A new checklist of the mosses of the continental United States and Canada1

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A new checklist of the mosses of the continental United States and Canada[1]

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Abstract. The checklist includes a listing of the genera and species of North American Bryophyta thought to occur in the continental United States and Canada. The floras of Mexico, Hawaii and Greenland are not included. The current list recognizes 1565 species, 12 subspecies, 34 varieties and one form (for a total of 1612 taxa) in 366 genera and 100 families. As a preface to the list, a systematic arrangement of the families and included genera for North America is presented. Many changes from the previous checklist are documented via footnotes that provide references to where changes were made. Only synonymy since the previous checklist is included. Twenty nomenclatural changes are made. These include 19 new combinations: *Bryum brassicoides* (≡ *Gemmabryum brassicoides*), *B. pacificum* (≡ *Ptychostomum pacificum*), *B. torenii* (≡ *Imbribryum torenii*), *B. vinosum* (≡ *Gemmabryum vinosum*), *Chionoloma maragniphyllum* (≡ *Oxystegus maragniphyllus*), *Lescuraea tribulosa* (≡ *Pseudoleskea tribulosa*), *Pterygoneurum ×kieneri* (≡ *P. subsessile* var. *kieneri* Habeeb), *Pylaisiadelpha canadensis* (≡ *Brotherella canadensis*), *Streblotrichum convolutum* var. *eustegium* (≡ *Barbula eustegia*), *Streblotrichum convolutum* var. *gallinula* (≡ *Barbula convoluta* var. *gallinula*), *Voitia angustata* (≡ *Splachnum angustatum*), *V. mnioides* (≡ *Splachnum mnioides*), *V. pallida* (≡ *Tetraplodon pallidus*), *V. paradoxa* (≡ *Splachnum paradoxum*), *V. urceolata* (≡ *Splachnum urceolatum*), *Warnstorfia badia* (≡ *Hypnum badium*), *W. straminea* (≡ *Hypnum stramineum*), *W. straminea* var. *patens* (Lindb.) (≡ *Amblystegium stramineum* var. *patens*), *W. wickesiae* (≡ *Calliergon wickesiae*). A new order is also introduced: Rhizogemmales W.R.Buck & Goffinet (≡ Rhizogemmaceae Bonfim Santos, Siebel & Fedosov).

Keywords. Bryophyta, inventory, North America, systematics, classification.

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We present here the newest version of the North American moss checklist. In doing so, we stand on the shoulders of previous North American bryologists. Beginning with A. J. Grout (1940), who published the first comprehensive checklist of North American mosses, the task was then taken over by Howard Crum with the collaboration of Lewis Anderson and Bill Steere (Anderson 1990; Anderson et al. 1990; Crum et al. 1965, 1973). It has now been almost 35 years since the last checklist and our understanding of moss diversity, species delineation and phylogeny and its accompanying nomenclatural and classification changes have moved ahead faster than at any time in the past. Molecular data have revealed relationships previously undetected by morphological observations, and similarly may reveal that phenotypic divergences may be infraspecific rather than diagnostic of speciation events. Moss taxonomy is a dynamic field and hence changes are far from being finished and names will continue to change for the foreseeable future, as we can attest by the changes encountered during the two-year preparation of this list. Furthermore, some concepts remain contentious among authors (e.g., taxonomy

[1] We dedicate this checklist to the memory of Howard A. Crum and Lewis E. Anderson on whose shoulders we stand.

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and systematics of the Pottiaceae), and consequently we have had to make choices. While we aimed at considering the evidence of alternative hypotheses (e.g., strength of the data, whether morphological or molecular, in supporting lineages), in various cases the final decision may have been shaped by our own general concepts. However, the impacts of our perhaps subjective decisions affect primarily systematic rather than taxonomic concepts at the species level, and hence should have a minimal impact on the recognized diversity of species and infraspecific taxa in the continental United States and Canada.

Moss systematics historically has been driven by phenotypic divergences, which is obviously the first step in an effort to organize diversity. The difficulty arose from the weight attributed to specific characters to diagnose lineages. A good example is the genus *Physcomitrella* Bruch & Schimp. (Funariaceae). Distinguished from *Physcomitrium* (Brid.) Brid. by its indehiscent, immersed capsules, its circumscription varied in terms of species and rank (Tan 1979) and even its affinities to *Aphanorhegma* Sull., a unispecific genus also characterized by immersed but operculate capsules. Inferences from DNA sequence data, first from about ten loci (Liu et al. 2012) and then hundreds of organellar (Medina et al. 2018) and then nuclear loci (Medina et al. 2019a), revealed that immersed sporangia evolved multiple times within *Physcomitrium*, and hence recognizing *Physcomitrella* or *Aphanorhegma* resulted in a paraphyletic *Physcomitrium*. Consequently, all species with immersed capsules were transferred to *Physcomitrium* (Medina et al. 2019a).

When a genus diagnosed by morphological traits is resolved as paraphyletic, based on DNA data, for example, due to the inclusion of a small genus, a single genus should be recognized if monophyly is a criterion, such as in the above case of *Physcomitrella* and *Physcomitrium*. The single genus recognized should bear the earliest name available (e.g., *Physcomitrium*) as dictated by the *International Code of Nomenclature for algae, fungi, and plant*s (Turland et al. 2018). If the older name applies to a lesser-known genus, such priority can be overruled by a decision to conserve the younger name. Such is the recent case of *Plagiomnium* T.J.Kop. (Koponen 1968) being conserved over *Orthomnion* Wilson (Wilson 1857) at the recent congress in Madrid (Wilson 2024) on the basis that the former is "a well-established name for a widely distributed genus and therefore conservation would promote nomenclatural stability for the broad community of users of botanical names." Whether to conserve a name is to some extent a subjective decision based on the perceived "usage" of the younger name. However, one can argue that the sooner a name is adopted the sooner it will gain in usage; the time ahead of us is much longer than the past two centuries of Linnean classification. The genus *Voitia* Hornsch. (1818) has traditionally accommodated two species, and phylogenetic inferences drawn from many nuclear loci (Lewis et al. 2014) reveal that their common ancestor arose from within *Tetraplodon* Bruch & Schimp. (1844), which was thus resolved as paraphyletic. *Tetraplodon* occurs primarily in the Northern Hemisphere with disjunctions in southern South America, and high elevations in Africa and New Guinea, whereas *Voitia* is confined to Laurasia, where it is largely sympatric with species of *Tetraplodon* (Marino 2014). Both genera belong to the Splachnaceae and have been studied in this context (see A. Koponen [1982, 1990] and Marino [1988, 1991a, 1991b] and Marino et al. [2009]). Both genera have been accepted since their protologues and their species have been included in all subsequent inventories. Merging the two genera translates morphologically into species with indehiscent capsules (diagnostic of *Voitia*) having arisen from *Tetraplodon*-like ancestor with dehiscent sporangia. Such a scenario has been accepted for *Voitia grandis* D.G.Long transferred to *Tayloria* (Goffinet & Shaw 2002) and is recurrent in other genera such as *Physcomitrium* (Medina et al. 2019a) or *Weissia* Hedw. (Reese & Lemmon 1965; Zander 1993).

Other genera, primarily speciose ones, have been broken up based on their polyphyletic resolution; examples include *Brachythecium* Schimp. (Brachytheciaceae; e.g., Ignatov & Huttunen 2002) and *Hypnum* Hedw. (Hypnaceae; Schlesak et al. 2018). The outcome may be the recognition of new unispecific genera (e.g., *Buckia* D.Ríos, M.T.Gallego & J.Guerra), which serve as placeholders pending completion of a more comprehensive taxonomic sampling of the speciose genera. We have reluctantly accepted all these segregates. In other cases, the splitting of genera reflects perhaps more subjective preferences, and

may not be supported by phylogenetic evidence. For example, *Racomitrium* Brid. (Grimmiaceae) has been divided into several genera (i.e., the resurrected *Bucklandiella* Roiv. and *Codriophorus* P.Beauv. [Ochyra et al. 2003] and the newly proposed *Dilutineuron* Bedn.-Ochyra, Sawicki, Ochyra, Szczecińska & Plášek [Bednarek-Ochyra et al. 2015], *Frisvollia* Sawicki, Szczecińska, Bedn.-Ochyra & Ochyra [Sawicki et al. 2015] and *Niphotrichum* (Bedn.-Ochyra) Bedn.-Ochyra & Ochyra [Ochyra et al. 2003]). Although these generic segregates may be monophyletic, they all arose from a unique shared common ancestor, i.e., *Racomitrium* s.l. is itself monophyletic (Larraín et al. 2013). Hence, phylogenetically the recognition of smaller genera is not justified. Furthermore, these newer segregate genera lack unambiguous diagnostic morphological traits, given that their circumscription was dependent on DNA versus morphological character analyses (e.g., Bednarek-Ochyra et al. 2015, Sawicki et al. 2015). Hence, we recommend treating these lineages within *Racomitrium* as subgenera as originally proposed by Bednarek-Ochyra (1995). A similar case pertains to the *Warnstorfia* Loeske complex (Calliergonaceae), which comprises four genera, each accommodating only a few species: *Loeskypnum* H.K.G.Paul (2 spp.), *Sarmentypnum* Tuom. & T.J.Kop. (6 spp.), *Straminergon* Hedenäs (1 sp.) and *Warnstorfia* Loeske (4 spp.; Hedenäs 1993). Together these genera compose a monophyletic group (Hedenäs et al. 2005), which we propose recognizing at the generic level.

Another case of segregation of a new genus that can be avoided if a broader concept of the core genus is followed, is *Anomodon* Hook. & Taylor. Ignatov et al. (2019a) divided *Anomodon* into several genera. They erected *Pseudanomodon* for *Anomodon attenuatus* (Hedw.) Huebener because it was only distantly related to the clade comprising the type of *Anomodon*, i.e., *A. viticulosus* (Hedw.) Hook. & Taylor. We support recognizing *Pseudanomodon.* They also established the genus *Anomodontopsis* for *Anomodon rugelii* (Müll.Hal.) Keissl. because the latter is resolved as sister to a clade composed of *Anomodon* s.str. and *Haplohymenium* Dozy & Molk. Given the paraphyly of *Anomodon,* their proposal could be justified on phylogenetic grounds. However, Granzow-de la Cerda (1997) had previously argued for the merger of *Haplohymenium* with *Anomodon*; such a concept would restore the monophyly of *Anomodon* and hence make the segregation of *Anomodontopsis* unnecessary.

In its traditional circumscription, *Bryum* Hedw. is among the most speciose genera of mosses (Crosby et al. 1999). Some of its diversity was accommodated early on in distinct genera (e.g., *Ptychostomum* Hornsch. [Hornschuch 1824]; *Plagiobryum* Lindb. [Lindberg 1862]), but most have been transferred more recently into new generic segregates (i.e., *Gemmabryum* J.R.Spence & H.P.Ramsay [Spence & Ramsay 2005]; *Imbribryum* N.Pedersen [Pedersen 2005; Pedersen & Hedenäs 2005]; *Plagiobryoides* J.R.Spence [Spence 2005]; *Rosulabryum* J.R.Spence [Spence 1996]). The most recent phylogenetic analyses based on DNA data led Holyoak & Pedersen (2007) to merge *Plagiobryum* with *Ptychostomum* as well as other phylogenetic inferences, whether based on DNA (Pedersen & Hedenäs 2003; Wang & Zhao 2009) or morphological traits (Pedersen et al. 2007), thus raising doubts on the monophyly of the *Bryum* segregates, as recently also discussed by Toren et al. (2024). Consequently, we recognize a single, albeit morphologically diverse, genus, *Bryum*, pending a comprehensive taxonomic and data sampling to resolve the ambiguities.

Finally, generic concepts may be based on the integration of criteria other than strict monophyly. Zander (2024), for example, integrated functional information in the analysis of complexity leading him to recognize monothetic and fractal genera. Admittedly, we do not yet fully understand the conceptual basis for this approach. Therefore, we decided to not recognize the one new generic name that Zander (2023) applied to a taxon present in our flora, i.e., *Neotrichostomum* for *Trichostomum crispulum* Bruch.

Overall, we aimed for consistency in applying criteria for recognizing genera and understand that our concepts depart from those proposed or adopted by others, such as contributors to the *Bryophyte Flora of North America* (Flora of North America Editorial Committee 2007, 2014). In all cases, we sought to provide the basis or explanation for our systematic decisions. Systematic concepts will continue to be vulnerable to change as investigations continue to resolve relationships, methodological approaches evolve, and theoretical principles underlying classifications are developed. However, the generic or systematic concepts adopted have no bearing on the

actual inventory of moss species diversity. Our list provides a significant update to the previous one by Anderson et al. (1990). This list recognizes an additional 183 species and infraspecific taxa, an additional 54 genera, and an additional 28 families. For all additions, deletions, or synonymies we provide documentation in the form of footnotes. We have not reprinted the synonymy of previous lists but are only including names in the list of synonyms that differ from previous lists. All authority names have been checked and updated as needed. The suprageneric classification is built on that proposed by Goffinet et al. (2009a,b), and integrates proposals by Liu et al. (2019), Bechteler et al. (2023), Li et al. (2024) and many others as referenced in the footnotes throughout the classification. The list of taxa occurring in the United States and Canada is available as a spreadsheet (**Supplementary Table S1**), along with an alphabetical list of families of North American mosses and their generic inclusions (**Supplementary Table S2**), an alphabetical list of families of North American mosses and their ordinal affiliations (**Supplementary Table S3**), and an alphabetical list of orders of North American mosses and their familial inclusions (**Supplementary Table S4**).

Systematic Arrangement of Genera of North American mosses

SUBDIVISION TAKAKIOPHYTINA M.Stech & W.Frey
CLASS TAKAKIOPSIDA M.Stech & W.Frey
Takakiales M.Stech & W.Frey
Takakiaceae M.Stech & W.Frey
Takakia S. Hatt. & Inoue

SUBDIVISION SPHAGNOPHYTINA Doweld
CLASS SPHAGNOPSIDA Schimp.
Sphagnales Limpr.
Sphagnaceae Dumort.
Sphagnum L.

SUBDIVISION ANDREAEOPHYTINA Goffinet, W.R.Buck & A.J.Shaw
CLASS ANDREAEOPSIDA Trevis.
Andreaeales Limpr.
Andreaeaceae Dumort.
Andreaea Hedw.

CLASS ANDREAEOBRYOPSIDA Goffinet & W.R. Buck[1]
Andreaeobryales B.M.Murray
Andreaeobryaceae Steere
Andreaeobryum Steere & B.M.Murray

SUBDIVISION BRYOPHYTINA Engl.
CLASS POLYTRICHOPSIDA Doweld
Oedipodiales Goffinet & W.R.Buck
Oedipodiaceae Schimp.
Oedipodium Schwägr.

Polytrichales Cavers
Polytrichaceae Schwägr.
Atrichum P.Beauv., *nom. cons.*
Bartramiopsis Kindb.
Lyellia R.Br.
Oligotrichum DC., *nom. cons.*
Pogonatum P.Beauv.
Polytrichastrum G.L.Sm.
Polytrichum Hedw.
Psilopilum Brid.

Tetraphidales Cavers
Tetraphidaceae Schimp.
Tetraphis Hedw.
Tetrodontium Schwägr.

CLASS BRYOPSIDA Ritgen
Subclass Buxbaumiidae Doweld
Buxbaumiales Cavers
Buxbaumiaceae Schwägr.
Buxbaumia Hedw.

Subclass Diphysciidae Ochyra
Diphysciales M.Fleisch.
Diphysciaceae M.Fleisch.
Diphyscium D.Mohr

Subclass Gigaspermidae M.Stech & W.Frey
Gigaspermales Goffinet, Wickett, O.Werner, Ros, A.J.Shaw & C.J.Cox
Gigaspermaceae A.Jaeger & Sauerb.
Lorentziella Müll.Hal. *ex* Besch.

[1] The Andreaeobryophytina were erected by Goffinet et al. (2009a), but recent phylogenetic evidence (Bechteler et al. 2024, Liu et al. 2019) supports that this lineage is sister to the Andreaeopsida, and this combined monophyletic lineage is best treated as the Andreaeophytina.

Subclass Funariidae Ochyra
Disceliales Ignatov, Ignatova & Fedosov
Disceliaceae Schimp.
Discelium Brid.

Encalyptales Dixon
Encalyptaceae Schimp.
Bryobrittonia R.S.Williams
Encalypta Hedw.

Funariales M.Fleisch.
Funariaceae Schwägr.
Entosthodon Schwägr.
Funaria Hedw.
Physcomitrium (Brid.) Brid.
Pyramidula Brid.

Subclass Timmiidae Ochyra
Timmiales Ochyra
Timmiaceae Schimp.
Timmia Hedw., *nom. cons.*

Subclass Dicranidae Doweld
Distichiales D.Bell & Goffinet
Distichiaceae Schimp.
Distichium Bruch & Schimp., *nom. cons.*
Timmiellaceae Y.Inoue & H.Tsubota
Luisierella Thér. & P.de la Varde[2]
Timmiella (De Not.) Schimp.

Pseudoditrichales Ignatov & Fedosov
Pseudoditrichaceae Steere & Z.Iwats.
Pseudoditrichum Steere & Z.Iwats.

Flexitrichales D.Bell & Goffinet
Flexitrichaceae Ignatov & Fedosov *ex* D.Bell & Goffinet
Flexitrichum Ignatov & Fedosov

Catoscopiales Ignatov & Ignatova
Catoscopiaceae Boulay *ex* Broth.
Catoscopium Brid.

Scouleriales Goffinet & W.R.Buck
Hymenolomataceae Ignatov & Fedosov[3]
Hymenoloma Dusén
Scouleriaceae S.P.Churchill
Scouleria Hook.
Drummondiaceae Goffinet
Drummondia Hook., *nom. cons.*

Bryoxiphiales Á.Löve & D.Löve
Bryoxiphiaceae Besch., *nom. cons.*
Bryoxiphium Mitt., *nom. cons.*

Rhizogemmales W.R.Buck & Goffinet[4]
Rhizogemmaceae Bonfim Santos, Siebel & Fedosov
Rhizogemma Bonfim Santos, Siebel & Fedosov

Grimmiales M.Fleisch.
Saelaniaceae Ignatov & Fedosov
Saelania Lindb.
Grimmiaceae Arn.
Coscinodon Spreng.
Dryptodon Brid.
Grimmia Hedw.
Jaffueliobryum Thér.
Racomitrium Brid.
Schistidium Bruch & Schimp., *nom. cons.*
Ptychomitriaceae Schimp.
Brachydontium Fürnr.
Campylostelium Bruch & Schimp.
Indusiella Broth. & Müll.Hal.[5]
Ptychomitrium Fürnr., *nom. cons.*
Seligeriaceae Schimp.
Blindia Bruch & Schimp.
Blindiadelphus (Lindb.) Fedosov & Ignatov
Seligeria Bruch. & Schimp.

Archidiales Limpr.[6]
Archidiaceae Schimp.
Archidium Brid.
Micromitriaceae Smyth *ex* Goffinet & Budke
Micromitrium Austin
Leucobryaceae Schimp.
Atractylocarpus Mitt., *nom. cons.*

[2] See Inoue & Tsubota (2014).
[3] See Fedosov et al. (2016a).

[4] The Rhizogemmaceae were erected by Bonfim Santos et al. (in Fedosov et al. 2023b), and resolved as sister to a clade comprising Archidiales, Seligeriales, Grimmiales and Dicranales. We propose to accommodate this family in its own order, Rhizogemmales W.R.Buck & Goffinet comb. et stat. nov. ≡ Rhizogemmaceae Bonfim Santos, Siebel & Fedosov, Plants 12: 1360 [13]. 2023.
[5] See Hernández-Maqueda et al. (2008).
[6] See Bechteler et al. (2023).

Brothera Müll.Hal.
Campylopus Brid.
Leucobryum Hampe

Amphidiales D.Bell & Goffinet
Amphidiaceae M.Stech
Amphidium Schimp., *nom. cons.*

Dicranales M.Fleisch.
Ruficaulaceae Bonfim Santos & Fedosov
Ruficaulis Bonfim Santos & Fedosov
Dicranellopsidaceae Bonfim Santos, Siebel & Fedosov
Dicranellopsis Bonfim Santos, Siebel & Fedosov
Fissidentaceae Schimp.
Fissidens Hedw.
Schistostegaceae Schimp.
Schistostega D.Mohr
Dicranaceae Schimp., *nom. cons.*
Campylopodiella Cardot
Dicranodontium Bruch & Schimp.
Dicranoweisia Lindb. *ex* Milde
Dicranum Hedw.
Oncophorus (Brid.) Brid.
Oreas Brid., *nom. cons.*
Paraleucobryum (Lindb. *ex* Limpr.) Péterfi
Aongstroemiaceae De Not.
Aongstroemia Bruch & Schimp., *nom. cons.*
Calcidicranella Bonfim Santos, Fedosov & Jan Kučera
Dichodontium Schimp.
Diobelonella Ochyra
Dicranellaceae M.Stech
Dicranella (Müll.Hal.) Schimp., *nom. cons.*
Eccremidium Wilson
Octoblepharaceae A.Eddy *ex* M.Menzel
Octoblepharum Hedw.
Calymperaceae Kindb.
Calymperes Sw.
Syrrhopodon Schwägr.

Erpodiales Goffinet
Erpodiaceae Broth.
Erpodium (Brid.) Brid.
Solmsiella Müll.Hal.
Venturiella Müll.Hal.

Bruchiales Goffinet
Bruchiaceae Schimp.
Bruchia Schwägr.
Trematodon Michx.

Rhabdoweisiales D.Bell & Goffinet
Rhabdoweisiaceae Limpr., *nom. cons.*
Arctoa Bruch & Schimp.
Brideliella Fedosov, M.Stech & Ignatov
Cnestrum I.Hagen
Cynodontium Bruch & Schimp., *nom. cons.*
Kiaeria I.Hagen
Rhabdoweisia Bruch & Schimp.
Symblepharis Mont.
Rhachitheciaceae H.Rob.
Rhachithecium Broth. *ex* Le Jol.

Ditrichales D.Bell & Goffinet
Ditrichaceae Limpr., *nom. cons.*
Ceratodon Brid.
Cleistocarpidium Ochyra & Bedn.-Ochyra
Ditrichum Timm *ex* Hampe, *nom. cons.*
Pleuridium Rabenh., *nom. cons.*
Pseudephemerum (Lindb.) I.Hagen
Trichodon Schimp.

Pottiales M.Fleisch.
Pottiaceae Hampe, *nom. cons.*
Acaulon Müll.Hal.
Aloina Kindb., *nom. cons.*
Anoectangium Schwägr., *nom. cons.*
Aschisma Lindb.
Barbula Hedw., *nom. cons.*
Bellibarbula P.C.Chen
Bryoerythrophyllum P.C.Chen
Chenia R.H.Zander
Chionoloma Dixon
Crossidium Jur., *nom. cons.*
Crumia W.B.Schofield
Didymodon Hedw.
Ephemerum Hampe, *nom. cons.*
Eucladium Bruch & Schimp.
Geheebia Schimp.
Gertrudiella Broth.
Globulinella Steere
Gymnostomiella M.Fleisch.
Gymnostomum Nees & Hornsch., *nom. cons.*
Gyroweisia Schimp., *nom. cons.*
Hennediella Paris
Hilpertia R.H.Zander
Husnotiella Cardot
Hydrogonium (Müll.Hal.) A.Jaeger
Hymenostylium Brid.
Hyophila Brid., *nom. cons.*

Hyophiladelphus (Müll.Hal.) R.H.Zander
Leptodontium (Müll.Hal.) Lindb.
Merceyopsis Broth. & Dixon
Microbryum Schimp.
Molendoa Lindb.
Ozobryum G.L.Sm.Merr.
Plaubelia Brid.
Pleurochaete Lindb.
Pseudocrossidium R.S.Williams
Pterygoneurum Jur., *nom. cons.*
Rhexophyllum Herzog
Scopelophila (Mitt.) Lindb.
Splachnobryum Müll.Hal.
Stegonia Venturi
Streblotrichum P.Beauv.
Syntrichia Brid.
Tortella (Müll.Hal.) Limpr., *nom. cons.*
Tortula Hedw., *nom. cons.*
Trichostomopsis Cardot
Trichostomum Bruch, *nom. cons.*
Triquetrella Müll.Hal.
Tuerckheimia Broth.
Vinealobryum R.H.Zander
Weissia Hedw.
Zanderella J.A.Jiménez & M.J.Cano

Subclass Bryidae Engl.
Superorder **BRYANAE** Goffinet & W.R.Buck
Splachnales Ochyra
Splachnaceae Grev. & Arn.
Aplodon R.Br.
Splachnum Hedw.
Tayloria Hook.
Voitia Hornsch.
Meesiaceae Schimp.
Amblyodon P.Beauv., *nom. cons.*
Leptobryum (Schimp.) Wilson[7]
Meesia Hedw., *nom. cons.*
Paludella Ehrh. *ex* Brid.

Hedwigiales Ochyra
Hedwigiaceae Schimp.
Braunia Bruch & Schimp., *nom. cons.*
Hedwigia P.Beauv., *nom. cons*.
Pseudobraunia (Lesq. & James) Broth.

[7] See Cox & Hedderson (1999) and Cox et al. (2000).

Bartramiales M.Menzel
Bartramiaceae Schwägr.
Anacolia Schimp., *nom. cons.*
Bartramia Hedw., *nom. cons.*
Conostomum Sw.
Philonotis Brid.
Plagiopus Brid.

Bryales Limpr.
Bryaceae Rchb.
Anomobryum Schimp.
Brachymenium Schwägr.
Bryum Hedw.
Haplodontium Hampe
Plagiobryum Lindb.
Rhodobryum (Schimp.) Limpr., *nom. cons.*
Roellobryaceae Ochyra
Roellobryon Ochyra
Mniaceae Schwägr.
Cinclidium Sw.
Cyrtomnium Holmen
Leucolepis Lindb.
Mnium Hedw., *nom. cons.*
Plagiomnium T.J.Kop., *nom. cons.*
Pseudobryum (Kindb.) T.J.Kop.
Rhizomnium (Mitt. *ex* Broth.) T.J.Kop.
Trachycystis Lindb.
Mielichhoferiaceae Schimp.
Epipterygium Lindb.
Mielichhoferia Nees & Hornsch.
Pohlia Hedw.

Orthotrichales Dixon
Orthotrichaceae Arn.
Codonoblepharon Schwägr.
Groutiella Steere
Leratia Broth. & Paris
Lewinskya F.Lara, Garilleti & Goffinet
Macrocoma (Hornsch. *ex* Müll.Hal.) Grout
Macromitrium Brid.
Nyholmiella Holmen & E.Warncke
Orthotrichum Hedw.
Plenogemma Plášek, Sawicki & Ochyra
Pulvigera Plášek, Sawicki & Ochyra
Schlotheimia Brid.
Ulota D.Mohr
Zygodon Hook. & Taylor

Rhizogoniales Goffinet & W.R.Buck
Rhizogoniaceae Broth.
Pyrrhobryum Mitt.

Aulacomniales N.E.Bell, A.E.Newton & D.Quandt
Aulacomniaceae Schimp.
Aulacomnium Schwägr., *nom. cons.*

Orthodontiales N.E.Bell, A.E.Newton & D.Quandt
Orthodontiaceae Goffinet
Orthodontium Schwägr.

Superorder **HYPNANAE** W.R.Buck, Goffinet & A.J.Shaw
Hypnodendrales N.E.Bell, A.E.Newton & D.Quandt
Racopilaceae Kindb.
Racopilum P.Beauv.

Hypopterygiales Goffinet
Hypopterygiaceae Mitt.
Hypopterygium Brid.

Hookeriales M.Fleisch.
Daltoniaceae Schimp.
Daltonia Hook. & Taylor, *nom. cons.*
Hookeriaceae Schimp.
Hookeria Sm., *nom. cons.*
Pilotrichaceae Kindb.
Callicostella (Müll.Hal.) Mitt., *nom. cons.*
Cyclodictyon Mitt.
Lepidopilum (Brid.) Brid., *nom. cons.*
Trachyxiphium W.R.Buck

Hypnales W.R.Buck & Vitt
Rutenbergiaceae M.Fleisch.
Pseudocryphaea E.Britton *ex* Broth.
Fontinalaceae Schimp.
Brachelyma Schimp. *ex* Cardot
Dichelyma Myrin
Fontinalis Hedw.
Climaciaceae Kindb.
Climacium F.Weber & D.Mohr
Pleuroziopsis Kindb. *ex* E.Britton
Amblystegiaceae Kindb.
Amblystegium Schimp.
Anacamptodon Brid.
Campylium (Sull.) Spruce
Campylophyllopsis W.R.Buck
Conardia H.Rob.
Cratoneuron (Sull.) Spruce
Drepanium (Schimp.) Spruce
Drepanocladus (Müll.Hal.) G.Roth, *nom. cons.*
Hygroamblystegium Loeske, *nom. cons.*
Hygrohypnella Ignatov & Ignatova
Hygrohypnum Lindb.
Leptodictyum (Schimp.) Warnst.
Limbella (Müll.Hal.) Renauld & Cardot
Palustriella Ochyra
Platyhypnum Loeske
Platylomella A.L.Andrews
Pseudoamblystegium Vanderp. & Hedenäs
Pseudocampylium Vanderp. & Hedenäs
Sanionia Loeske
Tomentypnum Loeske
Calliergonaceae Vanderp., Hedenäs, C.J.Cox & A.J.Shaw
Calliergon (Sull.) Kindb.
Hamatocaulis Hedenäs
Scorpidium (Schimp.) Limpr.
Warnstorfia Loeske
Helodiaceae Ochyra
Helodium Warnst., *nom. cons.*
Leskeaceae Schimp.
Claopodium (Lesq. & James) Renauld & Cardot
Haplocladium (Müll.Hal.) Müll.Hal., *nom. cons.*
Lescuraea Schimp.
Leskea Hedw.
Lindbergia Kindb.
Pseudoleskeella Kindb.
Thuidiaceae Schimp.
Abietinella Müll.Hal.
Echinophyllum T.J.O'Brien
Herpetineuron (Müll.Hal.) Cardot
Pelekium Mitt., *nom. cons.*
Rauiella Reimers
Thuidium Schimp.
Stereophyllaceae W.R.Buck & Ireland
Entodontopsis Broth.
Pilosium (Müll.Hal.) M.Fleisch.
Stereophyllum Mitt.
Brachytheciaceae Schimp.
Brachytheciastrum Ignatov & Huttunen
Brachythecium Schimp.
Bryoandersonia H.Rob.
Cirriphyllum Grout
Clasmatodon Hook. & Wilson
Donrichardsia H.A.Crum & L.E.Anderson

Eurhynchiastrum Ignatov & Huttunen
Homalotheciella (Cardot) Broth.
Homalothecium Schimp.
Kindbergia Ochyra
Koponeniella Huttunen & Ignatov
Myuroclada Besch.
Oxyrrhynchium (Schimp.) Warnst., *nom. cons.*
Palamocladium Müll.Hal.
Pseudoscleropodium (Limpr.) M.Fleisch.
Rhynchostegium Schimp., *nom. cons.*
Sciuro-hypnum (Hampe) Hampe
Scleropodium Schimp.
Zelometeorium Manuel

Meteoriaceae Kindb.
Meteorium Dozy & Molk., *nom. cons.*
Neodicladiella (Nog.) W.R.Buck

Myriniaceae Schimp.
Myrinia Schimp., *nom. cons.*

Fabroniaceae Schimp.
Fabronia Raddi

Stereodontaceae Hedenäs, Schlesak & D.Quandt
Stereodon (Brid.) Brid.

Pylaisiaceae Schimp.
Aquilonium Hedenäs, Schlesak & D.Quandt
Buckia D.Ríos, M.T.Gallego & J.Guerra
Callicladium H.A.Crum
Calliergonella Loeske
Calliergonellopsis Jan Kučera & Ignatov
Pseudohygrohypnum Kanda
Pseudostereodon (Broth.) M.Fleisch.
Ptilium De Not.
Pylaisia Schimp., *nom. cons.*
Roaldia P.E.A.S.Câmara & Carv.-Silva

Heterocladiellaceae Ignatov & Fedosov
Heterocladiella Ignatov & Fedosov

Hypnaceae Schimp.
Bryocrumia L.E.Anderson
Campylophyllum (Schimp.) M.Fleisch.
Chryso-hypnum Hampe
Dacryophyllum Ireland
Gollania Broth.
Hageniella Broth.
Homomallium (Schimp.) Loeske
Hypnum Hedw., *nom. cons.*
Vesicularia (Müll.Hal.) Müll.Hal., *nom. cons.*

Pterigynandraceae Schimp.
Heterocladium Schimp.
Iwatsukiella W.R.Buck & H.A.Crum
Pterigynandrum Hedw.

Hylocomiaceae M.Fleisch.
Hylocomiadelphus Ochyra & Stebel
Hylocomiastrum M.Fleisch. *ex* Broth.
Hylocomium Schimp., *nom. cons.*
Leptohymenium Schwägr.
Loeskeobryum M.Fleisch. *ex* Broth.
Pleurozium (Sull.) Mitt., *nom. cons.*
Rhytidiadelphus (Limpr.) Warnst.
Rhytidiopsis Broth.

Rhytidiaceae Broth.
Rhytidium (Sull.) Austin *ex* C.F.Parker

Plagiotheciaceae M.Fleisch.
Herzogiella Broth.
Isopterygiella Ignatov & Ignatova
Isopterygiopsis Z.Iwats.
Myurella Schimp.
Ortholimnobium Dixon
Orthothecium Schimp., *nom. cons.*
Plagiothecium Schimp.
Platydictya Berk.
Pseudotaxiphyllum Z.Iwats.
Rectithecium Hedenäs & Huttunen
Redfearnia J.T.Wynns

Entodontaceae Kindb., *nom. cons.*
Entodon Müll.Hal.

Jocheniaceae Jan Kučera & Ignatov[8]
Jochenia Hedenäs, Schlesak & D.Quandt

Pylaisiadelphaceae Goffinet & W.R.Buck
Isopterygium Mitt.
Platygyrium Schimp., *nom. cons.*
Pylaisiadelpha Cardot
Serpoleskea (Hampe *ex* Limpr.) Loeske
Taxithelium Spruce *ex* Mitt.
Trochophyllohypnum Jan Kučera & Ignatov
Wijkia H.A.Crum

Sematophyllaceae Broth., *nom. cons.*
Acroporium Mitt.
Brittonodoxa W.R.Buck, P.E.A.S.Câmara & Carv.-Silva
Donnellia Austin
Heterophyllium (Schimp.) Müll.Hal. *ex* Kindb.
Sematophyllum Mitt.

Cryphaeaceae Schimp.
Cryphaea F.Weber
Dendroalsia E.Britton
Schoenobryum Dozy & Molk.

[8] See Kučera et al. (2019).

Leucodontaceae Schimp.
Antitrichia Brid.
Leucodon Schwägr.
Nogopterium Crosby & W.R.Buck
Pterobryaceae Kindb.
Henicodium (Müll.Hal.) Kindb.
Jaegerina Müll.Hal.
Pireella Cardot
Neckeraceae Schimp.
Alleniella S.Olsson, Enroth & D.Quandt
Bryolawtonia D.H.Norris & Enroth
Dannorrisia Enroth
Forsstroemia Lindb.[9]
Homalia Brid., *nom. cons.*
Metaneckera Steere
Neckera Hedw., *nom. cons.*
Neckeropsis Reichardt
Neomacounia Ireland
Pseudanomodon (Limpr.) Ignatov & Federov
Thamnobryum Nieuwl.
Leptodontaceae Schimp.
Leptodon D.Mohr, *nom. cons.*
Lembophyllaceae Broth.
Bestia Broth.
Isothecium Brid.
Pseudisothecium Grout
Tripterocladium (Müll.Hal.) A.Jaeger
Anomodontaceae Kindb.
Anomodon Hook. & Taylor
Anomodontella Ignatov & Fedosov
Schwetschkeopsis Broth.
Taxiphyllaceae Ignatov[10]
Leptopterigynandrum Müll.Hal.
Taxiphyllum M.Fleisch.
Ctenidiaceae Qinghua Wang & Y.Jia[11]
Ctenidium (Schimp.) Mitt.
Miyabeaceae Enroth, S.Olsson, Buchb., Hedenäs, Huttunen & D.Quandt
Homaliadelphus Dixon & P.de la Varde
Theliaceae M.Fleisch.
Thelia Sull.

[9] See Enroth et al. (2022).
[10] See Ignatov et al. (2012).
[11] See Li et al. (2024).

Alphabetical List of Taxa

Abietinella Müll.Hal. (Thuidiaceae)
abietina (Hedw.) M.Fleisch.
Acaulon Müll.Hal. (Pottiaceae)
mediterraneum Limpr.[12]
muticum (Hedw.) Müll.Hal.
rufescens A.Jaeger[13]
schimperianum (Sull.) Sull.
triquetrum (Spruce) Müll.Hal.
Acroporium Mitt. (Sematophyllaceae)
smallii (R.S.Williams) H.A.Crum & L.E.Anderson
Alleniella S.Olsson, Enroth & D.Quandt[14] (Neckeraceae)
besseri (Łobarż.) S.Olsson, Enroth & D.Quandt
complanata (Hedw.) S.Olsson, Enroth & D.Quandt
Aloina Kindb., *nom. cons.* (Pottiaceae)
ambigua (Bruch & Schimp.) Limpr.
bifrons (De Not.) Delgad.
brevirostris (Hook. & Grev.) Kindb.
hamulus (Müll.Hal.) Broth.
rigida (Hedw.) Limpr.
Amblyodon P.Beauv., *nom. cons.* (Meesiaceae)
dealbatus (Hedw.) P.Beauv.
Amblystegium Schimp. (Amblystegiaceae)
serpens (Hedw.) Schimp.
Amphidium Schimp., *nom. cons.* (Amphidiaceae)
californicum (Hampe *ex* Müll.Hal.) Broth.
lapponicum (Hedw.) Schimp.
mougeotii (Bruch & Schimp.) Schimp.
Anacamptodon Brid. (Amblystegiaceae)
splachnoides (Brid.) Brid.
Anacolia Schimp., *nom. cons.* (Bartramiaceae)
baueri (Hampe) Paris[15]
laevisphaera (Taylor) Flowers
menziesii (Turner) Paris
Andreaea Hedw. (Andreaeaceae)
alpestris (Thed.) Schimp.
blyttii Schimp.
crassinervia Bruch
heinemannii Hampe & Müll.Hal.
megistospora B.M.Murray var. *megistospora* var. *epapillosa* (B.M.Murray) H.A.Crum & L.E.Anderson
mutabilis Hook.f. & Wilson

[12] See GBIF.org (2024a).
[13] See McLaughlin (2024).
[14] See Olsson et al. (2011).
[15] See McLaughlin & Carter (2024).

nivalis Hook.
rothii F.Weber & D.Mohr subsp. *rothii*
subsp. *falcata* (Schimp.) Lindb.
rupestris Hedw. var. *rupestris*
var. *papillosa* (Lindb.) Podp.
schofieldiana B.M.Murray
sinuosa B.M.Murray

Andreaeobryum Steere & B.M.Murray (Andreaeobryaceae)
macrosporum Steere & B.M.Murray

Anoectangium Schwägr., *nom. cons.* (Pottiaceae)
aestivum (Hedw.) Spruce
sikkimense M.N.Aziz & Vohra[16]
stracheyanum Mitt.[17]

Anomobryum Schimp. (Bryaceae)
concinnatum (Spruce) A.Jaeger
julaceum (P.Gaertn., B.Mey. & Scherb.) Schimp.

Anomodon Hook. & Taylor[18] (Anomodontaceae)
minor (Hedw.) Lindb.
rugelii (Müll.Hal.) Keissl.
thraustus Müll.Hal.
tristis (Ces.) Sull.
viticulosus (Hedw.) Hook. & Taylor

Anomodontella Ignatov & Fedosov (Anomodontaceae)[19]
longifolius (Schleich. *ex* Brid.) Ignatov & Fedosov[20]

Antitrichia Brid. (Leucodontaceae)
californica Sull. *ex* Lesq.
curtipendula (Hedw.) Brid.
gigantea (Sull. & Lesq.) Kindb.[21]

Aongstroemia Bruch & Schimp. (Aongstroemiaceae)
canadensis (Mitt.) Siebel & Fedosov
grevilleana (Brid.) Müll.Hal.
longipes (Sommerf.) Bruch & Schimp.
schreberiana (Hedw.) Bonfim Santos & Fedosov[22]

Aplodon R.Br. (Splachnaceae)
wormskioldii (Hornem.) R.Br.

Aquilonium Hedenäs, Schlesak & D.Quandt[23] (Pylaisiaceae)
adscendens (Lindb.) Hedenäs, Schlesak & D.Quandt
plicatulum (Lindb.) Hedenäs, Schlesak & D.Quandt

Archidium Brid. (Archidiaceae)
alternifolium (Dicks. *ex* Hedw.) Mitt.
crassicostatum D.R.Toren, Kellman & Shevock[24]
donnellii Austin
hallii Austin
minus (Renauld & Cardot) Snider
ohioense Schimp.
tenerrimum Mitt.

Arctoa Bruch & Schimp. (Rhabdoweisiaceae)
anderssonii Wich.
blyttii (Bruch & Schimp.) Loeske
fulvella (Dicks.) Bruch & Schimp.
glacialis (Berggr.) Fedosov, Jan Kučera & M.Stech[25]
hyperborea (Gunnerus *ex* Dicks.) Bruch & Schimp.
starkei (F.Weber & D.Mohr) Loeske

Aschisma Lindb. (Pottiaceae)
kansanum A.L.Andrews

Atractylocarpus Mitt., *nom. cons.* (Leucobryaceae)
subporodictyon (Broth.) Bonfim Santos & M.Stech[26]

Atrichum P.Beauv., *nom. cons.* (Polytrichaceae)
altecristatum (Renauld & Cardot) Smyth & L.C. R.Smyth
angustatum (Brid.) Bruch & Schimp.
crispulum Schimp. *ex* Besch.[27]
crispum (James) Sull.
cylindricum (Willd. *ex* F.Weber) G.L.Sm.
flavisetum Mitt.
selwynii Austin
tenellum (Röhl.) Bruch & Schimp.
undulatum (Hedw.) P.Beauv.

Aulacomnium Schwägr., *nom. cons.* (Aulacomniaceae)
acuminatum (Lindb. & Arnell) Kindb.
androgynum (Hedw.) Schwägr.
heterostichum (Hedw.) Bruch & Schimp.
palustre (Hedw.) Schwägr.
turgidum (Wahlenb.) Schwägr.

[16] See Zander (2017).
[17] See Zander & Eckel (2007).
[18] The generic circumscription of the Anomodontaceae was revised by Ignatov et al. (2019a) based on phylogenetic inferences from organellar loci. We accept the recognition of *Pseudanomodon* and *Anomodontella* but not the segregate unispecific genus *Anomodontopsis*, and maintain the merger of *Haplohymenium* with *Anomodon* (Granzow-de la Cerda 1997).
[19] See Ignatov et al. (2019a).
[20] *Anomodon longifolius* and *A. thraustus* were reported as new to North America by Granzow-de la Cerda & Düll (2009).
[21] See Hedenäs (2008a).
[22] See Fedosov et al. (2023a).
[23] *Aquilonium* was established by Schlesak et al. (2018) based on phylogenetic evidence.
[24] See Toren et al. (2016).
[25] See Fedosov et al. (2021).
[26] See Bonfim Santos & Stech (2017).
[27] See Merrill & Ireland (2007).

Barbula Hedw., *nom. cons.* (Pottiaceae)
orizabensis Müll.Hal.
unguiculata Hedw.
Bartramia Hedw., *nom. cons.* (Bartramiaceae)
aprica Müll.Hal.[28]
brevifolia Brid.[29]
halleriana Hedw.
ithyphylla Brid.
pomiformis Hedw.
potosica Mont.
subulata Bruch & Schimp.
Bartramiopsis Kindb. (Polytrichaceae)
lescurii (James) Kindb.
Bellibarbula P.C.Chen[30] (Pottiaceae)
recurva (Griff.) R.H.Zander
Bestia Broth. (Lembophyllaceae)
longipes (Sull. & Lesq.) Broth.
Blindia Bruch & Schimp. (Seligeriaceae)
acuta (Hedw.) Bruch & Schimp.
Blindiadelphus (Lindb.) Fedosov & Ignatov[31] (Seligeriaceae)
campylopodus (Kindb.) Fedosov & Ignatov
diversifolius (Lindb.) Fedosov & Ignatov
polaris (Berggr.) Fedosov & Ignatov
recurvatus (Hedw.) Fedosov & Ignatov
subimmersus (Lindb.) Fedosov & Ignatov
Brachelyma Schimp. *ex* Cardot (Fontinalaceae)
subulatum (P.Beauv.) Schimp. *ex* Cardot
Brachydontium Fürnr. (Ptychomitriaceae)
olympicum (E.Britton) T.T.McIntosh & J.R.Spence
trichodes (F.Weber) Milde
Brachymenium Schwägr. (Bryaceae)
andersonii H.A.Crum
exile (Dozy & Molk.) Bosch & Sande Lac.[32]
erectum (Hook.) Wilson *ex* Mont.
macrocarpum Cardot
mexicanum Mont.
niveum Besch.
speciosum (Hook.f. & Wilson) Steere
systylium (Müll.Hal.) A.Jaeger
vinosulum Cardot[33]

[28] See Müller (2014).
[29] See Fransén (1995).
[30] See Zander (1993).
[31] See Fedosov et al. (2017).
[32] See Spence et al. (2022).
[33] See Spence (2007).

Brachytheciastrum Ignatov & Huttunen[34] (Brachytheciaceae)
collinum (Schleicher *ex* Müll.Hal.) Ignatov & Huttunen
delicatulum (Flowers) Ignatov
fendleri (Sull.) Ochyra & Żarnowiec
leibergii (Grout) Ignatov & Huttunen
salicinum (Schimp.) Orgaz, M.J.Cano & J.Guerra[35]
trachypodium (Brid.) Ignatov & Huttunen
velutinum (Hedw.) Ignatov & Huttunen var. *velutinum*
Brachythecium Schimp. (Brachytheciaceae)
acuminatum (Hedw.) Austin
acutum (Mitt.) Sull.
albicans (Hedw.) Schimp.
asperrimum (Mitt. *ex* Müll.Hal.) Sull.[36]
boreale Ignatov[37]
brandegeei (Austin) H.Rob.
campestre (Müll.Hal.) Schimp.
capillaceum (F.Weber & D.Mohr) Giacom.[38]
cirrosum (Schwägr.) Schimp.
erythrorrhizon Schimp. var. *erythrorrhizon* var. *alpinum* Kosovich-Anderson & Ignatov[39]
falcatum (Grout) H.A.Crum[40]
frigidum (Müll.Hal.) Besch.
jacuticum Ignatov[41]
laetum (Brid.) Schimp.
novae-angliae (Sull. & Lesq.) Austin subsp. *novae-angliae* subsp. *hultenii* (E.B.Bartram) Huttunen
rivulare Schimp.
ruderale (Brid.) W.R.Buck[42]
rutabulum (Hedw.) Schimp.
salebrosum (Hoffm. *ex* F.Weber & D.Mohr) Schimp.
tauriscorum Molendo & Lorentz[43]
turgidum (Hartm.) Kindb.
udum I.Hagen [44]

[34] See Ignatov & Huttunen (2002).
[35] See Orgaz et al. (2013).
[36] See Norris & Shevock (2004a,b).
[37] See Ignatov (2014).
[38] See Hodgetts et al. (2020).
[39] See Kosovich-Anderson & Ignatov (2010).
[40] See Crum (2001).
[41] See Ignatov (2014).
[42] See Buck (1998).
[43] See Hedenäs (2017).
[44] See Ignatov (2014).

Braunia Bruch & Schimp., *nom. cons.* (Hedwigiaceae)
andrieuxii Lorentz[45]
secunda (Hook.) Bruch & Schimp.
Brideliella Fedosov, M.Stech & Ignatov[46] (Rhabdoweisiaceae)
wahlenbergii (Brid.) Fedosov, M.Stech & Ignatov
Brittonodoxa W.R.Buck, P.E.A.S.Câmara & Carv.-Silva[47] (Sematophyllaceae)
subpinnata (Brid.) W.R.Buck, P.E.A.S.Câmara & Carv.-Silva
Brothera Müll.Hal. (Dicranaceae)
leana (Sull.) Müll.Hal.
Bruchia Schwägr. (Bruchiaceae)
bolanderi Lesq.
brevifolia Sull.
carolinae Austin
drummondii Hampe *ex* E.Britton
flexuosa (Schwägr.) Müll.Hal.
fusca E.Britton
hallii Austin
queenslandica I.G.Stone
ravenelii Wilson *ex* Sull.
texana Austin
vogesiaca Nest. *ex* Schwägr.
Bryoandersonia H.Rob. (Brachytheciaceae)
illecebra (Hedw.) H.Rob.
Bryobrittonia R.S.Williams (Encalyptaceae)
longipes (Mitt.) D.G.Horton
Bryocrumia L.E.Anderson (Hypnaceae)
vivicolor (Broth. & Dixon) W.R.Buck
Bryoerythrophyllum P.C.Chen (Pottiaceae)
columbianum (F.J.Herm. & E.Lawton) R.H.Zander
ferruginascens (Stirt.) Giacom.
inaequalifolium (Taylor) R.H.Zander
recurvirostrum (Hedw.) P.C.Chen
wallichii (Mitt.) P.C.Chen[48]
Bryolawtonia D.H.Norris & Enroth[49] (Neckeraceae)
vancouveriensis (Kindb.) D.H.Norris & Enroth
Bryoxiphium Mitt., *nom. cons.* (Bryoxiphiaceae)
norvegicum (Brid.) Mitt.
Bryum Hedw. (Bryaceae)
aenum Blytt *ex* Bruch & Schimp.
algovicum Sendtn. *ex* Müll.Hal. var. *algovicum*[50]
var. *rutheanum* (Warnst.) Crundw.
alpinum Huds. *ex* With.
amblyodon Müll.Hal.
andicola Hook.
apiculatum Schwägr.
archangelicum Bruch & Schimp.
arcticum (R.Br.) Bruch & Schimp.
argenteum Hedw. var. *argenteum*
var. *majus* Schwägr.
var. *muticum* Brid.
austriacum Köckinger, Holyoak & Suanjak[51]
biforme R.S.Williams [52]
billarderii Schwägr.
bimum (Schreb.) Turner[53]
blindii Bruch & Schimp.
bornholmense Wink. & R.Ruthe
brachyneuron Kindb.
brassicoides (J.R.Spence & Kellman) W.R.Buck & Goffinet[54]
caespiticium Hedw.
californicum Sull.[55]
calobryoides J.R.Spence
calophyllum R.Br.
canariense Brid.
capillare Hedw. var. *capillare*
var. *barbatum* (C.E.O.Jensen) Podp.
cellulare Hook.[56]
chryseum Mitt.[57]
coronatum Schwägr.
creberrimum Taylor
cryophilum Mårtensson[58]

[45] See Allen (2010).
[46] See Fedosov et al. (2021).
[47] See Carvalho-Silva et al. (2017).
[48] See Allen (2022).
[49] See Norris & Enroth (1990).

[50] Spence (2014) treated *B. algovicum* as a synonym of *Ptychostomum pendulum*; in *Bryum* the correct name should be *B. algovicum* as the combination *B. pendulum* (Hornsch.) Schimp. has earlier homonyms.
[51] See Spence et al. (2022).
[52] See Spence et al. (2022).
[53] See Spence (2014) as *Ptychostomum bimum* (Schreb.) J.R.Spence.
[54] Reported as *Gemmabryum brassicoides* by Spence & Kellman (2015) but accommodated here in *Bryum*; *Bryum brassicoides* (J.R.Spence & Kellman) W.R.Buck & Goffinet comb. nov. ≡ *Gemmabryum brassicoides* J.R.Spence & Kellman, Madroño 62(2):124. 2015. type: U.S.A., California, Santa Cruz Co.: Quail Hollow Ranch County Park, 37°04′57″N, 122°03′50″W, 18 Mar. 2006, *K.M. Kellman 5104* (holotype, cas).
[55] See Spence (2014).
[56] See Spence (2014).
[57] See Toren & Heise (2009).

curvatum Kaurin & Arnell
cyclophyllum (Schwägr.) Bruch & Schimp.
demaretianum Arts[59]
dichotomum Hedw.
elegans Nees *ex* Brid.
eremaeum Catches. *ex* J.R.Spence & H.P.Ramsay[60]
erythroloma (Kindb.) Syed
flabelliforme D.R.Toren, J.R.Spence & Shevock[61]
flaccidum Brid.
gemmiferum R.Wilczek & Demaret
gemmilucens R.Wilczek & Demaret
gemmiparum De Not.
hagenii Limpr.
imbricatulum Müll.Hal.[62]
incrassatolimbatum Cardot
intermedium (Brid.) Turton
klinggraeffii Schimp.
knowltonii Barnes
kunzei Hornsch.[63]
lanatum (P.Beauv.) Brid.[64]
lonchocaulon Müll.Hal.
longisetum Blandow *ex* Schwägr.
marratii Hook. & Wilson
meesioides Kindb.
microchaeton Hampe
mildeanum Jur.[65]
miniatum Lesq.
moravicum Podp.
muehlenbeckii Bruch & Schimp.
neodamense Itzigs.[66]
nitidulum Lindb.
oblongum Lindb.
pacificum (J.R.Spence & Shevock) W.R.Buck & Goffinet[67]
pallens Sw.
pallescens Schleich. *ex* Schwägr.
pseudocapillare Besch.
pseudotriquetrum (Hedw.) P.Gaertn., B.Mey. & Scherb.
purpurascens (R.Br.) Bruch & Schimp.
radiculosum Brid.
reedii H.Rob.
riparium I.Hagen
rubens Mitt.
ruderale Crundw. & Nyholm
rutilans Brid. & Schimp.
salinum I.Hagen *ex* Limpr.
sanguilentum Renauld & Cardot[68]
schleicheri Schwägr.
subapiculatum Hampe
subneodamense Kindb.
tenuisetum Limpr.
teres Lindb.
torenii (J.R.Spence & Shevock) W.R.Buck & Goffinet[69]
torquescens Bruch & Schimp.[70]
turbinatum (Hedw.) Turner
uliginosum (Brid.) Bruch & Schimp.
valparaisense Thér.
veronense De Not.[71]
vinosum (J.R.Spence & Kellman) W.R.Buck & Goffinet[72]

[58] See Spence (2014).
[59] See Whitehouse (2001).
[60] See Kellman (2017).
[61] See Toren et al. (2024).
[62] Spence (2014) recognized *Gemmabryum badium*, which is considered conspecific with *Bryum imbricatulum* by Holyoak & Pedersen (2007), which at the species level takes priority.
[63] See Spence (2014).
[64] See Spence (2014).
[65] See Spence (2014).
[66] See Spence (2005).
[67] Described by Spence & Shevock (2012) as *Ptychostomum pacificum*; accommodated here in *Bryum*, under the new combination *Bryum pacificum* (J.R.Spence & Shevock) W.R.Buck & Goffinet comb. nov. ≡ *Ptychostomum pacificum* J.R.Spence & Shevock, Madroño 59(3): 156. 2012. TYPE: U.S.A. California, Fresno Co.: Sierra National Forst, Highway 168 above Huntington Lake, 37°12′59.7″N, 119°11′30.4″W, 2 Sep. 2002, *J.R. Shevock 22887& B. Ertter* (holotype, CAS; isotypes, H, KRAM, MO, NY).
[68] See Spence et al. (2022).
[69] Described as *Imbribryum torenii* by Spence & Shevock (2015) and accommodated here in *Bryum* under the new combination *Bryum torenii* (J.R.Spence & Shevock) W.R.Buck & Goffinet comb. nov. ≡ *Imbribryum torenii* J.R.Spence & Shevock, Madroño 62(1): 68. 2015. TYPE: U.S.A., California, Monterey Co.: Fort Hunter Liggett Military Reservation, along Gabilan Road at bridge crossing Nacimiento River, southern end of the Palisades, 35°51′05″N, 121°11′51″W, 10 Apr. 2004, *J. R. Shevock et al. 24830* (holotype, CAS; isotypes, MO, NY).
[70] See Spence (2014).
[71] See Spence (2014).
[72] Described as *Gemmabryum vinosum* by Spence & Kellman (2015) and accommodated here in *Bryum* under the new combination *Bryum vinosum* (J.R.Spence & Kellman) W.R.Buck & Goffinet comb. nov. ≡ *Gemmabryum vinosum* J.R.Spence & Kellman, Madroño 62(2):127. 2015. TYPE:

violaceum Crundw. & Nyholm
warneum (Schwägr. *ex* Steud.) Brid.
weigelii Biehler
wrightii Sull. & Lesq.

Buckia D.Ríos, M.T.Gallego & J.Guerra[73] (Pylaisiaceae)
vaucheri (Lesq.) D.Ríos, M.T.Gallego & J.Guerra

Buxbaumia Hedw. (Buxbaumiaceae)
aphylla Hedw.
minakatae S.Okamura
piperi Best
viridis (Moug. *ex* DC.) Brid. *ex* Moug. & Nestl.

Calcidicranella Bonfim Santos, Fedosov & Jan Kučera[74] (Aongstroemiaceae)
howei (Renauld & Cardot) Bonfim Santos, Fedosov & Jan Kučera
pacifica (W.B.Schofield) Jan Kučera & Fedosov
varia (Hedw.) Bonfim Santos, Fedosov & Jan Kučera

Callicladium H.A.Crum[75] (Pylaisiaceae)
fujiyamae (Broth.) Jan Kučera & Ignatov[76]
haldaneanum (Grev.) H.A.Crum
imponens (Hedw.) Hedenäs, Schlesak & D.Quandt

Callicostella (Müll.Hal.) Mitt., *nom. cons.* (Pilotrichaceae)
pallida (Hornsch.) Spruce

Calliergon (Sull.) Kindb. (Calliergonaceae)
cordifolium (Hedw.) Kindb.
giganteum (Schimp.) Kindb.
megalophyllum Mikut., *nom. cons.*
orbicularicordatum (Renauld & Cardot) Broth.[77]
richardsonii (Mitt.) Kindb. *ex* G.Roth

Calliergonella Loeske (Pylaisiaceae)
curvifolia (Hedw.) B.H.Allen[78]
cuspidata (Hedw.) Loeske
lindbergii (Mitt.) Hedenäs var. *lindbergii*[79]
var. *americana* (Renauld & Cardot) J.J.Atwood & Brinda[80]

Calliergonellopsis Jan Kučera & Ignatov[81] (Pylaisiaceae)
dieckii (Renauld & Cardot) Jan Kučera & Ignatov

Calymperes Sw. *ex* F.Weber (Calymperaceae)
afzelii Sw.
erosum Müll.Hal.
palisotii Schwägr.
pallidum Mitt.[82]
tenerum Müll.Hal.

Campylium (Sull.) Spruce (Amblystegiaceae)
bambergeri (Schimp.) Hedenäs, Schlesak & D.Quandt
chrysophyllum (Brid.) Lange
laxifolium Engelmark & Hedenäs
longicuspis (Lindb. & Arnell) Hedenäs
protensum (Brid.) Kindb.
stellatum (Hedw.) Lange & C.E.O.Jensen

Campylophyllopsis W.R.Buck[83] (Amblystegiaceae)
hispidula (Brid.) Ochyra
sommerfeltii (Myrin) Ochyra

Campylophyllum (Schimp.) M.Fleisch.[84] (Hypnaceae)
halleri (Hedw.) M.Fleisch.
montanum (Lindb.) B.H.Allen[85]

Campylopodiella Cardot (Dicranaceae)
flagellacea (Müll.Hal.) J.-P.Frahm & Isov.[86]
stenocarpa (Wilson) P.Müll. & J.-P.Frahm

Campylopus Brid. (Dicranaceae)
angustiretis (Austin) Lesq. & James
arctocarpus (Hornsch.) Mitt.
atrovirens De Not. var. *atrovirens*[87]
var. *cucullatifolius* J.-P.Frahm
carolinae Grout
flexuosus (Hedw.) Brid.
fragilis (Brid.) Bruch & Schimp.
gracilis (Mitt.) A.Jaeger[88]

U.S.A., California, Fresno Co.: BLM San Joaquin River Gorge Management Area, along river via a 0.25 mi trail from powerhouse and parking lot, 37°04′37″N, 119°33′43″W, 26 Mar. 2009, *J. R. Shevock et al. 32676* (holotype, CAS; isotypes, H, KRAM, MO, NY, UC).

[73] See Câmara et al. (2018).

[74] *Calcidicranella* was erected and segregated from *Dicranella* by Bonfim Santos et al. (Fedosov et al. 2023b) based on phylogenetic evidence.

[75] *Callicladium* comprised a single species until Kučera et al. (2019) and Schlesak et al. (2018) transferred *Hypnum fujiyamae* and *H. imponens*, respectively.

[76] The species was reported from North America by Schofield (2014) as *Hypnum fujiyamae* (Broth.) Paris.

[77] Ignatova et al. (2021) argued that *C. orbicularicordatum* falls within the variation of *C. cordifolium*; we tentatively retain it as distinct until further data are available.

[78] See Allen (2014).

[79] See Hedenäs (1990).

[80] See Atwood & Brinda (2020).

[81] See Kučera et al. (2019).

[82] See Buck (1994).

[83] See Goffinet et al. (2009b).

[84] See Kučera et al. (2019).

[85] See Allen (2014).

[86] See Shevock (2000), as *Atractylocarpus flagellaceus*.

[87] See Frahm (2007).

[88] See Frahm (2007).

introflexus (Hedw.) Brid.
oerstedianus (Müll.Hal.) Mitt.
pilifer Brid.
pyriformis (Schultz) Brid.
schimperi Milde
schmidii (Müll.Hal.) A.Jaeger[89]
sinensis (Müll.Hal.) J.-P.Frahm[90]
subulatus Schimp. *ex* Milde
surinamensis Müll.Hal.
tallulensis Sull. & Lesq.

Campylostelium Bruch & Schimp. (Ptychomitriaceae)
brachycarpum (Nog.) Z.Iwats., Tateishi & Tad. Suzuki[91]
laegerae Brinda, D.R.Toren & Shevock[92]
pitardii (Corb.) E.Maier[93]
saxicola (F.Weber & D.Mohr) Bruch & Schimp.

Catoscopium Brid. (Catoscopiaceae)
nigritum (Hedw.) Brid.

Ceratodon Brid. (Ditrichaceae)
×*conicus* (Hampe *ex* Müll.Hal.) Lindb.
heterophyllus Kindb.
purpureus (Hedw.) Brid.
stenocarpus Bruch & Schimp.[94]

Chenia R.H.Zander[95] (Pottiaceae)
leptophylla (Müll.Hal.) R.H.Zander

Chionoloma Dixon[96] (Pottiaceae)
cylindrotheca (Mitt.) M.Alonso, M.J.Cano & J.A.Jiménez
maragniphyllum (R.H.Zander & Eckel) W.R.Buck & Goffinet[97]
orthodontum (Müll.Hal.) M.Alonso, M.J.Cano & J.A.Jiménez
recurvifolium (Taylor) M.Alonso, M.J.Cano & J.A.Jiménez
stenocarpum (Thér.) M.Alonso, M.J.Cano & J.A.Jiménez
tenuirostre (Hook. & Taylor) M.Alonso, M.J.Cano & J.A.Jiménez

***Chryso*-hypnum** Hampe (Hypnaceae)
diminutivum (Hampe) W.R.Buck

Cinclidium Sw. (Mniaceae)
alaskanum R.E.Wyatt & A.H.Stoneb.[98]
arcticum (Bruch & Schimp.) Schimp.
latifolium Lindb.
minutifolium Broth.[99]
stygium Sw.
subrotundum Lindb.

Cirriphyllum Grout (Brachytheciaceae)
piliferum (Hedw.) Grout

Claopodium (Lesq. & James) Renauld & Cardot (Leskeaceae)
bolanderi Best
crispifolium (Hook.) Renauld & Cardot
pellucinerve (Mitt.) Best
rostratum (Hedw.) Ignatov[100]
whippleanum (Sull.) Renauld & Cardot

Clasmatodon Hook. & Wilson (Brachytheciaceae)
parvulus (Hampe) Sull.

Cleistocarpidium Ochyra & Bedn.-Ochyra[101] (Ditrichaceae)
palustre (Bruch & Schimp.) Ochyra & Bedn.-Ochyra

Climacium F.Weber & D.Mohr (Climaciaceae)
americanum Brid.
dendroides (Hedw.) F.Weber & D.Mohr
kindbergii (Renauld & Cardot) Grout

Cnestrum I.Hagen[102] (Rhabdoweisiaceae)
alpestre (Wahlenb.) Nyholm
glaucescens (Lindb. & Arnell) Holmen *ex* Mogensen & Steere
schisti (F.Weber & D.Mohr) I.Hagen

Codonoblepharon Schwägr.[103] (Orthotrichaceae)
menziesii Schwägr.[104]

[89] See Frahm (2007).
[90] See Frahm (2007).
[91] See Iwatsuki et al. (1999).
[92] See Brinda et al. (2016).
[93] See Brinda et al. (2016).
[94] We retain this taxon as a distinct species following Shevock et al. (2021).
[95] See Zander (1989).
[96] See Alonso-García et al. (2016, 2019).
[97] Described as *Oxystegus maragniphyllus* by Zander & Eckel (2019) and here accommodated in *Chionoloma* under the new combination *Chionoloma maragniphyllum* (R.H.Zander & Eckel) W.R.Buck & Goffinet comb. nov. ≡ *Oxystegus maragniphyllus* R.H.Zander & Eckel, The Bryologist 122(4): 569. 2019. type: Canada, British Columbia: West Vancouver Island, Ocluelet, 7 May 1969, *W.B. Schofield 89947* (holotype, ubc).
[98] See Wyatt et al. (2021b).
[99] See Wyatt & Stoneburner (2021).
[100] See Ignatov et al. (2006).
[101] See Ochyra & Bednarek-Ochyra (1996).
[102] See Fedosov et al. (2021).
[103] See Goffinet & Vitt (1998).
[104] See Shevock (2000).

Conardia H.Rob. (Amblystegiaceae)
compacta (Mül.Hal.) H.Rob.
Conostomum Sw. (Bartramiaceae)
tetragonum (Hedw.) Lindb.
Coscinodon Spreng. (Grimmiaceae)
arctolimnius (Steere) Steere
calyptratus (Drumm.) C.E.O.Jensen.
cribrosus (Hedw.) Spruce
hartzii C.E.O.Jensen[105]
yukonensis Hastings[106]
Cratoneuron (Sull.) Spruce (Amblystegiaceae)
filicinum (Hedw.) Spruce
Crossidium Jur., *nom. cons.* (Pottiaceae)
aberrans Holz. & E.B.Bartram
crassinervium (De Not.) Jur. var. *crassisnervium*
seriatum H.A.Crum & Steere
squamiferum (Viv.) Jur. var. *squamiferum*
var. *pottioideum* (De Not.) Mönk.
Crumia W.B.Schofield (Pottiaceae)
latifolia (Kindb.) W.B.Schofield
Cryphaea F.Weber (Cryphaeaceae)
filiformis (Hedw.) Brid.
glomerata Schimp. *ex* Sull.
nervosa (Hook. & Wilson) Müll.Hal.
ravenelii Austin
Ctenidium (Schimp.) Mitt. (Ctenidiaceae)
schofieldii N.Nishim.
subrectifolium (Brid.) Pedano *ex* W.R.Buck & B. H.Allen[107]
Cyclodictyon Mitt. (Pilotrichaceae)
varians (Sull.) Kuntze
Cynodontium Bruch & Schimp., *nom. cons.* (Rhabdoweisiaceae)
gracilescens (F.Weber & D.Mohr) Schimp.
jenneri (Schimp.) Stirt.
polycarpon (Hedw.) Schimp.
strumiferum (Hedw.) Lindb.
strumulosum Müll.Hal. & Kindb.
tenellum (Schimp.) Limpr.
Cyrtomnium Holmen (Mniaceae)
hymenophylloides (Huebener) T.J.Kop.
hymenophyllum (Bruch & Schimp.) Holmen
Dacryophyllum Ireland (Hypnaceae)
falcifolium Ireland[108]

Daltonia Hook. & Taylor, *nom. cons.* (Daltoniaceae)
splachnoides (Sm.) Hook. & Taylor
Dannorrisia Enroth (Neckeraceae)
bigelovii (Sull.) Enroth[109]
Dendroalsia E.Britton (Cryphaeaceae)
abietina (Hook.) E.Britton
Dichelyma Myrin (Fontinalaceae)
capillaceum (Dicks.) Myrin
falcatum (Hedw.) Myrin
pallescens Bruch & Schimp.
uncinatum Mitt.
Dichodontium Schimp. (Aongstroemiaceae)
olympicum Renauld & Cardot
pellucidum (Hedw.) Schimp.
Dicranella (Müll.Hal.) Schimp., *nom. cons.* (Dicranellaceae)
cerviculata (Hedw.) Schimp.
heteromalla (Hedw.) Schimp.
hilariana (Mont.) Mitt.
lindigiana (Hampe) Mitt.
Dicranellopsis Bonfim Santos, Siebel & Fedosov[110] (Dicranellopsidaceae)
crispa (Hedw.) Bonfim Santos, Siebel & Fedosov
subulata (Hedw.) Bonfim Santos, Siebel & Fedosov
Dicranodontium Bruch & Schimp. (Dicranaceae)
asperulum (Mitt.) Broth.
denudatum (Brid.) E.Britton
uncinatum (Harv.) A.Jaeger
Dicranoweisia Lindb. *ex* Milde (Dicranaceae)
cirrata (Hedw.) Lindb. *ex* Milde
Dicranum Hedw. (Dicranaceae)
acutifolium (Lindb. & Arnell) C.E.O.Jensen
bonjeanii De Not.
brevifolium (Lindb.) Lindb.
condensatum Hedw.
dispersum Engelmark[111]
drummondii Müll.Hal.
elongatum Schleich. *ex* Schwägr.
flagellare Hedw.
flexicaule Brid.[112]
fragilifolium Lindb.
fulvum Hook.
fuscescens Turner

[105] See Hastings (1999).
[106] See Hastings (1999).
[107] See Buck & Allen (2004).
[108] The genus and species were established by Ireland (2004).
[109] See Enroth et al. (2019).
[110] See Fedosov et al. (2023b).
[111] See Afonina & Breen (2009).
[112] See Tubanova et al. (2010).

groenlandicum Brid.
hakkodense Cardot[113]
howellii Renauld & Cardot
leioneuron Kindb.
majus Turner var. *majus*
var. *orthophyllum* A.Braun *ex* Milde
montanum Hedw.
muehlenbeckii Bruch & Schimp.
ontariense W.L.Peterson
pallidisetum (J.W.Bailey) Ireland
polysetum Sw.
rhabdocarpum Sull.
scoparium Hedw.
spadiceum J.E.Zetterst.
spurium Hedw.
tauricum Sapjegin
undulatum Schrad. *ex* Brid.
viride (Sull. & Lesq.) Lindb.

Didymodon Hedw. (Pottiaceae)
acutus (Brid.) K.Saito
anserinocapitatus (X.J.Li) R.H.Zander[114]
cordatus Jur.[115]
ditrichoides (Broth.) X.J.Li & S.He
icmadophilus (Schimp. *ex* Müll.Hal.) K.Saito
maschalogena (Renauld & Cardot) Broth.
nigrescens (Mitt.) K.Saito
novae-hispaniae J.A.Jiménez & M.J.Cano[116]
perobtusus Broth.
rigidulus Hedw.
subandreaeoides (Kindb.) R.H.Zander
tectorum (Müll.Hal.) K.Saito

Diobelonella Ochyra[117] (Aongstroemiaceae)
palustris (Dicks.) Ochyra

Diphyscium D.Mohr (Diphysciaceae)
foliosum (Hedw.) D.Mohr
mucronifolium Mitt. *ex* Dozy & Molk.[118]

Discelium Brid. (Disceliaceae)
nudum (Dicks.) Brid.

Distichium Bruch & Schimp., *nom. cons.* (Distichiaceae)
capillaceum (Hedw.) Bruch & Schimp.
hagenii Ryan *ex* H.Philib.
inclinatum (Hedw.) Bruch & Schimp.

Ditrichum Timm *ex* Hampe, *nom. cons.* (Ditrichaceae)
ambiguum Best
divaricatum Mitt.[119]
heteromallum (Hedw.) E.Britton
lineare (Sw.) Lindb.
montanum Leiberg
pallidum (Hedw.) Brockm.
pusillum (Hedw.) Hampe
rhynchostegium Kindb.
schimperi (Lesq.) Kuntze
septentrionale Fedosov, Jan Kučera & Ignatova[120]
tortuloides Grout
zonatum (Brid.) Braithw.[121]

Donnellia Austin (Sematophyllaceae)
commutata (Müll.Hal.) W.R.Buck

Donrichardsia H.A.Crum & L.E.Anderson (Brachytheciaceae)
macroneuron (Grout) H.A.Crum & L.E.Anderson
pringlei (Cardot) Huttunen & Ignatov[122]

Drepanium (Schimp.) Spruce (Amblystegiaceae)
fastigiatum (Brid.) Lange & C.E.O.Jensen[123]

Drepanocladus (Müll.Hal.) G.Roth, *nom. cons.* (Amblystegiaceae)
aduncus (Hedw.) Warnst.
angustifolius (Hedenäs) Hedenäs & Rosborg
arcticus (R.S.Williams) Hedenäs
brevifolius (Lindb.) Warnst.
capillifolius (Warnst.) Warnst.[124]
cardotii (Thér.) Hedenäs[125]
latinervis Warnst.[126]
polygamus (Schimp.) Hedenäs
sordidus (Müll.Hal.) Hedenäs
trifarius (F.Weber & D.Mohr) Broth.
turgescens (T.Jensen) Broth.

[113] According to Huang et al. (2024) and Ignatova & Fedosov (2008) specimens from the West Coast of North America considered to belong to *D. viride* are most likely populations of *D. hakkodense.*
[114] See Zander & Weber (1997).
[115] See Allred et al. (2024).
[116] See Jiménez et al. (2022).
[117] Established for *Dicranella palustris* (Dicks.) Crundw. *ex* E.F.Warb. by Ochyra et al. (2003).
[118] See Magombo (2003).
[119] See Fedosov et al. (2023a).
[120] See Fedosov et al. (2024).
[121] See Matsui & Iwatsuki (1990).
[122] See Huttunen et al. (2007).
[123] See Schlesak et al. (2018).
[124] See Saługa et al. (2018); treated as *D. longifolius* earlier by Hedenäs (2014b).
[125] See Hedenäs (1997).
[126] See Hedenäs (1998).

Drummondia Hook., *nom. cons.* (Drummondiaceae)
prorepens (Hedw.) Trevis.
Dryptodon Brid.[127] (Grimmiaceae)
anomalus (Hampe *ex* Schimp.) Loeske
arcuatifolius (Kindb.) Ochyra & Żarnowiec[128]
fuscoluteus (Hook.) Ochyra & Żarnowiec[129]
hartmanii (Schimp.) Limpr.
leibergii (Paris) Ochyra & Żarnowiec
lisae (De Not.) Loeske[130]
muehlenbeckii (Schimp.) Loeske
patens (Dicks. *ex* Hedw.) Brid.
torquatus (Hook.) Brid.
trichophyllus (Grev.) Brid.
Eccremidium Wilson (Dicranellaceae)
floridanum H.A.Crum
Echinophyllum T.J.O'Brien (Thuidiaceae)
sachalinensis (Lindb.) T.J.O'Brien[131]
Encalypta Hedw. (Encalyptaceae)
affinis R.Hedw. subsp. *affinis*
subsp. *macounii* (Austin) D.G.Horton
alpina Sm.
brevicolla (Bruch & Schimp.) Ångstr. subsp. *brevicolla*
subsp. *crumiana* D.G.Horton
brevipes Schljakov
ciliata Hedw.
flowersiana D.G.Horton
longicolla Bruch
mutica I.Hagen
pilifera Funck[132]
procera Bruch
rhaptocarpa Schwägr.
spathulata Müll.Hal.
texana Magill
vittiana D.G.Horton
vulgaris Hedw.
Entodon Müll.Hal. (Entodontaceae)
beyrichii (Schwägr.) Müll.Hal.
brevisetus (Hook. & Wilson) Lindb.
challengeri (Paris) Cardot
cladorrhizans (Hedw.) Müll.Hal.
concinnus (DeNot.) Paris
hampeanus Müll.Hal.
macropodus (Hedw.) Müll.Hal.
schleicheri (Schimp.) Demet.
seductrix (Hedw.) Müll.Hal.
sullivantii (Müll.Hal.) Lindb.
Entodontopsis Broth. (Stereophyllaceae)
leucostega (Brid.) W.R.Buck & Ireland
Entosthodon Schwägr. (Funariaceae)
americanus (Lindb.) Fife
apiculatopilosus (Cardot) Fife
attenuatus (Dicks.) Bryhn
bolanderi Lesq.
californicus (Sull. & Lesq.) H.A.Crum & L.E. Anderson
convexus (Spruce) Brugués
drummondii Sull.
fascicularis (Hedw.) Müll.Hal.
kochii H.A.Crum & L.E.Anderson
muhlenbergii (Turner) Fife
planoconvexus (E.B.Bartram) Grout
rubiginosus (R.S.Williams) Grout
rubrisetus (E.B.Bartram) Grout
serratus (Brid.) Fife
sonorae (Cardot) Steere
tucsonii (E.B.Bartram) Grout
wigginsii Steere
Ephemerum Hampe, *nom. cons.* (Pottiaceae)
cohaerens (Hedw.) Hampe
crassinervium (Schwägr.) Hampe var. *crassinervium*
var. *texanum* (Grout) V.S.Bryan & L.E. Anderson
recurvifolium (Dicks.) Boulay[133]
serratum (Schreb. *ex* Hedw.) Hampe
spinulosum Bruch & Schimp.
Epipterygium Lindb. (Mielichhoferiaceae)
biauritum Hanusch[134]
Erpodium (Brid.) Brid. (Erpodiaceae)
domingense (Spreng.) Brid.
Eucladium Bruch & Schimp. (Pottiaceae)
verticillatum (With.) Bruch & Schimp.

[127] *Dryptodon* was recovered as a clade of ambiguous affinities (Hernández-Maqueda et al. 2008, Larraín et al. 2013) and is here treated sensu Ochyra et al. (2003).
[128] This name has been proposed as a synonym of either *Grimmia lisae* (Hastings & Greven 2007) or *G. decipiens* (Maier 2010); we propose to retain the name, albeit in *Dryptodon*, pending clarification.
[129] See Muñoz (1999) and Muñoz & Pando (2000).
[130] See Streiff (2006).
[131] See O'Brien & Horton (2000).
[132] See Fedosov (2012).
[133] See Snyder (2023).
[134] This name replaces *E. tozeri* for the North American flora (Hanush et al. 2020).

Eurhynchiastrum Ignatov & Huttunen[135] (Brachytheciaceae)
pulchellum (Hedw.) Ignatov & Huttunen var. *pulchellum*
var. *barnesii* (Renauld & Cardot) Ignatov
Fabronia Raddi (Fabroniaceae)
ciliaris (Brid.) Brid. var. *ciliaris*
var. *polycarpa* (Hook.) W.R.Buck
var. *wrightii* (Sull.) W.R.Buck
pusilla Raddi
Fissidens Hedw. (Fissidentaceae)
adianthoides Hedw.
amoenus Müll.Hal.
aphelotaxifolius Pursell
appalachensis R.H.Zander
arcticus Bryhn
asplenioides Hedw.
bryoides Hedw.
bushii (Cardot & Thér.) Cardot & Thér.
closteri Austin
crispus Mont.
curvatus Hornsch.
dubius P.Beauv.
elegans Brid.
exilis Hedw.
fontanus (Bach.Pyl.) Steud.
grandifrons Brid.
hallianus (Sull. & Lesq.) Mitt.
hyalinus Wilson & Hook.
leptophyllus Mont.
littlei (R.S.Williams) Grout
minutulus Sull.
obtusifolius Wilson
osmundioides Hedw.
pallidinervis Mitt.
pauperculus M.Howe
pellucidus Hornsch.
polypodioides Hedw.
santa-clarensis Thér.
scalaris Mitt.
serratus Müll.Hal.
subbasilaris Hedw.
sublimbatus Grout
submarginatus Bruch
taxifolius Hedw.
taylorii Müll.Hal.
ventricosus Lesq.
zollingeri Mont.
Flexitrichum Ignatov & Fedosov[136] (Flexitrichaceae)
flexicaule (Schwägr.) Ignatov & Fedosov
gracile (Mitt.) Ignatov & Fedosov
Fontinalis Hedw. (Fontinalaceae)
antipyretica Hedw.
dalecarlica Bruch & Schimp.
howellii Renauld & Cardot
hypnoides Hartm.
neomexicana Sull. & Lesq.
novae-angliae Sull.
redfearnii B.H.Allen[137]
sphagnifolia (Müll.Hal.) Wijk & Margad.
sullivantii Lindb.
welchiana B.H.Allen
Forsstroemia Lindb. (Neckeraceae)
producta (Hornsch.) Paris
trichomitria (Hedw.) Lindb.
Funaria Hedw. (Funariaceae)
arctica (Berggr.) Kindb.
calvescens Schwägr.
convexa Spruce[138]
flavicans Michx.
hygrometrica Hedw.
microstoma Bruch *ex* Schimp.
polaris Bryhn
Geheebia Schimp.[139] (Pottiaceae)
constricta (Mitt.) R.H.Zander & Caners[140]
fallax (Hedw.) R.H.Zander
ferruginea (Schimp. *ex* Besch.) R.H.Zander
gigantea (Funck) Boulay
leskeoides (K.Saito) R.H.Zander
lurida (Hornsch. *ex* Spreng.) J.A.Jiménez & M.J. Cano
maxima (Syed & Crundw.) R.H.Zander
tophacea (Brid.) R.H.Zander
Gertrudiella Broth.[141] (Pottiaceae)
nevadensis (R.H.Zander) J.A.Jiménez & M.J.Cano
Globulinella Steere (Pottiaceae)
globifera (Hampe) Steere

[135] See Ignatov & Huttunen (2002).

[136] See Fedosov et al. (2016b).
[137] *Fontinalis redfearnii* was described by Allen (1991) and is known from Oklahoma.
[138] See Toren (2008).
[139] See Jiménez et al. (2022).
[140] See Zander & Caners (2017).
[141] See Jiménez et al. (2022).

Gollania Broth. (Hypnaceae)
turgens (Müll.Hal.) Ando
Grimmia Hedw. (Grimmiaceae)
alpestris (F.Weber & D.Mohr) Schleich.
americana E.B.Bartram
anodon Bruch & Schimp.
arizonae Renauld & Cardot
atrata Miel. *ex* Hornsch.
brittoniae R.S.Williams
caespiticia (Brid.) Jur.
crinitoleucophaea Cardot
donniana Sm.
elatior Bruch *ex* Bals.-Criv. & De Not.
elongata Kaulf.
funalis (Schwägr.) Bruch *ex* De Not.
hamulosa Lesq.
incurva Schwägr.
insolita J.Muñoz, I.Solano & D.Quandt[142]
laevigata (Brid.) Brid.
lesherae Greven
longirostris Hook.
mariniana Sayre
mollis Bruch & Schimp.
montana Bruch & Schimp.
moxleyi R.S.Williams
nevadensis Greven
olneyi Sull.
orbicularis Bruch *ex* Wilson
ovalis (Hedw.) Lindb.
pilifera P.Beauv.
plagiopodia Hedw.
pulvinata (Hedw.) Sm.
reflexidens Müll.Hal.
serrana J.Muñoz, Shevock & D.R.Toren
sessitana De Not.
shastae Greven
shevockii J.Muñoz, I.Solano & D.Quandt[143]
tergestina Tomm. *ex* Bruch & Schimp.[144]
texicana Greven[145]
torenii Hastings[146]
ungeri Jur.[147]
unicolor Hook. *ex* Grev.
Groutiella Steere (Orthotrichaceae)
tomentosa (Hornsch.) Wijk & Margad.
tumidula (Mitt.) Vitt
Gymnostomiella M.Fleisch. (Pottiaceae)
vernicosa (Hook. *ex* Harv.) M.Fleisch.[148]
Gymnostomum Nees & Hornsch., *nom. cons.* (Pottiaceae)
aeruginosum Sm.
calcareum Nees & Hornsch.
viridulum Brid.
Gyroweisia Schimp., *nom. cons.* (Pottiaceae)
tenuis (Hedw.) Schimp.
Hageniella Broth. (Hypnaceae)
micans (Mitt.) B.C.Tan & Y.Jia[149]
Hamatocaulis Hedenäs (Calliergonaceae)
lapponicus (Norrl.) Hedenäs
vernicosus (Mitt.) Hedenäs
Haplocladium (Müll.Hal.) Müll.Hal., *nom. cons.*[150] (Leskeaceae)
angustifolium (Hampe & Müll.Hal.) Broth.
microphyllum (Sw. *ex* Hedw.) Broth.
virginianum (Brid.) Broth.
Haplodontium Hampe[151] (Mniaceae)
macrocarpum (Drumm.) J.R.Spence
tehamense (Showers) J.R.Spence
Hedwigia P.Beauv., *nom. cons.* (Hedwigiaceae)
ciliata (Hedw.) Boucher
detonsa (M.Howe) W.R.Buck & D.H.Norris
emodica Hampe *ex* Müll.Hal.[152]
filiformis (Michx.) P.Beauv.[153]
nivalis (Müll.Hal.) Mitt.[154]
stellata Hedenäs
Helodium Warnst., *nom. cons.* (Helodiaceae)
blandovii (F.Weber & D.Mohr) Warnst.

[142] See Solano et al. (2023).
[143] See Solano et al. (2023).
[144] See Allred et al. (2024).
[145] See Greven (2010).
[146] See Hastings (2008). However, Maier (2010) synonymized this name with *G. tergestina*, but more recently it has been recognized by California botanists (Toren 2015; Rae 2021; McLaughlin 2024).
[147] See Muñoz (1999).
[148] Pending further studies, we follow Redfearn (1991), Arts (1998) and Allen (2002), versus Zander (2007b), who argued for retaining the name *G. orcuttii* E.B.Bartram for the North American populations.
[149] See Tan & Jia (1999).
[150] See Wilson (2021).
[151] See Spence (2005).
[152] The species may be present in North America based on herbarium records (Gbif 2024b) although it has not formally been reported from North America.
[153] See De Luna (2022).
[154] Reported from the southwestern and south-central United States by Allen (2010); see Gbif.org (2024c).

elodioides (Renauld & Cardot) B.H.Allen
paludosum (A.Jaeger) Austin *ex* C.F.Parker
Henicodium (Müll.Hal.) Kindb. (Pterobryaceae)
geniculatum (Mitt.) W.R.Buck
Hennediella Paris[155] (Pottiaceae)
heimii (Hedw.) R.H.Zander
stanfordensis (Steere) Blockeel
Herpetineuron (Müll.Hal.) Cardot (Thuidiaceae)
toccoae (Sull. & Lesq.) Cardot
Herzogiella Broth. (Plagiotheciaceae)
seligeri (Brid.) Z.Iwats.
striatella (Brid.) Z.Iwats.
turfacea (Lindb.) Z.Iwats.
Heterocladiella Ignatov & Fedosov[156] (Heterocladiellaceae)
dimorpha (Brid.) Ignatov & Fedosov
procurrens (Mitt.) Ignatov & Fedosov
Heterocladium Schimp. (Pterigynandraceae)
macounii Best
Heterophyllium (Schimp.) Müll.Hal. *ex* Kindb. (Sematophyllaceae)
nemorosum (W.D.J.Koch *ex* Brid.) Kindb.
Hilpertia R.H.Zander[157] (Pottiaceae)
velenovskyi (Schiffn.) R.H.Zander
Homalia Brid., *nom. cons.* (Neckeraceae)
trichomanoides (Hedw.) Brid.
Homaliadelphus Dixon & P.de la Varde (Miyabeaceae)
sharpii (R.S.Williams) Sharp
Homalotheciella (Cardot) Broth. (Brachytheciaceae)
subcapillata (Hedw.) Broth.
Homalothecium Schimp. (Brachytheciaceae)
aeneum (Mitt.) E.Lawton
arenarium (Lesq.) E.Lawton
aureum (Spruce) H.Rob.
californicum Hedenäs
fulgescens (Mitt. *ex* Müll.Hal.) A.Jaeger
megaptilum (Sull.) H.Rob.
nevadense (Lesq.) Renauld & Cardot
nuttallii (Wilson) A.Jaeger
sericeum (Hedw.) Schimp.
Homomallium (Schimp.) Loeske (Hypnaceae)
adnatum (Hedw.) Broth.
incurvatum (Schrad. *ex* Brid.) Loeske
mexicanum Cardot var. *mexicanum*
var. *latifolium* Cardot

[155] See Cano (2008).
[156] See Ignatov et al. (2019a).
[157] See Zander (1989).

Hookeria Sm., *nom. cons.* (Hookeriaceae)
acutifolia Hook. & Grev.
lucens (Hedw.) Sm.
Husnotiella Cardot[158] (Pottiaceae)
asperifolia (Mitt.) J.A.Jiménez & M.J.Cano
fragilicuspis (Broth) J.A.Jiménez & M.J.Cano
johansenii (R.S.Williams) J.A.Jiménez & M.J.Cano
revoluta Cardot
Hydrogonium (Müll.Hal.) A.Jaeger[159] (Pottiaceae)
amplexifolium (Mitt.) P.C.Chen
bolleanum (Müll.Hal.) A.Jaeger
consanguineum (Thwaites & Mitt.) Hilp. var. *cancellatum* (Müll.Hal.) Jan Kučera
cruegeri (Sond. *ex* Müll.Hal.) Jan Kučera
gregarium (Mitt.) Jan Kučera
orientale (F.Weber) Jan Kučera
Hygroamblystegium Loeske, *nom. cons.*[160] (Amblystegiaceae)
fluviatile (Hedw.) Loeske
humile (P.Beauv.) Vanderp., Hedenäs & Goffinet
noterophilum (Sull. & Lesq.) Warnst.
tenax (Hedw.) Jenn.
varium (Hedw.) Mönk.
Hygrohypnella Ignatov & Ignatova[161] (Amblystegiaceae)
ochracea (Turner *ex* Wilson) Ignatov & Ignatova
polaris (Lindb.) Ignatov & Ignatova
Hygrohypnum Lindb. (Amblystegiaceae)
closteri (Austin) Grout
luridum (Hedw.) Jenn.
styriacum (Limpr.) Broth.
Hylocomiadelphus Ochyra & Stebel[162] (Hylocomiaceae)
triquetrus (Hedw.) Ochyra & Stebel
Hylocomiastrum M.Fleisch. *ex* Broth. (Hylocomiaceae)
pyrenaicum (Spruce) M.Fleisch. *ex* Broth.
umbratum (Hedw.) M.Fleisch. *ex* Broth.
Hylocomium Schimp., *nom. cons.* (Hylocomiaceae)
splendens (Hedw.) Schimp.
Hymenoloma Dusén[163] (Hymenolomataceae)
crispulum (Hedw.) Ochyra
mulahaceni (Höhn.) Ochyra[164]

[158] See Jiménez et al. (2022).
[159] See Kučera et al. (2013).
[160] *Hygroamblystegium* is, albeit not robustly, resolved as a sister group to *Amblystegium* (Vanderpoorten et al. (2002), which holds a single species. The two could be merged into a single genus, as adopted by Anderson et al. (1990).
[161] See Ignatov & Ignatova (2004).
[162] See Ochyra & Stebel (2008) and Ignatov et al. (2019b).
[163] See Ochyra et al. (2003).

Hymenostylium Brid.[165] (Pottiaceae)
annotinum Mitt. *ex* Dixon
aurantiacum Mitt.[166]
recurvirostrum (Hedw.) Dixon
Hyophila Brid., *nom. cons.* (Pottiaceae)
involuta (Hook.) A.Jaeger
Hyophiladelphus (Müll.Hal.) R.H.Zander (Pottiaceae)
agrarius (Hedw.) R.H.Zander[167]
Hypnum Hedw., *nom. cons.* (Hypnaceae)
andoi A.J.E.Sm.[168]
cupressiforme Hedw. var. *cupressiforme*
var. *filiforme* Brid.
var. *julaceum* Brid.
jutlandicum Holmen & E.Warncke
resupinatum Taylor
subjulaceum (Molendo) Hedenäs, Schlesak & D. Quandt
Hypopterygium Brid. (Hypopterygiaceae)
flavolimbatum Müll.Hal.
tamarisci (Sw.) Brid. *ex* Müll.Hal.
Indusiella Broth. & Müll.Hal. (Ptychomitriaceae)
thianschanica Broth. & Müll.Hal.
Isopterygiella Ignatov & Ignatova[169] (Plagiotheciaceae)
alpicola (Lindb.) Ignatov & Ignatova
pulchella (Hedw.) Ignatov & Ignatova
Isopterygiopsis Z.Iwats. (Plagiotheciaceae)
catagonioides (Broth.) Ignatov & Ignatova[170]
muelleriana (Schimp.) Z.Iwats.
Isopterygium Mitt. (Pylaisiadelphaceae)
tenerifolium Mitt.[171]
tenerum (Sw.) Mitt.
Isothecium Brid. (Lembophyllaceae)
alopecuroides (Lam. *ex* Dubois) Isov.
Iwatsukiella W.R.Buck & H.A.Crum (Pterigynandraceae)
leucotricha (Mitt.) W.R.Buck & H.A.Crum
Jaegerina Müll.Hal. (Pterobryaceae)
scariosa (Lorentz) Arzeni
Jaffueliobryum Thér. (Grimmiaceae)
raui (Austin) Thér.
wrightii (Sull.) Thér.
Jochenia Hedenäs, Schlesak & D.Quandt[172] (Jocheniaceae)
pallescens (Hedw.) Hedenäs, Schlesak & D.Quandt
protuberans (Brid.) Jan Kučera & Ignatov[173]
Kiaeria I.Hagen (Rhabdoweisiaceae)
falcata (Hedw.) I.Hagen[174]
Kindbergia Ochyra[175] (Brachytheciaceae)
oregana (Sull.) Ochyra
praelonga (Hedw.) Ochyra
Koponeniella Huttunen & Ignatov[176] (Brachytheciaceae)
bolanderi (Lesq.) Huttunen & Ignatov
graminicolor (Brid.) Huttunen, Ignatov, M.Li & Y.F.Wang
Lepidopilum (Brid.) Brid., *nom. cons.* (Pilotrichaceae)
polytrichoides (Hedw.) Brid.
Leptobryum (Schimp.) Wilson (Meesiaceae)
pyriforme (Hedw.) Wilson
Leptodictyum (Schimp.) Warnst. (Amblystegiaceae)
riparium (Hedw.) Warnst.
wallacei B.H.Allen & Magill[177]
Leptodon D.Mohr, *nom. cons.* (Leptodontaceae)
smithii (Dicks. *ex* Hedw.) F.Weber & D.Mohr
Leptodontium (Müll.Hal.) Hampe *ex* Lindb. (Pottiaceae)
excelsum (Sull.) E.Britton
flexifolium (With.) Hampe *ex* Lindb.
Leptohymenium Schwägr. (Hylocomiaceae)
sharpii (H.A.Crum & L.E.Anderson) W.R.Buck & H.A.Crum
Leptopterigynandrum Müll.Hal. (Taxiphyllaceae)
austroalpinum Müll.Hal.
subintegrum (Mitt.) Broth.[178]

[164] Reported from North America by Werner et al. (2013).
[165] Zander & Hedderson (2016) segregated North American and other species of *Hymenostylium* in their new genus *Ardeuma*. However, the phylogenetic study by Cano et al. (2022) highlighted ambiguous monophyly of this and other related genera, and hence we prefer to retain a conservative, i.e., broader, circumscription of *Hymenostylium*. Hodgetts et al. (2020) rejected recognizing *Ardeuma* on the basis of unpublished data, which may be forthcoming.
[166] Reported from North America by Zander & Eckel (2017).
[167] See Zander (1995).
[168] Potentially doubtful, see Allen (2014).
[169] See Ignatova et al. (2020a).
[170] See Ignatova et al. (2020a).
[171] See Buck (1994).
[172] *Jochenia* was erected by Schlesak et al. (2018) to accommodate *Hypnum pallescens*.
[173] See Kučera et al. (2019).
[174] See Brinda & Fedosov (2023).
[175] See Li et al. (2015).
[176] *Kopononiella* was established based on phylogenetic evidence (Huttunen et al. 2015).
[177] Described by Allen & Magill (2004) for material from Texas.
[178] Reported by He (2005).

Leratia Broth. & Paris (ORTHOTRICHACEAE)
exigua (Sull.) Goffinet[179]
Lescuraea Schimp.[180] (LESKEACEAE)
arizonae (R.S.Williams) P.S.Wilson & D.H.Norris
atricha (Kindb.) E.Lawton
baileyi (Best & Grout) E.Lawton
incurvata (Hedw.) E.Lawton
var. *gigantea* E.Lawton
var. *tenuiretis* (Culm.) E.Lawton
patens (Lindb.) Arnell & C.E.O.Jensen
radicosa (Mitt.) Mönk. var. *radicosa*
var. *compacta* (Best) E.Lawton
var. *denudata* (Kindb.) E.Lawton
var. *pallida* (Best) E.Lawton
saviana (De Not.) E.Lawton
saxicola (Schimp.) Molendo
stenophylla (Renauld & Cardot) Kindb.
tribulosa (Shevock & W.R.Buck) W.R.Buck & Goffinet[181]
Leskea Hedw. (LESKEACEAE)
australis Sharp
gracilescens Hedw.
obscura Hedw.
polycarpa Hedw.
Leucobryum Hampe (LEUCOBRYACEAE)
albidum (Brid. *ex* P.Beauv.) Lindb.
antillarum Schimp. *ex* Besch.
glaucum (Hedw.) Ångstr.
Leucodon Schwägr. (LEUCODONTACEAE)
brachypus Brid.
julaceus (Hedw.) Sull.
sciuroides (Hedw.) Schwägr.[182]
Leucolepis Lindb. (MNIACEAE)
acanthoneura (Schwägr.) Lindb.
Lewinskya F.Lara, Garilleti & Goffinet[183] (ORTHOTRICHACEAE)
affinis (Brid.) F.Lara, Garilleti & Goffinet var. *affinis* var. *bohemica* (Plášek & Sawicki) Plášek[184]
arida Vigalondo, F.Lara & Garilleti[185]
bolanderi (Sull.) F.Lara, Garilleti & Goffinet
elegans (Schwägr. *ex* Hook. & Grev.) F.Lara, Garilleti & Goffinet
fenestrata (Cardot & Thér.) F.Lara, Garilleti & Goffinet
holzingeri (Renauld & Cardot) F.Lara, Garilleti & Goffinet
keeverae (H.A.Crum & L.E.Anderson) F.Lara, Garilleti & Goffinet
laevigata (J.E.Zetterst.) F.Lara, Garilleti & Goffinet
pacifica Vigalondo, F.Lara & Garilleti[186]
praemorsa (Venturi) F.Lara, Garilleti & Goffinet
pseudoaffinis Vigalondo, F.Lara & Garilleti[187]
pycnophylla (Schimp.) F.Lara, Garilleti & Goffinet
pylaisii (Brid.) F.Lara, Garilleti & Goffinet
rupestris (Schleich. *ex* Schwägr.) F.Lara, Garilleti & Goffinet
shawii (Wilson) F.Lara, Garilleti & Goffinet[188]
sordida (Sull. & Lesq.) F.Lara, Garilleti & Goffinet
speciosa (Nees) F.Lara, Garilleti & Goffinet
spjutii (D.H.Norris & Vitt) F.Lara, Garilleti & Goffinet[189]
striata (Hedw.) F.Lara, Garilleti & Goffinet
Limbella (Müll.Hal.) Renauld & Cardot (AMBLYSTEGIACEAE)
fryei (R.S.Williams) Ochyra
Lindbergia Kindb. (LESKEACEAE)
brachyptera (Mitt.) Kindb.
mexicana (Besch.) Cardot
Loeskeobryum M.Fleisch. *ex* Broth. (HYLOCOMIACEAE)
brevirostre (Brid.) M.Fleisch. *ex* Broth.
Lorentziella Müll.Hal. *ex* Besch. (GIGASPERMACEAE)
imbricata (Mitt.) Broth.

[179] See Goffinet et al. (2004)
[180] We follow Gardiner et al. (2005) who merged *Pseudoleskea* with *Lescuraea*.
[181] Described as *Pseudoleskea tribulosa* by Shevock & Buck (2009) and accommodated in *Lescuraea* under the new combination *Lescuraea tribulosa* (Shevock & W.R.Buck) W.R.Buck & Goffinet comb. nov. ≡ *Pseudoleskea tribulosa* Shevock & W.R.Buck, The Bryologist 112(1): 184. 2009. TYPE: U.S.A., California, Mariposa Co.: Yosemite National Park, Hoffmann Creek watershed S of Mt. Hoffmann and N of Tioga Road, 37°49′52″N, 119°30′50″W, 4 Aug. 2006, *J.R. Shevock et al. 28987* (holotype, CAS; isotypes, DUKE, H, MO, NY, UC, US, YM).
[182] Previously this taxon was known as *L. brachypus* var. *andrewsianus* Crum & Anderson (Stech et al. 2011).
[183] See Lara et al. (2016).
[184] Based on a collection, *D. H. Vitt 24* (MO) from Idaho; but see Vigalondo et al. (2020) who considered this taxon a form of *L. affinis*.
[185] See Vigalondo et al. (2020).
[186] See Vigalondo et al. (2020).
[187] See Vigalondo et al. (2020).
[188] See Garilleti et al. (2006b).
[189] See Norris & Vitt (1993).

Luisierella Thér. & P.de la Varde (Timmiellaceae)
barbula (Schwägr.) Steere
Lyellia R.Br. (Polytrichaceae)
aspera (I.Hagen & C.E.O.Jensen) Frye
Macrocoma (Hornsch. *ex* Müll.Hal.) Grout (Orthotrichaceae)
tenuis (Hook. & Grev.) Vitt subsp. *sullivantii* (Müll.Hal.) Vitt
Macromitrium Brid. (Orthotrichaceae)
viticulosum (Raddi) Brid.[190]
Meesia Hedw., *nom. cons.* (Meesiaceae)
longiseta Hedw.
triquetra (L. *ex* Jolycl.) Ångstr.
uliginosa Hedw.
Merceyopsis Broth. & Dixon (Pottiaceae)
cataractae (Mitt.) Brinda, Ignatov & Fedosov[191]
Metaneckera Steere (Neckeraceae)
menziesii (Drumm.) Steere
Meteorium Dozy & Molk., *nom. cons.* (Meteoriaceae)
nigrescens (Hedw.) Dozy & Molk.[192]
Microbryum Schimp.[193] (Pottiaceae)
commutatum (Limpr.) Cl.Schneid., Th.Schneid. & Mahévas[194]
conicum (Schleich. *ex* Schwägr.) Cl.Schneid., Th.Schneid. & Mahévas[195]
davallianum (Sm.) R.H.Zander[196]
floerkeanum (F.Weber & D.Mohr) Schimp.
fosbergii (E.B.Bartram) Ros, O.Werner & Rams[197]
muticum (Venturi) Cl.Schneid., Th.Schneid. & Mahévas[198]
starckeanum (Hedw.) R.H.Zander
Micromitrium Austin (Micromitriaceae)
megalosporum Austin
synoicum (James) Austin
tenerum (Bruch & Schimp.) Crosby
wrightii (Müll.Hal.) Crosby
Mielichhoferia Hornsch. (Mielichhoferiaceae)
elongata (Hoppe & Hornsch. *ex* Hook.) Hornsch.
mielichhoferiana (Funck) Loeske
shevockii (A.J.Shaw) A.J.Shaw[199]
Mnium Hedw., *nom. cons.* (Mniaceae)
arizonicum J.J.Amann
blyttii Bruch & Schimp.
hornum Hedw.
lycopodioides Schwägr.
marginatum (Dicks.) P.Beauv.
spinosum (Voit) Schwägr.
spinulosum Bruch & Schimp.
stellare Hedw.
thomsonii Schimp.
Molendoa Lindb. (Pottiaceae)
handelii (Schiffn.) Brinda & R.H.Zander[200]
hornschuchiana (Hook.) Lindb. *ex* Limpr.
sendtneriana (Bruch & Schimp.) Limpr.
Myrinia Schimp., *nom. cons.* (Myriniaceae)
pulvinata (Wahlenb.) Schimp.
Myurella Schimp. (Plagiotheciaceae)
julacea (Schwägr.) Schimp.
sibirica (Müll.Hal.) Reimers
tenerrima (Brid.) Lindb.
Myuroclada Besch. (Brachytheciaceae)
maximowiczii (G.G.Borshch.) Steere & W.B.Schofield
Neckera Hedw., *nom. cons.* (Neckeraceae)
californica Hook. & Arn.[201]
douglasii Hook.
pennata Hedw.
Neckeropsis Reichardt (Neckeraceae)
disticha (Hedw.) Kindb.
undulata (Hedw.) Reichardt
Neodicladiella (Nog.) W.R.Buck (Meteoriaceae)
pendula (Sull.) W.R.Buck[202]
Neomacounia Ireland (Neckeraceae)
nitida (Lindb.) Ireland
Nogopterium Crosby & W.R.Buck (Leucodontaceae)
gracile (Hedw.) Crosby & W.R.Buck[203]
Nyholmiella Holmen & E.Warncke[204] (Orthotrichaceae)
gymnostoma (Bruch *ex* Brid.) Holmen & E.Warncke
obtusifolia (Brid.) Holmen & E.Warncke
Octoblepharum Hedw. (Octoblepharaceae)
albidum Hedw.
Oedipodium Schwägr. (Oedipodiaceae)
griffithianum (Dicks.) Schwägr.

[190] See Valente et al. (2020).
[191] See Brinda & Fedosov (2023).
[192] See Buck (1998).
[193] See Zander (1993).
[194] See Mahévas et al. (2016).
[195] See Mahévas et al. (2016).
[196] See Zander (2007d).
[197] See Ros et al. (2005).
[198] See Mahévas et al. (2016).
[199] See Shaw (2009).
[200] See Brinda & Zander (2020).
[201] See Olsson et al. (2011).
[202] See Buck (1994).
[203] See Crosby & Buck (2011).
[204] See Sawicki et al. (2010).

Oligotrichum DC., *nom. cons.* (Polytrichaceae)
aligerum Mitt.
falcatum Steere
hercynicum (Hedw.) DC.
parallelum (Mitt.) Kindb.
Oncophorus (Brid.) Brid. (Dicranaceae)
integerrimus Hedenäs[205]
virens (Hedw.) Brid.
Oreas Brid., *nom. cons.* (Dicranaceae)
martiana (Hoppe & Hornsch.) Brid.
Orthodontium Schwägr. (Orthodontiaceae)
gracile (Wilson *ex* Hook.) Schwägr. *ex* Bruch & Schimp.
pellucens (Hook.) Bruch & Schimp.
Ortholimnobium Dixon (Plagiotheciaceae)
handelii (Broth.) Schröck & J.T.Wynns[206]
Orthothecium Schimp., *nom. cons.* (Plagiotheciaceae)
acuminatum Bryhn
chryseon (Schwägr.) Schimp.
intricatum (Hartm.) Schimp.
rufescens (Dicks. *ex* Brid.) Schimp.
strictum Lorentz
Orthotrichum Hedw. (Orthotrichaceae)
alpestre Hornsch. *ex* Bruch & Schimp.
anodon F.Lara, Garilleti & Mazimpaka[207]
anomalum Hedw.
bartramii R.S.Williams
consimile Mitt.
consobrinum Cardot[208]
cucullatum F.Lara, R.Medina & Garilleti[209]
cupulatum Hoffm. *ex* Brid.
cylindrocarpum Lesq.[210]
diaphanum Schrad. *ex* Brid.
euryphyllum Venturi
flowersii Vitt
franciscanum F.Lara, R.Medina & Garilleti[211]
hallii Sull. & Lesq.
mazimpakanum Garilleti & F.Lara[212]
norrisii F.Lara, R.Medina & Garilleti[213]
ohioense Sull. & Lesq.
pallens Bruch *ex* Brid. var. *pallens*
var. *crenulatum* Vitt
var. *johnseniae* Vitt
pellucidum Lindb.
pulchellum Brunt.
pumilum Sw.
pusillum Mitt.
rivulare Turner
shevockii Lewinsky-Haapasaari & D.H.Norris[214]
stellatum Brid.
stramineum Hornsch. *ex* Brid.
strangulatum P.Beauv.
underwoodii F.Lara, Garilleti & Mazimpaka[215]
Oxyrrhynchium (Schimp.) Warnst., *nom. cons.*[216] (Brachytheciaceae)
hians (Hedw.) Loeske
Ozobryum G.L.Sm.Merr. (Pottiaceae)
ogalalense G.L.Sm.Merr.[217]
Palamocladium Müll.Hal. (Brachytheciaceae)
leskeoides (Hook.) E.Britton
Paludella Ehrh. *ex* Brid. (Meesiaceae)
squarrosa (Hedw.) Brid.
Palustriella Ochyra (Amblystegiaceae)
commutata (Hedw.) Ochyra
falcata (Brid.) Hedenäs
Paraleucobryum (Lindb. *ex* Limpr.) Péterfi (Dicranaceae)
enerve (Thed.) Loeske
longifolium (Ehrh. *ex* Hedw.) Péterfi
sauteri (Bruch & Schimp.) Loeske[218]
Pelekium Mitt., *nom. cons.*[219] (Thuidiaceae)
involvens (Hedw.) Touw
minutulum (Hedw.) Touw
pygmaeum (Schimp.) Touw
schistocalyx (Müll.Hal.) Touw
Philonotis Brid. (Bartramiaceae)
americana Dism.[220]
breutelioides Shevock & Aguero[221]
capillaris Lindb.
cernua (Wilson) D.G.Griffin & W.R.Buck[222]

[205] See Afonina (2020).
[206] See Wynns & Schröck (2018).
[207] See Garilleti et al. (2006a).
[208] See Flagmeier et al. (2021).
[209] See Medina et al. (2013).
[210] See Medina et al. (2019b).
[211] See Medina et al. (2013).
[212] See Garilleti et al. (2011).
[213] See Medina et al. (2008).
[214] See Lewinsky-Haapasaari (1998).
[215] See Garilleti et al. (2001).
[216] See Ignatov & Huttunen (2002).
[217] See Merrill (1992).
[218] See Haring (1961) and Allred et al. (2024).
[219] See Touw (2001).
[220] See Koponen et al. (2012).
[221] See Shevock & Aguero (2023).

fontana (Hedw.) Brid.
longiseta (Michx.) E.Britton
marchica (Hedw.) Brid.
minuta (Taylor) A.Jaeger[223]
sphaericarpa (Hedw.) Brid.
tomentella Molendo
uncinata (Schwägr.) Brid.
yezoana Besch. & Cardot

Physcomitrium (Brid.) Brid. (Funariaceae)
californicum E.Britton[224]
collenchymatum Gier
hookeri Hampe
immersum Sull.
patens (Hedw.) Mitt.[225]
pygmaeum James[226]
pyriforme (Hedw.) Brid.
readeri Müll.Hal.[227]
serratum (Wilson & Hook.) Müll.Hal.[228]

Pilosium (Müll.Hal.) M.Fleisch. (Stereophyllaceae)
chlorophyllum (Hornsch.) Müll.Hal.[229]

Pireella Cardot (Pterobryaceae)
cymbifolia (Sull.) Cardot
pohlii (Schwägr.) Cardot

Plagiobryum Lindb. (Bryaceae)
demissum (Hook.) Lindb.
zieri (Dicks. *ex* Hedw.) Lindb.

Plagiomnium T.J.Kop., *nom. cons.* (Mniaceae)
ciliare (Müll.Hal.) T.J.Kop.
curvatulum (Lindb.) Schljakov[230]
cuspidatum (Hedw.) T.J.Kop.
drummondii (Bruch & Schimp.) T.J.Kop.
ellipticum (Brid.) T.J.Kop.
floridanum R.E.Wyatt & Odrzyk.[231]
insigne (Mitt.) T.J.Kop.
medium (Bruch & Schimp.) T.J.Kop.
rhynchophorum (Harv.) T.J.Kop.[232]
rostratum (Schrad.) T.J.Kop.
undulatum (Hedw.) T.J.Kop.[233]
venustum (Mitt.) T.J.Kop.

Plagiopus Brid. (Bartramiaceae)
oederianus (Sw.) H.A.Crum & L.E.Anderson
serratus Brid.[234]

Plagiothecium Schimp. (Plagiotheciaceae)
berggrenianum Frisvoll
cavifolium (Brid.) Z.Iwats.
curvifolium Schleiph. *ex* Limpr.[235]
denticulatum (Hedw.) Schimp. var. *denticulatum* var. *obtusifolium* (Turner) Moore[236]
laetum Schimp.
latebricola Schimp.
nemorale (Mitt.) A.Jaeger[237]
pacificum J.T.Wynns[238]
schofieldii Wolski & W.R.Buck[239]
succulentum (Wilson) Lindb.[240]
sylvaticum (Brid.) Schimp.[241]
talbotii Wolski & W.R.Buck[242]
undulatum (Hedw.) Schimp.

Platydictya Berk. (Plagiotheciaceae)
jungermannioides (Brid.) H.A.Crum

Platygyrium Schimp., *nom. cons.* (Pylaisiadelphaceae)
fuscoluteum Cardot
repens (Brid.) Schimp.

Platyhypnum Loeske[243] (Amblystegiaceae)
alpestre (Hedw.) Ochyra
alpinum (Lindb.) Loeske
bestii (Renauld & Bryhn) Ochyra
cochlearifolium (Venturi) Ochyra
duriusculum (De Not.) Ochyra
molle (Hedw.) Loeske
norvegicum (Schimp.) Ochyra
smithii (Sw.) Ochyra

Platylomella A.L.Andrews (Amblystegiaceae)
lescurii (Sull.) A.L.Andrews

[222] See Griffin & Buck (1989).
[223] See Jiménez & Toren (2018).
[224] See Norris & Shevock (2004a,b).
[225] See Medina et al. (2019a).
[226] See Medina et al. (2022).
[227] See Medina et al. (2019a).
[228] See Medina et al. (2019a).
[229] Newly reported from North America based on a collection, *A.J. Shaw 8153*, on 14 Sep. 1996, from North Carolina (duke, ny).
[230] See Wyatt et al. (1993).
[231] See Wyatt & Odrzykoski (2012).
[232] See Wyatt et al. (2021a).
[233] See Joya & McIntosh (2012).
[234] See Habeeb (1950) and Hedenäs (2020) as *P. alpinus*.
[235] See Wolski et al. (2022c).
[236] See Wolski et al. (2022a).
[237] See Wolski et al. (2020).
[238] See Wynns et al. (2018).
[239] See Wolski et al. (2021).
[240] See Wolski (2020).
[241] See Wolski et al. (2024).
[242] See Wolski et al. (2022b).
[243] We follow the treatment by Ochyra (2013), supported by Kučera et al. (2019).

Plaubelia Brid.[244] (Pottiaceae)
sprengelii (Schwägr.) R.H.Zander
stomatodonta (Cardot) R.H.Zander
Plenogemma Plášek, Sawicki & Ochyra (Orthotrichaceae)
phyllantha (Brid.) Sawicki, Plášek & Ochyra[245]
Pleuridium Rabenh., *nom. cons.* (Ditrichaceae)
acuminatum Lindb.
mexicanum Cardot[246]
ravenelii Austin
subulatum (Hedw.) Rabenh.
sullivantii Austin
Pleurochaete Lindb. (Pottiaceae)
luteola (Besch.) Thér.[247]
Pleuroziopsis Kindb. *ex* E.Britton (Climaciaceae)
ruthenica (Weinm.) Kindb. *ex* E.Britton
Pleurozium Mitt., *nom. cons.* (Hylocomiaceae)
schreberi (Willd. *ex* Brid.) Mitt.
Pogonatum P.Beauv. (Polytrichaceae)
brachyphyllum (Michx.) P.Beauv.
contortum (Menzies *ex* Brid.) Lesq.
dentatum (Menzies *ex* Brid.) Brid.
pensilvanicum (Bartram *ex* Hedw.) Paris
urnigerum (Hedw.) P.Beauv.
Pohlia Hedw. (Mielichhoferiaceae)
andalusica (Höhn.) Broth.
andrewsii A.J.Shaw
annotina (Hedw.) Lindb.
atropurpurea (Wahlenb.) H.Lindb.
beringiensis A.J.Shaw
bolanderi (Lesq.) Broth.
brevinervis Lindb. & Arnell
bulbifera (Warnst.) Warnst.
camptotrachela (Renauld & Cardot) Broth.
cardotii (Renauld) Broth.
columbica (Kindb.) A.L.Andrews
cruda (Hedw.) Lindb.
crudoides (Sull. & Lesq.) Broth.
drummondii (Müll.Hal.) A.L.Andrews
elongata Hedw.
erecta Lindb.
filum (Schimp.) Mårtensson
flexuosa Harv.[248]
greenii Brid.[249]
lescuriana (Sull.) Grout
longibracteata Broth.
longicolla (Hedw.) Lindb.
ludwigii (Spreng. *ex* Schwägr.) Broth.
melanodon (Brid.) A.J.Shaw
nutans (Hedw.) Lindb.
obtusifolia (Vill. *ex* Brid.) L.F.Koch
pacifica A.J.Shaw
proligera (Kindb. *ex* Breidl.) Lindb. *ex* Arnell
rabunbaldensis A.J.Shaw[250]
robertsonii Shevock & A.J.Shaw[251]
sphagnicola (Bruch & Schimp.) Broth.[252]
tundrae A.J.Shaw
vexans (Limpr.) H.Lindb.
wahlenbergii (F.Weber & D.Mohr) A.L.Andrews
Polytrichastrum G.L.Sm.[253] (Polytrichaceae)
alpinum (Hedw.) G.L.Sm.
fragile (Bryhn) Schljakov
lyallii (Mitt.) G.L. Sm
papillatum G.L.Sm.
septentrionale (Sw. *ex* Brid.) E.I.Ivanova, N.E. Bell & Ignatov
sexangulare (Flörke *ex* Brid.) G.L.Sm.
sphaerothecium (Besch.) J.-P.Frahm
Polytrichum Hedw.[254] (Polytrichaceae)
appalachianum L.E.Anderson
commune Hedw.
densifolium Wilson *ex* Mitt.[255]
formosum Hedw.
hyperboreum R.Br.
jensenii I.Hagen
juniperinum Hedw.
longisetum Sw. *ex* Brid.
ohioense Renauld & Cardot
pallidisetum Funck
perigoniale Michx.[256]
piliferum Hedw.
strictum Menzies *ex* Brid.
swartzii Hartm.

[244] See Zander (2021).
[245] See Plášek et al. (2015).
[246] See Yip et al. (2007).
[247] See Eckel (2007) and Wyatt & Stoneburner (2018).
[248] See Shaw & Toren (2009).
[249] See Guerra (2021).
[250] See Shevock & Shaw (2005).
[251] See Shevock & Shaw (2005).
[252] Considered conspecific with *P. nutans* by Shaw (2014) but retained as distinct by Hodgetts et al. (2020).
[253] See Bell & Hyvönen (2010).
[254] See Bell & Hyvönen (2010).
[255] See Ivanova & Ignatov (2017).
[256] Considered a variety of *P. commune* by Merrill (2007) but a distinct species by Kariyawasam (2021).

Pseudanomodon (Limpr.) Ignatov & Fedosov[257] (Neckeraceae)
attenuatus (Hedw.) Ignatov & Fedosov
Pseudephemerum (Lindb.) I.Hagen (Ditrichaceae)
nitidum (Hedw.) Loeske[258]
Pseudisothecium Grout[259] (Lembophyllaceae)
cardotii (Kindb.) Ignatova, Fedosov & Ignatov
cristatum (Hampe) Ignatova, Fedosov & Ignatov
myosuroides (Brid.) Grout
stoloniferum (Brid.) Grout
Pseudoamblystegium Vanderp. & Hedenäs (Amblystegiaceae)
subtile (Hedw.) Vanderp. & Hedenäs[260]
Pseudobraunia (Lesq. & James) Broth. (Hedwigiaceae)
californica (Lesq.) Broth.
Pseudobryum (Kindb.) T.J.Kop. (Mniaceae)
cinclidioides (Huebener) T.J.Kop.
Pseudocampylium Vanderp. & Hedenäs[261] (Amblystegiaceae)
radicale (P.Beauv.) Vanderp. & Hedenäs
Pseudocrossidium R.S.Williams (Pottiaceae)
arenicola (Dusén) M.J.Cano[262]
hornschuchianum (Schultz) R.H.Zander
obtusulum (Lindb.) H.A.Crum & L.E.Anderson
replicatum (Taylor) R.H.Zander
Pseudocryphaea E.Britton *ex* Broth. (Rutenbergiaceae)
domingensis (Spreng.) W.R.Buck
Pseudoditrichum Steere & Z.Iwats. (Pseudoditrichaceae)
mirabile Steere & Z.Iwats.
Pseudohygrohypnum Kanda[263] (Pylaisiaceae)
appalachianum Brinda, Fedosov & Ignatova[264]
eugyrium (Schimp.) Kanda
fauriei (Cardot) Jan Kučera & Ignatov
fertile (Sendtn.) Jan Kučera & Ignatov
neglectum Fedosova & Ignatova
subeugyrium (Renauld & Cardot) Ignatov & Ignatova
Pseudoleskeella Kindb. (Leskeaceae)
nervosa (Brid.) Nyholm
rupestris (Berggr.) Hedenäs & L.Söderstr.[265]
serpentinensis P.S.Wilson & D.H.Norris
tectorum (Funck *ex* Brid.) Kindb.
Pseudoscleropodium (Limpr.) M.Fleisch. (Brachytheciaceae)
purum (Hedw.) M.Fleisch.
Pseudostereodon (Broth.) M.Fleisch.[266] (Pylaisiaceae)
procerrimus (Molendo) M.Fleisch.
Pseudotaxiphyllum Z.Iwats. (Plagiotheciaceae)
elegans (Brid.) Z.Iwats.
subfalcatum (Austin) X.Q.Li, Q.Zuo & Y.F.Wang[267]
Psilopilum Brid. (Polytrichaceae)
cavifolium (Wilson) I.Hagen
laevigatum (Wahlenb.) Lindb.
Pterigynandrum Hedw. (Pterigynandraceae)
filiforme Hedw.
Pterygoneurum Jur., *nom. cons.* (Pottiaceae)
×*kieneri* (Habeeb) W.R.Buck & Goffinet[268]
×*kozlovii* Laz.[269]
lamellatum (Lindb.) Jur.
ovatum (Hedw.) Dixon
subsessile (Brid.) Jur.
Ptilium De Not. (Pylaisiaceae)
crista-castrensis (Hedw.) De Not.
Ptychomitrium Fürnr., *nom. cons.* (Ptychomitriaceae)
drummondii (Wilson) Sull.
gardneri Lesq.
incurvum (Schwägr.) Spruce
serratum Bruch & Schimp.
sinense (Mitt.) A.Jaeger
Pulvigera Plášek, Sawicki & Ochyra[270] (Orthotrichaceae)
howei (Renauld & Cardot) F.Lara, Draper & Garilleti[271]

[257] See Ignatov et al. (2019a).
[258] See Yip (2002).
[259] See Ignatova et al. (2019).
[260] See Vanderpoorten & Hedenäs (2009).
[261] See Vanderpoorten & Hedenäs (2009).
[262] See Cano et al. (2016).
[263] See Fedosov et al. (2022).
[264] See Fedosov et al. (2022).
[265] See Hedenäs & Söderström (1991).
[266] See Câmara et al. (2018).
[267] See Li et al. (2015).
[268] *Pterygoneurum* ×*kieneri* (Habeeb) W.R.Buck & Goffinet comb. et stat. nov. ≡ *P. subsessile* var. *kieneri* Habeeb, Rhodora 51: 128. 1949. type: U.S.A., Nebraska, Chase Co.: 8 mi W of Champion, 31 Jul. 1941, *W. Kiener 10627 p.p.* (neb). See Guerra et al. (1994), who demonstrated that this taxon is a hybrid between *P. ovatum* and *Phascum cuspidatum*. Recognizing this taxon at the species level is treating it like the intergeneric hybrid *Entosthodon* ×*hungaricus* (Boros) Loeske (Beike et al. 2014; Patel et al. 2023). This may be the same taxon as *P.* ×*kozlovii*, but is recognized until additional data are available.
[269] See Guerra et al. (1994) for demonstration of the hybrid nature of this taxon.
[270] See Plášek et al. (2015).

lyellii (Hook. & Taylor) Plášek, Sawicki & Ochyra
papillosa (Hampe) F.Lara, Draper & Garilleti[272]
pringlei (Müll.Hal.) F.Lara, Draper & Garilleti[273]
Pylaisiadelpha Cardot[274] (Pylaisiadelphaceae)
canadensis (W.B.Schofield) W.R.Buck & Goffinet[275]
henonii (Duby) W.R.Buck
recurvans (Michx.) W.R.Buck
roellii (Renauld & Cardot) W.R.Buck
tenuirostris (Bruch & Schimp. *ex* Sull.) W.R.Buck
Pylaisia Schimp., *nom. cons.* (Pylaisiaceae)
intricata (Hedw.) Schimp.
polyantha (Hedw.) Schimp.
selwynii Kindb.[276]
steerei (Ando & Higuchi) Ignatov
Pyramidula Brid. (Funariaceae)
tetragona (Brid.) Brid.
Pyrrhobryum Mitt. (Rhizogoniaceae)
spiniforme (Hedw.) Mitt.
Racomitrium Brid. (Grimmiaceae)
aciculare (Hedw.) Brid.
aduncoides Bedn.-Ochyra[277]
afoninae Frisvoll[278]
affine (Schleich. *ex* F.Weber & D.Mohr) Lindb.
brevipes Kindb.
brevisetum Lindb.[279]
canescens (Hedw.) Brid. subsp. *canescens*
subsp. *latifolium (*C.E.O.Jensen) Frisvoll
corrugatum (Bedn.-Ochyra) Larraín & J.Muñoz[280]
depressum Lesq.
elongatum Ehrh. *ex* Frisvoll
ericoides (Brid.) Brid.
fasciculare (Schrad. *ex* Hedw.) Brid.
heterostichum (Hedw.) Brid.
lanuginosum (Hedw.) Brid.
lawtoniae Ireland
macounii Kindb. subsp. *macounii*
subsp. *alpinum* (E.Lawton) Frisvoll
microcarpon (Hedw.) Brid. fo. *microcarpon*
fo. *afoninae* Frisvoll[281]
molle Cardot[282]
muticum (Kindb.) Frisvoll
norrisii Bedn.-Ochyra & Ochyra[283]
obesum Frisvoll
occidentale (Renauld & Cardot) Renauld & Cardot
pacificum Ireland & J.R.Spence
panschii (Müll.Hal.) Kindb.
pygmaeum Frisvoll
ryszardii Bedn.-Ochyra[284]
sudeticum (Funck) Bruch & Schimp.
varium (Mitt.) A.Jaeger
venustum Frisvoll
Racopilum P.Beauv. (Racopilaceae)
tomentosum (Hedw.) Brid.
Rauiella Reimers (Thuidiaceae)
praelonga (Schimp. *ex* Besch.) Wijk & Margad.
scita (P.Beauv.) Reimers
Rectithecium Hedenäs & Huttunen[285] (Plagiotheciaceae)
piliferum (Sw.) Hedenäs & Huttunen
Redfearnia J.T.Wynns[286] (Plagiotheciaceae)
homomallifolia (Redf.) J.T.Wynns
Rhabdoweisia Bruch & Schimp. (Rhabdoweisiaceae)
crenulata (Mitt.) H.Jameson
crispata (Dicks.) Lindb.
Rhachithecium Broth. *ex* Le Jol. (Rhachitheciaceae)
perpusillum (Thwaites & Mitt.) Broth.
Rhexophyllum Herzog (Pottiaceae)
subnigrum (Mitt.) Hilp.
Rhizogemma Bonfim Santos, Siebel & Fedosov (Rhizogemmaceae)
staphylina (H.Whitehouse) Bonfim Santos, Siebel & Fedosov[287]

[271] See Lara et al. (2020).
[272] See Lara et al. (2020).
[273] See Lara et al. (2020).
[274] See Buck (1984).
[275] Described as *Brotherella canadensis* by Schofield (2006) and accommodated in *Pylaidiadelpha* under the new combination *Pylaidiadelpha canadensis* (W.B.Schofield) W.R.Buck & Goffinet comb. nov. ≡ *Brotherella canadensis* W.B.Schofield, J. Hattori Bot. Lab. 100: 355. 2006. TYPE: Canada, British Columbia: just NE of Webster Island, Effingham Inlet, Barclayl Cound, Vancouver Island, 49°05′N, 125°09′W, *W.B. Schofield 43474* (holotype, UBC).
[276] See Ignatova et al. (2020b).
[277] See Bednarek-Ochyra (1999).
[278] See Ochyra & Bednarek-Ochyra (2007) under *Bucklandiella*.
[279] Currently only known from one unverified collection, *Lyford* (MSC-B-0008248) from Oregon.
[280] Described by Bednarek-Ochyra (2004) as *Codriophorus*.
[281] See Ochyra in Ellis et al. (2018).
[282] See Bednarek-Ochyra & Ochyra (2007) under *Codriophorus*.
[283] See Bednarek-Ochyra & Ochyra (2000).
[284] See Bednarek-Ochyra (2000).
[285] See Huttunen et al. (2013).
[286] See Wynns (2020).
[287] See Whitehouse (2001).

Rhizomnium T.J.Kop. (Mniaceae)
andrewsianum (Steere) T.J.Kop.
appalachianum T.J.Kop.
chlorophyllosum (Kindb.) T.J.Kop.[288]
glabrescens (Kindb.) T.J.Kop.
gracile T.J.Kop.
magnifolium (Horik.) T.J.Kop.
nudum (R.S.Williams) T.J.Kop.
pseudopunctatum (Bruch & Schimp.) T.J.Kop.
punctatum (Hedw.) T.J.Kop.
Rhodobryum (Schimp.) Limpr., *nom. cons.* (Bryaceae)
ontariense (Kindb.) Paris
roseum (Hedw.) Limpr.
Rhynchostegium Schimp., *nom. cons.* (Brachytheciaceae)
aquaticum Spruce[289]
serrulatum (Hedw.) Austin
Rhytidiadelphus (Limpr.) Warnst. (Hylocomiaceae)
japonicus (Reimers) T.J.Kop.
loreus (Hedw.) Warnst.
squarrosus (Hedw.) Warnst.
subpinnatus (Lindb.) T.J.Kop.
Rhytidiopsis Broth. (Hylocomiaceae)
robusta (Hook.) Broth.
Rhytidium (Sull.) Austin *ex* C.F.Parker (Rhytidiaceae)
rugosum (Hedw.) Austin *ex* C.F.Parker
Roaldia P.E.A.S.Câmara & Carv.-Silva[290] (Pylaisiaceae)
revoluta (Mitt.) P.E.A.S.Câmara & Carv.-Silva
Roellobryon Ochyra[291] (Roellobryaceae)
roellii (Broth.) Ochyra
Ruficaulis Bonfim Santos & Fedosov[292] (Ruficaulaceae)
rufescens (Dicks.) Bonfim Santos & Fedosov
Saelania Lindb. (Saelaniaceae)
glaucescens (Hedw.) Broth.
Sanionia Loeske (Amblystegiaceae)
nivalis Hedenäs
orthothecioides (Lindb.) Loeske
symmetrica (Renauld & Cardot) Wheldon
uncinata (Hedw.) Loeske
Schistidium Bruch & Schimp., *nom. cons.* (Grimmiaceae)
agassizii Sull. & Lesq.
ambiguum Sull.[293]
andreaeopsis (Müll.Hal.) Laz.
apocarpum (Hedw.) Bruch & Schimp.
atrichum (Müll.Hal. & Kindb.) W.A.Weber
atrofuscum (Schimp.) Limpr.
boreale Poelt
canadense (Dupr.) Ignatova & H.H.Blom
cinclidodonteum (Müll.Hal.) B.Bremer
confertum (Funck) Bruch & Schimp.
crassipilum H.H.Blom
crassithecium H.H.Blom *ex* B.H.Allen[294]
cryptocarpum Mogensen & H.H.Blom
dupretii (Thér.) W.A.Weber
echinatum Ignatova & H.H. Blom[295]
flaccidum (De Not.) Ochyra
flexipile (Lindb. *ex* Broth.) G.Roth
frigidum H.H.Blom
frisvollianum H.H.Blom
grandirete H.H.Blom
heterophyllum (Kindb.) T.T.McIntosh
holmenianum Steere & Brassard
lancifolium (Kindb.) H.H.Blom[296]
liliputanum (Müll.Hal.) Deguchi
maritimum (Turner *ex* R.R.Scott) Bruch & Schimp.
occidentale (E.Lawton) S.P.Churchill
papillosum Culm.
poeltii H.H.Blom
pulchrum H.H.Blom
relictum T.T.McIntosh, H.H.Blom & Ignatova[297]
rivulare (Brid.) Podp.
robustum (Nees & Hornsch.) H.H.Blom
sinensiapocarpum (Müll.Hal.) Ochyra[298]
splendens T.T.McIntosh, H.H.Blom, D.R.Toren & Shevock[299]
squarrosum T.T.McIntosh, H.H.Blom, D.R. Toren & Shevock[300]
strictum (Turner) Loeske *ex* Mårtensson
subjulaceum H.H.Blom
tenerum (J.E.Zetterst.) Nyholm
teretinerve (Limpr.) Limpr.[301]
trichodon (Brid.) Poelt
venetum H.H.Blom

[288] See Koponen & Sun (2017) and Wyatt et al. (2023).
[289] See Wynns (2006) and Huttunen & Ignatov (2010).
[290] See Câmara et al. (2018).
[291] See Ochyra (2011).
[292] See Fedosov et al. (2023b).
[293] See Sullivant (1849) and Allred et al. (2024).
[294] See Allen (2005).
[295] See Ignatova et al. (2009).
[296] Treated as conspecific with *Schistidium apocarpum* by McIntosh (2007) but here resurrected following Ignatova & Blom (2017).
[297] See McIntosh et al. (2017).
[298] See Allred et al. (2024).
[299] See McIntosh et al. (2015).
[300] See McIntosh et al. (2015).
[301] See Kiebacher & Meier (2021).

Schistostega D.Mohr (SCHISTOSTEGACEAE)
pennata (Hedw.) F.Weber & D.Mohr
Schlotheimia Brid. (ORTHOTRICHACEAE)
lancifolia E.B.Bartram
rugifolia (Hook.) Schwägr.
Schoenobryum Dozy & Molk. (CRYPHAEACEAE)
concavifolium (Griff.) Gangulee[302]
Schwetschkeopsis Broth. (ANOMODONTACEAE)
fabronia (Schwägr.) Broth.
Sciuro-hypnum (Hampe) Hampe[303] (BRACHYTHECIACEAE)
curtum (Lindb.) Ignatov
glaciale (Schimp.) Ignatov & Huttunen
hylotapetum (N.L.Higinb. & B.L.Higinb.) Ignatov & Huttunen
latifolium (Kindb.) Ignatov & Huttunen
oedipodium (Mitt.) Ignatov & Huttunen
ornellanum (Molendo) Ignatov & Huttunen
plumosum (Hedw.) Ignatov & Huttunen
populeum (Hedw.) Ignatov & Huttunen
reflexum (Starke) Ignatov & Huttunen
starkei (Brid.) Ignatov & Huttunen
uncinifolium (Broth. & Paris) Ochyra & Żarnowiec
Scleropodium Schimp. (BRACHYTHECIACEAE)
californicum (Lesq.) Kindb.
cespitans (Müll.Hal.) L.F.Koch
julaceum E.Lawton
obtusifolium (Mitt.) Kindb.
occidentale B.E.Carter[304]
touretii (Brid.) L.F.Koch
Scopelophila (Mitt.) Lindb. (POTTIACEAE)
ligulata (Spruce) Spruce[305]
Scorpidium (Schimp.) Limpr. (CALLIERGONACEAE)
cossonii (Schimp.) Hedenäs
revolvens (Sw.) Rubers
scorpioides (Hedw.) Limpr.
Scouleria Hook. (SCOULERIACEAE)
aquatica Hook.
marginata E.Britton
siskiyouensis Shevock & D.H.Norris[306]

Seligeria Bruch. & Schimp. (SELIGERIACEAE)
acutifolia Lindb.
brevifolia (Lindb.) Lindb. & Arnell
calcarea (Hedw.) Bruch & Schimp.
careyana Vitt & W.B.Schofield
donniana (Sm.) Müll.Hal.
oelandica C.E.O.Jensen & Medelius
pusilla (Hedw.) Bruch & Schimp.
tristichoides Kindb.
Sematophyllum Mitt. (SEMATOPHYLLACEAE)
adnatum (Michx.) E.Britton
demissum (Wilson) Mitt.
marylandicum (Müll.Hal.) E.Britton
Serpoleskea (Hampe *ex* Limpr.) Loeske[307] (PYLAISIADELPHACEAE)
confervoides (Brid.) Loeske
minutissima (Sull. & Lesq.) W.R.Buck & B.H.Allen[308]
Solmsiella Müll.Hal. (ERPODIACEAE)
biseriata (Austin) Steere[309]
Sphagnum L. (SPHAGNACEAE)
affine Renauld & Cardot
alaskense R.E.Andrus & Janssens
angermanicum Melin
angustifolium (C.E.O.Jensen *ex* Russow) C.E.O.Jensen
annulatum H.Lindb. *ex* Warnst.
aongstroemii C.Hartm.
arcticum Flatberg & Frisvoll
austinii Sull.
balticum (Russow) C.E.O.Jensen
beothuk R.E.Andrus
capillifolium (Ehrh.) Hedw.
carolinianum R.E.Andrus
centrale C.E.O.Jensen
compactum DC.
concinnum (Berggr.) Flatberg
contortum Schultz
cribrosum Lindb.
cuspidatum Ehrh. *ex* Hoffm.
cyclophyllum Sull. & Lesq.
diabolicum A.J.Shaw, Aguero & Nieto-Lugilde
divinum Flatberg & K.Hassel
fallax (H.Klinggr.) H.Klinggr.
fimbriatum Wilson
fitzgeraldii Renauld *ex* Lesq.

[302] See Buck (1994).
[303] See Ignatov & Huttunen (2002).
[304] See Carter (2012).
[305] Kuznetsova et al. (2023) recognized the genus *Merceya* Schimp. to accommodate *Merceya ligulata* (Spruce) Schimp., but this generic name is superfluous for the earlier *Scopelophila* (Mitt.) Lindb. (Brinda & Fedosov 2023).
[306] See Shevock & Norris (2014).
[307] See Vanderpoorten & Hedenäs (2009).
[308] See Buck & Allen (2017).
[309] See Pursell (2017).

flavicomans (Cardot) Warnst.
flexuosum Dozy & Molk.
fuscum (Schimp.) H.Klinggr.
girgensohnii Russow
imbricatum Hornsch. *ex* Russow
incundum Flatberg & K.Hassel
inexspectatum Flatberg
jensenii H.Lindb.
junghuhnianum Dozy & Molk.
kenaiense R.E.Andrus
lenense H.Lindb.
lescurii Sull.
lindbergii Schimp.
macrophyllum Bernh. *ex* Brid.
magniae A.J.Shaw, Aguero & Nieto-Lugilde
majus (Russow) C.E.O.Jensen
medium Limpr.
mendocinum Sull. & Lesq.
miyabeanum Warnst.[310]
microcarpum Warnst.
mirum Flatberg & Thingsgaard
mississippiense R.E.Andrus
missouricum Warnst. & Cardot[311]
molle Sull.
obtusum Warnst.
oregonense R.E.Andrus
orientale L.I.Savicz
pacificum Flatberg
palustre L.
papillosum Lindb.
perfoliatum L.I.Savicz
perichaetiale Hampe
platyphyllum (Lindb. *ex* Braithw.) Sull. *ex* Warnst.
portoricense Hampe
pulchrum (Lindb. *ex* Braithw.) Warnst.
pylaesii Brid.
quinquefarium (Lindb. *ex* Braithw.) Warnst.
recurvum P.Beauv.
riparium Ångstr.
rubellum Wilson
rubiginosum Flatberg
russowii Warnst.
splendens Maass
squarrosum Crome
steerei R.E.Andrus
strictum Sull.
subfulvum Sjörs
subnitens Russow & Warnst.
subsecundum Nees
talbotianum R.E.Andrus
tenellum (Brid.) Bory
tenerum Sull. & Lesq. *ex* Sull.
teres (Schimp.) Ångstr.
torreyanum Sull.
trinitense Müll.Hal.
tundrae Flatberg
warnstorfii Russow
wulfianum Girg.

Splachnobryum Müll.Hal. (Pottiaceae)
obtusum (Brid.) Müll.Hal.

Splachnum Hedw. (Splachnaceae)
ampullaceum Hedw.
luteum Hedw.
melanocaulon (Wahlenb.) Schwägr.[312]
pensylvanicum (Brid.) Grout *ex* H.A.Crum
rubrum Hedw.
sphaericum Hedw.
vasculosum Hedw.

Stegonia Venturi (Pottiaceae)
hyalinotricha (Cardot & Thér.) R.H.Zander
latifolia (Schwägr.) Venturi *ex* Broth.
pilifera (Brid.) H.A.Crum & L.E.Anderson

Stereodon (Brid.) Brid.[313] (Stereodontaceae)
callichrous (Brid.) Brid.
hamulosus (Schimp.) Lindb.
holmenii (Ando) Ignatov & Ignatova[314]
pratensis (W.D.J.Koch *ex* Spruce) E.Britton
subimponens (Lesq.) Broth.

Stereophyllum Mitt. (Stereophyllaceae)
radiculosum (Hook.) Spruce

Streblotrichum P.Beauv.[315] (Pottiaceae)
convolutum (Hedw.) P.Beauv. var. *convolutum*
var. *eustegium* (Cardot & Thér.) W.R.Buck & Goffinet[316]

[310] See Shaw et al. (2015).
[311] See Shaw et al. (2012b).
[312] See Worley & Iwatzuki (1970).
[313] See Kučera et al. (2019).
[314] Described by Ando as *Hypnum holmenii* (Ando 1994) and transferred to *Stereodon* by Ignatov & Ignatova (2004).
[315] See Kučera et al. (2013).
[316] Recognized by Zander (2007a) under *Barbula convoluta* and accommodated here in *Streblotrichum* under the new combination *Streblotrichum convolutum* var. *eustegium* (Cardot & Thér.) W.R.Buck & Goffinet comb. nov. ≡ *Barbula eustegia* Cardot & Thér., Bot. Gaz. 30: 17. 1900. TYPE:

var. *gallinula* (R.H.Zander) W.R.Buck & Goffinet[317]

Symblepharis Mont. (Rhabdoweisiaceae)
raui (Austin) R.S.Williams *ex* Broth.[318]
vaginata (Hook. *ex* Harv.) Wijk & Margad.

Syntrichia Brid.[319] (Pottiaceae)
ammonsiana (H.A.Crum & L.E.Anderson) Ochyra
amphidiacea (Müll.Hal.) R.H.Zander[320]
bartramii (Steere) R.H.Zander
caninervis Mitt.
cascadensis W.A.Kramer
chisosa (Magill, Delgad. & L.R.Stark) R.H.Zander
coloradensis W.A.Kramer
fragilis (Taylor) Ochyra
hermannii W.A.Kramer
laevipila Brid.
laeviuscula (Kindb.) W.A.Kramer
latifolia (Bruch *ex* Hartm.) Huebener
leptotricha (Müll.Hal. & Kindb.) W.A.Kramer
lithophila (Dusén) Ochyra & R.H.Zander[321]
norvegica F.Weber var. *norvegica*
var. *cainii* (H.A.Crum & L.E.Anderson) W.A. Kramer
novomexicana W.A.Kramer
obtusissima (Müll.Hal.) R.H.Zander subsp. *obtusissima*
subsp. *stellaris* W.A.Kramer
subsp. *substellaris* W.A.Kramer
ovata W.A.Kramer subsp. *dendropapillosa* W.A. Kramer
subsp. *subdendropapillosa* W.A.Kramer
pagorum (Milde) J.J.Amann
papillosa (Wilson *ex* Spruce) Spruce
princeps (De Not.) Mitt.
ruralis (Hedw.) F.Weber & D.Mohr subsp. *ruralis*
subsp. *hirsuta* (Venturi) Düll
subsp. *subpapillosissima* (Bizot & R.B.Pierrot *ex* W.A.Kramer) W.A.Kramer
sinensis (Müll.Hal.) Ochyra
subintermedia (Renauld & Cardot) W.A.Kramer var. *subintermedia*
var. *umatillae* W.A.Kramer
sucrosa Kellman[322]
virescens (De Not.) Ochyra subsp. *virescens*
subsp. *zailijskialatauensis* W.A.Kramer

Syrrhopodon Schwägr. (Calymperaceae)
gaudichaudii Mont.
incompletus Schwägr. var. *incompletus*
ligulatus Mont.
parasiticus (Sw. *ex* Brid.) Besch.
prolifer Schwägr. var. *scaber* (Mitt.) W.D.Reese
texanus Sull.

Takakia S.Hatt. & Inoue[323] (Takakiaceae)
ceratophylla (Mitt.) Grolle
lepidozioides S.Hatt. & Inoue

Taxiphyllum M.Fleisch. (Taxiphyllaceae)
alternans (Cardot) Z.Iwats.
cuspidifolium (Cardot) Z.Iwats.
deplanatum (Bruch & Schimp. *ex* Sull.) M.Fleisch.
taxirameum (Mitt.) M.Fleisch.

Taxithelium Spruce *ex* Mitt. (Pylaisiadelphaceae)
planum (Brid.) Mitt.

Tayloria Hook. (Splachnaceae)
acuminata Hornsch.
froelichiana (Hedw.) Mitt. *ex* Broth.
hornschuchii (Grev. & Arn.) Broth.
lingulata (Dicks.) Lindb.
serrata (Hedw.) Bruch & Schimp.
splachnoides (Schleich. *ex* Schwägr.) Hook.

Tetraphis Hedw. (Tetraphidaceae)
geniculata Girg. *ex* Milde
pellucida Hedw. var. *pellucida*
var. *trachypoda* (Kindb.) Harpel[324]

U.S.A., Idaho, Latah Co.: Cedar Creek, 1897, *L. F. Henderson* (holotype, p).

[317] Recognized by Zander (2007a) under *Barbula convoluta* and accommodated here in *Streblotrichum* under the new combination *Streblotrichum convolutum* var. *gallinula* (R.H.Zander) W.R.Buck & Goffinet comb. nov. ≡ *Barbula convoluta* Hedw. var. *gallinula* R.H.Zander, Phytologia 44(4): 195. 1979. type: Canada, Northwest Territories, Distr. Mackenzie: Nananni National Park, South Nahanni River, Virginia Falls, 61°38′N, 125°42′W, 3 Sep. 1974, *G. Scotter 22433* (holotype, ny; isotype, buf).

[318] See Fedosov et al. (2021).

[319] The genus was typified by Zander (1989). We follow the treatment by Kramer (2023).

[320] The species was resolved as sister to a species of *Streptopogon* Wilson *ex* Mitt. in Jáuregui-Lazo et al. (2023) consistent with inferences by Gallego et al. (2022). However, in both cases *Streptopogon* is nested within a larger *Syntrichia* clade. We therefore retain *amphidiacea* within *Syntrichia* rather than accepting its transfer to *Streptopogon*, pending further systematic resolution of the complex. However, Kramer (2023) argued for its exclusion from *Syntrichia* and for its recognition within *Tortula* on morphological grounds.

[321] See Brooks & Jáuregui-Lazo (2023).

[322] See Kellman (2008).

[323] See Smith & Davison (1993) and Newton et al. (2000).

[324] See Harpel (2006).

Tetrodontium Schwägr. (Tetraphidaceae)
brownianum (Dicks.) Schwägr.
ovatum (Funck) Schwägr.
repandum (Funck) Schwägr.
Thamnobryum Nieuwl. (Neckeraceae)
neckeroides (Hook.) E.Lawton
subserratum (Hook. *ex* Harv.) Nog. & Z.Iwats.[325]
Thelia Sull. (Theliaceae)
asprella (Schimp.) Sull.
hirtella (Hedw.) Sull.
lescurii Sull.
Thuidium Schimp. (Thuidiaceae)
alleniorum Austin[326]
assimile (Mitt.) A.Jaeger
delicatulum (Hedw.) Schimp.
recognitum (Hedw.) Lindb.
tamariscinum (Hedw.) Schimp.
Timmia Hedw., *nom. cons.* (Timmiaceae)
austriaca Hedw.
bavarica Hessl.
comata Lindb. & Arnell[327]
megapolitana Hedw.
norvegica J.E.Zetterst.
sibirica Lindb. & Arnell
Timmiella (DeNot.) Limpr. (Timmiellaceae)
anomala (Bruch & Schimp.) Limpr.
crassinervis (Hampe) L.F.Koch
Tomentypnum Loeske[328] (Amblystegiaceae)
falcifolium (Renauld *ex* Nichols) Tuom.
involutum (Limpr.) Hedenäs & Ignatov[329]
nitens (Hedw.) Loeske
Tortella (Müll.Hal.) Limpr., *nom. cons.* (Pottiaceae)
alpicola Dixon
arctica (Arnell) Crundw. & Nyholm[330]
×*cuspidatissima* (Cardot & Thér.) O.Werner, Köckinger & Ros[331]
densa (Lorentz & Molendo) Crundw. & Nyholm[332]
flavovirens (Bruch) Broth.
fragilis (Drumm.) Limpr.
humilis (Hedw.) Jenn.
inclinata (R.Hedw.) Limpr.
nitida (Lindb.) Broth. var. *fragilifolia* (Jur.) Köckinger & Hedenäs[333]
rigens Alberts.
spitsbergensis (Bizot & Thér.) O.Werner, Köckinger & Ros[334]
tortuosa (Schrad. *ex* Hedw.) Limpr.
Tortula Hedw., *nom. cons.* (Pottiaceae)
acaulon (With.) R.H.Zander
amplexa (Lesq.) Steere
atrovirens (Sm.) Lindb.
bolanderi (Lesq.) M.Howe
brevipes (Lesq.) Broth.
brevissima Schiffn.[335]
californica E.B.Bartram
caucasica Lindb.
cernua (Huebener) Lindb.
cuneifolia (Dicks.) Turner var. *blissii* R.H.Zander
deciduidentata (Sharp & Z.Iwats.) R.H.Zander
guepinii (Bruch & Schimp.) Broth.
hoppeana (Schultz) Ochyra
inermis (Brid.) Mont.
israelis Bizot & F.Bilewsky[336]
laureri (Schultz) Lindb.
leucostoma (R.Br.) Hook. & Grev.
lindbergii Kindb. *ex* Broth.
mucronifolia Schwägr.
muralis Hedw.
nevadensis (Cardot & Thér.) R.H.Zander
obtusifolia (Schwägr.) Mathieu
plinthobia (Sull. & Lesq.) Broth.
porteri (James) R.H.Zander
protobryoides R.H.Zander
subulata Hedw.
systylia (Schimp.) Lindb.
truncata (Hedw.) Mitt.
vlassovii (Laz.) Ros & Herrnst.[337]

[325] See Mastracci (2003).
[326] Described as *T. alleni* but corrected orthographically because the species was named for two Allens (Austin 1880): "It gives me great pleasure to be able to dedicate so fine a species to the Allens, father and son."
[327] See Hedenäs (2011).
[328] For justification for placement in Amblystegiaceae versus Brachytheciaceae see Hedenäs et al. (2020) and references therein.
[329] See Hedenäs et al. (2020).
[330] See Werner et al. (2014).
[331] See Werner et al. (2014).
[332] See Köckinger et al. (2018).
[333] See Köckinger & Hedenäs (2021).
[334] See Werner et al. (2014).
[335] See Kellman (2012).
[336] See GBIF.org (2024d).
[337] See Ros & Herrnstadt (2010).

Trachycystis Lindb. (Mniaceae)
flagellaris (Sull. & Lesq.) Lindb.
Trachyxiphium W.R.Buck (Pilotrichaceae)
hypnaceum (Müll.Hal.) W.R.Buck
Trematodon Michx. (Bruchiaceae)
ambiguus (Hedw.) Hornsch.
asanoi Tuzibe
brevicollis Hornsch.
laetevirens Hakelier & J.-P.Frahm[338]
longicollis Michx.
montanus Belland & Brassard
Trichodon Schimp. (Ditrichaceae)
cylindricus (Hedw.) Schimp.
oblongus Lindb.[339]
Trichostomopsis Cardot[340] (Pottiaceae)
australasiae (Hook. & Grev.) H.Rob.
umbrosa (Müll.Hal.) H.Rob.[341]
Trichostomum Bruch, *nom. cons.* (Pottiaceae)
brachydontium Bruch
crispulum Bruch
planifolium (Dixon) R.H.Zander
portoricense H.A.Crum & Steere
Tripterocladium (Müll.Hal.) A.Jaeger (Lembophyllaceae)
leucocladulum (Müll.Hal.) A.Jaeger
Triquetrella Müll.Hal. (Pottiaceae)
californica (Lesq.) Grout
Trochophyllohypnum Jan Kučera & Ignatov[342] (Pylaisiadelphaceae)
circinale (Hook.) Jan Kučera & Ignatov
Tuerckheimia Broth. (Pottiaceae)
svihlae (E.B.Bartram) R.H.Zander
Ulota D.Mohr (Orthotrichaceae)
barclayi Mitt.
coarctata (P.Beauv.) Hammar
crispa (Hedw.) Brid.
crispula Bruch[343]
curvifolia (Wahlenb.) Sw.
drummondii (Hook. & Grev.) Brid.
hutchinsiae (Sm.) Hammar var. *hutchinsiae* var. *rufescens* (E.Britton) Dixon
intermedia Schimp.[344]
longifolia Dixon & Sakurai[345]
megalospora Venturi
obtusiuscula Müll.Hal. & Kindb.
reptans Mitt.[346]
Venturiella Müll.Hal. (Erpodiaceae)
acrifolia (Pursell) Pursell[347]
sinensis (Venturi) Müll.Hal. subsp. *angustiannulata* (D.G.Griffin & Sharp) Pursell
Vesicularia (Müll.Hal.) Müll.Hal., *nom. cons.* (Hypnaceae)
vesicularis (Schwägr.) Broth.
Vinealobryum R.H.Zander[348] (Pottiaceae)
brachyphyllum (Sull.) R.H.Zander
californicum (J.A.Jiménez, D.R.Toren & Shevock) R.H.Zander[349]
eckeliae (R.H.Zander) R.H.Zander
insulanum (De Not.) R.H.Zander
nicholsonii (Culm.) R.H.Zander
norrisii (R.H.Zander) J.A.Jiménez & M.J.Cano[350]
rubiginosum (Mitt.) J.A.Jiménez & M.J.Cano[351]
vineale (Brid.) R.H.Zander
Voitia Hornsch.[352] (Splachnaceae)
angustata (Hedw.) W.R.Buck & Goffinet[353]
hyperborea Grev. & Arn.
mnioides (Hedw.) W.R.Buck & Goffinet[354]
nivalis Hornsch.
pallida (I.Hagen) W.R.Buck & Goffinet[355]

[338] See Stehn & Kofranek (2014).
[339] See Fedosov et al. (2024).
[340] See Jiménez et al. (2005, 2022).
[341] See Robinson (1970).
[342] See Kučera et al. (2019).
[343] See Caparrós et al. (2016).
[344] See Caparrós et al. (2016).
[345] Based on western North American (Alaska, British Columbia and Washington) specimens held in NY annotated as such by R. Caparrós in 2012.
[346] The occurrence of this species, originally described from Japan, was considered doubtful by Vitt (2014), although he acknowledged that it may be present. Hence, we prefer to retain it for now.
[347] See Pursell (2017).
[348] See Zander (2013).
[349] See Jiménez et al. (2014).
[350] See Jiménez et al. (2022).
[351] See Jiménez et al. (2022).
[352] Phylogenetic inferences resolve *Voitia* within *Tetraplodon* (Lewis et al. 2014; 2017); *Voitia* being an earlier name (Hornschuch 1818), *Tetrapodon* (Bruch & Schimper 1844) is considered a synonym.
[353] *Voitia angustata* (Hedw.) W.R.Buck & Goffinet comb. nov. ≡ *Splachnum angustatum* Hedw., Sp. Musc. Frond. 51–52. 1801. Holotype, G00040316.
[354] *Voitia mnioides* (Hedw.) W.R.Buck & Goffinet comb. nov. ≡ *Splachnum mnioides* Hedw., Sp. Musc. Frond. 51. 1801. Holotype, G00040318.
[355] *Voitia pallida* (I.Hagen) W.R.Buck & Goffinet comb. nov. ≡ *Tetraplodon pallidus* I.Hagen, Kongel. Norske Vidensk.

paradoxa (R.Br.) W.R.Buck & Goffinet[356]
urceolata (Hedw.) W.R.Buck & Goffinet[357]
Warnstorfia Loeske (Calliergonaceae)
badia (Hartm.) W.R.Buck & Goffinet[358]
exannulata (Schimp.) Loeske[359]
fluitans (Hedw.) Loeske
pseudosarmentosa (Cardot & Thér.) Tuom. & T.J.Kop.
pseudostraminea (Müll.Hal.) Tuom. & T.J.Kop.
sarmentosa (Wahlenb.) Tuom. & T.J.Kop.
straminea (Dicks. *ex* Brid.) W.R.Buck & Goffinet[360]
var. *straminea*
var. *patens* (Lindb.) W.R.Buck & Goffinet[361]
trichophylla (Warnst.) Tuom. & T.J.Kop.
tundrae (Arnell) Loeske
wickesiae (Grout) W.R.Buck & Goffinet[362]
Weissia Hedw. (Pottiaceae)
armata (Thér. & Trab.) Fedosov[363]
brachycarpa (Nees & Hornsch.) Jur.
controversa Hedw.
inoperculata (H.A.Crum) H.A.Crum, Steere & L.E.Anderson
jamaicensis (Mitt.) Grout
ligulifolia (E.B.Bartram) Grout
ludoviciana (Sull.) W.D.Reese & B.A.E.Lemmon
muhlenbergiana (Sw.) W.D.Reese & B.A.E.Lemmon
occidentalis (H.A.Crum) A.H.Stoneb.
phascopsis R.H.Zander
sharpii L.E.Anderson & B.A.E.Lemmon
Wijkia H.A.Crum (Pylaisiadelphaceae)
carlottae (W.B.Schofield) H.A.Crum
Zanderella J.A.Jiménez & M.J.Cano[364] (Pottiaceae)
purpurea (Müll.Hal.) J.A.Jiménez & M.J.Cano
Zelometeorium Manuel (Brachytheciaceae)
patulum (Hedw.) Manuel
Zygodon Hook. & Taylor (Orthotrichaceae)
conoideus (Dicks.) Hook. & Taylor
dentatus (Limpr.) Breidl. *ex* Gams
gracilis Wilson
reinwardtii (Hornsch.) A.Braun
rupestris Schimp. *ex* Lorentz
viridissimus (Dicks.) Brid.

Synonyms and Excluded Taxa

Aloina aloides (W.D.J.Koch *ex* Schultz) Kindb. var. *ambigua* (Bruch & Schimp.) Limpr. ≡ *A. ambigua* (Bruch & Schimp.) Limpr.
Alsia californica (Hook. & Arn.) Sull. ≡ *Neckera californica* Hook. & Arn.
Amblystegium radicale (P.Beauv.) Schimp. ≡ *Pseudocampylium radicale* (P.Beauv.) Vanderp. & Hedenäs
Amblystegium serpens (Hedw.) Schimp. var. *juratzkanum* (Schimp.) Rau & Herv. = *A. serpens* (Hedw.) Schimp.
Amblystegium varium (Hedw.) Lindb. ≡ *Hygroamblystegium varium* (Hedw.) Mönk.
Anacolia menziesii (Turner) Paris var. *baueri* (Hampe) Flowers ≡ *A. baueri* (Hampe) Paris
Andreaea obovata Thed. = *A. alpina* Hedw.

Selsk. Skr. (Trondheim) 1893:75–76. 1894. TYPE: Norway and Sweden, *I. Hagen* (S).

[356] *Voitia paradoxa* (R.Br.) W.R.Buck & Goffinet comb. nov. ≡ *Splachnum paradoxum* R.Br., Chlor. Melvill. 44–45. 1823. TYPE: Canada: inter Fort Enterprise et mare arcticum, *D. Richardson* (BM).

[357] *Voitia urceolata* (Hedw.) W.R.Buck & Goffinet comb. nov. ≡ *Splachnum urceolatum* Hedw., Sp. Musc. Frond. 52. 1801. Holotype, G00040320.

[358] Previously treated as *Loeskypnum badium* (Anderson et al. 1990; Hedenäs 2014a) and here accommodated within *Warnstorfia* under the new combination *Warnstorfia badia* (Hartm.) W.R.Buck & Goffinet comb. nov. ≡ *Hypnum badium* Hartm., Handb. Skan. Fl. (ed. 5) 332. 1849. TYPE: Sweden: Hn. Lul. lpm. Ananas, 23 Jun. 1848, *C.J. Hartman* (holotype, UPS).

[359] See Hedenäs (2006).

[360] Previously treated as *Straminergon straminea* (Dicks. *ex* Brid.) Hedenäs (Hedenäs 2014a) and here accommodated within *Warnstorfia* under the new combination *Warnstorfia straminea* (Dicks. *ex* Brid.) W.R.Buck & Goffinet comb. nov. ≡ *Hypnum stramineum* Dicks. *ex* Brid., Muscol. Recent. 2(2): 172. 1801. TYPE: '3, stramineum' on a sheet with 'Hypnum' species in herb. Dickson (holotype, BM).

[361] Previously recognized as *Calliergon stramineum* var. *patens* (Lindb.) G.Roth (Allen 2014) and here accommodated within *Warnstorfia* under the combination *Warnstorfia straminea* var. *patens* (Lindb.) W.R.Buck & Goffinet comb. nov. ≡ *Amblystegium stramineum* var. *patens* Lindb., Musci Scand. 34. 1879. TYPE: Finland: Helsingfors, *S.O. Lindberg* (holotype, H).

[362] Previously treated as *Loeskypnum wickesiae* (Anderson et al. 1990; Hedenäs 2014a) and here accommodated within *Warnstorfia* under the combination *Warnstorfia wickesiae* (Grout) W.R.Buck & Goffinet comb. nov. ≡ *Calliergon wickesiae* Grout, Moss Fl. N. Amer. 1(4): 250. 1939. TYPE: Canada, Labrador, 1938, *Wickes* (holotype, DUKE).

[363] See Herid et al. (2019).

[364] See Jiménez et al. (2022).

Andreaea rothii F.Weber & D.Mohr var. *papillosa* Müll.Hal. = *A. rothii* F.Weber & D.Mohr subsp. *falcata* (Schimp.) Lindb.

Anoectangium handelii Schiffn. ≡ *Molendoa handelii* (Schiffn.) Brinda & R.H.Zander

Anoectangium incurvans (Schimp. *ex* Besch.) E.B. Bartram = *Molendoa sendtneriana* (Bruch & Schimp.) Limpr.

Anoectangium tenuinerve (Limpr.) Paris = *Molendoa sendtneriana* (Bruch & Schimp.) Limpr.

Anomobryum apiculatum (Schwägr.) D.Bell & Holyoak ≡ *Bryum apiculatum* Schwägr.

Anomobryum filiforme (Dicks.) Husn. = *A. julaceum* (Schrad. *ex* G.Gaertn., B.Mey. & Scherb.) Schimp.

Anomobryum leptostomoides Schimp. = *A. concinnatum* (Spruce) A.Jaeger

Anomodon attenuatus (Hedw.) Huebener ≡ *Pseudanomodon attenuatus* (Hedw.) Ignatov & Fedosov

Anomodon longifolius (Schleich. *ex* Brid.) Hartm. ≡ *Anomodontella longifolia* (Schleich. *ex* Brid.) Ignatov & Fedosov

Anomodon rostratus (Hedw.) Schimp. ≡ *Claopodium rostratum* (Hedw.) Ignatov

Anomodontopsis rugelii (Müll.Hal.) Ignatov & Fedosov ≡ *Anomodon rugelii* (Müll.Hal.) Keissl.

Antitrichia curtipendula (Hedw.) Brid. var. *gigantea* Sull. & Lesq. ≡ *A. gigantea* (Sull. & Lesq.) Kindb.

Aphanorhegma serratum (Wilson & Hook.) Sull. ≡ *Physcomitrium serratum* (Wilson & Hook.) Müll.Hal.

Ardeuma annotinum (Mitt. *ex* Dixon) R.H.Zander & Brinda ≡ *Hymenostylium annotinum* Mitt. *ex* Dixon

Ardeuma aurantiacum (Mitt.) R.H.Zander & Hedd. ≡ *Hymenostylium aurantiacum* Mitt.

Ardeuma insigne (Dixon) R.H.Zander & Hedd. = *Hymenostylium annotinum* Mitt. *ex* Dixon

Ardeuma recurvirostrum (Hedw.) R.H.Zander & Hedd. ≡ *Hymenostylium recurvirostrum* (Hedw.) Dixon

Arrhenopterum heterostichum Hedw. ≡ *Aulacomnium heterostichum* (Hedw.) Bruch & Schimp.

Astomum ludovicianum (Sull.) Sull. ≡ *Weissia ludoviciana* (Sull.) W.D.Reese & B.A.E.Lemmon

Astomum muhlenbergianum (Sw.) Grout ≡ *Weissia muhlenbergiana* (Sw.) W.D.Reese & B.A.E.Lemmon

Astomum occidentale Flowers ≡ *Weissia occidentalis* (Flowers) A.H.Stoneb.

Astomum phascoides (Drumm.) Grout ≡ *Weissia phascopsis* R.H.Zander

Atractylocarpus flagellaceus (Müll.Hal.) R.S.Williams ≡ *Campylopodiella flagellacea* (Müll.Hal.) J.-P. Frahm & Isov.

Atrichum haussknechtii Jur. & Milde = *A. flavisetum* Mitt.

Atrichum oerstedianum (Müll.Hal.) Mitt. - excluded

Atrichum oerstedianum sensu auct. Amer. non (Müll. Hal) Mitt. = *A. crispulum* Schimp. *ex* Besch.[365]

Barbella pendula (Sull.) M.Fleisch. ≡ *Neodicladiella pendula* (Sull.) W.R.Buck

Barbula agraria Hedw. ≡ *Hyophiladelphus agrarius* (Hedw.) R.H.Zander

Barbula amplexifolia (Mitt.) A.Jaeger ≡ *Hydrogonium amplexifolium* (Mitt.) P.C.Chen

Barbula bolleana (Müll.Hal.) Broth. ≡ *Hydrogonium bolleanum* (Müll.Hal.) A.Jaeger

Barbula cancellata Müll.Hal. ≡ *Hydrogonium consanguineum* (Thwaites & Mitt.) Hilp. var. *cancellatum* (Müll.Hal.) Jan Kučera

Barbula convoluta Hedw. var. *convoluta* ≡ *Streblotrichum convolutum* (Hedw.) P.Beauv.

Barbula convoluta Hedw. var. *eustegia* (Cardot & Thér.) R.H.Zander ≡ *Streblotrichum convolutum* (Hedw.) P.Beauv. var. *eustegium* (Cardot & Thér.) W.R.Buck & Goffinet

Barbula convoluta Hedw. var. *gallinula* R.H.Zander ≡ *Streblotrichum convolutum* (Hedw.) P.Beauv. var. *gallinula* (R.H.Zander) W.R.Buck & Goffinet

Barbula coreensis (Cardot) K.Saito = *Hydrogonium amplexifolium* (Mitt.) P.C.Chen

Barbula cruegeri Sond. *ex* Müll.Hal. ≡ *Hydrogonium cruegeri* (Sond. *ex* Müll.Hal.) Jan Kučera

Barbula ehrenbergii (Lorentz) M.Fleisch. = *Hydrogonium bolleanum* (Müll.Hal.) A.Jaeger

Barbula eustegia Cardot & Thér. ≡ *Streblotrichum convolutum* (Hedw.) P.Beauv. var. *eustegium* (Cardot & Thér.) W.R.Buck & Goffinet

Barbula indica Brid. *ex* Broth. = *Hydrogonium orientale* (F.Weber) Jan Kučera

Barbula indica Brid. *ex* Broth. var. *gregaria* (Mitt.) R.H.Zander ≡ *Hydrogonium gregarium* (Mitt.) Jan Kučera

Bartramia glauca Lorentz = *B. potosica* Mont.

Bartramia microstoma Mitt. - excluded

Bartramia microstoma sensu auct. Amer. non Mitt. = *B. brevifolia* Brid.[366]

[365] See Merrill & Ireland (2007).

Bartramidula wilsonii Bruch & Schimp. = *Philonotis cernua* (Wilson) D.G.Griffin & W.R.Buck[367]

Brachymenium klotzschii (Schwägr.) Paris - excluded

Brachymenium klotzschii sensu auct. Amer. non (Schwägr.) Paris = *B. macrocarpum* Cardot[368]

Brachythecium biventrosum (Müll.Hal.) A.Jaeger = *B. acuminatum* (Hedw.) Austin

Brachythecium bolanderi (Lesq.) A.Jaeger ≡ *Koponeniella bolanderi* (Lesq.) Huttunen & Ignatov

Brachythecium calcareum Kindb. = *B. campestre* (Müll.Hal.) Schimp.

Brachythecium collinum (Schleich. *ex* Müll.Hal.) Schimp. ≡ *Brachytheciastrum collinum* (Schleich. *ex* Müll.Hal.) Ignatov & Huttunen

Brachythecium delicatulum Flowers ≡ *Brachytheciastrum delicatulum* (Flowers) Ignatov

Brachythecium digastrum Müll.Hal. & Kindb. = *B. laetum* (Brid.) Schimp.

Brachythecium edentatum R.S.Williams = *Drepanocladus aduncus* (Hedw.) Warnst.[369]

Brachythecium fendleri (Sull.) A.Jaeger ≡ *Brachytheciastrum fendleri* (Sull.) Ochyra & Żarnowiec

Brachythecium glaciale Schimp. ≡ *Sciuro-hypnum glaciale* (Schimp.) Ignatov & Huttunen

Brachythecium groenlandicum (C.E.O.Jensen) Schljakov = *B. tauriscorum* Molendo & Lorentz

Brachythecium holzingeri (Grout) Grout = *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen

Brachythecium hylotapetum B.L.Higinb. & N.L.Higinb. ≡ *Sciuro-hypnum hylotapetum* (B.L.Higinb. & N. L.Higinb.) Ignatov & Huttunen

Brachythecium latifolium Kindb. ≡ *Sciuro-hypnum latifolium* (Kindb.) Ignatov & Huttunen

Brachythecium leibergii Grout ≡ *Brachytheciastrum leibergii* (Grout) Ignatov & Huttunen

Brachythecium mildeanum (Schimp.) Schimp. *ex* Milde – excluded[370]

Brachythecium nelsonii Grout = *Sciuro-hypnum latifolium* (Kindb.) Ignatov & Huttunen

Brachythecium oedipodium (Mitt.) A.Jaeger ≡ *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen

Brachythecium oxycladon (Brid.) A.Jaeger = *B. acuminatum* (Hedw.) Austin

Brachythecium oxycladon sensu auct. Amer. non (Brid.) A.Jaeger = *B. laetum* (Brid.) Schimp.[371]

Brachythecium plumosum (Hedw.) Schimp. ≡ *Sciuro-hypnum plumosum* (Hedw.) Ignatov & Huttunen

Brachythecium populeum (Hedw.) Schimp. ≡ *Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen

Brachythecium reflexum (Starke) Schimp. ≡ *Sciuro-hypnum reflexum* (Starke) Ignatov & Huttunen

Brachythecium rotaeanum De Not. = *B. capillaceum* (F.Weber & D.Mohr) Giacom.

Brachythecium starkei (Brid.) Schimp. ≡ *Sciuro-hypnum starkei* (Brid.) Ignatov & Huttunen

Brachythecium stereopoma (Spruce *ex* Mitt.) A. Jaeger = *B. ruderale* (Brid.) W.R.Buck

Brachythecium trachypodium (Brid.) Schimp. ≡ *Brachytheciastrum trachypodium* (Brid.) Ignatov & Huttunen

Brachythecium velutinum (Hedw.) Schimp. ≡ *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen

Brotherella canadensis W.B.Schofield ≡ *Pylaisiadelpha canadensis* (W.B.Schofield) W.R.Buck & Goffinet

Brotherella henonii (Duby) M.Fleisch. ≡ *Pylaisiadelpha henonii* (Duby) W.R.Buck

Brotherella recurvans (Michx.) M.Fleisch. ≡ *Pylaisiadelpha recurvans* (Michx.) W.R.Buck

Brotherella roellii (Renauld & Cardot) M.Fleisch. ≡ *Pylaisiadelpha roellii* (Renauld & Cardot) W.R. Buck

Bryhnia graminicolor (Brid.) Grout ≡ *Koponeniella graminicolor* (Brid.) Huttunen, Ignatov, Min Li & Y.F.Wang

Bryhnia hultenii E.B.Bartram ≡ *Brachythecium novae-angliae* (Sull. & Lesq.) Austin subsp. *hultenii* (E.B. Bartram) Huttunen

Bryhnia novae-angliae (Sull. & Lesq.) Grout ≡ *Brachythecium novae-angliae* (Sull. & Lesq.) Austin

Bryochenea sachalinensis (Lindb.) C.Gao & K.C. Chang ≡ *Echinophyllum sachalinense* (Lindb.) T.J.O'Brien

Bryoerythrophyllum recurvum (Griff.) K.Saito ≡ *Bellibarbula recurva* (Griff.) R.H.Zander

[366] See Griffin (2014).
[367] See Griffin & Buck (1989).
[368] See Spence (2014).
[369] See Żarnowiec (2001).
[370] See Ignatov (2014).
[371] See Robinson & Ignatov (1997).

Bryohaplocladium angustifolium (Hampe & Müll. Hal.) R.Watan. & Z.Iwats. ≡ *Haplocladium angustifolium* (Hampe & Müll.Hal.) Broth.

Bryohaplocladium microphyllum (Sw. *ex* Hedw.) R. Watan. & Z.Iwats. ≡ *Haplocladium microphyllum* (Sw. *ex* Hedw.) Broth.

Bryohaplocladium virginianum (Brid.) R.Watan. & Z.Iwats. ≡ *Haplocladium virginianum* (Brid.) Broth.

Bryum axel-blyttii H.Philb. = *B. calophyllum* R.Br.[372]

Bryum badium (Brid.) Bruch *ex* Milde = *B. imbricatulum* Müll.Hal.

Bryum barnesii J.B.Wood *ex* Schimp. = *B. dichotomum* Hedw.

Bryum capillare Hedw. var. *ferchelii* (Funck *ex* Brid.) Bruch & Schimp. = *B. elegans* Nees *ex* Brid.

Bryum gemmascens Kindb. = *B. sanguilentum* Renauld & Cardot

Bryum laevifilum Syed = *B. moravicum* Podp.

Bryum lisae De Not. var. *cuspidatum* (Bruch & Schimp.) Margad. = *B. creberrimum* Taylor

Bryum longisetum Blandow *ex* Schwägr. var. *labradorense* (H.Philib.) C.E.O.Jensen = *B. longisetum* Blandow *ex* Schwägr. var. *longisetum*

Bryum porsildii (I.Hagen) C.J.Cox & Hedd. = *Haplodontium macrocarpum* (Drumm.) J.R.Spence

Bryum pyriferum Crundw. & H.Whitehouse = *B. valparaisense* Thér.[373]

Bryum renauldii Röll - excluded[374]

Bryum stirtonii Schimp. = *B. elegans* Nees *ex* Brid.

Buckiella undulata (Hedw.) Ireland ≡ *Plagiothecium undulatum* (Hedw.) Schimp.

Bucklandiella affinis (Schleich. *ex* F.Weber & D. Mohr) Bedn.-Ochyra & Ochyra ≡ *Racomitrium affine* (Schleich. *ex* F.Weber & D.Mohr) Lindb.

Bucklandiella afoninae (Frisvoll) Bedn.-Ochyra & Ochyra ≡ *Racomitrium afoninae* Frisvoll

Bucklandiella brevipes (Kindb.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium brevipes* Kindb.

Bucklandiella heterosticha (Hedw.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium heterostichum* (Hedw.) Brid.

Bucklandiella lawtoniae (Ireland) Bedn.-Ochyra & Ochyra ≡ *Racomitrium lawtoniae* Ireland

Bucklandiella macounii (Kindb.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium macounii* Kindb.

Bucklandiella macounii (Kindb.) Bedn.-Ochyra & Ochyra subsp. *alpina* (E.Lawton) Bedn.-Ochyra & Ochyra ≡ *Racomitrium macounii* Kindb. subsp. *alpinum* (E.Lawton) Frisvoll

Bucklandiella microcarpos (Hedw.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium microcarpon* (Hedw.) Brid.

Bucklandiella obesa (Frisvoll) Bedn.-Ochyra & Ochyra ≡ *Racomitrium obesum* Frisvoll

Bucklandiella occidentalis (Renauld & Cardot) Bedn.-Ochyra & Ochyra ≡ *Racomitrium occidentale* (Renauld & Cardot) Renauld & Cardot

Bucklandiella pacifica (Ireland & J.R.Spence) Bedn.-Ochyra & Ochyra ≡ *Racomitrium pacificum* Ireland & J.R.Spence

Bucklandiella sudetica (Funck) Bedn.-Ochyra & Ochyra ≡ *Racomitrium sudeticum* (Funck) Bruch & Schimp.

Bucklandiella venusta (Frisvoll) Bedn.-Ochyra & Ochyra ≡ *Racomitrium venustum* Frisvoll

Calliergon cordifolium (Hedw.) Kindb. subsp. *orbicularicordatum* (Renauld & Cardot) Grout ≡ *C. orbicularicordatum* (Renauld & Cardot) Broth.

Calliergon macounii Kindb. = *C. richardsonii* (Mitt.) Kindb. *ex* G.Roth

Calliergon obtusifolium Karczm. = *C. richardsonii* (Mitt.) Kindb. *ex* G.Roth

Calliergon stramineum (Dicks. *ex* Brid.) Kindb. ≡ *Warnstorfia straminea* (Dicks. *ex* Brid.) W.R. Buck & Goffinet

Calliergon stramineum (Dicks. *ex* Brid.) Kindb. var. *patens* (Lindb.) G.Roth ≡ *Warnstorfia straminea* (Dicks. *ex* Brid.) W.R.Buck & Goffinet var. *patens* (Lindb.) W.R.Buck & Goffinet

Calliergon trifarium (F.Weber & D.Mohr) Kindb. ≡ *Drepanocladus trifarius* (F.Weber & D.Mohr) Broth.

Campyliadelphus chrysophyllus (Brid.) Kanda ≡ *Campylium chrysophyllum* (Brid.) Lange

Campylium halleri (Hedw.) Lindb. ≡ *Campylophyllum halleri* (Hedw.) M.Fleisch.

Campylium hispidulum (Brid.) Mitt. ≡ *Campylophyllopsis hispidula* (Brid.) Ochyra

Campylium polygamum (Schimp.) Lange & C.E.O. Jensen ≡ *Drepanocladus polygamus* (Schimp.) Hedenäs

[372] See Holyoak (2004).
[373] See Arts et al. (1995).
[374] See Toren et al. (2024).

Campylium radicale (P.Beauv.) Grout ≡ *Pseudocampylium radicale* (P.Beauv.) Vanderp. & Hedenäs

Campylium stellatum (Hedw.) Lange & C.E.O. Jensen var. *arcticum* (R.S.Williams) L.I.Savicz ≡ *Drepanocladus arcticus* (R.S.Williams) Hedenäs

Campylium stellatum (Hedw.) Lange & C.E.O. Jensen var. *protensum* (Brid.) Bryhn ≡ *C. protensum* (Brid.) Kindb.

Campylophyllum hispidulum (Brid.) Hedenäs ≡ *Campylophyllopsis hispidula* (Brid.) Ochyra

Campylophyllum sommerfeltii (Myrin) Hedenäs ≡ *Campylophyllopsis sommerfeltii* (Myrin) Ochyra

Campylopus aureus Bosch & Sande Lac. = *C. schmidii* (Müll.Hal.) A.Jaeger

Campylopus japonicus Broth. = *C. sinensis* (Müll. Hal.) J.-P.Frahm

Campylopus paradoxus Wilson = *C. flexuosus* (Hedw.) Brid.

Campylopus schwarzii Schimp. = *C. gracilis* (Mitt.) A.Jaeger

Campylopus subporodictyon (Broth.) B.H.Allen & Ireland ≡ *Atractylocarpus subporodictyon* (Broth.) Bonfim Santos & M.Stech

Campylopus zygodonticarpus (Müll.Hal.) Paris – excluded[375]

Ceratodon purpureus (Hedw.) Brid. subsp. *conicus* (Hampe *ex* Müll.Hal.) Dixon ≡ *C.* ×*conicus* (Hampe *ex* Müll.Hal.) Lindb.

Ceratodon purpureus (Hedw.) Brid. var. *rotundifolius* Berggr. = *C. heterophyllus* Kindb.

Ceratodon purpureus (Hedw.) Brid. subsp. *stenocarpus* (Bruch & Schimp.) Dixon ≡ *C. stenocarpus* Bruch & Schimp.

Cirriphyllum brandegeei (Austin) Grout ≡ *Brachythecium brandegeei* (Austin) H.Rob.

Cirriphyllum cirrosum (Schwägr.) Grout ≡ *Brachythecium cirrosum* (Schwägr.) Schimp.

Codriophorus acicularis (Hedw.) P.Beauv. ≡ *Racomitrium aciculare* (Hedw.) Brid.

Codriophorus aduncoides (Bedn.-Ochyra) Bedn.-Ochyra & Ochyra ≡ *Racomitrium aduncoides* Bedn.-Ochyra

Codriophorus brevisetus (Lindb.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium brevisetum* Lindb.

Codriophorus corrugatus Bedn.-Ochyra ≡ *Racomitrium corrugatum* (Bedn.-Ochyra) Larraín & J.Muñoz

Codriophorus depressus (Lesq.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium depressum* Lesq.

Codriophorus fascicularis (Schrad. *ex* Hedw.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium fasciculare* (Schrad. *ex* Hedw.) Brid.

Codriophorus mollis (Cardot) Bedn.-Ochyra & Ochyra ≡ *Racomitrium molle* Cardot

Codriophorus norrisii (Bedn.-Ochyra & Ochyra) Bedn.-Ochyra & Ochyra ≡ *Racomitrium norrisii* Bedn.-Ochyra & Ochyra

Codriophorus ryszardii (Bedn.-Ochyra) Bedn.-Ochyra & Ochyra ≡ *Racomitrium ryszardii* Bedn.-Ochyra

Codriophorus varius (Mitt.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium varium* (Mitt.) A.Jaeger

Cratoneuron arcticum Steere = *Hygroamblystegium varium* (Hedw.) Mönk.[376]

Crossidium rosei R.S.Williams - excluded[377]

Crumia deciduidentata Sharp & Z.Iwats. ≡ *Tortula deciduidentata* (Sharp & Z.Iwats.) R.H.Zander

Ctenidium malacodes Mitt. - excluded

Ctenidium malacodes sensu auct. Amer. non Mitt. = *C. subrectifolium* (Brid.) G.Pedano *ex* W.R.Buck & B.H.Allen[378]

Ctenidium molluscum (Hedw.) Mitt. - excluded

Ctenidium molluscum sensu auct. Amer. non (Hedw.) Mitt. = *C. subrectifolium* (Brid.) G.Pedano *ex* W. R.Buck & B.H.Allen[379]

Cynodontium alpestre (Wahlenb.) Milde ≡ *Cnestrum alpestre* (Wahlenb.) Nyholm

Cynodontium glaucescens (Lindb. & Arnell) Kindb. ≡ *Cnestrum glaucescens* (Lindb. & Arnell) Holmen *ex* Mogensen & Steere

Cynodontium schisti (F.Weber & D.Mohr) Lindb. ≡ *Cnestrum schisti* (F.Weber & D.Mohr) I.Hagen

Cyrto-hypnum involvens (Hedw.) W.R.Buck & H.A. Crum ≡ *Pelekium involvens* (Hedw.) Touw

Cyrto-hypnum minutulum (Hedw.) W.R.Buck & H. A.Crum ≡ *Pelekium minutulum* (Hedw.) Touw

Cyrto-hypnum pygmaeum (Schimp.) W.R.Buck & H.A.Crum ≡ *Pelekium pygmaeum* (Schimp.) Touw

[375] See Frahm (2007).

[376] See Ochyra (1989) for synonymy as *Pseudoleskea chilensis* (Lor.) Ochyra = *Hygroamblyamblystegium varium.*

[377] See Delgadillo (1996).

[378] See Buck & Allen (2004).

[379] See Buck & Allen (2004).

Cyrto-hypnum schistocalyx (Müll.Hal.) W.R.Buck & H.A.Crum ≡ *Pelekium schistocalyx* (Müll.Hal.) Touw

Desmatodon cernuus (Huebener) Bruch & Schimp. ≡ *Tortula cernua* (Huebener) Lindb.

Desmatodon convolutus (Brid.) Grout = *Tortula atrovirens* (Sm.) Lindb.

Desmatodon guepinii Bruch & Schimp. ≡ *Tortula guepinii* (Bruch & Schimp.) Broth.

Desmatodon heimii (Hedw.) Mitt. ≡ *Hennediella heimii* (Hedw.) R.H.Zander

Desmatodon heimii (Hedw.) Mitt. var. *arcticus* (Lindb.) H.A.Crum = *Hennediella heimii* (Hedw.) R.H.Zander

Desmatodon latifolius (Hedw.) Brid. = *Tortula hoppeana* (Schultz) Ochyra[380]

Desmatodon laureri (Schultz) Bruch & Schimp. ≡ *Tortula laureri* (Schultz) Lindb.

Desmatodon leucostoma (R.Br.) Berggr. ≡ *Tortula leucostoma* (R.Br.) Hook. & Grev.

Desmatodon obtusifolius (Schwägr.) Schimp. ≡ *Tortula obtusifolia* (Schwägr.) Mathieu

Desmatodon plinthobius Sull. & Lesq. ≡ *Tortula plinthobia* (Sull. & Lesq.) Austin

Desmatodon porteri James ≡ *Tortula porteri* (James) Broth.

Desmatodon randii (Kenn.) Laz. = *Tortula cernua* (Huebener) Lindb.

Desmatodon systylius Schimp. ≡ *Tortula systylia* (Schimp.) Lindb.

Dicranella crispa (Hedw.) Schimp. ≡ *Dicranellopsis crispa* (Hedw.) Bonfim Santos, Siebel & Fedosov

Dicranella grevilleana (Brid.) Schimp. ≡ *Aongstroemia grevilleana* (Brid.) Müll.Hal.

Dicranella howei Renauld & Cardot ≡ *Calcidicranella howei* (Renauld & Cardot) Bonfim Santos, Fedosov & Jan Kučera

Dicranella pacifica W.B.Schofield ≡ *Calcidicranella pacifica* (W.B.Schofield) Jan Kučera & Fedosov

Dicranella palustris (Dicks.) Crundw. *ex* E.F.Warb. ≡ *Diobelonella palustris* (Dicks.) Ochyra

Dicranella rufescens (With.) Schimp. ≡ *Ruficaulis rufescens* (With.) Bonfim Santos & Fedosov

Dicranella schreberiana (Hedw.) Dixon ≡ *Aongstroemia schreberiana* (Hedw.) Bonfim Santos & Fedosov

Dicranella schreberiana (Hedw.) Dixon var. *robusta* (Schimp. *ex* Braithw.) H.A.Crum & L.E. Anderson = *Aongstroemia canadensis* (Mitt.) Siebel & Fedosov

Dicranella staphylina H.Whitehouse ≡ *Rhizogemma staphylina* (H.Whitehouse) Bonfim Santos, Siebel & Fedosov.

Dicranella stickinensis Grout = *Dicranellopsis subulata* (Hedw.) Bonfim Santos, Siebel & Fedosov

Dicranella subulata (Hedw.) Schimp. ≡ *Dicranellopsis subulata* (Hedw.) Bonfim Santos, Siebel & Fedosov

Dicranella varia (Hedw.) Schimp. ≡ *Calcidicranella varia* (Hedw.) Bonfim Santos, Fedosov & Jan Kučera

Dicranodontium subporodictyon Broth. ≡ *Atractylocarpus subporodictyon* (Broth.) Bonfim Santos & M.Stech

Dicranoweisia crispula (Hedw.) Milde ≡ *Hymenoloma crispulum* (Hedw.) Ochyra

Dicranum angustum Lindb. = *D. spadiceum* J.E.Zetterst.

Dicranum fuscescens Turner var. *flexicaule* (Brid.) Wilson ≡ *D. flexicaule* Brid.

Dicranum latifolium J.J.Amann = *D. scoparium* Hedw.

Didymodon asperifolius (Mitt.) H.A.Crum, Steere & L.E.Anderson ≡ *Husnotiella asperifolia* (Mitt.) J. A.Jiménez & M.J.Cano

Didymodon australasiae (Hook. & Grev.) R.H. Zander ≡ *Trichostomopsis australasiae* (Hook. & Grev.) H.Rob.

Didymodon bistratosus Hébrard & R.B.Pierrot = *Zanderella purpurea* (Müll.Hal.) J.A.Jiménez & M.J.Cano

Didymodon brachyphyllus (Sull.) R.H.Zander ≡ *Vinealobryum brachyphyllum* (Sull.) R.H. Zander

Didymodon californicus J.A. Jiménez, D.R. Toren & Shevock ≡ *Vinealobryum californicum* (J.A. Jiménez, D.R. Toren & Shevock) R.H. Zander

Didymodon constrictus (Mitt.) K.Saito ≡ *Geheebia constricta* (Mitt.) R.H.Zander & Caners

Didymodon eckeliae R.H.Zander ≡ *Vinealobryum eckeliae* (R.H.Zander) R.H.Zander

Didymodon fallax (Hedw.) R.H.Zander ≡ *Geheebia fallax* (Hedw.) R.H.Zander

Didymodon fallax (Hedw.) R.H.Zander var. *reflexus* (Brid.) R.H.Zander = *Geheebia ferruginea* (Schimp. *ex* Besch.) R.H.Zander

Didymodon ferrugineus (Schimp. *ex* Besch.) M.O. Hill ≡ *Geheebia ferruginea* (Schimp. *ex* Besch.) R.H.Zander

[380] See Ochyra (2004).

Didymodon fragilicuspis Broth. ≡ *Husnotiella fragilicuspis* (Broth.) J.A.Jiménez & M.J.Cano
Didymodon giganteus (Funck) Jur. ≡ *Geheebia gigantea* (Funck) Boulay
Didymodon johansenii (R.S.Williams) H.A.Crum ≡ *Husnotiella johansenii* (R.S.Williams) J.A.Jiménez & M.J.Cano
Didymodon leskeoides K.Saito ≡ *Geheebia leskeoides* (K.Saito) R.H.Zander
Didymodon maximus (Syed & Crundw.) M.O.Hill ≡ *Geheebia maxima* (Syed & Crundw.) R.H.Zander
Didymodon michiganensis (Steere) K.Saito = *D. maschalogena* (Renauld & Cardot) Broth.
Didymodon murrayae Otnyukova = *Husnotiella fragilicuspis* (Broth.) J.A.Jiménez & M.J.Cano
Didymodon nevadensis R.H.Zander ≡ *Gertrudiella nevadensis* (R.H.Zander) J.A.Jiménez & M.J.Cano
Didymodon nicholsonii Culm. ≡ *Vinealobryum nicholsonii* (Culm.) R.H.Zander
Didymodon norrisii R.H.Zander ≡ *Vinealobryum norrisii* (R.H.Zander) J.A.Jiménez & M.J.Cano
Didymodon reedii H.Rob. = *D. tectorum* (Müll.Hal.) K.Saito
Didymodon revolutus (Cardot) R.S.Williams ≡ *Husnotiella revoluta* Cardot
Didymodon rigidulus Hedw. var. *ditrichoides* (Broth.) R.H.Zander ≡ *D. ditrichoides* (Broth.) X.J.Li & S. He
Didymodon rigidulus Hedw. var. *gracilis* (Hook. & Grev.) R.H.Zander = *D. acutus* (Brid.) K.Saito
Didymodon rigidulus Hedw. var. *icmadophilus* (Schimp. *ex* Müll.Hal.) R.H.Zander ≡ *D. icmadophilus* (Schimp. *ex* Müll.Hal.) K.Saito
Didymodon rigidulus Hedw. var. *subulatus* (Thér. & E.B.Bartram) R.H.Zander ≡ *D. novae-hispaniae* J.A.Jiménez & M.J.Cano
Didymodon tophaceus (Brid.) Lisa ≡ *Geheebia tophacea* (Brid.) R.H.Zander
Didymodon umbrosus (Müll.Hal.) R.H.Zander ≡ *Trichostomopsis umbrosa* (Müll.Hal.) H.Rob.
Didymodon vinealis (Brid.) R.H.Zander ≡ *Vinealobryum vineale* (Brid.) R.H.Zander
Didymodon vinealis (Brid.) R.H.Zander var. *brachyphyllus* (Sull.) R.H.Zander ≡ *Vinealobryum brachyphyllum* (Sull.) R.H.Zander
Didymodon vinealis (Brid.) R.H.Zander var. *flaccidus* (Bruch & Schimp.) R.H.Zander = *Vinealobryum insulanum* (De Not.) R.H.Zander
Didymodon vinealis (Brid.) R.H.Zander var. *luridus* (Hornsch. *ex* Spreng.) R.H.Zander ≡ *Geheebia lurida* (Hornsch. *ex* Spreng.) J. A.Jiménez & M.J.Cano
Didymodon vinealis (Brid.) R.H.Zander var. *nicholsonii* (Culm.) R.H.Zander ≡ *Vinealobryum nicholsonii* (Culm.) R.H.Zander
Didymodon vinealis (Brid.) R.H.Zander var. *rubiginosus* (Mitt.) R.H.Zander ≡ *Vinealobryum rubiginosum* (Mitt.) J.A.Jiménez & M.J.Cano
Dilutineuron brevisetum (Lindb.) Bedn.-Ochyra, Sawicki, Ochyra, Szczecińska & Plášek ≡ *Racomitrium brevisetum* Lindb.
Dilutineuron corrugatum (Bedn.-Ochyra) Bedn.-Ochyra, Sawicki, Ochyra, Szczecińska & Plášek ≡ *Racomitrium corrugatum* (Bedn.-Ochyra) Larraín & J.Muñoz
Dilutineuron fasciculare (Schrad. *ex* Hedw.) Bedn.-Ochyra, Sawicki, Ochyra, Szczecińska & Plášek ≡ *Racomitrium fasciculare (*Schrad. *ex* Hedw.) Brid.
Diphyscium cumberlandianum Harvill = *D. mucronifolium* Mitt. *ex* Dozy & Molk.
Distichium capillaceum (Hedw.) Bruch & Schimp. var. *curvatum* Flowers = *D. capillaceum* (Hedw.) Bruch & Schimp.[381]
Ditrichum flexicaule (Schwägr.) Brockm. ≡ *Flexitrichum flexicaule* (Schwägr.) Ignatov & Fedosov
Ditrichum gracile (Mitt.) Kuntze ≡ *Flexitrichum gracile* (Mitt.) Ignatov & Fedosov
Ditrichum zonatum (Brid.) Braithw. var. *scabrifolium* Dixon = *D. zonatum* (Brid.) Braithw.
Drepanocladus aduncus (Hedw.) Warnst. var. *kneiffii* (Schimp.) Grout = *D. aduncus* (Hedw.) Warnst.
Drepanocladus aduncus (Hedw.) Warnst. var. *polycarpos* (Blandow *ex* Voit) G.Roth = *D. aduncus* (Hedw.) Warnst.[382]
Drepanocladus crassicostatus Janssens = *D. capillifolius* (Warnst.) Warnst.
Drepanocladus longifolius (Wilson *ex* Mitt.) Broth. *ex* Paris - excluded, see *D. capillifolius* (Warnst.) Warnst.[383]
Drepanocladus pseudosarmentosus (Cardot & Thér.) Perss. ≡ *Warnstorfia pseudosarmentosa* (Cardot & Thér.) Tuom. & T.J.Kop.

[381] See Hedenäs (2021).
[382] See Hedenäs (2008b).
[383] See Saługa et al. (2018).

Drepanocladus sendtneri (Schimp. *ex* H.Müll.) Warnst. – excluded[384]
Drepanocladus simplicissimus Warnst. = *D. aduncus* (Hedw.) Warnst.[385]
Dryptodon incurvus Schwägr. = *Grimmia elatior* Bruch *ex* Bals.-Criv. & De Not.
Encalypta affinis R.Hedw. var. *macounii* (Austin) H. A.Crum & L.E.Anderson ≡ *E. affinis* R.Hedw. subsp. *macounii* (Austin) D.G.Horton
Encalypta brevicolla (Bruch & Schimp.) Ångstr. var. *crumiana* (D.G.Horton) H.A.Crum & L.E. Anderson ≡ *E. brevicolla* (Bruch & Schimp.) Ångstr. subsp. *crumiana* D.G.Horton
Encalypta intermedia Jur. = *E. pilifera* Funck
Encalypta microstoma Bals.-Criv. & De Not. - excluded[386]
Encalypta sibirica (Weinm.) Warnst. - excluded[387]
Entodon compressus (Hedw.) Müll.Hal. = *E. challengeri* (Paris) Cardot
Epipterygium tozeri (Grev.) Lindb. - excluded
Epipterygium tozeri sensu auct. Amer. non (Grev.) Lindb. = *E. biauritum* Hanusch[388]
Erpodium acrifolium Pursell ≡ *Venturiella acrifolia* (Pursell) Pursell
Erpodium biseriatum (Austin) Austin ≡ *Solmsiella biseriata* (Austin) Steere
Eurhynchium hians (Hedw.) Sande Lac. ≡ *Oxyrrhynchium hians* (Hedw.) Loeske
Eurhynchium oreganum (Sull.) A.Jaeger ≡ *Kindbergia oregana* (Sull.) Ochyra
Eurhynchium praelongum (Hedw.) Schimp. ≡ *Kindbergia praelonga* (Hedw.) Ochyra
Eurhynchium praelongum (Hedw.) Schimp. var. *stokesii* (Turner) Dixon = *Kindbergia praelonga* (Hedw.) Ochyra
Eurhynchium pringlei (Cardot) H.A.Crum & L.E. Anderson ≡ *Donrichardsia pringlei* (Cardot) Huttunen & Ignatov
Eurhynchium pulchellum (Hedw.) Jenn. ≡ *Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen
Eurhynchium pulchellum (Hedw.) Jenn. var. *barnesii* (Renauld & Cardot) H.A.Crum, Steere & L.E. Anderson ≡ *Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen var. *barnesii* (Renauld & Cardot) Ignatov
Fissidens allenianus Brugg.-Nann. & Pursell = *F. santa-clarensis* Thér.
Fissidens clebschii Steere = *F. taxifolius* Hedw.
Fissidens garberi Lesq. & James = *F. pallidinervis* Mitt.
Fissidens hallii Austin = *F. amoenus* Müll.Hal.
Fissidens kochii H.A.Crum & L.E.Anderson = *F. submarginatus* Bruch
Fissidens limbatus Sull. = *F. crispus* Mont.
Fissidens microcladus Thwaites & Mitt. – excluded[389]
Fissidens milobakeri L.F.Koch = *F. curvatus* Hornsch.
Fissidens minutus Thwaites & Mitt. = *F. pallidinervis* Mitt.
Fissidens neonii (E.B.Bartram) Grout = *F. scalaris* Mitt.
Fissidens obtusifolius Wilson var. *apiculatus* Grout = *F. sublimbatus* Grout
Fissidens obtusifolius Wilson var. *kansanus* Renauld & Cardot = *F. obtusifolius* Wilson
Fissidens obtusifolius Wilson var. *marginatus* Flowers = *F. obtusifolius* Wilson
Fissidens papillosus Sande Lac. = *F. serratus* Müll. Hal.
Fissidens radicans Mont. - excluded
Fissidens ravenelii Sull. = *F. elegans* Brid.
Fissidens reesei H.A.Crum & L.E.Anderson = *F. leptophyllus* Mont.
Fontinalis antipyretica Hedw. var. *gigantea* (Sull.) Sull. = *F. antipyretica* Hedw.
Fontinalis antipyretica Hedw. var. *oreganensis* Renauld & Cardot = *F. antipyretica* Hedw.
Fontinalis filiformis Sull. & Lesq. = *F. sullivantii* Lindb.
Fontinalis flaccida Renauld & Cardot = *F. sullivantii* Lindb.
Fontinalis hypnoides Hartm. var. *duriaei* (Schimp.) Husn. = *F. hypnoides* Hartm.
Fontinalis langloisii Cardot = *F. sullivantii* Lindb.
Fontinalis macmillanii Cardot = *F. hypnoides* Hartm.
Fontinalis missourica Cardot = *F. sullivantii* Lindb.
Fontinalis novae-angliae Sull. var. *cymbifolia* (Austin) W.H.Welch = *F. novae-angliae* Sull.

[384] See Hedenäs (2014b).
[385] See Hedenäs (2008b).
[386] See Horton (1983).
[387] See Magill (2006).
[388] See Hanusch et al. (2020).
[389] See Pursell & Vital (1986), under *F. gardneri*, of which it is a synonym.

Fontinalis novae-angliae Sull. var. *lorenziae* Cardot = *F. novae-angliae* Sull.
Frisvollia varia (Mitt.) Sawicki, Szczecińska, Bedn.-Ochyra & Ochyra ≡ *Racomitrium varium* (Mitt.) A.Jaeger
Funaria americana Lindb. ≡ *Entosthodon americanus* (Lindb.) Fife
Funaria apiculatopilosa Cardot ≡ *Entosthodon apiculatopilosus* (Cardot) Fife
Funaria groutiana Fife = *F. arctica* (Berggr.) Kindb.
Funaria muhlenbergii Turner ≡ *Entosthodon muhlenbergii* (Turner) Fife
Funaria serrata Brid. ≡ *Entosthodon serratus* (Brid.) Fife
Gemmabryum apiculatum (Schwägr.) J.R.Spence & H.P.Ramsay ≡ *Bryum apiculatum* Schwägr.
Gemmabryum badium (Brid.) J.R.Spence = *Bryum imbricatulum* Müll.Hal.
Gemmabryum barnesii (J.B.Wood *ex* Schimp.) J.R. Spence = *Bryum dichotomum* Hedw.
Gemmabryum brassicoides J.R.Spence & Kellman ≡ *Bryum brassicoides* (J.R.Spence & Kellman) W. R.Buck & Goffinet
Gemmabryum caespiticium (Hedw.) J.R.Spence ≡ *Bryum caespiticium* Hedw.
Gemmabryum californicum (Sull.) J.R.Spence ≡ *Bryum californicum* Sull.
Gemmabryum coronatum (Schwägr.) J.R.Spence ≡ *Bryum coronatum* Schwägr.
Gemmabryum demaretianum (Arts) J.R.Spence ≡ *Bryum demaretianum* Arts
Gemmabryum dichotomum (Hedw.) J.R.Spence ≡ *Bryum dichotomum* Hedw.
Gemmabryum exile (Dozy & Molk.) J.R.Spence & H. P.Ramsay ≡ *Brachymenium exile* (Dozy & Molk.) Bosch & Sande Lac.
Gemmabryum gemmiferum (R.Wilczek & Demaret) J.R.Spence ≡ *Bryum gemmiferum* R.Wilczek & Demaret
Gemmabryum gemmilucens (R.Wilczek & Demaret) J.R.Spence ≡ *Bryum gemmilucens* R.Wilczek & Demaret
Gemmabryum klinggraeffii (Schimp.) J.R.Spence ≡ *Bryum klinggraeffii* Schimp.
Gemmabryum kunzei (Hornsch.) J.R.Spence ≡ *Bryum kunzei* Hornsch.
Gemmabryum radiculosum (Brid.) J.R.Spence & H. P.Ramsay ≡ *Bryum radiculosum* Brid.
Gemmabryum ruderale (Crundw. & Nyholm) J.R. Spence ≡ *Bryum ruderale* Crundw. & Nyholm
Gemmabryum subapiculatum (Hampe) J.R.Spence ≡ *Bryum subapiculatum* Hampe
Gemmabryum tenuisetum (Limpr.) J.R.Spence & H. P.Ramsay ≡ *Bryum tenuisetum* Limpr.
Gemmabryum valparaisense (Thér.) J.R.Spence ≡ *Bryum valparaisense* Thér.
Gemmabryum vinosum J.R.Spence & Kellman ≡ *Bryum vinosum* (J.R.Spence & Kellman) W.R. Buck & Goffinet
Gemmabryum violaceum (Crundw. & Nyholm) J.R. Spence ≡ *Bryum violaceum* Crundw. & Nyholm
Grimmia affinis Hornsch. = *G. longirostris* Hook.
Grimmia anomala Hampe *ex* Schimp. ≡ *Dryptodon anomalus* (Hampe *ex* Schimp.) Loeske
Grimmia arcuatifolia Kindb. ≡ *Dryptodon arcuatifolius* (Kindb.) Ochyra & Żarnowiec
Grimmia bernoullii Müll.Hal. = *G. ovalis* (Hedw.) Lindb.[390]
Grimmia brevirostris R.S.Williams = *G. hamulosa* Lesq.
Grimmia fuscolutea Hook. ≡ *Dryptodon fuscoluteus* (Hook.) Ochyra & Żarnowiec
Grimmia hartmanii Schimp. ≡ *Dryptodon hartmanii* (Schimp.) Limpr.
Grimmia hermannii H.A.Crum = *Dryptodon muehlenbeckii* (Schimp.) Loeske
Grimmia leibergii Paris ≡ *Dryptodon leibergii* (Paris) Ochyra & Żarnowiec
Grimmia lisae De Not. ≡ *Dryptodon lisae* (De Not.) Loeske
Grimmia muehlenbeckii Schimp. ≡ *Dryptodon muehlenbeckii* (Schimp.) Loeske
Grimmia poecilostoma Cardot & Sebille = *G. crinitoleucophaea* Cardot
Grimmia pulvinata (Hedw.) Sm. var. *africana* (Hedw.) Hook.f. & Wilson= *G. pulvinata* (Hedw.) Sm.
Grimmia ramondii (DC.) Margad. = *Dryptodon patens* (Dicks. *ex* Hedw.) Brid.
Grimmia tenerrima Renauld & Cardot = *G. sessitana* De Not.
Grimmia teretinervis Limpr. ≡ *Schistidium teretinerve* (Limpr.) Limpr.

[390] The species was reported from the United States by Weber et al. (2003) but then considered conspecific with *G. ovalis* by Muñoz (1999).

Grimmia torngakiana Brassard & Hedd. = *G. incurva* Schwägr.

Grimmia torquata Hook. ≡ *Dryptodon torquatus* (Hook.) Brid.

Grimmia torquata Hook. var. *flettii* (Holz.) Vaar. = *Dryptodon torquatus* (Hook.) Brid.[391]

Grimmia trichophylla Grev. ≡ *Dryptodon trichophyllus* (Grev.) Brid.

Gymnostomiella orcuttii E.B.Bartram = *G. vernicosa* (Hook. *ex* Harv.) M.Fleisch.

Gyroweisia reflexa (Brid.) Schimp. - excluded[392]

Haplohymenium triste (Ces.) Kindb. ≡ *Anomodon tristis* (Ces.) Sull.

Hedwigia ciliata (Hedw.) Boucher fo. *detonsa* (M. Howe) G.N.Jones ≡ *H. detonsa* (M.Howe) W.R. Buck & D.H.Norris

Hedwigia ciliata (Hedw.) Boucher var. *leucophaea* Bruch & Schimp. = *H. emodica* Hampe *ex* Müll. Hal.

Hedwigia nemoralis Ignatova, Ignatov & Fedosov[393] = *H. filiformis* (Michx.) P.Beauv.

Helodium blandowii (F.Weber & D.Mohr) Warnst. ≡ *H. blandovii* (F.Weber & D.Mohr) Warnst.

Helodium blandovii (F.Weber & D.Mohr) Warnst. var. *elodioides* (Renauld & Cardot) H.A.Crum, Steere & L.E.Anderson ≡ *H. elodioides* (Renauld & Cardot) B.H.Allen

Herzogiella adscendens (Lindb.) Z.Iwats. & W.B. Schofield ≡ *Aquilonium adscendens* (Lindb.) Hedenäs, Schlesak & D.Quandt

Heterocladium dimorphum (Brid.) Schimp. ≡ *Heterocladiella dimorpha* (Brid.) Ignatov & Fedosov

Heterocladium procurrens (Mitt.) A.Jaeger ≡ *Heterocladiella procurrens* (Mitt.) Ignatov & Fedosov

Heterophyllium affine (Hook.) M.Fleisch. = *H. nemorosum* (W.D.J.Koch *ex* Brid.) Kindb.

Homalothecium pinnatifidum (Sull. & Lesq.) E. Lawton = *H. aureum* (Spruce) H.Rob.

Hygroamblystegium tenax (Hedw.) Jenn. var. *spinifolium* (Schimp.) Jenn ≡ *Cratoneuron filicinum* (Hedw.) Spruce[394]

Hygrohypnum alpestre (Hedw.) Loeske ≡ *Platyhypnum alpestre* (Hedw.) Ochyra

Hygrohypnum alpinum (Lindb.) Loeske ≡ *Platyhypnum alpinum* (Lindb.) Loeske

Hygrohypnum bestii (Renauld & Bryhn) Holz. ≡ *Platyhypnum bestii* (Renauld & Bryhn) Ochyra

Hygrohypnum cochleariifolium (Venturi) Broth. ≡ *Platyhypnum cochleariifolium* (Venturi) Ochyra

Hygrohypnum duriusculum (De Not.) D.W.Jamieson ≡ *Platyhypnum duriusculum* (De Not.) Ochyra

Hygrohypnum eugyrium (Schimp.) Loeske ≡ *Pseudohygrohypnum eugyrium* (Schimp.) Kanda

Hygrohypnum micans (Mitt.) Broth. ≡ *Hageniella micans* (Mitt.) B.C.Tan & Y.Jia

Hygrohypnum molle (Hedw.) Loeske ≡ *Platyhypnum molle* (Hedw.) Loeske

Hygrohypnum montanum (Lindb.) Broth. ≡ *Campylophyllum montanum* (Lindb.) B.H. Allen

Hygrohypnum norvegicum (Schimp.) J.J.Amann ≡ *Platyhypnum norvegicum* (Schimp.) Ochyra

Hygrohypnum ochraceum (Turner *ex* Wilson) Loeske ≡ *Hygrohypnella ochracea* (Turner *ex* Wilson) Ignatov & Ignatova

Hygrohypnum polare (Lindb.) Loeske ≡ *Hygrohypnella polaris* (Lindb.) Ignatov & Ignatova

Hygrohypnum smithii (Sw.) Broth. ≡ *Platyhypnum smithii* (Sw.) Ochyra

Hygrohypnum subeugyrium (Renauld & Cardot) Broth. ≡ *Pseudohygrohypnum subeugyrium* (Renauld & Cardot) Ignatov & Ignatova

Hymenostylium insigne (Dixon) Podp. = *H. annotinum* Mitt. *ex* Dixon

Hymenostylium recurvirostrum (Hedw.) Dixon var. *insigne* (Dixon) E.B.Bartram = *H. annotinum* Mitt. *ex* Dixon

Hypnum bambergeri Schimp. ≡ *Campylium bambergeri* (Schimp.) Hedenäs, Schlesak & D.Quandt

Hypnum callichroum Brid. ≡ *Stereodon callichrous* (Brid.) Brid.

Hypnum circinale Hook. ≡ *Trochophyllohypnum circinale* (Hook.) Jan Kučera & Ignatov

Hypnum cupressiforme Hedw. var. *lacunosum* Brid. = *H. cupressiforme* Hedw. var. *cupressiforme*

Hypnum cupressiforme Hedw. var. *resupinatum* (Taylor) Schimp. ≡ *H. resupinatum* Taylor

[391] See Muñoz & Pando (2000). Note that Maier (2010) placed this var. in synonymy with *G. elongata.*

[392] First reported by Conard (1945) and confirmed by Manierre (1998) but excluded by Zander (2007c).

[393] See Ignatova et al. (2016).

[394] See Hedenäs (2003).

Hypnum cupressiforme Hedw. var. *subjulaceum* Molendo ≡ *H. subjulaceum* (Molendo) Hedenäs, Schlesak & D.Quandt
Hypnum curvifolium Hedw. ≡ *Calliergonella curvifolia* (Hedw.) B.H.Allen
Hypnum dieckii Renauld & Cardot ≡ *Calliergonellopsis dieckii* (Renauld & Cardot) Jan Kučera & Ignatov
Hypnum fujiyamae (Broth.) Paris ≡ *Callicladium fujiyamae* (Broth.) Jan Kučera & Ignatov
Hypnum geminum (Mitt.) Lesq. & James = *Isopterygiella pulchella* (Hedw.) Ignatov & Ignatova
Hypnum hamulosum Schimp. ≡ *Stereodon hamulosus* (Schimp.) Lindb.
Hypnum holmenii Ando ≡ *Stereodon holmenii* (Ando) Ignatov & Ignatova
Hypnum imponens Hedw. ≡ *Callicladium imponens* (Hedw.) Hedenäs, Schlesak & D.Quandt
Hypnum lindbergii Mitt. ≡ *Calliergonella lindbergii* (Mitt.) Hedenäs
Hypnum mammillatum (Brid.) Lindb. ≡ *H. andoi* A.J.E.Sm.
Hypnum pallescens (Hedw.) P. Beauv. ≡ *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt
Hypnum pallescens (Hedw.) P. Beauv. var. *protuberans* (Brid.) Austin ≡ *Jochenia protuberans* (Brid.) Jan Kučera & Ignatov
Hypnum plicatulum (Lindb.) A.Jaeger ≡ *Aquilonium plicatulum* (Lindb.) Hedenäs, Schlesak & D.Quandt
Hypnum pratense W.D.J.Koch *ex* Spruce ≡ *Stereodon pratensis* (W.D.J.Koch *ex* Spruce) E.Britton.
Hypnum procerrimum Molendo ≡ *Pseudostereodon procerrimus* (Molendo) M.Fleisch.
Hypnum recurvatum (Lindb. & Arnell) Kindb. = *Drepanium fastigiatum* (Brid.) Lange & C.E.O. Jensen
Hypnum revolutum (Mitt.) Lindb. ≡ *Roaldia revoluta* (Mitt.) P.E.A.S.Câmara & Carv.-Silva
Hypnum subimponens Lesq. ≡ *Stereodon subimponens* (Lesq.) Broth.
Hypnum vaucheri Lesq. ≡ *Buckia vaucheri* (Lesq.) D.Ríos, M.T.Gallego & J.Guerra
Hypopterygium fauriei Besch. = *H. flavolimbatum* Müll.Hal.
Hypopterygium tamariscinum sensu auct. Amer. non (Hedw.) Brid. = *H. tamarisci* (Sm.) Müll.Hal.
Imbribryum alpinum (Huds. *ex* With.) N.Pedersen ≡ *Bryum alpinum* Huds. *ex* With.
Imbribryum gemmiparum (De Not.) J.R.Spence ≡ *Bryum gemmiparum* De Not.
Imbribryum microchaeton (Hampe) J.R.Spence ≡ *Bryum microchaeton* Hampe
Imbribryum mildeanum (Jur.) J.R.Spence ≡ *Bryum mildeanum* Jur.
Imbribryum miniatum (Lesq.) J.R.Spence ≡ *Bryum miniatum* Lesq.
Imbribryum muehlenbeckii (Bruch & Schimp.) N. Pedersen ≡ *Bryum muehlenbeckii* Bruch & Schimp.
Imbribryum torenii J.R.Spence & Shevock ≡ *Bryum torenii* (J.R.Spence & Shevock) W.R.Buck & Goffinet
Isopterygiopsis alpicola (Lindb.) Hedenäs ≡ *Isopterygiella alpicola* (Lindb.) Ignatov & Ignatova
Isopterygiopsis pulchella (Hedw.) Z.Iwats. ≡ *Isopterygiella pulchella* (Hedw.) Ignatov & Ignatova
Isothecium cardotii Kindb. ≡ *Pseudisothecium cardotii* (Kindb.) Ignatova, Fedosov & Ignatov
Isothecium cristatum (Hampe) H.Rob. ≡ *Pseudisothecium cristatum* (Hampe) Ignatova, Fedosov & Ignatov
Isothecium myosuroides Brid. ≡ *Pseudisothecium myosuroides* (Brid.) Grout
Isothecium stoloniferum Brid. ≡ *Pseudisothecium stoloniferum* (Brid.) Grout
Kiaeria blyttii (Bruch & Schimp.) Broth. ≡ *Arctoa blyttii* (Bruch & Schimp.) Loeske
Kiaeria falcata (Hedw.) I.Hagen ≡ *Pseudoblindia falcata* (Hedw.) Fedosov, M.Stech & Ignatov
Kiaeria glacialis (Berggr.) I.Hagen ≡ *Arctoa glacialis* (Berggr.) Fedosov, Jan Kučera & M.Stech
Kiaeria starkei (F.Weber & D.Mohr) I.Hagen ≡ *Arctoa starkei* (F.Weber & D.Mohr) Loeske
Leptodictyum humile (P.Beauv.) Ochyra ≡ *Hygroamblystegium humile* (P.Beauv.) Vanderp., Hedenäs & Goffinet
Leptodontium viticulosoides (P.Beauv.) Wijk & Margad. var. *sulphureum* (Müll.Hal.) R.H.Zander = *L. excelsum* (Sull.) E.Britton
Leptostomopsis nivea (Besch.) J.R.Spence ≡ *Brachymenium niveum* Besch.
Leptostomopsis systylia (Müll.Hal.) J.R.Spence ≡ *Brachymenium systylium* (Müll.Hal.) A.Jaeger
Lescuraea arizonae (R.S.Williams) P.S.Wilson & D. H.Norris ≡ *Pseudoleskeella arizonae* (R.S.Williams) E.Lawton

Leskea angustata Taylor - excluded[395]

Leskeella nervosa (Brid.) Loeske ≡ *Pseudoleskeella nervosa* (Brid.) Nyholm

Leucodon andrewsianus (H.A.Crum & L.E.Anderson) W.D.Reese & L.E.Anderson = *L. sciuroides* (Hedw.) Schwägr.

Leucodon brachypus Brid. var. *andrewsianus* H.A. Crum & L.E.Anderson = *L. sciuroides* (Hedw.) Schwägr.

Limprichtia cossonii (Schimp.) L.E.Anderson, H.A. Crum & W.R.Buck ≡ *Scorpidium cossonii* (Schimp.) Hedenäs

Limprichtia revolvens (Sw.) Loeske ≡ *Scorpidium revolvens* (Sw.) Rubers

Loeskypnum badium (Hartm.) H.K.G.Paul ≡ *Warnstorfia badia* (Hartm.) W.R.Buck & Goffinet

Loeskypnum wickesiae (Grout) Tuom. ≡ *Warnstorfia wickesiae* (Grout) W.R.Buck & Goffinet

Macrocoma sullivantii (Müll.Hal.) Grout ≡ *M. tenuis* (Hook. & Grev.) Vitt subsp. *sullivantii* (Müll. Hal.) Vitt

Macromitrium richardii Schwägr. = *M. viticulosum* (Raddi) Brid.[396]

Meiotrichum lyallii (Mitt.) G.L.Sm.Merr. ≡ *Polytrichastrum lyallii* (Mitt.) G.L.Sm.[397]

Microbryum davallianum (Sm.) R.H.Zander var. *commutatum* (Limpr.) R.H.Zander ≡ *M. commutatum* (Limpr.) Cl.Schneid., Th.Schneid. & Mahévas

Microbryum davallianum (Sm.) R.H.Zander var. *conicum* (Schleich. *ex* Schwägr.) R.H.Zander ≡ *M. conicum* (Schleich. *ex* Schwägr.) Cl.Schneid., Th.Schneid. & Mahévas

Microbryum starckeanum (Hedw.) R.H.Zander var. *brachyodus* (Bruch & Schimp.) R.H.Zander = *M. muticum* (Venturi) Cl.Schneid., Th.Schneid. & Mahévas

Microbryum starckeanum (Hedw.) R.H.Zander var. *fosbergii* (E.B.Bartram) R.H.Zander ≡ *M. fosbergii* (E.B.Bartram) Ros, O.Werner & Rams

Microbryum vlassovii (Laz.) R.H.Zander ≡ *Tortula vlassovii* (Laz.) Ros & Herrnst.

Micromitrium austinii Austin = *M. tenerum* (Bruch & Schimp.) Crosby

Mielichhoferia macrocarpa (Drumm.) Bruch & Schimp. ≡ *Haplodontium macrocarpum* (Drumm.) J.R.Spence

Mielichhoferia tehamensis Showers ≡ *Haplodontium tehamense* (Showers) J.R.Spence

Monocryphaea ravenelii (Austin) P.Rao ≡ *Cryphaea ravenelii* Austin

Neckera besseri (Łobarż.) Jur. ≡ *Alleniella besseri* (Łobarż.) S.Olsson, Enroth & D.Quandt

Neckera complanata (Hedw.) Huebener ≡ *Alleniella complanata* (Hedw.) S.Olsson, Enroth & D.Quandt

Neohyophila sprengelii (Schwägr.) H.A.Crum ≡ *Plaubelia sprengelii* (Schwägr.) R.H.Zander

Neohyophila stomatodonta (Cardot) H.A.Crum ≡ *Plaubelia stomatodonta* (Cardot) R.H.Zander

Neotrichostomum crispulum (Bruch) R.H.Zander ≡ *Trichostomum crispulum* Bruch

Niphotrichum canescens (Hedw.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium canescens* (Hedw.) Brid.

Niphotrichum canescens (Hedw.) Bedn.-Ochyra & Ochyra subsp. *latifolium* (C.E.O.Jensen) Bedn.-Ochyra & Ochyra ≡ *Racomitrium canescens* (Hedw.) Brid. subsp. *latifolium* (C.E.O.Jensen) Frisvoll

Niphotrichum elongatum (Ehrh. *ex* Frisvoll) Bedn.-Ochyra & Ochyra ≡ *Racomitrium elongatum* Ehrh. *ex* Frisvoll

Niphotrichum ericoides (Brid.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium ericoides* (Brid.) Brid.

Niphotrichum muticum (Kindb.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium muticum* (Kindb.) Frisvoll

Niphotrichum panschii (Müll.Hal.) Bedn.-Ochyra & Ochyra ≡ *Racomitrium panschii* (Müll.Hal.) Kindb.

Niphotrichum pygmaeum (Frisvoll) Bedn.-Ochyra & Ochyra ≡ *Racomitrium pygmaeum* Frisvoll

Oncophorus raui (Austin) Grout ≡ *Symblepharis raui* (Austin) R.S.Williams *ex* Broth.

Oncophorus wahlenbergii Brid. ≡ *Brideliella wahlenbergii* (Brid.) Fedosov, M.Stech & Ignatov

Orthothecium chryseon (Schwägr.) Schimp. var. *cochleariifolium* (Lindb.) Limpr. = *O. chryseon* (Schwägr.) Schimp.[398]

Orthothecium diminutivum (Grout) H.A.Crum, Steere & L.E.Anderson = *Isopterygiella pulchella* (Hedw.) Ignatov & Ignatova

[395] See Allen (2018) sub *Leskeadelphus*.

[396] See Valente et al. (2020).

[397] See Bell & Hyvönen (2010).

[398] See Ignatov et al. (2020).

Orthotrichum affine Brid. ≡ *Lewinskya affinis* (Brid.) F.Lara, Garilleti & Goffinet var. *affinis*

Orthotrichum affine Brid. var. *bohemicum* Plášek & Sawicki ≡ *Lewinskya affinis* (Brid.) F.Lara, Garilleti & Goffinet var. *bohemica* (Plášek & Sawicki) Plášek

Orthotrichum bolanderi Sull. ≡ *Lewinskya bolanderi* (Sull.) F.Lara, Garilleti & Goffinet

Orthotrichum elegans Schwägr. *ex* Hook. & Grev. ≡ *Lewinskya elegans* (Schwägr. *ex* Hook. & Grev.) F.Lara, Garilleti & Goffinet

Orthotrichum epapillosum E.Lawton & F.J.Herm. = *O. euryphyllum* Venturi[399]

Orthotrichum exiguum Sull. ≡ *Leratia exigua* (Sull.) Goffinet

Orthotrichum fenestratum Cardot & Thér. ≡ *Lewinskya fenestrata* (Cardot & Thér.) F.Lara, Garilleti & Goffinet

Orthotrichum gymnostomum Bruch *ex* Brid. ≡ *Nyholmiella gymnostoma* (Bruch *ex* Brid.) Holmen & E.Warncke

Orthotrichum holzingeri Renauld & Cardot ≡ *Lewinskya holzingeri* (Renauld & Cardot) F.Lara, Garilleti & Goffinet

Orthotrichum keeverae H.A.Crum & L.E.Anderson ≡ *Lewinskya keeverae* (H.A.Crum & L.E.Anderson) F. Lara, Garilleti & Goffinet

Orthotrichum kellmanii D.H.Norris, Shevock & Goffinet = *Orthotrichum shevockii* Lewinsky-Haapasaari & D.H.Norris[400]

Orthotrichum laevigatum J.E.Zetterst. ≡ *Lewinskya laevigata* (J.E.Zetterst.) F.Lara, Garilleti & Goffinet

Orthotrichum lyellii Hook. & Taylor ≡ *Pulvigera lyellii* (Hook. & Taylor) Plášek, Sawicki & Ochyra

Orthotrichum lyellii Hook. & Taylor var. *howei* Renauld & Cardot ≡ *Pulvigera howei* (Renauld & Cardot) F.Lara, Draper & Garilleti

Orthotrichum obtusifolium Brid. ≡ *Nyholmiella obtusifolia* (Brid.) Holmen & E.Warncke

Orthotrichum papillosum Hampe ≡ *Pulvigera papillosa* (Hampe) F.Lara, Draper & Garilleti

Orthotrichum praemorsum Venturi ≡ *Lewinskya praemorsa* (Venturi) F.Lara, Garilleti & Goffinet

Orthotrichum pycnophyllum Schimp. ≡ *Lewinskya pycnophylla* (Schimp.) F.Lara, Garilleti & Goffinet

Orthotrichum pylaisii Brid. ≡ *Lewinskya pylaisii* (Brid.) F.Lara, Garilleti & Goffinet

Orthotrichum rupestre Schleich. *ex* Schwägr. ≡ *Lewinskya rupestris* (Schleich. *ex* Schwägr.) F. Lara, Garilleti & Goffinet

Orthotrichum shawii Wilson ≡ *Lewinskya shawii* (Wilson) F.Lara, Garilleti & Goffinet

Orthotrichum sordidum Sull. & Lesq. ≡ *Lewinskya sordida* (Sull. & Lesq.) F.Lara, Garilleti & Goffinet

Orthotrichum speciosum Nees ≡ *Lewinskya speciosa* (Nees) F.Lara, Garilleti & Goffinet

Orthotrichum spjutii D.H.Norris & Vitt ≡ *Lewinskya spjutii* (D.H.Norris & Vitt) F.Lara, Garilleti & Goffinet

Orthotrichum striatum Hedw. ≡ *Lewinskya striata* (Hedw.) F.Lara, Garilleti & Goffinet

Orthotrichum tenellum Bruch *ex* Brid. - excluded

Oxystegus daldinianus (De Not.) Köckinger, O. Werner & Ros ≡ *Chionoloma daldinianum* (De Not.) M.Alonso, M.J.Cano & J.A.Jiménez

Oxystegus maragniphyllus R.H.Zander & Eckel ≡ *Chionoloma maragniphyllum* (R.H.Zander & Eckel) W.R.Buck & Goffinet

Oxystegus spiralis (Grout) H.A.Crum & L.E.Anderson = *Chionoloma stenocarpum* (Thér.) M.Alonso, M.J. Cano & J.A.Jiménez

Oxystegus tenuirostris (Hook. & Taylor) A.J.E.Sm. ≡ *Chionoloma tenuirostre* (Hook. & Taylor) M. Alonso, M.J.Cano & J.A.Jiménez

Palustriella commutata (Hedw.) Ochyra - excluded[401]

Papillaria nigrescens (Sw. *ex* Hedw.) A.Jaeger ≡ *Meteorium nigrescens* (Sw. *ex* Hedw.) Dozy & Molk.

Paraleptodontium recurvifolium (Taylor) D.G.Long ≡ *Chionoloma recurvifolium* (Taylor) M.Alonso, M. J.Cano & J.A.Jiménez

Phascum cuspidatum Schreb. *ex* Hedw. = *Tortula acaulon* (With.) R.H.Zander

Phascum floerkeanum F.Weber & D.Mohr ≡ *Microbryum floerkeanum* (F.Weber & D.Mohr) Schimp.

Phascum hyalinotrichum Cardot & Thér. ≡ *Stegonia hyalinotricha* (Cardot & Thér.) R.H.Zander

[399] See Lewinsky-Haapasaari & Norris (1998).

[400] See Vigalondo et al. (2019).

[401] See Hedenäs (2014c).

Phascum vlassovii Laz. ≡ *Tortula vlassovii* (Laz.) Ros & Herrnst.

Philonotis fontana (Hedw.) Brid. var. *americana* (Dism.) Flowers ≡ *P. americana* Dism.

Philonotis fontana (Hedw.) Brid. var. *caespitosa* (Jur.) Schimp. = *P. fontana* (Hedw.) Brid.[402]

Philonotis fontana (Hedw.) Brid. var. *pumila* (Turner) Brid. = *P. tomentella* Molendo

Philonotis glaucescens (Hornsch.) Broth. = *P. uncinata* (Schwägr.) Brid.

Philonotis gracillima Ångstr. = *P. uncinata* (Schwägr.) Brid.

Philonotis muhlenbergii (Schwägr.) Brid. = *P. marchica* (Hedw.) Brid.

Physcomitrella patens (Hedw.) Bruch & Schimp. ≡ *Physcomitrium patens* (Hedw.) Mitt.

Physcomitrella readeri (Müll.Hal.) I.G.Stone & G.A. M.Scott ≡ *Physcomitrium readeri* Müll.Hal.

Physcomitridium readeri (Müll.Hal.) G.Roth ≡ *Physcomitrium readeri* Müll.Hal.

Physcomitrium washingtoniense H.A.Crum & L.E. Anderson = *P. pyriforme* (Hedw.) Brid.

Plagiobryoides brachyneura (Kindb.) J.R.Spence ≡ *Bryum brachyneuron* Kindb.

Plagiobryoides cellularis (Hook.) J.R.Spence ≡ *Bryum cellulare* Hook.

Plagiobryoides incrassatolimbata (Cardot) J.R.Spence ≡ *Bryum incrassatolimbatum* Cardot

Plagiobryoides renauldii (Röll) J.R.Spence ≡ *Bryum renauldii* Röll - excluded[403]

Plagiobryoides vinosula (Cardot) J.R.Spence ≡ *Brachymenium vinosulum* Cardot

Plagiomnium affine (Blandow) T.J.Kop. - excluded[404]

Plagiomnium carolinianum (L.E.Anderson) T.J. Kop. = *P. rhynchophorum* (Harv.) T.J.Kop.

Plagiomnium medium (Bruch & Schimp.) T.J.Kop. var. *curvatulum* (Lindb.) H.A.Crum & L.E. Anderson ≡ *P. curvatulum* (Lindb.) Schljakov

Plagiopus alpinus (Schwägr.) Hedenäs = *P. serratus* Brid.

Plagiopus oederi (Brid.) Limpr. var. *alpinus* (Schwägr.) Dalla Torre & Sarnth. = *P. serratus* Brid.

Plagiothecium handelii Broth. ≡ *Ortholimnobium handelii* (Broth.) Schröck & J.T.Wynns

Plagiothecium platyphyllum Mönk. = *P. sylvaticum* (Brid.) Schimp.

Plagiobryum austriacum (Köckinger, Holyoak & Suanjak) J.R.Spence & Brinda ≡ *Bryum austriacum* Köckinger, Holyoak & Suanjak

Platydictya confervoides (Brid.) H.A.Crum ≡ *Serpoleskea confervoides* (Brid.) Loeske

Platydictya minutissima (Sull. & Lesq.) H.A.Crum ≡ *Serpoleskea minutissima* (Sull. & Lesq.) W.R. Buck & B.H.Allen

Platydictya subtilis (Hedw.) H.A.Crum ≡ *Pseudoamblystegium subtile* (Hedw.) Vanderp. & Hedenäs

Platyhypnidium pringlei (Cardot) Broth. ≡ *Donrichardsia pringlei* (Cardot) Huttunen & Ignatov

Platyhypnidium riparioides sensu auct. Amer. non (Hedw.) Dixon = *Rhynchostegium aquaticum* Spruce

Plaubelia sprengelii (Schwägr.) R.H.Zander var. *stomatodonta* (Cardot) R.H.Zander ≡ *P. stomatodonta* (Cardot) R.H.Zander

Pleuridium californicum Grout = *P. acuminatum* Lindb.[405]

Pleuridium palustre (Bruch & Schimp.) Bruch & Schimp. ≡ *Cleistocarpidium palustre* (Bruch & Schimp.) Ochyra & Bedn.-Ochyra

Pleurochaete squarrosa (Brid.) Lindb. - excluded

Pohlia bolanderi (Lesq.) Broth. var. *seriata* A.J.Shaw = *P. bolanderi* (Lesq.) Broth.

Pohlia elongata Hedw. var. *greenii* (Brid.) A.J.Shaw = *P. greenii* Brid.

Polytrichastrum alpinum (Hedw.) G.L.Sm. var. *fragile* (Bryhn) D.G.Long ≡ *P. fragile* (Bryhn) Schljakov

Polytrichastrum appalachianum (L.E.Anderson) G.L. Sm.Merr. ≡ *Polytrichum appalachianum* L.E. Anderson

Polytrichastrum formosum (Hedw.) G.L.Sm. ≡ *Polytrichum formosum* Hedw.

Polytrichastrum formosum (Hedw.) G.L.Sm. var. *densifolium* (Wilson *ex* Mitt.) Z.Iwats. & Nog. ≡ *Polytrichum densifolium* Wilson *ex* Mitt.[406]

Polytrichastrum longisetum (Sw. *ex* Brid.) G.L.Sm. ≡ *Polytrichum longisetum* Sw. *ex* Brid.

Polytrichastrum ohioense (Renauld & Cardot) G.L. Sm. ≡ *Polytrichum ohioense* Renauld & Cardot

[402] See Hodgetts et al. (2020).
[403] See Toren et al. (2024).
[404] See McIntosh & Newmaster (2014).
[405] See Yip (2000).
[406] See Ivanova & Ignatov (2017).

Polytrichastrum pallidisetum (Funck) G.L.Sm. ≡ *Polytrichum pallidisetum* Funck

Polytrichastrum sexangulare (Flörke *ex* Brid.) G.L. Sm. var. *vulcanicum* (C.E.O.Jensen) G.L.Sm. Merr. = *P. sphaerothecium* (Besch.) J.-P.Frahm[407]

Polytrichum commune Hedw. var. *jensenii* (I.Hagen) Mönk. *ex* Frye ≡ *P. jensenii* I.Hagen

Polytrichum commune Hedw. var. *perigoniale* (Michx.) Hampe ≡ *P. perigoniale* Michx.

Polytrichum formosum Hedw. var. *densifolium* (Wilson *ex* Mitt.) Osada ≡ *P. densifolium* Wilson *ex* Mitt.

Polytrichum lyallii (Mitt.) Kindb. ≡ *Polytrichastrum lyallii* (Mitt.) G.L.Sm.

Polytrichum papillatum (G.L.Sm.) L.E.Anderson, H. A.Crum & W.R.Buck ≡ *Polytrichastrum papillatum* G.L.Sm.

Polytrichum sphaerothecium (Besch.) Müll.Hal. ≡ *Polytrichastrum sphaerothecium* (Besch.) J.-P. Frahm

Porotrichum bigelovii (Sull.) Kindb. ≡ *Dannorrisia bigelovii* (Sull.) Enroth[408]

Porotrichum vancouveriense (Kindb.) H.A.Crum ≡ *Bryolawtonia vancouveriensis* (Kindb.) D.H. Norris & Enroth

Pottia arizonica Wareham = *Microbryum starckeanum* (Hedw.) R.H.Zander

Pottia arizonica Wareham var. *mucronulata* Wareham = *Microbryum muticum* (Venturi) Cl.Schneid., Th.Schneid. & Mahévas

Pottia bryoides (Dicks.) Mitt. ≡ *Tortula protobryoides* R.H.Zander

Pottia davalliana (Sm.) C.E.O.Jensen ≡ *Microbryum davallianum* (Sm.) R.H.Zander

Pottia intermedia (Turner) Fürnr. = *Tortula caucasica* Lindb.

Pottia lanceolata (Hedw.) Müll.Hal. = *Tortula lindbergii* Kindb. *ex* Broth.

Pottia nevadensis Cardot & Thér. ≡ *Tortula nevadensis* (Cardot & Thér.) R.H.Zander

Pottia starckeana (Hedw.) Müll.Hal. ≡ *Microbryum starckeanum* (Hedw.) R.H.Zander

Pottia truncata (Hedw.) Bruch & Schimp. ≡ *Tortula truncata* (Hedw.) Mitt.

Pottia wilsonii (Hook.) Bruch & Schimp. ≡ *Tortula wilsonii* (Hook.) R.H.Zander - excluded[409]

Pseudoblindia Fedosov, M.Stech & Ignatov = *Kiaeria* I.Hagen[410]

Pseudoblindia falcata (Hedw.) Fedosov, M.Stech & Ignatov ≡ *Kiaeria falcata* (Hedw.) I.Hagen

Pseudocalliergon angustifolium Hedenäs ≡ *Drepanocladus angustifolius* (Hedenäs) Hedenäs & Rosborg

Pseudocalliergon brevifolium (Lindb.) Hedenäs ≡ *Drepanocladus brevifolius* (Lindb.) Warnst.

Pseudocalliergon trifarium (F.Weber & D.Mohr) Loeske ≡ *Drepanocladus trifarius* (F.Weber & D. Mohr) Broth.

Pseudocalliergon turgescens (T.Jensen) Loeske ≡ *Drepanocladus turgescens* (T.Jensen) Broth.

Pseudocrossidium aureum (E.B.Bartram) R.H.Zander = *P. arenicola* (Dusén) M.J.Cano

Pseudocrossidium crinitum (Schultz) R.H.Zander - excluded[411]

Pseudocrossidium revolutum (Brid.) R.H.Zander - excluded[412]

Pseudocrossidium revolutum (Brid.) R.H.Zander var. *obtusulum* (Lindb.) B.C.Tan, R.H.Zander & T. T.Taylor ≡ *P. obtusulum* (Lindb.) H.A.Crum & L.E.Anderson

Pseudoleskea atricha (Kindb.) Kindb. ≡ *Lescuraea atricha* (Kindb.) E.Lawton

Pseudoleskea baileyi Best & Grout ≡ *Lescuraea baileyi* (Best & Grout) E.Lawton

Pseudoleskea incurvata (Hedw.) Loeske ≡ *Lescuraea incurvata* (Hedw.) E.Lawton

Pseudoleskea incurvata (Hedw.) Loeske var. *gigantea* (E.Lawton) H.A.Crum, Steere & L.E.Anderson ≡ *Lescuraea incurvata* (Hedw.) E.Lawton var. *gigantea* E.Lawton

Pseudoleskea incurvata (Hedw.) Loeske var. *tenuiretis* (Culm.) H.A.Crum, Steere & L.E.Anderson ≡ *Lescuraea incurvata* (Hedw.) E.Lawton var. *tenuiretis* (Culm.) E.Lawton

Pseudoleskea patens (Lindb.) Kindb. ≡ *Lescuraea patens* (Lindb.) Arnell & C.E.O.Jensen

Pseudoleskea radicosa (Mitt.) Macoun & Kindb. var. *radicosa* ≡ *Lescuraea radicosa* (Mitt.) Mönk. var. *radicosa*

[407] See Ivanova & Ignatov (2017).
[408] See Enroth et al. (2019).
[409] See Zander (2007f).
[410] See Brinda & Fedosov (2023).
[411] See Cano et al. (2016).
[412] See Zander (2007e).

Pseudoleskea radicosa (Mitt.) Macoun & Kindb. var. *compacta* Best ≡ *Lescuraea radicosa* (Mitt.) Mönk. var. *compacta* (Best) E.Lawton

Pseudoleskea radicosa (Mitt.) Macoun & Kindb. var. *denudata* (Kindb.) Wijk & Margad. ≡ *Lescuraea radicosa* (Mitt.) Mönk. var. *denudata* (Kindb.) E.Lawton

Pseudoleskea radicosa (Mitt.) Macoun & Kindb. var. *pallida* (Best) H.A.Crum, Steere & L.E.Anderson ≡ *Lescuraea radicosa* (Mitt.) Mönk. var. *pallida* (Best) E.Lawton

Pseudoleskea saviana (DeNot.) Latzel ≡ *Lescuraea saviana* (De Not.) E.Lawton

Pseudoleskea stenophylla Renauld & Cardot ≡ *Lescuraea stenophylla* (Renauld & Cardot) Kindb.

Pseudoleskea tribulosa Shevock & W.R.Buck ≡ *Lescuraea tribulosa* (Shevock & W.R.Buck) W.R. Buck & Goffinet

Pseudoleskeella sibirica (Arnell) P.S.Wilson & D.H. Norris = *P. rupestris* (Berggr.) Hedenäs & L. Söderstr.

Pseudosymblepharis angustata (Mitt.) Hilp. ≡ *Chionoloma angustatum* (Mitt.) M.Menzel

Pseudotaxiphyllum distichaceum (Mitt.) Z.Iwats. ≡ *Longiella distichacea* (Mitt.) J.T.Wynns - excluded[413]

Pseudotaxiphyllum distichaceum sensu auct. Amer. non (Mitt.) Z.Iwats. = *P. subfalcatum* (Austin) X.Q.Li, Q.Zuo & Y.F.Wang

Pseudotaxiphyllum homomallifolium (Redf.) Ireland ≡ *Redfearnia homomallifolia* (Redf.) J.T.Wynns

Pterogonium gracile (Hedw.) Sm. ≡ *Nogopterium gracile* (Hedw.) Crosby & W.R.Buck

Pterygoneurum californicum H.A.Crum = *P. subsessile* (Brid.) Jur.

Ptychomitrium leibergii Best = *P. sinense* (Mitt.) A. Jaeger

Ptychostomum acutiforme (Limpr. *ex* Ryan) J.R. Spence ≡ *Bryum acutiforme* Limpr. *ex* Ryan.

Ptychostomum archangelicum (Bruch & Schimp.) J. R.Spence ≡ *Bryum archangelicum* Bruch & Schimp.

Ptychostomum arcticum (R.Br.) J.R.Spence ≡ *Bryum arcticum* R.Br.

Ptychostomum austriacum (Köckinger, Holyoak & Suanjak) D.Bell & Holyoak ≡ *Bryum austriacum* Köckinger, Holyoak & Suanjak

Ptychostomum axel-blyttii (H.Philb.) J.R.Spence = *Bryum calophyllum* R.Br.

Ptychostomum badium (Brid.) J.R.Spence = *Bryum imbricatulum* Müll.Hal.

Ptychostomum bimum (Schreb.) J.R.Spence ≡ *Bryum bimum* (Schreb.) Turner

Ptychostomum calophyllum (R.Br.) J.R.Spence ≡ *Bryum calophyllum* R.Br.

Ptychostomum cernuum (Hedw.) Hornsch. = *Bryum uliginosum* (Brid.) Bruch & Schimp.

Ptychostomum compactum Hornsch. = *Bryum algovicum* Sendtn. *ex* Müll.Hal.

Ptychostomum creberrimum (Taylor) J.R.Spence & H.P.Ramsay ≡ *Bryum creberrimum* Taylor

Ptychostomum cryophilum (Mårtensson) J.R.Spence ≡ *Bryum cryophilum* Mårtensson

Ptychostomum cyclophyllum (Schwägr.) J.R.Spence ≡ *Bryum cyclophyllum* Schwägr.

Ptychostomum inclinatum (Sw. *ex* Brid.) J.R.Spence = *Bryum amblyodon* Müll.Hal.

Ptychostomum intermedium (Brid.) J.R.Spence ≡ *Bryum intermedium* (Brid.) Turton

Ptychostomum knowltonii (Barnes) J.R.Spence ≡ *Bryum knowltonii* Barnes

Ptychostomum lonchocaulon (Müll.Hal.) J.R.Spence ≡ *Bryum lonchocaulon* Müll.Hal.

Ptychostomum longisetum (Blandow *ex* Schwägr.) J.R. Spence ≡ *Bryum longisetum* Blandow *ex* Schwägr.

Ptychostomum marratii (Hook. & Wilson) J.R. Spence ≡ *Bryum marratii* Hook. & Wilson

Ptychostomum meesioides (Kindb.) J.R.Spence ≡ *Bryum meesioides* Kindb.

Ptychostomum neodamense (Itzigs.) J.R.Spence ≡ *Bryum neodamense* Itzigs.

Ptychostomum nitidulum (Lindb.) J.R.Spence ≡ *Bryum nitidulum* Lindb.

Ptychostomum pacificum J.R.Spence & Shevock ≡ *Bryum pacificum* (J.R.Spence & Shevock) W.R. Buck & Goffinet

Ptychostomum pallens (Sw.) J.R.Spence ≡ *Bryum pallens* Sw.

Ptychostomum pallescens (Schleich. *ex* Schwägr.) J.R. Spence ≡ *Bryum pallescens* Schleich. *ex* Schwägr.

Ptychostomum pendulum Hornsch. = *Bryum algovicum* Sendtn. *ex* Müll.Hal.

Ptychostomum pseudotriquetrum (Hedw.) J.R.Spence & H.P.Ramsay *ex* Holyoak & N.Pedersen ≡

[413] See Li et al. (2015) and Wynns (2020).

Bryum pseudotriquetrum (Hedw.) G.Gaertn., B. Meyer & Scherb.

Ptychostomum reedii (H.Rob.) J.R.Spence ≡ *Bryum reedii* H.Rob.

Ptychostomum rutilans (Brid.) J.R.Spence ≡ *Bryum rutilans* Brid.

Ptychostomum salinum (I.Hagen *ex* Limpr.) J.R. Spence ≡ *Bryum salinum* I.Hagen *ex* Limpr.

Ptychostomum schleicheri (Schwägr.) J.R.Spence ≡ *Bryum schleicheri* Schwägr.

Ptychostomum subneodamense (Kindb.) J.R.Spence ≡ *Bryum subneodamense* Kindb.

Ptychostomum turbinatum (Hedw.) J.R.Spence ≡ *Bryum turbinatum* (Hedw.) Turner

Ptychostomum warneum (Schwägr. *ex* Steud.) J.R. Spence ≡ *Bryum warneum* (Schwägr. *ex* Steud.) Brid.

Ptychostomum weigelii (Biehler) J.R.Spence ≡ *Bryum weigelii* Biehler

Ptychostomum wrightii (Sull.) J.R.Spence ≡ *Bryum wrightii* Sull.

Pylaisia condensata (Mitt.) A.Jaeger - excluded[414]

Pylaisiella intricata (Hedw.) Grout ≡ *Pylaisia intricata* (Hedw.) Schimp.

Pylaisiella polyantha (Hedw.) Grout ≡ *Pylaisia polyantha* (Hedw.) Schimp.

Pylaisiella selwynii (Kindb.) H.A.Crum, Steere & L. E.Anderson ≡ *Pylaisia selwynii* Kindb.

Pylaisiella steerei Ando & Higuchi ≡ *Pylaisia steerei* (Ando & Higuchi) Ignatov

Racomitrium aquaticum (Brid. *ex* Schrad.) Brid. - excluded

Racomitrium aquaticum sensu auct. Amer. non (Brid. *ex* Schrad.) Brid. = *R. ryszardii* Bedn.-Ochyra[415]

Rhynchostegium riparioides sensu auct. Amer. non (Hedw.) Cardot = *R. aquaticum* Spruce

Rhytidiadelphus triquetrus (Hedw.) Warnst. ≡ *Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel

Roellia roellii (Broth.) A.L.Andrews *ex* H.A.Crum ≡ *Roellobryon roellii* (Broth.) Ochyra

Rosulabryum andersonii (H.A.Crum) J.R.Spence ≡ *Brachymenium andersonii* H.A.Crum

Rosulabryum andicola (Hook.) Ochyra ≡ *Bryum andicola* Hook.

Rosulabryum biforme (R.S.Williams) J.R.Spence ≡ *Bryum biforme* R.S.Williams

Rosulabryum bornholmense (Wink. & R.Ruthe) J.R. Spence ≡ *Bryum bornholmense* Wink. & R. Ruthe

Rosulabryum canariense (Brid.) Ochyra ≡ *Bryum canariense* Brid.

Rosulabryum capillare (Hedw.) J.R.Spence ≡ *Bryum capillare* Hedw.

Rosulabryum elegans (Nees *ex* Brid.) Ochyra ≡ *Bryum elegans* Nees *ex* Brid.

Rosulabryum erythroloma (Kindb.) J.R.Spence ≡ *Bryum erythroloma (*Kindb.) Syed

Rosulabryum flaccidum (Brid.) J.R.Spence ≡ *Bryum flaccidum* Brid.

Rosulabryum gemmascens (Kindb.) J.R.Spence = *Bryum sanguilentum* Renauld & Cardot

Rosulabryum laevifilum (Syed) Ochyra = *Bryum moravicum* Podp.

Rosulabryum pseudocapillare (Besch.) Ochyra ≡ *Bryum pseudocapillare* Besch.

Rosulabryum rubens (Mitt.) J.R.Spence ≡ *Bryum rubens* Mitt.

Rosulabryum sanguilentum (Renauld & Cardot) J.R. Spence & Brinda ≡ *Bryum sanguilentum* Renauld & Cardot

Rosulabryum torquescens (Bruch & Schimp.) J.R. Spence ≡ *Bryum torquescens* Bruch & Schimp.

Sanionia georgicouncinata (Müll.Hal.) Ochyra & Hedenäs - excluded

Sanionia georgicouncinata sensu auct. Amer. non (Müll.Hal.) Ochyra & Hedenäs = *S. nivalis* Hedenäs[416]

Sanionia uncinata (Hedw.) Loeske var. *symmetrica* (Renauld & Cardot) H.A.Crum & L.E.Anderson ≡ *S. symmetrica* (Renauld & Cardot) Wheldon

Sarmentypnum exannulatum (Schimp.) Hedenäs ≡ *Warnstorfia exannulata* (Schimp.) Loeske

Sarmentypnum pseudosarmentosum (Cardot & Thér.) Hedenäs ≡ *Warnstorfia pseudosarmentosa* (Cardot & Thér.) Tuom. & T.J.Kop.

Sarmentypnum sarmentosum (Wahlenb.) Tuom. & T.J.Kop. ≡ *Warnstorfia sarmentosa* (Wahlenb.) Hedenäs

[414] See Ignatova et al. (2020b).

[415] See Bednarek-Ochyra (2000).

[416] See Hedenäs (2012).

Sarmentypnum trichophyllum (Warnst.) Hedenäs ≡ *Warnstorfia trichophylla* (Warnst.) Tuom. & T.J. Kop.

Sarmentypnum tundrae (Arnell) Hedenäs ≡ *Warnstorfia tundrae* (Arnell) Loeske

Schistidium apocarpum (Hedw.) Bruch & Schimp. subsp. *canadense* (Dupr.) H.H.Blom *ex* B.H. Allen & Pursell ≡ *S. canadense* (Dupr.) Ignatova & H.H.Blom

Schofieldiella micans (Mitt.) W.R.Buck ≡ *Hageniella micans* (Mitt.) B.C.Tan & Y.Jia

Scleropodium cespitans (Müll.Hal.) L.F.Koch var. *sublaeve* (Renauld & Cardot) Wijk & Margad. = *S. cespitans* (Müll.Hal.) L.F.Koch[417]

Scleropodium touretii (Brid.) L.F.Koch var. *colpophyllum* (Sull.) E.Lawton *ex* H.A.Crum = *S. touretii* (Brid.) L.F.Koch

Scopelophila cataractae (Mitt.) Broth. ≡ *Merceyopsis cataractae* (Mitt.) Brinda, Ignatov & Fedosov

Sematophyllum subpinnatum (Brid.) E.Britton ≡ *Brittonodoxa subpinnata* (Brid.) W.R.Buck, P.E. A.S.Câmara & Carv.-Silva

Sphagnum andrusii (H.A.Crum) Flatberg = *S. miyabeanum* Warnst.

Sphagnum atlanticum R.E.Andrus = *S. torreyanum* Sull.[418]

Sphagnum bartlettianum Warnst. = *S. rubellum* Wilson[419]

Sphagnum bergianum R.E.Andrus = *S. subfulvum* Sjörs[420]

Sphagnum brevifolium (Lindb.) Röll = *S. fallax* (H. Klinggr.) H.Klinggr.[421]

Sphagnum crispum R.E.Andrus = *S. subsecundum* Nees

Sphagnum denticulatum Brid. - excluded

Sphagnum fimbriatum Wilson subsp. *concinnum* (Berggr.) Flatberg & Frisvoll ≡ *S. concinnum* (Berggr.) Flatberg[422]

Sphagnum henryense Warnst. = *S. palustre* L.[423]

Sphagnum inundatum Russow - excluded[424]

Sphagnum isoviitae Flatberg = *S. fallax* (H.Klinggr.) H.Klinggr.[425]

Sphagnum macrophyllum Brid. var. *burinense* Maass = *S. macrophyllum* Brid.

Sphagnum macrophyllum Brid. var. *floridanum* Austin = *S. cribrosum* Lindb.

Sphagnum majus (Russow) C.E.O.Jensen ssp. *norvegicum* Flatberg = *S. majus* (Russow) C.E.O.Jensen

Sphagnum mcqueenii R.E.Andrus = *S. torreyanum* Sull.

Sphagnum nitidum Warnst. = *S. subfulvum* Sjörs

Sphagnum rubroflexuosum R.E.Andrus = *S. flexuosum* Dozy & Molk.[426]

Sphagnum schofieldii H.A.Crum = *S. quinquefarium* (Lindb. *ex* Braithw.) Warnst.

Sphagnum sitchense R.E.Andrus = *S. capillifolium* (Ehrh.) Hedw.[427]

Sphagnum subobesum Warnst. = *S. miyabeanum* Warnst.[428]

Sphagnum subsecundum Nees var. *andrusii* H.A. Crum = *S. miyabeanum* Warnst.

Sphagnum subtile (Russow) Warnst. = *S. capillifolium* (Ehrh.) Hedw.[429]

Sphagnum viride Flatberg = *S. cuspidatum* Ehrh. *ex* Hoffm.[430]

Sphagnum wilfii H.A.Crum = *S. rubellum* Wilson [431]

Splachnum luteum Hedw. var. *melanocaulon* Wahlenb. ≡ *Splachnum melanocaulon* (Wahlenb.) Schwägr.

Steerecleus serrulatus (Hedw.) H.Rob. ≡ *Rhynchostegium serrulatum* (Hedw.) Austin

Straminergon stramineum (Dicks. *ex* Brid.) Hedenäs ≡ *Warnstorfia straminea* (Dicks. *ex* Brid.) W.R. Buck & Goffinet

Streptopogon amphidiaceus (Müll.Hal.) M.T.Gallego & M.J.Cano ≡ *Syntrichia amphidiacea* (Müll. Hal.) R.H.Zander

Syntrichia cainii (H.A.Crum & L.E.Anderson) R.H. Zander ≡ *S. norvegica* F.Weber var. *cainii* (H.A. Crum & L.E.Anderson) W.A.Kramer

Syntrichia papillosissima (Copp.) Loeske = *S. ruralis* (Hedw.) F.Weber & D.Mohr subsp. *hirsuta* (Venturi) Düll

[417] See Carter (2014).
[418] See Shaw et al. (2009).
[419] See Imwattana et al. (2024).
[420] See Shaw et al. (2009).
[421] See Duffy et al. (2020).
[422] See Shaw et al. (2012a).
[423] See Karlin et al. (2010).
[424] See Shaw et al. (2012b).
[425] See Duffy et al. (2020).
[426] See Duffy et al. (2020).
[427] See Imwattana et al. (2024).
[428] See Shaw et al. (2015).
[429] See Imwattana et al. (2024).
[430] See Robinson et al. (2024).
[431] See Imwattana et al. (2024).

Tetraplodon angustatus (Hedw.) Bruch & Schimp. ≡ *Voitia angustata* (Hedw.) W.R.Buck & Goffinet
Tetraplodon mnioides (Hedw.) Bruch & Schimp. ≡ *Voitia mnioides* (Hedw.) W.R.Buck & Goffinet
Tetraplodon pallidus I.Hagen ≡ *Voitia pallida* (I. Hagen) W.R.Buck & Goffinet
Tetraplodon paradoxus (R.Br.) I.Hagen ≡ *Voitia paradoxa* (R.Br.) W.R.Buck & Goffinet
Tetraplodon urceolatus (Hedw.) Bruch & Schimp. ≡ *Voitia urceolata* (Hedw.) W.R.Buck & Goffinet
Tetrodontium brownianum (Dicks.) Schwägr. var. *ovatum* (Funck) Wijk & Margad. ≡ *T. ovatum* (Funck) Schwägr.
Thamnobryum alleghaniense (Müll.Hal.) Nieuwl. = *T. subserratum* (Hook. *ex* Harv.) Nog. & Z. Iwats.
Thuidium delicatulum (Hedw.) Schimp. var. *radicans* (Kindb.) H.A.Crum, Steere & L.E.Anderson = *T. assimile* (Mitt.) A.Jaeger
Thuidium philibertii Limpr. = *T. assimile* (Mitt.) A. Jaeger
Timmia megapolitana Hedw. var. *bavarica* (Hessl.) Brid. ≡ *T. bavarica* Hessl.
Timmia norvegica J.E.Zetterst. var. *excurrens* Bryhn = *T. comata* Lindb. & Arnell
Torrentaria riparioides (Hedw.) Ochyra – excluded
Tortella inclinata (R.Hedw.) Limpr. var. *densa* (Lorentz & Molendo) Limpr. ≡ *T. densa* (Lorentz & Molendo) Crundw. & Nyholm
Tortella tortelloides (S.W.Greene) H.Rob. = *T. alpicola* Dixon
Tortella tortuosa (Hedw.) Limpr. var. *arctica* (Arnell) Broth. ≡ *T. arctica* (Arnell) Crundw. & Nyholm
Tortella tortuosa (Hedw.) Limpr. var. *fragilifolia* (Jur.) Limpr. ≡ *T. nidita* (Lindb.) Broth. var. *fragilifolia* (Jur.) Köckinger & Hedenäs
Tortula ammonsiana H.A.Crum & L.E.Anderson ≡ *Syntrichia ammonsiana* (H.A.Crum & L.E.Anderson) Ochyra
Tortula amphidiacea (Müll.Hal.) Broth. ≡ *Syntrichia amphidiacea* (Müll.Hal.) R.H.Zander
Tortula bartramii Steere ≡ *Syntrichia bartramii* (Steere) R.H.Zander
Tortula cainii H.A.Crum & L.E.Anderson ≡ *Syntrichia norvegica* F.Weber var. *cainii* (H.A.Crum & L.E. Anderson) W.A.Kramer
Tortula caninervis (Mitt.) Broth. ≡ *Syntrichia caninervis* Mitt.
Tortula chisosa Magill, Delgad. & L.R.Stark ≡ *Syntrichia chisosa* (Magill, Delgad. & L.R.Stark) R.H.Zander
Tortula fragilis Taylor ≡ *Syntrichia fragilis* (Taylor) Ochyra
Tortula laevipila (Brid.) Schwägr. ≡ *Syntrichia laevipila* Brid.
Tortula laevipila (Brid.) Schwägr. var. *meridionalis* (Schimp.) Wijk & Margad. = *Syntrichia laevipila* Brid.[432]
Tortula lanceola R.H.Zander = *T. lindbergii* Kindb. *ex* Broth.
Tortula latifolia Bruch *ex* Hartm. ≡ *Syntrichia latifolia* (Bruch *ex* Hartm.) Huebener
Tortula modica R.H.Zander = *T. caucasica* Lindb.
Tortula norvegica (F.Weber) Wahlenb. *ex* Lindb. ≡ *Syntrichia norvegica* F.Weber
Tortula obtusissima (Müll.Hal.) Mitt. ≡ *Syntrichia obtusissima* (Müll.Hal.) R.H.Zander
Tortula pagorum (Milde) De Not. ≡ *Syntrichia pagorum* (Milde) J.J.Amann
Tortula papillosa Wilson *ex* Spruce ≡ *Syntrichia papillosa (*Wilson *ex* Spruce) Spruce
Tortula princeps De Not. ≡ *Syntrichia princeps* (De Not.) Mitt.
Tortula rhizophylla (Sakurai) Z.Iwats. & K.Saito = *Chenia leptophylla* (Müll.Hal.) R.H.Zander
Tortula ruralis (Hedw.) G.Gaertn., B.Mey. & Scherb. ≡ *Syntrichia ruralis* (Hedw.) F.Weber & D.Mohr
Tortula scotteri R.H.Zander & Steere = *Hilpertia velenovskyi* (Schiffn.) R.H.Zander
Tortula sinensis (Müll.Hal.) Broth. ≡ *Syntrichia sinensis* (Müll.Hal.) Ochyra
Tortula stanfordensis Steere ≡ *Hennediella stanfordensis* (Steere) Blockeel
Tortula virescens (De Not.) De Not. ≡ *Syntrichia virescens* (De Not.) Boros
Trachybryum megaptilum (Sull.) W.B.Schofield ≡ *Homalothecium megaptilum* (Sull.) H.Rob.
Trachyxiphium heteroicum (Cardot) W.R.Buck = *T. hypnaceum* (Müll.Hal.) W.R.Buck
Trematodon boasii W.B.Schofield = *T. asanoi* Tuzibe
Trichodon cylindricus (Hedw.) Schimp. var. *oblongus* (Lindb.) Podp. ≡ *Trichodon oblongus* Lindb.
Trichostomopsis brevifolia E.B.Bartram = *T. australasiae* (Grev. & Hook.) H.Rob.

[432] See Gallego et al. (2004).

Trichostomum arcticum Kaal. = *Tortella spitsbergensis* (Bizot & Thér.) O.Werner, Köckinger & Ros
Trichostomum brittonianum R.H.Zander - excluded[433]
Trichostomum molariforme R.H.Zander = *T. portoricense* H.A.Crum & Steere
Trichostomum recurvifolium (Taylor) R.H.Zander ≡ *Chionoloma recurvifolium* (Taylor) M.Alonso, M.J.Cano & J.A.Jiménez
Trichostomum spirale Grout = *Chionoloma stenocarpum* (Thér.) M.Alonso, M.J.Cano & J.A.Jiménez
Trichostomum tenuirostre (Hook. & Taylor) Lindb. ≡ *Chionoloma tenuirostre* (Hook. & Taylor) M. Alonso, M.J.Cano & J.A.Jiménez
Trichostomum tenuirostre (Hook. & Taylor) Lindb. var. *gemmiparum* (Schimp.) R.H.Zander = *Chionoloma orthodontum* (Müll.Hal.) M.Alonso, M.J.Cano & J.A.Jiménez[434]
Tuerckheimia angustifolia (K.Saito) R.H.Zander = *T. svihlae* (E.B.Bartram) R.H.Zander
Ulota japonica (Sull. & Lesq.) Mitt. - excluded[435]
Ulota phyllantha Brid. ≡ *Plenogemma phyllantha* (Brid.) Sawicki, Plášek & Ochyra
Venturiella sinensis (Venturi) Müll.Hal. var. *angustiannulata* D.G.Griffin & Sharp ≡ *V. sinensis* (Venturi) Müll.Hal. subsp. *angustiannulata* (D. G.Griffin & Sharp) Pursell
Vinealobryum murrayae (Otnyukova) R.H.Zander = *Husnotiella fragilicuspis* (Broth.) J.A.Jiménez & M.J.Cano
Weissia andersoniana R.H.Zander = *W. ligulifolia* (E.B.Bartram) Grout
Weissia condensa (Voit) Lindb. - excluded[436]
Weissia flavescens (E.Britton) W.D.Reese = *Trichostomum brittonianum* R.H.Zander - excluded
Weissia glauca E.B.Bartram = *W. ligulifolia* (E.B. Bartram) Grout
Weissia hedwigii H.A.Crum = *W. brachycarpa* (Nees & Hornsch.) Jur.
Zygodon apiculatus Redf. = *Z. rupestris* Schimp. *ex* Lorentz
Zygodon menziesii (Schwägr.) Arn. ≡ *Codonoblepharon menziesii* Schwägr.
Zygodon viridissimus (Dicks.) Brid. var. *dentatus* Limpr. ≡ *Z. dentatus* (Limpr.) Breidl. *ex* Gams
Zygodon viridissimus (Dicks.) Brid. var. *rupestris* Lindb. *ex* C.Hartm. ≡ *Z. rupestris* Schimp. *ex* Lorentz

[433] See Zander (2007g).
[434] See Alonso-García et al. (2019).
[435] See Vitt (2014).
[436] See Zander (1993, 2007h).

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Supplementary documents online:

Supplementary Table S1. Alphabetical list of genera, species, subspecies, varieties and forms of mosses from the continental United States and Canada and their familial affiliations.

Supplementary Table S2. Alphabetical list of families of mosses from the continental United States and Canada and their generic inclusions.

Supplementary Table S3. Alphabetical list of families of mosses from the continental United States and Canada and their ordinal affiliations.

Supplementary Table S4. Alphabetical list of orders of mosses from the continental United States and Canada and their familial inclusions.