

A case of mistaken identity

Cortinarius simulatus and *C. brunneotinctus*

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Fig. 1. The original collection in 2019 of *C. simulatus* from Fairy Hill, Boat-of-Garten, Scotland. Photograph © Mario Tortelli.

In 2019 one of us (MT) made a collection of an attractive *Cortinarius* from a mixed birch and pine woodland on a hillside popularly known as Fairy Hill, in Boat-of-Garten, in the Cairngorms National Park, Scotland (Fig. 1). With its quite large size, 5–7 cm across, beautiful violet stem and purple-brown to greyish purple or red-brown cap it seemed very distinctive. At that time however our *Cortinarius* literature was much more limited than it is today, consisting mainly of the *Cortinarius Flora Photographica* (Brandrud *et al.*, 1989–2018) and *Funga Nordica* (Knudsen & Vesterholt, Eds. 2012). Attempts to key it out in these works were unsatisfactory and the collection remained unresolved although recorded by MT tentatively, but without much confidence, as cf. *C. lucorum*.

The following year we both visited the same site and made a second, much poorer collection, and with more literature now at our disposal,

particularly Orton's two useful papers on the genus (Orton, 1955–58), we then identified it as *C. simulatus* P.D. Orton. However, our material did not dry well and none was suitable for molecular sequencing, so once again we were left with doubts, although his original description seemed to fit quite well.

Peter Orton described his species from Loch-an-Eilean (only a few miles from the Fairy Hill locality) and considered it as “probably not uncommon”. The epithet *simulatus* means resembling or mimicking something and was probably coined by Orton because of its similarity to other members of section *Anomali*. Indeed, Orton relates in his original description how he first identified it as four other species over the years, before deciding that it was a new, independent species.

The fungarium at Kew has just four collections,



Fig. 2. A collection of *C. brunneotinctus* from the Italian Alps. Photograph © Marco Floriani.

including the holotype collection made by Derek Reid in 1955 and later described by Orton in 1958. Another collection is from Wales and two more from England. These three all need further examination and if possible, sequencing to establish if they are correct.

By this time, we were hard at work on our book on the British species of *Cortinarius* (Kibby & Tortelli, 2021) and while putting this book together we made contact with Marco Floriani, part of an Italian team who were also working on a *Cortinarius* book for Italy (Calledda *et al.*, 2021). Marco very kindly shared with us details of their book and vice versa, and our email collaboration helped both teams resolve a few taxonomic and nomenclatural problems.

One of the interesting facts shared by the Italian team was that they had collections of a *Cortinarius* which they had traditionally called *C. simulatus* P.D. Orton but upon sequencing their collections discovered it matched a sequence derived from the holotype of *C. brunneotinctus* Niskanen *et al.* (Fig. 2). This species was described in 2012 from conifer forests in Canada and the photograph that Marco sent us looked very similar to our Scottish finds.

If we could obtain a further Fairy Hill collection and compare its ITS sequence with that of *C. brunneotinctus* we might be able to solve our mystery once and for all. Unfortunately, a search the next year was unsuccessful and our book had to go into print. A decision had to be made whether to call our collection *C. simulatus* or *C. brunneotinctus*. Because the photograph sent by Marco looked so similar to our specimens, we decided in the end to go with the latter, and this is the name used in our book.

It was not until 2024 that a further collection appeared on Fairy Hill (Fig. 3) and we were able to successfully obtain a good ITS sequence. We sent the sequence to *Cortinarius* expert Kare Liimatainen, who, when he worked at Kew, had sequenced many of the types of *Cortinarius*, including that of *C. simulatus* P.D. Orton. Back came the answer that the sequence was a very good match to that of the holotype of *C. simulatus* and bore little similarity to that of *C. brunneotinctus*!

So, here we have two species very similar in their gross morphology but with very different ITS sequences, and indeed they are not very closely related (K. Liimatainen, pers. comm.).

This is a lesson in not relying entirely on morphology in this difficult genus and perhaps in having the courage of one's convictions; too many species are very similar to each other. Anyone using our book should therefore change the name on p.95 from *C. brunneotinctus* to *C. simulatus*. Below is a description of *C. simulatus* which will hopefully encourage others to report any findings.

Cortinarius simulatus P.D. Orton

Cap 25–70 mm, broadly convex with margin remaining downcurved or even slightly inrolled, dark purplish brown when wet, felty-fibrillose, hygrophanous and drying to pale greyish brown or greyish violet.

Gills moderately crowded, deep violet to violet-brown when young then slowly rust-brown, adnexed-adnate.

Stem 40–100 × 10–20 mm, pale whitish violet, with whiter veil remnants visible, cortina prominent, white.

Flesh pale to deep violet.

Odour raphanoid, especially when cut.

Spores 7.0–8.5(–9) × 5.0–6.0 µm, ellipsoid, finely warted.

Habitat in mixed *Pinus* and *Betula*, mostly close to the *Betula* which is assumed to be the mycorrhizal host.

Notes: *C. brunneotinctus* has very slightly broader spores on average (7.0–8.5 × 5.5–6.5 µm), has more yellowish brown tones in its flesh with just a faint violet flush in the stem apex, and is described as lacking the raphanoid odour. It is perhaps confined to conifers rather than *Betula* and it is entirely possible that it also occurs in Scotland. Any collections looking like either species should be carefully checked and if possible sequenced.

References

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Fig. 3. The collection of *C. simulatus* made in 2024 from Fairy Hill, subsequently sequenced and compared with the sequence derived from Orton's holotype. Photograph © G. Kibby.