

A NEW SPECIES OF LANZIA (RUTSTROEMIACEAE) FROM MT KOSCIUSZKO, AUSTRALIA

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Abstract

Ascomata of a species of *Lanzia* were found growing on a dead stump of *Leptospermum grandifolium* in Mt Kosciuszko National Park, Australia. The new taxon is described and illustrated; and compared with similar species. *Helotium novae-zealandiae* is transferred to *Lanzia*. A key is included to the lignicolous species of *Lanzia* known from Australia and New Zealand.

Key words: Helotiales, Rutstroemiaceae, Leotiaceae, *Hymenoscyphus*, Myrtaceae fungi, systematics.

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Introduction

The most recent revision of the Helotiales in Australia was by Spooner (1987) but he did not treat the Leotiaceae. Recent molecular studies (Gernandt *et al.* 2001) have shown the Helotiales and Rhytismatales form a paraphyletic clade. Helotiaceae *sensu lato* is polyphyletic and distinct from the Leotiaceae (Gernandt *et al.* 2001). *Hymenoscyphus* is outside the main Helotiales/Rhytismatales clade. *Hymenoscyphus* S.F. Gray or *Helotium* Pers. has been used for fungi with ascocarps stalked, excipulum glabrous or furfuraceous, receptacle of thin-walled parallel hyphae, hyphae not gelatinised, disc cupulate, ascospores aseptate and smooth-walled, ascus pore amyloid, ascospores ellipsoidal to ellipso-fusoid, hyaline and smooth-walled, 0 or 1 septate. Generic and nomenclatural concepts within these and related genera of Helotiaceae have been discussed by Dennis (1963, 1981), Carpenter (1981), Redhead (1982), Baral & Kreiglsteiner (1985), Spooner (1987), Lizoň (1992) and Baral (1994). Dennis (1957, 1958, 1961) revised numerous species of *Helotium* from Australia and New Zealand. Some of these were subsequently transferred to *Lanzia* Sacc. or *Poculum* Velen. in the Sclerotiniaceae (Spooner 1987). Molecular studies of the Sclerotiniaceae *sensu* Spooner (1987) indicate it comprises two families, the Sclerotiniaceae *sensu stricto* with sclerotial stromata and the Rutstroemiaceae with substratal stromata (Gernandt *et al.* 2001, Holst-Jensen *et al.* 1997).

During a collecting trip to Mt Kosciuszko (Good 1992) an interesting robust discomycete was found growing on decayed bark, just below the level of the soil surface, on a dead stump of a woolly teatree (*Leptospermum grandifolium* Sm.). The fungus could not be identified to an already described taxon and is therefore described and illustrated in this paper as a new species.

Materials and Methods

Colours were recorded using Kornerup & Wanscher (1983). Free-hand thin sections of ascomata were briefly soaked in 70% ethanol then mounted in lactic acid Cotton Blue, ammoniacal Congo Red, 5% KOH, Melzer's reagent or distilled water.

Taxonomy

Lanzia kosciuszkoensis J.A. Simpson & C.A. Grgurinovic, sp. nov. (Fig. 1)

Etymology: from the place of collection.

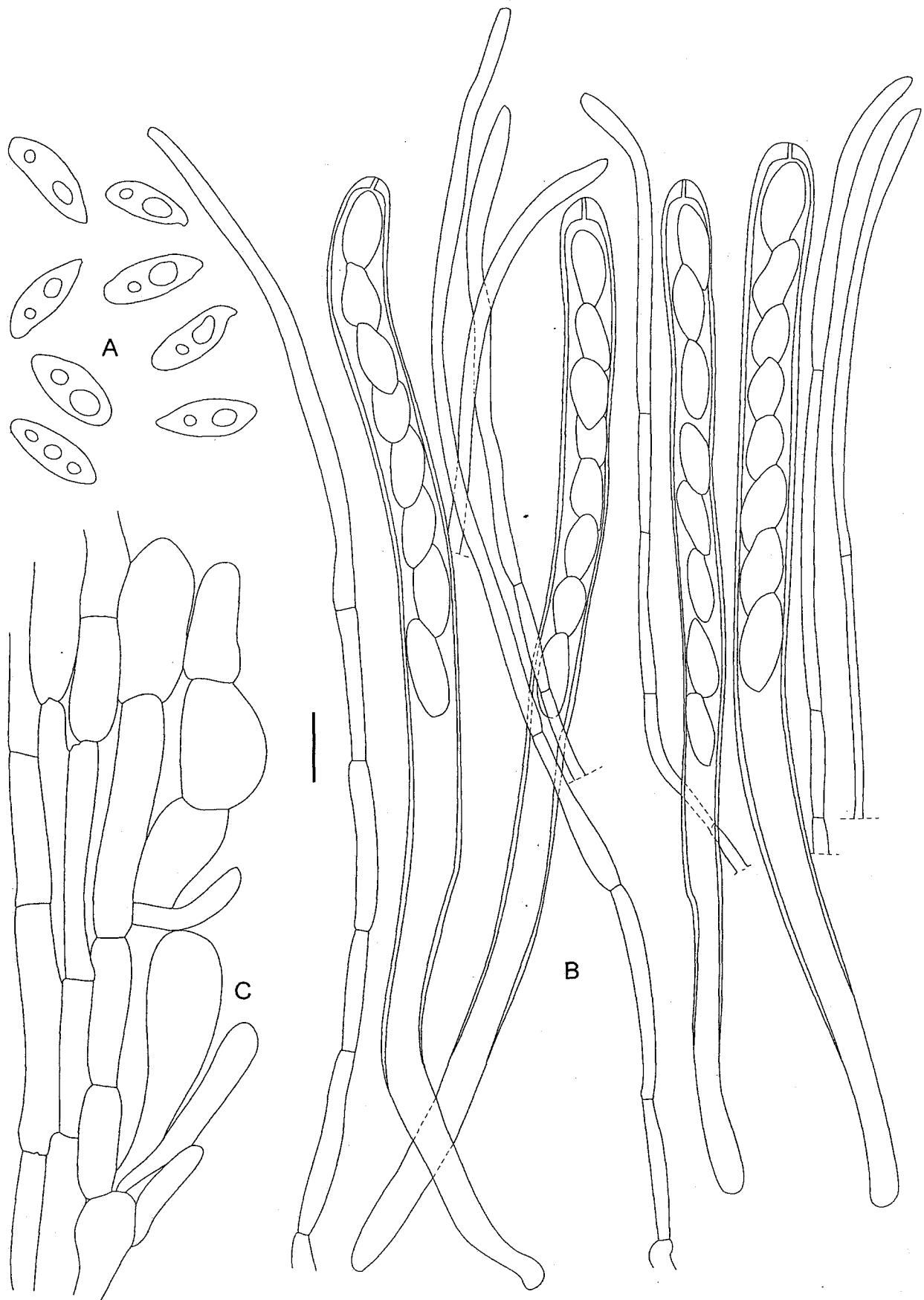


Figure 1. A. Ascospores. B. Asci, ascospores and paraphyses. C. Drawing of portion of ectal excipulum. Scale bar = 10 μ m.

Apothecia gregaria, mediocria, usque 9 mm diam., superficialia, brevistipitata, cupulata, disco concavo. Receptaculum patellare, minute furfuraceum. Asci 165–190 × 7.5–10 µm, cylindranei, octospori, apice rotundati, poro in Melzero caerulescentes. Ascospori 13.9–19.2 × 5.3–6.7 (16.4 ± 1.4 × 6.1 ± 0.6, n = 21) µm, uniseriati, hyalini, late ellipsoidei, bi-guttulati, glabrous. Paraphyses 190–210 × 2–3 µm, filiformis, septatae. Holotypus: Australia, New South Wales, Thredbo, Kosciuszko National Park, Dead Horse Track, 12.i.2002, J. Curnow, J.A. Simpson (014/02) & C.A. Grgurinovic (CANB 639972), hic designatur.

Apothecia gregaria, superficial on very decayed bark, growing just below the level of the soil surface, shortly stipitate, not lichenised. *Sclerotia*, *stromata* and *zone lines* in the substratum not seen. Disc to 9 mm diam., shallow concave to pulvinate, umbilicate, ochraceous orange, drying brownish orange (6D4). *Receptacle* to 6 mm high, margin incurved, outer surface furfuraceous, ochraceous orange but paler than the disc, drying greyish orange (5B3). *Stipe* to 2 mm diam., 2 mm high, cylindrical, solid, surface glabrous, context white.

Hymenium about 200 µm thick, fleshy. *Asci* 165–190 × 7.5–10 µm, 8-spored, apex rounded, inoperculate, cylindrical, thin- to slightly thick-walled, attenuate to truncate base, proliferating from croziers, apical cap amyloid, but a strong amyloid reaction confined to the wall of the apical pore. *Ascospores* 13.9–19.2 × 5.3–6.7 (16.4 ± 1.4 × 6.1 ± 0.6, n = 21) µm, obliquely uniseriate, ellipso-fusoid, inequilateral, apices acute, smooth, hyaline, with 2 large guttules, occasionally 3 to many, apex occasionally short-apiculate and slightly hooked, occasionally one-septate. *Paraphyses* 190–210 × 2–3 µm, filiform, septate, unbranched, walls thin, smooth, hyaline, extending above the asci. *Subhymenium* not clearly differentiated from the medullary excipulum, of hyphae 2–5 µm wide, hyaline, in a layer about 40 µm deep. *Medullary excipulum* of textura porrecta, hyphae parallel to loosely interwoven, 4–6 µm wide, thin-walled, hyaline. *Ectal excipulum* of textura prismatica, hyphae parallel, undulating, septate, 3–8 µm diam., arranged at a low angle to the surface, hyaline, not gelatinised, free, subclavate to clavate cells, to 15 µm diam., single or in short chains of 2 or 3 cells, hyaline, thin-walled, adpressed or curving away from the surface. *Anamorph* not known.

Habit: lignicolous, on decayed bark on dead stump of *Leptospermum grandifolium* Sm.

Holotype: Australia, New South Wales, Thredbo, Kosciuszko National Park, Dead Horse Track, 12.i.2002, J. Curnow, J.A. Simpson (014/02) & C.A. Grgurinovic (CANB 639972), here designated.

If asci are left in Melzer's overnight the wall thickens to about 1.5 µm and the apical pore disintegrates. In biguttulate ascospores the apical guttule is consistently larger than the lower.

Discussion

This stipitate taxon with an ectal excipulum of textura prismatica has many of the attributes of a member of the *Hymenoscyphus caudatus* (P. Karst.) Dennis group (Dennis 1963, Dumont 1981a, 1981b) but does not match any of the species described in Dennis (1957, 1958, 1961, 1963, 1981), Dumont (1981a, 1981b) or Lizoň (1992). *Hymenoscyphus* is a large and confusing genus that has yet to be monographed. Several aspects of the fungus described above are different from typical species of *Hymenoscyphus* including the relatively large size of the ascocarps, the ectal excipulum of textura prismatica with short chains of clavate cells on the surface, and a medullary excipulum of textura porrecta. Species of *Hymenoscyphus* rarely have ascocarps larger than 4 or 5 mm diam, if the ectal excipulum is farinaceous or downy it is textura angularis or textura porrecta, and the medullary excipulum is of textura intricata (Lizoň 1992).

Therefore we looked again at the genera of Sclerotiniaceae *sensu* Spooner (1987) to which species of *Helotium* had been transferred. Three genera in particular, part of the *Rutstroemia* P. Karst. *sensu* W.L. White (1941) complex, or Rutstroemiaceae (Holst-Jensen *et al.* 1997) were considered. *Lambertella* Höhn. has pigmented and mostly punctate ascospores while *Poculum* Velen. has the hyphae of the upper ectal excipulum immersed in a gelatinous matrix (Spooner 1987) and so neither genus was considered further. Attributes of *Lanzia* Sacc. (Spooner 1987) are in good accord with those of our fungus. The major discrepancy is the apparent absence of black stromal tissue. However, when the fungus was collected and the decayed substratum removed from the base of the ascomata no notes were made of presence of black stroma or zone lines. They may have been present but not observed. Spooner (1987, p. 199) noted that many species of *Lanzia* 'would necessarily be referred to *Hymenoscyphus* if the stroma were overlooked'. 'Stromatic development in *Lanzia* is variable and not always clearly visible' (Spooner 1987, p. 341). *Lanzia* is characterised by an ectal excipulum of prismatic cells arranged almost parallel to the surface and frequently with a downy to tomentose covering. Therefore we decided to describe the fungus as a species of *Lanzia*. It can be distinguished from the described Australasian lignicolous species of *Lanzia* as shown in the key.

Spooner (1987) proposed the new name *Lanzia prasina* var. *nigripes* [as 'prasinum'] for the fungus described by Dennis (1961) as *Helotium novae-zealandiae*. He gave two reasons for this change. Firstly, the visible distinction between the taxa is one of colour of the stipe and, secondly, that *H. novae-zealandiae* is not restricted to New Zealand. An epithet has no priority outside its rank. As shown in the key below there are morphological differences between the two taxa. Therefore the following new combination is proposed:

Lanzia novae-zealandiae (Dennis) J.A. Simpson & C.A. Grgurinovic, *comb. nov.*

Basionym: *Helotium novae-zealandiae* Dennis, *Kew Bulletin* 15: 307 (1961).

Synonym: *Lanzia prasina* (Masse) Spooner var. *nigripes* Spooner, *Bibliotheca Mycologica* 116: 350 (1987).

Key to the lignicolous species of *Lanzia* known from Australia

1. Ascospores cylindrical, often curved or allantoid, 1.5–2.0 µm diam. *L. allantospora* (Dennis) Spooner
- 1'. Ascospores ellipsoidal to ellipso-fusoid, >2.5 µm diam. 2
2. Ascospores 5.8–8.5 × 2.5–3.0 µm 3
- 2'. Ascospores >10 µm long 4
3. Stipe olive-yellow, surface hyphae of excipulum free, clavate, hyaline, hair-like, 6–10 µm diam., ascus pore blue in Melzer's *L. prasina* (Masse) Spooner
- 3'. Stipe dark brown, surface hyphae of excipulum terminating in free, rounded to reflexed tips, brown pigmented, 2–5 µm diam., ascus pore not staining in Melzer's *L. novae-zealandiae* (Dennis) J.A. Simpson & Grgurinovic
4. Ascospores 10–12.5 × 3–4 µm, ascocarps sessile *L. australis* Spooner
4. Ascospores 13–19 µm long, ascocarps stipitate 5
5. Ascospores 3.8–5.0 µm wide, ascus pore not staining in Melzer's, subhymenial layer present, dark brown, ectal excipulum lacking clavate terminal cells, stipe longer than disc diameter *L. lanaripes* (Dennis) Spooner
- 5'. Ascospores 5.3–6.7 µm wide, ascus pore dark blue in Melzer's, dark subhymenial layer absent, ectal excipulum with clavate terminal cells to 15 µm diam., stipe much shorter than disc diameter *L. kosciuszkoensis* J.A. Simpson & Grgurinovic

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