

***Opegrapha viridistellata* (Roccellaceae), a new foliicolous lichen species from the Paleotropics**

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Abstract — The new foliicolous species *Opegrapha viridistellata* is described from the Paleotropics. The species is characterized by a pale greyish green thallus without black dots, partially branched apothecia covered by a thin thalline layer, predominantly 4-septate ascospores and abundant black pycnidia producing two conidial types.

Key words — Australia, Ivory Coast, Japan, New Caledonia, Papua New Guinea, Seychelles, Thailand

Introduction

For several years we have been aware of an easily recognizable, though undescribed species of *Opegrapha*, characterized by its partially branched apothecia covered by a thin thallus layer, its abundant pycnidia, and its predominantly 4-septate ascospores. Originally discovered in Papua New Guinea, the species was eventually reported from Africa (Ivory Coast: Lücking et al. 1998), the Seychelles (Seaward & Aptroot 2006), Japan (Thor et al. 2000), Australia (Lücking et al. 2001) and New Caledonia (Lücking & Kalb 2001). To avoid spreading a nomen nudum further, the species is here described formally, with accounts on its diagnostic features, its taxonomic position, and its world distribution.

The species

***Opegrapha viridistellata* Sérus., Lücking & Sparrius sp. nov**

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= *Opegrapha viridistellata* Sérus., in Lücking & al., Herzogia 13: 213. 1998, nom. nud.

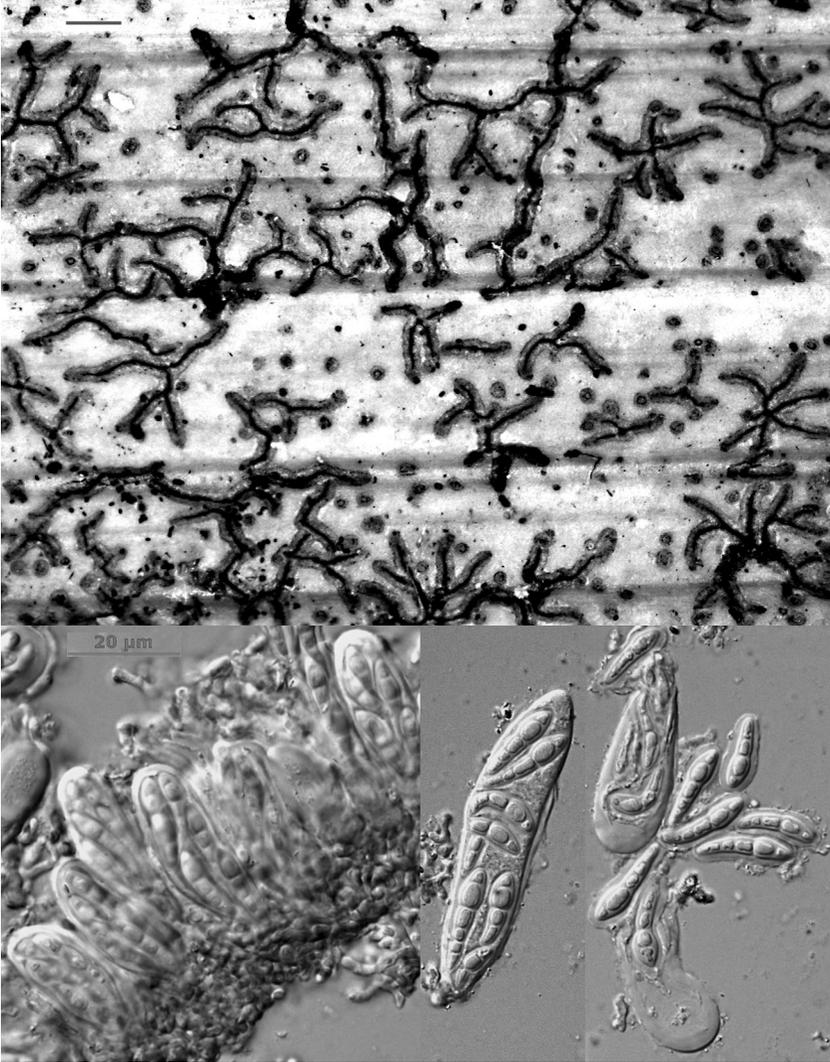
Fig. 1-2

- = *Opegrapha viridistellata* Sérus., in Thor & al., Symb. Bot. Upsal. 32(3): 49. 2000, nom. nud.
- = *Opegrapha viridistellata* Sérus., in Lücking & al., Lichenologist 33: 209. 2001, nom. nud.
- = *Opegrapha viridistellata* Sérus., in Lücking & Kalb, Bibl. Lichenol. 78: 260. 2001, nom. nud.
- = *Opegrapha viridistellata* Sérus., in Seaward & Aptroot, J. Hattori Bot. Lab. 100: 775. 2006, nom. nud.

Species foliicola *Opegrapha vegae*, *similis est, sed differt in ascosporis 4-septatibus majoribusque (15-19 × 4-5 µm), et apotheciis thallo tectis.*

THALLUS foliicolous, epiphyllous, very thin, yellowish green (when fresh) to greyish green, usually discontinuous (most probably because of thallus brittleness, being easily flaked off in herbarium specimens). Prothallus not visible. PHOTOBIONT: a species of *Phycopeltis*, cells angular to oblong, 7-10 × 5-6 µm, not arranged in regular, radiating rows. ASCOCARPS elongate, sparsely to densely branched and partially stellate, irregularly bent or undulating, up to 2.0 × 0.1-0.3 mm, black but laterally covered by thin layer of grey thalline tissue, disc visible as slit, exposed part of epihymenium to 0.05 mm wide, dark brown-black; excipulum 70-80 µm wide, of sclerotized, radiating hyphae; hypothecium hyaline to pale blackish, c. 10 µm high, I-, K/I+ pale violet; hymenium 40-45 µm high, hemiamyloid, I+ red, K/I+ blue in most areas (some patches more intensely coloured); epithecium pale brownish, K-; paraphysoids sparsely branched and anastomosing, 1-2 µm thick, apices 2-3 µm thick, colourless to pale brown; asci 8-spored, clavate, 35-40 × 15-17 µm, with an apical K/I-refringent ring; spores fusiform to almost clavate, (3-)4-septate, with second cell (when counted from distal end) somewhat enlarged, especially when young, with up to 2 µm thick epispore and rounded ends, slightly but distinctly constricted at the septum between the two most distal cells and the other three, and easily broken at that level, colourless when mature, (14-)15-19(-23) × 4-5(-7) µm. PYCNIDIA abundant, black, laterally covered by thallus tissue, up to 0.1 mm diam.; two types of conidia produced, sometimes within the same pycnidium: (a) microconidia bacilliform, slightly curved to crescent-shape, (2-)3-5 × 1 µm, (b) macroconidia filiform, straight, 15-17 × 1 µm.

NOTES — This new species is characterized by the abundant black pycnidia, the green thallus and the partially branched and stellate apothecia covered by a thin thalline layer, in combination with the 4-septate ascospores. The central part of the thallus with ascomata is usually surrounded by thallus islets with a central pycnidium. The species is somewhat similar to *Opegrapha vegae* R. Sant., but this species has (1-)3-septate, smaller spores (8-14 × 2-3 µm) and slightly longer microconidia (4-6 × 1.5 µm) (Santesson 1952), and its apothecia are exposed and not covered by thallus tissue. Thus far, all other known foliicolous



Figs. 1–2. *Opegrapha viridistellata* (holotype). Fig. 1 (top). Ascomata and pycnidia. Bar = 1 mm. Fig. 2 (bottom, from left to right). Hymenium with mature ascospores; asci gently pressed in water, one with expelled ascospores. Bar = 20 μ m.

species of *Opegrapha* have exposed, pure black and rarely branched apothecia, which make the new species easily recognizable morphologically.

Some licheniculous species might look similar to *O. viridistellata* and are probably closely related. This applies in particular to *O. ectolechiacearum*

Matzer & R. Sant. (Matzer 1996), which has a very similar type of ascomata and ascospores; however, besides its lichenicolous growth on *Calopadia*, *Loflammia* and *Sporopodium* species, its ascospores become brownish and ornamented when old, a feature not observed in *Opegrapha viridistellata*.

The even number of four ascospore septa is somewhat unusual among lichens but can be found in other species of the *Roccellaceae*, such as *Mazosia rubropunctata* R. Sant. (Santesson 1952) and *Enterographa brezhonega* Sparrius & Aptroot (2007).

One of the earliest collections examined (Papua New Guinea, Demoulin 5952 & Smeets, LG) was published under *Opegrapha filicina* Mont. (Sérusiaux 1984); two types of conidia were described and this observation is here confirmed. Ascospores and conidia are illustrated in figs 12-13 of that paper.

DISTRIBUTION AND ECOLOGY — The species is apparently widely distributed in the Paleotropics, where it occurs at altitudes from sea level (mangroves, palms and lowland rainforest) up to 1100 m (submontane and subtropical forest). It has not been found in the Neotropics.

In Thailand, the new species grows in a species-poor association with *Porina epiphylla*, *P. rufula*, *P. virescens*, *Strigula nemathora* and *Trichothelium* sp. in secondary forest in a shaded valley with remnants of mature primary forest with *Manglietia*-trees. The leaves have been collected in the lower canopy, at 10 m height.

SPECIMENS EXAMINED — **ASIA.** Papua New Guinea: Madang prov., bridge over Gogol river, road from Lae about 15 km from Madang, 5°20'S 145°43'E, 30 m, evergreen rain forest, on leaves of *Arenga microcarpa*, Apr 1987, J. Lambinon 87/370 (LG—**holotype**, hb. Lücking, hb. Vezda—**isotypes**). Between Awar plantation and Boroi, sea-level, 4°06'S 144°48'E, foliicolous on palm tree, 1980, V. Demoulin 5952 & L. Smeets (LG). Near Bogia, mangrove island in mouth of Boroi river, 1 m, 4°04'S 144°47'E, foliicolous, July 1992, E. Sérusiaux 13207-3 (LG). Thailand: Chiang Mai prov., 10 km W of Chiang Mai, Doi Suthep-Pui Nat. Park, 18°48'N 98° 54'E, 1000-1100 m, secondary forest in valley, Oct 2002, on *Manglietia garrettii*, L.B. Sparrius 7079 (hb. Sparrius, LG, CMU). Japan: Ishigaki-jima (Yaeyama Islands, Okinawa Pref.), 13 km NNE of Ishigaki city, along trail on S slope of Mt. Omoto, summit area, Ishigaki-city administrative area, 24°25'N 124°11'E, 500-520 m, dense oldgrowth, subtropical forest, Feb 1995, on *Satakentia liukuensis*, T. Matsumoto 2693 (HIRO, in a collection of *Porina virescens*) and G. Thor 13042 (TNS, UPS). **AUSTRALIA-OCEANIA:** Australia: Queensland: Eacham Shire, Souita Falls, 8 km SE of Millaa Millaa, 17°35'S, 145°40'E, tropical rainforest, Aug 1987, Henssen 31241 (hb. Henssen). New Caledonia: Province Sud: Monts Koghis-Dumbéa, 15 km of Nouméa, 22°14'S, 166°30'E, 550 m, tropical rainforest, Mar 1994, Kalb & Kalb s.n. (hb. Kalb). **AFRICA.** Ivory Coast: Taï National Park, 5°52'N, 7°27'W, 200 m, Sept-Oct 1992, Becker s.n. (hb. Becker). Abidjan forest of Banco, 5 km N of Abidjan, 50 m, lowland rainforest, on leaves of *Tylostemon*, Aug 1954, R. Santesson 10333c (UPS). Seychelles: Silhouette, Belle Vue, 230 m, on leaves of *Cinnamomum*, July 2000, Seaward 119A, 121A (hb. Seaward).

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Literature cited

- Lücking R, Becker U, Follmann G. 1998. Foliikole Flechten aus dem Taï Nationalpark, Elfenbeinküste (Tropisches Afrika). II. Ökologie und Biogeographie. *Herzogia* 13: 207-228.
- Lücking R, Kalb K. 2001. New Caledonia, foliicolous lichens, and island biogeography. *Bibliotheca Lichenologica* 78: 247-273.
- Lücking R, Streimann H, Elix JA. 2001. Further records of foliicolous lichens and lichenicolous fungi from Australasia, with an updated checklist for continental Australia. *Lichenologist* 33: 195-201.
- Santesson R 1952. Foliicolous lichens I. A revision of the taxonomy of the obligately foliicolous, lichenized fungi. *Symb. Bot. Upsal.* 12(1): 1-590.
- Santesson R, Lücking R. 1999. Additions to the foliicolous lichen flora of the Ivory Coast and Guinea (Tropical West Africa). *Nord. J. Bot.* 19: 719-734.
- Seaward MRD, Aptroot A. 2006. A preliminary checklist of lichens for the Seychelles Group. - *Journal of the Hattori Botanical Laboratory* 100: 765-781.
- Sérusiaux E. 1984. New species or interesting records of foliicolous lichens. *Mycotaxon* 20: 283-306.
- Sparrius LB, Aptroot A. 2007. A new lichenicolous *Enterographa* species from Brittany (France). *Lichenologist* 39: 315-317.
- Thor G, Lücking R, Matsumoto T. 2000. The foliicolous lichens of Japan. *Symb. Bot. Ups.* 32(3): 1-72.

