

A contribution to the study of the cortinarioid mycoflora of New Zealand, IV

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Abstract

Ten new species: *Cortinarius promethenus*, *C. armiaë*, *C. ophryx*, *C. peristeris*, *C. pansicolor*, *C. fiordlandensis*, *C. turcopes*, *C. calaisopus*, *C. paraoniti*, *C. palissandrinus*, and one new variety: *Cortinarius cremeolina* var. *subpicoides* are described from New Zealand.

Introduction

This fourth instalment in a series on new *Cortinarius* (Pers.) Gray taxa from New Zealand deals with groups of fungi that may be placed in subgenera *Dermocybe* (Fr.) Trog, *Phlegmacium* (Fr.) Trog, *Telamonia* (Fr.) Trog (*sensu* Brandrud et al. 1989-97), or in section *Leprocybe* (M.M. Moser) Melot. Species in these groups were partly considered in the previous instalments (Soop 2001, 2002, 2005; also cf. Horak 1987, Soop 1998, Orlovich & Oliver 2002, Gasparini & Soop 2008), but have not otherwise been treated in publications aimed at the mycota of the country.

Many cortinarioid fungi from the Southern Hemisphere have been included in molecular studies during the past decade (Garnica et al. 2003, 2005, Høiland & Holst-Jensen 1997, 2000, Peintner et al. 2001, 2002, 2004, Sawyer et al. 1999, Chambers & Sawyer 1999, Seidl 2000). These studies indicate the joint presence, in the European and the South Pacific areas, of many taxa at the section — in a few cases subgeneric — rank, while other groups appear to be isolated and endemic to their respective hemisphere. The latter holds in particular for many species that would morphologically be assigned to subgenera *Phlegmacium* or *Telamonia*, among others those reported in this study (see the comments in the taxonomical section). A comprehensive study of the phylogeny of *Cortinarius* on a global basis has not yet been published. On the other hand, many of the collections reported in the present study have been sequenced for genetic markers and analysed, showing a number of interesting affinities. The results of these efforts will be reported in a later publication.

All taxa described in the present study are assumed to form obligatory mycorrhiza with native trees (notably *Nothofagus* and *Leptospermum/Kunzea* spp.). One would therefore seek to identify them primarily in descriptions from the corresponding habitats in Australia and Patagonia (South America), these being the only regions where analogous studies have been undertaken (among these, notably Cleland et Harris 1948; Moser & Horak 1975; Bougher & Hilton 1989; Gasparini 2001a,b, 2007; Garnica et al. 2002).

N.B. Notes in brackets are mostly based on molecular analyses, effected after publication of the article.

Methods

In the descriptions measurements of the fruit-body pertain to adult specimens; these are the diameter of the pileus, the length of the stipe, and the diameter of the upper part of the stipe. Lamella colour pertains to immature individuals unless specified otherwise, the designation "L="

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means the number of lamellæ reaching the stipe, and "l=" the number of lamellulæ between two lamellæ.

The alkaline reaction was made with a 25% NaOH solution, the phenol reaction with a 3% solution, and the formalin reaction with a 10% solution. The lugol reaction was made with a solution of 4% I₂ + 3% KI in diluted ethyl alcohol. Fluorescence was tested on a number of species; the test is reported under "Macrochemical Reactions" and consisted of irradiating the context of a fresh fruit-body with UV light in an otherwise dark room. Microscopic observations were made principally on material mounted in 5% ammoniacal solution and examined with an oil-immersion objective (1000 ×). The veil hyphæ were sought on the lower stipe, unless otherwise specified. The term "marginal elements" refers to sterile cells that are found on the lamellar edge.

Species mentioned for comparison under *Comments* were described from New Zealand unless otherwise specified. All holotype material has been deposited in the PDD herbarium, Auckland, New Zealand. Unless stated otherwise, collections were made by the author and the descriptor "KS" indicates the collection number.

Taxonomy

1. *Cortinarius promethenus* Soop, sp. nov.

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Fig. 1a, 2a

Pileo 25–40 mm diam., globoso, deinde convexo, sicco, haud hygrophano, luteo-ochraceo, disco obscurior, innato-fibrilloso vel granuloso, margine pallidiore rubrofibrilloso. *Lamellis* primo luteo-ochraceis, distantibus. *Stipite* subfusiforme, croceo-luteo, ignite rubro-cingulato. *Velo* cramesino, subcopioso. *Carne* flavidula, ochraceo-marmorata; odore subraphanico; sapore nullo. *Sporis* ellipsoideis, 6.5–8.2 × 4.4–5.5 µm, moderate verrucosis. *Reactionem* ope NaOH ubique splendide rubram præbet.

Holotypus hic designatus PDD 94059: Nova Zelandia, Otago, Waipori Falls, 2008-05-15 in silvis cum *Nothofagete*, K. Soop.

Pileus 25–40 mm diam., rounded, later convex, dry, not hygrophanous, yellow-brown with a darker disk, innate fibrillose to granulose with brownish tufts, margin paler with thin, red fibrils. *Lamellæ* yellow-brown when young, narrowly notched, edge slightly paler, L=34, l=2–3. *Stipe* 35–50 × 4–7 mm, somewhat fusoid, saffron yellow with fiery red bands and fibrils on lower part, apex pale yellow. *Veil* carmine red, rather copious; *cortina* pale yellow. *Context* pale yellow, marbled darker yellow-brown. *Macrochemical reactions*: NaOH blood red on all parts; fluorescence yellow. *Odour* faintly raphanoid; *taste* nil.

Spores (6.2)6.5–7.1–8.2(8.4) × 4.4–4.7–5.5 µm, Q=1.53±0.12 (n=24), elliptic, moderately to rather weakly verrucose. *Marginal elements* numerous, clavate to capitate, 25–35 × 6–13 µm, hyaline, some filled and partly encrusted with a golden-yellow grainy substance. *Basidia* 25–35 × 7–9 µm, 4-spored. *Epicutis* thin with hyaline hyphæ 4–7 µm diam. *Hypocutis* of oval elements 20–35 × 10–15 µm with a pale brownish-yellow pigment, lower strata darker coloured with frequent dark yellow-brown pigment lumps, 10–20 µm in extent. *Veil hyphæ* pinkish yellow, 4–5 µm wide. *Clamp connections* present.

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

Collections examined: New Zealand. Otago, Waipori Falls, 15th May 2008, holotype here designated as PDD 94059, herb. S: F93255 (isotype), KS-CO1815 (isotype). Several findings from nearby locations were studied during the 2008 Foray in Dunedin, but unfortunately the conserved material does not appear to be available.

Etymology: From the Greek deity Προμηθεύς who mastered fire, as evoked by the velar pattern on the stipe.

Comments: This strangely beautiful *Dermocybe* exhibits flame-like, red velar bands on the yellow stipe, while being otherwise rather dull ochraceous in colour. This pattern recalls *Cortinarius papaver* Soop, which however, presents an orange-red pileus. The species has so far been

recorded only from the Dunedin area in New Zealand. None of the *Dermocybe* reported by Horak 1987, or by Moser & Horak 1975 fit the present species.

[The species is closely related to *C. cramesinus* Horak, and is part of the dermocyboid lineage *Icterinula*.]

2. *Cortinarius armiæ* Soop, sp. nov.

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Fig. 1b, 2b

Pileo 30–70 mm diam., conico, deinde conico obtuso, sicco, interdum hygrophano, rubro-rufo vel aurantio-ochraceo, glabro vel minute innato-fibrilloso, margine leviter aurantio-fibrilloso, haud striato. *Lamellis* primo ochraceis vel griseo-flavis, subconfertis. *Stipite* æquale, versus basim sæpe attenuato, saturate luteo vel croceo. *Velo* aurantio-rubro, subcopioso. *Carne* ex crocea flavida, primo aurantio-marmorata; odore saporeque vix ullo. *Sporis* subglobosis 6-7.5 × 4.6-5.7 µm, paulo verrucosis. *Reactionem supra cuticula veloque ope NaOH intense rubram præbet.*

Holotypus hic designatus PDD 94057: Nova Zelandia, Otago, Waipori Falls, 2008-05-15 in silvis cum *Nothofagete*, K. Soop.

Pileus 30-70 mm diam., conical, later obtusely conical, dry, more or less hygrophanous, warmly mahogany-red to orange-brown, glabrous to finely innate fibrillose, margin concolorous, naked or with sparse orange fibrils, not striate. *Lamellæ* yellow-brown to greyish yellow when young, narrowly notched, fairly crowded (L=50, l=2), edge concolorous. *Stipe* 40-75 (145) × 5-13 mm, cylindrical, often tapering towards base, dark yellow to saffron yellow, base flushed darker yellow-brown, apex yellow-white. *Veil* orange-red to brownish red, fairly copious, as felty tufts and fibrils on stipe; *cortina* pale yellow. *Context* pale yellow to saffron, young marbled orange in stipe-base. *Macrochemical reactions*: NaOH intensely red on cutis and stipital veil, blackish red in context; fluorescence nil. *Odour* nil or faintly agaricoid; *taste* nil.

Spores (5.7)6-6.6-7.5 × 4.6-5.2-5.7 µm, Q=1.27±0.06 (n=26), subglobose, rather weakly verrucose. *Marginal elements* crowded, clavate rarely capitate, 20-30 × 7-10 µm, hyaline. *Basidia* 20-25 × 7-9 µm, 4-spored. *Epicutis* fairly thick with hyaline to pale yellow hyphæ 5-8 µm diam. *Hypocutis* of oval to rectangular elements 15-40 × 6-15 µm, lower strata with a granular dark yellow-brown pigment. *Clamp connections* present in stipital cortex, scarce in lamellar trama.

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

Collections examined: New Zealand. Otago, Waipori Falls, 15th May 2008, holotype here designated as PDD 94057, herb. S: F93254 (isotype), KS-CO1813 (isotype); *idem*, 12th May 2008, KS-CO1798; *idem*, 15th May 2008, PDD 94055, herb S: F93252, KS-CO1811; West Coast, Reefton, Murray Creek Track, 4th May 2008, PDD 94034, herb. S: F93234, KS-CO1782; Southland, Milford Road, Totara Rest Area, 4th May 2001, herb. S: F44462, KS-CO1207.

Etymology: In honour of Mrs. Armi Jahn for her constant encouragement.

Comments: This rather large and beautiful species is very similar to *Cortinarius collybianus* Soop, common in the same habitat, which differs principally by its lack of alkaline reaction. This reaction indicates that *C. armiæ* may be part of subgenus *Dermocybe*, where it resembles *C. papaver* Soop, smaller with a silky pileus. *C. veronicoides* Gasp., recently described from Tasmania (Gasparini & Soop 2008) is similar, but presents a scarlet pileus, orange gills, and a clavate stipe.

[The species belongs to sect. *Limonii*, whereas *C. collybianus* is part of sect. *Callistei*.]

3. *Cortinarius ophryx* Soop, sp. nov.

MB 564219

Fig. 1c, 2c

Pileo 30–45 mm diam., conico-obtuso, deinde convexo-expanso, sicco, haud hygrophano, squamulis spadiceis immo purpureo-badiis vestito, disco umbrino fere atro, margine deinde lacerato. *Lamellis* primo pallide virido-luteis, subconfertis. *Stipite* clavato-bulboso, pallide citrino-luteo. *Velo* ex fusco-ochraceo umbrino, subcopioso. *Carne* pallide lutea; odore saporeque nullo. *Sporis* ex obtuse ellipsoideis subglobosis, 8.7-11 × 6.5-8 µm, grosse verrucosis. *Reactionem supra stipite ope NaOH rubram, ceterum nullam.*

Holotypus hic designatus PDD 78769: Nova Zelandia, Southland, Kepler Track, 2004-04-23 in silvis cum *Nothofagete*, K. Soop.

Pileus 30-45 mm diam., obtusely conical, later convex to expanded, dry, not hygrophanous, densely covered by dark brown to somewhat purple-brown squamules against a yellowish grey background, centre umber almost black, margin later radially lacerated. *Lamellæ* pale greenish yellow when young, rather crowded (L=52, I=2-3), edge concolorous. *Stipe* 15-50 × 5-8 mm, clavate with a rounded to marginate bulb, pale yellow to citrinous with numerous brown girdles terminating in an adpressed collar, apex white. *Veil* dark yellow-brown to umber, fairly copious; *cortina* white to pale yellow. *Context* pale yellow. *Macrochemical reactions*: NaOH red on bulb, else trivial; formalin, guayac and phenol nil; fluorescence strongly greenish yellow to whitish yellow. *Odour* and *taste* nil.

Spores 8.7-9.7-11 × 6.5-7.2-8(8.2) µm, Q=1.35±0.10 (n=30), obtusely elliptic to subglobose, coarsely verrucose. *Marginal elements* crowded, vesiculose, 12-20 × 8-10 µm, hyaline. *Basidia* 20-30 × 8-10 µm, 4-spored. *Epicutis* fairly thick with hyaline to pale yellow hyphæ 6-8 µm diam., lower strata with an evenly distributed yellow pigment. *Hypocutis* of oblong, irregular elements 40-50 × c. 15 µm. *Veil hyphæ* thick, with a grey-brown evenly distributed pigment, not encrusted, 7-10(15) µm diam. *Clamp connections* present, occasional on veil hyphæ.

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

Collections examined: New Zealand. Southland, Kepler Track, 23rd April 2004, holotype here designated as PDD 78769, KS-CO1411 (isotype); Southland, Milford Road, Te Anau Downs, 26th April 2008, KS-CO1756; *idem* 26th April 2009, KS-CO1872; Wellington, Rimutaka Forest Park, 14th May 2009, PDD 97590, leg. P. White.

Etymology: From Greek ο Φρυξ, "from Phrygia", due to its resemblance to the boreal species *C. phrygianus* Fr.

Comments: A spectacular and rather robust fungus, well characterised by its dark brown girdles on the stipe, strong fluorescence in UV light, the rounded and coarsely verrucose spores, and the crowded balloon-shaped marginal elements that give the impression of a cellular hymenium. These characters indicate section *Leprocybe* (M.M. Moser) Melot, in which *C. phrygianus* Fr. is morphologically close. *Cortinarius ophryx* is quite similar to *C. tigrellus* Soop, differing mainly by a darker veil, a wide bulb, and larger spores. The very common *C. castoreus* Soop in the same habitat produces even larger spores (–17 µm) and lacks a yellow tinge in lamella and context, but is otherwise rather similar, including the marginal cells. Among the Patagonian species described by Moser & Horak 1975, the closest seems to be *C. austronanceiensis* (M.M. Moser) Garnier, but this lacks the velar girdles of the present species, is somewhat viscid, and the spores are amygdaloid in shape. *C. brunneovelatus* M.M. Moser & E. Horak from the same area possesses a stipe with brown girdles, but is hygrophanous with a brown context, and is described as a *Telamonia*.

[Both *C. tigrellus* and *C. ophryx* belong to sect. *Persplendidi*, sister to sect. *Leprocybe*.]

4. *Cortinarius peristeris* Soop, sp. nov.

MB 564220

Fig. 1d, 2d

Pileo 15–50 mm diam., conico-obtuso, deinde expanso, viscido, haud hygrophano, griseo-argillaceo vel griseo-brunneo, ad discum interdum obscurior, squamulis ex albis pallide ochraceis subtiliter pustulato, versus marginem subgrosse brunneo-fibrilloso. *Lamellis* primo pallide griseis vel luridis, subconfertis. *Stipite* æquale subgracile, sicco, albido, ad basim in ochraceam vergente. *Velo* albo, deinde ochraceo, subcopioso. *Carne* subalba; *odore* saporeque subnullis. *Sporis* ellipsoideis, 6.5-7.7 × 3.5-4.5 µm, paulo verrucosis. *Reactionem* ope NaOH veli rufam vel sanguineam, ceterum subnullam.

Holotypus hic designatus PDD 88270: Nova Zelandia, Southland, Kepler Track, 2006-04-28 in silvis cum *Nothofagete*, K. Soop.

Pileus 15-50 mm diam., obtusely conical, later expanded, viscid, not hygrophanous, clay grey to grey-brown, young often darker on disk, more or less covered by tiny whitish to pale brown

pustules or squamules, fairly coarsely brownish fibrillose towards margin, which is not striate. *Lamellæ* pale grey to pale grey-brown when young, adnate, rather crowded (L=48-54, l=2), edge concolorous. *Stipe* 25-50 × 3-8 mm, cylindrical, slender, dry, white to pale greyish yellow, flushing ochraceous with brownish fibrils from base. *Veil* white, later ochraceous, rather copious. *Context* white to pale tan, often with a brown horn-rim, brownish in stipe-base. *Macrochemical reactions*: NaOH red-brown to blood red on stipital veil, else weakly reddish or nil; guayac nil. *Odour* nil or faintly hinnuloid; *taste* nil.

Spores (6)6.5-7-7.7(8.2) × 3.5-4-4.5 µm, Q=1.76±0.11 (n=28), elliptic, rather weakly verrucose. *Marginal elements* crowded, slender, cylindrical to clavate, 15-25 × 5-7 µm, hyaline. *Basidia* 20-25 × 6-7 µm, 4-spored. *Pileipellis* with gelified, sinuous hyphæ, 3-4 µm wide. *Epicutis* very thin with hyphæ 2-4 µm diam. *Hypocutis* of oval elements 15-40 × 12-20 µm, hyaline to pale grey-brown, deeper strata in places darker, orange-brown. *Clamp connections* present.

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

Collections examined: New Zealand. Southland, Kepler Track, 28th April 2006, holotype here designated as PDD 88270, KS-CO1647 (isotype); Southland, 24th April 2008, PDD 94005, herb. S: F93207, KS-CO1747; Southland, Milford Road, MacKey Creek, 26th April 2008, PDD 94012, herb. S: F93213, KS-CO1754.

Etymology: From Greek περιστέρα “dove”, alluding to the peculiar grey colour and texture of the pileus.

Comments: This taxon may be considered a small *Phlegmacium* due to the viscid cutis and dry stipe. It is well characterised by the dove-grey pileus, studded with whitish granules from the veil, and its reddish alkaline reaction. *Cortinarius peristeris* may recall a pale form of *C. phæomyxa* (E. Horak) E. Horak & al., which, however, displays significantly coarser veil remnants and lacks a cortina. Among the smaller *Phlegmacia* described by Moser & Horak 1975 from Patagonia, the closest seems to be *C. coartatus* E. Horak, which, however, lacks the telltale veil pattern on the pileus of the present species and produces larger spores.

5. *Cortinarius pansicolor* Soop, sp. nov.

MB 564221

Fig. 2e

Pileo 12–30 mm diam., globoso, deinde conico-expanso, viscido, haud vel parum hygrophano, armeniaco canescente, disco obscurior magis aurantio, glabro, ad marginem leviter brunneo-fibrilloso. *Lamellis* primo pallide violaceis, subconfertis. *Stipite* æquale ad basim tenuiter bulboso, subviscido, pallide brunneo-griseo, versus basim leviter rufo-cingulato. *Velo* ex rufo purpureo-badio, subsparso. *Carne* grisea vel ochracea; odore saporeque subnullo. *Sporis* ellipsoideis vel subamygdaloideis 7.5-8.7 × 4.6-5.7µm, paulo verrucosis. *Reactionem* ope NaOH ubique rufam vel subrubram præbet.

Holotypus hic designatus PDD 94042: Nova Zelandia, Southland, Canterbury, Craigieburn, 2008-05-08 in silvis cum *Nothofagete*, K. Soop.

Pileus 12-30 mm diam., rounded, later conical to expanded, viscid, weakly or not hygrophano, orange-brown with a grey tinge, drying greyish tan, disk darker, more orange, glabrous, margin concolorous with thin brownish fibres, weakly striate. *Lamellæ* pale violet to grey-violet when young, narrowly notched, moderately crowded (L=32-46, l=2), edge concolorous. *Stipe* 35-55 × 2-5 mm, cylindrical with a small bulb and rhizomorphs embedded in substrate, slightly viscid, pale grey-brown with brownish tufts and fibrils on lower part, apex pale grey-brown. *Veil* red-brown to purple-brown, rather sparse; *cortina* white. *Context* grey to yellow-brown, weakly marbled violaceous grey. *Macrochemical reactions*: NaOH red to red-brown on cutis, weakly red on gills, dark red on stipital veil. *Odour* nil; *taste* nil or slightly acerbic.

Spores (7.3)7.5-8.1-8.7(9.3) × (4.4)4.6-5.2-5.7(6) µm, Q=1.55±0.11 (n=28), elliptic to, weakly verrucose. *Marginal elements* crowded, clavate to subcylindrical, 12-25 × 5-8 µm, hyaline. *Basidia* 15-20 × c. 8 µm, 4-spored. *Pileipellis* with sparse, gelified, sinuous hyphæ, 2-5 µm wide, containing a grainy to zebra-patterned dark yellow pigment, not encrusted. *Epicutis* thin with pale hyphæ 4-6

μm wide, lower strata somewhat thicker ($-8 \mu\text{m}$). *Hypocutis* of more or less rectangular elements with brownish yellow contents, $20\text{-}35 \times 15\text{-}17 \mu\text{m}$. *Clamp connections* present.

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

Collections examined: New Zealand. Canterbury, Craigieburn, 8th May 2008, holotype here designated as PDD 94042, herb. S: F93240 (isotype), KS-CO1791 (isotype); Nelson, St Arnaud Range, 3rd May 2008, PDD 94030, herb. S: F93230, KS-CO1776; Canterbury, Waimakariri Valley Track, 9th May 2008, KS-CO1796; *idem* 4th May 2009, PDD 97531, herb. S: F140315, KS-CO1906.

Etymology: Alluding to the boreal species *C. pansa* Fr. with a similar coloration.

Comments: *Cortinarius pansicolor* is a fairly anonymous small *Phlegmacium* with a brownish to orange pileus and violaceous lamellæ. It may alternatively be considered a *Myxaciium* due to the often slightly viscid stipe. It shares the reddish alkaline reaction with several other small, viscid *Cortinarii* in the mycota of New Zealand, e.g., *C. peristeris* (*loc. cit.*). *C. panchrous* E. Horak, described from Patagonia, is somewhat similar but displays greenish tones in addition to the colours shared with the present species.

[The species belongs to sect. *Rufoaurantii*, consisting of around 10 austral species, most of which from Patagonia.]

6. *Cortinarius cremeolina* var. *subpicoides* Soop, var. nov.

MB 564222

Fig. 1e

Basionymon: *Cortinarius cremeolina* Soop 2001, Contribution à l'étude de la mycoflore cortinarioïde de Nouvelle-Zélande, *Bull. Soc. Mycol. France* 117(2) p.103.

A typo differt pileo stipiteque valde obscurior, griseo vel fusco.

Holotypus hic designatus PDD 78808: Nova Zelandia, Nelson, Wangapeka Valley, 2004-05-13 in silvis cum *Nothofagete*, K. Soop.

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

Collections examined: New Zealand. Nelson, Wangapeka Valley, 13th May 2004, holotype here designated as PDD 78808, herb. KS-CO1476 (isotype); Southland, Kepler Track 26th April 2004, KS-CO1431; Otago, Reefton, Murray Creek Track, 11th May 2006, KS-CO1681; Otago, Springs Junction, Palmers Road, 12th May 2006, KS-CO1685.

Etymology: Due to its resemblance to *C. picoides*.

Comments: The rather common *Cortinarius cremeolina* type possesses a cream to ivory yellow pileus and a white stipe. In contrast, var. *subpicoides* presents a dark grey pileus, often with an olivaceous tone, which may also appear on the upper part of the stipe but is usually not reflected in the context. In this the variety resembles *C. picoides* Soop, which, however, produces smaller and smoother spores.

7. *Cortinarius fiordlandensis* Soop, sp. nov.

MB 564223

Fig. 1f, 2f

Pileo 25–50 mm diam., globoso, deinde obtuse conico vel expanso, viscido, haud hygrophano, uniforme castaneo-rufo, glabro vel innato-fibrilloso, ad marginem obscuriore, haud striato. Lamellis primo intense e saturate violaceis, subconfertis. Stipite æquale ad basim late marginato-bulboso, sicco, flavido vel lurido, sorsum pallide violaceo-nitido, deorsum cum fibrillis ferrugineis. Velo rufo, sparso. Carne pallide violacea, versus basim stipite rufescente; odore saporeque nullo. Sporis ellipsoideis vel subamygdaloideis $9\text{-}10.4 \times 5\text{-}6 \mu\text{m}$, moderate verrucosis. Reactionem ope NaOH ubique saturate rubram vel purpureo-badiam præbet.

Holotypus hic designatus PDD 94013: Nova Zelandia, Southland, Milford Road, MacKey Creek, 2008-04-26 in silvis cum *Nothofagete*, K. Soop.

Pileus 25-50 mm diam., rounded, later obtusely conical to expanded, viscid, not hygrophanous, evenly date brown to dark red-brown, glabrous to innate fibrillose, margin darker with thin,

brownish fibrils, not striate. *Lamellæ* intensely dark violet to reddish violet when young, moderately crowded (L=42, I=2), broadly notched, edge concolorous. *Stipe* 20-45 × 4-9 mm, cylindrical with a rather wide marginate bulb, dry, pale yellowish with a pale violet sheen on upper half, blushing with rusty-brown fibrils from base. *Veil* red-brown, sparse; *cortina* pale violet. *Context* pale violet, blushing red-brown in lower stipe. *Macrochemical reactions*: NaOH dark red to purple-brown on cutis and stipital veil; lugol nil. *Odour* and *taste* nil.

Spores (8.2)9-9.3-10.4(11.5) × (4.5)5-5.6-6(6.5) µm, Q=1.67±0.11 (n=28), elliptic to subamygdaloid, moderately verrucose. *Marginal elements* abundant, clavate, 18-25 × 6-8 µm, hyaline. *Basidia* 20-25 × 7-8 µm, 4-spored. *Epicutis* thick with 5-8 µm wide hyphæ, most containing a vacuolar, often encrusting pigment, some hyaline, upper layer gelified, entangled, lower strata repent. *Hypocutis* of rather large, irregular to more or less rectangular, hyaline elements, 25-40(60) × 12-20 µm. *Clamp connections* present.

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

Collections examined: New Zealand. Southland, Milford Road, MacKey Creek, 26th April 2008, holotype here designated as PDD 94013, herb. S: F93214 (isotype), KS-CO1755 (isotype); *idem*, 27th April 2006, PDD 88267, KS-CO1641.

Etymology: As a homage to the Fiordlands of New Zealand, where the species was collected.

Comments: A dark brown and violet *Phlegmacium* with a marginate stipe bulb and an unusual red-brown veil colour. It is quite similar to *C. chalybæus* Soop, from which it differs mainly by the shape of the stipe, the elongated spores and a lack of iodine-based reaction.

8. *Cortinarius turcopes* Soop, sp. nov.

MB 564224

Fig. 1g, 2g

Pileo 25–70 mm diam., obtuse globoso, deinde expanso, viscido utque glutinoso, haud hygrophano, olivaceo-griseo vel olivaceo-virido, disco ochraceo, glabro vel subgranuloso, margine flavescente, haud striato. *Lamellis* primo violaceis vel cæσιο-griseis, subconfertis. *Stipite* ex clavato submarginato-bulboso, sicco, splendide cœruleo vel cæσιο-griseo, deorsum plus minusve subviscose violaceo-vestito. *Velo* pallide violaceo fuscescente, subviscoso, sparso vel subcopioso. *Carne* virido-cœrulea, versus basim stipitis intense cœruela; odore saporeque vix ullo. *Sporis* ellipsoideis vel subamygdaloideis 8.5-10.4 × 5.5-6.2 µm, moderate verrucosis. *Reactionem* ope NaOH cute carneque subrubram præbet.

Holotypus hic designatus PDD 94051: Nova Zelandia, Otago, Maungatua Scenic Reserve, Woodside Glen, 2008-05-13 in silvis cum *Nothofagete*, K. Soop.

Pileus 25-70 mm diam., obtusely rounded, later expanded, viscid to glutinous, not hygrophanous, olive-grey to olive-green with an ochraceous disk, young darker with viscid, violet, more or less radial streaks, later staining grey to olive-brown, glabrous to somewhat granulose, margin sometimes slightly yellowish or orange, not striate. *Lamellæ* violet to blue-grey when young, sometimes with a green tinge, soon pinkish, adnate, moderately crowded (L=48, I=2-3), edge concolorous. *Stipe* 25-60 × 6-17 mm, clavate to cylindrical with a rounded or slightly marginate bulb, dry, strikingly turquoise blue to grey-blue with a more or less viscid, violaceous coating on lower half, apex shining pale blue to white. *Veil* pale violet, darkening, later olive-grey, more or less viscid, sparse to fairly copious; *cortina* white. *Context* grey-blue to turquoise, intensely blue in stipe-base when young. *Macrochemical reactions*: NaOH red to orange-brown on cutis and context, often weakly so; guayac and lugol nil. *Odour* nil or faintly sweetish; *taste* nil.

Spores (7.9)8.5-9.4-10.4(11) × (5.1)5.5-5.7-6.2(6.5) µm, Q=1.65±0.14 (n=28), elliptic to subamygdaloid, moderately and densely verrucose. *Marginal elements* abundant, clavate, 16-30 × 5-8 µm, hyaline. *Basidia* 23-27 × 7-9 µm, 4-spored. *Epicutis* with 2.5-4 µm wide hyphæ, upper layer gelified, entangled, lower layer thin, repent. *Hypocutis* of more or less rectangular elements, 15-30 × 7-12 µm with pale brownish yellow contents, lower strata with larger elements, 50-70 × 15-25 µm, containing a vacuolar, partly encrusting darker yellow-brown pigment. *Clamp connections* present.

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

Collections examined: New Zealand. Otago, Maungatua Scenic Reserve, Woodside Glen, 13th May 2008, holotype here designated as PDD 94051, herb. S: F93250 (isotype), KS-CO1807 (isotype), *leg.* G. Gates; Otago, Waipori Falls 15th May 2008, PDD 94058, KS-CO1814; Southland, Kepler Track, 28th April 2006, KS-CO1646; Southland, Milford Road, Te Anau Downs, 1st May 2006, PDD 88275, KS-CO1657; Canterbury, Craigieburn, 5th May 2009, PDD 97529, herb S: F140313, KS-CO1904; Wellington, Rimutaka Forest Park, 14th May 2009, PDD 97555, KS-CO1923, *leg.* R. Beever.

Etymology: From *turquoise* and Latin *pes*, “foot”, due to the coloration.

Comments: A beautiful fungus, and one of several *Phlegmacia* in the same habitat with sky-blue or turquoise hues. *Cortinarius turcopes* differs from *C. rhipiduranus* Soop in the same habitat by a bulbous stipe, longer spores and lack of iodine-based reaction. The latter character indicates that the species is not part of section *Purpurascetes*. *C. austrocyranites* Soop is more robust with a less viscid pileus of a different colour. *C. stephanopus* M.M. Moser & E. Horak 1975, described from *Nothofagus* habitat in Patagonia, is rather similar, but presents thick veil remnants on the stipe and larger spores that are coarsely verrucose.

9. *Cortinarius calaisopus* Soop, sp. nov.

MB 564225

Fig. 1h, 2h

Pileo 25–40 mm diam., obtuse globoso, deinde convexo, sicco vel subviscido, haud hygrophano, ex olivaceo-virido flavo-virido, ad discum in ochraceam vel aurantiam maculato, tomentoso vel minute granuloso. *Lamellis* primo griseo-cæsiis, interdum pallidioribus, subconfertis. *Stipite* clavato vel æquali, sicco, cœruelo vel cæσιο-griseo, sursum pallidior et nitido, deorsum flavescente. *Velo* aurantio interdum brunnescente, sparso vel subcopioso. *Carne* pallide cœrulea, flavo-aurantio marmorata; odore saporeque subnullis. *Sporis* subglobosis 6-7.6 × 5.5-6.5 µm, moderate verrucosis. *Reactionem* ope NaOH ubique subrubram.

Holotypus hic designatus PDD 94050: Nova Zelandia, Otago Mosgiel, Waiora Scout Camp, 2008-05-13 in silvis cum *Kunzea ericoides*, K. Soop.

Pileus 25-40 mm diam., obtusely rounded, later convex, dry to slightly viscid, not hygrophanous, olive-green to olive-grey or yellow-green, disk darker with orange to ochraceous patches and strands, tomentose to finely granulose. *Lamellæ* greyish blue to pale grey-violet when young, sometimes thick, adnate, L=52, l=2, edge concolorous. *Stipe* 25-55 × 8-11 mm, clavate to cylindrical, greyish blue to turquoise blue, pale and shiny on upper half, weakly yellow-tinged below with ochraceous fibrils, apex pale blue. *Veil* orange to brownish orange, sparse to fairly copious; *cortina* greyish white to pale blue-grey. *Context* pale turquoise-blue, marbled yellowish to orange. *Macrochemical reactions:* NaOH orange-red on cutis, pinkish on stipital veil, vaguely red-brown in context; guayac nil. *Odour* faint, phlegmacioid; *taste* nil.

Spores (5.5)6-6.5-7.6(8.2) × (5)5.5-6.5(7) µm, Q=1.16±0.08 (n=28), subglobose, moderately verrucose. *Marginal elements* abundant, obtusely clavate, some vesiculose, 20-25 × 5-9 µm, hyaline. *Basidia* 20-30 × 8-10 µm, 4-spored, some 2-spored with rather short sterigms. *Epicutis* with repent 5-7 µm wide hyphæ filled with a pale yellow-brown, vacuolar pigment, not encrusted. *Hypocutis* of oval or irregular, hyaline elements, 20-50 × 12-20 µm. *Clamp connections* present.

Habitat: Gregarious, rare, associated with *Kunzea ericoides*, probably also with *Leptospermum scoparium*.

Collections examined: New Zealand. Otago, Mosgiel, Waiora Scout Camp, 13th May 2008, holotype here designated as PDD 94050, herb. S: F93249 (isotype), KS-CO1806 (isotype); *idem*, 12th May 2008, KS-CO1803, *leg.* D. Ratkowsky.

Etymology: From Greek καλαις, “turquoise” and πους, “foot”, due to the coloration.

Comments: Another *Phlegmacium* with olive and turquoise hues, but here blended in an interesting combination with orange. *Cortinarius calaisopus* also differs from *C. turcopes* (*loc. cit.*) by a dry pileus, absence of a stipe-bulb, subglobose spores, and habitat with Myrtaceæ hosts. Among the greenish *Phlegmacia* described by Gasparini 2007 from Tasmania, *C. chrysochalybdeus* appears closest, but this differs by a pale stipe and longer, amygdaliform spores. — A comparison of ITS

sequences (unpubl.) identifies *C. calaisopus* as *C. sp.* RFLP II in Sawyer & al. 1999, which means that (a) the species nests in the *C. rotundisporus* clade in section *Delibuti*, and (b) that it occurs also in Australia.

[Extended molecular analyses confirm these relationships, showing that *C. calaisopus* is part of sect. *Delibuti* along with around 10 other species from the South Pacific.]

10. *Cortinarius paraoniti* Soop, sp. nov.

MB 564226

Fig. 1i, 2i

Pileo 15–45 mm diam., obtuso-globoso, deinde convexo vel expanso, subviscido mox sicco, hygrophano, omnino fulvo vel ochraceo aut roseolo, junior sæpe leviter albopruinato, glabro vel minute innato-fibrilloso, margine pallidiore. Lamellis primo pallide cinnamomeis, subdistantibus. Stipite æquali vel paulo clavato, primo albivestito, demum magis helvello. Velo albo, sparso. Carne pallide cinnamomea; odore dipite instar, sapore debile. Sporis ellipsoideis 6.8–7.6 × 4.1–5.1 µm, minute verrucosis. Reactionem ope NaOH vix ullam.

Holotypus hic designatus PDD 88268: Nova Zelandia, Southland, Milford Road, Deer Flat, 2006-04-27 in silvis cum *Nothofagete*, K. Soop.

Pileus 15–45 mm diam., obtusely rounded, later convex to expanded, slightly viscid soon dry, hygrophanous, evenly tan to greyish yellow-brown or pinkish, young often with a sparse white frost, glabrous or finely innate fibrillose, margin paler, usually with a white rim, not striate. *Lamellæ* pale cinnamon when young, adnate to broadly notched, rather distant (L=32–34, l=2–3), edge concolorous. *Stipe* 25–40 × 2–8 mm, cylindrical to slightly clavate, often sinuate, dry, coated white that absorbs to pale brown. *Veil* white, occasionally with a yellow tint, sparse; *cortina* white. *Context* pale cinnamon, devoid of violet tints. *Macrochemical reactions*: NaOH nil or weakly reddish on cutis and context; guayac green. *Odour* weakly like “lubricant”; *taste* nil or slightly nauseating.

Spores (6.5)6.8–7.1–7.6(8.2) × (3.8)4.1–4.6–5.1 µm, Q=1.54±0.13 (n=28), elliptic, weakly verrucose. *Marginal elements* abundant, cylindrical to vesiculose, 15–20 × 6–8 µm, hyaline. *Basidia* 15–18 × 6–8 µm, 4-spored. *Epicutis* thin with 4–6 µm wide, hyaline hyphæ. *Hypocutis* of oval to irregular, hyaline or pale yellow elements, 25–50 × 12–15 µm, some narrow (3–6 µm) hyphæ with a yellow, even or granular pigment. *Clamp connections* present.

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

Collections examined: New Zealand. Southland, Milford Road, Deer Flat, 27th April 2006, holotype here designated as PDD 88268, herb. S: F93221 (isotype), KS-CO1642 (isotype); Southland, Milford Road, Te Anau Downs, 1st May 2006, KS-CO1658; Southland, Milford Road, Lake Gunn Track, 24th April 2003, PDD 77470, KS-CO1313.

Etymology: From Maori *paraone*, “brown”, and *iti*, “small”, here implying smaller than the similar *C. paraonui* (*nui*, “big”).

Comments: A small *Telamonia* morphologically similar to *Cortinarius obtusus* (Fr.:Fr.) Fr. in the Northern Hemisphere. The pileus is often remarkably evenly pastel-coloured, light yellow-brown, while the stipe is whitish. It may be difficult to separate *C. paraoniti* from *C. saturniorum* Soop in the same habitat, which, however, is always dry, often with a violet tinge, and produces slightly shorter spores. *C. phæocephalus* E. Horak, described from Patagonia (Moser & Horak 1975), is quite similar, but is more robust with an often bulbous stipe, hardly hygrophanous, and presents a more saturated pileus hue.

[The species nests in sect. *Austroduracini*, whereas *C. saturniorum* is a singleton.]

11. *Cortinarius palissandrinus* Soop, sp. nov.

MB 564227

Fig. 1j, 2j

Pileo 15–30 mm diam., obtuso-conico, deinde convexo vel expanso, sicco, hygrophano, saturate castaneo-rufo, innato-fibrilloso, margine leviter flavido-fibrilloso, striato. Lamellis primo saturate ex testaceis aurantiorubris, distantibus. Stipite æquali, luteo-ochraceo vel pallide aurantio-ochraceo deorsum sparse flavido-

fibrilloso. Velo flavido, sparso; cortina forsan absente. Carne flavidula, junior obscuriter marmorata; odore nullo, sapore presse raphanico. Sporis obtuse ellipsoideis 6.2-7.6 × 4.4-5.4 μm, moderate verrucosis. Reactionem ope NaOH cute rubram præbet.

Holotypus hic designatus PDD 94028: Nova Zelandia; Otago, Haast, Blue Pool Track, 2008-04-30 in silvis cum Nothofagete, K. Soop.

Pileus 10-30 mm diam., obtusely conical, later conical to expanded, dry, hygrophanous, intensely dark red-brown to mahogany red, later fading towards margin, innate fibrillose, margin striate with sparse yellow-white fibrils. *Lamellæ* saturated brick-red to orange-red when young, narrowly notched, distant (L=24, I=2), edge often more intensely coloured. *Stipe* 20-45 × 2-4 mm, cylindrical, yellow tan to pale brownish orange with sparse yellowish fibrils and tufts towards base. *Veil* pale yellow, sparse; *cortina* very sparse, possibly absent. *Context* yellowish white, marbled darker when young. *Macrochemical reactions*: NaOH red on cutis and gills, inconsistently red-brown in context. *Odour* nil; *taste* distinctly raphanoid.

Spores (5.7)6.2-6.8-7.6 × 4.4-4.8-5.4 μm, Q=1.44±0.07 (n=27), obtusely elliptic, moderately to rather weakly verrucose. *Marginal elements* abundant, vesiculose, 15-25(30) × 5-7 μm, some leaner, more or less cylindrical, hyaline. *Basidia* 20-25 × 4-6 μm, 4-spored. *Epicutis* thin with repent 4-6 μm wide hyphæ, deeper layer 8-10 μm wide. *Hypocutis* of rectangular, elements, 35-70 × 15-20 μm, hyaline or with a yellow-brown vacuolar pigment. *Clamp connections* present.

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

Collections examined: New Zealand. Nelson, St Arnaud Range, 3rd May 2008, holotype here designated as PDD 94028, herb. S: F93228 (isotype), KS-CO1773 (isotype); Otago, Haast, Blue Pool Track, 30th April 2008, PDD 94025, herb. S: F93225, KS-CO1769; Nelson, Floral Saddle, 10th May 2004, KS-CO1467; Southland, Kepler Track, 28th April 2000, PDD 97514, herb S: F140303, KS-CO1887.

Etymology: From French *palissandre*, "rosewood" (*Dalbergia retusa*), due to the characteristic pileus hue.

Comments: A small *Telamonia* characterised by a mahogany-coloured pileus and intensely brick-red lamellæ. Specimens where the colours have faded from age or draught recall *Cortinarius paraoniti* (*loc. cit.*). *C. palissandrinus* does not seem to produce a cortina, which suggests section *Reidentes*, consisting of vividly orange or red-brown fungi that often lack a veil and a cortina (cf. Garnica & al. 2005). Moser & Horak (1975) describe the similar *C. xanthopus* M.M. Moser from *Nothofagus* habitat in Patagonia, but this possesses longer spores.

[*C. palissandrinus* forms a small section (*Luteini*) with *C. luteinus* Soop.]

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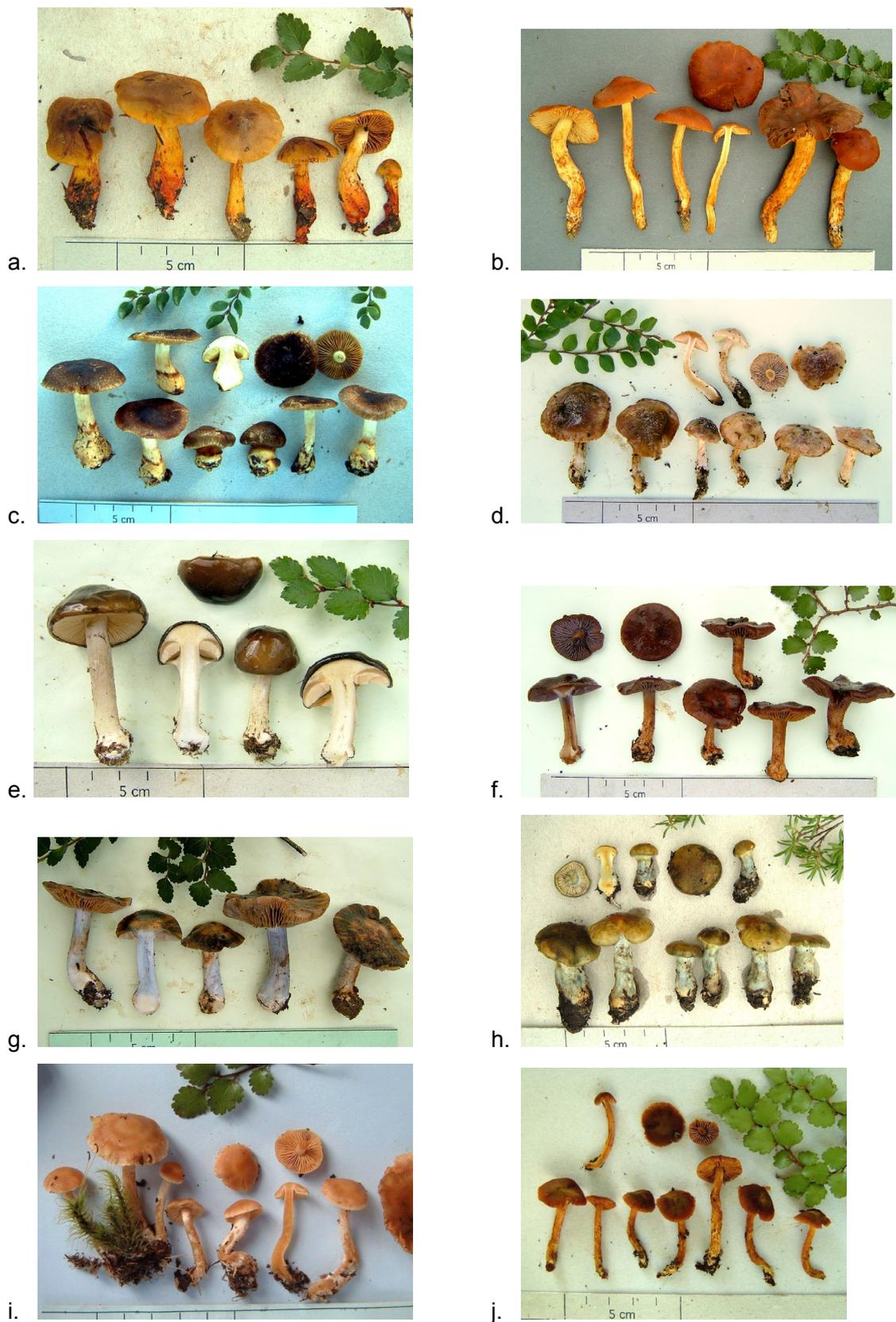


Fig. 1

a: *C. promethenus*, **b:** *C. armiaë*, **c:** *C. ophryx*, **d:** *C. peristeris*, **e:** *C. cremeolina* var. *subpicoides*,
f: *C. fiordlandensis*, **g:** *C. turcopes*, **h:** *C. calaisopus*, **i:** *C. paraoniti*, **j:** *C. palissandrinus*.

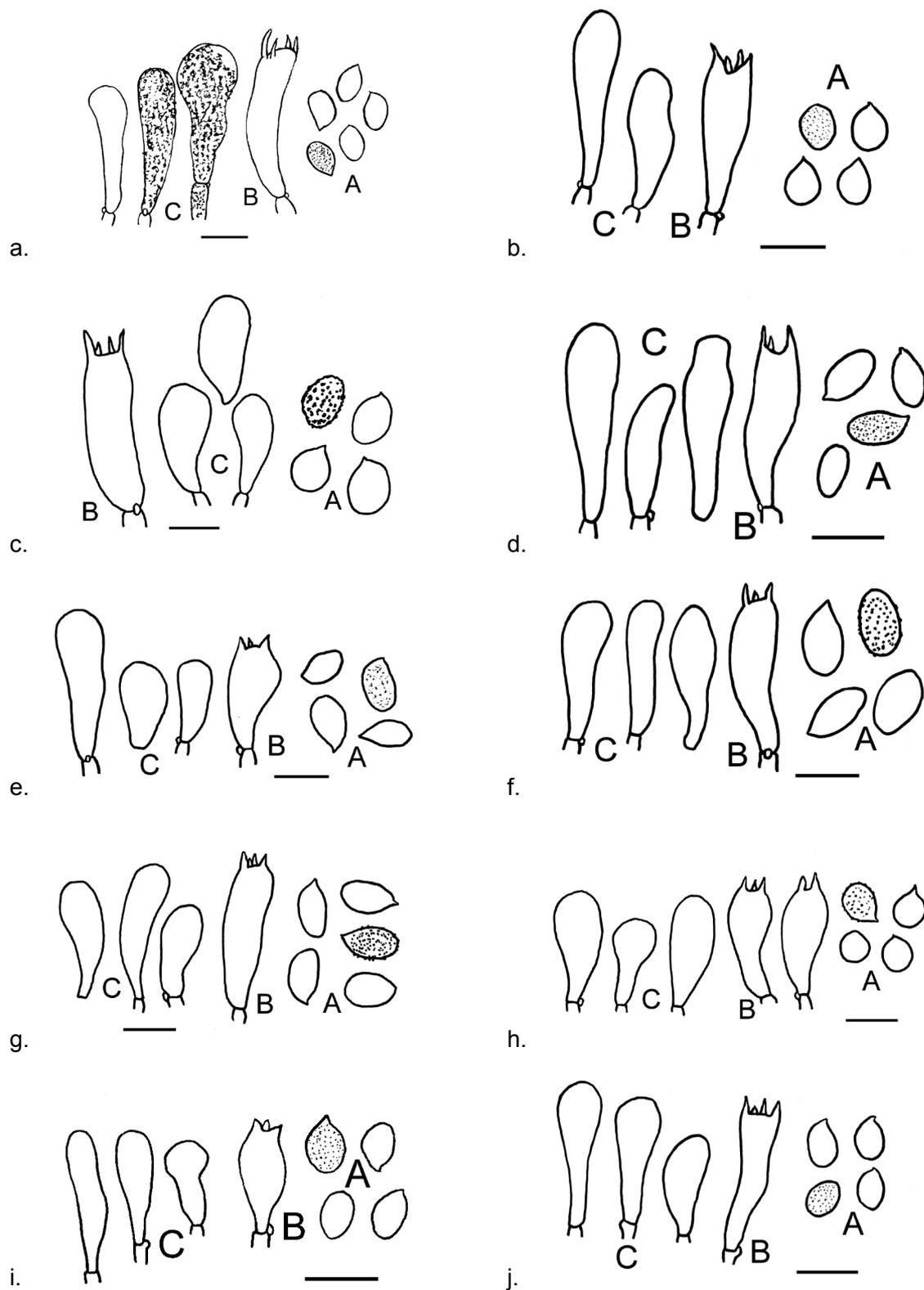


Fig. 2 Microscopic details.

A: spores, B: basidia, C: sterile marginal elements, scale = 10 μ m.

a: *C. promethenus*, b: *C. armiæ*, c: *C. ophryx*, d: *C. peristeris*, e: *C. pansicolor*,
f: *C. fiordlandensis*, g: *C. turcopes*, h: *C. calaisopus*, i: *C. paraoniti*, j: *C. palissandrinus*.