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PAPER TO NOTE H
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Bioamrywiaeth Cymru
Biodiversity Wales
PARTNERIAETH BIOAMRYWIAETH CYMRU
WALES BIODIVERSITY PARTNERSHIP

Title: Changes to Bryophyte S42 List

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Background/Progress

The original Section 42 bryophyte list was derived from the UK BAP list and only a single Welsh priority was added – Prince of Wales Feather-moss *Leptodon smithii*. Since then, six UK BAP mosses were added to the S42 list in 2011; 3 were originally believed to be extinct and 3 were discovered new to Wales between 2008 and 2010.

The production of *A Bryophyte Red Data List for Wales* (Bosanquet & Dines, 2011) has allowed the identification of 16 additional mosses and liverworts that are under serious threat in Wales. Addition of these to the Section 42 list will allow action to be taken to protect them. Significant threats to them include climate change, increasingly coarse fen and dune vegetation, changes in mining activity and water level changes in ravine woodlands. One more UK BAP moss was discovered new to Wales in early 2011 and therefore also needs to be added to the S42 list.

Oceanic/Atlantic woodlands are one of Wales' most important habitats and many have already been identified as SAC and SSSI. Oceanic bryophytes have long been considered 'safe' because the deep ravines in which they grow are relatively remote from man's influence, and no oceanic bryophytes were included on the UK BAP list because of this perceived lack of threat. There is now a significant threat in the form of Hydro Electric Power (HEP) schemes, which have the potential to reduce the critical humidity level in ravine systems and thus damage desiccation intolerant mosses and liverworts. Recognition of the rarest oceanic species on the Section 42 list is one way of protecting sites, but the habitat as a whole is in need of additional protection. An 'Oceanic Ravine Bryophyte Assemblage' has been identified using combinations of species in a similar way to the Section 42 'Lobarion' lichen community.

The S42 list does not include species thought to be extinct in Wales. Two extinct species therefore need to be removed from the list. In addition, two species may warrant removal because of recent downgrading of their GB conservation status (Hodgetts, 2011) and because their apparent UK declines are likely to be artefacts of local recording.

Full details of the selection of proposed additions to the Section 42 bryophyte list are given in the Excel document 'Section 42 bryophyte section 2011'. If the following suggestions are adopted then there would be 52 bryophyte species on the Section 42 list, plus the Oceanic Ravine markers. This

compares with 51 birds, 186 invertebrates, 78 vascular plants and 69 lichens. Suggested additions and deletions are as follows:

1. Current UK BAP species newly recorded in Wales

This species should be added to the S42 list:

Taxon group	UK BAP species to add to S42 list	Year and location of record	Source of information
Bryophyte	*Orthotrichum pumilum* (Dwarf Bristle-moss)	Abergavenny, 2011	Sam Bosanquet

2. Species identified as meeting Section 42 criteria following the production of *A Bryophyte Red Data List for Wales*

These species should be added to the S42 list:

Taxon group	UK BAP species to add to S42 list	Section 42 evidence
Bryophyte	*Aloina rigida* (Rigid Aloe-moss)	Only extant in Wales at one site, CR on *Bryophyte Red Data List for Wales*
Bryophyte	*Bryum intermedium* (Many-seasoned Thread-moss)	The last Welsh record came from Flintshire in 1988, all 6 dune systems where it grew have lost their population
Bryophyte	*Bryum muehlenbeckii* (Muehlenbeck's Thread-moss)	Two Welsh colonies are disjunct from Scotland. This species requires regular inundation and is especially vulnerable to HEP developments.
Bryophyte	*Buxbaumia aphylla* (Brown Shield-moss)	Only three Welsh records, one 19th century, not relocated in 2007 at its only 1990s site nor in 2009 at its 1960s site. The ecology of this species in GB/Wales urgently needs investigation.
Bryophyte	*Cephaloziella massalongii* (Lesser Copperwort)	2011 survey revealed colonies at 6 Welsh sites, but most populations are exceptionally small and vulnerable
Bryophyte	*Dicranodontium asperulum* (Orange Bow-moss)	The population at Llyn Bochlwyd is the southern most in the UK and is thought to be vulnerable to climate change or changes to the lake
Bryophyte	*Fossombronia fimbriata* (Fragile Frillwort)	More than half of recent (post-1980) British records are from 6 sites in Pembrokeshire. No Welsh colony has more than 10 plants and the entire Welsh population is <40 individuals (21 in Pembs, 1 in Carms, 3 in Brecs and <10 in Caerns)
Bryophyte	*Grimmia arenaria* (Nodding Donn's Grimmia)	There are recent (post-1980) records from only 4 of the 8 Welsh sites, and three of these colonies consist of fewer than 10 cushions. The small population size and vulnerable habitat of drystone walls make this moss highly threatened
Bryophyte	*Leiocolea fitzgeraldiae* (Fitzgerald's Notchwort)	Cwm Idwal is at the southern edge of the global range of *Leiocolea fitzgeraldiae*, making this species especially vulnerable to climate change in Wales.
Bryophyte	*Meesia uliginosa* (Broad-nerved Hump-moss)	The only Welsh site, Tywyn Aberffraw, is the southernmost in the UK. The GB decline has been most severe in the south. Sand dune

		habitats are especially vulnerable and difficult to manage.
Bryophyte	*Paraleptodontium recurvifolium* (Drooping-leaved Beard-moss)	The only recent Welsh records come from Cwm Dyli (1988) and Rhaeadr Ogwen (1990), and populations at 6 other Welsh sites have been lost in the 20th century. At least 3 former sites are ravines with HEP proposals.
Bryophyte	*Pseudocalliergon lycopodioides* (Large Hook-moss)	Extant at single sites on Ynys Mon and in Glamorgan, but lost from Pembrokeshire since 1960s. The remaining sites are dune systems, which are highly vulnerable to ecological change
Bryophyte	*Radula voluta* (Pale Scalewort)	Most of the 12 Welsh sites have recent records, but this species has a very restricted range in Wales, UK and Europe and is highly vulnerable.
Bryophyte	*Sematophyllum demissum* (Prostrate Signal-moss)	Entire GB population is in north Wales. Most colonies are extremely small, often restricted to 1 or 2 rocks at a site, and one site supports the majority of the Welsh (and therefore GB) population. This species is highly vulnerable to Hydro Electric schemes.
Bryophyte	*Tomentypnum nitens* (Woolly Feather-moss)	All 11 Welsh sites were revisited in 2008-2010, only 4 colonies are still extant, there are rank vegetation and scrub invasion problems at all sites, exacerbated by air pollution.
Bryophyte	*Tortula canescens* (Dog Screw-moss)	Severely threatened by scrub invasion on coastal slopes. Perhaps lost from all 6 recorded Welsh sites already, but 1970s records from two need to be followed up.

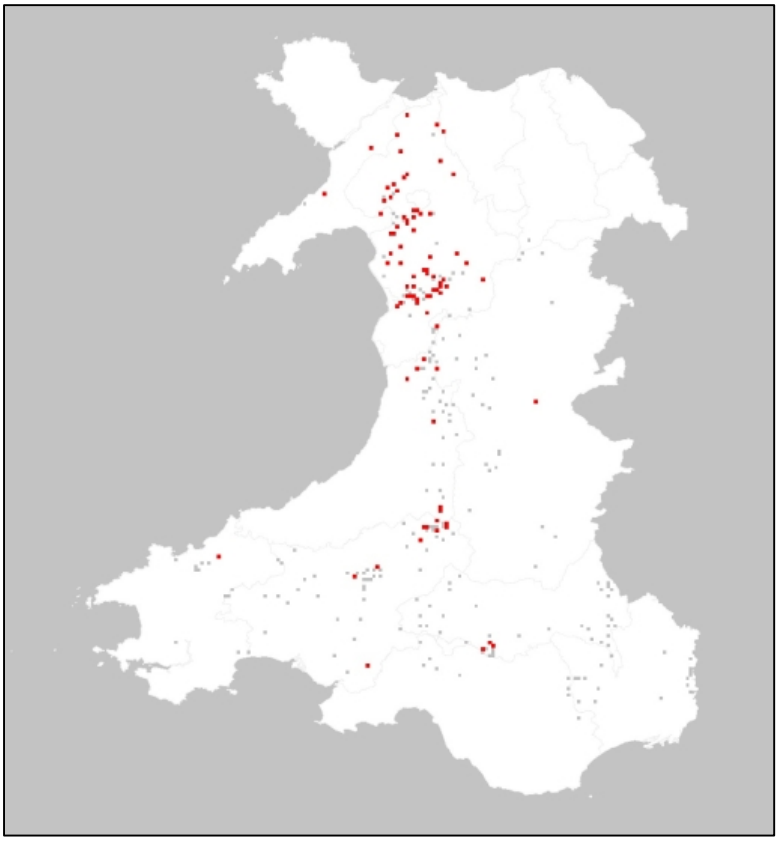
4. The Oceanic Ravine Bryophyte Assemblage

An Oceanic Ravine Bryophyte habitat is likely to be present if a site supports:-

Any one of the following species
Aphanolejeunea microscopica
Campylopus setifolius
Daltonia splachnoides
Drepanolejeunea hamatifolia
Hageniella micans
Harpalejeunea molleri
Leptoscyphus cuneifolius
Metzgeria leptoneura
Paraleptodontium recurvifolium
Plagiochila exigua
Plagiochila heterophylla
Radula voluta
Sematophyllum demissum
Three or more of the following species
Adelanthus decipiens
Andreaea megistospora
Dicranum scottianum
Fissidens polyphyllus
Jubula hutchinsiae
Lepidozia cupressina
Lepidozia pearsonii
Radula aquilegia

Five or more of the following species
Anastrepta orcadensis
Colura calyptrifolia
Douinia ovata
Heterocladium wulfsbergii
Hygrobiella laxifolia
Hygrohypnum eugyrium
Isothecium holtii
Marchesinia mackaii
Plagiochila bifaria
Plagiochila punctata
Platyhypnidium lusitanicum
Porella pinnata
Rhabdoweisia crenulata
Sphenolobopsis pearsonii
Eight or more of the following species
Bazzania trilobata
Fissidens bryoides var. *caespitans*
Hyocomium armoricum
Lejeunea lamacerina
Lejeunea patens
Lophocolea fragrans
Plagiochila spinulosa
Saccogyna viticulosa
Scapania gracilis
Solenostoma paroicum
Sphagnum quinquefarium

The Section 42 Oceanic Ravine Bryophyte habitat, thus defined would be present at 85 sites in Wales, as mapped below (red squares: Oceanic Ravine Bryophyte Assemblage present; grey squares: ravine assessed but found not to support the Assemblage):-



4. Species extinct in Wales

These species should be removed from the S42 list:

Taxon group	S42 species extinct in Wales	Evidence
Bryophyte	*Atrichum angustatum* (Lesser Smoothcap)	Only Welsh record was poorly localised from 1926; presumed extinct and no actions suitable
Bryophyte	*Fissidens serrulatus* (Large Atlantic Pocket-moss)	Only Welsh site, in Meirionydd, resurveyed in 2009; presumed extinct and no actions suitable

5. Species for which evidence of decline is likely to be an artefact

These species should be removed from the S42 list:

Taxon group	S42 species extinct in Wales	Evidence
Bryophyte	*Grimmia elongata* (Brown Grimmia)	Downgraded to VU in 2011 GB Redlist and evidence for decline is based on paucity of revisits to remote localities
Bryophyte	*Rhytidiadelphus subpinnatus* (Scarce Turf-moss)	Downgraded to NT in 2011 GB Redlist as new sites have been discovered and the decline is probably not genuine

Plan/Proposals

We ask that WPB formally accept the above revisions and that the Section 42 list available for download on the WBP website is amended to include them.

Action Requested

- Approve us to carry on as suggested above YES/NO