The Lichenologist **46**(2): 141–158 (2014)
doi:10.1017/S0024282913000790

The foliicolous lichen biota of the Democratic Republic of the Congo, with the description of six new species

Dries VAN DEN BROECK, Robert LÜCKING and Damien ERTZ

Abstract: Six new species of foliicolous lichenized fungi are described as new to science from lowland rainforest in the Congo Basin: *Bapalmuia serusiauxiana* Van den Broeck, Lücking & Ertz (*Pilocarpaceae*) characterized by (7–)15(–19)-septate ascospores of (40–)50–65(–72) × 1·5–2·5 µm, *Microtheliopsis ramazaniana* Van den Broeck, Lücking & Ertz (*Microtheliopsidaceae*) characterized by 1-septate ascospores of 13–16 × 3–5 µm, *Phylloblastia verheyeniana* Van den Broeck, Lücking & Ertz (*Verrucariaceae*) characterized by 3-septate ascospores of 13–15(–17) × 3·0–4·5 µm, *Porina duduana* Van den Broeck, Lücking & Ertz (*Porinaceae*) characterized by 3-septate ascospores of 11·0–14·5 × 2·5–3·0 µm, perithecia 130–150(–170) µm diam. and a photobiont with angular-rounded and irregularly arranged cells, *Porina gryseelsiana* Van den Broeck, Lücking & Ertz (*Porinaceae*) characterized by orange-brown perithecia and 7–9(–12)-septate ascospores of 29–46 × 5·0–7·5 µm, *Porina weghiana* Van den Broeck, Lücking & Ertz (*Porinaceae*) characterized by the presence of disc-shaped isidia, yellow perithecia without apical appendages and (7–)9-septate ascospores of 33–50 × 5·0–6·5 µm. In addition, 53 species new for the Democratic Republic of the Congo are listed, including five species new for tropical Africa and six new for the Palaeotropics, thus raising the number of species known from the Democratic Republic of the Congo from 150 to 209. Keys are presented to all known species of *Microtheliopsis* and to species of *Porina* with disc-shaped isidia.

Key words: *Bapalmuia*, biogeography, *Microtheliopsis*, Palaeotropics, *Phylloblastia*, *Phyllophiale*, *Porina*, tropical Africa

Accepted for publication 5 *October* 2013

Introduction

The lichen biota of tropical Central Africa is very incompletely known. Almost all available studies are historical and date from before 1950, often going back to the 19th century. For the Democratic Republic of the Congo (DRC), formerly known as Belgian Congo (1908–1960) and then Zaire (1971–1997), only a few, taxonomically limited, modern treatments on non-foliicolous lichens have been published, dealing with the genera *Bulbothrix*, *Coccocarpia*, *Everniopsis*, *Herpothallon*, *Leprocaulon*, *Lobaria*, *Neoheppia*, *Normandina*, *Parmotrema*, *Pertusaria*, *Placopsis* and *Stereocaulon* (Lambinon & Sérusiaux 1977; Sérusiaux 1979*a*, *c*, 1981, 1984*a*; Lambinon *et al*. 1981; Krog & Swinscow 1986; Büdel 1995; Aptroot *et al*. 2009; Archer *et al.* 2009), as well as biogeographical and ecological approaches (Lambinon & Sérusiaux 1983; Biedinger & Fischer 1996; Batke 2012).

The foliicolous lichen biota of the Democratic Republic of the Congo has received somewhat more attention. Santesson (1952) mentioned 49 species for the country, at that time known as Belgian Congo. Most of these had been collected by Hyacinthe Julien Robert Vanderyst between 1912 and 1933. More recent investigations added substantial information to our knowledge of the foliicolous lichen flora, raising the number of species to 150 (Sérusiaux 1978, 1979*a*, *b*, 1984*b*, 1985, 1998; Vězda 1978, 1979, 1980, 1982, 1986, 1987, 1994; Arvidsson 1982; Döbbeler & Vězda 1982; Kalb & Vězda 1992; Lücking *et al.* 1994; Sérusiaux & Lambinon 1994; Biedinger & Fischer 1996; Lücking & Vězda 1998; Lücking & Kalb 2000; Ferraro *et al*. 2001). Still, the foliicolous lichen biota of tropical Central Africa is poorly known, when compared to tropical America and South East Asia. The

D. Van den Broeck and D. Ertz: National Botanic Garden of Belgium, domein van Bouchout, Nieuwelaan 38, 1860 Meise, Belgium.
Email: Dries.van.den.Broeck@br.fgov.be
R. Lücking: Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, Illinois, 60605-2496, USA.

number of species recorded is certainly far below the diversity to be expected from the type of lowland rainforests which dominate the Congo River Basin and surroundings (Santesson & Lücking 1999). For example, Lücking (1998) listed 233 species for Guyana, and Lücking & Kalb (2000) listed 371 species for Brazilian lowland rainforests.

In 2009 and 2010, the University of Kisangani, the Royal Museum for Central Africa, the Royal Belgian Institute for Natural Sciences and the National Botanical Garden of Belgium established a multidisciplinary project to study the biodiversity in the Democratic Republic of the Congo. Between 16 June and 9 July 2009 and between 15 May and 6 June 2010, corticolous and foliicolous lichens were collected at several localities in the Congo River Basin. Subsequently, a follow-up project was established under the name COBIMFO. Between 19 October and 9 November 2012, nine forest plots of 1 ha were investigated: three young secondary forests, three evergreen forests and three mixed semi-evergreen forests. Thanks to our rich collection of foliicolous lichens from these two projects, we are able to describe six species as new to science and present an additional 53 species new for the Democratic Republic of the Congo, including five species new for tropical Africa and six new for the Palaeotropics, raising the number of species known from the Democratic Republic of the Congo from 150 to 209. We also provide a list of the 150 species already known from the Democratic Republic of the Congo, based on a detailed search of the literature (Appendix 1).

Material and Methods

Specimens were studied using a Wild M38 stereomicroscope and two Olympus CHR-TR45 and Olympus BX51 microscopes. Microscopical preparations were mounted in water, 5% KOH (K) and Lugol's reagent (1% I_2), either without (I) or with KOH pretreatment (K/I). Measurements of ascospores refer to material examined in water, those of asci to material examined in K/I. Microchemical reactions and spot tests were performed under the microscope using a 10% KOH or a sodium hypochlorite solution (C), and under the dissecting microscope using *para*-phenylenediamine according to Orange *et al.* (2001) and Lücking (2009). For those reactions, thin hand-cut sections of thallus and ascomata were used. Additional specimens examined for comparison included four species from four herbaria: *Arthonia flavoverrucosa* (*U. Becker* s. n., holotype, G), *Bapalmuia halleana* (*Sérusiaux* s. n., holotype & topotype, LG), *B. ivoriensis* (*R. Santesson* 10668:7, isotype, UPS), *Phylloblastia borhidii* (*F. Farkas* 86228/LD, isotype, UPS), *Phylloblastia inexpectata* (*A. Aptroot* 68152, BR), *Porina ornata* (*S. Lisowski* 1082, isotype, UPS), *Psoroglaena perminuta* (*S. Lisowski* 1013, isotype, UPS). Voucher specimens are deposited in the herbarium of the National Botanic Garden of Belgium (BR) and, for species with abundant material, in the herbarium of Yangambi (YBI).

The New Species

Bapalmuia serusiauxiana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805732

Species similar to *Bapalmuia halleana*, but differs by shorter ascospores with fewer septa.

Type: Democratic Republic of the Congo, Equator Province, Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at ±3 km of the stream, 345 m alt., 2°07′20·71″N, 21°44′13·2″E, old secondary forest, on leaves, 23 June 2009, *D. Ertz* 14333 (BR—holotype).

(Fig. 1A–D)

Thallus foliicolous, epiphyllous, crustose, continuous, ecorticate, smooth to farinose-effuse, pale green to greenish grey, without verrucae or radiate ridges, partly with a whitish, byssoid prothallus. A dark bluish margin is formed when the species grows side by side with another lichen species. *Photobiont* chlorococcoid, cells ± round, 3–5 × 3–4 μm.

Ascomata apothecioid, sessile, rounded, 220–800 μm diam. and 140–160 μm high, usually growing on a marginally hypophyllous alga-free mycelium, rarely on the epiphyllous thallus; *disc* strongly convex, orange-brown, dark reddish brown to almost black, margin distinct but thin and evanescent, in young apothecia with a root-like byssoid mycelium, composed of colourless, branched hyphae. *Excipulum* prosoplectenchymatous, with radiating cell rows, 25–35 μm broad. *Hypothecium* prosoplectenchymatous, orange-brown, 80–120 μm high. *Epithecium* indistinct. *Hymenium* not inspersed, pale yellow, I+ dark blue, K/I+ dark blue, 70–90 μm high. *Paraphyses* distinct, unbranched, 1·0–1·5 μm thick, not thickened

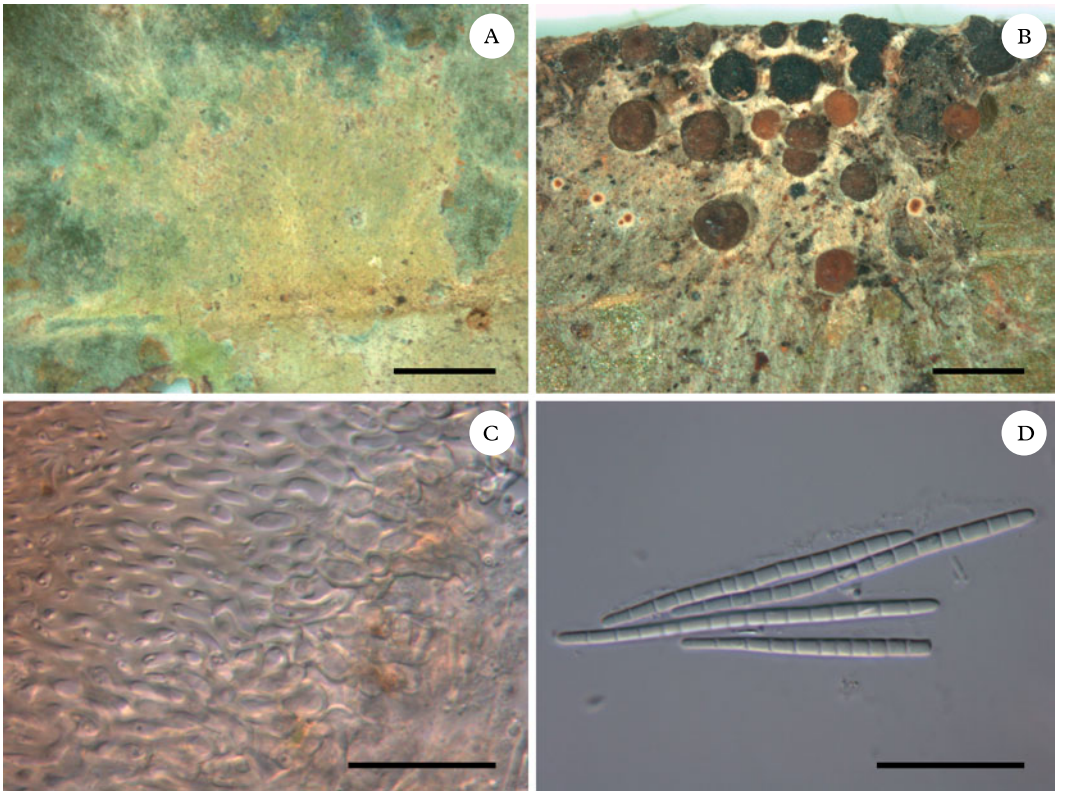

FIG. 1. *Bapalmuia serusiauxiana* (holotype, BR). A, epiphyllous thallus; B, hypophyllous apothecia; C, section showing the prosoplectenchymatous excipulum; D, ascospores (note that the ascospore below is broken, with a missing part). Scales: A = 2 mm; B = 1 mm; C & D = 20 µm. In colour online.

apically. *Asci* cylindrical, 90–100 × 7–9 µm. Ascus wall I+ blue, K/I+ blue, tholus K/I+ blue with a dark blue ring structure conforming to *Byssoloma*-type *sensu* Hafellner (1984). *Ascospores* 8 per ascus, acicular, (7–)15(–19)-septate, colourless, (40–)50–65(–72) × 1·5–2·5 µm (n = 22, mean: 57 × 2 µm), I–, without constrictions at septa.

Pycnidia sessile, hemispherical; inner wall pale brown, glossy; outer wall pale green, farinose with widely open ostiolum. *Conidia* not observed.

Chemistry. Thallus and apothecia K–, KC–, C–, P–, UV–.

Etymology. This new species is dedicated to Emmanüel Sérusiaux, an outstanding figure in foliicolous lichen research, especially in tropical Africa.

Ecology and habitat. A very common species of *Bapalmuia* in the Congo Basin with apothecia growing mostly hypophyllous but also epiphyllous on leaves of *Marantaceae* sp., *Scaphopetalum thonneri* and other plants and shrubs.

Distribution. Tropical Africa. The species seems widespread in the Congo Basin.

Notes. Morphologically and anatomically, this new species is very similar to *B. ivoriensis* R. Sant. & Lücking and *B. halleana* Sérus. It differs primarily in the size and septation of the ascospores. Most of the ascospores are 15-septate and 50–65 × 2·0 µm but this seems very variable. This species can be considered as an intermediate new species between *B. ivoriensis* and *B. halleana*. In *B. halleana*, the ascospores are 20–30-septate

https://doi.org/10.1017/S0024282913000790 Published online by Cambridge University Press

and 70–105 × 2·5–3·0 µm (Kalb *et al.* 2000). In the isotype of *B. ivoriensis* (Ivory Coast: Man, forest of Kouin, *c.* 30 km E of Man, in a dark rainforest, 300–400 m alt., 16 viii 1954, *R. Santesson* 10668:7, UPS) that we examined, all the ascospores are shorter than 36 µm (30·5–33·0 × 1–2 µm).

Additional specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14993 (BR); Bomane, fishing village at the Aruwimi River, 2010, *D. Van den Broeck* 4163, 4164, 4933, 4954 (BR); champs close to the village, 2010, *D. Van den Broeck* 4162 (BR); Jafira, upstream of Lieki at the other side of the Lomami River, understorey of secondary wood, 2010, *D. Van den Broeck* 4159, 4263 (BR); Yangambi, Yangambi Biosphere Reserve, hypophyllous and epiphyllous on leaves of *Scaphopetalum thonneri* and other plants, in young regrowth, in old evergreen and semi-evergreen forests, 2012, *D. Van den Broeck* 4158 (YBI).

Microtheliopsis ramazaniana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805737

Species similar to *Microtheliopsis concentrica*, but differs by broader ascospores.

Type: Democratic Republic of the Congo, Orientale Province, Yangambi, Yangambi Biosphere Reserve, 0°47′47·8″N, 24°29′51·9″E, 422–437 m alt., evergreen forest, on leaves of *Scaphopetalum thonneri*, 26 October 2012, *D. Van den Broeck* 5673 (BR—holotype).

(Fig. 2A & B)

Thallus foliicolous, epiphyllous, crustose, into rounded patches, ecorticate, smooth or thinly setose, ochraceous yellow, yellow-brown to green. *Photobiont* trentepohlioid (*Phycopeltis*), cells rectangular, 13–16 × 5–7 µm, in radiating plates.

Ascomata perithecioid, adnate, more or less concentrically arranged, lens-shaped to conical, rounded or slightly radiately elongate, 0·04–0·08 mm diam., brownish black. *Involucrellum* formed by algal cells 12–21 × 6–9 µm in size, surrounded by dark brown branched and septate hyphae with cells 10–17 × 2·5–3·0 µm in size. *Hamathecium* hemiamyloid, aparaphysate. *Asci* fissitunicate, obclavate, 26–28 × 13–17 µm. Ascus wall I−, K/I−, very thick in the third upper part with a quite large ocular chamber. *Ascospores* 8 per ascus, 1-septate, greyish brown, 13–16 × 3–5 µm, with slight constrictions at septa: young ascospores hyaline but soon becoming brown.

Pycnidia not observed.

Chemistry. Thallus K−, KC−, C−, P−, UV−.

Etymology. This new species is dedicated to Elasi Ramazani, an African botanist and the head of the herbarium of Yangambi in the Democratic Republic of the Congo.

Ecology and habitat. By far the most common species of the genus in the Yangambi Biosphere Reserve, growing on leaves of *Scaphopetalum thonneri* and other understorey plants or shrubs.

Distribution. Tropical Africa. So far the species is known only from the Yangambi Biosphere Reserve.

Notes. The new species fits well in the genus *Microtheliopsis* due to the perithecioid ascomata with an aparaphysate, hemiamyloid hamathecium, fissitunicate asci and greyish brown ascospores. *Microtheliopsis concentrica* (J. L. Bezerra & Cavalc.) Lücking *et al.* is the closest species, which is known from Brazil (Lücking & Kalb 2000), but was accidentally omitted in the monograph on neotropical foliicolous lichens (Lücking 2008). It has ascospores as long as in *M. ramazaniana* but much narrower (10–15 × 2·0–2·5 µm). *Microtheliopsis uniseptata* Herrera-Campos & Lücking, another species with 1-septate ascospores, differs by shorter and narrower ascospores (6–10 × 2·5–3·5 µm) (Lücking 2008). *Microtheliopsis uleana* Müll. Arg. differs by 3-septate ascospores and much larger perithecia (0·15–0·25 mm), and the ascospores of *M. winkleri* Lücking are submuriform.

Additional specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on leaves of *Scaphopetalum thonneri* and other plants, in young regrowth as well as old evergreen and semi-evergreen forests, 2012, *D. Van den Broeck* 4450 (BR), 4452 (YBI).

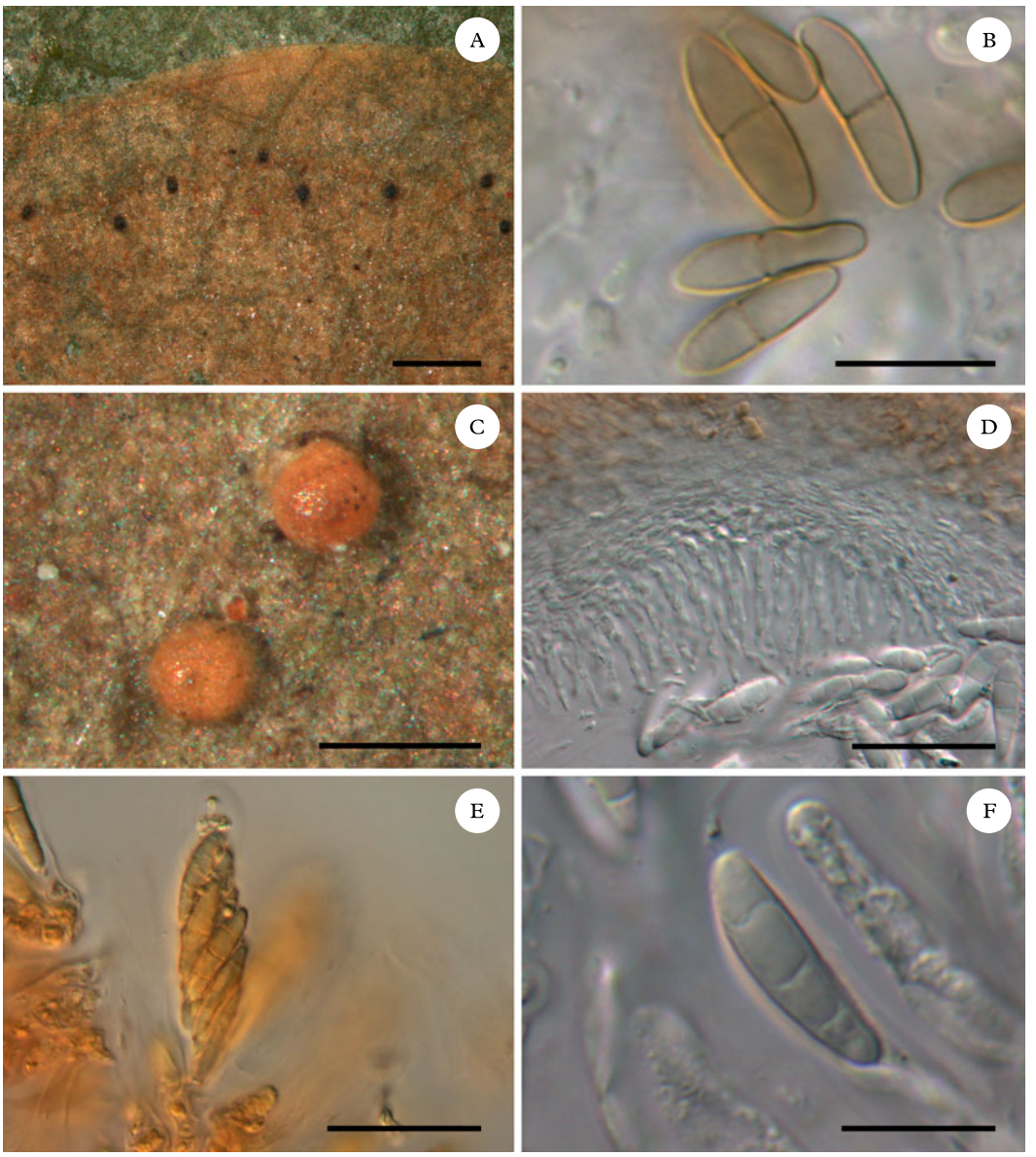

FIG. 2. *Microtheliopsis ramazaniana* (holotype, BR); A, thallus with perithecia; B, ascospores. *Phylloblastia verheyeniana* (holotype, BR); C, thallus with perithecia; D, section showing periphyses; E, ascus in lugol; F, ascospore. Scales: A = 500 µm; B & F = 10 µm; C = 200 µm; D & E = 20 µm. In colour online.

https://doi.org/10.1017/S0024282913000790 Published online by Cambridge University Press

The species of *Microtheliopsis* can be distinguished using the following key:

1	Ascospores 1-septate	2
	Ascospores 3-septate or submuriform	4
2(1)	Ascospores 6–10 µm long	**M. uniseptata**
	Ascospores 10–16 µm long	3
3(2)	Ascospores 2·0–2·5 µm broad	**M. concentrica**
	Ascospores 3–5 µm broad	**M. ramazaniana**
4(1)	Ascospores 3-septate	**M. uleana**
	Ascospores submuriform	**M. winkleri**

Phylloblastia verheyeniana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805740

Species similar to *Phylloblastia borhidii*, but differs by the absence of isidia and by smaller and narrower ascospores.

Type: Democratic Republic of the Congo, Orientale Province, Yaengo, at the Lomami River, 30 km upstream of Lieki, forest, 0°30′00″N, 24°10′15″E, 422–437 m alt., on leaves, 1 June 2010, *D. Van den Broeck* 4992 (BR—holotype).

(Fig. 2C–F)

Thallus foliicolous, epiphyllous, smooth, crustose, continuous or partly dispersed into irregular patches, green, without isidia. *Photobiont* cells green, in radiating plates or in irregular groups with angular-rounded cells, 5–10 × 5–6 µm. Mycobiont hyphae not papillose.

Ascomata perithecioid, sessile, constricted at the base, subglobose, 110–150 µm diam. and 150 µm high, slightly pilose, orange to yellow, mostly with a darker spot around the ostiolum. *Asci* fissitunicate, clavate, 45–55 × 8–12 µm, with broad ocular chamber, I−, K/I−. *Hamathecium* aparaphysate, K/I+ blue. *Periphyses* abundant and well developed, 11–17 × 1–2 µm. *Involucrellum* well developed, orange, K−, 35 µm thick, containing green algal cells, more or less rounded, 5–6 × 3–6 µm. *Excipulum* 10–12 µm thick, colourless. *Ascospores* 3-septate, colourless, fusiform-ellipsoid, 8 per ascus, 13–15(–17) × 3·0–4·5 µm, 3·7–4·7 times as long as broad, I−, K/I−.

Pycnidia not observed.

Chemistry. Thallus K−, KC−, C−, P−, UV−.

Etymology. This new species is named after Erik Verheyen, a zoologist at the Museum of Natural Sciences of Belgium and one of the promoters of the expeditions and studies in the Congo Basin of the Democratic Republic of the Congo.

Ecology and habitat. On leaves of understorey plants or shrubs in tropical lowland forests.

Distribution. Tropical Africa. So far the species is known only from the Congo Basin.

Notes. This new species of *Verrucariaceae* fits well in the genus *Phylloblastia*, rather than the closely related genus *Psoroglaena*, due to the absence of papillae on the mycobiont hyphae and the distinctly developed involucrellum. *Phylloblastia borhidii* (Farkas & Vězda) Lücking is the closest species, but that taxon differs by the presence of abundant whitish spherical isidia and larger ascospores, 18–23 × 4·5–5·0 µm (Farkas & Vězda 1987). Two other species have 3-septate ascospores: *P. inexpectata* (Farkas & Vězda) Lücking and *P. triseptata* (Kalb & Vězda) Lücking (Sérusiaux *et al.* 2007). *Phylloblastia inexpectata* differs by its pinkish brown to almost black perithecia soon depressed at their top. The ascospores of *P. triseptata* are slightly curved and measure 24–26 × 3·5–4·0 µm. *Phylloblastia verheyeniana* might be confused with specimens of *Psoroglaena perminuta* (Vězda) H. Harada, but can be separated by its distinctly developed involucrellum, the absence of papillose hyphae and its smaller ascospores (13–15 × 3·0–4·5 µm instead of 16–24 × 3–4 µm).

Additional specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Lisala, left bank of the Congo River, close to Lisala, dense forest, 335 m alt., on leaves, 2009, *D. Ertz* 15090 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4949, 3653 (BR), 4947 (YBI).

Porina duduana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805743

Species similar to *Porina rufula* but differs by angular-rounded and irregularly arranged photobiont cells, smaller perithecia and smaller ascospores.

Type: Democratic Republic of the Congo, Orientale Province, Yangambi, Yangambi Biosphere Reserve, 0°47′58″N, 24°29′30″E, *c.* 473 m alt., evergreen forest dominated by *Brachystegia laurentii*, on leaves of *Scaphopetalum thonneri*, 31 October 2012, *D. Van den Broeck* 4444 (BR—holotype).

(Fig. 3A–D)

Thallus foliicolous, epiphyllous, crustose, corticate, continuous, lacking calcium oxalate crystals, thin, smooth, slightly shiny, green. *Photobiont* trentepohlioid (*Phycopeltis*), cells angular-rounded, 4·5–13·5 × 3·5–5·0 µm, in non-radiating plates.

Ascomata perithecioid, conical to hemispherical, rounded, 130–150(–170) µm diam. and 65–70 µm high, completely translucent, orange. *Excipulum* prosoplectenchymatous, 11–15 µm thick, yellowish orange, K+ orange. *Involucrellum* not distinctly separated from excipulum, paraplectenchymatous, 10–12 µm thick, yellowish orange, K+ orange, externally covered by 3·0–3·5 µm thick, algal layer. *Hamathecium* composed of unbranched paraphyses, 1·0–1·5 µm thick, gel I−, K/I−. *Asci* unitunicate, obclavate, 40–50 × 8–11 µm, I−, K/I−. *Ascospores* oblong-fusiform, 8 per ascus, 3-septate, without constrictions at septa, 11·0–14·5 × 2·5–3·0 µm ($n = 20$, mean: 12·4 × 2·9 µm), 4–5 times as long as broad, colourless.

Pycnidia not observed.

Chemistry. Thallus K−, KC−, C−, P−, UV−.

Etymology. This new species is named after Professor Benjamin Akaibe Dudu, zoologist and chief of the department EGRA at the University of Kisangani in the Democratic Republic of the Congo.

Ecology and habitat. On leaves of *Scaphopetalum thonneri* in an evergreen tropical lowland forest dominated by *Brachystegia laurentii*.

Distribution. A rare species, known only from the type collection.

Notes. The species is similar to *Porina rufula* (Kremp.) Vain., which differs by its larger perithecia, 0·15–0·30(–0·40) mm diam., larger ascospores, 18–27(–31) × 3–5(–6) µm, and the photobiont cells are rectangular, in radiating plates. *Porina duduana* also does not match with the atypical specimens of *P. rufula* ('morph α' according to Lücking 1996), which differ by much larger ascospores [17–26(–30) × 3–6 µm] and in which photobiont cells are rectangular, forming radiate plates. Also similar is *P. fulvelloides* Lücking & Wirth, which differs by the depressed and opaque top of its much larger perithecia (0·25–0·50 mm diam.) and the larger ascospores (18–24 × 3·5–4·5 µm) (Lücking 2008). The new species also resembles *P. fulvella* Müll. Arg., which differs by the presence of an internal algal layer, larger perithecia (0·25–0·45 mm diam.) with depressed top and smooth to minutely pilose surface, and larger ascospores (17–25 × 3–5 µm) (Lücking 2008).

Porina gryseelsiana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805747

Species similar to *Porina octomera* but differs by orange-brown perithecia and larger, 7–9(–12)-septate ascospores.

Type: Democratic Republic of the Congo, Orientale Province, Yaekama, 0°46′26″N, 24°18′39″E, *c.* 370 m alt., 5 July 2009, *D. Ertz* 14971 (BR—holotype).

(Fig. 3E–G)

Thallus foliicolous, epiphyllous, crustose, in irregular patches, lacking calcium oxalate crystals, thin, smooth, slightly shiny, pale green. *Photobiont* trentepohlioid (*Phycopeltis*), cells rectangular, 12·5–22·0 × 5·5–11·0 µm, in radiate plates.

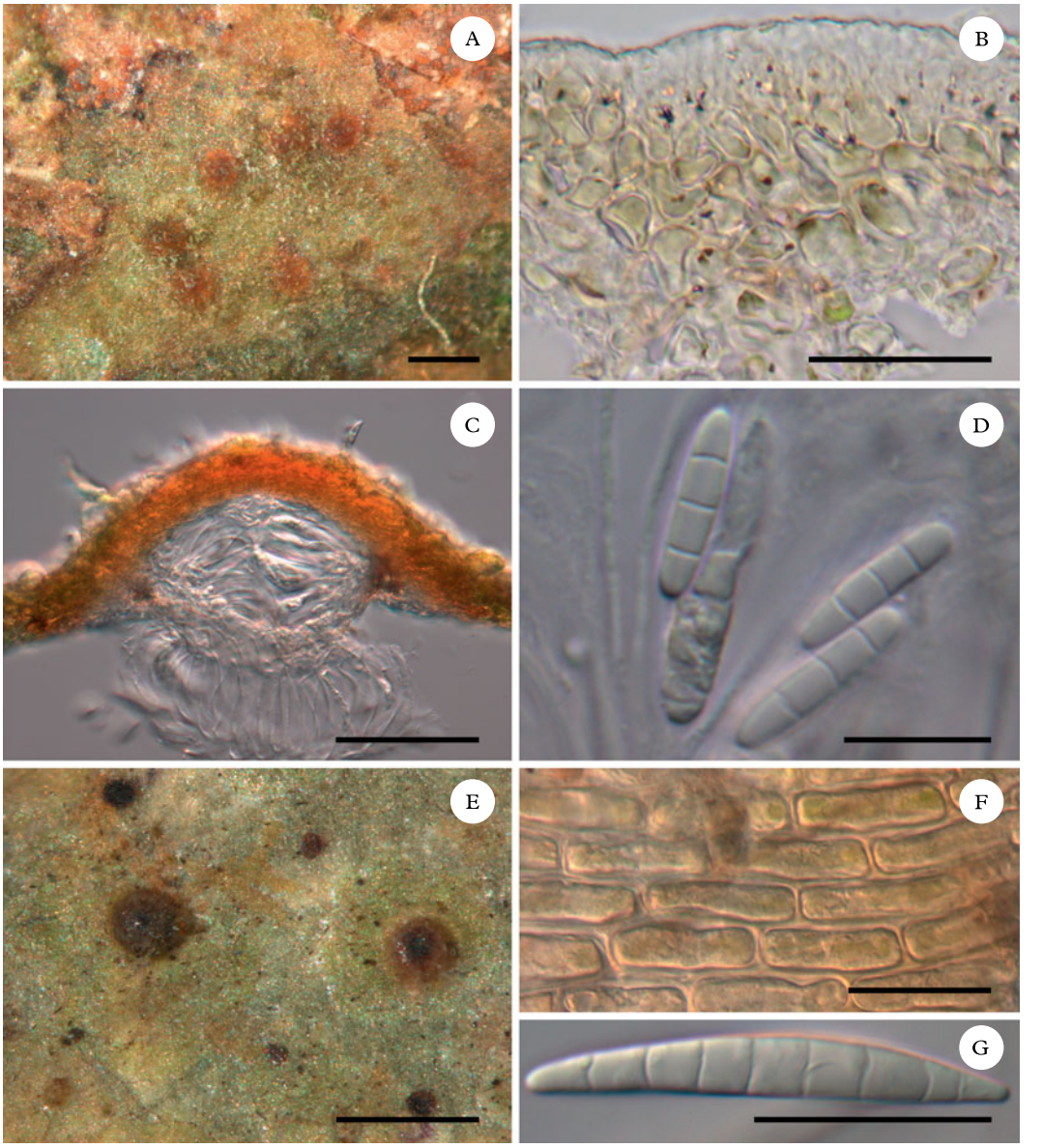

FIG. 3. *Porina duduana* (holotype, BR); A, thallus with perithecia; B, section of thallus showing non-radiate, angular-rounded trentepohlioid photobiont; C, section of perithecium showing involucrellum; D, ascospores. *Porina gryseelsiana* (holotype, BR); E, thallus with perithecia; F, radiate regular trentepohlioid photobiont; G, ascospore. Scales: A = 200 μm; B, F & G = 20 μm; C = 50 μm; D = 10 μm; E = 500 μm. In colour online.

Ascomata perithecioid, hemispherical to subglobose, glabrous, rounded, 170–240 μm diam., orange-brown with a darker, almost black spot around the ostiolum, base pale yellow, without algal layer between excipulum and involucrellum. *Excipulum* prosoplectenchymatous, 21–26 μm thick, yellow, K+ orange. *Involucrellum* not covered by crystallostratum, not distinctly separated from excipulum, paraplectenchymatous, 16–19 μm

thick, orange, K+ orange-red, externally covered by algal layer. *Hamathecium* composed of unbranched paraphyses, 1 µm thick, gel I−, K/I−. *Asci* unitunicate, cylindrical, 90–104 × 12–16 µm, I−, K/I−. *Ascospores* fusiform, sometimes slightly attenuated at one or both sides, 8 per ascus, 7–9(–12)-septate, without constrictions at septa, 29–46 × 5·0–7·5 µm ($n = 13$, mean: 38·5 × 5·6 µm), 6–8 times as long as broad, colourless.

Pycnidia not observed.

Chemistry. Thallus K−, KC−, C−, P−, UV−.

Etymology. This new species is named after Guido Gryseels, Director of the Royal Museum of Central Africa in Belgium.

Ecology and habitat. On leaves of understorey plants or shrubs in a lowland tropical forest in the Congo Basin.

Distribution. Tropical Africa. A rare species, known only from the type collection.

Notes. This new species is easily distinguished by its glabrous, subglobose and prominent perithecia that are brownish with a darker, almost black spot around the ostiolum, in combination with 7–9-septate ascospores. The only other species with subglobose, glabrous perithecia and ascospores with more than 5 septa in the *Porina rufula*-group is *P. octomera* (Müll. Arg.) F. Schill. (Lücking 2004, 2008), but that species has much smaller, invariably 7-septate ascospores (24–32 × 3–4 µm).

Porina weghiana Van den Broeck, Lücking & Ertz sp. nov.

MycoBank No.: MB 805750

Species resembles *Porina ornata*, but differs in the presence of disc-shaped isidia, yellow perithecia without apical appendages and smaller ascospores with less septa.

Type: Democratic Republic of the Congo, Equator Province, Monze (Engengele: between Lisala and Kisangani), valley of Loika (= tributary of the Itimbiri River), trees along the river, 350 m alt., 29 June 2009, *D. Ertz* 14659 (BR—holotype).

(Fig. 4A–D)

Thallus foliicolous, epiphyllous, in irregular patches with abundant disc-shaped isidia of the *Phyllophiale alba*-type, smooth, grey-green to yellowish brown, slightly shiny, lacking calcium oxalate crystals. *Isidia* circular, stalked, the margins more or less smooth or clearly dentate, white or with a greenish or brownish tinge. *Photobiont* cells angular rounded, 6·5–12·5 × 3–5 µm, in irregular plates.

Ascomata perithecia, sessile, subglobose, sometimes somewhat depressed at the ostiolum, 115–230 µm diam. and *c.* 152 µm high, surface smooth to rough, sometimes slightly papillose, yellowish to whitish, slightly shiny. *Excipulum* well developed, prosoplectenchymatous, 12–15 µm thick, yellow to pale orange, K+ orange. *Involucrellum* well developed, paraplectenchymatous, 15–19 µm thick, yellowish, K+ orange, not covered by a layer of calcium oxalate crystals (crystallostratum). Between excipulum and involucrellum, an algal layer of *c.* 8 µm thick with dispersed algal cells, 4–6 × 3–4 µm. *Hamathecium* colourless, I−, K/I−, paraphyses unbranched. *Asci* obclavate, 84–105 × 23–26 µm, K−, K/I−. *Ascospores* 8 per ascus, fusiform, (7–)9-septate, 33–50 × 5·0–6·5 µm ($n = 18$, mean: 46 × 6 µm) with perispore 1·5 µm thick, without constrictions at septa, colourless, K−, K/I−.

Pycnidia immersed, rounded. *Conidia* ellipsoid, non-septate, colourless, 4·0–5·5 × 0·5–1·0 µm.

Chemistry. Thallus K−, KC−, C−, P−, UV−.

Etymology. This new species is named after Micheline Wegh, the girlfriend of the first author.

Ecology and habitat. On leaves of palm trees along a river.

Distribution. Tropical Africa. This species seems very rare since it is known only from the type locality.

Notes. *Porina ornata* Vězda seems the closest species in terms of perithecial morphology and ascospores, but that species differs by the absence of disc-shaped isidia, broader ascospores (35–50 × 8–11 µm) and perithecia with a pale grey to dark greyish brown colour and apical appendages. *Porina*

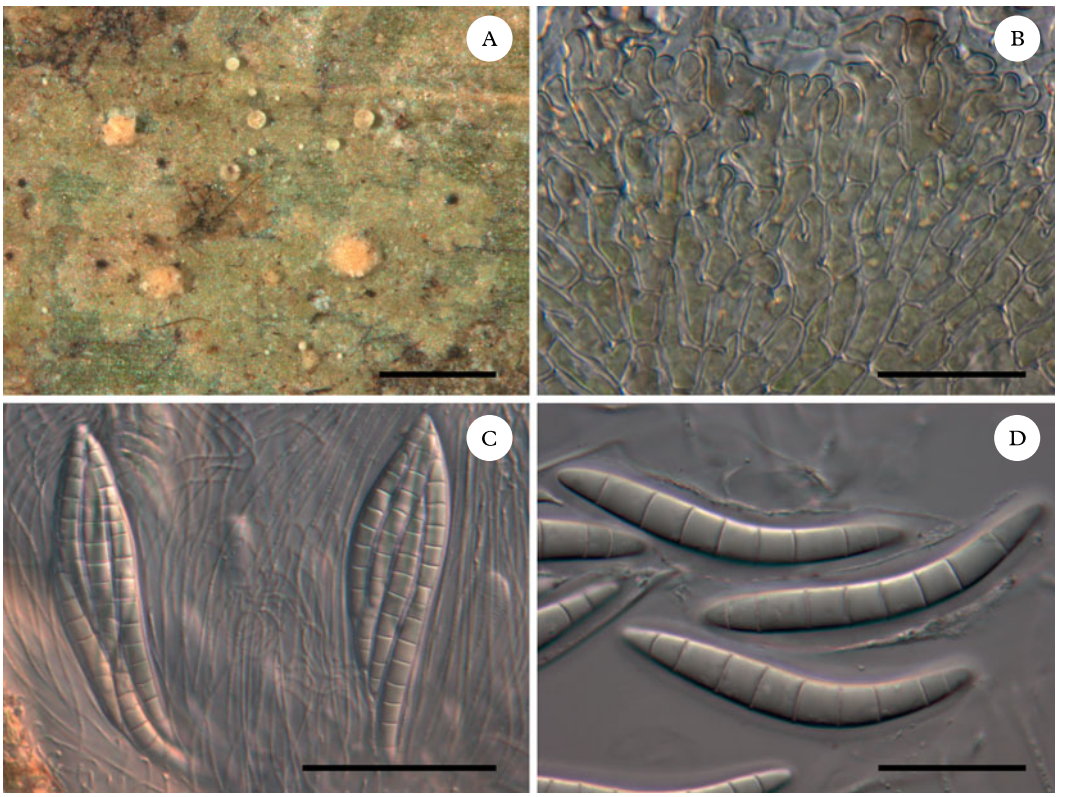

FIG. 4. A–D, *Porina weghiana* (holotype, BR). A, thallus with perithecia and disc-shaped isdia of *Phyllophiale alba*-type; B, irregular trentepohlioid photobiont; C, asci and paraphyses; D, ascospores. Scales: A = 500 μm; B & D = 20 μm; C = 50 μm. In colour online.

weghiana is the fourth species to produce *Phyllophiale*-type isidia, besides *P. alba* (R. Sant.) Lücking, *P. fusca* Lücking and *P. pseudoapplanata* Lücking & M. Cáceres (Lücking 2004, 2008). Notably, all four have markedly different perithecial and thallus morphologies which suggests that they are not closely related and that this type of isidia evolved multiple times (Lücking 2008).

The four species can be distinguished as follows:

1 Ascospores 3-septate; thallus and isidia ochraceous brown . . . . . **P. fusca**
Ascospores 7–9-septate; thallus greenish to yellowish; isidia whitish to greenish . . 2

2(1) Perithecia subglobose, with slightly papillose surface; ascospores mostly 9-septate. . . . . **P. weghiana**
Perithecia lens-shaped, with smooth and glabrous surface; ascospores 7-septate . . 3

3(2) Thallus and perithecia with layer of calcium oxalate crystals; isidia whitish. . . . . **P. alba**
Thallus and perithecia lacking calcium oxalate crystals; isidia greenish . . . . . **P. pseudoapplanata**

https://doi.org/10.1017/S0024282913000790 Published online by Cambridge University Press

New Records

All specimens examined are from the Democratic Republic of the Congo. The taxa are listed in alphabetical order. New records for the Democratic Republic of the Congo are marked with (*), those new for tropical Africa with (**), and those new for the Palaeotropics with (***). Nomenclature follows Lücking (2008).

Anisomeridium musaesporoides Etayo & Lücking (*)

Notes. Previously known from the Neotropics and the Seychelles (Lücking 2008). New for continental Africa.

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at *c.* 3 km of the river, 345 m alt., 2009, old secondary forest, *D. Ertz* 15059 (BR); Monze (Engengele: between Lisala and Kisangani), valley of Loika (= tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14669 (BR).

Arthonia cyanea Müll. Arg. (***)

Notes. Of the three intraspecific taxa distinguished by Lücking (2008), only *Arthonia cyanea* var. *cyanea* f. *minor* Lücking was found. In his description, Lücking states that this new form, known from Costa Rica and Bolivia, is possibly pantropical but we know only about one recent additional location in Colombia (Mateus *et al.* 2012). Nevertheless, the discovery of this species in the Democratic Republic of the Congo supports his hypothesis.

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at *c.* 3 km of the river, 345 m alt., old secondary forest, 2009, *D. Ertz* 15052 (BR); Monze (Engengele: between Lisala and Kisangani), valley of Loika (= tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14639 (BR). *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14977 (BR).

Arthonia flavoverrucosa U. Becker & Lücking (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (= tributary of the Itimbiri River), 350 m alt., on palm leaves, 2009, *D. Ertz* 15025 (BR); on palm leaves, forest on hydromorphic soil, 2009, *D. Ertz* 14640 (BR).

Arthonia leptosperma (Müll. Arg.) R. Sant. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province:* Yangambi, Yangambi Biosphere Reserve, forest dominated by *Gilbertiodendron dewevrei*, 2012, *D. Van den Broeck* 4445 (BR).

Arthonia lividula Vain. (**)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Jafira, upstream of Lieki at the other side of the Lomami River, understorey of secondary wood, 2010, *D. Van den Broeck* 3651 (BR).

Arthonia palmulacea (Müll. Arg.) R. Sant. (**)

Notes. A pantropical species known from North and South America (Santesson 1952; Lücking 2008) and Asia (Santesson 1952). This species has been placed in *Eremothecella* by Sérusiaux (1992), but this was questioned by Lücking (2008). *Eremothecella* has peculiar pycnidia and filiform, transversely multiseptate conidia. Our specimen has nonseptate conidia placing it clearly, as was suggested by Lücking, in *Arthonia*.

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14980 (BR).

Aspidothelium scutellicarpum Lücking (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (= tributary of the Itimbiri River), trees along the river, on palm leaves, 350 m alt., 2009, *D. Ertz* 14550 (BR).

Asterothyrium argenteum Müll. Arg. (*)

Notes. Already mentioned by Santesson (1952) from tropical Africa (Nigeria, Uganda and Kenya). New to the Democratic Republic of the Congo.

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14941, 14946 (BR); Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 3795 (BR).

Asterothyrium leucophthalmum (Müll. Arg.) R. Sant. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 3846 (BR).

Bacidina pseudohyphophorifera (Lücking & Sérusiaux) Lücking (**)

Notes. This species was always sterile but due to the conspicuous, stipitate pycnidia it was easily recognized.

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14662 (BR). *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14966 (BR).

Bacidina hypophylla Lücking & Kalb (***)

Notes. *Bacidina apiahica* also grows on the underside of leaves, but *B. hypophylla* is easily discernible by its shorter ascospores. It seems very common, thus it must have been overlooked.

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at *c.* 3 km of the river, 345 m alt., old secondary forest, 2009, *D. Ertz* 15089 (BR); Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14660 (BR). *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, hypophyllous on leaves of *Scaphopetalum thonneri*, in young regrowth as well as old primary forests, × 2012, *D. Van den Broeck* s. n. (BR).

Byssolecania variabilis Vězda *et al.* (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at ±3 km of the stream, 345 m alt., dense secondary forest, 2009, *D. Ertz* 14336 (BR). *Orientale Province*: Basoko (between Lisala and Kisangani), left bank of the Congo River, dense forest on the slope of the river bank, 360 m alt., 2009, *D. Ertz* 14775 (BR); Yaekama, 370 m alt., 2009, *D. Ertz* 14990 (BR).

Byssoloma absconditum Farkas & Vězda (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Lieki, fishing village at the Lomami River, temporarily inundated wood at the NE side of the village, 2010, *D. Van den Broeck* 4272 (BR); Bomane, fishing village at the Aruwimi River, near the village, on palm leaves in a plantation of palms, 2010, *D. Van den Broeck* 4279 (BR).

Byssoloma aurantiacum Kalb & Vězda (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4958 (BR); *ibid.* understorey of temporarily inundated wood, 2010, *D. Van den Broeck* 4276 (BR).

Byssoloma minutissimum Kalb & Vězda (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), swamp forest, palm leaves, 2009, *D. Ertz* 15048 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, champs close to the village, 2010, *D. Van den Broeck* 4267 (BR).

Byssoloma subleucoblepharum G. Thor *et al.* (**)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, young regrowth forest, 2012, *D. Van den Broeck* 4446 (BR).

Calopadia foliicola (Fée) Vězda (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14981 (BR). *Equator Province*: Lisala, some km downstream of Lisala, secondary forest on the right bank of the Congo River, 310 m alt., 2009, *D. Ertz* 15015 (BR); Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4244, 4245, 4926 (BR); Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4944 (BR).

Calopadia subcoerulescens (Zahlbr.) Vězda (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14557 (BR).

Chroodiscus australiensis Vězda & Lumbsch (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaengo, fishing village at the Lomami River, 30 km upstream of Lieki, 2010, *D. Van den Broeck* 4995 (BR).

Coenogonium hypophyllum (Vězda) Kalb & Lücking (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at ±3 km of the stream, 345 m alt., dense secondary forest, 2009, *D. Ertz* 15098 (BR). *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, hypophyllous on leaves of *Scaphopetalum thonneri* and other plants, in young regrowth as well as old evergreen and semi-evergreen forests, × 2012, *D. Van den Broeck* s. n. (BR).

Coenogonium interplexum Nyl. (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4292 (BR); plantation of *Hevea brasiliensis*, 2010, *D. Van den Broeck* 5026 (BR).

Coenogonium labyrinthicum Lücking & Kalb (*)

Notes. No apothecia seen but the applanate pycnidia with elongate, radiating, labyrinthic chambers fusing into a single ostiolum are unmistakable.

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on palm leaves, in old evergreen *Gilbertiodendron dewevrei* forest, 2012, *D. Van den Broeck* 4447, 4451 (BR).

Coenogonium linkii Ehrenb. (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14665 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4293, 4941 (BR).

Coenogonium lisowskii (Vězda) Lücking (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4313 (BR).

Coenogonium pocsii (Vězda & Farkas) Lücking et al. (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, close to the river and the village, *c.* 345 m alt., dense secondary forest, 2009, *D. Ertz* 14255 (BR).

Cryptothecia irregularis Lücking et al. (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14986 (BR); Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4144 (BR); *ibid*. secondary wood, 2010, *D. Van den Broeck* 4145 (BR).

Fellhanera carnea (Vězda) Vězda (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at ±3 km of the stream, 345 m alt., dense secondary forest, 2009, *D. Ertz* 14999 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, trees in the village, 2010, *D. Van den Broeck* 4246 (BR).

Fellhanera rubida (Müll. Arg.) Lücking (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14650 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, palm leaves, 2010, *D. Van den Broeck* 4951, 5002 (BR); plantation of *Hevea brasiliensis*, *D. Van den Broeck* 5020 (BR).

Fellhanera vandenberghenii (Sérus.) Vězda (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., on palm leaves, 2009, *D. Ertz* 14967 (BR).

Keratosphaera multiseptata Flakus & Lücking (***)

Notes. This is a first record for the Palaeotropics of this recently described species from Bolivia (Flakus & Lücking 2008).

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14976 (BR).

Lyromma confusum Lücking & Sérus. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on leaves of an unidentified plant species, in old evergreen *Gilbertiodendron dewevrei* forest, 2012, *D. Van den Broeck* 4448 (BR).

Lyromma nectandrae Bat. & H. Maia (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14648 (BR). *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14951 (BR); Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4146 (BR); Bomane, fishing village at the Aruwimi River, trees in and around the village, 2010, *D. Van den Broeck* 4249 (BR).

Microtheliopsis uleana Müll. Arg. (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), swamp forest, palm leaves, 350 m alt., 2009, *D. Ertz* 15046 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, palm leaves, 2010, *D. Van den Broeck* 4931 (BR).

Microtheliopsis uniseptata Herrera-Campos & Lücking (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4148 (BR).

Opegrapha vegae R. Sant. (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, close to the river and the village, *c.* 345 m alt., dense secondary forest, 2009, *D. Ertz* 14250 (BR); Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), swamp forest, palm leaves, 350 m alt., 2009, *D. Ertz* 15049 (BR). *Orientale Province*: Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 3617 (BR).

Phylloblastia dolichospora Vain. (*)

Notes. No perithecia observed but the disciform, adnate isidia in combination with the microsquamulose thallus are quite typical.

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, near the village, on palm leaves, 2010, *D. Van den Broeck* 4149 (BR).

Phylloblastia mucronata (McCarthy) Lücking (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Lisala, some km downstream of Lisala, secondary forest on the right bank of the Congo River, 310 m alt., 2009, *D. Ertz* 15111 (BR).

Porina follmanniana U. Becker & Lücking (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on leaves of *Scaphopetalum thonneri* and other understorey plants, in young regrowth and in old evergreen and semi-evergreen forests, 2012, *D. Van den Broeck* 4449, 4453 (BR).

Porina palmicola Malcolm & Vězda (**)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, temporarily inundated wood, 2010, *D. Van den Broeck* 5602 (BR).

Porina rubentior (Stirt.) Müll. Arg. (*)

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14983 (BR); Bomane, fishing village at the Aruwimi River, trees in and around the village, 2010, *D. Van den Broeck* 4150 (BR); plantation of palms, 2010, *D. Van den Broeck* 4910, 4914, 4959 (BR).

Porina rubescens (Lücking) Hafellner & Kalb (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Basoko (between Lisala and Kisangani), left bank of the Congo River, dense forest on the slope of the river bank, 360 m alt., 2009, *D. Ertz* 14781 (BR).

Porina sphaerocephala Vain. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on leaves of *Scaphopetalum thonneri*, semi-evergreen forest, 2012, *D. Van den Broeck* 4454 (BR).

Porina subnucula Lumbsch et al. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, on leaves of *Scaphopetalum thonneri*, in young regrowth forest, 2012, *D. Van den Broeck* 4455 (BR).

Psoroglaena ornata Herrera-Campos & Lücking (***)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Jafira, upstream of Lieki at the other side of the Lomami River, understorey of secondary wood, 2010, *D. Van den Broeck* 4151 (BR).

Psoroglaena perminuta (Vězda) H. Harada (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), trees along the river, 350 m alt., 2009, *D. Ertz* 14661 (BR).

Sporopodium antonianum Elix et al. (*)

Notes. In our specimens, this species sometimes grows partially on the underside of leaves.

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), swamp forest, palm leaves, 350 m alt., 2009, *D. Ertz* 15024 (BR). *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 14953 (BR); Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4925 (BR); Jafira, upstream of Lieki at the other side of the Lomami River, understorey of secondary wood, 2010, *D. Van den Broeck* 4145 (BR); Yaengo, fishing village at the Lomami River, 30 km upstream of Lieki, in the village near the Lomami River, 2010, *D. Van den Broeck* 4993 (BR).

Sporopodium podosphaera Lücking & R. Sant. (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at *c.* 3 km of the river, 345 m alt., old secondary forest, 2009, *D. Ertz* 15009 (BR). *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, 2010, *D. Van den Broeck* 4247, 4929 (BR).

Strigula albomaculata Sérus. (*)

Specimens examined. **Democratic Republic of the Congo:** *Equator Province*: Mbangi (±20 km upstream of Lisala), left bank of the Congo River, at *c.* 3 km of the river, 345 m alt., old secondary forest, 2009, *D. Ertz* 15073 (BR). *Orientale Province*: Yaekama, 370 m alt., 2009, *D. Ertz* 15074, 15189 (BR).

Strigula obducta (Müll. Arg.) R. C. Harris (*)

Specimen examined. **Democratic Republic of the Congo:** *Equator Province*: Monze (Engengele: between Lisala and Kisangani), valley of Loika (=tributary of the Itimbiri River), swamp forest, 350 m alt., 2009, *D. Ertz* 15033 (BR).

Strigula subelegans Vain. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yaengo, fishing village at the Lomami River, 30 km upstream of Lieki, 2010, *D. Van den Broeck* 4155 (BR).

Trichothelium epiphyllum Müll. Arg. (*)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Kona, temporary fishing village at the Itimbiri River, swamp forest, 2010, *D. Van den Broeck* 4924 (BR).

Trichothelium sipmanii Lücking (***)

Notes. Of the two intraspecific taxa distinguished by Lücking (2008), only *Trichothelium sipmanii* fo. *multiseptatum* Lücking was found.

Specimens examined. **Democratic Republic of the Congo:** *Orientale Province*: Bomane, fishing village at the Aruwimi River, plantation of palms, palm leaves, 2010, *D. Van den Broeck* 4939 (BR); Jafira, upstream of Lieki on the other side of the Lomami River, understorey of secondary wood, 2010, *D. Van den Broeck* 4156 (BR).

Vezdaea polyspora Kalb & Vězda (***)

Specimen examined. **Democratic Republic of the Congo:** *Orientale Province*: Yangambi, Yangambi Biosphere Reserve, evergreen forest, 0°46′49·49″N, 24°31′15·89″E, *c.* 471 m alt., hypophyllous on leaves of *Marantaceae* sp., 2012, *D. Van den Broeck* 4456 (BR).

The expeditions to the Democratic Republic of the Congo and the COBIMFO project were financially supported by the Belgian National Lottery, BELSPO and BTC. Fieldwork was supported by local guides, the staff of the WWF and the herbarium in Yangambi. Logistical support was generously provided by the organizers of the expeditions, Professor Benjamin Akaibe Dudu and the staff of the CBS at the University of Kisangani. Alidé Kidimbu, Elisabeth Kearsly and Thalès de Haulleville are warmly thanked for the selection of the forest plots at the Yangambi Biosphere Reserve. The authors are indebted to Cyrille Gerstmans and Daniel De Wit for technical assistance. The curators of LG, G and UPS are acknowledged for the loan of, or permission to study, material.

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Appendix 1. List of foliicolous species of the Democratic Republic of the Congo reported in literature. Sixty-six taxa with an asterisk (*) were collected during fieldwork in 2009–2012.

*Aderkomyces albostrigosus**, *Aderkomyces dilatatus*, *Aderkomyces helminthosporus*, *Anisomeridium foliicola**, *Arthonia accolens**, *Arthonia trilocularis**, *Arthotheliopsis planicarpa*, *Aspidothelium fugiens*, *Aspidothelium trichothelioides*, *Asterothyrium monosporum*, *Asterothyrium octomerum*, *Asterothyrium pittieri**, *Asterothyrium rotuliforme*, *Aulaxina epiphylla*, *Aulaxina microphana**, *Aulaxina minuta*, *Aulaxina opegraphina**, *Aulaxina quadrangula**, *Aulaxina submuralis*, *Aulaxina unispora*, *Bacidia clauzadei*, *Bacidia dimerelloides*, *Bacidia foliicola**, *Bacidia ituriensis*, *Bacidina apiahica**, *Bacidina mirabilis**, *Bacidina scutellifera*, *Badimia dimidiata**, *Badimia pallidula*, *Bapalmuia palmularis*, *Barubria rubrofusca*, *Byssolecania deplanata**, *Byssoloma fadenii*, *Byssoloma guttiferae**, *Byssoloma leucoblepharum**, *Byssoloma murinum*, *Byssoloma subdiscordans**, *Byssoloma subpolychromum*, *Byssoloma tricholomum**, *Byssoloma vanderystii**, *Byssoloma vezdanum**, *Calenia africana*, *Calenia aspidota**, *Calenia depressa**, *Calenia graphidea*, *Calenia thelotremella*, *Caleniopsis laevigata*, *Calopadia fusca**, *Calopadia puiggarii**, *Chroodiscus mirificus*, *Chroodiscus verrucosus**, *Coccocarpia erythroxyli*, *Coccocarpia palmicola*, *Coccocarpia pellita*, *Coenogonium fallaciosum*, *Coenogonium subluteum**, *Coenogonium vezdanum*, *Cryptothecia candida**, *Echinoplaca diffluens*, *Echinoplaca epiphylla**, *Echinoplaca handelii*, *Echinoplaca leucotrichoides**, *Echinoplaca pellicula*, *Eugeniella micrommata**, *Fellhanera africana**, *Fellhanera bouteillei*, *Fellhanera encephalarti*, *Fellhanera lambinonii**, *Fellhanera lisowskii*, *Fellhanera rhapidophylli*, *Fellhanera sorediantha**, *Fellhanera stanhopeae*, *Fellhanera subfuscatula*, *Fellhanera sublecanorina*, *Fellhanera submicrommata**, *Fellhanera subternella**, *Fellhanera wirthii*, *Gyalectidium filicinum*, *Gyalideopsis perminuta*, *Gyalideopsis rubescens*, *Lasioloma arachnoideum**, *Loflammia epiphylla**, *Loflammiopsis brasiliensis*, *Macentina hepaticola*, *Mazosia dispersa**, *Mazosia melanophthalma**, *Mazosia paupercula**, *Mazosia phyllosema**, *Mazosia rotula**, *Mazosia rubropunctata*, *Opegrapha filicina*, *Opegrapha lambinonii*, *Opegrapha santessonii**, *Phylloblastia dispersa*, *Phylloblastia septemseptata*, *Phyllogyalidea epiphylla*, *Phyllogyalidea phyllophila**, *Pleurotrema epiphylla*, *Porina alba**, *Porina albida*, *Porina atrocoerulea*, *Porina distans**, *Porina epiphylla**, *Porina epiphylloides*, *Porina fusca*, *Porina imitatrix**, *Porina limbulata*, *Porina nilgiriensis*, *Porina nitidula*, *Porina radiata*, *Porina rufula**, *Porina tetramera**, *Porina trichothelioides**, *Porina triseptata*, *Psorotheciopsis albomaculans*, *Psorotheciopsis patellarioides**, *Psorotheciopsis premneella*, *Rolueckia conspersa**, *Sporopodium leprieurii**, *Strigula concreta*, *Strigula janeirensis**, *Strigula macrocarpa*, *Strigula melanobapha**, *Strigula nemathora**, *Strigula nitidula*, *Strigula orbicularis**, *Strigula phyllogena**, *Strigula prasina*, *Strigula schizospora*, *Strigula smaragdula**, *Strigula subtilissima**, *Tapellaria epiphylla*, *Tapellaria molleri**, *Tapellaria nigrata**, *Tapellaria phyllophila**, *Tricharia pallida*, *Tricharia similis*, *Tricharia sipmanii*, *Tricharia subsimilis*, *Tricharia triseptata*, *Tricharia urceolata*, *Tricharia vainioi**, *Trichothelium africanum*, *Trichothelium alboatrum*, *Trichothelium annulatum*, *Trichothelium bipindense**, *Trichothelium pauciseptatum*, *Trichothelium porinoides**, *Trichothelium triseptatum*, *Vezdaea foliicola*

https://doi.org/10.1017/S0024282913000790 Published online by Cambridge University Press