

## MICAREA PSEUDOMARGINATA: A NEW SAXICOLOUS LICHEN FROM THE BRITISH ISLES

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ABSTRACT. *Micarea pseudomarginata* Coppins sp. nov. is described from the British Isles, where it occurs in upland districts on vertical surfaces of acid rocks and walls.

Since 1979 I have recognized the existence in the British flora of an apparently undescribed saxicolous *Micarea* with superficial resemblance to *M. lutulata* (Nyl.) Coppins and *M. sylvicola* (Flotow) Vězda & V. Wirth. Unfortunately, sufficient material was not available for me to be able to treat it in my revision of the European members of the genus (Coppins, 1983). When I first received material from Sweden of the recently described *M. marginata* (Coppins, 1988) I thought I had found the answer, but a closer comparison showed that the British and Swedish collections differed from one another in several important respects. More recently, Mr A. Fryday has kindly sent me ample material of the hitherto undescribed species, thus allowing a formal treatment to be made.

### *Micarea pseudomarginata* Coppins, sp. nov.

*M. marginatae* affinis, a qua imprimis differt apotheciis semper immarginatis, ascosporis semper eseptatis  $9-12(-13) \times (3.5-4-5(-5.5))\mu\text{m}$ , mesoconidiis longioribus  $6.9 \times 1.5-1.8\mu\text{m}$ ; a *M. lutulatae* et *M. sylvicolae* cellulis algae parvioribus ( $4-7$  vs.  $5-15\mu\text{m}$  diam.), excipulo instructo, mesoconidiis longioribus distinguitur.

Typus: Anglia: North-East Yorkshire: Rosedale, Northdale, North Gill, 44/724.993, 260m, on sandstone wall in bottom of steep-sided valley, 21 xi 1987, A. M. Fryday (holo. E, iso. UPS).

Thallus effuse, pale to dark grey, or grey-green, occasionally in part with orange tinge (ferruginized), matt, scurfy granular to irregularly granular-areolate, sometimes secondarily rimose,  $50-200\mu\text{m}$  thick but often appearing thicker where thallus is developed over loose weathered surface debris. Areolae (when discrete) mostly confluent, convex, irregularly rounded,  $c.80-240\mu\text{m}$  wide; without well-defined cortex but often with an epinecral layer, up to  $25\mu\text{m}$  thick, which is mostly hyaline but sometimes has brownish patches (K+ purplish brown or K+ green,  $\text{HNO}_3$  + red) in dark coloured thalli; a white or orange (ferruginized) medulla is sometimes formed below the algal layer, hyphae  $1.7-2\mu\text{m}$  wide. *Photobiont* cells 'micareoid',  $4-7\mu\text{m}$  diam. *Cephalodia* absent.

*Apothecia* numerous, dark grey to black, matt, immarginate, adnate, convex to hemispherical and  $0.2-0.4\text{mm}$  diam., or tuberculate and to  $0.8\text{mm}$  diam. *Hymenium*  $40-55(-60)\mu\text{m}$  tall, hyaline but with many dark brown vertical streaks, without a well-defined epithecial layer. *Paraphyses* numerous, dimorphic: mostly simple, or sparingly branched or anastomosed,  $1-1.7\mu\text{m}$  wide at mid-hymenium, sometimes widening above to  $2\mu\text{m}$ , not surrounded by pigment; also present are small fascicles of stout ( $2-3\mu\text{m}$  wide), unbranched paraphyses that are surrounded by dark pigment (cf. vertical streaks). *Asci* clavate to cylindri-

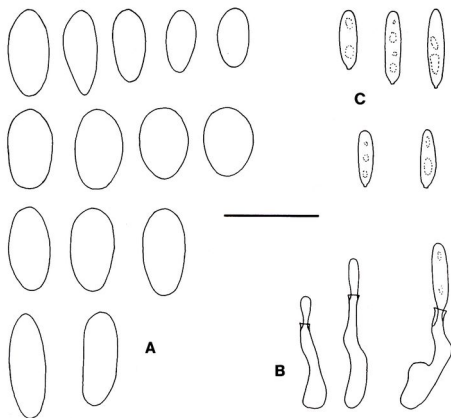


FIG. 1. *Micarea pseudomarginata* (holotype). A, ascospores; B, conidiogenous cells; C, mesoconidia. Scale bar = 10µm.

cal clavate,  $35-55 \times 9.5-12(-14)\mu\text{m}$ ; in K/I with amyloid apical dome which sometimes has a darker blue 'ring-structure'. *Ascospores* simple, variably shaped (Fig. 1A), broadly ellipsoid, ellipsoid to ovoid, or oblong-ellipsoid,  $9-12(-13) \times (3.5-)4-5(-5.5)\mu\text{m}$ . *Hypothecium*  $70-110\mu\text{m}$  tall, mottled dark brown in thin sections, K- or K+ faintly purplish tinge,  $\text{HNO}_3$ + purple-red; hyphae interwoven, c.  $1-1.5(-2)\mu\text{m}$  wide, embedded in pigmented gel matrix, also with short-celled ascogenous hyphae c.  $2-5\mu\text{m}$  wide. *Excipulum* distinct but soon reflexed,  $24-35\mu\text{m}$  wide, dark brown, mostly K- or K+ purplish tinge, but K+ greenish in outer part, composed of branched, outwardly radiating hyphae  $1-1.5\mu\text{m}$  wide, but heavily coated in dark pigment so as to appear to be  $3-4\mu\text{m}$  wide.

*Pycnidia* immersed to half-emergent, black,  $80-140\mu\text{m}$  diam., upper (exposed) part of wall dark brown (K± purplish), lower part pale brown or hyaline. Conidiogenous cells (Fig. 1B) elongate,  $7-11 \times 1.3-2\mu\text{m}$ . *Conidia* (mesoconidia; Fig. 1C) ± bacilliform, euseptate, usually with a few small guttules,  $6-9 \times 1.5-1.8\mu\text{m}$ .

*Chemistry*: thallus K-, C-, KC-, PD-, I-; apothecial sections C-; no substances by t.l.c.

ENGLAND. NE Yorkshire (V.C. 62): Rosedale, 44/72.99, on sandstone wall, iv 1987, A. M. Fryday (E). Cumberland (V.C. 70): Cross Fell, boulder field around summit, 35/6.3, c.850m, on sandstone boulder, 1979, Coppins 4385 (E).

SCOTLAND. E Ross (V.C. 106): Seana Bhraigh, Loch Luchd Choire, 28/289.878, c.600m, on N-facing vertical schistose rock face, 1984, Coppins 10454 (E).

WALES. Caernarvon (V.C. 49): Beddgelert, Cwm-y-llan, 26/61.51, c.500m, on vertical rock (slate) at entrance to copper mine adit, 9 iv 1972, Coppins (E).

*Ecology and distribution:* known in four localities on vertical surfaces of hard acidic rocks (sandstone, schist and slate) in open but sheltered or N-facing situations, at altitudes of 260–850m. *M. pseudomarginata* appears to be at least slightly tolerant of metal-rich conditions; most specimens show some degree of ferruginization (especially in the thallus medulla), and the collection from Wales was from the entrance to a copper mine. *M. pseudomarginata* is found in species-poor communities, and the material seen is associated only with *Porpidia tuberculosa* (3 collections) and *Lepraria* sp. (2 collections). Although so far known only from scattered sites in upland Britain, this rather inconspicuous species has probably been overlooked in other parts of Europe.

*Remarks:* *M. pseudomarginata* is characterized by the combination of black immarginate apothecia, a dark brown excipulum and hypothecium, dimorphic paraphyses, simple ascospores, mesoconidia (size), 'micareoid' photobiont, and its saxicolous habit. In many ways it seems very close to *M. marginata*, but the latter has marginate apothecia (at least when young), slightly longer ascospores, 9.5–14(–16) $\mu$ m, that are often 1(–2–3)-septate, and much shorter mesoconidia (3.5–5(–5.7) $\mu$ m). *M. marginata* also has pycnidia that contain curved macroconidia (24–32  $\times$  1–1.3 $\mu$ m); no such conidia have yet been detected in material of the new species.

*Micarea pseudomarginata* is apt to be confused with members of the *M. sylvicola* group, especially *M. sylvicola* itself which has a dark hypothecium and similar ascospores. However, the latter differs in lacking an excipulum, and in having shorter (3.8–6(–6.6) $\mu$ m) mesoconidia, a larger celled (5–12 $\mu$ m diam.) photobiont, and an aeruginose pigment in the hymenium. *M. lutulata* differs in having much smaller ascospores (c.6–8  $\times$  2–3 $\mu$ m), a dark brown hypothecium which is HNO<sub>3</sub>–, shorter mesoconidia (c.4–5 $\mu$ m), no excipulum, and a large-celled photobiont.

In the field, *M. pseudomarginata* could also be overlooked for the ubiquitous *Scoliciosporum umbrinum* (Ach.) Arnold, but the young apothecia of that species are usually glossy; internally its apothecia are very different, with vermiform ascospores and a hyaline hypothecium.

On account of its tuberculate apothecia, brown hypothecium and ascospore size, the Welsh collection was originally identified as *Lecidea pycnocarpa* (Körber) Ohl. However, the latter is easily distinguished by its white,  $\pm$  glossy, K+ yellow thallus, large-celled (c.9–15 $\mu$ m diam.) photobiont, distinct, greenish (rarely brown) epithecium, and paraphyses which have dark brown apical caps.

## REFERENCES

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