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A second *Micarea* with a hypothecial K+ violet pigment

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Abstract: *Micarea hypoviolascens* sp. nov. (*Pilocarpaceae*) is described from an ancient woodland in western Scotland. It is the second species within *Micarea* known to have the olivaceous, K+ deep violet pigment (Sedifolia-grey) in the hypothecium.

Key words: *Micarea*, *Pilocarpaceae*, Sedifolia-grey, Scotland, Europe

Introduction

The nature and location of pigments within apothecia and thallus structures are of prime importance in the delimitation of *Micarea* species. The olivaceous pigment, 'Sedifolia-grey' (Meyer & Printzen 2000; 'Pigment D' of Coppins 1983: 88; 'Thalloidima-Green' of Ekman 1996: 26) is found in several species of the genus, but it usually concentrates in a gel-matrix within the hymenium (especially in the upper part), giving the characteristic reactions: K+ violet, C+ violet. It may also be present in the uppermost part of the thallus areoles or goniocysts and in the walls of pycnidia. Just occasionally it is present in dilute amounts in the upper part of the hypothecium (e.g. in *M. micrococca*, *M. misella*, and *M. synotheoides*), probably as a result of exposure to strong sunlight. However, the presence of this pigment in concentrated amounts throughout the hypothecium has previously been reported only in the South African *M. endoviolascens* Coppins (Coppins 1999). The new species described below has the same olivaceous pigment in the hypothecium, but differs in morphology, anatomy and ecology from the latter.

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The Species

Micarea hypoviolascens Czarnota & Coppins sp. nov.

Species intra gener fere singularis ob pigmentum hypothecii intense olivaceum K+ violascens habens. In hoc respecto *M. endoviolascens* Coppins similis, sed areolis et apotheciis parvioribus, areolis ecorticatis, characteribus pycnidiorum dissimilibus, et habito lignicola (non terricola) differt.

Typus: British Isles, Scotland, V.C. 98, Argyll, S of Lochgoilhead, Cormonachan Wood, *c.* 0·3 km W of bank of Loch Goil, 56°07′74″N, 4°54′66″W [grid.: 16(NS)/19.96], alt. 70 m, on hard wood of stump within ancient oak-woodland, 12 September 2003, *P. Czarnota* 3432 (GPN—holotypus; E—isotypus).

(Fig. 1)

Thallus sometimes endoxylic or mostly episubstratal, developed as shallow-convex usually continuous, greyish green to greenish white areolae, *c.* 40–200 µm diam., forming an uneven crust. Areoles in section *c.* 100–180(–200) µm tall, without cortex, but sometimes with a hyaline amorphous covering layer (*c.* 5–15 µm tall). *Photobiont* 'micareoid'; cells regularly globose, 3·5–6(–7) µm diam.

Apothecia numerous, often crowded and confluent as small groups (2–4 apothecia), immarginate, convex-hemispherical, usually soon becoming constricted at the base and sometimes ± globose, grey (when young) to black with greyish tinge, 0·1–0·25 mm diam. or to 0·4 mm when tuberculate. *Hymenium* 30–35(–40) µm tall, dilute olive-brown to pale yellowish brown, K−, C± violet,

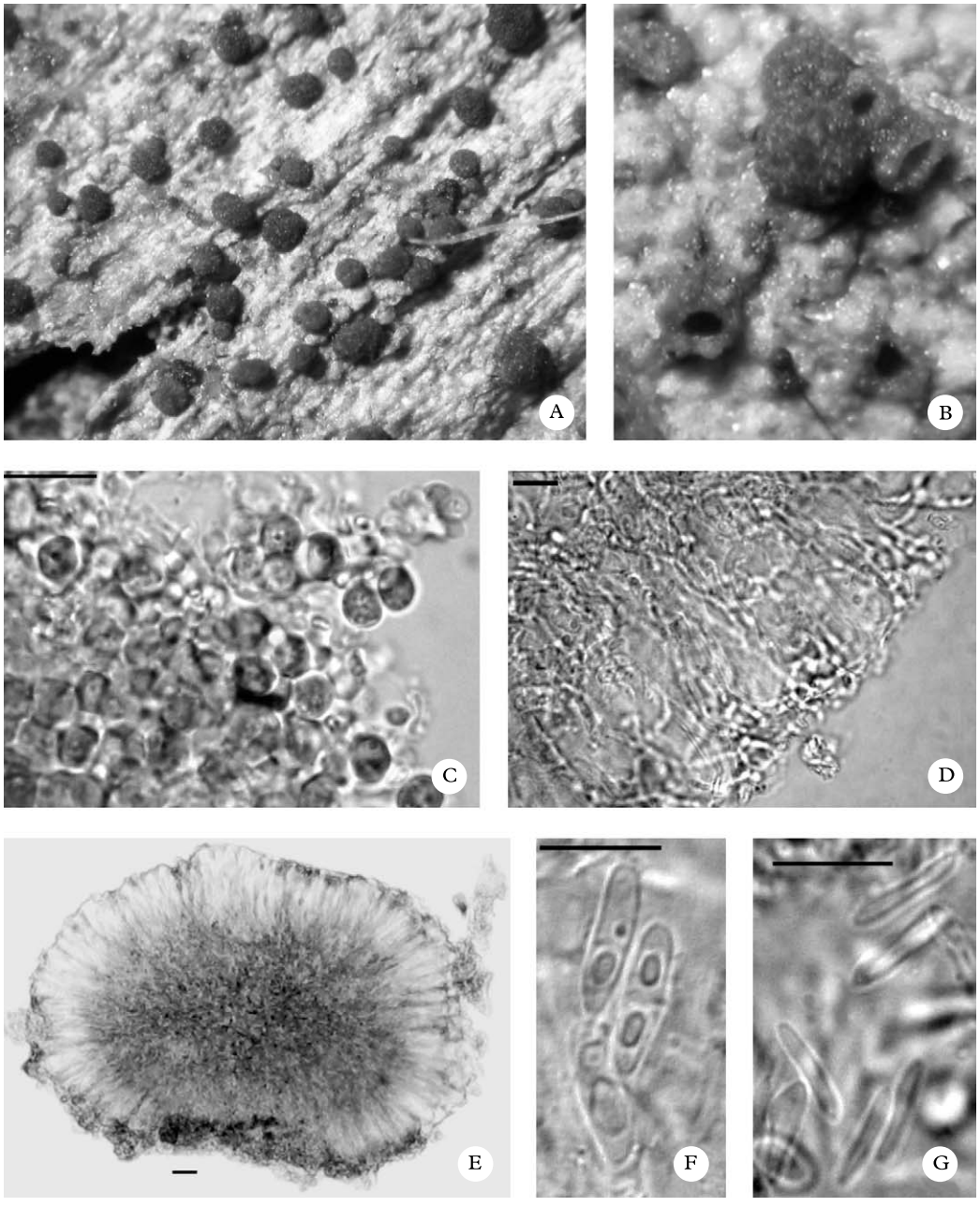

FIG. 1. *Micarea hypoviolascens* (holotype). A, apothecia and thallus; B, pycnidia; C, 'micareoid' photobiont; D, paraphyses; E, vertical section of apothecium; F, ascospores; G, conidia. Scales: C–G=10 μm.

N −. In thin cross-section the middle part is usually hyaline with occasional vertical yellowish-brown streaks. *Epithecium* not distinct, but sometimes pale brownish owing to the yellowish brown pigmented apices of some paraphyses. *Asci* cylindrical (20–)25–32 × 8–11 μm, 8-spored, *Micarea*-type. *Ascospores* oblong-ellipsoid, straight or

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rarely slightly curved, usually biguttulate, 0(–1)-septate, (8·2–)10–12(–13·4) × 3–4 (–4·3) µm. *Paraphyses* numerous, multiseptate, branched, occasionally anastomosing, mostly colourless but sometimes with yellowish brown walls, immersed within gel-matrix that does not dissolve in K, 1·3–2 µm wide in mid-hymenium, slightly widening above to 2·5 µm and becoming more branched. *Hypothecium c*. 70–85(–100) µm tall, olive to olive-brown, K+ intense violet (especially in the lower part), C+ violet, N−; hyphae multiseptate, densely interwoven and anastomosed, 2–2·5(–3) µm wide. *Excipulum* not visible macroscopically, but in cross-sections of young apothecia visible as a gold-brownish zone mostly reflexed under the hypothecium, distinctly entering into the thallus; in mature apothecia the brownish zone is narrower (<20 µm wide), but in most cases is still present; K± violet, I± bluish, N−.

Pycnidia partially immersed in the areoles, or sometimes becoming sessile, globose, 70–150 µm diam., with wide gaping ostiole; wall olive, K+ violet, C+ violet, I± bluish, N−. *Conidia* (mesoconidia?) bacilliform, rarely narrowly fusiform, straight (8·4–)9–11·5 × 1·3–1·8 (–2·1) µm.

Chemistry. Thallus K−, C−, KC−, Pd−, UV−. Pigments: 'Sedifolia-grey' (Meyer & Printzen 2000) in hypothecium and walls of pycnidia, K+ violet, C+ violet. TLC: unidentified substance in R_f class 6 in solvent system A.

Etymology. *Hypo-* from hypothecium, and *violascens* (=becoming violet) from the K+ violet reaction in the hypothecium.

Remarks. Microscopically, *M. hypoviolascens* is a very distinctive species on account of the olive-green pigment within the hypothecium, giving a K+ intensive violet reaction. Among other species of the genus only *M. endoviolascens*, discovered in South Africa, has the same pigment ('Sedifolia-grey') located within the hypothecium. However, this species differs from *M. hypoviolascens* mainly by its large (0·2–0·6 mm diam.), almost squamule-like, pale brown, corticated areoles, larger apothecia (0·2–0·4 mm diam.), larger trumpet-shaped pycnidia, smaller conidia and terricolous substratum ecology (Coppins 1999). Macroscopically, *M. hypoviolascens* is superficially similar to several other lignicolous *Micarea* species that can have a combination of ± globose, immarginate, ± black apothecia and a thin, ± whitish-green, crustose thallus, for example *M. melaena*, *M. lignaria* var. *lignaria* or sometimes even *M. denigrata*. However, differences in anatomy and pigmentation are very distinctive, and moreover no positive spot reactions are obtained from the thallus of *M. hypoviolascens*, whereas the thalli of *M. denigrata* and *M. melaena* are C+ red (gyrophoric acid), and that of *M. lignaria* var. *lignaria* is Pd+ red (argopsin).

Distribution and habitat. *Micarea hypoviolascens* is so far known only from the type locality in the hyperoceanic, western Highlands of Scotland. It has been found in a narrow zone of ancient woodland, dominated mainly by *Quercus petraea*, covering the west bank of a sea-loch. The new *Micarea* grew on the hard lignum of a stump of a deciduous tree near the ground. Associated species included *Micarea alabastrites*, *M. melaena*, *Lichenomphalia umbellifera* and *Placynthiella icmalea*.

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