Genus *Cortinarius*, subgenus *Phlegmacium* in Tasmania

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**Abstract** There has been no comprehensive work accounting for a hierarchical position of *Phlegmacium* world-wide since 1986. The advent of molecular research, however, has given new insights on the relationships among the species of this subgenus. I have studied a number of species from Tasmania and assign them to infrageneric taxa that recognise these new relationships and encompass a wide range of species in all geographical regions. The descriptions of 40 species of *Cortinarius*, subgenus *Phlegmacium* are provided including 27 new species (*C. australis*, *C. austrocausticus*, *C. austrosaguis*, *C. austroagavatis*, *C. caeruleoburneus*, *C. capscismus*, *C. chrysopicos*, *C. chrysochalybeus*, *C. coelopus*, *C. elatostipitatus*, *C. fucatus*, *C. fulvobulatus*, *C. ingratiolens*, *C. lacteus*, *C. madidus*, *C. memoria-anna*, *C. nigerrus*, *C. phaeouranis*, *C. pseudoporphyrops*, *C. quaresimalis*, *C. rubescens*, *C. salmaster*, *C. sclerophyllarum*, *C. submeleagris*, *C. subsciorphylus*, *C. ulmatas*, and *C. wittiebada*) and one variety (*C. austrocopytides var. brunniensis*). The following supraspecific taxa are proposed, validated, or described as new: 1 Section (*Rostisporati*), 4 Subsections (*Coelopedati*, *Myxacioidei*, *Rozites*, *Subpoliosporati*), 10 new Series (*Archerianni*, *Australiensium*, *Austroolicitudi*, *Barbati*, *Chrysochroi*, *Inflatededes*, *Mariae*, *Perizoniati*, *Pudorini*, and *Xiphidiopodes*), and 2 new subseries, *Volvatus* and *Sinapicolores*. *C. lavendocaerules* is here lectotypified. *Section Archerianni* and *Subsection Malvacei* are transferred from subgenus *Mycacium* to subgenus *Phlegmacium*.

**Keywords** Agaricales; Cortinariaceae; *Cortinarius*; *Phlegmacium*; Tasmania

**INTRODUCTION**

Many species of *Cortinarius* subgenus *Phlegmacium* have been collected in Tasmania, some of which have been published elsewhere (see May & Wood 1997, Grugunovic 1997). The present work presents some subdivisions within the subgenus and describes further new species. Current DNA work has constantly suggested that characters which were believed to be elements developed during the evolution of the species have emerged or were lost more than once during phylogenesis. Hence, in the endeavour of producing supraspecific monophyletic taxa, new systematic definitions for *Cortinarius* have become necessary (Liu et al. 1997; Sawyer et al. 1999; Heiland & Holst-Jensen 2000; Peintner et al. 2001, 2002a,b, 2004; Garnica & Oberwinkler 2003; Garnica et al. 2003, 2005; Freslev et al. 2005). Some external characters such as viscosity and hygrophanity and also habit and pigments have, thus, lost much of their taxonomic value. It has, therefore, become more difficult to establish net borders among the existing subgenera as well as the relevant infragenic taxa. Moreover, there is uncertainty about the number of subgenera that may in the future be recognised to divide the *Cortinarius* species hitherto included in *Phlegmacium*.

Recent taxonomic works, prepared without accounting for the indications emerging from DNA research, such as Atlas des Cortinaires (Bidaud et al. 1990) and Flora Photographica (Brandrud et al. 1990), have different and conflicting views about the subgeneric taxa and, therefore, about the true affinity among the species. After consideration of all taxonomic proposals, it has become evident that they were promoted by intuitions based on sinapomorphisms and that the contradictions were the logical consequences of the different weight each taxonomist gives the various morphological traits.
Therefore, I have preferred to adopt here the system proposed by Moser (in Singer 1986), although aware of the fact that the whole of the frame is now untenable. For this reason I have made adjustments to account for what has emerged from the molecular work.

Together with those species which have been traditionally included in subgenus Phlegmacium, species such as C. salor (and related taxa), the C. delibutus, C. anomalus, and C. rotundisporus complexes, C. archeri group, and part of Rozites were found by Holand & Holst-Jensen (2000) to be nested within Phlegmacium sens. lat. Cuphocyebe, Rozites, and Rapacea belong in the Cortinarius clade (Peintner et al. 2002a,b) and pro parte in Phlegmacium sens. lat. A more realistic division of the Cortinarius taxa presently included in Phlegmacium at subgeneric rank would create at least two subgenera, Phlegmacium and Callochroi. However, more data are required for redefining Phlegmacium and any other segregate subgenera. Thus, Callochroi is retained here as a Section of Phlegmacium.

MATERIAL AND METHODS

After collection, specimens were initially described, dried, and stored at the Ratkowsky residence in Hobart, Tasmania. Selected specimens were subsequently studied in Trieste (Italy). Specimens considered to be significant, including the holotypes all of those described here as new species, are lodged in the Tasmanian Herbarium (HO). Other specimens are held in the personal herbaria of B. Gasparini (referred to here as PHN), or D. A. Ratkowsky (referred to here as RPHN) in Hobart, or in the herbarium of the Associazione Micologica Bresadola (AMB) in Trento (Italy).

Microscopic features were drawn using a light microscope Zenith BK1000 and phase contrast.

Spore measurements are the average of at least 25 readings per collection: the range and standard deviation was also calculated for length (L), breadth (B), and their ratio (L/B), with some extreme measures shown in brackets. Spores of a few particularly interesting specimens were scanned with SEM in gold/palladium coating. For macrochemical reactions and reagents used see Azema (1986). Several specimens were sent to Tubingen University for DNA sequencing by S. Garnica. Results of analyses are indicated where appropriate.

After initial submission of this paper, the biomolecular work of Garnica et al. (2005) and Froslev et al. (2005) was published. Although I used some indications from this work, repositioning all the species in the most likely supraspecific taxa was impracticable. I have therefore limited myself to remarks included in the notes for each species.

In the descriptions, veil refers to a universal veil while cortina refers to the partial veil. L is the number of lamellae reaching the stipe; if followed by two numbers separated by a colon (e.g., 1:2) it means the number of lamellae between two lamellae. L/B (length/breadth) is the average ratio of spore measurements; in the Latin diagnosis this is L/C (= longitudo/crassitudo). The term tromboleprous hyphae (Clemençon 1994) is preferred to oleifer hyphae. In all drawings: the scale bar is 1:2000 for spores, 1:1000 for any parts of the hymenium, or 1:500 for pileal parts, veils, and/or stipe tissues. In the photographic part of figures, for practicality, the scale varies in accordance with the size of the fruit bodies. Colour names are according to the Colour Identification Chart (CIC) of Flora of British Fungi (Anon. 1969).

Whenever Stirp was used by previous authors, a valid taxon Series has been used here, considering Stirps as subordinate to Series and Subseries (ICBN Art. 4.1, 4.2, 4.3; McNeill et al. 2006).

TAXONOMY

Subgenus Phlegmacium (Fr.) Trog. Schweirische Schwämme, 26 (1844)

Type species: Cortinarius saginus Fr.

Species from regions with temperate or subarctic and subantarctic climates, ectomycorrhizal mainly with Fagales and Pinales, less often with Myrtales and Salicales, and possibly Papilionaceae. Basidiomes small to very large. Pileus generally viscid and non-hygrophanous and stipe generally dry (but see below). Stipe white or whitish, pileus yellow, orange, brown, rarely whitish, lamellae white or clay colour, veil white and well developed or veil poorly developed (Section Phlegmacium). Lamellae pale (whitish or buff) and veil coloured brown or yellow (Section Cleftici). Pileus brown or lilac or a mixture of these colours; stipe cylindrical, clavate or sub-bulbous, usually lamellae with mauve hues; if pileus quite dry and tomentose, then reaction to alkalis yellow or brown with yellow halo (Section Patibiles). Pileus white or with blue hues, stipe bulbous, veil white or inconspicuous, spores elliptical to amygdaliform (Section Caerulescentes), or spores
subglobose (Section Caesiocortinati). Species with vivacious colours all over, yellow, green, red, violet, rarely white, then spores finely reticulated (Section Searii), when white, sporeprint olivaceous or ochraceous (Subsection Subpolitospori), reaction purple with iodine and thallium reagents (Subsection Promopusenses), or non-reactive (Subsection Panchoii). Lamellae with blue (Subsection Calochroi) or yellow (Subsection Fulvi) hues. Pileus and stipe dry, lamellae blue, grey, whitish, buff, or buff-yellow, pileus and veil yellow, lilac, or brown-olivaceous, spores round or, seldom, amygdaliform (Section Anomali). Pileus and stipe glutinous, species small to medium sized, white, yellow, rarely with blue tones and then bitter (Section Vibratiles), species medium sized with yellow, ochre, or blue, or greenish colours and spores subglobose (Subsection Delphii; Section Rotundospori), with spores elliptical and reaction purple with iodine and thallium reagents (Subsection Myxocioides), or non reacting (Subsection Archerian). May be bright yellow or red (Subseries Sinapicolores).

### Key to species treated here

1 Lamellae pale (white, buff, cream, argillaceous) ................................................................. 2
   Lamellae of different colour or, if white or cream, then spore print olivaceous or basidiomata entirely viscous ................................. 12
2 Stipe cylindrical or bulbous. Pileus brown, olivaceous, ochre-yellow, orange, yellow-brown, fulvous brown, brick, whitish, flesh colour .............................................. 3
   Stipe white, tapered, rooting. Pileus white or orange. Spores elliptical or amygdaliform ......................................................... 7
3 Veil white or inconspicuous and hardly visible on the stipe ......................... 4
   Veil coloured leaving coloured debris on the stipe ................................................................. 6
4 Smell strong of pepper or potato, taste bitter. Pileus ochraceous buff. Spores 6.3–7.2 × 4.8–4.8 μm ........................................ C. capsicosomus
   Smell and taste different. Pileus not ochraceous buff. Spores larger ........................................................................................................................................... 5
5 Spores 7.2–8.3 × 4.2–4.7 μm. Pileus ochraceous, golden brown with greenish hues ................................................ C. pseudoclariancolor
   Spores 8.7–9.8 × 4.7–5.6 μm. Pileus ochre yellow with reddish orange hues .................. C. niijerus
6 Stipe bulbous ................................................................. 8
   Stipe cylindrical or clavate, white ................................................................................. 11
7 Pileus <80 mm, reddish orange. Lamellae whitish, argillaceous. Spores 7–7.8 × 3.9–7.4 μm, elliptical to subamygdaliform C. persicanus
   Pileus 160 mm or more, whitish cream in all parts. Basidiomata stout, partial veil membranous. Spores 10–11 × 5.2–6.2 μm, amygdaliform ...................................................... C. australiensis
8 Veil ochraceous. Pileus <120 mm, creamy with ochraceous reddish stains. Stipe apex lavender. Spores amygdaliform, 10–11.9 × 5.5–6.5 μm ........................................ C. coelopus
   Veil, pileus, and stipe apex of different colour ................................................................. 9
9 Veil orange. Pileus orange. Stipe white. Spores 11–12 × 6–6.5 μm .................................. C. fucatus
   Veil and pileus of different colour. Spores smaller ........................................................ 10
10 Veil red-brown. Pileus fulvous, cinnamon-brown, sienna, hygrophanous. Stipe white, often concentric. Spores 8.7–10.1 × 4.8–5.8 μm ........................................ C. fulvoiubatus
   Veil dark vinaceous. Pileus flesh colour with black-red scales. Lamellae pale. Stipe chamois. Spores 8.2–9.9 × 5.7–6.6 μm ................................................................. C. rubescens
11 Context changing to yellow when fruit body cut. Veil ochraceous. Pileus fulvous brown. Lamellae pale. Spores 8–9.2 × 5–5.5 μm .................................................. C. austrosaginis
12 Lamellae lilac, or if cream then fruit body white and glutinous. Pileus lilac or white, or if brown, then both veils membranous. Stipe cylindrical to bulbous. 13
   Lamellae brown, white, or yellow, or if lilac then fruit body with lilac hues, either dry or entirely glutinous, or veil lavender and red reaction to alkalis ................................. 19
13 Veil fibrous................................................................. 14
Veil membranous.......................................................... 18
14 Spores subglobose, 7.3–8.7 × 5.7–6.3 μm. Pileus very pale lavender. Lamellae lilac. Stipe base bulbous
Spores amygdaliiform or elliptical........................................ C. caeruleoëburneus
15 Only pileus glutinous. Fruit bodies large. Alkalis nil or yellow................................. 16
Whole basidiomata glutinous................................................ 17
Spores 8.8–10.4 × 4.9–5.8 μm. Pileus purple lilac to livid vinaceous. Lamellae pale lilac. Stipe massive
whitish lilaceous, veil whitish............................................... C. laevendulensis
17 Smell reminiscent of curry. Pileus 20–60 mm, off-white. Stipe whitish, occasionally pale bluish/mauve
at the apex. Lamellae whitish cream. Spores elliptical or ovoid, 8.4–11.2 × 4.2–6.7 μm
................................. C. australisbidus
× 4–4.7 μm................................................................. C. lacteus
18 Veil membranous, volva-like. Pileus to 60 mm, vinaceous. Lamellae livid vinaceous. Stipe lilac, bulbous.
Spores lemon-shaped, 11.3–13.2 × 6.7–7.6 μm..................................... C. austrostrovigineus
Both veils membranous. Pileus 60–80 mm, medium brown. Lamellae pale with a faint lilac hue. Stipe
white, pale lilac at the top, with membranous ring. Spores broadly amygdaliiform to citriform, 10.6–12
× 7.5–8.5 μm................................................................. C. submelleagris
19 Basidiomata staining yellow on handling. Pileus 60–70 mm, buff to brown in colour. Lamellae
brownish. Stipe buff. Spores 7.7–9.6 × 4.4–5.4 μm..................................... C. memoria-annae
Basidiomata not staining yellow on handling. Pileus of various colours. Lamellae mauve, pink, white,
brown, olivaceous, or yellow.................................................. 20
20 Spores subglobose. Basidiomata either entirely dry or glutinous all over.......................... 21
Spores elliptical or amygdaliiform............................................... 23
21 Pileus and stipe dry. Pileus 25–32 mm, hygrophanous, incarnate-vinaceous. Lamellae amethyst. Stipe
violet maculated with tiny red scales reminiscent of C. spilomeus. Spores 7.8–5.7–6.8 μm
........................................................................................................... C. sclerophyllarum
Both pileus and stipe glutinous.................................................. 22
5.4–6.3 μm................................................................. C. quaresimalis
Pileus <40 mm, stipe blue, leaden grey, reddish brown or with green hues. Lamellae pink. Stipe white.
Taste bitter. Spores 7.7–9.2 × 6–6.9 μm.................................................. C. rotundisperus
23 Basidiomes 30–50 mm, entirely glutinous. Purple reactions to iodine and/or thallium reagents......... 24
Basidiomata with pileus only glutinous or, if entirely glutinous then no reaction or, if reacting, then fruit
body yellow................................................................. 26
24 Smell strongly aromatic, fruity. Pileus brown-amethyst or purple-brown, margin very striate. Lamellae
lilac. Stipe pale lilac covered with pale ringlets. Spores ellipsoidal, 8.7–10 × 5.5–6.5 μm
........................................................................................................... C. submagellanicus
Smell different, unpleasant. Cap colour different. Stipe without ringlets. Spores either larger or
smaller.................................................................................. 25
25 Smell like raw potato. Pileus purplish brown or brick, margin striate. Lamellae purple. Stipe lilac. Spores
amygdaliiform, 9.2–11.3 × (4.9–)5.5–6.2 μm..................................... C. elastosvittatus
Smell spermatic. Pileus dark violet, centre ochraceous. Lamellae ochraceous with lilac splottes. Stipe
pale violet. Spores ovoid, 8.3–9.6 × 5.2–6.2 μm........................................ C. madidius
26 Whole basidiome glutinous. Pileus, stipe, and lamellae white. Pileus 20–27 mm, fawn, taste bitter.
Spores ellipsoidal, 7–8.4 × 4.4–5.1 μm.................................................. C. austrostrocausticus
Only cap slightly viscus if fruit body white, or basidiomes coloured................................. 27
27 Purple reactions to iodine and/or thallium reagents. Only pileus glutinous ........................................ 28
   No reaction to iodine or thallium reagents, or, if reaction positive, context yellow and fruit body glutinous ........................................ 29

28 Stipe violaceous, staining on handling. Pileus 40–50 mm, acutely umbo-nate, brick or chestnut with vi-naceous tones. Lamellae purple. Spores ellipsoid to subamygda-liform, 8.1–9.3 × 5.4–6.2 μm ........................................ C. australis

   Stipe pale violet with darker zoning markings unstained on handling. Pileus convex, 35 mm, purplish date, centre darkish vinaceous. Lamellae livid vinaceous. Spores ellipsoid, 9.1–10.3 × 5.7–6.9 μm ........ C. pseudoporphyro-pus

29 Spore print olivaceous. Basidiomata white. Spores dextrinoid, 14.7–17.8 × 8.6–10.7 μm, almost smooth ............ C. mariae

   Spore print ferrugineous. Basidiomata colourful ........................................ 30

30 Lamellae blue, mauve, grey, lilac, or brown-mauve ........................................ 31
   Lamellae of different colour, or if with blue hues, then veil golden or apricot or whole basidiomes glutinous ........................................ 32

31 Pileus grey-yellow and hairy, or green ........................................ 33
   Pileus colour different ........................................ 34

32 Pileus <50 mm, matted, hairy, grey-yellow mixed with dark brown. Lamellae lavender. Stipe robust, bulbous, white, apex lavender. Veil white. Spores ellipsoidal, 9–10 × 5–5.5 μm ........................................ C. austrocy-anites var. bruni-yiensis

   Pileus <35 mm, dark grey-green. Lamellae pale grey. Stipe pale lilac at apex. Spores elliptical, 6.7–7.6 × 3.9–4.6 μm ........................................ C. salmonter

33 Veil brown. No reaction to alkalis. Smell strong and unpleasant, phenolic. Pileus 35–50 mm, brown, vinaceous. Lamellae lilac, violaceous. Stipe bulbous, concolorous. Spores elliptical, 9.7–11.5 × 6–7 μm ........................................ C. ingrato-leonis

   Veil lavender. KOH red on cuticle. No particular smell ........................................ 35

34 Pileus 50–60 mm, medium brown, or livid vinaceous, ageing purplish date. Lamellae pale brown mixed with lilac. Stipe bulbous, white with vinaceous flushes of the veil. Spores amygdaliform, 9–12 × 5–6.4 μm ........................................ C. lavendocaeruleus

   Pileus 160–170 mm, honey brown, faintly vinaceous. Lamellae brown vinaceous, soon brown. Stipe massive, lilac at the apex. Spores amygdaliform, 8.2–9.3(–10) × (4.5–)5–6 μm ........ C. phaeocanus

35 Veil golden yellow or apricot, basidiomata with yellow and/or olivaceous colour ........................................ 36
   Veil and colour different ........................................ 37

36 Veil golden brown. Pileus 40–110 mm, golden brown, hygrophanous. Lamellae olive-grey-green with lilac marginal zone. Stipe apex lilac. Taste bitter. KOH ink red; NH₄OH pink. Spores amygdaliform, 8.3–9.5(–10) × 4.8–6 μm ........................................ C. chryso-pocos

   Veil golden apricot. Pileus 75–150 mm, apricot gold, with blue-violet. Lamellae pale grey-brown-mauve. Stipe cream. Spores subcirtiform, 9.1–10.4 × 5.6–6.4 μm ........................................ C. chrysochalybeus

37 Veil white, membranous volvaceous at the stipe base. Pileus 35–45 mm, pale orange-brown. Lamellae pale to medium brown. Stipe pale brown. Spores cirtiform, 8.3–9.9 × 5.2–5.9 μm ........ C. phalarus

   Veil non membranous ........................................ 38

38 Partial veil glassy. Lamellae pale blue. Both pileus and stipe glutinous. Pileus 50–100 mm, lilac. Stipe white, turning bluish on cutting. Spores amygdaliform, 11–15(–18) × 6.4–7.6 μm ........................................ C. archeri

   Partial veil cortiniform. Lamellae yellow ........................................ 39

39 Both pileus and stipe glutinous, 30–50 mm, yellow, centre redfulvous. Lamellae wax yellow. Stipe creamy yellow. Smell unpleasant, mixed earthy and aromatic. Taste bitter. KOH pink, then brown-red on cutis. Spores elliptical to amygdaliform, 7.1–8.1 × 4.4–5.2 μm ........................................ C. sinapicolo
color

   Only pileus glutinous, 30–45 mm, reddish brown, brick, centre darker. Lamellae yellow. Stipe elavate, buff or pale brown. Veil ochre-yellow. KOH olive green on cutis. Spores amygdaliform, 9–10.5 × 4.9–5.6 μm ........................................ C. wirrabara
Section Phlegmacium (Fr.) Gillot & Lucand, Catalogue raisonné des Champignons supérieurs environnons d’Autun et du département de Saône-et-Loire, 192 (1891)

description: Pileus mostly viscid or glutinous (occasionally almost dry) and colour from very pale cream or whitish to darker colour with yellow, ochreous, brown, olivaceous, reddish, or orange tones (very rarely mauve or bluish, and then only very faintly at the margin). Lamellae generally clay-like or with whitish or cream tones. Stipe dry, bulbous, marginate, cylindrical or tapering, mostly with very pale colours, white or off-white, occasionally weakly yellow or brown, rarely with lilac tones at apex. Context pale, mostly white, occasionally with bluish tinges. Veil strongly to weakly developed, mostly white, but in one subsection orange to red. Reaction to alkaloids mostly negative or sometimes brownish, never yellow or red. Basidiospores mostly amygdaloïd, ellipsoidal to fusoid, rarely citriform or subglobose.

type species: Cortinarius saganus Fr.

Subsection Phlegmacium Bidaud, Moënne-Locco et Remaux, Documents Mycologiques XXIV(93), 40 (1994)

description: Pileus large or medium, yellow, brown, or reddish orange. Lamellae pale, whitish, clay-like, buff. Stipe clavate, cylindrical or slightly tapered, even radicant, mostly white or off-white. Veil white to off-white, submembranaceous or woolly. Basidiospores amygdaloïd to narrowly ellipsoidal.

type species: Cortinarius saganus Fr.

Series Perizonium (M.M. Moser et E. Horak) ex Gasparini, ser. nov.


type species: Cortinarius perizonium E. Horak.

description: Basidiospores ellipsoidal to fusoid or subamygdaloïd. Pileus yellow to brown. Stipe clavate, cylindrical or somewhat tapering with woolly to submembranaceous veil forming white or whitish belts on the stipe. This section appears to be very close to Section Claricolores (Kühner et Romagn.) Moënne-Locco et Remaux.

note: The Series was published in Moser & Horak (1975) as Stirps Perizonium. It is here validated as a series in accordance with ICBN Art. 21.2 (McNeill et al. 2006).

Cortinarius pseudoclavicular E. Horak et M.M. Moser, Beiträge Nova Hedwigia 52, 132 (1975)

fig. 1

description: Pileus 40–60 mm, convex, margin very involute in younger basidiomes, less in adult, cuticle smooth, tacky, innately fibrillose, disc ranging from a very dark golden brown to a dirty grey-green, becoming lighter and more orange towards the margin, in some cases with a hint of golden brown over a white background at the margin. Lamellae crowded, moderately thick, to 4 mm deep, adnate, arcuate, creamy when young, pale brown ochre when mature, margin homogeneous, entire. Stipe 45–50 mm × 10–25 mm, cylindrical, tapering downwards, robust, fibrous, white with some scaly patches. Veil woolly or cottony, white, leaving festoons on the cap margin and belts on the stipe. Flesh white. Smell none, taste mild. Chemical reactions: KOH nil reaction on cap or context. Basidiospores fusoid, amygdaloïd, ellipsoidal, surface irregularly rough, (5.3–)7–8.3(–9) × (3.7–)4.2–4.9(–5.8) μm, L/B 1.5–1.9. Hymenium margin partly fertile, basidia 4-spored, somewhat smallish, 22–26 × 7.5–9 μm, margin with a palisade of sterile basidiform cells, 15–20 × 7–9 μm, pileipellis olivaceo-fulvous, an ixocutis, c. 450 μm thick, of subparallel or slightly interwoven gelatinised filamentous hyphae 3–3.5 μm diam., containing a yellowish pigment. Clamp throughout.

habitat: Wet sclerophyll forest with Eucalyptus obliqua dominant.


notes: The overall features of the Tasmanian collections coincide with those of Cortinarius pseudoclavicular from Argentina as described by Moser & Horak (1975). The Lenah Valley Track collection has vague olivaceous hues not noted in the holotype and there was no odour. The Argentinian collection was reported with an occasional unpleasant smell, but sometimes almost nil. In this respect, it is quite possible that the various collections made by Moser & Horak were considered all the same species. Cortinarius capsicosmus has definitely an unpleasant
Fig. 1 *Cortinarius pseudolaricicolor*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 529016. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig. 2  *Cortinarius nigerrus*. A, fruit body; B, spores; C, basidia; D, pileic hyphae. B–D drawn from HO 522437. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
smell, and also spores are definitely smaller than given in the protologue. The slight differences in the cap colour are within the variability of the species. The taste of the two following species is bitter, while this is not. In all the significant characters the Australian collections match the original description.

*Cortinarius nijeruss* Gasparini, sp. nov.  Fig. 2


**Holotype:** Australia, Tasmania, Kermadie Falls, Lower Track, 120 m, G. Gates, B. Gasparini & D. Raikowsky, 16 May 2002, PHN 529017.

**Description:** Pileus 30–50 mm, irregularly convex then almost plane, cuticle glutinous, soon dry, fibrillose-innate, yellowish, ochre-yellow, or between salmon and buff in CIC pervaded by greenish hues, with reddish tones, pale brown, near clay buff in CIC, or terracotta, mahogany, orange, disc darker, tending in the adult to pale yellowish olivaceous, somewhat between saffron and buff in CIC toward the margin, covered by debris of a submembranous white veil. Lamellae very crowded, L = 113, 1.2, shallow, 3 mm deep, adnate, margin strongly serrate, pale cream, becoming brown. Stipe stout, fibrous, woody, 30–85 mm × 10–15 mm, terete, slightly incurved, base rounded or sometime sub-bulbous, occasionally a little enlarged at the base, top 1/4 striate, whitish tending to yellow ochraceous at the base, due to the abundant flaky universal veil. Context white. Veil semimembranous, white, turning yellowish; leaving debris on cap and ochraceous fibrils on the bottom part of the stipe. Cortina white, persistent, leaving a broad annulus at the top of the stipe. Smell almost nil; taste nil or very slightly bitter. Chemical reactions: KOH light brown (honey brown) on cap, nil on flesh. Spores amygdaliniformis (7.8–8.7–9.8–10.8) × 4.7–5.6–(5.9) μm, L/B = 1.6–2. Hymenium, basidia 4-spored, stout, 24–28 × 8–10 μm; cheilocystidia clavate or spheropodunculate. Pileipellis orange under the microscope, thin ixocutis of filamentous hyphae 4–8 μm diam., encrusted by a yolk yellow pigment, hypodermium subcellular formed by ellipsoidal to subpolygonal hyphae 15–30 μm diam. Tromboplerous hyphae present. Pileal hyphae containing an orange yellow pigment. Clamps throughout. Veil, filamentous hyphae 1–4 μm diam., encrusted by a yellow pigment. Cortex of cylindrical hyphae 7–9 μm diam., clamped and encrusted by a yellow pigment.

**Habitat:** Mixed wet forests, rain forests.


**Etymology:** From the local Aboriginal word nijeriu, rain; being from rain forest.

**Notes:** This is a short-stipitate *Phlegmacium* sharing features with *Claricolores*, reminiscent of *Cortinarius pertinens* Britz., similar to *Cortinarius pseudoclарicolore* Horak et M.M. Moser. However, the spores of the latter are smaller and wider (7.2–8.3 × 4.2–4.7 μm, L/B 1.6–1.9). This species is clearly distinguished from the following *Cortinarius capsicosmus* by having a more brown colour on the cap, absence of odour, taste, and larger spores.

*Cortinarius capsicosmus* Gasparini, sp. nov.  Fig. 3

**Diagnosis:** Pileus usque 40 mm lato, abnorme convexo e breviter umbonato, cuticular glutinoso e glutine amaro, glabra e papulus frustulis veli ornata, ochraceo-avellanea, e aurantiaco disco. Lamellis confertis, adnatis, lacteis, deinde ochrasecentibus. Stipite 40 mm longo, 10 mm lato, robusto, cylindrico, e base rotunda, et cortinae annulo supero ornato. Carne solida, nivea. Odore solani tuberi capsicosmus permixte. Gusto amaro. Sporis ovatis vel ellipticis e verrucis latis, haud confertis, (5.9–6) × 4.8–(5.9) μm, L/C 1.4–1.6; margine e clavatis cystidios. Basidii 23–25 × 6.5–7.5 μm tetrasporigenis vel bisporigenis. Ixocute e cylindraceis hyphis 4–6 μm crassis.

**Holotype:** Australia, Tasmania, Artery Valley, Keog's Track, 200 m, G. Gates, B. Gasparini & D. Raikowsky, 14 May 2002, HO 529013.
Fig. 3  *Cortinarius capsicosmus*. A, fruit body; B, spores; C, basidia; D, pileic hyphae. B–D drawn from HO 529013. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Description: Pileus 40 mm, irregularly convex with a very broad, round umbo giving it a pagoda shape, cuticle glutinous, gluten bitter, smooth except for the papulose debris of the white veil particularly evident on the disc, otherwise a very pale ochraceous buff (close to saffron in CIC), orange buff on the disc, margin almost smooth. Lamellae crowded, L = 6.5, 5 mm deep, adnate, straight, pale cream, later pale ochraceous. Stipe 40 × 10 mm, stout, terete, base round, white, in the upper part with a broad annulus of the cortina. Context fleshy, white. Veil white, submembranous. Cortina abundant and persistent. Smell very strong and unpleasant, of potato peel with sweet pepper as a component. Taste very bitter. Chemical reactions: KOH nil. Spores ovoid or ellipsoidal, warts broad, distant, shallow, (5.9–)6.3–7.2(–7.8) × 4–4.8(–5.9) μm, LB 1.4–1.6. Hymenium margin nearly sterile due to numerous short, sterile cells. Basidia 2- or 4-spored, 23–25 × 6.5–7.5 μm. Pileipellis top layer formed by loose cylindrical hyphae 4–6 μm diam. Hypodermium indistinct of cells <20 μm diam.

Habitat: Wet Nothofagus forest.


Etymology: From Latin capsicum, pepper, and Greek σεβής, smell, because of the smell of the cut basidiome.

Notes: This species has some of the macroscopic and microscopic features of *Cortinarius pseudo-claricolor*, but it tastes very bitter and has smaller spores.


Description: Stipe mostly bulbous, pileus yellow, red, or brown. Veil not strongly developed, not orange or red.

Type species: *Cortinarius multiformis* (Fr.:Fr.) Fr.

Series Inflatipes M.M. Moser et E. Horak, Beihfte Nova Hedwigia 52, 60 (1975), ex Gasparini (sub Stirps Inflatipes, inval., Art. 36.1, 37.1; McNeill et al. 2006).


Type species: *Cortinarius inflatipes* M.M. Moser

*Cortinarius fucatus* Gasparini, sp. nov. Fig. 4

Diagnosis: Pileo 70–80 mm lato, plano-convexo. Cuticula viscosa, aurantia e griseis frusculis praedita. Lamellae fragilibus, confertis, emarginatis, argillaceis. Stipe usque 60 mm longo, 17 mm crasso, cylindraceo e submarginata bulbosa base, candido, sed e copioso aurantia velo praedito. Carne candidula. Sporis amygdaliformibus, 11–12 × 6–6.5 μm, L/B 1.7–2, verruculosis; monon vel bi sporatis. Basidis 26–34 × 9–10 μm. Epithecium crassa (80–100 μm) e filamentosis, gelatinosis, vere confusis fibulatis hyphis × 2.2–3(–5) μm crassis, e veli filamentosis hyphis × 1.5 μm crassis, confusis, pigmentatione interhyphale aurantia praebente.

Holotype: Australia, Tasmania, Mt Wellington, Old Farm Road, G. Gates & D. Ratakowsky, 9 Mar 1999, HO 510376.

Description: Pileus 70–80 mm, shallowly convex at maturity; cuticle viscid, orange, with some greyness imparting a frosted appearance. Lamellae close, emarginate, argillaceous. Stipe <60 × 17 mm, almost equal from apex to below the centre, then bulbous, almost bulb-marginate, white but covered with fibrils from the veil which give it an orange tinge concolorous with the pileus. Veil orange; cortina white, soon evanescent. Context white, solid. Smell undetected. Chemical reactions: none with KOH. Spores amygdaliiformes, 11–12 × 6–6.5 μm, L/B = 1.7–2, the warts small, regularly distributed. Margin fertile, basidia 1- or 2-spored, 26–34 × 9–10 μm, no significant cystidia. Epithecium rather shallow ixocutis, 80–100 μm of filamentous hyphae, 2.2–3(–5) μm diam., very thickly interwoven. Clamps present. Masses of orange pigment among the hyphae. Also scaly or stripy orange-brown-stalkous incrustations on the hyphae. Subcutis indistinct. Veil filamentous hyphae 1.5 μm diam., mixed with the hyphae of the epithecium.

Habitat: Wet sclerophyll forest with *E. obliqua* dominant and *Leptospermum scoparium* and *L. lanigerum* frequent.

Etymology: From Latin fucatus, colourful.

Notes: The orange overall aspect of this fungus, the white bulbous base, its orange veil, and the large amygdaliform spores distinguish it from any other known species. The pale lamellae and bulbous white stipe have led me to include this species in Inflatipes.
Fig. 4 *Cortinarius fucatus*. A, fruit body; B, spores; C, basidia; D, pilei.chyphae. B–D drawn from HO 510376. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig. 5 *Cortinarius fulvoventris*. A, fruit body; B, spores; C, basidia; D, pileus hyphae. B–D drawn from HO 529021. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
However, S. Garnica (pers. comm.) has found it nested it in an isolated phylogenetic position.

**Cortinarius fulvoiuba**us Gasparini, sp. nov.


**Holotype:** Australia, Tasmania, Mt Wellington, Myrtle Forest, D. Ratkowsky, 3 May 1997, HO 529021.

**Description:** Pileus 40–90 mm, irregularly convex, then irregularly plane, usually with broad flat umbo on the disk, occasionally even slightly depressed, cuticule viscid or tacky, hygrophanous, covered by considerable tomentum, with repens hairs denser on the cap disk; aging fibrillosse, cinnamon ochre, cinnamon brown, sienna, pale brown, with paler striations; appearance becoming metallic with age especially on the cap disk. Lamellae medium dense, fragile, ventricose, margin homogeneous, smooth, pale brown or sienna, finally cinnamon brown. Stipe often concrescent, 60–90 mm × 10–20 mm, cylindrical, sub-bulbosum to clavate, white with red-brownish velar remains. Context firm, white. Chemical reactions: on dry cuts blood red or brown-red with KOH. Basidiospores elliptical or amygdaliform, (7.5–)8.7–10.1 (–11.2) × (4.4–)4.8–5.8 (–6.9) μm, L/B 1.6–2, with broad, shallow warts, irregularly distributed. Hymenium margin sterile due to several inconspicuous sterile cells, but no obvious cystidia; basidia 1- or 2-spored (mostly 2-spored) with granular contents 25–30 × 7–8 μm. Pileipelle 90–120 μm, lemon or pale yellow, reddening immediately in KOH. Ixocuts of filamentous hyphae 3–6 μm diam., thick-walled, subparallel or interwoven, conspicuously encrusted by a yellow pigment. Hypodermium clearly distinct, subcellular with hyphae subspherical or elliptical 25–30 μm diam., clamps present.

**Habitat:** Wet sclerophyll forests of *Eucalyptus* with occasional *Leptospernum*.


**Etymology:** From Latin fulvus, fulvous and iuba, mane, because of the shaggy appearance.

**Notes:** This very common species is reminiscent of *Cortinarius castaneofulvus* Cleland. The latter, however, is darker brown on the cap and the stipe is yellow-brown with yellish context, the spores are completely different, in *Cortinarius fulvoiuba*us being shorter and much leaner with almost undetectable warts. The species has been shown by molecular studies (S. Garnica unpubl. data) to be very close to if not conspecific with *Cortinarius naphthilbus* (Soop) from New Zealand. The latter has a very strong odour of naphthalene, a feature not noted for the present species. Further, the New Zealand species is significantly less fibrillosose, has a yellow rather than red cap, possesses larger, elliptical, and broader spores, has articulated sterile cells, and was described from *Nothofagus* forest. It is therefore preferable to consider them separate species.

**Cortinarius rubescens** Gasparini, sp. nov. **Fig. 6**

**Diagnosis:** Pileus 30–50 mm lato, convexo, cuticula viscidia hygrophanous, polita, pallide incarnata et sanguineo velo, deinde rubro-nigriscensibus squamis infracto obtecta. Lamellis emarginatis,
Fig. 6 *Cortinarius rubescens*. A, fruit body; B, spores; C, basidia and marginal cells; D, pilei hyphae. B–D drawn from H0 522430. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
fragilibus, lacteis. Stipite breve, cylindrico 50 × 9 mm e basi bullosa 16–20 mm lata, pallide avellanee, e fusco-rubro velo oblecta. Carne lactea, in base brunnea. Odore gustaeque nullus, sporis ovatis vel late amygdaliformibus (7.8–)8.2–9.9(–10.8) × (5.4–)5.7–6.6(–6.9) µm, L/C 1.4–1.6, verruculosum. Basidias tetrasporigenes 28–30 × 7–10 µm. Ixocutis e filamentosis permixtis hyphis 3–6 µm erassis. Hypodermin subcellulare ex ellipticis vel subglobosis hyphis 15–30 µm erassis.

Holotype: Australia, Tasmania, Mt Field National Park, Lyre Bird Track, 700 m, G. Gates, D. Ratkowsky & B. Gasparini, 30 Apr 2002, HO 52243.

Description: Pileus 30–50 mm, convex, cuticle viscid, greasy, hygrophanous, smooth, pale incarnate orinarily covered by a dark, blood red veil, which later breaks up into reddish black scales. Lamellae medium spaced, L = 54, annexed-emarginate, 9 mm high, slightly ventricose, very fragile, margin irregularly wavy, pale, cream or similar colour, side slightly rugulose. Stipe rather short and stout, 50 × 9 mm, cylindrical, base inflated in emarginate bulb 16 mm diam., up to 20 mm in young specimens; pale fawn (chamois), cottony, the lower part with scaly remains of the veil. Context whitish buff, brown at the base. Veil very abundant, blackish vinaceous. Cortina white, soon disappearing. Smell inconspicuous; taste mild. Chemical reactions: KOH brownish on cap and base of stipe, TL4 nil, Guaiac +, phenolaniline +. Spores ovoid or rather broadly amygdaliform, generally showing a small but distinct sculpt at the distal end, with warts small, dense, evenly distributed and protruding, 8.2–9.9 × 5.7–6.6 µm, L/B 1.4–1.6. Hymenium margin fertile with basidia clavate, 4-spored, 28–30 × 7–10 µm; sterile cells ordinary, clavate, not protruding. Pileipellis ixocutis of filamentous hyphae 3–6 µm diam., loosely interwoven. Hypodermin subcellular of broadly elliptical or subglobose hyphae 15–30 µm diam., encrusted by a yellow pigment. Veil hyphae 4–7 µm diam., cylindrical and parallel, equally encrusted by a yellow pigment. Cortex of parallel cylindrical hyphae 10–13 µm diam. strongly encrusted by a golden yellow pigment. Clamps present throughout.

Habitat: Mixed wet Nothofagus and Eucalyptus forests.


Etymology: From the cap colour, which is reminiscent of Amanita rubescens.

Notes: This species was originally tagged as Cortinarius "measles" because of the red-blackish spots on the cap. This feature distinguishes it from any other species.

Series Xiphidipodes M.M. Moser et E. Horak, ex Gasparini, ser. nov.


Diagnosis: Spores ellipticae vel amygdaliformes. Pileus lacteus, fulvo-aumentaticus, flavus vel brunnescens, stipites lacteus vel brunnescentes ex acutissima radicante base, saepe e conspicua pseudorhiza praedita.

Type species: Cortinarius xiphidipus M.M. Moser et E. Horak.

Description: Spores ellipsoidae vel amygdaliformis. Pileus whitish, red-orange, yellow, or brown. Stipe strongly tapering, often with a long pseudorhiza, white to brownish.

Cortinarius persicanus Soop, Bulletin de la Société Mycologique Française 117, 2 (2001) Fig. 7

Description: Pileus to 80 mm, convex in youth, shallowly convex in largest caps, cuticle viscid, reddish orange, somewhere between apricot and rust, with greyish shreds of the veil, giving it a frosted appearance. Lamellae emarginate, whitish argillaceous, then a very pale brown even in the most mature basidiomes. Stipe 100–120 × 20–30 mm, narrowest near the insertion and almost equal for the top ½ or ⅔ of the stipe, then expanded and finally tapering to a conical, conerorescent pseudorhiza, white, interrupted only by the presence of sparse brownish fibrils. Veil greyish brownish. Cortina white. Context white in pileus and stipe. Smell and taste insignificant. Chemical reactions: none to KOH. Basidiospores ellipsoidae vel subamygdaliformis, verruculosae (6.7–)7–7.8(–8.2) × (3.7–)3.9–4.7(–4.9) µm, L/B 1.6–1.9. Hymenium with fertile margin, basidia, 22 × 7.5–9 µm, 1–2, 4-spored. Pileipellis orange fulvous; ixocutis of 160–200 µm, the hyphae gelatinised, strongly interwoven, often repent, cylindrical 2–4(–5) µm, cylindrical or filamentous, encrusted by a grey-yellow pigment; subcutis indistinct, hyphae subellipsoid to 11 µm. Clamps throughout.

Habitat: Wet sclerophyll forests.
Fig. 7 *Cortinarius persicanus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from NIO 510371. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Specimen examined: Australia: Tasmania: Mt Wellington, Pipeline Track, G. Gates, 4 May 1999, HO 510371.

Notes: This is a typical Phlegmacium of Xiphidiopodes, characterised by the long, rooting stipe and the conspicuous pseudohiza. The orange pigments of the cap and the caespitose habit are good distinguishing characters from all the other species so far described for the series. The microscopic traits coincide with Cortinarius persicus from New Zealand, with which conspecificity has been shown by Garnica et al. (2005). The infrageneric position of this species is not yet determined, and it could even be considered a variety of Cortinarius xiphipidos M.M. Moser. The latter, though, has a paler pileus. Moreover, the stipe is glutinous and not so abruptly tapering.

Series Australiensium Gasparini, ser. nov.

Diagnosis: Magnae, pallidulae species e copiosis velo obtectae. Sporaes mediae vel magna, amygdaliformes vel ellipticae.

Type species: Cortinarius australiensis (Cleland & Cheel) E. Horak.

Description: Large, pale coloured species with a very abundant, submembranous, universal veil, basidomes medium to large, basidiospores amygdaliform or ovoidal. Under Nothofagus and Eucalyptus in Southern Hemisphere.

Notes: Moser & Horak (1975) mentioned a Section Australiensis in genus Rozites. However, no type was indicated and the taxon should therefore be considered invalid (ICBN Art. 37.1; McNeill et al. 2006). Furthermore, in this case Art. 11.2 applies.

Its approximate position in the genus is in Subsection Ophiopodes Moënne-Locre & Remaux. Peintner et al. (2004) and Garnica et al. (2005) have found Cortinarius australiensis to be nested in the Delibuticus clade.

Cortinarius australiensis (Cleland & Cheel) E. Horak, Sydowia 34, 106 (1981) Fig. 8


Description: Pileus to 160 mm, at first tightly involuted, convex, cuticle originally white and enveloped in a very thick submembranaceous universal veil, slightly tacky when wet, disc somewhat squamulose with brownish squamules, velvety toward the margin, creamy buff, very pale. Lamellae very crowded, L = 200, shallow, fragile, adnate, pale, whitish, later pale cream to brown, edge smooth. Stipe massive and rather short, to 100 × 40 mm, almost cylindrical but ending in a very large turbinated bulb over 70 mm wide, tapering into a pointed, rooting end, whitish, encircled with several consistent annuli, the remains of the universal veil. Veil thick, consistently white, hanging from the margin as well as the stipe, in youth covering the lamellae with a thick curtain which appears like a partial veil. Context thick, whitish or creamy, of chalky consistency (reminiscent of Russula), clearly hollow in the middle even in young specimens. Odour pleasant. Taste mild. Chemical reactions: KOH on cuticle nil, on context yellowish ochre. Basidiospores mostly narrowly ellipsoidal or amygdaliform, often mucronate, occasionally subovoid, 10–11 × 5–2 μm, almost smooth or finely verruculose. Hymenium margin fertile with a row of basidia 5–40 × 7–8 μm, clavate and sterile cells of even shape and often emerging, all containing opaque granules; no cystidia observed. Pileipellis devoid of a proper gelatinised layer, but some signs of gelatinisation present on upper hyphae, which are interspersed and mixed with those of the veil. Epicit of hyphae 7–9 μm diam., greyish in colour from a finely encrusting wall pigment, hypodermium indistinct; hyphae gradually get shorter and thicker in the deeper strata. Context formed by more or less cylindrical hyphae 6–15 μm diam., irregularly arranged and occasionally clamped. Universal veil formed by subparallel, cylindrical hyphae 2.5–11 μm diam. Clamps present but not very frequent.

Habitat: Wet Eucalyptus obliqua forests.

Specimens examined: Australia: Tasmania: Mt Wellington, Old Farm Road, A. V. Ratkowski, 26 Feb 1996, PHN 960226A0; Junction of Reids Track and Silver Falls, Little Pipeline Track, G. Gates, 27 Feb 1999, PHN 990227A0.

Notes: Basidioles stout and very large, reminiscent of Amanita ovoidea, especially when young. An easily recognised Cortinarius because of the large white to cream basidioles and the thick veil that motivated the classification as a Rozites.

Section Cliduchi (Fr.) Sacc., Flora Italica Crittograma 1, 89 (1916)

Description: Pileus ochre, or yellow-brown, occasionally olive-brown or fawn. Lamellae pale whitish, buff (rarely with lavender hues), stipe cylindrical or
Fig. 8 Cortinarius australiensis. A, fruit body; B, spores; C, basidia; D, pileic hyphae. B–D drawn from PHE 990227A0. Scale bars: A = 15 cm; B = 1:2000; C = 1:1000; D = 1:500.
clavate, veil yellow ochre or brown leaving scaly debris on the stipe.

**Type species:** *Cortinarius triumphants* Fr.

**Subsection Triumphants** (M.M. Moser) ex Moënne-Locqu. & Remaux, *Atlas de Cortinaires 1*, 16 (1990)

**Description:** Large or medium-sized species of ochraceous, yellowish, or brown colour with a colourful veil. Spores medium to large.

**Type species:** *Cortinarius triumphants* Fr.

**Cortinarius austrosaginus** Gasparini, sp. nov.

**Diagnosis:** Pileus 50–110 mm lato, haemisphérico dein convexo atque gibbosus, valde glutinoso, squamoso vel irregulariter papulosus, e papulis apud disco densioribus, cuticula ochracea et fulvo-brunneo-lovelo obtecta. Lamellis subconfertis, crassis, e marginie plano, emarginatis, pallidiscus, lacteooligarrilaeis, dein brunneescenticus. Stipite solido 80–90 mm × 18–30 mm, cylindraceo, candidulo et fulvo-ochraceo flocculoso velo ornato. Carne solida, candida, secata favescente. KOH ope reactionem brunneo-luteam praebente, apud cærum brunneo-lam. Sporis amygdaiformibus, e apice constricto vel mucronato, verrucosis (7.5)8–9 × (4.5)–5–5.9 μm, L/C 1.5–1.7. Basidii cylindraceis vel clavatis, 30 × 9–9.7 μm. Ixocute aurantiaco-favescente, e valde confusis hyphis 3–7 (9) μm erisisis hypodermico haud distincta, hyphis crebro furcatis, anastomatis vel diverticulatis, saepe fibulatis.

**Holotype:** Australia, South-East Tasmania, Mt Leilateah, D. Raktowski, 9 May 1998, HO 510370.

**Description:** Pileus 50–110 mm, hemispherical, then convex, irregularly gibbous, in the adult often with a large central dome; cuticle very glutinous, squamoso to squamosulo or papulosus, the papules being irregular, denser near the centre, more distant near the margin, ochraceous but superimposed by fulvous brown colours, yellowish brown, with fulvous brown remains of the universal veil, margin involute and covered with white fluffy remains of the cortina. Lamellae rather crowded, thick and consistent, annexed or adnate to emarginate, almost whitish or very pale buff, becoming pale brown with maturity; margin smooth, homogeneous. Stipe 80–90 × 18–30 mm, almost equal, cottony-fibrillosus, white, irregularly scattered with flaky yellowish brown, fulvous brown remains of the veil. Veil fulvo-ochraceous. Cortina abundant, consistently submembranaceous and permanent, pure white. Context dense and white in cap and stipe, turning yellow when cut. Smell not very evident, taste mild. Chemical reactions: KOH brow-yellow on cutis, pale brownish on flesh. Basidiospores amygdaliformis, sometimes submucronate, warts shallow, somewhat broad, sparse (7.5)8–9.2 × (4.5)–5–5.9 μm, L/C 1.5–1.7. Hymenium, margin fertile: basidia 30 × 9–9.7 μm, often diverticulate, forked, anastomised of subenteriform aspect and thick-walled, rather thickly interwoven mixed with veil hyphae 2–3 μm diam. Rare terminal cells, clavate. Clamps sometimes quite large. Presence of intraphthal chrome yellow pigments, becoming fulvous red in KOH. Hyphae strongly encrusted by a fulvous pigment, tromboplarus hyphae abundant.

**Habitat:** Wet sclerophyll forest.

**Specimen examined:** AUSTRALIA: SOUTH-EAST TASMANIA: Mt Leilateah, D. Raktowski, 9 May 1998, HO 510370, PHN 980509A0.

**Etymology:** From Latin australis, southern, and sagin[at]us, opulent, a southern species similar to *Cortinarius saginus* Fr.

**Notes:** This species resembles *Cortinarius saginus* Fr. (or its possible synonym *Cortinarius subvalidus* Rob. Henry). The context oxidises to yellow when cut open, like *Cortinarius rubicundulus* (Rea) Pearson and *Cortinarius memoriae-annaee* Gasparini. In dried material there appear to be no soluble pigments (M. Gill pers. comm.). It is assigned to sect. *Cichidi* (Fr.) Sacc. because of the pale colour and the ochre coloured veil. A DNA examination has found it within a group named *Pseudotriumphantes* (Garnica et al. 2005). This is possibly the correct taxonomic place, but as Garnica et al. (2005) was published after the completion of this work the inclusion here in *Triumphantes* is provisional.

**Cortinarius subschorophyllus** Gasparini, sp. nov.

Fig. 9 *Cortinarius caesius*. A, fruit body; B, spores; C, basidia and marginal cells; D, pileic hyphae. B–D drawn from HO 510370. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig. 10 *Cortinarius subscorophyllus*. A, fruit body; B, spores; C, basidia; D, pileic hyphae. B–D drawn from HO 523508. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Gasparini—Cortinarius, subgenus Phlegmacium in Tasmania

HOLOTYPE: Australia, Tasmania, Mt Wellington, Silver Falls, Little Pipeline, D. Ratkowsky, 23 Mar 1999, HO 532508.


HABITAT: Wet sclerophyll Eucalyptus obliqua forest.

ETYMOLOGY: From Greek σιδηρος, acorn, and φύλλου, leaf, because of the pale brown lamellae.


NOTES: This species is distinguished by the brick pileus, the abundant ochraceous veil leaving scales on the brownish stipe, the brown lamellae, and the large, well-warted, amygdaliform spores.

Subsection Coelopodati Gasparini, subsect. nov.

DIAGNOSIS: Species e pileo niveo vel lacteo, stipite lamellis lilacinis. Sporis amygdaliformribus.

TYPE SPECIES: Cortinarius coelopus Gasparini.

DESCRIPTION: Species with white or whitish cap. Stipe and lamellae lilac. Spores amygdalyiform.

Cortinarius coelopus Gasparini, sp. nov. Fig. 11


HOLOTYPE: Australia, Tasmania, Mt Field National Park, 42°41'S, 146°42'E, A. V. Ratkowsky, 21 May 1995, HO 510353.

DESCRIPTION: Pileus 60–120 mm, hemispherical, becoming shallow convex or occasionally depressed, irregular, gibbous, margin irregular and often cracked, sometimes with large flat central umbo in the depression. Cuticle glutinous, edge exceeding the margin, normally full of debris; then dry and shiny, ageing mat, whitish cream or pale buff with ochraceous (or rusty) remains of a universal veil, tending to get stained buff or yellowish or pale brown or reddish in places. Lamellae emarginated, not crowded, thick but fragile, very irregularly undulate, margin serrate, adnate-emarginate, pale brown or argillaceus, but soon darker brown, eventually chocolate brown. Stipe 50–90 × 13–25 mm, cylindric or recurved, fibrillose, base swollen in a rather small, subterrinate, almost and sometimes quite narrowly bulb 30–40 mm diam., lilac, discoloring to white with brownish fibrils or white or cream, but distinctly mauve at the apex in youth. Veil ochraceous. Cortina abundant, persistent. Context white in cap staining ochraceous, in stipe white in core, lilac in the subcortical area and at the joining of the cap with the stipe. Chemical reactions: KOH nil on pileus, yellow-brown on lamellae and stipe; TL4 and Lugal nil. Basidiospores amygdaliform to fusiform, with narrow apex, and often distinctly mucronate, occasionally the spout so long and wide as to give the spore the profile of a hammer; apex devoid of warts, often with a dark stain, apparently a callus; warts generally broad, irregular and fairly densely distributed, well protruding, (9–)10–11.8(–16) × (4.9–)5.5–6.5(–7.9) μm, L/C 1.6–2. Hymenium margin partly fertile with medium, mostly 2- or 3-spored basidia, 37–48 × 8–12 μm; plenty of cystidia clavate.
Fig. 11  *Cortinarius coelopus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae; E, cortex. B–E drawn from HO.510353. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
or vesiculose, occasionally cylindrical, also multisepitate. Pileipellis an ixocutis of thin, cylindrical hyphae 3.5–6(−7.5) μm diam., often short-septate, with broad, sometimes double, clamps, densely interwoven and mixed with the filamentous hyphae of the veil, 1.5–3 μm diam. Hypodermium indistinct. Pigment yellow-brown in the inner tissue.

Habitat: Wet Eucalyptus forests.

Etymology: From Latin coelus, sky, and Greek πτοχο-, foot, because of the sky-blue stipe.


Notes: Large species with a pale cap and lilac stipe. The species is fairly common. It is well characterised by the solid habit, the large size, the viscid off-white pileus, the stout, bulbous stipe with a bluish top showing the remains of the ochraceous veil, the irregular and serrulate brownish lamellae, and the large spores with an acute apex which is often characteristically marked by a dark spot. ITS sequencing by Garnica et al. (2005) showed this species nested in a group including C. percomis, C. serarius, and C. papulosus.


Description: Pileus 50–100 mm wide, hemispheric, then plano-convex, glutinous. Lamellae emarginate, often serrulate. Stipe bulbose, bulb marginate, but relatively narrow and slightly radicating. Spores (sub-)globose, with coarse ornament.

Notes: The two species of the Northern Hemisphere belonging to the section were previously assigned to different sections (Calochroi and Fulvi). However, the faint blue colour and the round spores were characters not in common with the other species of these sections. DNA examination (Froslev et al. 2005) has shown them to belong to a segregate section. However, Garnica et al. (2005) did not confirm this position (see comment with Cortinarius caeruleoeburneus).

Type species: Cortinarius caesiocorticatus Schäff.

Cortinarius caeruleoeburneus. Gasparini, sp. nov.

Fig. 12

Diagnosis: Pileo 50–60 mm primum hemisphaericco, dein convexo, cuticula viscidula, fibrillosa vel feltrata, eburneo-lilacina. Lamellis adnatis, confertis, lilacenis dein brunneolis. Stipite 80 mm longo, apice 17–20 lato, et bulbo base 30 mm lata. Velo lacteo; cortina candida. Carne lilacea in pileo atque stipitis apice, in base lactea. KOH ope reactionem supra cute olivaceam, brunneolam lamellis carneque praebente. Sporis ovoidis vel ellipticis et largiisculis verrucis ornatis, (6.7–)7.3–8.7(−9.7) × 5.7–6.3 μm, L/C 1.2–1.4. Hymenii marginis sterile et sphaeropedunculatis vel subcapitatis elavatis cellulitis, basidis mediis bis largiisculis, cylindraceis vel elavatis, bisporigenis vel tetrasporigenis, 36–45 × 7.5–10 μm. Cute e haud gelatinosus, confusi hyphis (5–)97–9 μm crassis, in tandem erectis fasciculis et rotundis vel lanceolatis terminalibus cellulitis, a hypodermio haud distincta.


Description: Pileus 50–60 mm, almost hemispherical, later convex, cuticle tacky, fibrillosa with a coarse felted surface, very pale lavender, but becoming dark brown in old age. Lamellae adnate (not emarginate), close, lilac at first, later brown. Stipe 80 × 17–20 mm at apex, broadening towards the bulbous base. Veil milky white; cortina white. Context lilac in pileus and upper stipe, white in base. Chemical reactions: KOH olivaceous on pileus, brownish on flesh and lamellae. Spores ovoid to largely ellipsoidal, the warts medium-sized to fairly broad, well distributed, protruding, (6.7–)7.3–8.7(−9.7) × 5.7–6.3 μm, L/B 1.2–1.4. Hymenium marginis sterile owing to the presence of several sterile cells, mostly sphaeropedunculate, sometimes subcapitate. Basidia medium to large, cylindrical or elavate, 2- or 4-spored, 36–45 × 7.5–10 μm. Epicutis hardly or not gelatinised. Hyphae large, cylindrical (5–)7–9 μm diam., interwoven, with erected tufts and round or lanceolate terminal cells. Subcutis indistinct. Clamps...
Fig. 12 *Cortinarius caeruleoëburneus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 510373. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
present, sometimes very large; veil of cylindrical hyphae 3.5–4 μm diam.

Habitat: Wet sclerophyll forest of *Eucalyptus obliqua*.

Etymology: From Latin caeruleus, sky blue, and eburneus, ivory, from the overall aspect.


Notes: Very pale (ivory looking) fungus with light lavender hues in all parts. This fungus was tagged as “ivory-capped” in the field, although in old age the cap becomes brown. Later examination revealed a fine lavender colour that is also the colour of the stipe, while the lamellae are more true lilac. The bulbous base, the presence of faint blue tinges, and the small round spores suggested for this species a place within the boundaries of *Caesiocorticini*. However, Garnica et al. (2005) found *Cortinarius caeruleobubrueus* nesting close to *Cortinarius vinaceolamellatus* Cleland, which shares with the present species the faint lavender colour and the round spores. Also, the two species form a cluster in the core of *Dermocybe*, with which they share the dry (or nearly so) fruit bodies and the type of spores which are generally obsolete (plesiomorph), i.e., round to short elliptical rather than elongated, amygdaliform or citriform (evolute, i.e., anamorph), and they are all included in a larger cluster including *Anomali* and *Amaraceous*, all showing an obsolete degree of evolution (Garnica et al. 2005).


Type species: *Cortinarius patibilis* Brandrud et Melot.

Description: Basidiomes with mauve/lavender colours, pileus mostly with blue tinges mixed with brown, presence of blue/lavender colour in stipe and lamellae, stipe clavate or sub-bulbous, never bulb-marginate, often, but not necessarily, with alkaline reaction yellow, or brown with a yellow halo.

Notes: ICBN Art. 33.12 (McNeill et al. 2006) states that the names used by Fries as subdivisions of genus and called tribes (tribus) in *Systema Mycologicum* are to be treated as subdivisions of genus (for the genus *Cortinarius* they have all been used as subgenera). However, nothing is specified for the other subdivisions (rankless) used by Fries (1821) within the tribes, which sometimes have a different name, in the following publications. These taxa, if used, should be treated as “nomen novum” as indicated in Art. 46.4.

In Brandrud et al. (1994) three Friesian subgeneric taxa are typified: *Cortinarius* Section *Heterocliti* (ex Fries S.M., p. 213), *Phlegmacioides* (= *Phlegmacioides*, Fries S.M., p. 222), and *Mollipedes* (Fr. Épic., p. 291). These sections are considered valid only from the time of the actual publication (Sep 1994). Section *Phlegmacioides* Fr. ex Brandrud et al., however, is illegitimate since, prior to it, the section *Patibiles* had been validated (Bidaud et al. 1990).

In addition, *Agaricus* sect. *Phlegmacioides* Fr.: Fr. is incorrectly written since Fries sanctioned species not infrageneric taxa. *Phlegmacioides* was used by Fries (1821) as a subdivision of tribe XIX (Inoloma) in genus *Agaricus*, tribe *Inoloma*, not *Cortinarius*. He probably used it as a nomen nudum, without any specific rank; to interpret it as a section of *Cortinarius* is, in my view, arbitrary.


Type species: *Cortinarius lavendulensis* Cleland.

Description: Pileus pale lilac to whitish lilac, staining brownish. Lamellae lilac to brownish. Stipe clavate, whitish, lilac. Alkaline reaction nil or uncertain (pale brown).

Notes: This group is morphologically similar to *Phlegmacioides* (= *Variecolores*), but Moser & Horak (1975) believed it had little connection with this group and included it in Section *Calochroi*. However, an ITS analysis has nested this group in Section *Phlegmacioides*, i.e., *Patibiles* (Garnica et al. 2005).

*Cortinarius lavendulensis* Cleland, *Transactions and Proceedings of the Royal Society of South Australia* 52, 217, 218 (1928)

Fig. 13

Description: Pileus 40–150 mm, convex, sometimes extremely irregular, in adult stage often deeply channelled radially to ½ way up, cuticle viscid to glutinous, in youth purple lilac to livid vinaceous, with
Fig. 13  *Cortinarius lavendulensis*. A, fruit body; B, spores; C, basidia and cystidia; D, pilei c hyphae. B–D drawn from HO 522415. Scale bars: A = 20 cm; B = 1:2000; C = 1:1000; D = 1:500.
Cortinarius ulematus Gasparini, sp. nov.  Fig. 14


Holotype: Australia, Tasmania, Tasman Peninsula, Clarks Cliffs Track, 350 m, G. Gates; B. Gasparini & D. Ratkowsky, 4 May 2002, HO 532506.

Description: Pileus 60–100 mm convex, cuticle viscid to slightly tacky, soon dry, innate-fibrillosse particularly at margin, lavender, liliaceous in CIC, superimposed by a pale brown veil particularly evident at the cap disc. Lamellae fragilis, fairly crowded, L. 57, 10 mm deep, straight, often fuscate/divergent, annexed, pale lavender, then amethyst, later brownish. Stipe 55–9 × 12–15 mm, terete, except for the sub-bulbous base, pale lilac mixed with white patches, and overcast with brown fibrils of the universal veil; base swollen in a indistinct bulb 26 mm diam., ending in a rooting point. Context firm, white except at the stipe apex, which is pale livid vinaceous. Veil brown, fibrillosse. Cortina permanent. Smell pleasant, fungineous. Taste mild. Chemical reactions: KOH grey-brown on cap, nil on context; Guaiac slow (blue); TL4, sulphate of iron, Meltzer’s, nil; silver nitrate, grey; FMP, phenol, fenoaniline, strong purple. Spores amygdaliforme, fusiforme in front view, finely warted or surface irregularly rough, (6.4–)7.2–8.3(–9.9) × (3.7–)4.3–5 μm, L/C 1.5–1.8. Hymenium margin almost sterile due to numerous sterile cells cylindrical, clavate, sometimes subcapitate, hardly protruding over the profile. Basidia mostly 2-spored, some also 4-spored, 29–35(–40) × 6–10 μm full of fine hyaline or yellow granulations. Pileipellis a comparatively thin layer, 50–100 μm thick, of slightly gelatinised hyphae 4–10 μm diam., often repent in tufts. Hypodermium subcellulare with ovoid (barrel-shaped) hyphae 20–25 μm diam. Yellowish pigment densely encrusting the hyphae. Clamps present throughout.

Habitat: Wet sclerophyll forests.


Notes: The identity of this species was confirmed by DNA analysis (Garnica et al. 2005) on comparison of the sequencing of some of the above collections with Cortinarius lavendulensis Perth 05506735. It is distinguished by the lavender lamellae, by the abundant white veil, and by the amygdaliform to subcitriform, medium–large spores. According to Bougher & Hilton (1989) the reaction to alkanis should be brilliant yellow, but the exsiccate show a red reaction. The species is highly variable; the cap may be regular or sulcate and umbonate, like a lady’s bonnet, and the colour may be deep purple to pale lavender.
Fig. 14  *Cortinarius idematus*. A, fruit body; B, spores; C, basidia and marginal cells; D, pileic hyphae. B–D drawn from HO 532506. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
habitat: Wet mixed forests.

eytymology: From Greek νεήμα, wood, forest, as it evokes the boreal taxon Cortinarius nemorensis Fr.

specimens examined: AUSTRALIA: TASMANIA: Mt Wellington, Cleg Road near Middle Track, G. Gates & D. Raitkowsky, 22 Apr 1998, PHN 980523A3; Tasman Peninsula, Clarks Cliff Track, 350 m, G. Gates, B. Gasparini & D. Raitkowsky, 4 May 2002, PHN A20504A0.

notes: The aspect and the shape of the spores indicate a Phlegmacium in sect. Phlegmacioides, but the spores are smaller than those of the species in the Northern Hemisphere. The structure of the pileipellis is also particular, reminiscent of Cortinarius serotinus (Fr.) Bidaud, Moënne-Locqu. et Remaux. The latter, though, possesses a fawn pigment, while in the present species the pigment is yellowish.

Subsection Malvacei (M.M. Moser et E. Horak) Gasparini, stat. nov.

basionym: Myxacium Section Malvacei M.M. Moser et E. Horak, Beihfete Nova Hedwiga 52, 240 (1975).

type species: Cortinarius malvaceus E. Horak.

description: Pale-coloured species. Veils generally gelatinised so that they are glutinous on pileus and stipe, mostly with a slight blue colour on the stipe and, occasionally, on the pileus.

notes: Originally, Moser & Horak (1975), although suggesting that this group seemed to be near Stiprs Lavendulensis, included it in Myxacium because of the overall viscosity. Horak & Wood (1990) suggested that Cortinarius astrolabidus Cleland & J. Harris ought to be considered as a Phlegmacium. Phylogenetically, Cortinarius lacteus is very close to Cortinarius astrolabidus (S. Garnica pers. comm.); they belong to a clade which includes Cortinarius pungionipes M.M. Moser, Cortinarius cervinus M.M. Moser et E. Horak from South America, and Cortinarius cretaceus Soop from New Zealand (Garnica et al. 2005).

Series Astrolabidi Gasparini, ser. nov.

diagnosis: Species glutinosissimae et coloribus niveis vel pallidis tandem stipitis apice caerulea, sporis ellipiticis.

type species: Cortinarius astrolabidus Cleland et J. Harris

description: Cap and stipe glutinous, caused by gelatinisation of the veil. Colours pale in the whole basidiome but sometimes with lilac hues on stipe summit. Spores elliptic.

Cortinarius astrolabidus Cleland et J. Harris, Records of South Australia Museum 9, 54 (1948) Fig. 15


description: Pileus 20–60–(80) mm diam., conical to orbicular, hemispherical, then convex to plane, quite regular, sometimes irregular, gibbous or undulate, margin incurved for long time, cuticle shiny, glabrous, becoming tacky, smooth or velvety-fibrillose, off-white, creamy buff with some pale reddish brown hues, occasionally with lilac or livid vinaceous hues. Lamellae medium—crowded, rather shallow, annexed or slightly emarginate, margin straight, whitish, pale brown or off-white without blue hues. Stipe 30–80 mm × 7–9(10) mm, cylindrical or slightly inflated at the base, occasionally also slightly inflated at the apex, rarely sub-bulbous, viscid when wet, fibrillose, longitudinally with fine striations, whitish, in some cases pale bluish-mauve at the apex, with debris of veil and cortina. Context white in cap and in stipe. Smell strong and unpleasantly spicy, reminiscent of curry, retained in exsiccata. Taste mild.

Basidiospores elliptical or ovoid to, sometimes, amygdaliform (7.5–)8.4–11.2 × (3.8–)4.2–6.7 μm, L/B 1.6–2.3(–2.8), finely ornamented. Hymenium basidia 30–37–(44) × 5–7 μm; sterile cells often filiform/cylindrical, c. 25 μm long. Epicutis with gelatinised hyphae thickly interwoven, cylindrical or subentiform, 5.2–6.7(–11) μm diam. Hypodermium tesselated. Cortex of ± parallel, cylindrical hyphae 7.5–9 μm diam. Veil of gelatinised filamentous hyphae 2.2–6.2 μm diam.

habitat: Wet sclerophyll forest.

specimens examined: AUSTRALIA: TASMANIA: Mt Wellington, Pipeline, A. V. Raktowsky, 6 Apr 1994, AMB 8506; Pipeline Track, A. V. Raktowsky, 8 Mar 1995, PHN 950308A0; Pipeline, A. V. Raktowsky, 13 Mar 1995, PHN 950313A2; Finger Post, A. V. Raktowsky, 9 Apr 1995, AMB 8509; Rivotlet Track, A. V. Raktowsky, 17 Apr 1995, PHN 950417A0; Rivotlet Track, A. V. Raktowsky, 10 Jun 1995, AMB 8516; Old Farm Road, A. V. Raktowsky, 14 May 1995, PHN 950514A0; Old Farm Road, A. V. Raktowsky, 12 May 1996, PHN 960512A1; Old Farm Track, A. V. Raktowsky, 25 May 1996, PHN 960525A3; Radfords Track, A. V. Raktowsky, 8 May 1996, PHN 960508A0A; Old Farm Track,
Fig 15, *Cortinarius austroalbidus*, A, fruit bodies, B, spores, C, basidia and sterile cells, D, surface hyphae of the pileus. B - D drawn from PHN 990413A2. Scale bars: A = 10 cm, B = 1:2000, C = 1:1000, D = 1:500
Cortinarius lacteus Gasparini, sp. nov.

**Diagnosis:** Pileus 25–80 mm convexo, deinde plano-depresso, paucis umbonato, e vere viscosa fibrillosa cute, nivea vel lacteal. Lamellis confertis, annexis aut emarginatis, lacteis, deinde brunneecentibus. Stipite 90 × 18 mm cylindraceo et basi attenuata radicanteque, viscido, fibroso, niveo, poeno ochraceo. Carne solida, nivea, sine odore; gusto mite. Sporis ellipsoideis verrucosus vel rugulosus 6.9–7.8 × 4–4.7 μm, L/C 1.6–1.8. Basidiis 24 × 26 μm tetrasporigenis.

**Holotype:** Australia, Tasmania, Tasman Peninsula, Clarks Cliffs Track, 350 m, G. Gates, B. Gasparini & D. Ratkowsky, 4 May 2002, HO 522420.

**Description:** Pileus 25–80 mm, convex, then planar or even depressed, with a slight umbo, cuticle viscid, fibrillosa, white or off-white with considerable buff hues. Lamellae fairly crowded, L = 75, annexed emarginate, shallow, 2 mm deep, straight, the margin slightly eroded-serrulate, whitish cream, later pale buff-brown. Stipe 90 mm × 18 mm, terete, the base tapered, rooting fairly deeply into the ground, viscidulous, very tough and fibrous, white, staining ochraceous. Context solid, white. Smell inconspicuous. Taste mild. Cortina abundant and persistent. Chemical reactions: KOH nil, guaiac ++, pheno-laniline slow and weak, FeSO₄ nil. Spores ellipsoid, verruculose or slightly rugulose, 6.9–7.8 × 4–4.7 μm, L/B 1.6–1.8. Hymenium margin nearly sterile because of numerous sterile clavate cells. Basidia rather small, 24–26 × 5–7 μm, 4-spored. Pileipellis ixotrichoderm of filamentous hyphae 1.5–3 μm diam. Presence of masses of an ochre yellow pigment. Clamps present. Veil formed by filamentous gelatinised hyphae 1–2 μm diam. with walls pigmented by a yellow extrahyphal pigment.

**Habitat:** Wet sclerophyll forests.


**Etymology:** From Latin lacteus, colour of milk.

**Notes:** A typical Phlegmo-Myxacium* in the Series Austroalbidæ, distinct from Cortinarius austroalbidus by its larger basidiomes, more crowded lamellae, absence of smell, and smaller spores that are clearly amygdaliform and more verrucose. A similar species, Cortinarius crelax Soop, was described from New Zealand (Soop 2001). However, the spores of the latter are slightly smaller and the stipe is dry. This corroborates my tenet that this group belongs in Phlegmacium rather than Myxacium. These two species were found to nest in the same clade but not very close to each other (Garnica et al. 2005).

**Section Caerulescents** M.M. Moser ex Moënne-Loccoz & Remaux, *Atlas des Cortinaires 1*, 33 (1990)

**Description:** Species with viscid pileus and dry stipe, with presence of colours with a blue component (sometimes very vague) at least in some part of the fruiting bodies, owing to plasmatic pigments. Stipe cylindrical, clavate, or bulbous.

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*This is merely a practical definition of those all-glutinous Cortinarius, which are not true Myxacium.
Fig. 16  *Cortinarius lacteus.* A, fruit body; B, spores; C, basidia; D, pilei. B–D drawn from HO 522420. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
TYPE SPECIES: Cortinarius velicopita Kauffmann, Agarics of Michigan, 339 (1918).

Subsection Caerulescentes Bidaud, Moënne-Locc. et Remaux, Documents Mycologiques XXIV(95), 39 (1994)

DESCRIPTION: Generally stout basidiomes ± bulbous with bluish or lavender colour, soon discoloring, often mixed with ochraceous or yellow hues. Lamellae lilac or white. Spores elliptical, amygdaliform or citriform.

TYPE SPECIES: Cortinarius velicopita Kauffmann.

Series Caesiocanescens Bidaud, Moënne-Locc. et Remaux, Documents Mycologiques XXIV(95), 44 (1994)

TYPE SPECIES: Cortinarius caesiocanescens M.M. Moser.

DESCRIPTION: Medium or large species with pileus predominantly lilac but soon discoloring, and a well-developed veil. Spores amygdaliform to lemon-shaped.

TYPE SPECIES: Cortinarius caesiocanescens M.M. Moser.

Subseries Volvatus Bidaud, Moënne-Locc. & Remaux ex Gasparini, subser. nov.


DIAGNOSIS: Species with pilea caerulea e niveo copioso, membranacea velo obtectae.

TYPE SPECIES: Cortinarius volvatus A.H. Smith.

DESCRIPTION: Medium-sized species with a blue pileus and a well-developed, volviform universal veil.

Cortinarius austrovaginatus Gasparini, sp. nov. Fig. 17


HOLOTYPE: Australia, Tasmania, Mt Wellington, Jackson's Bend, G. Gates, 25 Jan 1999, HO 511416.

DESCRIPTION: Pileus to 60 mm, convex, cuticle very viscid exuding much glutinous fibrilllose, vinaceous, superimposed on a brown background, to pale lilac-brown with buff margin that is festooned with remains of the white veil stained with the rusty spores. Lamellae close, moderately thick, adnate, lilac vinaceous when young, lilac brown at maturity, margin heterogeneous, whitish irregular, crenulated. Stipe 30–36 × 8–12 mm, robust, fibrilllose, cylindrical, lilac to lilac vinaceous, with heavy rusty chocolate-brown spore deposit, densely covered with velar remains. Bulb margrante, ampullacea to slightly turbinate, violet, but covered with a white sheath of the general veil in a sort of a volva. Veil white, submembranaceous. Cortina white, abundant and permanent. Chemical reactions: negative to alkalii on cap. Basidiospores lemon-shaped, broad with a very pointed emicro, warts broad, sparse, prominent, (9.7–)11.3–13.2 × 6.7–7.6(–8.2) µm, L/C 1.5–1.9.

Hymenium margin partiely fertile, basidia often study, broadly clavate, 1–2–4 spored, 22–30 × (6–)10–14 µm, in palisade with clusters of hyaline, stunted, cylindrical, broadly clavate, or ellipsoido-subspherical, sometimes septate, sterile cells (6–20 × 5–8 µm). Pileipellis brown. Ixocutis 250–350 µm thick, of cylindrical hyphae 4–7 µm diam., mixed with the filamentous hyphae of the veil, 2–4 µm diam., sometimes forked or diverticulated, with rare terminal round-headed cells. Subcistus rather tesselated or polygonal than subcellular. Cortex hyphae cylindrical 7.5–11 µm diam.

HABITAT: Wet Nothofagus forest.


ETYMOLOGY: From Latin austro, from the south, vaginatus, sheathed, a southern species similar to Cortinarius vaginatus M.M. Moser et E. Horak.

NOTES: This species appears to be related to the group of Cortinarius volvatus Smith. Very distinctive are the early season of appearance and the volviform
Fig. 17  *Cortinarius austrovaginatus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 511416. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
universal veil. The citiform, large, strongly ornamented spores are somewhat rare in Section Caerulescens. However, Cortinarius velicopia Kauffmann (and a few other species of the boreal hemisphere) possess such a type of spore. Cortinarius microarcheri, lilac in colour and with a membranous volva, was described by Cleland (1933) and lectotypified by Grigorinovic (1997). However, it was included in subgenus Myxmacium, and it is therefore supposed to be glutinous all over. Furthermore its spores are small (6.5–7 × 4.4–5.3 μm), elliptical or ovate, and entirely different from those of the present species. According to Moser & Horak (1975) the hyphae of the veil of Cortinarius microarcheri are 5–6 μm broad.

**Subsection Rozites** Gasparini, subsect. nov.

**Diagnosis**: Species mediae vel magnae e sape velo membranaceo obtectae, saltem in stipitis apice coeulescentes vel purpurascentes, sporis magnis, KOH reactionem nullam vel incertam praebet.

**Type species**: *Cortinarius caperatus* (Pers.) Fr.

**Description**: This is an ancient group of *Cortinarius*, represented in both hemispheres. Its members are characterised by a consistent universal and/or partial veil; bluish pigments, particularly in the lamellae and the stipe apex, large, amygdaliform spores; lack of or only a weak reaction with alkalies; and a dense ixocutis superimposing a subcellular hypoderm. Molecular research has demonstrated (Peintner et al. 2002a) that *Rozites meleagris* is monophyletic with *Rozites caperatus* and that *R. caperatus* is monophyletic with a group that includes *Cortinarius scarius* and *Cortinarius variecolor* (Holland & Holst-Jennsen 2000). Garnea et al.'s (2003) investigation, however, contradicts this affinity.

**Note**: Recent DNA studies (Holland & Holst-Jennsen 2000; Peintner et al. 2001, 2002a; Rees et al. 2003) have demonstrated that there are no natural boundaries between *Cortinarius, Rapacea, Cuphocybe*, and *Rozites*, plus the sequestrate genera Thaxterogaster, Protoglossum, Quadrispora, and Hymenogaster pro parte. The genera were artificial, based on characters that have developed independently from natural evolution; therefore these genera should all be included in either the genus *Cortinarius* or the genus *Telamonia*. Work published since 1995, especially on DNA, suggests that *Cortinarius and Telamonia* are monophyletic, independent taxa and that each might be of equal rank. The concurrent presence of inner and outer veils that are (sub)membranous does not justify the separation of a genus. The development of either veil is very likely to have occurred in different times and places. Either veil being membranous (or submembranous) is not exceptional in *Cortinarius* and *Telamonia*, a fact that was pointed out by Moser & Horak (1975). The sequestrate Thaxterogaster, now recognised as *Cortinarius* or *Telamonia* (Peintner et al. 2001), shows that the development of the various parts of the basidiomata and particularly of the veils is due to environmental conditions and has little to do with the phylogenetic evolution of the species. *Rozites* species will eventually be included in different genera and subgenera. The *Rozites* of the Southern Hemisphere are likely to be less related with one another and more related to those of the Northern Hemisphere. Speculations made by Horak & Taylor (1981), Horak (1983), Halling & Ovrebo (1987), and Bougher et al. (1994) about a genus that originated in the Southern Hemisphere and migrated northwards appear to have little ground. *Agaricus caperatus*, considered in genus *Agaricus* by Persoon (1801) and then Fries (1838), was placed in genus *Cortinarius* by Fries (1838). Karsten (1879) included it in the new genus *Rozites*.

**Cortinarius submeleagris** Gasparini, sp. nov.


**Holotype**: Australia, Tasmania, Lake Skinner Track, D. Raskowsky, 11 Apr 1999, HO 51037.

**Description**: Pileus 60–80 mm, initially hemispheric to convex, becoming more and more planar with maturity, the centre somewhat umbonate, the margin striate, cuticle very glutinous, medium brown, sometimes rusty tawny in the button stage, brick to cinnamon, or similarly tinted, irregularly covered.
with whitish scales, becoming more brown and less reddish brown with ageing; covered with pale brownish white velar remains at first, these disappearing when mature. Lamellae adnate to emarginate, very pale in the button stage with a faint lilac hue, becoming pale brown to medium brown. Stipe 70–100 × 10–15 mm, almost equal or base slightly enlarged, or sometimes expanded up to 20 mm, white, pale lilac at the top, with a thick membranous ring (annulus) situated more than ½ way up, rooting, squamulose, white, but covered with brownish velar remains especially in the bottom half. Universal and partial veils submembranous to membranous, white. Context white with lilac showing in youth at the stipe apex. Smell faint. Taste mild. Chemical reactions: unimportant (brownish) on flesh and cuticle with alkaloids. Spores broadly amygdaliform to citiform, occasionally ovoid, warts broad, irregular well protruding, 10.6–12.7(–12.7) × (6.7–)7.5–8.5(–9) μm, L/B 1.3–1.5. Hymenium margin fertile, basidia 1–2-, or 4-spored, 30–40 × 11.5–13 μm with hyaline or yellow granular contents; cystidia mostly clavate and small, exceptionally some large and well protruding. Epicutis <320 μm thick ixocutis of cylindrical hyphae 3.5–12.5 μm diam., loose above, getting denser toward the subcutis of subcellular profile with ellipsoidal to subglobose hyphae 12–15 μm diam. Some round terminal cells with yellow-brown pigment encrusting the thick walls. Tromboplerous hyphae present. Veil a tissue of parallel, short septate, somewhat broad, cylindrical or rather flat hyphae (2–)5–7(–10) μm diam.

Habitat: Very wet Nothofagus forest.

Specimen examined: AUSTRALIA; TASMANIA; Lake Skinner Track, D. Ratkowsky, 11 Apr 1999, HO 510373.

Etymology: Due to its apparent similarity to Cortinarius meleagris (E. Horak & Taylor) Peintner et al.

Notes: This species resembles Cortinarius meleagris or Cortinarius symeus. While the latter lacks bluish tinges, Cortinarius meleagris is characterised by the bluish tinges particularly at the stipe/pileus intersection, the very abundant veil which leaves a conspicuous amount of remnants on the pileus, the subhymenial annulus (partial veil), the barely viscid, or tacky pileus, greyish, soon becoming ochraceous, and the very large, round, dextrinoid spores. The present species differs in a more glutinous pileus, by a bulbous or sub-bulbous stipe, and smaller, amygdaliform spores, and being inert to Meltzer’s solution. In some ways the species is evocative of the European Cortinarius praestans Cord. This is, however, a much larger species with a webby cortina.


Type species: Cortinarius delibutus Fr.

This Section includes a wide range of small to medium (rarely large) Cortinarius, non-hygrophanous, dry or glutinous over the whole basidiome or only on the cap, sometimes only slightly viscid, mostly with pale colours, yellow or yellowish, cream with or without brownish, olivaceous, and/or blue hues. The stipe is usually cylindrical to clavate, seldom sub-bulbose. The spores are commonly ovate or subglobose in the Northern Hemisphere, but often elliptical or slightly amygdaliform in the Southern Hemisphere (Moser & Horak 1975; Moser in Singer 1986). The pileipellis with two distinct layers, or an epicutis indistinct from the hypoderm.

The limits of the Section are difficult to establish, especially if the species of both the Northern and the Southern Hemisphere are considered together. Even the microscopic features do not help in establishing clear borders. According to Bidaud et al. (1990) Section Delibutis should be grouped with Section Anomali Konrad & Maublanc. These authors also include Cortinarius salor Fr. in the group, considering it close to Cortinarius delibutus Fr.

Molecular research by Liu et al. (1997) supports the position of Anomali together with Delibutis within Phlegmacium, while awarding a separate, distant phylogenetic position to Cortinarius salor Fr. DNA studies by Høiland & Holst-Jensen (2000) do not support this separation. Peintner et al. (2004) and Garnica et al. (2005) did not support one clade including Anomali and Delibutis. The taxonomic position of the two groups needs further investigation.


Type species: Cortinarius anomalus (Fr.:Fr.) Fr.

This Subsection occurs in both hemispheres; those of the Northern Hemisphere have mostly round or ovoid spores and generally a dry pileus with the cuticle sometimes slightly viscid in wet weather, whereas those of the Southern Hemisphere possess more elongated spores, from elliptic to amygdaliform, and may present a distinct gelatinisation of the cap (Moser & Horak 1975).
Fig. 19 *Cortinarius memoriae-annae*. A, fruit body; B, spores; C, basidia; D, pileal hyphae. B–D drawn from HO 510354. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
**Cortinarius memoriae-annae** Gasparini, sp. nov.

**Fig. 19**

**Diagnosis:** Pileus 60–70(–100) mm lato, trapeziforme deinde planato, in juventute viscido vel glutinoso, deinde vellutato-squamuloso, e colore crenoso vel brunnescente. Lamellae confertae, situatae, adnatae-emarginatae, crenatae vel brunnescentes. Exodium brunneum-fulvis vel obscure bruneis. Stipite usque 120 mm lango, 15–20 mm crasso, clavato vel sub-bulboso, pilei colore similis vel pallidiore, base lutea, tecta lutescente. Carne solida, candida, sub pilei-pelle lutea, caesa lutescente. Ope reactionem KOH flavo-auratam praebente. Sporis ellipticiis, vel, crebro, amygdaliformibus, capitatae et subacuto, ex hurnilibus verrucis sine ordine ornatis (6).7–9.6 × (3.7)4.4–5.4(7.2) μm, L/C 1.6–1.9. Basidii claviformes vel cylindraceae, intus granulosae, rarissimae cheilocystidii, pleuro cystidiis non videmus. Pileipelle e gelatinosis, filamentosis confluentisque hyphis 3.7–6.7(7.5) μm crassis et profundiori strato subparallelibus, flavis, e brunneo pigmento incrustatis. Hypodermio subcellulare, e ellipticis vel subsaclericiis hyphis 11–20 μm crassis.

**Holotype:** Australia, Tasmania, Mt Wellington, Middle Track, A. P. Ratkowsky, 23 Apr 1996, HO 510354.

**Description:** Pileus 60–70 mm diam., occasionally up to 100 mm, trapezoidal, planar with age; cuticle slimy when young, velvety squamulose in older age, buff to brownish in colour. Lamellae farinae close, sinuate-notched, adnate-emarginate, buff to pale brown in youth, then rusty, brown to chocolate brown with age. Stipe solid, slender, up to 120 mm × 15–20 mm, often concrescent, clavate to slightly bulbous, concealing with the pileus or paler (creamy white), staining yellow upon handling. Context white (except yellow in the subcuticular area), upon cutting or bruising becoming instantly bright chrome yellow. Chemical reactions: KOH yellow on context, nil on cap; guaiac (+), fenoaniline, metal, FMP, gold chloride, silver nitrate, FeSO₄ nil; solvents such as water, ammonia, ethanol, lactic acid, and lactophenol bring out a yellow pigment. Basidiospores unequally elliptical or more often amygdaliform (Fig. 20), slender with narrow head and a fairly long apiculus, (6).7–9.6 × (3.7)4.4–5.4(7.2) μm, L/B 1.6–1.9, a surface roughened by shallow and indistinct warts. Hyphenum edge fertile, basidia 4-spored, 28–38 × 7.5–8 μm, clavate or cylindrical, protruding for ½ of their length, with granular contents. Cheilocystidia mostly clavate and short, occasionally filamentous or lanceolate, rare; pleurocystidia not seen. Trama regular, of cylindrical or slightly inflated parallel hyphae with masses of a chrome yellow pigment present among the hyphae. Pileipelle, suprapelle greyish to pale yellowish colour formed by a top layer of thin hyphae in some gelatine, 3.7–6.7–(7.5) μm diam.
mixed with those filamentous of the veil 1.5–5.2 μm diam. Epicutis of thickly interwoven hyphae of bright yellow, fulvescent in KOH. Clamp connections present throughout. Several hyphae encrusted by a brownish extrahyphal pigment in large patches. Hypodermium of subcellular profile with ellipsoid to globose hyphae, 11–20 μm diam. Cortex of yellowish hyphae, cylindrical to 15 μm diam.

Habitat: Wet sclerophyll forests.

Specimens examined: AUSTRALIA: TASMANIA: Mt Wellington, Pillinger Track, A. V. Ratkowsky, 3 Mar 1994, PHN 94033A0; Middle, A. V. Ratkowsky, 10 Mar 1994, PHN 940310A0; Middle Track, A. V. Ratkowsky, 9 Apr 1995, PHN 950409A0; Pillinger Track, A. V. Ratkowsky, 7 Mar 1995, PHN 950307A0; Middle Track, A. V. Ratkowsky, 12 Apr 1995, PHN 950412A0; Pipeline Track, A. V. Ratkowsky, 21 Apr 1996, PHN 960421A0; Middle Track, A. V. Ratkowsky, 23 Apr 1996, PHN 960423A0; Pillinger Track, A. V. Ratkowsky, 25 Apr 1997, PHN 970425A3; Middle Track, G. Gates, 27 Feb 1999, HO 529023; Gordon Valley, Growling Swallett, B. Gasparini, 2 May 2002, HO 529024; Yarra Forest, collector and date unknown, DAR 55995, WAT 19346.

Etymology: In memory of Ann V. Ratkowsky.

Notes: Slender, medium-sized, pale fungus, mostly ascomitiphore. A collection from Yarra Forest (DAR 55995), studied by Watling, reported in Gills & Steglich (1987) and held at the NSW Rydalmere herbarium, was easily identified macroscopically and microscopically to be the present species. The description in Gills & Steglich (1987) has not been widely published.

The solubility of the pigment initially suggested a relationship with *Dermocybe*. However, Gills & Steglich (1987) found that the pigment was a very unusual chromogen for higher fungi, 6-iso-vanillic acid (from the shikimate-chorismate chemical pathway). This pigment is of different biological synthesis from the polyketide pigments possessed by many *Cortinarius* (particularly *Dermocybe*), but it characterises the species, which is easily recognised in the field by its pale colours, slender habit, and, above all, the remarkable change of its flesh colour to yellow with bruising or cutting, and by its bright golden yellow reaction to alkalis. The species has also been found in New Zealand (K. Soop pers. comm.). The aspect of the basidiomes and structure of the epicutis suggest a position in the Subsection *Anomalii*, with which R. Watling (pers. comm.) agrees, but molecular studies (S. Garnica pers. comm.) have found that this species occupies an isolated position close to *Phlegmacioides*, i.e., *Patiblei*. The yellow reaction to alkalis may also suggest a relationship with *Patiblei*. The inclusion here in *Anomalii* is therefore provisional.

In one collection (PHN 94033A0), many differentiated chilocystidia were present; in another (3 Apr 1995, not listed above), some ciliate cystidia showed encrustation indicated by colouring in alkaline fuchsin. These specimens need further investigation in order to establish if they are different taxa.

Series *Salon* Bidaud, Moënne-Loccoz et Remaux, *Documents Mycologiques* **XII** (93), 44 (1994)

Description: Species with a glutinous cap and stipe, coloured all over in violet or grey-lilac, occasionally mixed with white or yellow. Spores subglobose or broadly ovoid.

Type species: *Cortinarius salmon* Fr., *Epicrisis*, 276 (1838).

*Cortinarius quaeresimalis* Gasparini, sp. nov.

Fig. 21


Holotype: Australia, Tasmania, Duckhole Lake Track, 150 m, G. Gates, B. Gasparini & D. Ratkowsky, 6 Jun 2002, HO 522434.

Description: Pileus 20–50 mm, convex; cuticle very glutinous, hygrophanous, light violet, later purple, or

Fig. 21 *Cortinarius quaeresimalis*. A, fruit body; B, spores; C, basidia and cystidia; D, surface hyphae of the pileus. B–D drawn from HO 522434. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig 21. *Cortinarius quaresimalis*. A, fruit bodies; B, spores; C, basidia and cystidia; D, surface hyphae of the pileus. 

darker than livid vinaceous in CIC, the centre lighter as it ages, with a brownish disc; margin becoming very fibrillose almost rimose, with dark violet fibrils. Lamellae not very close, 1 = 42, 1–2.7 mm deep, annexed, lilac, then purple eventually ochraceous, sometimes without traces of lilac, margin entire, undulate. Stipe 95 × 6 mm, bulbillose, base <12 mm broad, otherwise terete, glabrous, deep violet. Context concolorous with the outer part of the stipe, light violet. Veil violet, glutinous and fibrillose on stipe. Cortina glassy, similar to that of C. archeri. Smell of radish. Taste nil. Chemical reactions: KOH trivial (brownish) on cap and lamellae; TL4, Meltzer’s none. Spores subgloboso to ovoid, (5.9–)6.3–7.7(–9.3) × (4.9–)5.4–6.3(–7.4) μm, L/B 1.1–1.3, verrucose. Hymenium margin substerile because of numerous clavate, short-clavate or subspherical to pedunculate sterile cells. Basidia 30–35 × 6–8 μm. Pileipellis somewhat shallow, ixocutis 30–50 μm deep, of cylindrical hyphae 5–7 μm diam., tightly interwoven; no subcutis. Clamps present. Pigment plasmatic yellow-brown.

Habitat: Very wet mixed forest.


Etymology: From the violet colour of the church vestments during quaresima, Latin for Lent.

Notes: Unlike all other glutinous, violet Cortinarius described here, Cortinarius quaresimalis possesses a habit and spore shape strongly reminiscent of Cortinarius salor Fr. Its spores, however, are smaller and, unlike C. salor, it smells of radish and the cortina has a submembranous consistency. Several DNA tests have indicated that Cortinarius salor, despite having a glutinous veil, belongs to Phlegmacium rather than Myxacium. Liu et al. (1997) suggested an independent position, while Hoiland & Holst-Jennsen (2000) found it to be near Cortinarius delimitatus. I have assumed the latter relationship.

Subsection Spilomei Bidaud, Moënne-Loeze, et Remaux, Atlas des Cortinaires 1, 16 (1990)

Description: Basidiomes medium-sized, pileus slightly hygrophanous, or pseudohygrophanous, veiled red or reddish leaving scales on stipe, spores ovoid to subglobose.

Type species: Cortinarius spilomeus (Fr.:Fr.) Fr.

Cortinarius sclerophyllarum Gasparini, sp. nov.

Fig. 22


Holotype: Australia, Tasmania, Mt Field National Park, Lyre Bird Track, 700 m, G. Gates, D. Ratkovsky & B. Gasparini, 30 Apr 2002, HO 522407.

Description: Pileus 25–32 mm, convex, then expanded, umbinate, the cuticle dry, fibrillose, hygrophanous, deeply striate/sulcate at the margin, a very pale incarnate-vinaceous, stains vinaceous, disc just darker, brownish, the margin darker. Lamellae distant, L = 24, 4–5 mm high, ventricose, annexed to detached, purple vinaceous or amethyst, the margin almost smooth. Stipe long and stiff, sometimes twisted or incurved, <70 mm × 3 mm, cylindrical, deep violet in the upper ¾, becoming paler, somewhat whitish in the lower potion, maculated with tiny red scales reminiscent of Cortinarius spilomeus Fr. Context pale vinaceous in the pileus, lilac at the apex, white in the lower part of the stipe. Veil vinaceous. Cortina evanescent. Smell not noticeable. Taste mild. Chemical reactions: KOH honey brown on cuts. Spores subgloboso to ovoid, the warts small, labyrintheiform, (6.4–)7–8 × (4.9–)5.7–6.8(–7.4) μm, L/C 1.1–1.3. Hymenium margin partly fertile, the basidia 4-spored, 22–25 × 7–9 μm, sterile cells <32 × 10 μm, clavate; no particular cystidia seen. Pileipellis very thin layer of cylindrical hyphae 4–5 μm diam., occasionally repent with some terminal hyphae <18 μm diam., subcapitate. Hypoderium hardly distinct, hyphae becoming shorter, ellipsoidal or subglobulose, 12–30 μm diam. Clamps present. Cortex, parallel, cylindrical hyphae 4–5 μm diam., with some repent lanceolate hairs, all with remarkable incrustations.

Habitat: Rain forest.

Specimens examined: AUSTRALIA: TASMANIA: Mt Field National Park, Lyre Bird Track, 700 m,
Fig. 22  *Corinarius sclerophyllarum*. A, fruit body; B, spores; C, basidia and marginal cells; D, pileic hyphae. B–D drawn from HO 522407. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Cortinarius rotundisporus Cleland et Cheel, Transactions and Proceedings of the Royal Society of South Australia 42, 96 (1918)  Fig. 23

SYNONYMS: Cortinarius austroevernensis Cleland et Cheel; Cortinarius oleagineus Cleland et J. Harris, according to Horak & Wood (1990).

DESCRIPTION: Pileus to 40 mm diam.. hemispherical, shallowly conical to convex even at maturity, shallowly umbonate; cuticle very glutinous, tacky or viscid, fibrillose, often squamulose on disk, scales decreasing toward the margin, distinctly coloured steely blue, aquamarine, leaden grey, deeply suffused with brown or reddish brown. Lamellae not very crowded, slightly emarginate, pinkish until browning from the ripening of spores. Stipe to 60 mm × 10–15 mm near the base, narrowing to c. 5 mm, then swelling into a clavate shape, white. Context white. Smell and taste bitter. Chemical reactions: KOH on cap cuticle pinkish; TLI on context practically nil. Basidiospores very broadly elliptical to subglobose 7.7–9.2 × 6–6.9 μm, L/B 1.2–1.4, warts distinguished, medium-sized, prominent over the profile. Basidia 35–40 × 6.6–7 μm, no cystidia noted. Pileipellis ixocutis of filamentous gelatinised hyphae 3–4.5 μm diam., subparallel or interwoven and mixed with veil hyphae 2–2.2 μm diam., often diverticulate, forked and with terminal hyphae rounded or subcapitate, strongly encrusted by a greyish brown pigment. Hypodermium indistinct, hyphae mostly cylindrical or inflated to 4–7 μm diam.

HABITAT: Wet Eucalyptus forest.


NOTES: In the field this species is easily recognised by the convex, slimy grey cap, mixed with several different colours, reddish brown, brown, green, blue, the white, equally viscid stipe, the bitter taste, and the round spores. Horak & Wood (1990) and Bougher & Syme (1998) considered this species synonymous with Cortinarius austroevernensis Cleland et Cheel and Cortinarius oleagineus Cleland et J. Harris, while Grigorinovic (1997) considered the three species to

sectio Rotundosporati Gasparini, sect. nov.


TYPE SPECIES: Cortinarius rotundisporus Cleland et Cheel.

DESCRIPTION: Basidiomes medium-sized, wholly glutinous, cap grey, greenish, or bluish, often mixed with brown or reddish colours. Stipe cylindrical or clavate. Spores globose, ovoid, or amygdaliform.

NOTES: The habit, presence of bluish tones, and round spores might suggest a relationship with Cortinarius salor group. Horak & Wood (1990) considered both Cortinarius salor and Cortinarius rotundisporus to be mycological relics. DNA investigations by Sawyer et al. (1999) have shown a phylogenetic position of Cortinarius rotundisporus near to Cortinarius delibutus and very far from Cortinarius salor. This conflicts with the findings of Hooland & Holst-Jensen (2000). Peintner et al. (2004) and Garnica et al. (2005) confirmed that Cortinarius rotundisporus belongs to a sister group to Cortinarius delibutus.

In the belief that an affinity with other Cortinarius should be confirmed, it is here chosen to keep Cortinarius rotundisporus in a separate section.
Fig. 23  *Cortinarius rotundisporus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from PHN A2060601. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
be distinct. Molecular work by Sawyer et al. (1999) indicates the possibility of a *Cortinarius rotundisporus* complex. The specimens examined described from Tasmania and those from New Zealand (Soop 2001) show considerable variability.

**Section Vibratiles** Melot, *Document Mycologiques* XX(77), 99 (1989)

**Description:** Species medium-small with pileus and stipe viscid. Pileus yellow, fulvous, or white, lamellae pale, stipe white or yellowish.

**Type species:** *Cortinarius vibratilis* (Fr.:Fr.) Fr.

**Notes:** In the Northern Hemisphere the Section which Melot (1989) included in subgenus *Myxacium* has small, ellipsoidal spores and all species so far described are + bitter in taste. In the Southern Hemisphere, several species are mild-tasting and spores are often amygdaliform according to Moser & Horak (1975).

**Series Barbati** Gasparini, ser. nov.

**Diagnosis:** Species glutinosae, mediocre, amarissimae fere omniae albae.

**Type species:** *Cortinarius barbatus* (Fr.:Fr.) Fr.

**Description:** Basidiomes rather small, white, bitter.

**Cortinarius austrocausticus** Gasparini, sp. nov.  
Fig. 24


**Holotype:** Australia, Tasmania, Gordon Valley, Little Florentine River, Growling Swallet, G. Gates, 2 May 2002, HO 522424.

**Description:** Pileus 20–27 mm diam., semiglabulo, the cuticle glutinosus, the gluten being bitter, fibrillose, white with a fawn disc and concolorous fibrils extending radially. Lamellae rather distant, L = 38, 1.3, 5 mm high, slightly ventricose, the margin straight, white becoming cream. Stipe 50 mm × 4–5 mm, clavate, fibrous, glutinous, white with an upper ring of the cortina. Context white, stipe empty.


**Habitat:** Very wet rain forest.


**Etymology:** A southern species, reminiscent of *Cortinarius causticus* Fr.

**Notes:** Characteristic in this species is the fawnish disc that distinguishes it from similar species. Apart from this, it is recognised by the viscosity and white colour in all parts, and the small ellipsoidal spores.

**Section Scauri** (Fr.) Henn., *Pflanzenflora I, 1*, Fasc. 181, 249 (1899)


**Description:** Colourful small to large species, yellow, green, red, or violet on cap, gills, and stipe. In two subsections, blue-purple reaction to Lugol, Meliter’s, and TL4 reagents.

**Notes:** The Section *Thallophili* was extended to include all *Phlegmacium* reactive to TL4. The type (*Cortinarius scaurus*) included by Hennings (1899) established the priority of this section over any other *Cortinarius* section including the same type (ICBN Art. 7; McNeill et al. 2006). Not all *Cortinarius* assigned to this section react to TL4 (e.g., Subsection *Panchiat*, see below, and Subsection *Subpolitispori* which includes white to whitish species which are not responsive to the above reagents and have almost smooth spores whose print is ochraceous or greenish), while this reaction seems to be an essential character of Subsections *Purpurascentes* and *Myxarioidei*.

**Type species:** *Cortinarius scaurus* Fr.
Fig. 24  *Cortinarius austrocaudatus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 522424. Scale bars: A = 5 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig. 25  *Cortinarius australis*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 522426. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Subsection Purpurascens Bidaud, Moënne-Loccc.
et Remaux, Atlas des Cortinaires 1, 17 (1990)

DESCRIPTION: As for the section. Also, often bruising
sordid purple on handling (oxidation), and showing
a purple reaction to iodine reagents (e.g., Lugol or
Meltzer's) and thallium compounds.

TYPE SPECIES: *Cortinarius subpurpurascens* (Batsch)
Fr.

*Cortinarius australis* Gasparini, sp. nov.  
**Fig. 25**

DIAGNOSIS: Pileo 40–50 mm convexo, haudd umbonato,
margine ricurvo cutis viscidac, fibrillosa, crebro
fissa, avellanea, e purpureis coloribus permixa. Lamellae
das umbilicatis, adnato-emarginati e margine
serratulo, purpureae. Stipite 60 × 5 mm cylindraceo,
poenè incurvatus e basi 10 mm lata, violacea, tecta
sordescence. Carne in pileo avellanea-purpurea,
lactea in stipite. Velo violaceo. Ope TL4 cuticula
carnecoque purpuream reactionem praebet. Sporis
ellipticissimi vel subamygdaliformiis (7.4–)8.1–9.3–
(9.8) × (4.9–)5.4–6.2–(6.4) μm, L/C 1.4–1.6, paucè
ornatis. Basidiis bi- vel tetrasporigenis, 28–32 ×
8–10 μm. Ixocute e cylindraceis hyphis 3–6 μm.
Hyphodermium subcellulare e ellipticis vel subglobose
hyphis 15–25 μm latis.

HOLOTYPE: Australia, Tasmania, Lake St Clair,

DESCRIPTION: Pileo 40–50 mm, convex, with a
flat umbo, the margin incurved, the cuticle viscid,
slightly fibrilllose, easily cracked, with buff
undertones, or brick to chestnut superimposed by
purple vinaceous tones. Lamellae medium crowded,
L = 50, adnato-emarginate, shallow, 3 mm deep,
the margin wavy, slightly denticulate, purple
becoming rusty purple. Stipe sometimes concrescent,
60 × 5 mm, cylindraceous, slightly recurved, base
thickened <10 mm diam., violaceous, similar to that
of *Cortinarius subpurpurascens*, bruising darker.
Context firm, concolorous with the pileus, whitish
in the middle, lilac under the cortex. Veil violaceo,
fibrilllose. Cortina evanescent. Smell slightly
spormatic. Taste mild. Chemical reactions: KOH nil,
Lugol uncertain, TL4 positive, violet. Spores ellipsoidales
vel subamygdaliforme (7.4–)8.1–9.3–(9.8) ×
(4.9–)5.4–6.2–(6.4) μm, L/B 1.4–1.6, the wars
very shallow, sparse. Hymenium margin fertile,
basidia 2- or 4-spored, 28–32 × 8–10 μm; cystidia
rare, claviforme. Pilepellis ixocutis 150 μm deep,
of densely interwoven filamentous hyphae 3–6 μm
diam. Hyphodermium subcellulare, hyphae ellipsoidales
to subglobose 15–25 μm diam.

HABITAT: Wet mixed forest.

SPECIMENS EXAMINED: AUSTRALIA: TASMANIA:
Lake St Clair, G. Gates, 20 Apr 2002, HO 522426,
PHN A20420A0.

ETYMOLOGY: From Latin australis, southern, in con-
traposition to *Cortinarius occidentalis* Smith from
the Northern Hemisphere which belongs to the same
group.

NOTES: The species is characterised by the dull
vinaceous hues on the pileus, the purple-violaceous
lamellae and stipe, the bruising on handling, and
the purple reaction to TL4. The uncertain reaction
to Lugol was possibly due to the reagent’s having
deteriorated. The appurtenance to *Purpurascens*
was confirmed by DNA examination (Garmica et
al. 2005).

*Cortinarius pseudoporphyropus* Gasparini, sp.

**Fig. 26**

DIAGNOSIS: Pileo convexo 35 mm lato, cuticula vis-
cida, fibrillosa, purpurea vel purpureo-spadicea
apud disco vinoso. Lamellae emarginate, purpureae.
Stipite 60 × 5 mm, clavato vel sub-bulboso, basi
crasiuscula, lilaceo, purpureo vel porphyromutato.
Carne lilacea. Velo violaceo. Ope Meltzer atque
TL4 cuticula carneoque purpurea reactionem praebet.
Sporis, ellipticis, 9.1–10.3 × 5.7–6.9 μm, 
L/C =1.4–1.7, verrucosis, basidiis tetrasporigenis,
35–40 × 7–9 μm, ixocutis et filamentosis hyphis
3–5 μm crassis. Hyphodermium subcellulare.

HOLOTYPE: Australia, Tasmania, Mt Field Na-
tional Park, Tall Trees Track, 200 m, G. Gates,
D. Raktowsky & B. Gasparini, 28 May 2002, HO
5209014.

DESCRIPTION: Pileus 35 mm, convex, cuticle sticky,
inmate-fibrillosa, purplish, purplish date in CIC,
darkish vinaceous on the cap-disc. Lamellae med-
ium-spaced, L = 38, 1:2, 3 mm deep, emarginate,
livid vinaceous, margin smooth. Stipe 60 × 5 mm,
slightly clavate-bulbous, base 9 mm broad, pale
violet with darker zoning markings, uncertainly
staining at manipulations. Context pale violet.
Veil violet, hardly evident. Cortina evanescent. Chemical
reactions: KOH untested; Meltzer’s and TL4 positive,
violet on cap and stipe. Basidioiopes ovoid to
ellipsoidales, warts broad, tall, regularly distributed,
9.1–10.3 × 5.7–6.9 μm, L/B 1.4–1.7. Hymenium
margin fertile, basidia clavata, 4-spored, 35–40 ×
7–9 μm. Epicutis in a very thin ixocutis of filament-
tous hyphae 3–5 μm diam. followed by a layer of
broader, cylindrical or slightly ellipsoidales, parallel
hyphae and by a subcellular hyphodermium of ellipti-
cal or subglobose hyphae 20–30 μm diam.
Fig. 26  *Cortinarius pseudoporphyrobus*. A, fruit body; B, spores; C, basidia; D, pileiphal hyphae. B–D drawn from HO 529014. Scale bars: A = 5 cm; B = 1:2000; C = 1:1000; D = 1:500.
Habitat: Wet mixed sclerophyll forest.

Etymology: From Greek, vertex, false, and porphyropus, as similar to Cortinarius porphyropus (Alb. & Schw.) Fr.


Notes: This species bears a remarkable resemblance to Cortinarius porphyropus (Alb. & Schw.) Fr., whose spores are smaller and which occurs in a different habitat. It differs from Cortinarius australis by having a more intense violet colour in all parts, a convex not umboatate cap, and spores larger and strongly warted.

The systematic position in Subsection Purpurascens has recently been confirmed for both of the species placed here in that subsection by DNA analysis (S. Garnica pers. comm.).

Cortinarius chalybaeus Soop, Cortinarius singularis Soop, and an unpublished species from New Zealand also appear to belong to this section (K. Soop unpubl. data; S. Garnica unpubl. data). This group seems to be quite spread out globally as species have been recorded from North and Central America (Jamaica) and Europe under Pinaceae and Fagaceae, as well as South America (Nothofagaceae and Myrtaceae). The bi-hemispheral presence and the considerable differentiation of the species (particularly in the Southern Hemisphere) indicates a very ancient origin of this group.

Subsection Myxacoides Gasparini, subsect. nov.


Type species: Cortinarius submagellanicus Gasparini.

Description: Medium- to small-sized fleshy species, brown, purple, dark blue, or purpureous. Stipe smooth, white or lilac. Lamellae brown or violet. Spores elliptical to subamygdaliform. Cheilocystidia clavate or spheropendunculate.

Notes: The species of this subsection have the habit of Myxacium, but the purple reaction to iodine and thallium reagents casts a doubt on their position, and they have been found to be nested in Purpurascences (Garnica et al. 2005).

Cortinarius submagellanicus Gasparini, sp. nov.

Fig. 27


Holotype: Australia, Tasmania, Mt Wellington, Rivulet Track, A. V. Ratkowsky, 16 May 1995, HO 522423.

Description: Pileus 30–50 (60) mm, convex, growing irregularly planar, often depressed. Cuticle very glutinous, smooth, hygrophanous, brown-amethyst or purple-brown, date brown mixed with violet; margin very striate. Lamellae not very close, L = 47, 1:2, 5 mm deep, annexed-emarginate, pale lilac, then brown, margin straight. Stipe <90 × 5 mm, bullulose base <9 mm diam., with cottony violaceous (lilac) mycelial threads, slightly tapered in the middle, pale lilac covered with pale fibrils which make a winding effect, viscid, liberally covered by the filamentous remains of a dark veil. Context watery brown in cap, lilac in empty stipe getting brown toward the base. Veil dark lilac, fibrillose on stipe. Cortina, scarce. Smell strongly aromatic, fruity. Taste nil. Chemical reactions: KOH nil (or doubtful pink-brown) on cap, nil on flesh; TL4 violet; Meltzer’s purple. Basidiospores ovoid to ellipsoidal, verrucose (8.3–)8.7–10(–10.8) × (4.6–)5.5–6.5(–6.9)
Fig. 27 *Cortinarius submagellanicus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from PHN 20518A1. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
Cortinarius elatospitatus Gasparini, sp. nov.

**Fig. 28**


**Holotype:** Australia, Tasmania, Kermandie Falls, Lower Track, 120 m, G. Gates, B. Gasparini & D. Ratakowsky, 8 Jun 2002, HO 522412.

**Description:** Pileus 35 mm convex then flat with a broad umbo around a depression. Cuticle very glutinous, purplish brown to brick with vinaceous hues, cap disc ochraceous, margin striate to the cap disc. Lamellae hardly crowded, L = 40, 1:3, 6 mm deep, annexed, purple, then brown with lilac hues; margin entire. Stipe viscid, 75 × 5 mm, bulbous, base 10 mm broad, lilac, with lilac mycelium at the base. Context lilac. Veil unobtrusive. Cortina traces on the stipe. Smell of raw potato, sometimes reminiscent of parsley. Taste mild. Chemical reactions: KOH nil, TL4 and Meltzer’s purple. Spores ovoid, elliptical, sometimes pip-shaped or navicular, warts sparse or subdense, irregular, fairly broad, protruding, (8.8–)9.2–11.3(–14.6) × (4.9–)5.5–6.2(–6.8) µm, L/B 1.5–2. Hymenium margin almost sterile due to the presence of numerous sterile cells, shortly clavate or sphaeropedunculate, 10–15 µm, hardly or not showing in silhouette. Basidia medium 28–33 × 7–8.5 µm, 2- or 4-spored, sterigmata <5 µm long. Pileipellis, gelatinised stratum c. 100 µm thick, of filamentous hyphae 3–7 µm diam. mixed with the filamentous hyphae of the veil 0.75–1.5 µm diam. Pigment plasmatous yellow. Hypoderma hardly distinct, hyphae getting broader elliptical to subglobose <20 µm diam. Clamps present throughout.

**Habitat:** Very wet sclerophyll forest.

**Etymology:** From the Latin elatus, tall, and stipes, stipe.
Fig. 28  *Cortinarius eleotripilatus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 522412. Scale bars: A = 5 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig. 29  *Cortinarius madidus*. A, fruit body; B, spores; C, basidia and cystidia; D, pilei hyphae. B–D drawn from HO 533234. Scalebars: A = 5 cm; B = 1:2000; C = 1:1000; D = 1:500.

notes: This species is not dissimilar to Cortinarius submagallanicus; yet the colour of the cap is more reddish, the stipe lacks the typical blue band on a whitish background, the flesh is violet throughout, and the spores are on average larger and more slender. The smell of Cortinarius submagallanicus is pleasant; the smell of the present species is unpleasant, like raw potatoes or parsley.

Cortinarius madidus Gasparini, sp. nov. Fig. 29

description: Pileus 20–50 mm, convexus; cuticula considerable rugulosa, verum glutinosum, hygrophanus, dark violet, but lighter than 82 in CIC, cap disk amethyst, central point brown. Lamellae not very close, L = 42, 1.2, 7 mm deep, annelled, ochraceous with lilac splotches, then brown, margin straight. Stipe 95 mm × 6–7 mm, bulbillose base <12 mm broad, otherwise terete, pale violet; violet mycelium in rhyzomorphs at the base. Context concolorous with the outer part of the stipe, light violet. Veil violet, fibrillose on stipe. Cortina rather scarce. Smell spermatic. Taste nil. Chemical reactions: KOH red brown, darker than vinaceous in CIC on cap, nil on flesh, TL4 violet; Meltzer’s purple. Spores ovoid, considerably verrucose; warts medium, well protruding (7.8–8.3–9.6–(10.8) × (4.9–5.2–6.2–(6.9) μm, L/B 1.4–1.6. Hymenium margin nearly sterile due to numerous sterile cells, clavate or subcyldrical 18–50 × 7–9 μm, basidia 40–50 × 8–9 μm. Pileipellis ixocutis of filamentous hyphae 3–5 μm diam., strongly encrustated by a yellow pigment, mixed with the veil hyphae 1–2 μm diam. Hypoderium subcellular, hyphae elliptical or globose 12–25 μm diam.

habitat: Very wet Nothofagus forest.

etymology: From the Latin madidus, wet, for its glutinous aspect.


notes: This very glutinous species is well characterised by its deep violet colour, similar to that of Cortinarius violaceus, its reaction both to alkaline and to iodine/TL4 reagents, and by the strongly verrucose spores. The ringlets that characterise Cortinarius submagallanicus are missing and the spores are broader.

All three above species share the main characters that justify including them in the Subsection Myxacioidei.

Subsection Panchroi M.M. Moser et E. Horak, Beihfte Nova Hedwigia 52, 173 (1975)
type species: Cortinarius panchrous E. Horak.
description: Species with vivacious colouring, yellow, ochraceous, green, lilac, lavender. Stipe cylinadrical or clavate-bulbous, never bulbo-marginate. Chemical reactions: KOH nil or brownish on cap. No reaction with iodine and thallium reagents.

Cortinarius austroycanites var. brunyiensis Gasparini, var. nov. Fig. 30

diagnosis: Ab typo differt et subdistantibus lamellis, non marginatulo bulbo, suave odorique.

**Cortinarius salmaster** Gasparini, sp. nov.  Fig. 31

**Diagnosis:** Pileus <35 μm lato, convexo, sepe umbonato, e cute viscida fibrillosa, atro-virido-grisea. Lamellae confractis, annexis, griseo-venetis vel griseo-caeruleis, e margine integro. Stipitum ligneo, 45 mm longo, 6 mm lato, attenuato, radicante, albido vel pallido e apice caeruleo. Carne albida, stipitis apice caeruleolente. Odore chlorosus. Sporis ellipticiis verruculosus, 6.7–7.6 × 3.9–4.6 μm, L/C 1.6–1.8 μm. Basidiis clavatis, tetraradigenesis. Pileipelle e media ixocute cylindraceorum hyparum 7–10 μm crassus, cum vell hypis 2 μm crassis permixtis.

**Holotype:** Australia, Tasmanien, Mt Field National Park, Tall Trees Track, G. Gates, D. Ratkowsky & B. Gasparini, 28 May 2002, HO 522427.

**Description:** Pileus <35 mm, convex, cuticle viscid, fibrillosum, dark grey-green. Lamellae fairly crowded, L = 60, 1:1, 3 mm deep, annexed, pale grey, the margin entire. Stipe woody hard, 45 mm × 6 mm, tapering to the base which is pointed and deeply rooted like that of *Duracini* (bird beak shape), white, pale lilac at the apex. Context white, pale lilac at the intersection of the pileus with the stipe. Veil brownish, filamentosus. Cortina evanescente. Smell of chlorine. Taste mild. Chemical reactions: KOH brown on cutis and lamellae, TL4 nil. Spores ellipsoidalis, verruculosus, almost smooth, 6.7–7.6 × 3.9–4.6 μm, L/B 1.6–1.8 μm. Hymenium margin fertile, basidia 4-spored, clavate, 23–35 × 5–8 μm, sterile cells, ordinary, clavate. Pileipellis medium ixocutis, c. 200 μm thick, of cylindrical hyphae 4–7 μm diam., mixed with the filamentous hyphae of the veil 1–2 μm diam., on top of a cutis of cylindraceous or slightly inflated short septate hyphae 7–10 μm diam., gradually merging into an indistinct hypoderium with pseudoparenchymatic profile of polygonal or ellipsoidal hyphae <30 μm diam. Clamps present. Pigment plasmatic, olivaceous.

**Habitat:** Mixed sclerophyll forests.

**Specimen Examined:** Australia: Tasmanien, Mt Field National Park, Tall Trees Track, G. Gates, D. Ratkowsky & B. Gasparini, 28 May 2002, HO 522427.

**Etymology:** From Latin salmaster, brackish, sea-blue, being similar in colour to brackish water found at the mouth of rivers.

**Notes:** Medium-small *Phlegmacium*, with a habit of *Dermocybe* and sombre colours reminiscent of some forms of *Cortinarius infractus* (Pers.:Fr.) Fr. Easily recognised in the field by the green-blue colour. The colour and the absence of a reaction...
with TL4 and iodine are also typical of *Cortinarius austro-evernius* Cleland et Cheel and *Cortinarius oleaginus* Cleland which may belong to the same group. However, both have globose spores, similar both in shape and ornamentation to those of *Cortinarius rotundisporus*. It is doubtful that the two latter taxa should be treated as one and the same species as Horak & Wood (1990) suggested, particularly as one important feature, the glutinosity of the stipe of *Cortinarius rotundisporus*, was not reported in the original description of either species.

DNA examination by (Garmica et al. 2005) found *Cortinarius salmaster* nesting in an isolated position near *Dermocybe* sens. str. The habit is dermocybal, but non-soluble pigment leached out in NH$_2$OH or alcoholic solution, hence inclusion here in *Panchroi*. 
Subsection *Subpolisporae* Gasparini, subsect. nov.

**Diagnosis:** Mediae vel firmiores species, e stipite sub-bulbosae, e olivaceae vel ferrugineae subpolitis sporis.

**Type species:** *Cortinarius mariae* (E. Horak) Peintner, E. Horak, M.M. Moser et R. Vilgalys.

**Description:** Medium-sized or fairly large basidiomes; stipit firm, sub-bulbosus; spore print olivaceous or rust-coloured; spores almost smooth.

**Notes:** Several characters deviate from other known species, except for an undescribed species with a rusty spore print from New Zealand (Peintner et al. 2002a). A new subgeneric taxon is therefore proposed. The taxonomic position, judging from morphologic data, is uncertain. However, Peintner et al. 2004 pointed out an affinity with Section *Purpurascens* based on ITS sequencing, which justifies the present position.

**Series *Mariae*** Gasparini, set. nov.

**Diagnosis:** Mediae vel firmiores species, e stipite sub-bulbosae, niveae, e magnis olivaceis subpolitis sporis.

**Type species:** *Cortinarius mariae* (E. Horak) Peintner, E. Horak, M.M. Moser et R. Vilgalys.

**Description:** Basidiomes medium-sized with an enlarged, sub-bulbos base, white throughout; spore print olivaceous; spores large, thick-walled, smooth under optical microscope.


**Description:** Pileus 45–80(–110) mm, orbicular, with a slight broad umbo; cuticle smooth, dry or slightly tacky, slightly striate from the umbo to the margin, persistently snow white. Stipe 110–140 × 13–15 mm, expanding to 28 mm towards the base, which is sub-bulbous, snow white, and slightly covered with very pale ochre velar remains. Lamellae fairly crowded, L = 58, 5 mm high, annexed, ventricose, pale white getting darker as the spores mature, the edge concentric, serrulate. Context solid, snow white. Spore print olivaceous. Spores varying considerably in size and shape within each collection, (10.7–) 14.7–17.8(–20.9) × (6.7–) 8.6–10.7(–11.2) μm, L/B 1.2–1.9(–2.4), ellipsoid, pip-shaped, amygdaliform to subcircular or even sometimes lemon-shaped, walls very thick, dextrinoid (pseudoamyloid), the inner layer metacromatic, appearing smooth and hyaline without colorant, red (red-brownish) in Melzer's reagent governed in chloralum hydroxide and showing a definite ornamentation consisting of a reticulation, rarely showing in silhouette. Hymenium margin partly sterile because of numerous clavate, shortly clavate, or subspheaeopodunculate marginal hairs. Basidia fairly large and broad, clavate, 35–45 × 7.5–12 μm. Pileipellis hyaline in H₂O₂, in ammonia, and in Melzer's solution. Epicutis fairly thin, of dissociated hyphae, but not showing any gelatinisation, fairly broad and short, 4.5–7.5 μm diam., rather thin-walled and smooth, from sub-parallel to slightly entangled, with several tufts of erect cells of various shape. Hypodermium slightly ochraceous, of thick, subcellular texture, formed by large ellipsoid, eventually subglobose hyphae 15–25 μm diam. Clamps present throughout.

**Habitat:** Very wet forest or rain forest.


**Notes:** This species is characterised by the snow-white colour, the olivaceous spore print, and by the dextrinoid spores, apparently smooth under the optical microscope, but reticulate in SEM scan (Fig. 35). It is often found on moss or debris in very humid forests. Like spores of other species of *Cortinarius*, those of *C. mariae* will not germinate in laboratory conditions (D. Richter, Michigan Technological University, Michigan, USA, pers. comm.)

Based on ITS sequencing Peintner et al. (2002a) concluded there was little support for a larger *Purpurascens* clade. However, *Rapacia mariae* was found to nest in *Cortinarius* and renamed *Cortinarius mariae* (Peintner et al. 2002b). In other sequencing work, S. Gamica (pers. comm.) has found *C. mariae* in an isolated position. The nearest other *Cortinarius*

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Fig. 32 *Cortinarius mariae*. A, fruit body; B, spores; C, basidia and marginal cells; D, hyphae of pileipellis. B–D drawn from HO 522417. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
was an unnamed collection with dermocyboid habit, a very dark pileus, and green lamellae, collected in Tasmania in rain forest in the same areas as *C. mariae*.

Overall, the taxonomic position of *Cortinarius mariae* is far from clear and inclusion here in *Purpurascents* is only provisional.

**Section Calochroi** M.M. Moser et E. Horak, Beih. Nova Hedwigia 52, 158 (1975)

**DESCRIPTION:** Basidiomes medium-sized, less frequently large. Pileus brightly coloured, yellow (whitish), red, mauve, blue, orange, or brown. Stipe bulbous, often marginate, very often with a bluish tinge at least at apex. Lamellae generally lilac (Subsection *Calochroi*) or yellow-orange (Subsection *Fulvi*). Alkaline reaction very often with bright colours, red, green, less frequently brown or nil. Taste often bitter. Basidiomes containing triterpenoid metabolites (sodagnitines), synthesised from the mevalonate pathway, or anthraquinones from the acetate-malonate pathway.

**TYPE SPECIES:** *Cortinarius calochrous* (Pers.: Fr.) Gray.

**NOTES:** The particular chromogens of Subsection *Calochroi*, which are not known in any other group of the subgenus, may justify a segregation at subgeneric level, an opinion also supported by Garnica & Oberwinkler (2003), Peintner et al. (2004), and Frolov et al. (2005).

The boundaries of the clade are not yet fully elucidated; therefore the original section within *Phlegmacium* is retained here. The latest DNA work
of Garnica et al. (2003, 2005) and Froslev et al. (2005) indicates that *Fulvi* and *Calochroi* constitute a homogeneous group, and, therefore, if *Calochroi* are considered at section rank then Section *Fulvi* is a late synonym of the latter. *Fulvi* may also be considered at subsection rank, which is done here. *Phlegmacium* is not a homogeneous, monophyletic group (S. Garnica pers. comm.) and it is bound to be divided into differently named subgenera. Therefore, Section *Calochroi* needs to be studied further to ascertain whether it should be a separate subgenus and how it should be divided to obtain, as far as possible, monophyletic groups.


**Description:** Stipe with a marginal bulge, cap yellow, yellow-ochraceous, grey-ochraceous, or fulvo-ochraceus; lamellae and stipe with a more or less evident lilac pigmentation; veil ochraceous, spores warty, generally amygdaliform, exceptionally ovate or subglobose. Pigments of the mevalonate pathway (sodagnitines). The section is very well characterised by a bulbous stipe and lamellae with blue hues.

**Type species:** *Cortinarius calochrous* (Pers. Fr.) Gray.

*Cortinarius ingratolens* Gasparini, sp. nov.

**Diagnosis:** Pileo 35–40 mm lato, convexo deinde planato, cuticula viscosa, fibrillosa, subhygrophanica fusce lilaceae, deinde bruneo-vinoasa, marginne crispso, e brunneti veli frusulis ornato. Lamellae confluentis emarginatis, lilaceae, deinde bruneo-purpureis. Stipte solidi 45–8 mm, cylindraceae, e base bulbosa 18 mm lata, sphaerica, subemarginata lilaceae; bulbo niveo. Carne nivea in bulbo pileoque, in stipite lilaceae. Odore ingrate. Gusto mite. KOH ope cute bruneam colorationem praebet. Sporis ellipticis, verrucosis (8.8–9.7–11.5–(12.3) × (5.9–)6–7–(7.4) μm, L/C 1.5–1.9. Basidies bisporigenis 30–35 × 8–10 μm, cistidies cylindraceae usque 70 μm longis. Ixocute e cylindracea lyphi 5–10 μm latis. Hypodermio subcellulare e lyphi elliptici 20–30 μm crassis.

**Holotype:** Australia, Tasmania, Mt Field National Park, track to Russell Waterfalls, 200 m, *B. Gasparini, G. Gates & D. Ratkowsky*, 9 May 2002, HO 529015.

**Habitat:** Very wet *Eucalyptus regnans* forest.

**Specimen Examined:** AUSTRALIA: TASMANIA: Mt Field National Park, track to Russell Waterfalls, 200 m, *B. Gasparini, G. Gates & D. Ratkowsky*, 9 May 2002, HO 529015.

**Etymology:** From Latin ingratus, unpleasant, and olens, scented, because of the unpleasant smell.

**Notes:** This species is easily identified by the lilac colour of cap, lamellae, and stipe, its brown veil, and the conspicuous cheilocystidia. Despite the lack of reaction with KOH, the overall aspect is typical of Section *Calochroi* Subsection *Calochroi*.


**Description:** Basidiomes with a violet veil. Pileus ochraceous, yellow, tawny, orange, or lilac-violet. Alkaline solutions mostly yield a red to ink red reaction in at least some parts of the basidiomes.

**Type species:** *Cortinarius dibaphus* Fr.
Fig 34, *Cortinarius ingratolens*, A, fruit bodies, B, spores, C, basidia and cystidia, D, surface hyphae of the pileus. B - D drawn from HO 529015. Scale bars: A = 10 cm, B = 1:2000, C = 1:1000, D = 1:500
Fig. 35  *Cortinarius lovendecaerulescens*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 522421. Scale bars: A = 10 cm; B = 1:2000; C = 1:1000; D = 1:500.
**Cortinarius lavendocaeruleus** Cleland et J. Harris, *Records of the South Australia Museum* 9, 52, pl. II, 1 (1948)

**LECTOTYPE** (here designated): Australia, Tasmania, Mt Wellington, Pinnacle Road, Pillinger Drive, G. Gates & D. Ratkowsky, 25 Mar 1999, HO 522421.

As stated by Grzinovici (1997), the original material could not be located at AD. Therefore the species was considered doubtful. Cleland’s description of the protologue applies very well to both macroscopic and microscopic features of the present species: caespitose habit, brownish colours embedded in a bluish veil, a bulbous stipe; spores 9–12 μm. Some basidiomes examined at the beginning of 1999 are also consistent with the original description, differing only by a very large size of the fruiting body, stipe not bulbous, and slightly smaller spores, though of the same type.

Photographs taken of specimens examined on 22 Feb 1995 (Fig. 35) closely match the icon of this *Cortinarius* (Cleland & Harris 1948, pl. 2, fig. 1). This is particularly so in the immature fruit bodies. The overall features, the lilac universal veil, and the red reaction with alkalis suggest the Section *Dibaphi*. When choosing a lectotype, it would be better to designate a collection made at the original site. However, the specimen selected here matches Cleland’s description perfectly.

**DESCRIPTION**: Pileus to 50–60 mm, convex with margins incurved for a long time, then plane, irregularly plane or even slightly depressed; cuticle slightly viscid, soon dry or tacky, fibroillose-velvety, and appearing smooth when dry, mostly a medium brown with some tinges of livid vinaceous, gradually turning into deep brown close to purplish date, or with only a hint of the underlying vinaceous hues, the margin remaining livid vinaceous. Lamellae crowded, narrow, seceding to sinuate to annexed, pale olive-brown with some vinaceous tinges, but becoming dusty brown as the spores mature. Stipe bulbous and stout, 40–60 × 24 mm at insertion, 30 mm wide near the base, which tends to be bulbous and concrecent, brown with vinaceous flushes. Context pale vinaceous under pileipellis. Veil lilac or vinaceous. Cortina whitish. Chemical reactions: KOH on cuticle red or reddish brown on pileus. Spores amygdaliform, sometimes clearly mucronate, to subfusciform or rhomboidal, yellow, slightly brownish in KOH, the warts medium-spaced, fairly small, somewhat conical, protruding, sometimes rarefied at the apex, (8.2–)9–12 × (4.5–)5–6.4(–7.5) μm, L/B 1.6–2. Basidia clavate or subcyllindrical, medium to rather small, 20–30 × 7.5–8.5 μm. Cystidia numerous, in tufts, clavate, cylindrical-filiform, sublageniform, lancelolate, more rarely unobtrusive. Epicutis orange-brown, the hyphae often containing a yellow pigment and encrusted by a brown-yellow pigment, gelatinised and strongly interwoven 3.5–5(–10) μm diam., mixed with filamentous hyphae of the veil 1.5–2.2 μm diam. Subcutis indistinct, the walls being encrusted by a brown pigment. Cortex hyphae filamentous, parallel or slightly interwoven, 3–9 μm diam. Clamps present throughout.

**HABITAT**: Wet Eucalyptus/Leptospermum forests.


**Cortinarius phaeouranus** Gasparini, sp. nov.


**DESCRIPTION**: Pileus 160–170 mm, convex, in maturity with a depressed centre, the margin involute; cuticle rather dry despite rainy weather, only slightly tacky, fibroillose but not squamulose, showing some degree of hygrophanity near the margin, honey brown, with pale brownish colouring appearing on drying. Lamellae fairly close, deep up to 10 mm, emarginate, faintly vinaceous, soon brown. Stipe massive, 60–150 × 35–50 mm, almost equal, slightly tapering towards the base, otherwise almost cylindrical, white, faintly lilac at the apex and with traces of
Fig. 36  *Cortinarius phaeocoronatus*. A, fruit body; B, spores; C, basidia and cystidia; D, pileic hyphae. B–D drawn from HO 522413. Scale bars: A = 20 cm; B = 1:2000; C = 1:1000; D = 1:500.
a violet veil towards the base. Veil pale lilac. Cortina white. Context underlying pileus white, becoming biscuity or pale orangey upon standing after cutting, in stipe solid, white discolouring pale brown or slightly vinaceous off-white upon cutting. Chemical reactions (dry): KOH dark blood red on pileus, pink-orange on pileus flesh, purple on stipe flesh, dark purple on lamellae. Spores subamygdaliform, warts shallow, broad not protruding, 7.7–9.6–(11) × (4)–5–6(–7) μm, L/B 1.5–1.8. Cortina hyphae 2–3 μm diam., thickly interwoven, with masses of yellow or yellow-brown necro pigment. Margin subterile due to the presence of cystidia mostly cylindrical, but also subcapitate or denticulate, 23–32 × 4–5 μm. Basidia 2-spored, 22–28 × 7–9 μm. Pileipellis a thin ixocutis of subparallel or slightly interwoven hyphae 4–5 μm diam., with a yellow-brown pigment covering but not encrusting the hyphae.

**Habitat:** Wet *Eucalyptus obliqua* sclerophyll forests.

**Etymology:** From Greek ἀοράτως, brown, and ἀνατός, sky, for the brown pileus and the blue veil.

**Specimens examined:** AUSTRALIA: TASMANIA: Mt Wellington, Middle Track, A. F Ratkowski, 31 Jan 1995, PHN 950131A0; Lenah Valley Track, G. Gates, 13 Feb 1999, HO 522413.

**Notes:** Many features coincide with *Cortinarius lavendocaeruleus*, but the size of the basidiomes is much larger than stated in the protologue and the spores are smaller. It is characterised by the large brown pileus, the white stipe with traces of the lavender veil, the fairly small spores and the abundant cystidia. This species fruits early (Dec–Feb), like *C. lavendocaeruleus*.

**Subsection Aureopulverulent** Brandrud et Melot, Nordic Journal of Botany 10(5), 535 (1990)

**Type species:** *Cortinarius aureopulverulentus* M.M. Moser.

**Description:** Basidiomes large with bright yellow, orange, orange-brown, or olivaceous colours often mixed with lilac hues on pileus. Lamellae and stipe with lilac tones. Veil bright yellow, reacting red to KOH.

**Notes:** The group was recognised as monophyletic in a separate clade of *Calochroi* by Moser & Pientner (2002).

**Series Chrysochroi** Gasparini, ser. nov.

**Diagnosis:** Magnificae species pileo brumneo-aureato vel e lilaceo permixto. Stititis apice intus extusque caeruleo. Lamellae olivaceis caeruleo colore permixtis, e interdum velo aureo praedictae. Ope KOH cuticula reactionem rubram praebet.

**Type species:** *Cortinarius chrysopocos* Gasparini.

**Description:** Basidiomes large with bright yellow veil. Pileus golden brown. Stipe apex and context lilac. Lamellae olivaceous mixed with blue. Reaction to alkalis red.

**Notes:** The group partly recalls *Laeticolores*, particularly *Cortinarius xanthophyllus* Cooke and *Cortinarius aureopulverulentus* M.M. Moser, which have an equally spectacular coloration, although differently distributed. Nothing is known yet about the pigments, which, considering colour and chemical reactions, may be of a triterpenoid origin, i.e., sodagrinines (Sontag et al. 1999). A separate Series is here proposed, as the different habitat is not conducive to inclusion in a group from the Northern Hemisphere.

*Cortinarius chrysopocos* Gasparini, sp. nov.

**Fig. 37**


**Holotype:** Australia, Tasmania, Mt Wellington, Myrtle Forest Creek, G. Gates, M. Andrews & D. Ratkowski, 18 Mar 1999, HO 510372.

**Description:** Pileus 40–110 mm, hemispherical when young, later convex; cuticle slightly tacky, innate fibrillosse, smooth, golden brown, hygrophanous drying to give a frosty look. Lamellae close to crowded, moderately thin, adnate with very slight tooth, arquate, 8 mm deep, margin entire, beautiful olive-grey-green with a lilac flush concentrated.
Fig. 37  *Cortinarius chrysopogos*. A, fruit body; B, spores; C, basidia; D, pileic hyphae. B–D drawn from HO 510372. Scale bars: A = 15 cm; B = 1:2000; C = 1:1000; D = 1:500.
in a circle under the margin of the pileus, turning later to golden brown. Stipe 30–40 × 19–35 mm, broadening in the middle to 38 mm, cylindrical or slightly obese, slippery, apex lilac, remaining basically white covered by golden brown fibrils. Veil golden brown. Cortina white. Context solid, white, lilac at the intersection. Smell none. Taste extremely bitter and astringent. Chemical reactions: KOH bright ink red on pileus and flesh; NH₄OH pink on pileus and lamellae. Spores amygdaliform or fusiform, often mucronate, seldom ellipsoidal, warts small, dense and evenly distributed, well showing over the profile, (7.8–)8.3–9.5(–10) × 4.8–6(–7.5) μm, L/B 1.4–1.8. hymenium margin fertile, basidia medium-sized, 26–30 × 7.5–8 μm. Cystidia mostly ordinary, occasionally filamentous. Pileipellis yellow. Epicutis a medium ixocutis, c. 100–170 μm deep, of strongly gelatinised cylindrical hyphae (3–)7–10 μm diam., loosely interwoven. Lumps of a fulvous yellow pigment lie among the hyphae. Subcutis indistinct. Clamps present.

Habitat: Wet sclerophyll forests.

Etymology: From Greek χρυσόποκος, with golden fleece, due to the golden yellow veil.


Notes: A beautifully bright species, unmistakable in the field. Its bitterness adds to the easy identification.

Cortinarius chrysochalydeus Gasparini, sp. nov.


Description: Pileus 75–150 mm, plane-convex, in some cases somewhat distorted; cuticle slippery when wet, smooth, fibrillosa, central splashes of apricot gold, mingled with a blue-violet mainly around the margin, with entire straight margin which bears remains of the veil clinging to it; heavily coated with rusty brown spores. Lamellae close, moderately thick, margin entire, 9 mm deep, annexed, pale grey or brown mauve. Stipe 62 × 25–40 mm, base 35–45 mm wide, cylindraceous, very robust, cream, overrun with long fibres and some loose brown fibrils, remains of cortina about 15 mm below apex, heavily laden with spores. Veil golden apricot. Cortina abundant and permanent. Context white interior pith, becoming dingy on exposure to air. Smell fungineous. Chemical reactions (dry): KOH no reaction on cap, orange on flesh. Spores mostly amygdaliform, sometimes subcylindrical, others ellipsoidal, the warts fairly broad, regular, well protruding, 9.1–10.4(–11.2) × 5.6–6.4 μm, L/B 1.5–1.8. Basidia 4-spored, cylindraceae, 20–26 × 10 μm. Ixocute an ixocutis c. 160 μm deep, hyaline, the hyphae cylindraceae, 3–5 μm diam., strongly interwoven, with some repent terminal round-headed cells. Clamps present. Bright yellow plasmatic pigments in the lower layers. Trombopleurous hyphae abundant containing a bright ochre-yellow pigment. Subcutis indistinct. Cortex hyphae bright yellow, similar to those of the cutis.

Habitat: Wet sclerophyll forests.

Etymology: From Greek χρυσός, golden, due to the golden yellow veil, and καλυτές, steel, because of the metal blue sheen.


Notes: A beautiful species characterised by the apricot colour with a blue pileus margin, mauve lamellae, and the characteristic apricot veil.

Subsection Coleopodes M.M. Moser et E. Horak, Bethefie Nova Hedwiga 52, 188 (1975)

Description: Basidiomes medium to fairly small, often with the stipitate base enveloped in a membranaceous volva. Colour often warm red, orange, yellow.

Type Species: Cortinarius coleopus M.M. Moser et E. Horak.

Notes: The argillaceous colour of the lamellae, the absence of reaction to alkalis, and the lack of evidence of anthraquinonic pigments indicate that the subsection belongs to Section Phlegmacium rather than to Subsection Fulvi. The latter is mainly characterised by yellow colours (pure or mixed with blue or red), particularly on lamellae, and by anthraquinonic pigments (mainly tetraquinons). To my knowledge none of the Cortinarius allegedly belonging to this
Fig. 38  *Cortinarius chrysochalybdeus*  A, fruit body; B, spores; C, basidia and cystidia, D, pileic hyphae. B–D drawn from HO 522404. Scale bars: A = 20 cm; B = 1:2000; C = 1:1000; D = 1:500.
subsection has had the DNA sequenced. The taxonomic inclusion in *Fulvi* is to be confirmed.

**Series Pudorini** Gasparini, ser. nov.

**Diagnosis:** Mediae hinc designatur species ex aurantiaco, roseolo vel armeniacae pileo, lamellis concoloribus vel dilute avellaneis, carne pallida vel alba, sporis amygdaliformibus vel citriformibus.

**Type species:** *Cortinarius pudorinus* E.Horak.

**Description:** Species with orange or pink-orange colours on cap, lamellae concorosorius or buff, context white or pale, spores amygdaliform or lemon-shaped.

**Cortinarius phalarus** Bouguer, *Mycol. Research* 93(4), 424–425 (1989) Fig. 39

**Description:** Pileus 35–45 mm, shallowly conical, broadly umbolate; cuticle dry at the time of collection, fibulose, pale orange-brown among essentially greyish brown fibrils. Lamellae adnate to subdecurrent, pale to medium brown. Stipe 20 × 8–9 mm, pale brown to off-white. Veil off-white to pale brown. Context firm, white. Smell nil. Taste mild. Chemical reactions: none with KOH. Spores mostly citriform, sometimes amygdaliform, the warts fairly broad, subdistant, protruding, 8.3–9.9 × 5.2–5.9 μm, L/B 1.5–1.8. Hymenium margin fertile, basidia 30 × 6–9 μm; cystidia unobtrusive. Epicutis an ixocutis e. 75–150 μm thick, the hyphae cylindrical to slightly interwoven. Subcutis subcellular, the hyphae ellipsoidal to subglobose, <35 μm diam. Clamps throughout. The hyphae are encrusted with an orange-fulvous pigment.

**Habitat:** Wet sclerophyll forests.

**Specimens examined:** AUSTRALIA: TASMANIA: Geveston, Donnelly’s Road, G. Gates, 26 Aug 1999, HO 522408; Mt Field National Park, track at the base of Russell Falls, 22 Mar 2003, G. Gates & D. Ratkowsky, HO 521198.

**Notes:** This species is easily recognised in the field by the orange cap and the membranous veil that leaves a volva at the bulbous base of the stipe.

**Subsection Fulvi** (M.M.Moser et E.Horak) Gasparini, stat. nov.

**Type species:** *Cortinarius elegantior* Fr.:Fr.

**Series Laeticolores** (Bidaud, Moëne-Locq. et Remaux) Gasparini, stat. nov.

**Type species:** *Cortinarius ochraceus* (Batsch) Fr.

**Description:** Basidiomes robust with spectacular colours, yellow, red-yellow, fulvous. Stipe bulbous. Spores elliptic to amygdaliform. Chemical reactions red with alkalies on cutis.

**Cortinarius ochraceus** Cleland, *Transactions and Proceedings of the Royal Society of South Australia* 57, 191 (1933) Fig. 40

**Synonyms:** *Cortinarius ochraceus* Cleland nec Peck; *Cortinarius parochraceus* var. *australiensis* M.M.Moser et E.Horak.

**Description:** Pileus 30–90 mm, convex, retaining a broad central umbo, rim regular; cuticle glutinous, yellow, sometimes even lemon yellow or nearly buff at the margin, towards the centre red-fulvous, rust, brick, or even cinnamon or reddish brown at the umbo. Lamellae crowded, L = 66, 1:1, often forked, 9 mm deep, almost plane, wax yellow, later ochre, annexed to briefly decurrent, the margin smooth. Stipe stout to 50–100 × 10–25 mm, and up to 50 mm broad at the base which is swollen into a marginate bulb, creamy yellow, under the cortinal ring ochraceous brown, the base orange.

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**Fig. 39** *Cortinarius phalarus*. A, fruit body; B, spores; C, basidia and cystidia, D, pileic hyphae. B–D drawn from HO 521198. Scale bars: A = 15 cm; B = 1:2000; C = 1:1000; D = 1:500.
Fig 39. *Cortinarius phalarus*, A, fruit bodies, B, spores, C, basidia and cystidia, D, surface hyphae of the pileus.

B - D drawn from HO 521198. Scale bars: A = 15 cm, B = 1.5 cm, C = 1 mm, D = 50 μm.
Fig 40, *Cortinarius sinapicolor*, A, fruit bodies, B, spores, C, basidia and cystidia, D, surface hyphae of the pileus, E, cortex
B - E drawn from HO 522436. Scale bars: A = 10 cm,
B = 1:2000, C = 1:1000, D, E = 1:500
Context solid, buff, yellow under the pileus. Smell unpleasant, evocative of Coralinarus muscivus (Fr.) Melot, becoming more so upon drying. Taste bitter. Chemical reactions: KOH pink, then brown-red (mahogany) on cutis, brown on context, purple-brown on lamellae; TL4 purplish; lugol purple, then brown-purple. Spores generally ellipsoid to amygdaliform, 7.1–8.1 × 4.4–5.2(–6) μm, L/B 1.4–1.7, warts thick, fairly large and low, unusual for different aspect sometimes present, oval or broadly oval to 10.5 × 6 μm and with coarse warts. Hymenium basidia 19–26 × 5–9 μm; cystidia absent, but numerous clavate sterile cells <20 μm. Pileipellis ixocutis of thin, hyaline hyphae 2–5 μm diam., repent and strongly interwoven, hyaline in H₄O, brick red in KOH, fulvous masses of pigment sparsely among the hyphae, while the walls are encrusted with thick brownish spots, mixed with gelatinised hyphae of the veil 1.5–3.5 μm diam., filamentous, hyaline with large brown inclusions. Hypodermium of ellipsoidal hyphae 8–9 μm diam. Cortex hyphae yellow, irregularly cylindrical 9 μm diam., more or less parallel and mixed with gelatinised hyphae of the veil.

HABITAT: Wet Eucalyptus sclerophyll forests.


NOTES: Very glutinous, medium basidiomata with bright fulvous colours, the exsiccate are reminiscent of those of several Phlegmacia of Section Orichalcei M.M. Moser, viz a bright red to orange lacquered pileus, reminiscent of that of the fresh basidiomes of Boletus dupinii Boud. They give off an unpleasant odour (resinous sometimes of some Percomes) and the taste is bitter, reminiscent of Infracti or Gymnopilus. The glutinosity and the bright red-orange colours separate this species easily from any others. The chemical reactions are also very distinctive.

Originally this species was placed by Moser & Horak (1975) in Section Pyromyxa of Subgenus Myxacium but Horak & Wood (1990) subsequently pointed out the lack of affinity with the other Cortinarius of the group. According to Liu et al. (1997), Myxacium in the traditional sense appeared to be polyphyletic and gelatinisation of the veil probably occurred independently in the various groups. From a morphological aspect Cortinarius archeri and Cortinarius sinicolor do not seem to be taxonomically near to each other. However, a relationship was shown by Chambers et al. (1999) following an ITS amplification analysis that suggested the monophyly of these two species. The same result has been reached by Garnica et al. (2005). C. sinicolor has also been found to nest very close to C. austrovagi- natus (S. Garnica pers. comm.).

Hydroxyphlegmaciumonone is the most abundant anthraquinonic pigment found in Cortinarius sinicolor, accompanied by a minor quantity of phlegmacins that are commonly found in Puhri (Gills 1995). These are responsible for the yellow colour of the species. Further, there are democerarins, responsible for the mustard yellow colour, pigments also found in Cortinarius canarius (E. Horak) Garnier. Both pigments originate from the same metabolite (torcsachryone) or from two similar precursors having the same origin (atrochryone).

Cortinarius wirrabara Gasparini, sp. nov. Fig. 41

DIAGNOSIS: Pileus 30–45 mm lato, primum hemisphaeric, deinde plano-convexo, tandem late umbonato; cuticula glutinosa, brunneo-rubra vel lateritia et disco brunneo-migranscent. Lamellae haud crassae, confer- tis, emarginatis, luteis vel lutescentibus, deinde brunneolis. Stipe usque ad 60 mm longo, 10 mm crasso, cylindraceo et submajorata bulbosa base 13–15 mm lata, superiore candidulo, inferiore brunneo, et copiosi ochracei veli frustulis obtecto nihil minus praedito, carne luteola. KOH ope reactionem supra cute olivaceam praebet. Sporis (8.2–9–10.5(–11.2) × (4.5–5–9.5(–6) μm, L/C 1.7–2, amygdaliformibus, subpolitis et verruculosis, basidis subcylindraceis, 4-sporigeris, 34–37 × 7.5–8 μm, et luteis granulis imples, epicate fe 200 μm crassa ixocute et cylindraceis, gelatinosis, sub parallelis et vel confusi fibulatis hyphae 4.5–7.5(–9) μm crassis. Pigmentatione fulva. Hypodermio haud distincto, e ellipticos hyphis 13–18 μm latis.

HOLOTYPE: Australia, Tasmania, Mt Wellington, Old Farm Road, G. Gates & D. Ratkowsky, 4 Mar 1999, HO 519375.

DESCRIPTION: Pileus 30–45 mm globosus, then irregularly convex, sometimes broadly umonate; cuticle glutinos, shiny, reddish brown, some shades of brick, centre darker tending to blackish. Lamellae dense and shallow, emarginate, yellow to yellowish then medium brown. Stipe <60 mm × 10 mm, clavate, base 13–15 mm broad, white at the apex,
Fig 41, *Cortinarius wirrabara*, A, fruit bodies, B, spores, C, basidia, D, surface hyphae of the pileus.
B - D drawn from HO 519375. Scale bars: A = 10 cm, B = 1:2000, C = 1:1000, D = 1:500
buff or pale brown underneath, circled with debris of an ochre yellow veil. Cortina whitish. Context yellowish. Smell undetected. Chemical reactions: KOH olive green on cutis; in ammoniacal solution a yellow pigment leaches out. Spores bright yellow, narrowly amygdaliform, the walls minimally ornamented, (8.2–9)–10.5 × 4.9–5.6 μm, L/B 1.7–2. Basidia 4-spored, somewhat cylindrical, 34–37 × 7.5–8 μm, containing a yellow granular pigment. Pileipellis fuscous or near so yellow. Epicutis an ixochitis c. 200 μm thick with subparallel to slightly interwoven cylindrical hyphae, clamped, encrusted with a fuscous pigment in loose plquettes; repent hyphae either isolated or in tufts with some lanceolate terminal cells. Subcutis hardly distinct, growing into ellipsoidal hyphae 13–18 μm diam. Veil filamentous hyphae 3.7–4 μm diam. Intragynial yellow-fuscous pigment present.

HABITAT: Wet sclerophyll forest.


ETYMOLOGY: From the Aboriginal word wirrabara, under the trees.

NOTES: This is one of the reddish fawn species with yellow lamellae, staining yellow with ammoniacal solutions. The slender, amygdaliform spores are another distinguishing character.

**Subsection Archerianii** (M.M.Mosher) ex Gasparini, stat. nov.


DESCRIPTION: Medium-sized basidiomes, pileus with bright fuscous or blue to violet colours, very glutinous. Veil strongly gelatinised. Spores ellipsoidal to amygdaliform.

TYPE SPECIES: *Cortinarius archeri* Berk.

NOTES: The section was placed by Moser & Horak (1975) in subgenus *Myxaciium* Fr. The habit, however, is that of a *Phlegmacium*. Molecular investigations following an ITS amplification analysis by Chambers et al. (1999) and by Garnica et al. (2005) suggest a taxonomic position in *Calochroi*.

**Series Archerianii** (M.M.Moser) ex Gasparini, ser. nov.


TYPE SPECIES: *Cortinarius archeri* Berk.

DIAGNOSIS: Species mediae vel majoris e pileo stipiteque purpureis, purpureis vel lilacis, crebter e parte vel membranaceo, lamellis niveis, lacteis vel lilacis, sporis ellipticis, amygdaliformibus vel citriformibus.

DESCRIPTION: Pileus and stipe purple, violet, or blue, partial veil often membranous, lamellae whitish, buff, or violet. Spores elliptical to amygdaliform or citriform.

**Cortinarius archeri** Berk. in D.H.Hooker, Flora Tasmanniae 2, 247 (1860) Fig. 42

DESCRIPTION: Pileus 50–100(–120) mm, originally hemispherical, later convex, regular or slightly undulate at the margin. Cuticle initially very glutinous and shiny, retaining some viscosity also in the adult, intensely violet or lilac-vinaceous, gradually changing to brown. Lamellae close, greasy, annexed or adnate, pale blue, later ochreous. Stipe 50–60 mm × 30 mm, clavate, glutinous, basically white, but covered with a lilac glutinous veil. Partial veil extremely thick and glassy, membranaceous and permanent, in the young covering the hymenium tightly, white. Context solid, white, turning bluish when cut. Chemical reactions: KOH light brown on cutis and context; Guaiaecum, Meltzer’s and TL4 nil; phenolamine ++ (pink), rather slow. Basidiospores 11–15(–18) × 6.4–7.6(–8.2) μm, L/B 1.5–2.1, subtusiform, unequally amygdaliform to (sub-) citriform, less frequently ellipsoidal in side view, amygdaliform or fusiform in front view, warts thin, densely arranged and protruding over the profile. Hymenium margin sterile, numerous cystidia clavate or subsphaeropendunculate, up to 33–37 × 11–15 μm. Basidia 37–40 × 11 μm. Pileipellis an ixochitis, hyphae thickly arranged and entangled to 4.5 μm diam., mixed with the gelatinised filamentous hyphae of the veil, to 3 μm diam., strongly encrusted by a brown pigment. Clamps large. Hypodermium in pitting profile with more or less polygonal cells.

HABITAT: Eucalyptus forests.

8524; Bruny Island, Cape Queen Elizabeth Track, B. Gasparini & D. Ratkowsky, 25 May 2002, PHN A20525B0.

NOTES: This is one of the most common species of Cortinarius in southern Australia and Tasmania. It is easily recognised by the lilac colours and the strong, membranous veil, partial veil, as well as by the glutinosity of the whole basidiome. Noticeable also is the oxidation of the plasmonic pigments that turn the mature specimen from lilac/blue to purple. There are other similar species, separated by having smaller basidiomata and a tendency to a submembranous universal veil (Cortinarius microarcheri), or by different spore size (Cortinarius subarcheri Cleland and Cortinarius bundarius Grigurinovic). Cortinarius species in the Southern Hemisphere seem to build a submembranous veil (partial or universal). The thick veil, whether single or double, probably arose independently at various times in the history of Cortinarius sens. lat.

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