BBS Autumn meeting 2021: Barmouth, 11–17 September

Margaret Crittenden reports on a much-postponed and very welcome meeting.

The 2021 autumn meeting of the BBS will be marked in our memories as the first time in two years that members could get together to enjoy the delights of field bryology at a national gathering. The initial April 2020 meeting was postponed owing to the COVID-19 pandemic. Having survived COVID restrictions, such as the 'rule of six', restricted travel, questions such as which tier are we in and anyway what does that mean, Zoom etiquette (oh, so many meetings over Zoom), vaccines, boosters, facemasks, lateral flow tests, food parcels, self-isolating, social distancing and the need to test one's eyesight, it was rather like suddenly being let out into the sunlight with friends after a long time underground. Our various committees could meet in person and additionally the Annual General Meeting took place on Sunday 12 September. The meeting was based at Plas Caerdeon, an Outdoor Education Centre in North Wales, situated between Dolgellau and Barmouth. The centre is set in its own grounds of about 7 ha of secluded woodlands and was famously visited by Darwin in 1869. He, like us, admired one of the best views of Cader Idris while drinking a morning cuppa. The centre boasted a large dining room which not only accommodated the 20 or so resident bryologists but also those who wished to attend the AGM and the BBS dinner that followed. The availability of a drying room as well as a comfortable seating area made enjoying the night-time beverages even more pleasant. There was also a lab conveniently situated in the grounds where we were able to set up our microscopes, leading to some very convivial evenings discussing the minutiae of bryophyte identification.

△ Figure 1. Rhinog country. *Calum McLennan*

Thirty-two people attended the meeting: Michael Ball, Astrid Biddle, Joan Bingley, Tom Blockeel, Sam Bosanquet, Agneta Burton, Chris Carter, Rachel Carter, Mags Crittenden, Martin Godfrey, George Greiff, Claire Halpin, Mark Hill, Roy Jeffrey, Liz Kungu, Mark Lawley, David Long, Ralph Martin, Peter Martin, Calum McLennan, Catharine Moss, Sean O'Leary, Tom Ottley, Sharon Pilkington, Chris Preston, Gordon Rothero, Lucia Ruffino, Jeff Scott, Clare Shaw, Alistair Stevenson, Matt Stribley and Philippa Thompson (Fig. 2).

Although the group ranged over a fairly large area, much of the recording was centred in and around the Rhinog range of heathery uplands, which is less well recorded than much of Merioneth. The Rhinogs are one of Wales' wildest and least visited mountain ranges (Fig. 1). The mountains from which the range takes its name include Rhinog Fawr at 720 m. As Blackstock & Yeo (2001) point out, there are two biogeographical features which make this vice-county (among the others that are included in the Snowdonia National Park) so floristically distinctive. Firstly, the southern upland flora of the Rhinogs, and secondly the bryophyte assemblages of the extensive lower lying woodlands, among both of which there are many much-admired Atlantic species. The Meirionnydd Sessile Oak Woodlands SAC in southern Snowdonia is one of the most important areas for woodland conservation in western

▽ Figure 2. Participants at Plas Caerdeon. *Mike Ball*

Europe. Despite the somewhat lower rainfall in comparison with north-west Scotland, many hyperoceanic and oceanic hygrophilous species occur in north Wales (Bosanquet, 2015) such as the liverworts *Plagiochila exigua* and *Radula voluta* and the pleurocarp *Pseudohygrohypnum eugyrium*, all of which were found during this meeting. However, the recording area also included a diverse range of habitats from farmland to moorland, grassland, heath, blanket bog and conifer plantations.

Geologically, the Rhinogs are dominated by Cambrian rocks which have been folded into the Harlech Dome, whose eroded apex makes up these mountains. The rocks of the recording area consist of coarse, well-jointed grits, slates and sandstones surrounded by a rim of dark shales, with abundant manganese in places which was mined in the past. Importantly, there are small basic igneous intrusions of dolerite, gabbro and microgabbro which are rich in iron and magnesium and poor in silica. The combination of these different bedrock elements and high rainfall leads to a landscape dominated by wet, acidic, infertile soils interspersed with basic flushes, outcrops and seepages. This in turn leads to high bryophyte diversity.

Both Hill (1988) and Blackstock & Yeo (2001) have contributed to our understanding of the distribution and ecology of the bryoflora of Merioneth, as well as the late Peter Benoit and Martha Newton, both of whom are sorely missed in bryological circles. Despite our goal of helping to fill in recording gaps, sites with bryological highlights were not ignored. Sam Bosanquet gave a 'Cook's Tour' of one of the very rich sites, Coed Ganllwyd NNR, to which many flocked. All the localities we visited were in vc 48, almost the whole of the area was within the Snowdonia National Park and many sites had statutory conservation designations.

△ Figure 3. *Bryoerythrophyllum campylocarpum*. *Claire Halpin*

We had the opportunity to discover for ourselves some species which had recently been added to the British flora, including the acrocarp *Bryoerythrophyllum campylocarpum* (Fig. 3), a species which looks very similar in some ways to *Barbula unguiculata* (Ottley *et al.*, 2021). Tom Ottley and Tom Blockeel were able not only to find this species but also confirm its discovery by other groups. In the end four additional records were found in four separate tetrads on very similar substrata – moist gravelly tracks in woodland. In addition, *Racomitrium obtusum*, which has recently been recognised at species rank by Ottley (2021), was recorded on acid rock in 21 places and 18 tetrads (Fig. 4). A very instructive key to *Racomitrium* taxa in Tom's article makes this group of difficult mosses more accessible. Lastly, another acrocarp, *Leucobryum albidum*, which will shortly be reported from Britain, was found and confirmed by Tom Ottley at Plas Caerdeon. This species is similar to *Leucobryum juniperoideum*, which was also

△ Figure 4. *Racomitrium obtusum*. Notice that this plant is yellow-green and lacks the numerous side-branches of *R. fasciculare*. *Claire Halpin*

recorded several times during the meeting.

In the following account, new vice-county records and debrackets are marked with an asterisk.

11–17 September

Plas Caerdeon (SH6418, SH6518), 140 species

Staying at such a convenient location was too tempting and a few of us were out and skipping through the woodland as soon as we arrived on Saturday 11 September. The grounds of Plas Caerdeon are extensive and comprise oak/birch woodland with *Rhododendron ponticum* and some streams, one of which has been dammed. Surprisingly, the grounds have never been fully recorded for bryophytes. Among the taxa encountered were both *Bryoerythrophyllum campylocarpum* and *Racomitrium obtusum*. The estate yielded stunning displays of both *Bazzania trilobata* (Fig. 5) and *Leucobryum juniperoideum* and what was later confirmed as *L. albidum*. We also found the striking *Diphyscium foliosum*

△ Figure 5. *Bazzania trilobata. Claire Halpin*

(Fig. 6), its capsules looking like the cereal grains as described in the *Field Guide* (Atherton *et al.*, 2010). On the morning of the final full day of the meeting, Tom Blockeel spotted what appeared to be a *Phaeoceros* on gravelly ground at the back of the Hall. It lacked sporophytes

▽ Figure 6. *Diphyscium foliosum. Mike Ball*

but on later microscopic examination had numerous male inflorescences, and was therefore evidently the dioicous *P. laevis*. *Marchantia polymorpha* subsp. *ruderalis** was also growing nearby. Sharon and Claire decided to spend a day recuperating but could not withstand the lure of the grounds. Among many other things, they found a patch of *Hedwigia stellata* (Fig 7), as well as *Encalypta streptocarpa, Pohlia bulbifera* and some *Barbilophozia sudetica* at the base of a nearby church.

12 September

Panorama walk (SH6317), 132 species

On Sunday, as the AGM was scheduled for the late afternoon, it was suggested that a couple of tetrads within easy reach of Plas Caerdeon could be covered. The Panorama Walk is a route which takes in a number of historic landmarks above Barmouth and which has some marvellous views of the surrounding countryside, as long as it isn't raining! They include old manganese mine workings and Victorian gardens grandly known as the 'Panorama Pleasure Grounds'. A less conventional route was taken by the party, and consequently some scrambling was necessary. *Marchesinia mackaii* (Fig. 8), an uncommon liverwort, was found by the former chapel at Cutiau, on a calcareous stone block in an ancient wall. In contrast there were also some calcifuge species, such as *Cynodontium bruntonii*. *Riccia subbifurca** (Fig. 9), also found here, is rather aptly named Least Crystalwort because of its sometimes scintillating, shiny appearance. This was also the first opportunity for the group to observe *Bryoerythrophyllum campylocarpum**.

◁ Figure 7 Top. *Hedwigia stellata. Claire Halpin*
Figure 8 Middle. *Marchesinia mackaii*. Dark green-black colony contrasts sharply with the colour of the substratum. *Chris Preston*
Figure 9 Bottom. *Riccia subbifurca. Claire Halpin*

▷ Figure 10 Top. *Lepidozia cupressina. Calum McLennan*
Figure 11 Below. *Plagiochila spinulosa. Claire Halpin*

Near Casailgwm-maw (mostly SH6920), 138 species

This site comprised two under-recorded monads in the tetrad to the north of Coed Garth Gell SSSI, an RSPB nature reserve covering some very nice woodland nestled in the spectacular Mawddach Valley. The SSSI was well recorded with a fantastic bryophyte assemblage and it was hoped that this might be mirrored in the rest of the tetrad. Bryologists always take some time to exit car parks and in this case that search paid off in the form of *Grimmia funalis* on a rock which must have had some degree of base richness and may have reflected the presence of the microgabbro intrusions in the area. In addition, the intrepid bryologists, searching through the steep-sided oak woodland to the south of Casailgwm-maw, found *Pseudohygrohypnum eugyrium* and not far from this *Dichodontium flavescens* on silt-covered boulders next to a tributary of the Afon Mawddach, as well as *Plagiochila exigua* together with associates *P. bifaria* and *Radula voluta*. A number of calcifuge liverworts were discovered on tree bases, including *Lepidozia cupressina* (Fig. 10), and *Barbilophozia sudetica* was seen on rocks. With very few records of *Chionoloma hibernicum* in southern Britain, it was pleasing to find a further two sites for this rare acrocarp.

13 September

Coed Llechwedd SSSI and SAC (SH5932), 139 species

This monad contains part of Coed Llechwedd SSSI. Interestingly, there were very few records for this oak woodland, possibly owing to it being overrun by bracken and bramble. The Woodland Trust, which owns some of this woodland, has longer term plans for its conservation. The group started by nonchalantly bryologising along the stone walls of a busy narrow road around a blind bend. However, once off the road the party (all intact) found the going steep and brambly as predicted and only accessible along paths. However, with the usual bryological stoicism, they managed to scramble up and down the slope to access jumbles of boulders and some crags and were able to demonstrate *Grimmia hartmanii* with gemmae, with some good cushions of *Plagiochila spinulosa* (Fig. 11) and *Scapania gracilis* on boulders and crags and quite extraordinary amounts of *Saccogyna viticulosa* (Fig. 12). Rotting dead wood is an important habitat in these oceanic woodlands and, on a decorticated

△ Figure 12. *Saccogyna viticulosa. Claire Halpin*

log, the group found both *Cephalozia catenulata* and *C. curvifolia*, the latter (formerly *Nowellia*) also known as Rustwort but looking much like elven dreadlocks. *Fissidens celticus* is a very small moss which occurred as scattered individuals on a crumbling soil bank adjacent to the track. This acrocarp has a characteristic 'kink' in the nerve giving it a distinctive appearance.

The area on the opposite side of the road, still within this monad, was also recorded, pulling in some rather nice ruderal species in a ditch at the edge of a field, such as the hornwort *Anthoceros punctatus* and the lettuce-like *Fossombronia wondraczekii* (known as Acid Frillwort – self-explanatory really), the uncommon *Philonotis caespitosa* and *Pohlia flexuosa*. Not a bad haul for a ditch.

Cwm Nantcol (SH6425), 107 species

Reaching this monad was definitely going the extra kilometre, bryologically speaking. Following an interesting journey in through six gates and high stone walls where only the sky was visible (seemingly), the valiant bryologists trekked a couple of kilometres before they reached their goal. Luckily, there were gullies and large rocky outcrops in abundance to begin with. On the damp, shaded rocks in these gullies, beside streams or seepages, an hepatic community thrived, boasting among others *Bazzania tricrenata*, *Drepanolejeunea hamatifolia, Lepidozia cupressina, Mylia taylorii, Orthocaulis attenuata*, *O. floerkei*, three *Plagiochila* species *(bifaria*, *spinulosa* and *punctata*) and *Solenostoma obovatum*. The day ended in less diverse *Molinia* tussocks.

Those of us who record in the east of Britain are always astounded by the variety and abundance of liverworts in these oceanic and hyperoceanic regions. Once out of the gullies and onto the upper rocks, *Grimmia hartmanii*, fruiting *Rhabdoweisia crenulata* and the looked-for *Racomitrium obtusum* were all recorded. Despite the unpromising end to the day, these were valuable additions to the databases of Natural Resources Wales as the majority of this monad was within the Rhinog SAC/ SSSI.

Tal-y-bont and Coed Cors-y-gedol

A large party parked at Tal-y-bont and initially recorded bryophytes near the village in SH5921. *Riccia subbifurca* was noted once again on gravelly ground near the local hotel (they didn't stop for a beverage this time). Once tetrad SH52W was entered, the group split up with one taking on the woodland upstream in SH6022 and SH5922, another taking on the fields, lanes and walls of SH5921 and yet another group continuing on and recording the same in SH6023.

SH6022 and SH5922, 90 and 74 species

Starting in SH5922, this group worked their way along the banks of the Afon Ysgethin and part of the well-recorded sessile oak woodlands of Coed Cors y Gedol SSSI. The woodland was attractive but included much planted mature beech which can reduce its bryological interest. However, in

and near the rocky stream and its banks an array of bryophytes was discovered, including the liverwort *Blepharostoma trichophyllum* with its thin finger-like leaves. Even though the liverwort is very tiny (with a 0.5 mm diameter shoot), its decline (Blockeel *et al.*, 2014) is unlikely to be a result of lack of recorder effort. A single patch of the rare liverwort *Porella pinnata* was found on a stone by the stream, last found in 1967 by the late Peter Benoit. Additional notables, included several magnificent patches of *Trichocolea tomentella* (Fig. 13), also known as Handsome Woollywort, were observed. This is indeed a gorgeous plant, its finely divided shoots giving it a woolly appearance. The flora in this monad was limited by the lack of bouldery ground in the woods. However, *Pohlia lutescens*, with its knobbly rhizoidal gemmae, was found on gritty clay at the base of a steep slump.

SH5921, 82 species

The problem with recording in a westerly vice-county like Merioneth is that nobody wants to record the areas that may be over-grazed, mismanaged or eutrophicated. This monad could not be described as bryophyte heaven, but nonetheless *Racomitrium obtusum* among a range of other notable species was found. The reluctance to spend a day recording common species on roadsides and farmland means that acrocarps such as *Bryum rubens* are overlooked and under-recorded in some areas. The record for this species was the only one of the meeting, as was that of *Ephemerum stoloniferum*. Indeed, two of us (Mags and Rachel) felt quite at home looking at the small acrocarps of disturbed ground around tracks and farms. These are our bread-and-butter species. However, we delighted in the opportunity to see western bryophytes such as *Lejeunea lamacerina* and *Microlejeunea ulicina* (the evocatively named Fairy Beads).

△ Figure 13. *Trichocolea tomentella. Mike Ball*

Near Cors-y-Gedol Hall, Dyffryn Ardudwy (SH6023), 60 species

This was another nondescript monad on the face of it, comprised mainly of fields, bogs, walls and some moorland. However, *Antitrichia curtipendula* (Fig. 14) which is a rather rare corpulent pleurocarp, occurred on a wall top

▽ Figure 14. *Antitrichia curtipendula* being admired by Liz Kungu (with hand lens), Agneta Burton and Mark Hill. *David Long*

very close to Cors-y-Gedol Hall, conveniently opposite the car park. One wonders whether this is the same moss cushion that Peter Benoit found in 1977. If it is, it's good to see that moss is still there and thriving.

Dyffryn Arduduwy, Llyn Bodlin and Pont-Scethin, Llyn Irddyn (SH62G), 151 species

In this tetrad, most of the bedrock is acidic in nature, but there were some igneous intrusions of gabbro and diorite, leading to some basic seepages and increasing bryophyte diversity. Llyn Bodlyn, a sizeable reservoir originally damned in 1894 to supply water to Barmouth, and Llyn Irddyn yielded a number of bryophytes that were found on boulders around the lakes. This group's effort to cover the whole tetrad was impressive and despite the almost unrelenting acidic nature of the substrata, a record of *Isothecium interludens* (*I. myosuroides* var. *brachythecioides*) was found. This species was reinstated in 2018 and Hodgetts & Vanderpoorten (2018) give a clear descriptive differentiation between it and *I. myosuroides*. In general, *I. interludens* is a more robust bryophyte with larger somewhat squatter capsules. *Grimmia lisae* was found in its typical habitat of periodically inundated and silt-covered boulders along the shore of Llyn Irddyn. Thorough searching led to the discovery of both *Sarmentypnum sarmentosum* and *S. exannulatum*. An excellent description of how to distinguish the latter species from *Scorpidium* and *Palustriella* can be found on the BBS website. Both species are found in flushes, but interestingly *S. sarmentosum* requires some mineral enrichment and in moorland this is a sign of a basic seepage and well worth further investigation. Here, for the first time during this meeting, *Straminergon stramineum* (Fig. 15) was found, a species typical of wet acidic habitats. A very useful field character, although not always apparent, is the presence of rhizoids developing near the tip of the leaf.

▽ Figure 15. *Straminergon stramineum*. *Calum McLennann*

14 September

Afon Crawcwellt (SH6829, SH6929), 96 species

The best thing that could be said for this tetrad was that it had never been previously recorded. On arrival, the team could see why! The road had just been regraded but thankfully the bryologists managed to park within their recording area. Both *Campylopus subulatus* and *Bryoerythrophyllum ferruginascens* were found adjacent to one another on the side of the forest track. The latter species is known for growing in basic conditions. *Pohlia camptotrachela*, which has dense clusters of green to orange axillary bulbils, was found on an ant hill on an open grassy slope at the forest margin. Of interest was *Polytrichum perigoniale* which is similar to *P. commune* but has a denser bushier habit. It is a species of rather dry tracks in Wales and well worth checking for. When the team rejoined the Afon Crawcwellt, the concrete by the weir was productive with some nice patches of *Bryum pallescens* under the metal and some calcicoles for the list. However, the *Molinia* beyond this

▷ Figure 16 Top. *Colura calyptrifolia*. *Claire Halpin*
Figure 17 Middle. *Hylocomiastrum umbratum* (centre) with *Rhytidiadelphus loreus* (right). *Claire Halpin*
Figure 18 Bottom. *Ptilium crista-castrensis*. *Claire Halpin*

was unspeakable, although Liz found *Sphagnum strictum*. This record is the third for Wales and so a very valuable and interesting find.

Forest around the waterfall Pistyll Gwyn (SH6729), 74 species

Being defeated by the *Molinia*, the group back-tracked and went by a devious route and gate key to Pistyll Gwyn higher up the river. This was very acidic and afforested but it did enable David Long to collect *Nardia compressa* from the waterfall for DNA sequencing.

Near Graigddu Isaf (SH6830), 54 species

On returning to the original tetrad, the forest was found to hold a number of colonies of the astonishing little liverwort *Colura calyptrifolia* (Fig. 16). This species has been increasing almost exponentially in the last few decades. It has water sacs with movable lids which are capable of trapping protozoans, whether as a food source or not is not known.

Coed Dolfudr (SH8232, SH8332, SH8331), 201 species

This was an additional site added at the last minute. A book on the history and wildlife of this valley was being written and the author was hoping for some input on bryophytes. We were happy to oblige. The unsurveyed sessile oak-dominated woodland, Coed Dolfudr, had the potential to be rich in bryophytes as it had an excellent lichen flora and is part of the Migneint-Arenig-Dduallt SSSI, SAC and SPA. The humidity within the woodland made the trees, mossy boulders (not easy to navigate) and dead wood suitable substrata for bryophytes to

thrive. The only records of *Orthocaulis atlanticus*, *Hylocomiastrum umbratum* (Fig. 17) and *Ptilium crista-castrensis* (Fig. 18) during the meeting were made here. On the opposite side of the river, *Gymnostomum viridulum** was found on shaded mortar. Other species of note nestled in gaps under boulders and included *Conocephalum salebrosum* (Claire says the largest patch she has ever seen) and the stunning *Dicranodontium denudatum.*

Llyn Hywel (SH6626), 63 species

Despite there being an extensive choice of venue, 13 participants decided to join this excursion to the high ground of the Rhinogs. After a fairly long walk in, the group eventually reached the beautiful Llyn Hywel, which lies between Rhinog Fach and Y Llethr (Fig. 19). Rocks on the south side of the lake soon produced *Douinia ovata, Gymnomitrion crenulatum*, *G. obtusum* and *Kiaeria blyttii*. There were some good patches of *Campylopus setifolius* along the base of a crag. After lunch with a fine view over the lake, the team headed up the slopes in the direction of Y Llethr in search of big hepatics. Almost immediately a patch of the very colourful and rare (for Wales and England) liverwort *Herbertus hutchinsiae* (Fig. 20) was found, but sadly no others. In equally small quantity was the liverwort *Bazzania tricrenata*. Near the top of the slope, a small wet crag produced a little more diversity, with *Rhabdoweisia crispata*.

Y Llethr (SH6525), 80 species

At this point the group descended the south-western slopes of Y Llethr. Here there were wet outcrops with some evidence of base-enrichment.

◁ Figure 19. Top. Llyn Hywel at the base of Rhinog Fach, with Rhinog Fawr behind. *Peter Crittenden*
Figure 20. Middle. *Herbertus hutchinsiae*. *Claire Halpin*
Figure 21. Bottom. *Anthelia julacea. Claire Halpin*

Andreaea hookeri, *Chionoloma cylindrotheca*, *Gymnostomum aeruginosum, Pohlia elongata* and *Rhabdoweisia crenulata* were among the additions, with a few stems of *Anastrepta orcadensis*. A wet runnel had some fine and extensive patches of *Anthelia julacea* (Fig. 21). This gorgeous little liverwort is known as Alpine Silverwort, with good reason. This was the only time this species was found during the meeting.

Foel Tyr Gawen and Coed y Graig, Dolgoch (SH6307, SH6207), 100 and 44 species

These were two fairly low-level monads and were mainly oak-dominated woodland, moorland, streams and tracks. This tetrad had never been recorded despite being the opposite side of the Dysynni Valley from Birds Rock SSSI. As would be expected, there were plenty of epiphytes including the rather splendid *Leucodon sciuroides* which is thought to have declined owing to the presence of various airborne pollutants (Blockeel *et al.*, 2014). This is one of the few recent records of this species in Wales. Another epiphyte of note was *Ulota crispula* on willow. *Ulota crispula* was recognised as part of the British flora by Blockeel (2017) who provides an instructive key.

Cefn Clawdd and Llyn Twr-glas (SH6733), 98 species

Having driven up from south-east Wales, Sam Bosanquet decided that there was little point in searching for bryologists as well as bryophytes, so made for an unassigned tetrad in the north-eastern Rhinog mountains. He recorded between Cefn Clawdd and Llyn Twr-glas, passing *Sphagnum molle* in wet heath and two patches of *Herbertus hutchinsiae* among boulders, as well as the Wales Red List lichen *Bryoria bicolor*.

15 September

Sam, onetime BBS liverwort recorder, conducted a tour of Coed Ganllwyd NNR, a jewel in

▽ Figure 22. Sam describing the bryological wonders of Coed Ganllwyd NNR. *Chris Carter*

the crown of Atlantic oak woodland, with its distinctive bryoflora. Sam had a large audience for what was a most enjoyable morning (Fig. 22). After the tour, the group split up to record in SH72M and SH72N in the Coed y Brenin Nature Reserve.

Afon Wen to Ceunant (SH7424), 96 species
The only record of *Solenostoma paroicum* during the meeting was found in this woodland. Thankfully it was fertile, which meant the perianth was emergent from the single pair of bracts with the dilated male bracts below; these characteristics distinguish it from the closely related *S. hyalinum*. Both species have a characteristic aroma.

Capel Hermon (SH7425), 74 species
A large specimen of *Dichodontium flavescens* was discovered, again in its typical habitat of rocks beside a river. Neither this specimen nor the other mentioned earlier were fertile which meant that for most of us, microscopic examination would be needed. *Dichodontium flavescens* differs from *D. pellucidum* in having leaves with a lower length to width ratio and marginal cells the same size as others. As for liverworts, the rather pretty *Tritomaria quinquedentata* was recorded, indicating some base enrichment.

Foel Wen (SH7426), 91 species
This was a heavily coniferised monad on the southern slopes of Foel Wen. The bryologists spent a while searching around old stone walls in a conifer plantation, where they found *Barbilophozia barbata*. They then admired the diverse forms of *Gymnocolea inflata* on metal-rich rock outcrops and pondered an unusual form of *Nardia scalaris*, before scrambling up a stream past *Colura calyptrifolia* and *Fissidens celticus*. As they looped back to the parking area they noted *Bryoerythrophyllum ferruginascens* on the track, whilst Sam clambered up to some low rock outcrops and located *Isopaches bicrenatus*.

Diffwys and the miners' track (SH6623, SH6723), 88 and 81 species
This group drove a fair distance along a forest road and parked above the west side of Llyn Cwm-mynach. Following the miners' path,

▽ Figure 23. *Gymnomitrion obtusum*. *Calum McLennan*

▽ Figure 24 *G. crenulatum*. *Calum McLennan*

which was constructed to bring down manganese from the mines above on Diffwys, the group found an interesting north-facing crag which yielded both *Gymnomitrion obtusum* (whitish pale yellow green with rounded leaf lobes; Fig 23) and *G. crenulatum* (brown with acute lobes; Fig. 24) and under a boulder what was later identified as *Glyphomitrium daviesii*, an excellent find. At this point the A team (the two Toms, Chris P and Lucia) trekked across typical rough Rhinog terrain, wet heath interspersed with steep rocky bluffs and scree and low crags, heading for the upper ramparts. The high crags justified the strenuous ascent. These are criss-crossed with microgabbro intrusions resulting in bryophytes typical of base-enrichment among the scattered plants of Rose-root. The bryophytes included *Anoectangium aestivum*, *Campylopus gracilis*, *C. setifolius*, *Chionoloma cylindrotheca*, *Entosthodon obtusus* and *Racomitrium ellipticum*. Interestingly, three of the five possible species of *Andreaea* were found here, *A. hookeri*, *A. rothii* and *A. rupestris* (Fig. 25). These are particularly fascinating because, together with *Sphagnum*, they are the only mosses that have no seta. The *Andreaea* capsules release spores through four longitudinal slits, often compared to Chinese lanterns. Gordon and Mags took the 'easy' route down via the miners' track. The broken crags near the track here were not over-productive, but did hold the wonderful waxy looking *Douinia ovata* (Fig. 26).

Y Llethr (SH6625), 101 species

Matt and Mark Lawley parked at the north end of the forest in Cwm Mynach to explore the eastern flank of Y Llethr. In what was essentially acid moorland, they found *Leptodontium flexifolium* which initially foxed them as it grew as a cushion (instead of the tufts expected), was rooted in a crevice of rock on a crag and had rather lax shoots over 10 mm tall (at the taller end of its height range). Furthermore, on microscopical examination, many leaves lacked the single row of pellucid marginal cells at the base of the leaf typical of *L. flexifolium*. However, Tom Blockeel compared the gathering with material from Derbyshire, and pronounced them microscopically identical. In addition, they recorded *Jungermannia eucordifolia* in a flush, the only record of this species from the meeting.

▽ Figure 25. *Andreaea rupestris*. *Calum McLennan*

▽ Figure 26. *Douinia ovata*. *Claire Halpin*

△ Figure 27. *Pseudomarsupidium decipiens. Jeff Scott*

16 September

Cwm Mynach and 'Martha's Wood' (SH6820, SH6821, SH6822)

The main objective of the group was an unrecorded monad SH6821 in the middle of Cwm Mynach. Interestingly, the monads to the north and south of this one had been well recorded by both Des Callaghan and the late Martha Newton. In homage to the astonishing bank of work she generated, the group spent some time in what they called 'Martha's Wood' in SH6822 and SH6820. Should you wish to know more about Martha, an obituary was written by Jeff Duckett (2021) in which he describes what a force of nature she was and her absolute dedication to bryology. The team admired the liverwort *Pseudomarsupidium decipiens* (Fig. 27) and much *Bazzania trilobata*, *Frullania fragilifolia, Plagiochila punctata, P. spinulosa* and *Loeskeobryum brevirostre*, after which a very pleasant, sylvan lunch spot was found. Martha recorded this monad in 2002 and found 120 taxa. Our intrepid bryologists found 65 and even found 11 new ones. It's amazing what 10 people can find if they are looking hard enough. Unfortunately, 'Martha's Wood' stopped almost exactly on the grid line meaning that the next target square was primarily coniferous woodland. The list of 109 records was described as 'rather mundane'. There may be a speech bubble moment here, 'thinks to self – is *Colura calyptrifolia* mundane?' Later, the group explored up the banks of the Afon Cym-mynach where *Heterocladium wulfsbergii* was found in the river with *Fissidens bryoides* var. *caespitans*, *Grimmia hartmanii* and *Hygrohypnella ochracea* on rocks above and there was some head-scratching over *Pohlia elongata* in an earthy bank above the burn, an unusual habitat at low altitude (150 m) for this diminutive moss.

Ffridd Gwndwn-uchaf & Cwm Camlan (SH7023, SH7124), 87 species in SH7023

Martha Newton had recorded SH7124 in 2002 and found 129 species and the woodland was surveyed again in 2015 by Des Callaghan, so the team only used this as access to the more challenging monad in the target tetrad. However, they still managed to record 24 species, of which 19 were new. New taxa included *Archidium alternifolium, Bryoerythrophyllum ferruginascens* and *Campylopus subulatus*, all of which were found frequently on the forest tracks scrutinised during this meeting.

The team decided that the most interesting parts of the tetrad were some cliffs and rocky outcrops at Craig-y-cae which lie below Y Garn at 629 m. They chose not to use the suggested route but to access these outcrops via forestry tracks and found to their cost that it's never as easy as it seems. After they had managed to reach the moorland, the outcrops became visible. Continuing uphill, they found among others the now familiar liverworts *Douinia ovata*, *Gymnomitrion crenulatum* and *G. obtusum*. The weather being rather fine, the group had lunch

△ Figure 28. *Sphagnum girgensohnii. Clare Shaw*

△ Figure 29. *Dicranodontium denudatum*, with many deciduous leaves lying on the surface. *Jeff Scott*

perched on rocks in a slightly sheltered spot with fabulous views over the Afon Mawddach valley to the mountains beyond. The route then took in some boggy patches where they found ten species and subspecies of *Sphagnum* including *S. girgensohnii* (Fig. 28), only just missing out on the prize for the most *Sphagna*.

Gelli-goch (SH7129, SH7028), 124 and 105 species

This tetrad included part of Afon Eden-Cors Goch Trwsfynydd SSSI. The core management plan of 2008 states that this area has raised bogs, associated with blanket bog. The blanket bog was certainly a draw, judging by the numbers attending. It took a while for the group to exit the field next to where the cars were parked which sparked the interest of the local farmer, who would have liked us to survey the woodland on the opposite side of the road. However, there were no takers and the horde moved on. Later that day, to the delight of our members, a small gorge was found and a number of the bryophyte crew threw themselves into its examination (almost literally). *Heterocladium wulfsbergii, Hygrohypnella ochracea* and *Schistidium rivulare* were found here.

17 September

Coed-y-Brenin Forest West (SH7027, SH7127), 65 and 79 species

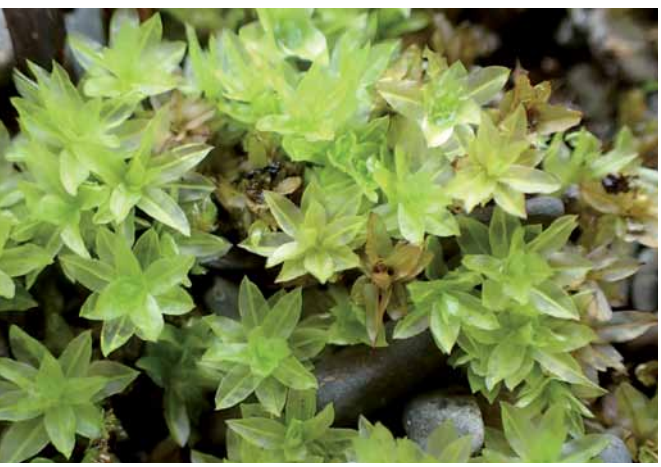
This tetrad had very few records, mainly because it was primarily coniferous forest, but it also included raised bogs, associated with blanket bog. Despite the reputation of coniferous forest being 'mundane', the team were excited by almost everything including the opportunity to get out together bryologising. A fun time was had examining everything from walls to old concrete pipes to ditches and tracks. Two of the best finds were *Dicranodontium denudatum* (Fig. 29), a particularly graceful acrocarp, and *Splachnum sphaericum*, which occupies the very specific habitat of herbivore dung. The extremely fetching dark purple, almost black, capsules are easy to spot. It is likely that this example was growing on deer dung this deep in the forest, however, both it and *S. ampullaceum* have declined because of the use in domestic herbivores of endectocides (Blockeel *et al*., 2014). These drugs kill parasitic

nematodes in the gut of herbivores and remain in their faeces to kill coprophilous invertebrates, the dispersal agents for *Splachnum* spores.

Afon Mawddach Valley, Upper Afon Mwddach, Braich-y-Dduallt (SH8028, SH8029, SH8128), 135, 93 and 39 species

All, or part of, each of these monads lie in the Mineint-Arenig-Dduallt SSSI. After another long drive up a forestry track through the back of beyond to the northern end of the Dduallt ridge, there came a point when the team had to park because of a huge, deep gully that had gouged its way across the route. A gap through the dense spruce plantation was navigable and the team spent an excellent morning in the open, upper part of Cwm yr-Allt-Lwyd, where the rocky stream and hillsides produced a long list of species. *Douinia ovata*, *Frullania fragilifolia*, *Gymnomitrion crenulatum*, *G. obtusum* and *Kiaeria blyttii* grew on and among the boulders, and *Hamatocaulis vernicosus* was found unexpectedly in a flush. Boulders in the burn had sheets of *Fontinalis squamosa* and *Hygrohypnella ochracea* and, on the bank, nice cushions of *Atrichum crispum* (Fig. 30). (Gordon had not seen this plant since leaving Wales 40 years ago!) Some of the rocks on the south-facing slope were moderately basic and there were scattered cushions of *Bartramia ithyphylla*, *Fissidens osmundoides* and *Tortella tortuosa*, with *Grimmia longirostris**. This team won the prize for the most *Sphagnum* taxa (11) found in a monad and these included *S. contortum* and *S. teres*.

▽ Figure 30. *Atrichum crispum. David Long*



Still the sun shone (you can thank the organiser for that), giving an exceedingly pleasant lunch spot complete with hovering kestrel. Bare soil patches had plentiful *Diphyscium foliosum* (mostly sterile) and some *Isopaches bicrenatus*. Some fertile *Bryum pseudotriquetrum* was later confirmed as var. *pseudotriquetrum*. Other finds included *Hygrobiella laxifolia* on wet rock by a small waterfall, and *Solenostoma obovatum* on a boulder on the stream bank. The ground eventually opened out onto an extensive area of blanket bog which looked uninviting (the dullest bog ever according to David Long) and was indeed unproductive. Little cascades in the small burn in the next monad to the north had *Hygrobiella laxifolia* with *Jungermannia pumila* growing through it.

While attempting to return to the track and the cars the group aimed a little too high and became enmeshed in thicket-stage Sitka Spruce, as delightful as ever, and regrettably leading to a lot of non-bryological language; a less forthright member of the group described it as 'challenging'. However, on returning to the cars the now much maligned spruce trees produced *Colura calyptrifolia* on young twigs.

Dduallt (SH8127), 99 species

This was another unrecorded monad and the group needed to be fit to access it. It was hard going on the rocky outcrops, in the blanket bog and fighting their way through the Sitka

Spruce to get to the monad. Their view of the mire was very similar to the previous group in that it was fairly unproductive, although both *Sphagnum medium** and *Calypogeia sphagnicola* were discovered here. *Calypogeia sphagnicola* is a characteristic plant of well-developed, saturated oligotrophic bogs, where it grows among hummock-forming *Sphagnum*, but needs to be identified using its oil bodies to distinguish it from slender *C. fissa*.

Cwm yr Allt-lwyd (SH7928), 147 species

All the lower-level recording sites had been snapped up, so it was with some misgivings that this group opted to record here after their previous, physically demanding day. Thankfully, they underestimated their athleticism. Claire felt that this was definitely the 'best day of the week!' There was plenty to maintain their interest even in the ditch they walked by towards the ravines they aimed to explore. At the bottom of the first ravine, the day brightened considerably when Sharon spotted a couple of plants of the gorgeous *Oedipodium griffithianum* (Fig. 31) – a first for all of them, with its beautiful multicellular discs of gemmae sitting at the base of the leaves. The rocks were quite friable and shaley and therefore progress was slow. The wet rocks were very slippery, and steep sections were often un-navigable, requiring the group to climb out of the ravine, along, and drop back down again.

En route, Sharon introduced Clare and Claire to the microhabitats within *Sphagnum* and *Molinia* tussocks, leading to the finding of *Odontoschisma sphagni* and *Sphenolobus minutus*. After the second ravine, the group decided to make a concerted effort to add to the species on their walk back along the track, and around the farmyard. They failed to find the ubiquitous *Calliergonella lindbergii* on the track, but by way of compensation there was plenty of *Bryum*

△ Figure 31. *Oedipodium griffithianum*. *Margaret Crittenden*

alpinum mixed with *Campylopus subulatus* (Fig. 32), as well as *Pohlia camptotrachela*.

West of Bronaber, Mynydd Bach (SH7530, SH7531, SH7330), 35, 57 and 73 species

This monad was relatively low level and consisted mainly of bridges, streams, tracks, moorland and roadsides. The woodland had been clear felled at Pont y Gain. Between 1903 and 1950, the land

▽ Figure 32. *Campylopus subulatus* (green) and *Bryum alpinum* (pink). *Sharon Pilkington*

shown as woodland on the map was used as a military firing range. After the land was sold, it was ploughed using specially armoured tractors. Quite a lot of both live and expended munitions were recovered, so it was with trepidation that our sturdy group of bryologists approached the site. In the event, they managed to avoid the area almost entirely. This proved to be the most unrewarding of sites to record. In fact, we believe it may have been called dull! Despite this, one new vice-county record, *Streblotrichum convolutum var. commutatum**, was made.

Summary

In conclusion, between 11 and 17 September 2021, 32 members of the British Bryological Society recorded 425 species, subspecies and varieties in 68 monads and 39 tetrads, with a total of 4127 records. Of those taxa recorded, 90 were found in only one monad. There were nine new vice-county records and one debracketed taxon. Considering the terrain, the weather (very wet and very lovely at times), the difficulties with access and the paucity of species in some places, everyone enjoyed being with people who felt kinship in their love of bryophytes.

BBS meetings are for all, from beginners to experts, and there was always someone on hand to answer the difficult and, in some cases, the easy questions. As the meeting organiser, I would encourage all our members to come to these meetings as a way not only of honing your skills, but also of meeting some of the nicest naturalists around.

Acknowledgements

There were many people who helped to make this meeting run smoothly. The staff of Plas Caerdeon deserve a huge thank you for looking after us and providing us with some delicious meals. Paul Williams of Natural Resources Wales and Ed Midmore of the Woodland Trust provided us with much useful information and access. Philippa Thompson walked many of the routes and supported me throughout the preparation of the meeting. Claire Halpin as webmaster made it much easier to access photographs and files, and much more. Lucia Ruffino, Catharine Moss (COFNOD) and Sam Bosanquet helped identify areas most in need of recording. Rachel Carter and Tim Blackstock commented on an earlier version of this account. Sarah Stille introduced me to the flora of Merioneth and was an invaluable source of information. Lastly, thank you to those who made it to this meeting despite the difficult circumstances.

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