Cortinarius oreoborealis: first British record

Helen Baker & the Grampian Fungus Group¹



Fig. 1. Two specimens of *Cortinarius oreoborealis* from Dinnet, Aberdeenshire. A & B illustrate one specimen; C & D illustrate the other, 18 August 2023. Photos © Helen Baker.

In August 2023, I came across two groups of large, orange-capped webcaps about 10 m apart in wet downy birch (Betula pubescens) woodland alongside Clarack Loch near Dinnet, Aberdeenshire. My initial impression was that they most closely resembled a Myxacium around C. mucosus or C. mucifluus, but those species are pine (Pinus spp.) and spruce (Picea spp.) associates respectively and so I collected two specimens, one from each grouping. Once home, I attempted to key the specimens using Kibby & Tortelli (2021), but without success, although the closest match was to C. septentrionalis. Due to this uncertainty, I decided to extract and amplify DNA (ITS region) from one specimen and send it for (BMS sequencing Sequencing Grant. University of Aberystwyth).

The resulting ITSf1 sequence was 655 bp long and of good quality so I compared it to reference sequences in both the Unite database (<u>UNITE.ut.ee</u>) and GenBank (<u>www.ncbi.nlm.</u> <u>nih.gov/genbank/</u>). The Unite database comparison returned the most similar sequence as *C. septentrionalis*, but it was relatively low similarity at 98.91% (UDB016169, collected in Estonia, associated with spruce and birch). Running the sequence through the BLAST comparison function of GenBank produced a slightly different outcome, highlighting closest similarity to C. MW911728, oreoborealis (e.g. 99.02% similarity, collected in China, and NR_153071, Type, 98.84% similarity, collected in Spain, associated with Betula pubescens). This latter species was not included in Kibby & Tortelli, and the different results from the two comparisons led me to search for more information. I came across an open access paper by Cadiñanos et al. (2016), describing two new species, including C. oreoborealis, which was found associated with birch and Scots pine (Pinus sylvestris). Based on this paper and the comparison results, I collated publicly available ITS sequences and ran a simple phylogenetic analysis that included our specimen (Fig. 2), which confirmed that it clustered with the C. oreoborealis type specimen (NR153071) along with a couple of other sequences of this species.



Fig. 2. Phylogenetic analysis of Grampian Fungus Group specimen (GFG_CMUK) compared with selected sequences from Cadiñanos *et al.* (2016) and similar sequences from GenBank (using one click method in <u>Phylogeny.fr</u>). This phylogeny also includes two specimens collected in 2024 (GFG-CFEN and KIBBY24_Abernethy, shown in Fig. 4.).

Description

Cortinarius oreoborealis Cadiñanos, M.M. Gómez & Ballarà

Cap: 60-85 mm, tawny-orange to dark orange, viscid, low-convex with slightly inrolled margin Gills: Full-length (Fig. 1). gills thin, emarginate, with alternate half-length gills, both separated by vestigial gills at cap edge. Beige with greyish-lilac tones in mature specimens (Fig. 3). Stem: 120–150 mm long by 15-18 mm wide, proportionately very long compared with cap diameter, cylindrical, cream without any lilac colouration, smooth at apex and with pronounced ochre to brown floccose bands in lower half or towards base. **Spores:** $10-15 \times 6-7.6 \, \mu m$ (from Cadiñanos *et* al., 2016), amygdaliform, moderately verrucose (not illustrated). Odour: nil.

Similar species

The most similar species to *C. oreoborealis* macroscopically appears to be *C. septentrionalis*, which has a bright orange cap and is also a birch associate, and for which there is just one British record in the FRDBI (associated with *Betula* spp., Inverey, Braemar, Aberdeenshire, 21 August 2010). Gill colour could be a useful distinguishing characteristic. C. septentrionalis with described as having pale greyish buff to greybrown gills (Kibby & Tortelli, 2021), and the stem is perhaps whiter and less floccose, but can be lilac flushed. *Cortinarius fennoscandicus* is another upland birch associate, but has a much duller orange-brown cap with olive tones and lilac colouration in the stem (Kibby & Tortelli, 2021); there are no British records (FRDBI). In mixed Pinus-Betula forests confusion might also occur with C. mucosus (Orange Webcap), which is a pine associate, but gill colour (pale greyish-buff to grev-brown) and spore shape (narrow amygdaliform, Q=2.0) (Kibby & Tortelli, 2021), plus a relatively short, white, less floccose stem are probably useful characteristics to separate the species.

Since the first collection was made in 2023, additional specimens have two been sequenced; one collected by the author on 11 September 2024 about 100 m from the 2023 collection (GFG_CFEN in Fig. 2), and another collected by G. Kibby, M. Tortelli, F. Hampe and C. Soler on 28 August 2024 in Abernethy Forest. Easterness (vc96) (KIBBY24 Abernethy in Figs. 2 and 4).



Fig. 3. Gill detail photo taken under artificial light. Photo © Helen Baker.



Fig. 4. Cortinarius oreoborealis from Abernethy Forest, Easterness (vc96), 28 August 2024. Photo © Mario Tortelli.

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References

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