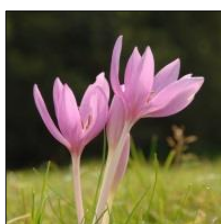
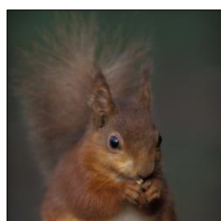


Natural Heritage Areas (NHAs) for Bryophytes: Selection Criteria

Christina Campbell and Neil Lockhart



An Roinn
Cultúir, Oidhreachta agus Gaeltachta
Department of
Culture, Heritage and the Gaeltacht



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Christina Campbell & Neil Lockhart

National Parks and Wildlife Service, 7 Ely Place, Dublin, D02 TW98

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The NPWS Project Officer for this report was: Dr Neil Lockhart; Neil.Lockhart@chg.gov.ie

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Executive Summary

This report aims to identify biological Natural Heritage Areas (NHAs) that could potentially be designated for bryophytes (mosses and liverworts) under the NHA selection Theme: Plants/Fungi, using selection criteria based on threat status and legal protection. An NHA is an area worthy of conservation that is legally protected under national legislation, i.e. the Wildlife (Amendment) Act, 2000.

Candidate NHAs that contain bryophyte taxa recorded in the Republic of Ireland (1970–2013) that are protected on Annex II of the EU Habitats Directive, and/or are listed on the Flora (Protection) Order, 2015 and/or that have a threat status of *Critically Endangered*, *Endangered*, *Vulnerable*, *Near Threatened* or *Data Deficient* were considered and selection criteria applied.

It is proposed that a candidate site could be designated as an NHA for the Theme: Plants/Fungi if it meets any, or any combination, of the following selection criteria: (1) the site contains at least one bryophyte taxon listed on Annex II of the EU Habitats Directive; (2) it contains at least one bryophyte taxon listed on the Flora (Protection) Order, 2015; (3) it contains at least one bryophyte taxon listed as *Critically Endangered* or *Endangered* on the Red Data List for Ireland; (4) it contains at least three bryophyte taxa listed as *Vulnerable*; (5) it contains at least five bryophyte taxa listed as *Near Threatened* and/or *Data Deficient*; and/or (6) it occurs within an Important Bryophyte Area (IBrA). Sites selected using these criteria were then subject to a review using best expert judgement and either kept or removed.

Using the selection criteria and following the expert review, 106 sites with existing mapped site boundaries could be put forward for NHA designation on the basis of bryophyte taxa present. A further 18 non-delineated areas were identified as qualifying for NHA designation based on the selection criteria, nine of which are situated in the vicinity of cNHAs already known to support other conservation interests, but whose site boundaries have not yet been mapped. Recommendations are also put forward to extend the boundaries of a further 12 mapped sites to include clusters of taxa that could benefit from inclusion.

Acknowledgements

We wish to thank Nick Hodgetts and David Holyoak, who undertook detailed surveys of bryophytes in Ireland from 1999–2009, and colleagues at the National Parks and Wildlife Service for their assistance with publishing this report.

1 Introduction

Following the publication of the bryophyte Red List for Ireland in *Rare and Threatened Bryophytes of Ireland* (Lockhart, Hodgetts and Holyoak, 2012) and the signing into law of the revised Schedule for bryophytes in the Flora (Protection) Order, 2015 (FPO; Statutory Instrument No. 356 of 2015), sufficient information on Ireland's bryoflora is now available to select biological Natural Heritage Areas on the basis of bryophyte species present within them.

A Natural Heritage Area (NHA) is defined under the Wildlife (Amendment) Act, 2000 as "an area which is worthy of conservation for one or more species, communities, habitats, landforms or geological or geomorphological features, or for its diversity of natural attributes". For over 40 years the National Parks and Wildlife Service (NPWS) has been surveying and assessing the ecological importance of natural and semi-natural habitats and species in Ireland, with the aim of protecting the most important sites. The internationally important sites have largely been identified as part of the Natura 2000 network. These sites are listed as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and have been selected using the Natura 2000 assessment criteria (European Commission, 2011). The SACs represent the best examples in Ireland of sites containing a significant presence of Annex I habitats and Annex II species, as listed in the EU Habitats Directive (Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). The SPA network protects the Annex I Bird Species listed in the EU Birds Directive (Directive 2009/147/EC on the conservation of wild birds).

The remaining sites of national, regional or local importance have been listed by NPWS as 'candidate Natural Heritage Areas' (cNHAs). A cNHA is defined here as any site that has been identified by NPWS as potentially of interest for nature conservation. The list of sites includes a suite of proposed NHAs (pNHAs) that were advertised by NPWS in 1995, as well as additional sites that have been identified since 1995 through NPWS surveys, County Council surveys, NGO recommendations, Environmental Impact Assessments (EIAs) and private appeals for NHA designation. The majority of these sites have had their boundaries mapped, but a proportion of them have not yet been delineated. All SACs and SPAs have also been assigned cNHA coverage and site codes because these sites may need consideration for NHA designation for the protection of features not covered by the EU Habitats or Bird Directives.

A possible scheme for designating NHAs is under broadly defined 'NHA Themes'. There are eight NHA habitat themes which mostly correspond to Level 1 of the Heritage Council habitat classification system (Fossitt, 2000):

1. Freshwater
2. Grassland and Marsh
3. Heath and Dense Bracken
4. Peatlands
5. Woodland and Scrub
6. Exposed Rock and Disturbed Ground
7. Coastland
8. Marine

There are also six NHA species themes which correspond to the main species categories of the Natura 2000 assessment form (European Commission, 2011):

1. Invertebrates
2. Fish
3. Amphibians/Reptiles
4. Birds
5. Mammals
6. Plants/Fungi

The aim of this report is to identify and apply a set of selection criteria that could be used to assess sites that might be suitable for designation as biological NHAs under species Theme 6, i.e. Plants/Fungi, based on the presence of bryophytes of conservation concern. It does not consider habitats that might be of importance for bryophytes *per se*, but rather confines itself to the presence of species, their risk of extinction and their legal protection status.

There are thought to be *ca* 838 bryophyte taxa (species, subspecies and varieties) in Ireland (Republic of Ireland and Northern Ireland). The majority are considered to be native (a possible *ca* 13 species are alien), common or widespread and not of particular conservation concern. The bryophyte Red List in *Rare and Threatened Bryophytes of Ireland* (Lockhart *et al.*, 2012) identifies the threat status of taxa thought to be of conservation concern in Ireland. Threat status is assigned to each taxon using International Union for Conservation of Nature (IUCN) assessment criteria, based on distribution, population sizes and evidence of decline. Threat status can be used as a means to identify taxa most at risk of extinction, many of which could benefit from protection through designation of the sites that contain them. In this report, threat status abbreviations follow current IUCN categories (IUCN, 2012):

- RE – Regionally Extinct
- CR – Critically Endangered
- EN – Endangered
- VU – Vulnerable
- NT – Near Threatened
- DD – Data Deficient
- LC – Least Concern

Nomenclature and taxonomy of bryophytes follow Hill *et al.* (2008).

2 Methodology

2.1 Preparation of records

In order to select a list of sites that could be considered as NHAs on the basis of bryophytes of conservation concern, it was first necessary to create and define a list of the rare and/or threatened taxa and compile all their known records in the Republic of Ireland (RoI). The data source that underpinned *Rare and Threatened Bryophytes of Ireland* (Lockhart *et al.*, 2012) was used as a starting point. This was an Excel spreadsheet of records for rare and threatened bryophytes in Ireland, which had been updated to include records up to the end of 2013. Records from fieldwork in 2014, 2015 and 2016, particularly from surveys of populations of FPO species, have not been incorporated. This dataset, hereafter referred to as 'IRL' (Irish Red List dataset), was used as the main source of records for the purposes of selecting potential NHAs for bryophytes. Extra columns were added to the IRL spreadsheet to contain the threat status, presence on the Flora (Protection) Order, 2015, and also whether the taxa were listed as Nationally Rare or Nationally Scarce (Hodgetts & Lockhart, 2013). Additional records were sourced from several other datasets: NPWS Recorder dataset for bryophytes (*ca* 150 new records and *ca* 340 records similar to existing records on IRL), Neil Lockhart's dataset of records for NT species given only a short account (see below) in *Rare and Threatened Bryophytes of Ireland* (*ca* 1,270 additional records), the National Biodiversity Data Centre (NBDC) bryophyte records dataset (5 additional records) and the UK Biological Records Centre (BRC) dataset for the *Atlas of British and Irish Bryophytes* (Blockeel *et al.*, 2014), the latter containing all bryophyte records for Ireland up to the end of 2013 (*ca* 1,070 additional records).

Columns listing the 'protected' sites, i.e. sites with delineated boundaries, within which particular records fell, were also included on the IRL spreadsheet. The term 'protected' is used loosely here for both designated and undesignated sites, including SAC, SPA, NHA, pNHA, National Park or Nature Reserve. These data were originally derived by Nick Hodgetts, in preparation for listing 'protected' areas in Appendix III of *Rare and Threatened Bryophytes of Ireland* (Lockhart *et al.*, 2012), using a map browser application developed by the GIS Unit of NPWS. Red-listed bryophyte records (pre-2010) were overlaid with GIS shapefiles to determine whether they were positioned within a 'protected' area or fell outside. Two further columns were added to IRL to record the site codes and site names of the cNHAs which corresponded to SACs and SPAs.

In *Rare and Threatened Bryophytes of Ireland* (Lockhart *et al.*, 2012), full accounts are given for 251 taxa and all known locations of these taxa are listed in the text. Each full account taxon was examined and post-1970 records listed in IRL were compared with those listed under the full account in Lockhart *et al.* (2012). Each full account in Lockhart *et al.* (2012) also lists "Protected sites with recent records" and "Unprotected sites with recent records"; these were also compared with those listed on IRL. Short accounts are given for a further 146 taxa in Lockhart *et al.* (2012), where only the number of hectads containing the particular taxon is stated. Comparisons were made with the number of hectads present in the datasets with that stated in Lockhart *et al.* (2012). Sites listed for those taxa in Appendix III of the *Rare and Threatened Bryophytes of Ireland* (Lockhart *et al.*, 2012) and also those listed under Important Bryophyte Areas (IBrAs) were also compared. Any discrepancies were noted and investigated for clarification.

Any short account taxon records that had not been checked for occurrence within or outside a 'protected' area in *Rare and Threatened Bryophytes of Ireland* (*ca* 1,200 records) were examined by locating their GPS co-ordinates on the NPWS GeoBrowser and on ArcGIS, noting if they fell within an SAC, SPA, NHA, pNHA, National Park or Nature Reserve boundary. The short account taxa on Neil Lockhart's spreadsheet were then added to IRL. Any additional records added to IRL from the BRC Atlas dataset, the NBDC dataset and the Recorder dataset were also checked for occurrence within or outside a 'protected' area.

The 'protected site' columns on IRL were populated with the appropriate site details (site code number and site names, if applicable) if a record definitely fell within an identified 'protected' area. A site code number appended with '_indet' (for indeterminate) was entered when it was unclear if a record was in or out of a 'protected' area (perhaps due to an inexact grid reference). 'Not protected' was entered if the record indisputably fell outside a 'protected' area.

2.2 Choosing candidate NHAs for potential designation based on bryophyte taxa present

Once all records were compiled, and their location cross-referenced with 'protected' site boundaries, a protocol for selecting NHAs, based on the bryophyte taxa within them, could commence. Many populations of threatened bryophytes are well known to occur within existing delineated boundaries of sites identified for other features of conservation interest. However, it was also hoped that the selection process would help identify clusters of populations that fell outside the currently mapped site-network, and help define previously unknown areas for possible protection. Designating NHAs for threatened bryophyte taxa would lend legal protection to the species and their habitats, and increase their chances of survival. Those taxa that have been assessed as CR, EN or VU are clearly in danger of disappearing and the sites containing them would be candidates for legal protection. NT and DD taxa, i.e. taxa that are close to or likely to qualify for a threatened category in the future, were also considered. Some taxa that were thought extinct (RE) in Ireland have recently been rediscovered, and their sites too were considered. Taxa already protected by taxon-specific legislation, such as the EU Habitats Directive and the Irish Flora (Protection) Order, 2015, were also included in the selection process.

There are *ca* 320 CR, EN, VU, NT, DD and recently rediscovered RE bryophyte taxa in Ireland. Two species are listed on Annex II of the EU Habitats Directive and 65 taxa are listed on the Flora (Protection) Order, 2015, most of which are also Red-listed. In the first instance, sites with existing mapped boundaries (SACs and SPAs [and their cNHA equivalents], NHAs and pNHAs) were identified that contained:

- Taxa recorded in the Republic of Ireland (1970–2013) that are listed on European legislation, i.e. Annex II of the EU Habitats Directive
- Taxa recorded in the Republic of Ireland (1970–2013) listed on the Flora (Protection) Order, 2015
- Taxa recorded in the Republic of Ireland (1970–2013) with a status of CR, EN, VU, NT or DD
- Taxa with a status of RE in Lockhart *et al.* (2012) but recently re-found or recorded new to the flora in the Republic of Ireland in 2011–2013

A total of 283 taxa, with 2,259 populations and *ca* 4,850 records in the Republic of Ireland, were compliant with the above stipulations.

There are 194 'candidate' NHA sites in the Republic of Ireland that contain at least one Annex II, FPO, CR, EN, VU, NT, DD or previously RE taxon with a 1970–2013 record. This list of 'candidate' NHAs is given in Appendix I. However, as not all these sites might be worthy of potential NHA designation for bryophytes, a suite of selection criteria was then chosen and applied to the candidate list.

2.3 NHA selection criteria

From review of the selection process used to determine Important Bryophyte Areas (Lockhart *et al.*, 2012), the selection process used to determine Flora (Protection) Order, 2015 species (Hodgetts *et al.*

2015) and that used to determine biological SSSIs for non-vascular plants in the United Kingdom (Hodgetts, 1992), the following selection criteria for potential NHA designation were chosen:

An NHA could be selected for bryophytes if the site meets any, or any combination, of the following selection criteria:

Criterion 1: Contains at least 1 taxon listed on European legislation, i.e. Annex II of the EU Habitats Directive

Criterion 2: Contains at least 1 taxon listed on the Flora (Protection) Order, 2015

Criterion 3: Contains at least 1 *Critically Endangered* or *Endangered* taxon

Criterion 4: Contains at least 3 *Vulnerable* taxa

Criterion 5: Contains at least 5 *Near Threatened* and/or *Data Deficient* taxa

Criterion 6: Is contained partly or wholly within an Important Bryophyte Area (IBrA)

All sites which qualified by the above process were then subject to an expert review stage:

Expert review: cNHA re-evaluated, i.e. kept, removed or added to the list based on best expert judgement

Each criterion is discussed below.

Criterion 1: Contains at least 1 taxon listed on European legislation, i.e. Annex II of the EU Habitats Directive

Bryophyte species of conservation concern were first listed for legal protection on the Bern Convention of 1979. This led to their inclusion on Annex II of the EU Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; European Commission, 1992). There are 30 bryophyte species listed on Annex II of the EU Habitats Directive (European Commission, 1992). Two of these species occur in Ireland: the liverwort *Petalophyllum ralfsii* and the moss *Hamatocaulis vernicosus* (NPWS, 2013). *P. ralfsii* is given a regional threat status of *Least Concern* (LC) and *H. vernicosus* is assigned a regional threat status of *Near Threatened* (NT), so while these species are not under particular threat in Ireland, there is an international obligation to conserve them.

Criterion 2: Contains at least 1 taxon listed on the Flora (Protection) Order, 2015

The Flora (Protection) Order, 2015 is a revision of the FPO of 1999. This national legislation affords protection to 65 bryophyte taxa (25 liverworts and 40 mosses). Under the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000, it is not allowed, other than with a licence granted by the Minister for Culture, Heritage and the Gaeltacht, to “cut, pick, collect, uproot or otherwise take, injure, damage, or destroy any specimen” of these species; to “purchase, sell, keep for sale, transport for sale or exchange, offer for sale or exchange or be in possession of any such specimen whether alive or dead or the flowers, roots, seeds, spores or any part, product or derivative thereof”; or to “wilfully alter, damage, destroy or interfere with the habitat or environment” of any of the species. The bryophyte taxa listed on the FPO, 2015 were chosen using criteria based on legal status, threat status, population numbers, date last seen and expert judgement (Hodgetts *et al.*, 2015).

Criterion 3: Contains at least 1 *Critically Endangered* or *Endangered* taxon

If a taxon is given the regional threat status of *Critically Endangered*, then it is facing an extremely high risk of regional extinction in the wild in the immediate future. If given a regional threat status of

Endangered, the taxon is facing a very high risk of regional extinction in the wild in the near future (Lockhart *et al.*, 2012). Therefore, protecting sites containing any one of these taxa through NHA designation should be a priority. Since the publication of the *Rare and Threatened Bryophytes of Ireland* in 2012, three taxa thought to be *Regionally Extinct* have been re-found in the Republic of Ireland, thereby changing their likely regional threat status to CR. These taxa are: *Bartramia halleriana*, *Entosthodon muhlenbergii* and *Meesia triquetra* (Hodgetts & Lockhart, 2013). *Entosthodon pulchellus* was found new to Ireland in 2011 and has been given a regional threat status of EN (Hodgetts & Lockhart, 2013).

Criterion 4: Contains at least 3 *Vulnerable* taxa

If a taxon is given the regional threat status of *Vulnerable*, then it is facing a high risk of regional extinction in the wild in the medium-term future (Lockhart *et al.*, 2012). Taxa given this status are at less risk than CR and EN taxa, but it remains important to protect the sites containing a suite of these taxa.

Criterion 5: Contains at least 5 *Near Threatened* and/or *Data Deficient* taxa

A taxon is given a regional threat status of *Near Threatened* when it has been evaluated against the IUCN criteria and does not qualify for CR, EN or VU status, but is close to qualifying for a threatened category in the future. A taxon is regarded as close to qualifying for a threatened category in Ireland if it occurs in 6–12 hectads (1970–2010) but has not declined; or it occurs in <20 hectads (1970–2010) and has declined (Lockhart *et al.*, 2012). A taxon is given a regional threat status of *Data Deficient* when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and population status. A taxon is regarded as DD in Ireland if it is thought likely that future research will show that a threatened classification is appropriate and that it will be included in the Red List at some stage (Lockhart *et al.*, 2012). Taxa given an NT or DD status are at less risk than CR, EN and VU taxa, but it remains important to protect the sites containing a suite of these taxa.

Criterion 6: Is contained partly or wholly within an Important Bryophyte Area (IBrA)

Important Bryophyte Areas (IBrAs) form part of the Important Plant Area (IPA) programme (Anderson, 2002), a project promoted by Plantlife International to identify and protect a network of the best sites for plant conservation worldwide as a means of fulfilling Target 5 of the Convention on Biological Diversity's Global Strategy for Plant Conservation. Though not a statutory site designation, IPAs and IBrAs can be used to support conservation actions and initiatives.

A total of 47 IBrAs were identified for Ireland (Lockhart *et al.*, 2012) following a two-stage approach; an initial selection of hectad 'hotspots' rich in threatened taxa, followed by a more detailed overlay with the recorded plant localities and the 'protected' site boundary layers. Hectad hotspots were defined as all hectads with legally protected taxa, all hectads with ≥ 3 Red List taxa (CR, EN or VU) and all hectads with ≥ 5 Red List, NT or DD taxa. Only recent (1970–2010) records were considered.

Sites selected by this method also included most of the internationally threatened taxa, nearly all of the internationally significant taxa and assemblages, and many of the outstanding species-rich assemblages and bryophyte-rich habitats. Also, the majority of sites supporting these key species were located within existing 'protected' areas and most of those that occurred on 'unprotected' land could be easily linked to one or more 'protected' areas in order to produce effective, realistic and pragmatic IBrAs.

The final criteria for selecting IBrAs for bryophytes in Ireland (Lockhart *et al.*, 2012) are as follows:

- A. The site holds significant populations of at least one legally protected taxon, OR at least three Red List (CR, EN or VU) taxa, OR at least five Red List, NT or DD taxa.
- B. The site is exceptionally rich in internationally significant taxa and assemblages.
- C. The site is an outstanding example of a habitat type of global or European plant conservation and botanical importance, containing rich assemblages of habitat-specific taxa.

Expert review: cNHAs re-evaluated and kept, removed or added to the list based on best expert judgement

Sites that met any, or any combination, of Criteria 1 to 6 were deemed to be short-listed for potential NHA selection based on their bryophyte flora. A review stage was then applied to re-evaluate the candidate list, using best expert judgement, to pick up additional sites not automatically selected under Criteria 1 to 6, or to exclude sites thought unsuitable for designation, for example, those containing some of the rare and threatened taxa considered colonists that crop up unexpectedly before completing their life-cycle and moving elsewhere. Designating NHAs for such taxa would serve little purpose as their rarity and vulnerability is a result of the overall state of the countryside rather than factors that can be addressed by site-specific protection.

Sites were subjected to expert review individually. No additional sites were selected, but several sites were removed from the list, mainly because they were not considered worthy of NHA designation based on the bryophyte taxa present within them. A summary of the sites removed from the short-list is given in Table 1.

Table 1 Sites removed from the candidate list of potential cNHAs following expert review

Site code	Site name	Criterion met	Comment
000078	Ballyvergan Marsh cNHA	3	This site solely contains the taxon <i>Aloina ambigua</i> which, although EN, is probably a colonist of bare soil, such as mud-capped walls
001658	Colgagh Lough cNHA	6	This site, although within the Dartry Mountains IBrA, only contains 1 NT taxon (<i>Drepanocladus sendtneri</i>)
005007	Dromore Woods and Loughs cNHA	6	This site, although within the Burren IBrA, only contains 2 NT taxa (<i>Amblystegium confervoides</i> and <i>Plasteurhynchium striatulum</i>)
005026	Ballyarr Wood cNHA	6	This site, although within the Derryveagh and Muckish Mountain IBrA, only contains 2 NT taxa (<i>Kurzia sylvatica</i> and <i>Sphagnum girgensohnii</i>)
005030	Fawnboy Bog/Lough Nacung cNHA	6	This site, although within the Derryveagh and Muckish Mountain IBrA, only contains 1 NT taxon (<i>Atrichum tenellum</i>)
005050	Howth Head cNHA	6	This site, although within the Dublin Bay IBrA, only contains 1 NT taxon (<i>Bryum bornholmense</i>)
005386	River Finn cNHA	6	This site lies mostly outside the core hectads of the Blue Stack Mountains IBrA and only contains 1 VU taxon (<i>Andreaea megistospora</i>)
005416	Horn Head to Fanad Head cNHA	6	This site overlaps with parts of 005032 and 005047, the non-overlapping part of 005416 only contains 1 VU taxon (<i>Cephalozia pleniceps</i>)

The possibility of a further criterion, based on those sites containing taxa classified as Nationally Rare (NR), i.e. present in 1–5 hectads in Ireland, and Nationally Scarce (NS), i.e. present in 6–20 hectads (Hodgetts & Lockhart, 2013), was also examined. However, the majority of taxa listed as NR have a threat status of CR, EN, VU, NT or DD assigned to them in any case, apart from the *Not Evaluated* taxa *Heteroscyphus fissistipus*, *Lophocolea bispinosa*, *Lophocolea semiteres*, *Riccia rhenana*, *Calyptrochaeta apiculata*, *Dicranoloma menziesii*, *Henediella stanfordensis*, *Calomnion complanatum* and *Leptotheca gaudichaudii* var. *gaudichaudii*, which are all considered to be alien introductions, and *Marsupella emarginata* var. *pearsonii*, a taxon of uncertain taxonomic status.

Not all taxa that occur in 20 or fewer hectads are threatened, or even *Near Threatened*, so there are many NS taxa that are *Least Concern*, and thus, records for the majority of NS taxa were not reviewed.

3 Results and Conclusions

3.1 Sites with delineated boundaries selected for NHA designation based on criteria

A total of 106 sites with delineated boundaries met the criteria for selection for potential NHA designation based on the bryophyte taxa present. This is 55% of the 194 sites listed as 'candidates' (see Appendix I). The list and further details of the 106 sites can be found in Appendix II.

3.2 Potential 'new' cNHAs and extensions to delineated cNHAs based on individual/clusters of records

The GPS co-ordinates of records that were assigned as 'unprotected', i.e. plotting outside existing delineated boundaries, were mapped using ArcGIS. Clusters of these records were then examined to identify whether or not the area containing the cluster of taxa met the selection criteria for potential NHA designation. Eighteen sites (see Appendix III) thus qualified for potential NHA designation (including Birrencorragh, a locality containing 2 DD taxa, 2 NT taxa and 1 VU taxon, which doesn't meet criteria 1 to 6, but is deemed worthy of designation after expert review). Of the eighteen locations, nine are situated in the vicinity of cNHAs already known to support other conservation interests, but whose boundaries have not yet been delineated.

'Unprotected' records of taxa that lay close to the boundaries of already delineated sites were also examined to determine whether existing sites could be extended to include such populations. A total of twelve sites were identified for possible extension and are detailed in Appendix IV.

3.3 Percentages of rare and threatened bryophytes within sites

The following analysis is based upon bryophyte records that fall within sites with existing, mapped boundaries. From such data, it is possible to determine the percentage of rare and threatened bryophyte populations that are located in 'protected' sites. It is also possible to determine the percentage of such species that occur within sites identified for selection as potential NHAs for bryophytes. In total, there are 283 taxa in the Republic of Ireland that were used to assess potential NHAs for designation. These 283 taxa have a total of 2,259 populations recorded in the period 1970–2013. Of the 2,259 populations, 1,565 are found within an SAC, SPA, NHA and/or cNHA boundary, which is 69.3% of the total. Of the 2,259 populations, 1,436 populations fall within one of the 106 delineated sites selected for potential NHA designation (based on bryophyte taxa present and criteria met), which is 63.6% of the total number of populations. A breakdown of the populations is presented in sections 3.3.1 to 3.3.3.

3.3.1 EU Habitats Directive Annex II taxa

All extant populations of the two Annex II taxa (*Hamatocaulis vernicosus* and *Petalophyllum ralfsii*) found in the Republic of Ireland are protected in SACs and all these sites would qualify under Criterion 1 for potential NHA designation (and perhaps one or more additional criteria). There are two populations of *Hamatocaulis vernicosus* that are not within protected sites, but these are thought to be extinct: the habitat for the population at Lough Nambrackkeagh, Co. Mayo is now afforested and the population at Dromone, Co. Meath has not been refound since 1978. Although *Petalophyllum ralfsii* is known as a coastal plant, there exists an inland record from 1970 in an old quarry near Lough Arrow, Co. Sligo, but as the species has not been seen there since, it is thought that it was just a transient occurrence.

3.3.2 Flora (Protection) Order, 2015 taxa

Of the 65 FPO, 2015 taxa, 276 of the 329 populations for these species are within 'protected' sites that would qualify for potential NHA designation (under Criterion 2, and perhaps other criteria). Of the populations that are not within 'protected' sites, many would merit designation of new or as yet undelineated sites or warrant extension of existing delineated sites (see Table 2 and Appendices III & IV). Some populations, particularly those of temporary habitats or man-made structures, are deemed unsuitable to conserve through NHA designation.

Table 2 Flora (Protection) Order, 2015 taxa that have populations (1970–2013) that are not contained within delineated site boundaries and recommendations for their designation

Taxon	Red List status	Recommendations for designation
<i>Bazzania pearsonii</i>	VU	1 of 16 populations not protected; GPS co-ordinates for population recorded at 'Benbreen & Bengower' too vague to accurately assign designation
<i>Bryum salinum</i>	CR	Sole population at 'SW of Derrymore Island' warrants extension of cNHA005306 (see Appendix IV)
<i>Bryum warneum</i>	EN	1 of 4 populations not protected; population at 'Catherine's Isle' warrants extension of cNHA005032 (see Appendix IV)
<i>Campylostelium saxicola</i>	EN	2 of 4 populations not protected; population at 'Luke's Bridge' warrants extension of cNHA005160 (see Appendix IV); GPS co-ordinates for population at 'Glenade' too vague to accurately assign designation
<i>Catoscopium nigratum</i>	NT	1 of 13 populations not protected; GPS co-ordinates for 1970 record from 'Rossbeg' too vague to accurately assign designation
<i>Cephalozia crassifolia</i>	EN	2 of 3 populations not protected; population at 'Sraheens Lough' warrants extension of cNHA002403 (see Appendix IV); population at 'Glounroe' (see Appendix III) warrants designation of a new site in the vicinity of cNHA002693 (no boundary delineated)
<i>Cephaloziella massalongi</i>	VU	1 of 6 populations not protected; population at 'Ballycorus' warrants designation of a new site (see Appendix III)
<i>C. nicholsonii</i>	VU	4 of 7 populations not protected; populations at 'Cappaghglass', 'Knockmahon' and 'SW of Caim Cross Roads' warrant designation of new sites; the population location at 'Tigroney West' is judged by expert review as being unsuitable for designation
<i>Didymodon acutus</i>	EN	1 of 3 populations not protected; population at 'near Baltray' warrants extension of cNHA005290 (see Appendix IV)
<i>Ditrichum plumbicola</i>	EN	1 of 3 populations not protected; population at 'Ballycorus' warrants designation of a new site (see Appendix III)
<i>Encalypta ciliata</i>	CR	Sole population at Temple Hill, Galtee Mountains warrants extension of cNHA005169 (see Appendix IV)
<i>Entosthodon muhlenbergii</i>	CR	Sole population at 'Glanworth Friary' deemed after expert review as not suitable for designation as it is found on a man-made structure (a wall of the friary)
<i>Ephemerum cohaerens</i>	VU	3 of 7 populations not protected; population at 'Kingsbog or Common' warrants designation of a new site (see Appendix III); population at 'W. of Elfeet' is on church grounds and therefore not suitable for designation; the site at 'N. of Jamestown' cannot be linked to an existing site and, as the taxon is ephemeral, FPO protection will suffice
<i>Fissidens rufulus</i>	EN	1 of 2 populations not protected; population at 'Ederdamone' warrants designation of a new site (see Appendix III)
<i>Gymnomitrium concinnum</i>	EN	2 of 5 populations not protected; population at 'Meenaguse' warrants

Taxon	Red List status	Recommendations for designation
		extension of cNHA005277 (see Appendix IV); population at 'W. of Lough Naweeloge' warrants designation of a new site (see Appendix III)
<i>Hamatocaulis vernicosus</i>	NT	2 of 15 populations not protected; populations at 'Dromone' and 'Lough Nambrackkeagh' are thought to be extinct
<i>Hedwigia integrifolia</i>	VU	3 of 8 populations not protected; population at 'above Derrynane House' is indeterminately in cNHA005332; populations at 'Mount Gunnery' and 'Slievenaglogh' warrant designation of new sites (see Appendix III)
<i>Hypnum uncinulatum</i>	NT	3 of 9 populations not protected; population at 'E. of Coomroe' warrants extension of cNHA001886; populations at 'Deereen Gardens' and 'below Lauragh Bridge' warrant extension of cNHA005332 (see Appendix IV)
<i>Kiaeria falcata</i>	CR	Sole population at 'Binacally, Lavagh Beg' warrants extension of cNHA005277 (See Appendix IV)
<i>Lejeunea hibernica</i>	NT	1 of 19 populations not protected; population at 'Derreen Gardens' warrants extension of cNHA005332 (see Appendix IV)
<i>Pallavicinia lyelli</i>	EN	5 of 6 populations not protected; population at 'Rathduffmore Bog' warrants designation of a new site (see Appendix III); record at 'Sugar Hill' is too vague to accurately assign designation; it is not deemed appropriate after expert review to designate the remaining 3 locations for this species
<i>Plagiochila heterophylla</i>	EN	4 of 5 populations are not protected; populations at 'Nowen Hill Gully' and 'Pass of Keimaneigh' warrant designation of new sites (see Appendix III); population at 'Derreen Gardens' warrants extension of cNHA005332 and population at 'Gougane Barra' warrants extension of cNHA001886 (see Appendix IV)
<i>Pohlia andalusica</i>	EN	4 of 6 populations are not protected; the populations at 'Knockmahon' and at 'NE of Cappaghglass' warrant designation of new sites (see Appendix III), but not the other two populations
<i>Radula holtii</i>	NT	2 of 14 populations not protected; populations at 'Mount Eagle' and at 'Pass of Keimaneigh' warrant designation of new sites (see Appendix III)
<i>Scapania ornithopodiodes</i>	VU	1 of 19 populations not protected; population at 'Nephin Mór' warrants designation of a new site (see Appendix III)
<i>Scleropodium touretti</i>	EN	2 of 3 populations are not protected; population at 'Ballycotton' warrants designation of a new site (see Appendix III); population at 'Charles Fort, Kinsale' is in an urban area and so designation is inappropriate

3.3.3 Red List taxa

Critically Endangered taxa

Of the 24 CR taxa with records in the Republic of Ireland (1970–2013), 20 of the 25 populations of these species are within existing delineated SAC, SPA, NHA and/or cNHA sites. All of these meet the selection criteria for potential NHA designation. This means 80% of CR taxa populations could be protected by NHA designation of these sites, a significant proportion. Of the five taxa with populations that fall outside delineated boundaries, two would not particularly benefit from site designation. The single known population of *Aongstroemia longipes* was found at a locality at E. of Pollranny, Co. Mayo in disturbed ground in an old sand quarry and is possibly only a transient occurrence there. As a colonist species, it was not included on the FPO, 2015. The sole population of *Entosthodon muhlenbergii* in Ireland was refound in 2012 for the first time since 1852 on a wall at Glanworth Friary, Co. Cork and is now protected under the FPO, 2015. However, designation of the

site would be inappropriate as it is found in a man-made habitat and protection under the FPO, 2015 will suffice (see Table 2).

The remaining three 'unprotected' CR taxa have populations that could benefit from the extension of site boundaries (see Table 2 and Appendix IV): the extension of Tralee Bay Complex cNHA (005306) for *Bryum salinum* (also on FPO, 2015); the extension of Galtee Mountains cNHA (005169) for *Encalypta ciliata* (on FPO, 2015) and the extension of Meenaguse Scragh cNHA (005277) for *Kiaeria falcata* (on FPO, 2015).

Endangered taxa

Of the 43 EN taxa with records in the Republic of Ireland (1970–2013), 90 of the 127 populations are located within existing delineated SAC, SPA, NHA and/or cNHA sites (70.9%). All but one of these sites meet the criteria for potential NHA designation. This means 70.1% of EN taxa populations could be protected by NHA designation of these sites. Ballyvergan Marsh cNHA (000078), although qualifying for potential NHA designation for bryophytes under Criterion 3, was removed from the list as the EN taxon it contains is *Aloina ambigua*, a colonist species (see Table 1). Of the populations that are not within 'protected' areas, many could add to the criteria to designate new, undelineated sites or extend existing delineated ones (see Table 2 and Appendices III & IV). Of the other populations, reasons as to why site designation would not be appropriate or of particular benefit to their survival are given in Table 3.

Vulnerable taxa

Of the 86 VU taxa with records in the Republic of Ireland (1970–2013), 335 of the 509 populations are located within existing delineated SAC, SPA, NHA and/or cNHA sites (65.8%) and 312 of the 509 populations are located within sites that meet the criteria for potential NHA designation. This means 61.3% of VU taxa populations could be protected by NHA designation. Isolated 'unprotected' populations of VU taxa not listed on the FPO, 2015 are not deemed to warrant new site designation or extension of existing sites. Details of VU taxa that are listed on the FPO, 2015 that warrant site designation are contained in Table 2.

Near Threatened taxa

Of the 97 NT taxa with records in the Republic of Ireland (1970–2013), 1,016 of the 1,420 populations are located within existing delineated SAC, SPA, NHA and/or cNHA sites (71.5%) and 921 of the 1,420 populations are located within sites that meet the criteria for potential NHA designation. This means 64.9% of NT taxa populations could be protected by NHA designation. Isolated 'unprotected' populations or clusters of less than 5 NT taxa not listed on the FPO, 2015 are not deemed to warrant new site designation or extension of existing sites. Details of NT taxa that are listed on the FPO, 2015 that warrant site designation are contained in Table 2.

Data Deficient taxa

Of the 31 DD taxa with records in the Republic of Ireland (1970–2013), 74 of the 147 populations are located within existing delineated SAC, SPA, NHA and/or cNHA sites (50.3%) and 64 of the 147 populations are located within sites that meet the criteria for potential NHA designation. This means 43.5% of DD taxa populations could be protected by NHA designation. As more research and recording is carried out and the Red List is updated in years to come, the status of these taxa could change and 'unprotected' populations may warrant further site designation.

Table 3 *Endangered taxa with ‘unprotected’ populations*

Taxon	Listed on FPO, 2015	‘Unprotected’ populations
<i>Aloina ambigua</i>	No	Both populations unprotected; population at Ballyvergan Marsh deemed by expert review not to warrant designation as A. <i>ambigua</i> is a colonist species; population at Lehinch indeterminately in cNHA005008
<i>Brachytheciastrum velutinum</i>	No	2 of 4 populations are currently unprotected, but this taxon can be found on impermanent substrata
<i>Dicranella crispa</i>	No	2 of 2 populations locations are indeterminately located in protected sites
<i>Entosthodon pulchellus</i>	No	Sole population discovered new to Ireland in 2011 at Holycross Abbey, a site not suitable for designation
<i>Hygroamblystegium humile</i>	No	2 of 5 populations are not protected, but the taxonomic status of this taxon is uncertain and so not worthy of protection at present
<i>Orthotrichum pallens</i>	No	Neither of this taxon’s two populations are protected, but it is a colonist species and would not benefit from site protection
<i>Pogonatum nanum</i>	No	1 of 5 populations is not protected, but this is a colonist taxon and would not benefit particularly from site protection

4 Bibliography and relevant literature

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Appendix I Candidate NHAs considered for potential designation for bryophytes (194 sites)

Site code	Site name	Criteria met	Recommended for designation for bryophytes	Comment	No. of FPO taxa	No. of Annex II taxa	No. of CR taxa	No. of EN taxa	No. of VU taxa	No. of NT taxa	No. of DD taxa	Important Bryophyte Area (IBrA)
000008	Lough Ramor cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000070	Tullagher Lough and Bog cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
000078	Ballyvergan Marsh cNHA	3	No	See Table 1	0	0	0	1	0	0	0	
000083	Capel Island and Knockadoon Head cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000120	Bulbin Mountain cNHA	2, 3, 5 & 6	Yes	Four criteria met	2	0	1	1	2	7	0	Bulbin Mountain IBrA
000139	Erne Estuary/Finner Dunes cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
000166	Lough Swilly including Big Isle, Blanket Nook and Inch Lake cNHA	2, 3 & 6	Yes	Three criteria met	1	0	0	1	0	0	0	North Inishowen Coast and Lough Swilly IBrA
000311	Monivea Bog cNHA	2 & 3	Yes	Two criteria met	1	0	0	1	0	0	0	
000401	Dunmore Cave cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000415	Coolrain Bog cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
000437	Lough Gur cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000477	Clare Island cNHA	3 & 5	Yes	Two criteria met	1	0	0	1	0	4	0	
000483	Croagh Patrick cNHA	2, 4, 5 & 6	Yes	Four criteria met	3	0	0	0	5	9	0	Croagh Patrick IBrA
000673	Ballynafid Lake and Fen cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000674	Ballynagrenia and Ballinderry Bog NHA	None	No	No criteria met	0	0	0	0	0	0	1	
000676	Carn Park Bog cNHA	None	No	No criteria met	0	0	0	0	0	1	1	
000687	Lough Iron cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000712	Wexford Slobs and Harbour cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000730	The Murrough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000735	Maumtrasna Mountain Complex cNHA	2, 3, 4 & 6	Yes	Four criteria met	3	0	0	1	4	4	0	West Galway and South Mayo IBrA
000965	Laffansbridge cNHA	None	No	No criteria met	0	0	0	0	0	1	1	
000983	Glasshouse Lake cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
000987	Lough Sheelin cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
000992	Lough Gowna cNHA	2	Yes	One criterion met	1	0	0	0	1	2	0	
001010	Fin Lough (Clare) cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001017	Lough Cullaunyeeda cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001065	Lough Allua cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
001215	Portraine Shore cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
001350	Doulus Head to Cooncrome Harbour cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001413	Garadice Lough Wood cNHA	None	No	No criteria met	0	0	0	0	2	0	0	

Site code	Site name	Criteria met	Recommended for designation for bryophytes	Comment	No. of FPO taxa	No. of Annex II taxa	No. of CR taxa	No. of EN taxa	No. of VU taxa	No. of NT taxa	No. of DD taxa	Important Bryophyte Area (IBrA)
001417	Lough Rinn cNHA	2 & 6	Yes	Two criteria met	1	0	0	0	1	4	0	Lough Rinn IBrA
001526	Quarryford Bridge cNHA	None	No	No criteria met	0	0	0	0	0	0	1	
001636	Fin Lough (Roscommon) cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
001648	Shad Lough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001658	Colgagh Lough cNHA	6	No	See Table 1	0	0	0	0	0	1	0	Dartry Mountains IBrA
001670	Knocknarea Mountain and Glen cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001693	Ballyvoyle Head to Tramore cNHA	2 & 3	Yes	Two criteria met	2	0	0	1	1	3	0	
001754	Dargle River Valley cNHA	2, 3, & 6	Yes	Three criteria met	1	0	0	1	0	0	0	Wicklow Mountains IBrA
001767	Powerscourt Waterfall cNHA	4 & 6	Yes	Two criteria met	0	0	0	0	3	1	0	Wicklow Mountains IBrA
001769	Great Sugar Loaf cNHA	6	Yes	One criterion met	0	0	0	0	1	0	0	Wicklow Mountains IBrA
001771	Vartry Reservoir cNHA	6	Yes	One criterion met	0	0	0	0	0	1	1	Wicklow Mountains IBrA
001805	Ravensdale Plantation cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
001920	Carrickaport Lough cNHA	None	No	No criteria met	0	0	0	0	1	2	0	
001981	Marfield Lake cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
001986	Garinish Point cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
002103	Royal Canal cNHA	None	No	No criteria met	0	0	0	0	0	0	1	
002104	Grand Canal cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
002186	Grageen Fen and Bog cNHA	6	Yes	One criterion met	0	0	0	0	1	0	0	Clare Glen and Grageen Fen IBrA
002357	Clonreher Bog NHA	None	No	No criteria met	0	0	0	0	1	0	0	
002375	Barnesmore Bog NHA	None	No	No criteria met	0	0	0	0	1	0	0	
002384	Dough/Thur Mountains NHA	2 & 3	Yes	Two criteria met	1	0	0	1	0	2	0	
002430	Aghavoghil Bog NHA	None	No	No criteria met	0	0	0	0	0	2	0	
002435	Crockauns/Keelogyboy Bogs NHA	2, 5 & 6	Yes	Three criteria met	1	0	0	0	1	8	0	Dartry Mountains IBrA
002455	Lough Greney Bog NHA	None	No	No criteria met	0	0	0	0	0	2	0	
005001	Lough Oughter and Associated Loughs cNHA	3, 5 & 6	Yes	Three criteria met	0	0	0	1	0	5	0	Lough Oughter and Associated Loughs IBrA
005005	Black Head-Poulsallagh Complex cNHA	1, 2, 3, 5 & 6	Yes	Five criteria met	2	1	0	1	0	5	0	The Burren IBrA
005007	Dromore Woods and Loughs cNHA	6	No	See Table 1	0	0	0	0	0	2	0	The Burren IBrA
005008	Inagh River Estuary cNHA	None	No	No criteria met	0	0	0	0	0	0	1	
005011	Moneen Mountain cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
005015	Glengarriff Harbour and Woodland cNHA	2, 4 & 6	Yes	Three criteria met	1	0	0	0	5	3	0	Glengarriff IBrA
005017	Caha Mountains cNHA	5 & 6	Yes	Two criteria met	0	0	0	0	0	6	0	Glengarriff IBrA
005018	Lough Hyne Nature Reserve and Environs cNHA	2 & 3	Yes	Two criteria met	1	0	0	1	0	0	1	
005019	Roaringwater Bay and Islands cNHA	2 & 3	Yes	Two criteria met	2	0	0	2	0	0	0	
005020	Sheep's Head cNHA	None	No	No criteria met	0	0	0	0	0	0	1	

Site code	Site name	Criteria met	Recommended for designation for bryophytes	Comment	No. of FPO taxa	No. of Annex II taxa	No. of CR taxa	No. of EN taxa	No. of VU taxa	No. of NT taxa	No. of DD taxa	Important Bryophyte Area (IBrA)
005026	Ballyarr Wood cNHA	6	No	See Table 1	0	0	0	0	0	2	0	Derryveagh and Muckish Mountain IBrA
005029	Durnesh Lough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005030	Fawnboy Bog/Lough Nacung cNHA	6	No	See Table 1	0	0	0	0	0	1	0	Derryveagh and Muckish Mountain IBrA
005032	Horn Head and Rinclevan cNHA	1, 2, 3 & 6	Yes	Four criteria met	4	1	0	1	2	3	0	Horn Head IBrA
005036	Lough Nagreany Dunes cNHA	2 & 6	Yes	Two criteria met	1	0	0	0	1	2	0	Horn Head IBrA
005037	Lough Nillan Bog (Carrickatieve) cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005039	Meenaguse/Ardbane Bog cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005040	Meentygrannagh Bog cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	2	3	0	Meentygrannagh Bog IBrA
005044	Slieve League cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	2	0	0	2	6	11	1	Slieve League IBrA
005045	Slieve Tooley/Tormore Island/Loughros Beg Bay cNHA	6	Yes	One criterion met	0	0	0	0	2	0	0	Slieve Tooley/Shekinmore IBrA
005047	Tranarossan and Melmore Lough cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	1	0	Horn Head IBrA
005048	West of Ardara/Maas Road cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	1	0	Slieve Tooley/Shekinmore IBrA
005050	Howth Head cNHA	6	No	See Table 1	0	0	0	0	0	1	0	Dublin Bay IBrA
005052	Malahide Estuary cNHA	None	No	No criteria met	0	0	0	0	1	2	0	
005053	North Dublin Bay cNHA	1, 2, 3 & 6	Yes	Four criteria met	4	1	0	3	1	1	0	Dublin Bay IBrA
005057	Inishmore Island cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
005058	River Shannon Callows cNHA	3 & 5	Yes	Two criteria met	0	0	0	2	0	4	1	
005061	Caheglassaun Turlough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005062	Castletaylor Complex cNHA	6	Yes	One criterion met	0	0	0	0	2	3	1	The Burren IBrA
005064	Coole-Garryland Complex cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
005073	Lough Corrib cNHA	1, 2 & 5	Yes	Three criteria met	1	1	0	0	1	6	0	
005075	Lough Lurgen Bog/Glenamaddy Turlough cNHA	2	Yes	One criterion met	1	0	0	0	1	1	0	
005086	Ballinskelligs Bay and Inny Estuary cNHA	1 & 2	Yes	Two criteria met	1	1	0	0	0	0	0	
005087	Castlemaine Harbour cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	0	0	Dingle Peninsula IBrA
005090	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	13	0	1	4	18	42	5	Killarney IBrA
005092	Mount Brandon cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	9	0	0	2	10	31	2	Dingle Peninsula IBrA
005095	Pollardstown Fen cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
005099	Slieve Bloom Mountains cNHA	None	No	No criteria met	0	0	0	0	1	4	0	
005103	Lough Ree cNHA	3, 5 & 6	Yes	Three criteria met	0	0	0	1	1	5	1	Lough Ree IBrA
005104	Fortwilliam Turlough cNHA	2 & 6	Yes	Two criteria met	1	0	0	0	2	1	0	Lough Ree IBrA
005105	Carlingford Mountain cNHA	2, 3 & 6	Yes	Three criteria met	1	0	0	1	2	4	0	Cooley Mountains IBrA
005107	Killala Bay/Moy Estuary cNHA	None	No	No criteria met	0	0	0	0	0	1	0	

Site code	Site name	Criteria met	Recommended for designation for bryophytes	Comment	No. of FPO taxa	No. of Annex II taxa	No. of CR taxa	No. of EN taxa	No. of VU taxa	No. of NT taxa	No. of DD taxa	Important Bryophyte Area (IBrA)
005110	Bellacorick Iron Flush cNHA	6	Yes	One criterion met	0	0	0	0	1	1	0	North Mayo IBrA
005111	Mullet/Blacksod Bay Complex cNHA	1 & 2	Yes	Two criteria met	1	1	0	0	0	1	0	
005116	Carrowmore Lake Complex cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	1	0	North Mayo IBrA
005120	Corraun Plateau cNHA	2, 4 & 6	Yes	Three criteria met	2	0	0	0	3	2	0	Achill Island and Corraun Plateau IBrA
005124	Glenamoy Bog Complex cNHA	1, 2, 3, 5 & 6	Yes	Five criteria met	4	2	0	1	1	7	0	North Mayo IBrA
005127	Inishkea Islands cNHA	1 & 2	Yes	Two criteria met	1	1	0	0	0	0	0	
005133	Owenduff/Nephin Complex cNHA	1, 2, 3, 4 & 5	Yes	Five criteria met	4	1	0	1	4	12	1	
005134	Skealaghan Turlough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005136	All Saints Bog and Esker cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005138	Clara Bog cNHA	6	Yes	One criterion met	0	0	0	0	1	0	1	Clara Bog
005143	Raheenmore Bog cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
005144	Cuilcagh-Anierin Uplands cNHA	1, 2, 3, 5 & 6	Yes	Five criteria met	1	1	0	1	2	8	1	Cuilcagh, Marlbank and Boleybrack IBrA
005145	Sharavogue Bog cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005146	Ballinturly Turlough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005149	Carrowbehy/Caher Bog cNHA	4 & 6	Yes	Two criteria met	0	0	0	0	3	2	0	Carrowbehy/Caher Bog IBrA
005152	Lough Fingall Complex cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
005154	Lisduff Turlough cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005156	Lough Funshinagh cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005159	Ballysadare Bay cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005160	Ben Bulbin, Gleniff and Glenade Complex cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	4	0	1	3	6	16	2	Dartry Mountains IBrA
005161	Bunduff Lough and Machair/Trawalua/Mullaghmore cNHA	1, 2 & 6	Yes	Two criteria met	1	1	0	0	0	1	0	Dartry Mountains IBrA
005162	Cummeen Strand/Drumcliff Bay (Sligo Bay) cNHA	2 & 3	Yes	Two criteria met	1	0	0	2	0	1	0	
005163	Lough Hoe Bog cNHA	3	Yes	One criterion met	0	0	0	1	0	2	2	
005169	Galtee Mountains cNHA	3, 4, 5 & 6	Yes	Four criteria met	0	0	0	1	3	13	2	Galtee Mountains IBrA
005170	Kilcarren-Firville Bog cNHA	None	No	No criteria met	0	0	0	0	0	0	1	
005173	Tramore Dunes and Backstrand cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005177	Scragh Bog cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	2	2	0	Scragh Bog IBrA
005184	Tacumshin Lake cNHA	None	No	No criteria met	0	0	0	0	0	0	1	
005190	Glen of the Downs cNHA	6	Yes	One criterion met	0	0	0	0	2	0	0	Wicklow Mountains IBrA
005191	Knocksink Wood cNHA	2, 3 & 6	Yes	Three criteria met	1	0	0	1	0	0	0	Wicklow Mountains IBrA
005192	Buckronev-Brittis Dunes and Fen cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005194	Hook Head cNHA	None	No	No criteria met	0	0	0	0	0	1	0	

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005195	Blackstairs Mountains cNHA	6	Yes	One criterion met	0	0	0	0	0	3	0	Blackstairs Mountains IBrA
005196	Slaney River Valley cNHA	2 & 4	Yes	Two criteria met	1	0	0	0	3	2	1	
005198	Spahill and Clomantagh Hill cNHA	6	Yes	One criterion met	0	0	0	0	2	1	0	River Barrow and River Nore IBrA
005203	Clare Glen cNHA	6	Yes	One criterion met	0	0	0	0	0	3	0	Clare Glen and Graegen Fen IBrA
005211	Barley Cove to Ballyrisode Point cNHA	1 & 2	Yes	Two criteria met	1	1	0	0	0	1	0	
005213	Great Channel Island cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005219	Gweedore Bay and Islands cNHA	1, 2 & 3	Yes	Three criteria met	2	1	0	1	0	2	0	
005221	Muckish Mountain cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	4	0	0	1	4	5	0	Derryveagh and Muckish Mountain IBrA
005222	Sheephaven cNHA	1, 2, 3 & 6	Yes	Four criteria met	4	1	0	1	2	2	0	Horn Head IBrA
005234	Omey Island Machair cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	0	0	West Galway Coast IBrA
005239	Cloonee and Inchiquin Loughs, Uragh Wood cNHA	2, 3, 5 & 6	Yes	Four criteria met	1	0	1	0	2	7	0	Glengarriff IBrA
005241	Ballynafagh Lake cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005243	Arroo Mountain cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	2	0	1	0	4	13	2	Dartry Mountains IBrA
005246	Clogher Head cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
005248	Doogort Machair/Lough Doo cNHA	1, 2, 3 & 6	Yes	Four criteria met	4	1	0	1	2	2	0	Achill Island and Corraun Plateau IBrA
005250	Keel Machair/Menaun Cliffs cNHA	1, 2, 3, 4, 5 & 6	Yes	Six criteria met	4	1	0	2	3	6	0	Achill Island and Corraun Plateau IBrA
005253	Castletownshend cNHA	2 & 3	Yes	Two criteria met	1	0	0	1	1	1	0	
005254	Urlaur Lakes cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005259	Knockalongy and Knockachree Cliffs cNHA	None	No	No criteria met	0	0	0	0	0	3	0	
005265	Holdenstown Bog cNHA	1 & 2	Yes	Two criteria met	1	1	0	0	0	1	0	
005267	Lough Carra/Mask Complex cNHA	1, 2, 3, 4, 5 & 6	Yes	Six criteria met	3	1	0	2	4	8	1	Lough Carra and Lough Mask IBrA
005275	Derryclogher (Knockboy) Bog cNHA	3, 5 & 6	Yes	Three criteria met	0	0	0	1	1	7	0	Glengarriff IBrA
005276	Glanmore Bog cNHA	2, 5 & 6	Yes	Three criteria met	2	0	0	0	0	7	0	Glengarriff IBrA
005277	Meenaguse Scragh cNHA	2, 3, 4 & 6	Yes	Four criteria met	1	0	0	1	3	2	0	Blue Stack Mountains IBrA
005285	Bellacorick Bog Complex cNHA	2, 3, 4 & 6	Yes	Four criteria met	2	0	1	1	4	2	0	North Mayo IBrA
005286	East Burren Complex cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	1	0	0	1	5	12	1	The Burren IBrA
005287	Mweelrea/Sheeffry/Erriff Complex cNHA	1, 2, 3, 4, 5 & 6	Yes	Six criteria met	13	1	4	6	11	23	4	West Galway and South Mayo IBrA
005288	Comeragh Mountains cNHA	1, 2, 3, 4, 5 & 6	Yes	Six criteria met	3	1	0	1	6	20	2	Comeragh Mountains IBrA

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005289	Croaghaun/Slievemore cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	5	0	0	2	7	17	2	Achill Island and Corraun Plateau IBrA
005290	Boyne Coast and Estuary cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005292	Lough Gill cNHA	2, 5 & 6	Yes	Three criteria met	1	0	0	0	1	5	0	Dartry Mountains IBrA
005295	Ox Mountains Bogs cNHA	2, 3, 4 & 5	Yes	Four criteria met	1	0	1	1	3	6	2	
005296	Maumturk Mountains cNHA	6	Yes	One criterion met	0	0	0	0	0	2	0	West Galway and South Mayo IBrA
005298	North Inishowen Coast cNHA	2, 3 & 6	Yes	Three criteria met	1	0	0	1	2	0	1	North Inishowen Coast and Lough Swilly IBrA
005299	The Twelve Bens/Garraun Complex cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	7	0	0	3	9	25	1	West Galway and South Mayo IBrA
005300	Boleybrack Mountain cNHA	6	Yes	One criterion met	0	0	0	0	2	0	0	Cuilcagh, Marlbank and Boleybrack IBrA
005301	Connemara Bog Complex cNHA	1, 2, 3, 4, 5 & 6	Yes	Six criteria met	1	1	1	0	4	10	2	West Galway and South Mayo IBrA
005302	Ballyhoura Mountains cNHA	2, 3 & 5	Yes	Three criteria met	1	0	0	1	0	5	0	
005305	Cloghernagore Bog and Glenveagh National Park cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	4	0	0	2	6	7	1	Derryveagh and Muckish Mountain IBrA
005306	Tralee Bay Complex cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	1	1	0	Dingle Peninsula IBrA
005307	Slyne Head Peninsula cNHA	1, 2, 3 & 6	Yes	Four criteria met	3	1	0	1	1	3	0	West Galway Coast IBrA
005319	Wicklow Mountains cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	7	0	3	3	9	15	2	Wicklow Mountains IBrA
005324	Murvey Machair cNHA	1, 2 & 6	Yes	Three criteria met	1	1	0	0	0	0	0	West Galway Coast IBrA
005327	Lower River Suir cNHA	2 & 3	Yes	Two criteria met	1	0	0	1	0	1	0	
005329	Newport River cNHA	None	No	No criteria met	0	0	0	0	0	2	0	
005332	Kenmare River cNHA	2, 3, 4 & 6	Yes	Four criteria met	5	0	2	1	4	1	0	Allihies IBrA
005335	River Barrow and River Nore cNHA	4 & 6	Yes	Two criteria met	0	0	0	0	4	4	0	River Barrow and River Nore IBrA
005337	Lower River Shannon cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005338	Blackwater River (Cork/Waterford) cNHA	2, 5 & 6	Yes	Three criteria met	1	0	0	0	2	7	1	Blackwater River and Knockmealdown Mountains IBrA
005340	Blasket Islands cNHA	None	No	No criteria met	0	0	0	0	0	1	0	
005341	Blackwater River (Kerry) cNHA	6	Yes	One criterion met	0	0	0	0	1	3	0	Killarney IBrA
005342	Leannan River cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
005347	Slieve Mish Mountains cNHA	2, 5 & 6	Yes	Three criteria met	3	0	0	0	2	13	1	Dingle Peninsula IBrA
005383	Williamstown Turloughs cNHA	None	No	No criteria met	0	0	0	0	1	0	0	
005384	River Moy cNHA	2, 3 & 6	Yes	Three criteria met	3	0	1	2	1	1	0	Mannin and Island Lakes IBrA

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005385	River Boyne and River Blackwater cNHA	3	Yes	One criterion met	0	0	1	0	0	1	0	
005386	River Finn cNHA	6	No	See Table 1	0	0	0	0	1	0	0	Blue Stack Mountains IBrA
005398	Glendine Wood cNHA	None	No	No criteria met	0	0	0	0	1	2	0	
005400	Cork Harbour cNHA	None	No	No criteria met	0	0	0	0	1	1	0	
005405	Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle cNHA	None	No	No criteria met	0	0	0	0	0	3	1	
005408	Slievefelim to Silvermines Mountains cNHA	2, 3, 4, 5 & 6	Yes	Five criteria met	1	0	0	1	3	9	1	Keeper Hill and Silvermines Mountains IBrA
005410	Slieve Aughty Mountains cNHA	None	No	No criteria met	0	0	0	0	0	4	0	
005411	West Donegal Coast cNHA	None	No	No criteria met; overlaps with parts of 005044, non-overlapping part only contains 1 NT taxon	0	0	0	0	0	1	0	
005416	Horn Head to Fanad Head cNHA	6	No	See Table 1	0	0	0	0	1	0	0	Horn Head IBrA
005419	Beara Peninsula cNHA	2	Yes	One criterion met	2	0	0	0	2	1	0	
005420	Sheep's Head to Toe Head cNHA	None	No	No criteria met; overlaps with parts of 005020 & 005211, non-overlapping part only contains 2 NT taxa	0	0	0	0	0	2	0	

Appendix II Sites with delineated boundaries meeting criteria for potential NHA designation (106 sites)

Site code	Site name	Criteria met	Taxa present (Red List status and/or legal protection status)	Important Bryophyte Area (IBrA)
000120	Bulbin Mountain cNHA	2, 3, 5 & 6	<i>Anthelia juratzkana</i> (NT), <i>Eremonotus myriocarpus</i> (NT), <i>Grimmia funalis</i> (NT), <i>Gymnomitrium corallioides</i> (CR; FPO), <i>Myurella julacea</i> (EN; FPO), <i>Nardia geoscyphus</i> (NT), <i>Philonotis tomentella</i> (VU), <i>Plagiobryum zieri</i> (NT), <i>Plagiothecium cavifolium</i> (VU), <i>Pohlia elongata</i> var. <i>elongata</i> (NT) & <i>Solenostoma subellipticum</i> (NT)	Bulbin Mountain IBrA
000166	Lough Swilly including Big Isle, Blanket Nook and Inch Lake cNHA	2, 3 & 6	<i>Bryum warneum</i> (EN; FPO)	North Inishowen Coast and Lough Swilly IBrA
000311	Monivea Bog cNHA	2 & 3	<i>Pallavicinia lyellii</i> (EN; FPO)	
000477	Clare Island cNHA	3 & 5	<i>Geocalyx graveolens</i> (EN; FPO), <i>Leiocolea fitzgeraldiae</i> (NT), <i>Marsupella funckii</i> (NT), <i>Plagiobryum zieri</i> (NT) & <i>Radula carringtonii</i> (NT)	
000483	Croagh Patrick cNHA	2, 4, 5 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Andreaea megistospora</i> (VU), <i>Bazzania pearsonii</i> (VU; FPO), <i>Dicranodontium uncinatum</i> (VU), <i>Eremonotus myriocarpus</i> (NT), <i>Grimmia decipiens</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Marsupella adusta</i> (NT), <i>Nardia geoscyphus</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania ornithopodioides</i> (VU; FPO) & <i>Schistidium strictum</i> (NT)	Croagh Patrick IBrA
000735	Maumtrasna Mountain Complex cNHA	2, 3, 4 & 6	<i>Acrobolbus wilsonii</i> (VU; FPO), <i>Andreaea megistospora</i> (VU), <i>Bazzania pearsonii</i> (VU; FPO), <i>Bryum riparium</i> (EN), <i>Eremonotus myriocarpus</i> (NT), <i>Fontinalis antipyretica</i> var. <i>gracilis</i> (NT), <i>Philonotis rigida</i> (VU), <i>Radula holtii</i> (NT; FPO) & <i>Rhabdoweisia crispata</i> (NT)	West Galway and South Mayo IBrA
000992	Lough Gowna cNHA	2	<i>Ephemerum cohaerens</i> (VU; FPO), <i>Ephemerum crassinervium</i> subsp. <i>sessile</i> (NT) & <i>Philonotis caespitosa</i> (NT)	Dartry Mountains IBrA
001417	Lough Rinn cNHA	2 & 6	<i>Ephemerum cohaerens</i> (VU; FPO), <i>Ephemerum crassinervium</i> subsp. <i>rutheanum</i> (NT), <i>Fissidens monguillonii</i> (NT), <i>Plagiomnium cuspidatum</i> (NT) & <i>Scleropodium cespitans</i> (NT)	Lough Rinn IBrA
001693	Ballyvoyle Head to Tramore cNHA	2 & 3	<i>Cephalozia massalongi</i> (VU; FPO), <i>C. stellulifera</i> (NT), <i>Pohlia andalusica</i> (EN; FPO), <i>Rhynchostegium megapolitanum</i> (NT) & <i>Tortula atrovirens</i> (NT)	
001754	Dargle River Valley cNHA	2, 3, & 6	<i>Fissidens rufulus</i> (EN; FPO)	Wicklow Mountains IBrA
001767	Powerscourt Waterfall cNHA	4 & 6	<i>Aulacomnium androgynum</i> (VU), <i>Orthotrichum stramineum</i> (VU), <i>Platyhypnidium lusitanicum</i> (NT) & <i>Rhabdoweisia fugax</i> (VU)	Wicklow Mountains IBrA
001769	Great Sugar Loaf cNHA	6	<i>Aneura mirabilis</i> (VU)	Wicklow Mountains IBrA
001771	Vartry Reservoir cNHA	6	<i>Grimmia decipiens</i> (NT) & <i>Riccia huebeneriana</i> (DD)	Wicklow Mountains IBrA
002186	Grageen Fen and Bog cNHA	6	<i>Tomentypnum nitens</i> (VU)	Clare Glen and Grageen Fen IBrA
002384	Dough/Thur Mountains NHA	2 & 3	<i>Brachydontium trichodes</i> (EN; FPO), <i>Diselium nudum</i> (NT) & <i>Solenostoma paroicum</i> (NT)	Dartry Mountains IBrA
002435	Crockauns/Keelogyboy Bogs NHA	2, 5 & 6	<i>Dicranella grevilleana</i> (NT), <i>Didymodon maximus</i> (NT; FPO), <i>Hymenostylium recurvirostrum</i> var. <i>insigne</i> (NT), <i>Leiocolea fitzgeraldiae</i> (NT), <i>Mnium thomsonii</i> (NT), <i>Orthothecium rufescens</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Timmia norvegica</i> (VU) & <i>Tortella densa</i> (NT)	

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005001	Lough Oughter and Associated Loughs cNHA	3, 5 & 6	<i>Ephemerum crassinervium</i> subsp. <i>rutheanum</i> (NT), <i>Fissidens monguillonii</i> (NT), <i>Hygroamblystegium humile</i> (EN), <i>Scleropodium cespitans</i> (NT), <i>Sphagnum teres</i> (NT) & <i>Weissia rostellata</i> (NT)	Lough Oughter and Associated Loughs IBrA
005005	Black Head-Poulsallagh Complex cNHA	1, 2, 3, 5 & 6	<i>Didymodon acutus</i> (EN; FPO), <i>Leiocolea bantriensis</i> (NT), <i>Orthothecium rufescens</i> (NT), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II), <i>Pleurochaete squarrosa</i> (NT), <i>Solenostoma sphaerocarpaceum</i> (NT) & <i>Tortella densa</i> (NT)	The Burren IBrA
005015	Glengarriff Harbour and Woodland cNHA	2, 4 & 6	<i>Fissidens polyphyllus</i> (VU), <i>Hedwigia integrifolia</i> (VU; FPO), <i>Heterocladium wulfsbergii</i> (NT), <i>Lejeunea flava</i> subsp. <i>moerei</i> (VU), <i>Sematophyllum demissum</i> (NT), <i>Sphagnum flexuosum</i> (VU), <i>Telaranea europaea</i> (NT) & <i>Tritomaria exsecta</i> (VU)	Glengarriff IBrA
005017	Caha Mountains cNHA	5 & 6	<i>Campylopus shawii</i> (NT), <i>Cyclodictyon laetevirens</i> (NT), <i>Douinia ovata</i> (NT), <i>Grimmia ramondii</i> (NT), <i>Hylocomiastrum umbratum</i> (NT) & <i>Metzgeria leptoneura</i> (NT)	Glengarriff IBrA
005018	Lough Hyne Nature Reserve and Environs cNHA	2 & 3	<i>Fossombronina caespitifformis</i> subsp. <i>multispira</i> (DD) & <i>Riccia crozalsii</i> (EN; FPO)	
005019	Roaringwater Bay and Islands cNHA	2 & 3	<i>Riccia crozalsii</i> (EN; FPO) & <i>Scleropodium touretii</i> (EN; FPO)	
005032	Horn Head and Rinclevan cNHA	1, 2, 3 & 6	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT), <i>Acrobolbus wilsonii</i> (VU; FPO), <i>Campyladelphus elodes</i> (NT), <i>Catoscopium nigratum</i> (NT; FPO), <i>Geocalyx graveolens</i> (EN; FPO), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II) & <i>Scapania cuspiduligera</i> (VU)	Horn Head IBrA
005036	Lough Nagreany Dunes cNHA	2 & 6	<i>Bryum dyffrynense</i> (NT), <i>Catoscopium nigratum</i> (NT; FPO) & <i>Thuidium recognitum</i> (VU)	Horn Head IBrA
005040	Meentygrannagh Bog cNHA	1, 2 & 6	<i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Sphagnum subsecundum</i> (NT), <i>Sphagnum teres</i> (NT), <i>Sphagnum warnstorffii</i> (VU) & <i>Tomentypnum nitens</i> (VU)	Meentygrannagh Bog IBrA
005044	Slieve League cNHA	2, 3, 4, 5 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Anthelia juratzkana</i> (NT), <i>Arctoa fulvella</i> (VU), <i>Campylopus subulatus</i> (VU), <i>Dicranella cerviculata</i> (NT), <i>Ditrichum zonatum</i> (EN), <i>Gymnomitrium concinnatum</i> (EN; FPO), <i>Hylocomiastrum umbratum</i> (NT), <i>Leiocolea fitzgeraldiae</i> (NT), <i>Marsupella sphaelata</i> (VU), <i>Mnium thomsonii</i> (NT), <i>Nardia geoscyphus</i> (NT), <i>Orthothecium rufescens</i> (NT), <i>Philonotis rigida</i> (VU), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Scapania gymnostomophila</i> (VU), <i>Solenostoma subellipticum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD) & <i>Tortula atrovirens</i> (NT)	Slieve League IBrA
005045	Slieve Tooley/Tormore Island/Loughros Beg Bay cNHA	6	<i>Lophozia opacifolia</i> (VU) & <i>Scapania cuspiduligera</i> (VU)	Slieve Tooley/Shekinmore IBrA
005047	Tranarossan and Melmore Lough cNHA	1, 2 & 6	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II) & <i>Platydictya jungermannioides</i> (NT)	Horn Head IBrA
005048	West of Ardara/Maas Road cNHA	1, 2 & 6	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	Slieve Tooley/Shekinmore IBrA
005053	North Dublin Bay cNHA	1, 2, 3 & 6	<i>Bryum intermedium</i> (EN; FPO), <i>Bryum uliginosum</i> (EN; FPO), <i>Bryum warneum</i> (EN; FPO), <i>Didymodon umbrosus</i> (VU), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II) & <i>Rhynchostegium megapolitanum</i> (NT)	Dublin Bay IBrA
005058	River Shannon Callows cNHA	3 & 5	<i>Brachytheciastrum velutinum</i> (EN), <i>Ephemerum crassinervium</i> subsp. <i>rutheanum</i> (NT), <i>Fissidens monguillonii</i> (NT), <i>Fontinalis antipyretica</i> var. <i>cymbifolia</i> (DD), <i>Hygroamblystegium humile</i> (EN), <i>Oxyrrhynchium speciosum</i> (NT) & <i>Sphagnum subsecundum</i> (NT)	
005062	Castletaylor Complex cNHA	6	<i>Bryum creberrimum</i> (DD), <i>Drepanocladus sendtneri</i> (NT), <i>Grimmia dissimulata</i> (VU), <i>Hygroamblystegium varium</i> (NT), <i>Plasturhynchium striatulum</i> (NT) & <i>Pseudocalliergon lycopodioides</i> (VU)	
005073	Lough Corrib cNHA	1, 2 & 5	<i>Drepanocladus sendtneri</i> (NT), <i>Grimmia decipiens</i> (NT), <i>Grimmia funalis</i> (NT), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Pseudocalliergon trifarium</i> (VU), <i>Rhodobryum roseum</i> (NT) & <i>Tortella densa</i> (NT)	

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005075	Lough Lurgeen Bog/Glenamaddy Turlough cNHA	2	<i>Drepanocladus sendtneri</i> (NT) & <i>Ephemerum cohaerens</i> (VU; FPO)	
005086	Ballinskelligs Bay and Inny Estuary cNHA	1 & 2	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	
005087	Castlemaine Harbour cNHA	1, 2 & 6	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	Dingle Peninsula IBrA
005090	Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment cNHA	2, 3, 4, 5 & 6	<i>Acrobolbus wilsonii</i> (VU; FPO), <i>Amphidium lapponicum</i> (VU), <i>Andreaea megistospora</i> (VU), <i>Aneura mirabilis</i> (VU), <i>Antitrichia curtipendula</i> (NT), <i>Arctoa fulvella</i> (VU), <i>Bazzania pearsonii</i> (VU; FPO), <i>Campyliadelphus elodes</i> (NT), <i>Campylopus atrovirens</i> var. <i>falcatus</i> (NT), <i>Campylopus shawii</i> (NT), <i>Campylostelium saxicola</i> (EN; FPO), <i>Cephalozia crassifolia</i> (EN; FPO), <i>Cephaloziella massalongi</i> (VU; FPO), <i>C. stellulifera</i> (NT), <i>Cyclodictyon laetevirens</i> (NT), <i>Douinia ovata</i> (NT), <i>Dumortiera hirsuta</i> (NT), <i>Eremonotus myriocarpus</i> (NT), <i>Fissidens crispus</i> (DD), <i>F. fontanus</i> (VU), <i>F. polyphyllus</i> (VU), <i>F. rivularis</i> (VU), <i>Fontinalis antipyretica</i> var. <i>cymbifolia</i> (DD), <i>Grimmia funalis</i> (NT), <i>G. ramondii</i> (NT), <i>G. torquata</i> (NT), <i>Gymnomitron obtusum</i> (NT), <i>Hageniella micans</i> (NT), <i>Heterocladium wulfsbergii</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Hypnum callichroum</i> (NT), <i>H. uncinulatum</i> (NT; FPO), <i>Isopterygiopsis muelleriana</i> (VU), <i>Leiocolea bantriensis</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>L. flava</i> subsp. <i>moorei</i> (VU), <i>L. hibernica</i> (NT; FPO), <i>Lophozia opacifolia</i> (VU), <i>Marsupella sprucei</i> (VU), <i>Mastigophora woodsii</i> (NT; FPO), <i>Metzgeria leptoneura</i> (NT), <i>Moerckia hibernica</i> (DD), <i>Odontoschisma elongatum</i> (NT), <i>Orthotrichum rivulare</i> (NT), <i>Oxyrrhynchium speciosum</i> (NT), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Plagiochila heterophylla</i> (EN; FPO), <i>Plagiomnium cuspidatum</i> (NT), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Platyhypnidium lusitanicum</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Radula carringtonii</i> (NT), <i>R. holtii</i> (NT; FPO), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania nimbosea</i> (EN; FPO), <i>S. ornithopodioides</i> (VU; FPO), <i>Schistidium strictum</i> (NT), <i>Scleropodium cespitans</i> (NT), <i>Sematophyllum demissum</i> (NT), <i>S. substrumulosum</i> (VU), <i>Sphagnum affine</i> (VU), <i>S. capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. girgensohnii</i> (NT), <i>S. platyphyllum</i> (NT), <i>S. strictum</i> (DD), <i>Sphenolobopsis pearsonii</i> (NT), <i>Telaranea europaea</i> (NT), <i>Tritomaria exsecta</i> (VU) & <i>Ulota coarctata</i> (CR; FPO)	Killarney IBrA
005092	Mount Brandon cNHA	2, 3, 4, 5 & 6	<i>Acrobolbus wilsonii</i> (VU; FPO), <i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Amphidium lapponicum</i> (VU), <i>Anthelia juratzkana</i> (NT), <i>Antitrichia curtipendula</i> (NT), <i>Bazzania pearsonii</i> (VU; FPO), <i>Campylopus atrovirens</i> var. <i>falcatus</i> (NT), <i>C. shawii</i> (NT), <i>Cyclodictyon laetevirens</i> (NT), <i>Douinia ovata</i> (NT), <i>Dumortiera hirsuta</i> (NT), <i>Grimmia donniana</i> (NT), <i>G. funalis</i> (NT), <i>G. muehlenbeckii</i> (DD), <i>G. ramondii</i> (NT), <i>G. torquata</i> (NT), <i>Hageniella micans</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>L. flava</i> subsp. <i>moorei</i> (VU), <i>L. hibernica</i> (NT; FPO), <i>L. mandonii</i> (EN; FPO), <i>Leptodontium flexifolium</i> (NT), <i>Mastigophora woodsii</i> (NT; FPO), <i>Metzgeria leptoneura</i> (NT), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiothecium cavifolium</i> (VU), <i>P. denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Platyhypnidium lusitanicum</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Racomitrium macounii</i> subsp. <i>alpinum</i> (VU), <i>Radula carringtonii</i> (NT), <i>R. holtii</i> (NT; FPO), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania gymmostomophila</i> (VU), <i>S. nimbosea</i> (EN; FPO), <i>S. ornithopodioides</i> (VU; FPO), <i>Schistidium strictum</i> (NT), <i>Sphagnum platyphyllum</i> (NT), <i>S. strictum</i> (DD), <i>Sphenolobopsis pearsonii</i> (NT), <i>Tetradontium brownianum</i> (NT) & <i>Tritomaria exsecta</i> (VU)	Dingle Peninsula IBrA
005103	Lough Ree cNHA	3, 5 & 6	<i>Campyliadelphus elodes</i> (NT), <i>Drepanocladus sendtneri</i> (NT), <i>Fontinalis antipyretica</i> var. <i>cymbifolia</i> (DD), <i>Hygroamblystegium humile</i> (EN), <i>Hygroamblystegium varium</i> (NT), <i>Oxyrrhynchium speciosum</i> (NT), <i>Plagiomnium cuspidatum</i> (NT) & <i>Pseudocalliergon lycopodioides</i> (VU)	Lough Ree IBrA
005104	Fortwilliam Turlough cNHA	2 & 6	<i>Ephemerum cohaerens</i> (VU; FPO), <i>Hygroamblystegium varium</i> (NT) & <i>Pseudocalliergon lycopodioides</i> (VU)	Lough Ree IBrA

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005105	Carlingford Mountain cNHA	2, 3 & 6	<i>Campylopus subulatus</i> (VU), <i>Grimmia decipiens</i> (NT), <i>G. ramondii</i> (NT), <i>Hedwigia integrifolia</i> (VU; FPO), <i>Leiocolea bantriensis</i> (NT), <i>Marsupella funckii</i> (NT) & <i>Pogonatum nanum</i> (EN)	Cooley Mountains IBrA
005110	Bellacorick Iron Flush cNHA	6	<i>Sphagnum teres</i> (NT) & <i>Tomentypnum nitens</i> (VU)	North Mayo IBrA
005111	Mullet/Blacksod Bay Complex cNHA	1 & 2	<i>Drepanocladus sendtneri</i> (NT) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	
005116	Carrowmore Lake Complex cNHA	1, 2 & 6	<i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II)	North Mayo IBrA
005120	Corraun Plateau cNHA	2, 4 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Dicranodontium uncinatum</i> (VU), <i>Douinia ovata</i> (NT), <i>Hypnum callichroum</i> (NT) & <i>Molendoa warbugii</i> (VU; FPO)	Achill Island and Corraun Plateau IBrA
005124	Glenamoy Bog Complex cNHA	1, 2, 3, 5 & 6	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT), <i>Bryum dyffrynense</i> (NT), <i>Bryum warneum</i> (EN; FPO), <i>Catoscopium nigratum</i> (NT; FPO), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II), <i>Plagiomnium cuspidatum</i> (NT), <i>Solenostoma paroicum</i> (NT), <i>Sphagnum subsecundum</i> (NT) & <i>Tomentypnum nitens</i> (VU)	North Mayo IBrA
005127	Inishkea Islands cNHA	1 & 2	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	
005133	Owenduff/Nephin Complex cNHA	1, 2, 3, 4 & 5	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Bryum riparium</i> (EN), <i>Dicranodontium uncinatum</i> (VU), <i>Douinia ovata</i> (NT), <i>Fontinalis antipyretica</i> var. <i>gracilis</i> (NT), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Heterocladium wulfsbergii</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>Mastigophora woodsii</i> (NT; FPO), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Scapania ornithopodioides</i> (VU; FPO), <i>Solenostoma sphaerocarpum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>Tetradontium brownianum</i> (NT) & <i>Tomentypnum nitens</i> (VU)	
005138	Clara Bog cNHA	6	<i>Cephalozia loitlesbergeri</i> (VU) & <i>Tetraplodon angustatus</i> (DD)	Clara Bog IBrA
005144	Cuilcagh-Anierin Uplands cNHA	1, 2, 3, 5 & 6	<i>Bartramia ithyphylla</i> (VU), <i>Dicranodontium asperulum</i> (VU), <i>Discelium nudum</i> (NT), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Leptodontium flexifolium</i> (NT), <i>Philonotis arnellii</i> (EN), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Rhabdoweisia crispata</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. girgensohnii</i> (NT), <i>S. platyphyllum</i> (NT) & <i>S. russowii</i> (NT)	Cuilcagh, Marlbank and Boleybrack IBrA
005149	Carrowbehy/Caher Bog cNHA	4 & 6	<i>Cephalozia pleniceps</i> (VU), <i>Sphagnum flexuosum</i> (VU), <i>S. subsecundum</i> (NT), <i>S. teres</i> (NT) & <i>S. warnstorffii</i> (VU)	Carrowbehy/Caher Bog IBrA
005160	Ben Bulbin, Gleniff and Glenade Complex cNHA	2, 3, 4, 5 & 6	<i>Bryum elegans</i> (VU), <i>Cinclidium stygium</i> (VU), <i>Dicranella grevilleana</i> (NT), <i>Didymodon maximus</i> (NT; FPO), <i>Dumortiera hirsuta</i> (NT), <i>Encalypta alpina</i> (VU), <i>Hymenostylium recurvirostrum</i> var. <i>insigne</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>L. fitzgeraldiae</i> (NT), <i>Lejeunea mandonii</i> (EN; FPO), <i>Marchantia polymorpha</i> subsp. <i>montivagans</i> (EN; FPO), <i>Metzgeria leptoneura</i> (NT), <i>Mnium thomsonii</i> (NT), <i>Myurella julacea</i> (EN; FPO), <i>Orthothecium rufescens</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Plagiomnium cuspidatum</i> (NT), <i>Plagiopus oederianus</i> (CR), <i>Platydictya jungermannioides</i> (NT), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Scapania cuspiduligera</i> (VU), <i>Schistidium robustum</i> (DD), <i>Seligeria oelandica</i> (VU), <i>S. patula</i> (NT), <i>Solenostoma subellipticum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>Timmia norvegica</i> (VU) & <i>Tortella densa</i> (NT)	Dartry Mountains IBrA
005161	Bunduff Lough and Machair/Trawalua/Mullaghmore cNHA	1, 2 & 6	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	Dartry Mountains IBrA
005162	Cummeen Strand/Drumcliff Bay (Sligo Bay) cNHA	2 & 3	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT), <i>Brachytheciastrum velutinum</i> (EN) & <i>Didymodon acutus</i> (EN; FPO)	

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005163	Lough Hoe Bog cNHA	3	<i>Grimmia anomala</i> (EN), <i>Hylocomiastrum umbratum</i> (NT), <i>Polytrichum commune</i> var. <i>perigoniale</i> (DD), <i>Sphagnum girgensohnii</i> (NT) & <i>Sphagnum skyense</i> (DD)	
005169	Galtee Mountains cNHA	3, 4, 5 & 6	<i>Amphidium lapponicum</i> (VU), <i>Bartramia ithyphylla</i> (VU), <i>Grimmia ramondii</i> (NT), <i>G. torquata</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>Metzgeria leptoneura</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>P. elongata</i> var. <i>greenii</i> (EN), <i>Rhabdoweisia crispata</i> (NT), <i>Schistidium strictum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. russowii</i> (NT), <i>S. skyense</i> (DD), <i>S. teres</i> (NT), <i>S. warnstorffii</i> (VU), <i>Sphenolobopsis pearsonii</i> (NT) & <i>Tortella densa</i> (NT)	Galtee Mountains IBrA
005177	Scragh Bog cNHA	1, 2 & 6	<i>Cinclidium stygium</i> (VU), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Ricciocarpos natans</i> (NT) & <i>Tomentypnum nitens</i> (VU)	Scragh Bog IBrA
005190	Glen of the Downs cNHA	6	<i>Cephaloziella turneri</i> (VU) & <i>Plagiothecium curvifolium</i> (VU)	Wicklow Mountains IBrA
005191	Knocksink Wood cNHA	2, 3 & 6	<i>Fissidens rufulus</i> (EN; FPO)	Wicklow Mountains IBrA
005195	Blackstairs Mountains cNHA	6	<i>Gymnomitrium obtusum</i> (NT), <i>Leptodontium flexifolium</i> (NT) & <i>Sphagnum russowii</i> (NT)	Blackstairs Mountains IBrA
005196	Slaney River Valley cNHA	2 & 4	<i>Cephaloziella turneri</i> (VU), <i>Diplophyllum obtusifolium</i> (NT), <i>Entosthodon fascicularis</i> (NT), <i>Grimmia orbicularis</i> (VU), <i>Orthotrichum sprucei</i> (VU; FPO) & <i>Weissia brachycarpa</i> var. <i>brachycarpa</i> (DD)	
005198	Spahill and Clomantagh Hill cNHA	6	<i>Bryum torquescens</i> (VU), <i>Fissidens exilis</i> (VU) & <i>Rhodobryum roseum</i> (NT)	River Barrow and River Nore IBrA
005203	Clare Glen cNHA	6	<i>Dumortiera hirsuta</i> (NT), <i>Hygroamblystegium fluviatile</i> (NT) & <i>Lejeunea eckloniana</i> (NT)	Clare Glen and Grageen Fen IBrA
005211	Barley Cove to Ballyrisode Point cNHA	1 & 2	<i>Cephaloziella stellulifera</i> (NT) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	
005219	Gweedore Bay and Islands cNHA	1, 2 & 3	<i>Abietinella abietina</i> var. <i>abietina</i> (EN), <i>Abietinella abietina</i> var. <i>hystricosa</i> (NT), <i>Catoscopium nigratum</i> (NT; FPO) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	
005221	Muckish Mountain cNHA	2, 3, 4, 5 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Anthelia juratzkana</i> (NT), <i>Bazzania pearsonii</i> (VU; FPO), <i>Brachydontium trichodes</i> (EN; FPO), <i>Leiocolea bantriensis</i> (NT), <i>Lophozia opacifolia</i> (VU), <i>Nardia geoscyphus</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Scapania ornithopodioides</i> (VU; FPO) & <i>Tetradontium brownianum</i> (NT)	Derryveagh and Muckish Mountain IBrA
005222	Sheephaven cNHA	1, 2, 3 & 6	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT), <i>Catoscopium nigratum</i> (NT; FPO), <i>Cephaloziella turneri</i> (VU), <i>Leiocolea gillmanii</i> (VU; FPO), <i>Meesia uliginosa</i> (EN; FPO) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	Horn Head IBrA
005234	Omev Island Machair cNHA	1, 2 & 6	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	West Galway Coast IBrA
005239	Cloonee and Inchiquin Loughs, Uragh Wood cNHA	2, 3, 5 & 6	<i>Aneura mirabilis</i> (VU), <i>Bryum moravicum</i> (CR), <i>Campylopus shawii</i> (NT), <i>Grimmia ramondii</i> (NT), <i>Hageniella micans</i> (NT), <i>Heterocladium wulfsbergii</i> (NT), <i>Hypnum uncinulatum</i> (NT; FPO), <i>Lejeunea eckloniana</i> (NT), <i>L. flava</i> subsp. <i>moorei</i> (VU) & <i>Sematophyllum demissum</i> (NT)	Glengarriff IBrA
005243	Arroo Mountain cNHA	2, 3, 4, 5 & 6	<i>Cinclidium stygium</i> (VU), <i>Dicranella grevilleana</i> (NT), <i>Didymodon maximus</i> (NT; FPO), <i>Encalypta rhaptocarpa</i> (CR; FPO), <i>Hymenostylium recurvirostrum</i> var. <i>insigne</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>L. fitzgeraldiae</i> (NT), <i>Mnium thomsonii</i> (NT), <i>Orthothecium rufescens</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Schistidium robustum</i> (DD), <i>Schistidium trichodon</i> (VU), <i>Seligeria oelandica</i> (VU), <i>S. patula</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. girgensohnii</i> (NT), <i>S. platyphyllum</i> (NT), <i>S. russowii</i> (NT) & <i>Timmia norvegica</i> (VU)	Dartry Mountains IBrA

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005248	Doogort Machair/Lough Doo cNHA	1, 2, 3 & 6	<i>Bryum calophyllum</i> (EN; FPO), <i>B. dyffrynense</i> (NT), <i>Catocopium nigratum</i> (NT; FPO), <i>Leiocolea gillmanii</i> (VU; FPO), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II) & <i>Scapania cuspiduligera</i> (VU)	Achill Island and Corraun Plateau IBrA
005250	Keel Machair/Menaun Cliffs cNHA	1, 2, 3, 4, 5 & 6	<i>Bryum calophyllum</i> (EN; FPO), <i>Catocopium nigratum</i> (NT; FPO), <i>Fossombronina fimbriata</i> (VU), <i>F. maritima</i> (NT), <i>Nardia geoscyphus</i> (NT), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II), <i>Philonotis rigida</i> (VU), <i>Plagiomnium cuspidatum</i> (NT), <i>Platyhypnidium lusitanicum</i> (NT), <i>Rhodobryum roseum</i> (NT), <i>Tortella inclinata</i> (EN; FPO) & <i>Tortula modica</i> (VU)	Achill Island and Corraun Plateau IBrA
005253	Castletownshend cNHA	2 & 3	<i>Cephalozia crassifolia</i> (EN; FPO), <i>Cephaloziella turneri</i> (VU) & <i>Telaranea europaea</i> (NT)	
005265	Holdenstown Bog cNHA	1 & 2	<i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II)	
005267	Lough Carra/Mask Complex cNHA	1, 2, 3, 4, 5 & 6	<i>Bryum caespitium</i> (VU), <i>B. gemmiparum</i> (VU), <i>B. knoxtonii</i> (EN; FPO), <i>Campyliadelphus elodes</i> (NT), <i>Ephemerum crassinervium</i> subsp. <i>rutheanum</i> (NT), <i>E. crassinervium</i> subsp. <i>sessile</i> (NT), <i>E. spinulosum</i> (EN; FPO), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Plagiomnium cuspidatum</i> (NT), <i>Pohlia wahlenbergii</i> var. <i>calcarea</i> (DD), <i>Pseudocalliergon lycopodioides</i> (VU), <i>Scapania gymnostomophila</i> (VU), <i>Tortella densa</i> (NT), <i>Tortula marginata</i> (NT) & <i>Weissia rostellata</i> (NT)	Lough Carra and Lough Mask IBrA
005275	Derryclogher (Knockboy) Bog cNHA	3, 5 & 6	<i>Douinia ovata</i> (NT), <i>Grimmia anomala</i> (EN), <i>G. ramondii</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Metzgeria leptoneura</i> (NT), <i>Odontoschisma elongatum</i> (NT), <i>Racomitrium macounii</i> subsp. <i>alpinum</i> (VU), <i>Schistidium strictum</i> (NT) & <i>Sphenolobopsis pearsonii</i> (NT)	Glengarriff IBrA
005276	Glanmore Bog cNHA	2, 5 & 6	<i>Dumortiera hirsuta</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>L. hibernica</i> (NT; FPO), <i>Paraleptodontium recurvifolium</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Radula holtii</i> (NT; FPO) & <i>Telaranea europaea</i> (NT)	Glengarriff IBrA
005277	Meenaguse Scragh cNHA	2, 3, 4 & 6	<i>Gymnomitrium concinnum</i> (EN; FPO), <i>Marsupella adusta</i> (NT), <i>M. sphacelata</i> (VU), <i>M. sprucei</i> (VU), <i>Philonotis tomentella</i> (VU) & <i>Sphagnum russowii</i> (NT)	Blue Stack Mountains IBrA
005285	Bellacorick Bog Complex cNHA	2, 3, 4 & 6	<i>Cephalozia pleniceps</i> (VU), <i>Leiocolea rutheana</i> var. <i>rutheana</i> (EN; FPO), <i>Paludella squarrosa</i> (CR; FPO), <i>Pseudocalliergon lycopodioides</i> (VU), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Sphagnum teres</i> (NT), <i>S. warnstorffii</i> (VU) & <i>Tomentypnum nitens</i> (VU)	North Mayo IBrA
005286	East Burren Complex cNHA	2, 3, 4, 5 & 6	<i>Amblystegium confervoides</i> (NT), <i>Campyliadelphus elodes</i> (NT), <i>Cephalozia pleniceps</i> (VU), <i>Cephaloziella spinigera</i> (DD), <i>C. stellulifera</i> (NT), <i>Cinclidium stygium</i> (VU), <i>Drepanocladus sendtneri</i> (NT), <i>Grimmia dissimulata</i> (VU), <i>Leiocolea bantriensis</i> (NT), <i>Leptodon smithii</i> (EN; FPO), <i>Mnium thomsonii</i> (NT), <i>Oxyrrhynchium speciosum</i> (NT), <i>Plasteurhynchium striatulum</i> (NT), <i>Platydictya jungermannioides</i> (NT), <i>Pseudocalliergon lycopodioides</i> (VU), <i>P. trifarium</i> (VU), <i>Rhodobryum roseum</i> (NT), <i>Scleropodium cespitans</i> (NT) & <i>Tortella densa</i> (NT)	The Burren IBrA
005287	Mweelrea/Sheeffry/Erriff Complex cNHA	1, 2, 3, 4, 5 & 6	<i>Amphidium lapponicum</i> (VU), <i>Bazzania pearsonii</i> (VU; FPO), <i>Bryum calophyllum</i> (EN; FPO), <i>B. riparium</i> (EN), <i>Catocopium nigratum</i> (NT; FPO), <i>Dicranodontium uncinatum</i> (VU), <i>Ditrichum zonatum</i> (EN), <i>Fissidens serrulatus</i> (VU), <i>Fossombronina caespitifformis</i> subsp. <i>multispira</i> (DD), <i>Grimmia donniana</i> (NT), <i>G. funalis</i> (NT), <i>Gymnomitrium obtusum</i> (NT), <i>Hygrohypnum duriusculum</i> (CR; FPO), <i>Hylocomiastrum umbratum</i> (NT), <i>Kurzia sylvatica</i> (NT), <i>Lejeunea flava</i> subsp. <i>moorei</i> (VU), <i>L. hibernica</i> (NT; FPO), <i>Lophozia opacifolia</i> (VU), <i>Marsupella adusta</i> (NT), <i>M. sprucei</i> (VU), <i>Mastigophora woodsii</i> (NT; FPO), <i>Metzgeria leptoneura</i> (NT), <i>Nardia geoscyphus</i> (NT), <i>Oedipodium griffithianum</i> (CR; FPO), <i>Paraleptodontium recurvifolium</i> (NT), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II), <i>Philonotis cernua</i> (CR), <i>P. rigida</i> (VU), <i>P. tomentella</i> (VU), <i>Plagiobryum zieri</i> (NT), <i>Plagiochila carringtonii</i> (EN; FPO), <i>Pogonatum nanum</i> (EN), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>Ptilium crista-castrensis</i> (CR; FPO), <i>Racomitrium macounii</i> subsp. <i>alpinum</i> (VU), <i>Radula holtii</i> (NT; FPO), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania nimbosea</i> (EN; FPO), <i>S. ornithopodioides</i> (VU; FPO), <i>S. subalpina</i> (DD), <i>Schistidium strictum</i> (NT), <i>Solenostoma paroicum</i> (NT), <i>S. sphaerocarpum</i> (NT), <i>S. subellipticum</i> (NT), <i>Sphagnum platyphyllum</i> (NT), <i>S. skyense</i> (DD), <i>S. strictum</i> (DD), <i>S. subsecundum</i> (NT) & <i>Telaranea europaea</i> (NT)	West Galway and South Mayo IBrA

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005288	Comeragh Mountains cNHA	1, 2, 3, 4, 5 & 6	<i>Andreaea megistospora</i> (VU), <i>Antitrichia curtipendula</i> (NT), <i>Barbilophozia atlantica</i> (EN; FPO), <i>Bartramia ithyphylla</i> (VU), <i>Grimmia decipiens</i> (NT), <i>G. funalis</i> (NT), <i>G. muehlenbeckii</i> (DD), <i>G. ramondii</i> (NT), <i>G. torquata</i> (NT), <i>Gymnomitrium obtusum</i> (NT), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Hedwigia ciliata</i> var. <i>ciliata</i> (VU), <i>H. integrifolia</i> (VU; FPO), <i>Heterocladium wulfsbergii</i> (NT), <i>Kurzia sylvatica</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>Leptodontium flexifolium</i> (NT), <i>Marsupella sphacelata</i> (VU), <i>Plagiothecium platyphyllum</i> (VU), <i>Platyhypnidium lusitanicum</i> (NT), <i>Porella cordaeana</i> (NT), <i>Rhabdoweisia crispata</i> (NT), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Schistidium strictum</i> (NT), <i>Solenostoma paroicum</i> (NT), <i>Sphagnum girgensohnii</i> (NT), <i>S. skyense</i> (DD), <i>S. teres</i> (NT) & <i>Tortella densa</i> (NT)	Comeragh Mountains IBrA
005289	Croaghau/Slievemore cNHA	2, 3, 4, 5 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Anthelia juratzkana</i> (NT), <i>Bazzania pearsonii</i> (VU; FPO), <i>Bryum riparium</i> (EN), <i>Cyclodictyon laetevirens</i> (NT), <i>Dicranodontium uncinatum</i> (VU), <i>Douinia ovata</i> (NT), <i>Geocalyx graveolens</i> (EN; FPO), <i>Grimmia ramondii</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Kurzia sylvatica</i> (NT), <i>Leptodontium flexifolium</i> (NT), <i>Marsupella funckii</i> (NT), <i>Marsupella sprucei</i> (VU), <i>Mastigophora woodsii</i> (NT; FPO), <i>Metzgeria leptoneura</i> (NT), <i>Nardia geoscyphus</i> (NT), <i>Plagiomnium cuspidatum</i> (NT), <i>Plagiothecium cavifolium</i> (VU), <i>Platyhypnidium lusitanicum</i> (NT), <i>Scapania lingulata</i> (DD), <i>S. ornithopodioides</i> (VU; FPO), <i>Solenostoma subellipticum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>Telaranea europaea</i> (NT), <i>Tortula marginata</i> (NT) & <i>Tritomaria exsecta</i> (VU)	Achill Island and Corraun Plateau IBrA
005292	Lough Gill cNHA	2, 5 & 6	<i>Fissidens monguillonii</i> (NT), <i>Orthotrichum rivulare</i> (NT), <i>O. sprucei</i> (VU; FPO), <i>Oxyrrhynchium speciosum</i> (NT), <i>Plasteurhynchium striatulum</i> (NT) & <i>Porella cordeana</i> (NT)	Dartry Mountains IBrA
005295	Ox Mountains Bogs cNHA	2, 3, 4 & 5	<i>Andreaea megistospora</i> (VU), <i>Grimmia anomala</i> (EN), <i>Leiocolea bantriensis</i> (NT), <i>Meesia triquetra</i> (CR; FPO), <i>Rhabdoweisia crispata</i> (NT), <i>Schistidium strictum</i> (NT), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. girgensohnii</i> (NT), <i>S. platyphyllum</i> (NT), <i>S. strictum</i> (DD), <i>S. teres</i> (NT), <i>S. warnstorffii</i> (VU) & <i>Tomentypnum nitens</i> (VU)	
005296	Maumturk Mountains cNHA	6	<i>Grimmia funalis</i> (NT) & <i>Sphagnum platyphyllum</i> (NT)	West Galway and South Mayo IBrA
005298	North Inishowen Coast cNHA	2, 3 & 6	<i>Bryum torquescens</i> (VU), <i>B. uliginosum</i> (EN; FPO), <i>Pohlia wahlenbergii</i> var. <i>calcarea</i> (DD) & <i>Thuidium recognitum</i> (VU)	North Inishowen Coast and Lough Swilly IBrA
005299	The Twelve Bens/Garraun Complex cNHA	2, 3, 4, 5 & 6	<i>Acrobolbus wilsonii</i> (VU; FPO), <i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Anthelia juratzkana</i> (NT), <i>Arctoa fulvella</i> (VU), <i>Bazzania pearsonii</i> (VU; FPO), <i>Campylopus atrovirens</i> var. <i>falcatus</i> (NT), <i>Cephalozia crassifolia</i> (EN; FPO), <i>Dicranodontium uncinatum</i> (VU), <i>Douinia ovata</i> (NT), <i>Eremonotus myriocarpus</i> (NT), <i>Fossombronina caespitiformis</i> subsp. <i>multispira</i> (DD), <i>Grimmia funalis</i> (NT), <i>Gymnomitrium obtusum</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Kurzia sylvatica</i> (NT), <i>Leiocolea bantriensis</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>L. hibernica</i> (NT; FPO), <i>Lophozia opacifolia</i> (VU), <i>Marsupella funckii</i> (NT), <i>M. sprucei</i> (VU), <i>Mnium thomsonii</i> (NT), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiobryum zieri</i> (NT), <i>Plagiochila carringtonii</i> (EN; FPO), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Platyhypnidium lusitanicum</i> (NT), <i>Pohlia elongata</i> var. <i>elongata</i> (NT), <i>P. elongata</i> var. <i>greenii</i> (EN), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania ornithopodioides</i> (VU; FPO), <i>Solenostoma paroicum</i> (NT), <i>S. subellipticum</i> (NT), <i>Sphagnum affine</i> (VU), <i>Sphenolobopsis pearsonii</i> (NT), <i>Telaranea europaea</i> (NT) & <i>Tetradontium brownianum</i> (NT)	West Galway and South Mayo IBrA
005300	Boleybrack Mountain cNHA	6	<i>Aulacomnium androgynum</i> (VU) & <i>Dicranodontium asperulum</i> (VU)	Cuilcagh, Marlbank and Boleybrack IBrA

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005301	Connemara Bog Complex cNHA	1, 2, 3, 4, 5 & 6	<i>Campylopus atrovirens</i> var. <i>falcatus</i> (NT), <i>Cephaloziella elachista</i> (DD), <i>Grimmia decipiens</i> (NT), <i>G. donniana</i> (NT), <i>G. funalis</i> (NT), <i>G. longirostris</i> (CR), <i>Hamatocaulis vernicosus</i> (NT; FPO; Annex II), <i>Kurzia sylvatica</i> (NT), <i>Pseudocalliergon trifarium</i> (VU), <i>Rhizomnium pseudopunctatum</i> (NT), <i>Sphagnum flexuosum</i> (VU), <i>S. platyphyllum</i> (NT), <i>S. strictum</i> (DD), <i>S. subsecundum</i> (NT), <i>S. warnstorffii</i> (VU), <i>Telaranea europaea</i> (NT) & <i>Tomentypnum nitens</i> (VU)	West Galway and South Mayo IBrA
005302	Ballyhoura Mountains cNHA	2, 3 & 5	<i>Bryum bornholmense</i> (NT), <i>Campylostelium saxicola</i> (EN; FPO), <i>Douinia ovata</i> (NT), <i>Heterocladium wulfsbergii</i> (NT), <i>Leptodontium flexifolium</i> (NT) & <i>Sphagnum russowii</i> (NT)	
005305	Cloghernagore Bog and Glenveagh National Park cNHA	2, 3, 4, 5 & 6	<i>Adelanthus lindenbergianus</i> (VU; FPO), <i>Aneura mirabilis</i> (VU), <i>Anthelia juratzkana</i> (NT), <i>Bazzania pearsonii</i> (VU; FPO), <i>Bryum bornholmense</i> (NT), <i>B. tenuisetum</i> (DD), <i>Ditrichum zonatum</i> (EN), <i>Grimmia atrata</i> (EN; FPO), <i>Hylocomiastrum umbratum</i> (NT), <i>Marsupella adusta</i> (NT), <i>M. sprucei</i> (VU), <i>Scapania ornithopodioides</i> (VU; FPO), <i>Schistidium agassizii</i> (VU), <i>Solenostoma subellipticum</i> (NT), <i>Telaranea europaea</i> (NT) & <i>Tetradontium brownianum</i> (NT)	Derryveagh and Muckish Mountain IBrA
005306	Tralee Bay Complex cNHA	1, 2 & 6	<i>Bryum caespiticium</i> (VU), <i>Drepanocladus sendtneri</i> (NT) & <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	Dingle Peninsula IBrA
005307	Slyne Head Peninsula cNHA	1, 2, 3 & 6	<i>Bryum calophyllum</i> (EN; FPO), <i>B. dyffrynense</i> (NT), <i>Campyliadelphus elodes</i> (NT), <i>Catoscopium nigratum</i> (NT; FPO), <i>Petalophyllum ralfsii</i> (LC; FPO; Annex II) & <i>Thuidium recognitum</i> (VU)	West Galway Coast IBrA
005319	Wicklow Mountains cNHA	2, 3, 4, 5 & 6	<i>Aneura mirabilis</i> (VU), <i>Barbilophozia barbata</i> (CR), <i>Bartramia halleriana</i> (CR; FPO), <i>Brachydontium trichodes</i> (EN; FPO), <i>Cephaloziella massalongi</i> (VU; FPO), <i>C. nicholsonii</i> (VU; FPO), <i>C. stellulifera</i> (NT), <i>Ditrichum plumbicola</i> (EN; FPO), <i>Ditrichum zonatum</i> (EN), <i>Douinia ovata</i> (NT), <i>Grimmia decipiens</i> (NT), <i>G. donniana</i> (NT), <i>G. ramondii</i> (NT), <i>Gymnomitrium obtusum</i> (NT), <i>Hedwigia integrifolia</i> (VU; FPO), <i>Heterocladium wulfsbergii</i> (NT), <i>Leptodontium flexifolium</i> (NT), <i>Marsupella sphacelata</i> (VU), <i>M. sprucei</i> (VU), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Plagiothecium platyphyllum</i> (VU), <i>Platyhypnidium lusitanicum</i> (NT), <i>Polytrichum commune</i> var. <i>perigoniale</i> (DD), <i>Racomitrium elongatum</i> (VU), <i>Rhabdoweisia crispata</i> (NT), <i>R. fugax</i> (VU), <i>Solenostoma sphaerocarpaceum</i> (NT), <i>Southbya tophacea</i> (CR; FPO), <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD), <i>S. girgensohnii</i> (NT), <i>S. russowii</i> (NT) & <i>Tetradontium brownianum</i> (NT)	Wicklow Mountains IBrA
005324	Murvey Machair cNHA	1, 2 & 6	<i>Petalophyllum ralfsii</i> (LC; FPO; Annex II)	West Galway Coast IBrA
005327	Lower River Suir cNHA	2 & 3	<i>Leptodon smithii</i> (EN; FPO) & <i>Scleropodium cespitans</i> (NT)	
005332	Kenmare River cNHA	2, 3, 4 & 6	<i>Cephaloziella integerrima</i> (VU), <i>C. massalongi</i> (VU; FPO), <i>C. nicholsonii</i> (VU; FPO), <i>C. stellulifera</i> (NT), <i>Ditrichum cornubicum</i> (CR; FPO), <i>D. lineare</i> (CR; FPO), <i>Pohlia andalusica</i> (EN; FPO) & <i>Scopelophila cataractae</i> (VU)	Allihies IBrA
005335	River Barrow and River Nore cNHA	4 & 6	<i>Cephaloziella turneri</i> (VU), <i>Didymodon umbrosus</i> (VU), <i>Fissidens exilis</i> (VU), <i>Grimmia orbicularis</i> (VU), <i>Hygroamblystegium fluviatile</i> (NT), <i>Lejeunea eckloniana</i> (NT), <i>Rhynchostegium megapolitanum</i> (NT) & <i>Tortula marginata</i> (NT)	River Barrow and River Nore IBrA
005338	Blackwater River (Cork/Waterford) cNHA	2, 5 & 6	<i>Dumortiera hirsuta</i> (NT), <i>Fissidens fontanus</i> (VU), <i>Hygroamblystegium fluviatile</i> (NT), <i>H. varium</i> (NT), <i>Orthotrichum rivulare</i> (NT), <i>O. sprucei</i> (VU; FPO), <i>Schistidium elegantulum</i> subsp. <i>elegantulum</i> (DD), <i>Scleropodium cespitans</i> (NT), <i>Telaranea europaea</i> (NT) & <i>Tortula marginata</i> (NT)	Blackwater River and Knockmealdown Mountains IBrA
005341	Blackwater River (Kerry) cNHA	6	<i>Atrichum tenellum</i> (NT), <i>Dumortiera hirsuta</i> (NT), <i>Lejeunea eckloniana</i> (NT) & <i>Philonotis rigida</i> (VU)	Killarney IBrA
005347	Slieve Mish Mountains cNHA	2, 5 & 6	<i>Bazzania pearsonii</i> (VU; FPO), <i>Dumortiera hirsuta</i> (NT), <i>Grimmia ramondii</i> (NT), <i>Heterocladium wulfsbergii</i> (NT), <i>Hylocomiastrum umbratum</i> (NT), <i>Hypnum callichroum</i> (NT), <i>Mastigophora woodsii</i> (NT; FPO), <i>Moerckia hibernica</i> (DD), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiothecium denticulatum</i> var. <i>obtusifolium</i> (NT), <i>Platyhypnidium lusitanicum</i> (NT), <i>Porella cordaeana</i> (NT), <i>Radula carringtonii</i> (NT), <i>Scapania ornithopodioides</i> (VU; FPO), <i>Schistidium strictum</i> (NT) & <i>Tetradontium brownianum</i> (NT)	Dingle Peninsula IBrA

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005384	River Moy cNHA	2, 3 & 6	<i>Bryum intermedium</i> (EN; FPO), <i>B. uliginosum</i> (EN; FPO), <i>Pseudocalliergon lycopodioides</i> (VU), <i>Schistidium strictum</i> (NT) & <i>Southbya tophacea</i> (CR; FPO)	Mannin and Island Lakes IBrA
005385	River Boyne and River Blackwater cNHA	3	<i>Tortula lanceola</i> (CR) & <i>Ricciocarpos natans</i> (NT)	
005408	Slievefelim to Silvermines Mountains cNHA	2, 3, 4, 5 & 6	<i>Cephaloziella stellulifera</i> (NT), <i>Ditrichum plumbicola</i> (EN; FPO), <i>Douinia ovata</i> (NT); <i>Entosthodon fascicularis</i> (NT), <i>Leptodontium flexifolium</i> (NT), <i>Oxyrrhynchium schleicheri</i> (CR), <i>Philonotis caespitosa</i> (NT), <i>Rhabdoweisia crispata</i> (NT), <i>Scapania lingulata</i> (DD), <i>Schistidium platyphyllum</i> (VU), <i>Sphagnum flexuosum</i> (VU), <i>S. subsecundum</i> (NT), <i>S. russowii</i> (NT) & <i>S. warnstorffii</i> (VU)	Keeper Hill and Silvermines Mountains IBrA
005419	Beara Peninsula cNHA	2 & 6	<i>Cephaloziella massalongi</i> (VU; FPO), <i>C. nicholsonii</i> (VU; FPO) & <i>C. stellulifera</i> (NT)	Allihies IBrA

Appendix III Potential 'new' cNHAs (18 sites)

Location name	County	Associated cNHA (no boundary delineated)	Grid Ref.	Criteria met	Taxa present (Red List status and/or legal protection status)	Important Bryophyte Area (IBrA)
Ballycorus	Dublin		O2220	2, 3 & 6	<i>Bryum bornholmense</i> (NT), <i>Cephaloziella massalongi</i> (VU; FPO), <i>Diplophyllum obtusifolium</i> (NT) & <i>Ditrichum plumbicola</i> (EN; FPO)	Wicklow Mountains IBrA
Ballycotton	Cork	Whitegate to Ballycotton Cliffs cNHA (002863)	W9963/ W9762	2, 3 & 6	<i>Rhynchostegium megapolitanum</i> (NT), <i>Scleropodium touretii</i> (EN; FPO), <i>Tortula atrovirens</i> (NT) & <i>Tortula canescens</i> (DD)	Ballycotton Cliffs IBrA
Birreencorragh	Mayo		G0105	Expert review	<i>Lophozia opacifolia</i> (VU), <i>Moerckia hibernica</i> (DD), <i>Paraleptodontium recurvifolium</i> (NT), <i>Plagiobryum zieri</i> (NT) & <i>Sphagnum skyense</i> (DD)	
Cappaghglass/ Cappagh Copper Mines	Cork	Cappagh Copper Mines cNHA (002851)	V9832/ V9932	2 & 3	<i>Cephaloziella nicholsonii</i> (VU; FPO), <i>C. stellulifera</i> (NT), <i>Pohlia andalusica</i> (EN; FPO) & <i>Scopelophila cataractae</i> (VU)	
Coomclogherane Lake	Kerry		V9967	5 & 6	<i>Eremonotus myriocarpus</i> (NT), <i>Grimmia ramondii</i> (NT), <i>Grimmia torquata</i> (NT), <i>Metzgeria leptoneura</i> (NT) & <i>Odontoschisma elongatum</i> (NT)	Glengarriff IBrA
Ederdamone	Donegal		G936602	2 & 3	<i>Fissidens rufulus</i> (EN; FPO)	
Glounroe/ Knockmealdown	Tipperary	Knockmealdown Mountains cNHA (002693)	R9811/ S0608/ S0411	2, 3 & 6	<i>Antitrichia curtipendula</i> (NT), <i>Cephalozia crassifolia</i> (EN; FPO), <i>Heterocladium wulfsbergii</i> (NT), <i>Plagiothecium platyphyllum</i> (VU), <i>Polytrichum commune</i> var. <i>perigoniale</i> (DD) & <i>Porella cordaeana</i> (NT)	Blackwater River and Knockmealdown Mountains IBrA
Kingsbog or Common	Kildare	Kingsbog Common cNHA (002850)	N719090	2	<i>Ephemerum cohaerens</i> (VU; FPO)	
Knockmahon	Waterford		X437990	2, 3 & 4	<i>Cephaloziella integerrima</i> (VU), <i>C. nicholsonii</i> (VU; FPO), <i>C. rubella</i> (VU) & <i>Pohlia andalusica</i> (EN; FPO)	
Mount Eagle	Kerry		V3399	2 & 6	<i>Grimmia funalis</i> (NT), <i>Radula carringtonii</i> (NT) & <i>R. holtii</i> (NT; FPO)	Dingle Peninsula IBrA
Mount Gunnery	Cork	Mount Gunnery cNHA (002669)	W2255	2	<i>Hedwigia integrifolia</i> (VU; FPO)	
Nephin Mór	Mayo	Nephin Mountain Bog cNHA (002390)	G1008	2	<i>Atrichum tenellum</i> (NT), <i>Dicranodontium uncinatum</i> (VU) & <i>Scapania ornithopodioides</i> (VU; FPO)	
Nowen Hill	Cork		W1453/ W1354	2, 3 & 6	<i>Grimmia ramondii</i> (NT), <i>Grimmia torquata</i> (NT), <i>Plagiochila heterophylla</i> (EN; FPO), <i>Platydictya jungermannioides</i> (NT) & <i>Telaranea europaea</i> (NT)	Glengarriff IBrA
Pass of Keimaneigh	Cork	The Pass of Keimaneigh cNHA (002665)	W103641	2 & 3	<i>Hageniella micans</i> (NT), <i>Metzgeria leptoneura</i> (NT), <i>Plagiochila heterophylla</i> (EN; FPO), <i>Radula holtii</i> (NT; FPO) & <i>Sematophyllum demissum</i> (NT)	
Rathduffmore Bog	Wicklow		T0182	2, 3 & 6	<i>Cephalozia macrostachya</i> var. <i>spiniflora</i> (DD), <i>Cephalozia pleniceps</i> (VU), <i>Cephaloziella rubella</i> (VU), <i>C. spinigera</i> (DD), <i>Kurzia sylvatica</i> (NT) & <i>Pallavicinia lyellii</i> (EN; FPO)	Wicklow Mountains IBrA
Slievenaglogh	Louth		J1309	2	<i>Grimmia decipiens</i> (NT), <i>Hedwigia integrifolia</i> (VU; FPO) & <i>Sphagnum platyphyllum</i> (NT)	

Location name	County	Associated cNHA (no boundary delineated)	Grid Ref.	Criteria met	Taxa present (Red List status and/or legal protection status)	Important Bryophyte Area (IBrA)
SW. of Caim Cross Roads	Wexford	Caim Mine cNHA (002995)	S8840	2 & 6	<i>Cephaloziella nicholsonii</i> (VU; FPO), <i>C. stellulifera</i> (NT) & <i>Scopelophila cataractae</i> (VU)	Blackstairs Mountains IBrA
W. of Lough Naweeloge, Common Mountain	Donegal	Common Mountain cNHA (002372)	G7186/ G7286	2 & 3	<i>Anthelia juratzkana</i> (NT), <i>Gymnomitrium concinatum</i> (EN; FPO), <i>Mnium thomsonii</i> (NT) & <i>Solenostoma subellipticum</i> (NT)	

Appendix IV Potential cNHA boundary extensions (12 sites)

Site code	Site name	Location name	Grid Ref.	Criteria added	Taxa present (Red List status and/or protection status)	Important Bryophyte Area (IBrA)
001886	Ballagh Bog cNHA	E. of Coomroe & Gougane Barra	W0765/ W0865	2, 3 & 6	<i>Andreaea megistospora</i> (VU), <i>Campylopus shawii</i> (NT), <i>Hypnum uncinulatum</i> (NT; FPO), <i>Leptodontium flexifolium</i> (NT), <i>Plagiochila heterophylla</i> (EN; FPO) & <i>Tritomaria exsecta</i> (VU)	Glengarriff IBrA
002103	Royal Canal cNHA	Kilpatrick Bridge	N408513	Site not selected	<i>Tomentypnum nitens</i> (VU)	
002403	Sraheens Bog cNHA	Sraheens Lough	L7199/ L7299	2, 3 & 6	<i>Cephalozia crassifolia</i> (EN; FPO) & <i>Telaranea europaea</i> (NT)	Achill Island and Corraun Plateau IBrA
005032	Horn Head and Rinclevan cNHA	Catherine's Isle	C02803766	Already qualifies	<i>Bryum warneum</i> (EN; FPO) & <i>Bryum dyffrynense</i> (NT)	
005159	Ballysadare Bay cNHA	Strandhill sandhills	G60343503	Site not selected	<i>Abietinella abietina</i> var. <i>hystricosa</i> (NT)	
005160	Ben Bulbin, Gleniff and Glenade Complex cNHA	Luke's Bridge	G69934719	Already qualifies	<i>Campylostelium saxicola</i> (EN; FPO)	Dartry Mountains IBrA
005169	Galtee Mountains cNHA	Temple Hill	R8320/ R8321	Already qualifies	<i>Encalypta ciliata</i> (CR; FPO), <i>Schistidium strictum</i> (NT; taxon already present in 005169), <i>Solenostoma paroicum</i> (NT) & <i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i> (DD)	Galtee Mountains IBrA
005277	Meenaguse Scragh cNHA	Binacally, Lavagh Beg Meenaguse	G92309233 G91288943	Already qualifies	<i>Kiaeria falcata</i> (CR; FPO)	Blue Stack Mountains IBrA
005290	Boyne Coast and Estuary cNHA	Near Baltray	G92368963		<i>Cynodontium jenneri</i> (VU) & <i>Rhabdoweisia fugax</i> (VU)	
005290	Boyne Coast and Estuary cNHA	Near Baltray	O14817758	2 & 3	<i>Didymodon acutus</i> (EN; FPO)	
005306	Tralee Bay Complex cNHA	SW of Derrymore Island	Q74231232	3 (already qualifies on 1, 2 & 6)	<i>Bryum salinum</i> (CR; FPO)	
005319	Wicklow Mountains cNHA	Carrawaystick Brook, Glenmalur	T08679204	Already qualifies	<i>Fissidens polyphyllus</i> (VU)	Wicklow Mountains IBrA
005332	Kenmare River cNHA	Derreen Gardens & near Lauragh Bridge	V7659/ V7758	5 (already qualifies on 2, 3, 4 & 6)	<i>Fissidens polyphyllus</i> (VU), <i>F. serrulatus</i> (VU), <i>Heterocladium wolfsbergii</i> (NT), <i>Hypnum uncinulatum</i> (NT; FPO), <i>Lejeunea flava</i> subsp. <i>moorei</i> (VU), <i>L. hibernica</i> (NT; FPO), <i>Plagiochila heterophylla</i> (EN; FPO), <i>Sematophyllum demissum</i> (NT) & <i>Telaranea europaea</i> (NT)	Glengarriff IBrA

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Coastal heath, Howth Head, Co Dublin, Maurice Eakin; Red Squirrel *Sciurus vulgaris*, Eddie Dunne, NPWS Image Library; Marsh Fritillary *Euphydryas aurinia*, Brian Nelson; Puffin *Fratercula arctica*, Mike Brown, NPWS Image Library; Long Range and Upper Lake, Killarney National Park, NPWS Image Library; Limestone pavement, Bricklieve Mountains, Co Sligo, Andy Bleasdale; Meadow Saffron *Colchicum autumnale*, Lorcan Scott; Barn Owl *Tyto alba*, Mike Brown, NPWS Image Library; A deep water fly trap anemone *Phelliactis* sp., Yvonne Leahy; Violet Crystalwort *Riccia huebeneriana*, Robert Thompson.

The Blue Stack Mountains, Co Donegal, Robert Thompson