We seem to have experienced an unusually (mycologically) quiet first half of the year. Rainfall has been close to average with the exception of a very dry April.

Emyr Jones has contributed a number of interesting finds including some resupinate fungi - often tricky to identify. The article on Steccerinum illustrates how careful measurement of spore size can usefully contribute to the confirmation of otherwise similar species.

This newsletter includes exciting news from Slovakia on the Dotted fanvault. This species, now called Hodophilus atropunctus (previously known as Camarophyllopsis atropuncta) has had its status clarified following detailed work on the genus. The re-defined species is supported by a new type specimen collected from Pembrokeshire during last year’s UK fungus day.

Our continuing involvement in DNA studies features in 2 articles: a round-up of our work on the Blackening waxcap assemblage, and an introduction to our Wales-wide project to look at Microglossum species.

Finally we include a provisional list of dates and venues for our Autumn fungus walks. Further details will be circulated closer to the time and details will be posted on the PFRN website and Finding Fungi in Pembrokeshire Facebook page.

David Harries
July 2017
John Byrne reported *Flammulaster muricatus*: observed in moss on a willow branch in wet woodland of willow alder and hazel near Redberth in December. The specimen was tiny - almost 5 mm in diameter, at the low end of the 5-30 mm range normally reported for this species.

Details were posted on the BMS Facebook page where the collection was identified by Michel Beeckman and confirmed by Geoffrey Kibby. This rarely recorded species is shown as Vulnerable/category B in the UK provisional red list (Evans et al 2006). The Fungus Records Database shows just two other records in Wales, both reported by Charles Aron in north Wales.

Brian Douglas from the Kew Lost and Found Team paid us a fleeting visit in March. Brian was keen to see the elusive *Cryptomyces maximus* (Willow blister) at first hand. A tour of key sites in north-west Pembrokeshire was arranged and we were able to show good fruiting examples at Porthclais car park and Llangloffan Fen. We also visited Dowrog Common where the species was observed during a British Mycological Society foray in 1987, and more recently by us in 2005 and 2006. No luck this year however; the second year running in which the fruiting bodies have not been seen at this site. Jane Hodges and Trevor Theobald have been able to confirm the continuing presence of *C. maximus* at the other known sites in Pembrokeshire: Goodwick Moor, Nine Wells and Trefeiddan Moor.

*Puccinia festucae* is a rust widely recorded on the perennial grass, Red fescue, but far less often reported from its alternate host, Honeysuckle. This year seems to have suited the rust with a number of records from Glamorganshire and Carmarthenshire, together with two observations in Pembrokeshire: one during a WWBIC recording event on National Trust property at Southwood and the other at Somerton Farm (record confirmed by Nigel Stringer).

Some welcome rain in May brought a resumption of fruiting towards the end of the month when Mike Karpaty photographed and reported Pembrokeshire's first record of *Coltricia perennis*, "The Tiger's Eye" from Canaston woods.
Emyr Jones found an interesting toothed resupinate fungus on dead silver birch above Cilgwyn. Emyr posted the images on the BMS Facebook page where correspondents identified the genus as *Steccherinum* and Emma Williams, from the Glamorgan FG, astutely suggested looking at *S. bourdotii* as this species has several records from western coastal regions.

Further investigation of the literature showed that the differences between *S. bourdotii* and the more widely recorded *S. ochraceum* are very small: the most helpful feature being the difference in shape and size of the rather tiny spores. In the event, the sample yielded very few spores, but measurements showed they corresponded well with literature values for *S. bourdotii*. This is best illustrated by plotting their dimensions on a chart following an example found on the Mushroom Observer website. Spores from Emyr's collection are shown as red stars, with the mean value of 4.3 x 3.3 μm falling nicely within one of the ranges given in the authoritative publication.
About a month later, Emyr found another toothed resupinate collection - this time on rowan. As it looked different to the *Steccherinum* previously found, he collected and forwarded a sample for microscopy. Spores from this collection (shown as black stars on the chart) averaged 3.2 x 2.1 μm which was consistent with *S. ochraceum*.

Note that in both cases a small number of spore measurements fell below the expected size range. This is likely to be a result of measuring spores scraped from dried material rather than a fresh spore deposit. The former would be expected to include a higher proportion of immature and thus smaller spores.

**Top:** *Steccherinum bourdotii*

**Bottom right:** *Steccherinum ochraceum*

Photos by Emyr Roberts
In October 2016 our PFRN event to support UK Fungus Day was held at Orielton Field Study Centre with the Slovakian mycologist, Slavomir Adamcik, as our guest expert.

During the course of the morning excursion, Slavomir observed several collections of Fanvault fungi (*Camarophyllopsis/Hodophilus*) which appeared to represent distinct species. As this fungal group was one of his principal research interests he returned to the spot in the afternoon for a detailed exploration in which he found and documented a number of very interesting collections.

Representative samples were processed by Slavomir at Aberystwyth University then sent to Slovakia for DNA sequencing. These, and other collections from the UK, provided a significant contribution towards a Europe-wide study of the genus led by Slavomir. The findings have recently been published (Adamcik et al, 2017) and demonstrate that two distinct species exist under the former name of *Camarophyllopsis atropuncta* (Dotted fanvault).

The species are *Hodophilus atropunctus* and *H. variabilipes*. Both were collected at Orielton within a few feet of each other in scrub at the edge of broadleaved secondary woodland. As the existing description of *Hodophilus atropunctus* (previously known as *Camarophyllopsis atropuncta*) was somewhat limited and lacked a corresponding type specimen, the authors emended (refined) the description and defined a neotype based on the Orielton collection.

The authors have provided detailed descriptions for each species but at this stage have not published a key as there may be some overlap of morphological features between *H. variabilipes* and other, so far unresolved, members of the genus.

**Hodophilus collections photographed at Orielton, 8th October 2016**

Left: *Hodophilus atropunctus*  
(neotype collection)  
Right: *Hodophilus variabilipes*

An article in an earlier newsletter (PFRN 3/2016) outlined progress with a project in which we set out to equip ourselves with the materials and expertise to extract DNA and isolate and amplify barcode portions of DNA from fungus samples. The project was supported with funding from the Pembrokeshire Biodiversity Partnership and technical support from Dr. Gareth Griffith at Aberystwyth University. This note summarises the outcome of the project.

The project

The target species selected for the project was Blackening waxcap - *Hygrocybe conica*. This species is widely distributed in Pembrokeshire and is believed to be a complex of several similar taxa. In spite of two consecutive disappointing fruiting seasons for waxcaps (2015/2016), we managed to find 26 collections which were photographed, documented and collected.

In parallel with the collection of specimens, we established and equipped a laboratory with the necessary apparatus and reagents for DNA extraction. We also participated in a programme to beta-test a prototype of a packaged mini-laboratory, the Bento Lab, which brought together four key pieces of equipment into one affordable lunchbox-sized unit. The project team visited Aberystwyth University to observe DNA extractions at first hand and receive training in the methods employed.

Out of the 26 collections made,

19 provided good sequence data for the entire target range.
3 provided good sequence data for most of the target range.
2 gave a poor sequence and 1 failed to give a meaningful result.
1 collection deteriorated in storage so was not processed.

The 22 good sequences were processed by us using freely available software to predict a phylogenetic tree for the collections (fig 1.). The resulting tree was consistent with a tree generated at Aberystwyth using our data on a professional software package.

The collections fell into four distinct clades (groups with a common ancestor).

The macro and micro morphology and habitat for one clade was consistent with our current understanding of *H. conica* var. *conicoides*: a sand dune species.

The remaining 3 clades offered less in the way of field and microscopy characters that could separate them, but the DNA sequences fitted well with the range of sequences held on public databases for *H. conica* collections.
Project outcome

We have established that we have the facilities and expertise to extract DNA and generate fungal barcode material for sequencing.

We have generated a distribution map which shows the distinct clades of *H. conica* collected from around the County (shown below). With the current state of knowledge of the taxonomy of this complex, this is as much as we can achieve. In the longer term, should new names be assigned to any members of the complex, we will be able to retrospectively visit the barcodes and voucher specimens to assign names to our collections.

Future plans

To work with researchers at Aberystwyth University who are looking at other features of *H. conica* collections to try to distinguish between the different clades within the species assemblage.

To collect, identify and extract DNA from collections of grassland fungi in order to provide reference material for the mycology group at Aberystwyth University

To investigate collections of species where recent molecular studies have significantly changed our understanding of a species complex. We will use a combination of DNA sequences and field/microscopy characters to gain a better understanding of the distribution of these species.

| A preliminary study of the distribution of Microglossum species in Wales |

A number of recent publications have clarified the taxonomy of species in the Microglossum genus - and it seems that our historic concept of the Olive Earhtongue (*Microglossum olivaceum*) covers a number of morphologically and genetically distinct species.

*Microglossum olivaceum* is listed on Section 7 of the Environment (Wales) Act 2016 as a species of “key significance to sustain and improve biodiversity in relation to Wales” With this in mind, we put together a project proposal in which we will look at collections of *Microglossum* sp. from across Wales with a view to establishing which species we have based on the most recent descriptions and DNA evidence.

The project is supported by the Kew “Lost and Found Fungi” project, Natural Resources Wales and the British Mycological Society. Mycologists across Wales have been invited to collect, photograph,
document and preserve collections of *Microglossum olivaceum* and *M. atropurpureum*. These collections will be forwarded to the project team who will arrange for:

- Morphological (microscopic) investigation, cataloguing and retention of the collections.
- Extraction and amplification of the DNA barcode for each collection
- Sequencing of the DNA extracts (at Aberystwyth University)

The results will be reviewed and interpreted with assistance from the Mycology Group at Aberystwyth. The output will provide a preliminary distribution map for *Microglossum* in Wales which takes account of the most recent understanding of the species complex.

3 “*Microglossum olivaceum*” collections - likely to represent 3 distinct species.


---

### Autumn events programme (provisional)

**Saturday 30th September** - Pengelli (leader Adam Pollard). 10.30 a.m. to 1.00 p.m. Meet at main entrance: SN123396. Parking limited - please share transport where possible.

**UK Fungus Day Event - Saturday 7th October 2016** - Colby Woodland Garden, near Amroth (leader Mike Karpaty). 10.30 a.m. to 1.00 p.m. Viewing of collections from 1.00 pm. Meet at main car park: SN158080. Organised in conjunction with the National Trust with support from the British Mycological Society. **Booking essential: contact pembshungi@gmail.com**

**Sunday 24th September** - Llanychllwydog woods, near Pontfaen, Gwaun Valley (leaders Mike Karpaty and Emyr Jones). 10.30 a.m. to 1.00 p.m. Meet outside the school at SN032339 (parking for 8-10 cars, also room at SN029340).

**Saturday 21st October** - Rhos Fach Common, near Mynachlog-ddu (leader David Harries) 10.30 a.m. to 1.00 p.m. Meet at roadside car park at SN135303.

Please come equipped with suitable wet weather gear (if the forecast is doubtful!), stout footwear and refreshments.