# Notes and Records

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In my August column last year I noted that Kew Gardens had had a drought and a record 40° temperature, and speculated on when any agarics might start to reappear. *Coprinopsis lagopus* did so on August 28 followed by a clutch of ectomycorrhizals on September 8. Writing now in June after a month with no rain at all, I return to this topic. Two other items have the common theme of DNA. Fungi have so few distinguishing characters that its taxonomic effect has perhaps been greater in mycology than in botany or zoology. This and every recent issue of FM all contain reports of species new to Britain supported by DNA evidence. I belong among the majority of FM readers who I suspect are never likely to embark personally on the still fairly complex task of DNA extraction. I can only admire the ever growing band of those who now do so, and thereby promptly record significant new finds.

## Did you see morels this year?

There has been general agreement among the many morel aficionados who post their finds on Facebook that this year the wet spring produced an excellent crop. [Andy Overall concurs in this issue p. 87, unseen when this was written.] Morels fruit almost exclusively in April and May and have a well-deserved reputation for unpredictability. One year they appear in quantity where never seen before but, alas for the gourmets, never the next or seemingly ever again. [Overall references his 2004 account, possibly the most recent comparable year.] At least one species is now thought to be limited to firesites of a certain age, which would explain its seemingly random appearance. Amid this enthusiasm it is worth emphasizing that it is next to impossible to identify *Morchella* species without sequencing. The one exception is the fairly common but rather variable *M. semilibera*, formerly placed in a separate genus *Mitrophora*, with opulent growths mistakenly assigned to an untenable further species *M. gigas*.

A troop of morels duly appeared in Kew Gardens this year, the first this century, so far unidentified awaiting sequencing. The previous record had been in 1998 when Brian Spooner cautiously identified a collection as *M. hortensis* sensu auct. (now subsumed in *M. elata*). Much earlier Massee (1906) had recorded several now doubtful species. These included forms of *M. semilibera* under three different species names.

I would encourage readers to revisit the admirable summary of the current state of morel taxonomy published in FM by Michael Loizides (2017). He outlines the still very partial knowledge, even just in Europe, of what has proved to be a large and difficult genus, still with many loose ends despite the 50+ references he cites. In his words "the morphological recognition of morel species remains challenging". Less specialist literature from Dennis (1981) onwards has been fairly uniform in recognising no more than three to five European species, each considered variable in appearance. Loizides listed 29 European species in his Table 3, giving for each a list of the European countries where its presence has received DNA confirmation, e.g. 12 demonstrably distinct species all known from France but none from Britain (no published sequenced records). I am told that current understanding of European species has recently been consolidated in a major treatment by Clowez & Moreau (2021) not seen personally.

## And when did you see your first mycorrhizals of 2023?

I am here talking about mycorrhizals as generally and loosely understood, more specifically about ectomycorrhizal species. They deserve a less cumbersome designation - here I will call them ECMs. There seems to be some sort of common trigger, probably based loosely on a combination of temperature and moisture over the previous weeks, which ensures that the earliest fruitings of most ECM genera (*Russula*, Boletes, *Amanita*, *Inocybe*) at any one site all tend to occur within a few days of each other. Long months with none of them, then suddenly one week they all appear (though admittedly *Cortinarius* usually comes a bit later). For most of the last twenty years and certainly all of the last ten I have noted the happy day when I recorded my first ECMs in Kew Gardens. This is

likely to have been within a week of their actual appearance.

This year, after a lot of rain and a few warm days I went in with high hopes on May 10. Everything looked very lush. In two hours the only agarics of any kind I found were two fruit-bodies of *Agrocybe praecox*. [Incidentally this too is agreed to be a complex needing DNA studies to clarify. It looked like it does in Phillips (1981) and Kibby (2021), but nothing like the photo so named in FTE (Læssøe & Petersen, 2019).] I began to think my eyesight was failing. But three days later Geoffrey Kibby, spurred on by reports of ECMs elsewhere, drew just as much of a blank. Going back to my records I decided we had both been unreasonable. The earliest ECMs I had ever recorded in Kew had been on 27 May 2002 and 30 May 2014, in both cases including a Kew speciality, the little finely scaly red *Russula melzeri* (illustrated on p.52 of the last issue of FM).

In Kew *R. melzeri* has always been among the earliest ECMs to appear in those years when it has appeared at all. But in four of the last six years a summer drought set in and it probably never did fruit. For instance in 2017 no ECMs were seen until three other *Russula* species appeared on July 28. And then, just nine days later, there were also Boletes, Amanitas and Inocybes - at least 20 ECM species in total. In 2018, 2020 and 2022 I saw no ECMs at all until the second week in September. 2015 had been yet another dry summer but the rains came slightly earlier (mid August). Just one ECM species, *R. melliolens* appeared on August 27. A fortnight later the simultaneous eruption had started. Two adjacent large sweet chestnuts (*Castanea sativa*), already known to be rich hosts, had 15 different ECM species fruiting under them, including an unusually late *R. melzeri*.

## More news of *Artomyces pyxidatus*

Two issues ago I highlighted the recent spread of *Artomyces pyxidatus* in Britain - two records in 120 years but ten sites spread over four vice-counties in the five years 2018-2022. Already this year there has been another, from Hounslow Heath in West London, a first for Middlesex. This was reported to me by Andy Overall, who writes elsewhere in this issue on his survey of the area. He had been greatly surprised to be shown a photo of this species taken on 22 Oct. 2022 by the local ranger, correctly identified via the iNaturalist website, though nobody had told him it was rare. Andy was shown the log where it had fruited. To his surprise on returning three weeks later (9 May 2023) it was fruiting once again (see Fig. 6 on p. 90 of this issue), and also on two further logs nearby, all old decorticated and not easily identifiable. Such a substrate is typical, but the spring fruiting is a novelty (at least for Britain). The collection is now in Kew. As a further addition to my earlier account, the host logs at the most prolific E. Kent site were later identified with some certainty as aspen (*Populus tremula*), in line with the view in FTE that it most often occurs on this host or other species of *Populus*.

## What has been happening to *Polyporus* and *Lentinus*?

The following notes are triggered by the radically different treatment of *Polyporus* in FTE from the traditional concept of this genus used in CBIB and maintained recently in Ryvarden & Melo (2014). In FTE (Læssøe & Petersen, 2019) its traditional members are split between five genera including *Lentinus*, with nothing among the impressive 370 references to say where this treatment comes from. Only 16 of these relate to polypores, listed on p.824 under 'Further Reading'. All can be quickly dismissed by their dates and titles from being sources of the treatment adopted.

It had long been suspected that *Polyporus* might be closely related to *Lentinus*, a gilled genus and thus treated in the 'Agarics and Boletes' literature. Moser (1983), widely used in its English translation before the arrival of *Funga Nordica* (2008), even included *Polyporus*, though nothing else poroid. Moser's concept of *Polyporales* was of a small otherwise gilled order. It covered *Lentinus* and *Panus* (both in *Polyporales* as now understood), but also *Pleurotus* and *Phyllotopsis* (now retained in *Agaricales*).

By the time of CBIB (2005) there had been a generic change. *Lentinus tigrinus* with a white rot was retained. The other three British species belonged in another genus *Neolentinus* with a brown rot, subsequently placed in a new order *Gloeophyllales*. There had also been changes within *Polyporus*. The well known *P. badius* first published as *Boletus badius* was illegitimate, ousted by Fries's later but sanctioned use of that

name for what is now *Imleria badia*. It became *P. durus* which had an earlier combination in *Polyporus*, until that too was found to be illegitimate and *P. badius* was restored to CBIB. The equally well known *P. varius* suffered similar complications. As the earlier of two names both sanctioned by Fries it had to become *P. leptocephalus*. In CBIB it remains there.

In recent years a succession of DNA studies have been gradually unravelling the very varied mix of genera included in *Polyporales* as now understood. The morphology that used to place gilled fungi in one identification handbook, polypores in another and corticioids in a third may be convenient but doesn't reflect phylogeny. *Polyporales* contains a mix of all these and also oddities like *Sparassis*, excluded from all three. A major multi-authored 3-gene study (Justo *et al*., 2017) treated 292 taxa of *Polyporales*, assigning family names to most of the clades revealed. They suggested "the classification proposed here provides a framework for further taxonomic revision". It revealed the inconvenient truth that the type species of *Polyporus* and *Lentinus* were uncomfortably closely related. Just how close depends on differing views on which species of *Polyporus* is deemed to be the type; some say *P. squamosus*, most now say *P. tuberaster*. Further taxonomic revision has continued apace in obscure journals. I do no more here than tabulate the results, listing the British species treated in *Polyporus* by Ryvarden & Melo (2014) and their latest names as used in FTE:

*P. badius* → *Picipes badius*
*P. brumalis* → *Lentinus brumalis*
*P. ciliatus* → *Lentinus substriatus*
*P. melanopus* → *Picipes melanopus*
*P. squamosus* → *Cerioporus squamosus*
*P. tuberaster* → *Polyporus tuberaster*
*P. umbellatus* → *Cladomeris umbellata*
*P. varius* → *Cerioporus varius*

Incidentally, *substriatus* is a long forgotten British epithet, stemming from Bolton's 1788 *An History of the fungusses growing about Halifax*.

Fig. 1. *Polyporus badius*, also known as *P. durus* and for some in a new genus as *Picipes badius*. Photo © Mario Tortelli.

**A correction:**

In my notes on *Hydropus* in the last issue I confused readers who had reached the last paragraph on p.69. The 'least uncommon' species there discussed was *H. subalpina*, but I inadvertently called it *H. floccipes*.

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