



Herefordshire Fungus Survey  
Group

## News Sheet N° 25: Spring 2013



*Cortinarius cinnabarinus* - Croft Castle (3/10/12)

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**Welcome to the Spring 2013 News Sheet**

Firstly, a very sad bit of news that, as many of you will already know, Ted Blackwell's wife, Beryl, died in April. She was a huge support to him in their long married life and we offer our sympathy to Ted and his family.

In this issue there is an article by Roger Evans about a log he found, with pink coloured *Stereum hirsutum*. It turned out to be caused by an infection of *Hypomyces rosellus* and Roger gives us a very good description of that species.

Debbie Evans has contributed two pieces this time, the first discussing the rusts that we might expect to find on ferns. In her own inimitable style she is, as always, brimming over with enthusiasm and very persuasive that we must all keep an eye out for them in future!

Her second concerns the 'Sticky Tape Technique', a useful way for preparing slides of some spores and other structures. Whilst this technique will be familiar to many of you with microscopes, Debbie has introduced one or two refinements and modifications which you may well find helpful.

Inspired by two photographs from Cherry Greenway, Jo describes the not-so-common 'other species' of *Schizophyllum*, *S. amplum*. This has not yet been recorded in Herefordshire, so there is a challenge for us!

At long last, we now have our own HFSG website up and running and, for those who do not already know, you will find it at:

[www.herefordfungi.org](http://www.herefordfungi.org)

Our grateful thanks are due to Les Hughes, who has put in so much time and hard work on it.

As mentioned in the last News Sheet, I have available for sale (£5.50 each) some copies of:

**'A guide to the identification of deciduous broad-leaved trees and shrubs in winter'**, by Andrew May and Jonathan Panter - a Field Studies Council Guide, reprinted from *Field Studies* Vol. 9 (2000).

If you would like a copy, just let me know.

A reminder that UK Fungus Day is on Sun., Oct.13th. For logistical reasons, though, we decided at the AGM to have our HFSG event on the Saturday (Oct. 12th). This will be at Queenswood Arboretum, Dinsmore Hill and it is also

being included in the Herefordshire Parks Department programme as part of the Queenswood Arboretum Diamond Jubilee year celebrations.

Don't forget that the Editor is always looking for **your** contribution(s) to the News Sheet and the deadline for the next issue is September 20<sup>th</sup>. I shall do my best to send it out it expeditiously, but it does help 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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**BIG & BEAUTIFUL**

Cherry Greenway



On the 10th March, when spring was just around the corner (celandines & toothwort in flower) I was in the Worcestershire Nature Trust's Knapp & Papermill Reserve and saw these saucer-size 'ears', high up with the light shining through them. The elder they were growing on was on the side of the Leigh brook, so perhaps their size was due to the tree's position.

Cherry has also sent this nice photograph of *Melanotus horizontalis* on a rope [see also Jo's article on 'Small Fan-like Fungi', HFSG News Sheet No. 20, Autumn 2010, page 11], found by Arthur Cundall at Croome Court, Worcs., and to whom we are very grateful.



From September through to the close of the season, hopes remained high that the rain would trigger fruiting - remember those dry conditions in 2012 which were blamed for the relative absence of fruitbodies? - but it was not to be. Maybe the mycelia were so well fed that reproduction seemed superfluous: maybe they actually 'drowned' in the water-logged ground.



*Melanoleuca strictipes* - Brockhampton Estate (5/9/12)



*Otidea alutacea* - Brockhampton Estate (5/9/12)

**Forays**

**Brockhampton Estate September 5<sup>th</sup>**

The estate yielded a scattering of common saprophytic agarics and brackets. The most productive patch was under a beech where *Lactarius blennius* and four species of *Russula* were found. *Otidea alutacea* (additional to the printed list) was a new site record. *Melanoleuca strictipes* (det. Shelly Stroud) was a second site record for a species rarely recorded in Britain. *Puccinia striiformis* var. *dactylis* (coll./det. Roger Evans) was last recorded in VC36 in 1914, but as *P. glumarum* – some doubt exists as to this synonymy. This variety has been very rarely recorded nationally. *Mastigosporium muticum* (coll./det. Ted Blackwell) is apparently rarely reported in Britain although described as common. Indeed Herefordshire appears to have a disproportionate share, with six records now in five sites. There are 4 records, all on cultivated land, between 1957 and 1963; the fifth record was from Brockhampton in 2008.

**Haye Park Wood September 19<sup>th</sup>**

Fungi were mostly seen in ones and twos only, so the total of about 70 species was pleasing. Of the agarics, *Entoloma conferendum* var. *pusillum* was speculatively named in the field as *E. hebes*, but proved not to be so when the spores were checked. *Lepiota ignivolva*, a species with a reddish flush at the stipe base at maturity, has only been recorded five times since the mid-eighties (and not at all before then). *Sparassis crispa*, usually associated with *Pinus*, was collected under Douglas fir *Pseudotsuga menziesii*. Notable ascos recorded included: *Gibberella pulicaris* in the perfect state, a new VC36 record, deposited at K; *Annulohyphoxylon minutellum* and *Chaetosphaeria callimorpha*, which had each been recorded only once before in the County; *Trichobolus sphaerosporus* which was probably a new VC36 record and certainly new to the site.

The morning foray was followed in the afternoon by an identification session at Jo's house.

A brown agaric picked up from the table at the end of the session was one of the more interesting of the day's finds. While it appeared to be *Pholiota lubrica*, the balloon-shaped cystidia tipped with crystals were uncharacteristic. Deposited at K as *P. lubrica* with notes of its features.

**Croft Castle Estate and Fishpool Valley October 3<sup>rd</sup>**

130 or so fungi were identified, but often of isolated specimens, apart from *Tricholoma sciodes*. However, there was a good diversity of species, mycorrhizals excepted - but that is this year's trade mark! This was an all day foray, although most species were found on the beech hanger in the morning, including several interesting species of *Cortinarius*:

- *C. turgidus* is a 1st VC36 record and very rarely recorded anywhere;
- *C. cinnabarinus* (see front cover photograph) - this spectacular and nationally uncommon species has been recorded 12 times in the County in the last 160 years, the last 4 of which are all from the Croft Estate.
- *C. acetosus* is a 1<sup>st</sup> VC36 record. There are very few national records of it, but this probably reflects a universal reticence in the face of a *Cortinarius* species - especially brown ones.

*Lepista irina*, which has only one other County site (Haffield), is a very sweet smelling and rather uncommon species.

The grassland in the park was not 'on song,' but the dung was. Of the species identified (Ted Blackwell), *Delitschia niesslii* is not unrecorded in Britain, but does not feature in the national database.

**Frith Wood October 17<sup>th</sup>**

A rewarding day as a quarter or so of the 100 species recorded were new to the site, most being common. Decay fungi were dominant among which 14 species of *Mycena*. *Mycena adonis* var. *coccinia*, however, is not common. This is the first VC36 site for this charming, diminutive, pink species with a red stipe (see next page for photograph).



*Mycena adonis* var. *coccinea* - Frith Wood (17/10/12)



*Resupinatus applicatus* - Frith Wood (17/10/12)



*Typhula phacorrhiza* - Frith Wood (17/10/12)



*Typhula setipes* - Frith Wood (17/10/12)

Other interesting litter species included *Lepiota echinella* (3<sup>rd</sup> VC36 site), *Resupinatus applicatus*, *Typhula setipes* and *Typhula phacorrhiza*, the last a thread-like club looking like dead grass arising from a small yellow-brown, lens-shaped sclerotium. It is common, especially in damp ash litter, but easy to overlook and often confused with *Macrotyphula juncea* (but this species does not have a sclerotium).

The *Resupinatus* is a dead wood species occurring in dense colonies of small, (~ 5mm), grey, fan-shaped, stalkless caps coated to a greater or lesser degree with black hairs.

#### Lea and Pagets Wood November 14<sup>th</sup>

Quite surprisingly for late November and very wet ground, nearly 100 species were recorded. Once again, scarcely a mycorrhizal fungus in sight, but by now their day was almost past.

The most spectacular fungus seen and the least common in VC36 was *Cortinarius cagei*, formerly known as *C. bicolor* and recorded just once before (2008) in Barnett Wood. Cap date brown with a white margin, hygrophanous and stipe a handsome purple throughout, with some white streaking.

We also recorded *Auricularia auricula-judae* on field maple *Acer campestre* (2<sup>nd</sup> county record on this host, *Rhodotus palmatus*, *Endoxyla* (*Ceratostomella*) *cirrhusa* on dead wood (new site record), *Macrocystidia cucumis* (fishy smell), *Tricholoma scalpturatum* and *Physisporinus vitreus* (rarely recorded and surely overlooked). *Peltigera hymenina* has only two other known sites in VC36 and does not seem to have been much recorded nationally.

#### Coppett Hill November 28<sup>th</sup>

Months of wet weather and extreme cold on the day issued a challenge to fungus and forayer. We searched just one area of the very large site, exploring broadleaved

woodland dominated by beech and ash with occasional patches of rather coarse grassland and more extensive grassland on the hilltop.

Most members forayed on the wooded lower slopes, finding, among more common species, *Coprinellus impatiens*, *Hypoxyton fraxinophilum*, *Terana caerulea*, *Litschauerella clematidis* (3<sup>rd</sup> VC 36 record), a white corticioid occurring on wild clematis *Clematis vitalba*, *Stypella grilletii* (4<sup>th</sup> VC 36 record) and, delightfully, a second collection this year of *Mycena adonis* var. *coccinea* (2<sup>nd</sup> VC 36).

There was a good colony of *Tricholoma cingulatum* which was first recorded at this site in 2011. Surprisingly, there is no other vice county record for this not uncommon annulate species associated with willows.

Fungi recorded on the grassland summit included *Hygrocybe mucronella* and *H. punicea* and the earth tongue *Geoglossum glutinosum*.

Several fungi were new County records, including *Tulasnella saveloides*, a species described by Peter Roberts, only recorded so far in 3 other (southern) counties and *Radulomyces rickii*, a rarely recorded corticioid differing from *R. confluens* by the uniformly globose spores.

Although scheduled as an all day foray, by midday we were all too frozen to continue.

#### Kinsham Court and Gorge December 12<sup>th</sup>

Cancelled owing to the extreme cold.

#### Interesting non-foray records

*Boletus radicans* 19.09.12 with oak *Quercus* sp, Upper Grange Bacton Charles and Susan Hunter. Boletes have been in very short supply this year.

*Cantharellus tubaeformis* 14.11.2012, Haugh Wood, coll. Margaret Hawkins. A normally common species but this is the only 2012 record.

*Clavaria incarnata* 04.09.12 coll. Cherry Greenway from her garden, det. Peter Roberts. A new VC36 record.

*Clitocybe houghtonii* 16.12.12 churchyard at Bodenham, where it was abundant under yew *Taxus baccata*. Jo Weightman.

*Flammulaster carpophilus* var. *subincarnatus* 06.10.12 Fishpool Valley Croft Castle Estate (1<sup>st</sup> VC36 record) and 21.10.12 Wapley Hill (2<sup>nd</sup> VC36 record). Usually on beech mast and probably widespread but overlooked. Jo Weightman.

*Geastrum striatum* 16.12.12 churchyard at Bodenham, a large colony under yew. Reported by Cherry Greenway.

*Gymnosporangium sabiniae* 18.09.12 rust on pear leaves, garden coll. Cherry Greenway, det. Ted Blackwell and 20.09.12 on Conference pear leaves orchard Herefordshire Nature Trust, Jean Wynne-Jones. 3<sup>rd</sup> and 4<sup>th</sup> VC36 records.

*Hydnum umbilicatum* 06.11.2012 in litter under *Pinus nigra*, Queenswood Arboretum, Jo Weightman. See *Field Mycology* October 2012 for details of this new British species. This appears to be the third British and first English collection. K.



*Hydnum umbilicatum* (photograph by Jo Weightman)

*Hygrocybe calyptriformis* 24.10.12 churchyard, Orleton. Jo Weightman. New site record.

*Hygrocybe splendidissima* 10.10.12 Cefn Hill Common, Sheila Spence.

*Macrotyphula juncea* 29.10.12 Great Doward, reported by Heather Colls. A new site record.

*Postia wakefieldaei* 01.11.12 on birch log, Mortimer Forest 3<sup>rd</sup> VC36 site, Jo Weightman.

*Rimbachia arachnoidea* 12.10.12 on *Polytrichum* sp., Oaker Coppice, Bircher Common, coll. Jo Weightman, det. Ted Blackwell, conf. Alick Henrici. 1<sup>st</sup> VC36 record. Near Threatened RDL 2006. K.

*Tricholoma sciodes* unusually abundant for most of the season, in beech litter Fishpool Valley, Jo Weightman.

Thank you to everyone who sent in records and especially to those who spent (happy?) hours with a microscope identifying specimens.

We have news at last of the unfamiliar bolete collected during the Moccas foray 19.10.2011. The flesh was an amazing, intense, unchanging, golden yellow. The fungus was thought to be a non-blueing form of *Boletus pulverulentus* by Geoffrey Kibby and this has now been confirmed Dr Bryn Dentinger following by DNA analysis at RBG Kew, making it the first known British collection. The find has been written up in the Editorial of the April 2013 issue of *Field Mycology*.



Non-blueing form of *Boletus pulverulentus* (photograph by Jo Weightman)

#### Erratum

In my article on pores and gills in the last newsletter, I mistakenly wrote that CBIB had ignored the lamellate 'tricolor' form of *Daedaleopsis confragosa*. There is, however, a note in the Excluded section, where 'tricolor' is described as "not authentically British". Time will tell!

## A PINK BRACKET

Roger Evans

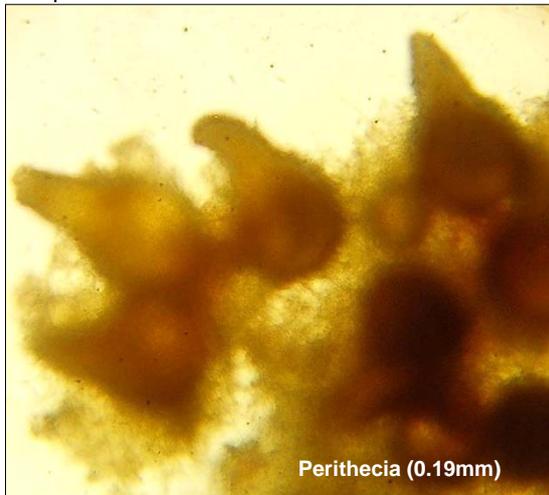
I was cutting up some oak logs for firewood last autumn: they had been cut from the tree in the preceding winter. When I lifted one up I saw a resupinate and a bracket fungus of a brilliant cerise red (rose red on Rayner's Mycological Colour Chart, Rayner, 1970). I had never seen a similar fungus of that colour, so I thought it might be something exciting. However, being rather more used to examining fungi on Petri dishes, it reminded me of the pigment produced by some species of *Fusarium* in culture.

I wondered whether the colour was due to a micro-fungus growing over the brackets and, if so, what were the brackets?

Some on the same log were clearly *Stereum hirsutum* and, on closer examination, the pink brackets appeared to be *Stereum* covered with numerous perithecia (0.19mm). On squashing these, they were immature and no asci or ascospores were present.

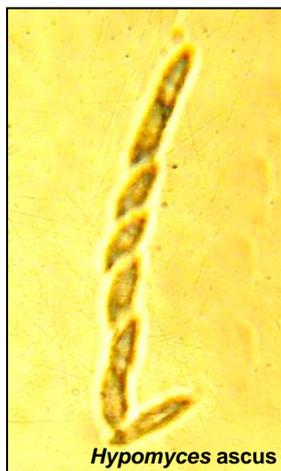


The log was left in a safe place outside and re-examined in February, when I found some asci in the perithecia. The ascospores (28 x 7µm), which were arranged in a tight row (uniseriate) in each ascus, had small appendages at either end and a single septum, so making them bicelled. The whole was covered with minute warts (verrucose). The micro-fungus was clearly *Hypomyces rosellus*



Perithecia (0.19mm)

Ellis and Ellis, 1988, state that the fungus is commonly found on *Stereum hirsutum*, *Piptoporus betulinus* and *Trametes versicolor*, amongst others. I had seen it as dark pink spots on *Piptoporus* and there are 4 records on this fungus in VC 35 (Monmouthshire), but none on *Stereum*. Nor do there appear to be any on this host in VC 36 (Herefordshire), although there are a few such records in other counties. Then, recently, I found the same pink colour on *Trametes versicolor* and again there are no records on this host in VC 35, although there are two records from VC 36. Am I in a *Hypomyces* hot spot I wonder??



*Hypomyces* ascus



*Hypomyces* ascospores



*Hypomyces* ascospore

## LOOKING FOR FERN RUSTS – A WINTER PURSUIT

Debbie Evans

A cold winter's day may not seem the ideal time to venture out and search for rust fungi, however it can prove quite rewarding. One group is quite prominent at this time of the year and any trip to a damp woodland or shady bank where ferns are growing should result in at least a few rust records.

The fern rusts are heteroecious<sup>1</sup> and can parasitise both ferns and fir trees (*Abies* spp.), although in Britain they are found almost solely on various ferns, with few records on the conifers. The aecia and aeciospores are formed on fir needles, while the uredinial and telial stages occur on living fronds of ferns, with the uredinia containing the urediniospores being the stage most easily found. The teliospores, where formed, are intracellular within the epidermal cells and thus much less conspicuous. In Britain these rusts can persist from year to year on the over-wintering leaves of ferns, without the need to complete their full life-cycle on fir trees.

looks as if it has been finely dusted with white flour or icing sugar. A further genus, called *Hyalopsora*, (3 species) has orangey coloured spores.

Only some of the *Milesina* species can be considered to be 'common and widespread'. There are also a few 'very rare' or 'rarely recorded' fern rusts, plus a couple which are probably extinct.

On a rust hunt the ferns which retain their leaves during the winter should be targeted, and the older, often moribund leaves examined for signs of infection.



The rust genera involved are of interest scientifically, as they are considered to be some of the oldest and most primitive of the rusts and heteroecism is thought to have originated in relatives of these groups. Alternation between two taxonomically unrelated hosts can be a distinct advantage for a parasite as, in this case, it allows the rust to exploit a wider range of habitats and altitudes, to use different times of the year and, thus, generally increases its chances of survival.

There are 14 fern rusts in the Basidiomycete checklist that have been recorded in Great Britain and Ireland and 8 belong to the genus *Milesina*. The species in this genus, along with those of *Milesia*, (1 species) and *Uredinopsis*, (2 species), produce hyaline urediniospores instead of the more typical coloured spores of many other genera, like *Puccinia* and *Uromyces*. The spores appear white *en masse* and, as a result, a heavily infected frond often

Any suspect rusts can be examined microscopically for typical rust spores if confirmation is necessary. Most ferns are only infected by a single rust, so naming it is easy. But in a few cases, where there are two possible species on the host, critical spore examination will be needed to identify the rust. The best texts to use for study and identification are listed with the references below.

Rusty-back Fern, *Asplenium ceterach*, despite its name has no rust associated with it and the backs of the fronds, when mature, are entirely covered with reddish-brown scales, from which it derives its common name.

*Milesina dieteliana* on Polypody, especially the common *Polypodium vulgare*, is a good species to start your search with. This fern is found growing on shady walls, banks, around bases of trees etc and searches should be made of the older leaves especially in damp conditions. Look for leaves with brown or dark patches and examine them underneath for brown pustules and the white spores, (a hand lens can be useful). The uredinia can be dotted over

<sup>1</sup> using two taxonomically unrelated hosts to complete their full life-cycle

the whole surface of the pinnules, especially round the edges and are much smaller and distinct from the round sori containing the fern spores. (Many rusts, however, tend to occur on sterile fronds).

*M. scolopendrii* on the darkened, older leaves of Hart's Tongue Fern, *Phyllitis scolopendrium*, (see photograph on previous page) is also very common and damp fronds can be completely covered underneath with a white dusting, which contrasts well with the long brown fern sori.

Soft Shield Fern, *Polystichum setiferum*, is a common fern in the woodlands near my home and I can always find heavily infected fronds in the winter although the rust involved called Shield-fern Rust, *M. whitei*, is regarded as a rare species according to all the texts. It is also recorded occasionally on Hard Shield Fern, *P. aculeatum*. The spores need checking microscopically and in this case they are echinulate, as with most fern rusts.

This easily differentiates it from the only smooth-spored one, called Smooth Spored Fern Rust, *M. vogesiaca* - the other species recorded on *P. setiferum*. This species is very rare and I have yet to record it myself, but Nigel Stringer has records for Carmarthenshire - definitely one on my wish list!

An easy rust to record should be *M. kriegeri* on Broad Buckler Fern, *Dryopteris dilatata*. Check the older, darkened, often moribund fronds which, in damp conditions, can be covered underneath with the 'white powder'. The species less commonly infects Male Fern, *D. filix-mas* and is uncommon on Scaly Male Fern, *D. affinis* agg. and other *Dryopteris* species, including those cultivars in gardens.

There is a second rust called Male Fern Rust, *M. carpatorum*, infecting *D. filix-mas*, but it is much rarer and on the RDL, where it is listed as vulnerable. The urediniospores of this species are smaller in size than *M. kriegeri*. I always check each collection of infected Male Fern in the hope of one day finding the rare species - but not found as yet!

I regularly find *M. blechni* on Hard Fern, *Blechnum spicant*. This rust infection is less obvious and fronds need to be closely examined, concentrating on those damp ones showing areas of darker colouration on the

upper surface, and then checking for pale pustules, the uredinia, and white spores underneath, always helped by a hand lens. It is rare in my personal experience to find heavily infected fronds.

Wall Rue, *Asplenium ruta-muraria*, is an atypical looking fern, usually found growing in cracks on old walls. Check the older, browner leaves underneath for the light brown uredinia and whitish spores of *M. murariae*; the fern sori can be covered by a silvery covering, but should be easily distinguishable from the rust. I find this species quite often, although it is more common in some years than others. I am sure that this rust must be under-recorded, with only 40 records at present in the FRDBI.

Andrew Graham, a friend and mycologist, has found the orange-spored *Hyalopsora polypodii*, which infects Brittle Bladder Fern, *Cystopteris fragilis*, at 2 old quarry sites, one in Flintshire (Sept. 2012) and one in Merionethshire (Sept. 2011). The fern fronds can be covered underneath with bright-orange spores and the infection should be easy to spot if present. The fern itself is fairly uncommon, found in limestone areas on cliffs, in rocky crevices, quarries, ravines etc and worthy of looking for in its own right. This rust will be one of my target species for 2013 in a quest to find my first Caernarfonshire record. Of the other two species of *Hyalopsora* known from Great Britain & Ireland, Oak Fern Rust, *H. aspidiotus*, on *Gymnocarpium dryopteris* is considered extinct and Maidenhair Rust, *H. adianti-capilli-veneris*, on *Adiantum capillus-veneris* is very rare.



*Milesina whitei* on Soft Shield Fern



*Milesina kriegeri* on Broad Buckler Fern



*Milesina kriegeri* on Male Fern

There are three further fern rusts: however, they are either very rare or probably extinct. BUT it is still worth checking fern species in passing like Oak and Beech ferns, and Black Spleenwort .....just in case! The fern rusts can be found at different times of the year, but winter is definitely the best time to target them, when there is very little else around, adding interest to a walk and hopefully generating lots of valuable records. Happy hunting!

**References and useful texts:**

Ellis & Ellis (1997). *Microfungi on Land Plants- An Identification Handbook* Richmond Publishing  
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 Termorshuizen, A.J. & Swertz, C.A. (2011) *Roesten: Roesten van Nederland* (Dutch Rust Fungi)  
 Wilson, M. & Henderson, D.M. (1966). *British Rust Fungi* Cambridge University Press



*Milesina blechni* on Hard Fern



*Milesina murariae* on Wall Rue



*Hyalopsora polypodii* on Brittle Baldfer fern (and spores)

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**FURTHER TO BYSSOMERULIUS CORIUM**

In the last issue of the News Sheet, Jo mentioned the very common *Byssomerulius corium* as an example of a meruloid fungus [see page 6, 'Variations on a Theme - Pores are Pores and Gills are Gills - or are they?']. We recently found this stick beautifully covered with *B. corium* in our garden and the right-hand photo shows what Jo was talking about.



Shelly & Mike Stroud

## SCHIZOPHYLLUM AMPLUM

Jo Weightman

Cherry Greenway has started 2013 with a bang by finding *Schizophyllum amplum* – in Worcestershire alas - but close to our VC36 boundary. There is a single record in the FRDBI from Gloucestershire (2003), but most of the entries are for finds in the eastern and southern counties. The fungus is widespread both in Europe and worldwide but, as yet(!), there is no Herefordshire record for this fungus so the search is on.



The Split-gill fungus, *Schizophyllum commune*, is generally well known; the Jelly Ear, *Auricularia auricula-judae*, even more so. The subject of this article, *Schizophyllum amplum*, is a fungus that lies, or appears to lie somewhere between the two and is listed as Near Threatened on the Red Data List ed.2. It was previously known as *Auriculariopsis ampla*, the –opsis of the latter name indicating the similarity to *Auricularia*. In other words, this is a look-alike species.

This fungus really does closely resemble the Jelly Ear, with a similar cup or ear shape, attached by the back to the host and a jelly-like texture. It is, however, never as large, being no more than 2cms in diameter, has a much paler cream to pale ochraceous brown colour (not red-brown) and a tomentose whitish reverse. It occurs on dead, often attached, poplar (not elder) or, more rarely, on willow. Any poplar will apparently serve as host. The gelatinous hymenial surface may be smooth or exhibit radial folding – giving then a faint glimmer of its sisterhood to *Schizophyllum commune*, which has a firmer, rather waxy surface, folded into pronounced, narrow, gill-like folds - albeit highly specialised ones. However, the specimens in the photos do not show any radial folding: neither do any others I have seen and I suspect it may not often happen.

Interestingly, both the relative, the Split-gill and the look-alike, the Jelly Ear, share a character lacking in our subject fungus – they are able to maximise their chances for spore dispersal. In dry and, therefore, unfavourable conditions, the divided edge of the Split-gill fungus folds back, shutting off smaller gills and the hymenium beneath. When rain falls, the cap rapidly absorbs moisture, the flaps return to the erect position and the basidia reactivate. Experiments have shown that fruitbodies dried and stored in a vacuum are capable of resuming spore production after thirty-five years.

The same result is achieved by the so-called jelly fungi, but they have a different technique. *Auricularia auricula-judae* desiccates in a dry atmosphere, shrinking and drying to a crisp but, when moisture is again available, it

swells up and re-commences sporing. It is not surprising then that these two species, providing the host is available, are always with us and well known. As *Schizophyllum amplum* is not gifted with a split gill edge and is not a jelly fungus, it lacks these advantages. In fact, it appears to be generally disadvantaged, given its relative rarity in the UK.

My thanks to Cherry whose photographs mean more than all the words above and illustrate how abundant this fungus can be when it finds what it likes. Never pass a poplar!



## THE STICKY TAPE TECHNIQUE – a useful aid in the study of Rusts and Mildews

Debbie Evans

Many years ago, when I was just beginning to collect and study rusts and mildews, I was working in the same *Phytophthora infestans* research laboratory at Bangor University as Dr Richard Shattock. As well as being a world authority on Potato Blight, Richard has done a lot of work on downy mildews and rusts. He told me how sticky tape could be used to produce a slide preparation of spores and other structures. I experimented with using tape myself and it has become an invaluable and indispensable aid in my studies. I do not, therefore, claim to have devised the method described below, but I have modified it for my own use and hope that others might also find my notes useful.

This is a simple and quick method to produce a slide preparation and negates the need for (and expense of) a coverslip. It works best on fresh material and more care is needed with dried or fragile specimens. The tape used must obviously be clear and proprietary brands like 'Scotch' tape are suitable, although I often prefer to use cheaper and slightly less sticky tape to get the best results. I find that the stickiest tape is more likely to tear leaf material on removal, especially with delicate tissues, when a very light-handed approach is needed.

Experiment with different tapes if necessary as, provided the tape is clear, any might be suitable. Ideally, choose a tape width similar to that of the slide.

1. Cut a piece of the tape 3 or 4 cm long and carefully place the sticky side over the sori, lesions, and spore masses etc. on the leaf or other infected part of the plant.
2. Press down gently and then very carefully peel off. With delicate material hover the middle of the tape over the lesion and just press gently at that spot. Try to remove only the tape and avoid tearing the plant tissue. With thicker leaves the tape can be pressed down more firmly to collect material.
3. Place a small drop of water (my preference), or a stain like lactophenol cotton blue, on a slide and carefully put the tape on the slide, starting at one end and slowly lowering it to avoid too many air bubbles, until it is lying flat on the slide. This may require practice, as too much liquid will result in the tape floating, with liquid oozing out of the sides and too little will increase the number of bubbles making examination difficult.
4. The tape will pick up spores, aecial cups, hyphae etc and these can now be viewed under the microscope.

Where only a few tiny lesions are present the tape can be applied to the tissue and, under a low-power microscope or with a hand lens, the critical area can be viewed and a mark or circle drawn on the tape while still attached. This will aid finding the spores and other structures under the microscope.

The advantage of the sticky tape is that structures are not disturbed and are, in effect, viewed 'in situ', without the need to use a blade to scrape or cut leaf sections etc. In addition to rust spores and structures, the technique works especially well with the downy and powdery mildews to view sporangiophores, sporangia, oospores, conidia, hyphae etc. The tape can be treated as a coverslip and used with immersion oil at high power and measurements are then possible. Acceptable photographs can even be taken down the microscope.

The tape is fully disposable after use and the slides washed for reuse. I frequently make 2 or 3 preparations

simultaneously, to view on the same slide and, in this way, a large number of specimens can be screened quickly.

Disadvantages of the method include the non-permanency of a preparation, damage to material if very fragile and, if too much material is picked up, or the tape applied carelessly to the slide, there can be a lot of bubbles. It works best with fresh material, especially thicker leaves and is less suitable (but not impossible), for dried and more brittle material where more care will be needed. Only the surface of the material is sampled and underlying structures will not be sampled. It is not suitable for squash preparations and similar.

This is a quick, easy and cheap way to produce a slide preparation, even if it is just used as 'a preview' prior to making a permanent slide.

