

**A new *Micarea* species *M. oleoprasina*, containing oildroplets in the thallus, occurring in western Europe and Macaronesia**

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**Abstract:** For the first time, a *Micarea* species has been found with oildroplets in the thallus, abundantly present and without known chemical compounds. Further characters are pale brownish coralloid thallus, pale apothecia of c. 0.35 mm and 0-1 septate, ellipsoid ascospores. It is known from Austria, Belgium, Ireland, Luxembourg, Canary Islands and Azores.

**Keywords:** Europe, Macaronesia, taxonomy, Ascomycetes, Pilocarpaceae, *Micarea prasina*

### Introduction

Since several recent years, the authors published rather a lot of papers of studies on the lichen genus *Micarea* (Brand & al. 2014, Launis & al. 2019, van den Boom & al. 2017, 2018, 2020). They collected a lot of *Micarea* material (much more than 1000 specimens), still several specimens belong to undescribed species, mostly waiting for more and better material. In 1989 one of us (AMB) collected a *Micarea* specimen with a deviant thallus, for the first time in Luxembuorg. One year later, both the authors collected material of the same undescribed *Micarea* species in Belgium, on two spots, rather close to each other. After that it was waiting for more material. Finally it has been found in four more countries. This new species contain oildroplets in the thallus and not any chemical compound has been found by TLC. The pale brownish coralloid thallus (fig.1) has not been found in any other *Micarea*. Apothecia are rather sparsely present. In the *Micarea* monograph by Coppins (1983), not any *Micarea* with oildroplets in the thallus is discussed.

### Materials & Methodes

The studied specimens from are kept in the private collections of the authors and BR. No comparable *Micarea* specimens could be found of *Micarea oleoprasina*. Hand-made sections were investigated microscopically in water and 5 % KOH. Microscopic measurements all refer to material examined in water. Chemical reactions were tested using 10–15 % KOH (K) and Lugol's reagent without (I) or with (K/I) pre-treatment with K. Microcrystallization, used to identify the possible presence of unknown substances follows Orange et al. (2010). Chemical compounds were studied by thin-layer chromatography (TLC) using standard methods (Orange et al. 2010).

*Micarea oleoprasina* van den Boom & M. Brand spec. nov. (fig. 1,2), MycoBank: no. 856715

**Diagnose:** Thallus thin coralloid, pale greenish, turning pale brownish in herbarium, inspersed with small oil globules, crystals lacking in thallus and apothecia, apothecia pale yellowish cream, slightly convex, roundish, margin often flexuose, up to 0.35 mm diam., ascospores (9.5)10.8–11.8 × (2.8-)3.8–4.1 µm, 0–1(–2) septate.

**Type:**—**Portugal**, Azores, Terceira, WNW of Angra do Heroísmo, NNE of Santa Bárbara, Cerrado das Sete, picnic area with mature *Cryptomeria* trees. 38° 42.60' N, 27° 19.52' W, 460 m, 1 July 2014, P & B. van den Boom 51636 (holotype: BR).

**Thallus** diffuse, small, to c. 2 cm, without prothallus, pale greenish, thin coralloid goniocystose; goniocysts av. 21–37 µm in diameter, more or less angular to stellate, fused to form branched coralloid structures; composed of conglutinated hyphae and micareoid photobiont (cells c. 5 µm), without crystals but interspersed with small (1–2.5 µm) oil globules. Apothecia not rare, to 0.2–0.35 mm, pale yellowish cream, sessile, without visible margin, outer rim sometimes somewhat paler, slightly convex. Excipulum formed by radiating, conglutinate hyphae. Hypothecium without algae, colourless. Hymenium c. 32–50 µm high. Paraphyses av. 1.2–1.4 µm thick, branched. Asci c. 30–40 × 10–11 µm. Ascospores elliptical av. (9.5)10.8–11.8 × (2.8–)3.8–4.1 µm, 0–1(–2)-septate. Pycnidia rare, c. 50 µm (once found, 57300f). Microconidia acicular, tapering to both ends, av. 10.2–0.8 µm. In 57142 we have found mesoconidia, bacillar, tapering at both ends, (4.5–)5–6.5 × 0.9–1.2 µm.

**Chemistry:**—Thallus K-, KC-. TLC : Acetone extract weak, clear gummy, without crystals, 'oleiprasina unknown', TDA 37/44, in UV 254 nm faint absorption, after charring in H<sub>2</sub>SO<sub>4</sub> light yellow, in UV 360 nm after charring white fluorescent, which fades in a few hours; additionally a weaker spot at 28/44 with the same characteristics, but not yellow in H. This compound is present in 3 collections, and not in the control sample of the substrate. However it is not detected in other collections, where it was not possible to extract enough uncontaminated thallus; the resulting spots must be contaminants. Pigments absent (or faint in goniocysts, K+violet in 20054. Hyphae of goniocysts weakly hemiamyloid.

**Etymology:**—The epithet refers to the oil droplets in the thallus.

**Habitat & distribution:**—On bark of *Fagus* in old forest in Ardennes, on *Erica mediterranea* in laurel wood (Tenerife), on rotting wood in forest (Ireland), associated species are *M. micrococca*, *M. peliocarpa*, *Cladonia coniocraea*, resp. *M. xanthonica*, *Lepidozia reptans* resp. *M. prasina*, *Mycoblastus caesius*, *Trapelia corticola*; also on schist on a sheltered place in mountains of W-Ireland, with i.e. *Hymenophyllum wilsoni*, *Micarea xanthonica*, *M. botryoides*, *Diplophyllum albicans*, en *Opegrapha gyrocarpa*. In the type collection, associated species are rare, we only were able to identify *Micarea azorica*.

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Fig. 1. *Micarea oleoprasina* van den Boom 9506. Scale = 0.5 mm

**Notes:**—Habitus of the new species as *M. xanthonica* Coppins & Tønsberg, *M. prasina* and *Micarea aeruginoprasina* van den Boom, Guzow-Krzemińska, Brand & Sérus., but with a more glassy habitus. It differs in habitus from the adjacent *M. prasina* by a paler green colour due to the absence of pigment. *M. xanthonica* and *M. aeruginoprasina* have somewhat the same thallus in habitus, but the former contains gyrophoric acid, the latter contains micareic acid and they have no oil droplets in the thallus. *M. oleoprasina* has often been found without or with a few apothecia. If only pycnidia are present in the new species and just a very few apothecia, the thallus is well developed. If apothecia are abundantly present, the thallus is rather reduced (fig. 2). *Bacidina celtica* van den Boom & Llop, a recently species described from western Europe (van den Boom & Llop 2021), has also a coralloid thallus with somewhat the same habitus and the same colour, so it is easily confusable with the new species, but the apothecia are much larger up to 0.8 mm wide and ascospores are acicular. Both of the authors visited some of the localities of the new species for the second time and spent some days, but couldn't find more specimens. Also the literature mentioned above has been checked as well as the recent paper about *Micarea* of Tasmania (Kantvilas & Coppins 2019) in which thirty-five species are treated including ten new species. None of them refer to our new species.



Fig. 2. *Micarea oleoprasina* holotype. Scale = 0.3 mm

**Specimens examined:**—**Belgium**, prov. Luxembourg, 8 km NE of St. Hubert, 1 km SW of La Neuville au Bois, 50°4'N, 5°27'E, 500 m, *Fagus* in old, open wood, with springs, 29 April 1990, P. van den Boom & A.M. Brand 23168 (hb. Brand); 7 km NE of St. Hubert, E of road St. Hubert-La Roche, forest with *Fagus* and *Quercus*, 50°4'N, 5°22'E, 500 m, *Fagus* in old, open forest, 29 April 1990, P. van den Boom 9506 & A.M. Brand (hb. v.d. Boom).—**Luxembourg**, Beaufort, c. 0.4 km SE of lake near castle, 49°49'N, 4°6'17"E, 310 m, large *Fagus* near brook in open wood in glen, 27 March 1989, A.M. Brand 20054 (hb. Brand).—**Ireland**, Connemara, Twelve Pins, S slope of Muckanaght, near saddle to Benbrack, 53°31.5'N, 9°51.4'W, 350 m, Micaschist rocks on N slope, overhang near entrance of cave, 18 May 2000, A.M. Brand 40684 (hb. Brand); co Kerry, Killarney, Meeting of the Waters, W-shore, N of Old Weir Bridge, 52°4'N, 9°32.9'W, c. 50 m, decaying bark of rotting trunks (*Quercus*) lying in open wood, 9 May 2000, A.M. Brand 40264 (hb. Brand).—**Austria**, Salzburg, St Wolfgang, Zinkenbachtal, 1 km S of Zinkenbachmühle, 47°43.0'N, 13°25.0'E, 600 m, *Picea* in wood in narrow valley, 28 July 2008, A.M. Brand 57142 (hb. Brand); Oberösterreich, St Wolfgang, 1.1 km SW of SW point of Schwarzensee, NE face of Strubeck, 47°44.47'N, 13°29.15'E, 800 m, rotting trunk in wood, 31 July 2008, A.M. Brand 57300 (hb. Brand).—**Spain**, Canary Islands, Tenerife, Anaga, Pico de Ingles, 28°31.90'N, 16°15.68'W, 920 m, *Erica mediterranea* in laurel wood on S slope, 7 July 2012, A.M. Brand 66699 (hb. Brand).—**Portugal**, Azores, Terceira, NW of Angra do

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Heroismo, W of Pico Gordo, Mistério dos Negros (N), trail from Lagoa do Negro to *Juniperus* forest, fence posts along fields, some rows of *Cryptomeria* trees and heathland with young *Cryptomeria*. 38°44.27'N, 27°16.60'W, 570 m, 28 June 2014, P. & B. van den Boom 51400, 51653 (hb. v.d. Boom). NE of Serreta, north trail to Lagoínha, *Cryptomeria* trees (in forest), *Myrica faya* trees, *Erica*, etc., 38°45.28'N, 27°20.50'W, 500 m, 2 July 2014, P. & B. van den Boom 51688, 51706, 51713 (hb. v.d. Boom).

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