

## Fungal Portraits

### No. 83: *Cortinarius heatherae*

Andy Overall\*



Fig. 1. *Cortinarius heatherae*, type collection, clustered on soil and leaf litter, Hampstead Heath Extension, Middlesex, Oct. 8, 2019. Photo © Andy Overall.

During the autumn of 2018 I received an excited email from Adam Cheeseman, the Biodiversity Officer at Heathrow Airport, for whom I had been carrying out fungi surveys for the previous two years, explaining that an area of interest that he had been telling me excitedly about for the past couple of years, was finally producing fungi. A date and time was promptly arranged for my next visit.

The area to which Adam was referring is the Causeway Nature Reserve and the particular spot where the fungi were appearing was the western bank of the Nature Reserve. The Causeway Nature Reserve is primarily an old reservoir surrounded on its banks by various broadleaved trees such as *Salix*, *Populus*, *Quercus*, *Corylus*, *Betula* and *Crataegus*.

Upon my visit on 8 November 2018 it was immediately obvious that there were a fair number of different *Cortinarius* species fruiting here. The ground was very uneven and I was told that a lot of concrete was dumped there many years ago during construction work. I would hazard a guess that lime from the concrete had leached into the soil and created slightly alkaline conditions upon which a lot of fungi were thriving. For example: *Lactarius mairei* was also found in this area, a species typically found with oak on alkaline soils.

The majority of the *Cortinarius* species present all appeared to belong to the subgenus *Telamonia*, a notoriously difficult group. Apart from one or two easier species such as *C. infractus* and *C. flexipes* everything else was impossible

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to identify in the field. I took photographs and made collections of all of the unidentifiable species and arranged a second visit, three days later, accompanied by Mario Tortelli, who helped with an invaluable second opinion on the collections. One particular collection of a red-brown, medium-sized species which was spotting black with maturity, MT likened to a similar species that he had seen in Scotland, a *Picea* associate, *Cortinarius sordidemaculatus* in section *Sordescentes*. However, although we might have been able to place some of them into a particular section, most of the species were just unnameable, this one was collected as ‘*Telamonia-5*’.

More photographs and collections were made during this second visit on 13 November and I managed to persuade Heathrow to have all of the collections sequenced. The collections were accordingly sent to Pablo Alvarado in Spain for sequencing.

Once I had the sequences I contacted *Cortinarius* specialist and Kew DNA curator,

Kare Liimatainen, whom I had already briefed on the collections. Kare checked the sequences against his and other specialist databases. All of the collections, apart from *Telamonias* 1, 4 & 5 came back with names, but three appeared to three collections of an undescribed species. I was subsequently asked what I would like to call it. I decided to name it after my wife Heather and the species became *Cortinarius heatherae*. It was published in *Fungal Diversity Notes* (Overall, 2020).

***Cortinarius heatherae* Overall**

**Pileus** 3–5.7 cm, convex to plano-convex with a broad umbo, surface silky, whitish fibrillose when young, later restricted to the margin, reddish brown overall, later blackening in large spots, hygrophanous. **Lamellae** adnate, medium spaced, fairly broad, at first light brown with paler edge, becoming rusty brown to dark brown in maturity. **Stipe** 6.3–8.2 x 0.7–1.5 cm, thick, ± clavate, greyish white silky fibrillose, later pale greyish brown. **Context** greyish brown, marbled hygrophanous. **Universal veil** cream-coloured, forming scattered patches on the surface of the stipe. **Odour** not recorded. **Basidiospores** 9–11 × 5.5–6.5(–7) μm, av. 10.0 × 6.2 μm, Q = 1.5–1.8, Q<sub>av.</sub> = 1.6, ± amygdaloid, strongly verrucose, strongly dextrinoid. **Pileipellis**: Epicutis pale, consisting of parallel hyphae, 6–8 μm wide, smooth to encrusted with spot-like encrustations. Hypoderm colourless, elements 17–50 × 11–19 μm, smooth. ITS sequence (GenBank MK795704, holotype) distinct from other members of *C.* sect. *Bovini*. With a close relationship to *C. subbrunneus* but deviating from it by nine substitutions and indels.

**Ecology and distribution:** In temperate mixed woods with *Quercus robur*, *Q. ilex* and *Salix* on calcareous soil. Currently only known from the British type site.

**Notes:** *Cortinarius heatherae* is a typical member of sect. *Bovini* in being medium-sized and brown with a pileus that becomes dark spotted or streaked in maturity, the stipe clavate and the spores amygdaliform. *C. heatherae* can be seen as the broadleaved tree counterpart to the conifer associating sister species, *C. subbrunneus* and *C. subbrunneoides* (both non-British) which in addition to morphology and habitat, have

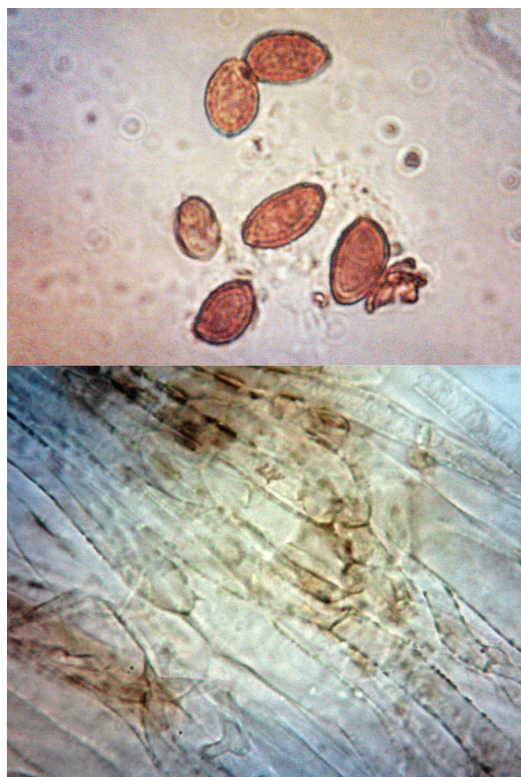


Fig. 2. Above: amygdaliform spores. Below: hyphae from the cap cuticle showing their encrusted surfaces.

Photographs © Andy Overall.



different spore sizes, the former being slightly larger (9.5–11.5 x 6–7  $\mu\text{m}$ ) the latter with smaller spores (av. = 9 x 6  $\mu\text{m}$ ), both with a weaker dextrinoid reaction. *C. sordidomaculatus* is morphologically similar but with smaller spores and associates with *Picea* in older plantations.

The three collections of *Cortinarius heatherae* formed a well-supported clade (100% ML; Fig. 3) in the phylogenetic analysis.

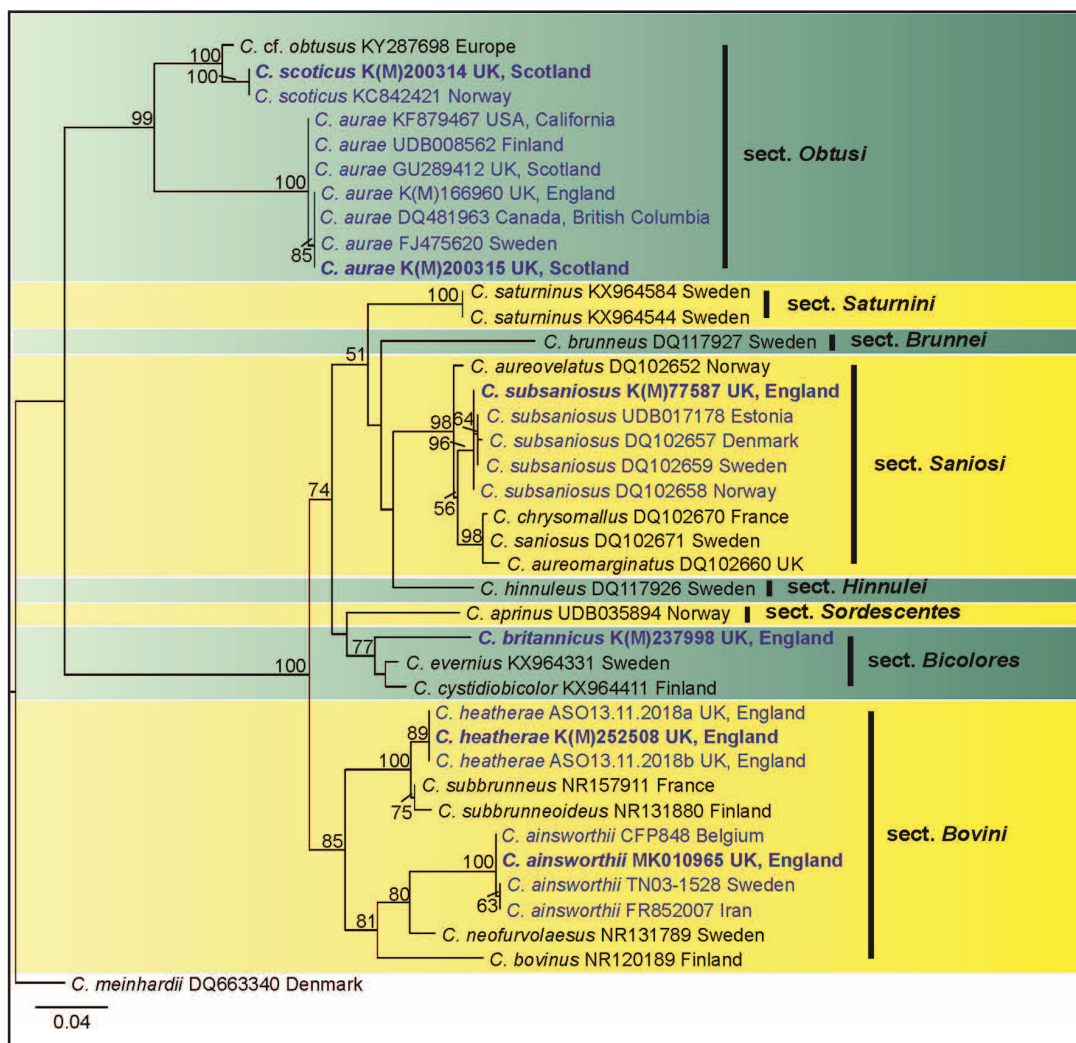


Fig. 3. Phylogram resulting from the RAxML analysis of ITS regions. Bootstrap values greater than 50% are indicated above branches. The specimens in boldface represent the type specimens of the species.

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## Reference

Overall, A. (2020).

*Cortinarius heatherae* Overall, sp. nov.

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