and one North American accession from New Mexico, and the second, all other North American accessions. Reliance on morphology has clearly resulted in merging genetically distinct lineages into a single taxon. Kadereit et al. (2012) argue that cryptic taxa should be formally named. We, like most taxonomists, are reluctant to do so because such taxa cannot be reliably identified without molecular evidence. Interestingly, although Kreier et al. (2010) included two accessions of "*Ptilidium* sp. nov." from Nepal in their phylogenetic study of *Ptilidium* they did not formally name this unique haplotype of the *P. ciliare* (L.) Hampe morphological group.

Distribution. This species is found in western North America from Alaska, British Columbia, and Colorado, and is widespread in eastern North America from Quebec to Florida and west to Missouri; it is also common throughout Europe, northern Africa, and Asia.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Porella platyphylloidea (Schwein.) Lindb. = **Porella platyphylla** (L.) Pfeiff.

Porella roellii Steph., Bot. Centralbl. 45: 203. 1891.

Distribution. This species is restricted to western North America, from Alaska to California.

Porella swartziana (F. Weber) Trevis., Mem. Reale Ist. Lombardo Sci. Ser. 3, Cl. Sci. Mat. 4: 407. 1877. Basionym: *Jungermannia swartziana* F. Weber, Hist. Musc. Hepat. Prodr.: 18. 1815.

Distribution. This species is found in North America and is known only from Louisiana; it is also in Mexico, Central America, and the West Indies.

Porella vernicosa Lindb. subsp. *fauriei* (Steph.) M. Hara ≡ **Porella fauriei** (Steph.) S. Hatt.

Prasanthus Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23(5): 62. 7 Dec. 1889. TYPE: *Prasanthus suecicus* (Gottsche) Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23(5): 62. 1889. Basionym: *Gymnomitrion suecicum* Gottsche in Lange, Fl. Danic. 16(48): 20. Copenhagen. 1871. [46. GYMNOMITRIACEAE.]

Prasanthus is a genus of two species, with one in our flora.

Prasanthus suecicus (Gottsche) Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk. Handl., n.s. 23 (5): 62. 1889. Basionym: *Gymnomitrion suecicum* Gottsche in Lange, Fl. Danic. 16(48): 20. Copenhagen. 1871.

Distribution. This species is found in Greenland to eastern Canada. It is also found throughout Europe and in Siberia and the Russian Far East.

Preissia quadrata (Scop.) Nees subsp. *quadrata* ≡ **Marchantia quadrata** Scop.

Preissia quadrata (Scop.) Nees subsp. *hyperborea* R. M. Schust. = **Marchantia quadrata** Scop.

Protolophozia (R. M. Schust.) Schljakov, Novosti Sist. Nizsh Rast. 16: 204. 1979 (post 12 Oct.). Basionym: *Lophozia* subg. *Protolophozia* R. M. Schust., Nova Hedwigia 15: 472. 1968. TYPE: *Lophozia crispata* R. M. Schust., Nova Hedwigia 15: 474. 1968. [35. CEPHALOZIELLACEAE.]

Protolophozia is a genus of 15 species, with one in our flora.

Protolophozia debiliformis (R. M. Schust. & Damsh.) Konstant. = **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Protolophozia elongata (Steph.) Schljakov, Novosti Sist. Nizsh. Rast. 16: 204. 1979. Basionym: *Lophozia elongata* Steph., Bull. Herb. Boissier, sér. 2, 1: 1145. 1902.

Distribution. This species is reported from Greenland, British Columbia, and Alberta; it is also in Scandinavia east to Siberia and the Chukotka Peninsula.

Pseudolepicolea fryei (Perss.) Grolle & Ando ≡ **Lophochaete fryei** (Perss.) R. M. Schust.

Pseudolophozia debiliformis (R. M. Schust. & Damsh.) Konstant. & Vilnet = **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Pseudolophozia sudetica (Nees ex Huebener) Konstant. & Vilnet ≡ **Barbilophozia sudetica** (Nees ex Huebener) L. Söderstr., De Roo & Hedd.

Pseudotritomaria Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. TYPE: *Pseudotritomaria heterophylla* (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Tritomaria heterophylla* R. M. Schust., Canad. J Bot. 36: 272. 1958. [36. SCAPANIACEAE.]

Pseudotritomaria is a monotypic genus.

Pseudotritomaria heterophylla (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Tritomaria heterophylla* R. M. Schust., Canad. J. Bot. 36: 272. 1958.

Distribution. This species is reported from Greenland, Ellesmere Island, and Alaska.

Ptilidium Nees, Naturgesch. Eur. Leberm. 1: 95. 15 Sep.–15 Dec. 1833.TYPE: *Ptilidium ciliare* (L.) Hampe, Prodr. Fl. Hercyniae: 76. Dec. 1836. Basionym: *Jungermannia ciliaris* L., Sp. Pl. 2: 1134. 1753. [30. PTILIDIACEAE.]

The distinctness of the three species that occur in our flora is confirmed by Kreier et al. (2010).

Ptilidium is a genus of three species, all of which occur in our flora.

Ptilidium californicum (Austin) Underw. & O. F. Cook, Hep. Amer. 69. 1890. Basionym: *Lepidozia californica* Austin, Bull. Torrey Bot. Club 6: 19. 1875.

Although the transfer of *Lepidozia californica* to the genus *Ptilidium* was effected by Pearson (1890: 7), the publication date of that paper was not until November 1890, whereas the exsiccatae of Underwood and Cook was issued in May 1890, and they must be credited as the combining authors.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is generally considered endemic to the Pacific Northwest, from Alaska to California, but is recently reported from the Russian Far East and Sakhalin (Bakalin, 2010: 138; 2012c: 60).

Ptilidium ciliare (L.) Hampe, Prodr. Fl. Hercyn.: 76. 1836. Basionym: *Jungermannia ciliaris* L., Sp. Pl. 2: 1134. 1753.

Distribution. This species is transcontinental from Alaska south to British Columbia, Alberta, and Montana, and in the east from Greenland south to Pennsylvania; it is widespread in Europe and northern Asia.

Ptilidium pulcherrimum (Weber) Vain., Meddeland. Soc. Fauna Fl. Fenn. 3: 88. 1878. Basionym: *Jungermannia pulcherrima* Weber, Spic. Fl. Goett.: 150. 1778.

Although Hampe (1836: 7) included both *Ptilidium ciliare* and *P. pulcherrimum* in his flora, he is credited only with the combination *P. ciliare* in that work. Grolle (1976: 222) pointed out that while the combination *P. ciliare* by Hampe was valid because of his indirect reference to Nees von Esenbeck (1833: 95), that of *P. pulcherrimum* was not because Nees did not recognize that species. Vainio (1878: 88) is considered to be the first to validly publish this name with an indirect reference to Lindberg rather than Nees; his citation was "*Pt*[*ilidium*]. *pulcherimum* (Lindb.)."

Distribution. This species is widespread in North America; it is found in the west from Alaska south to British Columbia, Idaho, and Montana, and in the east from Newfoundland south to Tennessee, North Carolina, and Iowa. It is also widespread in Europe, Asia, and Japan.

Ptychocoleus heterophyllus A. Evans ≡ **Acrolejeunea heterophylla** (A. Evans) Grolle & Gradst.

Radula Dumort., Commentat. Bot.: 112. Nov. (sero)–Dec. (ante) 1822, nom. cons. TYPE: *Radula complanata* (L.) Dumort., Syll. Jungerm. Europ.: 38. 1831. Basionym: *Jungermannia complanata* L., Sp. Pl. 2: 1133. 1753. [26. RADULACEAE.]

Radula is a genus of approximately 150 species, with 15 from North America.

Radula auriculata Steph., Bull. Herb. Boissier 5: 105. 1897.

Distribution. This species is reported by Schofield (1968b: 277) from British Columbia; it is otherwise known from Japan and India.

Radula australis Austin, Bot. Bull. 1: 32. 1876.

Distribution. This species is restricted to the coastal plain of the southeastern United States into the Appalachian escarpment.

Radula bolanderi Gottsche ex Steph., Hedwigia 23: 145. 1884.

Gottsche has often been cited as the author of this name, but Stephani actually described the species, although he ascribed it to "Gottsche ms." However, there is no evidence that Gottsche was involved in writing the description, but rather simply provided specimens for study from his collections (Stephani, 1884: 114). Therefore, the proper citation must be *Radula bolanderi* Gottsche ex Steph., or simply *R. bolanderi* Steph. (McNeill et al., 2012: Art. 46.5).

Distribution. This species is found in western North America, from Alaska to California.

Radula brunnea Steph., Sp. Hepat. 4: 232. 1910.

Distribution. This species is reported by Schofield and Godfrey (1979: 285) from Saddle Mountain, Oregon; otherwise it is found in Japan.

Radula complanata (L.) Dumort., Syll. Jungerm. Europ.: 38. 1831. Basionym: *Jungermannia complanata* L., Sp. Pl. 2: 1133. 1753.

Distribution. This species is transcontinental and widely dispersed in North America, from Greenland and Alaska in the north to Arizona and Florida in the south; it is also widespread in Europe and Asia.

Radula complanata (L.) Dumort. subsp. *lindenbergiana* (Gottsche ex C. Hartm.) R. M. Schust., as "*lindbergiana*" ≡ **Radula lindenbergiana** Gottsche ex C. Hartm.

Radula flaccida Lindenb. & Gottsche, in Gottsche, Lindenberg & Nees, Syn. Hepat.: 726. 1847.

Distribution. This species is rare in southernmost Florida; it is common in the West Indies, South American tropics, and tropical Africa.

Radula floridana Castle, Rev. Bryol. Lichénol. 36: 1. 1968.

Dauphin et al. (2011: 805) placed *Radula floridana* in synonymy under *R. javanica* Gottsche. In the molecular analysis of Devos et al. (2011), however, these two taxa are resolved in widely distant clades and have been now classified in different subgenera (see Söderström et al., 2016).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found in Florida and the coastal plain of Alabama, Mississippi, and Louisiana; it is also found in the Bahamas and Cuba.

Radula lindenbergiana Gottsche ex C. Hartm., Handb. Skand. Fl. (ed. 9) 2: 98. 1864. ≡ *Radula complanata* (L.) Dumort. subsp. *lindenbergiana* (Gottsche ex C. Hartm.) R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 609. 1980, as "*lindbergiana*."

Although Schuster (1980a: 609) regarded this taxon as a subspecies of *Radula complanata*, it is currently recognized at the species rank.

Distribution. This species is reported from Greenland and a few localities in Tennessee, Arkansas, and the escarpment gorges of North Carolina and South Carolina; it is widespread in Europe and Asia.

Radula mollis Lindenb. & Gottsche = **Radula quadrata** Gottsche.

Radula obconica Sull. in A. Gray, Manual Bot. North. U.S. (ed. 1): 688. 1848.

Distribution. This species is widespread in eastern North America, from Quebec to Minnesota and south to Florida.

Radula obtusiloba Steph., Bull. Herb. Boissier, 5: 105. 1897, subsp. **polyclada** (A. Evans) S. Hatt., J. Hattori Bot. Lab. 29: 1966. Basionym: *Radula polyclada* A. Evans, Bull. Torrey Bot. Club 41: 607. 1915.

Radula obtusiloba Steph. subsp. *obtusiloba* is restricted to Japan.

Distribution. This subspecies is found in coastal areas of the Pacific Northwest, from Alaska south to Washington.

Radula prolifera Arnell, Ark. Bot. 13: 12. 1913.

Distribution. This species is found in Alaska and northwestern Canada; it is also known from northeastern Europe and northern Asia.

Radula quadrata Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 255. 1845. = *Radula mollis* Lindenb. & Gottsche in Gottsche, Lindenberg & Nees, Syn. Hepat.: 725. 1847 (syn. fide Yamada, 1993: 133).

Distribution. This species is found in the southeastern United States, from the District of Columbia to Florida; it is widely distributed in Mexico, Central America, South America, Cuba, and the West Indies.

Radula sullivantii Austin, Hepat. Bor.-Amer. Exsicc.: 22. 1873, as "sullivanti."

Distribution. This species is scattered in ravine habitats of the southern Appalachians, with questionable reports from Florida (Dauphin et al., 2011: 805).

Radula tenax Lindb., Hepat. Hibernia: 492. 1875.

Distribution. This species is widely scattered in eastern North America, from Maine to Georgia.

Radula voluta Taylor ex Gottsche, Lindenb. & Nees, Syn. Hepat.: 255. 1845.

Taylor is often cited as the author of this name, but the correct author citation is Taylor ex Gottsche, Lindenberg & Nees, as in Grolle and Long (2000: 111), or simply Gottsche, Lindenberg & Nees. Although Gottsche et al. (1845) ascribed the epithet to Taylor, Taylor is not considered the author of the name because there is no indication that he wrote the description (McNeill et al., 2012: Art. 46.5). Mescall et al. (1980) reported this species as new to North America, but in fact, it had been included in our checklist (Stotler & Crandall-Stotler, 1977: 416) based upon a report by Schuster (1962b: 240).

Distribution. This species is restricted to North Carolina, Tennessee, and the British Isles.

Reboulia Raddi, Opusc. Sci. 2: 357. 1818, as "*Rebouillia*," nom. et orth. cons. TYPE: *Reboulia hemisphaerica* (L.) Raddi, Opusc. Sci. 2: 357. 1818. Basionym: *Marchantia hemisphaerica* L., Sp. Pl. 2: 1138. 1753. [8. AYTONIACEAE.]

Reboulia is a monospecific genus.

Reboulia hemisphaerica (L.) Raddi, Opusc. Sci. 2: 357. 1818, subsp. **hemisphaerica**. Basionym: *Marchantia hemisphaerica* L., Sp. Pl. 2: 1138. 1753.

Index Hepaticarum (Geissler & Bischler, 1990) attributes 15 species to the genus *Reboulia*, all of which have systematically been reduced to other taxa, most to various varieties or forms of *R. hemisphaerica*. Schuster (1992b: 161) recognized seven subspecies of *R. hemisphaerica*, nonetheless agreeing that "the criteria separating the populations are, in part, ambiguous." Isozyme studies by Boisselier-Dubayle et al. (1998) confirmed substantial genetic variation within *R. hemisphaerica* s.l. and identified one polyploid and three haploid genetic groups, or clusters.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Only two of the haploid clusters were also morphologically distinct, one that corresponded to *R. hemisphaerica* subsp. *hemisphaerica*, and the other to the Japanese *R. hemisphaerica* subsp. *orientalis*. All polyploid samples were from Australia and New Zealand and corresponded morphologically to *R. hemisphaerica* subsp. *australis*. Söderström et al. (2016) recognize five of Schuster's subspecies and two old varieties of *R. hemisphaerica*. Without doubt, identifying the taxonomic significance of the morphological and genetic variation within this cosmopolitan species remains highly problematic and requires more rigorous study.

Distribution. This species is cosmopolitan in temperate regions of both northern and southern hemispheres.

Reboulia hemisphaerica subsp. **acrogyna** (R. M. Schust.) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 168. 1992. Basionym: *Asterella bolanderi* subsp. *acrogyna* R. M. Schust., Phytologia 57: 410. 1985.

Note that two populations from Texas studied by Boisselier-Dubayle et al. (1998) were clustered with *Reboulia hemisphaerica* subsp. *hemisphaerica* and were not morphologically distinct, but since their locality in Texas was not indicated, the status of this subspecies could not be determined.

Distribution. It is known only from Big Bend National Park in Texas.

Reboulia hemisphaerica subsp. **australis** R. M. Schust., Phytologia 56: 460. 1985.

Whether this polyploid subspecies actually occurs in North America is doubtful.

Distribution. This subspecies is reported from single localities in Quebec, Massachusetts, and Virginia; it is otherwise known only from New Zealand and Australia.

Reboulia hemisphaerica subsp. **dioica** R. M. Schust., Phytologia 56: 462. 1985.

Distribution. This subspecies is from one locality in North Carolina; it is otherwise reported from Spain and the Canary Islands.

"*Reboulia hemisphaerica* (L.) Raddi subsp. *sabaliana* R. M. Schust.," nom. inval.

This subspecies was reported from Florida by Schuster (1992b) but was not validly published (no Latin description or diagnosis) (McNeill et al., 2012: Art. 39.1) and is not recognized by Söderström et al. (2016).

Rectolejeunea A. Evans, Bull. Torrey Bot. Club 33: 8. 8 Feb. 1906. TYPE: *Rectolejeunea flagelliformis* A. Evans, Bull. Torrey Bot. Club 33: 9. 1906.[29. LEJEUNEACEAE.]

Rectolejeunea is a genus with 68 described taxa now reduced to but five species (Reiner-Drehwald & Grolle, 2012), with the bulk of the species transferred to either *Cheilolejeunea* or *Lejeunea* and others to *Cyclolejeunea* or *Microlejeunea*. Now only a single species occurs in our flora, in contrast to the seven recognized in Schuster (1980a).

"*Rectolejeunea berteroana* (Gottsche ex Steph.) A. Evans," Bull. Torrey Bot. Club 33: 12. 1906, nom. inval. (McNeill et al., 2012: Art. 6.10) = **Rectolejeunea versifolia** (Schiffn.) L. Söderstr. & A. Hagborg.

Rectolejeunea brittoniae A. Evans = **Lejeunea phyllobola** Nees & Mont.

"*Rectolejeunea evansiana* R. M. Schust.," Hepat. Anthocerotae N. Amer. 4: 1127. 1980, nom. inval., type includes more than one gathering (McNeill et al., 2012: Art. 40.2). ≡ "*Lejeunea evansiana* (R. M. Schust.) Schäf.-Verw.," Candollea 56: 64. 2001, nom. inval., basionym not validly published (McNeill et al., 2012: Art. 6.10).

Rectolejeunea maxonii A. Evans = **Lejeunea deplanata** Nees.

Rectolejeunea phyllobola (Nees & Mont.) A. Evans ≡ **Lejeunea phyllobola** Nees & Mont.

Rectolejeunea pililoba (Spruce) R. M. Schust. = **Lejeunea trinitensis** Lindenb.

Rectolejeunea spiniloba (Lindenb. & Gottsche) R. M. Schust. ≡ **Lejeunea spiniloba** Lindenb. & Gottsche.

Rectolejeunea versifolia (Schiffn.) L. Söderstr. & A. Hagborg, Phytotaxa 220: 188. 2015. Basionym: *Cheilolejeunea versifolia* Schiffn., Bot. Jahrb. Syst. 23: 597. 1897.

Since the genus *Odontolejeunea* had not yet been validly published, "*O. berteroana* Gottsche ex Steph.," Hedwigia 27: 282. 1988, was not validly published by Stephani (1888); consequently, the combination "*Rectolejeunea berteroana* (Gottsche ex Steph.) A. Evans" is not a validly published combination (McNeill et al., 2012: Art. 6.10), but must instead be treated as a new species. However, Evans (1906) included the earlier published *Cheilolejeunea versifolia* as a synonym of *R. berteroana*. According to the Principle of Priority, then, the correct name for this taxon is *R. versifolia*, as discussed by Söderström et al. (2015b).

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found in southern Florida and is widespread in the West Indies, Central America, and South America.

Riccardia Gray, Nat. Arr. Brit. Pl. 1: 679, 683. 1 Nov. 1821, as "*Riccardius*," nom. et orth. cons. TYPE: *Riccardia multifida* (L.) Gray, Nat. Arr. Brit. Pl. 1: 684. 1821. Basionym: *Jungermannia multifida* L., Sp. Pl. 2: 1136. 1753. [24. ANEURACEAE.]

Riccardia is a genus of 90 to 100 species, seven of which occur in North America.

Riccardia chamedryfolia (With.) Grolle, Trans. Brit. Bryol. Soc. 5: 772. 1969. Basionym: *Jungermannia chamedryfolia* With., Bot. Arr. Veg. Gr. Brit. 2: 699. 1776.

Distribution. This species is found in Greenland and Nova Scotia south to Florida in eastern North America, and from Alaska south to California in the west; it is also found in Europe, the Canary Islands, Asia, and Japan.

Riccardia incurvata Lindb., Helsingfors Dagblad 1878(315): 2. 1878.

Distribution. This species is found in eastern Greenland; it is otherwise known from Iceland, western and central Europe, and northern Asia. It is also reported from Oregon by Schuster (1992a: 289), but this report is dubious (Damsholt, 2013: 512).

Riccardia jugata R. M. Schust., J. Hattori Bot. Lab. 62: 305. 1987.

Distribution. This species is reported from North Carolina and Georgia.

Riccardia latifrons (Lindb.) Lindb., Hepat. Hibernia: 513. 1875, subsp. **latifrons**. Basionym: *Aneura latifrons* Lindb., Bot. Not. 26: 62. 1873.

Distribution. This subspecies is known from Quebec to Florida in the east and Alaska to California in the west; it is widespread in Europe, Siberia, China, and Japan.

Riccardia latifrons subsp. **arctica** R. M. Schust. & Damsh. in Schuster, J. Hattori Bot. Lab. 62: 305. 1987.

Distribution. This subspecies is found in Greenland, Newfoundland, Nova Scotia, and Alaska; it is also known in Europe only from Scandinavia.

Riccardia multifida (L.) Gray, Nat. Arr. Brit. Pl. 1: 684. 1821, subsp. **multifida.** Basionym: *Jungermannia multifida* L., Sp. Pl. 1: 1136. 1753.

Distribution. This species is transcontinental; it is found in southern Greenland and from Ontario to Florida in eastern North America, and Alaska to California in the west. It is also widespread in Europe, northern Africa, and Asia.

Riccardia multifida subsp. **synoica** R. M. Schust., J. Hattori Bot. Lab. 62: 319. 1987.

Distribution. This subspecies is found in the coastal plain of North Carolina, south to Florida and west to Mississippi.

Riccardia palmata (Hedw.) Carruth., J. Bot. 3: 302. 1865. Basionym: *Jungermannia palmata* Hedw., Theoria Generat.: 87. 1784.

Distribution. This species is widely scattered from northwestern Greenland south to Florida in the east, and Alaska to California in the west; it is also found throughout Europe, Asia, and Japan.

Riccardia stricta R. M. Schust., J. Hattori Bot. Lab. 62: 326. 1987.

Distribution. This species is known only from Florida.

Riccia L., Sp. Pl. 2: 1138. 1 May 1753, nom. et type cons. TYPE: *Riccia glauca* L., Sp. Pl. 2: 1139. 1753. [13. RICCIACEAE.]

Riccia is a genus of an estimated 150 species, 33 of which occur in North America.

Riccia albida Sull. ex Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 231. 1869.

The correct author citation is Sull. ex Austin because Austin actually described this new species; he simply ascribed the name to Sullivant. In our checklist (Stotler & Crandall-Stotler, 1977: 416) and in Schuster (1992b: 682) the author was incorrectly listed as Sullivant. Although the date of publication is cited as 1869 "1870" in most publications, Stafleu and Mennega (1992) pointed out that the date on reprints is December 1869, and that the publication is to be cited as such.

Distribution. This species is reported from Texas and Louisiana in North America; it is also in Mexico, the Mediterranean region of Europe, southern Africa, central Asia, and Australia.

Riccia albolimbata S. W. Arnell, Mitt. Bot. Staatssamml. München 16: 264. 1957.

Distribution. This species is reported from Texas by Schuster (1992b: 545); otherwise it is known only from southern Africa.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Riccia americana (M. Howe) M. Howe = **Riccia lamellosa** Raddi.

Riccia andina Müll. Frib. = **Riccia mauryana** Steph.

"*Riccia andina* Müll. Frib. subsp. *chionophora* R. M. Schust.," J. Hattori Bot. Lab. 71: 275. 1992, nom. inval.

This subspecies was not validly published because the herbarium for type deposition was not specified (McNeill et al., 2012: Art. 40.7).

Riccia atromarginata Levier, Nuovo Giorn. Bot. Ital. 21: 291. 1889.

Distribution. This species is known from Texas in North America; it also occurs in Mexico and is widespread in Mediterranean Europe and Southwest Asia.

Riccia atromarginata Levier subsp. *iodocheila* (M. Howe) R. M. Schust. ≡ **Riccia iodocheila** M. Howe.

Riccia austinii Steph., as "*austini*" = **Riccia lamellosa** Raddi.

Riccia beyrichiana Hampe ex Lehm., Nov. Stirp. Pug. 7: 1. 1838.

The correct author citation is Hampe ex Lehm. because although Lehmann ascribed the name to "Hampe mss," the species was actually described by Lehmann. *Riccia lesquereuxii* Steph. [sic], listed as a synonym of *R. beyrichiana* Hampe ex Lehm. by Schuster (1992b: 660), is considered an orthographic variant of *R. lescuriana* Austin and hence not validly published (McNeill et al., 2012: Art. 61.1).

Distribution. This species is widespread in North America from Greenland to British Columbia and throughout the United States; it is also widespread in Europe and northern Africa.

Riccia bifurca Hoffm., Deutschl. Fl. 2: 95. 1795 [1796].

Distribution. This species is found in eastern North America from Quebec and Ontario to North Carolina and west to Wisconsin and Texas; it is also found throughout Europe.

Riccia californica Austin, Bull. Torrey Bot. Club 6: 46. 1875.

Distribution. This species is found in Oregon, California, and Texas.

Riccia campbelliana M. Howe, Mem. Torrey Bot. Club 7: 26. 1899.

Distribution. This species is found in California and the southeastern United States from Kansas and Texas to Georgia; it is also in the Neotropics from Mexico to Brazil, South Africa, central Asia, and western Siberia.

Riccia canaliculata Hoffm., Deutschl. Fl. 2: 96. 1795 [1796].

Although Schuster (1992b: 461) cited *Riccia perennis* Steph. [≡ *Riccinia perennis* (Steph.) Trab.] as a synonym of *Riccia canaliculata*, according to Jovet-Ast (1994: 83) *Riccia perennis* is a distinct Mediterranean endemic species.

Distribution. This Holarctic species is found in North America and Europe, for which Schuster (1992b: 463) stated the North American distribution remained problematic.

Riccia canescens Steph. = **Riccia crinita** Taylor.

Riccia cavernosa Hoffm., Deutschl. Fl. 2: 95. 1795 [1796].

Earlier reports of *Riccia crystallina* L. in our flora belong to this species. See the discussion under *R. crystallina*.

Distribution. This species is widespread throughout North America; it is also found in Latin America, Europe, Africa, Asia, and Australia.

Riccia ciliata Hoffm. subsp. **ciliata.** —EXCLUDED.

Schuster (1992b: 700) restricted *Riccia ciliata* subsp. *ciliata* to "Europe–North Africa." Therefore, *R. ciliata* s. str. is excluded from our flora. For further discussion of this species, see *R. crinita*.

Riccia ciliata Hoffm. subsp. *canescens* (Steph.) R. M. Schust. = **Riccia crinita** Taylor.

"*Riccia ciliata* Hoffm. subsp. *grisea* R. M. Schust.," J. Hattori Bot. Lab. 71: 276. 1992, nom. inval. (McNeill et al., 2012 Art. 40.7) = **Riccia crinita** Taylor.

Riccia ciliata Hoffm. subsp. *trichocarpa* (M. Howe) R. M. Schust. = **Riccia crinita** Taylor.

Riccia crinita Taylor, London J. Bot. 5: 414. 1846. = *Riccia trichocarpa* M. Howe, Bull. Torrey Bot. Club 25: 184. 1898 (syn. fide Jovet-Ast, 2000: 306). = *Riccia ciliata* Hoffm. subsp. *trichocarpa* (M. Howe) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 703. 1992 (syn. fide Jovet-Ast, 2000: 307). = *Riccia canescens* Steph., Bull. Herb. Boissier 6: 320. 1898 (syn. fide Jovet-Ast, 2000: 306). = *Riccia ciliata* Hoffm. subsp. *canescens* (Steph.)

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 700. 1992 (syn. fide Jovet-Ast, 2000: 307).

Damsholt (1989: 191) stated that "*R. trichocarpa* should probably be considered a synonym of *R. ciliata*" and that *Riccia canescens* Steph. was also conspecific. His SEM micrographs of *R. ciliata* spores from the lectotype, however, are different from the SEM micrographs of *R. trichocarpa* spores published by Steinkamp and Doyle (1979), suggesting that the North American taxon is not *R. ciliata*. Schuster (1992b) treated *R. trichocarpa* and *R. canescens* as new subspecies of *R. ciliata* along with "*R. ciliata* subsp. *grisea* R. M. Schust.," nom. inval. (Schuster, 1992c). Study of the type specimens of *R. ciliata* and *R. trichocarpa* by Jovet-Ast (1994: 82), however, prompted the following: "les sous-espèces établies par Schuster sont à rejeter. Deux espèces bien distinctes existent: *R. ciliata* et *R. trichocarpa* (= *R. canescens*)." Later, Jovet-Ast (2000: 289) reduced *R. trichocarpa* and the subspecies of *R. ciliata* named by Schuster to *R. crinita*. Unfortunately, *R. trichocarpa* still appears as an accepted species name in her treatment for *Flora Neotropica* (Jovet-Ast, 2005), but as noted on page 25, this treatment was compiled from a translation of papers done by Jovet-Ast in 1991 and 1993.

Distribution. This species is from Oregon south to Mexico, and in central North America from Minnesota to Texas; it is also reported from Australia.

Riccia crystallina auct. pl. non L. = **Riccia cavernosa** Hoffm.

Riccia crystallina L., Sp. Pl. 2: 1138. 1753.

Jovet-Ast (1965) showed that almost every report of this species in the literature is actually *Riccia cavernosa* Hoffm., including all of the reports from North America. However, actual *R. crystallina* has recently been verified to occur in our flora (Stotler & Doyle, 2004).

Distribution. This species is confirmed in North America only from California (Stotler & Doyle, 2004), although Schuster wrote, "Since typesetting of this account I have collected *R. crystallina* in Pima Co., Arizona" (1992b: 496). However, this report has not been verified. The species is found elsewhere in the Mediterranean areas of Europe, northern Africa, and the Middle East.

Riccia curtisii (Austin) Austin, Bull. Torrey Bot. Club 6: 305. 1879. Basionym: *Cryptocarpus curtisii* Austin in Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 231. 1869.

The name *Riccia curtisii* has consistently appeared with an incorrect author citation, namely, *R. curtisii* (Austin) James, e.g., in Stotler and Crandall-Stotler (1977: 417) and in Schuster (1992b: 509). According to the ICN (McNeill et al., 2012: Article 36.1c), the correct citation for this binomial is *R. curtisii* (Austin) Austin.

Distribution. This species is found in the southeastern United States from North Carolina to Florida and west to Arkansas and Texas; it is also found in Argentina and Brazil in South America and in South Africa.

Riccia dictyospora M. Howe, Bull. Torrey Bot. Club 28: 163. 1900.

Distribution. This species is found in the eastern United States from Minnesota to Connecticut and south to Texas and Georgia.

Riccia donnellii Austin = **Riccia gougetiana** Durieu & Mont.

Riccia dorsiverrucosa Hässel = **Riccia mauryana** Steph.

Riccia duplex Lorb. ex Müll. Frib., Hedwigia 80: 100. 1941. —EXCLUDED.

To date, *Riccia duplex* has not been reported from North America; see discussion under *R. fluitans*.

Riccia eldeeniae D. L. Jacobs = **Riccia warnstorfii** Limpr. ex Warnst.

Riccia fluitans auct. non L. = **Riccia rhenana** Lorb. ex Müll. Frib.

Riccia fluitans L., Sp. Pl. 2: 1139. 1753.

Notwithstanding the classic study by Berrie (1964) that showed *Riccia rhenana* to be a diploid phase of *R. fluitans* and *R. duplex* likely to represent a diploid phase of *R. canaliculata*, the general consensus among bryologists has been to recognize these as four discrete species. Although we (Stotler & Crandall-Stotler, 1977) listed *R. duplex* as a synonym of *R. canaliculata* and *R. rhenana* a synonym of *R. fluitans*, we now follow Schuster (1992b: 478) and Söderström et al. (2016) in recognizing these as accepted species. The complex, including a fifth taxon, *R. stenophylla*, remains a puzzle, as Schuster (1992b: 485) pointed out: "A solution as to the perimeters of 'species' in this complex is thus very far away—if, indeed, possible." The *R. fluitans* species concept should, then, be considered quite tentative until the "biology" of these entities is unraveled with molecular studies.

Distribution. This widespread Holarctic species is found in North America, Europe, and Asia.

Riccia frostii Austin, Bull. Torrey Bot. Club 6: 17. 1875.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is very widespread in the United States and in central and southern Europe, Saharan Africa, India, and Asia, but in Latin America it has been found only in Mexico, Argentina, and Uruguay according to Jovet-Ast (2005: 101).

Riccia glauca L., Sp. Pl. 2: 1139. 1753, var. **glauca**.

Distribution. This cosmopolitan species is found in the western United States from Alaska to California and east to Wyoming, Missouri, and Texas; it is also in Latin America, Europe, Africa, and Asia.

Riccia glauca var. **ciliaris** Warnst., Verh. Bot. Vereins Prov. Brandenburg 27: 87. 1885.

Distribution. This variety is reported from Oregon, California, and Arizona to Missouri, throughout Europe, northern Africa, and Asia Minor.

Riccia gougetiana Durieu & Mont., Ann. Sci. Nat., Bot., Sér. 3, 11: 35. 1849. = *Riccia donnellii* Austin, Bull. Torrey Bot. Club 6: 157. 1877 (syn. fide Schuster, 1992b: 689).

Distribution. This widespread Mediterranean species, which Schuster (1992b: 689) regarded as rare in North America, is reported from Texas, Florida, Georgia, and North Carolina. Most North American reports are based upon specimens reported as *Riccia donnellii*.

Riccia hirta (Austin) Underw., Bot. Gaz. 19: 274. 1894. Basionym: *Riccia arvensis* var. *hirta* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 232. 1869.

Distribution. This species is known in eastern North America from New England south to Florida and west to southern Minnesota, Kansas and Nebraska, and in the west from Texas to California.

"*Riccia howei* R. M. Schust.," J. Hattori Bot. Lab. 71: 271. 1992, nom. inval.

This name was not validly published because the herbarium of the type specimen deposit was not specified as per Article 40.7 of the ICN (McNeill et al., 2012). In addition to being not validly published, Jovet-Ast (1993: 223) pointed out that "Schuster semble douter de la valeur de son espèce puisqu'il écrit: 'until fresh material of this species is gathered, a comprehensive diagnosis cannot be prepared.'"

Riccia huebeneriana Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18: 504d. 1836 [1837], subsp. **sullivantii** (Austin) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 457. 1992. Basionym: *Riccia sullivantii* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 233. 1869.

Although the date of publication of the basionym, *Riccia sullivantii*, is cited as 1869 "1870" in most publications, Stafleu and Mennega (1992) pointed out that the date on reprints is December 1869 and that the publication is to be cited as such. Jovet-Ast (2005: 253) referred to *R. sullivantii* as a "synonym or a subspecies" of *R. huebeneriana* but made no formal taxonomic change. *Riccia huebeneriana* Lindenb. subsp. *huebeneriana* is found in northern Europe.

Distribution. This subspecies is found in eastern North America, from Quebec and Ontario south to Florida and west to Kansas and Texas.

Riccia iodocheila M. Howe, Proc. Calif. Acad. Sci., Ser. 4, 21: 200. 1934. ≡ *Riccia atromarginata* Levier subsp. *iodocheila* (M. Howe) R. M. Schust., Hepat. Anthocerotae N. Amer. 6: 623. 1992.

Distribution. This species is known from Texas and California; it is also found in western Latin America from Mexico to Argentina and the Galápagos Islands. Material identical to the type of *Riccia iodocheila* has been seen by R. McGregor (pers. comm.) from the Edwards Plateau of Texas and western Mexico.

Riccia lamellosa Raddi, Opusc. Sci. 2: 351. 1818. = *Riccia austinii* Steph., as "*austini*," Bull. Herb. Boissier 6: 336. 1898 (syn. fide Jovet-Ast, 1986: 312). = *Riccia lamellosa* Raddi var. *americana* M. Howe, Bull. Torrey Bot. Club 25: 189. 1898 (syn. fide Jovet-Ast, 1986: 312). ≡ *Riccia americana* (M. Howe) M. Howe, Mem. Torrey Bot. Club 7: 24. 1899.

Distribution. This species is common from Ontario to Minnesota, south to Texas and Georgia; it is also in California. In Europe this is a typical Mediterranean species.

Riccia lamellosa Raddi var. *americana* M. Howe = **Riccia lamellosa** Raddi.

Riccia leptothallus R. M. Schust., J. Hattori Bot. Lab. 71: 271. 1992.

Distribution. This species is known only from Florida and Texas.

Riccia lutescens Schwein. = **Ricciocarpos natans** (L.) Corda.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Riccia macallisteri M. Howe, Bryologist 20: 35. 1917.

The original spelling "*McAllisteri*" for this species epithet by Howe has been corrected to "*macallisteri*" in keeping with Recommendation 60C.5(a) of the ICN (McNeill et al., 2012), which states that the Scottish patronymic prefix "Mc" should be spelled "mac." McGregor (1955: 106) reduced *Riccia macallisteri* to *R. dictyospora*, but we follow Schuster (1992b: 558) and Söderström et al. (2016) and recognize it as a distinct species.

Distribution. This species is found in the central United States from Minnesota south to Texas.

Riccia mauryana Steph., Bull. Herb. Boissier 6: 327. 1898. = *Riccia andina* Müll. Frib., Feddes Repert. Spec. Nov. Regni Veg. 58: 65. 1955 (syn. fide Jovet-Ast, 2005: 63). = *Riccia dorsiverrucosa* Hässel, Opera Lilloana 7: 261. 1962 [1963] (syn. fide Jovet-Ast, 2005: 63).

Whether this species occurs in North America is problematic. Schuster (1992b: 555) stated that *Riccia andina*, "known only from Argentina and Texas," is "perhaps a dwarfed alpine phase of *R. lamellosa*"; at the same time, he considered the Texas specimens to be a distinct subspecies (*R. andina* subsp. *chionophora* R. M. Schust., nom. inval.), which was never validly published. Jovet-Ast (1994) disagreed with this hypothesis and, after studying the type, concluded that *R. andina* is a synonym of *R. mauryana*. In 2005 (Jovet-Ast, 2005: 63), the distribution of *R. mauryana* was reported to include Texas, Mexico, Brazil, and Argentina. We follow this treatment by Jovet-Ast (1994, 2005) and add this species to the North American flora.

Distribution. This species is reported from Texas; and from Mexico south to Argentina and Brazil.

Riccia membranacea Gottsche & Lindenb. in Gottsche, Lindenberg & Nees, Syn. Hepat.: 608. 1846.

Distribution. This species is found in the eastern United States west to Oklahoma and Texas; it is also in Mexico, South America, and tropical Africa.

Riccia nigrella DC., Fl. Franç. (ed. 3, tome 5) 6: 193. 1815.

Distribution. This species is found in California, Arizona, and Texas; it is also known from southern Europe, northern Africa, southern Africa, southwest Asia, and Australia.

Riccia ozarkiana McGregor, Bryologist 63: 30. 1960.

Distribution. This species is an endemic known only from Kansas, Missouri, and Arkansas.

Riccia rhenana Lorb. ex Müll. Frib., Hedwigia 80: 94. 1941.

Distribution. This species is often confused with *Riccia fluitans*; it is known from Arizona and California, north to British Columbia, and is widely scattered in eastern North America. It is also widespread in Europe, from Great Britain to Russia and the Balkans.

"*Riccia setigera* R. M. Schust.," J. Hattori Bot. Lab. 71: 273. 1992, nom. inval. (McNeill et al., 2012: Art. 40.7).

Riccia sorocarpa Bisch., Nov. Actorum Acad. Caes. Leop.-Carol. German. Nat. Cur. 17: 1053. 1835.

Jovet-Ast (1994) gave a detailed discussion on the extensive variability that she observed in *Riccia sorocarpa* populations, concluding that "les sous-espèces reconnues par Schuster me semblent donc à rejeter." In addition, Jovet-Ast (2005: 73) stated that she did not think that the characteristics used to distinguish *R. sorocarpa* Bisch. subsp. *erythrophora* R. M. Schust. deserved taxonomic status nor did *R. sorocarpa* Bisch. subsp. *arctica* R. M. Schust. (Jovet-Ast, 1994: 84), but she did not formally reduce those subspecies. This, of course, becomes a moot point because neither of those subspecies names were validly published, because no location of the place of conservation of the type was indicated (McNeill et. al., 2012: Art. 40.7).

Distribution. This species is widespread throughout North America from northwestern Greenland to the western United States and south to Florida and Texas; it is also common from western Latin America and is widely distributed in Europe from Scandinavia to the Mediterranean, southern Africa, Asia, Australia, and New Zealand.

"*Riccia sorocarpa* Bisch. subsp. *arctica* R. M. Schust.," J. Hattori Bot. Lab. 71: 274. 1992, nom. inval. (McNeill et al., 2012: Art. 40.7).

"*Riccia sorocarpa* Bisch. subsp. *erythrophora* R. M. Schust.," J. Hattori Bot. Lab. 71: 274. 1992, nom. inval. (McNeill et al., 2012: Art. 40.7).

Riccia stenophylla Spruce, Bull. Soc. Bot. France 36 (suppl.): 195. 1889 [1890].

The status and affinities of this species are equivocal, but it appears to be closely related to other species of the *Riccia fluitans* complex.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found in the southern United States from North Carolina and Florida to Texas; it is also known throughout the Neotropics and from Mexico.

Riccia sullivantii Austin ≡ **Riccia huebeneriana** Lindenb. subsp. **sullivantii** (Austin) R. M. Schust.

Riccia tenella D. L. Jacobs, Bryologist 52: 168. 1949.

Distribution. This species is known only from Kansas, Texas, and Georgia.

Riccia trichocarpa M. Howe = **Riccia crinita** Taylor.

Riccia violacea M. Howe, Ann. Missouri Bot. Gard. 2: 51. 1915.

This species was reported from Santa Catalina Island by Steere (1954), who acknowledged R. L. McGregor for verifying its identity. In his keys, Schuster (1992b: 611) reported *Riccia violacea* from West Texas, but in his discussion that follows the key, he (Schuster, 1992b: 614) concludes that these North American specimens should be referred to *R. iodocheila*. Several pages later he (Schuster, 1992b: 621) includes *R. violacea* in "provisional new synonymy" under *R. atromarginata*. Jovet-Ast (2005: 83) rejected Schuster's reduction and pointed out that *R. violacea* is related to but distinct from *R. atromarginata*. Although the identity of the West Texas specimen has not been confirmed, R. McGregor (pers. comm.) has seen characteristic material of *R. violacea* from California to Texas, south into Mexico.

Distribution. This species is likely in West Texas and California; it is common in Mexico, the West Indies, Central America, and South America.

"*Riccia violacea* M. Howe var. *iodocheila* (M. Howe) R. M. Schust.," Hepat. Anthocerotae N. Amer. 6: 611. 1992, nom. inval. (McNeill et al., 2012: Art. 41.5).

Riccia warnstorfii Limpr. ex Warnst., Verh. Bot. Vereins Prov. Brandenburg 27: 11, 85. 1885. = *Riccia eldeeniae* D. L. Jacobs, Bryologist 52: 169. 1949 [1950] (syn. fide Schuster, 1992b: 648).

McGregor (1955: 113) regarded *Riccia eldeeniae* as an ecological variant of *R. hirta*, and Dewey (1988: 350) also aligned it with *R. hirta*. Schuster, however, saw a closer relationship with *R. warnstorfii*, which we follow here. It may well be, though, that the reduction to *R. hirta* will prove to be correct.

Distribution. This species is reported from Georgia and Mississippi; it is also known from southern Europe and northern Africa. [13. RICCIACEAE.]

Ricciocarpos Corda, Naturalientausch 12: 651. 1829.

Corda (1829) spelled his new genus *Ricciocarpos* with an "os" ending from the Greek "carpos" (χαρποσ), meaning "fruit." The Latinized orthographic variant *Ricciocarpus* by Dumortier (1874), unfortunately maintained by Schuster (1992b: 413) and many others, is incorrect.

Ricciocarpos is a monospecific genus.

Ricciocarpos natans (L.) Corda, Naturalientausch 12: 651. 1829. Basionym: *Riccia natans* L., Syst. Nat. (ed. 10) 2: 1339. 1759. = *Riccia lutescens* Schwein., Spec. Fl. Amer. Sept. Crypt.: 26. 1821, syn. nov.

Schuster (1992b: 415) listed *Riccia lutescens* as a questionable synonym of *Ricciocarpos natans*, and Müller (1952: 416) had earlier associated *Riccia lutescens* with "*Ricciocarpos natans* (L.) Corda var. *decipiens* Schiffn." (Krit. Bemerk. Eur. Leberm. 24: 10. 1939, nom. inval. [McNeill et al., 2012: Art. 39.1]), which he synonymized with *Riccia rhenana*. We have studied the original material of *R. lutescens* in the Schweinitz herbarium (PH) and a duplicate fragment in the Sullivant herbarium (FH) and can confirm that *Riccia lutescens* is indeed the terrestrial form of *Ricciocarpos natans*. (To facilitate studies by future researchers, *Riccia lutescens* Schwein. is herein typified as follows: specimen labeled, *Riccia lutescens* Nobis, Salem, N.C., *Schweinitz s.n.*; lectotype, designated here, PH-096627!; Sullivant book of fragments from the Schweinitz herbarium, Fragment No. 82, Riccia lutescens; isolectotype, FH!).

Distribution. This species is widespread in North America south of the Arctic zone; it is also found in Latin America and throughout Europe, Asia, Africa, Australia, and New Zealand.

Riella Mont., Ann. Sci. Nat. Bot., sér. 3, 18: 11. 1852, nom. nov. for *Duriaea* Bory & Mont. (Compt. Rend. Hebd. Séances Acad. Sci. 16: 1115. 1843), non *Durieua* Mérat (Mém. Roy. Sci. Soc. Lille 1827–1829: 432. 1829). TYPE: *Riella helicophylla* (Bory & Mont.) Mont., Ann. Sci. Nat. Bot., sér. 3, 18: 12. 1852. Basionym: *Duriaea helicophylla* Bory & Mont., Compt. Rend. Hebd. Séances Acad. Sci. 16: 1114, 1116. 1843. [5. RIELLACEAE.]

Riella is a genus of 19 species, two of which occur in North America.

Riella affinis M. Howe & Underw., Bull. Torrey Bot. Club 30: 221. 1903. = *Riella heliospora* Segarra, Puche & Sabovlj., Syst. Bot. 37: 315. 2012, syn. nov.

We do not accept the segregation of the two known populations of *Riella affinis* from California by Segarra Moragues et al. (2012) into a new species, based on the slight differences in spore morphologies that they cite.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

In fact, a comparison of their spore micrographs shows that in both taxa the spores are more or less triangular in outline and lack a distinct triradiate ridge on the proximal surface. In light of their close morphological relationship, species-level separation should await molecular evidence, especially since the California populations have been found only in man-made habitats.

Distribution. This species is found in two localities in California; it is otherwise known from the Canary Islands, the Mediterranean region of Europe and northern Africa, and South Africa.

Riella americana M. Howe & Underw., Bull. Torrey Bot. Club 30: 218. 1903.

Distribution. This species is known from Texas, New Mexico, South Dakota, and California in North America; it is also found in Mexico and South America.

Riella heliospora Segarra, Puche & Sabovlj.= **Riella affinis** M. Howe & Underw.

Rivulariella D. H. Wagner, Phytoneuron 2013(10): 2. 9 Feb. 2013. TYPE: *Rivulariella gemmipara* (A. Evans) D. H. Wagner, Phytoneuron 2013 (10): 2. 2013. Basionym: *Chiloscyphus gemmiparus* A. Evans, Bryologist 41: 50. 1938. [34. ANASTROPHYLLACEAE.]

When named, this genus was placed in the Jungermanniaceae (Wagner, 2013:1), but in the molecular analyses of Patzak et al. (2016), it shows no relationship to the Jungermanniaceae but rather forms a lineage that is sister to the Anastrophyllaceae, albeit with weak support. On the basis of this evidence, we herein transfer *Rivulariella* to the Anastrophyllaceae.

Rivulariella is a monospecific genus.

Rivulariella gemmipara (A. Evans) D. H. Wagner, Phytoneuron 2013(10): 2. 2013. Basionym: *Chiloscyphus gemmiparus* A. Evans, Bryologist 41: 50. 1938.

Although Christy and Wagner (1996: part V: 12) refer to five localities for this rare taxon described from Utah, they do not provide specimen information. However, several specimens were cited by Wagner (2013: 3) from Alaska, Oregon, and California. The taxon was not treated by Doyle and Stotler (2006) or by Hong (1993).

Distribution. This species is found in Alaska, Oregon, California, and Utah.

Saccobasis H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 291. 1932 [1933]. TYPE: *Saccobasis polita* (Nees) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 291. 1932 [1933]. Basionym: *Jungermannia polita* Nees, Naturgesch. Eur. Leberm. 2: 9. 1836. [36. SCAPANIACEAE.]

Prior to the molecular studies of Vilnet et al. (2010), *Saccobasis* was generally regarded as a subgenus of *Tritomaria* (e.g., Schuster, 1969: 693; Stotler & Crandall-Stotler, 1977; Grolle & Long, 2000). The molecular analyses of Vilnet et al. (2010, 2012), however, strongly support the recognition of *Saccobasis* as a genus.

Saccobasis is a genus with two species, both of which occur in our area.

Saccobasis polita (Nees) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 291. 1932 [1933], subsp. **polita**. Basionym: *Jungermannia polita* Nees, Naturgesch. Eur. Leberm. 2: 9. 1836. ≡ *Tritomaria polita* (Nees) Jørg., Bergens Mus. Arbok 7: 4. 1921.

Distribution. This species is found in Alaska, the Yukon, and British Columbia in the west, and from Greenland and Nunavut south to Quebec in the east. It is also in Great Britain and in northern to central Europe, especially in montane habitats.

Saccobasis polymorpha (R. M. Schust.) Schljakov, Novosti Sist. Nizsh. Rast. 16: 205. 1979. Basionym: *Tritomaria polita* (Nees) Jørg. subsp. *polymorpha* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 700. 1969. ≡ *Tritomaria polymorpha* (R. M. Schust.) Grolle, J. Bryol. 12: 430. 1983.

Although Grolle and Long (2000: 118) synonymized this taxon with *Saccobasis polita*, it is still recognized as a distinct species by Söderström et al. (2016).

Distribution. This species is reported from Greenland and Quebec; it is also known from northern Russia and the Chukotka Peninsula in Asia.

Sauteria Nees, Naturgesch. Eur. Leberm. 4: 139. Sep. 1838. TYPE: *Sauteria alpina* (Nees) Nees, Naturgesch. Eur. Leberm. 4: 143. 1838. Basionym: *Lunularia alpina* Nees in Nees & Bischoff, Flora 13: 339. 1830. [9. CLEVEACEAE.]

Sauteria is a genus of two species, one of which occurs in North America.

Sauteria alpina (Nees) Nees, Naturgesch. Eur. Leberm. 4: 143. 1838. Basionym: *Lunularia alpina* Nees, Flora 13: 339. 1830.

Distribution. This arctic-alpine taxon is found from Alaska to British Columbia in the west, and Greenland and Ellesmere Island to Quebec in the east. It is also known from Scandinavia and the montane areas of central Europe, northern Asia, the Himalayas, and Japan.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Scapania (Dumort.) Dumort., Recueil Observ. Jungerm.: 14. 1835, nom. et type cons. Basionym: *Radula* sect. *Scapania* Dumort., Syll. Jungerm. Europ.: 38. 1831. TYPE: *Scapania undulata* (L.) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia undulata* L., Sp. Pl. 2: 1132. 1753. [36. SCAPANIACEAE.]

Scapania is a genus of approximately 85 species, with 44 found in North America.

Scapania aequiloba (Schwägr.) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia aequiloba* Schwägr., Hist. Musc. Hepat. Prodr.: 24. 1814. —EXCLUDED.

It is very doubtful that the European *Scapania aequiloba* (Schwägr.) Dumort. occurs in our flora, although it is treated briefly in Schuster (1974: 612) based upon unconfirmed reports from Arctic eastern North America.

Distribution. This species is found in northern and central Europe.

Scapania americana Müll. Frib., Bull. Herb. Boissier, sér. 2, 3: 44. 1903.

Distribution. This species is endemic to western North America; it is found from Alaska to the Northwest Territories, south to California and east to Montana.

Scapania apiculata Spruce, Hep. Pyren. [Exsicc.] n. 15. 1847.

This Spruce exsiccatae was published in parts (Ann. Mag. Nat. Hist., Ser. 2, 3: 81–106, 269–293, 358–380, 478–503, t. 3; Ser. 4: 104–120) in 1849, but it was distributed in 1847.

Distribution. In our flora, this Holarctic species is found from Alaska to British Columbia and New Mexico, east to Manitoba and Quebec, and south into New England and New York; it is also in central Europe and Japan.

Scapania aspera M. Bernet & Bernet, Cat. hép. Suisse: 42. 1888. —EXCLUDED.

The reports of this species in our flora by Polunin (1947: 509) and Brinkman (1934) are considered erroneous (Schuster, 1974: 612; Hong, 1980: 58).

Scapania bolanderi Austin, Proc. Acad. Nat. Sci. Philadelphia 1869: 281. 1869.

Distribution. This species is found in Alaska south to California and east to Idaho; it is also reported from Japan.

Scapania brevicaulis Taylor, London J. Bot. 5: 272. 1846.

Distribution. This arctic-alpine species is reported from Greenland and Labrador south to Quebec and Minnesota, and from Alaska to Manitoba; it also occurs in Great Britain, montane areas of central Europe, and Asiatic Siberia.

Scapania calcicola (Arnell & J. Perss.) Ingham, Naturalist (Hull) 1904: 11. 1904. Basionym: *Martinellius calcicola* Arnell & J. Perss., Rev. Bryol. 30: 97. 1903.

Distribution. In North America this species is confirmed only in Newfoundland (Schuster, 1974: 317); elsewhere it is found throughout central and northern Europe.

Scapania calcicola (Arnell & J. Perss.) Ingham var. *ligulifolia* R. M. Schust. = **Scapania ligulifolia** R. M. Schust.

Scapania calcicola (Arnell & J. Perss.) Ingham subsp. *ligulifolia* (R. M. Schust.) Damsh. & D. G. Long ≡ **Scapania ligulifolia** R. M. Schust.

Scapania calciphila R. M. Schust. = **Scapania glaucocephala** (Taylor) Austin var. **glaucocephala.**

Scapania carinthiaca J. B. Jack ex Lindb., Rev. Bryol. 7: 77. 1880. = *Scapania massalongoi* (Müll. Frib.) Müll. Frib., Beih. Bot. Centralbl. 11: 3. 1901, as "*massalongi*" (syn. fide Potemkin, 1999a: 36, as "*S. massalongii*"). Basionym: *Scapania carinthiaca* J. B. Jack ex Lindb. var. *massalongoi* Müll. Frib., Bull. Herb. Boissier, sér. 2, 1: 598. 1901, as "*massalongi*."

Distribution. This species is found in Alaska, Newfoundland, and Nova Scotia, south and west to Quebec, Wisconsin, and Minnesota; it is rare in Europe and Siberia.

Scapania compacta (Roth) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia compacta* Roth, Tent. Fl. Germ. 3: 375. 1800.

According to Schuster (1974: 523), reports of this taxon from Greenland and Hudson Bay were based on misidentifications. However, Potemkin (1995: 331) has verified the occurrence of this taxon in Alaska.

Distribution. This species is found in Alaska; it is otherwise found in Great Britain and oceanic areas of southern Europe.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Scapania crassiretis Bryhn, Rev. Bryol. 19: 7. 1892. ≡ *Scapania nemorea* (L.) Grolle subsp. *crassiretis* (Bryhn) Potemkin, J. Hattori Bot. Lab. 77: 277. 1994.

The DNA sequence differences shown by Heinrichs et al. (2012: 983) support the recognition of *Scapania nemorea* and *S. crassiretis* as distinct species.

Distribution. This arctic species is known from Alaska, the Northwest Territories, Greenland, and Quebec. It is also in northern Europe and Siberia.

Scapania curta (Mart.) Dumort., Recueil Observ. Jungerm. 14. 1835, var. **curta**. Basionym: *Jungermannia curta* Mart., Fl. Crypt. Erlang.: 148. 1817.

Distribution. This circumboreal species is found from Greenland to Alaska, south to California, Utah, and Wisconsin, and east to New York and New England; it is common in northern and central Europe and Asia.

Scapania curta (Mart.) Dumort. var. **grandiretis** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 393. 1974. = *Scapania perssonii* R. M. Schust., Bryologist 76: 573. 1973 (syn. fide Potemkin, 1999a: 34).

Distribution. This variety is known only from Greenland and Alaska in North America; it is also reported from Russia.

Scapania curta (Mart.) Dumort. var. **isoloba** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 396. 1974.

Distribution. This variety is known only from Greenland and Alaska.

Scapania cuspiduligera (Nees) Müll. Frib., Lebermoose 2: 472. 1915, var. **cuspiduligera**. Basionym: *Jungermannia cuspiduligera* Nees, Naturgesch. Eur. Leberm. 1: 180. 1833.

Distribution. This variety is found from Greenland to Nova Scotia and Quebec, south and west to Vermont, Wisconsin, and Minnesota, the higher altitudes of New Mexico and Colorado, and from California north to Alaska. It is also found in Europe, Siberia, and Japan.

Scapania cuspiduligera (Nees) Müll. Frib. var. **diplophyllopsis** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 361. 1974.

Distribution. This variety is known only from Greenland and Alaska; it is also in Siberia.

Scapania degenii Schiffn. ex Müll. Frib., Lebermoose: 497. 1915, var. **degenii**.

Potemkin (1999a: 35) reduced *Scapania degenii* to *S. brevicaulis* Taylor, but we follow Konstantinova et al. (2009: 30) and recognize it as a distinct species.

Distribution. This species is found from Alaska to Alberta, Manitoba, Montana, and Colorado in the west, and Minnesota to Ontario, Quebec, and Greenland in the east; it is also found in northern Europe.

Scapania degenii var. **dubia** R. M. Schust., Amer. Midl. Naturalist 49: 475. 1953.

Distribution. This variety is known only from Alaska, Greenland, and Minnesota.

Scapania fulfordiae W. S. Hong, Bryologist 83: 46. 1980.

Distribution. This species is known only from Wyoming and Colorado.

Scapania glaucocephala (Taylor) Austin, Bull. Torrey Bot. Club 6: 85. 1876, var. **glaucocephala**. Basionym: *Jungermannia glaucocephala* Taylor, London J. Bot. 5: 277. 1846. = *Scapania calcicola* R. M. Schust., Phytologia 45: 422. 1980 (syn. fide Potemkin, 2002: 330). = *Scapania vexata* C. Massal., Malpighia 16: 37. 1903, nom. illeg. (syn. fide Damsholt, 2002: 316). = *Scapania scapanioides* (C. Massal.) Grolle, Red. Rept. 87: 235. 1976 (syn. fide Damsholt, 2002: 316). Basionym: *Jungermannia scapanioides* C. Massal., Atti Soc. Venet.-Trent. Sci. Nat. 6: 154. 1879.

Distribution. This species is of rare occurrence from British Columbia and Manitoba to Washington and Montana and from Michigan, New Jersey, and north to Quebec and Greenland. It is also known from central and eastern Europe and Siberia. According to Doyle and Stotler (2006: 180), reports of this species from California are in error.

Scapania glaucocephala var. **saxicola** (R. M. Schust.) Potemkin, Bryologist 102: 36. 1999. Basionym: *Scapania saxicola* R. M. Schust., Amer. Midl. Naturalist 49: 448. 1953.

Distribution. This variety is found in Michigan, Wisconsin, and Minnesota.

Scapania gymnostomophila Kaal., Bot. Not. 1896: 21. 1896.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found from Alaska south to British Columbia, Idaho, and Montana, east to Minnesota, New York, and New England, and north to Quebec, Newfoundland, and Greenland. It is also found in Great Britain, Scandinavia, and central Europe east to Siberia.

Scapania helvetica Gottsche, Hepat. Eur., Leberm. Exsicc. n. 426. 1868.

Although Schuster (1974) expressed doubt that this species occurs in North America, Potemkin (2015) has included it in the flora, albeit with some reservations.

Distribution. This species is reported from British Columbia and by Schuster (1974: 457) from Wisconsin; it is otherwise known from alpine to subalpine regions of central Europe.

Scapania hians Steph. ex Müll. Frib., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 83: 223. 1905, subsp. **salishensis** J. D. Godfrey & G. Godfrey, Bryologist 81: 362. 1978.

Scapania hians subsp. *hians* is found only in China and Nepal.

Distribution. This subspecies is known only from British Columbia.

Scapania hollandiae W. S. Hong, Bryologist 83: 56. 1980.

Distribution. This species is known from British Columbia, Washington, and Wyoming.

Scapania hyperborea Jørg., Forh. Vidensk.-Selsk. Kristiania 1894: 56. 1894.

Distribution. This species is found in Alaska to Ellesmere Island and Greenland, south to Ontario, Maine, and New Hampshire, as well as high elevations in Colorado. It is also known from Iceland, northern Europe, and Asia.

Scapania imbricata M. Howe ≡ **Douinia imbricata** (M. Howe) Konstant. & Vilnet.

Scapania invisa R. M. Schust. = **Scapania zemliae** S. W. Arnell.

Scapania irrigua (Nees) Nees in Gottsche, Lindenberg & Nees, Syn. Hepat.: 67. 1844, subsp. **irrigua**. Basionym: *Jungermannia irrigua* Nees, Naturgesch. Eur. Leberm. 1: 175. 1833.

Heinrichs et al. (2012: 983) showed *Scapania irrigua* to be paraphyletic and suggested that it contains cryptic species.

Distribution. This species is widespread from Alaska south to California and New Mexico, east to Wyoming, Colorado, and Minnesota, and north to Quebec, Newfoundland, and Greenland; it is common in northern and central Europe into Siberia and Japan.

Scapania irrigua subsp. **rufescens** (Loeske) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 471. 1974. Basionym: *Scapania irrigua* (Nees) Nees f. *rufescens* Loeske, Moosfl. Harz.: 71. 1903.

Distribution. This subspecies is reported from Alaska, Greenland, Quebec, and Minnesota; it is also found in montane regions of central Europe.

Scapania kaurinii Ryan, Bot. Not. 1889: 210. 1889.

Distribution. This subspecies is known from Alaska, British Columbia, Northwest Territories, Ellesmere Island, and Greenland; in Europe, it is found from the Caucasus Mountains and Scandinavia, and in Asia from northern Russia.

Scapania ligulifolia R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 306. 1974. ≡ *Scapania calcicola* (Arnell & J. Perss.) Ingham subsp. *ligulifolia* (R. M. Schust.) Damsh. & D. G. Long, Lindbergia 5: 76. 1979 [1980]. = *Scapania calcicola* (Arnell & J. Perss.) Ingham var. *ligulifolia* R. M. Schust., Bull. Natl. Mus. Canada 122: 15. 1951 (syn. fide Schuster, 1974: 306).

When Schuster (1951) named *Scapania calcicola* var. *ligulifolia* R. M. Schust., he cited several collections from Canada, without designation of a type. Later, he named *S. ligulifolia* R. M. Schust., for which he designated a type collection from Greenland (Schuster, 1974: 306). Since these are heterotypic names, even though Schuster reduced his "var. *ligulifolia*" to his "species *ligulifolia*," it was not a new combination or a new status of that variety and the correct author citation for both names is simply R. M. Schust., with no basionym and hence, no parenthetical author. Damsholt and Long (1979) reduced *S. ligulifolia* R. M. Schust. to a subspecies of *S. calcicola* (Arnell & J. Perss.) Ingham, citing *S. ligulifolia* Schust. in Schuster & Damsholt, Meddel. Gronland 199: 217. 1974, as the basionym. However, *S. ligulifolia* was first validly published in *Hepaticae and Anthocerotae of North America*, vol. 3: 306, issued in Feb. 1974. According to Article 41.8 (McNeill et al., 2012), the basionym reference citation should be treated as an error to be corrected, which was done by Damsholt (2013: 299). This reduction is accepted by Potemkin (1999a, 2015) and Damsholt (2013), but not by Grolle and Long (2000), Konstantinova et al. (2009), and Söderström et al. (2016), and is also not followed in this checklist.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is known from Nunavut, the Northwest Territories, Quebec, Labrador, and Greenland; it is also known from Franz Josef Land in Europe and in eastern Russia, Taymyr, and the Chukotka Peninsula.

Scapania lingulata H. Buch, Meddeland. Soc. Fauna Fl. Fenn. 42: 92. 1916. = *Scapania microphylla* Warnst., Hedwigia 63: 75. 1921 (syn. fide Schuster, 1974: 405). = *Scapania lingulata* H. Buch var. *microphylla* (Warnst.) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 415. 1974 (syn. fide Konstantinova et al., 2009: 51).

Distribution. This species is found from Greenland south to New England and west to Wisconsin and Nevada (Potemkin, 1999b); it is also found in Iceland and northern Europe.

Scapania lingulata H. Buch var. *microphylla* (Warnst.) R. M. Schust. = **Scapania lingulata** H. Buch.

Scapania massalongoi (Müll. Frib.) Müll. Frib., as "*massalongi*" = **Scapania carinthiaca** J. B. Jack ex Lindb.

Scapania microdonta (Mitt.) Müll. Frib., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 83: 262. 1905. Basionym: *Martinellius microdontus* Mitt., Trans. Linn. Soc. London, Bot. 3: 196. 1891. ≡ *Macrodiplophyllum microdontum* (Mitt.) Perss., Svensk Bot. Tidskr. 43: 507. 1949. ≡ *Diplophyllum microdontum* (Mitt.) H. Buch, Soc. Sci. Fennica, Comment. Biol. 3: 31. 1928.

Distribution. This species is found in Alaska and eastern Siberia.

Scapania mucronata H. Buch, Meddeland. Soc. Fauna Fl. Fenn. 42: 91. 1916.

Distribution. This species is found in Greenland to Alaska, south to California and east to Colorado, Minnesota, Michigan, New York, New England to Quebec, and in the southern Appalachians; it is also in Europe and Asia.

Scapania mucronata H. Buch subsp. *praetervisa* (Meyl.) R. M. Schust. ≡ **Scapania praetervisa** Meyl.

Scapania mucronata H. Buch subsp. *praetervisa* (Meyl.) R. M. Schust. var. *polaris* R. M. Schust. = **Scapania praetervisa** Meyl.

Scapania nemorea (L.) Grolle, Rev. Bryol. Lichénol. 32: 160. 1963. Basionym: *Jungermannia nemorea* L., Syst. Nat. (ed. 10)2: 1337. 1759.

In our checklist (Stotler & Crandall-Stotler, 1977) we used the spelling "*nemorosa*" in keeping with the long-adopted usage of that epithet. In *Species Plantarum* (Linnaeus, 1753: 1132), that epithet was omitted due to a printing error. In the earliest publication where an epithet was provided for this taxon (Linnaeus, 1759), it was misspelled "*nemorea*" and even though Linnaeus had penciled "*nemorosa*" in his personal copy of *Species Plantarum* and obviously had intended for that spelling to be used, the error cannot be corrected unless a proposal is accepted to conserve the "*nemorosa*" spelling. Since Grolle (1963a) transferred *Jungermannia nemorea* L. (Linnaeus, 1759) to *Scapania*, the correct name for this taxon is *S. nemorea* (L.) Grolle and not *S. nemorosa* (L.) Dumort.

Distribution. This species is found throughout eastern North America from Labrador to Ontario, Minnesota, and Texas, east to Florida, and in Europe from Finland east to Siberia and south to the Black Sea and the Azores.

Scapania nemorea (L.) Grolle subsp. *crassiretis* (Bryhn) Potemkin ≡ **Scapania crassiretis** Bryhn.

Scapania nemorosa (L.) Dumort., Recueil Observ. Jungerm.: 14. 1835. = an illegitimate, nomenclaturally superfluous name (McNeill et al., 2012: Art. 52.1).

Scapania obcordata (Berggr.) S. W. Arnell, Ark. Bot., n.s. 4(6): 117. 1959. Basionym: *Sarcocyphos obcordatus* Berggr., Kongl. Svenska Vetensk. Acad. Handl., n.s. 13: 96. 1875.

Potemkin (1999a: 33) synonymized *Scapania paradoxa* R. M. Schust. with *S. obcordata*, but we agree with Konstantinova et al. (2009: 31) and recognize both as distinct species.

Distribution. This species is found in Alaska, Greenland, Ellesmere Island, and Quebec; it is also in arctic Scandinavia.

Scapania obscura (Arnell & C. E. O. Jensen) Schiffn., Oesterr. Bot. Z. 58: 377. 1908. Basionym: *Martinellius obscurus* Arnell & C. E. O. Jensen, Naturwiss. Untersuch. Sarekgebirges Schwed.-Lappl., Bot.: 91. 1907.

Distribution. This species is known from Alaska, the Northwest Territories, and Nunavut, south to the subalpine regions of California, with questionable reports from Greenland; it is also found in northern and central Europe and Siberia.

Scapania ornithopodioides (With.) Waddell, Moss Exch. Club Cat. Hepat.: 4. 1897. Basionym: *Jungermannia ornithopodioides* With., Bot. Arr. Veg. Gr. Brit. 2: 695. 1776, as "*ornithopoides*."

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This species is found in oceanic areas of Alaska and British Columbia; it is also known from the British Isles, Ireland, and Scandinavia in Europe, and the Himalayas, Japan, Taiwan, the Philippines, and Hawaii.

Scapania paludicola Loeske & Müll. Frib., Lebermoose 2: 425. 1915, var. **paludicola**.

Distribution. This species is widespread from Alaska to British Columbia, Alberta, and Montana, and from Greenland to Ontario and New England; it is also known from Iceland, central and eastern Europe, and Siberia, Sakhalin, and Japan.

Scapania paludicola var. **viridigemma** R. M. Schust., Bull. Nat. Mus. Canada 122: 20. 1951.

Distribution. This variety is reported from Greenland, Quebec, and New Hampshire.

"*Scapania paludicola* Loeske & Müll. Frib. var. *rotundiloba* R. M. Schust.," Hepat. Anthocerotae N. Amer. 3: 519. 1974, nom. inval. (McNeill et al., 2012: Art. 40.3).

Scapania paludosa (Müll. Frib.) Müll. Frib., Mitt. Bad. Bot. Vereins 182–183: 287. 1902. Basionym: *Scapania undulata* var. *paludosa* Müll. Frib., Beih. Bot. Centralbl. 10: 220. 1901.

Zehr (1980) and Potemkin (1999a: 37) synonymized *Scapania paludosa* (Müll. Frib.) Müll. Frib. with *S. uliginosa* (Lindenb.) Dumort., but we follow Grolle and Long (2000: 121), Konstantinova et al. (2009), and Söderström et al. (2016) in recognizing both as distinct species. The sequence data of Heinrichs et al. (2012: 983) also support species-level recognition for the two.

Distribution. This species is found from Alaska to British Columbia, Alberta, Oregon, and Montana in the west and from Newfoundland south to Quebec and New England in the east; it is also known from Iceland, northern and central Europe, northern Asia, and Japan.

Scapania paradoxa R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 287. 1974, var. **paradoxa**.

Although Potemkin (1999a: 33) regarded *Scapania paradoxa* as a synonym of *S. obcordata*, we follow Konstantinova et al. (2009) and recognize both species.

Distribution. This species is found in Greenland, and in Kola Peninsula in Russia.

Scapania paradoxa var. **ramosa** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 294. 1974.

Distribution. This variety is found in Greenland.

Scapania parvifolia Warnst., Hedwigia 63: 78. 1921.

Potemkin (1999a: 36) argued that *Scapania parvifolia* should be synonymized to *S scandica* (Arnell & H. Buch) Macvicar; however, we follow Konstantinova et al. (2009) and Söderström et al. (2016) and recognize both species until the relationship between them is satisfactorily resolved.

Distribution. This species is found from Alaska to Greenland and south to Quebec; it is also known from Scotland, Scandinavia, and Hokkaido, Japan.

Scapania parvifolia var. *grandiretis* Schljakov ≡ **Scapania scandica** var. **grandiretis** (Schljakov) Schljakov.

Scapania perssonii R. M. Schust. = **Scapania curta** (Mart.) Dumort. var. **grandiretis** R. M. Schust.

Scapania plicata (Lindb.) Potemkin ≡ **Douinia plicata** (Lindb.) Konstant. & Vilnet.

Scapania praetervisa Meyl., Jahresber. Naturf. Ges. Graubündens 64: 364. 1926. ≡ *Scapania mucronata* H. Buch subsp. *praetervisa* (Meyl.) R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 437. 1974. = *Scapania mucronata* H. Buch subsp. *praetervisa* (Meyl.) R. M. Schust. var. *polaris* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 442. 1974, syn. nov.

Although Potemkin (1999a: 37) followed Schuster (1974) and adopted the reduction of *Scapania praetervisa* to subspecific status of *S. mucronata* H. Buch, we follow Grolle and Long (2000: 109), Konstantinova et al. (2009), and Söderström et al. (2016) and maintain both as distinct species.

Distribution. This species is known from Alaska, Ellesmere Island, and Greenland; it is also found in alpine areas of northern and central Europe and eastern Siberia.

Scapania pseudocalcicola R. M. Schust., in Schuster & Damsholt, Phytologia 63: 327. 1987.

Distribution. This species is known only from the type in Newfoundland.

Scapania pulcherrima R. M. Schust. = **Scapania tundrae** (Arnell) H. Buch.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Scapania saxicola R. M. Schust. ≡ **Scapania glaucocephala** (Taylor) Austin var. **saxicola** (R. M. Schust.) Potemkin.

Scapania scandica (Arnell & H. Buch) Macvicar, Stud. Handb. Brit. Hepat. (ed. 2): 394. 1926, var. **scandica**. Basionym: *Martinellius scandicus* Arnell & H. Buch, Bot. Not. 1921: 1. 1921. = *Scapania scandica* (Arnell & H. Buch) Macvicar var. *argutedentata* H. Buch (syn. fide Konstantinova et al., 2009: 51).

Distribution. This species is found in Alaska south to British Columbia and California, and from Greenland and Newfoundland south to New York and Wisconsin; it is widely scattered in central and northern Europe, Asian Siberia, and Japan.

Scapania scandica (Arnell & H. Buch) Macvicar var. *argutedentata* H. Buch = **Scapania scandica** (Arnell & H. Buch) Macvicar.

Scapania scandica var. **dimorpha** R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 453. 1974.

Distribution. This variety is known only from Nova Scotia.

Scapania scandica var. **grandiretis** (Schljakov) Schljakov, Pečen. Mhi Severa SSSR 4: 152. 1981. Basionym: *Scapania parvifolia* var. *grandiretis* Schljakov, Novosti Sist. Nizsh. Rast. 8: 332. 1971.

Distribution. This variety is reported from California by Bakalin (2012: 204a); it is otherwise known from the Russian Far East.

Scapania serrulata R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 539. 1974.

Distribution. This species is reported from Greenland and Baffin Island (Nunavut).

Scapania simmonsii Bryhn & Kaal., Rep. Second Norweg Arctic Exped. 2(11): 51. 1906.

Distribution. This species is from Alaska to Greenland, south to Quebec in North America; Kola Peninsula in Europe, and Siberia to the Chukotka Peninsula in Asia.

Scapania spitsbergensis (Lindb.) Müll. Frib., Bull. Herb. Boissier, sér. 2, 1: 607. 1901, as "*spitzbergensis*." Basionym: *Martinellius spitsbergensis* Lindb. in Lindberg & Arnell, Kongl. Svenska Vetensk. Acad. Handl., n.s. 23: 31. 1889.

Distribution. This species is in Alaska to Greenland to Ontario and Maine; it is also in northern Scandinavia and Asia.

Scapania subalpina (Nees ex Lindenb.) Dumort., Recueil Observ. Jungerm. 14. 1835, var. **subalpina**. Basionym: *Jungermannia subalpina* Nees ex Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14(suppl.): 55. 1829.

Because of the recognition of *Scapania subalpina* var. *muddiae* C. D. Bird & W. S. Hong (Hong, 1980: 51), we have also included the earlier described *S. subalpina* (Nees ex Lindenb.) Dumort. var. *haynesiae* Frye & L. Clark in the North American flora.

Distribution. This species is found throughout western North America, from Alaska to California, and in Greenland, Quebec, and Ontario, into New England and New York, and west to Michigan, Wisconsin, and Minnesota. It is also known from boreal Europe, Asia, and Japan.

Scapania subalpina var. **haynesiae** Frye & L. Clark, Univ. Washington Publ. Biol. 6: 638. 1946.

Distribution. This variety is known only from the type from Alberta, Canada.

Scapania subalpina var. **muddiae** C. D. Bird & W. S. Hong, Bryologist 83: 51. 1980.

Distribution. This variety is known only from Alberta, Canada.

Scapania tundrae (Arnell) H. Buch, Commentat. Biol. 3: 99. 1928. Basionym: *Martinellius tundrae* Arnell, Bot. Not. 1921: 289. 1921. = *Scapania pulcherrima* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 505. 1974 (syn. fide Potemkin, 1993: 90). ≡ *Scapania hyperborea* Jørg. var. *tundrae* (Arnell) Potemkin, Bryologist 102: 34. 1999.

Potemkin (1999a: 34) reduced *Scapania tundrae* (Arnell) H. Buch to a variety of *S. hyperborea* Jørg., but we follow Grolle and Long (2000), Konstantinova et al. (2009), and Söderström et al. (2016) and recognize it as a distinct species.

Distribution. This species is found in Alaska and northwest Greenland; it is also found in Scandinavia, northern Russia into Siberia, and the Yamal Peninsula.

Scapania uliginosa (Lindenb.) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia undulata* L. var. *uliginosa* Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 14 (suppl.): 58. 1829.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Distribution. This arctic-alpine species is found from Alaska to Washington, Colorado, and Greenland; it is also known from higher elevations of western Europe, Siberia, and Spitsbergen.

Scapania umbrosa (Schrad.) Dumort., Recueil Observ. Jungerm.: 14. 1835. Basionym: *Jungermannia umbrosa* Schrad., Syst. Samm. Cryptog. Gew. 2: 5. 1797.

Distribution. This species is widely scattered in both eastern and western North America, from Alaska south to California and east to Montana, and from Newfoundland south to New York and Wisconsin; in Europe it is found from Scotland, Scandinavia, and eastern Russia.

Scapania undulata (L.) Dumort., Recueil Observ. Jungerm.: 14. 1835, var. **undulata**. Basionym: *Jungermannia undulata* L., Sp. Pl. 2: 1132. 1753.

Distribution. This species is widespread from Greenland to Alaska, south to California, east to the Great Lakes and New England, and south to West Virginia, Kentucky, and Georgia. It is also widespread in Great Britain, Europe, northern Africa, northern Asia, and Japan.

Scapania undulata var. **aequatiformis** De Not, Mem. Reale Accad. Sci. Torino, Ser. 2, 22: 360. 1865.

Distribution. This variety is rare in western Greenland; otherwise it is known from central Europe and England.

Scapania undulata var. **oakesii** (Austin) H. Buch, Commentat. Biol. 3: 139. 1928. Basionym: *Scapania oakesii* Austin, Bull. Torrey Bot. Club 3: 10. 1872.

Distribution. This species is found in Alaska south to California, Utah, and Wyoming, and from Minnesota, Vermont, and Nova Scotia in the east; it is also reported from southwestern Norway.

Scapania zemliae S. W. Arnell, Svensk Bot. Tidskr. 41: 215. 1947. = *Scapania invisa* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 348. 1974 (syn. fide Potemkin, 1999a: 34).

Distribution. This species is known from Greenland, Alaska, Franz Josef Land, and arctic Siberia.

Schistochilopsis (N. Kitag.) Konstant., Arctoa 3: 125. 1994. Basionym: *Lophozia* subg. *Schistochilopsis* N. Kitag., J. Hattori Bot. Lab. 28: 289. 1965. TYPE: *Lophozia cornuta* (Steph.) S. Hatt., Bull. Tokyo Sci. Mus. 11: 35. 1944. Basionym: *Schistochila cornuta* Steph., Sp. Hepat. 4: 84. 1906. [36. SCAPANIACEAE.]

Species currently recognized to comprise *Schistochilopsis* in North American were treated under *Lophozia* subg. *Massula* by Schuster (1969: 419). *Lophozia* subg. *Massula* Müll. Frib., Ber. Deutsch Bot. Gesell. 57: 341. 1939, however, was not a validly published "name" because a Latin description was not provided (McNeill et al., 2012: 39.1). Later authors have generally recognized "*Lophozia* subg. *Massula*" as a synonym of *Lophozia* subg. *Schistochilopsis*. The elevation of this subgenus to generic rank is supported by several molecular analyses, including those of De Roo et al. (2007) and Vilnet et al. (2010).

Schistochilopsis is a genus of six species, three of which occur in North America.

Schistochilopsis capitata (Hook.) Konstant. ≡ **Tritomaria capitata** (Hook.) Stotler & Crand.-Stotl.

Schistochilopsis grandiretis (Lindb. ex Kaal.) Konstant., Arctoa 3: 125. 1994, subsp. **grandiretis**. Basionym: *Jungermannia grandiretis* Lindb. ex Kaal., Nyt Mag. Naturvidensk. 33: 322. 1893. ≡ *Lophozia grandiretis* (Lindb. ex Kaal.) Schiffn., Lotos 51: 232. 1903. = *Lophozia grandiretis* (Lindb. ex Kaal.) Schiffn. var. *parviretis* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 462. 1969 (syn. fide Damsholt, 2013: 146).

Note that the designation "*Jungermannia grandiretis* Lindb.," Morgonbladet 1882(288): [3]. 1882, was not validly published because it lacks a description (McNeill et al., 2012: Art. 38.1a).

Damsholt (2013: 149) redefined *Schistochilopsis grandiretis* subsp. *grandiretis*; based on type specimen study he concluded that the description provided by Schuster (1969: 456) does not fit this subspecies, but is instead compatible with the characters of *Lophozia grandiretis* subsp. *proteidea* (Arnell) Damsh. ≡ *S. grandiretis* (Lindb. ex Kaal.) Konstant. subsp. *proteidea* (Arnell) Stotler & Crand.-Stotl. (see next entry).

Distribution. This subspecies is found in North America only from Greenland and Ellesmere Island; it is also in Siberia and Spitsbergen (Damsholt, 2013).

Schistochilopsis grandiretis subsp. **proteidea** (Arnell) Stotler & Crand.-Stotl., comb. nov. Basionym: *Jungermannia grandiretis* Lindb. ex Kaal. var. *proteidea* Arnell, Ark. f. Bot. 19(10): 70. 1925. ≡ *Lophozia grandiretis* (Lindb. ex Kaal.) Schiffn. subsp. *proteidea* (Arnell) Damsh., Lindbergia 33:

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

98. 2010. = *Lophozia grandiretis* (Lindb. ex Kaal.) Schiffn. var. *grandiretis* sensu R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 456. 1969 (syn. fide Damsholt, 2013: 149).

According to Damsholt (2013: 150), this subspecies is the widespread form of *Schistochilopsis grandiretis*.

Distribution. This subspecies is found from Alaska through western Canada to Washington, and from Greenland south to Quebec, Vermont, Minnesota, and Manitoba; it is also known from Iceland, central Europe and Scandinavia, and Siberia to Kamchatka.

Schistochilopsis hyperarctica Konstant. & L. Söderstr. in Konstantinova et al., Phytotaxa 162: 240. 2014.

Note that the designation "*Lophozia hyperarctica* R. M. Schust.," Canad. J. Bot. 39: 967. 1961, was not validly published because multiple collections were named as type (McNeill et al., 2012: Art. 9.1). As a consequence, all combinations that cite *L. hyperarctica* R. M. Schust. as the basionym are not validly published, because the basionym was not validly published (see Konstantinova et al., 2014: 240).

Distribution. This species is found in Arctic Alaska, Ellesmere Island, and Greenland.

Schistochilopsis incisa (Schrad.) Konstant., Arctoa 3: 125. 1994, var. **incisa**. Basionym: *Jungermannia incisa* Schrad., Syst. Samm. Cryptog. Gew. 2: 5. 1797. ≡ *Lophozia incisa* (Schrad.) Dumort., Recueil Observ. Jungerm.: 17. 1835.

Distribution. This species is common and widespread, from Alaska to California in western North America, Labrador to Tennessee in the east, and in Greenland; it is also widespread throughout Europe and Asia.

Schistochilopsis incisa var. **inermis** (Müll. Frib.) Konstant., Arctoa 6: 141. 1996. Basionym: *Lophozia incisa* (Schrad.) Dumort. var. *inermis* Müll. Frib., Leberm. Eur.: 710. 1916.

Distribution. This variety is known from Minnesota, Michigan, and Maine; it is also found in scattered localities in central Europe.

Schistochilopsis incisa var. **opacifolia** (Culm. ex Meyl.) Bakalin, Bryologist 114: 313. 2011. Basionym: *Lophozia opacifolia* Culm. ex Meyl., Hépat. Suisse: 174. 1924. ≡ *Schistochilopsis opacifolia* (Culm. ex Meyl.) Konstant., Arctoa 3: 125. 1994 ≡ *Lophozia incisa* (Schrad.) Dumort. subsp. *opacifolia* (Culm. ex Meyl.) R. M. Schust. & Damsh., Beih. Nova Hedwigia 92: 78. 1988.

The name *Lophozia opacifolia* was not validly published by Culmann in Rev. Bryol. 47: 21. 1920, because he did not accept it as a species when he stated "subspecies aut varietas nova *Lophoziae incisae*" (McNeill et al., 2012: Art. 36.1). It was, however, validly published by Meylan a few years later.

The molecular data of Vilnet et al. (2007: 1310) support the conspecific nature of *Lophozia incisa* and *L. opacifolia* and corroborate at most only infraspecific distinction. In a later study (Vilnet et al., 2010) data also showed that the genetic distance between the two is not comparable to the level of distance seen among other recognized species.

Distribution. This variety is found in Alaska and Greenland south through Canada to California, Utah, and Colorado in the west and Labrador in the east; it is also found in alpine zones of central and northern Europe and in Siberian Asia.

Schistochilopsis laxa (Lindb.) Konstant. ≡ **Tritomaria laxa** (Lindb.) Stotler & Crand.-Stotl.

Schistochilopsis obtusa (Lindb.) Potemkin ≡ **Obtusifolium obtusum** (Lindb.) S. W. Arnell.

Schizophyllopsis sphenoloboides (R. M. Schust.) Váňa & L. Söderstr. ≡ **Anastrophyllum sphenoloboides** R. M. Schust.

Schljakovia Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. TYPE: *Schljakovia kunzeana* (Huebener) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Jungermannia kunzeana* Huebener, Hepaticol. Germ.: 115. 1834. [34. ANASTROPHYLLACEAE.]

Schljakovia is a monospecific genus.

Schljakovia kunzeana (Huebener) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Jungermannia kunzeana* Huebener, Hepaticol. Germ. 115. 1834. ≡ *Barbilophozia kunzeana* (Huebener) Müll. Frib., Mitteil. Badischen Landesver. Naturk. Naturschutz, N. F. 4: 431. 1944. ≡ *Orthocaulis kunzeanus* (Huebener) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1933. ≡ *Lophozia kunzeana* (Huebener) A. Evans, Proc. Washington Acad. Sci. 2: 305. 1900.

In our checklist (Stotler & Crandall-Stotler, 1977: 410), we followed Grolle (1976: 182) and credited the valid publication of *Barbilophozia kunzeana* to Gams (Kleine Kryptogamenfl. ed. 2. 1: 44. 1948). Koponen et al. (1977: 49) pointed out that K. Müller had validly

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

published that combination four years earlier. In the molecular studies of Vilnet et al. (2010), *Barbilophozia* (*Orthocaulis*) *kunzeana* was shown to be unrelated to both *Barbilophozia* and *Orthocaulis*, and therefore, the monospecific genus *Schljakovia* was established.

Distribution. This species is found from Alaska to Colorado in the west, and from Greenland and Ellesmere Island to New York and Michigan in the east; it is also known from western and central to northern Europe, and Siberia.

Schljakovianthus Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. TYPE: *Schljakovianthus quadrilobus* (Lindb.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Jungermannia quadriloba* Lindb., Meddeland. Soc. Fauna Fl. Fenn. 9: 162. 1883. [34. ANASTROPHYLLACEAE.]

Schljakovianthus is a monospecific genus.

Schljakovianthus quadrilobus (Lindb.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010], var. **quadrilobus**. Basionym: *Jungermannia quadriloba* Lindb., in Lindberg & Arnell, Kongl. Svenska Vetensk.-Akad. Handl. (n. ser.) 23: 55. 1889. ≡ *Barbilophozia quadriloba* (Lindb.) Loeske, Hedwigia 49: 13. 1909. ≡ *Orthocaulis quadrilobus* (Lindb.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 294. 1933. ≡ *Lophozia quadriloba* (Lindb.) A. Evans, Proc. Wash. Acad. Sci. 2: 304. 1900.

In the molecular phylogenetic analyses of De Roo et al. (2007) and Vilnet et al. (2010, 2012), *Barbilophozia* (*Orthocaulis*) *quadrilobus* was resolved as a separate monophyletic lineage outside of both the *Barbilophozia* and *Orthocaulis* clades. The taxon was, consequently, transferred to the new monospecific genus *Schljakovianthus* by Konstantinova et al. (2009).

Distribution. This species is found from Alaska to British Columbia, and Greenland and Ellesmere Island south to Ontario and Michigan; it is also in Iceland, alpine areas of western, central, and northern Europe, and Siberia.

Schljakovianthus quadrilobus var. **collenchymaticus** (R. M. Schust.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010]. Basionym: *Lophozia quadriloba* (Lindb.) A. Evans var. *collenchymatica* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 281. 1969. ≡ *Barbilophozia quadriloba* (Lindb.) Loeske var. *collenchymatica* (R. M. Schust.) Stotler & Crand.-Stotl., Bryologist 80: 410. 1977.

Distribution. This variety is known only from Greenland.

Schljakovianthus quadrilobus var. **glareosus** (Jørg.) Konstant. & Vilnet, Arctoa 18: 66. 2009 [2010], as "*glareosa*." Basionym: *Jungermannia quadriloba* Lindb. var. *glareosa* Jørg., Forh. Vidensk.-Selsk. Kristiania 1894(8): 59. 1894. ≡ *Barbilophozia quadriloba* (Lindb.) Loeske var. *glareosa* (Jørg.) Lammes, Fl. Fenn. 6: 49. 1977.

The Lammes combination of "var. *glareosa*" was issued 30 September 1977 (P. Isoviita, pers. comm.), prior to our "comb. nov." (Stotler & Crandall-Stotler, 1977: 410), which did not publish until 8 December 1977. Several authors, such as Damsholt (2002: 55) and Konstantinova and Vilnet (2009: 66), cite "Jörg., Bergens Mus. Aarbok 18. s. p. 1895," following the entry given in Jørgensen (1934: 142), but this variety was validly published as *Jungermannia quadriloba* var. *glareosa* Jørg. in 1894 (vide Jørgensen, 1894: 59).

Distribution. This variety is found in Alaska and Greenland.

Schofieldia J. D. Godfrey = **Fuscocephaloziopsis** Fulford.

Vilnet et al. (2012) placed *Schofieldia* in synonymy with *Pleurocladula*; Potemkin and Sofronova (2013) treated it as a synonym of *Cephalozia*; and in 2013, Váňa et al. (2013e) combined it with *Fuscocephaloziopsis*. See discussion under *Cephalozia*.

Schofieldia monticola J. D. Godfrey ≡ **Fuscocephaloziopsis monticola** (J. D. Godfrey) Váňa & L. Söderstr.

Solenostoma Mitt., J. Linn. Soc. Bot. 8: 51. 30 June 1864 [1865], nom. cons. TYPE: *Solenostoma tersum* (Nees) Mitt., J. Proc. Linn. Soc., Bot. 8: 51. 1864 [1865]. Basionym: *Jungermannia tersa* Nees, Naturgesch. Eur. Leberm. 1: 279, 329. 1833. = *Jungermannia sphaerocarpa* Hook., Brit. Jungermann. pl. 74. 1815. [47. SOLENOSTOMATACEAE.]

This genus includes *Plectocolea* (Mitt.) Mitt., *Metasolenostoma* Bakalin & Vilnet, and *Protosolenostoma* (Amakawa) Bakalin & Vilnet.

The study of Hentschel et al. (2007b: 152) supported the recognition of *Liochlaena* and *Solenostoma* as autonomous genera and resolved the type species of *Solenostoma* nested in a clade with several species previously assigned to *Plectocolea*. These data provided no support for the recognition of *Plectocolea* as a genus separate from *Solenostoma*. Bakalin and Vilnet (2012: 581), however, considered *Plectocolea* to be a genus

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

distinct from *Solenostoma*, even though in their phylogenetic analysis "the core set of *Solenostoma* species exhibits relationships not only with *P. hyalina*, but also with species of the *P. obovata* complex." A more recent analysis by Bakalin et al. (2014) that added 24 accessions to the 2012 matrix resolved four main lineages within *Solenostoma*. Despite low support values among and within each of the clades, the authors interpreted these to represent four genera, namely, *Solenostoma* Mitt., *Plectocolea* (Mitt.) Mitt., *Metasolenostoma* Bakalin & Vilnet, and *Protosolenostoma* (Amakawa) Bakalin & Vilnet. In a more comprehensive, multilocus analysis, Shaw et al. (2015: 36) also resolved four well-supported major lineages within *Solenostoma*, but they recognized them at subgeneric rank because there was ambiguity as to the molecular relationships among the lineages and "there are clear morphological overlaps among them." We agree with Shaw et al. (2015) and do not recognize the segregate genera proposed by Bakalin et al. (2014).

Solenostoma is a genus of about 130 species, 13 of which occur in our flora.

Solenostoma appalachianum R. M. Schust. ex Bakalin, Arctoa 23: 127. 2014. = *Solenostoma pyriflorum* sensu R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 963. 1969, non *S. pyriflorum* Steph., Sp. Hepat. 6: 83. 1917 (syn. fide Bakalin, 2014: 127).

Whether *Solenostoma appalachianum* should be recognized as distinct from *S. pyriflorum* Steph. is questionable. Bakalin (2014: 127) validated Schuster's early nomen herbariorum of *S. appalachianum*, based primarily on the "strong geographic isolation between Japan and North America," despite Schuster's later view that the specimens were indeed *S. pyriflorum*, as had been verified by Amakawa, a monographer of the Japanese Jungermanniaceae (Amakawa, 1960). Söderström et al. (2016) recognize *S. appalachianum* as distinct from Asiatic *S. pyriflorum* based on the molecular studies of Shaw et al. (2015), in which the Asian and North American clades of *S. pyriflorum* resolve in separate lineages. However, a great deal more work is needed to unravel the complexities of the *S. pyriflorum* complex (Shaw et al., 2015: 37).

Distribution. This species is endemic to the southeastern Appalachians of the United States, from Virginia to Georgia.

Solenostoma atrovirens auct. (non *S. atrovirens* Steph., 1901) = **Jungermannia atrovirens** Dumort.

Solenostoma caespiticium (Lindenb.) Steph. ≡ **Endogemma caespiticia** (Lindenb.) Konstant., Vilnet & A. V. Troitsky.

Solenostoma confertissimum (Nees) Schljakov, Novosti Sist. Nizsh. Rast. 17: 239. 1980. Basionym: *Jungermannia confertissima* Nees, Naturgesch. Eur. Leberm. 1: 277, 291. 1833. = *Solenostoma levieri* (Steph.) Steph., Bull. Herb. Boissier, sér. 2, 1: 488. 1901. Basionym: *Nardia levieri* Steph., Bot. Centralbl. 50: 70. 1892. = *Jungermannia pyriflora* Steph. subsp. *purpurea* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl. var. *innovata* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl. (syn. fide Damsholt & Váňa, 1977: 20, as *J. confertissima*). Basionym: *Solenostoma pyriflorum* Steph. subsp. *purpureum* R. M. Schust. & Damsh. var. *innovatum* R. M. Schust. & Damsh., Meddel. Gronland 199: 176. 1974.

Damsholt and Váňa (1977: 22) initially suggested that all reports of *Solenostoma pusillum* and *S. pyriflorum* subsp. *purpureum* by Schuster (1969) and Schuster and Damsholt (1974) are equivalent to *Jungermannia confertissima* (*S. confertissimum*). However, Damsholt (2010: 102) transferred both varieties of *S. pyriflorum* subsp. *purpureum* to *J. sphaerocarpa* Hook. subsp. *purpurea* (R. M. Schust. & Damsh.) Damsh. without discussion. Váňa et al. (2013g: 39) recently also placed *J. pyriflora* subsp. *purpurea* in synonymy of *S. sphaerocarpum* (Hook.) Steph., but maintained *J. pyriflora* subsp. *purpurea* var. *innovata* as a synonym of *S. confertissimum*, which is followed here. We regard *S. pusillum* auct. amer. var. *pusillum* (syn. fide Damsholt & Váňa, 1977: 22, as *J. confertissima*) and *S. pusillum* auct. amer. var. *vinaceum* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 957. 1969 (syn. fide Bakalin, 2012d: 139) as misapplied names that should be referred to *S. confertissimum*, as designated by Damsholt and Váňa (1977) and Bakalin (2012d), respectively.

Distribution. This species is found in Alaska south to California and Nevada, and in eastern North America from Greenland to Quebec, Michigan, and Wisconsin; it is very common in northern Europe, and in Asia it is found in Siberia and the Russian Far East.

Solenostoma cordifolium (Dum.) Steph. ≡ **Jungermannia exsertifolia** Steph. subsp. **cordifolia** (Dumort.) Váňa.

Solenostoma crenuliforme (Austin) Steph., Bull. Herb. Boissier (ser. 2) 1: 494. 1901, as "*crenuliformis*." Basionym: *Jungermannia crenuliformis* Austin, Bull. Torrey Bot. Club 3: 10. 1872. ≡ *Plectocolea crenuliformis* (Austin) Mitt., Trans. Linn. Soc. London Bot. 3: 198. 1891.

Distribution. This species is found in eastern North America, from Quebec to Wisconsin south to Georgia and Arkansas.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Solenostoma fossombronioides (Austin) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 1027. 1969. Basionym: *Jungermannia fossombronioides* Austin, Proc. Acad. Nat. Sci. Philadelphia 21: 220. 1869. ≡ *Plectocolea fossombronioides* (Austin) Mitt., Trans. Linn. Soc. London Bot. 3: 198. 1891.

Distribution. This species is found in eastern North America, from Connecticut to Minnesota south to Georgia and southern Illinois.

Solenostoma fusiforme (Steph.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 944. 1969. Basionym: *Nardia fusiformis* Steph., Bull. Herb. Boissier 5: 99. 1897. = *Metasolenostoma orientale* Bakalin & Vilnet, Bot. Pac. 3(2): 12. 2014, syn. nov.

Initially, Bakalin (2012d: 139) determined several collections of *Solenostoma* from western North America as the first report of *S. fusiforme* for North America, although this species had, in fact, been reported from Alaska by Váňa (1975a). These same North American specimens were later transferred by Bakalin et al. (2014) to *Metasolenostoma orientale*, and *S. fusiforme* was established in a new monospecific genus, *Protosolenostoma fusiforme* (Steph.) Vilnet & Bakalin. We do not accept the conclusions of Bakalin et al. (2014) regarding this taxon and therefore continue to recognize *S. fusiforme* from western North America.

Distribution. This species is found in Alaska, British Columbia, Washington, Oregon, and Colorado; it is also found in eastern Asia and Japan.

Solenostoma gracillimum (Sm.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 972. 1969. Basionym: *Jungermannia gracillima* Sm. in Sowerby, Engl. Bot. 32. pl. 2238. 1811. ≡ *Metasolenostoma gracillimum* (Sm.) Vilnet & Bakalin in Bakalin et al., Bot. Pac. 3(2): 10. 2014. = *Solenostoma gracillimum* f. *crenulatum* (Mitt.) Bakalin, Polish Bot. J. 57: 141. 2012, syn. nov. ≡ *Metasolenostoma gracillimum* f. *crenulatum* (Mitt.) Vilnet & Bakalin in Bakalin et al., Bot. Pac. 3(2): 10. 2014.

Distribution. In North America this species is restricted to the east, from Greenland south to Florida and west to Missouri and Arkansas. It is also widespread in Europe, northern Africa, and Siberia. Note that the report of this species from California by Bakalin (2012d: 141) is a misidentification of *Solenostoma rubrum* according to Váňa (pers. comm.), who has seen the specimen.

Solenostoma hyalinum (Lyell) Mitt. in Goodman, Nat. Hist. Azores: 319. 1870. Basionym: *Jungermannia hyalina* Lyell in Hooker, Brit. Jungermann. pl. 63 [tab. LXIII]. 1814. ≡ *Plectocolea hyalina* (Lyell) Mitt. Trans. Linn. Soc. London Bot. 3: 198. 1891. = *Solenostoma ontariense* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 1004. 1969, as "*ontariensis*" (syn. fide Konstantinova et al., 2009: 51, as *Plectocolea hyalina* (Lyell) Mitt.).

Hooker (1812–1816) prepared the treatments for basically all of the taxa included in his British Jungermanniae, but the treatment of *Jungermannia hyalina* was solely prepared by Lyell. Hooker wrote, "To the above excellent character and description of *J. hyalina*, for both of which I am indebted to my friend, Mr. Lyell, by whom they were made from fresh specimens, it is needless for me to add anything" (Hooker, 1814: tab. LXIII).

Distribution. This species is widespread in North America from Alaska to Quebec, south to New Mexico in the west and Alabama in the east, with one report from Greenland; it is also widespread in Europe, eastern Asia, and Japan.

Solenostoma levieri (Steph.) Steph. = **Solenostoma confertissimum** (Nees) Schljakov.

Solenostoma oblongifolium (Müll. Frib.) Müll. Frib. = **Jungermannia pumila** With.

Solenostoma oblongifolium (Müll. Frib.) Müll. Frib. subsp. *heteroicum* R. M. Schust. & Damsh. ≡ **Jungermannia pumila** With.

Solenostoma oblongifolium sensu R. M. Schust. [non (Müll. Frib.) Müll. Frib.] = **Jungermannia borealis** Damsh. & Váňa.

Solenostoma obovatum (Nees) C. Massal., Epat. Erb. Critt. Ital.: 17. 1903. Basionym: *Jungermannia obovata* Nees, Naturgesch. Eur. Leberm. 1: 332. 1833. ≡ *Plectocolea obovata* (Nees) Mitt., in Seemann, Fl. Vitiensis: 405. 1871. = *Solenostoma subellipticum* (Lindb. ex Heeg) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 1021. 1969 (syn. fide. Shaw et al., 2015: 39). Basionym: *Nardia subelliptica* Lindb. ex Heeg, Verh. K. K. Zool.-Bot. Ges. Wien 43: 69. 1893. ≡ *Jungermannia subelliptica* (Lindb. ex Heeg) Levier, Bol. Soc. Bot. Ital. 1905: 211. 1905. ≡ *Plectocolea subelliptica* (Lindb. ex Heeg) Evans in Buch, Evans & Verdoorn, Ann. Bryol. 10: 42. 1938.

Note that Schuster (1969: 1007) published "*Solenostoma* (*Plectocolea*) *obovatum* (Nees) Schust., comb. nov." apparently unaware of the earlier transfer of this species to *Solenostoma* by Massalongo. Although

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

"Lindb. ex Kaal." is usually cited as the parenthetical authors of *Jungermannia subelliptica* instead of "Lindb. ex Heeg," the publication by Heeg was issued prior to the work by Kaalaas, making Lindb. ex Heeg the proper citation (vide Geissler & Bischler, 1989: 25). The synonymy of *S. subellipticum* and *S. obovatum* is supported by several molecular analyses (Bakalin & Vilnet, 2012; Bakalin et al., 2014; Shaw et al., 2015).

Distribution. This arctic-montane taxon is known from Alaska to California in the west and Greenland and Newfoundland to Vermont in the east; it is widely scattered in montane regions of Europe and arctic areas of Asia.

Solenostoma obscurum (A. Evans) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 1013. 1969. Basionym: *Nardia obscura* A. Evans, Rhodora 21: 159. 1919. ≡ *Plectocolea obscura* (A. Evans) A. Evans, Ann. Bryol. 10: 42. 1938. ≡ *Jungermannia evansii* Váňa, Folia Geobot. Phytotax. 10: 69. 1975.

When Váňa (1975b: 69) transferred this taxon from *Nardia* to *Jungermannia*, it was necessary to provide a replacement name because of the earlier publication of the blocking name *J. obscura* Sw. (Fl. Ind. Occid. 3: 1869. 1806). The 1957 publication of "*S. obscurum* (A. Evans) R. M. Schust.," Rhodora 59: 252. 1957, was not valid because a basionym was not cited, necessitating the new combination, made by Schuster in 1969.

Distribution. This species is known from Alaska to Oregon in the west, and Maine to Georgia in the east, with a single report from Greenland.

Solenostoma ontariense R. M. Schust. = **Solenostoma hyalinum** (Lyell) Mitt.

Solenostoma pseudopyriflorum Bakalin & Vilnet, Arctoa 18: 159. 2009 [2010].

The relationship between this species and *Solenostoma pyriflorum* Steph. is equivocal, with the paroicous sexual condition of *S. pseudopyriflorum* being the only morphological character differentiating it from *S. pyriflorum*. Although molecular analyses (e.g., Bakalin & Vilnet, 2009, 2012; Bakalin et al., 2014; Shaw et al., 2015) would seem to support the recognition of two species, there is ambiguity regarding the identity of the *S. pyriflorum* accessions, none of which are from Japan, the type locality of the species.

Distribution. In North America, this species is reported from a single California locality (Bakalin, 2012a: 204); it is otherwise known from the Russian Far East and northern Japan.

Solenostoma pumilum (With.) Müll. Frib. ≡ **Jungermannia pumila** With.

Solenostoma pumilum (With.) Müll. Frib. subsp. *anomalum* R. M. Schust. & Damsh. = **Jungermannia pumila** With.

Solenostoma pumilum (With.) Müll. Frib. subsp. *polare* (Lindb.) R. M. Schust., as "*polaris*" ≡ **Jungermannia polaris** Lindb.

Solenostoma pusillum auct. amer. [non (C. E. O. Jensen) Steph.] = **Solenostoma confertissimum** (Nees) Schljakov.

Solenostoma pusillum (C. E. O. Jensen) Steph. var. *vinaceum* R. M. Schust. = **Solenostoma confertissimum** (Nees) Schljakov.

Solenostoma pyriflorum Steph. subsp. *purpureum* R. M. Schust. & Damsh. = **Solenostoma sphaerocarpum** (Hook.) Steph.

Solenostoma pyriflorum Steph. subsp. *purpureum* R. M. Schust. & Damsh. var. *innovatum* R. M. Schust. & Damsh. = **Solenostoma confertissimum** (Nees) Schljakov.

Solenostoma pyriflorum Steph., Sp. Hepat. 6: 83. 1917. = *Jungermannia pyriflora* Steph., Spec. Hepat. 6: 90. 1917. —EXCLUDED.

Note that both *Solenostoma pyriflorum* and *Jungermannia pyriflora* were named at the same time by Stephani but from different collections from Japan and are considered heterotypic synonyms. As discussed under *S. appalachianum*, according to Bakalin (2014) *S. pyriflorum* is restricted to Asia, with specimens from the southeastern United States previously recognized as *S. pyriflorum* now segregated into the new species *S. appalachianum*.

Solenostoma rubrum (Gottsche ex Underw.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 1007. 1969. Basionym: *Jungermannia rubra* Gottsche ex Underw., Bot. Gaz. 13: 113. 1888. = *Solenostoma rubrum* (Gottsche ex Underw.) R. M. Schust. var. *underwoodii* Bakalin, Polish J. Bot. 58: 131. 2013 (syn. fide Váňa et al., 2013g: 42).

Distribution. This species is common in western North America from Alaska south to California; it is also reported from the Commander Islands in Russia.

Solenostoma schusterianum (J. D. Godfrey & G. Godfrey) Váňa, Hentschel & Heinrichs, Cryptogamie, Bryologie 31: 137. 2010. Basionym: *Jungermannia*

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

schusteriana J. D. Godfrey & G. Godfrey, as "*schusterana*," J. Hattori Bot. Lab. 46: 109. 1979. ≡ *Plectocolea schusteriana* (J. D. Godfrey & G. Godfrey) Bakalin, Bot. Pac. 3(2): 92. 2014.

Following Recommendation 60C.1(d) of Article 60 of the ICN (McNeill et al., 2012), *schusterana* is here corrected to *schusterianum*.

Distribution. This species is found in Alaska south to Washington.

Solenostoma sphaerocarpum (Hook.) Steph., Bull. Herb. Boissier (ser. 2) 1: 499. 1901. Basionym: *Jungermannia sphaerocarpa* Hook., Brit. Jungermann. pl. 74. 1815. = *Solenostoma sphaerocarpum* (Hook.) Steph. var. *nanum* (Nees ex Flot.) Müll. Frib., Leberm. Eur. 6: 829. 1956, as "*nana*," syn. nov. Basionym: *Jungermannia nana* Nees ex Flot., Flora 16: 396. 1833. ≡ *Jungermannia sphaerocarpa* Hook. var. *nana* (Nees ex Flot.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 295. 1943. = *Solenostoma pusillum* (C. E. O. Jensen) Steph., Sp. Hepat. 6: 83. 1917 (syn. fide Shaw et al., 2015: 39). Basionym: *Aplozia pusilla* C. E. O. Jensen, Rev. Bryol. 39: 92. 1912. = *Jungermannia pyriflora* Steph. subsp. *purpurea* (R. M. Schust. & Damsh.) Stotler & Crand.-Stotl., Bryologist 80: 413. 1977 (syn. fide Váňa et al., 2013g: 39). Basionym: *Solenostoma pyriflorum* Steph. subsp. *purpureum* R. M. Schust. & Damsh., Meddel. Gronland 199: 176. 1974.

Distribution. This species is common in northwestern North America, from Alaska south to California and east into the Rocky Mountains, and in the east from Greenland and Ellesmere Island south to New York and west to Minnesota; elsewhere, it is widespread in the montane and northern regions of Europe, and is also known from Siberia, Japan, the Himalayas, East Africa, Colombia, and Ecuador.

Solenostoma sphaerocarpum (Hook.) Steph. var. *nanum* (Nees ex Flot.) Müll. Frib. = **Solenostoma sphaerocarpum** (Hook.) Steph.

Solenostoma subellipticum (Lindb. ex Heeg) R. M. Schust. = **Solenostoma obovatum** (Nees) C. Massal.

Solenostoma triste (Nees) Müll. Frib. = **Jungermannia atrovirens** Dumort.

Sphaerocarpos Boehm. in C. G. Ludwig, Def. Gen. Pl. (ed. 3): 501. 1760. TYPE: *Sphaerocarpos michelii* Bellardi, App. Fl. Pedem.: 52. 1792. [4. SPHAEROCARPACEAE.]

Sphaerocarpos is a genus of nine species, six of which occur in North America.

Sphaerocarpos cristatus M. Howe, Mem. Torrey Bot. Club 7: 66. 1899.

Distribution. This species is endemic to California.

Sphaerocarpos donnellii Austin, Mem. Torrey Bot. Club 6: 157. 1877.

Distribution. This species is found in the southeastern United States, from South Carolina to Florida and Mississippi.

Sphaerocarpos drewiae Wigglesw., Univ. Calif. Publ. Bot. 16: 129. 1929, as "*drewei*."

This species was named after Miss K. M. Drew, in which case the epithet should end in "*iae*" not "*ei*," in compliance with Article 60.12 of the ICN (McNeill et al., 2012).

Distribution. This species is known only from San Diego Co., California.

Sphaerocarpos hians Haynes, Mem. Torrey Bot. Club 37: 225. 1910.

Distribution. This species is known from Idaho, Oregon, and Washington.

Sphaerocarpos michelii Bellardi, App. Fl. Pedem.: 52. 1792.

Distribution. This species is found in scattered localities in the midwestern and southern parts of the United States; it is also known from Argentina, Europe, and the Canary Islands.

Sphaerocarpos texanus Austin, Mem. Torrey Bot. Club 6: 158. 1877.

Distribution. This species is widespread in disturbed habitats from South Carolina west to California, but is absent from the intermountain west; it is also common in southern and central Europe, northern Africa, and Australia.

Sphenolobopsis R. M. Schust. & N. Kitag., Nova Hedwigia 22: 152. 1971 [7 Dec. 1973]. TYPE: *Sphenolobopsis pearsonii* (Spruce) R. M. Schust., Nova Hedwigia 22: 152. 1971 [1973], as "*pearsoni*." Basionym: *Jungermannia pearsonii* Spruce, J. Bot. 19: 33. 1881, as "*pearsoni*." [34. ANASTROPHYLLACEAE.]

Sphenolobopsis is a monospecific genus.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Sphenolobopsis himalayensis N. Kitag. = **Sphenolobopsis pearsonii** (Spruce) R. M. Schust.

Sphenolobopsis kitagawae R. M. Schust. = **Sphenolobopsis pearsonii** (Spruce) R. M. Schust.

Sphenolobopsis pearsonii (Spruce) R. M. Schust., Nova Hedwigia 22: 152. 1971 [1973], as "*pearsoni*." Basionym: *Jungermannia pearsonii* Spruce, J. Bot. 19: 33. 1881, as "*pearsoni*." = *Sphenolobopsis himalayensis* N. Kitag., Bull. Univ. Mus. Univ. Tokyo 8: 213. 1975 (syn. fide Váňa & Piippo, 1989: 287). = *Sphenolobopsis kitagawae* R. M. Schust., Hepat. Anthocerotae N. Amer. 4: 11. 1980 (syn. fide Váňa & Piippo, 1989: 287).

Although Spruce published the basionym as *Jungermannia pearsoni*, according to Recommendation 60C1b (McNeill et al., 2012), the epithet must be corrected to "*pearsonii*."

Distribution. This species is found in the mountains of North Carolina and Tennessee in the east and in British Columbia in the west; it is also found in Great Britain and northern Europe, the Himalayas, Japan, Taiwan, Borneo, and Papua New Guinea.

Sphenolobus (Lindb.) Berggr., New Zealand Hepat.: 22. 1898. Basionym: *Jungermannia* sect. *Sphenolobus* Lindb., Not. Sällsk. Fauna Fl. Fenn. Förh. 13: 370. 1874. TYPE: *Sphenolobus minutus* (Schreb.) Berggr., New Zealand Hepat.: 22. 1898. Basionym: *Jungermannia minuta* Schreb. in Crantz, Forts-. Hist. Grönland: 285. 1770. [34. ANASTROPHYLLACEAE.]

Molecular studies (e.g., De Roo et al., 2007; Vilnet et al., 2010) have confirmed that the broad circumscription of *Anastrophyllum* found in Schuster (1969), Stotler and Crandall-Stotler (1977), and Grolle and Long (2000) is not monophyletic. As a consequence, *Sphenolobus* (Lindb.) Berggr. is once again recognized at the generic level.

Sphenolobus is a genus of three species, two of which occur in North America.

Sphenolobus minutus (Schreb.) Berggr., New Zealand Hepat.: 22. 1898, var. **minutus**. Basionym: *Jungermannia minuta* Schreb. in Cranz, Forts. Hist. Grönland: 285. 1770. ≡ *Anastrophyllum minutum* (Schreb.) R. M. Schust. var. *minutum*, Amer. Midl. Naturalist 42: 576. 1949. = *Anastrophyllum minutum* (Schreb.) R. M. Schust. var. *grandis* (Gottsche ex Lindb.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 767. 1969 (syn. fide Söderström et al., 1992: 119). Basionym: *Cephalozia rigida* Lindb. var. β *grandis* Gottsche ex Lindb., Bot. Not. 1872: 165. 1872. ≡ *Sphenolobus minutus* (Schreb.) Berggr. var. *grandis* (Gottsche ex Lindb.) Jørg., Bergens Mus. Skr. 16: 120. 1934.

Söderström et al. (1992: 119) determined that the type of *Anastrophyllum minutum* (Schreb.) R. M. Schust. var. *minutum* from Greenland was identical to the arctic-alpine *A. minutum* var. *grandis* (Gottsche ex Lindb.) R. M. Schust. and that the circumboreal *A. minutum* var. *weberi* (Mart.) Kartt. (basionym: *Jungermannia weberi* Mart.) is the more common, widespread variety of *A. minutum*. This concept is also followed by Damsholt (2013).

Distribution. This species is found in Arctic zones of Alaska, Ellesmere Island, and Greenland; it is also known from northern Scandinavia, northern Russia, Iceland, and Spitsbergen.

Sphenolobus minutus var. β **weberi** (Mart.) Schiffn., Sitzungsber. Deutsch. Naturwiss.-Med. Vereins Böhmen "Lotos" Prag 53: 159, 165. 1905. Basionym: *Jungermannia weberi* Mart., Fl. Crypt. Erlang.: 157. 1817. ≡ *Anastrophyllum minutum* (Schreb.) R. M. Schust. var. *weberi* (Mart.) Kartt. in Söderström, Karttunen & Hedenäs, Ann. Bot. Fenn. 29: 119. 1992. = *Anastrophyllum minutum* f. *cuspidatum* (Kaal.) R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 765. 1969 (syn. fide Damsholt, 2013: 172). Basionym: *Jungermannia minuta* var. *cuspidata* Kaal., Nyt. Mag. Naturvid. 33: 376. 1893.

Distribution. This variety is widespread in boreal-montane habitats, in the west from Alaska to Mexico and in the east from Greenland, Ellesmere Island, and Minnesota, south to North Carolina and Tennessee; it is also widespread in Europe from Iceland, Scandinavia, and Russia south through Great Britain, Spain, and Africa, and in Siberia, Asia, and Kerguelen.

Sphenolobus saxicola (Schrad.) Steph., Sp. Hepat. 2: 160. 1902. Basionym: *Jungermannia saxicola* Schrad., Syst. Samm. Cryptog. Gew. 2: 4. 1797. ≡ *Anastrophyllum saxicola* (Schrad.) R. M. Schust., Amer. Midl. Naturalist 45: 71. 1951, as "*saxicolus*."

The correct spelling for the epithet is *saxicola*, not *saxicolus*, because it is a noun in apposition and "retains its own gender and termination irrespective of the gender of the generic name" (McNeill et al., 2012: Art. 23.5).

Distribution. This species is found from Alaska and the Yukon south to British Columbia, and in the east

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

from Greenland, Baffin Island, and Minnesota, south into the Appalachians of North Carolina and Tennessee; it is also known from northern and central Europe, northern Siberia, and Japan.

Syzygiella Spruce, J. Bot. Ser. 2. 5: 234. Aug. 1876. TYPE: *Syzygiella perfoliata* (Sw.) Spruce, J. Bot. Ser. 2. 5: 234. Basionym: *Jungermannia perfoliata* Sw., Prodr.: 143. 1788. = *Jamesoniella* (Spruce) F. Lees, London Cat. Brit. Moss. 2: 25. 1881. Basionym: *Jungermannia* subg. *Jamesoniella* Spruce, J. Bot. 14: 202, 230. 1876 (syn. fide Feldberg et al., 2010a: 141). = *Crossogyna* (R. M. Schust.) Schljakov, Novosti Sist. Nizsh. Rast. 12: 311. 1975. Basionym: *Jamesoniella* subg. *Crossogyna* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 817. 1969, syn. nov. [32. ADELANTHACEAE.]

In a comprehensive molecular phylogenetic study of the Adelanthaceae (Feldberg et al., 2010b: 300), *Jamesoniella colorata* (Lehm.) Schiffn., the generitype of *Jamesoniella*, and *Syzygiella perfoliata* (Sw.) Spruce, the generitype of *Syzygiella*, were resolved within the same clade, along with several other species of both genera. As a consequence, *Jamesoniella* was synonymized under *Syzygiella*, which has priority as the earlier published name (Feldberg et al., 2010a).

Syzygiella is a mostly southern hemisphere genus of about 35 species, two of which occur in North America.

Syzygiella autumnalis (DC.) K. Feldberg, Váňa, Hentschel & Heinrichs, Cryptog. Bryol. 31: 144. 2010. Basionym: *Jungermannia autumnalis* DC., Fl. Franç. (ed. 3), 6: 202. 1815. ≡ *Jamesoniella autumnalis* (DC.) Steph., Sp. Hepat. 2: 92. 1901. ≡ *Crossogyna autumnalis* (DC.) Schljakov, Novosti Sist. Nizsh. Rast. 12: 311. 1975. = *Jamesoniella autumnalis* var. *heterostipa* (A. Evans) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 274. 1944, syn. nov. Basionym: *Jamesoniella heterostipa* A. Evans, Bryologist 18: 81. 1915. = *Jamesoniella autumnalis* var. *myriocarpa* (Brinkm.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 275. 1944, syn nov. Basionym: *Jamesoniella myriocarpa* Brinkm., Bryologist 36: 57. 1933.

Schuster (1969: 817) segregated *Jamesoniella autumnalis* into *Jamesoniella* subg. *Crossogyna* R. M. Schust. Schljakov (1975) not only raised *Crossogyna* to generic rank, but also transferred an additional nine species to it. *Crossogyna* is still recognized as a distinct genus by Konstantinova et al. (2009: 13), but the molecular analyses of Feldberg et al. (2010b) do not support its recognition.

Distribution. This species is widespread, from Alaska through Canada to Wyoming, and from Newfoundland to Minnesota and Kansas, south to Mississippi; it is also common throughout Europe, Asia, and the Indian subcontinent.

Syzygiella nipponica (S. Hatt.) K. Feldberg, Váňa, Hentschel & Heinrichs, Cryptog. Bryol. 31: 145. 2010. Basionym: *Jamesoniella nipponica* S. Hatt., J. Jap. Bot. 19: 350. 1943. ≡ *Jamesoniella autumnalis* var. *nipponica* (S. Hatt.) S. Hatt., J. Hattori Bot. Lab. 5: 76. 1951. ≡ *Crossogyna nipponica* (S. Hatt.) Schljakov, Novosti Sist. Nizsh. Rast. 12: 311. 1975.

Distribution. This species is known only from White Top Mountain, Virginia, in North America; it is otherwise known from Japan.

Targionia L., Sp. Pl. 2: 1136. 1 May 1753. TYPE: *Targionia hypophylla* L., Sp. Pl. 2: 1136. 1753. [14. TARGIONIACEAE.]

Targionia is a genus of three species, one of which occurs in North America.

Targionia hypophylla L., Sp. Pl. 2: 1136. 1753.

Distribution. This species is found from California to Nevada, south to New Mexico; it is also known from southern Europe, Asia, Africa, and Latin America.

Taxilejeunea (Spruce) Steph. = **Lejeunea** Lib.

Taxilejeunea cladiophora R. M. Schust. = **Lejeunea cancellata** Nees & Mont.

Taxilejeunea obtusangula (Spruce) A. Evans ≡ **Lejeunea obtusangula** Spruce.

Telaranea Spruce ex Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 103. Sep. 1893 [preprint], nom. cons. TYPE: *Telaranea chaetophylla* (Spruce) Schiffn., Hepat. in Engl. & Prantl, Nat. Pflanzenfam. 1(3): 103. 1893 [preprint]. Basionym: *Lepidozia chaetophylla* Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 365. 1885. [54. LEPIDOZIACEAE.]

Schiffner (1893) ascribed the name *Telaranea* to Spruce, but although Spruce proposed the name, he treated it only as provisional, rendering it not validly published (McNeill et al., 2012: Art. 36.1). Therefore, the correct citation for the genus is *Telaranea* Spruce ex Schiffn. or simply *Telaranea* Schiffn. This generic name has been conserved over *Arachniopsis* Spruce, Cephalozia: 84. 1882 (Wiersema et al., 2015: 126).

Telaranea is a genus of about 30 species, one of which occurs in North America.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Telaranea longifolia (M. Howe) J. J. Engel & G. L. Merr., Fieldiana, Bot., n.s. 44: 163. 2004. Basionym: *Telaranea nematodes* (Gottsche ex Austin) M. Howe var. *longifolia* M. Howe, Bull. Torrey Bot. Club 29: 286. 1902. = *Telaranea nematodes* auct. amer. (syn. fide Engel & Smith Merrill, 2004: 164).

Distribution. This species is found in the eastern United States and Gulf Coast regions from Massachusetts to Florida and west to Oklahoma.

Telaranea nematodes (Gottsche ex Austin) M. Howe, Bull. Torrey Bot. Club 29: 284. 1902. Basionym: *Cephalozia nematodes* Gottsche ex Austin, Bull. Torrey Bot. Club 6: 302. 1879. —EXCLUDED.

The North American treatments of this species by Schuster (1969: 35) and others describe plants that belong to *Telaranea longifolia*.

Telaranea sejuncta (Ångstr.) S. W. Arnell, Bot. Not. 110: 18. 1957. Basionym: *Blepharostoma sejunctum* Ångstr., Öfvers. Kongl. Vetensk.-Akad. Förh. 33: 78. 1876. —EXCLUDED.

In our checklist (Stotler & Crandall-Stotler, 1977: 425) we listed *Telaranea sejuncta* as a synonym of *T. nematodes*. However, Engel and Smith Merrill (2004: 187) pointed out that this widely adopted synonymy was in error and, furthermore, that while *T. sejuncta* was probably widespread in the Neotropics, it does not occur in North America.

Tetralophozia (R. M. Schust.) Schljakov, Novosti Sist. Nizsh. Rast. 13: 227. 1976. Basionym: *Chandonanthus* subg. *Tetralophozia* R. M. Schust., J. Hattori Bot. Lab. 23: 206. 1960 [1961]. TYPE: *Tetralophozia setiformis* (Ehrh.) Schljakov, Novosti Sist. Nizsh. Rast. 13: 228. 1976. Basionym: *Jungermannia setiformis* Ehrh., Hannover. Mag. 22: 142. 1784. [34. ANASTROPHYLLACEAE.]

This Laurasian genus comprises four species, two of which occur in our flora.

Tetralophozia filiformis (Steph.) Urmi, J. Bryol. 12: 394. 1983. Basionym: *Chandonanthus filiformis* Steph., Sp. Hepat. 3: 644. 1909.

Distribution. This species is found in coastal regions from Alaska to British Columbia; it is also widespread in Asia.

Tetralophozia setiformis (Ehrh.) Schljakov, Novosti Sist. Nizsh. Rast. 13: 228. 1976. Basionym: *Jungermannia setiformis* Ehrh., Hannover. Mag. 22: 142. 1784. ≡ *Chandonanthus setiformis* (Ehrh.) Lindb., Hepat. Utveckl.: 32. Helsinki. 1877.

Distribution. This species is found in the west from Alaska to British Columbia and in the east from Greenland and Ellesmere Island south to Maine and New York; it is also known from Iceland, Scotland, central and northern Europe, and Siberia.

Trichocolea Dumort., Comment. Bot.: 113. Nov. (sero)–Dec. (ante) 1822, as "*Thricholea*," nom. et orth. cons. TYPE: *Trichocolea tomentella* (Ehrh.) Dumort., Syll. Jungerm. Europ.: 67. 1831. Basionym: *Jungermannia tomentella* Ehrh., Hannover. Mag. 21: 277. 1783. [49. TRICHOCOLEACEAE.]

Trichocolea is a genus of 18 to 20 species, one of which occurs in North America.

Trichocolea tomentella (Ehrh.) Dumort., Syll. Jungerm. Europ.: 67. 1831. Basionym: *Jungermannia tomentella* Ehrh., Hannover. Mag. 21: 277. 1783.

Distribution. This species is found in eastern North America from Newfoundland to Minnesota and south to Florida and Arkansas; it is unknown from western North America. It is also found in scattered localities in the British Isles, Europe, the Himalayas, China, and Japan.

Trilophozia quinquedentata (Huds.) Bakalin ≡ **Tritomaria quinquedentata** (Huds.) H. Buch.

Tritomaria Schiffn. ex Loeske, Hedwigia 49: 13. 4 Aug. 1909. TYPE: *Tritomaria exsecta* (Schmidel) Schiffn. ex Loeske, Hedwigia 49: 13. 1909. Basionym: *Jungermannia exsecta* Schmidel, Icon. Pl., ed. 2: 241, t. 62. 1796, nom. cons.

This genus includes *Heterogemma* (Jørg.) Konstant. & Vilnet (≡ *Lophozia* sect. *Heterogemma* Jørg.). The two species of *Lophozia* sect. *Heterogemma*, *L. capitita* and *L. laxa*, were placed by Schuster (1969) in *Lophozia* subg. *Massula* and later recognized as species of *Schistochilopsis* (N. Kitag.) Konstant. by Konstantinova and Vasiljev (1994). In molecular studies by Vilnet et al. (2007, 2008) these two species formed a distinct clade, which was elevated to generic rank as *Heterogemma* (Jørg.) Konstant. & Vilnet (Konstantinova & Vilnet, 2009). Unfortunately, however, this initial analyses did not include any members of the genus *Tritomaria*; when that genus was included (Vilnet et al., 2012), these two taxa nested within *Tritomaria*, where we have placed them. We also include *Trilophozia* (R. M. Schust.) Bakalin, with its single species, *T. quinquedentata*, within *Tritomaria*. See discussion under that species. [36. SCAPANIACEAE.]

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Tritomaria is a genus of six species, all of which occur in North America.

Tritomaria capitata (Hook.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Jungermannia capitata* Hook., Brit. Jungermann. pl. 80. 1816. ≡ *Lophozia capitata* (Hook.) Macoun, Cat. Canad. Pl., Lich. Hepat.: 18. 1902. ≡ *Schistochilopsis capitata* (Hook.) Konstant., Arctoa 3: 125. 1994. ≡ *Heterogemma capitata* (Hook.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010].

Although Schuster (1969: 469) attributed Boulay with the authorship of *Lophozia capitata*, Macoun had effected that combination two years earlier (vide Grolle, 1968: 544).

Distribution. This species is found from Ontario and Newfoundland south to Florida and west to Michigan, Minnesota, and Iowa; it is also in Great Britain and northern Europe.

Tritomaria exsecta (Schmidel) Schiffn. ex Loeske, Hedwigia 49: 13. 1909. Basionym: *Jungermannia exsecta* Schmidel, Icones Pl. et Anal. Part., ed. 2: 241. t. 62. 1796, nom. cons.

Since *Jungermannia exsecta* Schmidel is conserved, the correct citation for this taxon is *Tritomaria exsecta* (Schmidel) Schiffn. ex Loeske, or simply *T. exsecta* (Schmidel) Loeske (vide Wiersema et al., 2015: 367).

Distribution. This species is known in North America from Newfoundland to Michigan, south to Kentucky, and from southern Alaska to Colorado; it is also widespread in Europe.

Tritomaria exsectiformis (Breidl.) Schiffn. ex Loeske, Hedwigia 49: 13. 1909, subsp. **exsectiformis**. Basionym: *Jungermannia exsectiformis* Breidl., Mitt. Naturw. Ver. Steiermark 30: 321. 1894.

Loeske (1909) ascribed both *Tritomaria exsecta* and *T. exsectiformis* to Schiffner, but Loeske is the author who validly published these combinations.

Distribution. This species is circumboreal, in North America from British Columbia to Newfoundland, south to North Carolina and Colorado; it is widespread in northern Europe.

Tritomaria exsectiformis subsp. **arctica** R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 661. 1969.

Distribution. This variety is known only from Greenland.

Tritomaria heterophylla R. M. Schust. ≡ **Pseudotritomaria heterophylla** (R. M. Schust.) Konstant. & Vilnet.

Tritomaria laxa (Lindb.) Stotler & Crand.-Stotl., comb. nov. Basionym: *Jungermannia laxa* Lindb., Hepat. Hibernia 10: 539. 1875. ≡ *Lophozia laxa* (Lindb.) Grolle, Trans. Brit. Bryol. Soc. 5: 543. 1968. ≡ *Schistochilopsis laxa* (Lindb.) Konstant., Arctoa 3: 125. 1994. ≡ *Heterogemma laxa* (Lindb.) Konstant. & Vilnet, Arctoa 18: 67. 2009 [2010].

Schuster (1969: 464) used the name *Lophozia marchica* (Nees) Steph. in his flora but correctly stated in footnote 105 that "*L. laxa* (Lindb.) Grolle must supplant *L. marchica* (Nees) Steph.," as indicated by Grolle (1968: 543).

Distribution. This species is found in eastern North America from Ellesmere Island, Ontario, and Quebec south through New England to New Jersey and west to Michigan and Minnesota; it is also found in Europe from Scandinavia to Switzerland.

Tritomaria quinquedentata (Huds.) H. Buch, Memoranda Soc. Fauna Fl. Fenn. 8: 290. 1933, subsp. **quinquedentata**. Basionym: *Jungermannia quinquedentata* Huds., Fl. Angl. 433. 1762. ≡ *Trilophozia quinquedentata* (Huds.) Bakalin, Monogr. Obrab. Roda *Lophozia*: 34. 2005 [in Russian].

In 2005, Bakalin elevated *Tritomaria* sect. *Trilophozia* (R. M. Schust.) R. M. Schust. to generic rank, but this change in status is not supported by current molecular data.

Distribution. This species is found in North America from Alaska and the Yukon to British Columbia, east to Manitoba, and widespread in Greenland, Ellesmere Island, and New England; it is also found throughout northern Europe.

Tritomaria quinquedentata var. **grandiretis** H. Buch & S. W. Arnell in Arnell, Svensk Bot. Tidskr. 44: 84. 1950.

Distribution. This variety is found in North America where it is known only from Greenland and Ellesmere Island; it is also found in Scandinavia and Siberia.

Tritomaria quinquedentata (Huds.) H. Buch var. *turgida* (Lindb.) Weim. ≡ **Tritomaria quinquedentata** (Huds.) H. Buch subsp. **turgida** (Lindb.) Damsh.

Tritomaria quinquedentata subsp. **turgida** (Lindb.) Damsh., Bryologist 85: 98. 1982. Basionym:

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Jungermannia quinquedentata Huds. var. *turgida* Lindb. in Lindb. and Arnell, Kungl. Svenska Vetenskapsakad. Handl. N. F. 23: 59. 1889. ≡ *Tritomaria quinquedentata* (Huds.) H. Buch var. *turgida* (Lindb.) Weim., Svensk Bot. Tidskr. 31: 375. 1937.

Distribution. This species is found in Greenland and Ellesmere Island in the east and Alaska in the west; in Europe it is known from Scandinavia and Siberia.

Tritomaria scitula (Taylor) Jørg., Bergens Museums Årbok 7: 9. 1921. Basionym: *Jungermannia scitula* Taylor, London J. Bot. 5: 274. 1846.

Distribution. This species is found in North America from Alaska south to Alberta and British Columbia in the west and Greenland to Minnesota in the east; it is also in Scandinavia and the mountains of central Europe.

Literature Cited

Akiyama, H., K. Kosuge & T. Yamaguchi. 2003. Biosystematic studies of the *Dumortiera hirsuta* complex (Hepaticae), 1. Genetic and morphological diversity found in Taiwanese populations. Bryol. Res. 8: 203–213.

Amakawa, T. 1960. Family Jungermanniaceae of Japan. II. J. Hattori Bot. Lab. 22: 1–90.

Ångström, J. 1876. Primae lineae muscorum cognoscendorum, qui ad Caldas Brasiliae sunt collecti. 2. (Hepaticae). Öfvers. Kongl. Vetensk.-Akad. Förh. 33: 77–92.

Aranda, S. C., S. R. Gradstein, J. Patiño, B. Laenen, A. Désamoré & A. Vanderpoorten. 2014. Phylogeny, classification and species delimitation in the liverwort genus *Odontoschisma* (Cephaloziaceae). Taxon 63: 1008–1025.

Arnell, H. W. 1892. Lebermoosstudien im Nördlichen Norwegen. C. J. Lundgrens Enkas Boktryckeri, Jönköping, Sweden.

Arnell, S. 1950. Comments on some Swedish species of *Cephaloziella*. Bot. Not. 1950: 83–90.

Arnell, S. 1956. Illustrated Moss Flora of Fennoscandia. I. Hepaticae. CWK Gleerup, Lund.

Austin, C. F. 1869. Characters of some new Hepaticae (mostly North American), together with notes on a few imperfectly described species. Proc. Acad. Nat. Sci. Philadelphia 21: 218–234.

Austin, C. F. 1873. Hepaticae Boreali-Americanae. (Tickets of the Specimens.) Closter, New Jersey.

Austin, C. F. 1876. Notes on Hepaticology. Bot. Bull. 1: 35–36.

Bakalin, V. A. 2005. Monograficzeskaya obrabotka roda *Lophozia* (Dumort.) Dumort. s. str. [Monograph of the genus *Lophozia* (Dumort.) Dumort. s. str.]. Nauka, Moscow. [In Russian.]

Bakalin, V. A. 2010. The Distribution of Bryophytes in the Russian Far East. Part I. Hepatics. Far Eastern University, Vladivostok.

Bakalin, V. A. 2011. Notes on *Lophozia* VI. Taxonomy and distribution of *Lophozia* and *Schistochilopsis* (Lophoziaceae) in North America north of Mexico. Bryologist 114: 298–315.

Bakalin, V. A. 2012a. A small collection of hepatics from Oregon and California (western North America). Arctoa 21: 201–205.

Bakalin, V. A. 2012b. *Nardia hiroshii* Amakawa: A new species for North American liverwort flora and the key to *Nardia* species in North Pacific. Arctoa 21: 97–100.

Bakalin, V. A. 2012c. Bryophytes of Sakhalin. Maritime State University, Vladivostok. [In Russian.]

Bakalin, V. A. 2012d. *Solenostoma fusiforme*: An addition to the North American liverwort flora and a review of the genus *Solenostoma* in North America, north of Mexico. Polish Bot. J. 57: 137–143.

Bakalin, V. A. 2014. The study of type collection in Conservatoire et Jardin Botanique de la Ville de Genève (G): The hepatic genera *Jungermannia*, *Solenostoma* and *Plectocolea*. Arctoa 23: 91–136.

Bakalin, V. A. & A. A. Vilnet. 2009. [2010]. Two new species of Jungermanniaceae from Asiatic Russia. Arctoa 18: 151–162.

Bakalin, V. A. & A. A. Vilnet. 2012. New combinations and new species of *Solenostoma* and *Plectocolea* from the Russian Far East. Bryologist 115: 566–584.

Bakalin, V. A., S. S. Choi & A. Ermolenko. 2012. *Lejeunea alaskana* (R. M. Schust. & Steere) Inoue & Steere, a new species for the Russian liverwort flora. Arctoa 21: 193–196.

Bakalin, V. A., A. A. Vilnet, T. Furuki & T. Katagiri. 2014. Taxonomic novelties in *Solenostoma–Plectocolea* complex (Solenostomataceae, Hepaticae) in East Asia. Botanica Pacifica 3(2): 3–18.

Bednarek-Ochyra, H., J. Váňa, R. Ochyra & R. I. Lewis Smith. 2000. The Liverwort Flora of Antarctica. Polish Academy of Sciences, Cracow.

Bell, D. & D. G. Long. 2012. European *Herbertus* and the 'Viking prongwort.' Field Bryol. 106: 3–14.

Bell, D., D. G. Long, A. D. Forrest, M. L. Hollingsworth, H. H. Blom & P. M. Hollingsworth. 2012. DNA barcoding of European *Herbertus* (Marchantiopsida, Herbertaceae) and the discovery and description of a new species. Molec. Ecol. Resources 12: 36–47.

Berrie, G. K. 1964. Experimental studies on polyploidy in liverworts I. The *Riccia fluitans* complex. Bryologist 67: 146–152.

Bischler, H. 1978. *Plagiochasma* Lehm. et Lindenb. II. Les taxa européens et africains. Rev. Bryol. Lichénol. 44: 223–300.

Bischler, H. 1979. *Plagiochasma* Lehm. et Lindenb. IV. Les taxa américains. Rev. Bryol. Lichénol. 45: 255–333.

Bischler, H. 1984. *Marchantia* L. The new world species. Bryophyt. Biblioth. 26: 1–228.

Bischler, H. 1998. Systematics and evolution of the genera of the Marchantiales. Bryophyt. Biblioth. 51: 1–291.

Bischler-Causse, H. 1993. *Marchantia* L. The European and African taxa. Bryophyt. Biblioth. 45: 1–129.

Bischler-Causse, H. & M. C. Boisselier-Dubayle. 1991. Lectotypification of *Marchantia polymorpha* L. J. Bryol. 16: 361–365.

Bischler-Causse, H., S. R. Gradstein, S. Jovet-Ast, D. G. Long & N. Salazar Allen. 2005. Marchantiidae. Fl. Neotrop Monogr. 97: 1–262.

Boisselier-Dubayle, M.-C. & H. Bischler. 1997. Enzyme polymorphism in *Preissia quadrata* (Hepaticae, Marchantiaceae). Pl. Syst. Evol. 205: 73–84.

Boisselier-Dubayle, M. C., J. Lamboudière & H. Bischler. 1998. Taxa delimitation in *Reboulia* investigated with morphological, cytological, and isozyme markers. Bryologist 101: 61–69.

Bonner, C. E. B. 1963. Index Hepaticarum, Pars III: *Barbilophozia* to *Ceranthus*. J. Cramer, Weinheim.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Bonner, C. E. B. 1965. Index Hepaticarum, Pars V: *Delavayella* to *Geothallus*. J. Cramer, Weinheim.

Borovichev, E. A. & V. A. Bakalin. 2013. The survey of Marchantiales from the Russian Far East I. The review of Cleveaceae (Hepaticae). Botanica Pacifica 2: 53–61.

Bray, J. R. 2001. A Revision of the Genus *Fossombronia* Raddi in North America, North of Mexico, and Europe. Ph.D. Dissertation, Southern Illinois University, Carbondale.

Breil, D. A. 1970. Liverworts of the mid-Gulf coastal plain. Bryologist 73: 409–491.

Brinkman, A. H. 1934. List of Hepaticae of Pacific Coast and adjoining territory. Report of the Provincial Museum of Natural History, Victoria, British Columbia.

Briscoe, L., J. J. Engel, L. Söderström, A. Hagborg & M. von Konrat. 2015. Notes on early land plants today. 66. Nomenclatural notes on Acrobolbaceae. Phytotaxa 202: 58–62.

Brotherus, V. F. 1872. Musci Fenniae Exsiccatae, Fasc. 2, 51–100. Helsinki.

Brummitt, R. K. & C. E. Powell. 1992. Authors of Plant Names. A List of Authors of Scientific Names of Plants, with Recommended Standard Forms of their Names, Including Abbreviations. Royal Botanic Gardens, Kew.

Buch, H. 1932. [1933]. Vorarbeiten zu einer Lebermoosflora Fenno-scandias. I. Ein Versuch zur Aufspaltung der Gattungen *Lophozia* Dum. and *Sphenolobus* Steph. Memoranda Soc. Fauna Fl. Fenn. 8: 282–297.

Buch, H. 1942. Vorarbeiten zur eine Lebermoosflora Fenno-Scandias. VII. Über die verwandtschaftlichen Beziehungen zwischen den Arten der Gattungen *Sphenolobus* St. sens. lat. und *Lophozia* Dum. sens. lat. Memoranda Soc. Fauna Fl. Fenn. 17: 283–290, 295.

Buch, H., A. W. Evans & F. Verdoorn. 1937. A preliminary check list of the Hepaticae of Europe and America (North of Mexico). Ann. Bryol. 10: 3–8.

Caners, R. T. 2011. Discovery of the epixylic liverwort *Lophozia ciliata* Damsh., L. Söderstr. & H. Weibull in Canada. Evansia 28: 77–80.

Caners, R. T. 2013. Disjunct occurrence of *Harpanthus drummondii* (Taylor) Grolle (Geocalycaceae, Jungermanniopsida) in the boreal forest of west-central Canada. Evansia 30: 24–30.

Carruthers, W. 1865. On the nomenclature of the British Hepaticae. J. Bot. 3: 297–302.

Christy, J. A. & D. H. Wagner. 1996. Guide for the Identification of Rare, Threatened or Sensitive Bryophytes in the Range of the Northern Spotted Owl, Western Washington, Western Oregon, and Northwestern California. USDI Bureau of Land Management, USDA Forest Service, the Nature Conservancy, and Northwest Botanical Institute, Portland.

Corda, A. J. C. 1829. Genera Hepaticarum. Die Gattungen der Lebermoose. Beitr. Naturgesch. (Opiz) 12: 643 [sic, nec 645]–655.

Costa, D. P. 2008. Metzgeriaceae (Hepaticae). Fl. Neotrop. Monogr. 102: 1–169.

Costa, D. P. & S. R. Gradstein. 2000. On the status of *Metzgeria angusta*, a poorly known Neotropical taxon. Bryologist 104: 757–759.

Crandall-Stotler, B. J. & R. E. Stotler. 2007. On the identity of *Moerckia hibernica* (Hook.) Gottsche (Moerckiaceae fam. nov., Marchantiophyta). Beih. Nova Hedwigia 131: 41–59.

Crandall-Stotler, B., R. Stotler & P. Geissler. 1987. A biosystematic study of the subspecies of *Frullania tamarisci* (L.). Bryologist 90: 287–308.

Crandall-Stotler, B. J., R. E. Stotler & C. H. Ford. 2002. Contributions toward a monograph of *Petalophyllum* (Marchantiophyta). Novon 12: 334–337.

Crandall-Stotler, B., R. E. Stotler & D. G. Long. 2009a. Morphology and classification of the Marchantiophyta. Pp. 1–54 *in* B. Goffinet & A. J. Shaw (editors), Bryophyte Bryology, 2nd ed. Cambridge University Press, Cambridge.

Crandall-Stotler, B., R. E. Stotler & D. G. Long. 2009b. Phylogeny and classification of the Marchantiophyta. Edinburgh J. Bot. 66: 155–198.

Crozals, A. 1903. Flore bryologique de Roquehaute (Hérault). Rev. Bryol. 30(2): 17–32.

Damsholt, K. 1977. The taxonomic status of *Anomomarsupella* Schust. (Hepaticae). Lindbergia 4: 132.

Damsholt, K. 1989. Relationship between recently collected Swedish material of *Riccia ciliata* Hoffm. and the German material collected by Hoffmann. Lindbergia 14: 191–193.

Damsholt, K. 2002. Illustrated Flora of Nordic Liverworts and Hornworts. Nordic Bryological Society, Lund.

Damsholt, K. 2006. Liverworts of the Reindeer Preserve, Northwest Territories, Canada. Lindbergia 31: 88–100.

Damsholt, K. 2009. Illustrated Flora of Nordic Liverworts and Hornworts, 2nd ed. Nordic Bryological Society, Lund.

Damsholt, K. 2010. Liverworts collected during the Norwegian east Greenland expeditions 1929–1933. Lindbergia 33: 92–113.

Damsholt, K. 2013. The Liverworts of Greenland. Nordic Bryological Society, Lund.

Damsholt, K. & J. Váňa. 1977. The genus *Jungermannia* L. emend. Dumort. (*Hepaticae*) in Greenland. Lindbergia 4: 1–26.

Damsholt, K. & D. G. Long. 1979. The perianth of *Scapania calcicola* (Arn. et Persss.) Ingham (Hepaticae) and the relationship to *Scapania ligulifolia* (Schust.) Schust. Lindbergia 5: 73–76.

Dauphin, G. 2003. Ceratolejeunea. Fl. Neotrop. Monogr. 90: 1–86.

Dauphin, G., R. P. Wunderlin, F. B. Essig & P. G. Davison. 2011. A checklist of the liverworts (Marchantiophyta) and hornworts (Anthocerotophyta) of Florida. J. Bot. Res. Inst. Texas 5: 773–814.

Davison, P. & D. K. Smith. 1992. *Calycularia crispula* (Hepaticae) in the Aleutian Islands and Pacific Northwest of North America. Bryologist 85: 266–269.

Davison, P. G. & H. W. Robison. 2012. *Metzgeria uncigera* new to Arkansas. Evansia 29: 54–55.

Davison, P. G., D. K. Smith, K. Feldberg, M. Lindner & J. Heinrichs. 2006. *Plagiochila punctata* (Plagiochilaceae) in Tennessee, new to North America. Bryologist 109: 242–246.

del Rosario, R. M. 1964. The North American Species of *Asterella*. Master's Thesis, University of Kansas, Lawrence.

De Roo, R. T., T. A. Hedderson & L. Söderström. 2007. Molecular insights into the phylogeny of the leafy liverwort family Lophoziaceae Cavers. Taxon 56: 301–314.

Devos, N., M. A. M. Renner, R. Gradstein, A. J. Shaw, B. Laenen & A. Vanderpoorten. 2011. Evolution of sexual systems, dispersal strategies and habitat selection in the liverwort genus *Radula*. New Phytol. 192: 225–236.

Dewey, R. M. 1988. Electrophoretic studies in *Riccia* subgenus *Riccia* (Hepaticopsida: Ricciaceae). Bryologist 91: 344–353.

Dong, S., A. Schäfer-Verwimp, T. Pócs, K. Feldberg, A. Czumaj, A. R. Schmidt, H. Schneider, et al. 2013. Size doesn't matter: Recircumscription of *Microlejeunea* (Lejeuneaceae, Porellales) based on molecular and morphological evidence. Phytotaxa 85: 41–55.

Douin, C. 1916. Les variations du gamétophyte chez les Céphaloziellacées. Rev. Gén. Bot. 28: 251–353 + 19 pl.

Douin, C. 1920. La famille des Céphaloziellacées. Mém. Soc. Bot. France 29: 1–90.

This content downloaded from 146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Doyle, W. T. & R. E. Stotler. 2006. Contributions toward a bryoflora of California III. Keys and annotated species catalogue for liverworts and hornworts. Madroño 53: 89–197.

Dumortier, B. C. 1822. Commentationes Botanicae. Casterman-Dieu, Tournay.

Dumortier, B. C. 1831. Sylloge Jungermannidearum Europae Indigenarum. Casterman, Tournay.

Dumortier, B. C. 1835. Recueil d'Observations sur les Jungermanniacées, Fasc. I. Révision des Genres. Blanquart, Tournay.

Dumortier, B. C. 1874. Hepaticae Europae. Jungermannideae Europae post semiseculum recensitae, adjunctis Hepaticis. Bull. Soc. Roy. Bot. Belgique 13: 5–203.

Engel, J. J. 1990. Falkland Islands (Islas Malvinas) Hepaticae and Anthocertophyta: A taxonomic and phytogeographic study. Fieldiana, n.s. 25: i–vii, 1–209.

Engel, J. J. & R. M. Schuster. 1984. [1985]. An overview and evaluation of the genera of Geocalycaceae subfamily Lophocoleoideae (Hepaticae). Nova Hedwigia 39: 385–463.

Engel, J. J. & G. L. Smith Merrill. 2004. Austral Hepaticae. 35. A taxonomic and phylogenetic study of *Telaranea* (Lepidoziaceae), with a monograph of the genus in temperate Australasia and commentary on extra-Australasian taxa. Fieldiana, Bot., n.s. 44: 1–265.

Engel, J. J. & X. He. 2010. Studies on Lophocoleaceae. XIX. The systematic identity of *Cyanolophocolea* R. M. Schust., an intriguing liverwort from New Zealand and Australia, based on morphological and molecular evidence. Bryologist 113: 149–163.

Engel, J. J., X. He & D. Glenny. 2010. Studies on Lophocoleaceae XXII. The systematic position of *Amphilophocolea* R. M. Schust. together with comments on the status of *Tetracymbaliella* Grolle and *Lamellocolea* R. M. Schust. Phytotaxa 9: 41–52.

Evans, A. W. 1897. A revision of the North American species of *Frullania*, a genus of Hepaticae. Trans. Connecticut Acad. Arts 10: 1–39 + 15 pl.

Evans, A. W. 1902. The Lejeuneae of the United States and Canada. Mem. Torrey Bot. Club 8: 113–183 + 22 pl.

Evans, A. W. 1906. Hepaticae of Puerto Rico. VI. *Cheilolejeunea, Rectolejeunea, Cystolejeunea* and *Pycnolejeunea*. Bull. Torrey Bot. Club 33: 1–25.

Evans, A. W. 1911. Hepaticae of Puerto Rico. X. *Cololejeunea, Leptocolea* and *Aphanolejeunea*. Bull. Torrey Bot. Club 38: 251–286.

Evans, A. W. 1917a. Notes on North American Hepaticae. VII. Bryologist 20: 17–28.

Evans, A. W. 1917b. Notes on the genus *Herberta*, with a revision of the species known from Europe, Canada and the United States. Bull. Torrey Bot. Club 44: 191–222, pl. 8.

Evans, A. W. 1917c. The American species of *Marchantia*. Trans. Connecticut Acad. Arts 21: 201–313.

Evans, A. W. 1918. Hepaticae. Pp. 448–469 *in* N. L. Britton (editor), Flora of Bermuda. Charles Scribner's Sons, New York.

Evans, A. W. 1919. Notes on North American Hepaticae. VIII. Bryologist 22: 54–73.

Evans, A. W. 1920. Hepaticae. Pp. 500–521 *in* N. L. Britton & C. F. Millspaugh (editors), The Bahama Flora. New York Botanical Garden, Bronx.

Evans, A. 1923. Notes on North American Hepaticae. X. Bryologist 26: 55–67.

Evans, A. W. 1940. List of Hepaticae found in the United States, Canada, and Arctic America. Bryologist 43: 133–138.

Faubert, J., D. F. Bastien, M. Lapointe & R. Claude. 2012. Cinq hépatiques nouvelles pour le Québec. Carnets de Bryol. 2: 12–16.

Feldberg, K. & J. Heinrichs. 2005. On the identity of *Herbertus borealis* (Jungermanniopsida: Herbertaceae), with notes on the possible origin of *H. sendtneri*. J. Bryol. 27: 343–350.

Feldberg, K., H. Groth, R. Wilson, A. Schäfer-Verwimp & J. Heinrichs. 2004. Cryptic speciation in *Herbertus* (Herbertaceae, Jungermanniopsida): Range and morphology of *Herbertus sendtneri* inferred from nrITS sequences. Pl. Syst. Evol. 249: 247–261.

Feldberg, K., J. Hentschel, R. Wilson, D. S. Rycroft, D. Glenny & J. Heinrichs. 2007. Phylogenetic biogeography of the leafy liverwort *Herbertus* (Jungermanniales, Herbertaceae) based on nuclear and chloroplast DNA sequence data: Correlation between genetic variation and geographical distribution. J. Biogeogr. 34: 688–698.

Feldberg, K., J. Váňa, D. G. Long, A. J. Shaw, J. Hentschel & J. Heinrichs. 2010a. A phylogeny of Adelanthaceae (Jungermanniales, Marchantiophyta) based on nuclear and chloroplast DNA markers, with comments on classification, cryptic speciation and biogeography. Molec. Phylogen. Evol. 55: 293–304.

Feldberg, K., J. Váňa, J. Hentschel & J. Heinrichs. 2010b. Currently accepted species and new combinations in Jamesonielloideae (Adelanthaceae, Jungermanniales). Cryptog. Bryol. 31: 141–146.

Feldberg, K., J. Heinrichs, A. R. Schmidt, J. Váňa & H. Schneider. 2013. Exploring the impact of fossil constraints on the divergence time estimates of derived liverworts. Pl. Syst. Evol. 299: 585–601.

Feldberg, K., J. Váňa, J. Krusche, J. Kretschmann, S. D. F. Patzak, O. A. Pérez-Escobar, N. R. Rudolf, et al. 2016. A phylogeny of Cephaloziaceae (Jungermanniopsida) based on nuclear and chloroplast DNA markers. Organisms Diversity Evol. 16: 727–742.

Forrest, L. L., E. C. Davis, D. G. Long, B. J. Crandall-Stotler, A. Clark & M. L. Hollingsworth. 2006. Unraveling the evolutionary history of the liverworts (Marchantiophyta): Multiple taxa, genomes and analysis. Bryologist 109: 303–334.

Forrest, L. L., N. Salazar Allen, J. A. Gudiño, H. Korpelainen & D. Long. 2011. Molecular and morphological evidence for distinct species in *Dumortiera* (Dumortieriaceae). Bryologist 114: 102–115.

Frey, W. & M. Stech. 2008. New suprageneric taxa of liverworts (Marchantiophyta) and mosses (Bryophyta). Nova Hedwigia 87: 261–267.

Frye, T. C. & L. Clark. 1937. Hepaticae of North America. Univ. Wash. Publ. Biol. 6: 1–162.

Frye, T. C. & L. Clark. 1943. Hepaticae of North America. Part II. Univ. Wash. Publ. Biol. 6: 163–336.

Frye, T. C. & L. Clark. 1945. Hepaticae of North America. Part III. Univ. Wash. Publ. Biol. 6: 337–564.

Frye, T. C. & L. Clark. 1946. Hepaticae of North America. Part IV. Univ. Wash. Publ. Biol. 6: 565–733.

Frye, T. C. & L. Clark. 1947. Hepaticae of North America. Part V. Univ. Wash. Publ. Biol. 6: 735–1018.

Fulford, M. 1945. Studies on American Hepaticae. VI. *Ceratolejeunea*. Brittonia 5: 368–403.

Fuselier, L., P. G. Davison, M. Clements, B. Shaw, N. Devos, J. Heinrichs, J. Hentschel, et al 2009. Phylogeographic analyses reveal distinct lineages of the liverworts *Metzgeria furcata* (L.) Dumort. and *Metzgeria conjugata* Lindb. (Metzgeriaceae) in Europe and North America. Biol. J. Linn. Soc. 98: 745–756.

Fuselier, L. C., B. Shaw, J. J. Engel, M. von Konrat, D. P. Costa, N. Devos & A. J. Shaw. 2011. The status and phylogeography of the liverwort genus *Apometzgeria* Kuwah. (Metzgeriaceae). Bryologist 114: 92–101.

Geissler, P. & H. Bischler. 1987. Index Hepaticarum, Vol. 10. *Jungermannia* to *Lejeunites*. J. Cramer, Berlin.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Geissler, P. & H. Bischler. 1989. Index Hepaticarum, Vol. 11. *Naiadea* to *Pycnoscenus*. J. Cramer, Berlin.
Geissler, P. & H. Bischler. 1990. Index Hepaticarum, Vol. 12. *Racemigemma* to *Zoopsis*. J. Cramer, Berlin.
Glenny, D., J. J. Engel & X. He-Nygrén. 2009. The systematic identity of *Chiloscyphus trichocoleoides*, a new liverwort species from New Zealand, uncovered by morphological and molecular evidence. J. Bryol. 31: 93–105.
Gottsche, C. M. & L. Rabenhorst. 1862. Hepaticae Europaeae, Decas 21, 22. Dresden.
Gottsche, C. M. & L. Rabenhorst. 1872. Hepaticae Europaeae, Exsiccatae 521–550. Dresden.
Gottsche, C. M. & L. Rabenhorst. 1873. Hepaticae Europaeae, Exsiccatae 551–590. Dresden.
Gottsche, C. M., J. B. G. Lindenberg & G. G. Nees von Esenbeck. 1844. Synopsis Hepaticarum, Part 1: 1–144. Meissner, Hamburg.
Gottsche, C. M., J. B. G. Lindenberg & G. G. Nees von Esenbeck. 1845. Synopsis Hepaticarum, Part 3: 305–464. Meissner, Hamburg.
Gradstein, S. R. 1974. Studies on Lejeuneaceae subfam. Ptychanthoideae. I. Nomenclature and taxonomy of *Ptychocoleus, Acrolejeunea* and *Schiffneriolejeunea*. J. Hattori Bot. Lab. 38: 327–336.
Gradstein, S. R. 1975. A taxonomic monograph of the genus *Acrolejeunea* (Hepaticae). Bryophyt. Biblioth. 4: 1–162 + 24 pl.
Gradstein, S. R. 1994. Lejeuneaceae: Ptychantheae, Brachiolejeuneae. Fl. Neotrop. Monogr. 62: 1–216.
Gradstein, S. R. & J. Váňa. 1987. On the occurrence of Laurasian liverworts in the tropics. Mem. New York Bot. Gard. 45: 388–425.
Gradstein, S. R. & D. P. Costa. 2003. The Hepaticae and Anthocerotae of Brazil. Mem. New York Bot. Gard. 87: 1–316.
Gradstein, S. R. & A. L. Ilkiu-Borges. 2015. A taxonomic revision of the genus *Odontoschisma* (Marchantiophyta: Cephaloziaceae). Nova Hedwigia 100: 15–100.
Gray, A. 1846. *Musci Alleghanienses* . . . [review]. Amer. J. Sci. Arts. Ser. 2 1: 70–81.
Gray, S. F. 1821. Natural Arrangement of British Plants, Vol. 1. Baldwin, Craddock & Joy, London.
Greuter, W., H. M. Burdet, W. G. Chaloner, V. Demoulin, R. Grolle, D. L. Hawksworth, D. H. Nicolson, et al. (editors). 1988. International Code of Botanical Nomenclature (Berlin Code). Regnum Veg. 118.
Greuter, W., R. K. Brummitt, E. Farr, N. Kilian, P. M. Kirk & P. C. Silva (compilers and editors). 1993. Names in Current Use for Extant Plant Genera. Regnum Veg. 129.
Grolle, R. 1963a. Notulae hepaticologicae VII–IX. Rev. Bryol. Lichénol. 32: 157–165.
Grolle, R. 1963b. Über *Kurzia* v. Martens. Rev. Bryol. Lichénol. 32: 166–180.
Grolle, R. 1966. Die Typisierung von *Jungermannia* L. und *J. lanceolata* L. Taxon 15: 186–191.
Grolle, R. 1968. Miscellanea hepaticologica (81–90). Trans. Brit. Bryol. Soc. 5: 541–547.
Grolle, R. 1971. Miscellanea hepaticologica (111–120). Trans. Brit. Bryol. Soc. 6: 258–265.
Grolle, R. 1975a. Miscellanea hepaticologica 141–150. J. Bryol. 8: 483–492.
Grolle, R. 1975b. Miscellanea hepaticologica 151–160. Lindbergia 3: 47–56.
Grolle, R. 1976. Verzeichnis der Lebermoose Europas und benachbarter Gebiete. Feddes Repert. 87: 171–279.
Grolle, R. 1977. Miscellanea hepaticologica 161–170. J. Bryol. 9: 529–538.
Grolle, R. 1979a. Proposal to conserve the orthography and type species of *Calypogeia* Raddi, 1818, against *Calypogeja* Raddi, 1818 (Hepaticae). Taxon 28: 607–608.
Grolle, R. 1979b. Miscellanea hepaticologica 171–180. J. Bryol. 10: 263–272.
Grolle, R. 1979c. Miscellanea hepaticologica 191–200. J. Hattori Bot. Lab. 46: 337–355.
Grolle, R. 1980. [1981]. Miscellanea hepaticologica 201–210. J. Bryol. 11: 325–334.
Grolle, R. 1983a. Nomina generica Hepaticarum: References, types and synonymies. Acta Bot. Fenn. 121: 1–62.
Grolle, R. 1983b. Hepatics of Europe including the Azores: An annotated list of species, with synonyms from the recent literature. J. Bryol. 12: 403–459.
Grolle, R. 1985. Miscellanea hepaticologica 231–240. J. Hattori Bot. Lab. 58: 197–202.
Grolle, R. 1989a. A technically new lectotypification of *Harpalejeunea* (Hepaticae). Taxon 38: 88–90.
Grolle, R. 1989b. Miscellanea hepaticologica 271–280. J. Hattori Bot. Lab. 67: 249–254.
Grolle, R. 1995. The Hepaticae and Anthocerotae of the East African Islands, An Annotated Catalogue. Bryophyt. Biblioth. 48: 1–178.
Grolle, R. & D. G. Long. 2000. An annotated checklist of the Hepaticae and Anthocerotae of Europe and Macaronesia. J. Bryol. 22: 103–140.
Grolle, R. & M. L. So. 2000. Notes on *Plagiochila* section *Firmae* (Hepaticae). Syst. Bot. 25: 5–14.
Grolle, R. & M. L. So. 2003. *Riccia fruticulosa* O. F. Müll., 1782, and blue *Metzgeria* (Marchantiophyta) in Europe. Bot. J. Linn. Soc. 142: 229–235.
Grolle, R., D. G. Long & J. McNeill. 2005. Nomenclatural problems in *Pleurozia* (Pleurozioceae): The lectotypification of *Pleurozia* Dumort., *Jungermannia sphagnoides* Schwägr., *Pleurozia sphagnoides* Dumort., *P. purpurea* Lindb., *Mnium jungermannia* L. and *Jungermannia undulata* L. (Hepaticae). Taxon 54: 503–508.
Guerke, W. R. 1978. A monograph of the genus *Jubula* Dumortier. Bryophyt. Biblioth. 17: 1–118.
Hampe, E. 1836. Prodromus florae Hercyniae. Gebauerschen Buchdruckerei, Halle.
Hattori, S. 1966. Bryophyta: Hepaticae and Anthocerotae. Pp. 501–536 *in* H. Hara (editor), The Flora of Eastern Himalaya. Tokyo University Press, Tokyo.
Hattori, S. 1972. *Frullania tamarisci*-complex and the species concept. J. Hattori Bot. Lab. 35: 202–251.
Hattori, S. 1976. Notes on Asiatic species of the genus *Frullania*, Hepaticae. IX. Bull. Natl. Sci. Mus. Tokyo, B. 2: 7–22.
Hattori, S. & M. Mizutani. 1958. A revision of the Japanese species of the family Lepidoziaceae. J. Hattori Bot. Lab. 19: 76–118.
Haynes, C. C. (compiler) & A. W. Evans (reviser). 1925. Sullivant Moss Society exchange list of Hepaticae found in the United States, Canada, and Arctic America. Bryologist 23: 79–82.
Heinrichs, J. & S. R. Gradstein. 2000. A revision of *Plagiochila* sect. *Crispatae* and sect. *Hypnoides* (Hepaticae) in the Neotropics. I. *Plagiochila disticha, P. montagnei* and *P. raddiana*. Nova Hedwigia 70: 161–184.
Heinrichs, J., T. Pröschold, C. Renker, H. Groth & D. S. Rycroft. 2002. *Plagiochila virginica* A. Evans rather than *P. dubia* Lindenb. & Gottsche occurs in Macaronesia: Placement in sect. *Contiguae* Carl is supported by ITS sequences of nuclear ribosomal DNA. Pl. Syst. Evol. 230: 221–230.
Heinrichs, J., M. Lindner & H. Groth. 2004. Sectional classification of the North American *Plagiochila* (Hepaticae, Plagiochilaceae). Bryologist 107: 489–496.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Heinrichs, J., K. Feldberg, H.-P. Kreier & J. Váňa. 2010a. DNA-based identification of *Herbertus* species on Gough Island, South Atlantic Ocean. Cryptog. Bryol. 31: 67–74.

Heinrichs, J., J. Hentschel, A. Bombosch, A. Fiebig, J. Reise, M. Edelmann, H.-P. Kreier, et al. 2010b. One species or at least eight? Delimitation and distribution of *Frullania tamarisci* (L.) Dumort. s.l. (Jungermanniopsida, Porellales) inferred from nuclear and chloroplast DNA marker. Molec. Phylogen. Evol. 56: 1105–1114.

Heinrichs, J., A. Bombosch, K. Feldberg, H.-P. Kreier, J. Hentschel, J. Eckstein, D. Long, et al. 2012. A phylogeny of the northern temperate leafy liverwort genus *Scapania* (Scapaniaceae, Jungermanniales). Molec. Phylogen. Evol. 62: 973–985.

Heinrichs, J., S. Dong, A. Schäfer-Verwimp, T. Pócs, K. Feldberg, A. Czumaj, A. R. Schmidt, et al. 2013. Molecular phylogeny of the leafy liverwort *Lejeunea* (Porellales): Evidence for a Neotropical origin, uneven distribution of sexual systems and insufficient taxonomy. PLoS One 8(12): e82547 10.1371/journal.pone.0082547.

Hentschel, J., R. Wilson, M. Burghardt, H.-J. Zündorf, H. Schneider & J. Heinrichs. 2006a. Reinstatement of Lophocoleaceae (Jungermanniopsida) based on chloroplast gene rbcL data: Exploring the importance of female involucres for the systematics of Jungermanniales. Pl. Syst. Evol. 258: 211–226.

Hentschel, J., H.-J. Zündorf, F. H. Hellwig, A. Schäfer-Verwimp & J. Heinrichs. 2006b. Taxonomic studies in *Chiloscyphus* Corda (Jungermanniales: Lophocoleaceae) based on nrITS sequences and morphology. Pl. Syst. Evol. 262: 125–137.

Hentschel, J., R.-L. Zhu, D. G. Long, P. G. Davison, H. Schneider, S. R. Gradstein & J. Heinrichs. 2007a. A phylogeny of *Porella* (Porellaceae, Jungermanniopsida) based on nuclear and chloroplast DNA sequences. Molec. Phylogen. Evol. 45: 693–705.

Hentschel, J., J. A. Paton, H. Schneider & J. Heinrichs. 2007b. Acceptance of *Liochlaena* Nees and *Solenostoma* Mitt., the systematic position of *Eremonotus* Pearson and notes on *Jungermannia* L. s.l. (Jungermanniidae) based on chloroplast DNA sequence data. Pl. Syst. Evol. 268: 147–157.

Hentschel, J., K. Feldberg, H.-J. Zündorf, F. H. Hellwig, H. Schneider & J. Heinrichs. 2007c. The systematic position of *Pachyglossa* and *Clasmatocolea* (Jungermanniopsida: Lophocoleaceae) inferred from nrDNA ITS sequences and morphology. Taxon 56: 1136–1142.

Hentschel, J., M. J. von Konrat, T. Pócs, A. Schäfer-Verwimp, A. J. Shaw, H. Schneider & J. Heinrichs. 2009. Molecular insights into the phylogeny and subgeneric classification of *Frullania* Raddi (Frullaniaceae, Porellales). Molec. Phylogen. Evol. 52: 142–156.

He-Nygrén, X. & S. Piippo. 2003. Phylogenetic relationships of the generic complex *Chiloscyphus–Lophocolea–Heteroscyphus* (Geocalycaceae, Hepaticae): Insights from three chloroplast genes and morphology. Ann. Bot. Fenn. 40: 317–329.

Hill, M. O., T. H. Blackstock, D. G. Long & G. P. Rothero. 2008. A Checklist and Census Catalogue of British and Irish Bryophytes. British Bryological Society, Middlewich, Cheshire.

Hodgetts, N. G. 2003. Some synonyms of *Herbertus dicranus* (Taylor ex Gottsche *et al.*). Trevis. J. Bryol. 25: 138–140.

Hong, W. S. 1980. The genus *Scapania* in western North America. II. Taxonomic treatment. Bryologist 83: 40–59.

Hong, W. S. 1983. The genus *Porella* in North America west of the hundredth meridian. Bryologist 86: 143–155.

Hong, W. S. 1986. The family Cephaloziellaceae in North America west of the hundredth meridian. Bryologist 89: 155–162.

Hong, W. S. 1988. The family Lepidoziaceae in North America west of the hundredth meridian. Bryologist 91: 326–333.

Hong, W. S. 1993. The family Geocalycaceae (Hepaticae) in North America, west of the hundredth meridian. Bryologist 96: 592–597.

Hong, W. S. 2002. Comparison of hepatic flora and floristic affinities among four neighboring islands, Queen Charlotte Islands, British Columbia. Northw. Sci. 76: 286–292.

Hong, W. S. & J. Váňa. 2000. The distribution of *Nardia* in Western North America. Lindbergia 25: 9–14.

Hong, W. S., B. Deffinbaugh & B. Sparrow. 1993. The genus *Herbertus* in western North America. Lindbergia 18: 41–45.

Hooker, W. J. 1812–1816. British *Jungermanniae*. Parts 1–22. 1–84 tab. Longmans, London.

Inoue, H. 1976. Notes on the Plagiochilaceae. V. Studies in the genus *Plagiochila* (Dum.) Dum. in the Hawaiian Islands. J. Hattori Bot. Lab. 40: 411–440.

Inoue, H. 1977. Studies on Taiwan Hepaticae. II. Herbertaceae. Bull. Natl. Sci. Mus. Tokyo, B. 3: 1–11.

Inoue, H. 1984. The Genus *Plagiochila* (Dum.) Dum. in Southeast Asia. Academia Scientific Book, Tokyo.

Inoue, H. 1989. Notes on the Plagiochilaceae XVI. Studies on some *Plagiochila* species in the Neotropics. Bull. Natl. Sci. Mus. Tokyo, B. 15: 35–47.

Inoue, H. & N. G. Miller. 1985. A new *Aneura* Dum. (Hepaticae: Aneuraceae) from eastern North America. Bull. Natl. Sci. Mus. Tokyo, B. 11: 95–101.

Isoviita, P. 1979. [1980]. *Platydictya jungermannioides* and *Jungermania setacea*: A problem of typification. Ann. Bot. Fenn. 16: 275–284.

Jack, J. B. & F. Stephani. 1892. Hepaticae Wallisianae. Hedwigia 31(1): 11–27.

Janssens, J. A. & J. T. Greenlee. 2009. Occurrences of the liverwort *Frullania selwyniana* in the Superior National Forest, Minnesota: Overlooked or recovered? Evansia 26: 163–171.

Jones, E. W. 1958. An annotated list of British hepatics. Trans. Brit. Bryol. Soc. 3: 353–374.

Jones, E. W. 1972. African hepatics. XXIII. Some species of *Lejeunea*. J. Bryol. 7: 23–45.

Jørgensen, E. 1894. Om floraen i Nord-reisen og tilstødende dele af Lyngen. Forh. Vidensk-Selsk. Kristiania 1894(8): 1–104.

Jørgensen, E. 1934. Norges Levermoser. Bergens Mus. Skr. 16: 1–343. 25 maps.

Jovet-Ast, S. 1965. *Riccia crystallina* L. emend. Raddi et *Riccia cavernosa* Hoffm. emend. Raddi. Rev. Bryol. Lichénol. 33: 459–483.

Jovet-Ast, S. 1986. Les *Riccia* de la région Méditerranéenne. Cryptog. Bryol. Lichénol. 7(3 suppl.): [283]–431.

Jovet-Ast, S. 1991. *Riccia* (Hépatiques, Marchantiales) d'Amérique Latine. Taxons du sous-genre *Riccia*. Cryptog. Bryol. Lichénol. 12: 189–370.

Jovet-Ast, S. 1993. *Riccia* L. (Hépatiques, Marchantiales) d'Amérique Latine. Taxons des sous-genres *Thallocarpus, Leptoriccia, Ricciella*. Cryptog. Bryol. Lichénol. 14: 219–301.

Jovet-Ast, S. 1994. Le traitement des *Riccia* d'Amérique du Nord selon R. M. Schuster. Cryptog. Bryol. Lichénol. 15: 81–86.

Jovet-Ast, S. 2000. Documents pour la connaissance des *Riccia* australiens (Hépatiques, Marchantiales): Nouvelles récoltes. Taxons nouveaux. Commentaires morphologiques et écologiques. Cryptog. Bryol. Lichénol. 21: 289–343.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Jovet-Ast, S. 2005. *Riccia*. Pp. 25–123 *in* H. Bischler-Causse, S. R. Gradstein, S. Jovet-Ast, D. G. Long & N. Salazar Allen (editors), Marchantiidae. Fl. Neotrop. Monogr. 97.

Juslén, A. 2006. Revision of Asian *Herbertus* (Herbertaceae, Marchantiophyta). Ann. Bot. Fenn. 43: 409–436.

Kaalaas, B. 1893. Levermosernes udbreselse i Norge. Nyt Mag. Naturvidensk. 33: 1–490.

Kadereit, G., M. Piirainen, J. Lambionon & A. Vanderpoorten. 2012. Cryptic taxa should have names: Reflections in the glasswort genus *Salicornia* (Amaranthaceae). Taxon 61: 1227–1239.

Katagiri, T. & T. Furuki. 2012. Checklist of Japanese liverworts and hornworts, 2012. Bryol. Res. 10: 193–210 [In Japanese.]

Kitagawa, N. 1966. A revision of the family Lophoziaceae of Japan and its adjacent regions. II. J. Hattori Bot. Lab. 29: 101–149.

Kitagawa, N. & R. Grolle. 1986. A new *Acromastigum*-like species of *Bazzania* S. Gray from Bhutan. J. Hattori Bot. Lab. 61: 269–272.

Konstantinova, N. A. & A. N. Vasiljev. 1994. On the hepatic flora of Sayan Mountains (South Siberia). Arctoa 3: 123–132.

Konstantinova, N. A. & A. Potemkin. 1996. Liverworts of the Russian Arctic: An annotated checklist and bibliography. Arctoa 6: 125–150.

Konstantinova, N. A. & A. A. Vilnet. 2009. [2010]. New taxa and new combinations in Jungermanniales (Hepaticae). Arctoa 18: 65–67.

Konstantinova, N. A. & Y. S. Mamontov. 2010. A revision of the genus *Calycularia* Mitt. (Calyculariaceae, Marchantiophyta). Arctoa 19: 117–130.

Konstantinova, N. A., V. A. Bakalin, E. N. Andrejeva, A. G. Bezgodov, E. A. Borovichev, M. V. Dulin & Yu. S. Mamontov. 2009. [2010]. Checklist of liverworts (Marchantiophyta) of Russia. Arctoa 18: 1–64 [In English and Russian.]

Konstantinova, N. A., A. A. Vilnet, L. Söderström, A. Hagborg & M. von Konrat. 2013. Notes on early land plants today. 14. Transfer of two *Macrodiplophyllum* species to *Douinia*. Phytotaxa 76: 28–30.

Konstantinova, N. A., L. Söderström, A. Hagborg & M. von Konrat. 2014. Notes on early land plants today. 51. Validation of *Schistochilopsis hyperarctica* (Scapaniaceae, Marchantiophyta). Phytotaxa 162: 240.

Koponen, T., P. Isoviita & T. Lammes. 1977. The bryophytes of Finland: An annotated checklist. Fl. Fenn. 6: 1–77.

Krayesky, D. M., B. Crandall-Stotler & R. E. Stotler. 2005. A revision of the genus *Fossombronia* Raddi in east Asia and Oceania. J. Hattori Bot. Lab. 98: 1–45.

Kreier, H.-P., K. Feldberg, F. Mahr, A. Bombosch, A. R. Schmidt, R.-L. Zhu, M. von Konrat, et al. 2010. Phylogeny of the leafy liverwort *Ptilidium*: Cryptic speciation and shared haplotypes between the northern and southern hemispheres. Molec. Phylogen. Evol. 57: 1260–1267.

Kuwahara, Y. 1966. The family Metzgeriaceae in North and South East Asia, Pacific Oceania, Australia and New Zealand. Rev. Bryol. Lichénol. 34: 191–239.

Kuwahara, Y. 1983. *Metzgeria subundulata* (Aust. ex Lindb.) Kuw., stat. nov. from Texas. Bryologist 86: 276–277.

Kuwahara, Y. 1984. Synopsis of sect. *Biseria* Kuw., subgen. *Metzgeria* Kuw., gen. *Metzgeria* Raddi (Hepaticae). Hikobia 9: 31–42.

Kuwahara, Y. 1985. *Metzgeria*. Pp. 310–332 *in* P. Geissler & H. Bischler (editors), Index Hepaticarum, Vol. 10. *Lembidium* to *Mytilopsis*. J. Cramer, Vaduz.

Kuwahara, Y. 1986. The Metzgeriaceae of the Neotropics. Bryophyt. Biblioth. 28: 1–254.

Lehmann, J. G. C. 1834. Novarum et Minus Cognitarum Stirpium, Pugillus Sextus. J. A. Meissner, Hamburg.

Lehmann, J. G. C. 1844. Novarum et Minus Cognitarum Stirpium, Pugillus Octavus. J. A. Meissner, Hamburg.

Lehmann, J. G. C. 1857. Novarum et Minus Cognitarum Stirpium, Pugillus Decimus. J. A. Meissner, Hamburg.

Lindberg, S. O. 1877. [1878]. Monographia Metzgeriae. Acta Soc. Fauna Flora Fenn. 1(2): 1–48.

Lindberg, S. O. 1879. Musci Scandinavici in Systemate Novo Naturali Dispositi. Ex Officina Iesaiae Edquist, Uppsala.

Lindenberg, J. B. W. 1829. Synopsis Hepaticarum Europaearum. Nova Acta Acad. Caes. Leop.-Carolinae Suppl. 14: 1–133.

Lindenberg, J. B. W. 1839. Species Hepaticarum, Fasc. 1. Henry & Cohen, Bonn.

Linnaeus, C. 1753. Species Plantarum. Laurentii Salvii, Stockholm.

Linnaeus, C. 1759. Systema Naturae, ed. 10. Laurentii Salvii, Stockholm.

Loeske, L. 1909. Zur Moosflora der Zillertaler Alpen. Hedwigia 49: 1–53.

Long, D. G. 1979. Hepatic types of James Dickson in the Edinburgh Herbarium. J. Bryol. 10: 241–244.

Long, D. G. 2005. Notes on Himalayan Hepaticae 2: New records and extensions of range for some Himalayan leafy liverworts. Cryptog. Bryol. 26: 97–107.

Long, D. G. 2006. Revision of the genus *Asterella* P. Beauv. in Eurasia. Bryophyt. Biblioth. 63: 1–299.

Long, D. G. & B. J. Crandall-Stotler. 2016. Taxonomic changes in Cleveaceae (Marchantiidae, Marchantiophyta): A correction. Phytotaxa 273: 299–300.

Long, D. G., J. A. Paton, J. Squirrell, M. Woodhead & P. M. Hollingsworth. 2006. Morphological, ecological and genetic evidence for distinguishing *Anastrophyllum joergensenii* Schiffn. and *A. alpinum* Steph. (Jungermanniopsida: Lophoziaceae). J. Bryol. 28: 108–117.

Long, D. G., L. L. Forrest, J. C. Villarreal & B. J. Crandall-Stotler. 2016. Taxonomic changes in Marchantiaceae, Corsiniaceae and Cleveaceae (Marchantiidae, Marchantiophyta). Phytotaxa 252: 77–80.

Macvicar, S. M. 1912. Student's Handbook of British Hepatics. V. V. Sumfield, Eastbourne.

Macvicar, S. M. 1926. Student's Handbook of British Hepatics, 2nd ed. V. V. Sumfield, Eastbourne.

Malombe, I. 2009. Studies on African *Cheilolejeunea* (Lejeuneaceae) I: New species and new combinations. Acta Bot. Hung. 51: 315–328.

Martius, C. F. P. 1817. Flora cryptogamica erlangensis. J. L. Schrag, Nuremberg.

McGregor, R. L. 1955. Taxonomy and ecology of Kansas Hepaticae. Univ. Kansas Sci. Bull. 37: 55–141.

McNeill, J., F. R. Barrie, W. R. Buck, V. Demoulin, W. Greuter, D. L. Hawksworth, P. S. Herendeen, et al. (editors). 2012. International Code of Nomenclature for Algae, Fungi, and Plants (Melbourne Code). Regnum Veg. 154.

McNeill, J., F. R. Barrie, K. N. Ghandi, V. C. Hollowell, S. A. Redhead, L. Söderström & J. L. Zarucchi. 2016. Report of the special committee on publications using a largely mechanical method of selection of types (Art. 10.5(b)) (especially under the American Code). Taxon 65: 1443–1448.

Mescall, Y. M., K. Yamada & D. K. Smith. 1980. *Radula voluta* Tayl. new for North America. Misc. Bryol. Lichenol. 8: 153–154.

Miller, H. A. 1965. A review of *Herberta* in the tropical Pacific and Asia. J. Hattori Bot. Lab. 28: 299–412.

Miller, H. A. 1967. Oddments of Hawaiian bryology. J. Hattori Bot. Lab. 30: 271–276.

Miller, H. A. 1968. *Herberta* notes. J. Hattori Bot. Lab. 31: 247–250.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Mizutani, M. 1967. Studies of the Himalayan species of *Bazzania*. J. Hattori Bot. Lab. 30: 71–90.

Montagne, C. 1839. Cryptogamae Brasilienses seu Plantae cellulares quas in itinere per Brasiliam à celeb. Auguste de Sainte-Hilaire collectas recensuit observationibusque nonnullis illustravit. Ann. Sci. Nat., Bot., Ser. 2: 12: 42–55 + tab. 1.

Müller, K. 1913. Die Lebermoose (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz, VI Band, 2 Abteilung, 2 Auflage), pp. 145–208. Eduard Kummer, Leipzig.

Müller, K. 1940a. Die Lebermoose (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz, VI Band, Ergänzungsband, Lieferung 2), pp. 161–320. Akademische Verlagsgesellschaft m.b.H., Leipzig.

Müller, K. 1940b. Beiträge zur Systematik der Lebermoose. Hedwigia 79: 72–80.

Müller, K. 1947. Morphologische Untersuchungen zur Aufklärung einiger europäischer Lebermoose. Beitr. Kryptogamenfl. Schweiz 10: 7–55.

Müller, K. 1952. Ricciaceae. Pp. 413–474 *in* K. Müller (editor), Die Lebermoose Europas. Geest & Portig, Leipzig.

Müller, K. 1954. Die Lebermoose Europas (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Österreich und der Schweiz, VI. Band, 1. Abteilung, 3. Auflage, Die Lebermoose), pp. 1–754. Geest & Portig, Leipzig.

Müller, K. 1956. Die Lebermoose Europas (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Österreich und der Schweiz, VI. Band, 2. Abteilung, 3. Auflage, Die Lebermoose), pp. 757–1220. Geest & Portig, Leipzig.

Nees von Esenbeck, C. G. 1833. Naturgeschichte der Europäischen Lebermoose, Vol. 2. August Rücker, Berlin.

Nees von Esenbeck, C. G. 1838. Naturgeschichte der Europäischen Lebermoose. Vol. 4. Grass, Barth & Comp, Breslau.

Ochyra, R. & J. Váňa. 1989. The hepatics of King George Island, South Shetland Islands, Antarctica, with particular reference to the Admiralty Bay region. Polish Polar Res. 10: 183–210.

Paton, J. A. 1977. *Metzgeria temperata* Kuwah. in the British Isles, and *M. fruticulosa* (Dicks.) Evans with sporophytes. J. Bryol. 9: 441–449.

Paton, J. A. 1999. The Liverwort Flora of the British Isles. Harley Books, Colchester.

Pätsch, R., J. Hentschel, R. Linares-Palomino, R.-L. Zhu & J. Heinrichs. 2010. Diversification and taxonomy of the liverwort *Jubula* Dumort. (Jungermanniopsida: Porellales) inferred from nuclear and chloroplast DNA sequences. Syst. Bot. 35: 6–12.

Patzak, S. D. F., A. Schäfer-Verwimp, J. Váňa, M. A. M. Renner, D. F. Peralta & J. Heinrichs. 2016. Chonecoleaceae (Lophocoleineae) is a synonym of Cephaloziellaceae (Cephaloziineae) and *Rivulariella* (Jungermanniineae) belongs to Scapaniacae s.l. (Cephaloziineae). Phytotaxa 267: 91–102.

Pearson, W. H. 1890. List of Canadian Hepaticae. Geological and Natural History Survey of Canada, Ser. 3: 1–31 + 12 pl.

Persson, H. 1962. Bryophytes from Alaska collected by E. Hultén and others. Svensk. Bot. Tidskr. 56: 1–35.

Pócs, T. & A. Bernecker. 2009. Knowledge of *Aphanolejeunea* (Jungermanniopsida) after 25 years. Polish Bot. J. 54: 1–11.

Polunin, N. 1947. Hepaticae, in Botany of the Canadian Eastern Arctic. II. Thallophyta and Bryophyta, Natl. Mus. Canada Bull. 97, Biol. Ser. No. 26: 491–512.

Potemkin, A. D. 1992. *Barbilophozia hyperborea* (Schust.) Potemk. comb. nov. et *Cephaloziella rubella* (Nees) Warnst. var. *arctogena* Schust. in Arctica Sovietica. Novosti Sist. Nizsh. Rast. 28: 148–155. [In Russian.]

Potemkin, A. D. 1993. The Hepaticae of the Yamal Peninsula, West Siberian Arctic. Arctoa 2: 57–101.

Potemkin, A. D. 1995. Contribution to the knowledge of liverworts of North America. Fragm. Florist. Geobot. 40: 323–338.

Potemkin, A. D. 1999a. An analysis of the practical taxonomy of some critical northern species of *Scapania* (Scapaniaceae, Hepaticae). Bryologist 102: 32–38.

Potemkin, A. D. 1999b. *Scapania lingulata* from Nevada: A new puzzle of the section *Curtae* (Scapaniaceae, Hepaticae). Haussknechtia Beihefte 9: 291–298.

Potemkin, A. D. 2002. Phylogenetic system and classification of the family Scapaniaceae Mig. emend. Potemkin (Hepaticae). Ann. Bot. Fenn. 39: 309–334.

Potemkin, A. D. 2015. *Scapania* in Bryophyte Flora of North America, provisional publication, July 17, 2015. <http://www.mobot.org/plantscience/bfna/V3/Scapania_R2.pdf>, accessed 20 October 2017.

Potemkin, A. D. & E. Y. Sofronova. 2013. Taxonomic study on the genus *Cephalozia* in Russia and circumscription of the genus. Arctoa 22: 173–206.

Proskauer, J. 1958. On Hill, Wiggers, and Necker, and also the genus *Conocephalum*. Taxon 7: 123–130.

Proskauer, J. 1962. Notes on Hepaticae. IV. Bryologist 65: 213–233.

Raddi, G. 1818. Jungermanniografia. Etrusca. Mem. Mat. Fis. Soc. Ital. Sci, Modena.

Reiner-Drehwald, M. E. 1994. Sobre *Microlejeunea globosa* (Spruce) Steph. y la fragmentación del tallo, un tipo de reproducción asexual poco conocido en hepáticas. Candollea 49: 225–232.

Reiner-Drehwald, M. E. 1995a. Las Lejeuneaceae (Hepaticae) de Misiones, Argentina. IV. Aphanolejeunea. Trop. Bryol. 10: 29–39.

Reiner-Drehwald, M. E. 1995b. Las Lejeuneaceae (Hepaticae) de Misiones, Argentina. III. *Drepanolejeunea* y *Leptolejeunea*. Trop. Bryol. 10: 21–27.

Reiner-Drehwald, M. E. 2000. Las Lejeuneaceae (Hepaticae) de Misiones, Argentina. VI. *Lejeunea* y *Taxilejeunea*. Trop. Bryol. 19: 81–131.

Reiner-Drehwald, M. E. 2009. *Lejeunea adpressa* Nees (Lejeuneaceae), a widely distributed species of tropical America. Cryptog. Bryol. 30: 329–336.

Reiner-Drehwald, M. E. 2010. A taxonomic revision of *Lejeunea deplanata* (Lejeuneaceae, Marchantiophyta) from tropical America. Nova Hedwigia 91: 519–532.

Reiner-Drehwald, M. E. & S. R. Gradstein. 1997. New combinations and synonyms in *Myriocoleopsis* Schiffn. (Lejeuneaceae). J. Bryol. 19: 638–640.

Reiner-Drehwald, M. E. & A. Schäfer-Verwimp. 2008. On *Inflatolejeunea*, *Lejeunea* species with eplicate perianths and *Lejeunea talamancensis* sp. nov. from Costa Rica (Lejeuneaceae). Nova Hedwigia 87: 387–420.

Reiner-Drehwald, M. E. & R. Grolle. 2012. Review of the genus *Rectolejeunea* (Lejeuneaceae, Marchantiophyta). Nova Hedwigia 95: 451–482.

Rubasinghe, S. C. K. 2011. Phylogeny and Taxonomy of the Complex Thalloid Liverwort Family Cleveaceae Cavers. Ph.D. Dissertation, University of Edinburgh, Royal Botanic Garden Edinburgh, Edinburgh.

Rubasinghe, S. C. K., R. Milne, L. L. Forrest & D. G. Long. 2011a. Realignment of the genera of Cleveaceae (Marchantiopsida, Marchantiidae). Bryologist 114: 116–127.

Rubasinghe, S. C. K., D. G. Long & R. Milne. 2011b. A new combination and three new synonyms in the genus *Clevea* Lindb. (Marchantiopsida, Cleveaceae). J. Bryol. 33: 166–168.

Rycroft, D. S., J. Heinrichs, W. J. Cole & H. Anton. 2001. A phytochemical and morphological study of the liverwort

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Plagiochila retrorsa Gottsche, new to Europe. J. Bryol. 23: 23–34.
Schäfer-Verwimp, A. & M. E. Reiner-Drehwald. 2009. Some additions to the bryophyte flora of Guadeloupe, West Indies, and new synonyms in the genera *Diplasiolejeunea* and *Lejeunea* (Lejeuneaceae). Cryptog. Bryol. 30: 357–375.
Schiffner, V. 1893. Hepaticae. *In* H. G. A. Engler & J. Prantl (editors), Die Natürlichen Pflanzenfamilien, Teil. I. Abt. 3. [preprint]. Engelmann, Leipzig.
Schiffner, V. 1905. Bryologische Fragmente. XXIII–XXVI. Oesterr. Bot. Z. 55: 289–292.
Schiffner, V. 1908. [1909]. Bemerkungen über zwei kritische Hepaticae der europäischen Flora. Hedwigia 48: 184–190.
Schill, D. B., D. G. Long & L. L. Forrest. 2010. A molecular phylogenetic study of *Mannia* (Marchantiophyta, Aytoniaceae) using chloroplast and nuclear markers. Bryologist 113: 164–179.
Schljakov, R. N. 1975. Notulae systematicae de hepaticis s. str. Novosti Sist. Nizsh. Rast. 12: 307–317.
Schofield, W. B. 1962. *Treubia nana* in North America. Bryologist 65: 277–279.
Schofield, W. B. 1968a. A checklist of Hepaticae and Anthocerotae of British Columbia. Syesis 1: 157–162.
Schofield, W. B. 1968b. Bryophytes of British Columbia II. Hepatics of particular interest. J. Hattori Bot. Lab. 31: 265–282.
Schofield, W. B. 1984. Bryogeography of the Pacific coast of North America. J. Hattori Bot. Lab. 55: 35–43.
Schofield, W. B. 1989. Structure and affinities of the bryoflora of the Queen Charlotte Islands. Pp. 109–119 *in* G. G. F. Scudder & N. Gessler (editors), The Outer Shores. Skidgate, Queen Charlotte Islands.
Schofield, W. B. 2007. XX. Herbertaceae Müller Frib. ex Fulford & Hatcher. *In* Bryophyte Flora of North America, Provisional Publication. <http://www.mobot.org/plantscience/bfna/V3/HerbHerbertaceae.htm>, accessed 22 October 2017.
Schofield, W. B. & G. A. Godfrey. 1979. *Radula brunnea* Steph. in western North America. J. Hattori Bot. Lab. 46: 285–288.
Schofield, W. B., S. S. Talbot & S. L. Talbot. 2004. Bryophytes from Simeonof Island in the Shumagin Islands, southwestern Alaska. J. Hattori Bot. Lab. 95: 155–198.
Schuster, R. M. 1949. The ecology and distribution of Hepaticae in central and western New York. Amer. Midl. Naturalist 42: 513–712.
Schuster, R. M. 1951. The Hepaticae of the east coast of Hudson Bay. Natl. Mus. Canada Bull. No. 122: 1–62.
Schuster, R. M. 1953. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. Amer. Midl. Naturalist 49: 257–684.
Schuster, R. M. 1955. North American Lejeuneaceae I. Introduction; keys to subfamilies and genera. Elisha Mitchell Sci. Soc. 83: 106–126.
Schuster, R. M. 1957. Notes on nearctic Hepaticae. XI. *Herberta*. Rev. Bryol. Lichénol. 26: 123–145.
Schuster, R. M. 1958. Keys to the orders, families and genera of Hepaticae of America north of Mexico. Bryologist 61: 1–66.
Schuster, R. M. 1959. Epiphyllous Hepaticae in the southern Appalachians. Bryologist 62: 52–55.
Schuster, R. M. 1960. [1961]. Notes on nearctic Hepaticae XIX. The relationships of *Blepharostoma*, *Temnoma* and *Lepicolea*, with description of *Lophochaete* and *Chandonanthus* subg. *Tetralophozia*, subg. n. J. Hattori Bot. Lab. 23: 192–210.
Schuster, R. M. 1962a. North American Lejeuneaceae. VIII. *Lejeunea*, subgenera *Microlejeunea* and *Chaetolejeunea*. J. Hattori Bot. Lab. 25: 1–80.
Schuster, R. M. 1962b. A study of *Cephaloziopsis* with special reference to *C. pearsoni* and its distribution. Trans. Brit. Bryol. Soc. 4: 230–246.
Schuster, R. M. 1966. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. I. Columbia University Press, New York.
Schuster, R. M. 1967. North American *Lejeunea*. X. *Harpalejeunea*, *Drepanolejeunea*, and *Leptolejeunea*. J. Elisha Mitchell Sci. Soc. 83: 192–229.
Schuster, R. M. 1969. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. II. Columbia University Press, New York.
Schuster, R. M. 1974. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. III. Columbia University Press, New York.
Schuster, R. M. 1980a. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. IV. Columbia University Press, New York.
Schuster, R. M. 1980b. New combinations and taxa of Hepaticae. I. Phytologia 45: 415–437.
Schuster, R. M. 1980c. Studies on Hepaticae. LIV–LVIII. Kurzia v. Mart. [*Microlepidozia* (Spr.) Joerg.], *Megalembidium* Schust., *Psiloclada* Mitt., *Drucella* Hodgs. and *Isolembidium* Schust. J. Hattori Bot. Lab. 48: 337–421.
Schuster, R. M. 1981. Evolution and speciation in *Pellia*, with special reference to the *Pellia megaspora-endiviifolia* complex (Metzgeriales). I. Taxonomy and distribution. J. Bryol. 11: 411–431.
Schuster, R. M. 1983. Notes on nearctic Hepaticae, XVI. New taxa of *Frullania* from eastern North America. Phytologia 53: 364–366.
Schuster, R. M. 1988. The Hepaticae of South Greenland. Beih. Nova Hedwigia 92: 1–255.
Schuster, R. M. 1992a. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. V. Field Museum of Natural History, Chicago.
Schuster, R. M. 1992b. The Hepaticae and Anthocerotae of North America, East of the Hundredth Meridian, Vol. VI. Field Museum of Natural History, Chicago.
Schuster, R. M. 1992c. Studies on Marchantiales. I–III. J. Hattori Bot. Lab. 71: 267–287.
Schuster, R. M. 1999. *Harpalejeunea* (Spr.) Schiffn. I. Studies on a new Andean species of *Harpalejeunea*. J. Hattori Bot. Lab. 87: 287–294.
Schuster, R. M. 2000. Austral Hepaticae. Pt. I. Beih. Nova Hedwigia 118: 1–524.
Schuster, R. M. 2002a. Revisionary studies on the Chandonanthoideae (Jungermanniales, Jungermanniaceae). Nova Hedwigia 74: 465–496.
Schuster, R. M. 2002b. Austral Hepaticae. Pt. II. Beih. Nova Hedwigia 119: 1–606.
Schuster, R. M. & W. C. Steere. 1958. *Hygrolejeunea alaskana* sp. n., a critical endemic of northern Alaska. Bull. Torrey Bot. Club 85: 188–196.
Schuster, R. M. & K. Damsholt. 1974. The Hepaticae of West Greenland from ca. 66° N to 72° N. Meddel. Gronland 199: 1–370.
Schuster, R. M. & N. Konstantinova. 1995. Studies on Treubiales. I. On *Apotreubia* Hatt. et al. and *A. hortonae* Schust. & Konstantinova, sp. n. J. Hattori Bot. Lab. 78: 41–61.
Schütz, N., D. Quandt & M. Nebel. 2016. The position of the genus *Apopellia* stat. nov. within the Pelliales (Marchantiophytina: Jungermanniopsida). Taxon 65: 221–234.
Segarra-Moragues, J. G., F. Puce & M. Sabovljević. 2012. *Riella heliospora* (Riellaceae), a new monoicous species of *Riella* subgenus *Trabutiella* from California. Syst. Bot. 37: 307–319.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Sérgio, C. & M. Sim-Sim. 1989. *Riccia incrassata* Brotero, a neglected name of *Oxymitra paleacea* Bisch. ex Lindenb. J. Bryol. 15: 659–663.

Sharp, A. J. 1936. *Acrobolbus* in the United States. Bryologist 39: 1–2.

Shaw, B., B. Crandall-Stotler, J. Váňa, R. E. Stotler, M. von Konrat, J. J. Engel, E. C. Davis, et al. 2015. Phylogenetic relationships and morphological evolution in a major clade of leafy liverworts (phylum Marchantiophyta, order Jungermanniales). Suborder Jungermanniineae. Syst. Bot. 40: 27–45.

Shields, L. M. 1954. Current list of New Mexico Hepaticae. Bryologist 57: 18–19.

Shimizu, D. & S. Hattori. 1954. Marchantiales of Japan. III. J. Hattori Bot. Lab. 12: 53–75.

So, M. L. 2001. *Plagiochila* (Hepaticae, Plagiochilaceae) in China. Syst. Bot. Monogr. 60: 1–214.

So, M. L. 2004. *Metzgeria* (Metzgeriaceae, Marchantiophyta) in Africa. New Zealand J. Bot. 42: 271–292.

So, M. L. & R. Grolle. 1999. Studies on *Plagiochila* in Asia: Supplements to sections *Abietinae*, *Annotinae*, *Ciliatae*, *Contiguae*, *Cucullatae*, *Poeltiae*, *Subtropicae* and *Zonatae*. Cryptog. Bryol. 20: 167–179.

So, M. L. & R. Grolle. 2000a. Checklist of *Plagiochila* (Hepaticae) in Asia. J. Hattori Bot. Lab. 88: 199–243.

So, M. L. & R. Grolle. 2000b. Studies in *Plagiochila* sect. *Plagiochila* in Southeast Asia. J. Bryol. 22: 17–28.

Söderström, L., K. Karttunen & L. Hedenäs. 1992. Nomenclatural notes on Fennoscandian bryophytes. Ann. Bot. Fenn. 29: 119–122.

Söderström, L., E. Urmi & J. Váňa. 2002. Distribution of Hepaticae and Anthocerotae in Europe and Macaronesia. Lindbergia 27: 3–48.

Söderström, L., R. De Roo & T. Hedderson. 2010. Taxonomic novelties resulting from recent reclassification of the Lophoziaceae/Scapaniaceae clade. Phytotaxa 3: 47–53.

Söderström, L., B. Crandall-Stotler, R. Stotler, J. Váňa, A. Hagborg & M. von Konrat. 2013a. Notes on early land plants today. 36. Generic treatment of Lophocoleaceae. Phytotaxa 97: 36–43.

Söderström, L., B. Crandall-Stotler, R. Stotler, J. Váňa, A. Hagborg & M. von Konrat. 2013b. Notes on early land plants today. 43. New combinations in Lophocoleaceae (Marchantiophyta). Phytotaxa 112: 18–32.

Söderström, L., A. Hagborg & M. von Konrat. 2013c. Notes on early land plants today. 19. Validation of two names in *Pellia* (Pelliaceae, Marchantiophyta). Phytotaxa 76: 39–40.

Söderström, L., J. Váňa, A. Hagborg & M. von Konrat. 2013d. Notes on early land plants today. 35. Notes on Lophoziaceae (Marchantiophyta). Phytotaxa 97: 27–35.

Söderström, L., J. Váňa, B. Crandall-Stotler, M. A. M. Renner, A. Hagborg & M. von Konrat. 2015a. Notes on early land plants today. 68. Miscellaneous notes on Marchantiophyta. Phytotaxa 202: 69–72.

Söderström, L., F. R. Barrie, A. Hagborg, B. J. Crandall-Stotler, S. R. Gradstein, R. E. Stotler & M. von Konrat. 2015b. Notes on early land plants today. 73. Genera of Lejeuneaceae established in the period 1884–1893: Dates of validation and implications. Phytotaxa 220: 143–197.

Söderström, L., A. Hagborg, M. von Konrat, S. Bartholomew-Began, D. Bell, L. Briscoe, E. Brown, et al. 2016. World checklist of hornworts and liverworts. PhytoKeys 59: 1–828.

Spruce, R. 1882. On *Cephalozia* (a Genus of Hepaticae). Its Subgenera and Some Allied Genera. J. W. Slater, Malton.

Spruce, R. 1884. Hepaticae of the Amazon and the Andes of Peru and Ecuador. I. Trans. & Proc. Bot. Soc. Edinburgh 15: 1–308.

Stafleu, F. A. & R. S. Cowan. 1979. Taxonomic Literature, 2nd ed., Vol. II: H–Le. W. Junk, The Hague.

Stafleu, F. A. & R. S. Cowan. 1981. Taxonomic Literature, 2nd ed., Vol. III: Lh–O. W. Junk, The Hague.

Stafleu, F. A. & R. S. Cowan. 1983. Taxonomic Literature, 2nd ed., Vol. IV: P–Sak. W. Junk, The Hague.

Stafleu, F. A. & R. S. Cowan. 1985. Taxonomic Literature, 2nd ed., Vol. V: Sal–Ste. W. Junk, The Hague.

Stafleu, F. A. & R. S. Cowan. 1986. Taxonomic Literature, 2nd ed., Vol. VI: Sti–Vuy. W. Junk, The Hague.

Stafleu, F. A. & E. A. Mennega. 1992. Taxonomic Literature, Suppl. I: A–Ba. Koeltz, Königstein.

Steere, W. C. 1954. Bryophyta of Santa Catalina Island, California. Madroño 12: 180–189.

Steere, W. C. & H. Inoue. 1978. Hepaticae of Arctic Alaska. J. Hattori Bot. Lab. 44: 251–346.

Steinkamp, M. P. & W. T. Doyle. 1979. Spore wall ultrastructure in four species of the liverwort *Riccia*. Amer. J. Bot. 66: 546–556.

Stephani, F. 1884. Die Gattung Radula. Hedwigia 23: 113–116, 129–137, 145–159, 161–163.

Stephani, F. 1888. Westindische Hepaticae. I. Hepaticae portoricenses. Hedwigia 27: 276–299.

Stephani, F. 1890a. Die Gattung Lejeunea im Herbarium Lindenberg. Hedwigia 29: 68–99.

Stephani, F. 1890b. Hepaticae Africanae novae in insulis Bourbon, Maurice et Madagascar lecta. Bot. Gaz. 15: 281–292, pl. XVII–XIX.

Stephani, F. 1908. *Cephalozia* Dum. Pp. 285–347 *in* F. Stephani (editor), Species Hepaticarum, Vol. III. Georg & Cie, Geneva.

Stephani, F. 1910. *Madotheca* Dum. Pp. 241–315 *in* F. Stephani (editor), Species Hepaticarum, Vol. IV. Georg & Cie, Geneva.

Stotler, R. E. 1970. The genus *Frullania* subgenus *Frullania* in Latin America. Nova Hedwigia 18: 397–555.

Stotler, R. & B. Crandall-Stotler. 1977. A checklist of the liverworts and hornworts of North America. Bryologist 80: 407–428.

Stotler, R. E. & W. T. Doyle. 2004. *Riccia crystallina* verified in North America, north of Mexico. Bryologist 107: 107–110.

Sullivant, W. S. 1856. The Mosses and Liverworts. Pp. 607–702, 731–737 *in* A. Gray (editor), Manual of the Botany of the Northern United States, Including Virginia, Kentucky, and All East of the Mississippi: Arranged According to the Natural System. Rev. [2nd] ed. Ivison, Phinney & Co., Chicago.

Szweykowski, J., K. Buczkowska & I. J. Odrzykoski. 2005. *Conocephalum salebrosum* (Marchantiopsida, Conocephalaceae): A new Holarctic liverwort species. Pl. Syst. Evol. 253: 133–158.

Thedenius, K. F. 1838. [1839]. Anmärkningar om Herjedalens vegetation. Kongl. Vetensk.-Akad. Handl. 1838: 24–76.

Therrien, J. P., B. J. Crandall-Stotler & R. E. Stotler. 1998. Morphological and genetic variation in *Porella platyphylla* and *P. platyphylloidea* and their systematic implications. Bryologist 101: 1–19.

Underwood, L. M. 1884. Descriptive catalogue of the North American Hepaticae, North of Mexico. Bull. Illinois State Lab. Nat. Hist. 2: 1–132.

Underwood, L. M. 1888. Some undescribed Hepaticae from California. Bot. Gaz. 13: 112–114.

Underwood, L. M. 1890. A new North American *Lejeunea*. Bull. Torrey Bot. Club 17: 258–259.

Underwood, L. M. 1895. Notes on our Hepaticae. III. The distribution of the North American Marchantiaceae. Bot. Gaz. 20: 59–71.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

Underwood, L. M. & O. F. Cook. 1890. Hepaticae americanae, decades VII–VIII (Nos. 61–80). Exsiccatae, 40 sets.

Uribe-M., J. & S. R. Gradstein. 2003. Type studies on *Frullania* subgenus *Meteoriopsis* (Hepaticae). I. The lectotypification of the genus *Frullania*, *F.* subgen. *Thyopsiella* and *F.* subgen. *Meteoriopsis*, and some species transferred from subgen. *Meteoriopsis* to subgen. *Thyopsiella*. Cryptog. Bryol. 24: 193–207.

Vainio, E. 1878. Itä-Hämeen kasvistosta. [Florula tavastiae orientalis] Meddeland. Soc. Fauna Fl. Fenn. 3: 1–121.

Váňa, J. 1973a. Studien über die Jungermannioideae (Hepaticae). I. Allgemeine Charakteristik. Folia Geobot. Phytotax. 8: 181–208.

Váňa, J. 1973b. Studien über die Jungermannioideae (Hepaticae). 2. *Jungermannia* subg. *Jungermannia*. Folia Geobot. Phytotax. 8: 255–309.

Váňa, J. 1973c. Studien über die Jungermannioideae (Hepaticae). 3. *Jungermannia* subg. *Liochlaena*. Folia Geobot. Phytotax. 8: 397–416.

Váňa, J. 1975a. Miscellaneous notes on the Asiatic Jungermannioideae. IV. J. Hattori Bot. Lab. 39: 211–214.

Váňa, J. 1975b. Studien über die Jungermannioideae (Hepaticae) 7. *Jungermannia* subg. *Plectocolea*: Europäische und nordamerikanische Arten. Folia Geobot. Phytotax. 10: 67–99.

Váňa, J. 1976. Studien über die Jungermannioideae (Hepaticae). 10. *Nardia*. Folia Geobot. Phytotax. 11: 367–425.

Váňa, J. 2002. How to evaluate taxa with poorly known taxonomy. Portugaliae Acta Biol. 20: 25–36.

Váňa, J. & S. Piippo. 1989. Bryophyte flora of the Huon Peninsula, Papua New Guinea. XXXI. Cephaloziaceae subfam. Alobielloideae, Cephaloziellaceae, Antheliaceae and Lophoziaceae (Hepaticae). Ann. Bot. Fenn. 26: 263–290.

Váňa, J., L. Söderström, A. Hagborg, M. von Konrat & J. J. Engel. 2010a. Early land plants today: Taxonomy, systematics and nomenclature of Gymnomitriaceae. Phytotaxa 11: 1–80.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2010b. Nomenclatural novelties and lectotypifications in Gymnomitriaceae. Novon 20: 225–227.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2012. Early land plants today. 8. New combinations and some lectotypifications in *Mesoptychia*. Phytotaxa 65: 52–56.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013a. Notes on early land plants today. 13. New names and synonyms in *Diplophyllum* (Scapaniaceae, Marchantiophyta). Phytotaxa 76: 28–30.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013b. Notes on early land plants today. 24. What is *Protolophozia*? (Cephaloziellaceae, Marchantiophyta). Phytotaxa 76: 50–54.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013c. Notes on early land plants today. 30. Transfer of some taxa from *Anastrophyllum* (Anastrophyllaceae, Marchantiophyta). Phytotaxa 81: 15–18.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013d. Notes on early land plants today. 40. Notes on Cephaloziellaceae (Marchantiophyta). Phytotaxa 112: 1–6.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013e. Notes on early land plants today. 41. New combinations and synonyms in Cephaloziaceae (Marchantiophyta). Phytotaxa 112: 7–15.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013f. Notes on early land plants today. 45. A correction. Phytotaxa 152: 48–49.

Váňa, J., L. Söderström, A. Hagborg & M. von Konrat. 2013g. Notes on early land plants today. Comments on sexuality in *Solenostoma* (Solenostomataceae, Marchantiophyta) and on some newly described taxa. Phytotaxa 152: 33–47.

Vanden Berghen, C. 1948. [1949]. Genera des Lejeuneaceae. Lejeunia 6: 1–59.

Vanderpoorten, A., A. Schäfer-Verwimp, J. Heinrichs, N. Devos & D. G. Long. 2010. The taxonomy of the leafy liverwort genus *Leptoscyphus* (Lophocoleaceae) revisited. Taxon 59: 176–186.

van Slageren, M. 1985. A taxonomic monograph of the genera *Brachiolejeuea* and *Frullanoides* (Heparticae). Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 54: 1–309.

Villarreal A., J. C., B. J. Crandall-Stotler, M. L. Hart, D. G. Long & L. L. Forrest. 2015. Divergence times and the evolution of morphological complexity in an early land plant lineage (Marchantiophyta) with a slow molecular rate. New Phytol. 209: 1734–1746.

Vilnet, A. A., I. A. Milyutina, N. A. Konstantinova, M. S. Ignatov & A. V. Troitsky. 2007. Phylogeny of the genus *Lophozia* (Dumort.) Dumort. inferred from nuclear and chloroplast sequences ITS1-2 and trnL-F. Russ. J. Genet. 43: 1306–1313.

Vilnet, A. A., N. A. Konstantinova & A. V. Troitsky. 2008. Phylogeny and systematics of the genus *Lophozia* s. str. (Dumort.) Dumort. (Hepaticae) and related taxa from nuclear ITS1–2 and chloroplast trnL-F sequences. Molec. Phylogen. Evol. 47: 403–418.

Vilnet, A. A., N. A. Konstantinova & A. V. Troitsky. 2010. Molecular insight on phylogeny and systematics of the Lophoziaceae, Scapaniaceae, Gymnomitriaceae and Jungermanniaceae. Arctoa 19: 31–50.

Vilnet, A. A., N. A. Konstantinova & A. V. Troitsky. 2011. Taxonomic rearrangements of Solenostomataceae (Marchantiophyta) with description of a new family Endogemmataceae based on trnL-F cpDNA analysis. Folia Cryptog. Eston. 48: 125–133.

Vilnet, A. A., N. A. Konstantinova & A. V. Troitsky. 2012. Molecular phylogeny and systematics of the suborder Cephaloziineae with special attention to the family Cephaloziaceae s.l. (Jungermanniales, Marchantiophyta). Arctoa 21: 113–132.

Wachowiak, W., A. Baczkiewicz, E. Chudzińska & K. Buczkowska. 2007. Cryptic speciation in liverworts: A case study in the *Aneura pinguis* complex. Bot. J. Linn. Soc. 155: 273–282.

Wagner, D. 2011. Observations on *Blepharostoma arachnoideum* (Pseudolepicoleaceae) of western North America. Bryologist 114: 696–701.

Wagner, D. 2013. *Rivulariella*, gen. nov. (Jungermanniaceae), endemic to western North America. Phytoneuron 2013–10: 1–9.

Warnstorf, C. 1913. Zur Bryo-Geographie des Russischen Reiches. Hedwigia 53: 184–320.

Wickett, N. J. & B. Goffinet. 2008. Origin and relationships of the mycoheterotrophic liverwort *Cryptothallus mirabilis* Malmb. (Metzgeriales, Marchantiophyta). Bot. J. Linn. Soc. 156: 1–12.

Wiersema, J. H., J. McNeill, N. J. Turland, F. R. Barrie, W. R. Buck, V. Demoulin, W. Greuter, et al. 2015. International Code of Nomenclature for Algae, Fungi, and Plants (Melbourne Code), Appendices II–VIII. Regnum Veg. 157.

Wilson, R., S. R. Gradstein, H. Schneider & J. Heinrichs. 2007. Unraveling the phylogeny of Lejeuneaceae (Jungermanniopsida): Evidence for four main lineages. Molec. Phylogen. Evol. 43: 270–282.

Yamada, K. 1993. Notes on the type specimens of *Radula* taxa from Latin America 6. J. Hattori Bot. Lab. 73: 125–137.

Yatsentyuk, S. P., N. A. Konstantinova, M. S. Ignatov, J. Hyvönen & A. V. Troitsky. 2004. On phylogeny of Lophoziaceae and related families (Hepaticae, Jungermanniales) based on trnL-trnF intron-spacer sequences of chloroplast

This content downloaded from 146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms

DNA. Pp. 150–167 *in* B. Goffinet, V. Hollowell & R. Magill (editors), Molecular Systematics of Bryophytes. Monogr. Syst. Bot. 98.

Ye, W. & R.-L. Zhu. 2010. *Leucolejeunea*, a new synonym of *Cheilolejeunea* (Lejeuneaceae), with special reference to new combinations and nomenclature. J. Bryol. 32: 279–282.

Yu, Y., T. Pócs & R.-L. Zhu. 2014. Notes on early land plants today. 62. A synopsis of *Myriocoleopsis* (Lejeuneaceae, Marchantiophyta) with special reference to transfer of *Cololejeunea minutissima* to *Myriocoleopsis*. Phytotaxa 183: 293–297.

Yuzawa, Y. 1988. Some little-known species of *Frullania* subgen. *Diastaloba* described from Latin America. J. Hattori Bot. Lab. 64: 437–449.

Yuzawa, Y. 1991. A monograph of subgen. *Chonanthelia* of gen. *Frullania* (Hepaticae) of the world. J. Hattori Bot. Lab. 70: 181–291.

Yuzawa, Y. & N. Koike. 1989. Studies on the type specimens of Latin American *Frullania* species (1). J. Hattori Bot. Lab. 66: 343–358.

Zehr, D. R. 1980. An assessment of variation in *Scapania nemorosa* and selected related species. Bryophyt. Biblioth. 15: 1–140.

Zijlstra, G. 1990. Report of the committee for Bryophyta: 1. Taxon 39: 289–292.

Zijlstra, G. 1999. Report of the committee for Bryophyta: 5. Taxon 48: 563–565.

Appendix 1. List of taxa in which new heterotypic synonyms are proposed.

Barbilophozia sudetica (Nees ex Huebener) L. Söderstr., De Roo & Hedd. = *Lophozia sudetica* (Nees ex Huebener) Grolle var. *anomala* (Schljakov) Schljakov, Novosti Sist. Nizsh. Rast. 13: 228. 1976, syn. nov. = *Protolophozia debiliformis* (R. M. Schust. & Damsh.) Konstant., Novosti Sist. Nizsh. Rast. 30: 112. 1995, syn. nov. = *Pseudolophozia debiliformis* (R. M. Schust. & Damsh.) Konstant. & Vilnet, Arctoa 18: 66. 2009, syn. nov.

Cephaloziella divaricata (Sm.) Schiffn. var. **scabra** (M. Howe) Haynes = *Cephaloziella starkei* var. *scabra* (M. Howe) L. Clark & Frye, Publ. Puget Sound Biol. Sta. 6: 106. 1928, syn. nov. = *Cephaloziella scabrifolia* Douin & Schiffn., Mém. Soc. Bot. France 29: 66. 1920, syn. nov.

Cephaloziella elachista (J. B. Jack ex Gottsche & Rabenh.) Schiffn. = *Cephaloziella grimsulana* (J. B. Jack ex Gottsche & Rabenh.) Lacout. var. *angustiloba* (Douin) Jørg., Bergens Mus. Skr. [Norg. Leverm.] 16: 194. 1934, syn. nov.

Cephaloziella varians (Gottsche) Steph. = *Cephaloziella lorenziana* Douin, Mém. Soc. Bot. France 29: 70. 1920, syn. nov.

Clevea hyalina (Sommerf.) Lindb. = *Athalamia hyalina* (Sommerf.) S. Hatt. var. *californica* (M. Howe) R. M. Schust., nom. inval., Hepat. Anthocerotae N. Amer. 6: 139. 1992, syn. nov.

Jungermannia exsertifolia Steph. subsp. **cordifolia** (Dumort.) Váňa = *Jungermannia exertifolia* Steph. subsp. *cordifolia* (Dumort.) Váňa var. *pendletonii* (Pearson) Váňa, Folia Geobot. Phytotax. 8: 271. 1973, syn. nov.

Lophocolea coadunata (Sw.) Mont. = *Lophocolea cuspidata* (Nees) Limpr. var. *alata* (Gottsche, Lindenb. & Nees) Müll. Frib., Lebermoose: 803. 1911, syn. nov.

Lophoziopsis pellucida (R. M. Schust.) Konstant. & Vilnet = *Lophozia pellucida* R. M. Schust. var. *minor* R. M. Schust., Canad. J. Bot. 39: 984. 1961, syn. nov. ≡ *Lophoziopsis pellucida* (R. M. Schust.) Konstant. & Vilnet var. *minor* (R. M. Schust.) L. Söderstr. & Váňa in Söderström et al., Phytotaxa 97: 28. 2013, syn. nov.

Marchantia polymorpha L. subsp. **ruderalis** Bischl. & Boissel.-Dub. = *Marchantia latifolia* Gray, Nat. Arr. Brit. Pl. 1: 682. 1821, syn. nov.

Marchantia quadrata Scop. = *Preissia quadrata* (Scop.) Nees subsp. *hyperborea* R. M. Schust., Phytologia 57: 410. 1985, syn. nov.

Mesoptychia gillmanii (Austin) L. Söderstr. & Váňa = *Lophozia gillmanii* (Austin) R. M. Schust. var. *ciliolata* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 385. 1969, as "*gillmani*," syn. nov.

Plagiochila patula (Sw.) Nees & Mont. ex Lindenb. = *Plagiochila dubia* Lindenb. & Gottsche var. *integrifolia* R. M. Schust., Amer. Midl. Naturalist 63: 35. 1960, syn. nov.

Plagiochila porelloides (Torr. ex Nees) Lindenb. var. **porelloides** = *Plagiochila satoi* S. Hatt. var. *magna* W. B. Schofield & W. S. Hong in Hong, Bryologist 95: 144. 1992, syn. nov. = *Plagiochila asplenioides* (L.) Dumort. var. *obcampanulata* R. M. Schust., Amer. Midl. Nat. 62: 139. 1959, syn. nov.

Ricciocarpos natans (L.) Corda = *Riccia lutescens* Schwein., Spec. Fl. Amer. Sept. Crypt.: 26. 1821, syn. nov.

Riella affinis M. Howe & Underw. = *Riella heliospora* Segarra, Puche et Sabovlj., Syst. Bot. 37: 315. 2012, syn. nov.

Scapania praetervisa Meyl. = *Scapania mucronata* H. Buch subsp. *praetervisa* (Meyl.) R. M. Schust. var. *polaris* R. M. Schust., Hepat. Anthocerotae N. Amer. 3: 442. 1974, syn. nov.

Solenostoma fusiforme (Steph.) R. M. Schust. = *Metasolenostoma orientale* Bakalin & Vilnet, Bot. Pac. 3(2): 12. 2014., syn. nov.

Solenostoma gracillimum (Sm.) R. M. Schust. = *Solenostoma gracillimum* f. *crenulatum* (Mitt.) Bakalin, Polish Bot. J. 57: 141. 2012, syn. nov.

Solenostoma sphaerocarpum (Hook.) Steph. = *Solenostoma sphaerocarpum* (Hook.) Steph. var. *nanum* (Nees ex Flot.) Müll. Frib., Leberm. Eur. 6: 829. 1956, as "*nana*." Basionym: *Jungermannia nana* Nees ex Flot., Flora 16: 396. 1833, syn. nov. = *Jungermannia sphaerocarpa* Hook. var. *nana* (Nees ex Flot.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 295. 1943, syn. nov.

Syzygiella Spruce = *Crossogyna* (R. M. Schust.) Schljakov, Novosti Sist. Nizsh. Rast. 12: 311. 1975. Basionym: *Jamesoniella* subg. *Crossogyna* R. M. Schust., Hepat. Anthocerotae N. Amer. 2: 817. 1969, syn. nov.

Syzygiella autumnalis (DC.) K. Feldberg, Váňa, Hentschel & Heinrichs = *Jamesoniella autumnalis* var. *heterostipa* (A. Evans) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 274. 1944. Basionym: *Jamesoniella heterostipa* A. Evans, Bryologist 18: 81. 1915, syn. nov. = *Jamesoniella autumnalis* var. *myriocarpa* (Brinkm.) Frye & L. Clark, Univ. Wash. Publ. Biol. 6: 275. 1944. Basionym: *Jamesoniella myriocarpa* Brinkm., Bryologist 36: 57. 1933, syn. nov.

This content downloaded from
146.244.101.138 on Fri, 03 Nov 2023 13:20:41 +00:00
All use subject to https://about.jstor.org/terms