

Recent bryophyte records from water bodies in south Wales

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Background

Reservoirs within the Brecon Beacons National Park (BBNP) have long been known to support significant populations of the Biodiversity Action Plan priority species *Riccia huebeneriana*. Over the period 2000-05, GSM, SDSB, R.G. Woods and I.K. Morgan visited water bodies in south Wales, principally to build up a picture of the *R. huebeneriana* populations, but the opportunity was also taken to record other bryophytes occurring on draw-down zones and margins. This note provides information on the more notable species recorded during these field visits. It is based on a previous report (Motley & Bosanquet, 2003), updated to include some recent finds.

For the purposes of this note, south Wales is taken to be Glamorgan, Monmouthshire, southern Breconshire, Carmarthenshire and Pembrokeshire. Most site visits were made in 2003, when low summer rainfall resulted in extensive areas of exposed mud at many south Wales reservoirs. Coverage has been poorest in Glamorgan, where there are several unexplored and potentially interesting sites, including the Lliw Valley reservoirs (SN6606). Most visits were opportunistic and rather brief, and usually only a small fraction of potential marginal habitat at each site was investigated.

Liverworts

Fossombronia incurva. The *Atlas* (Hill *et al.*, 1994) shows only a single south Wales record for this species. However, in the past few years the number of known colonies in the region has increased and it is now recorded from four vice-counties. Although not a reservoir specialist it has been found on the drained beds of Scotch Peter's (SO1508) (v.-c. 35) and Upper Neuadd (SO0219) (v.-c. 42) Reservoirs.

Fossombronia wondraczekii. This is a rather local, although widely distributed, species, which occurs in a variety of habitats, often in small quantity. It is much the most frequent member of the genus on reservoir margins in south Wales and sometimes occurs in abundance.

Elsewhere in Britain, *Fossombronia foveolata* grows on reservoir margins, particularly where peaty and muddy substrates meet. It has recently been found new to south Wales in poached marshy grassland and gritty stream sides in Pembrokeshire, and may well occur on reservoir margins in the region. Similarly, *F. fimbriata* has been recorded from reservoir margins in Scotland; its recent discovery on gritty stream-sides in Pembrokeshire and Breconshire suggests that it too could be found on reservoir margins in south Wales.

***Riccia beyrichiana*.** This species has been recorded at Lower (SO0318) and Upper (SO0319) Neuadd Reservoirs (v.-c. 42). The population at the first reservoir is the largest currently known in south Wales. These reservoirs have been partially and permanently drained, and therefore it is likely that in time vascular plants will become dominant and the *Riccia* will decline. *R. beyrichiana* appears to be rather catholic in its habitat requirements, being recorded elsewhere in south Wales from limestone grassland, seasonally flushed grassland on stream and river banks, and coastal slopes. Lower Neuadd Reservoir is notable for the presence of four *Riccia* species (*R. beyrichiana*, *R. glauca*, *R. huebeneriana* and *R. sorocarpha*).

***Riccia cavernosa*.** This species appears to replace *R. huebeneriana* in Monmouthshire (v.-c. 35), where it has been recorded at Pant-yr-eos (ST2591), Wentwood (ST4293) and Llandegfedd (SO3300) Reservoirs (Bosanquet, 2003). Many millions of thalli have been found at Llandegfedd Reservoir. The population here is concentrated in areas where the underlying geology is Silurian limestone, rather than the Silurian sandstone that dominates most of the reservoir; the pH of Wentwood and Pant-yr-eos Reservoirs may similarly be affected by nearby Carboniferous Limestone. Higher pH values seem to be the most likely explanation for the presence of *R. cavernosa* instead of *R. huebeneriana* at these three sites. *R. cavernosa* has also been recorded at Pant y Llyn (SN6016), a seasonal lake in Carmarthenshire (v.-c. 44), situated at the junction of the Carboniferous Limestone and Devonian Old Red Sandstone.

***Riccia huebeneriana*.** The UK Biodiversity Action Plan for this species (UK Biodiversity Group, 1999) shows about 20 widely scattered localities, mainly in south-eastern and northern England and Wales. The Welsh populations are sparsely scattered throughout the Principality, with concentrations in Ceredigion and the south. A typical plant is shown in Figure 1. During the survey period, *R. huebeneriana* was recorded from

seven reservoirs in Breconshire (v.-c. 42) and one in Carmarthenshire (v.-c. 44). Many of the south Wales sites are located on Old Red Sandstone, with a few on the Coal Measures and Millstone Grit; these rocks tend to produce relatively acidic soils. At many sites where *R. huebeneriana* occurs, the main colonies are located near inflow streams where silts have built-up to create shallow marginal gradients. Although *R. huebeneriana* is often found on open muddy areas, it also occurs in great quantity under the light shade of emergent vascular plants such as *Carex* species, *Equisetum* species and *Polygonum amphibium*. The strongest populations of *R. huebeneriana*, consisting of millions of thalli, occur at Lower Lledi (SN5103), Llwyn-on (SO0012), Pontsticill (SO0513), Pentwyn (SO0515) and Talybont (SO0918) Reservoirs. There is also a 1995 record from Usk Reservoir (SN8228) on the Carmarthenshire/Breconshire boundary, but the species has not been relocated despite several visits to the site. It may have been lost from two sites: Beacons Reservoir (SN9818), where it was last recorded in 1951, and Talley Lakes (SN6333), where it was last seen about 100 years ago. Talley Lakes is the only natural water body in south Wales at which *R. huebeneriana* has been recorded, although it is known from old ox-bows by the Afon Teifi in mid Wales.



Figure 1. *Riccia huebeneriana* showing strong violet colouration, Shon-Sheffrey's Reservoir, Breconshire, 2003. Photo: S.D.S. Bosanquet.

Mosses

***Atrichum tenellum*.** This moss was found to be locally abundant on slightly flushed margins of Upper Neuadd Reservoir (v.-c. 42) in 2005. This is only the second known locality in Wales of this Nationally Scarce species.

***Aphanorhegma patens*.** *A. patens* is widespread on muddy substrates in southern England, but, until recently, was almost unknown from south Wales. It dominates large parts of the margins of Wentwood and Pant-yr-eos Reservoirs in Monmouthshire (v.-c. 35), and also occurs at Lower Lliedi Reservoir and Pant y Llyn in Carmarthenshire (v.-c. 44), Llys-y-fran (SN0324) in Pembrokeshire (v.-c. 45), and the Breconshire (v.-c. 42) part of Llyn Brienne Reservoir (SN8050). *A. patens* is a mild calcicole and its absence from the BBNP reservoirs is therefore expected. Its presence at Llyn Brienne, an upland reservoir surrounded by acid moorland, is a surprise, and its occurrence may be linked to liming of the feeder streams to de-acidify the water. Suitable habitat also occurs on the Cardiganshire (v.-c. 46) side of the reservoir.

***Ephemerum hibernicum*.** This recently described species (Holyoak & Bryan, 2005) has been collected at two localities on the margins of south Wales water bodies: the turlough at Pant y Llyn (v.-c. 44) and Wentwood Reservoir (v.-c. 35). At the latter site it grows with *E. sessile* (both det. D.T. Holyoak), the only time these two species have been found growing together (D.T. Holyoak, pers. comm.).

***Ephemerum serratum*.** This moss has only recently been added to the Carmarthenshire, Monmouthshire and Pembrokeshire bryophyte lists. It is likely that this variety has been neglected in the past, being lumped with *E. minutissimum* (*E. serratum* var. *minutissimum*) simply as *E. serratum sensu lato*, rather than having increased its range. It appears that, in south Wales at least, *E. serratum* is confined to reservoir margins and dried-out pools, where it

can be abundant, particularly at the upper margins.

***Ephemerum sessile*.** Although not confined to reservoir margins, most south Wales populations have been found in this habitat. It was first recorded in south Wales at Talybont Reservoir (v.-c. 42) in 1976. In the past few years it has been found at Llandegfedd, Wentwood (both v.-c. 35) and Pontsticill (v.-c. 42) Reservoirs, as well as being recorded from a quarry floor, a damp track and a few arable fields. The populations at Llandegfedd and Wentwood Reservoirs are concentrated in the upper zone of marginal vegetation, in a vegetation type dominated by *Carex hirta* and *Potentilla anserina*.

***Physcomitrium sphaericum*.** This Near Threatened species is confined to the dried-up margins of water bodies. It was reported new to Wales as recently as 2002, when a very large population, numbering many millions of plants, was found by I.K. Morgan at Lower Lliedi Reservoir in Carmarthenshire (v.-c. 44) (see Figure 2). A second small colony was discovered at Pontsticill Reservoir in Breconshire (v.-c. 42) in 2003. Previously, this moss was mainly known in Britain from a small number of sites in northern England and central Scotland. Searches may well reveal other populations of the species in south Wales in due course.



Figure 2. *Physcomitrium sphaericum* at Lower Lliedi Reservoir, Carmarthenshire, 2002. Photo: R.D. Pryce.

Weissia rostellata. Several patches of *W. rostellata* with immature sporophytes were noted with *E. hibernicum* and *E. sessile* at Wentwood Reservoir in Monmouthshire (v.-c. 35). Reservoir margins are one of the principal habitats of this Biodiversity Action Plan priority species, although it has also been recorded in set-aside arable fields elsewhere in Monmouthshire.

A few other mosses previously thought to be scarce in south Wales, such as *Archidium alternifolium*, are proving to be common on reservoir margins. Local species such as *Bryum gemmiferum*, *Epiphygium tozeri*, *Leptobryum pyriforme* and *Pohlia camptotrachela* have also been recorded from reservoir margins, but have their main loci in different habitats.

Summary

It is clear that large water bodies, particularly reservoirs, in south Wales support important

populations of uncommon bryophytes. The most significant populations, in a British context, are probably those of *Riccia huebeneriana*, *Ephemerum hibernicum* and *Physcomitrium sphaericum*. The cluster of reservoirs in the central Brecon Beacons are particularly important for *R. huebeneriana*.

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Sematophyllum substrumosum – an overlooked native?

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Sematophyllum substrumosum localities in England

The first report of *Sematophyllum substrumosum* in the British Isles was from Tresco in the Isles of Scilly (Holyoak, 1996), a locality well known for exotic plants, including bryophytes such as *Telaranea murphyae* and *Calyptrochaeta apiculata*.

This understandably led to speculation that it may be an introduction (e.g. Hill & Preston, 1998), although the possibility that it is a natural colonist was left open.

Then in 2004 came the revelation that *S. substrumosum* had been collected from mainland Britain in 1964 (Een, 2004). After a BBS