

The distribution of Hepaticae and Anthocerotae in Europe and Macaronesia — Update 1-427

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Abstract – Five years have passed since the last checklist with distributional data was published for European liverworts and hornworts. The present list updates the nomenclature, taxonomy and distribution, as well as Red List categories, for the liverworts and hornworts of Europe and Macaronesia.

checklist / red List / Europe / Macaronesia

A lot of information on taxonomy and distribution is scattered around in the literature and many reports are looked upon as of minor and local interest and thus published in local journals where they are hidden for a broader public. Regional checklists are therefore important tools to bring this information together and make it more readily available. Checklists are also useful for evaluation of conservation needs. However, different checklists use different taxonomy and nomenclature which make them difficult to compare (see e.g. Isaac *et al.*, 2004). A regional checklist is therefore also a good tool for harmonizing the nomenclature and taxonomy, a clear advantage for communication and comparisons.

Checklists do, however, have the built in problem that they are out of date already when printed as new data rapidly accumulates. To maintain their usefulness over a longer time, updates must be published regularly. In the five years that have passed since the publication of the last hepatic checklist with distributional data for Europe (Söderström *et al.*, 2002a) a lot of new information has been published, both on distribution and on taxonomy. This paper has three aims, to update the taxonomy (including species new for Europe), to update the distribution data and to update the Red List status in Europe. In this update we consider data published, and came to our notice, until April 2007. We also include some overlooked reports and correct some errors. These updates are in addition to the “notes added in proof” in the paper itself.

Views on the taxonomic status have changed for several taxa originally included. There are 5 species described since 2002 that occur in Europe and Macaronesia (4 of them described from the area) and 9 additional taxa are found

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Table 1. The nomenclatural changes necessary if the genus *Lophocolea* is included in *Chiloscyphus*.

<i>in Lophocolea</i>	<i>in Chiloscyphus</i>
<i>L. bidentata</i> (L.) Dumort.	<i>C. coadunatus</i> (Sw) J.J.Engel et R.M.Schust.
– var. <i>bidentata</i>	– var. <i>coadunatus</i>
– var. <i>rivularis</i> (Raddi) Warnst.	– var. <i>rivularis</i> (Raddi) Frisvoll <i>et al.</i>
<i>L. bispinosa</i> (Hook.f. et Taylor) Gottsche <i>et al.</i>	<i>C. bispinosus</i> (Hook.f. et Tayl.) J.J.Engel et R.M.Schust.
<i>L. brookwoodiana</i> Paton and Sheahan	not available
<i>L. fragrans</i> (Moris et De Not.) Gottsche <i>et al.</i>	<i>C. fragrans</i> (Moris et De Not.) J.J.Engel et R.M.Schust.
<i>L. heterophylla</i> (Schrad.) Dumort.	<i>C. profundus</i> (Nees) J.J.Engel et R.M.Schust.
<i>L. minor</i> Nees	<i>C. minor</i> (Nees) J.J.Engel et R.M.Schust.
<i>L. semiteres</i> (Lehm.) Mitt.	<i>C. semiteres</i> (Lehm.) Lehm. et Lindenb.

new to the area since 2002. In addition, there are several species that have been synonymised leading to name changes. We have generally accepted the new concepts, except in a few cases. In recent studies using molecular techniques (e.g. He-Nygren & Piippo, 2003; Hentschel *et al.*, 2006) the genus *Chiloscyphus* is an ingroup of *Lophocolea*. Although the results are convincing, the taxon sampling is rather small compared with the large number of species described in the group and we wait for further studies before making the necessary nomenclatural changes. The genus *Chiloscyphus* is older and in the event of uniting the two genera the names in Table 1 would become the correct ones for European taxa as currently understood.

The genera within the family Lophoziales are artificial and in need of a revision (see e.g. Davis, 2004; Yatsentyuk *et al.*, 2004; Roo *et al.*, 2007). *Barbilophozia* and *Anastrophyllum* are, e.g., more closely related to each other than to *Lophozia* s.str. and many of the segregates from *Lophozia* itself must be accepted as separate genera. However, none of these studies include a large enough proportion of the species to make us willing to make the necessary nomenclatural changes now, as it would require many new combinations that may prove erroneous or superfluous with more investigations.

In the new flora for the Nordic countries, Damsholt (2002a) recognized many taxa not included in our original distribution table and the taxonomy and nomenclature is partly different. We do not accept all his taxa and names.

Explorations around Europe and the world have led to an increased understanding of the distribution of European taxa. This includes both new reports from Europe and extensions of its range outside Europe. We have collected all relevant data that have come to our attention. In addition, we address some problems that were not solved in Söderström *et al.* (2002a).

Recently Serbia-Montenegro split up into two independent countries. We therefore provide a table with species reported for the respective country (Table 2). However, we keep the old code (Yu) for the Red List categories referring to both countries. The reports for Yugoslavia in Bischler (2004) refer obviously to the former extent of the country so we reject these reports for Serbia and Montenegro unless they are given in another source.

The checklist by Konstantinova *et al.* (1992) for the former Soviet Union includes many valuable reports, but their delimitations of regions are not the same as ours although some of their regions cover most part of one of our regions. The following translation of their provinces can be done: *Arc:Euro* to *Rn* although *Nz*

Table 2. Species reported from Serbia (Sb) and Montenegro (Me). Threat status in former Serbia-Montenegro (Yu) is after Sabovljević *et al.* (2004). Sources for reports of species not given in the checklist by Sabovljević (2000) are added

	<i>Yu</i>	<i>Sb</i>	<i>Me</i>	
ANTHOCEROTAE				
<i>Phymatoceros bulbiculosus</i>			●	
HEPATICAE				
<i>Anastrophyllum hellerianum</i>		●		
<i>A. minutum</i>	LR	●		
<i>Aneura pinguis</i>		●	●	
<i>Apometzgeria pubescens</i> var. <i>pubescens</i>		●	●	Me: Pichler (1940)
<i>Asterella lindenbergiana</i>			?	Me: Dragičević & Veljić (2006; cf. note 31)
<i>Athalamia hyalina</i>	CR		●	
<i>Barbilophozia attenuata</i>		●	–	
<i>B. barbata</i>		●		
<i>B. floerkei</i>	LR	●	●	Sb: Papp <i>et al.</i> (2004)
<i>B. hatcheri</i>	LR	●	●	
<i>B. lycopodioides</i>		●	●	
<i>Bazzania tricrenata</i> var. <i>tricrenata</i>	EN	●		
<i>B. trilobata</i>	EN	●		
– var. <i>trilobata</i>		r		
<i>Blasia pusilla</i>		●	●	
<i>Blepharostoma trichophyllum</i>		●	●	
– subsp. <i>trichophyllum</i>		r	r	
<i>Calypogeia azurea</i>		●	?	Me: Dragičević & Veljić (2006 ; cf. note 55)
<i>C. fissa</i> subsp. <i>fissa</i>	EN	●		Sb: Papp & Sabovljević (2002)
<i>C. integristipula</i> .	EN	●		Sb: Papp & Sabovljević (2002)
<i>C. muelleriana</i> subsp. <i>muelleriana</i>	CR	●		
<i>C. suecica</i>	EN	●		Sb: Papp & Sabovljević (2002)
<i>Cephalozia bicuspidata</i> .		●	●	Sb: Papp <i>et al.</i> (2004)
– var. <i>bicuspidata</i>		r	r	
<i>C. catenulata</i> subsp. <i>catenulata</i>	VU	●		Sb: Papp & Sabovljević (2002)
<i>C. connivens</i> subsp. <i>connivens</i>			?	Me: Dragičević & Veljić (2006 ; cf. note 66)
<i>C. lacunculata</i>	VU	●		
<i>C. lunulifolia</i>		●		Sb: Papp & Erzberger (2005)
<i>C. macounii</i>			?	Me: Dragičević & Veljić (2006 ; cf. note 72)
<i>C. pleniceps</i>			●	Me: Dragičević & Veljić (2006)
<i>Cephaloziella baumgartneri</i>			●	
<i>C. calyculata</i>	LR	●	–	Sb: cf. note 78
<i>C. divaricata</i>		●		Sb: Papp & Erzberger (2005)
– var. <i>divaricata</i>		r	r	
<i>C. rubella</i>	VU	●		
<i>C. stellulifera</i>	VU	●	●	Sb: Papp & Sabovljević (2001)
<i>C. turneri</i>	VU		●	
<i>Chiloscyphus pallescens</i> .		●	●	
– var. <i>pallescens</i>		r	r	
<i>C. polyanthos</i>		●	●	
– var. <i>polyanthos</i>		p	p	
– var. <i>rivularis</i>		p	p	
<i>Cololejeunea calcarea</i>		●	●	
<i>C. minutissima</i> subsp. <i>minutissima</i>	VU	l	l	Sb: Sabovljević & Natcheva (2006)

Table 2. Species reported from Serbia (Sb) and Montenegro (Me). Threat status in former Serbia-Montenegro (Yu) is after Sabovljević *et al.* (2004). Sources for reports of species not given in the checklist by Sabovljević (2000) are added (*continued*)

	<i>Yu</i>	<i>Sb</i>	<i>Me</i>	
<i>C. rossettiana</i>	VU	●	●	Sb: Papp & Sabovljević (2001)
<i>Conocephalum conicum</i> .		○	○	
<i>Corsinia coriandrina</i>			●	
<i>Diplophyllum albicans</i>		●		Sb: Papp & Erzberger (2005)
<i>D. obtusifolium</i>		●		
<i>Fossombronina angulosa</i>			●	Me: Dragičević & Veljić (2006)
<i>F. pusilla</i>		●		
<i>Frullania dilatata</i>		●	●	
<i>F. fragilifolia</i>	CR	●		
<i>F. tamarisci</i> subsp. <i>tamarisci</i>		●	●	
<i>Harpanthus scutatus</i>			?	Me: Dragičević & Veljić (2006 ; cf. note 152)
<i>Jamesoniella autumnalis</i> var. <i>autumnalis</i>		●	?	Sb: Papp & Erzberger (2005), Me: Dragičević & Veljić (2006 ; cf. note 159)
<i>Jungermannia atrovirens</i>		●	●	
<i>J. confertissima</i>		●		Sb: Sabovljević & Natcheva (2006)
<i>J. gracillima</i>	EN	●	—	Me: see note 168
<i>J. hyalina</i>		●		Sb: Papp & Erzberger (2005)
<i>J. leiantha</i>		●	●	Sb: Papp & Sabovljević (2002)
<i>J. obovata</i>		●		
<i>J. polaris</i>			●	
<i>J. pumila</i>			?	Me: Dragičević & Veljić (2006 ; see note 176)
<i>J. sphaerocarpa</i>		●		
<i>Leiocolea badensis</i> var. <i>badensis</i>	VU	●		
<i>L. bantriensis</i>	VU	●	●	Me: Dragičević & Veljić (2006)
<i>L. collaris</i>	VU	●	●	Sb: Papp & Erzberger (2005)
<i>L. heterocolpos</i>	VU	●	●	Sb: Sabovljević & Natcheva (2006)
– var. <i>heterocolpos</i>		r	r	
<i>L. turbinata</i>	VU	●	●	Sb: Papp & Erzberger (2005)
<i>Lejeunea cavifolia</i>		●	●	
<i>Lepidozia reptans</i>		●	●	
<i>Lophocolea bidentata</i> (L.) Dumort.		●	●	Me: Dragičević & Veljić (2006)
– var. <i>bidentata</i>		p		
– var. <i>rivularis</i>		p		
<i>L. heterophylla</i> subsp. <i>heterophylla</i>		●	●	
<i>L. minor</i> var. <i>minor</i>		●		
<i>Lophozia ascendens</i>	VU	●		Sb: Papp & Sabovljević (2002)
<i>L. bicrenata</i> var. <i>bicrenata</i>		●		Sb: Papp <i>et al.</i> (2004)
<i>L. excisa</i>		●	●	
– var. <i>excisa</i>		p	r	
<i>L. incisa</i>		●	●	
– var. <i>incisa</i>		r	r	
<i>L. longidens</i>		●		Sb: Papp & Erzberger (2005)
– subsp. <i>longidens</i>		r		
<i>L. longiflora</i>		●	?	Sb: Papp & Erzberger (2005), Me: Dragičević & Veljić (2006; cf. note 222)
<i>L. obtusa</i>		●		
<i>L. propagulifera</i>		—		Sb: see note 219

Table 2. Species reported from Serbia (Sb) and Montenegro (Me). Threat status in former Serbia-Montenegro (Yu) is after Sabovljević *et al.* (2004). Sources for reports of species not given in the checklist by Sabovljević (2000) are added (*continued*)

	Yu	Sb	Me
<i>L. sudetica</i>		●	Sb: Papp & Erzberger (2005)
– var. <i>sudetica</i>		r	
<i>L. ventricosa</i>		●	●
– var. <i>ventricosa</i>		p	r
<i>Lunularia cruciata</i> subsp. <i>cruciata</i>		●	●
<i>Mannia androgyna</i>	CR		●
<i>M. fragrans</i> subsp. <i>fragrans</i>	EN	●	
<i>M. triandra</i>	LR	–	● Sb: cf. note 242
<i>Marchantia paleacea</i> subsp. <i>paleacea</i>	VU	●	●
<i>M. polymorpha</i>		●	●
– subsp. <i>montivagans</i>		p	p Sb: Papp & Erzberger (2005)
– subsp. <i>polymorpha</i>		p	p Me: Kürschner & Parolly (1997)
– subsp. <i>ruderalis</i>		p	p
<i>Marsupella funckii</i>	VU	●	
<i>Metzgeria conjugata</i>		●	●
<i>M. furcata</i>		●	●
<i>M. temperata</i>		●	Sb: Papp & Sabovljević (2002)
<i>M. violacea</i>			● Me: Pichler (1940)
<i>Microlejeunea ulicina</i>		●	● Sabovljević & Natcheva (2006)
<i>Mylia taylorii</i>		●	Sabovljević (1999)
<i>Nardia compressa</i>		●	
<i>Nardia scalaris</i> subsp. <i>scalaris</i>		●	
<i>Nowellia curvifolia</i>	VU	●	● Sb: Papp & Sabovljević (2002)
<i>Oxymitra incrassata</i>			●
<i>Pedinophyllum interruptum</i>		●	●
<i>Pellia endiviifolia</i> subsp. <i>endiviifolia</i>		●	●
<i>P. epiphylla</i>		●	● Me: Pavletić & Pulević (1975)
– subsp. <i>epiphylla</i>		r	r
<i>P. neesiana</i> subsp. <i>neesiana</i>		●	? Me: Dragičević & Veljić (2006; cf. note 290)
<i>Plagiochasma rupestre</i> var. <i>rupestre</i>			●
<i>Plagiochila asplenioides</i>		●	●
<i>Plagiochila porelloides</i>		●	●
– var. <i>porelloides</i>		p	p
<i>Porella arboris-vitae</i> subsp. <i>arboris-vitae</i>		●	● Me: Dragicević <i>et al.</i> (2003)
<i>P. baueri</i>	DD	●	● Me: Dragičević & Veljić (2006)
<i>P. cordaeana</i>		●	●
<i>P. obtusata</i> var. <i>obtusata</i>	VU	●	● Sb: Sabovljević <i>et al.</i> (2004)
<i>P. platyphylla</i>		●	●
<i>Preissia quadrata</i>		●	●
– subsp. <i>quadrata</i>		p	p
<i>Ptilidium ciliare</i>		●	●
<i>P. pulcherrimum</i>		●	●
<i>Radula complanata</i>		●	●
<i>R. lindenbergiana</i>			●
<i>Reboulia hemisphaerica</i>		●	●
– subsp. <i>hemisphaerica</i>		r	r
<i>Riccardia chamaedryfolia</i>			? Me: Dragičević & Veljić (2006; cf. note 328)

Table 2. Species reported from Serbia (Sb) and Montenegro (Me). Threat status in former Serbia-Montenegro (Yu) is after Sabovljević *et al.* (2004). Sources for reports of species not given in the checklist by Sabovljević (2000) are added (*continued*)

	Yu	Sb	Me
<i>Riccardia incurvata</i>		●	Sb: Papp <i>et al.</i> (2004)
<i>R. latifrons</i>		●	●
– subsp. <i>latifrons</i>		r	r
<i>R. multifida</i> subsp. <i>multifida</i>		●	
<i>R. palmata</i>		●	●
<i>Riccia bicarinata</i>			●
<i>R. ciliata</i>			●
<i>R. ciliifera</i>			● Me: Dragičević (2004)
<i>R. crinita</i>			●
<i>R. crozalsii</i>			●
<i>R. crystallina</i>		●	
<i>R. fluitans</i>		●	●
<i>R. glauca</i>		●	
– var. <i>glauca</i>		r	
<i>R. michelii</i>			●
<i>R. nigrella</i>			●
<i>R. papillosa</i>			●
<i>R. sorocarpa</i> subsp. <i>sorocarpa</i>		●	●
– var. <i>sorocarpa</i>		△	▲
<i>R. subbifurca</i>			●
<i>R. warnstorffii</i>			● Me: Dragičević & Veljić (2006)
<i>Ricciocarpos natans</i>		●	● Me: Dragičević & Veljić (2006)
<i>Sauteria alpina</i>	CR		●
<i>Scapania aequiloba</i>	EN	●	● Sb: Papp & Sabovljević (2002)
<i>S. aspera</i>		●	●
<i>S. calcicola</i>	VU	●	Sb: Veljić <i>et al.</i> (2001)
<i>S. compacta</i>			●
<i>S. curta</i>		●	
– var. <i>curta</i>		r	
<i>S. irrigua</i>		●	● Sb: Sabovljević (1999)
– subsp. <i>irrigua</i>		r	r
<i>S. lingulata</i>	EN	●	Sb: Sabovljević <i>et al.</i> (2004)
– var. <i>lingulata</i>		r	
<i>S. mucronata</i>		●	
<i>S. nemorea</i>		●	
<i>S. paludosa</i>	VU	●	
<i>S. scandica</i>		●	Sb: Papp <i>et al.</i> (2004)
– var. <i>scandica</i>		r	
<i>S. subalpina</i> var. <i>subalpina</i>		●	
<i>S. umbrosa</i>		●	●
<i>S. undulata</i>		●	●
<i>Southbya nigrella</i>			●
<i>S. tophacea</i>			●
<i>Targionia hypophylla</i>			○
<i>Trichocolea tomentella</i>	EN	●	
<i>Tritomaria exsecta</i>			● Me: Dragičević & Veljić (2006)
<i>T. quinquedentata</i>		l	Sb: Veljić <i>et al.</i> (2001)

and Fl are included, *Arc:WS* and *ES* to 30, *Arc:BE* to 31, *Eur:N* to *Rn* although N part of *Rw* is included, *Eur:N-Ur* to *Rn* although eastern slopes of Ural are included, *Eur:B* includes *Ee*, *Lv*, *Li* and *By*, *Eur:C* to *Rc* although parts of *Rn* and *Re* are included, *Eur:W* to *Ua* although *Md* is included, *Eur:K* to *Cm*, *Eur:E* to *Rs* although part of *Rc* is included, *Eur:S-Ur* to *Re* although E slopes of the Ural are included, *Cauc* to 33 since it is impossible to know which side of the mountain range the reports refer to, *Sib:W*, *E* and *S* to 30, *Far East* to 31, *Mid As* to 32 although *Kz* is included. This list comments on additional reports from Konstantinova *et al.* (1992) not commented on in the original paper and mostly excludes reports that we can not place with any certainty as recommended by N. Konstantinova (*in litt.*).

One problem often seen is that species erroneously reported from an area continue to be reported based on the rejected source. A good checklist should therefore clearly state that they are considered but rejected, even if this is only a repetition of an earlier rejection. This was not done for many taxa in Söderström *et al.* (2002a) and therefore we do include a large number of reports on this, some that are long forgotten but possible for an energetic person to dig out.

Eight new Red Lists have been published since 2002, for Luxembourg (Werner, 2003b), Switzerland (Schnyder *et al.*, 2004), Serbia and Montenegro (our Yu; Sabovljević *et al.*, 2004), the Czech Republic (Kučera & Váňa, 2005), Sweden (Gärdenfors, 2005), Bulgaria (Natcheva *et al.*, 2006), Norway (Kålås *et al.*, 2006) and Portugal, Spain and Andorra (Sérgio *et al.*, 2007). They all use the new IUCN categories. We update the categories for them when changed but only note the categories Regionally Extinct (RE), Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Data Deficient (DD) in this list.

Ros *et al.* (2007) publish a distribution table for the liverworts and hornworts of the Mediterranean basin. Our list corresponds with that list except in a few species that we (Söderström *et al.*, 2002a) rejected previously but that Ros *et al.* prefer to retain as questionable until all material is investigated. These are *Calypogeia azurea* (Ma), *Cephaloziella elachista* (Es), *Mannia fragrans* (Gr), *Porella arboris-vitae* (Cn), *P. platyphylla* (Cn) and *Scapania uliginosa* (Es).

The abbreviation of regions follows Söderström *et al.* (2002a; see Tab. 3 and Fig. 1). The updated table can be found on ECCB's web page www.bio.ntnu.no/ECCB/Hepatics. The map of the recognized regions in Europe was badly reproduced in Söderström *et al.* (2002a). It is therefore given here (Fig. 1), but with Serbia (Sb) and Montenegro (Me) recognized as separate entities. To make this list easier to read, we here refer to the areas we noted only as superscripts to their full country code, i.e. Northern Ireland (Ie^N) is Ni, Luxembourg (Be^L) is Lu, Channel Islands (Fr^C) is Ci, Monaco (Fr^M) is Mc, Liechtenstein (At^L) is Li, Gibraltar (Es^G) is Gi, Andorra (Es^A) is Ad, Malta (Sc^M) is Mt, Vatican (It^V) is Va, San Marino (It^S) is Sm and Kaliningrad (Lt^K) is Ka.

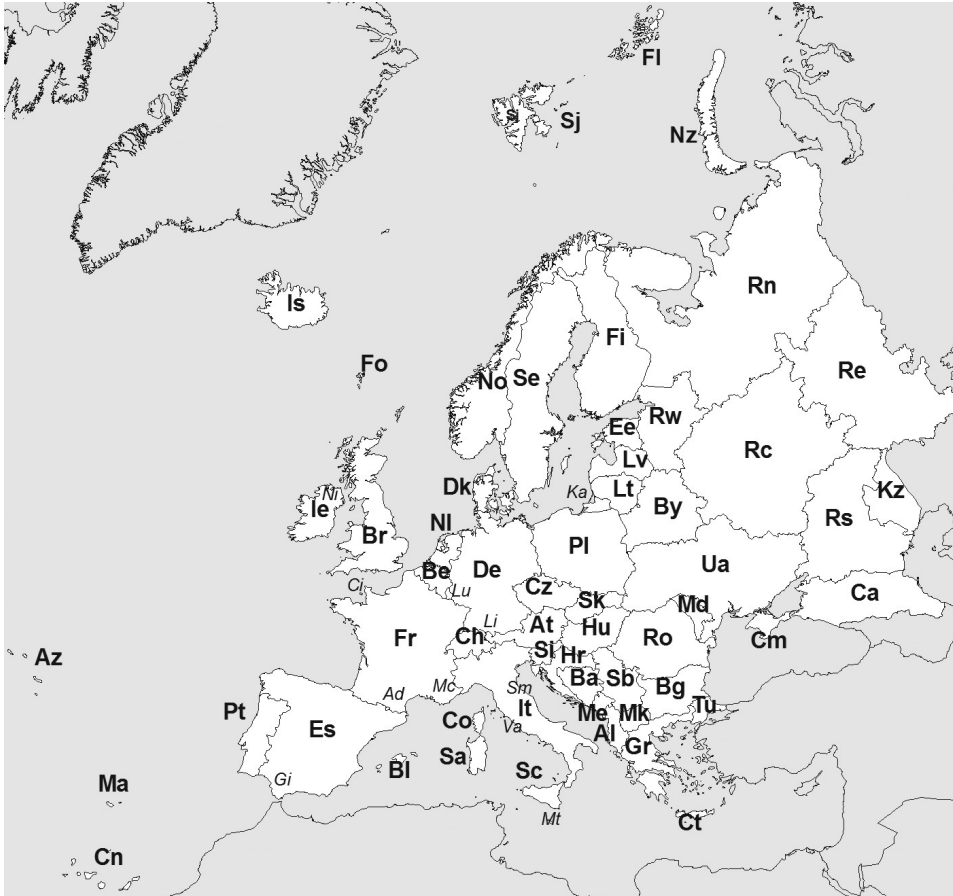


Fig. 1. Regions recognized in this checklist (cf. also Table 3).

Table 3. Number of species in each recognized region and the change from the table in Söderström *et al.* (2002a). The figures were earlier given as including the doubtful occurrences. In this table we count the confirmed species and give the number including doubtful species marks in paranthesis. The change in number of species from the last checklist is given as including question marks. In some cases the former figures were erroneous.

Al	Albania	91		Hu	Hungary	148	(151) + 3
At	Austria (incl. Liechtenstein).....	260	(262) + 2	Ie	Ireland (incl. Northern Ireland) ...	235	+ 6
<i>Li</i>	Liechtenstein	100	(101) + 1		Eire.....	230	(231) + 7
	Austria (s.str.).....	259	(261) + 1	<i>Ni</i>	Northern Ireland	192	+ 10
Az	Azores	158	(160) – 8	Is	Iceland	146	– 1
Ba	Bosnia-Herzegovine	107	+ 3	It	Italy (excl. Sardinia and Sicily but		
Be	Belgium (incl. Luxembourg).....	192	(193) + 9		incl. San Marino and Vatican City) 286	(288) + 3	
	Belgium (s.str.)	184	+ 11		Mainland Italy	286	(288) + 3
<i>Lu</i>	Luxembourg.....	136	(137) + 12	<i>Sm</i>	San Marino	11	(13)
Bg	Bulgaria	171	(174) + 2	<i>Va</i>	Vatican City	2	
Bl	Baleares	71	+ 10		<i>Italy</i> (incl. Sardinia and Sicily)	290	(292) + 3
Br	Britain (excl. Northern Ireland,	293	(294) + 3	Kz	Kazachstan (European part only)	0	
	Channel Islands and Gibraltar) ...			Lt	Lithuania (incl. Kaliningrad area)	122	(127) + 5
	<i>Britain</i> (incl. Northern Ireland,				Lithuania s.str.	114	(120) + 7
	Channel Islands and Gibraltar)	293	(294) + 3	<i>Ka</i>	Kaliningrad area	55	+ 7
By	Belarus	94	(99)	Lv	Latvia	131	(133) + 19
Ca	North Caucasus	102	(106) + 10	Ma	Madeira (to Portugal)	170	(176) + 5
Ch	Switzerland	263	(265) + 8	Md	Moldovo	9	
Cm	Crimea (to Ukraine).....	30	+ 1	Me	Montenegro	97	(107)
Cn	Canary Islands (to Spain).....	141	(143) + 3	Mk	Macedonia	72	+ 9
Co	Corsica (to France)	143	(145) + 18	Nl	Netherlands	134	(135) + 2
Ct	Crete (to Greece).....	75	– 2	No	Norway (excl. Svalbard)	277	(281) + 2
Cz	Czech Republic	213	(216) + 5		<i>Norway</i> (incl. Svalbard).....	286	(290) + 3
De	Germany	252	(254) + 7	Nz	Novaya Zemlya	61	(65) + 4
Dk	Denmark (excl. Faeroe Islands) ...	144	(146) + 2	Po	Poland	233	(241) + 2
	<i>Denmark</i> (incl. Faeroe Islands)....	198	(204) + 5	Pt	Portugal (excl. Azores and		
Ee	Estonia	120	(122) + 3		Madeira).....	177	(181) – 2
Es	Spain (excl. Canary Islands	276	+ 11		<i>Portugal</i> (incl. Azores and		
	and Baleares but incl. Andorra				Madeira).....	241	(245) – 10
	and Gibraltar).....			Rc	Russia Central	108	(115) + 14
	Peninsular Spain.....	273	+ 8	Re	Russia East	144	(147) + 36
<i>Ad</i>	Andorra.....	125	(126) + 79	Rn	Russia North	224	(227) + 9
<i>Gi</i>	Gibraltar (to Britain)	1		Ro	Romania	210	(213) + 15
	<i>Spain</i> (incl. Canary Islands			Rs	Russia South	18	(21) + 14
	and Baleares).....	291	+ 3	Rw	Russia Northwest	139	(144) + 8
Fi	Finland	222	(225) + 4		<i>Russia</i> (European part)	244	(250) + 10
Fl	Franz Josef Land (to Russia).....	39	(45) + 3	Sa	Sardinia (to Italy)	91	(113) + 16
Fo	Faeroe Islands (to Denmark)	125	(134) + 3	Sb	Serbia	118	(120)
Fr	France (excl. Corsica but incl.			Sc	Sicily (to Italy; incl. Malta).....	123	– 1
	Channel Islands and Monaco).....	308	(312) + 4		Sicily (Italian part)	119	(120) – 3
	Mainland France	308	(312) + 5	<i>Mt</i>	Malta	22	+ 1
<i>Ci</i>	Channel Islands (to Britain)	78	(79) – 1	Se	Sweden	262	(263) + 2
<i>Mc</i>	Monaco.....	0		Si	Slovenia	166	+ 9
	<i>France</i> (incl. Corsica).....	311	(314) + 6	Sj	Svalbard (incl. Jan Mayen)	96	(97) + 6
Gr	Greece (excl. Crete).....	134	(144) + 5	Sk	Slovakia	223	(224) + 3
	<i>Greece</i> (incl. Crete).....	140	(150) + 2	Tu	Turkey (European part only)	26	+ 14
Hr	Croatia	155	(157) + 12	Ua	Ukraine (excl. Crimea).....	180	(182) + 2
					<i>Ukraine</i> (incl. Crimea))	185	(187) + 3

Notes of taxonomy, nomenclature and distribution of European taxa

1. *Anthoceros agrestis*: change No to ● (Kålås *et al.*, 2006), Lu to ● (Werner, 2003b), change Pt to RE (Sérgio *et al.*, 2007), reject Bg (Ganeva & Natcheva 2003), add Lv to ● (Söderström *et al.*, 2002b) and add ?Rs (Suragina *et al.*, 2003) and 31 (Konstantinova *et al.*, 1992). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is probably from there.
2. *Anthoceros caucasicus*: add Be (Siebel *et al.*, 2002), change Pt and Es to ● (Sérgio *et al.*, 2007) and add 34 (Akhani & Kürschner, 2004).
3. *Anthoceros neesii*: change Cz to DD-va (Kučera & Váňa, 2005).
4. *Anthoceros punctatus*: change Ch to ● (Bisang & E. Urmi 2006) and Bg to ○ (Ganeva & Natcheva, 2003) and add ? to Lt (Kalinauskaitė & Najaulis, 2001 but the report is probably s. lat. and referring to *A. agrestis*), 81 (Damsholt, 2002a), 77? and 79? (Frye & Clark, 1947). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is probably from there.
5. *Notothyas orbicularis*: change Cz to DD-va (Kučera & Váňa, 2005) delete 22, 26 and add 25 (Stieperaere & Matcham, 2007). The var. *pseudotemperata* R.M.Schust is invalid.
6. *Phaeoceros bulbiculosus*: Stotler *et al.* (2005) describe a new genus, *Phymatoceros*, for this species (*P. bulbiculosus* (Brot.) Stotler *et al.*). Add 74 and 80 due to synonymy with *Anthoceros phymatodes* M.Howey by Stotler & Crandall-Stotler (2005).
7. *Phaeoceros carolinianus*: change No to VU (Kålås *et al.*, 2006), Se to ● (Gärdenfors, 2005), Lu to VU (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), delete Ct (mentioned by Jovet-Ast & Bischler (1969) referring to Düll (1966), but he does not separate *P. carolinianus* from *P. laevis*) and add Lv (Söderström *et al.*, 2002b) and 80 (Duff *et al.*, 2004). The reports from Ie and Bg (Damsholt, 2002a) are rejected until confirmed.
8. *Phaeoceros laevis*: change ○ to ● for Be (Siebel *et al.*, 2002) and ○ to ? for Po (Szweykowski, 2006). Rejected from North America north of Mexico (but confirmed for Mexico, 79) by Stotler & Crandall-Stotler (2005).
9. *Adelanthus decipiens*: change Es to VU (Sérgio *et al.*, 2007). Var. *aureocinctus* R.M.Schust. occurs in 82 (Gradstein, 1999). However, Schuster (2002b) elevated it to species rank. All European reports are var. *decipiens*. Grolle (2003) split *Adelanthus* into two genera, *Adelanthus* and *Pseudomarsupidium*. The latter included *P. decipiens* (Hook.) Grolle.
10. *Anastrepta orcadensis*: change Ch to VU (Schnyder *et al.*, 2004), Es to DD-n (Sérgio *et al.*, 2007) and add 30 (Vilnet *et al.*, 2005).
11. *Anastrophyllum alpinum* Steph. is separated from *A. joergensenii* by Long *et al.* (2006). It occurs in Br, 36, 40 and 70.
12. *Anastrophyllum assimile*: change Ch to EN (Schnyder *et al.*, 2004) and add 31 (Konstantinova *et al.*, 2003).
13. *Anastrophyllum donnianum*: the report from the Czech Republic (Schill & Long, 2003) refers to “Czechoslovakia” and the locality is in Slovakia.
14. *Anastrophyllum hellerianum*: change Lu to VU (Werner, 2003b) and mark it as not occurring in Belgium (error in Söderström *et al.*, 2002a), Ch to EN

- (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), add Hu (Ódor, 2000), change Es to EN (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; EN fide Sérgio *et al.*, 2007) and 31 (Bakalin, 2004a).
15. *Anastrophyllum joergensenii*: delete 40 (Long *et al.*, 2006).
 16. *Anastrophyllum michauxii*: change Se to ● (Gärdenfors, 2005), Cz to EN (Kučera & Váňa, 2005), Bg to VU (Natcheva *et al.*, 2006) and add Rn (Dulin, 2001). Excluded from Re (although given by Konstantinova *et al.*, 1992 as "Eur:S-Ur").
 17. *Anastrophyllum minutum*: change Lu to ● (Werner, 2003b), add Ad (Sotiaux & Schumacker, 2002), Co (Sotiaux *et al.*, 2007), change Yu to l (Sabovljević *et al.*, 2004) and add 76 (Jessup, 2000). For var. *minutum*: add Nz (Arnell, 1947 as f. *grandis*) and Si (type of *Sphenolobus minutus* var. *major* Schiffn. synonymized in Müller, 1954). For var. *weberi*: add 76 (Jessup, 2000).
 18. *Anastrophyllum saxicola*: change Cz to EN (Kučera & Váňa, 2005) and add Lv (Söderström *et al.*, 2002b). Damsholt (2002a) gives it from Fr without locality but we reject it until confirmed.
 19. *Aneura maxima*: add ? to Br (Godfrey, 2006), CR to Lu (Werner, 2003a, b), Po (Schumacker & Váňa, 2005), DD to Cz (Kučera, 2004, Kučera & Váňa, 2005), Sk (Loskotová, 2006), Co (Sotiaux *et al.*, 2007) and 36 (Furuki, 2006), 43 (Grolle & Piippo, 1984) and 74 (Darigo, 2004).
 20. *Aneura pinguis*: add Mk (Sabovljević & Natcheva 2006), Nz (Konstantinova & Potemkin, 1996) and Ma (Sjögren, 2001).
 21. *Anthelia julacea*: change Ch to EN (Schnyder *et al.*, 2004) and Cz to VU (Kučera & Váňa, 2005).
 22. *Anthelia juratzkana*: change Cz to CR (Kučera & Váňa, 2005) and Bg to VU (Natcheva *et al.*, 2006) and add Hr (Sabovljević & Natcheva, 2006).
 23. *Aphanolejeunea azorica*: add 83 (Parolly *et al.*, 2004).
 24. *Aphanolejeunea microscopica*: change Lu to EX (Werner, 2003b) and Es to EN (Sérgio *et al.*, 2007).
 25. *Aphanolejeunea sintenisii*: add 80 (Lüth & Schäfer-Verwimp, 2004).
 26. *Apomarsupella revoluta* subsp. *revoluta*: change Ch to CR (Schnyder *et al.*, 2004) and treat 82 with a "???" (Váňa, 2003).
 27. *Apometzgeria pubescens*: add autonym (var. *kinabaluensis* is mentioned in the note). Change Se to EN (Gärdenfors, 2005), Lu to EN (Werner, 2003b) and add Ad (Casas, 1986), Co (Sotiaux *et al.*, 2007) and 63 (So, 2003). Excluded from Re (although given by Konstantinova *et al.*, 1992 as "Eur:S-Ur").
 28. *Arnellia fennica*: add Fr (confirmed by Skrzypczak, 2001a).
 29. *Asterella africana*: change Pt and Es to DD-n (Sérgio *et al.*, 2007). Bischler (2004) gives it for Sc but this is not supported by other sources and rejected by M. Aleffi (Pers. comm.).
 30. *Asterella gracilis*: change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007) and add Ad (Sotiaux & Schumacker, 2002).
 31. *Asterella lindenbergiana*: change Bg to VU (Natcheva *et al.*, 2006), add ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszylowicz, 1888), delete 34 (Long 2006b) and add 79 (Damsholt, 2002a). Given for Gr by Bischler (2004) without locality and not supported in other literature known to us and thus rejected.

32. *Asterella saccata*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to EN (Kučera & Váňa, 2005). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE").
33. The American *Asterella tenella* (L.) A. Evans is reported from Europe several times (at least from Se, Po, Ch, Pt, It) but these reports are rejected by Long (2006b).
34. *Fimbriaria raddii* Corda ex Nees (type from Italy) is synonymized with the Asiatic *Asterella wallichiana* (Lehm. et Lindenb.) Grolle by Long (2006b). However, as it is not known from any other collection in Europe, the origin of the type must be from outside Europe, probably the Himalayas.
35. *Athalamia hyalina* var. *hyalina*: change Ch to VU (Schnyder *et al.*, 2004), add Ad (Sotiaux & Schumacker, 2002), change Yu to CR (Sabovljević *et al.*, 2004), Bg to VU (Natcheva *et al.*, 2006) and add Ee (Söderström *et al.*, 2002b).
36. *Athalamia spathysii*: change Pt to ● (Sérgio *et al.*, 2007).
37. *Barbilophozia atlantica*: change Ch to VU (Schnyder *et al.*, 2004), Cz to DD-va (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007) and add ? to Rw (Arnell, 1956 as "Ik"). Given from It by Bischler (2004) without further note but this is rejected by Aleffi (pers. comm.).
38. *Barbilophozia attenuata*: change Lu to ● (Werner, 2003b), Es to VU (Sérgio *et al.*, 2007), add Ad (Casas, 1986), delete Sc (error in Söderström *et al.*, 2002b) and change Bg to DD (Natcheva *et al.*, 2006). Delete Me (report in Sabovljević, 2000 referring to Pavletić, 1955 but the latter does not report it from Montenegro).
39. *Barbilophozia barbata*: add Ka (Dietzow, 1938). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE").
40. *Barbilophozia binsteadii*: change Es to CR (Sérgio *et al.*, 2007)
41. *Barbilophozia floerkei*: change Pt to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002) and change Yu to LR (Sabovljević *et al.*, 2004).
42. *Barbilophozia hatcheri*: add Lu (Werner, 2004), change Pt to ● (Sérgio *et al.*, 2007) and add Hr (Bischler, 2004) and change Yu to LR (Sabovljević *et al.*, 2004). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "RsC").
43. *Barbilophozia hyperborea*: add ?Rn (Konstantinova *et al.*, 1992) as "Arct: Euro" (probably Novaya Zemlya) and "Eur:N". Chudzińska *et al.* (2001) and Szweykowski (2006) reports it from Po (Tatra Mts) but we doubt the correctness of the identification of this highly arctic taxon.
44. *Barbilophozia kunzeana*: change Lu to EV (Werner, 2003b), Cz to CR (Kučera & Váňa, 2005), add Ad (Sotiaux & Schumacker, 2002), change Bg to VU (Natcheva *et al.*, 2006), add Ka (Dietzow, 1938), confirmed for Rc (Konstantinova, 2004), and add 38 (Furuki & Mizutani, 2004).
45. *Barbilophozia lycopodioides*: change Pt to ● (Sérgio *et al.*, 2007) and add Ad (Sotiaux & Schumacker, 2002).
46. *Barbilophozia quadriloba*: change Cz to EN (Kučera & Váňa, 2005).
47. *Bazzania flaccida*: add Be (error in Söderström *et al.*, 2002a), change Lu to VU (Werner, 2003b), Cz to EN (Kučera & Váňa, 2005) and Bg to VU (Natcheva *et al.*, 2006) and add Si (Sabovljević & Natcheva, 2006).
48. *Bazzania pearsonii*: change Es to ● (Sérgio *et al.*, 2007) and add 43 (Grolle & Piippo, 1984).

49. *Bazzania tricrenata* var. *tricrenata*: add Ad (Sotiaux & Schumacker, 2002), change Ch to ● (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005) and Yu to EN (Sabovljević *et al.*, 2004) and add ? to Gr (Sabovljević & Natcheva, 2006; no first hand report found).
50. *Bazzania trilobata*: change Pt to ● (Sérgio *et al.*, 2007), Yu to EN (Sabovljević *et al.*, 2004), add Ka (Dietzow, 1938), ?Rn (Bomansson & Brotherus, 1894) and Ca (Ignatov *et al.*, 2003). *Bazzania trilobata* var. *trilobata*: change Δ to ▲ for Ee, Lv, Lt (Söderström *et al.*, 2002b), add ? to Rn (Bomansson & Brotherus, 1894) and Δ to Ca (Ignatov *et al.*, 2003).
51. *Blasia pusilla*: change Lu to EN (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004) and Pt and Es to VU (Sérgio *et al.*, 2007). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE").
52. *Blepharostoma trichophyllum*: excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"). For subsp. *brevirete*: add Re (Konstantinova & Bezgodov, 2005).
53. *Calycularia laxa* Lindb. et Arnell: add Rn (Konstantinova & Lavrinenko, 2002; new to Europe). Occurs also in 30, 31, 70, 71.
54. *Calypogeia arguta*: add VU to Lu (Werner, 2003a, b), change Ch to ● (Schnyder *et al.*, 2004), add Co (Sotiaux *et al.*, 2007) and confirmed for Sa (Aleffi, 2005).
55. *Calypogeia azurea*: change Lu to ● (Werner, 2003b), add Ad (Sotiaux & Schumacker, 2002), Sa (Aleffi, 2005), ? to Me (Dragičević & Veljić, 2006, but only based on Beck & Szyszłowicz, 1888), delete Az (Gabriel *et al.*, 2005) and confirmed for 30 (Konstantinova *et al.*, 2003).
56. *Calypogeia fissa* subsp. *fissa*: delete Fi (erroneously reported in Söderström *et al.*, 2002a), add Me (Dragičević & Veljić, 2006), add EN to Yu (Sabovljević *et al.*, 2004), change Bg to EN (Natcheva *et al.*, 2006) and add Tu (Sabovljević & Natcheva (2006) and 31 (Bakalin & Konstantinova, 2004). Excluded from Rn and Rw (although given by Bomansson & Brotherus, 1894). Buczkowska & Szweykowski (2001) reports subsp. *neogaea* R.M.Schust. from Pl. The subspecies otherwise occur in 72-78.
57. *Calypogeia integristipula*: change Lu to ● (Werner, 2003b), Es to VU (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; VU fide Sérgio *et al.*, 2007), Ro (Goia & Mátase, 2001) and EN to Yu (Sabovljević *et al.*, 2004).
58. *Calypogeia muelleriana* subsp. *muelleriana*: change Pt to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), change Yu to CR (Sabovljević *et al.*, 2004) and add Ca (Konstantinova, 2001a) and 34 (Kürschner & Erdağ, 2005).
59. *Calypogeia neesiana* subsp. *neesiana*: change Lu to DD (Werner, 2003b), and Ad (Sotiaux & Schumacker, 2002), change Bg to VU (Natcheva *et al.*, 2006) and add 40 (Kattel, 2002, as *C. cordistipula* (Steph.) Steph.)
60. *Calypogeia sphagnicola* add Be (Sotiaux & Vanderpoorten (2001), change Ch to VU (Schnyder *et al.*, 2004), change Pt and Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), change Bg to VU (Natcheva *et al.*, 2006) and add Re (Konstantinova & Bezgodov, 2005).
61. *Calypogeia suecica*: change Se to VU (Gärdenfors, 2005), Lu to EV (Werner, 2003b), Pt and Es to EN (Sérgio *et al.*, 2007), add EN to Yu (Sabovljević *et al.*, 2004), change Bg to VU (Natcheva *et al.*, 2006), add 31 (Bakalin *et al.*, 2005) and delete 38 (not included in Yamada & Iwatsuki, 2006).

62. *Cephalozia affinis*: add ?75 (Damsholt, 2002a).
63. *Cephalozia ambigua*: change Bg to VU (Natcheva *et al.*, 2006), Es to DD (Sérgio *et al.*, 2007), Lv to ● (Āboliņa & Reriha, 2005) and add Re (Konstantinova & Bezgodov, 2005).
64. *Cephalozia bicuspidata*: add Tu (Sabovljević & Natcheva, 2006; probably var. *bicuspidata*). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE"). For var. *lammersiana*: add Fi (Arnell, 1928). This taxon is treated as a modification by recent Finnish bryologists following Buch (1936).
65. *Cephalozia catenulata* subsp. *catenulata*: add NI (Bijlsma, 2004), change Lu to VU (Werner, 2003b), Cz to VU (Kučera & Váňa, 2005), add VU to Yu (Sabovljević *et al.*, 2004), change Bg to EN (Natcheva *et al.*, 2006), add Lv (Āboliņa & Reriha, 2005) and add Ka (Dietzow, 1938). Rejected from Rn although given by Bomansson & Brotherus (1894).
66. *Cephalozia connivens* subsp. *connivens*: change Lu to EN (Werner, 2003b), Pt and Es to DD (Sérgio *et al.*, 2007) and add Ad (Sotiaux & Schumacker, 2002; DD fide Sérgio *et al.*, 2007), Co (Sotiaux *et al.*, 2007), ? to Me (Dragičević & Veljić, 2006, but only based on Beck & Szyszyłowicz, 1888), change Bg to VU (Natcheva *et al.*, 2006) and add Ka (Dietzow, 1938). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is probably from there.
67. *Cephalozia crassifolia*: change Es to EN (Sérgio *et al.*, 2007).
68. *Cephalozia lacinulata*: excluded from Br (although given by Arnell, 1928) as unreliable report not confirmed in later sources. Treated as DD in Ch (Schnyder *et al.*, 2004) but the occurrence is not positively confirmed for the country. Change Cz to RE (Kučera & Váňa, 2005) and Bg to VU (Natcheva *et al.*, 2006).
69. *Cephalozia leucantha*: change Ch to EN (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005) and add Lt (Söderström *et al.*, 2002b). For var. *leucantha*: add Lt (Söderström *et al.*, 2002b).
70. *Cephalozia loitlesbergeri*: delete Be (Sotiaux & Vanderpoorten, 2001), change Ch to VU (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), add Es (Casas (1998) rejects it but Casas *et al.* (2004) recognize it; DD-n fide Sérgio *et al.*, 2007), change Bg to CR (Natcheva *et al.*, 2006), add Ka (Dietzow, 1938) and 31 (Potemkin, 2003).
71. *Cephalozia lunulifolia*: delete Is (Jóhannsson, 2003), change Lu to ● (Werner, 2003b), Pt and Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Sb (Papp & Erzberger, 2005) and 20? (given for both Tunisia and Algeria by Bischler, 2004, although rejected from Tunisia by Jovet-Ast & Bischler, 1972). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE").
72. *Cephalozia macounii*: add Re (Konstantinova & Bezgodov, 2005). Reported from Me by Dragičević & Veljić (2006) based on a report by Beck & Szyszyłowicz (1888). This boreal taxon is reported from continental Europe earlier but all reports have been proven to be wrong so we reject it until confirmed.
73. *Cephalozia macrostachya* subsp. *macrostachya*: change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005) and add It (Aleffi *et al.*, 2004) and Sa (Aleffi, 2005). Given for Es by Casas (1998) but this is an error (R.M.Ros, in litt.). For subsp. *macrostachya* var. *spiniflora*: add Se (Arnell, 1928).

74. *Cephalozia pleniceps* var. *pleniceps*: add Ni (omitted in Söderström *et al.*, 2002a), change Cz to VU (Kučera & Váňa, 2005), Pt to ● (Sérgio *et al.*, 2007), add Ad (Casas, 1986), Me (Dragičević & Veljić, 2006), change Bg to DD (Natcheva *et al.*, 2006) and add Ka (Dietzow, 1938).
75. *Cephaloziella arctogena*: add Sj (Thinggaard & Damsholt, 2007) and Is (Jóhannsson, 2003).
76. *Cephaloziella aspericaulis*: change No to VU (Kålås *et al.*, 2006).
77. *Cephaloziella baumgartneri*: add Ad (Sotiaux & Schumacker, 2002), Ro (Dihoru, 2004) and Tu (Sabovljević & Natcheva, 2006).
78. *Cephaloziella calyculata*: change Pt and Es to ● (Sérgio *et al.*, 2007), Yu to ● (Sabovljević *et al.*, 2004). Sabovljević *et al.* (2004) noted it for Sb but not for Me and we think it is an error and reject it from Sb.
79. *Cephaloziella dentata*: add Is (Jóhannsson, 2003), change Se to DD (Gärdenfors, 2005), confirmed for Sa (Aleffi, 2005) and add Cn (Brullo *et al.*, 2004) and 34 (Keçeli & Çetin, 2006).
80. *Cephaloziella divaricata*: add Ad (Sotiaux & Schumacker, 2002), Sb (Papp & Erzberger, 2005) and 34 (Bischler, 2004). Var. *grandiretis* is raised to species (*Cephaloziella grandiretis* (R.M.Schust.) R.M.Schust.; cf. Schuster, 2002b). However, var. *divaricata* also occurs in New Zealand (51). For var. *asperifolia*: delete Ch (erroneously reported in Söderström *et al.*, 2002a), add Ad (Sotiaux & Schumacker, 2002) and 36 (Zhu & So, 2003). Excluded from Br although given by Arnell (1928) and Bonner (1963) but not confirmed in later sources. For var. *divaricata*: add ▲ to Ad (Sotiaux & Schumacker, 2002) and change Δ to ▲ for Rc and Ca (Damsholt, 2002a).
81. *Cephaloziella elachista*: change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Pt to DD (Sérgio *et al.*, 2007) and add Lv (Áboliņa, 2001), Ka (Dietzow, 1938) and 31 (Bakalin, 2005a).
82. *Cephaloziella elegans*: change Ch to CR (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), add Es (Infante, 2000; DD fide Sérgio *et al.*, 2007) and delete Cn (error in Söderström *et al.*, 2002a).
83. *Cephaloziella grimsulana*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to EN (Kučera & Váňa, 2005). Sérgio *et al.* (2007) mentioned Pt but this is almost certainly an error for Es, thus change Es to VU.
84. *Cephaloziella hampeana*: change Lu to VU (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Cz to ● (Kučera & Váňa, 2005), change Es to DD (Sérgio *et al.*, 2007), add Hr (Sabovljević & Natcheva, 2006) and change Bg to CR (Natcheva *et al.*, 2006).
85. *Cephaloziella integerrima*: add Is (Jóhannsson, 2003), change Ch to VU (Schnyder *et al.*, 2004), add Hr (Sabovljević & Natcheva, 2006), Ro (Bálint & Orbán, 2003) and 33 (Pogosyan, 2003).
86. *Cephaloziella massalongi*: change Se to DD (Gärdenfors, 2005), Ch to VU (Schnyder *et al.*, 2004), change Pt and Es to DD (Sérgio *et al.*, 2007), add Ro (Jakab, 2000), change Bg to DD (Natcheva *et al.*, 2006) and add 71 (Damsholt, 2002a). Given for Japan (38) without doubt by Yamada & Iwatsuki (2006).
87. *Cephaloziella phyllacantha*: change No to DD (Kålås *et al.*, 2006) and Ch to VU (Schnyder *et al.*, 2004) and add ? to Es (Oliva, 1989).

88. *Cephaloziella rubella*: change Cz to ● (Kučera & Váňa, 2005), change Pt to DD (Sérgio *et al.*, 2007), add Es (Infante, 2000), Co (Sotiaux *et al.*, 2007) and change Yu to VU (Sabovljević *et al.*, 2004) and Bg to EN (Natcheva *et al.*, 2006).
89. *Cephaloziella spinigera*: add Sj (Thingsgaard & Damsholt, 2007), change Ch to VU (Schnyder *et al.*, 2004 as *C. subdentata*), Cz to VU (Kučera & Váňa, 2005) and add Ro (Jakab, 1999), Lv (Āboliņa, 2001), 74 and 76 (erroneously omitted in Söderström *et al.*, 2002a).
90. *Cephaloziella stellulifera*: change No to DD (Kålås *et al.*, 2006), add Fi (Söderström *et al.*, 2002b), change Lu to EN (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to DD (Kučera & Váňa, 2005), add Bl (Sáez *et al.*, 2006a), change Yu to VU (Sabovljević *et al.*, 2004) and add Tu (Sabovljević & Natcheva, 2006) and Lv (Āboliņa & Reriha, 2005). Damsholt (2002) reported it from Sj and Rn as doubtfully occurring there but we reject it until confirmed. He also reported it from Japan (38) but this is to be rejected as it is not mentioned by Yamada & Iwatsuki (2006) or any other known source.
91. *Cephaloziella turneri*: add Hr (Bischler, 2004) and change Yu to VU (Sabovljević *et al.*, 2004), Bg to CR (Natcheva *et al.*, 2006) and add Tu (Sabovljević & Natcheva, 2006) and Ca (Ignatov *et al.*, 2003).
92. *Cephaloziella uncinata*: add Se (Lönnell *et al.*, 2002). Damsholt (2002a) gives it from De without further comment and we reject it until confirmed.
93. *Cephaloziella varians*: change Ch to VU (Schnyder *et al.*, 2004 as *C. arctica*) and add 33 (Damsholt, 2002a).
94. *Chiloscyphus pallescens*: change Pt and Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE"). Var. *fragilis* is excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE"). For var. *pallescens*: Change Δ to ▲ for Ca (Konstantinova, 2001a). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "RsE").
95. *Chiloscyphus polyanthos*: add Rs (Konstantinova, 2001a). Var. *polyanthos*: given from Rs by Konstantinova *et al.* (1992) as "RsE" but no other sources found. However, the report of the species by Konstantinova (2001a) probably refers to this variety as she usually separates them at species level. For var. *rivularis*: add De (type!). Excluded from Br and It (although given by Arnell, 1928) as unreliable reports not confirmed in later sources. Also excluded from Rc (although given in Konstantinova *et al.*, 1992 as "RsC").
96. *Cladopodiella fluitans*: change Cz to EN (Kučera & Váňa, 2005) and Es to EN (Sérgio *et al.*, 2007). Damsholt (2002) mentions Pt but this must be rejected as no other sources are known.
97. *Cladopodiella francisci*: change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005) and Es to VU (Sérgio *et al.*, 2007).
98. *Cololejeunea calcarea*: change Se to VU (Gärdenfors, 2005), Cz to EN (Kučera & Váňa, 2005), add Bl (Casas *et al.*, 2004) and Ca (Ignatov *et al.*, 2003).
99. *Cololejeunea minutissima* subsp. *minutissima*: delete Co (only mentioned by Allorge 1974 without locality), change Yu to VU (Sabovljević *et al.*, 2004). Add 42 (Pippo *et al.*, 2002) to subsp. *myriocarpa*.
100. *Cololejeunea rossettiana*: change Lu to CR (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005) and Yu to VU (Sabovljević *et al.*, 2004; but also given as LR).

101. *Conocephalum conicum*. The revision of Szweykowski *et al.* (2005) shows that it is a European near endemic. They confirm it from No, Dk, Fi, Ie, Br, Fr, De, Po, At, Cz, Sk, Hu, Pt, Es, It, Hr, Ba, Ro, Bg, Gr, Ua and 34. Also confirmed from Lu (Werner, 2006b), Ch (H. Hoffmann, pers. comm.) and Se (T. Hallingbäck, pers. comm.). All other reports, including the recent ones from Ad (Sotiaux & Schumacker, 2002) and Mk (Cekova, 1991) have to be re-evaluated and until that is done, they have to be treated as doubtful. All reports from outside Europe, except perhaps from Macaronesia, North Africa and Caucasus are probably *C. salebrosum*.
102. *Conocephalum salebrosum* Szweykowski *et al.* is newly described as the common, circumboreal species (Szweykowski *et al.*, 2005) and is reported from No, Dk, Se, Br, Fr, Be, Lu, De, Po, Ch, At, Cz, Sk, Hu, Ba, Ro, Lv, Ua, 31, 36, 38, 40, 72-75, 77. Later reported from Ie and Ni (Holyoak, 2006). All reports from outside Europe (except perhaps Macaronesia, N Africa and Caucasus) probably belong to this species.
103. *Corsinia coriandrina*: change Ch to VU (Schnyder *et al.*, 2004) and Bg to EN (Natcheva *et al.*, 2006).
104. *Cryptothallus mirabilis*: change Se to ● (Gärdenfors, 2005), add Be (Davis, 2004) and change Pt to DD-n (Sérgio *et al.*, 2007).
105. *Cyathodium* cf. *foetidissimum* Schiffn. is found as new to Europe in It (Duckett & Ligrone, 2006) it occurs also in 23, 25, 42, 43, 61, 80. Although it is a *Cyathodium*, the species is not yet definitely confirmed as male plants are not yet found.
106. *Diplophyllum albicans*: add Sa (Aleffi, 2005), Sb (Papp & Erzberger, 2005) and Lv (Āboliņa & Reriha, 2005). Lt is based on a specimen from 1811 and thus questionable.
107. *Diplophyllum obtusatum*: add 31 (Konstantinova *et al.*, 2003).
108. *Diplophyllum obtusifolium*: change Ch to ● (Schnyder *et al.*, 2004), add ? to Pt (Sérgio & Carvalho, 2003), change Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Lv (Āboliņa & Reriha, 2005) and Re (Konstantinova & Bezgodov, 2005). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "RsC").
109. *Diplophyllum taxifolium*: change Pt to ● (Sérgio *et al.*, 2007), add Re (Konstantinova & Bezgodov, 2005) and ?32 (Arnell, 1928).
110. *Douinia ovata*: change Pt to ● (Sérgio *et al.*, 2007), add Co (Sotiaux *et al.*, 2007), delete 74 and 75 (older erroneous and earlier rejected reports were repeated uncritically in Söderström *et al.*, 2002a).
111. *Drepanolejeunea hamatifolia*: change Pt and Es to ● (Sérgio *et al.*, 2007).
112. *Dumortiera hirsuta*: change Pt to ● (Sérgio *et al.*, 2007). Paton (1999) mentions Be but we do not know any other source for it and prefer to reject it until confirmed. Bischler (2004) gives it from 20 (Algeria without locality) but this is rejected until confirmed (cf. Ros *et al.*, 2007). Subsp. *hirsuta* also occur in 41 and 43 (erronously omitted in Söderström *et al.* 2002). Subsp. *nepalensis* (Taylor) R.M.Schust. is given from Europe by Bapna & Kachroo (2000) but it is never found there.
113. *Eremonotus myriocarpus*: add Is (Jóhannsson, 2003), change Bg to VU (Natcheva *et al.*, 2006) and add 31 (Konstantinova *et al.*, 2003).
114. *Exormotheca pustulosa*: change Pt and Es to ● (Sérgio *et al.*, 2007) and delete "?" in 79 (Bischler-Causse *et al.*, 2005).

115. *Exormotheca welwitschii*: change Pt and Es to ● (Sérgio *et al.*, 2007).
116. *Fossombronia angulosa*: change Ch to VU (Schnyder *et al.*, 2004), Cz to RE (Kučera & Váňa, 2005), Bg to EN (Natcheva *et al.*, 2006), add Me (Dragičević & Veljić, 2006), Tu (Sabovljević & Natcheva, 2006) and 35 (Kürschner, 2003).
117. *Fossombronia caespitifformis*: treated as DD in Ch (Schnyder *et al.*, 2004) but it is uncertain if it occurs there.
118. *Fossombronia crispa* Nees: Sérgio & Carvalho (2003) claim that the report of *F. zehyeri* Steph. belongs to *F. crispa* and not *F. foveolata*. The identity of the Portuguese specimen needs apparently further study and until clarified *F. crispa* should be considered doubtful for Pt and Europe. Treated as EN by Sérgio *et al.* (2007).
119. *Fossombronia crozalsii*: *Fossombronia mittenii* Tind. is convincingly regarded as a synonym to *F. crozalsii* by Stotler *et al.* (unpubl.; R. Stotler, pers. comm.) and not to *F. wondraczekii* as we report. Thus also add Pt as VU (Sérgio *et al.*, 2007). *F. mittenii* is older and should have priority.
120. *Fossombronia echinata*: change Pt and Es to ● (Sérgio *et al.*, 2007) and add 34 (Bischler, 2004).
121. *Fossombronia fleischeri* Osterw. is recognized as a distinct species by Stotler *et al.* (2003). The type is from De and occurs at least also in Fi, but we have no further information about its distribution. According to R. Stotler (pers. comm.) it is more common than *F. incurva* and the species so named needs to be re-examined.
122. *Fossombronia foveolata* var. *cristula* is raised to an independent species (*Fossombronia cristula* Austin) based on DNA analysis by Scott & Crandall-Stotler (2002). *F. f.* var. *foveolata*: change Ch to RE (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Pt to CR (Sérgio *et al.*, 2007) and add Ka (Dietzow, 1938), Rc (Konstantinova, 2001a), Rs (Suragina *et al.*, 2003) and 34 (Damsholt, 2002a),
123. *Fossombronia husnotii*: add Bl (Casas *et al.*, 2004), Co (Sotiaux *et al.*, 2007) and change Bg to CR (Natcheva *et al.*, 2006) and add Ct (Papp, 2003). Stotler *et al.* (2003) recognize *Fossombronia caespitifformis* subsp. *multispira* (Schiffn.) J.R.Bray et D.C.Cargill and treat *F. husnotii* as a synonym, a treatment that we are following.
124. *Fossombronia incurva*: change Se to VU (Gärdenfors, 2005) and Ch to VU (Schnyder *et al.*, 2004).
125. *Fossombronia leucoxantha* Lehm. is a species from southern Africa (26) that is found in Pt (Sérgio, 2003).
126. *Fossombronia maritima* has recently been reported as new to Pt (Sérgio, 2002; DD-n fide Sérgio *et al.*, 2007), Bl (Casas *et al.*, 2004) and It (Preston & Blockeel, 2006), and as DD-n in Es (Sérgio *et al.*, 2007). However, Stotler *et al.* (unpubl.; Stotler, pers. comm) treat it as a synonym of *F. pusilla*.
127. *Fossombronia pusilla*: change Lu to ● (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004) and Cz to DD-va (Kučera & Váňa, 2005), add Tu (Sabovljević & Natcheva, 2006), 22, 43 and 63 (Krayesky *et al.*, 2005). Perold (2003) questions its occurrence in 27.
128. *Fossombronia wondraczekii*: change Lu to VU (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004) and add Bl (Casas *et al.*, 2004) and Co (Sotiaux *et al.*, 2007) and Az (Frahm, 2005b). Stotler *et al.* (unpubl.; R. Stotler, pers. comm.) regard *Fossombronia hamato-hirta* as a species separated from *F. wondrac-*

- zekii* and all reports of the latter from 28 probably belong to the former taxon. They also give *F. macounii* Austin as a synonym of *F. wondraczekii* which adds 71 to its distribution area. Delete 31 and 38 (Krayesky *et al.*, 2005).
129. *Frullania azorica*: change Pt to RE (Sérgio *et al.*, 2007).
 130. *Frullania bolanderi*: change No to VU (Kålås *et al.*, 2006) and add Rc (Konstantinova, 2004).
 131. *Frullania dilatata*: add Ad (Sotiaux & Schumacker, 2002) and ?84 (Oliveira e Silva *et al.*, 2002). The *Frullania dilatata* complex was split into several species and subspecies by S. Hattori and he rejected it from E Asia. However, there is no conclusive treatment yet so the world distribution and taxon delimitation is preliminary. Sim-Sim (1999) recognized var. *elongata* Losada-Lima & Vanden Berghen but Bisang *et al.* (1989) put that variety in synonymy with *F. ericoides*.
 132. *Frullania fragilifolia*: change Lu to ● (Werner, 2003b), change Cz to CR (Kučera & Váňa, 2005), add Ad (Casas *et al.*, 2004), change Yu to CR (Sabovljević *et al.*, 2004), Bg to VU (Natcheva *et al.*, 2006), add Lt (Söderström *et al.*, 2002b) and delete Az (Gabriel *et al.*, 2005).
 133. *Frullania inflata* var. *inflata*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to DD (Kučera & Váňa, 2005) and add Si (locality given by Grolle, 1970 as Italy is in Slovenia) and ? to Gr (Sabovljević & Natcheva, 2006; no first hand report found). Var. *dioica* S.Hatt. et Thaith. is an additional variety that occurs in 40 (Hattori & Thaithong, 1978).
 134. *Frullania jackii*: Bg to EN (Natcheva *et al.*, 2006) and add 33 (Düll, 1983, Bisang *et al.*, 1986). Excluded from Rn (although given by Konstantinova *et al.*, 1992 as "Arct:Euro?" and "Eur:N-Ur?").
 135. *Frullania microphylla*: change Pt to ● (Sérgio *et al.*, 2007). Given for It by Bischler (2004) without further comment but not included in Aleffi (2005) and we reject the report until confirmed by a specimen. Arnell (1928) is rejecting earlier reports from No. Sim-Sim (1999) does not recognize any varieties.
 136. *Frullania oakesiana*: change No to EN (Kålås *et al.*, 2006), Se to EN (Gärdenfors, 2005), Pt and Es to VU (Sérgio *et al.*, 2007). Bischler (2004) gives it from It, Sc and 20 (but not from Pt) and the report is obviously an error in print referring to some other species.
 137. *Frullania parvistipula*: change Ch to CR (Schnyder *et al.*, 2004) and add Ro (Ştefănuţ, 2004). Bischler (2004) mentions it from Es but it is not supported by other known sources and far outside the earlier known distribution range so we reject it. Ştefănuţ also mention Russian part of Caucasus (Ossetia) but the only report from Caucasus is from Georgia and the report is probably referring to Jugo-Ossetia (*i.e.* in Georgia).
 138. *Frullania riparia*: change Ch to VU (Schnyder *et al.*, 2004 as *F. cesatiana*), Es to DD (Sérgio *et al.*, 2007), add Bl (Casas *et al.*, 2004), change Bg to CR (Natcheva *et al.*, 2006) and add 34 (Akhani & Kürschner, 2004).
 139. *Frullania tamarisci* subsp. *tamarisci*: change Cz to VU (Kučera & Váňa, 2005), Ch to ● (Schnyder *et al.*, 2004) and add Ka (Dietzow, 1938) and 32? (Arnell, 1928; presumably subsp. *tamarisci* is meant). Frahm (2006) describes var. *azorica* J.-P.Frahm as a new variety from Az. There are many varieties reported but there is no convincing treatment of the variation in the complex at the variety level to subdivide subsp. *tamarisci*.

140. *Frullania teneriffae*: change Pt and Es to VU (Sérgio *et al.*, 2007). Damsholt (2002) gives it from It and Sabovljević & Natcheva (2006) gives it from Si but we can not find any original source and as these records for this oceanic species are far out of their known range, we reject it until verified by specimens.
141. *Geocalyx graveolens*: change Lu to EN (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Rc (Popova, 2003) and delete 38 (Yamada & Iwatsuki, 2006).
142. *Gongylanthus ericetorum*: add Bl (Cano *et al.*, 2001).
143. *Gymnocolea inflata*: change Lu to EN (Werner, 2003b), change Pt and Es to ● (Sérgio *et al.*, 2007) and add Ad (Casas, 1986), Bg (Sabovljević & Natcheva, 2006) and Ka (Dietzow, 1938), all probably subsp. *inflata*. Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E").
144. *Gymnomitrium apiculatum*: change Ch to VU (Schnyder *et al.*, 2004) and Bg to DD (Natcheva *et al.*, 2006) and Si (Sabovljević & Natcheva, 2006).
145. *Gymnomitrium concinnatum*: change Cz to ● (Kučera & Váňa, 2005) and add Re (Konstantinova & Bezgodov, 2005).
146. *Gymnomitrium corallioides*: add De (Reimann & Dürhammer, 2004), change Ch to ● (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007), add Ad (Casas, 1986), and change Bg to VU (Natcheva *et al.*, 2006).
147. *Gymnomitrium crenulatum*: change Pt and Es to ● (Sérgio *et al.*, 2007).
148. *Gymnomitrium obtusum*: change Ch to VU (Schnyder *et al.*, 2004), Cz to DD-va (Kučera & Váňa, 2005), Pt to ● (Sérgio *et al.*, 2007) and add Ad (Sotiaux & Schumacker, 2002),
149. *Haplomitrium hookeri* var. *hookeri*: change No to ● (Kålås *et al.*, 2006), add Ni (Blackstock, 2005), Fr (Skrzypczak, 2001a), Be (Sotiaux *et al.*, 2006), change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Ad (Chavoutier, 2004) and Ro (Ştefănuţ, 2000).
150. *Harpalejeunea mollerii*: change Ch to VU (Schnyder *et al.*, 2004 as *H. ovata*) and change Pt to ● (Sérgio *et al.*, 2007).
151. *Harpanthus flotvianus*: change Ch to VU (Schnyder *et al.*, 2004), Cz to ● (Kučera & Váňa, 2005) and add Lv (Āboliņa, 2001) and 31 (Gambaryan, 1998).
152. *Harpanthus scutatus*: change change Lu to L (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007), Bg to ?DD (Natcheva *et al.*, 2006; doubtful if it occurs there at all) and add ? to Me (Dragičević & Veljić, 2006, but they base the record only on Beck & Szyszylowicz, 1888) and 34 (Papp, 2004).
153. *Herbertus aduncus* subsp. *hutchinsiae*: add Fo (Damsholt, 2002b) and change No to ● (Kålås *et al.*, 2006) and Se to VU (Gärdenfors, 2005).
154. *Herbertus azoricus*: Feldberg *et al.* (2004) synonymized it with *H. sendtneri*.
155. *Herbertus borealis*: Hodgetts (2003) synonymized it with *H. dicranus* (Taylor ex Gottsche *et al.*) Trevis. (which is the oldest name) and *H. sakurarii* (Warnst.) S.Hatt. However, Feldberg & Heinrichs (2005b) rejects that and synonymizes it with *H. delavayi* Steph. based on molecular evidence. We accept the latter. For the complete distribution change Az to ● and add 36 and 40.
156. *Herbertus sendtneri*: add Az (Feldberg *et al.*, 2004), 78, 80, 82-84 (Feldberg & Heinrichs, 2005a) and 42 (Feldberg & Heinrichs, 2005b).

157. *Herbertus stramineus*: add 83 (Groth & Heinrichs, 2005).
158. *Hygrobliella laxifolia*: change Ch to VU (Schnyder *et al.*, 2004) and add Cz as EN (Kučera & Váňa, 2005) and Hr (Sabovljević & Natcheva, 2006). Damsholt (2002) mentioned Pt but this must be rejected as no other sources can be found.
159. *Jamesoniella autumnalis* var. *autumnalis*: exclude Ie (given by Schuster, 1969, but in no other sources), change Ch to EN (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007) and add Sb (Papp & Erzberger, 2005) and ? to Me (Dragičević & Veljić, 2006, but they base their record only on Beck & Szyszylowicz, 1888). Var. *heterostipa*: add 71 (Christy & Wagner, 1996).
160. *Jamesoniella undulifolia*: change Ch to CR (Schnyder *et al.*, 2004) and Cz to RE (Kučera & Váňa, 2005). Excluded from Rn (although given by Konstantinova *et al.*, 1992 as "Arct:Euro").
161. *Jubula hutchinsiae* subsp. *hutchinsiae*: add Co (Sotiaux *et al.*, 2007). Excluded from No although reported by Hartman (1864). The report from Pt (Wilson *et al.*, 2004) probably refers to Ma. Sim-Sim *et al.* (2002) recognize subsp. *hutchinsiae* var. *integrifolia* Lindb. This name is erroneous as Lindberg (1875) placed it in the genus *Frullania*. Further, the type material is from Java and it is synonymized with subsp. *javanica* by Guerke (1978). *Jubula integrifolia* Steph. (type from Japan) is combined as *J. hutchinsiae* var. *integrifolia* (Steph.) S.Hatt. but this taxon is also a synonym of subsp. *javanica* in Guerke (1978). This is probably the source for subsp. *javanica* from Macaronesia. The nondentate European and Macaronesian plants that Sim-Sim *et al.* (2002) recognize do not seem to have any valid name. Subsp. *javanica* (Steph.) Verd. is reported from Ca by Ignatov *et al.* (2003).
162. *Jubula pennsylvanica*: delete Az (Gabriel *et al.*, 2005) and therefore the species from the whole region.
163. *Jungermannia atrovirens*: change Cz to EN (Kučera & Váňa, 2005) and add Ad (Sotiaux & Schumacker, 2002) and Tu (Sabovljević & Natcheva, 2006).
164. *Jungermannia borealis*: add Ie (type of *J. pumila* var. *nigricans* Hook. placed in synonymy by Damsholt & Váňa, 1977), change Ch to VU (Schnyder *et al.*, 2004) and add Fr (Skrzypczak & Skrzypczak, 1998).
165. *Jungermannia caespiticia*: change Ch to VU (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), reject Fr (only second hand references found) and Bg to CR (Natcheva *et al.*, 2006). Excluded from Re (although given by Konstantinova *et al.*, 1992 as "Eur:S-Ur?").
166. *Jungermannia confertissima*: change Cz to EN (Kučera & Váňa, 2005), Es to EN (Sérgio *et al.*, 2007), add Ad (Casas *et al.*, 2004; EN fide Sérgio *et al.*, 2007), change Bg to VU (Natcheva *et al.*, 2006) and add Sb (Sabovljević & Natcheva, 2006) and Re (Konstantinova & Bezgodov, 2005).
167. *Jungermannia exsertifolia* subsp. *cordifolia*: change Ch to VU (Schnyder *et al.*, 2004), add Ad (Sotiaux & Schumacker, 2002), Co (Sotiaux *et al.*, 2007), change Bg to VU (Natcheva *et al.*, 2006) and add Re (Konstantinova & Bezgodov, 2005). Var. *pendletonii* (Pearson) Váňa occurs in 76.
168. *Jungermannia gracillima*: add Ad (Sotiaux & Schumacker, 2002) and Sa (Aleffi, 2005), change Yu to EN (Sabovljević *et al.*, 2004), add Mk (Sabovljević & Natcheva, 2006), change Bg to VU (Natcheva *et al.*, 2006), delete Ct (only mentioned by Allorge, 1974, without locality) and add 31 (Bakalin, 2003b)

- and 76 (Howe, 1899). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "Eur:C"). Sabovljević *et al.* (2004) give it erroneously for Me but not for Sb where it is known from earlier.
169. *Jungermannia handelii*: change Es to RE (Sérgio *et al.*, 2007). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is from there.
170. *Jungermannia hyalina*: change Fo to ? (Damsholt, 2002a), Lu to VU (Werner, 2003b), Pt to ● (Sérgio *et al.*, 2007) and add Sb (Papp & Erzberger, 2005) and Re (Konstantinova & Bezgodov, 2005). Confirmed for Cn (Casas, 2002) and Az (Gabriel *et al.*, 2005).
171. *Jungermannia jenseniana*: delete Es (Sérgio *et al.*, 2007). Excluded from Ua (although given by Konstantinova *et al.*, 1992 as "Eur:W" which also includes Md). Popova (2003) gives it from Rc with a question mark. Váňa (1975) rejects it from all Central Europe. Given from China by Gao & Bai (2001) but this must be questioned considering the exclusion from Japan and other areas in the region. Bakalin (2003b) confirms it from 31.
172. *Jungermannia leiantha*: change Lu to (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to ● (Kučera & Váňa, 2005), delete Pt (Sérgio & Carvalho, 2003) and add Ad (Sotiaux & Schumacker, 2002) and Co (Sotiaux *et al.*, 2007). Given for Is in Damsholt (2002; as *J. subulata s. lat.*) but the map is erroneously that of *Chiloscyphus polyanthos*.
173. *Jungermannia obovata*: add Ca (Konstantinova, 2001a). Sérgio & Carvalho (2003) rejects it from Pt but it has recently been found there again (Vieira *et al.*, 2007).
174. *Jungermannia paroica*: add Es (Fernández Ordoñez *et al.*, 2003; DD-n fide Sérgio *et al.*, 2007).
175. *Jungermannia polaris*: change Es to ● (Sérgio *et al.*, 2007) and add Ad (Sotiaux & Schumacker, 2002). Given for Sc by Bischler (2004) but this is rejected by M. Aleffi (pers. comm.).
176. *Jungermannia pumila*: change Lu to VU (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Pt to ● (Sérgio *et al.*, 2007), Bg to VU (Natcheva *et al.*, 2006) and add ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszylowicz, 1888).
177. *Jungermannia sphaerocarpa*: change Pt to ● (Sérgio *et al.*, 2007), add Me (Sabovljević & Natcheva (2006) and Re (Konstantinova, 2001a).
178. *Jungermannia subelliptica*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to VU (Kučera & Váňa, 2005).
179. *Jungermannia subulata*: add DD to Ch (Schnyder *et al.*, 2004), change Cz to CR (Kučera & Váňa, 2005) and add Re (Konstantinova & Bezgodov, 2005). The map in Damsholt (2002a) is meant to be *s.lat.* (*i.e.* including *J. leiantha*) but it is erroneously that of *Chiloscyphus polyanthos*. The reports from Is, No and Fi (and all but one from Se) is to be rejected (cf. text).
180. *Kurzia pauciflora*: change Ch to EN (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007) and add Ka (Dietzow, 1938).
181. *Kurzia sylvatica*: change No to DD (Kålås *et al.*, 2006), Es to EN (Sérgio *et al.*, 2007) and add 76 (Kellman, 2003).
182. *Kurzia trichoclados*: change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), delete Pt (Sérgio & Carvalho, 2003) and change Es to VU (Sérgio *et al.*, 2007).

183. *Leiocolea badensis*: change Cz to VU (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Ad (Casas, 1986; DD fide Sérgio *et al.*, 2007) and VU to Yu (Sabovljević *et al.*, 2004).
184. *Leiocolea bantriensis*: change Lu to ? (all reports include *L. collaris* and probably refer to that taxon), add Ad (Sotiaux & Schumacker, 2002), VU to Yu (Sabovljević *et al.*, 2004) and Lv (Áboliņa, 2001).
185. *Leiocolea collaris*: add Sj (confirmed by Konstantinova & Koroleva, 2003), Ad (Sotiaux & Schumacker, 2002), change Yu to VU (Sabovljević *et al.*, 2004), Fi to ? (cf. Konstantinova & Potemkin, 1996) and add 20 (Bischler, 2004).
186. *Leiocolea fitzgeraldiae*: add Ni (Holyoak, 2006). Transferred to *Lophozia* (*L. fitzgeraldiae* (Paton et Perry) Schumacker et Váňa) by Schumacker & Váňa (2005). However, the genus *Leiocolea* is not closely related to *Lophozia* and the genus should be retained (cf. e.g. de Roo *et al.*, 2007).
187. *Leiocolea gillmanii*: change Ch to VU (Schnyder *et al.*, 2004).
188. *Leiocolea heterocolpos*: change Lu to EN (Werner, 2003b), Cz to CR (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), delete Al (locality reported by Szepesfalvy, 1926 is in Montenegro fide C. Colacino, pers. comm.), add Re (Konstantinova, 2001a) and add VU to Yu (Sabovljević *et al.*, 2004). For var. *arctica*: add ? to Fi (Söderström *et al.*, 2002b). For var. *heterocolpos*: add Δ to Re (Konstantinova, 2001a).
189. *Leiocolea rutheana*: add Re (Konstantinova & Bezgodov, 2005).
190. *Leiocolea turbinata*: add Be (Sotiaux & Vanderpoorten, 2001; also occurring outside Luxembourg), change Lu to EV (Werner, 2003b), confirmed for De (Buchbender & Solga, 2002), change Ch to EN (Werner, 2003b), Yu to VU (Sabovljević *et al.*, 2004), add Mk (Sabovljević & Natcheva, 2006), Tu (Sabovljević & Natcheva, 2006) and Ca (Ignatov *et al.*, 2003).
191. *Lejeunea cavifolia*: add Ad (Sotiaux & Schumacker, 2002) and Ka (Dietzow, 1938). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "RsC").
192. *Lejeunea eckloniana*: change Es to DD-n (Sérgio *et al.*, 2007).
193. *Lejeunea laetevirens* Nees et Mont.: reported from Ca by Dirkse *et al.* (1993) but rejected as *L. canariensis* by Grolle & Long (2000).
194. *Lejeunea lamacerina* subsp. *lamacerina*: add DD to No (Kålås *et al.*, 2006), change Ch to VU (Schnyder *et al.*, 2004), Pt and Es to ● (Sérgio *et al.*, 2007), add Co (Skrypczak, 2004) and Sa (Aleffi, 2005). Arnell (1956) rejected earlier reports from No and Dk.
195. *Lejeunea mandonii*: change Pt and Es to VU (Sérgio *et al.*, 2007).
196. *Lejeunea patens*: change Pt to ● (Sérgio *et al.*, 2007), delete Co (Camus, 1895) and reject Sc (Zodda, 1913). Both use the name as *L. serpyllifolia* (Dicks.) Lib. but this name has erroneously been used also for *L. cavifolia*. Zodda (1934) also wrongly included the name as a synonym of *L. cavifolia*.
197. *Lepidozia azorica* was transferred to *Telaranea* as *T. azorica* (H. Buch & Perss.) Pócs ex Schumacker & Váňa in Schumacker & Váňa (2005).
198. *Lepidozia cupressina* subsp. *cupressina*: change Lu to EX (Werner, 2003b), Es to VU (Sérgio *et al.*, 2007) and Bg to DD (Natcheva *et al.*, 2006).
199. *Lepidozia pearsonii*: delete Se (Weibull, pers. comm.) and add Az (Frahm, 2005a).

200. *Lepidozia reptans*: change Pt to ● (Sérgio *et al.*, 2007) and Az to ? (Gabriel *et al.*, 2005).
201. *Lepidozia stuhlmannii* Steph. is found on Az (Frahm, 2005a). It also occurs in 23-27, 29.
202. *Leptoscyphus cuneifolius* subsp. *cuneifolius*: change No to CR (Kålås *et al.*, 2006).
203. *Lophocolea bidentata*: add Me (Dragičević & Veljić, 2006). *L. b.* var. *ventricosa* Schiffn. occurs in 91. Its status is uncertain fide Grolle (2002). Var. *rivularis*: delete Bl (error in Söderström *et al.*, 2002b). The variety is excluded from Rn (although given by Konstantinova *et al.*, 1992 as "RsN-Ur").
204. *Lophocolea bispinosa*: add Ni (Blackstock & Rothero, 2003, new for the whole island).
205. *Lophocolea brookwoodiana* Paton & Sheahan (Paton & Sheahan, 2006) was described from Br.
206. *Lophocolea fragrans*: change No to ● (Kålås *et al.*, 2006), Lu to CR (Werner, 2003b), add De (Nebel & Philippi, 2000), change Pt and Es to VU (Sérgio *et al.*, 2007), and delete Sc (Aleffi, 2005).
207. *Lophocolea heterophylla* subsp. *heterophylla*: add Ad (Sotiaux & Schumacker, 2002) and 28 (Frye & Clark, 1944).
208. *Lophocolea minor*: change Pt to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002) and delete Az (Gabriel *et al.*, 2005). A var. *chinensis* C.Massal. is recognized by Piippo (1990) from 36. Var. *minor* occurs probably as the species.
209. *Lophocolea semiteres*: add Ni (Blackstock & Rothero, 2003; new for the whole island).
210. *Lophozia ascendens*: change No to ● (Kålås *et al.*, 2006), Se to ● (Gärdenfors, 2005), Cz to EN (Kučera & Váňa, 2005), Pt and Es to VU (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), VU to Yu (Sabovljević *et al.*, 2004), change Bg to VU (Natcheva *et al.*, 2006) and add Lv (Āboliņa, 2001).
211. *Lophozia bicrenata* var. *bicrenata*: change Lu to ● (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Pt to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Sb (Papp *et al.*, 2004), Re (Ignatov *et al.*, 2005b), change ? to ● for Az (Gabriel *et al.*, 2005) and add 51 (Schuster, 2002a) and 76 (Hong, 2002). Given for Bg by Damsholt (2002) but this is rejected as no other source has been found.
212. *Lophozia capitata*: change No to CR (Kålås *et al.*, 2006), Lu to EN (Werner, 2003b), Cz to EN (Kučera & Váňa, 2005), add Lv (Āboliņa, 2001), Rc (Konstantinova, 2004), Rw (Vilnet *et al.*, 2005), 71 and 73 (Hong, 2002).
213. *Lophozia decolorans*: change No to EN (Kålås *et al.*, 2006), Ch to ● (Schnyder *et al.*, 2004), Bg to VU (Natcheva *et al.*, 2006) and add 31 (Bakalin, 2005c).
214. *Lophozia elongata*: add Re (Konstantinova & Bezgodov, 2005).
215. *Lophozia excisa*: change Pt and Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Gr (Blockeel *et al.*, 2002), 25 and 27 (Váňa & Watling, 2004). Bakalin (2005b) recognizes *L. chinensis* Steph. as a separate species with *L. hedbergii* S.W.Arnell as a synonym. If this is accepted *L. excisa* does not occur in 25 and 27. However, recent studies on the material of D. Long and G. and S. Miehe from the Himalaya and China confirm the occurrence of *L. excisa* in the Himalaya and China (D.G. Long, pers. comm.). For var.

- excisa*: change Δ to \blacktriangle for Po (type of *Jungermannia socia* placed in synonym by Schuster, 1969) and ? to \blacktriangle for Sj (Söderström *et al.*, 2002b). var. *gemicumulata* Bakalin is described from De by Bakalin (2005b).
216. *Lophozia grandiretis*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to VU (Kučera & Váňa, 2005). For var. *grandiretis*: add Nz and change Δ to \blacktriangle for for Rn (Damsholt, 2002a).
217. *Lophozia groenlandica*: add Sj (Thingsgaard & Damsholt, 2007) and change No to EN (Kålås *et al.*, 2006). Bakalin (2004b, 2005b) reports it from Se, Br, Ch, Re, Ca but his concept of it is completely different from what we are using and we reject it. The type of *Jungermannia groenlandica* Nees has been studied by several hepaticologists with very different conclusion. The name should perhaps be rejected as a *nomen confusum* since it seems impossible to find out where it belongs. Unfortunately it is one of the oldest names in the group.
218. *Lophozia incisa*: change Lu to VU (Werner, 2003b), Es to \bullet (Sérgio *et al.*, 2007), add Ad (Casas, 1986). Var. *inermis* Müll.Frib. is recognized by Potemkin (1993). It is reported from at least No, Po, Bg, Ua, 30, 31, 33, 74, 75.
219. *Lophozia latifolia*: add Ca (Bakalin, 2005b). Bakalin (2003b) synonymizes it with *L. propagulifera* (Gottsche) Steph. and the latter has priority. This makes the species bipolar and 85, 90 and 91 should be added. The report from Ch is based on the doubtful synonymy with *L. jurensis* Müll.Frib. Also given for Sb (Sabovljević & Natcheva, 2006) without further remarks but this report of an arctic species must be doubted or rejected.
220. *Lophozia laxa*: rejected from Is (Jóhannsson, 2003), change No to VU (Kålås *et al.*, 2006), Ch to EN (Schnyder *et al.*, 2004), confirmed for 30 (Bakalin, 2004a) and add 31 (Bakalin, 2005c).
221. *Lophozia longidens*: change Lu to EN (Werner, 2003b), Es to \bullet (Sérgio *et al.*, 2007), add Ad (Casas & Infante, 1998) and Co (Sotiaux *et al.*, 2007), change Bg to EN (Natcheva *et al.*, 2006) and add Nz (Bakalin, 2005b). For subsp. *arctica*: add Nz (Bakalin, 2005b, as *L. pellucida* var. *rubrigemma* f. *arctica* (R.M. Schust.) Bakalin). For subsp. *longidens*: change Δ to \blacktriangle for Ee, Lv, Lt (Söderström *et al.*, 2002b).
222. *Lophozia longiflora*: change Lu to CR (Werner, 2003b), add Li (erroneous omission in Söderström *et al.*, 2002a), Ad (Sotiaux & Schumacker, 2002), Sb (Papp & Erzberger, 2005), ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszyłowicz, 1888), Ka (Dietzow, 1938), 32 (Bakalin, 2005b, as *L. ventricosa* var. *guttulata*). Bischler (2004) gives it for Sa (rejected by Aleffi, *in litt.*) and Ma but there is no other report and we reject it until confirmed by specimens. Bakalin (2005b) reported it from 90 but the report is based on the same taxon as J. Váňa (Bednarek-Ochyra *et al.*, 2000) identified as *L. cf. groenlandica*.
223. *Lophozia obtusa*: change Lu to VU (Werner, 2003b), Ch to \bullet (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; VU fide Sérgio *et al.*, 2007), change Bg to VU (Natcheva *et al.*, 2006) and delete Me (given by Sabovljević, 2000 referring to Pavletić, 1955 but the latter does not give it from Montenegro). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "RsC").
224. *Lophozia opacifolia*: change Cz to DD-va (Kučera & Váňa, 2005), Es to \bullet (Sérgio *et al.*, 2007) and add Ad (Bisang, 1991) and Ro (Blockeel *et al.*, 2004a).

225. *Lophozia pellucida*: add Re (Konstantinova & Bezgodov, 2005, probably var. *pellucida*). Both described varieties are reported from Europe. Var. *pellucida* occur in Sj (Bakalin, 2005b), No (probably), Se (Schuster & Konstantinova, 1996), Fl (Bakalin, 2005b), Rn (Kildjuschevsky, 1975), 30, 31, 70, 71 and var. *minor* R.M.Schust. in Sj (Schuster & Konstantinova, 1996), Rn (Dulin, 2005), 30, 31, 70.
226. *Lophozia perssonii*: change Se to ● (Gärdenfors, 2005), Ch to VU (Schnyder *et al.*, 2004) and add Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007; not occurring in Spain although earlier reported) and Rc (Bakalin, 2005b). Erroneously published for Hungary by Konstantinova (2000; Konstantinova *in litt.*).
227. *Lophozia polaris*: add Fi (Damsholt, 2002a), Si (Sabovljević & Natcheva, 2006) and Mk (Sabovljević & Natcheva, 2006). Bakalin (2005b) gives only var. *polaris* from Europe and confirms the variety from Rn, Fl, 30, 31. He also confirms var. *sphagnorum* from 30 and 70.
228. *Lophozia rubrigemma*: add 31 (Bakalin, 2005c as *L. pellucida* var. *rubrigemma* (R.M.Schust.) Bakalin).
229. *Lophozia savicziae*: add ? to Fi (Söderström *et al.*, 2002b) and add Re (Konstantinova & Bezgodov, 2005). The species was mentioned in the systematic catalogue of Polish liverworts and hornworts, but not included in commented checklist in the same publication (Szweykowski, 2006), probably an error made when compiling the index.
230. *Lophozia schusterana* Schljak.: add Rn (Konstantinova, 2001b; new to Europe), add 30 and 31 (Bakalin, 2004b). Reported from Po by Szweykowski (2006, as *L. groenlandica*) but it can not be outruled that it is *L. silvicola* and we reject it.
231. *Lophozia silvicoloides* N.Kitag. is recorded from Sj (Vilnet *et al.*, 2005), Rn (Vilnet *et al.*, 2005) and Re (Bakalin, 2001). It also occurs in 31, 38, add 70 (Bakalin 2005b).
232. *Lophozia sudetica*: change Lu to ● (Werner, 2003b), Pt to ● (Sérgio *et al.*, 2007), add Sb (Papp & Erzberger, 2005) and Re (Konstantinova & Bezgodov, 2005). Damsholt (2002) and Bakalin (2003a) recognize var. *anomala* (Schljakov) Schljakov (reported from at least Sj, Se, Fi, Cz, Rn, Re, 30, 31, 70) and var. *sudetica* (confirmed for No, Se, Fi, Ge, Cz, Sk, Re and Ca by Bakalin, 2005b, but probably occurring as the species).
233. *Lophozia ventricosa*: change Pt to ● (Sérgio *et al.*, 2007), delete Bl (Sáez *et al.*, 2006b), add 76 (Howe, 1899) and delete 38 (Yamada & Iwatsuki, 2006). Var. *confertifolia* (Schiffn.) Husn. is a confusing taxon that is often given as a synonym of *L. wenzelii*. It is reported from No, Se, Ie, Br, De, Ch, At, Sk, Ro, Gr, Rn, 30, 31, 70, 71, 75, 77. For a time it was used as the correct name for our *L. v.* var. *ventricosa* in Russian literature and some reports may refer to this taxon. It is in need of both taxonomic and nomenclatural clarification! Damsholt (2002) report a plant “approaching” var. *confusa* R.M. Schust. from Norway. For var. *uliginosa*: add Se (Een, 2004). For var. *ventricosa*: confirmed for Sj (Damsholt, 2002a), Sc (Blockeel, 1995) and Ca (Bakalin, 2005b), add 76 (Hong, 2002).
234. Roo *et al.* (2007) and others show that *Lophozia ventricosa* var. *silvicola* should be recognized at species level as *L. silvicola* H.Buch. Add Sj (Thingsgaard & Damsholt, 2007), change Cz to DD (Kučera & Váňa, 2005), and add It (Düll, 1991), Hu, Ro, Lt (Bakalin, 2005b), Rc (Konstantinova, 2004) and 37 (Baka-

- lin, 2005b). Reported from Cm, Ua (incl. Md) and Rs by Konstantinova *et al.* (1992) but Virchenko (pers. comm.) rejects *L. ventricosa s. lat.* from Ukraine and Rs is also excluded due to uncertainties of the report.
235. *Lophozia wenzelii*: add Ie (Bakalin, 2004b), change Cz to EN (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Ca (erroneous omission in Söderström *et al.*, 2002a) and 77 (Hong, 2002). Reported from Gr by Sabovljević & Natcheva (2006) but they include also Crete. The report is probably based on Lüth (2003) as *L. confertifolia* which we think is related to *L. ventricosa*. For var. *lapponica*: add Sj (Konstantinova & Koroleva, 2003), No (Bakalin, 2004b) and 71 (Bakalin, 2005b). Schumacker & Váňa (2005) gives var. *lapponica* as a synonym to *L. savicziae* but this is an error in print. Var. *litoralis* (Arnell) Bakalin is recognized by Bakalin (2004b) from Se (type), Ch, Rn, Re, and 30. Var. *massularioides* Bakalin is described from Ca (Bakalin, 2004b). For var. *wenzelii*: add Ie (Bakalin, 2004b), change Ch to ▲ (Bakalin, 2004b), Rc (Damsholt, 2002a) and Ca (Bakalin, 2004b).
236. *Lunularia cruciata* subsp. *cruciata*: change Cz to ● (Kučera & Váňa, 2005) and add 79 (Forrest *et al.*, 2006).
237. *Mannia androgyna*: change Ch to CR (Schnyder *et al.*, 2004), add Sm (Zodda, 1930) and change Yu to CR (Sabovljević *et al.*, 2004) and Bg to CR (Natcheva *et al.*, 2006).
238. *Mannia californica* (Gottsche ex Underw.) L.C.Wheeler is found as new for Europe in Fr (Hugonnot & Schill, 2006). It occurs also in 76-79.
239. *Mannia fragrans*: change Ch to EN (Schnyder *et al.*, 2004), Es to CR (Sérgio *et al.*, 2007), Yu to EN (Sabovljević *et al.*, 2004), add Lv (Áboliņa, 2001) and Rc (Popova, 1999).
240. *Mannia pilosa*: change Ch to VU (Schnyder *et al.*, 2004), Bg to VU (Natcheva *et al.*, 2006) and add Ee (Söderström *et al.*, 2002b).
241. *Mannia sibirica*: change No to ?CR (Kålås *et al.*, 2006) and add 72 (Crum, 1956).
242. *Mannia triandra*: change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), add Es (Rams *et al.*, 2001; DD-va fide Sérgio *et al.*, 2007) and change Yu to LR (Sabovljević *et al.*, 2004) and Bg to EN (Natcheva *et al.*, 2006). Sabovljević *et al.* (2004) gives it erroneously for Sb but not for Me where it is known earlier.
243. *Marchantia paleacea* subsp. *paleacea*: change Ch to VU (Schnyder *et al.*, 2004), change Pt to ? (Sérgio & Carvalho, 2003; revised material erroneous but occurring at least in greenhouses in Porto, A. Séneca, pers comm.), change Yu to VU (Sabovljević *et al.*, 2004), add Mk (Sabovljević & Natcheva, 2006), delete Ro (Dihoru, 2004) and add 82 (Bischler-Causse *et al.*, 2005).
244. *Marchantia polymorpha*: add Sa (erroneous omission in Söderström *et al.*, 2002a), Mt (Schembri & Lanfranco 1996) and Rs (Konstantinova, 2001a), all probably subsp. *ruderalis*. For subsp. *montivagans*: change Cz to DD (Kučera & Váňa, 2005), add Ad (Sotiaux & Schumacker, 2002), change Bg to ▲ (Natcheva *et al.*, 2006), add Re (Konstantinova & Bezgodov, 2005), 40 (Long, 2006), 79 and 85 (Damsholt, 2002a). For subsp. *polymorpha*: add Pt (Sérgio & Carvalho, 2003), Lv (Söderström *et al.*, 2002b), Rs (Konstantinova, 2001a), 74 (Darigo, 2004) and 84 (Bischler-Causse *et al.*, 2005). For subsp. *ruderalis*: change Pt to ▲ (Sérgio & Carvalho, 2003), delete Bg (Ganeva & Natcheva,

- 2003), change Al to ▲ (Damsholt, 2002a) and Lv (Söderström *et al.*, 2002b). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"). Damsholt (2002a) treats it at species level under the name *M. latifolia* Gray.
245. *Marchesinia mackaii*: change Pt to ● (Sérgio *et al.*, 2007). Excluded from No although reported by Hartman (1864). Add Bl (Casas *et al.*, 2004) and Co (Skrypczak, 2004).
246. *Marsupella adusta*: change Ch to VU (Schnyder *et al.*, 2004), Cz to RE (Kučera & Váňa, 2005) Pt to EN (Sérgio *et al.*, 2007) and Bg to VU (Natcheva *et al.*, 2006).
247. *Marsupella alpina*: change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to EN (Sérgio *et al.*, 2007), add Ad (Casas, 1986; EN fide Sérgio *et al.*, 2007), delete Pt (Sérgio & Carvalho, 2003) and change Bg to VU (Natcheva *et al.*, 2006).
248. *Marsupella andreaeoides*: change Se to DD (Gärdenfors, 2005).
249. *Marsupella arctica*: Add Se (Lönnell *et al.*, 2002).
250. *Marsupella boeckii*: change Ch to VU (Schnyder *et al.*, 2004) and add Re (Konstantinova & Bezgodov, 2005). Record for Sicily is from Malta (Dia *et al.*, 1985), and the occurrence on Sicily itself is rejected.
251. *Marsupella brevissima*: change Cz to RE (Kučera & Váňa, 2005), delete Pt (Sérgio & Carvalho, 2003), change Es to VU (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; VU fide Sérgio *et al.*, 2007) and Bg to VU (Natcheva *et al.*, 2006).
252. *Marsupella commutata*: change Ch to VU (Schnyder *et al.*, 2004) and add Ro (Blockeel *et al.*, 2004b).
253. *Marsupella condensata*: 33 (Manakyan, 1995) and add 73 (Christy & Wagner, 1996).
254. *Marsupella emarginata*: change Lu to ● (Werner, 2003b).
255. *Marsupella funckii*: change Lu to VU (Werner, 2003b), add Ad (Sotiaux & Schumacker, 2002) and change Bg to VU (Natcheva *et al.*, 2006) and Yu to VU (Sabovljević *et al.*, 2004).
256. *Marsupella sparsifolia* subsp. *sparsifolia*: add Is (Jóhannsson, 2003), change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; DD fide Sérgio *et al.*, 2007), change Bg to DD (Natcheva *et al.*, 2006) and add Rw (Potemkin & Andrejeva, 1999).
257. *Marsupella sphacelata*: delete Is (Jóhannsson, 2003), change Es to ● (Sérgio *et al.*, 2007) and add Ad (Casas *et al.*, 2004), Re (Konstantinova & Bezgodov, 2005) and 31 (Bakalin (2003b).
258. *Marsupella spiniloba*: add Rn (Konstantinova, 2001b).
259. *Marsupella sprucei*: change Cz to CR (Kučera & Váňa, 2005), add Ad (Sotiaux & Schumacker, 2002) and Re (Konstantinova & Bezgodov, 2005).
260. *Mastigophora woodsii*: add 50 (He-Nygren *et al.*, 2006).
261. *Metzgeria conjugata*: add Is (Jóhannsson, 2003), Ad (Sotiaux & Schumacker, 2002) and delete Az (Gabriel *et al.*, 2005).
262. *Metzgeria fruticulosa*: Grolle & So (2003) showed that *M. violacea* (Ach.) Dumort. is the correct name. Change No to ● (Kálás *et al.*, 2006), Lu to ● (Werner, 2003b), Cz to EN (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*,

- 2007), add Si (Sabovljević & Natcheva, 2006), Hr, 78, 83, 85 and delete 36 and 38 (Grolle & So, 2003), add ? to 79 (Damsholt, 2002a) and add 82 (Morales *et al.*, 2007). Damsholt (2002) mentions Pt without further comment but it is not mentioned in Portuguese literature and should be rejected.
263. *Metzgeria furcata*: add Ad (Sotiaux & Schumacker, 2002). Grolle (2002) synonymized *M. decipiens* (C.Massal.) Schiffn. from the Southern Hemisphere with *M. furcata*. Thus add (confirm) 24, 25, 26, 27, 29, 60, 61, 62, 63, 80, 81, 82, 83, 84, 85. The species is variable and many varieties are described. However, with the inclusion of *M. decipiens* it is not possible to map any without a world-wide study of the complex.
264. *Metzgeria leptoneura* var. *leptoneura*: add 62 (So, 2002).
265. *Metzgeria lindbergii* Schiffn. is rejected from the Canary Islands although given by Miller *et al.* (1983).
266. *Metzgeria simplex*: change Cz to DD (Kučera & Váňa, 2005), add Si (Sabovljević & Natcheva, 2006) and Ro (Sabovljević & Natcheva, 2006) and change Bg to DD (Natcheva *et al.*, 2006). Schumacker & Váňa (2005) use the name *M. lindbergii* but as we do not know of any investigation synonymizing them, we keep them apart for now.
267. *Metzgeria temperata*: change Lu to VU (Werner, 2003b), Es to VU (Sérgio *et al.*, 2007) add Sb (Papp & Sabovljević, 2002) and 36 (Koponen *et al.*, 2000).
268. *Microlejeunea ulicina*: change Lu to VU (Werner, 2003b), Cz to ? (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007) and add Me and Sb (Sabovljević & Natcheva, 2006).
269. *Mnioloma fuscum*: add 41 (Gao *et al.*, 2003) and 51 (Renner, 2003).
270. *Moerckia blythii*: change Cz to VU (Kučera & Váňa, 2005) and add 31 (Bakalin, 2003b).
271. *Moerckia hibernica*: change Ch to EN (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005) and add Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007; not reported from Spain).
272. *Mylia anomala*: delete Is (Jóhannsson, 2003), change Pt and Es to EN (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), change Bg to VU (Natcheva *et al.*, 2006) and add 76 (Kellman, 2003).
273. *Mylia taylorii*: change Lu to Ex (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004). Bischler (2004) reported it from Es but there are no other sources are known for this and we thus reject it as recommended by M. Infante (pers. comm.). Excluded from Rc (although given by Konstantinova *et al.*, 1992 as "RsC").
274. *Nardia breidleri*: change Ch to VU (Schnyder *et al.*, 2004) and add Es (Casas *et al.*, 2004) and Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007).
275. *Nardia compressa*: delete Is (Jóhannsson, 2003), Po (Szwejkowski, 2006), change Cz to VU (Kučera & Váňa, 2005), change Pt to ● (Sérgio *et al.*, 2007), and add 40 (He-Nygren *et al.*, 2006).
276. *Nardia geoscyphus*: change Lu to EN (Werner, 2003b), add Pt (Sérgio & Carvalho, 2003), change Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Co (Sotiaux *et al.*, 2007), change Bg to VU (Natcheva *et al.*, 2006) and add Re (Konstantinova & Bezgodov, 2005).

277. *Nardia insecta*: delete Is (Jóhannsson, 2003), change Ch to VU (Schnyder *et al.*, 2004), Po to ? (Szweykowski, 2006), Cz to DD-va (Kučera & Váňa, 2005) and add Re (Konstantinova & Bezgodov, 2005).
278. *Nardia japonica*: add 36 (Gao & Bai, 2001).
279. *Nardia scalaris* subsp. *scalaris*: add Ka (Dietzow, 1938) and 33 (Papp, 2004).
280. *Nowellia curvifolia*: change Cz to ● (Kučera & Váňa, 2005), add Ad (Sotiaux & Schumacker, 2002), change Yu to VU (Sabovljević *et al.*, 2004) and add 83 (Schuster, 2002b).
281. *Odontoschisma denudatum* var. *denudatum*: change Lu to VU (Werner, 2003b), Es to VU (Sérgio *et al.*, 2007) and add 43 and 60 (So, 2004).
282. *Odontoschisma elongatum*: change Es to ● (Sérgio *et al.*, 2007), add Ad (Casas, 1986) and Re (Konstantinova & Bezgodov, 2005).
283. *Odontoschisma macounii*: change Ch to VU (Schnyder *et al.*, 2004).
284. *Odontoschisma sphagni*: change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007), add Ad (Casas, 1986), Co (Sotiaux *et al.*, 2007), change Bg to DD (Natcheva *et al.*, 2006), add Lv (Āboliņa, 2001) and Ka (Dietzow, 1938). Excluded from Rn although given by Konstantinova *et al.* (1992 as "Arc:Euro?").
285. *Oxymitra incrassata*: change Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005) and add Mt (Dia *et al.*, 1985).
286. *Pallavicinia lyellii*: change Cz to DD (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007), and add Ro (Ştefănuţ, 2004).
287. *Pedinophyllum interruptum*: change change Lu to L (not threatened; Werner, 2003b), Cz to ● (Kučera & Váňa, 2005), add Sa (Aleffi, 2005) and change Bg to ● (Natcheva *et al.*, 2006). Excluded from Rn (although given by Konstantinova *et al.*, 1992 as "Eur:N").
288. *Pellia endiviifolia* subsp. *endiviifolia*: change Pt to ● (Sérgio *et al.*, 2007), add Tu (Sabovljević & Natcheva, 2006) and Ka (Dietzow, 1938), exclude Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"), Az (Gabriel *et al.*, 2005) and add Ca (Ignatov *et al.*, 2003). For subsp. *alpicola*, add 70 (Damsholt, 2007).
289. *Pellia epiphylla*: add 24 (Kürschner, 2003). For subsp. *borealis*: add Rn (Arnell, 1956) and 31? (Damsholt, 2002a). For subsp. *epiphylla*: change Ch to DD (Schnyder *et al.*, 2004).
290. *Pellia neesiana* subsp. *neesiana*: add Ad (Casas *et al.*, 2004), ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszyłowicz, 1888), Ka (Dietzow, 1938), Re (Baisheva & Potemkin, 1998) and Rs (Konstantinova, 2001a) and delete Az (Gabriel *et al.*, 2005).
291. *Peltolepis quadrata*: change Ch to EN (Schnyder *et al.*, 2004).
292. *Petalophyllum ralfsii*: change Pt to VU (Sérgio *et al.*, 2007), confirmed for Sa (Aleffi, 2005) and add Sm (Dia *et al.*, 1985).
293. *Plagiochasma appendiculatum* Lehm. & Lindenb.: add Bl (Cros *et al.*, 2005; new for Europe).
294. *Plagiochasma rupestre* var. *rupestre*: change Ch to VU (Schnyder *et al.*, 2004).
295. *Plagiochila arctica*: Damsholt (2002a) uses the name *P. asplenioides* subsp. *arctica* (Bryhn & Kaal.) R.M.Schust. and, in addition, separates a var. *lobata*

- (Kaal.) Jørg. The type of this variety is from central Norway so, if the synonymisation is correct, the species does occur in No.
296. *Plagiochila asplenioides*: change Pt to ? (Sérgio & Carvalho, 2003; reports are probably s. lat., i.e. including and referring to *P. porelloides*), Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002) and change ? to ● for Bg (Ganeva & Natcheva, 2003). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E").
 297. *Plagiochila atlantica* is synonymized with the mainly South American *P. heterophylla* Lindenb. ex Lehm. var. *heterophylla* by Heinrichs (2002). Thus add 80, 81, 83. Var. *beauvardii* (Steph.) J.Heinrichs occurs in 80, 82, 83.
 298. *Plagiochila bifaria* var. *bifaria*: change Lu to EV (Werner, 2003b) and Pt to ● (Sérgio *et al.*, 2007). Bischler (2004) gives it from 34 without further comment and as no other source for this atlantic species is known we reject it. Var. *rosea* (R.M.Schust.) J.Heinrichs occurs in 82.
 299. *Plagiochila britannica*: change Ch to VU (Schnyder *et al.*, 2004) and Es to DD-n (Sérgio *et al.*, 2007).
 300. *Plagiochila dubia* from Macaronesia is misidentified. The specimens belong to *P. virginica* A.Evans (Heinrich *et al.*, 2002b), a species that also occurs in 74, 75, 78.
 301. *Plagiochila exigua*: change Ch to VU (Schnyder *et al.*, 2004) and Es to ● (Sérgio *et al.*, 2007).
 302. *Plagiochila maderensis* Gottsche ex Steph. is reinstated as a species endemic to Ma (Rycroft *et al.*, 2004) and later reported also from Cn (Sim-Sim *et al.*, 2005b).
 303. *Plagiochila norvegica*: change No to EN (Kålås *et al.*, 2006). Not red listed in Sweden by Gårdenfors (2005) but this is probably because he does not recognize the taxon any more. Treated as a variety of *P. porelloides* (*P. porelloides* var. *norvegica* (H.H.Blom & Holten) Schumacker & Váña) by Schumacker & Váña (2005) based on the study by Cronberg (2000).
 304. *Plagiochila papillifolia* Steph. is reported from Az by Heinrichs *et al.* (2002a). It occurs also in 80, 82, 83.
 305. *Plagiochila porelloides*: change Pt to ● (Sérgio *et al.*, 2007) and add Ma (Sim-Sim *et al.*, 2003). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"). *P. asplenioides* subsp. *porelloides* var. *grandiretis* R.M. Schust. (not combined under *P. porelloides*) is recognized by Schuster (1980) from 70.
 306. *Plagiochila punctata*: change Lu to EX (Werner, 2003b), Pt and Es to DD (Sérgio *et al.*, 2007), add De (Frahm & Klaus, 2001), 25, 29, 83 (Heinrichs *et al.*, 2005) and 78 (Davison *et al.*, 2006). It is, thus, not endemic to Europe. Sérgio & Carvalho (2003) reject it from Pt but Hespanhol *et al.* (2005) reports it from the north of the country.
 307. *Plagiochila spinulosa*: change No to VU (Kålås *et al.*, 2006), Lu to CR (Werner, 2003b), Es to DD-n (Sérgio *et al.*, 2007), Cn to ? (Rycroft *et al.*, 2002) who question it from Macaronesia, confirmed for Ma (Sim-Sim, 2005a), delete Az (Gabriel *et al.*, 2005). Given as DD-n for Ad in Sérgio *et al.* (2007) but this is obviously an error for Es.
 308. *Plagiochila stricta* Lindenb. is a South and Central American species newly found in Macaronesia. Add Ma (Rycroft *et al.*, 2002, Heinrichs *et al.*, 2004), Cn (Blockeel, 2002) and 29 (Lindner *et al.*, 2004), 78, 80, 81, 83, 84.

309. *Pleurocladula albescens*: change Es to VU (Sérgio *et al.*, 2007), add Hr (Sabovljević & Natcheva, 2006). For var. *islandica*, change Ch to VU (Schnyder *et al.*, 2004) and add Rn (Bomansson & Brotherus, 1894) and 31 (Bakalin, 2005a).
310. *Pleurozia purpurea*: rejected from Sj by Frisvoll in Söderström (1995; although reported from Jan Mayen). Add 36 (Zhu & So, 2003).
311. *Porella arboris-vitae* subsp. *arboris-vitae*: change Se to EN (Gärdenfors, 2005), Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), Sa to ● (Aleffi, 2005), add Ad (Sotiaux & Schumacker, 2002) and ?Rc (Popova, 2003; based on a report from 1849).
312. *Porella baueri*: change Ch to DD (Schnyder *et al.*, 2004), Cz to DD (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Si (Sabovljević & Natcheva, 2006), change Yu to DD (Sabovljević *et al.*, 2004), Bg to ● (Natcheva *et al.*, 2006) and add Me (Dragičević & Veljić, 2006). Although reported many times from Se and No, Damsholt (2002a) states that the occurrence in the Nordic countries has not been established with certainty. Thus change l to ? for Se and No.
313. *Porella canariensis*: change Pt and Es to ● (Sérgio *et al.*, 2007) and delete 20 (Ros *et al.*, 2007).
314. *Porella cordaeana*: change Lu to ● (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Cz to ● (Kučera & Váňa, 2005), Pt to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002) and 40 (Damsholt, 2002a).
315. *Porella obtusata*: add ?Fo (Arnell, 1956; no recent sources known), change No to EN (Kålås *et al.*, 2006), add Si (Sabovljević & Natcheva, 2006), change Yu to VU (Sabovljević *et al.*, 2004), add Ro (Sabovljević & Natcheva, 2006), add DD to Bg (Ganeva & Natcheva, 2003; Natcheva *et al.*, 2006) and delete Al (Colacino & Sabovljević, 2006; only known from an unpublished source and no voucher has so far been traced). Sabovljević *et al.* (2004) give it erroneously for Sb but not for Me where it is known earlier. *P. o.* var. *macroloba* (Steph.) S.Hatt. et Zhang occurs in 33, 36, 38, 40. All European reports are probably var. *obtusata*.
316. *Porella pinnata*: add Be (Siebel *et al.*, 2002), change Pt and Es to ● (Sérgio *et al.*, 2007). Ganeva & Natcheva (2003) and add CR to Bg (Natcheva *et al.*, 2006; refound in 2003 fide A. Ganeva, pers. comm.).
317. *Porella platyphylla*: add Ka (Dietzow, 1938) and delete 79 (So, 2005). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"). Bischler *et al.* (2006) show that *P. platyphylloidea* (Schwein.) Lindb. is genetically (but hardly morphologically) clearly separated from *P. platyphylla*. It is, however, unclear if the former occurs in Europe, and if the latter occurs in North America.
318. *Prasanthus suecicus*: delete Is (Jóhannsson, 2003) and add Ch (Lüth, 2006).
319. *Preissia quadrata*: change Lu to VU (Werner, 2003b), Pt to ● (Sérgio *et al.*, 2007), Gr to ● (Damm & Düll, 1995, Düll, 1995a, b). For subsp. *hyperborea*: add Sj (Thinggaard & Damsholt, 2007), Se and No (Damsholt, 2002a).
320. *Ptilidium ciliare*: change Lu to CR (Werner, 2003b), add Co (Sotiaux *et al.*, 2007) and change Bg to EN (Natcheva *et al.*, 2006). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E").
321. *Ptilidium pulcherrimum*: delete Is (Jóhannsson, 2003), change Es to EN (Sérgio *et al.*, 2007) and add Rs (Konstantinova, 2001a) and 34 (Keçeli & Çetin, 2005).

322. *Radula aquilegia*: delete Pt (Sérgio & Carvalho, 2003).
323. *Radula carringtonii*: excluded from No although given by Arnell (1928) but not confirmed in later sources.
324. *Radula complanata*: delete Fo (Damsholt, 2002a), change Ee to ● (Söderström *et al.*, 2002b) and delete 80 (Dauphin, 2005) and thus SAm.
325. *Radula holtii*: recently refound in Pt (Blockeel *et al.*, 2004b; VU fide Sérgio *et al.*, 2007) and change Es to VU (Sérgio *et al.*, 2007).
326. *Radula lindenbergiana*: add Ni (Blackstock, 2005) and change Cz to VU (Kučera & Váňa, 2005) and Bg to VU (Natcheva *et al.*, 2006).
327. *Reboulia hemisphaerica*: change Lu to ● (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004) and add Ad (Sotiaux & Schumacker, 2002), Rn (Konstantinova, 2001a) and Rw (Potemkin & Andrejeva, 1999). For subsp. *australis*: add ? to Dk (Damsholt, 2002a). For subsp. *hemisphaerica*: change Dk, Ee, Lv, Lt (Söderström *et al.*, 2002b), Fr, Es, Pt, Co, Sa, It (Boisselier-Dubayle *et al.*, 1998) to ▲ and add ▲ to Ad (Sotiaux & Schumacker, 2002), Rn and Rw (Konstantinova, 2001a). Yamada & Iwatsuki (2006) refer all reports from Japan to subsp. *orientalis* R.M.Schust.
328. *Riccardia chamaedryfolia*: change Lu to EN (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005) and add ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszylowicz, 1888) and 31 (Damsholt, 2002a) and Lt (Söderström *et al.*, 2002b; thus occurring not only in Kaliningrad area).
329. *Riccardia incurvata*: add Ni (Blackstock & Rothero, 2003), change Ch to VU (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007), Bg to VU (Natcheva *et al.*, 2006) and add Sb (Papp *et al.*, 2004). The report from Ma (Sérgio & Fontinha, 1994) should be treated as doubtful (M. Sim-Sim, pers. comm.).
330. *Riccardia latifrons*: change Ni to EB (Siebel & Bijlsma, 2004), Cz to ● (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007), and add Ad (Sotiaux & Schumacker, 2002). For subsp. *arctica*: ad Fo (Damsholt, 2002b, Söderström *et al.*, 2002b) and Dk (Damsholt, 2002a). For subsp. *latifrons*: add Δ to Ad (Sotiaux & Schumacker, 2002).
331. *Riccardia multifida* subsp. *multifida*: change Lu to L (not threatened; Werner, 2003b), Cz to ● (Kučera & Váňa, 2005), Bg to VU (Natcheva *et al.*, 2006) and add 27 (Perold, 2003) and 43 (Grolle & Piippo, 1984). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is probably from there.
332. *Riccardia palmata*: change Cz to ● (Kučera & Váňa, 2005), delete Sa (Aleffi, 2005), and add Re (Konstantinova, 2001a) and 32 (Konstantinova *et al.*, 1992). Given from 83 by Gradstein & Hekking (1979) but not in Uribe & Gradstein (1998) and thus probably considered erroneous.
333. *Riccia atromarginata*: change Pt and Es to ● (Sérgio *et al.*, 2007) and add Ma (Sérgio & Fontinha, 1994).
334. *Riccia beyrichiana*: add Bl (Casas *et al.*, 2004) and Gr (Erzberger, 2006).
335. *Riccia bicarinata*: add Bl (erroneously rejected in Söderström *et al.*, 2002a) and Mt (Dia *et al.*, 1985).
336. *Riccia bifurca*: delete Is (Jóhannsson, 2003), change No to EN (Kålås *et al.*, 2006), Lu to EN (Werner, 2003b), Ch to CR (Schnyder *et al.*, 2004), Cz to DD

- (Kučera & Váňa, 2005) and add Bl (Casas *et al.*, 2004), Mk (Sabovljević & Natcheva, 2006) and Lt (Söderström *et al.*, 2002b; thus occurring not only in Kaliningrad area).
337. *Riccia breidleri*: change Ch to VU (Schnyder *et al.*, 2004).
338. *Riccia bullosa* Link ex Lindenb. is given from Pt (Nees, 1838, *non vidi*) and Es (Duthie & Garside, 1937, *non vidi*) but rejected from Europe by Perold (1999).
339. *Riccia canaliculata*: change No to EN (Kålås *et al.*, 2006), Ch to RE (Schnyder *et al.*, 2004) and Cz to DD-va (Kučera & Váňa, 2005), Pt and Es to DD (Sérgio *et al.*, 2007), and add Gr (Erzberger, 2006) and Re (Ignatov *et al.*, 2005). Given for Gr by Sabovljević & Natcheva (2006) but they include Crete and the report is probably from there.
340. *Riccia cavernosa*: change No to VU (Kålås *et al.*, 2006), Ch to CR (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007), Hr (Bischler, 2004), Lv (Āboliņa, 2001), Rw (Potemkin & Andrejeva, 1999), Rs (Suragina *et al.*, 2003), 33 (Manakyan, 1995) and 38 (Furuki, 2006) and delete Az (only reported by Schuster, 1992 without locality but not mentioned by Gabriel *et al.*, 2005). Given from Sa and Ro by Schuster (1992) and Damsholt (2002a) but this is rejected as no other sources are found.
341. *Riccia ciliata*: change No to CR (Kålås *et al.*, 2006), Ch to VU (Schnyder *et al.*, 2004), change Cz to CR (Kučera & Váňa, 2005) and add Ad (Sotiaux & Schumacker, 2002).
342. *Riccia ciliifera*: add Lu (Blockeel *et al.*, 2006), change Ch to VU (Schnyder *et al.*, 2004) and add Me (Dragičević, 2004 as *R. latzelii* Schiffn. treated as a synonym by Jovet-Ast, 1986).
343. *Riccia crinita*: change Ch to VU (Schnyder *et al.*, 2004 as *R. trichocarpa*), Es to ● (Sérgio *et al.*, 2007) and add Sb (Sabovljević & Natcheva, 2006) and Rs (Suragina *et al.*, 2003). Given for Sc by Bischler (2004) but this is rejected by Aleffi (*in litt.*).
344. *Riccia crozalsii*: add Lu (Werner, 2006a), change Ch to VU (Schnyder *et al.*, 2004) and add Mt (Dia *et al.*, 1985) and Tu (Sabovljević & Natcheva, 2006).
345. *Riccia crustata*: change Bg to CR (Natcheva *et al.*, 2006). Rejected from Pt although given by Bischler (2004; C. Sérgio, pers. comm.).
346. *Riccia crystallina*: change Es to ● (Sérgio *et al.*, 2007), Sa to ● for Sa (Aleffi, 2005) and Bg to EN (Natcheva *et al.*, 2006). Reports from No, Dk and Rn (Arnell, 1928, Arnell, 1956) are rejected as *R. cavernosa* (Söderström *et al.*, 2002b).
347. *Riccia fluitans*: change No to VU (Kålås *et al.*, 2006), Lu to CR (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), add Mk (Sabovljević & Natcheva, 2006), delete 27 (Perold, 2003) and add 80 (Dauphin, 2005).
348. *Riccia duplex* var. *duplex*: change Pt and Es to DD (Sérgio *et al.*, 2007).
349. *Riccia fluitans*: change Pt to ● (Sérgio *et al.*, 2007).
350. *Riccia frostii*: change Es to DD (Sérgio *et al.*, 2007), add Sb (Sabovljević & Natcheva, 2006), delete Bg (reported by Düll, 1983, and uncritically repeated by e.g. Sabovljević & Natcheva, 2006, but no specimen seems to exist) and add 41 (Jovet-Ast, 2003).
351. *Riccia glauca*: change Bg to EN (Natcheva *et al.*, 2006), add ?Rs (Suragina *et al.*, 2003) and 32 (Konstantinova *et al.*, 1992). A report from Is (Damsholt,

- 2002a with a ?) is rejected until confirmed. For var. *ciliaris*: delete Ch (erroneous interpretation of Meylan, 1924, in Söderström *et al.*, 2002a), add Rw (Arnell, 1956 as var. *subinermis* (Lindb.) Warnst. from "Fi: Ik" now in Russia).
352. *Riccia gougetiana*: change Ch to VU (Schnyder *et al.*, 2004), Cz to DD (Kučera & Váňa, 2005) and add Bl (Sáez *et al.*, 2006a) and Mk (Sabovljević & Natcheva, 2006).
353. *Riccia huebeneriana*: change No to VU (Kålås *et al.*, 2006), Lu to EN (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Cz to DD (Kučera & Váňa, 2005), Pt and Es to VU (Sérgio *et al.*, 2007), add 33 (Bischler & Jovet-Ast, 1986) and 71 (Jovet-Ast, 2003).
354. *Riccia lamellosa*: delete Al (only reported with a question mark by Jovet-Ast, 1986), add Rs (Suragina *et al.*, 2003), 31 (Bakalin, 2003b) and 84 (Bischler-Causse *et al.*, 2005).
355. *Riccia ligula*: change Ch to VU (Schnyder *et al.*, 2004), delete Pt (Sérgio & Carvalho, 2003) and add 20 (Bischler, 2004).
356. *Riccia macrocarpa*: add Bl (Casas *et al.*, 2004).
357. *Riccia michelii*: change Ch to VU (Schnyder *et al.*, 2004) and Es to ● (Sérgio *et al.*, 2007).
358. *Riccia nigrella*: change Ch to VU (Schnyder *et al.*, 2004) and add Tu (Sabovljević & Natcheva, 2006) and 38 (Kawasumi & Furuki, 2005).
359. *Riccia papillosa*: change Cz to EN (Kučera & Váňa, 2005), Es to ● (Sérgio *et al.*, 2007) and Bg to EN (Natcheva *et al.*, 2006) and add Al (Sabovljević & Natcheva, 2006).
360. *Riccia perennis*: delete Fr as the only known source is Düll (1983).
361. *Riccia rhenana*: add Ie (Blackstock & Rothero, 2005), EN to Lu (Werner, 2003b), change Ch to DD (Schnyder *et al.*, 2004) and Cz to DD (Kučera & Váňa, 2005) and add 72 (Faubert & Roy, 2007).
362. *Riccia sommieri*: change Es to ● (Sérgio *et al.*, 2007).
363. *Riccia sorocarpa* subsp. *sorocarpa*: add Ad (Sotiaux & Schumacker, 2002) and ?Rs (Suragina *et al.*, 2003). The report from Sj with a question mark in Damsholt (2002a) is rejected until it is confirmed. Ros *et al.* (2007) recognize var. *sorocarpa* (confirmed for Is, Fr, De, Pt, Es, Bl, Co, Sa, Sc, It, Si, Hr, Ba, Me, Al, Gr, Cr, Az, Ma, Cn, 20, 24, 25, 27, 34) and var. *heegii* Schiffn. (Fr, At, Pt, Es, Co, Sa, Ma, Cn, 20; rejected from Al).
364. *Riccia subbifurca*: add VU to Lu (Werner, 2003b), change Ch to VU (Schnyder *et al.*, 2004), Pt and Es to ● (Sérgio *et al.*, 2007), and delete Az (Gabriel *et al.*, 2005). Given for Gr by Bischler (2004) without locality and not supported in other literature known to us and thus rejected.
365. *Riccia warnstorffii*: add Lu (J. Werner, *in litt.*), change Ch to VU (Schnyder *et al.*, 2004), Cz to DD (Kučera & Váňa, 2005), Pt and Es to ● (Sérgio *et al.*, 2007), and add Me (Dragičević & Veljić, 2006), 77 to 78 (error in Söderström *et al.*, 2002a). Ros *et al.* (2007) recognize var. *subinermis* Warnst. (Pt, Sc, Hr, 20) and var. *warnstorffii* (confirmed for Se, Br, Fr, De, Po, Ch, Hu, Pt, Es, Co, Sc, It, 20).
366. *Ricciocarpos natans*: change No to ● (Kålås *et al.*, 2006), Lu to CR (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Es to EN (Sérgio *et al.*, 2007), Bg to DD (Ganeva & Natcheva, 2003), add Me (Dragičević & Veljić, 2006), Ka (Dietzow, 1938), Re (Ignatov *et al.*, 2005), Rs (Ignatov *et al.*, 2005) and 83 (Gradstein *et al.*, 2003).

367. *Riella affinis*: delete Es (error for Cn in Casas, 1998, fide M. Brugués pers. comm.).
368. *Riella cossoniana*: change Es to EN (Sérgio *et al.*, 2007).
369. *Riella helicophylla*: add ● to Fr (Skrzypczak, 2001b), change Pt and Es to VU (Sérgio *et al.*, 2007), and add Mt (Lanfranco & Lonfranco 1999).
370. *Riella notarisii*: change Ch to RE (Schnyder *et al.*, 2004), Pt and Es to VU (Sérgio *et al.*, 2007), and add Hr (Sabovljević & Natcheva, 2006) and Cn (Doort & Niewukoop, 2003).
371. *Riella parisii*: add Fr (Skrzypczak, 2001b). Thus re-instated in the European flora.
372. *Saccogyna viticulosa*: change Pt to ● (Sérgio *et al.*, 2007).
373. *Sauteria alpina*: change Ch to VU (Schnyder *et al.*, 2004) and Yu to CR (Sabovljević *et al.*, 2004).
374. *Scapania aequiloba*: change Lu to CR (Werner, 2003b), Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002) and change Yu to EN (Sabovljević *et al.*, 2004).
375. *Scapania apiculata*: change No to VU (Kålås *et al.*, 2006), Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005), Ad to DD-n (Sérgio *et al.*, 2007), Bg to CR (Natcheva *et al.*, 2006) and add Lt (Söderström *et al.*, 2002b), Re (Konstantinova & Bezgodov, 2005) and 40 (synonymisation with *S. ensifolia* Grolle by Potemkin, 2002).
376. *Scapania aspera*: change Lu to ● (Werner, 2003b), Cz to EN (Kučera & Váňa, 2005), delete Pt (Sérgio & Carvalho, 2003), add Ad (Sotiaux & Schumacker, 2002) and delete 36 (Potemkin, 2000).
377. *Scapania brevicaulis*: change Ch to DD (Schnyder *et al.*, 2004 as *S. degenii*, occurrence doubtful). Mentioned from It without specification by Potemkin (2002). Treated as doubtful until verified by specimens.
378. *Scapania calcicola*: add Be (Sotiaux *et al.*, 2002), change Ch to VU (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), delete Sc (Aleffi, *in litt.*) and add VU to Yu (Sabovljević *et al.*, 2004). Noted for BI in Casas *et al.* (2004) but this is a mistake (R.M. Ros, pers. comm.).
379. *Scapania carinthiaca*: change No to EN (Kålås *et al.*, 2006), Ch to VU (Schnyder *et al.*, 2004), Cz to RE (Kučera & Váňa, 2005) and add Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007; variety unknown; not reported from Spain). For var. *massalongi*: change Ch to VU (Schnyder *et al.*, 2004) and Cz to RE (Kučera & Váňa, 2005).
380. *Scapania compacta*: change Lu to ● (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to DD-va (Kučera & Váňa, 2005), add Ad (Sotiaux & Schumacker, 2002) and change Bg to EN (Natcheva *et al.*, 2006).
381. *Scapania crassiretis*: change Se to VU (Gärdenfors, 2005), Ch to VU (Schnyder *et al.*, 2004) and add 38 (Potemkin, 2002). Ganeva & Natcheva (2003) report it from Bg but without locating any specimen (based on Düll, 1983) and it should be rejected until a specimen is found. Potemkin (2002) treat it as a subspecies of *S. nemorea*.
382. *Scapania curta*: change Lu to VU (Werner, 2003b), Ch to EN (Schnyder *et al.*, 2004), Pt and Es to DD (Sérgio *et al.*, 2007) and add Ka (Dietzow, 1938). Excluded from Rs (although given by Konstantinova *et al.*, 1992 as "Eur:E"). For var. *curta*: change Δ to \blacktriangle for Fo, Ee, Lv, Lt (Söderström *et al.*, 2002b) and

- Cz (type of *Jungemania rosacea* Corda treated as a synonym by Schuster, 1974). For var. *grandiretis* R.M.Schust.: add Rn (Konstantinova, 2001b; new to Europe). Occurs also in 30, 31, 70.
383. *Scapania cuspiduligera* var. *cuspiduligera*: change Is to ● (Jóhannsson, 2003), add VU to Lu (Werner & Caspari, 2002, Werner, 2003b; not reported from Belgium), change Cz to EN (Kučera & Váňa, 2005), Es to DD-n (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007), Re (Konstantinova & Bezgodov, 2005), 25 (O'Shea *et al.*, 2003), 27 (Hodgetts *et al.*, 1999), 36 (Bai, 1993 and others), 85 (Paton, 1999).
384. *Scapania glaucocephala*: change No to DD (Kålås *et al.*, 2006), add 31 (Bakalin, 2003b) and 36 (Cao *et al.*, 2003). Potemkin (1999) recognizes var. *saxicola* occurring in 70, 72, 73, 74 and 75.
385. *Scapania gracilis*: change Se to VU (Gärdenfors, 2005).
386. *Scapania gymnostomophila*: change Ch to CR (Schnyder *et al.*, 2004), Cz to EN (Kučera & Váňa, 2005), Es to VU (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002; VU fide Sérgio *et al.*, 2007) and Re (Konstantinova & Bezgodov, 2005).
387. *Scapania helvetica*: change Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005) and Bg to VU (Natcheva *et al.*, 2006).
388. *Scapania hyperborea*: add VU to Ch (Schnyder *et al.*, 2004).
389. *Scapania irrigua*: add Tu (Sabovljević & Natcheva, 2006) and Rs (Konstantinova, 2001a) and Δ to subsp. *irrigua*. Given for Malta (and thus Sc) in Frye & Clark (1946) citing Buch (1928), but the latter does not mention it from Sicily. For subsp. *irrigua*: change Δ to \blacktriangle for Rc (Damsholt, 2002a).
390. *Scapania kaurinii*: excluded from Re (although given by Konstantinova *et al.*, 1992 as "Eur:S-Ur?" which also include the eastern slope of Ural Mts.).
391. *Scapania ligulifolia* is treated as a subspecies of *S. calcicola* by Potemkin (2002).
392. *Scapania lingulata*: add Fo (Söderström *et al.*, 2002b), change Cz to EN (Kučera & Váňa, 2005), add EN to Yu (Sabovljević *et al.*, 2004) and delete 38 (Yamada & Iwatsuki, 2006). For var. *lingulata*: add Fo (\blacktriangle ; Söderström *et al.*, 2002b) and Yu (Δ ; Sabovljević *et al.*, 2004) and change Δ to \blacktriangle for Ee and Lv (Söderström *et al.*, 2002b).
393. *Scapania mucronata*: change Lu to VU (Werner, 2003b), Ch to ● (Schnyder *et al.*, 2004), Es to DD (Sérgio *et al.*, 2007) and add Lv (Áboliņa, 2001) and Rc (Konstantinova, 2004).
394. *Scapania nemorea*: add Rw (Arnell, 1956 from "Fi: Ik" now in Russia) and delete 70, 71, 73 (Hong, 1980). Rejected from Fl by Konstantinova & Potemkin, 1996 (given in Zhukova, 1973).
395. *Scapania obcordata*: excluded from Re (although given by Konstantinova *et al.*, 1992 as "Eur:S-Ur?" which also includes the eastern slope of Ural Mts.).
396. *Scapania obscura*: add 73 (Christy & Wagner, 1996).
397. *Scapania ornithopodioides*: add 71 (Potemkin, 2002).
398. *Scapania paludicola*: change Cz to VU (Kučera & Váňa, 2005), add Es (Fuertes *et al.*, 1998), change Es to DD (Sérgio *et al.*, 2007), Bg to VU (Natcheva *et al.*, 2006) and add Ka (Dietzow, 1938). For var. *paludicola*: change Δ to \blacktriangle for Dk and Lv (Söderström *et al.*, 2002b).

399. *Scapania paludosa*: change Cz to VU (Kučera & Váňa, 2005), Es to DD (Sérgio *et al.*, 2007), add Co (Sotiaux *et al.*, 2007) and Yu to VU (Sabovljević *et al.*, 2004).
400. *Scapania praetervisa* var. *praetervisa*: change Ch to VU (Schnyder *et al.*, 2004), Cz to VU (Kučera & Váňa, 2005), Pt and Es to DD (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Ro (Jakab, 1999) and Re (Konstantinova & Bezgodov, 2005). Potemkin (2002) treats it as a subspecies of *S. mucronata*.
401. *Scapania scandica*: change Lu to EN (Werner, 2003b), Cz to DD (Kučera & Váňa, 2005; treating *S. parvifolia* separately as CR), add Pt (Sérgio *et al.*, 2001; DD fide Sérgio *et al.*, 2007), Es (Brugués *et al.*, 2002; DD fide Sérgio *et al.*, 2007), Ad (Sotiaux & Schumacker, 2002; DD fide Sérgio *et al.*, 2007), Sb (Papp *et al.*, 2004), change Bg to EN (Natcheva *et al.*, 2006), add Rc (Konstantinova, 2004), Re (Konstantinova & Bezgodov, 2005), 36 and 38 (Potemkin, 2002 as synonymy of *S. parvifolia*). For var. *scandica*: *Scapania parvifolia* is treated as a synonym by Potemkin (2002) and the variety is thus confirmed (change Δ to \blacktriangle) for Po, Cz, Sk, Hu, Bg, Ua, Rw, 36 and 38. Also add Re (Konstantinova & Bezgodov, 2005 as *S. parvifolia*).
402. *Scapania scapanioides*: change Ch to VU (Schnyder *et al.*, 2004). Potemkin (2002) synonymized it with *S. glaucocephala* with a question mark.
403. *Scapania spitsbergensis*: change No to DD (Kålås *et al.*, 2006).
404. *Scapania subalpina*: change Pt to \bullet (Sérgio *et al.*, 2007), add Re (Konstantinova & Bezgodov, 2005) and 34 (Papp, 2004). Var. *haynesiae* Frye et L. Clark is recognised by Hong (1975) and var. *muddiae* Bird et Hong by Hong (1987). Both occur in 71. All European reports probably belong to var. *subalpina*.
405. *Scapania tundrae*: change No to DD (Kålås *et al.*, 2006).
406. *Scapania uliginosa*: delete 38 (Yamada & Iwatsuki, 2006).
407. *Scapania umbrosa*: change Lu to EN (Werner, 2003b), Pt and Es to EN (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Co (Sotiaux *et al.*, 2007), ? to Rc (Popova, 2003), delete Az (Gabriel *et al.*, 2005) and add 31 (Bakalin, 2003b).
408. *Scapania undulata*: change Lu to VU (Werner, 2003b) and add 32 (Arnell, 1928).
409. *Scapania verrucosa*: delete Po (Szweykowski 2006), change Ch to VU (Schnyder *et al.*, 2004), add Ba and Hr (Sabovljević & Natcheva, 2006) and change Bg to EN (Natcheva *et al.*, 2006). Excluded from No although reported by Arnell (1928) but no recent report exists.
410. *Southbya nigrella*: change Es to CR (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), Ma (Sérgio & Fontinha, 1994) and 24 (Kürschner, 2003).
411. *Southbya tophacea*: add Ca (Ignatov *et al.*, 2003) and delete Az (Gabriel *et al.*, 2005).
412. *Spaerocarpos stipitatus*: change Es to CR (Sérgio *et al.*, 2007).
413. *Sphaerocarpos texanus*: add Lu (Werner, 2006b), change Ch to EN (Schnyder *et al.*, 2004) and add Co (Sotiaux *et al.*, 2007) and Sc (Polizzi & Lo Guidice, 2002).
414. *Sphenolobopsis pearsonii*: add Is (Jóhannsson, 2003) and 70 (Schofield *et al.*, 2004). Rejected from Rn by Konstantinova (pers. comm.).

415. *Targionia hypophylla*: excluded from Se (although reported in Hartman, 1864), change Lu to EX (Werner, 2003b), Ch to VU (Schnyder *et al.*, 2004), Cz to CR (Kučera & Váňa, 2005) and add Ro (Sabovljević & Natcheva, 2006), 43 (Piippo, 1991) and 81 (Bischler-Causse *et al.*, 2005).
416. *Targionia lorbeeriana*: add Hr (Sabovljević & Natcheva, 2006).
417. *Telaranea longii*: Engel & Smith Merrill (2004) synonymized it with *T. tetradactyla* (Hook.f. & Tayl.) Hodgs. (which has priority), a species reported from many places in the southern hemisphere but that they showed is restricted to S New Zealand (51) and offshore islands. It is thus reasonably convincing that it is an introduction to Europe.
418. *Telaranea nematodes*: Engel & Smith Merrill (2004) described a new species, *T. europaea* J.J.Engel & G.L.Merrill that includes all reports of *T. nematodes* from Europe and Macaronesia, but that is not known from elsewhere. Change Pt and Es to VU (Sérgio *et al.*, 2007) and add 34 (Keçeli & Abay, 2007).
419. *Tetralophozia filiformis*: change Es to VU (Sérgio *et al.*, 2007) and add 30, 31 (Konstantinova, 2003).
420. *Tetralophozia setiformis*: change Cz to VU (Kučera & Váňa, 2005).
421. *Trichocolea tomentella*: change Lu to VU (Werner, 2003b), Pt to ● (Sérgio *et al.*, 2007), add Co (Sotiaux *et al.*, 2007), change Yu to EN (Sabovljević *et al.*, 2004) and Bg to EN (Natcheva *et al.*, 2006). Giulia (1858-59) reports it from Mt but this must be rejected.
422. *Tritomaria exsecta*: add Ni (Corley & Hill, 1981), change Lu to ● (Werner, 2003b), Es to ● (Sérgio *et al.*, 2007), add Ad (Sotiaux & Schumacker, 2002), ? to Me (Dragičević & Veljić, 2006, but referring only to Beck & Szyszyłowicz, 1888), change Bg to VU (Natcheva *et al.*, 2006) and confirmed for Rc (Konstantinova *et al.*, 2004). Rejected from Rn although given by Bomansson & Brotherus (1894) and Damsholt (2002a). Engel (2006) describes subsp. *novaezelandiae* J.J.Engel from New Zealand (thus add 51) and refers all other reports to subsp. *exsecta*.
423. *Tritomaria exsectiformis*: change Cz to ● (Kučera & Váňa, 2005), Es to l (Sérgio *et al.*, 2007) and add Ad (?var. *exsectiformis*; Sotiaux & Schumacker, 2002). For subsp. *exsectiformis*: change Δ to \blacktriangle for Es, Ro, Bg, Rc (Damsholt, 2002a) and add r to Ad (Sotiaux & Schumacker, 2002).
424. *Tritomaria heterophylla*: excluded from Rn (although given by Konstantinova *et al.*, 1992 as "Arc:Euro" which also include Nz and Fl). Refers probably to Fl.
425. *Tritomaria polita* subsp. *polymorpha*: confirmed for Sj (Konstantinova & Koroleva, 2003).
426. *Tritomaria quinquedentata*: add Ba (Hébrard, 1975), Sb (Veljić *et al.*, 2001), Al (Sabovljević & Natcheva, 2006), Lv (Āboliņa, 2001) and ?Rc (Popova, 2003). For subsp. *quinquedentata*: change Δ to \blacktriangle for Fr, NI, Be, Po, Ch, Hu, Pt, Co, It, Si, Hr, Mk, Ro, Bg (Damsholt, 2002a; stating subsp. *turgida* is absent from C Europe and the Alps) and add r to Lv (Aboliņa, 2001). For subsp. *turgida*: add Fi (Söderström *et al.*, 2002b) and 71 (Damsholt, 2002a).
427. *Tritomaria scitula*: add Ad (Sotiaux & Schumacker, 2002; DD-n fide Sérgio *et al.*, 2007; not reported from Spain), change Bg to DD (Natcheva *et al.*, 2006) and add 40 (Long, 2005).

Update to table

Table 3 shows the actual known number of species in each recognized area. Most areas have increased the number of known species during the last 5 years, mainly due to increased bryological activity in some less known areas.

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