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Red-list of moss species of Serbia: 2024 assessment

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ABSTRACT:
The new extinction risk assessments of the mosses of Serbia have been completed. Based on the available data, 27.18% of Serbian moss flora (174 species) is under threat (status 2024). Nearly 20% (129 species) of Serbian moss flora is considered to be Data Deficient (DD) and 5.16% (33 species) Near Threatened (NT). These findings clearly indicate the urgent need for field investigation and species biology research in order to define the major threats and adequate conservation measures.

Keywords:
threat assessment, conservation, bryophyte, extinction risk

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INTRODUCTION

Mosses, the biggest group within the bryophytes, exhibit high species diversity in Serbia. According to Pantović *et al.* (2021) and Sabovljević *et al.* (2023), moss flora of Serbia comprises 640 species and an additional 35 infraspecific taxa. These numbers are probably underestimated bearing in mind that many taxa are under-recorded and taxonomically unclear. Almost 40% have also been newly recorded over the last two decades (Pantović *et al.* 2021). Despite Serbia's rich bryophyte flora, data on moss distribution within the country remains limited. Numerous species have been recorded just once, and the presence of many species is reported without precise locality details. In addition, the lack of historical herbarium specimens has hindered the confirmation of the identity and presence of certain species in Serbia.

However, rapid environmental changes and climate shifts threaten the survival of mosses just like other organism groups. Mosses, like other bryophytes, are good indicators of environmental health, and carrying out extinction risk assessments provides insights into both the state of various habitat types and ecosystems and the survival status of individual species (Sabovljević *et al.* 2024).

Mosses are included in the national legislative, but the last comprehensive assessment of the threat to their survival was conducted jointly for Serbia and Montenegro 20 years ago (Sabovljević *et al.* 2004). Although new data has been collected on their presence and distribution since then, new studies are urgently needed (Pantović & Sabovljević 2017). Thus, using all the data from the literature, available herbaria, as well as field studies, an extensive and geo-referenced database has been developed, allowing us to make new threat assessments for the mosses of Serbia (Pantović & Sabovljević 2017).

Here we present the results of the IUCN assessment of the extinction risk of mosses in Serbia, building on the recently published red-list of hornwort and liverwort species (Sabovljević *et al.* 2024).

MATERIAL AND METHODS

The nomenclatural and taxonomical approach for mosses given in Pantović *et al.* (2021) was followed in this study. All the moss taxa present in Serbia were subjected to extinction risk assessment strictly applying the criteria set out by the IUCN (2012a, b, 2022). The specific issues regarding bryophyte assessment as highlighted by Hallingbäck *et al.* (1998) and Bergamini *et al.* (2019) were also considered. The lack of knowledge on the biology and population trends for the majority of the taxa reported in Serbia led to the primary application of criterion B and D in the assessment process. However, other criteria were applied where possible (e.g. Pantović *et al.* 2023). The presence and knowledge of the population status of the same taxa in neighbouring territories, especially their dispersal potential, were taken into consideration in the decision on the final IUCN threat status in Serbia. The age of reports or records (Pantović *et al.* 2021), as well as habitat preferences and ecological requirements (Dierssen 2001) were also taken into account. The year 1990 was used as the cut-off date between old and recent records. For doubtful records/reports unconfirmed by recent field investigation and/or herbarium specimens the category of DD (data deficient) was retained.

The continuously expanding BRYO database was used as the data source for distribution since it includes both literature and herbarium records (Pantović & Sabovljević 2017), the data from the extensive Balkan collection of bryophytes deposited within the Hungarian Natural History Museum in Budapest (BP) and the Belgrade University Bryophyte Collection (BEOU-Bryo), as well as recent surveys conducted in Serbia. The extent of occurrence (EOO) and area of occupancy (AOO) were calculated following the confirmation of the distributional data using the open-source application GeoCAT (Geospatial Conservation Assessment Tool) with a 2 × 2 km calculation grid in accordance with the European scale (Hodgetts *et al.* 2019). For the moss extinction risks in Europe, the guidelines provided by Hodgetts *et al.* (2019) were followed, while national and regional risks were considered according to Hodgetts & Lockhart (2020) and Martinčič (2024). A taxon was considered Regionally Extinct (RE) or Possibly Extinct (PE) only if it had been the focus of recent field investigations where no occurrences were found. Alternatively, the status for such species remained Data Deficient (DD).

RESULTS AND DISCUSSION

Over the last 20 years, revived but non-intensive bryological field research in Serbia has resulted in a rather high number of newly reported mosses for the country. The first red list of Serbia (Sabovljević *et al.* 2004) assessed 210 out of 423 known moss taxa at that time. A more recent account of 640 moss species known from Serbia (Pantović *et al.* 2021; Sabovljević *et al.* 2023), was assessed for extinction risk in this work. This assessment was made possible due to the time elapsed since the previous list, but more importantly, thanks to the extensive new information on mosses gathered over the last two decades. Nevertheless, the occurrence, real distribution and threat status of many species remain unclear.

The updated information on mosses used to assess moss species extinction risk in Serbia is given in Table 1. The accumulation of knowledge has allowed for the revision of the threat status of some species, also taking into account population abundance in nearby areas/countries as suggested by the IUCN (2012a, b, 2022).

The current red-list (2024) of mosses in Serbia comprises one Extinct species (EX), two Possibly Extinct/Regionally Extinct (PE/RE), 21 Critically Endangered (CR), 51 Endangered (EN), 102 Vulnerable (VU), 33 Near Threatened (NT) and 129 Data Deficient (DD) species, and one species was not subject to extinction risk assessment as it is characterized as new and invasive taxon in bryophyte flora of Serbia (Sabovljević *et al.* 2023) (Table 2). The Least Concern (LC) species in Serbia account for 46.87% (300 species) of the total moss flora. The total number of taxa under threat (CR+EN+VU) is 174, representing 27.18% of the moss flora, which is an increase compared to the previous red-list (Sabovljević *et al.* 2004) where 20.09% of moss taxa were classified as threatened. The recent knowledge gathered on mosses, and also the cut-off threshold (i.e. species not recorded after 1990), have led to an increase in both threatened and data deficient (DD) taxa. Slightly more than 20% of Serbian moss flora remains data deficient (DD). According to Table 2, the percentage of NT and LC taxa has significantly decreased, thus indicating a higher extinction risk for more taxa than previously reported. This highlights the urgent need for further studies and effective management strategies to ensure the survival of threatened species. The total number of CR and VU taxa has almost doubled, while the numbers of EN increased four times. The number of taxa which may soon be considered under threat (NT) remains relatively high (33), although their percentage in the total moss flora has decreased.

As previously noted by Sabovljević *et al.* (2024), the current list reflects the bryophyte investigation rate in Serbia and the available Serbian moss data sets. However, it provides significantly better insights into species survival prospects than the previous list (Sabovljević *et al.* 2004), and also highlights the need for conservation efforts for this plant group, particularly in the light of rapid environmental and climate changes.

Thus, there is an urgent need for field investigation and species biology research in order to define the major threats and implement adequate conservation measures so as to actively protect the moss flora of Serbia.

Table 1. A list of the moss species present in Serbia with the assessed threatened status in 2024 (VU – Vulnerable; EN – Endangered; CR – Critically Endangered; NT – Near Threatened; DD – Data Deficient; PE – Possibly Extinct; LC - Least Concern). The species marked with an asterisk are those whose assessment has been corrected (increased/decreased) based on the population abundance in nearby areas/countries. Two asterisks signify taxonomical problems or species complex.

Species	Assesment ratio	IUCN categorization in Serbia (status 2024)
Abietinella abietina (Hedw.) M. Fleisch		LC
Acaulon triquetrum (Spruce) Müll. Hal.	B2ab(i,iii,iv)	VU
Alleniella besseri (Lobarz.) S. Olsson, Enroth & D. Quandt		LC
Alleniella complanata (Hedw.) S. Olsson, Enrot & D. Quandt		LC
Aloina aloides (Koch ex Schultz) Kindb.		LC
Aloina ambigua (Bruch & Schimp.) Limpr.		LC
Aloina obliquifolia (Moll. Hal.) Broth.	D1	CR
Aloina rigida (Hedw.) Limpr.		LC
Amblystegium serpens (Hedw.) Schimp		LC
Amphidium lapponicum (Hedw.) Schimp.		DD
Amphidium mougeotii (Schimp.) Schimp	B2a	NT
Anacamptodon splachnoides (Froel. ex Brid.) Brid.		DD
Andreaea rothii F. Weber & D. Mohr	D1	CR
Andreaea rupestris Hedw	B2a	NT
Anomobryum julaceum (Schrad. ex P. Gaertn. & al.) Schimp	D2	VU
Anomodon attenuatus (Hedw.) Huebener		LC
Anomodon longifolius (Schleich. ex Brid.) Hartm.	B2ab(i,iii,iv)*	VU
Anomodon rugelii (Müll. Hal.) Keissl	D1	CR
Anomodon viticulosus (Hedw.) Hook. & Taylor		LC
Antitrichia curtipendula (Hedw.) Brid		LC
Archidium alternifolium (Hedw.) Mitt.		DD
Atrichum angustatum (Brid.) Bruch & Schimp.	B2a	NT
Atrichum flavisetum Mitt.		DD
Atrichum tenellum (Röhl.) Bruch & Schimp	B2ab(ii,iv)	EN
Atrichum undulatum (Hedw.) P. Beauv.		LC
Aulacomnium androgynum (Hedw.) Schwägr.	D1	EN
Aulacomnium palustre (Hedw.) Schwägr	B2a	NT
Barbula unguiculata Hedw.		LC
Bartramia aprica Müll. Hal.		DD
Bartramia halleriana Hedw		LC
Bartramia ithyphylla Brid		LC
Bartramia pomiformis Hedw.		LC
Blindia acuta (Hedw.) Bruch & Schimp.	B1,2ab(ii,ii,iv), D1	CR
Brachytheciastrum olympicum (Jur.) Wanderport. et al.		DD
Brachytheciastrum velutinum (Hedw.) Ignatov & Huttunen		LC
Brachythecium albicans (Hedw.) Schimp		LC
Brachythecium campestre (Müll. Hal.) Schimp		LC
Brachythecium cirrosum (Schwägr.) Schimp.		DD
Brachythecium erythrorrhizon Schimp		LC
Brachythecium geheebii Milde	B2ab(ii,iv), D1	EN
Brachythecium glareosum (Bruch ex Spruce) Schimp.		LC
Brachythecium laetum (Brid.) Schimp.		DD
Brachythecium mildeanum (Schimp.) Schimp.		LC
Brachythecium rivulare Schimp		LC
Brachythecium rutabulum (Hedw.) Schimp		LC
Brachythecium salebrosum (Hoffm. ex F. Weber & D. Mohr.) Schimp.		LC
Brachythecium tenuicaule (Spruce) Kindb.		DD
Brachythecium tommasinii (Sendtner ex Boulay) Ignatov & Huttunen		LC

Breidleria pratensis (W.D.J. Koch ex Spruce) Loeske	B2b(ii, iv)	VU
Bryoerythrophyllum recurvirostrum (Hedw.) P. Chen		LC
Bryum argenteum Hedw		LC
Bryum blindii Bruch & Schimp.		DD
Bryum canariense Brid.	D2	VU
Bryum dichotomum Hedw.		LC
Bryum elegans Nees		LC
Bryum funkii Schwägr		DD
Bryum gemmiferum R. Wilczek & Demaret		LC
Bryum gemmiparum De Not.	D2	VU
Bryum intermedium (Brid.) Blandow		DD
Bryum klinggraeffii Schimp.		LC
Bryum kunzei Hornsch.		DD
Bryum lanatum (P. Beauv.) Brid.		LC
Bryum radiculosum Brid		LC
Bryum ruderale Crundw. & Nyholm		LC
Bryum sauteri Bruch & Schimp.		DD
Bryum schleicheri DC.		LC
Bryum subapiculatum Hampe		LC
Bryum turbinatum (Hedw.) Turner	B2ab(ii,iv), D1	EN
Bryum violaceum Crundw. & Nyholm		LC
Bryum weigelii Spreng.		DD
Buckia vaucheri (Lesq.) D. Ríos, M.T. Gallego & J. Guerra		LC
Buxbaumia viridis (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl	B2ab(ii, iii, iv, v), D1	EN
Callicladium haldanianum (Grev.) H. A. Crum		DD
Calliergon cordifolium (Hedw.) Kindb.		LC
Calliergon giganteum (Schimp.) Kindb.	B2ab(i,ii, iii, iv)	EN
Calliergonella cuspidata (Hedw.) Loeske		LC
Calliergonella lindbergii (Mitt.) Hedenäs		LC
Campyliadelphus chrysophyllus (Brid.) R. S. Chopra		LC
Campyliadelphus elodes (Lindb.) Kanda	D2	VU
Campylium protensum (Brid.) Kindb.		LC
Campylium stellatum (Hedw.) Lange & C.E.O. Jensen		LC
Campylophyllopsis calcarea (Crundw. & Nyholm) Ochyra		LC
Campylophyllopsis sommerfeltii (Myrin) Ochyra		LC
Campylophyllum halleri (Hedw.) M. Fleisch.	B2a	NT
Campylopus flexuosus (Hedw.) Brid		DD
Campylopus introflexus (Hedw.) Brid		NE
Campylopus setifolius Wilson		DD
Campylopus subulatus Schimp. ex Milde (Hampe) Lindb.	D2	VU
Ceratodon conicus (Hampe) Lindb.		DD
Ceratodon purpureus (Hedw.) Brid		LC
Cheilothela chloropus (Brid.) Broth.		DD
Chionoloma tenuirostre (Hook. & Taylor) M. Alonso, M.J. Cano & J.A. Jiménez	D2	VU
Cinclidotus aquaticus (Hedw.) Bruch & Schimp.		LC
Cinclidotus fontinaloides (Hedw.) P. Beauv		LC
Cinclidotus riparius (Host ex Brid.) Arn.		LC
Cirriphyllum crassinervium (Taylor) Loeske & M. Fleisch		LC
Cirriphyllum piliferum (Hedw.) Grout		LC
Claopodium rostratum (Hedw.) Ignatov	B2ab(i,ii,iv)	EN
Climacium dendroides (Hedw.) F. Weber & D. Mohr		LC
Cnestrum alpestre (Wahlenb. ex Huebener) Nyholm ex Mogensen		DD
Codonoblepharon forsteri (Dicks.) Goffinet	D1	CR
Conardia compacta (Drumm. ex Müll. Hal.) H. Rob	B2a*	VU

Coscinodon cribrosus (Hedw.) Spruce		LC
Cratoneuron curvicaule (Jur.) G.Roth		DD
Cratoneuron filicinum (Hedw.) Spruce		LC
Crossidium crassinervium (De Not.) Jur	D2	VU
Crossidium laxefilamentosum W. Frey & Kürschner	D1	EN
Crossidium squamiferum (Viv.) Jur		LC
Ctenidium molluscum (Hedw.) Mitt		LC
Cynodontium bruntonii (Sm.) Bruch & Schimp.	D2	VU
Cynodontium fallax Limpr.	D2	VU
Cynodontium gracilescens (F. Weber & D. Mohr) Schimp.	D2	VU
Cynodontium polycarpon (Hedw.) Schimp.	B2ab(ii,iv)	EN
Cynodontium strumiferum (Hedw.) Lindb.	D2	VU
Cynodontium tenellum (Schimp.) Limpr	B2a	NT
Cyrtomnium hymenophylloides (Huebener) T. J. Kop.		DD
Dialytrichia mucronata (Brid.) Broth.	B2a	NT
Dichodontium pellucidum (Hedw.) Schimp		LC
Dicranella cerviculata (Hedw.) Schimp.		LC
Dicranella crispa (Hedw.) Schimp.		DD
Dicranella grevilleana (Brid.) Schimp.		DD
Dicranella heteromalla (Hedw.) Schimp		LC
Dicranella howei Renauld & Cardot	B2ab(ii,iv)*	NT
Dicranella humilis R. Ruthe		DD
Dicranella rufescens (Dicks.) Schimp.		DD
Dicranella schreberiana (Hedw.) Dixon		LC
Dicranella staphylina H. Whitehouse	B2a	NT
Dicranella subulata (Hedw.) Schimp	B2a	NT
Dicranella varia (Hedw.) Schimp.		LC
Dicranodontium asperulum (Mitt.) Broth		DD
Dicranodontium denudatum (Brid.) E. Britton	B2a	NT
Dicranoweisia cirrata (Hedw.) Lindb.	D2	VU
Dicranum bonjeanii De Not	D2	VU
Dicranum flagellare Hedw		DD
Dicranum elongatum Schleich. ex Schwägr.		DD
Dicranum fuscescens Sm.		DD
Dicranum majus Sm.	D2	VU
Dicranum montanum Hedw	B2a	NT
Dicranum muehlenbeckii Bruch & Schimp.	D2	VU
Dicranum polysetum Sw. ex anon.		LC
Dicranum scoparium Hedw.		LC
Dicranum spadiceum J. E. Zetterst.	D2	VU
Dicranum spurium Hedw.		DD
Dicranum tauricum Sapjegin		LC
Dicranum undulatum Schrad. ex Brid.		DD
Dicranum viride (Sull. & Lesq.) Lindb.	D2	VU
Didymodon acutus (Brid.) K. Saito		LC
Didymodon australasiae (Hook & Grev.) R. H. Zander		DD
Didymodon cordatus Jur.		LC
Didymodon fallax (Hedw.) R. H. Zander		LC
Didymodon ferrugineus (Schimp. ex Besch.) M. O. Hill	B2ab(ii,iv)	VU
Didymodon icmadophilus (Schimp. ex Müll. Hal.) K. Saito		DD
Didymodon insulanus (De Not.) M.O. Hill		LC
Didymodon luridus Hornsch.		LC
Didymodon nicholsonii Culm	D2	VU
Didymodon rigidulus Hedw.		LC

Didymodon sicculus M.J. Cano, Ros, GarcSa-Zamora & J. Guerra	D2**	VU
Didymodon sinuosus (Mitt.) Delogne		LC
Didymodon spadiceus (Mitt.) Limpr.		DD
Didymodon tophaceus (Brid.) Lisa		LC
Didymodon umbrosus (Müll. Hal.) R. H. Zander		DD
Didymodon validus Limpr.		DD
Didymodon vinealis (Brid.) R. H. Zander		LC
Diphyscium foliosum (Hedw.) D. Mohr	B2a	NT
Distichium capillaceum (Hedw.) Bruch & Schimp.		LC
Distichium inclinatum (Hedw.) Bruch & Schimp		LC
Ditrichum heteromallum (Hedw.) E. Britton		LC
Ditrichum lineare (Sw.) Lindb.	D2	VU
Ditrichum pallidum (Hedw.) Hampe	B2a	NT
Ditrichum pusillum (Hedw.) Hampe		LC
Ditrichum subulatum Hampe		DD
Diobelonella palustris (Dicks.) Ochyra	B2ab(i,ii,iv)	EN
Drepanocladus aduncus (Hedw.) Warnst.		LC
Drepanocladus polygamus (Schimp.) Heden.		LC
Drepanocladus sendtneri (Schimp. ex H.Müll.) Warnst.	D2*	EN
Drepanocladus trifarius (F. Weber & D. Mohr) Broth. ex Paris		DD
Encalypta affinis R. Hedw.		DD
Encalypta alpina Sm		DD
Encalypta ciliata Hedw.		LC
Encalypta microstoma Bals.-Criv. & De Not.	D2	VU
Encalypta rhaptocarpa Schwägr		LC
Encalypta spathulata Müll. Hal.	D2*	EN
Encalypta streptocarpa Hedw		LC
Encalypta vulgaris Hedw.		LC
Entodon concinnus (De Not.) Paris		LC
Entosthodon convexus (Spruce) Brugués		DD
Entosthodon fascicularis (Hedw.) Müll. Hal.		LC
Entosthodon hungaricus (Boros) Loeske	B2ab(i,ii,iv)	VU
Entosthodon muhlenbergii (Turner) Fife	B2ab(i,ii,iv)	VU
Entosthodon pulchellus (H.Philib.) Brugués		DD
Ephemerum stoloniferum (Hedw.) L. T. Ellis & M. J. Price	D2	VU
Eucladium verticillatum (With.) Bruch & Schimp.		LC
Eurhynchiastrum pulchellum (Hedw.) Ignatov & Huttunen		LC
Eurhynchium angustirete (Broth.) T. J. Kop.		LC
Eurhynchium striatum (Hedw.) Schimp.		LC
Exsertotheca crispa (Hedw.) S. Olsson, Enroth		LC
Fissidens adianthoides Hedw.		LC
Fissidens bryoides Hedw		LC
Fissidens crassipes Wilson ex Bruch & Schimp.		LC
Fissidens crispus Mont.	D2	VU
Fissidens dubius P. Beauv.		LC
Fissidens exilis Hedw.	D2	VU
Fissidens gracilifolius Brugg.-Nann. & Nyholm		LC
Fissidens pusillus (Wilson) Milde		LC
Fissidens rivularis (Spruce) Schimp.	D2	VU
Fissidens rufulus Bruch & Schimp	D2	VU
Fissidens serrulatus Brid.		DD
Fissidens taxifolius Hedw		LC
Fissidens viridulus (Sw. ex anon.) Wahlenb	D2	VU
Flexitrichum flexicaule (Schwägr.) Ignatov & Fedosov		LC

Flexitrichum gracile (Mitt.) Ignatov & Fedosov		LC
Fontinalis antipyretica Hedw.		LC
Fontinalis hypnoides C. Hartm.	D2	VU
Funaria hygrometrica Hedw		LC
Funaria microstoma Bruch ex Schimp.		DD
Funariella curviseta (Schwägr.) Sérgio		DD
Grimmia alpestris (F. Weber & D. Mohr) Schleich.		LC
Grimmia anodon Bruch & Schimp.		LC
Grimmia anomala Hampe ex Schimp.	D2	VU
Grimmia arenaria Hampe		DD
Grimmia atrata Miel. ex Hornsch.		DD
Grimmia caespiticia (Brid.) Jur.		LC
Grimmia crinita Brid		DD
Grimmia decipiens (Schultz) Lindb.		LC
Grimmia dissimulata E. Maier		LC
Grimmia donniana Sm.		DD
Grimmia elatior Bruch ex Bals.-Criv. & De Not		LC
Grimmia elongata Kaulf.		DD
Grimmia funalis (Schwägr.) Bruch & Schimp.		LC
Grimmia hartmanii Schimp.		LC
Grimmia incurva Schwägr.		LC
Grimmia laevigata (Brid.) Brid.		LC
Grimmia lisae De Not.		LC
Grimmia longirostris Hook		LC
Grimmia montana Bruch & Schimp.		LC
Grimmia muehlenbeckii Schimp.		LC
Grimmia orbicularis Bruch ex Wilson		LC
Grimmia ovalis (Hedw.) Lindb.		LC
Grimmia pulvinata (Hedw.) Sm.		LC
Grimmia ramondii (Lam. & DC.) Margad.	B2ab(ii,iv)	VU
Grimmia reflexidens Müll. Hal		DD
Grimmia tergestina Tomm. ex Bruch & Schimp.		LC
Grimmia torquata Drumm.	D2	VU
Grimmia trichophylla Grev.		LC
Grimmia unicolor Hook.	D2*	EN
Gymnobarbula bicolor (Bruch & Schimp.) Jan Kučera		DD
Gymnostomum aeruginosum Sm.		LC
Gymnostomum calcareum Nees & Hornsch.		LC
Gymnostomum viridulum Brid.	D2	VU
Gyroweisia tenuis (Hedw.) Schimp.		LC
Habrodon perpusillus (De Not.) Lindb.	B2ab(i,ii,iii,iv)	EN
Hamatocaulis vernicosus (Mitt.) Hedenäs	B2ab(i,ii,iii,iv)	EN
Hedwigia ciliata (Hedw.) P. Beauv		LC
Hedwigia emodica Hampe ex Müll.Hal.		LC
Hennediella heimii (Hedw.) R. H. Zander		DD
Herzogiella seligeri (Brid.) Z. Iwats.		LC
Heterocladium dimorphum (Brid.) Schimp.	B2a	NT
Heterocladium heteropterum (Brid.) Schimp.	D2	VU
Hilpertia velenovskyi (Schiffn.) R. H. Zander	B1a,2ab(i,ii,iii,iv)	CR
Homalia trichomanoides (Hedw.) Brid.		LC
Homalothecium aureum (Spruce) H. Rob.	B2a	NT
Homalothecium lutescens (Hedw.) H. Rob.		LC
Homalothecium philippeanum (Spruce) Schimp.		LC
Homalothecium sericeum (Hedw.) Schimp.		LC

Homomallium incurvatum (Schrader ex Brid.) Loeske		LC
Hookeria lucens (Hedw.) Sm.	D	EN
Hydrogonium croceum (Brid.) Jan Kučera	D	CR
Hygroamblystegium fluviatile (Hedw.) Loeske		LC
Hygroamblystegium humile (P. Beauv.) Vanderp., Goffinet & Hedenäs		LC
Hygroamblystegium tenax (Hedw.) Jenn.		LC
Hygroamblystegium varium (Hedw.) Mönk.		LC
Hygrohypnum luridum (Hedw.) Jenn.		LC
Hylocomiastrum pyrenaicum (Spruce) M. Fleisch.	D2*	EN
Hylocomiastrum umbratum (Hedw.) M. Fleisch		DD
Hylocomium splendens (Hedw.) Schimp.		LC
Hymenoloma crispulum (Hedw.) Ochyra		LC
Hymenostylium recurvirostrum (Hedw.) Dixon	D2	VU
Hypnum andoi A. J. E. Sm.		DD
Hypnum bambergeri Schimp.		DD
Hypnum callichroum Brid.		DD
Hypnum cupressiforme Hedw.		LC
Hypnum fertile Sendtn.		DD
Hypnum hamulosum Schimp.	D2	VU
Hypnum imponens Hedw.		DD
Hypnum jutlandicum Holmen & E. Warncke		DD
Hypnum pallescens (Hedw.) P. Beauv.		DD
Hypnum recurvatum (Lindb. & Arnell) Kindb.		DD
Hypnum sauteri Schimp.		DD
Imbribryum alpinum (Huds. ex With.) N. Pedersen		LC
Imbribryum mildeanum (Jur.) J. R. Spence	D2	VU
Isopterygiopsis pulchella (Hedw.) Z. Iwats	B2a	NT
Isothecium alopecuroides (Lam. ex Dubois.) Isov		LC
Isothecium myosuroides Brid		LC
Kiaeria falcata (Hedw.) I. Hagen		DD
Kindbergia praelonga (Hedw.) Ochyra		LC
Leptobryum pyriforme (Hedw.) Wilson		LC
Leptodictyum riparium (Hedw.) Warnst.		LC
Leptodon smithii (Hedw.) F. Weber & D. Mohr.	D	EN
Lescuraea incurvata (Hedw.) E. Lawton	B2ab(i,ii,iv)	VU
Lescuraea mutabilis (Brid.) Lindb. ex I. Hagen		DD
Lescuraea patens Lindb.		LC
Lescuraea plicata (Schleich. ex F. Weber & D. Mohr) Broth.		LC
Lescuraea radicosa (Mitt.) Mönk.		LC
Lescuraea saviana (De Not.) E. Lawton	B2ab(i,ii,iv)	VU
Lescuraea saxicola (Schimp.) Molendo		LC
Leskea polycarpa Hedw		LC
Leucobryum glaucum (Hedw.) Ångstr.	B2ab(i,ii,iv)	VU
Leucobryum juniperoideum (Brid.) Müll. Hal.		DD
Leucodon sciuroides (Hedw.) Schwägr		LC
Lewinskya affinis (Brid.) F. Lara, Garilleti & Goffinet		LC
Lewinskya rupestris (Schleich. ex Schwägr.) F. Lara, Garilleti & Goffinet		LC
Lewinskya speciosa (Nees) F. Lara, Garilleti & Goffinet		LC
Lewinskya striata (Hedw.) F. Lara, Garilleti & Goffinet		LC
Meesia triquetra (L. ex Jolycl.) Ångstr.		DD
Meesia uliginosa Hedw.		DD
Microbryum curvicollum (Hedw.) R. H. Zander	D1*	VU
Microbryum davallianum (Sm.) R. H. Zander		LC
Microbryum floerkeanum (F. Weber & D. Mohr) Schimp	D2	VU

Microbryum starckeanum (Hedw.) Müll. Hal.		LC
Microeurhynchium pumilum (Wilson) Ignatov & Vanderp.		LC
Mnium hornum Hedw.	B2a	NT
Mnium lycopodioides Schwägr.		LC
Mnium marginatum (Dicks.) P. Beauv.		LC
Mnium spinosum (Voit) Schwägr.	D1	VU
Mnium spinulosum Bruch & Schimp.	D1	VU
Mnium stellare Hedw.		LC
Mnium thomsonii Schimp.	B2a*	LC
Molendoa sendtneriana (Bruch & Schimp.) Limpr.		DD
Myurella julacea (Schwägr.) Schimp.	D2	VU
Myurella sibirica (Müll. Hal.) Reimers	D1	EN
Neckera menziesii Drumm.	B2ab(ii,iv)	EN
Neckera pennata Hedw.	B2ab(ii,iv)*	EN
Neckera pumila Hedw.	D2	VU
Nogopterium gracile (Hedw.) Crosby & W.R. Buck		DD
Nyholmiella obtusifolia (Brid.) Holmen & Warn.		LC
Oligotrichum hercynicum (Hedw.) Lam. & DC.	D1	CR
Oncophorus virens (Hedw.) Brid.	D2*	EN
Orthothecium intricatum (Hartm.) Schimp.	B2a	NT
Orthothecium rufescens (Dicks. ex Brid.) Schim.	B2a	NT
Orthotrichum anomalum Hedw		LC
Orthotrichum cupulatum Hoffm. ex Brid.		LC
Orthotrichum diaphanum Schrad. ex Brid.		LC
Orthotrichum pallens Bruch ex Brid.		LC
Orthotrichum patens Bruch ex Brid.	D2	NT
Orthotrichum philibertii Venturi	D1**	DD
Orthotrichum pulchellum Brun		DD
Orthotrichum pumilum Sw. ex anon.		LC
Orthotrichum scanicum Grönvall		DD
Orthotrichum schimperi Hammar		DD
Orthotrichum stellatum Brid.		DD
Orthotrichum stramineum Hornsch. ex Brid.		LC
Orthotrichum tenellum Bruch ex Brid.		DD
Orthotrichum urnigerum Myrin	D2*	EN
Oxyrrhynchium hians (Hedw.) Loeske		LC
Oxyrrhynchium schleicheri (R. Hedw.) Röll.		LC
Oxyrrhynchium speciosum (Brid.) Warnst.		LC
Palustriella commutata (Hedw.) Ochyra		LC
Palustriella decipiens (De Not.) Ochyra		LC
Palustriella falcata (Brid.) Heden		LC
Paraleucobryum enerve (Thed.) Loeske	B2ab(ii,iv)	EN
Paraleucobryum longifolium (Hedw.) Loeske		LC
Paraleucobryum sauteri (Bruch & Schimp.) Loeske	D1	CR
Pelekium minutulum (Hedw.) Touw		DD
Philonotis caespitosa Jur.	B2ab(ii,iv)	EN
Philonotis calcarea (Bruch & Schimp.) Schimp.	B2ab(ii,iv,v)	VU
Philonotis capillaris Lindb.	B2ab(ii,iv)	EN
Philonotis fontana (Hedw.) Brid.		LC
Philonotis marchica (Hedw.) Brid.	B2ab(ii,iv,v)	VU
Philonotis seriata Mitt.	B2a	NT
Philonotis tomentella Molendo	B2ab(ii,iv,v)	EN
Physcomitrella patens (Hedw.) Bruch & Schimp.		LC
Physcomitrium eurystomum Sendtn.	B2ab(ii,iv,v)	EN

Physcomitrium pyriforme (Hedw.) Bruch & Schimp.		LC
Physcomitrium sphaericum (C. F. Ludw. ex Schkuhr) Brid.		DD
Plagiomnium affine (Blandow ex Funck) T. J. Kop.		LC
Plagiomnium cuspidatum (Hedw.) T. J. Kop.		LC
Plagiomnium drummondii (Bruch & Schimp.) T. J. Kop.		DD
Plagiomnium elatum (Bruch & Schimp.) T. J. Kop.		LC
Plagiomnium ellipticum (Brid.) T. J. Kop.	B2ab(ii,iv)	EN
Plagiomnium medium (Bruch & Schimp.) T. J. Kop.	B2ab(ii,iv)	EN
Plagiomnium rostratum (Schrad.) T. J. Kop.		LC
Plagiomnium undulatum (Hedw.) T. J. Kop.		LC
Plagiopus oederianus (Sw.) H. A. Crum. & L. E. Anderson		LC
Plagiothecium cavifolium (Brid.) Z. Iwats.		LC
Plagiothecium curvifolium Schlieph. ex Limpr.		LC
Plagiothecium denticulatum (Hedw.) Schimp.		LC
Plagiothecium laetum Schimp.		LC
Plagiothecium latebricola Schimp.	D2	VU
Plagiothecium nemorale (Mitt.) A. Jaeger		LC
Plagiothecium platyphyllum Mönk	B2ab(ii,iv)	EN
Plagiothecium succulentum (Wilson) Lindb		LC
Plagiothecium undulatum (Hedw.) Schimp.	D1	CR
Plasteurhynchium meridionale (Schimp.) M. Fleisch.		DD
Plasteurhynchium striatulum (Spruce) M. Fleiscch.		LC
Platygyrium repens (Brid.) Schimp.		LC
Platyhypnum duriusculum (De Not.) Ochyra	B2ab(ii,iv)	VU
Platyhypnum molle (Dicks. ex Hedw.) Loeske		DD
Pleuridium acuminatum Lindb.		LC
Pleuridium subulatum (Hedw.) Rabenh.		DD
Pleurozium schreberi (Willd. ex Brid.) Mitt.		LC
Pogonatum aloides (Hedw.) P. Beauv		LC
Pogonatum nanum (Hedw.) P. Beauv	B2a	NT
Pogonatum urnigerum (Hedw.) P. Beauv		LC
Pohlia andalusica (Höhn.) Broth.		LC
Pohlia annotina (Hedw.) Lindb.		LC
Pohlia bulbifera (Warnst.) Warnst.	D2	VU
Pohlia camptotrachela (Renauld & Cardot) Broth.	D2	VU
Pohlia cruda (Hedw.) Lindb.		LC
Pohlia drummondii (Müll. Hal.) A. L. Andrews	D2	VU
Pohlia elongata Hedw.	D2	VU
Pohlia filum (Schimp.) Martensson		DD
Pohlia lescuriana (Sull.) Ochi	B2ab(ii,iv)*	VU
Pohlia longicolla (Hedw.) Lindb.	B2ab(ii,iv)	EN
Pohlia ludwigii (Spreng. ex Schwägr.) Broth.	B2ab(ii,iv)	VU
Pohlia lutescens (Limpr.) H. Lindb.		LC
Pohlia melanodon (Brid.) A. J. Shaw		LC
Pohlia nutans (Hedw.) Lindb.		LC
Pohlia proligera (Kindb.) Lindb. ex Broth	D1*	VU
Pohlia sphagnicola (Bruch & Schimp.) Broth.	D1	DD
Pohlia wahlenbergii (F. Weber & D. Mohr) A. L. Andrews		LC
Polytrichastrum alpinum (Hedw.) G. L. Sm.		LC
Polytrichastrum sexangulare (Brid.) G. L. Sm.		DD
Polytrichum commune Hedw.		LC
Polytrichum formosum Hedw.		LC
Polytrichum juniperinum Hedw.		LC
Polytrichum longisetum Sw. ex Brid.	D1	EN

Polytrichum perigoniale Michx.	D1	VU
Polytrichum piliferum Hedw.		LC
Polytrichum strictum Menzies ex Brid.	D1	VU
Pottiopsis caespitosa (Bruch ex Brid.) Blockeel & A.J.E.Sm		DD
Pseudoamblystegium subtile (Hedw.) Vanderp. & Hedenäs		LC
Pseudobryum cinclidioides (Huebener) T. J. Kop.		DD
Pseudocampylium radicale (P. Beauv.) Vanderp. & Hedenäs	D2	VU
Pseudocrossidium hornschuchianum (Schultz) R. Zander.		LC
Pseudocrossidium revolutum (Brid.) R. H. Zander	D1*	VU
Pseudohygrohypnum eugyrium (Schimp.) Kanda		DD
Pseudoleskeella catenulata (Brid. ex Schrad.) Kindb.		LC
Pseudoleskeella nervosa (Brid.) Nyholm		LC
Pseudoleskeella rupestris (Berggr.) Hedenäs & L. Söderstr.	B2ab(ii,iv)	EN
Pseudoleskeella tectorum (Funck. ex Brid.) Kindb. ex Broth.		DD
Pseudoscleropodium purum (Hedw.) M. Fleisch.		LC
Pseudostereodon procerrimus (Molendo) M. Fleisch.	B1aB2ab(ii,iv)	EN
Pseudotaxiphyllum elegans (Brid.) Z. Iwats.	B2a	NT
Pterigynandrum filiforme Hedw.		LC
Pterygoneurum compactum M. J. Cano, J. Guerra & Ros		DD
Pterygoneurum lamellatum (Lindb.) Jur.	B2a	NT
Pterygoneurum ovatum (Hedw.) Dixon		LC
Pterygoneurum subsessile (Brid.) Jur.		DD
Ptychostomum boreale (F. Weber & D. Mohr) Ochyra & Bednarek-Ochyra		LC
Ptychostomum capillare (Hedw.) Holyoak & N. Pedersen		LC
Ptychostomum cernuum (Hedw.) Hornsch.	B1a,b(ii,iv)	EN
Ptychostomum compactum Hornsch.	B1a	NT
Ptychostomum creberrimum (Taylor) J.R.Spence & & H.P.Ramsay		DD
Ptychostomum cyclophyllum (Schwägr.) J.R. Spence		DD
Ptychostomum imbricatulum (Müll. Hal.) Holyoak & N. Pedersen		LC
Ptychostomum inclinatum (Sw. ex Brid.) J.R. Spence		LC
Ptychostomum lonchocaulon (Müll. Hal.) J.R. Spence		DD
Ptychostomum moravicum (Podp.) Ros & Mazimpaka		LC
Ptychostomum pallens (Sw.) J.R. Spence		LC
Ptychostomum pseudotriquetrum (Hedw.) J.R. Spence & H.P. Ramsay		LC
Ptychostomum rubens (Mitt.) Holyoak & N. Pedersen		LC
Ptychostomum torquescens (Bruch & Schimp.) Ros & Mazimpaka		LC
Ptychostomum zieri (Hedw.) Holyoak & N. Pedersen		LC
Pulvigera lyellii (Hook. & Taylor) Plášek, Sawicki & Ochyra		LC
Pylaisia polyantha (Hedw.) Schimp.		LC
Pyramidula tetragona (Brid.) Brid.		EX
Racomitrium aciculare (Hedw.) Brid.	D2	VU
Racomitrium affine (F. Weber & D. Mohr) Lindb.	D2	VU
Racomitrium aquaticum (Brid. ex Schrad.) Brid.	D2	VU
Racomitrium canescens (Hedw.) Brid.		LC
Racomitrium elongatum Ehrh. ex Frisvoll		LC
Racomitrium ericoides (Brid.) Brid.		LC
Racomitrium fasciculare (Hedw.) Brid.		DD
Racomitrium heterostichum (Hedw.) Brid.		LC
Racomitrium lanuginosum (Hedw.) Brid.	D2	VU
Racomitrium sudeticum (Funck) Bruch & Schimp.		LC
Rhabdoweisia fugax (Hedw.) Bruch & Schimp.	B1a	NT
Rhizomnium magnifolium (Horik.) T. J. Kop.	B2a,b(ii,iv)	CR
Rhizomnium pseudopunctatum (Bruch & Schimp.) T. J. Kop.		DD
Rhizomnium punctatum (Hedw.) T. J. Kop.		LC

Rhodobryum ontariense (Kindb.) Kindb.	D1, B2a,b(ii,iv)	EN
Rhodobryum roseum (Hedw.) Limpr.	D1	VU
Rhynchostegiella curviseta (Brid.) Limpr.		DD
Rhynchostegiella tenella (Dicks.) Limpr.		LC
Rhynchostegiella teneriffae (Mont.) Dirkse & Bouman		LC
Rhynchostegium confertum (Dicks.) Schimp.		LC
Rhynchostegium megapolitanum (Blandow ex F. Weber & D. Mohr) Schimp.		LC
Rhynchostegium murale (Hedw.) Schimp.		LC
Rhynchostegium riparioides (Hedw.) Cardot		LC
Rhynchostegium rotundifolium (Scop. ex Brid.) Schimp.	D1, B2a,b(ii,iv)	CR
Rhytidiadelphus loreus (Hedw.) Warnst	B2a	NT
Rhytidiadelphus squarrosus (Hedw.) Warnst.		LC
Rhytidiadelphus triquetrus (Hedw.) Warnst.		LC
Rhytidium rugosum (Hedw.) Kindb.		LC
Roaldia revoluta (Mitt.) P.E.A.S. Câmara & Carv.-Silva	B2a,b(i,ii,iv)	EN
Saelania glaucescens (Hedw.) Broth.	D1, B2a,b(ii,iv)*	NT
Sanionia uncinata (Hedw.) Loeske		LC
Sarmentypnum exannulatum (Schimp.) Hedenäs		LC
Schistidium agassizii Sull. & Lesq.		DD
Schistidium apocarpum (Hedw.) Bruch & Schimp.		LC
Schistidium atrofuscum (Schimp.) Limpr.		LC
Schistidium brunnescens Limpr.		LC
Schistidium confertum (Funck) Bruch & Schimp.		LC
Schistidium crassipilum H.H.Blom		LC
Schistidium dupretii (Th.r.) W. A. Weber	D2	VU
Schistidium elegantulum H.H.Blom		LC
Schistidium flaccidum (De Not.) Ochyra		LC
Schistidium helveticum (Schkuhr) Deguchi		LC
Schistidium lancifolium (Kindb.) H.H.Blom	D2	VU
Schistidium papillosum Clum.		LC
Schistidium pruinosum (Wilson ex Schimp.) G. Roth.		LC
Schistidium rivulare (Brid.) Podp.		LC
Schistidium robustum (Nees & Hornsch.) H.H. Blom	D2	VU
Sciuro-hypnum flotowianum (Sendtn.) Ignatov & Huttunen		LC
Sciuro-hypnum glaciale (Schimp.) Ignatov & Huttunen		DD
Sciuro-hypnum oedipodium (Mitt.) Ignatov & Huttunen		DD
Sciuro-hypnum ornellanum (Molendo) Ignatov & Huttunen	D1	CR
Sciuro-hypnum plumosum (Hedw.) Ignatov & Huttunen		LC
Sciuro-hypnum populeum (Hedw.) Ignatov & Huttunen		LC
Sciuro-hypnum reflexum (Starke) Ignatov & Huttunen	D2	VU
Sciuro-hypnum starkei (Brid.) Ignatov & Huttunen		LC
Scleropodium touretii (Brid.) L. F. Koch		DD
Scorpidium cossonii (Schimp.) Hedenäs		DD
Scorpidium revolvens (Sw. ex. anon.) Rubers		DD
Scorpidium scorpioides (Hedw.) Limpr.	D2	VU
Scorpiurium circinatum (Brid.) M. Fleisch. & Loeske		DD
Seligeria acutifolia Lindb.	D1	VU
Seligeria calycina Mitt. ex Lindb.	B2a,b(ii,iv)	EN
Seligeria carniolica (Breidl. & Beck) Nyholm		DD
Seligeria donniana (Sm.) Müll. Hal.	B1a	NT
Seligeria pusilla (Hedw.) Bruch & Schimp.	B1a	NT
Sematophyllum demissum (Willson) Mitt.	D2	VU
Serpoleskea confervoides (Brid.) Kartt.		LC
Sphagnum angustifolium (C. Jens. ex Russ.) C. Jens.	B2a,b(i,iii)	EN

Sphagnum auriculatum Schimp.	B2a,b(i,iii)	DD
Sphagnum capillifolium (Ehrh.) Hedw	D1	CR
Sphagnum centrale C. E. O. Jensen	B2a,b(i,iii)	EN
Sphagnum contortum Schultz	B2a,b(iii,iv)	EN
Sphagnum cuspidatum Ehrh. ex Hoffm.	B2a,b(iii,iv)	CR
Sphagnum fallax (H. Klinggr.) H. Klinggr.	B2a,b(iii,iv)	VU
Sphagnum fimbriatum Wilson	D2	VU
Sphagnum flexuosum Dozy & Molk.	B2a,b(iii,iv)	VU
Sphagnum fuscum (Schimp.) H. Klinggr	B2a,b(iii,iv)	CR
Sphagnum girgensohnii Russow	B2a,b(iii, iv)	VU
Sphagnum inundatum Russow	B2a,b(iii)	EN
Sphagnum medium Limpr	B2a,b(iii, iv)	EN
Sphagnum molle Sull		DD
Sphagnum obtusum Warnst.	B2a,b(iii, iv)	CR
Sphagnum palustre L.	B2a,b(iii, iv)	VU
Sphagnum papillosum Lindb.		DD
Sphagnum platyphyllum (Lindb. ex Braithw.) Warnst.	B2a,b(iii, iv)	EN
Sphagnum rubellum Wilson	B2a,b(iii, iv)	CR
Sphagnum russowii Warnst.	D1, B1a,b(iii, iv)	CR
Sphagnum squarrosum Crome	B2a,b(iii, iv)	VU
Sphagnum subnitens Russow & Warnst.	D1, B1a,b(iii, iv)	CR
Sphagnum subsecundum Nees	B2a,b(iii, iv)	VU
Sphagnum teres (Schimp.) Ångstr.	B2a,b(iii, iv)	EN
Sphagnum warnstorfii Russow	D1, B1a,b(iii, iv)	CR
Splachnum sphaericum Hedw		PE
Stegonia latifolia (Schwägr.) Venturi ex Broth.		DD
Straminergon stramineum (Dicks. ex Brid.) Hedenäs		LC
Streblotrichum commutatum (Jur.) Hilp		LC
Streblotrichum convolutum (Hedw.) P. Beauv		LC
Streblotrichum enderesii (Garov.) Loeske		PE
Syntrichia calcicola J. J. Amann		LC
Syntrichia caninervis Mitt	D2	VU
Syntrichia laevipila Brid.		LC
Syntrichia latifolia (Bruch ex Hartm.) Huebener		LC
Syntrichia montana Nees		LC
Syntrichia norvegica F. Weber		DD
Syntrichia papillosa (Willson) Jur		LC
Syntrichia princeps (De Not.) Mitt		DD
Syntrichia ruralis (Hedw.) F. Weber & D. Mohr		LC
Syntrichia ruralis (Hedw.) F. Weber & D. Mohr var. *ruraliformis* (Besch.) Delogne		LC
Syntrichia sinensis (Müll. Hal.) Ochyra	D2	VU
Syntrichia subpapillosissima (Bizot & R.B. Pierrot ex W.A. Kramer) M.T. Gallego & J. Guerra	B1a,b(ii,iv)*	VU
Syntrichia virescens (De Not.) Ochyra		LC
Taxiphyllum densifolium (Lindb. ex Broth.) Reimers	D1, B1a,b(ii,iv)	EN
Taxiphyllum wissgrillii (Garov.) Wijk & Margad		LC
Tayloria froelichiana (Hedw.) Mitt. ex Broth		DD
Tetraphis pellucida Hedw		LC
Thamnobryum alopecurum (Hedw.) Gangulee		LC
Thuidium assimile (Mitt.) A. Jaeger		LC
Thuidium delicatulum (Hedw.) Schimp.		LC
Thuidium recognitum (Hedw.) Lindb.		LC
Thuidium tamariscinum (Hedw.) Schimp.		LC
Timmia austriaca Hedw.	B1a,b(ii,iv)	VU
Timmia bavarica Hessl	D2	VU

Timmia norvegica J. E. Zetterst.		DD
Timmiella anomala Limpr.		DD
Tomentypnum nitens (Hedw.) Loeske	D1, B1a,b(ii,iv)	EN
Tortella densa (Lorentz & Molendo) Crundw. & Nyholm	D1, B1a,b(ii,iv)	EN
Tortella fasciculata (Culm.) Culm		LC
Tortella flavovirens (Bruch) Broth.		LC
Tortella fragilis (Hook. & Wilson) Limpr		DD
Tortella humilis (Hedw.) Jenn.		DD
Tortella inclinata (R. Hedw.) Limpr		LC
Tortella inflexa (Bruch) Broth		DD
Tortella nitida (Lindb.) Broth.		DD
Tortella squarrosa (Brid.) Limpr.		LC
Tortella tortuosa (Hedw.) Limpr.		LC
Tortula acaulon (With.) R.H. Zander		LC
Tortula atrovirens (Sm.) Lindb.	D2	VU
Tortula brevissima Schiffn	B1a,b(ii,iv)	VU
Tortula canescens Mont		DD
Tortula caucasica Broth		LC
Tortula cuneifolia (Dicks.) Turner		DD
Tortula hoppeana (Schultz) Ochyra	B1a,b(ii,iv)	EN
Tortula inermis (Brid.) Mont		LC
Tortula lindbergii Broth.		LC
Tortula marginata (Bruch & Schimp.) Spruce		DD
Tortula mucronifolia Schwärg		DD
Tortula muralis Hedw		LC
Tortula pallida (Lindb.) R.H. Zander	D2	VU
Tortula protobryoides R.H. Zander	B1a,b(ii,iv)*	NT
Tortula schimperi M. J. Cano, O. Werner & J. Guerra		LC
Tortula subulata Hedw		LC
Tortula truncata (Hedw.) Mitt.		LC
Tortula vahliana (Schultz) Mont.		DD
Tortula viridifolia (Mitt.) Blockeel & A.J.E.Sm.		DD
Trichodon cylindricus (Hedw.) Schimp.	B1a,b(ii,iv)	VU
Trichostomum brachydontium Bruch		LC
Trichostomum crispulum Bruch		LC
Ulota bruchii Hornsch. ex Brid.	B1a,b(ii,iv)	EN
Ulota calvescens Wilson		DD
Ulota crispa (Hedw.) Brid.		LC
Ulota crispula Bruch		LC
Ulota hutchinsiae (Sm.) Hammar	D2	VU
Ulota intermedia Schimp.	B1a	NT
Warnstorfia fluitans (Hedw.) Loeske		DD
Weissia brachycarpa (Nees & Hornsch.) Jur.		LC
Weissia condensa (Voit) Lindb.		LC
Weissia controversa Hedw.		LC
Weissia levieri (Limpr.) Kindb.	D2	VU
Weissia longifolia Mitt.		LC
Weissia rostellata (Brid.) Lindb.	D2	VU
Weissia rutilans (Hedw.) Lindb.	D2	VU
Weissia squarrosa (Ness et Hornsch.) C. Muell.	D2	VU
Zygodon rupestris Schimp. ex Lorentz	D2	VU
Zygodon viridissimus (Dicks.) Brid.	D2	VU

Table 2. A comparison of the threatened moss taxa in Serbia in 2004 and 2024

Category	2004, number of assessed taxa 423 (ratio threatened / total)	2024, number of assessed taxa 640 (ratio threatened / total)
EX	1 (0.23)	1 (0.16)
RE / PE	-	2 (0.32)
CR	11 (2.60)	21 (3.28)
EN	12 (2.83)	51 (7.96)
VU	62 (14.66)	102 (15.94)
NT	48 (11.34)	33 (5.16)
DD	35 (8.27)	129 (20.15)
LC	254 (60.07)	300 (46.87)
NE	-	1 (0.16)

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REZIME

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Crvena lista vrsta mahovina Srbije: procena ugroženosti 2024

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U radu je prikazana nova procena ugroženosti vrsta mahovina Srbije. Na osnovu svih dostupnih podataka, procenjuje se da je 27,18% (174 vrste) mahovina Srbije u nekom statusu ugroženosti (stanje 2024). Takođe, za nešto više od 20% (129 vrsta) flore mahovina Srbije nema dovoljno podataka da bi se procenio njihov status ugroženosti (DD), a 5,16% mahovina (33 vrste) je na korak da uđe u neku od kategorija ugroženosti (NT). Sve ovo jasno navodi da su terenska istraživanja, kao i istraživanja biologije vrsta hitno potrebna, kako bi se definisali glavni problemi ugrožavanja, ali i predložile adekvatne mere zaštite.

Ključne reči: procena ugroženosti, konzervacija, briofite, rizik od nestajanja

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