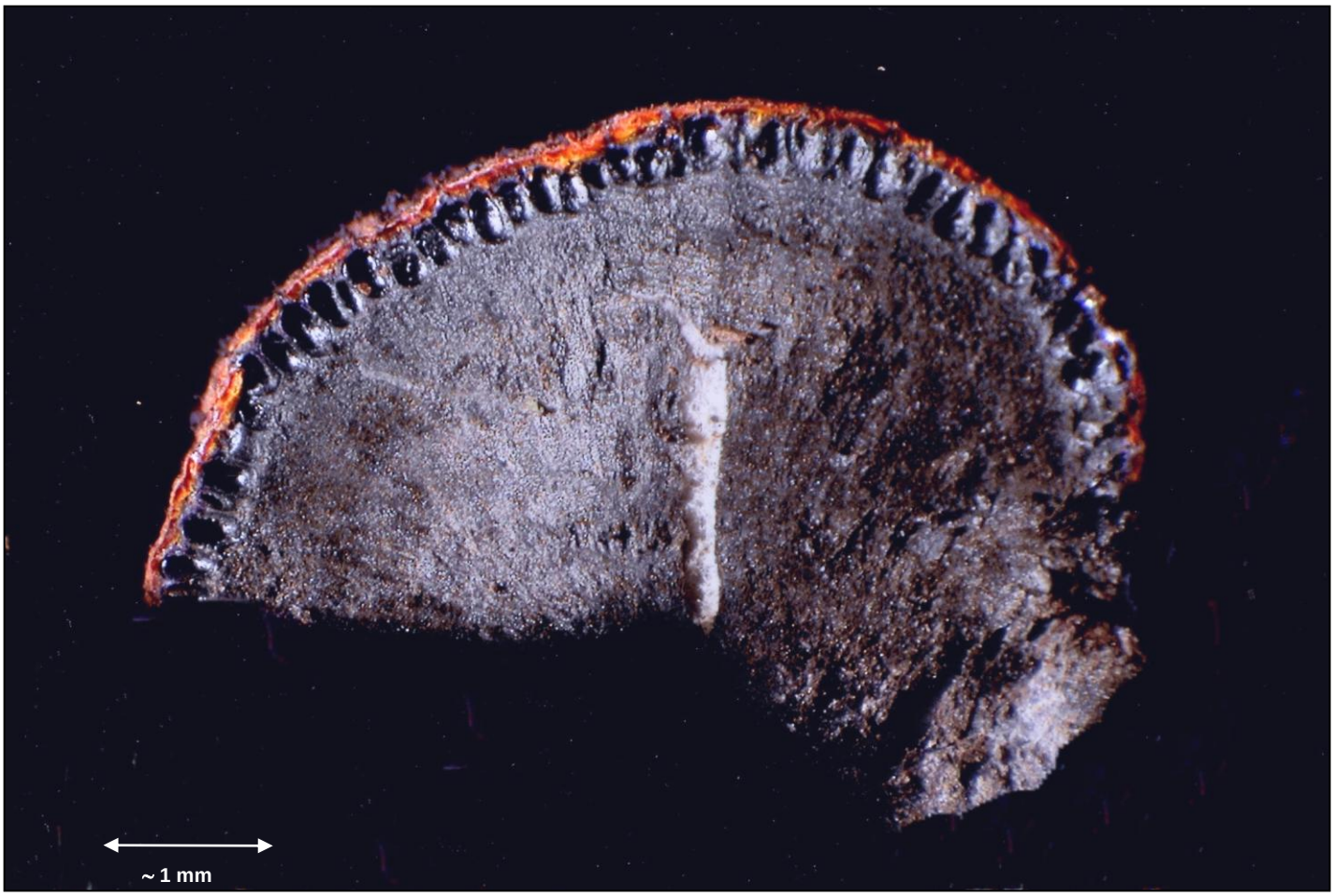
# Herefordshire Fungus Survey Group

# News Sheet Nº 17: Spring 2009




*Hypoxylon rutilum (Turnastone Court Farm – 6/12/08) Photograph by Bryan Lack*

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| **President:** | Ted Blackwell |
| **Recorder:** | Jo Weightman |
| **Chairman:** | Roger Evans |
| **Secretary:** | Mike Stroud |
| **Treasurer:** | Steve Rolph |

***Welcome to the Spring 2009 News Sheet***

By the time you read this the Spring foraying season should already have started. Hopefully, it will be a good one – at the time of writing Shelly and I have already seen (in early March) a host of Scarlet Elfcups in a wood on the Powys/Herefordshire border, which maybe bodes well.

2009 sees some changes in HFSG, the major one being that Ted Blackwell has now stepped down as County Recorder after many years of hard and dedicated work. We all owe him a great debt of gratitude and are thankful that he will still be a very active member of the Group. He will be a hard act to follow. However, he is replaced by Jo Weightman, whom we all know and greatly respect for her own mycological knowledge. She will undoubtedly be a worthy successor to Ted, continuing the high regard for which the accuracy of HFSG records are known.

The 2009 Foray Programme has been out for some time and you may have noticed that we now have a foray in August – ie at least one every month except January and February. This year also includes some sites that we have not revisited since the early days of the Group, in line with the policy stated at the AGM. If you know of people who would like to join us on a foray (as a 'taster'), please do not hesitate to encourage them. All I ask is that they/you check with me a few days beforehand, as we do not want to be overwhelmed, in the (unlikely!) event that there are large numbers wanting to come.

As part of our 'outreach' commitment, this year we shall be experimenting with an 'ID Day', in the Woolhope Room at Hereford Museum. This will enable members of the public to bring in specimens for us to try to identify, as well as being something of a small exhibition. Also once again, HFSG will be leading a public foray – this time for Herefordshire County Council, at Queenswood Arboretum.

In our News Sheet this time:

- Ted makes his final Recorder's Report, as well as the second part of his fascinating discourse on Fungi & Creepy-crawlies. Incidentally, he also asks that, if anyone finds specimens of fungi infecting flies, spiders, etc., he would be very interested to see them.
- A follow-up article by Tom Preece on *Xanthoriicola physciae* to the one in News Sheet No. 11, Spring 2006.
- Jo tempts us to keep a look-out for some of those intriguing Spring cup-fungi that should be making their appearance now. She has also produced some suggested books for newcomers to foraying, as she was asked to do at the AGM. This is not an exhaustive list so, if you have any favourites to let us know about, please do send them to me for a future News Sheet – they need not necessarily be on fungus identification.
- Debbie has torn herself away from rusts and reports on some interesting grassland species she found last Autumn – together with some stunning photos.
- It is also really pleasing that John Roberts has contributed to this News Sheet - albeit with a well-deserved dig at the name of the fungus on the Editor's last Christmas card. His article will, hopefully, prove provocative to others as well!

Don't forget, that this is ***your*** news Sheet so, if you would like to contribute, the Editor will be more than grateful.

One last point: the BMS Website is being redone and the web version of our News Sheets are now under 'Resources…Fungus Groups in the UK…'

Happy reading!

Mike Stroud
e-mail: mikestroud1@btinternet.com

ERRATA

On page 9 in the Autumn 2008 issue

*Pezizicula houghtonii* should read *Pezicula houghtonii*
*Hygrophorus houghtonii* is now *Hygrocybe laeta* not *Hygrophorus lactea*, as stated.

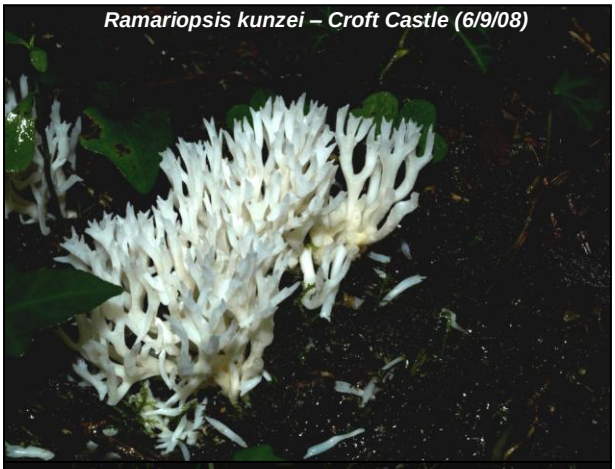
My apologies!

*Our new Recorder, Jo Weightman, at the HFSG lunch*.

She asks that all Herefordshire (VC 36) records are now sent to her at joweightman@ntlworld.com

**RECORDER'S REPORT  September - December 2008**.

There was a noticeably marked dearth of mycorrhizal fungi at every foray in this period.



*Ramariopsis kunzei – Croft Castle (6/9/08)*

*Ramaria Formosa - Croft Castle (6/9/08)*


*Rutstroemia petiolorum - Croft Castle (6/9/08)*

*Limacella delicata* var. *vinorubescens – Croft Castle*

**FISHPOOL VALLEY, CROFT CASTLE ESTATE,  6th SEPTEMBER 2008.  SO 4565 & 4566.**

There were several interesting finds from this prime site in the long and varied list.  *Ramariopsis kunzei*  had not been recorded since Woolhope Club days (18XX) and *Ramaria fennica* var. *griseolilacina* is only the second record having been first noted at this same site in August 2004.  It is noteworthy that the majority of *Ramaria formosa* records in the VC36 database are also from this site.  *Rutstroemia petiolorum* occurs in the record only once before at Barnett Wood in 2003, and *Limacella delicata* var. *vinosorubescens* is only the third record after previous finds in 1999 at Barnett Wood and at Frith Wood in 2001.  A total of about 108 species identified.

**QUEEN'S WOOD, DYMOCK, 17th SEPTEMBER 2008.  SO 6728.**

Four species of *Helvella* were found, *H.  elastica, H. lacunosa, H.  macropus* and in quantity, *H.  crispa*, at a number of locations.  The site produced several species of which there are only limited previous records although no rarities were reported.  There was only one previous record of *Hemimycena delectabilis*, at Wapley Hill in 2002; there were only two of *Scutellinia kerguelensis*: four of *Lepiota echinacea*; five of *Uloporus lividus*, always associated with alder, including one found at this site in 2001; five of *Oligoporus ptychogaster*; five of *Eudarluca caricis* but only the second record on Pendulous Sedge rust.  Other more common but nevertheless interesting finds were of the Trumpet Chanterelle *Cantharellus tubaeformis*, Aniseed Cockleshell *Lentinellus cochleatus*, so called for its aniseed smell, the diminutive Glazed Cup *Humaria hemisphaerica*, Jelly Tooth *Pseudohydnum gelatinosum*, and two parasites, Silky Piggyback Toadstool *Asterophora parasitica* growing on old *Russula nigricans*, and a mould *Helminthosphaeria* (*Spadicoides*) *clavariarum* growing on *Clavulina cristata* which it tends to blacken.  A total of about 116 species identified.

*Helvella macropus;* *Dymock (17/9/08)*

*Cantharellus tubaeformis*

**COLWALL ORCHARDS, 27th SEPTEMBER 2008, SO7543 & 7643**

A survey of eight orchards was carried out in the Colwall, Ledbury area in collaboration with Natural England. Apart from a single Myxomycete *Stemonitopsis typhina*, characteristic of very rotten soggy wood, and a few fungi which might be considered typical of orchards such as *Phellinus tuberculosus* on a living pear trunk and *Monilinia fructigena* on rotting apples, the mycota were much as might have been expected in grazed grassland with surrounding hedgerow trees. But again, an absence of mycorrhizal fungi. A combined total of 38 species were recorded for all orchards.


*Stemonitopsis typhina – Colwall (27/9/08)*

**WHITE ROCKS, GREAT DOWARD, 4th OCTOBER 2008, SO 5515.**

The site was reported to have been very dry which limited the number of species recorded. But *Hydnellum concrescens* had only been recorded twice before, one at this site in 1999, the other at Whitcliffe near Ludlow in Woolhope Club days dated 18XX. A total of about 21 species identified.

*Hydnellum concrescens – Great Doward (4/10/08)*

**HERGEST CROFT GARDEN, PARKLAND AND WOOD, 26th OCTOBER 2008 SO 2856.**

Grassland fungi helped to balance the almost complete absence of mycorrhizal fungi, in particular *Hygrocybe calytriformis* and *Geoglossum fallax*, as Russulales and Boletes were barely represented. Possibly the Fly Agaric *Amanita muscaria* was the first to be recorded in this strange autumn season. A total of about 47 species identified.

**MOCCAS DEER PARK, 5th NOVEMBER 2008, SO 3442.**


*Spinellus fusiger on Mycena sp. – Moccas Park (5/11/08)*

Again there were few mycorrhizal fungi, the site yielding a total of one *Boletus* and three *Russula*, but no *Amanita* or *Lactarius*. But six Waxcap species helped to redress the balance. Although normally thought of as common the Orange-peel Fungus *Aleuria aurantia* was the first to be recorded this year, and other season firsts were *Lecopaxillus giganteus* and the Agaric parasite *Spinellus fusiger*. Another parasitic fungus, *Tremella mesenteria*, was found on *Stereum gausapatum*. A total of about 66 species identified.

**LEA & PAGETS WOOD, 22nd NOVEMBER 2008. SO 5934.**

The scarcity of mycorrhizal fungi continued, of which this site yielded only the Coconut Milkcap *Lactarius glyciosmus*. On the other hand four Myxomycetes were discovered of which *Enteridium lobatum* is a first record. Typical of winter were the Olive Oysterling *Panelleus serotinus* and Bitter Oysterling *P. stipticus* (see photos on next page). There are only two previous records of *Mycena corynephora*, probably overlooked due to its small size. *Polyporus varius* var. *nummularius* has been recorded only occasionally. *Cheirospora botryospora* on ivy dead wood occurred as only the second record, like small lumps of tar and with curiously-shaped conidia of agglomerated cells, previously found at Weobley in 2003.


*Panellus serotinus (left) & Panellus stipticus (right) – Lea & Paget's Wood (22/11/08)*

An unusual Rust, *Uromyces pisi-sativi* II was found on Spotted Medic *Medicago arabica* and was the first record on this host, otherwise only a single previous record on peas in 18XX at an unrecorded site. The lichen *Peltigera membranacea*, although regarded as common, had not been recorded since 2001, at Haffield. A total of about 48 fungi and one lichen identified.

**TURNASTONE, 6th DECEMBER 2008, SO 3536/3537.**

No mycorrhizal fungi were recorded although several fungi typical of late season conditions were present including the Snowy Waxcap *Hygrocybe virginea*, the Cedarwood Waxcap *H. russocoriacea*, the Goblet *Pseudoclitocybe cyathiformis*, and the edible Oyster Mushroom *Pleurotus ostreatus*. A conspicuously large example was seen of the Golden Brain fungus *Tremella aurantia* parasitising the common Hairy Curtain Crust *Stereum hirsutum* on a sawn log. Amongst the microfungi recorded *Nitschkia collapsa* is only the second VC36 record, first found at Barnett Wood in 2000, and *Hypoxylon rutilum* ( see front cover), another second record, having been first recorded at Haugh Wood in 1999. A total of about 40 fungi and 4 lichen species identified.

*Tremella aurantia* on *Stereum hirsutum* - *Turnastoine (6/12/08)*

**NOTES OF UNUSUAL RECORDS.**

In addition to those from programmed forays some records of interest were reported from Herefordshire and neighbouring counties, of which the following are a selection.
+ = First VC36 record;
(+) = last record from 1800s.

*Spongipellis spumeus*(+) on old apple trunk; Putley, Hereford. SO5340, 14/8/2008. Sheila Spence. Identified and accessioned at Kew K(M)159085. Last recorded in Woolhope Club days, 18XX at Hereford.

*Tomentella* cf. *sublilacina*+ on fallen wood, Leeping Stocks nature reserve, Great Doward, SO5416, 28/8/2008. Cherry Greenway. Identified and accessioned at Kew K(M)160974. *Tomentella* spp. are very much under-recorded in the county, the few previous records on the database having occurred in the 1920s and 1961, all from BMS Annual Forays.

*Lyophyllum gangraenosum*+ on soil under broadleaved trees. Downton Gorge, SO4474, 11/9/08, Jo Weightman.

*Strobilomyces* (*floccopus*) *stobilaceus*, under hazel and birch, Downton Gorge, SO4474, 11/9/08, Jo Weightman.

*Geastrum striatum* in a greenhouse flower pot. Marden, Sutton St. Nicholas. SO5247. 15/9/08. Stephanie Thomson.

*Geastrum striatum*

*Aspergillus* sp. mould on House Spider *Tegenaria gigantea*, Orleton. SO4867 4/9/08. Ted Blackwell. Accesioned at Kew as K(M)159611, Kew remarking this mould genus is not one usually found on spiders.

*Mycosphaerella podagraria* on *Aegopodium podagraria* on living leaf, Durlow Common, SO6339, 22/9/08, Ray Bray. Only three previous records in 1999 and 2003.


*Nectria decora*

*Stephanospora caroticolor* in soil under holly, Limekiln Coppice, Storridge, SO756498, 2/10/08 Cherry Greenway. Accesioned at Kew as K(M)160723. (This false truffle is truly 'carrot-coloured').

*Nectria decora*, parasitic on *Massaria inquinans*, Holywell Dingle, Eardisley, SO312512, 22/10/2008, Shelly Stroud. Accessioned at Kew as K(M)160742. (The *Nectria* stroma sits over the *Massaria* ostiole and sends its hyphae down into it).

*Peniophora erikssonii*+ on alder, Downton Gorge, SO4474. 30/9/2008. Jo Weightman. Accessioned at Kew as K(M)159827.

**OUT OF COUNTY**

*Stephensia bombycina*, on top of soil under hawthorn. Old Country gravel pit, Mathon, Worcestershire. SO734447, 3/9/08. Cherry Greenway. Accession at Kew as K(M)160724. (This false truffle is notable for its repulsive odour).

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My thanks are due to all collectors and recorders for lists and reports and the results of diligent home-work, whose contribution continues to expand the number of county records and thereby the knowledge of the diversity of Herefordshire fungi and lichens.

Ted Blackwell, Recorder. 27/12/2008.

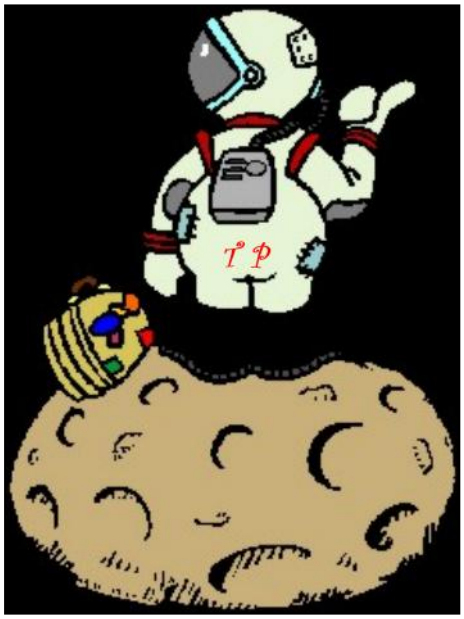
**SOME PHOTO-MEMORIES OF THE HFSG ANNUAL LUNCH (February 2009)**

## BIG FLEAS HAVE LESSER FLEAS – CONTINUED
### *(Xanthoriicola physciae)*

The response from various people hearing about this extraordinary, black fungus was quite remarkable. 400 specimens, from all over inland Britain (in 39 vice-counties), arrived at the author's home!

From there having been no known previous records from Herefordshire or Shropshire (see News Sheet No. 11, Spring 2006), it was then found at 66 sites in VC 36 and, in VC 40, at 52 sites. It is clear that this is a very widespread fungus inland, wherever *Xanthoria parietina* occurs, although sometimes difficult to find.

Simple field experiments over 3 years have indicated that the black spores of this lichenicolous fungus are probably inert, as nobody has succeeded in germinating them – an easy process with the majority of fungi.



*The author examines Xanthoriicola on an alien Earth*

Some specimens sent to Prof. H.G.M. Edwards, at Bradford University - who specialises in non-destructive spectroscopic raman analysis of living things – revealed that these spores contain the substance scytonemin. This is already known to protect black, cyano-bacterial colonies in very extreme (Antarctic) environments and also inland, in very hot desert environments.

Thus, *Xanthoriicola* is what is known as an 'extremophile'. It is almost certain to survive, probably for aeons of time, when the Earth's environment may be utterly different from that which we know (see picture to left!) and when other living things may die.

The collections of *X. physciae* have, as is clear, already proved extraordinarily interesting and provided us with more problems to study. A glance at the distribution map of *Xanthoria parietina* shows it to be commonest near the sea; no-one has yet examined it on rocks for *Xanthoriicola.*

Tom Preece

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## SPRING FUNGI ALERT

Apart from the plastic red cups of *Sarcoscypha austriaca / coccinea* (photo: Issue 4, p3) perching early in the year on damp, fallen moss-covered branches, alerting the most sleepy passer-by to the first awakening of spring, there are other more secretive species we could be seeking at this time of year.

An equally large cup fungus that occurs only under cedar (and, according to the litt., yew) has a somewhat different modus operandi, masquerading as a grubby half buried tennis ball before a small hole opens up on top splitting eventually into an open bowl. The hymenial lining is pale cream, sometimes with a greenish tint reminding me of the colour of duck eggs. This fungus is *Geopora sumneriana* (7/6). I had intended to write that it has only one current site in VC 36 - in the churchyard at How Caple, where it has been recorded since 1997. FRDBI has a single record from Ross in 1983, but the current status is not known. However, poring at Kew over Dr Bull`s paintings, I found a watercolour of this fungus painted from a collection at Hampton Court and dated March 4th 1882. Yesterday, March 24th, I found about thirty under the massive *Cedrus deodara* behind the house. Same tree? I would love to think so.


*Photographs by Jo Weightman*

An equally elusive, but morphologically similar species should be sought under beech on a dry calcareous slope. *Sarcosphaera coronaria*, which your books may have as *S. crassa*, differs in having a dusky pink to dark purplish lining. In the UK it seems to be at the limit of its range. I have one site that I monitor in Kent where it has fruited regularly since 1999 in April and early May. It does occur in local swarms on the Continent, where I have also seen it under pine. So far(!), it has not been recorded in Herefordshire.

Finally, do home in on

hawthorns especially if the soil is calcareous. It was while I was crouched under a hawthorn in May, looking for *Morchella semilibera* and *Verpa conica,* which favour this habitat, that I found a little brown cup on a stalk - my first *Monilia johnsonii* in the perfect state. Habitat is often a strong clue to these look-alike fungi, which are spread over several genera. *Dumontinia tuberosa* which has featured in this Newsletter (photos: Issue 6, p6 & Issue 8 p4) occurs on Wood Anemone, *Rutstroemia echinophila* (mentioned in Issue 1, p1) on Sweet Chestnut husks, *Ciboria amentacea* on the previous year`s Alder catkins (see photo). *Monilia johnsonii*, however, arises from mummified hawthorn berries. It is seldom recorded as a cup although more often observed as a grey, sweet smelling mould on young leaves. In VC36 it has been regularly recorded on Durlow Common as a mould and once in Moccas Park as a stalked cup but must surely occur elsewhere. This is a hands and knees, eyes on stalks job in the gloom under the bush, but rewarding.


*Ciboria amentacea*

Happy hunting! Jo Weightman

**SOME SUGGESTIONS FOR BOOKS TO GET STARTED WITH FUNGUS IDENTIFICATION**

At the last AGM Jo was 'volunteered' to make some suggestions of a few books that beginners might use to start on the path of fungus identification. Here, together with a couple of others, are her suggestions:

**The Mushrooms and Toadstools of Britain and North-western Europe** by Marcel Bon
Published by Hodder and Stoughton

A much used and respected pocket-sized guide, with descriptions of field characters, illustrations on the facing page, useful keys and a sketch of the spore in the margin. Out of print – try for a secondhand copy.
The long-awaited revised edition is now re-scheduled for March 09.

**Mushrooms and Toadstools of Britain and Europe** by Courtecuisse and Duhem Collins Field Guide
Published by HarperCollins

No pocket field guidebook can have every species in it but, with 1750 species illustrated, this book has many more than most field guides. Coverage is mainly of the agarics and boletes, other groups being less well represented. The illustrations are of a high standard and usefully sited on the page facing the brief description of field characters. Ample keys are provided but the small print makes them hard to use. The book most of us have in our pocket.

**Mushrooms and other fungi of Great Britain and Europe** by Roger Phillips
Published by Pan

Although the some of the names are out of date this book, first published in 1981, remains a firm favourite. It is too large to take out in the field but its balanced coverage of all the major types of larger fungi more than compensates for this. The studio photographs usually show several specimens, laid out to show a range of diagnostic features.

Republished in 2006 with up-dated nomenclature, some additional species (including some American ones) and in a smaller format (but alas, still too large for the pocket) is **Mushrooms** by Macmillan. The original, with new names hand-written in, remains a firm favourite.

For the absolute beginner, the **Collins Little Gem** now apparently out of print, was helpful. It has been succeeded by the **Collins Gem** which has photographs instead of drawings and covers just 240 species. It is not a bad idea to start with a modest coverage of the commonest species and work up as you get hooked.

**Pocket Nature: Fungi** by Shelley Evans & Geoffrey Kibby
Published by Dorling Kindersley

This book (by one of our HFSG members) is arranged so that *similar looking* species (particularly the colour) appear together. It covers 440 species and gives all the new English names first, which is helpful to many beginners. We have had some very good reports of how helpful this book is from several newcomers to foraying.

For those who want an enjoyable, light read, Shelly & Mike can recommend **Mushroom Miscellany** by Patrick Harding (Published by Collins). We picked this up in Waterstones and really enjoyed it. It is a collection of short essays on aspects of the fungus world (fact, history and myth) which, although mostly not new to us, was told in an entertaining manner. It would also be a good choice for that present for a relative or friend who might then become interested in fungi.

Of course, these are only a few of the many good books now available. If you would like to let us know about some of your favourites, please do send in a 'review' for one of our forthcoming News Sheets.

## A MISCELLANY OF RECORDS FROM NORTH WALES

The Exobasidiales are basidial fungi which are obligate parasites on a range of flowering plants and especially the Ericaceae. The fungi do not have fruit-bodies: instead the basidia and basidiospores are formed on the tissue of the host plant and the *Exobasidiums* produce a range of symptoms depending on the species present. These include coloured leaf spots, galls, deformed, thickened and coloured shoots and/or leaves. Each species is host specific and where the host is infected by more than one *Exobasidium* the symptoms are usually different. The damage is not fatal and the infection remains until the host dies although it may make the tissue more frost sensitive, (Ing 1998).

*Grassland fungi – Valley (3/11/08)*

Last summer I visited a fantastic quaking bog on the Lleyn Peninsular with more cranberry, *Vaccinum oxycoccus,* than I have ever seen. Some of the cranberry leaves were obviously infected with an *Exobasidium* and it had given the swollen leaves and petioles a beautiful candyfloss pink colour. I took some samples home and, referring to articles by Bruce Ing, identified the species as *Exobasidium oxycocci*, (Ing 1998, 1999). There are 2 *Exobasidium* species infecting cranberry. *E. rostrupii*, (depicted in Fungi of Switzerland 2), is the more common species and causes bright red spots on the leaves. In contrast, *E. oxycocci* infects the entire shoot, causing the leaves to become deformed and turn pink. This species is very visible and easy to find if present. Ing describes it as rare with records from Ireland, Scotland and Northern England in the FRDBI. There is also one for Plumlymon in Wales, (Ing pers. comm.) - definitely a species to look out for in suitable habitats: a really beautiful (in my opinion) fungus.

The genus *Squamanita* is a very strange group of fungi which parasitise other agarics, but unlike other parasitic fungi they take over the host fruit-bodies producing a fruit-body consisting of a fusion of both species. Geoffrey Kibby recently wrote about *Squamanita paradoxa*, a species parasitic on *Cystoderma amianthinum*, in the editorial of Field Mycology, (Kibby 2009). He had received several reports of this strange species around October 2008. [See also HFSG News Sheet, Issue 9, p7 & Issue 14, p11 – Ed.]

Last autumn I was receiving collections of fungi for identification from a site on Snowdon, by a CCW team. The site is one of a series throughout GB being similarly intensively monitored for a large number of parameters. They record/collect the fungi every 2 weeks and any new or unidentified species were brought to me. Amongst the commoner fungi recorded they found notable numbers of *Squamanita paradoxa* growing on the *C. amianthinum*. I had only found a single specimen myself previously in 2007 - the first VC49 record. The first one was found on 9/9/08, a couple more on 10/10/08 and on the visit of 22/10/08, a total of 8 were found including a group of 4. The dates cited by Kibby agree with our experience and reinforce the assumption that some factor/s may have been favourable to the fruiting of the species over the whole country during 2008. There are interesting accounts of *Squamanitas* in FM 6(1) including the rarer *Squamanita pearsonii*, also parasitic on *C. amianthinum.* This species was recorded locally by John Harold in 2007, the first Welsh record.

I have an interest in grassland fungi and I have been recording them, conducting surveys and running workshops for several years. A cemetery I visit regularly yielded a new British record in 2005. The site is high quality supporting a good range of *Hygrocybes* and Clavarioids including *H. ovina*, *H. punicea*, *H. citrinovirens*, *H. calyptriformis*, *H. spadicea* and *Clavaria zollingeri*; also *Microglossum olivaceum*.

In 2005 I found a pale yellow *Clavaria*, similar in form and stature to Golden Spindles, *Clavulinopsis fusiformis* but less densely clumped. It keyed out to *Clavaria amoenoides* in Nordic Macromycetes and was subsequently confirmed by Peter Roberts at Kew. This species was not on the British list. Since this record there have been 2 additional collections from Wales and a collection in the Kew herbarium from Scotland, 1936, has been shown to be the same species. FM 9(4) contains a useful key and account to this group of yellow *Clavaria* written by Roberts. In 2008 the fungus was again present in the same spot in my cemetery and I made a second collection from a cemetery on Anglesey. *C. amoenoides* could well be incorrectly or under recorded as it might be dismissed as washed out *C. fusiformis*. However its inflated, unclamped hyphae and spore shape clearly differentiate it from other yellow species and it will be interesting to see if further collections are found following the FM article.

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*Photographs & text by* Debbie Evans

**HOW ACCURATE ARE RECORDS?**

Foray recording in the field: how accurate is it? Is it that important?

Two recent events have prompted this - the simple slip of the mind by Newsheet editor, Mike, in describing *Mycena crocata* as *crocea* on his lovely Christmas card and a recent request from Kew to query the accuracy of a record of *Stictis pachyspora.*

This latter was collected some six years ago by Mary Hunt, who determined the species, with myself as confirmer. If accurate, it would be a first British record. However, we no longer had a fruit body, or photographs to back it up. Mary does keep dried specimens of anything unusual, the point here being that, ***at the time,*** we did not doubt the determination nor realise its rarity: a check on the BMS database would have shown this, but is it common practice to put all of your foray records through this procedure on the day?

A *Clitocybe* I collected, also many years ago on a HFSG foray, still bothers me. I believed, ***at the time***, that my determination was accurate. Hindsight and greater skills and experience now puts this in doubt in my mind. I have learned that most *Clitocybes* are very difficult to get right in the field; they are not that easy at home either!

When recording in the field it is common practice to tape records as you see them. Over and over again the same fungi are recorded and it is taken for granted that all the common ones can be accepted as such - they are rarely checked. However, occasionally it comes to light that the names so freely used, may be wrong. Such an instance recently came to light in Field Mycology, with Roy Anderson's series of articles on `*Hypoxylon* in Britain and Ireland`, during which he advocates that the familiar *Hypoxylon rubiginosum* should mostly be *H. petrinae* and claims that the 2000 plus records on the FRDBI may be inaccurate.

Who is right? Who is to say that five years down the line another expert will not come along and demolish the records again?

It is very difficult for amateur field mycologists to know who to believe. I recall that when the widely used and much admired B&K volume 6, (*Russula* and *Lactarius*) was published, it was rapidly followed by P-A Moreau's comments in Documents Mycologiques XXXIV, condemning dozens of the identifications. Who do you trust?

The Hereford group has always been particularly keen on accuracy in recording, the argument being that inaccurate records are useless. But who is to say what is accurate? Who is right? Mycology is a very difficult subject; it takes time. When vital newcomers are attracted to forays they will make errors. In time, with support, they will correct these mistakes and so will learn; it does not help that, if they consult half a dozen books, they will get six different descriptions of their specimen.

Today, with digital cameras very accurate photos are taken of fungi. Is it not reasonable that these should be acceptable as evidence of recording a species? I myself collected this year a pure white Elf Cup, (*Sarcoscypha austriaca*). It was offered to Kew, but little interest was shown in it; now, it has been submitted, along with thousands of other records, to both the FRDBI and ABFG databases. If one day a review is done of the *Sarcoscypha* genus, why would a clear photograph not be acceptable evidence?

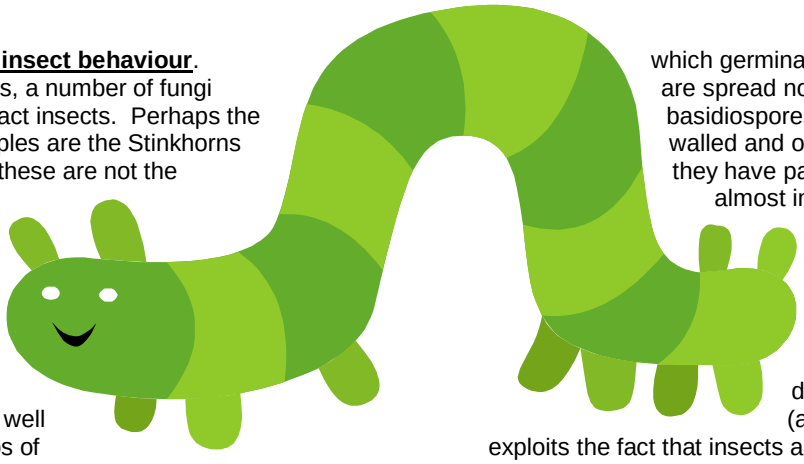
Steve Clements, a clinical chemist writing in `The Forayer`, notes that experienced hospital pathologists, with state of the art equipment, who you would expect to get 100% accuracy, only achieved 73% on a test for *Aspergillus nidulans*. Also that, when set the test, 50 of the top laboratories failed to get 80% correct identification on 4 out of 12 other specimens circulated. What chance have we amateurs got?

Of course accurate records are paramount, but whose opinion can you trust?

John Roberts

**FUNGI AND CREEPY-CRAWLIES: PART 2**

Part one mentioned some parasitism (often lethal) of arthropods by fungi. This concluding part describes perhaps more benign ways in which fungi exploit insects quasi-parasitically and, reversing the roles, how insects parasitise or exploit fungi or form symbiotic associations, and how some incidental effects arise from these insect/arthropod interactions.



**Fungus exploiting insect behaviour**. Analogous to flowers, a number of fungi employ smell to attract insects. Perhaps the most obvious examples are the Stinkhorns and their allies, but these are not the only species in the aroma business.

*Puccinia punctiformis*, the rust fungus of common creeping thistle *Cirsium arvense* is probably well known to aficionados of microfungi by its sweet-smelling initial pycnidial/spermogonial stage. Here the fungus aims at a dispersal strategy by attracting insects to spermatia oozing out in sugary droplets which feeding insects then carry to other spermogonia. Cross-fertilisation of the rust fungus is thereby effected which initiates the formation of aecia. A number of other rusts employ the same strategy although seldom with such a conspicuous fragrance.

A similar strategy is used by ergot *Claviceps purpurea* infecting a variety of grasses which in its conidial *Sphacelia* stage produces an insect-attracting sugary exudate sometimes referred to as "stinking honeydew" containing conidiospores which insects carry to other grasses, thus spreading the infection.

Whereas the two previously mentioned fungi create their own insect-attractants, some of the smut-fungi rely instead on the fragrance of the host flowers. The anthers of Red Campion and several related species of the Caryophyllaceae are often parasitised by the fungus *Microbotryum* (hitherto known as *Ustilago violacea*). This converts the normally white anthers to a mass of brownish-violet spores which usurp the role of pollen. Similarly, the anthers of Devil's Bit Scabious are parasitised by another smut-fungus, *Ustilago sucissae*, turning the normally purplish anthers creamy-white. Another example is anther mould of red clover caused by *Botrytis anthophila* where conidiophores replace anthers and pollen, turning the anthers grey. In these instances the smut spores are carried away, as pollen would be, by night-flying moths and other insects to infect other flowers.

Honey bees are known to collect the spores of some fungi, especially rusts, which probably have a similar nutritional value to pollen. It has been observed that when an abundant source of fungus spores is available they can be 'fungus constant' when collecting and appear to ignore flowers and collect only fungus spores in preference to pollen.

In another strategy, almost as if the fungus had bowed to the inevitable before turning insect attack to its own advantage, the basidiospores of *Ganoderma lucidum* are reported to be thin walled at the beginning of sporulation which germinate readily and presumably are spread normally by air-currents. But basidiospores produced later are thick-walled and only germinate readily when they have passed through a fly larva gut, almost in anticipation that as the bracket ages it will be invaded and browsed by insects.

The fungus *Basidiobolus ranarum* which grows on the dung of cold-blooded animals (amphibia and reptiles) exploits the fact that insects and beetles are eaten by frogs and lizards. It shoots out (by rocket-propulsion!) an adhesive conidium which either adheres to or is ingested by insects, without evidence of any harm to the insect. However, if the insect is eaten and digested, the conidium divides in the gut of the frog or lizard into numerous cells from which mycelium develops to produce new fruiting-bodies on the animal's droppings.

A different mode of exploitation of large flightless weevils is reported to occur in the forests of New Guinea. The weevils are thickly covered with a sorediate lichen *Parmotrema reticulatum* which adheres closely to the insects' backs and which is in turn infested with oribatid mites that seem to be feeding on the lichen and may thereby assist in dispersing the lichen propagules.

**Insect parasitic on fungus.**

Maggots, the larval stage of fungus-gnats (Mycetophilidae) of which there are many species in Britain, abound in macrofungi into which they burrow. Toadstool pickers are familiar with maggots devouring Agarics and recognise *Amanita rubescens* as particularly maggoty. But in other cases it is not always clear if the presence of insects in fungi is for food, shelter, egg deposition, or to ambush prey, or perhaps a combination. One often finds insects nestling between the gills of Agarics, perhaps taking refuge in a more humid environment. Consequently, ascribing insect presence to any single mode of interaction may not be straight forward. It has been claimed that Chanterelles are not invaded by fungus-gnats but instead the larva of the Click-beetle, *Agrypnus murinus* may be found in the stem; and it is reported that a single Dor Beetle, *Geotrupes stercorosus*, which normally tunnels into dung to lay its eggs, is able to hollow-out an entire *Boletus* fruitbody. For those wishing to pursue the topic this reference[2] gives more details of various creatures associated with some of the larger fungi.

There are a number of cases where insects invade fungi causing gall formation. The larva of a gall-midge *Agathomyia wankowiczi* colonises the hymenium of *Ganoderm applanatum* (but not other *Ganoderma* spp. As far as is known) causing nipple-like pustules[3]. A gall-midge *Brachyneurina peniophorae* produces galls on *Peniophora cinerea* and *P. limitata*, and the gall-like

thickening of gills of *Panaeolus* and *Panaeolina* are associated with a scuttle-fly *Megaselia lutescens* (Phoridae)[4].


*Paneolus foensecii with larva & thickened gills*

A gall-midge *Mycocalis ovalis* (Cecidomyidae) lays its eggs on the stroma of *Hypoxylon rubiginosum*, (and only *H. rubiginosum* as far as is known) which results in the formation of blister-like swellings. These develop into 'cells' or pupating chambers of the larvae which, on hatching, build a transparent film over themselves and induce the fungus to produce a yellow gall tissue which they consume inside the cell, which can sometimes be seen outside the cell. Eventually the pupa extrudes from the cell and the fly emerges from it. Haplessly, this tiny gall-midge is frequently attacked by a parasite *Psiloceva* sp. (Pteromalidae), which emerges by making small holes in the 'lids', up to ten percent may be parasitised.

Beetles often inhabit bracket fungi and one which breeds successfully and most commonly in Birch Bracket *Piptoporus betulinus* is *Tetratoma fungorum* which has been collected also from other brackets such as *Inonotus*, *Bjerkandera* and *Polyporus squamosus*. It has been found breeding also in fleshier fungi such as *Pleurotus*, *Flammulina*, *Fistulina* and *Paxillus*. Its adults are nocturnal, and it is said to be widespread throughout much of Britain. Another widespread species is *Cis bilamellatus*, which arrived in Britain from Australia about 150 years ago probably having escaped from a fungus sent to Kew. It is reported to be a good coloniser of many British fungi and is most easily found in Birch Bracket but uses many other fungi as well.

Ascomycetes are not immune to colonisation, and beetles said to be specific to *Daldinia concentrica* are *Platyrhinus resinosus* and *Biphyllus lunatus*. Anyone wishing to keep dried fungus specimens which may be harbouring insect tenants are advised to first put previously-dried specimens into deep freeze at -20C°, or lower, for 48 hours, the standard treatment before material can be accepted for herbarium storage.

**Insect exploiting fungus, mutualistic associations and incidental effects**.

Certain insects known as ambrosia beetles (Scolytidae or Platypodidae) have a specialised habit of boring deeply into tree wood although they do not feed directly on wood. They have evolved specialised pouches, known as mycangia, in which they carry propagules of ambrosia fungus which they introduce into their tunnels where the fungus germinates and lines the walls, on which all stages of the beetle then feed. By this means indigestible wood is converted into a nutritious and easily available food source of fungus tissue. A related group known as bark beetles bore mainly into living phloem of tree bark and are associated with specific fungi in their brood chambers. But unlike ambrosia beetles, bark beetles carry fungi from tree-to-tree, not in specialised mycangia, but accidentally due to slimy fungus spores adhering to their bodies. These fungi are not essential for beetle development although may be utilised nutritionally, but the resulting infection of the tree may have incidental disastrous consequences. This is the case in Dutch Elm disease, which devastated British elms in the 1970's and by which the fungus *Ophiostoma novo-ulmi* is spread from tree to tree by species of *Scolytus* bark beetle.

A wood-wasp *Sirex* is known to introduce hyphal propagules (oidia and arthrospores) of the Basidiomycete fungus *Amylosterum areolatum* into the wood of conifers when egg laying. The fungus degrades the wood tissue and thereby enables the hatching larvae to bore more easily into the softened wood. Again, an incidental effect is that, particularly in Australia and South Africa, this wood-wasp is a serious destructive pest in pine aboriculture.

Another example of incidental effect is the spread of disease by a scale-insect the Felted Beech Coccus. The living bark of beech trees is often seen with extensive patches of white 'wool' produced by this insect. In Britain it has been implicated in the spread of *Nectria coccinea* to *Fagus sylvatica*, but (apart from disfigurement of specimen trees) is a pest only on nursery stock. In Canada and New England this insect spreads a variant *N. coccinea* var. *faginata* to American beech *F. grandiflora*, the cause of a serious necrotic bark disease.

*Nectria coccinea*

Termites, well known for their destruction of wood, are able to detect over long distances the volatile compounds given off by wood-decaying fungi and are rapidly attracted to infected wood which they devour. According to Prof. Watling, sterile wood in sterile soil fails to attract them so treatment of structural timber with anti-fungal chemicals gives effective protection. Some species cultivate in their mounds 'fungus gardens' which are a sponge-like aggregations of droppings and mycelium known as combs. Within the nest due to the cultivation processes by the termites the fungus never produces normal fruitbodies but, instead, specialised conidial nodules arise on which the larvae are fed exclusively, although the adults consume both comb material and fungus. Since the fungus is nurtured and continues in productive cultivation throughout generations of termites, this is more an example of exploitation than of parasitism. A

comprehensive account of termite use of fungi is given in *Fungi*[5].

One of the principal termite fungi is appropriately classified in the Agaric genus *Termitomyces*, and incidental to termite activity is the occurrence in certain instances of much prized edible mushrooms. These are the famous termite mushrooms of tropical Africa which are keenly sought because of their superb flavour. They range in size from small to very large and usually begin to grow near termite mounds at the beginning of the rains after the termites grow wings and abandon the nest. One of very small species, *T. microcarpus,* is considered a delicacy and growing in dense masses is thought to arise from termites scattering comb material above-ground. The larger species are characterised by their metre-long tapering root-like base or pseudorhiza which results from the developing mushrooms forcing their way up to the surface from the parent comb: these are accordingly known by a local name meaning 'mushroom with a long leg'. Amongst these is what is claimed to be the largest known Agaric worldwide, *T. titanicus*, where the cap diameter has been claimed to approach one metre, and according to folklore provides shelter for small gazelles and snakes.

*Termitomyces titanicus (photograph on Moblog.net)*

In a recent article[7] the Jet-black Ant *Lasius fuliginosus* which nests in stumps or hollow trees is described as employing the fungus *Cladosporium myrmecophilum* not as food but as a means of strengthening its nest-building material akin to steel reinforcement in ferroconcrete.

**Symbiotic association**.
The fungus *Septobasidium* grows over colonies of sap-sucking scale insects providing protection from desiccation and predators, often resembling a thick crustose lichen. In return, it parasitises a proportion of the colony by sending haustoria (specialised absorptive hyphae) into the bodies of immobilised insects, by which it extracts nutrients. Parasitised insects remain alive but are dwarfed and sterile, acting like nutrient pumps between the sap source and the fungus. Under the protective roof the fungus forms vaulted chambers in which infected insects are held captive but via connecting tunnels opening to the outside uninfected females are free to move about, mate, and reproduce. Young scale insects emerging from the colony pick-up basidiospores which germinate when a new colony is formed.

If one may include the slime-moulds (Myxomycetes) as honorary fungi there is a long list of insects known to feed on them[8]. Perhaps the most interesting example is that of the largest known slime-mould, *Brefeldia maxima*, described as widespread in Britain and Europe. Its huge plasmodium has been likened in appearance to a bucket of porridge emptied over a decayed stump or other wood substrate which may cover a square meter or more and be up to 1cm thick, eventually maturing to a black powdery mat. A variety of animals have been reported associated with it such as grazing fungus gnats, flies, springtails and mites and visiting beetles and spiders, and not least, the regular visits of a spotted-flycatcher to take insects.

Toadstool pickers may perhaps regard the association of arthropods with fungi as an incidental irrelevance or at times even a nuisance; but there is much of interest in the extensive consequences of their interactions which may be significant in the life cycle of either group in unexpected ways and sometimes also weirdly fascinating.

As a footnote, I am interested in any fungi infecting flies, spiders, etc. and would be interested to see specimens if anyone finds these with mould or fungal outgrows.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3 *Fungi of Switzerland* Vol 2. No. 425; and Fungi, p126. Field Mycology 4(3) July 2003. pp76-7.
4 *Field Mycology* 4(3) July 2003 p91; & 4(4) Oct 2003. p137.
5 *Fungi* pp112-63. 6 *Fungi* p113 fig. 42.
7 *Field Mycology* 9(1) January 2008 pp22-23.
8 *Myxomycetes as food for other organisms*. 1967. Bruce Ing. Proc. S.London Ent.Nat.Soc.


More detailed treatment can be found in the following:

*Fungal Biology*. Hudson, H.J. 1986. Edward Arnold.
*Fungi*, Spooner & Roberts. RBG Kew. 2005.
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*Modern Mycology*. Deacon, J.W. 1997. Blackwell Science.


Ted Blackwell

***TYPHULA CRASSIPES***


We thought you might like to see this, found in our garden last November, on Japanese Anemone.

Shelly & Mike Stroud