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Three new species of thelotremoid Graphidaceae from tropical Africa

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Abstract

Three new species of thelotremoid Graphidaceae are described from tropical Africa. *Astrochapsa fusca* Lücking differs from *A. platycarpella* in the brown thallus and larger ascospores with more numerous septa. *Ocellularia abbayesiana* is similar to *O. exuta* in morphology and chemistry but has smaller, hyaline ascospores. *Ocellularia grantii* resembles *O. terebrata* in the carbonized excipulum and columella, the hyaline, transversely septate ascospores, and the psoromic acid chemistry, but is distinguished by its verrucose-bullate thallus, white-tipped columella, and smaller ascospores. The three species were discovered in historic material collected between 1874 and 1954 and underline the importance of revising herbarium collections for the discovery of novel taxa.

Key words: Abbayes, Dodge

Introduction

Efforts to sample and catalog the global diversity of Graphidaceae, and other groups of lichens, are very unevenly distributed at the world level. For tropical representatives, which make over 95% of the family, activities during the past decade focused on Costa Rica, Brazil, India, Sri Lanka, Thailand, Australia, and New Caledonia (Lücking *et al.* 2014). For tropical Africa, the work of Frisch *et al.* (2006) established a solid foundation, but much remains to be discovered on this continent especially in the vast tropical rain forests of west and central Africa.

A revision of material from BM collected in Sierra Leone and Nigeria between 1874 and 1954, in part treated by Dodge but never published (Dodge 1953, 1964, 1971), revealed three species of thelotremoid Graphidaceae new to science, in the genera *Astrochapsa* and *Ocellularia*. These species are described and illustrated here.

Material and Methods

Thallus morphology was examined using a LEICA MS5 dissecting microscope. Sections of thalli and ascomata were cut by hand with a razor blade and examined with squash preparations in water, KOH and Lugol's solution, using a ZEISS Axioskop 2 compound microscope. All measurements are given in water. TLC was done using standard techniques with solvent C following Orange *et al.* (2010).

Taxonomic Treatment

Astrochapsa fusca* Lücking, *sp. nov. (Fig. 1A–B)
Mycobank #807521

Differing from *Astrochapsa platycarpella* in the brown thallus and larger, 5–7-septate ascospores.

Type:—SIERRA LEONE. **Southern Province:** Njala (Kori); on twigs of *Amphias pterocarpoides*; 15 February 1954, *Deighton M-5677* (holotype BM!).

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Thallus corticolous, epiperidermal, up to 5 cm diam., continuous; surface with very large verrucae, up to 1 mm long, 0.6 mm wide, and 0.3 mm high,, elswhere smooth, olive-green; prothallus absent. Thallus in section 40–60 µm thick, with dense, prosoplectenchymatous cortex, 10–15 µm thick, and photobiont layer 30–50 µm thick, lacking crystal clusters except for the large verrucae which are completely filled with large clusters of calcium oxalate crystals below the photobiont layer. Photobiont *Trentepohlia*; cells rounded to irregular in outline, in irregular groups, yellowish green, 7–12 × 6–10 µm. Ascomata rounded, erumpent, with an entire thalline margin, 0.5–0.8 mm diam., 0.2–0.3 mm high; disc covered by 0.1–0.2 mm wide pore partially filled with plug-shaped to irregular, white-tipped columella; proper margin indistinct, entire, visible as thin, dark brown rim around the pore; thalline margin entire, light olive-green. Excipulum entire, completely carbonized, 25–50 µm wide, prosoplectenchymatous in thin sections; laterally covered by corticate algiferous thallus; columella present, becoming irregular in outline with lateral bridges towards the excipulum, completely carbonized, 70–150 µm wide, apically covered with brownish tissue; hypothecium prosoplectenchymatous, 10–20 µm high, colorless; hymenium 100–120 µm high, colorless, clear; epithecium indistinct, 5–10 µm high, colorless. Paraphyses unbranched, apically smooth; periphysoids absent; asci fusiform to clavate, 90–110 × 15–20 µm. Ascospores 8 per ascus, ellipsoid, 5–7-septate, 15–20 × 6–7 µm, 2.5–3 times long as wide, hyaline, distoseptate with lens-shaped lumina, I+ violet-blue.

Secondary chemistry:—Psoromic, subpsoromic, and 2'-*O*-demethylpsoromic acids.

Etymology:—The epithet refers to the collector of the type material.

Distribution and ecology:—Known only from the type collection from tropical West Africa.

Remarks:—*Ocellularia grantii* belongs in a complex of species with *O. terebrata* morphology, featuring a carbonized excipulum and columella, small, hyaline, transversely septate ascospores, and psoromic acid chemistry. It is most similar to *O. terebrata* s.str., but differs in the verrucose-bullate thallus and the white-tipped columella, besides having distinctly smaller ascospores.

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References

Dodge, C.W. (1953) Some lichens from tropical Africa. *Annals of the Missouri Botanical Garden* 40: 271–401. http://dx.doi.org/10.2307/2394552

Dodge, C.W. (1964) Some Lichens of Tropical Africa. IV. Dermatocarpaceae to Pertusariaceae. *Beihefte zur Nova Hedwigia* 12: 1–282.

Dodge, C.W. (1971) Some lichens of tropical Africa. V. Lecanoraceae to Physciaceae. *Beihefte zur Nova Hedwigia* 38: 1–225.

Frisch, A., Kalb, K. & Grube, M. (2006) Contributions towards a new systematics of the lichen family Thelotremataceae. *Bibliotheca Lichenologica* 92: 1–556.

Hale, M.E. (1981) A revision of the lichen family Thelotremataceae in Sri Lanka. *Bulletin of the British Museum (Natural History), Botany Series* 8: 227–332.

Lücking, R., Aptroot, A., Boonpragob, K., Cáceres, M.E.S., Ertz, D., Harris, R.C., Jia, Z.-F., Kalb, K., Kraichak, E., Lendemer, J.C., Mangold, A., Manoch, L., Mercado-Díaz, J., Moncada, B., Mogkulsuk, P., Papong, K., Parnmen, S., Peláez, R., Poengsunoen, V., Rivas-Plata, E., Saipunkaew, W., Sipman, H.J.M., Sutjaritturakan, J., van den Broeck, D., von Konrat, M., Weerakoon, G. & Lumbsch H.T. (2014) One hundred and seventy five new species of Graphidaceae: closing the gap or a drop in the bucket? *Phytotaxa* 189(1): 7–38. http://dx.doi.org/10.11646/phytotaxa.189.1.4

Müller, J. (1887) Lichenologische Beiträge 26. *Flora* 70: 268–273, 283–288, 316–322, 336–338, 396–402, 423–429.

Parnmen, S., Lücking, R. & Lumbsch, H.T. (2012) Phylogenetic classification at generic level in the absence of distinct phylogenetic patterns of phenotypical variation: A case study in Graphidaceae (Ascomycota). *PLoS ONE* 7(12): e51392. http://dx.doi.org/10.1371/journal.pone.0051392

Rivas Plata, E., Lücking, R, & Lumbsch, H.T. (2012) A new classification for the family Graphidaceae (Ascomycota: Lecanoromycetes: Ostropales). *Fungal Diversity* 52: 107–121. http://dx.doi.org/10.1007/s13225-011-0135-8