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A new *Bacidia* with long-necked pycnidia from Central Europe

Paweł CZARNOTA and Brian J. COPPINS

Abstract: *Bacidia pycnidiata* sp. nov. (*Ramalinaceae*) is described from Poland and the Czech Republic. It is the first species within *Bacidia* s. lat., referable to the *Bacidina* group, known to have sessile, long-necked, lageniform pycnidia bearing straight macroconidia. It has been found growing on saxicolous as well as on corticolous bryophytes and directly on bark of deciduous trees within young, hardly changed woodlands or in the vicinity of human settlements.

Key words: *Bacidina*, *Ramalinaceae*, straight macroconidia, Central Europe

Introduction

During surveys for lichens in southern Poland and a few neighbouring countries, the first author made three collections of a curious crustose species with white, sessile, long-necked, lageniform pycnidia. This species also has apothecia, whose characters place it in *Bacidia* s. lat. In having a finely granular thallus, a paraplectenchymatous outer exciple, narrowly acicular ascospores and filiform conidia, the species is referable to the group sometimes (e.g. Ekman 1996) treated in the segregate genus *Bacidina* Vězda (1990). Indeed our new species agrees with *Bacidia phacodes* Körb., the type of *Bacidina*, in having straight, rather than the strongly curved or hamate conidia found in most other species of the group. However, doubts have been expressed concerning the circumscription and nomenclature of this group, and as to whether or not it is monophyletic (Ekman 2001). Owing to these uncertainties, we follow some other recent treatments (e.g. Coppins & van den Boom 2002; Sparrius & Aptroot 2003) and describe our new species in *Bacidia* s. lat.

P. Czarnota: Scientific Laboratory of the Gorce National Park, Poręba Wielka 590, 34–735 Niedźwiedź, Poland.
B. J. Coppins: Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh EH3 5LR, UK.

The Species

Bacidia pycnidiata Czarnota & Coppins sp. nov.

Bacidiae delicatae (Larbal. ex Leight.) Coppins similis sed pycnidiis sessilibus lageniformibus, collo ostiolare 120–200 µm elato, instructis et conidiis plus minusve rectis.

Typus: Czech Republic, Eastern Sudetes, Rychlebské hory Mts, W of Bila Voda village, vicinity of worked-out quarry of marble 'Kukačka' near the border of Poland, 50°26′18″N, 16°53′14″E, alt. *c.* 360 m, on bryophytes over marble rock within mixed spruce-ash forest, 23 April 2004, *P. Czarnota* 4157 (GPN—holotypus; E, UGDA—isotypi).

(Fig. 1)

Thallus greyish green, finely granular, sometimes slightly coralloid; granules (goniocysts) 20–30 µm diam., composed of a few chlorococcoid algae, surrounded by a hyaline amorphous gel-layer; hyphae hyaline throughout, 1–1·5 µm wide, apressoria present; algal cells mostly ± globose, 7–10 (–13) µm diam. or ellipsoid, 8–10(–12) × 5–8 µm diam.

Apothecia numerous or a few, mostly simple, pale, whitish cream, flesh-coloured, pale brownish, or rarely straw or orange-brown when older, at first constricted at the base with a shallow or slightly concave disc and a thick, concolorous or sometimes slightly brownish margin; older apothecia convex or hemispherical with a thin, usually

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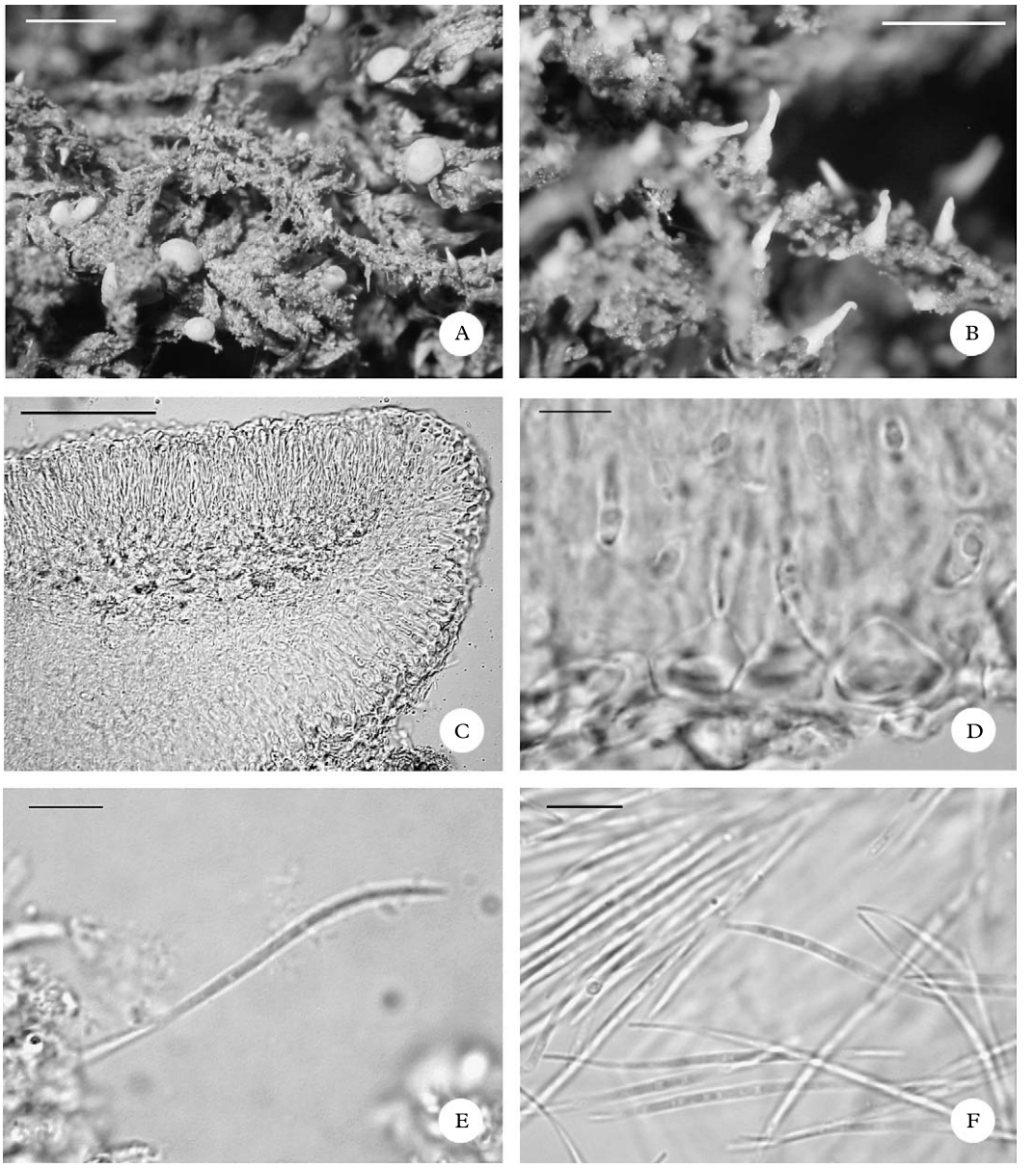


FIG. 1. *Bacidia pycnidiata* (holotype). A, apothecia and thallus; B, pycnidia; C, cross-section of apothecium; D, lumina in outer edge of excipulum; E, ascospore; F, macroconidia. Scales: A & B=1 mm; C=100 μm; D–F=10 μm.

paler or disappearing margin; (0·1–)0·2–0·5 mm diam., sometimes tuberculate and to 0·6 mm diam. *Hymenium* colourless, 40–50 μm tall. *Asci* cylindrical, 35–40 × 6–8 μm; *Bacidia*-type, but ocular chamber absent or very poorly developed, apical dome K/I+ blue but largely filled by a broad apical cushion (axial body); the ascus most resembles that present in an undescribed species named *Bacidina* sp. 1 (Ekman 1996,

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fig. 5R). *Ascospores* acicular, slightly curved or ± sigmoid, 3-septate, 35–50(–52) × 1–1·2 µm. *Paraphyses* multiseptate, simple or sometimes forked above, hyaline throughout, 2–2·5 µm wide, apices swollen to 3(–3·5) µm. *Hypothecium* colourless or in upper part sometimes dilute straw-orange; sometimes in older, more pigmented apothecia whole hypothecium distinctly orange-straw, K − or K+ slightly pinkish orange. *Excipulum* strongly developed, usually colourless or inner part concolorous with hypothecium; hyphae towards outer part with cylindrical lumina 5–7 µm wide, but the outermost cells often periclinally widened and sometimes to 10(–13) µm wide.

Pycnidia whitish, cream or older slightly brownish, numerous, sessile, ± globose, 90–190 µm diam. with long ostiolar neck of 120–200 µm tall; *macroconidia* straight, transversely 3–5(–7?)-septate (septation indistinct), filiform or acicular, (30–)35–50 (–55) × 0·5–0·8 µm.

Chemistry. Thallus and apothecia K − , C − , Pd − . TLC: no substances detected.

Etymology. *Pycnidiata*—from the numerous, distinctly visible pycnidia with long, ostiolar necks.

Remarks. *Bacidia pycnidiata* is a very distinct species owing to the numerous, pale, sessile, long-necked pycnidia, the like of which has not been reported for any other species belonging to the genus. Similarly long-necked pycnidia arise from the endosubstratal thallus of *Anisomeridium polypori* (M. B. Ellis & Everh.) M. E. Barr, which grows in the company of *B. pycnidiata*, but the pycnidia are smaller, black, and produce completely different, short ovoid or ellipsoid conidia. Almost the same kind of long-necked pycnidia appear sometimes in *Fellhanera subtilis* (Vězda) Diederich & Sérus., probably especially so when it occurs in more polluted areas (as observed in e.g. Polish Karkonosze Mts, Puszcza Niepołomicka Forest near Kraków city). However, conidia of this species are short, pyriform and completely different from the filiform macroconidia of *B. pycnidiata*, and the thallus of *F. subtilis* is never distinctly granular, and moreover both species differ in ecology. The finely granular thallus and pale apothecia of *Bacidia pycnidiata* are reminiscent of *B. delicata* and pale forms of *B. arnoldiana* Körb. However, both have only immersed pycnidia with wide gaping ostioles, and their macroconidia are shorter and distinctly curved. Similar, ± straight conidia are characteristic of *B. phacodes*, but that species can be distinguished by its non-granular thallus, completely colourless hypothecium and above all by the absence of stalked, long-necked pycnidia.

Distribution and habitats. The new species is so far known only from three localities in Central Europe. These sites are all located in mountainous regions, but other environmental features are quite different. In the Polish localities, *Bacidia pycnidiata* grew on corticolous bryophytes and directly on bark at the base of deciduous trees, within small, semi-natural, river side forest communities surrounded by farm buildings or, as in the second case, within a young, broad leaf wood, which appeared as a result of natural succession on a former sandstone quarry. In the Czech Republic it was found, however, on bryophytes covering small, calcareous rocks, in a shaded, forested, moist and quite shallow valley. The structure and domination of even-aged spruce in the close vicinity of this Czech locality, the presence of former quarries and also the neighbourhood of human settlements suggest that *B. pycnidiata* could be a synanthropic lichen species, but probably preferring humid niches.

Species associated with the Polish material included *Anisomeridium polypori* and cf. *Phaeophyscia orbicularis*. The first species is also an associate in the Czech material, together with two other muscicolous lichens, *Vezdaea retigera* and *Bilimbia sabuletorum*.

Additional specimens examined. **Poland:** *Western Beskidy Mts*: Gorce Mts, Niedźwiedź village, Witów settlement, by Konina stream, alt. 490 m, on bryophytes and bark of *Fraxinus excelsior* within ash-willow-alder forest, 2001, *P. Czarnota* 4158 (GPN). *Pogórze*

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Środkowobeskidzkie foothills: Pogórze Strzyżowskie foothills, Chełm Mt., 'Chełm' nature reserve, 49°53′17″, 21°33′36″E, alt. 450 m, on bark of young trees of *Salix* sp. within mixed, deciduous forest, 2005, *P. Czarnota* 4768 (GPN).

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