**Polycoccum crespoae** sp. nov., the first report of a lichenicolous fungus on *Chondropsis semiviridis* (Parmeliaceae)

P. VÁCZI and D. L. HAWKSWORTH

**Abstract:** *Polycoccum crespoae* sp. nov. is described from thalli of *Chondropsis semiviridis* collected in Australia (Victoria). It has consistently 4-spored asci but differs from known 4-spored species in the size and shape of the ascospores. Attention is also drawn to another undescribed *Polycoccum* found on another genus of *Parmeliaceae*, *Karoowia adhaerens*, from South Africa (Cape Province).

**Methods**

Mature ascospores were measured in water, 10% KOH, Lugol’s iodine (after pre-treatment with 10% KOH), and lactophenol cotton-blue (after warming) at ×1600 magnification on a Zeiss Axioskop photomicroscope. There were no significant differences between the measurements in different mountants. The mean value was calculated and the results are given as: (extreme minimum) minimum value—mean (italic)—maximum value (extreme maximum). Thirty-eight ascospores, 10 perithecia, and 3 mature asci were measured in the Axioskop. Larger numbers of perithecia and asci were not studied to avoid using too great a proportion of the perithecia in the holotype; in these cases measurements are given without a mean. Drawings were prepared with a drawing tube.

**The Species**

*Polycoccum crespoae* Váčzi & D. Hawksw., sp. nov.

Perithecia immersa, (105–)115–135 (–155) μm alta, (85–)100–120 (–130) μm lata. Asci 44–64 × 12–5–
Fig. 1. *Polycoccum crespoae* (holotype). A, infected thalli of *Chondropsis semiviridis*, dried and rolled up (left) and re-hydrated in water (right), the latter showing abundant perithecia; B, vertical section of perithecium; C, ascus with branched cellular pseudoparaphyses. Scales: A=2 mm; B=15 μm; C=10 μm.
13 μm, 4-spored. Ascospores late ellipsoidae vel soleiformes, brunnea, leviter verruculosae, 1-septatae, (14–)17–19·7–20(–21) × (6–)6·5–6·8–7·5(–8) μm.


(Figs 1–3A)

Ascomata perithecia, immersed, arising singly, frequently in small patches of 13–25 separate perithecia, the patches mostly 2–3 mm wide, sometimes becoming confluent and forming more extensive infections, not producing galls. Perithecia subglobose to broadly ellipsoid, when mature slightly narrower in the upper part, (105–)115–135(–155) μm tall and (85–)100–120(–130) μm wide, dark brown; ostiole (10–)25–35 (–55) μm wide, not protruding above the thallus surface; walls (6–)8–14(–15) μm thick in vertical section, when mature composed of 4–6 layers of angular and radially compressed pseudoparenchymatous cells (textura angularis), brown; individual cells (5–)7–9(–13) × 2–3 μm in vertical section, 7–9 × 2–7 μm in surface view (the narrower cells elongated and orientated vertically in young perithecia); cell walls 0·5–1 μm thick. Mycelium immersed, sparse; hyphae spreading through the cortex of the host; hyphae filamentous, rather uneven in thickness, hyaline; cells (4·5–)8–10·5(–12·5) × (1–)1·5–2(–2·5) μm; walls less than 0·5 μm

![Fig. 2. Polycoccum crespoae (holotype). A, surface view of young perithecium showing a hyphal structure; B, surface view of mature perithecium showing angular pseudoparenchymatous cells; C, vertical section of wall of mature perithecium; D, hypha penetrating into the algal layer of the host; E, ascospore with phase contrast illumination showing the gelatinous sheath. Scale = 10 μm.](image-url)
Hamathecium of branched and anastomosed cellular pseudoparaphyses, abundant, persistent, repeatedly septate, 1·5–2 μm thick; centrum I – (Lugol’s iodine). Asci broadly clavate, short-stalked, bitunicate in structure with an internal apical beak, 44–64 × 12·5–13 μm, 4-spored; discharge fissitunicate; contents I+ yellow-orange (Lugol’s iodine), ascus wall I – (Lugol’s iodine). Ascospores overlapping monoseriate, deep yellow-brown, ellipsoid to soleiform, 1-septate, the upper cell larger and the lower sometimes somewhat attenuated, constricted at the septum, thick-walled, minutely warted, with a thin enveloping gelatinous sheath 1 μm thick, overall excluding the sheath (14–)17–19·7–20 (–21) × (6–)6·5–6·8–7·5 (–8) μm, length:breadth ratio 2·5:1.

Etymology. Named in recognition of Professor Ana Maria Crespo de Las Casas’s contributions to lichenology and our gratitude to her for enabling us to collaborate on this paper.

Host. Polycoccum crespoae infects thalli of Chondropsis semiviridis (Parmeliaceae). The fungus does not form galls in the specimen studied, but appears to be mildly pathogenic as the most infested areas of the thallus become discoloured brownish. It occurs on inrolled parts of the upper surface of the thallus, and is most easily found when the specimens unroll after re-hydration in water (Fig. 1A).

Distribution. Known only from the holotype from Australia (Victoria). The fungus was not noted on other material in BM, but should be sought on other specimens of this species within the range of the host in Australia and New Zealand (Elix & Child 1987). In addition, species currently placed in Neofuscelia and Xanthoparmelia might also be checked as these ‘genera’ are now known to be extremely closely related and perhaps congeneric with Chondropsis (Crespo et al. 2001).

Observations. Polycoccum montis-wilhelmii on Hypotrachyna (see above) is gall-forming and has 8-spored asc with smaller ascospores (14·5–16 × 6·5–7 μm). Scant material of another undescribed Polycoccum was discovered on a third genus in the Parmeliaceae during our studies. This occurred on a specimen of Karooavia adhaerens (South Africa: Cape Province: 19 km south of Prince Albert, summit of Swartberg Pass, on

Fig. 3. Ascospore outlines. A, Polycoccum crespoae (holotype); B, Polycoccum sp. on Karooavia adhaerens (BM 676683). Scale=10 μm.
rock, alt. 1650 m, 6 February 1986, F. Brusse 4883, BM 676683) and had 8-spored ascis and thick-walled, dark brown, equal-celled (isolocular), ellipsoid ascospores of 13–17 × 7–8 μm (Fig. 3B; the walls to 2 μm thick). The fungus on the Karoovia is mentioned here to encourage the search for additional infected specimens and permit its formal description.

Polycoccum crespoae is unusual in the genus in having consistently 4-spored ascis. These also occur in P. crassum Vězda (on Peltigera) but in that species the ascospores are coarsely warted and (25–)30–32(–36) μm long. Both 4- and 6-spored ascis occur in three species: P. clauzadei Nav.-Ros. & C. Roux (on Xanthoria elegans) with coarsely warted, dark brown, ascospores 15–18.5 (−19.5) × (6.5−)7–9(−9.5) μm; P. microstitecticum (Leighton ex Mudd) Arnold (on saxicolous Acarospora, Buellia and Hymenelia species) with ascospores 14–18 × 7–8.5 μm; and P. peltigerae (Fuckel) Vězda (on Peltigera) with centrally septate ascospores that are generally more pointed at the apices and measure (12–)13.5–16(–18) × 4–6(–7) μm.

The new species is closest to P. microstitecticum in the overall ascospore dimensions, but in that fungus the ascospores are darker in colour, more coarsely ornamented, smoothly rounded at the apices, centrally septate, and relatively broad with a length:breadth ratio of 2:1.

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References


