Ireland

Red List No. 14

Bryophytes
(Mosses, Liverworts & Hornworts)

Nick Hodgetts and Neil Lockhart

RED LIST

An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

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National Biodiversity Data Centre
Documenting Ireland's Wildlife

CEDaR

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Cover photos: *Drepanocladus trifarius* (left), *Riccia huebeneriana* (centre top), *Paludella squarrosa* (centre bottom), *Plagiochila carringtonii* subsp. *carringtonii* (right)

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EXECUTIVE SUMMARY

This Ireland Red List provides a revision of the existing bryophyte Red List (Lockhart *et al.*, 2012a). It covers the island of Ireland. It draws on data used for the 2012 list, and on new data accumulated between 2012 and December 2024. It lists 841 taxa (including species, subspecies and varieties).

A brief introductory section sets out the scope of the revision and refers back to the much more comprehensive information given in Lockhart *et al.*, (2012a, b). A summary is given of 'new' taxa in Ireland, excluded taxa, and changes in the Red List since 2012. Threat assessments follow the current IUCN criteria and guidelines (IUCN, 2012a, b) and have been applied to a targeted subset of the Irish bryophyte flora, except for 11 taxa thought to be of alien origin in Ireland.

The checklist of Irish bryophytes follows nomenclature in *A Census Catalogue of British and Irish Bryophytes* (Blockeel *et al.*, 2021a), with very few exceptions. Each taxon is categorised by its IUCN threat category in Ireland, and in Europe. Legal protection status in the Republic of Ireland, Northern Ireland, as well as internationally, is listed. Although information on the percentage of the global populations occurring in Ireland is lacking, an attempt is made to identify those taxa for which Ireland might hold a special responsibility for conservation, and those taxa considered endemic or near-endemic to Europe are shown. A short discussion summarises some of the key findings of the revision and makes some observations about bryophyte conservation in Ireland, and suggestions for conservation action.

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1 INTRODUCTION

1.1 Background

The last bryophyte Red List for Ireland (including both the Republic and Northern Ireland) was published in 2012, following a ten-year period of intensive fieldwork designed to ascertain the current status of bryophyte species in Ireland (Lockhart *et al.*, 2012a, b). This was the first time a bryophyte Red List based strictly on IUCN criteria had been produced for Ireland. Also resulting from this period of intensive recording was the publication of lists of Rare and Scarce bryophytes in Ireland (Hodgetts & Lockhart, 2013); and an update of the list of bryophytes that were afforded strict legal protection in the Republic of Ireland under the Flora (Protection) Order, 1999 (Hodgetts *et al.*, 2015). Red Lists should ideally be updated every decade or thereabouts. In view of the wealth of new information gathered on the bryophytes of Ireland over the last 12 years, it was therefore considered that an update was overdue.

Much has changed since the publication of the 2012 Red List. Fieldwork has continued, mainly carried out by a new generation of bryologists, and our knowledge of rare and threatened species of bryophytes has steadily improved. Contracts led by the Ireland National Parks & Wildlife Service, the Northern Ireland Department of the Environment and National Museums Northern Ireland have produced many new records from throughout the island of Ireland. Rory Hodd has been particularly active in carrying out new fieldwork, and the Dublin group, led by Joanne Denyer, has also done much work, particularly in the Dublin area and Co. Wicklow. This new fieldwork has resulted in many new records of rare and scarce species.

The British Bryological Society has continued to hold field meetings in Ireland, and has published a new *Atlas*, covering both Britain and Ireland (Blockeel *et al.*, 2014), and a new *Census Catalogue (*Blockeel *et al.*, 2021a). Two significant new Checklists have also been produced, one covering Europe as a whole (Hodgetts *et al.*, 2020), the other covering Ireland and Britain (Blockeel *et al.*, 2021b).

Meanwhile, the IUCN has continued to hone and improve its criteria for allocating threat status to species, particularly at a regional level (IUCN 2012a, b; 2024), and a new bryophyte Red List for Europe has been produced, under the joint aegis of the European Committee for the Conservation of Bryophytes (ECCB) and the IUCN (Hodgetts *et al.*, 2019). The current criteria used to evaluate taxa are summarised in Appendix 1.

1.2 Changes to the Irish bryophyte flora since 2012

It was necessary to bring the list of taxa used in 2012 up-to-date according to more recent research, much of which is referred to in the 2021 Checklist (Blockeel *et al.*, 2021b). A number of taxonomic and nomenclatural changes have been published that have to be considered in any new treatment of the Irish bryophyte flora.

Several species new to Ireland have been identified, and a number of species considered Regionally Extinct (RE) in Ireland in 2012 have been rediscovered; some 'new' taxa have also appeared in the Irish list as a result of recent taxonomic or nomenclatural work. All these are listed in Table 1, below.

The recent work on *Tortella tortuosa*, which proposed splitting the European plants into eight species (Köckinger & Hedenäs, 2023), has not been included because a complete revision of herbarium specimens is needed. At least four species of the complex are known to occur in Ireland – *T. angustifolia*, *T. commutata*, *T. densa* and *T. splendida* – but only *T. densa* (which has in any case long been known to occur in Ireland) has been assessed. *T. tortuosa sens. strict*. has not been detected in Ireland. *T. tortuosa sens. lat*. is therefore listed. The very recent proposed changes in *Ditrichum* (Fedosov *et al.*, 2025) have also not been taken into account: although this work, if generally accepted, will result in name changes for the rare *Ditrichum* species, it has no effect on their Red List status, regardless of their names. See *Notes* column in Red List below for more details.

Table 1. Taxa new to Ireland or previously assessed as Regionally Extinct (RE).

Species	New/RE in 2012
Liverworts	
Calypogeia suecica	RE in 2012 – refound at an old site in Co. Kerry, 2013 and found new at another near Dublin, 2015
Gymnomitrion alpinum	New – found in Wicklow Mountains, 2018
Oleolophozia perssonii	New – found in Co. Kildare, 2011, then Co. Limerick, 2021
Ptilidium pulcherrimum	RE in 2012 – found at new site in Co. Antrim, 2012
Mosses	
Bartramia halleriana	RE in 2012 – refound at an old site in Co. Kerry, 2014 and found new at another in Co. Wicklow, 2013
Bryoerythrophyllum campylocarpum	New – found in Co. Antrim, 2022 (possibly introduced, but not clearly so)
Campylophyllopsis calcarea	New – excluded from Irish flora in 2012 because all specimens were incorrectly identified; *bona fide* material found in Cos. Wicklow, 2018 & Fermanagh, 2023
Chionoloma cylindrotheca	New – a recent segregate of *C. tenuirostre* (Köckinger *et al.*, 2010; Alonso *et al.*, 2019); likely to be widespread
Dialytrichia mucronata	New – found in Co. Clare, 1994 (but not published), then Co. Tipperary, 2011
Dicranella howei	New – recently recognised in Ireland & Britain as distinct from *D. varia* (Blockeel, 2020); so far known only from Cos. Kildare, 2021 & Kilkenny, 2023, and probably more widespread
Dicranum undulatum	RE in 2012 – found in a bog in Co. Offaly, 2014, not far from its old sites
Didymodon icmadophilus	RE in 2012 – recent records from four sites. Our understanding of the *Didymodon acutus/icmadophilus* complex has improved (Blockeel & Kučera, 2019). It is now considered that *D. acutus* has never been recorded from Ireland, and all records of *D. acutus* in Ireland refer to *D. icmadophilus*
Entosthodon muhlenbergii	RE in 2012 –refound at an old site in Co. Cork, 2012
Entosthodon pulchellus	New – found in Co. Tipperary, 2011, but too late for 2012 list
Eurhynchiastrum diversifolium	RE in 2012 – refound at its only known site, Co. Derry, 2013

Species	New/RE in 2012
Grimmia longirostris	RE in 2012 – refound at an old site in Co. Antrim, 2022 and found new at another in Co. Galway, 2014
Hedwigia striata	New – a recently resurrected relation of *H. ciliata* (Blockeel & Bosanquet, 2016), with which it was previously confused at its single site in Co. Waterford
Leucobryum albidum	New – a species of *Leucobryum* only recently recognised in Ireland & Britain (Ottley *et al.*, 2023), so far known only from Cos. Kerry, 1983 & Kilkenny, 2010 (re-examined herbarium specimens)
Meesia triquetra	RE in 2012 – found at new site in Co. Sligo, 2012
Microbryum davallianum var. *conicum*	New – previously treated as a synonym of *M. davallianum*; known from several sites
Microbryum starckeanum	RE in 2012 – found at new site in Co. Clare, 2023
Pohlia wahlenbergii var. *glacialis*	RE in 2012 – found at new site in Co. Kerry, 2014
Racomitrium obtusum	New – previously considered a form of *R. heterostichum*; widespread (Ottley, 2021)
Sphagnum beothuk	New – a segregate of *S. fuscum* recently recognised in Europe (Hill, 2017); widespread in bogs
Sphagnum divinum	New – a recent segregate of *S. magellanicum*; known from several sites
Sphagnum majus	New – found in bog in Co. Galway, 2020
Sphagnum medium	New – a recent segregate of *S. magellanicum*; widespread
Stereodon hamulosus	New – found in Co. Mayo, 2019
Syntrichia princeps	RE in 2012 – refound at two of its old sites in Cos. Antrim, 2012 & Derry, 2024
Tortula wilsonii	RE in 2012 – refound at an old site in Howth, Co. Dublin, 2019
Trichostomum herzogii	New – a recent segregate of *T. brachydontium* (Ros *et al.*, 2022, Pilkington, 2024); several sites known
Trichostomum littorale	New – a recent segregate of *T. brachydontium* (Ros *et al.*, 2022, Pilkington 2024); likely to be widespread
Ulota crispula	New – a recent segregate of *U. crispa* (Blockeel, 2017); three sites known but likely to be under-recorded
Ulota drummondii	RE in 2012 – found at new site in Co. Dublin, 2021
Ulota intermedia	New – a recent segregate of *U. crispa* (Blockeel, 2017); several sites known but likely to be under-recorded

Several taxa mentioned in 2012 (Lockhart *et al.*, 2012b) are now considered never to have been reported correctly from Ireland, while others have now been sunk into synonymy. These taxa are therefore no longer assessed in the Red List and are listed in Table 2, below. Furthermore, there are a number of more-or-less 'straight synonymies' (e.g. *Andreaea alpina* to *A. hookeri*) that are not included in Tables 1 and 2, but can be found in the *Synonym(s)* column in the checklist (Section 7).

Table 2. Taxa excluded from the 2025 assessment. Taxa included in the 2012 assessment are indicated with an asterisk (*).

Species	Reason for exclusion
Liverworts	
Marsupella emarginata var. *pearsonii**	Subsumed into *M. emarginata*
Scapania uliginosa	Not correctly reported in Ireland
Mosses	
Brachythecium salebrosum	Not reliably reported in Ireland
Bryum dunense	Synonym of *B. dichotomum* (Holyoak 2021)
Bryum neodamense	Synonym of *B. pseudotriquetrum* (Holyoak 2021)
Bryum weigelii	Not reliably reported in Ireland (Lockhart *et al.*, 2012b)
Campylopus atrovirens var. *falcatus**	Subsumed into *Campylopus atrovirens*
Ctenidium molluscum var. *condensatum**	Subsumed into *Ctenidium molluscum*
Ctenidium mollustum var. *robustum**	Subsumed into *Ctenidium molluscum*
*Didymodon acutus**	All Irish records of this species are referable to *D. icmadophilus*
Ephemerum stellatum	Synonym of *E. stoloniferum* (Holyoak 2010; Ellis & Price 2015)
Fontinalis antipyretica var. *cymbifolia**	Subsumed into *F. antipyretica*
Fontinalis squamosa var. *dixonii*	Subsumed into *F. squamosa*
Hedwigia ciliata var. *ciliata**	All Irish records of this species are referable to *H. striata* (Blockeel & Bosanquet, 2016)
Homomallium incurvatum	Not reliably reported in Ireland (Lockhart *et al.*, 2012b)
Orthotrichum cupulatum var. *riparium*	Subsumed into *O. cupulatum*
Palustriella commutata var. *virescens*	Subsumed into *P. commutata*
Pylaisia polyantha	Not reliably reported in Ireland (Lockhart *et al.*, 2012b)
Schistidium elegantulum subsp. *wilsonii**	Subsumed into *S. elegantulum*
Sphagnum magellanicum	*Sphagnum magellanicum* has been revised (Hassel *et al.*, 2018). *S. magellanicum* is now known to be confined to southern South America, with plants in Europe being assigned to *S. medium* and *S. divinum*; *S. medium* is the commoner of the two in Ireland, but both are likely to prove LC.
Timmia austriaca	Not correctly reported in Ireland (Hodgetts, 2004)
Tortella fragilis	Not correctly reported in Ireland (Lockhart *et al.*, 2012b)

The list of introduced species is unchanged from the 2012 Red List (Table 4 in Lockhart *et al.*, 2012a). These species were assigned to Not Evaluated (NE), but the correct category, according to the Regional Guidelines (IUCN 2012b) is Not Applicable (NA), so this has been changed accordingly in the revised list.

2 METHODS

The project to produce this updated Red List was on a much smaller scale than the work leading to the 2012 Red List. The dataset used for the 2012 list was therefore built on, rather than starting from scratch. The starting point for the Red List revision was to make a shortlist of 'candidate species' for applying the IUCN criteria. This shortlist included:

- species recorded new to Ireland;
- species considered Regionally Extinct (RE) in 2012 that had subsequently been refound;
- species considered threatened (CR, EN, VU) in 2012 that might have changed their status since then;
- species assigned to the Data Deficient (DD) category in 2012 that might now have sufficient data to assign to a more definite threat category;
- species considered Near Threatened (NT) or Least Concern (LC) in 2012 that may have moved into a higher threat category;
- 'new' taxa resulting from recent taxonomic or nomenclatural work

Both the quantity and the quality of on-line data resources have improved since 2012. The main data sources for this revision of the Red List were the Irish Biodiversity Maps website (https://maps.biodiversityireland.ie/Species) and the UK-based National Biodiversity Network (https://nbnatlas.org). The data in these resources were augmented by data directly from the British Bryological Society, especially the new vice-county records published annually in *Field Bryology*, and also from key field workers in Ireland, notably Rory Hodd and Joanne Denyer, and a new survey of rare *Bryum* species by David Holyoak (Holyoak & Campbell 2024). The 2012 records for all the taxa on the shortlist were updated with records made between 2012 and 2024, then the IUCN threat criteria were applied to all.

Apart from targeted taxa, other species on the Irish list (the majority) were also examined, but less thoroughly. A brief examination of these taxa did result in a change of status for some, if, for example, recent recording activity revealed a dramatic increase or decrease in records. However, most of the species on the Irish list that were assessed as Least Concern (LC) in the 2012 Red List clearly remain in the Least Concern (LC) category.

As with the 2012 list, this Red List is for the whole of Ireland. It will inform separate lists for conservation action, which will be different within the two jurisdictions.

In applying the IUCN criteria, the cut-off date has been updated from 1970 to 1980, to represent the threshold between old and recent records. This seemed reasonable in the light of the extensive fieldwork that has taken place between 2012 and the present. This decision has been vindicated in the light of the application of the IUCN criteria.

The issues concerning the application of the IUCN criteria to bryophytes were very much the same as those encountered in 2012, and are not repeated here. However, the useful new bryophyte-specific guidance given in Bergamini *et al.*, (2019) was taken into account, and applied, and the experience of working on the European Red List (Hodgetts *et al.*, 2019) was also very useful. Similarly, the analysis of habitats in the 2012 Red List has not changed substantially, and is therefore not repeated here. Refer to Lockhart *et al.*, (2012a, b) for more details.

The scientific names adopted follow the *Census Catalogue of British & Irish Bryophytes* (Blockeel *et al.* 2021a), with a few minor modifications. Scientific names given in the European Checklist (Hodgetts *et al.*, 2020) are given as synonyms where they differ.

3 RESULTS

The number of taxa in each threat category is summarised in Table 3 below.

Table 3 Summary of the number of taxa in each threat category in Ireland.

	RE	CR	EN	VU	NT	DD	LC	NA	Total
Hornworts	0	0	0	1	0	0	2	0	**3**
Liverworts	3	2	14	27	27	6	153	4	**236**
Mosses	24	22	34	66	56	30	363	7	**602**
Total	**27**	**24**	**48**	**94**	**83**	**36**	**518**	**11**	**841**

Taxa that have changed their threat category between 2012 (Lockhart *et al.*, 2012a, b) and 2025 are summarised in Table 4, below.

Table 4 Summary of taxa that have changed their threat category between 2012 and 2025 (excluding NE/NA taxa).

Taxon	2012	2025
Liverworts		
Anthelia juratzkana	NT	LC
Barbilophozia barbata	CR	EN
Calypogeia suecica	RE	VU
Cephalozia crassifolia	EN	NT
Cephalozia pleniceps	VU	NT
Diplophyllum obtusifolium	NT	LC
Douinia ovata	NT	LC
Fossombronia husnotii	DD	NT
Gymnomitrion concinnatum	EN	NT
Lejeunea flava subsp. *moorei*	VU	NT
Marsupella funckii	NT	VU
Mesoptychia bantriensis	NT	LC
Mesoptychia heterocolpos	CR	EN
Metzgeria pubescens	VU	NT
Pallavicinia lyellii	EN	VU
Porella cordaeana	NT	LC
Ptilidium pulcherrimum	RE	DD
Riccia huebeneriana	DD	CR
Scapania lingulata	DD	VU

Taxon	2012	2025
Scapania subalpina	DD	EN
Schistochilopsis opacifolia	VU	NT
Solenostoma paroicum	NT	VU
Southbya tophacea	CR	EN
Telaranea europaea	NT	LC
Mosses		
Bartramia halleriana	RE	VU
Bryum gemmiparum	VU	RE
Bryum marratii	LC	EN
Bryum moravicum	CR	VU
Bryum warneum	EN	CR
Bryum zieri	NT	LC
Campylopus subulatus	VU	NT
Dicranodontium uncinatum	VU	NT
Dicranum undulatum	RE	CR
Didymodon icmadophilus	RE	EN
Didymodon maximus	NT	VU
Ditrichum zonatum	EN	NT
Entosthodon fascicularis	NT	LC
Eurhynchiastrum diversifolium	RE	CR
Fissidens fontanus	VU	NT
Fissidens rivularis	VU	NT
Grimmia decipiens	NT	LC
Grimmia funalis	NT	LC
Grimmia hartmanii	LC	NT
Grimmia longirostris	RE	EN
Grimmia muehlenbeckii	DD	NT
Grimmia ramondii	NT	LC
Grimmia torquata	NT	LC
Hygroamblystegium fluviatile	NT	LC
Hygroamblystegium varium	NT	LC
Hylocomiastrum umbratum	NT	LC
Hypnum uncinulatum	NT	VU
Leucobryum juniperoideum	LC	DD
Meesia triquetra	RE	CR
Microbryum starckeanum	RE	DD
Oedipodium griffithianum	CR	VU
Orthotrichum rivulare	NT	LC
Orthotrichum sprucei	VU	NT
Orthotrichum stramineum	VU	NT
Oxyrrhynchium schleicheri	CR	DD
Oxyrrhynchium speciosum	NT	LC
Plagiomnium cuspidatum	NT	LC
Plagiothecium curvifolium	VU	NT
Plasteurhynchium striatulum	NT	LC
Platyhypnum duriusculum	CR	EN

Taxon	**2012**	**2025**
Pohlia elongata var. *elongata*	NT	LC
Pohlia elongata var. *greenii*	EN	CR
Pohlia lescuriana	DD	VU
Pohlia wahlenbergii var. *glacialis*	RE	DD
Rhabdoweisia crispata	NT	LC
Rhabdoweisia fugax	VU	EN
Rhynchostegium alopecuroides	NT	LC
Schistidium elegantulum	DD	LC
Schistidium pruinosum	DD	VU
Schistidium robustum	DD	VU
Schistidium strictum	NT	LC
Scleropodium cespitans	NT	LC
Sematophyllum substrumulosum	DD	NT
Serpoleskea confervoides	NT	VU
Sphagnum flexuosum	VU	NT
Sphagnum fuscum s.s.	LC	VU
Sphagnum girgensohnii	NT	LC
Sphagnum russowii	NT	LC
Sphagnum skyense	DD	LC
Sphagnum strictum	DD	VU
Sphagnum teres	NT	LC
Sphagnum warnstorfii	VU	NT
Syntrichia princeps	RE	EN
Tortella densa	NT	DD
Tortula canescens	DD	VU
Tortula cuneifolia	CR	RE
Tortula wilsonii	RE	CR
Weissia angustifolia	VU	EN
Weissia controversa var. *crispata*	DD	LC

The All-Ireland Red List of bryophytes, *i.e.* taxa considered threatened (CR, EN, VU), is presented in Table 5, below.

Table 5 Red list of Irish bryophytes showing Groups (H – hornworts; L – liverworts; M – mosses), Taxon name, Threat Category (CR- Critically Endangered; EN – Endangered; VU – Vulnerable) and Criteria by which category levels were assigned. See IUCN (2012a, b) and Appendix 1.

Group	Taxon name	Threat Category	Criteria
L	*Gymnomitrion corallioides*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Riccia huebeneriana*	CR	B1a, bii, iii, v, B2a, bii, iii, cii, iv
M	*Aongstroemia longipes*	CR	A3c
M	*Bryum salinum*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv, D
M	*Bryum warneum*	CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Dicranum undulatum*	CR	B2a, bi, ii, iii, iv, v
M	*Ditrichum cornubicum*	CR	D
M	*Ditrichum lineare*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Encalypta rhaptocarpa*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Entosthodon muhlenbergii*	CR	D
M	*Eurhynchiastrum diversifolium*	CR	D
M	*Kiaeria falcata*	CR	D
M	*Meesia triquetra*	CR	B2a, biii, D
M	*Orthodontium gracile*	CR	B2a, biii
M	*Paludella squarrosa*	CR	B2a, biii, D
M	*Philonotis cernua*	CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Plagiopus oederianus*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Pohlia elongata* var. *greenii*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Ptilium crista-castrensis*	CR	B2a, biii, D
M	*Sphagnum majus*	CR	D
M	*Tortula lindbergii*	CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Tortula wilsonii*	CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Ulota coarctata*	CR	D
M	*Ulota drummondii*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Barbilophozia barbata*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Calypogeia integristipula*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Geocalyx graveolens*	EN	D
L	*Lejeunea mandonii*	EN	B2a, bii, iv
L	*Marchantia polymorpha* subsp. *montivagans*	EN	D
L	*Mesoptychia heterocolpos*	EN	B2a, biii, D
L	*Mesoptychia rutheana*	EN	B2a, biii, D
L	*Orthocaulis atlanticus*	EN	B2a, bii, iv, v
L	*Plagiochila carringtonii* subsp. *carringtonii*	EN	B2a, biii
L	*Plagiochila heterophylla*	EN	B2a, bii, iv
L	*Riccia crozalsii*	EN	D
L	*Scapania nimbosa*	EN	B2a, bii, iii, iv
L	*Scapania subalpina*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Southbya tophacea*	EN	B1a, bii, iv, B2a, bii, iv
M	*Abietinella abietina* var. *abietina*	EN	B2a, biii, iv
M	*Aloina ambigua*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv, D
M	*Brachydontium trichodes*	EN	B2a, bi, ii, iv
M	*Brachytheciastrum velutinum*	EN	B2a, bi, ii, iv
M	*Bryum calophyllum*	EN	B2a, biii
M	*Bryum intermedium*	EN	B2a, bii, iv
M	*Bryum knowltonii*	EN	D
M	*Bryum marratii*	EN	B2a, bi, ii, iii, iv, v

Group	Taxon name	Threat Category	Criteria
M	*Bryum riparium*	EN	B2a, bii, iv
M	*Bryum uliginosum*	EN	B2a, bii, iv
M	*Campylostelium saxicola*	EN	B1a, bi, ii. iv, B2a, bi, ii, iv
M	*Dicranella crispa*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Didymodon icmadophilus*	EN	B2a, bii, iii, iv
M	*Ditrichum plumbicola*	EN	D
M	*Encalypta ciliata*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Entosthodon pulchellus*	EN	D
M	*Ephemerum spinulosum*	EN	B2a, ciii, iv
M	*Fissidens rufulus*	EN	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Grimmia atrata*	EN	D
M	*Grimmia longirostris*	EN	B1a, bi, ii, iv, v, B2a, bi, ii, iv, v
M	*Hygroamblystegium humile*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Meesia uliginosa*	EN	D
M	*Myurella julacea*	EN	B2a, bii, iv
M	*Neckera smithii*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Orthotrichum pallens*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Philonotis capillaris*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Platyhypnum duriusculum*	EN	B2a, bi, ii, iii, iv
M	*Pogonatum nanum*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Pohlia andalusica*	EN	B1a, biii, B2a, biii
M	*Rhabdoweisia fugax*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Scleropodium touretii*	EN	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Syntrichia princeps*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Tortella inclinata*	EN	B2a, bii, iv
M	*Weissia angustifolia*	EN	B1a, bii, iv, B2a, bii, iv
H	*Anthoceros agrestis*	VU	D2
L	*Acrobolbus wilsonii*	VU	D1
L	*Adelanthus lindenbergianus*	VU	A2c
L	*Aneura mirabilis*	VU	B2a, B2bii, iii, iv
L	*Bazzania pearsonii*	VU	A2c
L	*Calypogeia suecica*	VU	D2
L	*Cephalozia loitlesbergeri*	VU	B2a, biii
L	*Cephaloziella integerrima*	VU	D2
L	*Cephaloziella massalongoi*	VU	D2
L	*Cephaloziella nicholsonii*	VU	B2a, biii
L	*Cephaloziella rubella*	VU	D2
L	*Cephaloziella turneri*	VU	D2
L	*Fossombronia fimbriata*	VU	D2
L	*Gymnomitrion alpinum*	VU	D2
L	*Marsupella funckii*	VU	B2a, bi, ii, iv; D2
L	*Marsupella sphacelata*	VU	B1a, bi, ii, iv, B2a, bi, ii, iv
L	*Marsupella sprucei*	VU	B2a, bii, biv
L	*Mesoptychia gillmanii*	VU	D2
L	*Odontoschisma francisci*	VU	D2
L	*Oleolophozia perssonii*	VU	D2
L	*Pallavicinia lyellii*	VU	B2a, bi, ii, iv
L	*Scapania curta*	VU	D2
L	*Scapania cuspiduligera*	VU	D
L	*Scapania gymnostomophila*	VU	D2
L	*Scapania lingulata*	VU	D2
L	*Scapania ornithopoides*	VU	A2c
L	*Solenostoma paroicum*	VU	D2
L	*Tritomaria exsecta*	VU	B2a, bii, iv
M	*Amphidium lapponicum*	VU	D2

Group	Taxon name	Threat Category	Criteria
M	*Andreaea megistospora*	VU	B1a, bi, ii, iv, B2a, bi, ii, iv
M	*Arctoa fulvella*	VU	D2
M	*Aulacomnium androgynum*	VU	B2a, bii, iv
M	*Bartramia halleriana*	VU	D2
M	*Bartramia ithyphylla*	VU	B2a, bii, iv
M	*Braunia imberbis*	VU	B2a, bii, iv
M	*Bryum caespiticium*	VU	D2
M	*Bryum elegans*	VU	D2
M	*Bryum moravicum*	VU	D2
M	*Bryum torquescens*	VU	B2a, bi, ii, iv
M	*Campylophyllopsis calcarea*	VU	D2
M	*Cinclidium stygium*	VU	B2a, biii
M	*Cynodontium jenneri*	VU	D2
M	*Dialytrichia mucronata*	VU	D2
M	*Dicranodontium asperulum*	VU	D2
M	*Didymodon maximus*	VU	D1, D2
M	*Didymodon tomaculosus*	VU	B2a, bii, iii, iv
M	*Didymodon umbrosus*	VU	D2
M	*Drepanocladus lycopodioides*	VU	A2c
M	*Drepanocladus trifarius*	VU	D2
M	*Encalypta alpina*	VU	D2
M	*Ephemerum cohaerens*	VU	B2a, ciii, iv
M	*Fissidens exilis*	VU	B2a, bii, iv
M	*Fissidens polyphyllus*	VU	D2
M	*Fissidens serrulatus*	VU	D2
M	*Grimmia anomala*	VU	D2
M	*Grimmia dissimulata*	VU	D2
M	*Grimmia orbicularis*	VU	B2a, bii, iv
M	*Hedwigia striata*	VU	D2
M	*Hypnum uncinulatum*	VU	D2
M	*Isopterygiopsis muelleriana*	VU	D2
M	*Leptobarbula berica*	VU	D2
M	*Molendoa warburgii*	VU	D2
M	*Oedipodium griffithianum*	VU	D2
M	*Philonotis rigida*	VU	B2a, bii, iv
M	*Philonotis tomentella*	VU	D2
M	*Physcomitrium sphaericum*	VU	D2
M	*Plagiothecium cavifolium*	VU	D2
M	*Plagiothecium laetum*	VU	D2
M	*Plagiothecium latebricola*	VU	D2
M	*Plagiothecium platyphyllum*	VU	D2
M	*Pohlia filum*	VU	A3c, D1
M	*Pohlia lescuriana*	VU	D2
M	*Racomitrium canescens*	VU	D2
M	*Racomitrium elongatum*	VU	D2
M	*Racomitrium macounii* subsp. *alpinum*	VU	D2
M	*Rhytidium rugosum*	VU	D2
M	*Schistidium agassizii*	VU	D2
M	*Schistidium platyphyllum*	VU	B2a, bii, iii, iv
M	*Schistidium pruinosum*	VU	D2
M	*Schistidium robustum*	VU	D2
M	*Schistidium trichodon*	VU	D2
M	*Scopelophila cataractae*	VU	D2
M	*Seligeria calcarea*	VU	B2a, bii, iv
M	*Seligeria oelandica*	VU	D1

Group	Taxon name	Threat Category	Criteria
M	*Serpoleskea confervoides*	VU	D2
M	*Sphagnum affine*	VU	D2
M	*Sphagnum fuscum s.s.*	VU	D2
M	*Sphagnum strictum*	VU	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv
M	*Stereodon hamulosus*	VU	D2
M	*Thuidium recognitum*	VU	B2a, bii, iv
M	*Timmia norvegica*	VU	D1
M	*Tomentypnum nitens*	VU	A3c
M	*Tortula canescens*	VU	D2
M	*Weissia rutilans*	VU	B2a, bii, iv

4 DISCUSSION

While the 2025 Red List is substantially similar to the 2012 list, there are some significant differences. Many species have been 'downgraded', with a particularly large number going from Near Threatened to Least Concern. There has also been a reduction in the number of species considered to be Regionally Extinct. These changes are because of continuing fieldwork by some very competent field bryologists resulting in a much better picture of the distribution of many species. This has largely been through contracts with the government agencies, but also through 'recreational bryology' by a small band of enthusiasts. Therefore, while the realisation that some species are less threatened than was previously thought, and the 'rescuing' of several species from regional extinction are all very welcome, these changes are largely due to an increase in field activity leading to a more complete picture of the Irish bryophyte flora than in 2012, rather than any improvement in environmental conditions.

A recent (and ongoing) research project in partnership between NPWS and the National Botanic Gardens of Ireland, Glasnevin, has also informed the Red List revision (Hodgetts *et al.*, 2024). Its purpose was to investigate the morphological and molecular identity of a small number of bryophytes for which Ireland has special responsibility, in order to put them in a global context. This has shown that the Irish bryophyte flora has features which are unique and therefore important to conserve in a global context; that morphological uniformity can sometimes hide genetic diversity, with implications for the conservation of biodiversity as a whole; and that there are likely to be many other bryophyte taxa with hidden genetic diversity, and much more research is needed in order to investigate this, especially in the case of the globally important oceanic flora.

Specific results from this project have revealed a number of interesting stories. For example, *Didymodon maximus* is even rarer in Ireland than previously thought, several populations now having been identified as another taxon that may be a form of *D. spadiceus*. Similarly, *Hypnum uncinulatum* appears to be more strictly confined to the Killarney area than existing records suggest, with specimens from elsewhere in south-western Ireland proving to be either *H. andoi* or *H. jutlandicum*. The results also show that there are four haplotypes of *Hamatocaulis vernicosus* in Ireland, showing genetic diversity between populations; *Radula carringtonii* in Ireland exists as two different – but morphologically indistinguishable – haplotypes; and Irish *Lejeunea eckloniana* is significantly different to African material, and its original name of *L. holtii* will probably be resurrected for Irish and Macaronesian material, which would therefore have to be considered a rare oceanic European endemic. The recent molecular/morphological work has resulted in two changes to the 2012 Red List: the number of confirmed localities for both *Didymodon maximus* and *Hypnum uncinulatum* is now certainly less than previously thought, so both have been 'upgraded' from Near Threatened to Vulnerable. Other results from this project show that the Red List must not be the only resource used for determining conservation priority. For example, knowing that there are four haplotypes of *Hamatocaulis vernicosus* in Ireland does not result in any change to its IUCN threat category, which remains at Near Threatened, but it does mean that it is important to recognise and take measures to conserve enough populations to maintain the genetic diversity. The same applies to populations representing the two haplotypes of *Radula carringtonii*, which also remains as Near Theatened.

In terms of threat, the general eutrophication of the countryside has continued and increased, partly as a result of agricultural practices in Ireland and partly because of what is essentially a global increase in atmospheric nitrogen deposition. This has resulted in an increase in coarse grasses and other nitrophilous vegetation at the expense of less nutrient-demanding species. Wetlands in particular are vulnerable to eutrophication. Among the bryophytes of wetlands, a few very common species tolerant of high nutrient levels, notably *Calliergonella cuspidata*, have increased, while many other species have declined. In water bodies, including even mountain streams, there has been an increase in algae at the expense of the more natural, and more diverse, bryophyte flora. The nitrification phenomenon can even be observed on rocks and trees, which may often be invaded by a slimy coat of green algae that tends

to 'smother' the bryophytes and lichens. Refer to Holyoak & Campbell (2024) for further details and references regarding eutrophication.

The recent survey of rare *Bryum* species (Holyoak & Campbell 2024) has revealed a serious decline in many of the Bryaceae species since 2012. The decline in *Bryum marratii* in particular has been dramatic, going from LC to EN. The main reason for this deterioration in *Bryum* is the decline in quality of habitat. The most egregious example is the apparently indiscriminate spreading of cattle dung at a key site for *Bryum gemmiparum* and *B. knowltonii* NW of Keel Bridge in the Lough Carra/Mask Complex SAC. In theory, this site should be protected and managed with nature conservation in mind. The reality appears to fall some way short of this ideal. The disappointing conclusions of these new surveys are that *Bryum gemmiparum* has probably become extinct in Ireland, that *B. calophyllum* and *B. warneum* are very close to extinction here if predictable patterns of habitat loss are maintained, and that *B. uliginosum* is likely also to be lost within the next decade if present trends continue unchecked.

Other threats remain similar to those in 2012 (Lockhart *et al.*, 2012b). The numbers of hill sheep have declined in most areas, but the upland habitats, while possibly not declining any further since 2012, have not yet improved to any great extent. The increased numbers of records of the rare oceanic liverworts such as *Adelanthus lindenbergianus*, *Bazzania pearsonii*, etc, are largely due to intensive searching by expert bryologists, and therefore do not necessarily represent any kind of recovery. These populations have probably always been there, but have been undetected in recent decades until the recent period of bryological recording activity. The main value of this fieldwork is that we now have a much better idea of the extent and quality of these populations, and what condition they are in, rather than concluding that the new records indicate any real change based on land management or conservation actions in the last decade.

Habitat destruction and degradation through drainage and planting of conifers is still a threat in some areas. New wind farms are potentially destructive if built in the wrong place, or without due attention to the microtopography and hydrology.

In summary, this new list is a substantial improvement on the 2012 list because of new fieldwork leading to a better understanding of the Irish bryophyte flora. The new list therefore paints a more realistic picture of the rarity of and degree of threat to Irish bryophytes. There is, however, still much fieldwork to be done in order to further improve our knowledge. It is to be hoped that the findings of this Red List will inform conservation action, with a subsequent and continuing improvement in the fortunes of bryophytes in Ireland.

5 RECOMMENDATIONS

5.1 Recommendations for amendments to protected species lists

Protected bryophytes in the Republic of Ireland are listed in the Flora (Protection) Order, 2022. The list is based on a number of criteria, one of which is to be listed in Ireland as CR or EN or (if with fewer than 10 populations in the Republic) VU. This means that a number of recommendations for amendments to this list can be suggested in the light of the revised Red List. Similar suggestions can be made for the list of Northern Ireland Priority Species (published January 2023, updated March 2023). These are given in Table 6, below.

Table 6 Suggestions for amendments to the Flora (Protection) Order 2022 and the list of Northern Ireland Priority Species 2023.

Species	Recommendation	Rationale
Liverworts		
Barbilophozia barbata	Add to FPO & Priority NI	Refound at two sites, one in Republic & one in NI
Calypogeia suecica	Add to FPO	Refound at one site, found new at another
Gymnomitrion alpinum	Add to FPO	Found new to Ireland at single site in Wicklow Mountains
Gymnomitrion concinnatum	Remove from FPO	Refound at five sites, found at six new sites, and no real evidence of decline; still not refound at only known NI site (last seen 1964)
Riccia huebeneriana	Add to FPO	Single site, last seen 1992, but dependent on fluctuating water levels at reservoir
Mosses		
Andreaea megistospora	Add to FPO	No further records in last decade, so seems genuinely rare
Bryum marratii	Add to FPO	Steep decline to only five sites ((Holyoak & Campbell 2024); its removal from the FPO at last revision may have been premature
Campylophyllopsis calcarea	Add to FPO & Priority NI	Found new to Ireland at two sites, one in Republic & one in NI
Dicranum undulatum	Add to FPO	Thought to have disappeared from central Irish bogs (last seen 1960) but rediscovered at Clara Bog, 2014
Entosthodon pulchellus	Add to FPO	Found new to Ireland at single site in Co. Tipperary
Grimmia longirostris	Add to FPO & Priority NI	Refound at one site (NI), found new at another (Republic)
Plagiopus oederianus	Add to Priority NI	Refound at one site (NI)
Sphagnum majus	Add to FPO	Found new to Ireland at single site in Co. Galway
Syntrichia princeps	Add to Priority NI	Refound at two sites in NI
Tortula wilsonii	Add to FPO	Refound at one site in Co. Dublin (Howth)
Ulota drummondii	Add to FPO	Found at new site in Co. Dublin (Glenasmole)

6 FORMAT OF CHECKLIST

The full list of bryophyte species in Ireland with their threat category is given below. The format of the revised Red List assessment is similar to that of the 2012 list, but with some modifications.

Description of the columns

Group: Hornwort (H), liverwort (L) or moss (M).

Taxon name: Accepted taxon name, mostly according to the British Bryological Society *Census Catalogue* (Blockeel *et al.,* 2021).

Synonym(s): Other name used in recent literature where different from currently accepted name, mainly in Lockhart *et al.,* (2012a, b) and the European *Checklist* (Hodgetts *et al.,* 2020).

Threat Category (IRL): The IUCN threat category in Ireland; taxa are assigned according to the IUCN guidelines (2012a, b). The 2012 threat category is given in brackets where different.

Criteria: These follow IUCN (2012a, b). Key: RE – Regionally Extinct; CR – Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near Threatened; LC – Least Concern; DD – Data Deficient; NA – Not Applicable.

Special Responsibility: Taxa for which Ireland has special responsibility are noted, and defined here as those considered threatened or endemic in Europe (Hodgetts *et al.,* 2019; Bisang *et al.,* in prep.); or with Oceanic/Hyperoceanic distributions in Europe (Hill *et al.,* 2007); or with occurrence in Ireland but not in Britain (Blockeel *et al.,* 2014, 2021a).

Threat Category (Europe): According to the current European Red List (Hodgetts *et al.,* 2019).

European endemism: Species that are endemic to Europe or with an estimated ≥90% of their global population in Europe are indicated, according to recent research (Bisang *et al.,* in prep.).

Current Protection Status: Lists legal status: Flora (Protection) Order, 2022; Priority Species Northern Ireland; UKBAP species; EU Habitats Directive Annex II or V.

Notes: Notes that may be relevant to interpreting global distribution (and significance of Irish populations) are given where appropriate. 'NI only' distribution refers to distribution within Ireland. Additions to the names used in Blockeel *et al.,* (2021a, b) are also marked here as 'Not in CC'.

7 RED LIST OF IRISH BRYOPHYTES

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
H	*Anthoceros agrestis*		VU	D2		NT		Priority NI	
H	*Anthoceros punctatus*		LC			LC			
H	*Phaeoceros laevis*		LC			LC			
L	*Acrobolbus wilsonii*		VU	D1	Yes	VU	Endemic	FPO	
L	*Adelanthus lindenbergianus*		VU	A2c	Yes	EN		FPO	Globally disjunct
L	*Anastrepta orcadensis*		LC			LC			
L	*Anastrophyllum hellerianum*	*Crossocalyx hellerianus*	RE		Yes, if refound	LC			
L	*Aneura mirabilis*		VU	B2a, B2bii, iii, iv		NT			
L	*Aneura pinguis*		LC			LC			About 8 semi-cryptic species are now known within *A. pinguis*, but this has not yet been published
L	*Anthelia julacea*		LC			LC			
L	*Anthelia juratzkana*		LC (NT)			LC			New localities found
L	*Barbilophozia barbata*		EN (CR)	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			Refound at 2 old localities
L	*Barbilophozia kunzeana*	*Schljakovia kunzeana*	RE			LC			
L	*Barbilophozia sudetica*	*Lophozia sudetica*	LC			LC			
L	*Bazzania pearsonii*		VU	A2c	Yes	NT		FPO	Globally disjunct
L	*Bazzania tricrenata*		LC			LC			
L	*Bazzania trilobata*		LC			LC			
L	*Blasia pusilla*		LC			LC			
L	*Blepharostoma trichophyllum*		LC			LC			
L	*Calypogeia arguta*		LC			LC			
L	*Calypogeia azurea*		LC			LC			
L	*Calypogeia fissa*		LC			LC			
L	*Calypogeia integristipula*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		Priority NI	NI only

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Calypogeia muelleriana*		LC			LC			
L	*Calypogeia neesiana*		LC			LC			
L	*Calypogeia sphagnicola*		LC			LC			
L	*Calypogeia suecica*		VU (RE)	D2		LC			Refound at 1 locality, found new at another
L	*Cephalozia bicuspidata*		LC			LC			
L	*Cephalozia catenulata*	*Fuscocephaloziopsis catenulata*	LC			LC			
L	*Cephalozia connivens*	*Fuscocephaloziopsis connivens*	LC			LC			
L	*Cephalozia crassifolia*	*Fuscocephaloziopsis crassifolia*	NT (EN)		Yes	LC		FPO	In Ireland but not in Britain
L	*Cephalozia curvifolia*	*Nowellia curvifolia*	LC			LC			
L	*Cephalozia leucantha*	*Fuscocephaloziopsis leucantha*	LC			LC			
L	*Cephalozia loitlesbergeri*	*Fuscocephaloziopsis loitlesbergeri*	VU	B2a, biii		LC			
L	*Cephalozia lunulifolia*	*Fuscocephaloziopsis lunulifolia*	LC			LC			
L	*Cephalozia macrostachya* var. *macrostachya*	*Fuscocephaloziopsis macrostachya* var. *macrostachya*	LC			LC			
L	*Cephalozia macrostachya* var. *spiniflora*	*Fuscocephaloziopsis macrostachya* var. *spiniflora*	DD			LC			
L	*Cephalozia pleniceps*	*Fuscocephaloziopsis pleniceps*	NT (VU)			LC		Priority NI	Slight decline?
L	*Cephaloziella divaricata*		LC			LC			
L	*Cephaloziella elachista*		DD		Yes	VU			
L	*Cephaloziella hampeana*		LC			LC			
L	*Cephaloziella integerrima*		VU	D2		EN	≥90%		
L	*Cephaloziella massalongoi*	*Cephaloziella massalongi*	VU	D2	Yes	EN	≥90%	FPO (as *C. massalongi*)	
L	*Cephaloziella nicholsonii*		VU	B2a, biii	Yes	EN	Endemic	FPO	
L	*Cephaloziella rubella*		VU	D2		LC		Priority NI	
L	*Cephaloziella spinigera*		DD			NT			
L	*Cephaloziella stellulifera*		NT			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Cephaloziella turneri*		VU	D2	Yes	LC			
L	*Chisoscyphus pallescens*		LC			LC			
L	*Chisoscyphus polyanthos*		LC			LC			
L	*Cololejeunea calcarea*		LC			LC			
L	*Cololejeunea microscopica*	*Aphanolejeunea microscopica*	LC			LC			
L	*Cololejeunea rossettiana*		LC			LC			
L	*Colura calyptrifolia*		LC			LC			
L	*Conocephalum conicum*		LC			LC			
L	*Conocephalum salebrosum*		LC			LC			
L	*Diplophyllum albicans*		LC			LC			
L	*Diplophyllum obtusifolium*		LC (NT)			LC			A ruderal plant of soil banks
L	*Douinia ovata*		LC (NT)		Yes	LC			Many new records
L	*Drepanolejeunea hamatifolia*		LC			LC			
L	*Dumortiera hirsuta*		NT		Yes	NT		UKBAP; Priority NI	Some long-term decline? Difficult to overlook
L	*Eremonotus myriocarpus*		NT			NT			
L	*Fossombronia angulosa*		LC			LC			
L	*Fossombronia fimbriata*		VU	D2	Yes	LC	Endemic		
L	*Fossombronia foveolata*		LC			LC			
L	*Fossombronia husnotii*	*Fossombronia caespitiformis* subsp. *multispira*	NT (DD)		Yes	LC			Not seen at many old sites, but several new sites found; no real evidence of decline
L	*Fossombronia incurva*		LC			LC	Endemic		
L	*Fossombronia maritima*		NT		Yes	LC	Endemic		
L	*Fossombronia pusilla*		LC			LC			
L	*Fossombronia wondraczekii*		LC			LC			
L	*Frullania dilatata*		LC			LC			
L	*Frullania fragilifolia*		LC			LC			
L	*Frullania microphylla*		LC			LC	Endemic		
L	*Frullania tamarisci*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Frullania teneriffae*		LC			LC			
L	*Geocalyx graveolens*		EN	D		NT		FPO; Priority NI	
L	*Gymnocolea inflata*		LC			LC			
L	*Gymnomitrion adustum*	*Marsupella adusta*	NT			LC			
L	*Gymnomitrion alpinum*	*Marsupella alpina*	VU	D2	Yes	VU			New to Ireland
L	*Gymnomitrion concinnatum*		NT (EN)			LC		FPO, Priority NI	New records from old & new site; no real evidence of decline
L	*Gymnomitrion corallioides*		CR	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		FPO	
L	*Gymnomitrion crenulatum*		LC			LC	Endemic		
L	*Gymnomitrion obtusum*		NT			LC			
L	*Haplomitrium hookeri*		LC		Yes	LC			
L	*Harpalejeunea molleri*		LC			LC	Endemic		
L	*Harpanthus scutatus*		LC			LC			
L	*Herbertus hutchinsiae*	*Herbertus aduncus* subsp. *hutchinsiae*	LC			NT	Endemic		
L	*Heteroscyphus fissistipus*		NA (NE)			NA			
L	*Hygrobiella laxifolia*		LC			LC			
L	*Isopaches bicrenatus*	*Lophozia bicrenata*	LC			LC			
L	*Jubula hutchinsiae*		LC			LC			
L	*Jungermannia atrovirens*		LC			LC			
L	*Jungermannia eucordifolia*	*Jungermannia exsertifolia* subsp. *cordifolia*	LC			LC			
L	*Jungermannia pumila*		LC			LC			
L	*Kurzia pauciflora*		LC			LC			
L	*Kurzia sylvatica*		NT			LC			
L	*Kurzia trichoclados*		LC			LC			
L	*Lejeunea cavifolia*		LC			LC			
L	*Lejeunea eckloniana*		NT		Yes	LC			Perhaps some decline. The name *Lejeunea holtii* shortly to be reinstated for Irish material (Hodgetts *et al.*, in prep.)
L	*Lejeunea flava* subsp. *moorei*		NT (VU)		Yes	NT	Endemic		In Ireland but not in Brtain; Too many localities for VU

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Lejeunea hibernica*		NT		Yes	NT	Endemic	FPO	In Ireland but not in Brtain; Perhaps some decline
L	*Lejeunea lamacerina*		LC			LC			
L	*Lejeunea mandonii*		EN	B2a, bii, iv	Yes	VU	Endemic	FPO	
L	*Lejeunea patens*		LC			LC			
L	*Lepidozia cupressina*		LC			LC			
L	*Lepidozia pearsonii*		LC			LC			
L	*Lepidozia reptans*		LC			LC			
L	*Leptoscyphus cuneifolius*		LC			LC			
L	*Lophocolea bidentata*		LC			LC			
L	*Lophocolea bispinosa*		NA (NE)			NA			
L	*Lophocolea fragrans*		LC			LC			
L	*Lophocolea heterophylla*		LC			LC			
L	*Lophocolea semiteres*		NA (NE)			NA			
L	*Lophozia excisa*	*Lophoziopsis excisa*	LC			LC			
L	*Lophozia ventricosa*		LC			LC			Undoubtedly still LC, although many of the records will ultimately prove to be of *L. wenzelii*
L	*Lophozia wenzelii*		DD			LC			Not 'officially' recorded from any Irish vice-county (Blockeel *et al.*, 2021), but ongoing work suggests that *L. wenzelii* (*sensu* Bakalin) is present. Further taxonomic work is needed to clarify the situation
L	*Lunularia cruciata*		LC			LC			
L	*Marchantia polymorpha* subsp. *montivagans*		EN	D		LC		FPO	
L	*Marchantia polymorpha* subsp. *polymorpha*		LC			LC			
L	*Marchantia polymorpha* subsp. *ruderalis*		LC			LC			
L	*Marchantia quadrata*	*Preissia quadrata*	LC			LC			
L	*Marchesinia mackaii*		LC			LC			
L	*Marsupella aquatica*	*Marsupella emarginata* var. *aquatica*	LC			LC			
L	*Marsupella emarginata*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Marsupella funckii*		VU (NT)	B2a, bi, ii, iv; D2		LC		Priority NI	Appears to have declined significantly
L	*Marsupella sphacelata*		VU	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			
L	*Marsupella sprucei*		VU	B2a, bii, biv		LC		Priority NI	
L	*Mastigophora woodsii*		NT		Yes	NT		FPO	Globally disjunct
L	*Mesoptychia badensis*	*Leiocolea badensis*	LC			LC			
L	*Mesoptychia bantriensis*	*Leiocolea bantriensis*	LC (NT)			LC			Many new records
L	*Mesoptychia collaris*	*Leiocolea collaris*	LC			LC			
L	*Mesoptychia fitzgeraldiae*	*Leiocolea fitzgeraldiae*	NT		Yes	NT	Endemic		Endemic to Britain & Ireland
L	*Mesoptychia gillmanii*	*Leiocolea gillmanii*	VU	D2	?	VU		FPO (as *Leiocolea gillmanii*)	
L	*Mesoptychia heterocolpos*	*Leiocolea heterocolpos*	EN (CR)	B2a, biii, D		LC		Priority NI (as *Leiocolea heterocolpos*)	NI only
L	*Mesoptychia rutheana*	*Leiocolea rutheana*	EN	B2a, biii, D		NT		FPO (as *Leiocolea rutheana*)	
L	*Mesoptychia turbinata*	*Leiocolea badensis*	LC			LC			
L	*Metzgeria conjugata*		LC			LC			
L	*Metzgeria consanguinea*		LC			LC			
L	*Metzgeria furcata*		LC			LC			
L	*Metzgeria leptoneura*		NT		Yes	LC			Some decline?
L	*Metzgeria pubescens*		NT (VU)		Yes	LC		Priority NI	NI only; Now too many recent locations
L	*Metzgeria violacea*		LC			LC			
L	*Microlejeunea ulicina*		LC			LC			
L	*Moerckia flotoviana*		LC			NT			
L	*Moerckia hibernica*		DD			VU			
L	*Mylia anomala*		LC			LC			
L	*Mylia taylorii*		LC			LC			
L	*Myriocoleopsis minutissima*	*Cololejeunea minutissima*	LC			LC			
L	*Nardia compressa*		LC			LC			
L	*Nardia geoscyphus*		NT			LC			
L	*Nardia scalaris*		LC			LC			
L	*Odontoschisma denudatum*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Odontoschisma elongatum*		NT			LC			
L	*Odontoschisma fluitans*	*Cladopodiella fluitans*	LC			LC			
L	*Odontoschisma francisci*	*Cladopodiella francisci*	VU	D2		NT		Priority NI (as *Cladopodiella francisci*)	
L	*Odontoschisma sphagni*		LC			LC			
L	*Oleolophozia perssonii*	*Lophozia perssonii*	VU	D2		LC			
L	*Orthocaulis atlanticus*	*Barbilophozia atlantica*	EN	B2a, bii, iv, v		LC		FPO (as *Barbilophozia atlantica*)	
L	*Orthocaulis attenuatus*	*Barbilophozia attenuata*	LC			LC			
L	*Orthocaulis floerkei*	*Barbilophozia floerkei*	LC			LC			
L	*Pallavicinia lyellii*		VU (EN)	B2a, bi, ii, iv	Yes	VU		FPO	
L	*Pedinophyllum interruptum*		LC			LC			
L	*Pellia endiviifolia*		LC			LC			
L	*Pellia epiphylla*		LC			LC			
L	*Pellia neesiana*		LC			LC			
L	*Petalophyllum ralfsii*		LC		Yes	LC		FPO; WCA; Bern App. 1; Hab. Dir. Annex 2; UKBAP; Priority NI	
L	*Plagiochila asplenioides*		LC			LC			
L	*Plagiochila bifaria*		LC			LC			
L	*Plagiochila britannica*		LC		Yes	LC	Endemic		
L	*Plagiochila carringtonii* subsp. *carringtonii*		EN	B2a, biii	Yes	NT	Endemic	FPO	
L	*Plagiochila exigua*		LC			LC			
L	*Plagiochila heterophylla*		EN	B2a, bii, iv	Yes	LC		FPO	
L	*Plagiochila porelloides*		LC			LC			
L	*Plagiochila punctata*		LC			LC			
L	*Plagiochila spinulosa*		LC			LC	Endemic		
L	*Pleurozia purpurea*		LC			LC			
L	*Porella arboris-vitae*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Porella cordaeana*		LC (NT)			LC			Too many records, no convincing decline
L	*Porella obtusata*		LC			LC			
L	*Porella pinnata*		LC			LC			
L	*Porella platyphylla*		LC			LC			
L	*Pseudomarsupidium decipiens*	*Adelanthus decipiens*	LC			LC			
L	*Ptilidium ciliare*		LC			LC			
L	*Ptilidium pulcherrimum*		DD (RE)			LC			Presumably sink populations. Could be anything from LC to CR
L	*Radula aquilegia*		LC			LC			
L	*Radula carringtonii*		NT		Yes	NT	Endemic		
L	*Radula complanata*		LC			LC			
L	*Radula holtii*		NT		Yes	NT	Endemic	FPO	
L	*Radula lindenbergiana*		LC			LC			
L	*Radula voluta*		LC		Yes	NT			
L	*Reboulia hemisphaerica*		LC			LC			Keep under observation; may be declining
L	*Riccardia chamedryfolia*		LC			LC			
L	*Riccardia incurvata*		LC			LC			
L	*Riccardia latifolia*		LC			LC			
L	*Riccardia multifida*		LC			LC			
L	*Riccardia palmata*		LC			LC			
L	*Riccia beyrichiana*		LC			LC			
L	*Riccia cavernosa*		LC			LC			
L	*Riccia crozalsii*		EN	D	Yes	LC		FPO	
L	*Riccia fluitans*		LC			LC			
L	*Riccia glauca*		LC			LC			
L	*Riccia huebeneriana*		CR (DD)	B1a, bii, iii, v, B2a, bii, iii, cii, iv	Yes	LC			Last record 1992, but dependent on reservoir levels sinking occasionally
L	*Riccia rhenana*		NA (NE)			LC			
L	*Riccia sorocarpa*		LC			LC			
L	*Riccia subbifurca*		LC			LC			
L	*Ricciocarpos natans*		NT			LC			
L	*Saccogyna viticulosa*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Scapania aequiloba*		LC			LC			
L	*Scapania compacta*		LC			LC			
L	*Scapania curta*		VU	D2		LC			
L	*Scapania cuspiduligera*		VU	D		LC			
L	*Scapania gracilis*		LC			LC			
L	*Scapania gymnostomophila*		VU	D2		LC			
L	*Scapania irrigua*		LC			LC			
L	*Scapania lingulata*		VU (DD)	D2		NT			Recorded only rarely in recent years
L	*Scapania nemorea*		LC			LC			
L	*Scapania nimbosa*		EN	B2a, bii, iii, iv	Yes	NT		FPO	Globally disjunct
L	*Scapania ornithopoides*	*Scapania ornithopodioides*	VU	A2c	Yes	NT		FPO (as *S. ornithopodioides*)	Globally disjunct
L	*Scapania scandica*		LC			LC			
L	*Scapania subalpina*		EN (DD)	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			Still no further records in the last decade, suggesting it has become genuinely rare
L	*Scapania umbrosa*		LC			LC			
L	*Scapania undulata*		LC			LC			
L	*Schistochilopsis incisa*	*Lophozia incisa*	LC			LC			
L	*Schistochilopsis opacifolia*	*Lophozia opacifolia*	NT (VU)			LC			
L	*Solenostoma gracillimum*		LC			LC			
L	*Solenostoma hyalinum*		LC			LC			
L	*Solenostoma obovatum*		LC			LC			
L	*Solenostoma paroicum*		VU (NT)	D2	Yes	LC	Endemic		No new records in last decade; rare or overlooked? Needs targeted fieldwork
L	*Solenostoma sphaerocarpum*		NT			LC			No new records in last decade; needs targeted fieldwork
L	*Solenostoma subellipticum*		NT			LC			No change for now; but probably should be synonymous with *S. obovatum*
L	*Southbya tophacea*		EN (CR)	B1a, bii, iv, B2a, bii, iv	Yes	LC		FPO	Most northerly world localities
L	*Sphenolobopsis pearsonii*		NT		Yes	LC			
L	*Sphenolobus minutus*	*Anastrophyllum minutum*	LC			LC			
L	*Targionia hypophylla*		RE			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
L	*Telaranea europaea*		LC (NT)		Yes	LC			
L	*Trichocolea tomentella*		LC			NT			
L	*Tritomaria exsecta*		VU	B2a, bii, iv		LC			
L	*Tritomaria exsectiformis*		LC			LC			
L	*Tritomaria quinquedentata*		LC			LC			
M	*Abietinella abietina* var. *abietina*		EN	B2a, biii, iv		LC		Priority NI (as *A. abietina*)	
M	*Abietinella abietina* var. *hystricosa*		NT			LC		Priority NI (as *A. abietina*)	Habitat still under threat
M	*Acaulon muticum*		RE			NT			
M	*Aloina aloides*		LC			LC			
M	*Aloina ambigua*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv, D		LC			
M	*Aloina rigida*		RE			LC			
M	*Amblyodon dealbatus*		LC			LC			
M	*Amblystegium serpens*		LC			LC			
M	*Amphidium lapponicum*		VU	D2		LC			
M	*Amphidium mougeotii*		LC			LC			
M	*Andreaea hookeri*	*Andreaea alpina* auct. mult., non Hedw.	LC			LC			
M	*Andreaea megistospora*		VU	B1a, bi, ii, iv, B2a, bi, ii, iv	Yes	LC			No records in last decade, so genuinely rare
M	*Andreaea rothii* subsp. *falcata*		LC			LC			
M	*Andreaea rothii* subsp. *rothii*		LC			LC			
M	*Andreaea rupestris*		LC			LC			
M	*Anoectangium aestivum*		LC			LC			
M	*Anomodon viticulosus*		LC			LC			
M	*Antitrichia curtipendula*		NT			LC			
M	*Aongstroemia longipes*		CR	A3c		LC			
M	*Archidium alternifolium*		LC			LC			
M	*Arctoa fulvella*		VU	D2		LC			
M	*Atrichum angustatum*		RE			VU		UKBAP	NI only

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Atrichum crispum*		NA (NE)			NA			
M	*Atrichum tenellum*		NT			LC			
M	*Atrichum undulatum*		LC			LC			
M	*Aulacomnium androgynum*		VU	B2a, bii, iv		LC		Priority NI	Retained as VU, as Ardee Bog probably not revisited; also could be sink population in Ireland?
M	*Aulacomnium palustre*		LC			LC			
M	*Barbula unguiculata*		LC			LC			
M	*Bartramia halleriana*		VU (RE)	D2		LC		FPO	New site found
M	*Bartramia ithyphylla*		VU	B2a, bii, iv		LC		Priority NI	
M	*Bartramia pomiformis*		LC			LC			
M	*Blindia acuta*		LC			LC			
M	*Blindiadelphus recurvatus*	*Seligeria recurvata*	LC			LC			
M	*Brachydontium trichodes*		EN	B2a, bi, ii, iv	Yes	LC		FPO; Priority NI	
M	*Brachytheciastrum velutinum*		EN	B2a, bi, ii, iv		LC			
M	*Brachythecium albicans*		LC			LC			
M	*Brachythecium glareosum*		LC			LC			
M	*Brachythecium mildeanum*		LC			LC			
M	*Brachythecium rivulare*		LC			LC			
M	*Brachythecium rutabulum*		LC			LC			
M	*Braunia imberbis*	*Hedwigia integrifolia*	VU	B2a, bii, iv	Yes	NT		FPO; Priority NI (as *Hedwigia integrifolia*)	
M	*Breutelia chrysocoma*		LC			LC	Endemic		
M	*Bryoerythrophyllum campylocarpum*		DD			VU		Hab. Dir. Annex 2	Not in CC; NI only; Single site known, but may be spreading; may also be introduced
M	*Bryoerythrophyllum ferruginascens*		LC			LC			
M	*Bryoerythrophyllum recurvirostrum*		LC			LC			
M	*Bryum algovicum* var. *rutheanum*	*Ptychostomum compactum* var. *rutheanum*	LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Bryum alpinum*	*Imbribryum alpinum*	LC			LC			
M	*Bryum archangelicum*		LC			LC			
M	*Bryum argenteum*		LC			LC			
M	*Bryum bornholmense*	*Ptychostomum bornholmense*	NT			LC	Endemic		
M	*Bryum caespiticium*		VU	D2		LC			
M	*Bryum calophyllum*	*Ptychostomum calophyllum*	EN	B2a, biii	Yes	EN		FPO	
M	*Bryum capillare*	*Ptychostomum capillare*	LC			LC			
M	*Bryum concinnatum*	*Anomobryum concinnatum*	LC			LC			
M	*Bryum creberrimum*	*Ptychostomum creberrimum*	DD			LC			Genuinely rare but probably all sink populations; could be anything from LC to EN
M	*Bryum dichotomum*		LC			LC			
M	*Bryum donianum*	*Ptychostomum donianum*	LC			LC			
M	*Bryum dyffrynense*		NT		Yes	NT	Endemic		
M	*Bryum elegans*	*Ptychostomum elegans*	VU	D2		LC			
M	*Bryum gemmiferum*		LC			LC			
M	*Bryum gemmiparum*		RE (VU)		Yes, if refound	LC			2023 survey work failed to find (Holyoak & Campbell, 2024). Site now covered with cattle dung because of irresponsible grazing
M	*Bryum intermedium*	*Ptychostomum intermedium*	EN	B2a, bii, iv		DD		FPO; Priority NI	
M	*Bryum julaceum*	*Anomobryum julaceum*	LC			LC			
M	*Bryum klinggraeffii*		LC			LC			
M	*Bryum knowltonii*	*Ptychostomum knowltonii*	EN	D		VU		FPO	
M	*Bryum marratii*		EN (LC)	B2a, bi, ii, iii, iv, v	Yes	EN		UKBAP	2023 survey suggests steep decline to only *c*. 5 sites, because of poor management (Holyoak & Campbell, 2024)
M	*Bryum moravicum*	*Ptychostomum moravicum*	VU (CR)	D2		LC			
M	*Bryum pallens*	*Ptychostomum pallens*	LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Bryum pallescens*	*Ptychostomum pallescens*	LC			LC			
M	*Bryum pseudotriquetrum* var. *bimum*	*Ptychostomum pseudotriquetrum* var. *bimum*	LC			LC			
M	*Bryum pseudotriquetrum* var. *pseudotriquetrum*	*Ptychostomum pseudotriquetrum* var. *pseudotriquetrum*	LC			LC			
M	*Bryum radiculosum*		LC			LC			
M	*Bryum riparium*		EN	B2a, bii, iv	Yes	VU	≥90%		
M	*Bryum rubens*	*Ptychostomum rubens*	LC			LC			
M	*Bryum ruderale*		LC			LC			
M	*Bryum salinum*	*Ptychostomum salinum*	CR	B1a, bi, ii, iv, B2a, bi, ii, iv, D		VU		FPO	
M	*Bryum subapiculatum*	*Imbribryum subapiculatum*	LC			LC			
M	*Bryum tenuisetum*	*Imbribryum tenuisetum*	DD		Yes	LC			
M	*Bryum torquescens*	*Ptychostomum torquescens*	VU	B2a, bi, ii, iv	Yes	LC		Priority NI	
M	*Bryum turbinatum*	*Ptychostomum turbinatum*	RE			VU			
M	*Bryum uliginosum*	*Ptychostomum cernuum*	EN	B2a, bii, iv	Yes	EN		FPO; UKBAP	Only two populations extant (Holyoak & Campbell, 2024)
M	*Bryum violaceum*		LC			LC			
M	*Bryum warneum*	*Ptychostomum warneum*	CR (EN)	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv	Yes	VU		FPO	Only one tiny extant population (Holyoak & Campbell, 2024)
M	*Bryum zieri*	*Plagiobryum zieri*; *Ptychostomum zieri*	LC (NT)			LC			No real evidence of decline
M	*Buxbaumia aphylla*		RE		Yes, if refound	LC			
M	*Calliergon cordifolium*		LC			LC			
M	*Calliergon giganteum*		LC			LC			
M	*Calliergonella cuspidata*		LC			LC			
M	*Calliergonella lindbergii*		LC			LC			
M	*Calomnion complanatum*		NA (NE)			NA			
M	*Calyptrochaeta apiculata*		NA (NE)			NA			
M	*Campylium chrysophyllum*	*Campyliadelphus chrysophyllus*	LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Campylium protensum*		LC			LC			
M	*Campylium stellatum*		LC			LC			
M	*Campylophyllopsis calcarea*		VU	D2		LC			Two new sites; rare but not necessarily declining
M	*Campylopus atrovirens*		LC			LC			
M	*Campylopus brevipilus*		LC			LC			
M	*Campylopus flexuosus*		LC			LC			
M	*Campylopus fragilis*		LC			LC			
M	*Campylopus gracilis*		LC			LC			
M	*Campylopus introflexus*		LC			NA			
M	*Campylopus pilifer*		LC			LC			
M	*Campylopus pyriformis*		LC			LC			
M	*Campylopus schimperi*		RE			LC			
M	*Campylopus setifolius*		LC		Yes	LC	Endemic		
M	*Campylopus shawii*		NT		Yes	LC			
M	*Campylopus subulatus*		NT (VU)			DD		Priority NI	Possibly LC in reality but under-recorded; ruderal but might be genuinely rare and sporadic
M	*Campylostelium saxicola*		EN	B1a, bi, ii. iv, B2a, bi, ii, iv	Yes	VU		FPO	
M	*Catoscopium nigritum*		NT			LC		FPO	
M	*Ceratodon purpureus*		LC			LC			
M	*Chionoloma cylindrotheca*	*Oxystegus daldinianus*	LC			LC			Certainly under-recorded, so downgraded from NT
M	*Chionoloma hibernicum*	*Oxystegus hibernicus; Trichostomum hibernicum*	LC		Yes	LC	Endemic		
M	*Chionoloma recurvifolium*	*Oxystegus recurvifolius; Paraleptodontium recurvifolium; Trichostomum recurvifolium*	NT		Yes	NT			
M	*Chionoloma tenuirostre* var. *holtii*	*Oxystegus tenuirostris var. holtii; Trichostomum tenuirostre* var. *holtii*	LC			LC			Under-recorded

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Chionoloma tenuirostre* var. *tenuirostre*	*Oxystegus tenuirostris var. tenuirostris; Trichostomum tenuirostre* var. *tenuirostre*	LC			LC			
M	*Cinclidium stygium*		VU	B2a, biii		LC		Priority NI	
M	*Cinclidotus fontinaloides*		LC			LC			
M	*Cinclidotus riparius*		DD			LC			Needs targeted fieldwork
M	*Cirriphyllum crassinervium*		LC			LC			
M	*Cirriphyllum piliferum*		LC			LC			
M	*Climacium dendroides*		LC			LC			
M	*Conardia compacta*		RE			NT			
M	*Cratoneuron filicinum*		LC			LC			
M	*Cryphaea heteromalla*		LC			LC			
M	*Ctenidium molluscum*		LC			LC			
M	*Cyclodictyon laetevirens*		NT		Yes	LC			Ireland has most of the European population
M	*Cynodontium bruntonii*		LC			LC			
M	*Cynodontium jenneri*		VU	D2		LC			
M	*Daltonia splachnoides*		LC		Yes	LC		UKBAP; Priority NI	
M	*Dialytrichia mucronata*		VU	D2		LC			
M	*Dichodontium flavescens*		LC			DD			
M	*Dichodontium palustre*		LC			LC			
M	*Dichodontium pellucidum*		LC			LC			
M	*Dicranella cerviculata*		NT			LC			Picture slightly confused but NT probably appropriate
M	*Dicranella crispa*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			
M	*Dicranella grevilleana*		NT			LC			
M	*Dicranella heteromalla*		LC			LC			
M	*Dicranella howei*		DD			LC			Probably LC but still only two records, so may be genuinely rare; *D. varia* probably much the commoner of the two
M	*Dicranella rufescens*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Dicranella schreberiana*		LC			LC			
M	*Dicranella staphylina*		LC			LC	Endemic		
M	*Dicranella subulata*		LC			LC			
M	*Dicranella varia*		LC			LC			
M	*Dicranodontium asperulum*		VU	D2	Yes	LC		Priority NI	
M	*Dicranodontium denudatum*		LC			LC			
M	*Dicranodontium uncinatum*		NT (VU)			LC			Globally disjunct; any decline seems slight & unconvincing, especially in light of recent records from Kerry
M	*Dicranoloma menziesii*		NA (NE)			LC			
M	*Dicranoweisia cirrata*		LC			LC			
M	*Dicranum bonjeanii*		LC			LC			
M	*Dicranum fuscescens*		LC			LC			
M	*Dicranum majus*		LC			LC			
M	*Dicranum scoparium*		LC			LC			
M	*Dicranum scottianum*		LC			LC	Endemic		
M	*Dicranum undulatum*		CR (RE)	B2a, bi, ii, iii, iv, v		LC			Rediscovered in Clara Bog
M	*Didymodon fallax*		LC			LC			
M	*Didymodon ferrugineus*		LC			LC			
M	*Didymodon icmadophilus*	*Didymodon acutus* auct., non (Brid.) K.Saito	EN (RE)	B2a, bii, iii, iv		LC		FPO (as '*D. acutus*')	All *D. acutus* records are now under this species
M	*Didymodon insulanus*		LC			LC			
M	*Didymodon luridus*		LC			LC			
M	*Didymodon maximus*		VU (NT)	D1, D2	Yes	VU		FPO	In Ireland but not rest of Europe; globally rare and disjunct
M	*Didymodon nicholsonii*		LC			LC			
M	*Didymodon rigidulus*		LC			LC			
M	*Didymodon sinuosus*		LC			LC			
M	*Didymodon spadiceus*		LC			LC			
M	*Didymodon tomaculosus*		VU	B2a, bii, iii, iv	Yes	LC	Endemic		Lost from at least one, possibly two, of its known sites, so still VU but criteria changed; not seen since 2012

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Didymodon tophaceus*		LC			LC			
M	*Didymodon umbrosus*		VU	D2	Yes	LC			
M	*Didymodon vinealis*		LC			LC			
M	*Diphyscium foliosum*		LC			LC			
M	*Discelium nudum*		NT		Yes	LC			
M	*Distichium capillaceum*		LC			LC			
M	*Distichium inclinatum*		LC			LC			
M	*Ditrichum cornubicum*		CR	D	Yes	CR	Endemic	FPO	IUCN World Red List, EN (bi2c); this species has very recently been tentatively synonymised with *D. macrorhynchum* (Fedosov *et al*., 2025); however, this does not affect its threat category, so it is retained as CR
M	*Ditrichum heteromallum*		LC			LC			
M	*Ditrichum lineare*		CR	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		FPO	This European plants assigned to this species have very recently been reassigned to *D. pusillum* (which is not the same as our traditional concept of *D. pusillum*) (Fedosov *et al*., 2025); it is still a very rare taxon, and is therefore retained as CR
M	*Ditrichum plumbicola*		EN	D	Yes	EN	Endemic	FPO	This species has very recently been tentatively synonymised with *D. lineare*, in the American (not European) sense (Fedosov *et al*., 2025); it is still are very rare taxon, and is therefore retained as EN
M	*Ditrichum pusillum*		DD			LC			British and Irish specimens of this species have very recently been assigned to *D. macrorhynchum* (Fedosov *et al*., 2025)
M	*Ditrichum zonatum*		NT (EN)			LC			At least 7 'sites' now; no real sign of decline except perhaps in NI
M	*Drepanocladus aduncus*		LC			LC			
M	*Drepanocladus lycopodioides*	*Pseudocalliergon lycopodioides*	VU	A2c	Yes	VU	≥90%	Priority NI (as *Pseudocalliergon lycopodioides*)	
M	*Drepanocladus polygamus*		LC			LC			
M	*Drepanocladus sendtneri*		NT		Yes	VU			Barely qualifies for NT, but decline is probably still ongoing

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Drepanocladus trifarius*	*Pseudocalliergon trifarium*	VU	D2		LC			
M	*Encalypta alpina*		VU	D2		LC			
M	*Encalypta ciliata*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		FPO	
M	*Encalypta rhaptocarpa*		CR	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		FPO	
M	*Encalypta streptocarpa*		LC			LC			
M	*Encalypta vulgaris*		NT			LC			
M	*Entodon concinnus*		LC			LC			
M	*Entosthodon attenuatus*		LC			LC			
M	*Entosthodon fascicularis*		LC (NT)			LC			Decline unconvincing, at least recently; many new records
M	*Entosthodon muhlenbergii*		CR	D		NT		FPO	
M	*Entosthodon obtusus*		LC			LC			
M	*Entosthodon pulchellus*		EN	D		LC			
M	*Ephemerum cohaerens*		VU	B2a, ciii, iv	Yes	VU		FPO	
M	*Ephemerum crassinervium* subsp. *rutheanum*		NT		Yes	NT			
M	*Ephemerum crassinervium* subsp. *sessile*		NT		Yes	NT			
M	*Ephemerum recurvifolium*		DD		Yes	NT			
M	*Ephemerum serratum*	*Ephemerum minutissimum*	LC			LC			
M	*Ephemerum spinulosum*		EN	B2a, ciii, iv	Yes	DD		FPO; UKBAP; Priority NI	In Ireland but not in Britain
M	*Ephemerum serratum*	*Ephemerum minutissimum*	LC			LC			
M	*Ephemerum stoloniferum*	*Ephemerum serratum* auct., non (Hedw.) Hampe	LC			LC			
M	*Epipterygium tozeri*		LC			LC			
M	*Eucladium verticillatum*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Eurhynchiastrum diversifolium*	*Eurhynchiastrum pulchellum* var. *diversifolium*	CR (RE)	D		LC		UKBAP; Priority NI (as *Eurhynchiastrum pulchellum*)	NI only; refound at its single known location
M	*Eurhynchium striatum*		LC			LC			
M	*Fissidens adianthoides*		LC			LC			
M	*Fissidens bryoides* var. *bryoides*		LC			LC			
M	*Fissidens bryoides* var. *caespitans*		LC			LC			
M	*Fissidens celticus*		LC			LC	Endemic		
M	*Fissidens crassipes*		LC			LC			
M	*Fissidens crispus*		DD		Yes	LC			
M	*Fissidens curvatus*		RE		Yes, if refound	DD			
M	*Fissidens dubius*		LC			LC			
M	*Fissidens exilis*		VU	B2a, bii, iv		LC			
M	*Fissidens fontanus*		NT (VU)			LC			New sites, no evidence of decline
M	*Fissidens gracilifolius*		LC			LC			
M	*Fissidens incurvus*		LC			LC			
M	*Fissidens monguillonii*		NT		Yes	DD	≥90%		
M	*Fissidens osmundoides*		LC			LC			
M	*Fissidens polyphyllus*		VU	D2	Yes	LC	≥90%		
M	*Fissidens pusillus*		LC			LC			
M	*Fissidens rivularis*		NT (VU)		Yes	NT			No decline
M	*Fissidens rufulus*		EN	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv		LC	≥90%	FPO	
M	*Fissidens serrulatus*		VU	D2	Yes	LC	≥90%		
M	*Fissidens taxifolius*		LC			LC			
M	*Fissidens viridulus*		LC			LC			
M	*Flexitrichum flexicaule*	*Ditrichum flexicaule*	DD			LC			
M	*Flexitrichum gracile*	*Ditrichum gracile*	LC			LC			
M	*Fontinalis antipyretica* var. *antipyretica*		LC			LC			
M	*Fontinalis antipyretica* var. *gracilis*		NT			LC			
M	*Funaria hygrometrica*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Glyphomitrium daviesii*		LC		Yes	LC	Endemic		
M	*Grimmia anomala*		VU	D2		LC			
M	*Grimmia atrata*		EN	D	Yes	LC		FPO	
M	*Grimmia crinita*		RE			VU			
M	*Grimmia decipiens*		LC (NT)			LC			
M	*Grimmia dissimulata*		VU	D2		LC			
M	*Grimmia donniana*		NT			LC			
M	*Grimmia funalis*		LC (NT)			LC			No convincing decline; new records, including in the east
M	*Grimmia hartmanii*		NT (LC)			LC			Some evidence of decline: few recent records
M	*Grimmia laevigata*		RE			LC			
M	*Grimmia lisae*		LC		Yes	LC			
M	*Grimmia longirostris*		EN (RE)	B1a, bi, ii, iv, v, B2a, bi, ii, iv, v		LC			Refound at one old site, discovered new at another
M	*Grimmia muehlenbeckii*		NT (DD)			LC			Some new records, but hardly a flood
M	*Grimmia orbicularis*		VU	B2a, bii, iv		LC			
M	*Grimmia pulvinata*		LC			LC			
M	*Grimmia ramondii*		LC (NT)			LC			Many new records
M	*Grimmia torquata*		LC (NT)			LC			New records, no convincing decline, except the very old one in Wicklow
M	*Grimmia trichophylla*		LC			LC			
M	*Gymnostomum aeruginosum*		LC			LC			
M	*Gymnostomum calcareum*		LC			LC			
M	*Gymnostomum viridulum*		LC			LC			
M	*Gyroweisia tenuis*		LC			LC			
M	*Hageniella micans*		NT		Yes	NT			Not uncommon around Killarney, and certainly not declining there; many of the outlying sites probably have not been revisited
M	*Hamatocaulis vernicosus*		NT		Yes	VU		FPO; Bern App. 1; Hab. Dir. Annex 2	Retained as NT on basis that "Population has declined by an estimated 10% in the last three generations, and is continuing to decline, and has about 15,000 mature

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
									individuals". Some new sites, but lost from several old sites. Habitat generally under threat.
M	*Hedwigia stellata*		LC			LC			
M	*Hedwigia striata*		VU	D2		NT			
M	*Hennediella heimii*		LC			LC			
M	*Hennediella stanfordensis*		NA (NE)			NA			
M	*Heterocladium flaccidum*	*Heterocladium heteropterum* var. *flaccidum*	LC			LC	Endemic		
M	*Heterocladium heteropterum*	*Heterocladium heteropterum* var. *heteropterum*	LC			LC			
M	*Heterocladium wulfsbergii*		LC		Yes	LC	Endemic		
M	*Homalia trichomanoides*		LC			LC			
M	*Homalothecium lutescens*		LC			LC			
M	*Homalothecium sericeum*		LC			LC			
M	*Hookeria lucens*		LC			LC			
M	*Hygroamblystegium fluviatile*		LC (NT)			LC			No good reason for this to be anything other than LC
M	*Hygroamblystegium humile*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			
M	*Hygroamblystegium tenax*		LC			LC			
M	*Hygroamblystegium varium*		LC (NT)			LC			
M	*Hygrohypnella ochracea*	*Hygrohypnum ochraceum*	LC			LC			
M	*Hygrohypnum luridum*		LC			LC			
M	*Hylocomiadelphus triquetrus*	*Rhytidiadelphus triquetrus*	LC			LC			
M	*Hylocomiastrum umbratum*		LC (NT)			LC			
M	*Hylocomium splendens*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Hymenostylium recurvirostrum* var. *insigne*		NT		Yes	LC			
M	*Hymenostylium recurvirostrum* var. *recurvirostrum*		LC			LC			
M	*Hyocomium armoricum*		LC			LC			
M	*Hypnum andoi*		LC			LC			
M	*Hypnum cupressiforme* var. *cupressiforme*		LC			LC			
M	*Hypnum cupressiforme* var. *lacunosum*		LC			LC			
M	*Hypnum cupressiforme* var. *resupinatum*	*Hypnum resupinatum*	LC			LC			
M	*Hypnum jutlandicum*		LC			LC			
M	*Hypnum uncinulatum*		VU (NT)	D2	Yes	LC	Endemic	FPO	In Ireland but not in Britain
M	*Hypopterygium immigrans*		NA (NE)			NA			
M	*Isopterygiopsis muelleriana*		VU	D2		LC			
M	*Isopterygiopsis pulchella*		LC			LC			
M	*Isothecium alopecuroides*		LC			LC			
M	*Isothecium holtii*		LC			LC	≥90%		
M	*Isothecium interludens*	*Isothecium myosuroides* var. *brachythecioides*	LC		Yes	LC	Endemic		Common in western Ireland
M	*Isothecium myosuroides*		LC			LC			
M	*Kandaea elodes*	*Campyliadelphus elodes*	NT		Yes	NT			Retained as NT on basis that "Population has declined by an estimated 10% in the last three generations, and is continuing to decline, and has about 15,000 mature individuals". Some new sites, but lost from many old sites, and very little overlap. Habitat generally under threat.
M	*Kiaeria blyttii*		LC			LC			
M	*Kiaeria falcata*		CR	D		LC		FPO	
M	*Kindbergia praelonga*		LC			LC			
M	*Leptobarbula berica*		VU	D2	Yes	LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Leptobryum pyriforme*		LC			LC			
M	*Leptodontium flexifolium*		NT		Yes	NT			Few recent records: evidence of ongoing decline; is, however, ruderal, so downgraded to NT
M	*Leptotheca gaudichaudii* var. *gaudichaudii*		NA (NE)			NA			
M	*Leucobryum albidum*		DD			DD			Not in CC
M	*Leucobryum glaucum*		LC			LC		Hab. Dir. Annex 5	Undoubtedly LC, even though some records may prove to be one of the other spp.
M	*Leucobryum juniperoideum*		DD (LC)			LC			Only 3 confirmed in the light of *L. albidum* work
M	*Leucodon sciuroides*		LC			LC			Not declined: a rare long-lived colonist.
M	*Lewinskya affinis*	*Orthotrichum affine*	LC			LC			
M	*Lewinskya rupestris*	*Orthotrichum rupestre*	LC			LC			
M	*Lewinskya striata*	*Orthotrichum striatum*	LC			LC			
M	*Loeskeobryum brevirostre*		LC			LC			
M	*Meesia triquetra*		CR (RE)	B2a, biii, D	Yes	NT		FPO	In Ireland but not in Britain
M	*Meesia uliginosa*		EN	D		LC		FPO	
M	*Microbryum curvicollum*		RE			LC			
M	*Microbryum davallianum* var. *conicum*		DD			LC			
M	*Microbryum davallianum* var. *davallianum*		LC			LC			
M	*Microbryum rectum*		LC			LC			
M	*Microbryum starckeanum*		DD (RE)			LC			New record in Co. Clare; very rare and probably threatened on mine spoil habitat
M	*Microeurhynchium pumilum*	*Oxyrrhynchium pumilum*	LC			LC			
M	*Mnium hornum*		LC			LC			
M	*Mnium marginatum*		LC			LC			
M	*Mnium stellare*		LC			LC			
M	*Mnium thomsonii*		NT			LC			
M	*Molendoa warburgii*		VU	D2	Yes	LC	≥90%	FPO	
M	*Myurella julacea*		EN	B2a, bii, iv		LC		FPO; Priority NI	
M	*Myurium hochstetteri*		RE		Yes, if refound	LC	Endemic		

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Neckera complanata*	*Alleniella complanata*	LC			LC			
M	*Neckera crispa*	*Exsertotheca crispa*	LC			LC			
M	*Neckera smithii*	*Leptodon smithii*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv	Yes	LC		FPO (as *Leptodon smithii*)	
M	*Nogopterium gracile*	*Pterogonium gracile*	LC			LC			
M	*Oedipodium griffithianum*		VU (CR)	D2	Yes	NT		FPO	
M	*Oligotrichum hercynicum*		LC			LC			
M	*Orthodontium gracile*		CR	B2a, biii	Yes	CR		UKBAP; Priority NI	NI only
M	*Orthodontium lineare*		LC			NA			
M	*Orthothecium intricatum*		LC			LC			
M	*Orthothecium rufescens*		NT			LC			
M	*Orthotrichum anomalum*		LC			LC			
M	*Orthotrichum cupulatum*		LC			LC			
M	*Orthotrichum diaphanum*		LC			LC			
M	*Orthotrichum pallens*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			Potentially CR but downgraded because probably a sink population
M	*Orthotrichum pulchellum*		LC			LC			
M	*Orthotrichum rivulare*		LC (NT)			LC			Many new records, no decline
M	*Orthotrichum sprucei*		NT (VU)	B2a, biii	Yes	LC	≥90%	FPO; Priority NI	No evidence of decline
M	*Orthotrichum stramineum*		NT (VU)			LC			Seems to be spreading fast in Wicklow/Dublin
M	*Orthotrichum tenellum*		LC			LC			
M	*Oxyrrhynchium hians*		LC			LC			
M	*Oxyrrhynchium schleicheri*		DD (CR)			LC			Needs new survey to confirm extinction
M	*Oxyrrhynchium speciosum*		LC (NT)			LC			Many new records; no decline
M	*Paludella squarrosa*		CR	B2a, biii, D	Yes	LC		FPO	In Ireland but not in Britain
M	*Palustriella commutata*		LC			LC			
M	*Palustriella falcata*		LC			LC			
M	*Philonotis caespitosa*		NT			LC			
M	*Philonotis calcarea*		LC			NT			
M	*Philonotis capillaris*	*Philonotis arnellii*	EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Philonotis cernua*		CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv	Yes	CR			In Britain & Ireland but not in rest of Europe; CR maintained since individual colonies are impermanent and the 1987 one has almost certainly gone
M	*Philonotis fontana*		LC			LC			
M	*Philonotis rigida*		VU	B2a, bii, iv	Yes	VU		Priority NI	
M	*Philonotis tomentella*		VU	D2		LC			
M	*Physcomitrium patens*	*Aphanorrhegma patens*	LC			LC			
M	*Physcomitrium pyriforme*		LC			LC			
M	*Physcomitrium sphaericum*		VU	D2	Yes	VU		Priority NI	NI only
M	*Plagiomnium affine*		LC			LC			
M	*Plagiomnium cuspidatum*		LC (NT)			LC			Many new records; no decline
M	*Plagiomnium elatum*		LC			LC			
M	*Plagiomnium ellipticum*		LC			LC			
M	*Plagiomnium rostratum*		LC			LC			
M	*Plagiomnium undulatum*		LC			LC			
M	*Plagiopus oederianus*		CR	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			NI only (recently)
M	*Plagiothecium cavifolium*		VU	D2		LC			
M	*Plagiothecium curvifolium*		NT (VU)			LC			
M	*Plagiothecium denticulatum* var. *denticulatum*		LC			LC			
M	*Plagiothecium denticulatum* var. *obtusifolium*		NT			LC			
M	*Plagiothecium laetum*		VU	D2		LC			
M	*Plagiothecium latebricola*		VU	D2		LC			
M	*Plagiothecium nemorale*		LC			LC			
M	*Plagiothecium platyphyllum*		VU	D2		LC			
M	*Plagiothecium succulentum*		LC			LC			
M	*Plagiothecium undulatum*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Plasteurhynchium striatulum*		LC (NT)			LC			
M	*Platydictya jungermannioides*		NT			LC			
M	*Platyhypnum duriusculum*	*Hygrohypnum duriusculum*	EN (CR)	B2a, bi, ii, iii, iv		LC		FPO (as *Hygrohypnum duriusculum*)	New locations, but disappeared from two old sites
M	*Plenogemma phyllantha*	*Ulota phyllantha*	LC			LC			
M	*Pleuridium acuminatum*		LC			LC			
M	*Pleuridium subulatum*		LC			LC			
M	*Pleurozium schreberi*		LC			LC			
M	*Pogonatum aloides*		LC			LC			
M	*Pogonatum nanum*		EN	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			
M	*Pogonatum urnigerum*		LC			LC			
M	*Pohlia andalusica*		EN	B1a, biii, B2a, biii		LC		FPO	
M	*Pohlia annotina*		LC			LC			
M	*Pohlia bulbifera*		LC			LC			
M	*Pohlia camptotrachela*		LC			LC			
M	*Pohlia cruda*		LC			LC			
M	*Pohlia drummondii*		LC			LC			
M	*Pohlia elongata* var. *elongata*		LC (NT)			LC			No real decline
M	*Pohlia elongata* var. *greenii*		CR (EN)	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			
M	*Pohlia filum*		VU	A3c, D1		LC		Priority NI	
M	*Pohlia flexuosa*		LC			LC			
M	*Pohlia lescuriana*		VU (DD)	D2		LC			Still overlooked, but equally must be very rare
M	*Pohlia lutescens*		LC			LC			
M	*Pohlia melanodon*		LC			LC			
M	*Pohlia nutans*		LC			LC			
M	*Pohlia proligera*		RE			LC			
M	*Pohlia wahlenbergii* var. *calcarea*		DD			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Pohlia wahlenbergii* var. *glacialis*		DD (RE)			LC			New site. Threatened by climate change? Still perhaps taxonomically dubious?
M	*Pohlia wahlenbergii* var. *wahlenbergii*		LC			LC			
M	*Polytrichastrum alpinum*		LC			LC			
M	*Polytrichum commune*	*Polytrichum commune* var. *commune*	LC			LC			
M	*Polytrichum formosum*	*Polytrichastrum formosum*	LC			LC			
M	*Polytrichum juniperinum*		LC			LC			
M	*Polytrichum longisetum*	*Polytrichastrum longisetum*	LC			LC			
M	*Polytrichum perigoniale*	*Polytrichum commune* var. *perigoniale*	DD			LC			
M	*Polytrichum piliferum*		LC			LC			
M	*Polytrichum strictum*		LC			LC			
M	*Pseudephemerum nitidum*		LC			LC			
M	*Pseudocrossidium hornschuchianum*		LC			LC			
M	*Pseudocrossidium revolutum*		LC			LC			
M	*Pseudohygrohypnum eugyrium*	*Hygrohypnum eugyrium*	LC			LC			
M	*Pseudoscleropodium purum*		LC			LC			
M	*Pseudotaxiphyllum elegans*		LC			LC			
M	*Pterigynandrum filiforme*		RE			LC			
M	*Pterygoneurum lamellatum*		RE		Yes, if refound	LC			
M	*Pterygoneurum ovatum*		RE			LC			
M	*Ptilium crista-castrensis*		CR	B2a, biii, D		LC		FPO	Site revisited on numerous occasions without success, but it is a big area. Keep as CR until next Red List revision.
M	*Ptychophyllum polyphyllum*		LC			LC	Endemic		
M	*Pulvigera lyellii*	*Orthotrichum lyellii*	LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Racomitrium aciculare*		LC			LC			
M	*Racomitrium affine*		LC			LC			
M	*Racomitrium aquaticum*		LC			LC			
M	*Racomitrium canescens*		VU	D2		LC		Priority NI	
M	*Racomitrium ellipticum*		LC			LC			
M	*Racomitrium elongatum*		VU	D2		LC			
M	*Racomitrium ericoides*		LC			LC			
M	*Racomitrium fasciculare*		LC			LC			
M	*Racomitrium heterostichum*		LC			LC			
M	*Racomitrium lanuginosum*		LC			LC			
M	*Racomitrium macounii* subsp. *alpinum*		VU	D2		LC			
M	*Racomitrium obtusum*		LC			LC	Endemic		Still no complete picture but certain this is LC
M	*Racomitrium sudeticum*		LC			LC			
M	*Rhabdoweisia crenulata*		LC			LC			
M	*Rhabdoweisia crispata*		LC (NT)			LC			Still sparse in north, but many new records
M	*Rhabdoweisia fugax*		EN (VU)	B1a, bi, ii, iv, B2a, bi, ii, iv		LC		Priority NI	Not sure why this was VU in 2012
M	*Rhizomnium pseudopunctatum*		NT			LC			Retained as NT on basis that "Population has declined by an estimated 10% in the last three generations, and is continuing to decline, and has about 15,000 mature individuals". Some new sites, but lost from several old sites. Habitat generally under threat.
M	*Rhizomnium punctatum*		LC			LC			
M	*Rhodobryum roseum*		NT			LC			Still seems to have declined overall
M	*Rhynchostegiella curviseta*		RE			LC			NI only
M	*Rhynchostegiella tenella*		LC			LC			
M	*Rhynchostegiella teneriffae*		LC			LC			
M	*Rhynchostegium alopecuroides*	*Platyhypnidium lusitanicum*	LC (NT)		Yes	LC	Endemic		

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Rhynchostegium confertum*		LC			LC			
M	*Rhynchostegium megapolitanum*		NT			LC			
M	*Rhynchostegium murale*		LC			LC			
M	*Rhynchostegium riparioides*	*Platyhypnidium riparioides*	LC			LC			
M	*Rhytidiadelphus loreus*		LC			LC			
M	*Rhytidiadelphus squarrosus*		LC			LC			
M	*Rhytidiadelphus subpinnatus*		RE			LC			
M	*Rhytidium rugosum*		VU	D2		LC		Priority NI	NI only
M	*Sanionia uncinata*		LC			LC			
M	*Sarmentypnum exannulatum*		LC			LC			
M	*Sarmentypnum sarmentosum*		LC			LC			
M	*Schistidium agassizii*		VU	D2		LC			
M	*Schistidium apocarpum*		LC			LC			
M	*Schistidium confertum*		DD			LC			
M	*Schistidium crassipilum*		LC			LC			
M	*Schistidium elegantulum*		LC (DD)			LC			
M	*Schistidium maritimum*		LC			LC			
M	*Schistidium platyphyllum*		VU	B2a, bii, iii, iv		LC		Priority NI	
M	*Schistidium pruinosum*		VU (DD)	D2	Yes	LC	≥90%		NI only; Only one new population, in same area as others; clearly genuinely rare, but probably not declined
M	*Schistidium rivulare*		LC			LC			
M	*Schistidium robustum*		VU (DD)	D2		LC			No new records; very rare, but not declined
M	*Schistidium strictum*		LC (NT)			LC			
M	*Schistidium trichodon*		VU	D2	Yes	LC		Priority NI	
M	*Sciuro-hypnum plumosum*		LC			LC			
M	*Sciuro-hypnum populeum*		LC			LC			
M	*Scleropodium cespitans*		LC (NT)			LC			Many new records

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Scleropodium touretii*		EN	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv	Yes	LC		FPO	
M	*Scopelophila cataractae*		VU	D2		EN			
M	*Scorpidium cossonii*		LC			LC			
M	*Scorpidium revolvens*		LC			LC			
M	*Scorpidium scorpioides*		LC			NT			
M	*Scorpiurium circinatum*		LC			LC			
M	*Seligeria acutifolia*		LC			LC			
M	*Seligeria calcarea*		VU	B2a, bii, iv		LC		Priority NI	NI only
M	*Seligeria calycina*		RE		Yes, if refound	LC	≥90%		
M	*Seligeria donniana*		LC			LC			
M	*Seligeria oelandica*		VU	D1	Yes	NT		UKBAP; Priority NI	
M	*Seligeria patula*		NT		Yes	LC	≥90%		All *S. trifaria s.l.* records are almost certainly *S. patula*
M	*Seligeria pusilla*		LC			LC			
M	*Sematophyllum demissum*		NT		Yes	LC			
M	*Sematophyllum substrumulosum*		NT (DD)		Yes	LC			At least 10 localities, no decline.
M	*Serpoleskea confervoides*	*Amblystegium confervoides*	VU (NT)	D2		LC			No new records: may be some decline too
M	*Sphagnum affine*		VU	D2		LC		Hab. Dir. Annex 5	
M	*Sphagnum angustifolium*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum auriculatum*	*Sphagnum denticulatum*	LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum austinii*		LC			NT		Hab. Dir. Annex 5	
M	*Sphagnum beothuk*	*Sphagnum fuscum* p.p.	LC			LC		Hab. Dir. Annex 5	Most Irish '*S. fuscum*' is *S. beothuk*
M	*Sphagnum capillifolium*	*Sphagnum capillifolium* subsp. *capillifolium*	LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum compactum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum contortum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum cuspidatum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum divinum*	*Sphagnum magellanicum* p.p.	DD			LC		Hab. Dir. Annex 5	Could be LC, NT or VU
M	*Sphagnum fallax*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum fimbriatum*		LC			LC		Hab. Dir. Annex 5	

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Sphagnum flexuosum*		NT (VU)			LC		Hab. Dir. Annex 5	Scattered and apparently rare, but probably under-recorded, and ultimately expected to be LC
M	*Sphagnum fuscum* s.s.		VU (LC)	D2		LC		Hab. Dir. Annex 5	May even be EN if considered to have declined, but that is unknown
M	*Sphagnum girgensohnii*		LC (NT)			LC		Hab. Dir. Annex 5	New records, no real decline; somewhat scarce and spasely distributed but not threatened
M	*Sphagnum inundatum*		LC			LC	≥90%	Hab. Dir. Annex 5	
M	*Sphagnum majus*		CR	D		LC		Hab. Dir. Annex 5	Single site; rare and threatened; who knows if declined?
M	*Sphagnum medium*	*Sphagnum magellanicum* p.p.	LC			LC		Hab. Dir. Annex 5	Most records of '*S. magellanicum*' are referable to this species
M	*Sphagnum molle*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum palustre*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum papillosum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum platyphyllum*		NT			LC		Hab. Dir. Annex 5	Retained as NT on basis that "Population has declined by an estimated 10% in the last three generations, and is continuing to decline, and has about 15,000 mature individuals". Nearly all new records, but this is because the species wasn't widely recognised until relatively recently. Habitat generally under threat.
M	*Sphagnum pulchrum*		LC			LC		Hab. Dir. Annex 5	Still some good populations
M	*Sphagnum quinquefarium*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum rubellum*	*Sphagnum capillifolium* subsp. *rubellum*	LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum russowii*		LC (NT)			LC		Hab. Dir. Annex 5	Many new localities, but perhaps lost from many old ones - not much overlap. No real decline though.
M	*Sphagnum skyense*		LC (DD)		Yes	LC	Endemic	Hab. Dir. Annex 5	Not declined, not threatened, probably still under-recorded
M	*Sphagnum squarrosum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum strictum*		VU (DD)	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv	Yes	LC		Hab. Dir. Annex 5	Very few recent records; possibly declined owing to moorland mismanagement?

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Sphagnum subnitens* var. *ferrugineum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum subnitens* var. *subnitens*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum subsecundum*		NT			LC		Hab. Dir. Annex 5	
M	*Sphagnum tenellum*		LC			LC		Hab. Dir. Annex 5	
M	*Sphagnum teres*		LC (NT)			LC		Hab. Dir. Annex 5	More abundant than some other fen species, and perhaps less habitat-specific; not declined
M	*Sphagnum warnstorfii*		NT (VU)			LC		Hab. Dir. Annex 5	Little evidence of decline; NT on basis that "Population has declined by an estimated 10% in the last three generations, and is continuing to decline, and has about 15,000 mature individuals". Habitat generally under threat.
M	*Splachnum ampullaceum*		LC			NT			Probably still LC, but definitely some range contraction historically: monitor.
M	*Splachnum sphaericum*		LC			LC			Probably still LC, but definitely some range contraction historically: monitor.
M	*Stereodon callichrous*	*Hypnum callichroum*	NT			LC			Really has declined, apparently completely disappeared - or has been overlooked - from NW Ireland since the 1960s
M	*Stereodon hamulosus*	*Hypnum hamulosum*	VU	D2		LC			Very rare, single site; not known if it has declined
M	*Straminergon stramineum*		LC			LC			
M	*Streblotrtichum convolutum* var. *commutatum*	*Barbula convoluta* var. *sardoa*	LC			LC			
M	*Streblotrtichum convolutum* var. *convolutum*	*Barbula convoluta* var. *convoluta*	LC			LC			
M	*Syntrichia laevipila*		LC			LC			
M	*Syntrichia latifolia*		LC			LC			
M	*Syntrichia montana*		LC			LC			
M	*Syntrichia papillosa*		LC			LC			
M	*Syntrichia princeps*		EN (RE)	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			NI only, recently; Refound at Binevenagh, several stands

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Syntrichia ruraliformis*	*Syntrichia ruralis* var. *ruraliformis*	LC			LC			
M	*Syntrichia ruralis*	*Syntrichia ruralis* var. *ruralis*	LC			LC			
M	*Syntrichia virescens*		DD			LC			No further records; could still be overlooked; probably a sink population
M	*Taxiphyllum wissgrillii*		LC			LC			
M	*Tayloria tenuis*		RE			VU	≥90%	UKBAP	NI only
M	*Tetraphis pellucida*		LC			LC			
M	*Tetraplodon angustatus*		DD			LC			No further records; could still be overlooked; probably a sink population
M	*Tetraplodon mnioides*		LC			LC			
M	*Tetrodontium brownianum*		NT			LC			
M	*Thamnobryum alopecurum*		LC			LC			
M	*Thuidium assimile*		LC			LC			
M	*Thuidium delicatulum*		LC			LC			
M	*Thuidium recognitum*		VU	B2a, bii, iv		LC		Priority NI	But probably needs revision, as this and T. assimile have often been confused
M	*Thuidium tamariscinum*		LC			LC			
M	*Timmia norvegica*		VU	D1		LC			May also have declined: seems to be less decade on decade at Annacoona East site
M	*Tomentypnum nitens*		VU	A3c		NT			
M	*Tortella densa*		DD (NT)			LC			Apparently still no decline, and some new records; however, the recent revision of the *T. tortuosa* group (Köckinger & Hedenäs, 2023) means that it must be regarded as DD for the present
M	*Tortella fasciculata*	*Tortella bambergeri* p.p.	LC			LC	Endemic		Recorded as *T. bambergeri* in the 2012 list; following a taxonomic revision, *T. bambergeri* in Europe was split into two species, *T. fasciculata* and *T. pseudofragilis,* of which only the former has been found in Ireland
M	*Tortella flavovirens*		LC			LC			
M	*Tortella inclinata*		EN	B2a, bii, iv		LC		FPO; Priority NI	

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Tortella nitida*		LC			LC			
M	*Tortella squarrosa*	*Pleurochaete squarrosa*	NT			LC			
M	*Tortella tortuosa* s.l.		LC			LC			Now split into several species (Köckinger & Hedenäs, 2023), but too early to assess the segregates in Ireland
M	*Tortula acaulon* var. *acaulon*	*Phascum cuspidatum* var. *cuspidatum*	LC			LC			
M	*Tortula acaulon* var. *papillosa*	*Phascum cuspidatum* var. *papillosum*	DD			LC			NI only
M	*Tortula acaulon* var. *pilifera*	*Phascum cuspidatum* var. *piliferum*	DD			LC			
M	*Tortula atrovirens*		NT			LC			
M	*Tortula canescens*		VU (DD)	D2	Yes	LC			No new records; certainly rare
M	*Tortula caucasica*	*Tortula modica*	NT			LC			Keep as NT on basis of decline? Seems to have disappeared from NI
M	*Tortula cuneifolia*		RE (CR)		Yes	LC		UKBAP	CR cannot now be maintained after nearly 60 years
M	*Tortula lindbergii*	*Tortula lanceola*	CR	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv		LC			Last record 1978 but retain as CR until next Red List revision
M	*Tortula marginata*		NT		Yes	LC			
M	*Tortula muralis*		LC			LC			
M	*Tortula protobryoides*		RE			LC			NI only
M	*Tortula subulata*		LC			LC			
M	*Tortula truncata*		LC			LC			
M	*Tortula vahliana*		RE			LC			
M	*Tortula viridifolia*		LC			LC			
M	*Tortula wilsonii*		CR (RE)	B1a, bi, ii, iii, iv, B2a, bi, ii, iii, iv		LC			New record from Howth
M	*Trichodon cylindricus*		LC			LC			
M	*Trichostomum brachydontium* s.s.		LC			LC			Now split into several species (Ros *et al.*, 2022), three of which occur in Ireland; commonest appears to be *T. brachydontium s.s.*, which is clearly widespread and LC, although we do not yet have the full picture.
M	*Trichostomum crispulum*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Trichostomum herzogii*		DD			NE			Not in CC. Recent segregate of *T. brachydontium*, probably the rarest of the three, but too early to assign a threat category
M	*Trichostomum littorale*		DD			NE			Not in CC. Recent segregate of *T. brachydontium*, and probably will prove to be LC, but too early to be sure
M	*Ulota bruchii*		LC			LC	Endemic		
M	*Ulota calvescens*		LC			LC	Endemic		
M	*Ulota coarctata*		CR	D	Yes	LC		FPO	
M	*Ulota crispa* s.s.		LC			LC			Only recently recognised as separate from related species, and bound to be further records; no decline
M	*Ulota crispula*		DD			LC			Could be anything from LC to EN
M	*Ulota drummondii*		CR	B1a, bi, ii, iv, B2a, bi, ii, iv		LC			Refound near one of its old localities, but no new records elsewhere
M	*Ulota hutchinisiae*		LC			LC			
M	*Ulota intermedia*		DD			LC			Could be anything from LC to EN
M	*Warnstorfia fluitans*		LC			LC			
M	*Weissia angustifolia*		EN (VU)	B1a, bii, iv, B2a, bii, iv		LC			No new populations discovered in last 12 years
M	*Weissia brachycarpa* var. *brachycarpa*		DD			LC			
M	*Weissia brachycarpa* var. *obliqua*		LC			LC			
M	*Weissia condensa*		DD			LC			
M	*Weissia controversa* var. *controversa*		LC			LC			
M	*Weissia controversa* var. *crispata*		LC (DD)			LC			Many new records
M	*Weissia controversa* var. *densifolia*		LC			LC			
M	*Weissia perssonii*		LC		Yes	LC	Endemic		
M	*Weissia rostellata*		NT		Yes	NT	Endemic		
M	*Weissia rutilans*		VU	B2a, bii, iv		LC		Priority NI	
M	*Zygodon conoideus*		LC			LC			
M	*Zygodon rupestris*		LC			LC			

Group	Taxon name	Synonym(s)	Threat Category (IRL)	Criteria	Special Responsibility	Threat Category (Europe)	European endemism	Current Protection Status	Notes
M	*Zygodon stirtonii*	*Zygodon viridissimus* var. *stirtonii*	LC			LC			
M	*Zygodon viridissimus*	*Zygodon viridissimus* var. *viridissimus*	LC			LC			

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APPENDIX 1: SUMMARY OF THE CRITERIA USED TO EVALUATE TAXA (IUCN Red List of Threatened Species)

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).[1]

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation *[except A3]*
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented **OR** Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals			
(c) Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals			

C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	**D1.** < 1,000
D2. *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	**D2.** typically: AOO < 20 km² or number of locations ≤ 5

E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.