I thought I had better get another Sporeprint out before the season really starts. I have heard tales of abundant *Agaricus campestris* and have seen the odd *Russula* and *Amanita* but not much seems to be stirring here yet.

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## By their spores shall they be known

Every mycologist with a microscope knows that knowledge of spore shape, size and texture is essential to separate similar species and confirm identities. However, spore characteristics are not, usually, the first clue used when trying to place an unfamiliar agaric, but twice recently spores have provided me with a helpful early clue. At the

**Old *Tephrocybe tylicolor*, Dinosaur Park, Lenwade. June 2013.**

two-day Dinosaur Park Bioblitz, Joseph Hubbard and I (greatly helped by his family) managed to record 46 species of fungus and slime mould – not bad for the first weekend in June! One of these was a collection of over-mature small brown agarics from leaf litter Despite the habitat, my first thought was that they might be a *Psilocybe* species but to my surprise the spore-drop was white. Having failed to find anything like a match in the white-spored sections of various field guides, I examined the spores at x400 and got my second surprise – the spores were spiny, like a *Lepista* or *Laccaria*, although it was clearly neither. I then skimmed through the marginal spore drawings in Bon's book and noticed that a *Tephrocybe* (*T. graminicolor*) had this feature although its spores were more ellipsoid than those of the specimen. Below it was a subsidiary description of *T. tylicolor* with more globose spores. *Funga Nordica* was used to confirm that this was indeed the correct identification and although its gills start pale, the fungus darkens with age (see photo), The only other Norfolk records for this species appear to be from Reg and Lil Evans who found it at Felthorpe Woods in 1985 and 1987.

The second experience was with a small pale-gilled agaric, several specimens of which were found attached to buried sticks in leaf litter under Holly trees at Staverton Thicks in Suffolk by Neil Mahler and others while we were hunting Oak Polypores. First thoughts were that it was a *Pluteus* but the

***Hydnopus subalpinus*, Staverton Thicks, Suffolk. July 2013.**

gills were ached, not free. A spore print was made to establish whether their colour was white or pink. It turned out that they were white but again I failed to find anything like it in the white-spored sections of the guides. When I looked at the spores under the microscope I saw that they were cylindrical, even allantoid (sausage shaped). I had suspected *Hydnopus*, solely on the grounds that this was one of the few white-spored agarics on wood and was delighted to find in *Funga Nordica* a perfect match with the incongruously named *Hydropus subalpinus*, not hitherto recorded in either Suffolk or Norfolk.

## White rust wanted

Not everyone wants 'mouldy' plants but Agathe Jouet of the School of Environmental Sciences, UEA, does. Specifically she needs specimens of *Albugo candida* which forms a white powdery deposit on leaves (especially the undersides) and stems of plants in the cabbage family. Heavy infections produce blistering and distortions.

As part of her PhD studies, Agathe is genotype specimens from Britain and elsewhere to understand the evolution of this pathogen and to devise means of limiting the damage it can cause. Her website http://agathejouet.wix.com/white-rust-survey gives details of how to contact her and send specimens.

White rust is not a rust fungus – it is not even a fungus. It is named by analogy to the rust fungi which, unexpectedly, are actually basidiomycetes, albeit highly reduced ones. Many true rusts have very complex lifecycles with up to five quite different stages, sometimes involving two

**Table 1.** Main groups of fungi and fungus-like organisms which attack leaves.

| Type | Kingdom | Phylum | Examples of genera | General appearance |
|---|---|---|---|---|
| Rusts | Fungi | Basidiomycota | *Puccinia, Uromyces Phragmidium, Melampsoridium, Melampsora* | Spots or patches of orange on lvs or stem, sometimes with distortion. |
| Smuts | Fungi | Basidiomycota | *Ustilago, Urocystis, Entyloma, Tilletia* | Brown black or purplish spots or patches on lvs, stems or flowers. |
| Powdery mildews | Fungi | Ascomycota | *Erisyphe, Podosphaera, Microsphaera Golvinomyces* | White powdery coating. |
| Leaf spots | Fungi | Deuteromycetes or Ascomycota | *Ramularia, Venturia, Septoria, Rhytisma, Cercospora* | Circular or irregular discoloured areas on leaves. |
| Downy mildews | Chromista | Oomycota | *Peronospora, Plasmopara, Bremia, Pythium* | Yellowish patches on lvs. with off-white mould below when damp |
| Blister rusts | Chromista | Oomycota | *Albugo* | Distorted parts of plant as if splashed with white paint |

unrelated hosts. The stage most often seen is the uredinium stage. Because the host specificity of most plant parasites is high, identification is usually possible via that of the host, using *Microfungi on Land Plants* (1985) by Martin and Pamela Ellis.

Table 1 summarises the main groups of fungi and fungus-like organisms which attack the leaves of vascular plants. All three of the photos were taken on the same allotment on the same day in July 2013.

*Tony Leech*

***Albugo candida***, a blister rust, on Shepherd's Purse *Capsella bursa-pastoris*.

***Coleosporium tussilaginis,*** a rust, on Groundsel *Senecio vulgaris.*

***Golovinomyces cynoglossus,*** a powdery mildew, on Comfrey *Symphytum officinale.*

**Forthcoming NFSG forays**

| | | |
|---|---|---|
| 31Aug | 10.30 am | Burgh Apton |
| 7 Sept | 10.30 am | Woodrising |
| 10 Sept | 2.00 pm | Ringland Hills |
| 14 Sept | 10.30 am | Waveney Forest |
| 21 Sept | 10.30 am | Sculthorpe Moor (bioblitz) |
| 28 Sept | 10.30 am | Buxton Heath |
| 5 Oct | 10.30 am | Hockwold Heath / Watermill Broad |
| 8 Oct | 2.00 pm | St Faith's Common |

**Forthcoming Dersingham Mushroom Club forays**

| | | |
|---|---|---|
| 8 Sept | 10.00 am | Leziate Heath / Bawdsey |
| 13 Oct | 10.00 am | Holme Dunes |

Interested persons are welcome to attend any of these meetings. For further details of all these forays, and for those taking place later in the year, go to the NFSG website http://www.nnns.org.uk/content/fungus-study-group-home-page

## Pink dung fungi

Literally hundreds of fungus species occur on herbivore dung – usually as their only substrate. But most are small – and some minute. Not so *Bolbitius coprophilus*, an inkcap-like toadstool with conical caps up to 75mm high of which several hundred were seen on dungy-straw in two open-sided cattle shelters at Briston in May 2012. Their identity was a puzzle until the delicate pink flush was noted on the caps of young specimens.

Although nationally scarce this fungus is not new to Norfolk as it was seen by Anne Andrews on a dung heap at Honing, Norfolk in 2004 when she observed that the dung appeared pink at a distance (pers. comm.). Just three other British records for *B. coprophilus* are documented, all from the Surrey/ Berkshire area since 1998.

*Tony Leech*

***Bolbitius coprophilus*** in situ (above) and young fruiting bodies (right). Briston, May 2012.

**Fungus event at Wheatfen**

We have been asked to help at a fungus 'workshop' at the Ted Ellis Trust, Wheatfen at 2.30 pm on Sunday October 6. This date is not on the NFSG programme.

## Inkcaps on reeds

Sometimes a specialised habitat provides the clue that makes a fungus identifiable. There are well over 100 inkcaps on the British list but only a handful have been recorded on Reed *Phragmites australis* stems. Two of these have recently been found at Watermill Broad (Cranwich Pits) a few miles west of Mundford on standing dead reeds, or the leaf sheaths of living ones, just above the waterline. *Coprinopsis kubickae* and *C. tigrinella* are very small and quite similar but the almost spherical spores of the former and the cap-like brown veil of the latter distinguish them. Unsurprisingly, these fungi are rarely recorded as reedbeds are not a habitat usually penetrated by mycologists. Their discovery, by Lee Barber, came about in connection with research on Reed Warblers at the site which involved the regular collection of dragonfly exuviae from the reeds. Neither species has been previously recorded from Norfolk and *C. kubickae* only once before in Britain (Buckinghamshire, 2001).

***Coprinopsis kubickae,*** Cranwich Pits (Watermill Broad), July 2013.

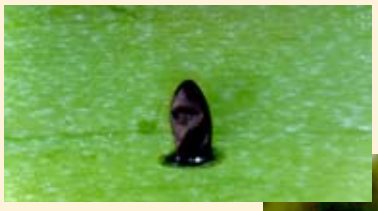
***Coprinopsis tigrinellla,*** Cranwich Pits (Watermill Broad), August 2013.

The old genus *Coprinus* was one of the first casualties of the improved knowledge of evolutionary relationship which has come about through molecular studies. Species are now distributed between *Coprinus, Coprinellus, Coprinopsis* and *Parasola* – and placed in two different families!

*Tony Leech*

## Mistaken identity

The package from Alec Bull contained a tube, carefully packed inside which was a length of asparagus stem and a note asking if I had any idea what the fungi on it were. Barely 1 mm high, several of these black cylindrical objects lay in a line along the stem. Puzzlingly, the asparagus stem was green, fresh, and showed no signs of decay. Trawling through *Microfungi on Land Plants* by Ellis and Ellis I lighted on the genus *Acrospermum* with *A. graminis,* superficially at least, a good match (although no mention of asparagus). Hoping to see asci and spores, I squashed a fruit body and observed at x400. I did not look fungal - all I could see was a small pinkish mass surrounded by clear cells. The penny began to drop, an insect egg perhaps? The only insect I knew associated with asparagus was the Asparagus Beetle *Crioceras asparagi* and a Google image soon confirmed what Alec had found.



*Left:* 'Fungus' on asparagus stem. as received from Alec Bull.

*Right: Acrospermum graminum* on grass. http://mycologie.catalogne.free.fr/

*Left:* Eggs of Asparagus Beetle. http://www7.inra.fr/

*Tony Leech*

## *Ascomycetes in Colour*

Peter Thompson (2013). Available from the author at thompson.ascomycetes@gmail.com at £42.99 paperback or £62.99 hardback, plus p&p

With 700 colour photographs of ascomycetes this book will be a great help to those of us who dip occasionally, if rather unsystematically, into the ascomycete world. For each, macroscopic and microscopic features are briefly described, together with notes on substrates and line drawings of spores. here is also a key and cross reference to other literature. It is organised with species in the same general order as in *Fungi of Switzerland, Vol.1* and does not shirk the non-discomycetes.

Unfortunately, somewhere along the production line the quality of some of the photographs has suffered but the book is a remarkable achievement. By arrangement, the author has generously agreed to email additional entries as they become available free of charge to purchasers of the book. To date he has provided illustrations of 12 further species.

*Tony Leech*

**STOP PRESS**

**New records for Oak Polypore in Norfolk**

Since being shown Oak Polypore *Piptoporus quercinus* at Staverton Thicks in Suffolk by Neil Mahler, Anne Crotty has found her own at Whittlingham. Tracy Money, who had only seen Neil's pictures, has also very recently almost certaily found it (with Andy Gardiner) at Wymondham. It only occurs on the heartwood of very old oak, on the ground or standing. **Well spotted!**