

Lecanographa uniseptata, a new species from Gabon and Guatemala (Ascomycota, Arthoniales)

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Abstract: *Lecanographa uniseptata* is described as new to science. It is characterized by having small rounded to lrellate ascomata, and 1-septate ascospores. The species is known from tropical Africa (Gabon) and tropical America (Guatemala).

Key words: *Opegrapha*, *Roccellaceae*, taxonomy, tropical forest

Introduction

Since the monograph of Egea & Torrente (1994) that included 24 species of *Lecanographa*, eight new taxa have been described in the genus: the lichens *Lecanographa laingiana* Diederich, Egea & Sipman from Papua New Guinea (Aptroot *et al.* 1995), *L. longicarpa* Egea, Sérusiaux, Torrente & Wessels and *L. tehleri* Egea, Sérusiaux, Torrente & Wessels from Namibia (Egea *et al.* 1997), *L. littoralis* Kantvilas from Australia and Tasmania, *L. nothofagi* Kantvilas from Tasmania (Kantvilas 2004), *L. atropunctata* Sparrius, Saipunkaew & Wolseley from Thailand (Sparrius *et al.* 2006) and *L. azurea* Follmann from Chile (Follmann 2008), and the lichenicolous fungus *L. imitans* Werner & Follmann from the Galapagos Islands (Follmann & Werner 2003). In addition, *Lecanactis elegans* (Müll. Arg.) Stizenb. and *Opegrapha rinodinae* Vězda were newly combined in *Lecanographa* (Mies & Schultz 2004; Santesson *et al.* 2004). *Lecanographa littoralis* was recently

chosen as the type species of the new genus *Angiactis* Aptroot & Sparrius (Aptroot *et al.* 2008). A total of 33 species are currently accepted in the genus, but the recent discoveries suggest that more species will be described.

During a field trip by two of us (DE and JD) in Gabon in 2006, an interesting species of *Lecanographa*, characterized by 1-septate ascospores was collected. It proved out to be new for science and similar to a specimen collected in Guatemala by P. van den Boom in 2004. The new species is described here.

Material and Methods

Microscopical examination was carried out on hand-cut sections mounted in water, 5% KOH (K), or Lugol's reagent (1% I₂) without (I) or with KOH pre-treatment (K/I). Measurements and drawings of asci and ascospores all refer to material examined in KOH. Drawings were prepared using a drawing tube. Ascospore measurements are recorded as (minimum–) $\bar{x} - \sigma_x - \bar{X} + \sigma_x$ (–maximum), followed by the number of measurements (*n*); the length/breadth ratio of the ascospores is indicated as l/b and given in the same way. For the other characters, the minimum and the maximum values are given and are based on the examination of at least three different ascomata.

Thin-layer chromatography (TLC) of acetone extracts was performed on 20 × 20 cm silica gel 60 F₂₅₄ layer glass plates using solvent systems C and G. For the visualization of the spots, 10% sulphuric acid was used as a reagent (Orange *et al.* 2001).

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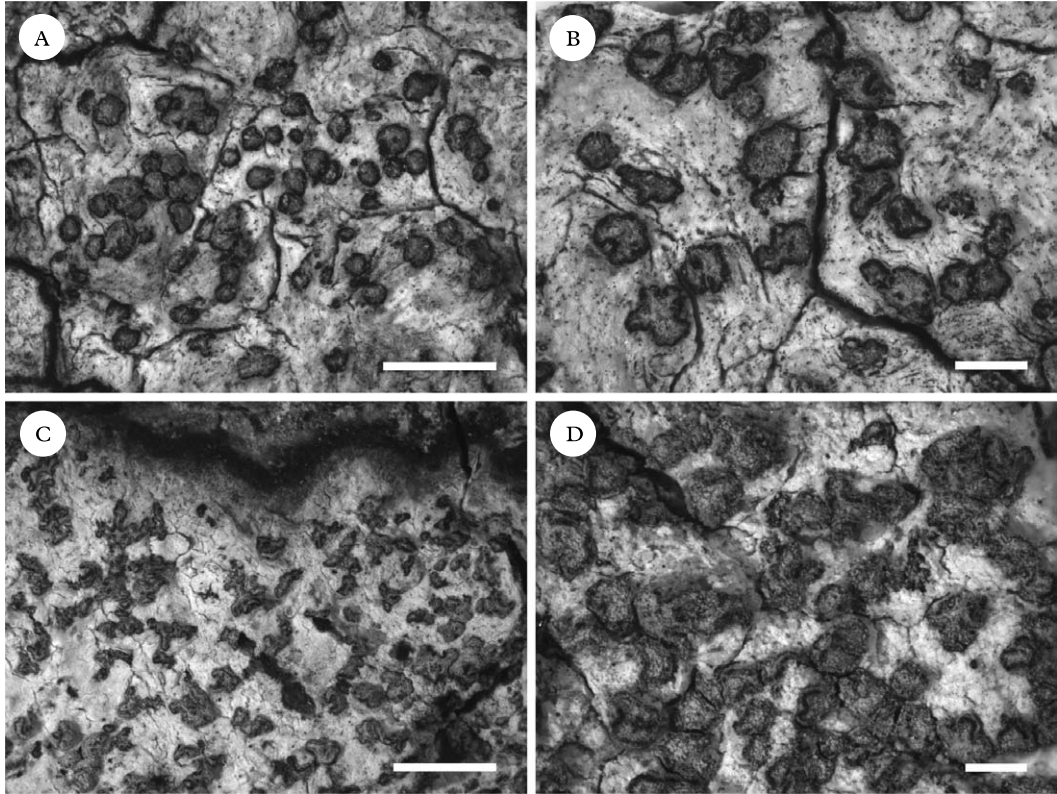


FIG. 1. *Lecanographa uniseptata*. A & B, thallus and apothecia (holotype); C & D, thallus and apothecia (van den Boom 33288). Scales: A = 1 mm; B & D = 0.5 mm; C = 2 mm.

The Species

Lecanographa uniseptata Ertz, van den Boom, Tehler & Degreef sp. nov.

MycoBank No.: MB 515185

Thallus crustaceus, ecorticatus, albus vel pallide griseus. Ascوماتa rotundata vel lirellata, sessilia, atra, 0.2–1 × 0.2–0.6(–0.8) mm; discus expositus, pruina alba obtectus. Excipulum atrobrunneum, K+ olivaceum, infra clausum. Hymenium I+ rubrum. Paraphysoides ramosae anastomosantesque. Ascospores fusiformes, 1-septatae, (12–)12.9–15(–16) × (2–)2.2–2.3(–2.5) μm. Conidia 3.5–4.5 × 1–1.5 μm.

Typus: Gabon, Ogooué-Ivindo Prov., Makokou, station de recherche d'Ipasa, parc entourant la station, 520 m, 0°30'N, 12°48'E, gros tronc dans un parc, 15 April 2006, D. Ertz 9859 (BR—holotypus; S—isotypus).

(Figs 1 & 2)

Thallus very thin, epiphloeodal, continuous or rimose, smooth, white or pale grey, matt, c. 40–80 μm thick. *Photobiont* *Trentepohlia*.

Prothallus dark brown, 0.3–1 mm wide. *Ascوماتa* numerous, scattered more or less evenly over the thallus, more rarely in groups of 2–10, rounded, oblong or lirelliform, usually strongly lobate or with short branches, sessile, black, covered by a white pruina, small, 0.2–0.6(–0.8) mm diam. when round or up to 1 mm long when lirelliform; hymenial disc usually widely exposed, covered by a white pruina, with irregular crystals c. 2–5 μm diam. *Excipulum* dark brown to black, K+ olivaceous, very thick below the hymenium, extending slightly into the substratum, 12–35 μm wide laterally, 50–200 μm wide at the base. *Hymenium* hyaline or pale brownish, not interspersed with oil droplets, I+ red, 45–55 μm tall, K/I+ blue; subhymenium pale brown, K+ olivaceous, I+ red. *Paraphysoids* branched, especially in the epihymenium, anastomosing, 1–1.5 μm

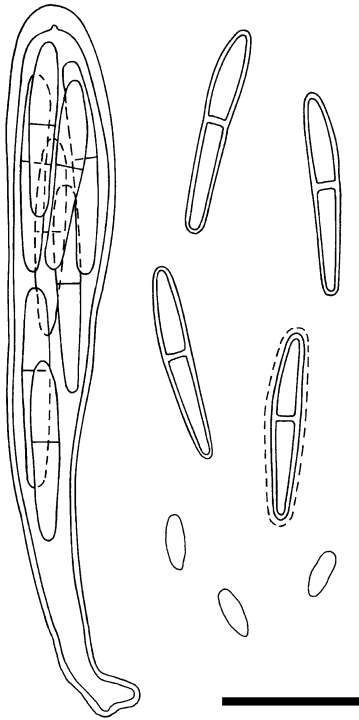


FIG. 2. *Lecanographa uniseptata* (holotype), ascus, ascospores and conidia. Scale = 10 μ m.

wide, not or slightly enlarged at the apex. *Epihymenium* hyaline to pale brown, I+ red, covered by a white pruina not dissolving in K (polarized light). *Asci* cylindrical-clavate, 8-spored, 40–50 \times 7–8 μ m, with a very small, hardly visible ocular chamber, without a K/I+ blue apical ring (*Grumulosa*-type). *Ascospores* fusiform, often slightly narrower in the lower half, hyaline, 1-septate, not constricted at the septum, (12–)12.9–15(–16) \times (2–)2–2.3(–2.5) μ m, l/b ratio 6.1–7.4 ($n = 50$); perispore *c.* 0.5 μ m thick; brownish pigmentation not observed.

Pycnidia rare, visible as black dots, half-immersed, 60–120 μ m diam.; wall dark brown, 5–10 μ m thick, K+ slightly olivaceous. *Conidia* bacilliform, non-septate, 3.5–4.5 \times 1–1.5 μ m.

Chemistry. Thallus and apothecia K–, C–, KC–, PD–, UV– (white). TLC: traces of an unidentified fatty acid with relative Rf value C: 39, of a greyish brown spot after addition

of sulphuric acid and heating with relative Rf value C/G: 45/71, and of two unidentified UV+ pigments (holotype tested).

Distribution and ecology. The species is known from Africa (Gabon; type locality) at 520 m altitude, growing on the bark of a large tree in a park surrounded by a dense tropical secondary forest. The Ipassa plateau regularly experiences whirlwinds coming up from the Ivindo valley. This phenomenon induces large clearings in the canopy and prevents the ageing of the forest. The resulting secondary vegetation is characterized by a dense lower layer comprising shrubs (mainly *Rubiaceae* and *Euphorbiaceae*) and herbaceous *Zingiberaceae* and *Marantaceae*. Most dominant trees at the Ipassa research station are *Baphia leptobotrys* and *Scorodophloeus zenkeri* (*Leguminosae*), *Plagiostyles africana* and *Dichostemma glaucescens* (*Euphorbiaceae*), *Santiria trimera* (*Burseraceae*), *Greenwayodendron suaveolens* (*Annonaceae*) and *Pancovia pedicellaris* (*Sapindaceae*) (Vande Weghe 2006). The new species is also known from Guatemala, growing on a trunk of *Quercus* sp. at 1325 m altitude. The Guatemala locality was occupied by a few \pm scattered trees, *Acer*, *Pinus* and *Quercus* with a grassy understorey with a few rock outcrops. The only lichen species found on the outcrops was *Paulia wrightii* (Tuck.) Treliach & Henssen. The only accompanying species identified on the *Quercus* tree, close to the *Lecanographa* were *Cladonia ceratophylla* (Sw.) Spreng., *Parmeliella pannosa* (Sw.) Müll. Arg. and *Schismatomma* sp. The present distribution suggests an unusual disjunction between Central America and Central Africa. However, the known distribution of the new species will undoubtedly change with additional collecting in the tropics and the recognition this publication allows. Therefore, it would be too speculative to discuss this distribution here.

Notes. In the identification keys to genera of *Arthoniales* by Egea & Torrente (1994) and Grube (1998), the new taxon keys out in the genus *Lecanographa*. The species fits well in the genus *Lecanographa* on account of the pruinose, often rounded and oblong ascomata with a widely exposed hymenial

disc, the carbonized excipulum and the *Grumulosa*-type asci. In a forthcoming publication on the phylogeny of the *Arthoniales* using LSU and *RPB2* sequences, it will be shown that the species is closely related to a group that includes *Lecanographa lyncea*, the generic type species (D. Ertz *et al.* unpublished data). It differs from all other species of *Lecanographa* by the 1-septate ascospores that are unique within the genus. In order to verify that the species has not been described in a different genus, we compared the new taxon with species of the closely related genus *Opegrapha*. A few *Opegrapha* species are known to produce 1-septate ascospores. *Opegrapha devia* (C. Knight & Mitt.) Nyl. and *O. stellata* C. Knight, two lichen-forming and corticolous species, differ by much longer lirellae (0.5–2 mm and 2–4 mm long, respectively), by a lack of an excipulum under the hymenium and by much wider ascospores (6–8 µm and 3–6 µm, respectively) (Hayward 1977; Galloway 1985; Kantvilas & James 1991; Kantvilas *et al.* 1994). *Opegrapha uni-septata* Matzer differs by its lichenicolous habit (on foliicolous *Strigula* species), epruinose ascomata and wider ascospores (3–4 µm) (Matzer 1996). The relevant literature was also checked to ensure that no other epithet was available for the new species, especially amongst the lichens known to occur in Gabon and Guatemala.

Additional specimen examined: **Guatemala:** *Alta Verapaz dept.:* E of Coban, San Pedro Carcha, Balneario Las Islas, hill along and above cascades, with *Acer*, *Pinus* and *Quercus* trees and some outcrops, 1325 m, 15°28.0' N, 90°18.5' W, on *Quercus*, 2004, P. & B. van den Boom 33288 (hb. P. van den Boom).

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