

## *Opegrapha cladoniicola*, a new lichenicolous fungus from Hawaii

Damien ERTZ and Paul DIEDERICH

**Abstract:** A new species *Opegrapha cladoniicola*, lichenicolous on the podetia of *Cladonia ochrochlora*, is described from Hawaii. It is the first known *Opegrapha* species found growing on *Cladonia*.

© 2003 The British Lichen Society. Published by Elsevier Science Ltd. All rights reserved.

**Key words:** *Cladonia*, Hawaiian Islands, *Opegrapha*, *Roccellaceae*.

### Introduction

While examining collections of lichenicolous fungi preserved in the herbarium of the University of Helsinki (H), we discovered a remarkable species of *Opegrapha* growing abundantly on podetia of *Cladonia ochrochlora*. Since *Opegrapha* has not hitherto been known from *Cladonia*, and as our fungus is morphologically distinct from all other known lichenicolous *Opegrapha* species, the description of a new species is appropriate.

### Material and Methods

Microscopical examination was carried out on hand cut sections mounted in water, 5% KOH (K), Congo Red with KOH pre-treatment, or Lugol's reagent without (I) or with KOH pre-treatment (K/I). Measurements and drawings of asci and ascospores were all made from material mounted in KOH. Drawings were done using a drawing tube.

### The Species

#### *Opegrapha cladoniicola* Ertz & Diederich sp. nov.

*Opegrapha* lichenicola insignis ascomatis atris, epruinosis, lirellatis, 180–500 × 110–160 µm, excipulo brunneo, K–, lateraliter 30–65 µm, hypothecio hyalino vel pallide brunneo, ascis subclavatis, 35–44 × 9–14 µm, 6-sporis, ascosporis 3-septatis, 14–

17 × 5–6 µm, perispore granuloso maturitate brunneo, conidiis 3–4 × 1 µm.

Typus: Hawaii, Lanai, Munro trail, Lanaihale, 1150 m, on fallen tree trunk, moist rain forest area, on *Cladonia ochrochlora*, 26 September 1966, Liisa & Mäkinen 66-2146a (H—holotypus; hb. Diederich—isotypus).

(Figs 1 & 2)

*Ascomata* lichenicolous on the podetia of *Cladonia*, black, epruinose, lirellate, with a slit-like opening and a hardly visible disc, unbranched or slightly forked, 180–500 × 110–160 µm, aggregated in groups of often more than 10 ascomata. *Exciple* dark brown, K–, continuous below the hypothecium, laterally 30–65 µm, basally 20–70 µm thick. *Hypothecium* hyaline to brownish, K–, 12–23 µm thick. *Hymenium* hyaline to brownish, K–, I+ red (but upper part I+ blue), K/I+ blue (only the hymenial gel reacting), 45–75 µm high; epihymenium brownish, K–. *Paraphyses* branched, anastomosing, 1–2 µm thick, apically not or indistinctly swollen. *Asci* subclavate, usually 6-spored, 35–44 × 9–14 µm, wall I–, K/I–, except for an apical K/I+ blue ring. *Ascospores* hyaline, becoming brown at maturity (pigment located in the perispore), elongate ellipsoid, 3-septate, slightly constricted at the median septum, 14–17 × 5–6 µm; perispore present, with a coarsely verrucose to granulose pigmentation when mature. *Pycnidia* not uncommon, black, immersed, 35–50 µm

D. Ertz: National Botanic Garden of Belgium, Domaine de Bouchout, B-1860 Meise, Belgium.

P. Diederich: Musée national d'histoire naturelle, 25 rue Munster, L-2160 Luxembourg, Luxembourg.

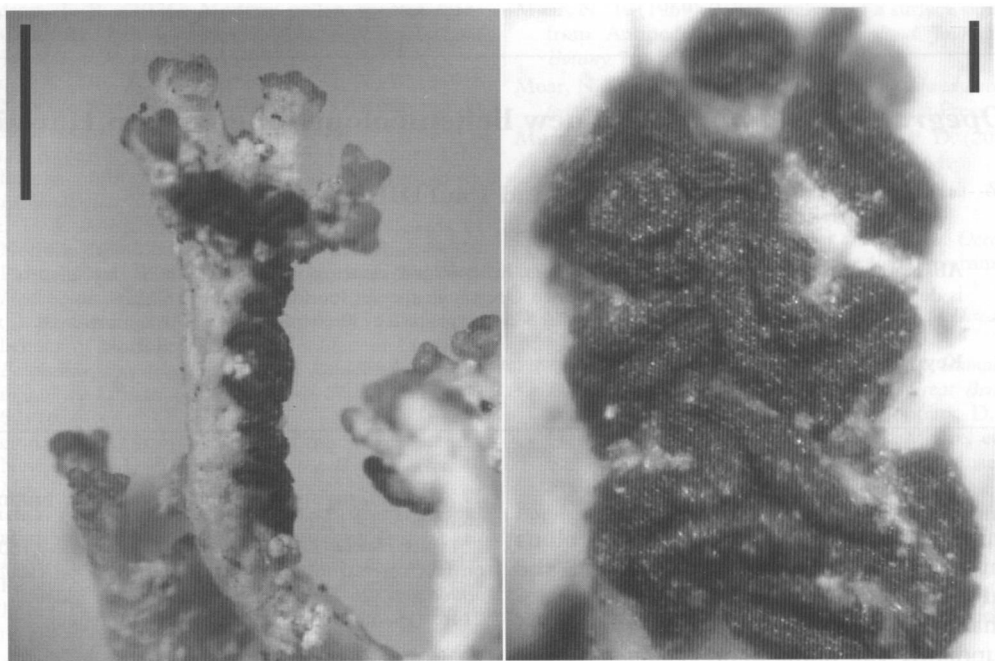


FIG. 1. A & B, habit of *Opegrapha cladoniicola* (holotypus), ascomata on the podetia of *Cladonia ochrochlora*. Scales: A = 1 mm; B = 0.1 mm.

diam.; wall dark brown, K—. *Conidia* bacilliform, basally truncate, hyaline, aseptate,  $3\text{--}4 \times 1\text{ }\mu\text{m}$ .

**Distribution and host.** Known only from the type collection from Hawaii, mainly on the upper part of podetia of *Cladonia ochrochlora* (det. T. Ahti), absent from the squamules of the primary thallus, not visibly damaging the host thallus.

**Notes.** Only a few other lichenicolous species of *Opegrapha* are known with elongate, lirelliform ascomata with a slit-like opening and 3-septate ascospores less than  $20 \times 6\text{ }\mu\text{m}$  (Clauzade *et al.* 1989; Hafellner 1994). *Opegrapha thelotrematis* Coppins and *O. brevis* Coppins, both confined to species of *Thelotrema*, have a K+ greenish exciple (Coppins 1987). *Opegrapha brigantina* Hafellner, confined to *Brigantiaea*, is very close to our new species, but following the detailed description given by Hafellner (1985), it is distinguished from *O. cladoni-*

*icola* by much broader ascomata, 150–250  $\mu\text{m}$  wide, a brown hypothecium, generally 8-spored asci, and slightly narrower ascospores that are 4–6  $\mu\text{m}$  wide. *Opegrapha trassii* S. Kondratyuk & Coppins, a common species confined to *Heterodermia*, is distinguished by a much thinner lateral exciple, 18–27  $\mu\text{m}$  thick, longer and narrower conidia,  $3.8\text{--}5 \times 0.5\text{--}0.7\text{ }\mu\text{m}$ , and narrower ascospores, 4.5–5  $\mu\text{m}$  wide, that are hyaline, only old ascospores released from the asci rarely becoming pale brown (Coppins & Kondratyuk 1998). In *O. cladoniicola*, ascospores become strongly pigmented and granulose at a much earlier stage of their development.

A related fungus, *Plectocarpon cladoniae* R. Sant., is readily distinguished by its roundish, emarginate ascomata, 0.5–1.5 mm diam., 4-spored asci and 5-septate ascospores,  $20\text{--}27 \times 7\text{--}8\text{ }\mu\text{m}$  (Santesson 1994).

We are grateful to Ted Ahti for allowing us to study the collection of lichenicolous fungi from H.

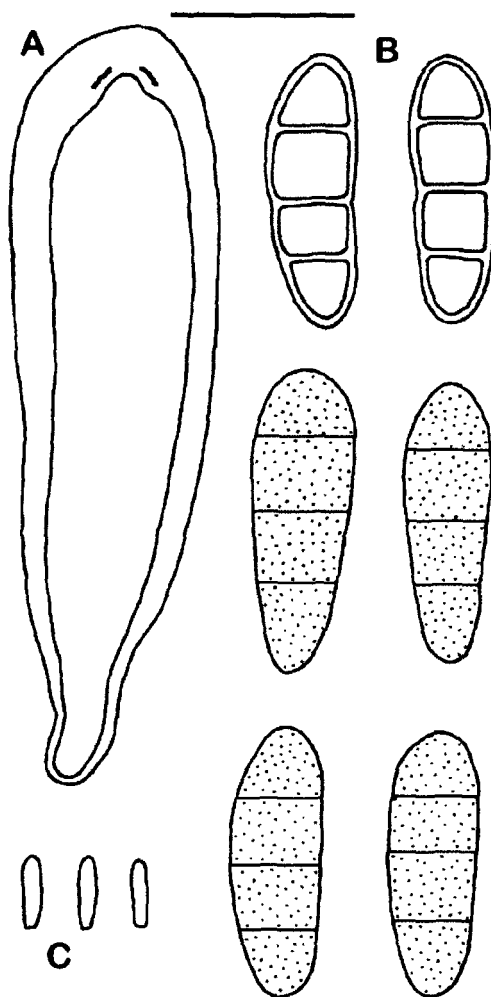


FIG. 2. *Opegrapha cladoniicola* (holotypus). A, ascus (with an apical K/I+ blue ring); B, ascospores (two young in section—perispore not represented, four older in surface view); C, conidia. Scale = 10  $\mu$ m.

#### REFERENCES

- Clauzade, G., Diederich, P. & Roux, C. (1989) Nelikenigintaj fungoj likenlogaj. Ilustrita determinlibro. *Bulletin de la Société linnéenne de Provence, numéro spécial* 1: 1–142.
- Coppins, B. J. (1987) Two new lichenicolous species of *Opegrapha* from western Scotland. *Notes from the Royal Botanic Garden Edinburgh* 44: 601–606.
- Coppins, B. J. & Kondratyuk, S. Y. (1998) *Opegrapha trassii* sp. nov., a new lichenicolous fungus on *Heterodermia*. *Folia Cryptogamica Estonica* 32: 9–14.
- Hafellner, J. (1985) Studien über lichenicole Pilze und Flechten IV. Die auf *Brigantiaea*-Arten beobachteten Ascomyceten. *Herzogia* 7: 163–180.
- Hafellner, J. (1994) Beiträge zu einem Prodromus der lichenicolen Pilze Österreichs und angrenzender Gebiete. I. Einige neue oder seltene Arten. *Herzogia* 10: 1–28.
- Santesson, R. (1994) Fungi lichenicoli exsiccati. Fasc. 7 & 8 (Nos 151–200). *Thunbergia* 21: 1–18.

