Notes and Records

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By the time you are reading these notes the fourth and final volume of your editor's *Mushrooms & Toadstools of Britain and Europe* (Kibby, 2023) will have been published. If you thoughtfully preordered a copy it should already be with you. This is a major milestone in the long and winding road of British fungal recording and it demands acknowledgement.

We are now remarkably well off for fungal identification literature compared to what was available when I took up the subject forty years ago. Then there was really only Lange & Hora (1963) under the title *The Collins Guide to Mushrooms and Toadstools*, the 700 or so species covered therein being all that the general public could be expected to want to know about. Luckily in my case this was very soon followed by the more extensive coverage in Roger Phillips' Mushrooms (1981), followed up by the translation that Phillips commissioned of Moser's keys to Agarics and Boleti, published in 1983. This ruffled a few feathers at the time; the brief species descriptions it gave were considered to risk a general lowering of fungal identification from the days when it was largely the domain of the knowledgable and learned possessors of Kühner & Romagnesi (1953). Incidentally Phillips' preface to Moser pays tribute to Geoffrey Kibby, listed as editor, "whose help and enthusiasm has been a constant inspiration".

By contrast today we have the incomparable FTE = *Fungi of Temperate Europe* (Læssøe & Petersen, 2019) to guide us to a plausible genus for all our more baffling finds. And now a quick flick through the pages of the relevant genus in Kibby usually reveals only a few plausible candidates. With luck a slide showing spores and cystidia will eliminate most of these. The knowledge that almost every known British agaric is in there somewhere lends support to the view that identification should be easy. We all know it doesn't quite work like that, but at least it's easier than it used to be. And I can't be the only one constantly turning to the Kibby books for species I know perfectly well but whose names I have forgotten, or remember only the names they had ten years ago.

Much more about *Hydropus*

The last issue of FM contained a very interesting article (Cullington *et al*., 2023) on the attempt to track down a *Hydropus* species. In this issue another *Hydropus* is discussed (by Richard Fortey, see p.47) under its new name *Hydropodia subalpina*. The earlier article provides a good illustration of where the DNA revolution has got to, and how much further it still has to travel before any area of fungal taxonomy settles down.

When the checklist (CBIB, 2005) came out it listed four British *Hydropus* species. All are illustrated in Kibby Vol.2 and three of them also in FTE. There has also been one alien (*H. sphaerosporus*) identified from a single collection in the Kew Palm House. Treatment in CBIB followed Watling & Turnbull (1998). Before then Orton had followed Kühner in treating *Hydropus* as a section of *Mycena*. He wrote (Orton, 1988) that the blackening type species *Hydropus fuliginarius* appeared worthy of generic rank, but having never seen this "I am not prepared to pronounce finally on the stature or scope of *Hydropus*". This was in a paper reporting *H. trichoderma* new to Britain following a Surrey collection in 1982. Singer however had already raised Kühner's section to a genus in 1948 and by the fourth (1986) edition of his *Agaricales* had listed over a hundred species there, mostly tropical or southern temperate, and nearly all describe by Singer himself.

The following is a summary of the four currently recognised British species, for simplicity all here listed in *Hydropus*, as by Læssøe in *Funga Nordica*, where eight species are recognised, though he remarks that "the genus is in all likelihood polyphyletic", with the phylogeny awaiting investigation of its "huge tropical diversity":

- *H. floccipes* is by some way the least uncommon of the four species with 40+ collections in K, mostly from southern England, about half of these contributed by Nick Legon, who also contributed a 'profile' of this species to *The Mycologist* (Pegler & Legon, 2001). As Fortey notes, it is easily identified (once you've got to *Hydropus*) by the unusual spore shape. Once more I praise FTE, not only for presenting a

'wheel' (p.176) displaying the range of choice for mycenoid genera, but also for actually including on the wheel a drawing of what is clearly a spore of this very species.

• *H. subalpinus* and *H. scabripes* are clearly quite uncommon with only around 15 collections each in K (though possibly under-recorded from looking too like *Mycena* and thus difficult).

• *H. trichoderma* is much less securely known in Britain. There are only two collections in K, and there is a footnote in FN suggesting it is part of a complex with *H. scabripes*: occasional awkward intermediates are sometimes found. Curiously Watling and Gregory place this species alone in a section *Hydropus* and the other three all in a section *Floccipes*.

• There are also four collections in K merely listed as *Hydropus* sp. awaiting further investigation, though they may have to wait a long time. Two of these are clearly conspecific, collected a week apart and ten miles apart in Kent, one by me and one by Mariko Parslow who sent hers to an acknowledged expert (Vladimir Antonin), to whom it was also unfamiliar.

What the DNA now shows

Readers are urged to look back at the phylogenetic tree presented by Cullington *et al*. on p.9 of the last issue of FN which they may not have examined in detail if at all. Firstly it shows that even just the European species are spread over at least five different species-level clades. Secondly, as the authors stress, their new unnamed species is clearly the only British one with a good claim to be a genuine *Hydropus* species. Thirdly at least four of the sequenced collections included in this tree have clearly been wrongly named, sitting far from the others so named. The genus *Mycopan*, already used in Kibby Vol.2 for *H. scabripes* of CBIB, shows up in a tight group of seven collections near the top of the tree (with *H. trichoderma* close by as expected). But the only collection named as *Mycopan scabripes*, sitting snugly in the middle of the *Hydropus sensu stricto* clade, has clearly been misidentified.

The tree also shows that a species *H. moserianus*, described by Bas from Dutch dunes and listed in *Funga Nordica* only from Norway, has also been found in Japan with exactly matching DNA. There is clearly much more to be learnt about *Hydropus*. It also shows that all the new genera are clearly necessary. If the former broad *Hydropus* were to be maintained it would have to also include *Clitocybula*, a genus that for many now includes *Megacollybia* (see below). From now on we should be using not only *Mycopan* (as by Kibby) and *Hydropodia* (as by Fortey), but also

Fig. 1. *Megacollybia platyphylla*, a contender for the agaric placed in the most genera. Photograph © Mario Tortelli.

Pseudohydropus for *H. floccipes*.

Further notes on the effects of the DNA revolution

I mentioned above the rather obscure genus *Clitocybula*, intruding among the various species assigned to *Hydropus*. The checklist claims there is a single collection in K of *C. lacerata*, the type and only species of the genus to have ever been recorded in Britain. Also an illustration by Cooke. I have my doubts. These could well have been optimistic misidentifications of *Clitocybe* species. DNA shows it to be close to (congeneric with?) *Megacollybia*. Indeed *Funga Nordica* reduces that familiar genus to a synonym of *Clitocybula*, though it is retained by both Kibby and FTE [Following the phylogenetic study by Antonin *et al*. (2019) – Ed.]. The very well known *M. platyphylla* has always been a problem for taxonomists. Without citing all the details I assure readers that in date order undoubtedly eminent mycologists have also assigned this unfortunate species to the following: *Agaricus*, *Collybia*, *Marasmius*, *Lyophyllum*, *Tricholoma*, *Tricholomopsis*, *Gymnopus*, *Oudemansiella* and indeed *Hydropus* itself. Most of the details are listed in CBIB, and all in *Index Fungorum*, except that by Kühner to *Hydropus*, which failed as he omitted to cite the basionym. Readers who collect an interesting mushroom in good condition and still have no idea what genus it belongs to can take comfort. Maybe eventually DNA will have it all sorted. Meanwhile they are in good company!

How many books do I need?

Some thoughts provoked by being given a single small agaric to identify, collected last year on 12 March uner a pine, thought to have come from a cone, but not examined microscopically. Should be easy. All the books give variants of the same story: just four species to consider: three *Strobilurus* in Spring, one *Baeospora* in Autumn. One of the *Strobilurus* is only on *Picea*, the two on *Pinus* are clearly distinguished by the shape of the cystidia. I made a slide which revealed large numbers of 'extraordinarily small' spores (so described by Watling in the British Fungus Flora Vol.8). So it was in fact *Baeospora myosura*.

I amused myself by looking up this species in all my books that cover it, 12 of them, surely too many. One has no seasonal information. Nearly all find space to mention the possible confusion with *Strobilurus* and their Spring/Autumn difference. None allow Autumn to extend to March. Two just say 'autumn', one rashly adds 'not as early as Spring'. One getting nearer has 'late summer, autumn and early winter'. The two that come nearest are Kühner & Romagnesi 'Oct.–Feb.' and Phillips 'autumn to late winter'. Distribution is generally agreed to be 'widespread', but frequency runs in British texts from 'never common' to 'fairly common' while FTE has 'common' and the Swiss book 'rare'.

Most note that the cones are often buried. Some books only mention *Pinus* as a host. While this is the commonest, there is no need to get excited by finds on other hosts. In Kew Gardens I have also found it under *Picea*, *Cedrus* and *Tsuga* (helped by the identificaion labels). Only one of my 12 sources (the Dutch F.A.N. Vol.4) records that is also known 'very rarely' on wood rather than cones.

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