



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

Eryri SSSI bryophyte survey 2015

Sam Bosanquet & British Bryological Society
Natural Resources Wales

Evidence Report No 91

About Natural Resources Wales

Natural Resources Wales is the organisation responsible for the work carried out by the three former organisations, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales. It is also responsible for some functions previously undertaken by Welsh Government.

Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.

We work for the communities of Wales to protect people and their homes as much as possible from environmental incidents like flooding and pollution. We provide opportunities for people to learn, use and benefit from Wales' natural resources.

We work to support Wales' economy by enabling the sustainable use of natural resources to support jobs and enterprise. We help businesses and developers to understand and consider environmental limits when they make important decisions.

We work to maintain and improve the quality of the environment for everyone and we work towards making the environment and our natural resources more resilient to climate change and other pressures.

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Natural Resources Wales is an evidence based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

This Evidence Report series serves as a record of work carried out or commissioned by Natural Resources Wales. It also helps us to share and promote use of our evidence by others and develop future collaborations. However, the views and recommendations presented in this report are not necessarily those of NRW and should, therefore, not be attributed to NRW.

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1. Crynodeb Gweithredol

Cynhaliwyd arolygon mewn 18 cwm ac ar ddau gopa yn SoDdGA Eryri gan 30 o fryolegwyr o'r British Bryological Society, gan gynnwys 9 arbenigwr cenedlaethol, rhwng 7 a 12 Mehefin 2015. Cydgysylltwyd yr arolwg gan ecolegydd planhigion anfaswlaidd Cyfoeth Naturiol Cymru. Canfuwyd oddeutu 400 rhywogaeth o fryoffytau, gan gynnwys 44 sy'n Brin neu'n Anfynych yn Genedlaethol ac/neu sydd ar Restr Goch Cymru. Cafwyd y cofnodion cyntaf yng Nghymru o *Lophozia opacifolia*, *Oxystegus hibernicus/minor* a *Pseudoleskeella rupestris*, yn ogystal â chofnodion Cymraeg modern cyntaf o *Hedwigia striata* a *Pterigynandrum filiforme*. Darganfuwyd poblogaethau newydd o rywogaethau Adran 42 sef *Bryum muehlenbeckii*, *Fossombronia fimbriata* a *Paraleptodontium recurvifolium*.

Mae'r arolwg hwn yn rhoi tystiolaeth o gyfoeth eithriadol fflora mwsoglau a llysiâu'r afu yn Eryri a hefyd yn dangos ei bod yn bosibl darganfod rhywogaethau newydd yng Nghymru, hyd yn oed yn y rhannau o'r wlad sydd wedi eu cofnodi orau. Golyga ehangder aruthrol cymoedd a chopau Eryri y bydd cofnodi manwl, hyd yn oed gan dimau o arolygwyr, yn parhau i fod yn sialens barhaol, nid yn unig oherwydd eu bod yn targedu planhigion sydd, yn bennaf, yn amrywio rhwng 1 mm a 5 cm o ran taldra. Dengys yr arolwg effeithioldeb ac effeithiolrwydd arolwg cydgysylltiedig gan ecolegwyr o Cyfoeth Naturiol Cymru ac arbenigwyr o'r cymdeithasau dysgedig: yn yr achos hwn y British Bryological Society. Roedd y gwaith yn llawer mwy trwyadl na phetai'r arolwg wedi ei gynnal gan un arbenigwr, a chafwyd y sgil-fantais fod nifer o fryolegwyr lleol yn dysgu am edrychiad a chynefin rhywogaethau prin gan arbenigwyr cenedlaethol.

2. Executive Summary

18 cwms and two summits in Eryri SSSI were surveyed by 30 bryologists from the British Bryological Society, including 9 national experts, between 7th and 12th June 2015. The survey was coordinated by the Natural Resources Wales non-vascular plant ecologist. Nearly 400 bryophyte species were found, including 43 that are Nationally Rare or Nationally Scarce and/or are on the Welsh Red List. The first Welsh records of *Lophozia opacifolia*, *Oxystegus hibernicus/minor* and *Pseudoleskeella rupestris* were made, along with the first modern Welsh records of *Hedwigia striata* and *Pterigynandrum filiforme*. New populations of the Section 42 species *Bryum muehlenbeckii*, *Fossombronia fimbriata* and *Paraleptodontium recurvifolium* were found.

This survey provides evidence of the outstanding richness of the moss and liverwort floras of Eryri and also shows that new species for Wales can be discovered even in the best-recorded parts of the country. The vast scale of the cwms and summits of Eryri means that detailed recording, even by teams of surveyors, will always remain a challenge, not least because their targets are plants that are mostly between 1 mm and 5 cm in height. The survey shows the effectiveness and efficiency of coordinated survey by ecologists from Natural Resources Wales and experts from the learned societies: in this case the British Bryological Society. Coverage was far more thorough than if the survey had been carried out by a solo expert, and there was the spin-off benefit of many local bryologists gaining knowledge of the appearance and habitat of rare species from national experts.

3. Background

Eryri SSSI, comprising the three massifs of Yr Wyddfa, Glyderau and Carneddau, has one of the richest bryophyte assemblages in Wales. This SSSI assemblage is made up of more than 150 species of moss and liverwort, including many Nationally Rare and Nationally Scarce taxa that grow on montane rock. Some of these taxa have not been seen in Eryri (or indeed Wales) for more than 100 years, but the vast size of the SSSI and its rugged terrain make survey for inconspicuous bryophytes difficult and time-consuming. Because the records were made *ad hoc* over many decades, very few have precise locality details or include notes on population size or ecology, and monitoring the feature is therefore almost impossible. The first step towards evaluating and monitoring the SSSI bryophyte feature was to establish its component species (Bosanquet, 2014); the next was to identify which cwms each notable species has been found in and when each was last seen; this was followed by identifying hotspots and under-recorded areas; and finally, surveys were needed to locate populations for future monitoring.

Three sections of Yr Wyffda were surveyed by Gordon Rothero (2011), but solo recording in vast upland landscapes is relatively inefficient and Gordon suggested that more people were needed to cover the remainder of the SSSI. The first week of the British Bryological Society 2015 Summer Meeting took place in Eryri, and that allowed a coordinated approach to recording, with teams of 2 to 6 people including at least one national expert¹ visiting 18 cwms and two summits in the Glyderau and Carneddau

¹ Attendees on the meeting were **Tim Blackstock**, **Sam Bosanquet**, **Des Callaghan**, Fiona Cameron, Richard Finch, Chris Forster Brown, Ray Harding, Tom Harrison, Gordon Haycock, Peter Jones, Jill Kowal, **Mark Lawley**, **Peter Martin**, Andy McLay, Emily Meilleur, **Oliver Moore**, David Morris, **Tom Ottley**, **Sharon Pilkington**, Gary

between 7th and 12th June 2015. Recording was coordinated by Sam Bosanquet (NRW non-vascular plant ecologist), and each party was assigned to a cwm, issued with a map, geological information, and records of which notable bryophytes had been seen there before, and instructed to record all notable species with a GPS and habitat/population notes. Not only did the week provide coverage of many sections by experts; it also allowed many intermediate bryologists and several NRW staff to learn new species under expert guidance. The weather was warm and sunny all week, and was perfect for bryophyte recording, particularly on the mountain tops.

The list of Nationally Rare and Scarce Bryophytes was revised shortly after the survey took place (Pescott & Preston, 2015), resulting in a number of target species being demoted from Nationally Rare to Nationally Scarce or from Nationally Scarce to uncommon, and one that was not specifically targeted (*Marsupella sprucei*) being promoted to Nationally Scarce. This has little effect on the overall richness of the Eryri SSSI bryophyte assemblage.

4. Results

A full dataset from the BBS meeting comprising 3456 records of more than 390 taxa will be sent to the British Bryological Society and COFNOD. Most of these were made in Eryri SSSI, although a few come from other sites in lowland Eryri, or from Moel yr Ogof or Moel Siabod. Data from Eryri SSSI are present in this report organised day by day and then by cwm, rather than species by species, so that hotspots for montane bryophytes can be more readily recognised. The cwms visited are indicated

Powell, Gail Quartly-Bishop, Tristan ap Rheinallt, Dafydd Roberts, **Gordon Rothero**, Lucia Ruffino, Julie Smith, Barry Stewart, Alex Turner, Malcolm Watling and Sharon Yardy; national experts are in bold.

on Figure 1 and a list of the notable species recorded is given in Table 1. Location details of notable species recorded during the survey are in the proformae (in sections 4.1 to 4.19) and in Appendix 1.

Table 1: a list of the 44 notable bryophyte species recorded during the 2015 Eryri SSSI survey, with the number of cwms that each species was recorded in (from a total of 18)

Species	Status	Crags
<i>Amphidium lapponicum</i>	Nationally scarce	7
<i>Antitrichia curtipendula</i>	Wales Endangered	3
<i>Arctoa fulvella</i>	Nationally scarce	5
<i>Bartramia halleriana</i>	Nationally scarce	1
<i>Bazzania tricrenata</i>	Wales Near Threatened	7
<i>Brachydontium trichodes</i>	Nationally scarce	4
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	3
<i>Bryum riparium</i>	Nationally scarce	2
<i>Bryum weigelii</i>	Nationally scarce, Wales Endangered	1
<i>Calypogeia azurea</i>	Nationally scarce, Wales Vulnerable	1
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	4
<i>Ditrichum zonatum</i>	Nationally scarce	3
<i>Encalypta ciliata</i>	Nationally scarce	2
<i>Eremonotus myriocarpus</i>	Nationally scarce	3
<i>Glyphomitrium daviesii</i>	Wales Endangered	1
<i>Grimmia elongata</i>	Nationally rare, Wales Vulnerable	1
<i>Grimmia funalis</i>	Wales Vulnerable	9
<i>Grimmia incurva</i>	Nationally scarce	6
<i>Hedwigia striata</i>	Nationally rare, Wales Regionally Extinct	1
<i>Heterocladium wulfsbergii</i>	Nationally scarce	3
<i>Hypnum callichroum</i>	Wales Vulnerable	1
<i>Kiaeria falcata</i>	Nationally scarce, Wales Endangered	2
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	7
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	5
<i>Marsupella sphacelata</i>	Nationally scarce, Wales Vulnerable	1
<i>Marsupella sprucei</i>	Nationally scarce	3
<i>Marsupella stableri</i>	Nationally scarce, Wales Endangered	1
<i>Molendoa warburgii</i>	Nationally scarce, Wales Endangered	3
<i>Oedipodium griffithianum</i>	Nationally scarce, Wales Near Threatened	1
<i>Philonotis seriata</i>	Nationally scarce, Wales Regionally Extinct	2
<i>Plagiopus oederianus</i>	Nationally scarce	1
<i>Plagiothecium cavifolium</i>	Nationally scarce	1
<i>Plagiothecium platyphyllum</i>	Nationally scarce, Wales Endangered	1
<i>Platyhypnidium lusitanicum</i>	Nationally scarce	2
<i>Pohlia ludwigii</i>	Nationally scarce, Wales Endangered	1

<i>Pohlia wahlenbergii</i> var. <i>glacialis</i>	Nationally scarce, Wales Critically Endangered	2
<i>Pseudoleskeella rupestris</i>	New for Wales, Nationally Rare	1
<i>Pterigynandrum filiforme</i>	Nationally scarce, Wales Regionally Extinct	1
<i>Racomitrium macounii</i>	Nationally rare, Wales Vulnerable	3
<i>Scapania uliginosa</i>	Wales Endangered	1
<i>Sphagnum angustifolium</i>	Nationally scarce	1
<i>Sphagnum platyphyllum</i>	Nationally scarce	2
<i>Tortella bambergeri</i>	Nationally scarce	2

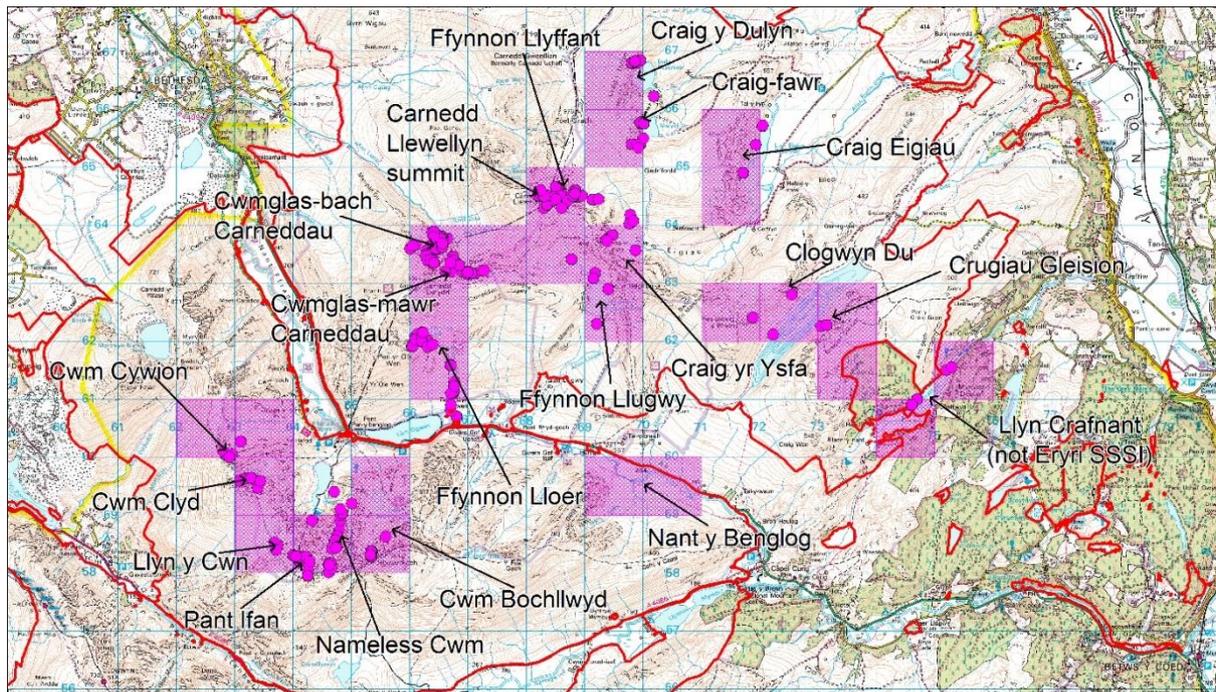


Figure 1: sites recorded during the 2015 Eryri SSSI bryophyte survey, with records accurate at 1km square resolution shown as pink squares and those accurate to 100m or 10m resolution as pink dots; the SSSI boundary is shown in red.

4.1 Creigiau Gleision (SSSI unit Farchwel (A))

Surveyed on 7th June by **Des Callaghan**, Andy McLay, Tristan ap Rheinallt, Alex Turner and Sharon Yardy. The group approached from the south-west and covered the south-western and central parts of the crag.



Figure 2: the area of Creigiau Gleision covered by the survey (blue) and location of one notable species.

Notable records (those seen in 2015 are underlined): *Amphidium lapponicum*, *Anomobryum concinatum*, *Anthelia juratzkana*, *Eremonotus myriocarpus*, *Hypnum hamulosum*, *Nardia geoscyphus*, *Sphenolobopsis pearsonii*, *Tortella bambergeri*.

Despite the presence of base-rich rock, a population of *Dryas octopetalla*, and past records of Nationally Scarce bryophytes, this cwm was considered disappointing by the group.

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Anomobryum concinatum*

Threat status: Nationally Scarce

Location: Creigiau Gleision

Altitude:

GPS: SH73056226

Habitat: crevices in dry, base-rich rock

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Tortella bambergeri*

Threat status: Nationally Scarce

Location: Creigiau Gleision

Altitude:

GPS: SH73156228

Habitat: dry, base-rich rock

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.2 Clogwyn Du (SSSI unit Farchwel (A))

Surveyed on 7th June by Gordon Haycock, **Sharon Pilkington**, **Peter Martin**, **Oliver Moore** and Lucia Ruffino. The group approached from the south-west and covered the south-western 1km of crag in SH7162 and SH7262.

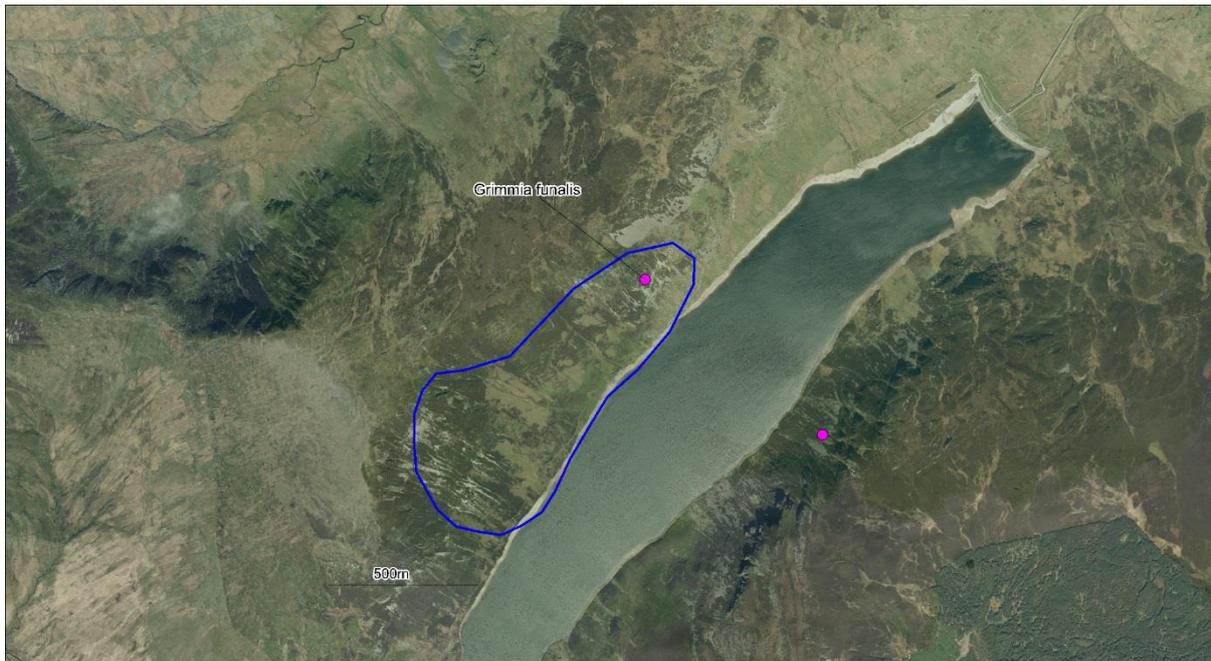


Figure 3: the area of Clogwyn Du covered by the survey (blue) and location of one notable species.

Notable records (those seen in 2015 are underlined): *Grimmia funalis*. Other species of interest recorded included *Grimmia torquata*, *Kieria blyttii*, *Leiocolea collaris* & *Racomitrium ellipticum*.

There were no previous records of notable bryophytes from the crags of Clogwyn Du, so the discovery of some montane calcicoles is of interest and suggests that further exploration might be worthwhile.

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Clogwyn Du

Altitude:

GPS: SH7255162809

Habitat: base-rich rock high on crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.3 Craig Eigiau (SSSI unit Llwydfaen (A))

Surveyed on 7th June by **Rory Hodd**, Jill Kowal, **Mark Lawley**, Emily Meilleur and David Morris. The group started at the north end of the crags, worked southwards along them, and also examined some sections of the lake shore.

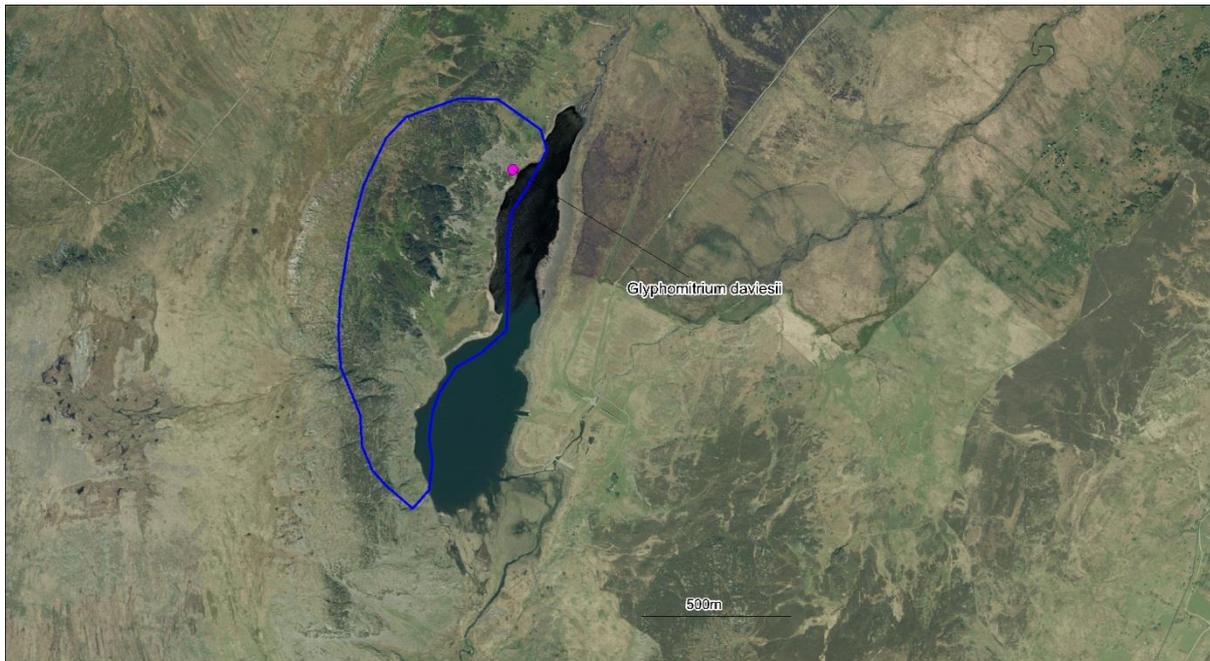


Figure 4: the area of Craig Eigiau covered by the survey (blue) and location of one notable species.

Notable records (those seen in 2015 are underlined): *Atrichum tenellum* and *Glyphomitrium daviesii*, with *Schistidium platyphyllum* reported but not confirmed. Other species of interest included *Douinia ovata*, *Grimmia lisa*, *Heterocladium wulfsbergii*, *Isothecium holtii* and *Schistidium strictum*.

The discovery of *Glyphomitrium daviesii* is of particular note because it was thought to be extinct in north Wales until a few years ago. This is the first record from the Carneddau section of Eryri SSSI, although *G. daviesii* is also present on a cliff within the Afon Llugwy SSSI near Betws-y-coed.

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Atrichum tenellum*

Threat status: Nationally Scarce;
new for Eryri

Location: Llyn Eigiau

Altitude:

GPS: SH718645

Habitat: reservoir margin

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Glyphomitrium daviesii*

Threat status: Welsh Red List
(Endangered)

Location: Craig Eigiau

Altitude:

GPS: SH7204765724

Habitat: recess in scree

Abundance: in small quantity

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Schistidium platyphyllum* unconfirmed **Threat status:** Nationally Scarce

Location: Craig Eigiau

Altitude:

GPS: SH7164 (not recorded precisely)

Habitat: not noted

Abundance: not noted; collected by Rory Hodd and identified microscopically, but the specimen was not retained and could not be confirmed as a new record for Caernarvonshire

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.4 Ffynnon Lloer (SSSI unit Llyn Ffynnon Lloer)

Surveyed on 7th June by **Sam Bosanquet**, Richard Finch, Ray Harding, **Tom Ottley** and Barry Stewart. The south shore of the lake was examined in detail, as was the western half of the north shore; the east shore and the eastern half of the north shore require further survey, and it would also be useful to document the distribution and abundance of *Bryum muehlenbeckii* in more detail. More than 2 hours was spent specifically searching lakeside rocks here.

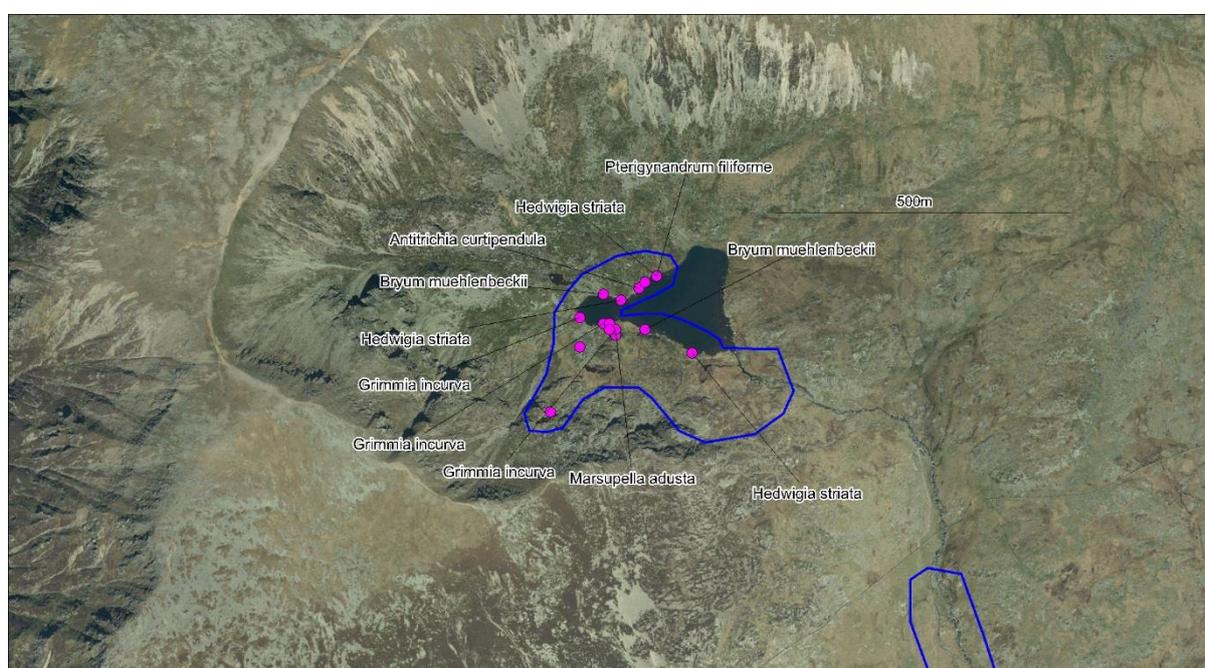


Figure 5: the area of Llyn Ffynnon Lloer covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Antitrichia curtipendula*, *Bryum muehlenbeckii*, *Grimmia incurva*, *Hedwigia striata*, *Marsupella adusta* and *Pterigynandrum filiforme*. Also present were *Isothecium holtii* and *Porella cordaeana*.

The presence of the Section 42 moss *Bryum muehlenbeckii*, the only extant Welsh population of *Pterigynandrum filiforme* and the long-lost *Hedwigia striata* confirm that Ffynnon Lloer is one of the most important lakes in Wales for bryophyte conservation. It is also considered to be one of Wales' prime sites for lake lichens. The un-dammed,

natural nature of the lake is different to most of the other lakes in Eryri, and it seems likely that this natural state combines with an abundance of base-rich rock to provide ideal conditions for rare cryptogams.



Site: Eryri SSSI

Date: 7th June 2015

Target species: *Antitrichia curtipendula*

Threat status: Welsh Red List
(Endangered)

Location: Ffynnon Lloer

Altitude: 655

GPS: SH66196213

Habitat: large boulder in shallow edge of lake

Abundance: 1x1m patch

Associated species: not noted

Estimated health/viability of population(s): a very large patch, but not noted elsewhere during the visit

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Marsupella adusta*

Threat status: Nationally Scarce
Welsh Red List (Vulnerable)

Location: Ffynnon Lloer

Altitude: 655

GPS: SH66146206

Habitat: sloping face of small rock embedded in turf by lake

Abundance: the only patch noted by the lake, but more is present further up the cwm

Associated species: not noted

Estimated health/viability of population(s): typically small

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Bryum muehlenbeckii*
Scarce

Threat status: Section 42, Nationally
Welsh Red List (Endangered)

Location: Ffynnon Lloer

Altitude: 655

GPS: SH66096208, SH66136212,
SH66206206

Habitat: rocks on edge of lake

Abundance: scattered patches around much of southern and northern shores; requires more detailed survey

Associated species: not noted

Estimated health/viability of population(s): the largest population in Wales

Photographs: a large patch of concave-leaved *Bryum muehlenbeckii* with admixed *Sedum anglicum*



Tom Ottley examining a patch of *Bryum muehlenbeckii* (arrowed)



Site: Eryri SSSI

Date: 7th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Ffynnon Lloer

Altitude: 655

GPS: SH66136207, SH66096208

Habitat: gaps between boulders

Abundance: small quantity on two boulders

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: huge boulder on lake shore, with bryologists examining *Grimmia incurva* in a deep crevice



Site: Eryri SSSI

Date: 7th June 2015

Target species: *Hedwigia striata*

Threat status: Nationally Rare

Location: Ffynnon Lloer

Altitude: 655
SH6622062152

GPS: SH66166211, SH6628462026,

Habitat: boulders in shallow water of lake

Abundance: large patches on two rocks on south shore and one in western part of north shore

Associated species: *Pterigynandrum filiforme* on one rock, *Grimmia ramondii*, *Sciuro-hypnum plumosum*

Estimated health/viability of population(s): worryingly small, particularly as no other British sites are known

Photographs: close view of *Hedwigia striata* showing its relatively short hair-points compared with *H. stellata*



A boulder supporting *Hedwigia striata* (ringed)



Site: Eryri SSSI

Date: 7th June 2015

Target species: *Pterigynandrum filiforme*

Threat status: Nationally Scarce,
Welsh Red List (Regionally Extinct)

Location: Ffynnon Lloer

Altitude: 655

GPS: SH6622062152

Habitat: south side of large boulder about 2m into the lake from north shore

Abundance: less than 20x20 cm

Associated species: the same boulder supports *Grimmia hartmanii* (N side) and *Hedwigia striata* (S side)

Estimated health/viability of population(s): very small

Photographs: *Pterigynandrum filiforme*



Sam Bosanquet and Tom Ottley straddling the boulder on which *Pterigynandrum filiforme* grows



4.5 Cwm Ffynnon Lloer (SSSI unit Braich Ty Du)

Surveyed on 7th June by **Sam Bosanquet**, Richard Finch, Ray Harding, Peter Jones, **Tom Ottley** and Barry Stewart. About 1.5 hours was spent examining cascades on the Afon Lloer, then the group scrutinised the rocky lake margins of Ffynnon Lloer (see separate section) before looking at some of the cliffs to the south-west of the lake. The time spent on the cliffs and boulders seemed very inadequate, and further survey is certainly needed.

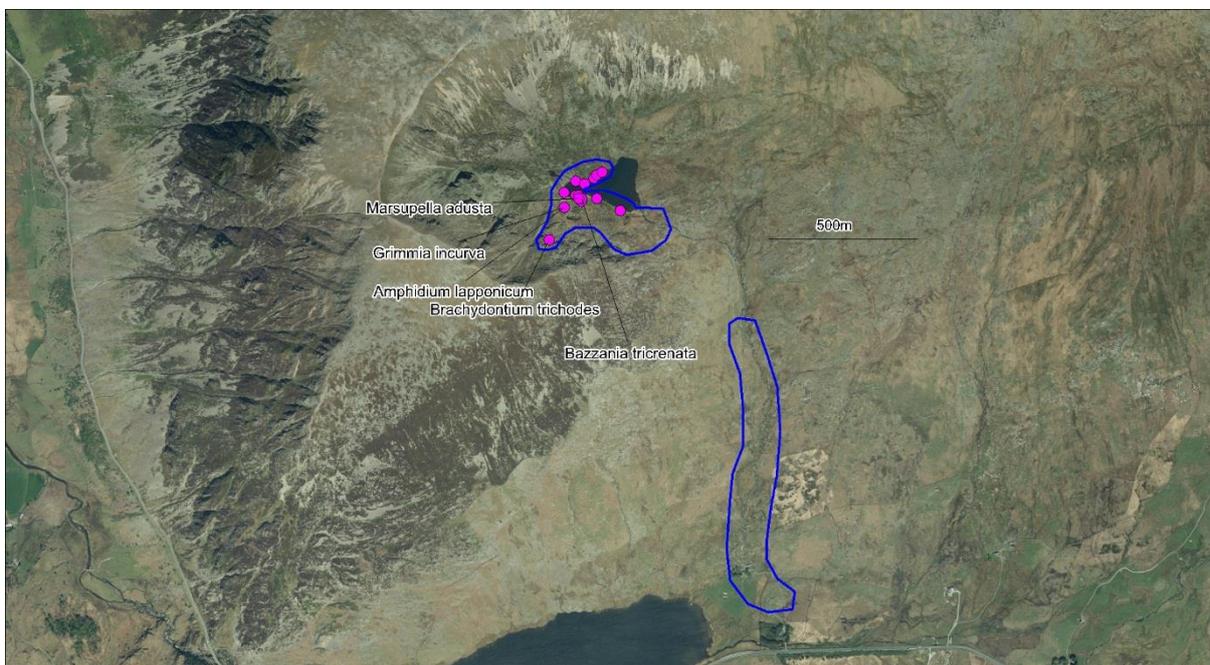


Figure 6: the area of Cwm Ffynnon Lloer covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Amphidium lapponicum, Anomobryum concinatum, Barbilophozia hatcheri, Brachydontium trichodes, Bryum weigeli, Grimmia incurva, Hypnum hamulosum and Porella pinnata. Other interesting records were Bazzania tricrenata and Kiaeria blyttii in scree, Racomitrium ellipticum on a damp crag, and Hygrobiella laxifolia by the Afon Lloer.

There are exposures of under-explored base-rich in Cwm Ffynnon Lloer, and the 2015 group barely scratched the surface of this cwm's montane bryophyte flora.

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Lloer

Altitude:

GPS: SH66096203

Habitat: overhang on huge base-rich boulder

Abundance: a few patches with sporophytes

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Anomobryum concinatum*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Lloer

Altitude:

GPS: SH66096203

Habitat: crevice in base-rich boulder

Abundance: very small quantity

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Brachydontium trichodes*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Lloer

Altitude:

GPS: SH66046192

Habitat: small rock in scree

Abundance: small quantity

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 7th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Lloer

Altitude:

GPS: SH66096203, SH66156206

Habitat: base-poor boulders

Abundance: a few cushions

Associated species: *Andreaea* spp.

Estimated health/viability of population(s): not noted

Photographs: cushion of *Grimmia incurva* alongside branched *Andreaea rothii falcata*



4.6 Cwm Bochllwyd and north cliffs of Glyder Fach (SSSI unit Blaen-y-nant)

Surveyed on 8th June by **Des Callaghan, Mark Lawley, Oliver Moore**, Gail Quartley-Bishop and Tristan ap Rheinallt. The group started around Llyn Bochllwyd with instructions to look for *Hedwigia striata* and *Paraleptodontium recurvifolium*. Later they climbed to upper part of the cwm, including the north cliffs of Glyder Fach. Nobody searched for the *Dicranodontium asperulum* colony.

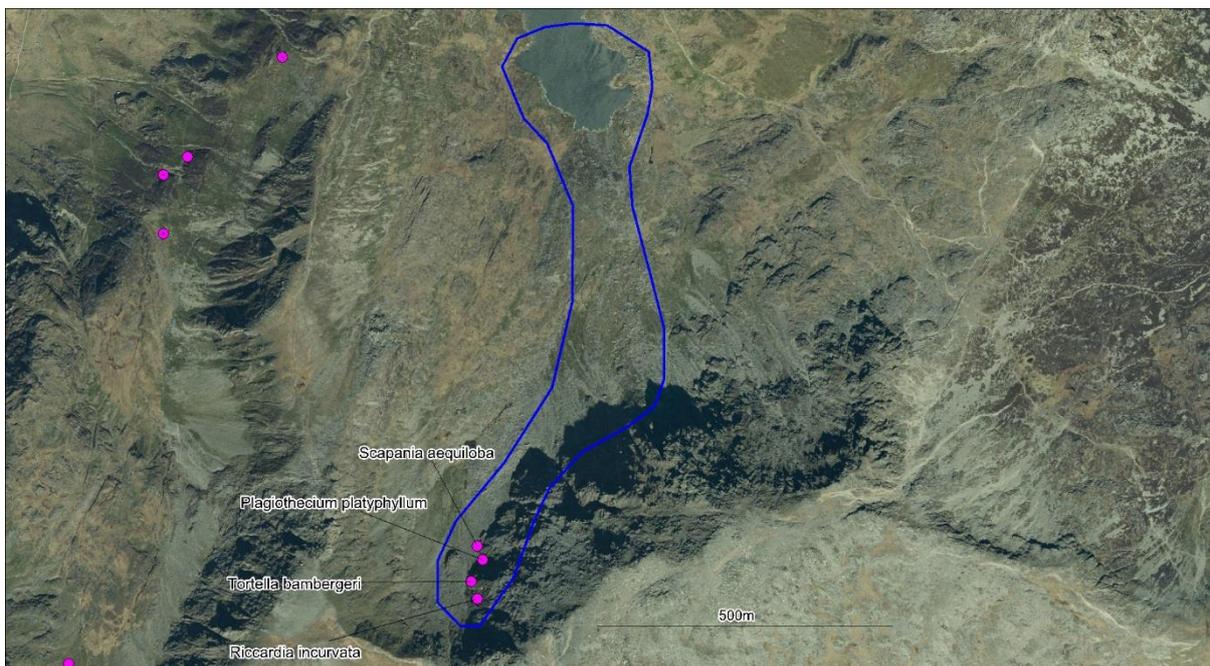


Figure 7: the area of Cwm Bochllwyd covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Andreaea mutabilis*, *Anomobryum concinnatum*, *Dicranodontium asperulum* (only Welsh site), *Grimmia incurva*, *Marsupella adusta*, *Plagiothecium platyphyllum*, *Pohlia ludwigii*, *Racomitrium macounii* and *Tortella bambergeri*. Other taxa of interest, most of which were Nationally Scarce until recently, included *Bazzania tricrenata*, *Gymnomitrium concinnatum*, *Metzgeria leptoneura*, *Plagiothecium denticulatum* var. *obtusifolium*, *Racomitrium ellipticum*, *Riccardia incurvata*, *Scapania aequiloba* and *Schistidium strictum*.

The lake itself held few bryophytes of note, although *Racomitrium macounii* was collected by Mark Lawley. Base-rich rocks higher in the cwm supported a good range of uncommon calcicoles, but very little in the way of genuinely scarce species.

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Anomobryum concinatum*

Threat status: Nationally Scarce

Location: Cwm Bochllwyd

Altitude:

GPS: SH65335827

Habitat: base-rich rock

Abundance: not noted

Associated species: not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Plagiothecium platyphyllum*

Threat status: Nationally Scarce,
Welsh Red List (Endangered)

Location: Cwm Bochllwyd

Altitude:

GPS: SH6533958346

Habitat: block scree

Abundance: not noted

Associated species: not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Racomitrium macounii*

Threat status: Nationally Scarce,
Welsh Red List (Vulnerable)

Location: Llyn Bochllwyd

Altitude:

GPS: SH6559 (no GPS reading taken)

Habitat: rocks by lake

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Tortella bambergeri*

Threat status: Nationally Scarce

Location: Cwm Bochllwyd

Altitude:

GPS: SH65325831

Habitat: base-rich rock

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.7 Cwm Cneifion/The Nameless Cwm (SSSI unit Cwm Idwal)

Surveyed on 8th June by Jill Kowal, **Peter Martin**, **Tom Ottley**, **Sharon Pilkington**, **Gordon Rothero**, Julie Smith, Barry Stewart and Sharon Yardy. The group climbed into Cwm Cneifion from Cwm Idwal, ascended to Glyder Fawr, and then descended along Y Gribin (see separate section).

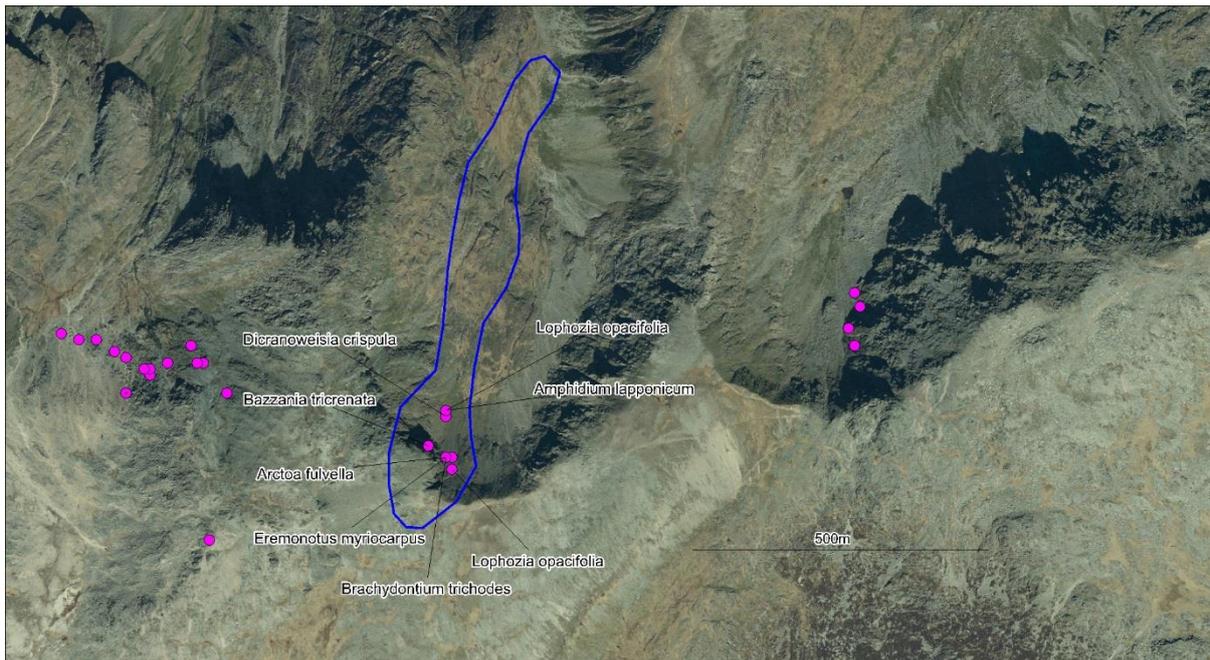


Figure 8 the area of Cwm Cneifion/The Nameless Cwm covered by the survey (blue) and locations of notable species

Notable records (those seen in 2015 are underlined): Amphidium lapponicum, Arctoa fulvella, Brachydontium trichodes, Conostomum tetragonum, Dicranoweisia crispula, Ditrichum zonatum, Eremonotus myriocarpus, Lophozia opacifolia, Marsupella adusta, Marsupella stableri, Molendoa warburgi and Scapania uliginosa. Other species of interest recorded were Bazzania tricrenata, Gymnomitrium concinnatum and Racomitrium ellipticum.

High altitude base-rich rock in Cwm Cneifion yielded several notable species, including new localities for *Arctoa fulvella* and *Eremonotus myriocarpus*. *Lophozia opacifolia* was discovered new to Wales at roughly the same time here and just to the

north in Pant Ifan (see separate section). This cwm still has considerably fewer records of rare bryophytes than Cwm Idwal.

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH64645817

Habitat: base-rich rock

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Arctoa fulvella*

Threat status: Nationally Scarce

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH64645809

Habitat: base-rich rock in scree

Abundance: not noted

Associated species: not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Brachydontium trichodes*

Threat status: Nationally Scarce

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH64645809

Habitat: small rock in scree at cliff base

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Dicranoweisia crispula*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH64645816

Habitat: boulder

Abundance: one cushion

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce,
New for Wales

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH64645817

Habitat: scattered among other bryophytes at cliff base

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Molendoa warburgii*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwm Cneifion/The Nameless Cwm

Altitude:

GPS: SH648589

Habitat: damp rocks by stream

Abundance: a few small patches

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.8 Y Gribin (SSSI unit Cwm Idwal)

Surveyed on 8th June by Jill Kowal, **Peter Martin**, **Tom Ottley**, **Sharon Pilkington**, **Gordon Rothero**, Julie Smith, Barry Stewart and Sharon Yardy. This was a brief stop on the way down from Cwm Cneifion.

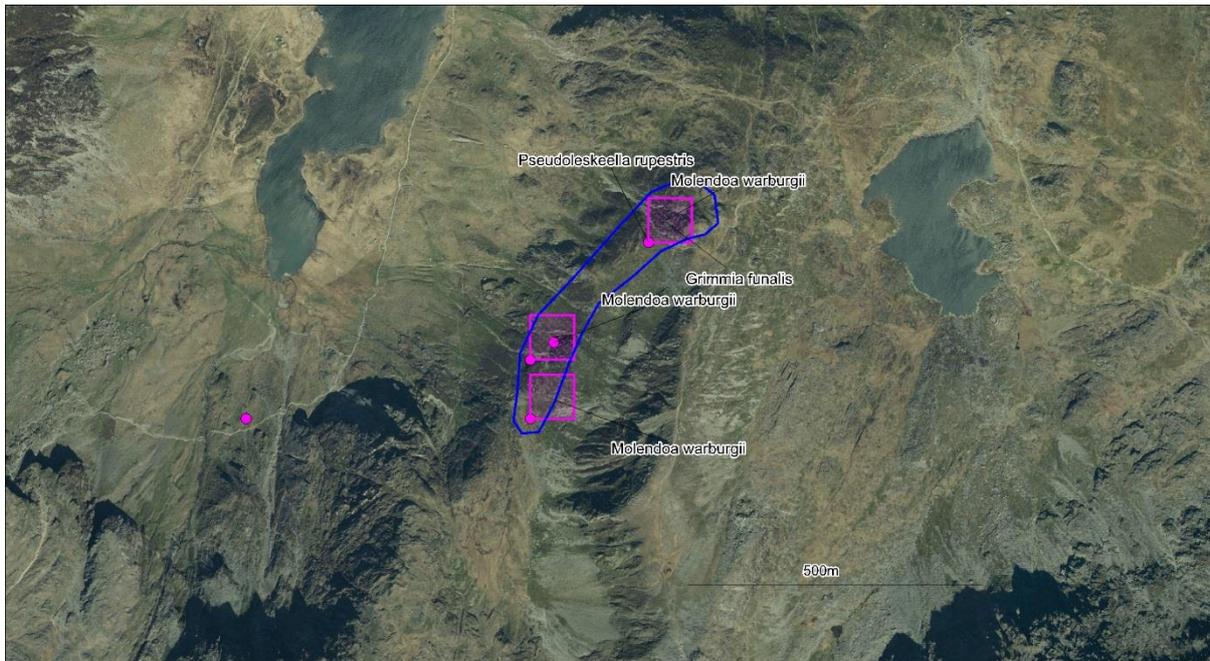


Figure 9: the area of Y Gribin covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Grimmia funalis, Molendoa warburgii and Pseudoleskeella rupestris.

There were no specific records of notable bryophytes from the base-rich rock of Y Gribin despite this being one of two Welsh sites for the montane calcicole vascular plant *Dryas octopetella*. The discovery of *Pseudoleskeella rupestris* new for Wales was remarkable and marks this cliff as an area that warrants further exploration.

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Y Gribin

Altitude:

GPS: SH650592

Habitat: base-rich rock outcrop

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Molendoa warburgii*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Y Gribin

Altitude:

GPS: SH648590, SH650592

Habitat: damp, base-rich rocks

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Pseudoleskeella rupestris*

Threat status: Nationally Rare
New for Wales

Location: Y Gribbin

Altitude:

GPS: SH650592 (no GPS reading taken)

Habitat: creeping in narrow crevice low down on left wall of deep cleft in crag

Abundance: a few square centimetres

Associated species: not noted

Estimated health/viability of population(s): not recognised in the field, but present in very small quantity

Photographs: none

4.9 Llyn y Cwn (SSSI unit Llyn y Cwn)

Surveyed on 8th June by **Sam Bosanquet**, Gordon Haycock, **Rory Hodd**, Andy McLay, David Morris, Lucia Ruffino and Alex Turner. An hour was spent on the rocky north shore of the lake, and two people explored the boggy south shore as well.

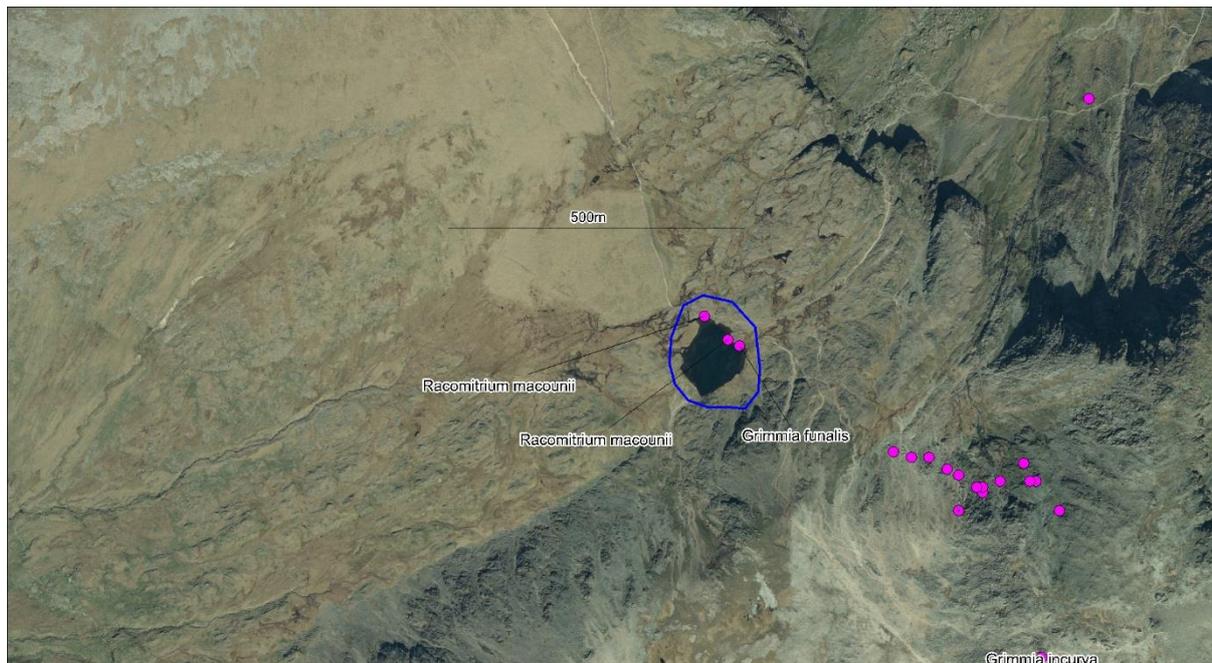


Figure 10: the area of Llyn y Cwn covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Grimmia funalis* and *Racomitrium macounii*.

This lake seems to have been bryologically unknown until 2015, but thorough exploration showed that it lacks the rarities of Ffynnon Lloer and some other montane lakes in Eryri. An 1898 record of *Pterigynandrum filiforme* from “near Llyn y Cwn, above Cwm Idwal” requires further searching.

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Llyn y Cwn

Altitude:

GPS: SH63735848

Habitat: base-rich rockface by lake

Abundance: a few patches

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Racomitrium macounii*

Threat status: Nationally Scarce,
Welsh Red List (Vulnerable)

Location: Llyn y Cwn

Altitude:

GPS: SH63675853, SH63715849

Habitat: sloping rocks on lake shore

Abundance: frequent patches on two rocks

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs:

Racomitrium macounii (black cushions) on sloping rock by Llyn y Cwn



Bryologists examining the *Racomitrium macounii* colony



4.10 Pant Ifan (SSSI unit Cwm Idwal)

Surveyed on 8th June by **Sam Bosanquet**, Gordon Haycock, **Rory Hodd**, Andy McLay, David Morris, Lucia Ruffino and Alex Turner. About 3 hours was spent traversing the huge boulder field of Pant Ifan (the area east of Llyn y Cwn, north-west of Glyder Fawr, and above Cwm Idwal), examining sparsely vegetated ground, springs and rills, and gaps within block scree. Despite the size of the party, there was a feeling that less than 10% of the area had been checked.

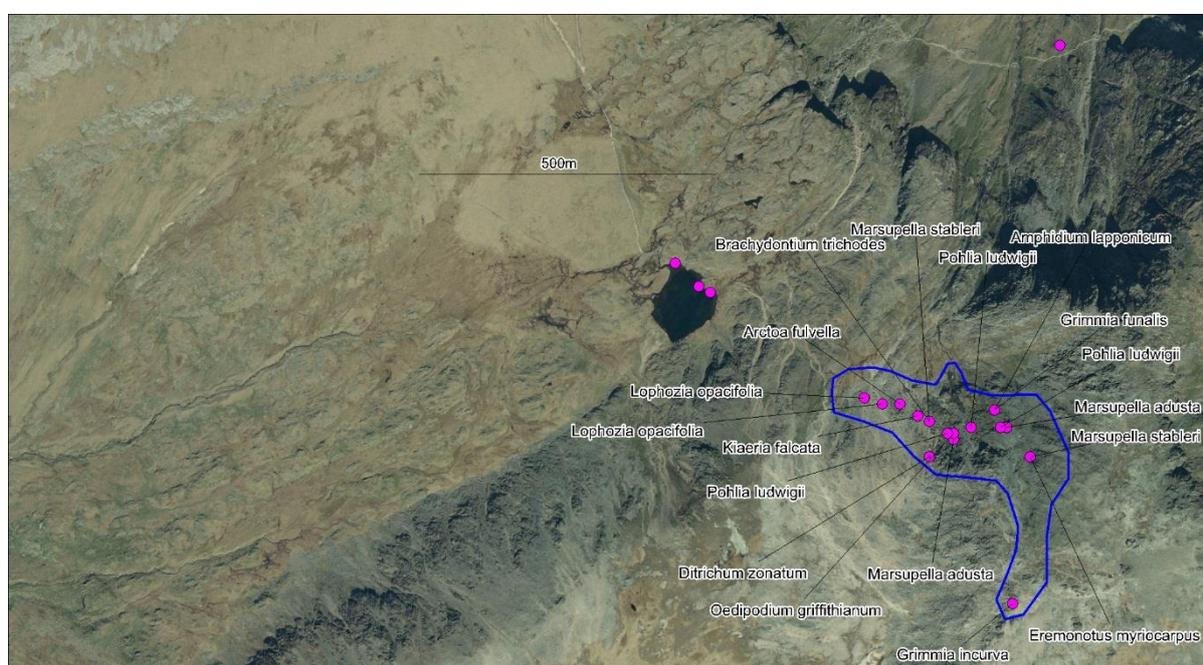


Figure 11: the area of Pant Ifan covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Amphidium lapponicum*, *Arctoa fulvella*, *Brachydontium trichodes*, *Campylopus gracilis*, *Ditrichum zonatum*, *Eremonotus myriocarpus*, *Grimmia funalis*, *Grimmia incurva* (summit of Glyder Fawr), *Kiaeria falcata*, *Lophozia obtusa*, *Lophozia opacifolia*, *Marsupella adusta*, *Marsupella stableri*, *Oedipodium griffithianum*, *Pohlia ludwigii* and *Scapania uliginosa*. Other species of interest recorded here included *Gymnomitrium concinatum*, *Kiaeria blytii*,

Plagiothecium denticulatum var. *obtusifolium*, *Rhabdoweisia crenulata*, *Schistidium strictum* and *Tetrodontium brownianum*.

The ultimate aim of the visit was to relocate *Scapania nimbosa*, which has its only Welsh record from "among boulders, Cwm Cnyfiau, Glyders 2800ft". This mission was unsuccessful, but Pant Ifan proved to be an outstandingly rich locality for montane bryophytes, with 13 Nationally Scarce species seen during the visit.



Site: Eryri SSSI

Date: 8th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude:

GPS: SH64215828

Habitat: base-rich boulder

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Arctoa fulvella*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude:

GPS: SH64055829

Habitat: rock on mountain slope

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Brachydontium trichodes*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude:

GPS: SH64105826

Habitat: boulder on mountain side

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Campylopus gracilis*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude: 889 m

GPS: SH64225825

Habitat: damp turf among boulders

Abundance: 50x50cm patch

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Ditrichum zonatum*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude:

GPS: SH641582

Habitat: scree

Abundance: surprisingly few patches

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Eremonotus myriocarpus*

Threat status: Nationally Scarce

Location: Pant Ifan

Altitude: 920 m

GPS: SH64275820

Habitat: damp, base-rich boulder in block scree

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Pant Ifan

Altitude:

GPS: SH64215828

Habitat: base-rich boulder

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Glyder Fawr summit

Altitude: 1000

GPS: SH64245795

Habitat: summit rocks

Abundance: widespread around rock rib on the summit

Associated species: *Kiaeria blyttii*

Estimated health/viability of population(s): not noted

Photographs:

a cushion of *Grimmia incurva* on the summit of Glyder Fawr



Site: Eryri SSSI

Date: 8th June 2015

Target species: *Kiaeria falcata*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Pant Ifan

Altitude:

GPS: SH64085827

Habitat: rocky mountain slope

Abundance: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce
New for Wales

Location: Pant Ifan

Altitude:

GPS: SH63995830, SH64025829 etc.

Habitat: thin soil over rock in scree, *Scapania* rills

Abundance: widely scattered, only the first two colonies were recorded with a GPS

Associated species: *Scapania undulata*

Estimated health/viability of population(s): not noted

Photographs: close-up of *Lophozia opacifolia* among *Scapania undulata*



Alex Turner photographing the westernmost patch of *Lophozia opacifolia*



Site: Eryri SSSI

Date: 8th June 2015

Target species: *Marsupella adusta*

Threat status: Nationally Scarce,
Welsh Red List (Vulnerable)

Location: Pant Ifan

Altitude:

GPS: SH64145823, SH64235825 etc.

Habitat: sides of boulders in scree

Abundance: scattered colonies but easily overlooked, only collections that were confirmed microscopically were GPSed

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 8th June 2015

Target species: *Marsupella stableri*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Pant Ifan

Altitude:

GPS: SH64275820 & SH64105826

Habitat: sloping boulder faces in scree

Abundance: only two colonies located

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs:

narrow, wiry shoots of *Marsupella stableri* creeping across a rock



Marsupella stableri locus 1 (SH64105826)





Marsupella stableri locus 2 (SH64275820)



Site: Eryri SSSI

Date: 8th June 2015

Target species: *Oedipodium griffithianum*

Threat status: Nationally Scarce
Welsh Red List (Near Threatened)

Location: Pant Ifan

Altitude:

GPS: SH64145824

Habitat: holes in block scree

Abundance: only seen in two places, and only one was recorded with GPS

Associated species: not noted

Estimated health/viability of population(s): one with sporophytes and one with gemmae

Photographs: *Oedipodium* with sporophytes



Site: Eryri SSSI

Date: 8th June 2015

Target species: *Pohlia ludwigii*

Threat status: Nationally Scarce,
Welsh Red List (Endangered)

Location: Pant Ifan

Altitude: 858, 860 & 889 m

GPS: SH64175825, SH64135824, SH64225825

Habitat: *Scapania* rills and damp soil among boulder scree

Abundance: a few relatively large patches

Associated species: *Scapania undulata*, *Sphagnum denticulatum*

Estimated health/viability of population(s): not noted

Photographs: *Pohlia ludwigii* growing with *Scapania undulata*







4.11 Cwmglas-mawr & Cwmglas-bach Carneddau (SSSI unit Llanllechid Common)

Surveyed on 9th June by **Tim Blackstock, Sam Bosanquet, Des Callaghan,** Richard Finch, Chris Forster Brown, Gordon Haycock, **Mark Lawley,** Andy McLay, **Oliver Moore, Tom Ottley,** Tristan ap Rheinallt, **Gordon Rothero,** Lucia Ruffino, Julie Smith, Barry Stewart, Alex Turner and Sharon Yardy, with two parties covering the western crags of Llech Ddu and Cwmglas-bach (including SB, TO and GR) and the eastern crags of Ysgolion Duon and Cwmglas-mawr (including TB, DC, ML and OM).

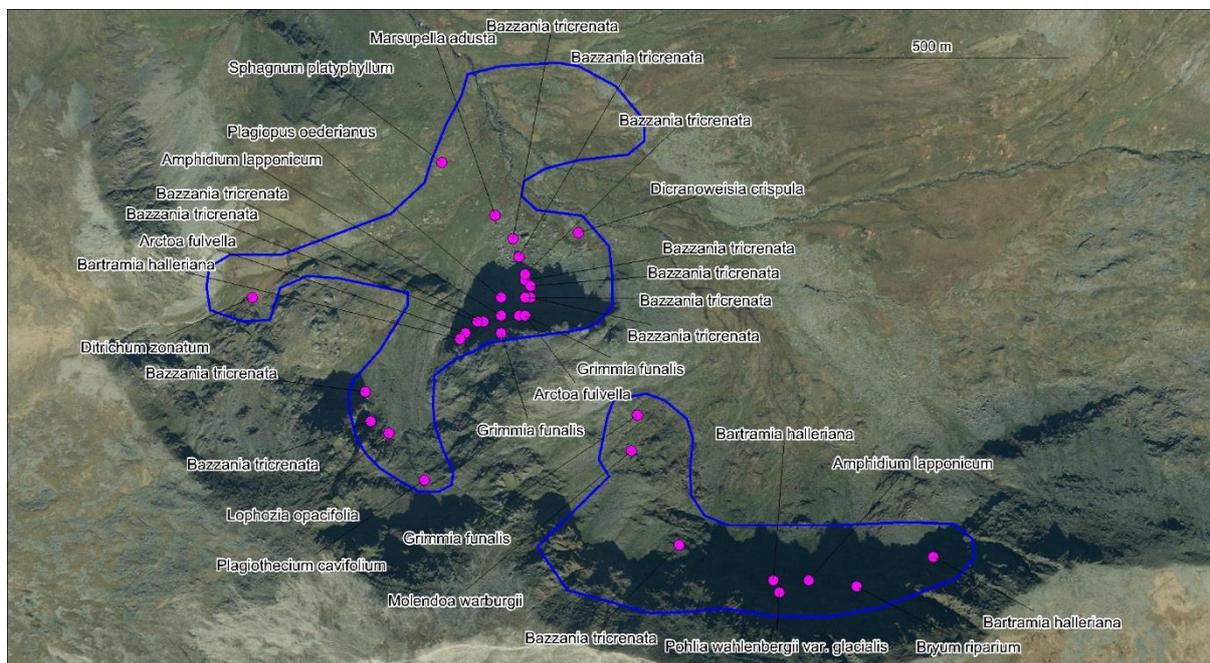


Figure 12: the areas of Cwmglas-bach and Cwmglas-mawr Carneddau covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Amphidium lapponicum*, *Anomobryum concinatum*, *Arctoa fulvella*, *Bartramia halleriana*, *Bazzania tricrenata*, *Bryum riparium*, *Calypogeia azurea*, *Dicranoweisia crispula*, *Ditrichum zonatum*, *Grimmia elongata*, *Grimmia funalis*, *Hygrohypnum duriusculum*, *Hypnum callichroum*, *Hypnum hamulosum*, *Isopterygiopsis muelleriana*, *Lophozia opacifolia*, *Marsupella adusta*, *Molendoa warburgii*, *Plagiopus oederianus*, *Plagiothecium cavifolium*, *Plagiothecium platyphyllum*, *Pseudobryum cinclidioides*, *Pseudoleskeella catenulata*,

Scapania ornithopodioides, *Scapania uliginosa*, *Sphagnum platyphyllum* and *Sphenolobopsis pearsonii*. *Aphanolejeunea microscopica*, *Distichium capillaceum*, *Grimmia torquata*, *Herbertus hutchinsiae*, *Herbertus stramineus*, *Metzgeria leptoneura*, *Pohlia wahlenbergii* var. *glacialis* and *Scapania aequiloba* were also seen. Potential *Oxystegus hibernicus/minor* was also collected from two localities, and would be new for Wales whichever species it proved to be, but its identification remains equivocal.

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 ruderal species or epiphytes! There were a few notable omissions from the list, particularly *Hygrohypnum duriusculum*, *Isopterygiopsis muelleriana*, *Pseudoleskeella catenulata* and *Scapania ornithopodioides*, but *Lophozia opacifolia* and *Molendoa warburgii* were notable additions and the *Oxystegus* will be exciting if/when its identity is finally solved.

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwmglas-bach & Cwmglas-mawr Carneddau

Altitude:

GPS: SH66516363, SH67036318 etc.

Habitat: base-rich crags

Abundance: occasional patches on crags in both major cwms and on large boulders below the crags

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Arctoa fulvella*

Threat status: Nationally Scarce

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66456360 & SH66556363

Habitat: foot of base-rich crags

Abundance: only a few tufts noted in one area

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Bartramia halleriana*

Threat status: Nationally Scarce

Location: Cwmglas-bach & Cwmglas-mawr Carneddau

Altitude:

GPS: SH66446359, SH66976318, SH67246322

Habitat: foot of base-rich crags

Abundance: two small colonies in Cwmglas-mawr and one on Llech Ddu, Cwmglas-bach

Associated species: not noted

Estimated health/viability of population(s): relatively large patches, but restricted in distribution

Photographs: a typical loose cushion of *Bartramia halleriana* on Llech Ddu



Site: Eryri SSSI

Date: 9th June 2015

Target species: *Bazzania tricrenata*

Threat status: Welsh Red List (Near Threatened)

Location: Cwmglas-bach & Cwmglas-mawr Carneddau

Altitude:

GPS: SH66286350, SH66296345, SH66476362, SH66486362, SH66536376, SH66546373, SH66556366, SH66556369, SH66556370, SH66566366, SH66566368 etc. (Cwmglas-bach) SH66816324, SH6763 etc. (Cwmglas-mawr)

Habitat: scree and turf at foot of crags, cliff gullies

Abundance: locally frequent at foot of Llech Ddu and Ysgolion Duon

Associated species: include *Anastrepta orcadensis*, *Herbertus hutchinsiae* and *Mylia taylori*

Estimated health/viability of population(s): one of the largest populations in Wales of this uncommon species

Photographs: a typical loose cushion of *Bazzania tricrenata*



Site: Eryri SSSI

Date: 9th June 2015

Target species: *Bryum riparium*

Threat status: Nationally Scarce

Location: Cwmglas-mawr Carneddau

Altitude:

GPS: SH67116317

Habitat: frost-heaved soil on edge of a runnel

Abundance: only collected from one place

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Calypogeia azurea*

Threat status: Nationally Scarce
Welsh Red List (Vulnerable)

Location: Cwmglas-mawr Carneddau

Altitude:

GPS: SH6663

Habitat: montane crag (no details recorded)

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Dicranoweisia crispula*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66646377

Habitat: boulder below crags

Abundance: one cushion on one boulder

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Ditrichum zonatum*

Threat status: Nationally Scarce

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66096366

Habitat: low crag in upper cwm

Abundance: very small quantity

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Cwmglas-bach & Cwmglas-mawr Carneddau

Altitude:
etc.

GPS: SH66516360, SH66556363, SH66746346

Habitat: base-rich crag

Abundance: scattered small colonies

Associated species: *Grimmia torquata*, *Schistidium strictum* etc.

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce,
New for Wales

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66326343

Habitat: bare soil in montane scree

Abundance: collected from one locality only

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Marsupella adusta*

Threat status: Nationally Scarce
Welsh Red List (Vulnerable)

Location: Cwmglas-bach & Cwmglas-mawr Carneddau

Altitude:

GPS: SH66506380, SH6763 etc.

Habitat: small rocks in scree

Abundance: probably widespread, although only two colonies were checked carefully

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Molendoa warburgii*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwmglas-mawr Carneddau

Altitude:

GPS: SH66736340

Habitat: damp cliff

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Oxystegus hibernicus/minor*

Threat status: new for Wales

Location: Cwmglas-bach Carneddau

Altitude:

GPS: ??

Habitat: flushed basalt

Abundance: not noted

Associated species: *Ctenidium molluscum*, *Leiocolea bantriensis* etc.

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Plagiopus oederianus*

Threat status: Nationally Scarce

Location: Llech Ddu, Cwmglas-bach Carneddau

Altitude:

GPS: SH66516366

Habitat: gully at foot of base-rich crag

Abundance: a few large cushions in one narrow gully

Associated species: not noted

Estimated health/viability of population(s): a strong, fruiting population

Photographs: cushion of *Plagiopus oederianus* from Llech Ddu



Site: Eryri SSSI

Date: 9th June 2015

Target species: *Plagiothecium cavifolium*

Threat status: Nationally Scarce

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66386335

Habitat: overhang on low, base-rich rock outcrop

Abundance: only recorded in one small area

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: typically concave-leaved *Plagiothecium cavifolium* from Cwmglas-bach Carneddau



Site: Eryri SSSI

Date: 9th June 2015

Target species: *Pohlia wahlenbergii* var. *glacialis*

Threat status: Welsh Red List (Critical)

Location: Cwmglas-mawr Carneddau

Altitude:

GPS: SH66986316

Habitat: flushed rock ledge

Abundance: several patches over 4x2m area

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 9th June 2015

Target species: *Sphagnum platyphyllum*

Threat status: Nationally Scarce

Location: Cwmglas-bach Carneddau

Altitude:

GPS: SH66416389

Habitat: neutral flush on hillslope below crags

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.12 Cwm Llugwy and Ffynnon Llugwy (SSSI unit Tal y Braich Isaf)

Surveyed on 10th June by Fiona Cameron, **Peter Martin**, **Sharon Pilkington**, Gail Quartly-Bishop and Lucia Ruffino. The west side of the reservoir was surveyed, along with part of Cwm Llugwy, although the group did not reach the higher part of Craig Llugwy.



Figure 13: the area of Ffynnon Llugwy covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Antitrichia curtispindula*, *Heterocladium wulfsbergii* and *Platyhypnidium lusitanicum*. *Rhabdoweisia crenulata* was also recorded.

Relatively little was found, but the highest ground was not reached and there was little sign of base-enrichment. Further survey would be worthwhile.

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Heterocladium wulfsbergii*

Threat status: Nationally Scarce

Location: Ffynnon Llugwy

Altitude:

GPS: SH6914463083

Habitat: rocks in stream

Abundance: quite plentiful on rocks in stream draining Cwm Llugwy

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Platyhypnidium lusitanicum*

Threat status: Nationally Scarce

Location: Ffynnon Llugwy

Altitude:

GPS: SH6914463083

Habitat: rocks in stream

Abundance: patches on rocks below waterfall also further up in main stream draining Cwm Llugwy

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.13 Craig yr Ysfa (SSSI unit Llwydfaen (A))

Surveyed on 10th June by Richard Finch, Tristan ap Rheinallt, **Gordon Rothero**, Julie Smith and Sharon Yardy. Most of the day was spent working along the foot of the crags of Craig yr Ysfa, focussing particularly on scree beds, but the group also visited the ravine where *Bryum muehlenbeckii* had previously been reported.

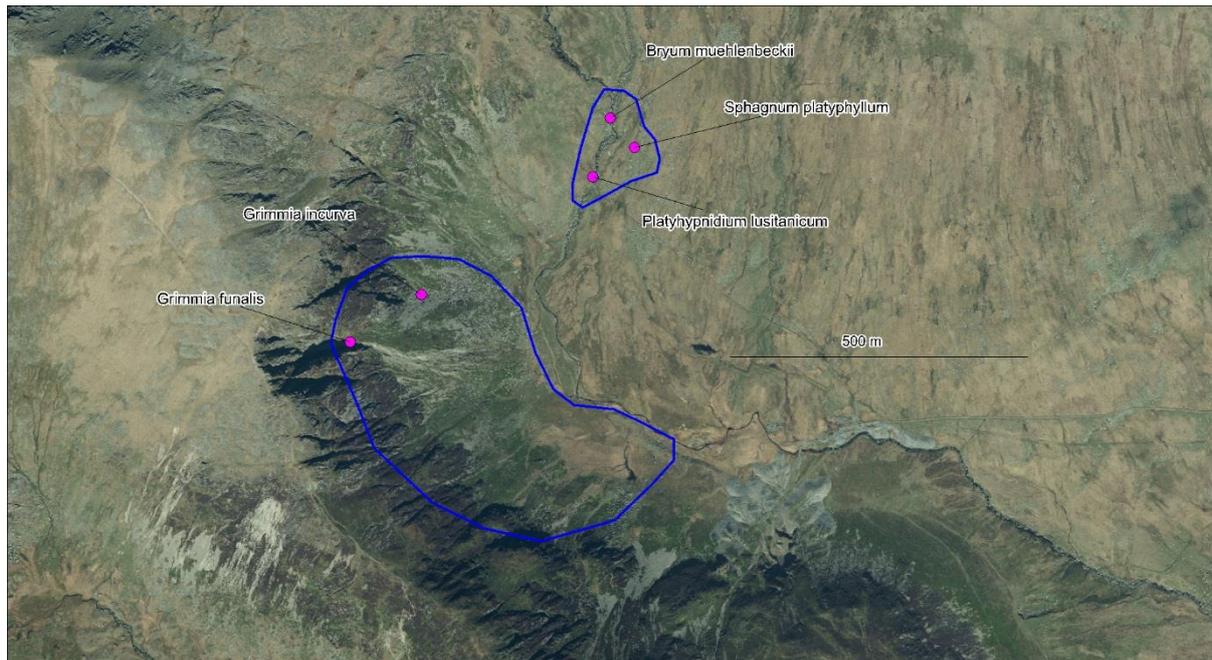


Figure 14: the areas of Craig yr Ysfa covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Bryum muehlenbeckii* (ravine), *Cynodontium jeneri*, *Ditrichum zonatum*, *Grimmia funalis*, *Grimmia incurva*, *Marsupella adusta*, *Marsupella sprucei*, *Platyhypnidium lusitanicum* (ravine), *Rhytidium rugosum* and *Sphagnum platyphyllum*. Records of *Grimmia torquata*, *Kiaeria blyttii* and *Rhabdoweisia crenulata* were also made.

The crag is predominantly base-poor, although a few calcicoles such as *Grimmia funalis* and *G. torquata* were seen. There seemed little hope of refinding *Rhytidium rugosum*, reported from Craig yr Ysfa (670m) in 1946, as there is little base-rich rock. The Afon Eigiau ravine is one of four Welsh sites with *Bryum muehlenbeckii*.

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum muehlenbeckii*
Scarce

Threat status: Section 42, Nationally
Welsh Red List (Endangered)

Location: Afon Eigiau ravine, Craig yr Ysfa

Altitude:

GPS: SH69796413

Habitat: rocks by stream in ravine

Abundance: scattered patches

Associated species: not noted

Estimated health/viability of population(s): rather small compared with Ffynnon Lloer

Photographs: bryologists examining *Bryum muehlenbeckii* in the Afon Eigiau ravine



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Craig yr Ysfa

Altitude:

GPS: SH69356375

Habitat: base-rich rock on crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Craig yr Ysfa

Altitude:

GPS: SH69476383

Habitat: scree

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Marsupella sprucei*

Threat status: Nationally Scarce

Location: Craig yr Ysfa

Altitude:

GPS: SH69876357

Habitat: shaded side of a boulder

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Platyhypnidium lusitanicum*

Threat status: Nationally Scarce

Location: Afon Eigiau ravine, Craig yr Ysfa

Altitude:

GPS: SH69766403

Habitat: rocks in stream in ravine

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs:

locality for *Platyhypnidium lusitanicum* in the Afon Eigiau ravine



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Sphagnum platyphyllum*

Threat status: Nationally Scarce

Location: Afon Eigiau ravine, Craig yr Ysfa

Altitude: 530 m

GPS: SH69836408

Habitat: neutral flush

Abundance: not noted

Associated species: not noted

Photographs: none

4.14 Ffynnon Llyffant (SSSI unit Llwydfaen (A))

Surveyed on 10th June by **Tim Blackstock**, **Sam Bosanquet**, **Des Callaghan**, **Gordon Haycock**, **Rory Hodd**, **Mark Lawley** and **Andy McLay**. The small lake of Ffynnon Llyffant was approached via its outflow stream and then circumnavigated, after which the group took three separate routes south-westward up the cwm towards the summit of Carnedd Llewellyn.

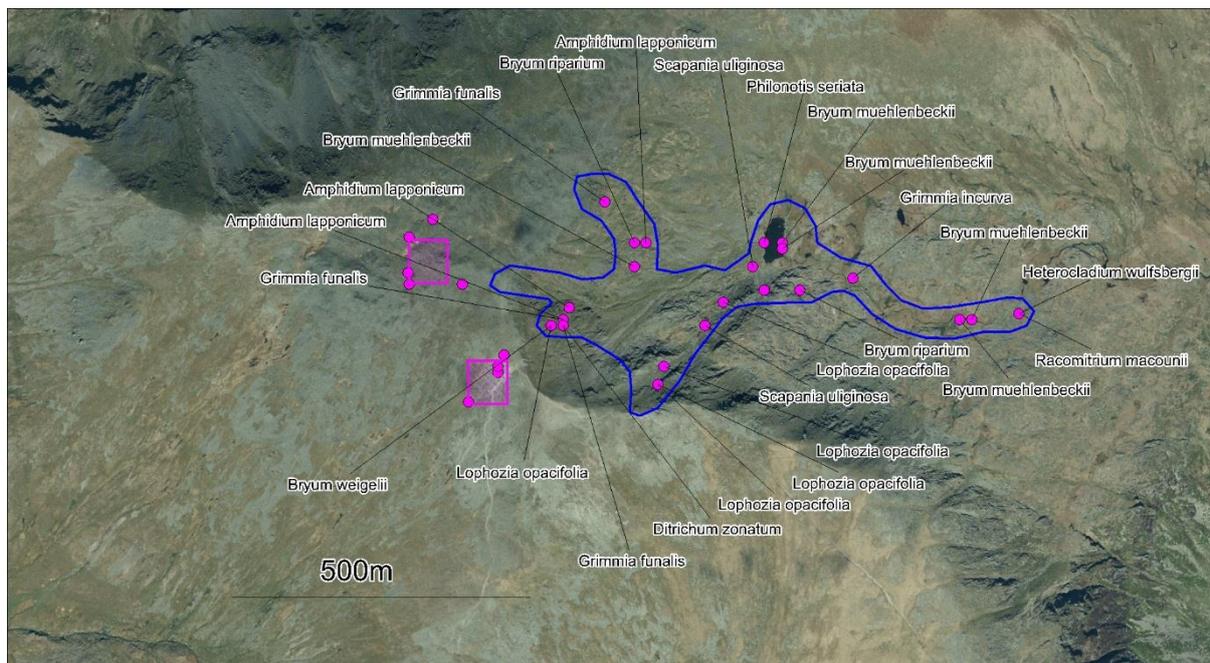
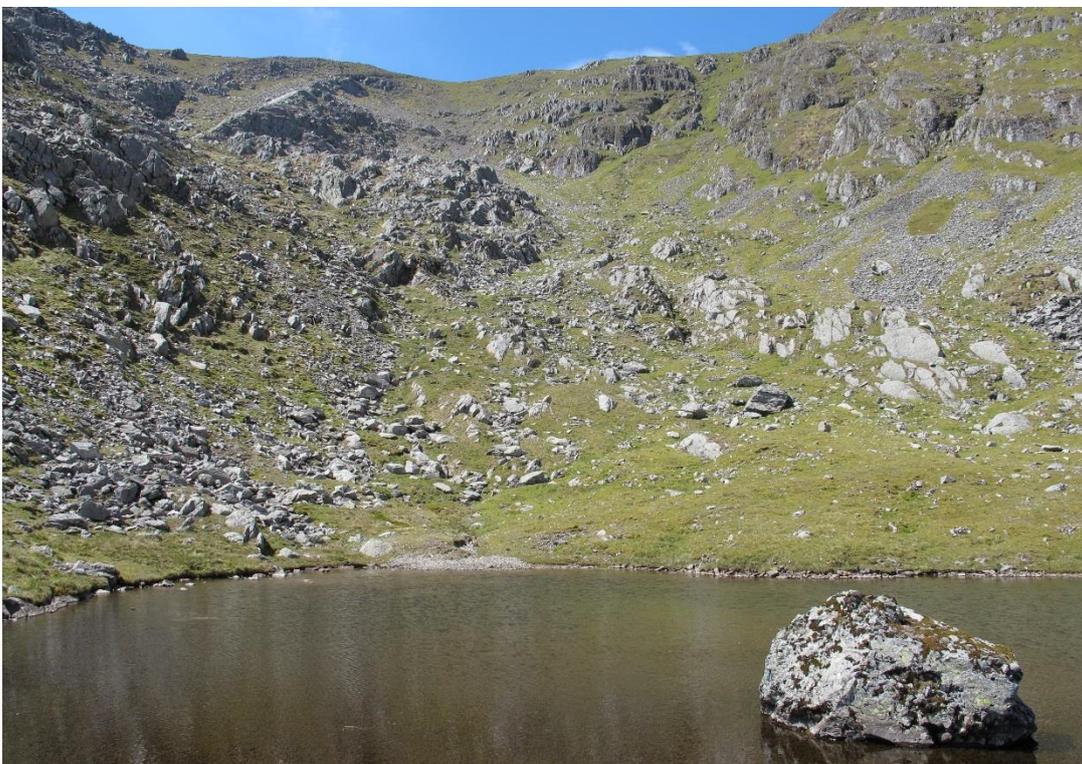


Figure 15: the area of Ffynnon Llyffant covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Amphidium lapponicum, Arctoa fulvella, Bryum muehlenbeckii, Bryum riparium, Bryum weigelii, Dicranoweisia crispula, Ditrichum zonatum, Grimmia funalis, Grimmia incurva, Heterocladium wulfsbergii, Hypnum callichroum, Lophozia opacifolia, Marsupella adusta, Oedipodium griffithianum, Oxystegus hibernicus/minor, Philonotis seriata, Pohlia ludwigii, Pohlia wahlenbergii var. glacialis, Racomitrium macounii and Scapania uliginosa. Grimmia torquata, Rhabdoweisia crenulata, Scapania aequiloba and Schistidium strictum were also seen.

The north-facing crags, south of Ffynnon Llyffant, were base-poor and bryologically dull except that they held a springhead with *Scapania uliginosa*. Base-rich outcrops were more frequent to the south-west of the lake, in the upper part of a broad gully in which *Scapania undulata* rills were abundant. The higher altitude crags to the west of the lake were only looked at briefly and there is a considerable area that needs to be searched, particularly just below the summit ridge. This was an outstandingly rich cwm, and it provided new localities for *Dicranoweisia crispula*, *Grimmia incurva*, *Lophozia opacifolia*, *Philonotis seriata* and *Racomitrium macounii*, as well as a novel Welsh habitat for *Bryum muehlenbeckii* and a potential source for downstream populations. A population of *Oxystegus cf. hibernicus* consists of rather small plants and could be the form that is sometimes split as *O. minor*; there are no previous Welsh records of either taxon, but further *O. cf. hibernicus* was collected during the survey at Cwmglas-bach Carneddau and Cwm Cywion.



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Llyffant

Altitude:
SH68606457

GPS: SH68466444, SH68476446,

Habitat: base-rich overhangs on crags

Abundance: a few small colonies alongside other calcicoles

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: close-up of *Amphidium lapponicum* in Cwm Ffynnon Llyffant



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum muehlenbeckii*
Scarce

Threat status: Section 42, Nationally
Welsh Red List (Endangered)

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH68586453

Habitat: flushed rockface on crag high above the lake

Abundance: a few patches

Associated species: *Scapania undulata*

Estimated health/viability of population(s): not noted

Photographs: *Bryum muehlenbeckii* from Cwm Ffynnon Llyffant



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum muehlenbeckii*
Scarce

Threat status: Section 42, Nationally
Welsh Red List (Endangered)

Location: Ffynnon Llyffant

Altitude: 810 m

GPS: SH68836456, SH68836457

Habitat: rocks in lake

Abundance: on two rocks only

Associated species: not noted

Estimated health/viability of population(s): much smaller than the Ffynnon Lloer population

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum muehlenbeckii*
Scarce

Threat status: Section 42, Nationally
Welsh Red List (Endangered)

Location: Ffynnon Llyffant outflow

Altitude: 780-810

GPS: SH69136444, SH69156444

Habitat: rocky stream flowing out of mountain lake

Abundance: several patches found during brief search

Associated species: not noted

Estimated health/viability of population(s): more abundant in the outflow stream than the lake itself

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum riparium*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH68586457, SH68866449

Habitat: bare soil on crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Bryum weigellii*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwm Ffynnon Llyffant

Altitude: 1110 m

GPS: SH68446443

Habitat: spring high on crag

Abundance: not noted

Associated species: *Chrysosplenium oppositifolium*, *Philonotis fontana*, *Scapania undulata*

Estimated health/viability of population(s): not noted

Photographs:

Bryum weigellii in Cwm Ffynnon Llyffant and the spring it grows in





Site: Eryri SSSI

Date: 10th June 2015

Target species: *Dicranoweisia crispula*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH6864 (not noted when collected by ML)

Habitat: boulder

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Ditrichum zonatum*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Llyffant

Altitude: 1000 m

GPS: SH68466443

Habitat: ledge on montane crag

Abundance: in small quantity

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH68466443, SH68466444, SH68536464

Habitat: base-rich outcrops

Abundance: locally frequent near top of gully

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Ffynnon Llyffant, below the lake

Altitude: 805 m

GPS: SH68956451

Habitat: boulder on hillside

Abundance: a few cushions

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Heterocladium wulfsbergii*

Threat status: Nationally Scarce

Location: Ffynnon Llyffant outflow

Altitude: 765

GPS: SH69236445

Habitat: scree with stream flowing through it

Abundance: abundant

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce

Location: Cwm Ffynnon Llyffant

Altitude: 860 - 1110 m

GPS: a) SH68736447, b) SH68636436,
c) SH68626433, d) SH68626433, e) SH68446443

Habitat: sparsely vegetated mineral soil, sphagnum patches etc. on steep mountain slope

Abundance: scattered small patches collected during a transect up the cwm

Associated species: *Pellia epiphylla*, *Sphagnum denticulatum*

Estimated health/viability of population(s): not noted

Photographs:

Lophozia opacifolia in Cwm Ffynnon Llyffant locus a) (860 m altitude)



Lophozia opacifolia in Cwm Ffynnon Llyffant locus b) (940 m altitude)





Lophozia opacifolia in Cwm Ffynnon Llyffant locus c) (955 m altitude)



Lophozia opacifolia in Cwm Ffynnon Llyffant locus d) (960 m altitude)



Lophozia opacifolia in Cwm Ffynnon Llyffant locus e) (1110 m altitude)





Site: Eryri SSSI

Date: 10th June 2015

Target species: *Oxystegus hibernicus/minor*

Threat status: uncertain

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: ??

Habitat: flushed basalt

Abundance: abundant shoots over ca. 20x20 cm

Associated species: *Bryum alpinum*, *Campylopus atrovirens*, *Scorpidium revolvens*

Estimated health/viability of population(s): not noted

Photographs:

location and colony close-up



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Philonotis seriata*

Threat status: Nationally Scarce,
Welsh Red List (Regionally Extinct)

Location: Ffynnon Llyffant

Altitude: 810 m

GPS: SH68806457

Habitat: gravelly lake shore

Abundance: a few 10x10cm patches

Associated species: *Philonotis fontana*

Estimated health/viability of population(s): not noted

Photographs: locality of *Philonotis seriata* by Ffynnon Llyffant and close-up of one of the patches here





Site: Eryri SSSI

Date: 10th June 2015

Target species: *Pohlia wahlenbergii* var. *glacialis*

Threat status: Welsh Red List (Critical)

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH6864 (not noted when collected by DC)

Habitat: montane crag

Abundance: not noted

Associated species: not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Racomitrium macounii*

Threat status: Nationally Scarce,
Welsh Red List (Vulnerable)

Location: Ffynnon Llyffant outflow

Altitude: 765 m

GPS: SH69236445

Habitat: scree with stream flowing through it

Abundance: frequent

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Scapania uliginosa*

Threat status: Welsh Red List (Endangered)

Location: Cwm Ffynnon Llyffant

Altitude:

GPS: SH68706443, SH68786453

Habitat: rills in gully

Abundance: at least two springheads with abundant *S. uliginosa*

Associated species: *Scapania undulata* is considerably more abundant than *S. uliginosa* here

Estimated health/viability of population(s): not noted

Photographs:

a *Scapania uliginosa* springhead at SH68706443 south-east of the main gully



4.15 Carnedd Llewellyn summit ridge (SSSI unit Llanllechid Common)

Surveyed on 10th June by **Tim Blackstock**, **Sam Bosanquet**, **Des Callaghan**, Gordon Haycock, **Rory Hodd**, **Mark Lawley** and Andy McLay. Over an hour was spent on the summit ridge in perfect sunny weather: ideal conditions to make a good search for small *Marsupella* species.

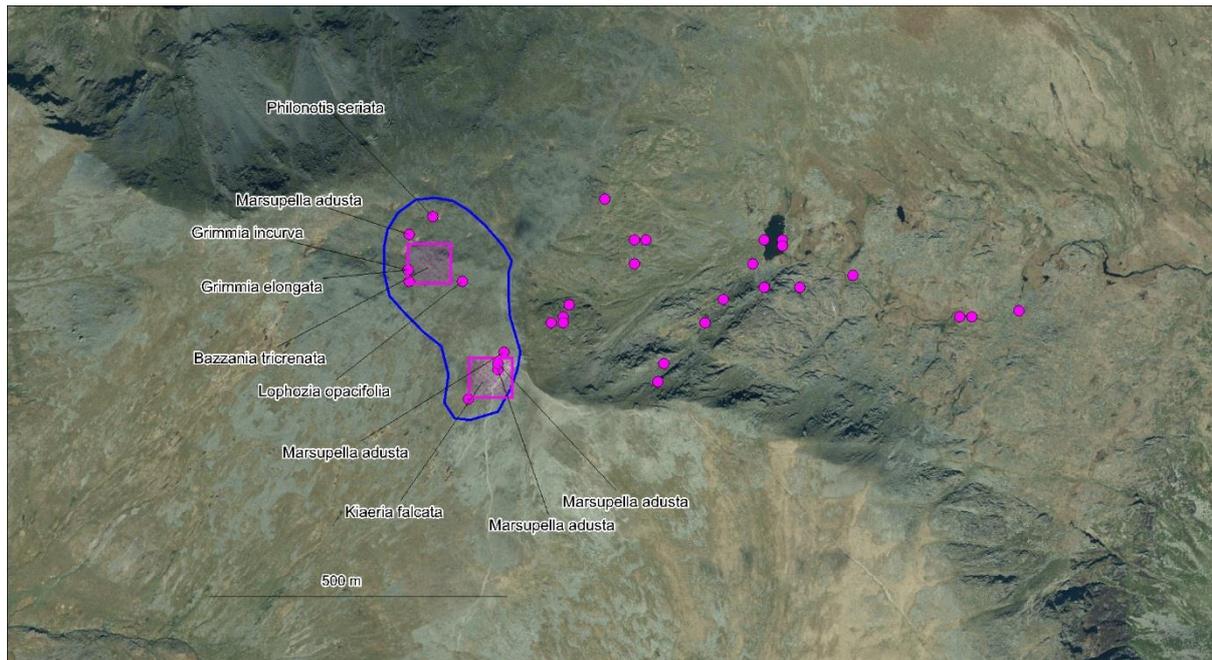


Figure 16: the area of Carnedd Llewellyn summit covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): *Grimmia elongata*, *Grimmia incurva*, *Kiaeria falcata*, *Lophozia opacifolia*, *Marsupella adusta*, *Marsupella sprucei* and *Philonotis seriata*. *Bazzania tricrenata* and *Kiaeria blyttii* were also seen.

There is an impressive abundance of *Racomitrium lanuginosum* heath on the summit ridge, and careful searching of more sparsely vegetated areas revealed several colonies of *Marsupella* spp., as well as *Dicranum fuscescens*, *Kiaeria blyttii* and *K. falcata*. A pool supporting a large population of *Philonotis seriata* is considered likely to be the colony recorded by W.N. Tetley in 1919.

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia elongata*

Threat status: Nationally Scarce,
Welsh Red List (Vulnerable)

Location: Carnedd Llewellyn summit

Altitude: 1050

GPS: SH6819864519

Habitat: boulder on summit ridge

Abundance: not noted

Associated species: *Grimmia incurva*

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Grimmia incurva*

Threat status: Nationally Scarce

Location: Carnedd Llewellyn summit

Altitude: 1050

GPS: SH6819864519

Habitat: boulder on summit ridge

Abundance: not noted

Associated species: *Grimmia elongata*

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Kiaeria falcata*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Carnedd Llewellyn summit

Altitude: 1050 m

GPS: SH683643 (not precisely recorded)

Habitat: summit plateau vegetation

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce

Location: Carnedd Llewellyn summit

Altitude: 1060 m

GPS: SH68296450

Habitat: soil gap in *Racomitrium lanuginosum* heath

Abundance: only one patch located on the summit plateau

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Marsupella adusta*

Threat status: Nationally Scarce
Welsh Red List (Vulnerable)

Location: Carnedd Llewellyn summit

Altitude: 1050-1060 m

GPS: SH68356435, SH68366438, SH68206458,
SH68356436

Habitat: summit plateau vegetation

Abundance: widely scattered on the summit plateau

Associated species: *Nardia scalaris*, *Solenostoma gracillimum*

Estimated health/viability of population(s): not noted

Photographs: bryologists in an area where *Marsupella adusta* is frequent



Site: Eryri SSSI

Date: 10th June 2015

Target species: *Marsupella sprucei*

Threat status: Nationally Scarce

Location: Carnedd Llewellyn summit

Altitude: 1060 m

GPS: SH68376451

Habitat: summit plateau vegetation

Abundance: only one colony appeared to be *M. sprucei*, with the majority being *M. adusta*

Associated species: none

Estimated health/viability of population(s): not noted

Photographs: colony location and close-up





Site: Eryri SSSI

Date: 10th June 2015

Target species: *Philonotis seriata*

Threat status: Nationally Scarce,
Welsh Red List (Regionally Extinct)

Location: Carnedd Llewellyn summit

Altitude: 1043 m

GPS: SH68246461

Habitat: spring-fed mire on summit plateau

Abundance: locally abundant over >2x2m

Associated species: *Anthelia julacea*, *Aulacomnium palustre*, *Dichodontium palustre*, *Polytrichum commune* var. *commune*, *Sarmentypnum sarmentosum*, *Scapania undulata*, *Sphagnum denticulatum*

Estimated health/viability of population(s): not noted

Photographs:

colony location and close-up





4.16 Craig y Dulyn (SSSI unit Blaenddol (C))

Surveyed on 10th June by **Oliver Moore** and **Tom Ottley**. The day was split between Craig Fawr and Craig y Dulyn, and coverage was relatively incomplete with only two recorders and two very large crags.

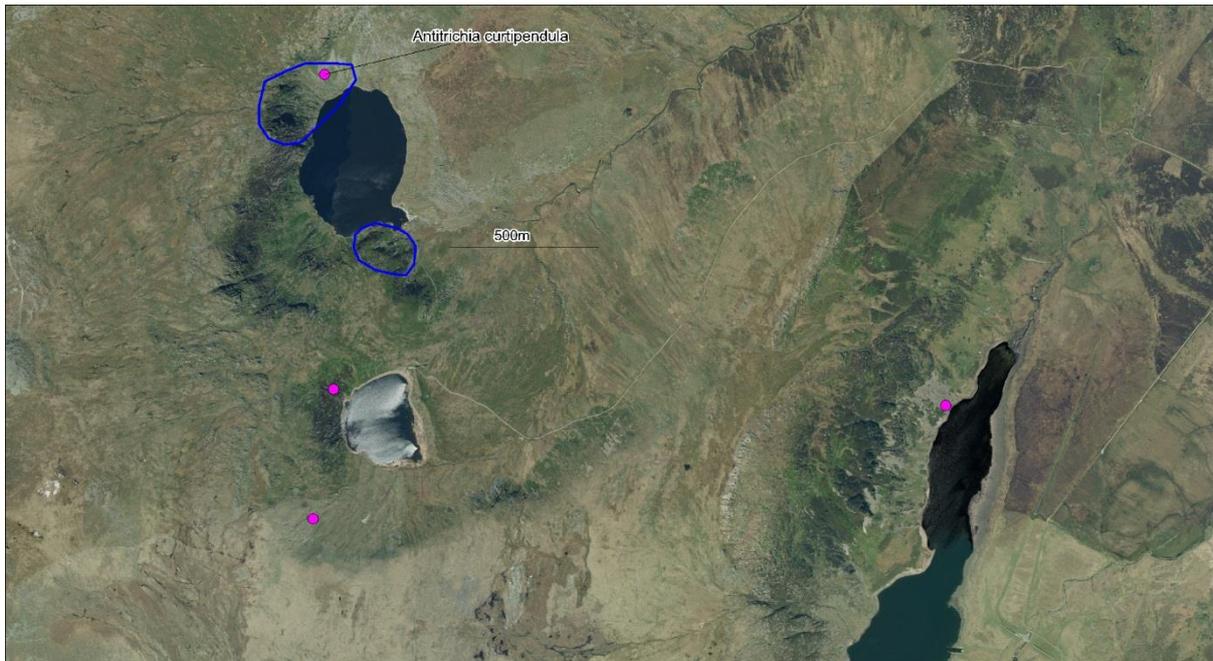


Figure 17: the areas of Craig y Dulyn covered by the survey (blue) and location of one notable species.

Notable records (those seen in 2015 are underlined): *Amphidium lapponicum*, *Antitrichia curtispindula*, *Bryum weigeli*, *Grimmia funalis*, *Hedwigia integrifolia*, *Herbertus stramineus* and *Hypnum callichroum*; most of these date from the BBS visit in 1976. *Distichium capillaceum* and *Hygrobiella laxifolia* were also noted in 2015.

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Antitrichia curtipendula*

Threat status: Welsh Red List (Endangered)

Location: Craig y Dulyn

Altitude:

GPS: SH69956685

Habitat: side of a large boulder

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Hypnum callichroum*
(Vulnerable)

Threat status: Welsh Red List

Location: Craig y Dulyn

Altitude:

GPS: SH6966 (apparently a field record)

Habitat: upland crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.17 Craig-fawr (SSSI unit Blaenddol (C))

Surveyed on 10th June by **Oliver Moore** and **Tom Ottley**. The day was split between Craig-fawr and Craig y Dulyn, and coverage was relatively incomplete with only two recorders and two very large crags. This crag appears not to have been explored by bryologists previously.

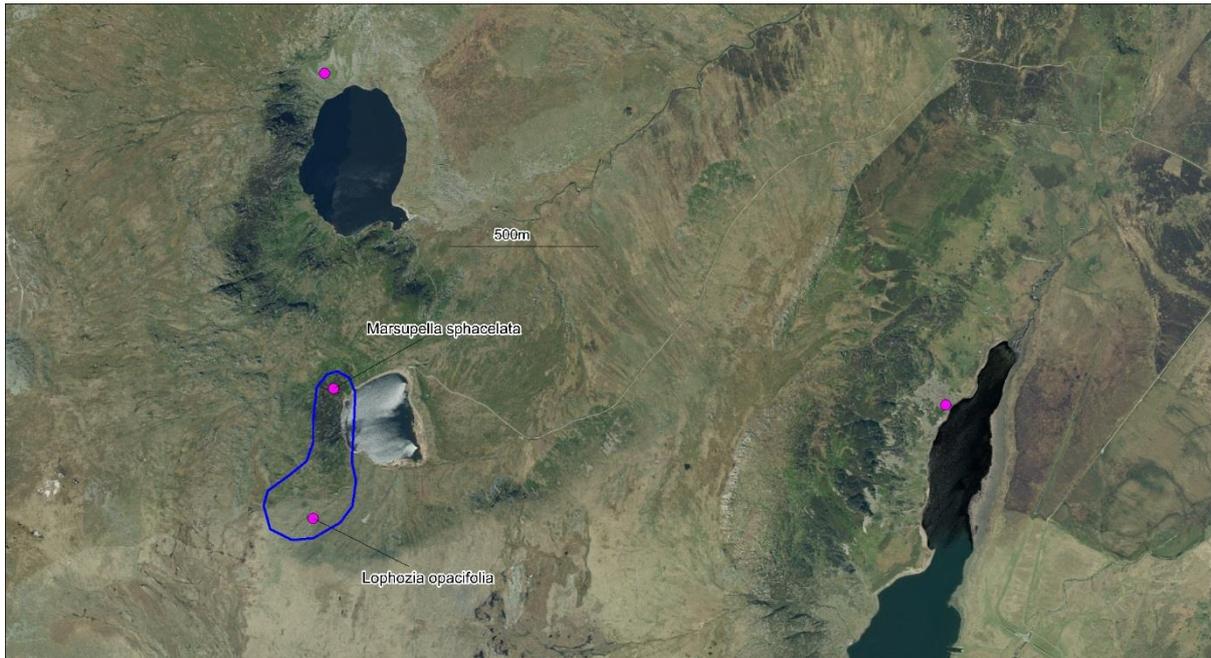


Figure 18: the area of Craig-fawr covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Lophozia opacifolia and Marsupella sphacellata. Hygrobiella laxifolia and Schistidium strictum were also seen.

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce,
New for Wales

Location: Craig-fawr

Altitude:

GPS: SH69916534

Habitat: bare soil on crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 10th June 2015

Target species: *Marsupella sphacellata*

Threat status: Nationally Scarce

Location: Craig-fawr

Altitude:

GPS: SH69986578

Habitat: wet rock on crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

4.18 Cwm Cywion (SSSI unit Pentre)

Surveyed on 12th June by **Mark Lawley**, Gail Quartly-Bishop, Tristan ap Rheinallt, Dafydd Roberts, **Gordon Rothero** and Julie Smith. Both the eastern (SH6360) and western (SH6260) parts of the cwm were explored, with most time spent on the lower-lying basalt in SH6360, but more notable species found in SH6260.

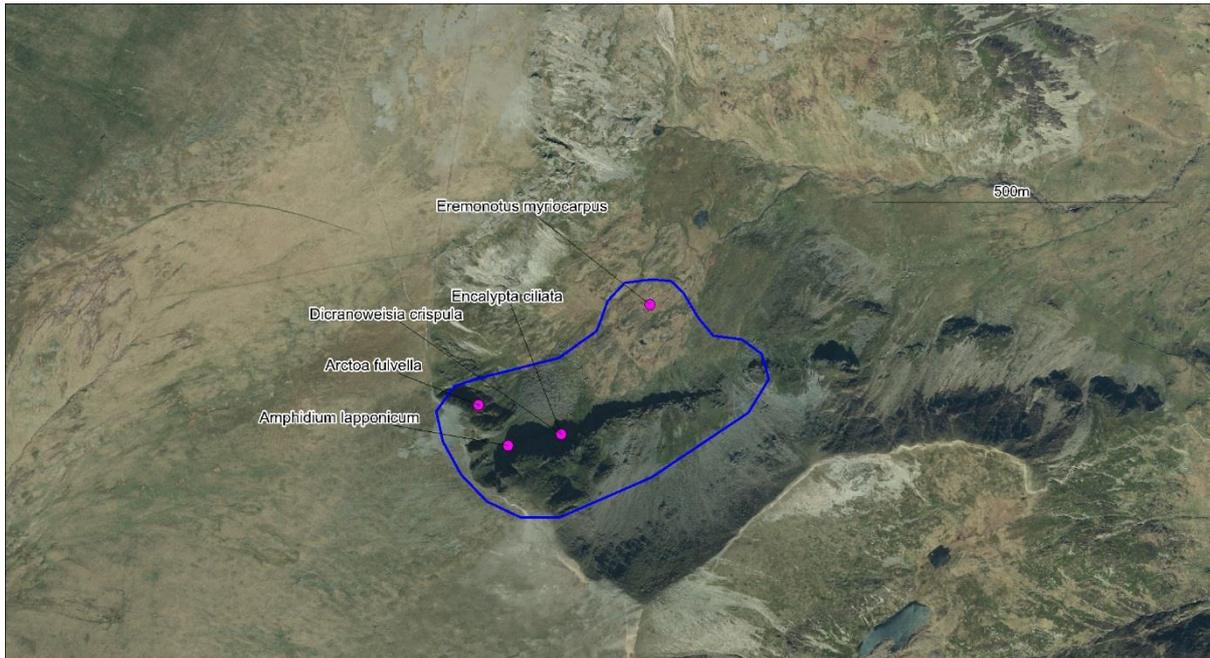


Figure 19: the area of Cwm Cywion covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Amphidium lapponicum, Arctoa fulvella, Dicranoweisia crispula, Encalypta ciliata, Eremonotus myriocarpus and Plagiothecium platyphyllum. Bazzania tricrenata, Distichium capillaceum, Grimmia torquata and Schistidium strictum were also recorded.

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwm Cywion

Altitude: 760 m

GPS: SH62856003

Habitat: crevice in base-rich crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Arctoa fulvella*

Threat status: Nationally Scarce

Location: Cwm Cywion

Altitude: 720 m

GPS: SH628601

Habitat: base-rich crag

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Dicranoweisia crispula*

Threat status: Nationally Scarce
Welsh Red List (Endangered)

Location: Cwm Cywion

Altitude: 740 m

GPS: SH62946005

Habitat: base-rich boulder below crag

Abundance: 4 cushions

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Encalypta ciliata*

Threat status: Nationally Scarce

Location: Cwm Cywion

Altitude: 740 m

GPS: SH62946005

Habitat: base-rich boulder below crag

Abundance: two small patches

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs:

location and close-up of *Encalypta ciliata* at Cwm Cywion



Site: Eryri SSSI

Date: 12th June 2015

Target species: *Eremonotus myriocarpus*

Threat status: Nationally Scarce

Location: Cwm Cywion

Altitude: 620 m

GPS: SH63096027

Habitat: irrigated base-rich slab

Abundance: a very small colony

Associated species: growing through *Gymnostomum aeruginosum*

Estimated health/viability of population(s): not noted

Photographs: none

4.19 Cwm Clyd (SSSI unit Cwm Idwal)

Surveyed on 12th June by Gordon Haycock, **Rory Hodd**, Emily Meilleur, **Sharon Pilkington** and Lucia Ruffino. The lakes and the crags above them were surveyed in reasonable detail.

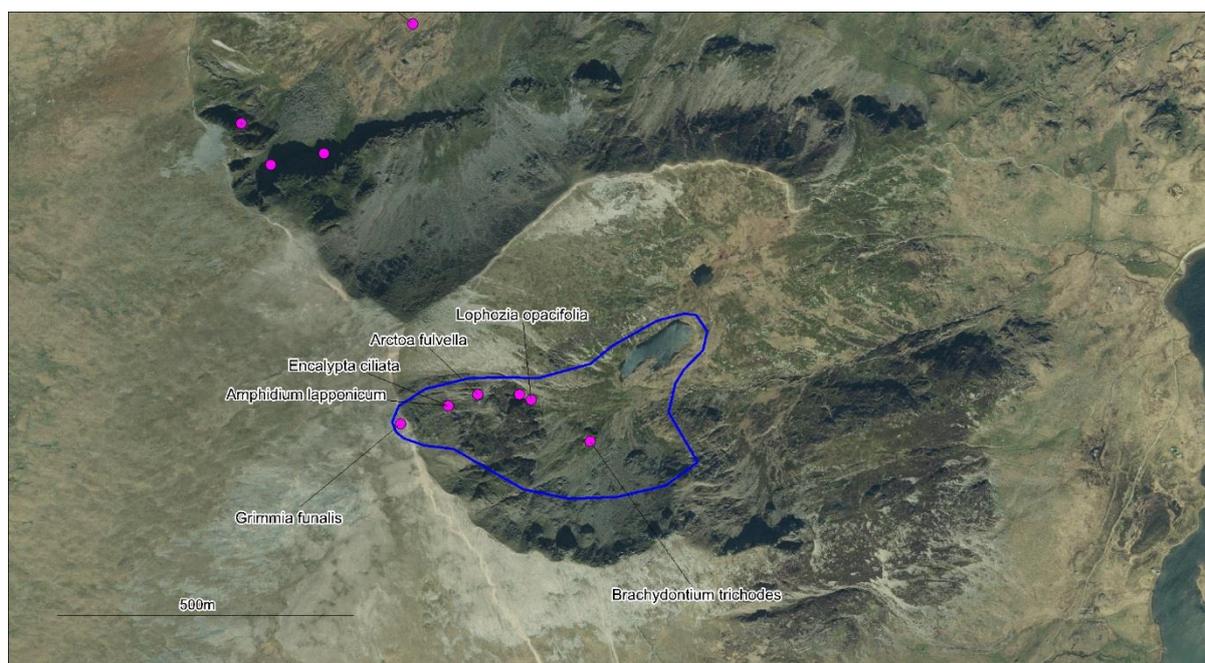


Figure 20: the area of Cwm Clyd covered by the survey (blue) and locations of notable species.

Notable records (those seen in 2015 are underlined): Amphidium lapponicum, Arctoa fulvella, Brachydontium trichodes, Encalypta ciliata, Grimmia funalis, Herbertus stramineus, Lophozia opacifolia, Marsupella adusta, Marsupella stableri and Molendoa warburgi. Anastrophyllum minutum, Grimmia torquata, Herbertus hutchinsiae, Scapania aequiloba and Schistidium strictum were also recorded.

A good number of species were newly recorded from this previously under-explored cwm, including Amphidium lapponicum, Arctoa fulvella, Encalypta ciliata and Herbertus stramineus. There are similarities to the adjacent upper parts of Cwm Idwal, and further exploration of Cwm Clyd would be worthwhile.

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Amphidium lapponicum*

Threat status: Nationally Scarce

Location: Cwm Clyd

Altitude:

GPS: SH63155962

Habitat: base-rich rockface

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Arctoa fulvella*

Threat status: Nationally Scarce

Location: Cwm Clyd

Altitude:

GPS: SH63205964

Habitat: crevices on base-rich rockface

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Brachydontium trichodes*

Threat status: Nationally Scarce

Location: Cwm Clyd

Altitude:

GPS: SH63395956

Habitat: small rocks

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Encalypta ciliata*

Threat status: Nationally Scarce

Location: Cwm Clyd

Altitude:

GPS: SH63155962

Habitat: base-rich rockface

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Grimmia funalis*
(Vulnerable)

Threat status: Welsh Red List

Location: Cwm Clyd

Altitude:

GPS: SH63075959

Habitat: base-rich rockface

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Herbertus stramineus*

Threat status: very rare in Wales

Location: Cwm Clyd

Altitude:

GPS: SH63325960

Habitat: base-rich rockface

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

Site: Eryri SSSI

Date: 12th June 2015

Target species: *Lophozia opacifolia*

Threat status: Nationally Scarce,
New for Wales

Location: Cwm Clyd

Altitude:

GPS: SH63295963

Habitat: steep montane slope

Abundance: not noted

Associated species: not noted

Estimated health/viability of population(s): not noted

Photographs: none

5. Discussion

The results were remarkably impressive, particularly for hotspots such as Pant Ifan, Cwmglas-mawr & Cwmglas-bach Carneddau, Ffynnon Lloer and Cwm Ffynnon Llyffant (Table 2). Many new colonies of rare and scarce species were found – the vast majority localised to 100m or even 10m accuracy – and many other populations of notable species that were previously known only from broad cwms were rediscovered and pinpointed. The survey provides evidence of the outstanding richness of the moss and liverwort floras of Eryri, and by visiting a series of localities away from known hotspots reinforces the importance of sites such as Cwm Idwal, Clogwyn Du'r Arddu and Cwm Glas Mawr, which have long been considered the richest bryophyte sites in the SSSI.

Table 2: totals of notable bryophyte species recorded from each section of Eryri SSSI covered by the survey in 2015.

Section	Cwm/summit	Count of 2015	notable species 1800-2015
Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	17	27
Section 4.14	Ffynnon Llyffant	14	19
Section 4.10	Pant Ifan	13	15
Section 4.7	Cwm Cneifion/The Nameless Cwm	8	13
Section 4.13	Craig yr Ysfa	6	10
Section 4.19	Cwm Clyd	6	9
Section 4.6	Cwm Bochllwyd & north cliffs of Glyder Fach	4	9
Section 4.15	Carnedd Llewellyn summit	8	8
Section 4.18	Cwm Cywion	7	8
Section 4.5	Cwm Ffynnon Lloer	5	8
Section 4.1	Creigiau Gleision	2	8
Section 4.4	Ffynnon Lloer	7	7
Section 4.16	Craig y Dulyn	2	7
Section 4.3	Craig Eigiau	5	5
Section 4.8	Y Gribin	3	3
Section 4.12	Cwm Llugwy & Ffynnon Llugwy	2	3
Section 4.17	Craig Fawr	2	2
Section 4.9	Llyn y Cwn	2	2
Section 4.2	Clogwyn Du	1	1

The first Welsh records of *Lophozia opacifolia*, *Pseudoleskeella rupestris* and *Oxystegus hibernicus/minor* were made, along with the first modern Welsh records of *Hedwigia striata* and *Pterigynandrum filiforme*. New populations of the Section 42 species *Bryum muehlenbeckii*, *Fossombronia fimbriata*, *Leiocolea fitzgeraldiae* and *Paraleptodontium recurvifolium* were found, although only *B. muehlenbeckii* was within Eryri SSSI. New sites for many other scarce upland species, including *Arctoa fulvella*, *Dicranoweisia crispula*, *Grimmia incurva*, *Marsupella adusta* and *Racomitrium macounii*, were discovered. Perhaps equally significant was the failure to find a number of upland bryophytes in the cwms where they had previously been found: the apparent loss of *Scapania nimbosa* from Cwm Cneifion or Pant Ifan, *Scapania ornithopodioides* and *Isopterygiopsis muelleriana* from Cwmglas-mawr Carneddau, *Anthelia juratzkana* from Creigiau Gleision, and *Hypnum hamulosum* from Creigiau Gleision, Cwm Ffynnon Lloer and Cwmglas-mawr Carneddau is a particular concern. Given the large size of all of these sites, there is a good chance that these species remain, but were missed during the 2015 survey. *Conostomum tetragonum* really does appear to have become extinct in Wales, although it could conceivably cling on somewhere along the upper edge of Pant Ifan or Cwm Cneifion.

When *A Bryophyte Red Data List for Wales* (Bosanquet & Dines, 2011) was written, there had been little bryophyte recording in north Wales over the preceding 20 years and many species that had been widely reported in the 1960s and 1970s had no localised records from 1980 onwards. Strict adherence to the IUCN threat criteria would have led to many species with a northern distribution in Wales being classed as having suffered significant declines (over a 30 year period). This was recognised by Bosanquet & Dines, who downgraded many of these declining species by one threat category (species meeting the Endangered criteria were downgraded to Vulnerable

etc.). Nevertheless, a significant number of species were considered to be threatened in Wales because of apparent declines, and there was particular concern that many of these were close to the southern edge of their British range and were thus vulnerable to the effects of climate change. Nine records of *Grimmia funalis* and five records of *Marsupella adusta* suggest that neither has declined nearly as much as records previously suggested, and neither warrants their Vulnerable status in Wales. The same is probably true of the Near Threatened *Bazzania tricrenata*, which was found on seven crags, although its hepatic heath habitat has undoubtedly declined in Eryri due to heavy grazing and there is little doubt that the *Bazzania* will have declined to some extent. A wider-ranging mapping survey of dwarf shrub heath, taking in *B. tricrenata*, *Herbertus hutchinsiae*, *Anastrepta orcadensis* and *Scapania ornithopodioides* would be very worthwhile. Both *Pterigynandrum filiforme* and *Philonotis seriata* were listed as Regionally Extinct by Bosanquet & Dines, and their rediscovery means that both should now be regarded as Critically Endangered.

Monitoring of the SSSI bryophyte feature should focus on a subset of sites and a subset of species. One option would be to set targets based on team coverage of, say, the 10 richest cwms, with the aim of locating a certain number of populations of each of more widespread species – *Amphidium lapponicum*, *Arctoa fulvella*, *Brachydontium trichodes*, *Dicranoweisia crispula*, *Ditrichum zonatum*, *Eremonotus myriocarpus*, *Grimmia incurva*, *Lophozia opacifolia* and *Marsupella adusta* – combined with direct monitoring of colonies of rarer species – *Bartramia halleriana*, *Bryum muehlenbeckii*, *Bryum weigeli*, *Encalypta ciliata*, *Grimmia elongata*, *Hedwigia striata*, *Kiaeria falcata*, *Marsupella stableri*, *Molendoa warburgii*, *Philonotis seriata*, *Plagiopus oederianus*, *Plagiothecium cavifolium*, *Plagiothecium platyphyllum*, *Pohlia ludwigii*, *Pseudoleskeella rupestris*, *Pterigynandrum filiforme*, *Scapania uliginosa* and

other species recorded by Rothero (2011) and previous surveyors. Monitoring ecologically indicative species is to be encouraged: these include pioneer liverworts of mountain tops such as *M. adusta* and *M. stableri*, indicators of a healthy natural lake environment such as *B. muehlenbeckii*, and species that play a significant role in natural spring-fed wetlands including *B. weigellii* and *S. uliginosa*. Further discussion between NRW protected sites officers and the non-vascular plant ecologist is needed to set these targets and decide which species to include.

The vast scale of the cwms and summits of Eryri means that detailed recording, even by teams of surveyors, will always remain a challenge, particularly given the size of many of the target species, with *Marsupella adusta*, *M. stableri* and *Ditrichum zonatum* being small even by bryological standards. Taxonomic complexities were also apparent, and *Bryum muehlenbeckii*, *Hedwigia striata*, *Lophozia opacifolia* and *Oxystegus hibernicus/minor* were all subject to particular scrutiny during the week. An abiding feeling from the week was the large scale and topographic complexity of each cwm and how little area was actually covered by each group, even when two or three national experts were present and despite the outstanding weather. Additional exploration of the bryophyte flora of Eryri would undoubtedly reap rewards.

The survey shows the effectiveness and efficiency of coordinated survey by specialists from Natural Resources Wales and experts from the learned societies: in this case the British Bryological Society. Coverage was far more thorough than if the survey had been carried out by a solo expert, and there was the spin-off benefit of many local bryologists gaining knowledge of the appearance and habitat of rare species from national experts.

6. References

Bosanquet SDS 2014, *Bryophyte species forming Eryri SSSI Feature*. Unpublished report, Natural Resources Wales, Bangor.

Bosanquet SDS, Dines T 2011, *A Bryophyte Red Data List for Wales*. Plantlife, Salisbury.

Pescott O, Preston CD (in prep.), *A Revised list of Nationally Rare and Nationally Scarce bryophytes*. [list circulated as NS_NR_2015_FINAL_06.07.2015_v2.XLSX on 6th July 2015].

Rothero GP 2011, *A survey of boreal bryophytes on Snowdon*. CCW Science Report no. 981, Bangor.

Appendix 1: notable species recorded in each cwm during the 2015 Eryri SSSI bryophyte survey

Species	Status	Section	Location	Grid ref
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.5	Cwm Ffynnon Lloer	SH66096203
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645817
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645817
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.10	Pant Ifan	SH64215828
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66516363
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH67036318
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68606457
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68466444
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68476446
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH62856003
<i>Amphidium lapponicum</i>	Nationally scarce	Section 4.19	Cwm Clyd	SH63155962
<i>Antitrichia curtispindula</i>	Wales Endangered	Section 4.3	Craig Eigiau	SH7165
<i>Antitrichia curtispindula</i>	Wales Endangered	Section 4.4	Ffynnon Lloer	SH66196213
<i>Antitrichia curtispindula</i>	Wales Endangered	Section 4.4	Ffynnon Lloer	SH66206214
<i>Antitrichia curtispindula</i>	Wales Endangered	Section 4.16	Craig y Dulyn	SH69956685
<i>Antitrichia curtispindula</i>	Wales Endangered	Section 4.16	Craig y Dulyn	SH6966
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645809
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.10	Pant Ifan	SH64055829
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66456360
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66456360
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66556363

<i>Arctoa fulvella</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH628601
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH6360
<i>Arctoa fulvella</i>	Nationally scarce	Section 4.19	Cwm Clyd	SH63205964
<i>Bartramia halleriana</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66446359
<i>Bartramia halleriana</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66976318
<i>Bartramia halleriana</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH67246322
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.4	Ffynnon Lloer	SH66156205
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.5	Cwm Ffynnon Lloer	SH66156206
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.6	Cwm Bochllwyd & north cliffs of Glyder Fach	SH6558
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.6	Cwm Bochllwyd & north cliffs of Glyder Fach	SH6559
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH6458
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64615811
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66556369
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6663
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66536376
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66546373
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66556370
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66566368
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66566366
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66556366
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66486362
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66476362
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66286350

<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66296345
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66816324
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6763
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6663
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.15	Carnedd Llewellyn summit	SH682645
<i>Bazzania tricrenata</i>	Wales Near Threatened	Section 4.18	Cwm Cywion	SH6260
<i>Brachydontium trichodes</i>	Nationally scarce	Section 4.5	Cwm Ffynnon Lloer	SH66046192
<i>Brachydontium trichodes</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64655809
<i>Brachydontium trichodes</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645809
<i>Brachydontium trichodes</i>	Nationally scarce	Section 4.10	Pant Ifan	SH64105826
<i>Brachydontium trichodes</i>	Nationally scarce	Section 4.19	Cwm Clyd	SH63395956
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.4	Ffynnon Lloer	SH66096208
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.4	Ffynnon Lloer	SH66136212
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.4	Ffynnon Lloer	SH66206206
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.4	Ffynnon Lloer	SH66206206
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.13	Craig yr Ysfa	SH69796413
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68836457
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68836456
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68586453
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH69156444
<i>Bryum muehlenbeckii</i>	S42, Nationally Scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH69136444
<i>Bryum riparium</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH67116317
<i>Bryum riparium</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68866449

<i>Bryum riparium</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68586457
<i>Bryum weigelii</i>	Nationally scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68446443
<i>Calypogeia azurea</i>	Nationally scarce, Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6663
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645816
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645816
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66646377
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.14	Ffynnon Llyffant	SH6864
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.18	Cwm Cywion	SH62946005
<i>Dicranoweisia crispula</i>	Nationally scarce, Wales Endangered	Section 4.18	Cwm Cywion	SH6360
<i>Ditrichum zonatum</i>	Nationally scarce	Section 4.10	Pant Ifan	SH641582
<i>Ditrichum zonatum</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66096366
<i>Ditrichum zonatum</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68466443
<i>Encalypta ciliata</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH62946005
<i>Encalypta ciliata</i>	Nationally scarce	Section 4.19	Cwm Clyd	SH63155962
<i>Eremonotus myriocarpus</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64655809
<i>Eremonotus myriocarpus</i>	Nationally scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645809
<i>Eremonotus myriocarpus</i>	Nationally scarce	Section 4.10	Pant Ifan	SH64275820
<i>Eremonotus myriocarpus</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH63096027
<i>Glyphomitrium daviesii</i>	Wales Endangered	Section 4.3	Craig Eigiau	SH7204765724
<i>Grimmia elongata</i>	Nationally rare, Wales Vulnerable	Section 4.15	Carnedd Llewellyn summit	SH6819864519
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.2	Clogwyn Du	SH7255162809
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.3	Craig Eigiau	SH7165
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.8	Y Gribin	SH650592
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.8	Y Gribin	SH650592

<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.9	Llyn y Cwn	SH63735848
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.10	Pant Ifan	SH64215828
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66516360
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66556363
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66746346
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.13	Craig yr Ysfa	SH69356375
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.14	Ffynnon Llyffant	SH68536464
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.14	Ffynnon Llyffant	SH68466444
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.14	Ffynnon Llyffant	SH68466443
<i>Grimmia funalis</i>	Wales Vulnerable	Section 4.19	Cwm Clyd	SH63075959
<i>Grimmia incurva</i>	Nationally scarce	Section 4.4	Ffynnon Lloer	SH66136207
<i>Grimmia incurva</i>	Nationally scarce	Section 4.4	Ffynnon Lloer	SH66096208
<i>Grimmia incurva</i>	Nationally scarce	Section 4.4	Ffynnon Lloer	SH66146207
<i>Grimmia incurva</i>	Nationally scarce	Section 4.5	Cwm Ffynnon Lloer	SH66156206
<i>Grimmia incurva</i>	Nationally scarce	Section 4.5	Cwm Ffynnon Lloer	SH66096203
<i>Grimmia incurva</i>	Nationally scarce	Section 4.10	Pant Ifan	SH64245795
<i>Grimmia incurva</i>	Nationally scarce	Section 4.13	Craig yr Ysfa	SH69476383
<i>Grimmia incurva</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH68956451
<i>Grimmia incurva</i>	Nationally scarce	Section 4.15	Carnedd Llewellyn summit	SH6819864519
<i>Hedwigia striata</i>	Nationally rare, Wales Regionally Extinct	Section 4.4	Ffynnon Lloer	SH66226215
<i>Hedwigia striata</i>	Nationally rare, Wales Regionally Extinct	Section 4.4	Ffynnon Lloer	SH66286202
<i>Hedwigia striata</i>	Nationally rare, Wales Regionally Extinct	Section 4.4	Ffynnon Lloer	SH66166211
<i>Heterocladium wulfsbergii</i>	Nationally scarce	Section 4.3	Craig Eigiau	SH7164
<i>Heterocladium wulfsbergii</i>	Nationally scarce	Section 4.12	Cwm Llugwy & Ffynnon Llugwy	SH6914463083

<i>Heterocladium wulfsbergii</i>	Nationally scarce	Section 4.14	Ffynnon Llyffant	SH69236445
<i>Hypnum callichroum</i>	Wales Vulnerable	Section 4.16	Craig y Dulyn	SH6966
<i>Kiaeria falcata</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64085827
<i>Kiaeria falcata</i>	Nationally scarce, Wales Endangered	Section 4.15	Carnedd Llewellyn summit	SH683643
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64645817
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH64655807
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.10	Pant Ifan	SH63995830
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.10	Pant Ifan	SH64025829
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66326343
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.14	Ffynnon Llyffant	SH68446443
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.14	Ffynnon Llyffant	SH68636436
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.14	Ffynnon Llyffant	SH68626433
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.14	Ffynnon Llyffant	SH68626433
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.14	Ffynnon Llyffant	SH68736447
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.15	Carnedd Llewellyn summit	SH68296450
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.17	Craig Fawr	SH69916534
<i>Lophozia opacifolia</i>	New for Wales, Nationally Scarce	Section 4.19	Cwm Clyd	SH63295963
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.4	Ffynnon Lloer	SH66146206
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.5	Cwm Ffynnon Lloer	SH66156206
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.10	Pant Ifan	SH64145823
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.10	Pant Ifan	SH64235825
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66506380

<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6763
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.15	Carnedd Llewellyn summit	SH68356435
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.15	Carnedd Llewellyn summit	SH68366438
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.15	Carnedd Llewellyn summit	SH68206458
<i>Marsupella adusta</i>	Nationally scarce, Wales Vulnerable	Section 4.15	Carnedd Llewellyn summit	SH68356436
<i>Marsupella sphacelata</i>	Nationally scarce, Wales Vulnerable	Section 4.17	Craig Fawr	SH69986578
<i>Marsupella sprucei</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH6763
<i>Marsupella sprucei</i>	Nationally scarce	Section 4.15	Carnedd Llewellyn summit	SH68376451
<i>Marsupella sprucei</i>	Nationally scarce	Section 4.13	Craig yr Ysfa	SH69876357
<i>Marsupella stableri</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64275820
<i>Marsupella stableri</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64105826
<i>Molendoa warburgii</i>	Nationally scarce, Wales Endangered	Section 4.7	Cwm Cneifion/The Nameless Cwm	SH648589
<i>Molendoa warburgii</i>	Nationally scarce, Wales Endangered	Section 4.8	Y Gribin	SH648590
<i>Molendoa warburgii</i>	Nationally scarce, Wales Endangered	Section 4.8	Y Gribin	SH650592
<i>Molendoa warburgii</i>	Nationally scarce, Wales Endangered	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66736340
<i>Oedipodium griffithianum</i>	Nationally scarce, Wales Near Threatened	Section 4.10	Pant Ifan	SH64145824
<i>Philonotis seriata</i>	Nationally scarce, Wales Regionally Extinct	Section 4.14	Ffynnon Llyffant	SH68806457
<i>Philonotis seriata</i>	Nationally scarce, Wales Regionally Extinct	Section 4.15	Carnedd Llewellyn summit	SH68246461
<i>Plagiopus oederianus</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66516366
<i>Plagiothecium cavifolium</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66386335
<i>Plagiothecium platyphyllum</i>	Nationally scarce, Wales Endangered	Section 4.6	Cwm Bochlwyd & north cliffs of Glyder Fach	SH6533958346
<i>Platyhypnidium lusitanicum</i>	Nationally scarce	Section 4.12	Cwm Llugwy & Ffynnon Llugwy	SH6914463083

<i>Platyhypnidium lusitanicum</i>	Nationally scarce	Section 4.13	Craig yr Ysfa	SH69766403
<i>Pohlia ludwigii</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64225825
<i>Pohlia ludwigii</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64175825
<i>Pohlia ludwigii</i>	Nationally scarce, Wales Endangered	Section 4.10	Pant Ifan	SH64135824
<i>Pohlia wahlenbergii</i> var. <i>glacialis</i>	Nationally scarce, Wales Critically Endangered	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66986316
<i>Pohlia wahlenbergii</i> var. <i>glacialis</i>	Nationally scarce, Wales Critically Endangered	Section 4.14	Ffynnon Llyffant	SH6864
<i>Pseudoleskeella rupestris</i>	New for Wales, Nationally Rare	Section 4.8	Y Gribin	SH650592
<i>Pterigynandrum filiforme</i>	Nationally scarce, Wales Regionally Extinct	Section 4.4	Ffynnon Lloer	SH66226215
<i>Racomitrium macounii</i>	Nationally rare, Wales Vulnerable	Section 4.6	Cwm Bochlwyd & north cliffs of Glyder Fach	SH6559
<i>Racomitrium macounii</i>	Nationally rare, Wales Vulnerable	Section 4.9	Llyn y Cwn	SH63715849
<i>Racomitrium macounii</i>	Nationally rare, Wales Vulnerable	Section 4.9	Llyn y Cwn	SH63675853
<i>Racomitrium macounii</i>	Nationally rare, Wales Vulnerable	Section 4.14	Ffynnon Llyffant	SH69236445
<i>Scapania uliginosa</i>	Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68786453
<i>Scapania uliginosa</i>	Wales Endangered	Section 4.14	Ffynnon Llyffant	SH68706443
<i>Schistidium platyphyllum</i>	Nationally scarce	Section 4.3	Craig Eigiau	SH7164
<i>Sphagnum angustifolium</i>	Nationally scarce	Section 4.18	Cwm Cywion	SH6360
<i>Sphagnum platyphyllum</i>	Nationally scarce	Section 4.11	Cwmglas-mawr & Cwmglas-bach Carneddau	SH66416389
<i>Sphagnum platyphyllum</i>	Nationally scarce	Section 4.13	Craig yr Ysfa	SH69836408
<i>Tortella bambergeri</i>	Nationally scarce	Section 4.1	Creigiau Gleision	SH73156228
<i>Tortella bambergeri</i>	Nationally scarce	Section 4.6	Cwm Bochlwyd & north cliffs of Glyder Fach	SH65325831