Part 3

Basidiomycota
Agaricomycotina – I

Hygrocybe acutoconica
FUNGI IN AUSTRALIA

Part 3

Basidiomycota

Agaricomycotina – I

Revision 2.2
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Agaricomycotina: Agaricales

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Almost all basidiomycetes described in *Fungi In Australia* are from this subphylum. Many of the species in Agaricomycotina produce conspicuous fruit-bodies that are attractive to amateur field naturalists, such as members of the FNCV, and are also popular as subjects for artists and photographers (see Petersen 2012).

Figure 1.1: Subphylum Agaricomycotina
Coloured #’s represent basidia types see Figure 1.2
The present status of Agaricomycotina can be seen in Figure 1.1. This subphylum contains approximately 34,000 described species in 3 classes — Agaricomycetes, Dacrymycetes, and Tremellomycetes — and 21 orders (“Catalogue of Life” website).

![Figure 1.2](image)

**Figure 1.2:** The basidia types found in Agaricomycotina

The basidia in Figure 1.2 are diagrammatic representations of the main basidia types (Alexopoulos *et al.* 1996) found in Agaricomycotina: (A) typical holobasidium found in most classes in Agaricomycetes; (B) tuning fork basidium found in the class Dacrymycetes; (C) Tremelloid basidium found in the classes Tremellomycetes and Agaricomycetes; (D) Auricularioid basidium found in the Order Auriclariales in the class Agaricomycetes.

New species are continually being described, and DNA sequences of unknown species are being routinely detected (Blackwell 2011; Hibbett *et al.* 2011). This suggests that the actual species diversity exceeds what has been described; this may have an impact upon taxon relationships.

**Agaricomycetes** is the largest class in Agaricomycotina, containing roughly 33,000 described species in 17 orders (“Catalogue of Life” website). In Australia the fruit-bodies range in size from the millimetre-sized *Sphaerobolus stellatus* to the large *Phlebopus marginatus*, which grows up to 1 metre across. Gilled mushrooms, boletes, puffballs, earth-stars, bracket fungi and corals are some of the various fruit-bodies that can be found in this class.

Molecular classification by Hibbett *et al.* (2007) breaks completely with previous morphological classification. Now fruit-body morphology and hymenophore type no longer define the taxonomic position of a species, because
species that are, for example, gilled, corticioid or polyporoid are now scattered amongst the orders of Agaricomycetes.

**Dacrymycetes** is a relatively small group of jelly fungi consisting of 1 order, 1 family, 9 genera and approximately 150 species (“Catalogue of Life” website). Recent molecular phylogenetic studies support the monophyly of Dacrymycetes and show a sister relationship to Agaricomycetes (Hibbett 2006; Shirouzu *et al.* 2013).

Species in the Dacrymycetes form yellow to orange, gelatinous to cartilaginous, variously shaped, resupinate, pulvinate, stipitate, spathulate and dendroid fruit-bodies. They are mainly brown rot fungi with decaying abilities comparable to those of other wood rotters.

**Tremellomycetes** contains 3 orders — Cystofilobasidiales, Filobasidiales and Tremellales — 11 families, 50 genera, and approximately 520 described species (Millanes *et al.* 2011; “Catalogue of Life” website). The fungi in this class have diverse morphologies and lifestyles. Their morphology can range from large gelatinous fruit-bodies such as *Tremella mesenterica* to species without a distinct fruit-body, such as yeasts (Lowy 1971). Some of the fungi in this class are either saprotrophic or parasitic. Many of the parasitic fungi are fungicolous (fungal-inhabiting, including lichen-inhabiting), and some species that have a yeast phase are animal parasites, including some severe human pathogens (Millanes *et al.* 2011).

**References**


2.1 Order: Agaricales

Agaricales is dominated by mushroom-shaped fungi (e.g. Amanita, Agaricus, Coprinus, Entoloma, Lepiota, Tricholoma, etc.). Of the 21 orders in Agaricomycotina, the Agaricales is by far the largest, containing almost 63% of the species.

Recent advances in molecular phylogenetics have revealed that morphological characteristics such as spore print colour, fruit-body formation and shape has led to artificial groups being formed (Matheny 2006; Matheny et al. 2007). Phylogenetic data has shown that the species morphology is highly varied; now Agaricales contains species with truffle-like, puffball, coral, club and bird-nest fungi morphologies.

In the Dictionary of the Fungi Kirk et al. (2008) reported that the Agaricales contains 33 families, 413 genera and 13,233 species. Currently the “Catalogue of Life” website http://www.catalogueoflife.org, which obtains its data from the “Index Fungorum” data base, has the Agaricales containing 31 families, 559 genera and 21,792 species. From the differences in these figures it can be assumed that much of the taxonomy of this order is in flux.

The most recent data used in the list of families below comes from the the “Catalogue of Life” website.
**Agaricaceae** – consists of 105 genera with 2577 described species. Its type genus is *Agaricus*, which contains about 400 species. Although the majority of species are gilled, it also contains genera such as *Battarrea*, which are stalked puffballs, *Cyathus* and *Nidula*, which are “Bird’s Nest Fungi”, and *Lycoperdon*, which are puffballs.

**Amanitaceae** – consists of 6 genera with 662 described species. Its type genus is *Amanita*, which contains about 620 species. This family is dominated by the genus *Amanita*, which contains over 90% of these species.

**Bolbitiaceae** – consists of 18 genera with 397 described species. Its type genus is *Bolbitius*, which contains about 54 species. The majority of species in this family are small *Mycena*-like mushrooms.

**Broomeiaceae** – consists of 1 genus *Broomeia* and 2 described species.

**Chromocyphellaceae** – consists of 1 genus *Chromocyphella* and 5 described species. The species in this family have cypheloid (disc, tube, or cup-shaped) fruit-bodies.

**Clavariaceae** – consists of 7 genera with 305 described species. Its type genus is *Clavaria*, which contains about 170 species. The species in this family are commonly known as “Coral Fungi”.
Cortinariaceae – consists of 23 genera with 3546 described species. Its type genus is *Cortinarius*, which contains about 2747 species. This makes *Cortinarius* the largest genus in the Kingdom Fungi. A fungus with a cortina protecting its lamellae when young and having rusty-brown spores will most likely belong to the genus *Cortinarius*.

Cyphellaceae – consists of 17 genera with 97 described species. Its type genus is *Cyphella*.

Entolomataceae – consists of 19 genera with 1844 described species. Its type genus is *Entoloma*, which contains about 1500 species. Some other well known genera in this family are *Clitopilus*, *Leptonia* and *Rhodocybe*.

Fistulinaceae – consists of 3 genera with 11 described species. Its type genus is *Fistulina*.

Hemigasteraceae – consists of 2 genera with 2 described species, *Flammulogaster himalayensis* and *Hemigaster candidus*. Its type genus is *Hemigaster*.

Hydnangiaceae – consists of 5 genera with 71 described species. Its type genus is *Hydnangium*. A well known genus in this family is *Laccaria*. 
**Hygrophoraceae** – consists of 17 genera with 687 described species. Its type genus is *Hygrophorus*, which contains about 250 species. Some other well known genera in this family are *Humidicutis*, *Hygrocybe* and *Lichenomphalia*.

![Hygrophorus involutus](image)

**Inocybaceae** – consists of 15 genera with 1333 described species. Its type genus is *Inocybe*, which contains about 850 species. Other well known genera in this family are *Crepidotus* and *Simocybe*.

![Inocybe australiensis](image)

**Lyophyllaceae** – consists of 13 genera with 261 described species. Its type genus is *Lyophyllum*. Another well known genus in this family is *Asterophora*, a parasitic fungus usually found on *Russula* spp.

![Asterophora mirabilis](image)

**Marasmiaceae** – consists of 47 genera with 1626 described species. Its type genus is *Marasmius*, which contains over 900 species. Some other well known genera in this family are *Campanella*, *Henningsomyces*, *Hydropus* and *Trogia*.

![Marasmius elegans](image)

**Mycenaceae** – consists of 24 genera with 1472 described species. Its type genus is *Mycena*, which contains over 1100 species. Some other well known genera in this family are *Cruentomycena*, *Favolaschia*, *Panellus* and *Xeromphalina*.

![Mycena interrupta](image)
Niaceae – consists of 9 genera with 75 described species. Its type genus is *Nia*. The species in this family have cyphelloid (disc, tube, or cup-shaped) fruit-bodies.

Omphalotaceae – consists of 10 genera with 555 described species. Its type genus is *Omphalotus*, which contains 11 species. Some other well known genera in this family are *Gymnopus, Marasmiellus* and *Rhodocollybia*.

Phelloriniaceae – consists of 2 genera with 3 described species. Its type genus is *Phellorinia*, which contains 2 species. The species in this family have stalked-puffball-like fruit-bodies.

Physalaciaceae – consists of 24 genera with 312 described species. Its type genus is *Physalacria*, which contains 34 species. Some other well known genera in this family are *Armillaria, Cyptotrama, Flammulina* and *Oudemansiella*.

Pleurotaceae – consists of 8 genera with 348 described species. Its type genus is *Pleurotus*, which contains 202 species. Another well known genus in this family is *Hohenbuehelia*.

Pluteaceae – consists of 6 genera with 439 described species. Its type genus is *Pluteus*, which contains 344 species. Some other well known genera in this family are *Volvariella* and *Volvopluteus*. 
Porotheleaceae – consists of 3 genera with 9 described species. Its type genus is *Porotheleum*, which contains 7 species. The species in this family are mainly wood-rotters.

Psathyrellaceae – consists of 14 genera with 905 described species. Its type genus is *Psathyrella*, which contains 667 species. Some other well known genera in this family are *Coprinellus*, *Coprinopsis* and *Parasola*.

Pterulaceae – consists of 15 genera with 173 described species. Its type genus is *Pterula*, which contains 104 species. The species in this family are coral-like and are primarily leaf and wood rotters.

Schizophyllaceae – consists of 2 genera, *Auriculariopsis* and *Schizophyllum*, with 13 described species. Its type genus is *Schizophyllum*, which contains 10 species.

Strophariaceae – consists of 30 genera with 1529 described species. Its type genus is *Stropharia*, which contains 61 species. Some other well known genera in this family are *Agrocybe*, *Gymnopilus*, *Heboloma*, *Hypholoma*, *Leratiomyces*, *Pholiota* and *Psilocybe*.

Tricholomataceae – consists of 82 genera with 2200 described species. Its type genus is *Tricholoma*, which contains 353 species. Some other well known genera in this family are *Clitocybe*, *Collybia*, *Lepista*, *Leucopaxillus* and *Resupinatus*. 

*Psathyrella echinata*  
*Schizophyllum commune*  
*Stropharia formosa*  
*Tricholoma eucalypticum*
2.1. Order: Agaricales

**Tubariaceae** – consists of 1 genus, *Tubaria*, containing 72 described species.

**Typhulaceae** – consists of 5 genera with 128 described species. Its type genus is *Typhula*, which contains 81 species. A well known genus in this family is *Macrotypula*. The species in this family have small fruit-bodies consisting of simple or compound clubs.

Although the majority of fungi with a gilled mushroom morphology are in the Agaricales they also occur in other orders of Agaricomycetes.

**References**


Agaricus xanthodermus
Agaricus xanthodermus

Biology
Saprotrophic basidiomycete; typically growing in groups; may occasionally form fairy rings in lawns, nature strips, or in well mulched garden beds.

Fruit-body Description
Pileus (Cap) Diameter to 150 mm or more; at first with a flattened apex and nearly vertical sides, then convex to plane; surface initially white and smooth, with a tendency to thin buff fibrils, dry, and when bruised staining bright yellow. Lamellae (Gills) Attachment free; narrow; colour pale at first, then flesh-pink, finally becoming dark brown as spores mature; margin smooth. Stipe (Stem) Central; generally up to 120 mm long and 20 mm thick; smooth; staining bright yellow when bruised near base; often has a bulbous base. Annulus pronounced, membranous, approximately two-thirds of the way up the stipe. Spore Print Chocolate brown

Microscopic Features
Basidiospores 5.5–8 × 4–5.5 µm, ellipsoidal, smooth. Basidia four-spored, 21–33 × 7–12 µm, clavate. Clamp connections absent.

Comments
This mushroom, with the common name “Yellow Stainer”, is readily identified by the yellow stains appearing when the pileus or stipe are bruised. However, yellow stains may not appear on specimens that are old or have dried out in warm weather.

References
2.1. Order: Agaricales

Battarrea stevenii

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**Battarrea stevenii**
*Battarrea phalloides*  *Battarrea muelleri*
*Battarrea laciniata*

**Biology**
Saprotrophic basidiomycete; solitary or scattered in dry sandy soil with litter.

**Fruit-body Description**
At first developing underground (hypogeous) as a globose to egg-shaped sand-encrusted fruit-body, up to 50 mm diameter; then the egg (exoperidium) is ruptured by the emerging spore sac and stipe. **Spore Sac** diameter up to 60 mm and height up to 30 mm, convex or cushion-shaped, with a flattened bottom. The spore mass (gleba) is covered by a whitish to ochraceous membrane (endoperidium) which later splits along its margin and falls away, usually in one piece, exposing the gleba. **Stipe** woody, up to 300 mm or more tall and up to 20 mm or more thick; at the apex expanded to form a disc on which the gleba sits and at the base the remains of the exoperidium form the volva; surface covered with coarse overlapping scales; colour ochraceous to rust-brown. **Gleba** When mature, rust-brown, powdery and abundant. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 5.5–8.5 × 4.5–7.5 µm, globose to subglobose, finely warty. Clamp connections present. Gleba with capillitial threads 4–6 µm wide and elaters with annular or spiral thickenings up to 75 µm long and up to 7 µm wide.

**Comments**
*Battarrea stevenii* is like a puffball stuck on top of a tall shaggy stick, which makes it readily identifiable in the field. Despite its size it often goes unnoticed because it blends in with the plants and shrubs of its favoured habitat. This cosmopolitan species occurs on all continents except Antarctica. The research carried out by Martin and Johannesson (2000) and Jeffries and McLain (2004) provides very strong evidence that the two species *B. phalloides* and *B. stevenii* are conspecific.

**References**


Chlorophyllum brunneum
2.1. Order: Agaricales

Fam. Agaricaceae

**Chlorophyllum brunneum**

*Macrolepiota rachodes* var. *hortensis*  
*Leptota brunnea*  
*Macrolepiota rachodes* sensu Australian authors

**Biology**
Saprotrophic basidiomycete; gregarious or caespitose on the ground in various man-made habitats, such as mulched garden beds and lawns, or in rich soils.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 200 mm or more; initially globular, then convex, becoming broadly convex, then plane; surface initially smooth, then breaking into large brownish scales, appressed at first, tips then becoming erect; a smooth brown disc remains in the centre of the pileus. **Lamellae (Gills)**
Attachment free; crowded; colour white, dulling with age. **Stipe (Stem)**
Central; generally up to 130 mm long and 35 mm thick; white, silky-fibrillose, with an abrupt bulbous base. **Annulus**
Ample, membranous, whitish or brownish, collar-like, high up on the stipe, becoming free. **Spore Print**
White

**Microscopic Features**
Basidiospores 10–13.5 × 6–9 µm, ellipsoidal, smooth, thick-walled, with a germ pore. Basidia four-spored, 30–50 × 9–14 µm, elongate clavate.

**Comments**

*Chlorophyllum brunneum* is a northern hemisphere species, introduced into Australia some time during the 19th century. *Chlorophyllum brunneum* is very similar to *C. rachodes*; separating these two species is very difficult. Fortunately, to date it seems that *C. rachodes* has not been introduced into Australia.

**References**


Coprinus comatus
Coprinus comatus

Biology
Saprotrophic basidiomycete; rarely solitary, generally forming gregarious groups on lawns, grassy areas alongside roads, on woodchips or above buried wood.

Fruit-body Description
Pileus (Cap) Diameter to 50 mm or more; up to 150 mm high; cylindrical to ovoid when young, expanding to cylindro-campanulate (bell-shaped) with a lifting margin; colour whitish with a brownish centre; surface covered in large shaggy scales, appressed at first, then curving upwards with age; margin splitting, eroding and deliquescing when old. Lamellae (Gills) Attachment free; close; colour initially white, becoming pinkish then black as spores mature. Stipe (Stem) Central; generally up to 230 mm tall and 20 mm thick; white, dry, longitudinally silky-fibrillose. Annulus white, narrow, persistent, movable, often slipping to the base of the stipe. Spore Print Black

Microscopic Features

Comments
The stature of Coprinus comatus means that it can be readily recognised in the field.

References
2.1. Order: Agaricales


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**D**=Description; **I**=Illustration; **CI**=Colour Illustration; **P**=Photo; **CP**=Colour Photo
2.1. Order: Agaricales

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Fam. Agaricaceae

_Cyathus olla_
Cyathus olla

Biology
Saprotrophic basidiomycete; scattered gregariously or in dense clusters on the ground; usually on woody debris such as woodchips or straw; also found on heavily mulched soils.

Fruit-body Description
Up to 15 mm high and 10 mm wide at the top; vase-shaped, narrowed at the base, gradually enlarged above, flaring broadly at the mouth, margin occasionally wavy. Outer Surface brownish to greyish, covered with fine-textured hairs. Inner Surface smooth, shiny, silvery-grey to blackish; cap whitish to pale greyish, soon disappearing. Peridioles (“eggs” containing the spores) up to 10, 2–4 mm diameter, larger than those of other Cyathus species, smooth, greyish to black, lens- or bean-shaped. Spore Print Not observed

Microscopic Features
Basidiospores 9–12 × 6–8 µm, ovate to ellipsoidal, smooth, hyaline.

Comments
Cyathus olla belongs to a group of fungi that have the collective common name of “Bird’s Nest Fungi”. C. olla is readily recognised by its large size, flared vase shape, and greyish colour. It is common in Europe and North America, and it has also been found in South America, South Africa, Iran and India (Dorjey et al. 2013).

References
2.1. Order: Agaricales

Fam. Agaricaceae

*Cyathus stercoreus*
**Cyathus stercoreus**

**Biology**
Saprotrophic basidiomycete; densely gregarious on woody debris such as wood-chips, straw or sawdust; also found on heavily manured soils and on herbivore dung.

**Fruit-body Description**
Up to 12 mm high and 10 mm wide at the top; cone- or goblet-shaped. **Outer Surface** brown, hairy, shaggy. **Inner Surface** smooth, shiny, lead-grey to blackish; **cap** pallid or pale brown, soon disappearing. **Peridioles** (“eggs” containing the spores) several, 1–2 mm diameter, smooth, black, lens- or bean-shaped. **Spore Print** Not observed

**Microscopic Features**
Basidiospores 22–40 × 18–30 µm, subglobose to globose, smooth, thick-walled, variable in size and shape but mostly globose.

**Comments**
*Cyathus stercoreus* belongs to a group of fungi that have the collective common name of “Bird’s Nest Fungi”. The principal features that help to identify *C. stercoreus* in the field are its shaggy cone-shaped fruit-body with its smooth lead-grey interior, and black “eggs”.

**References**
Cystolepiota cf. adulterina
2.1. Order: Agaricales

Fam. Agaricaceae

**Cystolepiota cf. adulterina**

**Biology**
Saprotrophic basidiomycete; solitary or gregarious to caespitose on decaying Myrtle Beech *Nothofagus cunninghamii* wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 25 mm or more; when young semi-globose, then expanding to broadly conico-convex; surface white, covered in cottony, mealy granules that are easily shed. **Lamellae (Gills)** Attachment free; moderately close; colour white. **Stipe (Stem)** Central; generally up to 50 mm long and 5 mm thick; whitish, covered in white mealy granules **Veil** mealy, visible only in young specimens. **Spore Print** White

**Microscopic Features**
Not observed

**Comments**
More specimens need to be found in order to determine their identity.

**References**
   p. 58 [D CP] (as **Cystolepiota** sp.)

   no. 24 [D CP]

   p. 136 [D CP]

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Cystolepiota cf. sistrata
**Fam. Agaricaceae**

**Cystolepiota cf. sistrata**

**Biology**
Saprotrophic basidiomycete; solitary or gregarious to caespitose on the ground amongst leaf litter.

**Fruit-body Description**
- **Pileus (Cap)** Diameter to 20 mm or more; conical or convex, becoming plane, occasionally with an umbo, veil fragments appendiculate at the margin; surface dry, smooth or powdery-meyale; colour whitish, tinged pinkish brown at the centre. **Lamellae (Gills)** Attachment free; moderately close; colour white. **Stipe (Stem)** Central; generally up to 50 mm long and 3 mm thick; whitish with a tinge of cinnamon towards the base, smooth or minutely mealy; **Veil** evanescent, leaving fragments on pileus margin, but not a distinct annulus on the stipe. **Spore Print** White

**Microscopic Features**
Not observed

**Comments**
More specimens need to be found in order to determine the identity of this fungus.

**References**
2.1. Order: Agaricales

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Fam. Agaricaceae

Echinoderma asperum
Echinoderma asperum

Lepiota acutesquamosa  Lepiota friesii
Cystolepiota aspera    Lepiota aspera

Biology
Saprotrophic basidiomycete; solitary or scattered on the ground in forest litter.

Fruit-body Description
Pileus (Cap) Diameter to 100 mm or more; initially ovate, then deeply convex to convex, with a suggestion of an umbo, finally plane; surface dry, covered in pointy dark brown scales that are more crowded towards the centre; colour of surface beneath the scales is cream; central umbo region is dark brown. Lamellae (Gills) Attachment free; close; colour white, may become discoloured with age. Stipe (Stem) Central; generally up to 100 mm long and 15 mm thick; cylindrical, slender; surface dry, smooth to longitudinally fibrillose below the annulus; colour white to pallid. Annulus membranous, prominent, fixed, usually falls off with age. Spore Print White

Microscopic Features
Basidiospores 6.5–8 × 2.5–3.5 μm, elongate-ellipsoidal to cylindrical, smooth, without a germ pore. Basidia four-spored 20–24 × 6.5–8 μm, clavate. Clamp connections present.

Comments
Echinoderma asperum is a robust fungus, which can be identified by the small brown sharp scales on the pileus, the flimsy membranous annulus, and close white lamellae that are free from the stipe. This fungus belongs to a number of confusing amanitoid and lepiotoid fungi with small sharp erect scales on the pileus, therefore it is recommended that care should be taken when identifying this species. Echinoderma asperum is cosmopolitan and widespread in both northern and southern hemispheres. The Australian type material for this species was found in Queensland by Cooke in 1889 and is filed at the Kew herbarium. This species was first described by the nineteenth century mycologist Persoon as Agaricus asper, and since then it has gone through a number of taxonomical name changes. Lucien Quélet moved it to genus Lepiota where it sat until 1978, when Marcel Bon moved it to the genus Cystolepiota. Then in 1991 Bon created a new genus Echinoderma for this and similar species, and gave it the present day name of Echinoderma asperum.
References
2.1. Order: Agaricales

Fam. Agaricaceae

*Lepiota haemorrhagica*
**Lepiota haemorrhagica**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter, associated with *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 50 mm or more; when young conico-convex, convex becoming nearly plane, often with an umbo, radial splitting at the margin revealing white flesh; surface dry, covered with reddish brown fibrillose scales that are thicker at the centre of the pileus; colour reddish brown. **Lamellae (Gills)** Attachment free; close; white to cream-coloured, staining blood-red when bruised. **Stipe (Stem)** Central; generally up to 50 mm long and 6 mm thick; slender to relatively stout, attenuated upwards; surface dry, glabrous, finely fibrillose; colour reddish brown, lighter at the apex. **Annulus** prominent, initially about two-thirds up the stipe, as a movable ring, eventually sliding down the stipe or disappearing. **Spore Print** White to pinkish white

**Microscopic Features**
Basidiospores 6.5–10 × 4–6 µm, ellipsoidal, smooth, no germ pore. Basidia four-spored, 18–24 × 7–9 µm, clavate. Clamp connections absent.

**Comments**
*Lepiota haemorrhagica* is identified in the field by the reddish brown fibrillose scales on the pileus, the reddish brown stipe with a movable annulus, and whitish lamellae that stain blood-red when bruised. This species is relatively common in eucalypt forests.

**References**

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*D* = Description; *I* = Illustration; *CI* = Colour Illustration; *P* = Photo; *CP* = Colour Photo
Lepiota sp. “pale blue”
**Lepiota sp.** “pale blue”

**Biology**
Saprotrophic basidiomycete; gregarious or caespitose on the ground amongst litter in wet sclerophyll forests.

**Fruit-body Description**

**Pileus (Cap)**
- Diameter to 28 mm or more; initially convex, then plane; surface dry, scaly; colour pale blue, dark blue in centre, paler at margin; margin slightly appendiculate at first, soon becoming eroded.
- Lamellae (Gills) Attachment free; crowded; colour white; with one tier of lamellulae.

**Stipe (Stem)**
- Central; 62 mm long and 4 mm thick; attenuating upwards; surface finely fibrillose; colour pale blue, lighter towards base; hollow; basal mycelium white.
- Annulus simple, fragile; about one-third of the way down from apex; colour pale blue with a whitish edge.

**Spore Print** White

**Microscopic Features**

Basidiospores 6.5–9 × 3.5–4.5 μm (mean 7.7 ± 0.6 × 4.1 ± 0.2 μm, Q=1.89 ± 0.15, n=30), ellipsoidal, smooth, dextrinoid (staining reddish in Melzer’s reagent). Basidia four-spored, 15.5–20.5 × 7.5–9 μm, broadly clavate. Cheilocystidia 24–44 × 8–17 μm, clavate to broadly clavate; abundant, forming a sterile lamella edge. Pleurocystidia absent. Clamp connections absent.

**Comments**
This beautiful, delicate *Lepiota* is readily recognised by the pale blue colour of the pileus and stipe, white free lamellae and fragile annulus. It seems to be restricted to a few localities in wet sclerophyll forest. Most *Lepiota* spp., such as those described in Grgurinovic (1997), have white, brown or grey colouration, with no hint of blue.

**References**
2.1. Order: Agaricales

Fungi in Australia

Fam. Agaricaceae

*Leucoagaricus naucinus*
Leucoagaricus naucinus

Leucoagaricus leucothites  Lepiota leucothites  Lepiota naucina

Biology
Saprotrophic basidiomycete; solitary, scattered to gregarious in lawns, parks, nature strips or pastures.

Fruit-body Description
Pileus (Cap) Diameter to 100 mm or more; at first globular, becoming convex, then broadly convex to plane, margin initially incurved, then decurved, sometimes appendiculate with veil fragments; surface dry, silky smooth, glabrous, with age or drying may develop appressed scales; colour dull white to buff, sometimes greyish, the central disc usually darker; flesh white, soft. Lamellae (Gills) Attachment free; close; colour white, ageing to a pale pinkish brown. Stipe (Stem) Central; generally up to 80 mm long and 15 mm thick, enlarged to sub-bulbous at the base; surface smooth to silky; colour dull white to buff, bruising yellowish to brownish, yellow bruising will turn brownish in a short time. Annulus pronounced, membranous, approximately two-thirds of the way up the stipe, may fall off with with age. Spore Print White

Microscopic Features
Basidiospores 7–9.5 × 5–7 µm, ellipsoidal, smooth, with a small germ pore that is difficult to see. Basidia four-spored, 26–38 × 9–12 µm, clavate. Clamp connections absent.

Comments
Leucoagaricus naucinus is recognised by its fondness for grassy areas, its predominantly dull white fruit-body, lamellae which are free from the stipe, and membranous annulus on the stipe. Leucoagaricus naucinus could be confused with Agaricus xanthodermus as both will stain yellow when the base of the stipe is bruised, but Agaricus xanthodermous has pink to brown lamellae. Care must be taken not to confuse this species with other Lepiota or Amanita species.

References
  p. 112 [D CP]

  p. 448 [D I]

  p. 33 [CP]

  p. 134 [D CP] (as *Leucoagaricus leucothites*)
Leucocoprinus birnbaumii
Leucocoprinus birnbaumii

Leucocoprinus luteus  Lepiota lutea
Lepiota birnbaumii

Biology
Saprotrophic basidiomycete; solitary, scattered to gregarious on the ground in lawns, on the soil of potted greenhouse plants or in cultivated areas rich in organic matter. This is a subtropical species.

Fruit-body Description
Pileus (Cap) Diameter to 60 mm or more; at first ellipsoidal, then conical, becoming plane with an umbo, conspicuously radially striate; surface dry, initially scaly, becoming mealy due to small scales which may wash off; colour initially bright yellow to greenish yellow or pale yellow, quickly fading to buff in sunlight or with age; flesh thin, yellow, soft. Lamellae (Gills) Attachment free; crowded; colour yellow to pale yellow. Stipe (Stem) Central; generally up to 80 mm long and 6 mm thick, enlarged to sub-bulbous at the base; surface dry, smooth or mealy; colour dull white to buff, bruising yellowish to brownish, yellowish bruising will turn brownish in a short time. Annulus delicate, forms a collar-like ring approximately two-thirds of the way up the stipe and may fall off with age. Spore Print White

Microscopic Features
Basidiospores 7.5–11 × 5.5–7.5 μm, ovoid to broadly ellipsoidal, smooth, with a small germ pore, hyaline. Basidia four-spored, 20–28 × 10–14 μm, clavate. Clamp connections absent.

Comments
Leucocoprinus birnbaumii is readily recognised by the bright yellow fruit-bodies when they first emerge. It is most commonly found on the soil of potted indoor plants; it is harmless to the plants and harmless to touch, but it should not be eaten. One should feel fortunate to have such a beautiful species of fungus come up in a flower pot.

References
  p. 114 [D CP]

  p. 170 [D CP] (as *Leucocephaloporus luteus*)

  p. 135 [D CP]

  p. 152 [D CI]

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Lycoperdon pyriforme
**Lycoperdon pyriforme**

*Lycoperdon pyriforme*

**Biology**
Saprotrophic basidiomycete; scattered to densely gregarious on rotting wood, stumps, or lignin-rich humus.

**Fruit-body Description**
Up to 50 mm or more tall and 40 mm in diameter; pyriform (pear-shaped) to subglobose (nearly round), usually with a well developed sterile base with conspicuous white mycelial threads. **Peridium** (external skin) at first covered with small white spines, then becoming granulose to finely cracked, eventually splitting at the apex to form an apical pore through which the spores can escape; colour when young cream, then pale tan, eventually becoming dark brown. **Stipe** (sterile base) may be small, usually well-developed, up to 40 mm high, when fresh filled with white spongy flesh; at the base conspicuous white mycelial threads attach it to the substrate. **Gleba** at first firm and white, then yellowish to olive, finally deep brown and powdery. **Spore Print** Brown

**Microscopic Features**
Basidiospores 3.5–6 × 3.5–6 µm, globose, may appear smooth, but are minutely warty.

**Comments**
*Lycoperdon pyriforme* is relatively unique, being a brown pear-shaped puffball growing on decaying wood or woody material. This makes it readily identifiable in the field. If it is seen on the ground there will be decaying wood below the surface. DNA research conducted by Krüger *et al.* (2001) showed that this species did not belong in the *Lycoperdon* genus. It was also pointed out that the species was distinct from other members of *Lycoperdon* because of its habitat on wood and the presence of mycelial threads at its base. At present its taxonomic position has not been determined and hence retains its old name.

**References**


Lycoperdon subincarnatum

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**Lycoperdon subincarnatum**

*Morganella subincarnata*

**Biology**
Saprotrophic basidiomycete; scattered to gregarious on rotting wood or stumps.

**Fruit-body Description**
Up to 30 mm or more in diameter; subglobose (nearly round) to slightly pyriform (pear-shaped). **Peridium** (external skin) thin and tough, at first covered with short nodular spines which are more prominent at the apex; with age spines fall off leaving a pitted surface, eventually spores can escape via a tear at the apex; colour when young cream, then pale tan, covered in grey to brownish spines. **Stipe** (sterile base) usually non-existent; at the base conspicuous white mycelial threads attach the fruit-body to the substrate. **Gleba** olivaceous, becoming greyish, brownish, or umber. **Spore Print** Brown

**Microscopic Features**
Basidiospores 3.5–4.5 µm diameter, globose, minutely warty.

**Comments**
*Lycoperdon subincarnatum* is relatively unique, being a roundish spiny puffball growing on decaying wood. This makes it readily identifiable in the field. It is very rare to see it on the ground: if seen on the ground it will be just above decaying wood. In Australia there are only two puffball species growing on wood, the other species being *Lycoperdon pyriforme*, which is usually pear-shaped.

**References**

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Macrolepiota clelandii
Macrolepiota clelandii

Biology
Saprotrophic basidiomycete; solitary or scattered on the ground in forest litter, grass, or in disturbed areas such as roadsides.

Fruit-body Description
Pileus (Cap) Diameter to 120 mm or more; initially conico-convex, then convex, umbonate, finally plane; surface dry, covered in concentric rings of dark brown scales that become more crowded towards the centre; colour underlying the scaly surface is cream; central umbo region is dark brown. Lamellae (Gills) Attachment free; close; colour white, may become discoloured with age. Stipe (Stem) Central; generally up to 150 mm long and 5 mm thick; cylindrical, slender, with a bulbous base; surface dry, smooth; colour cream to pale brownish. Annulus membranous, prominent, initially fixed, becoming movable, may slide down the stipe or fall off with age. Spore Print White

Microscopic Features
Basidiospores 14–28.5 × 9–15.5 µm, ellipsoidal, smooth, with a germ pore. Basidia normally four-spored (there are mixed-spored variants), 34–52 × 10–17 µm, clavate. Clamp connections mostly absent.

Comments
Macrolepiota clelandii is recognised by its large size, umbonate pileus with dark brown scales, free white lamellae, and a long slender stipe with a persistent movable annulus. The large variation in the microscopic and macroscopic characteristics of this species has resulted in different names for various strains. The DNA analysis done by Vellinga (2003) showed that the following names were all misapplied: Macrolepiota procera, Macrolepiota gracilenta, Macrolepiota konradii, Macrolepiota mastoidea. As a result the identification of M. clelandii was made a lot easier.

References


2.1. Order: Agaricales

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Fam. Agaricaceae

**Macrolepiota dolichaula**
Macrolepiota dolichaula

**Biology**
Saprotrophic basidiomycete; solitary or scattered on the ground, usually in open grassland.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 200 mm or more; initially conico-convex, then convex, finally plane with a low umbo; surface dry, covered with small pallid to light brownish squamules, which become minute and sparse towards the margin; disc smooth, yellow brown to brown; margin appendiculate. **Lamellae (Gills)** Attachment free; close; colour white, may become discoloured with age; with several tiers of lamellulae. **Stipe (Stem)** Central; generally up to 240 mm long and 8–25 mm thick, attenuating upwards; cylindrical, slender, base slightly enlarged, sometimes becoming orange when cut; surface dry, covered with minute farinose (mealy) granules; colour white to pale cream. **Annulus** simple, membranous, whitish, prominent, initially fixed, becoming movable, may slide down the stipe or fall off with age. **Spore Print** White

**Microscopic Features**
Basidiospores 12.5–16 $\times$ 8–10.5 $\mu$m, ellipsoidal, smooth, thick-walled, with a germ pore, dextrinoid (staining reddish in Melzer’s reagent). Basidia four-spored, 30–45 $\times$ 10–17 $\mu$m, clavate. Cheilocystidia approximately the same size as basidia, clavate to broadly clavate. Pleurocystidia absent. Clamp connections mostly at base of basidia and cheilocystidia, but rare elsewhere.

**Comments**
Macrolepiota dolichaula is recognised by its large size, whitish colour, large umbonate pileus with small to minute pallid squamules, and long slender stipe. This species appears to be common throughout East Africa, South-East Asia, China, and Eastern Australia.

**References**
Melanophyllum haematospermum
2.1. Order: Agaricales

Fungi in Australia 55

Fam. Agaricaceae

**Melanophyllum haematospermum**

*Melanophyllum echinatum*

**Biology**

Saprotrophic basidiomycete; solitary to gregarious on the ground, on humus-rich soils amongst forest litter.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 35 mm or more; initially convex or bluntly conical, then convex, expanding to plane, usually with a broad central umbo, margin when young has triangular velar remnants; surface dry, granulate-mealy all over, largest granules in the centre, granules wash away after heavy rain, leaving a glabrous surface; colour of mealy coating grey-brown, background colour pale brown to pinkish brown, central umbo region a darker grey-brown.

**Lamellae (Gills)** Attachment free; moderately crowded; colour reddish when young, becoming purplish pink to red-brown.

**Stipe (Stem)** Central; generally up to 50 mm long and 3 mm thick; equal, cylindrical; surface dry, mealy; colour when young vinaceous pink, later reddish or purplish brown, covered with grey-brown mealy granules.

**Annulus** evanescent, when young may leave a fibrillose zone on the stipe.

**Spore Print** Green when fresh, turning reddish brown

**Microscopic Features**

Basidiospores 5–6.5 × 2.5–4 μm, oblong, cylindrical, warty. Basidia four-spored, some two-spored, 14–25 × 5–7 μm, clavate. Clamp connections present.

**Comments**

*Melanophyllum haematospermum* is recognised by the mealy grey-brown granules and pendulous veil remnants on its pileus, free reddish brown lamellae, and mealy stipe. This species is also found in the northern hemisphere.

**References**


Nidula emodensis
**Nidula emodensis**  
*Nidula microcarpa*  
*Crucibulum emodense*

**Biology**  
Saprotrophic basidiomycete; usually caespitose on decaying wood or woody debris on the ground.

**Fruit-body Description**  
**Peridium** the birds-nest-like fruit-body is up to 6 mm high, and up to 5 mm wide across the mouth, tapering slightly towards the base; mouth opening of the immature fruit-body is covered by a thin skin-like membrane; exterior is covered with matted hairs; dingy grey, slightly brownish, becoming darker with age; interior smooth, shiny, dingy white, with age becoming dingy brown;  
**Peridiole** “eggs” containing spores, up to 1 mm diameter, numerous, free, no attached filaments, readily separable, initially reddish brown, becoming blackish with age. **Spore Print** Not observed

**Microscopic Features**  
Basidiospores 6–9 × 4–6 µm, ellipsoidal, or more commonly pear-shaped or egg-shaped, narrower at one end (obovate).

**Comments**  
*Nidula emodensis* is readily recognised as a birds-nest fungus. It is up to 6 mm high, hairy on the exterior, smooth and pale on the interior, with numerous free readily separable reddish brown “eggs”. Most other members of this genus are significantly larger, usually more than 10 mm high.

**References**  
Cunningham GH (1924) “A Revision of the New Zealand Nidulariales, or “Birds-nest Fungi”.  
*Transactions of the Royal Society of New Zealand* Vol. 55, pp. 59–66 [D I]  
p. 221 [D CP]
Amanita armeniaca
**Amanita armeniaca**

**Biology**
Mycorrhizal basidiomycete; found growing in association with *Eucalyptus* trees in sclerophyll forest.

**Fruit-body Description**

- **Pileus (Cap)** Diameter to 90 mm or more; at first hemispherical, then concave, finally plane; surface smooth, dry; colour bright orange, with dull cream-coloured velar membranous scales. **Lamellae (Gills)** Attachment free; crowded; colour white; with margin similar colour to pileus. **Stipe (Stem)** Central; generally up to 130 mm long and 20 mm thick; equal, with a small bulbous base; colour pale orange. **Annulus** pronounced, membranous, soft and fragile. **Volva** absent. **Spore Print** White

**Microscopic Features**
Basidiospores 8–10 × 7–9.5 μm, globose to subglobose, smooth. Basidia four-spored, 32–40 × 7–10 μm, clavate. Clamp connections absent.

**Comments**
This distinctive *Amanita* is readily recognised by its bright orange pileus, and lamellae that have an orange margin, especially near the pileus margin. The stipe has a membranous annulus but lacks a volva. It grows on soil in eucalypt forest and heathy woodland.

**References**
Amanita chlorophylla complex
Amanita chlorophylla complex

Biology
Mycorrhizal basidiomycete; solitary or in small groups on sandy soils in coastal scrubland, usually in association with *Casuarina* trees.

Fruit-body Description

Pileus (Cap) Diameter to 90 mm or more; at first convex, then flat convex or centrally depressed; covered with pale olive-green velar remnants; margin appendiculate. Lamellae (Gills) Attachment adnexed, becoming free; closely spaced; colour deep olive-green; margin paler to almost white. Stipe (Stem) Central; generally up to 120 mm long and 20 mm thick; with fine fibrillose hairs and a bulbous base; colour off-white to pale green. Annulus fragile, membranous, often present as fragments; buff to pale green. Volva absent.

Spore Print Pale greenish cream

Microscopic Features

Comments
This species is found in Victorian and New South Wales coastal regions. A related and very similar green species *Amanita austroviridis* is found in Western Australian coastal regions, also in association with *Casuarina* trees. They have slightly different morphological characteristics, and as a result they have been classified as different species.

References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Amanitaceae

*Amanita farinacea*
Amanita farinacea

Biology
Mycorrhizal basidiomycete; solitary or in small groups on the ground in eucalypt forests.

Fruit-body Description
Pileus (Cap) Diameter to 100 mm or more; at first deeply convex, then convex, then may become plane; surface covered in mealy velar remains; on the margin there are usually pendulous veil fragments; colour initially white, with age becoming pale brownish. Lamellae (Gills) Attachment free; narrow; close; colour off-white. Stipe (Stem) Central; generally up to 120 mm long and 15 mm thick; smooth; coated in mealy granules; with a bulbous to turbinate base; colour white. Annulus white; distinct; very fragile; often disappears quickly. Volva absent. Spore Print White

Microscopic Features

Comments
There are a small number other species that look similar but can be separated using microscopic features. The mealy velar remains are eroded away fairly quickly; this may make identification in the field more difficult.

References
Amanita grisella complex
Amanita grisella complex

Biology
Mycorrhizal basidiomycete; solitary or in small groups on the ground in eucalypt forests.

Fruit-body Description
Pileus (Cap) Diameter to 90 mm or more; convex, expanding to broadly convex; surface smooth, dry, covered in thick off-white mealy to membranous velar remains with irregular scales; colour pallid grey to mouse grey; velar remains gradually erode with age. Lamellae (Gills) Attachment free; thin; crowded; colour white to pale cream. Stipe (Stem) Central; generally up to 90 mm long and 13 mm thick; smooth; slightly expanded to a little bulbous at the base; colour white to pale cream. Annulus pronounced; membranous. Volva absent. Spore Print White

Microscopic Features
Basidiospores 7.5–9.5 × 5–7.5 µm, ellipsoidal, smooth. Basidia four-spored, 35–52 × 8–12 µm, clavate. Clamp connections absent.

Comments
This fungus belongs to the Amanita grisella complex. The species in this complex are difficult to separate using macroscopic features. The common features of this complex are: grey pileus covered in off-white velar remains; margin not appendiculate; annulus membranous; stipe smooth; no volva; and their sizes overlap. Some of the species in this complex are: A. grisella, A. griselloides, A. grisea, A. luteolovelata, and A. griseovelata.

References
Amanita muscaria
Amanita muscaria

Biology
Mycorrhizal basidiomycete; solitary or in groups, typically growing in association with pines (*Pinus*), birch (*Betula*), and spruce (*Picea*).

Fruit-body Description
Pileus (Cap) Diameter to 150 mm or more; globular at first, then broadly convex to flat with age; surface smooth underneath the many cottony white warty fragments of the universal veil; colour deep to bright red, but often fading with age to pale orange or pale yellow. Lamellae (Gills) Attachment free but reaching the stipe; crowded; colour white. Stipe (Stem) Central; generally up to 200 mm long and 30 mm thick; smooth, white, more or less equal, with a bulbous base. Annulus persistent, membranous, skirt-like. Volva usually absent but remnants present as rings on the top of the bulb at the base of the stipe.

Spore Print White

Microscopic Features

Comments
*Amanita muscaria* is an introduced species from the northern hemisphere. Its common name “Fly agaric” probably comes from this mushroom’s traditional use as a fly killer. Mycorrhizal fungi such as *A. muscaria* are normally host plant specific. However, in Tasmania and south-eastern Australia *A. muscaria* is now starting to become associated with Myrtle Beech *Nothofagus cunninghamii*. This has caused some concern as it may start to displace some of the native mycorrhizal fungi. The long-term effect this may have is unknown.

References


p. 9 [CP]
**Vol. 10**, pp. 723–854 [D I]
p. 105 [D CP]
Amanita ochrophylla complex
Amanita ochrophylla complex

Biology

Mycorrhizal basidiomycete; found growing in association with eucalypts, either solitary or in small groups on soil.

Fruit-body Description

Pileus (Cap) Diameter to 240 mm or more; at first rounded convex, then plano-convex; surface smooth, dry; colour warm buff to pinkish buff; when young, covered with flecks or large adhering universal veil remnants; veil fragments often remain on the margin. Lamellae (Gills) Attachment free; colour whitish to cream-coloured, becoming brownish with age. Stipe (Stem) Central; generally up to 150 mm long and 37 mm thick; stout; slightly hairy to floccose, and with a large turbinate bulbous base; colour warm buff to pinkish buff. Annulus prominent double annulus; the upper annulus close to the lamellae is membranous and striate; the lower annulus is often damaged and not as prominent. Spore Print White

Microscopic Features

Basidiospores 9–11 \( \times \) 5.5–7.5 \( \mu \text{m} \), ellipsoidal, smooth. Basidia four-spored, 50–65 \( \times \) 10–12 \( \mu \text{m} \), clavate. Clamp connections present.

Comments

This relatively common species is readily identified by its large size, coloration, double annulus, and membranous upper annulus. Similar closely related species are A. ochraceobulbosa and A. ochrophylloides. Although they differ slightly in colour they could be difficult to separate in the field.

References


Amanita phalloides
Amanita phalloides

Biology
Mycorrhizal basidiomycete; found growing in association with mature oaks, either solitary or in small groups on soil.

Fruit-body Description
Pileus (Cap) Diameter to 120 mm or more; ovoid at first, then becoming convex to plane; surface smooth, sticky when moist, often shiny when dry; colour variable, ranging from greenish to olive to yellowish to brownish, often darker towards centre; margin usually not striate. Lamellae (Gills) Attachment free or sometimes attached; crowded; colour white or tinged faintly greenish. Stipe (Stem) Central; generally up to 150 mm long and 30 mm thick; tapering upwards or equal; smooth, dry, with a bulbous base; colour white. Annulus persistent, membranous, skirt-like. Volva sac-like, encasing the base, frequently underground or broken up. Spore Print White

Microscopic Features
Basidiospores 8–10.5 × 5.5–8 µm, ellipsoidal to subglobose, smooth. Basidia four-spored, 40–50 × 10–13 µm, clavate. Clamp connections absent.

Comments
This mushroom is an introduced species from the northern hemisphere. It is extremely poisonous when ingested, hence its common name “Death Cap”. The symptoms of poisoning are delayed from 6 to 24 hours after ingestion, by which time there is little modern medicine can do to help. Identification of this species is not difficult: any mushroom that is found near an oak tree (Quercus spp.), and has white lamellae, white stipe, an annulus and a bulbous base, will most likely be A. phalloides.

References
Reid DA (1979) “A Monograph of the Australian Species of Amanita Pers. ex Hook. (Fungi)”. Australasian Journal of Botany Supplementary Series No. 8, pp. 1–97
Amanita vaginata complex
**Amanita vaginata complex**

**Biology**
Mycorrhizal basidiomycete; found growing in association with eucalypts, either solitary or in small groups on soil.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; ovate at first, then convex and finally plane; surface dry, often with whitish velar patches, distinctly striate at margin; colour pale grey or pale greyish cream to dark grey, sometimes with shades of brown. **Lamellae (Gills)** Attachment free; crowded; colour white; may have a slightly coloured margin, but not grey. **Stipe (Stem)** Central; generally up to 90 mm long and 15 mm thick; equal; smooth or with fine white fibrils; dry; base slightly enlarged; colour whitish. **Annulus** none. **Volva** saccate, membranous, white, encasing the base, frequently underground or broken up. **Spore Print** White

**Microscopic Features**

**Comments**
This is a relatively common species, but may be difficult to identify in the field because there are a number of *Amanita* species that are similar since they all have a stipe without an annulus or bulbous base, all have a saccate volva and all are of similar stature. Some of these species are *A. albovolvata*, *A. punctata*, *A. subvaginata*, and *A. sordidobubalina*. From this complex *A. punctata* is most readily separated in the field because its lamellae have a distinct grey, punctate (with spots or pits) margin.

**References**
2.1. Order: Agaricales

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Fam. Amanitaceae

*Amanita xanthocephala*
2.1. Order: Agaricales

**Amanita xanthocephala**

**Biology**
Mycorrhizal basidiomycete; found growing in association with eucalypts, either solitary or in small groups on soil.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; initially convex, expanding to plane; surface smooth, dry, finely radially fibrillose, margin striate; colour varies from yellow-orange to rust-orange, often with whitish to yellowish felty velar remains on the surface. **Lamellae (Gills)** Attachment free; crowded; colour white, sometimes becoming a very pale yellow with age. **Stipe (Stem)** Central; generally up to 50 mm long and 10 mm thick; smooth; base slightly bulbous; colour whitish. **Annulus** absent. **Volva** may be absent or indistinct, but leaving an orange to yellowish ring on the top of the bulb at the base of the stipe. **Spore Print** White

**Microscopic Features**
Basidiospores 7–9.5 × 5.5–8 µm, ellipsoidal to subglobose, smooth. Basidia four-spored, 25–35 × 7–10 µm, clavate. Clamp connections absent.

**Comments**
This small *Amanita* is easily identified in the field, with its orange, planate pileus, often with felty patches, its white lamellae, pale stipe with no annulus, and an orange or yellow ring on its bulbous base.

**References**


**Limacella pitereka**

Fungi in Australia

Fam. Amanitaceae
**Limacella pitereka**

**Biology**
Mycorrhizal basidiomycete; solitary or in small groups on the ground in eucalypt forests.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; convex, becoming plano-convex, then plane, when young margin inturned; surface sticky, glutinous when moist; colour white with brownish tints in the centre. **Lamellae (Gills)** Attachment almost free; close; colour off-white to cream. **Stipe (Stem)** Central; generally up to 60 mm long and 15 mm thick; smooth or indistinctly longitudinally striate; glutinous. **Annulus** no annulus or discernible annular zone. **Spore Print** White

**Microscopic Features**
Basidiospores 4.5–8 × 3.5–5.5 µm, short ellipsoidal to subglobose, smooth, with prominent apiculus. Basidia four-spored, 25–45 × 6.5–10 µm, clavate. Clamp connections present.

**Comments**
This species is usually found in eucalypt forest and woodlands. It has a glutinous pileus and stipe, the fruit-body is predominantly white with brownish tints in the centre of the pileus and there is no annulus on the stipe.

**References**

Bolbitius titubans
**Bolbitius titubans**

*Bolbitius vitellinus*

**Biology**
Saprotrophic basidiomycete; gregarious or rarely solitary, on manure-rich soil, decaying grass straw, or on lawns.

**Fruit-body Description**

**Pileus (Cap)** Diameter averages about 30 mm, but can be up to 76 mm, depending on the amount of food in the substrate; ovoid when young, then convex, finally expanding to nearly plane; surface very viscid when young, smooth, hygrophanous; margin somewhat striate; colour egg yolk yellow to lemon yellow, becoming pale on drying. **Lamellae (Gills)** Attachment nearly free, just reaching the stipe; close; colour pallid or pale yellow at first, becoming brownish as spores mature. **Stipe (Stem)** Central; generally up to 80 mm long and 5 mm thick; slender, fragile; whitish with faint tinges of yellow; covered in white scales. **Spore Print** Brown

**Microscopic Features**

**Comments**
This species, found on dung or amongst grass, is readily recognised by its bright yellow colour, pale stipe with white scales, and its very fragile nature. The fruit-body will seldom last more than a day, and it will quickly dry up in sunlight.

**References**


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**D**=Description; **I**=Illustration; **CI**=Colour Illustration; **P**=Photo; **CP**=Colour Photo
2.1. Order: Agaricales

**Conocybe apala**
Conocybe apala

Conocybe lactea

Biology
Saprotrophic basidiomycete; solitary to gregarious in grass, such as lawns, parks, meadows and pasture.

Fruit-body Description
Pileus (Cap) Diameter to 25 mm or more; narrow conical to bell-shaped; surface dry, smooth; margin striate; colour white to creamy, often with brownish tints in the centre. Lamellae (Gills) Attachment adnexed or almost free; close; colour pallid, soon becoming dull orange-brown as spores mature. Stipe (Stem) Central, generally up to 50 mm tall and 2 mm thick; equal, thin, fragile, easily splitting; colour white or whitish, with a very light mealy coating. Annulus absent. Spore Print Rust-brown

Microscopic Features

Comments
Conocybe apala is a small grass-inhabiting mushroom characterised by its whitish conical pileus with a striate margin, and its slender fragile stipe. It will often appear in lawns in the morning and by the afternoon most specimens will have withered. Conocybe crispa is a similar looking species but its pileus is usually ochre-tinged, and the lamellae are veined.

References
2.1. Order: Agaricales

Conocybe filaris
Conocybe filaris

Pholiotina filaris

**Biology**
Saprotrophic basidiomycete; solitary to gregarious in grass near decaying woody debris or on decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 25 mm or more; initially conical, expanding to convex or plane, usually retaining a slight central umbo; surface smooth, margin faintly striate; colour tawny-brown to brown; hygrophanous, fading to cream-buff when dry.  **Lamellae (Gills)** Attachment adnexed to notched; close; colour at first cream-buff, becoming rust-brown as spores mature.  **Stipe (Stem)** Central, generally up to 50 mm tall and 3 mm thick; more or less equal, fragile, surface minutely mealy; colour yellow-brown or similar to pileus. **Annulus** membranous, movable, prominent, striate-grooved; colour cream-buff.

**Spore Print** Yellowish brown

**Microscopic Features**
Basidiospores 7.5–13 × 3.5–6.5 µm, ellipsoidal, smooth, thick-walled, with an apical germ pore. Basidia four-spored, 19–23 × 7–10 µm.

**Comments**
*Conocybe filaris* is distinctive with its tawny-brown pileus, movable striate-grooved annulus, and slightly mealy stipe. This is a very toxic species as it contains the same deadly toxins as those found in *Amanita phalloides* (Death Cap). If *C. filaris* loses its distinctive annulus it will become one of those unidentifiable little brown mushrooms (LBMs), and this can create a problem because *C. filaris* are often found where magic mushrooms grow and could be picked by mistake.

**References**


Descolea recedens
Descolea recedens
Pholiota recedens

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under Eucalyptus, Nothofagus and Leptospermum spp.

Fruit-body Description
Pileus (Cap) Diameter to 40 mm or more; hemispherical when young, becoming slightly conical or convex, later becoming almost plane; surface dry, when young covered in fine yellowish brown scales from the veil, scales disappearing with age; margin often radially striate; colour dark brown when moist, becoming lighter when dry (hygrophanous). Lamellae (Gills) Attachment adnexed or adnate with a decurrent tooth; moderately distant; colour at first pallid brown, becoming brown as spores mature. Stipe (Stem) Central; generally up to 50 mm long and 6 mm thick; robust, widening towards the base; surface dry, finely fibrillose; colour usually a paler tint of the pileus. Annulus usually about two-thirds up the stipe, membranous, prominent, grooved or plicate on its upper surface; colour pale brown. Spore Print Brown

Microscopic Features
Basidiospores 10–14 × 6–8.5 μm, ellipsoidal to broadly lemon-shaped, finely verrucose (warty). Basidia four-spored, 30–40 × 8–12 μm, clavate. Clamp connections present.

Comments
Nearly all species of the genus Descolea belong to the small brown mushroom class. Members of this genus are usually identified by their plicate membranous annulus, brown lamellae and terrestrial habitat. Distinguishing the individual species within this genus is a little more difficult, but not too difficult, because the number of species is small. This species can be identified by the yellow scales on the pileus and the distinctive annulus, which is striate on the upper surface. The most closely related species is D. maculata, which has almost smooth spores and a more fibrillose base to the stipe; most of the specimens found have been in Western Australia (see Bougher and Syme 1998). Another species, found in the eastern and southern parts of Australia, is D. phlebophora, which has a wrinkled reddish brown pileus without the characteristic yellowish scales; its stipe is also more slender and its annulus is almost white, not brownish, though this may be difficult to detect because the annulus may be stained by a rust-brown spore deposit. The genus Descolea was placed in the
family Cortinariaceae but phylogenetic evidence (Matheny et al. 2014; Tóth et al. 2013) now places it in the family Bolbitiaceae.

References
Panaeolus antillarum
**Panaeolus antillarum**

**Biology**
Saprotrophic basidiomycete; solitary or gregarious on herbivore dung, usually cow or horse dung.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; at first globular, quickly becoming parabolic to bell-shaped, rarely convex; surface at first viscid, quickly drying, becoming smooth and shiny, depending on weather may become wrinkled or cracked; colour when young and fresh pure white, becoming silver grey, may develop brownish discolorations with age. **Lamellae (Gills)** Attachment ascending to adnate; relatively close; colour at first pale grey, becoming mottled black as spores mature; margin distinctly whitish and finely serrate. **Stipe (Stem)** Central; generally up to 100 mm long and 6 mm thick; slender, cylindrical, no trace of annulus or volva; surface dry, finely pruinose, striate near the lamellae; colour white, often brownish at the base. **Spore Print** Black

**Microscopic Features**
Basidiospores, depending on angle of view, $15–19 \times 8–12$ $\mu$m, in the oval plane, $15–19 \times 10–14$ $\mu$m, in the sub-hexagonal plane; smooth, with a prominent germ pore. Basidia four-spored, $20–28 \times 14–19$ $\mu$m, clavate. Pleurocystidia large, thin-walled, with contents that turn yellow-brown in alkali or stain deeply in cotton blue.

**Comments**
*Panaeolus antillarum* is an introduced species, its origin not known. It is found solely on herbivore dung, and is identified by its whitish pileus and stipe, its blackish mottled lamellae, and absence of any ring or volva on the stipe. This species is relatively rare in Europe, and more common in areas with a warmer climate.

**References**


**Panaeolus papilionaceus**
**Panaeolus papilionaceus**

*Panaeolus sphinctrinus*  *Panaeolus retirugis*  *Panaeolus campanulatus*

**Biology**
Saprotrophic basidiomycete; solitary or gregarious on herbivore dung, usually cow or horse dung, or on well manured pasture.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 35 mm or more; at first bluntly conical, becoming parabolic to bell-shaped, sometimes with a slight umbo, margin initially incurved, then decurved, margin decorated with tooth-like white veil fragments that may disappear with age; surface smooth, shiny when dry, not viscid, may become wrinkled or cracked; colour variable, can be dark grey when young and moist, when dry becoming pale brown to grey-brown, occasionally with darker orange-brown tints at the centre. **Lamellae (Gills)** Attachment adnate to adnexed; relatively close; colour at first pale grey, becoming mottled black as spores mature; margin distinctly whitish. **Stipe (Stem)** Central; generally up to 100 mm long and 4 mm thick; slender, fragile, cylindrical, no trace of annulus or volva; surface dry, finely pruinose, striate near the lamellae; colour darker than pileus, brown to grey-brown, or dark grey. **Spore Print** Black

**Microscopic Features**
Basidiospores depending on angle of view, 13–18 × 8–10 µm, in the oval plane, 13–18 × 10–12 µm, in the sub-hexagonal plane; smooth, with a prominent germ pore. Basidia four-spored, 28–42 × 10–15 µm, broadly clavate. Clamp connections present but rare.

**Comments**
*Panaeolus papilionaceus* is an introduced species, usually found in heavily manured soils in pastures, or on horse or cow dung. In the field it is usually identified by its smooth, grey-brown, bell-shaped pileus with tooth-like white veil fragments at the margin, blackish mottled lamellae, and brownish stipe. Until 1996 this species was considered to be a member of a confusing complex of species that included *P. campanulatus*, *P. sphinctrinus* and *P. retirugis*. However, work done by Gerhart (1996) showed that all of these species are conspecific and therefore are synonyms for *P. papilionaceus*. (This reference has not been sighted.)
References


2.1. Order: Agaricales

**Fungi in Australia**

Fam. Chromocyphellaceae

*Chromocyphella muscicola*

![Image of Chromocyphella muscicola](image-url)
Chromocyphella muscicola

Biology
Parasitic basidiomycete; found in colonies on mosses (bryophytes) on near-vertical or horizontal wood, such as mossy live tree trunks or branches. The fruit-bodies are clearly attached to the moss.

Fruit-body Description
Generally up to 4 mm across, seldom more, initially inverted deep cup- or bell-shaped, with age becoming flattish; attachment to the bryophyte is either by a minute stipe-like base, or sessile. **Outer Surface** (pileus), hairy, felty, whitish; **Inner Surface** (hymenium) smooth, whitish at first, becoming brownish at maturity. **Spore Print** Not observed

Microscopic Features
Basidiospores 7.5–9.5 × 6.5–8.5 μm, subglobose to broadly ellipsoidal, minutely spiny. Basidia four-spored, 30–40 × 7–10.5 μm, clavate. Clamp connections present.

Comments
*Chromocyphella muscicola* is readily identified by its small, whitish, sessile cup- or bell-shaped fruit-bodies, with a felty outer surface, growing on bryophytes (mosses). Work done by Kost (1988) shows that this species is a parasite on bryophytes. Donk (1956) placed this species in the family Cyphellaceae. Later, based on morphological characters, it was moved into Crepidotaceae (Singer 1986 p. 157), but the phylogenetic work performed by Petersen *et al.* (2010) now places this species in a new, well defined, sister family Chromocyphellaceae.

References


Clavaria fragilis
2.1. Order: Agaricales

**Clavaria fragilis**

*Clavaria vermicularis*  *Clavaria meuleri*

**Biology**
Saprotrophic basidiomycete; solitary, gregarious or in dense clusters on the ground in woody leaf litter or in old unimproved grassland.

**Fruit-body Description**
Up to 150 mm tall and 5 mm thick; simple clubs, brittle and fragile, the tip usually rounded but with age may taper to a point. **Spore-bearing Surface** (hymenium) white, smooth, dry, with age tip may discolour to yellowish or pale brownish. **Stipe** usually not distinct, but evident as a short semitransparent zone at the base of the club. **Spore Print** White

**Microscopic Features**

**Comments**
*Clavaria fragilis* is fairly easily recognised; it grows in small clumps of translucent white, brittle clubs, which can grow up to 150 mm tall. A similar looking species with which it is sometimes confused is *Clavaria alboglobospora*, which is predominantly a New Zealand species. Phylogenetic analysis (Kautmanová et al 2012) shows that *C. vermicularis* and *C. fragilis* are synonymous. *C. fragilis* is a global species, originally described from Denmark in 1790 by the Danish mycologist Theodor Holmskjold.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fungi in Australia 100

Fam. Clavariaceae

Clavulinopsis amoena
2.1. Order: Agaricales

**Clavulinopsis amoena**

*Clavaria amoena*

**Biology**
Basidiomycete, suspected to be mycorrhizal; solitary, gregarious or caespitose on the ground in *Eucalyptus* dominated woodland.

**Fruit-body Description**
Up to 100 mm tall and 2 mm thick; simple clubs. **Spore-bearing Surface** (hymenium) cylindrical, flattened or grooved, equal, bright yellow. **Stipe** up to 15 mm long, same colour as club above, arising from small mycelial patch. **Spore Print** White

**Microscopic Features**
Basidiospores 5–7 × 4–4.5 µm, ellipsoidal to ovate, smooth, thin-walled. Basidia (2)–four-spored, 40–50 × 4–4.5 µm, elongate clavate.

**Comments**
*Clavaria amoena* is relatively common and widespread; the bright yellow simple clubs make this a readily identifiable fungus.

**References**
Clavulinopsis corallinorosacea
**Clavulinopsis corallinorosacea**  
*Clavaria corallinorosacea*

**Biology**  
Basidiomycete, suspected to be mycorrhizal; solitary, gregarious or caespitose on the ground in *Eucalyptus* dominated woodland.

**Fruit-body Description**  
Up to 50 mm tall and 3 mm thick; simple clubs. **Spore-bearing Surface** (hymenium) cylindrical, flattened or grooved, equal, bright rosy pink, covered with white powdery bloom of spores. **Stipe** up to 15 mm long, colour similar to or darker than club above, delimited from hymenium by not being covered with the powdery bloom of spores. **Spore Print** White

**Microscopic Features**  
Basidiospores 5.5–8 × 3.5–5 µm, ellipsoidal to almond-shaped, smooth, thin-walled. Basidia four-spored, 35–50 × 6–7 µm, elongate clavate.

**Comments**  
*Clavulinopsis corallinorosacea* can be confused with *C. sulcata*, but *C. sulcata* does not have a bloom on its hymenium and there is no noticeable delineation between the hymenium and the stipe.

**References**  
  p. 198 [D CP] (as *Clavaria corallinorosacea*)  
  p. 86 [CP] (as *Clavaria corallinorosacea*)  
  p. 197 [D I] (as *Clavaria corallinorosacea*)
Clavulinopsis sulcata complex
**Clavulinopsis sulcata complex**

*Clavulinopsis miniata   Clavaria miniata*

**Biology**
Basidiomycete, suspected to be mycorrhizal; solitary, gregarious or caespitose on the ground in *Eucalyptus* dominated woodland.

**Fruit-body Description**
Up to 100 mm tall and 10 mm thick; simple to occasionally branched clubs. **Spore-bearing Surface** (hymenium) cylindrical, flattened or grooved, equal, flame-orange to bright red. **Stipe** up to 15 mm long, same colour as club above, not obviously delimited. **Spore Print** White

**Microscopic Features**
Basidiospores 5–7 × 4–6.5 µm, broadly ellipsoidal, smooth, thin-walled.

**Comments**
*Clavulinopsis sulcata* has the common name “Flame Fungus”: when the bright red clubs are seen protruding above the leaf litter they are reminiscent of a small fire. *Clavulinopsis sulcata* can be confused with *C. corallinorosacea*, but *C. sulcata* does not have a bloom on its hymenium and there is no noticeable delineation between the hymenium and the stipe.

**References**
Mucronella pendula
**Mucronella pendula**  
*Myxomycidium pendulum  Mucronella alba*

**Biology**
Saprotrophic basidiomycete; solitary to gregarious on dead wood such as fallen rotting tree trunks in wet forests, usually found in sheltered hollows. It causes brown rot.

**Fruit-body Description**
Length up to 25 mm or more, and up to 3 mm across; pendulous, stipe and head clearly distinct. **Head** fertile region, icicle-shaped, narrowly conical, tapering evenly to a point; surface smooth, dry; colour white, translucent white, slightly yellowing with age; **Stipe** central, curved, cylindrical, length up to 5 mm or more, thickness up to 2 mm; surface smooth; colour whitish, or dull ochraceous. **Flesh** firm, gelatinous. **Spore Print** White

**Microscopic Features**
Basidiospores $6–9 \times 4.5–6.7$ $\mu$m, broadly ellipsoid, usually flattened axially, smooth. Basidia four-spored, $28–35 \times 6–8$ $\mu$m, elongated clavate, almost cylindrical. Clamp connections present.

**Comments**
*Mucronella pendula* is a small, beautiful fungus. Its white, pendulous, spearhead-shaped fruit-body cannot be mistaken for anything else. It is usually found in sheltered locations on old damp rotting logs. This species is also found in the northern hemisphere.

**References**
  p. 203 [D CP]
  p. 81  [D CP]
  p. 72  [CP]
  p. 90  [D CI]
Cortinarius abnormis
**Cortinarius abnormis**

**Biology**
Mycorrhizal basidiomycete; solitary, gregarious or caespitose on the ground amongst leaf litter, moss or grass, under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; convex, then plane, eventually uplifted, margin incurved at first; surface viscid when moist but usually dry, not translucent-striate nor hygrophanous, radially flattened fibrillose, flattened squamules in centre; colour yellowish brown, darker yellowish brown in the centre, initially yellowish at the margin. **Lamellae (Gills)** Attachment sinuate or subdecurrent; moderately crowded; colour at first yellowish brown, becoming light brown as spores mature. **Stipe (Stem)** Central; generally up to 130 mm long and 9 mm thick; almost equal; surface smooth with brownish fibrils, dry; colour yellowish at the apex, becoming more yellow-brown towards the base; basal mycelium bright yellow. **Cortina** yellowish, well developed, collapsing to a brown fibrillose zone. **Spore Print** Rust-brown

**Microscopic Features**

**Comments**
The yellow-brown colour, the finely fibrillose pileus and the bright yellow basal mycelium are the main features that are used to identify *Cortinarius abnormis* in the field.

**References**
Cortinarius aff. alboviolaceus
**Cortinarius aff. alboviolaceus**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 80 mm or more; convex to bell-shaped at first, finally expanding to umbonate; viscid when moist, silky smooth; colour pale lilac to pale grey-lilac. **Lamellae (Gills)** Attachment adnexed; moderately crowded; colour at first violaceous, becoming rust-brown as spores mature. **Stipe (Stem)** Central; generally up to 90 mm long and 18 mm thick; slender, almost equal, viscid when moist. **Cortina** white, collapsing to an indistinct fibrillose zone, which sometimes becomes rust-brown as it collects fallen spores.

**Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 8–10 × 4.5–5.5 µm, ovoid-ellipsoidal (almond-shaped), ornamented, warty. Basidia four-spored. Clamp connections present.

**Comments**
*Cortinarius* aff. *alboviolaceus* is readily identified by its pale lilac colour, and neither the pileus nor the stipe is glutinous. *Cortinarius alboviolaceus* is the name of a northern hemisphere species that is mycorrhizal with deciduous trees. The Australian species has an affinity to this species: the morphology of the Australian and northern hemisphere species is very similar. Because it has not yet been decided that the Australian species is unique, for the time being it has been given the name *Cortinarius* aff. *alboviolaceus*.

**References**
Cortinarius archeri
Cortinarius archeri

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under Eucalyptus spp.

Fruit-body Description
Pileus (Cap) Diameter to 100 mm or more; originally hemispherical, then convex, finally plane; surface smooth, initially glutinous, becoming viscid; colour initially deep violet or lilac-vinaceous, ageing to brown with a violet tinge. Lamellae (Gills) Attachment adnate; moderately crowded; colour at first bluish, becoming ochraceous to rust-brown as spores mature. Stipe (Stem) Central; generally up to 90 mm long and 30 mm thick; pale above the annulus, violet or lilac below; glutinous. Annulus white, membranous, becoming rust-brown as it collects fallen spores. Spore Print Rust-brown

Microscopic Features

Comments
Cortinarius archeri is readily identified in the field by its large glutinous violet-coloured fruit-body. There are two other species, C. microarcheri and C. subarcheri, that look similar but they are much smaller in stature. It is possible that these species may be small strains of C. archeri; more work needs to be done in this area.

References
2.1. Order: Agaricales

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Fam. Cortinariaceae

*Cortinarius areolatoimbricatus*
**Cortinarius areolatoimbricatus**

**Biology**
Mycorrhizal basidiomycete; solitary, gregarious or caespitose on the ground amongst leaf litter or grass under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 150 mm or more; initially deeply convex, then convex, sometimes deformed from mutual pressure; surface dry, covered with pallid overlapping fibrillose scales (imbricate); colour ochraceous buff to cinna-mon buff.

**Lamellae (Gills)** Attachment adnate; close; colour at first creamy to pale ochraceous buff, becoming ochraceous to rust-brown as spores mature.

**Stipe (Stem)** Central; generally up to 65 mm long and 40 mm thick; cream to pale ochraceous buff. **Cortina** white, collapsing to a faint fibrillose zone.

**Spore Print** Rust-brown

**Microscopic Features**

**Comments**
*Cortinarius areolatoimbricatus* is usually found in caespitose clumps, is a stout fleshy fungus and, with its brownish imbricate pileus and robust pale stipe, is easily recognised in the field.

**References**

Cortinarius australiensis
2.1. Order: Agaricales

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Fam. Cortinariaceae

*Cortinarius australiensis*

*Rozites australiensis*

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter or grass under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 170 mm or more; initially convex with an inrolled margin, becoming nearly plane, then expanding to be uplifted, margin wavy, often with ragged fragments of the partial veil attached; surface dry, viscid when moist, finely felty to smooth, sometimes cracking; colour whitish with brownish tints or stains. **Lamellae (Gills)** Attachment adnate becoming sinuate or free with age; close; colour at first pale straw, becoming pale tan to rust-brown as spores mature. **Stipe (Stem)** Central; robust, generally up to 120 mm long and 50 mm thick, base bulbous, forming a conical root; colour whitish, often discoloured by soil stains; surface dry, with fine longitudinal fibrils. **Annulus** membranous, white, becoming stained rust-brown by falling spores. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 10–12 × 5–6.5 µm, ellipsoidal, ornamented, finely warty. Basidia four-spored, 35–45 × 7–8 µm, clavate. Clamp connections present.

**Comments**

*Cortinarius australiensis* is a large robust fungus, found in association with eucalypts. Its large whitish pileus, and robust stipe with a membranous annulus usually covered in rust-brown spores, make this species readily identifiable in the field. *C. australiensis* also occurs in New Zealand, where it grows with *Leptospermum*. It was originally described by Cleland and Cheel (1918) as *Rozites australiensis*. Horak (1981) transferred it to *Cortinarius*, giving it the binomial by which it is now known.

**References**


2.1. Order: Agaricales

Fam. Cortinariaceae

*Cortinarius austroalbidus*
**Cortinarius austroalbidus**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 70 mm or more; convex becoming plane; surface glutinous, sticky, smooth or velvety-fibrillose; colour white to cream, may have faint hues of reddish brown or lilac. **Lamellae (Gills)** Attachment adnexed; moderately close; colour at first white to creamy, becoming ochraceous as spores mature. **Stipe (Stem)** Central; generally up to 80 mm long and 30 mm thick; moderately stout; white to cream, glutinous, sticky, fibrillose. **Cortina** white, collapsing to a faint fibrillose zone. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 8.5–11 × 4–7.5 μm, ellipsoidal to ovoid, ornamented, finely warty. Basidia four-spored, 28–40 × 8–12 μm, clavate. Clamp connections present.

**Comments**
The whitish colour, glutinous nature and distinctive spicy odour reminiscent of curry, make *Cortinarius austroalbidus* readily identifiable in the field.

**References**
2.1. Order: Agaricales

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Fam. Cortinariaceae

*Cortinarius austrocinnabarinus*
**Cortinarius austrocinabarinus**

**Biology**
Mycorrhizal basidiomycete; solitary, gregarious or caespitose on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 60 mm or more; conical when young then convex to irregularly plane; surface dry, fibrillose; colour uniformly cinnabar, or orange-red; dulling with age; no purple tints. **Chemical test** application of KOH solution initially produces a black then purplish colour reaction. **Lamellae (Gills)** Attachment adnate; moderately close; colour at first yellow-ochre, becoming yellow-brown as spores mature; margin cinnabar red. **Stipe (Stem)** Central; generally up to 60 mm long and 20 mm thick; long, slender or stout, slightly fusoid or clavate; surface dry, covered with zones of cinnabar or red fibrillose veil remnants; colour whitish or pallid yellowish at apex, often cinnabar or orange-red towards the base. **Cortina** cobweb-like, ochre, collapsing to ochre fibrillose zone near apex. **Spore Print** Rust-brown

**Microscopic Features**

**Comments**
The main characteristic that identifies *Cortinarius austrocinabarinus* in the field is the cinnabar or orange-red of its pileus, as the epithet of its name would suggest. There are other similarly coloured Cortinarius species, but most of these usually have lilac tints. *Cortinarius austrocinabarinus* is occasionally misidentified as *Dermocybe cramesina* (see Fuhrer 2005). Fuhrer corrected this error in the 2009 reprint of his field guide. *Dermocybe cramesina*, now known as *Cortinarius cramesinus*, is usually found in association with *Nothofagus* spp. and has a purple tint to its colour (Horak 1988), whereas *Cortinarius austrocinabarinus* is normally associated with *Eucalyptus* spp. and has no purple tints.

**References**


Cortinarius austrovenetus
2.1. Order: Agaricales

Fam. Cortinariaceae

Cortinarius austrovenetus

Dermocybe austroveneta

**Biology**

Mycorrhizal basidiomycete; solitary to gregarious on the ground amongst leaf litter under Eucalyptus spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 80 mm or more; when young convex, later nearly plane with a broad umbo; surface dry, smooth, finely velvety, radially fibrillose; colour varies from yellowish green to deep olive-green. **Chemical test** application of KOH solution produces a reddish colour reaction. **Lamellae (Gills)** Attachment adnate; moderately close; colour at first bright yellow, becoming yellow-brown as spores mature. **Stipe (Stem)** Central; generally up to 75 mm long and 15 mm thick; long, slender or stout, slightly attenuated upwards; surface dry, fibrillose; colour whitish or pallid yellowish, often stained brownish with spore deposits. **Cortina** cobweb-like, whitish, collapsing to a faint fibrillose zone. **Spore Print** Rust-brown

**Microscopic Features**

Basidiospores 8.5–11.5 × 4.5–7 μm, ellipsoidal, finely verrucose to coarsely ornamented. Basidia four-spored, 27–41 × 7–12 μm, clavate. Clamp connections present.

**Comments**

*Cortinarius austrovenetus* is easily recognisable because of its stout appearance, green pileus and yellowish stipe. It is found amongst leaf litter under eucalypts. There is no other species with which it can be easily confused. The name change from *Dermocybe austroveneta* to *Cortinarius austrovenetus* was based on DNA evidence showing that all Australian species of the genus *Dermocybe* belong in the genus *Cortinarius*.

**References**


Cortinarius austroviolaceus
Cortinarius austroviolaceus

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under Eucalyptus spp.

Fruit-body Description
Pileus (Cap) Diameter to 90 mm or more; when young convex, becoming flattened at maturity; surface dry, initially finely fibrillose, later smooth; colour dark violet, with age developing brownish tints. Chemical test application of KOH solution produces a pink reaction. Lamellae (Gills) Attachment adnate; moderately close; colour dark violet, gradually developing a rust-brown flush as spores mature. Stipe (Stem) Central; generally up to 70 mm long and 15 mm thick; equal to slightly clavate; surface dry, fibrillose; colour dark violet. Cortina violet, collapsing to a faint fibrillose zone. Spore Print Rust-brown

Microscopic Features
Basidiospores 8–10 × 5–6 µm (mean 9.1 ± 0.5 × 5.5 ± 0.3 µm, Q=1.66 ± 0.09, n=60), ellipsoidal, covered in small warts (verrucose). Basidia four-spored, 33–37 × 7.5–9 µm, sub-cylindrical, clavate. Cheilocystidia sometimes laneniform (gourd-shaped, often with a long neck), often capitate or ampule-shaped. Clamp connections present.

Comments
The overall dark violet colour of this species, its smooth pileus and fibrillose stipe make it easy to recognise, but care needs to be taken when trying to identify it in the field. There are a number of similar looking species, for instance in Bougher and Syme (1998) the fungus portrayed as C. violaceus is now known as C. hallowensis (found in Western Australia and Tasmania); its greasy smooth pileus separates it from C. austroviolaceus. Two of several species described in Wood (2009) include C. kioloensis, which can be separated from C. austroviolaceus by its rough squamulose pileus, and C. jenolanensis, which can be separated from C. austroviolaceus using microscopic features. The original description of C. austroviolaceus was written by Gasparini (2001), who assumed it was closely related to the European species C. violaceus due to their morphological similarity, but phylogenetic evidence produced by Harrower et al. (2015) demonstrates that C. austroviolaceus is not closely related to C. violaceus.
References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Cortinarius canarius
Cortinarius canarius

Dermocybe canaria

Biology
Mycorrhizal basidiomycete; solitary to gregarious on the ground amongst leaf litter under Eucalyptus or Nothofagus spp.

Fruit-body Description
Pileus (Cap) Diameter to 60 mm or more; when young hemispherical becoming convex, centre broadly umbonate; surface dry, minutely to coarsely fibrillose; colour bright yellow. Chemical test application of KOH solution produces a red to red-brown colour reaction. Lamellae (Gills) Attachment sharply adnexed, sometimes with a decurrent tooth; crowded; colour at first golden yellow, becoming yellow-brown as spores mature. Stipe (Stem) Central; generally up to 80 mm long and 30 mm thick; stout, slightly bulbous with root-like base; surface dry, smooth; colour yellow. Cortina membranous to thick, cobweb-like, yellow, leaving an annulus or collapsing to 1 to 3 robust fibrillose zones towards the base of the stipe; usually stained yellow-brown from spore deposit. Spore Print Rust-brown

Microscopic Features

Comments
Cortinarius canarius is readily identified by its bright yellow colour and stout fruit-body, which is not viscid. This species was previously recorded as Dermocybe canaria but phylogenetic evidence produced by Stefani et al. shows that all Australian species of Dermocybe nest in the genus Cortinarius. Gasparini (2014) renamed the species from Dermocybe canaria to Cortinarius canarius.

References

2.1. Order: Agaricales

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Fam. Cortinariaceae

*Cortinarius cystidiocatenatus*
Fam. Cortinariaceae

**Cortinarius cystidiocatenatus**

*Inocybe cystidiocatenata*

**Biology**
Mycorrhizal basidiomycete; solitary, gregarious or caespitose on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; initially deeply convex, becoming broadly conical, often with an umbo, and occasionally with white veil remnants on the margin; surface dry, hygrophanous, hoary from whitish fibrils; surface colour under fibrils usually orange-brown but sometimes a more reddish brown.

**Lamellae (Gills)** Attachment adnexed; moderately close; colour pale brown to orange-brown, margin pale to whitish.

**Stipe (Stem)** Central; generally up to 45 mm long and 5 mm thick; slender, fibrillose; colour pallid whitish. **Cortina** white, collapsing to a faint fibrillose zone.

**Spore Print** Pale ochre-brown

**Microscopic Features**
Basidiospores $6–9 \times 3–5.5 \mu m$, (mean $7.6 \pm 0.8 \times 4.5 \pm 0.6 \mu m$, $Q=1.73 \pm 0.24$, $n=30$), ellipsoidal, almost smooth, surface faintly ornamented. Basidia four-spored, $24–34 \times 7–9 \mu m$, clavate. Cheilocystidia often made up from multiseptate chains or clusters of subglobose to ellipsoidal cells $16–35 \times 10–20 \mu m$. Pleurocystidia absent. Clamp connections present.

**Comments**
Many of the morphological features of this species, such as the fibrillose pileus and smooth ochraceous brown spores, are consistent with the genus *Inocybe*, into which Grgurinovic (1997) placed it as *Inocybe cystidiocatenata*. This species was included in a DNA study of *Cortinarius* by Garnica *et al.* (2005). As a result it was found to be a *Cortinarius* species and was later renamed by Gasparini (2006) as *Cortinarius cystidiocatenatus*. To make the identification of *C. cystidiocatenatus* a little uncertain, Cleland (1976) described a species *C. fibrillosus* which is morphologically very similar to *C. cystidiocatenatus* but according to Grgurinovic (1997) is not the same species because there is a difference in the cheilocystidia structure. *Cortinarius cystidiocatenatus* tends to form multiseptate cystidia whereas *C. fibrillosus* does not. According to Matheny and Bougher (2010), who examined both species closely, there is little doubt that *C. fibrillosus* is conspecific with *C. cystidiocatenatus*, but at present we do not have the DNA evidence that says they are the same species. If eventually it is proven that they are, *C. fibrillosus*, being the older
name, would have nomenclatural priority. This shows how difficult it can be to correctly name a species that is relatively common and readily identifiable in the field.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Cortinariaceae

*Cortinarius globuliformis*
**Cortinarius globuliformis**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious, it is a hypogeous species (growing or developing below the surface of the ground), and occurs on the ground, buried just below the leaf litter near *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 30 mm or more; when young flat-convex, becoming plane, margin persistently incurved with appendiculate fibrils; surface smooth, dry, radially appressed silky-fibrillose; colour when young bright yellow, with age dulling to a yellowish bronze, when exposed to the atmosphere for a long period becoming dark grey-brown. **Chemical test** application of KOH solution produces a red-brown colour reaction. **Lamellae (Gills)** Attachment adnate to subdecurrent; moderately close, usually crinkled; colour at first yellow, gradually becoming rust-brown as spores mature. **Stipe (Stem)** Central; generally up to 7 mm long and 4 mm thick; short-squat, base abrupt or slightly bulbous; surface smooth, dry, usually covered by inner veil remnants; colour similar to pileus. **Cortina** yellow, thick, persistent, breaking up into strands with age. Basal mycelium bright yellow, forming a dense mat. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 9.5–10.5 × 6.5–8 µm, broadly ellipsoidal to subglobose, coarsely ornamented, warty, thick-walled. Basidia four-spored, 25–43 × 6–10 µm, clavate to cylindrical-clavate. Clamp connections present.

**Comments**
Because of its hypogeous nature *Cortinarius globuliformis* is not easily found, but once located it is identified by the yellow colour of the buried pileus and yellow dense mycelial mat associated with the fruit-bodies. The subglobose spores are unique to this species of hypogeous *Cortinarius*. The DNA analysis done by Peintner et al. (2001) showed that *C. globuliformis* is very closely related to *C. persplendidus*. Although these fungi are morphologically very different they do have a number of common inherited features, a notable one being the yellow mycelial mat. Claridge et al. (2000) carried out a program of collecting a large number of hypogeous fungi. Their conclusion was that hypogeous species such as *C. globuliformis* were more competitive at sites that were subjected to water stress. Staying just below the surface of the ground meant that there was less chance of the fungi drying out during dry periods, thus giving them an evolutionary advantage.
References


Cortinarius kula
**Cortinarius kula**

*Dermocybe kula*  
*Cortinarius sanguineus*

*Dermocybe sanguinea*

**Biology**

Mycorrhizal basidiomycete; solitary, gregarious or caespitose on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; when young broadly conical, becoming broadly convex with an umbo; surface dry, silky, finely radially fibrillose; colour dark blood-red, with centre claret brown.

**Lamellae (Gills)** Attachment adnate or slightly sinuate; moderately close; colour at first dark red, becoming rusty red as spores mature.

**Stipe (Stem)** Central; generally up to 90 mm long and 15 mm thick; rather slender, base usually swollen; basal mycelium orangey pink; surface dry, finely fibrillose; colour blood-red. 

**Cortina** cobweb-like, reddish, evanescent.

**Spore Print** Rust-brown

**Microscopic Features**

Basidiospores $8–10.5 \times 6–7.5 \mu m$, ellipsoidal to short ellipsoidal, warty rough. Basidia four-spored, $26–38 \times 8–12 \mu m$, clavate, often with brown pigment. Clamp connections present.

**Comments**

The main distinguishing feature of *Cortinarius kula* is that the whole fruit-body is blood-red, with no hint of any yellow tints. This species was previously recorded as *Dermocybe kula* but phylogenetic evidence produced by Stefani et al. shows that all Australian species of *Dermocybe* nest in the genus *Cortinarius*. Gasparini (2014) renamed the species from *D. kula* to *C. kula*.

**References**

  p. 61 [D CP] *Dermocybe sanguinea*


  p. 59 [D CP] (as *Dermocybe kula*)

  p. 135 [D CI] (as *Dermocybe kula*)


**D**=Description; **I**=Illustration; **CI**=Colour Illustration; **P**=Photo; **CP**=Colour Photo
Cortinarius metallicus
Cortinarius metallicus
Rozites metallica

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter in *Nothofagus gunnii* and *Nothofagus cunninghamii* forests.

Fruit-body Description

Pileus (Cap) Diameter to 140 mm or more; initially convex or parabolic, with age expanding to plane with a broad umbo, margin translucent striate, eroded, becoming radially wrinkled with age; surface smooth, glutinous, sometimes with patches (remnants of the universal veil); colour initially uniformly bluish grey; with age fading to pale grey and central region becoming tan to yellowish brown; brown colour then expanding towards the margin; markedly hygrophanous.

Lamellae (Gills) Attachment adnexed with small decurrent tooth; crowded; colour at first cream with a slight greenish tinge, gradually becoming tan as spores mature. Stipe (Stem) Central; generally up to 150 mm long and 15 mm thick; stout, swollen towards the base, has white mycelium at the base; surface dry, shiny, has longitudinal fibrils; colour white, stains brownish. Annulus white, smooth to striate, membranous, becoming rust-brown as it collects spores. Spore Print Rust-brown

Microscopic Features
Basidiospores 9.5–12 × 7.5–8.5 µm, broad ellipsoidal (almond-shaped), coarsely ornamented, warty. Basidia four-spored, 32–41 × 10–14 µm, clavate. Clamp connections present.

Comments
*Cortinarius metallicus* is found with Myrtle Beech *Nothofagus cunninghamii* and, in Tasmania, also with Deciduous Beech *Nothofagus gunnii*, where it is readily recognised by its steel bluish grey coloured glutinous pileus, white stipe and membranous annulus. Originally it belonged to the genus *Rozites*, which now no longer exists, because DNA analysis showed that all members of the genus *Rozites* were actually members of the genus *Cortinarius* (see Garnica et al. 2005).

References
2.1. Order: Agaricales


2.1. Order: Agaricales

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Fam. Cortinariaceae

*Cortinarius perfoetens*

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Cortinarius perfoetens

Rozites foetens

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter, associated with Myrtle Beech *Nothofagus cunninghamii* in Victoria and Tasmania.

**Fruit-body Description**

*Pileus (Cap)* Diameter to 90 mm or more; when young convex with appendiculate margin (adhering white velar remnants), at maturity becoming flattened and translucent striate; surface glutinous, becoming radially wrinkled on drying; colour reddish brown at centre, grading to a paler yellowish brown towards the margin. **Context**: whitish cream, with a distinct unpleasant foetid odour.

*Lamellae (Gills)* Attachment adnexed; moderately close to crowded, with abundant lamellulae; colour initially cream, gradually becoming brownish as spores mature.

*Stipe (Stem)* Central; generally up to 65 mm long and 10 mm thick; cylindrical; surface dry, fibrillose along entire stipe, fibrils most dense and shaggy below annulus; colour initially cream, becoming stained brownish when spores mature, basal mycelium white. **Annulus** membranous, fibrillose, concolorous with stipe. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 8.5–11.5 × 5–7 μm (mean 9.9 ± 0.7 × 6.0 ± 0.5 μm, Q=1.66 ± 0.09 n=30), ellipsoidal to almond-shaped, covered in warts (verrucose) less than 1 μm tall, irregular to labyrinthine. Basidia four-spored, 33–50 × 8–11.5 μm, sub-cylindrical to clavate. Clamp connections present.

**Comments**
*Cortinarius perfoetens* is unusual for a *Cortinarius* in that it has both a robust membranous annulus and a strong distinctive unpleasant foetid odour. Other features that help in identifying this species are its brownish glutinous pileus with an appendiculate margin, its whitish shaggy stipe and its mycorrhizal relationship with *Nothofagus cunninghamii*. This species was originally placed in the genus *Rozites* because it possessed a membranous annulus, but later DNA analysis confirmed that it belonged to the genus *Cortinarius*.

**References**

Cortinarius persplendidus
**Cortinarius persplendidus**

*Dermocybe splendida*

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* and *Leptospermum* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 55 mm or more; at first convex, becoming broadly umbonate; on drying may split radially at the margin; surface smooth at first, becoming finely radially fibrillose, not hygrophanous; colour dark orange-brown, darker reddish brown at the centre; application of KOH solution produces a red to violet colour. **Lamellae (Gills)** Attachment adnexed to sinuate; moderately close; colour at first brilliant orange-red or paprika-red, darkening slightly as spores mature, but remaining brilliant. **Stipe (Stem)** Central; generally up to 100 mm long and 15 mm thick; usually slender, tapering towards apex; basal mycelium yellow; surface dry, finely fibrillose; colour yellowish with yellow and red longitudinal fibrils. **Cortina** cobweb-like, yellowish to pinkish, evanescent. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 7–9 × 5–6.5 µm, ellipsoidal to broadly ellipsoidal, covered in conspicuous isolated warts. Basidia four-spored, 27–40 × 8–10 µm, clavate, often with brilliant purple pigment. Clamp connections present.

**Comments**
The dry non-hygrophanous pileus, the bright paprika red lamellae and the yellowish stipe with yellow basal mycelium make *Cortinarius persplendidus* readily identifiable in the field. This species was originally placed in the *Dermocybe* genus but due to DNA evidence it has now been moved into the genus *Cortinarius*. The epithet *splendida* had already been allocated to another species, so it could not be used. This species was then renamed as *Cortinarius persplendidus* (Gasparini 2006).

**References**


Cortinarius phalarus
Cortinarius phalarus

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter in association with thickets of Leptospermum and Agonis species.

Fruit-body Description
Pileus (Cap) Diameter to 70 mm or more; in button stage covered by a white universal veil, then convex with an incurved margin, flattening on maturity; surface sticky when moist, quickly drying smooth, slightly radially fibrillose, with a central whitish membranous patch; colour golden brown to brownish-orange. Lamellae (Gills) Attachment adnate; close; colour at first pale tan, becoming golden brown as spores mature. Stipe (Stem) Central; generally up to 70 mm long and 15 mm thick; cream to pale yellow. Cortina disappearing quickly, usually leaving no fibrillose zone. Volva a membranous white saccate volva at the base of the stipe. Spore Print Brown

Microscopic Features

Comments
This species of Cortinarius is relatively unique, because its early stage of development resembles that of an Amanita: it is initially covered by a membranous external universal veil. This Amanita-like developmental stage leaves it with its main identifying features, the whitish patch of velar remains in the centre of the pileus and the white saccate volva at the base of the stipe. The closest relatives to this species can be found in South America, where they are also considered to be unusual.

References
Cortinarius rotundisporus
Cortinarius rotundisporus
Cortinarius austroevernius  Cortinarius oleaginus

Biology
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under Eucalyptus spp.

Fruit-body Description
Pileus (Cap) Diameter to 70 mm or more; when young convex, becoming plane, retaining a broad central umbo; surface smooth, viscid or glutinous when moist; colour when young deep indigo-blue, on ageing becoming a paler blue with a yellow-ochre centre. Chemical test: application of KOH solution produces a pinkish purplish colour. Lamellae (Gills) Attachment adnate to sinuate; moderately close; colour at first pallid with a violet tinge, gradually becoming pale rust-brown as spores mature. Stipe (Stem) Central; generally up to 75 (140) mm long and 15 mm thick; long, slender or stout, bulbous towards the base; surface viscid, drying smooth; colour white or cream tinged with the colour of the pileus. Cortina bluish when young, collapsing to a faint fibrillose zone. Basal mycelium white. Spore Print Rust-brown

Microscopic Features
Basidiospores 7–10 × 5.5–8 µm, subglobose to globose, coarsely ornamented, warty. Basidia four-spored, 28–39 × 8–11 µm, clavate. Clamp connections present.

Comments
A typical Cortinarius rotundisporus is readily recognised in the field by its viscid metal-blue pileus (usually with a yellow-ochre centre) and stout whitish stipe. Although the typical variety of C. rotundisporus is readily identified, it is a species that seems to have a diverse range of morphology and colour. There are varieties where the stipe is long and slender, or the yellow-ochre centre covers most of the pileus, or the pileus may have shades of green. Genetic work done by Sawyer et al. (1999) suggests that C. rotundisporus belongs to a complex of closely related species or to a single species with a broad genetic fingerprint; more work needs to be done to be certain. This would tend to explain the diversity found in this species.

References


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Cortinarius sinapicolor
**Cortinarius sinapicolor**

*Cortinarius ochraceus*

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 90 mm or more; when young convex, becoming plane, retaining a broad central umbo; surface smooth, very glutinous; colour mustard yellow, sometimes lemon yellow at the margin, rust-brown to reddish brown towards the centre. **Chemical test** application of KOH solution produces a red then brown-red reaction. **Lamellae (Gills)** Attachment adnate, developing a shallow notch with age; moderately close; colour at first yellow, gradually becoming ochre as spores mature. **Stipe (Stem)** Central; generally up to 80 mm long and 25 mm thick; moderately stout, base bulbous; surface glutinous, drying smooth; colour yellow at the apex grading to orange towards the base. **Cortina** pale yellow, collapsing to a faint fibrillose zone. Basal mycelium whitish to pale yellow. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 7–9 \( \times \) 4.5–5.5 \( \mu \)m, ellipsoidal, coarsely ornamented, warty. Basidia four-spored, 24–36 \( \times \) 6–8 \( \mu \)m, clavate. Cystidia absent. Clamp connections present.

**Comments**
*Cortinarius sinapicolor* is readily recognised in the field by its very glutinous, yellow-orange fruit-body which has a smell reminiscent of curry.

**References**
Entoloma albidocoeruleum
Entoloma albidocoeruleum

Biology
Saprotrophic basidiomycete; solitary or gregarious amongst forest litter or moss on damp ground.

Fruit-body Description
Pileus (Cap) Diameter to 47 mm or more; when young conico-convex, then convex, finally near plane with a central depression, sometimes with a knob in the centre; margin striate and slightly grooved; surface glabrous, silky, sometimes finely fibrillose on drying, more so at the centre, hygrophanous; colour varies from pallid beige to very pale brown, sometimes almost white, usually with a darker central spot, sometimes with an ephemeral violet margin, becoming paler on drying. Lamellae (Gills) Attachment adnate or with a small decurrent tooth; moderately spaced; colour almost white, becoming very pale pink as spores mature. Stipe (Stem) Central; generally up to 70 mm long and 4 mm or more thick, with white mycelium at the base; surface smooth, glabrous, shiny; colour when young pale sky-blue, quickly becoming blue-grey and finally slate-grey. Spore Print Pink

Microscopic Features

Comments
Entoloma albidocoeruleum is recognised in the field by its fawn to pale brown pileus, usually with a dark central dimple, and grey-blue stipe with a tuft of white mycelium at its base. Before this species was named it had the field name of Entoloma “fawn bluey”.

References
2.1. Order: Agaricales

Fam. Entolomataceae

Entoloma albidosimulans
**Entoloma albidosimulans**

**Biology**
Saprotrophic basidiomycete; gregarious on the ground or on tree fern trunks (caudices) in wet sclerophyll forests and rainforests.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 15 mm or more; convex, becoming plane with age; margin deflexed then straight; surface finely fibrillose; colour white, with age slowly changing to ochre yellow or pink. **Lamellae (Gills)** Attachment adnate, or abruptly adnexed with a decurrent tooth; moderately distant; edge entire or slightly fimbriate; colour initially white, becoming pink as spores mature. **Stipe (Stem)** Central; 20 to 30 mm long and 2 to 3 mm thick; cylindrical, often broader towards the base; surface innately fibrillose; colour white to yellowish. **Spore Print** Pink

**Microscopic Features**

**Comments**
This *Entoloma* is found on the ground, or sometimes on the stems of tree ferns, in wet sclerophyll forests and rainforests. With its small, white, finely fibrillose pileus and slender white stipe, it can easily be confused with *E. sericellum*, and was originally identified as that species. Microscopic examination is required for positive identification.

**References**
**Entoloma aromaticum**
**Entoloma aromaticum**

**Biology**
Saprotrophic basidiomycete; solitary or gregarious amongst forest litter on damp ground.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 20 mm or more; when young conical, then broadly conical with a pronounced umbo; margin translucently striate when moist and slightly grooved; surface dry, hygrophanous, glabrous, or finely fibrillose, more so at the centre; colour darkish yellow-brown, and darker reddish brown towards the central umbo, paler towards margin, with age becoming pallid beige to very pale brown, becoming paler on drying; odour of young fruit-bodies is a distinctive strong fruity, aromatic smell which quickly becomes farinaceous as the fruit-bodies age. **Lamellae (Gills)** Attachment almost free to finely adnexed; moderately spaced; colour almost white, becoming very pale pink as spores mature. **Stipe (Stem)** Central; generally up to 45 mm long and 2 mm or more thick, with white mycelium at the base; surface smooth, glabrous, shiny; colour varies from light brown to a dark cigar brown. **Spore Print** Pink

**Microscopic Features**

**Comments**
*Entoloma aromaticum* is variable in its morphology and colour, but young fruit-bodies can be recognised in the field by the characteristic strong fruity odour, and by the pileus which has a distinctive brownish umbo. This species is also found in New Zealand and New Caledonia (Noordeloos 2012).

**References**
2.1. Order: Agaricales

Fam. Entolomataceae

Entoloma baronii
Entoloma baronii

Biology
Saprotrophic basidiomycete; solitary or in small groups on the ground in litter of mixed or sclerophyll forests.

Fruit-body Description

Pileus (Cap) Diameter up to 100 mm or more; convex, plano-convex with a broad umbo, becoming uplifted with age and with a rimose margin; surface smooth, glabrous, not hygrophanous, slightly translucent-striate at the margin; colour pale brown to greyish brown, paler towards the margin.

Lamellae (Gills) Attachment narrowly adnexed to almost free; moderately crowded; colour whitish with a pink tint, becoming pinkish as spores mature.

Stipe (Stem) Central, generally up to 60 mm long and up to 17 mm thick; cylindrical but broader towards the base (up to 20 mm or more); surface longitudinally fibrillose; colour whitish, covered with pale brown fibrils; basal mycelium white. Spore Print Pink

Microscopic Features
Basidiospores 6.5–8 × 6–8 µm, 6 angled in side view. Basidia four-spored, 32–45 × 8–12 µm, clavate. Clamp connections present.

Comments
Entoloma baronii is rare, and to date has been found only in Tasmania and Victoria. Its robust stature is such that it can be easily misidentified as a Tricholoma species, but the pale pinkish colour of its lamellae indicate that it is an Entoloma.

References
2.1. Order: Agaricales

**Entoloma brevispermum**

![Mushroom Image]

© Jurrie Hubregtse
2.1. Order: Agaricales

Fam. Entolomataceae

Entoloma brevispermum

Biology
Saprotrophic basidiomycete; solitary or gregarious amongst forest litter or moss on damp ground in wet sclerophyll forest.

Fruit-body Description
Pileus (Cap) Diameter to 50 mm or more; may be broadly conical, convex or almost plane, usually with a pronounced sharp umbo, distinctly translucent striate when moist, margin may be undulating or upturned; surface glabrous to finely radially fibrillose, hygrophanous; colour reddish or yellowish brown, paler at the margin and darker on the umbo, becoming paler on drying. Lamellae (Gills) Attachment narrowly adnexed to almost free; moderately crowded; colour pallid, becoming pink as spores mature. Stipe (Stem) Central; 40 to 120 mm long and 2.5 to 9 mm thick, cylindrical, slightly broader towards the base, with white basal mycelium; surface dry, glabrous, fibrillose to pruinose, longitudinally twisted-striate, becoming hollow with age; colour silvery white, when bruised or with age becoming dark yellow-brown.

Spore Print Pink

Microscopic Features
Basidiospores 6.5–9 × 5.5–8.5 µm, angular, 5 or 6 angled, very irregularly shaped. Basidia four-spored, 24–40 × 7–11 µm, clavate to cylindrical. Clamp connections absent.

Comments
Some of the characteristics that assist in identifying this species are: the pale brownish pileus, which is distinctly striate, usually umbonate, and often quite large; the pale pink lamellae; and the silvery, longitudinally striate stipe. Usually found amongst litter on the ground in wet sclerophyll forest. Widespread in Tasmania where it fruits throughout the year. In Victoria it is much less common and seems likely to be confined to the Otway Ranges.

References
Entoloma readiae
2.1. Order: Agaricales

Fam. Entolomataceae

**Entoloma readiae**

*Entoloma sulphureum*

**Biology**
Saprotrophic basidiomycete; solitary or in small groups, in forest litter and on dead wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 25 mm or more; convex, with a depressed centre which is sometimes infundibuliform; surface hygrophanous, when moist translucent-striate up to half the radius; colour yellowish brown to greyish brown, central depression darker. **Lamellae (Gills)** Attachment adnate to abruptly adnexed; moderately distant; colour pallid with a yellowish brown tint, becoming pink as spores mature. **Stipe (Stem)** Central, generally up to 30 mm long and up to 2 mm thick; cylindric; surface smooth; colour yellowish brown, becoming darker towards base; basal mycelium white. **Spore Print** Pink

**Microscopic Features**
Basidiospores 5.5–7 × 4.5–6.5 µm, angular. Basidia four-spored, 22–34 × 7–11 µm, clavate. Clamp connections present.

**Comments**
The yellowish brown convex pileus with a darker depressed centre is characteristic of this species. It has been recorded in Victoria, Tasmania and New Zealand. Horak (2008) described this yellowish brown species as *Entoloma sulphureum*. However, its similarity to *E. readiae*, plus the results of ongoing molecular studies, have resulted in the merging of the two species (Noordeloos and Gates 2012).

**References**


Entoloma rodwayi
2.1. Order: Agaricales

**Entoloma rodwayi**

**Biology**
Saprotrophic basidiomycete; found on wet ground in small groups amongst forest litter or moss.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 50 mm or more; initially convex, becoming plane, usually depressed in the centre; surface finely fibrillose, scales more dense at pileus centre, dry, translucent-striate; colour lime green to yellowish green, on drying becoming blue-green. **Lamellae (Gills)** Attachment adnate; moderately spaced; colour pale green at first, becoming brownish pinkish as spores mature. **Stipe (Stem)** Central; generally up to 50 mm long and 4 mm thick; smooth, shiny; olive-green to pale green, usually with a tuft of white mycelium at the base. **Spore Print** Pink

**Microscopic Features**

**Comments**
*Entoloma rodwayi* is identified in the field mainly by its lime green to yellow-green colour, its pallid lamellae which do not have a coloured margin, and a tuft of white mycelium at the base of the stipe. A similar species *E. viridomarginatum* is easily distinguished because its lamellae have a dark green margin.

**References**
Entoloma sericellum
2.1. Order: Agaricales

**Entoloma sericellum**

*Alboleptonia sericella*

**Biology**
Saprotrophic basidiomycete; found on wet ground in small groups amongst forest litter or moss.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 30 mm or more; initially convex, becoming plane, finally deeply depressed; white but may become yellowish or pinkish with age; surface smooth, dry, silky because of fine appressed fibrils visible with a hand lens. **Lamellae (Gills)** Attachment adnate with decurrent tooth; moderately spaced; colour white at first, becoming pinkish as spores mature. **Stipe (Stem)** Central; generally up to 50 mm long and 4 mm thick; smooth, white, slightly pruinose at apex. **Spore Print** Pink

**Microscopic Features**

**Comments**
This is a fragile mushroom, and is one of only a few species that is all white with pink spores and a thin stipe. In Australia it can be easily be confused with *E. albidosimulans* because the field characteristics are very similar and microscopic examination is required to separate the two species. (Gates and Noordeloos 2007). The DNA analysis done by Co-David et al. (2009) clearly shows that the species belonging to the genus *Alboleptonia* should be placed into the *Entoloma* genus.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
**Entoloma viridomarginatum**
**Entoloma viridomarginatum**

*Leptonia viridomarginata*

**Biology**
Saprotrophic basidiomycete; solitary or gregarious amongst forest litter or moss on damp ground.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 30 mm or more; convex when young, becoming plane with a central depression; margin striate and slightly grooved; surface finely fibrillose, scales more dense at pileus centre; colour varies from yellow-green to deep blue-green. **Lamellae (Gills)** Attachment adnate or slightly sinuate, and may have a decurrent tooth; moderately spaced; colour pallid to yellowish at first, becoming pinkish as spores mature; lamellae have a dark green margin. **Stipe (Stem)** Central; generally up to 65 mm long and 4 mm thick; smooth; shiny, dark green, usually with a tuft of white mycelium at its base. **Spore Print** Pink

**Microscopic Features**

**Comments**
This handsome green *Entoloma* is readily differentiated from other green species by the dark green margin on its lamellae.

**References**


2.1. Order: Agaricales

Fam. Fistulinaceae

_Fistulina hepatica_
2.1. Order: Agaricales

Fam. Fistulinaceae

**Fistulina hepatica**

**Biology**
Saprotrophic or sometimes parasitic basidiomycete; solitary or sometimes several together on dead eucalypt wood or where the tree has been wounded.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 200 mm or more, and up to 60 mm thick; irregular in shape, fan-shaped, kidney-shaped or semicircular; surface velvety, may be radially wrinkled, when moist often gelatinous; margin rounded, smooth; colour when young bright pinkish red or dark red, becoming reddish brown with age; flesh thick, soft when fresh, and exuding a reddish liquid when squeezed.

**Pore Surface** bright pink at first, becoming reddish, with age turning pale brown; darker when bruised. **Pores** 1–2 per mm. **Tubes** 10–15 mm long; distinct and closely packed. **Stipe (Stem)** Absent, or if present, lateral, short, thick, same colour as pileus; continuous with pileus. **Spore Print** Pinkish to pale rust-brown

**Microscopic Features**

**Comments**
*Fistulina hepatica* is commonly called the Beefsteak Fungus. This species is readily identified in the field by its colour and the spore-bearing tubes that are readily separable (see under a hand lens) on its underside. Although this fungus has often been treated as a polypore, recent DNA research has placed *Fistulina* within the “Schizophyllloid Clade”, showing that *F. hepatica* closely related to *Schizophyllum commune* (see Bodensteiner et al. 2004).

**References**

Laccaria canaliculata
Laccaria canaliculata

Laccaria glabripes

Biology
Mycorrhizal basidiomycete; solitary, gregarious, or occasionally caespitose, on the ground amongst leaf litter, bryophytes, tree ferns (Dicksonia species), or native trees (Eucalyptus, Nothofagus, Leptospermum, Angophora and Melaleuca species).

Fruit-body Description
Pileus (Cap) Diameter to 37 mm or more; when young hemispherical, convex to broadly convex, finally plane or uplifted, sometimes centrally depressed, margin often crenulate, distinctly translucent-striate, hygrophanous; surface moist, smooth, very finely radially fibrillose (visible under a hand lens); colour reddish brown to reddish orange, or sometimes strong brown. Lamellae (Gills) Attachment adnate to subdecurrent; moderately distant, reddish brown with a whitish bloom when spores mature. Stipe (Stem) Central; generally up to 70 mm long and 4 mm thick; slender; surface glabrous, finely longitudinally grooved; colour reddish brown to brick-red. Spore Print White

Microscopic Features
Basidiospores 6–9 × 6–8 µm, globose to subglobose, spiny. Basidia four-spored, 31–52 × 7.5–11.5 µm, clavate. Cheilocystidia and Pleurocystidia are similar, 460–90 × 12–18 µm, clavate to ventricose. Clamp connections absent.

Comments
Laccaria species are difficult to separate because there is a lot of overlap in their macro and micro characteristics. The most distinctive features of this species are the reddish brown lamellae and the orangey brown pileus with distinct translucent striations extending towards the centre. Although this species can be associated with a number of native tree species, it is also one of a very few species found at the base of tree ferns (Dicksonia species). Studies by Sheedy et al. (2013) show that this species is in a well-formed clade.

References
2.1. Order: Agaricales

Fam. Hygrophoraceae

\textit{Gliophorus graminicolor}
**Gliophorus graminicolor**

*Hygrocybe graminicolor*

**Biology**
Saprotrophic basidiomycete; solitary, gregarious or sometimes caespitose on soil, amongst moss or leaf litter in wet eucalypt forest or subtropical rainforest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 30 mm or more; initially convex, becoming plane with a central depression, or with an umbo in the depression; surface smooth, viscid to glutinous, translucent-striate, margin always strongly striate; colour very variable, can be shades of brown to green but it is usually dark green to grass-green; all colour variations can occur in the same troop of fruit-bodies; dried material turns pink. **Lamellae (Gills)** Attachment decurrent; distant, thick, waxy, viscid to glutinous; colour white with greenish tints, margin usually grey-green due to the presence of a glutinous thread. **Stipe (Stem)** Central; generally up to 40 mm long and 5 mm thick; smooth, cylindrical; surface smooth, viscid to glutinous; colour green or similar to the pileus colour, base usually greenish yellow. **Spore Print** White

**Microscopic Features**
Basidiospores 5.5–8 × 3.5–5 μm, ellipsoidal, smooth. Basidia four-spored with scattered two-spored basidia, 30–41 × 5–7 μm, clavate. Clamp connections present.

**Comments**

*Gliophorus graminicolor* is found in Queensland, New South Wales, Victoria, and Tasmania (where it is more common). This species is recognised by its viscid to glutinous nature, usually the green colour of the pileus and stipe (but also fruit-bodies within the troop which may have shades of brown, yellow or pink), and its whitish lamellae. *Gliophorus graminicolor* can be confused with the not so common *Hygrocybe stevensoniae*: to be able to positively separate the two species their microscopic features need to be examined. *Hygrocybe stevensoniae* has larger spores (7–10.5 × 5.5–6.5 μm,) and lacks cheilocystidia.

Originally *G. graminicolor* was placed in the genus *Hygrocybe*, but DNA evidence (Lodge *et al.* 2014) shows that this species actually belongs in the genus *Gliophorus*. 
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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
**Humidicutis mavis**
Humidicutis mavis
*Hygrocybe mavis*  *Hygrophorus mavis*

**Biology**
Saprotrophic basidiomycete; solitary or occasionally gregarious, on the ground, often on sandy soil, amongst moss or leaf litter in wet forest, subtropical rainforest or heathland.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 50 mm or more; conical, becoming umbonate to almost plane, often splitting radially at the margin, the split extending through the lamellae below; surface dry, smooth, finely radially fibrillose; colour pure white, occasionally central umbo may be ivory-white. **Lamellae (Gills)** Attachment adnexed to almost free; distant, thick, waxy; colour pure white. **Stipe (Stem)** Central; generally up to 60 mm long and 6 mm thick; smooth, cylindrical, equal, occasionally slightly swollen at the base; surface smooth; colour pure white. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–8.5 × 4.5–5.5 µm, subglobose, ovoid, smooth. Basidia four-spored or occasionally two-spored, 31–40 × 6–8 µm, clavate. Clamp connections only at the base of the basidia.

**Comments**
*Humidicutis mavis* is readily identified by its pure white fruit-body which is neither viscid nor glutinous, its adnexed lamellae and its radially split pileus. There are no other species with which it can readily be confused. Some mycologists (Young 2005b) thought that *H. mavis* may be a pure white form of *H. lewellinae* (= *Porpolomopsis lewellinia*). DNA evidence provided by Lodge *et al.* (2014) showed conclusively that these species are distinct and in separate but closely related genera.

**References**


Hygrocybe acutoconica
**Hygrocybe acutoconica**

*Mycena acutoconica*  
*Hygrocybe konradii*  
*Hygrophorus acutoconicus*  
*Hygrocybe persistens*  
*Hygrophorus persistens*

**Biology**

Saprotrophic basidiomycete; gregarious, often in small groups or clusters on calcareous or granitic sandy soils, usually in the company of various grasses.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; initially conical, becoming broadly conical to umbonate; surface smooth, viscid to sticky when moist but drying quickly; colour yellow to yellow-orange or orange to reddish orange, usually darker in the centre, does not blacken with age or when bruised.  

**Lamellae (Gills)** Attachment finely adnexed; distant; colour cream to pale orange.  

**Stipe (Stem)** Central; 50–90 mm long and 5–12 mm thick; cylindrical; surface glabrous, dry or slightly viscid when moist; colour yellow to straw yellow, usually whitish at the base.  

**Spore Print** White

**Microscopic Features**

Basidiospores 11.5–16.5 × 5.5–10.5 µm, subglobose to ellipsoidal, smooth, hyaline. Basidia four-spored, some two-spored, 30–60 × 9–15 µm, clavate. Cystidia occasionally present. Clamp connections present.

**Comments**

*H. acutoconica* is characterised by its conical pileus with yellow to reddish colours, and the fact that it does not blacken with age or when bruised. It occurs on calcareous or granitic sandy soils, usually in the company of various grasses (Jordal et al. 2016). *H. acutoconica* is a cosmopolitan species and is widespread in the northern hemisphere. Phylogenetic analysis by Lodge et al. (2014) clearly shows that *H. persistens* and *H. acutoconica* are conspecific. The choice of name is determined by which one has precedence. Max Britzelmayr, a German mycologist, published the name *Hygrophorus persistens* in May 1893, while Frederic Edward Clements, an American plant ecologist, named this species *Mycena acutoconica*, also in 1893, but the actual publication date was unknown. This initially gave *H. persistens* precedence over *H. acutoconica*, but recently Cantrel and Lodge (2000) discovered that *H. acutoconica* was published on 15 April 1893, thus giving the name *H. acutoconica* priority.
2.1. Order: Agaricales

References


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Hygrophoraceae

*Hygrocybe aurantiopallens*
Hygrocybe aurantiopallens

_Camarophyllus aurantiopallens_

**Biology**
Saprotrophic basidiomycete; gregarious to caespitose on the ground amongst moss or leaf litter in wet forest or rainforest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 20 mm or more; initially convex, expanding to plane, with age becoming centrally depressed, often striate at the margin; surface smooth, dry; colour apricot-yellow to light orange, colour fading with age. **Lamellae (Gills)** Attachment adnate to subdecurrent; distant; waxy, usually connected by veins; colour similar to or slightly paler than the pileus.

**Stipe (Stem)** Central; 17–44 mm long and 1.5–3.5 mm thick; cylindrical but often tapers towards the base, hollow; surface dry, smooth; colour similar to or slightly paler than the pileus, usually whitish at the base. **Spore Print** White

**Microscopic Features**

**Comments**
This distinctive species, which occurs on the ground amongst litter in wet forest or rainforest, is identified by its overall apricot-yellow to light orange colour, and by the cross-veining between the lamellae. It is widespread in eastern Australia (Qld, N.S.W., Vic. and Tas.), and also in New Zealand, where there is another species _H. apricosa_ with which it can be confused. According to the website “Index Fungorum”, and mycologists in New Zealand, the preferred name for this species is _Camarophyllus aurantiopallens_.

**References**
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2.1. Order: Agaricales

Fam. Hygrophoraceae

*Hygrocybe austropratensis*
Hygrocybe austropratensis

Biology
Saprotrophic basidiomycete; gregarious to caespitose on the ground, amongst grass, moss, or leaf litter in dry sclerophyll woodland or thickets of Kunzea ericoides.

Fruit-body Description
Pileus (Cap) Diameter to 30 mm or more; initially convex, expanding to plano-convex, then irregular or repand; surface smooth, initially with a white furfuraceous (scurfy, powdery scales) layer that mostly disappears at maturity; colour orange to light orange-brown. Lamellae (Gills) Attachment decurrent; distant; waxy, thick, sometimes forking near pileal margin; colour pale orange-buff. Stipe (Stem) Central; generally up to 45 mm long and 7 mm thick; cylindrical, equal, base slightly bulbous; surface dry, smooth, with a white furfuraceous layer that disappears with age; colour cream to pale creamy brown.

Spore Print White

Microscopic Features
Basidiospores 6–8.5 × 5–7.5 µm, subglobose to broadly ellipsoidal, smooth. Basidia four-spored, some two-spored, 53–69 × 6–8 µm, slenderly clavate. Clamp connections present.

Comments
Hygrocybe austropratensis is a relatively rare and beautiful fungus. It is readily identified by its distinctive pale cream thick stipe, orange to light orange-brown pileus, pale orange-buff lamellae, and the furfuraceous layer on the pileus and stipe of young fruit-bodies. A similar looking species is H. pratensis, which does not have the furfuraceous layer on young fruit-bodies, and also has a stipe that tends to taper towards the base. At present H. pratensis is found in the south-western region of Western Australia.

References
2.1. Order: Agaricales

Fam. Hygrophoraceae

**Hygrocybe cheelii**
**Hygrocybe cheelii**

*Cantharellus lilacinus  Camarophyllus lilacinus*

**Biology**
Saprotrophic basidiomycete; gregarious to caespitose on the ground, amongst grass, moss, or leaf litter in sclerophyll forest or cool temperate rainforest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; initially convex becoming depressed, funnel-shaped, or deformed, margin always strongly inrolled; surface smooth, finely velvety, not striate; colour bright pinkish mauve to pinkish lilac. **Lamellae (Gills)** Attachment deeply decurrent; distant; waxy, thick, sometimes forking near pileal margin; colour mauve to lilac, paler towards the margin. **Stipe (Stem)** Central; generally up to 50 mm long and 10 mm thick; cylindrical, slightly swollen towards the base; surface dry, smooth, fibrillose; colour mauve to lilac, similar to pileus, yellowish at the base. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–8.5 × 4.5–6.5 µm, subglobose to ellipsoidal, smooth. Basidia four-spored, some two-spored, 47–70 × 7–9 µm, slenderly clavate. Clamp connections present.

**Comments**
*Hygrocybe cheelii* is a relatively rare and beautiful fungus. It is readily identified by its waxy nature, mauve to lilac colour, decurrent lamellae and the yellowish colour at the base of its stipe. At present the website “Species Fungorum” recognises *Cantharellus lilacinus* as the current name for this species. Molecular work needs to be carried out on this species to remove the doubt surrounding its taxonomic status.

**References**


Hygrocybe chromolimonea
Hygrocybe chromolimonea

Biology
Saprotrophic basidiomycete; solitary to gregarious on the ground amongst leaf litter, moss, or at the base of old tree ferns in sclerophyll forest or cool temperate rainforest.

Fruit-body Description
Pileus (Cap) Diameter to 20 mm or more; initially convex with a dimple above the stipe, becoming plane with centre persistently depressed, margin slightly scalloped (crenulate); surface smooth, usually translucent-striate, viscid to glutinous; colour bright chrome yellow fading to a lemon yellow. Lamellae (Gills) Attachment decurrent; distant, thin; colour initially chrome yellow becoming pale lemon yellow, margin sometimes greyish due to the presence of a glutinous thread. Stipe (Stem) Central; generally up to 35 mm long and 3 mm thick; smooth, cylindrical, often tapering towards the base; surface smooth, viscid to glutinous; colour chrome yellow. Spore Print White

Microscopic Features
Basidiospores 7–9 × 4–6 µm, oblong to ellipsoidal, smooth. Basidia four-spored, 36–46 × 6.5–9 µm, clavate. Clamp connections present.

Comments
Hygrocybe chromolimonea is a small bright yellow fungus which is recognised by its colour, viscid fruit-body, crenulate margin on the pileus and the glutinous thread on its lamellae. This species is also found in New Zealand.

References
Hygrocybe lilaceolamellata
**Hygrocybe lilaceolamellata**
*Hygrophorus lilaceolamellatus*

**Biology**
Saprotrophic basidiomycete; gregarious on the ground amongst moss or leaf litter in wet forest or rainforest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 25 mm or more; initially convex, expanding to plane, with age becoming centrally depressed, occasionally radially split, striate at the margin; surface smooth, dry or slightly viscid when moist, finely scurfy when dry; colour initially brown, sometimes reddish brown, fading to pale brown with age. **Lamellae (Gills)** Attachment adnate to subdecurrent; distant to subdistant; waxy; colour brilliant lilac to violaceous, occasionally with an olive tint. **Stipe (Stem)** Central; 30 mm or more long and 1.5–3 mm thick; cylindrical; surface dry, smooth; colour light brown. **Spore Print** White to violet white

**Microscopic Features**
Basidiospores 6.5–10 × 3.5–5.5 µm, subglobose to tear-drop-shaped, smooth. Basidia four-spored, some two-spored, 30–50 × 5.5–9.5 µm, slenderly clavate. Cystidia absent. Clamp connections present.

**Comments**
This distinctive species, which occurs on the ground amongst litter in wet forest or rainforest, is readily identified by its brownish pileus and stipe, and lilac lamellae. This species was first named as *Hygrophorus lilaceolamellatus* by G. Stevenson in 1963 from material found in New Zealand. It was renamed *Hygrocybe lilaceolamellata* by E. Horak in 1971. Species in the family Hygrophoraceae normally have a white spore sprint but in this case, which is a rare exception, the spore print is a violet white (Mills AK and Monks AJ 1993).

**References**


Hygrocybe miniata
**Hygrocybe miniata**

**Biology**
Saprotrophic basidiomycete; gregarious to caespitose on the ground amongst moss or leaf litter in wet forest, subtropical rainforest, heathland, or grass.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 35 mm or more; convex, becoming broadly convex often with a central depression, margin often slightly scalloped; surface dry, smooth towards the margin and squamulose (with short erect fibrils) towards the centre, not translucent striate; colour bright red, with age fading to orange-red or yellowish red. **Lamellae (Gills)** Attachment adnate to subdecurrent; distant, thick, waxy; colour varies from yellowish scarlet to pale pinkish orange, margin occasionally yellowish. **Stipe (Stem)** Central; generally up to 30 mm long and 4 mm thick; smooth, cylindrical, equal; surface smooth; colour brilliant scarlet, yellowish at the base. **Spore Print** White

**Microscopic Features**

**Comments**

*Hygrocybe miniata* is separated from other brilliant red members of this genus by not being glutinous and by having a convex pileus. A feature which helps in identifying this species in the field is the erect fibrils in the centre of the pileus, which can readily be observed with a hand lens. *Hygrocybe miniata* is found in Australia, New Zealand and also in Europe. The macroscopic and microscopic characteristics of the European species are similar to those found in Australia, suggesting that they are most likely the same species, but this probably needs to be examined further as the vast majority of *Hygrocybe* species found in Australia are uniquely Australian.

**References**


2.1. Order: Agaricales


Hygrocybe rodwayi
Hygrocybe rodwayi  
*Camarophyllus rodwayi*

**Biology**  
Saprotrophic basidiomycete; solitary to gregarious on the ground amongst leaf litter or moss in sclerophyll forest or warm-temperate to cool-temperate rainforest.

**Fruit-body Description**  
**Pileus (Cap)** Diameter to 35 mm or more; initially convex, becoming plane with centre usually depressed, margin even, not striate; surface dry, smooth to very finely velvety; colour white, becoming cream to light buff brown, usually with a darker centre. **Lamellae (Gills)** Attachment decurrent; distant, thick; colour white or pale cream. **Stipe (Stem)** Central; generally up to 45 mm long and 3 mm thick; smooth, cylindrical, often tapering towards the base; surface dry, smooth; colour white to cream. **Spore Print** White

**Microscopic Features**  
Basidiospores 5–7 × 4.5–5.5 µm, subglobose to globose, smooth. Basidia four-spored, 37–50 × 6–7.5 µm, elongate, subclavate. Clamp connections present.

**Comments**  
*Hygrocybe rodwayi* is widespread and common in south-eastern Australia, and occurs on the ground amongst litter or moss in wet sclerophyll or in rainforest regions. It is recognised by its whitish colour, smooth pileus that is usually darker in the centre, widely spaced decurrent lamellae, and thin longish stipe. When identifying this species care must be taken not to confuse it with *Hygrocybe virginea*, which is also white, but tends to have a striate margin, while microscopically its spores are significantly larger.

**References**  
  p. 91 [D CP]  
  p. 39 [D CP] (as *Camarophyllus rodwayi*)  
  p. 142–143 [D CP]
Hygrocybe siccitatopapillata
Hygrocybe siccitatopapillata

Biology
Saprotrophic basidiomycete; solitary to gregarious on the ground amongst moss, in sclerophyll forest or warm temperate rainforest gullies.

Fruit-body Description

Pileus (Cap) Diameter to 15 mm or more; initially conical, expanding to convex with a pronounced papillate umbo; surface smooth, dry, striate towards the margin; colour bright crimson. Lamellae (Gills) Attachment broadly adnate; subdistant, thick; colour orangey to pinkish yellow, margin even, concolorous. Stipe (Stem) Central; generally up to 35 mm long and 1.0–2.5 mm thick; smooth, cylindrical; surface smooth; colour orangey to pale crimson with yellowish tints. Spore Print White

Microscopic Features
Basidiospores 7–9.5 × 4.5–6 μm, ellipsoidal, smooth. Basidia four-spored, 28–40 × 7–10 μm, clavate. Clamp connections present.

Comments
Hygrocybe siccitatopapillata is usually found growing on the ground amongst moss. Its bright crimson pileus with a pronounced papillate umbo and orangey lamellae make it readily identifiable. No part of the fruit-body blackens on bruising, nor is there a colour change with age.

References
Hygrophorus involutus
**Hygrophorus involutus**

**Biology**
Saprotrophic basidiomycete; solitary to gregarious on the ground amongst leaf litter or moss, in sclerophyll forest or cool-temperate rainforest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 35 mm or more; initially convex to hemispherical, margin inrolled; surface smooth, viscid to glutinous when fresh; colour uniform, variable from white to cream to pale apricot. **Lamellae (Gills)** Attachment adnate; close; colour cream to pale apricot. **Stipe (Stem)** Central; generally up to 40 mm long and 3 mm thick; smooth, cylindrical, often tapering towards the base; at its apex, just under the lamellae, covered with numerous clear droplets; surface dry, smooth, often with a fine pruinose coating; colour white to cream. **Spore Print** White

**Microscopic Features**
Basidiospores 6–8.5 × 3.5–4.5 µm, ellipsoidal, smooth. Basidia mostly four-spored with some scattered two-spored, 32–42 × 5–6.5 µm, clavate to subclavate. Clamp connections present.

**Comments**
*Hygrophorus involutus* is recognised by its viscid creamy-coloured pileus, pale apricot-coloured lamellae and the clear droplets covering the apex of the longish stipe. The presence of these clear droplets on the stipes of fresh fruit-bodies is a distinctive characteristic.

**References**
2.1. Order: Agaricales

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Fam. Hygrophoraceae

*Lichenomphalia chromacea*

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Lichenomphalia chromacea

*Omphalina chromacea  Botrydina chromacea  Phytoconis chromacea  Omphalia chromacea*

**Biology**
Lichenised basidiomycete; gregarious, sometimes in large groups on the ground, always symbiotic with an algal mat.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 25 mm or more; initially convex, with an incurved margin, centrally depressed at an early age, becoming funnel-shaped, margin wavy and translucent striate; surface smooth, waxy; colour bright yellow, chrome yellow, becoming golden or yellow-orange at centre when mature.

**Lamellae (Gills)** Attachment decurrent; tending to be distant; sometimes forked and interconnected (anastomosing); colour bright yellow to chrome yellow.

**Stipe (Stem)** Central; generally up to 20 mm long and 2 mm thick; cylindrical; surface dry, smooth; colour same as pileus.

**Spore Print** White

**Microscopic Features**
Basidiospores 7–10 × 3.5–5 μm, ellipsoidal or almond-shaped, smooth. Basidia one- to four-spored, 30–35 × 7–9 μm, clavate. Clamp connections absent.

**Comments**
The bright chrome yellow fruit-body, funnel-shaped pileus and growth on an algal mat make *Lichenomphalia chromacea* unmistakable. Because this species has a compulsory symbiotic association with a green alga *Coccomyxa*, it is a lichenised agaric.

**References**


2.1. Order: Agaricales

Porpolomopsis lewelliniae

Fam. Hygrophoraceae
Porpolomopsis lewelliniae

Humidicutis lewelliniae  Hygrocybe lewelliniae  Hygrophorus lewelliniae

Biology
Saprotrophic basidiomycete; solitary or gregarious on the ground, often on sandy soil, amongst moss or leaf litter in wet forest or heathland.

Fruit-body Description
Pileus (Cap) Diameter to 60 mm or more; conical, becoming umbonate to almost plane, often splitting radially at the margin, the split extends through the lamellae below; surface dry, smooth, finely radially fibrillose; colour wholly lilac except for the central umbo, which may be greyish or have brownish tints; with age the surface colour fades. Lamellae (Gills) Attachment adnexed to almost free; distant, thick, waxy; colour pallid lilac. Stipe (Stem) Central; generally up to 70 mm long and 8 mm thick; smooth, cylindrical, equal, sometimes tapered towards the base; surface smooth; colour lilac to pale lilac, sometimes with translucent horizontal banding, occasionally yellowish at the base. Spore Print White

Microscopic Features
Basidiospores 7–11.5 × 4.5–6 µm, subglobose, ovoid, smooth. Basidia four-spored or occasionally two-spored, 32–41 × 8–10 µm, clavate. Clamp connections only at the base of the basidia.

Comments
Porpolomopsis lewelliniae is readily identified by its lilac-coloured fruit-body, which is neither viscid nor glutinous, its adnexed lamellae and its radially split pileus. There are no other species with which it can readily be confused. Phylogenetic analysis performed by Lodge et al. (2014) clearly shows that this species is a member of the genus Porpolomopsis.

References

_Fungal Diversity_ **Vol. 64, pp. 1–99 [CP]**


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_D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo_
Galerina patagonica
2.1. Order: Agaricales

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Fam. Hymenogastraceae

Galerina patagonica

Biology
Saprotrophic basidiomycete; scattered or gregarious; usually found on damp, decaying logs that may be mossy; rarely found on the ground in soils with a high humus content.

Fruit-body Description
Pileus (Cap) Diameter to 45 mm or more; initially hemispherical, becoming broadly convex, usually with a distinct umbo; surface smooth, viscid when moist, strongly hygrophanous, margin striate; colour yellowish brown to dark brown. Lamellae (Gills) Attachment broadly adnate; moderately crowded; colour at first pale cream, becoming light brown as spores mature. Stipe (Stem) Central; generally up to 70 mm long and 6 mm thick, often expanded at the base; white mycelium at the base; surface smooth; colour pallid grey to pallid brown. Annulus persistent, membranous, cream to rust-brown. Spore Print Rust-brown to darkish brown

Microscopic Features

Comments
Galerina patagonica is readily recognised by its robust habit, central unbo and persistent annulus, and is typically found on decaying wood. Microscopically it can readily be identified because its unique cystidia have finger-like projections. Galerina patagonica is a southern hemisphere species found in South America, New Zealand and Australia. A closely related species is G. marginata, which can readily be separated from G. patagonica because its cystidia lack the finger-like projections.

References

**Gymnopilus allantopus**
**Gymnopilus allantopus**

**Biology**
Saprotrophic basidiomycete; usually found in eucalypt forest, solitary or in clusters on decaying woody debris or on the ground above buried decaying wood.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 50 mm or more; initially hemispherical, becoming convex then occasionally plane, sometimes with a broad umbo, margin of young specimens slightly incurved; surface dry, dull, not hygrophanous, radially fibrillose, usually with a ring of white veil remnants at or near the margin; colour a yellow-buff, paler at the margin. **Lamellae (Gills)** Attachment adnate to sinuate; thin, crowded; colour initially yellowish, becoming brownish yellow as spores mature. **Stipe (Stem)** Central; generally up to 60 mm long and 4 mm thick; covered in fine white fibrillose velar remains; colour underneath the velar remains is yellowish to orange-brown. **Annulus** evanescent, fibrillose.

**Spore Print** Brown to yellow-brown

**Microscopic Features**

**Comments**
This is a relatively common species in Australia, but as yet has not been found in the Northern Territory. In the field it can be identified by its yellow-brown pileus with a ring of white velar remains at the margin, and by the silky white fibrils on the stipe.

**References**

Gymnopilus dilepis
Gymnopilus dilepis

Biology
Saprotrophic basidiomycete; usually found in eucalypt forest, solitary or in clusters on decaying woody debris or on the ground above buried decaying wood.

Fruit-body Description
Pileus (Cap) Diameter to 120 mm or more; initially convex then plano-convex, sometimes with a broad umbo; surface dry, when young covered with purplish to reddish purple fibrils (tomentose), appearing scaly (squamulose) as the cap expands; with age the colour fades, scales diminish from the margin inwards, leaving behind a yellow surface. Lamellae (Gills) Attachment adnate to somewhat subdecurrent; subdistant to close; colour initially light orange, becoming orange as spores mature. Stipe (Stem) Central; generally up to 100 mm long and 10 mm thick; colour above the annulus yellowish to orange, below the annulus covered in a layer of reddish purple fibrils that become more dense towards the base. Annulus close to the lamellae, yellowish, membranous, permanent. Spore Print Brown to yellow-brown

Microscopic Features
Basidiospores 6–8 × 4.5–6 µm, ellipsoidal, coarsely warty. Basidia four-spored, 20–32 × 6–9 µm, broadly clavate. Clamp connections present.

Comments
Gymnopilus dilepis lives on wood or woody debris, and is recognised by its colour scheme: when young the yellow pileus is obscured by a covering of reddish purple scales, the lamellae are yellowish, and there is a distinct annulus on the stipe. The stipe also has a covering of reddish purple fibrils. This species has a similar colour scheme to Tricholomopsis rutilans, which has no annulus and has white spores.

References

Gymnopilus eucalyptorum


**Gymnopilus eucalyptorum**  
**Flammula eucalyptorum**  

**Biology**  
Saprotrophic basidiomycete; usually found on eucalypt bark, either shed or on living trees, solitary, subcaespitose or in dispersed colonies.

**Fruit-body Description**  
**Pileus (Cap)** Diameter to 20 mm or more; initially deeply convex, then convex to broadly convex, margin of young specimens slightly incurved; surface dry, dull, finely fibrillose-scaly; colour orangey brown or yellowish brown, margin paler. **Lamellae (Gills)** Attachment adnexed to sinuate; moderately close, slightly ventricose; colour initially yellow-orange, becoming brownish yellow as spores mature. **Stipe (Stem)** Central or eccentric; generally up to 30 mm long and 2–3 mm thick; slender, often curved, tapering slightly towards the base; covered in a whitish mealy-fibrillose layer, becoming more fibrillose towards the base; colour pallid at top, grading to yellowish brown, then brown towards the base. **Annulus** absent. **Spore Print** Brown to yellow-brown

**Microscopic Features**  
Basidiospores 8.5–10.5 × 5.5–7 µm, (mean 9.4 ± 0.4 × 6.3 ± 0.3 µm, Q=1.50 ± 0.05 n=30), ellipsoidal, coarsely warty. Basidia four-spored, occasionally two-spored, 23–29 × 6–9.5 µm, clavate. Cheilocystidia abundant, forming a sterile lamella edge, 22–52 × 4–9 µm, subventricose with a long narrow neck, apex swollen into a round head (caput). Pleurocystidia not observed. Clamp connections present.

**Comments**  
This *Gymnopilus* species grows on eucalypt bark, either shed or on living trees, and also on eucalypt logs. It is quite common in wet forests. It can be recognised by its small size, orangey to yellowish brown convex pileus, usually with a pale ochre margin, yellow-orange lamellae, and slender stipe that is usually covered with a whitish bloom.

**References**  
**p. 124** (as *Flammula eucalyptorum*)  
**p. 123–124** [D I]
2.1. Order: Agaricales

Fam. Hymenogastraceae

*Gymnopilus ferruginosus*
**Gymnopilus ferruginosus**

**Biology**
Saprotrophic basidiomycete; found in sclerophyll forest or rainforest, solitary or in clusters on well rotted wood.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 32 mm or more; initially hemispherical, becoming convex then broadly convex, no velar remains on the margin; surface dry, dull, not hygrophanous, finely appressed scales cover entire surface; colour bright, ferruginous, orange to reddish orange-brown, when young with a mustard yellow margin. **Lamellae (Gills)** Attachment adnate to sinuate; crowded; colour initially drab cream, becoming orangey brown as spores mature. **Stipe (Stem)** Central; generally up to 35 mm long and 5 mm thick; slightly bulbous at the base, covered in fine hairs; colour a little paler than pileus. **Annulus** evanescent, fibrillose zone. **Spore Print** Brown to yellow-brown

**Microscopic Features**
Basidiospores $8–10 \times 5–7 \mu m$, ellipsoid, heavily warted, with a prominent suprahilar (area free of ornamentation near apiculus) depression. Basidia four-spored, $23–30 \times 7–9 \mu m$, broadly clavate to almost cylindrical.

**Comments**
*Gymnopilus ferruginosus* is usually found on well rotted logs and can be identified by its scaly rust- to orange-brown pileus with a yellowish margin, and its rust-coloured stipe. This is a relatively common species that can be found throughout Australia. In the field this species can be confused with *G. crociphyllus*, but may be differentiated by its more slender stipe and finely scaly pileal surface.

**References**

Gymnopilus junonius
**Gymnopilus junonius**

*Gymnopilus spectabilis*  *Gymnopilus pampeanus*

**Biology**
Saprotrophic basidiomycete; forms caespitose to densely caespitose clumps at the bases of living trees and dead stumps, or on the ground above buried wood. When growing at the base of living trees it has been known to cause white heart rot, eventually resulting in the death of the trees (Rees and Strid 2001)

**Fruit-body Description**

**Pileus (Cap)** Diameter to 150 mm or more; initially hemispherical, finally expanding to nearly plane; margin of young specimens incurved; surface dry, dull, not hygrophanous, radially fibrillose, fibrillose-scaly when mature; colour yellow-orange to golden brown. **Lamellae (Gills)** Attachment adnate to sinuate; moderately close to close; colour initially yellowish, becoming brownish as spores mature. **Stipe (Stem)** Central; generally up to 100 mm long and 25 mm thick, stout, usually swollen towards the base; fibrillose to scaly; colour orange-brown below the annulus and more yellowish above the annulus. **Annulus** membranous, rust-brown with spore deposit. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 8.5–11.5 × 5–7 µm, ellipsoidal, coarsely warty. Basidia four-spored, 28–38 × 6.5–10 µm, broadly clavate. Clamp connections present.

**Comments**
*Gymnopilus junonius* is large, bright yellow-orange, conspicuous, and usually found in caespitose clumps at the base of dead stumps or living trees. It is not readily confused with any other species of fungi. Although *G. junonius* and *G. pampeanus* are considered to be very similar, there is probably no need to separate them because there is strong DNA evidence (Guzmàn-Dàvalos *et al.* 2003) that *G. junonius*, *G. pampeanus*, and *G. spectabilis* are all variants of the same species.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Hymenogastraceae

*Hebeloma aminophilum*
**Hebeloma aminophilum**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* and *Nothofagus* spp. The growth of fruit-bodies is promoted by the introduction of nitrogen-rich fertiliser to the soil, either in the form of decaying animal remains or as urea.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 110 mm or more; initially convex, with age expanding to plane, sometimes with a broad umbo; margin incurved when young; surface smooth, viscid when moist but soon drying, when young often coated with a whitish bloom; colour when young cream to dull pink-brown, with age becoming a reddish brown, colour lighter towards the margin; surface bruises dark brown; not hygrophanous. **Lamellae (Gills)** Attachment adnate, sometimes adnexed; crowded; colour pale dull pink, becoming pinkish brown as spores mature; surface becoming mottled with dark clumps of spores; margin minutely fringed. **Stipe (Stem)** Central; generally up to 90 mm long and 20 mm thick; stout, slightly swollen towards the base; surface dry, smooth, longitudinally silky-fibrillose; colour white or off-white, surface often stained brown by spore deposit. **Cortina** white, can be seen on young specimens, rapidly collapsing, usually leaving no remains on the mature stipe. **Spore Print** Dull pinkish brown

**Microscopic Features**
Basidiospores 7.5–10 × 4.5–5.5 µm, broadly ellipsoidal, almond- or lemon-shaped, ornamented, finely warty. Basidia four-spored, 30–38 × 6–8 µm, clavate. Clamp connections present.

**Comments**
The common name for *Hebeloma aminophilum* is Ghoul Fungus, because it often appears on sites where there is a decaying animal carcass. A rich nitrogen fertiliser source is a requirement for the formation of fruit-bodies (Suzuki *et al.* 2003). Other field characteristics that assist in the identification of this species are its fairly large pale brownish sticky pileus, pinkish brown lamellae, and whitish stipe with brownish spore stains.

**References**


Hebeloma crustuliniforme
**Hebeloma crustuliniforme**

**Biology**
Mycorrhizal basidiomycete; associated with introduced hardwoods or conifers; grows gregariously or in loose clusters.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 80 mm or more; initially convex, with age expanding to plane, sometimes with a broad umbo, margin incurved when young; surface smooth, viscid when moist but soon drying, sometimes coated with a whitish bloom; colour whitish to buff, pale tan to cinnamon buff, usually darker towards the centre. **Lamellae (Gills)** Attachment adnate, sometimes adnexed; close to moderately close; colour initially pallid whitish, becoming fleshy brown and then cinnamon-brown when spores mature; margin finely serrate. **Stipe (Stem)** Central; generally up to 70 mm long and 20 mm thick; stout or slender, base slightly bulbous; surface dry, somewhat fibrillose or mealy; colour white or off-white. **Cortina** partial veil absent. **Spore Print** Brown

**Microscopic Features**

**Comments**

*Hebeloma crustuliniforme* is an introduced species found in gardens or parks, only in association with exotic species of trees such as pines or broad-leaved deciduous trees that are common in Europe. It is identified by its pale viscid pileus and pale, almost white stipe. There is a similar pale native species, *H. kammala*, which is found under bushes and trees in native forests.

**References**
2.1. Order: Agaricales

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Fam. Hymenogastraceae

*Hebeloma victoriense*

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**Hebeloma victoriense**

**Biology**
Mycorrhizal basidiomycete; solitary, gregarious, or caespitose, on the ground amongst leaf litter; associated with *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 150 mm or more; at first convex, with age expanding to broadly convex to plane; margin incurved, often appendiculate with velar remains; surface shiny, glabrous, with age forming appressed squamules at margin; colour pinkish cinnamon to ochraceous buff, fading to almost white inwards from the margin. **Lamellae (Gills)** Attachment sinuate; close to crowded; colour initially pale pinkish brown, becoming darker as spores mature. **Stipe (Stem)** Central; generally up to 130 mm long and 20 mm thick; stout clavate with a bulbous base up to 45 mm diameter; surface dry, fibrillose; colour cream to buffy brown. **Annulus** persistent, membranous, whitish.

**Spore Print** Brownish pink

**Microscopic Features**

**Comments**
*Hebeloma victoriense* is found in eucalypt forests, and is recognised by the very large fleshy fruit-body with pinkish lamellae and a stipe with a membranous annulus and a bulbous base. It seems that this species was not known or had not been collected before the 1980s.

**References**
Psilocybe subaeruginosa
Psilocybe subaeruginosa

Psilocybe eucalypta  Psilocybe tasmaniana  Psilocybe australiana

Biology
Saprotrophic basidiomycete; solitary, usually gregarious, found on decaying plant material such as dead grass, wood or leaf litter.

Fruit-body Description
Pileus (Cap) Diameter to 50 mm or more; when young broadly conic to convex, expanding to broadly umbonate, sometimes with a small pointed umbo, when young margin slightly inrolled, sometimes with attached veil remnants; surface smooth, dry, greasy to the touch, slightly sticky when moist, margin finely striate; colour yellow-brown to orange-brown, often with blue-green patches, also bruises blue-green; hygrophanous, drying pallid biscuit brown.

Lamellae (Gills) Attachment adnexed to adnate; moderately close; colour at first pallid grey-brown, becoming dark purplish brown as spores mature; margin pale.

Stipe (Stem) Central; generally up to 100 mm long and 5 mm thick; slender, more or less cylindrical; surface dry, silky-fibrillose; white mycelium at the base; colour pallid whitish, often with blue-green stains, also bruises blue-green. Veil usually well developed, cortinoid, often remaining visible as fibrillose zone on the stipe, does not form an annulus.

Spore Print Dark purplish brown

Microscopic Features

Comments
Psilocybe subaeruginosa can be identified by the distinctive blue-green stains that form on the yellowish pileus and pallid stipe. These stains indicate the presence of the compounds psilocybin and/or psilocin.

References

2.1. Order: Agaricales

Fam. Inocybaceae

Crepidotus eucalyptorum
**Crepidotus eucalyptorum**

**Biology**
Saprotrophic basidiomycete; rarely solitary, usually gregarious on the bark of living eucalypt species.

**Fruit-body Description**
**Pileus (Cap)** Up to 55 mm broad, initially convex to broadly convex or fan-shaped; surface matt to fibrously scaly, margin slightly inturned; colour yellowish brown to biscuit brown. **Lamellae (Gills)** Radiating from a rudimentary stipe, or from point of attachment to the substrate; moderately close; colour initially pallid brownish, becoming yellowish brown then brown as spores mature. **Stipe (Stem)** None, or when present rudimentary, eccentric and temporary, usually laterally attached by a constricted base, often with white fluffy mycelium at point of contact. **Spore Print** Brown

**Microscopic Features**
Basidiospores 9.5–13.5 × 6–9 µm, globose to ellipsoidal, smooth, thick-walled, pale brown in KOH solution. Basidia four-spored, 22–32 × 7.5–12 µm, clavate. Clamp connections present.

**Comments**
This species can be tentatively identified in the field by its moderately scaly pileus, usually growing on the bark of living eucalypt trees. It can be readily identified microscopically by its smooth spores, because there are only a few other smooth-spored *Crepidotus* species, such as *C. prostratus*, which grows at the base of stumps or on buried wood.

**References**
Crepidotus cf. nephrodes
Crepidotus cf. nephrodes

Biology
Saprotrophic basidiomycete; solitary or in small loose colonies on dead wood such as decaying logs.

Fruit-body Description
Pileus (Cap) Up to 60 mm broad, semicircular, kidney- or shell-shaped, initially convex, becoming plane with age, brittle when mature; surface nearly smooth or finely hairy, dry, fluffy to fibrillose at point of attachment to substrate, sometimes translucent-striate towards the margin; colour pallid yellow to pale brownish yellow, becoming pallid brown with age. Lamellae (Gills) Radiating from rudimentary stipe, or point of attachment to the substrate; moderately close; margin very finely serrate; colour initially greyish white, then yellowish brown, becoming brownish as spores mature. Stipe (Stem) None, or when present rudimentary, eccentric, and temporary. Spore Print Brown

Microscopic Features
Basidiospores 6–8 × 6–7.5 µm (mean 6.8 ± 0.4 × 6.7 ± 0.4 µm, Q=1.01 ± 0.03, n=30), globose, covered in small spines. Basidia mostly four-spored, 24.5–35 × 6.5–9.5 µm, clavate. Pleurocystidia absent. Cheilocystidia 20–50 × 5.5–12.5 µm, mostly pyriform to clavate, but also long cylindric with restrictions. Clamp connections present.

Comments
This relatively common species of Crepidotus is recognised by its large size, pale yellowish colour and smooth pileus, and is usually found growing on logs. Many Crepidotus species with spiny spores have morphologies that seem to overlap, making identification problematic. Using microscopic examination it was concluded that this species very closely correlates with the description of C. nephrodes sensu Grgurinovic (1997). Normally this would be enough evidence to conclude that the species in Australia is Crepidotus nephrodes, but Crepidotus species can be quite cryptic, and although this species is widespread it is predominantly a northern hemisphere species. Also, recent studies by Ripková et al. (2005) using DNA evidence, and Bandala et al. (2008) using morphological evidence, have shown that C. nephrodes is a synonym of C. crocophyllus. So far all of the phylogentic work done in identifying these species has been done on northern hemisphere material. To be able to conclude that the Australian species is actually C. nephrodes, DNA analysis on Australian material will need to be done. Until such time this species will be referred to as Crepidotus cf. nephrodes.
References


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Grgurinovic CA (1997) *Larger fungi of South Australia*. Botanical Gardens of Adelaide and State Herbarium and The Flora and Fauna of South Australia Handbooks Committee: Adelaide. p. 92 [D I](as *Crepidotus nephrodes*)

Hood IA (2003) *An introduction to fungi on wood in Queensland*. School of Environmental Sciences and Natural Resources Management, University of New England: Armidale, NSW. p. 122 [D I](as *Crepidotus nephrodes*)


Crepidotus aff. variabilis
**Crepidotus aff. variabilis**

**Biology**
Saprotrophic basidiomycete; solitary or in small loose colonies on dead twigs and small branches.

**Fruit-body Description**
**Pileus (Cap)** Up to 12 mm broad; initially convex, becoming plane, kidney-shaped to nearly circular, often lobed; surface dry, hairy or downy; colour white. **Context** moderately thin. **Lamellae (Gills)** Radiating from rudimentary stipe, or point of attachment to the substrate; colour initially white, becoming ochre-flesh to pinkish cinnamon as spores mature. **Stipe (Stem)** None, or when present rudimentary, eccentric, and temporary. **Spore Print** Pale brown

**Microscopic Features**
Basidiospores 6–8.5 × 4–5.5 μm, (mean 7.4 ± 0.6 × 4.7 ± 0.4 μm, Q=1.58 ± 0.12, n=120 from 4 collections), ellipsoidal, covered in small warts (verrucose). Basidia four-spored, 23–36 × 6–8.5 μm, clavate. Cystidia 30–40 × 4–8 μm, fusoid-ventricose, some with constrictions, capitate, not branched. Clamp connections present.

**Comments**
This fungus belongs to a group of small whitish, downy surfaced, oyster-shaped *Crepidotus* species, all with brownish spores. Most of these species can be separated using microscopic examination; each has relatively unique looking spores (Pegler and Young 1972). In Australian field guides and literature (e.g. Fuhrer 2009; Gates and Ratkowsky 2016; McCann 2003; Grgurinovic 1997) this species has been given European names such as *C. variabilis*, *C. cesatii* = *C. sphaerosporus*. *Crepidotus variabilis* has smaller spores (5.5–7.5 × 2.5–4 μm) and branched cystidia, *C. cesatii* has globose to subglobose spores (6.5–9 × 5.5–7.5 μm) and branched cystidia. These species clearly do not match this one (Senn-Irlet 1995). The closest match in the literature is *C. sphaerosporus* sensu Grgurinovic (1997) with a spore size of 7.0–10.2 × 3.8–6.2 μm, spores with a spinuloose wall, and non branching cystidia, but the spore description does not match this species, which has smaller spores with a warty surface. It is most likely that this small white *Crepidotus* is an unnamed species belonging to the *C. variabilis* complex, and best referred to as *Crepidotus* aff. *variabilis*. In Australia this genus is understudied and phylogenetic analysis will most likely be required if this species is to be named.
References


Pegler DN and Young TWK (1972) “Basidiospore Form in British Species of *Crepidotus*”. *Kew Bulletin* Vol. 27(2), pp. 311–323


Crepidotus sp. “yellow orange”
Crepidotus sp. “yellow orange”

Biology
Saprotrophic basidiomycete; in small colonies on dead wood such as decaying branches.

Fruit-body Description
Pileus (Cap) Up to 50 mm broad, semicircular, kidney- or shell-shaped, initially convex, becoming almost plane with age; surface dry, finely fibrillose, white and fluffy to tufted at point of attachment to substrate; colour pale yellow when young, becoming yellow-orange, with age margin remains yellow-orange while colour darkens towards point of attachment to the substrate.

Lamellae (Gills) Radiating from rudimentary stipe, or point of attachment to the substrate; moderately close; margin very finely serrate; colour pale cream, with age showing rust-brown spores.

Stipe (Stem) None, or when present rudimentary, eccentric, and temporary.

Spore Print Bright rust-brown

Microscopic Features
Basidiospores 5.5–7.5 × 4–6 μm (mean 6.4 ± 0.5 × 5.2 ± 0.5 μm, Q=1.23 ± 0.08, n=30), broadly ellipsoid to subglobose, finely warted. Basidia four-spored, 31–41 × 8.5–10.5 μm, clavate. Cheilocystidia 30–70 × 7.5–13.5 μm, clavate, elongate-clavate, cylindrical with occasional restrictions, very rarely branched. Pleurocystidia absent. Clamp connections present.

Comments
The mature fruit-bodies of this species can be recognised by their yellow-orange colour, while the immature fruit-bodies are pale yellow. This species does not seem to be as common as Crepidotus cf. nephrodes (Grgurinovic 1997; Ripkov et al. 2005), which may also have yellow-brown tints in its pileus. To be sure of the identity of this species, microscopic examination is required. The two species can be readily separated by differences in the size and shape of their spores.

References

Inocybe atrisquamosa
**Inocybe atrisquamosa**

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter in eucalypt forest and woodland.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 24 mm or more; when young conical, becoming broadly convex then plane with age, often umbonate; surface dry, centre with erect pointy dark brown scales, and fibrils radiating towards the margin; colour dark brown in centre, becoming brown towards the margin. **Lamellae (Gills)**
Attachment adnexed; moderately close; colour at first pale yellowish brown, becoming yellowish brown to dark yellowish brown with age. **Stipe (Stem)**
Central; generally up to 25 mm long and 3 mm thick; slender, buried base sometimes slightly bulbous; surface dry, pruinose, especially towards the apex; colour paler brown than pileus, becoming darker brown towards the base.

**Spore Print**
Brown

**Microscopic Features**

**Comments**
*Inocybe atrisquamosa* grows in association with eucalypts, and is identified by its relatively small fruit-body, overall brown colour, pileus with erect pointy dark brown scales at the centre, stipe with a pruinose surface, and yellowish brown lamellae. Matheny and Bougher (2017) illustrate a number of morphologically similar species with which it can be confused, such as *I. australiensis*, which has dark woolly fibrils over the lower half of the stipe and scales on the disc not as pronounced, *I. eriocalis*, *I. fibrillosipes*, and *I. fibrillosibrunnea*, all of which grow in eucalypt forests. If the fruit-body is in good condition and showing all diagnostic features, field identification should be possible, but since there are a number of morphologically similar species, microscopic examination is recommended.

**References**
Inocybe sp. “pale yellow”
**Inocybe sp. “pale yellow”**

**Biology**
Mycorrhizal basidiomycete; usually solitary on the ground amongst leaf litter in eucalypt forest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; conical to campanulate, margin incurved at first, then expanding and becoming wavy with age; surface generally dry, but may be sticky in centre when wet, radially fibrillose, tends to split radially; colour pale yellow, sometimes with an orange centre that becomes brownish with age, fibrils are orange at first, becoming brownish with age. **Context** texture firm; colour very pale yellow, 10 mm thick above stipe.

**Chemical test** application of 5% KOH solution produces a bright orange colour on the pileus and flesh. **Lamellae (Gills)** Attachment adnexed; close; colour golden yellow at first, becoming dull yellow then brownish as spores mature. **Stipe (Stem)** Central; generally up to 53 mm long and 11 mm thick; stout, base slightly bulbous; surface dry, pruinose at top, longitudinally fibrillose, fibrils become orange towards base, then brownish with age; colour paler yellow than pileus; solid but upper part may start to become hollow with age. **Spore Print** Brown

**Microscopic Features**
Basidiospores $6.5–9 \times 4–5.5 \ \mu m$ (mean $7.7 \pm 0.7 \times 4.9 \pm 0.3 \ \mu m$, $Q=1.59 \pm 0.2, n=30$), almond-shaped to ellipsoidal, thick-walled, smooth. Basidia four-spored, $26–40 \times 7–9 \ \mu m$, clavate. Cheilocystidia and Pleurocystidia are similar, $40–60 \times 15–24 \ \mu m$, cylindro-ventricose, metuloid (thick-walled), most with crystalline crust at apex. Clamp connections present.

**Comments**
This *Inocybe* grows on the ground in eucalypt forest. Its distinctive features are the light yellow, conical to campanulate, fibrillose pileus and thick, pale yellow, longitudinally fibrillose stipe. The pileus and flesh turn bright orange when KOH is applied. At present no references to this species have been located, and it appears to be undescribed. There are two similar species, *I. sphaerospora*, (Horak 1980; Horak *et al.* 2015) which is found in south-east and east Asia, and *I. fraudans* (Breitenbach and Kränzlin 2000) which is found in Europe, North America, Asia and North Africa, but these species can be readily separated from Inocybye “pale yellow” on microscopic characteristics.
References
Inocybe sindonia
**Inocybe sindonia**

*Inocybe eutheles*

**Biology**
Mycorrhizal basidiomycete; solitary or gregarious on the ground amongst leaf litter, in association with conifers.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; when young conical, then bell-shaped, becoming broadly convex to almost plane, often umbonate; surface dry, distinctly radially fibrillose; colour whitish, cream, light tan, colour usually paler towards the margin. Pileus not staining pink when bruised. **Lamellae (Gills)** Attachment sinuate with a decurrent tooth extending as a ridge down the stipe; moderately close; colour at first white to cream, becoming pale tan as spores mature, remaining light-coloured. **Stipe (Stem)** Central; generally up to 40 mm long and 5 mm thick; slender to robust, slightly swollen towards the base; surface dry, mealy-striate to mealy-fibrillose; colour white to cream, may have pinkish hues at apex. **Spore Print** Brown

**Microscopic Features**
Basidiospores 8.5–10 × 4–5.5 µm, ellipsoidal to almond-shaped, smooth. Basidia four-spored, 25–32 × 7–9 µm, clavate. Cheilocystidia and Pleurocystidia are similar, 46–90 × 12–18 µm, clavate to cylindro-ventricose, metuloid (thick-walled), some with crystalline crust at apex. Clamp connections present.

**Comments**
*Inocybe sindonia* is an introduced species, normally found in the northern hemisphere. This species is recognised in the field by its association with introduced conifers, its pale fruit-body, radially fibrillose pileus, mealy stipe, lamellae with a sinuate attachment, and faint bleach-like odour.

**References**

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Inocybaceae

*Inocybe violaceocaulis*

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**Inocybe violaceocaulis**

**Biology**  
Mycorrhizal basidiomycete; solitary or gregarious on the ground under various woody myrtaceous species and also in wet eucalypt and sclerophyll forests.

**Fruit-body Description**  
**Pileus (Cap)** Diameter to 35 mm or more; when young conical, becoming broadly umbonate with a large low obtuse umbo, margin undulate and often split; surface dry, smooth, centre often scaly, with appressed fibrils radiating towards the margin; colour when young pale with a lilac or violet tinge, with age becoming cinnamon-brown and losing much of the lilac or violet tint.  
**Lamellae (Gills)** Attachment narrowly adnate; moderately close; colour at first pale grey, often with a lilac or violet tinge, becoming yellowish brown with age.  
**Stipe (Stem)** Central; generally up to 40 mm long and 6 mm thick at apex; slightly stout, base sometimes rounded bulbous, basal mycelium white; surface dry, fibrillose; colour violet, lilac or greyish lilac.  
**Cortina** initially thick and cobweb-like, disappearing quickly with age; colour pale lilac.  
**Spore Print** Dull brown

**Microscopic Features**  
Basidiospores 7.5–9.5 × 5–5.5 μm, ellipsoidal, smooth. Basidia four-spored, 25–35 × 7–8 μm, clavate. Cheilocystidia and Pleurocystidia are similar, 52–65 × 11–15 μm, fusiform, usually without a distinct neck, usually thin walled, but metuloids present, occasionally with a crystalline covered apex. Clamp connections present.

**Comments**  
This rather small but robust species is recognised by its cinnamon-brown pileus which may have a lilac or violet tinge, pale greyish lamellae, and distinctly lilac or violet stipe. It is usually found on the ground under various woody myrtaceous species, and also in wet eucalypt forests. This is a widespread species found in both western and eastern Australian states.

**References**  
Simocybe phlebophora
Simocybe phlebophora

Biology
Saprotrophic basidiomycete; solitary or in small clusters on decayed Eucalyptus or Nothofagus spp. wood.

Fruit-body Description
Pileus (Cap) Diameter to 30 mm or more; initially hemispheric to convex, becoming plane; surface dry, coarsely wrinkled with a conspicuous net-like structure towards the centre, margin striate, strongly hygrophanous; colour grey-brown to dark brown with a distinct olive tint. Lamellae (Gills) Attachment adnexed or adnate; moderately close; colour pallid at first, becoming brownish as spores mature, margin very finely serrate (view with hand lens). Stipe (Stem) Central; generally up to 30 mm long and 2.5 mm thick; cylindric, equal; surface longitudinally fibrillose, covered with whitish hairs; colour pale brown to dark brown, usually paler at the apex, base whitish. Spore Print Brown

Microscopic Features

Comments
Simocybe phlebophora occurs on rotting wood, and is recognised in the field by its brownish pileus with an olive tint and distinctive net-like wrinkles. To date this species has been found only in New Zealand and Australia.

References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

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Fam. Lyophyllaceae

Asterophora mirabilis
Asterophora mirabilis

Nyctalis mirabilis

Biology
Parasitic basidiomycete; parasitic on Russulaceae (Russula or Lactarius) on which it grows in caespitose colonies.

Fruit-body Description
Pileus (Cap) Diameter up to 30 mm; convex, broadly convex to almost plane; surface dry; colour brownish, covered in a flattened layer of fine silvery grey fibrils. Lamellae (Gills) Attachment adnate with decurrent tooth; moderately crowded; colour light brown. Stipe (Stem) Central; generally up to 35 mm long and 3 mm thick; same colour as pileus; covered in a flattened longitudinal layer of fine silvery grey fibrils. Spore Print White

Microscopic Features

Comments
This is a relatively rare species, and at present is the only agaric in Australia that is known to be parasitic on other agarics.

References
Clitocybula sp. “streaky yellow”
**Clitocybula sp. “streaky yellow”**

**Biology**
Saprotrophic basidiomycete; grows in caespitose clumps or in groups on decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; initially convex, becoming plane, then with a depressed centre, margin becoming ragged; surface dry, with dark brown radiating fibrils making the surface look radially streaked, slightly scaly at centre; colour greyish yellow becoming darker with age, with a dark brown to almost blackish centre.  

**Lamellae (Gills)** Attachment sub-decurrent; close; colour creamy yellow to yellow.  

**Stipe (Stem)** Central to off-centre; generally up to 56 mm long and 5 mm thick, cylindrical, hollow; surface longitudinally fibrillose; colour pale creamy yellow to brownish yellow, becoming darker towards the base.  

**Spore Print** White

**Microscopic Features**
Basidiospores \(4-5.5 \times 3.5-5 \ \mu m\), (mean \(4.6 \pm 0.4 \times 4.3 \pm 0.4 \ \mu m\), \(n=30\)) globose to subglobose, thin-walled, weakly amyloid, smooth. Basidia four-spored, \(28-40 \times 4.5-6 \ \mu m\), narrowly clavate. Clamp connections present.

**Comments**

*Clitocybula “streaky yellow”* normally grows on wood. It has a greyish yellow depressed pileus that is dark brown in the centre with radiating fibrils, and creamy yellow to yellow lamellae. Some of the main diagnostic characters of *Clitocybula* are: i) radially fibrillose to squamulose pileus surface; ii) amyloid smooth spores; and iii) lignicolous habitat.

**References**
Henningsomyces candidus
**Henningsomyces candidus**

*Lachnella candida  Solenia candida*

**Biology**
Saprotrophic basidiomycete; scattered or crowded in small groups on the underside of decaying wood. It is positively geotropic (tubes facing downwards), and causes white rot.

**Fruit-body Description**
Developing as individual tubes, 0.5–1 mm tall and 0.2–0.4 mm diameter attached by a narrow base. **Outer Surface** covered with delicate hairs, finely tomentose; colour white to slightly cream. **Inner Surface** hymenium (spore-bearing surface) smooth. **Spore Print** White

**Microscopic Features**
Basidiospores 5–7 × 4–5 µm, globose to subglobose, smooth, hyaline. Basidia four-spored, 14–18 × 4–7 µm, clavate. Marginal hairs on the outside surface of the fruit-body are hyaline, smooth, finely branched. Clamp connections present.

**Comments**
*Henningsomyces candidus* is found on the underside of decaying wood where the fruit-bodies form clusters of very small white tubes, the outer surface of which is covered with delicate hairs. It is recommended that a 10× hand lens be used. A similar species is *Rectipilus fasciculatus* but, although its fruit-bodies can be tubular, they are usually conical or deep cup-shaped. Microscopically their spores are ellipsoidal, not subglobose, and their marginal hairs are not branched: this branching occurs only in the *Henningsomyces* genus. *Henningsomyces candidus* belongs to a group of fungi called cyphelloid fungi. Fungi that were difficult to classify and usually had minute cup- to barrel-shaped, tubular or pendant fruit-bodies were placed in the cyphelloid group. The DNA work done by Bodensteiner et al. (2004) not surprisingly showed that cyphelloid fungi were a polyphyletic group of species that evolved through a process of simplification, or reduction. Although it was possible to place most of the species in this group into their proper phylogenetic positions, the genus *Henningsomyces* was not one of them and more work needs to be done.
References


Marasmius alveolaris
Marasmius alveolaris

Biology
Saprotrophic basidiomycete; gregarious to densely gregarious, predominantly on shed eucalypt bark.

Fruit-body Description
Pileus (Cap) Diameter to 5 mm or more; hemispherical to convex, translucent; surface dry, alveolar (having small cavities or pits); colour whitish, greyish white or pale brown. Lamellae (Gills) Attachment adnate; distant, some venose (vein-like) elevations; colour white to pallid yellowish brown. Stipe (Stem) Central; generally up to 15 mm long and very slender (horsehair-like), equal, abruptly entering substrate; surface dry, slightly pruinose; colour whitish at the apex, dark brown to nearly black towards the base. Spore Print White

Microscopic Features

Comments
Marasmius alveolaris is a tiny gregarious fungus, recognised by its pale, almost hemispherical pileus, and dark brown horsehair-like stipe growing on damp shed eucalypt bark. A similar species, M. crinis-equin has a small dark knob in the centre of its pileus. Like most Marasmius spp., fruit-bodies will rehydrate in moist conditions, regaining their original size.

References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Marasmius sp. “angina”
Marasmius sp. “angina”

Biology
Saprotrophic basidiomycete; solitary to gregarious, predominantly on damp forest litter such as fallen leaves and small twigs.

Fruit-body Description
Pileus (Cap) Diameter to 20 mm or more; initially convex, becoming broadly convex or plane with a broad central umbo, sometimes with upturned margin; surface dry, smooth to glabrous, radially furrowed and striate towards the margin; colour of disc, dark bluish grey to purplish grey, becoming paler towards the margin, which is often whitish with a brown tint. Lamellae (Gills) Attachment adnexed; close to subdistant; colour pale beige to pale brown, with a distinct whitish margin. Stipe (Stem) Central; up to 80 mm long or more and 1–2 mm thick, cartilaginous; surface minutely rough (×10), at the apex slightly pruinose (covered with fine whitish powder); attachment insititious (emerging directly out of substrate); colour blackish to very dark brown, at the apex just before the lamellae, becoming pale brown to almost white. Spore Print White

Microscopic Features
Basidiospores 6.5–8.5 × 2.5–4 μm (mean 7.45 ± 0.54 × 3.35 ± 0.28 μm, Q=2.23 ± 0.21 n=90 from 3 collections), ellipsoidal, ellipsoid-fusoid, smooth, hyaline, thin-walled. Basidia four-spored, 23–34 × 5.5–8 μm, cylindrical-clavate. Lamellae have a sterile edge, consisting of matted thick hyphae, terminal cells up to 12 μm diameter. Cystidia not observed. Pileipellis a cutis of smooth radially aligned hyphae. Clamp connections present.

Comments
Marasmius “angina” is a relatively common Australian species found in damp forests, but it has not been officially described and named. It is recognised by its bluish grey pileus, pale lamellae with a whitish margin, and an insititious, thin blackish brown stipe usually with a pale zone at its apex. The etymology of the field name “angina” refers to the bluish skin colour of a person suffering a heart attack. Although the field name puts this species in the genus Marasmius our observations indicate that this species is unlikely to be a Marasmius. The insititious stipe and a cutis for the pileipellus would place this species in the genus Marasmiellus. The primary characteristic that distinguished Marasmiellus from Gymnopus was the insititious stipe in the former versus well developed basal mycelium in the latter (Antonín et al. 1997). However,
phylogenetic analysis carried out by Wilson et al. (2005) shows that this distinction between *Marasmiellus* and *Gymnopus* is of limited significance. Therefore it is also possible that this species may belong in *Gymnopus*. DNA analysis will most likely be required to determine its identity.

**References**


Marasmius crinis-æquus
**Marasmius crinis-equi**  
*Marasmius equicrinis*  
*Marasmius graminum* var. *equicrinis*  
*Marasmius repens*

**Biology**
Saprotrophic basidiomycete; gregarious to densely gregarious, predominantly on damp forest litter.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 6 mm or more; hemispherical to convex, umbrella-like, radially pleated and ribbed, umbilicate (having a navel-like depression) with a small black knob in the centre; surface dry, smooth; colour whitish, pallid brown to pale brown. **Lamellae (Gills)** Attachment adnate; distant, attached to a collar; colour white to pallid. **Stipe (Stem)** Central; generally up to 100 mm long and very slender (horsehair-like), equal, abruptly entering substrate; surface dry, smooth; colour dark brown to nearly black, pallid just below the pileus. **Rhizomorphs** brown to black, hair-like tough strands of mycelium, woven through or on the forest litter. **Spore Print** White

**Microscopic Features**

**Comments**
*Marasmius crinis-equi* is common on damp forest litter in eastern Australia. It is a widespread pantropical species, and is recognised by its umbrella-like pileus with a knob in its centre, its horsehair-like stipe, and its associated rhizomorphs.

**References**
Marasmius elegans

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Marasmius elegans

Collybia elegans

**Biology**
Saprotrophic basidiomycete; solitary to gregarious, predominantly on damp forest litter and occasionally on well rotted wood.

**Fruit-body Description**
- **Pileus (Cap)** Diameter to 50 mm or more; initially bell-shaped, then convex, becoming broadly convex, or plane with a broad central umbo; surface dry, smooth, very slightly velvety; colour orange-brown to reddish brown, often paler towards the margin. **Lamellae (Gills)** Attachment broadly adnexed; crowded; colour white at first, becoming pale orange with age. **Stipe (Stem)** Central; generally up to 70 mm long and 5 mm thick; slender; at the base there is usually a tuft of pale yellowish mycelium; surface dry, smooth, shiny; colour two-toned, white at the apex, grading to orange or reddish brown (usually same colour as pileus) towards the base. **Spore Print** White

**Microscopic Features**

**Comments**
*Marasmius elegans* is recognised by its orange-brown to reddish brown, slightly velvety pileus, whitish lamellae, and its two-toned stipe, which is white at the apex and orange or red-brown towards the base. This species is common in southern Australia.

**References**
2.1. Order: Agaricales

Fam. Marasmiaceae

*Marasmius oreades*
Marasmius oreades

**Biology**
Saprotrophic basidiomycete; solitary to gregarious on the ground in grass, lawns, parks, or pasture, often forming arcs or rings. The living mycelium on the periphery of the arc stimulates the grass to grow, while the dead or dried-up mycelium in the centre of the arc inhibits grass growth.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 50 mm or more; initially bell-shaped, then convex, becoming broadly convex, or plane with a broad central umbo; surface dry, smooth, matt; colour variable, pallid, buff, tan, reddish tan to light brown, or biscuit-coloured, fading with age. **Lamellae (Gills)** Attachment adnexed or free; moderately distant; cream-coloured. **Stipe (Stem)** Central; generally up to 70 mm long and 5 mm thick; usually slightly swollen at the base; surface dry, smooth, pruinose towards the base; colour two-toned but not obviously so, whitish at the apex grading to the same colour as pileus towards the base.

**Spore Print** White

**Microscopic Features**

**Comments**
*Marasmius oreades* occurs mainly in lawns or grassy areas. It usually has a pale biscuit-coloured pileus with a distinct umbo, and has whitish, well spaced lamellae. This is a northern hemisphere species, most likely accidentally introduced into Australia. *Marasmius oreades* seems to have the ability to resurrect after death. Most fungi are finished once they dry out. They cannot revive even when given adequate water. Apparently *Marasmius* species are able to withstand drying out because they have a high concentration of trehalose (a type of sugar) in their cells. Trehalose protects living tissue against the effects of desiccation, preventing damage to cells as they dry out. When a *Marasmius* is rehydrated, the trehalose is digested as the cells take up water and revive. It has been demonstrated that the fungus is actually alive, not just swollen up. This special survival technique is what allows *Marasmius oreades* to survive in your lawn where it can be subjected to drying out.

**References**


2.1. Order: Agaricales

Fam. Marasmiaceae

*Tetrapyrgos olivaceonigra*
Fam. Marasmiaceae

**Tetrapyrgos olivaceonigra**

*Pterospora olivaceonigra*  *Campanella olivaceonigra*

**Biology**
Saprotrophic basidiomycete; solitary or in small loose colonies on dead twigs or grass stalks.

**Fruit-body Description**

**Pileus (Cap)** Fan-shaped, up to 20 mm across; surface dry, finely pruinose (covered with a fine powder); colour whitish, tinted blackish to bluish green.

**Lamellae (Gills)** Pointing away from the substrate, radiating from where the stipe is attached to the pileus; shallow, ridge-like, often forked and interconnected; colour white. **Stipe (Stem)** Almost lateral, short, up to 4 mm long, protruding from the upper surface of the pileus; colour whitish, tinted blackish to bluish green. **Spore Print** White

**Microscopic Features**
Basidiospores 7.5–10 \( \times \) 4.5–6 \( \mu \)m, triangular with a central protuberance on one side (like a pasty). Basidia four-spored, 25–35 \( \times \) 7–8 \( \mu \)m.

**Comments**
*Tetrapyrgos olivaceonigra* is a delicate fungus usually found on small dead twigs or on grass stalks, to which it is attached by a small stipe protruding from the top of the pileus. The small, short stipe and pileus coated with a blackish to bluish green pruinose layer are features that help identify this species in the field. Placing this species in either *Tetrapyrgos* or *Campanella* has been problematical but phylogenetic evidence (Honan et al. 2015) has shown that Horak’s placement of this species in *Tetrapyrgos* (Horak 1987) was valid.

**References**
  p. 35 [D CP] (as *Campanella olivaceonigra*)
  p. 38 [D CP] (as *Campanella olivaceonigra*)
Cruentomycena viscidocruenta
Cruentomycesa viscidocruenta
Mycena viscidocruenta

Biology
Saprotrophic basidiomycete; solitary to gregarious on fallen leaves, twigs and bark, often under eucalypts, but also in a wide range of forest and heathland habitats.

Fruit-body Description
Pileus (Cap) Diameter up to 14 mm or more; about 3 mm high; convex to campanulate, becoming flattened and finally uplifted, with a shallow central depression; surface viscid when moist, smooth, silky to shiny when dry, translucent-striate; colour blood-red to rich reddish crimson. Lamellae (Gills) Attachment adnate with a decurrent tooth, or decurrent; subdistant; colour same as pileus or a little lighter; margin darker; with one or two series of lamellulae. Stipe (Stem) Central, to 41 mm long and 2 mm thick; diameter widens slightly from apex to base; often constricted immediately above base; hollow; surface smooth, glutinous, with short white strigose hairs at base; colour same as pileus. Spore Print White

Microscopic Features
Basidiospores 7–12 × 3–4.5 µm, cylindrical to narrowly ellipsoidal, smooth. Basidia four-spored, 22.4–37 × 6–8 µm, clavate to slenderly clavate, with robust sterigmata to 5 µm long, and clamp connection at base.

Comments
Cruentomycesa viscidocruenta is a small, beautiful fungus, easily recognised by its blood-red colour, glutinous to viscid pileus and stipe, and its habitat on litter. It can be found in the south-eastern Australian mainland, Tasmania, and also in New Zealand. This species was originally named Mycena viscidocruenta by J.B. Cleland in 1924. The DNA analysis of a Tasmanian specimen showed that it did not belong in the Mycena genus because the DNA analysis showed that it was more closely related to Panellus stypticus than to any Mycena species. This result prompted Petersen et al. (2008) to do a more detailed study and to propose a new genus Cruentomycesa, which is closely related to the Panellus genus, to accommodate this species.

References


Favolaschia calocera
Favolaschia calocera

Biology
Saprotrophic basidiomycete; usually forms large colonies on dead wood or woody monocotyledon substrates.

Fruit-body Description
Pileus (Cap) Diameter up to 20 mm or more; convex, typically lobed on either side of the stipe, forming a kidney-like shape; surface glabrous when young, slightly undulate in a reticulate pattern matching pores below; colour pale orange to bright orange. Pore Surface same colour as pileus. Pores relatively large, 0.3–2.5 mm diameter; ellipsoidal towards the stipe and polygonal towards the margin; larger towards the stipe. Stipe (Stem) Laterally attached; generally up to 15 mm long and 2.5 mm thick; surface smooth; colour same as pileus. Spore Print White

Microscopic Features
Basidiospores 9–12.5 × 6.5–8.5 μm, smooth, broadly ovoid or broadly ellipsoidal. Basidia two-spored 28–35 × 6–10 μm, clavate. Clamp connections most likely absent.

Comments
Favolaschia calocera is readily identified by its bright orange colour, its large pored undersurface, and its habit of forming large colonies. It is native to Madagascar and some parts of Asia, and has spread to Europe, New Zealand and Australia. It is considered a fungal weed, and has been sighted in Lamington National Park in Queensland and also around Melbourne.

References
2.1. Order: Agaricales

**Favolaschia pustulosa**

![Image of Favolaschia pustulosa](image1)

![Image of Favolaschia pustulosa](image2)
Favolaschia pustulosa

**Biology**
Saprotrophic basidiomycete; often gregarious on dead wood in subtropical and tropical regions.

**Fruit-body Description**

**Pileus (Cap)**
Diameter up to 85 mm or more; convex, spherical, subspherical, or kidney shaped in outline; surface when young glabrous, slightly undulate in a reticulate pattern matching pores below; colour white, somewhat translucent; flesh gelatinous. **Pore Surface** same colour as pileus. **Pores** 0.3–1.5 mm diameter; irregularly polygonal, central pores typically larger than marginal pores. **Stipe (Stem)** Laterally attached or absent; when present length up to 5 mm or more, and 6 mm thick; surface smooth; colour same as pileus.

**Spore Print** White

**Microscopic Features**
Basidiospores 7.5–10 × 5–7 µm, smooth, broadly ellipsoidal. Basidia four-spored, 28–35 × 5.5–8 µm, clavate. Clamp connections most likely present.

**Comments**
Largish fruit-bodies in good condition can readily be identified as *Favolaschia pustulosa* by their white gelatinous nature and large polygonal pores. In Australia this species occurs mainly in the rainforests of south-east Queensland. It also occurs in south-east Asia, Indonesia and New Zealand.

**References**

**Filoboletus manipularis**
Filoboletus manipularis

Biology
Saprotrophic basidiomycete; usually caespitose, sometimes forms large groups on decaying wood in subtropical and tropical regions.

Fruit-body Description
Pileus (Cap) Diameter to 30 mm or more; convex to broadly convex, sometimes slightly umbonate; surface glabrous, translucent, appearing dimpled due to visibility of pores through the pileus; colour white to pale cream, centre usually tinted brown; flesh thin, soft and fragile. Pore Surface pallid to white. Pores up to 1.3 mm diameter, round to hexagonal; radially arranged; adnate to somewhat decurrent. Stipe (Stem) Central; generally up to 70 mm long and 3 mm thick; surface smooth, finely pruinose; colour pallid to white, brownish towards the base. Spore Print White

Microscopic Features

Comments
Filoboletus manipularis occurs on rotting wood in tropical to subtropical rainforests and can be found throughout South-East Asia. It is closely related to Mycena. In the field it is readily identified by its caespitose nature, white colour, large pores on the pileus underside, and fragility of the fruit-bodies.

References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Mycena albidofusca
2.1. Order: Agaricales

Fam. Mycenaceae

**Mycena albidofusca**

**Biology**
Saprotrophic basidiomycete; gregarious or occasionally scattered, usually on eucalypt litter.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 28 mm or more; 8.5 mm high; convex to broadly conical, translucent-striate, with or without a low obtuse umbo; surface when moist gelatinous, silky; colour various shades of brown to yellowish brown, with a whitish or semi-translucent disc in the centre. **Lamellae (Gills)** Attachment narrowly adnate, ascending; moderately close; up to 2.7 mm broad; colour pale grey, greyish brown or brown, whitish at margin; generally with one or two series of lamellulae. **Stipe (Stem)** Central, to 77 mm long, diameter may widen from apex (to 3.5 mm) to base (to 4.5 mm); cylindrical or slightly flattened; surface smooth; with coarse strigose hairs towards base; colour various shades of brown. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–10 × 4–6.5 µm, ellipsoidal, smooth. Basidia four-spored, 25–39 × 7–10.5 µm, clavate, with robust sterigmata to 6 µm long, and clamp connection at base.

**Comments**
The pallid or semi-translucent disc in the centre of the striate pileus is a distinctive feature of this fungus.

**References**
2.1. Order: Agaricales

Fungi in Australia

Mycena austrofilopes

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2.1. Order: Agaricales

Mycena austrofilopes

*Mycena austropullata*

**Biology**
Saprotrophic basidiomycete; gregarious, usually on eucalypt litter, often amongst moss; occasionally on litter under *Pinus radiata* and Myrtle Beech *Nothofagus cunninghamii*.

**Fruit-body Description**

*Pileus (Cap)* Diameter up to 20 mm or more; up to 16 mm high; ovoid-conical, becoming broadly conical to convex or sometimes plane, translucent-striate, with obtuse umbo; surface moist, silky, usually giving the impression of a whitish bloom over the centre; colour various shades of brown, brownish grey or greyish orange. *Lamellae (Gills)* Attachment narrowly adnexed to narrowly adnate, ascending; moderately close; up to 3 mm broad; colour greyish brown or brown, paler at margin; with one to three, but generally two, series of lamellulae. *Stipe (Stem)* Central, to 122 mm long, diameter widens slightly from apex (to 1.7 mm) to base (to 4 mm); sometimes twisted, cartilaginous, fistulose, hollow; surface smooth or faintly longitudinally striate; colour pallid or orange-grey towards apex, light brown to greyish brown towards base; sometimes has white hairs at base. **Spore Print** White

**Microscopic Features**
Basidiospores 7–13.5 × 4–7 µm, ellipsoidal, smooth, thin-walled. Basidia two-spored, rarely four-spored, 18–40 × 6–13 µm, clavate, with robust sterigmata up to 7.5 µm long, and clamp connection at base.

**Comments**
*Mycena austrofilopes* has a similar habit and habitat to *M. cystidiosa*, but is generally smaller in stature, paler in colour, and has no sterile stipes.

**References**


2.1. Order: Agaricales

Fam. Mycenaceae

Mycena carmeliana
Mycena carmeliana

Biology
Saprotrophic basidiomycete; scattered, gregarious or caespitose, usually on eucalypt wood or woody litter.

Fruit-body Description
Pileus (Cap) Diameter up to 20 mm or more; 8 mm high; convex, becoming plano-convex; translucent-striate; centre may be flat, slightly depressed, or obtusely umbonate; surface viscid or silky and shining; colour light brown or pale grey-brown, sometimes with orange tints; margin paler. Odour ammonia-like.
Lamellae (Gills) Attachment adnexed to narrowly adnate, ascending; distant or close; up to 2 mm broad; colour whitish; with one or two series of lamellulae.
Stipe (Stem) Central, to 50 mm long, diameter widens from apex (to 2 mm) to base (to 3 mm); surface smooth, may feel 'greasy', with short hairs towards base; has a distinctive striate orange disc at base; colour translucent-whitish at top, darkening towards base. Spore Print White

Microscopic Features
Basidiospores 6–10 × 4–6.5 µm, ellipsoidal, smooth. Basidia four-spored, 18–28 × 7.5–12 µm, clavate to broadly clavate, with slender sterigmata to 5 µm long, and clamp connection at base.

Comments
The distinctive orange disc at the base of the stipe makes this species easily recognisable.

References
Mycena clarkeana
Mycena clarkeana

Biology
Saprotrophic basidiomycete; caespitose on stumps, logs and fallen branches of native trees such as *Eucalyptus, Allocasuarina, Melaleuca*; also on dead bark at base of living *Eucalyptus* spp.

**Fruit-body Description**
**Pileus (Cap)** Diameter up to 40 mm; 19 mm high; ovoid to broadly conical or bell-shaped, often with an umbo, margin grooved or slightly flared; surface moist, silky, translucent striate; hygrophanous; colour pinkish, vinaceous or greyish brown; margin paler, drying to greyish orange with a brownish grey margin. **Lamellae (Gills)** Attachment adnate or slightly sinuate, often with a decurrent tooth, ascending, moderately close; up to 7 mm broad; colour pale vinaceous to greyish brown, paler at margin; with one or two series of lamellulae. **Stipe (Stem)** Central, to 89 mm long and 5 mm thick; cylindrical or narrowing towards base; up to 5 mm in diameter; may be twisted; dry; surface silky, smooth, finely pruinose towards apex; often has woolly mycelium at base; hollow; colour greyish brown. **Spore Print** White

**Microscopic Features**
Basidiospores 8–12 × 5.5–8 µm, ellipsoidal, smooth. Basidia four-spored, sometimes two-spored, 36–50 × 8–11 µm, clavate, with clamp connection at base.

**Comments**
The colour and shape of this *Mycena* make it fairly distinctive. It is always found on dead wood or bark.

**References**
2.1. Order: Agaricales

*Mycena cystidiosa*

Fam. Mycenaceae
Mycena cystidiosa

Fayodia cystidiosa  Mycena hispida

Biology
Saprotrophic basidiomycete; gregarious or in troops, with or sometimes without sterile stipes, on bark and other litter under Eucalyptus, Bedfordia, and Pomaderris spp.; rarely on Nothofagus cunninghamii logs.

Fruit-body Description
Pileus (Cap) Diameter up to 27 mm or more; 9 mm or more high; broadly conical, convex or campanulate, obtusely umbonate; surface moist, translucent striate, often with a bloom around the darker brown centre of the umbo; colour greyish brown. Lamellae (Gills) Attachment narrowly adnate, ascending, moderately close; up to 1.5 mm broad; colour whitish, sometimes becoming blotched; usually with one series of lamellulae. Stipe (Stem) Central, to 205 mm long and 3 mm thick, tapering upwards; surface smooth, dry; colour brown, often paler towards apex; with abundant strigose hairs, sometimes from half way down the stipe. Whitish sterile stipes present or absent, up to 300 mm long, threadlike, with an undeveloped pileus at apex, growing aerially around litter. Spore Print White

Microscopic Features
Basidiospores 7.5–12 × 5–7.5 µm, ellipsoidal, smooth. Basidia four-spored, 29–43 × 8–11 µm, clavate, with a clamp connection at the base.

Comments
This is possibly Australia’s tallest Mycena species. Its height, together with the abundant white hairs on the lower part of the stipe, and the presence of sterile stipes, are distinguishing features of this fungus. Sometimes the presence of this fungus is indicated only by patches of sterile stipes.

References
Mycena epipterygia complex
**Mycena epipterygia complex**

**Biology**
Saprotrophic basidiomycete; solitary to gregarious on litter in most forest types.

**Fruit-body Description**
**Pileus (Cap)** Diameter up to 30 mm or more; 13 mm or more high; conical to broadly conical or conico-campanulate, with or without a broad umbo, translucent-striate; surface smooth, viscid; colour light brown. **Lamellae (Gills)** Attachment adnate, ascending, moderately close; colour white or greyish. **Stipe (Stem)** Central, to 76 mm long and 3 mm thick; cylindrical, central; surface viscid; colour yellow. **Spore Print** White

**Microscopic Features**
Basidiospores 7–11 × 3–6.5 µm; ellipsoidal, smooth. Basidia four-spored.

**Comments**
*Mycena epipterygia* is a northern hemisphere species. In Australia, there is a complex of very similar looking species, which were initially misidentified as *M. epipterygia*. The term *Mycena epipterygia* complex is used to describe the closely related Australian species because they are very difficult to separate in the field. For more details on the Australian species see Grgurinovic (2003) p.196.

**References**
Mycena fumosa
**Mycena fumosa**

**Biology**
Saprotrophic basidiomycete; scattered, gregarious or caespitose, usually on decaying logs, branches, or twigs.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 15 mm or more; 6.5 mm high; at first ovoid-conical, becoming conical or convex, finally plano-convex with centre slightly depressed; translucent-striate; surface moist to viscid, silky to shiny, centre of disc sometimes very slightly pruinose; colour of disc brownish to greyish brown, becoming paler towards the margin. **Flesh** thin, watery. **Odour** not distinctive, sometimes slightly ammonia-like.

**Lamellae (Gills)** Attachment free to narrowly adnate; distant or close; up to 2 mm broad, margin minutely toothed or pruinose; colour whitish; with one or two series of lamellulae.

**Stipe (Stem)** Central, to 40 mm long, diameter widens from apex (to 2 mm) to base (to 3 mm); surface smooth, may feel ‘greasy’, with short hairs towards base; has a whitish or brownish basal disc; colour translucent-whitish at top, darkening towards base. **Spore Print** White

**Microscopic Features**
Basidiospores 7–10 × 4–6 μm, narrowly ellipsoidal or almost oblong, smooth. Basidia four-spored, 17–28 × 7–14 μm, clavate, with robust sterigmata to 6 μm long. Clamp connections present.

**Comments**
*Mycena fumosa* is usually found on decaying moss-covered logs, and is recognised by its pale brownish grey pileus, translucent stipe and whitish to slightly brownish basal disc. This species is very similar to *Mycena carmeliana*, which has a distinctive orange basal disc.

**References**

Mycena interrupta
**Mycena interrupta**

**Biology**
Saprotrophic basidiomycete; gregarious, or occasionally solitary or scattered, usually on eucalypt logs or stumps.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 16 mm or more; generally 4 mm high; convex, slightly depressed in centre; surface shiny, gelatinous, translucent striate; colour dull blue, darker in centre. **Lamellae (Gills)** Attachment adnate to free, moderately close to distant; margin blue, though sometimes this feature is not visible, sides white; with one or two series of lamellulæ. **Stipe (Stem)** Central, to 22 mm long and 2 mm thick; cylindrical; surface often pruinose, particularly at base; attached to substrate by a bluish basal disc that often fades to white; colour white. **Spore Print** White

**Microscopic Features**
Basidiospores 8–12 × 5.5–9 µm, ellipsoidal or rarely subglobose, smooth. Basidia four-spored, sometimes two-spored, 21–40 µm, with stout sterigmata to 9 µm long; clavate or pear-shaped, with clamp connection at base.

**Comments**
*Mycena interrupta* is easily recognised, because to date it is the only blue fungus with lamellae known to grow on wood in Australia.

**References**

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D = Description; I = Illustration; CI = Colour Illustration; P = Photo; CP = Colour Photo
Mycena kurramulla
2.1. Order: Agaricales

Fam. Mycenaceae

*Mycena kurramulla*  
*Mycena erythromyces*  
*Mycena rosella*

**Biology**  
Saprotrophic basidiomycete; gregarious to caespitose on decaying eucalypt stumps, logs and branches; also on litter under *Athrotaxis* sp. (a cypress species endemic to Tasmania).

**Fruit-body Description**  
**Pileus (Cap)** Diameter up to 34 mm diameter or more; 10 mm high; ovoid-conical, convex or sometimes uplifted, umbonate; surface translucent-striate, minutely radially wrinkled; colour rosy pink. **Lamellae (Gills)** Attachment decurrent; moderately close, arched; colour whitish with a pink tinge, and with a red margin. **Stipe (Stem)** Central, to 85 mm long and 7 mm thick, diameter widens slightly from apex to base; surface smooth, sometimes pruinose near apex, with sparse strigose hairs at base; colour pinkish brown to violet brown. **Spore Print** White

**Microscopic Features**  
Basidiospores 5–10 × 3–6 μm, ellipsoidal, smooth. Basidia four-spored, rarely two-spored, 20–30 × 5–7.5 μm, clavate, with slender sterigmata to 9 μm long, and clamp connection at base.

**Comments**  
*Mycena kurramulla* is recognised by its rosy pink pileus and arched, decurrent, lamellae with a red margin, making it one of the most distinctive *Mycena* species.

**References**  

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Mycena kuurkacea
Mycena kuurkacea

*Mycena sanguinolenta*

**Biology**
Saprotrophic basidiomycete; gregarious on eucalypt litter, or gregarious to caespitose on eucalypt logs; has also been found on a *Bedfordia salicina* log.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 16 mm or more; up to 11.5 mm or more high; conic to campanulate, slightly umbonate; surface minutely radially wrinkled, translucent-striate; colour reddish brown, usually darker in centre; flesh exudes reddish brown fluid when bruised or cut. **Lamellae (Gills)** Attachment adnate, with or without a small decurrent tooth, ascending; distant to moderately close; colour white with a pink tint, or rosy buff, with red margins; generally with one or two series of lamellulae, but lamellulae sometimes absent. **Stipe (Stem)** Central, to 70 mm long and 3 mm thick, widens slightly towards base; surface smooth, may be pruinose towards apex, with sparse white strigose hairs at base; hollow; colour reddish brown; exudes reddish brown fluid when bruised or cut. **Spore Print** White

**Microscopic Features**
Basidiospores 7–11 × 4.5–7.5 µm, ellipsoidal, smooth. Basidia four-spored, 25.3–40 × 8–10 µm, clavate, with robust sterigmata to 6 µm long, and clamp connection at base.

**Comments**
The generally reddish brown coloration, lamellae with a red margin and reddish brown fluid in the fruit-body are diagnostic features.

**References**
Mycena cf. lazulina
2.1. Order: Agaricales

Fam. Mycenaceae

Mycena cf. lazulina

**Biology**
Saprotrophic basidiomycete; gregarious or occasionally scattered, usually on still hanging dead tree fern rachises, in wet forest.

**Fruit-body Description**

Pileus (Cap) Diameter up to 3 mm; convex, often depressed in the centre; (under 10× hand lens) surface pruinose, white, with occasional bluish patches, centre often has a blue patch above the stipe; translucent-striate, bulbous between lamellae. Lamellae (Gills) Attachment adnate to a collar; white with bluish tints, distant, between 6 and 9 lamellae, with a flat pruinose margin.

Stipe (Stem) Central, to 5 mm long, and 0.5 mm in diameter; (under ×10 hand lens) surface slightly pruinose, the colour can vary from a deep blue to almost translucent; attached to substrate via a minute dark blue disc. The mycelium in the substrate is blue. Spore Print Not observed

**Microscopic Features**
Basidiospores 6.5–9 × 3.5–6 µm, (mean 7.7 ± 0.6 × 4.8 ± 0.6 µm, Q=1.63 ± 0.18, n=20), ellipsoidal to broadly ellipsoidal, smooth, thin-walled. Basidia two or four-spored, 16–22 × 6–8 µm, clavate, with robust sterigmata to 6 µm long. Cheilocystidia 20–30 × 12–18 µm, clavate to pyriform, top half covered with dense fine spines. Pleurocystidia absent. Pileal surface has abundant stalked broadly clavate to subglobose spiny cells (acanthocysts), 20–40 × 15–25 µm, top half or more covered with dense fine spines. Clamp connections present.

**Comments**

Mycena cf. lazulina is readily recognised by its minute size (usually less than 3 mm across), white pileus, blue stipe, and its substrate, usually dead tree fern rachises. The fruit-bodies and the blue mycelium are bioluminescent. A description of a very similar species from Japan is given by Takahashi et al. (2016), with the given name *Mycena lazulina*, but since there is no DNA evidence showing that the Australian and Japanese species are actually the same, the Australian species will be referred to as *Mycena cf. lazulina*.

**References**
Mycena leaiana var. australis
Mycena leaiana var. australis

Biology
Saprotrophic basidiomycete; caespitose, rarely solitary, on logs of *Eucalyptus* or *Nothofagus* spp.

Fruit-body Description
Pileus (Cap) Diameter up to 30 mm or more; 7.5 mm or more high; convex, sometimes slightly depressed in centre; surface viscid; smooth; translucent striate at margin; colour olive-yellow, orange-green or brownish orange. Lamellae (Gills) Attachment adnate with a decurrent tooth; moderately close; up to 4 mm broad; colour orange with a deep orange margin that is sometimes gelatinous. Stipe (Stem) Central, to 45 mm long and 4 mm thick, widens slightly towards base; surface smooth, with minute fibrils, glutinous or silky to shiny; hollow; colour orange. Spore Print White

Microscopic Features
Basidiospores 6–10 × 4–6.5 µm, ellipsoidal, smooth. Basidia two- or four-spored, 25–36 × 6–9 µm, clavate, with robust sterigmata to 8 µm long, and clamp connection at base.

Comments
The orange lamellae with deep orange margins distinguish this fungus from other *Mycena* species.

References
2.1. Order: Agaricales

**Mycena maldea**
Mycena maldea

Biology
Saprotrophic basidiomycete; gregarious on bark, bracken fronds, leaf litter under eucalypts, or fallen cones of *Pinus radiata*.

Fruit-body Description
Pileus (Cap) Diameter up to 5 mm diameter or more; 3 mm or more high; convex with a central depression; surface moist, silky, translucent-striate; colour whitish, sometimes tinged with brownish orange in centre. Lamellae (Gills) Attachment adnate, distant; colour whitish. Stipe (Stem) Central, to 35 mm long, threadlike; silky, with no basal disc; colour whitish towards apex, pale blond or brownish orange towards base. Whitish criniform stipes present. Odour may be strongly nitric or not distinctive. Spore Print White

Microscopic Features
Basidiospores 6.5–9.5 × 3.5–5 µm, narrowly ellipsoidal to almost cylindrical; smooth. Basidia four-spored, 20–36 × 6.5–10 µm, clavate, with robust sterigmata to 5 µm long, and clamp connection at base.

Comments
The strong nitric odour and presence of criniform stipes help distinguish this fungus from the somewhat similar *M. albidocapillaris*.

References
Mycena aff. mamaku
2.1. Order: Agaricales

Fam. Mycenaceae

*Mycena aff. mamaku*

**Biology**
Saprotrophic basidiomycete; gregarious on mossy tree fern trunks in wet forest.

**Fruit-body Description**

*Pileus (Cap)* Diameter up to 4 mm or more, height 5 mm or more; campanulate to cylindrical, apex truncated, centre flat to depressed; surface smooth, moist, translucent-striate; colour pale yellowish brown to brown.  

*Lamellae (Gills)* Attachment adnate with a decurrent tooth; close, thick, margin flat; colour similar to or paler than the pileus; 16 to 19 lamellae, no lamellulae.  

*Stipe (Stem)* Central, generally up to 40 mm long about 1 mm thick; cylindrical, tough, flexible; surface smooth, shiny; colour whitish at apex, brownish for most of its length, becoming darker smoky brown towards the base.  

**Spore Print** White

**Microscopic Features**
Basidiospores 6.5–9 × 4–5.5 µm (mean 7.7 ± 0.7 × 4.7 ± 0.4 µm, Q=1.64 ± 0.13, n=30), narrowly ellipsoidal, rarely ellipsoidal, smooth, amyloid, hyaline. Basidia four-spored, 17–30 × 6–8 µm, clavate. Cheilocystidia 18–30 × 8–16 µm, clavate to swollen-clavate at the apex, with finger-like projections up to 12 µm long. Pleurocystidia not observed. Clamp connections present.

**Comments**
This species is readily recognised by its striated cylindrical shape, and by its habitat on mossy tree fern trunks. Although this species is very similar to *Mycena mamaku*, a New Zealand species (see Segedin 1995), it differs slightly on a number of microscopic features. The most obvious are the long finger-like projections on the cheilocystidia: in *M. mamaku* these projections are much smaller. More work needs to be done on the Australian species before it is possible to determine if it is the same as *M. mamaku*.

**References**


Mycena mijoi
Mycena mijoi

Biology
Saprotrophic basidiomycete; gregarious to caespitose, usually on fallen leaves and bark of Eucalyptus species, and on Bracken Fern Pteridium esculentum fronds.

Fruit-body Description
Pileus (Cap) Diameter up to 23 mm or more; convex to shallowly convex, with or without a flattened or slightly depressed apex; surface moist, translucent-striate; colour brown to very pale brown. Lamellae (Gills) Attachment adnate to subdecurrent; moderately close to distant; colour whitish; generally with two or sometimes only one series of lamellulae. Stipe (Stem) Central, generally up to 60 mm long and up to 1.5 mm thick; cylindrical; surface glutinous, shiny, often with long, coarse hairs at base; colour pallid at apex, becoming darker towards base. Spore Print White

Microscopic Features
Basidiospores 6–10.5 × 3.5–5 µm, narrowly ellipsoidal, rarely ellipsoidal; smooth. Basidia four-spored, 17.5–33 × 6–8.5 µm, clavate, with slender sterigmata to 7 µm long. Clamp connections present.

Comments
The pale brown, moist, convex pileus, glutinous stipe and habitat on leaf litter in eucalypt forests are characteristic of this species. It has been recorded in South Australia, Victoria and Tasmania.

References
Mycena mulawaestris
**Mycena mulawaestris**

**Biology**
Saprotrophic basidiomycete; caespitose on decaying eucalypt logs and fallen branches; has also been found on Crab Apple *Schizomeria* sp.

**Fruit-body Description**

*Pileus (Cap)* Diameter up to 21 mm or more; 13 mm or more high; conical or convex, with an acute or obtuse umbo; surface translucent striate; glutinous; colour almost black at first, becoming dark brown, sometimes lighter at margin, but remaining dark in the centre. *Lamellae (Gills)* Attachment adnate, with or without a decurrent tooth; ascending; moderately close; colour white with brown margin; with one or two series of lamellulae. *Stipe (Stem)* Central, to 60 mm long and 4 mm thick; widens from apex to base; hollow; surface glutinous; colour light brown or grey-brown. *Spore Print* White

**Microscopic Features**
Basidiospores 8–11 × 4.5–7 µm, ellipsoidal, smooth. Basidia four-spored or occasionally two-spored, 25–44 × 8–11 µm, clavate, with robust sterigmata to 12 µm long, and clamp connection at base.

**Comments**
The glutinous pileus and stipe, and white lamellae with brown margins, are distinctive features of this species.

**References**
Mycena nargar

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Mycena nargan

Biology
Saprotrophic basidiomycete; gregarious on dead wood, usually eucalypt but has also been found on Maritime Pine *Pinus pinaster* and Canary Island Date Palm *Phoenix canariensis*.

Fruit-body Description

Pileus (Cap) Diameter up to 20 mm or more; conico-convex when young, becoming convex; surface moist, silky, when young covered in evanescent white scales; colour dark brown to almost black, becoming brown to greyish brown and losing the scales as it ages. Lamellae (Gills) Narrowly adnate, ascending, moderately close; colour greyish brown towards pileus, pallid towards margin; generally with one or two series of lamellulae. Stipe (Stem) Central, generally up to 40 mm long and 3 mm thick; cylindrical; surface covered with whitish scales when young; colour dark brown, becoming lighter brown with age; usually has felty white mycelium at base. Spore Print White

Microscopic Features
Basidiospores 7–10.5 × 4.5–7 µm, ellipsoidal to broadly ellipsoidal; smooth. Basidia four-spored, 29–37 × 8–11 µm, clavate, with slender sterigmata to 7 µm long, and clamp connection at base.

Comments
When young, *Mycena nargan* is easily recognised by its dark pileus and stipe, both covered with whitish scales. After the scales disappear with age and the dark colour fades, the fruit-body becomes difficult to distinguish from other *Mycena* species.

References
Mycena piringa
Mycena piringa

Biology
Saprotrophic basidiomycete; gregarious on eucalypts; also on Pepper Tree *Schinus molle*.

Fruit-body Description
Pileus (Cap) Diameter up to 3 mm; convex with a dimple in centre; surface a little mealy, granular; colour white with a greyish tinge, or cream-coloured. Lamellae (Gills) Attachment adnate to a collar, distant; colour whitish; one tier of lamellulae. Stipe (Stem) Central, to 6 mm long, cylindrical, slender; surface mealy; attached to the substrate by a minute mealy disc; colour white.

Spore Print White

Microscopic Features
Basidiospores \(7.5–11 \times 5–7.5 \mu m\), ellipsoid, smooth. Basidia four-spored, \(16–25 \times 7–10 \mu m\), clavate, with clamp connection at base.

Comments
*Mycena piringa* is easily distinguished from *M. subalbida* by its smaller size, lack of odour, and the disc at the base of the stipe.

References
Mycena roseoflava
**Mycena roseoflava**

**Biology**
Saprotrophic basidiomycete; gregarious or occasionally scattered, on dead wood, bark and twigs.

**Fruit-body Description**

**Pileus (Cap)**
Diameter up to 10 mm or more; hemispherical to convex, often with a shallow central depression, faintly translucent-striate; surface glabrous when moist to minutely fibrillose when dry; colour pink fading to whitish.

**Lamellae (Gills)**
Attachment adnate to slightly decurrent; moderately distant; colour pale pink to whitish, whitish at margin; generally with one or two series of lamellulae.

**Stipe (Stem)**
Central to eccentric, up to 10 mm long, and 1–2 mm thick, cylindrical; surface smooth to minutely floccose; colour pink to pale ochraceus, usually with a yellow tint, darker towards the base.

**Spore Print**
White

**Microscopic Features**
Basidiospores $6–8.5 \times 5.5–8 \mu m$, (mean $7.3 \pm 0.6 \times 6.7 \pm 0.6 \mu m$, $n=30$) globose to subglobose, thin-walled, smooth. Basidia four-spored, $23–27 \times 8–10 \mu m$, clavate. Cystidia $25–40 \times 15–20 \mu m$, abundant, clavate to pyriform, with abundant excrescences (outgrowths) over apex. Clamp connections present.

**Comments**
Although *Mycena roseoflava* is a small species, its pink colour and habitat on dead twigs and branches make it easy to see and identify.

**References**

Mycena subgalericulata
**Mycena subgalericulata**

**Biology**
Saprotrophic basidiomycete; caespitose on bark, wood or trunks of *Eucalyptus* spp., such as *E. obliqua* and *E. regnans*.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 25 mm or more; 22 mm or more high; broadly conical, campanulate or deeply convex, with an obtuse or acute umbo, striate to the umbo; young specimens have a narrow white band at the margin; surface smooth, translucent-striate; colour whitish or various shades of brown.

**Lamellae (Gills)** Attachment adnate, or adnate with a decurrent tooth, or sinuate; moderately distant, sometimes connected by veins; colour whitish, sometimes with a greyish or brownish tint; generally with one series of lamellulae.

**Stipe (Stem)** Central, to 51 mm long and 3 mm thick; often curved; may be fragile or tough; with hairs at base; hollow; surface smooth or striate; colour whitish or various shades of brown. **Spore Print** White

**Microscopic Features**
Basidiospores 8.5–13 × 6–9 µm, ellipsoidal, smooth. Basidia four-spored (rarely two-spored), 33–45 × 8–13 µm, clavate, with very robust sterigmata to 8 µm long, and clamp connection at base.

**Comments**
The variability of this fungus can make identification difficult, especially as there are several similar species. The caespitose growth habit on eucalypt wood or bark, pileus that is striate to the umbo, and often curved stipe are indicative but not diagnostic. Young specimens have a narrow white band at the pileus margin, but this is not the only *Mycena* with this characteristic. Microscopic examination is useful for confirming the identity.

**References**


2.1. Order: Agaricales


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D = Description; I = Illustration; CI = Colour Illustration; P = Photo; CP = Colour Photo
2.1. Order: Agaricales

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Fam. Mycenaceae

Mycena subvulgaris

© Jurrie Hubregtse
**Mycena subvulgaris**

**Biology**
Saprotrophic basidiomycete; gregarious to subcaespitose on leaf litter and small sticks.

**Fruit-body Description**
- **Pileus (Cap)** Diameter up to 21 mm or more; convex with a central depression, becoming plane with a central depression; surface moist, smooth, strongly striate; colour grey-brown. Inside the fruit-body there is a triangular cavity below the dimple. **Lamellae (Gills)** Attachment adnate to slightly decurrent; colour white with a greyish tint; with three series of lamellulae. **Stipe (Stem)** Central, to 50 mm long and 3 mm thick; central; slender; hollow; surface very glutinous, with some hairs at base; colour pale at top, greyish brown below.

**Spore Print** White

**Microscopic Features**
Basidiospores 7–10.5 × 4–5 µm, narrow-ellipsoidal, smooth. Basidia four-spored, 29–39 × 6–9 µm, clavate, with robust sterigmata to 6 µm long, and clamp connection at base.

**Comments**
The grey-brown striate centrally depressed pileus, slightly decurrent lamellae and viscid stipe are the distinctive features of this fungus.

**References**
Mycena toyerlaricola
Mycena toyerlaricola

Biology
Saprotrophic basidiomycete; solitary or in small groups on litter under Myrtle Beech *Nothofagus cunninghamii*.

Fruit-body Description
Pileus (Cap) Diameter up to 15 mm or more; about 8.5 mm high; conical, becoming convex, with an obtuse umbo; surface smooth, moist, silky, translucent striate; colour red or brownish red; exudes a red fluid when cut or broken. Lamellae (Gills) Narrowly adnate, ascending; subdistant; colour red or brownish red; generally with one or two series of lamellulae. Stipe (Stem) Central, to 78 mm long and 2 mm thick; cylindrical; hollow; surface smooth, with sparse strigose hairs at base; colour brownish red; exudes a red fluid when cut or broken. Spore Print White

Microscopic Features
Basidiospores 6.5–10.5 × 3–6.5 μm, ellipsoidal, smooth. Basidia four-spored, rarely two-spored, 26–36 × 7–10 μm, clavate, with slender sterigmata to 6 μm long, and clamp connection at base.

Comments
*Mycena toyerlaricola* has been found only in *Nothofagus cunninghamii* forests, where it is widespread and fairly common. Its red coloration makes it clearly visible. A red juice is produced when the lamellae or stipe are cut or damaged. The specific name comes from 'toyeyerlare', which is a Tasmanian Aboriginal word meaning Myrtle Beech.

References
Mycena tuvara
Mycena tuvara

**Biology**
Saprotrophic basidiomycete; forms caespitose clusters on decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 25 mm or more; 8 mm high; convex to broadly convex, with or without a low obtuse umbo, centre may sometimes become depressed, translucent-striate towards the margin; surface smooth, greasy, silky; colour grey to brownish grey. **Context** tough, produces yellowish stains when cut. **Lamellae (Gills)** Attachment adnate, with a small decurrent tooth, ascending; moderately close, slightly ventricose; colour pale grey. **Stipe (Stem)** Central, up to 75 mm long and 4 mm thick; cylindrical; surface moist, slightly pruinose towards apex, smooth towards base, base may be slightly fibrillose; colour greyish white at apex, becoming grey-brown to orange-brown at the base. **Spore Print** White

**Microscopic Features**
Basidiospores $5.5-7.5 \times 3-4.5 \, \mu m$, (mean $6.4 \pm 0.5 \times 3.6 \pm 0.2 \, \mu m$, $Q=1.78 \pm 0.17 \, n=30$), narrowly ellipsoidal to occasionally ellipsoidal, smooth, hyaline, strongly amyloid. Basidia four-spored, $22-37 \times 5-8 \, \mu m$, clavate, with slender sterigmata to $4.5 \, \mu m$ long. Cheilocystidia abundant, forming a sterile lamella edge, $20-50 \times 4-16 \, \mu m$, clavate, pyriform, cylindro-ventricose, some sphaeropedunculate (having a spherical cap on the apex). Clamp connections present.

**Comments**
*Mycena tuvara* is a relatively large *Mycena*, and is readily identified by its tough flesh (context), grey to brownish grey greasy convex pileus, and pale greyish stipe that may be brownish to orange-brown at the base. The flesh stains yellowish when cut. This is a rare characteristic for a *Mycena*. This species can form large clusters on decaying stumps or fallen wood in wet Victorian and Tasmanian forests.

**References**
Mycena vinacea
2.1. Order: Agaricales

**Mycena vinacea**

**Biology**
Saprotrophic basidiomycete; gregarious or caespitose, on the ground in litter under pines and eucalypts.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 38 mm or more; about 7 mm high; convex, becoming plane, then finally uplifted; sometimes umbonate; surface moist, silky to dull, translucent-striate; colour brown or greyish lilac, lighter in centre and at margin. **Lamellae (Gills)** Attachment sinuate or narrowly adnate, often with a decurrent tooth; ascending, moderately close; up to 8 mm broad; sometimes with shallow veins between lamellae; colour pale greyish lilac; generally with two or three series of lamellulae. **Stipe (Stem)** Central, to 70 mm long, 5 mm thick at apex, widens towards base; hollow; surface smooth to slightly mealy, often with woolly white mycelium at base; colour greyish purple or brownish purple. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–9.5 × 3–5 µm, narrowly ellipsoidal, smooth. Basidia four-spored, 19–31 × 6–9 µm, clavate, with robust sterigmata to 6 µm long, and clamp connection at base.

**Comments**
*Mycena vinacea* can be identified by its large size, its habitat on soil, its greyish lilac pileus, pale lilac lamellae, and purplish stipe.

**References**


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**D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo**
2.1. Order: Agaricales

Fam. Mycenaceae

Panellus pusillus

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Panellus pusillus

Dictyopanus pusillus

Biology
Saprotrophic basidiomycete; gregarious to densely clustered on dead wood or bark.

Fruit-body Description
Pileus (Cap) Diameter up to 12 mm or more; broadly convex, somewhat kidney-like in shape; flesh thin; surface dry, not viscid, minutely hairy (tomentose); colour whitish, becoming clay-coloured with age. Pore Surface creamy white. Pores about 3 per mm, large for the size of the fruit-body. Stipe (Stem) Laterally attached; generally up to 3 mm long and 2 mm thick; surface minutely hairy (tomentose); colour whitish to cream. Spore Print White

Microscopic Features
Basidiospores 4–5.5 × 2–3 µm, smooth, ovoid to broadly ovoid. Basidia four-spored, 15–27 × 4–6 µm, clavate.

Comments
Panellus pusillus is a very unique species, recognised in the field by its small size, whitish, pip-pong bat-shaped fruit-body, with large pores on the underside. Although this species has pores, DNA analysis (Jin et al. 2001) puts it with species that have lamellae. Its sister species P. stipticus has lamellae.

References
Jin J, Hughes WK and Petersen HR (2001) “Phylogenetic Relationships of Panellus (Agaricales) and Related Species Based on Morphology and Ribosomal Large Subunit DNA Sequences”. Mycotaxon Vol. 79, pp. 7–21

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Panellus stipticus
Panellus stipticus

Biology
Saprotrophic basidiomycete; usually forms colonies on decaying logs.

Fruit-body Description
Pileus (Cap) Diameter up to 25 mm or more; broadly convex, typically lobed on either side of the stipe, forming a kidney-like shape; surface minutely scurfy, pruinose, finely velvety, with age breaking up into small flaky scales; colour pale ochre-brown to cinnamon. Flesh thin, elastic; juice sticky. Lamellae (Gills) Emanating from lateral stipe, adnate; moderately close, often forked, with cross-veins (intervenose); colour ochraceous to cinnamon. Stipe (Stem) Laterally attached; generally up to 20 mm long and 3 mm thick; surface pruinose, finely velvety, tapering towards the base; colour same as pileus or paler. Spore Print White

Microscopic Features

Comments
There are many small laterally stiped species that grow on wood. Panellus stipticus is identified in the field by its light brown colour, short lateral stipe, lamellae which are often forked with cross-veins, and sticky juice that is produced when the fruit-body is squeezed. This species can easily be confused with species of Crepidotus but can be separated on spore colour, because Crepidotus spp. have a brown spore print. In the past the juice from this fungus was used as a styptic to coagulate blood.

References
Jin J, Hughes WK and Petersen HR (2001) “Phylogenetic Relationships of Panellus (Agaricales) and Related Species Based on Morphology and Ribosomal Large Subunit DNA Sequences”. Mycotaxon Vol. 79, pp. 7–21

Roridomyces australororidus
**Roridomyces australoridus**

*Mycena veronicae  Mycena australoroida*

**Biology**
Saprotrophic basidiomycete; subcaespitose to gregarious, usually on decayed logs or branches of eucalypts or Myrtle Beech *Nothofagus cunninghamii*; also on pine cones.

**Fruit-body Description**

**Pileus (Cap)** Diameter up to 16 mm or more; 5 mm high; convex, with or without a shallow umbo; surface usually speckled with tiny brown spots (squamules); colour very pale greyish brown to off-white. **Lamellae (Gills)** Attachment broadly adnate to decurrent; subdistant to distant; minutely denticulate (x 10); colour white; generally with two series of lamellulae. **Stipe (Stem)** Central, to 27 mm long and 2.5 mm thick at base, narrowing towards apex; surface smooth, glutinous, especially at base; colour whitish; sometimes with short white hairs at base. **Spore Print** White

**Microscopic Features**
Basidiospores 9–15.5 × 6–9 µm, ellipsoidal, smooth. Basidia four-spored, rarely two-spored, 35–50 × 10–15 µm, clavate, with robust sterigmata up to 6 µm long, and clamp connection at base.

**Comments**
*Roridomyces australoridus* is readily recognised by its pale colour, gregarious habit and glutinous stipe that often has very thick gluten at the base. This species was moved into genus *Roridomyces* which was circumscribed by Karl-Heinz Rexer in his 1994 doctoral thesis (Rexer 1994).

**References**


Xeromphalina leonina
Xeromphalina leonina

*Omphalia leonina*  *Xeromphalina racemosa*  *Omphalia epichysium*

**Biology**
Saprotrophic basidiomycete; in dense colonies on rotten wood (e.g. *Nothofagus* or *Eucalyptus* spp.).

**Fruit-body Description**

**Pileus (Cap)** Diameter to 10 mm or more; initially hemispherical, becoming convex then plano-convex and finally umbilicate at centre, translucent-striate; surface smooth, dry, hygrophanous; colour when young yellow-brown, becoming cinnamon to reddish brown, initially paler towards the margin; flesh tough, leathery. **Lamellae (Gills)** Attachment broadly adnate to strongly decurrent (running down the stipe); semi-distant, sometimes forked towards the margin, colour same as pileus or slightly paler. **Stipe (Stem)** Central; generally up to 15 mm long and 1 mm thick; slender, tough, tapering towards base; surface smooth, dry, sometimes covered with minute fibrils near base; colour initially pale yellow-brown at the apex, becoming reddish-brown towards the base, with age the whole stipe becoming reddish-brown. **Spore Print** White

**Microscopic Features**

**Comments**
*Xeromphalina leonina* normally occurs in large dense eruptions on rotten wood; fruit-bodies are most readily identified by their small size, central stipe, and tough flesh. This species can be confused with *Xeromphalina podocarpi*, which usually has an eccentric stipe, and usually occurs on rotten conifer wood. Microscopically, *X. leonina* can be separated from others in the genus by its comparatively large ovate spores.

**References**
Anthracophyllum archeri
**Anthracophyllum archeri**

**Biology**
Saprotrophic basidiomycete; on dead wood such as twigs, small branches, and logs in wet eucalypt forests. The fruit-bodies often appear in large groups.

**Fruit-body Description**

**Pileus (Cap)** Up to 35 mm across; semi-circular or fan-shaped, margin incurved when young; surface smooth or minutely wrinkled; colour pale to bright reddish orange or reddish brown. **Lamellae (Gills)** Fanning out from stipe or attachment; widely spaced; initially same colour as pileus, becoming darker with age. **Stipe (Stem)** Absent or lateral; when present only about 1 mm long and pale orange-brown; when absent reduced to a semi-circular lump.

**Spore Print** White

**Microscopic Features**
Basidiospores 8–11.5 × 5–6.5 µm, ovoid, ellipsoidal, with prominent apiculus; smooth, thin-walled. Basidia 32–148 × 4–8 µm, clavate or irregularly shaped; sterigmata large, up to 8 µm long. Clamp connections present.

**Comments**
This is an opportunistic species that will break out *en masse* when the conditions are right. It is readily identified by its bright colour and its papery-tough fruit-bodies.

**References**
Gymnopus sp. “pink furry”
**Gymnopus** sp. “pink furry”

**Biology**
Saprotrophic basidiomycete; grows either solitary or in groups in crevices in the bark of living eucalypts, as well as on eucalypt logs. Usually found in wet sclerophyll forests.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 15 mm or more; convex to broadly convex, and plano-convex at maturity; surface fibrillose at the centre, becoming scaly towards the margin, when young covered with a white furry layer that disappears with age; colour when young pinkish brown to rust brown, becoming dull brown with age. **Lamellae (Gills)** Attachment adnexed; subdistant, margin finely serrate; colour pallid to dingy buff or very pale brown. **Stipe (Stem)** Central; generally up to 20 mm long and 2 mm thick, equal or broadening slightly at the apex; surface dry, covered in a whitish furry layer which may erode with age; colour reddish brown to brown. Base attachment either institious or with a fine mat of white mycelium. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–8 × 3.5–5 μm, (mean 7.2 ± 0.3 × 4.1 ± 0.2 μm, Q=1.75 ± 0.10 n=30), ellipsoidal to tear-drop-shaped, smooth, hyaline. Basidia four-spored, clavate, 25–27 × 6–7 μm. Cheilocystidia abundant, often in clusters, forming a sterile lamella edge, cylindrical to sub-clavate, broadening at apex, 30–55 × 6–10 μm. Clamp connections present.

**Comments**
This small distinctive *Gymnopus* is readily recognised by its rust-brown to pinkish brown fibrillose-scaly pileus, finely serrate lamellae, and furry stipe. It is found on the bark of living eucalypt trunks as well as on logs, and usually grows in crevices in the bark, either solitary or in groups. This species has been found in Victoria, Tasmania and South Australia.

**References**

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Gymnopus subpruinosus
**Gymnopous subpruinosus**

_Collybia subpruinoso _ _Marasmius subpruinosus_

**Biology**
Saprotrophic basidiomycete; forms gregarious to densely gregarious colonies on rotting woody debris or mulch, usually in urban garden beds.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; convex to broadly convex, broadly complanulate or plano-convex at maturity, occasionally with a small central umbo; surface moist to dry, hygrophanous, finely fibrillose, glabrous to slightly pruinose, conspicuously radially grooved-striate from margin to disc; colour when young dark brown to reddish brown, with age disc and striations staying brown while the rest of the pileus fades to light tan. **Context** very thin, up to 1 mm, tough and pliant. **Lamellae (Gills)** Attachment adnate to adnexed; subdistant, sometimes interveining; colour dingy buff to pale brown. **Stipe (Stem)** Central or eccentric; generally up to 40 mm long and 3 mm thick, equal or tapered towards the base; surface dry, finely pubescent, becoming scurfy towards the base; colour two-toned, pallid at the apex, grading to dark brown towards the base. Base usually attached to a mat of white binding mycelial rhizomorphs. **Spore Print** White

**Microscopic Features**
Basidiospores 7.5–9.5 × 4–5 µm, (mean 8.4 ± 0.7 × 4.7 ± 0.3 µm, Q=1.82 ± 0.15 n=30), ellipsoidal to tear-drop-shaped, smooth, hyaline. Basidia four-spored, 30–40 × 7–9 µm, clavate. Clamp connections present.

**Comments**
_Gymnopus subpruinosus_ is an introduced species from the northern hemisphere. It can be identified by its deeply striate, light brown pileus, pale brown lamellae, and tough two-toned stipe. It is usually found growing on rotting woody debris in urban garden beds.

**References**
Murrill QA, Burlingham GS, Pennington LH and Barnhart JH (1915) “(Agaricales) Polyporaceae-Agaricaceae”. *North American Flora* **Vol. 9(4)**, pp. 201–296 (as _Marasmius subpruinosus_)

_D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo_
2.1. Order: Agaricales

Fam. Omphalotaceae

*Marasmiellus affixus*
Marasmiellus affixus

**Biology**
Saprotrophic basidiomycete as well as a basidiolichen (forms a fungal/algal symbiotic association); forms dense colonies on moist dead eucalypt bark and branches in the presence of an algal partner.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 15 mm or more; when young broadly convex, soon becoming plano-convex, semicircular, fan-shaped or shell-like, margin crenate to scalloped; surface dry, smooth, very finely fibrillose (velvety), translucent-striate; colour whitish to pale creamy brown. **Lamellae (Gills)** Attachment adnate; distant; colour whitish to creamy yellow. **Stipe (Stem)** Lateral; generally up to 15 mm long and 2.5 mm thick; curved so that the top of the pileus is facing the substrate; surface smooth, dry; colour whitish to creamy yellow. **Spore Print** White

**Microscopic Features**
Basidiospores 5.5–9 × 3–4.5 µm, elongate to cylindrical, smooth. Basidia four-spored.

**Comments**
*Marasmiellus affixus* has the common name “Little Stinker”. It forms dense whitish to creamy colonies on dead eucalypt bark and branches, and can be identified easily by its very strong unpleasant odour. Because of its symbiotic association with an algal partner it is classified as a lichen (see Kantvilas and May 1995; Kantvilas and Jarman 2006). *Marasmiellus* species with thin stipes can revive quickly after rain.

**References**
Fuhrer B (2009) *A field guide to Australian fungi*. Bloomings Books: Melbourne. p. 120 [D CP]
Marasmiellus candidus
**Marasmiellus candidus**  
*Marasmius candidus*

**Biology**  
Saprotrophic basidiomycete; gregarious to densely gregarious on decaying wood such as fallen branches, stumps and shrubs.

**Fruit-body Description**  
**Pileus (Cap)** Diameter to 20 mm or more; convex when young, becoming plane, usually with a depressed centre; surface dry, glabrous to slightly pruinose, often translucent-striate; colour white to translucent white when young, becoming buff, with age often staining pinkish. **Lamellae (Gills)** Attachment adnate to subdecurrent; distant, intervenose (with connecting veins); colour white to buff, often staining pinkish when it ages. **Stipe (Stem)** Central, occasionally eccentric; generally up to 20 mm long and 3 mm thick, equal or tapered towards the base; surface dry, smooth; colour two-toned, white at the apex, grading to dark grey or black towards the base. **Spore Print** White

**Microscopic Features**  

**Comments**  
*Marasmiellus candidus* is recognised by its lignicolous habit, small size, whitish pileus, widely spaced lamellae, and two-toned stipe that is white at the apex and grey to black at the base.

**References**  
2.1. Order: Agaricales

Fam. Omphalotaceae

Omphalotus nidiformis
2.1. Order: Agaricales

**Omphalotus nidiformis**

*Pleurotus nidiformis  Pleurotus phosphorus  Pleurotus lampas*

**Biology**
Saprotrophic basidiomycete; usually growing in overlapping clusters on dead wood; if on living trees, infecting dead heart wood; causes white rot.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 150 mm or more; shape variable, usually fan-shaped or semicircular, if circular, can be convex or more commonly with a deep depression, margin sometimes lobed; surface dry, matt when young, becoming smooth with age; colour usually cream, darker above the stipe or in the centre, often with a tint of brown or purplish black. **Lamellae (Gills)** Attachment decurrent; closely spaced; colour white to cream. **Stipe (Stem)** Eccentric; generally up to 80 mm long and 20 mm thick; usually curved, cylindrical, stout; surface smooth, finely fibrillose; colour creamy grading to dark grey or purplish grey towards base. **Spore Print** White

**Microscopic Features**
Basidiospores $6.5–10.5 \times 4.5–8 \mu m$, ellipsoidal, smooth. Basidia four-spored, $32–42 \times 6–9 \mu m$, clavate. Clamp connections present.

**Comments**
*Omphalotus nidiformis* is also known as the Ghost Fungus because of its bright bioluminescence at night. Other identifying features are its pale fleshy pileus, which is often greyish or brownish towards the centre, cream decurrent lamellae, and a cream stipe that becomes darkish grey or purplish towards its base. This species causes white rot and can infiltrate the heartwood of a tree via a breach in its bark. This can be detrimental to the survival of the tree.

**References**


D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Rhodocollybia cf. incarnata
Rhodocollybia cf. incarnata

Biology
Saprotrophic basidiomycete; solitary but usually gregarious on the ground amongst leaf litter; also in grassy areas.

Fruit-body Description
Pileus (Cap) Diameter to 40 mm or more; when young broadly convex with incurved margin, becoming plano-convex to plane or umbonate, with a decurved margin; surface moist, glabrous, greasy when young; colour pale yellowish tan, reddish brown to greyish brown, hygrophanous, fading to light tan on drying. Lamellae (Gills) Attachment adnexed to nearly free; close; colour white; margin irregular, sometimes finely scalloped, or eroded with age. Stipe (Stem) Central; generally up to 60 mm long and 10 mm thick; widening towards an enlarged base, cartilaginous, hollow when mature, readily splitting longitudinally; surface glabrous, fibrous at the base; colour whitish to buff towards the apex, near the base becoming same colour as the pileus.

Spore Print White to Creamy

Microscopic Features
Basidiospores 6–10 × 3.5–5 µm, ellipsoidal, smooth. Clamp connections present.

Comments
Rhodocollybia cf. incarnata is recognised by its pale brownish pileus, which is greasy to the touch, its nearly free white lamellae, and its cartilaginous stipe. This is a relatively common species found on the ground amongst leaf litter and grass. It is very similar to the northern hemisphere R. butyracea, but is less robust and with a white to cream spore print rather than a pinkish one. Because of their similarity, this species often appears in Australian field guides as R. butyracea (Gates and Ratkowsky 2016). In New Zealand there is a very similar species, R. incarnata (Stevenson 1964). It is likely that this species is the same as the one found in Australia, but to be certain more work will be required.

References
2.1. Order: Agaricales

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Fam. Physalacriaceae

Armillaria hinnulea

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**Armillaria hinnulea**

**Biology**
Parasitic and saprotrophic basidiomycete. This is a pathogen that may kill the host plant by invading the roots and sap wood, but it usually occurs on rotting wood in wet or dry sclerophyll forests. Fruit-bodies can be solitary or in dense groups.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; initially umbonate to broadly convex, becoming plano-convex with an inrolled margin, then plane and finally plano-concave or irregularly depressed; surface initially scaly, then a few squamules restricted mainly to centre, often losing these with age, not viscid, waxy to the touch, margin usually distinctly striate; colour pinkish brown, wood brown, dark pinkish brown or cigar brown, hygrophanous (drying lighter).

**Lamellae (Gills)** Attachment sinuate to slightly decurrent; close; colour light pinkish brown, becoming fawn with age. **Stipe (Stem)** Central; generally up to 80 mm long and 9 mm thick; cylindrical or widening towards a swollen base; surface dry, covered with a thin fibrillose layer; colour sepia on approximately upper third, becoming dark brown towards the base. **Annulus** cortina- or web-like, high on the stipe, collapsing to form a whitish to greyish annular zone. **Spore Print** White

**Microscopic Features**
Basidiospores 6.5–8.5 × 5–6 µm (mean 7.4 ± 0.5 × 5.5 ± 0.3 µm, Q=1.33 ± 0.09, n=30), broadly ellipsoid to ovoid, smooth. Basidia four-spored, 20–45 × 5–9 µm, clavate. Cheilocystidia 25–45 × 3–9 µm, cylindrical to elongate-clavate. Pleurocystidia absent. Clamp connections present in sub-hymenium.

**Comments**
*Armillaria hinnulea* grows predominantly on dead wood and is readily identified in the field by its overall pinkish brown colour, its non-viscid pileus and pale annular zone (*A. luteobubalina* and *A. novea-zelandiae* have a membranous annulus). This species can also be found in New Zealand where DNA evidence suggests that it was introduced into New Zealand from Australia, firstly at some time in the distant past, and again more recently (Ramsfield et al. 2008).

**References**


Armillaria luteobubalina
**Armillaria luteobubalina**

**Biology**
Parasitic and saprotrophic basidiomycete; it is a virulent pathogen that kills the plant by invading the roots and sap wood; it occurs on a wide variety of eucalypts and other plants, both native and introduced. It grows in caespitose clusters at the base or above shallow roots of the infected plant.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; initially convex with definite umbo, becoming plane with umbo; surface dull, usually with scattered black to brown minute scales, more dense in the centre; colour varies from a yellowish brown to a greenish brown. **Lamellae (Gills)** Attachment adnate to slightly decurrent; close; colour white, becoming cream with age. **Stipe (Stem)** Central; generally up to 200 mm long and 20 mm thick; mealy above annulus and fibrillose-scaly below; colour whitish, often with brownish tints. **Annulus** membranous, high on the stipe, becoming fragmentary with age. **Spore Print** White

**Microscopic Features**

**Comments**
This widespread species is a virulent pathogen of eucalypts and other trees and will most likely kill the tree it has infected. In the field it is readily identified by the caespitose clusters of fruit-bodies, usually at the base of the infected tree or on its shallow roots, its honey colour, sandpapery pileus surface, white lamellae and membranous annulus.

**References**
2.1. Order: Agaricales

Fam. Physalacriaceae

Armillaria novae-zelandiae

© Jurrie Hubregtse
**Armillaria novae-zelandiae**  
*Armillariella novae-zelandiae*

**Biology**
Parasitic and saprotrophic basidiomycete. This is a pathogen that may kill the host plant by invading the roots and sap wood. It occurs on a wide variety of eucalypts and other plants. Fruit-bodies can be solitary or in dense groups, usually on dead wood. Found in cool rainforest and wet sclerophyll forest.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; initially umbonate, becoming plano-convex with an inrolled margin, then plane and often centrally depressed; surface initially scaly, with age few squamules restricted mainly to centre, sticky, viscid when moist, margin conspicuously striate; colour when very young blackish brown, becoming pale brownish yellow to honey-yellow, slightly darker towards the centre, hygrophanous (drying lighter, almost pallid).  

**Lamellae (Gills)** Attachment sinuate to slightly decurrent; close; colour whitish, becoming cream with age.  

**Stipe (Stem)** Central; generally up to 120 mm long and 10 mm thick; widening from about the middle to a swollen base; surface covered with a thin fibrillose layer; colour pale at apex, whitish to light pinkish brown above annulus, below annulus darkening to a greyish purplish dark brown towards the base.  

**Annulus** membranous, high on the stipe, becoming fragmented with age.  

**Spore Print** White

**Microscopic Features**
Basidiospores 6.5–9 × 4–6 µm (mean 7.7 ± 0.6 × 5.1 ± 0.4 µm, Q=1.53 ± 0.14, n=30), ellipsoidal, smooth. Basidia four-spored, 30–40 × 7–9.5 µm, clavate. Clamp connections not observed (most likely absent).

**Comments**
*Armillaria novae-zelandiae* grows predominantly on dead wood and is readily identified in the field by its viscid pale honey-coloured pileus, and by its stipe which is pale above the annulus and much darker below. This species is also found in New Zealand and South America. DNA data tend to suggest that this is a Gondwana species which was initially associated with *Nothofagus* spp. (Coetzee et al. 2003).

**References**


Cyptotrama asprata
**Cyptotrama asprata**

*Cyptotrama aspratum*

**Biology**

Saprotrophic basidiomycete; solitary, gregarious or caespitose on decaying wood such as fallen logs or branches.

**Fruit-body Description**

**Pileus (Cap)**

Diameter to 50 mm or more; when young knob-shaped, expanding to almost plane; surface dry, yellow to orange, covered with orange-yellow spiny pyramidal warts that tend to disappear with age. **Lamellae (Gills)** Attachment adnate but may have a small decurrent tooth; moderately distant; colour white. **Stipe (Stem)** Central; generally up to 60 mm long and 5 mm thick at apex, slightly broader towards the base; yellowish at the apex, becoming orange-yellow towards the base; covered in orange scales that become spiny towards the base; **Veil** more or less cobwebby, soon disappearing (evanescent).

**Spore Print** White

**Microscopic Features**

Basidiospores 7–11 × 7–8 μm, lemon-shaped to ovoid, smooth. Basidia four-spored, 36–70 × 5.5–11 μm, narrowly clavate. Clamp connections present.

**Comments**

*Cyptotrama asprata* is an elegant little mushroom; its bright orange-yellow colour, spiny pileus and white lamellae make this species unmistakable. This fungus is not confined to Australia: it is also found in North and South America, Africa, New Zealand, and on some Pacific islands but is conspicuously absent in Europe.

**References**

  p. 56 [D CP] (as *Cyptotrama aspratum*)

  p. 62 [D CP]

  p. 33 [D CP] (as *Cyptotrama aspratum*)

  p. 254 [D I]

  p. 44 [CP] (as *Cyptotrama aspratum*)

2.1. Order: Agaricales

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Fam. Physalacriaceae

*Flammulina velutipes*
Flammulina velutipes

Collybia velutipes

**Biology**
Saprotrophic basidiomycete; forms caespitose clusters on dead wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; initially convex, soon becoming plane or broadly umboinate; margin often incurved when young; surface smooth, viscid, slimy when moist; colour varies from yellow-orange to yellow-brown or red-brown, margin often paler. **Lamellae (Gills)** Attachment adnexed; close; colour white, becoming cream with age. **Stipe (Stem)** Central or slightly off-centre; generally up to 100 mm long and 6 mm thick; tough, slender; surface velvety particularly towards the base; colour pale yellowish brown to orange-brown when young; becoming covered with a brown to blackish velvety coating; velvety coating is darker towards the base, where it is almost black.

**Spore Print** White

**Microscopic Features**

**Comments**
*Flammulina velutipes* is readily recognised by its caespitose habit on dead wood, the sticky yellow-brown to reddish brown pileus, and velvety stipe that is dark at the base. This species is also common in the northern hemisphere.

**References**
Oudemansiella gigaspora
Oudemansiella gigaspora

Oudemansiella radicata  Hymenopellis gigaspora
Xerula gigaspora

Biology
Saprotrophic basidiomycete; solitary or scattered in small groups on the ground, amongst leaf litter or in grass, usually above buried wood.

Fruit-body Description
Pileus (Cap) Diameter to 80 mm or more; broadly convex, becoming plane, sometimes slightly umbonate, margin incurved; surface smooth, not evidently viscid, but sometimes sticky when moist, becoming radially wrinkled with age or dryness; colour varies from brown to grey-brown, olive-brown or sometimes almost black. Lamellae (Gills) Attachment adnexed to adnate; subdistant; colour white. Stipe (Stem) Central; generally up to 200 mm long and 10 mm thick; cylindrical, equal, or thickening at the base, with a tapering root-like section in the soil; surface dry, smooth, pruinose when young, minutely silky; colour white or whitish grey. Spore Print White

Microscopic Features

Comments
Oudemansiella gigaspora belongs to a complex of about 9 species that are very similar, making it difficult to separate them in the field (Petersen 2008). When mature, species belonging to this group all have a plane pileus, white lamellae, and a long slender stipe with a root-like extension in the soil at the base. In 2010 RH Petersen and KW Hughes placed this species into a new genus Hymenopellis, but this genus was not monophyletic (a practice not consistent with modern taxonomy). Although the new genus name Hymenopellis is preferred in “Index Fungorum”, in this instance the name Oudemansiella will be retained in Australia.

References


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*D*=Description; *I*=Illustration; *CI*=Colour Illustration; *P*=Photo; *CP*=Colour Photo
Oudemansiella mundroola
Oudemansiella mundroola

Xerula radicata var. mundroola  Hymenopellis mundroola
Xerula mundroola

**Biology**
Saprotrophic basidiomycete; solitary or scattered in small groups on the ground, amongst leaf litter or in grass, usually above buried wood.

**Fruit-body Description**

*Pileus (Cap)* Diameter to 70 mm or more; broadly convex, becoming plane, sometimes slightly umbonate, margin upturned, not striate; surface smooth, viscid to glutinous when moist, often wrinkled over disc; colour pale yellowish brown, becoming dark brown over disc. *Lamellae (Gills)* Attachment adnexed, usually with a decurrent tooth; subdistant; colour white. *Stipe (Stem)* Central; generally up to 200 mm long and 2–4 mm thick at apex; cylindrical, thickening at the base, with a tapering root-like section in the soil; surface dry, smooth, pruinose when young, minutely silky; colour white to pale brownish.

**Spore Print** White

**Microscopic Features**

**Comments**
*Oudemansiella mundroola* belongs to a complex of about 9 species that are relatively similar (Petersen 2008), making it difficult to separate them in the field. *O. mundroola* can be tentatively identified by its relatively small and delicate fruit-body, and by its viscid to glutinous light brown pileus. Microscopically this species is readily identifiable because its basidia are two-spored. Other two-spored species of *Oudemansiella* are *O. raphanipes* and *O. atrocaerulea*. *Oudemansiella raphanipes* is a more robust species with a dark brown pileus, and is usually found in subtropical regions; *O. atrocaerulea* has a dark grey to dark grey-blue pileus, and its range seems to be limited to western Australia. In 2010, RH Petersen and KW Hughes placed *O. mundroola* into a new genus *Hymenopellis*, but this genus was not monophyletic (a practice not consistent with modern taxonomy). Although the new genus name *Hymenopellis* is preferred in “Index Fungorum”, in this instance the name *Oudemansiella* will be retained in Australia.
References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Physalacria australiensis
Physalacria australiensis

**Biology**
Saprotrophic basidiomycete; scattered in groups and caespitose clumps on decaying wood in wet eucalypt forest.

**Fruit-body Description**

**Pileus (Head)** Up to 10 mm diameter, irregularly globose, like a partially inflated bladder, hollow; surface minutely pubescent; colour white, turning yellowish to brownish with age. **Stipe (Stem)** Cylindrical, central, generally 3–6 × 0.5–1.5 mm; surface minutely pubescent; colour white. **Spore Print** White

**Microscopic Features**
Basidiospores 2.5–4 × 2–3 µm (mean 3.4 ± 0.3 × 2.4 ± 0.2 µm, Q=1.44 ± 0.16 n=30), broadly ellipsoidal to pip-shaped, smooth. Basidia two-spored (some 4-spored), 15–24 × 3–5 µm, clavate. Cystidia 50–85 × 7–15 µm, subcylindrical, some slightly ventricose, apex rounded, semi-circular, apex often with a knob, occasionally capitate. Clamp connections present.

**Comments**
*Physalacria australiensis* can be recognised by its simple fruit-body, consisting of a whitish inflated bladder-like head, 3–10 mm diameter, on a shortish slender stipe up to 6 mm long, usually growing on decaying wood. To be sure of the identification, microscopic features need to be examined. Most of the morphological features observed from our specimens agree very well with the descriptions of *P. australiensis* produced by Fawcett (1940) and Corner (1950), except for one difference: in both of those descriptions only two-spored basidia are mentioned, whereas in our specimens we observed some four-spored basidia. Since our specimens were found in the general area from where Fawcett and Corner obtained theirs, and since *P. australiensis* is the only *Physalacria* genus recorded for south-eastern Victoria, it is highly likely that this is *P. australiensis*. *Physalacria inflata* is a similar looking species, but can be differentiated on its larger spore size (4–6 × 2–3.5 µm) and differently shaped cystidia (Corner 1950; McGuire 1939).

**References**


**Pluteus atromarginatus**
Pluteus atromarginatus

Biology
Saprotrophic basidiomycete; usually solitary or in small groups on rotting wood, logs, and stumps; if on the ground it is above buried wood.

Fruit-body Description
Pileus (Cap) Diameter to 60 mm or more; when young convex, expanding to plane or with a low broad umbo; surface dry, dull, not hygrophanous, radially fibrillose, velvety, sometimes with small appressed scales; colour dark sooty brown when young, becoming lighter brown with age. Lamellae (Gills) Attachment free; close; colour initially white, becoming dull pink to pink buff as spores mature; margin dark brown to blackish brown. Stipe (Stem) Central; generally up to 75 mm long and 8 mm thick; cylindrical with a slightly bulbous base; surface overlaid with dark brown fibrils; colour off-white. Spore Print Salmon-pink

Microscopic Features

Comments
Pluteus atromarginatus is found on decaying wood but with a preference for conifer wood, and is recognised by its largish size, dark sooty brown pileus, and pinkish lamellae, which have a dark brown margin and are free from the stipe.

The macro and micro morphology of this species agree reasonably well with that of the northern hemisphere species, and for that reason the northern hemisphere name is used. Morphological features between different species of Pluteus can overlap (Justo et al. 2014). To be certain that this species is the same as that from the northern hemisphere, DNA analysis will be required.

References


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Pluteus cervinus
**Pluteus cervinus**

**Biology**
Saprotrophic basidiomycete; usually solitary or in small groups, found on rotting wood, logs and stumps; if on the ground it is above buried wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young convex, expanding to plane or with a low broad umbo; surface moist, slightly viscid to viscid, dull, radially fibrillose, velvety, sometimes with small appressed scales over disc; colour varies from grey-brown to dark brown, becoming lighter with age.

**Lamellae (Gills)** Attachment free; close; colour initially white, becoming dull pink to pink-buff as spores mature; margin pallid to white, but may darken as fruit-body dries out.

**Stipe (Stem)** Central; generally up to 100 mm long and 10 mm thick; cylindrical, base sometimes slightly bulbous; surface overlaid with dark brown fibrils; colour off-white, pallid.

**Spore Print** Salmon-pink

**Microscopic Features**
Basidiospores $5.5–8 \times 4.5–6$ $\mu$m, broadly ellipsoidal, smooth, thin-walled. Basidia four-spored, $22–36 \times 7–9$ $\mu$m, cylindro-clavate. Pleurocystidia abundant, metuloid (thick-walled) with 2–5 apical projections. Clamp connections absent.

**Comments**

*Pluteus cervinus* grows on rotting logs, stumps or on woody debris, and can be recognised by its moist brown, fibrillose pileus, free white lamellae that turn pinkish as spores mature, and the lack of an annulus on the stipe.

The macro and micro morphology of this species agree reasonably well with that of the northern hemisphere species, and for that reason the northern hemisphere name is used. Morphological features between different species of *Pluteus* can overlap (Justo et al. 2014). To be certain that this species is the same as that from the northern hemisphere, DNA analysis will be required.

**References**


Pluteus pauperculus
**Pluteus pauperculus**

*Pluteus flammipes var. depauperatus*

**Biology**
Saprotrophic basidiomycete; usually solitary or in small groups on rotting wood, logs and stumps; if on the ground it is above buried wood.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 35 mm or more; when young convex, expanding to plane or with a low broad umbo, margin weakly striate; surface dry, minutely granulose, finely wrinkled; colour dark brown to brown, margin usually paler.

**Lamellae (Gills)**
Attachment free; crowded; colour initially lemon yellow, then golden yellow, becoming pinkish yellow as spores mature.

**Stipe (Stem)**
Central; generally up to 35 mm long and 4 mm thick; cylindrical with white matted mycelium at the base; surface smooth or minutely longitudinally fibrillose; colour yellow to chrome-yellow, base may be yellow or conspicuously orange to reddish orange.

**Spore Print**
Salmon-pink

**Microscopic Features**

**Comments**
*Pluteus pauperculus* is a fragile fungus that is readily identified by its brown pileus, free lemon yellow lamellae, and a yellow stipe, which occasionally has a distinctive reddish orange base. This uncommon species has been found in Victoria, Tasmania and Western Australia. It is also found in New Zealand. It is often confused with *Pluteus romellii* which is predominantly a northern hemisphere species. The type specimen of *Pluteus pauperculus* was collected in Western Australia (Horak 1983) and *Pluteus nanus* sensu Grgurinovic (1997) from South Australia is probably contaxic (Horak 2008).

**References**


Pluteus sp. “yellow”
**Pluteus sp. “yellow”**

**Biology**
Saprotrophic basidiomycete; usually solitary or in small groups on rotting wood, logs or stumps; if on the ground it is above buried wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 35 mm or more; when young convex, expanding to plane, sometimes with a low broad umbo; surface dry, dull, not hygrophanous, smooth or very finely fibrillose or granular, translucent striate towards the margin; colour when very young brown to yellowish brown, becoming dull yellowish to olive-yellow with age. **Lamellae (Gills)** Attachment free; moderately close; colour whitish at first, then pale buff, becoming pale pinkish yellow as spores mature. **Stipe (Stem)** Central; generally up to 40 mm long and 3 mm thick; cylindrical, usually with a basal disc, basal mycelium is white; surface smooth to slightly fibrillose; colour yellow. **Spore Print** Pink

**Microscopic Features**

**Comments**
*Pluteus* “yellow” most likely is an undescribed Australian species which is readily recognised by its yellow to olive-yellow pileus, and pale buff lamellae that are free from the yellow stipe. The stipe often has a fibrillose basal disc. This fungus is usually found on decaying wood, but if found on the ground it will be in woody mulch or above buried wood. This species was thought to be *P. lutescens* based on images found in some fungi field guides, e.g. Fuhrer (2009), McCann (2003) and Griffiths (1985). Detailed examination of the pileus cuticle (pileipellis) revealed a cutis in transition to a trichoderm with long cylindrical terminal cells. This is inconsistent with *P. lutescens*, which has a hymeniderm layer of almost spherical inflated cells. The characteristics of this *Pluteus* would suggest that it is closely related to the group of species in *Pluteus* stirps *Leoninus*.

**References**
  p. 162 [D CP] (as *Pluteus lutescens*)

Griffiths K (1985) *A field guide to the larger fungi of the Darling Scarp & South West of Western Australia*. The Author: Perth, W.A.  p. 34 [D CI] (as *Pluteus lutescens*)


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Pluteaceae

Volvopluteus gloiocephalus
**Volvopluteus gloiocephalus**

*Volvariella speciosa*  
*Volvariella speciosa var. gloiocephala*  
*Volvariella gloiocephala*

**Biology**
Saprotrophic basidiomycete; solitary or in small groups on the ground, in rich humus, mulch, lawns, and fields.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young an ovoid button, then conico-convex, soon developing an umbo, then convex, later becoming broadly convex to plane; surface viscid when moist, soon drying shiny-smooth; colour usually greyish beige, sometimes brownish, umbo darker and sometimes more brownish. **Lamellae (Gills)** Attachment free or just reaching the stipe; moderately close; colour at first whitish, becoming brownish pink as spores mature. **Stipe (Stem)** Central; generally up to 120 mm long and 20 mm thick; slender, buried base bulbous; surface dry, very slightly fibrillose striate; colour whitish with yellowish or brownish tints. **Volva** Outer veil forming a white membranous saccate volva at the base of the stipe. **Spore Print** Pink to Pinkish brown

**Microscopic Features**

**Comments**
*Volvopluteus gloiocephalus* is tall, recognised by its brownish grey pileus, which is viscid when moist, brownish pink lamellae free from the stipe, a volva at the base of the stipe, and no annulus. A northern hemisphere species, accidentally introduced into Australia, it is most common in parks and gardens, but seldom found in native forests.

This fungus was previously known as *Volvariella speciosa*, but DNA analysis carried out by Justo *et al.* (2010) showed that the *Volvariella* genus, which consisted of about 50 species, was polyphyletic, as most of its species fell outside the Pluteoid clade. To accommodate the species that fell within the Pluteoid clade a new genus name *Volvopluteus* was created. *Volvariella gloiocephala*, which was the earlier synonym of *Volvariella speciosa*, was then placed into *Volvopluteus* as *Volvopluteus gloiocephalus*. 
References
2.1. Order: Agaricales

Fam. Psathyrellaceae

*Coprinellus disseminatus*
2.1. Order: Agaricales

Fam. Psathyrellaceae

Coprinellus disseminatus

Coprinus disseminatus

Biology
Saprotrophic basidiomycete; often growing in large clusters on and around decaying wood and stumps, or on the ground above buried wood.

Fruit-body Description
Pileus (Cap) Diameter to 15 mm or more; ovoid when young, expanding to broadly convex; young fruit-bodies pallid or yellowish cream, darkening to grey or greyish brown; deeply striate from the margin almost to the centre. Lamellae (Gills) Attachment adnate or free; close to distant; colour initially whitish, later grey-brown to brown-black; not deliquescent with age. Stipe (Stem) Central; generally up to 40 mm long and 2 mm thick; smooth, fragile, hollow, colour white. Spore Print Black

Microscopic Features
Basidiospores 7–11 × 4–6.5 µm, ellipsoid, smooth, with a large apical germ pore. Basidia four-spored, 16–32.5 × 6.5–9 µm, clavate.

Comments
Coprinellus disseminatus typically fruits in large numbers; the change in the pileus colour from almost white to greyish brown helps to identify this species. It is also one of the coprinoid species that does not deliquesce, making it possible to get a spore print. The species originally belonged in the genus Coprinus but due to phylogenetic analysis by Redhead et al. (2001) the genus Coprinus was divided into a number of genera, including the genus Coprinellus.

References


Coprinellus truncorum
Coprinellus truncorum
Coprinus truncorum

Biology
Saprotrophic basidiomycete; rarely solitary, generally forming gregarious groups on decaying wood such as old stumps, mulch, woodchips or buried wood; when over buried wood it may appear terrestrial.

Fruit-body Description
Pileus (Cap) Diameter to 35 mm or more; height up to 18 mm; conical at first, convex to broadly convex, plicate, initially covered with mica-like flecks that disappear with age; with age margin erodes as pileus begins to autodigest; colour light brown to orange-brown. Lamellae (Gills) Attachment ascending-adnate; close; colour initially white, then brown, finally black as spores mature. Stipe (Stem) Central; generally up to 80 mm long and 5 mm thick; white, smooth, hollow, fragile. Spore Print Black

Microscopic Features
Basidiospores 8–10.5 × 5.5–8 µm, ellipsoidal, smooth, thick-walled, with an apical germ pore. Basidia four-spored, 33–42 × 8–10.5 µm, clavate.

Comments
Coprinellus truncorum and C. micaceus are very similar looking species. C. micaceus has a very finely pruinose stipe (it has large caulocystida) whereas C. truncorum does not. Also, C. micaceus has some spores that are shaped like a Bishop’s hat (mitriform) whereas the spores of C. truncorum are ellipsoidal. On the basis of this microscopic detail the morphologies of these two species seem to make distinct species, but preliminary DNA results produced by Keirle, et al. (2004) show that they are genetically identical. At present it seems most likely that C. truncorum and C. micaceus are variants of the same species. Until more conclusive research has been done C. truncorum and C. micaceus will be treated as a separate species.

References

2.1. Order: Agaricales

Fam. Psathyrellaceae

Coprinopsis atramentaria
**Coprinopsis atramentaria**

*Coprinus atramentarius*

**Biology**
Saprotrophic basidiomycete; usually growing in dense caespitose clusters on buried decaying wood, rarely found directly on decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Prior to expansion up to 65 mm in height and after expansion up to 80 mm or more in diameter; at first subglobose, quickly expanding to cylindro-campanulate (bell-shaped), then broadly conic, and finally with a lifting margin; colour whitish to grey-brown, disc often darker; surface dry, ranging from smooth and glabrous to being partially covered with small, brown, closely adhering scales; margin splitting, eroding and deliquescing when old.

**Lamellae (Gills)** Attachment free; extremely crowded; colour initially white, becoming brown, then brownish black as spores mature, and finally destroyed by autodigestion.

**Stipe (Stem)** Central; generally up to 175 mm tall and 10 mm thick, cylindrical, hollow, brittle; white, smooth with a silky appearance above the annular ring or flange-like zone, and roughened by small appressed scales below it.

**Annulus** white, persistent ring-like zone.

**Spore Print** Black

**Microscopic Features**
Basidiospores 8–10 × 4–6.5 µm, ellipsoidal, smooth, with an apical germ pore. Basidia four-spored, 12–37 × 7–10 µm, clavate. Clamp connections present, occasionally in the lamellar trama, more common in stipe and pileal cuticle.

**Comments**
*Coprinopsis atramentaria* is recognised by its smooth to silky, greyish brown pileus, its two-toned stipe that is white above the annular fibrillose zone and has small brownish scales below it, its clustered habit, and deliquescing lamellae. It prefers disturbed habitats, and hence is found along paths, garden beds, or in lawns and other grassy areas. This is a cosmopolitan species. See Redhead *et al.* (2001) for the current names of *Coprinus* species.

**References**


Young AM (2005) *A field guide to the fungi of Australia*. University of New South Wales Press: Sydney.  p. 120 [D I] (as *Coprinus atramentarius*)

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Psathyrellaceae

Coprinopsis lagopus
Coprinopsis lagopus

Coprinus lagopus

Biology
Saprotrophic basidiomycete; rarely solitary, generally forming gregarious groups on decaying wood, such as old stumps, mulch or woodchips.

Fruit-body Description
Pileus (Cap) Diameter to 40 mm or more when mature; initially small ovoid, expanding to broadly convex and eventually plane; old fruit-bodies have an uplifted margin; when young, woolly, covered in dense white hairs (universal veil) which break up and disappear with age; underlying surface is mouse grey, plicate-striate almost to the centre; with age margin will erode as pileus begins to autodigest. Lamellae (Gills) Attachment narrowly adnexed to almost free; crowded; colour white at first, turning black as spores mature. Stipe (Stem) Central; generally up to 100 mm long and 5 mm thick; white, densely covered in white fibrils, shaggy or woolly at first, but fibrils disappear with age; base may be slightly bulbous but not rooting. Spore Print Black

Microscopic Features

Comments
Coprinopsis lagopus belongs to a group of very similar looking species that have different habits. Coprinopsis lagopus fruits typically on old woodchip piles, and does not form a root at its base, whereas some of the other look-alikes prefer to fruit on dung or manured soil, and if on woody material tend to have a root at the base of the stipe.

References

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

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Fam. Psathyrellaceae

Coprinopsis nivea
**Coprinopsis nivea**

*Coprinus niveus*

**Biology**
Saprotrophic basidiomycete; usually solitary but occasionally gregarious on herbivore dung.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 15 mm but can grow to 40 mm; height up to 35 mm; ovoid when young, later becoming bell-shaped, often with an uplifted margin; entire surface mealy white (remnant of the universal veil)

**Lamellae (Gills)**
Attachment finely adnexed or free; close; colour white when young, becoming grey and then black as spores mature, finally deliquescent.

**Stipe (Stem)**
Central; generally up to 70 mm long and 5 mm thick; white, mealy; cottony fibres at the base. **Spore Print** Black

**Microscopic Features**

**Comments**
The main characteristics of *Coprinopsis nivea* are that it appears principally on herbivore dung, it is snow white in colour due to its white mealy coating, and it is usually small in size. Another similar looking species is a young *C. lagopus*, but it prefers to grow on woodchips, not on dung.

**References**


Parasola plicatilis
Parasola plicatilis

Coprinus plicatilis

Biology
Saprotrophic basidiomycete; solitary or in small groups on soil amongst grass, in mulched garden beds and along path edges.

Fruit-body Description
Pileus (Cap) Diameter to 24 mm or more; initially nearly cylindrical, becoming convex to broadly convex, finally plane, margin sometimes recurved, central disc at first slightly raised, then plane, finally slightly depressed; surface smooth, dry, strongly pleated to disc; colour buff to yellow-brown, cinnamon centre, soon greying from margin inwards. Lamellae (Gills) Attachment adnate to a collar at the apex of the stipe; moderately close; colour at first clay-pink, becoming grey and finally black as spores mature; with age tending to wither rather than deliquesce. Stipe (Stem) Central; generally up to 70 mm long and 3 mm thick; slender, fragile; surface, smooth; colour whitish to pale brown, becoming darker towards the base. Spore Print Black

Microscopic Features
Basidiospores 10–14.5 × 6–10.5 µm, broadly ellipsoidal, mitriform (mitre-like in shape), or hexagonal, with rounded corners and a distinct germ pore. Basidia four-spored, 37–51 × 11–18 µm, clavate.

Comments
Parasola plicatilis is a beautiful delicate fungus, identified in the field by its grey-brown pleated pileus with a smooth central disc, and lamellae attached to a collar at the apex of the stipe. With age the pileus erodes, often leaving a skeletal form of itself. This is a cosmopolitan species.

References

Psathyrella asperospora
**Psathyrella asperospora**

*Lacrymaria asperospora*

**Biology**
Saprotrophic basidiomycete; solitary, or in groups, or in caespitose clusters on the ground, generally in disturbed soil, and usually associated with buried rotting wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young conical to convex, becoming broadly convex with a slight umbo, margin incurved, often with pendulous velar fragments; surface dry, radially scaly to shaggy-fibrillose; colour brown to cinnamon-brown. **Lamellae (Gills)** Attachment adnexed; close; colour at first brown, becoming dark brown and mottled as spores mature; margin remaining whitish; in wet conditions droplets form on the lamellae. **Stipe (Stem)** Central; generally up to 100 mm long and 30 mm thick; cylindrical, base slightly bulbous; surface longitudinally fibrillose; colour pale dirty greyish to light brown, blackening with age due to spore deposit. **Inner veil** whitish to pale brown, fibrillose, leaving fragments on pileus margin, but usually no ring or fibrillose zone on stipe. **Spore Print** Black

**Microscopic Features**

**Comments**
*Psathyrella asperospora* is readily identified by its brownish shaggy pileus and stipe, and black spore deposits on the fibrillose stipe. During wet conditions, droplets of water form on the lamellae, hence the common name ‘Weeping Mary’.

**References**


Psathyrella candolleana
2.1. Order: Agaricales

Psathyrella candolleana

_Family: Psathyrellaceae_

Psathyrella candolleana  
_Hypholoma candolleanum  
_Hypholoma cutifractum_

**Biology**

Normally a saprotrophic basidiomycete; solitary or in groups, typically growing in lawns, pastures and cultivated areas. It is also a mycorrhizal partner of a widespread mycoheterotrophic orchid _Eulophia zollingeri_.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young conical to convex, becoming broadly convex, with age broadly umbонate to plane with a slight umbo, margin often has velar fragments when young; surface dry, smooth, occasionally cracked in dry weather; colour when fresh and moist is brown to yellowish brown, on drying quickly fading to a whitish buff with a darker centre, hygrophanous. Flesh thin and fragile. **Lamellae (Gills)** Attachment adnate; close; colour at first very pale brown, becoming dark greyish and finally dark brown as spores mature; margin slightly fringed or serrate. **Stipe (Stem)** Central; generally up to 100 mm long and 9 mm thick; cylindrical, fragile, hollow; surface satiny, covered with silky fibrils; colour white or very pale brown. **Inner veil** whitish to pale brown, fibrillose, evanescent, not always evident on mature specimens. **Spore Print** Dark red-brown

**Microscopic Features**
Basidiospores 6–8 × 3.5–5 µm, ellipsoidal to ovoid, smooth, with distinct germ pore. Basidia four-spored, 22–28 × 7–9 µm, clavate. Clamp connections present.

**Comments**

Recognising _Psathyrella candolleana_ in the field is made difficult by the variable colour of its pileus, and variable fruit-body size. The colour of the pileus is not of great importance but it must be remembered that this species is hygrophanous and becomes pale when dry. The more significant features are the dark brown lamellae when mature, dark red-brown spore deposit, whitish fragile stipe that may have remnants of an annulus, and occurrence on lawns and in cultivated areas. The overall fragile nature of the fruit-body is also important. Species belonging to the genus _Psathyrella_ represent the typical little brown mushroom with few distinguishing features, making this an inadequately studied genus in Australia.
References


Psathyrella echinata
Psathyrella echinata
Psilocybe echinata

Biology
Saprotrophic basidiomycete; solitary, or in groups, or in caespitose clusters, usually on rotting wood, sometimes at the base of trees; if on the ground always associated with buried wood.

Fruit-body Description
Pileus (Cap) Diameter to 20 mm or more; when young globular, then convex to nearly plane with a small umbo, margin incurved, often with pendulous velar fragments; surface dry, when young covered with granular-like erect spiny bundles of fibrils that disappear with age; colour dark reddish brown, becoming brown, drying to light brown. Lamellae (Gills) Attachment adnexed; close; colour brown at first, becoming dark brown as spores mature. Stipe (Stem) Central; generally up to 30 mm long and 4 mm thick; cylindrical, usually with tufts of whitish mycelium at the base; surface when young covered with spiny fibrils, which disappear with age starting from the apex; colour pallid, becoming brown. Inner veil whitish, fibrillose, leaving fragments on pileus margin, but usually no ring or fibrillose zone on stipe. Spore Print Dark brown to black

Microscopic Features
Basidiospores 6–7.5 × 3.5–4.5 µm, ellipsoidal, smooth, with distinct germ pore. Basidia four-spored, 17–23 × 6–11 µm, clavate. Cystidia metuloid (thick-walled), with encrusted apices. Clamp connections present.

Comments
Psathyrella echinata is more easily identified when the fruit-bodies are young, because it is the erect spiny fibrils on the young fruit-bodies that makes this species relatively unique and readily identifiable. When the spiny fibrils disappear, it becomes just another brown mushroom with the associated difficulties in identification. Species belonging to the genus Psathyrella represent the typical little brown mushroom with few distinguishing features, making this an inadequately studied genus in Australia.

References

2.1. Order: Agaricales

Fam. Schizophyllaceae

Schizophyllum commune
**Schizophyllum commune**

**Biology**
Saprotrophic basidiomycete; solitary, or more frequently gregarious to clustered, bracket-like to imbricate, usually on decaying hardwood, but has also been reported in hay bales.

**Fruit-body Description**
**Pileus (Cap)** Width to 60 mm or more; usually fan-shaped, sometimes convex or irregularly lobed; surface dry, radially hairy, covered in downy hair; colour whitish to greyish or sometimes brownish grey when moist, strongly hygroscopic. **Flesh** thin, tough, leathery. **Lamellae (Gills)** Lamellae-like folds radiate from point of attachment; they are distinctively split down the middle; colour whitish to greyish. **Stipe (Stem)** Absent or only slightly developed, narrow or point-like attachment to the substrate. **Spore Print** White

**Microscopic Features**
Basidiospores 5.5–8 × 2–3.5 µm, cylindrical, some curved, smooth. Basidia four-spored, 40–55 × 7–10 µm, slenderly clavate. Clamp connections present.

**Comments**
*Schizophyllum commune* is bracket-like and readily identifiable by its uniquely split lamellae, hairy pileus, and thin tough fruit-body. This species is cosmopolitan, making it one of the most common species of fungi. *Schizophyllum commune* does not really have lamellae: its hymenium (spore-bearing surface) consists of cup-like structures, and where they come in contact with each other they produce a formation that looks like a split lamella. *Schizophyllum commune* is in the schizophylloid clade, which is a member of the cyphelloid group of fungi. A very closely related species, also in the schizophylloid clade, is *Fistulina hepatica*, which is a bracket fungus consisting mainly of closely spaced tubes.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Agrocybe parasitica
Agrocybe parasitica
Cyclocybe parasitica

Biology
Saprotrophic and weakly parasitic basidiomycete; scattered to gregarious on dead or living hardwood trees. When fruit-bodies are observed on living trees, heartwood rot is well advanced.

Fruit-body Description
Pileus (Cap) Diameter to 250 mm or more; at first rounded to convex, then broadly convex to plane; margin sometimes hung with whitish veil remnants; surface dry, velvety; colour brown to golden-brown at centre, becoming paler towards the margin. Lamellae (Gills) Attachment adnexed to adnate; close; colour at first buff with a pale margin, then becoming brownish as spores mature. Stipe (Stem) Central; generally up to 120 mm long and 20 mm thick; more or less equal; surface velvety or with appressed scales; colour whitish above the annulus and pale brown below, becoming darker brown towards the base. Annulus initially a white veil covering the developing lamellae, falling free as a substantial pleated annulus, usually coated with a brown layer of spores. Spore Print Brown

Microscopic Features
Basidiospores 9–11.5 × 5–7 µm (mean 10.2 ± 0.4 × 6.0 ± 0.3, n=30), ellipsoidal, smooth, thick-walled, with a conspicuous germ pore. Basidia predominantly four-spored, 30–33 × 11–13 µm, clavate. Clamp connections present.

Comments
This species, usually found growing on hardwood trees, is recognised by its large fruit-body size, brownish colour and membranous annulus covered in brown spores. This species also occurs in New Zealand, where it was named by Greta Stevenson (Stevenson 1982). There is reasonable phylogenetic evidence indicating that this species is not an Agrocybe and that it actually belongs in the genus Cyclocybe in the family Tubariaceae. I hesitate to use its new name before seeing some phylogenetic evidence that this species actually belongs in the genus Cyclocybe.

References

2.1. Order: Agaricales

Fam. Strophariaceae

Agrocybe pediades
**Agrocybe pediades**

*Agrocybe arenaria*  *Agrocybe semi-orbicularis*  *Agrocybe arenicola*

**Biology**
Saprotrophic basidiomycete; scattered to gregarious in grass, on lawns, or on manured cultivated ground.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 30 mm or more; at first rounded to convex, then broadly convex to plane; when young, margin sometimes hung with whitish fibrillose veil remnants; surface lubricious-viscid when moist, smooth and silky when dry, becoming areolate (split into blocks) when in dry conditions; colour golden-brown to yellow-brown when moist and young, hygrophanous, when dry becoming creamy to creamy ochre. **Lamellae (Gills)** Attachment adnate; close; colour at first pale, then light brown, and finally becoming dark brown as spores mature; margin appears smooth or denticulate under a hand lens. **Stipe (Stem)** Central; generally up to 50 mm long and 3 mm thick; equal, often longitudinally striate; cream to yellow-brown, usually darker towards the base. **Annulus** with or without an annular zone, if annular zone present then evanescent and fibrillose. **Spore Print** Brown

**Microscopic Features**
Basidiospores 9–14.5 × 6.5–9.5 µm, ellipsoidal, smooth, thick-walled, with germ pore. Basidia four-spored, 30–33 × 11–13 µm, clavate. Clamp connections present.

**Comments**
*Agrocybe pediades* is identified by its relatively small size, yellow-brown colour and convex pileus. It is usually found in grassy areas, particularly in lawns. This is a common northern hemisphere species, which probably was unintentionally introduced into Australia.

**References**
Agrocybe praecox complex
Agrocybe praecox complex

Pholiota praecox

Biology
Saprotrophic basidiomycete; gregarious or solitary in parks, gardens, pasture, or in wood mulch.

Fruit-body Description
Pileus (Cap) Diameter to 150 mm or more; at first convex, then plane, and finally with a slightly umbonate centre when old; when young, margin sometimes hung with whitish veil remnants; surface smooth, dull, areolate (split into blocks) when in dry conditions; colour light brown to yellow-brown when moist and young, hygrophanous, when dry becoming creamy to creamy ochre. Lamellae (Gills) Attachment adnate; close; colour at first pale, then light brown, and finally becoming dark brown as spores mature; margin appears smooth or denticulate under a hand lens. Stipe (Stem) Central; generally up to 75 mm long and 15 mm thick; longitudinally whitish-fibrillose; cream; base is bulbous. Annulus pronounced when young, but disappears with age. Spore Print Cigar-brown

Microscopic Features
Basidiospores 8–10.5 × 5.5–7 µm, ellipsoidal, smooth, thick-walled, with germ pore. Basidia four-spored, 25–37 × 8–10 µm, clavate. Clamp connections present.

Comments
Agrocybe praecox belongs to a complex of species which are all recognised by their pale pileus often hung with veil remnants, brownish lamellae, and pale stipe. Mating experiments done by Flynn and Miller (1990) show that in the northern hemisphere at least four species belong to this complex, and they cannot readily be separated using macro or micro characteristics. Fruit-bodies of the A. praecox complex of mushrooms tend to appear in spring, usually amongst grass or in well mulched garden beds. These mushrooms are most likely introduced from the northern hemisphere, where they are common.

References
Flynn T and Miller OK Jr (1990) “Biosystematics of *Agrocybe molesta* and sibling species allied to *Agrocybe praecox* in North America and Europe”. *Mycological Research* Vol. 94(8), pp. 1103–1110


2.1. Order: Agaricales

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Fam. Strophariaceae

Deconica horizontalis
Deconica horizontalis

*Melanotus haematochrous*  *Psilocybe hepatochrous*

*Melanotus horizontalis*  *Psilocybe horizontalis*

*Melanotus hepatochrous*

**Biology**
Saprotrophic basidiomycete; solitary to gregarious on dead wood or bark.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 20 mm or more; convex, kidney-shaped, fan-shaped, sometimes irregularly lobed; surface dry, dull, covered with a whitish bloom, becoming shiny, margin inturned when young; colour cinnamon, pale brown to brown, drying to pale buff. **Lamellae (Gills)**
Attachment adnate; moderately close, with many series of lamellulae; colour cinnamon-brown. **Stipe (Stem)**
Eccentric to nearly lateral; up to 4 mm long, short, curved, covered with a whitish bloom, base fluffy. **Spore Print** Purple-brown

**Microscopic Features**
Basidiospores 6.5–8.5 × 4–5.5 µm, ellipsoidal, smooth, with a distinct apical germ pore. Basidia four-spored, 16–28 × 5–10 µm, clavate. Clamp connections present.

**Comments**
*Deconica horizontalis* is recognised by its small size, brownish pileus and lamellae, and its short curved stipe. The short stipe is curved in such a way as to allow the lamellae to face downwards. Classification-wise, this species has gone through some tumultuous changes: Noordeloos (1995) moved this species into the genus *Psilocybe*; phylogenetic analysis performed by Matheny et al. (2006) split *Psilocybe* into two well supported clades (one predominantly with hallucinogenic species and the other with non-hallucinogenic species); Redhead et al. (2007) proposed to conserve the name *Psilocybe* for the hallucinogenic species; this implied that the non-hallucinogenic species had to be rearranged. As this species is non-hallucinogenic, Noordeloos (2009) placed it in the genus *Deconica* as *D. horizontalis*. The phylogenetic studies performed by Ramírez-Cruz et al. (2013) have resolved relationships within *Deconica* and *Psilocybe* and have given us a better understanding of species in these related genera.

**References**


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**D**=Description; **I**=Illustration; **CI**=Colour Illustration; **P**=Photo; **CP**=Colour Photo
2.1. Order: Agaricales

Fam. Strophariaceae

*Hypholoma australe*

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Hypholoma australe

Biology
Saprotrophic basidiomycete; gregarious to caespitose, usually at the base of stumps, but when on the ground it is above buried decaying wood; causes white rot. When seen at the base of live trees it is growing on the dead bark.

Fruit-body Description
Pileus (Cap) Diameter to 55 mm or more; convex button at first, becoming broadly convex to irregularly convex; surface smooth, almost waxy to the touch, covered with small white fibrillose scales, most dense at the margin; fibrillose scales disappear with age; colour initially brick-red, with age becoming orange-red, usually paler towards the margin. Lamellae (Gills) Attachment adnate; moderately close; colour yellow-green at first, becoming yellowish, then darkening to a purplish brownish grey as spores mature. Stipe (Stem) Central; generally up to 50 mm long and 5 mm thick; cylindrical, equal; surface fibrillose, shaggy fibrillose from veil remnants; colour light brown, becoming dark brown with age, veil remnants white. Inner Veil white, when intact submembranous, usually evanescent, produces a fibrillose annular zone on the stipe. Spore Print Purple-brown

Microscopic Features
Basidiospores 6–8.5 × 4–5 µm, ellipsoidal, smooth, with a distinct apical germ pore. Basidia four-spored, 20–30 × 5–7 µm, clavate. Pleurocystidia 31–46 × 8–11 µm, clavate to clavate-mucronate (with short pointy end), often with yellow oil bodies near apex. Clamp connections present.

Comments
Hypholoma australe has the common name “Brick Caps”, which describes the colour of the pileus of the young fruit-bodies. This species is identified by its reddish pileus with white scales, particularly near the margin, its shaggy fibrillose stipe and its caespitose growth on wood. Hypholoma australe was originally known as H. sublateritium because of its similarity to the northern hemisphere species of that name. In 1996, O. K. Miller Jr. and M. H. Pearce, using mating experiments between the Australian and North American species, conclusively proved that these fungi were not the same species. As a result the Australian version of H. sublateritium was renamed as H. australe.

References
 p. 97 [D CP] (as *Hypholoma sublateritium*)

 p. 95 [D CP]

 p. 539 [D I] (as *Hypholoma sublateritium*)


 p. 144 [D I] (as *Hypholoma sublateritium*)

D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Hypholoma brunneum
2.1. Order: Agaricales

**Hypholoma brunneum**

*Hypholoma brunnea*

**Biology**
Saprotrophic basidiomycete; usually in dense caespitose clumps on decaying wood such as tree stumps or fallen logs and branches; rarely on the ground above buried decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 60 mm or more; convex button at first, becoming broadly convex, sometimes slightly umbonate; surface smooth, viscid when moist, covered with small white fibrillose scales, most dense at the margin, fibrillose scales disappear with age; colour varies from dark reddish brown to dark olive-brown, becoming darker (almost black) with age. **Lamellae (Gills)** Attachment adnate; moderately close; colour brownish cream, becoming dull brown as spores mature. **Stipe (Stem)** Central; generally up to 60 mm long and 6 mm thick; cylindrical, equal; surface fibrillose, shaggy fibrillose below annular fibrillose zone; colour pallid to light brown, veil remnants white. **Inner Veil** white, usually evanescent, produces a fibrillose annular zone on the stipe. **Spore Print** Purple-brown

**Microscopic Features**
Basidiospores 6–7.5 × 3.5–5 µm, ellipsoidal, smooth, has a distinct apical germ pore. Basidia four-spored, 18–31 × 5–7 µm, clavate. Pleurocystidia 25–32 × 11–12 µm, clavate to clavate-mucronate (with short pointy end), often with brown oil bodies near apex. Clamp connections present.

**Comments**
*Hypholoma brunneum* is usually recognised by its brown pileus with white fibrillose scales around its margin, its pale fibrillose stipe, and its caespitose growth on dead wood. It is also found in New Zealand.

**References**
2.1. Order: Agaricales

**Fam. Strophariaceae**

*Hypholoma fasciculare*

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**Hypholoma fasciculare**

*Naematoloma fasciculare*

**Biology**
Saprotrophic basidiomycete; usually in dense caespitose clumps on decaying wood such as tree stumps or fallen logs and branches; rarely on the ground above buried decaying wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 50 mm or more; young convex button becoming convex then broadly convex, sometimes slightly umbonate, margin often with yellowish veil fragments when young; surface smooth, not viscid, dull; colour when young yellow-orange then bright sulphur-yellow to greenish yellow, centre usually darker, colour may fade with age. **Lamellae (Gills)** Attachment adnate; crowded; colour sulphur-yellow when young, then greenish, becoming purplish brown to blackish when spores mature. **Stipe (Stem)** Central; generally up to 90 mm long and 10 mm thick; cylindrical, equal; surface smooth, finely longitudinally fibrillose, when young there is a yellowish fibrillose zone from veil remnants on the upper third; colour sulphur-yellow, reddish brown towards the base. **Inner Veil** present in the button stage, soon disappearing, leaving a fibrillose zone on the stipe. **Spore Print** Purple-black

**Microscopic Features**
Basidiospores 6–9 × 4–5.5 µm, ellipsoidal, smooth, has a distinct apical germ pore. Basidia four-spored, 20–32 × 5–7 µm, clavate. Pleurocystidia 22–52 × 6–12 µm, clavate to clavate-mucronate (with short pointy end), often with oil bodies near apex. Clamp connections present.

**Comments**
*Hypholoma fasciculare* has the common name of “Sulphur Tuft”. This species, which is found on decaying wood, is recognised by the sulphur-yellow fruit-body, the greenish yellow lamellae, and its caespitose habit. *Hypholoma fasciculare* is a common species, also found in the northern hemisphere.

**References**


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Leratiomyces ceras
2.1. Order: Agaricales

Fam. Strophariaceae

**Leratiomyces ceres**

*Stropharia aurantiaca  Naematoloma aurantiaca  Hypholoma aurantiaca*

**Biology**
Saprotrophic basidiomycete; scattered or gregarious on woodchips, in sawdust, lawns, gardens or in forest litter.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 40 mm or more; convex, then broadly convex, finally flat or broadly funnel-shaped, margin usually with white veil fragments; surface smooth, greasy, sticky when moist, soon drying; colour variable, ranging from orange-red, reddish brown, brick-red to tomato-red. **Lamellae (Gills)** Attachment adnexed; moderately close; colour initially pallid, becoming greyish brown then purplish brown as spores mature. **Stipe (Stem)** Central; generally up to 100 mm long and 10 mm thick; cylindrical, slender, base slightly swollen; surface smooth, with coarse (strigose) hairs at the base, with or without a fibrillose annular zone; colour white towards the apex, with brownish red tints towards the base. **Inner Veil** white, usually evanescent. **Spore Print** Dark purple-brown

**Microscopic Features**
Basidiospores 10–14 × 6–9 \( \mu \text{m} \), ellipsoidal, smooth, with a distinct apical germ pore. Basidia four-spored, 27–39 × 8–14 \( \mu \text{m} \), clavate. Clamp connections present.

**Comments**
*Leratiomyces ceres* is readily recognised by its growth habit and bright reddish to reddish brown pileus. This species is very common in parks and gardens, indicating that it is most likely an introduced species. DNA analysis by Bridge et al. (2008) showed that this species does not belong to the *Stropharia* genus, but to a closely related genus *Leratiomyces*.

**References**
2.1. Order: Agaricales


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D = Description; I = Illustration; CI = Colour Illustration; P = Photo; CP = Colour Photo
Pholiota communis
**Pholiota communis**

**Biology**
Saprotrophic basidiomycete; solitary, often gregarious or caespitose on the ground amongst leaf litter or on woody debris such as woodchips.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 75 mm or more; initially convex, soon becoming plane, or broadly umbonate, margin sometimes with yellowish veil remnants; surface smooth, viscid when moist, sometimes slightly fibrillose, or with widely spaced scales, more scaly towards the centre; colour variable, ranging from chestnut brown to ochraceous brown. **Lamellae (Gills)** Attachment adnate to sinuate with a slight decurrent tooth; moderately close; colour at first greenish yellow, becoming brownish as spores mature. **Stipe (Stem)** Central; generally up to 75 mm long and 10 mm thick; slender, base slightly bulbous; surface smooth at apex, becoming fibrillose and scaly towards the base; colour pale fawn with brownish scales. **Annulus** visible only when young, yellowish, evanescent, may leave a fibrillose ring on the stipe, and veil fragments on the pileus margin. **Spore Print** Dull brown

**Microscopic Features**
Basidiospores 6.5–10 × 5–6.5 µm, ellipsoidal, smooth, with germ pore. Basidia four-spored, 23–33 × 7–10 µm, clavate. Clamp connections present.

**Comments**
*Pholiota communis* is recognised by its caespitose habit on woody debris, its brownish viscid pileus, and pale stipe with brownish fibrils towards the base. In the bush it is usually found on woody debris at the base of trees, but it is more common on woodchips in garden beds.

**References**
 p. 157 [D CP]

 p. 524 [D I]
2.1. Order: Agaricales

**Pholiota highlandensis**
Pholiota highlandensis

Pholiota carbonaria

Biology
Saprotrophic basidiomycete; solitary or gregarious on burnt ground amongst charcoal, or on burnt wood; often found in old campfire sites.

Fruit-body Description
Pileus (Cap) Diameter to 25 mm or more; at first almost hemispherical, becoming convex, then expanding to almost plane, sometimes slightly umbo-nate; surface smooth, slightly viscid when moist, shiny when dry; colour dark tan to chestnut, or yellowish brown. Lamellae (Gills) Attachment broadly adnate and notched; moderately close, margin slightly serrate; cream-coloured when young, becoming pale grey-brown as spores mature. Stipe (Stem) Central; generally up to 50 mm long and 5 mm thick; almost slender; surface covered with projecting brownish fibrillose scales; colour pale yellowish brown to brown. Annulus visible only when young, yellowish, rudimentary, leaving an evanescent fibrillose zone on the stipe. Spore Print Brown

Microscopic Features
Basidiospores 6–9 × 4–6 µm, ellipsoidal, with indistinct apical germ pore. Basidia four-spored, 18–24 × 5–8 µm, clavate. Pleurocystidia and cheilocystidia fusiform, projecting conspicuously beyond the basidia. Clamp connections present.

Comments
Pholiota highlandensis is readily identified by its sticky brownish pileus, its fibrillose stipe and its association with charcoal. It is a cosmopolitan species and is found on burnt-over soil or on charcoal, and is often found on old campfire sites. It is also an early coloniser after bush fires.

References


Pholiota malicola
**Pholiota malicola**  
*Flammula malicola*

**Biology**
Saprotrophic basidiomycete; gregarious, usually caespitose on rotting wood, woody debris such as woodchips and, if on the ground, above rotting buried wood.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 60 mm or more; at first slightly conic, soon convex, becoming plane or broadly umbonate, sometimes with veil remnants at margin; surface smooth, viscid when moist, shiny when dry; colour variable, ranging from yellow to yellow-orange, orange or orange-buff, fading with age, slightly hygrophanous. **Lamellae (Gills)** Attachment adnate to sinuate; close; colour at first yellowish, becoming rust-brown as spores mature. **Stipe (Stem)** Central; generally up to 100 mm long and 10 mm thick; equal, base sometimes enlarged; surface smooth, dry, fibrillose but not scaly; colour at first same as pileus, usually paler at apex. **Annulus** visible only when young, yellowish, rudimentary, leaving an evanescent fibrillose zone on the stipe. **Spore Print** Rust brown

**Microscopic Features**
Basidiospores 8.5–11 × 4.5–5.5 µm, ellipsoidal to ovate, smooth, with small germ pore. Basidia four-spored, 25–33 × 6–8 µm, clavate. Clamp connections present.

**Comments**
*Pholiota malicola* is recognised by its caespitose habit, its smooth yellowish orange pileus and stipe, and yellowish to rust-brown lamellae.

**References**


Pholiota squarrosipes
Pholiota squarrosipes

Biology
Saprotrophic basidiomycete; gregarious, usually caespitose on the ground, amongst leaf litter, mulch, or near stumps, in native and pine forest.

Fruit-body Description
Pileus (Cap) Diameter to 75 mm or more; at first convex, then slightly umbonate, margin often wavy with velar remnants attached; surface viscid when moist, nearly smooth, sometimes with erect fibrillose scales; colour variable, ranging from brownish cream to bright tan. Lamellae (Gills) Attachment adnate or with a decurrent tooth; at first closed with a veil; moderately close; initially cream-coloured, turning brownish as spores mature. Stipe (Stem) Central; up to 80 mm long and up to 12 mm thick, narrowing slightly towards the base; shaggy fibrillose from base to annulus, slightly fibrillose from annulus to just under the lamellae; colour similar to pileus but lighter; white mycelium at base. Annulus present only when young, fibrillose ring remains visible.

Spore Print Brown

Microscopic Features

Comments
This species is readily identified by its caespitose growth habit, viscid, brightly coloured pileus with veil remnants, and shaggy fibrillose stipe.

References
Protostropharia semiglobata
Protostropharia semiglobata

*Biology*
Saprotrophic basidiomycete; solitary or in small groups, almost exclusively on herbivore dung, such as wombat, cow, or horse dung.

**Fruit-body Description**

*Pileus (Cap)* Diameter to 25 mm or more; hemispherical, then expanding to convex; surface smooth, viscid to glutinous, margin even; colour light yellow, sometimes a little darker in the centre. *Lamellae (Gills)* Attachment adnate; moderately close; colour initially pallid, becoming purplish brown, then mottled black as spores mature. *Stipe (Stem)* Central; generally up to 100 mm long and 3 mm thick; cylindrical, slender; surface smooth, viscid to glutinous below the glutinous annulus; colour white towards the apex and yellowish towards the base. *Inner Veil* white, usually evanescent, leaving a spore-covered glutinous ring on the stipe. *Spore Print* Black

**Microscopic Features**

**Comments**
*Protostropharia semiglobata* is readily recognised by its viscid, yellow, hemispherical pileus, its long slender glutinous stipe, and growth on herbivore dung. It is a European species that has most likely been introduced into Australia with domestic stock.

**References**
2.1. Order: Agaricales


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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
2.1. Order: Agaricales

Fam. Strophariaceae

**Stropharia formosa**

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Fam. Strophariaceae

**Stropharia formosa**  
*Psilocybe formosa*

**Biology**  
Saprotrophic basidiomycete; solitary, or scattered, on the ground amongst woody mulch or leaf litter, or on rotting wood.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 55 mm or more; when young broadly conic, expanding to broadly umbонate or convex, with appendiculate veil remnants on the margin; surface slimy, viscid, drying to glabrous; colour burgundy, rich date brown, becoming brown with a vinaceous tint, or dull brown. **Lamellae (Gills)** Attachment adnate; close; colour at first yellowish grey or pallid, as spores mature becoming greyish brown or dark grey; margin pale. **Stipe (Stem)** Central; up to 80 mm long and 8 mm thick; more or less cylindrical; surface dry, flocculose (scaly) below the annulus; white mycelium at the base; colour pallid, grading to pale creamy brown towards base. **Veil** usually well developed, pale yellow. **Spore Print** Black

**Microscopic Features**

Basidiospores $9–12 \times 5.5–7.5 \, \mu m$, smooth, ellipsoidal, with a germ pore. Basidia normally four-spored, rarely two- or three-spored, $21–31 \times 6–12 \, \mu m$, clavate. Clamp connections present.

**Comments**

*Stropharia formosa* is a handsome tallish fungus, readily identified by its slimy burgundy to brownish pileus with appendiculate veil remnants on the margin, greyish lamellae and pale scaly stipe.

**References**


  **p. 59 [D CP]** (as *Stropharia* sp.)

  **p. 145 [D CP]**

Collybia eucalyptorum
**Collybia eucalyptorum**

**Biology**
Saprotrophic basidiomycete; in moist to wet forest, gregarious to caespitose on wood, usually at the bases of stumps or old eucalypt trunks.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 38 mm or more; convex to broadly convex; surface smooth, dry; colour buffy cinnamon at centre, becoming pallid towards the margin. **Lamellae (Gills)** Attachment adnexed; close to crowded; cream-coloured. **Stipe (Stem)** Central; generally up to 60 mm long and 5 mm thick, slender, smooth, cartilaginous, often hollow; colour reddish brown.

**Spore Print** White

**Microscopic Features**
Basidiospores 5.5–8 × 3–5.5 μm, ellipsoidal, smooth. Basidia four-spored, 23–34 × 6.5–9.5 μm, clavate. Cheilocystidia 16–25 × 3.5–10.5 μm, fusoid, some with large excrescences. Clamp connections present.

**Comments**
The pale coloured pileus, the smooth, reddish brown stipe and the lignicolous habit of this species makes identification not too difficult. Also, it is one of a few species of *Collybia* that have conspicuous cheilocystidia.

**References**

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D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Conchomyces bursiformis
Conchomyces bursiformis

Agaricus bursaeformis  Pleurotus bursaeformis
Agaricus euphyllus  Hohenbuehelia bursaeformis
Agaricus guilfoylei  Hohenbuehelia dimorphocystis
Agaricus sordulentus  Resupinatus sordulentus
Conchomyces verrucisporus  Conchomyces bursaeformis

Biology
Saprotrophic basidiomycete; solitary or in small to large colonies on dead wood such as decaying logs in wet forest.

Fruit-body Description
Pileus (Cap) Up to 60 mm broad, varying in shape from fan- or shell-shaped, to having irregular lobes; margin initially inrolled, becoming fully expanded with age; surface nearly smooth or finely hairy, becoming scaly at point of contact with substrate, sometimes striate towards the margin; colour white, pale cream to light brown, sometimes with a greenish tint, with age becoming ochraceous, strongly hygrophanous. Context tough to subgelatinous, rubbery, white to very pale brown. Lamellae (Gills) Radiating from rudimentary stipe, or from point of attachment to the substrate, close; colour white to cream, often with transverse striations on both faces. Stipe (Stem) None, or when present either rudimentary or cylindrical, up to 10 mm long and 3 mm thick, eccentric to laterally attached; concolorous with pileus; surface felty and dry. Spore Print White

Microscopic Features
Basidiospores 5.5–8 × 5–6 μm, ovoid to subglobose, covered in small spines. Basidia four-spored, 20–25 × 6–8 μm, clavate. Clamp connections present.

Comments
Conchomyces bursiformis is a relatively rare fungus found throughout Australasia and Java (Indonesia). It is readily recognised by its smooth, pale cream to light brown, rubbery, shell-shaped pileus (up to 60 mm broad), which is attached to decaying wood by a very short stipe, and its white lamellae and spores. Although this species is readily recognisable, its mix of characteristics made it very difficult to assign to a genus (Horak 1981). It was first described from Tasmania in 1860, by Berkeley as Agaricus bursaeformis. In 1887 he transferred it to Pleurotus bursaeformis. In 1927 Casper van Overeem, a Dutch mycologist, described a new species he found in Java as Conchomyces verrucisporus. (The significance of this will become apparent later). The species
was still producing problems. In 1963 Derek Reid, a mycologist at the Royal Botanic Gardens, Kew, renamed it *Hohenbuehelia bursaeformis*. Egon Horak, who had come across Overeem’s description, and in 1977 had collected new material in Java, finally re-described this species in 1981 and placed it in the genus *Conchomyces* (Horak, 1981). He concluded that *Conchomyces verrucisporus* described by Overeem is the same as *Agaricus bursaeformis* described by Berkeley in 1860. Horak renamed this species *Conchomyces bursaeformis*. Using present day nomenclature it is now known as *C. bursiformis*. A DNA study carried out by Moncalvo *et al.* (2002) proved that Horak was correct in placing this species in its own genus.

**References**


Lepista nuda
Lepista nuda
Clitocybe nuda

Biology
Saprotrophic basidiomycete; solitary, gregarious or caespitose on the ground, in humus, heavily mulched garden beds, or in decaying leaf litter.

Fruit-body Description
Pileus (Cap) Diameter to 60 mm or more; when young, broadly convex with inrolled margin, becoming plane, occasionally with a broad low umbo, margin at times uplifted, wavy or irregular; surface glabrous, often lustrous when dry; colour shades of violet or purple when young and fresh, with age slowly fading to drab cinnamon buff with only a slight violet tinge at the margin.

Lamellae (Gills) Attachment adnexed to sinuate, occasionally subdecurrent; close; colour at first pale violet or lavender, becoming buff or brownish with age.

Stipe (Stem) Central; generally up to 60 mm long and 25 mm thick; usually stout, equal, base sometimes slightly bulbous, with whitish mycelium at the base; surface dry, fibrillose to scurfy; colour violet to lavender, bruising a dull lavender, with age turning brown from the base upwards.

Spore Print
Dull pinkish

Microscopic Features
Basidiospores 5.5–8.5 × 3.5–5 µm, ellipsoidal, minutely verrucose (warty), roughened. Basidia four-spored, 23–36 × 7–10 µm, clavate. Clamp connections present.

Comments
When young and fresh, Lepista nuda is readily identified by its overall violet to lavender colour; when it ages it loses its violet coloration and starts to turn a dull cinnamon-brown, then field identification becomes a little more difficult and confusion with some species of Cortinarius is possible. Careful attention to the spore colour needs to be made. In Australia, Lepista nuda is an introduced species, usually found in nature strips, garden beds, or on the periphery of native forests, but seldom deep within native forests. It has been shown that Lepista belongs inside the Clitocybe clade: genetically Lepista is a Clitocybe, although not a typical one, because it has pinkish roughened spores instead of smooth whitish spores and its lamellae are not strongly decurrent.

References
Brittonia Vol. 21(2), pp. 144–177 [D P] (as Clitocybe nuda)
2.1. Order: Agaricales

Fam. Tricholomataceae

*Leucopaxillus cerealis*
2.1. Order: Agaricales

Fam. Tricholomataceae

**Leucopaxillus cerealis**

*Leucopaxillus albissimus*

**Biology**
Most likely a saprotrophic basidiomycete; solitary or gregarious on the ground amongst leaf litter under a variety of trees, including conifers and *Eucalyptus* spp.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young convex with an inrolled margin, expanding to nearly plane; surface dry, dull, glabrous when young and moist, often cracking or becoming scaly when dry and with age; colour when very young pure white, with age becoming tinted yellowish brown, darker in the centre. **Context** white, does not bruise, with age becoming cream-coloured. **Lamellae (Gills)** Attachment subdecurrent to decurrent; close, thin; colour white at first, becoming pale buff with age. **Stipe (Stem)** Central; generally up to 60 mm long and 30 mm thick; stout, cylindrical, often enlarged at the base, growing from copious dense white mycelium; surface smooth to finely scaly; colour when young creamy white, becoming pale buff with age. **Spore Print** White

**Microscopic Features**
Basidiospores 7–8.5 × 4–5.5 μm (including ornamentations), ellipsoidal to almost oval, hyaline, often with one oil drop, and with scattered strongly amyloid warts. Basidia four-spored, 29–36 × 5.–8 μm, narrowly clavate, often with a clamp connection at the base. Cystidia: cheilocystidia and pleurocystidia present, filamentous, often with short branches, often septate, not easy to find in some specimens but abundant in others. Clamp connections present.

**Comments**
*Leucopaxillus cerealis* is a moderately large agaric which has a whitish to pale fawn pileus, whitish decurrent lamellae and a stout white stipe, at the base of which is a dense white mycelial mat. Another feature of this species is its resistance to decay: non-waterlogged specimens can survive for months. Although these features would make it seem easy to identify this species, according to Singer and Smith (1943) there is a complex of closely related species that could make identification difficult. It is also possible that *Leucopaxillus cerealis* does not belong to a complex of species but is a single variable species. More taxonomic work needs to be done on this genus in order to clarify the number of species within it. The longevity of the fruit-body is made possible
by the presence of antibacterial, antifungal and antioxidant compounds (Marx 1969).

References


2.1. Order: Agaricales

Fam. Tricholomataceae

*Leucopaxillus eucalyptorum*
Leucopaxillus eucalyptorum

Clitocybe eucalyptorum

Biology
Most likely a saprotrophic basidiomycete; solitary or gregarious on the ground amongst leaf litter under Eucalyptus spp.

Fruit-body Description
Pileus (Cap) Diameter to 150 mm or more; initially convex, with inrolled margin, then becoming broadly convex, then becoming plane and centrally depressed; surface dry, innately fibrillose, slightly velvety, becoming scaly in the centre; colour drab, dull creamy brown to dull tan, usually darker in the centre, sometimes with mottled patches. Lamellae (Gills) Attachment adnate to moderately decurrent; crowded; colour white to cream, sometimes bruising brownish when older. Stipe (Stem) Central; generally up to 100 mm long and 25 mm thick; rather stout, with swollen base; dense white mycelium in the substrate near the base; surface dry, finely fibrillose; colour pallid to whitish.

Spore Print White

Microscopic Features
Basidiospores 4–7 × 3.5–5.5 µm, short ellipsoidal to subglobose, warty-rough. Basidia four-spored, 24–35 × 6–9 µm, clavate. Clamp connections present.

Comments
Leucopaxillus eucalyptorum is a stout fungus usually found near the base of old eucalypts. It is identified by its brownish velvety pileus, whitish stipe and lamellae, and copious white mycelium in the mulch and soil near the base of the stipe.

References

Leucopaxillus gentianeus
**Leucopaxillus gentianaeus**

*L. amarus*

**Biology**
Most likely a saprotrophic basidiomycete; solitary or gregarious on the ground amongst leaf litter under conifers.

**Fruit-body Description**

**Pileus (Cap)** Diameter to 100 mm or more; when young convex with an inrolled margin, expanding to nearly plane, with age may become upturned, margin slightly striate; surface dry, dull, glabrous when young and moist, often cracking or becoming scaly when dry and with age; colour when young reddish-brown to brown, with age becoming dull brown, usually lighter towards the margin. **Context** white, does not bruise, with age becoming cream-coloured.

**Lamellae (Gills)** Attachment adnate to slightly decurrent; close, thin; colour white, becoming pale buff with age. **Stipe (Stem)** Central; generally up to 80 mm long and 40 mm thick; stout, cylindrical, often enlarged at the base, growing from copious dense white mycelium; surface smooth to felty; colour white to cream, may become stained pallid brown with age. **Spore Print** White

**Microscopic Features**
Basidiospores 4–5.5 × 3.5–5 µm (including ornamentations), short ellipsoidal to subglobose, hyaline, ornamentation difficult to see in KOH, amyloid warts easily seen with Melzer’s reagent. Basidia four-spored, 21–30 × 5–7 µm, narrowly clavate, often with a clamp connection at the base. Cystidia: cheilocystidia filamentous. Clamp connections present.

**Comments**
*Leucopaxillus gentianaeus* is found under conifers and can readily be identified by its large size, brownish pileus and white lamellae and stipe. This is a northern hemisphere species which has been introduced into Australia and at present is not common. *L. gentianaeus* is very similar in appearance to *L. eucalyptorum*, which does not grow under conifers.

**References**


2.1. Order: Agaricales

Fam. Tricholomataceae

*Leucopaxillus lilacinus*
Leucopaxillus lilacinus

Biology
Most likely a saprotrophic basidiomycete; solitary or gregarious on the ground amongst leaf litter under *Eucalyptus* spp.

Fruit-body Description
Pileus (Cap) Diameter to 100 mm or more; initially convex, with inrolled margin, becoming broadly convex, or becoming plane and centrally depressed, margin grooved; surface dry, smooth, very slightly velvety; colour entirely lilac, not changing with age, sometimes mottled with paler shades. Lamellae (Gills) Attachment adnate to subdecurrent; crowded; sometimes forked and interconnected (anastomosing); colour white to cream, occasionally bruising brownish when older. Stipe (Stem) Central; generally up to 60 mm long and 25 mm thick; stout-clavate, with dense white mycelium in the substrate near the base; surface dry, smooth; colour light shade of lilac, becoming white at apex. Spore Print White

Microscopic Features
Basidiospores 6–7.5 × 4–5.5 μm, short ellipsoidal to ovoid, warty-rough as seen in Melzer’s reagent, warts are removed by KOH solution. Basidia four-spored, 34–55 × 6–11 μm, clavate. Clamp connections present.

Comments
*Leucopaxillus lilacinus* is a stout fungus usually found at the base of eucalypts. It is identified by its lilac pileus and stipe, whitish lamellae, and copious white mycelium in the mulch and soil near the base of the stipe.

References
Resupinatus cinerascens

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**Resupinatus cinerascens**

*Pleurotus cinerascens*

**Biology**
Saprotrophic basidiomycete; usually gregarious, its shell-like fruit-bodies often overlapping on dead twigs, decaying wood or woody bark.

**Fruit-body Description**

**Pileus (Cap)**
Up to 12 mm in diameter; convex to cup-shaped, becoming flattened; surface dry, when young hoary, covered with tufts of white hairs, with age surface becomes smooth with only a remnant of hairy fibrils left on the margin; colour brownish grey to sooty grey. **Flesh** thin, dark, rubbery, gelatinous.

**Lamellae (Gills)**
Radiating from point of attachment, moderately close, with numerous lamellulae, margin pale to white.

**Stipe (Stem)**
Absent; fruit-body eccentrically attached to substrate at the apex of the pileus.

**Spore Print**
White

**Microscopic Features**
Basidiospores 5.5–9.5 × 3.5–5.5 μm, ellipsoidal, smooth. Basidia two- or four-spored, 19–22 × 4.5–6.5 μm, clavate, with robust sterigmata up to 7 μm long. Cheilocystidia 19–34 μm long, diverticulate (having numerous short branches or peg-like protrusions over the surface). Pileal cuticle consists of a gelatinous matrix of cylindrical hyphae 3–8 μm diameter, with abundant finger-like protrusions with numerous encrusting crystals. Clamp connections present.

**Comments**
*Resupinatus cinerascens* is a beautiful small bracket, found on decaying twigs or woody bark. This species is evidently closely related to *R. applicatus* and *R. subapplicatus*, but can be separated using microscopic features. *R. applicatus* has different pileal cells without any embedded crystals, and widely spaced lamellae, while *R. subapplicatus* has smaller subglobose spores. The white hoary patches on the young fruit-bodies of *R. cinerascens* are usually more pronounced than those on *R. applicatus* and *R. subapplicatus*, but this is not an accurate diagnostic feature because the hoary patches are quickly lost with age.

**References**


Willis JH (1957) *Victorian Toadstools and Mushrooms*. 2nd edn. The Field Naturalists Club of Victoria.  p. 57 [D] (as *Pleurotus cinerascens*)
Resupinatus subapplicatus
2.1. Order: Agaricales

Fam. Tricholomataceae

Resupinatus subapplicatus

Pleurotus subapplicatus

**Biology**
Saprotrophic basidiomycete; usually gregarious, its shell-like fruit-bodies sometimes overlapping on decaying *Eucalyptus* wood or woody bark.

**Fruit-body Description**

**Pileus (Cap)**
Diameter up to 16 mm but often much less (approximately 6 mm); convex, becoming depressed towards the attachment, at first inverted saucer-shaped, becoming fan-shaped; surface hairy, powdery then rather rough; colour pallid grey or greyish brown. **Flesh** thin, with a dark, gelatinous upper layer. **Lamellae (Gills)** Radiating from a lateral or eccentric point of attachment, moderately close, with numerous lamellulae, initially white, then grey with a light brown tint. **Stipe (Stem)** No definite stipe present.

**Spore Print** White

**Microscopic Features**
Basidiospores 4.5–7.5 × 3.5–6.5 μm, subglobose, smooth. Basidia four-spored, 18–33 × 6–8 μm, clavate, with robust sterigmata up to 6 μm long. Cheilocystidia 10–21 μm long, diverticulate (having numerous short branches or peg-like protrusions over the surface), forming a sterile lamella edge. Pileal cuticle consists of filamentous, nodulose-diverticulate hyphae. Clamp connections present.

**Comments**
*Resupinatus subapplicatus* is a small grey bracket, found on decaying *Eucalyptus* wood or woody bark. This species is evidently closely related to *R. applicatus* and *R. cinerascens*, but can be separated using microscopic features. *R. applicatus* has different pileal cells without any embedded crystals, and widely spaced lamellae, while *R. cinerascens* has larger ellipsoidal spores.

**References**


2.1. Order: Agaricales

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Fam. Tricholomataceae

*Rimbachia bryophila*

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2.1. Order: Agaricales

**Fungi in Australia** 499

Fam. Tricholomataceae

**Rimbachia bryophila**

*Cantarellos bryophilus*  *Mniopetalum bryophilum*

*Leptoglossum bryophilum*

**Biology**
Possibly parasitic basidiomycete; scattered to gregarious, found growing on mosses.

**Fruit-body Description**

**Pileus (Cap)** Very small, up to 6 mm diameter, pendulous cupulate, then pleurotoid to broadly fan-shaped; margin incurved, decurved in age, sometimes wavy; surface dry, slightly pubescent near the base, elsewhere glabrous or matted-fibrillose; colour white. **Lamellae (Gills)** Thick lamellae-like folds, distant, radiating from basal attachment point; colour white, with age becoming stained. **Stipe (Stem)** Absent or lateral; attachment eccentric or lateral.

**Spore Print** White

**Microscopic Features**
Basidiospores 6–7 × 4.5–6.5 µm, subglobose to broadly tear-drop-shaped, smooth, thin-walled, with conspicuous apiculus up to 2.0 µm long. Basidia four-spored, 20–25 × 6–8 µm, clavate. Clamp connections present.

**Comments**
*Rimbachia bryophila* is a cosmopolitan species. As its name would suggest, it is usually found growing on moss, and it is likely that this association with mosses is a parasitic one, as patches of dead moss are often found near the fruit-bodies. It can be recognised in the field by its small size, laterally attached white pileus, lack of stipe, and lamellae that look like thick folds. The latter feature helps to separate it from other diminutive species such as those of *Crepidotus*.

**References**


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*D*=Description; *I*=Illustration; *CI*=Colour Illustration; *P*=Photo; *CP*=Colour Photo
Scytinotus longinquus
Scytinotus longinquus  
*Panellus longinquus*  *Pleurotopsis longinqua*

**Biology**
Saprotrophic basidiomycete; solitary or gregarious, usually on damp dead fallen or standing branches or twigs.

**Fruit-body Description**
**Pileus (Cap)**  Up to 40 × 20 mm; when young almost circular, becoming fan-shaped or irregularly lobed, in profile broadly convex, margin inrolled; surface glabrous, often viscid, translucent when moist; colour when very young white, becoming pinkish brown then finally cinnamon-brown. **Flesh** thin, firm, almost gelatinous. **Lamellae (Gills)** Attachment decurrent; moderately close when young, becoming subdistant with age; colour initially white, then pale yellow-cream, becoming peach-coloured as spores mature. **Stipe (Stem)** Lateral to radially eccentric; generally up to 5 mm long and 5 mm thick, short, stout, same colour as lamellae, usually with a wad of white mycelium at the base. **Spore Print** White

**Microscopic Features**
Basidiospores 6–10.5 × 3–5 μm, ellipsoidal to almost cylindrical, smooth. Basidia four-spored, 30–42 × 4–6 μm, clavate.

**Comments**
*Scytinotus longinquus* is readily recognised by its beautiful translucent fruit-body, the pinkish brown, almost gelatinous-like pileus, pinkish lamellae, and short lateral stipe that is the same colour as the lamellae. This species also occurs in North and South America and New Zealand. DNA analysis (Hughes *et al.* 1998) indicates that this species is native to Australia and New Zealand and the American populations are most likely due to unintentional distribution caused by human migration.

**References**
  p. 159 [D CP] (as *Pleurotopsis longinqua*)
  p. 126 [D CP] (as *Panellus longinquus*)
  Vol. 90(4),  
  pp. 595–600 (as *Pleurotopsis longinqua*)

Singerocybe clitocyboides
**Singerocybe clitocyboides**

*Clitocybe clitocyboides*

**Biology**
Saprotrophic basidiomycete; found on the ground in wet eucalypt forest and rainforest, either solitary or in small groups.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 75 mm or more; funnel-shaped; surface has a silky smooth, waxy texture due to inflated hyphal cells in the pileus cuticle; colour cream to brownish cream. **Lamellae (Gills)** Attachment decurrent; crowded; colour white at first, becoming creamy with age. **Stipe (Stem)** Central; generally up to 65 mm long and 7 mm thick; smooth, same colour as pileus.

**Spore Print** White

**Microscopic Features**

**Comments**
*Singerocybe clitocyboides* is recognised by its pale colour and decurrent lamellae. Microscopically it can readily be identified by the inflated hyphal cells in the pileus cuticle. It is found on soil, and has no distinctive odour. There are similar looking species, most of which have distinctive odours, such as *Clitocybe paraditopa* which smells like wattle blossom.

**References**
Tricholoma eucalypticum
**Tricholoma eucalypticum**

*Tricholoma coarctata*  *Lyophyllum eucalypticum*

**Biology**
Mycorrhizal basidiomycete; found on the ground amongst litter, usually in caespitose clumps or small groups under a variety of *Eucalyptus* species in wet or dry sclerophyll forests.

**Fruit-body Description**

**Pileus (Cap)**
Diameter to 100 mm or more; initially convex, becoming broadly convex, then irregularly convex, with an incurved margin; surface in moist conditions sticky-viscid, in dry conditions smooth, sometimes with scales, shiny, with radial fibrils; colour brownish to pinkish-brown, darker in the centre.

**Lamellae (Gills)**
Attachment adnexed to sinuate; moderately close to crowded, edge smooth; colour white, then cream-coloured, with age developing rusty brown spots.

**Stipe (Stem)**
Central; generally up to 80 mm long and 40 mm or more thick; stout, cylindrical at the apex becoming more club-shaped towards the base; surface dry, grading from fibrillose to scaly towards the base; colour whitish at the apex, grading to pinkish brown towards the base.

**Spore Print**
White

**Microscopic Features**

Basidiospores 5–6.5 × 3.5–4.5 µm, broadly ellipsoidal to subglobose. Basidia four-spored, 28–44 × 5–8 µm, slender clavate. Cystidia absent. Clamp connections absent.

**Comments**

It seems that *Tricholoma eucalypticum* is found throughout Australia where there are *Eucalyptus* species in wet or dry sclerophyll forests. This makes it a widely distributed and common species. *T. eucalypticum* was named by Pearson (1951) from material found in a South African eucalypt plantation. It has also been found in other overseas eucalypt plantations (Lago et al. 1999). In 1986 *T. eucalypticum* was renamed to *Lyophyllum eucalypticum* by M.M Moser, and according to “Index Fungorum” *L. eucalypticum* is the preferred name for this species. For the time being the name *Tricholoma eucalypticum* will be used until phylogenetic evidence becomes available to warrant a name change.

**References**

2.1. Order: Agaricales


D=Description; I=Illustration; CI=Colour Illustration; P=Photo; CP=Colour Photo
Tricholomopsis rutilans

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Tricholomopsis rutilans

Tricholoma rutilans

Biology
Saprotrophic basidiomycete; solitary or caespitose on rotting wood such as rotting stumps and other wood that is either above ground or buried. Most common on decaying conifer wood.

Fruit-body Description
Pileus (Cap) Diameter to 80 mm or more; initially button-shaped, then convex, broadly convex with an incurved margin, expanding to plane; surface dry, densely covered with fibrils or scales, at maturity the fibrils aggregating into scales; colour of underlying surface yellow, covered with dark red to purplish red fibrils. Lamellae (Gills) Attachment adnate to notched; close to moderately close; colour yellow to pale yellow. Stipe (Stem) Central; generally up to 100 mm long and 20 mm thick; stout or slender; surface dry, fibrillose or scaly; colour yellow, covered in red to purplish red fibrils, fibrils more dense towards the base. Spore Print White

Microscopic Features
Basidiospores 6–8 × 4–5.5 μm, broadly ellipsoidal to subglobose. Basidia four-spored, 32–45 × 7–9 μm, slender clavate. Clamp connections present.

Comments
Tricholomopsis rutilans is readily recognised by growing on wood, having a pileus covered in red to purplish red fibrils, yellow lamellae, a stipe covered with red to purplish red fibrils, and no annulus. Gymnopilus dilepis has a similar colour scheme, but has an annulus. T. rutilans is a northern hemisphere species, which was probably accidentally introduced into Australia with pine trees or on infected pine wood.

References


**Tubaria rufofulva**
**Tubaria rufofulva**

*Pholiota rufofulva  Pholiota imperfecta  Pholiota serrulata*

**Biology**
Saprotrophic basidiomycete; solitary, in large colonies or caespitose on rotting wood, amongst deep forest litter, or on the ground above buried wood.

**Fruit-body Description**
**Pileus (Cap)** Diameter to 45 mm or more; when young conico-convex, with lamellae protected by a white veil, then convex, broadly convex, finally plane or uplifted, margin sometimes striate; surface dry, minutely fibrillose, velvety; colour wine-red to maroon, hygrophanous, drying paler. **Lamellae (Gills)** Attachment adnate; close to moderately close; colour wine-red to maroon, becoming brownish as spores mature. **Stipe (Stem)** Central; generally up to 50 mm long and 10 mm thick; normally slender; surface dry, smooth; colour similar to pileus. **Annulus** evanescent, leaving a white fibrillose ring on the stipe. **Spore Print** Rust-brown

**Microscopic Features**
Basidiospores 7.5–10.5 × 5–6.5 µm, ellipsoidal. Basidia four-spored, 26–38 × 7–10 µm, slender clavate. Clamp connections present.

**Comments**
*Tubaria rufofulva* is readily recognised by the wine-red to maroon colour of the fruit-body (pileus, lamellae, and stipe), the white annulus on the stipe, and its lignicolous habit. There are no other species with which it could be easily confused.

**References**
**Macrotyphula juncea**
**Macrotyphula juncea**

**Biology**
Saprotrophic basidiomycete; solitary or more commonly in large colonies on moist decaying forest litter under native or introduced trees and shrubs.

**Fruit-body Description**
Height to 80 mm or more and up to 1.5 mm thick, slender, thread-like, initially erect, at maturity straight to curved, flexible, apex ending with an obtuse tip, attached to the substrate by a white mycelial disc; surface of fertile region smooth, cream-buff to pale ochraceous brown, the lower sterile region slightly darker in colour. **Spore Print** White

**Microscopic Features**

**Comments**
*Macrotyphula juncea* is recognised by its slender fruit-body. If it were not for its gregarious fruiting habit it would easily remain unnoticed. Its slimness makes this species unique amongst the coral and club fungi.

**References**
As you get more involved with fungi, and in particular when talking with fellow enthusiasts or reading about fungi, the jargon of terms and phrases will eventually become part of your own language. In the meantime, here is a glossary with images to assist with terms that are frequently used by mycologists.

**adnate** – pertaining to the attachment of the lamellae, tubes, spines, etc. to the stipe of the fungus in which the attachment is perpendicular to the stipe.

**adnexed** – pertaining to the attachment of the lamellae, tubes, spines, etc. to the stipe of the fungus in which the fertile tissue curves upwards towards the pileus of the fungus before attaching to the stipe.

**aff.** – with affinity to, or similar to.

**agaric** – a term commonly used to describe a fungus that has a pileus (cap), lamellae (gills), and a stipe (stem), i.e., what most people would call a mushroom.

**allantoid** – sausage-shaped, usually referring to spores.

**amanitoid** – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, free or finely adnexed lamellae, an annulus and a volva.
**amyloid** – a chemical staining reaction in which the tissue, spore wall ornamentation, etc. stains bluish-black in Melzer’s reagent (iodine solution), showing the presence of starch.

**amygdaliform** – having an almond-shape, usually referring to almond-shaped spores.

**anamorph** – an asexual reproductive form of a fungus, cf. teleomorph.

**anastomosing (interveining)** – referring to lamellae that have transverse connections resembling veins.

**annulus** – a ring or collar of tissue around the stipe, usually derived from the partial veil. See *Amanita muscaria*.

**appendiculate** – usually referring to the hanging veil remnants on the margin of a pileus.

**applanate** – flattened or becoming flattened.

**appressed** – scales, fibres or hairs that lie flat against the surface of the pileus or stipe.

**areolate** – a surface that is split into regular or irregular shaped blocks, revealing the underlying flesh, usually referring to the outer skin of a fungus.

**armillarioid** – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, attached lamellae, an annulus, but no volva.

**attached** – lamellae (gills) fastened to the stipe of a mushroom.
basidiomycete – a fungus that reproduces by producing basidiospores on the basidia. Examples of these fungi types are mushrooms, corals, jellies, puffballs, stinkhorns, brackets, and clubs.

basidium (pl. basidia) – a microscopic club-shaped structure that bears the spores of basidiomycetes.

basidiocarp – the fruit-body of a basidiomycete fungus.

bifurcate – dividing into two branches; usually used to describe branching of lamellae.

bolete – a fleshy mushroom-like fungus with tubes and pores on the underside of the pileus. See Suillus luteus.

boletoid – resembling a bolete.

bracket – a fungus with a bracket-shaped fruit-body, often produced on trees or dead wood. The fruit-body can be woody, fleshy, tough, or leathery.

broom cell – a cystidium that bears apical appendages, giving it a broom-like appearance.

bulbous – (of stipe) having a swollen base.
caespitose – where a number of fruit-bodies are fused together. See *Flammulina velutipes*.

caulocystidium – a cystidium found on the stipe of a fungal fruit-body.

campanulate – (often of pileus) bell-shaped.

caulocystidium (pl. caulocystidia) – a cystidium on the stipe of a fungus.

cheilocystidium (pl. cheilocystidia) – a cystidium on the edge of a lamella (gill).

chlamydospores – asexual spores formed by the breaking up of fungal hyphae.

clamp connection – a special structure bridging the septa (cross-walls) of the hyphae of some basidiomycetes. This structure allows nuclei to migrate into new cells after mitotic division. A clamp connection looks something like the handle on a cup. However, it may be flattened against the wall of the cells or may have a large opening (keyhole clamp).

clavate – club-shaped.

clitocyboid – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, decurrent lamellae, and no annulus or volva.
close – usually referring to the spacing of lamellae, which are neither crowded nor well spaced (distant) but arbitrarily in between.

collybioid – a mushroom stature type describing a mushroom with a cartilaginous stipe, attached (but not decurrent) lamellae, a convex to parabolic pileus with an initially inrolled to incurved pileal margin, and no annulus or volva.

concave – saucer-shaped; often used to describe the shape of disc fungi.

concentric – having rings or zones within each other.

concolorous – two or more objects having the same colour.

conic – cone-shaped (e.g. a pileus that is taller than its width and often pointed).

convex – rounded, higher in the middle than at the margin.

coprophilous – growing on dung or droppings.

corticioid – having effused, smooth fruit-body that usually forms on the underside of dead wood, also sometimes called crust fungi.
cortina – cobweb-like partial (inner) veil between pileus margin and stipe of certain agarics. See *Cortinarius* species.

crowded – referring to the spacing of lamellae that are very close together.

cuticle – outermost layer of pileus or stipe.

cylindric – cylinder-shaped, e.g. a stipe that has the same diameter from apex to base.

cystidium (pl. cystidia) – a large sterile cell of distinct shape on the pileus, lamellae, or stipe surface.

decurrent – pertaining to the attachment of the lamellae, tubes, spines, etc. that descend down the stipe to some degree. See *Austropaxillus infundibuliformis*.

decurved (incurved) – bent downwards, usually referring to the margin of a pileus.

deliquescence (autodigestion) – lamellae turning into a liquid, liquefying. See *Coprinus comatus*.

depressed – usually with reference to a pileus, with the central part sunken below the level of the margin. Concave.

dextrinoid – a chemical staining reaction in which the tissue, spore wall ornamentation, etc. stains reddish to reddish brown upon exposure to iodine or Melzer’s reagent. (See also amyloid).

diploid – of a nucleus, cell, hypha, or a fruit-body having two sets of chromosomes (male and female).
**disc** – (of pileus) central part of the pileus.

**distant** – referring to the spacing of lamellae that are wide apart.

**dry** – pileus or stipe neither viscid nor hygrophanous.

**eccentric (excentric)** – (of stipe) not attached to the centre of the pileus.

**ectomycorrhiza (EM)** – mycorrhiza where the fungal hyphae form sheaths around the rootlets of a plant (often of a tree), growing between but not penetrating the cells of the plant rootlets, and providing the plant with water and nutrients while the plant supplies sugars to the fungus.

**ellipsoidal** – a object that is bilaterally symmetrical, with curved sides and rounded ends, often referring to the shape of spores.

**emarginate** – sharply adnexed to the stipe, typically describing lamellae attachment.

**endomycorrhiza** – mycorrhiza in which fungal hyphae penetrate cell walls of host plant.
ephemeral (evanescent) – appearing briefly and then vanishing, e.g. a part of the fungus that is present in the young fruit-body, but disappears when it matures.

equal – usually refers to a stipe having the same diameter throughout its length.

farinaceous – an odour variously described as that of raw potatoes, raw cucumbers, or even of soaps; mealy.

felted – covered with densely matted fibrils or hairs.

fibrillose – covered with hair-like filaments and arranged more or less parallel with one another.

floccose – with a covering of loose cotton-like or or downy scales.

free – referring to lamellae, tubes, spines etc. that are not attached to the stipe.

fruit-body – in macro and micro fungi, the structure that supports the spore-bearing organs.

fusiform – spindle-shaped, tapering at both ends (usually referring to spores).

galerinoid – a mushroom stature type describing a mushroom with a cartilaginous stipe, attached lamellae (which may be decurrent), a variable pileal shape, variable pileal margin, and an annulus but no volva.

gasteroid – basidiocarps that include puffballs, earth-stars, stinkhorns, and false-truffles.
gasteromycetes – macrofungi with a sac-like structure containing spore-bearing tissue (gleba).

germ pore – thin region of spore wall via which spores can germinate.

glabrous – smooth, without any hairs or other ornamentation.

gleba – the spore-bearing tissue inside a sac-like structure.

globose – having a spherical shape (e.g. fungal fruit-bodies or spores).

glutinous – (often describing a pileus surface) covered with a slimy gelatinous layer.

granulose – (often describing a pileus or stipe surface) covered with small granules.

guttule – a small oil-like drop visible (via a microscope) inside a fungal spore.

haploid – of a nucleus, cell, hypha, or a fruit-body having only one set of chromosomes.

hirsute – covered with longish fibres or hairs.

hispid – covered with stiff or bristle-like hairs.

hyaline – clear and without colour; referring to structures such as spores seen under a microscope.

hygrophanous – having the characteristic of changing colour upon drying.
hymenium – the spore-bearing surface of the fruit-body.

hypha (pl. hyphae) – one of the filaments of a fungal mycelium.

imbricate – overlapping like roof tiles, e.g. the scales on a pileus, or multiple tiers of a bracket-like fungus. See Coprinus comatus.

infundibuliform – (of pileus) funnel-shaped. See Austroaxillus infundibuliformis.

inamyloid – no change of colour upon application of Melzer’s reagent.

incurved – referring to a pileal margin, pointing down towards the stipe or the lamellae, but not rolled up.

institious – where the stipe is attached to the substrate without fibrils or hyphae being visible.

intervenose – see anastomosing.

involute (inrolled) – referring to a pileal margin, margin rolled inwards.

lamellae (sing. lamella) – the technical term used to describe the gills of a mushroom which extend from the pileal margin to the stipe.
lamellulae (sing. lamellula) – short gills that occur between normal gills but do not extend all the way from the pileal margin to the stipe.

lageniform – usually in reference to the shape of cystidia, swollen at the base and narrow at the apex; flask-shaped.

latex – a coloured juice exuding from an injured portion of a fungal fruit-body.

leythiform – often referring to cystidia, bowling pin-shaped.

lepiotoid – A mushroom stature type describing a mushroom with a fleshy-fibrous stipe, free or finely adnexed lamellae, and an annulus but no volva.

lignicolous – growing on or in wood.

lubricous – slippery; a greasy smoothness.

macrofungi – fungal fruit-bodies that can be seen readily with the naked eye.

margin – with reference to pileus or lamellae, outermost edge of the pileus; edge of lamellae.
**marginate** – with reference to (a) lamellae, when the lamella edge has a different colour from its face; or (b) stipe base, when there is a distinct rim at the base of a bulbous stipe.

**mealy** – a surface covered with flour-like particles; smelling like fresh flour.

**merulioid** – a structure type, hymenophore wrinkled with low uneven ridges, like the fruit-body of a *Merulius*.

**metuloid** – a thick-walled cystidium which may or may not be encrusted at its apex.

**micaceous** – a surface covered with mica-like (glistening) particles.

**mycelium** – the filamentous vegetative (growing and feeding) portion of a fungus.

**mycenoid** – a mushroom stature type describing a mushroom with a cartilaginous stipe, variably attached (but not decurrent) lamellae, a conic to campanulate pileal shape, an incurved to straight pileal margin, and no annulus or volva.

**mycorrhizal fungi** – fungi that have a symbiotic relationship with a host green plant.

**naucoriod** – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, adnexed or emarginate lamellae, and no annulus or volva.
omphalinoid – a mushroom stature type describing a mushroom with a cartilaginous stipe, decurrent lamellae, a convex to plane and sometimes umbilicate pileal shape, a variable pileal margin, and no annulus or volva.

ostiole – a pore or hole through which spores are ejected; for an ascomycete at the apex of the perithecium, or for a basidiomycete the mouth of a puffball or earth-star.

parasitic fungi – fungi that feed on other living organisms. See Cordyceps gunnii.

partial veil – (of agarics and boletes) a membrane joining the stipe to the pileus margin during the development of the hymenium; this membrane ruptures to become an annulus or cortina.

pileus – the scientific name for the cap on a macrofungus; it carries the spore-bearing surface.

pleurotoid – a mushroom stature type describing a mushroom with a stipe, eccentrically or laterally attached or absent, a variable lamellae attachment, and no annulus or volva.

plecate-striate – (of pileus) having radial folds or pleats.

pluteotoid – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, free or finely adnexed lamellae, and no annulus or volva.

polypore – a wood-inhabiting fungus, often bracket-like, which bears its spores in pores on the hymenium.
**pore** – (in boletes and polypores) the orifice of a tube through which spores fall.

**pruinose** – covered in a fine powder; powdery.

**pulvinate** – cushion-like in form.

**pyriform** – pear-shaped.

**resupinate** – fruit-body that lies flat on the substrate with its hymenium outermost, often used with reference to crust fungi.

**reticulate** – (describing a stipe, notably of a bolete) marked with a net-like pattern of ridges or wrinkles.

**rhizomorph** – easily visible string-like aggregation of hyphae, often seen at the base of a fungal fruit-body.

**rimose** – (of pileus) cracked or split in a radial manner.

**saccate** – sac- or bag-like, usually used when describing a loose membranous volva at the base of a stipe.
**scabrous** – rough surface, covered with short rigid projections.

**sclerotium** – a sterile compact mass of hyphae, usually with a hard outer protective layer.

**scrobiculate** – (of stipe) with shallow depressions or conspicuous spots.

**serrate** – jagged or saw-like; usually with reference to a lamella or pileus edge.

**sessile** – a fruit-body without a stipe, so that it sits directly on the substrate.

**sinuate** – (describing lamellae) with a notch near the point of attachment to the stipe.

**spatulate** – spoon-like in form.

**spore** – reproductive unit of a fungus.

**squamose** – (of pileus) having flat scales.

**sterigma (pl. sterigmata)** – the projection on the basidium on which developing basidiospores are attached (can only be seen under a microscope).
**stipe** – technical term for the stem of a fungus.

**stipitate** – having a stipe.

**striate** – (describing a pileus) with fine lines, grooves or ridges.

**substratum (substrate)** – the material to which a fruit-body is attached.

**teleomorph** – the sexual reproductive stage of the fungus, producing sexual spores.

**terricolous (terrestrial)** – living or growing on soil.

**tomentose** – covered with long, soft, hairy fibrils, either tangled or matted.

**translucent-striate** – having the lines of the lamellae visible through the top of the pileus.

**tricholomatoid** – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, sinuate or notched lamellae, and no annulus or volva.

**tube** – the hollow cylinder, on the underside of boletes and polypores, in which spores are produced.
**umbilicate** – having a deep depression, usually with a small umbo (protrusion) in the centre, e.g. as in a belly button.

**umbo** – a broad swelling or bump in the centre of the pileus.

**umbonate** – a pileus with a distinct swelling or bump (umbo) at the centre.

**universal veil** – (for some agarics) a protective membrane that initially surrounds an entire young agaric fruit-body. Later, when the membrane ruptures, it may leave scales, patches or warts on the pileus surface.

**vaginatoid** – a mushroom stature type describing a mushroom with a fleshy-fibrous stipe, free or finely adnexed lamellae, and a volva but no annulus.

**ventricose** – swollen or wider in the middle; (of stipe) swollen at or near the middle; (of lamellae) broader midway between stipe and pileal margin.

**viscid** – slimy or sticky to the touch.

**volva** – the remains of the universal veil at the base of the stipe in certain fungi.
warts – small pieces of universal veil tissue left on the surface of the pileus.

zonate – pileus or flesh marked with concentrically zoned coloured bands.
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