



Herefordshire Fungus Survey Group

News Sheet N° 30: Autumn 2015



Polyporus squamosus - Lea & Pagets Reserve (15/7/15)

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Chairman:	Roger Evans
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Treasurer:	Charles Hunter
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Welcome to the Autumn 2015 News Sheet

As I hinted at in the last News Sheet, we have indeed enough material for another 'proper' one this Autumn - ie not just a Recorder's Report, as in Autumn 2014.

We are very lucky to have another article from our most northerly member and contributor, Michael Valentine , this time about an orange variant of the Scarlet Elfcup, *Sarcoscypha austriaca* (p6). As before, it is accompanied by some stunning photographs - both macro and micro - by Michael and also, this time, one by Dr. Paul Cannon (Kew), to whom we are very much indebted for allowing us to reproduce it. With Christmas nearly upon us, it is soon time for us all to start looking out for this colouration.

We are again very grateful to Debbie Evans, who has given us two articles for this issue. One is about the rather striking 'Blackthorn Dotty', *Polystigma rubra*, (p8) - one of the Lost & Found project fungi, which we should be keeping an eye out for. The other concerns the prevalence this year of some of the *Taphrina* species north-west Wales (p10).

Jo Weightman discusses how to look for clues in the field, to help with fungus identification (p10). She stresses that not only must we be meticulous in looking for the overt ones, such as colour and smell, but also be aware of the possibility of the 'invisible clues', such as the 'root' that certain fungi have.

Finally, on the back page there are a few of the photographs of our UK Fungus Day event at Queenswood Arboretum. These have been kindly contributed by one of our visitors, Si Homfray (a professional photographer) and also by Ted Blackwell and Roger Evans.

I hope you enjoy reading this issue.

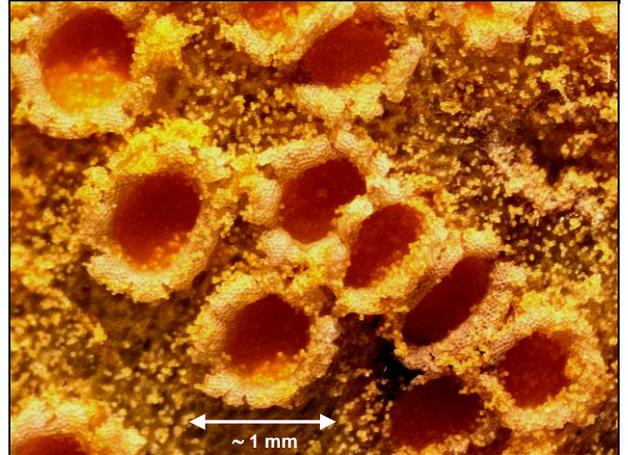
The deadline for the next News Sheet will be March 20th. Don't forget that the Editor is always looking for **your** contribution(s) to the News Sheet. It is by no means too early to start sending these to me - it does help a great deal if you can send me your articles, photos, etc. as far as possible in advance of the deadline!

Happy reading!

Mike Stroud

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These are two pictures of Nettle Clustercup Rust, *Puccinia urticata* - found at Croft Castle on 20/5/2015. The lower one shows the aecia in more detail.



..... and a couple more, just to fill this space:



Leptosphaeria acuta - Athelstan's Wood (7/1/2015)



Isaria farinosa - Cwmdu, Powys (25/4/2015)

HALF YEAR REPORT - 1st January - 31st August 2015

We have had six forays this half year. A seventh, at Holme Lacy, had to be cancelled. Attendance at the forays has ranged from five to thirteen people, including visitors. Our Chairman, Ted Blackwell, has been able to join us several times at our pub lunches.

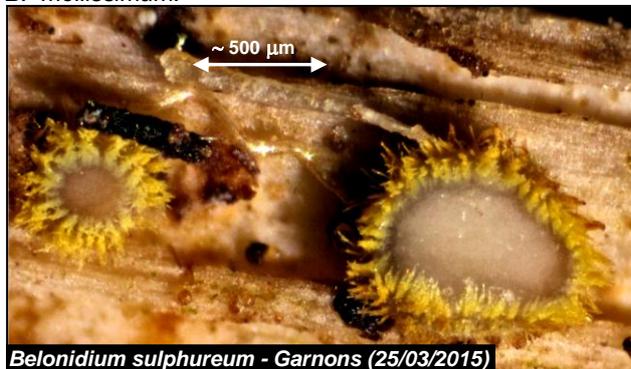
I am hugely indebted to Shelly, Roger and Ted for their help with identification. Without them, our records would be much reduced. And I give my thanks to all our eagle-eyed collectors.

Garnons Estate Foray 25. 03. 2015

The ground was very dry, so there was little to find and to see the out-of-season *Inocybe* was a real surprise. Even so, however, there were 5 new site records.

The rust, *Milesina scolopendrii*, is very common wherever hart's tongue fern occurs, the spores visible as a whitish 'powder' on the underside of fronds as they die off. *Puccinia buxi* appears to colonise leaves on old, long-established box, so it can often be present in historic gardens. Records on young box would be very interesting, so please do send in any sightings.

Belonidium sulphureum, previously *Trichopeziza sulphurea*, has been recorded several times in the County under yet another earlier name *Dasyscyphus sulphureus*. It forms white discs fringed with bright yellow hairs and has much larger spores than the otherwise similar *B. mollissimum*.



Belonidium sulphureum - Garnons (25/03/2015)

My thanks to Mike and Shelly Stroud who compiled the records, as I was unable to attend.

Woodbury Hill, Moccas Foray 08. 04. 2015

It is some years since the Group surveyed this site, which has recently been cleared of conifers, leaving much of it exposed and bare. Collecting was therefore largely restricted to a broadleaf fringe (beech mostly) and conifer debris. The dryness of the ground further limited our search.

However, the site is under-recorded and 14 of the finds were 'firsts'. Although no spring specials were seen, a number of early species were present, such as *Pholiotina aporos*. This is a 'little brown job' with a very neat, quite persistent, ring on the stipe. *Melanoleuca cognata*, although most commonly found in the autumn, is not unusual in the spring. It is characterised by close, apricot-coloured gills that 'glance' when the specimen is given a twirl. *Exidia thuretiana* is an opalescent 'jelly',

very similar to *E. nucleata*, but it lacks the white inclusions and is rather more firm and shapely. Unlike most *Polyporus* species, *P. brumalis* is toadstool-shaped with a central stipe. It fruits in the winter and early spring. In the field it is distinguishable from its summer look-alike *P. ciliatus* by its small but visible pores – those of *ciliatus* are barely visible even with a lens. *Hyaloscypha hyalina* is a small white discomycete with a felty-hairy rim and underside. Many discs look like this and require careful examination of spore and hair characters.



Hyaloscypha hyalina - Woodbury Hill (08/04/2015)

Hergest Croft Foray 22. 04. 2015

It was a day for looking for spots on leaves and enjoying the sunshine, the ground being much too dry to hope for anything fleshy.

Glomerella cingulata was widespread in the garden, forming purple spots on *Rhododendron* leaves, while buds on the same host were turned into mini-hedgehogs by *Pycnostysanus azaleae*.

Charles Hunter defeated probability and found the only fleshy object of the morning with a swelling, juvenile Dryads Saddle, *Polyporus squamosus*, a species which comes early and is mature by mid-summer.

Corynespora smithii was collected by Val Deisler on sticks under holly bushes. It forms black furry patches which are conspicuous even to the eye, while under the microscope the long, narrow conidiophores have close stripes, rather like the segments of a worm.

Lophodermium pinastri is rarely recorded although a common species on fallen pine needles. It forms black, oval pyreno-like spots but is actually a disco, the apothecia (fruiting discs) emerging through a central slit (coll/det Shelly Stroud). Not all spots on needles will be this!

15 new site records

Croft Castle Foray 20. 05. 2015

As dry conditions continued, we opted to go into Fishpool Valley as the wooded slopes and stream would offer most opportunities. It soon became evident that it would be another 'spots on leaves' day – none of the more

spectacular of the spring fungi were in evidence – but we did manage to record a good half century of fungi, a dozen of which were new to the site. Some were species which had oddly managed to escape detection before, for example, *Botrytis cinerea* on a sweet chestnut husk, *Blumeria graminis* and *Leptospora rubella*. *Pyrenopeziza urticicola* has not been recorded in the county for 25 years – and only twice before that. With 230 records listed on the FRDBI it is clearly not common anywhere (if that sounds like a large number, bear in mind that there are 13784 !!! for candle snuff).

I always search in spring for *Puccinia chrysosplenii*, a rust fungus occurring on the leaves of both golden saxifrages, plants of wet flushes. So far, no luck with the much rarer alternate-leaved *Chrysosplenium alternifolium*, but the database does hold a few records on the common opposite-leaved *Chrysosplenium oppositifolium*.

Two separate collections were made on this foray. *Coprinopsis stercorea* is one of several very diminutive fungi occurring on dung. It is or appears to be a rare species with only 18 records nationally. The Herefordshire database has 3 previous records, one from the nineteenth century.

There were two, perhaps three VC36 firsts. The myxo, *Craterium leucocephalum* - when still closed the top or lid is lime-encrusted (hence the name –white head), without the lid, it resembles a cup or goblet with irregular broken edges.

Two sticks, both heavily encrusted with black ‘dots’, were taken by Ted Blackwell. Under the hand lens the dots on one could be seen to be oozing opalescent bubbles. This was the *Rabenhorstia tiliae* stage of *Hercospora tiliae*, a pyrenomycete immersed in the bark. The perfect stage has been recorded just three times before in the County and it may be the first record for the anamorph. On the second stick the dots could be seen to consist of crowded tufts. These were the necks of an immersed pyrenomycete *Amphiporthe* (*Cryptodiaporthe*) *hranicensis* in its *Amphicytostroma* state, for which there are only 23 records on the FRDBI.

Athelstans Wood Foray 17. 06. 2015

Athelstans Wood is one of several in the area that are held by the Duchy of Cornwall. It is primarily managed as a conifer plantation but broadleaf trees are present in the fringe and as occasional survivors. This was the Group’s first visit although some of us did a recce. in January and Stephanie Thomson did some recording here in September 2010. So this was the first summer survey and most records of the 31 finds were also ‘firsts’.

On this occasion we were a very select ie small group, doing our best under very dry ground conditions. From the car park the route leads into the most elevated – and therefore the driest – part of the wood where conifer is dominant. Patricia Morgan who managed to reach a lower area of more extensive broadleaf near a stream returned with several additional species.

Dead stinging nettle stems are often rewarding. *Hyalopeziza millepunctata* is an asco forming a tiny off-white to greyish cup – hyalo means glasslike and millepunctata means a thousand dots – a reference

perhaps to the spots of light refracting from the glassy hairs on the outside of the cup. This species was recorded several times in the County by Graddon under the older name *Unguicularia millepunctata* when the generic name refers to these stiff hairs as claws.

Strobilurus tenacellus is a ‘small brown job’ that peaks in May-June and is restricted to pine and spruce cones. It is said that it can be distinguished in the field by its bitter taste. I learn that strobilurin, when extracted from the fungus, apparently has a role as a control agent of fungal disease in cereal crops.

Ed Clark, Forester for the Duchy, spotted two of the four agarics. *Pholiotina arrhenii* (another small brown job) is the new name for *Conocybe arrhenii* - all *Conocybe* spp with rings are now known as *Pholiotina*. The very neat ring is a good field indicator but there are look-alikes, especially in the spring-summer months, so it has to be checked under the microscope.

Coprinopsis semitalis is a new County record for a probably under-recorded species. For just a few hours it is totally clad in a grey veil – and as the structure of that veil is important, study has to be rapid before deliquescence sets in.

Lea & Pagets Foray 15. 07. 2015

It was July and it was dry, so most of us headed down into the valley bottom and proceeded to turn over fallen wood.

There were a number of white resupinate species to be found including *Hyphoderma puberum* and a white poroid one which proved to be *Ceriporiopsis gilvescens*.

Many fallen ash branches were conspicuously spotted with the *Nodulisporium* state of, probably, *Daldinia concentrica*.

We had hardly come through the gates before we spotted something special - *Ganoderma lucidum* growing near the base of a living oak. A spit and polish quickly revealed its lacquered blood red colour. This is an uncommon species with only a handful of county records.

The largest find of the day was a monstrous dryad’s saddle *Polyporus squamosus* at the base of an ash, its preferred host (see front cover photograph).

Patricia Morgan who ranged more widely returned in triumph with a specimen of *Agaricus augustus* - a somewhat aged and experienced Prince in this case but unmistakable with its red-gold scales on cap and ring.

Most notable of the bunch was *Volvariella pusilla*, a second County record (see photographs on the next page). *Volvariellas* have pink spores and, needless to say, a volva. This one, as its specific name *pusilla* tells us, is a small one. A contributory field character is the pale sticky cap.
8 new site records



Volvariella pusilla - Lea & Pagets Reserve (15/07/15)

Entoloma rhodocylix - Cwmdu, Powys (23/02/15)

OTHER VC36 RECORDS

Onygena equina - on hoof of a dead pony Black Hill 18.02.2015. First VC36 record. See the Spring 2015 News Sheet.

Geastrum britannicum - a large colony under yew, Yarpole, 16.03.2015. Coll/det JW. A 3rd Herefordshire site for this newly described species.

Brachysporium nigrum - on cone of *Sequoiadendron giganteum* Upper Grange, Bacton, 08.04.2015, coll C&S Hunter, det EB. A second VC36 record (the first dated from the nineteenth century). Rarely recorded.

Puccinia tumida - on living leaves of pignut *Conopodium majus*, Brilley Green Dingle, 18.04. 2015. Coll/det JW. First VC36 record. K.

Entyloma chrysosplenii - on living leaves of alternate-leaved golden saxifrage *Chrysosplenium alternifolium* 18.04.2015. Formed white spots on the upper side of the leaves. Coll/det JW. First VC36 record. **Vulnerable / D2** (Red Data List, Evans et al. 2006).K.

Puccinia betonicae - on living leaves of betony *Stachys officinalis*, in private grounds, Great Doward 28.05.2015. A third VC36 record.

OUT OF COUNTY RECORDS

Ramularia hellebori - on *Helleborus viridis*, Bannoms Wood, Morton Bagot, Warwickshire, 12.05.2015. Rare on this host – more commonly on *Helleborus foetidus*. Coll/det Cherry Greenway, confirmed by Ted Blackwell. Rarely recorded.

Entoloma rhodocylix - garden, Mill House, Cwmdu, Powys, 23.02.2015, Shelly & Mike Stroud. Rarely recorded.

SARCOSCYPHA AUSTRICA – ORANGE COLOUR VARIATION

(A Phenomenon worth looking out for) Text & photos by Michael Valentine

On January 12th 2013, I visited Miller Wood, a narrow strip of woodland beside the central Lancashire village of Withnell Fold, and one of several relatively local sites where Scarlet Elf Cup - *Sarcoscypha austriaca* may be found. Much of the woodland floor is damp/wet underfoot, with moss covered fallen trunks and branches in abundance – *Acer*, *Alnus*, *Betula*, *Fraxinus*, *Quercus*, and *Salix*, being the most common of the tree species present.

On this occasion, and in just one localised spot amongst the normal red *S. austriaca* apothecia, several bright orange “cups” were seen (Fig. 1) which, at first glance, looked remarkably like Orange Peel Fungus – *Aleuria aurantia*. Upon closer inspection, it was noted that these orange fungi were inhabiting the same moss covered woody debris substrate as, and sometimes actually touching the apothecia of normal red *S. austriaca* (Figs. 2 & 3). Since growing on wood immediately ruled out *A. aurantia*, they too had to be a *Sarcoscypha* species – but which?

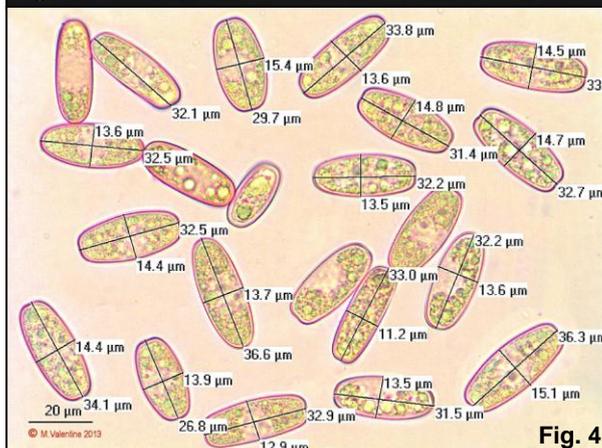
Taking several differently sized examples home for further study, microscopy from overnight spore drop revealed spores measuring 26.8-36.6µm in length x 11.2-15.4µm in width, many being “blunt” ended and multi guttulate (Fig. 4). Excipular hairs were found to be very curly (Fig. 5). All of this suggested *S. austriaca*. Spores kept on a microscope slide in a “moist chamber” environment germinated after several days, exhibiting germ tubes and conidia, also typical of *S. austriaca* (Fig. 6).

At the time of making the find, I was aware of the existence of only one alternate colour “variety” – that being *S. austriaca* var. *lutea* – and had initially assumed the find to be that. However, when it was discovered that *S. austriaca* var. *lutea* has only one British record, I began to doubt this somewhat hasty determination, and enlisted the help of fungi forum members from “Wild About Britain” and “Ascofrance” websites respectively, for enlightened suggestion.

(At this point I must confess to my naivety, being completely unaware that albinism, with its attendant possibility of orange, yellow, and even white fruitbodies, existed within *S. austriaca* as a species). Several informed replies to my online enquiries ensued, including a response from non-other than eminent mycologist Hans-Otto Baral, who confirmed the find as being one of these uncommon albinotic colour variants of normal *S. austriaca*.

It is thought that such albinism results from rarely occurring genetic defects, resulting in reduced carotenoid pigmentation within the paraphyses – the extent of which determines the colour of the affected apothecia. It is further suggested that once produced, similar colour variants should be seen year on year at a given location.

Samples of both fresh and dried apothecia of these orange variants were subsequently sent to the Mycology section of the Royal Botanic Gardens, Kew, where Dr. Paul Cannon kindly examined them and, using Differential Interference Contrast microscopy, produced this remarkable composite photograph (Fig. 7) along with the following (*italicised*) explanatory notes.



I am indebted to Dr. Cannon for granting permission to reproduce both his photograph and notes here:-

On the left the asci are mounted in water. The other two are in lactic acid (works just the same as lactophenol but doesn't poison you); the centre one is mounted direct from fresh material and the one on the right was made from the dried specimen. Both of the lactic acid mounts were warmed to remove air bubbles.

You can see that the water mount shows lots of oil droplets within the spores and paraphyses (the orange carotenoid pigment is in the paraphysis cells). The lactic acid mounts don't show the oil droplets etc. nearly so well, but you can see the wall structures more clearly - and this is important when you're looking for ornamentation.

Take home message is: both methods have advantages and disadvantages. The important thing is to record how you've made the slide preparations - I wish more taxonomists would specify this in their papers.

By the way, you can see the carotenoid pigments are leached out of the paraphyses much more in the dried material - presumably because the cell membranes are damaged by desiccation. You need to be aware of these

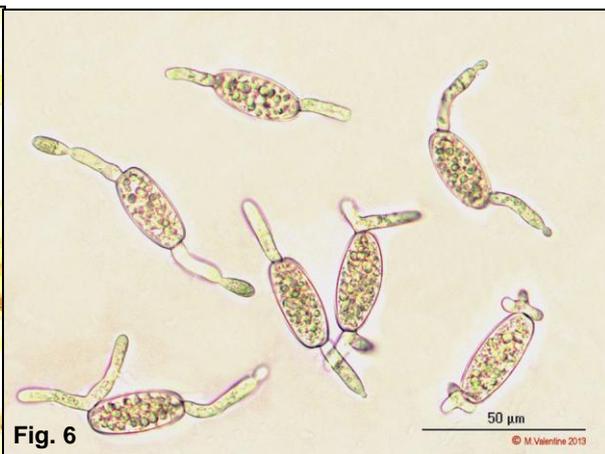
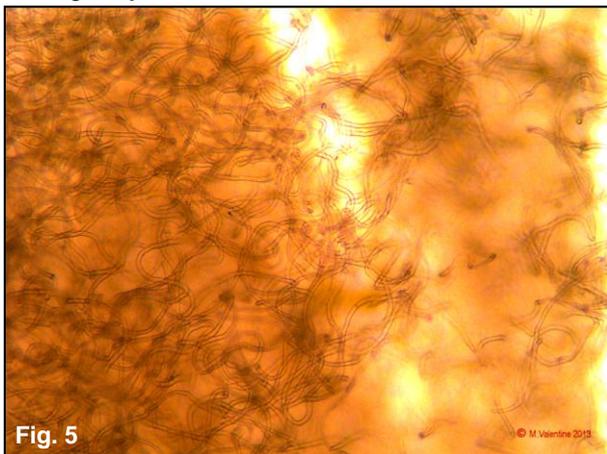
things when comparing fresh material with dried specimens.

I appreciate that my finds were made in Lancashire, well away from the HFSG foraging area, but *S.austriaca* is widespread throughout Britain, and such colour variants might appear anywhere. With little if any mention of albinism affected fruitings having been made within British records to date, it is only by better documenting such colour variation that the frequency of occurrence will become better known. – Definitely a phenomenon worth looking out for.

Footnote – The same orange coloured variants reappeared at the same site during the following winter, (2013/14), and are currently present at the site once again. (January 2015).

References

H.O. Baral, Tübingen, 2004 – The European and North-American Species of *Sarcoscypha*
<http://www.gbif-mycology.de/HostedSites/Baral/Sarcoscypha.htm>



LOOKING FOR A 'RED SPRAY-PAINT JOB'

Debbie Evans

As most members are aware, the BMS are currently running a 'Lost and Found' project to try and establish the true distribution and rarity of a number of fungi. In one of the regular project updates we were asked to look for a leaf-spot fungus called *Polystigma rubrum* - it has the delightful English name of 'Blackthorn Dotty'. I was already aware of this species, having recorded it on at least 3 previous occasions. It is an unmistakable fungus and when I encountered a heavy infection for the first time my initial thought was that someone had had an accident with a red paint spray-gun!

The leaves of the Blackthorn, *Prunus spinosa*, were covered with a splattering of reddish-orange dots with corresponding slight thickened, orangey area - the stromata, on the underside. Reference to Ellis & Ellis quickly identified it as *P. rubrum*, an Ascomycete fungus - the dots are generally bigger than the 1mm described. Despite these 3 records I realised the species must be uncommon to rare, as I had been monitoring 100's of

blackthorn bushes locally this spring for *Taphrina pruni* and I have been doing plant surveys for several years without finding further records.

I retrieved the 3 records from my database - the Llŷn, Caernarfonshire in 2009, and Anglesey 2014 and 2007. The first 2 were on Wild Plum, (bullaces), *Prunus domestica* in hedgerows and the latter was on blackthorn. I decided to return to the sites and managed to re-find all 3 records in exactly the same place, including the 2007 one - after over 8 years! Only the blackthorn here, along a short length, was infected and, despite searching other nearby bushes, no further infected ones were found. This would 'suggest' a perennial or systemic infection and either a low infectivity rate of the fungus or a variation in the susceptibility of individual bushes.

For the Llŷn and Anglesey records on wild plum, I was able to check all possible host trees and bushes in nearby hedgerows and identified an extended area of infection in both cases. However,



P. rubrum - heavy infection on *Prunus domestica*



P. rubrum - on underside of leaf



P. rubrum - on topside of leaf

especially on Anglesey, no further infection could be found outside of the 'hotspot' in any direction. Despite the presence of blackthorn in the hedgerows, most was unaffected.

An explanation could be that the hedgerows are cut severely at least once a year, preventing the fungus from establishing. One area of blackthorn with infection was behind a wide ditch and mostly out of reach of the flail mower and the 2004 blackthorn

record was on a nature reserve rather than on a roadside. Lesions on plum leaves tend to be bigger and much redder or carmine-red on the upper surface compared to those on blackthorn. Ellis & Ellis states that infection is more common near the sea, yet all my records and a recent one from near Pentraeth on Anglesey, (Charles Aron, pers. comm.) have been inland. It does seem to have a more westerly distribution in Great Britain. Full details about the *Polystigma rubrum* including microscopic information are on the Lost & Found datasheet.

This is an interesting and pretty fungus - definitely one to look out for. But, in my considerable experience as a plant surveyor and field mycologist, it is a chance finding and would be difficult to target.

Further Information and References:

Ellis & Ellis (1997). *Microfungi on*

Land Plants. 2nd Edn. Richmond Publishing.

Lost and Found Fungi Datasheet: *Polystigma rubrum*.

<http://fungi.myspecies.info/content/lost-found-fungi-project>

INVISIBLE CLUES

Jo Weightman

Some fungi play hard to get, others make it easy. The elusive ones, lacking tell-tale features, have to go under the revealing eye of the microscope. In the field it is so satisfying when all the cogs fall into place ie a number of characters can be 'read' and the fungus in the hand can be named. The eye is seeing, or the hand lens revealing, all manner of features but there may be other, invisible clues. For example the find may have a smell or like monkeys have a 'tail' or 'root'. Such is *Hebeloma radicosum*, one of the easy ones and my trigger for this note.



Fig 1 *Hebeloma radicosum* - Haugh Wood (2/9/2015)
photograph by Ian Fraser



Fig 2 *Hebeloma radicosum* and 'root'; photograph by Jo Weightman

On the 2nd September 2015, in Haugh Wood, a specimen was collected that had it all, both visible and invisible diagnostic characters. The cap was creamy brown, overlaid with brown fibrillose scales, looking rather blotchy overall, thick and fleshy. The stipe, similarly coloured, was also chunky and had a ring. The gills and spores that had fallen on the ring were yellow-brown. Spore colour and body colour overall suggested *Hebeloma*, which nowadays are often an over-the-shoulder-job.

But there is a ring.... and a smell ! ... and why does it not want to leave the ground?..... such a 'tail'!

This root-like structure is unique.... lo and behold, it is a 'monkey'. Identification comes as a shaft of light..... *Hebeloma radicosum*.

This species is not often recorded, years going by without a sighting. Stephanie Thomson saw it, also in Haugh Wood, in 1981, but it has not been recorded there since. Unfortunately, there is no way of telling whether the 2015 collection appeared in the same spot. There are just six other known sites in the County and it is rarely reported nationally. Fig. 1 shows the visible characters and the substantial build. But it cannot show the two invisible key characters. One is a strong smell of almond/anise and the other is the 'tail'.

Smell first.

Almond / bitter almond / anise. I must bow to those who have noses who can separate these smells. I cannot, although oddly, I love the taste of almond and loathe anise. The smell is not unique, for in Britain there are other fungi that give off a very similar odour - notably some of the *Agaricus* species, especially those in the subsections *Arvensis* (eg the Prince, *Agaricus augustus* and the Horse Mushroom, *A. arvensis*) and *Minores* (eg *A. lutosus*).

Agaricus species also have rings, may be substantial, have yellow-brown colours and may be scaly - so not a hundred miles from our *Hebeloma*. But the spores of an *Agaricus* are a rich chocolate brown and they are not 'monkeys'. At most, a few species have a wee hanging thread.

Among the *Clitocybes*, *C. odora* and *C. fragrans* are well-known account for their delightful almond smell. The former, when fresh, is normally a distinctive soft greenish blue, thus identifiable even without the help of the nose. But the second is a small pinkish tan brown species, unremarkable save for the strong smell. It is not even necessary to do the usual pinch and squash before sniffing.

Clitocybe obsoleta, which enjoys the same smell, has recently been restored to the British list following a recent collection in Surrey. It is a pallid, clay-coloured species of conifer woods. See *Field Mycology* 15(4) p111 for a discussion of this species.



Agaricus augustus

My final offering of almond-smelling agarics may come as a surprise – *Inocybe hirtella*. As most *Inocybes* can only be named under the microscope, it is a relief to know that

a few have useful smells. *I. hirtella* occurs in broad-leaf woodland on calcareous soils and has a fibrillose-finely scaly yellow-ochre cap. It looks horribly like and could well be any one of a number of species – but not with that diagnostic smell. Andy Woodall had the perfect title in FM1(2) p40. “Comparisons are odorous”

The tale or ‘tail’ of *Hebeloma radicosum*.

This is no slender thread, but the real article, reaching down perhaps 50 cms or more. I recall one occasion when a fungus I was collecting resisted arrest and I had to wriggle my arm through humus and loose soil right up to the elbow to extract as much as possible of the thick ‘tail’ or rhizoid. (See Fig. 2).

This amazing structure arises from the latrine, or nest of a mole or wood mouse and has been reported from rabbit warrens. The explanation for this intriguing lifestyle is that some fungi are known to have a particular dependency on soil alkalinity. Such is the case here. Ammonia from the urea in the latrines or released from decaying animal bodies reduces soil acidity. It seems likely that spores of the fungus were introduced into the nest by the animals in the first place, either through their droppings or on their feet. It could even be that the mycelium permeates the walls of the underground tunnel or nest making it stronger.

But fruiting from the mycelium would be induced by an optimum level for the fungus of alkalinity.

To my knowledge, no other British fungus can boast such an appendage. A few have stipes which extend into the soil for about half length of the stipe, The best known is the Rooting Shank, *Xerula* (formerly *Oudemansiella*) *radicata*, which arises from the buried root to which it is attached by what looks like an extension of the stipe usually angling off sideways. The related *X. pudens* (formerly *Oudemansiella longipes*) has a similar rooting structure. Both cap and stipe of this second *Xerula* have conspicuous stiff hairs. *Tephrocybe rancida* is less commonly known. It is a much smaller fungus, mycenoid in build and an unassuming smoky grey all over, but it can be readily identified by its strong rancid mealy smell and its tapering root-like ‘tail’. *Coprinus cinereus* is ‘rooted’ in dung or manured soil, a habitat often crusty dry on the surface but wetter and warmer below. The term radicant is used for all of the above apparently rooting species and also describes those with stipes, which are no more than Manx-like stumps again often set at an angle. Certain boletes exhibit this feature eg *Boletus radicans*, as do a few Cortinariid eg *C. duracinus*. This is why fungi should never be snapped off when collecting but carefully eased out with a tool – bottoms are important.

AN EXCEPTIONAL ‘TAPHRINA’ YEAR IN NORTH-WEST WALES

Text & photos by Debbie Evans

The Taphrinas are a group of plant parasitic, Ascomycete fungi, producing their spores within asci. However, unlike many fungi they do not form a fruiting body of their own and instead utilise a host’s tissues: we detect them by the interesting and sometimes spectacular galls that they provoke. They are all obligate parasites and, like the Rust Fungi I study, cannot live or reproduce sexually independently. They only thrive within a host.

In most years I see a few examples of ‘Pocket Plums’, the classic sign of *Taphrina pruni* infection of Blackthorn, *Prunus spinosa*. This is one of the more common species. However, 2015 has proved to be exceptional and almost every blackthorn bush I looked at around Anglesey and in Caernarfonshire was infected to a greater or lesser extent. I first started seeing the signs of infection in late May, while out running. Blackthorn is an important component of the hedgerows around me and, being a keen runner, I can view a lot of bushes and trees! It was soon apparent that it was not the odd tree which had the fungus, but the majority. Infection was also more severe than I have seen previously, with foliage often being affected as well as the sloes. The twigs and shoots appeared stunted, or distorted and the leaves small and deformed, especially at the tips of the branches.

The blackthorn is infected by spores landing on the bark during the previous season and, when conditions dictate, these germinate and penetrate the tissue, where they can gain nutrients and produce a mycelium. Then, in the spring, the fungus invades the flowers and the sloes as they start to develop, causing the tissue to thicken and elongate and the fruit stones not to form.

Cell division is enhanced, so infected sloes are larger than normal ones and, eventually, a long hollow pocket is formed, often curved due to uneven growth on one side. This results in the classic ‘Pocket Plums’, which are inedible and can be variably coloured, pale-green to orangey-red. On the outside they are soon covered with a



Pocket Plums on Blackthorn, caused by *Taphrina pruni*



Deformed foliage on Blackthorn, caused by *Taphrina pruni*

bloom, which is the protruding asci, from which the spores are ejected to complete the life cycle. Later the pockets become dry and shrivelled and fall off the tree, so monitoring of the disease needs to take place in the spring and early summer. Many fungi are highly influenced by weather conditions and I can only speculate that conditions last summer were ideal for the spreading of the spores to susceptible blackthorn bushes. Equally, the warm, late spring we had in North-west Wales, and resultant bumper amount of blossom to invade, favoured the fungus.

To judge whether this degree of infection was widespread over the rest of Wales and further afield, I asked members of the HFSG and NWFG for their experiences and it was additionally mentioned on a Welsh language radio programme, (with a warning that Sloe Gin might be in short supply in 2015!) - my thanks to all who replied.

My conclusion was that, although there were sporadic occurrences in other areas, North-west Wales did appear to have much more infection. This could be partly due to the sheer volume of blackthorn hedges up here and that we also do get a lot of rain.....but combined weather conditions may have just been ideal for the fungus.

The more severely infected bushes still look quite sick, with greatly reduced foliage and abnormal twigs, but most infected trees seem to have recovered to a large extent. New growth and leaves can be seen at the ends of branches and, despite my prediction, there still appears to be a decent number of normally ripening sloes for gin - a measure of the heavy blossom earlier this year. Plum trees, *Prunus domestica*, are also susceptible to this fungus and I saw a number of trees with some 'Pocket Plums', but none as heavily affected as the blackthorn.

One of the most spectacular *Taphrinas* is *T. deformans*, the cause of 'Peach Leaf Curl' on Peaches and Nectarines, *Prunus persica*, and occasionally Almond, *P. dulcis*. Areas of the leaves, in this case, are greatly thickened and turn a bright red colour, making them very visible. They tend to fall early, so the greatest effect on the tree is loss of leaf material indirectly reducing the fruit yield, rather than a direct effect on the fruit. (See Evans, 2012).

Bird Cherry, *Prunus padus*, is the host to a *Taphrina* species called *T. padi* and elongated, hollow galls, similar to Pocket Plums, are formed instead of the normal cherries. This is a species I had not seen, so I was very pleased in May when I found a tree on Anglesey, with a heavy crop of 'Pocket Cherries'. Despite searching I failed to locate any further records, but the tree is not very common on Anglesey and always planted.

At the end of July Roger Evans sent me a photo of some 'Pocket Cherries' he had found on the Bird Cherry in his garden, presumably caused by *T. padi*. He also sent photos of crinkled, thickened and reddened leaves very similar in appearance to Peach Leaf Curl from the same tree. I suspected this could be a further species of *Taphrina* called *T. wiesneri*, which causes Witches' Brooms and Cherry Leaf Curl on Wild Cherry, *P. avium* and Sour Cherry, *P. cerasus*.

Roger has now told me that this has been confirmed by Brian Spooner at Kew. However, the deformed fruits are

not described for *T. wiesneri*, so it remains unresolved as to which species was responsible.



Peach leaf curl on Almond, caused by *Taphrina deformans*



'Pocket cherries' on Bird Cherry, caused by *Taphrina padi*



Alder Tongues on alder cones, caused by *Taphrina alni*

Taphrina alni has also had an excellent year locally. This species infects mature Alder trees, *Alnus glutinosa* and the infected female cones have elongated, twisted growths protruding from them, hence the common name 'Alder Tongue'. These are initially a red or bright-pink colour and very visible, eventually drying and turning black and they may persist on the old cones. It is fairly common to see one tongue on the occasional cone, but this year infection was heavy in many cases with several tongues per cone. I could not detect any effect on the foliage. The outside of the fresh tongues similarly becomes covered by a bloom composed of the protruding asci, from which the spores are released to infect next season's cones.

A further species, *Taphrina betulinum*, is responsible for the familiar 'Birch Besom' or 'Witches' Brooms' on Birch

trees, *Betula* spp. The fungus infects the apical buds and shoots, causing hyper proliferation until a mass of twigs is formed. These 'brooms' can be quite sizeable and are best seen in the winter on the leafless trees.

Other *Taphrina* species to look for in Britain include

- *T. populina*, causing yellow 'blistering' of the leaves of Poplar, *Populus* spp.
- *T. tosquinetii*, mainly affecting the leaves of *Alnus glutinosa* and
- *T. johansonii*, 'Aspen Tongue', a rarer species galling the catkins of Aspen, *Populus tremulus*.

For the amateur mycologist, the Taphrinas are an ideal group to record as most species are readily identifiable by the host tree and the gall produced, usually with no need for microscopic examination. Useful guides for naming the species are given below.

It will be interesting to see how much blackthorn and alder shows infection in 2016 and I would welcome any comments or observations from others.

Further reading and references:

Chinery, M. (2011). *British Plant Galls: A Photographic Guide*. Princeton University Press.



Witches' Besom on Birch, caused by *Taphrina betulinum*

Ellis & Ellis (1997). *Microfungi on Land Plants*. 2nd Edn. Richmond Publishing.

Evans, D. (2012). *More Garden Rusts and Fungi*.... HFSG News Sheet no. 24.

Ingram, D. & Robertson, N. (1999). *Plant Disease. A natural history*. New Naturalist 85. Harper Collins.
Redfern, M. & Shirley, P. (2011). *British Plant Galls*. 2nd Ed. Field Study Council.

SOME MEMORIES OF UK FUNGUS DAY 2015 AT QUEENSWOOD ARBORETUM



© Photo: Si Homfray



A 'thank you' for these photographs to Si Homfray (top), Ted Blackwell (bottom left) & Roger Evans (bottom centre & right).