

**CONTRIBUTION TO THE KNOWLEDGE OF *CORTINARIUS* [AGARICALES,  
CORTINARIACEAE] OF TASMANIA (AUSTRALIA) AND NEW ZEALAND.**

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**Abstract**

The authors have been studying the mycological flora of New Zealand and Tasmania over many years with the aim of discovering phylogenetic links between *Cortinarius* occurring in the Southern and Northern Hemispheres. Based on morphological and molecular phylogenetic studies, which will be published elsewhere, we describe here ten new species of *Cortinarius* (*C. ardesiacus*, *C. austrotorvus*, *C. controversus*, *C. laetelamellatus*, *C. leucanthemium*, *C. mastoideus*, *C. pseudorotundisporus*, *C. rozites*, *C. tasmacamphoratus*, *C. veronicoides*) plus another interesting one (*C. austrocinnabarinus*) from Tasmania, and eleven (*C. dulciorum*, *C. elaiops*, *C. gymnocephalus*, *C. malosinae*, *C. myxenosma*, *C. orixanthus*, *C. pectochelis*, *C. pselioticton*, *C. rattinoides*, *C. rhipiduranus*, *C. vernicifer*) from New Zealand. Further we rename two taxa, *Dermocybe purpurata* and *Cortinarius rotundisporus* ssp. *nothofagi*, from New Zealand to *C. rubripurpuratus* and *C. tessiae*.

**Key Words:** Agaricales, Cortinariaceae, *Cortinarius*, Tasmania, New Zealand.

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**Introduction**

*Cortinarius* is a large and complex genus within the Agaricales. If we include genera synonymised with *Cortinarius* by Peintner *et al.*, 2001b, 2002b, the total number of the species hitherto described in the world is close to 3000.

*Cortinarius* species deserve particular attention as they are ectomycorrhizal and therefore constitute a noteworthy element in natural and commercial forests. In the past two centuries, the level taxonomy of *Cortinarius* relied almost exclusively on morphological and – partly – macrochemical traits. However, rDNA sequence data have suggested hypotheses about the phylogeography of the ancestors of these agarics during their early dispersion over the globe, and thereby contribute to the knowledge of their relationships (Frøslev *et al.* 2005, 2006a,b, 2007, Garnica & Oberwinkler 2003, Garnica *et al.* 2003, 2005, Høiland & Holst-Jensen 2000, Kytövuori *et al.* 2005, Liu

*et al.* 1995, 1997, Peintner *et al.* 2001, 2002, 2004, Sawyer *et al.* 1999, Seidl 2000).

A considerable number of species occur in the temperate areas of the Southern Hemisphere. Subsequent to the important work reported by M. M. Moser and E. Horak from Patagonia (1975; 278 taxa), comparatively few species have been described from Australia and New Zealand. Only 61 species are reported (including the genus *Dermocybe*) in Fungi of Australia 2A (May & Wood 1997), of which at least 16 according to our view are doubtfully determined. According to Segedin & Pennycook (2001), 98 species are reported from New Zealand (including the genera *Dermocybe*, *Cuphocybe*, *Rapacea*, *Rozites* and *Thaxterogaster*, now generally considered as *Cortinarius*). Since these checklists were published, 32 *Cortinarius* taxa have been published from Australia (Gasparini 2001, 2004, 2007a) and 24 from New Zealand (Soop 2002, 2005). The number of described and validly published species is still modest with respect to the diversity of *Cortinarius* species

present in Australia and New Zealand (pers. obs.). It is our firm belief that only through chorology a cogent universal hierarchic system can be produced.

In this article we propose a number of new species of *Cortinarius* from Tasmania and New Zealand. In addition, a few taxa are renamed. Samples of all our taxa have been investigated for DNA at Tübingen University by the team of S. Garnica. A separate report on this molecular investigation is in preparation. Although all the species reported in this article were investigated by ITS sequencing and the results taken into account to award possible taxonomic positions, we have refrained from reporting individual results, waiting for a comprehensive phylogeny to be published.

The species proposed here belong to several infrageneric taxa. While some species appear to be grouped into known infrageneric taxa, either by morphologic or phylogenetic markers or both, others occupy unresolved positions. Hence, we do not consider it advisable to propose a new infrageneric structure until more is known from ongoing phylogenetic work within *Cortinarius*. Therefore, in the present study, the order between the species only reflects an approximate taxonomy.

### Materials and methods

Taxonomic descriptions are essentially based on the material studied by the authors. Macro-measures of all species were taken from fresh basidiomes. Most of the species examined were dried and stored as exsiccata, and the micro-measures were taken later from revived parts of the dry material.

All holotype material has been deposited either in the Tasmanian State Herbarium (HO), Hobart, Tasmania, or in the New Zealand herbarium (PDD), Auckland. Other specimens are held in the personal herbaria of B. Gasparini (referred to here as PHN), or D. A. Ratkowsky (referred to here as RHN) in Hobart. Unless otherwise specified, collections reported from New Zealand were made by the second author (KS), and the descriptor "KS" then indicates the collection number.

For microscopical study, portions of the dried basidiomes were revived in 2% KOH mounts. Drawings and measures were drawn using a light microscope Zenith BK1000 with phase

contrast. The spore measurements are the average of at least 25 readings per collection taken at random, the total number being indicated in brackets at the end of each spore measure item. The measurements account for the minimum maximum (in brackets) and the standard deviation from the average. For macrochemical reactions and reagents used, see Azema (1986). For the description of colours the Colour Identification Chart of Flora of Royal Botanic Garden Edinburgh (1969) was used.

In the descriptions the measures of the basidiocarp were taken from adult specimens; these are the diameter of the pileus, the length of the stipe, and the diameter of the upper part of the stipe. The designation "L" means the number of lamellae reaching the stipe, possibly followed by "l", the number of lamellulae between two lamellae. Q is the average ratio of spore measurements. The term veil refers to a universal veil, while cortina means a partial veil. Veil hyphae (where applicable) were measured from the lower part of the stipe, unless otherwise specified. The term cheilocystidia is reserved for marginal, sterile cells that are conspicuously differentiated from the basidia in either size, shape, or both; trivial, non differentiated cells are designated as marginal (or sterile) elements. TLC is the acronym of thin layer chromatography.

In all drawings the scale-bar is 1:2000 for spores, 1:1000 for any parts of the hymenium, 1:500 for pileal and any other structural parts. A refers to spores; B, basidia; C, cystidia/marginal cells where applies; D, pileal surface; D1 and D2, respectively cortex and veil, if any. In the ecological descriptions, it was sometimes not possible to ascertain the suggested mycorrhizal partner down to species level, although the likely host genus is indicated. For the species collected in Tasmania, environmental sites are described by Gasparini (2001), and for New Zealand, see, e.g., Horak (1970).

### TAXONOMY

#### Key to species described in this study

The key encompasses taxa from both regions, since past analyses have shown that several species occur both in Tasmania and in New Zealand.

- 1** basidiocarp entirely dry or, if weakly viscous, with bright colours and habit of *Dermocybe* **2**  
 basidiocarp partly or totally viscid/glutinous **17**
- 2** habit of *Dermocybe*, basidiocarp colourful, often bright reaction to alkalis **3**  
 different habit **10**
- 3** lamellae yellow with or without olive tones **4**  
 lamellae brighter red or orange **6**
- 4** lamellae olive yellow, cap 15–50 mm, hygrophanous mustard-yellow, stipe lemon yellow, spores  
 6.2–5.7 x 5.2–5.5  $\mu\text{m}$ , subglobose *C. elaiops* p. 177  
 lamellae of different colour (at least when young) **5**
- 5** lamellae grey-yellow, cap 30–60 mm, yellow-brown with a faint orange tinge, margin yellow,  
 stipe encircled by the yellow veil; spores elliptical 7.7–8.4 x 4.5–5  $\mu\text{m}$  *C. orixanthus* p. 177  
 cap umbonate with umbo resembling a nipple, sulphur yellow, alternate with brownish circles,  
 lamellae sulphur yellow, then orange olivaceous *C. mastoideus* p. 179
- 6** overall colour yellowish with orange tones **7**  
 colour brigher or purple **8**
- 7** lamellae vividly orange-yellow, cap dry, fibrillose, often cracked in circles, with an orange  
 aspect, reaction pink with formaldehyde *C. laetelamellatus* p. 182  
 cap conical, hygrophanous, wax or straw yellow, lamellae orange, margin yellow  
*C. leucanthemium* p. 184
- 8** whole basidiocarp orange red, or cinnabar; spores amygdaliform or elliptical 5.9–7.2 x 4.1–5.2  
 $\mu\text{m}$  *C. austrocinnabarinus* p. 185  
 Overall colour scarlet or purple **9**
- 9** cap scarlet or vermillion, stipe orange zoned by the scarlet veil, lamellae brown, margin cinnabar  
 red, spores amygdaliform 5.9–7.2 x 4.1–5.2. *C. veronicoides* p. 187  
 cap and stipe red purple to dark blood red, lamellae blood red, spores elliptical, 5.5–6 x 3.5  $\mu\text{m}$   
*C. rubripurpuratus* p. 189
- 10** habit telamonioid, hygrophanous **11**  
 habit different, basidiocarps partly or entirely dry **15**
- 11** colour yellow or orange **12**  
 colour grey or bluish or brown drying slate colour **13**
- 12** cap yellow orange, darker at the disc and the margin with marks of hygrophaneity, veil orange,  
 fluorescence blue *C. controversus* p. 190  
 part of stipe, context and mycelium bright orange, cap 10–30 mm, dull yellow  
*C. malosinae* p. 191
- 13** cap lilac or flesh coloured, margin pale lilac, becoming darker, stipe circled with white veil  
*C. austrotorvus* p. 191

- different characters **14**
- 14** aspect of *C. camphoratus* Fr., equally unpleasant smell (acetylene or the like), cap pale blue, stipe lilac, veil yellow ochraceous submembranous *C. tasmacamphoratus* p. 192
- cap pale to medium brown somewhat slate grey, appearing mottled, lamellae brown to sienna, stipe whitish *C. ardesiacus* p. 193
- 15** habit of *Rozites*, cap 60 mm. hygrophanous, brownish-yellow with a darker disk, lamellae grey-white, spores elliptical to subamygdaliform, 12.4–13.5 x 7.5–8.2  $\mu\text{m}$  *C. pselioticton* p. 196
- different habit **16**
- 16** entire fruiting body dry, some violet present in the fruit body **17**
- viscosity present in some parts **18**
- 17** cap lilac or livid vinaceous, lamellae concolorous, stipe white with mauve velar zonings *C. rozites* p. 194
- cap 15–40, fragile, mouse grey to grey-brown, lamellae violet, stipe with reddish to wine-brown girdles and tufts reminiscent of *C. spilomeus* *C. rattinoides* p. 195
- 18** only cap viscid or glutinous **19**
- whole basidiocarp glutinous **22**
- 19** stipe conspicuously turquoise-blue, cap 20–35 mm, blackish brown, lamellae blue-grey *C. rhipiduranus* p. 197
- characters different **20**
- 20** cap red-brown tinged apricot, stipe cylindrical to clavate *C. dulciorum* p. 197
- characters different **21**
- 21** cap not hygrophanous, mahogany brown, stipe with a marginate bulb *C. myxenosma* p. 198
- cap hygrophanous, deeply orange to orange-brown, with a lacquered aspect, lamellae and stipe yellow, not bulbous, spores elliptical, 8–8.7 x 4.4–4.7  $\mu\text{m}$  *C. vernicifer* p. 199
- 22** clamp connections absent, habit of *Cuphocybe*. Cap 30–50 mm grey-brown to yellow-brown, margin greyish with a violet tinge, lamellae and stipe violet, spores 12.4–14 x 6.8–7.3–8  $\mu\text{m}$ , elliptic to amygdaloid *C. gymnocephalus* p. 199
- clamps connections present **23**
- 23** spores subglobose 6.5–8.5 x 6–7.5  $\mu\text{m}$ , cap 20–50 mm, yellow to blue-green, lamellae with an olivaceous hue *C. tessiae* p. 200
- spores different **24**
- 24** species reminiscent of *C. rotundisporus*, but taste mild and spores amygdaliform 7.6–9.4 x 4.8–5.7  $\mu\text{m}$ , cap greyish blue, disc reddish brown *C. pseudorotundisporus* p. 200
- cap 15–40 mm dark yellow-brown to mahogany, lamellae greyish to pale brown, spores amygdaliform 9.8–10.4 x 5.2–6  $\mu\text{m}$  *C. pectochelis* p. 201

***Cortinarius elaiops*** Soop sp. nov.

Figures 3B, 5A

Pileo 15-50 mm diam., primo obtuso-globoso, deinde convexo-conico, sicco, hygrophano, helvello, ad discum olivaceobadio, interdum aurantio-lavato, minute vel impolite innato-fibrilloso, margine pallidior, olivaceolutea, striata. Lamellis primo ex olivaceoluteis pallide cinnamomeis, distantibus. Stipite aequali, procero, ad basem interdum incrassato, pallide citrino-luteo, minute fulvo-fibrilloso. Velo helvello, aurantio-rubescens, sparso. Carne pilei olivaceobadia, stipite pugnante olivaceo-fulva; odore saporeque raphanoideis. Sporis subglobosis 5.5–7 x 4.5–5.5  $\mu\text{m}$ , moderate verrucosis. Reactionem ope NaOH badio rufam.

Holotypus hic designatus PDD 88271: Nova Zelandia, Southland, Milford Road, Mackay Creek, in silvis cum Nothofagete, 29<sup>th</sup> April 2006, K. Soop.

*Pileus* 15–50 mm diam., obtusely rounded, later convex-conical, dry, finely to rather coarsely innate fibrillose, hygrophanous, brownish-yellow with an olive-brown to olive-black disk, sometimes with an orange tinge; margin contrastingly brighter, olive-yellow, striate with darker, yellow-brown fibrils. *Lamellae* adnate, distant (L=28, l=2), olive-yellow to pale cinnamon when young, edge concolorous. *Stipe* 35–80 x 3–9 mm, tall, slender, cylindrical, often somewhat expanded at base; pale yellow to citrinous from an absorbing sheen, with sparse, thin, brownish to orange fibrils and bands. *Veil* yellow-brown, turning orange-red, sparse. *Context* olive-brown in pileus, contrastingly yellow-brown to olive yellow in stipe. *Macrochemical reactions*: NaOH warmly dark brown to red-brown on pileal surface, weakly purple-brown in context; formalin, guayac, phenol in context nil. *Odour* and *taste* raphanoid.

*Spores* 5.5–6.2–7(–7.3) x 4.6–5.2–5.5(–5.7)  $\mu\text{m}$ , Q=1.19±0.10 (n=26), subglobose, moderately verrucose. *Marginal elements* fairly crowded, clavate to vesiculose, 12–20 x 6–7  $\mu\text{m}$ . *Basidia* 20–25 x 5–7  $\mu\text{m}$ , 4-spored. *Epicutis* thick with parallel hyaline hyphae 7–11  $\mu\text{m}$  diam., lower strata with a (pale) red-brown, vacuolar pigment. *Hypocutis* with irregular, angular, hyphal elements, up to 40 x 20  $\mu\text{m}$ . *Clamp connections* present.

*Habitat*: Gregarious, fairly common, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Southland, Milford Road, Mackay Creek, 29<sup>th</sup> April 2006, PDD 88271 (holotype), KS-CO1649 (isotype); idem, Te Anau Downs, 4<sup>th</sup> May 2001, KS-CO1218; Southland, Borland Lodge Track, 25<sup>th</sup> April 2004, PDD 78777, KS-CO1425; Springs Junction, Palmer Road, 30<sup>th</sup> April 2004, KS-CO1446.

*Etymology*: From Greek ελαιον, olive, and -οπος, eye, due to the concentric colour pattern on the pileus.

*Comments*: This rather common fungus is easily recognised from its round, mustard-yellow pileus with a darker centre, reminiscent of an eye. The colour usually presents a distinct olive component. Despite its telamonioid habit the alkaline reaction of *Cortinarius elaiops* suggests an affinity to subgenus *Dermocybe*. The rather similar *C. indotatus* E. Horak yields a stronger red alkaline reaction and produces differently shaped spores. *C. paraxanthus* Soop is also similar to this species, but it has a darker and more uniformly coloured pileus, no alkaline reaction, and significantly larger spores.

***Cortinarius orixanthus*** Soop sp. nov.

Figures 3E, 5B

Pileo 30–60 mm diam., globoso, deinde conico-convexo, viscido, hygrophano, luteo-ochraceo subtiliter aurantio-umbrato, disco obscuriore, glabro vel innato-fibrilloso, margine luteo. Lamellis primo luteo-cinereis, subconfertis. Stipite aequali vel clavato, sordide albo, luteo-cingulato. Velo luteo subviscido. Carne fusco-ochracea, interdum rubro-tacta; odore subraphanico; sapore debile. Sporis ellipsoideis, 6.5–8 x 4–5  $\mu\text{m}$ , paulo verrucosis. Reactionem ope NaOH splendide aurantiam vel aurantiorufam praebet.

Holotypus hic designatus PDD 88253: Nova Zelandia, Te Anau, Totara Rest Area, in silvis cum Nothofagete, 23<sup>rd</sup> April 2006, K. Soop.

*Pileus* 30–60 mm diam., hemispherical, later conical-convex, viscid, glabrous to innate fibrillose, hygrophanous, warmly yellow-brown with a faint orange tinge, disk darker, weakly red-brown; margin greyish-yellow with a yellow rim, not striate. *Lamellae* moderately



**Figure 1** A *Cortinarius ardesiacus*, B *Cortinarius austrotorvus*, C *Cortinarius austrocinnabarinus*, D *Cortinarius controversus*, E *Cortinarius laetelamellatus*, F *Cortinarius leucanthemum*.

crowded, yellow-grey when young. *Stipe* 40-85 x 6-8 mm, cylindrical to fusoid or clavate, dry; dirty white with yellow girdles on lower part. *Veil* yellow, fairly copious to sparse, more or less viscid. *Context* rather dark yellow-brown, sometimes with a red-brown tinge. *Macrochemical reactions*: NaOH strongly orange to orange-red on stipital veil, weaker on gills and context, dark brown on pileal surface; guayac green in context. *Odour* faintly raphanoid. *Taste* nil or slightly fetid.

*Spores* (6.2-)6.8-7.7-8.4(-8.7) x 4-4.5-5  $\mu$ m, Q=1.70 $\pm$ 0.16 (n=29), elliptical, weakly verrucose. *Marginal elements* crowded,

clavate, 17-22 x 6-7  $\mu$ m. *Basidia* 20-25 x 6-8  $\mu$ m, 4-spored. *Pileipellis* with gelified hyaline hyphae 4-5  $\mu$ m diam. *Epicutis* of erected hyphae 5-7  $\mu$ m diam. with a yellow, epimembranal pigment. *Hypocutis* with oval, hyaline hyphal elements 20-40 x 11-20  $\mu$ m. *Veil* hyphae (from stipe) gelified, saturated yellow, 4-6  $\mu$ m diam. *Clamp connections* present.

*Habitat*: Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Te Anau, Totara Rest Area, 23<sup>rd</sup> April 2006, PDD 88253



**Figure 2** A *Cortinarius mastoideus*, B *Cortinarius pseudorotundisporus*, C *Cortinarius rozites*, D *Cortinarius tasmacamphoratus*, E *Cortinarius veronicoides*, F *Cortinarius ripiduranus* (PDD 88269).

(holotype), KS-CO1614 (isotype); Taupo, Cascade Hut Track, 14<sup>th</sup> May 2001, KS-CO1262; Karamea River Track, leg. G. Gates, 9<sup>th</sup> May 2006, KS-CO1675.

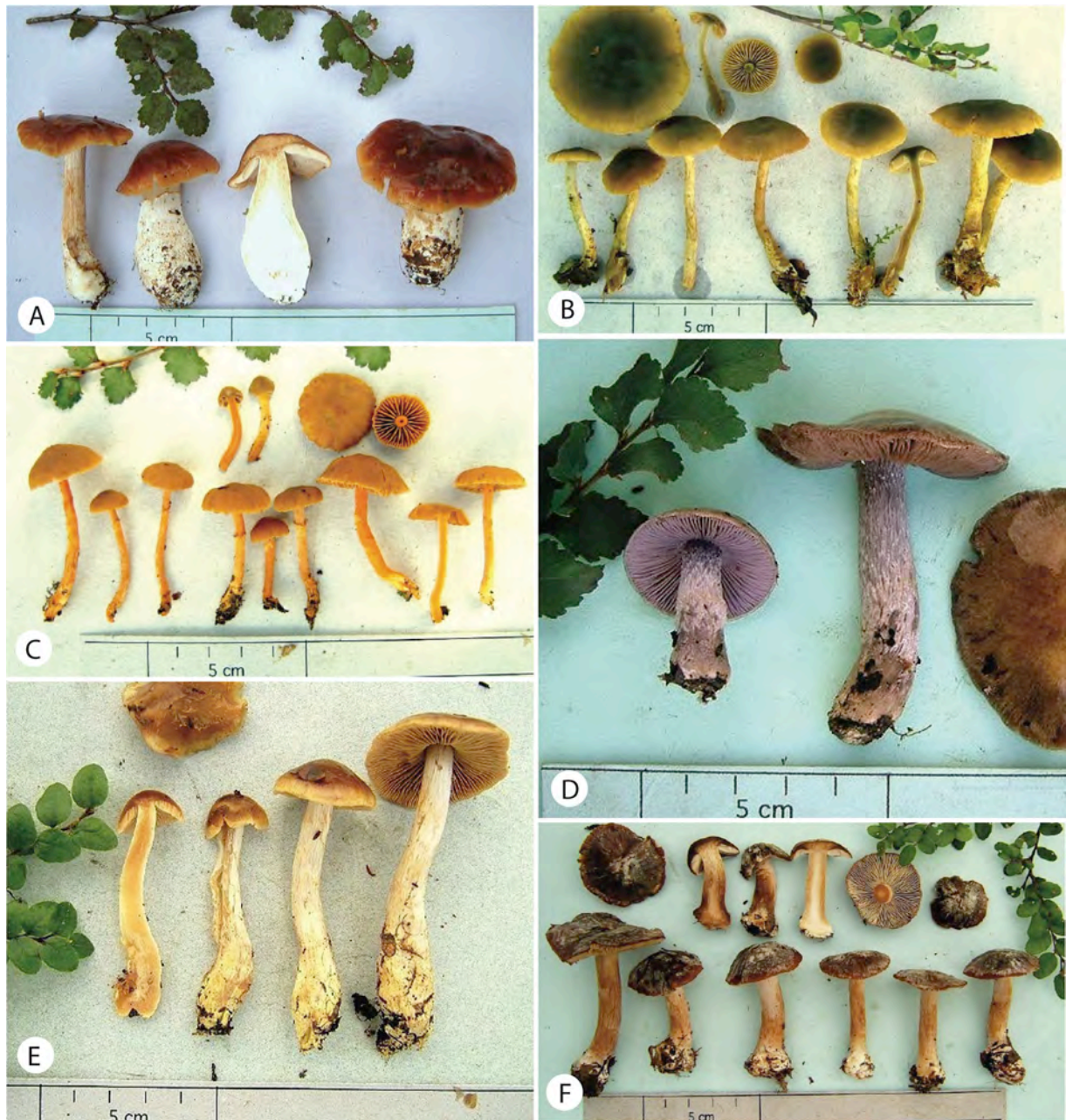
*Etymology:* From Greek ορος, margin, and ξανθος, yellow, from the colouration of the pileus.

*Comments:* This species is recognised by a remarkable yellow rim on the pileus, often paired by yellow veil girdles on the stipe. It recalls *Cortinarius thumastus* Soop in the same habitat, but it is larger and displays brighter hues. The alkaline reaction indicates an affinity to subg. *Dermocybe*.

***Cortinarius mastoideus*** Gasparini, sp. nov.

Figures 2A, 5C

Pileo usque 25 mm lato, e conico applanato, acute umbonato, cuticula viscida, squamosa, e luteo margine infracto fimbriatoque, alternis vicibus sulphureo vel brunneo urbiculata. Lamellis haud confertis, annexis, ventricosis, sulphureis, deinde aurantio olivaceis e margine homogeneo integroque. Stipite 50 mm longo, 2 mm lato, ligneo, vix incurvato, apice e lutea pulvere asperso, aurantio olivaceo e carminei veli fibrillis ornato, basi sulphureo myceliata. Carne vitellina. Odore haud notabile, gusto amaro. Ope KOH supra cuticula coccineam reactionem, lamellis subnullam, stipite nullam,



**Figure 3** A *Cortinarius dulciorum* (PDD 78797), B *Cortinarius elaiops* (PDD 88271), C *Cortinarius malosinae* (PDD 88279), D *Cortinarius gymnocephalus* (PDD 88292), E *Cortinarius orixanthus* (PDD 88253), F *Cortinarius myxenosma* (PDD 88282).

carne brunneolam praebent. Sporis ovatis, verrucosis (4.7–)6–7.4(–8.8) x (3.4–)4.1–5.4(–7.7)  $\mu\text{m}$ ; Q = 1.2–1.6. Basidiis bi- vel tri-sporigenis 33–38 x 7–8  $\mu\text{m}$ ; cystidiis clavatis. Epicute haud crassa e pauce gelatinosis haud confusis hyphis 5–13  $\mu\text{m}$  crassis, e terminalibus hyphis lanceolatis. Hypodermio subcellulare. Pigmento intracellulare luteo.

Holotypus hic designatus HO 522353: Australia: Tasmania, Gordon Valley, Little Florentine River, Timbs Road, B. Gasparini & D. Ratkowsky, 23<sup>rd</sup> May 2002.

*Pileus* diam. < 25 mm, conical, then flat, with a tiny, acute umbo on the disk. *Cuticle* viscid or tacky, scaly, umbo pink red resembling a nipple, concentrically zoned with sulphur yellow, alternate with brownish circles, margin infracted, fimbriate, yellow. *Lamellae* distant, L = 24, l = 2, annexed, 4 mm deep, obese, sulphur yellow, then orange olivaceous, margin homogeneous, entire. *Stipe* 50 x 2 mm, tough, fibrous, slightly incurved, apex (5 mm) covered by a yellow powder, yellow orange with remains of a pinkish (carmine red) veil and the base thickly enveloped in a sulphur yellow





**Figure 4** A *Cortinarius pectochelis* (PDD 88278), B *Cortinarius pselioticton* (PDD 88277), C *Cortinarius rattinoides* (PDD 88283), D *Cortinarius vernicifer* (PDD 88273).

mycelium. *Context* yellow orange, in stipe medullose wax yellow. *Macrochemical reactions*: KOH dark red on pileus, subnil on lamellae, nil on stipe, brownish on flesh. A yellow pigment leaches out in solvents. *Veil* reddish. *Cortina* evanescent. *Smell*, weak, *taste* bitter.

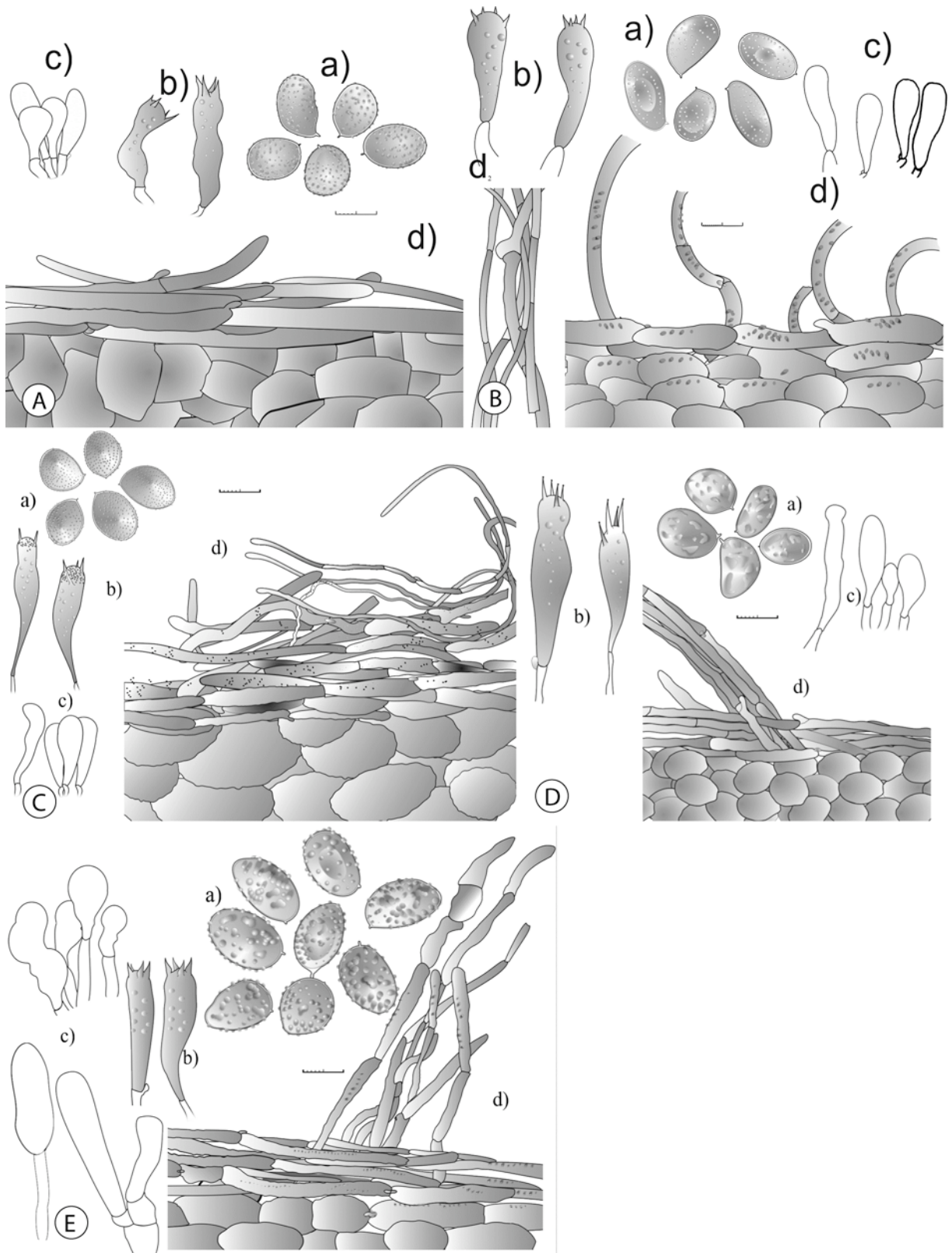
*Spores* ovoid medium warty, warts rather small, densely distributed but comparatively tall and well visible over the profile, more so at the distal end  $(4.7\text{--})6\text{--}7.4\text{--}(8.8) \times (3.4\text{--})4.1\text{--}5.4\text{--}(7.7) \mu\text{m}$ ;  $Q = 1.2\text{--}1.6$  ( $n=201$ ). *Hymenium* margin partly fertile, *basidia* mostly 2 spored cylindraceous or clavate,  $33\text{--}38 \times 7\text{--}8 \mu\text{m}$ ; presence of numerous sterile cells, cylindraceous or clavate; an intracellular yellow pigment lays among the hyphae of the trama becoming flame red in KOH. *Pileipellis*: epicutis cylindric hyphae,  $5\text{--}13 \mu\text{m}$  diam. with some gelatinisation, slightly interwoven, often with erected terminal lanceolate cells. *Hypodermium* subcellular of broadly ellipsoid hyphae  $15\text{--}30 \mu\text{m}$  broad.

*Habitat*: Gregarious in rain forest, *Nothofagus cunninghamii* dominant.

*Collections examined*: Australia: Tasmania, Gordon Valley, Little Forentine River: Timbs Road, B, Gasparini & D. Ratkowsky, 23<sup>rd</sup> May 2002, HO 522353 (holotype), PHN A20523B4 (isotype); Growling Swollett, Genevieve Gates, B. Gasparini & D. Ratkowsky, 6<sup>th</sup> June 2002, PHN A20606A8.

*Etymology*: From Greek  $\mu\alpha\sigma\tau\acute{o}\varsigma\sigma$ , bosom, because of the nipple-like umbo.

*Comments*: This species is characterised by the very acute reddish nipple like umbo on an otherwise yellow, usually concentrically zoned pileus, by the sulphur yellow lamellae with an olivaceous hint, by the yellow, powdery veil, the yellow mycelium, and the bright red chemical reaction with KOH under the microscope. The strongly warty ovoid spores also characterize this species. This character is rather unusual in *Dermocybe*, whereas it is one of the distinctive characters for *Splendidi*. Further, a yellow powder stains the paper where exsiccata are kept.



**Figure 5** A *Cortinarius elaiops* PDD 88271, B *Cortinarius orixanthus* PDD 88253, C *Cortinarius mastoideus* HO 522353, D *Cortinarius leucanthemium* HO 526399, E *Cortinarius laetelamellatus* HO 544582. a) spores, b) basidia, c) cystidia and/or marginal cells, d) pileal structure, d<sub>1</sub>) cortex, d<sub>2</sub>) veil. Scale bars a) = 2000:1; b), c) = 1000:1; d), d<sub>1</sub>), d<sub>2</sub>) = 500:1.

***Cortinarius laetelamellatus*** Gasparini, sp. nov.

Figures 1E, 5E

Pileo usque 16 mm lato acute umbonato epicute sicca, fibrillosa, saepe circiter fissa, rubra e luteis fibrillis oblecta, disco fuscior, subrunneus. Lamellis haud confertis,

ventricosis, annexis, aurantiacis, e margine denticulato. Stipite 60–70 mm longo, 3–4 mm lato, clavato, aurantiaco e crocea pruina obtecto. Carne aurantiaca, fistulosa. Velo pruinoso croceo. KOH griseam reactionem, formaldehyde purpuream praebet. Sporis ellipticis, verrucosis, (6.4–)7.3–8.6(–10.1) x (4.1–)5.4–6.3(–6.9)  $\mu\text{m}$ .; Q= 1.2–1.5. Hymenii margine e copiosissimis sterilibus cellulis praedito, basidiis tetrasporigenis 35–39  $\mu\text{m}$  longis, 8–10  $\mu\text{m}$  crassis. Epicute e cylindraceutis hyphis 4–8  $\mu\text{m}$  crassis.

Holotypus hic designatus HO526399: Australia, Tasmania, Gordon Valley: Little Florentine River, Five Road, B. Gasparini & D. Ratkowsky 23<sup>rd</sup> May 2002.

*Pileus* diam. 16 mm, conical, acute umbonate. *Cuticle* dry, fibrillose, often cracked in circles, background reddish, covered by a thread like yellowish veil to give it an orange overall colouration, disc darker, dark brown, margin regular sometimes fimbriate with the yellow veil. *Lamellae* distant, L = 26, l=1, < 6 mm deep, ventricose, annexed to sub free, orange yellow or saffron, margin very finely denticulate. *Stipe* 60–70 x 3–4 mm, clavate, base 5 mm diam., orange, but covered by the intense pruinosity of the saffron yellow veil. *Context* orange, stipe hollow. *Macrochemical reactions*: KOH black grey on all parts, formaldehyde mauve. *Veil* saffron yellow, pruinose. *Cortina* evanescent.

*Spores* (6.4–)7.3–8.6(–10.1) x (4.1–)5.4–6.3(–6.9)  $\mu\text{m}$ .; Q = 1.2–1.5, (n=286) ellipsoid, warts somewhat irregular, sublabyrinthiform, or medium, protruding. *Hymenium*, margin almost sterile due to numerous clavate, vesiculose or cylindrical, sterile cells; *basidia* 4-spored, 35–39 x 8–10  $\mu\text{m}$ . *Pileipellis*: a medium size cutis of parallel cylindrical hyphae 4–8  $\mu\text{m}$  diam. *Hypodermium* indistinct, hyphae becoming broader to 20  $\mu\text{m}$ . clamp connections present. The hyphae are encrusted by a yellow-brown pigment.

*Habitat*: Very mature eucalypt and *Nothofagus* forest.

*Collections examined*: Australia, Tasmania, Gordon Valley: Little Florentine River, Five Road, B. Gasparini & S. McMullen-Fisher, 23<sup>rd</sup> May 2002. HO 526399 (holotype), PHN A20523B1 (isotype); Creepy Crawly, B. Gasparini & S. McMullen-Fisher, same date, PHN A20523B5.

*Etymology*: from Latin, *laete*, pretty and *lamellatus*, gilled because of the gill's colour.

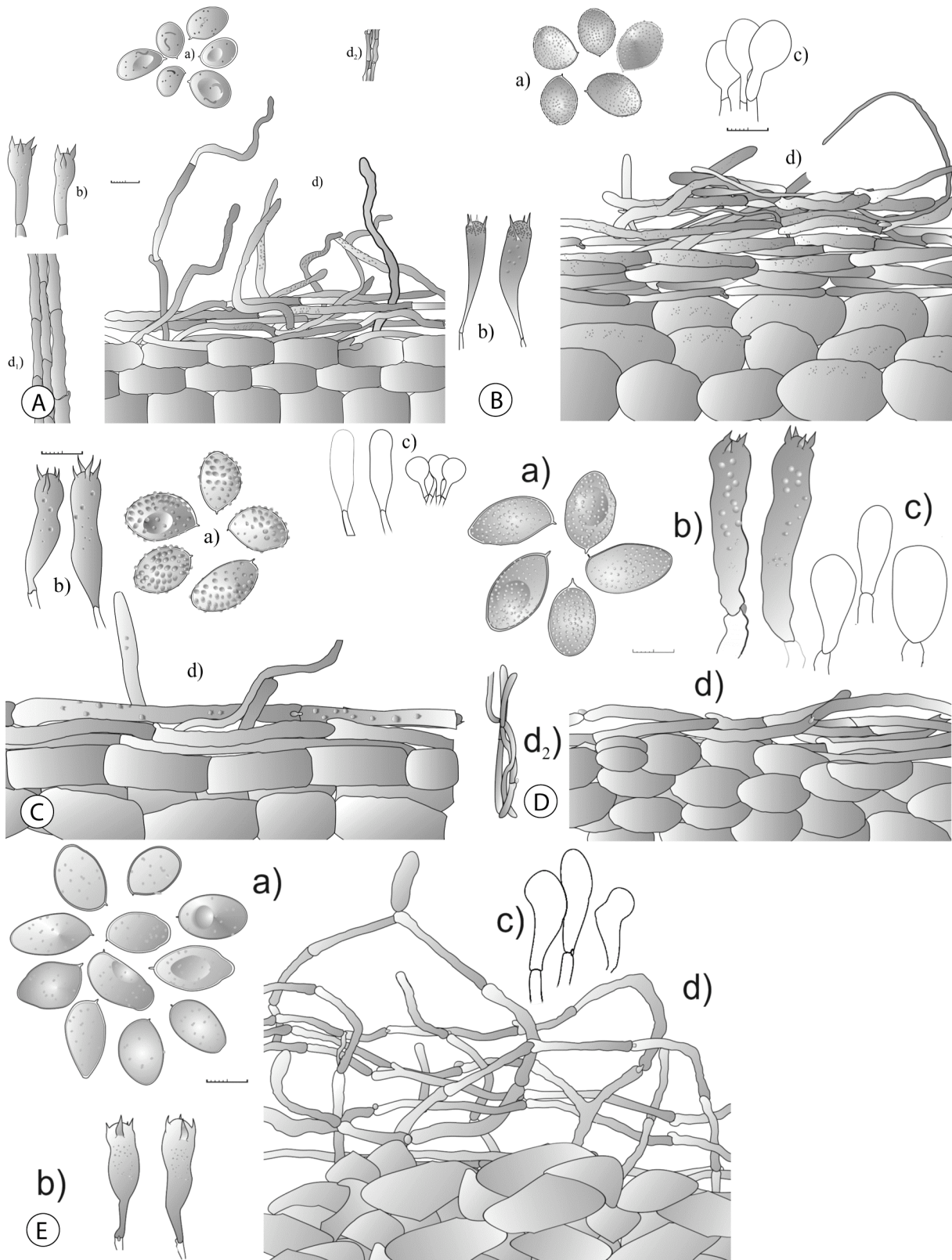
*Comments*: This *Cortinarius* is well recognised in the field by the pretty orange lamellae reminiscent of those of the northern *C. malicorius* Fr:Fr. and *C. luteostriatulus* M. M. Moser from South America, *C. aurantiellus* (E. Horak) G. Garnier and *C. egmontianus* (E. Horak) G. Garnier from New Zealand. However, *C. malicorius* has green context, orange veil and smaller spores, as well as a different habitat (Pinaceae). *C. luteostriatulus* has an orange cap with olive hues. *Cortinarius aurantiellus* has a similar size and colour to *C. laetelamellatus*, but does not show the pruinose veil, and the spores are much larger. *C. egmontianus* has a brown black cap, no evident veil and smaller spores. Another distinguishing character is the pruinose saffron coloured veil.

In the same habitat one can find *C. mastoideus* with similar colour and cracked cuticle (yet with presence of olivaceous hues), and characterised by a nipple-like umbo. Its similar spores, are, however, larger [(4.7–) 6.3–7.7(–8.8) x (3.4–)4.4–5.3(–6.1)  $\mu\text{m}$ ]. Distinct are also the macrochemical reactions: *C. mastoideus* has a red reaction with alkalis (KOH) on its cap and no reaction with formaldehyde, while *C. laetelamellatus* reacts grey with alkalis and pink with formaldehyde.

A TLC performed by A. Gerault has shown a strong blue fluorescence at R<sub>f</sub> 0.20 plus a red fluorescence at R<sub>f</sub> 0.45. Mass spectrography to detect the presence of orellanine was also performed, but presence of this metabolite — which could not be excluded — was not definitely detected.

The very strong blue fluorescence detected from the extract of a dry specimen shows a molecular weight of 235 amu. As orellanine and its derivatives always have an even number of nitrogen ions, the odd number seems to exclude orellanine and derivatives, but would rather suggest the presence of some nucleoside, this not being uncommon in extracts from fungi. The red fluorescence is likely to be an unidentified anthraquinonic pigment.

The morphological traits, presence of anthraquinonic metabolites, and unpublished rDNA sequence analysis places this *Cortinarius* in subgenus *Dermocybe*.



**Figure 6** A *Cortinarius austrocinnabarinus* HO 522321, B *Cortinarius veronicoides* HO 542327, C *Cortinarius controversus* HO 522441, D *Cortinarius malosinae* PDD 88279, E *Cortinarius austrotorvus* HO 526401. a) spores, b) basidia, c) cystidia and/or marginal cells, d) pileal structure, d<sub>1</sub>) cortex, d<sub>2</sub>) veil. Scale bars a) = 2000:1; b), c) = 1000:1; d), d<sub>1</sub>), d<sub>2</sub>) = 500:1.

***Cortinarius leucanthemium*** Gasparini sp. nov.

Figures 1F, 5D

Pileo usque 18 mm lato, conico vel campanulato, e cuticola sicca, vere fibrillosa, hygrophana, cerea, aut straminea, e brunneis fibrillis striata. Lamellis distantibus, ventricosis,

annexis, aurantiacis margine luteo. Stipite 40 mm longo, 2 mm lato, e base crassiuscula, interdum fasciculato, straminea. Carne quam exteriore concolore. KOH supra cuticula brunneolam reactionem praebet. Sporis ellipticis (5.9–)6.3–7.3(–7.9) x (3.7–)4.5–5.4(–6)  $\mu\text{m}$ ; Q = 1.3–1.5, verruculosus. Hymenii margine substerile, e copiosissimis sterilibus cellulis praedito. Basidiis 30–40  $\mu\text{m}$  longis 8–9  $\mu\text{m}$  crassis. Pileipelle e epicute haud crassa, hyphis cylindraceis 5–10  $\mu\text{m}$  crassis.

Holotypus hic designatus HO544582: Australia, Tasmania, Mt. Wellington: Silver falls, Service Track, G. Gates, 11<sup>th</sup> May 2002.

*Pileus* diam. < 18 mm, conical campanulate, cuticle dry, very fibrillose, hygrophanous, wax yellow or straw yellow with pale brown striations. *Lamellae* conspicuously distant, L = 21, 2 mm deep, slightly ventricose, annexed, orange with yellow margin. *Stipe* 40 x 2 mm, terete, sometimes slightly swollen at the base, sometimes fasciculate, fibrillose, straw yellow. *Context* concolorous to the outer stipe. *Macrochemical reactions*: KOH brownish, a yellow pigment leaches out in alcoholic solution: *Veil* straw yellow. *Cortina* evanescent. *Smell* not distinctive.

*Sporae* ellipsoid, warts very shallow and irregular (5.9–)6.3–7.3(–7.9) x (3.7–)4.5–5.4(–6)  $\mu\text{m}$ ; Q = 1.3–1.5 (n=50). *Hymenium*: margin partly fertile with numerous sterile cells, clavate or cylindrical 9–25  $\mu\text{m}$ . *Basidia* 30–40 x 8–9  $\mu\text{m}$ , with long sterigmata < 7  $\mu\text{m}$  and with yellowish granular contents. *Pileipellis*: thin surface layer of cylindrical or slightly inflating hyphae, 5–10  $\mu\text{m}$  diam., parallel with some erected tufts. *Hypodermium* not clearly distinct, hyphae getting broader and more elliptical, 15–20  $\mu\text{m}$  diam.

*Habitat*: wet sclerophyll with *Eucalyptus obliqua* prevailing

*Collections examined*: Australia, Tasmania, Gordon Valley, Little Florentine, A. Mills & D. Ratkowsky, 24<sup>th</sup> July 1997, PHN 970724A1, River Mt. Wellington: Silver falls, Service Track, G. Gates, 11<sup>th</sup> May 2002, HO544522 (holotype), PHN A20511C8.

*Etymology*: From λευκοσανθεμον = daisy, from its aspect.

*Comments*: This is a small and pretty *Cortinarius*, resembling a yellow daisy.

Distinctive are its yellow veil, the orange gills with a yellow margin, and the sterile margin of the lamellae. Its size and the type of spores suggest a position in subgenus *Dermocybe*. The size and colour suggest affinity with *C. mastoideus*, which differs by the nipple like umbo, lack of hygrophanicity, the sulphur-yellow colour of the lamellae, the straw-yellow mycelium, and the coarsely verrucose spores. It also resembles *C. laetelamellatus*, which, however, lacks the yellow margin of the otherwise orange lamellae and has larger spores [(6.4–)7.3–8.6(–10.1) x (4.1–)5.4–6.3(–6.9)  $\mu\text{m}$ ].

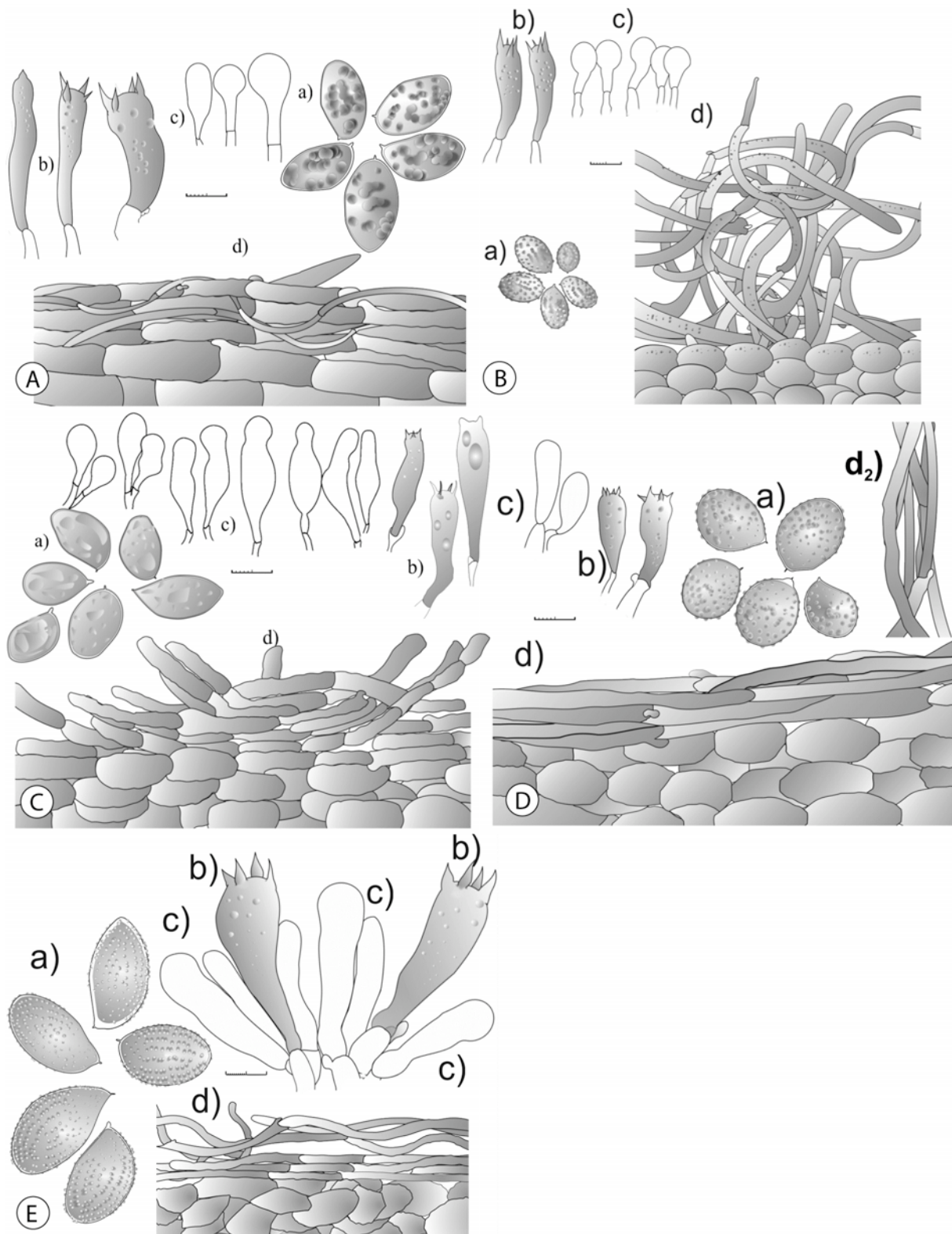
***Cortinarius austrocinnabarinus*** R.H. Jones & T.W. May *Muelleria* 26, 81.

Figures 1C, 6A

Name misapplied: *Cortinarius cramesinus* (E. Horak) Garnier ss. Fuhrer.

*Pileus* diam. 30–40(–60) mm conical at first, then convex to irregularly plane. *Cuticle* dry, not hygrophanous, fibrillose, orange red, or cinnabar (vermillion), sometimes paler and then egg yolk, but always with cinnabar fibrils covering the whole of the cap, while the margin tends to a paler colour. *Lamellae* emarginated, subdistant, L = 38, l=3, 6 mm, deep, pale brown or medium brown or medium brown but cinnabar red at the margin. *Stipe* 40–70 x 8–15 mm, enlarging to a clavate base, orange with some yellow throughout or white or pale orangey yellow, the entire stalk covered with bands of cinnabar streaked velar remains. *Veil* red, zoning the stipe. *Cortina* cinnabar/orange red. *Context* concolorous to the outer side of the stipe, yellowish in the core. *Macrochemical reactions*: KOH on cap black then purplish, on context purple. NH<sub>4</sub>OH on cap purple, on gills ink pink. In water a cinnabar pigment leaches out. *Smell* and *taste* raphanoid.

*Sporae* very variable, amygdaliform, ellipsoid sometimes sub cylindrical, almost smooth, warts very shallow and irregular (4.8–)5.9–7.2(–9.7) x (3.3–)4.1–5.2(–6)  $\mu\text{m}$ ; Q = 1.2–1.6, (n=246). *Hymenium* trama regular with hyphae cylindrical, parallel 4–7  $\mu\text{m}$  diam., presence of a great quantity of intracellular red pigment dissolving in KOH, margin fertile, no noteworthy cystidia seen; *basidia* 4-spored 20–25 x 6–7  $\mu\text{m}$ , containing yellow granules and in many cases a red pigment in the bottom half. *Epicutis* yellowish, a thin layer partly of



**Figure 7** A *Cortinarius tasmacamphoratus* HO 522416, B *Cortinarius ardesacus* HO 542373, C *Cortinarius rozites* HO 542318, D *Cortinarius rattinoides* PDD 88283, E *Cortinarius pselioticton* PDD 88277. a) spores, b) basidia, c) cystidia and/or marginal cells, d) pileal structure, d<sub>1</sub>) cortex, d<sub>2</sub>) veil. Scale bars a) = 2000:1; b), c) = 1000:1; d), d<sub>1</sub>, d<sub>2</sub>) = 500:1.

parallel and partly of erected hyphae in tufts with round terminal cells, 4–12  $\mu\text{m}$  diam., strongly encrusted with a bright yellow pigment. *Subcutis* subcellular with ovoid or

barrel-shaped hyphae 15–30  $\mu\text{m}$  diam.; masses of cinnabar pigment among the tissue, in KOH black purple, then soon dissolved. *Clamp connections* present throughout,

sometimes very large. *Cortex* parallel, cylindrical hyphae 6–15 µm diam. *Veil* cylindrical yellow/orange hyphae 2–2.5 µm diam., with masses of golden or minium coloured pigment.

*Habitat*: Gregarious in *Eucalyptus* forests.

*Collections examined*: Australia: Tasmania, Lake Skinner Track, G. Gates & D. Ratkowsky, 11<sup>th</sup> April 1999, HO522321; same date, locality and legit HO522322, HO522323, PHN 990413A5 and PHN 990413A5/B; Mt. Wellington, Old Farm Trail, G. Gates, D. Ratkowsky, G. Collins & S. McMullen-Fisher, 13<sup>th</sup> April 1999, PHN 990413A4; Mt Wellington, Pelverata Falls, G. Gates & L. Cusack, 23<sup>rd</sup> May 1999, PHN 990523A1; Timbs Track, G. Gates & D. Ratkowsky, 18<sup>th</sup> April 2002, RPN 20020418A0.

*Comments*: As noted by Jones & May (2008), the description fits pro-parte *Cortinarius cramesinus* (E. Horak) Garnier, which is apparently smaller than the present species (30 mm). However the basidiocarp size is not necessarily a relevant character, as the species appears to have been found by Horak only once. It has, however, been found by the second co-author (KS) at its type locality with larger caps. The other character is the habitat of *C. cramesinus* under *Nothofagus* while the present collections were found with *Eucalyptus*. Other anatomical characters, though, conform to Horak's: particularly the cinnabar colour of the cap, the ochraceous gills and the yellow stipe, encircled with crimson belts, that are all very conspicuous characters. Even the spores (246 spores measured from our collections) seem to have the same size, shape and ornaments. Scanning electron microscopy clearly indicates a different type of spore ornamentation (Jones & May 2008). The chemical reaction (applied on dry collections with *Cortinarius austrocinnabarinus*) is similar.

This species was photographed and published by Gill (1995, p. 2), and by Fuhrer (2005, p. 61). As Gill mentioned the collection by Watling under accession number WAT 19352 at Royal Botanic Garden of Edinburgh, the voucher was obtained from the herbarium. The spores matched closely the present species and it can be concluded that it is the same taxon.

Gill (1995, p. 8–9) examined *C. cramesinus*, and WAT 19352 and found an entirely different

pigmentation. The main pigment found in WAT 19352 (Gill & Giménez (1988), Gill (1990), Cotterill *et al.* (1994), Gill (1995)) is austrocorticin (orange), accompanied by austrocorticinic acid, austrocorticone and its 4-hydroxy derivatives. *Cortinarius cramesinus* pigments are cinnarubin, cinnarubinglucosyde, an unspecified violet pigment, a weak presence of physcion and doubtful presence of endocrocin. These pigments place *C. cramesinus* in the core of *Dermocybe*, sect. *Sanguinei* (Keller 1979).

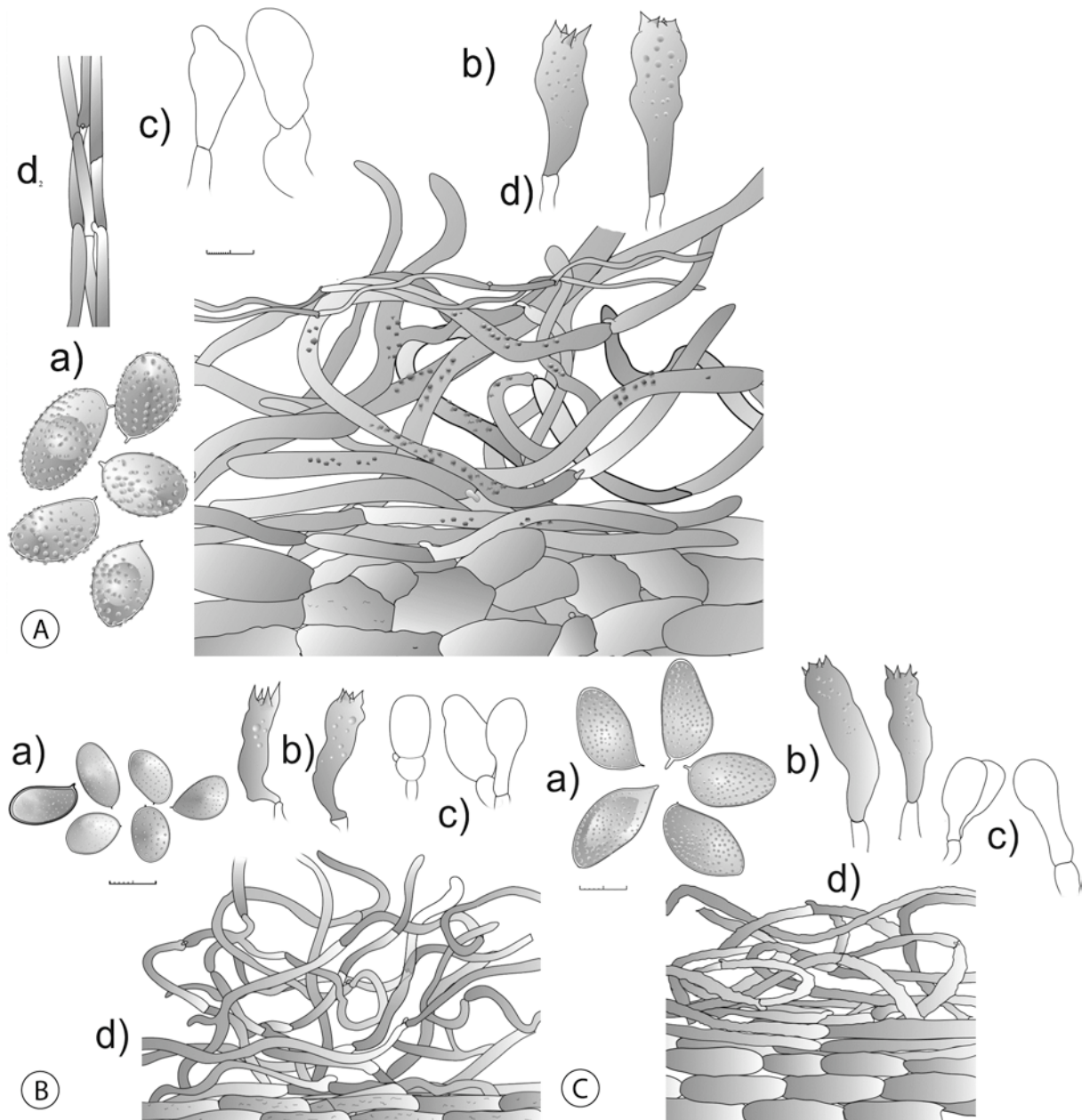
The internal transcribed spacer region of the present species was also sequenced (unpublished data). Analysis suggested a taxonomic position in the core of the *Dermocybe* clade close to *C. walkeri* Cooke & Masee ss Gasparini (2007b). *C. cinnabarinus* appears to be exclusive to the Northern Hemisphere and belongs to *Telamonia*. Several other red *Dermocybe*-like *Cortinarius* found in Tasmania (i.e., *C. kula* (Grgurinovic) Gasparini, *C. persplendidus* Gasparini) appear to occupy a totally different taxonomic position (cf. Garnica *et al.* 2005) and should be included in the said article for the time being named *Splendidi*.

The conclusion is that the collections examined by Gill represent two separate species with one of them (WAT 19352) corresponding to the Tasmanian material described above and named *C. austrocinnabarinus*.

***Cortinarius veronicoides*** Gasparini, sp. nov.

Figures 2E, 6B

Pileo usque 50 mm lato, applanato, subumbonato, cuticola sicca, hygrophana, tomentosa, coccinea vel purpurea e pallide rubro velo obtecta. Lamellis fere confertis, ventricosis, annexis, aurantiacis, e margine praeter regulare denticolato. Stipite 70 mm longo 5 mm lato, clavato vel sub bulboso e basi 8 mm crassa, armeniaco, e rubris fibrillis veli decorato. Carne stipitis concolore. Velo rubro. KOH sanguineam, ope cuticola, lamellis brunneam, purpureo violascentem stipite carneque reactionem praebet. Sporis subglobosis, 5.7–6.5–(–6.9) x 4.5–(–5) µm; Q = 1.2–1.4. µm; L/Q = 1.6–2 valde verrucosis. Basidiis clavatis, tetrasporigenis, 30–32 µm longis 5–7 µm crassis. Pileipelle, parallelis cylindraceis hyphis 15–30 µm crassis. Hypodermio subcellulare e ellipticis vel subglobosis hyphis 40–80 µm longis, 18–25 µm latis. Pigmentatione e rubris crustis hyphas operente.



**Figure 8** A *Cortinarius rhipiduranus* PDD 88269, B *Cortinarius dulciorum* PDD 78797, C *Cortinarius myxenosma* PDD 88282. a) spores, b) basidia, c) cystidia and/or marginal cells, d) pileal structure, d<sub>1</sub>) cortex, d<sub>2</sub>) veil. Scale bars a) = 2000:1; b), c) = 1000:1; d), d<sub>1</sub>), d<sub>2</sub>) = 500:1.

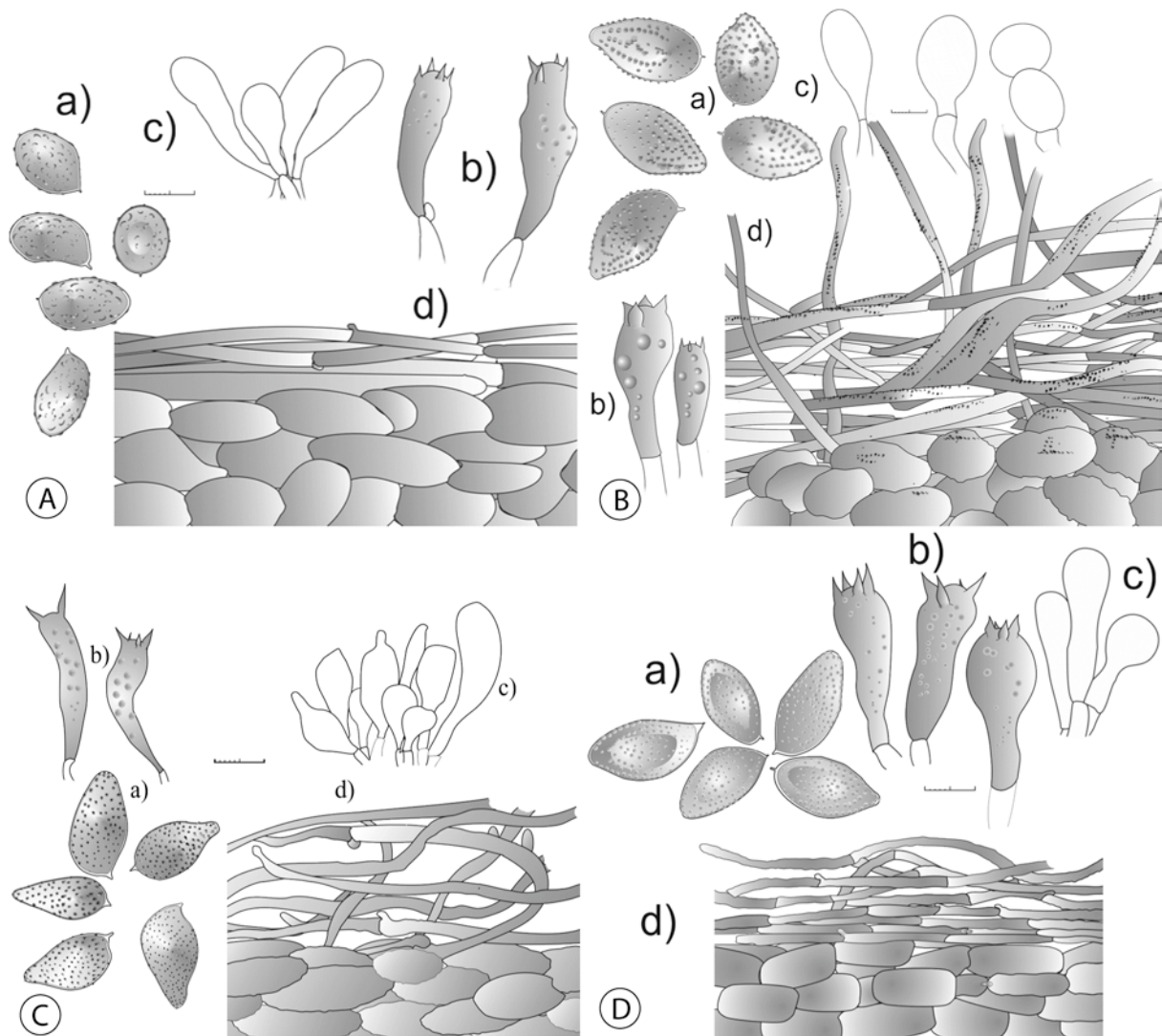
Holotypus hic designatus HO542327: Australia, Tasmania, Gordon Valley, Growling Swallett, G. Gates, B. Gasparini & D. Ratkowsky, 4<sup>th</sup> June 2002.

*Pileus* diam. < 50 mm, plane at the time of collection, slightly umbonate. *Cuticle* dry, hygrophanous, tomentose, scarlet or vermilion, decorated with a pale hairy veil, some other times paler carmine red. *Lamellae* normally distributed, L = 47, l=1, 6 mm deep, annexed, ventricose, orange or cinnabar, margin entire. *Stipe* 70 x 5 mm, clavate, sub bulbous, base 8 mm wide, yellow or pale orange, with fibrils of the red veil, *Context* almost inexistent in cap,

fibrous in stipe, concolorous with the outer part. *Macrochemical reactions*: KOH blood red on cap, brownish on gills, mauve or pale violet on context and at the base of the stipe. Fluorescence not tested. *Veil* red, fibrillose. *Cortina* evanescent. *Smell*, none, *taste* slightly bitter.

*Spores* almost subglobose warts very showy, medium-sized, well distributed, conspicuous in profile particularly at the distal end, 5.7–6.5–(–6.9) x 4.5(–5) μm; Q=1.2–1.4 (n=144). *Hymenium* margin fertile; *basidia* 4-spored, 30–32 x 5–7 μm, containing a lemon yellow pigment; *sterile cells* clavate. *Pileipellis*:





**Figure 9** A *Cortinarius vernicifer* PDD 88273, B *Cortinarius gymnocephalus* PDD 88292, C *Cortinarius pseudorotundisporus* HO 522433, D *Cortinarius pectochelis* PDD 88278. a) spores, b) basidia, c) cystidia and/or marginal cells, d) pileal structure, d<sub>1</sub>) cortex, d<sub>2</sub>) veil. Scale bars a) = 2000:1; b), c) = 1000:1; d), d<sub>1</sub>), d<sub>2</sub>) = 500:1.

*Epicutis*, a very thin, yellow upper layer, hyphae cylindrical 5–7 µm diam., parallel often erected on the surface, surmounted by the filamentous veil hyphae 1–2.5 µm diam. *Hypodermium* subcellular; hyphae ellipsoid to subglobose 15–30 µm diam. Pigment reddish olivaceous, encrusting the hyphae. *Clamp connections* present.

*Habitat*: Solitary or gregarious in rain forest with *Nothofagus cunninghamii* dominant; also presence of *Eucalyptus obliqua* L'Hér.

*Specimens examined*: Australia: Tasmania, Mt. Wellington, Myrtle Gully, G. Gates & D. Ratkowsky, 9<sup>th</sup> June 2001, RHN 10609A0; Gordon Valley, Growling Swallett, G. Gates, B. Gasparini & D. Ratkowsky, 4<sup>th</sup> Jun 2002, HO 542327 (holotype).

*Etymology*: Latin *veronicae*, Greek –οειδης, of similar aspect, in reference to its likeness to *Cortinarius veronicae* Soop.

*Comments*: *C. veronicoides* is a brilliant, scarlet dermocyboid *Cortinarius*. In the field it is recognised by its hygrophaneity, by the tomentose red veil, the brilliant scarlet or carmine colour of the pileus, the specific chemical reaction with KOH, the small, round spores and the two layered pileipellis. The chemical reactions obtained by applying a KOH solution (blood red on cap, mauve or pale violet on context and at the base of the stipe) is similar to that of *Cortinarius veronicae*.

***Cortinarius rubripurpuratus*** Soop nom. nov.

Basionymon: *Dermocybe purpurata* E. Horak & Gerw. Keller, in Horak, E. (1988). New species

of *Dermocybe* (Agaricales) from New Zealand, *Sydowia* **40**, p. 83; the name *Cortinarius purpuratus* R. Henry, 1985 being preoccupied.

***Cortinarius controversus*** Gasparini, sp. nov.

Figures 1D, Plate 6C

Pileo 20–40 mm lato, e globuloso convexo, cuticola viscidula, hygrophana, fulvo aurantiaca, disco margineque fuscioribus, margine obscure radiato. Lamellis subdistantibus, 6 mm latis, annexis, cerae coloratis deinde tenue ochraceis. Stipite 80 mm longo, 5 mm crasso clavato luteo ochraceo e aurantiaci veli frustulis oblecto. Carne cerea colorata, stipite vacuo. Odore fructato vel crustuli instar, gusto mite. KOH ope cuticola sanguineam, lamellis stipiteque roseam reactionem praebet. Sporis ovatis, etiam interdum subglobosis, amygdaliformibus vel fusiformibus, (5.2–)6.2–7.3(–8.8) × (3.5–)4.5–5.5(–6.4) μm. Q = 1.2–1.5, vere verrucosis. Hymenii margine substerile e clavatis sterilibus cellulis ornato 18–21 μm longis, 7 μm crassis. Basidiis 28–32 μm longis, 7–11 μm crassis. Pileipelle, epicute haud crassa e cylindraceutis parallelis hyphis 5–10 μm crassis. Hypodermio subcellulare e ellipticis el subglobosis hyphis 15–30 μm crassis. Intracellulare pigmentatione e vitellinis globulis.

Holotypus hic designatus HO522441: Australia: Tasmania, Gordon Valley, Little Florentine River, Timbs Road, B. Gasparini & D. Ratkowsky, 11<sup>th</sup> May 2002.

*Pileus* diam. 20–49 mm subglobose, then convex, cuticle dry or sticky, hygrophanous, yellow-orange darker at the disc and the margin where there are dark striations of hygrophanicity. *Lamellae* rather distant, L = 27, 6 mm deep, annexed, wax yellow, becoming light ochre. *Stipe* < 80 × 5 mm, base slightly enlarged, otherwise terete clavate, pale ochre yellow, with fibrils of the orange veil. *Context* concolorous with stipe (straw yellow). *Stipe* empty. *Macrochemical reactions*: KOH blood red, on cap, pinkish on gills and stipe. *Fluorescence* blue. *Veil* orange, fibrillose. *Cortina* yellowish, evanescent. *Smell* strong, sweet pastry or fruit, *taste* mild.

*Spores* (5.2–)6.2–7.3(–8.8) × (3.5–)4.5–5.5(–6.4) μm; Q = 1.2–1.5, (n=193) ovoid, ellipsoid or subglobose, but also fusiform or occasionally amygdaliform, warts rather coarse, sometimes subcalyptrate, evenly

distributed and well showing over the profile. *Hymenium* almost sterile due to the presence of clavate or vesiculose sterile cells, 18–21 × 7 μm with occasional presence of 4-spored basidia. *Basidia* 25–32 × 7 μm. *Lamellar trama* regular hyphae cylindrical 12–14 μm. *Pileipellis*, somewhat thin layer of cylindrical hyphae 5–10 μm diam., parallel with rare round-headed terminal cells; masses of intracellular bright yellow (fulvous yellow in the deepest strata) coloured pigments among the hyphae, which are also heavily encrusted with yellow brown pigment. *Hypodermium* subcellular with hyphae cylindrical, becoming ellipsoid to subcellular in the deepest strata, 20–30 μm diam. *Clamp connections* present.

*Habitat*: Very abundant, gregarious to subfasciculate in wet forest with *Nothofagus cunninghamii*.

*Collections examined*: Australia: Tasmania, Tasman Peninsula, Duckhole Lake Track, G. Gates & D. Ratkowsky, 9<sup>th</sup> March 2002, RPN 20020309A0; Gordon Valley: Little Florentine River, Timbs Road, B. Gasparini & D. Ratkowsky, 11<sup>th</sup> May 2002, HO522441 (holotype); Growling Swallett, G. Gates, D. Ratkowsky & B. Gasparini, 11<sup>th</sup> May 2002 HO526391; Timbs Road 23<sup>rd</sup> May 2002, PHN A20523A0.

*Etymology*: From Latin *controversus*, controversially sharing partly telamonioid and partly dermocyboid characters

*Comments*: *Cortinarius controversus* is a very distinctive species with a compact basidiome, growing gregariously and abundantly along tracks in wet forests, possibly symbiotic with *Nothofagus*. The cap has a remarkable bright orange colour, while the lower parts of the basidiome are yellow. The cap is strongly hygrophanous and has a pleasant odour evocative of pastry. Also the spores are unusually small and their shape may be subglobose but also amygdaliform, coarsely or lightly verrucose. Its shape and hygrophanicity at first suggest a *Telamonia*. However, the bright colour and the chemical reaction to alkali cast some doubts. TLC performed in two different laboratories (data unpublished) arrived at the same conclusion. The extractable stock of pigments is very scarce and does not suggest the presence of anthraquinones. The presence of a blue fluorescence is not distinctive, being probably due to different

molecules, for instance nucleosides, frequently found in fungal extracts.

***Cortinarius malosinae*** Soop sp. nov.

Figures 3C, 6D

Pileo 15–30 mm diam., conico, deinde convexo, sicco, hygrophano, helvello, juvento luteopruinato, minute innato-fibrilloso, margine substriata. Lamellis primo e cinnamomeis aurantiobadiis, distantibus et crassis. Stipite aequali, pallide luteo, subdense fibrillis aurantiis vestito. Velo aurantiorubro, subcopioso. Carne saturate aurantia vel aurantiolutea; odore saporeque nullis. Sporis ex ellipsoideis subamygdaloideis 8.5–10.5 x 4.5–5.5  $\mu\text{m}$ , moderate vel subminute verrucosis. Reactionem ope NaOH nullam.

Holotypus hic designatus PDD88279: Nova Zelandia, Haast Pass, Blue Pools, in silvis cum *Nothofagete*, 4<sup>th</sup> May 2006, K. Soop.

*Pileus* 10–30 mm diam., conical, later convex, dry, finely innate fibrillose, young coated with a yellow frost, hygrophanous, yellow-brown, margin somewhat striate, sulcate when older. *Lamellae* notched, distant (L=14, l=2–3), thick but not veined, tan to orange-brown. *Stipe* 30–50 x 2–4 mm, cylindrical; pale yellow, coated orange with orange fibrils, sometimes densely so, base and often apex strikingly red-orange. *Veil* orange to red-orange, fairly copious; *cortina* dark yellow. *Context* saturated orange to orange-yellow. *Macrochemical reactions*: NaOH discolours the orange pigment on the stipe, turning it olive-grey, elsewhere trivial; guayac weakly green in context. *Odour* and *taste* nil.

*Spores* (8–)8.5–9.2–10.5 x 4.6–5.2–5.5(–6)  $\mu\text{m}$ ,  $Q=1.76\pm 0.13$  (n=24), elliptic to subamygdaloid, moderately to rather weakly verrucose. *Cheilocystidia* clavate, 30–40 x 5–7  $\mu\text{m}$  interspersed by smaller (20–30  $\mu\text{m}$ ), crowded marginal elements. *Basidia* 32–45 x 8–10  $\mu\text{m}$ , 4-spored. *Epicutis* of hyaline entangled hyphae, 6–10  $\mu\text{m}$  diam., lower strata with a yellow pigment. *Hypocutis* with hyphal oval elements, 30–45 x 15–25  $\mu\text{m}$ . *Veil* hyphae (from stipe) yellowish 2–4  $\mu\text{m}$  diam. *Clamp connections* present.

*Habitat*: Gregarious, fairly common, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Haast Pass, Blue Pools, 4<sup>th</sup> May 2006, PDD 88279 (holotype), KS-CO1664 (isotype); Te Anau, Kepler Track, 6<sup>th</sup> May 2001, KS-CO1231; Hawkes Bay, Tuai, Lake Waikareiti Track, 9<sup>th</sup> May 2001, PDD 73155, KS-CO1237.

*Etymology*: From Latin *malum*, apple and *sinae*, of China; that is, orange fruit, due to its conspicuous colouration.

*Comments*: A small telamonioid fungus easily recognised by its spectacularly orange-coloured stipe, at least at the base, and a contrastingly dull-coloured pileus. Also the context and mycelium are orange. Specimens with a duller coloured stipe resemble *Cortinarius luteinus* Soop, but may be separated by spore size.

***Cortinarius austrotorvus*** Gasparini sp. nov.

Figures 1B, 6E

Pileo 30–40 mm lato, campanulato vel convexo, cuticola rugulosa, hygrophana, incarnata e margine lilaceo pallidescente, deinde vinoso-incarnata, lamellis confertis annexis, lilacinis, deinde brunneo-purpureis e margine vere serrato, heterogeneo (niveo) stipite < 50 mm x 5–7 mm, clavato, base crassiuscula 11 mm crassa, lilaceo apice vehementiore e copioso niveo velo circellato, carne firma, in pileo nitente, stipitis apice lilaacea, odore gustoque raphanoidibus, sporis ellipticis vel amygdaliformibus (7.8–)8–9.4(–10.3) x (4.4–)4.7–5.4(–6.9)  $\mu\text{m}$ ;  $Q = 1.6–1.9$ , verrucosis. Hymenii margine substerile e copiosissimis cheilocystidiis versiformibus 20–35 x 6–8  $\mu\text{m}$ ; pleurcystidiis similibus sed parvioribus, basidiis cylindratis 30 50 x 7 9  $\mu\text{m}$  pileipelle e haud crassa epicute intextis brevibus hyphis x 4–10  $\mu\text{m}$  crassis. Hypodemio subcellulare e polygonalibus vel ellipticis hyphis 18–30  $\mu\text{m}$  crassis.

Holotypus hic designatus: HO526401. Australia: Tasmania, Mt. Field National Park, Tall Trees Track, 28<sup>th</sup> May 2002, G. Gates, D. Ratkovsky & B. Gasparini.

*Pileus* diam. 30–40 mm, campanulate then convex to plano convex, cuticle rugulose, lilac or flesh coloured, gradually lighter towards the pale lilac margin, becoming darker (livid vinaceous) due to hygrophaneity on drying. *Lamellae* crowded, L = 65, 15 mm deep, annexed, pale lilaceous, soon purple brown, margin heterogeneous, white very serrate.

*Stipe* < 50 x 5–7 mm, clavate, base 11 mm wide, pale lilac slightly more intense at the apex, covered by a sheath of the cottony veil. *Context* solid, off white in cap and at the base, lilac in the stipe. *Macrochemical reactions*: KOH and all other usual reagents nil. *Veil* white, zoning the stipe with ringlets, woolly. *Cortina* white, permanent. *Smell* and *taste* raphanoid.

*Spores* ellipsoid, very faintly ornamented (7.8–)8–9.4(–10.3) x (4.4–)4.7–5.4(–6.9)  $\mu\text{m}$ ; Q = 1.6–1.9, (n=50). *Hymenium* margin almost sterile due to the presence of numerous *cheilocystidia* mostly clavate or cylindrical, sometimes also pluriseptate 20–35 x 6–8  $\mu\text{m}$  protruding for c. 20  $\mu\text{m}$ ; *pleurocystidia* similar, but generally smaller, *basidia* cylindrical, 2- or 4-spored 30–50 x 7–9  $\mu\text{m}$ . *Pileipellis* a cutis formed by subentangled, cylindrical hyphae 4–10  $\mu\text{m}$  diam., somewhat short, clamped elements, often forked or diverticulated with terminal cells often erected and round headed. *Hypodermium* formed by a tessellated structure of versiform (ellipsoid, polygonal) hyphae 18–30  $\mu\text{m}$  diam. *Pigment* encrusting the hyphae pale brownish olivaceous.

*Habitat*: Gregarious in wet mixed sclerophyll, possibly in association with *Eucalyptus*

*Collections examined*: Australia: Tasmania, Mt. Field National Park, Tall Trees Track, 28<sup>th</sup> May 2002, G. Gates, D. Ratkowsky & B. Gasparini, HO526401 (holotype); 28<sup>th</sup> May 2002 same locality and legit, HO 526402.

*Etymology*: In reference to its resemblance to *C. torvus* Fr. because of the very abundant veil.

*Comments*: This telamoniod *Cortinarius* belongs to a group evocative of the subsection *Lilaceofolii* M.M. Moser with colours that range between lilac/blue to pink in the whole basidiocarp. This species is characterised by an incarnate (flesh colour) hue of the cap and a peronate stipe with a very strongly developed, white veil, and by the substerile margin of the lamellae occupied by abundant cystidia. Other *Cortinarius* apparently similar are commonly found in Tasmanian forests. However they exhibit some differences, like a glabrous stipe or subglobose spores. In the field they resemble *C. saturninus* Fr.

***Cortinarius tasmacamphoratus*** Gasparini, sp. nov.

Figures 2D, 7A

Pileo 30–80 mm lato, e convexo subplano, cuticola sicca, nitente, squamosa, griseo-rosea, lilaceo tincta e cremeis vel dilute luteis squamis obtecta. Lamellis confertis saepe furcatis vel anastomatibus, adnatis, dilute lilacinis. Stipite 50 mm longo, 13 mm crasso, cylindrico, vel clavato vel subbulboso, fibroso, fibrilloso, lilaceo e luteis frustulis veli obtecto. Carne firma, in pileo nitida, lilacina in stipite. Odore peculiare, molesto, Gusto amarescente. KOH ope cuticola griseam reactionem praebet. Sporis 8.6–9.6  $\mu\text{m}$  longis, 5–5.8  $\mu\text{m}$  latis, Q = 1.6–1.8 e superficie rugosa. Hymenii margine fertile basidiis tetrasporigenis, nonnunquam monosporigenis 30–40  $\mu\text{m}$  longis 7–8  $\mu\text{m}$  crassis. Copiosissimis sterilibus cellulis vesiculososis vel cylindratis. Pileipelle haud crassa e cylindratis parallelis hyphis 5–8(–10)  $\mu\text{m}$  crassis, veli 1–2  $\mu\text{m}$  crassis permixtis.

Holotypus hic designatus HO522416: Australia, Tasmanian Peninsula, Tiranna Forest Walk, G. Gates, D. Ratkowsky & B. Gasparini, 1<sup>st</sup> June 2002.

*Pileus* diam. 30–80 mm, convex. *Cuticle* dry, glistening, not hygrophanous, scaly, clay pink in C.I.C. colour chart, immature having the appearance of *C. alboviolaceus* Fr. i.e., micaceous, pale lilac or bluish, then pale potato peel in the middle retaining the lilac colour at the margin, or hazel nut with many appressed off white or pale yellow membranous strips of the veil scattered on the whole cap similarly to that of some *Amanita*. *Lamellae* crowded, L = 70, l = 1, 10 mm deep, often forked by the stipe or even anastomised, adnate, slightly rugulose, pale lilac, soon purple brown. *Stipe* 50 x 13 mm, almost terete, often slightly clavate bulbous, a little incurved when adult, fibrous, fibrillose, lilac all the way through, girdled with a clear yellow ochraceous submembranous veil. *Context* solid, off white in cap, lilac in stipe, centre of stipe medullose. *Macrochemical reactions*: KOH grey on cutis. *Veil* pale yellow, scaly. *Cortina* submembranous, pale yellow to whitish, abundant and persistent. *Smell* very strong and unpleasant, typical of *C. camphoratus*, may be defined as similar to goat cheese, potato peel left to ferment, acetylene, gas, or cooking turnips. *Taste* slightly bitter.

*Spores* ellipsoid, warts broad irregular, shallow 8.6–9.6 x 5–5.8  $\mu\text{m}$ .  $Q = 1.6\text{--}1.8$  ( $n=50$ ). Hymenium margin fertile, *basidia* generally 4-spored, occasionally 1-spored, clavate, 30–40 x 7–8  $\mu\text{m}$ , sterile cells clavate, vesiculose or cylindrical rarely showing over the profile. *Pileipellis*: thin layer of sub parallel, cylindrical or slightly inflated hyphae 5–8(–10)  $\mu\text{m}$  diam., parallel or slightly interwoven mixed with the hyphae of the veil, 1–2  $\mu\text{m}$  diam. Some terminal hyphae lanceolate. *Hypodermium* indistinct the hyphae gradually getting shorter and broader < 25  $\mu\text{m}$ . *Clamp connections* present.

*Habitat*: Solitary or gregarious in very wet forests, *Nothofagus cunninghami* (Hook.) Oersted, Vidensk being dominant.

*Specimens examined*: Australia: Tasmania, Wedge, G. Gates & D. Ratkowsky, 3<sup>rd</sup> July 2001, RPN 2001070301; Tasman Peninsula, Tiranna Forest Walk, G. Gates, D. Ratkowsky & B. Gasparini, 1<sup>st</sup> Jun 2002, HO522416 (holotype); Duckhole Lake Track, G. Gates, D. Ratkowsky & B. Gasparini, 6<sup>th</sup> Jun 2002, HO522405.

*Etymology*: In reference to its resemblance to *Cortinarius camphoratus* Fr. and to its growing in Tasmania.

*Comments*: A true "*Sericeocybe*" of the Southern Hemisphere, this species possesses a remarkable likeness to *Cortinarius camphoratus* Fr., which grows in the conifers of the Northern Hemisphere — another example of homomorphism. On collection it exhibits the same colour (albeit a little duller), the same veil, the same odour, very similar spores and equally single pileipellis. The lamellae are pale lilac at the beginning, but, unlike *C. camphoratus*, soon turn brown. Other distinctive characters are the dull grey lilac colour all over and the yellowish veil. Unmistakable is the strong, unpleasant smell shared by very few other species of *Cortinarius*. It shares this odour with the New Zealand species *C. dysodes* Sooty, which is also macroscopically similar.

***Cortinarius ardesiacus*** Gasparini, sp. nov.

Figures 1A, 7B

Pileo 60–90(–120) mm lato, e convexo appanato, cuticola sicca, hygrophana, brunneola, sicca ardesiaca, e obscuris fibillis insitis ornata. Lamellis confertis, adnatis vel

emarginatis, brunneolis vel ochraceis, senescentibus brunneis. Stipite 30–70 mm longo 15–18 mm lato, clavato vel subbulboso, basi < 30 mm lata, niveo vel lacteo. Carne in stipite sordida, in pileo brunneola. Sporis ellipticis vel ovi instar (5.6–)6.7–8.3(–9.8) x (3.6–)4.3–5.4(–6.4)  $\mu\text{m}$ ;  $Q = 1.4\text{--}1.7$ . Basidiis tetrasporigenis 32–40  $\mu\text{m}$  longis; cystidiis vesiculosis vel cylindraceutis. Pilipelle, epicute gelatinosa e confusis hyphis 4–6  $\mu\text{m}$  crassis e luteo pigmento incrustatis. Hypodermio subgloboso, e ellipticis hyphis 20  $\mu\text{m}$  crassis.

Holotypus hic designatus HO542373. Australia, Tasmania, Mt. Wellington, Fern Glade, D. Ratkowsky, 27<sup>th</sup> April 1996.

*Pileus* diam. 60–90(–120) mm convex, then becoming flattened or irregularly plane, sometimes retaining a broad central umbo into maturity. *Cuticle* dry, fibrillose, hygrophaneous, pale to medium brown with some slate grey hues with dark narrow fibres, appearing mottled due to irregularly embedded darker fibres, radiating towards the margin, which appears concolorous to the rest of the cap, sometimes fimbriate due to the veil remnants. Soon smooth with a lead colour, which it retains on drying. *Lamellae* adnate to emarginate, crowded,  $L = 90$ ,  $I = 2$ , pale brown to sienna when young, later deep chocolate brown. *Stipe* 30–70 x 15–18 mm narrower at the apex, clavate to sub bulbous, with base < 30 mm, smooth or with brownish fibrils of the veil, in patches along the whole length, whitish to cream. *Veil* brownish, cortina white fugacious. *Context* brownish in cap, white to watery in stipe. *Macrochemical tests*: KOH nil (blackish) on all parts. *Smell* and *taste* inconspicuous.

*Spores* (5.6–)6.7–8.3(–9.8)x (3.6–)4.3–5.4(–6.4)  $\mu\text{m}$ ;  $Q = 1.4\text{--}1.7$  ( $n=280$ ), ellipsoid to ovoid with warts medium, well distributed and conspicuous in profile. *Hymenium* margin fertile, sterile cells and *cystidia* present, spheropedunculate or cylindrical 35–40 x 7–8  $\mu\text{m}$ . *Pileipellis* slightly gelatinised upper stratum of cylindrical hyphae 4–6(–9)  $\mu\text{m}$  diam., strongly interwoven, encrusted by a yellow pigment. *Hypodermium* subcellular or tessellated, hyphae polygonal, ellipsoidal to subglobose 20  $\mu\text{m}$  broad. *Clamp connections* abundant.

*Habitat*: Large, telamonioid, gregarious, sometimes fasciculate in dry and wet

sclerophyll presumably associated with *Eucalyptus* sp.; common.

*Collections examined:* Australia, Tasmania, Mt. Wellington, Road between Waterworks Reserve and Ridgeway, A. V. Ratkowsky, 18<sup>th</sup> April 1994, PHN 940418A0; Knoklofty, D. Ratkowsky, 24<sup>th</sup> July 1994, PHN 940724A0; between Waterwork Reserve and Ridgeway, A. May Ratkowsky, 27<sup>th</sup> April 1996, HO542373 (holotype), PHN 960427A1 (isotype); Fern Glade, D. Ratkowsky, 19<sup>th</sup> April 1997, PHN 970419A0; Pillinger Drive to Fern Glade Track, D. Ratkowsky, 25<sup>th</sup> April 1997, PHN 970425A5; nr. Junction of Betts Vale Track and Circle Track, D. Ratkowsky, 24<sup>th</sup> April 1998, PHN 980424A0; Tasman Peninsula, Kermantie Falls, G. Gates, P. Pratt, F. Lewis, L. Bishop & D. Ratkowsky, 30<sup>th</sup> March 1999, PHN 990330A0.

*Etymology:* from Latin *ardesia*, slate, because of the colour it acquires when drying.

*Comments:* The species is fairly common in dry and wet sclerophyll forest and it is characterised by the medium size, the mottled brown cap, becoming a peculiar slate colour upon drying and finally leaden grey, vaguely suffused in pink. The ochraceous, crowded gills and the fairly small, ovate, well ornate spores are further distinguishing characters. The description partly fits *Cortinarius areolato-imbricatus* Clé., but the cap of the latter does not dry to a leaden colour. Further its spores are much larger [8.6–9.7(–10.5) × (3.6–)4.6–5.6 μm; Q = 1.8] with a more slender profile and the cheilocystidia have a different profile (fusoid to fusoid ventricose, cylindrical or subcapitate).

***Cortinarius rozites*** Gasparini, sp. nov.

Figures 2C, 7C

Pileo usque 60 mm lato, convexo, obtuse umbonato, margine recurvato. Cuticula in juventute viscidula, deinde sicca, squamosa, lilacea vel purpurea, deinde brunneo-ochracea, margine lilaceo. Lamellis tenuibus, 5 mm latis, subconfertis, adnatis vel emarginatis, quam pileo concoloribus vel pallidioribus, in aetate griseo-ochraceis. Stipite 90–100 mm longo, 13–15 mm crasso, basi crassiore usque 25 mm, clavato, niveo, e viperae corio reminiscente azureo velo peronato. Carne in pileo stipiteque nivea caerulescente. KOH ope cute pileoque aurantiacam reactionem praebet. Sporis ellipticis, haud verrucosis (5.6–)7.1–9(–

11.2) × (3.8–)4.8–5.7(–7.2) μm, Q = 1.3–1.7. Hymenii margine substerile, copiosissimis variiformibus cystidiis (18–)20–35 μm longis, 7–10 μm latis, basidiis cylindraceutis, tetrasporigenis 25–35 μm longis, 7–8 μm latis. Pileipellis, epicute media e brevisseptatis cylindraceutis hyphis 7.5–12 μm crassis, parallelis frequentibus pilis erectis. Hypodermio haud distincto.

Holotypus hic designatus HO542318: Australia: Tasmania, Kermantie Falls, Lower Track, G. Gates & D. Ratkowsky, 30th May 2000.

*Pileus* diam. < 60 mm, convex, in age with a round dome on the disc, margins slightly incurved, *Cuticle* tacky in the young collections, intensely shaggy, squamose, the elongated fibrils coalescing to form pyramids, which extend from the disc to the margin, lilac or livid vinaceous, red purple or magenta, later ochre brown with mauve showing at the margin. *Lamellae* thin, 15 mm deep, fairly crowded, adnate/emarginate, margin almost plane, concolorous with cap or slightly paler, later greyish ochre for maturing of the spores. *Stipe* 90–100 × 13–15 mm near the apex the narrowest point, 20 mm broad near the central area, 25 mm broad at the expanded, claviform base, white, peronate below the cortical ring with snake skin like markings of the veil. *Veil* lilac, peronating the stipe, *cortina* abundant and permanent leaving a pseudoannulus c. ⅓ up the stipe. This annulus though — not very infrequent in *Cortinarius* — has a webby texture, not being membranous as typical in *Rozites*. *Context* in pileus white with a faint lilac hue, in stipe white with lilac imbued. *Macrochemical reactions:* KOH orange on cap and stipe. *Smell* insignificant. *Taste* mild.

*Spores* (5.6–)7.1–9(–11.2) × (3.8–)4.8–5.7(–7.2) μm, Q = 1.3–1.7 (n=322) ellipsoid, sometimes ovate or pip-shaped, warts shallow, smallish irregularly distributed. *Hymenium* margin substerile, due to the presence of claviform or cylindrical, sub lageniform, subcapitate sometimes even vesiculose *cystidia*, (18–)20–35 × 7–10 μm, *basidia* cylindraceutis, 4-spored, 25–35 × 7–8 μm. *Pileipellis*, *epicutis* a medium deep layer of short hyphae 7.5–12 μm diam., cylindrical or slightly inflate, often arquate; frequent erected hairs, ending on round or pointed terminal cells. *Hypodermium* indistinct formed by broadly ellipsoid or polygonal hyphae 15–30 μm diam. Masses of a chrome yellow pigment present among the tissues. *Cortex*, cylindrical

hyphae 8–15 µm diam., parallel. Veil hyphae filamentous 3–5 µm diam., clamped.

*Habitat:* Gregarious in very wet forests or rain forests, possibly associated with *Nothofagus*.

*Collections examined:* Australia: Tasmania, Kermadie Falls, Lower Track, G. Gates, S. McMullen-Fisher & D. Ratkowsky, 12<sup>th</sup> May 1999, PHN 990512A1; G. Gates & D. Ratkowsky, 30<sup>th</sup> May 2000, HO542318 (holotype); G. Gates & D. Ratkowsky, 29<sup>th</sup> May 2001, PHN A10529A0.

*Etymology:* in reference to the aspect of a *Rozites* at first glance.

*Comments:* An extraordinary *Cortinarius*, which has the aspect of fungi formerly placed in the genus *Rozites*. This genus was described as distinct from *Cortinarius* mainly by the presence of both veils being membranous. In our view, however, there are other aspects of this group, which makes them recognisable in the field. The habit is gymnopileoid or pholiotoid rather than tricholomoid, collyboid or galerinoid, and the cap is typically shaped as a dome or a parson's hat or a Chinese farmer's hat. These characters are however only useful for an informal identification, since they have proved to be convergent in fungi that do not possess a close affinity (Peintner *et al.* 2002a, 2002b). The partial veil of *C. rozites* is, however, cortinate. This *Cortinarius* has a beautiful purple cap and a white stipe. Distinctive is the blue veil zoning the stipe and splitting into an armilla at the level of the cortinal annulus. This feature evokes the genus *Stephanopus* M.M. Moser & E. Horak, which, however, has otherwise different characters both macroscopically — *Stephanopus* has a stropharoid habit, membranous partial veil and gelatinised cap — and, microscopically, citriform spores as well as the presence of both cheilo- and pleurocystidia.

In common parlance we should say that *C. rozites* is an *Inoloma*. This taxon is illegitimate as it is considered a superfluous synonym of *Cortinarius*, which is the autonym (McNeill *et al.* 2006, art. 22.1 and 22.3) of the genus. Further, being characterised by a dry, non-hygrophanous basidiocarp, it includes a number of species reciprocally unrelated. The species is in no way related to subgenus *Cortinarius* nor with subgenus *Sericeocybe* P.D.Orton. The latter has been questioned both by taxonomists and by geneticists and its

type (*C. alboviolaceus* Pers.:Fr.)Fr. allegedly belongs to subgenus *Telamonia* (Fr.) Trog. (Melot 1990, Peinter 2004).

Without a DNA study, awarding this species a taxonomic position is merely guess work.

***Cortinarius rattinoides*** Soop sp. nov.

Figures 4C, 7D

Pileo 15–40 mm diam., conico vel globoso, deinde campanulato-plano, sicco, hygrophano, fragile, cinereo-brunneo, ad discum subrufo, impolito, e irregularibus rubris fibrillis ornato, margine testaceo-fimbriato, aetate lacerato. Lamellis primo intense at fugaciter obscure violaceis, subdistantibus. Stipite aequali, subgracile, iuveni argenteo-violaceo, demum sordide albo, rufo vel vinaceo-cincto e margine fimbriata. Velo testaceo, mox rufo, subcopioso; cortina grisea. Carne saturate et obscuriter violacea, mox griseo-brunnea, fragile; odore saporeque debilibus. Sporis subglobosis, 6.5–8.5 x 5.5–6.5 µm, moderate usque subgrosse verrucosis. Reactionem ope NaOH nullam.

Holotypus hic designatus PDD 88283: Nova Zelandia, Canterbury, near Klondyke Rest Area, in silvis cum Nothofagete, 7<sup>th</sup> May 2006, K. Soop.

*Pileus* 15–40 mm diam., hood-shaped to subglobose, later campanulate to plane, dry, irregularly and coarsely reddish fibrillose, hygrophanous, fragile, mouse-grey to grey-brown, more red-brown on disk, young with a violet tinge around it; margin with brick-red tufts or brown fibrils, strongly fimbriate, when old lacerate. *Lamellae* rather distant, sinuate but not thick, intensely dark violet, soon evanescent. *Stipe* 40–75 x 2–5 mm, cylindrical, slender; young silvery violaceous, later dirty white with reddish to wine-brown girdles and tufts, apex white. *Veil* brick-red, soon brownish-red, fairly copious; *cortina* grey, rudimentary. *Context* deeply dark violet, soon grey-brown, brittle. *Macrochemical reactions:* NaOH nil in all parts. *Odour* nil to vaguely raphanoid. *Taste* nil to somewhat bitter.

*Spores* (6–)7–7.5–8.4(–8.7) x 5.5–6–6.5(–6.8) µm, Q=1.24±0.10 (n=27), subglobose, moderately to rather coarsely verrucose. *Marginal elements* scattered, clavate, 15–25 x 5–7 µm. *Basidia* 20–25 x 7 µm, 4-spored. *Epicutis* of rather thin, repent, hyaline hyphae 7–11 µm diam. *Hypocutis* with rounded-cylindrical hyphal elements 35–55 x 20–27 µm.

*Veil* hyphae (from stipe) pale yellow-brown to greyish-pink, 6–10  $\mu\text{m}$  diam. *Clamp connections* present.

*Habitat*: Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Canterbury, near Klondyke Rest Area, 7<sup>th</sup> May 2006, PDD 88283 (holotype), KS-CO1673 (isotype); Hawkes Bay, Tuai, Lake Waikareiti Track, 11<sup>th</sup> May 2001, KS-CO1248; idem leg. P. Marstad, 10<sup>th</sup> May 2001, KS-CO1220, PM90-01; Taupo, Kiko Track, 6<sup>th</sup> May 2004, PDD 78799, KS-CO1462.

*Etymology*: From its resemblance to *C. rattinus*, growing in the same habitat.

*Comments*: A greyish, fragile fungus with a pileus that rapidly gets furrowed and torn at the margin ("scare-crow look"). Very young collections display an evanescent, dark violet colour in the context and gills. The veil is distinctly reddish similar to that of the boreal species *Cortinarius spilomeus* (Fr.:Fr.) Fr. in section *Anomali* Konrad & Maubl., characterised by subglobose spores and a coloured veil. In this section *C. rattinoides* is also close to several South-Pacific taxa, notably *C. suecicolor* Soop, described from New Zealand, and to the Tasmanian species *C. sclerophyllarum* Gasparini, which also occurs in New Zealand.

***Cortinarius pselioticton* Soop sp. nov.**

Figures 4B, 7E

Pileo 30–60 mm diam., globoso, deinde convexo-plano, viscido, hygrophano, helvello, disco obscurior, aetate griseobrunneo, subgrosse innato-fibrilloso, margine cano-vergente, leviter striato-sulcata. Lamellis primo griseo-albis, subconfertis. Stipite aequali vel leviter clavato, albo, fulvescente; e tenui, pendente, striato anulo. Velo ochraceo, subcopioso. Carne luteoalba, ad stipitis basem obscurior; odore saporeque nullis. Sporis ex ellipsoideis vel amygdaloideis 11.5–13.5  $\times$  7–8.2  $\mu\text{m}$ , moderate verrucosis. Reactionem ope NaOH supra cute veloque distincte at leviter rufam.

Holotypus hic designatus PDD 88277: Nova Zelandia, Southland, Borland Lodge Track, in silvis cum Nothofagete, 1<sup>st</sup> May 2006, K. Soop.

*Pileus* 30–60 mm diam., hemispherical, later convex to plane, viscid, rather coarsely innate fibrillose, hygrophanous, brownish-yellow with a darker disk, grey-brown when older; margin more greyish, weakly striate to sulcate. *Lamellae* moderately crowded (L = 50, I = 2–3), free, greyish-white when young, edge concolorous. *Stipe* 55–100  $\times$  6–11 mm, cylindrical to weakly clavate, dry; white, flushing yellow-brown from base with time, provided with a thin, pendulous, grey-white, striate collar that flushes brown. *Veil* yellow-brown, rather copious. *Context* yellowish-white, darker in stipe-base. *Macrochemical reactions*: NaOH weakly but distinctly red to brownish-red on pileal surface and stipital veil, elsewhere nil; guayac strongly blue-green in context. *Odour* and *taste* nil.

*Spores* (11–)11.5–12.4–13.5(–13.8)  $\times$  (6.8–)7–7.5–8.2  $\mu\text{m}$ , Q=1.67 $\pm$ 0.12 (n=27), obtusely elliptic to subamygdaloid, moderately verrucose, weakly dextrinoid. *Marginal elements* crowded, clavate, many of which may be qualified as cheilocystidia, 40–50  $\times$  10–15  $\mu\text{m}$ , often subcapitate. *Basidia* 40–50  $\times$  13–15  $\mu\text{m}$ , 4-spored. *Pileipellis* with a thin layer of gelified hyaline hyphae 2–3  $\mu\text{m}$  diam. *Epicutis* of irregular hyphae 3–4  $\mu\text{m}$  diam., lower strata with a greyish-yellow, vacuolar and granular pigment. *Hypocutis* with ovoid, sometimes more angular, hyphal elements, 20–40  $\times$  12–15  $\mu\text{m}$ , with a greyish-yellow pigment. *Veil* hyphae (from stipe) 4–6  $\mu\text{m}$  diam. *Clamp connections* present.

*Habitat*: Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Southland, Borland Lodge Track, 1<sup>st</sup> May 2006, PDD 88277 (holotype), KS-CO1660 (isotype); Taupo, Te Iringa Track, 12<sup>th</sup> May 2001, KS-CO1252; Lewis Pass, Lake Daniel Track, 1<sup>st</sup> May 2006, KS-CO1686; Lake Gunn Track, 25<sup>th</sup> April 2008, PDD 94008, KS-CO1750.

*Etymology*: From Greek ψελιον, bracelet, and τικτω, create, due to the conspicuous collar on the stipe.

*Comments*: A rather colourless *Cortinarius* with a stipital collar, in habit and hue somewhat recalling an *Armillaria*. It somewhat resembles *C. submeleagris* Gasparini from Tasmania, another species of *Rozites* morphology, but this is darker with smaller spores. The rather similar *C. elacatipus* E. Horak *et al.* (= *Rozites*



*fusipes* E. Horak) displays warmer orange-fulvous tints on the pileus, and produces no alkaline reaction, while *C. rugosiceps* (E. Horak & Taylor) E. Horak *et al.* is darker with orange-coloured lamellae.

***Cortinarius rhipiduranus*** Soop sp. nov.

Figures 2F, 8A

Pileo 20–35 mm diam., obtuse globoso, deinde convexo, viscido, haud hygrophano, atrobrunneo olivaceo-umbrato, iuveni ochropallido maculato, fimbriato fibrillosoque. Lamellis primo griseo-caesiis, subdistantibus. Stipite aequali, splendide caeruleo, deorsum pallide luteo-fimbriato. Velo pallide ochraceo, subcopioso; cortina alba. Carne ex obscuriter caerulea atroviride; odore saporeque debilibus. Sporis ellipsoideis, 8.2–9.3 x 5.2–6 µm, moderate verrucosis. Reactionem ope NaOH supra cute carneque rubram.

Holotypus hic designatus PDD 88269: Nova Zelandia, Te Anau, Kepler Track, in silvis cum *Nothofagete*, 28<sup>th</sup> April 2006, K. Soop.

*Pileus* 20–35 mm diam., obtusely rounded, later convex to plano-convex, viscid, when young partly covered by pale ochre spots, tufts and fibrils from the universal veil, otherwise glabrous to finely innate fibrillose, not hygrophanous; disk blackish-brown with an olive tinge, margin concolorous with pale-ochre tufts, not striate. *Lamellae* narrowly emarginate, rather distant (L = 4, I = 2), blue-grey when young, edge slightly paler. *Stipe* 25–50 x 2–8 mm, cylindrical to slightly clavate, surface dry, partly hollow deeply turquoise-blue, somewhat shimmering on upper half, flushing brown below with pale yellow tufts, apex pale blue. *Veil* pale ochraceous, often copious; cortina white to yellowish grey. *Context* dark blue-green to blackish green, more violaceous in stipe-base. *Macrochemical reactions*: NaOH red on pileus surface and context, else trivial; lugol brownish to reddish-violet; guayac weakly yellow-green in context. *Odour* faint. *Taste* nil.

*Spores* (7.3–)7.6–8.4–9.3(–9.8) x 5–5.6–6(–6.2) µm, Q=1.52±0.11 (n=29), elliptic, moderately verrucose. *Marginal elements* clavate, 20–30 x 5–8 µm. *Basidia* 25–35 x 6–8 µm, 4-spored. *Pileipellis* with gelified hyaline hyphae 2–3 µm diam. *Epicutis* of entangled hyphae 2–5 µm diam., often brownish-yellow granulose and encrusted. *Hypocutis* with ovoid to rectangular hyaline hyphal elements 12–35

x 8–15 µm. *Veil* hyphae (from stipe) hyaline, 5–6 µm diam. *Clamp connections* present.

*Habitat*: Gregarious, rare, growing associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Te Anau, Kepler Track, PDD 88269 (holotype), 28<sup>th</sup> April 2006, KS-CO1645 (isotype); Te Anau, Totara Rest Area, 4<sup>th</sup> May 2001, KS-CO1217; St Arnaud Range, 3<sup>rd</sup> May 2008, PDD 94033, KS-CO1781.

*Etymology*: In honour of *Rhipidura fuliginosa*, the fantail bird with a similar colouration; a loyal companion in the New Zealand forest.

*Comments*: A striking but uncommon *Phlegmacium* in section *Purpurascetes* with a spectacular turquoise or steel-blue tint in the context and on the stipe. *Cortinarius rhipiduranus* is morphologically close to *C. kaimanawa* Soop, the two species sharing a violaceous context but differing in pileus colour and spore size. Other macroscopically similar species, such as *C. chalybaeus* Soop, can be separated from *C. rhipiduranus* by the colour of the context, smell, and alkaline reaction.

***Cortinarius dulciorum*** Soop sp. nov.

Figures 3A, 8B

Pileo 40–65 mm diam., globoso, deinde convexo, viscido, haud vel parum hygrophano, armeniaco-rufo, glabro vel minuter innato-fibrilloso, margine pallidior, subfulva. Lamellis primo albis, subconfertis. Stipite ex aequale clavato, albo, juvento subdense alboperonato. Velo albo, sparso vel subcopioso; cortina alba. Carne subalba, molli; odore subforte melleo; sapore debile grato. Sporis ellipsoideis, 5.5–7 x 3.5–4.5 µm, parum verrucosis. Reactionem ope NaOH rosatam rufam.

Holotypus hic designatus PDD 78797: Nova Zelandia, Taupo, Kiko Track, in silvis cum *Nothofagete*, 6<sup>th</sup> May 2004, K. Soop.

*Pileus* 40–65 mm diam., hemispherical, later convex, viscid, glabrous to very finely innate fibrillose, not or weakly hygrophanous, warmly red-brown with a mahogany or dark apricot hue; margin paler, more yellow-brown. *Lamellae* moderately crowded (L = 68), white when young. *Stipe* 40–70 x 6–15 mm, cylindrical to clavate (–20 mm diam.); white, young peronate from a rather thick white coating, sometimes terminating in an

addressed collar. *Veil* white, sparse to fairly copious; *cortina* white. *Context* soft, white, vaguely brown in pileus. *Macrochemical reactions*: NaOH pink with a yellow tinge in context, brownish-red on pileal surface, else nil; guayac weakly grey-green. *Odour* rather strong, melleous. *Taste* faint, rather pleasant.

*Spores* (5.2–)5.5–6.2–7(–7.3) x 3.5–3.9–4.5  $\mu\text{m}$ ,  $Q=1.58\pm 0.15$  ( $n=27$ ), elliptic, weakly verrucose. *Marginal elements* clavate, 14–20 x 5–7  $\mu\text{m}$ , the shorter ones often with a wide base, more or less trapezoid. *Basidia* 18–28 x 8  $\mu\text{m}$ , 4-spored. *Pileipellis* with gelified hyaline hyphae 3–5  $\mu\text{m}$  diam. *Epicutis* of a few layers of repent hyphae 3  $\mu\text{m}$  diam. with brownish contents. *Hypocutis* with hyphal elements up to 45 x 12  $\mu\text{m}$ . *Veil* hyphae (from pileus) hyaline, 4–5  $\mu\text{m}$  diam. *Clamp connections* present.

*Habitat*: Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Taupo, Kiko Track, 6<sup>th</sup> May 2004, PDD 78797 (holotype), KS-CO1460 (isotype); Te Anau, Kepler Track, 24<sup>th</sup> April 2006, KS-CO1623; Lewis Pass, Lake Daniel Track, 12<sup>th</sup> May 2006, KS-CO1689.

*Etymology*: From Latin *dulcis*, sweet, due to the distinctive odour.

*Comments*: This is a handsome, phlegmacioid fungus with a warmly apricot-coloured pileus, a white stipe, and a distinctly sweet odour. *Cortinarius dulciorum* appears related to *C. cremeolina* Soop, also found in New Zealand, which is a pale fungus with a more marginate bulb. It somewhat resembles *C. albobrunneus* M.M. Moser, described from Patagonia (Moser & Horak 1975), but the latter produces larger spores, and its odour is insignificant.

***Cortinarius myxenosma*** Soop sp. nov.

Figures 3F, 8C

Pileo 25–45 mm diam., globoso, deinde plano-convexo, viscido, haud hygrophano, rubido, disco obscurior subatro, innato-fibrilloso, veli albomaculato, margine pallidior. Lamellis primo albis, subconfertis. Stipite marginato-bulboso, albo vel pallide helvello, ad basem rubescente. Velo albo subrubescente, subcopioso; cortina alba. Carne leviter cano-fulva; odore subdulci; sapore raphanico, subamaro. Sporibus amygdaloideis vel subellipsoideis, 7.5–9.5 x

4.5–5.5  $\mu\text{m}$ , moderate verrucosis. Reactionem ope NaOH ad velum rubram.

Holotypus hic designatus PDD 88282: Nova Zelandia, Canterbury, Waimakariri Valley Track, in silvis cum Nothofagete, 7<sup>th</sup> May 2006, K. Soop.

*Pileus* 25–45 mm diam., hemispherical, later convex to plane, viscid, innate fibrillose with white veil tufts and patches, not hygrophanous, warmly mahogany brown to red-brown with a darker almost black disk, paler red-brown towards margin. *Lamellae* rather crowded ( $L = 68$ ,  $I = 2-3$ ), adnate, white when young. *Stipe* 30–75 x 6–10 mm with a marginate to rounded bulb (–22 mm diam.) white to pale yellow-brown, reddening red-brown from base, with a white coating on bulb. *Veil* white somewhat blushing to brownish-red, fairly copious; *cortina* white. *Context* greyish tan to white, marbled pale brown. *Taste* raphanoid to bitter. *Macrochemical reactions*: NaOH red on stipital veil and on pale areas of the pileal surface, weakly red in context; guayac greyish-green in context. *Odour* faintly phlegmacioid or sweetish.

*Spores* (7.3–)7.5–8.6–9.5(–9.8) x 4.4–5.4  $\mu\text{m}$ ,  $Q=1.79\pm 0.13$  ( $n=25$ ), amygdaloid to subelliptic, moderately to rather weakly verrucose. *Marginal elements* clavate, often with a wide base, 12–20 x 7–8  $\mu\text{m}$ . *Basidia* c. 22 x 7  $\mu\text{m}$ , 4-spored. *Epicutis* rather thick with poorly gelified hyphae 4–7  $\mu\text{m}$  diam. with a brownish vacuolar pigment loosely arranged in a slightly gelatinised hyaline matrix. *Hypocutis* with with subcylindrical hyphal elements 30–45 x 10–15  $\mu\text{m}$  with a plasmatic brownish-yellow pigment. *Veil* hyphae (from stipe) hyaline, 3–6  $\mu\text{m}$  diam. *Clamp connections* present.

*Habitat*: Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Canterbury, Waimakariri Valley Track, 7<sup>th</sup> May 2006, PDD 88282 (holotype), KS-CO1672 (isotype); Reefton, Murray Creek Track, 11<sup>th</sup> April 2006, KS-CO1682; Lewis Pass, Boyle River, 12<sup>th</sup> May 2006, KS-CO1698.

*Etymology*: From Greek  $\mu\upsilon\chi\omicron\varsigma$ , viscid, and *C. xenosma*, a similar species.

*Comments*: This *Phlegmacium* is characterised by the red-brown pileus decorated with white

veil remnants and a stipe with a marginate, sometimes wide, bulb. It recalls *Cortinarius xenosma* Soop, but the latter possesses a dry pileus and a bulbless cylindrical stipe. *C. myxenosma* differs from *C. dulciorum* mainly by the persistent veil on the pileus, and by larger spores.

***Cortinarius vernicifer*** Soop sp. nov.

Figures 4D, 9A

Pileo 20–55 mm diam., obtuso-conico, deinde expanso vel campanulato, sicco, hygrophano, saturate aurantio vel aurantiorufo, uniforme laevigato cera illitus viso, glabro vel minute innato-fibrilloso, margine prima aetate minute luteofibrillosa. Lamellis primo luteogriseis, subconfertis. Stipite aequali, primo pallide luteo, demum obscurior. Velo pallide luteo, sparso. Carne pallida, sublutea; odore saporeque debilibus. Sporis ellipsoideis 7.5–8.7 x 4.5–5.2  $\mu\text{m}$ , subminute verrucosis. Reactionem ope NaOH vix ullam.

Holotypus hic designatus PDD 88273: Nova Zelandia, Southland, Milford Road, Te Anau Downs, in silvis cum *Leptospermate*, 30<sup>th</sup> April 2006, K. Soop.

*Pileus* 20–55 mm diam., obtusely conical, later expanded to campanulate, dry, glabrous to very finely innate fibrillose, hygrophanous, deeply orange to orange-brown, evenly coloured like varnish; margin young with thin yellow fibrils. *Lamellae* moderately crowded (L=48, l=2–3), free, yellowish-grey when young, edge concolorous. *Stipe* 40–80 x 3–8 mm, cylindrical; young pale yellow, later darker with a pale-yellow coating towards base, apex almost white. *Veil* pale yellow, sparse; *cortina* greyish-yellow. *Context* rather pale yellow. *Macrochemical reactions*: NaOH more or less trivial, dark brown on pileal surface; guayac weakly green in context. *Odour* faint, agaricoid. *Taste* nil.

*Spores* (6.8–)7.1–8–8.7(–9.3) x 4.4–4.7–5.1  $\mu\text{m}$ , Q=1.70±0.12 (n=26), elliptic, rather weakly verrucose. *Marginal elements* crowded, mostly clavate, some vesiculose, 15–25 x 6–7  $\mu\text{m}$ . *Basidia* 25–30 x 7  $\mu\text{m}$ , 4-spored. *Epicutis* with parallel hyphal elements, 5–8  $\mu\text{m}$  diam. with a yellow-brown pigment. *Hypocutis* with oblong, oval, pale yellow hyphal elements, 50–85 x 15–20  $\mu\text{m}$ . *Clamp connections* present.

*Habitat*: Gregarious, rare, associated with *Leptospermum scoparium*.

*Collections examined*: New Zealand. Southland, Milford Road, Te Anau Downs, 30<sup>th</sup> April 2006, PDD 88273 (holotype), KS-CO1654 (isotype); idem 23<sup>rd</sup> April 2006, KS-CO1617; Canterbury, Kowai Bush, 21<sup>st</sup> April 1997, KS-CO815.

*Etymology*: From Latin *vernicium*, varnish, and *-fer*, carries, due to the remarkable sheen of the pileus.

*Comments*: This species looks macroscopically as though it were a *Leptospermum* vicariant of the similar *C. collybianus* Soop. Its pileus displays a handsome orange-brown tint with a remarkable varnished sheen, hardly ever seen in other *Cortinarius*.

***Cortinarius gymnocephalus*** Soop sp. nov.

Figures 3D, 9B

Pileo 30–50 mm diam., globoso, deinde convexo, glutinoso, haud vel parum hygrophano, ex ochraceo griseo-brunneo, glabro, margine pallida, juveni violaceo-lavata. Lamellis primo saturate violaceis, confertis. Stipite aequali, interdum bulboso pistone instar, viscido, pallide violaceo, squamulis albo-vestito. Velo albo vel etiam pallide violaceo; cortina absente. Carne albocanescente, violaceo-marmorata; odore subdulce; sapore debile ingrato. Sporis ex ellipsoideis amygdaloideis 10.5–14 x 6.8–8  $\mu\text{m}$ , e vere crassis verrucis obtectis. Cheilocystidiis confertis, clavato-vesiculosis, 25–40 x 10–12  $\mu\text{m}$ . Reactionem ope NaOH vix ullam.

Holotypus hic designatus: PDD 88292. Nova Zelandia, Taupo, Te Iringa Track, in silvis cum *Nothofagete*, 3<sup>rd</sup> May 2003, K. Soop.

*Pileus* 30–50 mm diam., hemispherical, later convex, glutinous, glabrous, not or weakly hygrophanous towards margin, grey-brown to yellow-brown, margin greyish with a violet tinge when young. *Lamellae* free, crowded, narrow, saturated violet when young, sometimes more pale reddish-violet with a marked violet edge. *Stipe* 30–55 x c. 8 mm, cylindrical, occasionally with a small piston-like bulb, viscid; pale violet with whitish squamules over the whole length. *Veil* white to pale violaceous, rather sparse; *cortina* absent. *Context* greyish-white to pale tan, marbled violet. *Macrochemical reactions*: NaOH trivial on all parts. *Odour* faintly sweetish. *Taste* faint, rather unpleasant.

*Spores* (10.5–)11–12.4–14(–15.8) x 6.8–7.3–8(–9)  $\mu\text{m}$ ,  $Q=1.70\pm 0.13$  ( $n=26$ ), broadly amygdaloid to citriform, sometimes papillate, coarsely verrucose. *Cheilocystidia* crowded, clavate to vesiculose, sometimes flattened on top or on side, 25–40 x 10–12  $\mu\text{m}$ . *Basidia* 30–36 x 12–15  $\mu\text{m}$ , 4-spored. *Pileipellis* with a thick gelatinous layer of hyphae 4–6  $\mu\text{m}$  diam., lower strata strongly pigmented with granules, 7–8  $\mu\text{m}$  diam. *Hypocutis* with hyaline, oval hyphal elements, 10–25 x 7–10  $\mu\text{m}$ . *Clamp connections* absent.

*Habitat*: Scattered to solitary, rare, associated with *Nothofagus* spp.

*Collections examined*: New Zealand. Taupo, Te Iringa Track, 3<sup>rd</sup> May 2003, PDD 88292 (holotype), KS-CO1334 (isotype); Southland, Borland Lodge Track, 25<sup>th</sup> April 2004, KS-CO1424.

*Etymology*: From Greek γυμνος, naked, and κεφαλος, head, this being in contrast to similar fungi with a *Cuphocybe* habit.

*Comments*: This species has the morphology of a *Cuphocybe* (notably the absence of a cortina), but is distinguished from the known *Cuphocybe* species by an almost naked pileus where conspicuous veil remnants are scarce. Its gills (sometimes only their edges) are beautifully violet-blue. *Cortinarius gymnocephalus* evokes *C. dulciolens* E. Horak *et al.* (synonym *Cuphocybe melliolens* Soop) but displays different veil and gill colours and possesses a viscid stipe. Because of the lack of clamp connections its taxonomic place is in subg. *Myxadium*, sect. *Defibulati*. It is also one of the first species in this section to be described from the Southern Hemisphere (only *C. basipurpureus* (Bougher) Peintner & M.M. Moser is known to us; cf. Garnica *et al.* 2005), a position shared by a second, so far undescribed species from New Zealand (data not shown). Therefore their combined presence in both hemispheres indicates an ancient origin of sect. *Defibulati*.

***Cortinarius tessiae*** Soop nom. nov.

*Basionymon*: *Cortinarius rotundisporus* Cleland & Cheel subsp. *nothofagi* Soop 2001, in Contribution à l'étude de la mycoflore cortinarioïde de Nouvelle-Zélande, *Bull. Soc. Mycol. France* **117** (2), p. 115.

*Etymology*: In honour of the author's daughter Tessi, on her graduation as a PhD in Molecular Biology.

*Comments*: The species may be considered a *Nothofagus* vicariant of *Cortinarius rotundisporus*, found under *Leptospermum* in New Zealand. It differs from the latter mainly by more pronounced yellow hues, often predominant also when young.

According to Sawyer *et al.* (1999) *C. rotundisporus* forms a complex of taxa. This is corroborated by collections from Tasmania (unpubl.) of species that appear close to *C. rotundisporus*.

***Cortinarius pseudorotundisporus***  
Gasparini sp. nov.

Figures 2B, 9C

Pileo 25–40 mm lato, subgloboso vel conico, deinde convexo vel praeter regula applanato, solito acute umbonato. Cuticula vere glutinosa, griseo-caerulea disco rubro brunneo. Lamellis haud confertis, L = 35, 6 mm latis, annexis, roseolis in aetate incarnatis. Stipite vere glutinoso, vacuo, 60 mm longo, 3–4 mm lato, basi usque 10 mm crassa, clavato vel sub-bulboso, nitido, apice coeruleo, e glutinoso coeruleo velo oblecto atque supero annulo ornato. Carne nivea e apice caeruleo. Odore e sapore nullis. Ope cuticola TL4 auream reactionem praebet. Sporis amygdaliformibus vel subcitriformibus, verrucosis. Hymenii margine substerile e copiosis sterilibus cellulis; basidiis mono-, bi- vel tetrasporigenis, 26–30  $\mu\text{m}$  longis, 8–9  $\mu\text{m}$  crassis. Pileipelle, ixocute e filamentosis hyphis 3–5  $\mu\text{m}$  crassis veli permixtis 1.5–3  $\mu\text{m}$  crassis. Hypodermio ellipticis hyphis 15–22  $\mu\text{m}$ .

*Holotypus*: hic designatus HO522433: Australia: Tasmania, Mt. Wellington, Reuben Falls, G. Gates, 15<sup>th</sup> May 1999.

*Pileus* diam. 25–40 mm, hemispherical or conical, then convex to irregularly plane, generally with a pointed conical umbo, margin striate. *Cuticle* very glutinous and slippery, hygrophanous, greyish blue similar to vinaceous buff in CIC, except on the disk which is reddish brown or ochraceous brown. *Lamellae* rather distant, L = 35, l=3, 6 mm deep, annexed, plane, very pale rose, becoming incarnate (=flesh colour), margin undulate. *Stipe* very glutinous, 30–60 x 3–6 mm hollow, clavate to sub-bulbous, base up to

10 mm, basically white, apex a very pale blue, covered in youth by the very glutinous greyish blue veil and in age by the ochraceous cortinal annulus. *Veil* glutinous, blue-grey, *cortina* persistent. *Context* whitish, except in the conjunction of the cap with the stipe, where it has an ash grey colour. *Macrochemical reactions*: KOH nil, TL4 old gold yellow. *Smell* inconspicuous. *Taste* none.

*Spores* (6.4–)7.6–9.4(–10.8) x (3.9–)4.8–5.7  $\mu\text{m}$ ; Q = 1.5–1.8 (n=100), amygdaliform, often broadly mucronate, or pyriform, warts irregular, generally rather small more concentrated at the apex. *Hymenium* margin substerile due to the presence of numerous vesiculate or subcapitate *cystidia* 19 x 7.5  $\mu\text{m}$ ; *basidia* narrow, 1-, 2- or 4 spored, 26–30 x 8–9  $\mu\text{m}$ , *clamp connections* very rare. *Pileipellis* hyaline or slightly grey. *Epicutis* an ixocutis, hyphae 3–4  $\mu\text{m}$  diam., thickly interwoven, clamped. *Veil* hyphae filamentous 1.5–3  $\mu\text{m}$  diam. *Hypodermium*: pseudoparenchymous of cylindrical or ellipsoid parallel hyphae 15–22  $\mu\text{m}$  diam. Light greenish or yellow olivaceous, cytoplasmic pigment; hyphae encrusted by a yellowish pigment. clamp connections present in the epicutis.

*Habitat*: Gregarious in numerous collections, in very wet *Nothofagus* forests.

*Collections examined*: Australia: Tasmania, Mt. Wellington, near Lone cabin. G. Gates & D. Ratkowsky, 20<sup>th</sup> May 1998, PHN 980520A6; Reuben Falls, G. Gates, 15<sup>th</sup> May 1999, HO522433 (holotype); Tasman Peninsula, Duckhole Lake Track. G. Gates, B. Gasparini & D. Ratkowsky, 16<sup>th</sup> May 2002, PHN A20518A7.

*Etymology*: From Greek ψευδής, false, due to its resemblance to *C. rotundisporus*.

*Comments*: The basidiocarps of this species resemble those of *C. rotundisporus*, but the two species differ microscopically by *C. rotundisporus* having relatively large, subglobose spores, while in *C. pseudorotundisporus* they are small and amygdaliform. The presence of vesiculose *cystidia*, sub citriform spores and the lack of clamp connections in the hymenium suggest an affinity with *Defibulati*, which are, however devoid of clamp connections in all tissues including in the pileipellis. The latter consists of a single well-developed gelatinous layer. Interesting is also the bright yellow reaction to

thallium salts, which is otherwise known only for *Cortinarius infractus* (Fr.)Fr.

***Cortinarius pectocheilis* Soop sp. nov.**

Figures 4A, 9D

Pileo 15–40 mm diam., globoso, deinde obtuse conico, glutinoso, haud vel parum hygrophano, saturate fuscoochraceo, ad discum subbadio, impolito innato-fibrilloso, margine striatula, interdum badio-fimbriato. Lamellis primo griseis vel pallide brunneis, subconfertis. Stipite aequali, viscido, pallide luteo, fimbrias aurantio-gelatinoseis cingulato, interdum collariato. Velo aurantio-rufo, gelatinoso, copioso; cortina canolutea, gelatinosa. Carne luteocanescens; odore saporeque debilibus. Sporis amygdaloideis 9–11 x 5–6  $\mu\text{m}$ , moderate vel subminute verrucosis. Reactionem ope NaOH ubique rubram vel rufam.

Holotypus hic designatus PDD 88278: Nova Zelandia, Haast Pass, Blue Pools, in silvis cum *Nothofagete*, 4<sup>th</sup> May 2006, K. Soop.

*Pileus* 15–40 mm diam., hemispherical, later obtusely conical, viscid to glutinous, rather coarsely innate fibrillose, not or weakly hygrophanous, saturated dark yellow-brown to mahogany, disk almost blackish-brown; margin weakly striate, occasionally with brownish fringes. *Lamellae* moderately crowded, free, greyish to pale brown when young, edge concolorous. *Stipe* 35–70 x 4–7 mm, cylindrical, viscid; pale yellow with numerous gelatinous, thick, pale orange to orange-brown tufts or stair-like girdles, sometimes terminating in a small collar. *Veil* copious, gelatinous, orange-brown to pale orange-yellow; *cortina* gelatinous greyish-yellow. *Context* yellow-grey to pale yellow. *Macrochemical reactions*: NaOH red to orange-red or brownish-red on all parts; guayac green in context. *Odour* weak, possibly like "lubricant". *Taste* nil.

*Spores* (8.4–)8.7–9.8–10.4(–11) x (4.5–)5–5.2–6(–6.5)  $\mu\text{m}$ , Q=1.89±0.15 (n=26), amygdaloid, moderately to rather weakly verrucose. *Marginal elements* crowded, clavate, a few vesiculose, 15–30 x 7–12  $\mu\text{m}$ , many filled with a yellowish pigment. *Basidia* c. 23 x 8  $\mu\text{m}$ , 4-spored. *Pileipellis* with gelified, hyaline hyphae 2–4  $\mu\text{m}$  diam. *Epicutis* hyphae erected 4–6  $\mu\text{m}$  diam. with a scattered yellow-brown, partly encrusted pigment. *Hypocutis*

with oblong, irregular hyphal elements, 40–50 x 15–20 µm. *Clamp connections* present.

*Habitat:* Gregarious, uncommon, associated with *Nothofagus* spp.

*Collections examined:* New Zealand. Haast Pass, Blue Pools, 4<sup>th</sup> May 2006, PDD 88278 (holotype), KS-CO1662 (isotype); Haast Pass, Davis Creek, 28<sup>th</sup> April 2004, PDD 78783, KS-CO1439; idem 5<sup>th</sup> May 2006, KS-CO1667.

*Etymology:* From Greek *πηκτος*, jelly, and *χελις*, girdle, due to the special quality of the stipital veil.

*Comments:* A yellow-brown, sticky fungus with a remarkable veil, not really glutinous as with most *Myxacia* but thick, gelatinous (cf. basidiocarps of the genus *Tremella*). The stipe often presents stair-like girdles and a small gelatinous collar. *Cortinarius pectocheilus* resembles *C. phaeomyxa* (E. Horak) E. Horak *et al.*, a taxon with similar colours and a similar alkaline reaction, but the latter possesses a dry veil and lacks a cortina.

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