Cortinarius cremeolaniger Orton found in Sweden

Karl Soop

During the mycologically rich year 1986 the author found, together with H.G. Toresson, a sericeocyboid Cortinarius that initially caused us problems to identify. It resembled a C. laniger but had unusually narrow spores. When I later presented the collection to M. Moscr, he suggested that I investigate C. cremeolaniger Orton. The material conformed sufficiently with P.D. Orton's diagnosis (1983) to allow a positive identification. The finding was corroborated in 1987 by a second collection at a different locality. Cortinarius cremeolaniger is an interesting species, for several reasons. First, it appears to be a key taxon linking the group of C. malachius Fr. to C. laniger Fr. and its relatives. Secondly, along with C. pearsonii Orton, it is exceptional within the complex to exhibit the above-mentioned narrow spores. Thirdly, according to our observations, it is also unique among these taxa to react with formalin. C. lanigeroides Orton [loc. cit.] is in my opinion a synonym.

Description

Cap 8-15 cm; hemispherical, disk soon flattened, then convex with margin long involute; fleshy.

Cutis dry, non-hygrophanous; buff to brick-coloured but long covered by a pale greyish to grey-yellow, silky to fibrous layer; margin paler.

Stipe 6-11 cm x 13-25 mm; clavate to cylindrical with a dilated base; pale buff but long covered by a thick, pale grey layer, sometimes with a faint violet shade at apex as young; often with an adpressed annulate girdle at the cortinal zone.

Lamellae bright brick to cinnamon; L= 62, 1= 2; adnate; edge paler.

Veil pale greyish yellow to grey-white, somewhat darkening, copious; cortina pure white, copious.

Flesh compact; pale grey with a yellow tinge in stipe; faintly marbled grey or violet-grey in stipe apex; larvæ perforations yellowish pink; odour and taste nil.

Reactions: NaOH, AgNO₃, FeSO₄ trivial; iodine preparations nil; formalin in flesh distinctly pink, then mauve after 5 minutes.

Spores oblong elliptical, somewhat angular in coll. A, weakly verrucose, 6.5-7.5 x 3.5-4 µm (-8 µm in coll. A); basidia tetrasporic, commensurate with frequent balloon-like basidiols, 25 x 7 µm; sterigmata 4-5 µm; cheilocystidia absent.

Epicutis of radially interwoven hyphæ 1-2 µm, with a brown, distributed pigment; velar hyphæ 5-8 µm, thick-walled (ab. 0.8 µm).

Collection A: in a mixed, calcareous forest (probably associated with Quercus); Kalkugnsberget, near Arboga, Central Sweden, 1986-09-02; 7 specimens in good condition, all ages (herb. KS-CO190).


A third collection, reported from the Gothenburg area [Dr. S. JACOBSSON, pers. comm.], most probably represents the subject taxon. I have seen no other reports of it, nor docs it occur under that name in any of the larger Swedish herbaria. I have not yet investigated herbarium specimens labelled C. laniger or related epithets.
Related species
C. pearsonii Orton (= C. malachius ss. Pearson 1943)
C. malachius Fr. (= C. malachioides Orton)
C. impennis Fr. (= C. malachius ss. Orton ?)
C. laniger Fr.
C. alborufescens Imler
C. diosmus Kühn. (= C. argentatus Fr. ss Hry., ss Fr.?)
C. triformis Fr. ss. Lge (= C. turgidus Fr.?)
C. subargentatus Orton

Discussion
The principal characters of the present species are:

1. The characteristic spores. Most of the other species in the list have spores in the range 8-11 x 6-8 µm. One may here note that among comparable Cortinarii, similar spores are only found with C. pseudocrassus Joss. (which I suspect being synonymous with C. opimus Fr. var. fulvobrunneus Fr. [Soop 1988b]), a species resembling C. laniger in cap colour and dryness, which has sometimes been regarded as a Sericeocybe.

2. The reaction with formalin (this was only tested on collection B). One should note, however, that the diagnosis princeps does not report any chemical reactions. The only other Cortinarius I have found to exhibit this character is the well-known case of C. caninus (Fr.) Fr.

3. The pale yellowish veil (cf. the epithet). All other species in the list have either a pure white, greyish, or violet grey veil. P.O. Orton has described C. lanigeroides together with the subject species, whose only distinguishing character appears to be the pure white veil. It is possible that collection A can be ascribed to this taxon due to its slightly longer spores and brighter veil; but in my opinion this is hardly enough to maintain it as a separate species.

C. pearsonii Orton (1958), with the same narrow spores, differs only by a bluish coloration on lamellae and at stipe apex, and it is conceivable that C. cremeolaniger should be regarded as a variety of this taxon (cf. Melot 1986b on the taxonomical significance of this character). Our collections agree well with the picture of C. pearsonii in Phillips (1981), which, according to Orton (1983) may well represent C. cremeolaniger.

Due to their persistent, silky veil on cap and stipe, and non-hygrophanous context, both C. cremeolaniger and C. laniger are typically sericeocyboid fungi. This author has claimed for many years (e.g. Soop 1987) that C. laniger, along with its relatives (C. calopus Karst., C. solis-occessus Melot, and C. canabarba Mos., whereas C. bivelus Fr. remains questionable) be accordingly placed in the subgenus Sericeocybe Orton (1958), and not in Telamonia, as maintained by many authors. Including this group agrees well with Orton's definition of the subgenus, and tends to consolidate this, to my mind, singularly valid and logical taxonomical unit. Our findings now corroborate this position, providing a link to an incontestably sericeocyboid species: C. malachius. Indeed, our first idea on encountering collection A was a variety of C. laniger, whereas collection B made us think of C. malachius.

Both are quite common fungi in Swedish spruce forests. To Scandinavian mycologists there is no doubt that the Friesian C. malachius is the taxon with rather long spores (9-12 µm) occurring all over the country, notably in the forests explored by its author. This fungus occasionally shows a weak hygrophanity of the cap, whereas the closely related C. impennis Fr. (which I believe to be C. malachius ss. Orton) is more hygrophanous, and might be considered a borderline case to Telamonia. The latter, rare in Sweden, is also stronger violet tinged than C. malachius, the veil being distinctly coloured, and has shorter spores: 7- 7.5 x 4-5 µm (herb. KS-CO162). Typically, C. malachius has a very weak violet coloration, sometimes totally absent, the fruit-bodies being mainly greyish to grey-brown, also in the context. In this form, the fungus merges with my conception of C. lucorum (Fr.) Lge, frequent in association with Populus tremula in Sweden (Soop 1987, cf. also Brandrud 1983). It is also in this form the species reminds the most of C. cremeolaniger.
C. laniger is distinctive by its brick-red lamellae and the pale brick to almost pink, marbled coloration of the flesh. The flesh of C. cremeolaniger is paler, more greyish. Curiously enough, I have encountered a form of C. laniger with an intensely violet veil, covering the cap and part of the stipe, and with very dark lamellae, growing mixed with the normal form, ostensibly from the same mycelium. Unfortunately no material was conserved from this collection, which was gathered not far from locality A, so I have been unable to ascertain whether it was a question of C. solis-occanus Melot (1986a), no doubt closely related.

One concludes that C. malachius, C. laniger, and C. cremeolaniger ss. lato (including C. pearsonii) all exist in forms with or without violet to bluish coloration.

I recently reported (1988a) a few collections of C. alboryfescens Imler (herb. KS-CO8, 226, 268). It is another rare and interesting species, resembling cremeolaniger. Apart from the spore size, it differs mainly by a fusoid stipe and a faint, but distinct, spicy smell. The flesh has the same hue as laniger, but is paler. We found this fungus in a rich spruce forest near Stockholm, whereas my finds in Belgium occurred in a Fagus association. C. diosmus Kühn., which may well be the true C. argenteatus of Fries, has been found in various localities in Sweden (herb. KS-CO256). It seems intermediate between C. alboryfescens and C. cremeolaniger, with the smell reminiscent of the former, but the more clavate stipe of the latter, the spore size also being somewhere in between. The context is pale greyish brown, and the veil is sparser than that of the previous taxa. Similar, but with even paler flesh and sparser veil, is C. triformis Fr. ss. Lge (possibly synonymous with C. turfus Fr.), also found in Belgium (herb. KS-CO180, 276).

Finally, in an acid Betula forest near Arboga, we regularly gather a pure white species in the same group (herb. KS-CO98), tentatively identified as C. subargentatus Orton (1958). The flesh is white (faintly blue only in young specimens), the white veil is copious, and the lamellae are greyish, like those of C. diosmus and C. triformis ss. Lge. We first regarded this fungus as C. argenteatus (Pers.:Fr.) Fr., but the odour mentioned by Fries (1851) is absent. It seems related to C. alboryfescens (Pers.:Fr.) Fr., forming a yet another bridge to C. cremeolaniger.

Summary

C. cremeolaniger seems to be a rare species, to my knowledge not previously reported from Sweden. It belongs to a group of macroscopically related taxa in the subgenus Sericeocybe, where (along with the possibly conspecific C. pearsonii) it is remarkable for its narrow spores. The following table summarises the key differences within the group, according to my observations:

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Spores</th>
<th>Lamellae</th>
<th>Context</th>
<th>Hygrophanity</th>
<th>Veil</th>
</tr>
</thead>
<tbody>
<tr>
<td>laniger</td>
<td>9-10.5 x 6.5-7</td>
<td>brick</td>
<td>beige to pinkish</td>
<td>nil</td>
<td>copious</td>
</tr>
<tr>
<td>alboryfescens</td>
<td>7-9.5 x 4.5-6.5</td>
<td>pale cinnamon</td>
<td>cinnamon to brick</td>
<td>nil</td>
<td>copious</td>
</tr>
<tr>
<td>diosmus</td>
<td>8-8.5 x 5-6</td>
<td>pale grey-brown</td>
<td>greyish beige</td>
<td>nil</td>
<td>medium</td>
</tr>
<tr>
<td>cremeolaniger</td>
<td>6.5-7.5 x 3.5-4</td>
<td>brick</td>
<td>pale grey-yellow</td>
<td>nil</td>
<td>copious</td>
</tr>
<tr>
<td>malachius</td>
<td>9-11.5 x 6.5-7</td>
<td>grey violet</td>
<td>greyish</td>
<td>weak</td>
<td>copious</td>
</tr>
<tr>
<td>triformis ss Lge</td>
<td>8-10.5 x 6.5-7.5</td>
<td>pale grey-brown</td>
<td>grey to white</td>
<td>weak</td>
<td>sparse</td>
</tr>
<tr>
<td>subargentatus</td>
<td>8.5-10.5 x 6-7</td>
<td>grey</td>
<td>white</td>
<td>nil</td>
<td>copious</td>
</tr>
</tbody>
</table>

References

E. Fries 1851: Monographia Cortinariorum Sueciae — Upsala.
P.O. Orton 1983: Some notes on the genus Cortinarius in Britain — Sydowia 36, p.213.