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Field Mycology

Field Mycology is a quarterly magazine, published by the British Mycological Society. It provides articles about fungi of interest to the field mycologist, covering all aspects of identification, conservation, recording and collection, for all levels of expertise.

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CHANGES TO FIELD MYCOLOGY SUBSCRIPTIONS

The most important change we will be making in 2025 is to move to an online, open access publication. The aim is to reach as wide an audience as possible to stimulate interest in fungi, rather than restrict circulation to BMS members. While Field Mycology will primarily be an online publication in future, paper copies will be made available at additional cost.

We are currently trialling a system for in-house, open access publication of Field Mycology. An editor and editorial panel will be appointed shortly. We intend to produce the first 2025 issue by March.

Accessing Field Mycology

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Vol. 25(4) November 2024

CONTENTS

Front cover: *Hygrocybe punicea,* our largest species of red waxcap, Piercefield Park, Chepstow, November 3 2024. Photograph © Geoffrey Kibby.

Back cover: *Leucopaxillus tricolor*, under *Fagus* on the North Downs, Surrey, Sept. 2024. Photo @ Claudi V. Soler.

EDITORIAL

In this 100th issue of Field Mycology, and my last as Editor, I thought I would indulge myself by having a *Russula* species as the Fungal Portrait opposite. *Russula* has long been my favourite genus since I first began mycology.

As with many such passions it began with a great teacher, in this case the foremost British *Russula* expert, now long since passed, Ronald Rayner. On one of my first BMS fungal forays, still in my teens, my father and I attended a foray led by Ronnie. During the course of the foray he picked up a dark purple *Russula* and proceeded to scratch the base of its stem and demonstrate the striking smell of iodoform that it possessed, it was *Russula turci*. I was hooked from that moment on.

On learning that the genus had over a hundred species in Britain (the current total is now 149 species) and that most required field characters, ecological data, microscopy and chemical tests to determine them I was determined to get to grips with them—a task I am still attempting today.

I have been fortunate, along with my colleagues Mario Tortelli and Claudi V. Soler to discover a few species new to the British list, but none more exciting or beautiful than the species opposite. But we know that there are still more species to discover; this is the excitement and joy of mycology. A.A. Pearson—another *Russula* enthusiast—in his work *The Genus Russula*, published in The Naturalist, 1948, stated it very succinctly: "There is no finality in mycology and least of all in the genus *Russula*".

A report in September (BBC 25th Sept.) recorded a serious case of poisoning after three people in Jersey, including a mother and son, ate Death Caps, *Amanita phalloides*. Apparently they had mistaken them for edible mushrooms although it is not made clear what species they thought they were picking. At the time of the report one of the three remained in hospital.

Whatever your views on the pros and cons of mushroom foraging, everyone agrees that to eat wild fungi without a thorough knowledge of what the distinguishing characters are of the known toxic species is foolhardy at best and potentially lethal at worst. If you are eating wild fungi do please be careful, try and get the opinion of an experienced mycologist and if in the slightest doubt do not eat them.

If you thought that human relationships were difficult then spare a thought for the fungi. A report in *PLOS Genetics* (https://doi.org/10.1371/journal.pgen.1010097) on three *Trichaptum* species looked at two regions on their genome which were thought to control crossbreeding.

These two regions had many different possible alleles and for potential mates to be compatible, both regions must be different from their prospective partner's. The report goes on to state that "This diversity has hampered sequencing efforts. The many divergent alleles make primer design all but impossible, thwarting the use of less expensive, targeted sequencing methods. This hurdle means that researchers wanting to sequence these fungi would need to rely on so-called next generation, short-read genomic sequencing technologies—methods which, given the number of individuals and the depth of sequencing needed to ensure accuracy, have simply been too expensive".

The team managed to overcome these difficulties however using lower cost next generation technologies. The result was that they found that up to 17,550 different combinations were possible. The report continues:
"Why any organism would need so much sexual variation remains an open question, but study author and University of Oslo geneticist David Peris suspects it has to do with the mushrooms' sessile lifestyle: having to be different at two different gene regions makes it less likely for spores released from the same mushroom to successfully combine, thus lowering the odds of inbreeding.

For a nice summary of the research see *The Scientist* (https://www.the-scientist.com/this-fungus-has-more-than-17-000-sexes-69930).

Fungal Portrait: 100

Russula blumiana

Geoffrey Kibby

Fig. 1. *Russula blumiana,* appears every year in large numbers under a row of large oaks in Epping Forest, Essex. Photograph © Geoffrey Kibby.

The species shown above, *Russula blumiana* Bon appears in large numbers almost every year along a certain stretch of oaks in Epping Forest, Essex. Both I and my friend and colleague Mario Tortelli have known this species in this spot for over 20 years – but under the wrong name! Attempts to key the species out had led, not entirely satisfactorily, to *Russula maculata*. It sort of 'fitted' the description of that species but not completely. The taste was acrid but lacked the cedar wood component often reported for *R. maculata*. The cap was not as red or as shiny as seen in photos and although often blotchy it lacked the small dark red-brown spots that gave *R. maculata* its specific epithet. But at the time there was nothing else in the available keys at the time that fitted better. So *R.maculata* it remained for many years.

It was only with the advent of publicly accessible DNA sequencing and the aquisition of a Bento Lab by our colleague Claudi Soler that the opportunity presented itself to finally pin down its identity. So it was with great surprise that the resulting sequence was found to be a 99.81% match to several sequences by M. Caboň of *Russula blumiana*. Very few works even mention this species; it is the last species described in the two-volume monograph by Sarnari (1998-2002) and it is painted in the beautiful two volumes by Marxmüller (2014).

We had not considered this species as it is usually considered a thermophilic species of more southern, Mediterranean woodlands. To date Epping Forest is still the only known site in Britain, but perhaps collections elsewhere have also been misidentified and lurk undiscovered in

Fig. 2. Mature specimens of *R. blumiana* bleached by exposure and age. Photograph © Geoffrey Kibby.

herbaria and fungaria. Kew for example has numerous collections of *R. maculata* which might repay further investigation.

The cap when young and fresh is a beautiful bright orange and quite matt in texture. The colour is often rather blotchy with paler areas and over time the entire cap may pale to yellowish ochre as seen in Fig. 2. The gills are pale cream to pale ochre and the spore deposit is medium to dark yellow-orange (IIIa-IVa on Romagnesi's scale, 1985). Its spores are 7.5–9.5 x 6.5–8 µm, with mostly isolated warts up to 1 µm high and a few scattered connectives or connate ridges (Fig. 3). Pileocystidia are abundant, clavate, 0–2 septate, usually not exceeding 8 µm width (Fig. 4). The taste of the gills is strongly acrid.

Both of the works already cited state that it may have a preference for somewhat waterlogged soils and it was noticeable in 2023 that the oaks were frequently surrounded by large puddles of rain water for some time, so there may well be some truth to this idea.

Lookalikes include the very similar *R. aurantioflammans*, a *Betula* associate known from one site in Scotland and the aforementioned *R. maculata* which is usually redder, with a smooth, shiny cuticle and noticeable dark red-brown spots as well as a darker spore deposit of IVc-d.

I would be very interested to hear of any further localities for this beautiful and seemingly rare species.

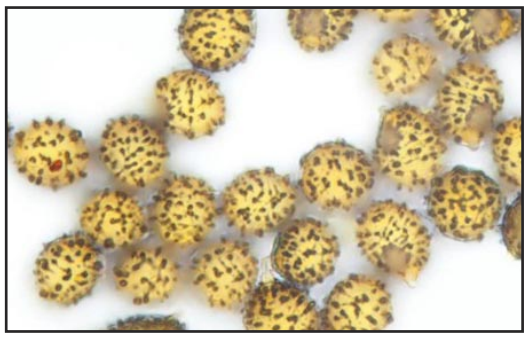

Fig. 3. Spores of *R. blumiana* showing ± isolated warts. Photo © Claudi V. Soler.

Fig. 4. Septate pileocystidia of *R. blumiana.* Photo © Geoffrey Kibby

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Dissingia confusa new to Britain

Charles E. Aron*

During late November 2017 I was searching for fungi in a rather dense spruce plantation at Tyddyn Isaf, Penrhoslligwy, on Anglesey. The site, which has proven very productive for interesting fungi, is close to Lligwy Woods which was visited by the BMS during October of the same year. On the sides of a small brook (Fig. 1) running through the plantation I noticed what appeared to be some *Helvella*. I was surprised as it seemed a strange site and time of year to find these fungi; they were cupulate with ribbed stipes, rather similar to *H. leucomelaena*, which occurs on the sand in Newborough Forest, south west Anglesey, a completely different habitat. Also, *H. leucomelaena* is a somewhat stockier, darker species. Using available texts such as Dissing (2000) the best fit seemed to be *H. solitaria*.

Further information was provided by Skrede *et al.* (2017); this detailed review of the morphology and phylogeny of the European *Helvella* species also provides a key. In the key *H. solitaria* forms a couplet with *H. confusa*. Of the two, *H. confusa* fitted best, *H. solitaria* being a larger and darker taxon. Another factor is that *H. solitaria* seems to prefer broad-leaved woodland, especially *Salix*, while *H. confusa* prefers conifers, usually *Picea*. It also occurs on rich or calcareous soils.

In Britain many spruce plantations are in upland situations on mostly acidic soil, however, in the Anglesey site there is runoff from an adjacent area of Carboniferous limestone, creating an ideal habitat for *H. confusa*. Inger Skrede (pers. comm.) agreed that photos of macro- and microscopic characters were close to *H. confusa*. She also sent me a further paper on *Helvella* (Hansen *et al.*, 2019). In this study *Dissingia* is erected as a separate genus from *Helvella* species on the basis of lacking croziers while they are present in other *Helvella* species apart from the *H. alpina/corium* lineage. This new genus consists of *D. confusa*, *D. crassitunicata*, *D. leucomelaena* and *D. oblongispora*. Of these only *D. leucomelaena* is known to occur in Britain.

Further examination of the Anglesey material confirmed the absence of croziers thus pointing to *D. confusa*. Material was sent to Paul Cannon who confirmed this identification and created a page for *Dissingia confusa* in his *Fungi of Great Britain and Ireland* website (see http://fungi.myspecies.info/all-fungi/dissingia-confusa).

Since its initial discovery *D. confusa* has been found on several occasions at the Anglesey site, from the winter months through to April, always in the same spot close to water. There is also a record on FRDBI from a spruce forest in Northern Ireland by C. Stretch, May 2021.

Fig. 1. Habitat of *Dissingia confusa*. Photograph © C.E. Aron.

Fig. 2. *Dissingia confusa* on wet ground in spruce plantation, showing the undersurface with broad ribs. Tyddyn Isaf, 24/11/17. Photograph © C.E. Aron.

Fig. 3. Specimens of *D. confusa* from Cae Brych Forestry, 25 Nov. 2021. Photograph © C.E. Aron.

A description based on the Tyddyn Isaf (VC 52, SH48698549) collections is given below:

Dissingia confusa (Harmaja) K. Hansen & Y.–H. Wang

Ascomata 22–43 mm (Figs 2 & 3). At first cyathiform, bowl-shaped and finally shallow-concave with a revolute margin.

Hymenium pale grey to grey-brown.

Excipulum pale to dark grey-brown in young specimens, becoming pallid to light grey but often remaining darker towards the margin. Finely downy under lens (Fig. 4).

Stipe distinct, 5–20 x 3–6 mm, tapering downwards with 4–5 ribs extending to excipulum, pallid.

Ascospores oblong-ellipsoid, 21–23 x 15–15.5 µm (Fig. 5).

Asci cylindrical 225–330 x 20–25 µm, without croziers (Fig. 6).

Paraphyses with greyish brown pigmentation, apex simple or somewhat gnarled and irregular (Fig. 7). Width at apex 6–9 µm.

Acknowlegements

Many thanks to Paul Cannon for confirming the identity of the *Dissingia confusa* material; to Caroline Hobart for sending me the paper on *Helvella* (Skrede *et al.*) and also for the loan of her *Helvella* specimens and thanks to Inger Skrede for help with identification and sending the link to '*Pindara* revisited' (Hansen *et al.*).

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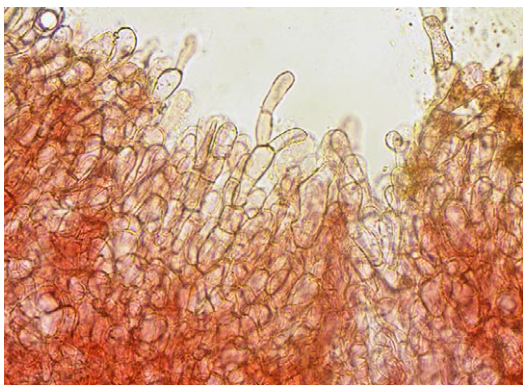

Fig. 4. Excipular cells of *D. confusa*. Photograph © C.E. Aron.

Fig. 5. Ascospores of *D. confusa*. Photograph © C.E. Aron.

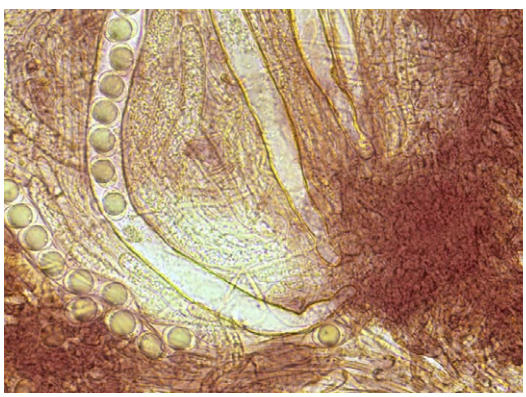

Fig. 6. Asci of *D. confusa*, showing simple bases. Photograph © C.E. Aron.

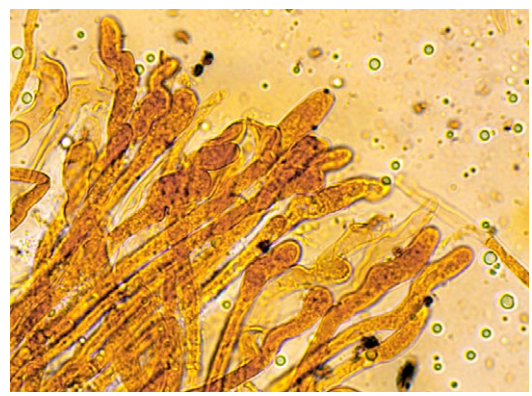

Fig. 7. Paraphyses of *D. confusa*. Photograph © C.E. Aron.

Leucopaxillus tricolor on offer at your local supermarket

Graham Mattock*

Situated in the middle of a supermarket carpark here in Winchester there is a stand of mature beech trees on calcareous soil. Over the years several interesting fungi have been recorded here including the colourful *Cortinarius croceocaeruleus*. During a visit in late August 2024 things looked fairly barren fungi wise with only a few gone-over boletes and a group of rather scrappy looking agarics with dingy buff caps with an inrolled margin and bright yellow gills. Thinking this was going to be a *Tricholoma*, I was rather surprised to find the collected specimen had dropped a white print of amyloid ovoid spores with isolated warts suggesting this was a *Leucopaxillus*. My collection, using *Funga Nordica* (2012), keys out to *Leucopaxillus tricolor*, the contrasting yellow gills being an identification feature (Fig. 1).

Roger Phillips (2006) in the 2nd edition of his book includes *Leucopaxillus tricolor* giving the habitat of mixed woods in mainland Europe but not recorded for Britain. It is a large species recorded reaching up to 25 cm across. The photograph in Roger's book is a distinct match for my collection. A look on the FRDBI now shows two records for *L. tricolor*, one from Cambridgeshire dated September 2008, the second from North Hampshire dated August 2019. Both collections were, as mine, from under *Fagus*.

So why spend time travelling to exotic locations when you can pick up rare and interesting fungi at your local supermarket?

[Editor's note: this species has also been found this year in large numbers on the North Downs, Surrey, again under *Fagus*, see back cover. The largest one seen had indeed reached 25 cm across]

• 16 Gordon Avenue, Winchester, Hampshire, SO23 0QQ

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Fig. 1. *Leucopaxillus tricolor* showing its distinctive yellow gills and pinkish cap colours. Photo © Graham Mattock.

Cortinarius geraniolens and related species smelling of *Pelargonium* leaves

Andy Overall* & Geoffrey Kibby**

In recent years, as greater knowledge of species has accumulated through the use of DNA sequencing, a number of *Cortinarius* species belonging to subgenera *Telamonia* section *Incrustati* have been identified, some of which have been new to Britain.

Species belonging to the *Incrustati* are characterized by their small to medium size, and usually shades of grey-brown to red-brown. They often have fine, white, plush scales on the cap surface, especially noticeable as they dry. Several species have a *Pelargonium*-like odour (a sharp, somewhat acidic, almost fruity smell) when fresh or after drying, violaceous gills when young, and some may have a violaceous stem apex and/or base. Some species are conspicuously umbonate and frequently have fugacious bands of white veil around the stem. All species are mycorrhizal with various deciduous or coniferous trees, with some species apparently confined to a single host species. Spores are usually ellipsoid, varyingly dextrinoid and verrucose.

Cortinarius geraniolens

Following visits to sites around Heathrow and Hounslow Heath, a medium sized, grey to brown species exhibiting the aforementioned features, was found occurring with *Quercus robur* on clay soils (Fig. 1). It strongly resembled *Cortinarius hemitrichus*, a common member of the *Incrustati* section which associates strictly with *Betula*. It wasn't until collections from both sites were DNA sequenced that its identity was revealed as *C. geraniolens* with a 99.6% match with the sequence from the holotype. We suspect that this has long been overlooked because of its similarity to other species in the group. A description of this collection follows along with photographs and a key to related species.

C. geraniolens was first described from France (Bidaud 2010) on calcareous soil with *Fagus sylvatica* and *Populus tremula* but appears to be more strictly a *Quercus* associate. It was first recorded from Britain in 2012 by John Watt in South Lancashire and this collection was sequenced and verified at Kew. There are

Fig. 1. *Cortinarius geraniolens* is mainly found under *Quercus*, has a rounded to flattened cap with white squamules and violet gills when young. Photograph © Andy Overall.

currently 10 records on the FRDBI, five of these from the South Lancashire location, during subsequent years, it is unknown if these collections were confirmed via sequencing. It has also been recorded in Kent in 2022. There are two collections currently held at Kew.

Details of the illustrated collection

Cap 40–75 mm, campanulate to flat, grey-brown, covered with fine, white squamules.

Gills violet-brown to rusty brown, well-spaced, edge concolorous.

Stem 50–92 x 6–15 mm, cylindric, fibrous, greyish silver, bruising reddish brown, with white velar remnants in lower half with well-defined ring-zone.

Flesh brownish, darker at base of stem.

Odour initially zero but becoming stronger of *Pelargonium* following collection and upon drying.

Spores ellipsoid, 8.0–9.5 x 5.0–6.0 µm, averaging 8.0 x 5.3 µm from 39 measured spores. Strongly dextrinoid and moderately verrucose.

An older, wetter collection found under *Quercus* in Kent in 2022 and illustrated in Fig. 2 shows the difficulties inherent in identifying species in this group. The white, floccose cap surface appears almost smooth when wet and the veil remnants on the stem have mostly rubbed off or collapsed back into the stem surface. Only the distinctive odour remained to alert the collectors that it might belong to this group.

Related species

Cortinarius cucumisporus Fig. 3

(Syn. *C. violilamellatus*)

Despite looking very similar to several other species, particularly *C. flexipes*, this is one of the easier members to identify because of its peculiar spores, many of which are long and spindle-shaped, 9.0–11.0 x 4.0–5.0 µm. Its gills are violaceous brown and there may be violet at the stem apex. It is a fairly uncommon to rare species found on sandy soils under *Pinus*, *Betula* and perhaps also *Salix*. It appears to be widespread in both lowland and alpine areas.

Cortinarius desertorum Fig. 4

(Syn. *C. diasemosporus* var. *leptospermus*)

This species is quite common in wet woods under *Salix*. Its conical cap is pale brown and only very finely floccose, best observed with a hand lens. The stem is finely and minutely white floccose and may be faintly violet at its apex. Spores are

Fig. 2. *C. geraniolens*, like most members of the subgenus *Incrustati* loses many of its distinctive characters when old and wet as seen here. Sequencing may then be the only way to get an identification. Photo © G. Kibby.

Fig. 3. *C. cucumisporus* showing the violet gills when young and fresh and the white floccose veil remnants on the cap. Inset: the fusoid, elongated spores. Photograph © Mario Tortelli.

rather longer than most species in the group, 8.5–11.0 x 4.5–5.5 µm making identification somewhat easier.

Cortinarius flabellus Fig. 5

With a weak *Pelargonium* odour but with much darker, browner hues, this species was formerly regarded as a variety of *C. flexipes*. When wet it is almost black and the squamules on the cap will be invisible. It dries to a pale umber or sepia brown and then the whitish squamules become evident. The white veil on the stem often forms a prominent ring zone. It is found under *Pinus* and may be quite common in some woodlands. Spores are 7.5–8.5 x 5.0–6.0 µm.

Cortinarius flexipes Figs 6 and 9

A look-alike of *C. geraniolens* this common species is usually found in *Betula* forests or in mixed woods with conifers. It is often the darkest

Fig. 4. *C. desertorum* is widespread and common and has longer spores than most members of this group of species. Photo © Mario Tortelli.

Fig. 5. *C. flabellus* is black when wet, brown when dry, the veil forms a white band. Photo © G. Kibby.

Fig. 6. *C. flexipes* is common and perhaps the most striking species in the group. Photo © Mario Tortelli.

and most violaceous-tinted member of this group and normally has a prominently conical cap, dark purple-brown gills, copious white veil on the violaceous stem and a strong *Pelargonium* odour. Its spores are ellipsoid, 8.0–9.0 x 4.5–5.5 µm. A common synonym in many earlier works is *C. paleiferus*.

Cortinarius lindstroemii

This species is similar to *C. flabellus*, although perhaps more often preferring deciduous woodlands and is paler, and more yellowish brown. It is best separated by sequencing to be certain of its identity. Its frequency in Britain is uncertain but it is likely to be quite common but confused with other species. Its spores are 7.0–8.5 x 5.0–6.0 µm.

Cortinarius pilatii Fig. 7

(Syn. *C. diasemospermus* ss. auct.)

This is perhaps the commonest member of the group in deciduous woodlands, often appearing in large numbers in late autumn under *Quercus*, *Fagus*, etc. Rather drab in appearance it is not as floccose as some species, often requiring a hand lens to see the cap squamules and there is only a hint of violet at the stem apex and in the gills. The stem is coated in white fibrils and veil remnants. The odour however is subtly different from other species, rather sweeter and distinct, partially of *Pelargonium* but mixed with old, faded roses; quite easy to recognise with practice. Spores are ellipsoid, 8.0–9.0 x 4.5–5.5 µm.

Cortinarius hemitrichus Fig. 8

NOT smelling of *Pelargonium* but very often confused with other species here, hence its inclusion. The pale greyish to grey-brown cap is densely white floccose when dry and the stem is coated in white fibrils and veil remnants. The best character however is the gill colour which is a uniform pale yellowish brown, often referred to as cafe-au-lait in colour. It is very common and widespread wherever *Betula* occurs, often appearing in large troops. Spores are 7.0–8.5 x 4.0–5.0 µm.

Key to species with a *Pelargonium* odour

1. Spores usually over 9 µm long, reaching up to 11 µm 2
1. Spores reaching a maximum of 9 µm, usually less 3

2. Spores ellipsoid, 8.5–11.0 x 4.5–5.5 µm; cap dull brown, yellowish brown, more or less

Fig. 7. *C. pilatii* with uniformly silvery stems and almost smooth caps. Its smell is more delicate and similar to faded roses than that of other species with *Pelargonium* odours. Photograph © Geoffrey Kibby.

Fig. 8. *C. hemitrichus* does not smell of *Pelargonium* but is usually easily recognisable with its greyish, copiously floccose cap and pale brown gills. Photograph © Mario Tortelli.

smooth; gills pale cinnamon; stem pale brown, sometimes violaceous at apex, with patches of white veil below; with *Salix* ...***C. desertorum***

2. Spores fusiform-elongate, 9.0–11.0 x 4.0–5.0 µm; cap umber-brown with white veil squamules, gills violet-brown; stem brown with white floccose veil; with *Pinus* or *Salix* on sandy soils .....***C. cucumisporus***

3. Gills and stem deep violaceous brown, cap prominently conical, stem with copious bands of white veil, odour strong and penetrating of *Pelargonium* leaves; with *Betula*, *Pinus*, more rarely *Fagus* .....***C. flexipes***
3. Gills and stem brown to dark blackish brown to more subtly violaceous brown; cap more obtusely conical to rounded-campanulate.....4

4. Cap dark blackish brown to reddish brown, strongly scurfy-scaly; stem dark brown with girdles of white veil; spores ellipsoid, 7.5–8.5 x 5.0–6.0 µm, with *Pinus, Fagus* ...***C. flabellus*** (also ***C. lindstroemii***, very similar and best separated via sequencing)
4. Cap paler or almost smooth; stem weakly floccose to silvery overall 5

5. Fruitbody slender, almost *Mycena*-like; cap almost smooth, yellow-brown, finely squamulose at the margin; stem usually uniformly silvery white over entire length; odour sweet with a rose-like component; spores more amygdaliform, 8.0–9.0 x 4.5–5.5 µm; in mixed deciduous woods ..***C. pilatii***
5. Fruitbody rather stocky; cap reddish brown, with very fine squamules, best seen with a hand lens, especially as it dries; gills vinaceous brown; stem silvery grey-brown with white ring-zone; spores ellipsoid, 8.0–9.5 x 5.0–6.0 µm, with *Quercus* ...***C. geraniolens***

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Fig. 9. *C. flexipes* showing its often extraordinarily conical caps and very dark gills. Photograph © G. Kibby.

An important photograph of early mycologists

Editor's note

I am indebted to Professor Stefan Buczacki* for the wonderful and important early photograph shown below. I can do no better than quote his description to me of the photo:

"It was lying loose and badly faded in a plain-leaved book belonging to a family with connections to the Rev. Miles Joseph Berkeley and I have used Photoshop to enhance it.

It is captioned in pencil on the back with the names of the individuals, but nothing else — no date or location. They are listed (in reverse order from the image) as: 'Dr Cook, C. E. Broome, Plowright, Phillips, Walker' and they have obviously had a fruitful day as evidenced by the full collecting baskets. I do not recognise the handwriting.

The striking pipe-smoking Mordecai Cubitt Cook (1825–1915) is readily recognisable of course but I do not think I have ever previously seen a photograph of Berkeley's long-time collaborator Christopher Edmund Broome (1812–1886), or of William Phillips (1822–1905), author of 'A Manual of British Discomycetes' (1887). The uniquely beardless Charles Bagge Plowright (1849–1910) appears on other early photographs, but I have been unable to identify 'Walker' who does not feature in Geoffrey Ainsworth's 'Brief Biographies' or any other document of which I am aware. And as far as I can determine, there is no-one of that name in the membership lists of the Woolhope Club although I assume this must have been a

Early mycologists left to right: ? Walker, William Phillips (1822–1905), Charles Bagge Plowright (1849–1910), Christopher Edmund Broome (1812–1886) and Mordecai Cubitt Cook (1825–1915).

Woolhope meeting of some sort – all the other individuals were members. The location appears to be a garden because the wall behind bears a carefully trained plant – either a rose or possibly a soft fruit. As C. E. Broome died in 1886 at the age of 74, I would guess the photograph was taken in the late 1870s or early 1880s, probably on a fairly warm autumn day but with the threat of rain as Plowright has his umbrella".

Perhaps one of our readers might have more information on the elusive Mr Walker or indeed on the photograph as a whole.

These early mycologists were among those who laid the foundations of much of our present knowledge about the fungi of Gt Britain and it is wonderful that such early photographs can be preserved, digitised and enhanced for future generations to admire. They certainly dressed for the occasion compared with modern day forays!

Geoffrey Kibby

*Prof. Stefan Buczacki, Prospect House, Clifford Chambers, Stratford-upon-Avon CV37 8HX

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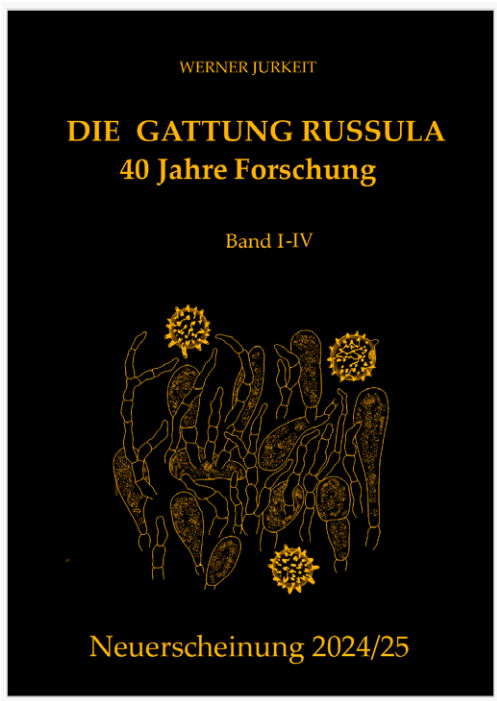


[14]

Russula subclariana – *Quercus-Tilia-Castanea-Russula-graveolens*-Gruppe. Die neue Art liegt in der Untersektion *Violaceinae* intermediär zwischen *R. clariana* und *R. violacea* (*R. pelargonia*).

Russula messapica – Mediterrane *Russula vinosobrunnea*-Gruppe, Foto Luciano MICHELIN; seltene und auffallend gilbende Art. Epikutisstruktur mit sehr kompliziertem Aufbau.

Pluteus umbrosus var. *albus*, the white form of Velvet Shield

Jeremy Bartlett*

On 25th November 2023 I was looking for fungi in woodland at Whitlingham Country Park on the outskirts of Norwich.

The woods have a good supply of dead, rotting tree trunks, especially Beech and Elm and are a good place to find species of *Pluteus*. In past years I've found several species there: Deer Shield (*Pluteus cervinus*), Yellow Shield (*P. chrysophlebius*), Goldleaf Shield (*P. romellii*) and Velvet Shield (*P. umbrosus*). Ashen Shield (*P. cinereofuscus*), Willow Shield (*P. salicinus*) and Flame Shield (*P. aurantiorugosus*) have also been recorded from the site.

I noticed a single, white fungus fruitbody growing from the base of a dead Beech (*Fagus sylvatica*) log (Fig. 1). It looked like a species of *Pluteus*, but not one I had seen before, so I took it home for a further look.

Fig. 1. The fungus in situ, on a Beech log. Photo © Jeremy Bartlett

The cap was 60 mm across, bright white and slightly granulose. The stipe measured 80 x 5 mm and was white and fibrillose, with a slightly bulbous base where it was attached to the wood. The whole fruitbody turned yellow-ochre as it aged and dried. Its odour was very faint, perhaps of radish. The spores measured on average 5 x 6.5 µm.

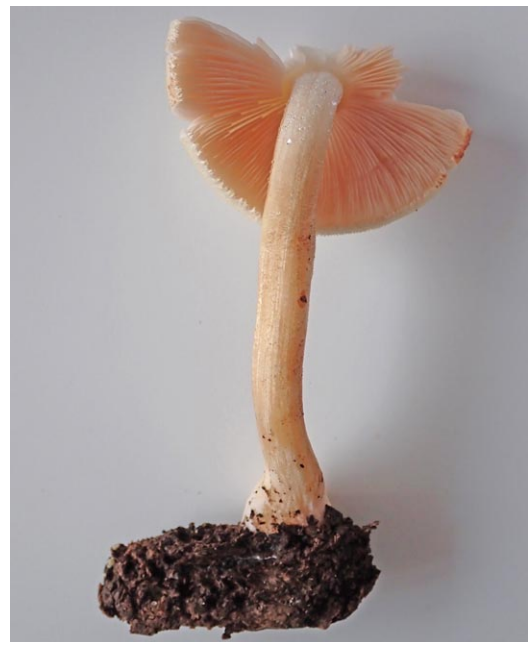

Fig. 2. The fungus a day after collection. Photo © Jeremy Bartlett.

The colour of the fruitbody and its slightly bulbous stipe base led me to identify it as *Pluteus semibulbosus*, for which there were three previous records in Norfolk.

However, I am very aware of my fallibility when identifying fungi and it seemed like a good idea to dry the fruitbody and pass it to the Norfolk Fungus Study Group's DNA team. They have featured in recent articles in *Field Mycology*, looking at unusual fungal specimens and species of webcap (*Cortinarius*). The team are used to me passing them hard to identify fungi, a few of which have been new for the

county. Occasionally my identification is correct, but not this time.

The conclusion from DNA analysis was that I'd found the white variety of Velvet Shield, *Pluteus umbrosus* var. *albus*. It is a first for Norfolk.

According to *Funga Nordica*, *Pluteus umbrosus* var. *albus* is very rare. It doesn't feature in Kibby Volume 2 (2020) or in the *Field Mycology* article *Getting to grips with Pluteus* (Illife, 2011), though it has a brief mention in *Fungi of Temperate Europe* (Læssøe & Petersen, 2019). Photographs are scarce but there are some online on the Danish 'Svampe Databasen' website.

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Fig. 3. Typical *Pluteus umbrosus*. Photo © Mark Joy.

[This variety was described from Denmark where it is considered as very rare, I don't know of any previous British records — Editor].

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Amanita opaca and *A. coryli*, two closely related species present in the UK

Andy Overall* & Geoffrey Kibby**

In a recent article on the fungi of Richmond Park (Overall, 2021) I described and illustrated a pale cream *Amanita* collected under *Carpinus betulus*, evidently belonging somewhere in Section Vaginatae. DNA had shown it was identical to a Danish collection then awaiting description as a new species. It has now been described in Varga *et al*. (2024) as *Amanita opaca* Hanss, Dima, Bidaud & Varga.

This is one of an ever growing number of species formerly lumped as 'The Grisette' *Amanita vaginata* or its supposed 'var. *alba*'. *A. opaca* is a close relative of *A. coryli*, another fairly recent addition to the British list, now known from two British sites. Thanks to DNA no less than five more very recently described members of Section Vaginatae are also known to be British, two that were illustrated in FM last year, *A. fulvoides* and *A. dryophila* (Overall, 2023) and three more illustrated in Kibby (2023), *A. alseides*, *A. huijsmanii* and *A. vladimirii*.

Fig. 1. *Amanita opaca* showing the pale cap and yellowish bruising of the volva. Photo © Andy Overall.

Amanita opaca and *A. coryli* sit within the *Coryli* stirps which also includes *A. prudens,* recorded from Hungary, Italy and Spain, *a*nd *A. cistetorum* recorded from Italy. A phylogenetic tree showing sequences of *A. opaca*, *A. coryli* and *A. prudens* was kindly produced by David Harries (Fig. 2).

Amanita opaca was described as robust in habit and 'always' with different colour zones on the pileus. However, the collection by AO was fairly uniform in colour, at least in this young stage. The holotype was a collection by A. Bidaud in Aug 2011 with *Quercus pubescens* and *Carpinus betulus* on calcareous soil.

Upon receiving news from Pierre-Arthur Moreau of the publication of *A. opaca*, Martyn Ainsworth at Kew was contacted to alert him to this newly described species and the collection from Richmond Park. He replied to say that he was already aware of this new species and that following the sequencing of Kew collections labelled *Amanita* sp. a collection had been found that matched the holotype sequence of *A. opaca*. He has drafted a note for the next CBIB update to include my collection and that of one made in 2019 in East Gloucestershire from Buckholt Wood, with *Fagus sylvatica*.

Amanita opaca is also known from Germany, Greenland, Hungary, and now the UK, making it potentially more widespread in Europe. It was surprising not to see the Denmark collection, to which the UK sequence was originally matched, among those countries listed, but Pierre-Arthur said that the Danish collection was indeed that of *A. opaca*, it just wasn't studied by Varga at the time.

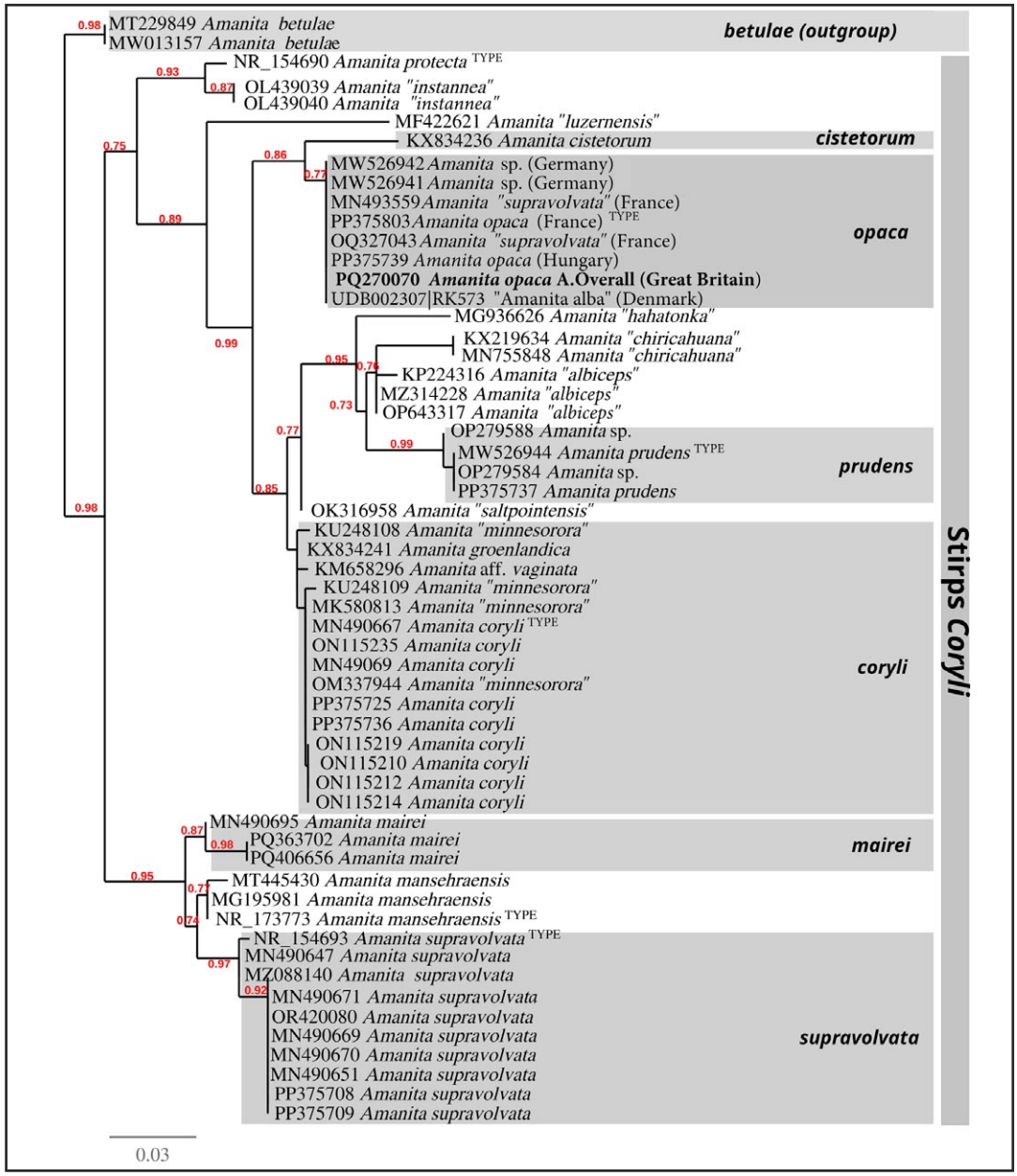

Fig 2. Phylogenetic reconstruction of *Amanita* stirps *Coryli* (sect. *Vaginatae*) based on ITS sequences (Maximum likelihood). European species are indicated in grey.

Following DNA sequencing, the description and further examination of the micromorphological features, *A. opaca* is seen to have some characteristic features that will help with the determination of collections. The volva reveals, tight, elongated hyphae enveloping groups of oval cells which form cylinder-like structures. Similar cells also occur in *A. coryli* and *A. prudens* (not yet British) but it is in *A. opaca* that they are the tightest and most striking. For this reason, the authors propose to call this original volva structure "opaca type". The spores are also larger in *A. opaca* than in *A. coryli*.

Description of the Richmond Park Collection of *Amanita opaca*

Found beneath *Carpinus betulus* on a sandy loam topsoil upon London Clay.

Cap 80–85 mm, conic, ovoid, convex, smooth, pale buff to almost white with very weak, grey

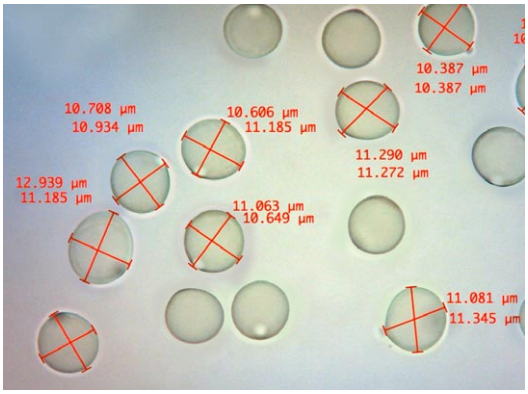

Fig. 3. Spores of *Amanita opaca*. Photo © Andy Overall.

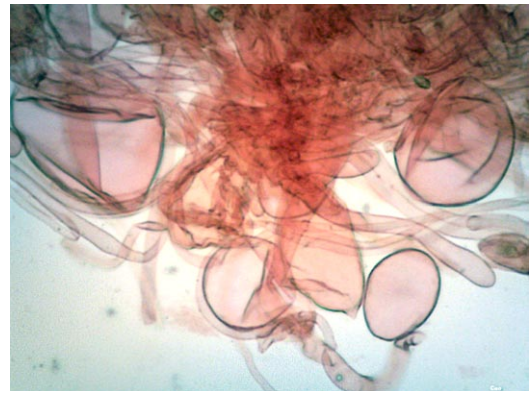

Fig. 4. Volval tissues showing the inflated cells with thinner hyphae wrapping around them. Photo © Andy Overall.

olivaceous hints. Margin deeply striate.

Gills free, white-cream, crowded, edge concolorous and somewhat crumbly.

Stem 185 x 24 mm, apex narrowing to 18 mm, cylindrical, white, smooth, fibrous, base volvate and slightly enlarged.

Volva saccate 80 mm deep, whitish staining yellow.

Spores subglobose-globose, smooth, 10.0–11.0 x 9.9–10.9 µm. Spore deposit white. Basidia 4–spored (Fig. 3).

Volval tissue with oval cells and slender bounding hyphae with swollen, bladder-like end cells (Fig. 4).

Amanita coryli

Described by Neville & Poumarat (2009), the original collections were recorded from under *Corylus avellana*, hence its specific epithet but subsequent collections in the years following have shown that it can also grow with other hosts e.g. *Betula* (Pierre-Arthur Moreau pers. comm.).

The first British collection was in 2012 from a hazel copse in the conservation area of Kew Gardens (Fig. 5) where it has reappeared many times in subsequent years (Fig. 6). There is also a collection in Kew from Wales and we know of a further collection from North Wales sequenced and confirmed by Rod Tulloss (Simon Harding pers. comm.).

Description of the 2012 Kew collection of *Amanita coryli*

Cap 8 cm diameter, broadly umbonate, margin coarsely sulcate up to 1.5 cm. Pale hazel to darker, drab at centre, paler clay-buff at margin; smooth to very slightly pruinose at centre.

Gills moderately spaced, approx 75 per 180 degrees circumference, 7 per cm; intermediates uncommon, pale cream to very pale buff, margin-minutely flocculose, concolorous.

Stem 17 cm long, 1 cm thick at apex, 1.7 cm thick at base, surface with distinct zig-zag hazel-drab veil remnants down to upper edge of volva.

Volva saccate, membranous, rather cylindric,

Fig. 5. The original 2012 collection of *Amanita coryli* under *Corylus avellana* in Kew Gardens, Richmond. Photo © Geoffrey Kibby.

often pinched in at base, white, unstaining; very pale buff internally. Limbus internus set very deep within volva.

Flesh with 2% phenol at first pale vinaceous pink then fading in 2 mins.

Volval tissues outer tissues predominantly filamentous mixed with numerous long, acrophysalid-like cells. Filamentous hyphae 3–4 µm across, very wavy and irregular, tangled; 'acrophysalids' like long balloons 50–65 x 10–12 µm. Deeper into the volva there are scattered, rounded or ellipsoid sphaerocysts 25–30 µm across.

Spores globose to slightly subglobose, very rarely more broadly ellipsoid 9–11 µm.

Amanita coryli can also occur in an all-white form described as forma *albida* Neville, Poumarat & M. Rovira. This white form has been found growing in the hazel copse at Kew alongside normally pigmented fruitbodies.

Acknowledgements

Thanks to David Harries for providing the phylogenetic tree, Nick Aplin for extracting the DNA, Caron Hughes at Aberystwyth University for sequencing and the BMS DNA programme for its support. Thanks also to Pierre Arthur Moreau for his help with the collection of *A. opaca*.

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Fig. 6. Two of a large number of *A. coryli* found in the hazel copse in Kew gardens, October 2017. Note the pale beige hue inside the volva. Photo © Geoffrey Kibby.

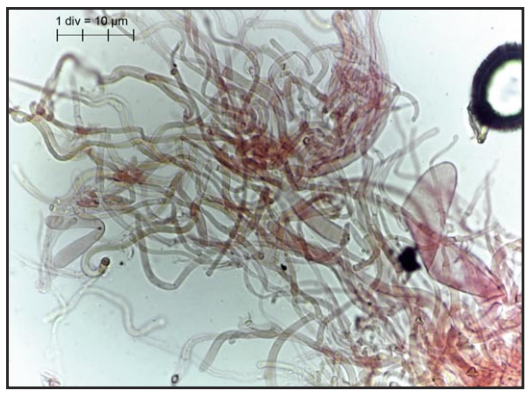

Fig. 7. Volval tissue showing narrow, tangled hyphae along with swollen, balloon-like cells. Photo © Simon Harding.

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Updates to our book: *The genus Cortinarius in Britain*

Mario Tortelli*

In the two years since our book was published (Kibby & Tortelli, 2022) a number of collections have been made of species not included at the time of publication or included species for which we had to rely on photographs from mainland Europe. We take this opportunity to provide photographs and descriptions of these often striking species along with a few potential name changes.

Although several of these species have recently been placed in new genera (Liimatainen *et al*., 2022), as our book placed them all in *Cortinarius* I have chosen to maintain that approach here but their new genera are mentioned.

Cortinarius sublilacinopes Bidaud, Moënne-Locc. & Reumaux (Fig.1)

This was first described in the *Atlas des Cortinaires* Vol. 11 (Bidaud *et al.* 2001). This is a poorly known species, not illustrated in any of the recently published photographic or illustrated guides or monographs (e.g. Calleda *et al*., 2021, Nitare *et al*. 2024 and Kuyper *et al*., 2024). It was recently transferred to the genus *Calonarius*.

A collection was made by MT and Claudi V. Soler on 10 Nov. 2023, under *Fagus* on calcareous soils in Badgin Wood, Kent. It was at first thought to be *C. callochrous* but the KOH reaction on the cap was blood-red rather than brown, and the cap paler than usual for that species. Subsequent sequencing showed a 99.39% match to the ex holotype sequence of *C. sublilacinopes* on GenBank, the first record of this species in Britain.

In our book this species would key out in Group 8 – having purple tints on the gills but not on the stem or cap and with a marginately bulbous stem. It would then key to couplet 5, being similar to *C. catharinae* but that species has a pink-red reaction to KOH on the surface of the bulb, negative in *C. sublilacinopes*.

Fig. 1. *Cortinarius sublilacinopes*, one of several very similar species found with *Fagus* on calcareous soil. Photograph © Mario Tortelli.

Fig. 2. *Cortinarius gracilior* is the smallest of the *Cortinarius* subgenus *Phlegmacium* species. Under *Fagus*, Shoreham, Kent, October 2024. Photograph © Mario Tortelli.

Cortinarius gracilior (Jul. Schäff. ex M.M. Moser) M.M. Moser (Fig. 2)

This remarkable species is distinguished by its very small size, caps reaching just 1.5–4 cm across, tiny compared with all other British *Phlegmacium* species.

The collection illustrated was found by MT and Trudy Fleming in a beech woodland in Shoreham, Kent, on calcareous soil, in October of this year. It is rare throughout Europe, only being illustrated recently in Nitare (2024) and in our book we had to rely on the generosity of European mycologist Balint Dima for the use of the same photograph.

The young gills being pale cream, combined with the yellow ochre cap, lack of any violaceous tints and wide, marginate bulb means it is keyed out in our Group 3. It has large, limoniform spores 10–12 x 6–7 µm. There appear to be no specimens held in the Kew Fungarium at the time of writing.

Cortinarius hildegardiae Schmidt-Stohn, Brandrud & Dima (Figs 3 & 4)

On the 7th November, 2023 two collections were made in Badgin Wood, Kent of a striking greenish yellow to ochraceous *Cortinarius*. Its spores were large, 10–11 x 5.5–6 µm, limoniform-amygdaliform and coarsely warty (Fig. 4). The caps had numerous small patches of veil adhering at their centre which had aged to a dull rust-brown. The older specimens had a rather earthy, musty odour, while the reaction of the cap surface to 20% solution of KOH was a negative, dull brown.

The fruitbodies were found in a stand of hornbeam, *Carpinus betulus* and the soil is known to be calcareous. Badgin Wood is well known as a site of great importance for *Cortinarius* species, a number of species new to Britain having been found there on previous occasions.

The collection was initially identified as the non-British *C. sulfurinus*, a species having a smell of parsley or celery, but there was enough doubt that it was felt sequencing was essential for an accurate identification.

Some specimens were dried for deposition in the Kew fungarium and a small sample was used for DNA sequencing. The resulting sequence was a 99.84% match to a sequence derived from the holotype of *C. hildegardiae* Schmidt-Stohn, Brandrud & Dima (2019) and a 100% match to several others, all on GenBank.

C. hildegardiae was described from Germany with further collections known from France, Hungary, Italy, Spain and Switzerland and regarded by the authors as extremely rare. It was named after the wife of the second author of the paper. Associated trees mentioned in the original description included *Quercus* species, *Fagus sylvatica* and *Tilia platyphyllos* as well as *Abies*

Fig. 3. *Cortinarius hildegardiae*, under *Carpinus betulus*, Badgin Wood, Kent, 7 November, 2023. Photograph © Claudi V. Soler.

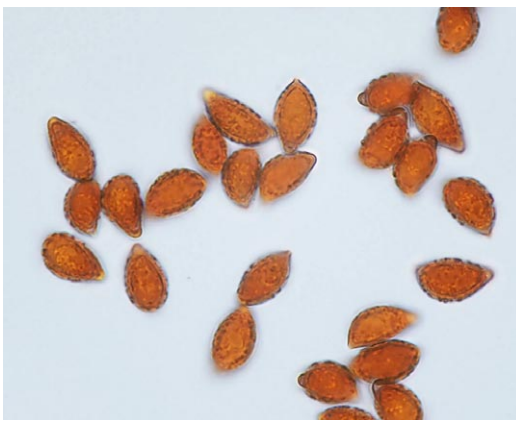

Fig. 4. Limoniform-amygdaliform spores of *C. hildegardiae*. Photo © Claudi V. Soler.

alba. This British record expands the known host range to *Carpinus betulus*. Soil is usually calcareous to base-rich.

C. hildegardiae is characterized by its initially pale greenish yellow colours on cap margin, gills and veil on bulb margin, contrasting white stipe and flesh. Like related taxa, it has an earthy-raphanoid smell, and a negative KOH-reaction.

In Kibby & Tortelli (2022) it would key out in our Group 1, Xanthophylli as *C. humolens* and the two species are quite difficult to tell apart. The colour differences on the young cap are quite subtle, with *C. humolens* having more greyish-green tones, becoming pale olivaceous grey-brown with age. The spores of *C. humolens* are similar in shape and length but perhaps slightly wider at 10–11.5 x 6–7 µm. The two species are perhaps best confirmed by sequencing whenever possible. Rather surprisingly the two species—despite their great similarity—are not particularly closely related, coming quite far apart on phylogenetic trees (Brandrud *et al*., 2019).

Other species that might be confused include *C. splendens*, *C. citrinus* and members of the *C. elegantissimus* species complex, but these all have rather brighter yellow colours, often with a red KOH reaction on some part of the fruitbody and usually lack the distinctive earthy-musty odour of *C. hildegardiae*.

Some name changes since publication

The following name changes are based on the recent publication by Kuyper *et al.* (2024), reviewed in this issue. Several of their name changes are a matter of opinion in the absence of ex type sequences but in many cases their arguments seem to us entirely reasonable and the following are accepted

C. sacchariosmus Beller & Bon (Fig. 5)

This is considered to be an earlier name for *C. anthracinicolor* with its striking smell of *Hebeloma sacchariolens* as illustrated in our book. Although there is no type sequence for

*C. saccharios*mus the original description agrees in all parts so this seems entirely reasonable to us.

C. helvolus Fr.(Fig. 6)

Nitare *et al*. (2024) regard this as the preferred name for what we illustrate as *C. lacustris*. We have long been unhappy at the loss of the name *C. helvolus* in Britain. This was a species included in all the older literature until the mid-1900s when it started to fade from common usage as the interpretation of the name lacked consistency.

The original description and the colour plate by Bulliard (the lectotype according to Kuyper *et al*.) are both in agreement with our modern day concept of *C. lacustris* (see Fig. 6). It seems unlikely to us that a species so common in many of our woodlands (in our experience *C. lacustris* is much commoner than the related *C. hinnuleus* for example) would not have had an earlier, well-established name in the literature.

Cortinarius modestus Peck (Fig. 7)

It was already suggested by Dima *et al*. (2021) that *C. lepidopus* of Cooke might be the same as the earlier *C. modestus* described from North America. Kuyper *et al*. (2024) concur and argue convincingly for their synonymy. Unless the holotype of Cooke can be successfully sequenced and their synonymy either proven or disproved once and for all, accepting this change will remain a matter of personal interpretation. For the moment we accept their conclusion.

C. psammocephalus (Bull.) Fr. (Fig. 8)

Kuyper *et al*. (2024) consider it unnecessary to introduce the new name *C. quercoconicus* (used in our book, following Liimatainen *et al*. 2020) for what has traditionally been called *C. psammocepalus*. They point out that there is no other *Cortinarius* species in Europe with the unique characters of this species. Nor, as has been suggested, is there any *Inocybe* species that could have been the basis of the name.

The original illustration by Bulliard is, we feel, undoubtedly the same species as illustrated in modern literature, so we are in agreement with this reversion to the older name.

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Fig. 5. *Cortinarius sacchariosmus* is suggested as an earlier name for what was called *C. anthracinicolor* in our book, a species with a striking smell like that of *Hebeloma sacchariolens*. Photograph © Geoffrey Kibby.

Fig. 6. *Cortinarius helvolus* is arguably the best name for this relatively common species in the *C. hinnuleus* species complex, rather than the relatively recent name *C. lacustris*. Photograph © Geoffrey Kibby.

Fig. 7. *Cortinarius modestus* is accepted by us as an earlier name for the common *C. lepidopus*. This species is distinguished by the smallest spores in its group along with its slender stature and yellow-banded stem. Photo © Mario Tortelli.

Fig. 8. We agree that *Cortinarius psammocephalus* is the earliest name for this very small but very distinctive species, called *C. quercoconicus* in our book. Photograph © Geoffrey Kibby.

The Kew Fungarium

Lee Davies*

The origin of the Fungarium goes back to the Rev. M.J. Berkeley in the late 19th Century. Before his death he donated his collection of over 10,000 fungal specimens to Kew Gardens. Since then, Kew has had a permanent mycological presence with a growing research group and a team of curators looking after the collection.

It has grown to over 1.3 million specimens (we think), covering over 170 years of collecting, every country on earth and has representatives of around 60% of known fungal genera (Figs 1 & 2).

It also has over 50,000 type specimens which are currently the subject of a DEFRA funded project to sequence the full genomes of as many of those 50,000 as possible. The resulting data will then be open source and fully available online.

Annually, something in the region of 3000–4000 new specimens are accessioned into the collection. Notably a significant proportion of these come from the amateur community, often via the British Mycological Society. These can be an invaluable source of new species, new UK records, and generally interesting and important species that keeps the collection growing and useful.

So why are Fungaria important?

Collections like the Fungarium, or Herbarium if you are plant inclined, act like a preserved microcosm of the world's fungal diversity through time and space. That diversity can be studied all in one place with relative ease, and a whole series of snapshots of global diversity are preserved for centuries.

What was once used for morphological and micromorphological study only, is now being used for DNA extraction and analysis. In the future we may also be able to study metabolites, enzymes, pigments or other elements of the species that we don't even have technology for. When that time comes, the collection will be here ready to be used, maintaining centuries worth of fungi.

How they are used

The simplest way to explain how they get used is to revert to the library metaphor: they act as a repository that can be visited for research whether that be taxonomic or ecological. Other disciplines also visit to make use of the collections, particularly the arts and humanities.

Like a library, you can also borrow specimens, and to that end we annually send 50–60 packages of specimens to other research institutions around the world.

We also allow destructive sampling – within reason – so that genomic data can be extracted from the collection to improve our understanding of species and their relationships.

Do we want more specimens?

Absolutely, yes! This is where we trust you, the mycological community. Whilst it might seem that we don't want things that are common, that isn't necessarily true; often collections-based institutions have a lack of common species as people think we won't need them so we don't get any accessioned. Nice examples of common species are still welcomed.

Then of course there are the obvious things; new species to science, new species records for the UK, or in fact new species records for counties or the home nations.

How to get a specimen into the collection

The first thing is to contact the Collection Manager at fungarium@kew.org

They can tell you not only how to get specimens to us, but also whether it is something of interest that we really do want (or maybe something we might not want right now). They will also be the one to send you a Donation Form. The form can either be posted with the specimen or emailed in advance and is a requirement for our accepting specimens as we need to be able to demonstrate we acquired the specimens legally. We may also ask for copies of permits to show you were on the land legally and had permission to collect. Any doubts, queries, or questions, drop the Collection Manager a line.

Once we receive a new accession, it will take a month or so to make its way through the system, but after that time it should be formally accessioned, databased, and incorporated into the collection

Whilst I have written these latter parts from the point of view of the Kew Fungarium and getting new and exciting material into our collection, there are other more locally based, and focussed, collections in the National Museum of Wales in Cardiff and the Royal Botanic Garden, Edinburgh. It is also worth contacting them to see what their requirements are and what material they will accept. The ideal situation would be a good distribution of fungal specimens across multiple institutions making those specimens more accessible and easier to examine and study.

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Fig. 1. Part of the fungarium at Kew where specimens are stored and research work undertaken. Photograph © Kew fungarium.

Fig. 2. Just a few of the thousands of fungarium storage boxes, with each box holding folders of dried specimens of one or more species. Photograph © Kew fungarium.

Readers' Finds

Fig.1. *Phaeoclavulina macrospora*, September 7th, Cotswolds, Gloucestershire, with inset image of the spores. Photographs © Simon Harding

Phaeoclavulina macrospora Brinkmann

Simon Harding sent in photos (Fig. 1) of the uncommon *Phaeoclavulina macrospora*, a coral fungus formerly known as *Ramaria broomei*. The genus *Ramaria* has been split following phylogenetic studies and several of our common species such as *R. flaccida* and *R. decurrens* are now in the genus *Phaeoclavulina*.

Simon found this collection in the Cotswolds and went on to say "This was one find on September 7th in early morning fog. Very few records exist for this in England, I think there are a few duplicate records. Formerly known as *Ramaria broomei* its common name is the Blackening Coral. It's in both FTE (Læssøe & Petersen, 2019) and the mega Italian reference books (Franchi & Marchetti, 2021). Huge spores ornamented with spines up to 2 µm, crystals with ends like spears (different than the tubular rod shape of confusion species) the violaceous flesh colour when exposed to the air and the greenish ferrous sulphate reaction are good ID characters".

The fungarium at Kew holds 29 collections from Britain (one under the older synonym), with the earliest collection (by Broome) from 1863 and the most recent from 2017, so it is perhaps not so rare, just not included in many guide books.

***Entoloma verae*?**

Simon Harding also sent in this photo (Fig. 2) of a beautiful *Entoloma*. It looks like the familiar *E. incanum* but with much brighter, almost fluorescent yellow-green fruitbodies. However, when he measured the spores they were significantly larger—average 11.87 µm x 8.59 µm. Q 1.38—than those quoted for *E. incanum* (10.5 x 7.5 µm average) so this may be the little known and only recently described *E. verae* Morozova *et al*.

The collection shared the strange odour reminiscent of mice, common to both species but the intense, almost luminous colours, might suggest a different, perhaps undescribed species and the collection is currently being sequenced to see if that is the case.

Derek Reid published a yellow variant, *Leptonia incana* var. *citrina* (Reid, 1972), also with large spores, 10.5–14 x 7.5–10.5 µm which perhaps also represents *E. verae*.

Figs 2 & 3. An *Entoloma* species similar to *E. incanum* but with larger spores and may be the recently described *E. verae*, although with much brighter colours than usually illustrated for either species. Cotswolds, Gloucestershire. Photo © Simon Harding.

Simon wrote concerning his collection: "Quite exciting as a find, there were over fifty of them and they looked well established but only in one area about fifty feet by fifty feet in open grazed grassland".

Senior Editor
Geoffrey Kibby

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Notes and Records

Alick Henrici*

Every page of this issue has '25(4)' printed at the top. It is within the mental capacity of most readers to realise that this is the 100th issue of FM! It is thus the 99th to contain a column of mine under this heading. Unlike the cricketers, I have no overpowering desire to turn my 99 into a century. Twenty five years is enough. This is the last such column I am going to write, but I certainly don't intend it to be the last time I contribute an article to FM. However it finds me in reminiscent mood.

LOOKING BACK ON MY FIRST COLUMN

This appeared in the second issue of FM, a modest page and a half. I reproduce here its first few sentences. "This is to be a regular column giving digests of news items from readers, for instance 'edited highlights' from the local foray reports that have in the past appeared in the Mycologist and sometimes recently in the BMS Newsletter. In the July issue I anticipate it being largely devoted to such items from the 1999 reports of local Foray Groups. As these were still in the pipeline when deadlines approached for this issue it has temporarily become my column to fill as I please." After its first year it seems to have remained that way ever since, rather than what I had originally envisaged. That first column contained four items, their headings reproduced below. Two of these have since needed considerable updating, supplied in later issues of FM.

So much to learn

Under this heading I discussed *Tephrocybe ellisii*, a species I then considered, and still consider probably under-recorded. I appealed for a photo to appear in FM. It was described by Peter Orton, named in honour of Ted Ellis (who incidentally greatly surpassed my quarterly productivity by supplying a column 'In the Countryside' to the Eastern Daily Press five days a week for forty years). This is an unremarkable small brown toadstool, now *Lyophyllum ellisii*, illustrated in Kibby Vol.2, easily confirmed by its distinctive spore shape. Most records are from southern British *Hygrocybe* sites, where I suspect it is widespread but ignored by the waxcap enthusiasts. It seems to be still unknown in Scandinavia (unknown to Vesterholt & Ludwig writing in *Funga Nordica*). My call for a photo to appear in FM remained unanswered until Mario Tortelli provided a photograph in issue 20(2): 39 of FM where it was the Fungal Portrait.

Rare or Extinct

"Everyone now agrees", I wrote, "that *Myriostoma coliforme* is extinct in mainland Britain". This is the so-called 'pepper-pot' fungus, illustrated in Phillips (1981) with a photo of the dried material at Kew of what had been the last known mainland British collection from Norfolk in 1880 (though still present in the Channel Islands). It was accompanied by a wistful statement: "It is hoped that the publication of an illustration of this interesting fungus will lead to its rediscovery." As many will know, this is exactly what happened, as recorded by Shelley Evans (2006) in FM following its discovery in Suffolk in February of that year. Four years later a second Suffolk site was found, also written up in FM (Mahler & Ainsworth, 2010).

Data Deficient

Under this heading I took the opportunity to report two further records of *Antrodia pseudosinuosa* A.Henrici & Ryvarden, described in 1997 from a single site at Perivale Wood, Middlesex, where it fruited on an elm log from 1993 to 1997. Only two years later it had also been found by Ted Green in Windsor Great Park and also in France at Fontainebleau. I made the obvious point that more data was evidently needed to give some clue to its true distribution. Today, thanks to DNA sequencing, it is no longer an *Antrodia*, nor was it even new when described, being in fact a synonym of the better known *Trametes cervina*, recently moved to *Trametopsis*. It was, however, the first British record of that species. The reasons that this synonymy was initially missed were later fully explained in FM in Henrici *et al.* (2018). I remain slightly perturbed that the British collections illustrated there and others since are all much less regularly poroid than the one from Slovenia illustrated in Ryvarden & Melo (2014), looking significantly

different. If that too was sequenced, I will swallow my doubts.

The joys of 1999

I reported that, at least in Kent, it had been a bumper year for forayers ("24 bolete species reported before the end of August", "*Russula vesca* recorded from July to December"). True then, but seemingly all too rare in recent years. As I write this in late October reports of an autumn flush have been extremely patchy in southern Britain (agarics in general, ectomycorhizals in particular). I moaned about this in my November column last year, but then there was some excuse - a September heatwave and a severe drought. I moan some more on this topic at the end of these notes.

25 YEARS ON

An era of outstanding change

It is a happy accident that the first 25 years of FM have coincided with the most volatile period in the whole history of fungal taxonomy, driven of course by DNA. Things changed almost overnight from a time when all too many species were weakly characterised by a few doubtful features. Suddenly every fungal species had a vast range of characters available to be explored, some that reinforced existing species concepts, others suggesting these were too narrow, calling for synonymy. More often they were too broad, revealing a complex needing to be split.

In the very first issue of FM none of its ten articles even mentioned DNA. But in the second Derek Schafer noted that DNA evidence had supported the firmly held view of fungal dyers that *Sarcodon squamosus* (with pine) was much more use to them than *S. imbricatus* (with spruce), despite mycologists having considered them synonymous for the previous fifty years. They were indeed two species. However it was a long time before the first DNA-based tree (phylogram) was presented in FM. This was in Ainsworth *et al.* (2018) a paper distinguishing five British species in the *Entoloma bloxamii* complex (the 'Big Blue Pinkgill' for those who like English names). The use of such trees had been illustrated the previous year with a simplified example presented by David Harries (2017) in the second of two much welcomed introductory articles on DNA. Today there tends to be at least one such tree in every issue, almost an essential back-up to the credentials of any new British find.

A change I'm still wanting to make

Though the first issue of FM didn't have my 'Notes and Records', it did have an 8-page article from me entitled 'An introduction to corticioid fungi'. I had been hoping to produce an updated version to appear in this issue, mainly to update the nomenclature. But that depended on the publication of Vols 2 and 3 of CFE, i.e. of Larsson & Ryvarden (2021) *Corticioid Fungi of Europe*, initially expected to be out by now. Corticioids have been my main area of interest throughout these 25 years. They may look unexciting in the field but under the microscope they exhibit a much wider range of structures than the agarics. This is unsurprising as the agarics almost all belong in one order *Agaricales*, while DNA has shown that European corticioids are spread over parts of 14 orders together with a few seemingly not fitting into any of those currently defined.

I am very conscious that it is difficult to get started on corticioids. Following a key to any particular genus is usually not too painful. The trouble comes with getting anywhere near the right genus in the first place. I wrote my introduction fairly soon after I'd slowly got over that initial hump. In it I provided simple keys addressed to beginners merely distinguishing 42 of the commonest species. Most things beginners collect will in fact be one or other of these few. All but one are described and illustrated in Breitenbach & Kränzlin, *Fungi of Switzerland* Vol.2. (1986). More recently all but five are also illustrated in that invaluable compilation *Fungi of Temperate Europe*, Læssøe & Petersen (2019). Looking back at what I wrote 25 years ago, I still think my probably long forgotten article provides quite a useful place to start, despite one error quickly pointed out to me: I keyed *Cylindrobasidium evolvens* as lacking cystidia when in fact they are present but sparse.

CFE Vol.1 has a detailed set of keys covering the genera they plan to treat in all three volumes but these aren't easy. They start from the most taxonomically significant characters. What beginners need are the characters non-expert users finds easiest to confirm (eg. 'spores globose') or to rule out ('confined to boreal spruce' and the like). The corresponding keys in the other widely available identification guide, Bernicchia

& Gorjón (2010) have similar problems. In both books the user has to wade through numerous couplets ruling out unlikely genera with strange features to arrive at the much more likely one corresponding with what they actually collected.

The one published volume of CFE is excellent for genera with names in the range A to G, thus falling annoyingly short of *Hyphoderma*, badly in need of an up to date treatment. There are many other troublesome genera still to come, all in similar need, notably *Phlebia* and *Sistotrema*.

This year's puzzle

Writing in late October I have recently visited two unbelievably productive sites on chalk yielding uncommon toadstools in profusion, under beech in Surrey and under mainly hornbeam in Kent. Meanwhile, despite well above average rainfall in September, Kew Gardens has remained a virtual mycological desert. The contrast passes all understanding. Two adjacent sweet chestnuts (*Castanea sativa*) that in one year had 15 mycorrhizal species fruiting simultaneously in September have this year only just started produced any mushrooms at all, and then it was only three fruitbodies of *Russula atropurpurea*. There is still much to be learnt about the mechanisms that cause agarics to decide when to fruit. A wide range of genera all seem to follow the same pattern.

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Fig. 1. *Russula atropurpurea*, one of the few fungi to make an appearance in Kew in late October 2024. Photograph © Mario Tortelli.

Book Reviews

The Little Book of Fungi

Britt A. Bunyard

Princeton University Press
ISBN-13: 978-0-691-25988-8
Hardback 160 pp.
160 x 105 mm
£8.99 from NHBS.com and other booksellers.

It could be considered an axiom perhaps that there is no such thing as a perfect book but this little gem certainly comes close. Its author is well known as the publisher and editor-in-chief of the excellent mycological journal *Fungi*, the widest-circulating mycology magazine in North America.

This is a physically small volume (readers may be reminded of the very popular Observers series of guides) but the author has somehow managed to distill his extensive knowledge within its 160 pages. There are 12 main chapters: *What is a Fungus?, Form and Function, Habitat and Ecology, Evolution, Lifestyle and Physiology, Reproduction, Mutualism and Competition*, *Study and Cultivation*, *Fungi and Humans*, *Threats and Conservation*, *Popular Culture*, and finally *Curious Facts*, plus a glossary.

Each of these chapters is further broken down into smaller sub-topics with each topic spanning a double page spread. Illustrations are mainly drawings and paintings with a scattering of photographs. The artwork is very nice, beautifully painted, simple and complementing the text very well.

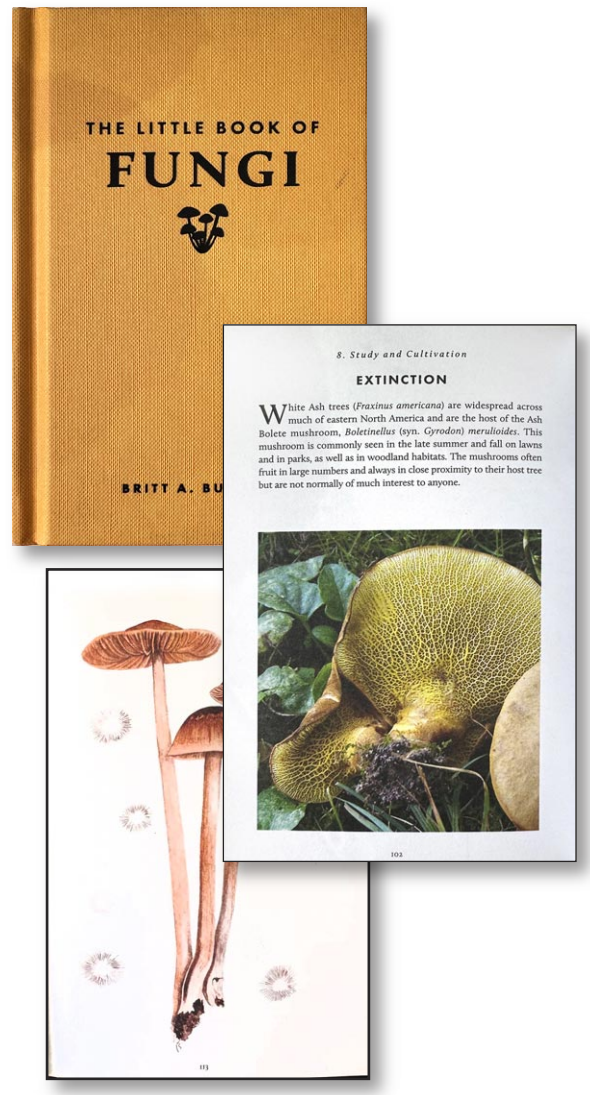
I found the text to be very easy to read and full of interesting and often surprising facts (and I have read an awful lot of mushroom books!).

For example there is the story of the loss of many ash trees in North America caused by a wood-boring beetle and the subsequent loss of the Ash Bolete mushroom, *Boletinellus merulioides* (see opposite). It was widely considered to be a mycorrhizal species but is in fact a symbiont of an aphid that lives as a parasite on the roots of the ash tree. The fungus grows around the insects, forming dark black galls within which the aphid continues to feed and with the bolete seemingly getting its nutrition from the insect. Fungi never cease to amaze. You can also read about the very strange *Psathyrella aquatica* which lives its life and fruits on the bottom of the Rogue River in Oregon. Mycologists are still trying to puzzle out the spore dispersal mechanisms of this remarkable underwater mushroom.

This book would make a great present for anyone interested in fungi; full of facts, stories, history, biology and interesting snippets.

Highly recommended and at a bargain price.

Geoffrey Kibby



Flora Agaricina Neerlandica Vol. 8. *Cortinarius*

Thomas W. Kuyper, André de Haan *et al.*

Candusso Editrice
ISBN: 978-88-943710-7-9
£84.00 from summerfieldbooks.com and other booksellers

This volume follows the new style of this series, being full colour, 25 x 18 cm rather than the old, black and white, A4 format of the earlier volumes. It has 844 pages, printed on high quality paper so is a heavy volume.

A total of 281 *Cortinarius* species are described and the authors have chosen to retain the overall generic name rather than adopt the recent splitting of some parts of the genus into smaller genera. There are 281 colour photographs, most of a very high quality.

Extensive DNA sequencing has been undertaken and there are numerous phylogenetic trees scattered throughout the text.

As always it is interesting to compare the species concepts used here with those of other recent volumes, such as that by the Italian team, Calleda *et al*. (2021), the Swedish *Ädelspindlingar* by Nitare *et al*. (2024) and the book by myself and Mario Tortelli (2022).

For the most part this new book is in close agreement with the other volumes but inevitably there will be some areas where species interpretations differ. The authors have adopted a more cautious approach when it comes to extremely similar species differing hardly at all in their DNA sequences, preferring to treat them as one species, possibly in the process of actively speciating.

Where an ex holotype sequence was unavailable and no neotype had been designated—for example *C. elatior*—they have avoided applying the name to any of their taxa and use instead more recently described species names, retaining *C. elatior* as a collective name until such time as neotypification takes place. This means that they have also avoided using such common names as *C. pseudosalor, C. mucifluoides* and *C. integerrimus* as no barcodes exist for these species either. They note that spore size also varies greatly, even within one collection, making this a less than useful character for this difficult group.

On the whole I like this cautious approach. All too often with very similar species pairs the morphological characters overlap more than one would like and the sequences one obtains are so similar and so difficult to interpret unequivocally that it is often impossible to be sure which of two species you have. The authors' treatment of *C. parvannulatus* and *C. neofallax* is a very good example of this. They consider *C. parvannulatus* as a species currently undergoing speciation. In hindsight I wish our own volume had made this same decision.

The text throughout is in English as are the identification keys (A Dutch version of the keys is also provided). I look forward to testing the keys later this season. They seem eminently clear and well written.

There are also superb drawings of the spores of all the species described, certainly the best of any published work to date.

I would highly recommend this book to anyone with an interest in this difficult but beautiful group of mushrooms.

Geoffrey Kibbby

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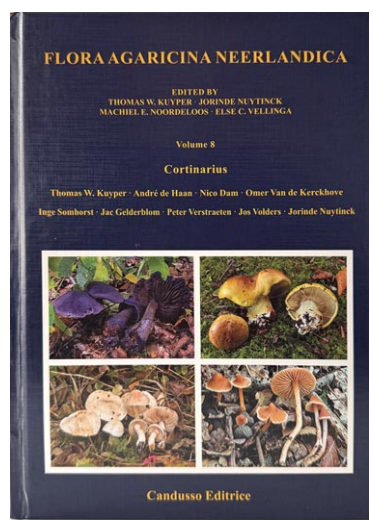

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