

Research and Development Series

# Research on Biodiversity Priority Bryophyte Species in Northern Ireland during 2002

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### **Research on Biodiversity Priority Bryophyte Species in Northern Ireland during 2002**

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**RESEARCH ON BIODIVERSITY PRIORITY BRYOPHYTE  
SPECIES  
IN NORTHERN IRELAND DURING 2002**

by D. T. Holyoak

**Contents:**

Summary 2

Introduction 4

Methods 5

**Notes on bryophyte species of ‘Conservation Concern in Northern Ireland’ 6**

Liverworts 6

Mosses 9

**New and updated vice-county records of bryophyte species 22**

Liverworts 23

Mosses 26

**Significance of bryofloras of individual sites, with suggestions for their conservation  
40**

**Conclusions and suggestions for future work 43**

**Acknowledgements 44**

**References 45**

## SUMMARY

Fieldwork to investigate bryophyte species of conservation concern (SOCC) was carried out in Northern Ireland on 35 days from 29 August to 2 October 2002. This work was preceded and followed by literature and herbarium research into old records of rare bryophytes in these counties.

Old sites were revisited and 'new' sites were sought for numerous SOCC, some of them UK BAP Priority species. 8 populations of SOCC species were refound at their old sites, 52 'new' sites were found, and significant negative records were obtained for 13 of the species by revisiting their old sites. Lack of recorded locality detail greatly impeded attempts to refind both certain old records and some more recent records. This report provides details of localities, habitats and voucher specimens for all records of all of the scarcer species encountered. Full bryophyte species lists for the localities visited are given in Appendix 1.

A surprisingly high number of new records resulted from the fieldwork in 2002, emphasising both the diversity of the Ulster bryoflora and the incompleteness of previous explorations. Records were made of eight bryophyte taxa new for Northern Ireland, among them two alien liverworts new to Ireland (*Lophocolea bispinosa*, *L. semiteres*). From these new finds, at least four taxa should be added to the SOCC list for Northern Ireland (*Atrichum tenellum*, *Discelium nudum*, *Leucobryum juniperoideum*, *Zygodon rupestris*). A total of 141 new or updated vice-county records was obtained, mostly from Co. Down and Co. Tyrone.

Several species placed on the 'Provisional list of species of conservation concern in Northern Ireland' have been found so often during fieldwork in 1999, 2000 or 2002 that arguments for their removal from the list have strengthened. Previous reports listed *Archidium alternifolium*, *Cololejeunea minutissima*, *Dicranella staphylina*, *Plagiochila killarniensis* and *Seligeria pusilla* as species to be removed (Holyoak 1999, 2000). Additional data now show that to these should be added *Bryum gemmiferum*, *B. pallescens*, *Fossombronia incurva*, *Philonotis caespitosa* and *Pohlia camptotrachela*, while four other taxa also appear to have been under-recorded and hence seem unlikely to maintain their place on the SOCC lists if bryophyte recording efforts are extended in future (*Aphanorhegma patens*, *Fissidens celticus*, *Pleuridium subulata*, *Pohlia lutescens*). New records were obtained in 2002 for two other species (*Mnium marginatum* and *Pedinophyllum interruptum*) for which it was previously noted (Holyoak 2000) that they appear to be locally common in limestone districts of western Co. Fermanagh and hence unlikely to be threatened. Two species newly recorded in Northern Ireland are unwelcome and potentially invasive aliens that clearly do not belong on the SOCC lists (*Lophocolea bispinosa*, *L. semiteres*) while a third form recently rediscovered in Northern Ireland (*Tortula acaulon* var. *papillosa*) should be excluded from the SOCC list because its taxonomic distinctness is dubious.

Bryophyte surveys of numerous reservoir margins in Northern Ireland were attempted in autumn 2002. However, these proved largely ineffective because of high water levels following unusually high summer rainfall, preventing the usual seasonal fall of water level at most reservoirs. Really good conditions for bryophyte survey were thus found at only 4 of 24 reservoirs visited. Results from three of these four reservoirs were highly

significant: Bonner's Reservoir (in the suburban north edge of Lisburn) provided new records of four SOCC (*Aphanorhegma patens*, *Ephemerum sessile*, *Riccia cavernosa*, *Weissia rostellata*, the last being a UK BAP Priority Species), Lough Island Reavy Reservoir and Fofanny Dam both produced *Atrichum tenellum* (new to Northern Ireland; a Red Data Book species in Republic of Ireland), and only the rocky margins of Silent Valley Reservoir proved to be dull bryologically. Satisfactory surveys of the remaining 20 reservoirs still need to be carried out in a drier year with lower autumn water-levels. The high bryological interest of those reservoirs already surveyed implies that significant finds will result from such a survey.

Because of the large numbers of old records of SOCC bryophytes in Northern Ireland, a significant number of the old sites have not been revisited during the fieldwork in 1999, 2000 or 2002. It would be useful in future to prepare an inventory of the old records that have still not been searched for, and then to attempt to refind the species among them that are of high conservation significance and for which the locality details are not too imprecise. During the 1999 fieldwork visits planned to several sites in Co. Antrim were not carried out, notably Colin Glen on the west edge of Belfast. It would be worthwhile seeking arrangements for a future visit to this site which had several old records of rare bryophytes. In addition, studies of old specimens from several museums are needed to revise identifications of several taxa (especially *Cololejeunea rossettiana* and *Seligeria* spp.), where there is evidence that some records from Northern Ireland are erroneous.

## Introduction

Fieldwork to investigate rare and threatened bryophytes was carried out in Northern Ireland on 35 days from 29 August to 2 October 2002. It was mainly devoted to seeking numerous species from the 'Provisional list of species of conservation concern in Northern Ireland' (SOCC). Special efforts were made to locate those species that are also listed as Priority species within the UK Biodiversity Action Plan (BAP). This fieldwork was preceded and followed by extensive literature and herbarium research into old records of rare bryophytes in Northern Ireland.

Similar research was carried out during 1999 (concentrated in Co. Antrim and Co. Londonderry: Holyoak 1999) and 2000 (concentrated in Co. Fermanagh: Holyoak 2000). Additional fieldwork was planned during 2001 to cover localities mainly in Co. Down and Co. Tyrone, but this was postponed until 2002 because the precautions against Foot & Mouth Disease prevented the fieldwork during much of 2001. The present report describes results of this work that was carried out during autumn 2002, consisting mainly of the studies in Co. Down and Co. Tyrone which had been postponed from 2001. It was also intended that fieldwork during 2001 would search the inundation zones of numerous reservoirs across Northern Ireland, following the surprising finds of numerous rare bryophytes in this virtually unexplored habitat during autumn 1999 (including *Ephemerum spinulosum* new to Europe). The survey of reservoir margins was also postponed until autumn 2002 and results are reported here. Unfortunately high water levels following unusually high summer rainfall in 2002 prevented the usual seasonal fall of water level at most reservoirs, so that really good conditions for bryophyte survey were found at only 4 of 24 reservoirs visited. Although several interesting records of rare bryophytes were found at these 4 reservoirs, satisfactory surveys of the remainder still need to be carried out in a drier year. The time gained from cancelled survey work at reservoirs found to be full of water was nevertheless put to good use in seeking more SOCC bryophytes in other habitats. Thus attempts were made to re-find older records mainly in Co. Down and Co. Tyrone, and to target searches towards habitats that had been under-recorded in the past (e.g. sand and gravel quarries, earthy stream banks). For completeness, the present report also incorporates results of a bryophyte survey carried out for the RSPB on their Aghatirourke Reserve, Cuilcagh, Co. Fermanagh on 29-31 August 2002 (Holyoak 2002).

The final results from 2002 included records of eight bryophytes new to Northern Ireland (three liverworts, five mosses), 141 new or updated vice-county records including numerous records of SOCC, and several thousands of distributional records to be added to the CEDAR database. These studies have already added four newly recorded bryophyte species to the draft SOCC lists (*Atrichum tenellum*, *Discelium nudum*, *Leucobryum juniperoideum*, *Zygodon rupestris*) and they also allow several species that appear to have been under-recorded in the past to be deleted from the SOCC lists. The present report contains details of potential threats to several of the rare species and suggestions for habitat management work that would be beneficial for them.

## Methods

Before starting fieldwork the full details of records of all rare bryophyte species in the counties to be visited were copied onto record cards that could be taken into the field. These details were available from notes prepared by Nick Stewart on records of all Red Data Book bryophytes throughout Ireland (which included results of searching the main herbaria and literature), supplemented by checking all relevant literature, especially the BBS Recorder's Reports, papers and notes in *Irish Naturalists' Journal*, and Megaw (1938).

Fieldwork was mainly aimed at refinding the more significant of the older records, but with searches for new localities where promising habitats were seen. A small voucher specimen was collected and standard information was recorded from each locality where a rare bryophyte was found or refound (see next section for examples of the data routinely recorded). So far as possible the grid references of localities were checked using a GPS (Garmin GPS 12), accurate to *ca* 10 m in the conditions under which it was used. However, the GPS only functions when a clear view of the sky is available, preventing its use in ravines or closed woodland.

*A Check-list and Census Catalogue of British and Irish Bryophytes* (Blockeel & Long 1998) provides a convenient up-to-date list of liverworts and mosses recorded in vice-counties throughout Northern Ireland, distinguishing in all cases between taxa recorded since 1949 and those only recorded before 1950. Additional records are listed in the Recorder's Reports in *Bulletin of the British Bryological Society* **75** (2000) and **77** (2001). In the present report numerous new or updated (i.e. first post-1949 record) records from fieldwork in 2002 are listed on the basis of the *Census Catalogue* plus the latest Recorder's Reports. Voucher specimens have been retained to substantiate all of these records, which have now been confirmed by the British Bryological Society's Recorders. Vouchers will eventually be lodged at The Ulster Museum, Belfast (BEL) and the BBS Herbarium at the National Museum and Gallery of Wales, Cardiff (BBSUK).

Throughout this report the names of bryophytes follow Blockeel & Long (1998), who adopt new names for some mosses compared to usage in the national *Atlas* (Hill *et al.* 1991-1994). Names used for vascular plants follow Stace (1997).

To avoid a great deal of repetition in this report, much of the information is given only once under one of three main headings, with frequent cross-references. The headings are as follows:

- (1) Species of conservation concern (liverworts, then mosses, arranged alphabetically);
- (2) New and updated vice-county records (again, liverworts, then mosses, arranged alphabetically);
- (3) Bryofloras of individual sites, giving brief lists of species along with suggestions for conservation or management of some of the sites.

Several vice-counties are referred to by their numbers when presenting or discussing data: H33 = Co. Fermanagh, H36 = Co. Tyrone, H37 = Co. Armagh, H38 = Co. Down, H39 = Co. Antrim, H40 = Co. Londonderry. Other abbreviations used include: BBSUK (BBS Herbarium at Cardiff), BEL (Herbarium of Ulster Museum, Belfast), cfr = with sporophytes, DBN (Herbarium of National Botanic Garden, Glasnevin, Dublin), E (Herbarium of Royal Botanic Garden, Edinburgh), *leg.* = collected by, NMW (Herbarium of National Museum and Gallery of Wales, Cardiff), NVCR = new vice-county record, UVCR = updated vice-county record (i.e. 1st post-1949 record). Numbers beginning 02- are the unique field numbers given to specimens in 2002 by DTH.

## Notes on bryophyte species of ‘Conservation Concern in Northern Ireland’

Those species for which new or updated records or significant negative records were obtained during fieldwork in 2002 are considered here, in alphabetical sequence for liverworts then mosses. All species from the ‘Provisional List of Northern Ireland Species of Conservation Concern’ are included for which there are significant data, including several that now appear to have been under-recorded in the past and hence not to merit a place on this list. In addition several rare species (or infraspecific taxa) newly discovered in Northern Ireland are included, where they may merit a place on the ‘conservation concern’ list.

### Liverworts

#### *Calypogeia suecica*

There are few Irish records of this small liverwort, which was collected at Sheskinawaddy (H36) by Mrs JW Fitzgerald in October 1957 (BEL) and in a wood near Sheskinawaddy Lodge [near Castlederg Wood] in June 1958 (DBN). The habitats were recorded as rotting coniferous wood with other liverworts, and on rotting logs in a small north-facing plantation that was gradually being invaded and killed by sphagna.

Searches around Sheskinawaddy (*ca* H09-81-) on 22 Sept. 2002 were unsuccessful in relocating the species. Very little rotting wood was seen.

#### *Cladopodiella francisci*

02-980: on vertical peaty bank above small stream in moorland near reservoir edge, *ca* 200 m alt., near N. end of Silent Valley Reservoir (H38), J3031/2462, 4 Sept. 2002.

This small liverwort has only sparsely scattered records in Ireland (with only old records in Northern Ireland, in H38 and H39: Blockeel & Long 1998). Its habitats on bared peat and open peaty soil are not rare, so the species may be somewhat under-recorded.

#### *Cololejeunea rossettiana*

Collected in H36 in October 1957 by JW Fitzgerald creeping over mosses, limestone rocks beside waterfall, Carrickaness Bridge (*Trans. BBS* 3 p. 469).

The site was revisited on 20 Sept. 2002 and a *Cololejeunea* presumed at the time to be *C. rossettiana* was collected close to Carrickaness Bridge at H298743, with other bryophytes on steep damp limestone *ca* 2 m above water on N. bank of river (see Photo 15). However, later microscopical study showed my specimen (02-1122) is *C. calcarea*, a new record for H36. Although confusion of *C. calcarea* and *C. rossettiana* seems unlikely if microscopical characters were studied, it would be worthwhile checking the identification of the specimen collected in 1957.

*Fossombronia incurva*

02-1099: on unshaded partly bare damp gravelly sand in disused sand and gravel quarry, *ca* 170 m alt., Killucan (H36), H6746/7948, 18 Sept. 2002.

02-1147: on unshaded compressed soil amongst gravel at edge of path beside lough, with sparse low vegetation, *ca* 225 m alt., by N. end of Lough Fea (H36), H7543/8756, 25 Sept. 2002.

02-1060: on partly bare damp sand by edge of pool in old sand quarry, unshaded, *ca* 20 m alt., SW. of Kilkeel (H38), J2804/1179, 12 Sept. 2002.

no specimen: on unshaded damp sand with low vegetation at edge of sand quarry (near roadside), *ca* 315 m alt., Crockandun Hills (H40), H7764/8820, 25 Sept. 2002 (male plants).

Several new records suggest this species is under-recorded rather than rare. Until Paton (1999: 522) pointed out that the large long-stalked antheridia of male plants are distinctive, identification tended to be based only on plants with mature spores which are rather infrequent in this dioicous species.

*Jungermannia exsertifolia* ssp. *cordifolia*

02-1117: on damp rock in edge of small stream shaded by ferns and grasses, *ca* 195 m alt., Butterlope Glen (H36), H4923/9505, 19 Sept. 2002.

There are recent records of this species in Northern Ireland in H33 (two sites: Holyoak 2000) and H40 and older records in H38 and H39.

*Lophocolea bispinosa*

02-1135: on unshaded compressed soil in middle of track surfaced with schistose gravel, among sparse grasses and low herbs, *ca* 210 m alt., near Kelly's Bridge, Ardnamona, H0663/7948, 22 Sept. 2002. One substantial pure patch was seen, about 40 cm in diameter; searches nearby did not reveal any other patches. The site was photographed (see Photos 1 and 2).

This is the first record in Ireland of this alien liverwort of Australasian origin. It has been known in Britain since 1962, where following early records in the Isles of Scilly and Colonsay it has become established and formed extensive populations in East Cornwall, Dorset and Sussex (Paton 1999: 392). It may prove to be a troublesome invader of open

acidic ground and should be regarded as a potential nuisance in Ireland rather than as an addition to the SOCC list.

*Lophocolea semiteres*

02-953: with mosses and lichens at base of patchy low *Erica cinerea* on dune-heath, ca 5 m alt., Murlough NNR (H38), J3981/3351, 3 Sept. 2002.

*L. semiteres* was found to be plentiful over less than one square metre, but much intermixed with other bryophytes and low grasses and herbs. This is the first record from Ireland of this alien species from the Southern Hemisphere. It is now established at scattered localities in England, Scotland, Belgium and the Netherlands (Paton 1999: 396) and is becoming so plentiful at some sites in East Anglia (R. Stevenson, pers. comm.) and Belgium (H. Stieperaere, pers. comm.) that there are fears of it becoming an invasive weed in open places on acid sandy soils. It should not be added to the list of SOCC in Northern Ireland.

*Marsupella adusta*

02-1023: in small crevices of unshaded sloping surface of granitic rock on N.-facing hillside, ca 485 m alt., E. of Slievenagh (H38), J3403/2886, 9 Sept. 2002 (scattered plants low on several rocks).

02-1159: on steep unshaded surfaces of schist blocks on N.-facing hillside, ca 596 m alt., N. slope of Dart Mountain (H40), H6040/9640, 26 Sept. 2002 (colls. DTH and Richard Weyl).

A tiny montane liverwort that is easily overlooked. 02-1023 provides the first record from the Mourne Mountains. Elsewhere in Northern Ireland, the species has recently been found in the Sperrin Mountains (H36 and H40, including previous records from Dart Mountain) and on the Fair Head undercliff (H39) (see Holyoak 2000, Appendix 2).

*Pedinophyllum interruptum*

02-899: in small quantity, on thin soil part-shaded in crevices beneath overhangs of small E.-facing limestone crag, ca 270 m alt., Carrickatlevin on NE. slope of Cuilcagh (H33), H1666/3214, 29 Aug. 2002.

02-900: with other bryophytes on shaded thin damp soil over limestone rocks in swallow hole part-shaded by deciduous trees, ca 305 m alt., NE. of Legacurragh on NE. slope of Cuilcagh (H33), ca H1602/3115, 29 Aug. 2002; (small amounts mixed with mosses, and one pure patch 20 x 7 cm).

Known in Northern Ireland only from H33. It was found at numerous localities in 2000, leading to the conclusion that *P. interruptum* is locally plentiful in humid sheltered habitats on the limestones of western Co. Fermanagh (Holyoak 2000) and not under any immediate threats there. The two additional records from the Cuilcagh RSPB Reserve in 2002 strengthen the suspicion that this species has too many localities in Northern Ireland for it to be retained on the SOCC list.

*Ptilidium ciliare*

02-1138: on unshaded near-horizontal top of schistose boulder low on E.-facing slope, *ca* 195 m alt., Barnes Gap (H36), H5509/8938, 23 Sept. 2002; patch 34 x 22 cm seen and photographed (see Photos 3-5).

The species was discovered at Barnes Gap by Mrs JW Fitzgerald in 1957. Although locally frequent in Britain, *P. ciliare* is surprisingly rare in Ireland, with other records from Northern Ireland only from H38 (old record from Colin Mt. given by Megaw 1938: 424; recent unpublished record from another locality by R. Weyl, pers. comm.) and H40 (Benbradagh: Holyoak 1999).

*Riccardia incurvata*

02-1058: on partly bare damp sand by edge of pool in old sand quarry, unshaded, *ca* 20 m alt., SW. of Kilkeel (H38), J2804/1179, 12 Sept. 2002.

This is the first record from Northern Ireland of a species that is apparently rather scarce in the Republic of Ireland. It may merit addition to the list of SOCC.

*Riccia cavernosa*

02-1006: on partly bare damp mud in inundation-zone beside reservoir, slightly shaded by *Persicaria amphibia*, *ca* 95 m alt., NE. edge of Bonner's Reservoir (N. edge of Lisburn) (H39), J2535/6664, 7 Sept. 2002 (scattered small plants, but mature spores seen on specimens).

Rather an uncommon species in Ireland, characteristic of inundation zones beside reservoirs and lakes or on dried beds of pools. Previously recorded in Northern Ireland at reservoir edges in H39 (Holyoak 1999) and H38.

## **Mosses**

*Amblystegium tenax*

02-1037: on part-shaded exposed tree roots *ca* 0.5 m above water at edge of lake, *ca* 115 m alt., shore of SE. edge of Castlewellan Lake (H38), J3327/3662, 11 Sept. 2002.

*A. tenax* was previously noted as showing a 'rapid decline' in Northern Ireland, where the only post-1949 records were from H33 (Crundwell 1959: 39), but recorded recently in H33 and H40 (Holyoak 1999, 2000). It is a rather nondescript moss and may often be overlooked.

*Aphanorhegma patens*

02-1071: on gritty sediment between stones high in inundation-zone beside reservoir, partly shaded by grasses, *ca* 155 m alt., NE. edge of Seagahan Reservoir (H37), H9051/3812, 16 Sept. 2002.

02-1087: few plants cfr on sparsely vegetated surface of soil heap, slightly shaded at woodland edge, *ca* 65 m alt., Gosford Forest Park (H37), H9641/4049, 17 Sept. 2002.

02-1005: on partly bare damp mud in inundation-zone beside reservoir, slightly shaded by *Persicaria amphibia*, *ca* 95 m alt., NE. edge of Bonner's Reservoir (N. edge of Lisburn) (H39), J2535/6664, 7 Sept. 2002 (scattered immature plants in several places, but only a few small patches cfr).

A characteristic species of mud exposed in inundation zones besides reservoirs, lakes, pools and rivers, often in mesotrophic places. Occasional records from wet paths, damp field edges and wet tracks suggest it may often be overlooked.

#### *Archidium alternifolium*

Several more records of this species were obtained (see Appendix 1). Fieldwork during 1999 and 2000 had suggested it was under-recorded and should be removed from the SOCC list.

#### *Atrichum angustatum*

This rarity was found repeatedly in H38 by Rev. HW Lett and Rev. CH Waddell from 1900-1910 on a wall south of Saintfield Demesne (BEL, DBN). Notes on the specimens record the habitat variously as mud capped top of dwarf wall, sods on top of wall and a large patch 15" across on top of a mud-capped wall.

The practice of placing soil-cappings on walls ended many years ago throughout Ireland and Britain, so it was hardly surprising that several searches along the roadsides south of Saintfield in September 2002 failed to reveal any earth-capped walls.

#### *Atrichum tenellum*

02-960: on unshaded mainly bare gravelly and gritty sediment high in inundation-zone beside reservoir, *ca* 125 m alt., NW. edge of Lough Island Reavy Reservoir (H38), J2883/3437, 3 Sept. 2002 (several large patches, the largest 1.0 x 0.8 m) (see Frontispiece and Photo 10).

02-970: among stones on unshaded silty mud exposed in inundation-zone beside reservoir, with patchy low herbs and grasees, *ca* 290 m alt., S. end of Fofanny Dam, J2860/2872, 4 Sept. 2002 (in small quantity).

This species is new to Northern Ireland and treated as a Red Data Book species in Republic of Ireland.

#### *Brachydontium trichodes*

02-1030: on damp sloping surfaces of sandstone boulders on floor of old quarry, slightly shaded by scrub, *ca* 100 m alt., Scrabo quarry (H38), J4782/7239, 10 Sept. 2002 (several small patches on each of two boulders, the largest patch < 1 cm across). See Photos 7-9.

Previously recorded at Scrabo Quarry on wet sandstone by WR Megaw in 1933 and again by EW Jones on sandstone blocks in talus on 22 Sept. 1952. The few other Irish records for this species are mainly old (including a record in H40), but it was found at a new site in West Donegal in 2002 (DTH unpublished report to National Parks and Wildlife).

*Bryum gemmiferum*

02-1095: on unshaded sandy soil in damp hollow in floor of disused sand and gravel quarry, ca 177 m alt., Killucan (H36), H6733/7940, 18 Sept. 2002.

02-1102: on unshaded sparsely vegetated sandy gravel in floor of disused sand and gravel quarry, ca 210 m alt., SW. of Cam Lough (H36), H6650/7648, 18 Sept. 2002.

02-1057: on almost bare unshaded bank of sandy gravel in old sand pit, ca 20 m alt., SW. of Kilkeel (H38), J2804/1179, 12 Sept. 2002.

This species is a taxonomic segregate from *B. bicolor*. Numerous recent records in Ireland suggest either that it was under-recorded in the past or that it is increasing and extending its range.

*Bryum neodamense*

Collected in July 1886 by Rev. CH Waddell in H37 on marshy shore of Lough Neagh, with *Campylium polygamum* (BBSUK). The locality appears to have been given as Carter's Bay, for which the nearest equivalent spelling [for localities on L. Neagh in H37] appears to be Castor Bay at J07-62-.

A visit to the Castor Bay/Oxford Island area on 7 Sept. 2002 suggested that modern Lough Neagh is unlikely to have suitable habitat for *B. neodamense*. The water-level of the Lough is higher than it was historically and maintained so there is little seasonal fall in level. Furthermore, the water is conspicuously eutrophicated. Elsewhere in Ireland *B. neodamense* occurs on the edges of clean mesotrophic lakes on marl skins covering rocks that are exposed when water levels fall in summer (pers. obs.). Since habitats of this kind are no longer present around L. Neagh there can be little doubt that *B. neodamense* has become extinct there.

*Bryum pallescens*

02-1109: on damp mud among rocks and debris of a ruined building in an old sand and gravel quarry, slightly shaded, ca 180 m alt., W. of Brackagh South (H36), H5731/7983, 18 Sept. 2002.

02-1153: on unshaded mainly bare ground of old bonfire site at edge of disused gravel quarry, with sparse low vegetation, ca 280 m alt., above Whitewater Bridge, NE. of Lough Fea (H40), H7651/8787, 25 Sept. 2002.

The only previous records from Northern Ireland are from H33 (1957 and 2000: Holyoak 2000) and an old record from H38 (Blockeel & Long 1998: 118). However, *B. pallescens* is probably under-recorded because of its strong superficial similarity to commoner species such as *B. amblyodon* and the need for detailed study of the peristome and spore measurements to ensure accurate identification. Recent records from the Republic of Ireland include numerous finds from zinc-contaminated ground near galvanised-iron roofs and in guttering, suggesting it is too common there to merit coverage in the Red Data Book.

#### *Bryum riparium*

This species is known in Northern Ireland only from a specimen from H38 labelled Slievenabrock 16/8/1885 HW Lett (DBN). It was originally identified as *B. mildeanum*, but reidentified by HLK Whitehouse in 1963 (*Trans. BBS* 4, p. 399, 1963), when it was noted that it was mixed with *Dichodontium pellucidum*.

The admixture with *D. pellucidum* suggests a streamside habitat much like those of *Bryum riparium* at most of its British localities. Searches on 9 Sept. 2002 on the northern and western sides of the Slievenabrock hill (on northern slope of Mourne Mts) and along the Spinkwee River nearby were unsuccessful, but this is a small and inconspicuous moss and there is plenty of potentially suitable habitat.

#### *Dicranella staphylina*

Several more records of this species were obtained in 2002 (see following section and Appendix 1). Fieldwork during 1999 and 2000 had suggested it was under-recorded and should be removed from the SOCC list.

#### *Dicranella subulata*

02-1155: on unshaded damp gravelly soil on floor of disused gravel quarry, with sparse low vegetation, ca 275 m alt., above Whitewater Bridge, NE. of Lough Fea (H40), H7663/8789, 25 Sept. 2002, cfr.

This is apparently a rather rare species in Ireland. Previous records from Northern Ireland are from H36 (post-1949) and H38 and H39 (pre-1950). It may be somewhat under-recorded since non-fertile plants are easily overlooked as the commoner *Ditrichum heteromallum*.

#### *Dicranodontium asperulum*

02-909: on thin soil on sloping gritstone of boulder part-shaded by other boulders in block scree on NE.-facing hillslope, ca 506 m alt., high on NE. slope of Cuilcagh, H1249/2837, 31 Aug. 2002 (strong patches seen under four different boulders; the largest pure and 25 x 15 cm).

02-913: on steep damp soil among gritstone rocks on N.-facing montane slope, ca 650 m alt., just N. of summit of Cuilcagh, H1235/2802, 31 Aug. 2002.

Known in Northern Ireland only from H33 where collected on Cuilcagh on several visits between 1909 and 1965. In 2000 it was found to be plentiful elsewhere on the upper slopes of Cuilcagh (e.g. 00-172: forming extensive carpet on soil beneath overhanging block of gritstone in block scree on north-facing hillside (500 m elevation), SE. of Lough Atona, H112289, 29.v.00; also locally abundant higher up the same slopes, including at ca 620 m elevation at H108289: Holyoak 2000).

#### *Discelium nudum*

02-902: on unshaded damp near-vertical clay of steep eroded E.-facing bank 0.5-0.8 m above stream, ca 395 m alt., Altscraghy on NE. slope of Cuilcagh (H33), H1327/2933, 31 Aug. 2002 (plentiful over 1.5 x 0.5 m of bank).

This is the first record from Northern Ireland of a rather inconspicuous moss that was until recently known in Ireland only from a single gathering from the southern slopes of Cuilcagh in Co. Cavan. However, surveys during 2001 revealed several other populations on clay banks overlying Carboniferous rocks elsewhere in Co. Cavan and extending into Co. Leitrim (DTH unpublished reports on work for National Parks and Wildlife).

#### *Ditrichum lineare*

There are many old collections of this rare moss from Collin Top near Belfast, Top of Colin, W. of Collins Glen near summit and similar localities. Despite some ambiguity arising from existence of two hills called Collin in H39 (other is on the Garron Plateau, D21-16-) it is clear that the hill nearest Belfast is intended (at J26-70-). The most recent gatherings were made by EW Jones and JW Fitzgerald in October 1952 (NMW), from bare peaty ground and hard stony earth at edge of path and amongst patches of *Calluna*, with *Dicranella heteromalla*.

Several hours of searching on 16 Sept. 2002 were unsuccessful in relocating any *D. lineare*, despite familiarity with the species elsewhere. Potentially suitable habitats still exist high on the hill, especially within about 80 m of its summit, but all *Ditrichum* found (and later checked microscopically) was *D. heteromallum* (see Photos 11 and 12).

#### *Ditrichum pusillum*

This small and very inconspicuous moss was collected from Scrabo Quarry in H38 on 25 May 1908 by Rev. HW Lett (DBN, conf. Dixon and HLK Whitehouse). It was not refound on a visit to Scrabo Quarry on 10 Sept. 2002, but possible habitats still exist and the species might easily be overlooked.

#### *Ephemerum sessile*

02-1000, 02-1001: in pure patches and with *E. serratum* var. *serratum*, on unshaded partly bare mud exposed among patchy low herbs high in inundation-zone beside reservoir, ca 95 m alt., NE. edge of Bonner's Reservoir (N. edge of Lisburn) (H39), J2545/6656, 7 Sept. 2002 (several patches up to 0.5 m across, some cfr).

Apparently a rare species in Ireland, the only previous records from Northern Ireland similarly being from reservoir edges in Co. Antrim (Holyoak 1999).

*Fissidens celticus*

02-1094: with *Pohlia lutescens*, on steep partly bare bank of clay-loam by path near lake, part-shaded by trees, ca 80 m alt., Drum Manor Forest Park (H36), H7617/7771, 17 Sept. 2002.

02-1084: on steep soil of bank shaded beneath deciduous trees on slope above stream, ca 65 m alt., Gosford Forest Park (H37), H964405, 17 Sept. 2002.

02-1035: on vertical loamy soil of bank ca 2.5 m above river, partly shaded by larch plantation, ca 95 m alt., S. bank of Shimna River W. of Parnell's Bridge (in edge of Tollymore Forest Park) (H38), J324319, 11 Sept. 2002.

The only previous record from Northern Ireland was from H40. Three new vice-county records of this small moss of rather ordinary habitats suggests that (like *Pohlia lutescens* which often occurs with it) it may be under-recorded rather than really rare.

*Grimmia curvata*

02-1050: on unshaded sloping surfaces of large boulder on N.-facing hillside, ca 295 m alt., below Black Stairs, Thomas's Mountain, SW. of Newcastle (H38), J3642/2927, 12 Sept. 2002.

There are old records of this species in H38 (Mourne Mts) and H39 and more recent records in H40.

*Grimmia decipiens*

02-1052, 02-1054: on unshaded sloping surfaces of large boulder on N.-facing hillside, ca 295 m alt., below Black Stairs, Thomas's Mountain, SW. of Newcastle (H38), J3642/2927, 12 Sept. 2002 (several large patches cfr).

There are numerous old records of this species on the northern side of the Mourne Mts (H38), including Slievenabrock (1912, 1915, DBN), Tollymore Park- Slieve na Maddy (1884, DBN), Tollymore Park on wall (1885, E), Slieve Donard, Black Stairs and nearby (1885-1889, DBN), Slieve Donard, nr Ice House (1884, DBN) and Slieve Donard, Ballagh Park on stone fence (1884).

*Grimmia funalis*

There are old records from H38 from Slievenabrock (1884, DBN) and Slieve Donard (1884-1888, from Thomas Mt., W. River glen and Black Stairs, DBN, BBSUK). It was not refound at any of these localities in Sept. 2002, despite efforts to study and collect *Grimmia* spp. There is, however, much suitable habitat below the Black Stairs on Slieve Donard and it may well persist somewhere there.

*Grimmia longirostris* (syn. *G. affinis*)

Recorded from H38 from siliceous rocks, Slieve Donard, Black Stairs on 9 Jul. 1887 (Rev. HW Lett, DBN). It was not refound near the Black Stairs in Sept. 2002, despite efforts to study and collect *Grimmia* spp. There is, however, much suitable habitat there and it may well persist somewhere in the vicinity.

*Henediella heimii*

02-994: on unshaded soil in crevices of gravel track just above HWST level of Strangford Lough, ca 5 m alt., SE. of Castle Island (H38), J5179/4852, 6 Sept. 2002 (a few small patches).

This species of saline habitats is almost certainly under-recorded because bryologists usually pay little attention to salt-marsh edges and disturbed habitats just above high-tide level. Although treated in the provisional list of Red Data Book species for the Republic of Ireland, it should probably be excluded because recent surveys by National Parks and Wildlife have found numerous new localities in Co. Donegal.

*Kiaeria blyttii*

02-1046: a few small patches on unshaded top of boulder on N.-facing slope near stream, ca 280 m alt., below Black Stairs, Thomas's Mountain, SW. of Newcastle (H38), J3644/2930, 12 Sept. 2002.

02-1157: on near-vertical hard schistose rock at base of low N.-facing crags, almost unshaded, ca 580 m alt., N. slope of Dart Mountain (H40), H6036/9643, 26 Sept. 2002 (colls. DTH and Richard Weyl).

02-1046 represents the first record for the Mourne Mountains of a rather rare montane moss known elsewhere in Northern Ireland only in the Sperrin Mountains (H40) (for previous record on Dart Mountain see Holyoak 1999).

*Leucobryum juniperoideum*

02-935: on rotting wood of old tree stump and humic soil nearby, part-shaded in edge of planted woodland, ca 50 m alt., just N. of Shimna River in Tollymore Forest Park (H38), J345323, 2 Sept. 2002 (several strong patches).

02-987: on horizontal soil on slope under conifers at edge of plantation above small river, ca 70 m alt., by Spinkwee River in Tollymore Forest Park (H38), J336318, (scores of patches, some of them large).

These are the first records from Northern Ireland of a species that is apparently uncommon in Ireland, where it probably becomes scarcer northwards. In Britain *L. juniperoideum* occurs mainly or exclusively in old woodland habitats, sometimes with the commoner *L. glaucum*, but it is absent from the open heaths, moorlands and montane habitats where the latter species is often also common. *L. juniperoideum* may prove to be locally plentiful in Tollymore Forest Park and it should be watched for in other areas of

old woodland in Northern Ireland, although considerable care is needed to distinguish it from *L. glaucum*.

Capsules of the two *Leucobryum* species differ markedly, but both species are only rarely fertile. Non-fertile plants of *L. juniperoideum* look subtly different to those of *L. glaucum*, due to the different shape of the upper part of the leaf (Nyholm 1987 p. 65), which tends to be parallel-sided and less tapered in *L. juniperoideum*. However, reliable identification is tedious because it needs to be based on average measurements of numerous epidermal cells from the ventral surface of at least six well-grown leaves (see account of technique due to A.C. Crundwell in Corley & Hill 1981 p. 136). Mean width of these cells is about 34 µm in *L. glaucum* and 27 µm in *L. juniperoideum*.

#### *Leucodon sciuroides* var. *sciuroides*

A record made in H33 in 2002 by DG Long is a noteworthy find of a species that is rare in Ireland (on old *Fraxinus* in parkland, 80 m alt., Florence Court House, H13, DG Long 30787). It was previously known in Northern Ireland only from an old record in H39 (Blockeel & Long 1998: 132). Survival of this species in the grounds near Florence Court House is likely to depend on the survival of the old tree(s) on which it grows.

#### *Mnium marginatum*

02-897: in small amounts, with other bryophytes in crevice of N.-facing limestone crag, partly shaded by low bushes, ca 295 m alt., Legacurragh, NE. slope of Cuilcagh (H33), H1581/3078, 29 Aug. 2002.

02-898: in small quantity, on thin soil part-shaded in crevices beneath overhangs of small E.-facing limestone crag, ca 270 m alt., Carrickatlevin on NE. slope of Cuilcagh (H33), H1666/3214, 29 Aug. 2002.

Numerous records in 2000 suggest *M. marginatum* is locally common on limestone in southwestern parts of Co. Fermanagh (Holyoak 2000). The two additional records from the Cuilcagh RSPB Reserve strengthen the suspicion that this species has too many localities in Northern Ireland for it to be retained on the SOCC list.

#### *Orthotrichum rivulare*

02-993: on bark of near-horizontal branch of *Salix cinerea* ca 0.5 m above water in carr at edge of lake, ca 5 m alt., E. side of Quoile Pondage Basin NNR (N. of Downpatrick), J496471, 6 Sept. 2002.

The species is known in Northern Ireland in H36 and by old records in H38, H39 and H40. Although treated as a provisional Red Data Book species in the Republic of Ireland, the number of recent records there suggest it has been under-recorded, perhaps because of its restriction to substrata in the inundation zones at river and lake edges.

#### *Orthotrichum stramineum*

There are two old records from Tollymore Park (H38), from a beech tree in June 1885 (Rev. CH Waddell) and from trees by back entrance in 1926 (Rev. WR Megaw, BEL). Searches were made for epiphytes in Tollymore Forest Park on several days in Sept. 2002 without success in locating *O. stramineum*, but there are so many potentially suitable trees that it is impossible to search comprehensively.

*Philonotis caespitosa*

02-1068: on firm mud high in inundation-zone beside reservoir, partly shaded by grasses, ca 155 m alt., NE. edge of Seagahan Reservoir (H37), H9055/3800, 16 Sept. 2002.

02-977: unshaded partly bare mud at edge of tarmac of disused moorland road, with sparse low grasses and sedges, ca 335 m alt., near S. end of Spelga Dam (H38), J2695/2593, 4 Sept. 2002.

02-1151: on unshaded mainly bare sandy soil beside track at entrance to disused gravel quarry, with sparse low vegetation, ca 285 m alt., above Whitewater Bridge, NE. of Lough Fea (H40), H7650/8780, 25 Sept. 2002.

Although provisionally treated as a Red Data Book species in the Republic of Ireland, *P. caespitosa* has been much confused with small forms of *P. fontana* and it is doubtless under-recorded. It should not be listed as a SOCC.

*Pleuridium subulatum*

02-1148: on unshaded compressed soil amongst gravel at edge of path beside lough, with sparse low vegetation, ca 225 m alt., by N. end of Lough Fea (H36), H7543/8756, 25 Sept. 2002.

02-1032: on unshaded partly bare stony soil on floor of old sandstone quarry among very short grasses and herbs, ca 100 m alt., Scrabo quarry (H38), J4787/7239, 10 Sept. 2002.

This inconspicuous species is otherwise known by only a few old records in Northern Ireland (H38, H39: Blockeel & Long 1998: 32), but it may well be overlooked.

*Pohlia camptotrachela*

Several more records of this species were obtained during 2002 (see Appendix 1). Fieldwork during 1999 and 2000 had already suggested it was under-recorded and should be removed from the SOCC list.

*Pohlia cruda*

02-896: one small patch, with other mosses on thin steep soil in part-shaded crevice of low N.-facing limestone crag, ca 295 m alt., Legacurragh, NE. slope of Cuilcagh (H33), H1581/3078, 29 Aug. 2002.

Recorded in Northern Ireland from H33, H38, H39 and H40 (Blockeel & Long 1998). In 1999 the species was found or refound at three sites in H39 and one in H40 (Holyoak

1999). In H33 it was recorded by R.D. Porley at Letter Scarp (*ca* H065566) on 10 June 1999 (Porley 1999) and once in 2000 by DTH (Holyoak 2000).

The number of records accumulated for this species may suggest that it no longer merits listing as a 'Species of Conservation Concern in Northern Ireland', but its removal should perhaps be deferred until further fieldwork is carried out.

*Pohlia drummondii*

02-1143: with other low bryophytes on thin soil over damp quarried schistose rock, almost unshaded, *ca* 180 m alt., Barnes Gap (H36), H5505/8973, 23 Sept. 2002 (see Photo 6). The species was also present on sparsely vegetated ground of the roadside parking place beneath the rocks.

This is apparently the first record of the species in Northern Ireland, but it has often been confused with other species of bulbiferous *Pohlia*. Although placed on the provisional list of species to be covered in the Red Data Book for the Republic of Ireland, there are too many recent records from Co. Donegal for it to merit a place (unpublished report by DTH to National Parks and Wildlife).

*Pohlia filum*

02-1108: on partly bare sandy mud on flat ground in old sand and gravel quarry, with sparse low herbs and grasses, *ca* 180 m alt., W. of Brackagh South (H36), H5732/7972, 18 Sept. 2002.

02-1150: on unshaded mainly bare sandy soil beside track at entrance to disused gravel quarry, with sparse low vegetation, *ca* 285 m alt., above Whitewater Bridge, NE. of Lough Fea (H40), H7650/8780, 25 Sept. 2002.

02-1154: on unshaded partly bare gravelly soil on floor of disused gravel quarry, with sparse low vegetation, *ca* 280 m alt., above Whitewater Bridge, NE. of Lough Fea (H40), H7659/8785, 25 Sept. 2002.

02-1156: on unshaded damp sand with low vegetation at edge of sand quarry (near roadside), *ca* 315 m alt., Crockandun Hills (H40), H7764/8820, 25 Sept. 2002 (with inflorescences).

*P. filum* has few Irish records and was previously known in Northern Ireland only from H36. It appears to be a very local plant of extremely base-poor open sandy habitats, often where water stands for part of the year.

*Pohlia lutescens*

02-1093: on thin soil over end of rotting oak bough *ca* 0.5 m above ground in shade of oaks near lake, *ca* 80 m alt., Drum Manor Forest Park (H36), *ca* H7608/7767, 17 Sept. 2002.

02-1094: with specimen of *Fissidens celticus*, on steep partly bare bank of clay-loam by path near lake, part-shaded by trees, ca 80 m alt., Drum Manor Forest Park (H36), H7617/7771, 17 Sept. 2002.

02-1083: on steep soil of bank shaded beneath deciduous trees on slope above stream, ca 65 m alt., Gosford Forest Park (H37), H964405, 17 Sept. 2002.

The only previous record from Northern Ireland was from H33 in 2000 (Holyoak 2000) and there are only five other records from Ireland. It is a small moss of rather ordinary habitats, so two new vice-county records may suggest that (like *Fissidens celticus* which often occurs with it) it may be under-recorded rather than really rare, especially since microscopic study of the tubers is important to confirm determinations. It should not be added to the 'List of Species of Conservation Concern in Northern Ireland' unless further survey work confirms that it is genuinely rare rather than merely overlooked.

*Pterigynandrum filiforme* var. *filiforme*  
*Pterigynandrum filiforme* var. *majus*

Tollymore Park (H38) is the best known of the few Irish localities for this rarity, and the only site in Ireland from which var. *majus* has been recorded. Records of the species at Tollymore begin in 1829 (from Lord Rodens Demesne ) and continue up to 1926-1938 (by Shimna River, by side of stream , WR Megaw, BEL).

Searches in Sept. 2002 were unsuccessful in relocating the species along the Shimna River in Tollymore Forest Park, but there are several kilometres of rocky river bank that it would take many days to search comprehensively. It may still persist somewhere, although the extensive coniferous plantations now present along some stretches of riverbank might have caused loss or decline of the species through excessive shading.

*Racomitrium affine*

02-1101: on unshaded granitic boulder in disused sand and gravel quarry, ca 210 m alt., SW. of Cam Lough (H36), H6651/7656, 18 Sept. 2002.

A taxonomic segregate of the *Racomitrium heterostichum* group, previously recorded in Northern Ireland in H38 and H39, but difficult to identify without cutting leaf-sections so doubtless under-recorded.

*Racomitrium canescens*

02-947: on unshaded partly bare sand in short dune grassland near path, ca 5 m alt., Murlough NNR (H38), J3984/3353, 3 Sept. 2002.

02-948: on unshaded sandy shingle of area with mosses and lichens in dune-heath, ca 5 m alt., Murlough NNR (H38), J3975/3334, 3 Sept. 2002 (see Photos 13 and 14).

*R. canescens* was formerly much confused with the closely allied *R. ericoides*, which is much commoner in Ireland. However, *R. canescens* s.s. was collected at Newcastle sand

dunes by Rev. HW Lett in 1908 (DBN, conf. MO Hill) and at Murlough dunes (probably the same locality) by NF Stewart on 25 Oct. 1992 (DBN: NF Stewart pers. comm.).

On 3 Sept. 2002 *R. canescens* was widespread in the area where the two specimens (02-947, 948) were collected, but much scarcer there than *R. ericoides*, forming approximately 1-5 % of the abundant cover of *Racomitrium* whereas *R. ericoides* formed 95-99 % of the cover. Although not absolutely reliable for distinguishing the species in the field, the much whiter, hoar-frosted appearance usually distinguished *R. canescens* from the predominantly light green *R. ericoides* (which has shorter hair-points on most leaves).

It seems extraordinary that the abundant *R. ericoides* at Murlough NNR represented an updated vice-county record for H38, from which fact it seems likely this species has either spread to the locality or become much commoner there in recent years. It would nevertheless appear that even if it is correctly surmised that *R. ericoides* has shown a large recent increase on Murlough NNR, the accompanying *R. canescens* is still holding its own. The very short vegetation over acidic sand at Murlough NNR, maintained by intensive grazing by rabbits, provides optimal habitat for *R. canescens*.

#### *Racomitrium sudeticum*

02-1047: cushion on vertical side of large boulder on N.-facing slope near stream, ca 280 m alt., below Black Stairs, Thomas's Mountain, SW. of Newcastle (H38), J3644/2930, 12 Sept. 2002.

02-1051: on unshaded sloping surfaces of large boulder on N.-facing hillside, ca 295 m alt., below Black Stairs, Thomas's Mountain, SW. of Newcastle (H38), J3642/2927, 12 Sept. 2002.

A member of the taxonomically difficult *Racomitrium heterostichum* group and hence probably under-recorded. There are previous records in Northern Ireland in H33, H38 and H39.

#### *Schistidium platyphyllum*

02-1121: on sloping rock ca 0.4 m above water at edge of river, almost unshaded, ca 95 m alt., just below Carrickaness Bridge (W. of Drumquin) (H36), H2980/7435, 20 Sept. 2002. Potentially threatened by material being bulldozed into river from bank above (see Photos 15 and 16).

This is a rather rare species in Ireland. Previous records in Northern Ireland are from H33 (post-1949), and H39 and H40 (pre-1950).

### *Schistidium pruinosum*

The only Irish record is based on specimens labelled Co Antrim, Belfast, Cave Hill, Apr 1890, Waddell (in BM and E; redetermined by Blom 1996: 111). A brief search on the upper part of Cave Hill on 13 Sept. 2002 produced plenty of *S. apocarpum* s.s. and no *S. pruinosum*, but there is plenty of potentially suitable habitat still to be searched there.

### *Seligeria recurvata*

Collected in October 1957 in H36 by RD Fitzgerald from altered mica-schist, Butterlope Glen, nr Plumbridge (*Trans. BBS* 3 p. 474, 675).

Attempts to re-find the species there on 19 Sept. 2002 were unsuccessful.

### *Seligeria* spp.

*Seligeria* that were non-fertile and hence not identifiable to species level were found in two places on the RSPB Reserve at Cuilcagh (H33), although the species most likely to be involved were *S. acutifolia* and *S. pusilla*. Studies in 1999 and 2000 suggest that *Seligeria pusilla* has too many localities in Northern Ireland for it to be retained on the SOCC list.

### *Tortella inclinata*

02-950: on unshaded sandy shingle of area with mosses and lichens in dune-heath, ca 5 m alt., Murlough NNR (H38), J3976/3336, 3 Sept. 2002 (see Photo 13).

*T. inclinata* has been reported only once before from Northern Ireland (1952: among stones and sand, Sudderyford [*sic* = Slideryford ?], RD Fitzgerald, det. A.C. Crundwell : in Warburg, *Trans. BBS* 4 p. 166, 1961) and it is otherwise known in Ireland only from two sites in West Co. Mayo (Blockeel & Long 1998: 86). The species is scarcely distinguishable in the field from the commoner *T. flavovirens*, so it might perhaps be overlooked at other localities in Ireland.

### *Tortula acaulon* var. *papillosa*

02-954: stony soil on disturbed ground near estuarine bay, part-shaded by long grasses, ca 5 m alt., W. of Dundrum (H38), J3955/3569, 3 Sept. 2002.

This specimen was collected to update the old vice-county record of the common *Tortula acaulon* var. *acaulon* (formerly *Phascum cuspidatum*) in H38. Microscopical checking later revealed the spinulose spores and small, highly papillose upper cells of the leaf lamina characterising var. *papillosa*, a variety otherwise known in Ireland only from an old specimen from H39.

It is unlikely, however, that var. *papillosa* is of much taxonomic significance. In West Cornwall about one-third to one-half of all gatherings of *T. acaulon* show characters of var. *papillosa*, but intermediates connecting it to var. *acaulon* are very common, with some plants showing spore characters of one var. and leaf characters of the other.

*Weissia rostellata*

02-1002: sparsely amongst *Ephemerum* spp., on unshaded partly bare mud exposed among patchy low herbs high in inundation-zone beside reservoir, ca 95 m alt., NE. edge of Bonner's Reservoir (N. edge of Lisburn) (H39), J2545/6656, 7 Sept. 2002 (scattered tiny patches, very few of them cfr).

This UK BAP Priority Species is apparently rare in Britain and Ireland. The only other recent records from Northern Ireland were also from reservoir edges in Co. Antrim (Holyoak 1999), but there are scattered recent records from inundation zones beside loughs and rivers in Republic of Ireland (Co. Cavan, Co. Leitrim; DTH unpublished reports to National Parks and Wildlife).

*Zygodon rupestris* (syn. *Z. baumgartneri*)

02-919: bark on trunk of large oak in open planted woodland, ca 50 m alt., Tollymore Forest Park (H38), J345324, 2 Sept. 2002.

This specimen was mistakenly collected as *Z. viridissimus* var. *viridissimus* to update the old vice-county record of that common moss. It was therefore a pleasant surprise when microscopical checking of the gemmae revealed that it was the much rarer *Z. rupestris*, new to Northern Ireland. Because of the circumstances of its discovery, it is unfortunate that only the basic information was recorded in the field, although it was remembered that there was plenty of *Zygodon* on the tree that was sampled (not far from the bridge over the Shimna River).

The species was listed for four localities in H33 by R.G. Woods, based on surveys in June 1988, but it was not accepted for any vice-county in Northern Ireland by Blockeel & Long (1998). Since the species was not refound at some of these localities in May-June 2000, despite being searched for (Holyoak 2000), these records should be dismissed as probable misidentifications, unless voucher specimens can be located.

## **New and updated vice-county records of bryophytes**

This section lists new vice-county records and records updating the BBS *Census Catalogue*, in alphabetical sequence for liverworts then for mosses. Updated records represent the first confirmed record post-1949. All material has been verified by the BBS Recorder of Hepatics or BBS Recorder of Mosses and the details given below are those supplied for the drafts of their reports (Blackstock 2003 in press, for Hepatics; Rothero 2003b in press, for most Mosses, but Rothero 2003a in press, for *Schistidium apocarpum* and its close allies). Full grid references for the localities and fuller habitat notes are given on the packets containing the voucher specimens (BBSUK, BEL).

## Liverworts

### *Aneura pinguis*

H38

2002: with other bryophytes on unshaded damp near-horizontal granite in flush, *ca* 465 m alt., E of Slievenaglogh, J32, DTH 02-1022.

### *Cladopodiella francisci*

H38

2002: on vertical peaty bank above small stream in moorland near reservoir edge, *ca* 200 m alt., near N end of Silent Valley Reservoir, J32, DTH 02-980.

### *Cololejeunea calcarea*

H36

2002: with other bryophytes on steep damp limestone *ca* 2 m above water on N bank of river, shaded by *Corylus* and saplings of *Fraxinus*, *ca* 95 m alt., just below Carrickaness Bridge (W of Drumquin), H27, DTH 02-1122.

### *Fossombronina incurva*

H36

2002: on unshaded partly bare damp gravelly sand in disused sand and gravel quarry, *ca* 170 m alt., Killucan, H67, DTH 02-1099.

H38

2002: on unshaded partly bare damp sand by edge of pool in old sand quarry, *ca* 20 m alt., SW of Kilkeel, J21, DTH 02-1060.

### *Hygrobiella laxifolia*

H38

2002: on thin soil in crevice of rocks near river, part shaded by deciduous trees, *ca* 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-930.

### *Jungermannia exsertifolia* ssp. *cordifolia*

H36

2002: on damp rock in edge of small stream shaded by ferns and grasses, *ca* 195 m, Butterlope Glen, H49, DTH 02-1117.

### *Jungermannia obovata*

H33

2002: on unshaded thin damp soil on ledge at base of N-facing gritstone crag, *ca* 578 m alt., high on NE slope of Cuilcagh, H12, DTH 02-912.

*Lophocolea bispinosa*

H36

2002: on unshaded compressed soil in middle of track surfaced with schistose gravel, among sparse grasses and low herbs, *ca* 210 m alt., near Kelly's Bridge, Ardnamona, H07, DTH 02-1135. New to Ireland.

*Lophocolea fragrans*

H36

2002: on near-vertical sandstone block *ca* 1 m above water in river gorge below waterfall, part shaded by deciduous woodland, *ca* 160 m alt., Sloughan Glen, H27, DTH 02-1126.

H37

2002: on steep bark 0.5 m above ground on old *Acer pseudoplatanus* tree in open woodland above stream, *ca* 65 m alt., Gosford Forest Park, H94, DTH 02-1081.

*Lophocolea heterophylla*

H38

2002: on rotting wood of tree stumps and humic soil nearby in mature coniferous plantation, *ca* 50 m alt., Tollymore Forest Park, J33, DTH 02-920.

*Lophocolea semiteres*

H38

2002: with mosses and lichens at base of patchy low *Erica cinerea* in dune-heath, *ca* 5 m alt., Murlough NNR, J33, DTH 02-953. New to Ireland.

*Marsupella adusta*

H38

2002: in small crevices of unshaded sloping surface of granitic rock on N-facing hillside, *ca* 485 m alt., E of Slievenaglogh, J32, DTH 02-1023.

*Metzgeria temperata*

H38

2002: on base of *Pinus radiata* trunk near edge of young plantation of that species, *ca* 295 m alt., near S end of Fofanny Dam, J22, DTH 02-972.

*Microlejeunea ulicina*

H38

2002: *ca* 1.5 m above ground on almost unshaded bark of *Betula pubescens* tree beside clearing at edge of river, *ca* 95 m alt., by N bank of Shimna River just W of Parnell's Bridge, Tollymore Forest Park, J33, DTH 02-1034.

*Pellia endiviifolia*

H38

2002: with other bryophytes on steep flushed rock of bank *ca* 2.5 m above river, partly shaded by deciduous trees, *ca* 45 m alt., edge of Shimna River in Tollymore Forest Park, J33, DTH 02-938.

*Phaeoceros laevis*

H38

2002: (male), on soil part shaded by crop of oats in field, *ca* 14 m alt., W of B1 road NW of Ballyhosset (SE of Downpatrick), J54, DTH 02-1012.

*Preissia quadrata*

H38

2002: in unshaded crevices in mortared-stone wall of bridge over river, *ca* 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-922.

*Radula complanata*

H38

2002: on bark of oak in open planted woodland, *ca* 45 m alt., just S of Shimna River in Tollymore Forest Park, J33, DTH 02-941.

*Riccardia chamedryfolia*

H38

2002: on thin soil over horizontal sandstone in floor of old quarry, part-shaded by scrub, *ca* 100 m alt., Scrabo quarry, J47, DTH 02-1026.

*Riccardia incurvata*

H38

2002: on unshaded partly bare damp sand by edge of pool in old sand quarry, *ca* 20 m alt., SW of Kilkeel, J21, DTH 02-1058.

*Riccia beyrichiana*

H38

2002: among low grasses and herbs on unshaded mainly bare gravelly and gritty sediment high in inundation zone beside reservoir, *ca* 125 m alt., NW edge of Lough Island Reavy Reservoir, J23, DTH 02-964.

*Scapania irrigua*

H38

2002: among stones on unshaded silty mud exposed in inundation zone beside reservoir, with patchy low herbs and grasses, ca 290 m alt., S end of Fofanny Dam, J22, DTH 02-969.

## **Mosses**

### *Aloina aloides*

H38

2002: on thin soil over sandstone in old quarry, 100 m alt., Scrabo Quarry, J47, DTH, 02-1027.

### *Amblystegium serpens* var. *serpens*

H38

2002: on *Salix cinerea* in carr at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH 02-989.

### *Amblystegium tenax*

H38

2002: on exposed tree roots at edge of lake, 115 m alt., SE edge of Castlewellan Lake, J33, DTH 02-1037.

### *Aphanorhegma patens*

H37

2002: on soil heap at edge of woodland, 65 m alt., Gosford Forest Park, H94, DTH 02-1087.

### *Archidium alternifolium*

H38

2002: on open gravelly sediment in inundation zone of reservoir, 125 m alt., NW end of Lough Island Reavy Reservoir, J23, DTH 02-961.

### *Atrichum tenellum*

H38

2002: on open gravelly sediment in inundation zone of reservoir, 125 m alt., NW end of Lough Island Reavy Reservoir, J23, DTH 02-960. New to Northern Ireland.

### *Barbula unguiculata*

H38

2002: on wall of bridge, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-923.

### *Brachythecium albicans*

H38

2002: on open sandy shingle in dune heathland, 5 m alt., Murlough NNR, J33, DTH 02-951.

*Brachythecium populeum*

H38

2002: on sandstone block on floor of old quarry, 100 m alt., Scrabo Quarry, J47, DTH 02-1029.

*Brachythecium rivulare*

H38

2002: on rocks by river, 45 m alt., edge of Shimna River, Tollymore Forest Park, J33, DTH 02-940.

*Bryum algovicum* var. *rutheanum*

H37

2002: in crevices of mortared wall, 65 m alt., Gosford Forest Park, H94, DTH, 02-1075.

*Bryum amblyodon* (syn. *B. imbricatum* auct.)

H36

2002: on gravelly soil on bank between ditch and road, 210 m alt., near Kelly's Bridge, Ardnamona, H07, DTH 02-1132.

*Bryum gemmiferum*

H36

2002: on sandy soil in damp hollow in old quarry, 177 m alt., Killucan, H67, DTH 02-1095.

H38

2002: on bank of sandy gravel in ol quarry, 20 m alt., SW of Kilkeel, J21, DTH 02-1057.

*Bryum pallescens*

H36

2002: on damp mud among debris of ruined building, 180 m alt., in old quarry W of Brackagh South, H57, DTH 02-1109.

H40

2002: on ground of old fire-site in old quarry, 280 m alt., above Whitewater Bridge, NE of Lough Fea, H78, DTH 02-1153.

*Bryum pseudotriquetrum* var. *pseudotriquetrum*

H38

on rock at edge of stream, 225 m alt., Spinkwee River, W of Slievenabrock, J33, DTH 02-1021.

*Bryum radiculosum*

H37

2002: in crevices of mortared wall, 65 m alt., Gosford Forest Park, H94, DTH 02-1077.

H38

2002: on wall of bridge, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-928.

*Bryum rubens*

H37

2002: on disturbed soil by path, 65 m alt., Gosford Forest Park, H94, DTH 02-1079.

H38

2002: on bank of sandy gravel in old quarry, 20 m alt., SW of Kilkeel, J21, DTH 02-1059.

*Bryum ruderale*

H37

2002: on disturbed soil at base of wall, 65 m alt., Gosford Forest Park, H94, DTH 02-1074.

H38

2002: on disturbed ground by estuarine bay, 5 m alt., W of Dundrum, J33, DTH 02-955.

*Bryum subapiculatum*

H36

2002: on gravelly sand in old quarry, 177 m alt., Killucan, H67, DTH 02-1097B.

H38

2002: on gravelly soil on verge beside road, 210 m alt., near N end of Silent Valley Reservoir, J32, DTH 02-978.

*Calliergon stramineum*

H38

2002: on peat in inundation zone of reservoir, 330 m alt., near S edge of Spelga Dam, J22, DTH 02-974.

*Campylium stellatum* var. *stellatum*

H38

2002: on peat in flush on hillside, 200 m alt., W slope of Slievenabrock, J33, DTH 02-1017.

*Campylopus fragilis*

H36

2002: on thin soil over rock in old quarry, 185 m alt., Butterlope Glen, H49, DTH 02-1111.

*Cinclidotus fontinaloides*

H38

2002: on rock at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH 02-992.

*Cirriphyllum piliferum*

H38

2002: on soil by track at edge of lake, 45 m alt., E edge of The Lake, Tollymore Forest Park, J33, DTH 02-945.

*Cryphaea heteromalla*

H38

2002: on *Sambucus nigra* at edge of plantation, 65 m alt., S of Shimna River in Tollymore Forest Park, J33, DTH 02-981.

*Dicranella palustris*

H38

2002: on rock at edge of stream, 225 m alt., Spinkwee River, W. of Slievenabrock, J33, DTH 02-1020.

*Dicranella rufescens*

H37

2002: on soil on steep bank above stream, Gosford Forest Park, H94, DTH 02-1085.

H38

2002: on damp clay bank in inundation zone of reservoir, 290 m alt., S end of Fofanny Dam, J22, DTH 02-971.

*Dicranella schreberiana*

H38

2002: on disturbed soil on moorland slope by stream, 210 m alt., near N end of Silent Valley Reservoir, J32, DTH 02-979.

*Dicranella staphylina*

H36

2002: on soil at edge of track in woodland, 100 m alt., Drum Manor Forest Park, H77, DTH 02-1089.

H38

2002: on stony soil on disturbed ground by estuarine bay, 5 m alt, W of Dundrum, J33, DTH 02-957.

*Dicranella subulata*

H40

2002: on damp soil on floor of old quarry, 275 m alt., above Whitewater Bridge, NE of Lough Fea, H78, DTH 02-1155.

*Didymodon tophaceus*

H37

2002: in crevices of mortared wall, 65 m alt., Gosford Forest Park, H94, DTH 02-1078.

H38

2002: on wall of bridge, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-927.

*Discelium nudum*

H33

2002: on steep clay bank above stream, 395 m alt., Altscraghy NE slope of Cuilcagh, H12, DTH 02-902. New to Northern Ireland.

*Drepanocladus revolvens*

H36

2002: in flush on N-facing hillside, 290 m alt., NE slope of Bolaght Mountain, H27, DTH 02-1128.

*Ephemerum serratum* var. *serratum*

H38

2002: on open gravelly sediment in inundation zone of reservoir, 125 m alt., NW end of Lough Island Reavy Reservoir, J23, DTH 02-962.

*Eucladium verticillatum*

H38

2002: on damp mortar of wall of bridge, S bank of Shimna River W of Parnell's Bridge, Tollymore Forest Park, J33, DTH 02-1033.

*Eurhynchium hians*

H38

2002: on thin soil over rocks by river, 45 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-932.

*Eurhynchium pumilum*

H36

2002: on thin soil over limestone on outcrop, 95 m alt., near Carrickaness Bridge W of Drumquin, H27, DTH 02-1123.

H37

2002: on steep soil on bank above stream, 65 m alt., Gosford Forest Park, H94, DTH 02-1082.

*Fissidens celticus*

H36

2002: on clay-loam bank by path near lake, 80 m alt., Drum Manor Forest Park, H77, DTH 02-1094.

H37

2002: on steep soil on shaded slope above stream, 65 m alt., Gosford Forest Park, H94, DTH 02-1084.

H38

2002: on vertical loamy soil on bank by river, 95 m alt., S bank of Shimna River W of Parnell's Bridge, Tollymore Forest Park, J33, DTH 02-1035.

*Grimmia curvata*

H38

2002: on boulder on N-facing hillside, 280 m alt., below Black Stairs, Thomas's Mountain, J32, DTH 02-1050.

*Grimmia decipiens*

H38

2002: on boulder on N-facing hillside, 280 m alt., below Black Stairs, Thomas's Mountain, J32, DTH, 02-1052.

*Grimmia trichophylla*

H38

2002: on rock outcrop above river, 150 m alt., W of Glen River in Donards Wood near Newcastle, J32, DTH 02-1040.

*Gymnostomum aeruginosum*

H38

2002: on steep old concrete by river, 170 m alt., W of Glen River in Donards Wood near Newcastle, J32, DTH 02-1043.

*Gyroweisia tenuis*

H37

2002: in crevices of mortared wall, 65 m alt., Gosford Forest Park, H94, DTH 02-1076.

H38

2002: on sandstone in old quarry, 100 m alt., Scrabo Quarry, J47, DTH 02-1025.

*Hedwigia stellata*

H38

2002: on low outcrop on hillside, 205 m alt., W slope of Slievenabrock, J33, DTH 02-1019.

*Heterocladium heteropterum* var. *flaccidum*

H36

2002: on overhanging sandstone near river in wooded gorge, 160 m alt., Sloughan Glen, H27, DTH 02-1125.

*Hygrohypnum luridum* var. *luridum*

H37

2002: on open vertical concrete at edge of lough, 14 m alt., Lough Neagh at Oxford Island, J06, DTH 02-1008.

*Hypnum andoi*

H36

2002: on *Salix cinerea* at edge of woodland, 100 m alt., Drum Manor Forest Park, H77, DTH 02-1088.

*Hypnum lindbergii*

H38

2002: at edge of gravel track in plantation, 135 m alt., SE of Glen River in Donards Wood near Newcastle, J32, DTH 02-1039.

*Isothecium alopecuroides*

H38

2002: on bark of *Quercus*, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-921.

*Kiaeria blyttii*

H38

2002: on boulder on N-facing hillside near stream, 280 m alt., below Black Stairs, Thomas's Mountain, J32, DTH 02-1046.

*Leptobryum pyriforme*

H36

2002: on open damp soil in ditch, 185 m alt., Barnes Gap, H58, DTH 02-1141.

H38

2002: on thin soil on floor of old quarry, 100 m alt., Scrabo Quarry, J47, DTH 02-1031.

H39

2002: on mud by reservoir, 95 m alt., NE edge of Bonner's Reservoir, Lisburn, J26, DTH 02-1007.

*Leptodictyum riparium*

H38

2002: on soil beneath *Salix cinerea* by path at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH, 02-988.

*Leucobryum juniperoideum*

H38

2002: on old stump in woodland, 50 m alt., just N of Shimna River, J33, DTH 02-935. New to Northern Ireland.

*Leucodon sciuroides* var. *sciuroides*

H33

2002: on old *Fraxinus* in parkland, 80 m alt., Florence Court House, H13, DG Long 30787 . Although not a result of the present survey, this NVCR is a notable record of a species that is rare in Ireland.

*Orthotrichum anomalum*

H38

2002: on mortar of old wall, 7 m alt., SE of Castle Island, Strangford Lough, J54, DTH 02-995.

*Orthotrichum cupulatum* var. *riparium*

H37

2002: on boulder at edge of lough, 14 m alt., Lough Neagh at Oxford Island, J06, DTH 02-1009.

*Orthotrichum diaphanum*

H38

2002: on *Salix cinerea* in carr at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH 02-991.

*Orthotrichum pulchellum*

H38

2002: on *Fagus sylvatica* by pond, 45 m alt., Mill Pond, Tollymore Forest Park, J33, DTH 02-942.

*Orthotrichum rivulare*

H38

2002: on branch of *Salix cinerea* in carr at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH 02-993.

*Palustriella commutata* var. *commutata*

H38

2002: on damp schistose rock above river, 70 m alt., Spinkwee River, Tollymore Forest Park, J33, DTH, 02-986.

*Philonotis caespitosa*

H37

2002: on firm mud in inundation zone by reservoir, 155 m alt., NE edge of Seagahan Reservoir, H93, DTH 02-1068.

H38

2002: on mud at edge of tarmac on disused moorland road, 335 m alt., near S end of Spelga Dam, J22, DTH 02-977.

H40

2002: on open sandy soil by track in old quarry, 285 m alt., above Whitewater Bridge, NE of Lough Fea, H78, DTH 02-1151.

*Pleuridium subulatum*

H36

2002: on soil at edge of path by lough, 225 m alt., by N end of Lough Fea, H78, DTH 02-1148.

H38

2002: on open stony soil on floor of old quarry, 100 m alt., Scrabo Quarry, J47, DTH 02-1032.

*Pohlia bulbifera*

H38

2002: on peaty soil at edge of reservoir, 280 m alt., N end of Spelga Dam, J22, DTH 02-917.

*Pohlia camptotrachela*

H33

2002: on soil below crag, 566 m alt., NE slope of Cuilcagh, H12, DTH 02-910.

H36

2002: on damp soil on track, 185 m alt., Butterlope Glen, H49, DTH 02-1100.

*Pohlia drummondii*

H36

2002: on thin soil over quarried schist, 180 m alt., Barnes Gap, H58, DTH, 02-1143. New to Northern Ireland.

*Pohlia filum*

H40

2002: on open sandy soil by track in old quarry, 285 m alt., above Whitewater Bridge, NE of Lough Fea, H78, DTH 02-1150.

*Pohlia flexuosa*

H36

2002: on open damp soil in ditch, 185 m alt., Barnes Gap, H58, DTH 02-1142.

H40

2002: on gravelly soil at edge of quarry, 280 m alt., above Whitewater Bridge, NE of Lough Fea, H78, DTH, 02-1149.

*Pohlia lutescens*

H36

2002: on thin soil over rotting bough of *Quercus* near lake, 80 m alt., Drum Manor Forest Park, H77, DTH 02-1093.

H37

2002: on steep soil on bank above stream, 65 m alt., Gosford Forest Park, H94, DTH 02-1083.

*Pohlia melanodon*

H36

2002: on steep soil on bank on limestone, 95 m alt., near Carrickaness Bridge W of Drumquin, H27, DTH, 02-1124.

H37

2002: on gritty sediment between stones by reservoir, 155 m alt., NE edge of Seagahan Reservoir, H93, DTH 02-1070.

*Pohlia wahlenbergii* var. *wahlenbergii*

H38

2002: on bare wet sand by pool in old quarry, 20 m alt., SW of Kilkeel, J21, DTH 02-1061.

*Polytrichum alpinum*

H38

2002: on thin gritty soil over granite on N-facing slope, 485 m alt., E of Slievenaglogh, J32, DTH 02-1024.

*Pseudephemerum nitidum*

H38

2002: on soil in arable field with oat crop, 14 m alt., W of B1, NW of Ballyhosset, J54, DTH 02-1013.

*Ptychomitrium polyphyllum*

H38

2002: on parapet of bridge, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-925.

*Racomitrium affine*

H36

2002: on granite boulder, 210 m alt., in old quarry SW of Cam Lough, H67 DTH 02-1101.

*Racomitrium ericoides*

H38

2002: on open sandy shingle in dune heathland, 5 m alt., Murlough NNR, J33, DTH 02-949.

*Rhynchostegium confertum*

H38

2002: on top of wall of bridge, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-924.

*Schistidium apocarpum* s.s.

H33

2002: on open limestone rock, NE slope of Cuilcagh, H13, DTH 02-895B.

H36

2002: on concrete, 180 m alt., in old quarry W of Brackagh South, H57, DTH 02-1104.

H37

2002: on mortar on top of wall of bridge, 65 m alt., Gosford Forest Park, H94, DTH 02-1086.

H38

2002: on mortar on top of old wall, 7 m alt., SE of Castle Island, Strangford Lough, J54, DTH 02-998.

H39

2002: on open basalt crag in gully, 355 m alt., McArt's Fort, Cave Hill, J37, DTH 02-1063.

*Schistidium crassipilum*

H36

2002: on mortar on top of wall, 175 m alt., Gortin Glen Forest Park camping ground, H48, DTH 02-1119.

*Schistidium maritimum*

H38

2002: on top of wall above beach, 10 m alt., S of Kilough, J53, DTH 02-1010.

*Schistidium platyphyllum*

H36

2002: on sloping rock at edge of river, 95 m alt., just below Carrickaness Bridge W of Drumquin, H27, DTH 02-1121.

*Sphagnum compactum*

H38

2002: on peat on hillside with *Nardus* and *Carex panicea*, 205 m alt., W slope of Slievenabrock, J33, DTH 02-1018.

*Syntrichia intermedia*

H38

2002: on mortar on top of old wall, 7 m alt., SE of Castle Island, Strangford Lough, J54, DTH 02-999.

*Tortella flavovirens* var. *flavovirens*

H38

2002: in crevice of rocks on low coastal headland, 10 m alt., S of Killough, J53, DTH 02-1011.

*Tortula acaulon* var. *papillosa*

H38

2002: on disturbed ground by estuarine bay, 5 m alt., W of Dundrum, J33, DTH 02-954.

*Trichostomum brachydontium*

H36

2002: on thin soil in crevice of rocks in old quarry, 185 m alt., Butterlope Glen, H49, DTH 02-1112.

H38

2002: on soil in crevices of rocks by river, 45 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-934.

*Trichostomum tenuirostre* var. *tenuirostre*

H38

2002: in crevices of rocks above river, 45 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-931.

*Ulota phyllantha*

H38

2002: on *Salix cinerea* in carr at edge of lake, 5 m alt., E side of Quoile Pondage Basin NNR, Downpatrick, J44, DTH 02-990.

*Warnstorfia exannulata*

H36

2002: in carpet on wet ground at edge of lake, 235 m alt., E edge of Loughahull, H07, DTH 02-1137.

H38

2002: on peat in inundation zone of reservoir, 330 m alt., near S edge of Spelga Dam, J22, DTH 02-975.

*Zygodon conoideus*

H36

2002: on bark of *Robinia* in ornamental grounds, 100 m alt., Drum Manor Forest Park, H77, DTH 02-1092.

*Zygodon rupestris*

H38

2002: on trunk of large *Quercus*, 50 m alt., by Shimna River in Tollymore Forest Park, J33, DTH 02-919.

*Zygodon viridissimus* var. *stirtonii*

H38

2002: on mortar of old wall, 7 m alt., SE of Castle Island, Strangford lough, J54, DTH 02-996.

## **Significance of bryofloras of individual sites, with suggestions for their conservation**

To avoid a great deal of repetition, this section provides only a brief overview of the bryofloras of individual sites. Suggestions for conservation of the rarer bryophytes are made for the (minority of) sites where threats were apparent. Further details of any species found during the surveys in 2002 should **always** be sought above under the 'Species of conservation concern' heading, the 'New or updated vice-county records' heading, or both.

The present section discusses sites in order of vice-county numbers (for H33 Co. Fermanagh, H36 Co. Tyrone, H37 Co. Armagh, H38 Co. Down, H39 Co. Antrim, H40 Co. Londonderry), and within counties in order of National Grid references. It must be remembered that some of the sites are of greater importance for other plants or for animals than for their bryophytes, so that the apparent lack or scarcity of rarer bryophytes cannot be taken as representative of the whole biota.

Appendix 1 gives a bryophyte species list for each of the main sites studied in August - October 2002 as a copy of a recording card. These are mainly field records, so that a few taxa which cannot be identified reliably in the field will tend to be under-recorded (e.g. *Bryum* 'erythrocarpum' group).

### **H12-28- to H16-32- Aghatirourke RSPB Reserve on Cuilcagh (H33)**

A separate report to the RSPB (Holyoak 2002) gives details of the bryophyte flora found in the reserve and of suggestions for habitat management. It was suggested that damage to flushes and blanket bog would be reduced if (a) stocking levels were to be lowered, and (b) current heavy usage of some areas by quad-bikes was prevented.

### **H06-79- to H07-79- Ardnamona and Sheskinawaddy (H36)**

Attempts to rekindle the old record of *Calypogeia suecica* in the extensive coniferous plantations were unsuccessful, probably because no rotting dead wood of mature conifers was available. Distinctive assemblages of rare bryophytes in this area (including *C. suecica* and perhaps *Anastrophyllum hellerianum*) could be encouraged and perpetuated if large trunks of conifers were allowed to rot on the ground in certain relatively small areas of mature boggy plantation designated as conservation areas. Elsewhere, the tidy plantations of young conifers with little rotting wood offer no habitats suited to these assemblages of dead-wood bryophytes.

**H29-74-        near Carrickaness Bridge (H36)**

Rocks in the river just downstream of Carrickaness Bridge support *Schistidium platyphyllum* (at H2980/7435) and there is an old record of *Cololejeunea rossettiana* close by. The southern bank of the river close to the bridge has recently been bulldozed, apparently for a house site, covering the river bank with debris that has almost buried the *Schistidium platyphyllum* and also somewhat narrowing the river channel (see Photo 16). Further disturbance of this section of river and bank should be avoided. It seems surprising that planning consent would be given for works on the scale of those already undertaken in such a sensitive and attractive riverside location.

**H49-95-        Butterlope Glen (H36)**

Rocks and other open habitats support a rich bryoflora, with old records of *Seligeria recurvata* (on rock) and a recent record of *Jungermannia exsertifolia* ssp. *cordifolia* (in small stream at H4923/9505). Planting of trees should be avoided in the Glen because shading would be deleterious to the bryophytes.

**H55-89-        Barnes Gap (H36)**

*Ptilidium ciliare* occurs on a boulder (at H5509/8938, see Photos 3-5) and *Pohlia drummondii* occurs on rocks and a small roadside parking area (at H5505/8973, see Photo 6). Tree planting should be avoided at Barnes Gap because shading would be deleterious to these bryophytes.

**H57-79-        W. of Brackagh South (H36)**

Open sand and gravel of disused quarries supports *Pohlia filum* (and also *Filago minor* and *Gnaphalium sylvaticum*). The existing areas of open habitat here will almost inevitably be lost as natural vegetation succession replaces open ground with herbs then scrub and saplings. The best prospect for survival of *P. filum* and the other species will arise if continued sand/gravel quarrying provides new habitats in the same region.

**J28-11-        SW. of Kilkeel (H38)**

Partly bare areas of sand and gravel in old sand pits support *Riccardia incurvata* and other interesting bryophytes. As in other sand/gravel quarries, the existing areas of open habitat here will almost inevitably be lost as natural vegetation succession replaces open ground with herbs then scrub and saplings. The best prospect for survival of *R. incurvata* and the other species will arise if continued sand/gravel quarrying provides new habitats in the same region.

**J28-28-        S. end of Fofanny Dam (H38)**

The inundation-zone supports *Atrichum tenellum* (at J2860/2872) as part of an interesting community of bryophytes. Seasonal rise and fall of water-level is important for these bryophytes, which would eventually be lost if high water levels are maintained year-round e.g. for boating or angling interests.

### **J28-34- Lough Island Reavy Reservoir (H38)**

The inundation zone at the north-western corner of the reservoir (J2883/3437) supports *Atrichum tenellum* and *Riccia beyrichiana* (see Photo 10). Although this area is at the end of an access road, it should not be used for construction of a jetty or boat moorings or other structures or sources of disturbance.

Seasonal rise and fall of water-level is important for these bryophytes, which would eventually be lost if high water levels are maintained year-round e.g. for boating or angling interests.

### **J32-31- to J34-32- Tollymore Forest Park (H38)**

The areas of greatest bryological interest are along the rocky banks of the Shimna and Spinkwee Rivers. Some areas of the river banks are becoming heavily shaded as plantations of conifers mature. It would be beneficial to clear all (or at least most) conifers from within 30 metres of the river banks and to avoid new plantations of hardwood trees on the bank edges.

Elsewhere at Tollymore, there are significant records of epiphytes from old hardwood trees, including a recent record of *Zygodon rupestris* (on oak) and old records of *Orthotrichum stramineum* (on beech). The best epiphyte floras tend to occur on mature trees, especially those where the trunks are not heavily shaded. While isolated old hardwood trees are unlikely to be felled at Tollymore, it should be remembered that heavy shade created by new planting close to them may also damage epiphyte communities.

### **J36-29- below Black Stairs, Thomas's Mountain (H38)**

Boulders and blocks of rock on the north-facing slope support *Grimmia curvata*, *G. decipiens*, *Kiaeria blyttii* and *Racomitrium sudeticum*. There are no immediate or obvious threats to these, so long as the moorland vegetation around the rocks remains short in response to grazing pressure. However, cessation or reduction of grazing pressure could prove damaging if increased bulk of plant litter were to lead to damaging moorland fires.

### **J39-33- Murlough NNR (H38)**

The most significant bryophytes recorded here were *Racomitrium canescens* and *Tortella inclinata*. Both of these need extremely short vegetation on the stable areas of dune sand, with gaps exposing at least some bare ground. Intensive grazing by rabbits is important in maintaining these habitat conditions.

### **J47-72- Scrabo quarry (H38)**

Sandstone boulders on the floor of the quarry support *Brachydontium trichodes* (at J4782/7239, see Photos 7-9) and an area of very short grassland nearby has *Pleuridium subulatum* (at J4787/7239), while *Ditrichum pusillum* was recorded in the quarry in the past. The main threat to all of these is from shading caused as scrub and saplings

encroach. Deliberate scrub clearance will be important to halt natural vegetation succession on those areas of the quarry floor which still remain open.

**J49-47- Quoile Pondage Basin NNR (H38)**

Carr of *Salix* spp. beside the lake supports *Orthotrichum rivulare* and commoner species on trunks and branches subject to periodic inundation. Substantial stands of old *Salix* spp. at the edge of the water should be maintained for these species.

**J25-66- Bonner's Reservoir (H39)**

Mud in the inundation zone along (at least) the north-eastern edge of this suburban reservoir supports a notable flora of rare bryophytes, with *Aphanorhegma patens*, *Ephemerum sessile*, *Riccia cavernosa* and *Weissia rostellata* (a UK BAP Priority Species). Disturbance or changes to the upper part of the inundation zone should be avoided (e.g. no tree planting, no pitches or access tracks to be created for anglers.

Seasonal rise and fall of water-level is important for these bryophytes, which would eventually be lost if high water levels are maintained year-round e.g. for boating or angling interests.

**H76-87- above Whitewater Bridge (NE. of Lough Fea) (H40)**

**H77-88- Crockandun Hills (H40)**

Open sand and gravel of disused quarries and edges of active quarries support *Pohlia filum*. As at other sand/gravel quarries, the existing areas of open habitat will almost inevitably be lost as natural vegetation succession replaces open ground with herbs then scrub and saplings. The best prospect for survival of *P. filum* will arise if continued sand/gravel quarrying provides new habitats in the same region.

## Conclusions and suggestions for future work

Old sites were revisited and 'new' sites were sought for numerous 'Species of conservation concern in Northern Ireland', some of them UK BAP Priority species. 8 populations of these species were refound at their old sites; 52 'new' sites were found for these species; significant negative records were obtained for 13 of the species by revisiting their old sites. Lack of recorded locality detail greatly impeded attempts to refind both certain old records and some more recent records.

A surprisingly high number of new records resulted from the fieldwork in 2002, emphasising both the diversity of the Ulster bryoflora and the incompleteness of previous explorations. Records were made of eight bryophyte taxa new for Northern Ireland, among them two alien liverworts new to Ireland (*Lophocolea bispinosa*, *L. semiteres*). From these new finds, at least four taxa should be added to the 'List of species of conservation concern in Northern Ireland' (*Atrichum tenellum*, *Discelium nudum*, *Leucobryum juniperoideum*, *Zygodon rupestris*). A total of 141 new or updated vice-county records was obtained, mostly from Co. Down and Co. Tyrone.

Several species placed on the 'Provisional list of species of conservation concern in Northern Ireland' have been found so often during fieldwork in 1999, 2000 or 2002 that arguments for their removal from the list have strengthened. Previous reports listed *Archidium alternifolium*, *Cololejeunea minutissima*, *Dicranella staphylina*, *Plagiochila killarniensis* and *Seligeria pusilla*, as species to be removed (Holyoak 1999, 2000). To these should be added *Bryum gemmiferum*, *B. pallescens*, *Fossombronina incurva*, *Philonotis caespitosa* and *Pohlia camptotrachela*, while four other taxa appear to have been under-recorded and hence seem unlikely to maintain their place on the provisional SOCC lists if bryophyte recording efforts are extended in future (*Aphanorhegma patens*, *Fissidens celticus*, *Pleuridium subulata*). New records were obtained in 2002 for two other species (*Mnium marginatum* and *Pedinophyllum interruptum*) for which it was previously noted (Holyoak 2000) that they appear to be locally common in limestone districts of western Co. Fermanagh and hence unlikely to be threatened. Two taxa newly recorded in Northern Ireland are unwelcome and potentially invasive aliens that clearly do not belong on the SOCC lists (*Lophocolea bispinosa*, *L. semiteres*) while a third taxon recently rediscovered in Northern Ireland (*Tortula acaulon* var. *papillosa*) should be excluded from the SOCC list because its taxonomic distinctness is dubious.

It was noted in the Introduction to this Report that the survey of numerous reservoir margins in Northern Ireland was attempted in autumn 2002. However, this proved largely ineffective because of high water levels following unusually high summer rainfall, preventing the usual seasonal fall of water level at most reservoirs. Really good conditions for bryophyte survey were thus found at only 4 of 24 reservoirs visited, the 4 reservoirs evidently having low levels because the demand from water-supply exceeded input from rainfall. Results from three of these four reservoirs were highly significant: Bonner's Reservoir (in the suburban northern edge of Lisburn) provided new records of four SOCC (*Aphanorhegma patens*, *Ephemerum sessile*, *Riccia cavernosa*, *Weissia rostellata*, the last being a UK BAP Priority Species), Lough Island Reavy Reservoir and Fofanny Dam produced *Atrichum tenellum* (new to Northern Ireland; a Red Data Book species in Republic of Ireland), and only the rocky margins of Silent Valley Reservoir proved to be dull bryologically. Satisfactory surveys of the remaining 20 reservoirs still

need to be carried out in a drier year with lower autumn water-levels. The high bryological interest of those reservoirs already surveyed implies that significant finds will result from such a survey.

Because of the large numbers of old records of SOCC bryophytes in Northern Ireland, a significant number of the old sites have not been revisited during the fieldwork in 1999, 2000 or 2002. It would be useful in future to prepare an inventory of the old records that have not been searched for, and then to attempt to refind the species among them that are of high conservation significance and for which the locality details are not too imprecise. During the 1999 fieldwork visits planned to several sites in Co. Antrim were not carried out. Colin Glen on the west edge of Belfast has old records of several rare bryophytes (and vascular plants) but was not visited because no secure parking place was found nearby. It would be worthwhile liaising with the National Trust to make arrangements for a future visit whereby a car could be left in a safe place close to the Glen while carrying out surveys.

Attempts to refind *Seligeria* spp. during fieldwork in 1999 and 2000 were frequently successful, but the species found often appeared to bear little relation to those listed in the older records from each site. Since herbarium material of these tiny mosses is often misidentified it is therefore desirable to borrow, check and where necessary reidentify various of the older gatherings from Northern Ireland. Loans from Belfast, Cardiff and Dublin should yield most of the specimens needed. The voucher specimen of *Cololejeunea rossettiana* from H36 (Carrickaness Bridge) also needs to be reexamined.

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