Louth – Locally Important Biodiversity Sites – Botanical Study of the Cooley Mountains

Ciarán Flynn (Flynn Ecology)

November 2025

NPWS
An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

Comhairle Contae Lú
Louth County Council

An Chomhairle Oidhreachta
The Heritage Council

LOUTH NATURE TRUST

Acknowledgements

Many thanks to Helen Hanratty (Louth County Council), Jennifer Lynch (NPWS), and Breffni Martin (Louth Nature Trust) for their advice and encouragement.

This project was funded by the National Parks and Wildlife Service and Louth County Council under the Local Authority Biodiversity Action Fund. The project was supported by the Heritage Council through the Local Authority Biodiversity Officer Programme. Louth Nature Trust also provided funding for this project.

All photos by Ciarán Flynn.

Table of Contents

1. Introduction

1.1. Context

Comprehensive inventories of important biodiversity sites are essential for effective conservation. Knowledge of site locations can reduce the chances of inadvertent damage to valuable habitats and species. These inventories should contain detailed information on habitats and associated species. As well as recent data, older species records should be collated to identify site changes over time. They also provide a baseline to evaluate recent and future changes against. Although sites of national and international importance are of considerable conservation value, locally and regionally important sites must not be overlooked.

1.2. Study area

This project covers the Cooley peninsula in north Co. Louth. A standard definition of the peninsula's boundaries does not exist. In this study, it includes all areas east of the N1 road and north of Dundalk. Small areas 0 – 1.5 km west of the N1 are also included. It is bounded by Dundalk Bay/Irish Sea to the south and east. The northern boundary is delimited by Carlingford Lough and the Co. Louth/Armagh border.

1.3. Aims

With funding from the NPWS Local Biodiversity Action Fund, Louth County Council and Louth Nature Trust commissioned Flynn Ecology to conduct a desk and field study of botanically significant sites on the Cooley peninsula.

The aims of the study are as follows:

1. Extract and digitise significant vascular plant records by John Harron.
2. Compile and review important vascular plant and bryophyte records within Carlingford Mountain SAC.
3. Perform fieldwork to fill data gaps on important populations within Carlingford Mountain SAC.
4. Identify candidate Locally Important Biodiversity Areas (LIBS) within Cooley.

The digitisation of Harron's records supports aims 2-4. Also, it should be noted that LIBS identification is an iterative process. This study aims to provide a foundation which can be built upon through future work.

2. Methodology

2.1. Harron record extraction

Notable plant records were extracted from John Harron's unpublished record cards (Harron, undated). These handwritten notes are organised into seven presentation folders grouped by area within Co. Louth (Table 1). An additional eighth folder was not searched as the folder's contents relate to sites outside the study area.

Records of species on the Flora (Protection) Order, 2022 (FPO) and Red List (Wyse Jackson *et al.*, 2016) were selected. Significant records of species not on the FPO/Red List were also extracted. Generally, species which are rare and/or declining in eastern Ireland were included. The contents of two folders were scanned and stored digitally (Table 1). Due to time constraints, this was not carried out for the remaining folders. Instead, records were simply inputted into an Excel spreadsheet. Key record attributes (species name, date, grid reference etc.) were entered into the spreadsheet. Where relevant, other observations by Harron, such as population sizes and habitat descriptions, were extracted.

Table 1. Harron's folders of unpublished botanical record cards. Significant records were extracted from all seven folders. The contents of two folders were also scanned.

Folder title	**Record cards scanned?**
Slieve Foye	Yes
Cooley East	Yes
South Coast of Cooley	No
Clermont Pass	No
North Shore of Cooley	No
Flurry River Valley	No
Slieve Foye. West Slopes of Castletown Valley	No

2.2. Site identification and fieldwork

Other sources of records were reviewed in conjunction with Harron's data. These included the British Bryological Society (BBS) database (British Bryological Society, 2025), papers by Canon Lett and Rev. Waddell (Lett, 1889; Waddell 1898) and recent work by Lyons and Doogue (2023). For vascular plants, Donal Synnott's works were an important source of data (e.g. Synnott, 1977; undated).

Based on Harron's records, populations of *Rubus saxatilis*, *Galium uliginosum* and *Cryptogramma crispa* were searched for within Carlingford Mountain SAC. Fieldwork was also conducted to gather extra data on the moss *Glyphomitrium daviesii* at The Windy Gap. Data were collected on a field sheet adapted from Hodd (2015) (Annex A).

Once the desk study and fieldwork were completed, candidate LIBS and important sites within Carlingford Mountain SAC were identified and described.

3. Results

Bryophyte distributions have been taken from Blockeel *et al.* (2014), Pilkington and Hodgetts (2023) and British Bryological Society (2025). Vascular plant distributions have been taken from Stroh *et al.* (2023) and BSBI (2025). Threat status follows Wyse Jackson *et al*. (2016) and Hodgetts and Lockhart (2025).

3.1. Carlingford Mountain SAC

The SAC has been divided into two parts: Slieve Foye and Black Mountain.

3.1.1. Slieve Foye

All areas east of the Windy Gap (J 130 137) are included here. This has been further divided into subsites below.

3.1.1a. White Bog

Approximate grid reference: J 153 131.

White Bog hosts several small loughs alongside Annex I 7140 Transition Mire and 7230 Alkaline Fen (Roche *et al.*, 2014). Several calcicole species characteristic of mineral-enriched flushes can be found here: *Carex diocia*, *Selaginella selaginoides*, *Schoenus nigricans*, *Eleocharis multicaulis*, *E. quinqueflora* and *Pinguicula lusitanica*. Harron also reported *Utricularia minor* and *Isoetes* sp. here, both of which appear to be new records for the site.

Sphagnum warnstorfii (NT) was found new to Co. Louth (2023) in 7240 Alkaline Fen with *S. contortum* (Pilkington, 2025). These are both base-demanding species frequently found together in upland flushes (Blockeel *et al*., 2014). *Sphagnum warnstorfii* has a very scattered distribution in Ireland and was only recently downgraded from VU in the latest Red List (Hodgetts and Lockhart, 2025).

The Killarney Fern (*Trichomanes speciosum*) (gametophyte) occurs nearby (Annex A). This fern is listed on the FPO and Annex II of the EU Habitats Directive.

3.1.1b. Summit ridge

Approximate grid reference: J 16 12.

Salix herbacea (NT) has been found close to the summit of Slieve Foye (J 169 119). Harron recorded a patch less than one metre long ‘in fissures on the level surface of an exposure of the prevailing gabbro rock… along the outer eastern rim of the summit ground’ close to the triangulation pillar (Harron, undated). He observed the plant before 1972. An exact year was not provided in his notes. Harron’s subsequent attempts to re-find the plant in 1972 and 2014 were unsuccessful. However, Donal Synnott found *S. herbacea* on Slieve Foye in 1997, but it is unclear if the record refers to Harron’s site. I have been unable to trace any records after 1997.

Cryptogramma crispa (FPO) (VU) is known from several sites on the summit ridge and elsewhere on Slieve Foye (Annex A). Slieve Foye is possibly the only extant Irish site for this species outside Ulster.

Rhodiola rosea (*Sedum rosea*) occurs on a vertical cliff face north of the summit. This is the only known site for the species in the county. It appears to have declined here since at least the 1970s. Harron reported 'a few plants… over a limited area of the rock face' in 1972 (Harron, undated) but it has now been reduced to a single plant (Flynn, 2025). Declines have also been reported from Co. Fermanagh, Co. Wicklow and Co. Antrim (Forbes, 2024). Moreover, at least three populations in the Mournes have not been seen lately, with recent records restricted to Slieve Muck (Hackney, 1992; Day, 2024). With a predominantly western distribution in Ireland, this species is of high conservation value in Cooley.

Hymenophyllum wilsonii grows amongst boulder scree at J 165 128. This oceanic species is confined to high humidity environments. The steep slope, aspect and shade provided by the rocks enhance the humidity here. This appears to be the only known site for the species in Co. Louth.

The moss *Racomitrium ellipticum* has been found at J 166 124. Characteristic of mildly base-rich rock in the uplands (Blockeel *et al.*, 2014), there are approximately three recent records for this rare moss on the east coast of Ireland. Most sites occur along the western seaboard. In Britain, this species is also rare away from western Scotland.

3.1.1c. Two Mile River

Approximate grid reference: J 16 13.

This site is located halfway between Omeath and Carlingford on the north-eastern slopes of Slieve Foye. Notable vascular plant and bryophyte records have been made here.

Some of these species may no longer occur. A large population of *Pseudorchis albida* was found by J.P. Brunker in 1919. Although Brunker does not mention Two Mile River, his description of the location fits with this area (Brunker, 1919). The species has not been reported since and may have been lost to afforestation and agricultural intensification. These converted areas lie outside the SAC. Alternatively, it may survive further uphill within the SAC.

Other species, lost from peripheral areas, have persisted within the SAC. Harron recorded *Antennaria dioica* growing with *Platanthera chlorantha* in flushed ground at Two Mile River bridge (1972). The habitat has since been destroyed. *Antennaria dioica* still occurs *c.*1km uphill within the SAC (J 162 133) (Flynn, 2025).

Cryptogramma crispa (FPO) (VU) was found at Two Mile River by Maura Scannell in 1970 (Synnott, undated). It has not been recorded here since.

A significant suite of rare bryophytes has also been reported here. *Pogonatum nanum*, *Campylopus setifolius* and *Blindiadelphus recurvatus* (*Seligeria recurvata*) are the most notable species.

Pogonatum nanum (EN) was found on mineral soil on a rocky outcrop in 1999. This is a nationally rare moss species with post-1970 records confined to five Irish vice-counties. It also occurs at The Windy Gap (Section 3.1.1d).

Campylopus setifolius is a hyperoceanic moss of upland areas. Apart from recent records in the Cooley, Mourne and Galty Mountains (Co. Tipperary), this species is restricted to the western seaboard. Arguably, it is endemic to Britain and Ireland, having been last found in northern Spain in 1934 (Blockeel *et al*., 2014).

Blindiadelphus recurvatus was found on the Two Mile River by Donal Synnott in 1966. This is the sole record for this species in the east of Ireland. It produces abundant, curved capsules which aid its detection in the field. There is a high probability that it survives here given the low levels of bryological recording.

Other notable bryophytes recorded at Two Mile River include *Jungermannia atrovirens*, *Marchantia quadrata* (*Preissia quadrata*) and *Marchesinia mackaii*. These are indicative of the base-rich conditions here. There is also an old record for *Rhabdoweisia crispata* by Rev. Waddell (Lett, 1889). Although reclassified as LC in the latest Red List, *R. crispata* remains rare in the north of Ireland (Hodgetts and Lockhart, 2025).

3.1.1d. The Windy Gap

Approximate grid reference: J 130 138.

The Windy Gap is another area notable for a suite of rare bryophyte species. Many expert bryologists recorded here between 2010 and 2012. This may contribute somewhat to the disparity in apparent species richness among sites within the SAC.

The FPO species *Braunia imberbis* (*Hedwigia integrifolia*) (VU) is widespread and abundant on the gabbro boulders in this area (Annex A). Detailed information can be found in Hodd (2015). Other saxicolous bryophytes growing here include *Grimmia decipiens*, *G. ramondii* and *Glyphomitrium daviesii* (Section 4.4 and Annex A). Base-rich flushes host the leafy *Mesoptychia bantriensis* (*Leiocolea bantriensis*).

A disused quarry just south of the Long Woman's Grave (J 130 136) hosts several rarities. *Marsupella funckii* (VU) was abundant here in 2010. Associated species included *Campylopus subulatus* (NT), *Archidium alternifolium* and *Pohlia drummondii*. The liverwort *Lophozia excisa* was also recorded from the quarry. Gravel on the nearby road hosted *Pogonatum nanum* (EN).

Other notable species include the moss *Bryum subapiculatum* and the liverwort *Jungermannia pumila*.

3.1.1e. The Golden River

Approximate grid reference: J 17 12 and J 18 12.

The Golden River descends the eastern slopes of Slieve Foye, entering Carlingford Lough just south of Carlingford marina. Bryophytes were recorded here by Maurice Eakin. Some or all of the records below may lie just outside the SAC. For instance, *Bryum concinnatum* occurs in an open area within the conifer plantation at J 178 123. This species, along with *Mesoptychia bantriensis* and *Marchesinia mackaii*, indicate the presence of base-rich conditions. The *M. mackaii* record refers to the Liberties of Carlingford but was probably found in the vicinity of the Golden River. *Plagiothecium succulentum* and the hyperoceanic

liverwort *Plagiochila bifaria* (*P. killarniensis*) also grow here. The former is widespread in Britain yet is quite scattered in Ireland.

Native populations of *Aquilegia vulgaris* also occur here (Section 3.1.1f).

3.1.1f. Other records on Slieve Foye

Species on the Red List recorded from Slieve Foye include *Gentianella campestris* (NT). It has been found 'under bracken on the [eastern] slope of Slieve Foye' (Synnott, 1970; undated). This seems to be an unusual habitat for the species (Walker, 2015). I have been unable to trace any recent records of the species. The fern *Phegopteris connectilis* (NT) is widespread, rooting within crevices in rock outcrops. *Diphasiastrum alpinum* (NT) has been found between the Foxes Rock and Raven's Rock (J 14 13) (Roche *et al.*, 2014). *Cryptogramma crispa* (FPO) (VU) has been recorded from several areas of the mountain (Annex A).

Aquilegia vulgaris (Columbine) is widespread as an introduction in Ireland. Some populations are considered to be native although the distinction between alien and native occurrences is not always clear (Stroh *et al.*, 2023). Due to its persistence (known since 1878) and remote location, *A. vulgaris* is deemed native on Slieve Foye (Praeger, 1901; Haughton, 1944; Synnott, undated). Harron remarks that it 'appears to be one of the wildest sites for Columbine in Ireland' (Harron, undated). It has been found in three sites, one of which is the Golden River (Section 3.1.1e). The other sites are also on the eastern slopes of Slieve Foye: St. Patrick's River (J 173 131) and the base of a cliff-face (J 176 117).

Other noteworthy records by Harron on Slieve Foye include *Rubus saxatilis* (Section 4.1), *Hypericum elodes* and *Eleogiton fluitans*.

Other significant bryophyte records from Slieve Foye include *Andreaea hookeri*, *Bartramia ithyphylla* (VU) (Lett, 1889), *Douinia ovata*, *Gymnostomum aeruginosum* (south-east of the Two Mile River, J 168 135), *Rhabdoweisia fugax* (EN) and *Sphenolobopsis pearsonii* (NT) (1900, **DBN**) (Paton, 1964). Many of these records are quite old although the species may remain undetected.

3.1.2. Black Mountain

Records for Black Mountain are considered together, except for one site found on the lower slopes.

3.1.2a. Above Clermontpass Bridge

Approximate grid reference: J 117 153.

Mineral-enriched flushes near Clermontpass Bridge host *Sphagnum platyphyllum* (NT) and *Sarmentypnum sarmentosum* (Flynn, 2024). The latter species is quite abundant here yet is absent from many apparently suitable sites elsewhere in Cooley. Both species exhibit a predominantly western distribution in Ireland. The orchid *Platanthera bifolia* also occurs here (C. Flynn, pers. obs.).

3.1.2b. Other records on Black Mountain

The orchid *Hammarbya paludosa* (FPO) (NT) has been found in several flushes across Black Mountain. This inconspicuous species is likely to be more widespread here than current records suggest.

The clubmosses *Lycopodium clavatum* (NT) and *Diphasiastrum alpinum* (NT) have suffered declines since the 1970s or earlier. Large populations of both species were found south-east of Clermont Cairn in 1973 (McClintock *et al*., 1974; Harron, undated). Harron later observed how *D. alpinum* was 'only a faded shadow of its original population' in 2014 (Harron, undated). Moreover, *L. clavatum* seems to have been lost from this site whilst a second *D. alpinum* population nearby has also disappeared. *Lycopodium clavatum* was found besied a stream east of Clermont Cairn in 2021 and 2022. Whether these survived the severe flooding of October 2023 remains to be seen.

Harron found the bedstraw *Galium uliginosum* at three localities: above Clermontpass Bridge, on the eastern slopes of Slievetrasna (Moneycrockroe) (Annex A and Section 4.2), and at Ballymakellett. This species has its Irish headquarters in the base-rich wetlands of the midlands and is rare in the north-east.

Other notable finds by Harron include *Equisetum hyemale* near Cadgers Bridge and at Corrakit, and the only county record of *Lythrum portula* at The Doonan, Ballymakellett.

Braunia imberbis (*Hedwigia integrifolia*) (FPO) (VU) grows on The Round Mountain with *Grimmia decipiens* and *G. ramondii* (Lyons and Doogue, 2023). Clermont Cairn supports *G. donniana* (NT), *Bryum archangelicum* and *Oligotrichum hercynicum* (Lyons and Doogue, 2023). The occurrence of *Mesoptychia bantriensis* at Carnavaddy indicates the presence of mineral-enriched flushes here.

A large proportion of notable bryophyte records date from *c.*1900. These species have not been seen since yet some of them may still survive here. *Pseudohygrohypnum eugyrium* was encountered 'in young fruit, April 1883, by a stream on Anglesey Mountain, Co. Louth, opposite Narrow-water' (Waddell, 1898). C.H. Waddell also found *Rhizomnium pseudopunctatum* (NT) on Anglesey Mountain. Both of these records seem plausible. In contrast, an old record for *Thudium recognitum* on Anglesey Mountain (Lett, 1889) should be rejected. Early records of this species are often erroneous (Blockeel *et al.*, 2014) and the Anglesey specimen seems to have been re-determined (Lockhart *et al.*, 2012).

3.2. Sites outside Carlingford Mountain SAC

Twelve candidate LIBS have been provisionally identified (Annex A). These include upland, riparian and woodland habitats. Species which are rare in the north-east of Ireland have been found at these sites, some of which are also threatened nationally.

4. Fieldwork

4.1. *Rubus saxatilis*

Rubus saxatilis is a bramble found in rocky habitats. Within Ireland, records are concentrated in regions with base-rich bedrock such as the basalt of Co. Antrim and the limestone of Co. Fermanagh, Co. Sligo, Co. Leitrim and The Burren. Away from Co. Antrim, this species is very rare in the east/north-east of Ireland. Its distribution has contracted strongly in Ireland since 1987 (Stroh *et al.,* 2023).

S.A. Stewart recorded this bramble twice on Carlingford Mountain (1878 and 1897) (Praeger, 1901; Synnott, undated). It is also listed for H31 by Scannell and Synnott (1987), indicating the presence of a 1950 – 1987 record for Co. Louth. However, I have been unable to trace any record from this period.

Harron found *R. saxatilis* along a stream south-east of the Windy Gap in 2009. One stem, less than a metre long, was encountered growing with *Teucrium scorodonia*, *Digitalis purpurea*, *Hedera helix s.l.*, *Thymus drucei* and *Agrostis* sp. Based on Harron's notes and sketch map, I searched the area at J 1442 1283.

I failed to locate the plant. The habitat and species assemblage I encountered broadly agrees with the description provided by Harron. As he only encountered one, short stem, *R. saxatilis* could be easily overlooked here. Further searches should be carried out.

4.2. *Galium uliginosum*

Within Co. Louth, this bedstraw is only known from Cooley. Although first recorded in the early 19th century from 'marshes at the foot of the Saddle and Trumpet Mountains [Trumpet Hill]' (Baily, 1833), some doubt is attached to the record. Praeger (1901) cautions against uncritical acceptance of old records given the frequent misidentification of *G. uliginosum*. Moreover, the location of 'Saddle Mountain' is unclear. Recent sightings of this plant may lend some credibility to this record though. Donal Synnott found it in a field opposite the gate of Rockmarshall Forest in 1976 (Synnott, 1977). However, an undated, handwritten annotation in Synnott's typescript Flora states, 'the ground has since been ploughed' (Synnott, undated).

Harron encountered the plant in three locations, all within Carlingford Mountain SAC: above Clermontpass Bridge (2002), on the eastern slopes of Slievetrasna (Moneycrockroe) (2011), and at Ballymakellett (2011). He did not re-find the Clermontpass Bridge population in 2009.

Based on Harron's notes and sketch map, I searched for *G. uliginosum* at Moneycrockroe around J 1304 1232.

The bedstraw was not re-found. Apparently suitable flushed ground was frequent here. I intensively searched a small area at J 13049 12319 as this tallied with Harron's site description. Adjacent areas were also investigated. Further searches should be carried out here.

4.3. *Cryptogramma crispa*

Cryptogramma crispa (FPO) (VU) is a nationally rare and protected fern species. Cooley might be the only extant site for this species outside Ulster. I collected extra information on a population found by Harron in 2009 (Annex A).

4.4. *Glyphomitrium daviesii*

This acrocarpous moss has a restricted distribution in Ireland and is rare on the eastern coast. Ireland is considered to have a 'Special Responsibility' to conserve this species as it is a European endemic restricted to oceanic areas (Blockeel *et al*., 2014; Hodgetts and Lockhart, 2025).

In Cooley, *G. daviesii* is known from the Windy Gap and Slievenaglogh. I collected additional information on the populations at the Windy Gap (Annex A).

4.5. *Braunia imberbis* (*Hedwigia integrifolia*)

Braunia imberbis (*Hedwigia integrifolia*) (FPO) (VU) is a nationally rare and protected moss species. Large populations exist within Carlingford Mountain SAC, especially in the Windy Gap area. It is also known from Slievenaglogh. A detailed survey was conducted by Hodd (2015). Several additional populations of *Braunia imberbis* were incidentally recorded during fieldwork south-east of the Windy Gap (Figure 1, Table 2).

Table 2. New *Braunia imberbis* locations added during fieldwork.

Site name	**Grid reference**
SE of the Windy Gap, Slieve Foye	J 14084 12798 (±2m)
SE of the Windy Gap, Slieve Foye	J 14136 12761 (±3m)
SE of the Windy Gap, Slieve Foye	J 14162 12719 (±4m)
SE of the Windy Gap, Slieve Foye	J 14389 12798 (±4m)
SE of the Windy Gap, Slieve Foye	J 14388 13000 (±2m)

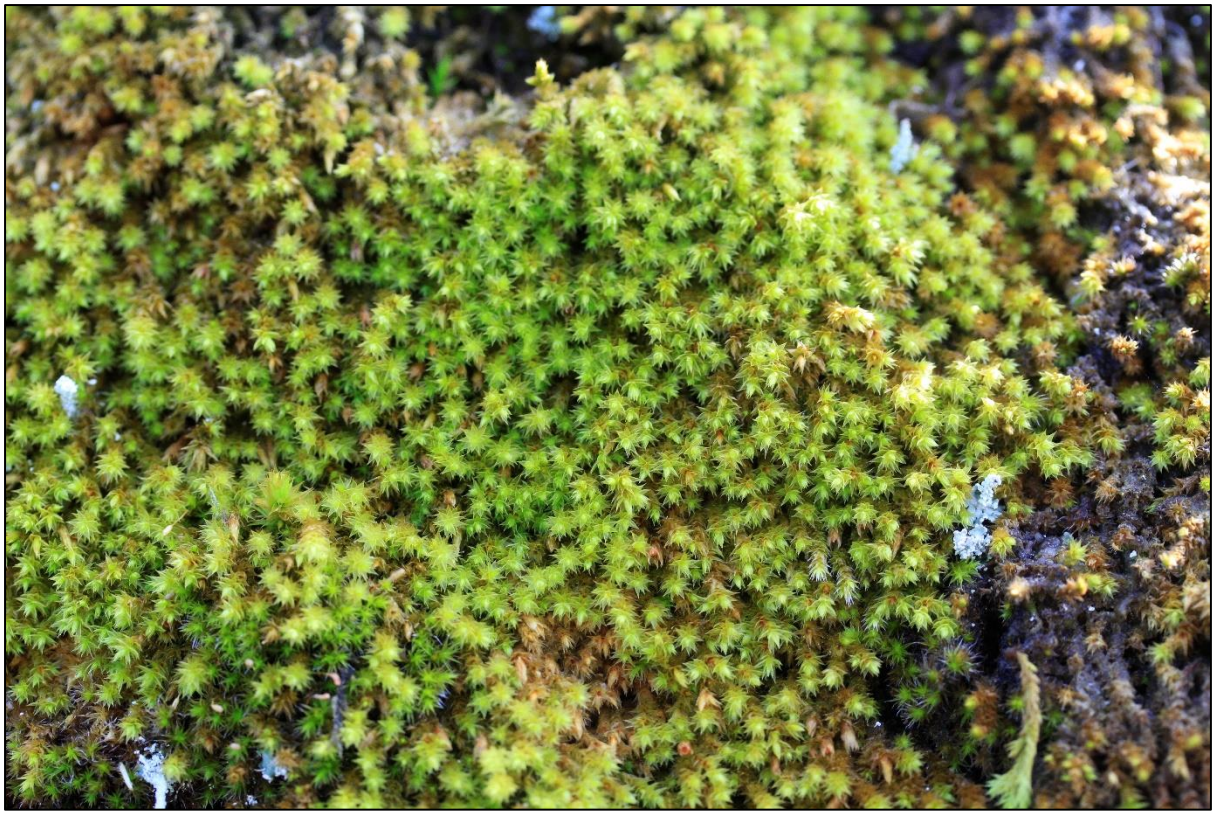

Figure 1. *Braunia imberbis* on a boulder south-east of the Windy Gap.

5. Discussion and recommendations

See Annex A for further details.

6. References

Anon. [Baily, K.S.] (1833). *The Irish Flora*. Hodges & Smith, Dublin.

Blockeel, T.L., Bosanquet, S.D.S, Hill, M.O. and Preston, C.D. (eds) (2014). *Atlas of British & Irish bryophytes: the distribution and habitat of mosses and liverworts in Britain and Ireland.* Pisces Publications, Berkshire.

British Bryological Society (2025). *Bryophytes of Ireland*. Online at https://maps.biodiversityireland.ie/Dataset/396. Accessed: 30th October 2025.

Brunker, J.P. (1919). Plants of Co. Louth. *Irish Naturalist* **28:** 95.

BSBI (2025). *BSBI Distribution Database*. Online at https://database.bsbi.org. Accessed: 30th October 2025.

Day, G. (2024). *County Down scarce, rare and extinct vascular plant register.* Unpublished Rare Plant Register.

Flynn, C. (2024). *Sphagnum platyphyllum* (Lindb. ex Braithw.) Sull. ex Warnst. and *Sarmentypnum sarmentosum* (Wahlenb.) Tuom. and T.J.Kop. in a flush on the Cooley Mountains, Co. Louth (H31). *Irish Naturalists' Journal* **41:** 84-86.

Flynn, C. (2025). Some notable records by John Harron (1944 – 2020) in Cooley, Co. Louth (H31). *Irish Botanical News* **35:** 27-48.

Forbes, R. (2024). *Fermanagh species accounts.* Online at: https://fermanagh.bsbi.org. Accessed: 29th December 2024.

Hackney, P. (ed.) (1992). *Stewart and Corry's Flora of the north-east of Ireland*. 3rd edition. Institute of Irish Studies, Queen's University, Belfast.

Harron, J. (undated). [Unpublished plant records by John Harron. The records date from c.1972 to 2015 and were later transferred to record cards with further comments added].

Haughton, J.P. (1944). News of the societies – Dublin Naturalists' Field Club. *Irish Naturalists' Journal* **8:** 228.

Hodd, R.L. (2015). *Survey of Flora Protection Order bryophytes 2015*. Unpublished report to National Parks and Wildlife Service, Dublin.

Hodgetts, N.G. and Lockhart, N. (2025). *Bryophytes (Mosses, Liverworts & Hornworts). Ireland Red List No. 14.* National Parks and Wildlife Service, Dublin.

Lett, H.W. (1889). Report of examination of the mosses, hepatics, and lichens of the Mourne Mountain district. *Proceedings of the Royal Irish Academy* **1:** 265-325.

Lockhart, N., Hodgetts, N. and Holyoak, D. (2012). *Rare and threatened bryophytes of Ireland.* National Museums Northern Ireland, Holywood.

Lyons, M. and Doogue, D. (2023). *Bryophytes of Cooley: a preliminary inventory of sites of bryological interest on the Cooley Peninsula, Co. Louth.* Unpublished report, Technological University Dublin.

McClintock, D., Harrison, W.E. and Harron, J. (1974). Some new plant records for Co. Louth, H31. *Irish Naturalists' Journal* **18:** 87.

Paton, J.A. (1964). New vice-county records and amendments to the Census Catalogue. Hepaticae. *Transactions of the British Bryological Society* **4:** 711-721.

Pilkington, S. (2025). The moss year - 2024. *Field Bryology* **133:** 63-75.

Pilkington, S.L. and Hodgetts, N.G. (2023). *Interim census catalogue 2023.* Online at: https://www.britishbryologicalsociety.org.uk/wp-content/uploads/2023/06/Census-Catalogue-2023.pdf. Accessed: 30th October 2025.

Praeger, R.L. (1901). Irish Topographical Botany. *Proceedings of the Royal Irish Academy, Third Series* **7:** i-clxxxvii, 1-140.

Roche, J.R, Perrin, P.M., Barron, S.J. and Daly, O.H. (2014). *National Survey of Upland Habitats (Pilot Survey Phase 2009-2010). Site Report No.4: Carlingford Mountain cSAC (00453), Co. Louth (Revision)*. National Parks and Wildlife Service, Dublin.

Scannell, M.J.P and Synnott, D.M. (1987). *Census Catalogue of the Flora of Ireland*. 2nd edition. Stationery Office, Dublin.

Stroh, P.A., Walker, K.J., Humphrey, T.A., Pescott, O.L. and Burkmar, R.J. (eds.) (2023). *Plant Atlas 2020: mapping changes in the distribution of the British and Irish flora* (2 vols). Botanical Society of Britain and Ireland, Durham and Princeton University Press, Princeton and Oxford.

Synnott, D.M. (1970). *County Louth Wildflowers*. Clarks Ireland, Dundalk.

Synnott, D.[M.] (1977). Additions to the flora of Louth. *Irish Naturalists' Journal* **19:** 131.

Synnott, D.M. (undated). *Flora of Louth.* [Manuscript containing a checklist of vascular plant species in Co. Louth. Compiled c.1980].

Waddell, C.H. (1898). Notes on mosses and hepaticae of Ulster. *Irish Naturalist* **7:** 157-160.

Walker, K.J. (2015). Gentianella campestris *(L.) Börner. species account*. Botanical Society of Britain and Ireland.

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. and Wright, M. (2016). *Ireland Red List No. 10: Vascular Plants.* National Parks and Wildlife Service, Dublin.