

Pembrokeshire Fungus Recorder

Issue 1/2024

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Introduction

This issue captures some of the interesting finds from last autumn – including notes from our public forays - together with a "rust" recording story as a tribute to Nick Crutchley. Hopefully we will have a productive season this year, though given the very high rainfall this winter one wonders what impact this has, especially for soil-dwelling species which might be adversely affected by waterlogged conditions.

Our recording efforts continue to be underpinned by DNA barcoding of interesting or challenging collections. We are very grateful for the support given by the [British Mycological Society](#) who contribute towards sequencing costs for fungus groups across the country, together with generous support locally from the [West Wales Biodiversity Information Centre](#) and the [Pembrokeshire Nature Partnership](#). We also thank Professor Gareth Griffith and Caron Evans from [IBERS \(Aberystwyth University\)](#) for their continuing technical advice and Sanger sequencing support respectively.



David Harries, April 2024

Useful website links:

<https://www.facebook.com/groups/PembsFungi>
<https://www.wwbic.org.uk/wildlife-recording/>
<https://aderyn.lercwales.org.uk/>

***Hygrocybe helobia* (Garlic Waxcap)**

David Ramsey and John Steer from the Wildlife Trust Mid Pems section put us into contact with the owner of a site near Hook which had a good showing of dry-capped red waxcaps during late August.

Likely contenders were *Hygrocybe miniata* and *H. helobia*. Inspection of the gill trama under a microscope showed that the structure was made up of cells between 260 and 410 um long which fitted well with published measurements of 150-500 um for *H. helobia* compared with values of up to 150 um reported for *H. miniata* (Boertmann, 2010). A DNA barcode was obtained and this confirmed the identity of our collection as *H. helobia*.



This species is one of the first to appear from mid/late summer onwards. It is found in old lawns, unimproved grasslands and transitional areas between grassland and wetland. Its field characters include a very fragile structure and a smell of garlic (though I have never been able to confirm this latter feature!)

We have only a handful of records for this species in Pembrokeshire – so a welcome find.

***Cuphophyllus radiatus* (Slender Waxcap)**

In late October, we held a fungus recording event at Rhos Fach, Mynachlogddu (Waldo’s memorial). The event was well attended and produced possibly the most important grassland species find of the season: Lesley Newcombe spotted a collection of small grey waxcaps which, on close inspection, fitted the description of *Cuphophyllus radiatus*.

The clue to the name is given by the appearance of the gill outline through the cap. The lack of any yellow colouration at the base of the stipe helps separate from the related species *C. flavipes*. The identity of our collection was confirmed using DNA barcoding.



This species is not widely recorded in the UK – and this is the first record for Pembrokeshire. It is a member of the European waxcap assemblage and has been assessed as Vulnerable on the IUCN global red list (https://redlist.info/iucn/species_view/1000197/).

Reference:

Boertmann, D. (2010). The genus *Hygrocybe*. Fungi of Northern Europe 1. 2nd revised edition. Danish Mycological Society, Copenhagen

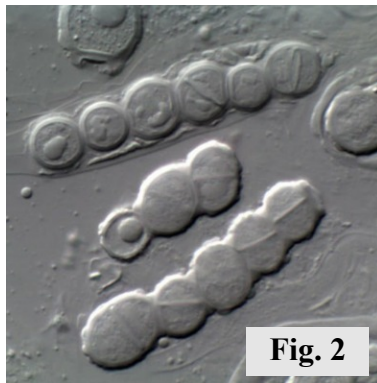
Hypocreopsis rhododendri (Hazel Gloves)

We continue to receive reports of *Hypocreopsis rhododendri* from across the County. We check a number of our collections using a microscope just in case we encounter the superficially similar, but very rare, *H. lichenoides* (Willow Gloves). Some of you may have seen press articles recently about the translocation of fruiting bodies of this latter species from a site in Scotland to a site in Cumbria where the species was once known to exist.

Figures 1 & 2 show images of the ascospores from each species taken from the Fungi of Great Britain and Ireland website (<https://fungi.myspecies.info>) maintained by Paul Cannon. Figure 3 shows the spores from a recent collection by Paul Culyer from Scoveston.



H. lichenoides



H. rhododendri



Fig. 3

Trevor Theobald and Ant Rogers reported another new site, from Wolfscastle, in March. Trevor noted six fruiting patches on an old Blackthorn overshadowed by a Willow, both waterlogged growing in/adjacent to an old overgrown farm pond (see below).



...and for good measure, known sites continue to thrive, with another report from Trevor last October of a particularly fine display (pictured right) from Fortune's Frolic, Haverfordwest.



Reference:

<https://www.theguardian.com/environment/2024/mar/26/rare-fungus-willow-gloves-scotland-england-hopes-to-save-species>

Forays (Adam Pollard)

Castell Henllys 7th October UK Fungus Day (Leader Adam Pollard)

We celebrated UK Fungus Day with a walk at Castell Henllys, in association with the Pembrokeshire Coast National Park Authority. A good turnout and, despite following a period of extreme heat in September, there was still quite a lot to be found.



Left: Mike Karpaty with collection of *Stereum hirsutum* (Hairy Curtain Crust)

Right: *Cyathus striatus* (Fluted Bird's Nest fungus)

The walk also yielded two collections for our Agaricus project: the first was *A. crocodilensis* (Macro Mushroom) which is one of our largest Agaricus species and favours grassland.

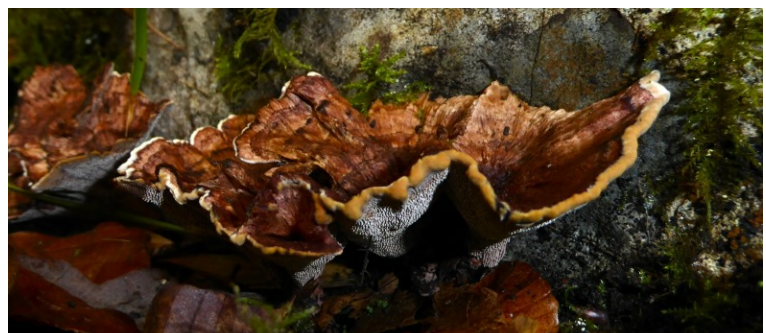
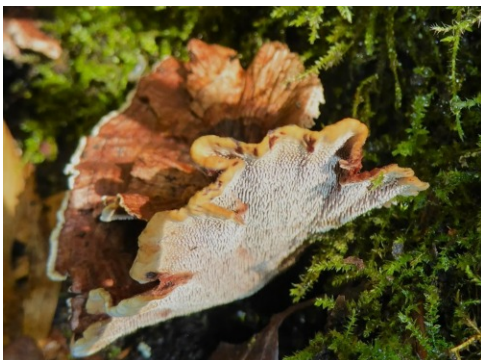
The other collection (pictured right) was spotted by Mike Karpaty and consistent with the *A. moelleri* (Inky Mushroom) which is characterised by a black, sooty colour towards the centre of the cap, and inky small and strongly yellowing stipe when cut. Just to confuse matters, subsequent DNA barcoding showed it was an almost identical species, not previously recognised in Britain, called *A. moelleroides*!



Little Milford 14th October (Leader Adam Pollard)

This event was held jointly with the mid-Pembs sections of the Wildlife Trust. We had a good turnout of enthusiasts (if not such a good turnout of fungi).

Nonetheless, with so many eyes searching we found plenty, including Trevor Theobald's find of *Hydnellum conrescens* (pictured right) which was last recorded at the site in 2016.



Request for help - Two coral-like fungi to look out for (David Harries)

This autumn we would welcome any collections of the coral-like fungi shown below. They belong to different genera, but both are likely to turn up from late summer onwards on old plant debris e.g. wood chips, compost, decomposing twigs and leaf litter.

The recent publication of two substantial volumes on club and coral fungi (Franchi, P., & Marchetti, M. 2021) provides valuable information on this group which can be supported by DNA barcoding of our samples.

If you are lucky enough to find a collection, then the following information will greatly assist any subsequent evaluation:

Good photos of the fresh material in situ and after collection. Preferably with something in one of the pictures for scale.

Details of any trees and other vegetation nearby and the likely source of material on which the coral is growing.

A note of any smell observed from the fresh material

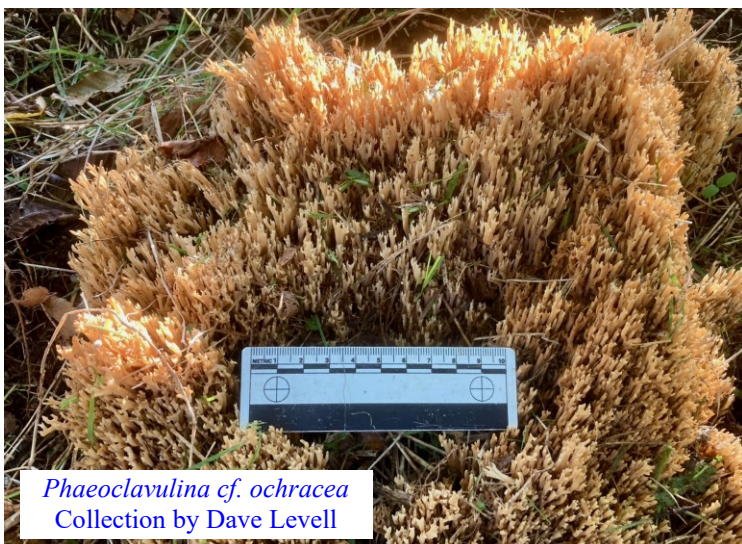
A note of the colour when collected and again after drying.

An overnight spore drop from fresh material captured on a piece of aluminium kitchen foil, then folded over.*

Voucher material dried over gentle heat (~30-50°C): radiator or sunny windowsill, then stored in paper envelope. Important that the sample is not allowed to get mouldy at any stage.

* A spore drop from fresh material ensures we get mostly mature spores for measurement. If we only have dried material, then we can still scrape off some spores but they will be a mix of mature and immature spores so the sizes will not be as reliable. Ideally spores should be collected on a microscope slide, but a piece of aluminium foil is fine as an alternative.

Phaeoclavulina



We already have three distinct collections of *Phaeoclavulina* including one found by Dave Levell on partially decomposed stable bedding and dung and another by Trevor Theobald on greenhouse compost. The third collection dates back to 2015 and was found on debris under a Yew hedge and subsequently sent to Kew for deposition in their fungarium. At the time this was considered as likely to be close to *Ramaria decurrens* (See Kibby page 56/57 for an example, *Ramaria decurrens* = *Phaeoclavulina decurrens*) but needs to be re-evaluated using the latest molecular data.

Pterula multifida

This is a delicate coral with a needle-like structure that seems to favour woodland debris. We have a single Pembrokeshire collection (pictured right) from 2022 found by Linda Screen, but investigation of the DNA barcode seems to suggest that more than one species is hiding under this name – so this may represent a species complex. More collections are needed so we can better understand the morphological features associated with this species. See Kibby page 48/49 (*Pterula multifida*)



Reference:

Franchi, P., & Marchetti, M. (2021). *I funghi clavarioidi in Italia*. Associazione Micologica Bresadola; Fondazione Centro Studi Micologici.

Kibby (2017) *Mushrooms and Toadstools of Britain and Europe, Volume 1*.

The unsung heroes –A tribute to Carol ‘Nick’ Crutchley, Haverfordwest (1944-2022) R. Nigel Stringer

Many of us are involved in natural history recording. Before the advent of the computerised input of records from home these would have been forwarded to the local recorder. This record would then be verified and in due course be submitted to that body officially collating records for that specific group of organisms. These data would then be used by academics to map the up-to-date distribution of species and ascertain whether species are increasing or declining across the country. An example of this is seen with the Botanical Society of the British Isles (BSBI) where the information collated from the County Recorders was used in the publication of both the Atlas 2000 and the Atlas 2020. This information was used to indicate the decline or increase in native and non-native species in the UK over time. The importance of recorders and those collating the records cannot be underestimated. For example, over 80,000 people contributed to the records submitted for the Atlas 2020.

With regards recording of fungi the records can be entered into a variety of separate recording systems. As with all records they are logged but very little credit is given to the individuals who submit these records. With rust fungi for example, the collation and archiving of records in west Wales is carried out by RNS and over the last 25+ years nearly 250 individuals have submitted over 60,000 records. It may come as a surprise to read that of these 250 individuals only three are qualified to verify these records. All the other individuals are amateurs with limited knowledge of rusts. Unless a particularly rare rust is found in west Wales and a specific article is written relating to this occurrence then all the data is entered into an UK species database and the importance of the recorder is lost in the spreadsheet.

With this in mind, I would like to highlight the importance of recorders in our work and would like to describe how Nick contributed some important observations to rust biology. Nick had a medical background working as a midwife and as a specialist in the Special Care Baby Unit until she retired in 1994. She always enjoyed walking and observing nature and about 15 years ago her interest in fungi was triggered when her husband Mike developed an interest in close-up macro photography taking pictures of fungi. Over the years Mike helped RNS by photographing rusts and both Nick and Mike developed a keen interest in rusts. Nick with her enquiring mind was always keen to increase her knowledge about this specialised group of fungi and was constantly asking questions about certain aspects of their biology which the author couldn't answer!

In early 2021 the COVID restrictions limited the movement of people in public places but Nick and Mike were fortunate in that they could go for daily walks to the nearby Haverfordwest Racecourse Public Park about 100m from their home. The area adjacent to the footpath was overgrown with bramble, and Nick, with her keen eye for detail, observed the distinct violet discolorations on the upper surface of the bramble leaves. These were accompanied by 'black masses' on the lower surface which were the spore masses of the Bramble rust *Phragmidium violaceum* (Figure 1). These spores (called teliospores) are the overwintering stage (commonly designated by Roman numerals as 'stage III') of the rust which produces four different spore types during its annual life cycle on bramble.



Their regular weekly walks took them past their bramble patch and on March 21st they routinely examined the leaves and instead of seeing an amorphous mass of black rust teliospores Nick found that within one spore cluster on one of the leaves the mass was 'colonised' by a lot of golden threads (Figure 2) which Mike confirmed with a hand lens. Further examination at home using a microscope showed that these golden threads were in fact fungal hyphae produced by the germinating spore. Further examination using a high power microscope showed that these hyphae formed little peg-like outgrowths on their surface, four in number and from each tip a small rounded spore was formed (Figure 3). This spore is the equivalent of the spores formed on the gills of mushrooms and are termed basidiospores. With regards to the Bramble rust this is designated as 'stage IV' of the life cycle. These spores are released and re-infect newly emerging bramble leaves in the spring and the life cycle starts all over again. The author had never seen 'stage IV' of the bramble rust in 30 years of recording so this was a highly significant find. The Fungal Records Database for Britain and Ireland (FRDBI) records 34 sightings of the 'stage IV' of the Bramble rust in the UK (one from Dorset, two from Cornwall and the rest from Leicestershire) submitted by four individuals. Closer examination of these records highlighted inconsistencies so the author contacted the recorders for verification of their records. It turned out that there had been 'data input' errors and that 'stage IV' was in fact 'stage III' of the life cycle. This meant that Nick and Mike's record was the first official record in the UK of the Stage IV of *Phragmidium violaceum*.



Fig. 3

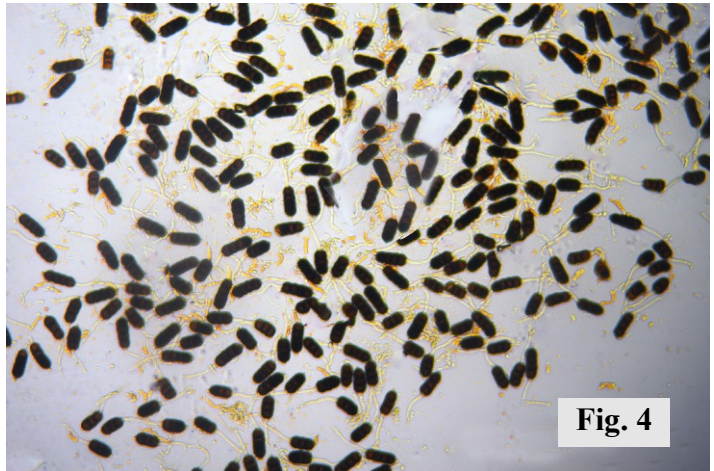


Fig. 4

Further examination of the rust under the microscope showed that the teliospores didn't germinate over a long period of time (as one would have expected) but a very high percentage germinated over a very short time period (Figure 4) of around ten hours. Also, once the mass of the teliospores had germinated there was no evidence of the black spore mass remaining on the underside of the leaves once this had taken place. Even though hundreds of leaves and spore clusters were examined for three to four weeks pre and post the date of the teliospore germination date the number of clusters with germinating teliospores only numbered one or two and reflects the scarcity of records in fungal databases.

This remarkable story doesn't end there. During the following two years the same bramble patch was periodically monitored weekly throughout the year noting the annual development and spread of the rust but three weeks prior to March 22nd the patch was monitored on a daily basis for evidence of germinating teliospores. As strange as this may seem, the 'golden threads' of germinating teliospores were first recorded on March 22nd in 2022 and on March 22nd in 2023. In March 2024 a repeat survey was undertaken but unfortunately very few leaves infected with *P. violaceum* had survived the winter so no data are available. There is no explanation as to how this remarkable coincidence of the date of teliospore spore germination occurring when it did over three consecutive years and we can only record what was happening.

The timing of the germination does however coincide with the emergence of the new young leaves produced by the bramble in March so there is fresh material for the basidiospores to infect and start the life cycle of the rust all over again.

This study will be continued in future years by Mike as a tribute to his late wife (Figure 5). These investigations show the importance of amateurs in the role of natural history recording even though they lack specialist knowledge in that subject area. It also highlights the importance of having a mechanism whereby we can record these events within notes published by (in this case) the PFRN Newsletter. I wonder what other significant finds/observations have been lost over the years due to the lack of a suitable repository to archive the find.



Carol 'Nick' Crutchley