



Herefordshire Fungus Survey
Group

News Sheet N° 11: Spring 2006



Ramaria botrytis – Barnet Wood, 5/10/05 (photo by Cherry Greenway)

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Treasurer: Ray Bray

[Welcome to the Spring 2006 News Sheet](#)

As I write this at the beginning of March, there is snow on the ground outside and we have just had a frost of -8 °C. Spring seems to be a very distant prospect. By the time you read this, however, we shall, hopefully, be into a warm and fruitful fungus season, spurred on with enthusiasm by all the goodies brought to you in this 11th HFSG News Sheet.

It is really pleasing that Stephanie and Ray have, after a short gap, continued with their linked articles on groups of host plants and their associated fungi - this time concerning three common Willowherbs. Incidentally, if anyone has any special requests for them to tackle in a future issue, I know that they would be very pleased to hear from you.

In 2004, the British Lichen Society Bulletin published an article by Tom Preece and Ted on the lichenicolous fungus, *Xanthorhizocola physciae* (on *Xanthoria parietina*). It is reproduced in this issue, together with some further amplification by Tom and Ted and will, I know, be of great interest to many of us.

Jo seems to have been up to her armpits in dung and has produced a (cautionary?) tale about Well, read it for yourself: I think you will enjoy it!

Also, in this issue is the second part of the 'Tribute' article by Neville Wilde - this time on paper-making from fungi.

Finally, a request from me: I am trying to compile an index of topics, fungi, plants, etc. that have been referred to in these News Sheets. When completed, this will be available to all HFSG members, as will updates (say, yearly). Clearly, current and future issues should be no problem for me (provided that I am systematic!), but I wonder if anyone would be willing to help me with the catching up on earlier issues? I should be most grateful.

In the meantime, thank you to all who contributed and everyone enjoy your reading!

Mike Stroud

CHAIRMAN'S MESSAGE

I would like to remind members about HFSG's involvement with the Community Commons Project which is being run by Herefordshire Nature Trust. Although the main surveying year was 2005 it is an ongoing project and we have been asked to continue looking at these particular commons for the next couple of years. This should enable them to collect a good range of data and also boost our own records, of course.

The commons in question are as follows:

- Badley Wood Common in the north east;
- Climbing Jack, Yatton Hill, Wyson and Brimfield in the north;
- Herrock Hill, Hergest Ridge, Merbach Hill, Cefn Hill and Vagar Hill in the west;
- Ewyas Harold and Garway Hill in the south.

Many thanks to those of you who took part in the surveys of fungi on the Community Commons last year - particularly to Jo, who collected quite a splendid amount of records from the north of the County.

Please continue to send your records to Ted as usual but, if you could also keep me informed, I would be grateful.

Happy Foraying!

Sheila Spence

RECORDER'S REPORT, SEPTEMBER - DECEMBER 2005

NETHER WOOD (SO 5233) 27th September 2005

Fairly dry conditions may have restricted the list which was limited to mainly saprotrophs or parasites, only three mycorrhizal species appearing - *Boletus chrysenteron*, *Lactarius pyrogalus*, and *Russula ochroleuca*. A total of about 38 species identified.

BARNETT WOOD (SO3967) 5th OCTOBER 2005

Paxillus panuoides occurs infrequently in the database, although it seems to be more common in recent years and has now been reclassified to *Tapinella*. *Dasyscyphus ciliaris* was only the fourth record, the last in 1993 at Lea & Pagets. Bilbury rust, *Naohidemyces vacciniorum* (= *Pucciniastrum vaccinii*), was the second record this year; it had not been recorded for over 115 years until reported by Jo Weightman in September from Haye Park Wood - not so much overlooked, as almost certainly not searched for. Interesting additions were the fungus-on-a-fungus, *Asterophora parasitica*, on decaying *Russula nigricans* and *Ramaria botrytis* (see cover photograph), with its pink-to-wine-tinged

tips of branches, “*botrytis*” meaning a bunch of grapes in allusion to the colour. A total of about 75 species identified.



Asterophora parasitica – Barnett Wood (5/10/05)

HOLLYBUSH ROUGH WOOD (SO7537) 12th November 2005,

Despite the mainly wooded ecosystem, a fair representation of Waxcaps was recorded. These included the report of a pink-stemmed form named as *Hygrocybe virginea* var. *roseipes*. However, this name is absent from Boertmann and according to Prof. Watling the colour arises from a *Fusarium* infection, so the taxon is illusory; BMSFRD lists it as synonymous with *H. virginea* var. *virginea*. Agarics predominate in the list, although there were many duplicates. There is no previous record of *Calocera glossoides*; however, to quote from the Basidiomycota Checklist: "often recorded but rarely collected, and the majority of these collections are misidentified *Calocera cornea*. Records unsubstantiated with voucher material should therefore be treated with caution". A total of about 83 species identified.

Frith Wood foray (28th September) was cancelled due to access difficulties; **Bromyard Downs** foray (30th November) was snowed-off.

SURVEYS FOR CFGA PROJECT (Caring for God's Acre Project):

Churchyards surveyed were: Cusop (SO2141); Docklow (SO5657); Dorstone (SO3141); Eye (SO4963); Hatfield (SO5859); Llangrove (SO5219); Orleton Memorial Garden (SO4967); Stoke Prior (SO5156); and Yarkhill (SO6042). These produced

a total of about 710 records, comprising about 174 species.

SURVEYS FOR COMMUNITY COMMONS PROJECT:

Commons visited were: Bradnor Hill (SO2858) as part of the Festival forays; Brimfield Common (SO5167); Bromyards Downs (SO6554); Cefn Hill Common (SO2738); Climbing Jack Common (SO47); Ewyas Harold Common (SO3830); Merbach Hill Common (SO3044); Wyson Common (SO5167); and Yatton Hill Common (SO4466). A total of about 460 records comprising about 207 species.

HEREFORDSHIRE FESTIVAL OF FUNGI

About 770 records were reported from various forays and walks comprising about 294 spp. Sites visited were Bradnor Hill (SO2858); Credenhill Park Wood (SO4544); Croft Castle parkland (SO4465); Fishpool Valley, Croft (SO4465); Hergest Croft gardens, arboretum, and woodland (SO2856); Merrivale Wood, Ross-on-Wye (SO6022); Moccas Park National Nature reserve (SO3442); Mouse Castle Wood (SO2442); Newton Coppice, Hereford (SO4837); Oaker Coppice, Croft estate (SO4667); and Queen's Wood, Dymock (SO6728).

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The records arising from all the above activities, namely three programmed forays, CFGA surveys, Community Commons surveys, and Herefordshire Festival events, amounted to a little over 2130 records. A detailed analysis is neither called for, nor attempted, but some rough data-crunching gave the following results which may be of interest:

Heading the list of the most commonly recorded species were: *Clitocybe nebularis*, *Collybia butyracea*, *Cystoderma amianthinum*, *Hygrocybe virginea*, *H. ceracea*, *H. chlorophana*, *H. psittacina*, *Hypholoma fasciculare*, *Bolbitius vitellinus*, *Mycena pura*, *M. rosea*, *Stereum hirsutum*, *Auricularia auricula-judae*, *Lycoperdon perlatum*, *Vascellum pratense*, *Clavulinopsis corniculata*; *Trametes versicolor*, *Leptosphaeria acuta*, *Rhytisma acerinum*, *Ramularia rubella*, etc.

The taxonomic composition based on BMS Taxonomic Order codes was as follows:

01 Agarics 46.5%
 02 Aphyllophorales 12.2%
 04 Boletales 3.4%
 16 Russulales 6%
 23 Rusts 4.6%
 34 Powdery Mildews 3.4%
 39 Helotiales 7%
 55 Sphaeriales 2.5%
 XX Conidial fungi 3.4%

The balance of 11.2% comprises various other groups each of less than 2%.

NOTES OF UNUSUAL RECORDS 2005

Interesting records from Herefordshire and neighbouring counties have been reported in addition to any from programmed forays. Inevitably, a number are seldom recorded, or have not been recorded before in VC36, of which the following are representative:

+ = First VC36 record;
(+) = not recorded for more than 100 years; last recorded in Woolhope Club times circa 1870s-1890s.

Lophiostoma fuckelii var. *pulveraceum* on dead bramble stem, Cusop churchyard, 4/5/05, Shelly Stroud.

Sphaerotheca macularis (H) on wild hops *Humulus lupulus*, Durlow Common, 9/9/05, Ray Bray. There are only four previous records but on commercially cultivated hops 1978-81, in reports from MAFF Plant Pathology Laboratory.

Gibberella cyanogena(+) on dead nettle stem, Stoke Prior churchyard, 11/5/05, Jo Weightman.

Discostroma corticola+ on dead bramble stem, Brimfield Common, 12/5/05, Jo Weightman.

Septoria lunariae+ on seeds of Honesty *Lunaria*, Llangrove Churchyard, 2/7/05, Sheila Spence.
Hymenoscyphus albidus on dead petiole of ash, Barnett Wood, 9/8/05, Shelly Stroud. This was last recorded by Douglas Graddon in 1975.

Boletus legaliae found again after 1st record in 2004 at Letton Lake 23/8/05, Cherry Greenway.

A first record on Red Bartsia *Odontites vernus* of *Coleosporium tussilaginis* (II) Coneygree Wood, Ledbury, SO 7137. 12/9/05, Cherry Greenway.

Crepidotus cinnabarinus+ on ash, Ast Wood, 17/9/05 Roy Mantle: *Rigidoporus ulmarius* on Ulmus, very few recent records, also Ast Wood 17/9/05, Jean Wynne-Jones.

Fistulina hepatica reported on the Great Eardisley Oak, SO3049, on 21/9/05, Cherry Greenway.

Hypoderma hederæ+ on dead ivy leaf, Yarkhill churchyard, 3/10/05, George Spence.

Ascochyta kabatiana+, leaf spot on living *Laburnum* leaf, roadside hedge, Birchwood, SO748502. 14/10/05, Cherry Greenway.

Chromelosporium terrestre+ on bare ground, Fishpool Valley, 16/10/2005, Jo Weightman.

Entoloma corvinum on grassy soil, Moccas Park, 18/10/05, Mike Stroud. Only the third record and last recorded at Hergest Croft gardens in 2002 by Sheila Spence. Named from its blue-black cap in allusion to the to a raven, *corvus*.



Entoloma corvinum

Boletus chrysenteron sensu stricto, with Douglas Fir, Haye Park wood, 18/10/2005, Jo Weightman. According to the new Basidiomycota Checklist the *Boletus* which from time immemorial has been called *B. chrysenteron* is now to be known as *B. cisalpinus*. The true *B. chrysenteron* is thought to be confined to conifers and beech and turns blue only slowly and slightly on cutting, whereas *B. cisalpinus* blues strongly in the stipe.

Entoloma pleopodium(+) amongst nettles, Croft estate, 22/10/05, John and Denise Bingham.

Cystolepiota hetieri, Haye Park Wood, 18/10/2005, Jo Weightman, only the fourth record.

Podoscypha multizonata, Croft estate near Bircher Common, 4/11/05, John and Denise Bingham, the only previous records were in 1966 at Garnons and in "18XX" at Moccas and Hereford.

Hygrocybe calyptriformis reported *en masse* in the region of 40 to 50 fruitbodies, 10/11/05 in meadows behind an acquaintance's house near Colwall, SO7642, by George Spence. It used to be regarded as rare.

Bjerkandera fumosa+ on dead standing elm, Sutton Walls, Marden. 22/11/05, Stephanie Thomson. Not considered rare nationally, but perhaps overlooked or misidentified as *B. adusta*.

Sowerbiella radiculata on conifer litter, Mallins Wood, SO7449, 6/12/2005. Cherry Greenway. A late autumn species. Only the 4th record, the third occurred the previous year 2004 at Little Dewchurch found by Sheila Spence; all earlier records were over 40 years ago.

OUT OF COUNTY

Phaeotellus (Omphalina) rickenii on moss, on house roof, Cwmdy, Crickhowell, Brecon, 28/9/2005, Shelly and Mike Stroud



Phaeotellus (Omphalina) rickenii

Rigidoporus ulmarius on Black Poplar at Broadstone, Shropshire, SO5489, 16/10/05, Ted Blackwell.

Lactarius mammosus, under pines, Forest of Dean, West Gloucestershire, 10/2005, Cherry Greenway.

Geoglossum atropurpureum and *Clavaria zollingeri* at BMS Grassland Workshop, Abergavenny, 6/11/05, Cherry Greenway.

Tulostoma brumale on dune slacks at Isle of Man, 20/11/2005, Cherry Greenway.

My thanks to all collectors and recorders who have contributed lists and reported the results of home-

work, and who continue to expand the Herefordshire records of fungi.

Ted Blackwell, Recorder

SERIOUS STUFF AT THE AGM!



BIG FLEAS HAVE LESSER FLEAS
(or, some observations on a lichenicolous fungus)

This note follows Heather Coll's series in earlier News Sheets, which introduced readers to lichens. What follows is about fungi which live on lichens and may even have fungi living on themselves, called lichenicolous fungi.

News Sheet readers will have heard about an Ascomycete, *Trichonectria rubifaciens*, on the lichen *Parmelia saxatilis*, collected from the Forest of Dean (Issue no. 5, page 7) and about the bright pink Hyphomycete, *Illosporiosis christiansenii*, from Leintwardine and elsewhere (Issue no.5, page 11). According to the latest check list (2003), there are at least 403 different lichenicolous fungi in Britain. Many publications by Prof. David Hawksworth describe these fungi, but very little is known about their occurrence and distribution in Britain: even less about their biology.

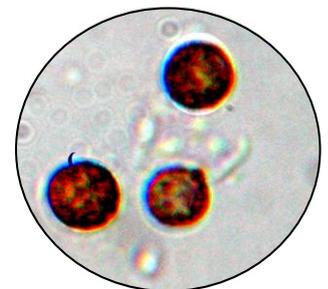
Below is reproduced (with permission of the BMS and BLS) an article we have written about another lichenicolous fungus of Herefordshire, *Xanthoriicola physciae*, on the lichen, *Xanthoria parietina*. Since the publication of our 2004 article, Ted Blackwell and Jo Weightman have recorded this fungus from 40 sites in VC 36 and many other records have been sent in from Shropshire and elsewhere. A revision of the distribution map is being prepared and more specimens would be welcome!



Infected *Xanthoria parietina*



2 mm



10 μ m

Xanthoriicola physciae spores

IS XANTHORIICOLA PHYSICIAE A COMMON SPECIES IN BRITAIN?

One of the most visible lichens in Shropshire and Herefordshire (VCs 40 & 36) is *Xanthoria parietina*, "greyish grey in the shade and bright orange when exposed to strong sunlight" (Dobson,2000). Over the last three years we have found 32 sites where small areas of the greenish and orange thalli of *X. parietina* can be seen to have black sooty apothecia with surrounding areas of the thallus dusted with black spores.

Easily identified using Hawksworth's (1983) key, these are the conidia of the lichenicolous fungus *Xanthoriicola physciae* (Kalchbr.) D. Hawksw. There are useful drawings (fig 1) of *Xanthoriicola physciae* in Hawksworth & Punithalingam (1973), and photomicrographs and SEM plates can be seen in Hawksworth's (1979) monograph of lichenicolous hyphomycetes. Most useful is the colour photograph of the fungus in a paper aimed at naturalists (Hawksworth, 2004).

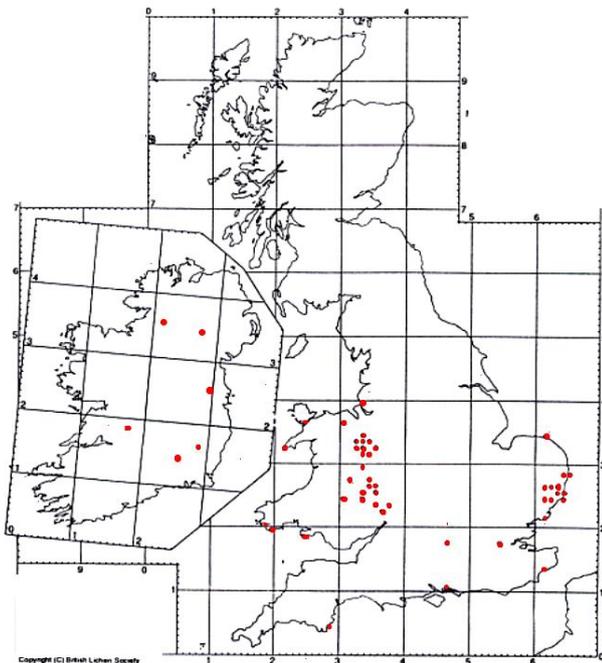
It seems there are no previous records of *Xanthoriicola physciae* from VCs 40 & 36. We also have specimens from Montgomeryshire (VC47), Radnorshire (VC43), and Merionethshire (VC48), from which there appear to be no previous records according to Woods & Orange (1999). More recently we have had specimens from Denbighshire (VC50) and East and West Kent (VCs 15 & 16).

Hawksworth (1973) suggested that *Xanthoriicola physciae* is "locally abundant in S.W. England", and later (1979) that it is "reliably recorded from the British Isles, France, Hungary, Spain, and Sweden".

Mark Seaward has kindly put our records and some previous ones into the standard map form (below), considering that this is a "very unrecorded fungus" and emphasising that the map "shows the distribution of recorders, not of this lichenicolous fungus".

Our object in producing this note is to stimulate others to look for this fungus. If it is correct that we have found it in five new VCs, and that in two of these (VC40 & 36) it must be regarded as very common, a rich harvest of observations seem possible in VCs 1 to 112!

We would like to thank Raymond Hesketh, Mervyn Rogers, and Jo Weightman for sending us specimens of *Xanthoriicola physciae*.



Distribution of *Xanthoriicola physciae*

Postscript

Since producing this map we have received records for two squares from Professor David Hawksworth. These are in 35/12, Lorton Vale, High Lorton, Cumbria and 23/94, Bryn Hafod Farm, Cerrigydrudion, Denbigh.

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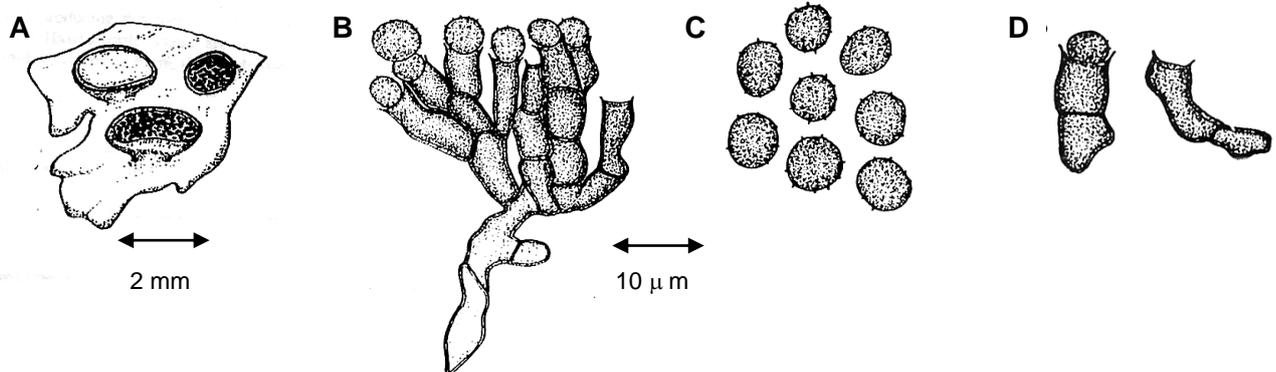
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Xanthoriicola physciae: **A** Infected ascocarps of *Xanthoria parietina*; **B** conidiophores; **C** conidia; **D** conidiogenous cells. (These drawings are reproduced from Hawksworth & Punithalingam (1973) by permission of Cambridge University Press)

There is one example, already, of a fungus, living on a fungus, on a lichen – the Hyphomycete, *Trichonis lichenicola*, on the Ascomycete, *Pyrenidium actinellum*, on the lichen, *Peltigera canina*, discovered by Prof. David Hawksworth. It seems likely that other examples may be found like this, when we get to know lichens and lichenicolous fungi better. It also seems that these relationships between living things have been thought about long ago:

“So, naturalists observe, a flea
Hath smaller fleas that on him prey;
And these have smaller fleas to bite ‘em,
And so proceed ad infinitum.
Thus every poet, in his kind,
Is bit by him who comes behind.”

(“On Poetry” – Jonathan Swift, 1667-1745)

Tom Preece & Ted Blackwell

VOLVARIELLA PUSILLA



We are always delighted to see these beautiful little toadstools, when they appear in our vegetable garden. This has been divided it into three sections, to run a three-yearly rotation of crops and *Volvariella pusilla* (= *V. parvula*) regularly seems to occur in one particular section, whenever we grow peas (and broad beans) there – ie every three years. They are usually evident in July, growing on the soil paths between the rows, solitary, although there are often several specimens within, say, a 3 m strip of path.

This miniature *Volvariella* is described as having a silky-fibrillose, white to cream or pale beige cap up to 35 mm in diameter; the white, pruinose to glabrous stipe is up to 50 x 5 mm, with a white, (usually) lobed volva at its base. However, we have never found our specimens to be nearly as large as this, more typically being of cap diameter about 10 mm and stipe 15 x 2mm.

Habitat is generally said to be in short grass in parklands, gardens or open woodland, but also occasionally on soil.

The books make no mention of any association with legumes (or with anything else for that matter), but we do wonder whether it is just coincidence that these toadstools always seem to appear in our garden where they do and when they do.



Shelly & Mike Stroud

FUNGI AS A SOURCE OF NATURAL DYES AND PAPER: NEVILLE WILDE - A TRIBUTE

PART 2: FUNGI FOR PAPER-MAKING

Fungal species in the order Aphyllophorales, and particularly those found growing on wood, often produce tough or hard fruit bodies. Within the structure of the fruit bodies are numerous interwoven microscopic thread-like structures called hyphae. The nature of this hyphal system varies from species to species. Three types of hyphae are identifiable each with different characteristics, referred to as generative, skeletal, and binding. Species with only generative hyphae present (e.g. *Inonotus radiatus*) are known as monomitic. Those with two of the hyphal types present such as generative and binding (e.g. *Polyporus squamosus*) are known as dimitic. Species with all three types present (e.g. *Daedaleopsis confragosa*) are known as trimitic. If fruit bodies with any of these hyphal systems are reduced to a pulp and suspended in water, the hyphae are then free to rearrange themselves. The pulp can be allowed to settle out as a flat sheet and be subsequently pressed and dried to form paper.

More substantial material can also be produced by alternative processing. For example, in parts of Germany, hats and waistcoats have been made out of felt produced from *Fomes fomentarius* (trimitic), as a traditional ancient woodland craft.



Daedaleopsis confragosa

Paper making Activity.

This part of the weekend workshop was concerned only with fungal paper manufacture. In order to prepare a working bath, a small quantity of water was added to the fruit bodies of the fungal species being used, e.g. *Daedaleopsis confragosa*. The combination was then reduced to a pulp using a powerful blender (Kenwood). A portion of the mixture was then further diluted with water in an open dish. In order to collect sufficient material to make a sheet of paper from the dish, the solution was agitated and a piece of mesh in a wooden frame (deckle) immersed horizontally and then withdrawn. The trapped solution was allowed to drain leaving a layer of fungal fibres on the mesh. When sufficiently drained, this layer was transferred on to a piece of cloth ('Jay-Cloth') by pressing the inverted mesh down on to it. When the layer was safely in place on the cloth, it was carefully covered with a further cloth to protect it and to separate it from the next layer. The process was repeated until a substantial pile of interleaved cloth and paper had been built up. The pile was then conveyed to a screw press where pressure was applied to



Inonotus radiatus

compress the paper and remove excess water. After a period of time the pile was removed and the paper layers, which had now gained sufficient strength to be handled, separated from the cloths. The paper layers were then hung over clothes-horses to dry naturally in air. The cloths were made available for reuse. As a means of hastening final drying, the sheets of paper were ironed using a domestic iron. Where unlimited time was available for drying, the paper could be allowed to dry fully in air without recourse to ironing.

Results and Conclusions.

The sheets of paper produced from the various species of fungus were full of character, displaying a wide range of interesting textures and colours. By mixing species, endless variations in the final paper could be achieved. Due to the complex nature of their construction, species with trimitic hyphal systems can make the finest and strongest papers. As with any craft, hand paper making with fungi requires knowledge, skill and particularly experience if the full potential is to be realised. In contrast to the situation with fungal dyeing, species of fungi suitable for paper making are relatively abundant in most years.

FLYING IN OR FLYING OUT?

It happened in Fishpool Valley. Until then I had not been over-fascinated by dung. I have been known to nurture the less offensive sort somewhat shiftily in my greenhouse, kitchen windowsills, though ideal as a study site, being too conspicuous. Since last summer though, I have found myself unable to pass by a dung heap.

Watching my step on a narrow path, and thinking unkind thoughts of horse riders on footpaths as I took a wide berth around a succession of fresh and generous leavings, I noticed that all the heaps were covered in white confetti.

Of course not ...!

Silly ...!

It must be *Poronia* at last - a dream come true!

Sillier ...!



Closer inspection, all sanitary considerations abandoned, revealed that the ornament consisted of hundreds of dead flies coated with a white waxy-looking substance. Getting a sample home called for some ingenuity – no handy box in my pocket.

I took some of the material straight to Ted, as I lack the literature to tackle this. He confirmed that the flies were indeed infected by a fungus, perhaps *Entomophthora muscae*, but an identification of the fly was required to confirm this. In the meantime I had disposed of the rest of the sample, not anticipating this difficulty, so I don't come out of this smelling too sweetly!!

This is an incomplete tale, but one which gave a kick-start to awareness of yet another area of fungal interest.

Spooner and Roberts, in the new *New Naturalist Fungi* (2005), state that at least 70 *Entomophthorales* occur in Britain. *E. muscae*, which parasitises hoverflies and various diptera, is one of the commonest. It appears that the presence of the fungus in the insect triggers a pattern of behaviour which favours spore germination. My flies therefore flew purposefully to the dung heaps rather than, as I had assumed, crawled out of them, heavily infected from the moment of emergence. This implies a circular chain of events:

from spore deposited on the dung

→ *mycelium in the dung*

→ *eggs/larvae/pupae penetrated by the fungus*

→ *emergence and flight of the fly*

→ *finally, that stage of fungal growth which directs the fly to seek out and home in on a warm moist dung heap.*

If this is not the correct sequence of events,

- how does the fly pick up the fungus from the dung?
- Just a chance encounter?

- Would any moist substrate have served equally well?

The questions keep coming.

Jo Weightman

FUNGAL FRAGMENTS

- ***Stropharia cyanea*** fruiting on a roundabout in Malvern, Worcestershire.



Photograph by Cherry Greenway

- Shelly & Mike Stroud found three specimens of this beautiful *Cystolepiota pulverulenta* (confirmed by Peter Roberts at Kew) under an old hazel boundary hedge of their garden in October.



About 15 - 20mm across, 30 mm tall and solitary, they appear to be on the Red Data List (32 records currently on the BMSFRD).

- In BMS Bulletin October 1978: According to the French journal *La Recherche* Dec. 1977, under the title "*Les champignons de Rameses II*", the occurrence of *Abortiporus biennis* was reported on the mummy of Rameses II.

Ted Blackwell

- ***Amanita franchetti*** found near Kinnersley, Herefordshire in September '05 by Dave Champion and Cherry Greenway.



Photograph by Dave Champion

- Thought you might like to see a photograph of *Illosporopsis christiansenii* conidia - we have found lots of it about this year!



KNOW YOUR HOST PLANTS: 5. *Epilobiums* - Willowherbs

I suspect that the three Willowherbs with which we are concerned this Spring are well known to our members – perhaps too well known! – but I understand that they harbour a good crop of fungi. They are a promiscuous lot, but the ones we are dealing with are reasonably straightforward. Hairs, both glandular and non-glandular, and their position on the plant, are important identification features to look out for.

Broad-leaved Willowherb (*Epilobium montanum*)

This is the fellow that some of us, with unkempt gardens, pull up relentlessly year after year, so it is nice to know that it has a few redeeming features. It is also the one which can be the most tiresome to distinguish from similar looking relations.

It is rather smaller than the following two plants, reaching about 60 cm in height, with shortly petiolate (2 – 6 cm), opposite, ovate-lanceolate leaves and a stem, which may be reddish, usually with only appressed hairs.

The small, pink flowers have a four-lobed stigma, which can be a useful distinguishing feature from similar small, pink flowered Willowherbs.

Great Willowherb, or Codlins and cream (*Epilobium hirsutum*)

This is the large Willowherb of ditches, streamsides and generally damp places.

It has nice large (for a Willowherb!), rose flowers, with a four-lobed stigma. Stems may be up to 150 cm tall, branching above and densely glandular-hairy, with numerous non-glandular, spreading hairs too. The sessile, oblong leaves are very hairy on both sides.

This large flowered Willowherb is unlikely to be confused with any other.

Rosebay Willowherb (*Chamerion angustifolium*)

This spectacular, tall plant has been through a few name changes over the years and was deemed to be an *Epilobium* until somebody started looking at it more closely.

It differs mainly, however, in the spiral arrangement of its leaves and the outward-facing (rather than upward-facing, as in the *Epilobiums*) pink flowers, borne in a handsome spike. In the 19th Century it was a local plant of mainly rocky places and screes, but now wood margins, cleared woodland, waste ground, gardens and bombed sites are equally to its liking. The name Fireweed refers to its propensity for colonising bombed sites.

It is a fine plant and, if it were rare, we should all want it in our gardens. But those marvellous, feathery Willowherb seeds and creeping stolons running amok ensure that, like the rest of the Family, it is unlikely to lose its common status.

Stephanie Thomson



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Photograph (and below) by Peter Thomson



RUSTS ON WILLOWHERBS

The three species of Willowherbs described above by Stephanie are of particular interest in that they are hosts to three different species of Uredinales, or rust fungi, each with a different life cycle.

Puccinia epilobii is a so-called micro-form or monocyclic rust; that is, it is known only as reddish-brown telia (stage III in the conventional sense). These appear from May to August, often covering the whole surface of the leaf. Spores are minutely verruculose, 27-48 x 16-25 µm. According to the latest checklist (Henderson, 2000) and Ellis & Ellis (1997), this rust is confined to Broad-leaved Willowherb (*Epilobium montanum*) and Great Willowherb (*E. hirsutum*) and other species of that genus not considered here. On the other hand, the British Mycological Society's Fungal Records Database (BMSFRD) includes 16 records of this rust on Rosebay Willowherb (*Chamerion angustifolium*), more than on the other two species combined. This seems odd to say the least, with a suggestion of misidentification of host, or rust, or both. [Justification for our series, 'Know your Host Plants'? – Ed.]

Puccinia pulverulenta is an autoecious rust, with all its stages on the same host. The aecia or "cluster cups" (stage I) appear from May to June, usually on the lower surface of leaves. Affected plants are pale and yellowish. Ascospores are orange, 16 -26µm diameter. Chestnut-brown uredinia (stage II) follow, with brown spores 20-28 x 15-25µm. Dark-brown telia (stage III), with teliospores 24-35 x 14-20µm, appear on small, late-formed leaves in September/October. According to Henderson and Ellis & Ellis, this rust appears on *E. montanum* and *E. hirsutum*, but BMSFRD also

records collections on *C. angustifolium*.

Pucciniastrum epilobii. Here we have an example of a heteroecious rust - one that has alternate hosts. Spermogonia (0) and aecia (1) appear on Grand Fir (*Abies grandis*) in June/July. Orange-yellow uredinia (II), with hyaline spores 15-23 x 10-15µm and minute, sub-epidermal telia (III), appear on Willowherb species from August to October. According to Henderson and Ellis & Ellis, these include *C. angustifolium* (overwhelmingly the most common host for stages II and III, with 354 records on BMSFRD) and *E. montanum* (13 such records). However, the same database gives 4 records on *E. hirsutum*.

To summarise, by hosts:

Epilobium montanum is host to all three rusts.

E. hirsutum, according to the latest checklist, is host to *Puccinia epilobii* and *P. pulverulenta*. BMSFRD, however, also includes records of *Pucciniastrum epilobii*

Chamerion angustifolium is host only to *Pucciniastrum epilobii* (Henderson 2004), yet BMSFRD includes a few records of *Puccinia epilobii* and *P. pulverulenta*.

Breakdown of BMSFRD records (VC36 in brackets)

Note: records on other species of Willowherbs are not considered in this article.

	<i>P. epilobii</i>	<i>P. pulverulenta</i>	<i>Pucciniastrum epilobii</i>
<i>Epilobium montanum</i>	10 (1)	60 (1)	13 (1)
<i>E. hirsutum</i>	4 (0)	194 (3)	4 (0)
<i>C. angustifolium</i>	16 (1)	10 (1)	354 (6)
" <i>Epilobium</i> "	12 (0)	32 (2)	26 (2)
No host named	17 (2)	?? (3)	?? (1)

References

- Ellis, M.B. & Ellis, J.P. (1997), *Microfungi on Land Plants*, Richmond Publishing Co.Ltd.
Henderson, D.M. (2000), *The Rust Fungi of the British Isles*, B.M.S.
Henderson, D.M. (2004), *A Checklist of the Rust Fungi of the British Isles*, B.M.S.

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