

New species and new records of *Enterographa* (Roccellaceae) from India

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Abstract: *Enterographa bengalensis*, a new species is described from the mangrove reserve – Sundarbans Biosphere Reserve, West Bengal, India. It is characterized by the convergent punctiform to lirelliform ascomata, 12–15(–17) septate fusiform ascospores and the presence of psoromic acid. In addition, three species of the genus viz. *E. anguinella* (Nyl.) Redinger, *E. divergens* (Müll. Arg.) Redinger and *E. multiseptata* R. Sant. are also reported for the first time from India.

Key words: *Arthoniales*, India, new species, *Roccellaceae*

Introduction

The lichen genus *Enterographa* Fée (*Roccellaceae*) was monographed by Sparrius (2004) and included 36 species. Subsequently, Ertz *et al.* (2005), Sparrius *et al.* (2006), Aptroot *et al.* (2007) and Sparrius & Aptroot (2007) added several species to the genus. *Enterographa mesomela* Sparrius, Saipunkaew & Wolseley, *E. micrographa* (Nyl.) Redinger and *E. pallidella* (Nyl.) Redinger are known from India (Awasthi 1991; Jagadeesh Ram *et al.* 2007; Sparrius 2004). During the course of ongoing lichenological studies in Sundarbans Biosphere Reserve, West Bengal, India, a new species and 3 new records for India of *Enterographa* have been discovered. The new species is described below as *Enterographa bengalensis* and brief notes on the new records are also provided.

Materials and Methods

Specimens collected from Sundarbans Biosphere Reserve, West Bengal, India, in the ASSAM and BSA herbaria were examined. External morphology was

studied using an Olympus stereomicroscope and anatomical details examined under a Leica DM2500 research microscope. The chemistry was studied by the usual spot tests and thin layer chromatography following White & James (1985).

The New Species

Enterographa bengalensis Jagadeesh Ram, G. P. Sinha & Kr. P. Singh sp. nov.

Thallus corticolus, epiphloeodes, albo-griseus; ascomata convergentia, punctiformia ad lirelliformia, 0.05–0.12 mm diam. vel 0.07–0.2(–0.25) mm longa et 0.05–0.1 mm lata; hymenium et hypothecium hyalina; asci 8-spori, 98–122 × 18–24 µm; ascosporae hyalinae, fusiformia, 12–15(–17)-septatae, (44–)46–57(–66) × 5–6.5 µm; perisporae 3.5–5.5 µm lata; acidum psoromicum continens.

Typus: India, West Bengal, Sundarbans Biosphere Reserve, Goshaba mangrove forests, alt. sea level, on *Excoecaria agallocha*, 29 February 2004, T. A. M. Jagadeesh Ram 1083 (BSA—holotypus).

(Fig. 1)

Thallus crustose, corticolous, epiphloeodal, suborbicular, up to 4 cm diam., whitish grey, water absorbing, smooth, fissured to fissured-areolate, 180–260 µm thick, ecorticate; prothallus distinct, black; upper algae free zone 18–32 µm thick, of loosely interwoven hyphae; medulla cream coloured, with abundant 5–22 µm wide calcium oxalate crystals; photobiont *Trentepohlia*.

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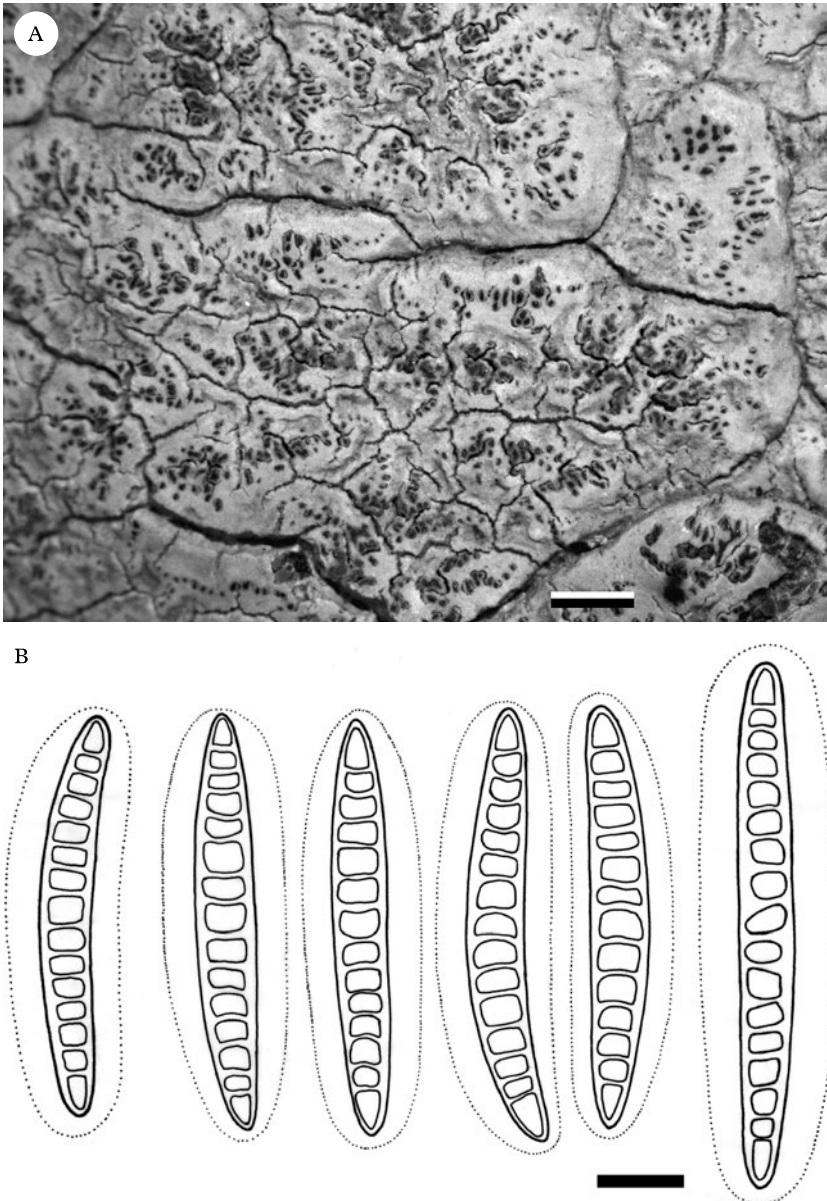


FIG. 1. *Enterogapha bengalensis* (holotype). A, habit; B, ascospores. Scales: A=1 mm; B=10 μ m.

Ascomata convergent, punctiform to lirelliform, 0.05–0.12 mm diam. if punctiform, 0.07–0.2(–0.25) mm long and 0.05–0.1 mm wide if lirelliform; *disc* black, shining, epruinose; *thalline margin* 40–60 μ m thick, often indistinct; *exciple* colourless, 10–22 μ m thick; *epithecium* brown, 10–18 μ m thick,

without crystals, K–; *hymenium* colourless, 105–115 μ m high, I+ blue, KI+ blue; *hypothecium* colourless, 42–65 μ m thick, K–, I+ blue, KI+ blue. *Paraphysoids* branched and anastomosing, 0.8–1 μ m wide; tips brown, 1 μ m wide. *Asci* cylindrical, 8-spored, 98–122 \times 18–24 μ m. *Ascospores* colourless,

fusiform, 12–15(–17) septate, (44–)46–57 (–66) \times 5–6.5 μm , with distinct perispore; perispore 3.5–5.5 μm thick.

Pycnidia not seen.

Chemistry. Thallus K+ yellowish, C –, P+ yellow, I+ weak red, KI+ weak blue, UV –; psoromic acid detected by TLC.

Remarks. *Enterographa bengalensis* is characterized by the convergent, punctiform to lirelliform ascomata, 12–15(–17) septate ascospores and the presence of psoromic acid. It closely resembles *E. subserialis* (Nyl.) Redinger, which also has punctiform ascomata and psoromic acid, but differs in the presence of 4–7(–12) septate smaller ascospores and norstictic acid and derivatives (Sparrius 2004). At present the new species is known only from the type locality.

The New Records

Enterographa anguinella (Nyl.)

Redinger

This common pantropical species has been found once in the Reserve. It is characterized by the corticolous, continuous to areolate thallus; rounded to lirelliform, linear, stellate, simple to radially branched, immersed to semi-immersed ascomata; 7–11-septate, 29–48 \times 2.5–3.5 μm ascospores and the presence of psoromic acid.

Specimen examined. **India:** West Bengal: Sundarbans Biosphere Reserve, alt. sea level, Hingalganj Ichamathi river bank, on *Sonneratia apetala*, 2003, Jagadeesh Ram 13862 (ASSAM).

Enterographa divergens (Müll. Arg.)

Redinger

This common paleotropical species was found frequently on the bark of *Avicennia* in the Biosphere Reserve. The species is characterized by the corticolous, smooth to verrucose thallus; immersed, ellipsoid to lirelliform, linear, stellate, simple to branched, radially branched ascomata and 5–7 septate, 20–28 \times 2.5–3.5 μm ascospores.

Specimens examined. **India:** West Bengal: Sundarbans Biosphere Reserve, alt. sea level: Gosaba–

Manmathnagar, on *Avicennia alba*, 2001, Sinha & Jagadeesh Ram 11618 (ASSAM); Gosaba–Birajnagar, on *Avicennia alba*, 2001, Sinha & Jagadeesh Ram 11725 (ASSAM); Ramganga, on *Avicennia alba*, 2002, Jagadeesh Ram 12201 (ASSAM); Jambu dwip, on *Avicennia alba*, 2002, Jagadeesh Ram 12274 (ASSAM); Sagar island, on *Avicennia*, 2002, Jagadeesh Ram 12278 (ASSAM); Lothian Island Wildlife Sanctuary, on *Avicennia alba*, 2003, Jagadeesh Ram 13807 (ASSAM).

Enterographa multiseptata R. Sant.

This paleotropical species was found on the leaves of young *Borassus flabellifer* trees at a single site. The species is characterized by a smooth, continuous, foliicolous thallus; immersed, lirelliform, simple to stellately branched ascomata; 7–11-septate, 25–34 \times 2.5–4 μm ascospores and the presence of psoromic acid.

Specimen examined. **India:** West Bengal: Sundarbans Biosphere Reserve, alt. sea level, Jambu dwip, on *Borassus flabellifer* leaves, 2003, Jagadeesh Ram 13832B (ASSAM).

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