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Bryological Monograph

An annotated checklist of the mosses of Europe and Macaronesia

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Summary

The moss flora of Europe and Macaronesia comprises 278 genera, 1292 species, 46 subspecies and 118 varieties. Of the total 1292 species, 53 are confined to Macaronesia and 21 are thought to be non-native. The checklist was derived from those for the various component countries and regions. It is based on results published up to the end of 2005. Subspecies and varieties are included; hybrids are omitted. The taxonomic hierarchy is based on one published by Goffinet & Buck in 2004. While it has been strongly influenced by results of modern molecular methods, there are still many remaining uncertainties, even at family level. Because of these uncertainties, taxonomic innovation has generally been avoided. There are four new combinations and one change of status.

KEYWORDS: Bryophyta, Sphagnopsida, Andreaeopsida, Oedipodiopsida, Polytrichopsida, Tetraphidopsida, Bryopsida.

Contents

Introduction

During the last two centuries, authors have at intervals produced floras and checklists that summarize the current state of knowledge of mosses in Europe. In the past 60 years, comprehensive lists of European mosses were produced by Podpěra (1954), Corley *et al.* (1981), with a substantial update by Corley & Crundwell (1991) and Dierssen (2001). It might be thought therefore that the time is not yet ripe for another list. However, Dierssen gives much information on ecology and phytosociology, but does not attempt a critical taxonomic review. Thus about 15 years have passed since the moss flora was fully revised.

These years have been very active and many new species have been described. A remarkable development, which would hardly have been anticipated in 1991, is the use of

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DNA sequencing to understand basic relationships. This has revolutionized the systematics of land plants and resulted in a new classification of mosses.

The immediate stimulus for producing a new list of European mosses came from a meeting of the European Committee for Conservation of Bryophytes (ECCB) in Valencia, Spain, in September 2004. They intend to produce an updated Red List of European bryophytes. For this activity it is necessary to have an updated checklist. There was no immediate need for a new list of Hepaticae and Anthocerotae, which had been revised by Grolle & Long (2000). Mosses were the priority.

A project to make a new checklist

After some consultation, M.O.H. was persuaded to coordinate production of the new list. He proposed a project lasting for the year 2005. It was given the name EuroMoss2005 and had its own website. A Steering Group consisting of Michele Aleffi (Italy), Bill Buck (USA), Montserrat Brugués (Spain), Klaus Dierssen (Germany), Misha Ignatov (Russia), Lars Söderström (Norway) and Jiří Váňa (Czech Republic) guided the project. It played a crucial role from the start, notably in giving the project sufficient gravitas to attract authors who were experts in particular groups.

The project then proceeded in three stages. The first stage was to construct a provisional list, including synonyms, for experts to work from. For this, the ECCB supplied M.O.H. with an initial checklist, which was cross-referenced to the world list of Crosby *et al.* (1999). National and regional lists produced since about 1995 were then searched for names and additional taxa. Many lists were available as electronic documents, either posted on the internet or sent by e-mail. Members of the Steering Group acted as scouts, seeking as complete a species list as possible. The output of the first stage was a provisional list of names, some of which had authorities, together with synonyms that had recently been used in Europe.

At the next stage, experts (Table 1) were each sent a provisional list of names and synonyms for their group, and were asked to convert the provisional list into one conforming to their own ideas. This process resulted in most of the major groups having been reviewed by one or more experts. The gaps were filled by the coordinator and Professor Söderström, with advice from other bryologists who are thanked in the acknowledgements.

When the list was nearly complete, doubtful species were reviewed in detail by the Steering Group, to ensure that they received reasonably consistent treatment. At the final stage, the information was loaded into databases (a database of names, another of annotations and a third with the bibliography) and reformatted for publication. Information published in papers after 2005 was not accepted for this list, which presents the state of knowledge on 31 December 2005.

Table 1. *Experts contributing text for particular families; for the authorship of the paper, contributors other than the coordinator are listed alphabetically, with no attempt made to distinguish the magnitude of their contribution.*

Family or families	*Expert or experts*
Sphagnaceae	Flatberg
Polytrichaceae	Hyvönen, Bell
Funariaceae	Brugués
Grimmiaceae (except *Schistidium*)	Muñoz
Fissidentaceae	Bruggeman-Nannenga
Dicranales (except Fissidentaceae)	Frahm
Pottiaceae	Guerra, Cano, Gallego
Orthotrichaceae	Lara, Garilleti, Mazimpaka
Bryaceae	Holyoak
Amblystegiaceae, Calliergonaceae	Hedenäs
Brachytheciaceae	Ignatov
Neckeraceae, Lembophyllaceae	Enroth

The area of the checklist

Europe is defined basically as that part of the land mass of Eurasia bounded in the east by the Ural mountains and Ural River, and in the south by the Caucasus mountains and the Mediterranean and Black seas (cf. Söderström, Urmi & Váňa, 2002). Defined thus, it includes the Caucasian parts of the Russian Federation but excludes Georgia and Azerbaijan. It includes Turkey-in-Europe, western Kazakhstan, and all the Greek islands. It excludes Anatolia and Cyprus. In the Arctic, Novaya Zemlaya and Franz Josef Land are included (excluded by Corley *et al.*, 1981), as well as Svalbard and Jan Mayen. The Atlantic islands of Iceland and of Macaronesia (Canaries, Madeira and Azores but not Cape Verde) are included.

Nomenclature and taxonomy

With some exceptions, the names listed here are those included in European checklists from about 1995, together with names from the world list of Crosby *et al.* (1999). Earlier names are ignored. This means, fortunately, that there are exceedingly few cases where a name is ambiguous, with different significance depending on authorities.

The more important subspecies and varieties have been included, but there is no intention to include varieties that are not generally recognized.

No attempt has been made to give a comprehensive catalogue of moss hybrids. Hybrid taxa are mentioned in the notes only if they have been treated in recent lists.

At the time of writing, moss taxonomy is being strongly affected by the results of studies using molecular methods and detailed anatomical analysis. In the present list for Europe, we have adopted a standpoint that might be characterized as moderately conservative. Thus we have accepted new generic concepts in Amblystegiaceae (mainly due to Hedenäs) and in Brachytheciaceae (mainly due to Ignatov and Huttunen). However, in Bryaceae, Hypnaceae, Plagiotheciaceae, Pottiaceae and several related small

families, generic and familial concepts are in turmoil. Our response has been to make only a few changes from previous European concepts, anticipating that new circumscriptions will become clear in future.

For similar reasons we have avoided splitting traditional genera, retaining *Dicranoweisia*, *Dicranum*, *Grimmia* and *Racomitrium* as in Corley *et al*. (1981). We are aware from molecular studies that our circumscriptions of *Barbula*, *Hygrohypnum*, *Hypnum*, *Polytrichastrum* and *Trichostomum* are unsatisfactory, but are not yet able to provide new ones. On the other hand, we are happy to accept genera and species that are phylogenetically nested within others, provided that there are clear morphological distinctions. In all of these matters, we have aimed for stability and convenience.

Author citations

Correct author citations are difficult to achieve, and we are well aware that our own are far from perfect. Given the timescale of the project, we have had to rely extensively on secondary sources, especially for those families that were not revised by experts. For author citations where expert opinion was not available, a hierarchy of reliability was applied. At the top of the hierarchy were the *nomina conservanda* set out in the *International Code of Botanical Nomenclature* (Greuter *et al.*, 2000). At the next stage in the hierarchy, we used the catalogue of Polish mosses (Ochyra, Żarnowiec & Bednarek-Ochyra, 2003), which contains the most comprehensive modern nomenclatural treatment of European taxa. For species and higher taxa not found in Poland, we drew on many other sources, none of which had overall priority. The internet database of the Missouri Botanical Garden, W^{3}MOST, was frequently consulted. We have not hesitated to make further changes where we had a definite opinion. The resulting treatment no doubt contains some inconsistencies, for example in the citation of Bruch & Schimper or Schimper alone in the *Bryologia Europaea*.

Author abbreviations are those recommended by the International Plant Names Index (2005), which are accurately based on those of Brummitt & Powell (1992). Where the IPNI omits diacritical signs, we have followed it exactly; thus Sjors, Martensson and Jaderh. appear in place of the more correct Sjörs, Mårtensson and Jäderh. Eva Maier is abbreviated E.Maier (as in W^{3}MOST); she is not the Elva Maria Maier listed by IPNI. Also Robert Scott, author of *Dicranum scottianum*, is cited here as R.Scott, not as the cumbersome Scott, Robert in W^{3}MOST.

The starting date for moss nomenclature (the Sphagnaceae excepted) is 1 January 1801, which is the notional publication date of *Species Muscorum*. According to article 46.5 of the *International Code* (Greuter *et al.*, 2000), the citation of an author who published the name before the starting point of the group concerned may be indicated by the use of the word 'ex'. However, this is optional and is not followed here for names in Hedwig (1801). We have generally cited the pre-Hedwigian author in other cases. Thus the form Sw. ex anon. is used for several Swartz species that were validated in an anonymous review (Anon., 1801), and L. ex Dicks. for a Linnaean species that was validated in the index of Dickson (1801). All names of species described by Dickson in his earlier fascicles were validated in this index if not before (Karttunen, 1988). Dickson's fourth fascicle was published on 4 October 1801 and antedates the fourth edition of Withering's *Systematic Arrangement of British Plants*, which was published on 26 December 1801 (Greene, 1962). Therefore the citation of *Tayloria tenuis* is here given as (Dicks.) Schimp. rather than (With.) Schimp. as in Corley *et al.* (1981). Several other citations have been changed similarly.

New combinations

For convenience of citation, new combinations are made by individual authors, including A.J.E. Smith, who supplied the text for his three. Smith's reasons for making these

Table 2. *Species confined in Europe to Macaronesia.*

Aloina humilis	*Echinodium prolixum*	*Microcampylopus laevigatus*
Alophosia azorica	*Echinodium renauldii*	*Nobregaea latinervis*
Amphidium tortuosum	*Echinodium setigerum*	*Orthotrichum handiense*
Andoa berthelotiana	*Echinodium spinosum*	*Pelekium atlanticum*
Brachymenium notarisii	*Entosthodon krausei*	*Philonotis uncinata*
Brachymenium philonotula	*Fissidens azoricus*	*Platyhypnidium torrenticola*
Brachythecium percurrens	*Fissidens coacervatus*	*Rhynchostegiella bourgaeana*
Breutelia azorica	*Fissidens luisierii*	*Rhynchostegiella macilenta*
Bryoxiphium madeirense	*Fissidens microstictus*	*Rhynchostegiella trichophylla*
Bryum apiculatum	*Fissidens nobreganus*	*Syntrichia bogotensis*
Campylopus cygneus	*Fissidens serratus*	*Thamnobryum fernandesii*
Campylopus flaccidus	*Fissidens sublimbatus*	*Thamnobryum rudolphianum*
Campylopus incrassatus	*Fissidens sublineaefolius*	*Thuidiopsis sparsa*
Crossidium davidai	*Grimmia curviseta*	*Tortella limbata*
Cryptoleptodon longisetus	*Homalia webbiana*	*Tortula ampliretis*
Daltonia stenophylla	*Leucobryum albidum*	*Tortula bogosica*
Dicranella campylophylla	*Leucodon canariensis*	*Trematodon perssoniorum*
Ditrichum punctulatum	*Leucodon treleasei*	

Table 3. *Non-native mosses in Europe.*

Species	Location
Achrophyllum dentatum	Garden, England
Atrichum crispum	Britain and Ireland, widespread (male only)
Bryum apiculatum	Tenerife
Bryum valparaisense	Canary Islands, Portugal
Calomnion complanatum	Garden, Ireland
Calyptrochaeta apiculata	Britain, rare
Campylopus introflexus	C. and W. Europe, widespread
Hennediella macrophylla	Britain, widespread and spreading
Hennediella stanfordensis	Britain and Ireland, widespread and spreading
Hypopterygium tamarisci	Portugal
Leptophascum leptophyllum	Widespread in S. and W. Europe, apparently spreading
Leptotheca gaudichaudii	Garden, Ireland
Myuroclada maximowiczii	Garden, southern Russia
Orthodontium lineare	C. and W. Europe, widespread
Sematophyllum adnatum	Lombardy and Piedmont, several localities
Splachnobryum obtusum	Hot springs, Hungary and Azores; elsewhere in greenhouses
Syntrichia bogotensis	Madeira
Tortula amplexa	Britain, confined to one small area
Tortula bogosica	Azores and Canaries
Tortula bolanderi	S. Europe (rare), Macaronesia
Thuidiopsis sparsa	Madeira, in a former park area

combinations are given in the second edition of his flora (Smith, 2004).

Heterocladium flaccidum (Schimp.) A.J.E.Sm., **stat. et comb. nov.** Basionym: *Heterocladium heteropterum* var. *flaccidum* Schimp. in Bruch, Schimp. & W.Gümbel, *Bryologia Europaea* 5: 154 (fasc. 49–51). 1852.

Hypnum cupressiforme var. ***heseleri*** (Ando & Higuchi) M.O.Hill, **stat. et comb. nov.** Basionym: *Hypnum heseleri* Ando & Higuchi, Journal of the Hattori Botanical Laboratory 75: 98. f. 1–2. 1994.

Pelekium atlanticum (Hedenäs) Hedenäs, **comb. nov.** Basionym: *Thuidium atlanticum* Hedenäs, Journal of Bryology 16: 387. f. 1–2. 1991.

Pohlia flexuosa var. ***pseudomuyldermansii*** (Arts, Nordhorn-Richter & A.J.E.Sm.) A.J.E.Sm., **comb. nov.** Basionym: *Pohlia muyldermansii* var. *pseudomuyldermansii* Arts, Nordhorn-Richter & A.J.E.Sm. Journal of Bryology 14: 642. f. 3. 1987.

Weissia × ***mittenii*** (Bruch & Schimp.) Mitt. emend. A.J.E.Sm., **stat. nov.** Basionym: *Weissia mittenii* (Bruch & Schimp.) Mitt., Annals and Magazine of Natural History, ser. 2, 8: 317. 1851.

Planta originis hybridae. Parens feminea *Weissia multicapsularis*. Parens mas forte *W. rostellata*.

Composition of the moss flora

The moss flora comprises 1292 species in 278 genera, 71 families and 22 orders. In addition, we recognize 46 subspecies and 118 varieties. Of the total 1292 species, 53 are confined in Europe to the Atlantic islands of Macaronesia (Table 2). In addition, *Bryoxiphium norvegicum*, *Didymodon brachyphyllus* and *Polytrichastrum sphaerothecium* are confined to Iceland, and *Bryum miniatum* to the Faeroe islands.

In the east and south-east, several species are known only from Russia, mainly from the Urals and the Caucasus. In Asia just outside Europe, *Crumia latifolia*, *Tortula caucasica* and *Trichostomum connivens* are known from the Caucasus. An additional eight species are listed by Kürschner & Erdağ (2005) from Anatolia.

Twenty-one species of moss are thought to have been introduced to Europe by human agency (Table 3), a remarkably small number. Mosses must have been introduced from the Americas, especially to Macaronesia, before moss recording began; but invasions before 1900 would not have been noticed. No non-native species is known to have arrived before 1800, though Corley & Frahm (1982) have speculated that *Campylopus pyriformis* is a late 18th century introduction from the Southern Hemisphere. Indeed, the only alien known to have reached Europe before 1900 is the North American *Atrichum crispum*, which has spread slowly and is probably a single clone. There are several other species that may be introduced. For example *Bryum gemmiferum*, now widespread in central and west Europe, appears still to be spreading, and lacks pre-1940 records (Herman Stieperaere, pers. comm.).

TAXONOMIC HIERARCHY

The main source for the hierarchy is Goffinet & Buck (2004). A few genera have been moved between families to take account of suggestions from Ignatov and Hedenäs or where there is evidence from newer molecular phylogenies. The following classes and orders occur in Europe. Orders are included in the list of taxa, below.

Sphagnopsida (Engl.) Ochyra
Sphagnales Limpr.
Andreaeopsida (Limpr.) Rothm.
Andreaeales Limpr.
Oedipodiopsida (Schimp.) Goffinet & W.R.Buck
Oedipodiales (Schimp.) Goffinet & W.R.Buck
Polytrichopsida Ochyra, Żarnowiec & Bednarek-Ochyra
Polytrichales M.Fleisch.
Tetraphidopsida (M.Fleisch.) Goffinet & W.R.Buck
Tetraphidales M.Fleisch.
Bryopsida (Limpr.) Rothm.
Buxbaumiales M.Fleisch.
Diphysciales M.Fleisch.
Timmiales (M.Fleisch.) Ochyra
Encalyptales Dixon
Funariales M.Fleisch.
Bryoxiphiales H.A.Crum & L.E.Anderson
Grimmiales M.Fleisch.
Archidiales Limpr.
Dicranales H.Philib. ex M.Fleisch.
Pottiales M.Fleisch.
Splachnales (M.Fleisch.) Ochyra
Orthotrichales Dixon
Hedwigiales Ochyra
Bryales Limpr.
Rhizogoniales (M.Fleisch.) Goffinet & W.R.Buck
Hookeriales M.Fleisch.
Hypnales (M.Fleisch.) W.R.Buck & Vitt

List of Taxa

Sphagnales Limpr.
Sphagnaceae Dumort.
1 ***Sphagnum*** L. [1]
section *Sphagnum*
1 ***affine*** Renauld & Cardot (*S. affine* var. *flagellare* (Schlieph. ex Röll) L.Söderstr. & Hedenäs, *S. imbricatum* subsp. *affine* (Renauld & Cardot) Flatberg)
2 ***austinii*** Sull. (*S. imbricatum* subsp. *austinii* (Sull.) Flatberg)
3 ***centrale*** C.E.O.Jensen (*S. palustre* var. *centrale* (C.E.O.Jensen) A.Eddy)
4 ***magellanicum*** Brid.
5 ***palustre*** L.
6 ***papillosum*** Lindb.
section *Rigida* (Lindb.) Limpr.
7 ***compactum*** Lam. & DC.
8 ***strictum*** Sull.
section *Cuspidata* Lindb.
9 ***angustifolium*** (C.E.O.Jensen ex Russow) C.E.O.Jensen (*S. recurvum* var. *tenue* H.Klinggr.)
10 ***annulatum*** H.Lindb. ex Warnst.
11 ***balticum*** (Russow) C.E.O.Jensen
12 ***cuspidatum*** Ehrh. ex Hoffm. (*S. viride* Flatberg) [2]
13 ***fallax*** (H.Klinggr.) H.Klinggr. (*S. brevifolium* (Lindb. ex Braithw.) Röll, *S. fallax* subsp. *isoviitae* (Flatberg) M.O.Hill, *S. isoviitae* Flatberg, *S. recurvum* var. *brevifolium* (Lindb. ex Braithw.) Warnst.) [3]
14 ***flexuosum*** Dozy & Molk.
15 ***jensenii*** H.Lindb.
16 ***lenense*** H.Lindb. ex L.I.Savicz [4]
17 ***lindbergii*** Schimp.
18 ***majus*** (Russow) C.E.O.Jensen
subsp. ***majus***
subsp. ***norvegicum*** Flatberg
19 ***obtusum*** Warnst.
20 ***pulchrum*** (Lindb. ex Braithw.) Warnst.
21 ***riparium*** Ångstr.
22 ***tenellum*** (Brid.) Pers. ex Brid.
23 ***troendelagicum*** Flatberg
section *Subsecunda* (Lindb.) Schimp.
24 ***auriculatum*** Schimp. (*S. denticulatum* Brid. [5], *S. subsecundum* var. *rufescens* (Nees ex Hornsch.) Huebener)
25 ***contortum*** Schultz (*S. subsecundum* var. *contortum* (Schultz) Huebener)
26 ***inundatum*** Russow (*S. denticulatum* var. *inundatum* (Russow) Kartt., *S. subsecundum* subsp. *inundatum* (Russow) Meyl., *S. subsecundum* var. *inundatum* (Russow) C.E.O.Jensen)
27 ***platyphyllum*** (Lindb. ex Braithw.) Warnst. (*S. subsecundum* var. *platyphyllum* (Lindb. ex Braithw.) Cardot)
28 ***pylaesii*** Brid.
29 ***subsecundum*** Nees
section *Squarrosa* (Russow) Schimp.
30 ***squarrosum*** Crome
31 ***teres*** (Schimp.) Ångstr.
32 ***tundrae*** Flatberg [6]
section *Polyclada* (C.E.O.Jensen) Horrell
33 ***wulfianum*** Girg. [7]
section *Insulosa* Isov.
34 ***aongstroemii*** C.Hartm. [8]
section *Acutifolia* Wilson [9, 10]
35 ***angermanicum*** Melin
36 ***arcticum*** Flatberg & Frisvoll
37 ***capillifolium*** (Ehrh.) Hedw. (*S. nemoreum* Scop., *S. tenerum* auct. eur. non Sull. & Lesq. ex Sull.) [11]
38 ***fimbriatum*** Wilson
subsp. ***concinnum*** (Berggr.) Flatberg & Frisvoll
subsp. ***fimbriatum***
39 ***fuscum*** (Schimp.) H.Klinggr.
40 ***girgensohnii*** Russow
41 ***molle*** Sull.
42 ***olafii*** Flatberg [12]
43 ***quinquefarium*** (Braithw.) Warnst.
44 ***rubellum*** Wilson (*S. andersonianum* R.E.Andrus [14], *S. capillifolium* subsp. *rubellum* (Wilson) M.O.Hill, *S. capillifolium* var. *tenellum* (Schimp.) H.A.Crum)
45 ***rubiginosum*** Flatberg [13]
46 ***russowii*** Warnst.
47 ***skyense*** Flatberg
48 ***subfulvum*** Sjors

subsp. ***purpureum*** Flatberg
subsp. ***subfulvum***
49 ***subnitens*** Russow & Warnst.
subsp. ***ferrugineum*** Flatberg (*S. subnitens* var. *ferrugineum* (Flatberg) M.O.Hill)
subsp. ***subnitens***
50 ***warnstorfii*** Russow
Andreaeales Limpr.
Andreaeaceae Dumort.
2 ***Andreaea*** Hedw. [15]
section *Chasmocalyx* Lindb. ex Braithw.
1 ***nivalis*** Hook.
section *Nerviae* Cardot ex G.Roth
2 ***blyttii*** Schimp.
3 ***crassinervia*** Bruch
4 ***frigida*** Huebener
5 ***heinemannii*** Hampe & Müll.Hal. (*A. planinervia* Lindb. ex G.Roth)
subsp. ***crassifolia*** (Luisier) Sérgio (*A. crassifolia* Luisier) [16]
subsp. ***heinemannii***
6 ***megistospora*** B.M.Murray
7 ***rothii*** F.Weber & D.Mohr
subsp. ***falcata*** (Schimp.) Lindb.
subsp. ***rothii***
section *Andreaea*
8 ***alpestris*** (Thed.) Schimp. (*A. rupestris* var. *alpestris* (Thed.) Sharp)
9 ***alpina*** Hedw.
10 ***mutabilis*** Hook.f. & Wilson
11 ***obovata*** Thed. (*A. hartmanii* Thed.)
12 ***rupestris*** Hedw.
var. ***papillosa*** (Lindb.) Podp.
var. ***rupestris***
13 ***sinuosa*** B.M.Murray
Oedipodiales (Schimp.) Goffinet & W.R.Buck
Oedipodiaceae Schimp.
3 ***Oedipodium*** Schwägr.
1 ***griffithianum*** (Dicks.) Schwägr.
Polytrichales M.Fleisch.
Polytrichaceae Schwägr.
4 ***Alophosia*** Cardot
1 ***azorica*** (Renauld & Cardot) Cardot
5 ***Atrichum*** P.Beauv., nom. cons.
1 ***angustatum*** (Brid.) Bruch & Schimp. (*A. angustatum* var. *rhystophyllum* (Müll.Hal.) P.W.Richards & E.C.Wallace) [17]
2 ***crispum*** (James) Sull.
3 ***flavisetum*** Mitt. (*A. haussknechtii* Jur. & Milde, *A. undulatum* var. *gracilisetum* Besch.) [18]
4 ***tenellum*** (Röhl.) Bruch & Schimp.
5 ***undulatum*** (Hedw.) P.Beauv.
6 ***Oligotrichum*** DC., nom. cons.
1 ***hercynicum*** (Hedw.) Lam. & DC.
7 ***Pogonatum*** P.Beauv. [19]
1 ***aloides*** (Hedw.) P.Beauv. [20]
2 ***dentatum*** (Menzies ex Brid.) Brid. (*P. capillare* (Michx.) Brid.)
3 ***nanum*** (Hedw.) P.Beauv. [20]
4 ***neesii*** (Müll.Hal.) Dozy [21]
5 ***urnigerum*** (Hedw.) P.Beauv. (*P. urnigerum* var. *subintegrifolium* (Arnell & C.E.O.Jensen) H.Möller)
8 ***Polytrichastrum*** G.L.Sm. [22]
1 ***alpinum*** (Hedw.) G.L.Sm. (*Pogonatum alpinum* (Hedw.) Rohl., *Polytrichastrum alpinum* var. *septentrionale* (Sw. ex Brid.) G.L.Sm., *P. alpinum* var. *fragile* (Bryhn) D.G.Long, *P. norwegicum* (Hedw.) Schljakov, *Polytrichum alpinum* Hedw., *P. alpinum* var. *arcticum* (Sw. ex Brid.) Wahlenb.) [23]
2 ***formosum*** (Hedw.) G.L.Sm. (*Polytrichum formosum* Hedw.)
3 ***longisetum*** (Sw. ex Brid.) G.L.Sm. (*P. longisetum* var. *anomalum* (Milde) Ignatov & G.L.Merr., *Polytrichum longisetum* Sw. ex Brid.)
4 ***pallidisetum*** (Funck) G.L.Sm. (*Polytrichum formosum* var. *decipiens* (Limpr.) Loeske, *Polytrichum pallidisetum* Funck)
5 ***sexangulare*** (Brid.) G.L.Sm. (*Polytrichum sexangulare* Hedw.)
6 ***sphaerothecium*** (Besch.) J.-P.Frahm (*P. sexangulare* var. *vulcanicum* (C.E.O.Jensen) G.L.Merr., *Polytrichum sphaerothecium* (Besch.) Müll.Hal.) [24]
9 ***Polytrichum*** Hedw. [25]
1 ***commune*** Hedw. (*P. commune* var. *humile* Sw., *P. commune* var. *perigoniale* (Michx.) Hampe, *P. perigoniale* Michx.)
2 ***hyperboreum*** R.Br.
3 ***jensenii*** I.Hagen (*P. commune* var. *jensenii* (I.Hagen) Mönk.)
4 ***juniperinum*** Hedw.
5 ***piliferum*** Hedw. (*P. piliferum* var. *hoppei* (Hornsch.) Haller)
6 ***strictum*** Menzies ex Brid. (*P. affine* Funck, *P. alpestre* Hoppe)
7 ***swartzii*** Hartm. (*P. commune* var. *swartzii* (Hartm.) Nyholm)
8 ***uliginosum*** (Wallr.) Schriebl (*P. commune* var. *uliginosum* Wallr.)
10 ***Psilopilum*** Brid.
1 ***cavifolium*** (Wilson) I.Hagen
2 ***laevigatum*** (Wahlenb.) Lindb. (*P. laevigatum* var. *aloma* I.Hagen)
Tetraphidales M.Fleisch.
Tetraphidaceae Schimp.
11 ***Tetraphis*** Hedw.
1 ***pellucida*** Hedw.
12 ***Tetrodontium*** Schwägr.
1 ***brownianum*** (Dicks.) Schwägr.
2 ***ovatum*** (Funck) Schwägr.
3 ***repandum*** (Funck) Schwägr.
Buxbaumiales M.Fleisch.
Buxbaumiaceae Schimp.
13 ***Buxbaumia*** Hedw.

1 ***aphylla*** Hedw.
2 ***viridis*** (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl.
Diphysciales M.Fleisch.
Diphysciaceae M.Fleisch.
14 ***Diphyscium*** D.Mohr
1 ***foliosum*** (Hedw.) D.Mohr
Timmiales (M.Fleisch.) Ochyra
Timmiaceae Schimp.
15 ***Timmia*** Hedw., nom. cons.
section *Timmiaurea* Brassard
1 ***austriaca*** Hedw.
section *Timmia*
2 ***bavarica*** Hessl.
3 ***megapolitana*** Hedw.
section *Norvegica* Brassard
4 ***comata*** Lindb. & Arnell
5 ***norvegica*** J.E.Zetterst.
6 ***sibirica*** Lindb. & Arnell
Encalyptales Dixon
Encalyptaceae Schimp.
16 ***Bryobrittonia*** Williams [26]
1 ***longipes*** (Mitt.) D.G.Horton (*Encalypta longipes* Mitt.)
17 ***Encalypta*** Hedw. [27] [28]
section *Streptotheca* (Kindb.) Broth.
1 ***procera*** Bruch
2 ***streptocarpa*** Hedw.
section *Pyromitrium* Wallr. ex Hampe
3 ***alpina*** Sm.
4 ***mutica*** I.Hagen (*E. vulgaris* var. *mutica* Brid.)
section *Rhabdotheca* Müll.Hal.
5 ***intermedia*** Jur. [29]
6 ***obovatifolia*** Nyholm [30]
7 ***rhaptocarpa*** Schwägr.
var. ***leptodon*** Lindb. (*E. rhaptocarpa* var. *trachymitria* (Ripart) Wijk & Margad., *E. trachymitria* Ripart) [31]
var. ***rhaptocarpa***
8 ***spathulata*** Müll.Hal. (*E. rhaptocarpa* var. *spathulata* (Müll.Hal.) Husn.)
9 ***vulgaris*** Hedw.
section *Megasporae* D.G.Horton
10 ***longicolla*** Bruch [32]
section *Encalypta*
11 ***affinis*** R.Hedw.
subsp. ***affinis***
subsp. ***macounii*** (Austin) D.G.Horton (*E. macounii* Austin) [33]
12 ***brevicolla*** (Bruch & Schimp.) Ångstr. [32]
13 ***brevipes*** Schljakov
14 ***ciliata*** Hedw.
15 ***microstoma*** Bals.-Criv. & De Not.
Funariales M.Fleisch.
Funariaceae Schwägr. [34] [35]
18 ***Entosthodon*** Schwägr. [36]
Subgenus *Entosthodon*
1 ***attenuatus*** (Dicks.) Bryhn (*E. templetonii* (Sm.) Schwägr., *Funaria attenuata* (Dicks.) Lindb.)
2 ***durieui*** Mont. (*E. durieui* var. *mustaphae* Trab., *E. mustaphae* Trab., *E. pallescens* Jur., *E. pallescens* var. *mitratus* (Casares-Gil) Wijk & Margad., *E. physcomitroides* Casares-Gil & Beltrán, *Funaria pallescens* (Jur.) Lindb.) [37]
3 ***hungaricus*** (Boros) Loeske (*E. maroccanus* (Meyl.) Hébr. & Lo Giudice, *Funaria hungarica* Boros, *Physcomitrium maroccanum* Meyl.) [38]
4 ***krausei*** Besch. (*Funaria krausei* (Besch.) Geh. & Herzog) [39]
5 ***obtusus*** (Hedw.) Lindb. (*E. ericetorum* (De Not.) Müll.Hal., *Funaria obtusa* (Hedw.) Lindb.)
Subgenus *Plagiodus* (Mitt.) Fife
6 ***convexus*** (Spruce) Brugués (*Funaria convexa* Spruce, *Funaria pustulosa* Zodda)
7 ***muhlenbergii*** (Turner) Fife (*Funaria calcarea* Wahlenb., *Funaria dentata* Crome, *Funaria hibernica* Hook., *Funaria mediterranea* Lindb., *Funaria muhlenbergii* Turner)
8 ***pulchellus*** (H.Philib.) Brugués (*Funaria pulchella* H.Philib.)
9 ***schimperi*** Brugués (*Funaria algieriensis* Lindb., *Funaria durieui* Schimp.) [40]
Subgenus *Murcia* Fife
10 ***fascicularis*** (Hedw.) Müll.Hal. (*Funaria fascicularis* (Hedw.) Lindb.)
11 ***mouretii*** (Corb.) Jelenc (*Funaria mouretii* Corb.) [41]
19 ***Funaria*** Hedw. [36] [39] [42]
1 ***aequidens*** Lindb. ex Broth.
2 ***arctica*** (Berggr.) Kindb.
3 ***hygrometrica*** Hedw.
4 ***microstoma*** Bruch ex Schimp.
20 ***Funariella*** Sérgio
1 ***curviseta*** (Schwägr.) Sérgio (*Entosthodon curvisetus* (Schwägr.) Müll.Hal., *Funaria curviseta* (Schwägr.) Milde)
21 ***Goniomitrium*** Hook.f. & Wilson [43]
1 ***seroi*** Casas [44]
22 ***Physcomitrella*** Bruch & Schimp.
1 ***patens*** (Hedw.) Bruch & Schimp. (*Aphanorrhegma patens* (Hedw.) Lindb., *Physcomitrium patens* (Hedw.) Mitt.)
23 ***Physcomitrium*** (Brid.) Brid.
1 ***arenicola*** Laz.
2 ***eurystomum*** Sendtn.
subsp. ***acuminatum*** (Bruch & Schimp.) Giacom. (*P. acuminatum* Bruch & Schimp.) [45]
subsp. ***eurystomum***
3 ***pyriforme*** (Hedw.) Bruch & Schimp.
4 ***sphaericum*** (C.F.Ludw. ex Schkuhr) Brid.
24 ***Pyramidula*** Brid.
1 ***tetragona*** (Brid.) Brid. (*P. algeriensis* Chud. & Douin, *P. tetragona* var. *zoddae* Bott.) [46]
Disceliaceae Schimp.
25 ***Discelium*** Brid.
1 ***nudum*** (Dicks.) Brid.
Gigaspermaceae Lindb.

26 ***Gigaspermum*** Lindb.
1 ***mouretii*** Corb.
27 ***Oedipodiella*** Dixon
1 ***australis*** (Wager & Dixon) Dixon (*O. australis* var. *catalaunica* P.de la Varde) [47]
Bryoxiphiales H.A.Crum & L.E.Anderson
Bryoxiphiaceae Besch., nom. cons.
28 ***Bryoxiphium*** Mitt., nom. cons.
1 ***madeirense*** Á.Löve & D.Löve [48]
2 ***norvegicum*** (Brid.) Mitt.
Grimmiales M.Fleisch.
Grimmiaceae Arn.
29 ***Coscinodon*** Spreng.
1 ***cribrosus*** (Hedw.) Spruce (*C. cribrosus* var. *brevipila* M.Fleisch. & Warnst.)
2 ***humilis*** Milde [49]
30 ***Grimmia*** Hedw.
1 ***alpestris*** (F.Weber & D.Mohr) Schleich. (*Orthogrimmia alpestris* (F.Weber & D.Mohr) Ochyra & Żarnowiec) [50]
2 ***anodon*** Bruch & Schimp. (*G. limprichtii* Kern) [51]
3 ***anomala*** Hampe ex Schimp. (*Dryptodon anomalus* (Hampe ex Schimp.) Loeske)
4 ***arenaria*** Hampe (*G. donniana* var. *curvula* Spruce, *Orthogrimmia arenaria* (Hampe) Ochyra & Żarnowiec) [52]
5 ***atrata*** Miel. ex Hornsch. (*Streptocolea atrata* (Miel. ex Hornsch.) Ochyra & Żarnowiec)
6 ***caespiticia*** (Brid.) Jur. (*G. pyrenaica* Kern, *Orthogrimmia caespiticia* (Brid.) Ochyra & Żarnowiec)
7 ***capillata*** De Not. [53]
8 ***crinita*** Brid.
9 ***curviseta*** Bouman [54]
10 ***decipiens*** (Schultz) Lindb. (*Dryptodon decipiens* (Schultz) Loeske)
11 ***dissimulata*** E.Maier [55]
12 ***donniana*** Sm. (*G. sudetica* Spreng. ex Schkuhr, *Orthogrimmia donniana* (Sm.) Ochyra & Żarnowiec)
13 ***elatior*** Bruch ex Bals.-Criv. & De Not. (*Dryptodon incurvus* (Hornsch.) Brid. [56], *G. elatior* var. *pseudofunalis* Limpr.)
14 ***elongata*** Kaulf. (*Dryptodon elongatus* (Kaulf.) Hartm.)
15 ***funalis*** (Schwägr.) Bruch & Schimp. (*Dryptodon funalis* (Schwägr.) Brid., *G. funalis* var. *calvescens* (Kindb.) H.Möller) [57]
16 ***fuscolutea*** Hook. (*G. apiculata* Hornsch., *G. holleri* Molendo)
17 ***hartmanii*** Schimp. (*Dryptodon hartmanii* (Schimp.) Limpr.)
18 ***incurva*** Schwägr. (*Dryptodon contortus* (Wahlenb.) Brid.)
19 ***laevigata*** (Brid.) Brid. (*Guembelia laevigata* (Brid.) Ochyra & Żarnowiec)
20 ***lisae*** De Not. (*G. retracta* Stirt.) [58]
21 ***longirostris*** Hook. (*G. affinis* Hornsch., *Guembelia longirostris* (Hook.) Ochyra & Żarnowiec)
22 ***mollis*** Bruch & Schimp. (*Hydrogrimmia mollis* (Bruch & Schimp.) Loeske)
23 ***montana*** Bruch & Schimp. (*G. pilosissima* Herzog, *Orthogrimmia montana* (Bruch & Schimp.) Ochyra & Żarnowiec)
24 ***muehlenbeckii*** Schimp. (*Dryptodon muehlenbeckii* (Schimp.) Loeske) [59]
25 ***nutans*** Bruch (*G. meteorae* C.C.Towns.)
26 ***orbicularis*** Bruch ex Wilson (*Dryptodon orbicularis* (Bruch ex Wilson) Ochyra & Żarnowiec)
27 ***ovalis*** (Hedw.) Lindb. (*Guembelia ovalis* (Hedw.) Müll.Hal.)
28 ***plagiopodia*** Hedw. (*G. plagiopodia* var. *arvernica* (H.Philib.) Boulay)
29 ***poecilostoma*** Cardot & Sebille, nom. cons. prop. (*G. tergestina* var. *poecilostoma* (Cardot & Sebille) Loeske, *G. tergestina* var. *tergestinoides* Culm.) [59]
30 ***pulvinata*** (Hedw.) Sm. (*Dryptodon pulvinatus* (Hedw.) Brid., *G. pulvinata* var. *africana* (Hedw.) Hook.f., *G. pulvinata* var. *obtusa* (Brid.) Huebener) [60]
31 ***ramondii*** (Lam. & DC.) Margad. (*Dryptodon patens* (Hedw.) Brid., *G. curvata* (Brid.) De Sloover)
32 ***reflexidens*** Müll.Hal. (*G. grisea* Cardot [62], *G. sessitana* De Not., *G. subsulcata* Limpr. [63], *Orthogrimmia sessitana* (De Not.) Ochyra & Żarnowiec) [61]
33 ***teretinervis*** Limpr.
34 ***tergestina*** Tomm. ex Bruch & Schimp. (*G. crassifolia* Lindb. ex Broth. [64], *Guembelia tergestina* (Tomm. ex Bruch & Schimp.) Buyss.)
35 ***torquata*** Drumm. (*Dryptodon torquatus* (Drumm.) Brid.)
36 ***trichophylla*** Grev. (*Dryptodon trichophyllus* (Grev.) Brid., *G. austrofunalis* auct. eur. non Müll.Hal. [65], *G. britannica* A.J.E.Sm. [66], *G. meridionalis* (Müll.Hal.) E.Maier [67], *G. trichophylla* var. *stirtonii* (Schimp.) H.Möller, *G. trichophylla* var. *subsquarrosa* (Wilson) A.J.E.Sm., *G. trichophylla* var. *tenuis* (Wahlenb.) Wijk & Margad.)
37 ***triformis*** Carestia & De Not. (*Orthogrimmia triformis* (Carestia & De Not.) Ochyra & Żarnowiec) [68]
38 ***ungeri*** Jur. [69]
39 ***unicolor*** Hook.
31 ***Indusiella*** Broth. & Müll.Hal.
1 ***thianschanica*** Broth. & Müll.Hal. [70]
32 ***Jaffueliobryum*** Thér.
1 ***latifolium*** Thér. [71]
33 ***Racomitrium*** Brid. [72]
Subgenus *Racomitrium*
1 ***lanuginosum*** (Hedw.) Brid.
Subgenus *Niphotrichum* Bednarek-Ochyra (*Niphotrichum* (Bednarek-Ochyra) Bednarek-Ochyra & Ochyra)
2 ***canescens*** (Hedw.) Brid. (*Niphotrichum canescens* (Hedw.) Bednarek-Ochyra & Ochyra) subsp. ***canescens***

subsp. ***latifolium*** (C.E.O.Jensen) Frisvoll (*Niphotrichum canescens* subsp. *latifolium* (C.E.O.Jensen) Bednarek-Ochyra & Ochyra)
3 ***elongatum*** Ehrh. ex Frisvoll (*Niphotrichum elongatum* (Frisvoll) Bednarek-Ochyra & Ochyra, *R. canescens* var. *intermedium* Venturi & Bott.)
4 ***ericoides*** (Brid.) Brid. (*Niphotrichum ericoides* (Brid.) Bednarek-Ochyra & Ochyra, *R. canescens* var. *ericoides* (Brid.) Hampe)
5 ***panschii*** (Müll.Hal.) Kindb. (*Niphotrichum panschii* (Müll.Hal.) Bednarek-Ochyra & Ochyra)
Subgenus *Cataracta* Vilh. (*Codriophorus* P.Beauv.)
6 ***aciculare*** (Hedw.) Brid. (*Codriophorus acicularis* (Hedw.) P.Beauv.)
7 ***aquaticum*** (Brid. ex Schrad.) Brid. (*Codriophorus aquaticus* (Brid. ex Schrad.) Bednarek-Ochyra & Ochyra)
8 ***fasciculare*** (Hedw.) Brid. (*Codriophorus fascicularis* (Hedw.) Bednarek-Ochyra & Ochyra)
9 ***hespericum*** Sérgio, J.Muñoz & Ochyra (*Codriophorus hespericus* (Sérgio, J.Muñoz & Ochyra) Bednarek-Ochyra & Ochyra) [73]
Subgenus *Ellipticodryptodon* (Vilh.) Bednarek-Ochyra & Ochyra (*Bucklandiella* Roiv.)
10 ***affine*** (F.Weber & D.Mohr) Lindb. (*Bucklandiella affinis* (F.Weber & D.Mohr) Bednarek-Ochyra & Ochyra, *R. heterostichum* var. *affine* (F.Weber & D.Mohr) Lesq.)
11 ***ellipticum*** (Turner) Bruch & Schimp. (*Bucklandiella elliptica* (Turner) Bednarek-Ochyra & Ochyra)
12 ***heterostichum*** (Hedw.) Brid. (*Bucklandiella heterosticha* (Hedw.) Bednarek-Ochyra & Ochyra)
13 ***himalayanum*** (Mitt.) A.Jaeger (*Bucklandiella himalayana* (Mitt.) Bednarek-Ochyra & Ochyra)
14 ***lamprocarpum*** (Müll.Hal.) A.Jaeger (*Bucklandiella lamprocarpa* (Müll.Hal.) Bednarek-Ochyra & Ochyra)
15 ***lusitanicum*** Ochyra & Sérgio (*Bucklandiella lusitanica* (Ochyra & Sérgio) Bednarek-Ochyra & Ochyra) [74]
16 ***macounii*** Kindb. (*Bucklandiella macounii* (Kindb.) Bednarek-Ochyra & Ochyra)
subsp. ***alpinum*** (E.Lawton) Frisvoll (*Bucklandiella macounii* subsp. *alpina* (E.Lawton) Bednarek-Ochyra & Ochyra)
subsp. ***macounii***
17 ***microcarpon*** (Hedw.) Brid. (*Bucklandiella microcarpa* (Hedw.) Bednarek-Ochyra & Ochyra)
18 ***obtusum*** (Brid.) Brid. (*Bucklandiella obtusa* (Brid.) Bednarek-Ochyra & Ochyra)
19 ***sudeticum*** (Funck) Bruch & Schimp. (*Bucklandiella sudetica* (Funck) Bednarek-Ochyra & Ochyra, *R. heterostichum* var. *sudeticum* (Funck) E.Bauer)
34 ***Schistidium*** Bruch & Schimp., nom. cons. [75] [76]
1 ***agassizii*** Sull. & Lesq. [77]
2 ***apocarpum*** (Hedw.) Bruch & Schimp.
3 ***atrofuscum*** (Schimp.) Limpr. (*S. apocarpum* var. *atrofuscum* (Schimp.) C.E.O.Jensen)
4 ***boreale*** Poelt
5 ***brunnescens*** Limpr.
subsp. ***brunnescens*** (*S. apocarpum* var. *brunnescens* (Limpr.) Loeske)
subsp. ***griseum*** (Nees & Hornsch.) H.H.Blom
6 ***bryhnii*** I.Hagen
7 ***confertum*** (Funck) Bruch & Schimp. (*S. apocarpum* var. *confertum* (Funck) H.Möller)
8 ***confusum*** H.H.Blom
9 ***crassipilum*** H.H.Blom
10 ***crenatum*** H.H.Blom
11 ***dupretii*** (Thér.) W.A.Weber
12 ***elegantulum*** H.H.Blom
subsp. ***elegantulum***
subsp. ***wilsonii*** H.H.Blom
13 ***flaccidum*** (De Not.) Ochyra (*S. pulvinatum* var. *flaccidum* (De Not.) De Not.)
14 ***flexipile*** (Lindb. ex Broth.) G.Roth
15 ***frigidum*** H.H.Blom
var. ***frigidum***
var. ***havaasii*** H.H.Blom
16 ***frisvollianum*** H.H.Blom
17 ***grande*** Poelt
18 ***grandirete*** H.H.Blom
19 ***helveticum*** (Schkuhr) Deguchi (*S. singarense* (Schiffn.) Laz.) [78]
20 ***holmenianum*** Steere & Brassard
21 ***lancifolium*** (Kindb.) H.H.Blom
22 ***maritimum*** (Sm. ex R.Scott) Bruch & Schimp. [79]
subsp. ***maritimum***
subsp. ***piliferum*** (I.Hagen) B.Bremer (*S. maritimum* var. *piliferum* (I.Hagen) Loeske)
23 ***occidentale*** (E.Lawton) S.P.Churchill [80]
24 ***papillosum*** Culm. (*S. apocarpum* subsp. *papillosum* (Culm.) Poelt)
25 ***platyphyllum*** (Mitt.) H.Perss. (*S. alpicola* auct. non (Hedw.) Limpr., *S. rivulare* subsp. *latifolium* (J.E.Zetterst.) B.Bremer, *S. rivulare* var. *latifolium* (J.E.Zetterst.) H.A.Crum & L.E.Anderson) [77]
subsp. ***abrupticostatum*** (Bryhn) H.H.Blom
subsp. ***platyphyllum***
26 ***poeltii*** H.H.Blom
27 ***pruinosum*** (Wilson ex Schimp.) G.Roth
28 ***pulchrum*** H.H.Blom
29 ***recurvum*** H.H.Blom
30 ***rivulare*** (Brid.) Podp.
31 ***robustum*** (Nees & Hornsch.) H.H.Blom
32 ***scandicum*** H.H.Blom
33 ***sinensiapocarpum*** (Müll.Hal.) Ochyra [81]
34 ***sordidum*** I.Hagen
35 ***spinosum*** H.H.Blom & Lüth [82]
36 ***strictum*** (Turner) Loeske ex Martensson
37 ***subjulaceum*** H.H.Blom
38 ***submuticum*** H.H.Blom
subsp. ***arcticum*** H.H.Blom
subsp. ***submuticum***
39 ***tenerum*** (J.E.Zetterst.) Nyholm
40 ***trichodon*** (Brid.) Poelt

var. ***nutans*** H.H.Blom
var. ***trichodon***
41 ***umbrosum*** (J.E.Zetterst.) H.H.Blom
42 ***venetum*** H.H.Blom

Ptychomitriaceae Schimp.

35 ***Campylostelium*** Bruch & Schimp.
1 ***pitardii*** (Corb.) E.Maier (*Grimmia pitardii* Corb.) [83]
2 ***saxicola*** (F.Weber & D.Mohr) Bruch & Schimp.
3 ***strictum*** Solms

36 ***Ptychomitrium*** Fürnr., nom. cons.
1 ***incurvum*** (Schwägr.) Spruce
2 ***nigrescens*** (Kunze) Wijk & Margad.
3 ***polyphyllum*** (Dicks. ex Sw.) Bruch & Schimp.

Seligeriaceae Schimp.

37 ***Blindia*** Bruch & Schimp.
1 ***acuta*** (Hedw.) Bruch & Schimp.
2 ***caespiticia*** (F.Weber & D.Mohr) Müll.Hal.

38 ***Brachydontium*** Fürnr.
1 ***trichodes*** (F.Weber) Milde (*Seligeria transylvanica* Plam. [84])

39 ***Seligeria*** Bruch & Schimp. [85]
Subgenus *Seligeria*
1 ***acutifolia*** Lindb.
2 ***brevifolia*** (Lindb.) Lindb.
3 ***galinae*** Mogensen & I.Goldberg [86]
4 ***pusilla*** (Hedw.) Bruch & Schimp.
Subgenus *Cyrtoseligeria* Vitt
5 ***campylopoda*** Kindb.
6 ***diversifolia*** Lindb.
7 ***recurvata*** (Hedw.) Bruch & Schimp.
Subgenus *Anodus* (Bruch & Schimp.) Boulay
8 ***calcarea*** (Hedw.) Bruch & Schimp.
9 ***calycina*** Mitt. ex Lindb. (*S. paucifolia* auct. non (With.) Carruth.)
10 ***donniana*** (Sm.) Müll.Hal.
Subgenus *Blindiadelphus* Lindb.
11 ***polaris*** Berggr.
12 ***subimmersa*** Lindb.
Subgenus *Megalosporia* Vitt
13 ***austriaca*** T.Schauer
14 ***carniolica*** (Breidl. & Beck) Nyholm (*Trochobryum carniolicum* Breidl. & Beck)
15 ***irrigata*** (H.K.G.Paul) Ochyra & Gos (*S. trifaria* var. *irrigata* H.K.G.Paul) [87]
16 ***oelandica*** C.E.O.Jensen & Medelius
17 ***patula*** (Lindb.) I.Hagen (*S. alpestris* T.Schauer, *S. patula* var. *alpestris* (T.Schauer) Gos & Ochyra, *S. tristichoides* var. *patula* (Lindb.) Broth.)
18 ***trifaria*** (Brid.) Lindb.
19 ***tristichoides*** Kindb.

Archidiales Limpr.

Archidiaceae Schimp.

40 ***Archidium*** Brid.
1 ***alternifolium*** (Hedw.) Mitt.

Dicranales H.Philib. ex M.Fleisch.

Fissidentaceae Schimp.

41 ***Fissidens*** Hedw.
Subgenus *Pachyfissidens* (Müll.Hal.) Kindb.
section *Pachyfissidens*
1 ***adianthoides*** Hedw.
2 ***azoricus*** (P.de la Varde) Bizot
3 ***dubius*** P.Beauv. (*F. cristatus* Wilson ex Mitt., *F. decipiens* De Not.) [88]
4 ***grandifrons*** Brid.
5 ***luisieri*** P.de la Varde [89]
6 ***osmundoides*** Hedw.
7 ***polyphyllus*** Wilson ex Bruch & Schimp. [90]
8 ***serrulatus*** Brid. [91]
9 ***taxifolius*** Hedw.
subsp. ***pallidicaulis*** (Mitt.) Mönk. (*F. pallidicaulis* Mitt., *F. taxifolius* var. *pallidicaulis* (Mitt.) Corb.)
subsp. ***taxifolius***
section *Amblyothallia* (Müll.Hal.) Pursell & Brugg.-Nann.
10 ***asplenioides*** Hedw.
Subgenus *Octodiceras* (Brid.) Broth.
11 ***fontanus*** (Bach.Pyl.) Steud. (*Octodiceras fontanum* (Bach.Pyl.) Lindb.)
Subgenus *Fissidens* [92]
12 ***arcticus*** Bryhn [93]
13 ***arnoldii*** R.Ruthe
14 ***bryoides*** Hedw. [94]
var. ***bryoides***
var. ***caespitans*** Schimp. (*F. bryoides* var. *curnovii* (Mitt.) J.J.Amann, *F. curnovii* Mitt.) [95]
15 ***coacervatus*** Brugg.-Nann.
16 ***crassipes*** Wilson ex Bruch & Schimp.
subsp. ***crassipes*** (*F. crassipes* var. *rufipes* Schimp.)
subsp. ***warnstorfii*** (M.Fleisch.) Brugg.-Nann. (*F. crassipes* var. *philibertii* Besch., *F. mouretii* Corb.)
17 ***crispus*** Mont. (*F. herzogii* R.Ruthe ex Herzog, *F. limbatus* Sull., *F. minutulus* Sull.) [96]
18 ***curvatus*** Hornsch. (*F. algarvicus* Solms)
19 ***gracilifolius*** Brugg.-Nann. & Nyholm (*F. viridulus* var. *tenuifolius* (Boulay) A.J.E.Sm.)
20 ***gymnandrus*** Büse [97]
21 ***jansenii*** Sérgio & Pursell [98]
22 ***microstictus*** Dixon & Luisier [99]
23 ***monguillonii*** Thér.
24 ***nobreganus*** Dixon & Luisier [100]
25 ***ovatifolius*** R.Ruthe (*F. perssonii* P.de la Varde) [101]
26 ***pusillus*** (Wilson) Milde (*F. exiguus* auct. eur. partim [103], *F. viridulus* var. *pusillus* Wilson) [102]
27 ***rivularis*** (Spruce) Schimp.
28 ***rufulus*** Bruch & Schimp.
29 ***sublimbatus*** Grout [104]
30 ***sublineaefolius*** (P.de la Varde) Brugg.-Nann.
31 ***viridulus*** (Sw. ex anon.) Wahlenb. [105] [106]
var. ***incurvus*** (Starke ex Röhl.) Waldh. (*F. incurvus* Starke ex Röhl., *F. incurvus* var. *tamarindifolius* (Turner) Braithw.) [107]
var. ***viridulus*** (*F. bambergeri* Milde [108], *F. bryoides* var. *inconstans* (Schimp.) R.Ruthe, *F. bryoides* var. *viridulus* (Sw. ex anon.) Broth., *F. exiguus* auct. eur.

partim [92] [103], *F. haraldii* (Lindb.) Limpr., *F. limbatus* var. *bambergeri* (Schimp. ex Milde) Düll, *F. marginatulus* Meln. [109], *F. viridulus* var. *bambergeri* (Schimp. ex Milde) Waldh., *F. viridulus* var. *haraldii* (Lindb.) C.E.O.Jensen, *F. viridulus* var. *intralimbatulus* (R.Ruthe) Düll) [92]
Subgenus *Aloma* Kindb.
32 ***celticus*** Paton
33 ***exilis*** Hedw.
34 ***serratus*** Müll.Hal. (*F. papillosus* Sande Lac.) [110]

Ditrichaceae Limpr., nom. cons.
42 ***Ceratodon*** Brid.
1 ***conicus*** (Hampe) Lindb. (*C. purpureus* var. *conicus* (Hampe) Husn.)
2 ***purpureus*** (Hedw.) Brid. [111]
subsp. ***purpureus*** (*C. purpureus* var. *brevifolius* Milde, *C. purpureus* var. *flavisetus* Limpr., *C. purpureus* var. *pallidisetus* Luisier, *C. purpureus* var. *xanthopus* Sull.) [112]
subsp. ***stenocarpus*** (Bruch. & Schimp. ex Müll.Hal.) Dixon (*C. corsicus* Bruch & Schimp, *C. stenocarpus* Bruch & Schimp. ex Müll.Hal.) [112]
43 ***Cheilothela*** Broth.
1 ***chloropus*** (Brid.) Broth.
44 ***Cleistocarpidium*** Ochyra & Bednarek-Ochyra
1 ***palustre*** (Bruch & Schimp.) Ochyra & Bednarek-Ochyra (*Pleuridium palustre* (Bruch & Schimp.) Bruch & Schimp., *Sporledera palustris* (Bruch & Schimp.) Hampe)
45 ***Distichium*** Bruch & Schimp., nom. cons.
1 ***capillaceum*** (Hedw.) Bruch & Schimp. (*D. capillaceum* var. *compactum* (Huebener) Dalla Torre & Sarnth.)
2 ***hagenii*** Ryan ex H.Philib.
3 ***inclinatum*** (Hedw.) Bruch & Schimp.
46 ***Ditrichum*** Timm ex Hampe, nom. cons.
1 ***cornubicum*** Paton
2 ***flexicaule*** (Schwägr.) Hampe
3 ***gracile*** (Mitt.) Kuntze (*D. crispatissimum* (Müll.Hal.) Paris, *D. flexicaule* var. *longifolium* (J.E.Zetterst.) I.Hagen, *D. flexicaule* var. *sterile* (De Not.) Limpr., *D. giganteum* R.S.Williams) [113]
4 ***heteromallum*** (Hedw.) E.Britton (*D. homomallum* (Hedw.) Hampe)
5 ***lineare*** (Sw.) Lindb. (*D. vaginans* (Sull.) Hampe)
6 ***pallidum*** (Hedw.) Hampe
7 ***plumbicola*** Crundw.
8 ***punctulatum*** Mitt. (*Campylopus brevipilus* var. *marginatulus* (Geh.) Paris, *Campylopus madeirensis* Luisier, *Campylopus marginatulus* Geh.) [114]
9 ***pusillum*** (Hedw.) Hampe (*D. tortile* (Schrad.) Brockm.)
10 ***subulatum*** Hampe
11 ***zonatum*** (Brid.) Kindb. (*D. heteromallum* var. *zonatum* (Brid.) Podp., *D. zonatum* var. *scabrifolium* Dixon)
47 ***Pleuridium*** Rabenh., nom. cons. [115]
1 ***acuminatum*** Lindb.
2 ***subulatum*** (Hedw.) Rabenh. (*P. alternifolium* auct. non (Dicks. ex Hedw.) Rabenh.)
48 ***Pseudephemerum*** (Lindb.) I.Hagen
1 ***nitidum*** (Hedw.) Loeske (*Pleuridium nitidum* (Hedw.) Rabenh., *P. axillare* (Dicks.) I.Hagen)
49 ***Rhamphidium*** Mitt.
1 ***purpuratum*** Mitt. [116]
50 ***Saelania*** Lindb.
1 ***glaucescens*** (Hedw.) Broth.
51 ***Trichodon*** Schimp.
1 ***cylindricus*** (Hedw.) Schimp. (*Ditrichum cylindricum* (Hedw.) Grout, *Ditrichum cylindricum* var. *oblongum* (Lindb.) C.E.O.Jensen)

Bruchiaceae Schimp.
52 ***Bruchia*** Schwägr.
1 ***flexuosa*** (Schwägr.) Müll.Hal. (*B. trobasiana* De Not.)
2 ***vogesiaca*** Nestl. ex Schwägr.
53 ***Trematodon*** Michx.
1 ***ambiguus*** (Hedw.) Hornsch.
2 ***brevicollis*** Hornsch. [32]
3 ***laetevirens*** Hakelier & J.-P.Frahm
4 ***longicollis*** Michx. [32]
5 ***perssoniorum*** P.Allorge & Thér. ex V.Allorge [117]

Rhabdoweisiaceae Limpr.
54 ***Amphidium*** Schimp., nom. cons.
1 ***lapponicum*** (Hedw.) Schimp.
2 ***mougeotii*** (Schimp.) Schimp.
3 ***tortuosum*** (Hornsch.) Cufod. (*A. curvipes* (Müll.Hal.) Broth.) [118]
55 ***Arctoa*** Bruch & Schimp.
1 ***anderssonii*** Wich. (*A. fulvella* var. *anderssonii* (Wich.) Grout)
2 ***fulvella*** (Dicks.) Bruch & Schimp.
3 ***hyperborea*** (Gunnerus ex Dicks.) Bruch & Schimp., nom. cons.
56 ***Cnestrum*** I.Hagen
1 ***alpestre*** (Wahlenb. ex Huebener) Nyholm ex Mogensen (*Cynodontium alpestre* (Wahlenb. ex Huebener) Milde)
2 ***glaucescens*** (Lindb. & Arnell) Holmen ex Mogensen & Steere
3 ***schisti*** (F.Weber & D.Mohr) I.Hagen, nom. cons.
57 ***Cynodontium*** Bruch & Schimp., nom. cons.
1 ***asperifolium*** (Lindb. ex Arnell) Paris [119]
2 ***bruntonii*** (Sm.) Bruch & Schimp. (*Oreoweisia bruntonii* (Sm.) Milde)
3 ***fallax*** Limpr.
4 ***gracilescens*** (F.Weber & D.Mohr) Schimp.
5 ***jenneri*** (Schimp.) Stirt.
6 ***polycarpon*** (Hedw.) Schimp. [120]
7 ***strumiferum*** (Hedw.) Lindb. (*C. polycarpon* var. *strumiferum* (Hedw.) Schimp.)
8 ***suecicum*** (Arnell & C.E.O.Jensen) I.Hagen
9 ***tenellum*** (Schimp.) Limpr. (*C. torquescens* Limpr.)
58 ***Dichodontium*** Schimp.
1 ***flavescens*** (Dicks.) Lindb. (*D. pellucidum* var. *flavescens* (Dicks.) Moore)
2 ***palustre*** (Dicks.) M.Stech (*Anisothecium palustre* (Dicks.) I.Hagen, *Dicranella palustris* (Dicks.) Crundw., *Diobelonella palustris* (Dicks.) Ochyra) [121]

3 ***pellucidum*** (Hedw.) Schimp. (*D. pellucidum* var. *fagimontanum* Brid., *D. pellucidum* var. *propaguliferum* (Correns) Casares-Gil)

59 ***Dicranoweisia*** Milde [122]
1 ***cirrata*** (Hedw.) Lindb.
2 ***compacta*** (Schleich. ex Schwägr.) Schimp. (*D. crispula* var. *compacta* (Schwägr.) Lindb., *Hymenoloma compactum* (Schwägr.) Ochyra)
3 ***crispula*** (Hedw.) Milde (*Hymenoloma crispulum* (Hedw.) Ochyra)

60 ***Glyphomitrium*** Brid.
1 ***daviesii*** (Dicks.) Brid.

61 ***Kiaeria*** I.Hagen
1 ***blyttii*** (Bruch & Schimp.) Broth.
2 ***falcata*** (Hedw.) I.Hagen
3 ***glacialis*** (Berggr.) I.Hagen
4 ***riparia*** (H.Lindb.) M.F.V.Corley (*Dicranella riparia* (H.Lindb.) Martensson & Nyholm, *K. starkei* var. *riparia* I.Hagen, *Oncophorus riparius* H.Lindb.)
5 ***starkei*** (F.Weber & D.Mohr) I.Hagen

62 ***Oncophorus*** (Brid.) Brid.
1 ***elongatus*** (I.Hagen) Hedenäs (*O. wahlenbergii* var. *elongatus* I.Hagen) [123]
2 ***virens*** (Hedw.) Brid.
3 ***wahlenbergii*** Brid.
var. ***compactus*** (Bruch & Schimp.) Braithw. (*O. compactus* (Bruch & Schimp.) Kindb.)
var. ***wahlenbergii***

63 ***Oreas*** Brid.
1 ***martiana*** (Hoppe & Hornsch.) Brid.

64 ***Oreoweisia*** (Bruch & Schimp.) De Not.
1 ***torquescens*** (Hornsch. ex Brid.) Wijk & Margad. (*O. serrulata* (Funck) De Not.)

65 ***Rhabdoweisia*** Bruch & Schimp.
1 ***crenulata*** (Mitt.) H.Jameson
2 ***crispata*** (Dicks.) Lindb. (*R. denticulata* (Brid.) Bruch & Schimp., *R. kusenevae* Broth. [124])
3 ***fugax*** (Hedw.) Bruch & Schimp. (*R. striata* (Schrad.) Lindb.)

Schistostegaceae Schimp. [125]

66 ***Schistostega*** D.Mohr
1 ***pennata*** (Hedw.) F.Weber & D.Mohr

Dicranaceae Schimp.

67 ***Aongstroemia*** Bruch & Schimp., nom. cons.
1 ***longipes*** (Sommerf.) Bruch & Schimp.

68 ***Dicranella*** (Müll.Hal.) Schimp., nom. cons.
1 ***campylophylla*** (Taylor) A.Jaeger [126]
2 ***cerviculata*** (Hedw.) Schimp.
3 ***crispa*** (Hedw.) Schimp. (*Anisothecium vaginale* (Dicks.) Loeske)
4 ***grevilleana*** (Brid.) Schimp. (*Anisothecium grevilleanum* (Brid.) Lindb.)
5 ***heteromalla*** (Hedw.) Schimp.
6 ***howei*** Renauld & Cardot
7 ***humilis*** R.Ruthe (*Anisothecium humile* (R.Ruthe) Lindb., *Anisothecium rigidulum* (Hedw.) C.E.O.Jensen)
8 ***rufescens*** (Dicks.) Schimp. (*Anisothecium rufescens* (Dicks.) Lindb.)
9 ***schreberiana*** (Hedw.) Dixon (*Anisothecium schreberianum* (Hedw.) Dixon)
10 ***staphylina*** H.Whitehouse (*Anisothecium staphylinum* (H.Whitehouse) Sipman, Rubers & Riemann)
11 ***subulata*** (Hedw.) Schimp. (*D. curvata* (Hedw.) Schimp., *D. secunda* Lindb.)
12 ***varia*** (Hedw.) Schimp. (*Anisothecium rubrum* Lindb., *Anisothecium varium* (Hedw.) Mitt.)

69 ***Dicranum*** Hedw. [127]
section *Dicranum*
1 ***bonjeanii*** De Not. (*D. palustre* Bruch & Schimp., *D. undulatum* Turner, hom. illeg.)
2 ***crassifolium*** Sérgio, Ochyra & Séneca [128]
3 ***leioneuron*** Kindb.
4 ***majus*** Sm.
5 ***polysetum*** Sw. ex anon. (*D. rugosum* Brid., *D. undulatum* Ehrh. ex F.Weber & D.Mohr, hom. illeg.) [106]
6 ***scoparium*** Hedw.
7 ***transsylvanicum*** Lüth [129]
section *Spuria* Bruch & Schimp.
8 ***acutifolium*** (Lindb. & Arnell) C.E.O.Jensen (*D. bergeri* var. *acutifolium* Lindb. & Arnell, *D. muehlenbeckii* var. *acutifolium* (Lindb. & Arnell) Nyholm)
9 ***brevifolium*** (Lindb.) Lindb. (*D. muehlenbeckii* var. *brevifolium* Lindb., *D. muehlenbeckii* var. *cirrhatum* (Schimp.) Lindb.)
10 ***dispersum*** Engelmark [130]
11 ***drummondii*** Müll.Hal. (*D. elatum* Lindb., *D. robustum* Bruch & Schimp.)
12 ***spurium*** Hedw.
13 ***undulatum*** Schrad. ex Brid. (*D. affine* Funck, *D. bergeri* Blandow) [131]
section *Fuscescentiformia* (Kindb.) Ochyra
14 ***flexicaule*** Brid. (*D. congestum* Brid., *D. fuscescens* var. *congestum* (Brid.) Kindb., *D. fuscescens* var. *flexicaule* (Brid.) Wilson)
15 ***fuscescens*** Sm.
section *Convolutifolia* (Kindb.) Ochyra
16 ***angustum*** Lindb. [132]
17 ***muehlenbeckii*** Bruch & Schimp.
18 ***spadiceum*** J.E.Zetterst. (*D. muehlenbeckii* var. *neglectum* (De Not.) Pfeff., *D. muehlenbeckii* var. *spadiceum* (J.E.Zetterst.) Podp., *D. neglectum* Jur. ex De Not.)
section *Elongata* I.Hagen
19 ***elongatum*** Schleich. ex Schwägr. (*D. elongatum* var. *sendtneri* (Limpr.) Mönk., *D. sendtneri* Limpr. [133])
20 ***fragilifolium*** Lindb.
21 ***groenlandicum*** Brid. (*D. elongatum* subsp. *groenlandicum* (Brid.) Mönk.)
22 ***laevidens*** R.S.Williams [132]
section *Crassinervia* G.Roth
23 ***canariense*** Hampe ex Müll.Hal. (*D. scottianum* subsp. *canariense* (Hampe) Corb.) [134]
24 ***fulvum*** Hook. (*Orthodicranum fulvum* (Hook.) G.Roth ex Casares-Gil)

25 ***scottianum*** Turner ex R.Scott (*Orthodicranum scottianum* (Turner ex R.Scott) G.Roth ex Casares-Gil) [79]
26 ***viride*** (Sull. & Lesq.) Lindb.
section *Montana* Hartm.
27 ***flagellare*** Hedw. (*Orthodicranum flagellare* (Hedw.) Loeske)
28 ***montanum*** Hedw. (*Orthodicranum montanum* (Hedw.) Loeske)
29 ***tauricum*** Sapjegin (*D. strictum* Schleich. ex D.Mohr, hom. illeg., *Orthodicranum tauricum* (Sapjegin) Smirnova)
70 ***Paraleucobryum*** (Limpr.) Loeske
1 ***enerve*** (Thed.) Loeske
2 ***longifolium*** (Hedw.) Loeske
3 ***sauteri*** (Bruch & Schimp.) Loeske (*P. longifolium* var. *sauteri* (Bruch & Schimp.) C.E.O.Jensen)
Leucobryaceae Schimp.
71 ***Atractylocarpus*** Mitt., nom. cons.
1 ***alpinus*** (Schimp. ex Milde) Lindb. (*Metzlerella alpina* (Schimp. ex Milde) I.Hagen, *Metzleria alpina* Schimp. ex Milde)
72 ***Campylopus*** Brid.
1 ***atrovirens*** De Not. (*C. atrovirens* var. *adustus* (De Not.) Husn., *C. atrovirens* var. *falcatus* Braithw., *C. atrovirens* var. *gracilis* Dixon)
2 ***brevipilus*** Bruch & Schimp.
3 ***cygneus*** (Hedw.) Brid. (*C. setaceus* Cardot)
4 ***flaccidus*** Renauld & Cardot
5 ***flexuosus*** (Hedw.) Brid.
6 ***fragilis*** (Brid.) Bruch & Schimp.
7 ***gracilis*** (Mitt.) A.Jaeger (*C. schwarzii* Schimp.)
8 ***incrassatus*** Müll.Hal. (*C. eximius* Reichardt) [135]
9 ***introflexus*** (Hedw.) Brid.
10 ***oerstedianus*** (Müll.Hal.) Mitt. (*C. mildei* Limpr.)
11 ***pilifer*** Brid.
12 ***pyriformis*** (Schultz) Brid. (*C. pyriformis* var. *azoricus* (Mitt.) M.F.V.Corley)
13 ***schimperi*** Milde (*C. subulatus* var. *schimperi* (Milde) Husn.)
14 ***setifolius*** Wilson
15 ***shawii*** Wilson (*C. carreiroanus* Cardot)
16 ***subulatus*** Schimp. ex Milde
73 ***Dicranodontium*** Bruch & Schimp.
1 ***asperulum*** (Mitt.) Broth.
2 ***denudatum*** (Brid.) E.Britton (*D. denudatum* var. *alpinum* (Schimp.) I.Hagen)
3 ***subporodictyon*** Broth. (*Campylopus subporodictyon* (Broth.) B.H.Allen & Ireland, *Dicranum subporodictyon* (Broth.) C.Gao & T.Cao) [136]
4 ***uncinatum*** (Harv.) A.Jaeger (*D. circinatum* (Wilson) Schimp.)
74 ***Leucobryum*** Hampe
1 ***albidum*** (P.Beauv.) Lindb. [137]
2 ***glaucum*** (Hedw.) Ångstr.
3 ***juniperoideum*** (Brid.) Müll.Hal. (*L. albidum* auct. eur. non (P.Beauv.) Lindb., *L. minus* Hampe)
75 ***Microcampylopus*** (Müll.Hal.) M.Fleisch.
1 ***laevigatus*** (Thér.) Giese & J.-P.Frahm
Calymperaceae Kindb. [138]
76 ***Calymperes*** Sw. ex F.Weber
1 ***erosum*** Müll.Hal. (*C. sommieri* Bott.)
Pottiales M.Fleisch. [139]
Pottiaceae Schimp., nom. cons. [140]
Timmielloideae R.H.Zander
77 ***Timmiella*** (De Not.) Limpr.
1 ***anomala*** (Bruch & Schimp.) Limpr.
2 ***barbuloides*** (Brid.) Mönk.
3 ***flexiseta*** (Bruch) Limpr.
Merceyoideae Broth.
78 ***Scopelophila*** (Mitt.) Lindb.
1 ***cataractae*** (Mitt.) Broth.
2 ***ligulata*** (Spruce) Spruce
Trichostomoideae (Limpr.) Broth.
79 ***Anoectangium*** Schwägr., nom. cons.
1 ***aestivum*** (Hedw.) Mitt. (*A. angustifolium* Mitt.)
2 ***handelii*** Schiffn. [141]
80 ***Aschisma*** Lindb.
1 ***carniolicum*** (F.Weber & D.Mohr) Lindb.
2 ***cuynetii*** (Bizot & R.B.Pierrot) J.Guerra & M.J.Cano (*Phascum cuynetii* Bizot & R.B.Pierrot)
81 ***Ephemerum*** Hampe, nom. cons.
1 ***cohaerens*** (Hedw.) Hampe
2 ***hibernicum*** Holyoak & V.S.Bryan [142]
3 ***minutissimum*** Lindb. (*E. serratum* var. *angustifolium* (Bruch & Schimp.) Bruch & Schimp., *E. serratum* var. *minutissimum* (Lindb.) Grout) [143]
4 ***recurvifolium*** (Dicks.) Boulay
5 ***serratum*** (Hedw.) Hampe (*E. serratum* var. *rutheanum* (Schimp.) Jur.) [143]
6 ***sessile*** (Bruch) Müll.Hal.
7 ***spinulosum*** Bruch & Schimp. ex Schimp. [144]
8 ***stellatum*** H.Philib.
82 ***Eucladium*** Bruch & Schimp.
1 ***verticillatum*** (With.) Bruch & Schimp. [145]
var. ***angustifolium*** Lindb.
var. ***verticillatum***
83 ***Gymnostomum*** Nees & Hornsch., nom. cons. [146]
1 ***aeruginosum*** Sm.
var. ***aeruginosum***
var. ***obscurum*** J.Guerra [147]
2 ***boreale*** Nyholm & Hedenäs
3 ***calcareum*** Nees & Hornsch.
4 ***lanceolatum*** M.J.Cano, Ros & J.Guerra [146]
5 ***viridulum*** Brid.
84 ***Gyroweisia*** Schimp., nom. cons.
1 ***reflexa*** (Brid.) Schimp.
2 ***tenuis*** (Hedw.) Schimp. (*G. tenuis* var. *badia* Limpr.)
85 ***Hymenostylium*** Brid.
1 ***recurvirostrum*** (Hedw.) Dixon (*Gymnostomum recurvirostrum* Hedw.) [148]
var. ***insigne*** (Dixon) E.B.Bartram (*H. insigne* (Dixon) Podp.)
var. ***recurvirostrum***

86 ***Hyophila*** Brid., nom. cons.
1 ***involuta*** (Hook.) A.Jaeger
87 ***Leptobarbula*** Schimp.
1 ***berica*** (De Not.) Schimp.
88 ***Micromitrium*** Austin
1 ***tenerum*** (Bruch & Schimp.) Crosby
89 ***Molendoa*** Lindb.
1 ***hornschuchiana*** (Hook.) Lindb. ex Limpr. (*Anoectangium hornschuchianum* (Hook.) Funck ex Hornsch.)
2 ***schliephackei*** (Schlieph.) R.H.Zander (*Anoectangium schliephackei* (Schlieph.) Paris)
3 ***sendtneriana*** (Bruch & Schimp.) Limpr. (*Anoectangium sendtnerianum* Bruch & Schimp.)
4 ***taeniatifolia*** Herzog (*Anoectangium taeniatifolium* (Herzog) M.O.Hill)
5 ***tenuinervis*** Limpr. (*Anoectangium tenuinerve* (Limpr.) Paris)
6 ***warburgii*** (Crundw. & M.O.Hill) R.H.Zander (*Anoectangium warburgii* Crundw. & M.O.Hill)
90 ***Oxystegus*** (Broth.) Hilp.
1 ***hibernicus*** (Mitt.) Hilp. (*Trichostomum hibernicum* (Mitt.) Dixon)
2 ***tenuirostris*** (Hook. & Taylor) A.J.E.Sm. (*Trichostomum tenuirostre* (Hook. & Taylor) Lindb.)
91 ***Pleurochaete*** Lindb. [149]
1 ***squarrosa*** (Brid.) Lindb.
92 ***Pottiopsis*** Blockeel & A.J.E.Sm.
1 ***caespitosa*** (Brid.) Blockeel & A.J.E.Sm. (*Pottia caespitosa* (Brid.) Müll.Hal., *Trichostomum caespitosum* (Brid.) Jur.)
93 ***Splachnobryum*** Müll.Hal.
1 ***obtusum*** (Brid.) Müll.Hal. (*S. delicatulum* Broth.) [150]
94 ***Tortella*** (Müll.Hal.) Limpr., nom. cons. [151]
1 ***alpicola*** Dixon [152]
2 ***bambergeri*** (Schimp.) Broth. (*T. tortuosa* var. *bambergeri* (Schimp.) Düll) [153]
3 ***flavovirens*** (Bruch) Broth. (*T. flavovirens* var. *minor* Lindb.)
var. ***flavovirens*** (*T. flavovirens* var. *viridiflava* (De Not.) Casares-Gil)
var. ***glareicola*** (T.A.Chr.) Crundw. & Nyholm (*T. glareicola* T.A.Chr.)
var. ***papillosissima*** Sérgio & Casas
4 ***fragilis*** (Hook. & Wilson) Limpr.
5 ***humilis*** (Hedw.) Jenn.
6 ***inclinata*** (R.Hedw.) Limpr.
var. ***densa*** (Lorentz & Molendo) Limpr. (*T. densa* (Lorentz & Molendo) Crundw. & Nyholm) [154]
var. ***inclinata***
7 ***inflexa*** (Bruch) Broth.
8 ***limbata*** (Schiffn.) Geh. & Herzog [155]
9 ***limosella*** (Stirt.) P.W.Richards & E.C.Wallace [156]
10 ***nitida*** (Lindb.) Broth. (*T. cirrifolia* (Mitt.) Broth.) [157]
11 ***rigens*** Alberts.
12 ***tortuosa*** (Hedw.) Limpr.
var. ***fragilifolia*** (Jur.) Limpr.
var. ***tortuosa***
95 ***Trichostomum*** Bruch, nom. cons. [158]
1 ***arcticum*** Kaal.
2 ***brachydontium*** Bruch (*Hyophila treleasei* Cardot [159])
3 ***crispulum*** Bruch
4 ***triumphans*** De Not. (*T. pallidisetum* H.Müll., *Weissia triumphans* (De Not.) M.O.Hill)
96 ***Weissia*** Hedw. (*Astomum* Hampe) [160] [161]
1 ***brachycarpa*** (Nees & Hornsch.) Jur. (*Hymenostomum microstomum* (Hedw.) R.Br. ex Nees & Hornsch.)
2 ***condensa*** (Voit) Lindb.
var. ***armata*** (Thér. & Trab.) M.J.Cano, Ros & J.Guerra (*W. papillosissima* Laz.)
var. ***condensa***
3 ***controversa*** Hedw.
var. ***controversa***
var. ***crispata*** (Nees & Hornsch.) Nyholm (*W. fallax* Sehlm.)
var. ***densifolia*** (Bruch & Schimp.) Wilson
4 ***levieri*** (Limpr.) Kindb. (*Astomum levieri* Limpr.)
5 ***longifolia*** Mitt. (*Astomum crispum* (Hedw.) Hampe)
6 ***multicapsularis*** (Sm.) Mitt. (*Astomum multicapsulare* (Sm.) Bruch & Schimp.)
7 ***perssonii*** Kindb.
8 ***rostellata*** (Brid.) Lindb.
9 ***rutilans*** (Hedw.) Lindb.
10 ***squarrosa*** (Nees & Hornsch.) Müll.Hal. (*Hymenostomum squarrosum* Nees & Hornsch.)
11 ***sterilis*** W.E.Nicholson
12 ***tyrrhena*** M.Fleisch.
13 ***wimmeriana*** (Sendtn.) Bruch & Schimp. (*W. controversa* var. *wimmeriana* (Sendtn.) Blockeel & A.J.E.Sm., *W. wimmeriana* subsp. *pallescens* (Schimp. ex Besch.) Giacom.) [162]

Pottioideae (Limpr.) Broth.

97 ***Acaulon*** Müll.Hal.
1 ***casasianum*** Brugués & H.A.Crum
2 ***dertosense*** Casas, Sérgio, Cros & Brugués
3 ***fontiquerianum*** Casas & Sérgio
4 ***mediterraneum*** Limpr. (*A. muticum* var. *mediterraneum* (Limpr.) Sérgio) [163]
5 ***muticum*** (Hedw.) Müll.Hal.
6 ***piligerum*** (De Not.) Limpr.
7 ***triquetrum*** (Spruce) Müll.Hal.
98 ***Aloina*** Kindb., nom. cons.
1 ***aloides*** (Koch ex Schultz) Kindb.
2 ***ambigua*** (Bruch & Schimp.) Limpr. (*A. aloides* var. *ambigua* (Bruch & Schimp.) E.J.Craig)
3 ***bifrons*** (De Not.) Delgad.
4 ***brevirostris*** (Hook. & Grev.) Kindb.
5 ***humilis*** M.T.Gallego, M.J.Cano & Ros [164]
6 ***obliquifolia*** (Müll.Hal.) Broth. (*A. rigida* var. *mucronulata* (Bruch & Schimp.) Limpr., *A. rigida* var. *obliquifolia* (Müll.Hal.) Delgad.) [165]
7 ***rigida*** (Hedw.) Limpr.
99 ***Barbula*** Hedw., nom. cons. [139] [166]

1 ***bicolor*** (Bruch & Schimp.) Lindb.
2 ***bolleana*** (Müll.Hal.) Broth. (*B. ehrenbergii* (Lorentz) M.Fleisch.)
3 ***convoluta*** Hedw. (*Streblotrichum convolutum* (Hedw.) P.Beauv.)
var. ***convoluta***
var. ***sardoa*** Schimp. (*B. commutata* Jur., *B. convoluta* var. *commutata* (Jur.) Husn., *B. convoluta* var. *uliginosa* (Limpr.) Limpr., *B. sardoa* (Schimp.) J.-P.Frahm, nom. inval.) [167]
4 ***crocea*** (Brid.) F.Weber & D.Mohr
5 ***enderesii*** Garov.
6 ***indica*** (Hook.) Spreng.
7 ***unguiculata*** Hedw.

100 ***Bryoerythrophyllum*** P.C.Chen
1 ***alpigenum*** (Venturi) P.C.Chen (*B. recurvirostrum* var. *dentatum* (Schimp.) H.A.Crum, Steere & L.E.Anderson)
2 ***caledonicum*** D.G.Long
3 ***campylocarpum*** (Müll.Hal.) H.A.Crum (*B. lusitanicum* (Cardot & Dixon) M.O.Hill, *B. machadoanum* (Sérgio) M.O.Hill, *Hyophila lusitanica* Cardot & Dixon, *Hyophila machadoana* Sérgio) [168]
4 ***ferruginascens*** (Stirt.) Giacom.
5 ***inaequalifolium*** (Taylor) R.H.Zander
6 ***recurvirostrum*** (Hedw.) P.C.Chen
7 ***rubrum*** (Jur. ex Geh.) P.C.Chen

101 ***Cinclidotus*** P.Beauv., nom. cons. [169]
1 ***aquaticus*** (Hedw.) Bruch & Schimp.
2 ***confertus*** Lüth [170]
3 ***danubicus*** Schiffn. & Baumgartner
4 ***fontinaloides*** (Hedw.) P.Beauv.
5 ***pachylomoides*** Bizot
6 ***riparius*** (Host ex Brid.) Arn.
7 ***vivesii*** Ederra [171]

102 ***Crossidium*** Jur., nom. cons.
1 ***aberrans*** Holz. & E.B.Bartram
2 ***crassinerve*** (De Not.) Jur.
3 ***davidai*** Catches. [172]
4 ***geheebii*** (Broth.) Broth. [173]
5 ***laevipilum*** Thér. & Trab. [174]
6 ***laxefilamentosum*** W.Frey & Kürschner [175]
7 ***squamiferum*** (Viv.) Jur.
var. ***pottioideum*** (De Not.) Mönk.
var. ***squamiferum***

103 ***Dialytrichia*** (Schimp.) Limpr.
1 ***fragilifolia*** (Bizot & J.Roux) F.Lara (*D. mucronata* var. *fragilifolia* Bizot & J.Roux) [176]
2 ***mucronata*** (Brid.) Broth. (*Cinclidotus mucronatus* (Brid.) Guim.)

104 ***Didymodon*** Hedw. [177] [178] [179]
1 ***acutus*** (Brid.) K.Saito (*Barbula acuta* (Brid.) Brid.)
2 ***asperifolius*** (Mitt.) H.A.Crum, Steere & L.E.Anderson (*Barbula asperifolia* Mitt., *Barbula kneuckeri* Loeske & Osterwald, *D. ferrugineus* var. *kneuckeri* (Loeske & Osterwald) Düll, *D. rufus* Lorentz) [180]
3 ***australasiae*** (Hook. & Grev.) R.H.Zander (*D. aaronis* (Lorentz) J.Guerra, *D. incrassatus* (Lindb.) Broth., *Trichostomopsis aaronis* (Lorentz) S.Agnew & C.C.Towns., *Trichostomopsis australasiae* (Hook. & Grev.) H.Rob.) [181]
4 ***bistratosus*** Hébr. & R.B.Pierrot [182]
5 ***brachyphyllus*** (Sull.) R.H.Zander [183]
6 ***cordatus*** Jur. (*Barbula cordata* (Jur.) Loeske)
7 ***erosus*** J.A.Jiménez & J.Guerra [184]
8 ***fallax*** (Hedw.) R.H.Zander (*Barbula adriatica* Baumgartner, *Barbula fallax* Hedw.) [180]
9 ***ferrugineus*** (Schimp. ex Besch.) M.O.Hill (*Barbula reflexa* (Brid.) Brid.)
10 ***giganteus*** (Funck) Jur. (*Barbula gigantea* Funck, *Geheebia gigantea* (Funck) Boulay) [180]
11 ***glaucus*** Ryan (*Barbula rigidula* subsp. *verbana* (W.E.Nicholson & Dixon) Podp., *Barbula rigidula* var. *glauca* (Ryan) J.J.Amann)
12 ***icmadophilus*** (Schimp. ex Müll.Hal.) K.Saito (*Barbula acuta* var. *icmadophila* (Schimp. ex Müll.Hal.) H.A.Crum)
13 ***insulanus*** (De Not.) M.O.Hill (*Barbula cylindrica* (Taylor) Schimp., *Barbula vinealis* var. *cylindrica* (Taylor) Boulay, *D. vinealis* var. *flaccidus* (Bruch & Schimp.) R.H.Zander)
14 ***johansenii*** (R.S.Williams) H.A.Crum (*Barbula johansenii* R.S.Williams)
15 ***lamyanus*** (Schimp.) Thér. [185]
16 ***luridus*** Hornsch. (*Barbula lurida* Hornsch., *D. trifarius* auct. non (Hedw.) Röhl.)
17 ***maximus*** (Syed & Crundw.) M.O.Hill (*Barbula reflexa* var. *robusta* Braithw.) [180]
18 ***nicholsonii*** Culm.
19 ***rigidulus*** Hedw. (*Barbula rigidula* (Hedw.) Milde, *D. mamillosus* (Crundw.) M.O.Hill) [186]
20 ***sicculus*** M.J.Cano, Ros, García-Zamora & J.Guerra [187]
21 ***sinuosus*** (Mitt.) Delogne (*Barbula sinuosa* (Mitt.) Grav.)
22 ***spadiceus*** (Mitt.) Limpr. (*Barbula insidiosa* Jur. & Milde, *Barbula spadicea* (Mitt.) Braithw., *D. barbuloides* Lib. ex Marchal, *D. zetterstedtii* Schimp., *Limneria viridula* Stirt.) [180]
23 ***subandreaeoides*** (Kindb.) R.H.Zander (*D. rigidulus* subsp. *andreaeoides* (Limpr.) Wijk & Margad.) [188]
24 ***tomaculosus*** (Blockeel) M.F.V.Corley
25 ***tophaceus*** (Brid.) Lisa (*Barbula tophacea* (Brid.) Mitt., *D. bosniacus* Głow., *D. spadiceus* var. *siluricus* Velen.) [180]
26 ***umbrosus*** (Müll.Hal.) R.H.Zander (*D. australasiae* var. *umbrosus* (Müll.Hal.) R.H.Zander, *D. trivialis* (Müll.Hal.) J.Guerra, *Trichostomopsis trivialis* (Müll.Hal.) H.Rob., *Trichostomopsis umbrosa* (Müll.Hal.) H.Rob.) [189]
27 ***vinealis*** (Brid.) R.H.Zander (*Barbula vinealis* Brid.)

105 ***Hennediella*** Paris

1 ***heimii*** (Hedw.) R.H.Zander (*Desmatodon heimii* (Hedw.) Mitt., *Pottia heimii* (Hedw.) Hampe)
var. ***arctica*** (Lindb.) R.H.Zander (*Desmatodon heimii* var. *arcticum* (Lindb.) H.A.Crum)
var. ***heimii***
2 ***macrophylla*** (R.Br.bis) Paris [190]
3 ***stanfordensis*** (Steere) Blockeel

106 ***Hilpertia*** R.H.Zander
1 ***velenovskyi*** (Schiffn.) R.H.Zander

107 ***Leptodontium*** (Müll.Hal.) Lindb.
1 ***flexifolium*** (Dicks.) Hampe
2 ***gemmascens*** (Mitt.) Braithw.
3 ***styriacum*** (Jur.) Limpr.

108 ***Leptophascum*** (Müll.Hal.) J.Guerra & M.J.Cano
1 ***leptophyllum*** (Müll.Hal.) J.Guerra & M.J.Cano (*Chenia leptophylla* (Müll.Hal.) R.H.Zander, *Chenia rhizophylla* (Sakurai) R.H.Zander, *Phascum leptophyllum* Müll.Hal., *Tortula rhizophylla* (Sakurai) Z.Iwats. & K.Saito)

109 ***Microbryum*** Schimp. [191]
1 ***curvicollum*** (Hedw.) R.H.Zander (*M. piptocarpum* (Durieu & Mont.) J.Guerra & M.J.Cano, *Phascum curvicollum* Hedw., *Phascum piptocarpum* Durieu & Mont.) [32] [19]
2 ***davallianum*** (Sm.) R.H.Zander (*Pottia commutata* Limpr., *Pottia conica* (Schleich. ex Schwägr.) Fürnr. ex Paris, *Pottia davalliana* (Sm.) C.E.O.Jensen, *Pottia starckeana* subsp. *conica* (Schleich. ex Schwägr.) D.F.Chamb., *Pottia starckeana* subsp. *minutula* (Schwägr.) D.F.Chamb., *Pottia starckeana* var. *minutula* (Schwägr.) Corb.) [193]
3 ***floerkeanum*** (F.Weber & D.Mohr) Schimp. (*Phascum floerkeanum* F.Weber & D.Mohr)
4 ***fosbergii*** (E.B.Bartram) Ros, O.Werner & Rams (*M. starckeanum* var. *fosbergii* (E.B.Bartram) R.H.Zander, *Pottia* ×*andalusica* Ros & R.Oliva) [194]
5 ***longipes*** (J.Guerra, J.J.Martínez & Ros) R.H.Zander (*Phascum longipes* J.Guerra, J.J.Martínez & Ros)
6 ***rectum*** (With.) R.H.Zander (*Pottia recta* (With.) Mitt.)
7 ***starckeanum*** (Hedw.) R.H.Zander (*Pottia mutica* Venturi, *Pottia starckeana* (Hedw.) Müll.Hal., *Pottia starckeana* var. *brachyodus* (Bruch & Schimp.) Müll.Hal.) [193] [195]

110 ***Paraleptodontium*** D.G.Long
1 ***recurvifolium*** (Taylor) D.G.Long (*Trichostomum recurvifolium* (Taylor) R.H.Zander)

111 ***Phascum*** Hedw.
1 ***cuspidatum*** Hedw. (*Tortula acaulon* (With.) R.H.Zander, *Tortula atherodes* R.H.Zander)
var. ***cuspidatum*** (*P. cuspidatum* var. *curvisetum* (Dicks.) Nees & Hornsch., *P. cuspidatum* var. *mitraeforme* Limpr., *Tortula atherodes* var. *curviseta* (Dicks.) R.H.Zander)
var. ***papillosum*** (Lindb.) G.Roth (*P. cuspidatum* subsp. *papillosum* (Lindb.) J.Guerra & Ros, *Tortula acaulon* var. *papillosa* (Lindb.) R.H.Zander, *Tortula atherodes* var. *papillosa* R.H.Zander)
var. ***piliferum*** (Hedw.) Hook. & Taylor (*Tortula acaulon* var. *pilifera* (Hedw.) R.H.Zander *Tortula atherodes* var. *pilifera* (Hedw.) R.H.Zander)
var. ***retortifolium*** J.Guerra & Ros
var. ***schreberianum*** (Dicks.) Brid. (*Tortula acaulon* var. *schreberiana* (Dicks.) R.H.Zander, *Tortula atherodes* var. *schreberiana* (Dicks.) R.H.Zander)
2 ***vlassovii*** Laz. (*Microbryum vlassovii* (Laz.) R.H.Zander)

112 ***Protobryum*** J.Guerra & M.J.Cano
1 ***bryoides*** (Dicks.) J.Guerra & M.J.Cano (*Pottia bryoides* (Dicks.) Mitt., *Tortula protobryoides* R.H.Zander)

113 ***Pseudocrossidium*** R.S.Williams
1 ***hornschuchianum*** (Schultz) R.H.Zander (*Barbula hornschuchiana* Schultz)
2 ***obtusulum*** (Lindb.) H.A.Crum & L.E.Anderson (*P. revolutum* var. *obtusulum* (Lindb.) B.C.Tan, R.H.Zander & Taylor,Terry) [196]
3 ***replicatum*** (Taylor) R.H.Zander [197]
4 ***revolutum*** (Brid.) R.H.Zander (*Barbula revoluta* Brid.)

114 ***Pterygoneurum*** Jur., nom. cons.
1 ***compactum*** M.J.Cano, J.Guerra & Ros [198]
2 ***crossidioides*** W.Frey, Herrnst. & Kürschner [199]
3 ***kozlovii*** Laz.
4 ***lamellatum*** (Lindb.) Jur.
5 ***ovatum*** (Hedw.) Dixon (*P. ovatum* var. *incanum* Jur.)
6 ***papillosum*** Oesau [200]
7 ***sampaianum*** (Guim.) Guim.
8 ***squamosum*** Segarra & Kürschner [201]
9 ***subsessile*** (Brid.) Jur.

115 ***Stegonia*** Venturi
1 ***latifolia*** (Schwägr.) Venturi ex Broth. (*S. latifolia* var. *latifolia*, *S. latifolia* var. *pilifera* (Brid.) Broth.)

116 ***Syntrichia*** Brid. [202]
1 ***bogotensis*** (Hampe) R.H.Zander [203]
2 ***calcicola*** J.J.Amann (*S. densa* (Velen.) J.-P.Frahm, *Tortula calcicolens* W.A.Kramer, *Tortula densa* (Velen.) J.-P.Frahm, *Tortula ruralis* var. *calcicola* (J.J.Amann) Barkman, *Tortula ruralis* var. *densa* Velen.) [204]
3 ***caninervis*** Mitt. (*Tortula caninervis* (Mitt.) Broth.) [205]
var. ***abranchesii*** (Luisier) R.H.Zander (*S. abranchesii* (Luisier) Ochyra, *Tortula abranchesii* Luisier) [206]
var. ***astrakhanica*** Ignatov, Ignatova & Suragina [207]
var. ***caninervis***
var. ***gypsophila*** (J.J.Amann ex G.Roth) Ochyra (*S. caninervis* var. *spuria* (J.J.Amann) R.H.Zander, *S. ruralis* var. *gypsophila* (J.J.Amann ex G.Roth) J.J.Amann, *S. ruralis* var. *spuria* (J.J.Amann) Podp., *Tortula caninervis* subsp. *spuria* (J.J.Amann) W.A.Kramer, *Tortula caninervis* subsp. *spuria* var. *gypsophila* (J.J.Amann ex G.Roth) W.A.Kramer, *Tortula ruralis* var. *gypsophila* J.J.Amann ex G.Roth, *Tortula spuria* J.J.Amann)
4 ***echinata*** (Schiffn.) Herrnst. & Ben-Sasson (*S. princeps* subsp. *echinata* (Schiffn.) Podp., *S. princeps* var.

echinata (Schiffn.) R.H.Zander, *Tortula echinata* Schiffn.) [202]
5 ***fragilis*** (Taylor) Ochyra (*Barbula alpina* var. *inermis* Milde, *S. mutica* Giacom., *Tortula fragilis* Taylor)
6 ***glabra*** J.-P.Frahm & M.T.Gallego [208]
7 ***handelii*** (Schiffn.) S.Agnew & Vondr. (*S. montana* subsp. *handelii* (Schiffn.) Podp., *Tortula handelii* Schiffn., *Tortula intermedia* subsp. *handelii* (Schiffn.) Wijk & Margad.)
8 ***laevipila*** Brid. (*S. laevipila* var. *laevipilaeformis* (De Not.) J.J.Amann, *S. pagorum* (Milde) J.J.Amann, *Tortula laevipila* (Brid.) Schwägr., *Tortula laevipila* var. *meridionalis* (Schimp.) Wijk & Margad., *Tortula laevipila* var. *notarisii* Barkman, *Tortula laevipila* var. *wachteri* Barkman, *Tortula laevipilaeformis* De Not., *Tortula pagorum* (Milde) De Not., *Tortula saccardoana* De Not.) [209]
9 ***latifolia*** (Bruch ex Hartm.) Huebener (*Tortula latifolia* Bruch ex Hartm.)
10 ***minor*** (Bizot) M.T.Gallego, J.Guerra, M.J.Cano, Ros & Sánchez-Moya [210]
11 ***montana*** Nees (*S. intermedia* Brid., *Tortula crinita* (De Not.) De Not., *Tortula intermedia* (Brid.) Berk., hom. illeg. [211])
var. ***calva*** (Durieu & Sagot ex Bruch & Schimp.) J.J.Amann (*Tortula crinita* var. *calva* (Durieu & Sagot ex Bruch & Schimp.) Nebel & Heinrichs, *Tortula ruralis* var. *calva* (Durieu & Sagot ex Bruch & Schimp.) C.Hartm.)
var. ***montana***
12 ***norvegica*** F.Weber (*Tortula norvegica* (F.Weber) Lindb.)
13 ***papillosa*** (Wilson) Jur. (*Tortula papillosa* var. *meridionalis* Warnst. [212], *Tortula papillosa* Wilson)
14 ***papillosissima*** (Copp.) Loeske (*S. ruralis* var. *hirsuta* (Venturi) Podp., *Tortula hirsuta* (Venturi) Laz., *Tortula papillosissima* (Copp.) Broth., *Tortula ruralis* subsp. *hirsuta* (Venturi) W.A.Kramer, *Tortula ruralis* var. *hirsuta* (Venturi) Paris) [202]
15 ***princeps*** (De Not.) Mitt. (*Tortula princeps* De Not.) [213]
16 ***rigescens*** (Broth. & Geh.) Ochyra (*Tortula rigescens* Broth. & Geh.) [202]
17 ***ruralis*** (Hedw.) F.Weber & D.Mohr (*Tortula ruralis* (Hedw.) P.Gaertn., B.Mey. & Scherb.)
var. ***ruraliformis*** (Besch.) Delogne (*S. ruraliformis* (Besch.) Cardot, *S. ruralis* var. *arenicola* J.J.Amann, *Tortula ruraliformis* (Besch.) Ingham, *Tortula ruralis* var. *ruraliformis* (Besch.) De Wild.) [214]
var. ***ruralis*** (*S. ruralis* var. *glacialis* J.J.Amann)
18 ***sinensis*** (Müll.Hal.) Ochyra (*Tortula sinensis* (Müll.Hal.) Broth.)
19 ***subpapillosissima*** (Bizot & R.B.Pierrot ex W.A.Kramer) M.T.Gallego & J.Guerra (*Tortula papillosissima* var. *submamillosa* (W.A.Kramer) Heinrichs & Caspari, *Tortula ruraliformis* var. *subpapillosissima* Bizot & R.B.Pierrot ex W.A.Kramer, *Tortula ruralis* var. *submamillosa* W.A.Kramer) [215]
20 ***virescens*** (De Not.) Ochyra (*Tortula virescens* (De Not.) De Not.)

117 ***Tortula*** Hedw., nom. cons. (*Desmatodon* Brid., *Pottia* Ehrh. ex Fürnr.) [216] [217]
1 ***amplexa*** (Lesq.) Steere (*Syntrichia amplexa* (Lesq.) R.H.Zander)
2 ***ampliretis*** Crundw. & D.G.Long [218]
3 ***atrovirens*** (Sm.) Lindb.
4 ***bogosica*** (Müll.Hal.) R.H.Zander (*Desmatodon bogosicus* Müll.Hal.)
5 ***bolanderi*** (Lesq. & James) M.Howe (*Syntrichia bolanderi* (Lesq. & James) R.H.Zander) [219]
6 ***brevissima*** Schiffn. [221]
7 ***canescens*** Mont.
8 ***cernua*** (Huebener) Lindb. (*Desmatodon cernuus* (Huebener) Bruch & Schimp.)
9 ***cuneifolia*** (Dicks.) Turner
10 ***freibergii*** Dixon & Loeske
11 ***guepinii*** (Bruch & Schimp.) Broth. (*Desmatodon guepinii* Bruch & Schimp.)
12 ***hoppeana*** (Schultz) Ochyra (*Desmatodon latifolius* (Hedw.) Brid., *T. eucalyptrata* Lindb., *T. euryphylla* R.H.Zander) [222]
13 ***inermis*** (Brid.) Mont. (*Syntrichia inermis* (Brid.) Bruch) [219]
14 ***israelis*** Bizot & F.Bilewsky (*T. baetica* (Casas & R.Oliva) J.Guerra & Ros, *T. muralis* var. *baetica* Casas & R.Oliva) [220]
15 ***lanceola*** R.H.Zander (*Pottia lanceolata* (Hedw.) Müll.Hal.)
16 ***laureri*** (Schultz) Lindb. (*Desmatodon laureri* (Schultz) Bruch & Schimp.)
17 ***leucostoma*** (R.Br.) Hook. & Grev. (*Desmatodon leucostoma* (R.Br.) Berggr.)
18 ***lingulata*** Lindb.
19 ***marginata*** (Bruch & Schimp.) Spruce (*Desmatodon meridionalis* Luisier) [223]
20 ***modica*** R.H.Zander (*Pottia intermedia* (Turner) Fürnr.)
21 ***mucronifolia*** Schwägr.
22 ***muralis*** Hedw.
23 ***obtusifolia*** (Schwägr.) Mathieu
24 ***pallida*** (Lindb.) R.H.Zander (*Pottia pallida* Lindb., *P. cuneifolia* Solms ex Schimp., *T. zoddae* R.H.Zander) [224]
25 ***randii*** (Kenn.) R.H.Zander (*Desmatodon oxneri* Laz., *Desmatodon randii* (Kenn.) Laz.)
26 ***revolvens*** (Schimp.) G.Roth
27 ***rhodonia*** R.H.Zander (*Desmatodon wilczekii* Meyl.) [225]
28 ***schimperi*** M.J.Cano, O.Werner & J.Guerra (*T. angustata* Lindb., hom. illeg., *T. subulata* var. *angustata* (Schimp.) Limpr.) [226]

29 ***solmsii*** (Schimp.) Limpr. (*T. marginata* subsp. *limbata* (Lindb.) Podp.) [227]
30 ***subulata*** Hedw. (*T. subulata* var. *graeffii* Warnst., *T. subulata* var. *subinermis* (Bruch & Schimp.) Wilson) [226]
31 ***systylia*** (Schimp.) Lindb. (*Desmatodon systylius* Schimp.)
32 ***truncata*** (Hedw.) Mitt. (*Pottia truncata* (Hedw.) Bruch & Schimp.)
33 ***ucrainica*** (Laz.) R.H.Zander (*Desmatodon ucrainicus* Laz.)
34 ***vahliana*** (Schultz) Mont.
35 ***viridifolia*** (Mitt.) Blockeel & A.J.E.Sm. (*Pottia crinita* Bruch & Schimp.)
36 ***wilsonii*** (Hook.) R.H.Zander (*Pottia wilsonii* (Hook.) Bruch & Schimp.)

118 ***Triquetrella*** Müll.Hal.
1 ***arapilensis*** Luisier

Splachnales (M.Fleisch.) Ochyra
Splachnaceae Grev. & Arn.

119 ***Aplodon*** R.Br.
1 ***wormskioldii*** (Hornem.) R.Br. [32]

120 ***Splachnum*** Hedw.
1 ***ampullaceum*** Hedw.
2 ***luteum*** Hedw.
3 ***melanocaulon*** (Wahlenb.) Schwägr.
4 ***pensylvanicum*** (Brid.) Grout ex H.A.Crum
5 ***rubrum*** Hedw.
6 ***sphaericum*** Hedw.
7 ***vasculosum*** Hedw.

121 ***Tayloria*** Hook.
1 ***acuminata*** Hornsch.
2 ***froelichiana*** (Hedw.) Mitt. ex Broth.
3 ***hornschuchii*** (Grev. & Arn.) Broth.
4 ***lingulata*** (Dicks.) Lindb.
5 ***rudolphiana*** (Garov.) Bruch & Schimp.
6 ***serrata*** (Hedw.) Bruch & Schimp.
7 ***splachnoides*** (Schleich. ex Schwägr.) Hook.
8 ***tenuis*** (Dicks.) Schimp. (*T. serrata* var. *tenuis* (Dicks.) Bruch & Schimp.)

122 ***Tetraplodon*** Bruch & Schimp.
1 ***angustatus*** (Hedw.) Bruch & Schimp.
2 ***blyttii*** Frisvoll
3 ***mnioides*** (Hedw.) Bruch & Schimp.
4 ***pallidus*** I.Hagen
5 ***paradoxus*** (R.Br.) I.Hagen
6 ***urceolatus*** (Hedw.) Bruch & Schimp. [228]

123 ***Voitia*** Hornsch.
1 ***hyperborea*** Grev. & Arn.
2 ***nivalis*** Hornsch.

Meesiaceae Schimp.

124 ***Amblyodon*** P.Beauv., nom. cons.
1 ***dealbatus*** (Hedw.) P.Beauv.

125 ***Leptobryum*** (Bruch & Schimp.) Wilson
1 ***pyriforme*** (Hedw.) Wilson

126 ***Meesia*** Hedw., nom. cons.
1 ***hexasticha*** (Funck) Bruch
2 ***longiseta*** Hedw.
3 ***triquetra*** (L. ex Jolycl.) Ångstr.
4 ***uliginosa*** Hedw.

127 ***Paludella*** Brid.
1 ***squarrosa*** (Hedw.) Brid.

Orthotrichales Dixon
Orthotrichaceae Arn.

128 ***Orthotrichum*** Hedw.
Subgenus *Orthotrichum* [229]
1 ***anomalum*** Hedw.
2 ***cupulatum*** Hoffm. ex Brid.
var. ***bistratosum*** Schiffn.
var. ***cupulatum***
var. ***fuscum*** (Venturi) Boulay (*O. limprichtii* I.Hagen) [230]
var. ***riparium*** Huebener (*O. cupulatum* var. *nudum* (Dicks.) Braithw.)
3 ***pellucidum*** Lindb.
4 ***urnigerum*** Myrin
Subgenus *Pulchella* (Schimp.) Vitt
5 ***alpestre*** Bruch & Schimp.
6 ***casasianum*** F.Lara, Garilleti & Mazimpaka [231]
7 ***consimile*** Mitt.
8 ***crenulatum*** Mitt. [231] [232]
9 ***diaphanum*** Schrad. ex Brid.
10 ***handiense*** F.Lara, Garilleti & Mazimpaka [233]
11 ***hispanicum*** F.Lara, Garilleti & Mazimpaka [234]
12 ***macrocephalum*** F.Lara, Garilleti & Mazimpaka [235]
13 ***microcarpum*** De Not.
14 ***pallens*** Bruch ex Brid. (*O. paradoxum* Gronvall)
15 ***patens*** Bruch ex Brid.
16 ***philibertii*** Venturi
17 ***pulchellum*** Brunt.
18 ***pumilum*** Sw. ex anon. [106]
19 ***rivulare*** Turner
20 ***rogeri*** Brid.
21 ***scanicum*** Gronvall (*O. lewinskyae* F.Lara, Garilleti & Mazimpaka) [236]
22 ***schimperi*** Hammar [237]
23 ***sprucei*** Mont.
24 ***stellatum*** Brid.
25 ***stramineum*** Hornsch. ex Brid. (*O. rogeri* var. *defluens* (Venturi) Venturi) [238]
26 ***tenellum*** Bruch ex Brid. (*O. australe* Jur.) [239]
27 ***vittii*** F.Lara, Garilleti & Mazimpaka [240]
Subgenus *Callistoma* (Z.Iwats. & Sharp) Lewinsky
28 ***callistomum*** Fisch.-Oost. ex Bruch & Schimp.
Subgenus *Orthophyllum* Delogne
29 ***gymnostomum*** Bruch ex Brid.
30 ***obtusifolium*** Brid.
Subgenus *Phaneroporum* Delogne
31 ***laevigatum*** J.E.Zetterst. (*O. arcangelianum* Massari) [241]
32 ***rupestre*** Schleich. ex Schwägr.
33 ***shawii*** Wilson [242]
Subgenus *Gymnoporus* (Braithw.) Limpr.
34 ***acuminatum*** H.Philib.

35 ***affine*** Schrad. ex Brid. (*O. fastigiatum* Bruch ex Brid.)
36 ***ibericum*** F.Lara & Mazimpaka [243]
37 ***lyellii*** Hook. & Taylor
38 ***pylaisii*** Brid.
39 ***sordidum*** Sull. & Lesq. (*O. caucasicum* Venturi) [244]
40 ***speciosum*** Nees (*O. elegans* auct. eur. non Schwägr.) [245]
var. ***brevisetum*** F.Lara, Garilleti & Mazimpaka [246]
var. ***speciosum***
41 ***striatum*** Hedw.
42 ***tortidontium*** F.Lara, Garilleti & Mazimpaka [247]
43 ***vladikavkanum*** Venturi [248]
129 ***Ulota*** D.Mohr
1 ***bruchii*** Hornsch. ex Brid. (*U. crispa* var. *norvegica* (Gronvall) A.J.E.Sm. & M.O.Hill)
2 ***calvescens*** Wilson
3 ***coarctata*** (P.Beauv.) Hammar
4 ***crispa*** (Hedw.) Brid. (*U. intermedia* Schimp.)
5 ***curvifolia*** (Wahlenb.) Lilj.
6 ***drummondii*** (Hook. & Grev.) Brid.
7 ***hutchinsiae*** (Sm.) Hammar
8 ***macrospora*** E.Bauer & Warnst. [249]
9 ***phyllantha*** Brid.
10 ***rehmannii*** Jur.
130 ***Zygodon*** Hook. & Taylor
1 ***conoideus*** (Dicks.) Hook. & Taylor
var. ***conoideus***
var. ***lingulatus*** S.R.Edwards
2 ***dentatus*** (Limpr.) Kartt. (*Z. viridissimus* var. *dentatus* Limpr.)
3 ***forsteri*** (Dicks.) Mitt. (*Codonoblepharon forsteri* (Dicks.) Goffinet, *Zygodon madeirensis* Dixon & Luisier) [250]
4 ***gracilis*** Wilson
5 ***rupestris*** Schimp. ex Lorentz (*Z. baumgartneri* Malta, *Z. viridissimus* var. *rupestris* C.Hartm., *Z. vulgaris* Nyholm)
6 ***sibiricus*** Ignatov, Ignatova, Z.Iwats. & B.C.Tan [251]
7 ***stirtonii*** Schimp. ex Stirt. [252]
8 ***viridissimus*** (Dicks.) Brid.

Hedwigiales Ochyra
Hedwigiaceae Schimp.
131 ***Braunia*** Bruch & Schimp.
1 ***alopecura*** (Brid.) Limpr.
132 ***Hedwigia*** P.Beauv., nom. cons.
1 ***ciliata*** (Hedw.) P.Beauv. [253]
var. ***ciliata***
var. ***leucophaea*** Bruch & Schimp. [254]
2 ***integrifolia*** P.Beauv. (*Hedwigidium integrifolium* (P.Beauv.) Dixon)
3 ***stellata*** Hedenäs [255]

Bryales Limpr.
Catoscopiaceae Boulay ex Broth.
133 ***Catoscopium*** Brid.
1 ***nigritum*** (Hedw.) Brid.

Bartramiaceae Schwägr.
134 ***Anacolia*** Schimp., nom. cons.
1 ***laevisphaera*** (Taylor) Flowers [256]
2 ***menziesii*** (Turner) Paris [257]
3 ***webbii*** (Mont.) Schimp.
135 ***Bartramia*** Hedw., nom. cons.
section *Bartramia*
1 ***halleriana*** Hedw.
2 ***pomiformis*** Hedw. [258]
section *Pyridium* Müll.Hal. [259]
3 ***breviseta*** Lindb. (*B. ithyphylla* var. *breviseta* (Lindb.) Kindb.) [260]
4 ***ithyphylla*** Brid. [261]
5 ***subulata*** Bruch & Schimp.
section *Strictidium* Müll.Hal.
6 ***stricta*** Brid.
136 ***Breutelia*** (Bruch & Schimp.) Schimp.
1 ***azorica*** (Mitt.) Cardot
2 ***chrysocoma*** (Hedw.) Lindb.
137 ***Conostomum*** Sw. ex F.Weber & D.Mohr
1 ***tetragonum*** (Hedw.) Lindb.
138 ***Philonotis*** Brid.
section *Bartramidula* (Bruch & Schimp.) Mitt.
1 ***cernua*** (Wilson) D.G.Griffin & W.R.Buck
section *Philonotula* (Schimp.) A.Jaeger
2 ***rigida*** Brid.
section *Homomorphae* (Kindb.) Ochyra
3 ***arnellii*** Husn. (*P. capillaris* auct. non Lindb.)
4 ***hastata*** (Duby) Wijk & Margad.
5 ***marchica*** (Hedw.) Brid. (*P. marchica* var. *laxa* (Limpr.) Loeske & Warnst. [262])
6 ***uncinata*** (Schwägr.) Brid. [263]
section *Philonotis*
7 ***caespitosa*** Jur.
8 ***calcarea*** (Bruch & Schimp.) Schimp.
9 ***fontana*** (Hedw.) Brid.
10 ***seriata*** Mitt.
11 ***tomentella*** Molendo (*P. fontana* var. *pumila* (Turner) Brid.)
139 ***Plagiopus*** Brid.
1 ***oederianus*** (Sw.) H.A.Crum & L.E.Anderson (*P. oederi* (Brid.) Limpr.)
var. ***alpinus*** (Schwägr.) Ochyra
var. ***oederianus***

Bryaceae Schwägr. [264]
140 ***Anomobryum*** Schimp.
1 ***concinnatum*** (Spruce) Lindb. (*A. filiforme* subsp. *concinnatum* (Spruce) J.J.Amann, *A. julaceum* var. *concinnatum* (Spruce) J.E.Zetterst., *A. leptostomoides* Schimp., *Bryum concinnatum* Spruce, *Bryum filiforme* var. *concinnatum* (Spruce) Boulay, *Bryum julaceum* var. *concinnatum* (Spruce) Wilson) [265]
2 ***julaceum*** (Schrad. ex P.Gaertn. et al.) Schimp. (*A. filiforme* (Dicks.) Husn., hom. illeg., *A. filiforme* var. *juliforme* (Solms) Husn., *A. juliforme* Solms, *Bryum filiforme* Dicks., *Bryum julaceum* Schrad. ex P.Gaertn. et al., *Bryum juliforme* (Solms) Schimp., *Bryum leptostomum* Schimp.)
3 ***lusitanicum*** (I.Hagen ex Luisier) Thér. [266]

141 ***Brachymenium*** Schwägr.
1 ***commutatum*** (Müll.Hal.) A.Jaeger [267]
2 ***notarisii*** (Mitt.) A.J.Shaw (*Haplodontium notarisii* (Mitt.) Broth.) [268]
3 ***paradoxum*** (Herzog) A.J.Shaw (*Mielichhoferia paradoxa* Herzog) [269]
4 ***philonotula*** Broth. [270]

142 ***Bryum*** Hedw. (*Imbribryum* N.Pedersen) [271] [272] [273] [274] [275]
1 ***algovicum*** Sendtn. ex Müll.Hal. [276]
var. ***algovicum*** (*B. algovicum* var. *compactum* (Hornsch.) Düll, *B. compactum* (Hornsch.) Kindb.)
var. ***rutheanum*** (Warnst.) Crundw.
2 ***alpinum*** Huds. ex With. (*Imbribryum alpinum* (Huds. ex With.) N.Pedersen)
3 ***apiculatum*** Schwägr. (*B. cruegeri* Hampe, *B. nitens* Hook., *Pohlia apiculata* (Schwägr.) H.A.Crum & L.E.Anderson, *Pohlia cruegeri* (Hampe) A.L.Andrews) [277]
4 ***archangelicum*** Bruch & Schimp. (*B. amblyodon* Müll.Hal., *B. curvatum* Kaurin & Arnell, *B. imbricatum* auct. non? (Schwägr.) Bruch & Schimp., *B. inclinatum* (Brid.) Turton, hom. illeg. non (Hedw.) Dicks., *B. stenotrichum* Müll.Hal.) [278]
5 ***arcticum*** (R.Br.) Bruch & Schimp. (*B. bryoides* (R.Br.) Wijk & Margad., *B. lawersianum* H.Philib., *B. purpurascens* (R.Br.) Bruch & Schimp.) [278]
6 ***argenteum*** Hedw. (*Anomobryum lanatum* (P.Beauv.) J.R.Spence & H.P.Ramsay, *B. argenteum* subsp. *veronense* (De Not.) J.J.Amann, *B. argenteum* var. *lanatum* (P.Beauv.) Hampe [280], *B. argenteum* var. *veronense* (De Not.) Molendo, *B. lanatum* (P.Beauv.) Brid., *B. veronense* De Not.) [279]
7 ***blindii*** Bruch & Schimp. [281]
8 ***bornholmense*** Wink. & R.Ruthe [282]
9 ***caespiticium*** Hedw. (*B. badium* (Brid.) Schimp., *B. comense* Schimp.) [283]
10 ***calophyllum*** R.Br. (*B. acutiforme* Limpr., *B. axel-blyttii* Kaurin ex H.Philib.) [278]
11 ***canariense*** Brid. (*B. provinciale* H.Philib.) [284]
12 ***capillare*** Hedw. (*B. platyloma* Schwägr., *B. rufifolium* (Dixon) Demaret & R.Wilczek, *B. validicostatum* Cardot & Dixon, *Rosulabryum capillare* (Hedw.) J.R.Spence) [278]
13 ***caucasicum*** (Schimp. ex Broth.) C.J.Cox & Hedd. (*Mielichhoferia caucasia* Schimp. ex Broth., *Mielichhoferia himalayana* Mitt. non *Bryum himalayanum* (Mitt.) Müll.Hal.) [285]
14 ***cellulare*** Hook. (*Brachymenium cellulare* (Hook.) A.Jaeger, *B. splachnoides* (Harv.) Müll.Hal. non Dicks.) [269]
15 ***creberrimum*** Taylor (*B. affine* F.W.Schultz non J.F.Gmel. ex Broth., *B. cuspidatum* (Bruch & Schimp.) Schimp., *B. lisae* De Not.)
16 ***cryophilum*** Martensson (*B. cyclophyllum* var. *obtusifolium* Lindb., *B. obtusifolium* Lindb., hom. illeg.)
17 ***cyclophyllum*** (Schwägr.) Bruch & Schimp. (*B. tortifolium* Funck ex Brid.)
18 ***demaretianum*** Arts [286]
19 ***dichotomum*** Hedw. (*B. balticum* Nyholm & Hedenäs, *B. barnesii* J.B.Wood ex Schimp., *B. bicolor* Dicks., *B. dunense* A.J.E.Sm. & H.Whitehouse, *B. excurrens* Lindb., *B. versicolor* A.Braun ex Bruch & Schimp.) [287]
20 ***dixonii*** Cardot ex W.E.Nicholson (*B. bicolor* subsp. *dixonii* (Cardot ex W.E.Nicholson) Podp.)
21 ***donianum*** Grev. (*B. obovatum* Mitt., *B. pachyloma* Cardot)
22 ***dyffrynense*** Holyoak [287]
23 ***elegans*** Nees (*B. capillare* var. *elegans* (Nees) Husn., *B. capillare* var. *ferchelii* (Funck ex Brid.) Bruch & Schimp., *B. chibinense* Schljakov, *B. stirtonii* Schimp., *Rosulabryum elegans* (Nees) Ochyra) [278]
24 ***funckii*** Schwägr. (*B. funkii* auct. non Schwägr.) [278]
25 ***gemmiferum*** R.Wilczek & Demaret
26 ***gemmilucens*** R.Wilczek & Demaret
27 ***gemmiparum*** De Not. (*B. alpinum* subsp. *gemmiparum* (De Not.) Kindb.)
28 ***intermedium*** (Brid.) Blandow (*B. nitidulum* Lindb.) [278]
29 ***klinggraeffii*** Schimp.
30 ***knowltonii*** Barnes (*B. lacustre* (F.Weber & D.Mohr) Blandow non Brid.)
31 ***kunzei*** Hornsch. (*B. caespiticium* subsp. *kunzei* (Hornsch.) Podp., *B. caespiticium* var. *imbricatum* Bruch & Schimp., *B. caespiticium* var. *kunzei* (Hornsch.) Braithw., nom. illeg.) [278] [283] [288]
32 ***longisetum*** Blandow ex Schwägr. (*B. inclinatum* subsp. *longisetum* (Blandow ex Schwägr.) Podp.)
33 ***marratii*** Hook.f. & Wilson
34 ***mildeanum*** Jur. (*B. alpinum* var. *mildeanum* (Jur.) Podp.)
35 ***miniatum*** Lesq. [289]
36 ***minii*** Podp. [290]
37 ***moravicum*** Podp. (*B. flaccidum* auct. non Brid., *B. laevifilum* Syed, *B. subelegans* auct. non Kindb., *Rosulabryum laevifilum* (Syed) Ochyra) [278]
38 ***muehlenbeckii*** Bruch & Schimp. (*B. alpinum* var. *brevifolium* Myrin, *Imbribryum muehlenbeckii* (Bruch & Schimp.) N.Pedersen) [291]
39 ***neodamense*** Itzigs. (*B. cavifolium* Wilson, nom. nud. in synon., *B. crispulum* Hampe ex Müll.Hal., *B. neodamense* var. *ovatum* (Lange & C.E.O.Jensen) Lindb. & Arnell, *B. pseudotriquetrum* subsp. *neodamense* (Itzigs.) J.J.Amann, *B. pseudotriquetrum* var. *cavifolium* Schimp., *B. subneodamense* Kindb.) [292]
40 ***oblongum*** Lindb. (*B. blindii* subsp. *oblongum* (Lindb.) Kindb., *B. blindii* var. *oblongum* (Lindb.) Mönk.) [281]
41 ***pallens*** Sw. ex anon. (*B. aeneum* Blytt ex Bruch & Schimp. [293], *B. oeneum* Blytt ex Bruch & Schimp. emend. Wijk et al., *B. rutilans* auct. eur. non Brid., *B. subelegans* Kindb.) [106] [278]
42 ***pallescens*** Schleich. ex Schwägr. (*B. lonchocaulon* Müll.Hal. [294], *B. obconicum* Hornsch. ex Bruch & Schimp.)

43 ***pseudotriquetrum*** (Hedw.) P.Gaertn. et al. (*B. castaneum* I.Hagen, *B. ventricosum* Dicks., nom. illeg.)
var. ***bimum*** (Schreb.) Lilj. (*B. bimum* (Schreb.) Turner, *B. pseudotriquetrum* subsp. *bimum* (Schreb.) Hartm.) [295]
var. ***pseudotriquetrum***
44 ***radiculosum*** Brid.
45 ***riparium*** I.Hagen
46 ***rubens*** Mitt.
47 ***ruderale*** Crundw. & Nyholm
48 ***salinum*** I.Hagen ex Limpr. [296]
49 ***sauteri*** Bruch & Schimp.
50 ***schleicheri*** DC. (*B. schleicheri* var. *latifolium* (Schwägr.) Schimp., *B. turbinatum* subsp. *schleicheri* (Schwägr.) Kindb., *B. turbinatum* var. *latifolium* (Schwägr.) Bruch & Schimp.) [297]
51 ***subapiculatum*** Hampe (*B. erythrocarpum* auct. partim, *B. microerythrocarpum* Müll.Hal. & Kindb. ex Macoun)
52 ***tenuisetum*** Limpr.
53 ***torquescens*** Bruch & Schimp. (*B. capillare* subsp. *icodense* (H.Winter) Podp., *B. capillare* subsp. *torquescens* (Bruch & Schimp.) Kindb., *B. capillare* var. *torquescens* (Bruch & Schimp.) Husn., *B. icodense* H.Winter, *B. obconicum* auct. non Hornsch. ex Bruch & Schimp., *Rosulabryum torquescens* (Bruch & Schimp.) J.R.Spence) [278] [298]
54 ***turbinatum*** (Hedw.) Turner (*B. syriacum* Lorentz)
55 ***uliginosum*** (Brid.) Bruch & Schimp. (*B. cernuum* (Hedw.) Bruch & Schimp.)
56 ***valparaisense*** Thér. (*B. pyriferum* Crundw. & H.Whitehouse) [299]
57 ***violaceum*** Crundw. & Nyholm
58 ***warneum*** (Röhl.) Brid. (*B. mamillatum* Lindb., *B. oelandicum* H.Philib.) [278]
59 ***weigelii*** Spreng. (*B. duvalii* Voit)
60 ***wrightii*** Sull. & Lesq. (*B. globosum* Lindb., *B. mamillatum* var. *globosum* (Lindb.) Berggr.)

143 ***Plagiobryum*** Lindb.
1 ***demissum*** (Hook.) Lindb. (*Bryum demissum* Hook.)
2 ***zieri*** (Hedw.) Lindb. (*Bryum zieri* Hedw.) [300]

144 ***Rhodobryum*** (Schimp.) Limpr., nom. cons.
1 ***ontariense*** (Kindb.) Kindb. (*Bryum ontariense* Kindb., *R. spathulatum* auct. non (Hornsch.) Pócs) [301]
2 ***roseum*** (Hedw.) Limpr. (*Bryum roseum* (Hedw.) P.Gaertn. et al.)

Mielichhoferiaceae Schimp. (Mniaceae subfam. Pohlioideae auct., nom. nud.) [302]

145 ***Epipterygium*** Lindb.
1 ***tozeri*** (Grev.) Lindb.

146 ***Mielichhoferia*** Nees & Hornsch.
1 ***elongata*** (Hoppe & Hornsch. ex Hook.) Hornsch. (*M. mielichhoferiana* var. *elongata* (Hoppe & Hornsch. ex Hook.) Wijk & Margad.) [303]
2 ***mielichhoferiana*** (Funck) Loeske (*M. mielichhoferi* (Hook.) Wijk & Margad., nom. inval.)

147 ***Pohlia*** Hedw. [304] [305]
section *Pohlia*
1 ***bolanderi*** (Lesq.) Broth. [306]
2 ***cruda*** (Hedw.) Lindb.
3 ***crudoides*** (Sull. & Lesq.) Broth.
4 ***elongata*** Hedw.
var. ***acuminata*** (Hornsch.) Huebener (*P. acuminata* Hornsch., *P. ambigua* (Limpr.) Broth.) [288] [307]
var. ***elongata***
var. ***greenii*** (Brid.) A.J.Shaw (*P. elongata* var. *polymorpha* (Hornsch.) Nyholm [288]
5 ***longicolla*** (Hedw.) Lindb. [32]
6 ***nutans*** (Hedw.) Lindb. [308]
subsp. ***nutans***
subsp. ***schimperi*** (Müll.Hal.) Nyholm (*P. nutans* var. *purpurascens* Latzel, *P. schimperi* (Müll.Hal.) A.L.Andrews) [308]
7 ***obtusifolia*** (Vill. ex Brid.) L.F.Koch
8 ***saprophila*** (Müll.Hal.) Broth. [309]
9 ***sphagnicola*** (Bruch & Schimp.) Broth.
section *Cacodon* Lindb. ex Broth.
10 ***andalusica*** (Höhn.) Broth.
11 ***andrewsii*** A.J.Shaw
12 ***annotina*** (Hedw.) Lindb. (*P. grandiflora* H.Lindb.)
13 ***bulbifera*** (Warnst.) Warnst.
14 ***camptotrachela*** (Renauld & Cardot) Broth.
15 ***drummondii*** (Müll.Hal.) A.L.Andrews
16 ***erecta*** Lindb. (*P. defecta* (Sanio) A.L.Andrews)
17 ***filum*** (Schimp.) Martensson (*P. schleicheri* H.A.Crum)
18 ***flexuosa*** Hook. (*P. muyldermansii* R.Wilczek & Demaret) [310]
var. ***flexuosa***
var. ***pseudomuyldermansii*** (Arts, Nordhorn-Richter & A.J.E.Sm.) A.J.E.Sm. (*P. muyldermansii* var. *pseudomuyldermansii* Arts, Nordhorn-Richter & A.J.E.Sm.) [311]
19 ***lescuriana*** (Sull.) Ochi (*Mniobryum pulchellum* (Hedw.) Loeske)
20 ***ludwigii*** (Spreng. ex Schwägr.) Broth.
21 ***lutescens*** (Limpr.) H.Lindb.
22 ***proligera*** (Kindb.) Lindb. ex Broth.
23 ***scotica*** Crundw.
24 ***tundrae*** A.J.Shaw [312]
section *Apalodictyon* (Müll.Hal.) Ochyra (section *Mniobryum* Nyholm, nom. inval.)
25 ***atropurpurea*** (Wahlenb.) H.Lindb.
26 ***melanodon*** (Brid.) A.J.Shaw (*Mniobryum delicatulum* (Hedw.) Dixon)
27 ***vexans*** (Limpr.) H.Lindb.
28 ***wahlenbergii*** (F.Weber & D.Mohr) A.L.Andrews (*Mniobryum wahlenbergii* (F.Weber & D.Mohr) Jenn.)
var. ***calcarea*** (Warnst.) E.F.Warb.
var. ***glacialis*** (Brid.) E.F.Warb.
var. ***wahlenbergii***

148 ***Schizymenium*** Harv.
1 ***pontevedrense*** (Luisier) Sérgio, Casas, Cros & Brugués

Mniaceae Schwägr. [302]

149 ***Mnium*** Hedw., nom. cons.

section *Mnium*
1 ***hornum*** Hedw.
section *Spinosa* (Kindb.) T.J.Kop.
2 ***spinosum*** (Voit) Schwägr.
3 ***spinulosum*** Bruch & Schimp.
4 ***thomsonii*** Schimp.
section *Laevinervia* P.C.Chen ex X.J.Li & M.Zang
5 ***lycopodioides*** Schwägr. (*M. ambiguum* H.Müll.) [313]
6 ***marginatum*** (Dicks.) P.Beauv.
var. ***dioicum*** (H.Müll.) Crundw. (*M. marginatum* var. *riparium* (Mitt.) Husn.)
var. ***marginatum***
section *Stellariformia* (Kindb.) T.J.Kop.
7 ***blyttii*** Bruch & Schimp.
8 ***heterophyllum*** (Hook.) Schwägr.
9 ***stellare*** Hedw.
150 ***Trachycystis*** T.J.Kop.
1 ***ussuriensis*** (Maack & Regel) T.J.Kop. (*T. immarginata* (Broth.) Laz.) [314]
Cinclidiaceae Kindb. (Mniaceae tribus Cinclidieae T.J.Kop.) [302]
151 ***Cinclidium*** Sw.
1 ***arcticum*** (Bruch & Schimp.) Schimp.
2 ***latifolium*** Lindb.
3 ***stygium*** Sw.
4 ***subrotundum*** Lindb.
152 ***Cyrtomnium*** Holmen
1 ***hymenophylloides*** (Huebener) T.J.Kop.
2 ***hymenophyllum*** (Bruch & Schimp.) Holmen
153 ***Rhizomnium*** (Broth.) T.J.Kop.
1 ***andrewsianum*** (Steere) T.J.Kop.
2 ***gracile*** T.J.Kop.
3 ***magnifolium*** (Horik.) T.J.Kop.
4 ***pseudopunctatum*** (Bruch & Schimp.) T.J.Kop.
5 ***punctatum*** (Hedw.) T.J.Kop.
Plagiomniaceae T.J.Kop. (Mniaceae tribus Plagiomnieae T.J.Kop.) [302]
154 ***Plagiomnium*** T.J.Kop.
section *Plagiomnium*
1 ***cuspidatum*** (Hedw.) T.J.Kop.
2 ***drummondii*** (Bruch & Schimp.) T.J.Kop.
section *Rosulata* (Kindb.) T.J.Kop.
3 ***affine*** (Blandow ex Funck) T.J.Kop.
4 ***curvatulum*** (Lindb.) Schljakov (*P. medium* subsp. *curvatulum* (Lindb.) T.J.Kop.) [315]
5 ***elatum*** (Bruch & Schimp.) T.J.Kop.
6 ***ellipticum*** (Brid.) T.J.Kop.
7 ***medium*** (Bruch & Schimp.) T.J.Kop.
section *Undulata* (Kindb.) T.J.Kop.
8 ***confertidens*** (Lindb. & Arnell) T.J.Kop.
9 ***undulatum*** (Hedw.) T.J.Kop.
var. ***madeirense*** T.J.Kop. & Sérgio [316]
var. ***undulatum***
section *Rostrata* (Kindb.) T.J.Kop.
10 ***rostratum*** (Schrad.) T.J.Kop.
155 ***Pseudobryum*** (Kindb.) T.J.Kop.
1 ***cinclidioides*** (Huebener) T.J.Kop.
Aulacomniaceae Schimp.
156 ***Aulacomnium*** Schwägr., nom. cons.
1 ***androgynum*** (Hedw.) Schwägr.
2 ***palustre*** (Hedw.) Schwägr.
3 ***turgidum*** (Wahlenb.) Schwägr.
Orthodontiaceae (Broth.) Goffinet
157 ***Orthodontium*** Schwägr.
1 ***gracile*** (Wilson) Schwägr. ex Bruch & Schimp.
2 ***lineare*** Schwägr. (*O. australe* Hook.f. & Wilson [317])
3 ***pellucens*** (Hook.) Bruch & Schimp.
Rhizogoniales (M.Fleisch.) Goffinet & W.R.Buck
Rhizogoniaceae Broth.
158 ***Leptotheca*** Schwägr.
1 ***gaudichaudii*** Schwägr. [318]
Calomniaceae Kindb.
159 ***Calomnion*** Hook.f. & Wilson
1 ***complanatum*** (Hook.f. & Wilson) Lindb. [319]
Hookeriales M.Fleisch.
Hypopterygiaceae Mitt.
160 ***Hypopterygium*** Brid.
1 ***tamarisci*** (Sw.) Brid. ex Müll.Hal. (*H. muelleri* Hampe) [320]
Daltoniaceae Schimp.
161 ***Achrophyllum*** Vitt & Crosby
1 ***dentatum*** (Hook.f. & Wilson) Vitt & Crosby [321]
162 ***Calyptrochaeta*** Desv.
1 ***apiculata*** (Hook.f. & Wilson) Vitt (*Eriopus apiculatus* (Hook.f. & Wilson) Mitt.)
163 ***Daltonia*** Hook. & Taylor, nom. cons.
1 ***splachnoides*** (Sm.) Hook. & Taylor
2 ***stenophylla*** Mitt. [322]
164 ***Distichophyllum*** Dozy & Molk.
1 ***carinatum*** Dixon & W.E.Nicholson
Hookeriaceae Schimp.
165 ***Hookeria*** Sm., nom. cons.
1 ***lucens*** (Hedw.) Sm.
Leucomiaceae Broth.
166 ***Tetrastichium*** (Mitt.) Cardot
1 ***fontanum*** (Mitt.) Cardot
2 ***virens*** (Cardot) S.P.Churchill (*Lepidopilum virens* Cardot)
Pilotrichaceae Kindb.
167 ***Cyclodictyon*** Mitt.
1 ***laetevirens*** (Hook. & Taylor) Mitt. [323]
Hypnales (M.Fleisch.) W.R.Buck & Vitt
Fontinalaceae Schimp.
168 ***Dichelyma*** Myrin
1 ***capillaceum*** (L. ex Dicks.) Myrin
2 ***falcatum*** (Hedw.) Myrin
169 ***Fontinalis*** Hedw.
1 ***antipyretica*** Hedw. [324]
subsp. ***antipyretica***
subsp. ***bryhnii*** (Limpr.) Podp. (*F. bryhnii* Limpr. ex I.Hagen) [325]
subsp. ***gracilis*** (Lindb.) Kindb. (*F. antipyretica* var. *gracilis* (Lindb.) Schimp.)

subsp. ***kindbergii*** (Renauld & Cardot) Cardot (*F. kindbergii* Renauld & Cardot)
2 ***dalecarlica*** Schimp.
3 ***dichelymoides*** Lindb. [326]
4 ***hypnoides*** C.Hartm.
var. ***duriaei*** (Schimp.) Kindb.
var. ***hypnoides***
5 ***squamosa*** Hedw.
var. ***curnowii*** Cardot
var. ***dixonii*** (Cardot) A.J.E.Sm.
var. ***squamosa***

Climaciaceae Kindb.
170 ***Climacium*** F.Weber & D.Mohr
1 ***dendroides*** (Hedw.) F.Weber & D.Mohr

Amblystegiaceae Kindb. [327]
171 ***Amblystegium*** Schimp. [327]
1 ***confervoides*** (Brid.) Schimp. (*Platydictya confervoides* (Brid.) H.A.Crum, *Serpoleskea confervoides* (Brid.) Loeske)
2 ***radicale*** (P.Beauv.) Schimp. (*A. saxatile* Schimp., *Campylium radicale* (P.Beauv.) Grout)
3 ***serpens*** (Hedw.) Schimp. (*A. juratzkanum* Schimp.)
4 ***subtile*** (Hedw.) Schimp. (*Platydictya subtilis* (Hedw.) H.A.Crum, *Serpoleskea subtilis* (Hedw.) Loeske)
172 ***Anacamptodon*** Brid.
1 ***splachnoides*** (Froel. ex Brid.) Brid.
173 ***Campyliadelphus*** (Kindb.) R.S.Chopra
1 ***chrysophyllus*** (Brid.) R.S.Chopra (*Campylium chrysophyllum* (Brid.) Lange)
2 ***elodes*** (Lindb.) Kanda (*Campylium elodes* (Lindb.) Kindb.)
174 ***Campylium*** (Sull.) Mitt.
1 ***laxifolium*** Engelmark & Hedenäs [328]
2 ***longicuspis*** (Lindb. & Arnell) Hedenäs
3 ***protensum*** (Brid.) Kindb. (*C. stellatum* subsp. *protensum* (Brid.) C.E.O.Jensen, *C. stellatum* var. *protensum* (Brid.) Bryhn)
4 ***stellatum*** (Hedw.) Lange & C.E.O.Jensen (*Campyliadelphus stellatus* (Hedw.) Kanda)
175 ***Conardia*** H.Rob. [327]
1 ***compacta*** (Drumm. ex Müll.Hal.) H.Rob. (*Amblystegium compactum* (Drumm. ex Müll.Hal.) Austin, *Rhynchostegiella compacta* (Drumm. ex Müll.Hal.) Loeske)
176 ***Cratoneuron*** (Sull.) Spruce
1 ***curvicaule*** (Jur.) G.Roth (*Callialaria curvicaulis* (Jur.) Ochyra, *Cratoneuron filicinum* var. *curvicaule* (Jur.) Mönk.)
2 ***filicinum*** (Hedw.) Spruce
177 ***Drepanocladus*** (Müll.Hal.) G.Roth, nom. cons.
1 ***aduncus*** (Hedw.) Warnst. (*D. polycarpos* (Blandow ex Voit) Warnst., *D. simplicissimus* Warnst., *D. stagnatus* Żarnowiec)
2 ***arcticus*** (R.S.Williams) Hedenäs (*Campylium arcticum* (R.S.Williams) Broth.)
3 ***longifolius*** (Mitt.) Paris (*D. capillifolius* (Warnst.) Warnst.)
4 ***polygamus*** (Schimp.) Hedenäs (*Campyliadelphus polygamus* (Schimp.) Kanda, *Campylium polygamum* (Schimp.) Lange & C.E.O.Jensen)
5 ***sendtneri*** (Schimp. ex H.Müll.) Warnst.
6 ***sordidus*** (Müll.Hal.) Hedenäs (*D. tenuinervis* T.J.Kop.)
178 ***Hygroamblystegium*** Loeske, nom. cons. [327] [329]
1 ***fluviatile*** (Hedw.) Loeske (*Amblystegium fluviatile* (Hedw.) Schimp.)
2 ***humile*** (P.Beauv.) Vanderp., Goffinet & Hedenäs (*Amblystegium humile* (P.Beauv.) Crundw., *Leptodictyum humile* (P.Beauv.) Ochyra, *Leptodictyum kochii* (Schimp.) Warnst.)
3 ***tenax*** (Hedw.) Jenn. (*Amblystegium tenax* (Hedw.) C.E.O.Jensen)
4 ***varium*** (Hedw.) Mönk. (*Amblystegium varium* (Hedw.) Lindb., *Orthotheciella varia* (Hedw.) Ochyra) [330]
179 ***Hygrohypnum*** Lindb. [327] [331]
1 ***alpestre*** (Hedw.) Loeske (*Ochyraea alpestris* (Hedw.) Ignatov & Ignatova)
2 ***alpinum*** (Lindb.) Loeske
3 ***cochlearifolium*** (Venturi) Broth. (*Ochyraea cochlearifolia* (Venturi) Ignatov & Ignatova)
4 ***duriusculum*** (De Not.) D.W.Jamieson (*Hygrohypnella duriuscula* (Turner ex Wilson) Ignatov & Ignatova, *H. dilatatum* (Wilson) Loeske)
5 ***eugyrium*** (Schimp.) Broth. (*Pseudohygrohypnum eugyrium* (Schimp.) Kanda)
6 ***luridum*** (Hedw.) Jenn. (*Pictus scoticus* C.C.Towns.) [332]
7 ***molle*** (Hedw.) Loeske (*H. molle* var. *schimperianum* (Lorentz) Loeske)
8 ***montanum*** (Lindb.) Broth. (*Ochyraea montana* (Lindb.) Ignatov & Ignatova)
9 ***norvegicum*** (Schimp.) J.J.Amann (*Ochyraea norvegica* (Schimp.) Ignatov & Ignatova)
10 ***ochraceum*** (Turner ex Wilson) Loeske (*Hygrohypnella ochracea* (Turner ex Wilson) Ignatov & Ignatova)
11 ***polare*** (Lindb.) Loeske (*Hygrohypnella polaris* (Lindb.) Ignatov & Ignatova)
12 ***smithii*** (Sw.) Broth. (*Ochyraea smithii* (Sw.) Ignatov & Ignatova)
13 ***styriacum*** (Limpr.) Broth.
14 ***subeugyrium*** (Renauld & Cardot) Broth. (*Pseudohygrohypnum subeugyrium* (Renauld & Cardot) Ignatov & Ignatova)
180 ***Leptodictyum*** (Schimp.) Warnst. [333]
1 ***riparium*** (Hedw.) Warnst. (*Amblystegium riparium* (Hedw.) Schimp.)
181 ***Ochyraea*** Váňa
1 ***tatrensis*** Váňa [331]
182 ***Palustriella*** Ochyra
1 ***commutata*** (Hedw.) Ochyra (*Cratoneuron commutatum* (Hedw.) G.Roth, *P. commutata* var. *fluctuans* (Schimp.) Ochyra, *P. commutata* var. *virescens* (Schimp.) Ochyra)
2 ***decipiens*** (De Not.) Ochyra (*Cratoneuron decipiens* (De Not.) Loeske)

3 ***falcata*** (Brid.) Hedenäs (*Cratoneuron falcatum* (Brid.) G.Roth, *P. commutata* var. *falcata* (Brid.) Ochyra, *P. commutata* var. *sulcata* (Lindb.) Ochyra)
4 ***pluristratosa*** M.Stech & J.-P.Frahm [334]

183 ***Pseudocalliergon*** (Limpr.) Loeske
1 ***angustifolium*** Hedenäs [335]
2 ***brevifolium*** (Lindb.) Hedenäs (*Drepanocladus brevifolius* (Lindb.) Warnst.) [336]
3 ***lycopodioides*** (Brid.) Hedenäs (*Drepanocladus lycopodioides* (Brid.) Warnst.)
4 ***trifarium*** (F.Weber & D.Mohr) Loeske (*Calliergon trifarium* (F.Weber & D.Mohr) Kindb.)
5 ***turgescens*** (T.Jensen) Loeske (*Scorpidium turgescens* (T.Jensen) Loeske)

184 ***Sanionia*** Loeske [327]
1 ***georgicouncinata*** (Müll.Hal.) Ochyra & Hedenäs (*S. nivalis* Hedenäs)
2 ***orthothecioides*** (Lindb.) Loeske
3 ***uncinata*** (Hedw.) Loeske (*Drepanocladus uncinatus* (Hedw.) Warnst.)

185 ***Tomentypnum*** Loeske [327]
1 ***nitens*** (Hedw.) Loeske

Calliergonaceae (Kanda) Vanderp., Hedenäs, C.J.Cox & A.J.Shaw [327]

186 ***Calliergon*** (Sull.) Kindb. [337]
1 ***cordifolium*** (Hedw.) Kindb.
2 ***giganteum*** (Schimp.) Kindb.
3 ***megalophyllum*** Mikut.
4 ***richardsonii*** (Mitt.) Kindb. (*C. obtusifolium* Karczm.) [338]

187 ***Hamatocaulis*** Hedenäs
1 ***lapponicus*** (Norrl.) Hedenäs (*Drepanocladus lapponicus* (Norrl.) Smirnova)
2 ***vernicosus*** (Mitt.) Hedenäs (*Drepanocladus vernicosus* (Mitt.) Warnst.)

188 ***Loeskypnum*** H.K.G.Paul
1 ***badium*** (Hartm.) H.K.G.Paul (*Drepanocladus badius* (Hartm.) G.Roth)

189 ***Scorpidium*** (Schimp.) Limpr.
1 ***cossonii*** (Schimp.) Hedenäs (*Drepanocladus cossonii* (Schimp.) Loeske, *Drepanocladus intermedius* (Lindb.) Warnst., *Limprichtia cossonii* (Schimp.) L.E.Anderson, H.A.Crum & W.R.Buck, *Limprichtia intermedia* (Lindb.) Loeske)
2 ***revolvens*** (Sw. ex anon.) Rubers (*Drepanocladus revolvens* (Sw. ex anon.) Warnst., *Limprichtia revolvens* (Sw. ex anon.) Loeske) [106]
3 ***scorpioides*** (Hedw.) Limpr.

190 ***Straminergon*** Hedenäs
1 ***stramineum*** (Dicks. ex Brid.) Hedenäs (*Calliergon stramineum* (Dicks. ex Brid.) Kindb.)

191 ***Warnstorfia*** Loeske
1 ***exannulata*** (Schimp.) Loeske (*Drepanocladus exannulatus* (Schimp.) Warnst.)
2 ***fluitans*** (Hedw.) Loeske (*Drepanocladus fluitans* (Hedw.) Warnst., *Drepanocladus h-schulzei* (Limpr.) Loeske, *W. fluitans* var. *falcata* (Sanio ex C.E.O.Jensen) H.A.Crum & L.E.Anderson, *W. h-schulzei* (Limpr.) Loeske)
3 ***procera*** (Renauld & Arnell) Tuom. (*Drepanocladus procerus* (Renauld & Arnell) Warnst.) [339]
4 ***pseudostraminea*** (Müll.Hal.) Tuom. & T.J.Kop. (*Drepanocladus pseudostramineus* (Müll.Hal.) G.Roth)
5 ***sarmentosa*** (Wahlenb.) Hedenäs (*Calliergon sarmentosum* (Wahlenb.) Kindb.)
6 ***trichophylla*** (Warnst.) Tuom. & T.J.Kop. (*Drepanocladus trichophyllus* (Warnst.) Podp.)
7 ***tundrae*** (Arnell) Loeske (*Drepanocladus tundrae* (Arnell) Loeske)

Leskeaceae Schimp. [340]

192 ***Haplocladium*** (Müll.Hal.) Müll.Hal.
1 ***angustifolium*** (Hampe & Müll.Hal.) Broth. (*Bryohaplocladium angustifolium* (Hampe & Müll.Hal.) R.Watan. & Z.Iwats., *Thuidium angustifolium* (Hampe & Müll.Hal.) A.Jaeger)
2 ***microphyllum*** (Hedw.) Broth. (*Bryohaplocladium microphyllum* (Hedw.) R.Watan. & Z.Iwats.)
3 ***virginianum*** (Brid.) Broth. (*Bryohaplocladium virginianum* (Brid.) R.Watan. & Z.Iwats., *Thuidium virginianum* (Brid.) Schimp.)

193 ***Lescuraea*** Schimp.
1 ***mutabilis*** (Brid.) Lindb. ex I.Hagen
2 ***saxicola*** (Schimp.) Molendo
3 ***secunda*** Arnell [341]

194 ***Leskea*** Hedw.
1 ***polycarpa*** Hedw.

195 ***Lindbergia*** Kindb.
1 ***brachyptera*** (Mitt.) Kindb. [342]

196 ***Pseudoleskea*** Schimp. [343] [344]
1 ***artariae*** Thér. (*Pseudoleskeopsis artariae* (Thér.) Thér.)
2 ***incurvata*** (Hedw.) Loeske (*Lescuraea incurvata* (Hedw.) E.Lawton)
3 ***patens*** (Lindb.) Kindb. (*Lescuraea patens* Lindb.)
4 ***radicosa*** (Mitt.) Macoun & Kindb. (*Lescuraea radicosa* (Mitt.) Mönk.)
5 ***saviana*** (De Not.) Latzel (*Lescuraea saviana* (De Not.) E.Lawton)

197 ***Pseudoleskeella*** Kindb. [345]
1 ***catenulata*** (Brid. ex Schrad.) Kindb.
2 ***nervosa*** (Brid.) Nyholm (*Leskeella incrassata* (Lindb. ex Broth.) Broth. [346], *Leskeella nervosa* (Brid.) Loeske)
3 ***papillosa*** (Lindb.) Kindb.
4 ***rupestris*** (Berggr.) Hedenäs & L.Söderstr. (*P. nervosa* var. *rupestris* (Berggr.) Nyholm, *P. sibirica* (Arnell) P.S.Wilson & D.H.Norris) [347]
5 ***tectorum*** (Funck ex Brid.) Kindb. ex Broth.

198 ***Ptychodium*** Schimp.
1 ***plicatum*** (Schleich. ex F.Weber & D.Mohr) Schimp. (*Lescuraea plicata* (Schleich. ex F.Weber & D.Mohr) Broth., *Pseudoleskea plicata* (Schleich. ex F.Weber & D.Mohr) Kindb.)

Thuidiaceae Schimp. [348]

199 ***Abietinella*** Müll.Hal.

1 ***abietina*** (Hedw.) M.Fleisch. (*Thuidium abietinum* (Hedw.) Schimp.)
var. ***abietina***
var. ***hystricosa*** (Mitt.) Sakurai (*A. hystricosa* (Mitt.) Broth., *Thuidium abietinum* subsp. *hystricosum* (Mitt.) Kindb., *Thuidium abietinum* var. *hystricosum* (Mitt.) Loeske & Lande) [32]

200 ***Helodium*** Warnst., nom. cons.
1 ***blandowii*** (F.Weber & D.Mohr) Warnst. (*Thuidium blandowii* (F.Weber & D.Mohr) Schimp.)

201 ***Pelekium*** Mitt., nom. cons. [348]
1 ***atlanticum*** (Hedenäs) Hedenäs (*Cyrto-hypnum atlanticum* (Hedenäs) Hedenäs & Sérgio, *Thuidium atlanticum* Hedenäs) [349]
2 ***minutulum*** (Hedw.) Touw (*Cyrto-hypnum minutulum* (Hedw.) W.R.Buck & H.A.Crum, *Microthuidium minutulum* (Hedw.) Warnst., *Thuidium minutulum* (Hedw.) Schimp.)

202 ***Thuidiopsis*** (Broth.) M.Fleisch.
1 ***sparsa*** (Hook.f. & Wilson) Broth. (*Cyrto-hypnum montei* Hedenäs) [350]

203 ***Thuidium*** Schimp.
1 ***assimile*** (Mitt.) A.Jaeger (*T. delicatulum* var. *radicans* (Kindb.) H.A.Crum, Steere & L.E.Anderson, *T. philibertii* Limpr.) [351]
2 ***delicatulum*** (Hedw.) Schimp. (*T. erectum* Duby)
3 ***recognitum*** (Hedw.) Lindb.
4 ***tamariscinum*** (Hedw.) Schimp.

Brachytheciaceae Schimp. [352]

Eurhynchioideae Milde (Rhynchostegioideae Ignatov & Huttunen) [352]

204 ***Pseudoscleropodium*** (Limpr.) M.Fleisch.
1 ***purum*** (Hedw.) M.Fleisch. (*Scleropodium purum* (Hedw.) Limpr.)

205 ***Scorpiurium*** Schimp.
1 ***circinatum*** (Bruch) M.Fleisch. & Loeske (*Thamnium cossyrense* var. *melitense* Bott.) [353]
2 ***deflexifolium*** (Solms) M.Fleisch. & Loeske
3 ***sendtneri*** (Schimp.) M.Fleisch. (*Thamnium cossyrense* Bott. var. *cossyrense*, *Thamnobryum cossyrense* (Bott.) A.J.E.Sm.) [353]

206 ***Palamocladium*** Müll.Hal.
1 ***euchloron*** (Müll.Hal.) Wijk & Margad.

207 ***Plasteurhynchium*** M.Fleisch. ex Broth.
1 ***meridionale*** (Schimp.) M.Fleisch. (*Eurhynchium meridionale* (Schimp.) De Not.)
2 ***striatulum*** (Spruce) M.Fleisch. (*Eurhynchium striatulum* (Spruce) Schimp., *Isothecium striatulum* (Spruce) Kindb.)

208 ***Eurhynchium*** Schimp.
1 ***angustirete*** (Broth.) T.J.Kop. (*E. striatum* subsp. *zetterstedtii* (P.Størmer) Podp., *E. striatum* var. *pachycladum* G.Roth)
2 ***striatum*** (Hedw.) Schimp.

209 ***Platyhypnidium*** M.Fleisch.
1 ***grolleanum*** Ochyra & Bednarek-Ochyra [354]
2 ***lusitanicum*** (Schimp.) Ochyra & Bednarek-Ochyra (*P. alopecuroides* (Brid.) A.J.E.Sm., *Rhynchostegium alopecuroides* (Brid.) A.J.E.Sm., *Rhynchostegium lusitanicum* (Schimp.) A.J.E.Sm., hom. illeg.)
3 ***mutatum*** Ochyra & Vanderp. [355]
4 ***riparioides*** (Hedw.) Dixon (*Rhynchostegium riparioides* (Hedw.) Cardot)
5 ***torrenticola*** (Ochyra, C.Schmidt & Bültmann) Ochyra & Bednarek-Ochyra (*Gradsteinia torrenticola* Ochyra, C.Schmidt & Bültmann) [356]

210 ***Rhynchostegium*** Schimp.
1 ***arcticum*** (I.Hagen) Ignatov & Huttunen (*R. murale* var. *arcticum* I.Hagen) [357]
2 ***confertum*** (Dicks.) Schimp. (*R. surrectum* (Mitt.) A.Jaeger) [358]
3 ***megapolitanum*** (Blandow ex F.Weber & D.Mohr) Schimp. (*Brachythecium cardotii* H.Winter) [359]
4 ***murale*** (Hedw.) Schimp.
5 ***rotundifolium*** (Scop. ex Brid.) Schimp.
6 ***strongylense*** (Bott.) W.R.Buck & Privitera (*Barbella strongylensis* Bott.) [360]

Helicodontioideae M.Fleisch. (Rhynchostegielloideae Ignatov & Huttunen) [352] [361]

211 ***Nobregaea*** Hedenäs
1 ***latinervis*** Hedenäs [362]

212 ***Helicodontium*** Schwägr.
1 **capillare** (Hedw.) A.Jaeger (*H. italicum* (Schimp.) M.Fleisch.) [363]

213 ***Rhynchostegiella*** (Schimp.) Limpr., nom. cons.
1 ***bourgaeana*** (Mitt.) Broth. [364]
2 ***curviseta*** (Brid.) Limpr. (*R. curviseta* var. *curviseta*, *R. curviseta* var. *laeviseta* (W.E.Nicholson & Dixon) Podp., *R. letourneuxii* (Besch.) Broth.)
3 ***durieui*** (Mont.) P.Allorge & Perss.
4 ***litorea*** (De Not.) Limpr. (*R. tenella* var. *litorea* (De Not.) Mönk.) [365]
5 ***macilenta*** (Renauld & Cardot) Cardot [366]
6 ***tenella*** (Dicks.) Limpr.
var. ***meridionalis*** (Boulay) Zodda
var. ***tenella***
7 ***teneriffae*** (Mont.) Dirkse & Bouman (*R. jacquinii* (Garov.) Limpr., *R. teesdalei* (Schimp.) Limpr.) [367]
8 ***tenuicaulis*** (Spruce) Kartt. (*Cirriphyllum germanicum* (Grebe) Loeske & M.Fleisch., *Cirriphyllum tenuicaule* (Spruce) Wijk & Margad.) [368]
9 ***trichophylla*** Dirkse & Bouman [369]

214 ***Cirriphyllum*** Grout
1 ***crassinervium*** (Taylor) Loeske & M.Fleisch. (*Eurhynchium crassinervium* (Taylor) Schimp.)
2 ***piliferum*** (Hedw.) Grout

215 ***Oxyrrhynchium*** (Schimp.) Warnst.
1 ***hians*** (Hedw.) Loeske (*Eurhynchium hians* (Hedw.) Sande Lac., *O. swartzii* (Turner) Warnst.)
2 ***pumilum*** (Wilson) Loeske (*Eurhynchium pumilum* (Wilson) Schimp., *Rhynchostegiella pallidirostris* (Brid.) Loeske, nom. illeg., *Rhynchostegiella pumila* (Wilson) E.F.Warb.)

3 ***schleicheri*** (R.Hedw.) Röll (*Eurhynchium schleicheri* (R.Hedw.) Milde)
4 ***speciosum*** (Brid.) Warnst. (*Eurhynchium speciosum* (Brid.) Jur.)

Brachythecioideae Engler

216 ***Kindbergia*** Ochyra
1 ***praelonga*** (Hedw.) Ochyra (*Eurhynchium praelongum* (Hedw.) Schimp., *Eurhynchium praelongum* var. *stokesii* (Turner) Dixon, *Eurhynchium stokesii* (Turner) Schimp., *Oxyrrhynchium praelongum* (Hedw.) Warnst.)

217 ***Bryhnia*** Kaurin
1 ***scabrida*** (Lindb.) Kaurin (*B. novae-angliae* auct. eur. non (Sull. & Lesq.) Grout) [370]

218 ***Myuroclada*** Besch.
1 ***maximowiczii*** (G.G.Borshch.) Steere & W.B.Schofield [371]

219 ***Sciuro-hypnum*** Hampe
1 ***flotowianum*** (Sendtn.) Ignatov & Huttunen (*Cirriphyllum reichenbachianum* (Huebener) Wijk & Margad., *Cirriphyllum velutinoides* (Schimp.) Loeske & M.Fleisch., nom. illeg., *Eurhynchium flotowianum* (Sendtn.) Kartt.)
2 ***glaciale*** (Schimp.) Ignatov & Huttunen (*Brachythecium dovrense* (Limpr.) Amman, *Brachythecium glaciale* Schimp., *Brachythecium glaciale* var. *dovrense* Limpr.) [372]
3 ***latifolium*** (Kindb.) Ignatov & Huttunen (*Brachythecium latifolium* Kindb.)
4 ***oedipodium*** (Mitt.) Ignatov & Huttunen (*Brachythecium curtum* (Lindb.) Limpr., *Brachythecium oedipodium* (Mitt.) A.Jaeger, *Brachythecium starkei* var. *curtum* (Lindb.) Warnst.)
5 ***ornellanum*** (Molendo) Ignatov & Huttunen (*Brachythecium ornellanum* (Molendo) Venturi & Bott., *Scleropodium apiculigerum* (Lindb. & Arnell) J.-P.Frahm, *Scleropodium ornellanum* (Molendo) Lorentz)
6 ***plumosum*** (Hedw.) Ignatov & Huttunen, nom. cons. (*Brachythecium plumosum* (Hedw.) Schimp.)
7 ***populeum*** (Hedw.) Ignatov & Huttunen (*Brachythecium populeum* (Hedw.) Schimp.)
8 ***reflexum*** (Starke) Ignatov & Huttunen (*Brachythecium reflexum* (Starke) Schimp.)
9 ***starkei*** (Brid.) Ignatov & Huttunen (*Brachythecium starkei* (Brid.) Schimp., *Brachythecium starkei* var. *tromsoeense* (Kaurin & Arnell) Nyholm)

220 ***Brachythecium*** Schimp. [373]
1 ***albicans*** (Hedw.) Schimp.
2 ***campestre*** (Müll.Hal.) Schimp. (*B. ryanii* Kaurin) [374]
3 ***capillaceum*** (F.Weber & D.Mohr) Giacom. (*B. rotaeanum* De Not. [375], *B. salebrosum* subsp. *rotaeanum* (De Not.) Amman, *B. salebrosum* var. *capillaceum* (F.Weber & D.Mohr) Lorentz)
4 ***cirrosum*** (Schwägr.) Schimp. (*Cirriphyllum cirrosum* (Schwägr.) Grout)
5 ***coruscum*** I.Hagen (*B. groenlandicum* (C.E.O.Jensen) Schljakov) [376]
6 ***erythrorrhizon*** Schimp.
subsp. ***asiaticum*** Ignatov [377]
subsp. ***erythrorrhizon***
var. ***erythrorrhizon***
var. ***thedenii*** (Schimp.) Lindb. [378]
7 ***geheebii*** Milde (*Homalothecium geheebii* (Milde) Wigh)
8 ***glareosum*** (Bruch ex Spruce) Schimp.
9 ***laetum*** (Brid.) Schimp. (*B. oxycladon* auct. non (Brid.) A.Jaeger) [379]
10 ***mildeanum*** (Schimp.) Schimp.
var. ***mildeanum***
var. ***udum*** (I.Hagen) Mönk. (*B. udum* I.Hagen)
11 ***percurrens*** Hedenäs [380]
12 ***rivulare*** Schimp.
13 ***rutabulum*** (Hedw.) Schimp.
var. ***atlanticum*** Hedenäs [381]
var. ***rutabulum***
14 ***salebrosum*** (Hoffm. ex F.Weber & D.Mohr) Schimp., nom. cons.
15 ***tommasinii*** (Sendtn. ex Boulay) Ignatov & Huttunen (*Cirriphyllum tenuinerve* (Lindb.) Wijk & Margad., *Cirriphyllum tommasinii* (Sendtn. ex Boulay) Grout)
16 ***turgidum*** (Hartm.) Kindb.

Homalothecioideae Ignatov & Huttunen

221 ***Scleropodium*** Bruch & Schimp.
1 ***cespitans*** (Wilson ex Müll.Hal.) L.F.Koch (*Brachythecium appleyardiae* McAdam & A.J.E.Sm.) [382]
2 ***touretii*** (Brid.) L.F.Koch [32]

222 ***Eurhynchiastrum*** Ignatov & Huttunen
1 ***pulchellum*** (Hedw.) Ignatov & Huttunen (*Eurhynchium pulchellum* (Hedw.) Jenn.)
var. ***diversifolium*** (Schimp.) Ochyra & Żarnowiec (*Eurhynchium pulchellum* var. *diversifolium* (Schimp.) C.E.O.Jensen)
var. ***praecox*** (Hedw.) Ochyra & Żarnowiec (*Eurhynchium pulchellum* var. *praecox* (Hedw.) Dixon)
var. ***pulchellum***

223 ***Brachytheciastrum*** Ignatov & Huttunen
1 ***collinum*** (Schleich. ex Müll.Hal.) Ignatov & Huttunen (*Brachythecium collinum* (Schleich. ex Müll.Hal.) Schimp.)
2 ***dieckii*** (Röll) Ignatov & Huttunen (*Brachythecium dieckii* Röll, *Brachythecium salteri* Cardot & Dixon) [383]
3 ***fendleri*** (Sull.) Vanderp. et al. (*Brachythecium fendleri* (Sull.) A.Jaeger) [384]
4 ***olympicum*** (Jur.) Vanderp. et al. (*Brachythecium olympicum* Jur.) [384]
5 ***trachypodium*** (Brid.) Ignatov & Huttunen (*Brachythecium trachypodium* (Brid.) Schimp., *Brachythecium trachypodium* var. *payotianum* (Boulay) Bott.)
6 ***vanekii*** (Šmarda) Ochyra & Żarnowiec (*Brachythecium vanekii* Šmarda)
7 ***velutinum*** (Hedw.) Ignatov & Huttunen (*Brachythecium velutinum* (Hedw.) Schimp.)

var. ***salicinum*** (Schimp.) Ochyra & Żarnowiec (*Brachythecium velutinum* var. *salicinum* (Schimp.) Mönk.)
var. ***vagans*** (Milde) Ochyra & Żarnowiec (*Brachythecium velutinum* var. *vagans* (Milde) Warnst.)
var. ***velutinum***

224 ***Homalothecium*** Schimp.
1 ***aureum*** (Spruce) H.Rob.
2 ***lutescens*** (Hedw.) H.Rob. (*Camptothecium lutescens* (Hedw.) Schimp.)
var. ***fallax*** H.Philib. ex Schimp.
var. ***lutescens***
3 ***philippeanum*** (Spruce) Schimp.
4 ***sericeum*** (Hedw.) Schimp.

Myriniaceae Schimp.

225 ***Myrinia*** Schimp., nom. cons.
1 ***pulvinata*** (Wahlenb.) Schimp.

Fabroniaceae Schimp.

226 ***Fabronia*** Raddi
1 ***ciliaris*** (Brid.) Brid.
2 ***pusilla*** Raddi

Hypnaceae Schimp. [340][385]

227 ***Andoa*** Ochyra
1 ***berthelotiana*** (Mont.) Ochyra

228 ***Breidleria*** Loeske
1 ***pratensis*** (W.D.J.Koch ex Spruce) Loeske (*Hypnum pratense* W.D.J.Koch ex Spruce) [386]

229 ***Callicladium*** H.A.Crum
1 ***haldanianum*** (Grev.) H.A.Crum

230 ***Calliergonella*** Loeske
1 ***cuspidata*** (Hedw.) Loeske
2 ***lindbergii*** (Mitt.) Hedenäs (*Hypnum lindbergii* Mitt.) [386]

231 ***Campylophyllum*** (Schimp.) M.Fleisch. [387]
1 ***calcareum*** (Crundw. & Nyholm) Hedenäs (*Campylidium calcareum* (Crundw. & Nyholm) Ochyra, *Campylium calcareum* Crundw. & Nyholm)
2 ***halleri*** (Hedw.) M.Fleisch. (*Campylium halleri* (Hedw.) Lindb.)
3 ***sommerfeltii*** (Myrin) Hedenäs (*Campylidium sommerfeltii* (Myrin) Ochyra, *Campylium hispidulum* auct. eur. non (Brid.) Mitt. [388], *Campylium sommerfeltii* (Myrin) Lange, *Campylophyllum hispidulum* auct. eur. non (Brid.) Hedenäs [388])

232 ***Ctenidium*** (Schimp.) Mitt.
1 ***molluscum*** (Hedw.) Mitt. [389]

233 ***Homomallium*** (Schimp.) Loeske
1 ***incurvatum*** (Schrad. ex Brid.) Loeske

234 ***Hyocomium*** Bruch & Schimp.
1 ***armoricum*** (Brid.) Wijk & Margad.

235 ***Hypnum*** Hedw., nom. cons.
1 ***andoi*** A.J.E.Sm. (*H. cupressiforme* var. *mammillatum* Brid., *H. mammillatum* (Brid.) Loeske, nom. inval.)
2 ***bambergeri*** Schimp. (*Stereodon bambergeri* (Schimp.) Lindb.)
3 ***callichroum*** Brid. (*Stereodon callichrous* (Brid.) Braithw.)
4 ***cupressiforme*** Hedw. [390]
var. ***cupressiforme***
var. ***filiforme*** Brid.
var. ***heseleri*** (Ando & Higuchi) M.O.Hill (*H. heseleri* Ando & Higuchi) [391]
var. ***lacunosum*** Brid. (*H. cupressiforme* subsp. *lacunosum* (Brid.) Bertsch, *H. lacunosum* (Brid.) Hoffm. ex Brid.)
var. ***resupinatum*** (Taylor) Schimp. (*H. cupressiforme* subsp. *resupinatum* (Taylor) Hartm., *H. resupinatum* Taylor)
var. ***subjulaceum*** Molendo
5 ***fertile*** Sendtn. (*Stereodon fertilis* (Sendtn.) Lindb.)
6 ***hamulosum*** Schimp. (*Stereodon hamulosus* (Schimp.) Lindb.) [392]
7 ***holmenii*** Ando (*Stereodon holmenii* (Ando) Ignatov & Ignatova) [393]
8 ***imponens*** Hedw.
9 ***jutlandicum*** Holmen & E.Warncke (*H. cupressiforme* var. *ericetorum* Schimp.)
10 ***pallescens*** (Hedw.) P.Beauv. (*Stereodon pallescens* (Hedw.) Mitt.)
11 ***plicatulum*** (Lindb.) A.Jaeger (*Stereodon plicatulus* Lindb.)
12 ***procerrimum*** Molendo (*Ctenidium procerrimum* (Molendo) Lindb.)
13 ***recurvatum*** (Lindb. & Arnell) Kindb. (*Drepanium recurvatum* (Lindb. & Arnell) G.Roth)
14 ***revolutum*** (Mitt.) Lindb. (*Stereodon revolutus* Mitt.)
var. ***dolomiticum*** (Milde) Mönk. (*H. dolomiticum* Milde)
var. ***revolutum***
15 ***sauteri*** Schimp.
16 ***subimponens*** Lesq. [394]
17 ***uncinulatum*** Jur.
18 ***vaucheri*** Lesq. (*Stereodon vaucheri* (Lesq.) Lindb. ex Broth.)

236 ***Ptilium*** De Not.
1 ***crista-castrensis*** (Hedw.) De Not.

237 ***Pylaisia*** Schimp., nom. cons.
1 ***polyantha*** (Hedw.) Schimp. (*Pylaisiella polyantha* (Hedw.) Grout)
2 ***selwynii*** Kindb. (*Pylaisiella selwynii* (Kindb.) H.A.Crum, Steere & L.E.Anderson)

238 ***Taxiphyllum*** M.Fleisch.
1 ***densifolium*** (Lindb. ex Broth.) Reimers
2 ***wissgrillii*** (Garov.) Wijk & Margad.

239 ***Vesicularia*** (Müll.Hal.) Müll.Hal.
1 ***reimersiana*** Bizot & P.de la Varde [395]

Pterigynandraceae Schimp.

240 ***Habrodon*** Schimp.
1 ***perpusillus*** (De Not.) Lindb.

241 ***Heterocladium*** Schimp.
1 ***dimorphum*** (Brid.) Schimp.
2 ***flaccidum*** (Schimp.) A.J.E.Sm. (*H. heteropterum* var. *flaccidum* Schimp.) [396]
3 ***heteropterum*** (Brid.) Schimp.

4 ***wulfsbergii*** I.Hagen (*H. heteropterum* subsp. *wulfsbergii* (I.Hagen) C.E.O.Jensen & Perss.) [397]
242 ***Iwatsukiella*** W.R.Buck & H.A.Crum
1 ***leucotricha*** (Mitt.) W.R.Buck & H.A.Crum [398]
243 ***Pterigynandrum*** Hedw.
1 ***filiforme*** Hedw.
var. ***filiforme***
var. ***majus*** (De Not.) De Not.

Hylocomiaceae (Broth.) M.Fleisch.
244 ***Hylocomiastrum*** Broth.
1 ***pyrenaicum*** (Spruce) M.Fleisch. (*Hylocomium pyrenaicum* (Spruce) Lindb.)
2 ***umbratum*** (Hedw.) M.Fleisch. (*Hylocomium umbratum* (Hedw.) Schimp.)
245 ***Hylocomium*** Schimp., nom. cons.
1 ***splendens*** (Hedw.) Schimp. [399]
246 ***Loeskeobryum*** Broth.
1 ***brevirostre*** (Brid.) M.Fleisch. (*Hylocomium brevirostre* (Brid.) Schimp.)
247 ***Pleurozium*** Mitt., nom. cons.
1 ***schreberi*** (Willd. ex Brid.) Mitt.
248 ***Rhytidiadelphus*** (Limpr.) Warnst.
1 ***loreus*** (Hedw.) Warnst.
2 ***squarrosus*** (Hedw.) Warnst. (*Rhytidiastrum squarrosum* (Hedw.) Ignatov & Ignatova)
3 ***subpinnatus*** (Lindb.) T.J.Kop. (*R. squarrosus* var. *calvescens* (Kindb.) Warnst., *Rhytidiastrum subpinnatum* (Lindb.) Ignatov & Ignatova)
4 ***triquetrus*** (Hedw.) Warnst.

Rhytidiaceae Broth.
249 ***Rhytidium*** (Sull.) Kindb.
1 ***rugosum*** (Hedw.) Kindb.

Plagiotheciaceae (Broth.) M.Fleisch.
250 ***Herzogiella*** Broth. [400]
1 ***seligeri*** (Brid.) Z.Iwats.
2 ***striatella*** (Brid.) Z.Iwats.
3 ***turfacea*** (Lindb.) Z.Iwats.
251 ***Isopterygiopsis*** Z.Iwats.
1 ***alpicola*** (Lindb. & Arnell) Hedenäs (*Isopterygium alpicola* (Lindb. & Arnell) Nyholm)
2 ***muelleriana*** (Schimp.) Z.Iwats. (*Isopterygium muellerianum* (Schimp.) A.Jaeger)
3 ***pulchella*** (Hedw.) Z.Iwats. (*Isopterygium pulchellum* (Hedw.) A.Jaeger)
252 ***Myurella*** Schimp.
1 ***julacea*** (Schwägr.) Schimp. [401]
2 ***sibirica*** (Müll.Hal.) Reimers
3 ***tenerrima*** (Brid.) Lindb.
253 ***Orthothecium*** Schimp., nom. cons.
1 ***chryseon*** (Schwägr.) Schimp. [402]
2 ***intricatum*** (Hartm.) Schimp.
3 ***lapponicum*** (Schimp.) C.Hartm.
4 ***rufescens*** (Dicks. ex Brid.) Schimp.
5 ***strictum*** Lorentz
254 ***Plagiothecium*** Schimp.
1 ***berggrenianum*** Frisvoll
2 ***cavifolium*** (Brid.) Z.Iwats. (*P. roeseanum* Schimp.)
3 ***curvifolium*** Schlieph. ex Limpr. (*P. laetum* var. *curvifolium* (Schlieph. ex Limpr.) Mastracci & M.Sauer, *P. laetum* var. *secundum* (Lindb.) Frisvoll et al.) [403]
4 ***denticulatum*** (Hedw.) Schimp.
var. ***denticulatum***
var. ***obtusifolium*** (Turner) Moore
var. ***undulatum*** R.Ruthe ex Geh. (*P. denticulatum* var. *ruthei* (Limpr.) Riehm., *P. ruthei* Limpr.) [404]
5 ***laetum*** Schimp.
6 ***latebricola*** Schimp.
7 ***neckeroideum*** Schimp. (*P. neckeroideum* subsp. *noricum* (Molendo ex Limpr.) J.J.Amann, *P. noricum* Molendo ex Limpr.) [405]
8 ***nemorale*** (Mitt.) A.Jaeger
9 ***piliferum*** (Sw.) Schimp.
10 ***platyphyllum*** Mönk.
11 ***succulentum*** (Wilson) Lindb. [406]
12 ***svalbardense*** Frisvoll [407]
13 ***undulatum*** (Hedw.) Schimp. (*Buckiella undulata* (Hedw.) Ireland)
255 ***Platydictya*** Berk.
1 ***jungermannioides*** (Brid.) H.A.Crum (*Amblystegium jungermannioides* (Brid.) A.J.E.Sm.)
256 ***Pseudotaxiphyllum*** Z.Iwats.
1 ***elegans*** (Brid.) Z.Iwats. (*Isopterygium elegans* (Brid.) Lindb.)
2 ***laetevirens*** (Dixon & Luisier ex F.Koppe & Düll) Hedenäs [408]

Entodontaceae Kindb., nom. cons.
257 ***Entodon*** Müll.Hal.
1 ***challengeri*** (Paris) Cardot (*E. compressus* Müll.Hal. ex Cardot non (Hedw.) Müll.Hal.) [409]
2 ***cladorrhizans*** (Hedw.) Müll.Hal.
3 ***concinnus*** (De Not.) Paris
4 ***schleicheri*** (Schimp.) Demet.

Pylaisiadelphaceae Goffinet & W.R.Buck
258 ***Brotherella*** Loeske ex M.Fleisch.
1 ***lorentziana*** (Molendo ex Lorentz) Loeske ex M.Fleisch.
259 ***Heterophyllium*** (Schimp.) Kindb.
1 ***affine*** (Hook.) M.Fleisch.
260 ***Isopterygium*** Mitt.
1 ***tenerum*** (Sw.) Mitt. (*I. bottinii* (Breidl.) Kindb., *Sematophyllum bottinii* (Breidl.) Podp.) [410]
261 ***Platygyrium*** Schimp., nom. cons.
1 ***repens*** (Brid.) Schimp.

Sematophyllaceae Broth., nom. cons.
262 ***Hageniella*** Broth.
1 ***micans*** (Mitt.) B.C.Tan & Y.Jia (*Hygrohypnum micans* (Mitt.) Broth., *Sematophyllum micans* (Mitt.) Braithw.) [411]
263 ***Sematophyllum*** Mitt.
1 ***adnatum*** (Michx.) E.Britton [412]
2 ***demissum*** (Wilson) Mitt.
3 ***substrumulosum*** (Hampe) E.Britton

Cryphaeaceae Schimp.
264 ***Cryphaea*** D.Mohr

1 ***heteromalla*** (Hedw.) D.Mohr
265 ***Dendrocryphaea*** Paris & Schimp. ex Broth.
1 ***lamyana*** (Mont.) P.Rao (*Cryphaea lamyana* (Mont.) Müll.Hal.) [413]
Leucodontaceae Schimp.
266 ***Antitrichia*** Brid.
1 ***californica*** Sull.
2 ***curtipendula*** (Hedw.) Brid.
267 ***Leucodon*** Schwägr.
1 ***canariensis*** (Brid.) Schwägr.
2 ***flagellaris*** Lindb. ex Broth. [414]
3 ***immersus*** Lindb.
4 ***pendulus*** Lindb. [415]
5 ***sciuroides*** (Hedw.) Schwägr.
var. ***morensis*** (Schwägr.) De Not.
var. ***sciuroides***
6 ***treleasei*** (Cardot) Paris [416]
268 ***Pterogonium*** Sw.
1 ***gracile*** (Hedw.) Sm.
Neckeraceae Schimp.
269 ***Homalia*** Brid., nom. cons.
1 ***lusitanica*** Schimp. (*H. lusitanica* var. *subrecta* (Mitt.) Düll-Herm., *H. subrecta* (Mitt.) A.Jaeger, *Neckera subrecta* Mitt.)
2 ***trichomanoides*** (Hedw.) Brid. [417]
3 ***webbiana*** (Mont.) Schimp. (*Neckera webbiana* (Mont.) Düll)
270 ***Neckera*** Hedw., nom. cons.
1 ***besseri*** (Lobarz.) Jur. (*Homalia besseri* Lobarz.)
2 ***cephalonica*** Jur. & Unger (*N. pennata* subsp. *cephalonica* (Jur. & Unger) Giacom.)
3 ***complanata*** (Hedw.) Huebener (*Homalia complanata* (Hedw.) De Not., *N. complanata* var. *longifolia* Schimp., *N. complanata* var. *secunda* Grav., *N. complanata* var. *tenella* Schimp.)
4 ***crispa*** Hedw. (*N. crispa* var. *falcata* Müll.Hal., *N. pseudopennata* (Warnst.) Schlieph. ex Żmuda)
5 ***intermedia*** Brid. (*N. elegans* Jur., *N. elegans* var. *laevifolia* Schiffn., *N. intermedia* var. *laevifolia* (Schiffn.) Renauld & Cardot, *N. laeviuscula* Geh.)
6 ***menziesii*** Drumm. (*Metaneckera menziesii* (Drumm.) Steere) [418]
7 ***oligocarpa*** Bruch (*N. pennata* subsp. *oligocarpa* (Bruch) Giacom., *N. pennata* var. *tenera* Müll.Hal.)
8 ***pennata*** Hedw.
9 ***pumila*** Hedw. (*N. fontinaloides* Lindb., *N. fontinaloides* var. *philippeana* (Schimp.) Guim., *N. philippeana* Schimp., *N. pumila* var. *philippeana* (Schimp.) Milde, *N. pumila* var. *pilifera* Jur.)
271 ***Thamnobryum*** Nieuwl.
1 ***alopecurum*** (Hedw.) Gangulee (*T. alopecurum* var. *gracillimum* Bott., *T. mediterraneum* (Bott.) G.Roth)
2 ***angustifolium*** (Holt) Nieuwl.
3 ***cataractarum*** N.G.Hodgetts & Blockeel [419]
4 ***fernandesii*** Sérgio (*Crassiphyllum fernandesii* (Sérgio) Ochyra) [420]
5 ***maderense*** (Kindb.) Hedenäs (*T. alopecurum* var. *maderense* (Kindb.) M.Stech, Ros & O.Werner) [421]
6 ***neckeroides*** (Hook.) E.Lawton [422]
7 ***rudolphianum*** Mastracci [423]
Echinodiaceae Broth.
272 ***Echinodium*** Jur.
1 ***prolixum*** (Mitt.) Broth. (*Scleromnium knyi* Jur.)
2 ***renauldii*** (Cardot) Broth.
3 ***setigerum*** (Mitt.) Jur. (*E. setigerum* var. *integrifolium* Luisier) [424]
4 ***spinosum*** (Mitt.) Jur. (*E. madeirense* Jur.)
Leptodontaceae Schimp.
273 ***Cryptoleptodon*** Renauld & Cardot
1 ***longisetus*** (Mont.) Enroth (*Leptodon longisetus* Mont., *Neckera longipedunculata* Müll.Hal.) [425]
274 ***Leptodon*** D.Mohr, nom. cons.
1 ***smithii*** (Hedw.) F.Weber & D.Mohr
Lembophyllaceae Broth.
275 ***Isothecium*** Brid.
1 ***algarvicum*** W.E.Nicholson & Dixon (*Forsstroemia canariensis* (Renauld & Cardot) Enroth, *I. atlanticum* Hedenäs, nom. illeg., *I. canariense* H.Winter, *Thamnium canariense* Renauld & Cardot, *Thamnobryum canariense* (Renauld & Cardot) D.G.Long) [426]
2 ***alopecuroides*** (Lam. ex Dubois) Isov. (*I. alopecuroides* var. *robustum* (Schimp.) Düll, *I. circinans* Saut., *I. myurum* Brid., *I. viviparum* Lindb.)
3 ***holtii*** Kindb. (*Eurhynchium myosuroides* var. *rivulare* (Limpr.) Paris, *I. myosuroides* var. *rivulare* Limpr.) [427]
4 ***myosuroides*** Brid.
subsp. ***brevinerve*** Lindb. (*I. myurum* var. *piliferum* C.E.O.Jensen, *I. myurum* var. *tenuinerve* (Kindb.) Limpr.)
subsp. ***myosuroides*** (*I. myosuroides* var. *cavernarum* Molendo, *I. myosuroides* var. *debile* Braithw., *I. myosuroides* var. *falcatum* Jaap ex G.Roth, *I. myosuroides* var. *filescens* (Renauld) Warnst., *I. myosuroides* var. *filiforme* Jaap ex G.Roth, *I. myosuroides* var. *integrifolium* Papp)
var. ***brachythecioides*** (Dixon) Braithw. [427]
Myuriaceae M.Fleisch.
276 ***Myurium*** Schimp.
1 ***hochstetteri*** (Schimp.) Kindb. (*M. hebridarum* Schimp.)
Anomodontaceae Kindb.
277 ***Anomodon*** Hook. & Taylor
1 ***attenuatus*** (Hedw.) Huebener
2 ***longifolius*** (Schleich. ex Brid.) Hartm.
3 ***rostratus*** (Hedw.) Schimp.
4 ***rugelii*** (Müll.Hal.) Keissl.
5 ***tristis*** (Ces.) Sull. & Lesq. (*Haplohymenium triste* (Ces.) Kindb.)
6 ***viticulosus*** (Hedw.) Hook. & Taylor
278 ***Claopodium*** (Lesq. & James) Renauld & Cardot
1 ***whippleanum*** (Sull.) Renauld & Cardot (*C. whippleanum* var. *cavernicola* Luisier)

Annotations

1. Ignatov & Afonina (1992) report *Sphagnum imbricatum* Hornsch. ex Russow (section *Sphagnum*), *S. orientale* L.I.Savicz (section *Subsecunda*) and *S. perfoliatum* L.I.Savicz (section *Subsecunda*) from arctic European Russia. The record of *S. imbricatum* would, if correct, be likely to refer to *S. steerei* R.E.Andrus, which is seemingly the only taxon of the *S. imbricatum* complex collected in arctic areas of North America and Eurasia (Flatberg, 1984), and which is listed by Dierssen (2001). However, Afonina (pers. comm. to Flatberg) tells us that there are no reliable herbarium specimens of European material of any of these species. They are therefore omitted.
2. *Sphagnum viride* is closely related to *S. cuspidatum* (Flatberg, 1988), and isoenzymatic results indicate that gene flow exists between the two morphs (Hanssen, Såstad & Flatberg, 2000). More genetic data are required to evaluate their taxonomic status.
3. *Sphagnum brevifolium* and *S. isoviitae* belong to a small group of closely related taxa in the *S. recurvum* complex with yellow spores (Flatberg, 1992, 1992 [1993]). In typical morphological appearance they are well separated from *S. fallax*, but seem not clearly segregated genetically in sympatric populations (Såstad, Stenøien & Flatberg, 1999). Their species status can therefore be questioned, and more genetic data are required before a decisive taxonomic conclusion can be drawn.
4. The name *Sphagnum lenense* was published as a nomen nudum in 1915, and was not validated until 1936 (Afonina and Egorova, pers. comm. to Flatberg).
5. *Sphagnum auriculatum* is retained here as the name for the taxon that has, following a paper by Dirkse & Isoviita (1986), been called *S. denticulatum* in recent lists. *Sphagnum denticulatum* is an aquatic form with abnormally large, nearly isophyllous leaves. Although most such plants belong to *S. auriculatum*, similar forms of *S. inundatum* are found not uncommonly growing under aquatic conditions in mire pools along the western coast of Norway. The type specimen of *S. denticulatum* is therefore unsatisfactory.
6. *Sphagnum tundrae* was described from Svalbard by Flatberg (1994).
7. *Sphagnum wulfianum* is either nested within section *Acutifolia* (Shaw, 2000b) or is sister to section *Acutifolia*, lying between it and section *Squarrosa* (Shaw, Cox & Boles, 2005). It is left here in its own section *Polyclada*.
8. *Sphagnum aongstroemii* may be nested within section *Acutifolia* (Shaw, 2000b, Shaw *et al.*, 2005). It is left here in its own section *Insulosa*.
9. *Sphagnum nitidulum* Warnst. was described from Terceira in the Azores, but type material has presumably been destroyed and its identity is obscure.
10. *Sphagnum subtile* (Russow) Warnst. (*S. capillifolium* var. *subtile* (Russow) Kartt., *S. rubellum* var. *subtile* (Russow) Amann) is a disputed taxon whose distinctness can be questioned. Natcheva & Cronberg (2002) consider European herbarium material studied to belong to *S. rubellum*. Shaw *et al.* (2005) claim that North American plants named *S. subtile* cannot be separated genetically from *S. capillifolium*. The name is based on European material, but original material has not been traced. It is premature to disregard the existence of a European taxon underlying this name.
11. *Sphagnum tenerum* Sull. & Lesq. ex Sull. (*S. capillifolium* var. *tenerum* (Sull. & Lesq. ex Sull.) H.A.Crum) is an eastern North American species, which according to Shaw *et al.* (2005) is highly differentiated genetically from *S. capillifolium*. European plants labelled *S. tenerum* have been examined by Flatberg, and belong to hemi-isophyllous forms of *S. capillifolium*.
12. *Sphagnum olafii* was described from Svalbard by Flatberg (1993a).
13. *Sphagnum rubiginosum* was described from Norway by Flatberg (1993b).
14. *Sphagnum andersonianum* has been reported from Europe, but Shaw *et al.* (2005) claim that examined material from Europe and North America cannot be distinguished by genetic markers from *S. rubellum*.
15. Sections of *Andreaea* follow Murray (1988).
16. Sérgio (2004) recognized *Andreaea heinemannii* subsp. *crassifolia*, stating that it does not intergrade morphologically with subsp. *heinemannii* and that they are found in one mixed population. The taxon may thus merit species status.
17. Smith (2004) treated the East Asian *Atrichum rhystophyllum* (Müll.Hal.) Paris as a synonym of *A. angustatum*, following Richards & Wallace (1950), who treated it as a variety of *A. angustatum*. The relationships of North American, European and East Asian representatives of this complex and their affinity with *A. undulatum* are not clear and are in need of thorough revision, as stated by Lou & Koponen (1986).
18. A critical, global revision is required to clarify the status of *Atrichum flavisetum* and its relationship to *A. undulatum.*
19. *Pogonatum inflexum* (Lindb.) Sande Lac. is listed for Turkey by Kürschner & Erdağ (2005). *Pogonatum inflexum* is an exclusively East Asian species confined to China, Japan, Korea and the Russian Far East. Several records from other parts of mainland Asia have been confirmed as misidentified, and are mostly *P. neesii* (Hyvönen, 1989). We have not studied any Turkish material but are inclined to assume that these records also represent *P. neesii*, a widespread Asian species with a disjunct occurrence in the Caucasus area (see below).
20. According to Schratz (1928), *Pogonatum aloides* var. *minimum* (Crome) Molendo and *P. nanum* var. *long-*

isetum Hampe ex Bruch & Schimp. are hybrids between *P. aloides* and *P. nanum*.

21. *Pogonatum neesii* was reported for European Russia for the first time by Akatova & Ignatova (2000).
22. According to the latest phylogenetic analyses (Hyvönen *et al.*, 2004, Koskinen & Hyvönen, 2004), neither *Polytrichastrum* nor the traditional *Polytrichum sensu lato* is monophyletic. Furthermore, several *Polytrichastrum* species have been shown to be allopolyploids (Derda & Wyatt, 2000; Van der Velde & Bijlsma, 2001). However, as *Polytrichum sensu stricto* (Smith, 1971) may be monophyletic, and as the paraphyly of *Polytrichastrum* is due to some taxa being more closely related to some *Pogonatum* species, we continue to accept *Polytrichastrum* until such time as more comprehensive phylogenetic analyses have been completed.
23. No infraspecific taxa of *Polytrichastrum alpinum* are recognized here, not even var. *fragile*, which Long (1985) recognized, although with reservations. Results obtained by Yli-Rekola (1980) and Schriebl (1991) in culture experiments support this wide circumscription of the species, although neither study included var. *fragile.* Although this taxon is easily identified by its caducous leaves that are constricted at the line of dehiscence, this tendency may be a result of phenotypic plasticity associated with certain habitats or environmental stimuli. A similar feature has been observed by Long (1988) at the population level in *Pogonatum urnigerum* (which recent phylogenetic analyses suggest is closely related to *Polytrichastrum alpinum*) and by both Holmen (1960) and Long (1985) for *Pogonatum dentatum*. As the other distinguishing characters of var. *fragile* are well within the range of variation for the species, it would be inconsistent to treat this feature as taxonomically significant in one taxon only.
24. *Polytrichastrum sphaerothecium* was treated by Corley *et al.* (1981) as a synonym of *P. sexangulare* and by Merrill (1992) as a variety of *P. sexangulare*.
25. Recent genetic (Van der Velde & Bijlsma, 2000) and culture experiments (Schriebl, 1991) based on European material support the recognition of several closely related species formerly treated as varieties of *Polytrichum commune*. Differences between some of these are small, and studies of North American material have not supported all of them (Derda & Wyatt, 1990). A global study including examination of type material is required to stabilize the taxonomy. We follow Long (1985) and Bijlsma *et al.* (2000) in reducing *P. commune* var. *humile* and var. *perigoniale* to synonymy under *P. commune*. As noted by Long (1985), perichaetial leaf length varies significantly in *P. commune* and minor differences in form hardly warrant taxonomic recognition.
26. The generic status of *Bryobrittonia* is questionable. Recent European checklists followed Horton (1983) in treating it as a genus, whereas Nyholm (1998) treated it as a member of *Encalypta* section *Streptotheca*. The question is still unresolved, so we follow previous checklists by treating *Bryobrittonia* as a genus.
27. *Encalypta* sections follow Horton (1983).
28. *Encalypta serbica* Katić was described from Serbia in 1906, but has not been refound. Horton (1983) was unable to trace a type specimen, but thought from the description that it was probably a form of *E. ciliata*.
29. The occurrence of *Encalypta intermedia* in Europe has hitherto not been well documented. It was described from Harput and Berit Dagt in Turkey (D.G. Horton, pers. comm.), and is listed for Turkey by Kürschner & Erdağ (2005). It was added to the European list by Corley & Crundwell (1991) because Horton (1983) stated that it occurred in Europe. Horton (pers. comm.) has confirmed two specimens (B) collected by J. Bornmüller in 1907 from Gröden in the South Tyrol and determined by him as *E. commutata*.
30. *Encalypta obovatifolia* was described from Gotland and Öland by Nyholm (1995 [1996]).
31. The status of *Encalypta rhaptocarpa* var. *leptodon* is disputed. Nyholm (1998) and Mogensen (2001) accord it species rank as *E. trachymitria*, while Ignatov & Ignatova (2003) treat it as a form of *E. rhaptocarpa* and Kučera & Váňa (2003) treat it as doubtful.
32. The original spelling of names terminating with *-colla* or *-collum* is retained, in accordance with article 60.1 of the *International Code* (Greuter *et al.*, 2000). The argument of Crundwell (1970) in favour of the *-collis* ending is not sustainable. *Trematodon brevicollis* and *T. longicollis* are, however, correct. We have also checked the original spelling of *Hypnum* (*Scleropodium*) *touretii* Brid., *Splachnum* (*Aplodon*) *wormskioldii* Hornem. and *Thuidium hystricosum* Mitt. (*Abietinella abietina* var. *hystricosa*).
33. *Encalypta affinis* subsp. *macounii* is commonly treated as a species, but Horton (1983; and pers. comm. to Hill) points out that it differs from subsp. *affinis* only in the muticous rather than hair-pointed leaves.
34. *Entosthodon subpallescens* Laz. (*Funaria subpallescens* (Laz.) Smirnova) has been included in European lists but is Asian.
35. The hybrid taxa *Funaria* × *hybrida* R.Ruthe ex Limpr. (*Entosthodon fascicularis* × *Funaria hygrometrica*) and *Physcomitrella* × *hampei* Limpr. (usually interpreted as *Physcomitrella patens* × *Physcomitrium eurystomum*) are omitted from the main list.
36. The genera *Funaria* and *Entosthodon* are distinguished according to the revision by Fife (1985).
37. For synonyms of *Entosthodon durieui* see Brugués (1998).
38. For synonymy of *Entosthodon hungaricus* see Cano *et al.* (1999).

39. The poorly known Macaronesian endemic *Funaria fritzei* is treated by Losada-Lima, Dirkse & Rodríguez-Núñez (2001) as a synonym of *Entosthodon krausei*. It needs further elucidation.
40. *Entosthodon schimperi* Brugués is a new name for the moss described by Schimper as *Funaria durieui*. The epithet *durieui* is not available in *Entosthodon*. The species has been found in Portugal, Spain and the Canary Islands (Brugués, Dirkse & Sérgio, 2001).
41. *Entosthodon mouretii* was reported from Spain by Brugués *et al.* (1999).
42. *Funaria maireana* Copp., from Greece, is too poorly known to be included in the checklist. *F. anomala* Jur. and *Funaria handelii* Schiffn. (*Entosthodon handelii* (Schiffn.) Laz.) are listed for Turkey by Kürschner & Erdağ (2005).
43. Goffinet & Buck (2004) placed *Goniomitrium* in Pottiales on the basis of a molecular study by Goffinet & Cox (2000). However, the following morphological features favour Funariales: laminal cells smooth, large and thin-walled; stomata with simple guard cells; calyptra mitriform.
44. Fife & Seppelt (2001) expressed doubts about the distinctness of *Goniomitrium seroi* from the Australian *G. acuminatum* Hook. & Wilson. A fuller study of Australian and Spanish material is required before these two species can be treated as synonyms.
45. *Physcomitrium eurystomum* subsp. *acuminatum* is treated as a species in the Polish checklist (Ochyra *et al.*, 2003) but as a synonym of subsp. *eurystomum* in the alpine countries from which it was described.
46. For synonymy of *Pyramidula tetragona* see Brugués, Casas & Belmonte (1998).
47. For synonymy of *Oedipodiella australis* see Brugués (2003).
48. *Bryoxiphium madeirense* was described from Madeira by Löve & Löve (1953) but ignored by Corley *et al.* (1981) and Corley & Crundwell (1991). It is listed by Eggers (1982), Düll (1992) and Dierssen (2001).
49. *Coscinodon humilis* was described from Europe, but largely ignored by European authors although recognized in Japan; European plants lack capsules (Greven, 1995).
50. For typification of *Grimmia alpestris*, see Muñoz (1997).
51. According to Maier (2002a), *Grimmia limprichtii* is a synonym of *G. tergestina*. However, Greven (2000) treats it as distinct.
52. *Grimmia donniana* var. *curvula* is homotypic with *G. arenaria*.
53. *Grimmia capillata*, originally described from Sardinia, was generally treated as a variety of *G. crinita* during the 20th century. Both Greven (1995) and Muñoz & Pando (2000) recognize it at species rank.
54. *Grimmia curviseta* was described from Tenerife by Bouman (1991).
55. *Grimmia dissimulata* was described from Cyprus by Maier (2002b), who also listed localities from Turkey, Syria and southern and western Europe.
56. *Dryptodon incurvus* is homotypic with *Grimmia elatior*.
57. *Grimmia funalis* var. *calvescens* is homotypic with *G. funalis* f. *epilifera* J.E.Zetterst., a heterotypic synonym of *G. funalis*.
58. Although the name *Grimmia retracta* remains to be typified, it is now treated as a synonym of *G. lisae* by Smith (2004).
59. *Grimmia muehlenbeckii* and *G. poecilostoma* were included by Corley *et al.* (1981) in *G. trichophylla* and *G. tergestina*, respectively. Both Greven (1995) and Muñoz & Pando (2000) recognize them as species.
60. *Grimmia pulvinata* var. *obtusa* is homotypic with *G. pulvinata* var. *africana*.
61. The identity of *Grimmia reflexidens*, which was described from Chile, is controversial; Maier (2002a) and Ochyra (2004b) treat it as a species of *Coscinodon*.
62. *Grimmia grisea* has been reported from Iceland by Greven (1998). This taxon was originally described from South Georgia (Cardot, 1906) after materials collected by Skottsberg. There are no original materials at PC, and all the available syntypes at S (Skottsberg original herbarium) and H-BR are conspecific with *G. reflexidens*.
63. *Grimmia subsulcata* was considered a synonym of *G. reflexidens* by Muñoz (1998), although he later realized (Muñoz & Pando, 2000) that this typification was in error (the name is homotypic with *G. alpestris* var. *microstoma* Bruch & Schimp.). No type of the latter name could be found in BM (original Schimper's herbarium) or any of the many herbaria to which materials were requested. Pending further developments the name is tentatively maintained under *G. reflexidens*.
64. The status of *Grimmia crassifolia* is controversial. There are no capsules in the holotype, and thus it is impossible to decide if it belongs to *G. poecilostoma* or *G. tergestina*. Muñoz (1999) considered it a synonym of *G. poecilostoma*, but in a more recent paper it was placed under *G. tergestina* (Ignatova & Muñoz, 2005).
65. *Grimmia austrofunalis* is an Australasian and South American taxon that does not grow in Europe. It is characterized by large gemmae (100–200 μm) formed on short stalks arising at dorsal costa base, whose liberation does not cause any damage to the leaves. Other characters, such as very large size for the genus (up to 8 cm) and shiny leaves, are more variable (Muñoz, 1999).
66. The name *Grimmia britannica*, now treated by Smith (2004) as a form of *G. trichophylla*, is a new name for *G. robusta* Braithw., a later homonym for *G. robusta* Nees & Hornsch. (? *Schistidium robustum* (Nees & Hornsch.) H.H.Blom) and thus illegitimate. When Braithwaite (1872) published his new species, he mentioned four syntypes from different Scotland

localities, collected by Fergusson, Moore, Stirton and Hunt, which are, at least Fergusson's, a mixture of several species. Not all possible syntypes have been located, and the name remains to be typified.

67. *Grimmia meridionalis*, originally described as *G. trichophylla* var. *meridionalis* Müll.Hal. and raised to species rank by Maier (2002b), is listed here as a synonym of *G. trichophylla*, in accordance with the opinion of Muñoz (1999).
68. *Grimmia triformis* was generally treated as a synonym or variety of *G. donniana* until revised by Muñoz (1998).
69. *Grimmia ungeri* was originally described from Cyprus. Its presence in Europe is disputed by Greven (1995) but asserted by Muñoz & Pando (2000).
70. *Indusiella thianschanica* was reported by Thériot (1918) from Dagestan, Russian Caucasus.
71. *Jaffueliobryum latifolium* has been found in the Russian Caucasus (Kharzinov *et al*., 2005).
72. Bednarek-Ochyra & Ochyra in Ochyra *et al.* (2003) divide *Racomitrium* into four genera, namely *Racomitrium* Brid., *Niphotrichum* (Bednarek-Ochyra) Bednarek-Ochyra & Ochyra, *Codriophorus* P.Beauv. and *Bucklandiella* Roiv. In the interests of nomenclatural stability, these subdivisions are recognized here at the rank of subgenus.
73. *Racomitrium hespericum* was described from the Iberian Peninsula by Sérgio, Muñoz & Ochyra (1995).
74. *Racomitrium lusitanicum* was described from Portugal by Ochyra & Sérgio (1992).
75. *Schistidium andreaeopsis* (Müll.Hal.) Laz., known from Beringia, is probably not European. *Schistidium marginale*, *S. pratense*, *S. scabrum* and *S. subflaccidium* are mapped for Austria on the website 'Mooskartierung in Österreich' http://www.sbg.ac.at/bot/, on the basis of specimens determined by H.H. Blom (pers. comm.). These names are *nomina nuda* and cannot be included in the checklist although the mapped taxa are thought to be good species.
76. *Schistidium apocarpum* s.l. has been comprehensively revised in northern Europe by Blom (1996). He subsequently wrote a substantial flora account of *Schistidium* (Blom in Nyholm, 1998) and has described additional species from elsewhere. Our treatment of *Schistidium* follows his flora account except where otherwise indicated.
77. The name *Schistidium alpicola* (Hedw.) Limpr., nom. rejic., was for long applied to the plant now called *S. platyphyllum*. It is a synonym of *Schistidium agassizii* (Blom in Nyholm, 1998) and is now rejected. Blom (pers. comm. to Hill) points out that the author citation *S. platyphyllum* (Mitt.) Kindb., often used in North America, is incorrect because Kindberg did not recognize *Schistidium* as a genus.
78. According to Ochyra *et al*. (2003), *Schistidium helveticum* (Schkuhr) Deguchi is a synonym of *S. singarense* and has priority. Blom (1996) was unable to study the lectotype of *S. helveticum*, which was not found at LAU. He has subsequently written (pers. comm.) 'All evidence (including the protologue) points towards the taxonomic identity of *S. helveticum* and *S. singarense*, further strengthened by the article by Ochyra *et al*. (2003)'. Given that there is apparently no Schkuhr material at HAL, he concludes that if we accept the lectotypification by Deguchi, then we may use the name *S. helveticum*. Therefore the name *S. helveticum* is recommended here, even though a new lectotype to replace the lost type specimen chosen by Deguchi has not been designated.
79. For protologues of *Grimmia maritima* and *Dicranum scottianum*, see Nelson (1997).
80. *Schistidium occidentale*, a species previously known only from the mountains of southwestern North America, was found in the Sierra Nevada, southern Spain (Casas, Blom & Cros, 2001).
81. *Schistidium sinensiapocarpum* is mapped for two localities in Austria on the website 'Mooskartierung in Österreich' http://www.sbg.ac.at/bot/, on the basis of specimens determined by H.H. Blom (pers. comm.).
82. *Schistidium spinosum* was described from the Black Forest, with localities elsewhere in Germany and France (Blom & Lüth, 2002).
83. *Campylostelium pitardii* was transferred from *Grimmia* by Maier (1998).
84. *Seligeria transylvanica* was synonymized with *Brachydontium trichodes* by Ochyra (2004c).
85. Subgenera of *Seligeria* are those of Vitt (1976).
86. *Seligeria galinae* was described from the Urals by Mogensen & Goldberg (2002).
87. *Seligeria irrigata* was raised to species rank by Ochyra & Gos (1992).
88. *Fissidens dubius* var. *mucronatus* (Breidl. ex Limpr.) Kartt., Hedenäs & L.Söderstr. is included here in var. *dubius*.
89. For information on *Fissidens luisieri* refer to Sérgio, Iwatsuki & Ederra (1997).
90. Like Sérgio & Carvalho (2003) we include pending further investigation *Fissidens polyphyllus* var. *newtonii* Husn. in *F. polyphyllus* var. *polyphyllus*.
91. Sérgio *et al.* (1997) provide a useful discussion of *Fissidens serrulatus*.
92. Limbidia can be greatly reduced in many limbate species. Most taxa that are primarily or only characterized by their limbidia restricted to the vaginant lamina, e.g. *Fissidens kosaninii* Latzel, *F. exiguus* Sull. and *F. viridulus* var. *intralimbatus* (R.Ruthe) Düll, are probably just poorly limbate forms of limbate species.
93. Pursell (2005) provides new insight on the characterization of *Fissidens arcticus*.
94. The European concept of *Fissidens bryoides* and related species diverges considerably from that of North American authors, e.g. Crum & Anderson (1981), Pursell (2005). European floras emphasize

differences and recognize several species. North American authors stress the presence of intergrading forms and recognize only one species, *F. bryoides* Hedw. On both continents many specimens are easily identified as *F. bryoides sensu stricto* (with numerous axillary antheridial buds), *F. viridulus* (most antheridia terminal on dwarf male or longer plants) or *F. incurvus* (incurved capsules). Also on both continents sexual characters are more or less correlated to other characters (extension of the limbidium, shape of the leaf apex, sporophyte, etc.). Intergrading specimens are also known from both continents and are probably most common in southern and northern regions. Whether they are more common in North America is unknown. In the Netherlands most specimens can be easily identified. Variation in sexuality in European material of this complex has led to the description of many varieties and species. In this checklist, we adopt a conservative (from a European point of view) perspective, but omit *F. exiguus* Sull. and *F. kosaninii* Latzel, and reduce *F. curnovii* and *F. incurvus* to varietal rank.

95. Cortini Pedrotti (2001) and Smith (2004) treat *Fissidens bryoides* var. *caespitans* at species level. It is here included as variety because, though extreme forms are clearly distinct from *F. bryoides* var. *bryoides* by red rhizoids, a thicker limbidium, inclined capsules and a cushion-like growth form, many collections cannot be identified with certainty.
96. In a recent provisional publication Pursell (2005) recognizes *Fissidens minutulus* as a distinct species, closely related to, yet distinct from, *F. crispus* (including *F. limbatus*). We are not convinced that the two taxa are distinct in Europe and they are treated as synonyms here.
97. *Fissidens gymnandrus* is treated by North American authors and Ignatov & Afonina (1992) as a synonym of *F. bryoides*. However it differs from *F. bryoides sensu stricto* in being polyoicous, having oblong leaves with a wide apex, and by its preference for woody substrates in regularly flooded localities.
98. *Fissidens jansenii* was described by Sérgio & Pursell (2001). The resemblance of this species to *Fissidens rufulus* was overlooked by its authors. Both species have small cells and limbidia that reach the insertion of the dorsal laminae. *F. jansenii* has bistratose leaves; the leaves of *F. rufulus* are irregularly bistratose or unistratose.
99. *Fissidens microstictus* is a relatively unknown species characterized by stems with numerous wide, elliptical to ovate leaves, broad, acute leaf tips and dorsal laminae that are narrowed below and typically reach the insertion. All leaves of a stem can be elimbate or limbate, or limbate and elimbate leaves may occur on the same stem, limbidia are found on the vaginant laminae and sometimes also in the middle of the dorsal laminae. It is closely related to *F. arnoldii* from which it differs in the broadly acute not acuminate leaf tips.
100. *Fissidens nobreganus* resembles *F. sublineaefolius* which also has linear leaves and smooth cells. It differs from this species in having bud-shaped axillary perigonia and perigonia terminal on short axillary branches, by smaller, almost isodiametric laminal cells and limbidia that are restricted to the upper leaves of perichaetial plants. *Fissidens sublineaefolius* has terminal perigonia, larger, hexagonal laminal cells and well-developed limbidia on all laminae of all leaves.
101. *Fissidens perssonii* was synonymized with *F. ovatifolius* by Dirkse, Bouman & Losada-Lima (1993).
102. *Fissidens pusillus* is treated by North American authors as an expression of *F. bryoides*.
103. European specimens identified as *Fissidens exiguus* are poorly limbate forms of either *F. viridulus* or of *F. pusillus*. *Fissidens exiguus* is treated by North American authors as a poorly limbate expression of *F. bryoides*.
104. *Fissidens sublimbatus* was reported from the Canary Islands by Ros *et al.* (2001).
105. *Fissidens viridulus* is treated by North American authors as an expression of *F. bryoides*.
106. *Bryum pallens*, *Dicranum polysetum*, *D. viridulum* (*Fissidens*), *Hypnum revolvens* (*Scorpidium*) and *Orthotrichum pumilum* are Swartz names from before *Species Muscorum* that were validated in a book review (Anon., 1801); thus 'ex anon.'.
107. *Fissidens viridulus* var. *incurvus* is linked to var. *viridulus* by transitional forms. North American authors treat both taxa as expressions of *F. bryoides*.
108. Re-examination of the isotype of *Fissidens bambergeri* in U showed that it is a poorly limbate form of *F. viridulus*. It differs from *F. crispus* (*F. limbatus*) with which it has been confused by larger, hardly bulging, less than twice as deep as wide, laminal cells.
109. *Fissidens marginatulus* is not accepted by Ignatov & Ignatova (2003) and seems hardly distinct from *F. viridulus*.
110. *Fissidens serratus* was reported as *F. papillosus*, new for the Canary Islands, by Dirkse, Bruggeman-Nannenga & Bouman (1991). Bruggeman-Nannenga & Pursell (1995) treated *F. papillosus* as a synonym of *F. serratus*.
111. *Ceratodon antarcticus* Cardot and *C. heterophyllus* Kindb. have been reported from arctic and alpine parts of Europe. According to Ochyra (1998), *C. antarcticus* is merely a developmental phase of *C. purpureus* with very large mid-leaf cells and plane leaf margins. European records of *C. heterophyllus* are based on plants that lack capsules and therefore according to the account of Burley & Pritchard (1990) are not reliable. Nevertheless, the occurrence in cold parts of Europe of *Ceratodon* plants with rounded, entire leaf apices is remarkable. Cultivation experi-

ments and additional genetic data are needed to elucidate their status.

112. The assignment of synonyms to the subspecies of *Ceratodon purpureus* follows Burley & Pritchard (1990).
113. *Ditrichum gracile* was synonymized with *D. crispatissimum* by Allen (1994).
114. *Ditrichum punctulatum* is a subantarctic species, known in Europe only from Madeira and the Azores. Records of *D. difficile* (Duby) M.Fleisch probably belong to this species.
115. *Pleuridium serrulatum* Luisier & Dixon, treated as doubtful by Corley *et al*. (1981) but included in recent Spanish lists, is represented in Luisier's herbarium (INA) by non-fruiting plants. It therefore remains doubtful.
116. *Rhamphidium purpuratum*, with peristome resembling *Saelania*, is excluded from Pottiaceae by Zander (1993). Its leaves resemble *Dicranella* and its tubers resemble those of *Trichodon* (Arts, 1989).
117. *Trematodon perssoniorum*, endemic to S. Miguel, Azores, is closely related to *T. longicollis*. It was described by Allorge (1951) on the basis of suggestions made by her husband (died 1944) and Thériot (died 1947). She makes it absolutely clear that the description is newly written by her for the paper. In accordance with Article 60.11 of the *International Code*, the epithet *perssonorum* is corrected here to *perssoniorum* (noting that the form *perssonii* is used for 'of Persson' in several bryophyte epithets).
118. *Amphidium tortuosum* is a tropical montane species, in Europe only in Tenerife and Madeira, where it had been reported as *A. curvipes*. Synonymy follows Frahm *et al.* (2000).
119. *Cynodontium asperifolium* is similar to *C. fallax*, with rather slight differences. It is known from the Ural Mountains (Ignatov & Ignatova, 2003).
120. The basionym of *Cynodontium polycarpon* is *Fissidens polycarpos*, which appears incorrectly in the index of *Species Muscorum* (Hedwig, 1801) as *F. polycarpus*.
121. Although *Dichodontium palustre* has been variously placed in *Dicranella*, *Diobelon* or *Diobelonella*, a molecular study by Stech (1999) supports its affiliation with *Dichodontium*; which seems reasonable in view of its leaf shape.
122. The systematic position of *Dicranoweisia* is controversial. Ochyra (1993) argued that its peristome places it in Seligeriaceae. He also (in Ochyra *et al*., 2003) divided the European species into *Dicranoweisia*, which occurs in the Northern Hemisphere and Africa, and *Hymenoloma*, whose distribution is mainly in the Southern Hemisphere. We recognize the merits of his argument but prefer to a adopt a conservative position until further work has been done.
123. *Oncophorus elongatus*, from Norway and Sweden, was elevated to the rank of species by Hedenäs (2005).
124. *Rhabdoweisia kusenevae* Broth. was included by Corley & Crundwell (1991) but treated by Ignatov & Afonina (1992) as a synonym of *R. crispata*.
125. The placement of *Schistostega* in Dicranales is controversial, but we follow Goffinet & Buck (2004) in this.
126. *Dicranella campylophylla*, not listed by Corley *et al.* (1981), was reported for Madeira by Eggers (1982).
127. Sections of *Dicranum* follow those of Nyholm (1987), with some nomenclatural changes due to Ochyra *et al.* (2003).
128. *Dicranum crassifolium* was described from Portugal (Sérgio, Ochyra & Séneca, 1995).
129. *Dicranum transsylvanicum* was described from Romania by Lüth (2002).
130. *Dicranum dispersum* was described from Germany by Engelmark (1999).
131. *Dicranum undulatum* Schrad. ex Brid. 1801 has priority over *D. bergeri* Blandow 1809. *Dicranum undulatum* Ehrh. ex F.Weber & D.Mohr 1803 is an illegitimate homonym. Although many recent European authors have avoided the name, it is current in North America and should also be used in Europe (Ochyra *et al.*, 2003).
132. *Dicranum angustum* and *D. laevidens* are treated as distinct species, following Hedenäs & Bisang (2004).
133. An isotype of *Dicranum sendtneri* at S consists of a mixture of *D. fuscescens* and *D. elongatum*. Following Hedenäs & Bisang (2004), *D. sendtneri* is not recognized here as a distinct species.
134. *Dicranum canariense*, often treated as a subspecies of *D. scottianum*, is known from the Canary Islands and Spain.
135. *Campylopus incrassatus* was reported under the name *C. eximius* from Madeira by Koppe & Düll (1986), having been previously known under other names including *C. dixonii* Luisier. The synonymy of *C. eximius* and *C. incrassatus* is due to Frahm (1987).
136. *Dicranodontium subporodictyon* is only known as sterile. Therefore its generic position is still doubtful.
137. *Leucobryum albidum* is a North American species, in Europe only in the Azores. For differences between it and *L. juniperoideum* see Frahm (2005b). The distinction between *L. albidum* and *L. juniperoideum* is controversial; according to Vanderpoorten, Boles & Shaw (2003) they should be treated as synonyms.
138. *Octoblepharum albidum* Hedw. was reported from Tenerife by Düll (1992) on the basis of a 19th century herbarium specimen. It is omitted from a recent list for the Canary Islands (Losada-Lima *et al.*, 2001). If the record is genuine, the species had probably been introduced from the tropics.

139. Molecular phylogenies of Pottiaceae by Werner *et al.* (2004a, 2005b) place the European species in the three groups recognized here: Merceyoideae (*Scopelophila*), Trichostomoideae (including *Splachnobryum*, Ephemeraceae, Pleuroweiseae *sensu* Corley *et al*., 1981, and some *Barbula* species, e.g. *B. bolleana*), and Pottioideae (including Pottieae, *Cinclidotus* and Barbuleae *sensu* Corley *et al*., 1981). *Timmiella* does not belong in Pottiaceae but is listed here until a better place can be found for it. Likewise, those *Barbula* species that belong in Trichostomoideae have been retained in *Barbula* until their correct generic position can be ascertained.
140. *Crumia latifolia* (Kindb.) W.B.Schofield is known from the Caucasus but outside Europe.
141. *Anoectangium handelii* is known from the Crimea. It is described by Zander & Weber (2005), correcting an earlier report by Zander (1977) who had treated it as a synonym of *Molendoa sendtneriana*.
142. *Ephemerum hibernicum* was described from Ireland by Holyoak & Bryan (2005).
143. Holyoak has examined much material of *Ephemerum serratum* and *E. minutissimum*, and finds that in both species occasional plants have leaves with a weak nerve. He has not seen the type of *E. serratum* var. *praecox*, which could be a synonym of either of these taxa.
144. *Ephemerum spinulosum* has been found in Ireland and the Basque region of Spain (Holyoak, 2001; Infante & Heras, 2005).
145. Author citation for *Eucladium verticillatum* follows the typification by Ochyra & Zijlstra (2005).
146. *Gymnostomum mosis* (Lorentz) Jur. & Milde was reported from Spain by Martínez-Sánchez, Ros & Guerra (1991), but later Cano, Ros & Guerra (1994) described the new species *Gymnostomum lanceolatum* based on this material.
147. *Gymnostomum aeruginosum* var. *obscurum* was described by Guerra (2004).
148. Spelling of species epithet in *Hymenostylium recurvirostrum* follows Hedwig (1801) not Crosby *et al.* (1999).
149. *Pleurochaete malacophylla* (Müll.Hal.) Broth. is listed for Turkey by Kürschner & Erdağ (2005).
150. *Splachnobryum delicatulum* is treated by Arts (2001) as a synonym of *S. obtusum*. *Splachnobryum obtusum* was not included in the main list of Corley *et al*. (1981), because these authors considered that its occurrences were not sufficiently natural. However, it occurs in the open in Hungary and the Azores, and is accordingly listed here.
151. *Tortella arctica* (Arnold) Crundw. & Nyholm has been reported from Svalbard, but the records refer to *Trichostomum arcticum* (Frisvoll & Elvebakk,1996).
152. *Tortella alpicola* was reported new for Europe by Otnyukova *et al*. (2004).
153. *Tortella bambergeri* was not recognized as a good species by Corley *et al*. (1981), but is generally accepted by bryologists in central Europe and also by us.
154. *Tortella densa* is treated as a variety *T. inclinata* var. *densa*, following Eckel (1998).
155. *Tortella limbata* has been refound on the Canary Islands. Dirkse *et al*. (1993) compared their collection with the holotype and noted the distinctive denticulate leaf border, composed of long narrow cells, running nearly to the leaf apex.
156. *Tortella limosella* is known only from the Scottish type-locality, and has not been refound since its discovery in 1906.
157. *Tortella cirrifolia* was synonymized with *T. nitida* by Sjögren (2001).
158. Molecular studies by Werner *et al.* (2005b) show that the genus *Trichostomum* as listed here is heterogeneous, with *T. brachydontium* and *T. crispulum* nested within *Weissia* and *T. triumphans* very close to *Pottiopsis caespitosa*. *Trichostomum connivens* (Lindb. ex Broth.) Paris is recorded from the Caucasus but is not known from Europe. *Trichostomum contortum* (Kunze) Sérgio is probably a synonym of *T. brachydontium*, although Sérgio (1985) thought that it was a good species.
159. For synonymy of *Hyophila treleasei*, see Sollman (1993).
160. *Weissia leptocarpa* Schimp. ex Besch. is treated by Sérgio & Carvalho (2003) as a doubtful species, but is accepted for Turkey by Kürschner & Erdağ (2005), in spite of the fact that Frey & Kürschner (1991) had treated it as doubtful and illegitimate.
161. *Weissia mittenii* (Bruch & Schimp.) Mitt. is omitted, because it is designated above as a hybrid *W.* × *mittenii* (Bruch & Schimp.) Mitt. emend. A.J.E.Sm. Smith (pers. comm. to Hill) notes that *W. mittenii* has malformed capsules and abnormal spores. Following Werner *et al*. (2005b), *Astomum* is included in *Weissia*.
162. A molecular study by Werner *et al.* (2004b) supports the species status of *Weissia wimmeriana*.
163. *Acaulon mediterraneum* is treated by many authors as a variety of *A. muticum*, to which it is undoubtedly close.
164. *Aloina humilis* was described from the Canary Islands by Gallego *et al*. (1998).
165. *Aloina obliquifolia* is accorded species rank following Gallego *et al*. (1999).
166. The Macaronesian *Barbula semilimbata* Dixon & Luisier was listed by Eggers (1982) but is a poorly known taxon, not recorded since it was described.
167. *Barbula convoluta* var. *sardoa* is treated by some at species rank. Frahm & Ahmed (2004a) suggested the name *B. sardoa*. However, the epithet *sardoa* is correct at the varietal level but superfluous at the species level.

If species rank is used, the correct name is *B. commutata* (see Frahm & Ahmed, 2004b).

168. Although Corley & Crundwell (1991) did not accept the synonymy of *Bryoerythrophyllum campylocarpum*, Sollman (1990), Zander (1993) and Sérgio & Carvalho (2003) all accept it, as we do here.
169. *Cinclidotus bistratosus* Kürschner & Lüb.-Nestle and *C. nyholmiae* Çetin have been described from Anatolia.
170. *Cinclidotus confertus* Lüth was described from north-west Greece. Dr Alicia Ederra, who treated *Cinclidotus* for the *Flora Briofítica Ibérica*, has written (pers. comm. to Hill) 'I had the opportunity to see the holotype of *Cinclidotus confertus* from STU. It is, without any doubt, a *Cinclidotus*; its habit is very similar to *C. riparius*, but, as noted by Lüth, the peristomes are different. So, I think they must be closely related species.' She recommends retaining it in the list, although it has not been found elsewhere.
171. *Cinclidotus vivesii* was described by Ederra in Ederra & Guerra (2005).
172. *Crossidium davidai* was reported new for our area from the Canary Islands by Dirkse & Bouman (1995b) and Stern (1995).
173. *Crossidium geheebii* was reported from Italy, new to Europe, by Privitera & Puglisi (2000a).
174. *Crossidium laevipilum* was described in 1931 from North Africa and subsequently found in Spain (Casas, Cros & Brugués, 1993; Guerra *et al.*, 1993).
175. *Crossidium laxefilamentosum* was reported new to Europe by Pócs *et al.* (2004).
176. *Dialytrichia fragilifolia* was raised to species rank by Lara (2005).
177. A molecular study by Werner *et al.* (2005a) shows that previous sectional divisions of *Didymodon* cannot be maintained, but does not yet provide enough detail to demarcate new sections.
178. *Didymodon reedii* H.Rob. (*D. tectorum* (Müll.Hal.) K. Saito), listed by Corley & Crundwell (1991), was erroneously reported from Britain (Blockeel & Smith, 1998).
179. According to Sérgio & Jiménez Fernández (2003), *Didymodon soaresii* is a non-fruiting species of *Tortula*, of uncertain species.
180. The synonymy of *Didymodon asperifolius*, *D. fallax*, *D. giganteus*, *D. maximus*, *D. spadiceus* and *D. tophaceus* follows Jiménez *et al.* (2005b).
181. *Didymodon australasiae* synonymy follows Jiménez *et al.* (2005a).
182. For description of *Didymodon bistratosus*, see Hébrard (1994).
183. *Didymodon brachyphyllus* is reported from Iceland (Jóhannsson, 2003).
184. *Didymodon erosus* was described by Jiménez *et al.* (2004).
185. *Didymodon lamyanus*, from France, has been omitted from recent European lists. It was studied by Werner *et al.* (2005a). Its closest relatives appear to be *D. insulanus*, *D. nicholsonii* and *D. vinealis*.
186. *Didymodon mamillosus* is treated by Jiménez (2004) as a synonym of *D. rigidulus*.
187. *Didymodon sicculus* was described by Cano *et al.* (1996).
188. For synonymy of *Didymodon subandreaeoides* see Kučera & Köckinger (2000).
189. *Didymodon umbrosus* synonymy follows Jiménez *et al.* (2005a).
190. According to Ochyra (1998), *Hennediella antarctica* (Ångstr.) Ochyra & Matteri is a synonym of *H. macrophylla* and has priority. However, there appear to be some differences, and we have not changed the name applied to European plants pending further study of variation in the genus.
191. Our circumscription of the genus *Microbryum* follows Zander (1993).
192. *Phascum piptocarpum* is treated as a synonym of *Microbryum curvicollum* following Ros, Werner & Rams (2005).
193. The synonymy of *Microbryum davallianum* and *M. starckeanum* follows Ros *et al.* (1996).
194. *Microbryum fosbergii* was raised to species rank and synonymized with *Pottia* × *andalusica* by Ros *et al.* (2005).
195. The basionym of *Microbryum starckeanum* is *Weissia starckeana*, named by Hedwig (1801) after Johan Christian Starke. Although Hedwig's spelling is not apt, Article 60.1 of the *International Code* (Greuter *et al.*, 2000) requires that it shall be retained.
196. *Pseudocrossidium obtusulum*, originally described from Sweden, is widespread in North America, from which *P. revolutum* is absent. Reasons for treating it as a distinct species are given by Eckel, Hoy & Elliot (1997) and Zander (2002).
197. *Pseudocrossidium replicatum* was found in Italy, new for the European moss flora (Privitera & Puglisi, 2000b).
198. *Pterygoneurum compactum* was described from Spain by Cano, Guerra & Ros (1994).
199. *Pterygoneurum crossidioides*, originally described from the Dead Sea area of Israel, was found in Hungary (Pócs, 1999). However, Erzberger & Papp (2004) regard the record as somewhat doubtful.
200. *Pterygoneurum papillosum* was described by Oesau (2003).
201. *Pterygoneurum squamosum* was described from Spain by Segarra *et al.* (1998).
202. *Syntrichia* treatment follows Gallego (2005).
203. *Syntrichia bogotensis* (Hampe) R.H.Zander has been found in Madeira (Gallego, Cano & Sérgio, 2005).
204. Some recent authors such as Vanderpoorten (2001) treat *Syntrichia calcicola* as a synonym of *S. ruralis*.
205. According to a revision by Gallego *et al.* (2002a), Spanish material ascribed to *Syntrichia pseudohandelii* is *S. caninervis* var. *caninervis*. These authors treat *S.*

pseudohandelii as a synonym of the non-European *S. caninervis* var. *pseudodesertorum* (Vondr.) M.T.Gallego, which is found in western Asia, including Turkey.

206. For the status of *Syntrichia caninervis* var. *abranchesii* refer to Gallego *et al.* (2002a).
207. *Syntrichia caninervis* var. *astrakhanica* was described by Ignatov, Ignatova & Suragina (2002).
208. *Syntrichia glabra* was described by Frahm & Gallego (2001).
209. Following Gallego, Cano & Guerra (2004), no infraspecific taxa are recognized within *Syntrichia laevipila*, which is synonymized with *S. pagorum*, *Tortula laevipilaeformis* and *T. saccardoana*.
210. *Syntrichia minor* was recognized at species rank by Gallego *et al.* (2000).
211. According to Ochyra (1994), *Tortula intermedia* De Not. 1838 is a synonym of *Tortella humilis*, making *Tortula intermedia* (Brid.) Berk. 1863 an illegitimate homonym.
212. According to Gallego (2005), *Tortula papillosa* var. *meridionalis* Warnst. should not be recognized as a distinct variety.
213. According to Gallego (2005), *Syntrichia princeps* var. *parnassica* (Schiffn.) Podp. should not be recognized as a distinct variety.
214. Author citation of *Syntrichia ruralis* var. *ruraliformis* follows Gallego (2005).
215. *Syntrichia subpapillosissima* was recognized at species rank by Gallego *et al.* (2002b). These authors treated *Tortula ruralis* var. *submamillosa* W.A.Kramer as a synonym.
216. *Tortula buyssonii* (H.Philib.) Broth., from the Auvergne, France, is a little-known taxon that has apparently not been found since the 19th century.
217. *Tortula caucasica* Lindb. (*Pottia caucasica* (Lindb.) Paris) is known from Georgia but not from Europe. *Tortula grandiretis* Broth. is listed for Turkey by Kürschner & Erdağ (2005).
218. *Tortula ampliretis*, described from the Canary Islands in a paper by Crundwell, During & Long (1978), was inexplicably not mentioned by Corley *et al.* (1981).
219. *Tortula bolanderi* and *T. inermis* should be in *Tortula* not *Syntrichia* (Werner *et al.*, 2003a).
220. *Tortula israelis*, described from Spain as *T. muralis* var. *baetica*, was raised to species rank by Guerra & Ros in Guerra, Ros & Carrión (1992) and subsequently synonymized with *T. israelis* by Cano, Guerra & Ros (1996).
221. According to Cano (2004a), European plants attributed to *Crossidium seriatum* Crum & Steere should be referred to *Tortula brevissima*.
222. The synonymy and nomenclature of *Tortula hoppeana* follow Ochyra (2004a).
223. For the synonymy of *Desmatodon meridionalis* see Sérgio & Granzow de la Cerda (2001).
224. According to Sérgio & Carvalho (2003), the type material of *Pottia cuneifolia* corresponds to *P. pallida*. Therefore, *P. pallida* and *Tortula zoddae*, which is a new name for *P. cuneifolia* in *Tortula*, are included in the synonymy of *T. pallida*.
225. Zander (1993) provided the new name *Tortula rhodonia* for *Desmatodon wilczekii*, because the epithet *wilczekii* is not available in *Tortula*.
226. Cano, Werner & Guerra (2005) raised *Tortula subulata* var. *angustata* with bistratose border to species rank, on the basis of *T. angustata* Lindb., and provided the new name *T. schimperi*, because the epithet *angustata* is not available at species rank in *Tortula*. The other varieties of *T. subulata* were sunk in a single variable species.
227. According to Cano (2004a, b), *Tortula marginata* subsp. *limbata* is a synonym of *T. solmsii*.
228. *Tetraplodon urceolatus* is a good species which has been misunderstood in Scandinavia, where it has been confused with forms of *T. mnioides*.
229. *Orthotrichum urnaceum* Müll.Hal. was signified for Europe by Lewinsky-Haapasaari (1995) but the locality is in Armenia.
230. Synonymy of *Orthotrichum limprichtii* follows Lewinsky-Haapasaari in Nyholm (1998).
231. *Orthotrichum casasianum* is reported only from northern Spain (Mazimpaka *et al.*, 1999).
232. *Orthotrichum crenulatum* was reported as *O. flowersii* Vitt from the French Alps (Boudier & Pierrot, 1992).
233. *Orthotrichum handiense* is an endemic from Fuerteventura, Canary Islands (Lara *et al.*, 1999a; Lara, Garilleti & Mazimpaka, 2003).
234. *Orthotrichum hispanicum* was described from Spain by Lara, Garilleti & Mazimpaka (2000).
235. *Orthotrichum macrocephalum* was described from Spain by Lara, Garilleti & Mazimpaka (1994).
236. For synonymy of *Orthotrichum lewinskyae* see Draper *et al.* (2003).
237. *Orthotrichum schimperi* is recognized as a species in accordance with Cortini & Lara in Cortini Pedrotti (2001).
238. For synonymy of *Orthotrichum rogeri* var. *defluens*, see Garilleti, Lara & Mazimpaka (2002).
239. For synonymy of *Orthotrichum australe*, see Lewinsky (1993).
240. *Orthotrichum vittii* was described from Spain by Lara *et al.* (1999b).
241. For synonymy of *Orthotrichum arcangelianum* see Lara *et al.* (2002) and Lewinsky (1993).
242. *Orthotrichum shawii* has been reinstated as a distinct species (Mazimpaka *et al.*, 2000).
243. *Orthotrichum ibericum* was described from Spain and Portugal by Lara & Mazimpaka (1993).
244. For the synonymy of *Orthotrichum caucasicum*, see Lewinsky (1993).
245. We have excluded *Orthotrichum elegans* Schwägr. as a European species because Nordic material named as

O. speciosum var. *elegans* (Schwägr.) Warnst. is referable to *O. speciosum*. For differences between these two taxa see Vitt & Darigo (1997).

246. *Orthotrichum speciosum* var. *brevisetum* is known from Spain & Sicily; see Draper *et al*. (2003).
247. *Orthotrichum tortidontium* was described from Morocco and Spain by Lara, Garilleti & Mazimpaka (1996).
248. *Orthotrichum vladikavkanum* was described from the Russian Caucasus by Venturi (1887). It was listed in Podpěra's (1954) *Conspectus*, but the Caucasus was assigned to Asia by Corley *et al*. (1981). For the present enumeration, the Russian part of the Causasus is now again included in Europe.
249. Corley *et al*. (1981) included *Ulota macrospora* in *U. rehmannii*, but the two species are distinguished here, following Boudier & Pierrot (1996) and Sauer (1998).
250. The inclusion of *Zygodon forsteri* in *Codonoblepharon* is controversial (Goffinet and Vitt, 1998; Matcham & O'Shea, 2005). In our opinion it is best placed in *Zygodon*. Casas *et al.* (1985) considered *Z. madeirensis* to be close to *Z. forsteri*; it is treated here as a synonym following Düll (1992). Further revision is needed to assess its identity.
251. *Zygodon sibiricus* was reported from the European side of the Urals by Ignatov & Ignatova (2003).
252. *Zygodon stirtonii* is recognized at species rank following Smith (2004).
253. *Hedwigia ciliata* var. *viridis* Bruch & Schimp. is listed by Casas (1991), but Hedenäs (1994) was unable to trace the type specimen, so it is uncertain whether the variety belongs to *H. ciliata* or *H. stellata*.
254. *Hedwigia ciliata* var. *leucophaea* was illustrated and mapped by Hedenäs (1994).
255. *Hedwigia stellata* was described from Sweden by Hedenäs (1994).
256. *Anacolia laevisphaera* is reported from Europe in an abstract by Quandt & Frahm (2004). It is a tropical montane species and German specimens from the Mosel region had been incorrectly identified as *Bartramia stricta*.
257. *Anacolia menziesii* was found new to Europe in the provinces of Almería and Granada in southern Spain (García-Zamora *et al.*, 1998). Its distinctness from *A. webbii* was confirmed by molecular data (Werner *et al.*, 2003b).
258. *Bartramia pomiformis* var. *elongata* Turner and *B. pomiformis* var. *heteromalla* (Brid.) Müll.Hal. are treated with great scepticism by Nyholm (1998), and var. *elongata* is treated as a synonym of var. *pomiformis* by Smith (2004). These varieties are accordingly excluded from the checklist.
259. Nomenclature for *Bartramia* section *Pyridium* (section *Vaginella* Müll.Hal., nom. illeg.) follows Ochyra *et al.* (2003).
260. *Bartramia breviseta* was originally described from Finnmark, but was treated as a synonym of *B. ithyphylla* in many European checklists. Fransén (2004) has demonstrated that it is distinct, differing, for example, in the lack of an inner peristome.
261. *Bartramia ithyphylla* var. *strigosa* (Wahlenb.) Hartm. was mapped by Söderström (1996). However, Fransén (2004) treats it as a synonym of var. *ithyphylla*, and it is accordingly not recognized here.
262. *Philonotis marchica* var. *laxa*, described from Switzerland and Germany as *P. laxa* Limpr., is listed by Casas (1991) but is no longer recognized in German and Swiss lists.
263. *Philonotis uncinata* (Schwägr.) Brid. is listed for the Azores by Gabriel *et al.* (2005).
264. Molecular data now leave no doubt that the genera *Anomobryum*, *Brachymenium*, *Plagiobryum* and *Rhodobryum* cannot be maintained with the circumscription used by Corley *et al.* (1981) since most are ingroups within *Bryum sensu lato* (e.g. Pedersen, Cox & Hedenäs, 2003; Pedersen & Hedenäs, 2005). The molecular data also show that there have been multiple instances of convergent evolution of morphological characters in Bryaceae, so that classifications based exclusively on the morphological characters currently known are unsound. Hence, for example, the genus *Rosulabryum* proposed by Spence (1996) is not adopted here because molecular data imply it is polyphyletic (Pedersen *et al.*, 2003). A start has been made on subdividing *Bryum* into segregate genera (e.g. *Imbribryum* N.Pedersen) on the basis of molecular data from multiple loci used in combination with morphological data (Pedersen, 2005; Pedersen & Hedenäs, 2005), but their treatment cannot yet be applied to European species as a whole because molecular data are not available for many species. The generic treatment of Corley *et al.* (1981) is therefore used here in an interim arrangement.
265. Loeske (1932 [1933]) long ago interpreted *Anomobryum leptostomoides* as fertile *A. concinnatum*, and numerous fertile specimens examined by Holyoak from its type-locality at Mont Dore (France) consistently show the gametophytic characters of *concinnatum*. This is therefore the only European locality at which *A. concinnatum* has been found with capsules, and it is significant because sporophytes of *A. leptostomoides* differ from those of *A. julaceum* in the erect not inclined to cernuous capsules and their greatly reduced peristome, as described in detail by Shaw & Fife (1984). Furthermore, similar capsules have been described from Michigan (USA), again from plants with gametophytes indistinguishable from those of *A. concinnatum*. Shaw & Fife (1984) were 'inclined to recognize *A. leptostomoides* at the specific level' but hesitated to do so because they thought that the

usual non-fertile plants would be impossible to name with certainty. However, European bryologists have long recognized *A. concinnatum* without great difficulty from non-fertile material, so this form is surely best treated at species rank as advocated by Loeske.

266. Sérgio, Cros & Brugués (1996) re-examined *Anomobryum lusitanicum* in detail, retaining it in the genus *Anomobryum*.
267. *Brachymenium commutatum* is known in Europe only from the Sierra Nevada. It was first reported by Thériot (1932) as *B. commutatum* var. *hispanicum* Thér. and rediscovered in 1997 (Brugués *et al.*, 2003). European plants are sterile and less robust than var. *attenuatum* Thér. & Trab., which was described from the Hoggar mountains, Algeria. Small forms are also found in the Hoggar (Thériot, 1932). Ochi (1972, 1973) did not examine any of the type material of *B. commutatum* during his review of African Bryoideae. However, a specimen assigned to *B. commutatum* var. *attenuatum* from Sudan and material from Eritrea were reidentified by him as the widespread *B. exile* Dozy & Molk. It appears very likely that *B. commutatum* should be placed as a synonym of *B. exile*.
268. *Brachymenium notarisii* was placed in the genus *Haplodontium* for many years, within which it is the type of subgenus *Ateleobryum* (Mitt.) Broth. (Wijk, Margadant & Florschütz, 1962). It was transferred from *Haplodontium* to *Brachymenium* by Shaw (1987), who commented that 'it certainly does not belong in the Mielichhoferioideae'.
269. Podpěra (1954) identified *Mielichhoferia paradoxa* with '*Bryum splachnoides* C. M.', i.e. *B. cellulare*. However, Shaw (1987) reidentified it as a distinct species known only from Macedonia that he placed in *Brachymenium*, an arrangement that was followed by Corley *et al.* (1991). The recent checklist of mosses of the former Yugoslavia (Pavletic, Martincic & Düll, 1999) continues to treat *Brachymenium paradoxum* erroneously as *Bryum cellulare*.
270. *Brachymenium philonotula* is known in our area only from Madeira (Rocha da Pena, 1928, leg. C. Barreto, S). According to Ochi (1972) it is perhaps conspecific with *B. exile* Dozy & Molk.
271. *Bryum pamirense* H.Philib. *ex* Broth. was reported new for Europe from Komi Republic in northern Russia (Zheleznova & Shubina, 1998). However, Ignatov & Afonina (1992) marked it with ?, to denote a 'particularly poorly known and putatively ill-defined species'. *Bryum pamirense* is apparently close to *B. savicziae* and *B. uliginosum* (Savicz-Ljubitzkaja & Smirnova, 1970), but differs from both of these in being synoicous rather than autoicous. Like *B. savicziae*, it has the cilia of the endostome well developed and appendiculate, whereas *B. uliginosum* has short cilia. It might be a form of *B. uliginosum* or possibly a hybrid.
272. *Bryum savicziae* Schljakov was described from the Kola peninsula in Russia in 1951 but overlooked by *Index Muscorum* (Wijk, Margadant & Florschütz, 1959, 1969). It is known only from the type-locality. It resembles *B. uliginosum* but has the cilia of the endostome well developed and appendiculate. Spore sizes of 19–31 μm given by Savicz-Ljubitzkaja & Smirnova (1970) seem rather variable and perhaps this suggests a hybrid is involved. Ignatov & Afonina (1992) also reported *B. ekstamii* L.I.Savicz, *B. labradorense* H.Philib., *B. umbratum* I.Hagen and *B. zemliae* Arnell & Jaderh. from the north of European Russia. These little-known species require further study.
273. *Bryum vermigerum* Arnell & C.E.O.Jensen was discovered at Hardanger, Norway in 1915 and 1916; it is otherwise known only by a recent report from Iceland. *Bryum vermigerum* was treated as a valid species by Nyholm (1993) and its combination of characters is undoubtedly different from that in any other European *Bryum* species. Nevertheless, Nyholm reported an extraordinarily wide range of spore sizes (10–20 μm) and, although one capsule examined by Holyoak (at S) contained spores of less variable size (10–14 μm), these included a proportion of small shrunken and presumably abortive spores. The rarity of *B. vermigerum*, its peculiar characters and the variable and sometimes abortive spores may suggest that an interspecific hybrid is involved.
274. *Bryum colombii* Meyl. and *B. mesodon* J.J.Amann are listed in the current Swiss list http://www.bryolich.ch/, but their identity is uncertain. *Bryum murmanicum* Broth. is on the Red List for the Murmansk Oblast of Russia as Data Deficient; its identity is also uncertain. *Bryum geheebii* Müll.Hal. was treated as probably a synonym of *B. alpinum* by Corley *et al.* (1981), as a species by Düll (1985), but very doubtful by Düll (1992); its identity is uncertain. The identity of *B. teres* Lindb. is also uncertain; it was treated by Düll (1985) as a synonym of *B. nitidulum* (here treated as a synonym of *B. intermedium*), but this synonymy was questioned by Nyholm (1993).
275. *Bryum gerwigii* (Müll.Hal.) Limpr. is known from its type-locality on limestone rocks above the Rheinfalles near Schaffhausen in Switzerland and from a few other reports from central Europe. As with other submerged *Bryum*, it is apparently so greatly modified by growth in water (and perhaps by low light levels) that it is difficult to judge which species was its immediate progenitor. This uncertainty provides insufficient reason for treating it as a valid species. *Bryum gemmiparum* seems closest in view of the leaf shape, occurrence of bulbils and the habitat.

276. Crundwell (1970) recognized the widespread synoicous forms of *Bryum algovicum* as var. *rutheanum* and the less common autoicous ones as var. *algovicum* (of which he treated var. *compactum* as a synonym). Unpublished studies by Holyoak suggest that autoicous plants appear to occur mainly if not entirely on high ground in the Alps, whereas synoicous plants occur throughout the lowlands, from central Europe north to Svalbard. The autoicous plants are often small and densely tufted, they sometimes have narrow capsules, and the endostome processes have narrow perforations. They might merit treatment as a separate species rather than merely as a variety.
277. *Bryum apiculatum* has a Pantropical range extending into temperate areas, with a single confirmed record in our region, from Tenerife (Ochi, 1972). The synonymy of *B. apiculatum* follows Ochi (1994).
278. Taxonomic treatment of several *Bryum* species follows Holyoak (2004).
279. *Bryum veronense* was treated as a subspecies of *B. argenteum* by Podpěra (1954) and Urmi (1987), as 'a weak species' by Düll (1992) who noted that verification is needed for most specimens, and as a distinct species allied to *B. argenteum* by Nyholm (1993). Some of the material referred to *B. veronense* is a modified form of *B. argenteum*, including plants with a proportion of achlorophyllose leaf tips that undoubtedly intergrade with that species, and otherwise typical *B. veronense* may have the papillose rhizoids of *B. argenteum*. However, other material placed as *B. veronense* in herbaria differs in various respects and may comprise similarly reduced, rather featureless, modified forms of other *Bryum* species, e.g. diminutive *B. pallens*.
280. Longton (1981) studied intraspecific variation in morphology and physiology of *Bryum argenteum* on a global scale by means of cultures grown on agar under standardized laboratory conditions. He established that var. *lanatum* is of doubtful taxonomic value because the excurrent nerve was not maintained in cultivation by clones originating in Canada and Hawaii. Ochi (1994) also noted 'gradations with the typical variety'. Nevertheless, *lanatum* was treated as a distinct species by Frahm (2002) and Spence & Ramsay (2002), on the basis of its longer acuminate leaf point, excurrent nerve and differing habitat preferences, but without any mention of Longton's detailed study. Unless better evidence for the genetic distinctness of *lanatum* can be found it should be dismissed as an inconstant form of *B. argenteum*.
281. *Bryum oblongum* and *B. blindii* are treated as separate species based on the detailed study by Shaw (1981).
282. *Bryum bornholmense* was redescribed by Crundwell & Whitehouse (2001).
283. Corley *et al.* (1981) suggested that *Bryum caespiticium* is probably an aggregate species, within which *B. comense* and *B. kunzei* may be good segregates. The latter is treated as a valid species here, but the case for maintaining *B. comense* appears weak. Although Düll (1985) listed *B. comense* as a species, he later (Düll, 1992) expressed doubt. Nyholm (1993) treated it as a synonym of *B. caespiticium*, as we do here.
284. Demaret & Wilczek (1982) examined the types of *B. canariense* and *B. provinciale* and concluded that they represented different species, but Corley *et al.* (1991) did not follow them because 'their work was based too rigidly on the study of types alone'. Studies by Holyoak support the conclusions of Ochi (1972), who noted that 'The form called *B. provinciale* is synoicous, but there are also dioicous plants which have no other clear-cut differences from such synoicous ones. These two forms should be better included in a single taxon'.
285. *Bryum caucasicum* is known in Europe only from the holotype from the Caucasus (S). It was transferred from *Mielichhoferia* to *Bryum* by Cox & Hedderson (2003).
286. *Bryum demaretianum* was described from Belgium by Arts (1992).
287. Treatment of the *Bryum bicolor* complex follows Holyoak (2003), who described *B. dyffrynense* as a new species from Britain.
288. *Bryum kunzei*, *Pohlia acuminata* and *P. polymorpha* were described by Hornschuch (1819), not by Hoppe & Hornschuch as commonly stated.
289. *Bryum miniatum* is a predominantly North American species known in Europe only from the Faeroe Islands.
290. *Bryum minii* was mainly overlooked until the paper by Sérgio *et al.* (1999).
291. *Bryum muehlenbeckii* is probably best regarded as a form of *B. alpinum* that grows where intermittently submerged in cold water, since a substantial proportion of European specimens intergrade with that species (Holyoak, unpublished). Some specimens have the characteristic leaves of both *B. muehlenbeckii* and *B. alpinum* on different parts of the same stem, apparently as a result of growth under wet or dry conditions, respectively.
292. *Bryum neodamense* is almost certainly a recurrent form of *B. pseudotriquetrum*, since intermediate plants occur intermixed with most populations of *neodamense*, often in large numbers (Holyoak, in preparation). Occurrence of the *neodamense* morphotype appears to be closely associated with intermittent flooding by hard water, most often on lake shores, but also in basic fens and dune-slacks. Detailed morphological analyses and molecular studies have been carried out (Holyoak & Hedenäs, in preparation).
293. *Bryum aeneum* was later emended to *B. oeneum*; see Wijk *et al.* (1959).
294. Zolotov (2000) treats the polyoicous (partly synoicous) *B. lonchocaulon* as a species distinct from the autoicous *B. pallescens*. However, he examined few

autoicous specimens and the differences he reported from *B. lonchocaulon* (other than in sexuality) appear inconstant in material from Britain.

295. *Bryum bimum* may merit species rank since it differs from *B. pseudotriquetrum* in being synoicous rather than autoicous, perhaps in having twice as many chromosomes (Smith, 2004), and in average dimensions of the leaf lamina cells and thickness of their cell walls (Demaret & Empain, 1985; Zolotov, 2000). However, they apparently do not differ much, if at all, in ranges, frequency or ecology, and preliminary molecular data (Hedenäs, pers. comm. to Holyoak) suggest they are very close.
296. *Bryum salinum* differs from *B. archangelicum* in only a few characters; a few intermediate specimens are known.
297. *Bryum schleicheri* author citation follows Geissler (1985).
298. Wijk *et al.* (1959) cited the original description of *Bryum torquescens* as Bruch ex De Not., *Syllab. Musc.*, no. 163, 1838. Syed (1973) found this reference to be wrong and he discounted '*Fl. Sard. Exs.*, 1828', given by other authors because he suspected it is a *nomen nudum*. The original description is therefore taken as that by Bruch & Schimper (*Bryol. Eur.*, 4 p. 119, pl. 20, 1839 (fasc. 6–9, *Mon.*, p. 49, pl. 20)) partly because this was the earliest description found by Syed and partly because they refer to it as 'Diese neue Art'.
299. Arts, Crundwell & Whitehouse (1995) showed that *Bryum pyriferum* described from Tenerife is conspecific with *B. valparaisense*, which was originally described from Chile but is now also known from N. America, Africa and Portugal.
300. Hedwig (1801) used the spelling *zierii* twice, but the name *Bryum zierii* commemorates John Zier as was pointed out by Crum & Anderson (1981). More recent authors who amend it to *zieri* are therefore correcting it according to Article 60.11 of the *International Code* (Greuter *et al.*, 2000).
301. Touw (1984) gave reasons for rejecting the name *Rhodobryum spathulatum* in favour of *R. ontariense*.
302. The large family Mniaceae of Goffinet & Buck (2004) is here divided following Koponen (1988) into the three families traditionally included in Mniaceae and the remainder, for which the only available name is Mielichhoferiaceae.
303. *Mielichhoferia elongata* is often treated as a synonym or variety of *M. mielichhoferiana*, but according to Shaw (2000a), it is in reality a cryptic species.
304. *Pohlia ramannii* Warnst. is recorded from the territory that was formerly in Finland and now in Russia (Söderström, 1998). It is not mentioned by Ignatov & Afonina (1992) and is treated here as doubtful. *Webera luisieri* Dixon and *W. maderensis* Dixon & Luisier, listed by Eggers (1982), are obscure taxa whose identity is uncertain.
305. Sections of *Pohlia* are based on Shaw (1984), except that we follow Smith (2004) in placing *P. crudoides* in section *Pohlia* and *P. flexuosa* in section *Cacodon*.
306. *Pohlia bolanderi* was found in the Sierra Nevada, new for Europe (Rams *et al.*, 2004).
307. *Pohlia ambigua* was described from Austria but remains a poorly known taxon. According to Shaw (1982) it is a form of *P. elongata*. It is autoicous and is therefore assigned to var. *acuminata*.
308. Species limits in the *Pohlia nutans* group require further elucidation. Köckinger, Kučera & Stebel (2005) studied *P. schimperi* and established that the only really stable character separating it from *P. nutans* is its red coloration; they accordingly gave it subspecies rank and synonymized it with *P. nutans* var. *purpurascens*. *Pohlia marchica* Osterwald was described from near Berlin and subsequently collected on Bornholm. It has not been found for many years, and is signified by Nyholm (1993) as very close to *P. schimperi*. *Pohlia turonensis* J.M.Couderc & Guédès, nom. inval. was described from France. It is a close relative of *P. nutans* and has not subsequently been validated.
309. *Pohlia saprophila*, a mainly Asian species, is reported from the Komi Republic, Russia (Zheleznova, 1994). It may prove to be a dioicous race of *P. elongata*, but needs further study.
310. For the synonymy of *Pohlia flexuosa* see Townsend (1995).
311. Smith (2004) recognized two varieties of *Pohlia flexuosa* in Europe, namely var. *flexuosa* and var. *pseudomuyldermansii* nom. nud. (*P. muyldermansii* var. *pseudomuyldermansii* Arts, Nordhorn-Richter & A.J.E.Sm.). Townsend (1995) had noted that there is continuous variation in bulbil morphology in Nepal and India, and argued that the varieties should therefore be treated as synonyms. He hypothesized that there might be only two clones in Europe, with var. *muyldermansii* possibly a recent introduction. However Smith (pers. comm. to Hill) is of the opinion that in Europe there has been differentiation into two morphologically and ecologically distinct groups of plants. In view of the distribution of var. *pseudomuyldermansii* (Austria, British Isles and Switzerland) it seems unlikely that the populations concerned represent a single clone. The habitat of the varieties appears to be markedly different in Europe. For these reasons, Smith (above) makes the new combination *P. flexuosa* var. *pseudomuyldermansii*.
312. *Pohlia tundrae* is reported from Central Europe (Düll, 1991, 1992; Müller, 2004).
313. *Mnium lycopodioides* is treated here as a full synonym of *M. ambiguum* following Koponen (1994).
314. There are a number of records of *Trachycystis ussuriensis* in the Russian Caucasus, e.g. Kharzivov *et al.* (2004).

315. *Plagiomnium curvatulum* is treated as a (rather cryptic) species distinct from *P. medium* on the basis of a genetic study by Wyatt, Odrzykoski & Stoneburner (1993).
316. *Plagiomnium undulatum* var. *madeirense* was described from Madeira by Koponen & Sérgio (2001).
317. According to Ochyra & Broughton (2004), *Orthodontium australe* is a synonym of *O. lineare*.
318. *Leptotheca gaudichaudii* is a New Zealand species that has been introduced to a garden in Ireland (Smith, 2004). It is not at present known in the wild in Europe.
319. *Calomnion complanatum* is an Australasian species that has been introduced to a garden in Ireland (Smith, 2004). It is not at present known in the wild in Europe.
320. According to Pfeiffer *et al.* (2000), *Hypopterygium tamarisci* is a variable and widely distributed species, which includes *H. muelleri*, introduced to Portugal from the Southern Hemisphere. We follow Sérgio & Carvalho (2003) in using the name *H. tamarisci*.
321. *Achrophyllum dentatum* is an austral species that has been introduced to a garden in England (Smith, 2004). It is not at present known in the wild in Europe.
322. *Daltonia stenophylla* is reported from Azores by Sjögren (2001) and Frahm (2004). According to Sjögren, Azores records attributed to *D. splachnoides* are actually *D. stenophylla*; this had been suggested to him by R. Schumacker and confirmed by H.A. Crum.
323. The species epithet of *Cyclodictyon laetevirens* was originally hyphenated as '*laete-virens*'. This is corrected here to '*laetevirens*' in accordance with Article 60.9 of the *International Code* (Greuter *et al.*, 2000).
324. The taxonomy of *Fontinalis antipyretica* is poorly understood and is further complicated by the startling results of recent phylogenetic studies using molecular methods (Shaw & Allen, 2000; Shaw, 2001). These show that European *F. antipyretica* is more closely related to the European endemic *F. squamosa* than to American *F. antipyretica*, which is morphologically indistinguishable from the European species. The subspecies retained here are recognized as distinct in several European countries, but they may be merely ecotypes that have evolved in different locations to suit similar selective pressures. Many other infraspecific taxa are not included in the main list. Recent European checklists have included subsp. *lachenaudii* (Cardot) Podp., subsp. *sparsifolia* (Limpr.) Kindb., var. *cymbifolia* W.E.Nicholson, and var. *gigantea* (Sull.) Sull.
325. *Fontinalis antipyretica* subsp. *bryhnii* is mapped as a species, *F. bryhnii*, by Söderström (1996), but is treated with great scepticism by Nyholm (1960) and signified as a possible hybrid by P. Martiny in Stewart (1995). In view of the taxonomic difficulties in the *F. antipyretica* aggregate, *F. bryhnii* is retained here only as a subspecies.
326. *Fontinalis dichelymoides* is recognized as a species in recent lists from Fennoscandia, e.g. Söderström (1996).
327. Generic concepts in Amblystegiaceae and Calliergonaceae mostly follow Vanderpoorten *et al.* (2002). *Hygroamblystegium* is separated from *Amblystegium* according to the results of Vanderpoorten *et al.* (2003) and *Serpoleskea* is retained in *Amblystegium*. *Hygrohypnum* is not monophyletic, but the genus is retained in its traditional sense awaiting ongoing studies regarding the relationships of its species. The positions of *Conardia*, *Sanionia* and *Tomentypnum* could not be decided by Vanderpoorten *et al.* (2002), and these genera are retained in the Amblystegiaceae until further studies have been made.
328. *Campylium laxifolium* was described from northern Sweden by Engelmark & Hedenäs (1990 [1992]).
329. Vanderpoorten (2004) has argued that the four European *Hygroamblystegium* species should be synonymized as *H. varium*. Further work is needed before making changes.
330. *Hygroamblystegium varium* is an aptly named species in a difficult genus. There is evidence that the *Hygroamblystegium* species recognized here are not monophyletic (Vanderpoorten, Cox & Shaw, 2004).
331. *Hygrohypnum* as circumscribed here is known to comprise heterogeneous elements, probably from more than one family. *Ochyraea tatrensis* would come within this circumscription, but a new combination is not made, pending a full revision of the group. According to Frahm (2005a), *O. tatrensis* is a mutant of *Hygrohypnum smithii*, but they are superficially very different and *H. smithii* was present at only one of the *O. tatrensis* sites.
332. The type of *Pictus scoticus* has been examined by Ignatov and others (pers. comm.), who consider it to be a form of *Hygrohypnum luridum*. This view is followed here.
333. *Leptodictyum kurdicum* (Schiffn.) Broth. is listed for Turkey by Kürschner & Erdağ (2005).
334. *Palustriella pluristratosa* was described from Valais, Switzerland (Stech & Frahm, 2001). However, in a later publication Frahm (2005a) signifies that *P. pluristratosa* may be a somatic mutation of *P. falcata*.
335. *Pseudocalliergon angustifolium* was described from Sweden by Hedenäs (1990 [1992]).
336. The high-arctic *Pseudocalliergon brevifolium* was transferred to *Pseudocalliergon* and recognized as a species by Hedenäs (1990 [1992]).
337. *Calliergon orbiculare-cordatum* ('*orbicularicordatum*') (Renauld & Cardot) Broth. was listed by Corley *et al.* (1981) but the specimens are *C. richardsonii* (Söderström, 1996).
338. For observations on *Calliergon richardsonii*, see Hedenäs (1993b).

339. *Warnstorfia procera* is recognized as a species following Hedenäs (1993b).
340. The circumscription of Leskeaceae and Hypnaceae has been challenged by Gardiner *et al*. (2005). We recognize the merit of their proposals, which would necessitate substantial nomenclatural change. We prefer not to make the changes until a more general overview of families in Hypnales is available.
341. *Lescuraea secunda* is reported from European Russia in the Urals (Ignatov & Ignatova, 2004).
342. *Lindbergia brachyptera*, known from the Russian Caucasus, was included by Podpěra (1954) but excluded by Corley *et al*. (1981) because the Caucasus was treated by them as part of Asia.
343. *Pseudoleskea* was reinstated as a genus distinct from *Lescuraea* by Corley & Crundwell (1991), on the basis of peristome differences emphasized by Crum & Anderson (1981). The peristome characters now seem less important, and Ignatov & Ignatova (2004) and Söderström (1998) included *Pseudoleskea* in *Lescuraea*. A conservative position is adopted here, pending more detailed analysis by molecular methods.
344. *Pseudoleskea brachyclados* (Schwägr.) Kindb., originally described from Austria, is listed for Turkey by Kürschner & Erdağ (2005). According to Podpěra (1954) it is a variety of *P. radicosa* (but if so it should have priority at species rank). Other European authors have treated it as a variety or synonym of *P. incurvata*.
345. We follow Wilson & Norris (1989) in including *Leskeella* (Limpr.) Loeske 1903 in *Pseudoleskeella* Kindb. 1897.
346. *Leskeella incrassata* type specimen has been examined by Ignatov; it is very close to *Pseudoleskeella nervosa* and, if recognized as a species, will prove to be common in southern Europe. For the time being the two are treated as synonyms.
347. *Pseudoleskeella rupestris* was lectotypified and synonymized with *P. sibirica* by Hedenäs & Söderström (1991).
348. In Thuidiaceae, the generic concepts of Touw (2001a) are adopted here. In particular *Pelekium* Mitt. (1868) emend. Touw is treated as a synonym of *Cyrto-hypnum* (Hampe) Hampe & Lorentz (1869).
349. *Pelekium atlanticum* was described from Madeira as *Thuidium atlanticum* (Hedenäs, 1991). The name *Pelekium atlanticum* (Hedenäs) Touw appears in Touw (2001a), p. 191, but he failed to validate the name by a combination, commenting that *P. atlanticum* is doubtfully distinct from the American *P. muricatulum* (Hampe) Touw. On the other hand, Touw was not prepared to treat *P. atlanticum* as a synonym of *P. muricatulum*. Hedenäs makes the necessary combination above.
350. For the synonymy of *Cyrto-hypnum montei* with *Thuidiopsis sparsa*, see Touw (2001a, p. 205). Touw notes that *T. sparsa* is known only from a former park area in Madeira, and suggests that it is an alien, introduced with ornamental plants.
351. *Thuidium assimile* has priority over *T. philibertii*, based on the large-scale revision of Touw (2001b). As noted by Touw, *T. assimile* belongs to a complex of poorly defined taxa including *T. delicatulum*. Observations by Mrs C.T. van Dorp on European specimens support the recognition of two weakly distinguished species, rather than treating *T. assimile* as a variety of *T. delicatulum*.
352. Subfamilial and generic concepts in Brachytheciaceae mostly follow Ignatov & Huttunen (2002). These authors overlooked the names Helicodontioideae M.Fleisch. and Eurhynchioideae Milde, and superfluously described these subfamilies as Rhynchostegielloideae and Rhynchostegioideae, respectively.
353. For the taxonomic status of *Thamnium cossyrense* Bott. var. *cossyrense* and var. *melitense* Bott. see Mastracci (2001).
354. *Platyhypnidium grolleanum* was described from Czech Republic by Ochyra & Bednarek-Ochyra (1999).
355. *Platyhypnidium mutatum* was described by Ochyra & Vanderpoorten (1999); molecular studies did not find differences between this species and *P. riparioides* (Stech & Frahm, 1999). Frahm (2005a) asserts that it is a somatic mutant of *P. riparioides*.
356. *Platyhypnidium torrenticola* was described as *Gradsteinia torrenticola* from the Canary Islands by Ochyra, Schmidt & Bultmann (1998) and subsequently transferred to the genus *Platyhypnidium*.
357. The status of *Rhynchostegium arcticum* was reevaluated by Ignatov & Huttunen (2002).
358. *Rhynchostegium surrectum* was synonymized with *R. confertum* by Hedenäs (1992b).
359. *Brachythecium cardotii* was synonymized with *Rhynchostegium megapolitanum* by Hedenäs (1992b).
360. *Barbella strongylensis* was transferred to *Rhynchostegium* by Buck & Privitera (1999).
361. *Clasmatodon parvulus* (Hampe) Sull. is excluded. Heras, Infante & Buck (2006) have found that every Spanish specimen named as *Clasmatodon* was *Pseudoleskeella tectorum*. An old German record from 1851 is poorly localized (Müller, 2004) and is unlikely to be *C. parvulus*.
362. *Nobregaea latinervis* is a morphologically very peculiar species known from a single locality in Madeira; it was described by Hedenäs (1992b).
363. Synonymy of *Helicodontium capillare* follows Cortini Pedrotti (2006 [2005]), who indicates that a specimen of the supposedly endemic *H. italicum* had been identified as *H. capillare* by W.R. Buck.
364. *Rhynchostegiella bourgaeana* is treated by Dirkse & Bouman (1995a) as an endemic of the Canary Islands. On the other hand, Corley *et al.* (1991) and Hedenäs (1992b) regarded it as a synonym of *R. tenella*.

365. The status of *Rhynchostegiella litorea* and its differentiation from *R. tenella* are discussed by Dirkse & Bouman (1995a).
366. *Rhynchostegiella macilenta*, omitted by Corley *et al.* (1981) and Corley & Crundwell (1991), is treated as a full species and illustrated by Dirkse & Bouman (1995a).
367. *Rhynchostegiella teesdalei* and *R. jacquinii* were synonymized with *R. teneriffae* by Dirkse & Bouman (1995a).
368. According to Ignatov & Huttunen (2002), *Rhynchostegiella tenuicaulis* does not belong to Brachytheciaceae and is more likely a member of Amblystegiaceae, but more studies are needed.
369. *Rhynchostegiella trichophylla* was described from the Canary Islands by Dirkse & Bouman (1995a).
370. Molecular data do not confirm the traditional view on the identity of European *Bryhnia scabrida* and North American *B. novae-angliae*, so the resurrection of the former name was suggested by Ignatov & Huttunen (2002).
371. Popov *et al.* (2000) showed that *Myuroclada maximowiczii* was reported from Europe on the basis of a misidentification and excluded it from the European flora, but later Virchenko & Babenko (2001) found it as an alien plant in the grounds of the University Botanical Garden, Rostov-na-Donu, southern Russia.
372. The status of *Brachythecium glaciale* var. *dovrense* needs further study. The taxon may deserve recognition as a species.
373. *Brachythecium umbilicatum* Jur. & Milde is listed for Turkey by Kürschner & Erdağ (2005).
374. *Brachythecium ryanii* was synonymized with *B. campestre* by Hedenäs (1996).
375. *Brachythecium rotaeanum* and *B. capillaceum* are treated as synonyms, as in most recent European checklists. However, their identity needs confirmation.
376. *Brachythecium coruscum* was recognized as a synonym of *B. groenlandicum* by Nyholm (1965) but the name was omitted by Corley *et al.* (1981).
377. *Brachythecium erythrorrhizon* subsp. *asiaticum* was described from the Altai by Ignatov (1998), and is known from the Urals.
378. A typographic error in Wijk *et al.* (1962) makes it seem that *Hypnum thedenii* (Schimp.) C.Hartm. (1854) (not Hartm. 1845 as indicated) was published before *Brachythecium thedenii* Schimp. (1853).
379. Robinson & Ignatov (1997) showed that *Brachythecium laetum* is the correct name for the species often called *B. oxycladon*. In eastern North America this species is very common. It is reported from various parts of Europe, but confirmation of the identity of European plants and the American one is needed.
380. *Brachythecium percurrens* was described from Madeira by Hedenäs (1992a). Unpublished molecular data by Vanderpoorten *et al.* and Huttunen *et al.* suggest that it belongs to subfamily Helicodontioideae, and may be a member of *Oxyrrhynchium*.
381. *Brachythecium rutabulum* var. *atlanticum* was described from Madeira by Hedenäs (1992a).
382. *Brachythecium appleyardiae* is a synonym of *Scleropodium cespitans* (Blockeel *et al.*, 2005).
383. *Brachythecium salteri* was synonymized with *B. dieckii* by Hedenäs (1993a).
384. The combinations *Brachytheciastrum fendleri* and *B. olympicum* were made by Vanderpoorten *et al.* (2005).
385. There is still much uncertainty about the correct circumscription of Hypnaceae and related families. The classification adopted here is provisional, and we are well aware that it will be changed in future.
386. The placement of *Hypnum lindbergii* and *H. pratense* in *Calliergonella* and *Breidleria*, respectively, follows Hedenäs (1990).
387. The circumscription of *Campylophyllum* is that of Hedenäs (1997).
388. *Campylophyllum hispidulum* (Brid.) Hedenäs is an American species not found in Europe (Crundwell & Nyholm, 1962).
389. *Ctenidium molluscum* is a very variable species, for which numerous infraspecific taxa have been described. The following varieties are recognized in more than one European country: var. *condensatum* (Schimp.) E.Britton, var. *molluscum*, and var. *robustum* Boulay. The genetic basis of this variation requires further elucidation.
390. *Hypnum cupressiforme* has such a complex pattern of variation that the delimitation of infraspecific taxa remains highly controversial. The varieties in the main list are those recognized in current checklists of at least four European countries. Other names, some of which may have priority over more popular ones, are var. *brevisetum* Schimp., var. *imbricatum* Boulay, var. *julaceum* Brid., var. *tectorum* Brid., var. *tenue* Hook. & Taylor, and var. *tectorum* (Brid.) J.-P.Frahm.
391. *Hypnum heseleri* was described from Saarland in Germany and two localities in the Netherlands (Ando & Higuchi, 1994). van Zanten & Hofman (1994) grew spores from capsules of *H. heseleri* and demonstrated that the progeny were about 50% *H. heseleri* and 50% *H. cupressiforme*. Allozyme-electrophoresis provided further convincing evidence that *H. heseleri* is a locally derived mutant of *H. cupressiforme*. Accordingly, *H. heseleri* is treated as a variety of *H. cupressiforme* in a new combination, made above.
392. *Hypnum aemulans* Breidl. ex Limpr., originally described from Austria, is treated as a good species by Ando (1994) but is listed without comment as a synonym of *H. hamulosum* by European authors (Koperski *et al.*, 2000; Ulvinen, Syrjänen & Anttila, 2002). European occurrences need further investigation.

393. *Hypnum holmenii* was described from Canada, Greenland and Finland (Ando, 1994), and has been found in the Arkhangelsk Oblast of Russia (Ignatov & Ignatova, 2004).
394. *Hypnum subimponens* is reported from European Russia by Afonina (2004).
395. *Vesicularia sphaerocarpa* (A.Jaeger) Broth. was reported from Malta by Reimers in 1934 on the basis of a 19th century collection by Schweinfurth. The specimen (B) was destroyed in the Second World War, but Reimers in Bizot & Potier de la Varde (1952) was confident that it belonged to the taxon described by these authors as *V. reimersiana*. According to Corley *et al.* (1981), *V. sphaerocarpa* is a synonym of *V. galerulata* (Duby) Broth. Düll (1985) listed the Maltese plant as *V. reimersiana*, but also asserted that *V. galerulata* had been found in mainland Italy. Corley & Crundwell (1991) accordingly added *V. reimersiana* to the list, retaining *V. galerulata*. However, no species of *Vesicularia* is listed for Italy by Cortini Pedrotti (2006 [2005]). It seems likely that *V. galerulata* has never been found in Europe.
396. Smith (2004) treated *Heterocladium flaccidum* as a species, but provided only a nomen nudum. He has made the necessary new combination above for this checklist, noting (pers. comm. to Hill) that consultation with a number of British field bryologists revealed that, with one exception, none had encountered intermediates between it and *H. heteropterum*.
397. *Heterocladium wulfsbergii* is discussed in detail by Crundwell & Smith (2000).
398. *Iwatsukiella leucotricha* was listed for Europe by Podpěra (1954) under the name *Habrodon leucotrichus* (Mitt.) Perss., with a locality in the southern Urals. It was omitted without comment by Corley *et al.* (1981), but is indicated from the European side of the Urals by Dierssen (2001) and Ignatov & Ignatova (2004).
399. Alpine and arctic forms of *Hylocomium splendens* have been variously treated. Var. *alpinum* Schlieph. ex Limpr. is mapped by Söderström (1996), but is doubted and treated as possibly a synonym of var. *obtusifolium* (Geh.) Paris by Koperski *et al.* (2000). Var. *obtusifolium* is commonly treated as a synonym of *H. alaskanum* (Lesq. & James) Austin, whose distinguishing characters have been shown by Ross *et al.* (2001) to be mainly under environmental rather than genetic control. It is not clear whether any of these forms is sufficiently distinct genetically to deserve taxonomic recognition.
400. *Herzogiella adscendens* (Lindb.) Z.Iwats. & W.B.Schofield has been reported from Svalbard (Corley & Crundwell, 1991; Düll, 1985), but the record was subsequently rejected (Frisvoll & Elvebakk, 1996).
401. *Myurella julacea* var. *ciliata* (Chal.) Ochyra & Bednarek-Ochyra (syn. *M. julacea* var. *scabrifolia* Lindb. ex Limpr.) is treated as distinct in some European countries, but intergrades completely with var. *julacea*. It is not recognized here.
402. *Orthothecium chryseon* is incorrectly listed as *O. chryseum* by Crosby *et al.* (1999). It was described as *Hypnum chryseon* by Schwägrichen (1804).
403. *Plagiothecium curvifolium* is sometimes treated as a variety (in Europe) or synonym (in North America) (Ireland, 2003) of *P. laetum*, to which it is undoubtedly very close. As a variety, its correct name is *P. laetum* var. *secundum*.
404. *Plagiothecium denticulatum* var. *undulatum* is treated in many European lists as a species, *P. ruthei*, but in North America merely as a synonym of *P. denticulatum* (Ireland, 2003). It is not clearly distinct from var. *denticulatum*, and we follow Ignatov & Ignatova (2004), Koperski *et al.* (2000) and Smith (2004) in treating it as a variety.
405. *Plagiothecium noricum* was described from the Pinzgau, Austria and was thought by Molendo (but not Limpricht) to intergrade with *P. neckeroideum*. Grims (1999) listed it but noted that Düll (1992) had thought it a weak species, possibly only a variety of *P. neckeroideum*. It is not recognized here.
406. *Plagiothecium succulentum* is a difficult taxon, intergrading on the one hand with *P. nemorale* (Hemeric, 1989) and on the other with *P. cavifolium* (Nyholm, 1965). It is also very close to *P. platyphyllum*. It is retained here, because it cannot satisfactorily be subordinated to any of these species without treating the whole group as a single, rather-broad species.
407. *Plagiothecium svalbardense* was described by Frisvoll in Frisvoll & Elvebakk (1996).
408. *Pseudotaxiphyllum laetevirens* was raised to species rank by Hedenäs (1992a).
409. *Entodon challengeri* occurs in European Russia (Ignatov & Ignatova, 2004) and is the correct name for the plant formerly known as *E. compressus* (Iwatsuki & Tan, 2001).
410. According to Ochyra & Ireland (2004), *Isopterygium tenerum* is absent from Europe but present in sub-Saharan Africa. However, Schumacker in Stewart (1995), Cortini Pedrotti (2006 [2005]) and Gabriel *et al.* (2005) list it for Italy and the Azores. *Isopterygium bottinii* was excluded from *Sematophyllum* by Guerra & Gallego (2005), and is included here in *I. tenerum*.
411. *Hageniella micans*, previously known from Europe and North America, was synonymized with *H. pacifica* Broth., which occurs in China and Taiwan (Tan & Jia, 1999).
412. *Sematophyllum adnatum* was found in Italy, where it is thought to be an introduction from North America (Brusa in Blockeel *et al.*, 2000).

413. *Cryphaea lamyana* was transferred to the otherwise tropical and Australasian genus *Dendrocryphaea* by Rao (2001).
414. *Leucodon flagellaris* author citation is based on synonymy in Podpěra (1954).
415. *Leucodon pendulus*, whose main distribution is in eastern Asia, has been found in the Ivanovo Oblast NE of Moscow (Ignatov & Ignatova, 2004).
416. *Leucodon treleasei* was treated as a synonym of *L. canariensis* by Corley *et al.* (1981) but as a distinct species by Hedenäs (1992b).
417. *Homalia trichomanoides* author citation follows that in the *International Code* (Greuter *et al.*, 2000) Appendix IIIa, rather than Corley & Crundwell (1991).
418. The characters emphasized by Steere (1941) do not justify generic status for *Metaneckera*. There are, especially in Asia, several species of *Neckera* that have some or all of those chracters (J. Enroth, pers. obs.).
419. *Thamnobryum cataractarum* was described from England by Hodgetts & Blockeel (1992).
420. *Thamnobryum fernandesii* was described from Madeira by Sérgio (1981).
421. *Thamnobryum maderense*, signified by Hedenäs (1992b) as a good species, was reduced to a variety of *T. alopecurum* by Stech, Ros & Werner (2001) on the basis of molecular data. We are not fully convinced by their argument and prefer to retain *T. maderense* as a species for the time being.
422. *Thamnobryum neckeroides* was reported from Czech Republic, Germany and Italy by Mastracci (2003).
423. *Thamnobryum rudolphianum* was described from the Azores by Mastracci (2004).
424. The Madeiran endemic *Echinodium setigerum* was not mentioned by Corley *et al*. (1981) but was recognized as a good species by Churchill (1986).
425. *Cryptoleptodon longisetus* was omitted by Corley *et al*. (1981) but listed as *Leptodon longisetus* by Düll (1985). It was transferred to *Cryptoleptodon* by Enroth (1992).
426. Synonymy of *Isothecium algarvicum* follows Enroth & Hedenäs (1993).
427. According to Smith (2004), *Isothecium myosuroides* var. *brachythecioides* and *I. holtii*, although distinct in their typical expressions, are linked to *I. myosuroides* by intermediate forms.

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Taxonomic Additions and Changes: *Heterocladium flaccidum* (Schimp.) A.J.E.Sm., stat. et comb. nov. (*Heterocladium heteropterum* var. *flaccidum* Schimp.); *Hypnum cupressiforme* var. *heseleri* (Ando & Higuchi) M.O.Hill, stat. et comb. nov. (*Hypnum heseleri* Ando & Higuchi); *Pelekium atlanticum* (Hedenäs) Hedenäs, comb. nov. (*Thuidium atlanticu*m Hedenäs); *Pohlia flexuosa* var. *pseudomuyldermansii* (Arts, Nordhorn-Richter & A.J.E.Sm.) A.J.E.Sm., comb. nov. (*Pohlia muyldermansii* var. *pseudomuyldermansii* Arts, Nordhorn-Richter & A.J.E.Sm.); *Weissia* × *mittenii* (Bruch & Schimp.) Mitt. emend. A.J.E.Sm., stat. nov. (*Weissia mittenii* (Bruch & Schimp.) Mitt.).

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Accepted names are given in roman type. Synonyms and names mentioned only in the annotations are in italics. The numbers following accepted names and synonyms are those of the genus and species in the main list. For names appearing only in the annotations, the annotation number is given.

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