

PORPIDIACEAE

A NEW SPECIES OF *PORPIDIA* FROM THE DRAKENSBERG

Porpidia afromontana Brusse, sp. nov.

Thallus crustosus, basalticola, fuscus, areolatus, ad 80 mm diametro, 150–800 μm crassus. *Areolae* 0,1–1,0 mm diametro, fuscae, marginibus albidis, non sorediatis. *Prothallus* ater. *Stratum epinecrale* hyalinum, 10–45 μm crassum. *Cortex superior* 15–35 μm crassus, paraplectenchymatus, cellulis 3,5–8,0 μm diametro, hyalinus, sed supernis 5–8 μm badius. *Stratum gonidiale* 40–60 μm crassum; algae 5–27 μm diametro, Chlorococcaleae. *Medulla* alba, 50–650 μm crassa. *Apothecia* atra, 0,2–0,8 mm diametro, immersa, plana vel concava. *Excipulum* reductum, 5–15 μm crassum, interne et inferne hyalinum, superne viridi-atrum et paraplectenchymatum. *Hypothecium* hyalinum vel stramineum, 40–70 μm crassum, paraplectenchymatum, cellulis 3–5 μm diametro. *Hymenium* hyalinum, 100 μm altum; epihymenium atrum, 5–10 μm crassum, granulare. *Paraphyses* graciles, septatae, ramosae et anastomosantes, 1,2–2,0 μm crassae, capitatae, capitibus 2,0–3,0 μm crassis. *Asci* clavati, 80–90 \times 25–30 μm , tholis J+ per pallide caeruleis, cylindris axialibus J+ caeruleis (Figure 5). *Ascospores* sextae vel octonae, hyalinae, simplices, late ellipsoideae, halonatae, 17–22 \times 8–11,5 μm . *Pycnidia* non visa. *Thallus* acidum confluenticum continens.

TYPE.—Cape, 3028 (Matatiele): 65 km N of Maclear, summit of Naudé's Nek, on basalt rocks on summit plateau, in full sun, alt. 2 500 m (–CA). *F. Brusse* 4590, 1986.01.26 (PRE, holo.; BM, COLO, E, LD, UC, UPS, iso.). Figure 6.

Thallus crustose, on basalt, brown, areolate, to 80 mm across, 150–800 μm thick. *Areoles* 0,1–1,0 mm across, brown, margins whitish, not sorediate. *Prothallus* black. *Epinecral zone* hyaline, 10–45 μm thick. *Upper cortex* 15–35 μm thick, paraplectenchymatous, cells 3,5–8,0 μm diam., hyaline, but upper 5–8 μm reddish brown. *Algal layer* 40–60 μm thick; algae 5–27 μm diam., Chlorococcalean. *Medulla* white (or rusty-coloured due to mineral inclusions from weathering of basalt), 50–650 μm thick. *Apothecia* black,

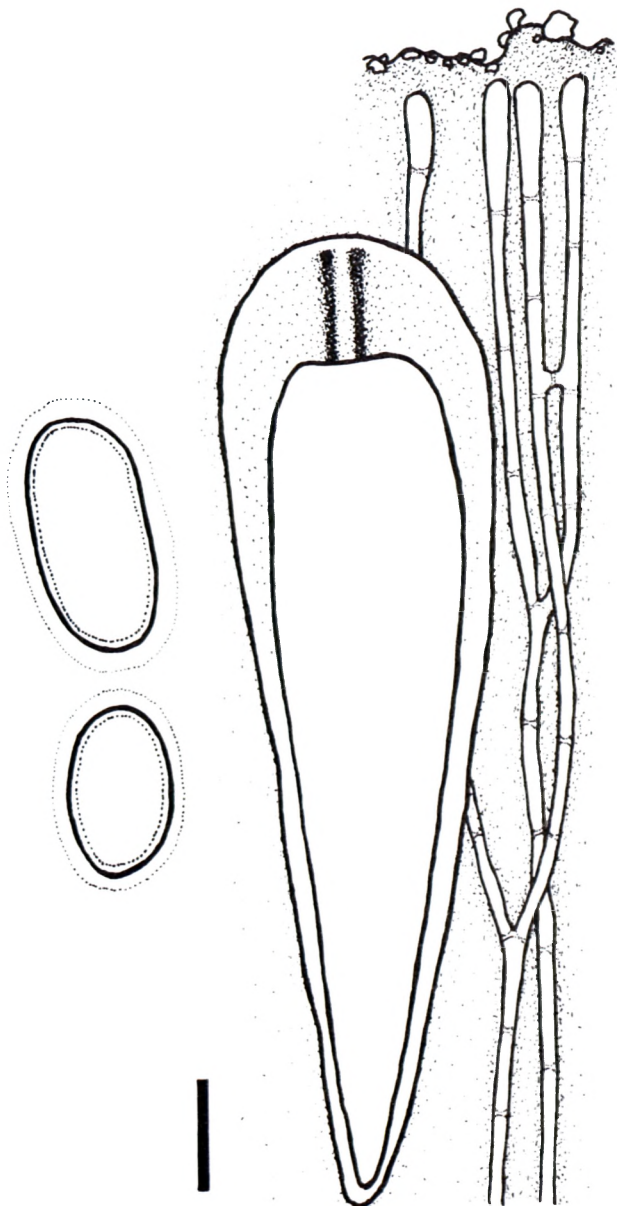


FIGURE 5.—*Porpidia afromontana* Brusse, ascus and paraphyses. *F. Brusse* 4590, holotype. Bar = 10 μm .

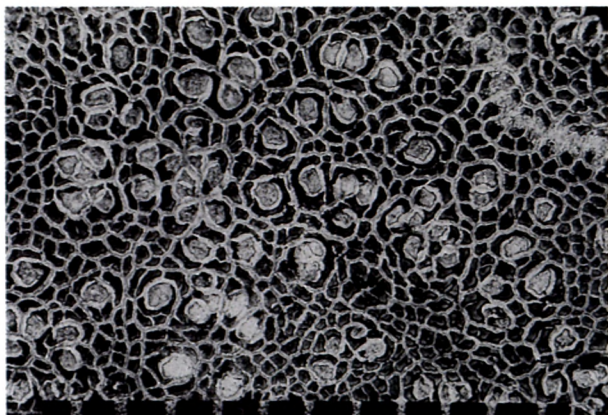


FIGURE 6.—*Porpidia afromontana* Brusse, habit. F. Brusse 4590, holotype. Scale in mm.

0,2–0,8 mm across, immersed, flat or concave. *Exciple* reduced (developed only on flanks), 5–15 μm thick, hyaline within and below, greenish black and paraplectenchymatous above. *Hypothecium* hyaline or stramineous, 40–70 μm thick, paraplectenchymatous, cells 3–5 μm diam. *Hymenium* hyaline, 100 μm high; epihymenium black, 5–10 μm thick, granular. *Paraphyses* slender, septate, branched and anastomosed, 1,2–2,0 μm thick, capitate, heads 2–3 μm thick. *Asci* clavate, six or eight-spored, 80–90 \times 25–30 μm , tholus J+ very pale blue, with J+ blue axial cylinder (Figure 5). *Ascospores* hyaline, simple, broadly ellipsoid, halonate, 17–22 \times 8–11,5 μm . *Pycnidia* not seen. *Chemistry*: confluent acid present.

Etymology: *afromontana* (Latin) = pertaining to, or from African mountains, hence afromontane.

This new species is a typical *Porpidia* except for the pale hypothecium, which makes it assignable to *Poeltiaria* Hertel (1984). However, this genus is based on a pale, rather than a dark hypothecium, as is typical for *Porpidia*, but this in itself, cannot be significant at the generic level. The brown pigments produced in lichens are probably all the products of oxidative coupling of phenols derived from polyketides, similar to the 1,8-dihydroxynaphthalene oxidative coupling demonstrated in some ascomycetes and ascomycete anamorphs (Wheeler 1983). The amount of genetic material (DNA) involved in this pigment production is too limited to be of significance at the generic level, and a single locus is probably involved in its production. It is also possible

* *Porpidia urbanskyana* (Zahlbr.) Brusse, comb. nov. Basionym: *Lecidea urbanskyana* Zahlbr., Deutsche Südpolar-Expedition 1901–1903 8: 38 (1906). Synonym: *Poeltiaria urbanskyana* (Zahlbr.) Hertel, Beihefte zur Nova Hedwigia 79: 432 (1984).

** *Porpidia turgescens* (Koerb.) Brusse, comb. nov. Basionym: *Lecidella turgescens* Koerb., Abhandlungen der Schlesischen Gesellschaft für vaterländische Cultur 2: 34 (1862). Synonym: *Poeltiaria turgescens* (Koerb.) Hertel, Beihefte zur Nova Hedwigia 79: 431 (1984).

that the phenomenon of a dark hypothecium, is simply a question of control mechanisms, which control the expression of the brown pigment in a particular anatomical region (in this case the hypothecium). For instance, brown pigments are often expressed in cortical, excipular, epihymenial, and hypothecial tissue, but not in medullary and rarely in hymenial tissue.

Porpidia afromontana is closest to *Porpidia urbanskyana* (Zahlbr.) Brusse*, but has a much thinner exciple (5–15 μm) than the latter (40–60 μm ; Hertel 1984). The apothecia of *P. afromontana* are also sunken in the areoles, whereas those of *P. urbanskyana* are adnate and larger (to 1,2 mm across). The thallus of *P. afromontana* is also much thicker (to 800 μm thick), brown-pigmented, and contains confluent acid, whereas that of *P. urbanskyana* is thin (rarely thicker than 100 μm), is grey-coloured (lacks brown pigments in the upper cortex), and contains traces of stictic acid (Hertel 1984).

The species of *Porpidia* with brown thalli have recently been thoroughly revised by Schwab (1986) for central and northern Europe, but these lichens all have brown hypothecia, a character that is significant at the species level. *Porpidia* has also received attention in central, southern and eastern Asia, including the Himalaya mountain range (Hertel 1977).

Confluent acid is well known in *Porpidia*, being known in *P. flavocoerulescens* (Hornem.) Hertel & Schwab, *P. tuberculosa* (Sm.) Hertel & Knoph, *P. turgescens* (Koerb.) Brusse** (with 2'-0-methylperlatolic acid) and is also known in *Xenolecia spadicomma* (Nyl.) Hertel, a lichen with a similar apothecial structure to *P. afromontana*. Since pycnidiospores were not found in *P. afromontana*, it is not possible to exclude the possibility that it belongs to *Xenolecia* Hertel (1984).

At present *Porpidia afromontana* is known only from the type locality, the summit of Naudé's Nek, at 2 500 m altitude, in the Drakensberg, on basalt.

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MS. received: 1987.08.13.