



Preliminary data on the frequency and distribution of Hungarian bryophytes, based on 'recent' (1974–2022) records

Peter Erzberger, János Csiky, Kornél Baráth, Ábel Beránek, Judit Deme, Gabriella Fintha, Gusztáv Jakab, Gábor Matus, Attila Mesterházy, József Nagy, Zoltán Nagy, Csaba Németh, Tamás Pócs, Dávid Schmidt, András Schmotzer, Péter Szűcs, Mátyás Wolf & Beáta Papp

To cite this article: Peter Erzberger, János Csiky, Kornél Baráth, Ábel Beránek, Judit Deme, Gabriella Fintha, Gusztáv Jakab, Gábor Matus, Attila Mesterházy, József Nagy, Zoltán Nagy, Csaba Németh, Tamás Pócs, Dávid Schmidt, András Schmotzer, Péter Szűcs, Mátyás Wolf & Beáta Papp (2023): Preliminary data on the frequency and distribution of Hungarian bryophytes, based on 'recent' (1974–2022) records, Journal of Bryology, DOI: [10.1080/03736687.2023.2225966](https://doi.org/10.1080/03736687.2023.2225966)

To link to this article: <https://doi.org/10.1080/03736687.2023.2225966>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 06 Jul 2023.



[Submit your article to this journal](#)



Article views: 193



[View related articles](#)



[View Crossmark data](#)

Preliminary data on the frequency and distribution of Hungarian bryophytes, based on 'recent' (1974–2022) records

Peter Erzberger^a, János Csiky^b, Kornél Baráth^c, Ábel Beránek^{b,d}, Judit Deme^b, Gabriella Fintha^e, Gusztáv Jakab^e, Gábor Matus^f, Attila Mesterházy^g, József Nagy^h, Zoltán Nagyⁱ, Csaba Németh^j, Tamás Pócs^k, Dávid Schmidt^l, András Schmotzer^m, Péter Szűcs^k, Máttyás Wolfⁿ and Beáta Papp^o

^aBerlin, Germany; ^bDepartment of Ecology, University of Pécs, Pécs, Hungary; ^cSavaria University Centre, Eötvös Loránd University, Szombathely, Hungary; ^dÓzd, Hungary; ^eSzent István Campus, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary; ^fDepartment of Botany, Faculty of Science and Technology, University of Debrecen, Debrecen, Hungary; ^gWetland Ecology Research Group, Centre for Ecological Research, Debrecen, Hungary; ^hMuseum and Library of Hungarian Agriculture, Budapest, Hungary; ⁱCereal Research Nonprofit Ltd, Szeged, Hungary; ^jInstitute of Ecology and Botany, Centre for Ecological Research, Vácrátót, Hungary; ^kDepartment of Botany and Plant Physiology, Eszterházy Károly Catholic University, Eger, Hungary; ^lDepartment of Botany and Nature Conservation, University of Sopron, Sopron, Hungary; ^mBükk National Park Directorate, Eger, Hungary; ⁿKaposvár, Hungary; ^oHungarian Natural History Museum, Budapest, Hungary

Introduction. The bryophyte flora of Hungary was relatively well studied during the twentieth century, but data on the present-day frequency and geographical distribution of Hungarian bryophytes are lacking. We present here our preliminary results based on recent fieldwork and herbarium studies.

Methods. We recorded bryophyte occurrences in grid cells (quadrants) of approximately 5.5 × 6 km. Frequency was determined based on the number of quadrants, and geographical distribution evaluated in terms of the 19 administrative units (counties) of the country. To investigate correlations between species richness and relevant environmental drivers, statistical analyses were carried out.

Key results. A total of 698 bryophyte taxa (2 hornworts, 151 liverworts and 545 mosses) have been found in the territory of Hungary. For each of the 637 taxa that have been observed since 1973, one of five frequency classes (very common, common, sporadic to frequent, rare, and very rare) has been assigned based on the relevant number of field records or herbarium specimens. Additionally, tabular distributional information (occurrence in each of the 19 counties) is presented for each taxon. In the statistical evaluation of the geographical distribution data, the elevational range and the size of the surveyed area were positively correlated with bryophyte richness, whereas arable land cover was negatively correlated.

Conclusions. Although the survey was not uniform or complete across the different counties, the results support some robust bryogeographical theories. We hope to have the opportunity in the near future to compile a new Hungarian bryophyte Red List, partly based on these national frequency data.

KEYWORDS

Hornworts; liverworts; mosses; rarity; counties

Introduction

Existing information about the rarity and frequency of the bryophytes in Hungary and their geographical distribution within the country is scarce. The three accounts summarising the Hungarian bryophyte flora (Boros 1953, 1968; Orbán and Vajda 1983) describe the situation in the twentieth century. They contain sporadic data on the frequency and rarity of taxa and list the floristic regions where they were found. A partial revision of the specimens in BP and EGR on which these accounts are based has shown that these reports must be interpreted with caution, because they sometimes follow outdated taxonomic concepts or are even erroneous when based on misidentified specimens (Erzberger 1999, 2002, 2005; Erzberger and

Schröder 2008; Erzberger 2009; Erzberger and Schröder 2013; Erzberger 2016; Erzberger et al. 2016, 2020).

It can be assumed that the bryophyte flora of Hungary has undergone considerable change since the era of Ádám Boros and László Vajda. Detailed research beyond the scope of the present study would be required to assess the extent of this change and the trends. However, there can be no doubt that our knowledge of the Hungarian bryoflora has greatly improved recently, as most obviously demonstrated by the fact that more than 30 additional taxa have been newly recorded for Hungary (Erzberger 2020). An updated checklist has recently been published (Erzberger and Papp 2020) containing nearly all taxa presently recognised, but

CONTACT Judit Deme  hiddenit92@gmail.com

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

without information on rarity or distribution. The existing Red List (Papp et al. 2010) contains some information on the frequency of taxa in the twenty-first century, assuming, for example, that species rated LC (Least Concern) are rather frequent while at the other extreme highly threatened taxa are rare. Strictly, however, Red List categories should not be equated with rarity or frequency alone. Although numerous floristic papers have been published in the past few decades (Nagy et al. 2019), an up-to-date synoptical treatment of the whole bryoflora of Hungary, containing information on rarity and distribution, is still lacking.

The bryophyte recording project (Erzberger 2012, 2020; Erzberger and Németh 2016) was initiated in 2012 to fill this gap, ultimately through the production of a distribution atlas based on the Central European mapping system, identical to the system used in the Hungarian atlas of vascular plants (Bartha et al. 2015). However, due to lack of manpower, it will probably still be a very long time before sufficient data have accumulated to enable publication of such an atlas. In the meantime, we decided to publish some preliminary results from our recording activity in such a way that they should not essentially be outdated by the progress of ongoing bryofloristical research, i.e. with a focus on overall frequency and rarity in the country and on distribution in the 19 administrative units of Hungary, the counties (Figure 1).

We aimed to classify the taxa of the Hungarian bryophyte flora according to frequency and rarity, and to present a preliminary overview of their geographical distributions. In accordance with questions Q1, Q4

and Q31 of Patiño et al. (2022), we also tried to test some general hypotheses on correlations between the species richness of Hungarian counties and a number of independent variables (elevational range, size of surveyed area, and forest and arable land cover).

Materials and methods

Biogeographical situation of Hungary

The Pannonian province or biogeographical region (Pannonicum) is a widely accepted separate region in Central Europe (Fekete et al. 2016), based not only on the flora (and fauna) but also on the vegetation pattern. The lower precipitation combined with higher temperature (aridity) values results in the appearance of the forest steppe zone (Borhidi 1961), especially in the lowlands and warm southern foothills. Such a massive transitional belt has served as a barrier for some forest and/or wetland (moss) species adapted to humid conditions typical in the Atlantic part of Europe (Boros 1968; Molnár et al. 2018).

Scope, taxonomy, nomenclature

The taxa evaluated in this study are those in the most recent Hungarian checklist (Erzberger and Papp 2020), which is also followed for taxonomy and nomenclature, with the exception that *Schistidium teretinerve* is used in place of *Grimmia teretinervis* Limpr., based on the results of the latest molecular analyses (Kiebacher and Meier 2020). There are eleven exceptions concerning

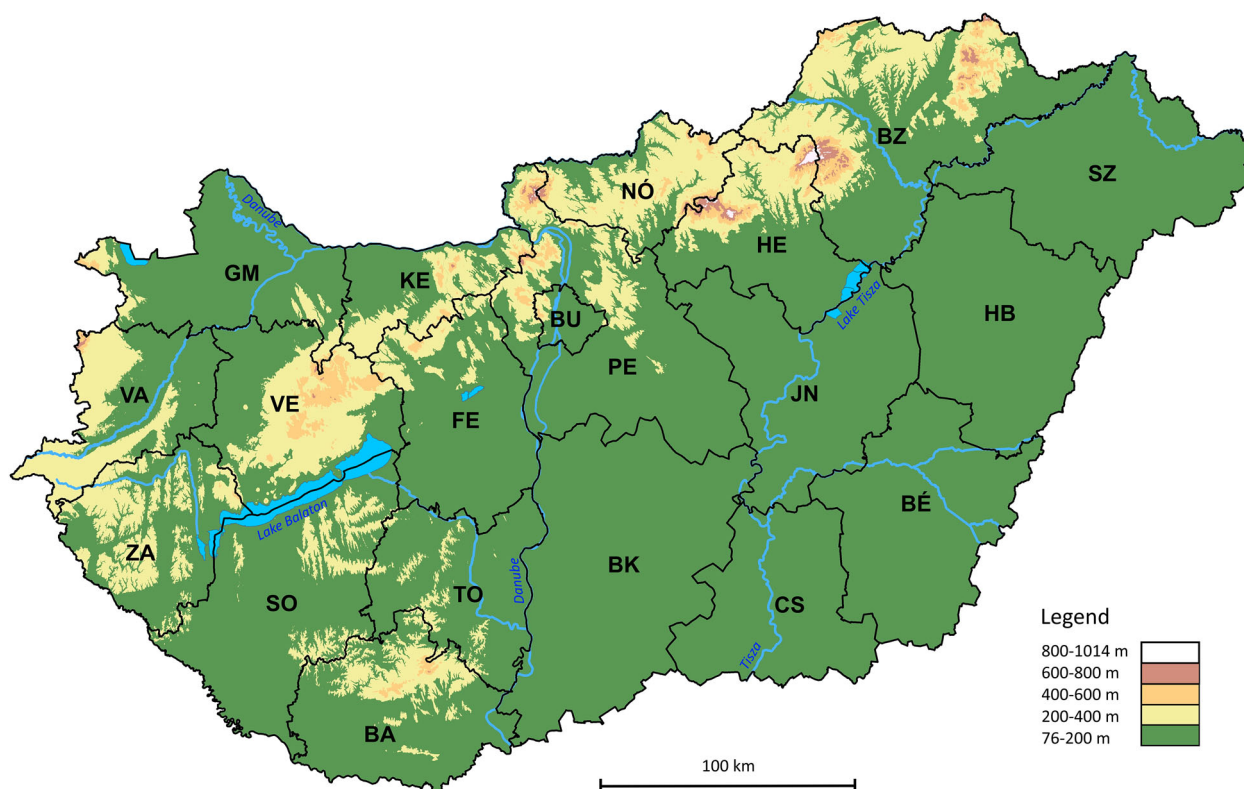


Figure 1. The administrative units of Hungary. See Table 1 for definitions of county abbreviations. Figure created by M. Gaál.

the set of taxa. The following ten additional taxa have been recognised after the publication of the checklist: *Rhytidiadelphus loreus* (Németh in Ellis et al. 2021a); *Calyptopogon arguta*, *Hydrogonium croceum* and *Orthothecium rufescens* (Papp and Szurdoki, Németh and Schmotzer, and Németh and Schmotzer, respectively, in Ellis et al. 2021b); *Encalypta spathulata* and *Pohlia bulbifera* (Németh and Schmotzer, and Erzberger, Nagy and Németh, respectively, in Ellis et al. 2021c); *Marchantia polymorpha* subsp. *montivagans* (Aszalósné Balogh et al. 2021); *Hymenoloma crispulum* and *Sphaerocarpos michelii* (Németh and Erzberger, and Wolf, Németh and Erzberger, respectively, in Ellis et al. 2022); and *Lewinskya fastigiata* (Németh, Nagy and Erzberger unpublished). Conversely, *Neoorthocaulis floerkei* (F.Weber & D.Mohr) L.Söderst., De Roo & Hedd. has been excluded, because the only existing voucher turned out to have been collected outside the present territory of Hungary.

Some taxa have not been recorded consistently since the beginning of the project, for example infra-specific taxa of *Fissidens dubius*, *Streblotrichum convolutum* and *Tortula acaulon*. Therefore, their frequencies and distributions might be underestimated. All records of *Ulotia crispa* before Caparrós et al. (2016) may include the segregate species (*U. crispula*, *U. intermedia*) as well; *U. crispa* s.s. seems to be rare according to more recent records. Additional data for *U. crispa* s.l. are shown in Appendix 1.

Data sources

Most of the data evaluated are the result of the collective fieldwork intended for the production of a bryophyte distribution atlas of Hungary based on the Central European mapping scheme (Niklfeld 1971; Bartha et al. 2015). Other data sources include unrelated fieldwork mostly carried out in connection with the Natural History Museum of Budapest. Published records were not evaluated unless one of the authors had seen a specimen.

We distinguish between 'historical' records (mainly from the era of Boros and Vajda and to a small extent before) and 'recent' records by choosing the year 1974 as discriminant. Ádám Boros died in 1973, and afterwards bryofloristic activity rapidly sank to a low level, as can be demonstrated by analysing the numbers of specimens collected over the years (Erzberger and Schröder 2008, 2013). Our estimates of frequency are based exclusively on records after 1973, as are the distributional data with respect to the 19 Hungarian administrative units. However, in Appendix 1, in some cases we have additionally indicated the presence of historical collections (before 1974) in a given county based on herbarium specimens housed mainly in BP and EGR (with a different symbol and only if not congruent with a recent record; herbarium codes follow Thiers [Continuously updated](#)). For species that have not been

recorded since 1973, the historical distribution is the only distributional information available. For species of more-or-less critical groups of taxa that have been the subject of a modern taxonomic revision, historical distributions reported in this paper are based exclusively on revised specimens and often differ significantly from the reports in the standard Hungarian treatments of the twentieth century.

County data on arable and forest cover and the sizes of county areas follow Központi Statisztikai Hivatal (2019). The digital topography model used to calculate elevational range data of counties was HydroDEM (the Hydrologically correct Terrain Model of Hungary), prepared by ESRI Magyarország Kft in 2014 on behalf of the General Directorate of Water Management (2022). To calculate these data, the 'Zonal Statistics as Table' function of ArcGIS Pro 2.9.1. (ESRI 2022) was used.

Fieldwork

The recording unit is the quadrant, i.e. a quarter of the Central European mapping grid (Niklfeld 1971). It has an extension of 3 minutes of latitude and 5 minutes of longitude, in Hungary corresponding to approximately 5.55 km × 6.25 km, respectively, or 34.6875 km² on average (Bartha et al. 2015). Field excursions were planned to include a maximum of different biotope types within a given quadrant, in order to observe as many different bryophyte taxa as possible. Species that could unequivocally be identified in the field were usually not collected. Samples collected for identification were mostly discarded after microscopy unless they represented rare or otherwise interesting taxa; these were kept and deposited in institutional herbaria (B, BP, EGR, JPU) or the private herbaria of the authors.

The richest quadrants were visited several times, but many were explored only once, thus a complete species inventory has probably not been observed in any of the examined quadrants except possibly the most species-rich ones (see Callaghan 2012).

The explored quadrants were chosen arbitrarily; they are geographically not representative of the country and show bias towards the capital as well as colline and mountain areas. This is reflected in the relative area investigated in each county (see Table 3).

Frequency

The frequency of Hungarian bryophytes is based on the number of quadrants in which they were found after 1973, in relation to the total number of investigated quadrants (cf Table 4). Quadrants with 20 or fewer in each were disregarded as being insufficiently explored. At the time of evaluation (July 2022), the number of quadrants with more than 20 different taxa recorded was 586 (see Table 2), this number being used in computing the threshold values for the frequency classes.

Table 1. The 19 counties of Hungary and their areas (following Központi Statisztikai Hivatal 2019).

Acronym	County	Area (km ²)
BA	Baranya	4430
BÉ	Békés	5630
BK	Bács-Kiskun	8445
BZ	Borsod-Abaúj-Zemplén	7247
CS	Csongrád-Csanád	4263
FE	Fejér	4358
GM	Győr-Moson-Sopron	4208
HB	Hajdú-Bihar	6210
HE	Heves	3637
JN	Jász-Nagykun-Szolnok	5582
KE	Komárom-Esztergom	2264
NÓ	Nógrád	2544
PE	Pest (including Budapest BU)	6916
SO	Somogy	6065
SZ	Szabolcs-Szatmár-Bereg	5936
TO	Tolna	3703
VA	Vas	3336
VE	Veszprém	4464
ZA	Zala	3784

County distribution

Our decision to evaluate the data on the basis of the 19 administrative units, i.e. the counties (with the capital, Budapest, included in the surrounding county, Pest), was motivated by the volume of data accumulated during recording. The amount of data seems insufficient for any finer-scaled partitioning. However, the borders of the counties are well defined, whereas other partitions, for example natural regions, are not sharply delimited and sometimes controversial.

In all cases, present-day county borders (Központi Statisztikai Hivatal 2019) were taken into account. The average county area (assuming the fusing of the areas of Budapest and Pest County) is approximately 4900 km², whereas the maximum (BK) per minimum (KE) ratio is 3.7 (Table 1).

Distribution of frequency classes in the counties

For each county we evaluated the number of taxa in the five frequency classes, based on Appendix 1, in comparison with the total number of taxa in each frequency class (see Table 4). The results were plotted on a map of Hungary showing the 19 administrative units in order to better visualise geographical patterns of frequency and rarity.

Data processing

Our study provides data at two geographical scales: the national scale (~100.000 km²) and the county-level scale (~5000 km²). We assume that our surveys more-or-less represent the true species richness of the counties – despite the significant and uneven bias at both scales – if the basic and robust bryogeographical rules can be verified with our data.

To measure correlations between species combinations and relevant environmental drivers, we used

simple linear (Pearson's) correlations (with 'r' and 'p (uncorr)' values) between the total number of bryophyte taxa per county (the dependent variable) and the independent variables, such as surveyed area (Area), elevational range (Elev), arable land cover (Arable) and forest cover (Forest).

The independent variables were selected based on the following bryogeographical assumptions:

- (i) the expected number of species increases with the size of the surveyed area (Callaghan 2012; Patiño and Vanderpoorten 2018);
- (ii) the number of species increases with elevational range (Theurillat et al. 2003; Hodgetts et al. 2019);
- (iii) the number of species increases with forest cover and decreases with arable land cover (Zechmeister and Moser 2001; Caners et al. 2013).

Arable land cover was highly correlated with forest cover. We performed linear correlation analysis using PAST 4.03 (Hammer et al. 2001). All the dependent and independent variables were normalised before analysis according to the following formula: $Z = (X - \mu) / \sigma$ (where X = original value, μ = mean of dataset, and σ = standard deviation of dataset).

Results

Mainly due to recent fieldwork, another 10 taxa have been added to the bryophyte flora of Hungary since the publication of the latest checklist (Erzberger and Papp 2020). We now recognise 698 taxa (2 hornworts, 151 liverworts and 545 mosses).

The preliminary evaluation of grid cell-based bryophyte recording in Hungary (Tables 2 and 3) gave rise to:

- (i) an assignment of all bryophyte taxa with 'recent' (after 1973) records known from the territory of Hungary, altogether 637 taxa, to one of five frequency classes (Table 4, Appendix 1); and
- (ii) an overview of their geographical distribution in the 19 counties (Appendix 1).

Data were obtained from a proportion of the total of 2832 quadrants covering the territory of Hungary. At the time of evaluation (July 2022), the number of quadrant/taxon records (i.e. the sum of the number of quadrants/taxon extended over all taxa) was 42,810. If we

Table 2. Present state of bryophyte recording (complemented by herbarium data after 1973) in Hungary.

Variable	No. (%) ^a
Quadrants with data	900 (31.8)
Quadrants with > 20 different taxa	586 (20.7)
Quadrants with ≥ 100 taxa	120 (4.2)
Quadrants with ≥ 200 taxa	8 (0.3)
Taxa in quadrants with > 20 taxa (mean)	68.4

^aAny value in parentheses is the proportion as a percentage of the total number of quadrants in the territory of Hungary (i.e. 2832).

Table 3. Statistically important descriptive data for the 19 counties of Hungary, including N_s = total number of species/county, N_{Qi} = number of investigated quadrants, and Area Q_i = area of investigated quadrants.

County abbreviation ^a	Taxa/quadrant					N_s	N_{Qi}	Area Q_i		Other independent variables		
	Minimum	Maximum	Mean	Median	SD			km ²	%	Elevation (m)	Forest cover (%)	Arable land cover (%)
BA	1	172	59.31	50	39.57	379	61	2115.94	47.76	599	25.2	48.90
BÉ	1	97	10.00	3	19.13	123	27	936.56	16.63	31	4.6	69.07
BK	1	52	21.82	23	17.11	141	28	971.25	11.50	96	20.8	42.10
BZ	1	192	56.64	49	50.91	460	85	2948.44	40.68	864	29.2	33.92
CS	1	40	19.91	25	12.99	124	35	1214.06	28.48	58	8.9	58.05
FE	1	181	49.64	40	44.40	295	39	1352.81	31.04	411	12.4	57.65
GM	1	159	34.43	27	35.93	300	47	1630.30	38.70	569	19	51.93
HB	1	59	18.13	13	17.20	152	40	1387.50	22.34	98	11.3	52.06
HE	1	199	59.42	41	51.12	387	48	1665.00	45.78	933	24.3	39.42
JN	1	40	13.00	8	13.08	88	17	589.69	10.56	56	5.9	62.93
KE	1	227	68.06	67	52.04	355	53	1838.44	81.20	620	27.3	44.50
NÓ	1	165	61.24	55	45.06	315	49	1699.69	66.80	827	39.2	26.01
PE (+ BU)	1	236*	71.87	56	60.22	474	82	2844.38	41.10	857	25.8	36.60
SO	1	84	33.77	33	24.09	247	56	1942.50	32.02	219	29.6	39.63
SZ	1	82	24.58	26	20.80	148	24	832.50	14.02	137	21.3	43.79
TO	1	64	17.88	6	19.44	184	33	1144.69	30.91	544	17.8	56.54
VA	1	236*	52.74	46	49.68	402	68	2358.75	70.70	757	28.2	45.53
VE	1	151	61.98	58	45.36	401	64	2220.00	49.73	613	30.2	31.43
ZA	1	123	41.00	38	32.37	283	44	1526.25	40.33	354	31.7	30.91

*Highest number of taxa/quadrant in Hungary.

^aSee Table 1 for definitions.**Table 4.** Definitions of frequency classes and number of taxa in each class.

Frequency class	Abbreviation	Percentage of total no. of quadrants investigated (586)	No. of taxa		
			Liverworts and hornworts	Mosses	Total
Very common	cc	> 65%	2	20	22
Common	c	40–65%	3	29	32
Sporadic to frequent	s-f	5–39.9%	33	193	226
Rare	r	1–4.9%	53	128	181
Very rare	rr	< 1%	37	139	176
Not seen since 1973	n.s.	0	25	36	61
Total			153	545	698

disregard the incompleteness (bias) of the survey, the coverage nationally of quadrants with any bryophyte data was 31.8%; considering only the quadrants with > 20 taxa, it was 20.7% (see Table 2). At the same time, if the territory of the country were to be divided into parts (counties in our case), their average completeness would be 38%, if we count all quadrants in which at least one bryophyte species was recorded. This apparent increase in completeness was due to the bias and the different size of the counties (cf Table 3).

Figure 2 shows for each county the number of taxa in each frequency class. Although all the very common species (cc) and nearly all the common species (c) were found in each county, the number of taxa of intermediate (s-f) and lower (r, rr) frequencies differs strongly among counties. The six counties with the highest proportion of taxa of intermediate and lower frequency are those with higher elevations (BA, BZ, HE, KE, PE, VA, VE), whose bryophytes comprise 86–99% of s-f taxa, 43–80% of r taxa, and 6–30% of rr taxa. At the other extreme, the six counties with the lowest proportions in these classes are the predominantly lowland counties (BÉ, BK, CS, HB, JN, SZ), having 20–35% of s-f taxa, 2–9% of r taxa, and 0–4% of rr taxa.

As shown in Table 5, strong correlations were found between the species richness of the counties and the selected independent variables. Excluding arable land cover, all independent variables were positively and significantly correlated with bryophyte richness; the strongest linear correlations with the total number of bryophyte species per county were found for surveyed area and elevational range. A negative significant correlation was found between arable land cover and species richness.

Discussion

When comparing the Hungarian bryophyte flora with that of other Central European countries, we have to exclude those with significant alpine or high-montane areas. This includes all the adjacent countries (Austria, Slovenia, Croatia, Serbia, Romania, Ukraine and Slovakia). Three German federal states (Niedersachsen, Brandenburg and Mecklenburg-Vorpommern) are, like Hungary, predominantly lowland. Although these states are individually much smaller in size, their areas ranging from 23,200 km² to 47,600 km², their bryophyte richness is not far behind that of Hungary or is even higher: Niedersachsen having

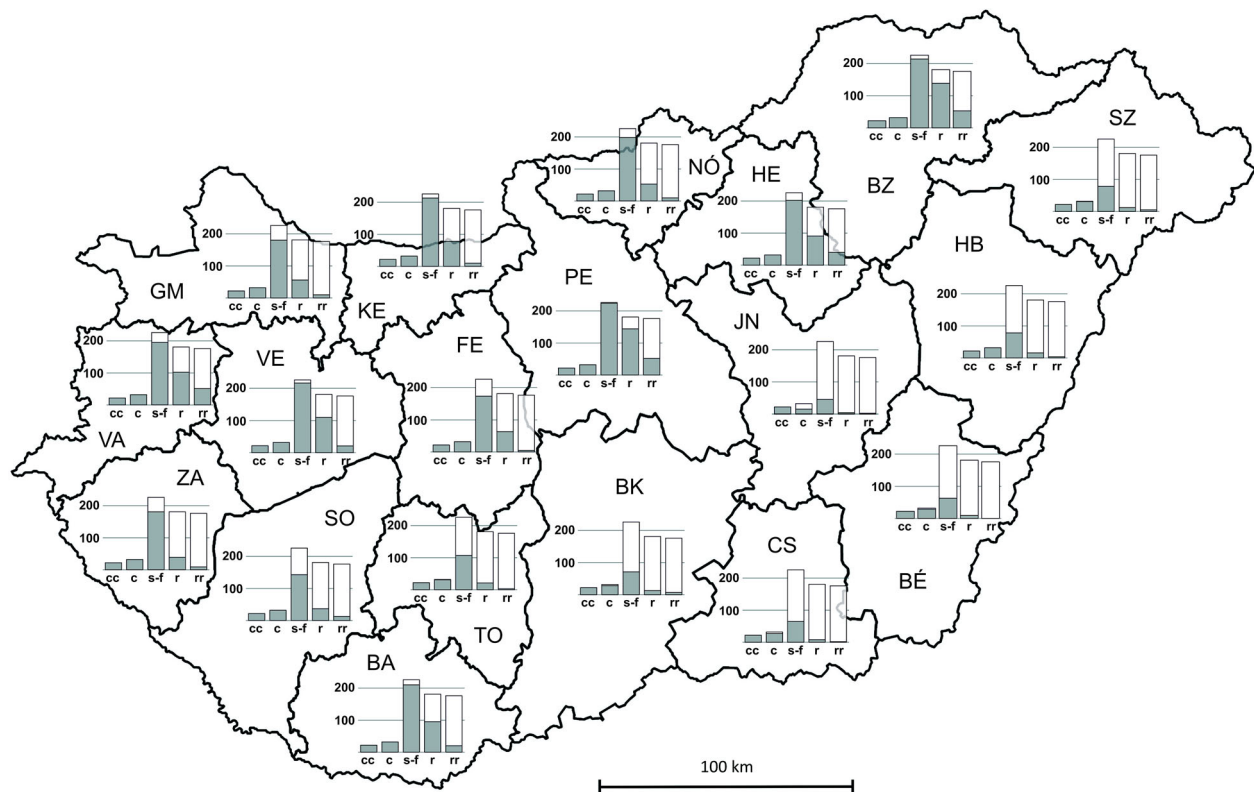


Figure 2. Distribution of frequency classes of bryophytes in the 19 counties of Hungary, based on the data in [Appendix 1](#). Column length is proportional to the number of taxa present (grey) or absent (white) in each county. cc = very common, c = common, s-f = sporadic to frequent, r = rare, rr = very rare. County abbreviations as shown in [Table 1](#).

Table 5. Pearson's linear correlations between dependent and independent variables.

Variable	Surveyed area	Forest cover	Arable land cover	Total no. of bryophytes/ county
Elevational range	0.766**	0.680*	-0.582*	0.909***
Surveyed area		0.641*	-0.589*	0.917***
Forest cover			-0.928***	0.696**
Arable land cover				-0.623*

* $p_{\text{uncorr}} < 0.05$, ** $p_{\text{uncorr}} < 0.001$, *** $p_{\text{uncorr}} < 0.0001$.

758 taxa (Koperski et al. 2011); Brandenburg, 580 taxa (Klawitter et al. 2002); and Mecklenburg-Vorpommern, 557 taxa (Berg et al. 2009). These differences can be easily explained by the species richness trends in Europe (Hodgetts et al. 2019), according to which species richness from the Atlantic and northern areas shows a decreasing trend towards the interior of the continent, the east and the south.

The quadrants with the highest number of taxa were 7980.2 in Pest County and 8664.2 in Vas County; 236 taxa were found in each, representing 33.8% of the national bryophyte flora. Given the geographical situation of Hungary, these numbers compare favourably with corresponding results from Thuringia, Germany, where 355 species were recorded in the most species-rich quadrant (5072.2) (Meinunger

1992), and Carinthia, Austria, where the maximum species number of 361 (40.4% of the 893 bryophyte species of Carinthia) was found in the alpine quadrant 8942.4 (Köckinger et al. 2008).

Considering the geographical distribution of taxa in the country, we find a rather large group with no records from the predominantly lowland counties BÉ, BK, CS, HB, JN, SO, SZ and TO. Interestingly, for most of them this type of geographical distribution was already reported in Orbán and Vajda (1983) as being frequent in mountain and colline areas but mostly lacking or rare in the lowlands ([Appendix 1](#)). The only lowland records of some taxa are often in artificial rocky habitats in the Vácrtót Botanical Garden or similar arboreta.

As shown in [Figure 2](#), the above-mentioned lowland counties (cf also [Figure 1](#)) have low proportions of taxa of intermediate (s-f) and low (r, rr) frequency. This is not surprising, because unfavourable climatic conditions and lack of other than the most common habitats give rise to the presence of fewer specialist and rare taxa. The greater diversity in those counties with some mountainous area (in the western part of the country, GM and VA; in the transdanubian and the northern mountain ranges VE, KE, PE, NÓ, HE, BZ; and BA in the south) could be explained by the fact that areas of higher elevation provide more and different types of microhabitat for species normally restricted to colline and mountain areas, which therefore have

lower national frequencies. However, because our survey shows bias towards the higher parts of the country, this might also contribute to the observed pattern.

All the hypotheses derived from the literature were supported by our results: the total number of bryophytes increases with increasing survey effort (Callaghan 2012), size of the explored area (Patiño and Vanderpoorten 2018), increased forest cover (Caners et al. 2013) and elevational range (Theurillat et al. 2003; Hodgetts et al. 2019), as well as decreasing arable land cover (Zechmeister and Moser 2001). Although Hungary is a predominantly lowland country, as 82.4% of its territory is situated below 200 m a.s.l. and only 0.6% rises above 500 m a.s.l., elevational range was the most significant variable influencing the species richness of the counties. This also means that the very small part of the country at higher elevation will produce significantly higher numbers of species in counties (e.g. as is the case with GM). However, 46.6% of the national territory is arable land and 20.8% is forest (Kocsis 2018); these independent variables influenced species richness at almost the same level but in opposite directions. This also suggests that a small increase in forest cover can lead to a significant increase in species numbers, especially if the increase in (semi-natural) forest area is at the expense of arable land. We must also not forget that our data collection is biased: we have primarily visited the higher regions (which are also more forested than the lowlands). Despite these sampling deficiencies, in the best case a survey of only 31.8% nationally, and only 38% per county on average, proved to be sufficient to confirm some fundamental bryogeographical theories in Hungary. Moreover, for the first time we shall have the opportunity in the near future to compile a Hungarian bryophyte Red List based on national frequency data, with which we have been able to support some basic, robust bryogeographical trends.

Acknowledgements

We are indebted to all who have contributed in one way or another to the dataset of the recording project, and in particular to Christian Berg (Graz, Austria), Steffen Caspari (Bonn, Germany), Jan Eckstein (Göttingen, Germany), Krisztián Harnos (Eger, Hungary), Sándor Jordán (Debrecen, Hungary), Andor Kovács (Budapest, Hungary), Dániel Kovács (Tápiószéle, Hungary), Gergely J. Kutszegi (Budapest, Hungary), Gábor Magos (Eger, Hungary), Katalin Nagy (Pécs, Hungary), Péter Ódor (Vácrátót, Hungary), Miklós Óvári (Zalaegerszeg, Hungary), Benedek Palotai (Érd, Hungary), Viktor Papp (Budapest, Hungary), Viktor Gábor Papp (Eger, Hungary), Dávid Putz (Vác, Hungary), Attila Rigó (Budapest, Hungary), Ágnes Pappné Szakály (Budapest, Hungary), Attila Takács (Debrecen, Hungary), István Zsolt Tóth (Bonyhád, Hungary), Zoltán Tóth (Budapest, Hungary), László Urbán (Eger, Hungary), and András Vojtkó (Eger,

Hungary). Special thanks are extended to Sorin Ștefănuț (Bucharest, Romania) for examining some critical liverwort specimens, to Thomas Kiebacher (Zürich, Switzerland) for revision of some Orthotrichaceae, to Tom Ottley (Aberystwyth, UK) for revision of some specimens of *Leucobryum*, and to Márta Gaál (Budapest, Hungary) for preparing the map in Figure 1. We thank the South-Transdanubian Water Management Directorate for making the Hungarian digital terrain model available, and Ákos Halmi (Pécs, Hungary) for making the elevational range data calculations. Last but not least, we also thank the editors and two anonymous reviewers for comments on and improvements to the manuscript.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Peter Erzberger is a retired schoolteacher exploring bryophyte distribution in Hungary by carrying out fieldwork and herbarium studies.

János Csiky Ph.D. is an associate professor at the University of Pécs in Hungary. His research focuses on taxonomy, cryptogam and vascular flora mapping, urban ecology and vegetation classification.

Kornél Baráth is an assistant professor at the Department of Biology, Savaria University Centre, Eötvös Loránd University, Szombathely. He is interested in ecological and taxonomical studies on parasitic plants and exploring bryophyte distribution in Hungary.

Ábel Beránek is a biologist, carrying out moss and vascular plant related fieldwork in his free time.

Judit Deme is a botanist at the University of Pécs in Hungary. Her research is focused on the distribution of rare bryophytes, invasive mosses and bryophyte flora mapping.

Gabriella Fintha is a Ph.D. student exploring bryophyte distribution in Hungary and bryophyte physiology.

Gusztáv Jakab is an associate professor in the Institute of Environmental Sciences, Hungarian University of Agriculture and Life Sciences. His previous and current research interests relate to the development of wetlands and interconnections with human influences and global climate change.

Gábor Matus is a university scholar working mainly with cryptogams, including lichens and bryophytes.

Attila Mesterházy is an agricultural engineer, exploring bryophyte distribution in Hungary through fieldwork.

József Nagy is a museologist working at the Museum and Library of Hungarian Agriculture, Budapest, Hungary. His research interests are the floristics of bryophytes and the vascular flora of the Börzsöny Mountains.

Zoltán Nagy is an applied plant biologist, exploring the Hungarian bryophyte flora, mainly on the Southern Great Plain.

Csaba Németh is a bryologist working at the Centre for Ecological Research, Institute of Ecology and Botany, Vácrátót, Hungary. His research interests are the floristics of bryophytes and the taxonomy and ecology of bryophilous ascomycetes.

Tamás Pócs is an emeritus professor, dealing with the exploration, identification, revision and geography of

tropical bryophytes, especially members of the families Lejeuneaceae, Lepidoziaceae and Dicranaceae.

Dávid Schmidt is an agricultural engineer and assistant professor at Sopron University in Hungary. He is engaged in floristic and vegetation research, and flora mapping in Hungary.

András Schmotzer works as research adviser at Bükk National Park Directorate. His work is focussed mostly on the Hungarian flora and nature conservation issues.

Péter Szűcs is an associate professor, interested in the bryophyte flora and diversity of the natural, semi-natural and urban environments of the Carpathian Basin (Hungary).

Mátyás Wolf is a medical doctor interested in the vascular and bryophyte flora of Hungary.

Beáta Papp is curator of bryophytes at the Hungarian National History Museum, Budapest, dealing with bryophyte conservation, monitoring, and bryophyte flora exploration in Hungary and in the Balkans.

ORCID

János Csiky  <http://orcid.org/0000-0002-7920-5070>
 Kornél Baráth  <http://orcid.org/0000-0002-4564-776X>
 Ábel Beránek  <http://orcid.org/0000-0002-4675-6992>
 Judit Deme  <http://orcid.org/0000-0001-7906-3749>
 Gabriella Fintha  <http://orcid.org/0009-0009-7548-5472>
 Gusztáv Jakab  <http://orcid.org/0000-0002-2569-5967>
 Attila Mesterházy  <http://orcid.org/0000-0001-7952-5990>
 Zoltán Nagy  <http://orcid.org/0000-0003-2034-9333>
 Csaba Németh  <http://orcid.org/0000-0002-3482-0512>
 Tamás Pócs  <http://orcid.org/0000-0002-1359-1298>
 Dávid Schmidt  <http://orcid.org/0000-0002-5387-9982>
 Péter Szűcs  <http://orcid.org/0000-0002-3988-7062>
 Beáta Papp  <http://orcid.org/0000-0002-9061-9987>

References

- Aszalósné Balogh R, Buczkó K, Erzberger P, Freytag Cs, Homm T, Lőkös L, Matus G, Nagy Z, Papp B, Farkas E. 2021. Taxonomical and chorological notes 15 (153–163). *Studia Botanica Hungarica*. 52(2):165–184. <https://doi.org/10.17110/StudBot.2021.52.2.165>.
- Bartha D, Király G, Schmidt D, Tiborcz V, Barina Z, Csiky J, Jakab G, Lesku B, Schmotzer A, Vidéki R, et al., editors. 2015. Magyarország edényes növényfajainak elterjedési atlasza [Distribution atlas of vascular plants of Hungary]. Sopron: University of West Hungary Press. Hungarian and English.
- Berg C, Linke C, Wiehle W. 2009. Rote Liste der Moose (Bryophyta) Mecklenburg-Vorpommerns. Stand: November 2009 [Red List of the bryophytes of Mecklenburg-Vorpommern. November 2009]. Schwerin: Mecklenburg-Vorpommern, Ministerium für Landwirtschaft, Umwelt und Verbraucherschutz. German.
- Borhidi A. 1961. Klimadiagramme und klimazonale Karte Ungarns [Climate diagrams and climate zone map of Hungary]. *Annales Universitatis Scientiarum Budapestiensis de Ronaldo Eötvös nominatae, Sectio Biologica*. 4:21–50. German.
- Boros Á. 1953. Magyarország mohái (Bryophyta Hungariae) [Bryophytes of Hungary (Bryophyta Hungariae)]. Budapest: Akadémiai Kiadó. Hungarian.
- Boros Á. 1968. Bryogeographie und Bryoflora Ungarns [Bryogeography and bryoflora of Hungary]. Budapest: Akadémiai Kiadó. German.
- Callaghan D. 2012. The inventory of bryophytes at sites: completeness and survey effort. *Journal of Bryology*. 34(1):37–44. <https://doi.org/10.1179/1743282011Y.0000000046>.
- Caners RT, Macdonald SE, Belland RJ. 2013. Bryophyte assemblage structure after partial harvesting in boreal mixed-wood forest depends on residual canopy abundance and composition. *Forest Ecology and Management*. 289:489–500. <https://doi.org/10.1016/j.foreco.2012.09.044>.
- Caparrós R, Lara F, Draper I, Mazimpaka V, Garilleti R. 2016. Integrative taxonomy sheds light on an old problem: the *Ulota crispa* complex (Orthotrichaceae, Musci). *Botanical Journal of the Linnean Society*. 180(4):427–451. <https://doi.org/10.1111/boj.12397>.
- Ellis LT, Alataş M, Aleffi M, Álvaro Alba WR, Becerra Infante DA, Cárdenas Espinosa KA, Aziz MdN, Bakalin VA, Bergamo Decarli G, Boiko M, et al. 2021a. New national and regional bryophyte records, 66. *Journal of Bryology*. 43(2):193–212. <https://doi.org/10.1080/03736687.2021.1942590>.
- Ellis LT, Alataş M, Álvaro Alba WR, Charry Giraldo AM, Amatov V, Batan N, Becerra Infante DA, Burghardt M, Czernyadjeva IV, Kuzmina EYu, et al. 2021b. New national and regional bryophyte records, 67. *Journal of Bryology*. 43(3):301–311. <https://doi.org/10.1080/03736687.2021.1977517>.
- Ellis LT, Arrocha C, Benítez Á, Beyrouthy M, Chandini VK, Czernyadjeva IV, Deme J, Erzberger P, Fedosov VE, Górski P, et al. 2022. New national and regional bryophyte records, 71. *Journal of Bryology*. 44(3):252–263. <https://doi.org/10.1080/03736687.2022.2143223>.
- Ellis LT, Bednarek-Ochyra H, Chandini VK, Manju CN, Nishida PP, Sajitha Menon S, Sruthi OM, Rajesh KP, Cottet AC, Messuti MI, et al. 2021c. New national and regional bryophyte records, 68. *Journal of Bryology*. 43(4):387–402. <https://doi.org/10.1080/03736687.2021.2002115>.
- Erzberger P. 1999. Distribution of *Dicranum viride* and *Dicranum tauricum* in Hungary. *Studia Botanica Hungarica*. 29:35–47.
- Erzberger P. 2002. *Funaria muhlenbergii* and *Funaria pulchella* (Funariaceae, Bryophyta) in Hungary. *Studia Botanica Hungarica*. 33:47–63.
- Erzberger P. 2005. The bulbiferous species of *Pohlia* (Bryaceae, Musci) in Hungary. *Studia Botanica Hungarica*. 36:67–75.
- Erzberger P. 2009. The genera *Grimmia* and *Coscinodon* (Grimmiaceae, Musci) in Hungary. *Studia Botanica Hungarica*. 40:37–124.
- Erzberger P. 2012. Project plan: Bryophyte mapping of Hungary. Poster session presented at: 8th Conference of European Committee for Conservation of Bryophytes; Apr 18–21; Budapest.
- Erzberger P. 2016. The genus *Fissidens* Hedw. (Bryophyta) in Hungary. *Studia Botanica Hungarica*. 47(1):41–139.
- Erzberger P. 2020. Bryophyte recording in Hungary in the 21st century. *Field Bryology*. 123:21–33.
- Erzberger P, Bednarek-Ochyra H, Ochyra R. 2016. Grimmiaceae subfam. Racomitrioideae (Bryophyta) in Hungary. *Polish Botanical Journal*. 61(1):23–51. <https://doi.org/10.1515/pbj-2016-0015>.
- Erzberger P, Németh Cs. 2016. Bryophyte recording in Hungary – results 2012–2015. Paper presented at: 11th International Conference ‘Advances in Research on the Flora and Vegetation of the Carpatho-Pannonian Region’. Book of abstracts; Feb 12–14; Budapest, Hungary.

- Erzberger P, Németh Cs, Sauer M, Nagy J, Papp B. 2020. *Plagiothecium platyphyllum* (Bryophyta), a rare species in Hungary. *Studia Botanica Hungarica*. 51(1):25–40. <https://doi.org/10.17110/StudBot.2020.51.1.25>.
- Erzberger P, Papp B. 2020. The checklist of Hungarian bryophytes – second update. *Studia Botanica Hungarica*. 51(2):11–76. <https://doi.org/10.17110/StudBot.2020.51.2.11>.
- Erzberger P, Schröder W. 2008. The genus *Schistidium* (Grimmiaceae, Musci) in Hungary. *Studia Botanica Hungarica*. 39:27–88.
- Erzberger P, Schröder W. 2013. The genus *Bryum* (Bryaceae, Musci) in Hungary. *Studia Botanica Hungarica*. 44:5–192.
- ESRI. 2022. ArcGIS Pro. Tool Reference. Zonal Statistics as Table (Spatial Analyst). [accessed 2022 Mar 27]. <https://pro.arcgis.com/en/pro-app/latest/tool-reference/spatial-analyst/zonal-statistics-as-table.htm>.
- Fekete G, Király G, Molnár Zs. 2016. Delineation of the Pannonian vegetation region. *Community Ecology*. 17(1):114–124. <https://doi.org/10.1556/168.2016.17.1.14>.
- General Directorate of Water Management. 2022. ArcGIS. My Map. HydroDEM. [accessed 2022 Mar 27]. https://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fgeoportal.vizugy.hu%2Farcgis%2Frest%2Fservices%2FAKK_3D%2FHydroDEM%2FImageServer&source=sd.
- Hammer O, Harper DAT, Ryan PD. 2001. PAST: Paleontological Statistics Software Package for Education and Data Analysis. *Palaeontologia Electronica*. 4(1):1–9. https://palaeo-electronica.org/2001_1/past/past.pdf.
- Hodgetts N, Cáliz M, Englefield E, Fettes N, García Criado M, Patin L, Nieto A, Bergamini A, Bisang I, Baisheva E, et al. 2019. A miniature world in decline: European Red List of mosses, liverworts and hornworts. Brussels: International Union for Conservation of Nature and Natural Resources (IUCN).
- Kiebach Th, Meier M. 2020. The generic placement of *Grimmia teretinervis* Limpr. *Herzogia*. 33(2):544–547. <https://doi.org/10.13158/heia.33.2.2020.544>.
- Klawitter J, Rätzel S, Schaepe A. 2002. Gesamtartenliste und Rote Liste der Moose des Landes Brandenburg [Total species list and Red List of the bryophytes of the Federal State Brandenburg]. *Naturschutz und Landschaftspflege in Brandenburg*. 11(4):1–103. German.
- Köckinger H, Suanjak M, Schriegl A, Schröck C. 2008. Die Moose Kärntens [Bryophytes of Carinthia]. Klagenfurt: Verlag des Naturwissenschaftlichen Vereins für Kärnten. (Sonderreihe Natur Kärnten; 4). German.
- Kocsis K. 2018. Magyarország dióhéjban [Hungary in a nutshell]. In: Kocsis K, Horváth G, Keresztesi Z, Nemerényi Zs, editors. Magyarország Nemzeti Atlasza – Természeti Környezet [National Atlas of Hungary – Natural Environment]. Budapest: Magyar Tudományos Akadémia, Csillagászati és Földtudományi Kutatóközpont, Földrajztudományi Intézet; p. 13. Hungarian.
- Koperski M. 2011. Rote Liste und Gesamtartenliste der Moose in Niedersachsen und Bremen – 3. Fassung, Stand 2011, unter Mitarbeit von M. Preußing (Südniedersachsen) [Red List and total species list of the bryophytes of Lower Saxony and Bremen – 3. version, 2011, with a contribution of M. Preußing (South Lower Saxony)]. Informationsdienst Naturschutz Niedersachsen. 31(3):129–208. German.
- Központi Statisztikai Hivatal [Hungarian Central Statistical Office]. 2019. Magyarország közigazgatási helynévkönyve, 2019. január 1. [Gazetteer of Hungary, 1 January of 2019]. Budapest: Központi Statisztikai Hivatal.
- Meinunger L. 1992. Florenatlas der Moose und Gefäßpflanzen des Thüringer Waldes, der Rhön und angrenzender Gebiete [Flora atlas of the bryophytes and vascular plants of the Thuringian Forest, the Rhön and adjacent areas]. Haussknechtia, Beiheft 3/1–2. Jena: Thüringische Botanische Gesellschaft e. V. und Thüringer Landesanstalt für Umwelt. German.
- Molnár Zs, Király G, Fekete G, editors. 2018. Növényzet [Vegetation]. In: Kocsis K, Horváth G, Keresztesi Z, Nemerényi Zs, editors. Magyarország Nemzeti Atlasza – Természeti Környezet [National Atlas of Hungary – Natural Environment]. Budapest: Magyar Tudományos Akadémia, Csillagászati és Földtudományi Kutatóközpont, Földrajztudományi Intézet; p. 94–103. Hungarian.
- Nagy J, Pap-Kovács A, Erzberger P. 2019. Bibliography of bryological research in Hungary (1968–2018). *Studia Botanica Hungarica*. 50(1):53–106. <https://doi.org/10.17110/StudBot.2019.50.1.53>.
- Niklfeld H. 1971. Bericht über die Kartierung der Flora Mitteleuropas [Report on the mapping of the flora of Central Europe]. *Taxon*. 20:545–571. German.
- Orbán S, Vajda L. 1983. Magyarország mohafórájának kézikönyve [Handbook of the Hungarian bryophyte flora]. Budapest: Akadémiai Kiadó. Hungarian.
- Papp B, Erzberger P, Ódor P, Hock Z, Szövényi P, Szurdoki E, Tóth Z. 2010. Updated Checklist and Red List of Hungarian Bryophytes. *Studia Botanica Hungarica*. 41:31–59.
- Patiño J, Bisang I, Goffinet B, Hedenäs L, McDaniel S, Pressel S, Stech M, Ah-Peng C, Bergamini A, Caners RT, et al. 2022. Unveiling the nature of a miniature world: a horizon scan of fundamental questions in bryology. *Journal of Bryology*. 44(1):1–34. <https://doi.org/10.1080/03736687.2022.2054615>.
- Patiño J, Vanderpoorten A. 2018. Bryophyte Biogeography. *Critical Reviews in Plant Sciences*. 37(2–3):175–209. <https://doi.org/10.1080/07352689.2018.1482444>.
- Theurillat JP, Schlüssell A, Geissler P, Guisan A, Velluti C, Wiget L. 2003. Vascular plant and bryophyte diversity along elevation gradients in the Alps. In: Nagy L, Grabherr G, Koerner C, Thompson GBA, editors. *Alpine biodiversity in Europe*. Ecological Studies. 167:185–193. Heidelberg: Springer. https://doi.org/10.1007/978-3-642-18967-8_8.
- Thiers B. Continuously updated. Index Herbariorum: a global directory of public herbaria and associated staff. New York Botanical Garden's virtual herbarium. [accessed 2023 Mar 1]. <http://sweetgum.nybg.org/science/ih/>.
- Zechmeister HG, Moser D. 2001. The influence of agricultural land-use intensity on bryophyte species richness. *Biodiversity and Conservation*. 10:1609–1625. <https://doi.org/10.1023/A:1012008828522>.

Appendix 1. Presence/absence data of bryophyte taxa according to the Hungarian county system.

Abbreviations: cc = very common, c = common, s-f = sporadic to frequent, r = rare, rr = very rare, n.s. = not seen since 1973, C&M* = confined to colline and montane areas according to Orbán and Vajda (1983), full circle = recent records (from 1974 on), empty circle = historical records (up to 1973).

Taxon	Frequency	County																No. of counties	C&M		
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS
Hornworts																					
<i>Anthoceros agrestis</i> Paton	r	●	●		●										●					4	*
<i>Phaeoceros carolinianus</i> (Michx.) Prosk.	r	●	●		●	●		●			○				●					6	
Liverworts																					
<i>Anastrophyllum michauxii</i> (F.Weber) H.Buch	n.s.														○					0	*
<i>Aneura pinguis</i> (L.) Dumort.	s-f		●	●	●	●		●	●	●	●	●	●	●	●	●				11	
<i>Apopellia endiviifolia</i> (Dicks.) Nebel & D.Quandt	s-f	●	●	●	●	●	●	●		●	●	●	●	●	●				●	13	
<i>Asterella saccata</i> (Wahlenb.) A.Evans	r			○		●		●	●	●	●				●					6	*
<i>Barbilophozia barbata</i> (Schmidel ex Schreb.) Loeske	s-f	○	●	●		●		●	●	●	●	●	●	●	●					10	
<i>Barbilophozia hatcheri</i> (A.Evans) Loeske	rr									●										1	
<i>Barbilophozia sudetica</i> (Nees ex Huebener) L.Söderstr., De Roo & Hedd.	rr									●					●					2	*
<i>Bazzania trilobata</i> (L.) Gray	r		●			●		○						○	●					3	*
<i>Blasia pusilla</i> L.	r	●	●	○	●			○		○	●			●						5	*
<i>Blepharostoma trichophyllum</i> (L.) Dumort.	r	○	●			●		●		○	●	●	●	●	●					7	*
<i>Calypogeia arguta</i> Nees & Mont.	rr		●																	1	
<i>Calypogeia azurea</i> Stotler & Crotz	r		●									●	●	●						4	*
<i>Calypogeia fissa</i> (L.) Raddi	s-f	●	●	●		●		●		●	●				●					8	*
<i>Calypogeia integristipula</i> Steph.	rr												●	●						2	*
<i>Calypogeia muelleriana</i> (Schiffn.) Müll.Frib.	r	●	●										●	●						4	*
<i>Calypogeia neesiana</i> (C.Massal. & Carestia) Müll.Frib.	n.s.												○	○						0	*
<i>Calypogeia suecica</i> (Arnell & J.Perss.) Müll.Frib.	rr												●							1	*
<i>Cephalozia bicuspidata</i> (L.) Dumort.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●				12	*
<i>Cephalozia lacinulata</i> (J.B.Jack ex Gottsche & Rabenh.) Spruce	n.s.		○																	0	*
<i>Cephaloziella divaricata</i> (Sm.) Schiffn. var. <i>divaricata</i>	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	15	
<i>Cephaloziella divaricata</i> (Sm.) Schiffn. var. <i>scabra</i> (M.Howe) Haynes	rr					●									●					2	
<i>Cephaloziella hampeana</i> (Nees) Schiffn. ex Loeske	rr									●		●		●	●					4	*
<i>Cephaloziella integerrima</i> (Lindb.) Warnst.	n.s.							○		○										0	*
<i>Cephaloziella rubella</i> (Nees) Warnst.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	14	*
<i>Cephaloziella spinigera</i> (Lindb.) Jørg.	n.s.														○					0	*
<i>Cephaloziella stellulifera</i> (Taylor ex Carrington & Pearson) Croz.	n.s.							○	○	○				○						0	*
<i>Cephaloziella varians</i> (Gottsche) Steph.	rr												●	●						2	
<i>Chiloscyphus pallescens</i> (Ehrh.) Dumort.	s-f	●	●		●	●		●		●	●	●	●	●	●	●				10	
<i>Chiloscyphus polyanthos</i> (L.) Corda	s-f	●	●	●		●		●		●	●	●	●	●	●	●				10	
<i>Clevea hyalina</i> (Sommerf.) Lindb.	r							●	●	●	●									4	*
<i>Cololejeunea calcarea</i> (Lib.) Steph.	r			●				●	●		●				●					5	*
<i>Cololejeunea rossettiana</i> (C.Massal.) Schiffn.	r	●				●		●		●			●	●						6	*

Continued.

Taxon	Frequency	County															No. of counties	C&M				
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB			JN	BÉ	CS	BK
<i>Mannia triandra</i> (Scop.) Grolle	r							●	●					●							3	*
<i>Marchantia polymorpha</i> L. subsp. <i>montivagans</i> Bischl. & Boissel.-Dub.	rr									●											1	
<i>Marchantia polymorpha</i> L. subsp. <i>polymorpha</i>	r			●	●	●	●			●	●		●								7	
<i>Marchantia polymorpha</i> L. subsp. <i>ruderalis</i> Bischl. & Boissel.-Dub.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Marchantia quadrata</i> Scop.	r	●	●					●	●	●			●	●							7	
<i>Marsupella emarginata</i> (Ehrh.) Dumort.	rr									●											1	*
<i>Marsupella funckii</i> (F.Weber & D.Mohr) Dumort.	r					●				●	●		●								4	*
<i>Marsupella sprucei</i> (Limpr.) Bernet	rr									●											1	*
<i>Mesoptychia badensis</i> (Gottsche ex Rabenh.) L.Söderstr. & Váňa	r	●	●					●		●			●								5	*
<i>Mesoptychia collaris</i> (Nees) L.Söderstr. & Váňa	r		●			●		●	●				●	●							6	*
<i>Mesoptychia heterocolpos</i> (Thed. ex Hartm.) L.Söderstr. & Váňa	n.s.											○	○								0	*
<i>Metzgeria conjugata</i> Lindb.	s-f	●	●			●		●		●	●	●	●	●							8	*
<i>Metzgeria furcata</i> (L.) Corda	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	17	
<i>Metzgeria pubescens</i> (Schrank) Raddi	r			○				●	○				●	●							3	*
<i>Nardia geoscyphus</i> (De Not.) Lindb.	rr												●								1	*
<i>Nardia scalaris</i> Gray	rr	●								●			●								3	*
<i>Nowellia curvifolia</i> (Dicks.) Mitt.	s-f	●	●	●	●	●				●	●	●	●	●							10	*
<i>Obtusifolium obtusum</i> (Lindb.) S.W.Arnell	n.s.													○							0	*
<i>Oxymitra incassata</i> (Brot.) Sérgio & Sim-Sim	r					○		●	●	●	●			○			○	○			4	
<i>Pedinophyllum interruptum</i> (Nees) Kaal.	s-f	●	●	●		●		●	●	●			●	●							9	*
<i>Pellia epiphylla</i> (L.) Corda	r	●	●										●								3	*
<i>Pellia neesiana</i> (Gottsche) Limpr.	rr	●	●	●																	3	
<i>Plagiochila asplenioides</i> (L.) Dumort.	r	●	●	●	●	●		●		●	●	●	●	●							10	*
<i>Plagiochila porelloides</i> (Torr. ex Nees) Lindenb.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	13	
<i>Porella arboris-vitae</i> (With.) Grolle	r		●			●		●	●	●			●	●							7	*
<i>Porella baueri</i> (Schiffn.) C.E.O.Jensen	r									●	●		●								3	*
<i>Porella cordaeana</i> (Huebener) Moore	r									●	●		●							●	4	*
<i>Porella platyphylla</i> (L.) Pfeiff.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Ptilidium pulcherrimum</i> (Weber) Vain.	s-f		●		●	●		●	○	○	●	●	●	●							8	*
<i>Radula complanata</i> (L.) Dumort.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Radula lindenbergiana</i> Gottsche ex C.Hartm.	n.s.		○																		0	*
<i>Reboulia hemisphaerica</i> (L.) Raddi	s-f	●	●			●		●	●	●	●	●	●	●							10	*
<i>Riccardia chamedryfolia</i> (With.) Grolle	rr		●			●															2	*
<i>Riccardia incurvata</i> Lindb.	n.s.													○							0	*
<i>Riccardia latifrons</i> (Lindb.) Lindb.	r	●	●										●								3	*
<i>Riccardia multifida</i> (L.) Gray	rr		●																		1	*

<i>Riccardia palmata</i> (Hedw.) Carruth.	r	● ●																					4	*						
<i>Riccia bifurca</i> Hoffm.	s-f	● ● ● ● ● ● ● ● ● ●								● ● ●														14						
<i>Riccia canaliculata</i> Hoffm.	n.s.	○ ○ ○ ○					○															○			0					
<i>Riccia cavernosa</i> Hoffm.	s-f	● ●		● ● ● ● ● ● ● ● ● ●						● ● ●													● ●			15				
<i>Riccia ciliata</i> Hoffm.	s-f			●			● ● ● ● ● ● ● ●			● ●			● ●														10			
<i>Riccia ciliifera</i> Link	s-f					●		● ● ● ● ●															● ●				7			
<i>Riccia crozalsii</i> Levier	rr																											2		
<i>Riccia fluitans</i> L.	s-f	● ● ● ● ● ● ● ● ● ● ● ●											● ● ● ● ● ● ● ● ● ●															18		
<i>Riccia frostii</i> Austin	s-f	●				○		● ● ● ●															○ ●					6		
<i>Riccia glauca</i> L. var. <i>glauca</i>	s-f	● ● ● ● ● ● ● ● ● ● ● ●											● ● ●											●				14		
<i>Riccia glauca</i> L. var. <i>ciliaris</i> Warnst.	rr																											1		
<i>Riccia gougetiana</i> Durieu & Mont.	r									● ● ●														● ●				5		
<i>Riccia huebeneriana</i> Lindenb.	rr			●		●																						2	*	
<i>Riccia papillosa</i> Moris	r									● ● ●														● ●				5		
<i>Riccia rhenana</i> Lorb. ex Müll.Frib.	r	● ● ● ● ● ● ● ● ● ●																						●				11		
<i>Riccia sorocarpa</i> Bisch.	s-f			● ● ● ●				● ● ● ● ● ● ● ● ● ●					● ● ●																14	
<i>Riccia subbifurca</i> Warnst. ex Croz.	r									● ● ●														● ●				5		
<i>Riccia warnstorffii</i> Limpr. ex Warnst.	n.s.					○																							0	
<i>Ricciocarpos natans</i> (L.) Corda	s-f	● ● ● ● ● ● ● ● ● ●										○		○	● ● ● ●		○	● ● ●											15	
<i>Scapania aequiloba</i> (Schwägr.) Dumort.	rr					●				●														●				3	*	
<i>Scapania apiculata</i> Spruce	n.s.																												0	*
<i>Scapania aspera</i> M.Bernet & Bernet	r					●		●		● ● ● ●																			6	*
<i>Scapania calcicola</i> (Arnell & J.Perss.) Ingham	r					●				● ● ● ●													● ●						7	*
<i>Scapania curta</i> (Mart.) Dumort.	rr							●																●					4	*
<i>Scapania irrigua</i> Nees	r	● ● ● ●				●																		● ●					7	*
<i>Scapania lingulata</i> H.Buch	r	●																						● ● ● ●					5	*
<i>Scapania mucronata</i> H.Buch	r	●								● ●														● ●					6	*
<i>Scapania nemorea</i> (L.) Grolle	r	● ●				●		●		● ● ● ●														● ●					8	*
<i>Scapania parvifolia</i> Warnst.	rr					○																		●					2	*
<i>Scapania praetervisa</i> Meyl.	r							●																● ● ● ●					5	
<i>Scapania scandica</i> (Arnell & H.Buch) Macvicar	rr	●																						● ●					3	*
<i>Scapania umbrosa</i> (Schrad.) Dumort.	n.s.																												0	*
<i>Scapania undulata</i> (L.) Dumort.	rr					●																		● ●					3	*
<i>Schistochilopsis incisa</i> (Schrad.) Konstant.	n.s.																												0	*
<i>Solenostoma gracillimum</i> (Sm.) R.M.Schust.	r					● ●		●																● ● ●					7	*
<i>Solenostoma hyalinum</i> (Lyell) Mitt.	r	● ●								● ● ● ●														● ●					8	*
<i>Solenostoma sphaerocarpum</i> (Hook.) Steph.	rr																								●				1	*
<i>Sphaerocarpos europaeus</i> Lorb.	n.s.																												0	

(Continued)

Continued.

Taxon	Frequency	County														No. of counties	C&M					
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ			HB	JN	BÉ	CS	BK
<i>Sphaerocarpos michelii</i> Bellardi	rr				●																1	
<i>Sphenobolus minutus</i> (Schreb. ex D.Crantz) Berggr.	rr												●	●							2	*
<i>Syzygiella autumnalis</i> (DC.) K.Feldberg, Váňa, Hentschel & Heinrichs	r		●			●		●	●		●		●	●							7	*
<i>Trichocolea tomentella</i> (Ehrh.) Dumort.	rr		●										●	○							2	*
<i>Trilophozia quinquentata</i> (Huds.) Bakalin	r							●		●	●		●								4	*
<i>Tritomaria exsecta</i> (Schmidel) Schiffn. ex Loeske	r							●		●			●								3	*
<i>Tritomaria exsectiformis</i> (Breidl.) Schiffn. ex Loeske	n.s.	○						○		○			○	○							0	*
Mosses																						
<i>Abietinella abietina</i> (Hedw.) M.Fleisch.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17	
<i>Acaulon muticum</i> (Hedw.) Müll.Hal.	r		●		●	●		●	●	●	●		●	●		●	●	●			12	
<i>Acaulon triquetrum</i> (Spruce) Müll.Hal.	s-f			●		●	●	●	●	●	●			●							8	
<i>Alleniella bessei</i> (Lobarz.) S.Olsson, Enroth & D.Quandt	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					14	
<i>Alleniella complanata</i> (Hedw.) S.Olsson, Enroth & D.Quandt	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●					13	
<i>Aloina aloides</i> (Koch ex Schultz) Kindb.	r		●			●	●		●	●	●			●							7	
<i>Aloina ambigua</i> (Bruch & Schimp.) Limpr.	r	●			●	●	●	●		●	●	●		●							10	
<i>Aloina rigida</i> (Hedw.) Limpr.	s-f		●	●	●	●	●	●	●	●	●		●	●							12	
<i>Amblyodon dealbatus</i> (Hedw.) P.Beauv.	n.s.									○											0	*
<i>Amblystegium serpens</i> (Hedw.) Schimp.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Amphidium mougeotii</i> (Schimp.) Schimp.	r		●							●	●	●	●	●							6	*
<i>Anacamptodon splachnoides</i> (Froel. ex Brid.) Brid.	s-f		●		○			●	●	●	●	●	●	●							8	*
<i>Andreaea rupestris</i> Hedw.	rr										●	●	●	●							4	*
<i>Anomodon longifolius</i> (Schleich. ex Brid.) Hartm.	s-f	●	●	●		●		●	●	●	●	●	●	●	●	●					12	
<i>Anomodon rugelii</i> (Müll.Hal.) Keissl.	rr										●		●								2	*
<i>Anomodon viticulosus</i> (Hedw.) Hook. & Taylor	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Antitrichia curtispindula</i> (Hedw.) Brid.	r			○				●		●	●	○	●		○						4	
<i>Archidium alternifolium</i> (Hedw.) Mitt.	n.s.													○							0	*
<i>Atrichum angustatum</i> (Brid.) Bruch & Schimp.	s-f	●	●	●	●	●		●	●	●	●	●	●	●							12	*
<i>Atrichum flavisetum</i> Mitt.	rr										●										1	*
<i>Atrichum undulatum</i> (Hedw.) P.Beauv.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17	
<i>Aulacomnium androgynum</i> (Hedw.) Schwägr.	r		●		●	●	●	●			●		●	●	●						9	
<i>Aulacomnium palustre</i> (Hedw.) Schwägr.	r		●	○	●	●		●			○		●	●	○	●					7	
<i>Barbula unguiculata</i> Hedw.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Bartramia halleriana</i> Hedw.	rr									○	○		●	●							2	*
<i>Bartramia ithyphylla</i> Brid.	r		○		●		●		●	●	●	●	●	●							7	*
<i>Bartramia pomiformis</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●							13	*
<i>Blindia acuta</i> (Hedw.) Bruch & Schimp.	n.s.										○										0	*

<i>Blindiadelphus campylopodus</i> (Kindb.) Fedosov & Ignatov	rr		●																1	
<i>Blindiadelphus recurvatus</i> (Hedw.) Fedosov & Ignatov	r	○		●	○	●	●	○	●	○									4	*
<i>Brachydontium trichodes</i> (F.Weber) Milde	rr			●				●	●		○	●							4	*
<i>Brachytheciacstrum olympicum</i> (Jur.) Vanderp. et al.	rr								●									●	2	
<i>Brachytheciacstrum velutinum</i> (Hedw.) Ignatov & Huttunen	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Brachythecium albicans</i> (Hedw.) Schimp.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Brachythecium campestre</i> (Müll.Hal.) Schimp.	r		●		●				●			●		●				5		
<i>Brachythecium capillaceum</i> (F.Weber & D.Mohr) Giacom.	r							●	●	●	●		●					6	*	
<i>Brachythecium geheebii</i> Milde	rr							○	●		●	○						2	*	
<i>Brachythecium glareosum</i> (Bruch ex Spruce) Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Brachythecium laetum</i> (Brid.) Schimp.	rr																●	1	*	
<i>Brachythecium mildeanum</i> (Schimp.) Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Brachythecium rivulare</i> Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●		●			15	*	
<i>Brachythecium rutabulum</i> (Hedw.) Schimp.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Brachythecium salebrosum</i> (Hoffm. ex F.Weber & D.Mohr) Schimp.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Brachythecium tommasinii</i> (Sendtn. ex Boulay) Ignatov & Huttunen	s-f	●	●	●		●	●	●	●	●	●	●						11	*	
<i>Bruchia flexuosa</i> (Schwägr.) Müll.Hal.	rr				●													1		
<i>Bryoerythrophyllum recurvirostrum</i> (Hedw.) P.C.Chen	s-f	●	●	●	●	●	●	●	●	●	●	●		○				12		
<i>Bryum argenteum</i> Hedw.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Bryum barnesii</i> J.B.Wood ex Schimp.	r	●	●		●	●			●	●			●				●	8		
<i>Bryum bicolor</i> Dicks.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	18		
<i>Bryum gemmiferum</i> R.Wilczek & Demaret	r							●	●	●	●	●	●					5		
<i>Bryum gemmilucens</i> R.Wilczek & Demaret	rr								●								●	2		
<i>Bryum klinggraeffii</i> Schimp.	s-f	●	●	●	●	●	●	●	●	●		○	●		●	●	●	15		
<i>Bryum radiculosum</i> Brid.	s-f	●	●	●	●	●		●	●	●	●	●			●	●		15		
<i>Bryum ruderale</i> Crundw. & Nyholm	s-f		●	●	●	●		●	●	●	●	●	●		●	●	●	16		
<i>Bryum stirtonii</i> Schimp.	r				●			●	●	●	●		●			●		7		
<i>Bryum violaceum</i> Crundw. & Nyholm	s-f		●	●	●	●		●	●	●	●	●		●	●	●	●	15		
<i>Buckia vaucheri</i> (Lesq.) D.Rios, M.T.Gallego & J.Guerra	s-f			●				●	●	●	●		●	●				7	*	
<i>Buxbaumia aphylla</i> Hedw.	s-f	●	●	●	●	●		●	●	●	●	●	●					11	*	
<i>Buxbaumia viridis</i> (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl.	s-f	●	●	●	●	●	●		●	●	●	●	●					12	*	
<i>Calli cladium haldanianum</i> (Grev.) H.A.Crum	rr				●												●	2		
<i>Calliergon cordifolium</i> (Hedw.) Kindb.	r	●	●		●			●		●	●	●						8		
<i>Calliergon giganteum</i> (Schimp.) Kindb.	rr			●						●								2	*	
<i>Calliergonella cuspidata</i> (Hedw.) Loeske	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18		
<i>Calliergonella lindbergii</i> (Mitt.) Hedenäs	s-f	●	●	●		●		●	●	●	●	●						10	*	
<i>Campyliadelphus chrysophyllus</i> (Brid.) R.S.Chopra	s-f	●	●	●	●	●		●	●	●	●	●	●				●	14		
<i>Campyliadelphus elodes</i> (Lindb.) Kanda	r							●		●								2		

(Continued)

Continued.

Taxon	Frequency	County																No. of counties	C&M				
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS	BK	
<i>Campylium protensum</i> (Brid.) Kindb.	r	●	●	●			●	●		●											6		
<i>Campylium stellatum</i> (Hedw.) Lange & C.E.O.Jensen	r	●	●	●			●	●	●	●				●							8		
<i>Campylophyllopsis calcarea</i> (Crundw. & Nyholm) Ochyra	s-f	●	●	●	●	●	●	●	●	●	●	●	●	○							13		
<i>Campylopus flexuosus</i> (Hedw.) Brid.	r		●		●	●		●					●								5		
<i>Campylopus fragilis</i> (Brid.) Bruch & Schimp.	rr					●															1		
<i>Campylopus introflexus</i> (Hedw.) Brid.	s-f	●	●	●	●	●	●	●	●	●	●				●	●		●		●	14		
<i>Campylopus pyriformis</i> (Schultz) Brid.	rr		●		●	●															3		
<i>Campylostelium saxicola</i> (F.Weber & D.Mohr) Bruch & Schimp.	rr									●	●										2	*	
<i>Ceratodon purpureus</i> (Hedw.) Brid.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Chenia leptophylla</i> (Müll.Hal.) R.H.Zander	r				●			●		●	●	●		●		●					7		
<i>Chionoloma tenuirostre</i> (Hook. & Taylor) M.Alonso, M.J.Cano & J.A.Jiménez	r	●	●								●		●	●							5	*	
<i>Cinclidotus danubicus</i> Schiffn. & Baumgartner	rr	●																			1		
<i>Cinclidotus fontinaloides</i> (Hedw.) P.Beauv.	s-f	●					●		●	●	●		○	●						●	7		
<i>Cinclidotus riparius</i> (Host ex Brid.) Arn.	s-f	●			●		●		●	●	●									●	7		
<i>Cirriphyllum crassinervium</i> (Taylor ex Wilson) Loeske & M.Fleisch.	s-f	●	●	●		●		●	●	●	●	●	●	●							11	*	
<i>Cirriphyllum piliferum</i> (Hedw.) Grout	s-f	●	●	●		●				●	●	●	●	●	●		●		●	●	12		
<i>Claopodium rostratum</i> (Hedw.) Ignatov	s-f	●	●	●				●	●	●	●		●	●							9	*	
<i>Climacium dendroides</i> (Hedw.) F.Weber & D.Mohr	s-f	●	●	●	●	●		●	○		●	●	●	●	●	●		●			13		
<i>Cnestrum schisti</i> (F.Weber & D.Mohr) I.Hagen	n.s.												○								0		
<i>Codonoblepharon forsteri</i> (Dicks.) Goffinet	r							●			●	●									3		
<i>Conardia compacta</i> (Drumm. ex Müll.Hal.) H.Rob.	r	●		●				●	●		●										5	*	
<i>Coscinodon cribrosus</i> (Hedw.) Spruce	rr					●						●									2		
<i>Cratoneuron filicinum</i> (Hedw.) Spruce	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●						13	*	
<i>Crossidium crassinervium</i> (De Not.) Jur.	rr					●	●		●											●	4		
<i>Crossidium laxefilamentosum</i> W.Frey & Kürschner	rr					●	●		●												3		
<i>Crossidium squamiferum</i> (Viv.) Jur. var. <i>squamiferum</i>	rr										●										1		
<i>Ctenidium molluscum</i> (Hedw.) Mitt.	s-f	●	●	●		●		●	●	●	●	●	●	●	●		●				12		
<i>Cynodontium polycarpon</i> (Hedw.) Schimp.	s-f		●			●		●		●	●	●	●	●	●						8	*	
<i>Cynodontium strumiferum</i> (Hedw.) Lindb.	rr										●		●	●							3		
<i>Cynodontium tenellum</i> (Schimp.) Limpr.	rr								●				●	●							3	*	
<i>Dichodontium pellucidum</i> (Hedw.) Schimp.	s-f		●			●				●	●	●	●	●							7	*	
<i>Dicranella cerviculata</i> (Hedw.) Schimp.	rr												●								1	*	
<i>Dicranella crispa</i> (Hedw.) Schimp.	n.s.								○					○							0	*	
<i>Dicranella heteromalla</i> (Hedw.) Schimp.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●		17		
<i>Dicranella howei</i> Renaud & Cardot	s-f	●		●	●	●	●	●		●	●		●	●						●	●	12	
<i>Dicranella humilis</i> R.Ruthe	n.s.								○												0		

<i>Dicranella rufescens</i> (Dicks.) Schimp.	r	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4	*
<i>Dicranella schreberiana</i> (Hedw.) Dixon	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16	
<i>Dicranella staphylina</i> H.Whitehouse	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15	*
<i>Dicranella subulata</i> (Hedw.) Schimp.	n.s.								○								0	*	
<i>Dicranella varia</i> (Hedw.) Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Dicranodontium denudatum</i> (Brid.) E.Britton	rr	●	○						○	○			●				2	*	
<i>Dicranoweisia cirrata</i> (Hedw.) Lindb.	s-f	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	15	
<i>Dicranum bonjeanii</i> De Not.	r	●											●	●			3	*	
<i>Dicranum flagellare</i> Hedw.	r	●	●	●					●				●	●			6	*	
<i>Dicranum fulvum</i> Hook.	r	●				●			●				●	●			5	*	
<i>Dicranum montanum</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17	
<i>Dicranum muehlenbeckii</i> Bruch & Schimp.	n.s.	○						○	○	○	○		○	○			0		
<i>Dicranum polysetum</i> Sw. ex anon.	s-f	●	●	●	●	●	●			●	●	●	●	●	●	●	13		
<i>Dicranum scoparium</i> Hedw.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Dicranum spurium</i> Hedw.	r	●				●							●				3	*	
<i>Dicranum tauricum</i> Sapjegin	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16	
<i>Dicranum viride</i> (Sull. & Lesq.) Lindb.	r	●	●					○		●	●	●	●	●			7		
<i>Didymodon acutus</i> (Brid.) K.Saito	s-f	●			●	●	●	●	●	●	●	●	●	●	●	●	●	11	
<i>Didymodon cordatus</i> Jur.	s-f	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	11	*
<i>Didymodon fallax</i> (Hedw.) R.H.Zander	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16	
<i>Didymodon ferrugineus</i> (Schimp. ex Besch.) M.O.Hill	r	●							●				●	●			4	*	
<i>Didymodon glaucus</i> Ryan	rr												●				1	*	
<i>Didymodon insulanus</i> (De Not.) M.O.Hill	s-f	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	12	*
<i>Didymodon luridus</i> Hornsch.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15	
<i>Didymodon rigidulus</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15	
<i>Didymodon sinuosus</i> (Mitt.) Delogne	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	13	*
<i>Didymodon spadiceus</i> (Mitt.) Limpr.	r				●				●	●	●	●	●	●			6	*	
<i>Didymodon tophaceus</i> (Brid.) Lisa subsp. <i>erosus</i> (J.A.Jiménez & J.Guerra) Jan Kučera	rr															●	1		
<i>Didymodon tophaceus</i> (Brid.) Lisa subsp. <i>sicculus</i> (M.J.Cano, Ros, García-Zam. & J.Guerra) Jan Kučera	rr									●						●	3		
<i>Didymodon tophaceus</i> (Brid.) Lisa subsp. <i>tophaceus</i>	s-f	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	11	
<i>Didymodon vinealis</i> (Brid.) R.H.Zander	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16	
<i>Diphyscium foliosum</i> (Hedw.) D.Mohr	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	11	*
<i>Distichium capillaceum</i> (Hedw.) Bruch & Schimp.	r	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10	*
<i>Ditrichum heteromallum</i> (Hedw.) E.Britton	r				●		●						●	●			4	*	
<i>Ditrichum lineare</i> (Sw.) Lindb.	rr													●			1		
<i>Ditrichum pallidum</i> (Hedw.) Hampe	s-f	●	●		●				●	●	●	●	●	●			7	*	
<i>Ditrichum pusillum</i> (Hedw.) Hampe	r	●			●				●	●	●	●	●	●		●	7		

(Continued)

Continued.

Taxon	Frequency	County																No. of counties	C&M			
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS	BK
<i>Drepanocladus aduncus</i> (Hedw.) Warnst.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Drepanocladus lycopodioides</i> (Brid.) Warnst.	rr			●				●													2	
<i>Drepanocladus polygamus</i> (Schimp.) Hedenäs	r	●	●			●		●											●		5	
<i>Drepanocladus sendtneri</i> (Schimp. ex H.Müll.) Warnst.	rr			●				●													2	
<i>Drepanocladus sordidus</i> (Müll.Hal.) Hedenäs	n.s.										○										0	
<i>Encalypta ciliata</i> Hedw.	r		●	●				●			●	●	●	●							7	*
<i>Encalypta rhaptocarpa</i> Schwägr.	n.s.									○			○								0	
<i>Encalypta spathulata</i> Müll.Hal.	rr												●								1	
<i>Encalypta streptocarpa</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	○						●	14	
<i>Encalypta vulgaris</i> Hedw.	s-f		●	●		●		●	●	●	●	●	●	●						●	11	
<i>Entodon concinnus</i> (De Not.) Paris	rr		●								●										2	
<i>Entosthodon fascicularis</i> (Hedw.) Müll.Hal.	r		●		●	●		●	●	●	●	●		●	○			●			10	
<i>Entosthodon hungaricus</i> (Boros) Loeske	s-f	○			●				○	●	●	●			●	●	●	●	●	●	9	
<i>Entosthodon mühlenbergii</i> (Turner) Fife	r			○		○		●	●	●	●		●	○							5	
<i>Entosthodon pulchellus</i> (H.Philib.) Brugués	r					●		●	●	●	●		●	●							7	
<i>Ephemerum cohaerens</i> (Hedw.) Hampe	r						●		●	●	●									●	5	
<i>Ephemerum crassinervium</i> (Schwägr.) Hampe subsp. <i>sessile</i> (Bruch) Holyoak	rr							●						○							1	
<i>Ephemerum recurvifolium</i> (Dicks.) Boulay	rr							●								●					2	
<i>Ephemerum serratum</i> (Hedw.) Hampe	r	●	●		●	●		●		●	●	●	●	●	●						11	*
<i>Ephemerum stoloniferum</i> (Hedw.) L.T.Ellis & M.J.Price	rr		●								●			●							3	
<i>Eucladium verticillatum</i> (With.) Bruch & Schimp.	s-f	●				●		●	●	●	●	●	●	●	●						9	*
<i>Eurhynchiastrum pulchellum</i> (Hedw.) Ignatov & Huttunen	s-f	●	●	●	●	●		●	●	●	●	●	●	●							12	
<i>Eurhynchium angustirete</i> (Broth.) T.J.Kop.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				16	
<i>Eurhynchium striatum</i> (Hedw.) Schimp.	s-f	●	●	●	●	●		●		●	●	●	●	●	●			●			13	
<i>Exsertotheca crispa</i> (Hedw.) S.Olsson, Enroth & D.Quandt	s-f	●	●	●		●		●	●	●	●		●	●						○	10	
<i>Fabronia ciliaris</i> (Brid.) Brid.	rr										●		●								2	*
<i>Fabronia pusilla</i> Raddi	r			●							●		●								3	*
<i>Fissidens adianthoides</i> Hedw.	r	●	●	●	○			●	○	○	●		●	●							7	
<i>Fissidens arnoldii</i> R.Ruthe	r					●		●	○	●	●	●		●							6	*
<i>Fissidens bryoides</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17	
<i>Fissidens crassipes</i> Wilson ex Bruch & Schimp.	r	●	●	●				●		●	●		●							●	8	
<i>Fissidens crispus</i> Mont.	n.s.										○										0	
<i>Fissidens curvatus</i> Hornsch.	n.s.											○									0	*
<i>Fissidens dubius</i> P.Beauv. var. <i>dubius</i>	s-f	●	●	●		●	●	●	●	●	●	●	●	●	●						12	*
<i>Fissidens dubius</i> P.Beauv. var. <i>mucronatus</i> (Limpr.) Kartt., Hedenäs & L.Söderstr.	r		●							●	●	●	●	●							6	
<i>Fissidens exilis</i> Hedw.	s-f	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	15	

<i>Fissidens gracilifolius</i> Brugg.-Nann. & Nyholm	s-f	● ● ● ● ● ● ● ● ● ● ● ●	11	*
<i>Fissidens gymnandrus</i> Buse	s-f	● ● ● ● ● ● ● ●	7	
<i>Fissidens incurvus</i> Starke ex Röhl.	r	○ ● ● ● ● ● ● ● ● ● ● ● ●	7	
<i>Fissidens pusillus</i> (Wilson) Milde	s-f	● ● ● ● ● ● ● ● ● ● ● ●	10	*
<i>Fissidens taxifolius</i> Hedw.	c	● ●	19	
<i>Fissidens viridulus</i> (Sw.) Wahlenb.	s-f	● ●	16	
<i>Flexitrichum flexicaule</i> (Schwägr.) Ignatov & Fedosov	s-f	● ○ ● ● ● ● ● ● ● ● ● ● ● ●	10	*
<i>Flexitrichum gracile</i> (Mitt.) Ignatov & Fedosov	rr	○ ● ● ● ● ● ● ● ● ● ● ● ●	1	
<i>Fontinalis antipyretica</i> Hedw.	r	● ●	9	
<i>Fontinalis hypnoides</i> C.Hartm.	rr	○ ●	1	
<i>Funaria hygrometrica</i> Hedw.	s-f	● ●	19	
<i>Grimmia anodon</i> Bruch & Schimp.	r	● ●	6	*
<i>Grimmia crinita</i> Brid.	rr	● ●	2	
<i>Grimmia decipiens</i> (Schultz) Lindb.	r	● ●	5	
<i>Grimmia dissimulata</i> E.Maier	s-f	● ●	9	
<i>Grimmia elatior</i> Bruch ex Bals.-Criv. & De Not.	rr	○ ○ ●	1	
<i>Grimmia funalis</i> (Schwägr.) Bruch & Schimp.	rr	● ●	1	*
<i>Grimmia hartmanii</i> Schimp.	s-f	● ●	9	*
<i>Grimmia laevigata</i> (Brid.) Brid.	s-f	● ●	12	
<i>Grimmia lisae</i> De Not.	r	● ●	4	
<i>Grimmia longirostris</i> Hook.	rr	● ●	3	*
<i>Grimmia montana</i> Bruch & Schimp.	rr	● ●	1	*
<i>Grimmia muehlenbeckii</i> Schimp.	s-f	○ ●	8	
<i>Grimmia orbicularis</i> Bruch ex Wilson	s-f	● ●	8	*
<i>Grimmia ovalis</i> (Hedw.) Lindb.	s-f	○ ●	8	
<i>Grimmia plagiopodia</i> Hedw.	rr	● ●	2	*
<i>Grimmia pulvinata</i> (Hedw.) Sm.	cc	● ●	19	
<i>Grimmia tergestina</i> Tomm. ex Bruch & Schimp.	s-f	● ●	7	*
<i>Grimmia trichophylla</i> Grev.	r	● ●	8	*
<i>Gymnostomum aeruginosum</i> Sm.	r	● ●	7	*
<i>Gymnostomum calcareum</i> Nees & Hornsch.	s-f	● ●	11	*
<i>Gymnostomum viridulum</i> Brid.	r	● ●	10	
<i>Gyroweisia tenuis</i> (Hedw.) Schimp.	rr	● ●	3	*
<i>Hamatocaulis vernicosus</i> (Mitt.) Hedenäs	rr	● ●	2	*
<i>Hedwigia ciliata</i> (Hedw.) P.Beauv.	s-f	● ●	10	
<i>Hedwigia emodica</i> Hampe ex Müll.Hal.	s-f	● ●	8	
<i>Hedwigia stellata</i> Hedenäs	rr	● ●	3	
<i>Helodium blandowii</i> (F.Weber & D.Mohr) Warnst.	rr	○ ●	1	

(Continued)

Continued.

Taxon	Frequency	County																No. of counties	C&M			
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS	BK
<i>Henediella heimii</i> (Hedw.) R.H.Zander	rr					●									○					●	2	
<i>Herzogiella seligeri</i> (Brid.) Z.Iwats.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●			16	
<i>Heteroclaidiella dimorpha</i> (Brid.) Ignatov & Fedosov	rr	●	●								●										3	*
<i>Heterocladium heteropterum</i> (Brid.) Schimp.	rr		●																		1	
<i>Hilpertia velenovskyi</i> (Schiffn.) R.H.Zander	r	○				●	●		●	●	●			●							6	*
<i>Homalia trichomanoides</i> (Hedw.) Brid.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Homalothecium lutescens</i> (Hedw.) H.Rob.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Homalothecium philippeanum</i> (Spruce) Schimp.	s-f	●	●	●		●		●	●	●	●	●	●	●							11	*
<i>Homalothecium sericeum</i> (Hedw.) Schimp.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	18	
<i>Homomallium incurvatum</i> (Schrad. ex Brid.) Loeske	s-f	●	●	●		●		●	●	●	●	●	●	●	●						12	
<i>Hookeria lucens</i> (Hedw.) Sm.	rr		●																		1	
<i>Hydrogonium consanguineum</i> (Thwaites & Mitt.) Hilp.	n.s.										○										0	
<i>Hydrogonium croceum</i> (Brid.) Jan Kučera	rr													●							1	
<i>Hygroamblystegium fluviatile</i> (Hedw.) Loeske	r	●	●		●			●		●	●			●							7	*
<i>Hygroamblystegium humile</i> (P.Beauv.) Vanderp., Goffinet & Hedenäs	s-f	●	●	●	●	●	●	●	●	●	●	●		●	●	●			●		15	
<i>Hygroamblystegium tenax</i> (Hedw.) Jenn.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●						13	*
<i>Hygroamblystegium varium</i> (Hedw.) Mönk.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●		●	●	●	17	
<i>Hygrohypnum luridum</i> (Hedw.) Jenn.	s-f		●	●	●			●		●	●	●	●	●							9	
<i>Hylcomiadelphus triquetrus</i> (Hedw.) Ochyra & Stebel	s-f	●	●	●	●	●		●	●		●	●	●	●	●	○			●		13	
<i>Hylcomium splendens</i> (Hedw.) Schimp.	s-f	●	●	●		●	○	●	●	●	●	●	●	●	●	●					13	
<i>Hymenoloma crispulum</i> (Hedw.) Ochyra	rr												●								1	
<i>Hymenostylium recurvirostrum</i> (Hedw.) Dixon	n.s.					○		○			○		○								0	*
<i>Hypnum cupressiforme</i> Hedw. var. <i>cupressiforme</i>	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Hypnum cupressiforme</i> Hedw. var. <i>lacunosum</i> Brid.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Hypnum cupressiforme</i> Hedw. var. <i>subjulaceum</i> Molendo	n.s.										○										0	
<i>Hypnum jutlandicum</i> Holmen & E.Warntke	r		●					●		●	●			●							5	
<i>Hypnum pallescens</i> (Hedw.) P.Beauv. var. <i>reptile</i> (Michx.) Husn.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					15	
<i>Imbribryum alpinum</i> (Huds. ex With.) N.Pedersen	s-f		●			●		●	○	●	●	●	●	●	○	●	●	●	●		12	
<i>Imbribryum mildeanum</i> (Jur.) J.R.Spence	rr		●							●			○	○							2	
<i>Imbribryum subapiculatum</i> (Hampe) D.Bell & Holyoak	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	17	
<i>Imbribryum tenuisetum</i> (Limpr.) D.Bell & Holyoak	r	●	●		●					●				●					●		6	
<i>Isopterygiopsis pulchella</i> (Hedw.) Z.Iwats.	r							●	●	●				●							4	*
<i>Isothecium alopecuroides</i> (Lam. ex Dubois) Isov.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	17	
<i>Isothecium myosuroides</i> Brid.	rr		●					●					●	●							4	*
<i>Kindbergia praelonga</i> (Hedw.) Ochyra	r	●	●			●		●		●	●										6	*
<i>Leptobryum pyriforme</i> (Hedw.) Wilson	s-f	●	●	●	●	●	●	●		●	●	●	●	●	●				●		14	

<i>Leptodictyum riparium</i> (Hedw.) Warnst.	c	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Leptodon smithii</i> (Hedw.) F.Weber & D.Mohr	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	3	*
<i>Lescurea saviana</i> (De Not.) E.Lawton	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	3	*
<i>Leskea polycarpa</i> Hedw.	cc	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Leucobryum glaucum</i> (Hedw.) Ångstr.	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	15	
<i>Leucobryum juniperoideum</i> (Brid.) Müll.Hal.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	5	
<i>Leucodon sciuroides</i> (Hedw.) Schwägr.	c	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	18	
<i>Lewinskya affinis</i> (Schrud. ex Brid.) F.Lara, Garilleti & Goffinet	cc	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Lewinskya fastigiata</i> (Bruch ex Brid.) Vigalondo, F.Lara & Garilleti	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	2	
<i>Lewinskya rupestris</i> (Schleich. ex Schwägr.) F.Lara, Garilleti & Goffinet	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	6	*
<i>Lewinskya speciosa</i> (Nees) F.Lara, Garilleti & Goffinet	cc	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Lewinskya striata</i> (Hedw.) F.Lara, Garilleti & Goffinet	c	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	18	
<i>Loeskeobryum brevirostre</i> (Brid.) M.Fleisch.	n.s.	○	0	*
<i>Meesia triquetra</i> (L. ex Jolycl.) Ångstr.	n.s.	○	0	*
<i>Microbryum curvicollum</i> (Hedw.) R.H.Zander	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	11	
<i>Microbryum davallianum</i> (Sm.) R.H.Zander	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	4	
<i>Microbryum floerkeanum</i> (F.Weber & D.Mohr) Schimp.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	8	
<i>Microbryum muticum</i> (Venturi) Cl.Schneid., Th.Schneid. & Mahévas	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	8	
<i>Microbryum starckeanum</i> (Hedw.) R.H.Zander	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	2	*
<i>Microerhynchium pumilum</i> (Wilson) Ignatov & Vanderp.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	6	*
<i>Mnium hornum</i> Hedw.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	6	
<i>Mnium lycopodioides</i> Schwägr.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	10	*
<i>Mnium marginatum</i> (Dicks.) P.Beauv.	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	11	*
<i>Mnium spinulosum</i> Bruch & Schimp.	n.s.	○	0	*
<i>Mnium stellare</i> Hedw.	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	13	*
<i>Mnium thomsonii</i> Schimp.	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	2	*
<i>Myurella julacea</i> (Schwägr.) Schimp.	r	○ ●	5	*
<i>Neckera pennata</i> Hedw.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	4	
<i>Neckera pumila</i> Hedw.	n.s.	○ ○	0	
<i>Nogopterium gracile</i> (Hedw.) Crosby & W.R.Buck	n.s.	○	0	*
<i>Nyholmiella gymnostoma</i> (Bruch ex Brid.) Holmen & E.Warncke	n.s.	○	0	
<i>Nyholmiella obtusifolia</i> (Brid.) Holmen & E.Warncke	c	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Orthodontium lineare</i> Schwägr.	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1	
<i>Orthothecium intricatum</i> (Hartm.) Schimp.	r	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	5	*
<i>Orthothecium rufescens</i> (Dicks. ex Brid.) Schimp.	rr	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	1	
<i>Orthotrichum anomalum</i> Hedw.	c	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	
<i>Orthotrichum cupulatum</i> Brid.	s-f	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	17	
<i>Orthotrichum diaphanum</i> Brid.	cc	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	19	

(Continued)

Continued.

Taxon	Frequency	County																	No. of counties	C&M		
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN	BÉ			CS	BK
<i>Orthotrichum pallens</i> Bruch ex Brid.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Orthotrichum patens</i> Bruch ex Brid.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Orthotrichum pumilum</i> Sw. ex anon.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Orthotrichum rogeri</i> Brid.	rr												●								1	
<i>Orthotrichum schimperi</i> Hammar	s-f	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	17	
<i>Orthotrichum sprucei</i> Mont.	rr																			●	1	
<i>Orthotrichum stramineum</i> Hornsch. ex Brid.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Orthotrichum urnigerum</i> Myrin	r					●					●		●	●							4	*
<i>Oxyrrhynchium hians</i> (Hedw.) Loeske	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Oxyrrhynchium schleicheri</i> (R.Hedw.) Röhl	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●						●	14	
<i>Oxyrrhynchium speciosum</i> (Brid.) Warnst.	r		●			●	●	●	●		●		●	●							8	
<i>Palustriella commutata</i> (Hedw.) Ochyra	r	●	●	○	○	●	●	●	●	○	○		●	○						○	7	
<i>Palustriella falcata</i> (Brid.) Hedenäs	rr		●					●													2	
<i>Paraleucobryum longifolium</i> (Hedw.) Loeske	s-f		●			●		●		●	●	●	●	●							8	*
<i>Philonotis caespitosa</i> Jur.	r		●			●		●		●	●		●	●							3	*
<i>Philonotis calcarea</i> (Bruch & Schimp.) Schimp.	rr		●											●							2	*
<i>Philonotis capillaris</i> Lindb.	r		●			●		●		●	●		●	●							7	*
<i>Philonotis fontana</i> (Hedw.) Brid.	r		●				●						●	●							4	*
<i>Philonotis marchica</i> (Hedw.) Brid.	rr					●		●		○	○		○	○							2	*
<i>Physcomitrium eurystomum</i> Sendtn.	r	●	○	○	●	●	●	○	○		●		○	●	●		○	●	●		9	
<i>Physcomitrium patens</i> (Hedw.) Mitt.	s-f	●	●		●	●	●	●	●	●	●	●		●	●	●		●	●	●	16	
<i>Physcomitrium pyriforme</i> (Hedw.) Bruch & Schimp.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●	●	●	17	
<i>Physcomitrium sphaericum</i> (C.F.Ludw. ex Schkuhr) Brid.	n.s.			○			○				○										0	
<i>Plagiomnium affine</i> (Blandow ex Funck) T.J.Kop.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●		17	
<i>Plagiomnium cuspidatum</i> (Hedw.) T.J.Kop.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Plagiomnium elatum</i> (Bruch & Schimp.) T.J.Kop.	s-f	●	●	●		●		●		●	●	●	●	●	●						11	
<i>Plagiomnium ellipticum</i> (Brid.) T.J.Kop.	r		●										●	●							3	
<i>Plagiomnium medium</i> (Bruch & Schimp.) T.J.Kop.	n.s.							○			○		○	○							0	*
<i>Plagiomnium rostratum</i> (Schrad.) T.J.Kop.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●						14	
<i>Plagiomnium undulatum</i> (Hedw.) T.J.Kop.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	17	
<i>Plagiopus oederianus</i> (Sw.) H.A.Crum & L.E.Anderson	r		○					●	●	●	●		●	●							6	*
<i>Plagiothecium cavifolium</i> (Brid.) Z.Iwats.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●					●		14	
<i>Plagiothecium curvifolium</i> Schlieph. ex Limpr.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●						14	
<i>Plagiothecium denticulatum</i> (Hedw.) Schimp. var. <i>denticulatum</i>	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					15	
<i>Plagiothecium denticulatum</i> (Hedw.) Schimp. var. <i>undulatum</i> R.Ruthe ex Geh.	r	●	●		●			●	●				●	●							6	*
<i>Plagiothecium laetum</i> Schimp.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●						13	*

<i>Plagiothecium latebricola</i> Schimp.	rr	●																	1
<i>Plagiothecium nemorale</i> (Mitt.) A.Jaeger	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●					13
<i>Plagiothecium platyphyllum</i> Mönk.	rr	○		●				○	●		○								2 *
<i>Plagiothecium succulentum</i> (Wilson) Lindb.	s-f	●	●	○	●	●	●	●	●	●	●	●	●	●					12
<i>Plagiothecium undulatum</i> (Hedw.) Schimp.	rr							●											2
<i>Plasteurhynchium striatulum</i> (Spruce) M.Fleisch.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●					11 *
<i>Platydictya jungermannioides</i> (Brid.) H.A.Crum	rr		○						○				●						1 *
<i>Platygyrium repens</i> (Brid.) Schimp.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19
<i>Pleuridium acuminatum</i> Lindb.	s-f	●	●	●	●	●		●	●	●	●			●					10
<i>Pleuridium subulatum</i> (Hedw.) Rabenh.	s-f		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	16
<i>Pleurozium schreberi</i> (Willd. ex Brid.) Mitt.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17
<i>Pogonatum aloides</i> (Hedw.) P.Beauv.	s-f	●	●		●	●	●	●	●	●	●	●	●	●					12 *
<i>Pogonatum nanum</i> (Hedw.) P.Beauv.	r	●	●		●			●	●	●	●			●					8 *
<i>Pogonatum urnigerum</i> (Hedw.) P.Beauv.	s-f		●		●	●		●	●	●	●	●	●	●					9 *
<i>Pohlia andalusica</i> (Höhn.) Broth.	rr		○		●						○	○	○						1
<i>Pohlia annotina</i> (Hedw.) Lindb.	r		●	●	●	●							●						5
<i>Pohlia bulbifera</i> (Warnst.) Warnst.	rr												●						1
<i>Pohlia camptotrachela</i> (Renauld & Cardot) Broth.	n.s.																○		0
<i>Pohlia cruda</i> (Hedw.) Lindb.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	○				11 *
<i>Pohlia elongata</i> Hedw.	n.s.								○		○			○					0 *
<i>Pohlia lescuriana</i> (Sull.) Ochi	r	●	●					●		●		●	●						6
<i>Pohlia lutescens</i> (Limpr.) H.Lindb.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●				13 *
<i>Pohlia melanodon</i> (Brid.) A.J.Shaw	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18
<i>Pohlia nutans</i> (Hedw.) Lindb. subsp. <i>nutans</i>	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16
<i>Pohlia nutans</i> (Hedw.) Lindb. subsp. <i>schimperi</i> (Müll.Hal.) Nyholm	r				●			●		●	●		●						5
<i>Pohlia prolifera</i> (Kindb.) Lindb. ex Broth.	rr		○						○		●			○					1
<i>Pohlia wahlenbergii</i> (F.Weber & D.Mohr) A.L.Andrews	s-f	●	●	●	●	●		●	●	●	●	●	●	●					13
<i>Polytrichastrum alpinum</i> (Hedw.) G.L.Sm.	n.s.																○		0 *
<i>Polytrichum commune</i> Hedw.	r		●		●			○		○			●	○					3
<i>Polytrichum formosum</i> Hedw.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16
<i>Polytrichum juniperinum</i> Hedw.	s-f	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		14
<i>Polytrichum longisetum</i> Sw. ex Brid.	rr		○	○	●		●	○		○	●		○	●					5
<i>Polytrichum perigoniale</i> Michx.	r		●	○	●	●		○		○			●	○	●				5
<i>Polytrichum piliferum</i> Hedw.	s-f	●	●		●	●	●	●	●	●	●	●	●	●	●			●	14
<i>Polytrichum strictum</i> Menzies ex Brid.	rr		●		●			●					●	○					4
<i>Pseudanomodon attenuatus</i> (Hedw.) Ignatov & Fedosov	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18
<i>Pseudephemerum nitidum</i> (Hedw.) Loeske	r	●	●	●		●		●		●			●	●					8 *
<i>Pseudoamblystegium subtile</i> (Hedw.) Vanderp. & Hedenäs	s-f	●	●	●	●	●	●	●		●		●	●	●	●				13

(Continued)

Continued.

Taxon	Frequency	County																No. of counties	C&M				
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS	BK	
<i>Pseudocampyllum radicale</i> (P.Beauv.) Vanderp. & Hedenäs	r		●	●			●		●					●	●						6	*	
<i>Pseudocrossidium hornschurchianum</i> (Schultz) R.H.Zander	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18		
<i>Pseudocrossidium revolutum</i> (Brid.) R.H.Zander	s-f	●				●	●	●	●	●	●	●	●	●							10		
<i>Pseudoleskeella catenulata</i> (Brid. ex Schrad.) Kindb.	s-f	●		●		●		●	●	●	●	●	●								9	*	
<i>Pseudoleskeella nervosa</i> (Brid.) Nyholm	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	16		
<i>Pseudoscleropodium purum</i> (Hedw.) M.Fleisch.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	18		
<i>Pseudotaxiphyllum elegans</i> (Brid.) Z.Iwats.	s-f	●	●	●		●		●		○	●	●	●	●							9	*	
<i>Pterigynandrum filiforme</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●					○	14		
<i>Pterygoneurum lamellatum</i> (Lindb.) Jur.	r						●		●	●	●										4		
<i>Pterygoneurum ovatum</i> (Hedw.) Dixon	s-f	●		●		●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	15		
<i>Pterygoneurum subsessile</i> (Brid.) Jur.	s-f					●	●		●	●	●	●						●	●	●	9		
<i>Ptilium crista-castrensis</i> (Hedw.) De Not.	rr		●										○	○	●	●					3	*	
<i>Ptychostomum capillare</i> (Hedw.) Holyoak & N.Pedersen	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	18		
<i>Ptychostomum cernuum</i> (Hedw.) Hornsch.	n.s.									○											0		
<i>Ptychostomum compactum</i> Hornsch.	r	○	●	○	●	○		○	○	●	●		○	○	○	○				●	●	6	
<i>Ptychostomum creberrimum</i> (Taylor) J.R.Spence & H.P.Ramsay	r	○	●	○		○					●	●	●	●	○			●			6		
<i>Ptychostomum elegans</i> (Nees in Brid.) D.Bell & Holyoak	r	●	●	●	●	●	●	●	●		●	●	●	●	●						13		
<i>Ptychostomum funkii</i> (Schwägr.) J.R.Spence	rr		○	○						●				●	○						2		
<i>Ptychostomum imbricatulum</i> (Müll.Hal.) Holyoak & N.Pedersen	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Ptychostomum inclinatum</i> (Sw. ex Brid.) J.R.Spence	rr					○					●		○	○						●	2		
<i>Ptychostomum intermedium</i> (Brid.) J.R.Spence	rr									○	●									●	2		
<i>Ptychostomum moravicum</i> (Podp.) Ros & Mazimpaka	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Ptychostomum pallens</i> (Sw. ex anon.) J.R.Spence	r		●	●	●			●		○	●	●	●	●							8		
<i>Ptychostomum pallescens</i> (Schleich. ex Schwägr.) J.R.Spence	r			●		●		●		○	●	●	●	●	○	○				●	8		
<i>Ptychostomum pseudotriquetrum</i> (Hedw.) J.R.Spence & H.P.Ramsay ex Holyoak & N.Pedersen var. <i>bimum</i> (Schreb.) Holyoak & N.Pedersen	rr		○	○				●		○	○		○	○							1		
<i>Ptychostomum pseudotriquetrum</i> (Hedw.) J.R.Spence & H.P.Ramsay ex Holyoak & N.Pedersen var. <i>pseudotriquetrum</i>	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	○					●	15		
<i>Ptychostomum rubens</i> (Mitt.) Holyoak & N.Pedersen	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Ptychostomum torquescens</i> (Bruch & Schimp.) Ros & Mazimpaka	r				●	●		●	●		●								○	●	6		
<i>Ptychostomum turbinatum</i> (Hedw.) J.R.Spence	rr		●	○		○		●		○	●	○	○								3		
<i>Ptychostomum warneum</i> (Röhl.) J.R.Spence	n.s.									○											0		
<i>Ptychostomum weigelii</i> (Biehler) J.R.Spence	n.s.													○							0		
<i>Ptychostomum zieri</i> (Hedw.) Holyoak & N.Pedersen	r							●	●				●								3	*	
<i>Pulviger a lyellii</i> (Hook. & Taylor) Plásek, Sawicki & Ochyra	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Pylaisia polyantha</i> (Hedw.) Schimp.	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19		
<i>Pyramidula tetragona</i> (Brid.) Brid.	r			●				●		●	●		○	○							4	*	

<i>Racomitrium aciculare</i> (Hedw.) Brid.	n.s.										○						0	
<i>Racomitrium affine</i> (F.Weber & D.Mohr) Lindb.	rr				●						●	●					3	*
<i>Racomitrium aquaticum</i> (Brid. ex Schrad.) Brid.	rr										●						1	*
<i>Racomitrium canescens</i> (Hedw.) Brid.	s-f	○	●	○	●	●	●	●	○	●	●	●	●	○	●		10	
<i>Racomitrium heterostichum</i> (Hedw.) Brid.	rr										●		●	●			3	*
<i>Racomitrium lanuginosum</i> (Hedw.) Brid.	rr												●				1	
<i>Racomitrium microcarpon</i> (Hedw.) Brid.	n.s.										○						0	
<i>Rhabdoweisia crispata</i> (Dicks.) Lindb.	rr		●														1	
<i>Rhabdoweisia fugax</i> (Hedw.) Bruch & Schimp.	r		●			●					●	●	●	●			6	*
<i>Rhizomnium punctatum</i> (Hedw.) T.J.Kop.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●		13	
<i>Rhodobryum ontariense</i> (Kindb.) Kindb.	s-f	●		●		●	●	●	●		●	●					9	
<i>Rhodobryum roseum</i> (Hedw.) Limpr.	r	●	●		●	●					●				●		8	
<i>Rhynchostegiella curviseta</i> (Brid.) Limpr.	rr									○	●						2	*
<i>Rhynchostegiella tenella</i> (Dicks.) Limpr.	s-f	●	●	●		●	●	●	●	●	●	●	●	●			11	*
<i>Rhynchostegiella teneriffae</i> (Mont.) Dirkse & Bouman	r					●	●	●	●	●							6	*
<i>Rhynchostegium confertum</i> (Dicks.) Schimp.	r		●	●	●	●	●	●	●				●	●			10	*
<i>Rhynchostegium megapolitanum</i> (Blandow ex F.Weber & D.Mohr) Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<i>Rhynchostegium murale</i> (Hedw.) Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	13
<i>Rhynchostegium riparioides</i> (Hedw.) Cardot	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	○	12	
<i>Rhynchostegium rotundifolium</i> (Scop. ex Brid.) Schimp.	s-f	●	●	●		●	●	●	●	●	●	●					11	*
<i>Rhytidiadelphus loreus</i> (Hedw.) Warnst.	rr				●												1	
<i>Rhytidiadelphus squarrosus</i> (Hedw.) Warnst.	s-f	●	●		●	●	●	●	●	●	●	●	○	○	●	●	13	
<i>Rhytidium rugosum</i> (Hedw.) Kindb.	s-f	●	●	●		●	○	●	●		●	●					8	*
<i>Saellania glaucescens</i> (Hedw.) Broth.	rr		○				●			○	○	●	○				2	*
<i>Sanionia uncinata</i> (Hedw.) Loeske	r					●					●	●	●	●			5	
<i>Sarmentypnum exannulatum</i> (Schimp.) Hedenäs	rr		●														1	
<i>Schistidium apocarpum</i> (Hedw.) Bruch & Schimp.	s-f	●	●	●	●	●	●	●	●	●	●	○	○		●		12	
<i>Schistidium brunnescens</i> Limpr. subsp. <i>brunnescens</i>	s-f				○		●	●	●	●	●	●					7	*
<i>Schistidium brunnescens</i> Limpr. subsp. <i>griseum</i> (Nees & Hornsch.) H.H.Blom	r				●		●	●	●		●	●					7	
<i>Schistidium confertum</i> (Funck) Bruch & Schimp.	rr											●	●				2	
<i>Schistidium confusum</i> H.H.Blom	rr											●					1	
<i>Schistidium crassipilum</i> H.H.Blom	c	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19
<i>Schistidium dupretii</i> (Thér.) W.A.Weber	s-f	●	●	●	●	●	●		●	●	●	●	●	●			13	
<i>Schistidium elegantulum</i> H.H.Blom	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18
<i>Schistidium flaccidum</i> (De Not.) Ochyra	rr											●	●	●			3	*
<i>Schistidium helveticum</i> (Schkuhr) Deguchi	s-f				●	○		●	●	●	●		●	●			7	
<i>Schistidium lancifolium</i> (Kindb.) H.H.Blom	s-f	●					●	○	●	●	●	●	●	○			7	
<i>Schistidium papillosum</i> Culm.	r					●						●	●	●			4	

(Continued)

Continued.

Taxon	Frequency	County																No. of counties	C&M					
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN			BÉ	CS	BK		
<i>Schistidium platyphyllum</i> (Mitt.) H.Perss.	rr										●												1	
<i>Schistidium pruinatum</i> (Wilson ex Schimp.) G.Roth	r										●		●	●									3	
<i>Schistidium robustum</i> (Nees & Hornsch.) H.H.Blom	r	●		○					●		●		●	●									5	
<i>Schistidium teretinerve</i> (Limpr.) Limpr.	n.s.													○	○								0	
<i>Sciuro-hypnum curtum</i> (Lindb.) Ignatov	r	●									●			●		●				●			5	
<i>Sciuro-hypnum flotowianum</i> (Sendtn.) Ignatov & Huttunen	s-f	●	●			●			●	●	●	●	●	●	●	●							10	*
<i>Sciuro-hypnum plumosum</i> (Hedw.) Ignatov & Huttunen	rr										●			●	●								3	*
<i>Sciuro-hypnum populeum</i> (Hedw.) Ignatov & Huttunen	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●		16	
<i>Sciuro-hypnum reflexum</i> (Starke) Ignatov & Huttunen	rr		●												●								2	
<i>Scorpidium cossonii</i> (Schimp.) Hedenäs	rr	●																					1	
<i>Scorpidium scorpioides</i> (Hedw.) Limpr.	rr								○		●												1	
<i>Seligeria acutifolia</i> Lindb.	rr					●					●												2	
<i>Seligeria calcarea</i> (Hedw.) Bruch & Schimp.	rr	●									○												1	*
<i>Seligeria donniana</i> (Sm.) Müll.Hal.	r		●			○		○	○	●	●		●	●									5	*
<i>Seligeria patula</i> (Lindb.) I.Hagen	n.s.								○														0	
<i>Seligeria pusilla</i> (Hedw.) Bruch & Schimp.	r		○	○		●		●	●	●	●	●	●	●	●								8	*
<i>Seligeria trifaria</i> (Brid.) Lindb. var. <i>longifolia</i> (Lindb. ex Broth.) Ochyra & Gos	rr													○	●								1	
<i>Sematophyllum adnatum</i> (Michx.) E.Britton	rr		●	●																			2	
<i>Serpoleskea confervoides</i> (Brid.) Schimp.	s-f		●	●		●		●	●	●	●		●	●									9	*
<i>Sphagnum angustifolium</i> (C.E.O.Jensen ex Russow) C.E.O.Jensen	r		●						●	●													3	
<i>Sphagnum auriculatum</i> Schimp.	rr		●		●																		2	
<i>Sphagnum capillifolium</i> (Ehrh.) Hedw.	rr		●			●																	2	
<i>Sphagnum centrale</i> C.E.O.Jensen	rr		●												●								2	
<i>Sphagnum compactum</i> Lam. & DC.	rr		●																				1	
<i>Sphagnum contortum</i> Schultz	rr		●																				1	
<i>Sphagnum cuspidatum</i> Ehrh. ex Hoffm.	rr		●		●																		2	
<i>Sphagnum divinum</i> Flatberg & Hassel	rr		●	○										○	●	●							3	
<i>Sphagnum fallax</i> (H.Klinggr.) H.Klinggr.	r		●		●	●				●		●	●	●	●	●							8	
<i>Sphagnum fimbriatum</i> Wilson	r		●		●	●			●	●	●	●	●	●	●	●	●						11	
<i>Sphagnum flexuosum</i> Dozy & Molk.	rr		●																				1	
<i>Sphagnum girgensohnii</i> Russow	rr		●																				1	
<i>Sphagnum inundatum</i> Russow	rr		●		●																		2	
<i>Sphagnum obtusum</i> Warnst.	rr		●																				1	
<i>Sphagnum palustre</i> L.	r		●		●				●	●		●		○	●	●							7	
<i>Sphagnum platyphyllum</i> (Lindb. ex Braithw.) Warnst.	rr		●																				1	
<i>Sphagnum quinquefarium</i> (Braithw.) Warnst.	rr		●																				1	

<i>Sphagnum riparium</i> Ångstr.	rr										●				1
<i>Sphagnum russowii</i> Warnst.	rr	●													1
<i>Sphagnum squarrosum</i> Crome	r	●	○	●	●	●	●	●	●	●	●				8
<i>Sphagnum subnitens</i> Russow & Warnst.	n.s.	○					○								0
<i>Sphagnum subsecundum</i> Nees	rr	●													1
<i>Sphagnum teres</i> (Schimp.) Ångstr.	rr	○	○	●			○		●		○				2
<i>Sphagnum warnstorffii</i> Russow	n.s.						○								0
<i>Splachnobryum obtusum</i> (Brid.) Müll.Hal.	n.s.									○					0
<i>Straminergon stramineum</i> (Dicks. ex Brid.) Hedenäs	rr	●									●	●			3
<i>Streblotrichum convolutum</i> (Hedw.) P.Beauv. var. <i>convolutum</i>	c	●	●	●	●	●	●	●	●	●	●	●	●	●	18
<i>Streblotrichum convolutum</i> (Hedw.) P.Beauv. var. <i>commutatum</i> (Jur.) J.J.Amann	r	●	●		●	●		●	●	●	●	●			10
<i>Syntrichia calcicola</i> J.J.Amann	s-f	●		●		●	●	●	●	●	●	●			11
<i>Syntrichia caninervis</i> Mitt. var. <i>gypsophila</i> (J.J.Amann ex G.Roth) Ochyra	rr								●				○		1
<i>Syntrichia laevipila</i> Brid.	rr				●							●	●		3
<i>Syntrichia latifolia</i> (Bruch ex Hartm.) Huebener	s-f	●	●	●	●		●	●	●	●	●			●	12
<i>Syntrichia montana</i> Nees var. <i>calva</i> (Durieu & Sagot ex Bruch & Schimp.) J.J.Amann	rr				○		●	○	○			●			2
<i>Syntrichia montana</i> Nees var. <i>montana</i>	s-f	●	●	●	●	●		●	●	●	●	●	●		14
<i>Syntrichia norvegica</i> F.Weber	rr											●			1
<i>Syntrichia papillosa</i> (Wilson) Jur.	c	●	●	●	●	●	●	●	●	●	●	●	●	●	19
<i>Syntrichia ruraliformis</i> (Besch.) Mans.	r					●	●	●	●	●	●			●	8
<i>Syntrichia ruralis</i> (Hedw.) F.Weber & D.Mohr var. <i>epilosa</i> (Venturi) J.J.Amann	rr				●										1
<i>Syntrichia ruralis</i> (Hedw.) F.Weber & D.Mohr var. <i>ruralis</i>	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	19
<i>Syntrichia subpapillosissima</i> (Bizot & R.B.Pierrot ex W.A.Kramer) M.T.Gallego & J.Guerra	s-f	●	●			●	●	●	●	●	●	●	●	●	14
<i>Syntrichia virescens</i> (De Not.) Ochyra	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	19
<i>Taxiphyllum densifolium</i> (Lindb. ex Broth.) Reimers	r	●	●		●		●	●	●	●	●	●			10
<i>Taxiphyllum wissgrillii</i> (Garov.) Wijk & Margad.	s-f	●	●	●		●	●	●	●	●	●				11
<i>Tetraphis pellucida</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●			13
<i>Thamnobryum alopecurum</i> (Hedw.) Gangulee	s-f	●	●	●		●	●	●	●	●	●	●			11
<i>Thamnobryum neckeroides</i> (Hook.) E.Lawton	rr				●			○							1
<i>Thuidium assimile</i> (Mitt.) A.Jaeger	s-f	●	●	●	●	●		●	●	●	●		●	●	15
<i>Thuidium delicatulum</i> (Hedw.) Schimp.	s-f	●	●	●	●	●		●	●	●	●				10
<i>Thuidium recognitum</i> (Hedw.) Lindb.	s-f	●	●	●	●	●	●	●	●	●	●				13
<i>Thuidium tamariscinum</i> (Hedw.) Schimp.	s-f	●	●	●		●		●		●	●	●	●		10
<i>Timmia austriaca</i> Hedw.	rr											●			1
<i>Timmia bavarica</i> Hessel.	rr		○									●	●		2
<i>Tomentypnum nitens</i> (Hedw.) Loeske	rr	○	●				○	○	○			○			1
<i>Tortella fasciculata</i> (Culm.) Culm.	r		●		●	●	●	●	●		●	●			9
<i>Tortella inclinata</i> (R.Hedw.) Limpr.	s-f	●	●	●		●	●	●	●	●	●		○	●	12
<i>Tortella pseudofragilis</i> (Thér.) Köckinger & Hedenäs	r							●	●		●	●			4

(Continued)

Continued.

Taxon	Frequency	County																	No. of counties	C&M		
		GM	VA	ZA	SO	BA	TO	VE	FE	KE	PE	NÓ	HE	BZ	SZ	HB	JN	BÉ			CS	BK
<i>Tortella squarrosa</i> (Brid.) Limpr.	s-f	●	●	●	●	●		●	●	●	●	●	●	●			●	●	●		15	
<i>Tortella tortuosa</i> (Hedw.) Limpr.	s-f	●	●	●		●		●	●	●	●	●	●	●	●				●		13	
<i>Tortula acaulon</i> (With.) R.H.Zander var. <i>acaulon</i>	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Tortula acaulon</i> (With.) R.H.Zander var. <i>papillosa</i> (Lindb.) R.H.Zander	r		●					●		●	●		●	●					●		7	
<i>Tortula acaulon</i> (With.) R.H.Zander var. <i>pilifera</i> (Hedw.) R.H.Zander	s-f		●	●		●		●	●	●	●	●	●	●					●		11	
<i>Tortula atrovirens</i> (Sm.) Lindb.	r					●			●		●	●									4	*
<i>Tortula brevissima</i> Schiffn.	r						●		●	●	●			●							5	
<i>Tortula caucasica</i> Broth.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●		16	
<i>Tortula cernua</i> (Huebener) Lindb.	rr																		●		1	
<i>Tortula inermis</i> (Brid.) Mont.	rr					●					○										1	*
<i>Tortula lindbergii</i> Broth.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●			●		●	●	16	
<i>Tortula mucronifolia</i> Schwägr.	rr												●								1	*
<i>Tortula muralis</i> Hedw. subsp. <i>muralis</i> var. <i>aestiva</i> Hedw.	s-f	●	●	●	●			●		●	●	●	●	●	●						10	
<i>Tortula muralis</i> Hedw. subsp. <i>muralis</i> var. <i>muralis</i>	cc	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Tortula muralis</i> Hedw. subsp. <i>obtusifolia</i> (Schwägr.) Culm.	r									●	●	●	●	●							5	*
<i>Tortula protobryoides</i> R.H.Zander	s-f	●			●	●		●	●	●	●	●	●	●	○	●	●		●	●	14	
<i>Tortula schimperi</i> M.J.Cano, O.Werner & J.Guerra	s-f	●	●		●	●	●	●		●	●	●	●	●				●			12	
<i>Tortula subulata</i> Hedw.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●				●			14	
<i>Tortula truncata</i> (Hedw.) Mitt.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18	
<i>Trichodon cylindricus</i> (Hedw.) Schimp.	s-f	●	●	●	●	●		●	●		●	●	●	●	●						12	*
<i>Trichostomum brachydontium</i> Bruch	r			●		●		●	●		●										5	*
<i>Trichostomum crispulum</i> Bruch	s-f	●	●	●		●		●	●	●	●	●	●	●			●				12	
<i>Ulota bruchii</i> Hornsch. ex Brid.	s-f	●	●		●	●	●	●		●	●	●	●	●	●	●					13	
<i>Ulota coarctata</i> (P.Beauv.) Hammar	rr		●					○			○			○	○						1	
<i>Ulota crispa</i> s.l.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19	
<i>Ulota crispa</i> (Hedw.) Brid. s.s.	r		●	●		●				●	●	●		●							7	
<i>Ulota crispula</i> Bruch	s-f	●	●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	17	
<i>Ulota hutchinsiae</i> (Sm.) Hammar	rr							●													1	*
<i>Ulota intermedia</i> Schimp.	r	●	●	●	●	●		●		●	●			●			●				10	
<i>Weissia brachycarpa</i> (Nees & Hornsch.) Jur.	s-f	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	15	
<i>Weissia condensa</i> (Voit) Lindb.	s-f			●		●		●	●	●	●	●	●	●							9	*
<i>Weissia controversa</i> Hedw. var. <i>controversa</i>	s-f	●	●			●		●	●	●	●	●	●	●							10	*
<i>Weissia controversa</i> Hedw. var. <i>crispata</i> (Nees & Hornsch.) Nyholm	r		●			●		●		●	●	●	●	●							7	*
<i>Weissia longifolia</i> Mitt.	s-f	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	16	
<i>Weissia rostellata</i> (Brid.) Lindb.	rr		●								●			○							2	
<i>Weissia rutilans</i> (Hedw.) Lindb.	rr		●	●		○					○		○	●				○			3	
<i>Zygodon rupestris</i> Schimp. ex Lorentz	r							●			●			●	●			●			5	