



Twenty-three new species in the lichen family Graphidaceae from New Caledonia (Ostropales, Ascomycota)

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Abstract

During a field trip to Grande Terre in New Caledonia in 2012, a number of Graphidaceae were collected, among which 23 species that turned out to represent previously undescribed species: *Astrochapsa verruculosa* Papong, Lücking & Parnmen, differing from *A. megaphlyctidioides* in the thinner, verrucose thallus and smaller, distinctly chroodiscoid ascomata; *Diorygma roseopruinatum* Papong, Lücking & Parnmen, similar to *D. junghuhnii* but with pink-red pruina covering the ascomata along the slit; *Fissurina aurantiacoliirellata* Papong, Lücking & Kraichak, differing from other species of *Fissurina* in the prominent to sessile ascomata with bright orange pigment; *F. fuscoalba* Papong, Lücking & Kraichak, superficially resembling *F. pseudostromatica* but distinguished by the brown, endoperidermal thallus and the distoseptate ascospores; *F. stegoboloides* Papong, Lücking & Kraichak, with large ascomata with exposed disc resembling a species of *Stegobolus*; *Graphis leptotremoides* Papong, Lücking & Kraichak, differing from other species of *Graphis* in the gall-forming thallus, in combination with immersed, uncarbonized ascomata; *G. subelongata* Papong, Lücking & Kraichak, related to *G. neolongata* but with less branched lirellae with lateral thalline margin and with narrower, submuriform ascospores; *Leucodecton pseudostromaticum* Papong, Lücking & Lumbsch, differing from *L. expallescentes* in the pseudostromatic ascomata and larger ascospores becoming brown; *Ocellularia albocolumellata* Lücking, Lumbsch & Parnmen, similar to *O. ripleyi* but with uncarbonized excipulum and columella and broader pore of the ascomata; *O. albothallina* Lücking, Lumbsch & Parnmen, differing from *O. pluripora* in the loosely corticate, whitish thallus and ascomata with broader pore and broad columella; *O. austropacifica* Lücking, Lumbsch & Parnmen, resembling *O. dolichotata* but with green, densely corticate thallus and smaller ascospores; *O. fuscosporella* Lücking, Lumbsch & Parnmen; differing from *O. vizcayensis* in the brown ascospores; *O. inconspicua* Lücking, Lumbsch & Parnmen, akin towards *O. pseudopyrenuloides* but with ascomata with narrower pore and uncarbonized columella and with broader ascospores; *O. neocaledonica* Lücking, Lumbsch & Parnmen, differing from *O. pluripora* in the lighter thallus and lack of secondary substances; *O. pulchella* Lücking, Lumbsch & Parnmen, resembling *Ocellularia mammicula* but with green, minutely grainy thallus with columnar clusters of calcium oxalate crystals and with ascomata with narrower, non-annulate pore; *O. rugosothallina* Lücking, Lumbsch & Parnmen, differing from *O. perforata* in the carbonized excipulum and columella; *O. salmonea* Lücking, Lumbsch & Parnmen, similar to *O. baileyi* in the salmon-pink medulla but with larger ascomata with only partially carbonized excipulum and with larger ascospores; *Pseudotopeliopsis longispora* Papong, Lücking & Parnmen, differing from other species of *Pseudotopeliopsis* in the long, transversely septate ascospores; *Rhabdodiscus farinosus* Papong, Lücking & Parnmen, differing from other species of *Rhabdodiscus* in the ecorticate, finely farinose and sorediate thallus; *R. neocaledonicus* Lücking, Lumbsch & Parnmen, similar to *R. lankaensis* in the salmon-pink ascoma pigment but with submuriform, brown ascospores; *R. saxicola* Lücking, Lumbsch & Parnmen, growing saxicolous and with pseudostromatic ascomata with broad brown rim and columella contrasting with the light yellowish brown thallus; *R. thouvenotii* Lücking, Lumbsch & Parnmen, similar to *R. saxicola* but with larger, more or less solitary ascomata with narrower pore and finger-like columella; and *Thelotrema perriei* Papong, Lücking & Lumbsch, differing from *T. diplostroma* in the densely corticate, verrucose thallus and smaller ascospores. The number of new discoveries demonstrates that the South Pacific is a center of diversity of Graphidaceae. We also propose the new combinations *Ocellularia mammicula* (Hale) Lücking, *O. permaculata* (Nagarkar & Hale) Lücking and *Rhabdodiscus lankaensis* (Hale) Lücking.

µm thick, photobiont layer 50–70 µm thick, and medulla 30–60 µm thick, encrusted with clusters of calcium oxalate crystals. Photobiont *Trentepohlia*; cells rounded to irregular in outline, in irregular groups, yellowish green, 7–12 × 6–9 µm. Ascomata angular-rounded, erumpent, with lateral thalline margin, 0.7–1.2 mm diam., 0.3–0.4 mm high; disc more or less covered by 0.3–0.5 mm wide pore, flesh-colored to yellowish, thinly white-pruinose; proper margin more or less erect, entire, undulate, white, separated from thalline margin by a split (double margin); thalline margin erect, entire to fissured, uneven to verrucose, light greyish green. Excipulum yellowish to orange in outer parts, 30–50 µm wide, paraplectenchymatous; laterally covered by massive thalline layer including an inner layer of clusters of calcium oxalate crystals, 50–100 µm thick, and distinct layers of periderm, 100–150 µm thick; columella absent; hypothecium prosoplectenchymatous, 10–20 µm high, yellowish; hymenium 110–120 µm high, colorless, clear; epihymenium granular, 5–10 µm high, greyish. Paraphyses unbranched, apically thin, smooth; periphysoids present, distinct (20–30 µm); asci fusiform, 110–120 × 20–25 µm. Ascospores 4–8 per ascus, oblong-tapering, 11–15-septate, 50–60 × 6–8 µm, 7–8 times as long as wide, hyaline, distoseptate with thickened septa and lens-shaped lumina, I+ violet-blue.

Secondary chemistry:—No substances detected by TLC.

Etymology:—The new species is named after the pteridologist Leon Perrie (New Zealand), who is a specialist in the flora of the South Pacific and systematics of ferns. Leon was a great companion on the field trip to New Caledonia and previous trips to Fiji.

Distribution and ecology:—*Thelotrema perriei* is so far only known from the type collection in the northern part of Grande Terre, where it was found in a relict montane forest.

Notes:—This new species is characterized by having a corticate, verrucose thallus and mid-sized ascospores. Similar ascospores are known from *Thelotrema diplotrema* Nylander (1859: 258), which differs by having a loosely corticate, smooth to uneven thallus and larger ascospores. Another similar species is *Thelotrema jugale* (Müll. Arg.) Lücking in Sipman et al. (2012: 195), which differs in its white, smooth to uneven thallus with loose cortex and the smaller, immersed ascomata.

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