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Rooaunalaghta Green Energy Project

Appendix 6-8

Bryophyte Survey Report

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Chapter 6 Biodiversity

Appendix 6-8: Bryophyte Survey Report

Woodrow Ref: P00011883 | P00016381
Date: September 2026

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APEM Group

Results of a survey of the bryophytes of stone wall sections that have been proposed for removal at Rooaunalaghta Wind Farm, Co. Mayo



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Report to: Woodrow APEM Group, Sligo

August 2026

1 Background

A survey was carried out on 23rd of July 2026 by Dr. Rory Hodd of Nimbosa Ecology of the mosses and liverworts (bryophytes) present on a series of sections of stone wall at Rooaunalaghta, Co. Mayo. The removal of these walls has been suggested as part of mitigation measures for bats to compensate for disturbance caused by the proposed construction of wind turbines at this site. The purpose of this survey was to document the bryophytes present and assess the value and importance of these walls for bryophytes.

2 Methodology

All 31 stone wall sections identified as high priority for surveyed were visited and carefully examined to determine the bryophyte species present. A list of the bryophytes present on each wall section was recorded and notes were taken on the overall characteristics of each wall and whether they were significant for the bryophyte flora of the area. Species growing epiphytically on trees and shrubs occurring directly alongside the walls were also noted, as even if these trees and shrubs were to remain in situ, removal of the adjacent wall would change the environment at their bases, particularly in terms of reducing humidity, leading to changes in the bryophyte flora on trunks and branches.

Specimens of any bryophytes of which the identification was not certain in the field were collected and identified microscopically using the keys of Smith (2004) for mosses and Paton (1999) for liverworts. The species list was cross referenced with the Flora (Protection) Order, 2022, the Irish bryophyte Red Data List (Hodgetts and Lockhart, 2025), and list of Nationally Rare or Scarce species (Hodgetts and Lockhart, 2013), as well as bryophyte records from the vice-county of East Mayo (H26), to determine the significance of each species record and aid in the identification of important sections of wall.

Time did not allow for the survey of walls identified as being of medium priority for survey. However, these walls were briefly viewed while surveying nearby high priority walls and it was considered that they are unlikely to hold bryophyte interest that differs much from that identified on the high priority walls.

3 Results

A list of all the bryophyte species recorded from each wall section, which are number sequentially in order they were surveyed, are contained in the accompanying spreadsheet file, labelled Appendix S1. A point shapefile, to link the numbering system with each corresponding wall section, and denoting whether the corresponding wall section is of importance for bryophytes (1 = important, 0 = not important) is also provided with this report.

A total of 50 species of bryophyte (43 mosses and 7 liverworts) were identified across all stone walls surveyed, primarily consisting of typical common species of lowland limestone stone walls (Appendix 1). The common mosses *Neckera complanata*, *Schistidium crassipilum* and *Homalothecium sericeum* were recorded from almost all walls surveyed. On the other hand, 14 species were found on only one of the surveyed walls. The species richness varied greatly across the walls surveyed (Appendix 2), depending on a range of factors including exposure, shading, level of disturbance and size, variety and shape of the rocks that make up the wall. 25 species were recorded from the most species-rich wall surveyed, while only five species were recorded from the most species-poor wall, with species-richness averaging at 11 species per wall across all walls surveyed. Six walls were found to support 15 or more species of bryophyte.

Notable species recorded are shown in Table 1. No species included within the Flora Protection Order or on the most recent bryophyte Red Data list (Hodgetts and Lockhart, 2025) were recorded on any of the walls surveyed. Two species listed as Nationally Scarce in Ireland (i.e. occurring in less than 20 10km squares across the island) were found to occur, namely *Plasteurhynchium striatulum* and *Schistidium elegantulum*. *P. striatulum* was listed as Near Threatened in Ireland until the 2025 update of the Red Data list, when its status was downgraded to Least Concern due to the discovery of additional populations. It has only been recorded in East Mayo on one previous occasion, in 1970. During this survey, strong populations were found covering stones of three walls. *Schistidium elegantulum* was last recorded in East Mayo in 1906 and was previously listed as Data Deficient on the Red List, but further knowledge of its distribution suggests that it is more widespread than previously thought and it is now Least Concern. The number of new records of this species in Ireland in recent years mean that if the list of Nationally Scarce species were updated, it would no

longer be included, but as the list has not been updated, it is still regarded as Nationally Scarce. It was found on one of the surveyed walls in small quantity. Four other species that are uncommon in East Mayo, but not rare on a national scale, were also recorded growing on the surveyed walls (Table 1).

Table 1: List of notable species recorded during the survey, reason for importance and the numbers of the walls on which each species was recorded.

Species name	Importance	Wall numbers
Frullania teneriffae	Uncommon in East Mayo, 3rd record from vice-county.	14
Plasteurhynchium striatulum	**Nationally Scarce** and formerly Near Threatened. Uncommon in East Mayo, 2nd record from vice-county, first since 1970.	13, 30, 31
Rhynchostegium murale	Uncommon in East Mayo, 3rd record from vice-county.	14, 17
Schistidium elegantulum	**Nationally Scarce**. Uncommon in East Mayo, 2nd record from vice-county, first since 1906.	12
Tortella nitida	Uncommon in East Mayo, 2nd record from vice-county, first since 1987.	2, 3, 12, 13, 16, 17, 23, 27, 29, 30
Zygodon stirtonii	Uncommon in East Mayo, 2nd record from vice-county.	9, 13, 24, 31

4 Determination of high importance walls for bryophytes

Based on the presence of Nationally Scarce species, total number of bryophyte species present and the general bryophyte assemblages present, nine stone walls were identified as being of high importance (Table 2). Four of these walls are included as high importance due to the presence of Nationally Scarce species. Six walls are classified as high importance due to supporting more than 15 species of bryophyte, while three walls support an overall interesting assemblage of bryophytes, that is considered worthy of conservation. Only one wall, number 12, fulfils all three criteria, and two walls fulfil two out of the three criteria.

5 Recommendations concerning high importance walls for bryophytes

It is recommended, where possible, to avoid the removal of the walls identified as being of high importance for bryophytes, especially wall number 6, which supports a remarkable diversity of bryophytes, wall number 12, which supports a rich and interesting bryophyte

assemblage, with a strong population of *Plasteurhychium striatulum* and wall number 30, which supports a rich diversity of species, including *Plasteurhynchium striatulum*. If it is decided that the desirable option is to remove these walls, then they should be carefully be relocated to another location, with similar environmental conditions, and even if the wall is not reconstructed, the stones should be placed with the bryophytes on the upper surface and not buried or otherwise inhibited.

Table 2: List of walls that were assessed as being of importance for bryophytes, with the reason for selection of each wall as being of importance summarised.

Wall number	Nationally Scarce species	More than 15 species	Good quality assemblages	Notes
6		x	x	Supports excellent diversity of species, 25 species recorded
7		x		
9		x		
12	x			*Schistidium elegantulum* present
13	x	x	x	Good assemblage of species present, including *Plasteurhynchium striatulum*
14			x	Bouldery wall in scrub covered in mat of bryophytes
17		x		
30	x	x		*Plasteurhynchium striatulum* present
31	x			*Plasteurhynchium striatulum* present

In the wider context, these stone walls are likely not especially remarkable in terms of bryophyte diversity and species composition, although no specific data exists for comparison. However, it is likely that many similar limestone walls are being lost or degraded across the country, so where possible, examples with a notable bryophyte flora should be retained. In particular, walls on which *Plasteurhynchium striatulum* grow are worthy of retention, as this species has only been recorded from ten other 10km squares in Ireland since 1989 (Blockeel *et al*., 2014), so although it is no longer considered Near Threatened, it is still an uncommon species across the island, particularly away from the Burren.

6 References

Blockeel, T.L., Bosanquet, S.D.S, Hill, M.O. and Preston, C.D. eds. (2014) Atlas of British and Irish Bryophytes. Pisces Publications, Newbury.

Hodgetts, N. and Lockhart, N. (2013) Rare and scarce bryophytes of Ireland. Field Bryology 110: 12-26.

Hodgetts, N.G. and Lockhart, N. (2025). Bryophytes (Mosses, Liverworts and Hornworts). Ireland Red List No. 14. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Dublin, Ireland.

Paton, J.A. (1999) The liverwort flora of Britain and Ireland. Harley Books, Colchester.

Smith, A.J.E. (2004) The Moss Flora of Britain and Ireland (2nd Ed.) Cambridge University Press, Cambridge.

7 Appendices

Appendix 1: List of bryophyte species recorded across the 31 stone walls surveyed and number of walls on which each species was recorded.

Latin name	English name	Number of occurences
Neckera complanata	Flat Neckera	28
Schistidium crassipilum	Thickpoint Grimmia	26
Homalothecium sericeum	Silky Wall Feathermoss	25
Ctenidium molluscum	Chalk Comb-moss	22
Brachythecium rutabulum	Rough-stalked Feathermoss	21
Hypnum cupressiforme var. *resupinatum*	Supine Plaitmoss	19
Tortella tortuosa	Frizzled Crisp-moss	19
Grimmia pulvinata	Grey-cushioned Grimmia	16
Tortula muralis	Wall Screwmoss	16
Orthotrichum anomalum	Anomalous Bristlemoss	13
Kindbergia praelonga	Common Feathermoss	12
Frullania dilatata	Dilated Scalewort	10
Orthotrichum cupulatum	Hooded Bristlemoss	10
Tortella nitida	Neat Crisp-moss	10
Bryum capillare	Capillary Threadmoss	9
Cinclidotus fontinaloides	Smaller Lattice-moss	8
Hypnum cupressiforme var. *cupressiforme*	Cypress-leaved Plaitmoss	8
Plenogemma phyllantha	Frizzled Pincushion	7
Ulota bruchii	Bruch's Pincushion	7
Thamnobryum alopecurum	Fox-tail Feathermoss	6
Eurhynchium striatum	Common Striated Feathermoss	5
Rhynchostegium confertum	Clustered Feathermoss	5
Campylium chrysophyllum	Golden Feathermoss	4
Cryphaea heteromalla	Lateral Cryphaea	4
Zygodon stirtonii	Stirton's Yokemoss	4
Homalothecium lutescens	Yellow Feathermoss	3
Orthotrichum pulchellum	Elegant Bristlemoss	3
Plasteurhynchium striatulum	Lesser Striated Feathermoss	3
Calliergonella cuspidata	Pointed Spearmoss	2
Didymodon rigidulus	Rigid Beardmoss	2
Didymodon sinuosus	Wavy Beardmoss	2
Lewinskya affinis	Wood Bristlemoss	2
Metzgeria furcata	Forked Veilwort	2
Plagiomnium undulatum	Hart's-tongue Thyme-moss	2
Thuidium tamariscinum	Common Tamarisk-moss	2
Rhynchostegium murale	Wall Feathermoss	2
Amblystegium serpens	Creeping Feathermoss	1
Didymodon insulanus	Cylindric Beardmoss	1
Frullania teneriffae	Sea Scalewort	1
Hylocomiadelphus triquetrus	Big Shaggy-moss	1

Metzgeria violacea	Blueish Veilwort	1
Myriocoleopsis minutissima	Minute Pouncewort	1
Plagiomnium elatum	Tall Thyme-moss	1
Porella platyphylla	Wall Scalewort	1
Radula complanata	Even Scalewort	1
Schistidium elegantulum	Elegant Grimmia	1
Syntrichia ruralis	Great Hairy Screwmoss	1
Trichostomum crispulum	Curly Crisp-moss	1
Weissia controversa	Green-tufted Stubble-moss	1
Zygodon conoideus	Lesser Yokemoss	1

Appendix 2: Number of bryophyte species recorded per stone wall section

Wall	Number of species
1	8
2	14
3	9
4	10
5	6
6	25
7	15
8	13
9	19
10	12
11	12
12	13
13	17
14	13
15	6
16	12
17	15
18	7
19	12
20	8
21	8
22	5
23	10
24	9
25	12
26	9
27	10
28	9
29	8
30	16
31	11

Appendix 3: Photographs



Photo 1: Typical blocky wall (wall 1), with little bryophyte cover and low diversity of species.



Photo 2: Loosely constructed wall (wall 6) with lots of niches for a rich variety of bryophytes to colonise and cover.



Photo 3: Wall with hedgerow along one side (wall 8), which adds shade and humidity but limits variety of species.



Photo 4: Wall 14, which consists of a low row of mossy boulders in scrub.



Photo 5: Strong patch of the Nationally Scarce moss *Plasteurhynchium striatulum* on top a stone in wall 13.



Photo 6: Cushions of *Tortella nitida* and *Tortella tortuosa* growing on a rock in wall 13.