

# BBS Summer Meeting 2015

## Snowdonia

6-12 June 2015

**Sam Bosanquet** reports on this year's Summer Meeting held in Eryri/Snowdonia



### Background

North Wales was arguably the epicentre of British bryology in the 1970s and 1980s, and at the time of the first *Atlas* there was a general feeling that the mountains of Snowdonia (Eryri in Welsh) had been fully recorded. Mark Hill wrote *A Bryophyte Flora of North Wales* in 1988 and Marcus Yeo then spent many hours exploring the mountains in the early 1990s. People moved and attention shifted, and when *A Bryophyte Red Data List for Wales* was written in 2011 we found that many colonies of rare montane mosses had not actually been reported for 25 to 30 years. Furthermore, most were only recorded in very broad-brush detail (in part because GPS had not been invented), often at the level of a cwm, and thus there was little chance of revisiting a population to check whether it was still extant or had declined or disappeared. The Countryside Council for Wales contracted Gordon Rothero to survey three major cwms on the Yr Wyffda (Snowdon)

△Fig. 1. Bryologists in the Nameless Cwm. S. Pilkington

massif in 2011, but solo recording in the vast landscape of Eryri is a challenge. The summer meeting of 2015 emerged from a suggestion by Gordon that the best way to seek rare bryophytes in the mountains would be to send out teams of bryologists.

The meeting was based in Llanrwst and Betws-y-coed, in eastern Eryri. This gave the meeting a natural focus on the eastern and central massifs of Eryri – the Carneddau and Glyderau – and five of our six days were spent in these areas. The other day turned slightly further afield, to Moel yr Ogof, Moel Hebog, Moel Siabod and Cnicht. Because the weather was fabulously sunny all week, the majority of attendees spent every day on high ground, although Malcolm Watling offered a lowland alternative on almost every day. The party was split into three to four groups each day, with an expert and one or two experienced bryologists in each group, so the meeting offered improves an excellent opportunity to learn the



△Figs. 2-5, from top right anticlockwise. Ffynnon Lloer: *Pterigynandrum* rock. R Harding; Exploring the lake margin. S.D.S. Bosanquet; *Bryum muehlenbeckii* around the lake margin. S.D.S. Bosanquet; Tom looking at *Bryum muehlenbeckii*. S.D.S. Bosanquet

upland bryophyte flora. The party comprised Tim Blackstock, Sam Bosanquet, Des Callaghan, Fiona Cameron, Richard Finch, Chris Forster Brown, Ray Harding, Tom Harrison, Gordon Haycock, Rory Hodd, Peter Jones, Jill Kowal, Mark Lawley, Peter Martin, Andy McLay, Emily Meilleur, Oliver Moore, David Morris, Tom Ottley, Sharon Pilkington, Gary Powell, Gail Quartly-Bishop, Tristan ap Rheinallt, Dafydd Roberts, Gordon Rothero, Lucia Ruffino, Julie Smith, Barry Stewart, Alex Turner, Malcolm Watling and Sharon Yardy, although only five people attended every day. Just under half of the group are based in Wales, and the trend towards youthful summer meetings continued (perhaps I'm just getting old!).

All sites were in Caernarfonshire (VC 49) with the exception of the visit to Cnicht, which is in Meirionydd (VC 48). These vice-counties have long histories of bryophyte recording, and only six new vice-county records and 'debracketters' were made (these are marked \* below). A flip-side to paucity of nvcrs was that a high proportion were also new for Wales: we discovered *Lophozia opacifolia*, *Oxystegus hibernicus* and *Pseudoleskeella rupestris* new for Wales during the week.

### Saturday 6<sup>th</sup> June 2015

About half of the party met at Llyn Crafnant at 13:00 as a prelude to the main expeditions and to get people familiar with the commoner bryophytes of Eryri. We started with the north-east corner of the lake (SH7561), where *Grimmia*

*funalis*, *G. hartmanii* and *Pterogonium gracile* were locally frequent on rocks lapped by the water. A small population of *Ulota hutchinsiae* provoked excitement because there are fewer than 10 known extant colonies in Wales. We continued along the west shore of the lake before starting a new card in SH7460, where the shore is shallowly sloping. Rory and Sam simultaneously found *Haplomitrium hookeri*, followed shortly after by a pair of tiny *Fossombronina fimbriata*\* plants. This was a welcome new vice-county voucher for Caernarvonshire because the only previous record, from the nearby Llyn Cowlyd, had been dissected to destruction during identification and had not been accepted as an official record. After a brief look at *Colura calyptrifolia*, because we were unlikely to see it at most of the week's montane sites, we returned to Llanrwst and Betws-y-coed to prepare for the next day's upland walks.

### Sunday 7<sup>th</sup> June 2015

We eased our way into the mountains on our first full day, with four groups looking at the lower crags of the south-eastern Carneddau. Creigiau Gleision (SH7361-7362) seemed the prime candidate for exciting discoveries, as it is one of only two Welsh localities for *Dryas octopetala* (and the other *Dryas* site produced the week's star find on the following day). Des' group came back rather disappointed at the paucity of base-rich rock and general dryness, but with records of *Anomobryum concinnum*, *Cololejeunea calcarea*, *Preissia quadrata* and *Tortella bambergeri* to show for their efforts. There was a similar paucity of really rich ground on the other side of Llyn Cowlyd, but Sharon Pilkington's team found *Grimmia funalis*, *G. torquata*, *Leiocolea collaris* and *Racomitrium ellipticum* on the crags of Pen Llithrig Wrach.

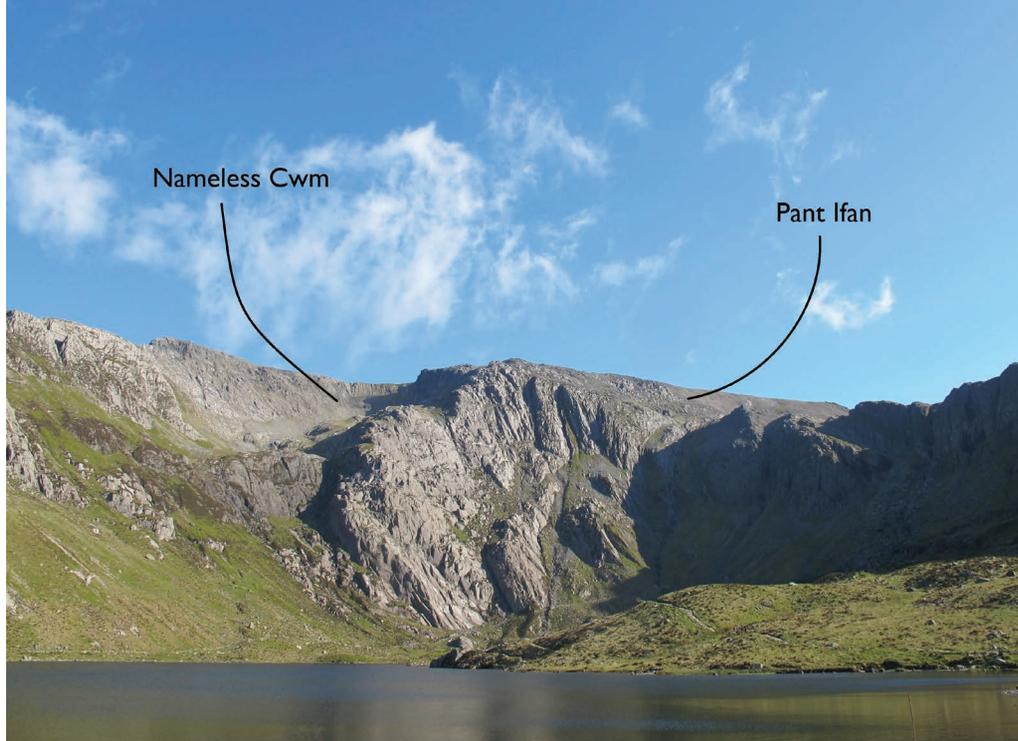
A third team circumnavigated Llyn Eigiau



△Fig. 6. Jill, Emily and Mark L. at Craig Eigiau. R. Hodd

and examined Craig Eigiau (SH7164-7265), just over the ridge from Llyn Cowlyd. Llyn Eigiau reservoir has been partly empty for many years, and Mark found *Atrichum tenellum*\* complete with tubers new for north Wales. He also collected *Douinia ovata* from a crevice in a boulder. A few years ago, Rory's *Glyphomitrium daviesii* would have been the highlight of the week because it was considered extinct in Wales for most of the 20<sup>th</sup> century. Nevertheless, the 8<sup>th</sup> extant Welsh population of this pretty little moss was very welcome. Other finds included *Grimmia lisae* on rock by the lake, *Antitrichia curtispindula*, *Grimmia funalis*, *Heterocladium wulfsbergii*, *Isoetecium holtii*, *Pohlia bulbifera* and *Schistidium strictum*. This was previously a bryologically unknown site, and turned out to be one of the surprise hotspots of the week.

The fourth group recorded their way up the Afon Lloer (SH6661) to the beautiful Ffynnon Lloer (SH6662). This is the only lake in Wales where the lichen *Lecanora achariana* grows, and its presence is thought to reflect the lake's naturalness: unlike many of the lakes of Eryri, its water levels have not been modified through damming. The only localised bryophyte record from the lake was some *Hedwigia ciliata* collected by lichenologist Ray Woods. Barry refound the *Hedwigia* almost immediately, but alarm bells started to ring because its leaves appeared strongly plicate when dry. Later microscope work showed that all three colonies



△Fig. 7. Nameless Cwm and Pant Ifan above Llyn Idwal. S.D.S. Bosanquet

of *Hedwigia 'ciliata'* on boulders by Ffynnon Lloer were actually the long-lost *H. striata*\*, which was first described from Cwm Idwal but was subsequently ignored for nearly 100 years. Another long-lost Welsh rarity was found when Sam waded out to a large boulder – the first record of *Pterigynandrum filiforme* since 1928. Scattered patches of *Bryum muehlenbeckii* around the lake margin represented the third Welsh population of this 'Section 42' species and the probable source of the small colony downstream in Rhaeadr Ogwen. These three rare mosses indicate that the un-dammed Ffynnon Lloer is one of the most important of the lakes of Eryri for bryophyte conservation. Other notable species seen in the cwm included *Amphidium lapponicum*, *Anomobryum concinatum*, *Grimmia incurva*, *Isothecium holtii*, *Marsupella adusta*, *Porella cordaeana* and a boulder covered with *Antitrichia curtipendula*.

Malcolm's lowland group recorded in the valley around Nant-y-benglog (SH6959-7059), making a useful list of sphagna and other mire bryophytes. The most surprising find in this generally base-poor area was *Bryoerythrophyllum ferruginascens* on a track.

### Monday 8<sup>th</sup> June 2015

Three groups climbed into the higher cwms of the Glyderau for the second full day. One focussed on Cwm Bochllwyd and Glyder Fach (SH6558-6559), starting by Llyn Bochllwyd, where *Barbilophozia barbata*, *Bazzania tricrenata* and *Cladopodiella fluitans* were recorded, and where Mark collected *Racomitrium macounii*. Most of the group then ascended to the north cliffs of Glyder Fach, where they found a rich array of upland species. Mark identified *Plagiothecium platyphyllum*, Oliver had *Scapania aequiloba*, and other species included *Anomobryum concinatum*, *Gymnomitrium concinatum*, *Metzgeria leptoneura*, *Plagiothecium denticulatum* var. *obtusifolium*, *Racomitrium ellipticum*, *Schistidium strictum* and *Tortella bambergeri*.

The next cwm to the west is now known as Cwm Cneifion, but was not named on early 20<sup>th</sup> century Ordnance Survey maps and still bears the title "The Nameless Cwm"; the BBS group will also think of it as "Julie's Cwm" from now on. Gordon led a team up through Cwm Idwal to spend most of their day in Cwm Cneifion (SH6358), where base-rich outcrops supported *Amphidium lapponicum*, *Arctoa fulvella*,



*Cololejeunea calcarea*, *Eremonotus myriocarpus*, *Gymnomitrium concinnatum*, *Molendoea warburgii* and *Racomitrium ellipticum*, with *Brachydontium trichodes* and *Dicranoweisia crispula* below. Tom Ottley collected *Lophozia opacifolia*\* from turf at 890m altitude, and it is open to debate whether his collection was the first from Wales or not because it was also found by the Pant Ifan group. Following some inadvertent boulder rolling, the group continued up to Glyder Fawr, before descending along the ridge of Y Gribin. There was only time for a short search for bryophytes in the vicinity of the *Dryas octopetala* colony, but the calcicoles *Grimmia funalis* and *Molendoea warburgii* were both noted. Sharon Pilkington then reached into a vertical crevice close to the *Dryas* and passed out a tiny pleurocarp to Tom Ottley. A few names were suggested in the field, but nobody had anticipated that this would turn out to be *Pseudoleskeella rupestris*\*! This was the first confirmed record for Wales, and more than 300 km south of its nearest extant British site, although subsequent investigation by Tom Blockeel showed that the only Welsh specimen of *P. catenulata* was actually *P. rupestris* instead.

Sam and Alex marched the third group up through Cwm Idwal with scarcely a pause, although we did pay brief respects to *Brachydontium trichodes*, *Herbertus stramineus* and *Molendoea warburgii*. First stop was Llyn y Cwn (SH6358) for an unsuccessful hunt for *Bryum muehlenbeckii* or *Hedwigia striata*. Neither of these was found, but *Grimmia funalis*, *Racomitrium macounii* and a mysterious, submerged leafy liverwort were noted. The main target of the day was a rocky area above Llyn y



△Figs. 8-11, from top left clockwise. *Racomitrium macounii* by Llyn y Cwn; Pant Ifan: *Lophozia opacifolia*; *Marsupella stableri*; *Pohlia ludwigii* and *Scapania undulata*. S.D.S. Bosanquet

Cwn, which Sam hoped might hold D.A. Jones' ambiguously localised *Scapania nimbosa* colony. This area has no name on Ordnance Survey maps and may have been considered to be the upper part of Cwm Cneifio in Jones' day, but it is now known as "Pant Ifan" (SH6458) in honour of a previous Cwm Idwal warden. It is a



△Fig. 12 left. Pant Ifan: bryologists above Cwm Idwal. Fig. 13 right. *Grimmia incurva* gracing the summit of Glyder Fawr. S.D.S. Bosanquet

spectacular area with rills dominated by *Scapania undulata*, and extensive beds of scree. *Lophozia opacifolia*\* was first found in a *Scapania* patch at 810m altitude, and was noted several times elsewhere in Pant Ifan. Although this is a new species for Wales, it is clearly well established on Glyder Fawr. Other notable montane species included the only two colonies of *Marsupella stableri* seen during the week, three patches of *Pohlia ludwigii*, *Amphidium lapponicum*, *Arctoa fulvella*, *Campylopus gracilis*, *Ditrichum zonatum*, *Eremonotus myriocarpos*, *Gymnomitrium concinatum*, *Marsupella adusta*, *Schistidium strictum* and some high altitude *Tetradontium brownianum* at 920m. The area seemed too

dry for *Scapania nimbose*, but it could still be present in a deep hole because the scree beds are vast. After some three hours of searching, the group popped up out of Pant Ifan and headed for the top of Glyder Fawr, where a previously unrecorded colony of *Grimmia incurva* graced the summit ridge.

The lowland alternative was some woodland by Llyn Gwynant (SH6452). Malcolm's collections of *Bazzania trilobata*, *Grimmia hartmanii*, *Lejeunea lamacerina* and *L. patens* – as well as some *Tritomaria exsectiformis* found by Ray – suggest that this area would repay further scrutiny by bryologists who are familiar with oceanic rarities.

▽Fig. 13. Group photo, Carneddau. S.D.S. Bosanquet





△Fig. 14 left. Cwmglas Bach Carneddau with Sam Bosanquet. T. Ottley. Fig. 15 right. *Plagiopus oederianus* at Cwmglas Bach Carneddau. T. Ottley

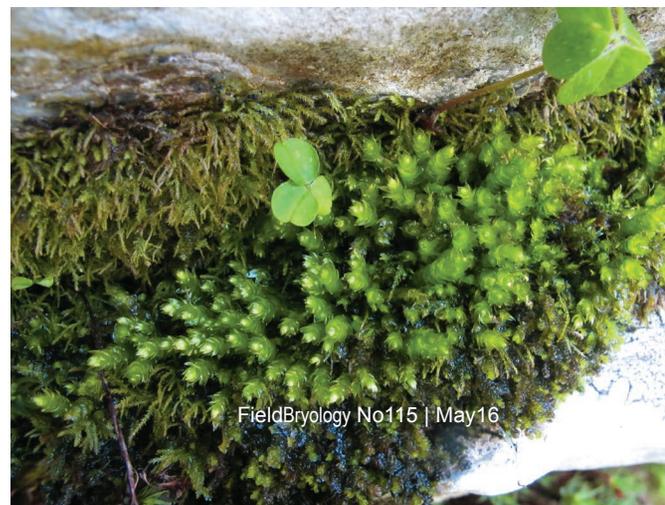
### Tuesday 9<sup>th</sup> June 2015

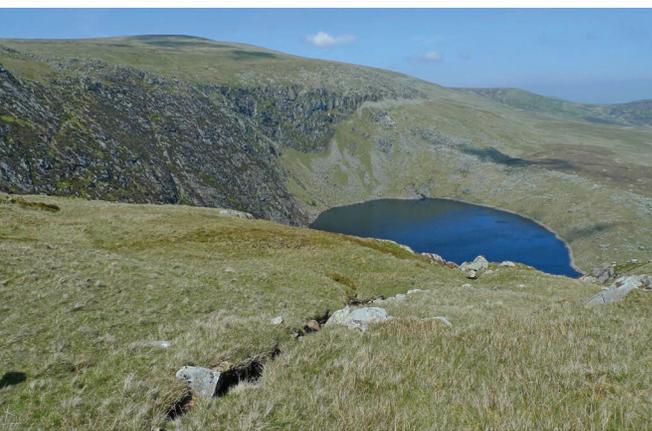
A merry band of 18 bryologists set off in the sunshine for the 5km walk from Bethesda to Ysgolion Duon and Llech Ddu in the heart of the western Carneddau. A couple of alternative venues for the day had been dropped so that we could all record together for once, although on arrival the group split in two so as to maximise coverage of the cwms. Some people spent their time working along the foot of Llech Ddu and then climbed up into Cwmglas Bach (SH6663); others went on into Cwmglas Mawr and recorded along the foot of Ysgolion Duon ('The Black Ladders') (SH6663-6763). This area has long been known as a bryological hotspot, but its remoteness compared with Cwm Idwal and the base-rich cwms of Yr Wyddfa have left it relatively under-explored and there were very few well-localised records. The site lived up to its billing, with a combined list of 195 taxa from the day, including no 'grots' or epiphytes! Equally importantly, we now have precise 8-figure GPS readings for 50 colonies of the most notable species and can monitor their condition in the future.

The smorgasbord of uncommon species seen by everyone included *Amphidium lapponicum*, *Anomobryum concinatum*, *Arctoa fulvella*, *Bartramia halleriana*, *Campylopus gracilis*, *Distichium capillaceum*, *Grimmia funalis*, *G. torquata*, *Isoetecium myosuroides* var. *brachythecioides*, *Kiaeria blyttii*, *Leiocolea*

*bantriensis*, *Marsupella adusta*, *M. sprucei*, *Plagiobryum zieri*, *Plagiopus oederianus*, *Racomitrium ellipticum*, *Scapania aequiloba* and *Schistidium strictum*. Gordon Rothero found *Dicranoweisia crispula* and Des identified *Pohlia wahlenbergii* var. *glacialis* – both have very few previous Welsh records – and Des also collected *Bryum riparium* from slumped soil at high altitude. Rory saw *Calypogeia azurea* and *Metzgeria leptoneura*, Oliver found *Molendoa warburgii*, and Sam located some convincing *Plagiothecium cavifolium* and dense patches of *Hygrobiella laxifolia* that covered several cm<sup>2</sup>. Tom found *Hygrohypnum eugyrium*, Tim spotted *Aphanolejeunea microscopica* (at 700m altitude) and *Herbertus stramineus*, whilst Tristan collected *Lophozia opacifolia* from some montane scree, representing the first Carneddau record of this species. Both Gordon and Sam collected small

▽Fig. 16. *Plagiothecium cavifolium* Cwmglas Bach Carneddau. S.D.S. Bosanquet





plants of *Oxystegus hibernicus*\* from flushed basalt, although both showed characteristics of *O. minor*. A lot of time was spent searching for *Scapania ornithopodioides* at the foot of the cliffs in both cwms, and worryingly Jeff Duckett's colony of this oceanic rarity was not relocated. There was still relatively extensive liverwort heath among the boulders, including locally frequent *Anastrepta orcadensis*, *Bazzania tricrenata* and *Herbertus hutchinsiae*, and the potential for a project to map this rare habitat was mooted. Overall the day was a tremendous success, but even a party of 18 bryologists barely scratched the surface of these vast cwms and there is doubtless much more still to be found.

Sharon Pilkington and Pete Martin joined Malcolm in leading the lowland group to Llyn Elsi (SH7854-7855), a reservoir above Betws-y-coed that was bryologically unknown. The trip started very well with *Frullania teneriffae*, which is extremely rare inland in Wales, on rocks by the track up towards the lake. *Colura calyptrifolia* was frequent on willows in the conifer plantation, giving at least a few attendees of the meeting a chance to see how common this species can be in Wales. Although much of the area around the reservoir is coniferised, the lake itself has a ring of semi-natural deciduous woodland, and the diversity of habitats led to a long list of bryophytes. *Plagiochila bifaria*, *Saccogyna viticulosa*, *Scapania gracilis* and *Sphagnum quinquefarium* were among the oceanic species seen.

### Wednesday 10<sup>th</sup> June 2015

More long walks were in order today, and most of the party drove up the Llyn Eigiau lane in

<Figs. 17-20, top to bottom. Finding *Colura* at Llyn Elsi. M. Watling; Craig y Dulyn. T. Ottley; *Paraleptodontium recurvifolium* with its finder. D. Callaghan; *Paraleptodontium recurvifolium*. D. Callaghan



order to approach some of the higher crags of the eastern Carneddau. Oliver and Tom chose the twin crags of Craig y Dulyn (SH6966) and Craig Fawr (SH6965). The former had been visited by the BBS in 1976, whereas the latter appeared to be new ground. *Antitrichia curtispindula*, *Bryoerythrophyllum ferruginascens*, *Distichium capillaceum*, *Hygrobrella laxifolia*, *Hypnum callichroum* and *Plagiobryum zieri* were recorded on Craig y Dulyn, but a few of the 1976 finds such as *Herbertus stramineus* were not relocated. Of course, it is much harder for two bryologists to cover two large crags than for a BBS Autumn Meeting group to cover one! Highlights on the unexplored Craig Fawr included *Hygrobrella*, *Schistidium strictum*, another new population of *Lophozia opacifolia*, and *Marsupella sphacelata*.

Gordon Rothero's memories of good climbing tempted him and a group to Craig yr Ysfa, which had no localised records except for *Bryum muehlenbeckii* in a ravine. The group worked northwards along the base of the crag, focussing particularly on areas of scree, and were rewarded with *Grimmia incurva* and *Marsupella sprucei* in the scree, and *G. funalis*, *G. torquata* and *Rhabdoweisia crenulata* on the cliff. They finished in the ravine that drains Ffynnon Llyffant, where Gordon confirmed the continued presence of *B. muehlenbeckii* as well as finding *Platyhypnidium lusitanicum*.

The longest walk of the day took a party past Craig yr Ysfa and up cwm Ffynnon Llyffant to the summit ridge of Carnedd Llewellyn – an

△Fig. 21 left. *Philonotis seriata* site, Carnedd Llewellyn.

Fig. 22 right. *Philonotis seriata*, close up. S.D.S.

Bosanquet

uphill slog of 8 km enlivened by some of the best bryology of the week. Recording started at Ffynnon Llyffant, where the first people to arrive spotted two patches of *Bryum muehlenbeckii* on rocks in the lake, and where Sam got over-excited about *Marchantia polymorpha* that seemed to be subsp. *montivagans* but later proved to be subsp. *polymorpha*. *Marchantia* confusion was soon forgotten when Rory noticed a fine patch of *Philonotis seriata* on the lake margin: a new site for a long-lost Eryri moss with just two previous Welsh records. The outflow stream was also examined, yielding further *B. muehlenbeckii*, and some *Heterocladium wulfsbergii* at 765 m altitude. The main gully south-west of the lake held the only *Scapania uliginosa* of the week, whilst a series of *Lophozia* collections revealed *L. incisa* at 845 m altitude and *L. opacifolia* at five localities between 860 m and 1110 m altitude. The southern slopes of the cwm were base-poor and bryologically dull, but the north-western basalt held a few calcicoles including *Amphidium lapponicum*, *Grimmia funalis*, *G. torquata*, *Plagiobryum zieri* and *Scapania aequiloba*, with *Oxystegus hibernicus* on flushed rock. Mark Lawley collected *Dicranoweisia crispula*, *Bryum weigeli* was found in a spring at 1110 m altitude, and Des noted both *Bryum riparium* and *Pohlia wahlenbergii* var. *glacialis*. We regrouped at the summit and realised that we were on top of one



◁Fig. 23, top. Mark and Des exploring the crags on Moel yr Ogof. Fig. 24, bottom. *Syntrichia princeps* slab with *Paraleptodontium* rock arrowed and Mark and Julie. G. Rothero.



Llugwy (SH6962-6963), which is only a stone's throw from Craig yr Ysfa but was approached from the south rather than the east. *Heterocladium wulfsbergii* and *Platyhypnidium lusitanicum* were found to be frequent in the stream draining the reservoir, and other notable discoveries in this bryologically unknown cwm included *Rhabdoweisia crenulata* on a ledge by a waterfall and *Sphagnum russowii*.

#### Thursday 11<sup>th</sup> June 2015

Sam had to leave the meeting early, but not before demonstrating *Drepanolejeunea* and *Hygrohypnum duriusculum* to a few people by the Afon Ddu near Dolgarrog. After his departure, they carried on upstream and found another colony of *Drepanolejeunea*, as well as some splendid *Jubula hutchinsiae*. The second part of their mission was to look for the colony of *Cephalozia leucantha* recorded at the Trefriw Sulphur Mine in 1947, but despite much scrutiny of small liverworts they were unsuccessful.

Most attendees spent the day on Moel yr Ogof, which has long been known as a hotspot for montane calcicoles. The group found many uncommon mosses, and importantly documented the location of most in detail because Moel yr Ogof had almost no previous localised records. This is the only site in Wales where *Syntrichia princeps* grows, and the

of Wales' highest peaks in absolutely perfect weather: a rare luxury that made a *Marsupella* search essential. A total of 25 bryophyte species were found among the rocky, *Racomitrium*-dominated summit vegetation, including widespread *Marsupella adusta*, one colony of *M. sprucei*, a small population of *Kiaeria falcata*, and more *Lophozia opacifolia*, with *Grimmia elongata* alongside *G. incurva* on one rock rib. The final highlight of the day was a large colony of *P. seriata* in a spring on the ridge north of the summit, at 1043 m altitude.

The fourth party recorded around Ffynnon



△Fig. 25. The boulder with *Encalypta ciliata* and *Plagiopus*. G. Rothero

population was photographed and GPSed. Nearby, Oliver spotted a new colony of *Paraleptodontium recurvifolium* – only the third known to be extant in Wales – and Tom collected *Leiocolea fitzgeraldiae*, which has only one other known Welsh site. Supporting cast included *Amphidium lapponicum*, *Arctoa fulvella*, *Bryum riparium*, *Campylopus setifolius*, *Cololejeunea calcarea*, *Harpalejeunea molleri*, *Homalothecium lutescens*, *Metzgeria leptoneura*, *Plagiochila exigua*, *Radula lindenbergiana* and *Sphenobolus pearsonii*. Only the base-rich basalt of Moel yr Ogof was explored, and other igneous rocks on the adjacent Moel Hebog might repay a detailed survey. Peter Martin met Dafydd Roberts and Alex Turner on Moel Siabod, but did not refine the *Mielichhoferia* that was apparently collected there in the 19<sup>th</sup> century. Peter collected *Dicranoweisia crispula* from the rock wall of an ancient building – the first Welsh record of this rare moss from a wall, albeit one that closely mimics scree. He also found patches of *Marsupella sphacelata* on soil by a path and *Barbilophozia atlantica* on rocks under a Hawthorn. Other notable species in their list of nearly 90 species were *Bryoerythrophyllum ferruginascens*, *Grimmia*

*torquata*, *Plagiochila spinulosa* and *Racomitrium ellipticum*, all of which are locally frequent on base-rich rocks in central Eryri but indicate pockets of richer ground on this more isolated mountain. Emily and a few others spent the day on the north slopes of Cnicht.

#### Friday 12<sup>th</sup> June 2015

The final day saw a revisit to Glyderau, targeting cwms to the north of Monday's sites. The decision was taken to focus on two areas because several people had already left the group, so the rich but under-recorded Cwm Clyd and Cwm Cywion were chosen. Both held similar calcicoles to those seen earlier in the week, including *Amphidium lapponicum*, *Arctoa fulvella*, *Distichium capillaceum*, *Grimmia funalis*, *G. torquata* and *Racomitrium ellipticum*. Sharon and Lucia spotted *Brachydontium trichodes* in Cwm Clyd, where Rory noted *Encalypta ciliata* and *Gymnomitrium concinnatum*, and collected *Lophozia opacifolia* and *Scapania aequiloba*. Gordon Rothero's group also found *E. ciliata* in Cwm Cywion, as well as *Dicranoweisia crispula* on at least two boulders and *Eremonotus myriocarpus* growing through *Gymnostomum*

*aeruginosum* on an irrigated rock slab. Star find of the day was the *Oxystegus hibernicus*\* that Mark Lawley collected, as it was well-grown and more convincing as a first for Wales than the small plants found earlier in the week.

### Analysis and conclusions

The meeting generated 3600 bryophyte records from over 30 different sites, representing just over 400 taxa (but no *Bryum argenteum*!). All were accurate to at least 1km precision, and more than 600 were accurate to 100m or better, including almost all of the records of rare and scarce species. This is a tremendous improvement on our previous knowledge of the distribution of uncommon bryophytes in Eryri, and will be particularly useful when working out which are the most important areas for bryophyte conservation in Eryri SSSI and Moel Hebog SSSI. 59 taxa that are threatened in Wales and/or are rare or scarce in Britain were found (Table 1), and some – including *Grimmia funalis*, *Amphidium lapponicum*, *Bazzania tricrenata*, *Arctoa fulvella*, *Scapania aequiloba* and *Lophozia opacifolia* – were shown to be remarkably frequent in Eryri. The widespread nature of *L. opacifolia* is particularly noteworthy given that it was not previously known from Wales, and it was clearly ignored as *L. incisa* by previous bryologists. The same is probably true of *Oxystegus hibernicus*, especially in its small forms, but *Pseudoleskeella rupestris* was a genuinely unexpected find (although it turned out to have been collected once before in Wales). *Hedwigia striata*, *Philonotis seriata* and *Pterigynandrum filiforme* were all thought to be extinct in Wales, so their rediscovery is welcome. The presence of all three on montane lake margins highlights both the importance of this habitat and the lack of attention paid to it by

Welsh bryologists in recent decades (*Grimmia anomala* and *Odontoschisma elongatum* have also been discovered new to Wales on montane lake margins since 2010). *Dicranoweisia crispula* and *Marsupella adusta* were thought to have declined in Wales, and were listed as Vulnerable or Endangered on the Welsh Redlist, but were located at several new sites and are clearly not uncommon in the area. The discovery of new sites for four species listed on Section 42 of the NERC Act – *Bryum muehlenbeckii*, *Fossombronia fimbriata*, *Leiocolea fitzgeraldiae* and *Paraleptodontium recurvifolium* – is encouraging for their conservation, as all four were thought to number among the most threatened of Welsh bryophytes. Again, there is an interesting link between montane lakes and the first two of these species.

As well as the exciting bryophyte records made during the meeting, the BBS week in Eryri introduced many bryologists to this fantastic area and helped to demonstrate how much potential there is for further exploration of north Wales' bryophyte flora. Sam was kept busy during the week providing daily updates to NRW's press team, who broadcast bryophyte finds to 8000 'followers' of @NatResWales on Twitter. Posts also came from @Sambbryo, @NimbosaEcology, @Gailqb and @Gowermoss using #EryriMosses: a 'hashtag' used in 30 'tweets', which were 'retweeted' more than 80 times and 'liked' over 130 times. The furthest 'like' came from Japan, so this BBS meeting really did have a global reach!

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**Table 1.** The number of monads (1x1 km squares) from which rare, scarce and/or threatened species were recorded during the BBS Eryri meeting

| Taxon  | Status  | Monads | Taxon                             | Status                | Monads |
|--|---|--------|-----------------------------------|-----------------------|--------|
| <i>Pseudoleskeella rupestris</i>                 | New for Wales, Nationally Rare                    | 1      | <i>Amphidium lapponicum</i>       | Nationally scarce     | 9      |
| <i>Lophozia opacifolia</i>                       | New for Wales, Nationally Scarce                  | 6      | <i>Arctoa fulvella</i>            | Nationally scarce     | 7      |
| <i>Oxystegus hibernicus</i>                      | New for Wales, Nationally Scarce                  | 3      | <i>Bartramia halleriana</i>       | Nationally scarce     | 3      |
| <i>Fossombronina fimbriata</i>                   | S42, Nationally Rare, Wales Critically Endangered | 1      | <i>Brachyodontium trichodes</i>   | Nationally scarce     | 3      |
| <i>Leitocolea fitzgeraldiae</i>                  | S42, Nationally Rare, Wales Critically Endangered | 2      | <i>Bryum riparium</i>             | Nationally scarce     | 3      |
| <i>Bryum muehlenbeckii</i>                       | S42, Nationally Scarce, Wales Endangered          | 3      | <i>Campylopus setifolius</i>      | Nationally scarce     | 1      |
| <i>Paraleptodontium recurvifolium</i>            | S42, Nationally Scarce, Wales Endangered          | 1      | <i>Ditrichum zonatum</i>          | Nationally scarce     | 4      |
| <i>Hedwigia striata</i>                          | Nationally rare, Wales Regionally Extinct         | 1      | <i>Encalypta ciliata</i>          | Nationally scarce     | 3      |
| <i>Grimmia elongata</i>                          | Nationally rare, Wales Vulnerable                 | 1      | <i>Eremonotus myriocarpus</i>     | Nationally scarce     | 2      |
| <i>Racomitrium macounii</i>                      | Nationally rare, Wales Vulnerable                 | 3      | <i>Grimmia incurva</i>            | Nationally scarce     | 4      |
| <i>Philonotis sericata</i>                       | Nationally scarce, Wales Regionally Extinct       | 1      | <i>Haplomitrium hookeri</i>       | Nationally scarce     | 1      |
| <i>Pterigynandrum flitiforme</i>                 | Nationally scarce, Wales Regionally Extinct       | 1      | <i>Heterocladium wulfisbergii</i> | Nationally scarce     | 3      |
| <i>Pohlia wahlenbergii</i> var. <i>glactalis</i> | Nationally scarce, Wales Critically Endangered    | 2      | <i>Plagiopus oederianus</i>       | Nationally scarce     | 2      |
| <i>Bryum weigelii</i>                            | Nationally scarce, Wales Endangered               | 1      | <i>Plagiothecium cavifolium</i>   | Nationally scarce     | 2      |
| <i>Dicranoweisia crispula</i>                    | Nationally scarce, Wales Endangered               | 6      | <i>Platyhypnidium lusitanicum</i> | Nationally scarce     | 2      |
| <i>Glyphomitrium daviesii</i>                    | Nationally scarce, Wales Endangered               | 1      | <i>Riccardia incurvata</i>        | Nationally scarce     | 1      |
| <i>Hygrohypnum duriusculum</i>                   | Nationally scarce, Wales Endangered               | 1      | <i>Scapania aequiloba</i>         | Nationally scarce     | 7      |
| <i>Kiaeria falcata</i>                           | Nationally scarce, Wales Endangered               | 2      | <i>Scapania lingulata</i>         | Nationally scarce     | 1      |
| <i>Marsupella stableri</i>                       | Nationally scarce, Wales Endangered               | 1      | <i>Schistidium platyphyllum</i>   | Nationally scarce     | 1      |
| <i>Molendoa warburgii</i>                        | Nationally scarce, Wales Endangered               | 4      | <i>Sphagnum angustifolium</i>     | Nationally scarce     | 1      |
| <i>Plagiothecium platyphyllum</i>                | Nationally scarce, Wales Endangered               | 1      | <i>Sphagnum platyphyllum</i>      | Nationally scarce     | 2      |
| <i>Pohlia ludwigii</i>                           | Nationally scarce, Wales Endangered               | 1      | <i>Sphenobolopsis pearsonii</i>   | Nationally scarce     | 1      |
| <i>Scapania uliginosa</i>                        | Nationally scarce, Wales Endangered               | 1      | <i>Tortella bambergeri</i>        | Nationally scarce     | 2      |
| <i>Ulota calvescens</i>                          | Nationally scarce, Wales Endangered               | 1      | <i>Antitrichia curtipendula</i>   | Wales Endangered      | 3      |
| <i>Arctichum tenellum</i>                        | Nationally scarce, Wales Vulnerable               | 1      | <i>Ulota hutchinsiae</i>          | Wales Endangered      | 1      |
| <i>Calyptogonia azurea</i>                       | Nationally scarce, Wales Vulnerable               | 1      | <i>Grimmia funalis</i>            | Wales Vulnerable      | 12     |
| <i>Hypnum hamulosum</i>                          | Nationally scarce, Wales Vulnerable               | 1      | <i>Hypnum callichroum</i>         | Wales Vulnerable      | 2      |
| <i>Marsupella adusta</i>                         | Nationally scarce, Wales Vulnerable               | 5      | <i>Bazzania tricrenata</i>        | Wales Near Threatened | 9      |
| <i>Marsupella sphacelata</i>                     | Nationally scarce, Wales Vulnerable               | 2      |                                   |                       |        |
| <i>Syntrichia princeps</i>                       | Nationally scarce, Wales Vulnerable               | 1      |                                   |                       |        |
| <i>Oedipodium griffithianum</i>                  | Nationally scarce, Wales Near Threatened          | 1      |                                   |                       |        |