A new species of *Leucopaxillus* BOURS. (Agaricales) from Western Australia

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Abstract. – *Leucopaxillus lilacinus* is described as a distinctive new species of the indigenous eucalyptus (Jarrah) forest in southwestern Australia. Comparison is made with the only other known representative of *Leucopaxillus* in Australia – *Clitocybe eucalyptorum*.

Description

Leucopaxillus lilacinus BOUGHER sp. nov. – Fig. 1, a–g; Pl. 1 a.

Pileus 80–150 mm, convexus demum planus, margo sulcatus revolutus demum planus, lilacinus demum atroviolaceus. Lamellae ad 5 mm latae, adnatae brevidentes, albae demum cremeae, margines lucentes sub lens. Stipes 50–100 × 20–30 mm, cylindricus vel clavatus, pileus concolor, laevis vel tomentosus, siccus. Odor leniter fragrans. Sapor nullus. Sporae congregatae cremeae. Sporae 5(5.5)–6.5(7) × 4–5(5.5) µm, ellipsoideae vel ovatae, verrucosae, ornamento valde amyloideo. Cheilocystidia 22–60 × 2–6 µm, filiformia vel cylindracea, tenuitunicata, hyalina, abundantes. Hyphae pileipellis densiter intricatae, cylindraceae, tenuitunicatae, hyalinae, 2–6 µm latae. Fibulae frequentes. In foliis dejectiis in silvis *Eucalypti marginatae* necnon *Eucalypti calophyllae*. Australia. BOUGHER (UWA 3014, Holotypus).

Pileus 80–150 mm; convex with inrolled margin expanding to plane with incurved margin, margin consistently grooved; uniformly lilac (16–B/3 or 16–B/4)*) soon dark violet (18–F/4 or 18–F/5) darkest at center; surface slightly velutinous, moist when wet then drying with consistency of soft leather; pigmented cuticle layer very thin, easily removed, with whitish and rust patches (insect damage) and whitish cracks especially near margin at maturity, veil remnants absent. – Context white. – Lamellae up to 5 mm broad; adnate with short decurrent tooth (up to 1 mm), crowded; white then cream; edges concolorous, glistening under lens, entire becoming wavy to eroded with age; lamellules present between all lamellae, L : 30–50, 1 : –15 between. – Stipe 50– 100 × 20–30 mm; cylindrical to clavate; concolorous with the pileus except white at apex (top 3 mm) and white with irregular rust markings at base; surface smooth to tomentose, dry. Context white, solid. – Mac-

*) Colours quoted in the taxonomic description are those of Kornerup and Wanscher (1978).

rochemical tests: Melzer's reagent, 15% KOH, 10% $FeSO_4$, 30% NH_4OH all negative on stipe and pileus surface and context. – Odour weakly fragrant. – Taste none.

Spore print cream. – Spores in Melzer's reagent (5) 5.5–6.5(7) × 4–5(5.5) µm, (mean of 30 spores 5.9 × 4.5 µm); ellipsoid to ovoid with a suprahilar applanation; verrucose with unevenly spaced and irregularly sized warts, ornamentation strongly amyloid and removed in 3% or 10% KOH (not removed in ammonia), suprahilar plage inconsistently present. – Basidia 30–40 × 4–8 µm; clavate; 4-spored. – Subyhmenium narrow, ramose. – Pleurocystidia none. – Cheilocystidia 22–60 × 2–6 µm; filiform to cylindrical with obtuse to pointed apices, thin-walled; hyaline; abundant, conspicously protruding. – Lamellar trama composed of undulating, subparallel, narrow, thin-walled hyphae, 2–5 µm diameter. – Pileipellis of densely entangled, cylindrical, thin-walled, hyaline, clamped hyphae, 2–6 µm diameter with some elements perpendicular to the surface, not gelatinised, pigment plasmatic and intercellular dissolves in 3% KOH becomes reddish brown. – Pileus trama of similar but broader hyphae up to 10 µm diameter. – Stipitipellis of narrow, entangled, thin-walled hyphae up to 4 µm diameter. – Clamp connections frequent, on all septa.

Habitat. – Among litter in mixed Myrtaceae-Jarrah (*Eucalyptus marginata* Donn ex Sm.) and Marri (*Eucalyptus calophylla* R. Br. ex Lindl.) forests, southwestern Western Australia.

Material examined. – Southwestern Western Australia: Dwellingup, Amphion Block, 29 May 1985, Bougher, UWA 3014 (holotype); ZT 2663 (isotype). – Dwellingup, Amphion Block, 18 May 1983, Bougher & Darling, UWA 2898, topotype. – Donnybrook, Newlands, 24 June 1985, Bougher, UWA 3018.

Discussion

L. lilacinus is most readily recognised in the field by its large size, lilac pileus and stipe darkening to violet with age, and crowded white or cream lamellae.

The possession of spores with strongly amyloid ornamentation clearly places the species within either the genus *Leucopaxillus* Bours. or *Melanoleuca* Pat. The presence of clamp connections excludes it from the latter. Clamp connections were found to be abundant in basidiomes of *L. lilacinus* and also in mycelium encompassed in the clumps at the base of their stipes.

Spores of *L. lilacinus* are no longer amyloid following treatment with KOH, or concentrated acid (HCl or H_2SO_4). However this effect is not seen with ammonia in which the ornamentation and hence amyloidy are retained.

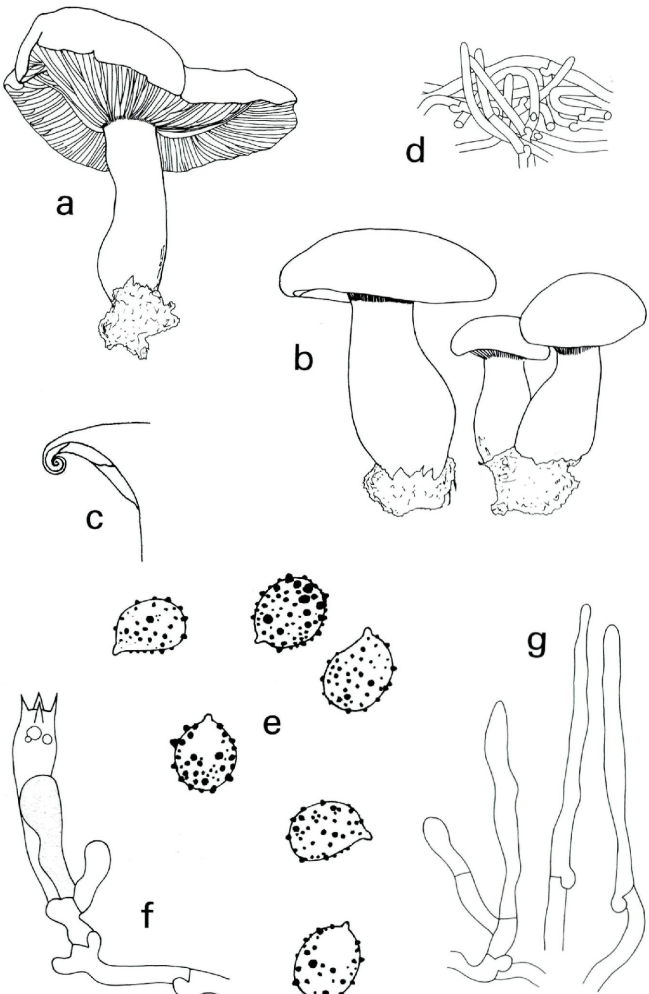

Fig. 1: *Leucopaxillus lilacinus:* a. basidiome (0.5×). – b. basidiomes (0.5×). – c. medial section of young basidiome showing inrolled margin (2×). – d. pileipellis (500×). – e. basidiospores (2000×). – f. basidia, developing and mature (1000×). – g. cheilocystidia (1000×). All of holotype, UWA 3014, except b. of topotype, UWA 2898.

The only other recorded species of *Leucopaxillus* in Australia is currently placed in *Clitocybe***). This species – *Clitocybe eucalyptorum* CLEL., is found in southeastern Australia. It differs from *L. lilacinus* in the absence of lilac or violet pigmentation and in being devoid of conspicuous cheilocystidia. The pileus is described by CLELAND (1934) as "drab when young to browner than Tawny Olive". Air-dried specimens of *C. eucalyptorum* (holotype, AD 3522) are indeed drab on the pileus, with brownish gills. In contrast, the pigmentation typical of fresh basidiomes of *L. lilacinus* persists as intense shades of violet on both freeze-dried and air-dried specimens. Another difference between the two species is the absence of conspicuous cheilocystidia in *C. eucalyptorum*. In *L. lilacinus* cheilocystidia are very abundant, and conspicuous to the eye as well as under the microscope. There is no mention of a glistening gill edge for *C. eucalyptorum* by CLELAND (1934), and a microscopic examination of the holotype has failed to reveal cheilocystidia. *C. eucalyptorum* shares with *L. lilacinus* very similar ornamented basidiospores (Pl. 1, b). The ornaments behave identically, being removed in KOH and acids but not in ammonia. Under the scanning electron microscope the similarity between the spores of the two species is emphasised (Plate 1). The spores have a surface of variously sized and spaced dome-shaped verrucae, and a suprahilar plage which can be smooth or with one or more low verrucae. The plage of these species is comparable to that observed by BIGELOW & ROWLEY (1968) for *L. lentus* (POST) SING.

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**) To be transferred in a forthcoming revision of fungi collected by J. B. CLELAND.

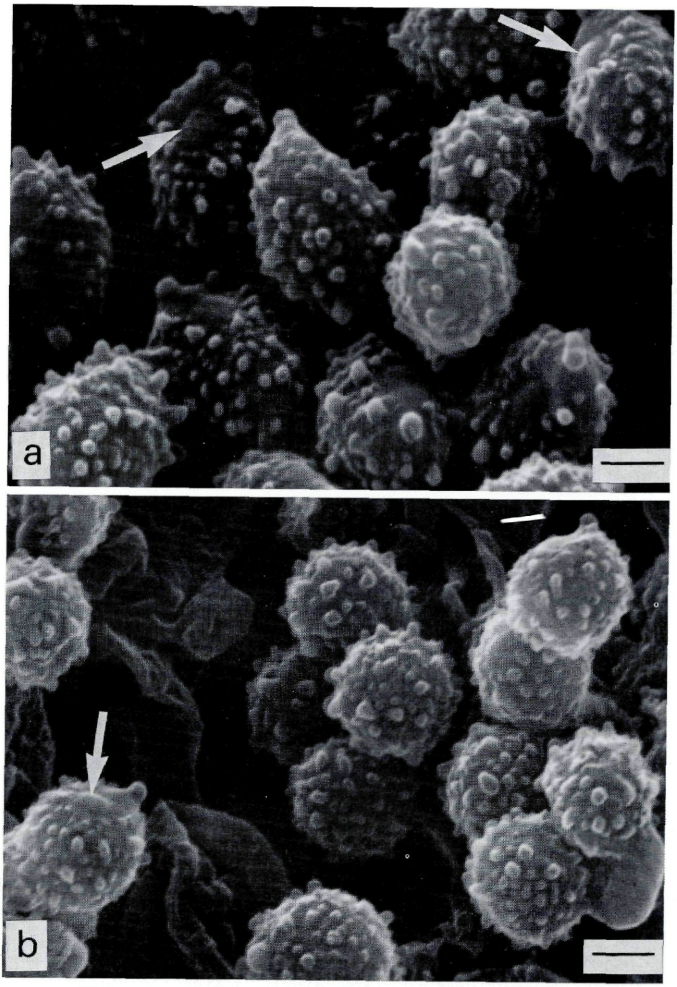

Plate 1: Scanning electron microscope images of basidiospores:
a. *Leucopaxillus lilacinus* (topotype, UWA 2898). – b. *Clitocybe eucalyptorum* (holotype, AD 3522). Note suprahilar plage and low verrucae within plages (arrows). Bars equal 2 µm. Spores fixed in glutaraldehyde, dehydrated in ethanol, critical point dried, croated with platinum (20 nm).