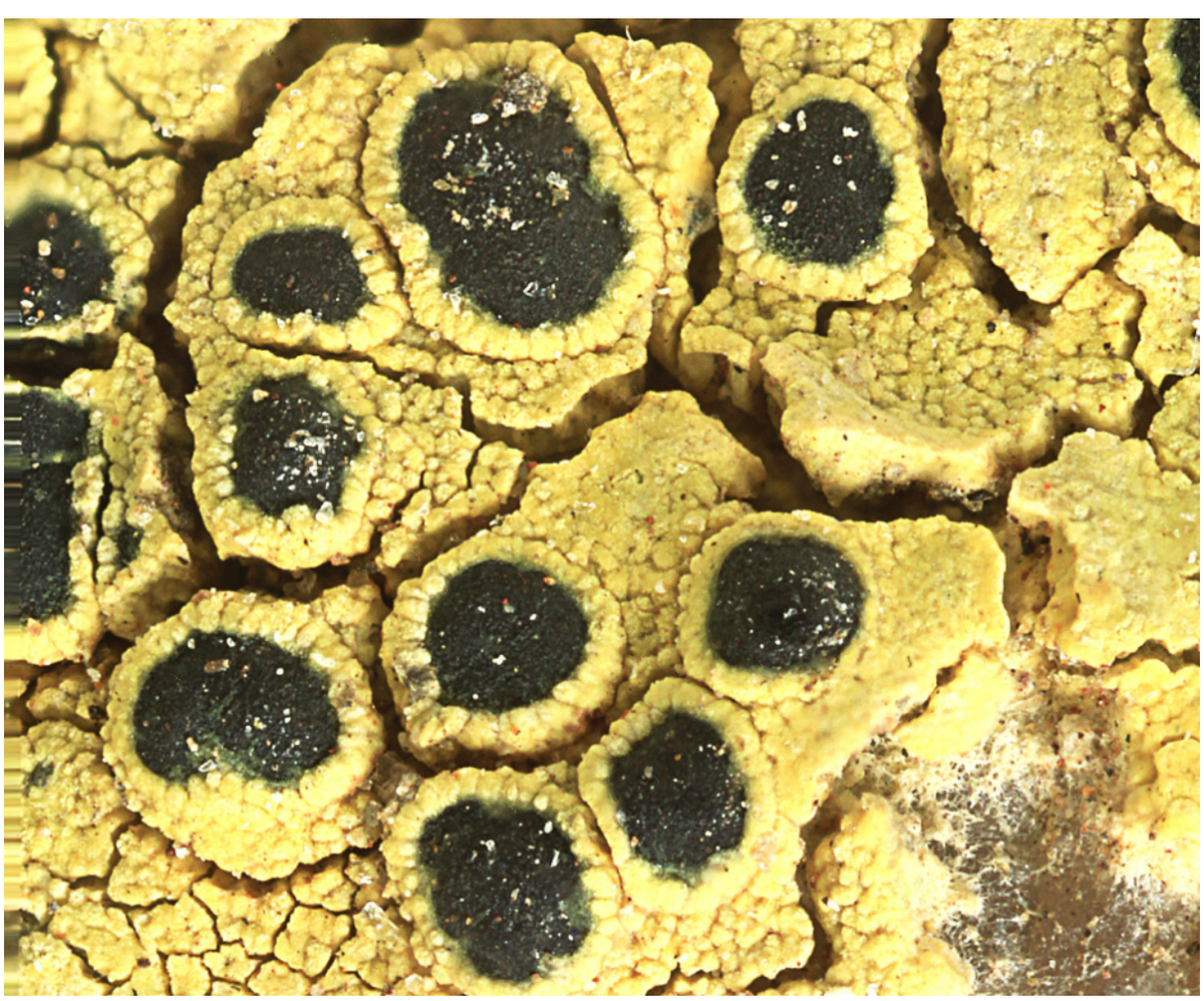
Felix Schumm & André Aptroot

Brazilian Lichens collected by Dr. André Aptroot

Vol IV - Bahia



Felix Schumm & André Aptroot

Brazilian Lichens Vol IV - Bahia

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Introduction

Bahia is one of the larger states of Brazil. It encompasses very different landscapes, including coastal dunes, rain forest, exposed mountains and savannahs. It was the first region of Brazil that was visited by Europeans, and many illustrated collections in this book are from the very first place of Brazil that Europeans ever saw, viz. Monte Pascual. The first capital of the new colony was also this state. Still, the lichens received little attention, and until recently no more or less comprehensive lists were ever published for any area in the state, although lichens were collected before and some species were already newly described from the state. Here we present a book with many species collected on various excursions by the second author. It includes illustrations of many isotypes of recently described species, and we describe two new species here. All illustrated specimens are duplicates of specimens that are preserved in ISE herbarium in Brazil, and they were collected under various permits which were cited in detail in the original reports. Regarding further issues, see the more elaborate introduction of volume 1

Felix Schumm & André Aptroot

New species:

Phaeographis vulcanica Aptroot, Lücking, Schumm & M. Cáceres, sp. nov.

Ocellularia fuscosubmuriformis Aptroot, L.A. Santos, Schumm & M. Cáceres, sp. nov.

New combination:

Lepra lichexanthoverrucosa (Aptroot & Cáceres) Aptroot & Schumm, comb. nov.; Basionym*: Pertusaria lichexanthoverrucosa* Aptroot & Cáceres

Acanthothecis subabaphoides Staiger & Kalb, in Feuerstein, Aptroot, Silveira, Lücking & Cáceres, Lichenologist 5(2): 93 (2022)

[ABL40812], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40812), 22.07.2017, det. A. Aptroot, 2017. - Corticolous *Acanthothecis* with 4–6-spored asci, large, transversely septate ascospores, and containing protocetraric acid and lichexanthone; differing from *A. submuriformis* and *A. tetraphora* in the transversely septate ascospores and the chemistry.



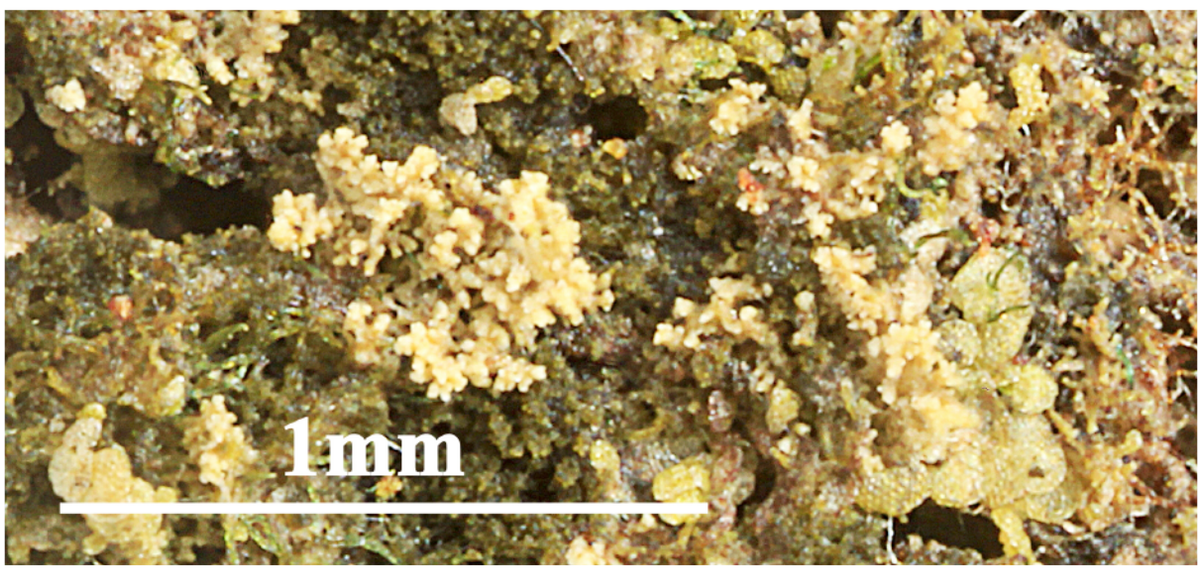


Acanthothecis subabaphoides

[ABL48867], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48867), 18.02.2019, det. A. Aptroot 2018. - Thallus consisting of green, minute flabellate generally dissected c. 0.1 mm wide lobes with hyaline papillae, developing globose goniocysts 25–35 mm diam. Ascomata perithecioid, simple, dispersed, ellipsoidal, superficial, grey due to a thin thalline cover, smooth, 0.3–0.4 mm wide, 0.4–0.6 mm high. Wall carbonized above, thickest at the sides, up to c. 100 µm thick. Ostioles whitish, apical. Hamathecium hyaline, not inspersed. Ascus pyriform, wall much thickened towards the tip. Ascospores 2 per ascus, hyaline, pale brown when old, ellipsoidal, densely muriform, 30–50(–76) x 20–35 µm. Pycnidia not observed. Chemistry: No reactions with K or UV; no secondary substances detected.







Agonimia tenuiloba

Allographa chloroalba (Makhija & Adaw.) Lücking & Kalb, Herzogia 31(1, Teil 2): 548 (2018)

[ABL48579], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'16" S, 39°24'40" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48579), 17.02.2019, det. A. Aptroot 2019. - Thallus greenish white to gray, yellow or off-white within, smooth, cracked, delimited by black hypothallus. Ascomata lirelline. 0.3-7 mm long, 0.2 mm broad, concolorous with the thallus, simple to dendroidly branched, scattered, immersed to slightly emergent, separated from the thallus witha a narrow fissure, irregular, flexuose, terminally acute. Disc blackish brown to black when exposed otherwise covered by white pruina, narrow. Exciple present at the base, striate, 2-3 striae on each side, apically carbonized, converent, covered by a thalline exciple to the top, studded with crystals. Epithecium pale. Hymenium hyaline, not inspersed, 84-109 µm high and 117-134 µm broad. Hypothecium yellow, 6-8 µm high. Paraphyses simple, long, thin. Asci 90-110 µm. Ascospores 6-8/ascus, ellipsoidal, 4-8-transeptate, 21-25 x 4-8 µm, I+ blue. Chemistry: Thallus K-, C-, KC-, P-, UV-, no lichen substances present.





Allographa chloroalba

Allographa consanguinea (Müll. Arg.) Lücking & Kalb, Herzogia 31(1, Teil 2): 549 (2018)

= *Graphina consanguinea* Müll. Arg., Nuovo G. bot. ital. 21(3): 362 (1889)

= *Graphis consanguinea* (Müll. Arg.) Lücking, in Lücking, Chaves, Sipman, Umaña & Aptroot, Fieldiana, Bot. 46(no. 1549): 67 (2008) -

[ABL40962], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 40962), 2017. - Lirellae immersed-erumpent, partly branched, with complete thalline cover; labia striate; excipulum completely carbonized; hymenium not inspersed; spores 1/ascus, hyaline, muriform, 100-130 x 25-35 µm. TLC: no substances detected





Allographa consanguinea

Allographa lumbricina (Vain.) Lücking & Kalb, in Kalb, Lücking & Kalb, Phytotaxa 377(1): 19 (2018)
= *Graphis lumbricina* Vain., Hedwigia 38: 256 (1899)

[ABL40563], Brazil, Bahia, Chapada Diamantina, Lençois Vila Serrano. 12°33'33" S, 41°23'20" W, 425 m. On tree bark in garden in Pousada. Leg. M. Caceres & A. Aptroot (no 404563), det. A. Aptroot 2014. - Excipulum carbonized; hymenium not inspersed; spores 60-80 x 12-16 µm, 4-8/ascus, hyaline, 10-16-septate. TLC: norstictic acid (K+ red), connorstictic acid.





Allographa lumbricina

Allographa phaeospora (Vain.) Lücking & Kalb, in Kalb, Lücking & Kalb, Phytotaxa 377(1): 21 (2018)

= *Graphis phaeospora* Vain., Acta Soc. Fauna Flora fenn. 7(no. 2): 97 (1890)

= *Phaeographina phaeospora* (Vain.) Zahlbr., Cat. Lich. Univers. 2: 443 (1923) [1924]

[ABL48324], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48324), 14.02.2019, det. A. Aptroot 2019. - Exciplum completely carbonized, hymenium not inspersed, spores muriform, 20-33/3-4-locular, 170-200 x 30 µm, 1/ascus, I+ blue-violet. Thallus K-





Allographa phaeospora

Allographa sitiana (Vain.) Lücking & Kalb, Herzogia 31(1, Teil 2): 555 (2018)
= *Graphis albida* Vain., J. Bot., Lond. 34: 259 (1896)
= *Graphis albida* Fink, Mycologia 19(4): 214 (1927)
= *Graphis sitiana* Vain., Acta Soc. Fauna Flora fenn. 7(no. 2): 120 (1890)
= *Phaeographis albida* (Vain.) Zahlbr., Cat. Lich. Univers. 2: 364 (1923) [1924]

[ABL48286], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48286), 14.02.2019, det. A. Aptroot 2019. - Labia pruinose, hymenium not inspersed, spores 7-septate, 26 x 7 µm. Thallus K-.





Allographa sitiana

Acarospora oligyrophorica Aptroot, Fungal Diversity 9: 17 (2002)

[ABL40619], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. Leg. M. Cáceres & A. Aptroot (no 40619), 22.07.2017, det. A.Aptroot, 2014. On siliceous rock along river. - Spores 24/ascus, 11 x 45 µ.



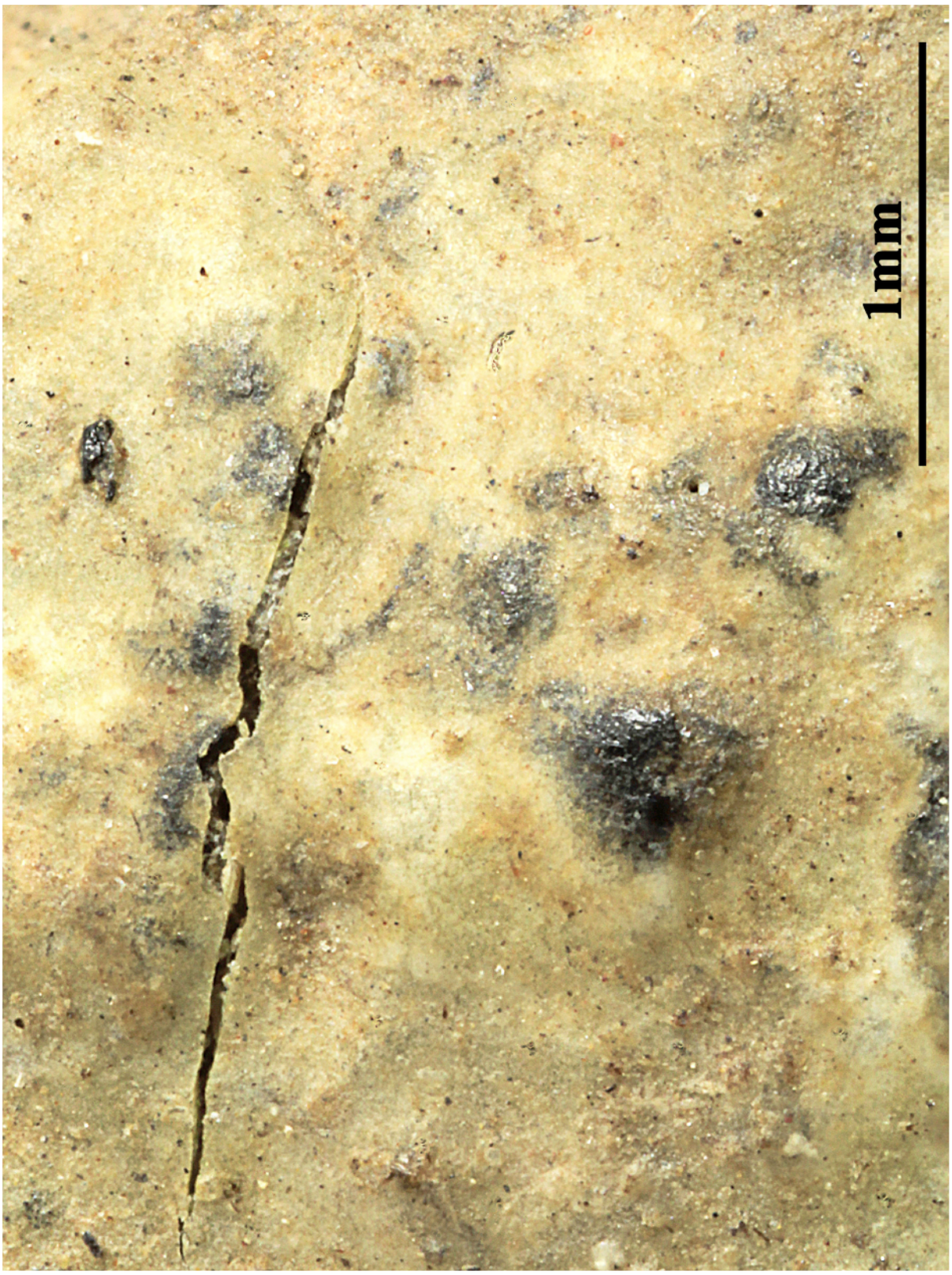


Acarospora oligyrophorica

Anisomeridium americanum (A. Massal.) R.C. Harris, More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 144 (1995)
= *Arthopyrenia americana* A. Massal., Ric. auton. lich. crost. (Verona): 170, fig. 341 (1852)
= *Arthopyrenia limitans* Müll. Arg., Flora, Regensburg 66(19): 306 (1883)
= *Ditremis americana* (A. Massal.) R.C. Harris, Some Florida Lichens (New York): 31 (1990)
= *Ditremis pyrenuloides* (Müll. Arg.) Makhija & Patw., Biovigyanam 16(1): 22 (1990)
= *Leiophloea americana* (A. Massal.) Trevis., Conspect. Verruc.: 9 (1860)
= *Pleurotrema pyrenuloides* Müll. Arg., Rep. Meetings Australs. Assoc. Advancem. Sci.: 462 (1895)
= *Pyrenula americana* (A. Massal.) Trevis., Spighe Paglie: 18 (1853)

[ABL48342], Brazil, Bahia, Itamarajú, Monte Pascoal, on wood bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48342), 15.02.2019, det. A. Aptroot 2019. - Hymenium deeply immersed, sores hyaline, 8/ascus, granular ornamented, submedian 1-septate, 26-42 x 7.5-12 µm. Thallus UV-.





Anisomeridium americanum

Anisomeridium anisolobum (Müll. Arg.) Aptroot, in Aptroot, Diederich, Sérusiaux & Sipman, Biblthca Lichenol. 57: 21 (1995)
= *Arthopyrenia anisoloba* Müll. Arg., Flora, Regensburg 66(19): 305 (1883)
= *Ditremis anisoloba* (Müll. Arg.) R.C. Harris, Some Florida Lichens (New York): 31 (1990)

[ABL48436], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48436), 15.02.2019, det. A. Aptroot 2019. - Spores 1-septate, 17 x 7 µm.





Anisomeridium anisolobum

Anisomeridium excoecariae (Müll. Arg.) R.C. Harris [as 'excaecariae'], More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 128 (1995)
= *Sagedia excoecariae* Müll. Arg. [as 'excaecariae'] 1880

[ABL48425], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48425), 15.02.2019, det. A. Aptroot 2019. - Ascospore wall relatively thin, even; ascospores 18-22 x 5.5-7 µm, ± fusiform, often slightly bent, with slightly submedian septum; microconidia globose or elliptical, ca. 2 µm diam. or 2-3 x 1.5-2 µm.





Anisomeridium excoecariae

Anisomeridium polypori (Ellis & Everh.) M.E. Barr, in Barr, Huhndorf & Rogerson, Mem. N. Y. bot. Gdn 79: 76 (1996)

= *Anisomeridium juistense* (Erichsen) R.C. Harris, in Hawksworth, James & Coppins, Lichenologist 12(1): 106 (1980)

= *Anisomeridium nyssigenum* (Ellis & Everh.) R.C. Harris [as 'nyssaegenum'], Evansia 2(3): 44 (1985)

= *Anisomeridium willeyanum* (R.C. Harris) R.C. Harris [as 'willeyana'], in Brodo, Syllogeus 29: 34 (1981)

= *Apiospora polypori* Ellis & Everh., N. Amer. Pyren. (Newfield): 311 (1892)

= *Apiosporella polypori* (Ellis & Everh.) Höhn., Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1 118: 1215 (1909)

= *Arthopyrenia willeyana* R.C. Harris, Michigan Bot. 12(1): 16 (1973)

= *Didymella polypori* (Ellis & Everh.) Ellis & Everh. ex Höhn., Öst. bot. Z. 63: 233 (1913)

= *Ditremis nyssigena* (Ellis & Everh.) R.C. Harris [as 'nyssaegena'], Some Florida Lichens (New York): 33 (1990)

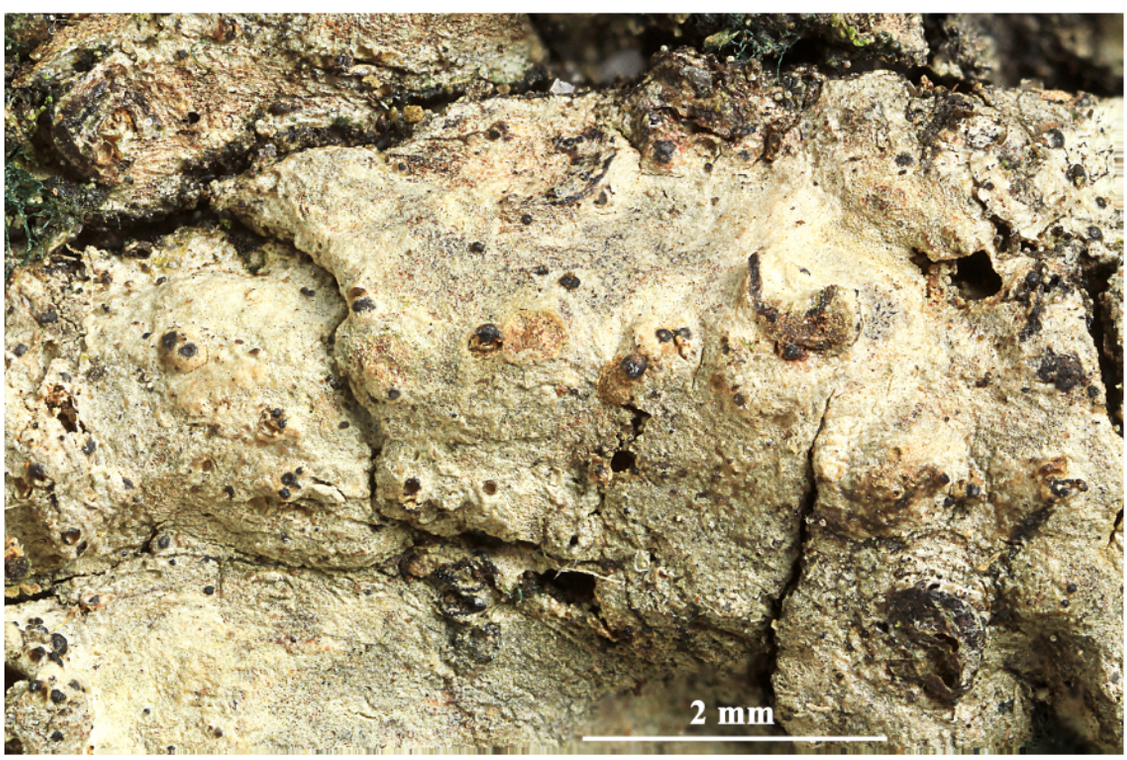
= *Paraphysothele juistensis* (Erichsen) Servít, Rozpr. Českoslov. Akad. Véd. Ročn. 65(no. 3): 28 (1955)

= *Sarcinulella banksiae* B. Sutton & Alcorn, Mycotaxon 16(2): 558 (1983)

= *Thelidium juistense* Erichsen, Mitt. Inst. Allg. Bot. Hamburg 10: 403 (1939)

= *Zignoella nyssigena* Ellis & Everh. [as 'nyssaegena'], Proc. Acad. nat. Sci. Philad. 45: 137 (1893)

[ABL40959], Brazil, Bahia, Chapada Diamantina, Palmeiras, Cachoeira Pai Inácio, near waterfall on tree bark. 12°27'24" S, 41°27'57" W, 850 m. Leg. M. Cáceres & A. Aptroot (no 40959), 23.07.2017, det. A. Aptroot, 2017. - Spores 1(-3)-septate, 12-23 x 3-5 µm.





Anisomeridium polypori

Anisomeridium subnectendum (Nyl.) R.C. Harris, More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 150 (1995)

= *Arthopyrenia exstans* Müll. Arg., Rep. Meetings Australs. Assoc. Advancem. Sci.: 451 (1895)

= *Arthopyrenia subnectenda* (Nyl.) Zahlbr., Cat. Lich. Univers. 1: 327 (1922)

= *Verrucaria subnectenda* Nyl., in Nylander & Crombie, J. Linn. Soc., Bot. 20: 61 (1883)

[ABL48377], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48377), 15.02.2019, det. A. Aptroot 2019.- Ascospores 23-32 x 12-18 µm broad, ovoid to broadly ovoid, with strongly submedian septum.





Anisomeridium subnectendum

Anisomeridium truncatum (Müll. Arg.) R.C. Harris, More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 151 (1995)
= *Arthopyrenia truncata* Müll. Arg. 1883

[ABL48163], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48163), 14.02.2019, det. A. Aptroot 2019. - Ascomata emergent, flat-topped; thallus very well developed, greenish tan, *Pyrenula*-like; ascospores narrowly ovoid, with septum submedian, strongly granular oranamented, uniseriate in ascus. Thallus UV-.





Anisomeridium truncatum

Anomomorpha turbulenta (Nyl.) Nyl., in Hue, Nouv. Arch. Mus. Hist. Nat., Paris, 3 sér. 3: 167 (1891)
= *Digraphis turbulenta* (Nyl.) Clem., Gen. fung. (Minneapolis): 174 (1909)
= *Graphis turbulenta* Nyl., Lich. Ins. Guin.: 50 (1889)

[ABL48869], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48869), 18.02.2019, det. A. Aptroot 2019. - Excipulum not carbonized, hymenium inspersed; spores 8/ascus, 2-3-locular, 5-9 x 3,5-5 µm, I+ blue. Chemistry: Norstictic acid, neotricon.





Anomomorpha turbulenta

Anthracothecium australiense (Müll. Arg.) Aptroot, in Aptroot, Diederich, Sérusiaux & Sipman, Biblthca Lichenol. 64: 17 (1997)

[ABL48374], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48374), 15.02.2019, det. A. Aptroot 2019. - Thallus UV-. Spores muriform, 2/ascus, 170 x 37 µm.





Anthracothecium australiense

Architrypethelium lauropaluanum Lücking, M.P. Nelsen & Marcelli, in Lücking, Nelsen, Aptroot, Benatti, Binh, Gueidan, Gutiérrez, Jungbluth, Lumbsch, Marcelli, Moncada, Naksuwankul, Orozco, Salazar-Allen & Upreti, Lichenologist 48(6): 641 (2016)

[ABL48300], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48300), 14.02.2019, det. A. Aptroot 2019. - Ascospores remaining hyaline. Ascomata completely immersed between bullate thallus warts, not visible except for ascospores accumulating around ostiole, 8/ascus, 100 x 25 µm.





Architrypethelium lauropaluanum

Arthonia rubrocincta G. Merr. ex Grube & Lendemer, Opuscula Philolichenum 7: 9 (2009)

[ABL42006], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. M. Cáceres & A. Aptroot (no 42006), 24. July 2017, det A. Aptroot, 2017. - Thallus greenish grey to white. Ascomata dispersed, elongate to furcate, always with crimson pruina on the excipuloid layer. Hypothecium reddish brown. Interascal filaments branched and anastomosing. Asci more or less densely arranged, clavate, 54-65 x 18-21 µm, 8-spored, indistinctly stipitate, lateral endotunica thin. Ascospores narrowly obovate, macrocephalic, 18-23 x 5-6 µm, persistently hyaline, smooth, faintly verrucose when old; with (3)-4 transverse septa, not constricted at the septa; septation sequence proceeding downwards from the upper third. Chemistry: Psoromic acid and a quinoid pigment. Spot tests: K-, C-, KC-, P+ yellow, UV-; pigment K+ flash of violet-purple, quickly dissolving.





Arthonia rubrocincta

Arthonia saxistellata Aptroot & Cáceres, **Isotype,** Bryologist 121(1): 69 (2018)

[ABL40997], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40997), 24. July 2017, det A. Aptroot , 2017. - Thallus saxicolous, reduced to patches and reticulate lines between sandstone grains, pale ochraceous to pale orange, slightly uneven, in section with numerous hyaline crystals; without prothallus. Photobiont Trentepohlia, cells rounded to irregular in outline, 6–8 x 6–10 µm, yellowish green to orange. Ascomata apothecia, superficial on the thallus or directly on the substratum, irregular in outline, often in unbranched to sparsely branched lines and eventually confluent, 0.2–0.4 mm diam.; disc dark brown; margin absent. Hymenium brownish; epihymenium dark brown; hypothecium dark brown. Paraphyses agglutinated, also in K. Asci pyriform. Ascospores hyaline, 8/ascus, 3-septate, clavate, 12–13 x 4–4.5 µm, surrounded by 2 µm wide gelatinous sheath. Pycnidia not observed. Chemistry: Thallus too small to test chemically.





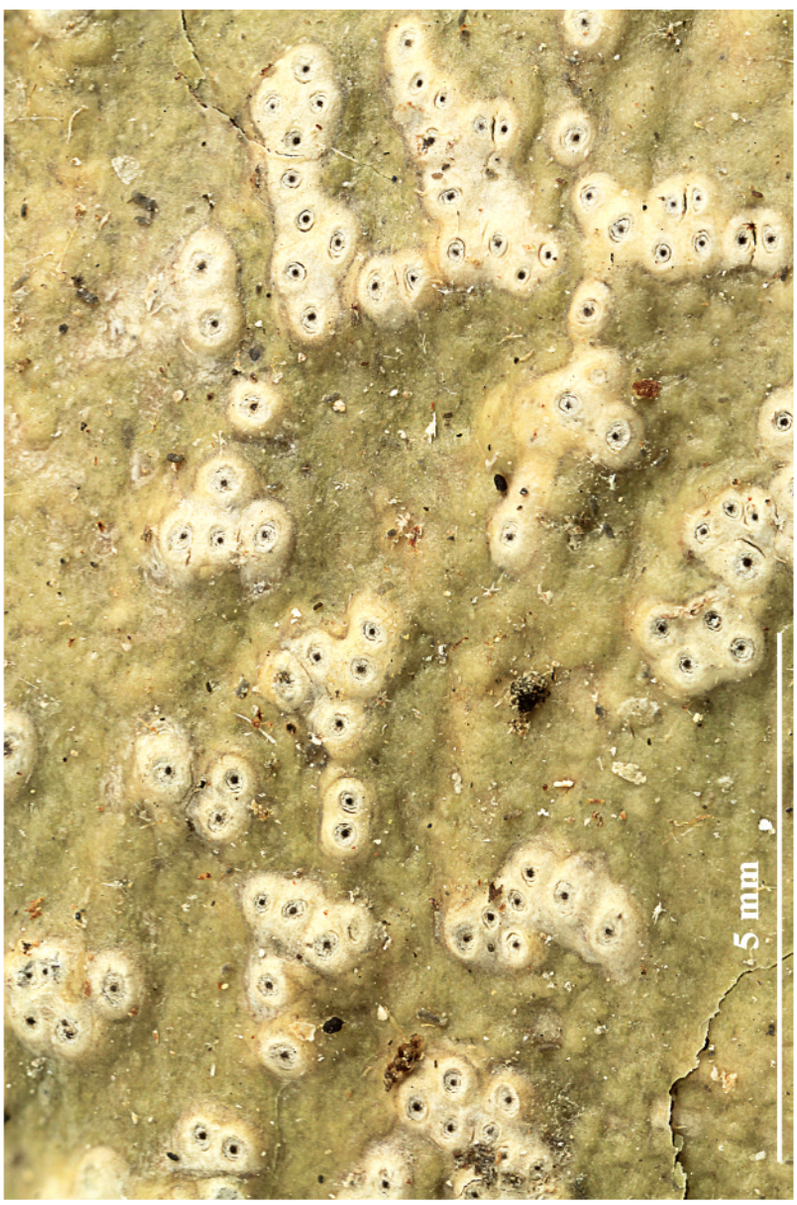
Arthonia saxistellata

Astrothelium bicolor (Taylor) Aptroot & Lücking, Lichenologist 48(6): 847 (2016)

= *Bathelium bicolor* (Taylor) C.W. Dodge, Beih. Nova Hedwigia 12: 20 (1964)

= *Trypethelium bicolor* Taylor, London J. Bot. 6: 157 (1847)

[ABL48395], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48395), 15.02.2019, det. A. Aptroot 2019. - Thallus corticate, green to yellowish or brown, smooth to somewhat bullate. Ascomata trypethelioid, with apical ostioles, pseudostromatic; pseudostromata 0.7–1.5mm broad, erumpent to prominent, rounded to irregular but not becoming confluent or reticulate, covered by thallus but often slightly paler than the surrounding thallus or sometimes whitish. Hamathecium not inspersed. Ascospores 8/ascus, 3-septate, fusiform, 15–27×7–10 µm, hyaline, IKI−. Chemistry: Thallus and pseudostromata UV−, K−. TLC: no substances detected.





Astrothelium bicolor

Arthrorhaphis citrinella (Ach.) Poelt, Best. europ. Flecht. (Vaduz): 126 (1969)
= *Arthrorhaphis citrinella* var. *catolechioides* Obermayer, Flora of Australia (Melbourne) 58A: 226 (2001)
= *Arthrorhaphis flavovirescens* (Flot.) Th. Fr. [as 'flavo-virescens'], Lich. arct. (Uppsala): 203 (1860)
= *Bacidia citrinella* (Ach.) Branth & Rostr., Bot. Tidsskr. 3: 235 (1869)
= *Bacidia flavovirescens* (Flot.) Anzi, Cat. Lich. Sondr.: 71 (1860)
= *Catolechia flavovirescens* Flot., Jber. schles. Ges. vaterl. Kultur [27]: 135 (1849)
= *Lecanactis citrinella* (Ach.) H. Olivier, Expos. Lich. Ouest France, Suppl. 2: 43 (1900)
= *Lecidea citrinella* (Ach.) Ach., Methodus, Sectio prior (Stockholmiæ): 47 (1803)
= *Lecidea flavovirescens* Borrer ex Hook., Engl. Fl., Mosses, Hepaticae, Lichens, Characeae and Algae (London) 5(1): 178 (1833)
= *Lecidea flavovirescens* var. *citrinella* (Ach.) Schaer., Enum. critic. lich. europ. (Bern): 125 (1850)
= *Lichen citrinellus* Ach., K. Vetensk-Acad. Nya Handl. 16(3): 135 (1795)
= *Lichen flavovirescens* Dicks., Fasc. pl. crypt. brit. (London) 3: 13 (1793)
= *Lichen peltatus* * *citrinella* (Ach.) Lam., Encycl. Méth. Bot., Suppl. (Paris) 3(2): 388 (1813)
= *Mycobacidia citrinella* (Ach.) Dalla Torre & Sarnth., Fl. Tirol, Vorarlberg, Leichtenstein, IV Band. Die Flechten von Tirol: 353 (1902)
= *Mycobacidia flavovirescens* (Flot.) Rehm, Rabenh. Krypt.-Fl., Edn 2 (Leipzig) 1.3(lief. 33): 338 (1890) [1896]
= *Pragmopora flavovirescens* (Flot.) J. Schröt., in Cohn, Krypt.-Fl. Schlesien (Breslau) 3.2(1–2): 128 (1893) [1908]
= *Raphiospora flavovirescens* (Flot.) A. Massal., Memor. Lich.: 119 (1853)
= *Raphiospora flavovirescens* var. *citrinella* (Ach.) Zahlbr., Cat. Lich. Univers. 4: 197 (1926) [1927]
= *Raphiospora flavovirescens* a *citrinella* (Ach.) Kremp., Denkschr. Kgl. Bayer. Bot. Ges., Abt. 2 4: 207 (1861)
= *Scoliciosporum flavovirescens* (Flot.) Jatta, Fl. ital. crypt. (Florence) 3: 660 (1911)
= *Secoliga flavovirescens* (Flot.) Stizenb., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 30(no. 3): 11 (1863)
= *Skolekites citrinellus* (Ach.) Norman, Conat. Praem. Gen. Lich.: 24 (1852)

[ABL40718], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous soil along river. Leg. M. Cáceres & A. Aptroot (no 40718), 22.07.2017, det. A. Aptroot, 2017.



Arthrorhaphis citrinella



Arthrorhaphis citrinella

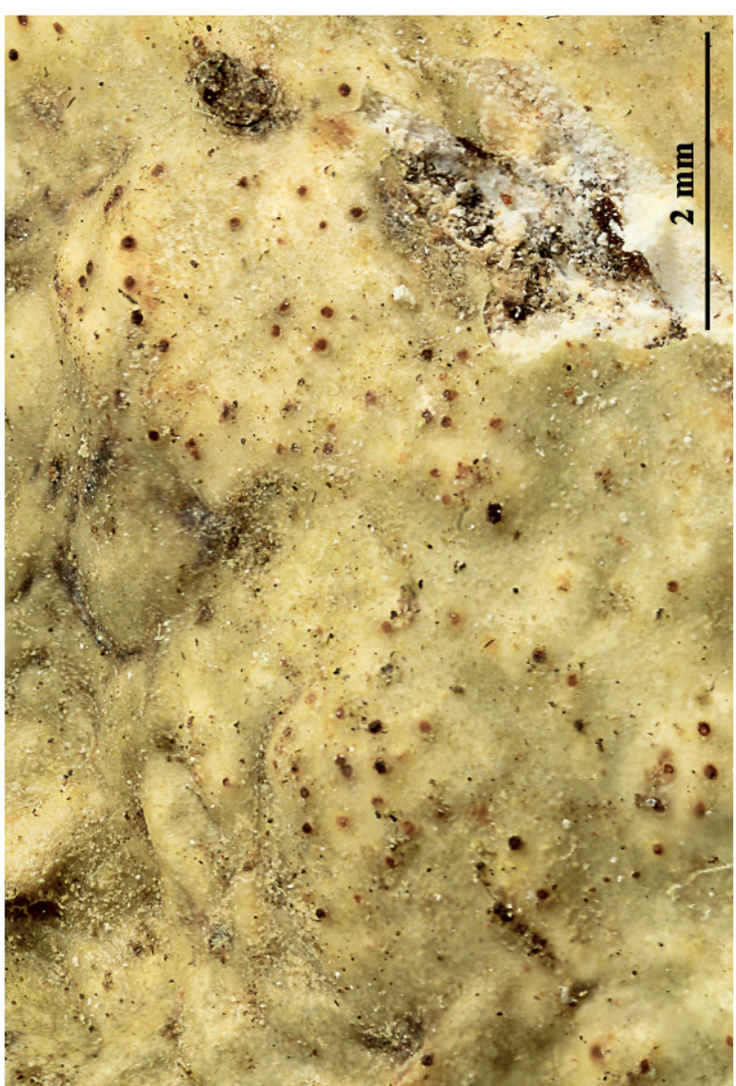
Aspidothelium trichothelioides Sérus. & Vězda, Lejeunia, n.s. 90: 4 (1978)

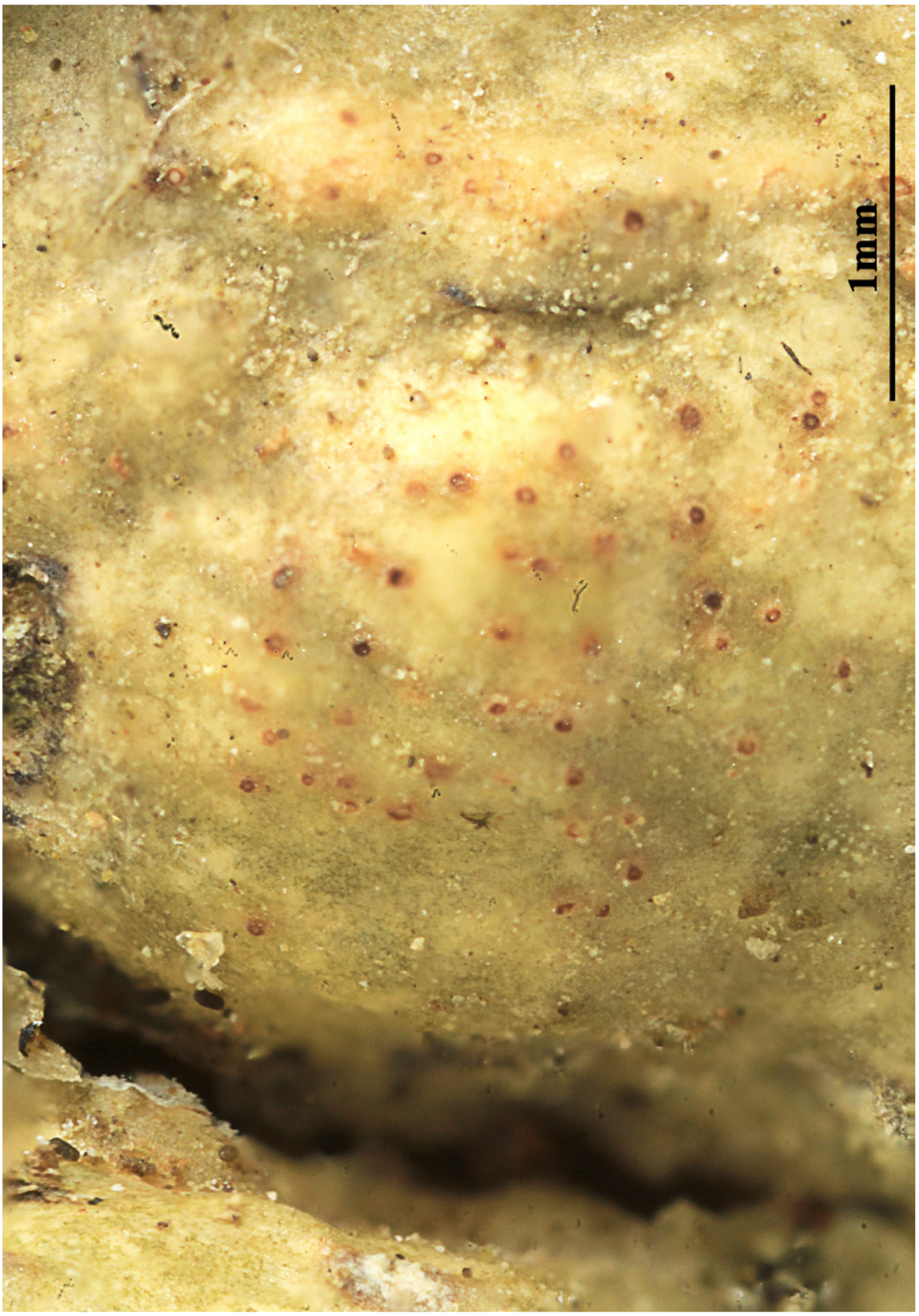
[ABL48290], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48290), 14.02.2019, det. A. Aptroot 2019. - Ascospores muriform, Ascomata with setae.



Astrothelium cartilagineum (Fée) Aptroot & Lücking, Lichenologist 48(6): 851 (2016)
= *Pyrenula cartilaginea* Fée, Essai Crypt. Exot. (Paris): 77 (1825) [1824]
= *Segestria porinoides* var. *cartilaginea* (Fée) Trevis., Conspect. Verruc.: 6 (1860)
= *Trypethelium cartilagineum* (Fée) Aptroot, in Aptroot, Lücking, Sipman, Umaña & Chaves, Biblthca Lichenol. 97: 134 (2008)
= *Verrucaria cartilaginea* (Fée) Spreng., Syst. veg., Edn 16 4(1): 245 (1827)

[ABL48605], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'56" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48605), 18.02.2019, det. A. Aptroot 2019. - Thallus corticate, brownish, smooth to uneven. Ascomata trypethelioid, with apical ostioles, solitary to irregularly confluent, 0.4–0.5mm diam., immersed to erumpent, covered by thallus except for dark ostiole surrounded by pale rim, internally with hyaline or red, K+ red crystals. Hamathecium clear. Ascospores 8/ascus, 3-septate, fusiform, (32–)37–47 ×14–16 µm, hyaline, IKI−. Chemistry: Thallus and ascomata UV−, K−; ascomata internally K+ red, with anthraquinone.





Astrothelium cartilagineum

Astrothelium citrisporum Aptroot, Oliveira-Junior & M. Cáceres, **Isotype**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 561 (2021)

[ABL48309], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Caceres & A. Aptroot (no 48309), 14.02.2019, det. A. Aptroot 2018. - Thallus ochraceous, UV-negative, ascomata fused in hemispherical, concolorous pseudostromata, hamathecium not inspersed, and spores submuriform, 5 x 1–2-septate, 35–40 x 18–20 µm, citriform, both ends pointed.

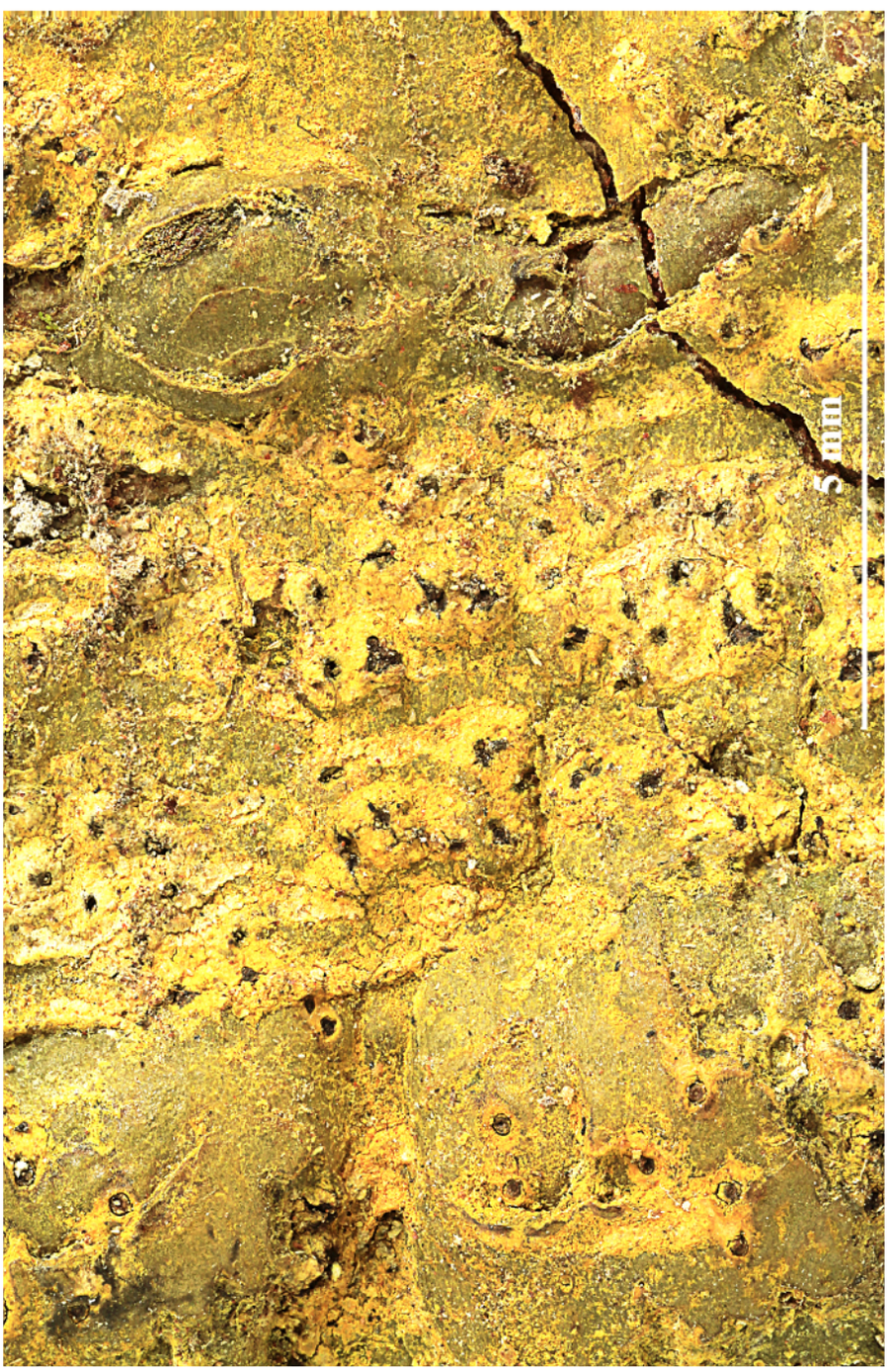




Astrothelium citrisporum

Astrothelium croceum Malme, Ark. Bot. 19(no. 1): 12 (1924)

[ABL48371], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48371), 15.02.2019, det. A. Aptroot 2019. - Thallus corticate, light olive-green to yellowish, yellowish grey, smooth to uneven. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata dispersed to confluent, 0.4–0.7mm diam., erumpent, covered by thallus and yellow-orange, K+ purple, UV+ red pigment. Hamathecium clear. Ascospores 8/ascus, 3-septate, fusiform-ellipsoid, 30–35 × 10–12 µm, hyaline, IKI−. Chemistry: Thallus UV−, K−, without lichexanthone or pigment; ascomata with yellow-orange, K+ purple, UV+ red anthraquinone.





Astrothelium croceum

Astrothelium degenerans (Vain.) Aptroot & Lücking, Lichenologist 48(6): 857 (2016)

= *Bathelium degenerans* (Vain.) R.C. Harris, More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 117 (1995)

= *Pseudopyrenula degenerans* Vain., J. Bot., Lond. 34: 292 (1896)

= *Trypethelium degenerans* (Vain.) Zahlbr., Cat. Lich. Univers. 1: 490 (1922)

[ABL40693], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark along river. Leg. M. Cáceres & A. Aptroot (no 40693), 22.07.2017, det. A. Aptroot, 2017.- Thallus corticate, olive-green to yellowish or brown, smooth to uneven. Ascomata trypethelioid, with apical ostioles, distinctly pseudostromatic; pseudostromata 1–2 mm diam., erumpent, forming irregular groups including numerous ascomata, dark brown, internally with yellow-orange, dusty granular pigment. Hamathecium not inspersed. Spores 8/ascus, 3-septate, fusiform-ellipsoid, 15–25 ×6–9 µm, hyaline, IKI−. Chemistry: Thallus UV−, K−; pseudostromata UV−, externally K−, internally K+ red, with anthraquinone.





Astrothelium degenerans

Astrothelium eustominspersum Aptroot & Oliveira-Junior, **ISOTYPE**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 561 (2021)

[ABL48640], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'56" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48640), 18.02.2019, det. A. Aptroot 2018. - Corticolous with thallus pale greyish olivaceous, ascomata fused, hamathecium inspersed, and ascospores 3-septate, 25–27 x 7–7.5 µm. Chemistry: Thallus UV–, K–; ostioles UV+ yellow. TLC: lichexanthone.

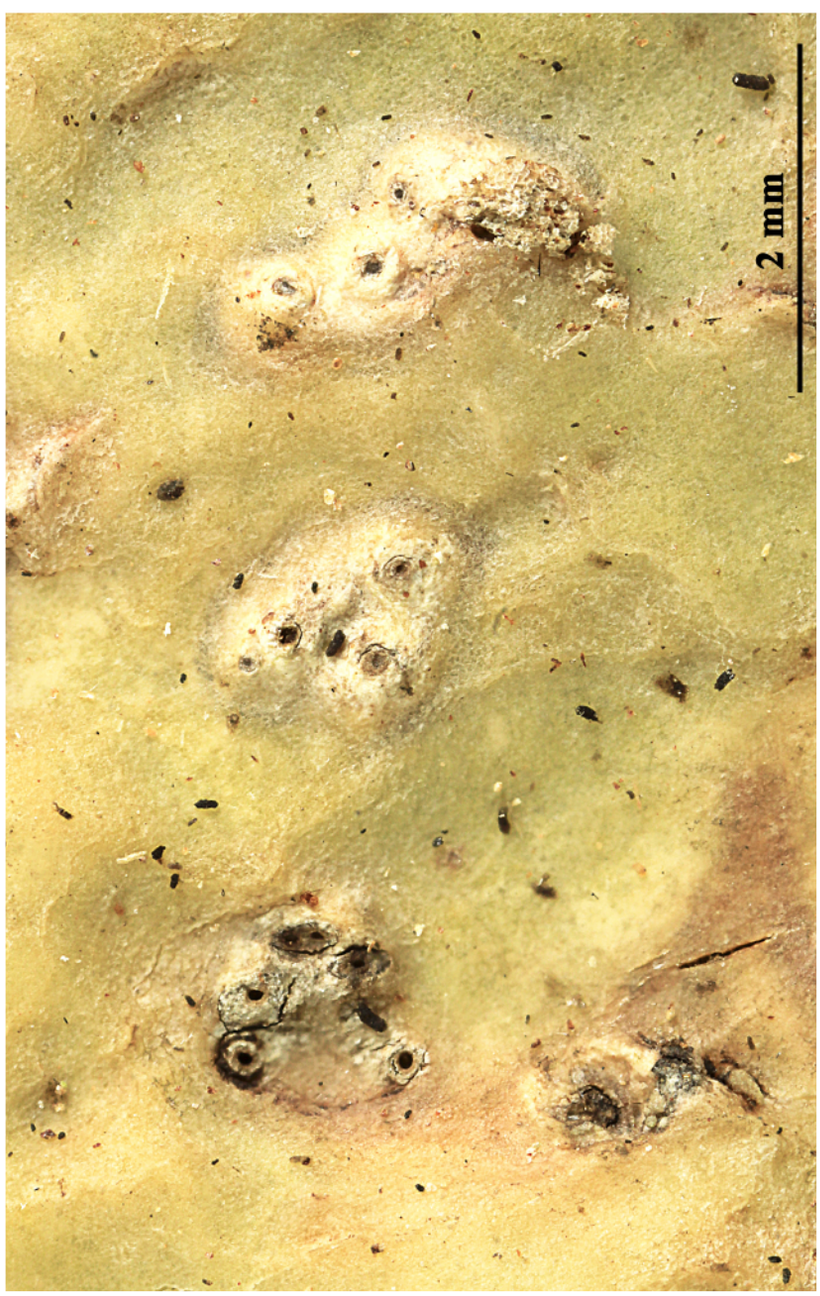




Astrothelium eustominspersum

Astrothelium eustomum (Mont.) Müll. Arg., Flora, Regensburg 68(12): 247 (1885)
= *Pyrenastrum eustomum* Mont. 1843

[ABL48348], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48348), 15.02.2019, det. A. Aptroot 2019. - Thallus corticate, olive-green to greyish green, smooth to uneven. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata dispersed to pseudostromatic, 0.4–0.8mm diam., erumpent with flattened tops, with whitish to pale yellowish cover contrasting with the thallus. Hamathecium clear. Ascospores 8/ascus, 3–5-septate, fusiform, 22–30 × 6–8 µm, hyaline, IKI−. Chemistry: Thallus UV−, K−; pseudostromata UV+ yellow, K−, with lichexanthone (or 1,8-dihydroxy-3,6-dimethoxyxanthone).





Astrothelium eustomum

Astrothelium flavomegaspermum Aptroot & Etayo, **Isotype**, in Etayo & Aptroot, Bryologist 120(4): 503 (2017)

[ABL48230], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Caceres & A. Aptroot (no 48230), 14.02.2019, det. A. Aptroot 2018. - Thallus patchy, very irregular, thick, partly bullate, almost subsqumulose, glossy, thickly corticate, olivaceous, not surrounded by a prothallus; medulla ochraceous (UV+orange). Ascomata solitary, globose to pyriform, 1.4–2.6 mm diam., sessile, ochraceous to grey, without distinct pseudostromata. Ostioles apical, ochraceous, often beaked. Hamathecium citrine yellow inspersed. Ascospores 4/ascus, hyaline, regularly densely muriform, 150–190 x 40–50 µm, long-ellipsoid, not thickened at the median septum, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–; yellow inspersion KOH+ orange exudate.





Astrothelium flavomegaspermum

Astrothelium flavomegaspermum Aptroot & Etayo, in Etayo & Aptroot, Bryologist 120(4): 503 (2017)

[ABL48199], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48199), 14.02.2019, det. A. Aptroot 2018. -

Thallus patchy, very irregular, thick, partly bullate, almost subsqumulose, glossy, thickly corticate, olivaceous, not surrounded by a prothallus; medulla ochraceous. Ascomata solitary, globose to pyriform, 1.4–2.6 mm diam., sessile, ochraceous to grey, without distinct pseudostromata. Ostioles apical, ochraceous, often beaked. Hamathecium citrine yellow inspersed. Ascospores 4/ascus, hyaline, regularly densely muriform, 150–190 x 40–50 µm, long-ellipsoid, not thickened at the median septum, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–; yellow inspersion KOH+ orange exudate.





Astrothelium flavomegaspermum

Astrothelium floridanum Zahlbr. ex M. Choisy, Icon. Lich. Univ., fasc. 1 (Lyon): tab. 5 (1928)

[ABL42134], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42134), 22.07.2017, det. A. Aptroot, 2017. - Thallus corticate, olive-green to brownish, smooth to uneven. Ascomata trypethelioid, with apical ostioles, solitary to irregularly confluent but not distinctly pseudostromatic, 0.3–0.6 mm diam., erumpent, covered by thallus except for the blackish ostiolar area surrounded by a whitish rim. Hamathecium clear. Ascospores 8/ascus, 3-septate, 35–45×14–16 µm, hyaline, IKI−. Chemistry: Thallus and ascomata UV−, K−. TLC: no substances detected.

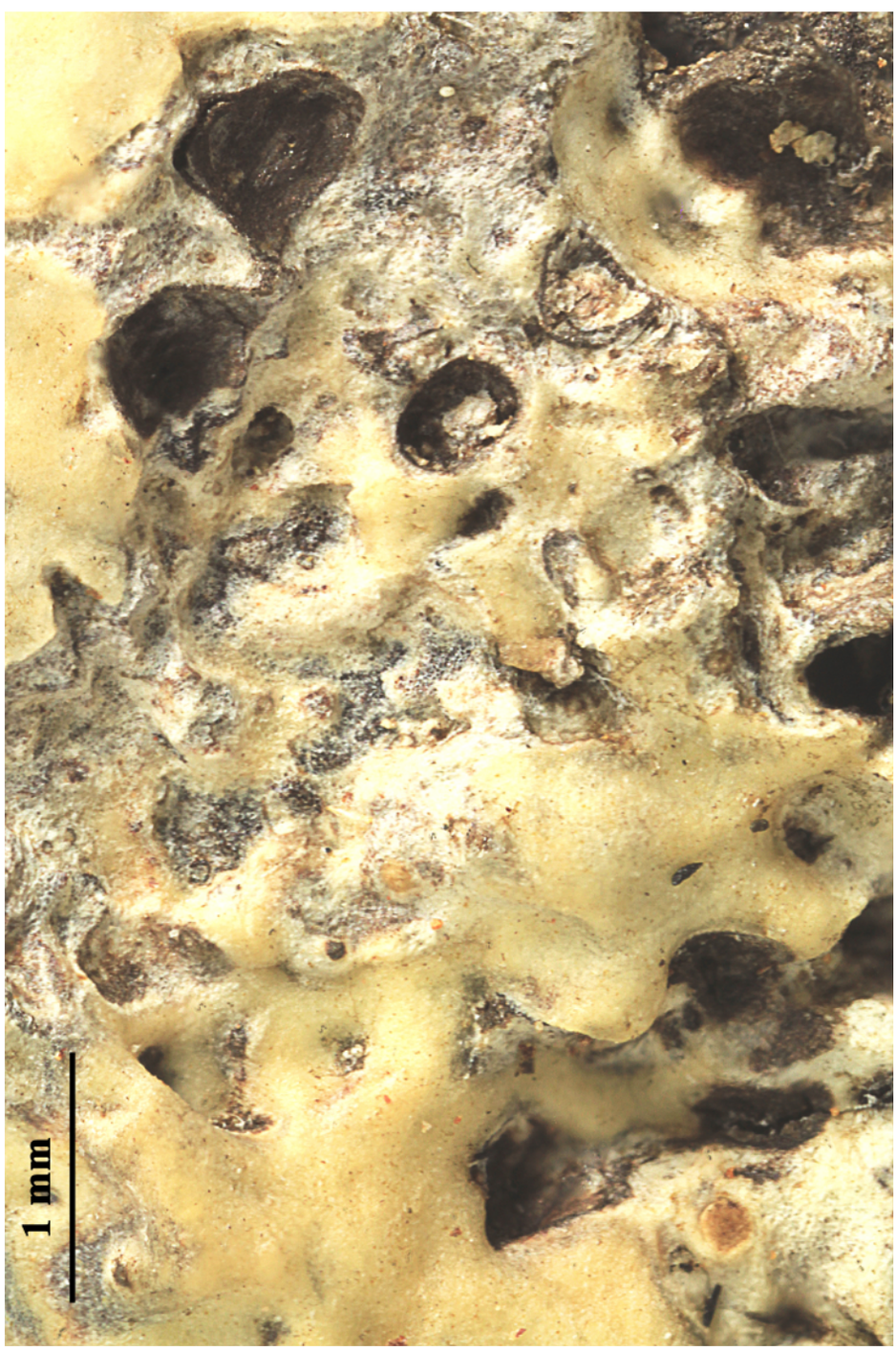




Astrothelium floridanum

Astrothelium interjectum R.C. Harris, Acta Amazon., Supl. 14(1-2): 61 (1986) [1984]

[ABL48224], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48224), 14.02.2019, det. A. Aptroot 2019. - Thallus light olive-green to greyish green, smooth to uneven. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata pseudostromatic; pseudostromata 1–2(–3) mm diam., erumpent to prominent, whitish and darker ostiolar areas. Hamathecium clear. Ascospores 8 per ascus, 3-septate, fusiform-ellipsoid, 25–30 × 6–11 µm, hyaline, IKI−. Chemistry: Thallus UV−, K−; pseudostromata UV+ yellow, K−, with lichexanthone.



Astrothelium laevithallinum Lücking, M.P. Nelsen & Marcelli, in Lücking, Nelsen, Aptroot, Benatti, Binh, Gueidan, Gutiérrez, Jungbluth, Lumbsch, Marcelli, Moncada, Naksuwankul, Orozco, Salazar-Allen & Upreti, Lichenologist 48(6): 646 (2016)

[ABL40781], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark along river. Leg. M. Cáceres & A. Aptroot (no 40781), 22.07.2017, det. A. Aptroot, 2017. - Thallus smooth to uneven, green. Perithecia 3–7 aggregated in irregular pseudostromata, with separate, apical ostioles; pseudostromata 1–3 mm diam., prominent, ≤1mm high, covered by a greybrown thallus layer; internally between the perithecia filled with yellow, K+ red pigment granules, in section bleeding deep yellow then deep orange to cinnabar red, covered by a carbonized layer with a thin cortex above; ostioles visible as black dots, 0.05–0.10 mm diam.; individual perithecia subglobose, 0.8–1.0 mm wide and 0.7–0.9 mm high. Excipulum carbonized, laterally covered by dense pigment granules. Hamathecium composed of densely anastomosing, 0.5 µm thick, net-like paraphyses embedded in a gelatinous matrix, not inspersed, IKI−. Spores 8/ascus, fusiform, 3-septate with distosepta and diamond-shaped lumina, 35–42×10–12 µm, hyaline, IKI−. Secondary chemistry: Pseudostromata with yellow pigment that bleeds first deep yellow, then deep orange to cinnabar red.





Astrothelium laevithallinum

Astrothelium medioincrassatum Aptroot & M. Cáceres, **Isotype**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 563 (2021)

[ABL48420], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48420), 15.02.2019, det. A. Aptroot 2018. - Thallus UV-. Hymenium not inspersed. Spores 9-11-septate, 100-115 x 23-27 µm. - Thallus dull, rather smooth, olivaceous green, up to 7 cm diam., not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata globose to pyriform, 0.2–0.4 mm diam., mostly immersed in the thallus, grouped by 2–6 in indistinct pseudostromata. Ostioles lateral, 2–6 fused, hemispherical, yellowish brown pruinose. Hamathecium not inspersed. Ascospores 8/ascus, hyaline, 9–11-septate, 98–115 x 23–27 µm, longellipsoid, with a thickened central septum, lumina diamond-shaped, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–, K–. TLC: nil.





Astrothelium medioincrassatum

Astrothelium subscoria Flakus & Aptroot, in Flakus, Kukwa & Aptroot, Lichenologist 48(6): 674 (2016)

[ABL42157], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42157), 22.07.2017, det. A. Aptroot, 2017. - Thallus corticate, with corticiform layer ≤ c. 30µm thick, smooth, somewhat shiny, continuous, not inducing swellings of the host bark, covering areas ≤ 3 cm diam., c. 0.3mm thick, greyish green, surrounded by a black prothallus. Ascomata subglobose, 0.2–0.4 mm diam., single, immersed in the thallus, ascomatal verrucae with a surface different from the thallus, not distinctly raised above the thallus, hemispherical, with sloping sides, white, inside without a coloured layer, thalline cover without bark tissues, but ascomata often immersed in the bark. Wall fully but not strongly carbonized, not differentiated into excipulum and involucrellum, ≤ c. 30 µm wide. Ostioles apical, not fused, flat, grey, surrounded by a white spot. Hamathecium inspersed with hyaline oil globules. Asci 8-spored. Ascospores hyaline, 3-septate, narrowly ellipsoid, 21–28 × 8–10 µm, ends rounded, lumina diamond-shaped, surrounded by a gelatinous layer ≤ 2 µm thick. Pycnidia not observed. Chemistry. Thallus surface UV−, K−, thallus medulla K−; pseudostromata surface UV−, inner part of pseudostromata K−. TLC: no secondary substances detected.





Astrothelium subscoria

Astrothelium macrostomum Aptroot, in Aptroot, Mendonça, Andrade, Silva, Martins, Gumboski, Fraga Junior & Cáceres, Lichenologist 48(6): 717 (2016)

[ABL48582], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'16" S, 39°24'40" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48582), 17.02.2019, det. A. Aptroot 2019. - Hamathecium clear; lichexanthone on ascomata only; ascospores transversely 5–7-septate, 65–85 ×14–18 µm; ascomata diffusely pseudostromatic, pseudostromata erumpent to prominent, covered by thallus, uneven-verrucose, each containing a single group of fused ascomata.





Astrothelium macrostomum

Astrothelium megaeneum Flakus & Aptroot, in Flakus, Kukwa & Aptroot, Lichenologist 48(6): 668 (2016)

[ABL48596], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'56" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48596), 18.02.2019, det. A. Aptroot 2019. -

Thallus corticate, with corticiform layer c. 20µm thick, smooth, matt, continuous, not inducing swellings of the host bark, covering areas ≤ 10 cm diam., c. 0.5 mm thick, orange, not surrounded by a black prothallus. Ascomata pyriform, 0.3–0.7 mm diam., single or 2–5 fused together, mostly aggregated, immersed in the thallus with base often immersed in the bark, ascomatal verrucae irregular in outline and with sloping sides, orange, thalline cover not containing bark tissue. Wall fully but not uniformly carbonized, composed of several layers, not differentiated into excipulum and involucrellum, ≤ c. 50 µm wide (in upper part sometimes ≤c. 130 µm). Ostioles apical, fused to separated, when separated then 2–5 aggregated and surrounded by a common ostiolar area, black, surrounded by a greyish black, flat spot. Hamathecium clear. Asci 8-spored. Ascospores hyaline, 3-septate, narrowly ellipsoid, 26–35 × 11–12 µm, ends rounded, lumina diamond-shaped, surrounded by a gelatinous layer ≤3 µm thick. Pycnidia not observed. Chemistry: Thallus surface UV+ orange, K+ purple, thallus medulla K−; pseudostromata surface UV+ orange, inner part of pseudostromata K−. TLC: parietin (major) detected.





Astrothelium megaeneum

Astrothelium obscurum Müll. Arg., Flora, Regensburg 66(16): 244 (1883)

[ABL48374], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48374), 15.02.2019, det. A. Aptroot 2019. - Thallus corticate, olive-brown, smooth to uneven. Ascomata astrotheli-oid, several chambers joined with eccentric, fused ostioles; joined ascomata largely confluent but not distinctly pseudostromatic, 0.3–0.4 mm diam., erumpent, applanately conical, exposed and dark brown. Hamathecium clear. Ascospores 8/ascus, 3-septate, fusiformellipsoid, 20–25 × 7–9 µm, hyaline, IKI−. Chemistry: Thallus and pseudostrom-ata UV−, K−. TLC: no substances detected.





Astrothelium obscurum

Astrothelium pyrenastrosulphureum Aptroot & Lücking, Lichenologist 48(6): 883 (2016)

[ABL48310], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48310), 14.02.2019, det. A. Aptroot 2019. - Thallus corticate, olive-green to yellowish, uneven to bullate. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata irregularly pseudostromatic; pseudostromata 0.8–1.5 mm diam., erumpent to prominent, covered by thallus except for blackish ostiolar area. Hamathecium clear. Ascospores 8/ascus, fusiform-ellipsoid, 3-septate, 27–30 × 8–10 µm, hyaline, IKI−. Chemistry: Thallus and pseudostromata UV−, K−. TLC: no substances.

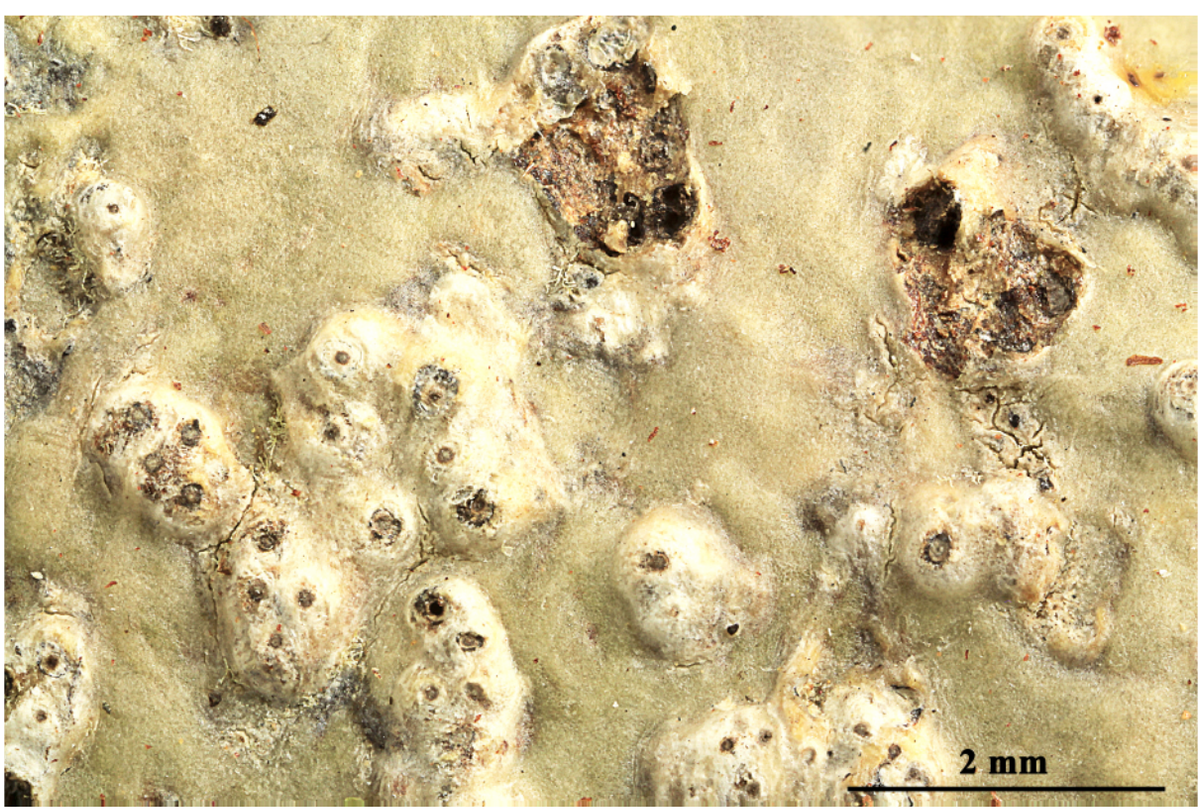




Astrothelium pyrenastrosulphureum

Astrothelium stromatofluorescens Aptroot & M. Cáceres, Lichenologist 48(6): 709 (2016)

[ABL48154], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48154), 14.02.2019, det. A. Aptroot 2019. - Thallus corticate, smooth, somewhat shiny, continuous, covering areas ≤7 cm diam., c. 0.1mm thick, pale ochraceous green, surrounded by a black prothallus line c. 0.2 mm wide, not inducing gall formation of the host bark. Ascomata globose, 0.2–0.5 mm diam., immersed in groups of 7–50 in pseudostromata, not all reaching the surface at one time. Pseudostromata well delimited, not corticate, slate grey with a whitish (partly slate grey when abraded) surface clearly different from the thallus, distinctly c. 1 mm raised above the thallus, ≤ 7 mm diam., irregular in outline and sometimes forming a network, inside with carbonized bark tissue. Wall black, ≤ c. 30 µm thick. Ostioles apical, not fused, flat to concave, ferrugineous brown, surrounded by a whitish zone. Hamathecium not inspersed with oil globules. Asci with 8 ascospores. Ascospores hyaline, 3-septate, fusiform, 20–23×7–9 µm, ends rounded, lumina diamond-shaped, surrounded by a gelatinous layer ≤ 6 µm thick. Pycnidia not observed. Chemistry: Thallus surface UV−, thallus medulla K−; pseudostroma surface UV+ yellow. TLC: lichexanthone.





Astrothelium stromatofluorescens

Astrothelium unisporum Aptroot & M. Cáceres, Bryologist 119(3): 257 (2016)

[ABL48374], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48374), 15.02.2019, det. A. Aptroot 2019. - Thallus slightly shiny, ochraceous, thickly corticate (cartilaginous), not surrounded by a prothallus, not inducing gall formation of the host bark. Ascomata globose, 0.8–1.2 mm diam., superficial on the bark, but immersed in high pseudostroma warts, solitary or in groups of 2–4. Pseudostroma prominent, without pigment, fully covered by the cartilaginous thallus. Ostioles apical, brown, usually in a depression, always surrounded by a 0.2–0.4 mm wide whitish ring or rim (in case of a depression). Hamathecium not inspersed, IKI–. Ascospores 1/ascus, hyaline, muriform, 125–148 x 35–42 µm, ellipsoid, without distinctly thickened median septum. Pycnidia not observed. Chemistry: Thallus UV–, C–, P–, K–. TLC: No substances detected.





Astrothelium unisporum

Astrothelium variolosum (Ach.) Müll. Arg., Flora, Regensburg 68(12): 255 (1885)E
= *Trypethelium variolosum* Ach., Syn. meth. lich. (Lund): 104 (1814)
= *Pseudopyrenula catervaria* (Fée) Müll. Arg., Flora, Regensburg 66(16): 248 (1883)
= *Pyrenula catervaria* (Fée) A. Massal., Framm. Lichenogr.: 25 (1855)
= *Spermatodium catervarium* (Fée) Trevis., Conspect. Verruc.: 10 (1860)
= *Trypethelium catervarium* (Fée) Tuck., Gen. lich. (Amherst): 260 (1872)
= *Verrucaria catervaria* Fée, Essai Crypt. Exot. (Paris): 90 (1825) [1824]

[ABL48914], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48914), 20.03.2019, det. A. Aptroot 2019.- Thallus corticate, pale greenish grey to pale yellowish brown (lichexanthone colour), smooth to uneven. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata pseudostromatic; pseudostromata 0.7–1.5 mm broad, erumpent to prominent, irregular in outline, covered by thallus but often paper to whitish, with dark ostioles. Hamathecium clear. Ascospores 8 per ascus, 3-septate, fusiform-ellipsoid, 20–26 × 7–9 µm, hyaline, IKI−. Chemistry: Thallus and pseudostromata UV+ yellow, K−, with lichexanthone (or 1,8-dihydroxy-3,6-dimethoxyxanthone).



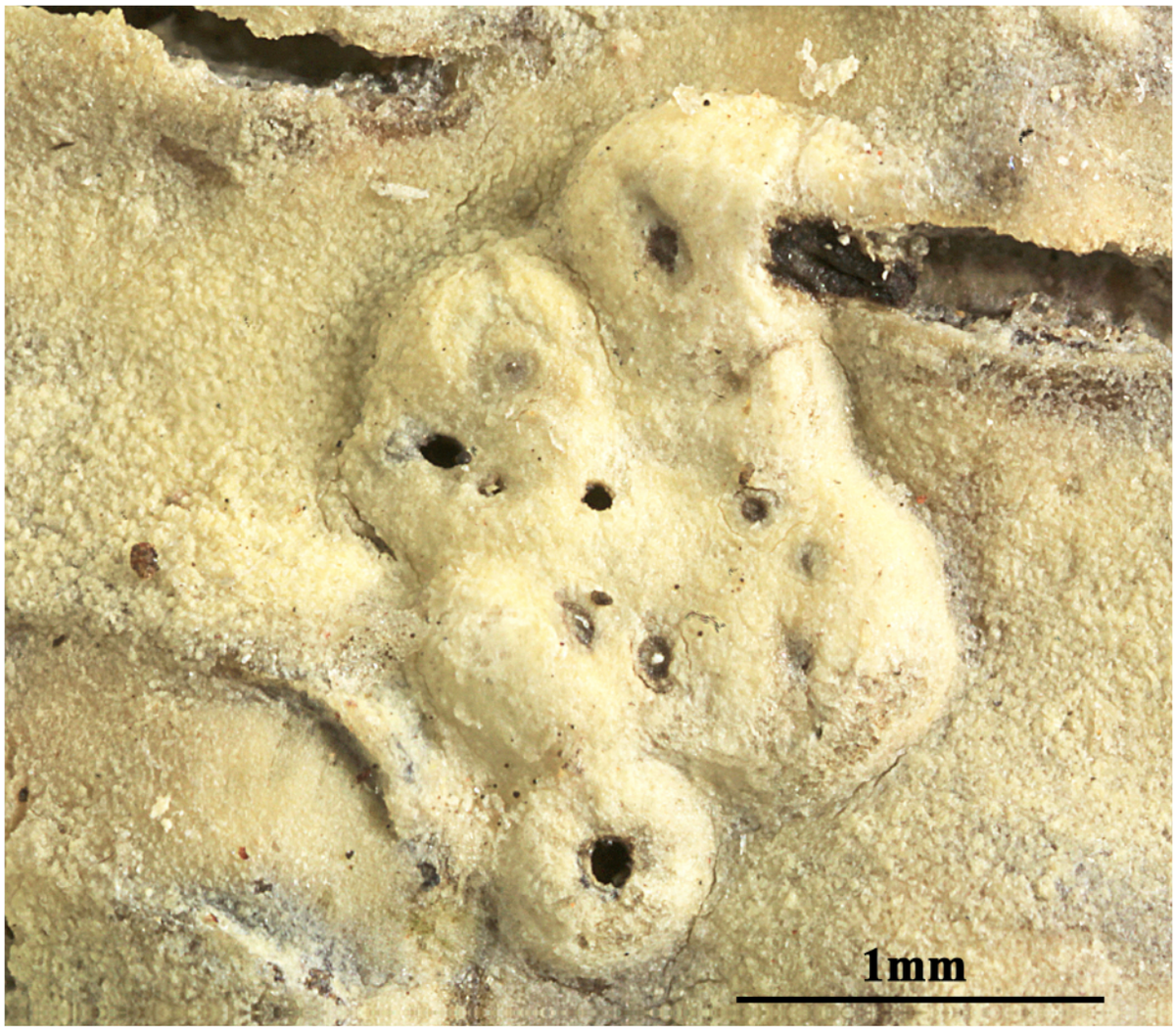


Astrothelium variolosum

Astrothelium variolosum (Ach.) Müll. Arg., Flora, Regensburg 68(12): 255 (1885)
= *Trypethelium variolosum* Ach. 1814

[ABL48898], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48898), 20.03.2019, det. A. Aptroot 2019. - Thallus corticate, pale greenish grey to pale yellowish brown (lichexanthone colour), smooth to uneven. Ascomata astrothelioid, several chambers joined with eccentric, fused ostioles; joined ascomata pseudostromatic; pseudostromata 0.7–1.5mm broad, erumpent to prominent, irregular in outline, covered by thallus but often paper to whitish, with dark ostioles. Hamathecium clear. Ascospores 8 per ascus, 3-septate, fusiform-ellipsoid, 20–26 × 7–9 µm, hyaline, IKI−. Chemistry: Thallus and pseudostromata UV+ yellow, K−, with lichexanthone (or 1,8-dihydroxy-3,6-dimethoxyxanthone).





Astrothelium variolosum

Bapalmuia halleana Sérus., in Kalb, Lücking & Sérusiaux, Mycotaxon 75: 293 (2000)

[ABL48487], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'04" S, 39°24'10" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48487), 16.02.2019, det. A. Aptroot 2019. - Spores 8/ascus, in a bundle, 20-30-septate, 70-105 x 2.5-3.0 µm. Chemistry: coronatone.





Bapalmuia halleana

Buellia dejungens (Nyl.) Vain., Ann. Acad. Sci. fenn., Ser. A 6(no. 7): 80 (1915)
= *Lecidea dejungens* Nyl. 1863

[ABL40737], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40737), 22.07.2017, det. A. Aptroot, 2017. - Spores brown, 1-septate, 21 x 11 µm



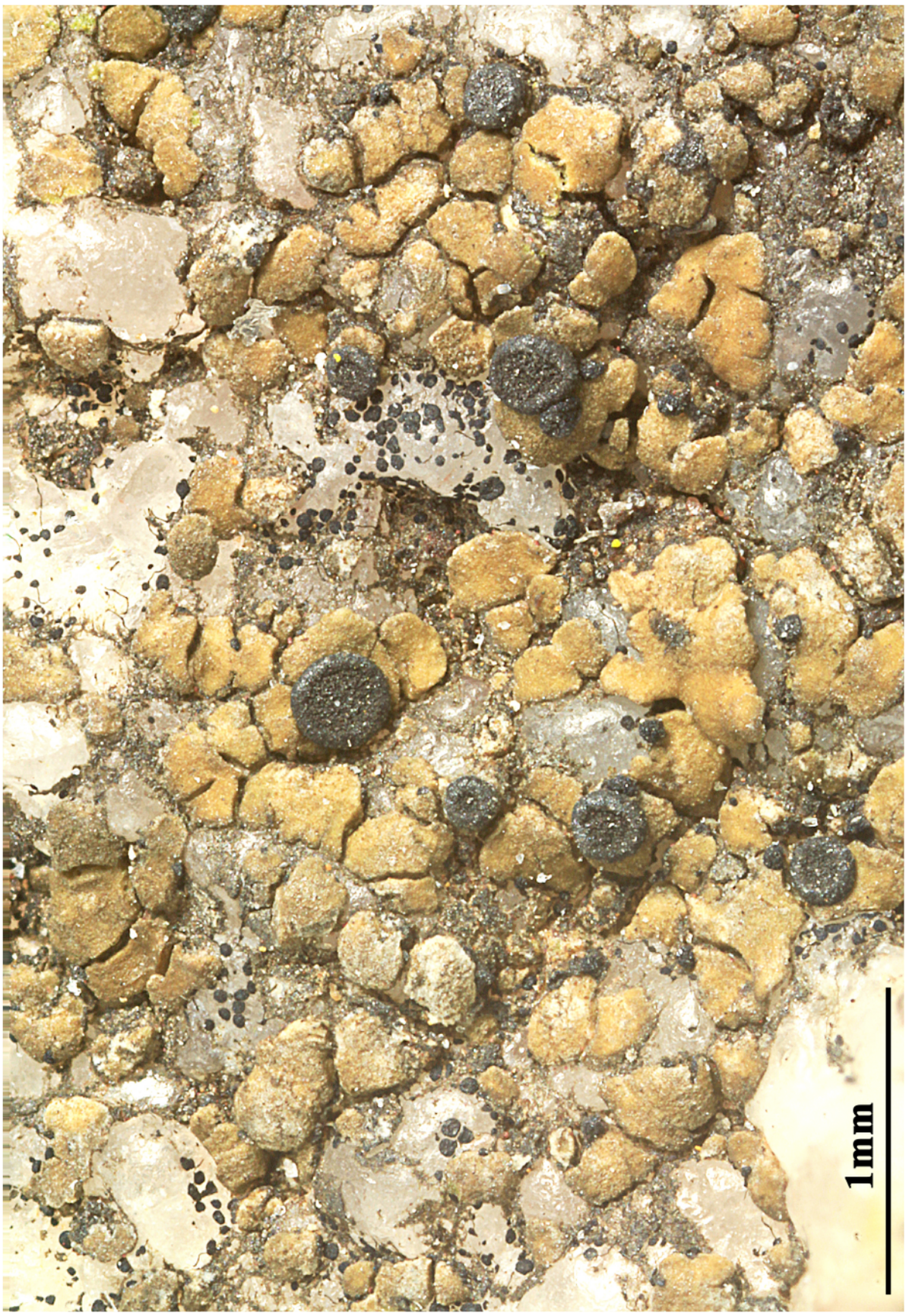


Buellia dejungens

Buellia subtabacina Malme, Ark. Bot. 21A(no. 14): 9 (1927)

[ABL40620], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40620), 22.07.2017, det. A.Aptroot, 2017

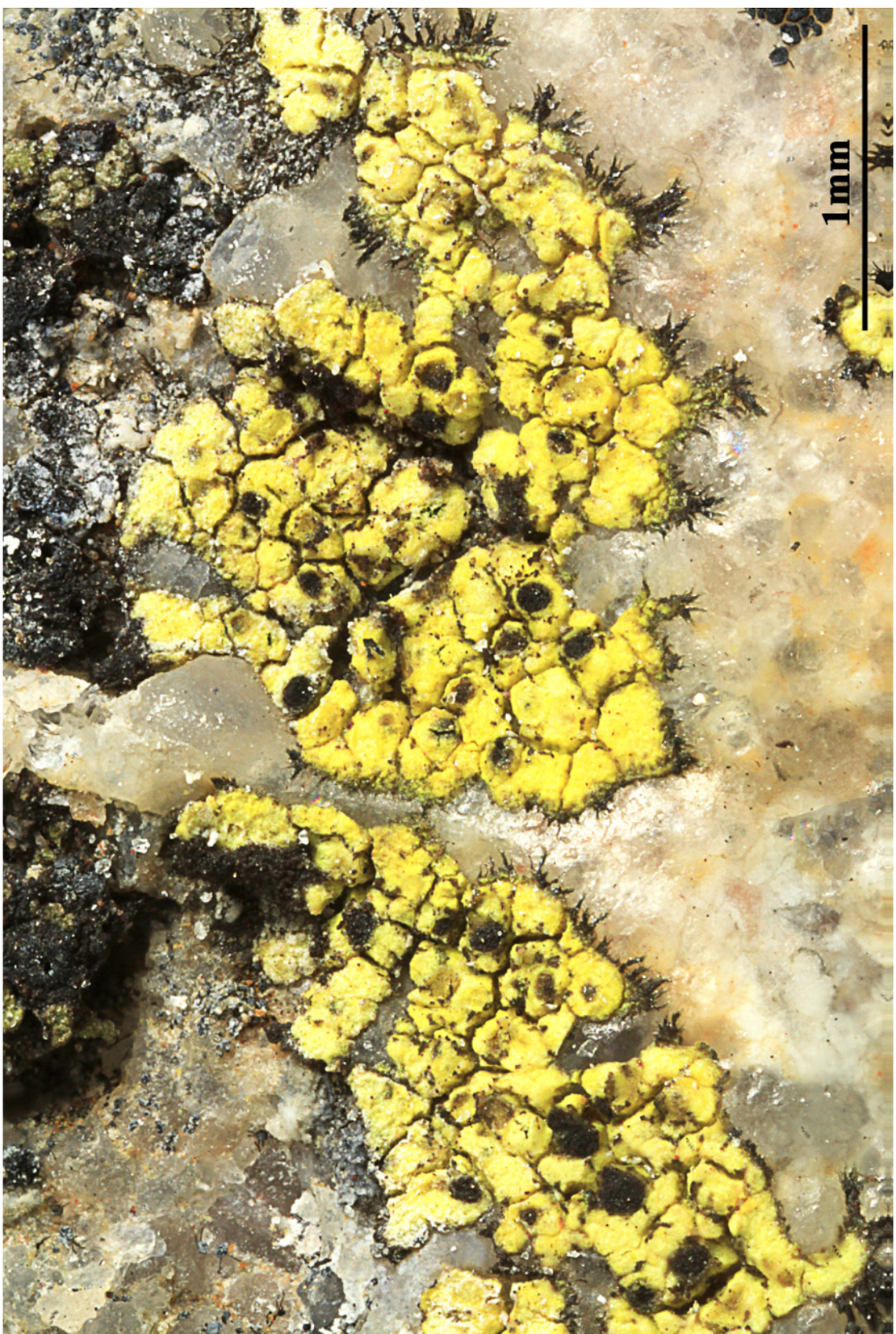




Buellia subtabacina

Buellia xanthinula (Müll. Arg.) Malme, Ark. Bot. 21A(no. 14): 9 (1927)
= *Rinodina xanthinula* Müll. Arg. 1888

[ABL40624], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40624), 22.07.2017, det. A. Aptroot, 2017.

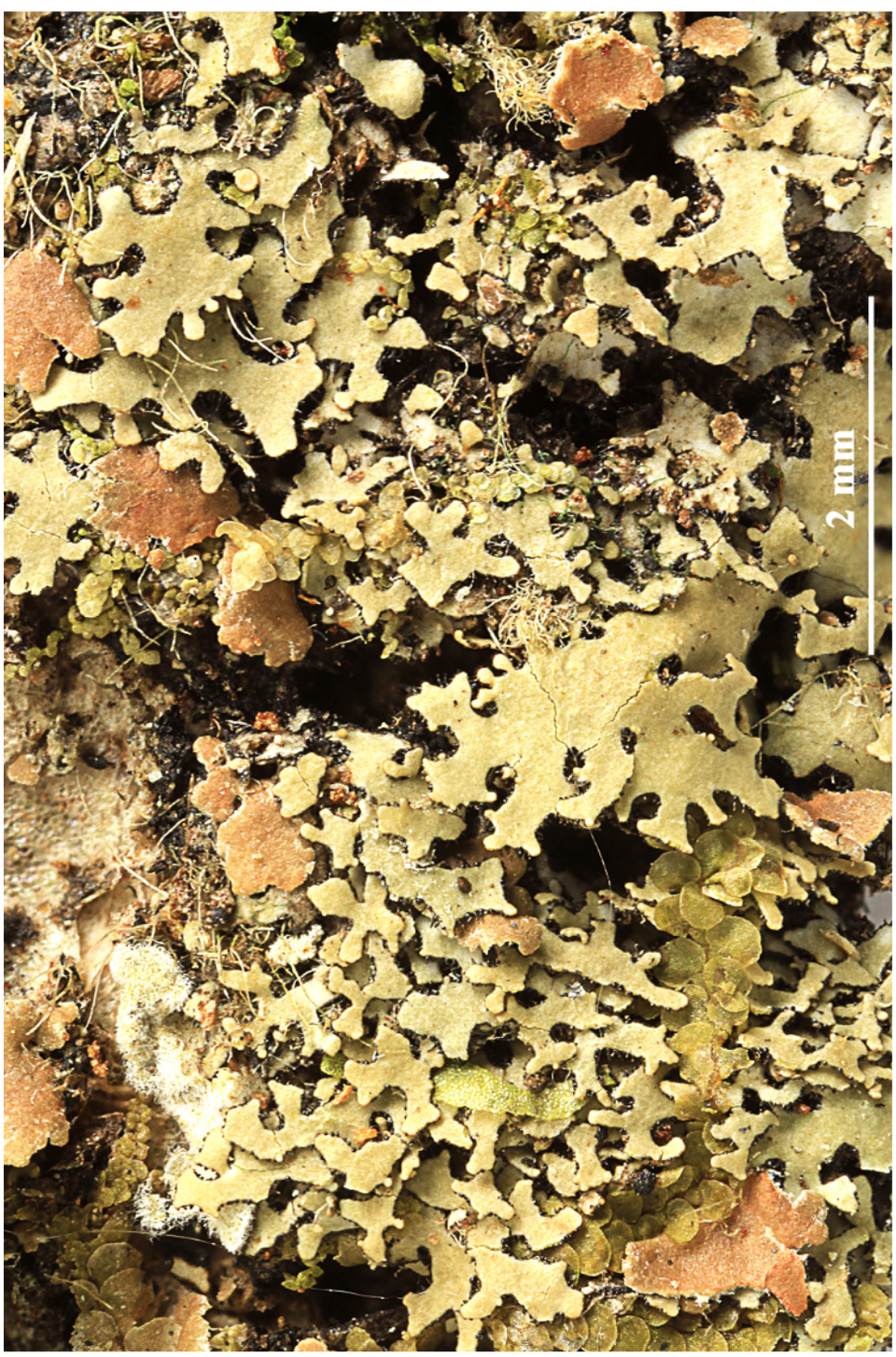




Buellia xanthinula

Bulbothrix caribensis Marcelli & Benatti, in Benatti, Fungal Diversity 2(4): 255 (2011)

[ABL48346], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48346), 15.02.2019, det. A. Aptroot 2019. - Characterized by the narrow sublinear lacinia, emaculate upper cortex, the formation of frequent to abundant laminal lacinulae often covering parts of the upper cortex, cilia with simple to sparsely branched apices, a black lower cortex with pale brown margins, simple to little sparsely branched rhizines with basal or displaced bulbs, and by the absence of medullary acids. K-, C-, KC-, P-.





Bulbothrix caribensis

Bulbothrix leprieurii Aubel, in Sipman & Aubel, Mycotaxon 44(1): 2 (1992)

[ABL48613], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'56" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48613), 18.02.2019, det. A. Aptroot 2019. - Thallus corticolous, closely appressed, flat, light grey, up to over **3** cm wide; lobes sublinear - elongate, c. 0.5 mm wide; cilia black, bulbate with repeatedly dichotomously branched tips, to 0.2 mm long; upper surface mostly flat, continuous or in central parts transversely cracked, sorediate; soralia superficial, pale grey, rounded, c. 0.6 mm wide, flat, at last often excavate and showing the black lower cortex, producing c. 50 µm diam. soredia; lower surface black, near the lobe tips brown, sparsely rhizinate; rhizines slightly inflated at base, strongly dichotomously branched, black, to c. 0.2 mm long. Apothecia and pycnidia unknown. Chemistry (TLC): atranorin and gyrophoric acid with variable amounts of orsellinic and lecanoric acids. Colour reactions: medulla K-, C+ rose, KC+ rose, P-, UV-; surface K+ yellow, UV-.

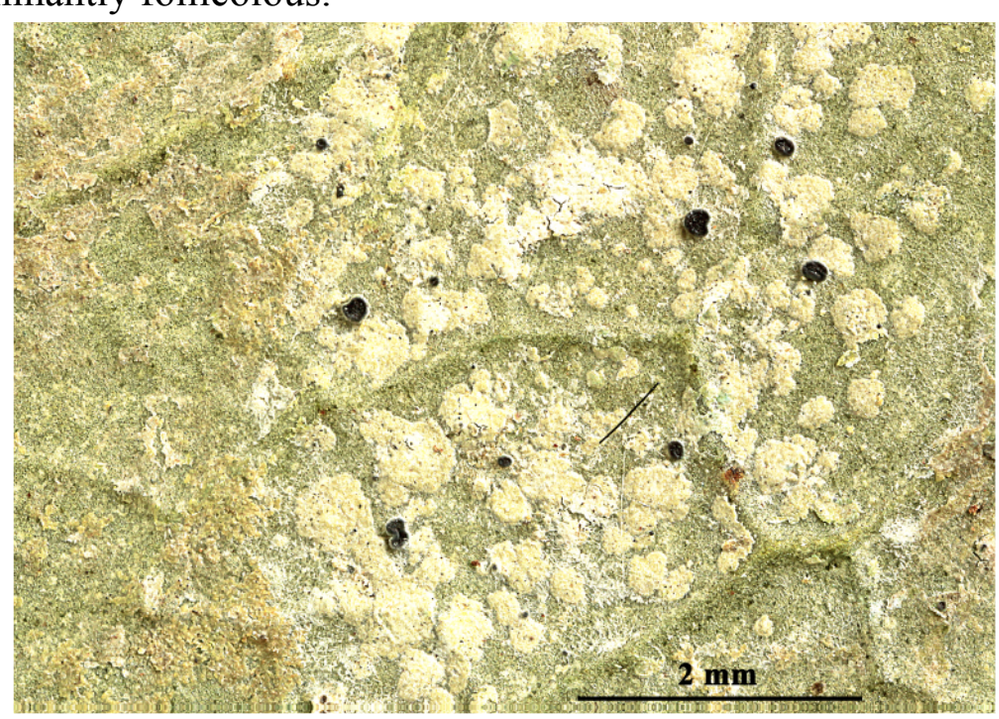




Bulbothrix leprieurii

Byssoloma subdiscordans (Nyl.) P. James, Lichenologist 5(1-2): 126 (1971)
= *Bacidia leucoblephara* var. *rupicola* (Wheldon & A. Wilson) P. James, Lichenologist 5: 126 (1971)
= *Bacidia rotuliformis* (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 4: 139 (1926) [1927]
= *Bilimbia leucoblephara* var. *rupicola* Wheldon & A. Wilson, J. Bot., Lond. 53(Suppl.): 63 (1915)
= *Byssoloma rotuliforme* (Müll. Arg.) R. Sant., in Thorold, Lich. Dan. 40: 129 (1952)
= *Byssoloma subdiscordans* f. *puertoricense* Sérus., Occ. Pap. Farlow Herb. Crypt. Bot. 10: 16 (1976)
= *Byssoloma subdiscordans* var. *puertoricense* (Sérus.) Lücking [as 'puertoricensis'], Fl. Neotrop., Monogr. 103: 687 (2008)
= *Byssoloma tricholomum* var. *rupicola* (Wheldon & A. Wilson) Zahlbr. [as 'rupicolum'], Cat. Lich. Univers. 2: 571 (1923) [1924]
= *Chiodecton subdiscordans* Nyl., Flora, Regensburg 62: 221 (1879)
= *Patellaria rotuliformis* Müll. Arg., Flora, Regensburg 64(15): 228 (1881)
= *Pilocarpon rotuliforme* (Müll. Arg.) Vain., J. Bot., Lond. 34: 210 (1896)

[ABL48873H], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873H), 21.03.2019, det. A. Aptroot 2019. - Discocarps are c. 0.3 mm in diameter and have tomentose, thalline margins typical of *Byssoloma.* The discocarps are clustered in groups of two to four and the black, matt disc has, in consequence, become deformed and distorted. Spores 3-septate. *Byssoloma subdiscordans* has a very wide, pan-tropical distribution and is predominantly foliicolous.





Byssoloma subdiscordans

Calopadia editiae Vězda ex Chaves & Lücking [as 'editae'], in Lumbsch et al., Phytotaxa 18: 27 (2011)

[ABL48504], Brazil, Bahia, Itamarajú, Monte Pascoal, on bark in palm forest. 16°51'04" S, 39°24'10" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48504), 16.02.2019, det. A. Aptroot 2019. - Spores 1/ascus, muriform, 65-80 x 16 µm.

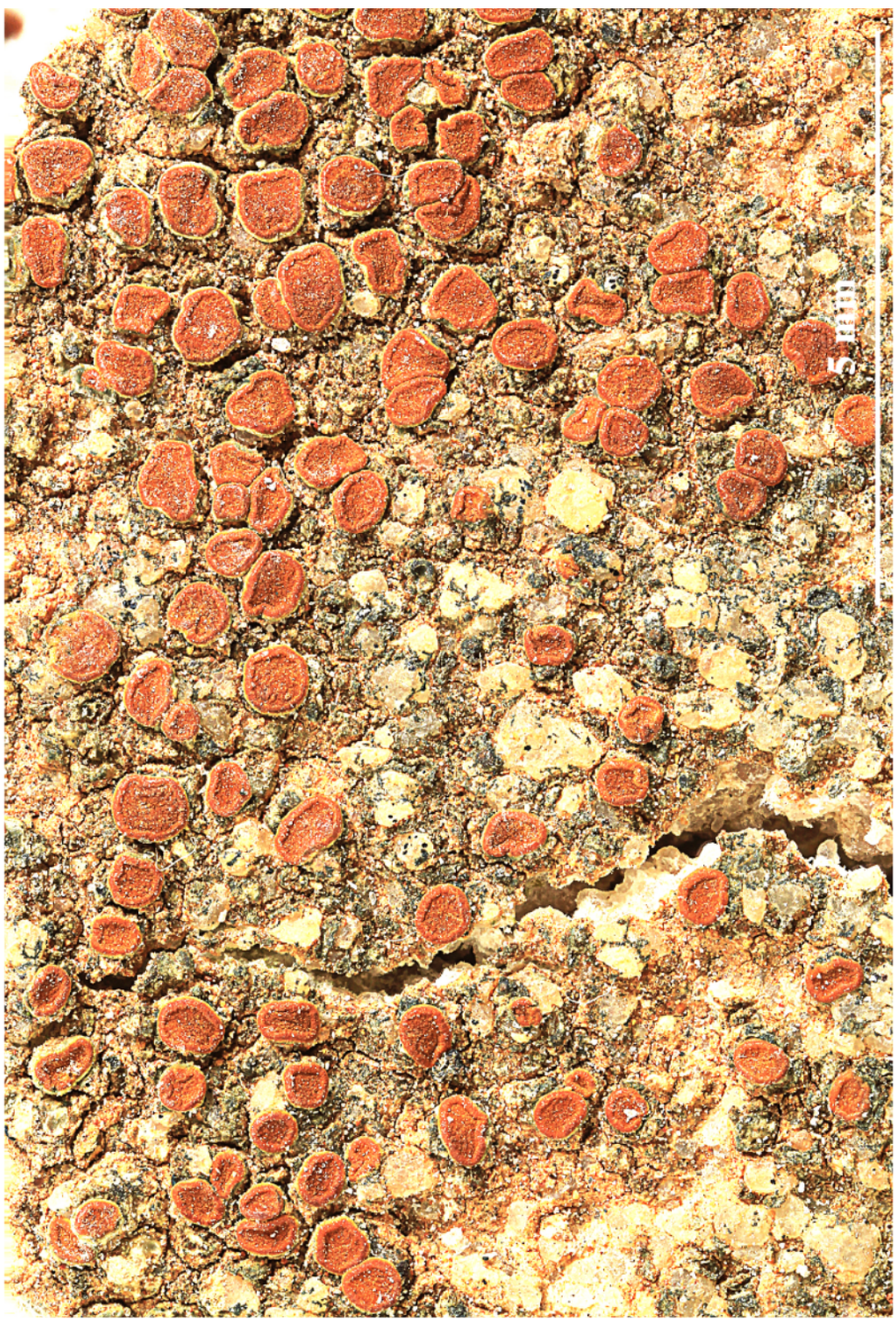


Caloplaca arenaria (Pers.) Müll. Arg., Mém. Soc. Phys. Hist. nat. Genève 16(2): 387 (1862)

= *Lichen arenarius* Pers. 1794

= *Rufoplaca arenaria* (Pers.) Arup, Søchting & Frödén, in Arup, Søchting & Frödé***n 2013***

[ABL40876], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40876), 23.07.2017, det. A. Aptroot, 2017. - Spores 13-17 x 8-8 µm, septum 2.0-3.5 µm, c. 1/5-1/6 of the length of the spore.





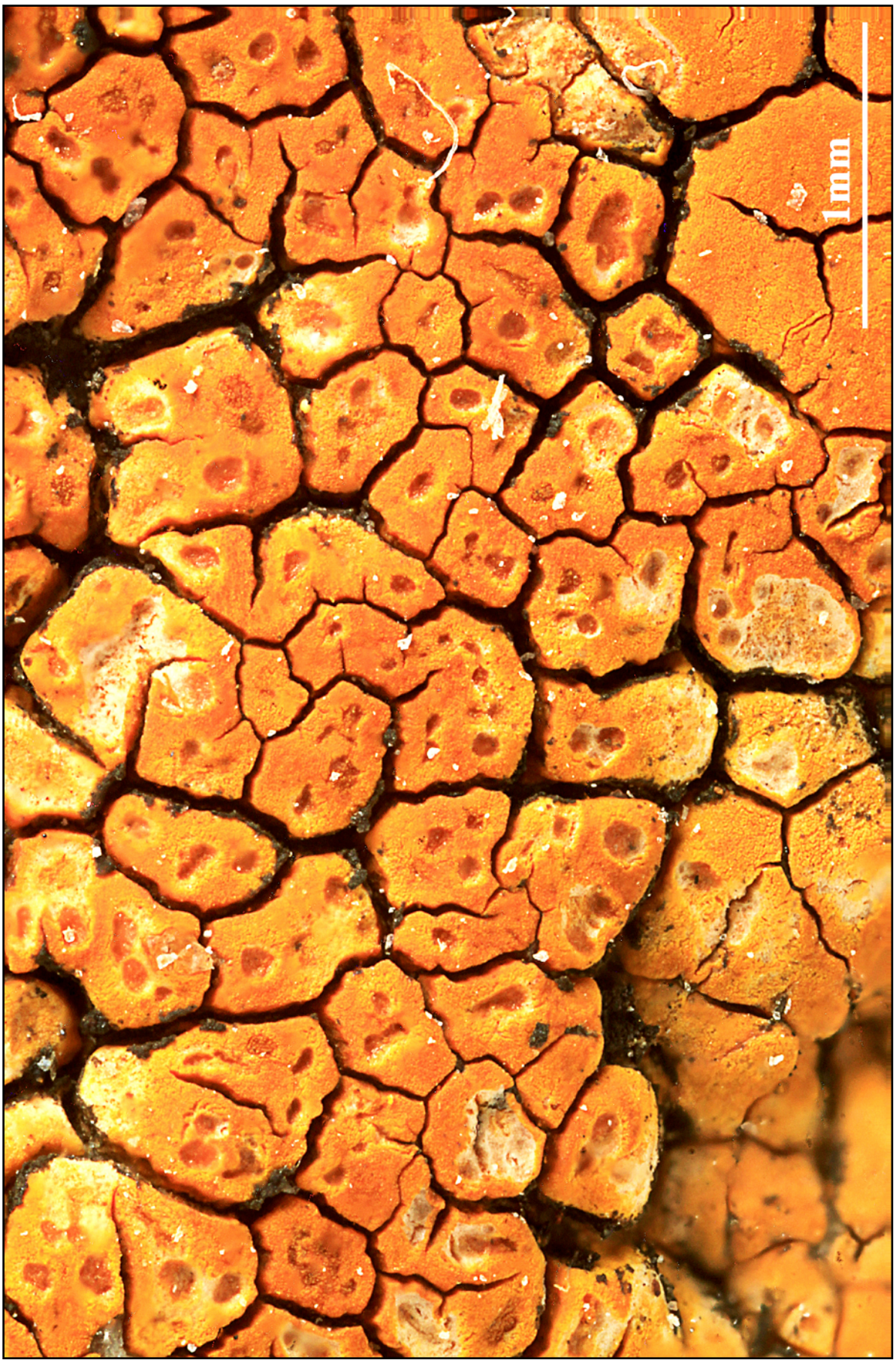
Caloplaca arenaria

Caloplaca cinnabarina (Ach.) Zahlbr., in Engler & Prantl, Nat. Pflanzenfam., Teil. I (Leipzig) 1(1*): 228 (1908)
= *Neobrownliella cinnabarina* (Ach.) S.Y. Kondr., Upreti & A. Thell, in Mishra, Upreti, Sanjeeva Nayaka, Thell, Kärnefelt, Hur, Sinha & Kondratyuk, Acta bot. hung. 62(3-4): 362 (2020)
= *Blastenia cinnabarina* (Ach.) Lindau, Die Flecht.: 207 (1913)
= *Brownliella cinnabarina* (Ach.) S.Y. Kondr., Kärnefelt, A. Thell, Elix, Jung Kim, A.S. Kondr. & Hur, in Kondratyuk et al., Acta bot. hung. 55(3-4): 271 (2013)
= *Callopisma cinnabarinum* (Ach.) Müll. Arg., Flora, Regensburg 64(32): 513 (1881)
= *Callopisma cinnabarinum* var. *opacum* Müll. Arg., Flora, Regensburg 64(32): 514 (1881)
= *Caloplaca cinnabarina* var. *opaca* (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 7: 102 (1930) [1931]
= *Caloplaca pallidior* f. *opaca* (Müll. Arg.) Zahlbr., Annals Cryptog. Exot. 5(3-4): 267 (1932)
= *Caloplaca pallidior* var. *opaca* (Müll. Arg.) Zahlbr., Annals Cryptog. Exot. 5(3-4): 267 (1932)
= *Lecanora cinnabarina* Ach., Lich. Univ.: 402 (1810)
= *Lichen peltatus* * *cinnabarina* (Ach.) Lam., Encycl. Méth. Bot., Suppl. (Paris) 3(2): 396 (1813)
= *Parmelia cinnabarina* (Ach.) Spreng., Syst. veg., Edn 16 4(1): 301 (1827)
= *Placodium cinnabarinum* (Ach.) Nyl., Mém. Soc. Imp. Sci. Nat. Cherbourg 3: 178 (1855)
= *Placodium cinnabarinum* var. *opacum* (Müll. Arg.) B. de Lesd., Lich. Mexique: 11 (1914)
= *Placodium murorum* var. *cinnabarinum* (Ach.) Nyl., Annls Sci. Nat., Bot., sér. 4 3: 154 (1855)
= *Urceolaria tessellata* Taylor [as 'tessulata'], London J. Bot. 6: 158 (1847)

[ABL40750], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40750), 22.07.2017, det. A. Aptroot, 2017.



Caloplaca cinnabarina

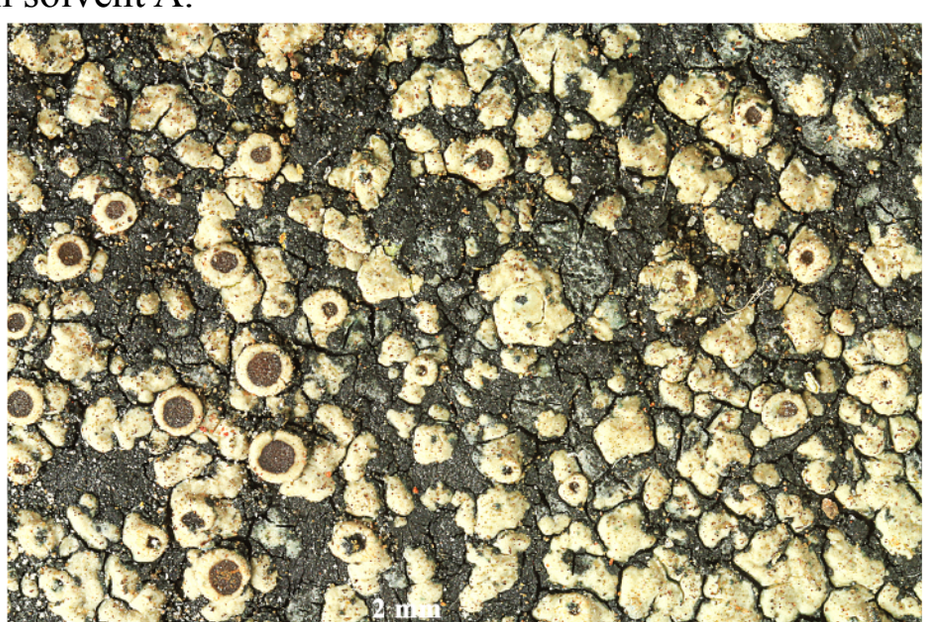


Caloplaca cinnabarina

Caloplaca lecanorocarpa Aptroot & M. Cáceres, Lichenologist 48(3): 205 (2016)

[ABL40727], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40727), 22.07.2017, det. A. Aptroot, 2017. -

Thallus crustose, corticate, slightly shiny, grey, areolate with bullate to somewhat flattened or slightly folded, round to angular areoles of c. 0.2–1.0 mm diam. on a black hypothallus. Thallus c. 100–220 µm thick; medulla hyphal, rather lax; cortex paraplectenchymatous, filled with tiny crystals (atranorin), c. 10–18 µm thick; algae chlorococcoid, cells c. 6–11 µm diam. Vegetative propagules absent. Apothecia numerous, dispersed, sessile, round, 0.4–1.0 mm diam., 0.3–0.7 mm high; disc concave, chocolate brown, glossy; margin grey, glossy, incurved, with some incisions, c. 0.2mm wide, much raised above the disc. Cortex of the apothecium margin paraplectenchymatous, filled with tiny crystals (atranorin), c. 10–15 µm thick; medulla of the apothecium margin with algae. Excipulum colourless. Hymenium not inspersed, c. 75–95 µm high; subhymenium hyaline, c. 50–75 µm high; epihymenium brown, c. 7–12 µm high; colour unchanged in KOH; paraphyses c. 2.0–2.5 µm thick, sparingly branched only at the tips; terminal cells widened to c. 3.0–3.5 µm and often with flattened tips. Ascospores 8/ascus, hyaline, ellipsoid, polardiblastic, 10.0–12.0(–12.5) × 5.0–5.5 µm, around twice as long as wide, with a 5.0–5.5 µm thick septum that occupies around half of the ascospore length. Pycnidia not observed. Chemistry. Thallus and apothecium margin KOH+ yellow. TLC: atranorin and a terpenoid at Rf 6 in solvent A.





Caloplaca lecanorocarpa

Calvitimela aglaea (Sommerf.) Hafellner, Stapfia 76: 151 (2001)
= *Lecidea aglaea* Sommerf., Suppl. Fl. lapp. (Oslo): 144 (1826)
= *Lecidea aglaea* f. *crombiei* (T.A. Jones ex Nyl.) Nyl., Flora, Regensburg 53: 38 (1870)
= *Lecidea aglaea* var. *crombiei* (T.A. Jones ex Nyl.) T.A. Jones ex Cromb., Grevillea 1(no. 11): 173 (1873)
= *Lecidea brunneri* var. *crombiei* (T.A. Jones ex Nyl.) Lettau, Hedwigia 55(1): 30 (1914)
= *Lecidea crombiei* T.A. Jones ex Nyl. [as 'crombei'], Flora, Regensburg 51: 345 (1868)
= *Lecidella aglaea* (Sommerf.) Körb., Syst. lich. germ. (Breslau): 240 (1855)
= *Oedemocarpus aglaeus* (Sommerf.) Trevis., Revta Period. Lav. Regia Accad. Sci., Padova 5: 76 (1857)
= *Tephromela aglaea* (Sommerf.) Hertel & Rambold, Bot. Jb. 107(1-4): 494 (1985)

[ABL40626], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40626), 22.07.2017, det. A. Aptroot, 2017. - Thallus UV+ pink; hypothecium brown; hymenium not inspersed; spores simple, 11 x 6 µm.



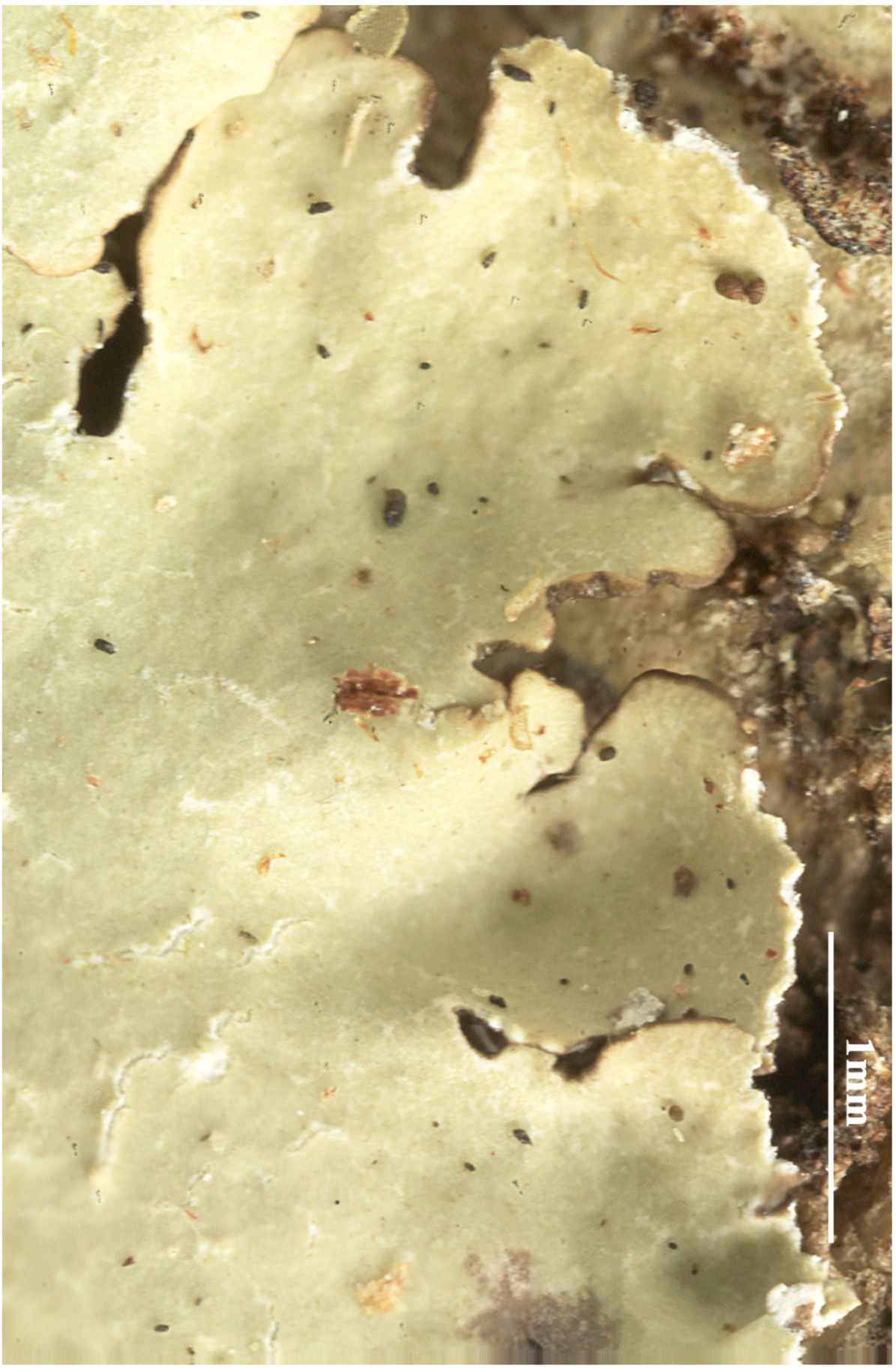


Calvitimela aglaea

Canoparmelia caroliniana (Nyl.) Elix & Hale, in Elix, Johnston & Verdon, Mycotaxon 27: 278 (1986)
= *Parmelia caroliniana* Nyl. 1885

[ABL48356], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48356), 15.02.2019, det. A. Aptroot 2019. - Thallus grey, loosely adnate. Lobes 2-5 mm wide. Upper surface reticulate-maculate. Under surface black. Isidia thin, 0.07 mm thick. Without soredia and cilia. Chemistry: cortex K+ yellow, C-, P-; medulla K-, C+ pink, P-; atranorin (min) chloroatranorin (min), stenosporic acid (maj), perlatolic acid (submaj), glomelliferic acid (min).





Canoparmelia caroliniana

Carassea connexa (Vain.) S. Stenroos, in Stenroos, Myllys, Thell & Hyvönen, Mycol. Progr. 1(3): 277 (2002)
= *Cladonia connexa* Vain., Acta Soc. Fauna Flora fenn. 4(no. 1): 288 (1887)

[ABL40916], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40916), 23.07.2017, det. A. Aptroot, 2017. - Podetia densely isotomously branched, no main axes differentiated, axils mostly open, primary thallus evanescent. P-, K+ yellow (atranorin).





Carassea connexa

Carbacanthographis candidata (Nyl.) Staiger & Kalb, in Staiger, Biblthca Lichenol. 85: 104 (2002)
= *Graphis candidata* Nyl., Flora, Regensburg 57(5): 72 (1874)

[ABL40765], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40765), 22.07.2017, det. A. Aptroot, 2017. - Excipulum carbonized; hymenium not inspersed; spores 4-8/ascus, hyaline, transversely 16-24-septated, 55-100 x 7-9 µm, IKI-; TLC: protocetraric acid, lichexanthone (UV+ yellow)





Carbacanthographis candidata

Celothelium cinchonarum (Müll. Arg.) Vain., Ann. Acad. Sci. fenn., Ser. A 6(no. 7): 209 (1915)
= *Tomasellia cinchonarum* Müll. Arg. 1885

[ABL48469], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48469), 15.02.2019, det. A. Aptroot 2019. - Thallus ochraceous white, smooth, often somewhat glossy. Ascomata generally fused laterally in linear groups of 5–50. Ostioles apical. Ascospores 9-septate, 60–100 × 1.5–2.5 µm. Chemistry: -.

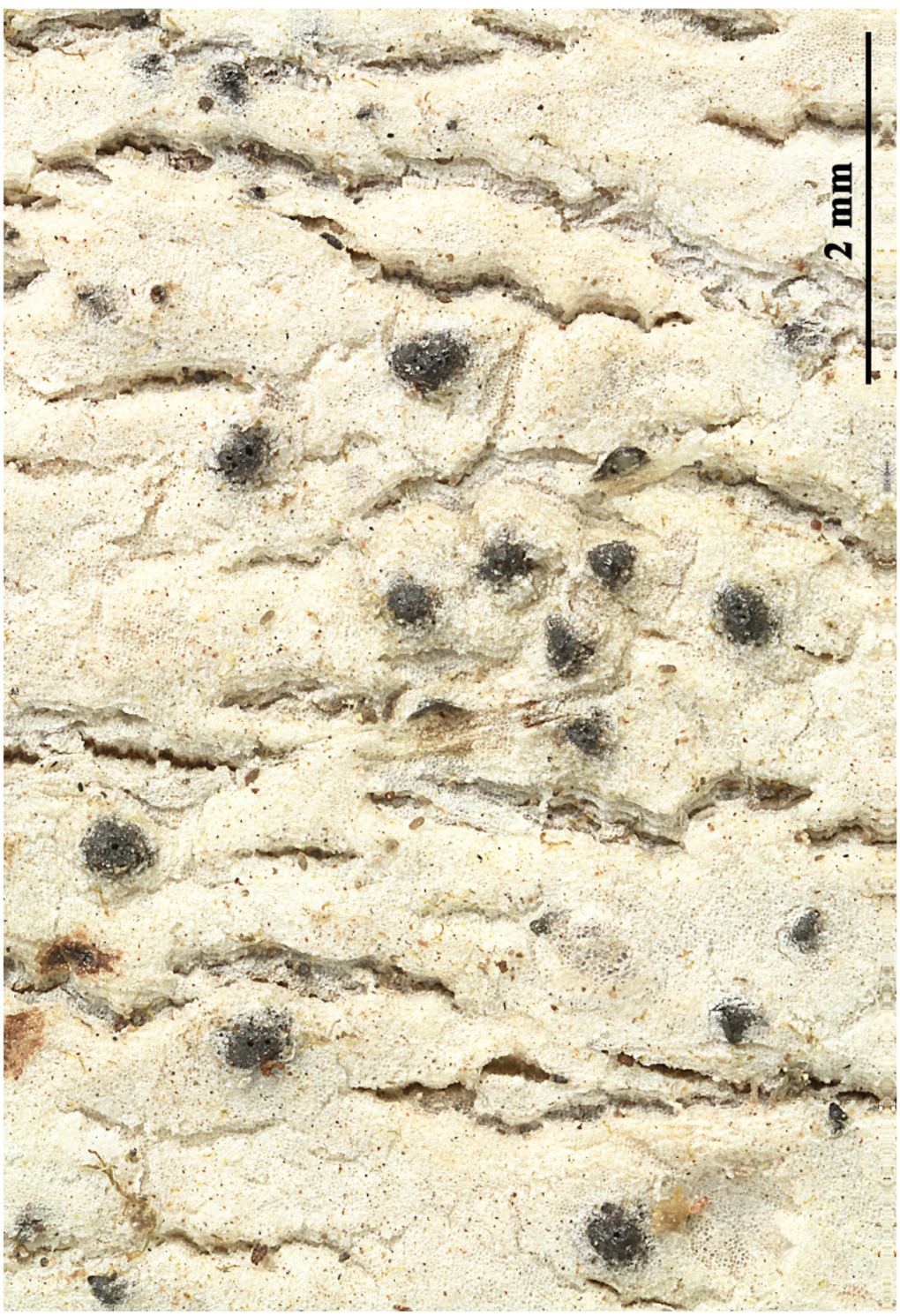




Celothelium cinchonarum

Celothelium dominicanum (Vain.) M.B. Aguirre, Bull. Br. Mus. nat. Hist., Bot. 21(2): 139 (1991)
= *Leptorhaphis dominicana* Vain. 1915

[ABL42163C], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 41632C), 2017. - Thallus ecorticate, white, UV–. Perithecia 0.2–0.4 mm diam., single. Ostiole apical. Hamathecium filaments thin and anastomosing above the asci. Ascospores hyaline, 7–15-septate, filiform, 70–100 × 1.5–2 µm.





Celothelium dominicanum

Chapsa patens (Nyl.) Frisch, Biblthca Lichenol. 92: 111 (2006)
= *Thelotrema patens* Nyl., Acta Soc. Sci. fenn. 26(no. 10): 17 (1900)

[ABL48897], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48897), 20.03.2019, det. A. Aptroot 2019. - Thallus corticolous, greenish-grey, continuous to slightly fissured, c. 0.07-0.1(-0.15) mm thick, slightly uneven to verrucose, matt, without compact surface, the bark substrate in some specimens shining through the thallus surface; a white medullary layer absent. Prothallus line thin, brownish. Phenocortex absent. Photobiont layer 70-100(-150) µm, with inclusions of some oxalate crystals, largely endophloeodal. Msdulla endophloeodal. Pycnidia unknown. Apothecia dispersed, level with the thallus, rounded to slightly angular, 0.8-2 mm diam. Margin strongly raised, deeply fissured to lobed, incurved to upright but usually not strongly recurved in the apical parts, with a thick, pale-brown to white-felty and sometimes slightly crystalline inner surface; proper exciple fused. Disc pale brown, covered by a thick white-felty to crystalline pruina. Periderm layer 15-70 µm thick, a loosely organised and only slightly brown conglutinated prosoplectenchyma, usually with decomposed periderm cells embedded between the hyphae. Proper exciple cupular, c. 15-25 µm deep and hyaline to pale brown at the base, laterally 60-130 µm wide, hyaline, formed of strongly conglutinated, prosoplectenchymatic hyphae with short to long rectangular cells. Periphysoids up to 50 µm long, free, perpendicular to the proper exciple or inclined towards the epihymenium, c. 1.5-2 µm wide, with up to six long rectangular cells, in the apical parts indistinctly moniliform and intensely adspersed with fine greyish to brownish granules. Hymenium 170-210 µm high, clear. Ascospores 1/ascus, hyaline, nearly thin-walled, densely muriform, 90-158 × 22-35 µm, with rounded ends, I–. Asci clavate, c. 105-200 × 25-40 µm. Paraphyses simple, straight, 2-2.5 µm wide; tips strongly moniliform and intensely adspersed with fine greyish to brownish granules. Epihymenium unpigmented, 10-15 µm high. Chemistry: No lichen compounds detected by TLC.



Chapsa patens



Chapsa patens

Chapsa sublilacina (Ellis & Everh.) M. Cáceres & Lücking, in Cáceres, Libri Botanici 22: 54 (2007)

= *Chapsa sublilacina* var. *cyanea* Lücking, in Sipman, Lücking, Aptroot, Chaves, Kalb & Umaña Tenorio, Phytotaxa 55: 48 (2012)

= *Karstenia sublilacina* Ellis & Everh., Bull. Lab. Nat. Hist. Iowa State Univ. 4: 69 (1896)

= *Ocellularia sublilacina* (Ellis & Everh.) Zahlbr., Cat. Lich. Univers. 2: 601 (1923) [1924]

= *Thelotrema sublilacinum* (Ellis & Everh.) Vain., Proc. Amer. Acad. Arts & Sci. 58(3): 137 (1923)

[ABL48854], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48854), 18.02.2019, det. A. Aptroot 2019. - Disc non pruinose; spores 2-4/ascus, transversely15-19-septate, 60-120 x 10-15 µm; stictic acid.





Chapsa sublilacina

Chiodecton complexum Aptroot & M. Cáceres, Lichenologist 46(4): 576 (2014)

[ABL421230], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 421230), 22.07.2017, det. A. Aptroot, 2017.

Thallus continuous, rimose in places, covering areas up to 5 cm diam., smooth to felty, closely appressed, greenish grey, with pinkish hue when fresh, dull, partly uneven/verrucose due to the presence of initials of soralia, pycnidia or stromata, surrounded by a felty dark brown prothallus line. Soralia numerous, mostly in central areas of the thallus, rounded, capitate, 0.2–0.6 mm diam., occasionally confluent but individual soralia remaining recognizable, with farinose soredia, pale green with a pink hue that fades in the herbarium. Algae trentepohlioid. Apothecia immersed and pyriform, 0.1–0.2 mm diam., only visible from above by black shiny ostioles c. 0.05 mm diam. Stromata originating in the marginal areas of some thalli, outside of thallus colour or generally somewhat paler, emergent from the thallus, 0.5–2.5 mm diam., containing 5–50 ascomata in branched lines, without yellow pigment. Excipulum black, dark brown in section; hypothecium black, extending fardownwards; epihymenium hyaline. Hymenium not inspersed, IKI+ blue (amyloid); paraphysoids 1.0–1.5 µm wide, anastomosing. Asci cylindrical, 45–50 x 10–13 µm. Ascospores 8 per ascus, hyaline, 3-septate, narrowly fusiform, (26–)33–40 x 2.5–3.5 µm, not constricted at the septa, without gelatinous sheath, ends rather pointed. Pycnidia originating in the marginal areas of some thalli, black, punctiform, c. 0.1 mm diam., immersed in c. 0.2 mm diam. emergent warts of thallus colour or generally somewhat paler. Conidia hyaline, filiform, curved, 13–18 x 1 µm. Chemistry. Thallus UV-, C-, P-, K-. TLC: roccellic acid (but in concentrations too low to cause a significant UV-reaction).



Chiodecton complexum



Chiodecton complexum

Cladonia bahiana Ahti, in Ahti, Stenroos & Marcelli, Biblthca Lichenol. 57: 10 (1995)

[ABL40903], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40903), 23.07.2017, det. A. Aptroot, 2017.- Primary thallus evanescent, turgid podetua, brown felt on the inner surface of the podetia, axils closed or perforate; P+ yellow, K+ yellow, thamnolic acid, decarboxythamnolic acid (trace)





Cladonia bahiana

Cladonia corallifera (Kunze) Nyl., Flora, Regensburg 57(5): 70 (1874)
= *Cenomyce corallifera* Kunze, in Weigelt & Kunze 1828

[ABL40723], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous soil along river. Leg. M. Cáceres & A. Aptroot (no 40723), 22.07.2017, det. A. Aptroot, 2017.





Cladonia corallifera

Cladonia crustacea Ahti, Fl. Neotrop., Monogr. 78: 191 (2000)

[ABL40910], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40910), 23.07.2017, det. A. Aptroot, 2017. - Podetia rare, mainly esorediate, apothecia red. Chemistry: P+ yellow, K+ yellow, thamnolic acid, rhodocladonic acid in the hymenia.





Cladonia crustacea

Cladonia dissecta Ahti, in Ahti & Marcelli, Biblthca Lichenol. 58: 14 (1995)

[ABL42105], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42105), 23.07.2017, det. A. Aptroot, 2017. - Primary thallus evanescent, consisting of squamules flocculose below. Podetia simple to slightly branched, scyphose. Hymenial discs at tips of scyphal laciniae, brown. Chemistry: P+ red, K- or + yellow; fumarprotocetraric acid and sometimes atranorin, protocetraric acid (trace), confumarprotocetraric acid (trace).

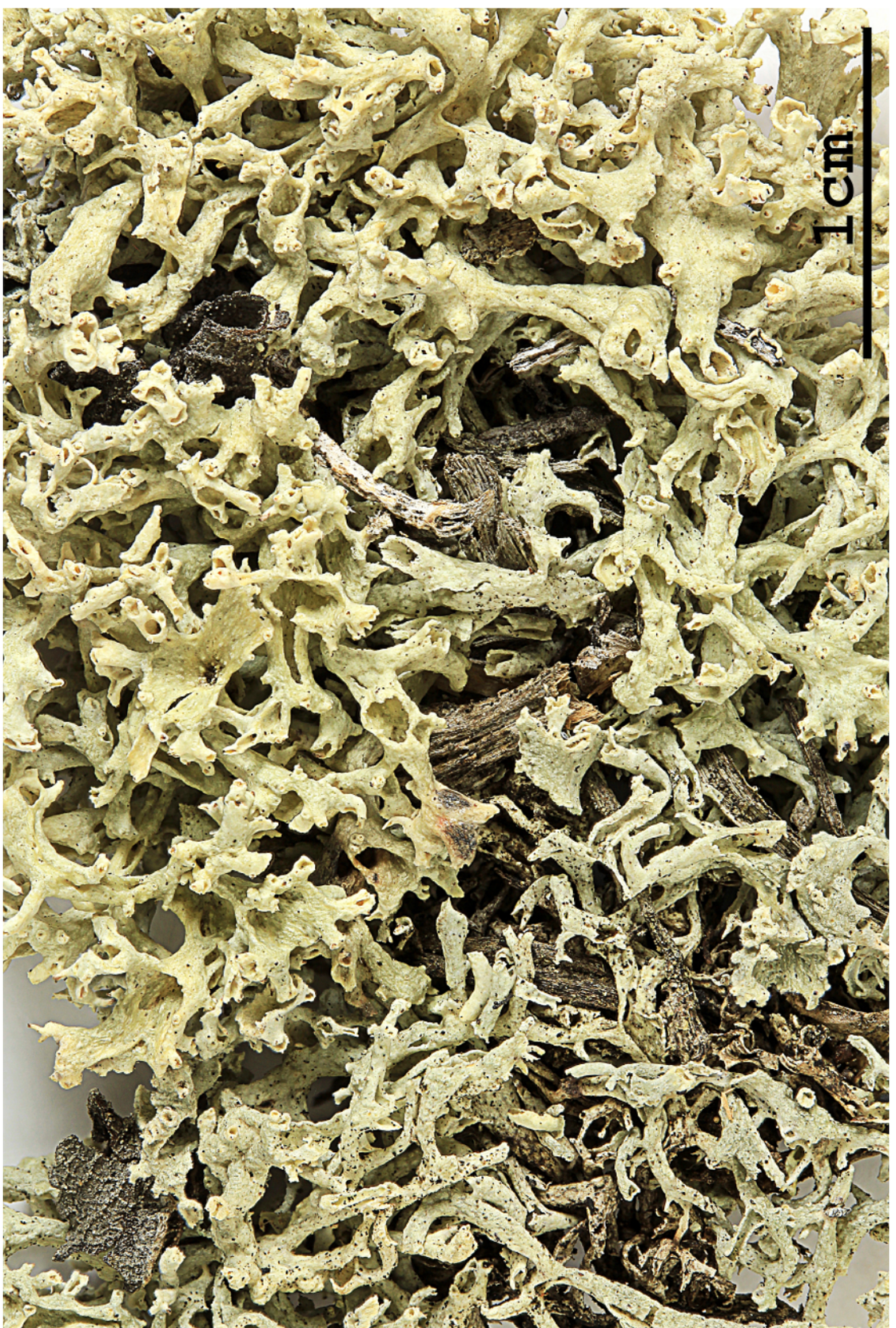




Cladonia dissecta

Cladonia divaricata Nyl., Syn. meth. lich. (Parisiis) 1(2): 260 (1860)

[ABL42105], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42105), 23.07.2017, det. A. Aptroot, 2017. - P+ red, K-,usnic acid, fumarprotocetraric acid, protocetraric acid





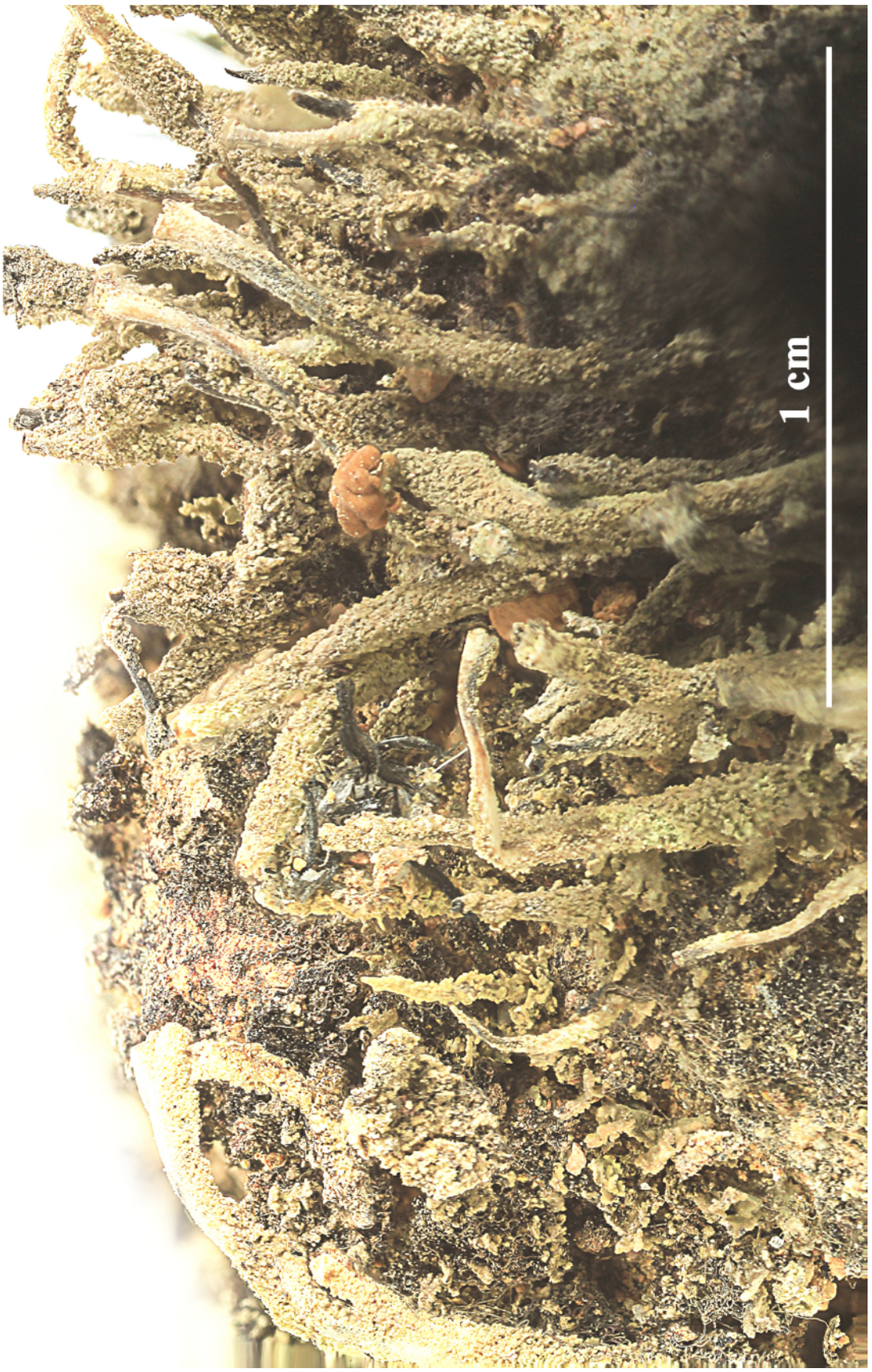
Cladonia divaricata



Cladonia divaricata

Cladonia farinacea (Vain.) A. Evans, Rhodora 52: 95 (1950)
= *Cladonia furcata var. farinacea* Vain., in Hariot 1887

[ABL48683], Brazil, Bahia, Itamarajú, km 6 on BR 498, on soil of radbank. 16°53'18" S, 39°26'21" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48683), 15.02.2019, det. A. Aptroot 2019.





Cladonia farinacea

Cladonia friabilis Ahti, Lichenologist 22(3): 261 (1990)

[ABL42102], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42102), 23.07.2017, det. A. Aptroot, 2017. - P+ yellow, K+ yellow, thamnolic acid.







Cladonia friabilis

Cladonia furfuracea Vain., Acta Soc. Fauna Flora fenn. 10: 375 (1894)

[ABL40934], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40934), 23.07.2017, det. A. Aptroot, 2017. - Primary thallus soon evanescent, consisting of incised squamules. Surface of podetia largely decorticate. Hymenial discs brown, spores 10-16 x 2.5-4 µm. Chemistry: P+ red, K-, fumarprotocetraric acid, protocetraric acid (trace), confumarprotocetraric acid (trace), convirensic acid (trace).





Cladonia furfuracea

Cladonia humilis (With.) J.R. Laundon, Lichenologist 16(3): 220 (1984)
= *Cenomyce pyxidata* var. *conistea* Delise, in Duby, Bot. Gall., Edn 2 (Paris) 2: 630 (1830)
= *Cladonia conistea* (Delise) Asahina, J. Jap. Bot. 19: 234 (1943)
= *Cladonia conoidea* Ahti, Lichenologist 12(1): 129 (1980)
= *Cladonia humilis* var. *bourgeanica* A.W. Archer, Muelleria 7(1): 3 (1989)
= *Cladonia pyxidata* f. *conistea* (Delise) Harm., Lich. Fr. 3: 304 (1907)
= *Cladonia pyxidata* var. *conistea* (Delise) Mont., in Gay, Hist. fis. y polit. Chile, Bot. 8: 158 (1852)
= *Lichen humilis* With., Bot. arr. veg. Gr. Brit. (London) 2: 721 (1776)

[ABL40922], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40922), 23.07.2017, det. A. Aptroot, 2017. - Primary thallus persistent, rather large squamules. Chemistry: P+ red, K- or + yellow; I: atranorin, fumarprotocetraric acid, II: bourgeanic acid, fumarprotocetraric acid, III: atranorin, bourgeanic acid, fumarprotocetraric acid.





Cladonia humilis

[ABL42064], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42064), 23.07.2017, det. A. Aptroot, 2017. - Thallus fruticose, terricolous, consisting of upright hollow podetia of c. 4–7 cm high in a cushion of up to 10 cm diam.; surface mineral grey, corticate, quite uneven to rugose and occasionally abraded; at the base c. 4 mm diam, very irregularly branched into inflated parts of up to 1 cm diam. that are occasionally so deformed that the inside becomes the surface; some terminal branches attenuated into a short pale cilium; in section hollow, inside dense, outside with numerous hyaline crystals. Primary and secondary squamules absent. Photobiont chloroccoid. Ascomata not observed. Pycnidia punctiform, brown, on inflated thallus parts; conidia not observed. Chemistry: Medulla K–, P+ red, C–, UV–. TLC: Fumarprotocetraric acid.





Cladonia inflata

Cladonia lichexanthonica Aptroot & Cáceres, **Isotype**, Bryologist 121(1): 70 (2018)

[ABL42114], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42114), 23.07.2017, det. A. Aptroot, 2017. - Thallus squamulose, saxicolous, extending over more than 10 cm diam., consisting of a c. 5 mm thick layer of crowded ascending squamules of c. 1–5 mm diam.; squamules shallowly incised, pale olive green, becoming olive brown towards the centers, surrounded by a sometimes indistinct whitish rim, smooth but not shiny, cartilaginous and deeply fissured at the centres; lower surface dull, pale brown mottled with darker brown, almost black towards the base; cortex up to 300 µm thick, mostly hyaline but brown at the upper surface. Photobiont green. Ascomata apothecia, superficial on the thallus, marginally on the squamules, round to irregular in outline, 0.2–0.7 mm diam.; disc chocolate brown, flat, glossy, often gyrose to umbilicate with sterile marginal strands alternating with hymenium; margin c. 0.1 mm wide, dark brown (paler outside), glossy, only slightly higher than the disc. Hymenium hyaline; epihymenium chocolate brown; excipulum dark brown outside, hyaline inside, densely filled with hyaline crystals; hypothecium contiguous with the excipulum, hyaline, densely filled with hyaline crystals. Paraphyses rather agglutinated. Asci cylindrical, unripe. Ascospores not observed. Pycnidia not observed. Chemistry: Cortex UV+ intense yellow, medulla K–, P–, C–, UV–. TLC: Lichexanthone and several other xanthones.





Cladonia lichexanthonica

Cladonia metaminiata S. Stenroos & Ahti, in Ahti, Stenroos & Marcelli, Biblthca Lichenol. 57: 13 (1995)

[ABL42111], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42111), 23.07.2017, det. A. Aptroot, 2017. - P+ yellow, K+ yellow, thzamnolic acid, didymic acid, barbatic acid (trace), decarboxythamnolic acid (trace), rhodocladonic acid in hymenia.



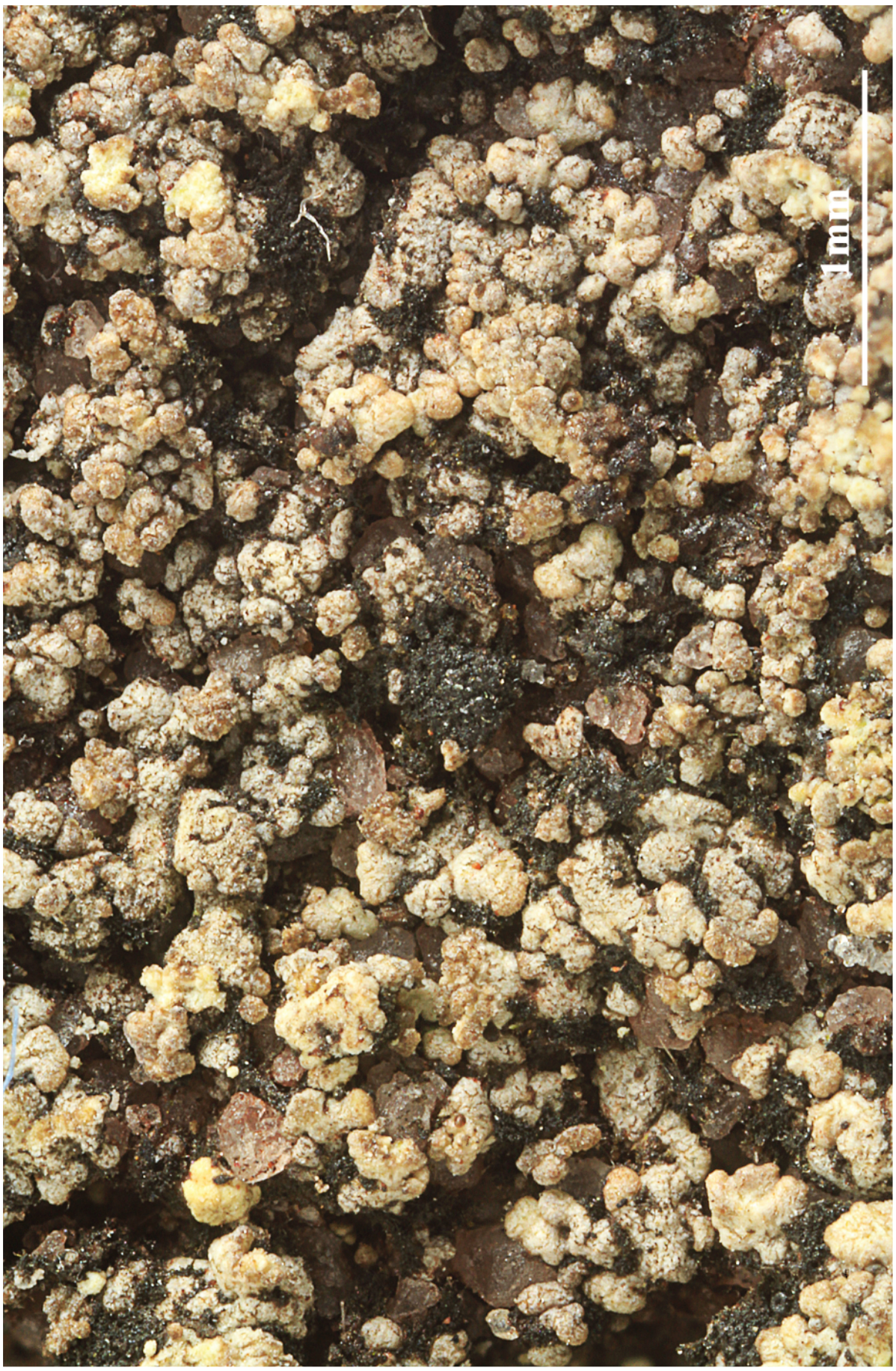


Cladonia metaminiata

Cladonia minisaxicola Aptroot & Cáceres, **Isotype,**Bryologist 121(1): 73 (2018)

[ABL40963], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40963), 24. July 2017, det A. Aptroot , 2017. - hallus saxicolous, dimorphous; primary thallus crustose, consisting of nodulose simple or lobed areoles that form a discontinuous irregular crust of up to 4 cm diam. Areoles almost squamulose but firmly attached to the substratum with the full lower surface, brownish grey mottled with glaucous grey, partly dull, partly shiny, areoles partly confluent, in the center of confluences with irregular to globose upright eroding elements resembling soredia. Podetia relatively scarce, 0.4–1 mm high and c. 0.3 mm wide, not hollow, consisting of a few pycnidia on a solid stalk, with or without a cover of a few thallus areoles. Photobiont green. Ascomata absent. Pycnidia on branched brown podetium-like stalks that can be covered with thallus or not, dark brown; conidia not observed. Chemistry: Medulla K–, P+ red, C–, UV–. TLC: Fumarprotocetraric acid.





Cladonia minisaxicola

Cladonia nana Vain., Acta Soc. Fauna Flora fenn. 10: 23 (1894)

[ABL40621], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40621), 22.07.2017, det. A. Aptroot, 2017.





Cladonia nana

Cladonia obscurata Ahti, Fl. Neotrop., Monogr. 78: 290 (2000)

[ABL40918A], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40918A), 23.07.2017, det. A. Aptroot, 2017. - Hymenial discdark red brown. Chemistry: P+ yellow, K+ yellow; thamnolic acid, decarboxythamnolic acid (trace), occasionally barbatic acid and 4-*O*-demethylbarbatic acid (trace).





Cladonia obscurata

Cladonia ochrochlora Flörke, Clad. Comm.: 75 (1827)
= *Cladonia coniocraea* f. *ceratodes* (Flörke) Dalla Torre & Sarnth., Fl. Tirol, Vorarlberg, Leichtenstein, IV Band. Die Flechten von Tirol: 72 (1902)
= *Cladonia coniocraea* var. *ochrochlora* (Flörke) Oxner, Flora Lischaĭnikiv Ukraïni (Kiev) 2(1): 284 (1968)
= *Cladonia cornuta* var. *ochrochlora* (Flörke) Nyl., Syn. meth. lich. (Parisiis) 1(2): 198 (1860)
= *Cladonia fimbriata* f. *ceratodes* (Flörke) Kovář, Věstn. Klubu Přírod. Prostějov 15: 175 (1912)
= Cladonia fimbriata *subsp*. ochrochlora (Flörke) Vain., Meddn Soc. Fauna Flora fenn. 3: 94 (1878)
= *Cladonia fimbriata* var. *ochrochlora* (Flörke) Schaer., Lich. helv. spicil. 6: 289 (1833)
= *Cladonia furcata* var. *notabilis* Müll. Arg., Flora, Regensburg 66: 18 (1883)
= *Cladonia gracilis* var. *ochrochlora* (Flörke) Leight., Lich.-Fl. Great Brit.: 63 (1871)
= *Cladonia lepidula* Kremp., Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 30: 331 (1881) [1880]
= *Cladonia ochrochlora* a *ceratodes* Flörke, De Cladoniis, Difficillimo lichenum genere, Commentatio nova (Rostock): 77 (1828)
= *Cladonia ochrochlora* f. *ceratodes* (Flörke) Harm., Bull. Séanc. Soc. Sci. Nancy, Sér. 2 14: 379 (1896) [1895]
= *Cladonia ochrochlora* var. *ceratodes* (Flörke) Rabenh., Deutschl. Krypt.-Fl. (Leipzig) 2(1): 102 (1845)
= *Cladonia ochrochlora* var. *spadicea* Müll. Arg., Flora, Regensburg 65(19): 297 (1882)
= *Cladonia pergracilis* Kremp., Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 30: 331 (1881) [1880]

[ABL40720], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous soil along river. Leg. M. Cáceres & A. Aptroot (no 40720), 22.07.2017, det. A. Aptroot, 2017.



Cladonia ochrochlora



Cladonia ochrochlora

Cladonia parvipes (Vain.) S. Stenroos, in Ahti, Fl. Neotrop., Monogr. 78: 221 (2000)

= *Cladonia miniata f. parvipes* Vain., Acta Soc. Fauna Flora fenn. 4(no. 1): 66 (1887)

[ABL42150], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42150), 22.07.2017, det. A. Aptroot, 2017. - Primary thallus permanent to evanescent, small isodiametric squamules, esorediate. Chemistry: P-, K-; barbatic acid, rhodocladonic acid





Cladonia parvipes

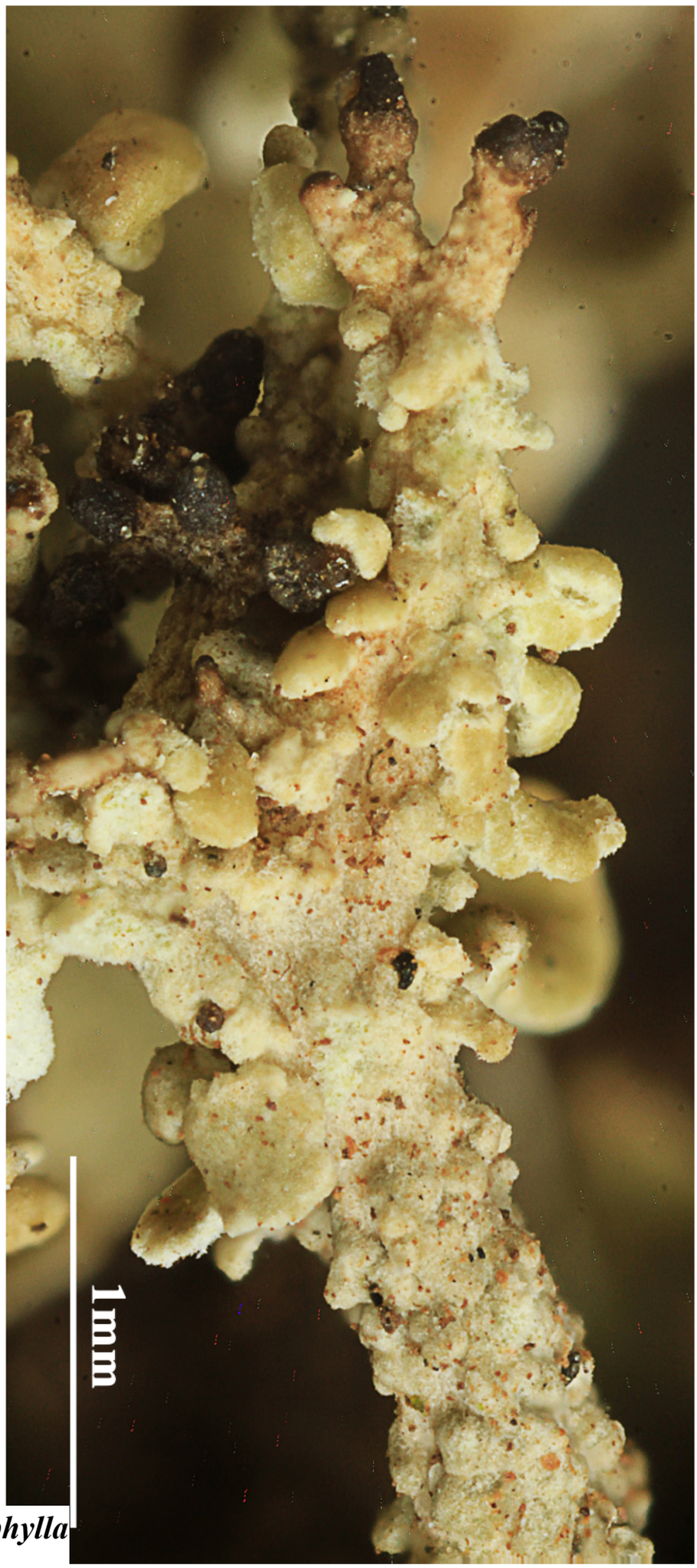
Cladonia pityrophylla Nyl., Flora, Regensburg 57(5): 70 (1874)

[ABL40726], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous soil along river. Leg. M. Cáceres & A. Aptroot (no 40726), 22.07.2017, det. A. Aptroot, 2017.





Cladonia pityrophylla

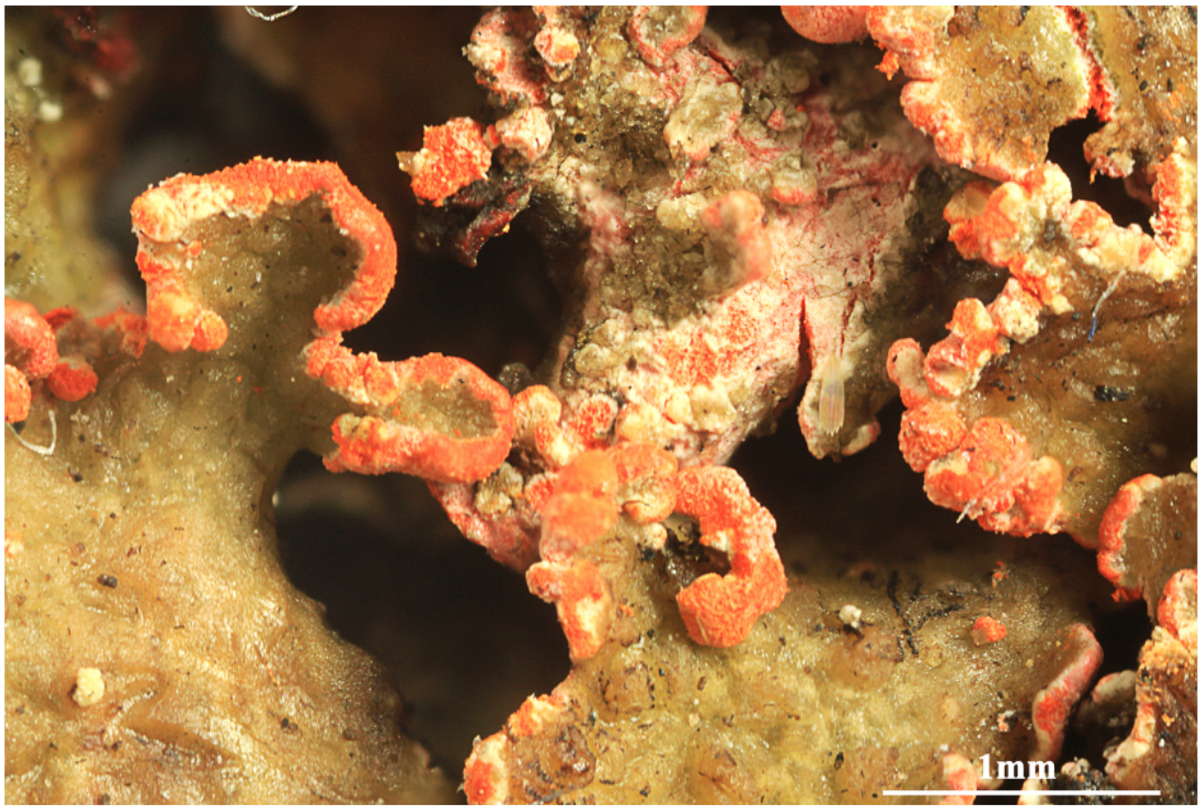


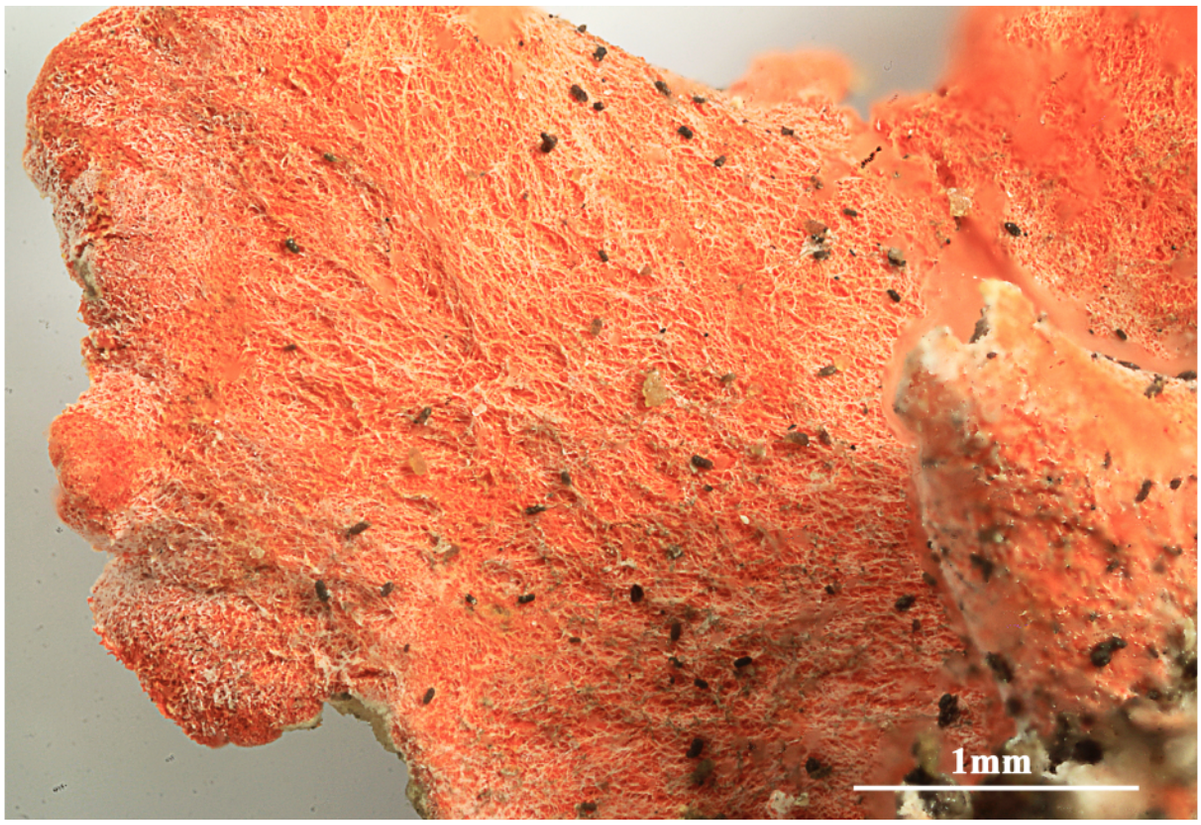
Cladonia pityrophylla

Cladonia salmonea S. Stenroos, Ann. bot. fenn. 26(3): 255 (1989)

[ABL40909], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40909), 23.07.2017, det. A. Aptroot, 2017. - Primary thallus persitent with large squamules, 1-4 cm long; lower surface orange red. Podetia very rare. Chemistry: P-, K+ violet; usnic acid, rhodocladonic acid, accessory substances in traces fumarprotocetraric acid, thamnolic acid.







Cladonia salmonea

Cladonia secundana Nyl., Flora, Regensburg 57(5): 71 (1874)

[ABL40914], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40914), 23.07.2017, det. A. Aptroot, 2017. - Primary thallus persistrent. Chemistry: P-, K-, rarely K+ yellow, P+ yellow to red; didymic acid (with condidymic acid and subdidymic acid), barbatic acid (minor) or sekikaic acid (minor) and homosekikaik cid (minor).





Cladonia secundana

Cladonia subradiata (Vain.) Sandst., Abh. naturw. Ver. Bremen 25: 230 (1922)
= *Cladonia balfourii* Cromb., J. Linn. Soc., Bot. 15: 433 (1876) [1877]
= *Cladonia balfourii f. subradiata* (Vain.) Robbins, Rhodora 33: 138 (1931)
= *Cladonia fimbriata f. balfourii* (Cromb.) L. Scriba, Hedwigia 53: 174 (1913)
= *Cladonia fimbriata var. balfourii* (Cromb.) Vain., Acta Soc. Fauna Flora fenn. 10: 239 (1894)
= *Cladonia fimbriata var. subradiata* Vain., Acta Soc. Fauna Flora fenn. 10: 338 (1894).

[ABL42150], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42150), 22.07.2017, det. A. Aptroot, 2017.- Primary thallus persistent to evanescent, esorediate to granular below and at margins. Podetia abundant, 0.8-3.0 cm, unbranched or sparsely branched. Chemistry: P+ red, K-; fumarprotocetraric acid and traces of protocetraric acid, convirensic acid, confumarprotocetraric acid.





Cladonia subradiata

Cladonia subsquamosa Kremp., Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 5: 336 (1874) [1873]

[ABL48730], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pale in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48730), 15.02.2019, det. A. Aptroot 2019. - P+, K-, fumarprotocetraric acid, convirensic acid.



Cladonia substellata Vain., Acta Soc. Fauna Flora fenn. 4(no. 1): 271 (1887)

[ABL40906], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40906), 23.07.2017, det. A. Aptroot, 2017. - Promary thallus rarely present in herbarium specimens, consisting of thick squamules 1-2 x 0.2-0.5 mm, pulverulent below. Podetia forming dense colonies, much branched. Axils closed or open, never scyphose. Chemistry: P+ slowly yellow, K+ slowly yellow or P-, K-. Three chemotypes: (1) usnic acid, stictic acid, constictic acid, norstictic acid, nonnorstictic acid, (2) usnic acid (3) usnic acid, fumarprotocetraric acid.





Cladonia substellata

Chiodecton malmei G. Thor, Op. bot. 103: 49 (1991)

[ABL40663], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40663), 22.07.2017, det. A. Aptroot, 2017. - Thallus UV-; spores 3-septate, 20-30 x 2-3 µm.



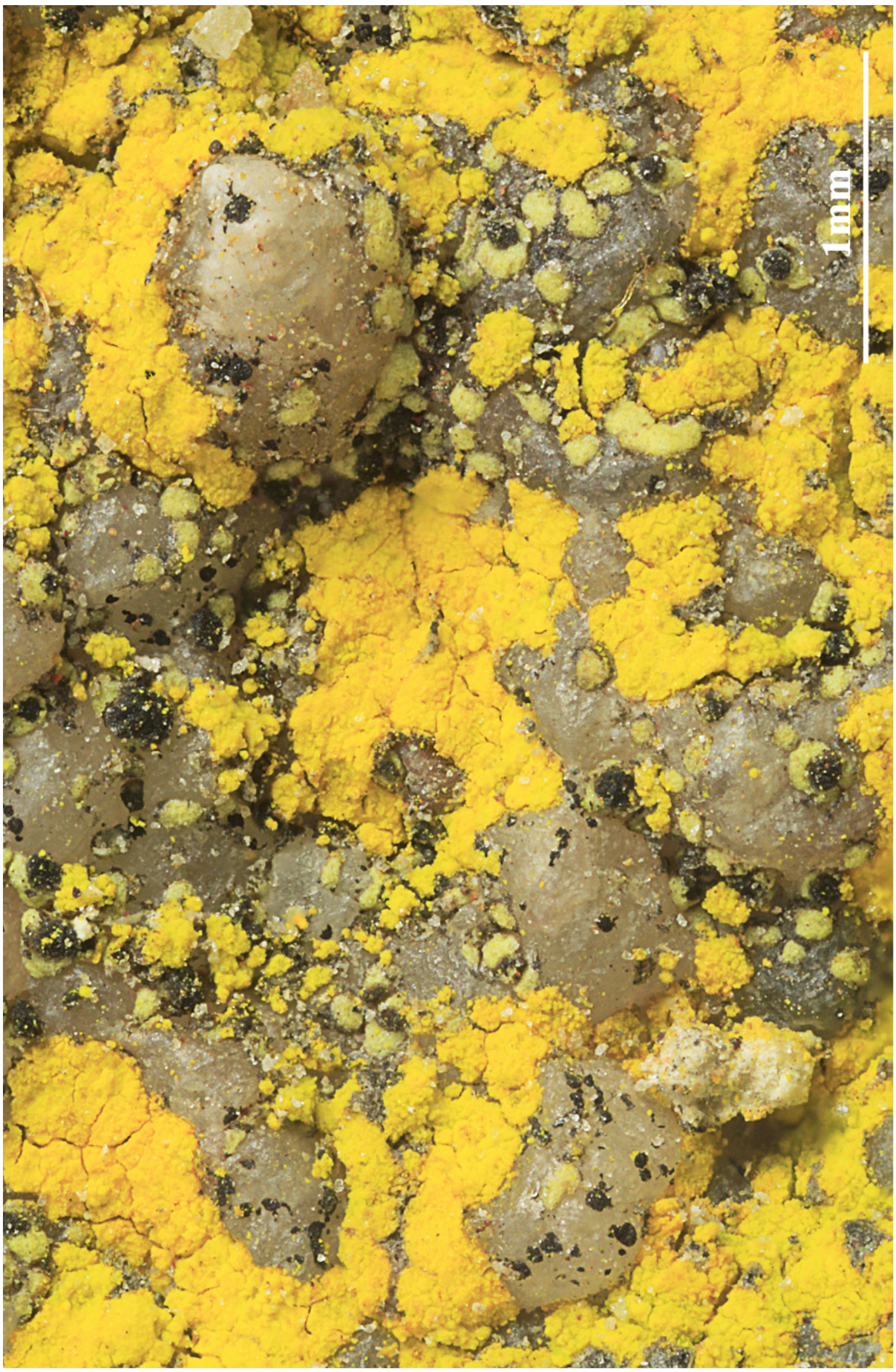


Chiodecton malmei

Chrysothrix placodioides G. Thor, Bryologist 91(4): 360 (1988)

[ABL40647], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40647), 22.07.2017, det. A. Aptroot, 2017.





Chrysothrix placodioides

Coccocarpia domingensis Vain., Ann. Acad. Sci. fenn., Ser. A 6(no. 7): 104 (1915)

[ABL48529], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'16" S, 39°24'40" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48529), 17.02.2019, det. A. Aptroot 2019.



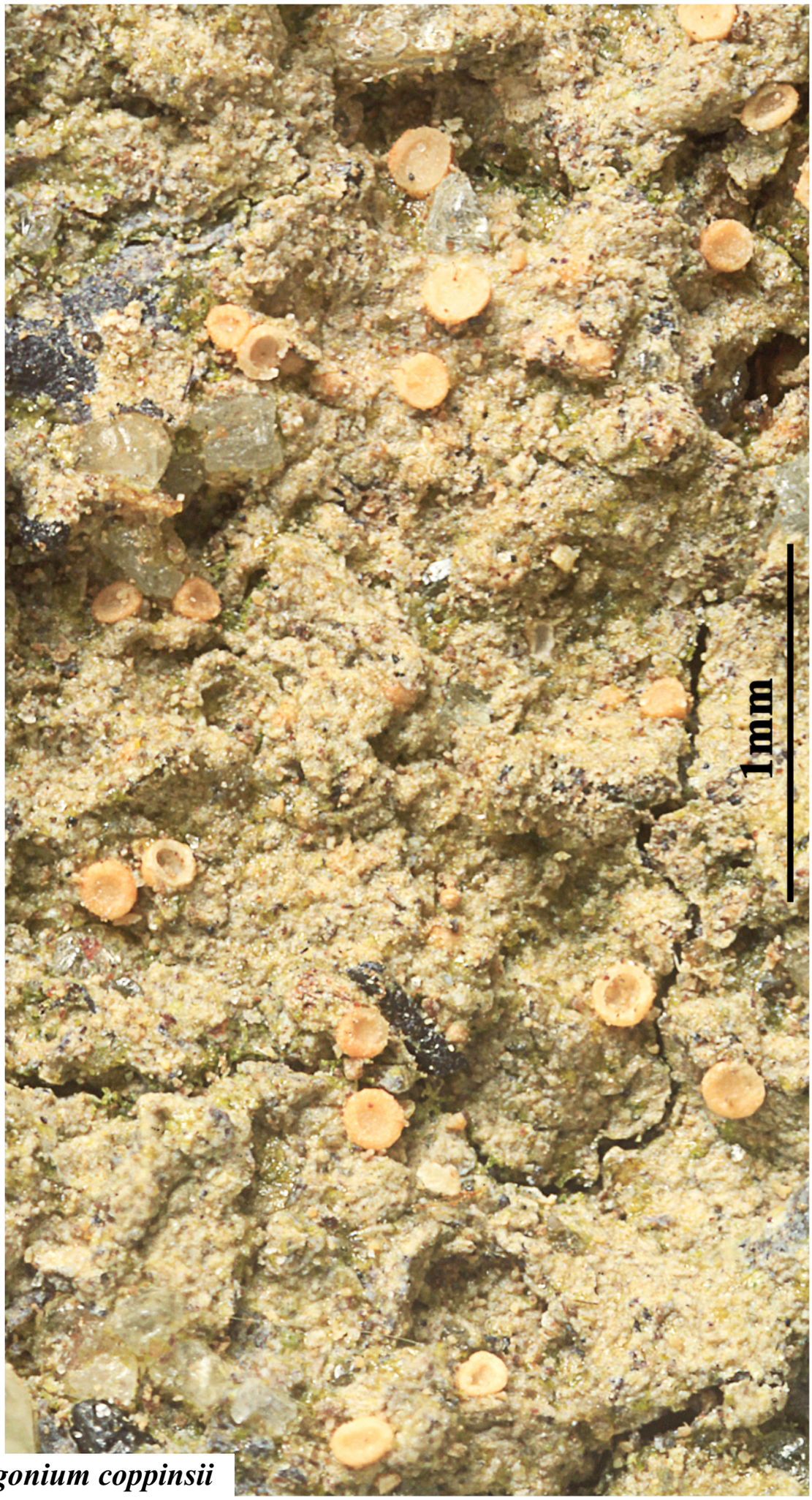


Coccocarpia domingensis

Coenogonium coppinsii Aptroot & M. Cáceres, Lichenologist 46(3): 369 (2014)

[ABL48254], Brazil, Bahia, Itamarajú, Monte Pascoal, on termite nest in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48254), 14.02.2019, det. A. Aptroot 2019. - Thallus very thin, smooth and patchily shiny, continuous, green, ecorticate. Algae trentepohlioid, c. 5–10 µm diam. Apothecia sessile, cupuliform, cartilaginous, appearing waxy, 0.2–0.3 mm diam., solitary, slightly to deeply concave; disc pale fuscous brown; margin concolorous or paler, up to 0.1 mm thick. Hymenium hyaline, 70–85 µm high; paraphyses with few septa towards the tips, which are clavate and c. 3 µ wide; epithecium hyaline, gelatinous; hypothecium hyaline; excipulum hyaline on the inside, fuscous brown in the outer zone, composed of irregular cells. Ascus with 8 irregularly biseriate ascospores, c. 60–80 x 5.0–7.5 µm. Ascospores hyaline, elongated ellipsoid, 1-septate, 6.0–9.5 x 2.5–3.0 µm, with rounded ends, lacking a gelatinous sheath. Pycnidia not observed. Chemistry:. Thallus UV-, C-, K-, KC-, P-. No lichen substances detected.





Coenogonium coppinsii

Coenogonium flavoviride M. Cáceres & Lücking, Nova Hedwigia 70(1-2): 219 (2000)

[ABL40584], Brazil, Bahia, Chapada Diamantina, Lençois Vila Serrano. 12°33'33" S, 41°23'20" W, 425 m. On tree bark in garden in Pousada. Leg. M. Caceres & A. Aptroot (no 40584), det. A. Aptroot 2014.





Coenogonium flavoviride

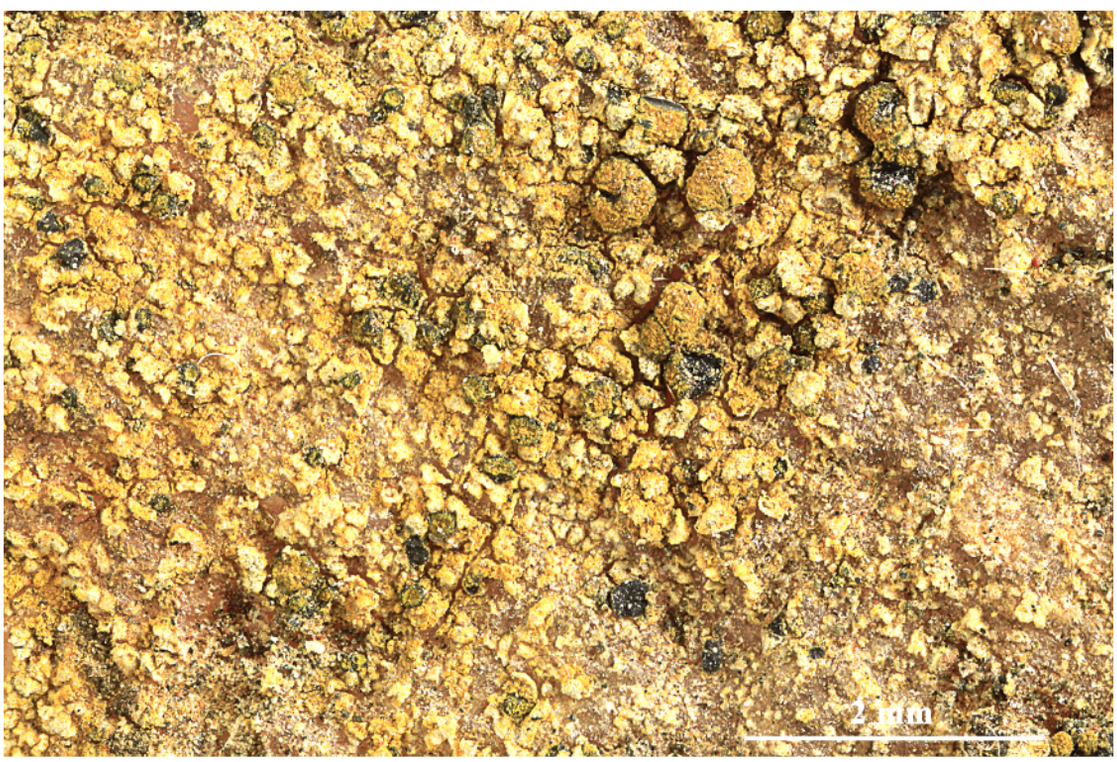
Coenogonium subzonatum (Lücking) Lücking & Kalb, Biblthca Lichenol. 78: 254 (2001)
= *Dimerella subzonata* Lücking, Lichenologist 31(4): 371 (1999)

[ABL48497], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'04" S, 39°24'10" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48497), 16.02.2019, det. A. Aptroot 2019. - Thallus mostly epiphyllous, up to 20 mm diam, continuous but in marginal parts sometimes effuse-laciniate, pale greenish grey to yellowish green, usually provided with a thin, whitish or translucent, 1-3 mm broad prothallus. Apothecia numerous, epiphyllous or marginally hypophyllous, 0-3-0-5 mm diam., disc slightly concave (in epiphyllous apothecia) or flat (in marginally hypophyllous apothecia), bright yellow, margin thin but slightly prominent in epiphyllous apothecia and usually minutely dentate, of the same colour as the disc or rarely somewhat paler. Exciple distinctly paraplectenchymatous, up to 50 urn thick, its inner part composed of small (2-4 µm diam.), pachydermatous cells, its outer part with larger (6-10 x 3-4 µm), leptodermatous, radiately elongate cells. Hypothecium uncoloured to very pale yellowish, 10-15 µm high. Hymenium uncoloured, 55-60 µm high. Paraphyses simple, apically clavate (2-3 µm). Asci oblong 45-50 x 5-6 |µm. Ascospores 8 per ascus, irregularly uniseriate, ellipsoid, 1-septate, 7-10 x 2.5-3.5 |µm. Pycnidia partly abundant, applanately wart-shaped, c. 0.15 mm diam. Conidia shortly bacillar to oval, simple, c. 3.0 x 1.µm.



Coniocarpon piccolioides Aptroot & Cáceres, **Isotype,** Bryologist 121(1): 73 (2018)

[ABL42062], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42062), 23.07.2017, det. A. Aptroot, 2017. - Thallus crustose, saxicolous, consisting of angular areoles with a very uneven surface that occasionally are almost squamuloid, mottled grey with ochraceous orange; areoles ranging from minute to c. 0.3 mm diam., up to 0.2 mm high, surface dull, occasionally abraded and such areas resembling soralia; in section with numerous yellowish crystals; surrounded by a c. 0.2 mm wide, dark brown, prothallus line. Photobiont Trentepohlia, cells elongate in outline, 6–8 3 7–12 µm, yellowish green to orange. Ascomata apothecia, superficial on the thallus, round to irregularly angular in outline, solitary or in dense groups of 2–5, 0.2–0.5 mm diam.; disc convex, black but with a thick layer of golden pruina; margin thin, black, not higher than the disc and in fact not structurally deviating from the disc and thus only a small rim of the disc without pruina. Hymenium hyaline, up to 100 µm high but varying widely in dimensions because of the convex apothecia; epihymenium golden brown; hypothecium dark brown. Paraphyses agglutinated, also in K. Asci pyriform. Ascospores hyaline, 8/ascus, 3-septate, clavate, 11–12 x 4–4.5 µm, without gelatinous sheath. Pycnidia black, at the tips of micro-squamules; conidia not observed. Chemistry: Thallus and disc K+ blood red, P–, C–, UV–. TLC: An unidentified anthraquinone.





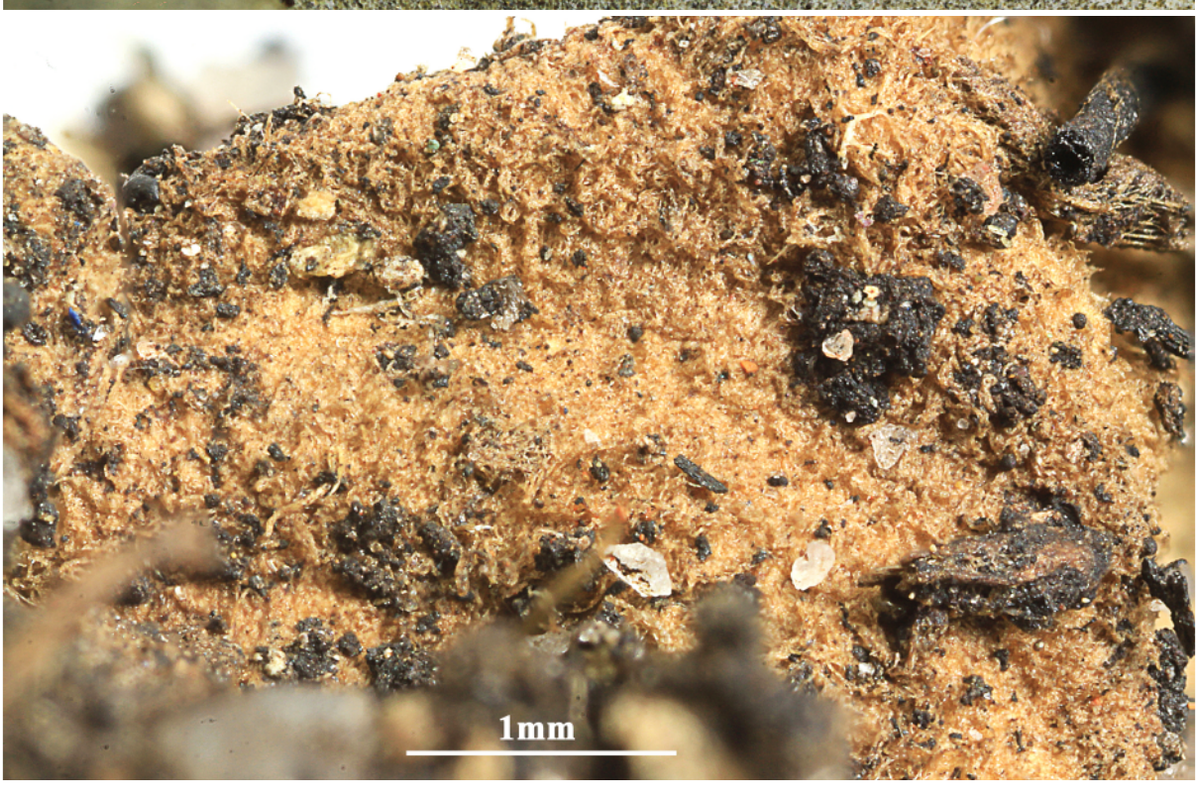
Coniocarpon piccolioides

Corella brasiliensis Vain., Acta Soc. Fauna Flora fenn. 7(no. 2): 243 (1890)
= *Cora glabrata* (Spreng.) Fr., Epicr. syst. mycol. (Upsaliae): 556 (1838) [1836-1838]
= *Cora bovei* Speg., Boln Acad. nac. Cienc. Córdoba 11(2): 169 (1887) [1888]
= *Cora reticulifera* Vain., Acta Soc. Fauna Flora fenn. 7(no. 1): 241 (1890)
= *Corella tomentosa* Vain., Hedwigia 38(Beibl.): (259) (1899)
= Corella zahlbruckneri Schiffn., Denkschr. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 83: 200 (1909)
= *Dictyonema glabratum* (Spreng.) D. Hawksw., Lichenologist 20(1): 101 (1988)
= *Dictyonema pavonium* f. *brasiliense* (Vain.) Parmasto, Nova Hedwigia 29(1-2): 106 (1977)
= *Dictyonema zahlbruckneri* (Schiffn.) V. Marcano, in Marcano, Morales Méndez, Sipman & Calderon, Trop. Bryol. 12: 202 (1996)
= *Gyrolophium elegans* Kunze ex Krombh., Naturgetr. Abbild. Beschr. Schwämme (Prague) 1: 76 (1831)
= *Gyrolophium mauritianum* Kunze ex Krombh., Naturgetr. Abbild. Beschr. Schwämme (Prague) 2: 76 (1832)
= *Thelephora glabrata* Spreng., K. svenska Vetensk-Akad. Handl., ser. 3 41: 51 (1820)

[ABL42065], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42065), 23.07.2017, det. A. Aptroot, 2017.







Corella brasiliensis

Dendrographa austrosorediata Aptroot & Gumboski, in Aptroot, Gumboski & Cáceres, Lichenologist 49(6): 601 (2017)

[ABL40923], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40923), 23.07.2017, det. A. Aptroot, 2017.





Dendrographa austrosorediata

Dichosporidium sorediatum G. Thor, Op. bot. 103: 74 (1991)

[ABL48212], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48212), 14.02.2019, det. A. Aptroot 2019. - Thallus byssoid, at least sometimes sparsely squamulose, grey with a yellowish green tinge; prothallus in the inner part whitish and in the outer part brown; soralia always present but sometimes few, scattered, maculiform, 0.6-1.2 mm in diam; soredia 14-28 µm in diam. Spores 5-8-septate. 66-83 x 4-5 µm. Chemistry: K+ red or -, C-, P+ orange to red, UV-; protocetraric acid or salazinic and norstictic acid





Dichosporidium sorediatum

Dictyomeridium proponens (Nyl.) Aptroot, M.P. Nelsen & Lücking, in Lücking et al., Lichenologist 48(6): 757 (2016)
= *Campylothelium proponens* (Nyl.) Müll. Arg., Hedwigia 31: 286 (1892)
= *Polyblastia proponens* (Nyl.) Müll. Arg., Flora, Regensburg 65: 402 (1882)
= *Polyblastiopsis proponens* (Nyl.) Zahlbr., Cat. Lich. Univers. 1: 351 (1922)
= *Polymeridium proponens* (Nyl.) R.C. Harris, Bolm Mus. paraense 'Emílio Goeldi', sér. bot. 7(2): 637 (1993) [1991]
=*Verrucaria proponens* Nyl., Bull. Soc. linn. Normandie, sér. 2 2: 130 (1868)

[ABL48910], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48910), 20.03.2019, det. A. Aptroot 2019. - Thallus ecorticate, white. Ascomata pleurothelioid, with lateral ostioles, solitary, 0.4–0.6 mm diam., erumpent, grey-black. Hamathecium clear, filaments profusely anastomosing. Ascospores 8 per ascus, IKI+ violet, muriform, 33–54 ×12–19 µm, with partly oblique septa, not ornamented, wall not thickened. Chemistry: Thallus UV+ yellow, K−. TLC: lichexanthone.





Dictyomeridium proponens

Dimelaena mayrhoferiana Aptroot & M. Cáceres, **Isotype**, Herzogia 31: 360 (2018)

[ABL42046], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42046), 23.07.2017, det. A. Aptroot, 2017. - Thallus placodioid with narrow lobes, saxicolous, closely appressed and closely following the surface structure of the rock, occupying extended areas but individual thalli up to 2 cm diam., greyish brown to chocolate brown, dull; marginal lobes up to 1 mm long, 0.04 – 0.25 mm wide, little, but irregularly to flabellately branched, tips usually shiny but furthermore undifferentiated. Isidia covering most of the central parts of the thallus, globose to cylindrical, unbranched or irregularly repeatedly branched (depending on the specimen, probably representing different developmental stages), greyish brown to chocolate brown, c. 0.04 mm wide, 0.05 – 0.25 mm high. Medulla whitish, up to 0.2 mm thick. Photobiont green. Ascomata apothecia, superficial on the thallus, round, c. 0.2 mm diam.; disc dark brown to black; margin c. 0.05 mm wide, crenate, of thallus colour and structure, higher than the disc. Hymenium hyaline; epihymenium brown; excipulum with algae; hypothecium hyaline. Paraphyses simple, with brown tips. Asci cylindrico-clavate. Ascospores brown, 8/ ascus, 1-septate, ellipsoid, 10 –11.5 × 6 –7 µm, smooth, without gelatinous sheath. Pycnidia not observed. Chemistry: Medulla K–, P–, C+ pink (fleeting), UV–. TLC: gyrophoric acid.





Dimelaena mayrhoferiana

Diorygma incantatum S.C. Feuerst. & Eliasaro, in Feuerestein, Cunha-Dias, Aptroot, Eliasaro & Cáceres, Lichenologist 46(6): 754 (2014)

[ABL48888], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48888), 18.02.2019, det. A. Aptroot 2019. - Thallus corticolous, continuous, without crystals, soredia and isidia absent; surface whitish grey, opaque, irregular, without cortex. Ascomata circular to elongated, isolated, simple, with rounded ends, immersed to erumpent, 0.6–1.6 x 0.3–0.6 mm, white; disc exposed, pinkish, white pruinose; margins entire, not corticate, divergent; excipulum hyaline. Hymenium not inspersed 150–175 µm, I-; epithecium not differentiated; hypothecium hyaline; paraphyses simple, filiform, 1.0–1.5 µm thick, periphysoids absent. Ascospores 8 per ascus, hyaline, transversely 29–31-septate, filiform, I-, 105–108 x 6 µm, surrounded by a c. 1 µm wide gelatinous sheath. Chemistry: Thallus and ascomata K+ pale yellow. TLC: an unidentified compound forming a spot of purple colour, in UV fluorescent orange, at approximately Rf 44 in solvent system C.

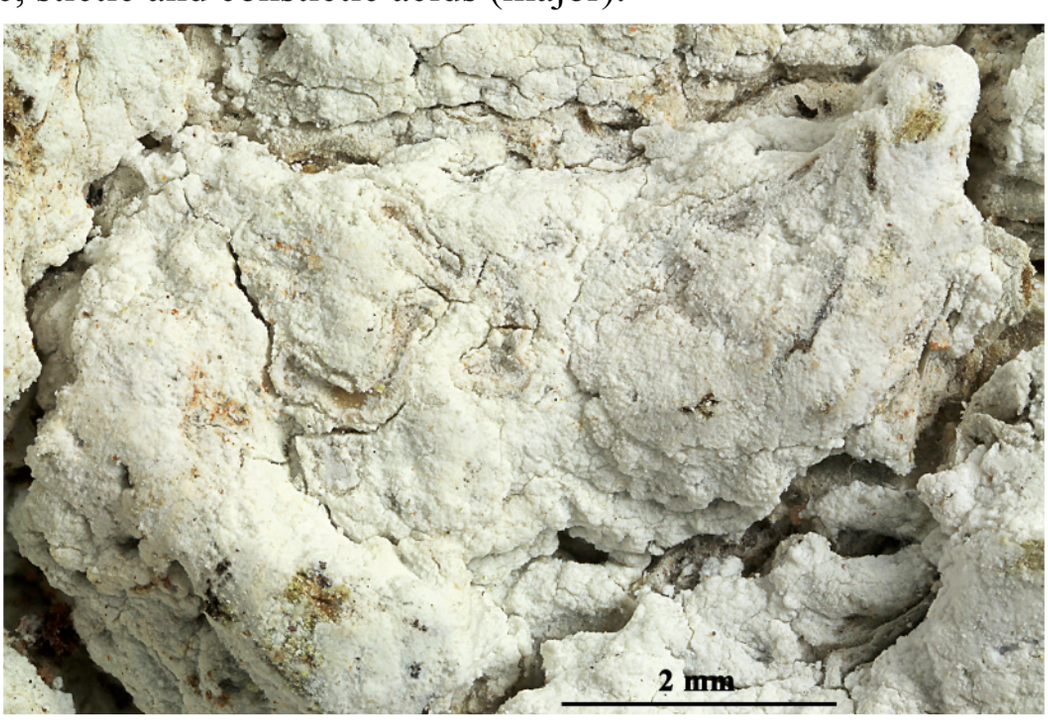




Diorygma incantatum

Diorygma minisporum Kalb, Staiger & Elix, Symb. bot. upsal. 34(no. 1): 161 (2004)

[ABL40790], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40790), 22.07.2017, det. A. Aptroot, 2017. - Thallus pale yellowish or pale grey, c. 70–100 µm thick; surface matt, often with fine cracks, especially along the lirellae; pseudocortex not visible or very thin; algal layer sometimes up to the surface, c. 30 µm thick; medulla 50–80 µm high, with´many crystals embedded. Ascocarps numerous, distinctly elongate, ± flexuous and branched, 2–5 x 0.1 mm; lirellae fissurine, immersed in the thallus, whitish, paler than the thallus; with inconspicuous, rarely raised thalline margins, which are often separated by a slit from the thallus or the adjacent disc; disc narrow, slightly open, with a whitish pruina; exciple divergent, uncarbonised, laterally poorly developed, excipular base well developed, consisting of short, ± rounded yellowish, conglutinated hyphae; hypothecium hyaline, 20–30 µm high; hymenium 60–70 µm high, not inspersed, I+ weakly blue, mainly in upper part; epithecium 5–20 µm high, less distinctly developed than in other species of the genus, consisting of hyaline reticulately interwoven paraphysis tips with end cells nodular thickened, intermingled with thin, greyish-brown dead(?) hyphae; paraphyses c. 1.5(–2) µm thick, closely adjacent, parallel, not or only slightly anastomosing. Spores 8/ascus, hyaline, transversely septate, 6–8 locular, 17–20 x 5–6.5 µm, I+ violet. Pycnidia not seen. CHEMISTRY. Hypostictic, hypoconstictic, stictic and constictic acids (major).





Diorygma minisporum

Diploschistes hypoleucus Zahlbr., Hedwigia 31: 35 (1892)
= *Urceolaria hypoleuca* Vain. 1890

[ABL48686], Brazil, Bahia, Itamarajú, km 6 on BR 498, on soil of roadbank. 16°53'18" S, 39°26'21" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48686), 15.02.2019, det. A. Aptroot 2019. - Thallus yellowish green to yelloish brown; spores 6-8/ascus, brown, muriform, 4-6 transversaly, 1-2 longitudinaly septate, 20-28 x 8-14 µm. Chemistry: K-, C+ red, P-, UV-; gyrophoric acid (major), lecanoric acid (minor).





Diploschistes hypoleucus

Enterographa chiodectonoides M. Cáceres & Lücking, in Cáceres, Libri Botanici 22: 74 (2007)

[ABL48568], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'16" S, 39°24'40" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48568), 17.02.2019, det. A. Aptroot 2019. - Photobiont Trentepohlia. Lirellae immersed in pseudostromata, 0.2-0.5 mm long and 0.05-0.15 mm broad; disc dark grey to black and sometimes thinly white pruinose; proper margin indistinct; pseudostromata erumpent to sessile, white, sharply contrasting with thallus, ecorticate. Excipulum prosoplecenchymatous, basely colourless but upper parts dark brown. Hymenium colourless, I+ blue. Paraphyses richly branched and anastomosing. Spores narrowly fusiform, 7-septate, 35-40 x 3-5 µm. Chemistry: K-, C-, P-, UV-; no substances detected by TLC.





Enterographa chiodectonoides

Enterographa compunctula (Nyl.) Redinger, Reprium nov. Spec. Regni veg. 43: 61 (1938)
= *Chiodecton compunctulum* (Nyl.) Müll. Arg., Hedwigia 34: 145 (1895)
= *Stigmatidium compunctulum* Nyl., Lich. Nov. Zeland. (Paris): 118 (1888)

[ABL40964], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. M. Cáceres & A. Aptroot (no 40964), 24. July 2017, det A. Aptroot , 2017. - Hypothecium orange-brown. Paraphysoids irregularly branched and anastomosing. Spores fusiform, hyaline, 3-septate, 25-30 x 3.5-4.5 µm. Chemistry: Thallus C-. K+ yellow to brownish, P-, UV-; norstictic acid



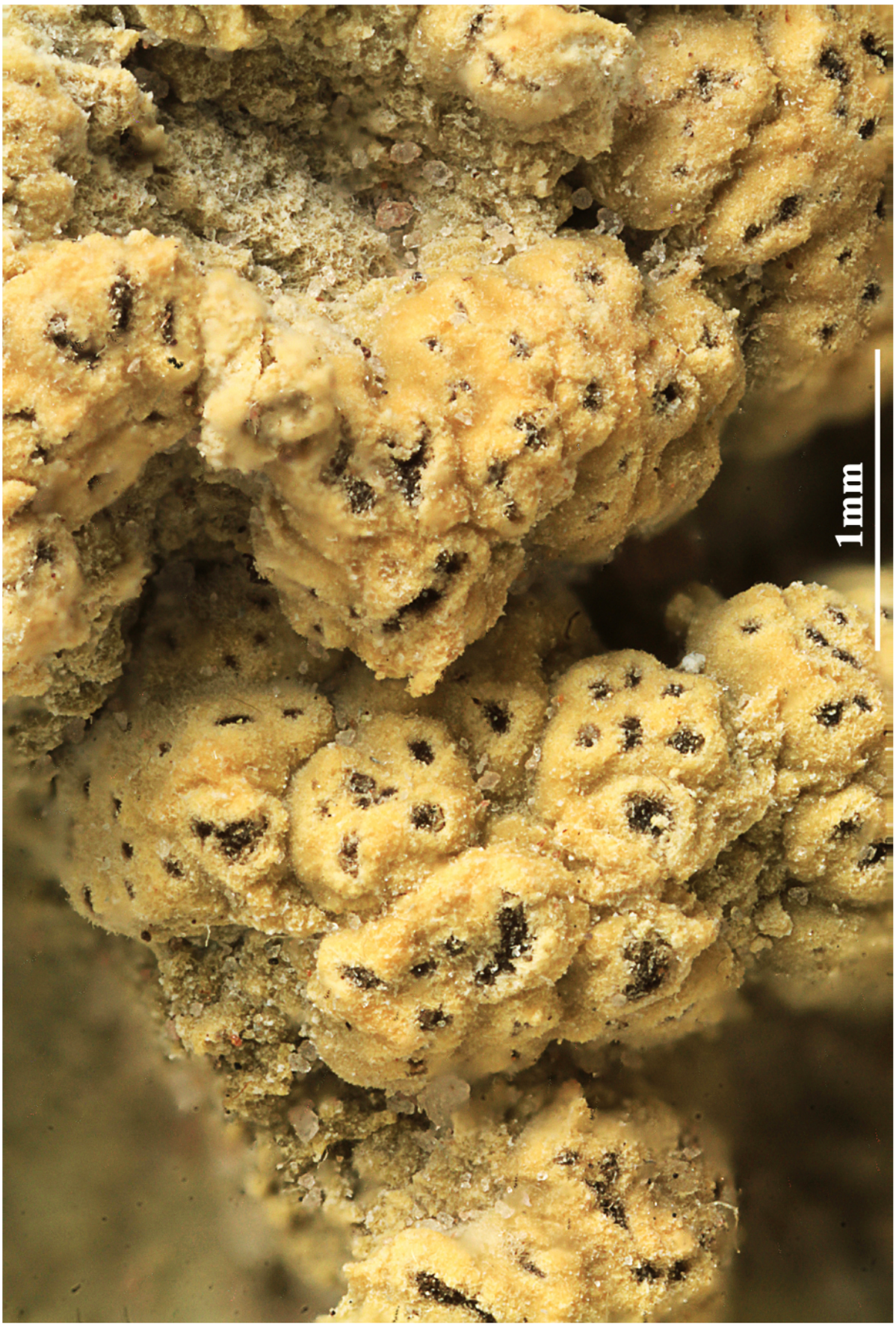


Enterographa compunctula

Enterographa glaucotremoides Aptroot & M. Cáceres, **Isotype**, Herzogia 31: 362 (2018)

[ABL40965], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40965), 24. July 2017, det A. Aptroot , 2017. - Thallus crustose, saxicolous, cretaceous, generally c. 1 mm thick but up to 4 mm thick, covering extended areas up to 1 m diam, incorporating sandstone grains inside the thallus, pale ochraceous grey, very uneven,dull, in section with numerous hyaline crystals; without prothallus. Photobiont *Trentepohlia*, cells elongate in outline, 6–8 × 7–12 µm, yellowish green to orange. Ascomata apothecia, superficial on the thallus, arranged in stroma-like groups of 3–20, punctiform or irregularly slit-like as a result of fusion, c. 0.2 × 0.2– 0.6 mm; disc dark brown; margin paler than thallus, raised high above the disc, c. 0.1 mm wide. Hymenium hyaline; epihymenium hyaline; excipulum hyaline; hypothecium hyaline. Paraphyses anastomosing. Asci clavate. Ascospores hyaline, 8/ascus, 5–6-septate, clavate, slightly curved, (26–)29–35 × 5.5–6.5 µm, walls thickened, without gelatinous sheath. Pycnidia not observed. Chemistry: Medulla K+ yellow> red, P–, C–, UV–. TLC: atranorin, norstictic and a trace of gyrophoric acid.





Enterographa glaucotremoides

Enterographa glaucotremoides Aptroot & M. Cáceres, Herzogia 31: 362 (2018)

[ABL40966], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40966), 24. July 2017, det A. Aptroot , 2017. - topotype.

Thallus crustose, saxicolous, cretaceous, generally c. 1 mm thick but up to 4 mm thick, covering extended areas up to 1 m diam, incorporating sandstone grains inside the thallus, pale ochraceous grey, very uneven,dull, in section with numerous hyaline crystals; without prothallus. Photobiont Trentepohlia, cells elongate in outline, 6 – 8 × 7–12 µm, yellowish green to orange. Ascomata apothecia, superficial on the thallus, arranged in stroma-like groups of 3 –20, punctiform or irregularly slit-like as a result of fusion, c. 0.2 × 0.2– 0.6 mm; disc dark brown; margin paler than thallus, raised high above the disc, c. 0.1 mm wide. Hymenium hyaline; epihymenium hyaline; excipulum hyaline; hypothecium hyaline. Paraphyses anastomosing. Asci clavate. Ascospores hyaline, 8 per ascus, 5 – 6-septate, clavate, slightly curved, (26 –)29 –35 × 5.5 – 6.5 µm, walls thickened, without gelatinous sheath. Chemistry: Medulla K+ yellow> red, P–, C–, UV–. TLC: atranorin, norstictic and a trace of gyrophoric acid.





Enterographa glaucotremoides

Enterographa rotundata M. Cáceres, E.L. Lima & Aptroot, Lichenologist 45(5): 630 (2013)

[ABL48255], Brazil, Bahia, Itamarajú, Monte Pascual, on wooden gate in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48255), 14.02.2019, det. A. Aptroot 2018. - P+ yellow, C-, UV-; hypothecium brown; spores 3-septate. - Thallus crustose, continuous but often seemingly absent, not corticate, dull, pale pinkish to pale brownish, very thin and closely following the bark surface, without prothallus. Algae trentepohlioid. Ascomata round or slightly ellipsoidal, dark brown to black, 0.1–0.2 mm wide, margin raised above the disc, ochraceous white, c. 0.05 mm wide. Excipulum hyaline to pale brownish. Epihymenium internally with pale brown pigmentation. Hamathecium not inspersed, IKI+ pale blue (weakly amyloid), paraphysoids 1.0–1.5 µm wide, anastomosing and often somewhat curled. Asci cylindrico-clavate, 65–79 x 15–23 µm, tholus amyloid. Ascospores 8/ascus, hyaline, (3–)7-septate, narrowly clavate, 50–60 x 3.5–5.0 µm, surrounded by a 1.5–2.5 µm wide gelatinous sheath, lumina somewhat rounded. Pycnidia not observed. Chemistry: Thallus and apothecia UV-, C-, P-, K-. TLC: no substances detected.

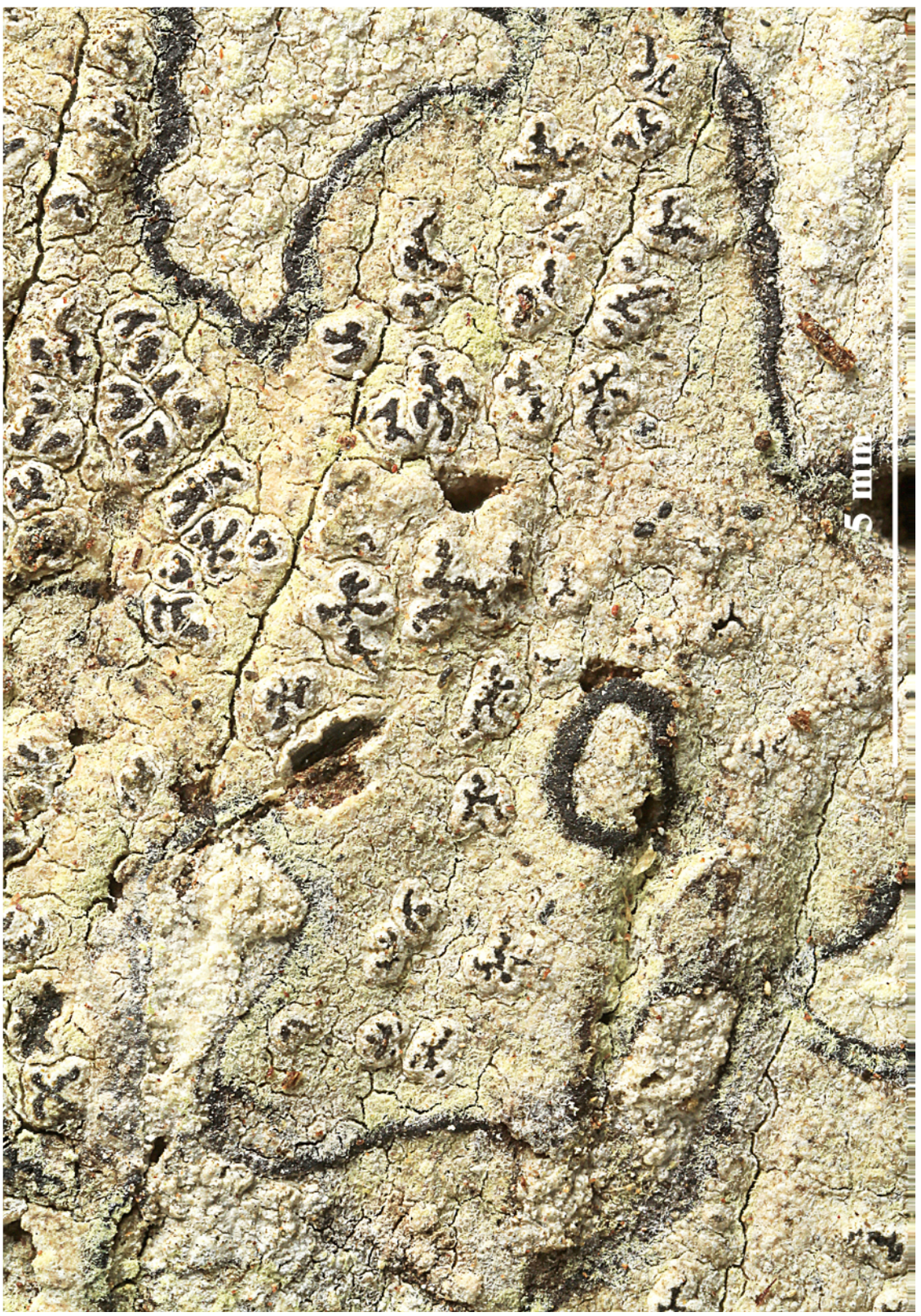




Enterographa rotundata

Enterographa sipmanii Sparrius, Biblthca Lichenol. 89: 57 (2004)

[ABL48216], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48216), 14.02.2019, det. A. Aptroot 2019. - Ascomata punctiform to shortly lirelliform, 0.08-0.10 x 0.15-0.60 mm, disc dark brown to black, not pruinose. Spores acicular-fusiform, 23-30 x 3.5-5.0 µm, 6-7-septate. Chemistry: C-, K+yellowish, P-, UV-; TLC no substances detected.





Enterographa sipmanii

Enterographa subquassiicola M. Cáceres & Lücking [as 'subquassiaecola'], in Cáceres, Libri Botanici 22: 75 (2007)

[ABL42123C], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42123C), 22.07.2017, det. A. Aptroot, 2017. - Ascomata always aggregate 5-15 in distinct pseudostromata; excipulum dark brown; hymenium IKI+ blue; spores narrowly fusiform, 7-11-septate, 40-50 x 4-5 µm; norstictic acid in pseudostromata.





Enterographa subquassiicola

Eschatogonia angustiloba Timdal, Lichenologist 40(1): 32 (2008)

[ABL48191], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48191), 14.02.2019, det. A. Aptroot 2019. - Prothallus absent. Thallus effuse, squamulose. Squamules medium sized to large, 1–2 mm broad, deeply divided into 0·1–0·3(–0·6) mm broad, more or less linear lobes, loosely adnate to the substratum or ascending, often imbricate; lobes plane to weakly convex or revolute, upper side green, often with a yellow or brown tinge, glabrous, epruinose, sometimes finely maculate; margin concolorous with the upper side. Lobules scattered, developing from the margin of the squamules both laterally and terminally. Medulla containing crystals dissolving in K (PD-, K-). Apothecia not common, up to 1 mm diam., rounded, simple or partly conglomerate, weakly to moderately convex, pale brown, with an indistinct margin when young, but later becoming emarginate. Ascospores narrowly ellipsoid to bacilliform, simple to 1-septate, 9–13 x 2.5–3 µm. Pycnidia not seen. Chemistry. Chemotype 1: two unidentified substances (both major) and zeorin (minor); chemotype 2: sekikaic acid (major), homosekikaic acid (submajor), and zeorin (minor); chemotype 3: sekikaic acid (major), zeorin (minor) and an unidentified terpenoid (minor); chemotype 4: an unidentified substance (major) and zeorin (minor).





Eschatogonia angustiloba

Fissurina instabilis (Nyl.) Nyl., Sert. Lich. Trop. Labuan Singapore: 36 (1891)
= *Graphis instabilis* Nyl. 1863

[ABL48180], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48180), 14.02.2019, det. A. Aptroot 2019. - Excipulum not carbonized. Spores 8/ascus, hyaline, muriform, 5-7/3-4-locular, 17-24 x 10-15 µm, I+ violet. Chemistry:psoromic acid or nil.





Fissurina instabilis

Fluctua megapotamica (Malme) Marbach, Biblthca Lichenol. 74: 208 (2000)
= *Buellia megapotamica* Malme, in Steiner, Öst. bot. Z. 68: 142 (1919)

[ABL48805], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48805), 20.03.2019, det. A. Aptroot 2019. - Hymenium not inspersed, excipulum and hypothecium carbonized. Paraphyses 1.5-1.8 µm thick, simple or branched, with brown caps. Spores (4-)8/ascus, 11-19 x 6-9 µm, 1-septate, brown. Chemistry: Thallus K+ red, UV-; norstictic acid, connorstictic acid.





Fluctua megapotamica

Fouragea filicina (Mont.) Trevis., Rc. Ist. Lomb., Milano, ser. 2 13: 67 (1880)
= *Aulographum filicinum* Lib., Pl. crypt. Arduenna, fasc. (Liège) 3(nos 201-300): no. 275 (1834)
= *Fouragea filicina* var. *brevis* (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 2: 451 (1923) [1924]
= *Gloniella filicina* (Lib.) Mouton, Bull. Soc. R. Bot. Belg. 28(no. 2): 80 (1889)
= *Gloniella filicina* var. *jaapii* Rehm, Ber. bayer. bot. Ges. 13: 114 (1912)
= *Leptopeltina filicina* (Lib.) Petr., Sydowia 1(4-6): 244 (1947)
= *Leptopeltinella filicina* (Lib.) Petr., Sydowia 5(1-2): 187 (1951)
= *Leptopeltis filicina* (Lib.) Höhn., Ber. dt. bot. Ges. 35: 422 (1917)
= *Opegrapha filicina* Mont., in Sagra, Hist. phys. Cuba, Bot. Pl. Cell. 9: 122 (1845)
= *Opegrapha filicina* var. *brevis* Müll. Arg., Flora, Regensburg 66(22): 349 (1883)
= *Opegraphella filicina* (Mont.) Müll. Arg., Lichenes Epiphylli Novi: 20 (1890)
= *Pycnothyrium filicinum* (Lib.) Arx, Acta bot. neerl. 13: 185 (1964)

[ABL48873M], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873N), 21.03.2019, det. A. Aptroot 2019. - Ascospores 5-septate, 18–27 × 3.5–4.5 µm





Fouragea filicina

Fuscidea tropica van den Boom & Kalb, in van den Boom, Kalb & Elix, Glalia 6(4): 2 (2014)

[ABL42096], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42096), 23.07.2017, det. A. Aptroot, 2017. - Thallus warted areolate to subsquamulose, up to 2.5 cm wide, pale grey to pale brownish grey; prothallus pale brown to rarely dark brown; apothecia dark brown to blackish, up to 1.4 mm wide; ascospores with obtuse ends, medially constricted, not septate, 8/ascus, 8.5–11(–12) × 4–5 µm; conidia dacryoid, 2–2.5 x 1–1.2 µm; containing sekikaic acid; K-, C-.



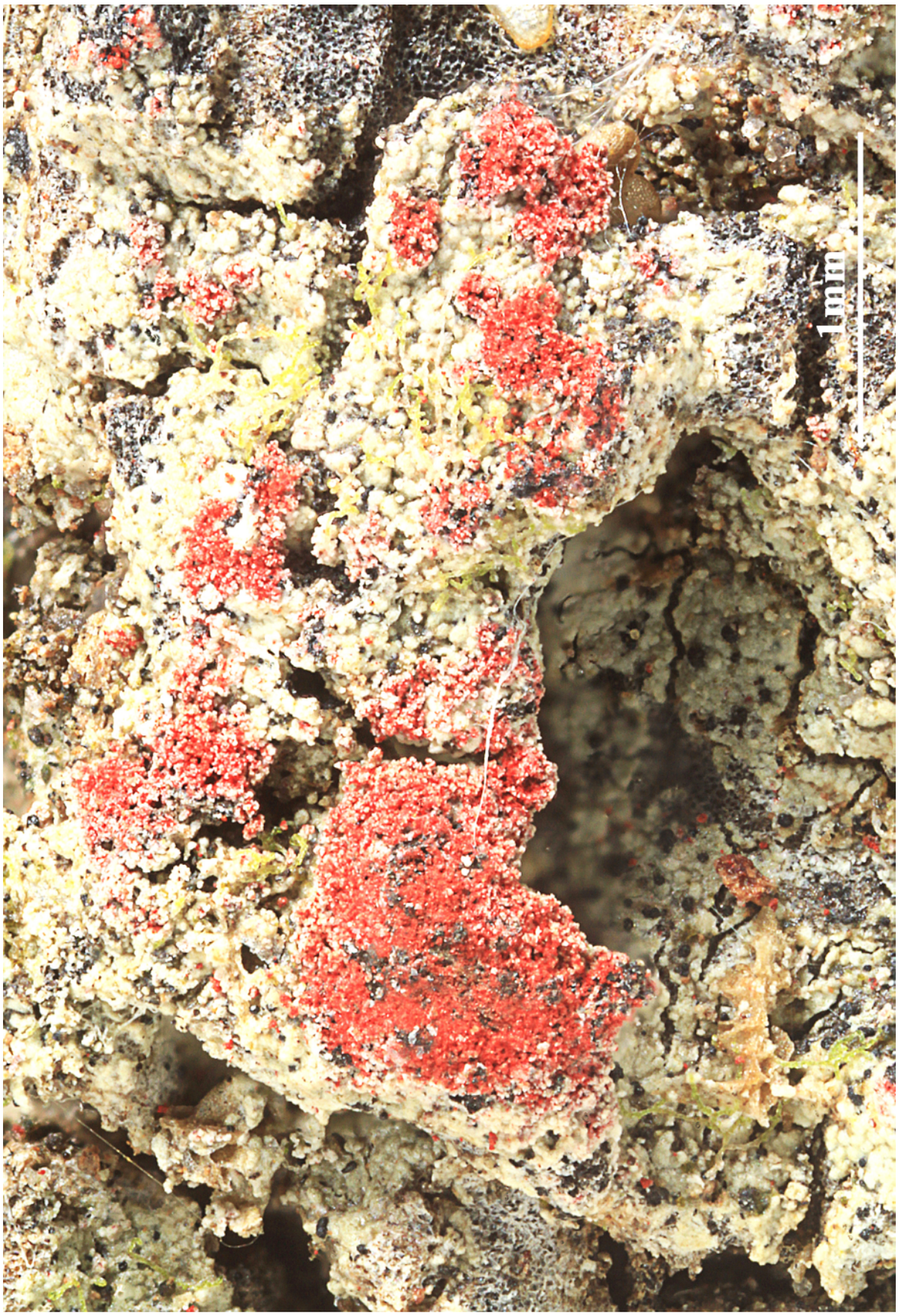


Fuscidea fulva

Gassicurtia carirensis M.M.E. Alves, Aptroot & M. Cáceres, in Alves, Aptroot, Rodrigues Lacerda & Cáceres, Bryologist 117(1): 52 (2014)

[ABL42150], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42150), 22.07.2017, det. A. Aptroot, 2017. - Corticolous *Gassicurtia* with a granular, greenish grey thallus with thiophanic acid, a red medulla with chiodectonic acid and copious punctiform red soredia, apothecia black, not pruinose, ascospores 8/ascus, 1-septate, brown, 8.5–11.5 x 3.3–4 µm. Chemistry: Thallus C+ orange, K-, KC-, P-, UV+ pink, medulla and soredia K+ purple, UV+ red. TLC: chiodectonic acid and thiophanic acid.





Gassicurtia carirensis

Gassicurtia restingiana D.S. Andrade, M. Cáceres & Aptroot, **Paratype**, in Andrade, Aptroot, Lücking, Barbosa, Cavalcante & Cáceres, Bryologist 123(1): 77 (2020)

[ABL45782], Brazil, Bahia, Mattronduplió, on tree bark in restinga. Leg. D. Andrade, 02. September 2018, det A. Aptroot , 2019. - Thallus crustose, greenish grey, somewhat glossy, surrounded by a 0.1 mm wide, black prothallus line. Corticate, irregular granular isidia of thallus color and of c. 0.1 mm wide/thick and high covering parts of thallus. Apothecia present on thallus between the isidia, sessile, solitary, 0.3–0.6 mm diam., disc with prominent margin, black, not or grey pruinose, margin black, persistent. Hymenium greenish, not inspersed, K+ yellow, c. 50–65 µm high. Paraphyses unbranched. Epithecium with pale brown caps. Hypothecium dark brown. Ascospores 8/ascus, 10–12 x 5–6 µm, pale brown, smooth, ellipsoid, ends somewhat pointed. Pycnidia not observed. Chemistry: Thallus C–, K+ yellow, P–, UV–. TLC: atranorin.





Gassicurtia restingiana

Gassicurtia rhizocarpoides Aptroot & M. Cáceres, **Isotype.** Herzogia 31: 363 (2018)

[ABL42047], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42047), 23.07.2017, det. A. Aptroot, 2017. - Thallus crustose, saxicolous, up to c. 1 cm diam., pale yellow (rhizocarpic acid; *Rhizocarpon* colour), dull, rather uneven, consisting of angular areoles that are dissected by blackish fissures; areoles c. 0.2– 0.7 mm diam, marginal areoles not differing from central ones; without prothallus. Medulla c. 0.3 mm thick, dusty, mostly filled with bright red crystals. Photobiont green. Ascomata and pycnidia not observed. Chemistry: Medulla K+ purple, P–, C–, UV–. TLC: rhizocarpic acid in the cortex and chiodectonic acid in the medulla.





Gassicurtia rhizocarpoides

Glyphis scyphulifera (Ach.) Staiger, Biblthca Lichenol. 85: 175 (2002)
= *Gyrostomum scyphuliferum* (Ach.) Nyl., Annls Sci. Nat., Bot., sér. 4 16: 96 (1862)
= Lecidea scyphulifera Ach., Syn. meth. lich. (Lund): 27 (1814)
= *Thelotrema scyphuliferum* (Ach.) Nyl., Flora, Regensburg 49(9): 132 (1866)

[ABL48775A], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48775A), 20.03.2019, det. A. Aptroot 2019. - Excipulum carbonized, hymenium not inspersed. Spores 6-8/ascus, hyaline, muriform,(7-)8-13/3-4-locular, 30-45 x 12-16 µm, I+ blue-violet.





Glyphis scyphulifera

Graphis conferta Zenker, in Goebel & Kunze, Pharmaceutische Waarenkunde (Eisenach) 1(3): 166 (1827) [1827-1829]

[ABL42126A], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42126A), 22.07.2017, det. A. Aptroot, 2017. - Labia entire, excipulum completely carbonized, hymenium not inspersed, spores transversely 7-11-septate, 35-45 x 10-13 µm. K-, no substances detected.





Graphis conferta

Graphis leptoclada Müll. Arg., Flora, Regensburg 65(21): 335 (1882)

[ABL48511], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'04" S, 39°24'10" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48511), 16.02.2019, det. A. Aptroot 2019. - Lirellae erumpent, with lateral thalline margin, elongate and irregularly branched, Excipulum laterally carbonized; ascospores 9–13-septate, 30–50 × 7–10 µm.





Graphis leptoclada

Graphis nanodes Vain., Ann. Acad. Sci. fenn., Ser. A 15(no. 6): 209 (1921)

[ABL42167], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 42167), 2017.- Lirellae erumpent, with lateral thalline margin, dis concealed, labia entire; excipulum laterally carbonized; hymenium not inspersed; spores muriform, 30-50 x 7ö18 µm; K-.





Graphis nanodes

Graphis puiggarii (Müll. Arg.) Lücking, in Lücking, Chaves, Sipman, Umaña & Aptroot, Fieldiana, Bot. 46(no. 1549): 102 (2008)
= *Graphina puiggarii* Müll. Arg., Flora, Regensburg 63(2): 22 (1880)

[ABL42168A], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 42168A), 2017. - Lirellae erumpent, rarely branched, with (apically thin) complete thalline cover, labia striate. Excipulum laterally carbonized. Hymenium not inspersed. Spores (2-)4-8/ascus, muriform, 25-35 x 8-12 µm, hyaline. TLC: no substances detected.





Graphis puiggarii

Graphis pyrrhocheiloides Zahlbr., Cat. Lich. Univers. 2: 321 (1923) [1924]
= *Graphis pyrrhocheila* Vain. 1907

[ABL40665], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40665), 22.07.2017, det. A. Aptroot, 2017.- Disc pruinose; excipulum laterally carbonized; hymenium not inspersed; spores transversely 9-sptate, 33 x 6 µm; Chemistry: nortictic acid (K+ red).

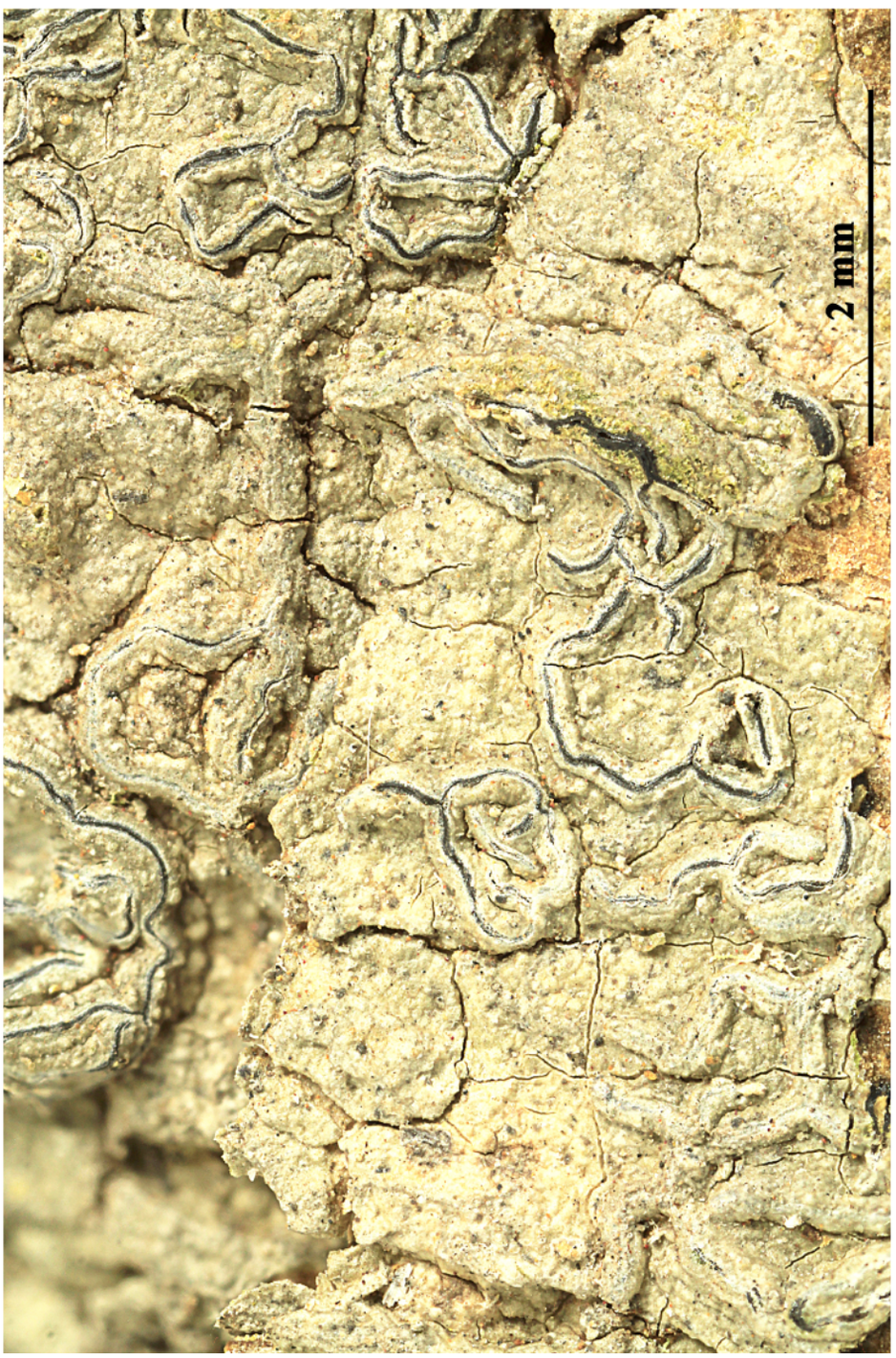




Graphis pyrrhocheiloides

Graphis stellata M. Cáceres & Lücking, in Cáceres, Libri Botanici 22: 87 (2007)

[ABL40838], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40838), 22.07.2017, det. A. Aptroot, 2017. - Thallus iregularly and coarsely verrucose. Lirellae flexuose, prominent, with lateral thalline margin; disc conceiled, labia entire; hypothecium prosoplectenchymatous, colourles; hymenium not inspersed; paraphyses unbranched; spores 8/ascus, 7-septate, 20-30 x 6-8 µm, colourless, IKI+ violet-blue. Chemistry: no substances detected by TLC.





Graphis stellata

Graphis tectigera Eschw., in Martius, Icon. Pl. Crypt. 2: 10 (1834) [1828-34]

[ABL48581], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'16" S, 39°24'40" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48581), 17.02.2019, det. A. Aptroot 2019. - Hymenium not inspersed,spores 8/ascus, hyaline, muriform, 25 x 10 µm. K-, P-, UV-.

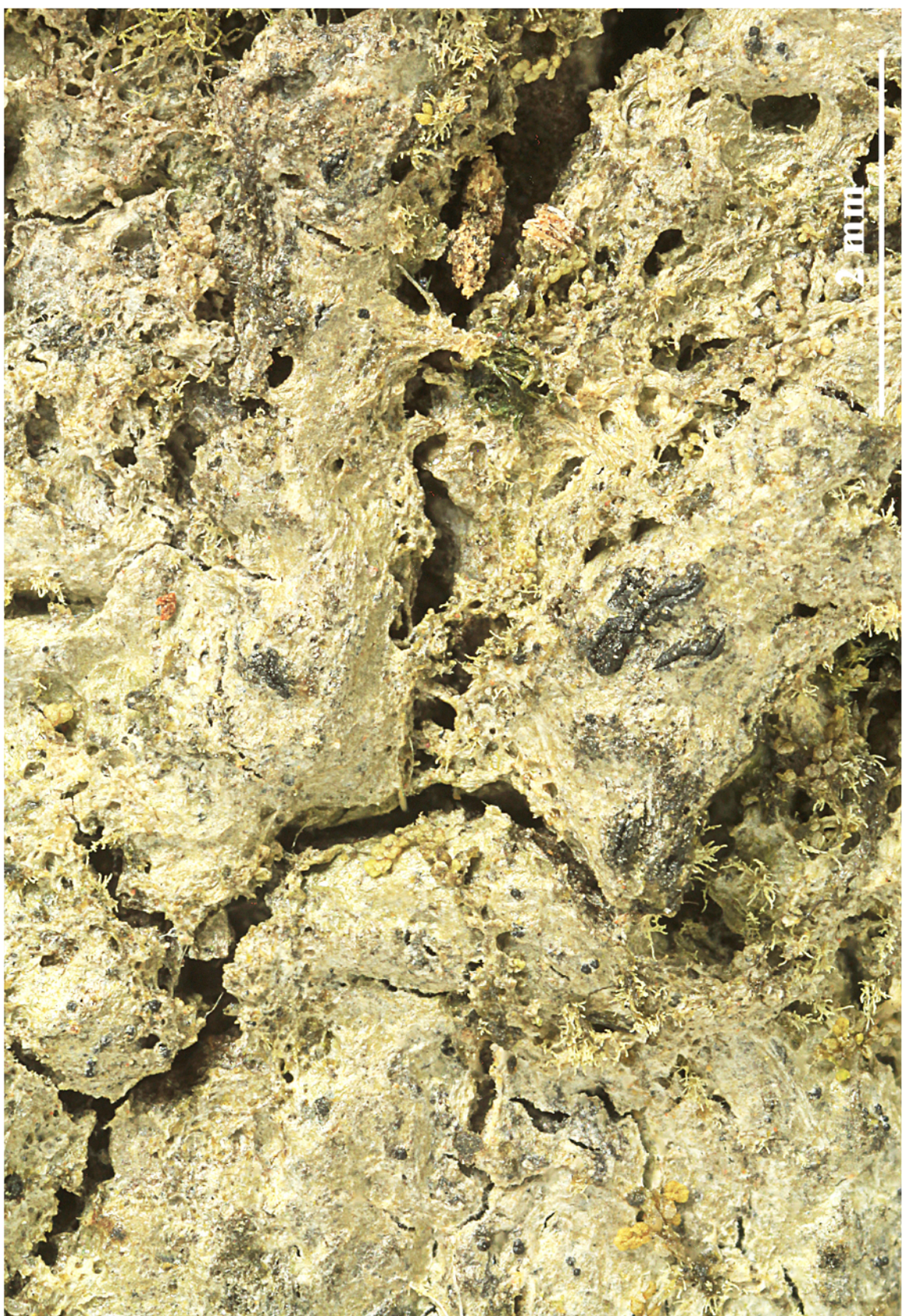




Graphis tectigera

Gyalideopsis krogiae Kalb & Vězda, in Kalb, Vězda & Antonín, Nova Hedwigia 58(3-4): 517 (1994)

[ABL40885], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On bark on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40885), 23.07.2017, det. A. Aptroot, 2017. - Spores 2/ascus, muriform, 50 x 30 µm.



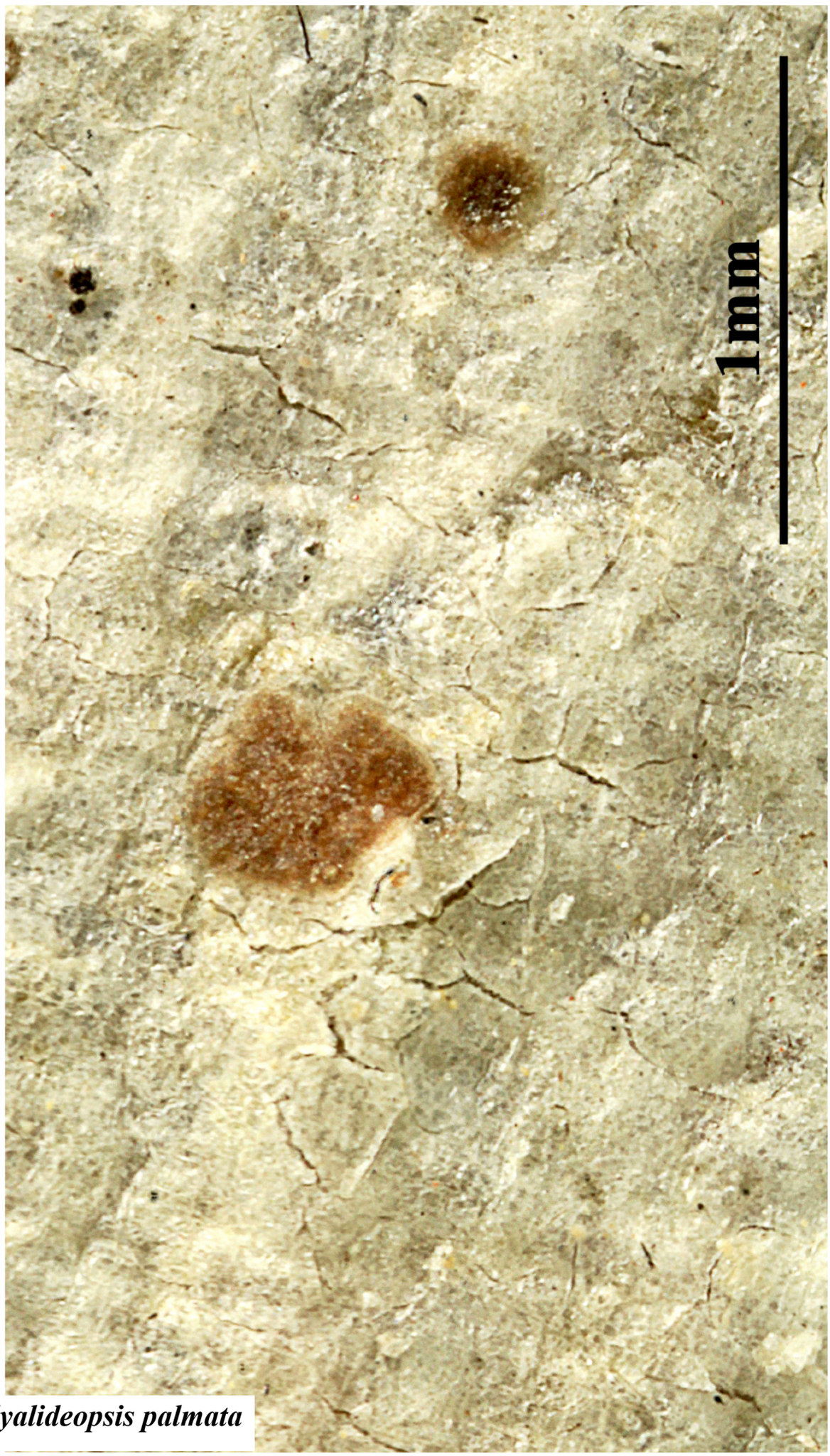


Gyalideopsis krogiae

Gyalideopsis palmata Kalb & Vězda, in Kalb, Vězda & Antonín, Nova Hedwigia 58(3-4): 520 (1994)

[ABL48461], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48461), 15.02.2019, det. A. Aptroot 2019. - Thallus crustose, not corticate. Soredia and isidia absent. Photobiont trentepohlioid. Apothecia sessile, disc pale brown, flat to concave, pruina absent, margin whitish to pale, without algae, hypothecium hyaline. Paraphyses branched, hymenium not inspersed. Ascospores 1/ascus, ellipsoid, muriform, hyaline, 50x 28 µm. Reactions none.



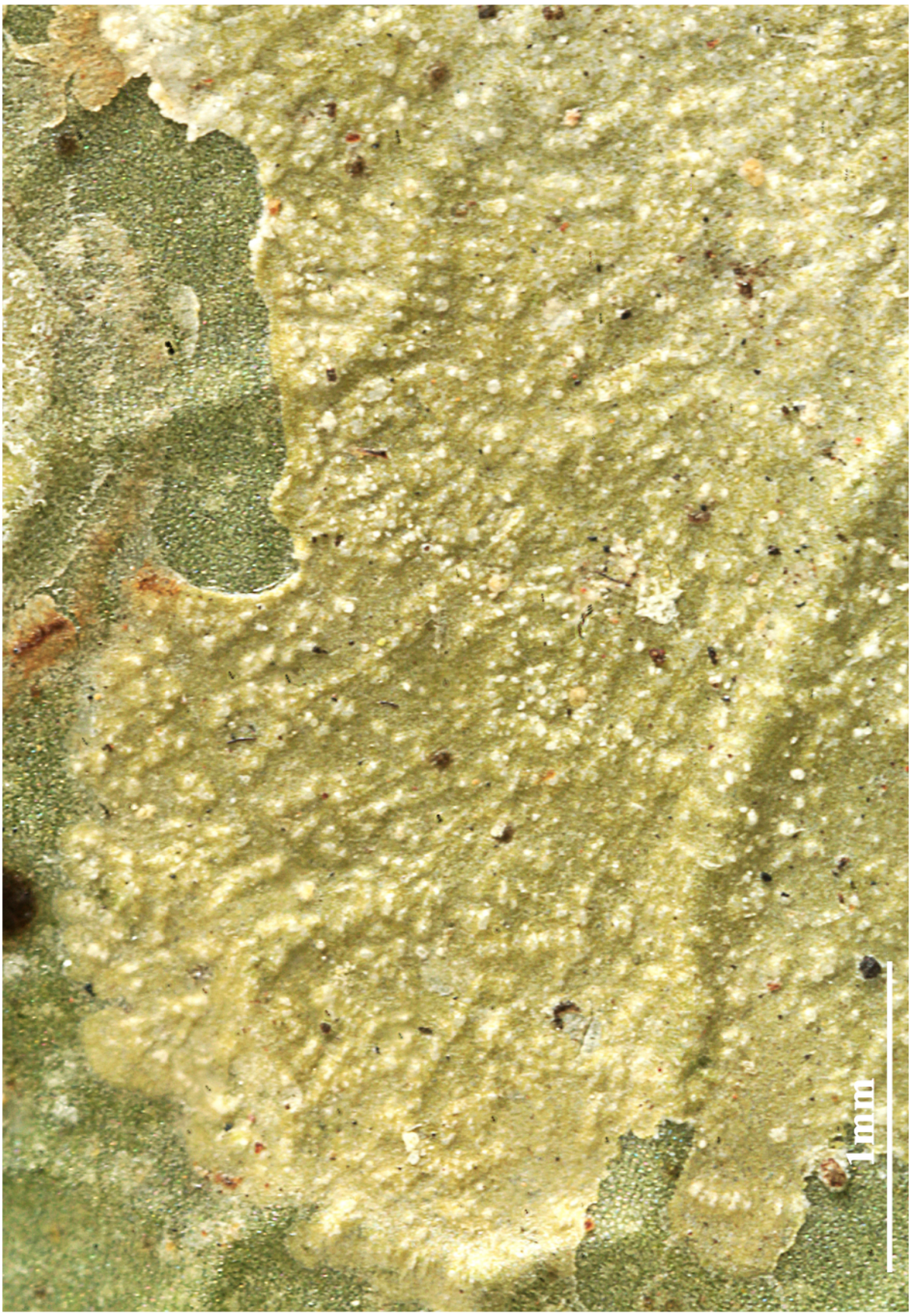


Gyalideopsis palmata

Gyalideopsis vulgaris (Müll. Arg.) Lücking, Biblthca Lichenol. 65: 75 (1997)
= *Actinoplaca vulgaris* phytotax. 22: 184 (1987)
= *Gyalideopsis vulgaris* f. *albopruinosa* Lücking, Fl. Neotrop., Monogr. 103: 431 (2008)
= *Lopadium vulgare* Müll. Arg., Flora, Regensburg 64(7): 109 (1881)
= *Strigula vulgaris* (Müll. Arg.) Lücking, Fl. Neotrop., Monogr. 103: 221 (2008)
= *Tricharia vulgaris* (Müll. Arg.) R. Sant., Symb. bot. upsal. 12(no. 1): 389 (1952)

[ABL48873G], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873G), 21.03.2019, det. A. Aptroot 2019. - Apothecia sessile to applanate, biatorine. Ascospores 1/ascus, muriform, 30-60 x 15-22 µm. Chemistry: No substances detected with TLC.



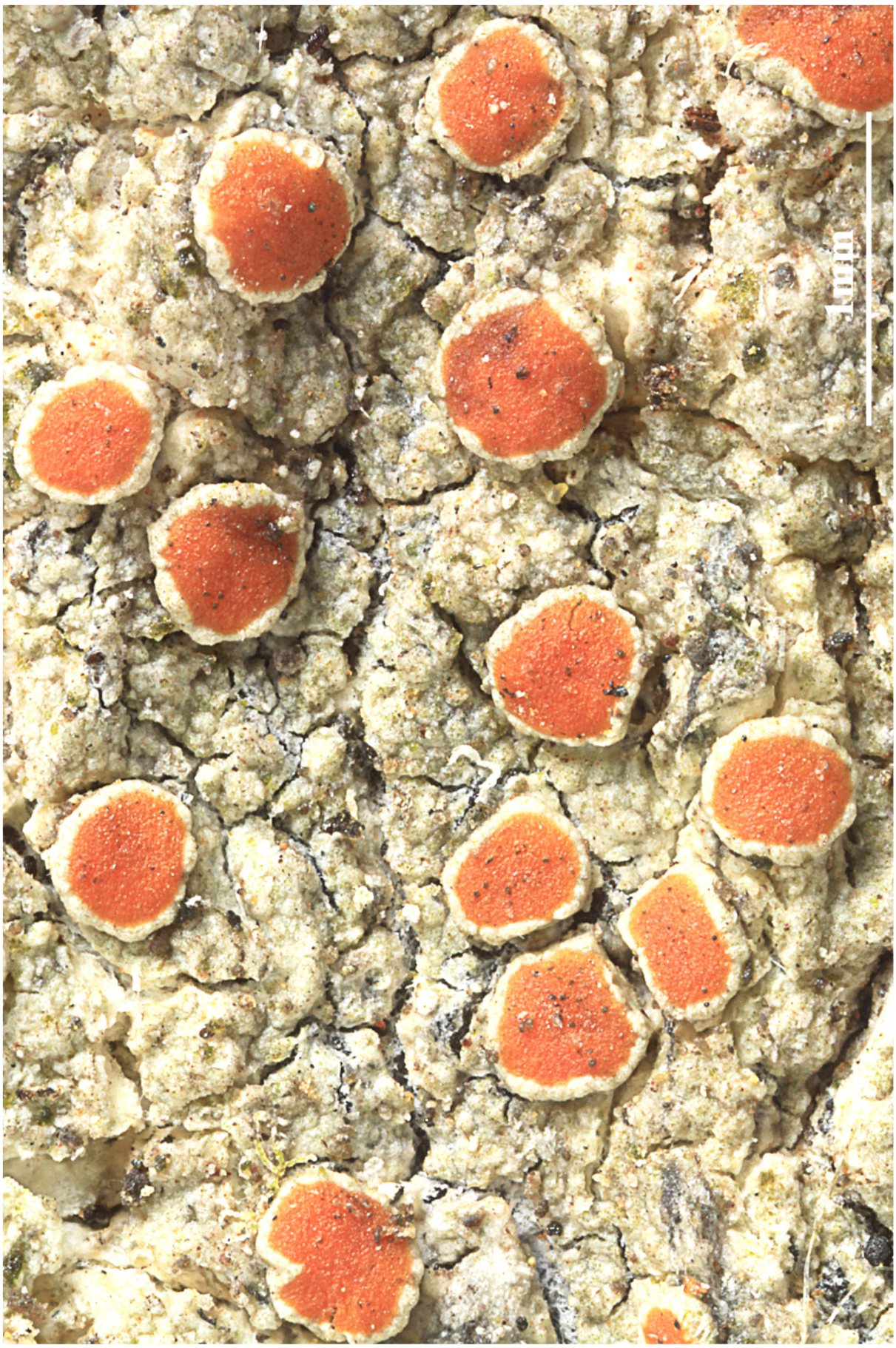


Gyalideopsis vulgaris

Haematomma rufidulum (Fée) A. Massal. [as 'ruficulum'], Atti Inst. Veneto Sci. lett., ed Arti, Sér. 3 5: 253 (1860) [1859-1860]
= *Lecanora rufidula* Fée, Essai Crypt. Exot., Suppl. Révis. (Paris): 116 (1837)

[ABL42165A], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 42165A), 2017. - Spores 8/ascus, transversely 7-24-septate, 45-80 x 4-6 µm. TLC: atranorin, placodiolic acid, russulone.



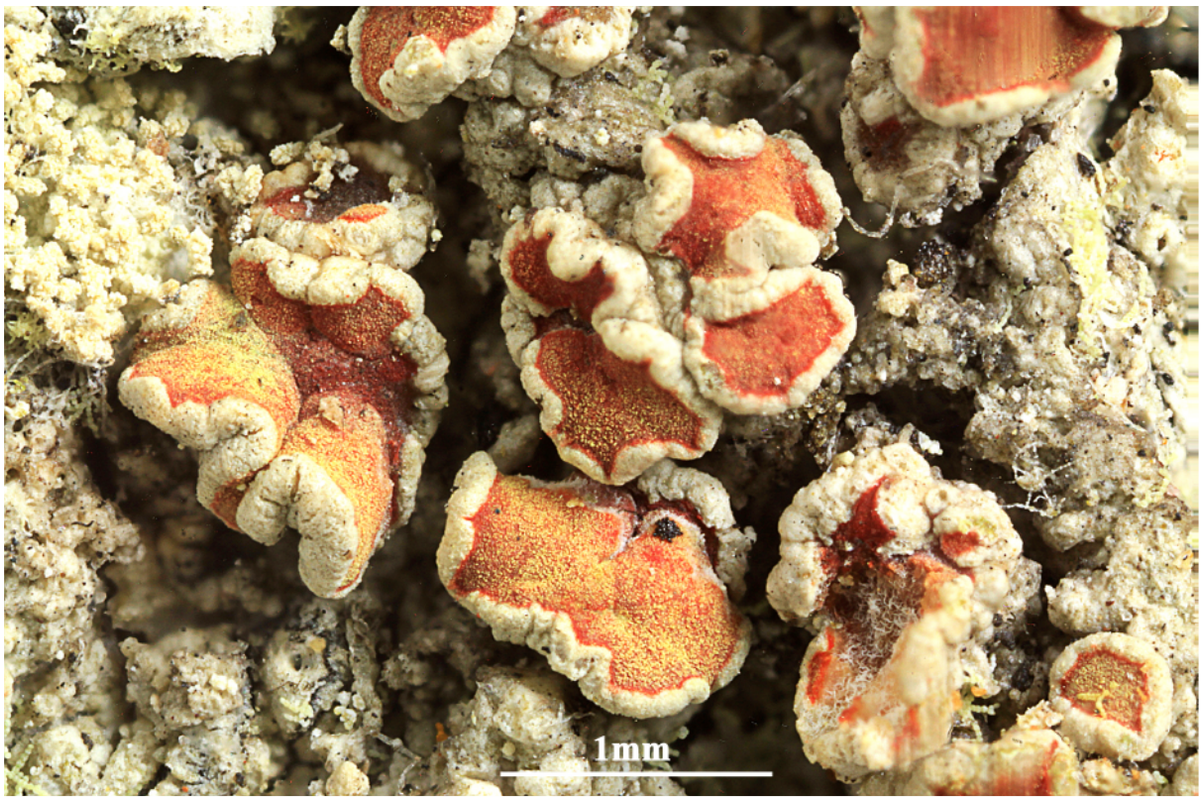


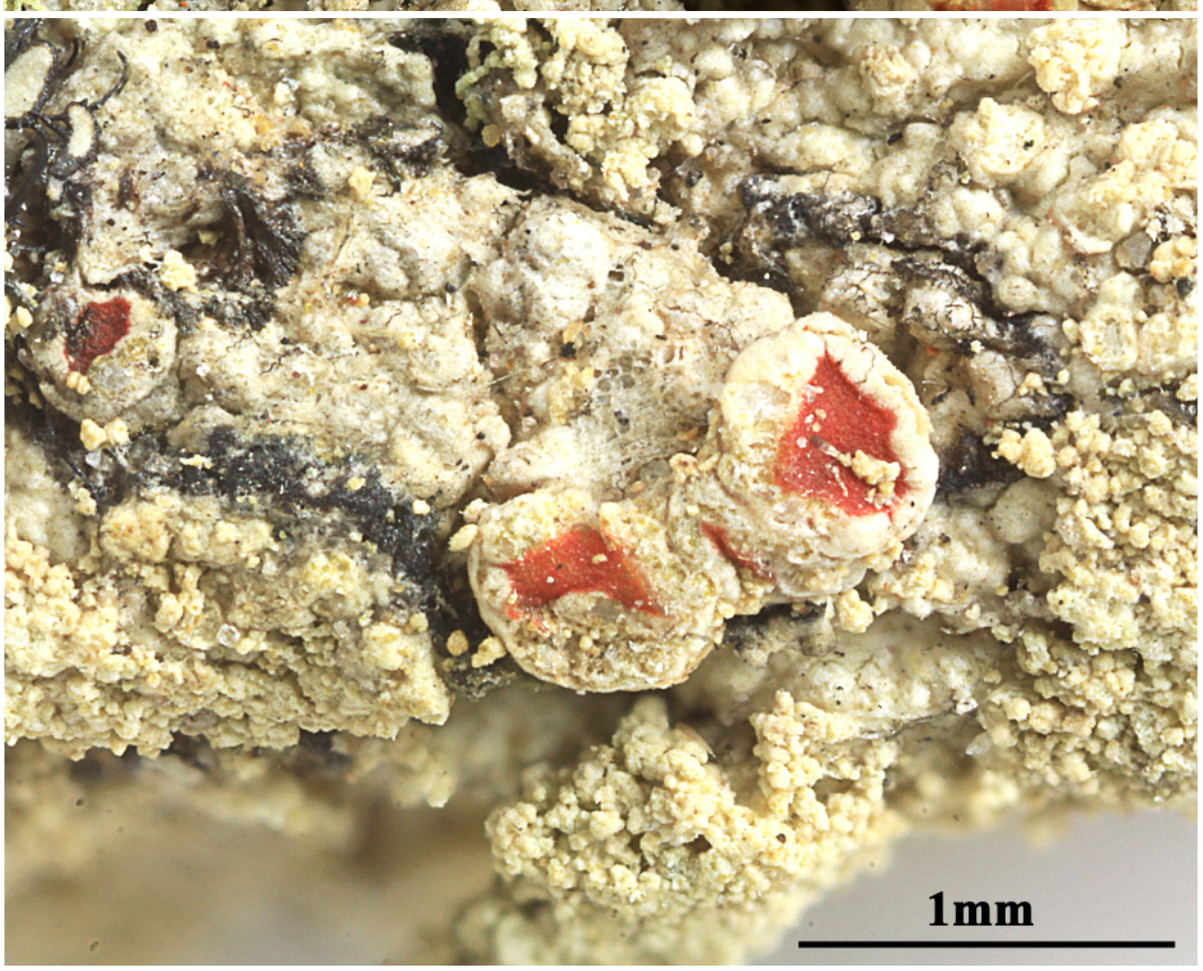
Haematomma rufidulum

Haematomma sulphureum (Müll. Arg.) Kalb & Staiger, in Staiger & Kalb, Biblthca Lichenol. 59: 174 (1995)
= *Lecania punicea* var. *sulphurea* Müll. Arg. 1881

[ABL42171], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42171), 23.07.2017, det. A. Aptroot, 2017. - Spore 8/ascus, transversely 11-19-septate, 55-75 x 4.5-6 µm. Thallus UV+ yellow. TLC: Lichexanthone, haematommon, placodiolic acid, atranorin.







Haematomma sulphureum

Hyperphyscia mobergii Kalb, Lichenes Neotropici, Fascicle XI (nos 451-475) (Neumarkt): 9, no. 463 (1990)

[ABL48746], Brazil, Bahia, Itamarajú, hotel Monte Pascoal, on tree bark in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48746), 15.02.2019, det. A. Aptroot 2019. - Thallus corticolous, to 2 cm diam., lower surface black, medulla white. Rhizines sparse. Marginal soralia with granulose sorediis. Spores brown, 15-18 x 10 µm.





Hyperphyscia mobergii

Hypotrachyna cryptochlora (Vain.) D. Hawksw. & A. Crespo, in Hawksworth, Divakar, Crespo & Ahti, Lichenologist 43(6): 641 (2011)

= *Parmelinopsis cryptochlora* (Vain.) Elix & Hale, Mycotaxon 29: 242 (1987)

= *Parmelia cryptochlora* Vain., J. Bot., Lond. 34: 34 (1896)

= *Parmelina cryptochlora* (Vain.) Hale, Phytologia 28(5): 482 (1974)

[ABL42033], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42033), 23.07.2017, det. A. Aptroot, 2017. - Chemistry: Cortex K+ yellow (atranorin); medulla K-, C+ rose, KC+ red, P- (gyrophphoric acid).

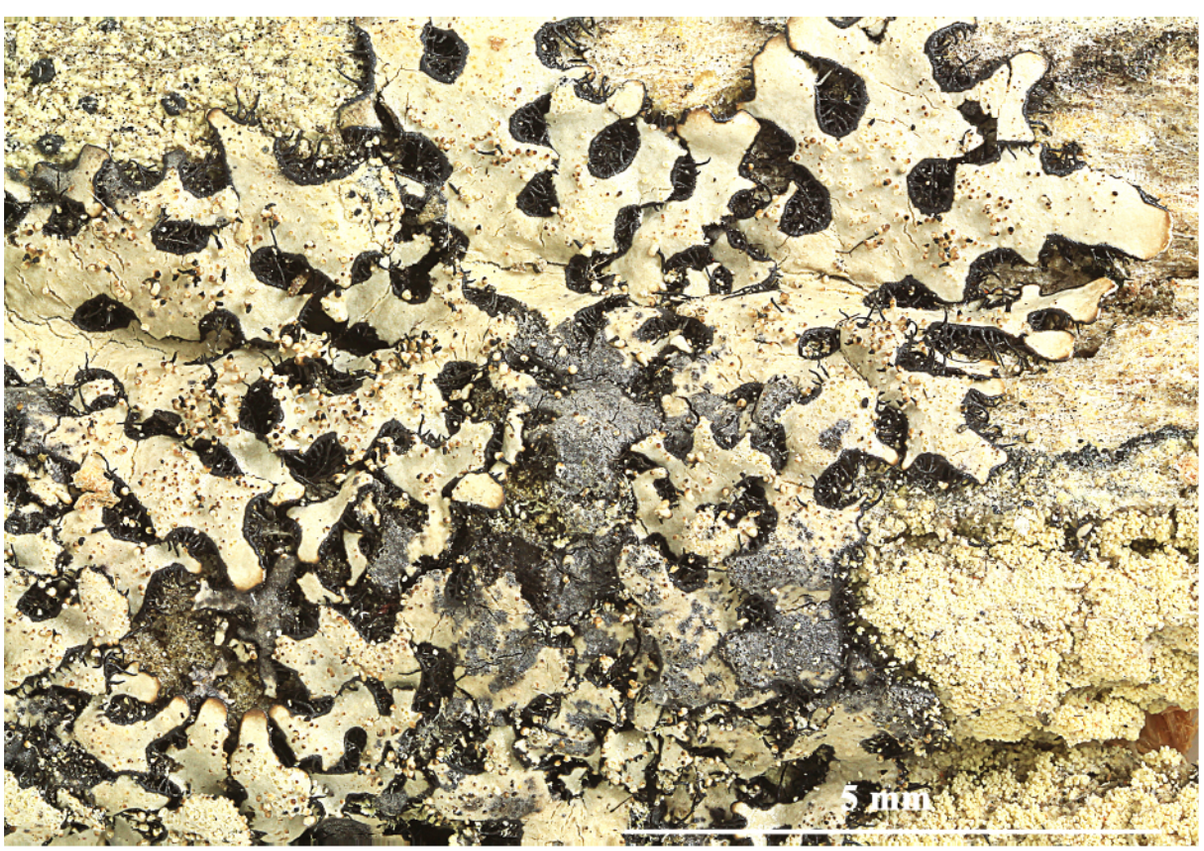




Parmelinopsis cryptochlora

Hypotrachyna horrescens (Taylor) Krog & Swinscow, Lichenologist 19(4): 420 (1987)
= *Parmelinopsis horrescens* (Taylor) Elix & Hale, Mycotaxon 29: 242 (1987)
= *Parmelia dissecta* Nyl., Flora, Regensburg 65(29): 451 (1882)
= *Parmelia horrescens* Taylor, in Mackay, Fl. Hibern. 2: 144 (1836)
= *Parmelia laevigata* f. *dissecta* (Nyl.) H. Olivier, Rev. Bot. 12: 63 (1894)
= *Parmelia laevigata* subsp. *dissecta* (Nyl.) Nyl., Lich. Envir. Paris: 37 (1896)
= *Parmelia saxatilis* f. *horrescens* (Taylor) Stizenb., Ber. Tät. St Gall. naturw. Ges.: 310 (1882) [1880-81]
= *Parmelina dissecta* (Nyl.) Hale, Phytologia 28(5): 482 (1974)
= *Parmelina horrescens* (Taylor) Hale, Phytologia 28(5): 482 (1974)

[ABL42035], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42035), 23.07.2017, det. A. Aptroot, 2017. - Isidia dense, cylindrical, apically spinulose or shortly ciliate. Chemistry: Cortex K+ yellow; medulla K-, C-, KC+ rose or red, P-. TLC: atranorin, chloroatranorin, 3-methoxy-2,4-di-*O*-methylgyrophoric acid (major), gyrophoric acid (minor), 2,4-di-*O*-methylgyrophoric acid (minor), 5-*O*-methylhiascic acid (minor), umbilicaric acid (minor), hiascic acid (trace), 2,4,5-tri-*O*-methylhiascic acid (trace),



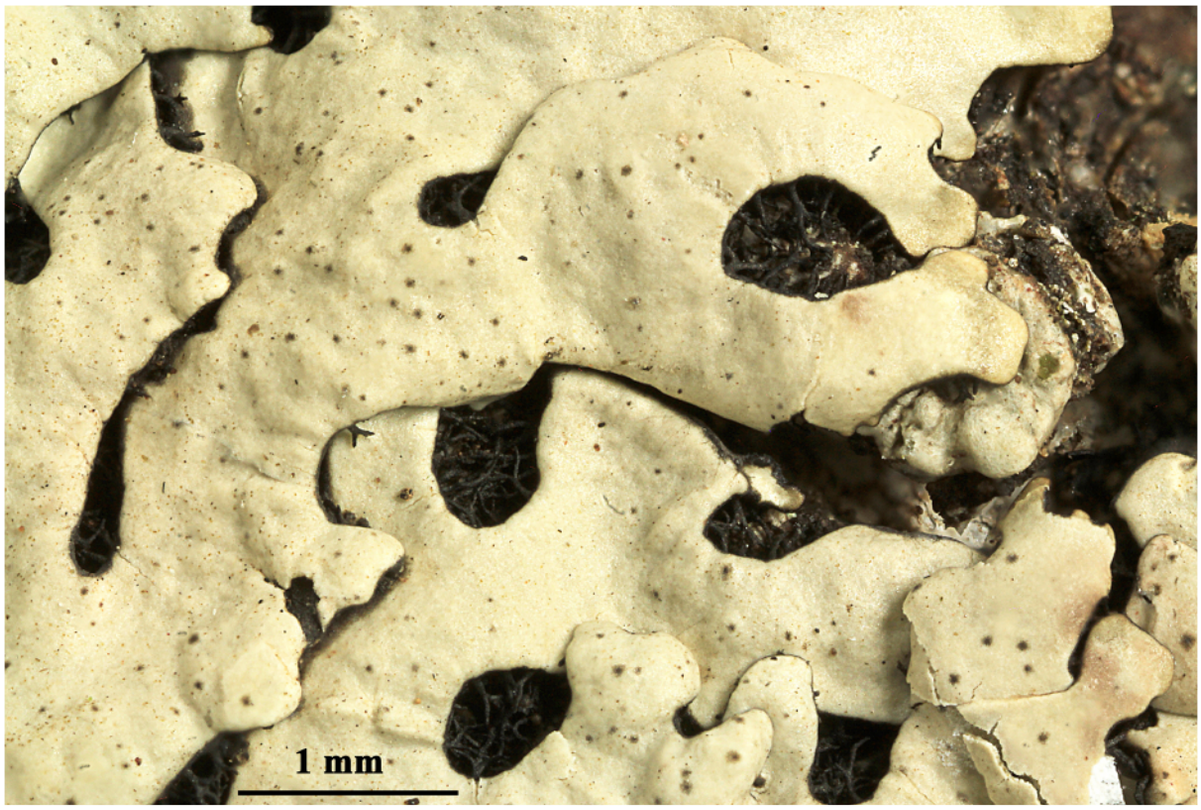


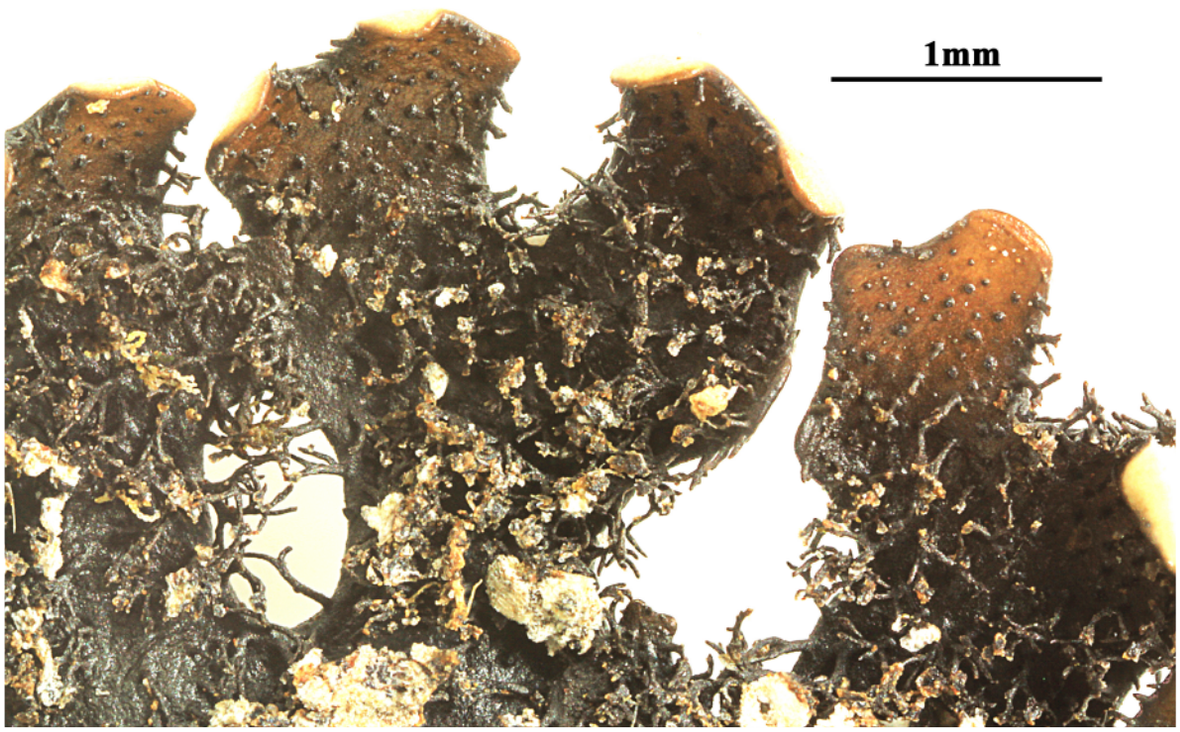
Parmelinopsis horrescens

Hypotrachyna livida (Taylor) Hale, Smithson. Contr. bot. 25: 45 (1975)
= *Parmelia livida* Taylor 1847

[ABL40709], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40709), 22.07.2017, det. A. Aptroot, 2017. - Thallus K-, C-, P-, KC+ pink, UV+ white.



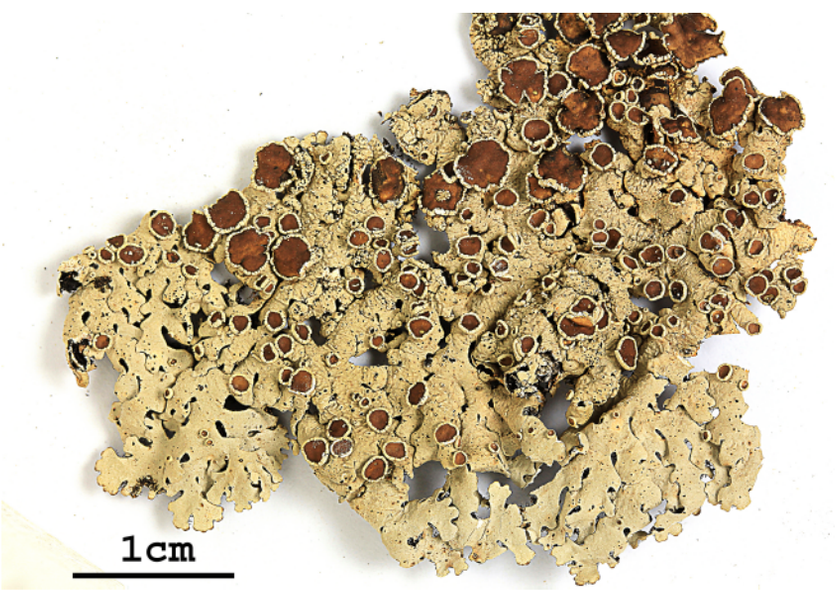




Hypotrachyna livida

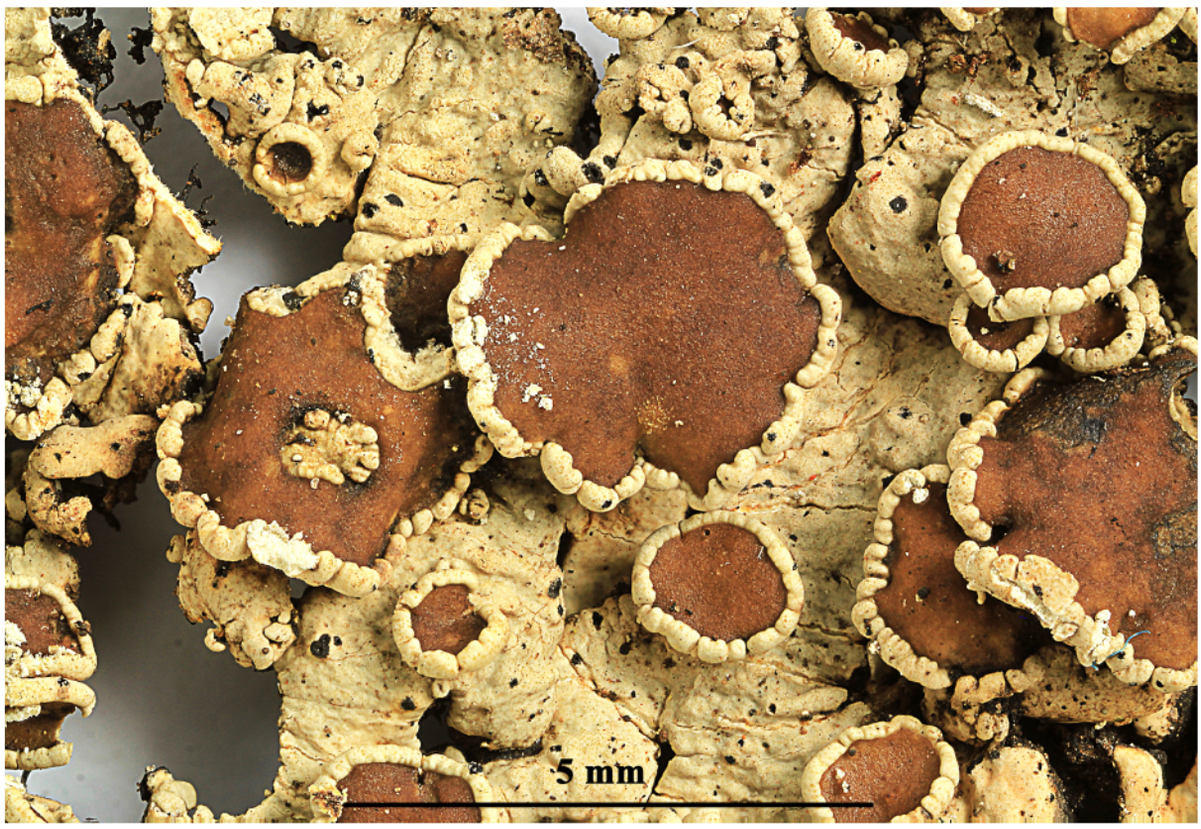
Hypotrachyna maculata Aptroot & M. Cáceres, **Isotype**, Herzogia 31: 364 (2018)

[ABL40785], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40785), 22.07.2017, det. A. Aptroot, 2017. - Thallus foliose, saxicolous, loosely appressed, up to 7 cm diam., mineral grey, dull; central part roughly rugose; upper surface, especially the marginal lobes, reticulately white maculate; lobes irregularly branched, 1–2 mm wide, outer rim brownish to black, glossy and truncated and often rolled downward. Isidia and soredia absent. Medulla up to 0.2 mm thick, upper part whitish, lower part mostly orangish. Lower surface yet black throughout, rugose, shiny, with rhizines. Rhizines rather numerous, often in groups interspersed with empty regions, black, young with white tips, simple to usually unfrequently irregularly branched, c. 0.1 mm thick, up to 0.7 mm long. Photobiont green. Ascomata apothecia, common, superficial on the central part of the thallus, round, c. 1–5 mm diam.; disc chocolate brown, flat to slightly convex; margin c. 0.2 mm wide, crenate, of thallus colour and structure, higher than the disc. Hymenium hyaline; epihymenium brown; excipulum with algae; hypothecium hyaline. Paraphyses simple. Asci cylindrico-clavate. Ascospores hyaline, 8/ascus, non-septate, ellipsoid, 11–12.5 × 6.5 –7.5 µm, wall c. 1 µm thick, smooth, without gelatinous sheath. Pycnidia black, punctiform, dispersed over most of the thallus, up to 0.2 mm diam. Chemistry: Cortex K+ yellow, white part of medulla K–, P+ orange, C–, UV–; pigmented part K+ blood red. TLC: atranorin, physodic acid and skyrin.





Hypotrachyna maculata





Hypotrachyna maculata

Hypotrachyna neodissecta (Hale) Hale, Smithson. Contr. bot. 25: 49 (1975)
= *Parmelia neodissecta* Hale 1971

[ABL48305], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48305), 14.02.2019, det. A. Aptroot 2019. - Thallus loosely attached, rather fragile, pale greenish ashy gray, 3-7 cm broad; lobes sublinear to subirregular, in part subascending, becoming subcaniculate, 1-3 mm wide; upper surface shiny, continuous, becoming densely isidiate, isidia cylindrical, mostly simple; lower surface densely rhizinate, the rhizines moderately dichotomously branched. Apothecia adnate, the amphithecium isidiate, 2-3 mm in diameter; spores not found
Chemistry: Cortex K+ yellow, medulla K-, P-, C+ red (atranorin and gyrophoric acid).





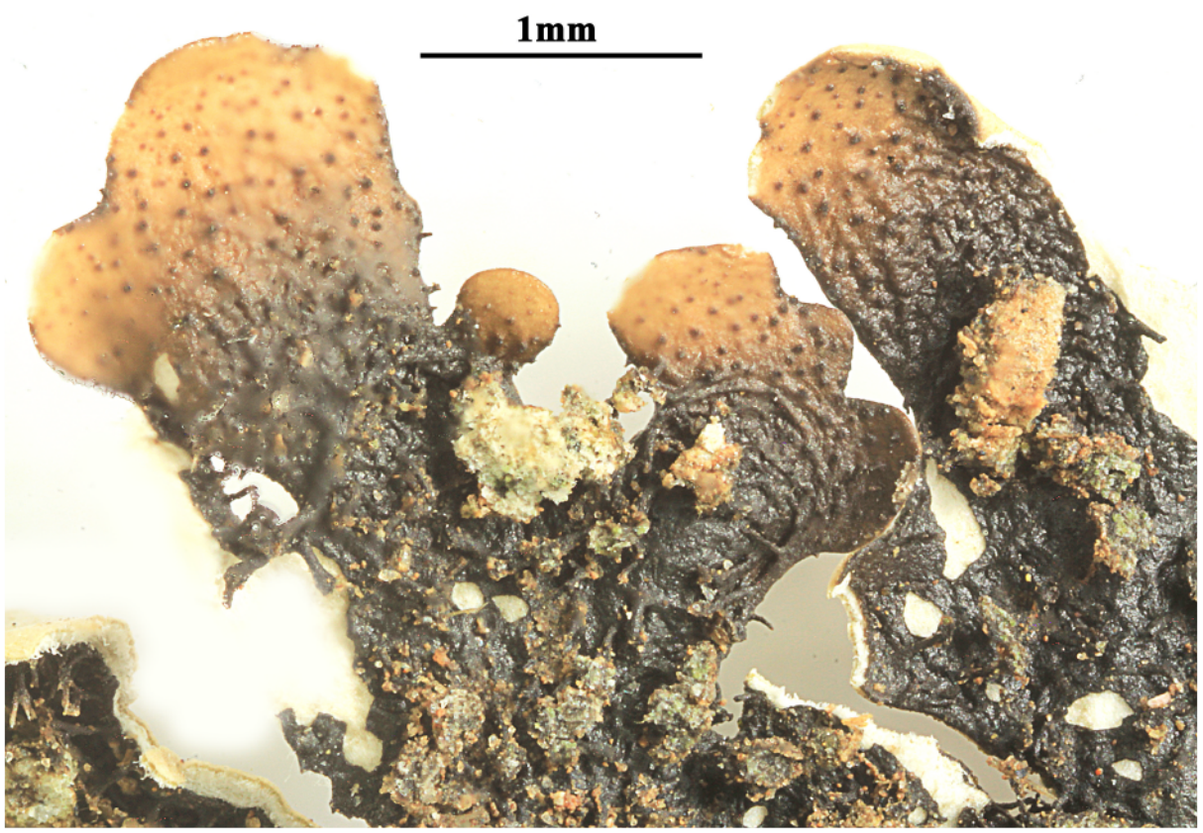
Hypotrachyna neodissecta

Hypotrachyna novella (Vain.) Hale, Smithson. Contr. bot. 25: 49 (1975)
= *Parmelia novella* Vain., Acta Soc. Fauna Flora fenn. 7(no. 1): 56 (1890)

[ABL40773], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40773), 22.07.2017, det. A. Aptroot, 2017.







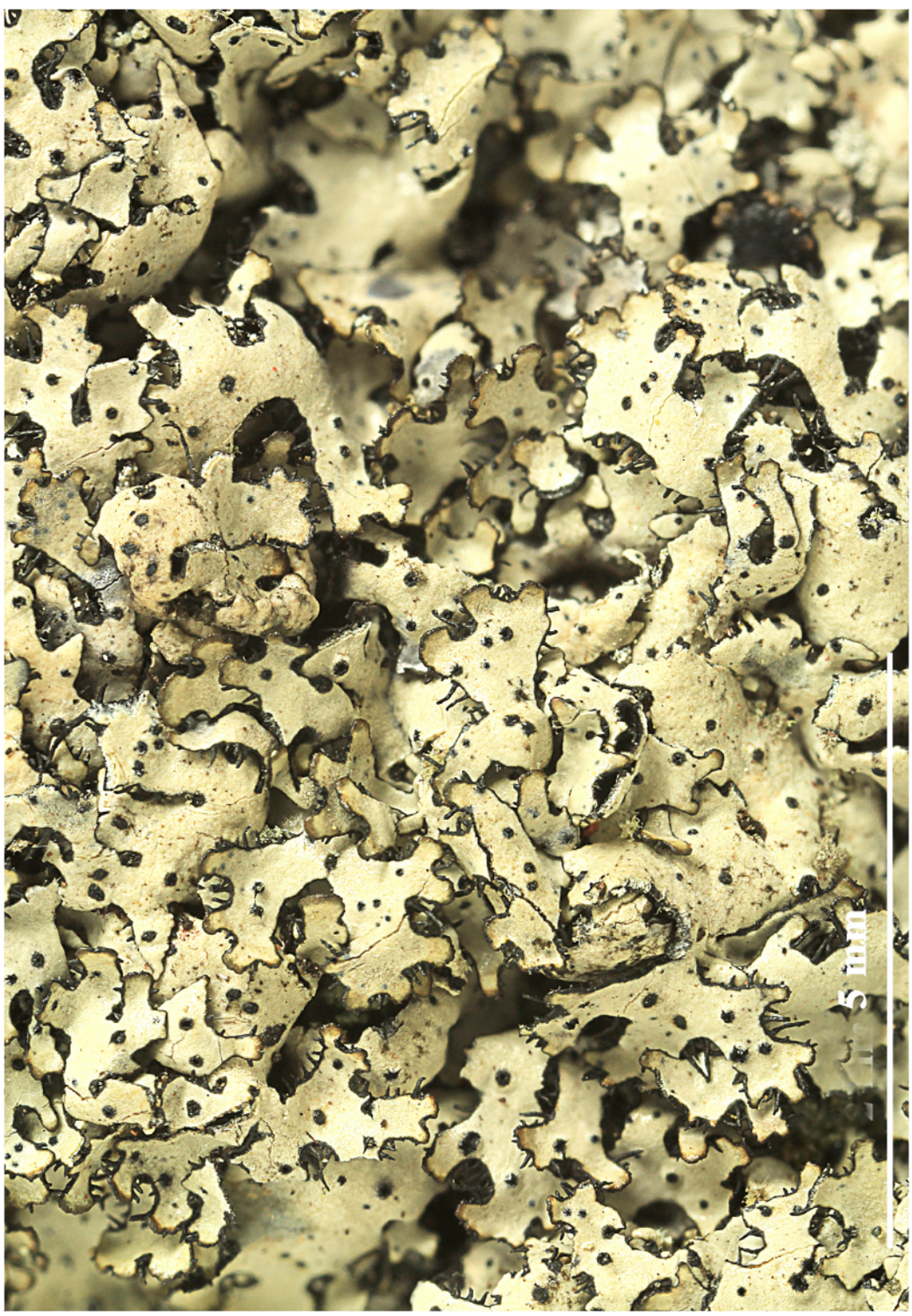
Hypotrachyna novella

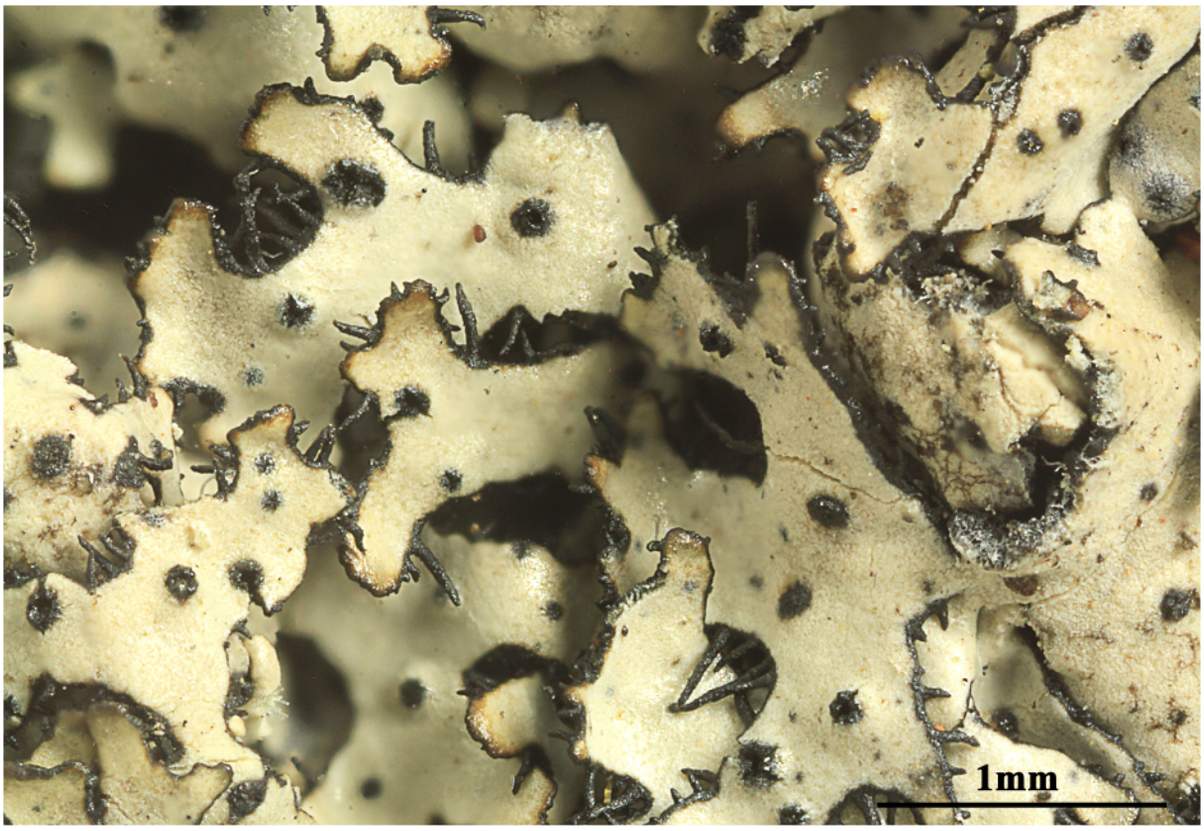
Hypotrachyna schindleri (Hale) Divakar, A. Crespo, Sipman, Elix & Lumbsch, in Divakar, Crespo, Núñez-Zapata, Flakus, Sipman, Elix & Lumbsch, Phytotaxa 132(1): 34 (2013)

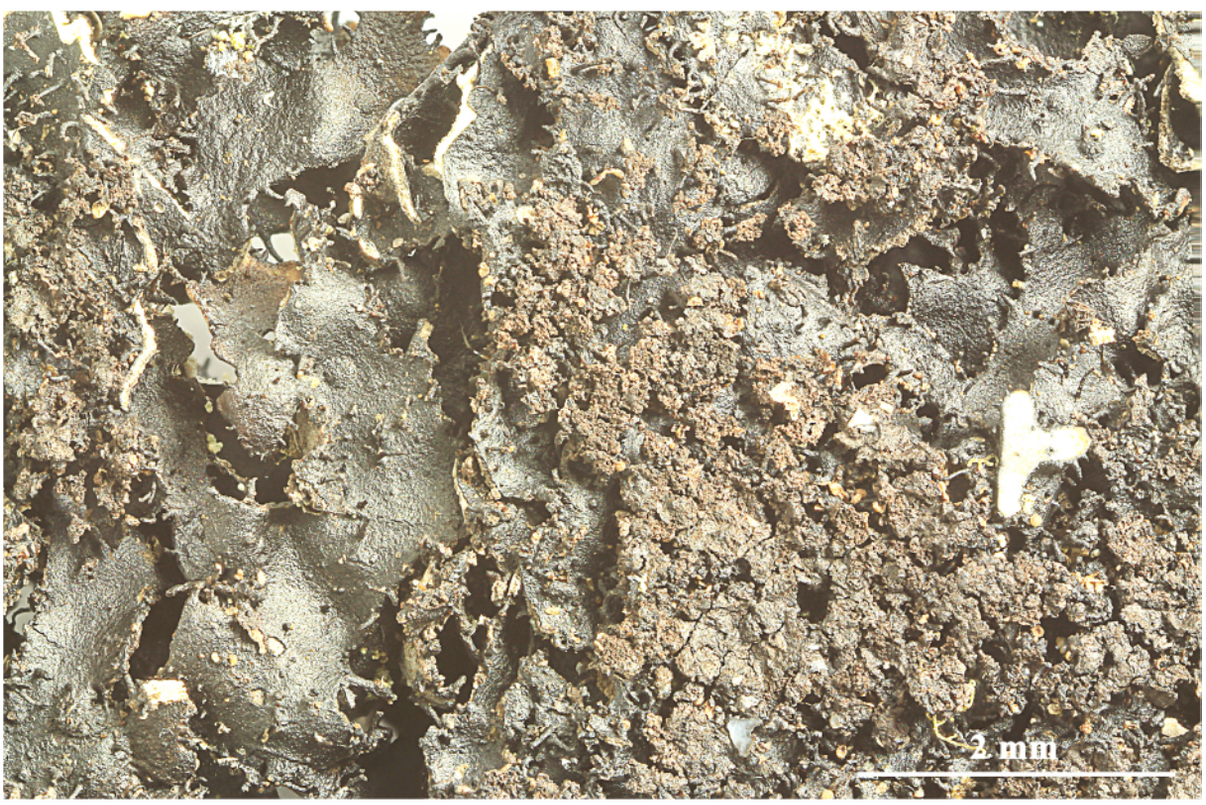
= *Parmelina schindleri* Hale, Smithson. Contr. bot. 33: 44 (1976)

= *Parmelinopsis schindleri* (Hale) Elix & Hale, Mycotaxon 29: 243 (1987)

[ABL40925], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree bark on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40925), 23.07.2017, det. A. Aptroot, 2017.- Chemistry: K-, KC-, UV-, atranorin, gyrophoric acis, hiascic acid.



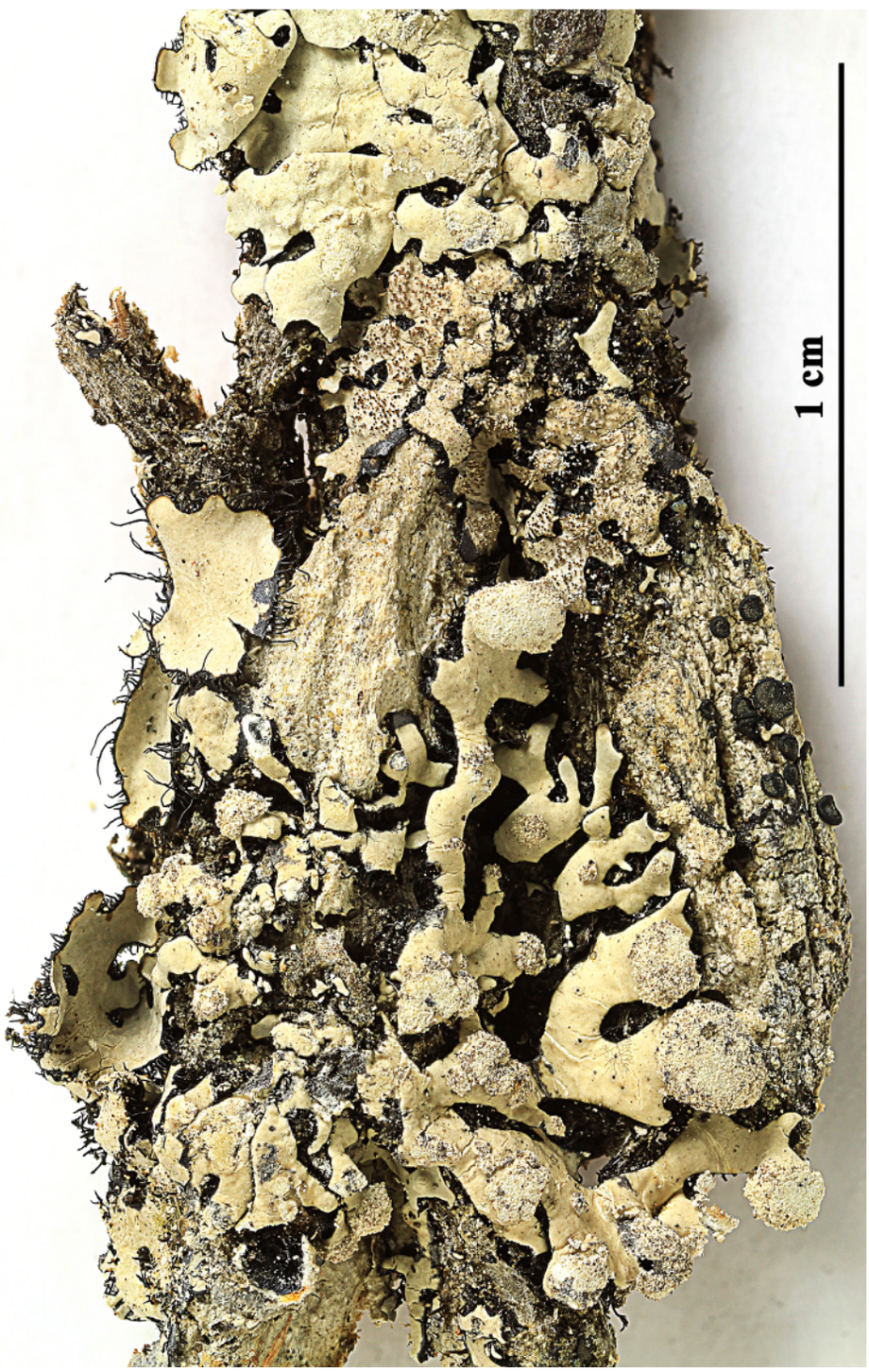


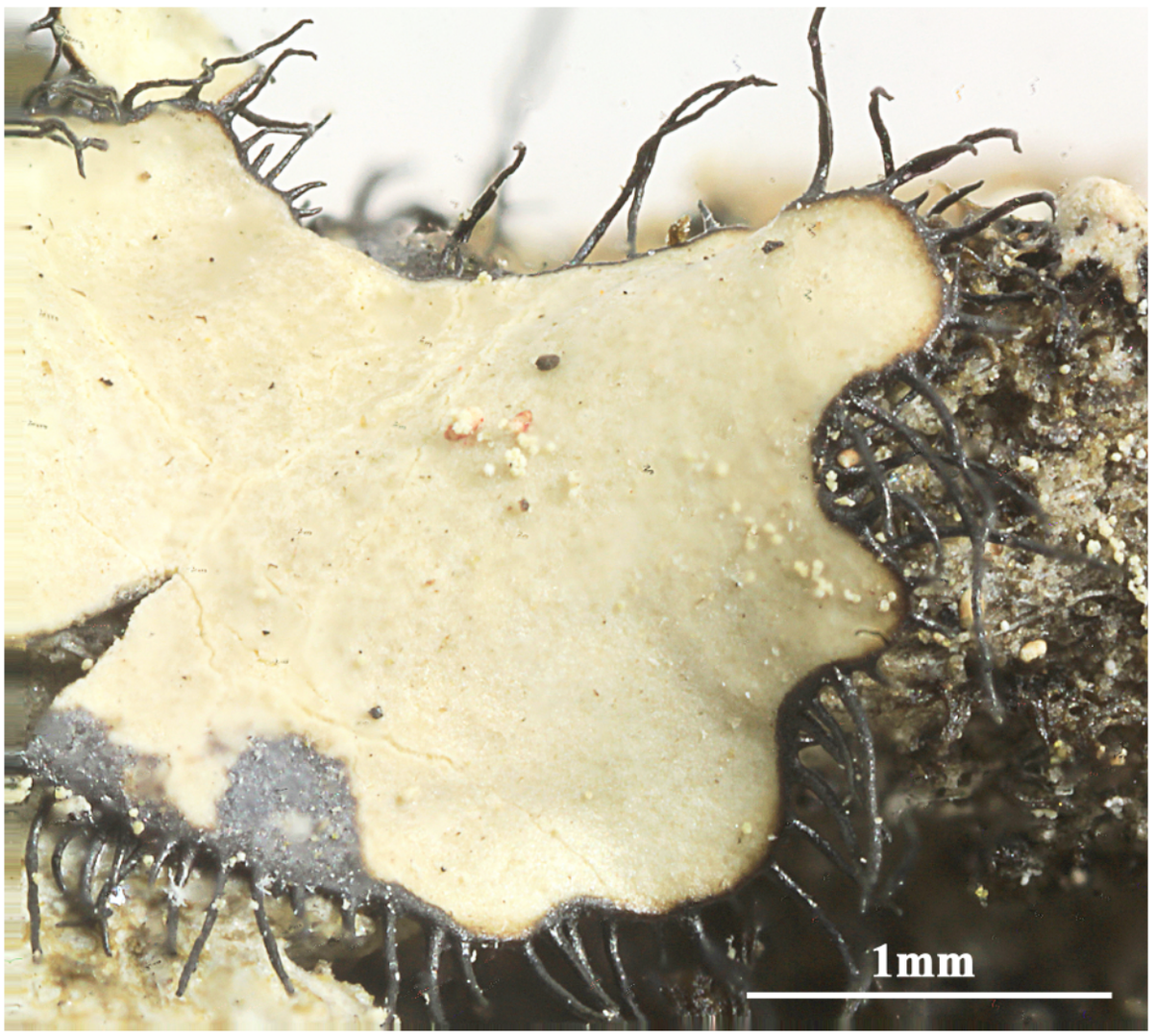


Hypotrachyna schindleri

Hypotrachyna subformosana Hale ex Elix, T.H. Nash & Sipman, in Sipman, Elix & Nash, Fl. Neotrop., Monogr. 104: 153 (2009)

[ABL42052], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42052), 23.07.2017, det. A. Aptroot, 2017. - Soralia laminal and subapical, capitate or orbicular. Medulla white with yellow-orange patches in lower part. Chemistry: Upper cortex K-, C-, KC-, P+ pale orange, UV+ yellow; medulla K-, C-, KC+ red, P-. TLC: Lichexanthone (major), lividic acid (major), 4-*O*-methylphysodic acid (major), oxyphysodic acid (minor), skyrin (minor), physodic acid (minor/trace).







Hypotrachyna subformosana

Hypotrachyna virensica Elix, T.H. Nash & Sipman, in Sipman, Elix & Nash, Fl. Neotrop., Monogr. 104: 163 (2009)

[ABL42144A], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42144A), 22.07.2017, det. A. Aptroot, 2017. - Upper cortex K-, C-, KC-, P+ pale orange, UV+ yellow; medulla K+ yellow-brown, C-, KC-, P+ orange-red; TLC: Lichexanthone (major), virensic acid (major), lividic acid (major), 4-*O*-methylphysodic acid (minor), colensoic acid (minor), methoxycolensoic acid (minor), 4-*O*-methyllividic acid (minor), oxyphysodic acid (minor), physodic acid (trace), protocetraric acid (trace)





Hypotrachyna virensica

Jenmania osorioi Henssen, Lichenologist 5(5-6): 447 (1973)

[ABL40617], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40617), 22.07.2017, det. A. Aptroot, 2017.

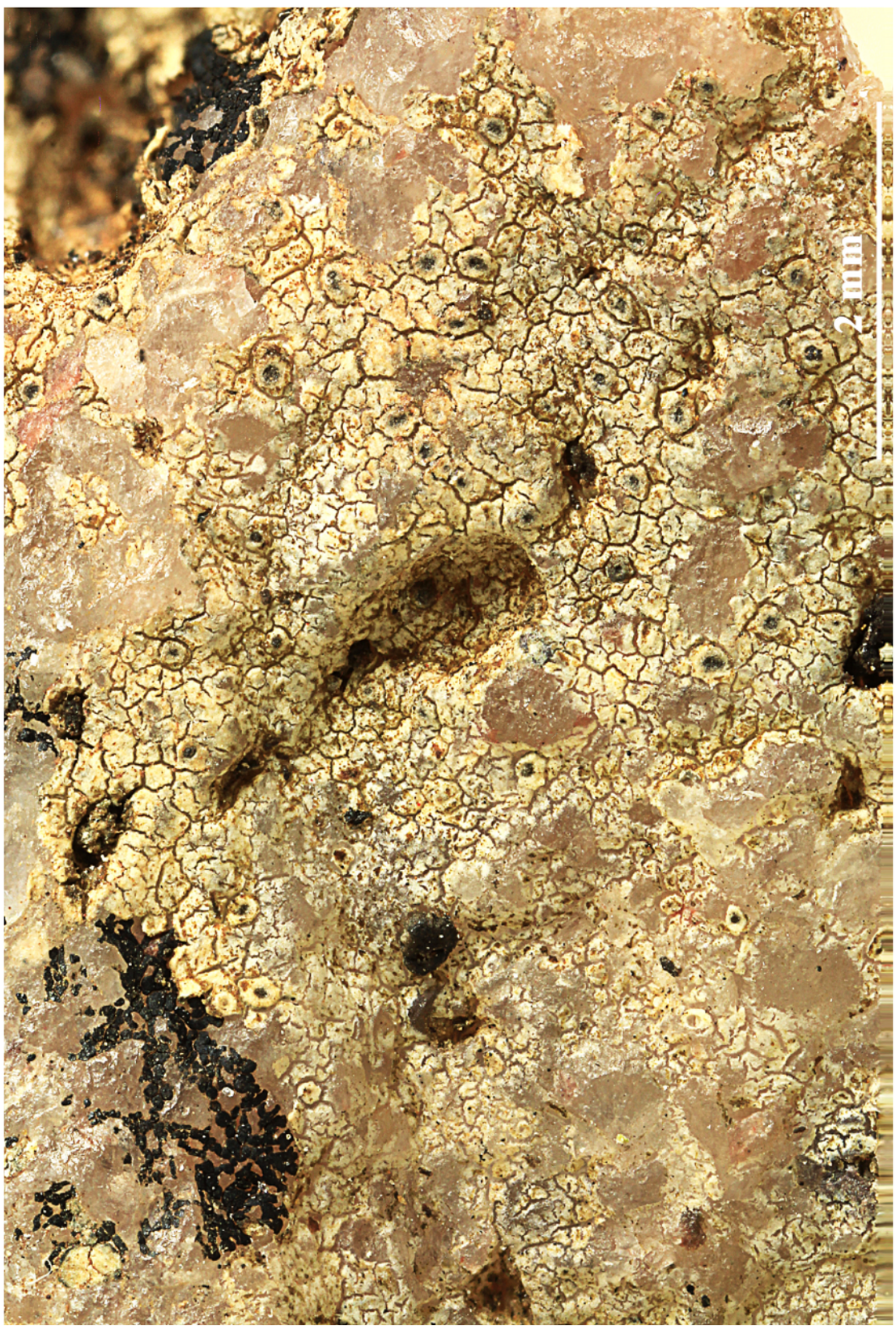




Jenmania osorioi

Lecanora atroflavens (Kremp.) Vain., Acta Soc. Fauna Flora fenn. 7(no. 1): 98 (1890)
= *Lecidea atroflavens* Kremp. 1876

[ABL40740], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40740), 22.07.2017, det. A. Aptroot, 2017.





Lecanora atroflavens

Lecanora atroviridis Fée, Bull. Soc. bot. Fr. 20: 312 (1873)

[ABL40637], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40637), 22.07.2017, det. A. Aptroot, 2017. - Thallus UV+ orange, spores 12 x 6 µm.





Lecanora atroviridis

Lecanora atroviridis Fée, Bull. Soc. bot. Fr. 20: 312 (1873)

[ABL40896], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40896), 23.07.2017, det. A. Aptroot, 2017. - Thallus without soredia, K+ yellow, UV+ orange. Apothecia greenish black. Hypothecium brown.





Lecanora atroviridis

Lecanora hensseniae Vänskä [as 'henssenii'], Ann. bot. fenn. 23(2): 130 (1986)

[ABL40973], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40973), 24. July 2017, det A. Aptroot , 2017. - Epithecium and hypothecium dark-brown; spores simple, hyaline, 11 x 6 µm.





Lecanora hensseniae

Lecanora hypofusca Aptroot & M. Cáceres, **Isotype,** Herzogia 31: 365 (2018)

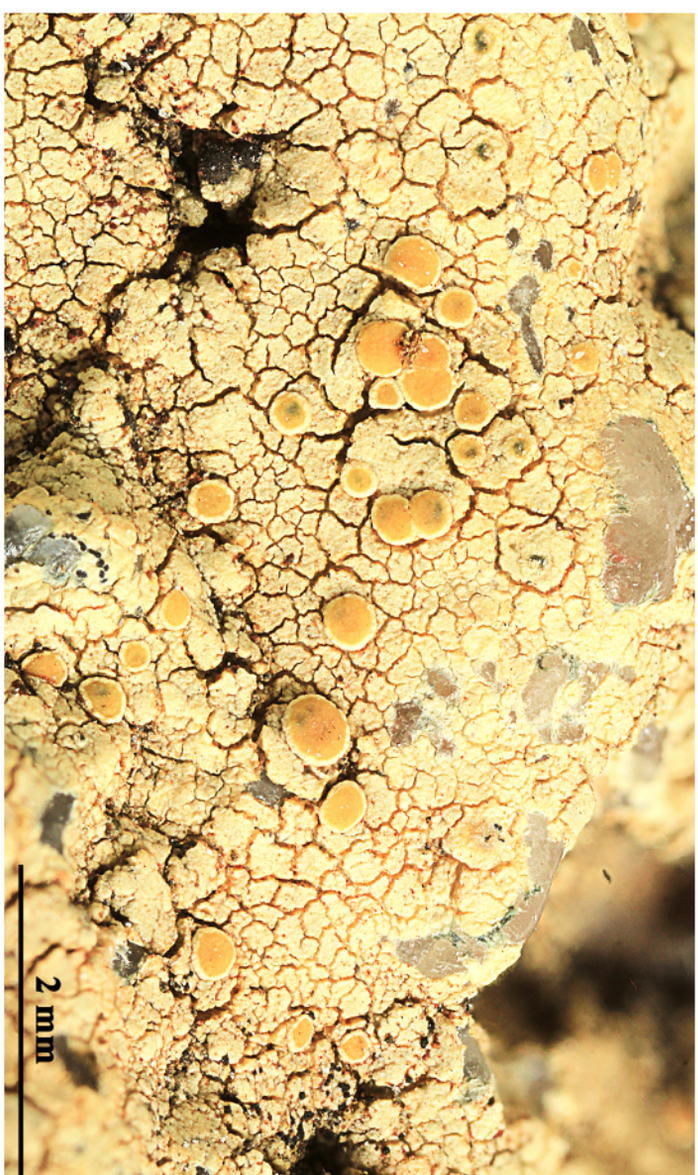
[ABL40630], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40630), 22.07.2017, det. A. Aptroot, 2017. - Thallus crustose, saxicolous, continuous but finely rimose, pale greenish grey, slightly uneven, dull, in section with numerous hyaline crystals; surrounded by a whitish hyphal prothallus. Photobiont green. Ascomata apothecia, superficial on the thallus, round, single, 0.1– 0.6 mm diam.; disc pale pinkish brown, flat to usually slightly convex; margin c. 0.1 mm wide, entire to usually coronate, somewhat paler than the thallus, not higher than the disc. Hymenium hyaline; epihymenium pale brown, without crystals; excipulum hyaline, with algae and with large crystals; central and lower part of hypothecium including stipe fuscous brown (in K unchanged). Paraphyses simple. Asci cylindrical. Ascospores hyaline, 8/ascus, non-septate, ellipsoid to somewhat pyriform, 10 –12 × 4 –5 µm, without gelatinous sheath. Pycnidia not observed. Chemistry: Cortex K+ yellow, KC unchanged, UV–, medulla K–, KC–, P–, C–, UV–. TLC: atranorin and chodatin (trace).





Lecanora hypofusca

[ABL40638], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40638), 22.07.2017, det. A. Aptroot, 2017. - Apothecia, superficial on the thallus, round, single, 0.1– 0.6 mm diam.; disc pale pinkish brown, flat to usually slightly convex; margin c. 0.1 mm wide, entire to usually coronate, somewhat paler than the thallus, not higher than the disc. Hymenium hyaline; epihymenium pale brown, without crystals; excipulum hyaline, with algae and with large crystals; central and lower part of hypothecium including stipe fuscous brown (in K unchanged). Paraphyses simple. Asci cylindrical. Ascospores hyaline, 8 per ascus, non-septate, ellipsoid to somewhat pyriform, 10–12 × 4–5 µm, without gelatinous sheath. Pycnidia not observed. Chemistry: Cortex K+ yellow, KC unchanged, UV–, medulla K–, KC–, P–, C–, UV–. TLC: atranorin and chodatin (trace).





Lecanora hypofusca

Lecanora leproplaca Zahlbr., in Magnusson & Zahlbruckner, Ark. Bot. 31A(no. 6): 64 (1944)

[ABL48711], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pole in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48711), 15.02.2019, det. A. Aptroot 2019.





Lecanora leproplaca

Lecanora subimmergens Vain., Bot. Mag., Tokyo 35: 51 (1921)

[ABL40654], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40654) 22.07.2017, det. A. Aptroot, 2017. - Margin of apothecia UV+ orange.



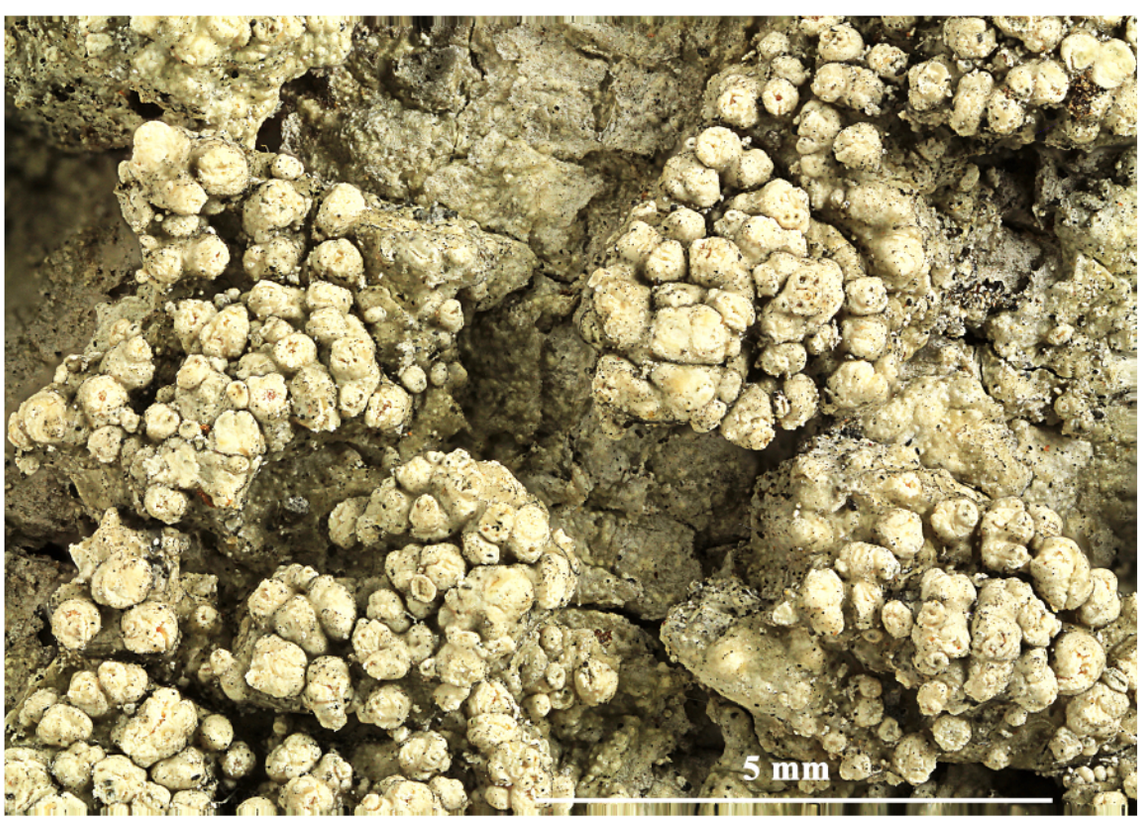


Lecanora subimmergens

Lepra lichexanthoverrucosa (Aptroot & Cáceres) Aptroot & Schumm
Basionym*: Pertusaria lichexanthoverrucosa* Aptroot & Cáceres, Bryologist 121(1): 77 (2018)

[ABL40861], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40861), 22.07.2017, det. A. Aptroot, 2017. - Thallus crustose, corticolous, with numerous whitish round to elongate warts of c. 0.1 mm that partly open and can function as pseudocyphellae; with isolated to compressed warts, each of which are probably initial apothecium warts; warts 0.2–1 mm, whitish, raised above the thallus, often eroded at the top, becoming hollow with wide gaping openings; without or with undifferentiated whitish prothallus. Soredia and isidia absent, but some areoles hollow with wide gaping openings, resembling soredia; these are locations where apothecium initials have fallen out. Ascomata apothecia, immersed inside the raised warts, almost globose to compressed or contorted, 0.2–0.4 mm diam. Hymenium pinkish; epihymenium pinkish; hypothecium hyaline. Paraphyses thin, mostly agglutinated to the asci. Asci cylindrical, 140–175 x 30–40 µm. Ascospores not observed. Chemistry. Cortex UV+ yellow, medulla K+ yellow-red, P–, C–, UV–. TLC: Lichexanthone and norstictic acid.

The new combination is made here because DNA analysis of a recent specimen of this species clusters inside the *Lepra* clade.





Lepra lichexanthoverrucosa

Lepra lichexanthoverrucosa (Aptroot & Cáceres) Aptroot & Schumm , comb. nov. **MycoBank MB849192**

Basionym*: Pertusaria lichexanthoverrucosa* Aptroot & Cáceres, Bryologist 121(1): 77 (2018)

[ABL40784], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40784), 22.07.2017, det. A. Aptroot, 2017. - Thallus crustose, corticolous, greyish green, up to c. 0.5 mm thick, continuous, with numerous whitish round to elongate warts of c. 0.1 mm that partly open and can function as pseudocyphellae; with isolated to compressed warts, each of which are probably initial apothecium warts; warts 0.2–1 mm, whitish, raised above the thallus, often eroded at the top, becoming hollow with wide gaping openings; without or with undifferentiated whitish prothallus. Soredia and isidia absent, but some areoles hollow with wide gaping openings, resembling soredia; these are locations where apothecium initials have fallen out. Photobiont green. Ascomata apothecia, immersed inside the raised warts, almost globose to compressed or contorted, 0.2–0.4 mm diam. Hymenium pinkish; epihymenium pinkish; hypothecium hyaline. Paraphyses thin, mostly agglutinated to the asci. Asci cylindrical, 140–175 x 30–40 µm, wall up to 10 µm thick. Ascospores not observed. Pycnidia not observed. Chemistry: Cortex UV+ yellow, medulla K+ yellow.red, P–, C–, UV–. TLC: Lichexanthone and norstictic acid.

The new combination is made here because DNA analysis of a recent specimen of this species clusters inside the *Lepra* clade.





Lepra lichexanthoverrucosa

Lepraria arbuscula (Nyl.) Lendemer & B.P. Hodk., Mycologia 105(4): 1005 (2013)

= *Leprocaulon arbuscula* (Nyl.) Nyl., Lich. Ins. Guin.: 34 (1889)

= *Stereocaulon arbuscula* (Nyl.) Nyl., Annls Sci. Nat., Bot., sér. 4 19: 297 (1863)

= *Stereocaulon nanum subsp. arbuscula* Nyl., Syn. meth. lich. (Parisiis) 1(2): 253 (1860)

[ABL40921], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40921), 23.07.2017, det. A. Aptroot, 2017.





Lepraria arbuscula

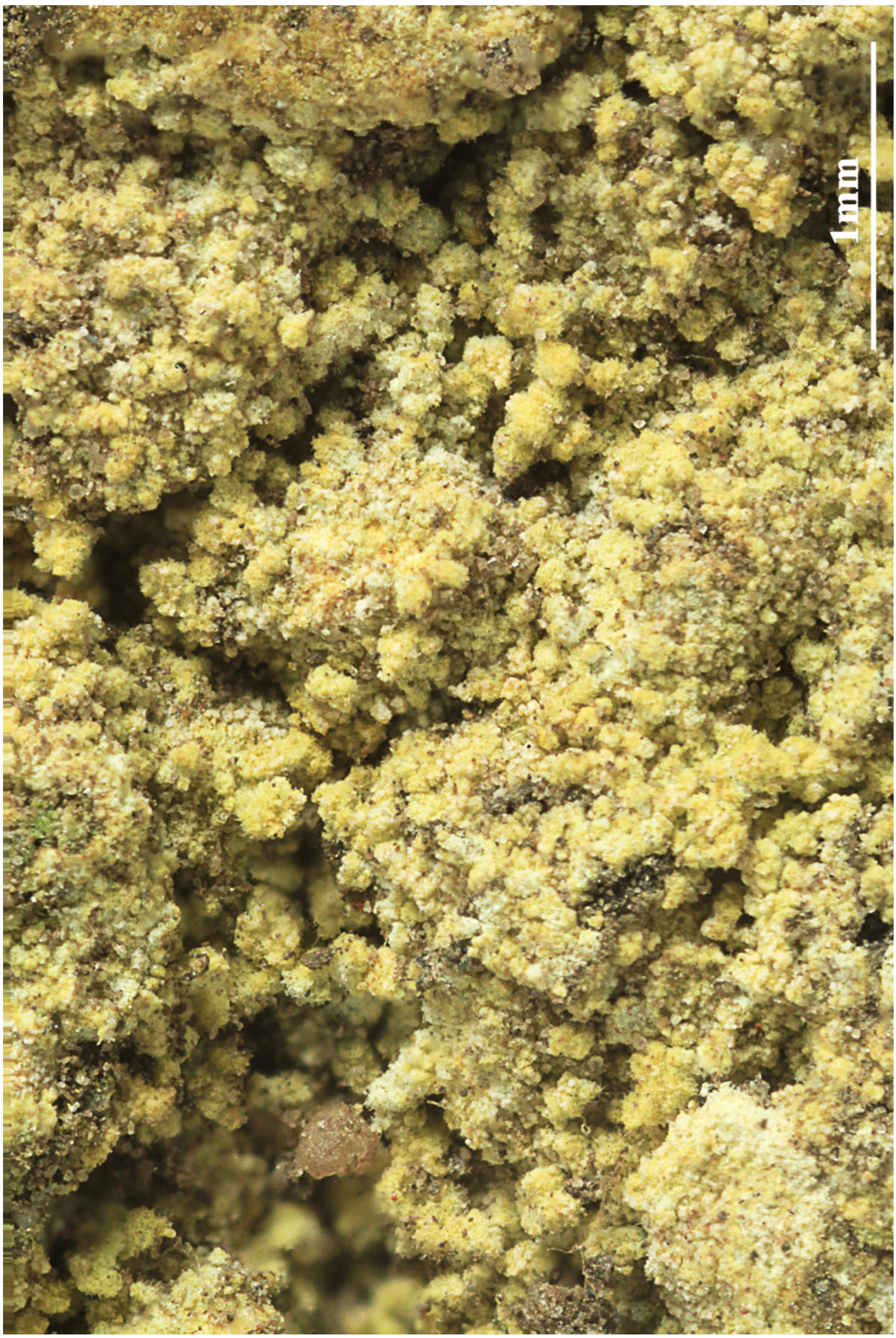
Lepraria sipmaniana (Kümmerl. & Leuckert) Kukwa, Ann. bot. fenn. 39(3): 226 (2002)

Leproloma sipmanianum Kümmerl. & Leuckert, in Leuckert & Kümmerling, Nova Hedwigia 52(1-2): 27 (1991)

[ABL40886], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous soil on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40886), 23.07.2017, det. A. Aptroot, 2017. - This tropical taxon is characterized mainly by the prominent lobes with raised margins, rather smooth surface with few granules and the production of pannaric acid-6-methylester as the main substance. *Lepraria membranacea* (Dicks.) Vain. is the only morphologically similar taxon containing dibenzofurans, but it can be distinguished by the production of pannaric acid as a diagnostic metabolite.

Chemistry: Pannaric acid-6-methylester (+), 4-oxypannaric acid-6-methylester (+, trace), anthraquinones (+) and 'vouauxii unknown' 1 (+) (see Tønsberg 1992).





Lepraria sipmaniana

Letrouitia leprolyta (Nyl.) Hafellner, Nova Hedwigia 35(4): 693 (1983) [1981]

= *Bombyliospora leprolyta* (Nyl.) Zahlbr., Cat. Lich. Univers. 7: 54 (1930) [1931]

= *Lecanora domingensis* * *leprolyta* Nyl., Flora, Regensburg 52: 70 (1869)

= *Lecanora leprolyta* (Nyl.) Hue, Nouv. Arch. Mus. Hist. Nat., Paris, 3 sér. 3: 53 (1891)

= *Patellaria leprolyta* (Nyl.) Müll. Arg., Flora, Regensburg 65: 489 (1882)

= *Placodium leprolytum* (Nyl.) Vain., Ann. Acad. Sci. fenn., Ser. A 2(no. 3): 9 (1926)

[ABL40591], Brazil, Bahia, Chapada Diamantina, Lençois Vila Serrano. 12°33'33" S, 41°23'20" W, 425 m. On tree bark in garden in Pousada. Leg. M. Caceres & A. Aptroot (no 40591), det. A. Aptroot 2014.





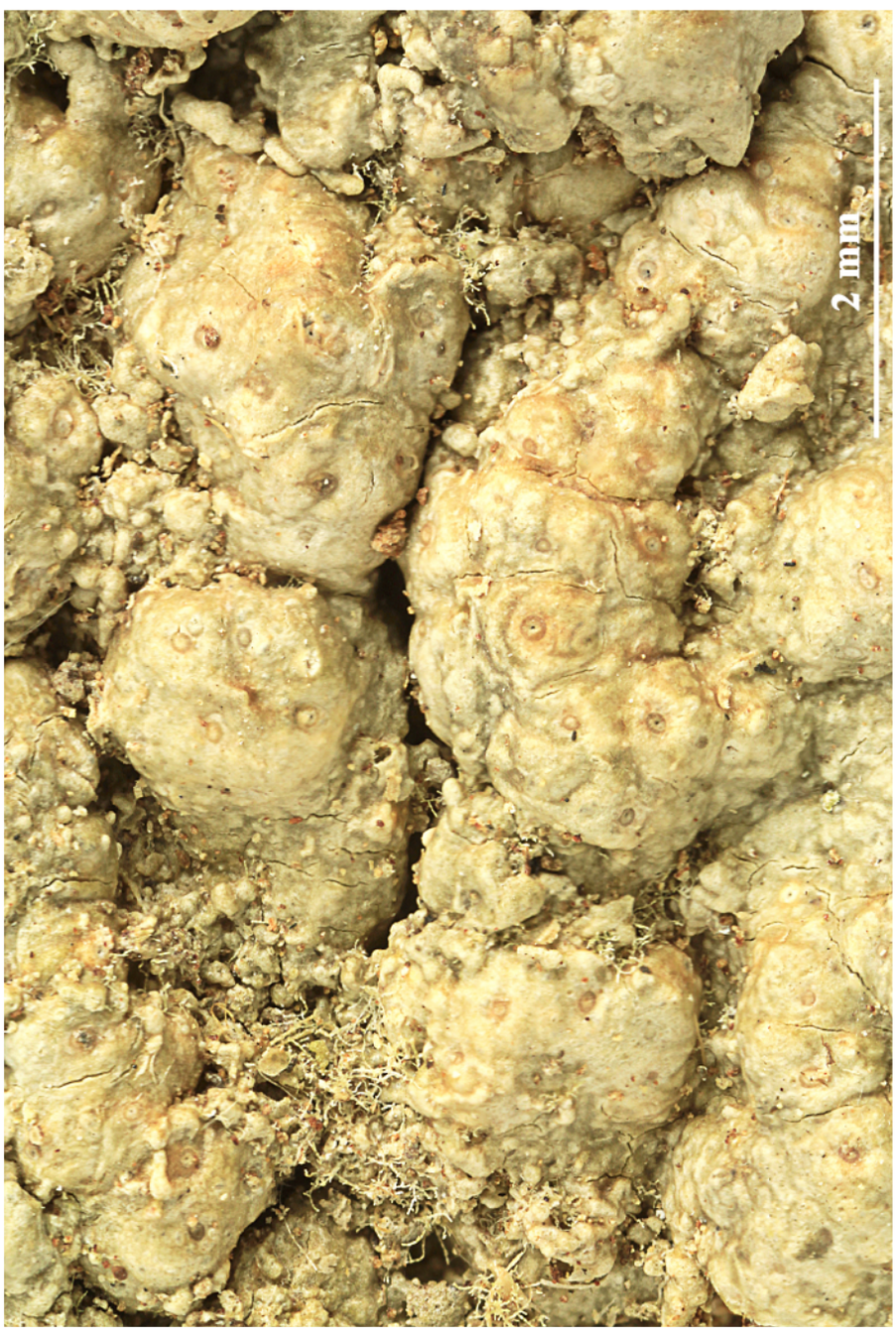
Letrouitia leprolyta

Leucodecton compunctellum (Nyl.) Frisch, Biblthca Lichenol. 92: 155 (2006)

= *Leptotrema compunctellum* (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 632 (1923) [1924]

= *Thelotrema compunctellum* Nyl., Bull. Soc. linn. Normandie, sér. 2 2: 77 (1868)

[ABL48352], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48352), 15.02.2019, det. A. Aptroot 2019. - Thallus pale-grey to straw colored, finely rugose to verrucose surface thallus with large columnar clusters of crystals, a fused proper exciple, porinoid apothecia with very small pores (ca. 0.05 mm); spores 1–4/ascus, brown, muriform, up to 140 µm long.



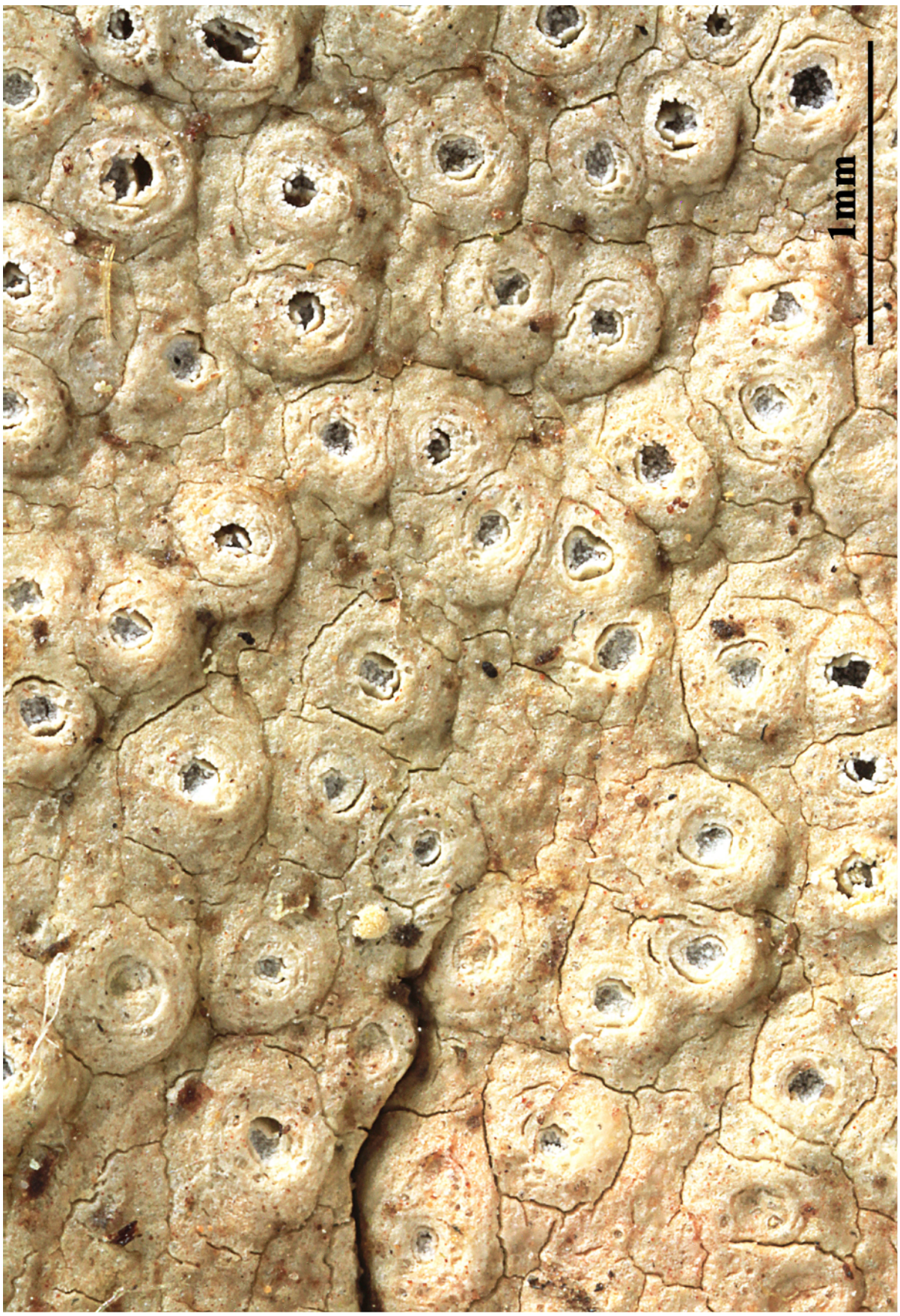


Leucodecton compunctellum

Leucodecton occultum (Eschw.) Frisch, Biblthca Lichenol. 92: 157 (2006)
= *Leptotrema occultum* (Eschw.) Hale, Smithson. Contr. bot. 16: 40 (1974)
= *Myriotrema occultum* (Eschw.) Hale, Mycotaxon 11(1): 134 (1980)
= *Thelotrema occultum* Eschw., in Martius, Fl. bras. enum. pl. 1(1): 174 (1833)

[ABL42163A], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 42163A), 2017. - Thallus tannish white, epiphloeodal, continuous, smooth to minutely pitted, forming colonies 3-5 cm broad; apothecia numerous, immersed, 0.2-0.3 mm in diameter, non carbonized and without columella, inner lepadinioid exciple well developed and pulling away from the wall, lightly pruinose surface of hymenium visible; hymenium 65-70 µm high; spores 4-8/ascus, brown, muriform with 5-7 transverse locules, 2-3 longitudinal locules, 9-l0 x 18-21 µm, IKI-. Chemistry: Norstictic acid.





Leucodecton occultum

Lopadium hepaticicola Döbbeler, Poelt & Vězda [as 'hepaticola'], Herzogia 7(1-2): 82 (1985)

[ABL40912], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On dead *Cladonia* on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40912), 23.07.2017, det. A. Aptroot, 2017. - Paraphyses simple,but also branched or anastomosing. Spores 1/ascus, muriforme, 60-155 x 25-55 µm; atranorin.



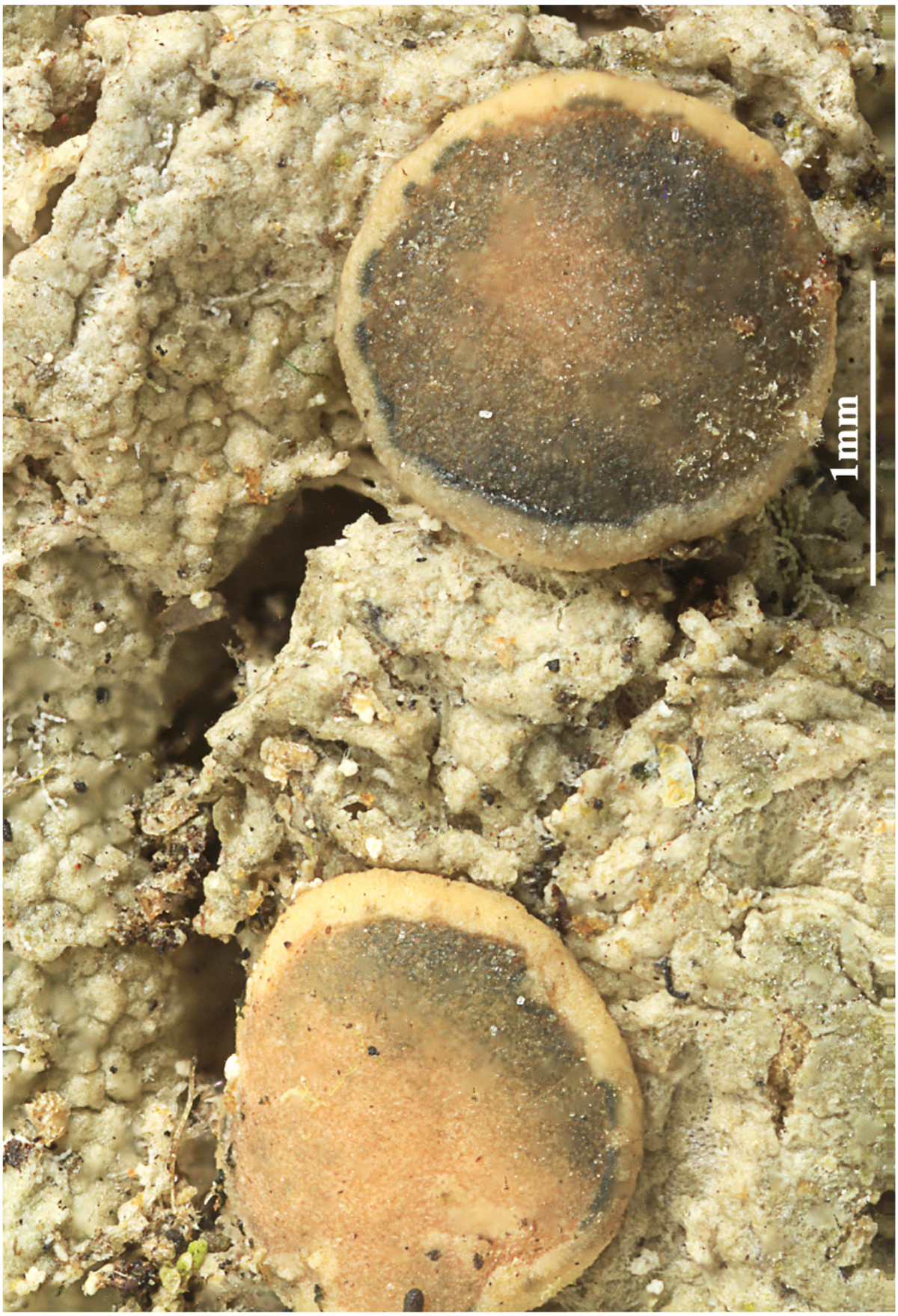


Lopadium hepaticicola

Lopezaria versicolor (Flot.) Kalb & Hafellner, in Kalb, Lichenes Neotropici, Fascicle XI (nos 451-475) (Neumarkt): 2, no. 464 (1990)
= *Bacidia versicolor* (Flot.) Trevis., Spighe Paglie: 7 (1853)
= *Biatora versicolor* (Flot.) Mont. & Bosch, Pl. Jungh. 4: 460 (1856)
= *Biatorina versicolor* (Flot.) Hellb., Bih. K. svenska VetenskAkad. Handl., Afd. 3 21(no. 13): 109 (1896)
= *Catinaria versicolor* (Flot.) Sipman, Biblthca Lichenol. 18: 172 (1983)
= *Heterothecium versicolor* Flot., Bot. Ztg. 8: 555 (1850)
= *Lecanora versicolor* Fée, Essai Crypt. Exot. (Paris): 115 (1825) [1824]
= *Lecidea versicolor* (Flot.) Nyl., Acta Soc. Sci. fenn. 7(2): 461 (1863)
= *Megalaria versicolor* (Flot.) Fryday & Lendemer, Lichenologist 42(5): 598 (2010)
= *Megalospora versicolor* (Flot.) Zahlbr., in Engler & Prantl, Nat. Pflanzenfam., Teil. I (Leipzig) 1(1*): 134 (1905)
= *Patellaria versicolor* (Flot.) Müll. Arg., Flora, Regensburg 65(21): 330 (1882)
= *Psorothecium versicolor* (Flot.) Zahlbr., Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1 111: 396 (1902)

[ABL40957], Brazil, Bahia, Chapada Diamantina, Palmeiras, Cachoeira Pai Inácio, near waterfall on tree bark. 12°27'24" S, 41°27'57" W, 850 m. Leg. M. Cáceres & A. Aptroot (no 40957), 23.07.2017, det. A. Aptroot, 2017. - Hymenium not inspersed, spores 2/ascus, 1-septate, 64-70 x 15 µm.





Lopezaria versicolor

Malmidea tratiana Kalb & Mongk. [as 'tratana'], in Kalb, Buaruang, Mongkolsuk & Boonpragob, Phytotaxa 42: 44 (2012)

[ABL48270], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48270), 14.02.2019, det. A. Aptroot 2019. - Thallus green, granular-sorediate, K-. Apothecia dark brown, Margin black. Hypothecium dark brown, K-. Medulla K-. Ascospores hyaline, simple, 8/ascus 9-12.5 x 5.2-6.2 µm. Chemisty: atranorin (tr),





Malmidea tratiana

Mazosia melanophthalma (Müll. Arg.) R. Sant., Symb. bot. upsal. 12(no. 1): 117 (1952)

= *Opegrapha melanophthalma* Müll. Arg., Flora, Regensburg 66(21): 348 (1883)

= *Platygrapha melanophthalma* (Müll. Arg.) Müll. Arg., Revue mycol., Toulouse 10(no. 39): 117 (1888)

[ABL48873E], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873E), 21.03.2019, det. A. Aptroot 2019. - Thallus finely verrucose, whitish to greenish. Soredia and isidia absent. Photobiont trentepohlioid. Apothecia present, round, emergent to sessile, disc olivaceous to black, margin thalline and often thin at the tip, widening downward to make a volcano-like shape, with algae. Paraphyses anastomosing. Asci cylindrical. Ascospores fusiform, 3-septate. 15-22 x 3-5 µm, upper median cell slightly enlarged. Chemistry: No lichen substances detected.





Mazosia melanophthalma

Mazosia phyllosema (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 503 (1923) [1924]
= *Platygrapha phyllosema* Nyl., Bull. Soc. linn. Normandie, sér. 2 7: 171 (1873)

[ABL48873H], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873H), 21.03.2019, det. A. Aptroot 2019. - Thalllus smooth.Spores fusiform, 3-septate, 15-25 x 4-5 µm. Chemistry: No substances detected by TLC.



Mazosia tumidula (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 2: 504 (1923) [1924]
= *Rotula tumidula* Müll. Arg. 1890

[ABL48873R], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873R), 21.03.2019, det. A. Aptroot 2019. - Thallus coarsely verrucose. Ascospores fusiform, 3-septate, 15-24 x 3-5 µm, upper median cell slightly enlarged. Chemistry: psoromic acid.





Mazosia tumidula

Megalaria leptocheila (Tuck.) Fryday & Lendemer, Lichenologist 42(5): 598 (2010)

= *Catillaria leptocheila* (Tuck.) Riddle, Mycologia 4(3): 128 (1912)

= *Catillochroma leptocheilum* (Tuck.) Kalb [as 'leptocheila'], Biblthca Lichenol. 95: 302 (2007)

= *Heterothecium leptocheilum* (Tuck.) Tuck., Syn. N. Amer. Lich. (Boston) 2: 55 (1888)

= *Lecidea leptocheila* Tuck., in Nylander, Annls Sci. Nat., Bot., sér. 4 19: 351 (1863)

= *Patellaria leptocheila* (Tuck.) Müll. Arg., Flora, Regensburg 64(32): 522 (1881)

[ABL48652], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'55" S, 39°24'57" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48652), 18.02.2019, det. A. Aptroot 2019. - Subhymenium chocolate brown, hymenium not inspersed, spores 1-septate, 13-20 x 4-7 µm



Megalotremis flavovulcana (Komposch) Aptroot [as 'flavovulcanus'], in Aptroot, Lücking, Sipman, Umaña & Chaves, Biblthca Lichenol. 97: 69 (2008)

= *Anisomeridium flavovulcanum* Komposch [as 'flavovulcanus'], Lichenologist 37(6): 520 (2005)

[ABL48337], Brazil, Bahia, Itamarajú, Monte Pascoal, on root in Atlantic tropical rain forest. 16°53'31" S, 39°24'40" W, 350 m. Leg. M. Cáceres & A. Aptroot (no 48337), 15.02.2019, det. A. Aptroot 2019. - Thallus greenish grey, corticate, smooth, UV-. Perithecia solitary or in groups, black, globose, superficial on the substratum, immersed in conical thallus warts. Hamathecium hyaline, not inspersed, IKI-, filaments profusely anastomosing. Spores 8/ascus, 1-septate, constricted at the septa, 35-55 x 15-23 µm.





Megalotremis flavovulcana

Melanotrema endomelaenum (Müll. Arg.) Mangold, in Mangold, Elix & Lumbsch, in McCarthy (Ed.), Flora of Australia, Vol. 57. Lichens 5 (Melbourne): 655 (2009)

= *Ocellularia endomelaena* Müll. Arg., Hedwigia 32: 131 (1892)

[ABL48398], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48398), 15.02.2019, det. A. Aptroot 2018. - UV-, P+ yellow. Hymenium not inspersed. Spores 7-septate.







Melanotrema endomelaenum

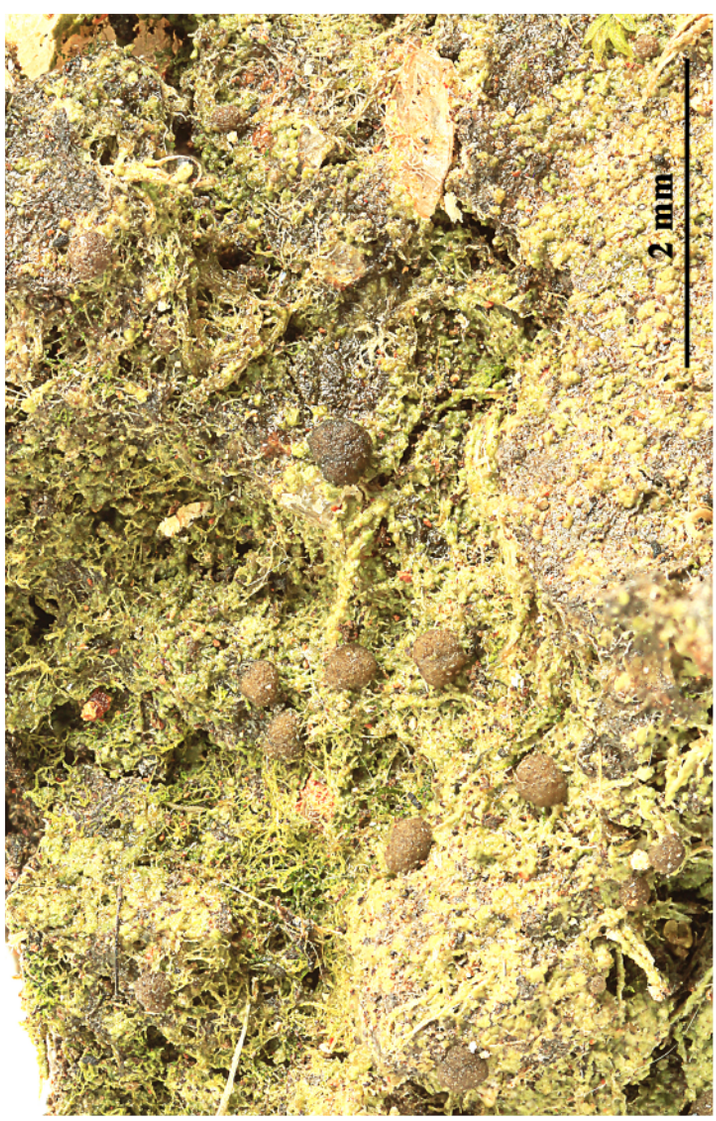
Micarea squamulosa Aptroot, Lücking & M. Cáceres, **Isotype**, in Hyde et al., Fungal Diversity 10: 10.1007/s13225-019-00429-2, [123] (2019)

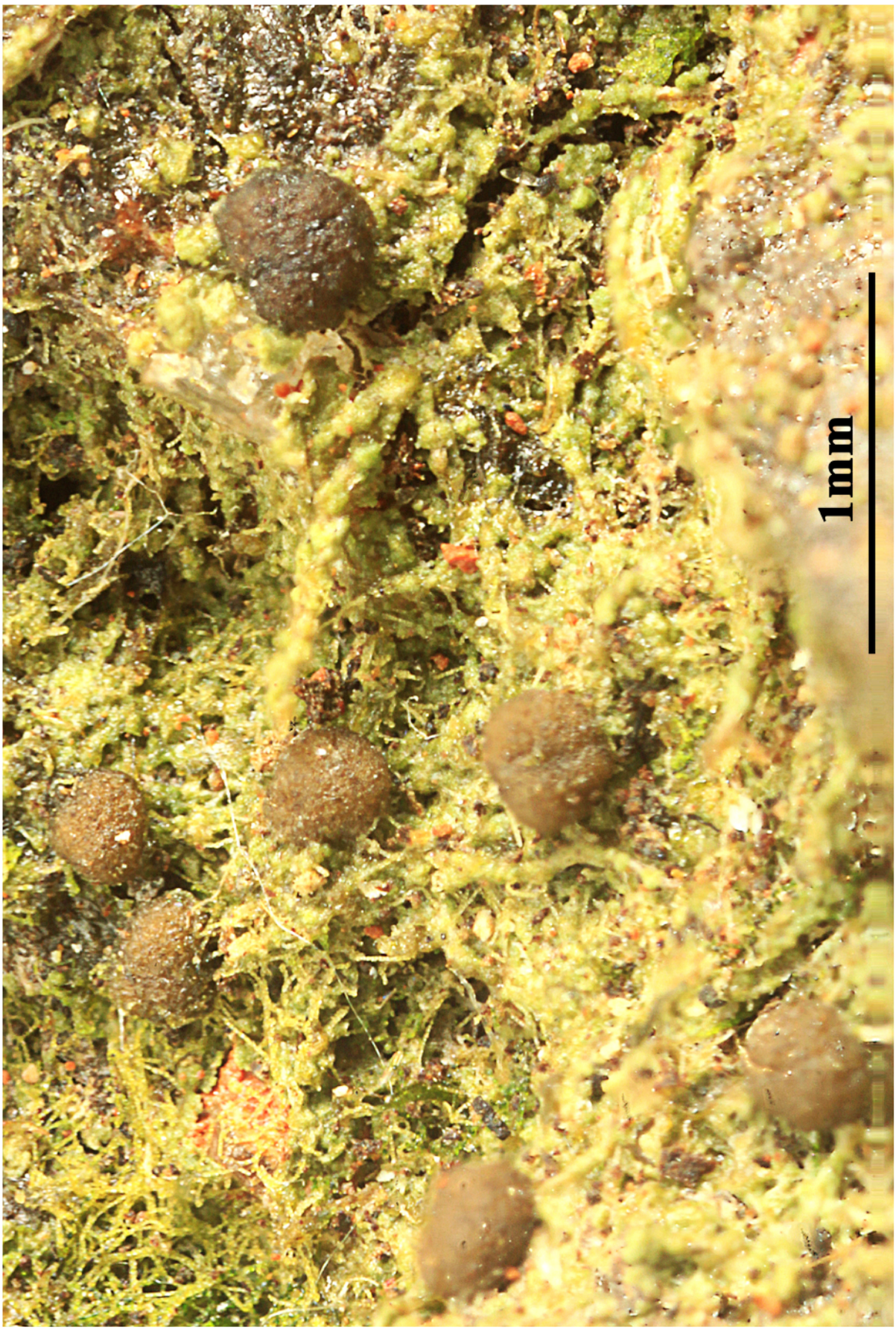
[ABL40719], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous soil along river. Leg. M. Cáceres & A. Aptroot (no 40719), 22.07.2017, det. A. Aptroot, 2017.



Micarea termitophila Aptroot & M. Cáceres, Lichenologist 46(3): 371 (2014)

[ABL48434], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest, on termite nest. 16°53'45" S, 39°24'30" W, 550 m. Leg. M. Cáceres & A. Aptroot (no 48434), 15.02.2019, det. A. Aptroot 2019. - Thallus dull, continuous but with surface plicate and roughened, c. 50 mm thick, with a thin, hyaline cortex. Algae probably myrmecioid, c. 2–4 µm diam. Apothecia appressed, initially between the thallus granules, later often emergent, 0.2–0.3 mm diam., round or usually lobate; disc convex, dull, brown to black. Hymenium hyaline, 30–50 mm high, K+ violet, especially in the upper part; paraphyses numerous, c. 1 µm wide; hypothecium purplish brownish, K+ orange-brown; excipulum absent. Asci 8-spored. Ascospores hyaline, pyriform, simple, 7–9 x 3.0–3.5 µm, with rounded ends, lacking a gelatinous sheath. Pycnidia on the same thallus as the apothecia, often somewhat in separate groups, black, c. 0.1 µm diam. Conidia hyaline, bacilliform, 4–5 x 1 µm. Chemistry. Thallus UV-, C-, K-, KC-, P-. No lichen substances detected with TLC.





Micarea termitophila

Mycoporum pycnocarpoides Müll. Arg., Bot. Jb. 20: 290 (1895)
= *Dermatina pycnocarpoides* (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 1: 550 (1922)

[ABL48408], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48408), 15.02.2019, det. A. Aptroot 2019. - Spores hyaline, muriform, 9 x 3-5-septate, 40 x 18 µm.



Myriostigma filicinum (Ellis & Everh.) Frisch & G. Thor, in Frisch, Thor, Ertz & Grube, Taxon 63(4): 739 (2014)

= *Ascomycetella filicina* Ellis & Everh., Journal of the Inst. Jamaica 1: 247 (1893)

= *Cryptothecia filicina* (Ellis & Everh.) Lücking & G. Thor, in Lücking, Thor, Aptroot, Kalb & Elix, Lichenologist 38(3): 238 (2006)

[ABL48267], Brazil, Bahia, Itamarajú, Monte Pascoal, on bamboo in Atlantic tropical rain forest. 16°52'35" S, 39°25'05" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48267), 14.02.2019, det. A. Aptroot 2019. - Thallus foliicolous or corticolous on smooth bark or bamboo, epiphyllous or often hypophyllous, continuous but marginally often effuse, smooth to indistinctly farinose-byssoid, 10–50 mm across and 15–35 µm thick, ecorticate, pale greyish green, matt, with colourless, hydrophobic crystals dissolving in K. Photobiont a species of *Trentepohlia*, cells rounded to oblong, 8–15 x 4–6 µm, in irregular plates or short threads leaving large interspaces. Ascomata (ascigerous areas) erumpent, slightly raised above thallus level, rounded to somewhat irregular in outline, 0.8–3(–5) mm diam. and 100–140 µm high, white to pale greenish white and usually with darker dots indicating individual asci. Ascigerous layer covered by 15–25 µm high, algiferous thallus layer. Ascigerous layer 70–110 µm high, dark grey due to inspersion of paraphyses with numerous small crystals (dissolving in K), I+ bluish, KI+ blue then greenish. Asci obovate to globose, shortly stalked, 60–90 x 50–70 µm, I-, KI-. Ascospores (6–)8/ascus, oblong-ellipsoid, muriform, with very slight constrictions at septa, 40–80 x 15–25 µm, 2.5–3.5 times as long as broad, colourless. Pycnidia not observed. Chemistry: Perlatolic acid (thallus and ascomata C-).





Myriostigma filicinum

Myriostigma xanthonicum Aptroot & M. Cáceres, **Isotype,** Herzogia 31: 367 (2018)

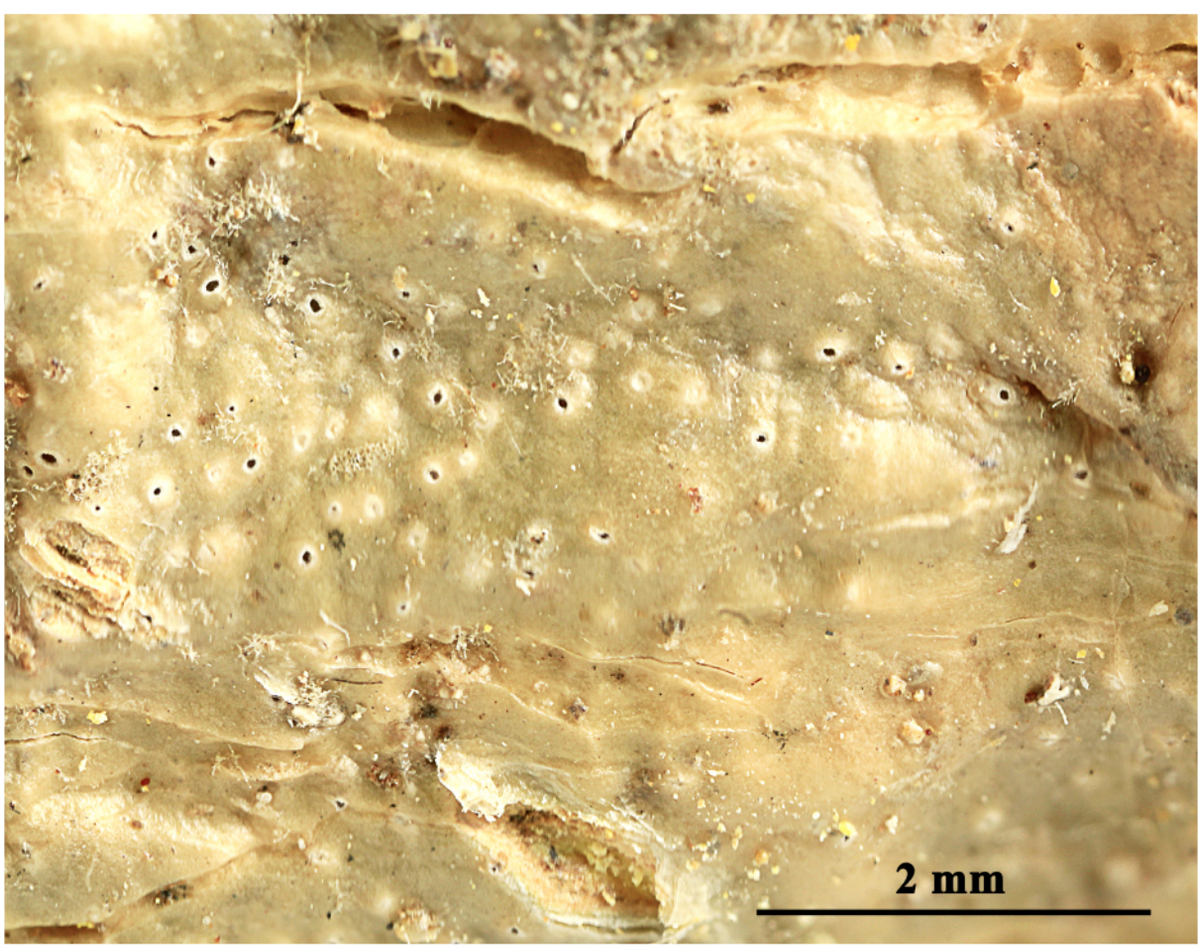
[ABL40958], Brazil, Bahia, Chapada Diamantina, Palmeiras, Cachoeira Pai Inácio, near waterfall on tree bark. 12°27'24" S, 41°27'57" W, 850 m. Leg. M. Cáceres & A. Aptroot (no 40958), 23.07.2017, det. A. Aptroot, 2017. - Thallus crustose, corticolous, whitish grey, dull, uneven with numerous punctiform to conical warts of thallus colour, in section with numerous hyaline crystals; without prothallus. Photobiont *Trentepohlia*, cells rounded to irregular in outline, 6 – 8 × 6 –10 µm, yellowish green to orange. Ascomata compact groups of asci within anastomosing hyphae, superficial on the thallus, irregular in outline, often in unbranched to sparsely branched lines and even initially confluent, lines c. 0.2– 0.5 mm wide and up to 3 mm long.; surface flat, almost pure white; margin absent. Hymenium absent, but asci interspersed by anastomosing hyphae. Asci pyriform, with thickened tip leaving a clear, small and round to somewhat elongated ocular chamber. Ascospores hyaline, 8 per ascus, submuriform, 7 × 0–1-septate with only 2–3 longitudinal septa in total, fusiform, clavate, 18–21 × 7–8.5 µm, without gelatinous sheath. Pycnidia not observed. Chemistry: Thallus K–, P–, C–, UV+ yellow. TLC: lichexanthone and perlatolic acid.





Myriostigma xanthonicum

[ABL48207], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'44" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48207), 14.02.2019, det. A. Aptroot 2019. - Thallus light grey-green, smooth to uneven, with dense, prosoplectenchymatous cortex; photobiont layer and medulla with clusters of calcium oxalate crystals. Apothecia immersed, rounded, 0.1–0.2 mm diam., aggregate in irregular to almost pseudostromatic groups; disc covered by narrow, 0.05 mm wide pore, invisible; margin entire, brown. Columella absent. Excipulum prosoplectenchymatous, brown; periphysoids absent. Hymenium 60–70 µm high, clear; paraphyses unbranched. Ascospores 8/ascus, submuriform with 5–7 transverse septa and 0–1 longitudinal septa per segment, 18–25 x 7–9 µm, ellipsoid, with thick septa and rounded lumina, colorless, I+ violet-blue (amyloid). Secondary chemistry: no substances detected by TLC. This species somehow resembles *Pycnotrema pycnoporellum* but differs in the very small, irregularly aggregate, almost porinoid apothecia.

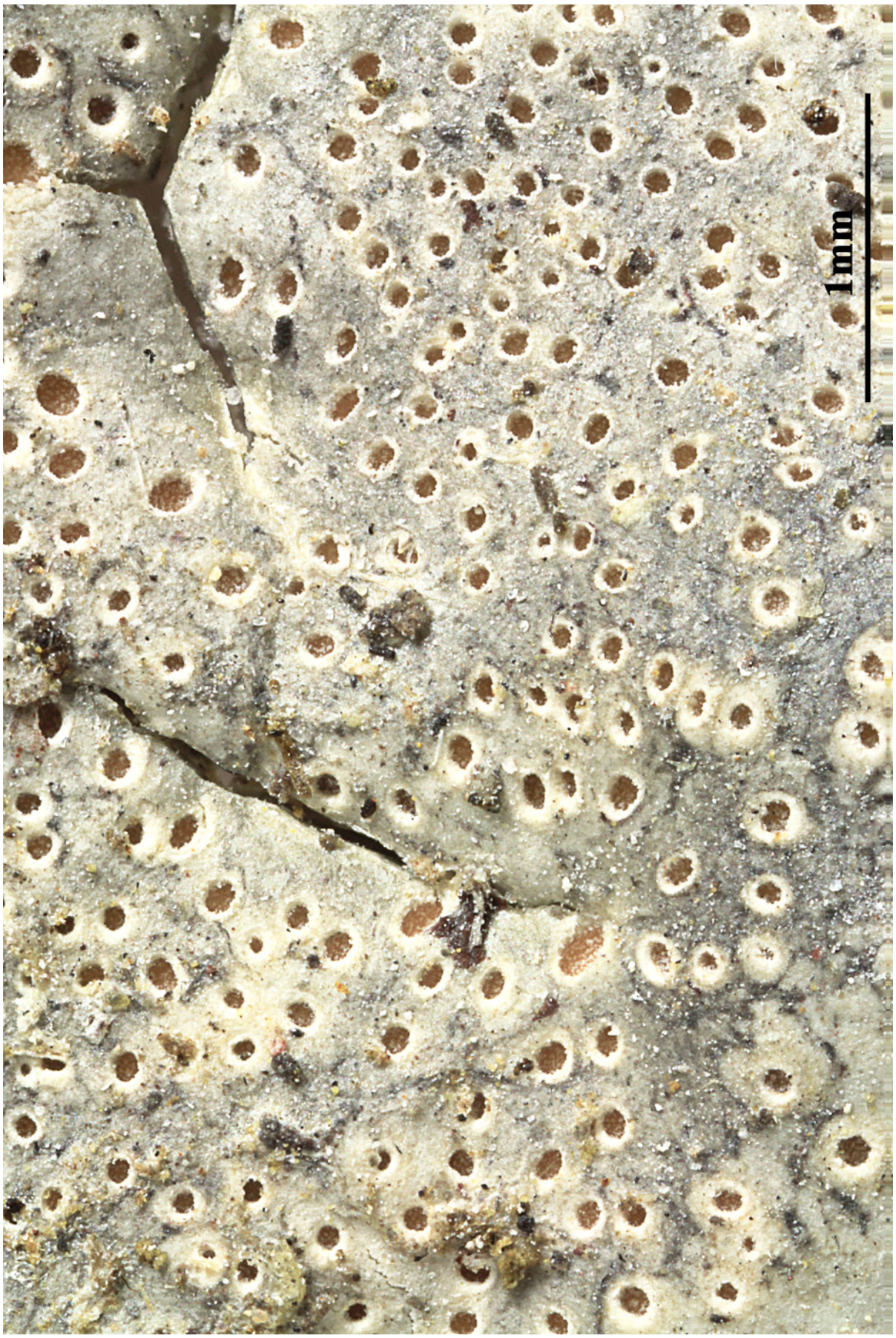




Myriotrema aggregans

[ABL42059], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42059), 23.07.2017, det. A. Aptroot, 2017. - Thallus corticolous, epiperidermal. Photobiont *Trentepohlia*. Ascomata rounded, immersed, with nearly complete thalline margin, 0.2–0.3(–0.4) mm diam., disc covered by 0.1–0.2(–0.25) mm wide pore and rarely with irregular, white pseudocolumella; proper margin distinct, entire, visible as thick, pure white rim around the pore; thalline margin entire, silvery-grey. Excipulum entire, yellowish brown, 30–50 µm wide, fused with thalline margin; laterally covered by algiferous, corticate thallus; columella usually absent, rarely a hyaline, irregular pseudocolumella covering the hymenium and connecting to the excipulum; hypothecium prosoplectenchymatous, 5–10 µm high, hyaline; hymenium 70–80 µm high, hyaline, clear; epithecium indistinct, 5–10 µm high, hyaline. Paraphyses unbranched, apically smooth; periphysoids absent; asci cylindrical to clavate, 70–80 x 10–12 µm. Ascospores 8 per ascus, more or less uniseriate to irregularly arranged, ellipsoid, submuriform with 3–5 transverse and 0–1 longitudinal septa per segment, 15–20 x 10–13 µm, 1.3–1.7 times as long as wide, hyaline, distoseptate with lens-shaped to rounded lumina and rather thick outer wall, I+ violet-blue. CHEMISTRY: Psoromic, subpsoromic, and 2'-*O*-demethylpsoromic acids; medulla P+ yellow, microscopic section K–.





Myriotrema arimense

Myriotrema frondosolucens Lücking, in Sipman, Lücking, Aptroot, Chaves, Kalb & Umaña Tenorio, Phytotaxa 55: 95 (2012)

[ABL40802], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40802), 22.07.2017, det. A. Aptroot, 2017. - Differing from *Myriotrema frondosum* and *M. neofrondosum* in the presence of stictic acid and lichexanthone. Thallus light grey-olive to pale yellow-white, smooth to uneven, producing schizidia, with loose cortex; schizidia 0.15–0.25 mm diam.; photobiont layer and medulla with clusters of calcium oxalate crystals. Apothecia not observed.





Myriotrema frondosolucens

Myriotrema frondosum Hale, Bull. Br. Mus. nat. Hist., Bot. 8(3): 282 (1981)

[ABL48397], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'36" S, 39°24'37" W, 430 m. Leg. M. Cáceres & A. Aptroot (no 48397), 15.02.2019, det. A. Aptroot 2019. - Thallus with schizidia, spores muriform, with 4-5 transverse septa, 21-24 x 9-10 µm; psoromic acid.





Myriotrema frondosum

Myriotrema myrioporoides (Müll. Arg.) Hale, Mycotaxon 11(1): 134 (1980)

= *Thelotrema myrioporoides* Müll. Arg., Bull. Soc. R. Bot. Belg. 32(2): 147 (1894) [1893]

[ABL48194], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'42" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48194), 14.02.2019, det. A. Aptroot 2019. - Thallus corticolous, epiphloeodal, continuous, dull, the surface becoming minutely scabrid, whitish mineral gray, 4-8 cm broad; apothecia numerous, separate to mostly irregularly aggregated, immersed to barely emergent, 0.3-0.4 mm in diameter, noncarbonized and without a columella, the pore round, surrounded by a broad white area, slightly raised and white pruinose, 0.1 mm in diameter; spores 8.3-5 µm, 4-5 loculate, I+ blue. Chemistry: Psoromic acid.





Myriotrema myrioporoides

Neoprotoparmelia saxicola (Aptroot & M. Cáceres) L.A. Santos, M. Cáceres & Aptroot, **Isotype,** in Santos, Aptroot, Lücking & Caceres, Bryologist 122(4): 551 (2019)
= *Maronina saxicola* Aptroot & M. Cáceres, Herzogia 31: 365 (2018)

[ABL40898], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40898), 23.07.2017, det. A. Aptroot, 2017. - Thallus crustose, saxicolous, continuous, very uneven, seemingly formed of a coalescence of minute convex areoles of c. 0.2 mm diam., glossy, greyish brown, relatively thick (at least 0.3 mm in all places), in section with numerous hyaline crystals; surrounded by a c. 0.2 mm wide black prothallus line. Photobiont green. Ascomata apothecia, superficial on the thallus, round to somewhat angular, 0.2– 0.4 mm diam.; disc dark brown, flat; margin brownish grey, glossy, continuous, slightly higher than the disc. Hymenium hyaline; epihymenium chocolate brown; excipulum cupular, hyaline, with algae; hypothecium hyaline. Paraphyses simple. Asci cylindrical. Ascospores hyaline, c. 50–64/ ascus, non-septate but usually with two oil droplets, long ellipsoid, 7–8 × 3–3.5 µm, without gelatinous sheath. Pycnidia not observed. Chemistry: Medulla K–, P–, C–, UV–. No substances detected by TLC.



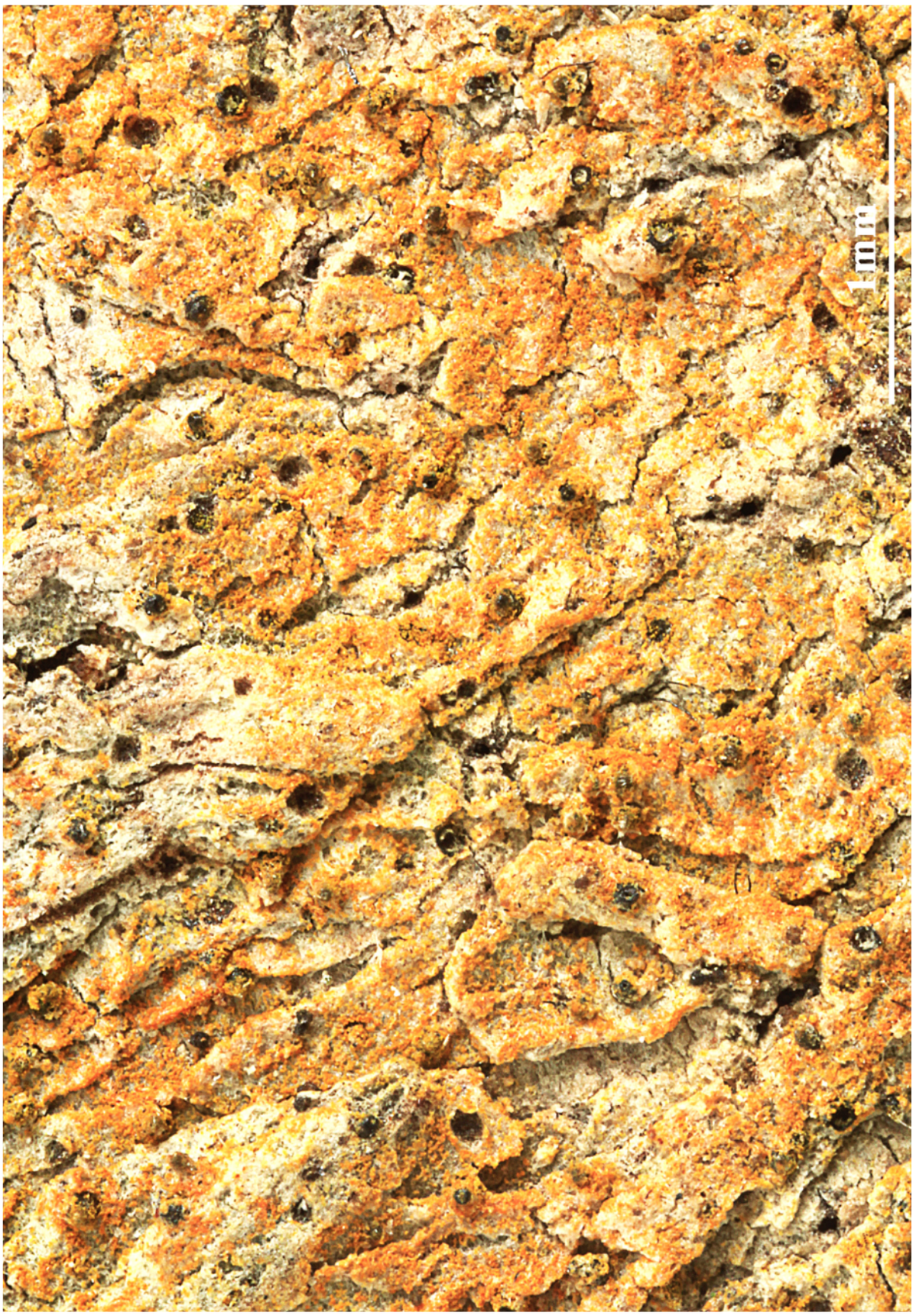


Neoprotoparmelia saxicola

Neosergipea bicolor Aptroot & M. Cáceres, in Aptroot, Gumboski & Cáceres, Cryptog. Mycol. 38(2): 279 (2017)

[ABL48258], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'35" S, 39°25'05" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48258), 14.02.2019, det. A. Aptroot 2019. - Thallus less than 0.1 mm thick, dull, indistinctly corticate, whitish grey, not surrounded by a prothallus. Algae trentepohlioid, c. 6 x 5-9 µm. Ascomata not observed. Pycnidia abundant whitish grey, mostly conical, black-tipped, with bright orange pruina at the base and partly at the sides, c. 0.2 mm diam., c. 0.2 mm high. Conidia hyaline, 3-septate, narrowly fusiform, 20-25 x 2-2.5 µm, with pointed ends. Chemistry: Thallus UV–, C–, P–, K–; orange pruina on pycnidia UV+ pink, K+ blood red. TLC: An anthraquinone, probably parietin.

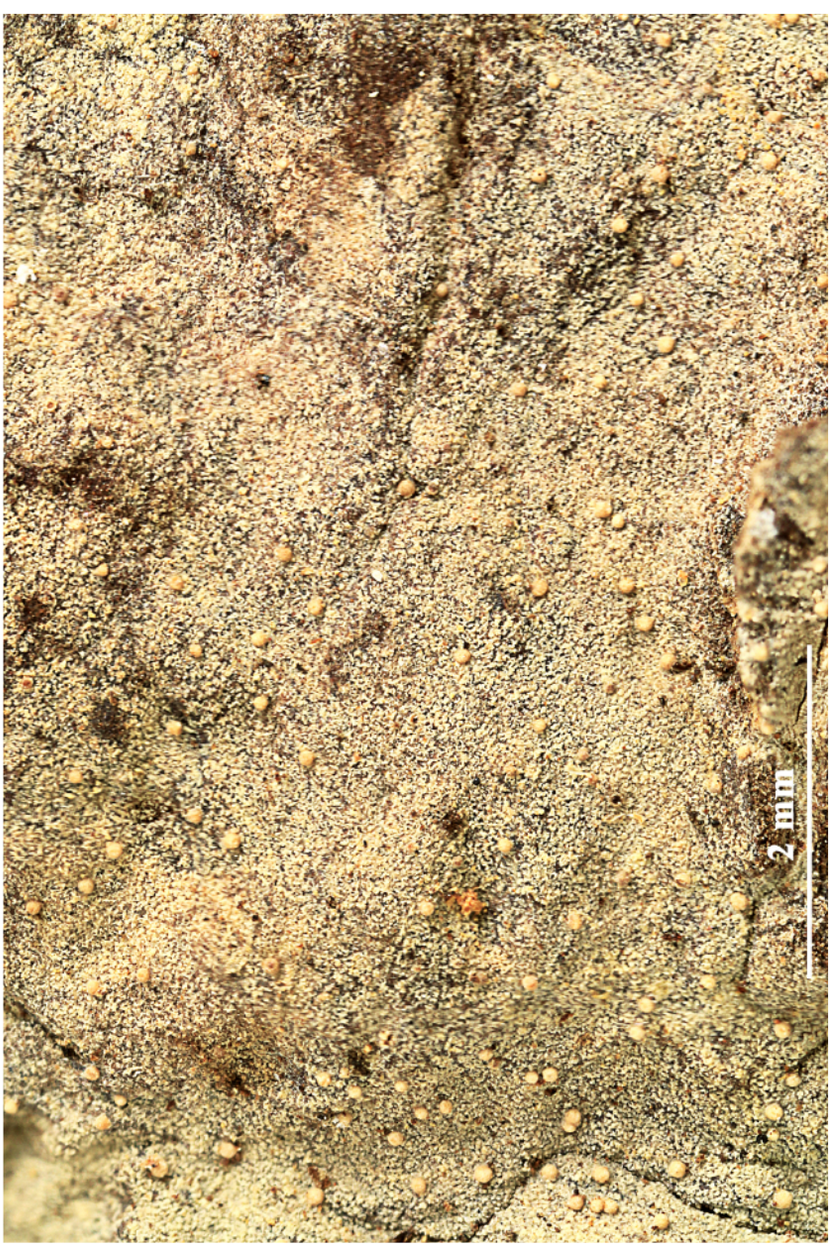




Neosergipea bicolor

Nyungwea pycnidiata Aptroot & M. Cáceres, Lichenologist 49(6): 611 (2017)

[ABL48175], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'41" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48175), 14.02.2019, det. A. Aptroot 2019. - Thallus less than 0.1mm thick, dull, not corticate, greyish green, resembling clay, without prothallus. Medulla not clearly distinguishable in colour, without calcium oxalate crystals. Hyphae hyaline, rather brittle, branched and septate, 2–3 µm wide, rough from superficial lecanoric acid crystals, all IKI−. Algae trentepohlioid, mostly solitary, in a dense layer, c. 4–5 × 5–8 µm. Ascomata not observed. Pycnidia abundant, whitish, papillate, smooth, c. 0.1–0 .2mm diam., c. 0.2–0.4 mm high, at the base covered by thallus. Conidia hyaline, simple, ellipsoid, 2.5–4.0 × 1.5–2.0 µm, with rounded ends. Chemistry: Thallus UV−, C−, P−, K−; pycnidia C+ red. TLC: lecanoric acid.





Nyungwea pycnidiata

Ocellularia antillensis Hale, Smithson. Contr. bot. 16: 17 (1974)

[ABL40961], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. M. Cáceres & A. Aptroot (no 40961), 24. July 2017, det A. Aptroot , 2017. - Thallus whitish, verrucose; spores 8/ascus, 6-septate, 20 x 7 µm, IKI+ blue. Chemistry: psoromic acid, conpsoromic acid.





Ocellularia antillensis

Ocellularia aurulenta Hale, Phytologia 27(6): 490 (1974)

[ABL40803], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40803), 22.07.2017, det. A. Aptroot, 2017.- Thallus isidiate; medulla yellow; spores 1-2/ascus, hyaline, transversally 15-20-septate, 25-35 x 150-200 µm. Chemistry: Hypoprotocetraric acid and 4-O-demethylnotatic acid with unidentified yellow pigments.





Ocellularia aurulenta

Ocellularia fuscosubmuriformis Aptroot, L.A. Santos, Schumm & M. Cáceres, sp. nov.

MycoBank MB 848603

Diagnosis. Corticolous *Ocellularia* with thallus with hypoprotocetraric acid, columella carbonized inside, surface whitish and ascospores brown, submuriform, 24–26 × 11.5–12.5 µm.

Type: BRAZIL. Bahia: Raso da Catarina Ecoregion, municipality of Paulo Afonso, alt. c. 500 m, 12.-12. Oct 2021, 09°26' S, 38°25', on tree bark in Caatinga forest, L.A. dos Santos s.n., ISE 53984 (holotype, ise; isotype, abl).

Description. Thallus crustose, continuous, corticate, dull, pale mineral grey, up to 0.1 mm thick, not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata erumpent, solitary, round, c. 0.4 mm wide, margin raised above the disc, concolourous with the thallus, c. 0.05 mm wide. Excipulum pale. Columella carbonized inside, surface whitish. Hamathecium not inspersed. Ascospores 8/ascus, brown, submurifrom, 24–26 × 11.5–12.5 µm, without gelatinous sheath. Pycnidia not observed.

Chemistry. Thallus UV–, C–, K–, KC–, P–. TLC: Hypoprotocetraric acid.

Etymology. Named after the brown submuriform ascospores.

Ecology and distribution. On tree bark in Caatinga forest; only known from Brazil.

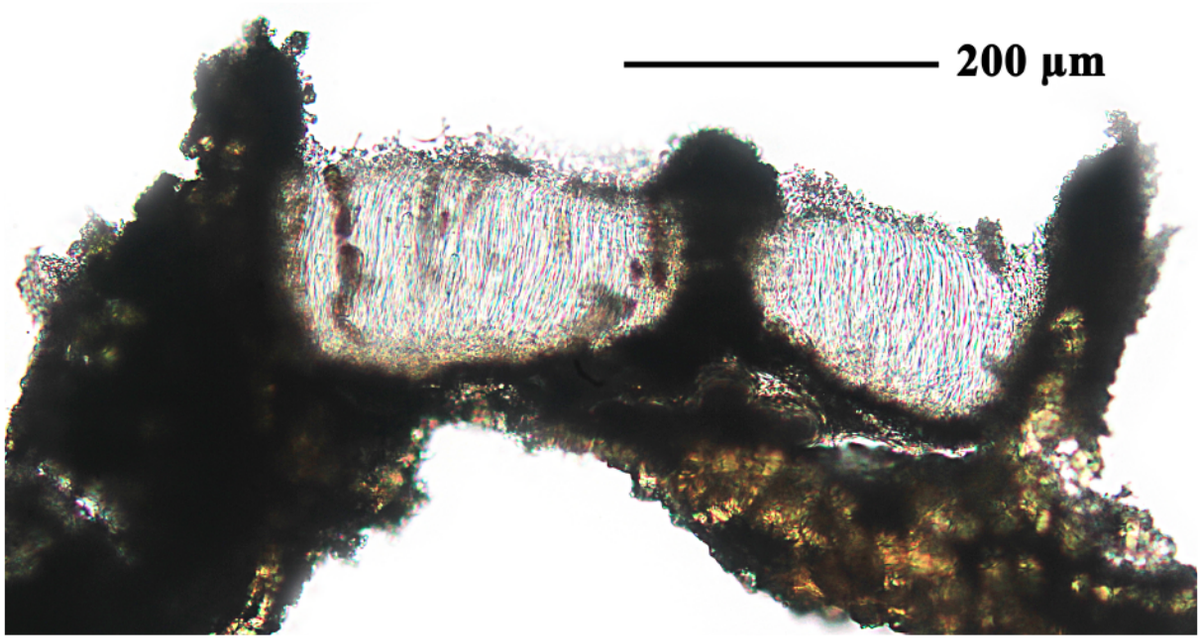
Discussion. This species is characterized by the brown, submuriform ascospores, the presence of a carbonized columella and hypoprotocetraric acid in the thallus.

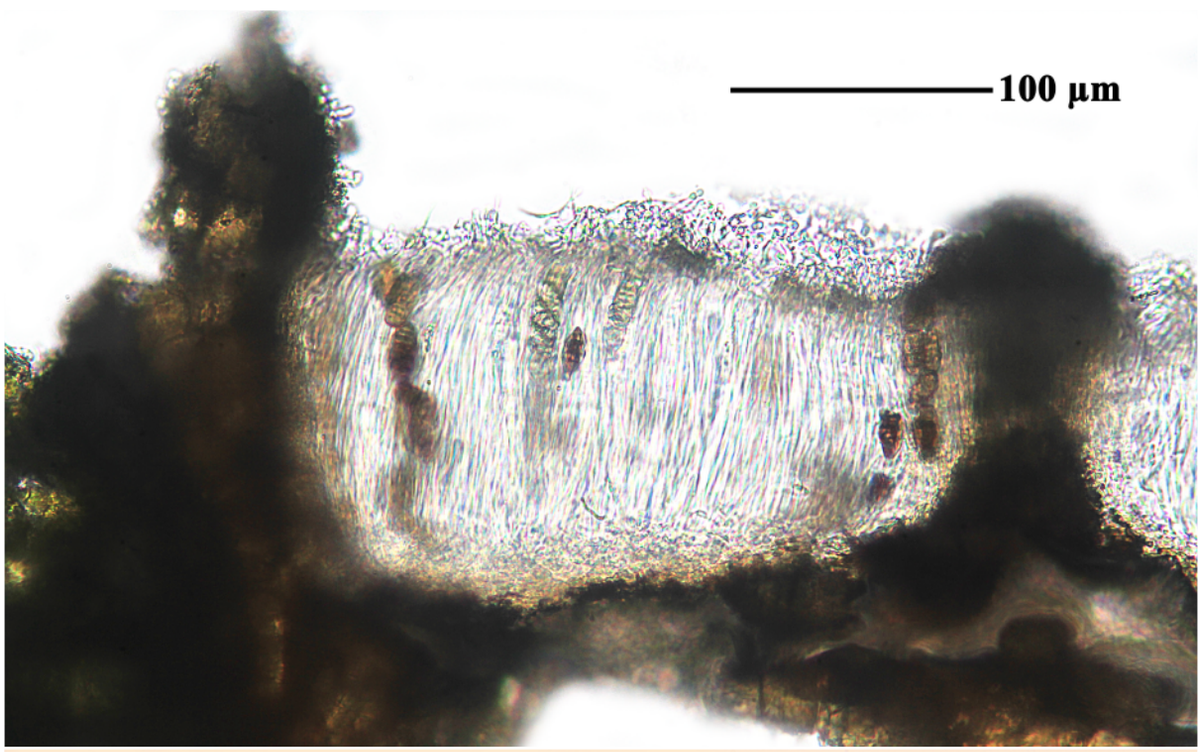


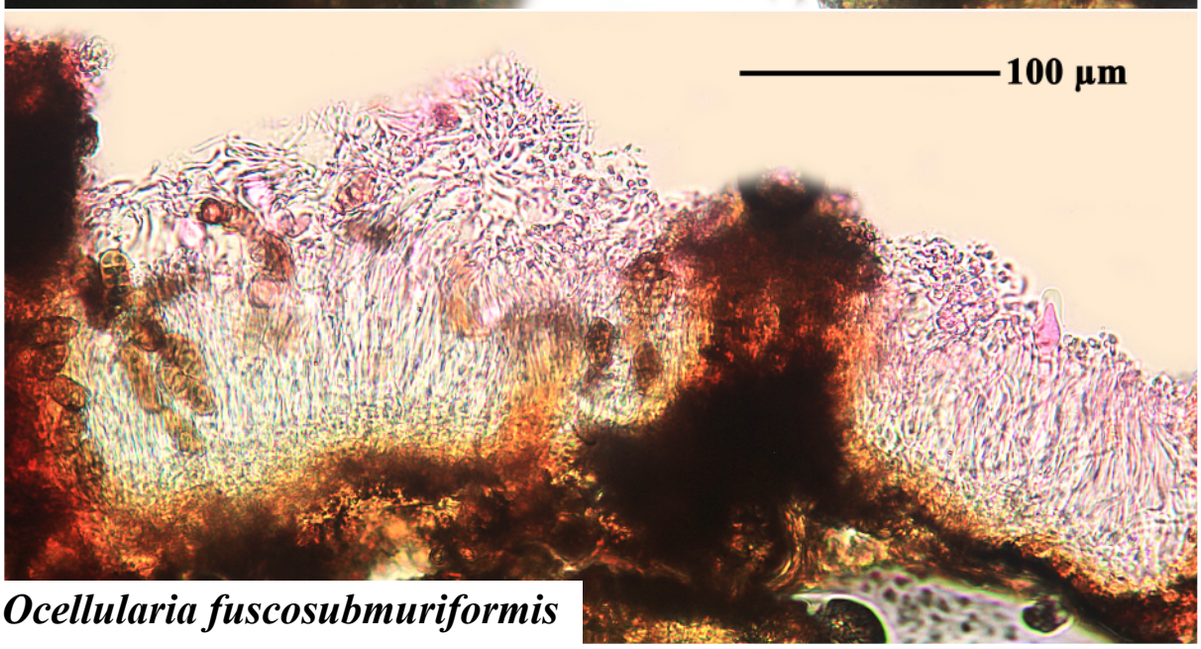
Ocellularia fuscosubmuriformis



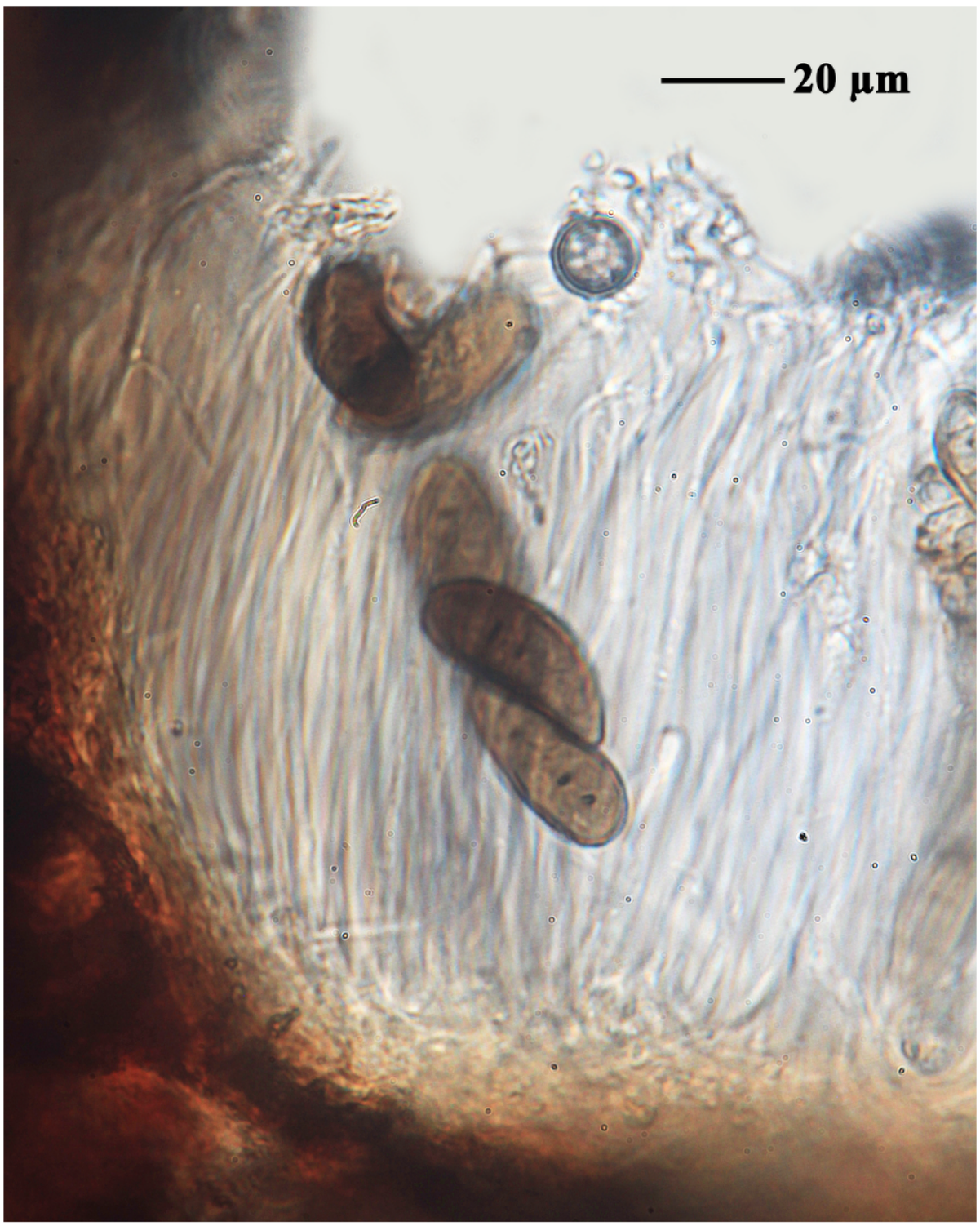
Ocellularia fuscosubmuriformis



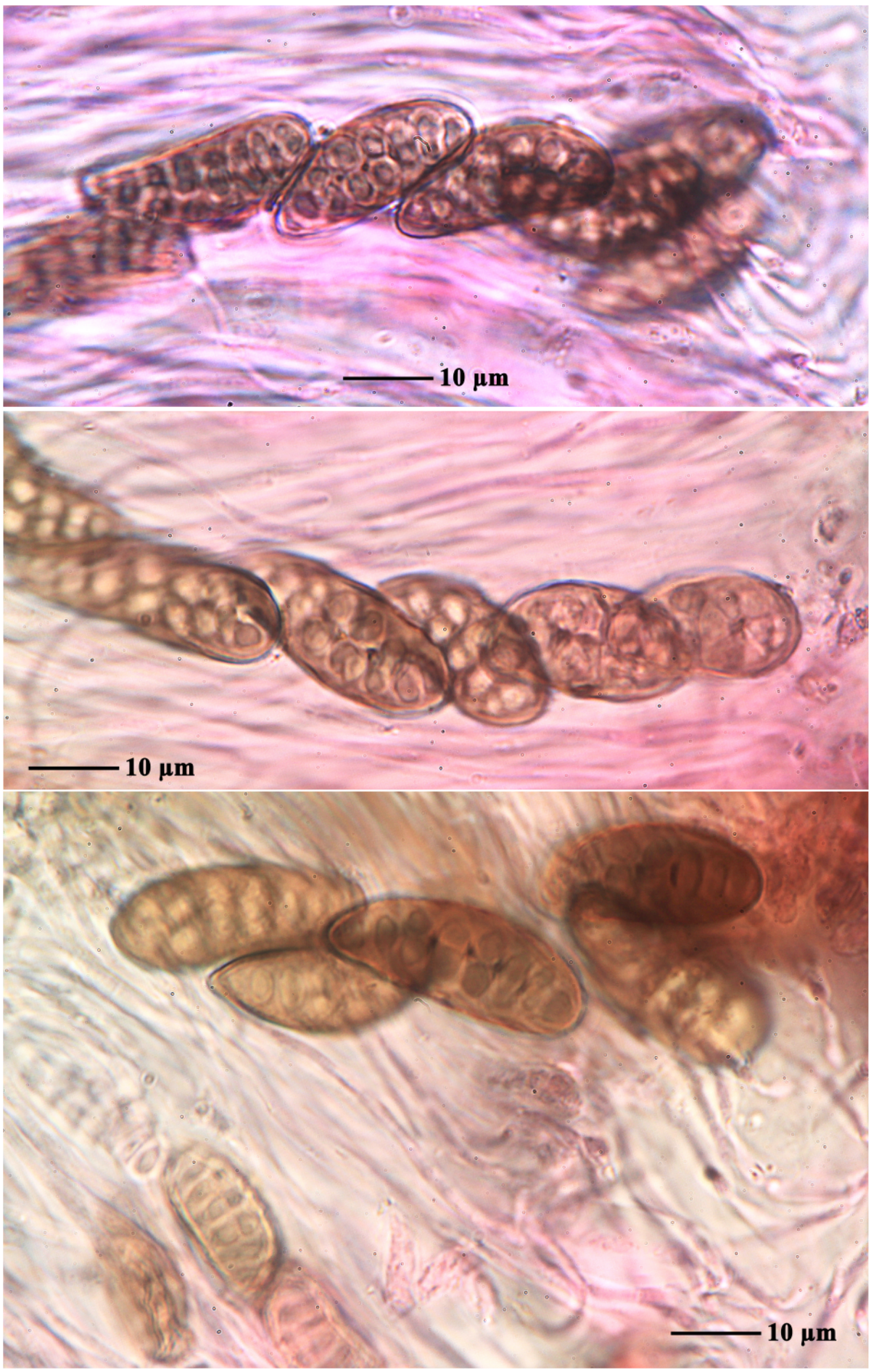




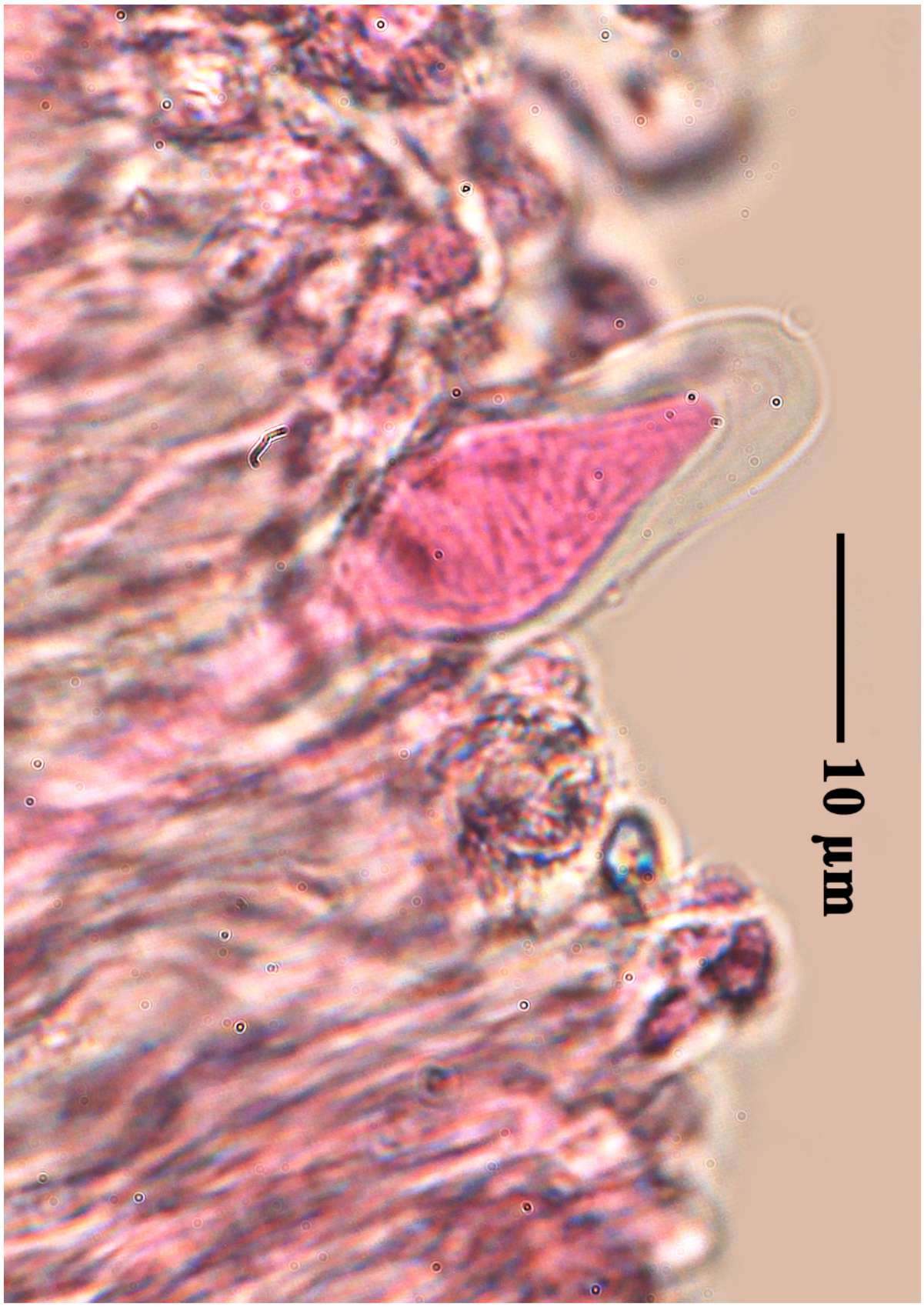
Ocellularia fuscosubmuriformis



Ocellularia fuscosubmuriformis



Ocellularia fuscosubmuriformis



Ocellularia fuscosubmuriformis

Ocellularia inspersula Lücking & Aptroot, in Sipman, Lücking, Aptroot, Chaves, Kalb & Umaña Tenorio, Phytotaxa 55: 131 (2012)

[ABL48246], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pole in Atlantic tropical rain forest. 16°52'40" S, 39°24'50" W, 150 m. Leg. M. Cáceres & A. Aptroot (no 48246), 14.02.2019, det. A. Aptroot 2019. - Thallus light grey-olive, smooth to uneven, with dense, prosoplectenchymatous cortex with internal splitting; photobiont layer with clusters of calcium oxalate crystals. Apothecia prominent, rounded, 0.6–0.8 mm diam.; disc partially covered by 0.2–0.4 mm wide pore, flesh-colored, partially filled by white pseudocolumella; margin entire, yellow-white, laterally covered by thalline layer. Pseudocolumella present, irregular, colorless. Excipulum prosoplectenchymatous, brown; periphysoids absent. Hymenium 80–100 µm high, inspersed; paraphyses unbranched. Ascospores 8/ascus, 3–5-septate, 10–16 x 5–6 µm, ellipsoid, with thick septa and lens-shaped lumina, colorless, I+ violet (amyloid). Chemistry: protocetraric and virensic acids.





Ocellularia inspersula

Ocellularia mauritiana Hale [as 'mauretiana'], Mycotaxon 3(1): 175 (1975)

[ABL48226], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'44" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48226), 14.02.2019, det. A. Aptroot 2019. - Thallus corticolous, epiphloeodic, verruculose, rimose, ca. 6 cm wide; apothecia emergent, irregularly aggregat, basin constricta, 1.5-3.0 mm diam., amphithecium corticate, verruculose; ostiolum open, 0.5-2.0 mm diam., disc late actinoideo-diviso; hymenium 120 µm high; spores 8/ascus, hyaline, transversaly 4-6 loculate, 8-10 x 15-18 µm, J+ blue. Chemistry: Protocetraric acid.





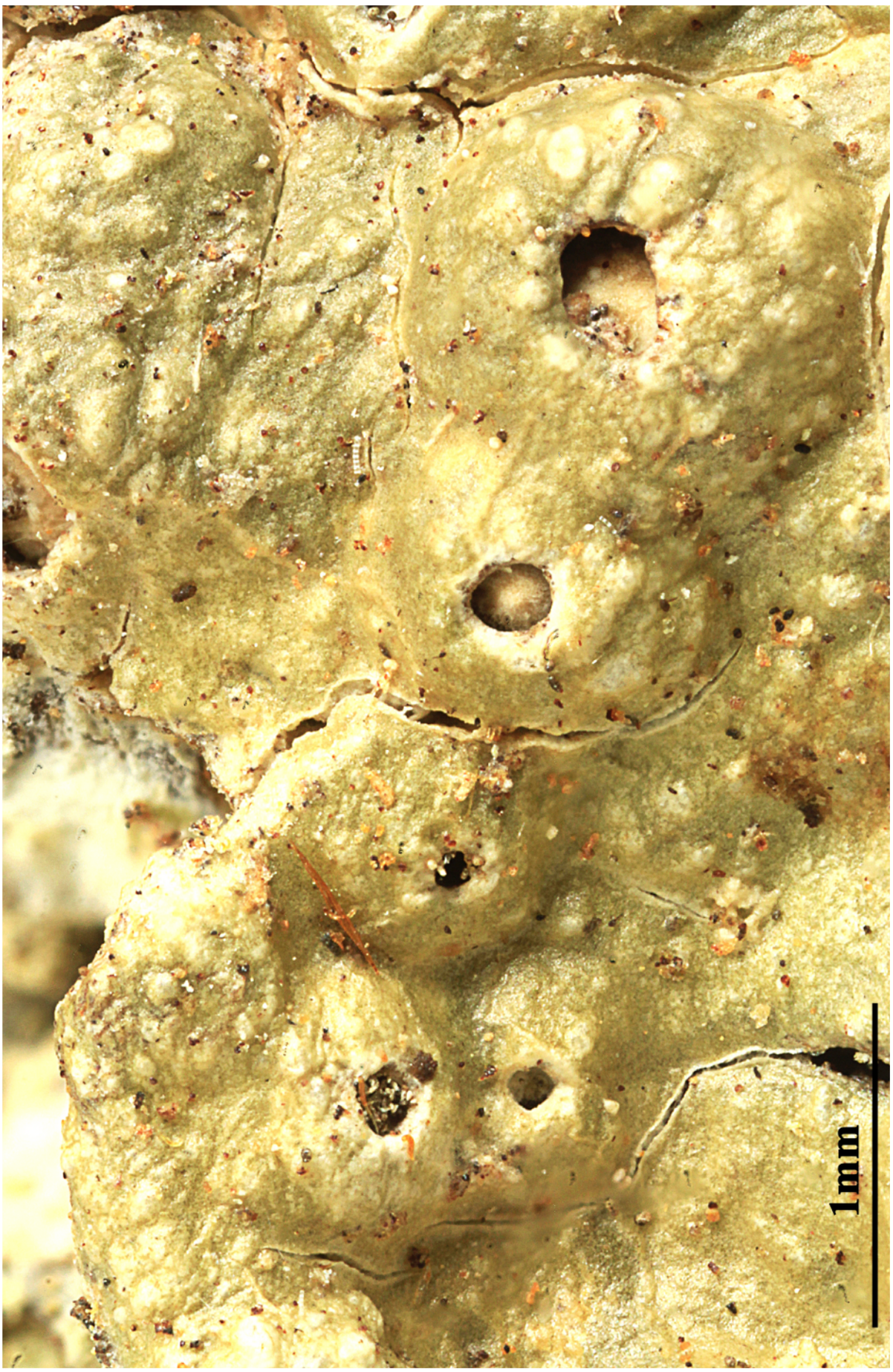
Ocellularia mauritiana

Ocellularia mauritiana Hale [as 'mauretiana'], Mycotaxon 3(1): 175 (1975)

[ABL48140], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'39" W, 150 m. Leg. M. Cáceres & A. Aptroot (no 48140), 14.02.2019, det. A. Aptroot 2019. -

Thallus corticolous, epiphloeodic, verruculose, rimose, ca. 6 cm wide; apothecia emergent, irregularly aggregat, basin constricta, 1.5-3.0 mm diam., amphithecium corticate, verruculose; ostiolum open, 0.5-2.0 mm diam., disc late actinoideo-diviso; hymenium 120 µm high; spores 8/ascus, hyaline, transversaly 4-6(-8) loculate, (6-)8-10 x 15-18(-25) µm, J+ blue. Chemistry: Protocetraric acid.





Ocellularia mauritiana

Ocellularia minutula Hale, Smithson. Contr. bot. 38: 24 (1978)
= *Myriotrema minutulum* (Hale) Hale 1980

[ABL40669], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40669), 22.07.2017, det. A. Aptroot, 2017. - Thallus P+ yellow, hymenium not inspersed, spores hyaline, 7-septate, 37 x 10 µm.





Ocellularia minutula

Ocellularia rondoniana M. Cáceres, Aptroot & Lücking, in Cáceres, Aptroot, Parnmen & Lücking, Phytotaxa 189(1): 116 (2014)

[ABL48875], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34" S, 38°02" W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48875), 18.02.2019, det. A. Aptroot 2019.- Thallus corticolous, epiperidermal, up to c. 10 cm diam., continuous; surface uneven to irregularly ridged, greyish green; prothallus absent. Thallus in section 80–120 µm thick, with prosoplectenchymatous cortex, 15–20 µm thick, photobiont layer 15–30 µm thick, and irregular medulla, 50–70 µm thick, strongly encrusted with numerous small, grey crystals that partially dissolve in K, and clusters of calcium oxalate crystals. Photobiont *Trentepohlia*; cells rounded to irregular in outline, in irregular groups, yellowish green, 7–11 × 6–9 µm. Ascomata rounded to angular, erumpent, with complete thalline margin, 0.7–1 mm diam., 0.2–0.3 mm high; disc covered by 0.15–0.25 mm wide pore; proper margin distinct, entire, visible as thin, white rim around the pore; thalline margin entire, smooth, light greyish green. Excipulum entire, yellowish to orange-brown (difficult to separate from modified periderm), together with periderm 70–150 µm wide, fused with thalline margin; laterally covered by algiferous, corticate thallus containing periderm layers; columella present, finger-like to barrel-shaped, 50–100 µm broad, carbonized; hypothecium prosoplectenchymatous, 10–15 µm high, hyaline; hymenium 110–120 µm high, hyaline, clear; epithecium indistinct, 10–15 µm high, hyaline. Paraphyses unbranched, apically smooth; periphysoids absent; asci cylindrical, 100–110 × 8–10 µm. Ascospores 8 per ascus, ellipsoid, 5–7-septate, 17–23 ×6–7 µm, 2.5–3.5 times as long as wide, hyaline, distoseptate with lens-shaped lumina, I+ violet-blue. Chemistry: Psoromic acid, subpsoromic acid, and 2'-O-demethylpsoromic acid; medulla P+ yellow, microscopic section K–.





Ocellularia rondoniana

Pallidogramme chrysenteron (Mont.) Staiger, Kalb & Lücking, in Lücking, Chaves, Sipman, Umaña & Aptroot, Fieldiana, Bot. 46(no. 1549): 14 (2008)

= *Graphis chrysenteron* Mont., Annls Sci. Nat., Bot., sér. 2 18: 269 (1842)

= *Hemithecium chrysenteron* (Mont.) Trevis., Spighe Paglie: 13 (1853)

= *Leucogramma chrysenteron* (Mont.) A. Massal., Atti Inst. Veneto Sci. lett., ed Arti, Sér. 3 5: 320 (1860) [1859-1860]

= *Phaeographina chrysenteron* (Mont.) Müll. Arg. [as 'chrysentera'], Hedwigia 30: 52 (1891)

[ABL40770], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40770), 22.07.2017, det. A. Aptroot, 2017. - Hymenium inspersed; spores 6-8/ascus, brownish, muriform, IKI redbrown, 9-13/2-3-septated, 33-60(-65) x 10-15 µm. TLC: Stictic-, cryptostictic-, constictic-, hyposticti-, hypconstictic acid.





Pallidogramme chrysenteron

Parmotrema ciliiferum Hale, in Jahns, Biblthca Lichenol. 38: 112 (1990)

[ABL48317], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48317), 14.02.2019, det. A. Aptroot 2019. - Thallus corticolous, loosely adnate; lobes 4-8 mm wide, tips sorediate, cilia 2-3 mm long. Chemistry: atranorin, constipatic acid, unidentified fatty acid.





Parmotrema ciliiferum

Parmelinella cinerascens (Lynge) Benatti & Marcelli, in Benatti, Opuscula Philolichenum 11: 27 (2012)
= *Canoparmelia cinerascens* (Lynge) Elix & Hale, in Elix, Johnston & Verdon, Mycotaxon 27: 278 (1986)
= *Parmelia cinerascens* Lynge, Ark. Bot. 13(no. 13): 104 (1914)
= *Pseudoparmelia cinerascens* (Lynge) Hale, Phytologia 29(3): 189 (1974)

[ABL48192], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48192), 14.02.2019, det. A. Aptroot 2019. - Thallus lobed, pale gray to greenish gray becoming dusky gray in herbarium, up to 11.0 cm diam., submembranaceous, corticolous. Lobes irregularly ramified to subdichotomous, 1.0-3.5 mm wide, contiguous to imbricate, closely adnate and adpressed, with rotund or subrotund apices, the margins entire to partly subcrenate, ±plane, upper surface continuous, smooth in the distal parts, sometimes slightly rugose in the older parts. Maculae weak to absent, punctiform, laminal. Cilia restricted mainly to the lobes axils, scarce, simple and very short (< 0.5 mm length). Lacinulae absent, small adventitious lobules absent to ±common, usually in the older parts. Soredia and pustulae absent. Isidia granular to short cylindrical, 0.05-0.30 x ca. 0.05 mm, smooth, simple, erect, firm to caducous, concolor with brown or black apices, eciliate, laminal. Medulla white, without K+ pigments. Lower surface black, sometimes mottled with dark brown spots, shiny, slightly rugose, sometimes slightly veined or papillate. Marginal zone pale to dark brown, shiny, 1.0–3.0 mm wide, attenuate, slightly rugose or veined, usually naked but sometimes sparsely papillate or rhizinate approaching the center. Rhizines dark brown to black, pale brown near the margins, simple and acute, 0.10-0.50 (-0.70) x ca. 0.05 mm, frequent, ±evenly distributed but partially crowded at some parts. Apothecia concave, sessile, imperforate, eventually isidiate, ascospores ellipsoid, (6,0−) 8,0−12,0 × 4,0−6,0 µm, epispore ca. 1,0 µm. Pycnidia scarce, submarginal, with black ostioles. Conidia baciliform to ± weakly bifusiform, 5.0−9.0 × ca. 1,0 µm. Chemistry: TLC/HPLC: cortical atranorin and chloroatranorin; medullary salazinic acid, and consalazinic acid, with traces of protocetraric acid and of an unknown substance (the protocetraric acid and the unknown substance might be contaminants). Spot tests: cortex K+ yellow, UV-; medulla K+ yellow turning dark red, C−, KC−, P+ yellow, UV-.



Parmelinella cinerascens



Parmelinella cinerascens

Parmotrema alectoronicum C.H. Ribeiro & Marcelli, in Marcelli & Ribeiro, Mitt. Inst. Allg. Bot. Hamburg 30-32: 143 (2002)

[ABL40751], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40751), 22.07.2017, det. A. Aptroot, 2017. - Usnic acid , alectoronic acid.





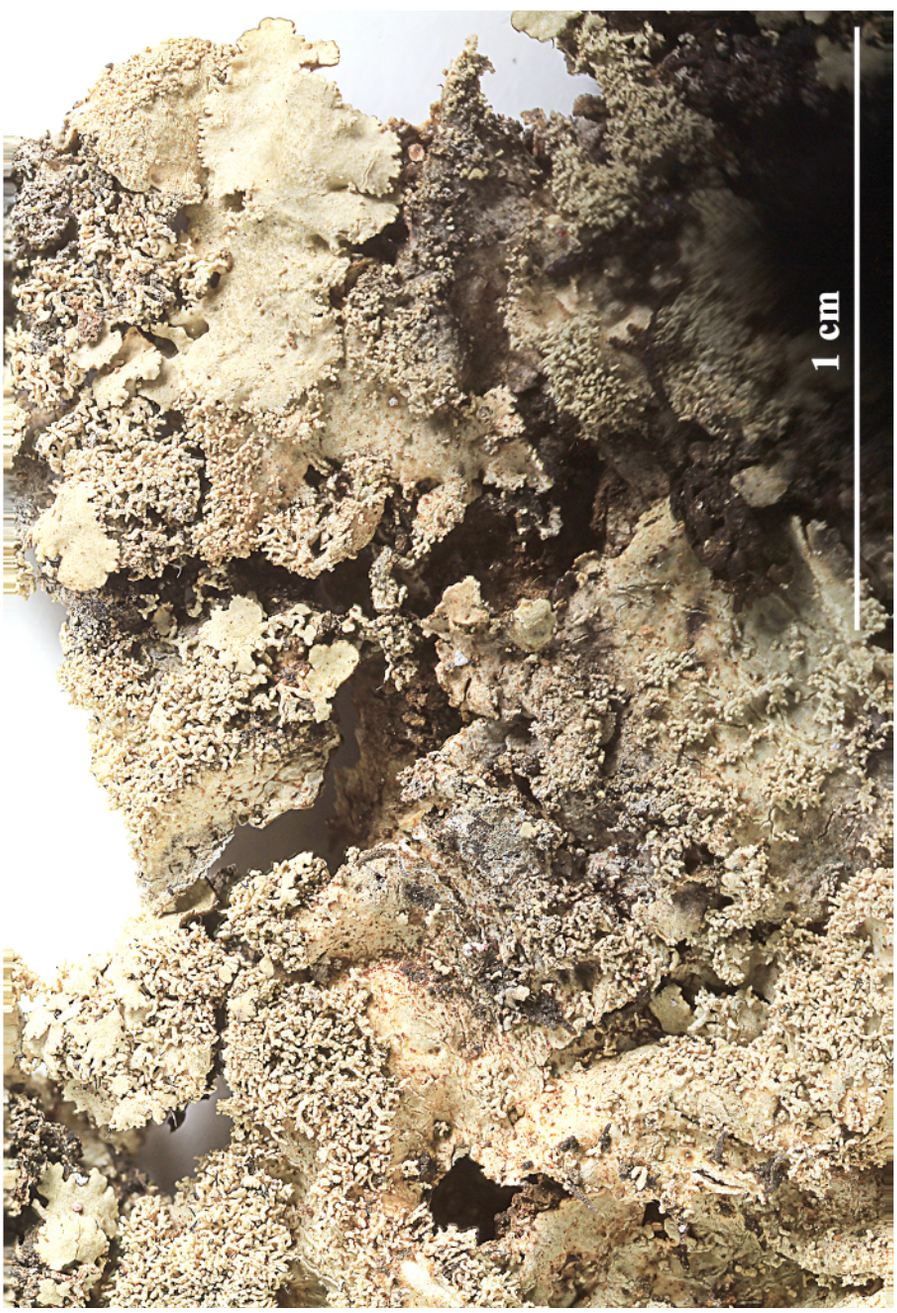
Parmotrema alectoronicum

Parmotrema fumarprotocetraricum Marcelli & Hale, Mycotaxon 25(1): 88 (1986)

= *Canomaculina fumarprotocetrarica* (Marcelli & Hale) Elix, Mycotaxon 65: 477 (1997)

= *Rimeliella fumarprotocetrarica* (Marcelli & Hale) Kurok., Annals of the Tsukuba Botanical Garden 10: 5 (1991)

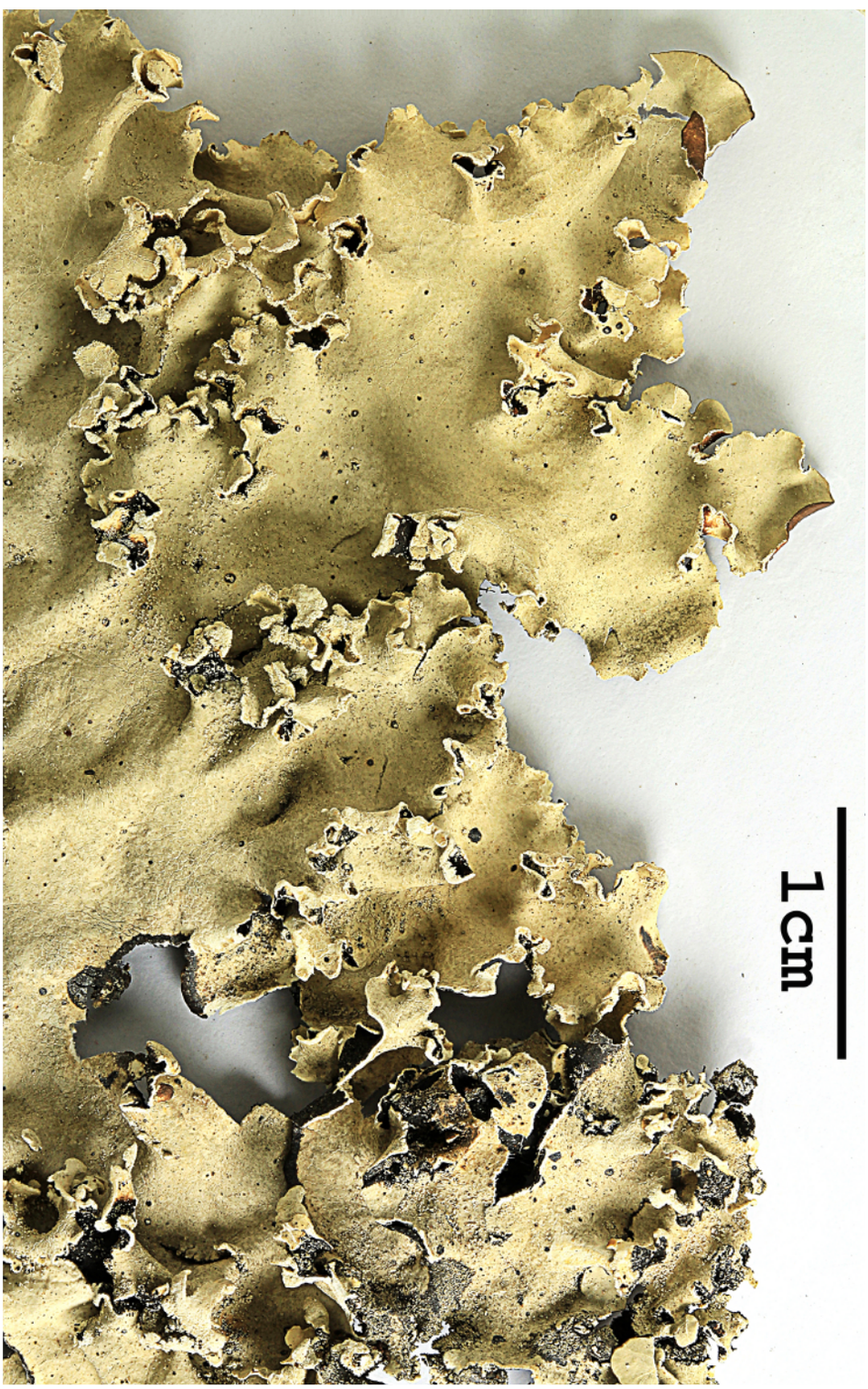
[ABL42158], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42158), 22.07.2017, det. A. Aptroot, 2017.- Thallus 8-12 cm in diameter; lobes 8-15 mm wide, laciniae lacking; upper surface maculate; margins ciliate, cilia apical, 0.5-1 mm long; isidia present, cylindrical; lower surface brown, marginal rim brown. Apothecia lacking. Conidia not seen. Chemistry: atranorin, protocetraric acid, fumarprotocetraric acid; pigments lacking.

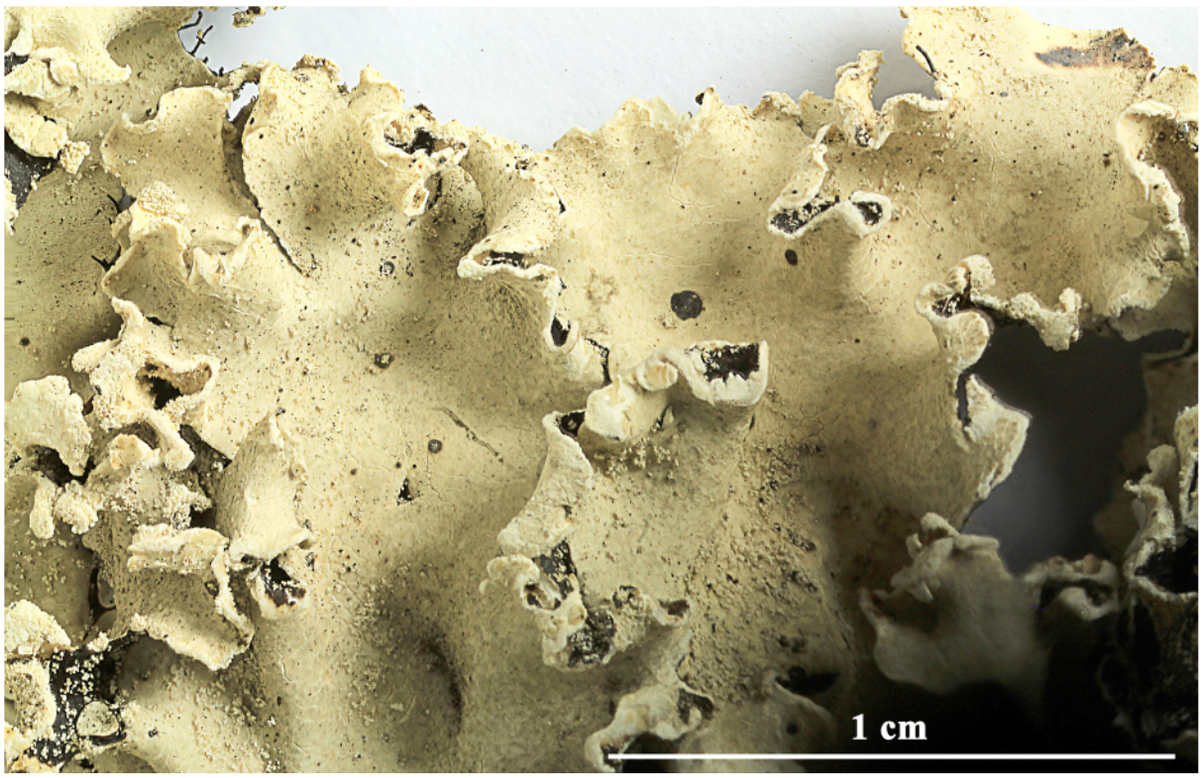


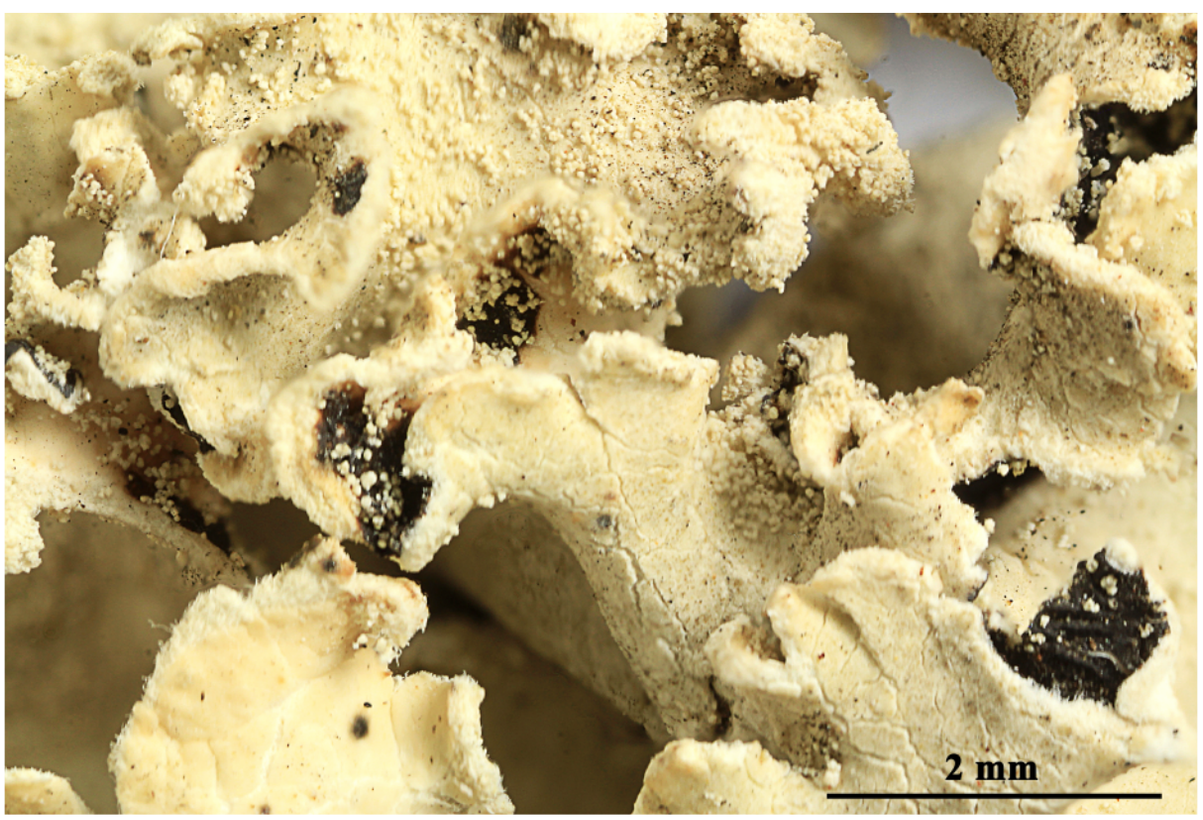


Parmotrema fumarprotocetraricum

Parmotrema gardneri (C.W. Dodge) Sérus., Bryologist 87(1): 5 (1984)
= *Parmelia gardneri* C.W. Dodge, Ann. Mo. bot. Gdn 46(1-2): 179 (1959)
l
[ABL40831], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40831), 22.07.2017, det. A. Aptroot, 2017. - Soralia marginal, medulla white, lower surface black. Apothecia imperforate. Spores 18-22 x 8-10 µm. Chemistry: cortex K+ yellow; medulla K+ yellow, C-, P+ orange-red; atranorin, protocetraric acid (major).







Parmotrema gardneri

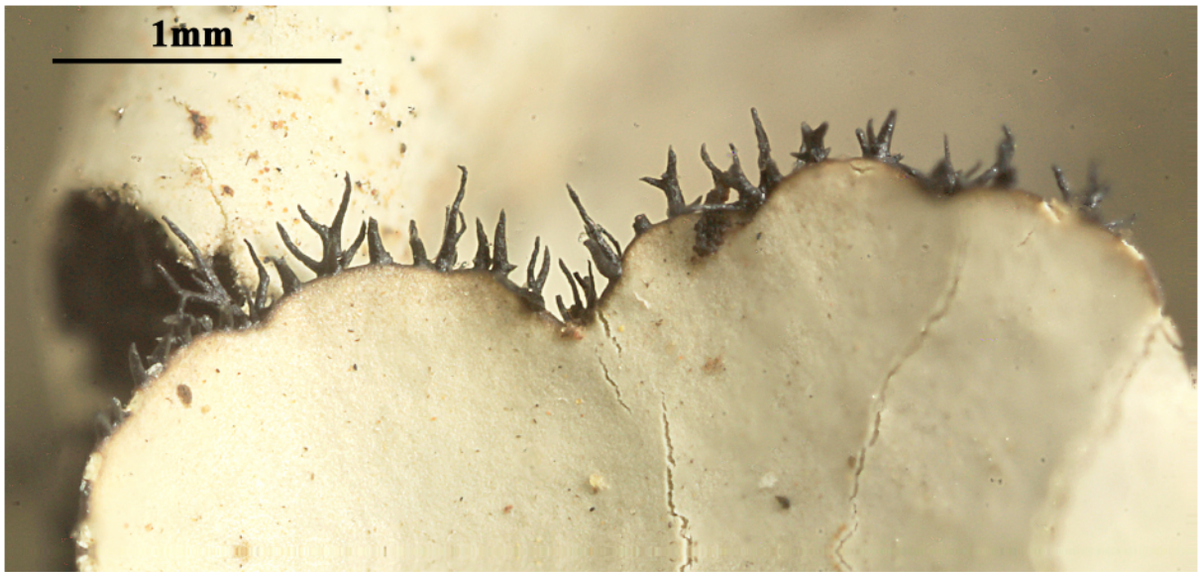


Parmotre

Parmotrema lichexanthonicum Eliasaro & Adler, Mycotaxon 63: 49 (1997)

[ABL40744], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40744), 22.07.2017, det. A. Aptroot, 2017. - Thallus saxicolous, loosely attached, margins ciliate, lacking isidia. Medulla white. Lower surface black, dark brown below the apices of the lobes, densely rhizinate. Apothecia disc brown, perforate. Spores 8/ascus, hyaline, simple, 10-11 x 14.5-16 µm. Pycnidia laminal. Chemistry: Upper cortex K+ yellow (atranorin). Medulla K+ yellow turning red (salazinic acid), C-, KC-, UV+ bright yellow (lichexanthone).







Parmotrema lichexanthonicum

Parmotrema neotropicum Kurok., in Hale, Mycotaxon 5(2): 437 (1977)
= *Canomaculina neotropica* (Kurok.) Elix, Mycotaxon 65: 477 (1997)
= *Rimeliella neotropica* (Kurok.) Kurok., Annals of the Tsukuba Botanical Garden 10: 6 (1991)

[ABL40747], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40747), 22.07.2017, det. A. Aptroot, 2017. - Atranorin, salazinic asid, hypostictic acid; C-, K+ yellow, UV-.



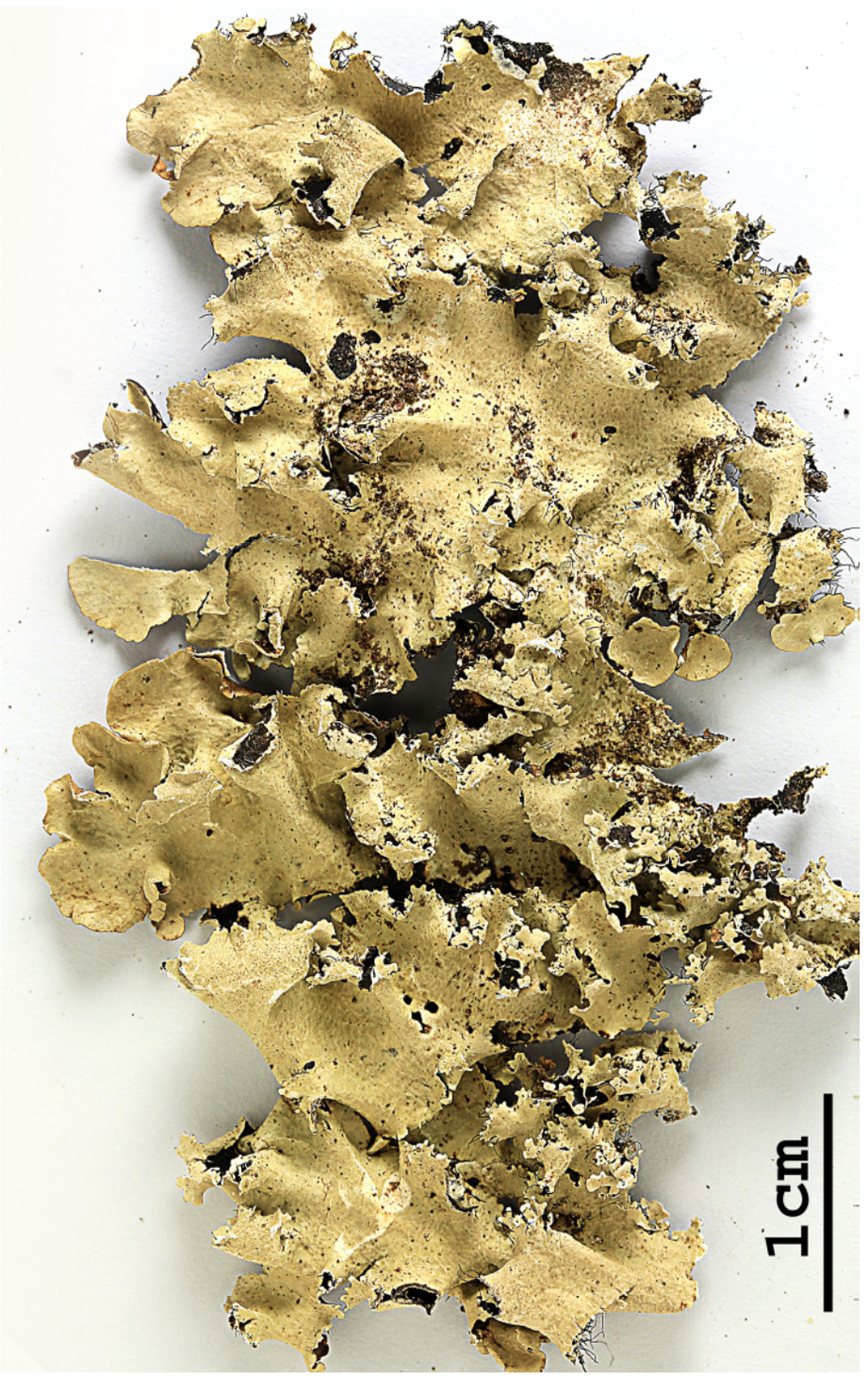
Parmotrema paraense Hale, in Jahns, Biblthca Lichenol. 38: 116 (1990)

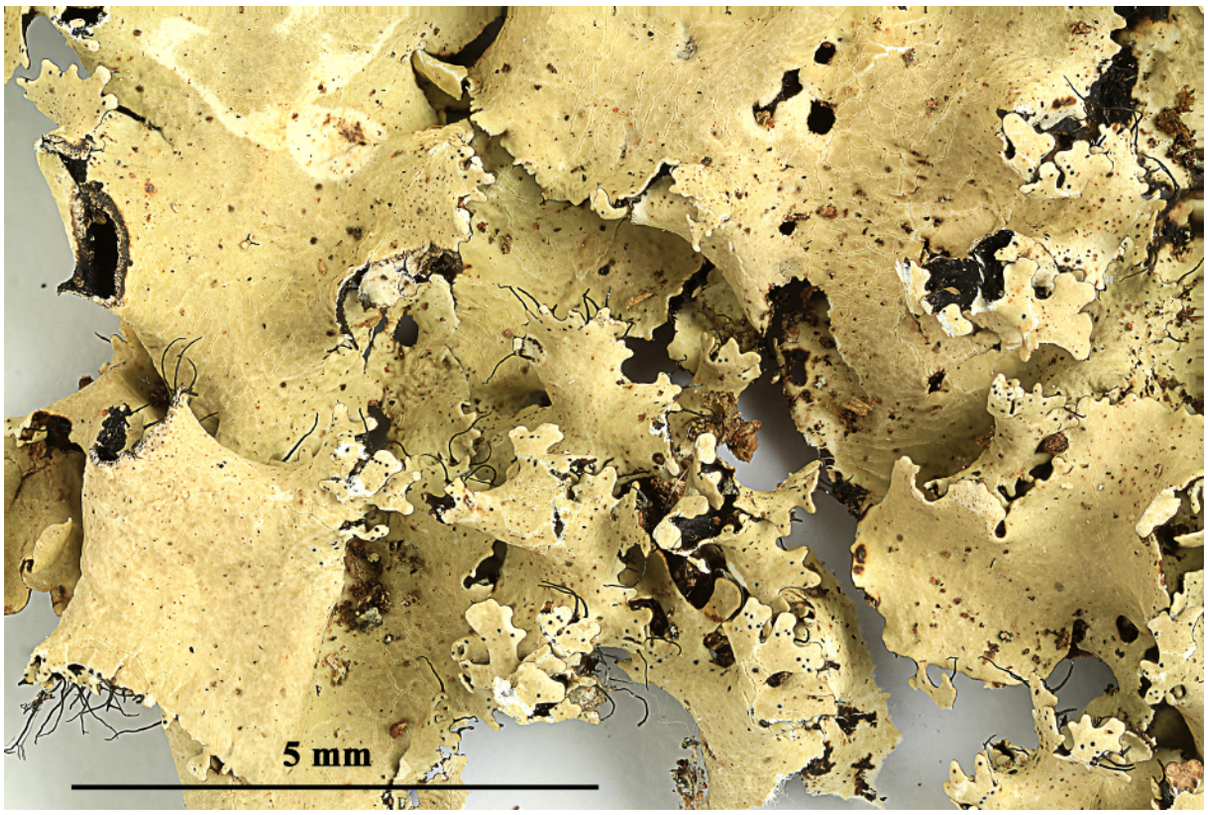
[ABL48206], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'44" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48206), 14.02.2019, det. A. Aptroot 2019. - Thallus corticolous, loosela adnate, ineral grey. Cilia 0.5-1.5 mm long. Isidia and soredia lacking. Spores 10-12 x 22-25 µm. Chemistry: Atranorin and two unidentified fatty acids.

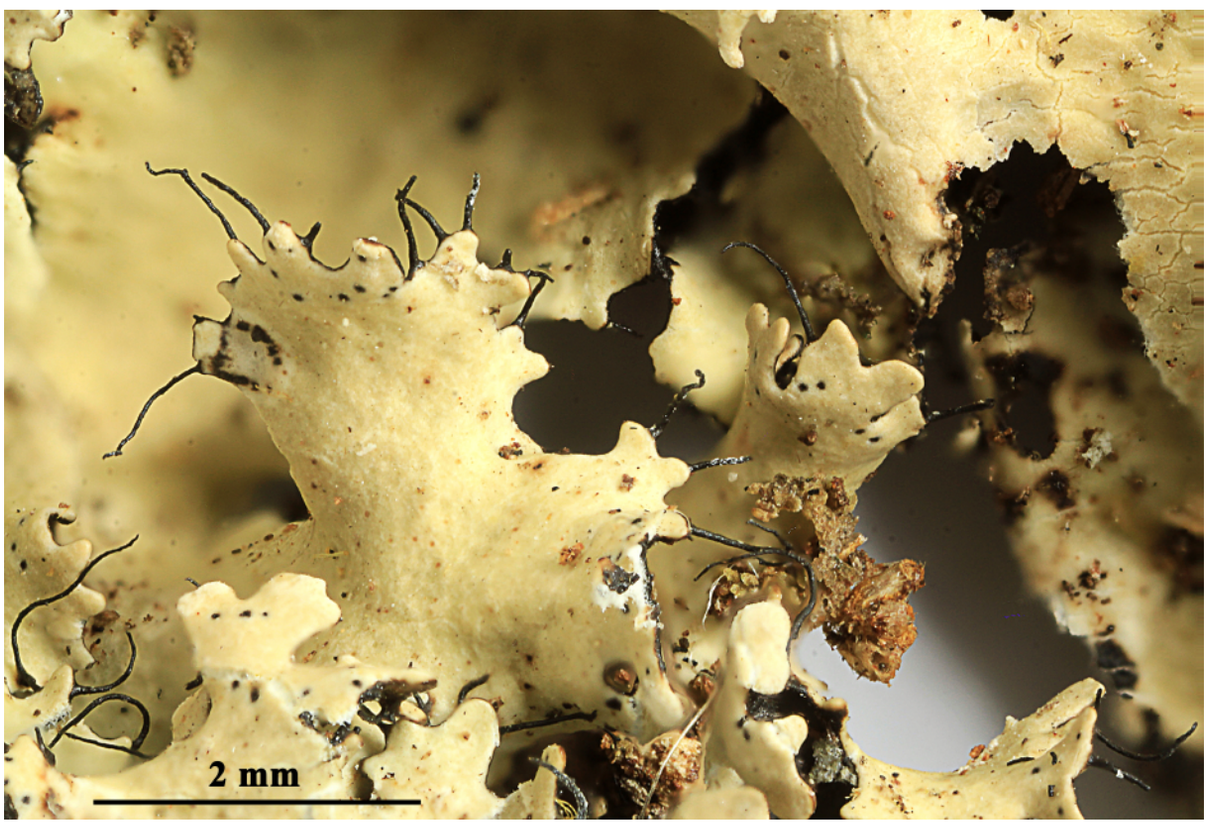


Parmotrema progenes Hale, Mycotaxon 5(2): 438 (1977)

[ABL48389], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'36" S, 39°24'37" W, 430 m. Leg. M. Cáceres & A. Aptroot (no 48389), 15.02.2019, det. A. Aptroot 2019. - Thallus corticolous, loosely adnate, soredia and isidia lacking. Spores 20-22 x 10 µm. Chemistry: Atranorin, protocetraric acid, echinocarpic acid







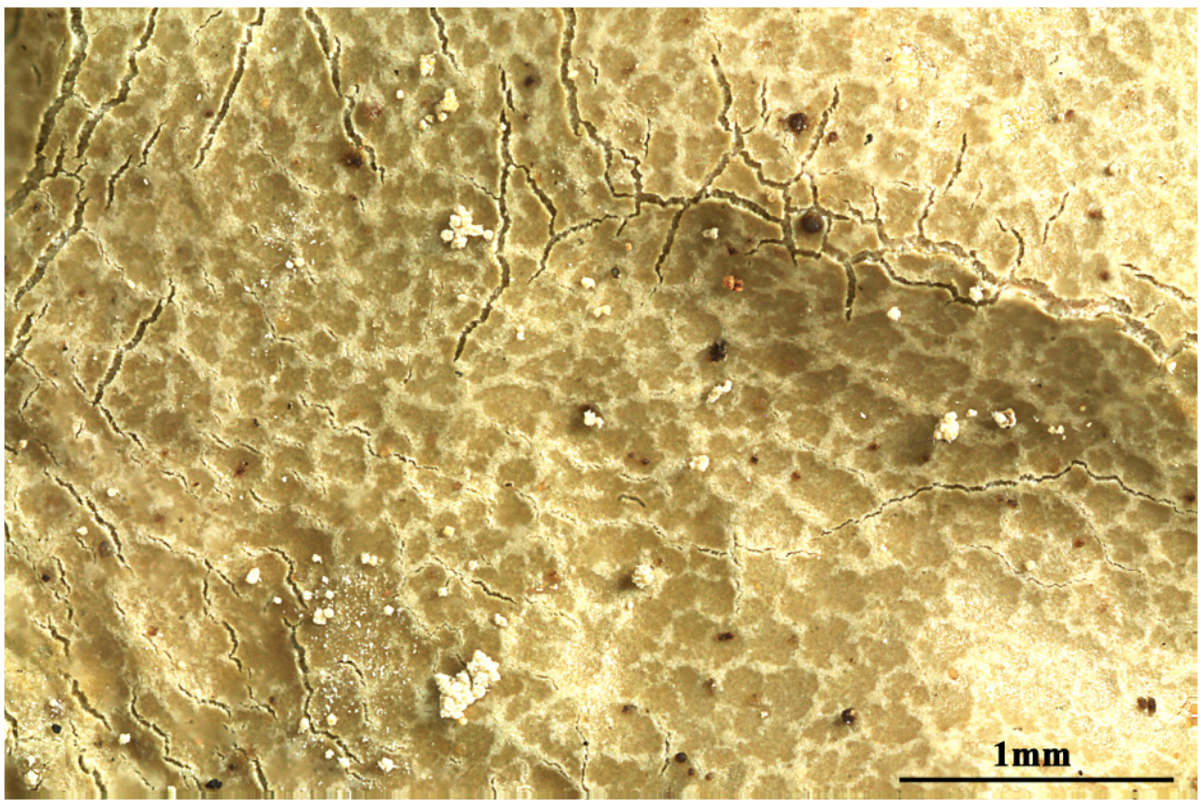
Parmotrema progenes

Parmotrema reticulatum (Taylor) M. Choisy, Bull. mens. Soc. linn. Soc. Bot. Lyon 21: 148 (1952)
= *Canomaculina leucosemotheta* (Hue) Elix, Mycotaxon 65: 477 (1997)
= *Parmelia ciliata* (Nyl.) Gyeln., Feddes Repert. Spec. Nov. Regni veg. 30: 225 (1932)
= *Parmelia laevigata* var. *reticulata* (Taylor) Linds., Trans. Linn. Soc. London 25: 514 (1866)
= *Parmelia leucosemotheta* Hue, Nouv. Arch. Mus. Hist. Nat., Paris, 4 sér. 1: 192 (1899)
= *Parmelia macquariensis* C.W. Dodge, Nova Hedwigia 19: 450 (1970)
= *Parmelia perforata* f. *ciliata* (Nyl.) Leight., Lich.-Fl. Great Brit., Edn 3: 124 (1879)
= *Parmelia perforata* var. *ciliata* Nyl., Syn. meth. lich. (Parisiis) 1(2): 378 (1860)
= *Parmelia perlata* var. *reticulata* (Taylor) Linds., Trans. R. Soc. Edinb. 22: 210 (1859) [1861]
= *Parmelia pseudovirens* Gyeln., Feddes Repert. Spec. Nov. Regni veg. 29: 288 (1931)
= *Parmelia reticulata* Taylor, in Mackay, Fl. Hibern. 2: 148 (1836)
= *Parmelia urceolata* f. *sorediifera* (Müll. Arg.) Stizenb., Ber. Tät. St Gall. naturw. Ges.: 158 (1890) [1888-89]
= *Parmelia urceolata* var. *sorediifera* Müll. Arg., Flora, Regensburg 63: 266 (1880)
= *Parmelia urceolata* var. *subcetrata* Müll. Arg., Flora, Regensburg 66(3): 46 (1883)
= *Parmelia virens* var. *sorediata* Müll. Arg., Flora, Regensburg 69: 256 (1886)
= *Parmotrema leucosemothetum* (Hue) Hale, Phytologia 28(4): 337 (1974)
= *Parmotrema pseudovirens* (Gyeln.) Elix, Mycotaxon 47: 127 (1993)
= *Rimelia reticulata* (Taylor) Hale & A. Fletcher, Bryologist 93(1): 28 (1990)

[ABL42049], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42049), 23.07.2017, det. A. Aptroot, 2017. - Soralia marginal linear to subcapitate. Spores 13-18 x 8-11 µm. Chemistri: Cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange red; TLC: atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor).



Parmotrema reticulatum

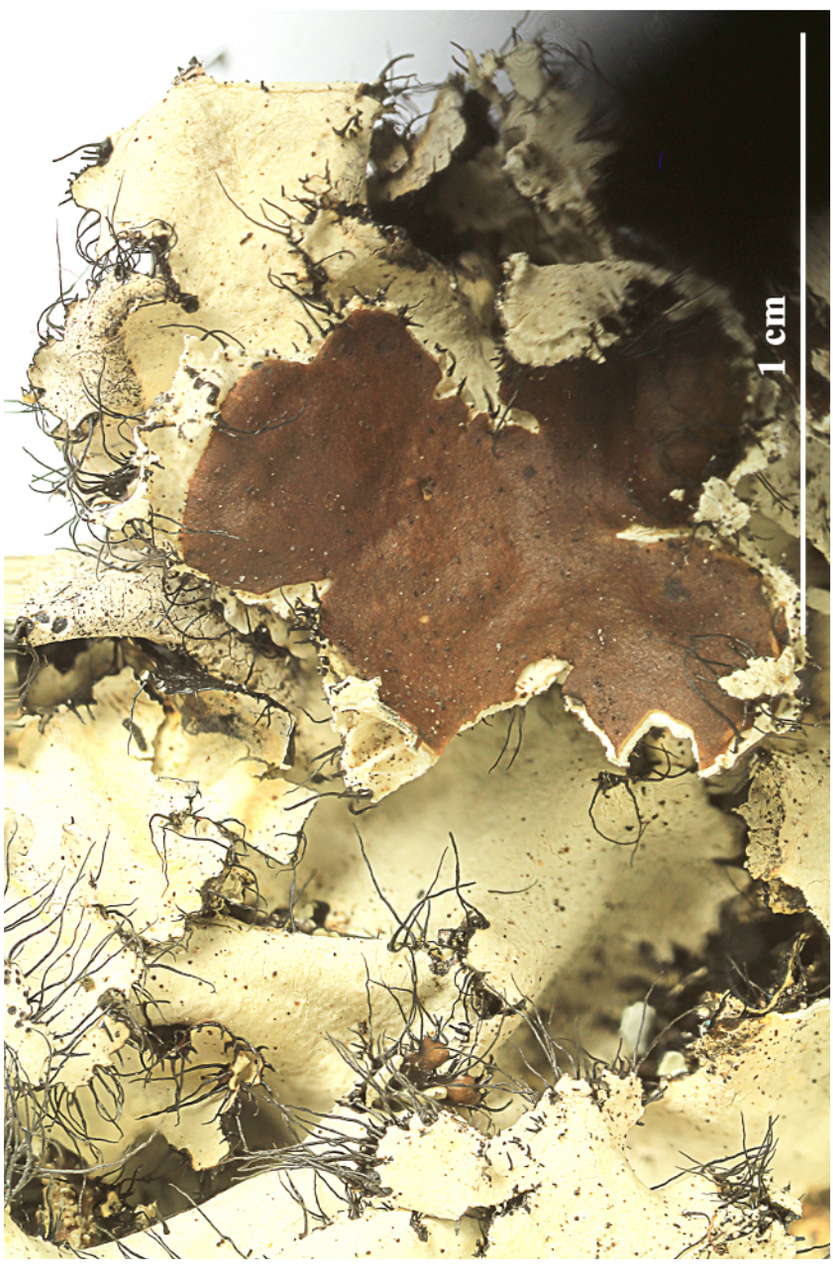


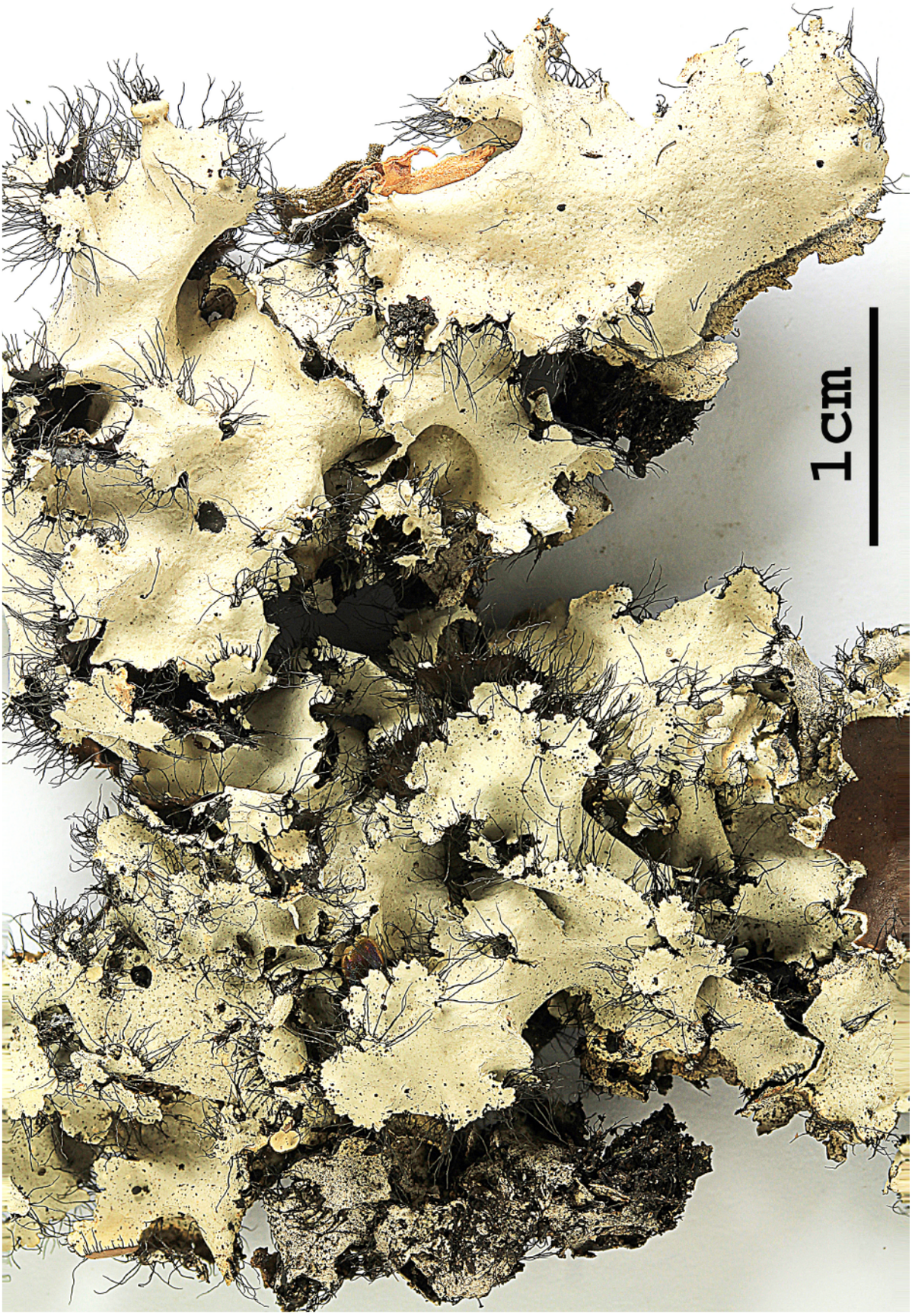


Parmotrema reticulatum

Parmotrema subrugatum (Kremp.) Hale, Phytologia 28(4): 339 (1974)
= *Parmelia cyathina* Stirt., Scott. Natural. 4: 252 (1878) [1877-78]
= *Parmelia perforata subsp. subrugata* (Kremp.) Tuck., Syn. N. Amer. Lich. (Boston) 1: 54 (1882)
= *Parmelia subrugata* Kremp., Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 18: 320 (1868)

[ABL40917], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40917), 23.07.2017, det. A. Aptroot, 2017. - Lacking soredia and isidia; medulla white, orange-red near lower cortex. Apothecia common, disc imperforate. Spores 26-34 x 12-18 µm. Chemistry: cortex K+ yellow; medulla K-, C-, KC+ red, P-, UV+ blue-white; pigmented medulla K+ purple; atranorin, chloroatranorin, alectoronic acid (major), α-collatolic acid, skyrin.



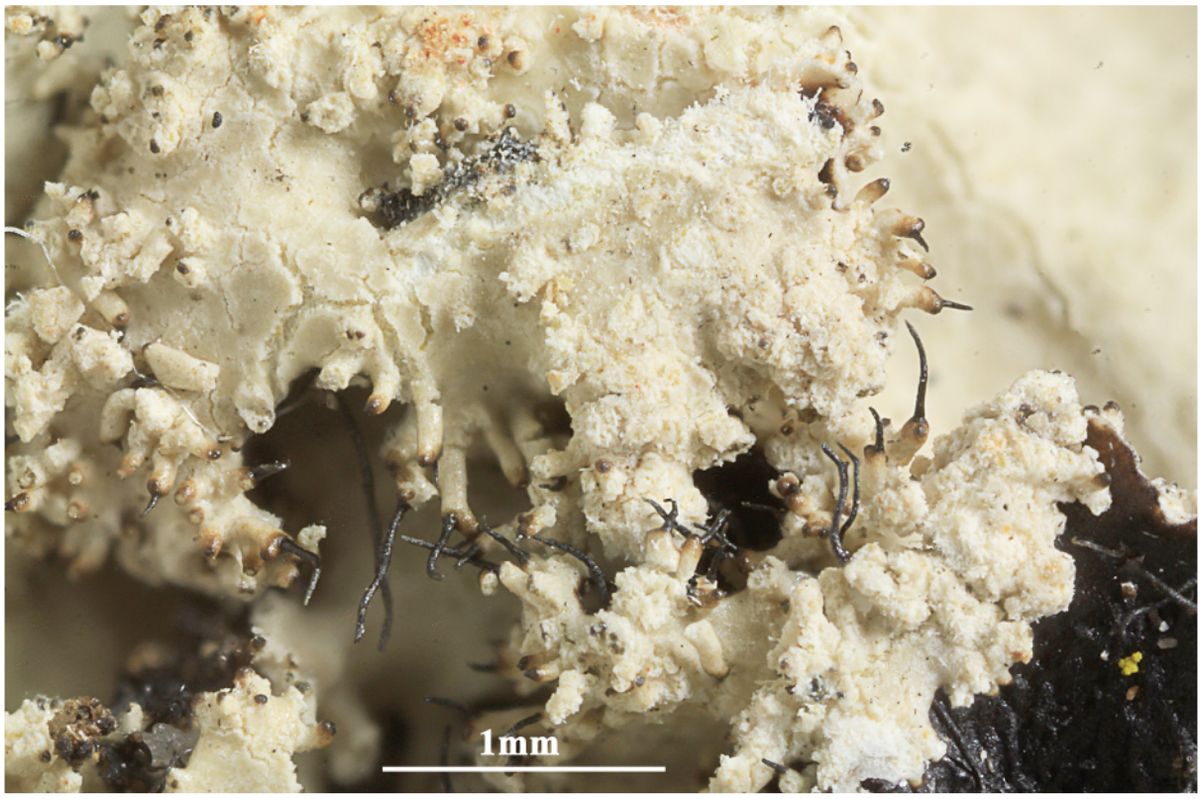


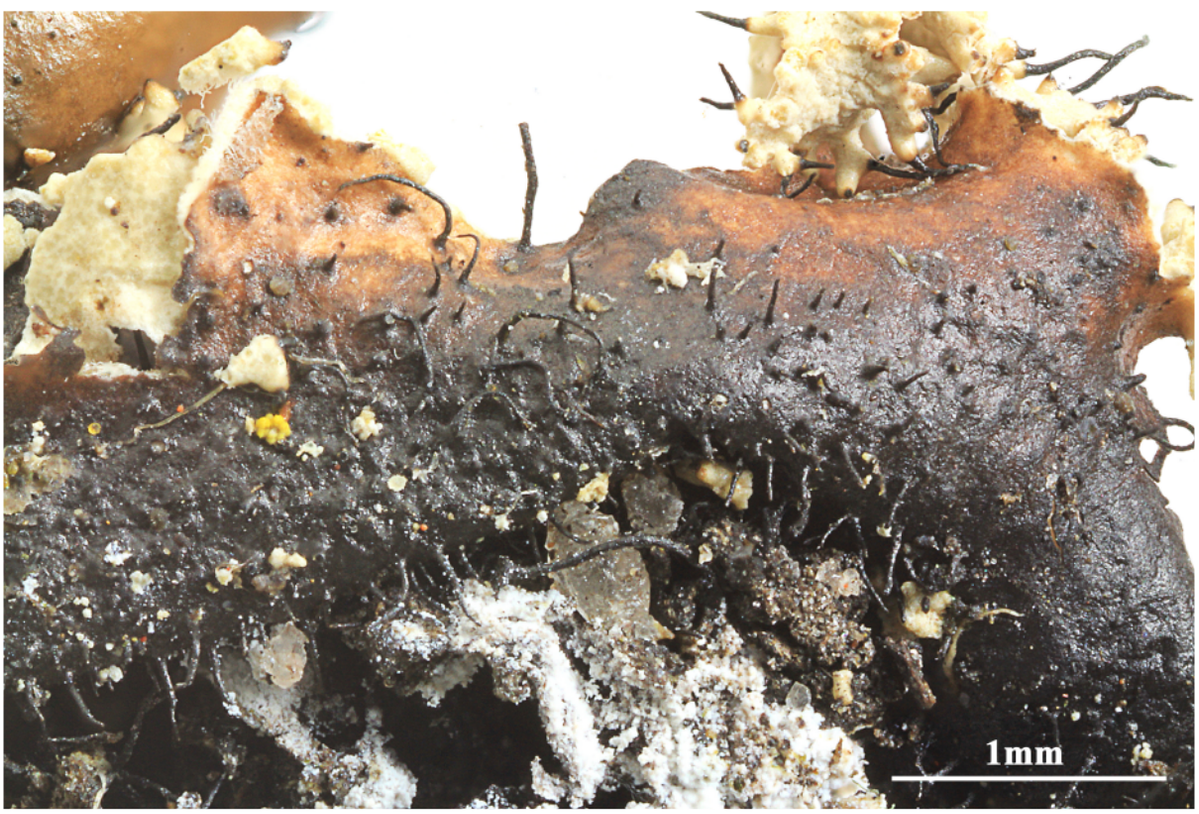
Parmotrema subrugatum

Parmotrema subisidiosum (Müll. Arg.) Hale, Phytologia 28(4): 339 (1974)
= *Parmelia cetrata* var. *subisidiosa* Müll. Arg. 1894

[ABL42088], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42088), 23.07.2017, det. A. Aptroot, 2017. - Thallus 8-12 cm in diameter; lobes 5-12 mm wide, laciniae lacking; upper surface reticulate; margins ciliate, cilia apical, 0.5-1 mm long; isidia present, sorediate; lower surface black, marginal rim brown. Apothecia present, the rim eciliate, disc imperforate; spores 6-10 x 12-14 µm. Conidia 10-12 um, filiform. Chemistry: atranorin, salazinic acid; pigments lacking.







Parmotrema subisidiosum

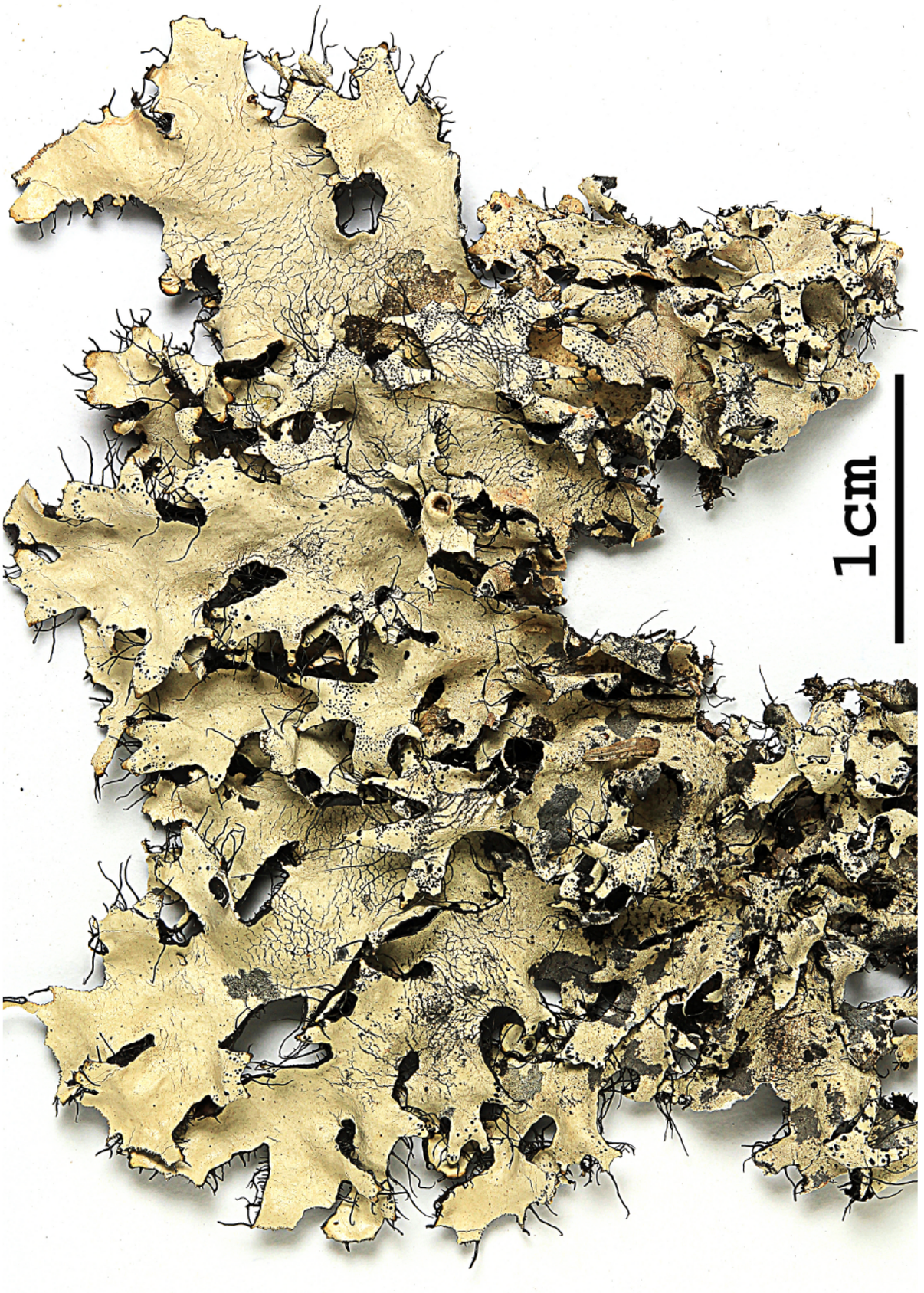
Parmotrema warmingii (Vain.) A.A. Spielm. & Marcelli, Plant and Fungal Systematics 65(2): 496 (2020)

= *Parmelia angustata* Kremp., Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn [35]: 13 (1873) [1873-74]

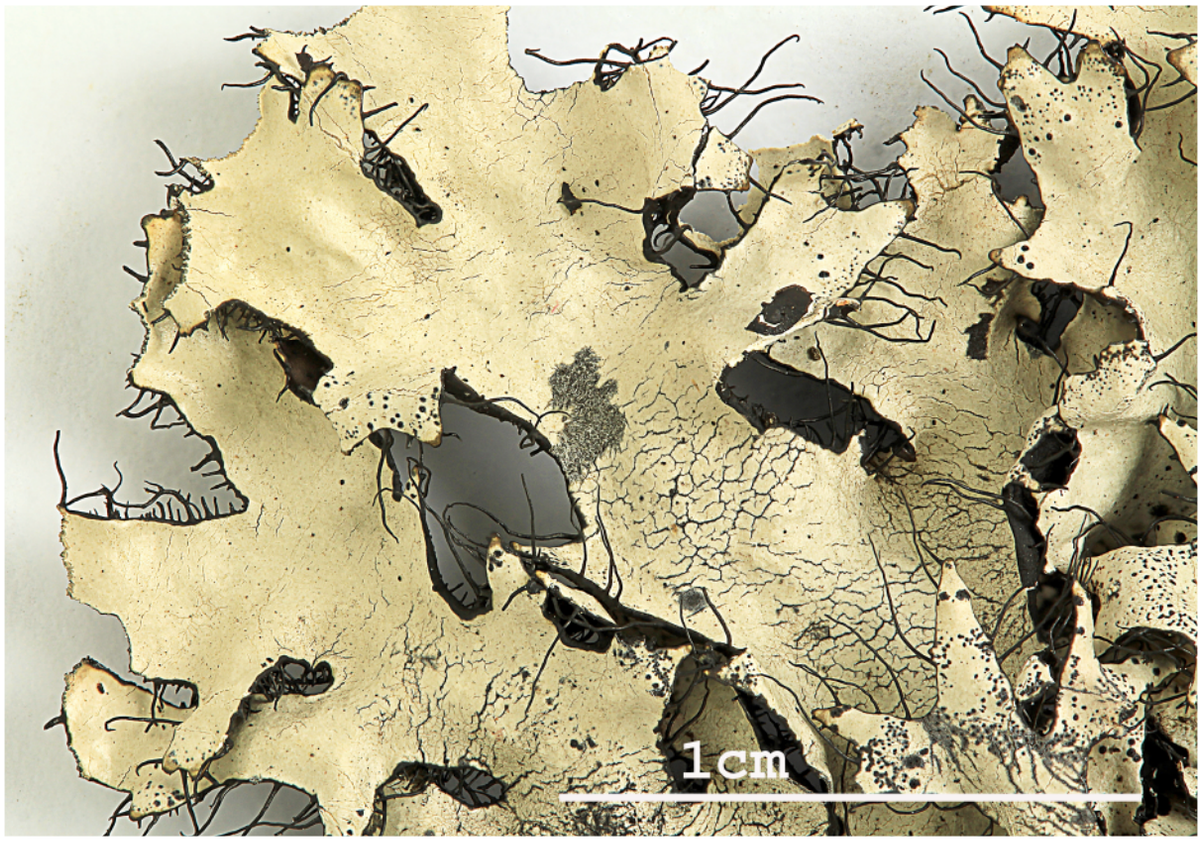
= *Parmelia warmingii* Vain. [as 'warmingi'], Acta Soc. Fauna Flora fenn. 7(no. 1): 41 (1890)

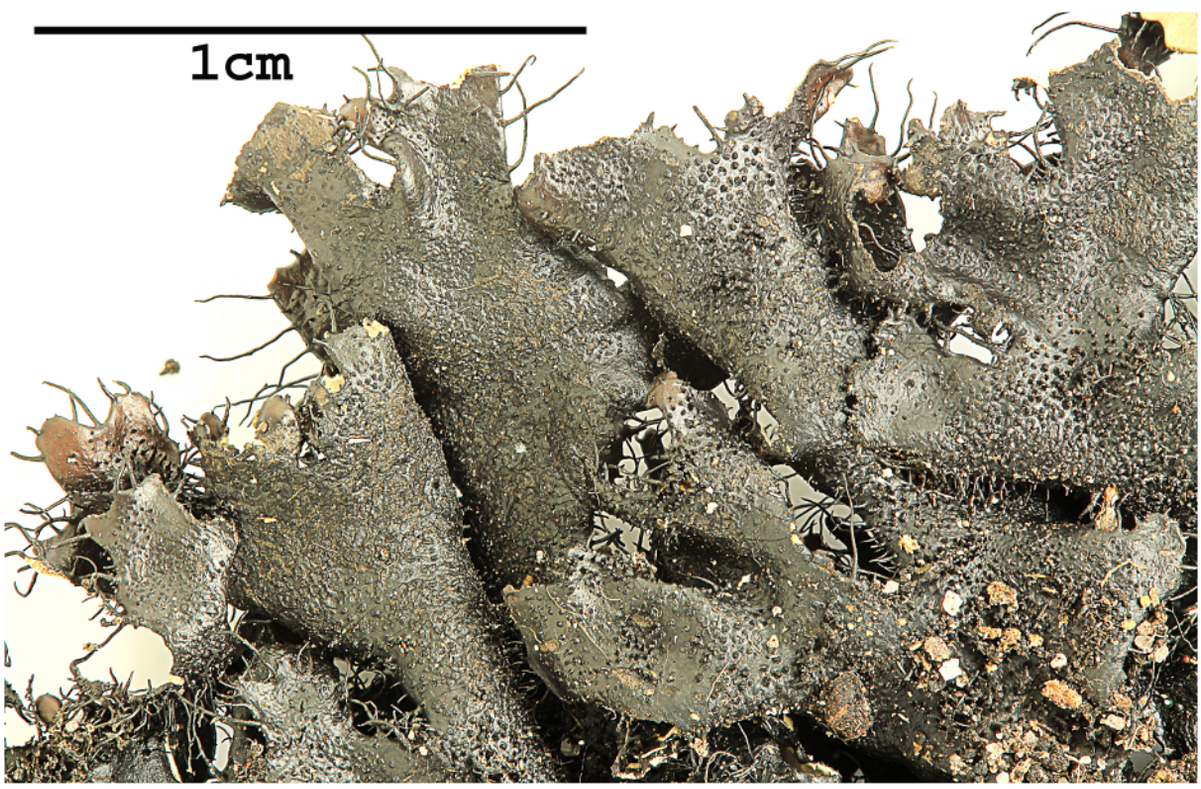
= *Parmotrema warmingii* (Vain.) A.A. Spielm. & Marcelli, in Spielmann, Estudos taxonômicos em Parmotrema s.l. (Parmeliaceae, Ascomycota liquenizados) com ácido salazínico: 90 (2009)

[ABL40907], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40907), 23.07.2017, det. A. Aptroot, 2017. - Thallus dirty beige to blackened (herbarium), laciniate, loosely adnate, saxicolous, 4 cm broad. Laciniae dichotomous, crowded, 0.5–2.0 mm wide, surface continuous to irregularly scared, smooth, lustrous, becoming irregularly or reticulately cracked towards the center; apical zone usually acute, sometimes truncate; margin smooth, with a conspicuous black line, plane to slightly undulated. Maculae extensive (hypermaculate), laminal, not originating cracks. Cilia black, simple, up to 2.3 mm long, 0.01–0.05 mm wide, abundant. Lacinules, soredia and isidia absent. Medulla white. Undersurface black, lustrous, papillate to rugulose, with cracks; marginal zone dark brown, lustrous, 0.5–2.5 mm wide, rhizinate, with an attenuated limit, smooth; rhizines black, simple, usually entangled, up to 1.5 mm long, usually thin, rarely thickened, 0.01–0.15 mm wide, frequent, distributed in groups. Apothecia cupuliform, 1.0–2.5 mm in diameter, sessile to substipitate, laminal or submarginal, margin incised, amphithecium maculate, smooth to irregular, disc dark brown, epruinose, imperforate; ascospores ellipsoid, 15–16 × 6–8 µm, episporium 1.0–1.5 µm. Pycnidia laminal, conspicuous, without prominent margin, abundant, ostiole black; conidia short-filiform, 6.5–10 × ca. 1.0 µm. Color tests: cortex K+ yellow, UV–; medulla K+ yellow → blood red, C–, KC–, P+ strong yellow, UV–. Chemistry: atranorin (minor), chloroatranorin (trace), salazinic acid (major), consalazinic acid (minor).



Parmotrema warmingii





Parmotrema warmingii

Peltula farinosa Büdel, in Büdel & Lange, Cryptog. bot. 4(3): 263 (1994)

[ABL42010], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 42010), 24. July 2017, det A. Aptroot , 2017.





Peltula farinosa

Peltula impressa (Vain.) Swinscow & Krog, Norw. Jl Bot. 26: 219 (1979)
= *Heppia impressa* Vain., Hedwigia 37(Beibl.): (43) (1898)

[ABL40731], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40731), 22.07.2017, det. A. Aptroot, 2017. - Lobes obconical to clavate or cylindrical, stipitate-peltate, upright, 2-4 times higher than wide, some branched, with apex truncate, attached to substrate by holdfast. Apical surface olivaceous brown, with thin necral layer. Medulla of loose hyphae. Under side olivaceous brown, cortex of 2-5 rows of paraplectenchymatous cells. Apothecia usually two or three per lobe, mainly immersed, appearing when mature as red pits in the upper surface. Spores subglobose to ellipsoid, 5-7 x 3-4 µm, occasionally with pseudoseptum.





Peltula impressa

Peltula impressa (Vain.) Swinscow & Krog, Norw. Jl Bot. 26: 219 (1979)
= *Heppia impressa* Vain., Hedwigia 37(Beibl.): (43) (1898)

[ABL42020], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 42020), 24. July 2017, det A. Aptroot , 2017. - Spores simple, hyaline, globose, 64 and more/ascus, 3.5-4.8 x 2.4-3.5 µm.

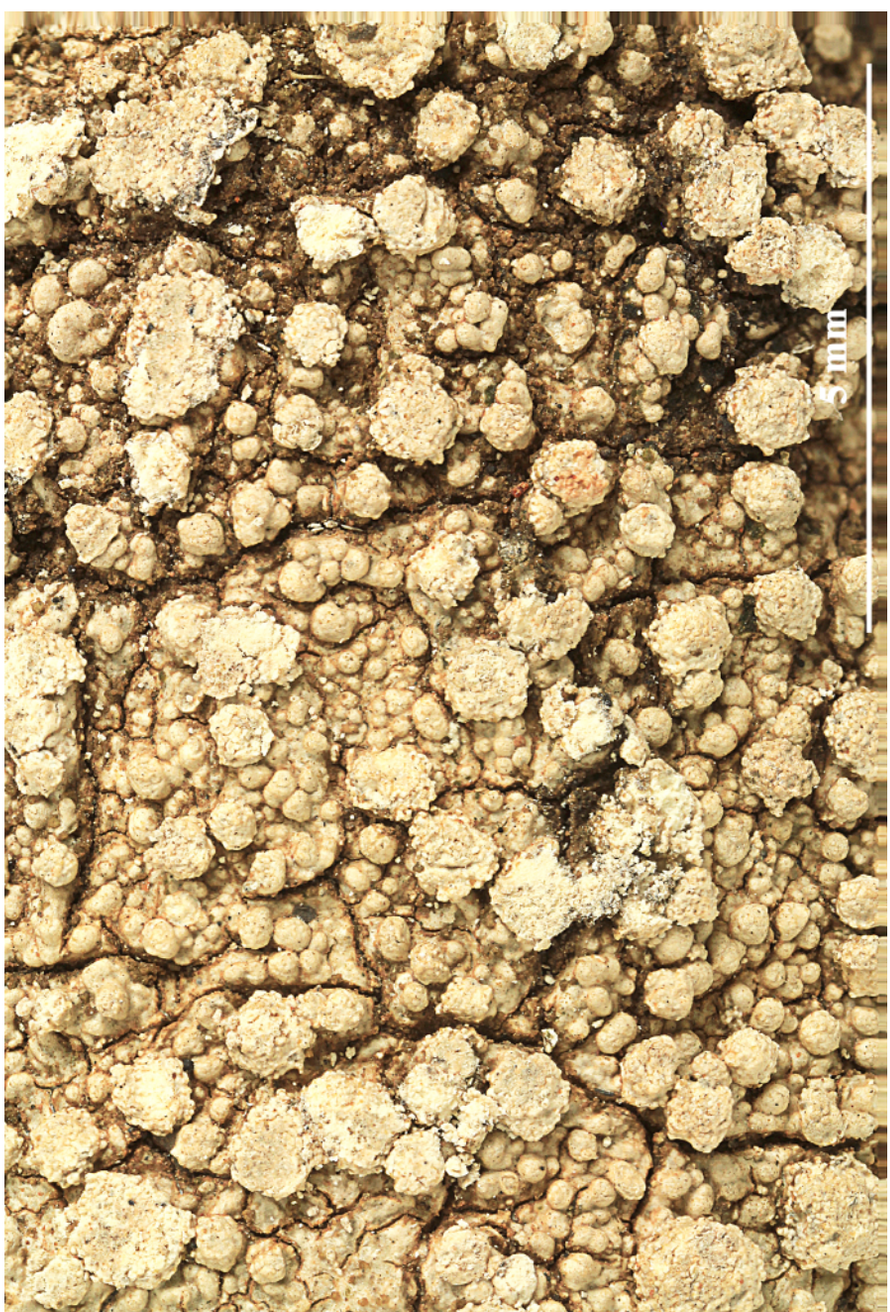




Peltula impressa

Pertusaria lichexanthofarinosa Aptroot & Cáceres, Bryologist 121(1): 75 (2018)

[ABL40764], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40764), 22.07.2017, det. A. Aptroot, 2017. - Thallus crustose, corticolous, ochraceous white, up to c. 0.5 mm thick, continuous, with numerous whitish round warts; warts 0.2–1.4 mm diam., up to 0.6 mm high, whitish, raised above the thallus, often eroded at the top to reveal or become covered by soredia; without or with undifferentiated whitish prothallus. Soredia farinose, mottled ochraceous white and whitish, covering most of the surface of the warts. Isidia absent. Photobiont green. Ascomata and pycnidia not observed. Chemistry: Cortex UV+ yellow, medulla K–, P–, C–, UV– .TLC: Lichexanthone.





Pertusaria lichexanthofarinosa

Pertusaria lichexanthoimmersa Aptroot & Cáceres, **Isotype**, Bryologist 121(1): 75 (2018)

[ABL40930], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40930), 23.07.2017, det. A. Aptroot, 2017. - Thallus crustose, corticolous, pale mineral grey, up to c. 2 mm thick, continuous, irregularly deeply fissured, composed of compressed and contorted high areoles, each of which are probably initial apothecium warts; surface warty with many convex parts; cortex smooth; towards the margin thinning out, shiny and more regularly radiately fissured; surrounded by a c. 0.4 mm wide white, shiny prothallus. Soredia and isidia absent, but some areoles hollow with wide gaping openings, resembling soredia; these are locations where the hymenium is destroyed, possibly by grazing by arthropods. Photobiont green. Ascomata apothecia, immersed in the thallus inside thalline warts, almost globose to compressed or contorted, 0.2–0.4 mm diam. Hymenium pinkish; epihymenium pinkish; hypothecium hyaline. Paraphyses thin, mostly agglutinated to the asci. Asci cylindrical, 120–165 x 25–35 µm, wall up to 10 µm thick. Ascospores hyaline, 2/ ascus, non-septate, ellipsoid, probably still juvenile, 30–36 x 13–17 µm, wall not rough. Pycnidia not observed. Chemistry. Cortex UV+ yellow, medulla K+ yellow-red, P–, C–, UV–. TLC: Lichexanthone and norstictic acid.





Pertusaria lichexanthoimmersa

Phaeographis amazonica Staiger, Biblthca Lichenol. 85: 316 (2002)

[ABL42077], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42077), 23.07.2017, det. A. Aptroot, 2017. - Hymenium inspersed, IKI-; spores 8/ascus, muriform, brownish, 14-17/1-2-septate, 50-70 x 11-14 µm, IKI+ red or redbrown; K+ red, norstictic acid, connorstictic. acid.





Phaeographis amazonica

Phaeographis crispata Matthes-Leicht ined.

[ABL48518], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in palm forest. 16°51'04" S, 39°24'10" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48518), 16.02.2019, det. A. Aptroot 2019. - Hymenium not inspersed, spores 5-septate, 28 x 7 µm,K+ yellow.





Phaeographis crispata

Phaeographis crispata Matthes-Leicht ined.

[ABL42043], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42043), 23.07.2017, det. A. Aptroot, 2017. - Hymenium not inspersed; spores 5-septate, 23 x 8 µm; K+ red, UV-.





Phaeographis crispata

Phaeographis nylanderi (Vain.) Zahlbr., Cat. Lich. Univers. 2: 382 (1923) [1924]
= *Graphis nylanderi* Vain. 1909

[ABL40595], Brazil, Bahia, Chapada Diamantina, Lençois Vila Serrano. 12°33'33" S, 41°23'20" W, 425 m. On tree bark in garden in Pousada. Leg. M. Caceres & A. Aptroot (no 40595), det. A. Aptroot 2017. - Thallus K+ ysllow>red, UV-; hymenium not inspersed; spores 8/ascus, 3-5-septate, brown 14-24 x 6-9 µm.





Phaeographis nylanderi

Phaeographis spondaica (Nyl.) Lücking, Opuscula Philolichenum 14: 23 (2015)

= *Leptotrema spondaicum* (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 640 (1923) [1924]

= *Thelotrema spondaicum* Nyl., in Triana & Planchon, Annls Sci. Nat., Bot., sér. 4 19: 330 (1863)

= *Phaeographis lecanographa* (Nyl.) Staiger

[ABL48415], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'36" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48415), 15.02.20198 det. A. Aptroot 2019. - Apothecia 1-1,5 × 0,8-1 mm. Disc brown black, not pruinose. Excipulum not carbonized. Hymenium inspersed. Spores brown, 1-2/ascus, muriform, , 22-33(-45)/7-10-locular, 85-150 (-200) × 25-50 µm, gel sheat 2-5 µm, I+ violet. Chemistry: Virensic acid. - The type of *Thelotrema spondaicum* agrees morphologically and chemically with the type of *Graphis lecanographa* and provides an earlier epithet for this species.





Phaeographis spondaica

Phaeographis vulcanica Aptroot, Lücking, Schumm & M. Cáceres, sp. nov.

MycoBank MB 848604

Diagnosis. Corticolous *Phaeographis* differing from all known species in the genus by the combination of the following characters: Thallus without secondary substances, ascomata almost round, ascospores muriform, 75–90 × 29–32 µm.

Type: BRAZIL. Bahia: Chapada Diamantina, Lençois, Morro do Pai Inácio, alt. 1100 m, 12°27′24″S, 41°28′20″W, on tree bark in mountain forest, 23 Jul. 2017, M.E.S. Cáceres & A. Aptroot s.n., ISE 42093 (holotype, ise; isotype, abl).

Description. Thallus crustose, continuous, following the surface of the substratum, corticate, slightly shiny, mottled pale and darker ochraceous, up to 5 cm diam., under 0.1 mm thick, not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata erumpent, solitary, often laterally covered by the thallus, round to ellipsoid, 0.4–0.6 × 0.4–1 mm long, disc wide open, chocolate brown, not pruinose. Hamathecium inspersed, but the inspersion vanishes in lactophenol-cottonblue. Ascospores 1(–2?)/ascus, grey, muriform, 75–90 × 29–32 µm, without gelatinous sheath. Pycnidia not observed.

Chemistry. Thallus UV–, K–, P–. TLC: nil.

Etymology. Named after volcano-like apothecia.

Ecology and distribution. On tree bark in mountain forest; only known from Brazil.

Discussion. This species is well characterized by the almost round apothecia and muriform ascospores. It would key out in the world key of muriform *Phaeographis* by Staiger (2009) in at couplet 10 as: Thallus without secondary substances, ascospores 75–90 × 29–32 µm. It is most similar to *P. spondaica* (Nyl.) Lücking, which mainly differs by the heavily inspersed hamathecium.

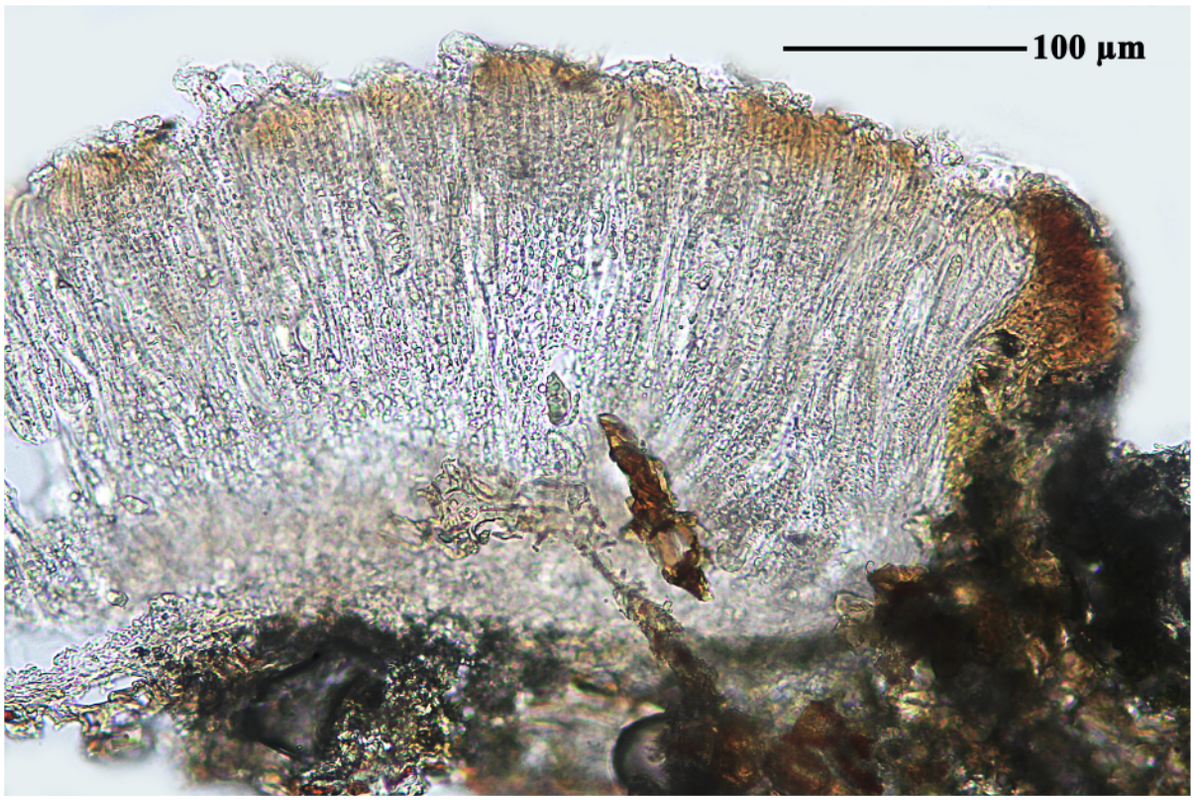
Additional material. BRAZIL. Same details as the type, ISE 42104 (ise, abl).

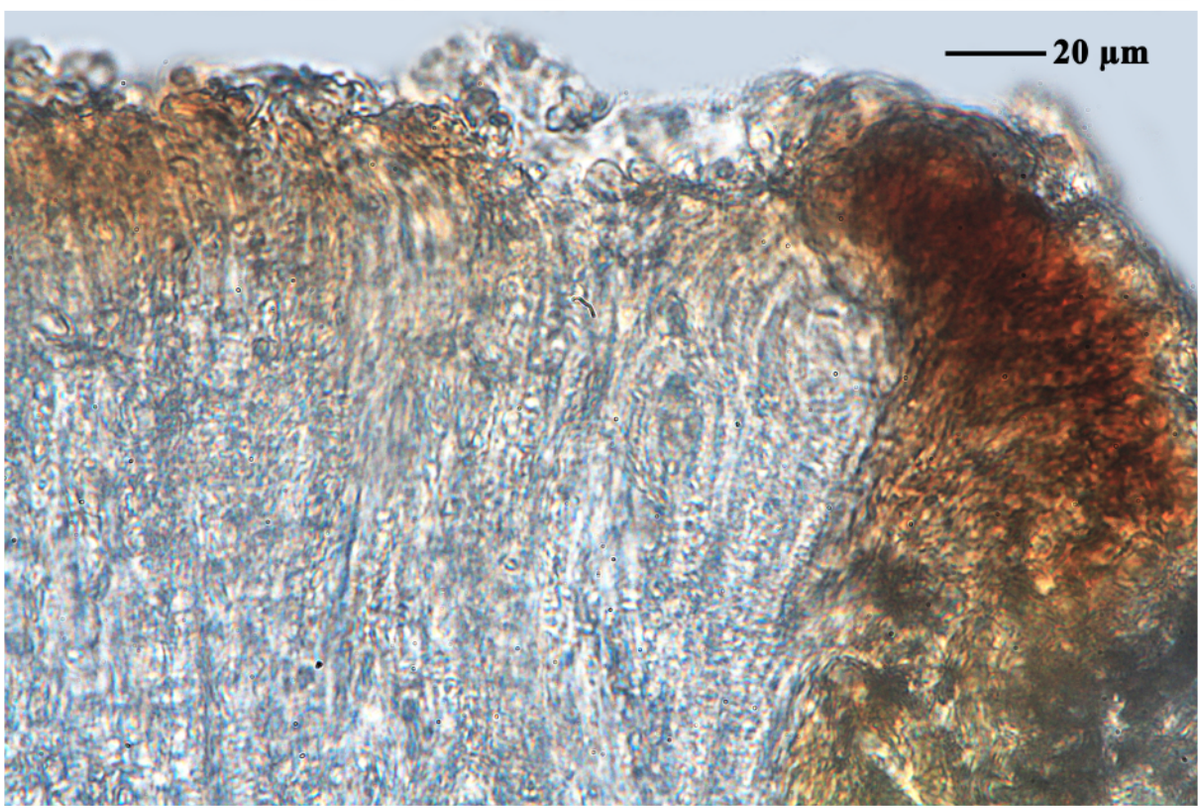


Phaeographis vulcanica

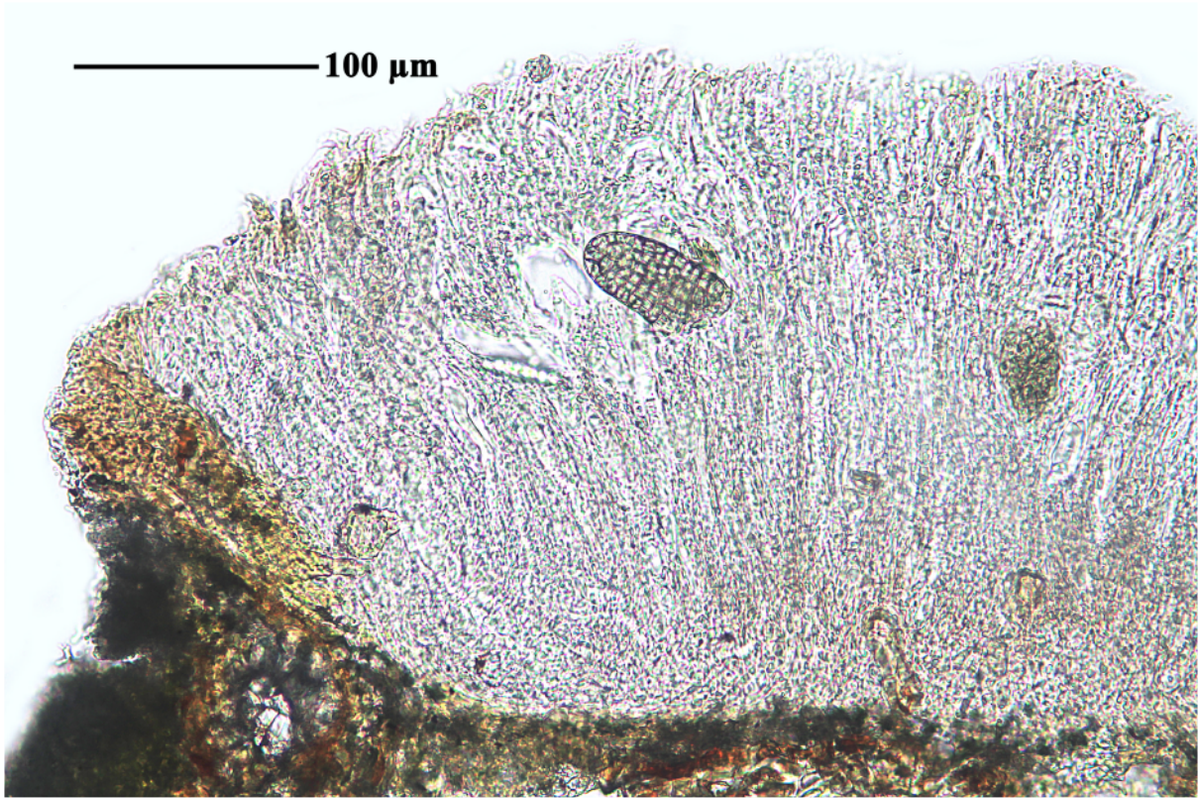


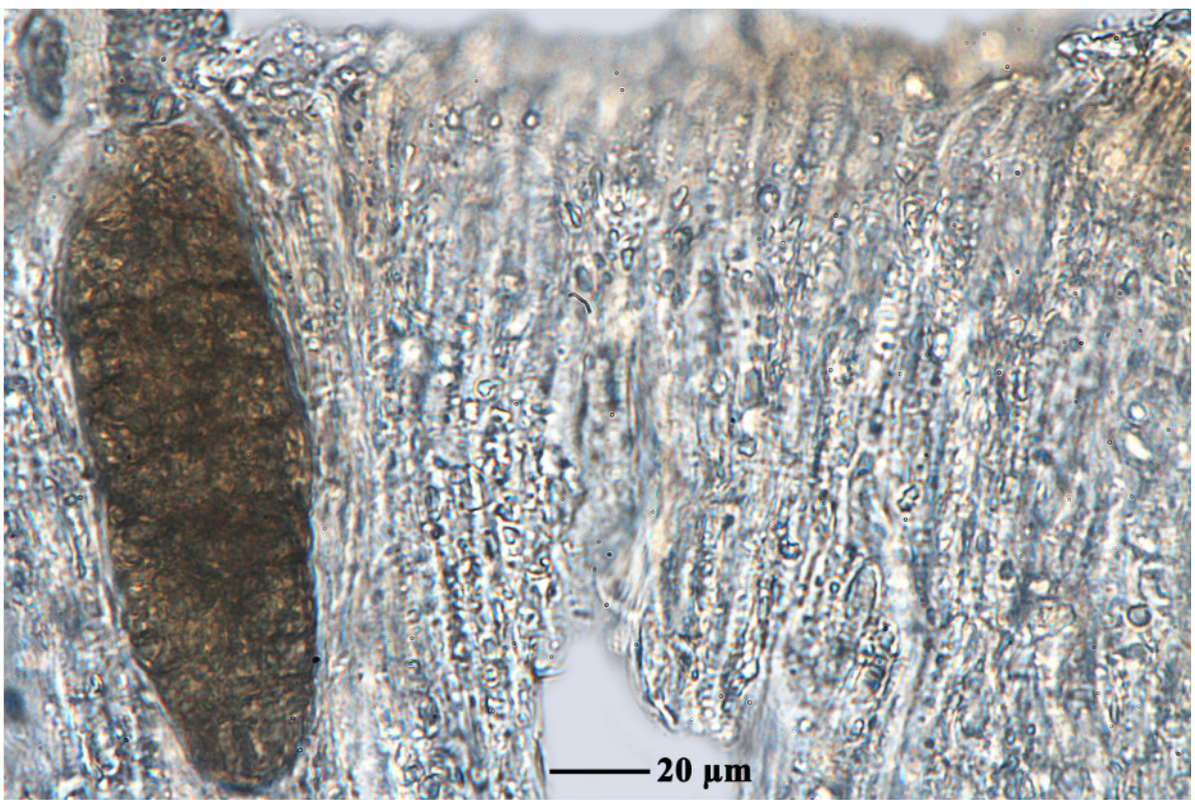
Phaeographis vulcanica



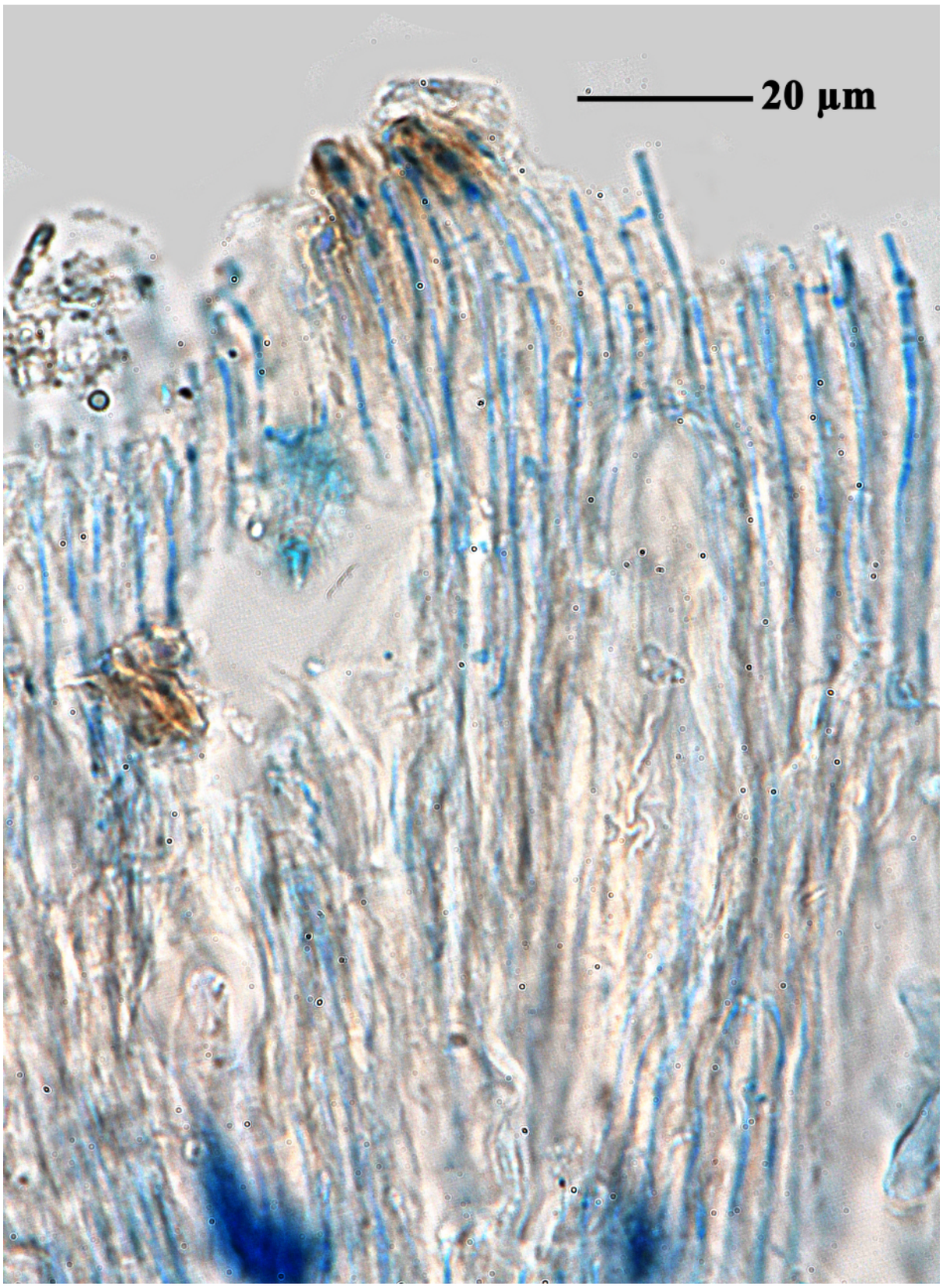


Phaeographis vulcanica

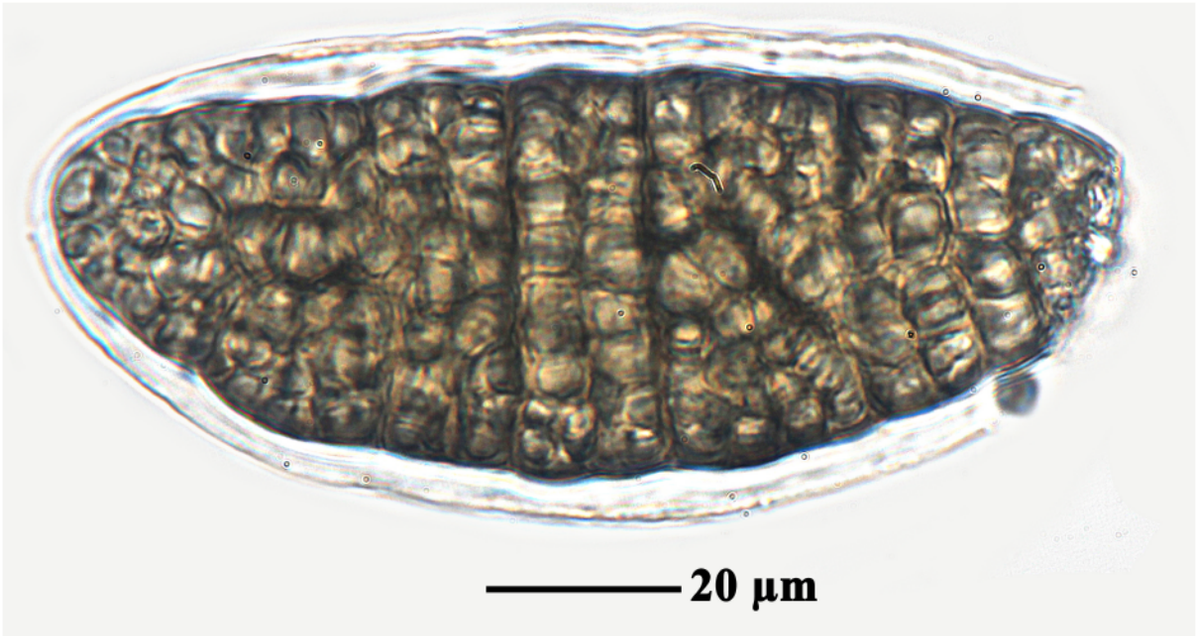


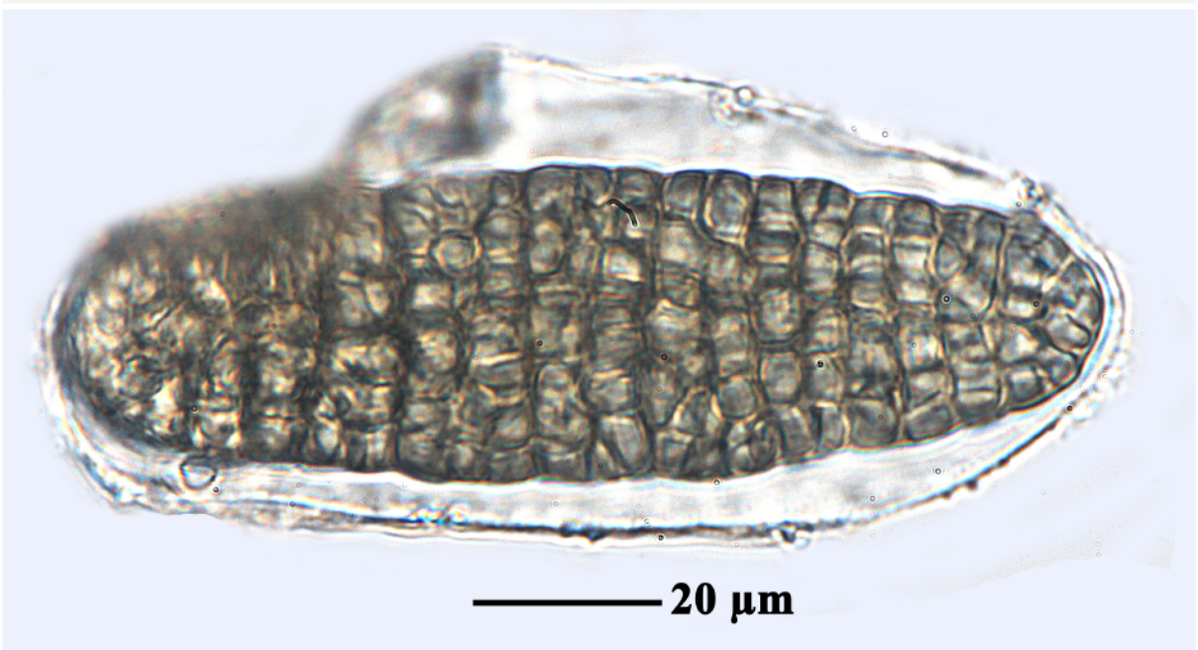


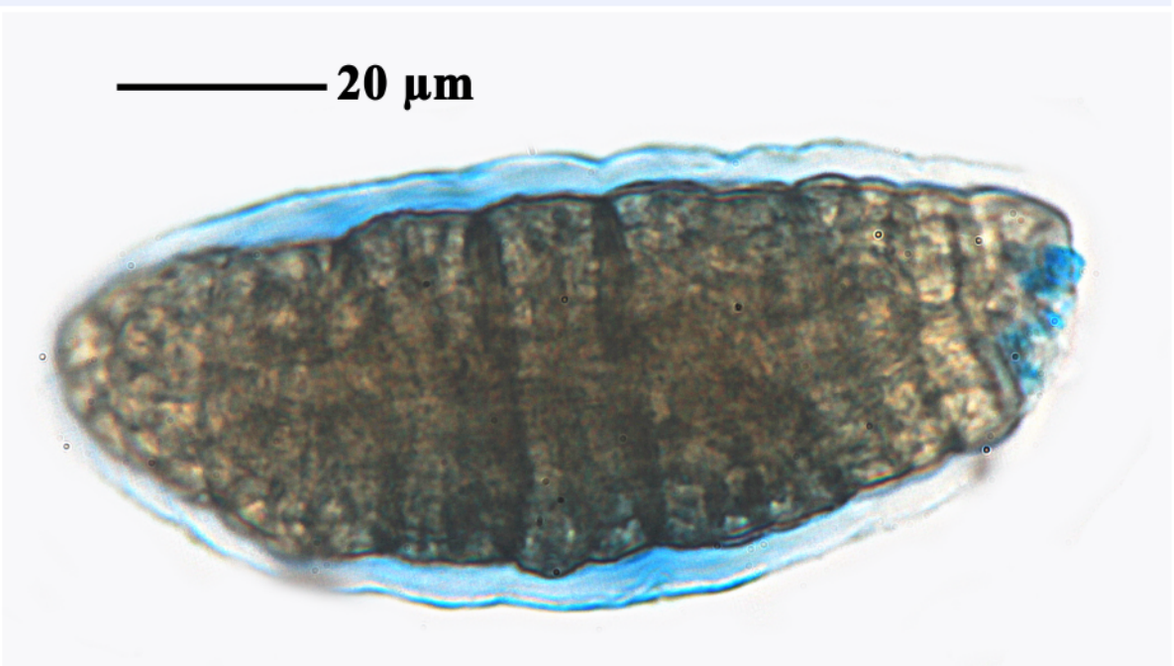
Phaeographis vulcanica



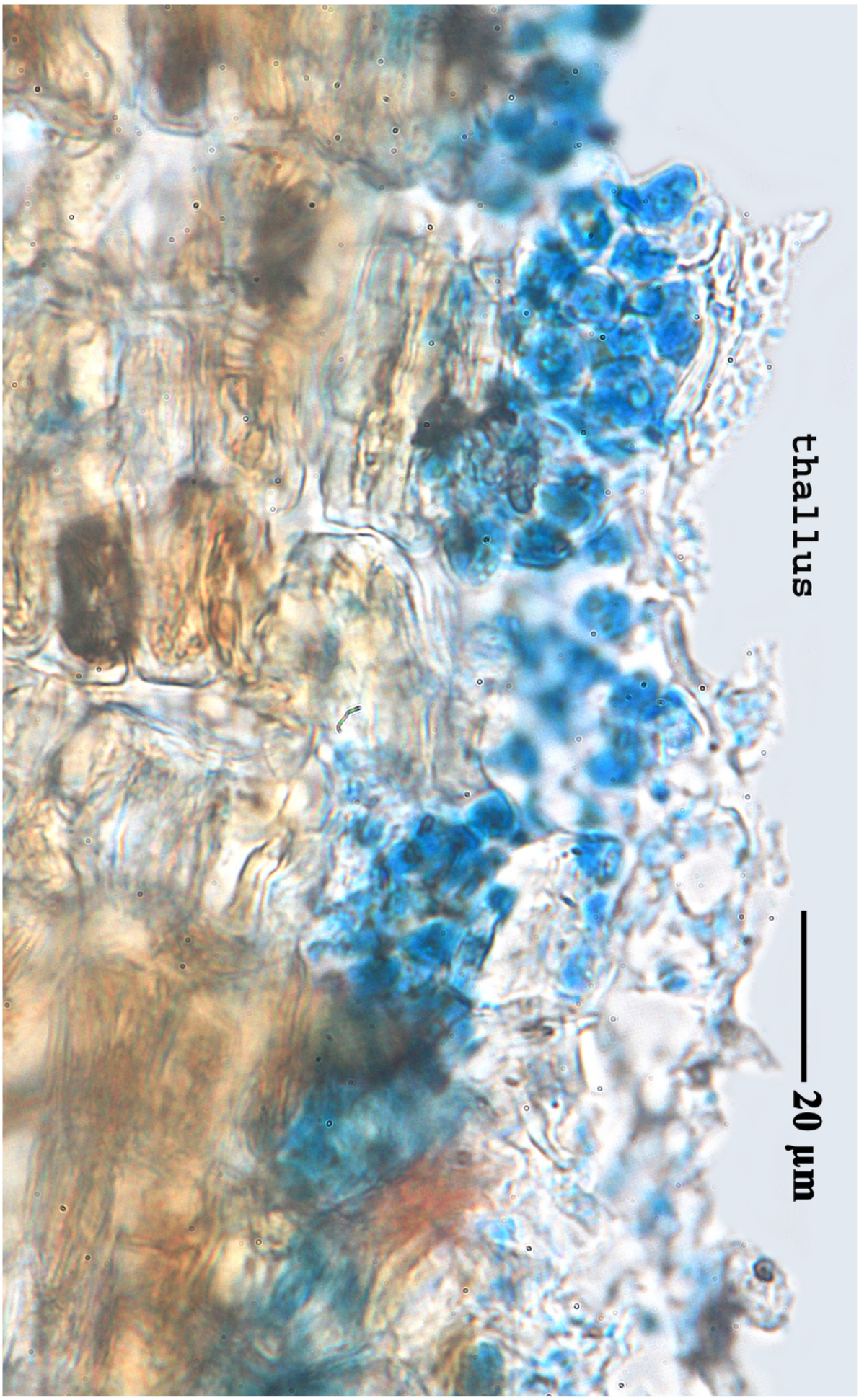
Phaeographis vulcanica







Phaeographis vulcanica



Phaeographis vulcanica

Physcia poncinsii Hue, Bull. Soc. bot. Fr. 63(Mém. no. 28): 10 (1916)

[ABL48728], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pale in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48728), 15.02.2019, det. A. Aptroot 2019. - Lobes 1-2 mm wide. Soredia laminal .Lower surface white to brownish. Upper cortex paraplectenchymatous. Apothecia seldom. Spores (17)20-25(26) x 9-11(-14) µm. Chemistry: Cortex and medulla K+ yellow, atranorin, zeorin.





Physcia poncinsii

Physcia sorediiconvexa Aptroot & Cáceres, **Isotype**, Bryologist 121(1): 77 (2018)

[ABL42018], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 42018), 24. July 2017, det A. Aptroot , 2017. - Thallus foliose, saxicolous, closely appressed, up to 7 cm diam., mineral grey, slightly glossy; upper surface, also in the central part, reticulately white maculate; lobes irregularly branched, discrete with wide interspaces and almost not overlapping, 0.7–1.2 mm wide, outer rim truncated, often with recurved margins. Isidia absent. Soredia farinose, glaucous grey, in sparse capitate soralia of c. 1–2 mm diam.; soralia not confluent. Medulla up to 0.3 mm thick, whitish. Lower surface pale brown, ivory towards the margin, glossy, paraplect-enchymatous, with rhizines. Rhizines rather numerous, ivory or partly pale brown, simple, c. 0.1 mm thick, up to 0.4 mm long. Photobiont green. Ascomata and pycnidia not observed. Chemistry: Cortex K+ yellow, medulla K+ yellow, P–, C–, UV–. TLC: Atranorin and zeorin and other terpenoids.





Physcia sorediiconvexa

Physcia tribacioides Nyl. [as 'tribacoides'], Flora, Regensburg 57: 307 (1874)
= *Physcia stellaris f. tribacoides* (Nyl.) Boistel, Nouv. Fl. Lich. (Paris) 2: 75 (1903)
= *Physcia tribacia var. tribacoides* (Nyl.) H. Olivier, Rev. Bot. 12: 88 (1894)
= *Xanthoria tribacioides* (Nyl.) Horw., Hand-list Lich. Gr. Brit.: 13 (1912)

[ABL48701], Brazil, Bahia, Itamarajú, Hotel Monte Pascoal, on tree bark in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48701), 15.02.2019, det. A. Aptroot 2019. - Upper surface ash grey to brownish grey, not evidently spotted, with laminal elongated capitate soredia. Lower surface white to weakly brownish grey





Physcia tribacioides

Physma byrsaeum (Afzel. ex Ach.) Tuck., Syn. N. Amer. Lich. (Boston) 1: 115 (1882)
= *Collema amphiurum* Nyl., Annls Sci. Nat., Bot., sér. 4 12: 281 (1859)
= *Collema byrsaeum* (Afzel. ex Ach.) Ach. [as 'byrsinum'], Lich. Univ.: 642 (1810)
= *Collema hypolasium* Stirt., in Bailey, Queensland Agric. J. 5: 484 (1899)
= *Dichodium amphiurum* (Nyl.) Nyl., in Hue, Nouv. Arch. Mus. Hist. Nat., Paris, 3 sér. 2: 232 (1890)
= *Dichodium byrsaeum* (Afzel. ex Ach.) Nyl. [as 'byrsinum'], Lich. Nov. Zeland. (Paris): 9 (1888)
= *Gabura byrsaea* (Afzel. ex Ach.) Kuntze [as 'byrsina'], Revis. gen. pl. (Leipzig) 2: 875 (1891)
= *Lempholemma hypolasium* (Stirt.) Zahlbr., Cat. Lich. Univers. 3: 17 (1924) [1925]
= *Lichen furvus* * *byrsaeum* (Afzel. ex Ach.) Lam. [as 'byrsinum'], Encycl. Méth. Bot., Suppl. (Paris) 3(2): 415 (1813)
= *Parmelia byrsaea* Afzel. ex Ach. [as 'byrsæa'], Methodus, Sectio post. (Stockholmiæ): 222 (1803)
= *Physma amphiurum* (Nyl.) Zahlbr., Cat. Lich. Univers. 3: 24 (1924) [1925]
= *Physma byrsaeum* var. *amphiurum* (Nyl.) Müll. Arg., Hedwigia 32: 47 (1891)

[ABL48818], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34" S, 38°00" W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48818), 20.03.2019, det. A. Aptroot 2019. - Thallus loosely to firmly adnate. Lower surface densely covered with short browenish grey to black hairs. Spores 12-18 x 6-12 µm, 8/ascus, colourless, simple, with thick lacerate epispore.





Physma byrsaeum

Platygramme discurrens (Nyl.) Staiger, Biblthca Lichenol. 85: 362 (2002)
= *Graphis discurrens* Nyl., Annls Sci. Nat., Bot., sér. 4 19: 358 (1863)
= *Phaeographis discurrens* (Nyl.) Müll. Arg., Flora, Regensburg 65: 504 (1882)

[ABL48631], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'57" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48631), 18.02.2019, det. A. Aptroot 2019. - Spores 4-6 septate, 15-25 x 5-7,5 µm, grey to brownish, I+ reddish violet. Stictic acid.

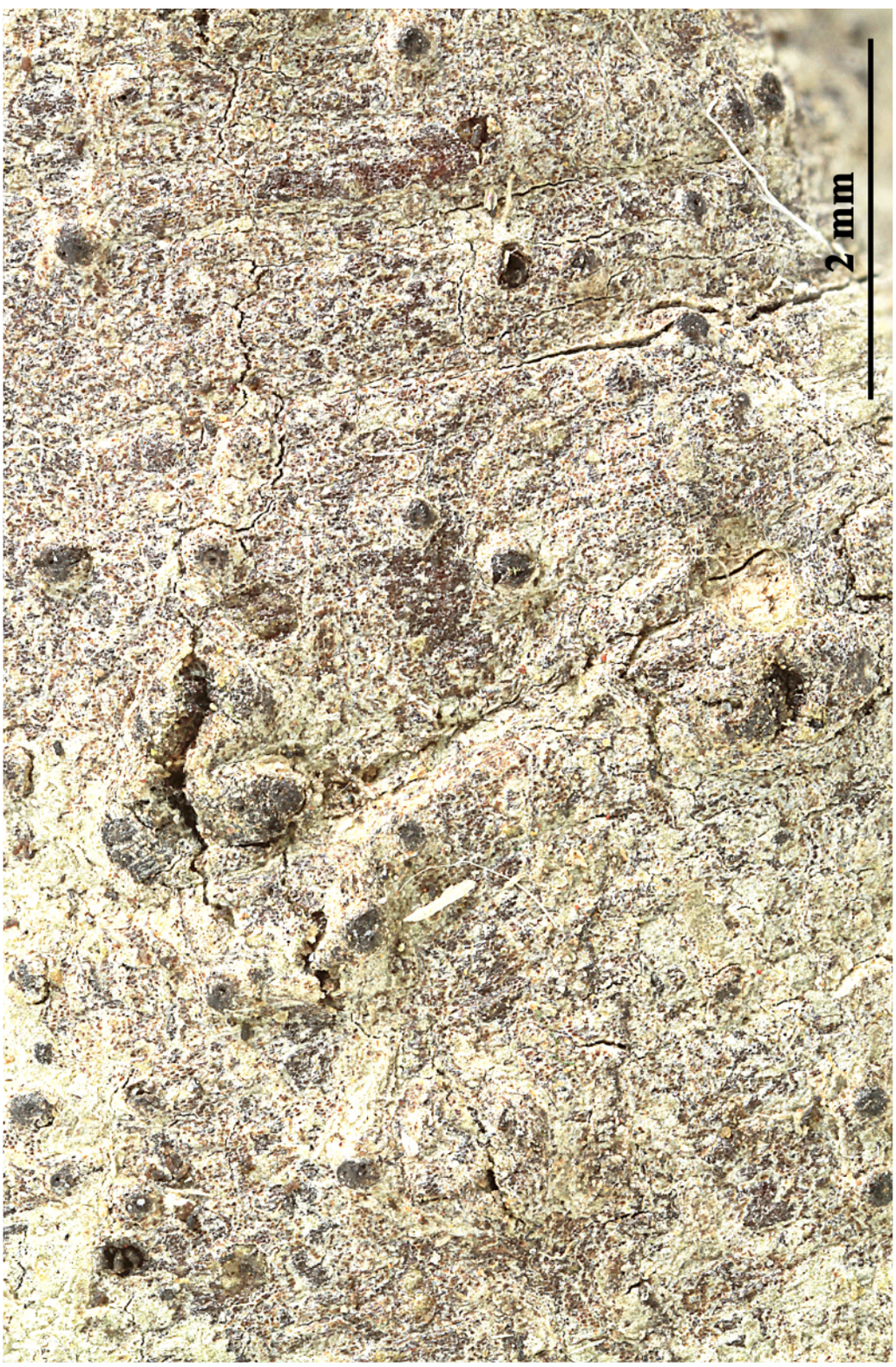




Platygramme discurrens

Polymeridium catapastoides Aptroot, Nova Hedwigia 98(1-2): 12 (2013) [2014]

[ABL40985], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. M. Cáceres & A. Aptroot (no 40985), 24. July 2017, det A. Aptroot , 2017. - Thallus ecorticate, white, UV-. Perithecia solitary. Ostiole apical or partly lateral. Hamathecium not inspersed with oil droplets. Ascospores IKI–, 3-septate, 24–33 × 6–10 ìm. Chemistry: no substances.

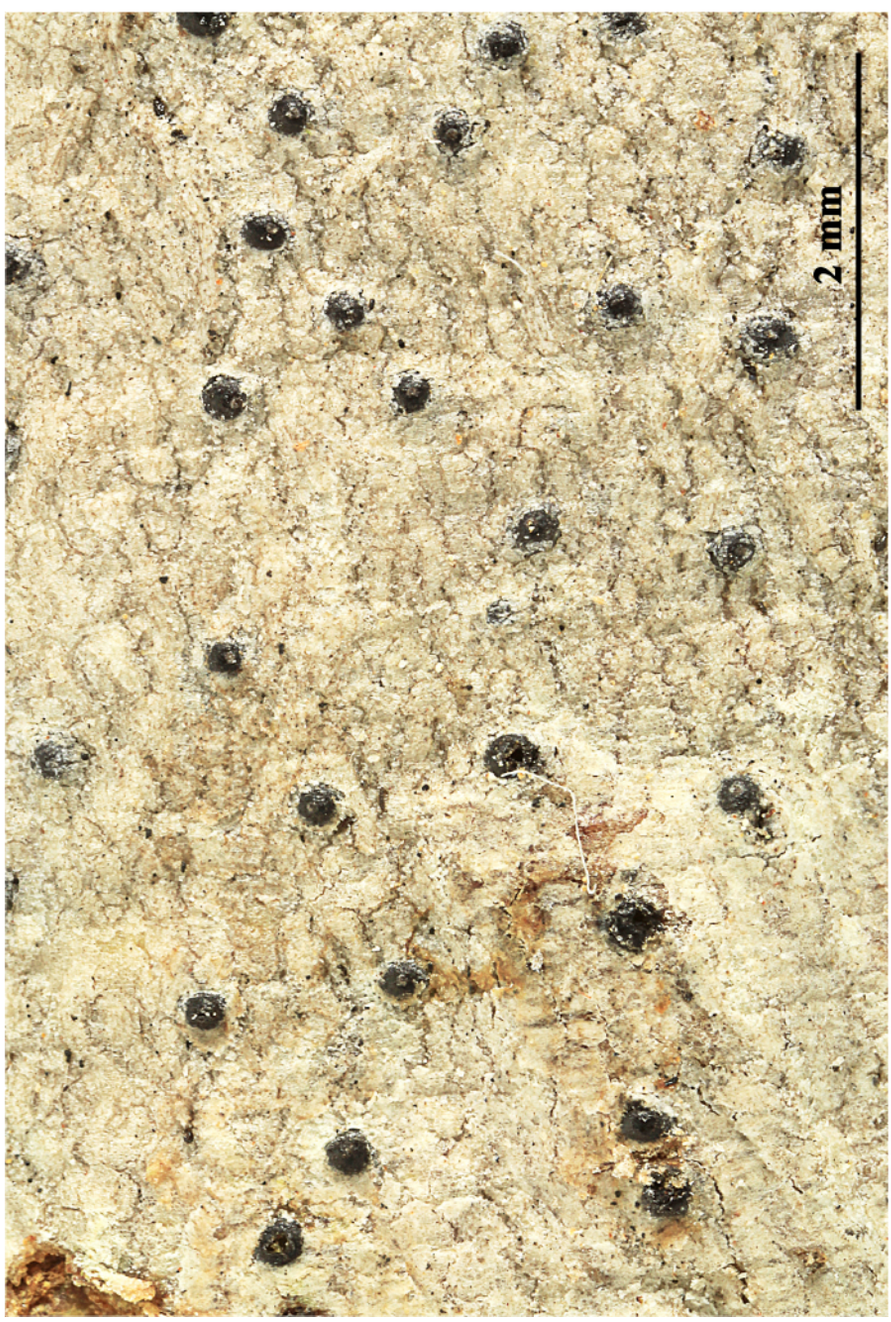


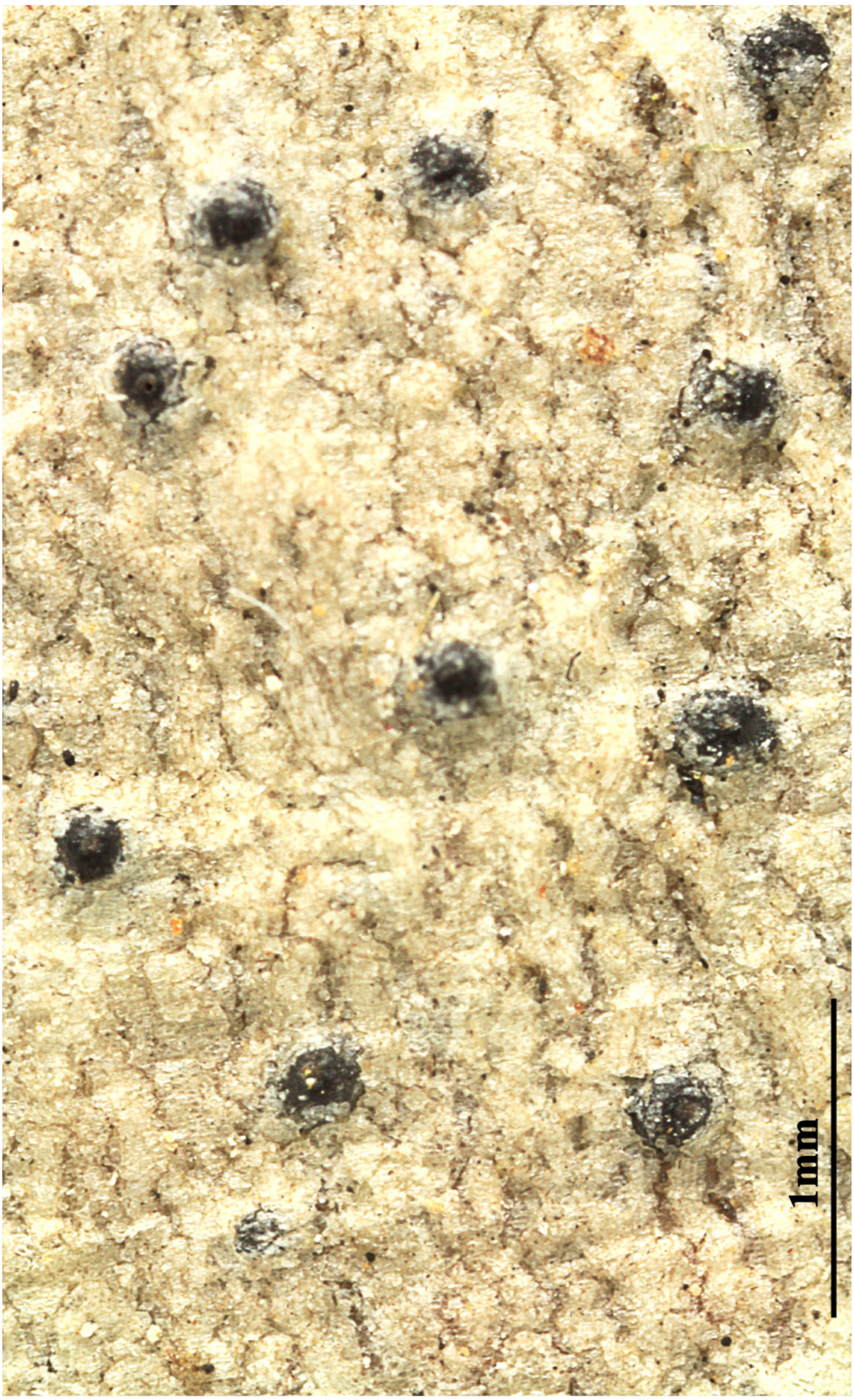


Polymeridium catapastoides

Polymeridium fernandoi Aptroot & Weerakoon, Cryptog. Mycol. 39(3): 375 (2018)

[ABL48459], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'45" S, 39°24'30" W, 550 m. Leg. M. Cáceres & A. Aptroot (no 48459), 15.02.2019 det. A. Aptroot 2019. - Thallus not corticate, smooth, dull, continuous, c. 0.2 mm thick, whitish grey. Ascomata hemispherical, c. 0.3–0.5 mm diam., single, black, erumpent to distinctly raised above the thallus. Wall carbonized, up to 80µm thick. Ostioles central, apical, flat, dark brown. Hamathecium inspersed with yellow oil globules that are KOH+ violet. Ascospores 8/ascus, hyaline, 6–8 septate, 35–39 × 7.5–8 µm (swelling to 43 µm long in KOH), slightly clavate, ends rounded, surrounded by a c. 1.5 µm thick gelatinous layer. Chemistry: UV-, K-. No TLC performed.





Polymeridium fernandoi

Polymeridium jordanii (C.W. Dodge) Aptroot, Nova Hedwigia 98(1-2): 18 (2013) [2014]
= *Pseudopyrenula jordanii* C.W. Dodge, Beih. Nova Hedwigia 12: 11 (1964)

[ABL48783], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48783), 20.03.2019, det. A. Aptroot 2019. - Thallus ecorticate, white, smooth to uneven.Ascomata with apical ostioles, solitary, 0.2-0.4 mm diam., erumpent, exposed an black. Hamathecium clear. Ascospores 8/ascus, 4-7 septate, fusiform, 21-30 x 5-9, µm, hyaline, IKI-, wall smooth. Chemistry: Thallus UV-, K-. TLC: no substances detected.





Polymeridium jordanii

Polymeridium multiforme Aptroot, Nova Hedwigia 98(1-2): 18 (2013) [2014]

[ABL42172A], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42172A), 23.07.2017, det. A. Aptroot, 2017. -

Thallus ecorticate, whitish grey, smooth to uneven. Ascomata with apical ostioles, solitary, 0.2–0.3 mm diam., erumpent, exposed and black. Hamathecium clear. Ascospores 8/ascus, (4–)5(–7)-septate, fusiform, 19–26 × 5–7 µm, hyaline, IKI-, wall smooth. Chemistry: Thallus UV+ yellow, K-; TLC: Lichexanthone.

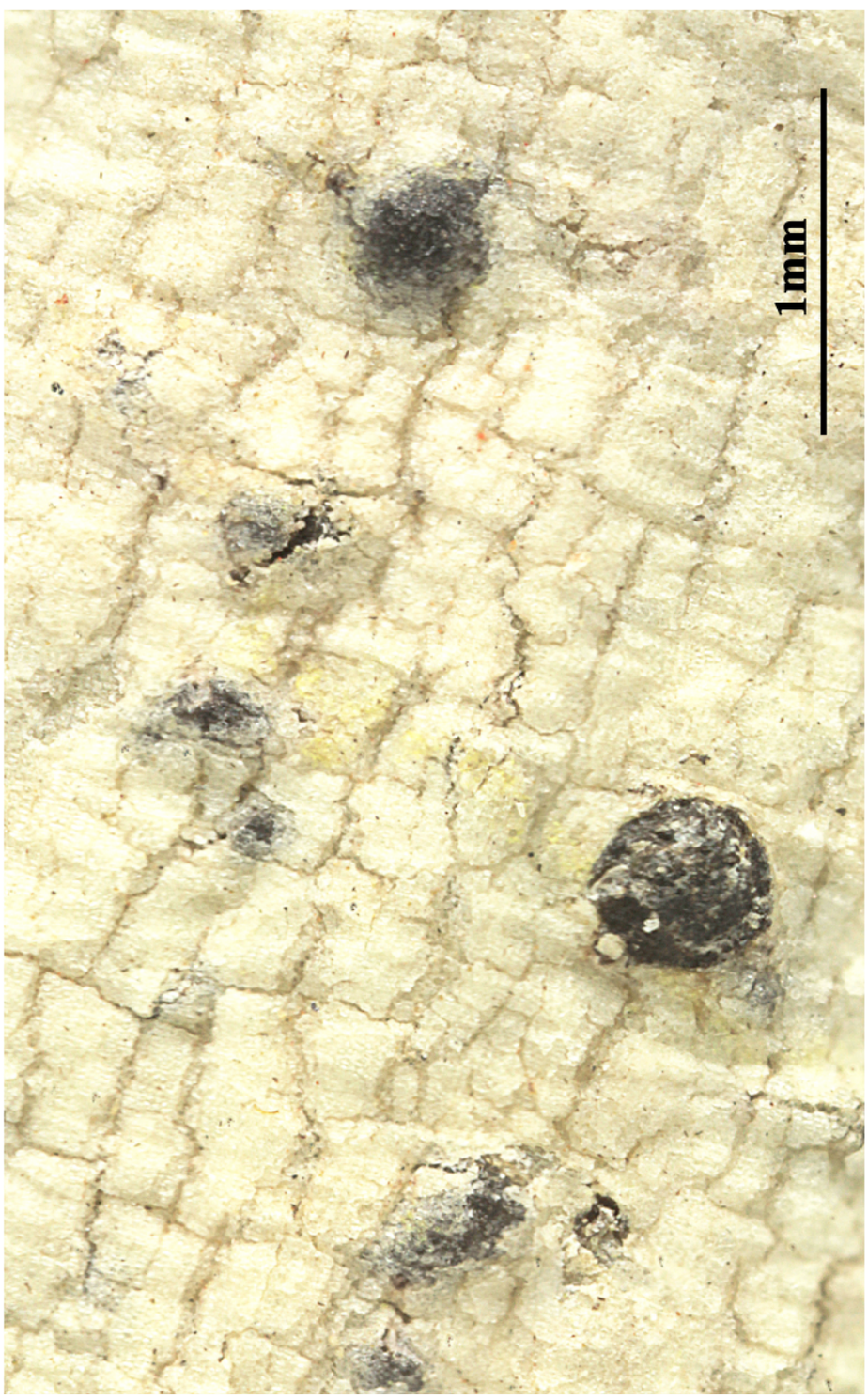




Polymeridium multiforme

Polymeridium simulans R.C. Harris, Bolm Mus. paraense 'Emílio Goeldi', sér. bot. 7(2): 641 (1993) [1991]

[ABL48465], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'45" S, 39°24'30" W, 550 m. Leg. M. Cáceres & A. Aptroot (no 48465), 15.02.2019, det. A. Aptroot 2019. - Thallus ecorticate, white, smooth to uneven. Ascomata with lateral, separate ostioles, solitary, 0.4–0.6mm diam., erumpent, pearshaped, exposed and black. Hamathecium clear. Ascospores 8/ascus, 3-septate, fusiform, 30–35 × 12–13 µm, hyaline, IKI−, wall smooth. Chemistry: Thallus UV−, K−. TLC: no substances detected.

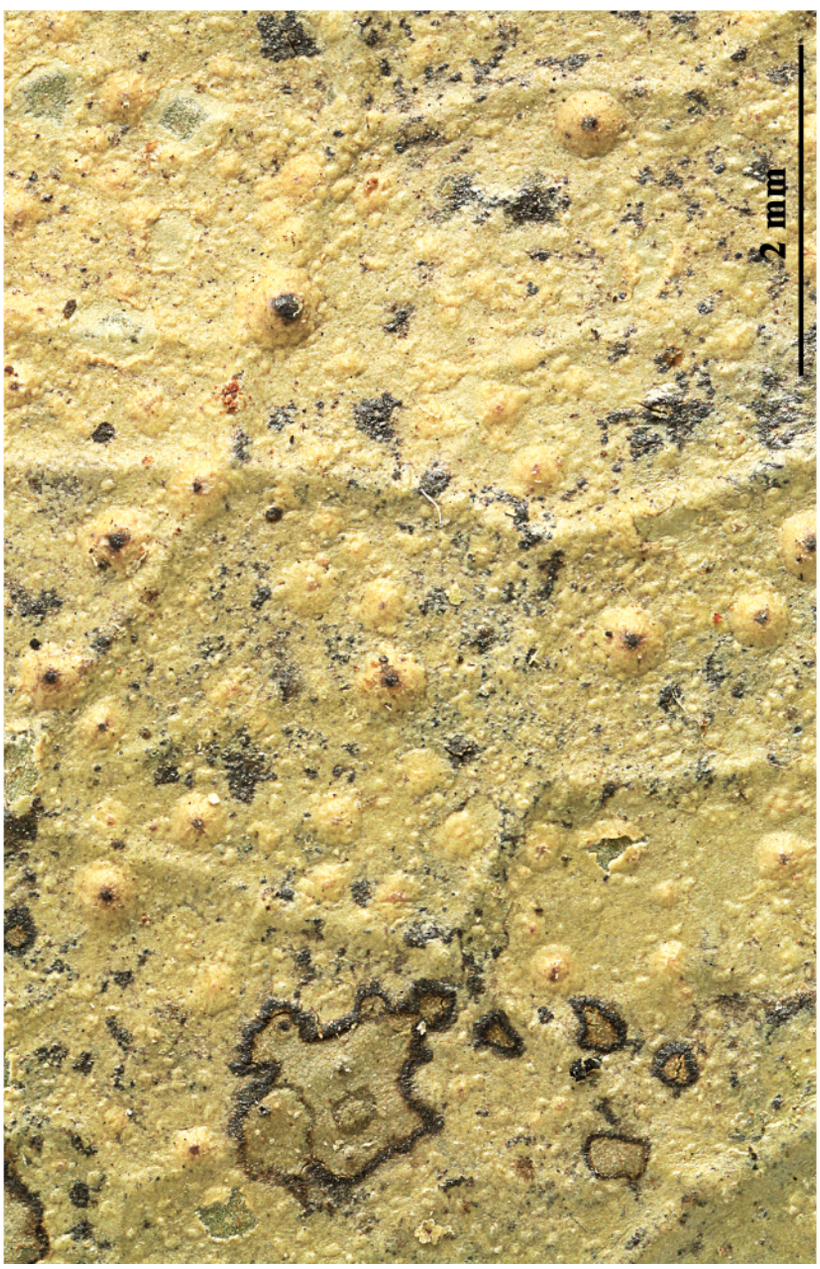




Polymeridium simulans

Porina epiphylla Fée, Essai Crypt. Exot. (Paris): 76 (1825) [1824]
= *Lecanora epiphylla* (Fée) Fée, Dict. Class. Hist. Nat. 9: 575 (1826)
= *Phylloporina epiphylla* (Fée) Müll. Arg., Lichenes Epiphylli Novi: 21 (1890)
= *Pyrenula epiphylla* (Fée) Plitt, Bryologist 24(5): 74 (1921)
= *Verrucaria epiphylla* (Fée) Eschw., in Martius, Fl. bras. enum. pl. 1(1): 141 (1833)

[ABL48873C], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34' S, 38°02' W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873C), 21.03.2019, det. A. Aptroot 2019. - Thallus continuous but sometimes marginally dispersed, minutely uneven, pale greyish green. Perithecia adnate, lens-shaped to hemispherical, sometimes with slight red tinge. Excipilum coluorless to pale yellow, K+ orange. Spores oblong, 7-septate, colourless, 25-33 x 3-4 µm

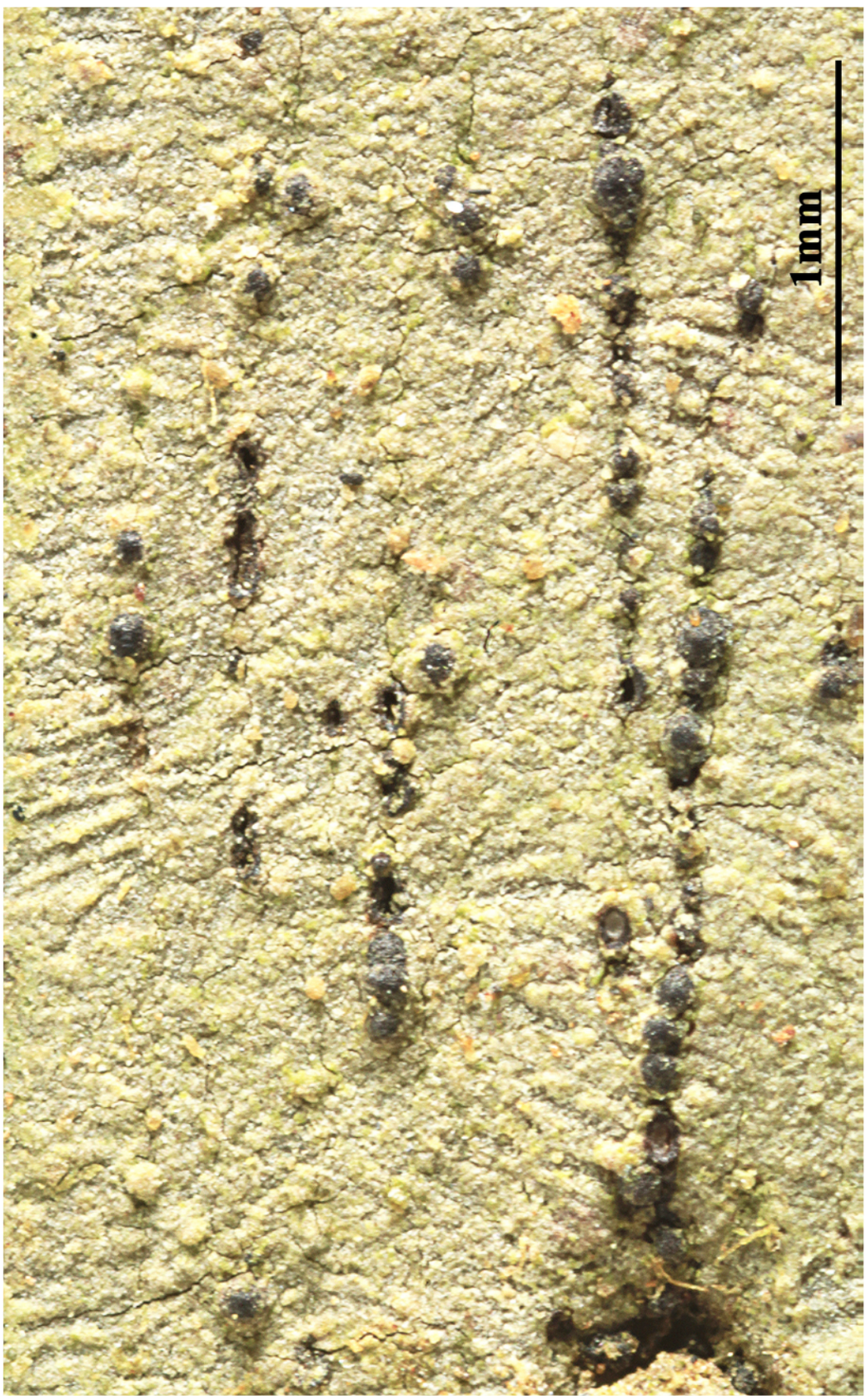


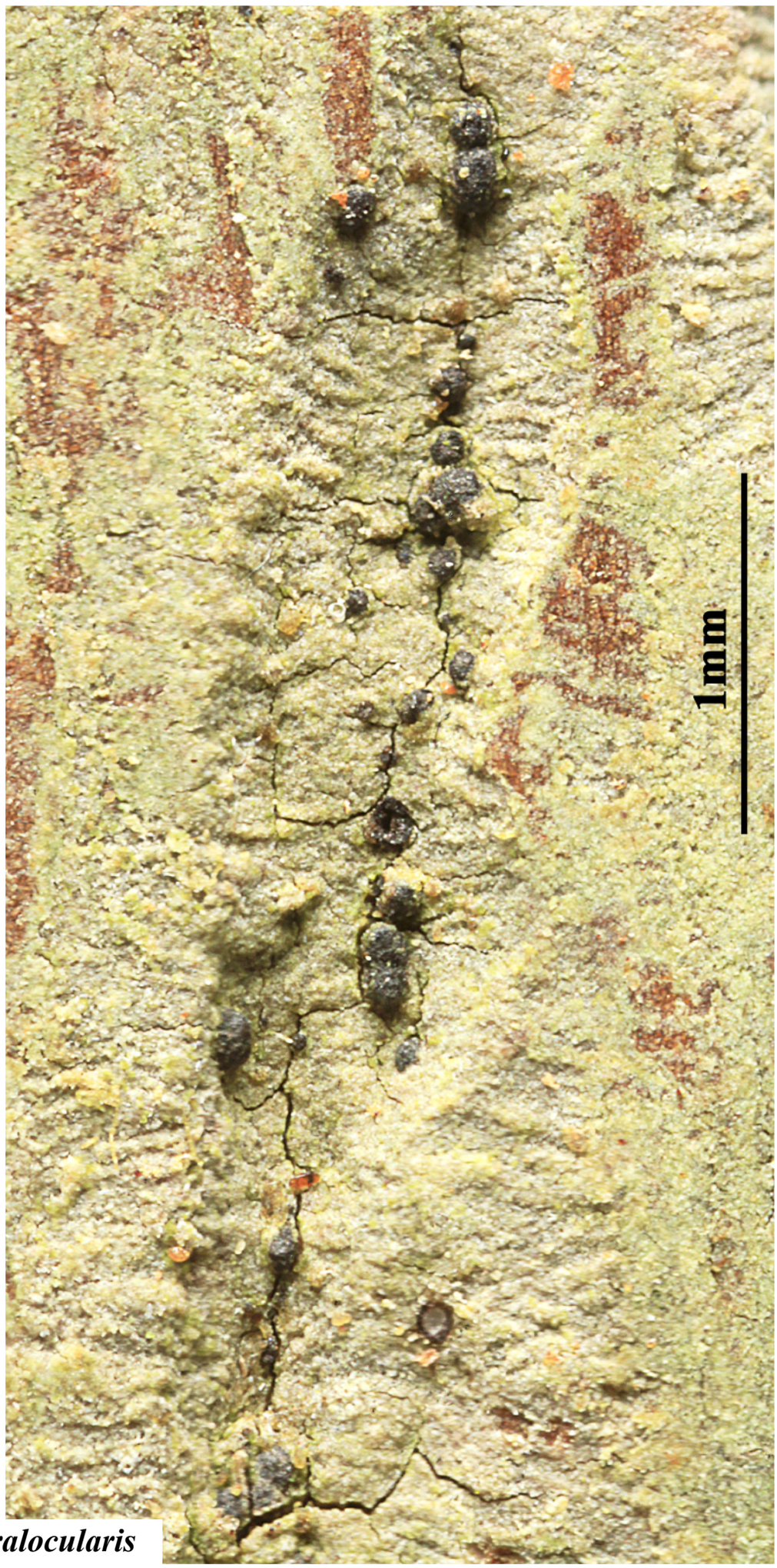


Porina epiphylla

Porina tetralocularis Aptroot, Flora of the Guianas, Series E: Fungi and Lichens. Fascicle 2 (Königstein): 39 (1993)

[ABL48552], Brazil, Bahia, Itamarajú, Monte Pascoal, on palm bark in palm forest. 16°51'18" S, 39°24'42" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48552), 17.02.2019, det. A. Aptroot 2019. - Spores 3-septate, 20-25 x 3 µm.





Porina tetralocularis

Pseudopyrenula americana Aptroot, in Aptroot, Ertz, Etayo Salazar, Gueidan, Mercado Diaz, Schumm & Weerakoon, Lichenologist 48(6): 633 (2016)

[ABL42129A], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 42128A), 22.07.2017, det. A. Aptroot, 2017. - Thallus ecorticate, whitish. Ascomata solitary or occasionally a few fused sideways, hemispherical, black, 0.3–0.5 mm diam. Ostioles apical, whitish to black. Hamathecium not inspersed, hyaline. Ascospores 8/ascus, IKI− , 3-septate, 26–32 × 7–10 µm, not ornamented, lumina diamond-shaped. Chemistry. Thallus UV−. TLC: no secondary substances detected.

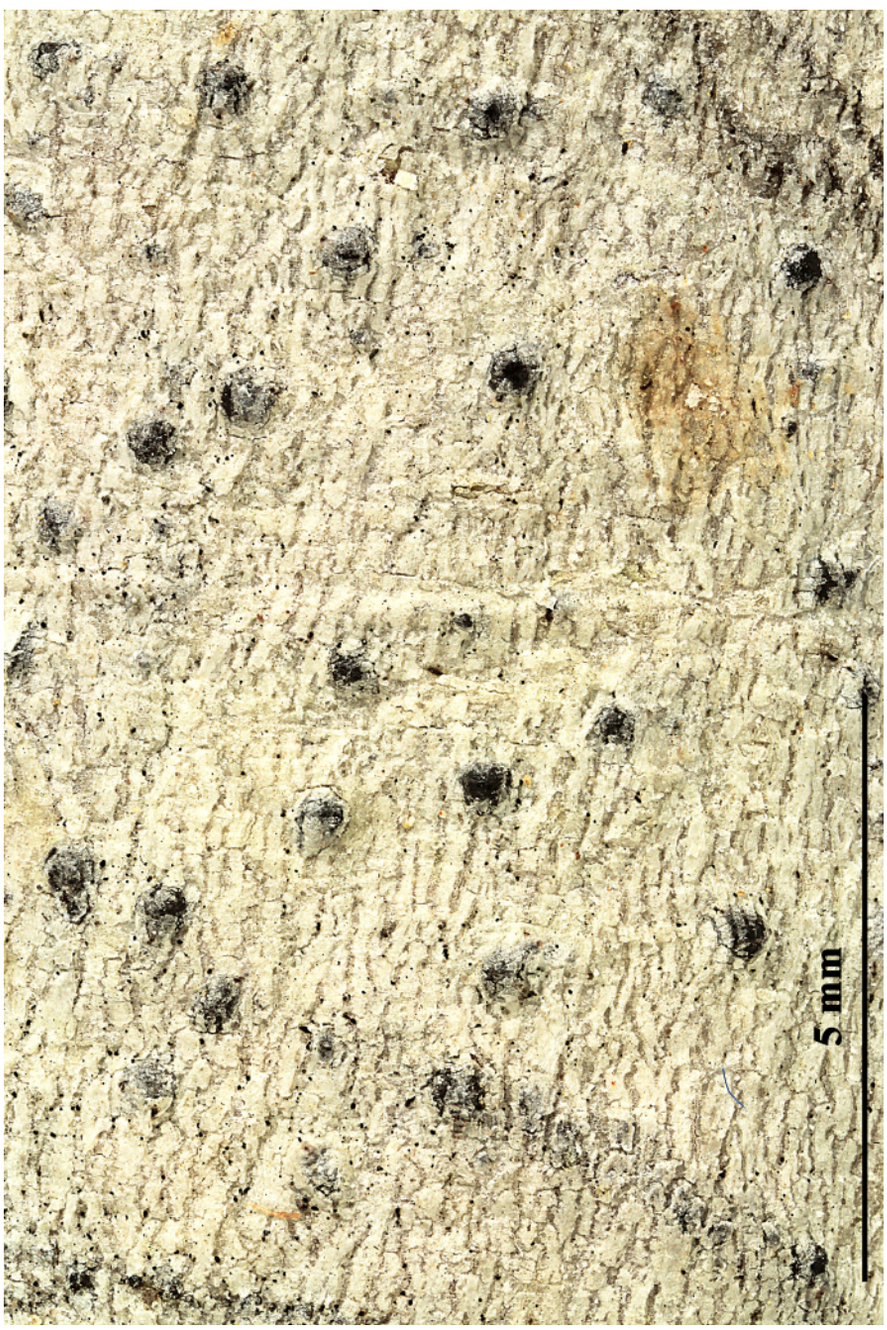




Pseudopyrenula americana

Pseudopyrenula gelatinosa Aptroot, **Isotype**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 563 (2021)

[ABL48388], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48388), 15.02.2019, det. A. Aptroot 2018. - Thallus not corticate, dull, greyish white, surrounded by a thin black prothallus line. Photobiont trentepohlioid. Ascomata globose to pyriform, 0.4–0.6 mm diam., hemispherical, black, erumpent from the thallus. Ostioles apical, single, black. Hamathecium not inspersed. Ascospores 8/ascus, hyaline, 3-septate, 34–37 x 9–10.5 µm, longellipsoid, lumina diamond-shaped, wall 1 µm thick, surrounded by a 9–10.5 µm thick gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–, K–. TLC: nil.

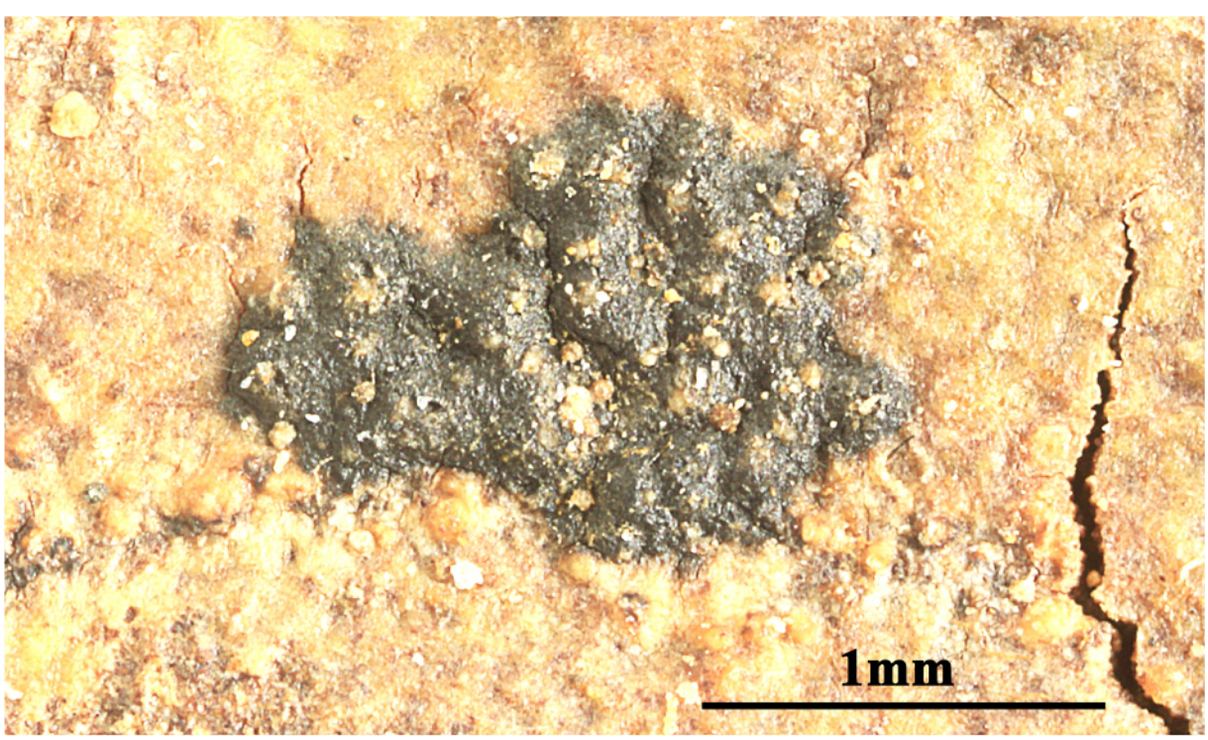




Pseudopyrenula gelatinosa

Pyrenula arthoniotheca Upreti, Nova Hedwigia 66(3-4): 566 (1998)
= *Melanotheca arthonioides* (Eschw.) Müll. Arg., Flora, Regensburg 67(35): 665 (1884)
= *Melanotheca eschweileri* (Trevis.) Zahlbr., Cat. Lich. Univers. 1: 480 (1922)
= *Porodothion arthonioides* (Eschw.) Trevis., Flora, Regensburg 44: 24 (1861)
= *Porothelium arthonioides* Eschw., Syst. Lich.: 26 + fig. 21 (1824)
= *Pyrenula arthonioides* (Eschw.) Vain., in Hiern, Cat. Afr. Pl. 2(2): 463 (1901)
= *Syngenosorus eschweileri* Trevis., Conspect. Verruc.: 15 (1860)
= *Verrucaria arthonioides* Eschw., in Martius, Icon. Pl. Crypt. 2: 15 (1828) [1828-34]
= *Verrucaria arthonioides* (Eschw.) Eschw., in Martius, Fl. bras. enum. pl. 1(1): 129 (1833)

[ABL48549], Brazil, Bahia, Itamarajú, Monte Pascoal, on palm bark in palm forest. 16°51'18" S, 39°24'42" W, 40 m. Leg. M. Cáceres & A. Aptroot (no 48549), 17.02.2019, det. A. Aptroot 2019. - Ascomata in large groups in which the individual ascomata are not distinguishable. Hamathecium not inspersed, spores 3-septate, 10-12 x 4 µm.

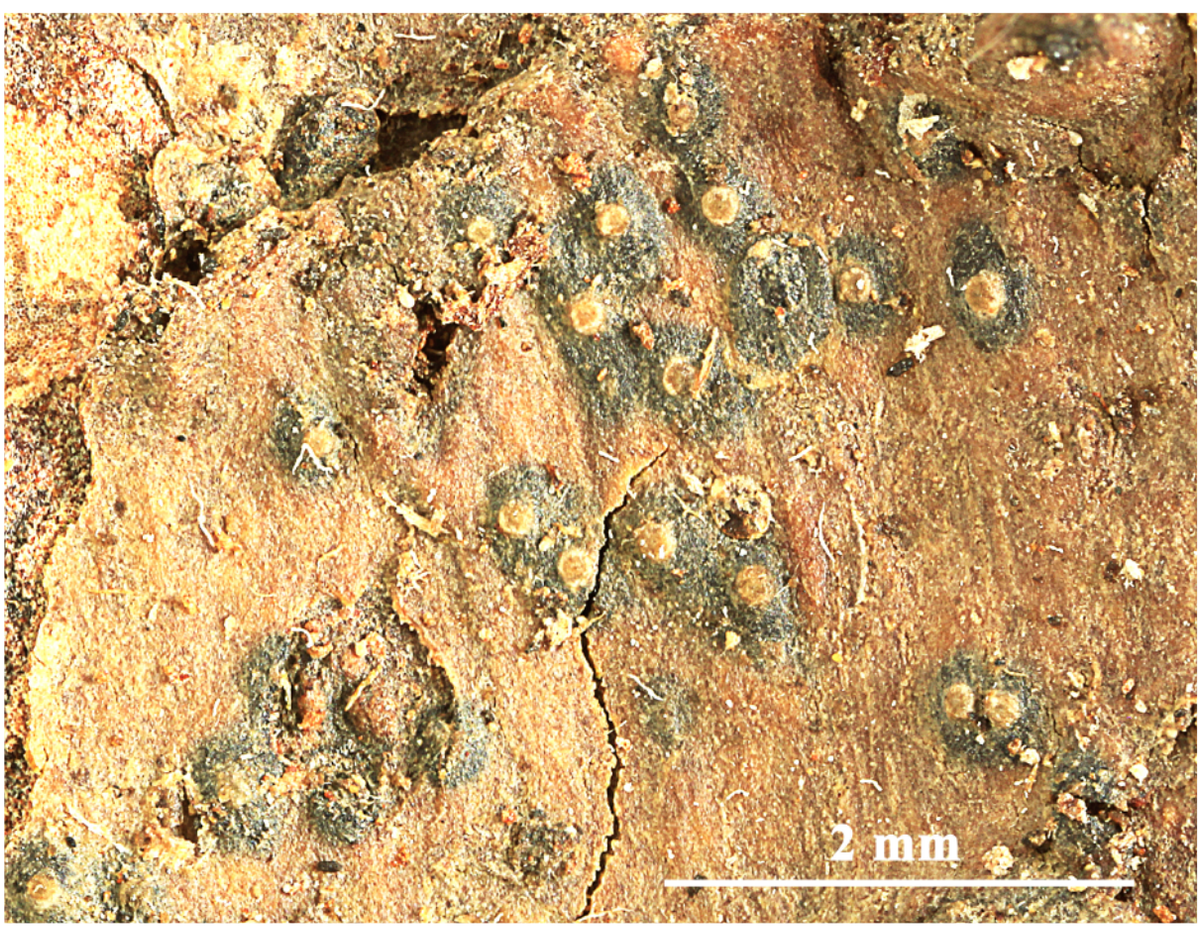




Pyrenula arthoniotheca

Pyrenula biseptata Aptroot & M. Cáceres, in Aptroot, Sipman, Mercado Diaz, Mendonça, Feuerstein, Cunga-Dias, Pereira & Cáceres, Lichenologist 50(1): 78 (2018)

[ABL48114], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'01" S, 39°24'38" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48114), 14.02.2019, det. A. Aptroot 2019. - Thallus corticate, smooth, continuous, thin, dark brown, without pseudocyphellae or pockets of crystals; algal cells trentepohlioid. Ascomata perithecioid, simple, dispersed, flat conical, superficial, often elongated, 0.2–0.4 mm diam., black, without thallus covering. Wall more or less equally carbonized, without crystals, c. 50 µm thick. Ostioles apical, brown. Hamathecium hyaline, heavily inspersed with oil droplets. Asci cylindricoclavate, with 8 irregularly arranged ascospores. Ascospores brown, 2-septate, long ellipsoid, without constrictions, 11–12×4.5–5.0 µm, ends rounded; lumina rounded to diamondshaped, terminal lumina separated from the end wall by an endospore layer. Pycnidia not observed. Chemistry: No secondary lichen substances detected.





Pyrenula biseptata

Pyrenula cocoes Müll. Arg. [as 'cocoës'], Hedwigia 32(2): 136 (1893)

[ABL48811], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48811), 20.03.2019, det. A. Aptroot 2019. - Thallus ecorticate, whitish, UV+ yellow; ascomata flattened to conical, erumpent, sides often partly thallus-covered, c. 0.5–1.0 mm diam.; ostioles apical, pale to black; ascospores 4-loculate, 18–21 × 10–13 µm, fusiform, with thick apical walls.





Pyrenula cocoes

Pyrenula complanata (Mont.) Trevis., Spighe Paglie: 17 (1853)
= *Verrucaria complanata* Mont. 1843

[ABL48151], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'39" W, 150 m. Leg. M. Cáceres & A. Aptroot (no 48151), 14.02.2019, det. A. Aptroot 2019. - Hamathecium not inspersed, sores 3-septate, 30 x 10 µm; UV-.





Pyrenula complanata

Pyrenula corticata (Müll. Arg.) R.C. Harris, Mem. N. Y. bot. Gdn 49: 89 (1989)

= *Anthracothecium corticatum* Müll. Arg., Bull. Soc. R. Bot. Belg. 30(no. 1): 96 (1891)

= *Pyrenula confinis* (Nyl.) R.C. Harris, More Florida Lichens, Incl. 10 Cent Tour Pyrenol. (New York): 109 (1995)

= *Anthracothecium confine* (Nyl.) Müll. Arg., Linnaea 43(9): 45 (1880)

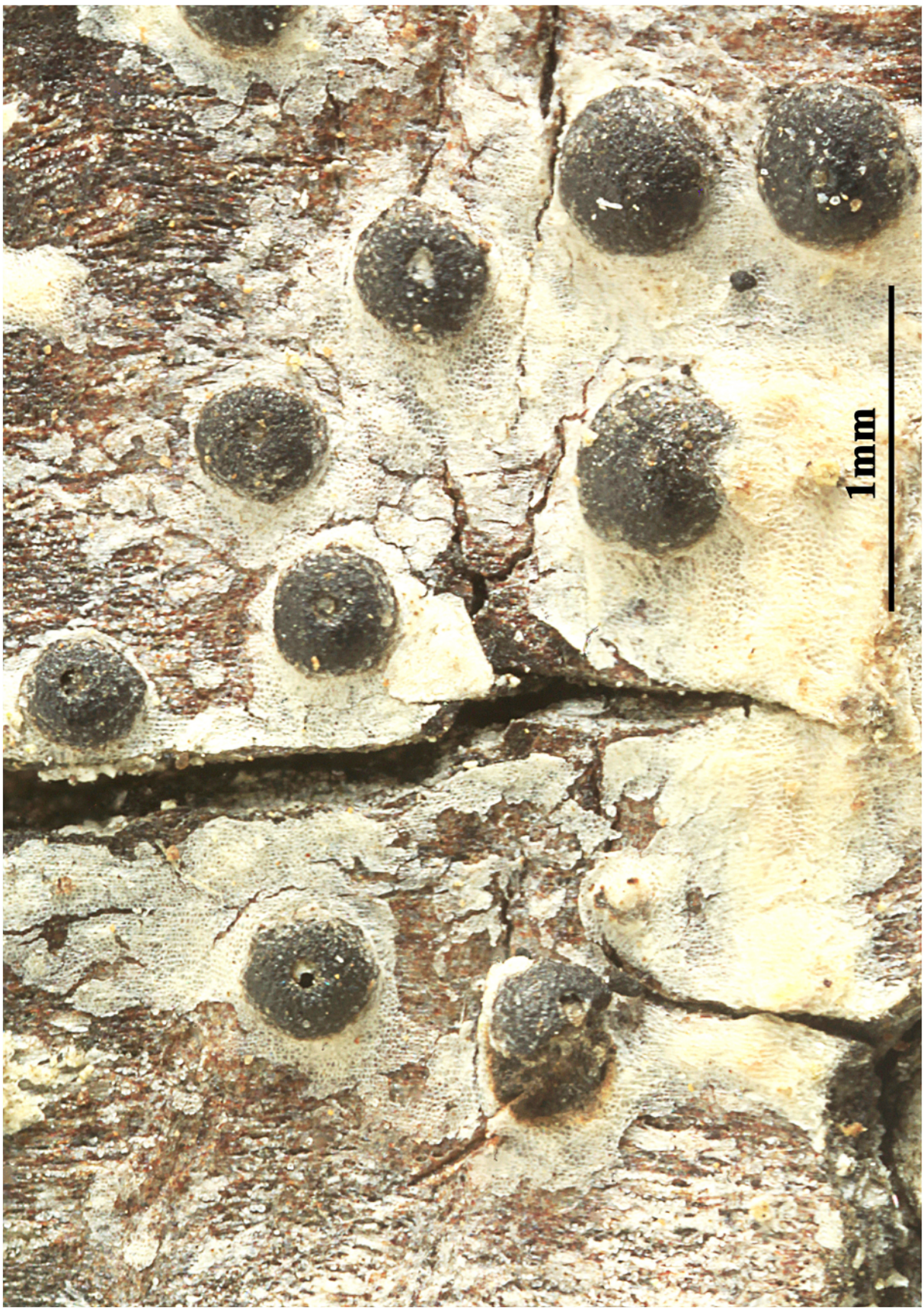
= *Bottaria confinis* (Nyl.) Vain., Bot. Tidsskr. 29: 144 (1909)

= *Sporodictyon confine* (Nyl.) Trevis., Conspect. Verruc.: 13 (1860)

= *Verrucaria confinis* Nyl., Annls Sci. Nat., Bot., sér. 4 3: 173 (1855)

[ABL48775C], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48775C), 20.03.2019, det. A. Aptroot 2019. - Ostioles apical. Hamathecium not inspersed, filaments mostly unbranched. Spores muriform, septation distoseptate with thickened endospore, < 25 µm long. UV+ yellow, anthraquinones absent.

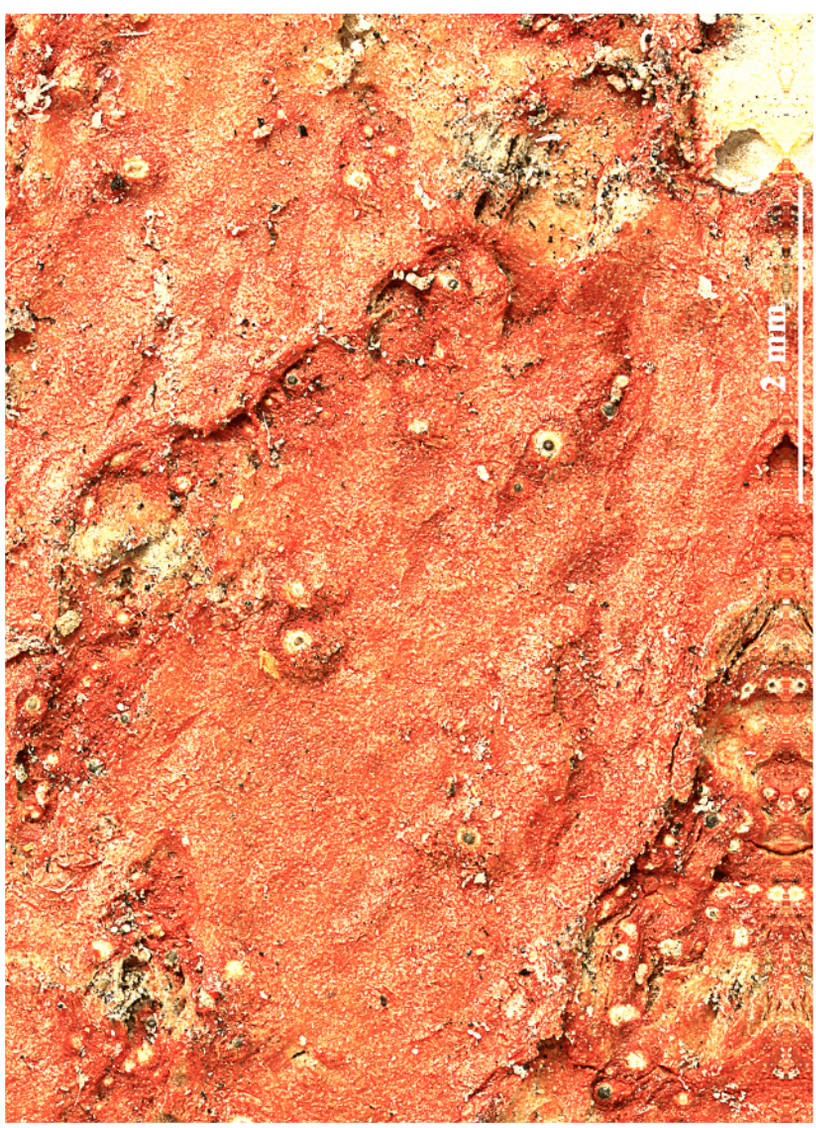


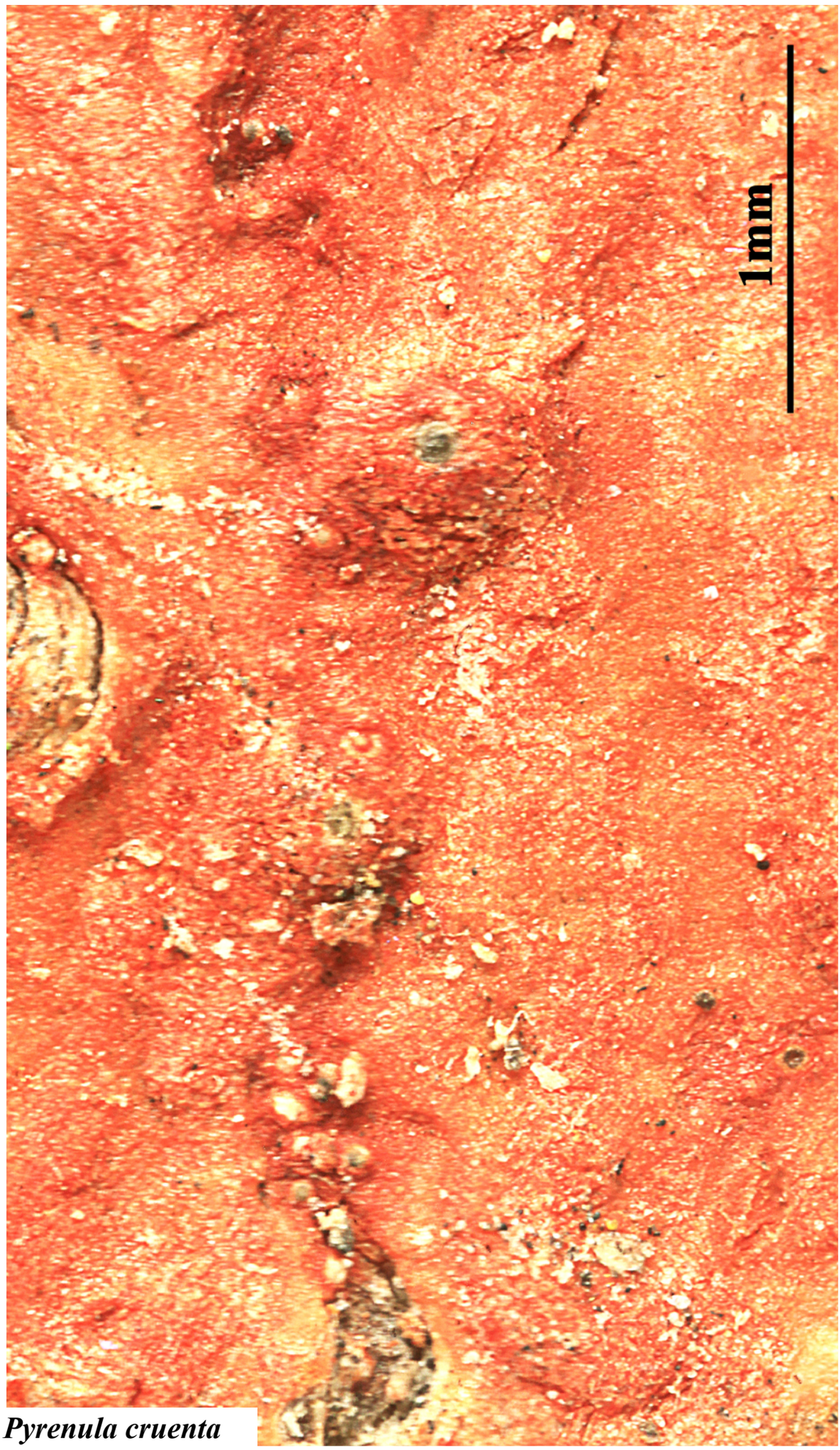


Pyrenula corticata

Pyrenula cruenta (Mont.) Vain., Acta Soc. Fauna Flora fenn. 7(no. 2): 197 (1890)
= *Melanotheca cruenta* (Mont.) Müll. Arg., Bot. Jb. 6: 397 (1885)
= *Melanotheca rubra* (C. Knight) C. Knight, in Shirley, Lich. Fl. Queensland 4: 167 (1889)
= *Pyrenula circumrubens* (Nyl.) B. de Lesd., Bull. Soc. bot. Fr. 62: 463 (1910)
= *Stromatothelium cruentum* (Mont.) Trevis., Flora, Regensburg 44: 20 (1861)
= *Trypethelium cruentum* Mont., Annls Sci. Nat., Bot., sér. 2 8: 357 (1837)
= *Trypethelium rubrum* C. Knight, in Bailey, Proc. R. Soc. Qd. 1: 152 (1884)
= *Verrucaria circumrubens* Nyl., Bull. Soc. linn. Normandie, sér. 2 2: 128 (1868)

[ABL48765], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48765), 20.03.2019, det. A. Aptroot 2019. - Thallus red. Hamathecium inspersed. Spores 3-septate, (25-)27-35 x 12 µm.



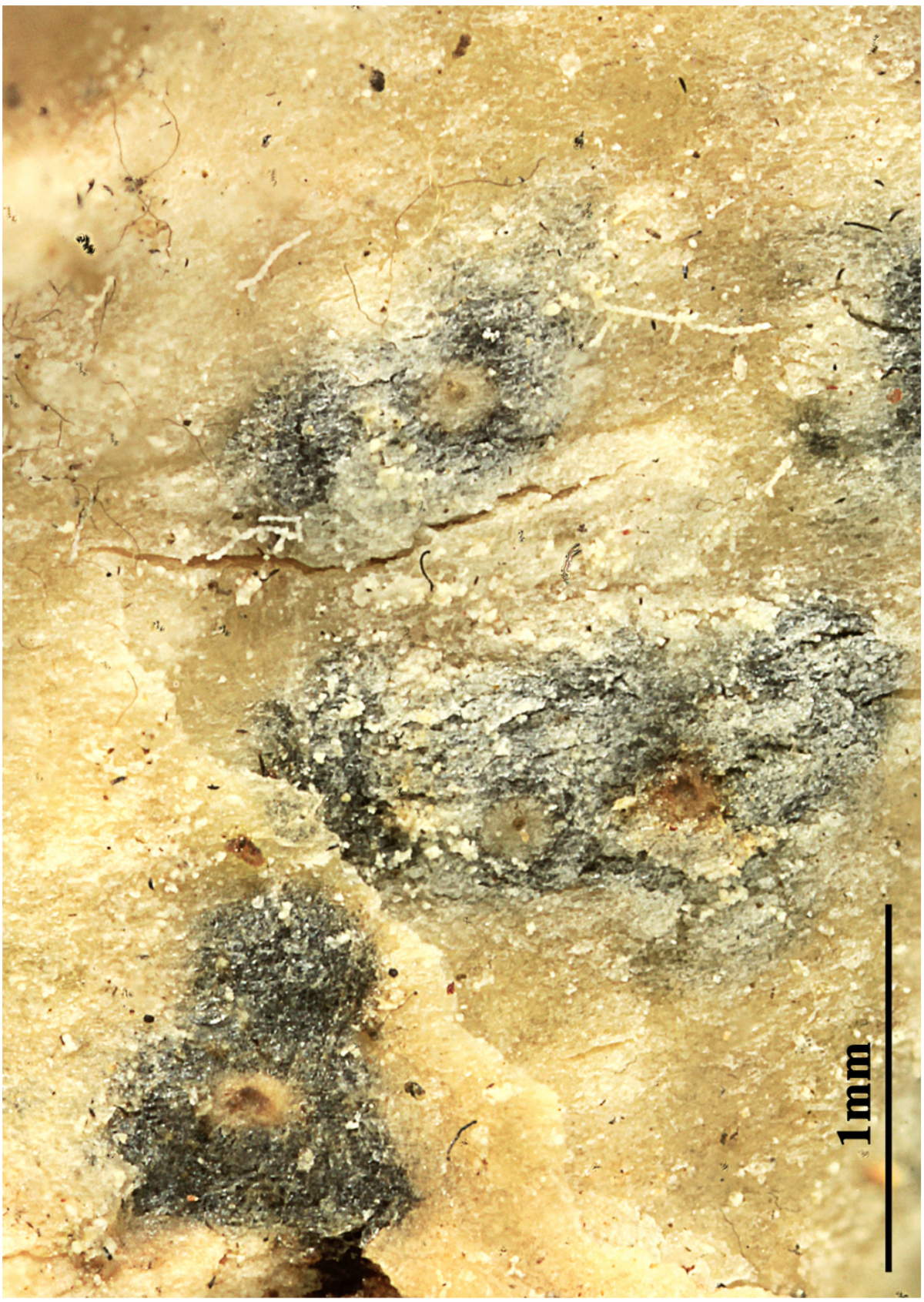


Pyrenula cruenta

Pyrenula inspersicollaris Aptroot & M. Cáceres, in Aptroot, Andrade, Mendonça, Lima & Cáceres, Phytotaxa 197(3): 203 (2014)

[ABL48450], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'45" S, 39°24'30" W, 550 m. Leg. M. Cáceres & A. Aptroot (no 48450), 15.02.2019, det. A. Aptroot 2019. - Thallus thin, corticate, dark brown, somewhat glossy, without pseudocyphellae, without prothallus. Ascomata emergent from the bark but fully covered by thallus, pyriform, 0.3–0.5 mm diam., usually 2–7 fused, without clearly fused walls but with fused ostioles. Wall carbonized all around. Ostiole lateral. Hamathecium inspersed with hyaline oil droplets. Ascospores 8/ascus, brown, irregularly biseriate, 3-septate, 17–20 × 5.5–6.5 µm, lumina mostly rounded, separated from the wall by a thick layer of endospore. Pycnidia not observed. Chemistry: Thallus UV–; no substances detected with TLC. This species is close to the common pantropical species *Pyrenula septicollaris* (Eschw.) R.C. Harris (1989: 101), which also grows in the same location, in most characters, but differs by the inspersed hamathecium.





Pyrenula inspersicollaris

Pyrenula lineatostroma Aptroot, in Aptroot, Diederich, Sérusiaux & Sipman, Biblthca Lichenol. 64: 160 (1997)

[ABL48627], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'57" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48627), 18.02.2019, det. A. Aptroot 2019. - Thallus up to 5 cm wide, pale brownish to whitish, continuous, smooth, corticate, without pseudocyphellae, UV-, surrounded by a black prothallus. Perithecia immersed, black, spherical, 50-80 µm wide, with 10-100 together in convex, black, 0.5-1 x 1-5 mm large, elongate pseudostromata; ascoma wall entire, carbonized, without clypeus, up to 30 µm thick; ostiole apical, forming an inconspicuous, punctiform depression; hymenium I-, not inspersed; ascospores 8/ascus, irregularly arranged in the ascus, lacrymiform-pyriform, 2-septate, distoseptate, with rounded lumina, 8-10 x 4-5 µm



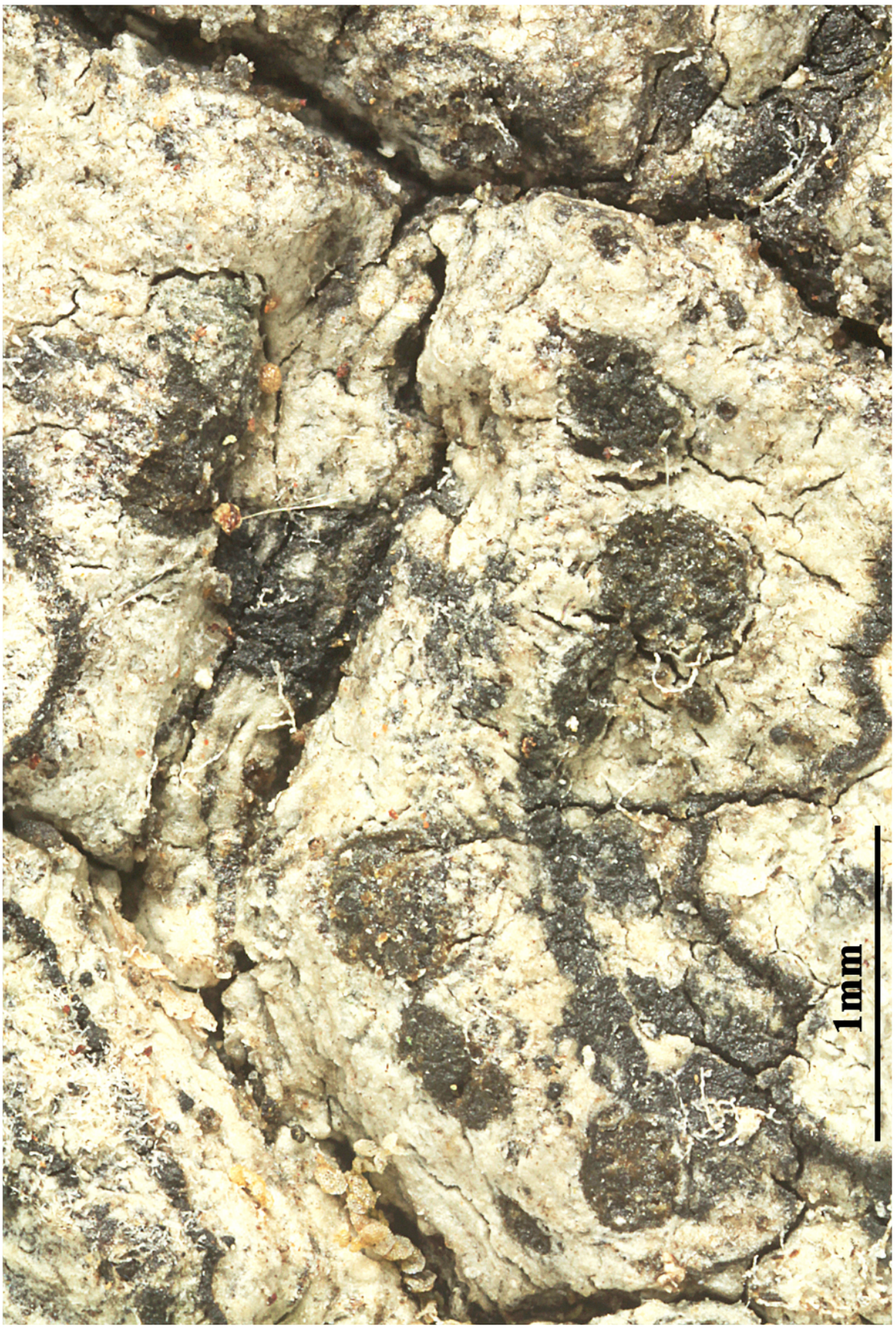


Pyrenula lineatostroma

Pyrenula microcarpa Müll. Arg., Bot. Jb. 6: 412 (1885)

[ABL48186A], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'41" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48186A), 14.02.2019, det. A. Aptroot 2019. - Thallus ecorticate, white to greyish, without pseudocyphellae. Perithecia solitary, subglobose, erumpent from the substratum, sides often partly covered by thallus, c. 0.3–0.4 mm diam. Perithecial wall without crystals, up to 100 µm thick. Ostiole pale, apical. Hamathecium not inspersed, IKI–, filaments unbranched. Ascospores 8/ascus, grey brown, irregularly biseriate, long hyaline, greyish brown, 3-septate, fusiform with pointed ends, 17–25 × 7–11 µm, lumina angular, terminal lumina separated from the exospore by an endospore layer. Chemistry: No substances detected, thallus UV- (often seeming greenish).





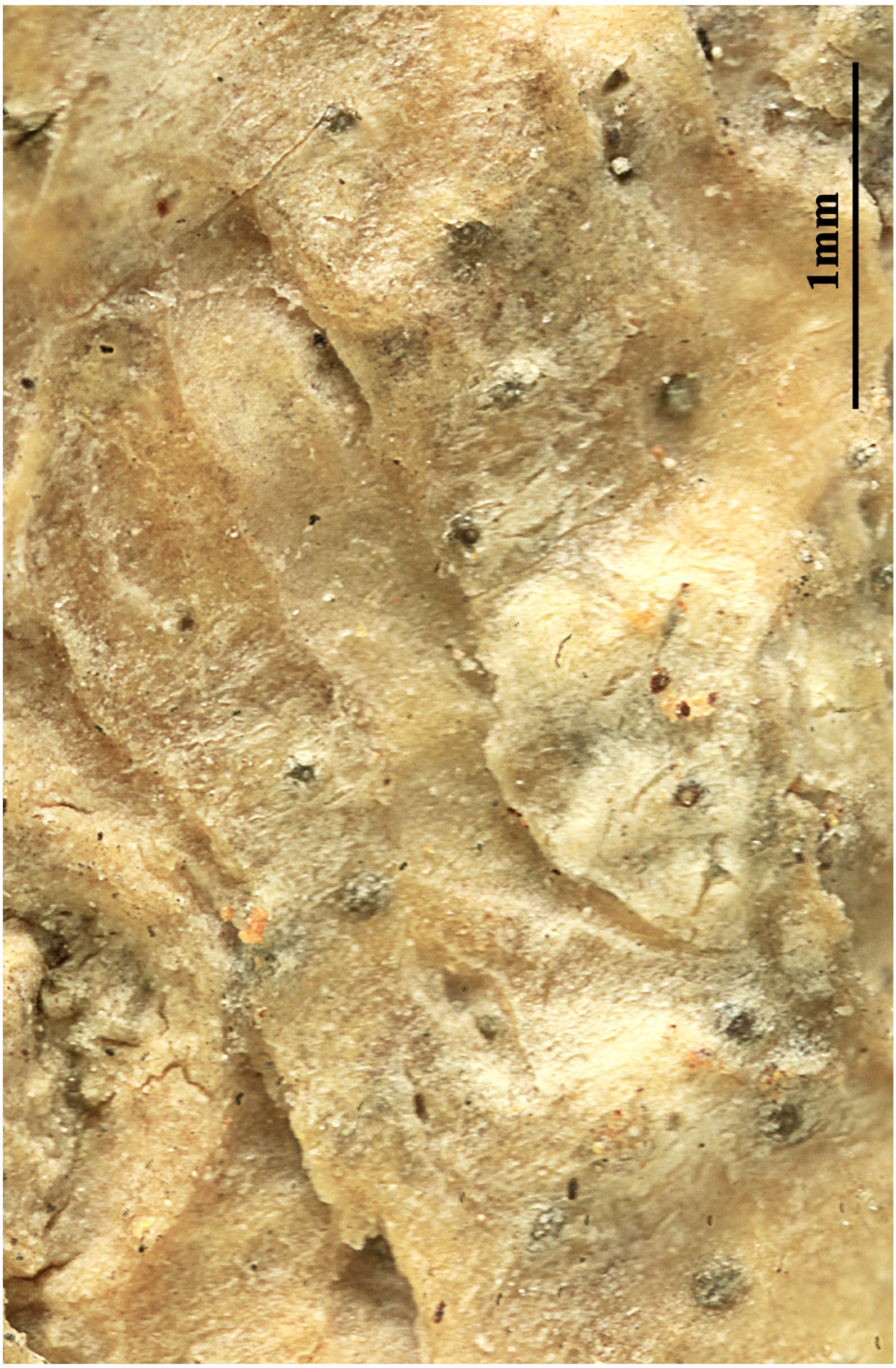
Pyrenula microcarpa

Pyrenula papillifera (Nyl.) Aptroot, Lichenologist 44(1): 36 (2011) [2012]

= *Verrucaria papillifera* Nyl., Expos. Synopt. Pyrenocarp.: 42 (1858)

[ABL48800], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48800), 20.03.2019, det. A. Aptroot 2019. - Hamathecium not inspersed. Spore muriform, brown, lumina round, with more than 6 between 2 primary septa, 8/ascus, 40-60 x 12-17 µm

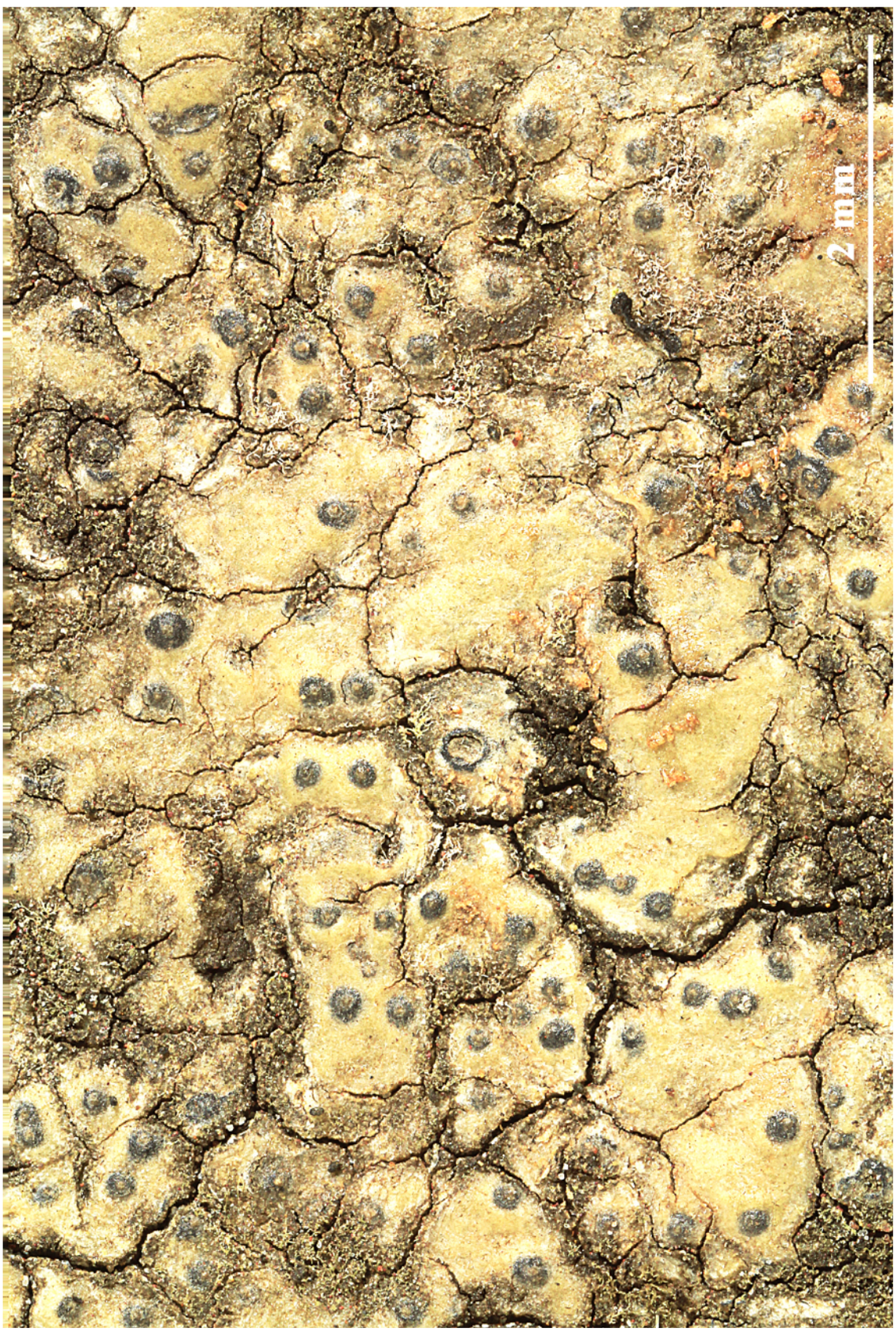




Pyrenula papillifera

Pyrenula psoriformis Zahlbr., Mycologia 22(2): 70 (1930)

[ABL40677], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40677), 22.07.2017, det. A. Aptroot, 2017. - Hymenium not inspersed; spores 3-septate, 16 x 6 µm.



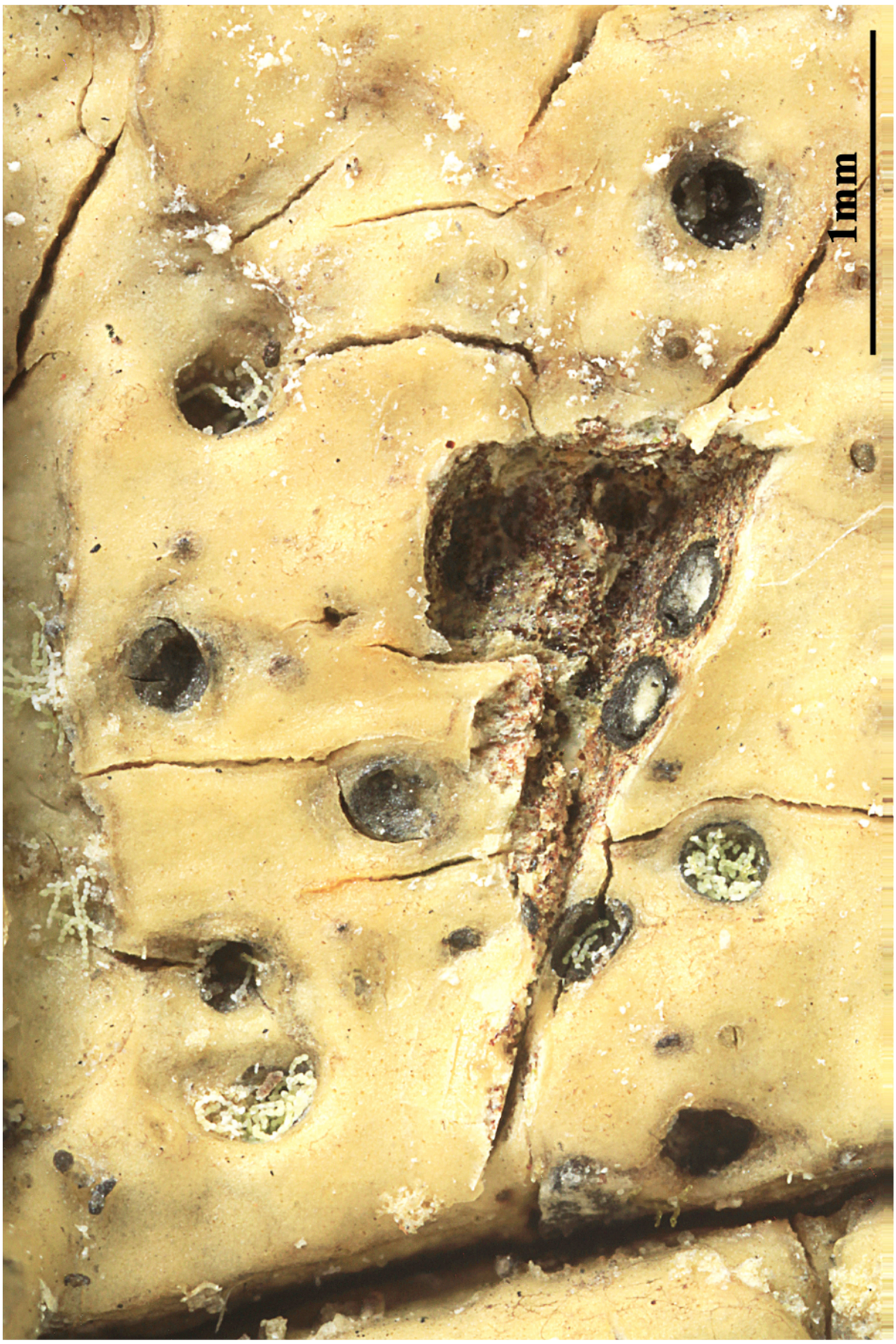


Pyrenula psoriformis

Pyrenula psoriformis Zahlbr., Mycologia 22(2): 70 (1930)

[ABL40950], Brazil, Bahia, Chapada Diamantina, Palmeiras, Cachoeira Pai Inácio, near waterfall on tree bark. 12°27'24" S, 41°27'57" W, 850 m. Leg. M. Cáceres & A. Aptroot (no 40950), 23.07.2017, det. A. Aptroot, 2017. - Hymenium not inspersed; spores 3-septate, 18 x 6 µm; thallus UV-.



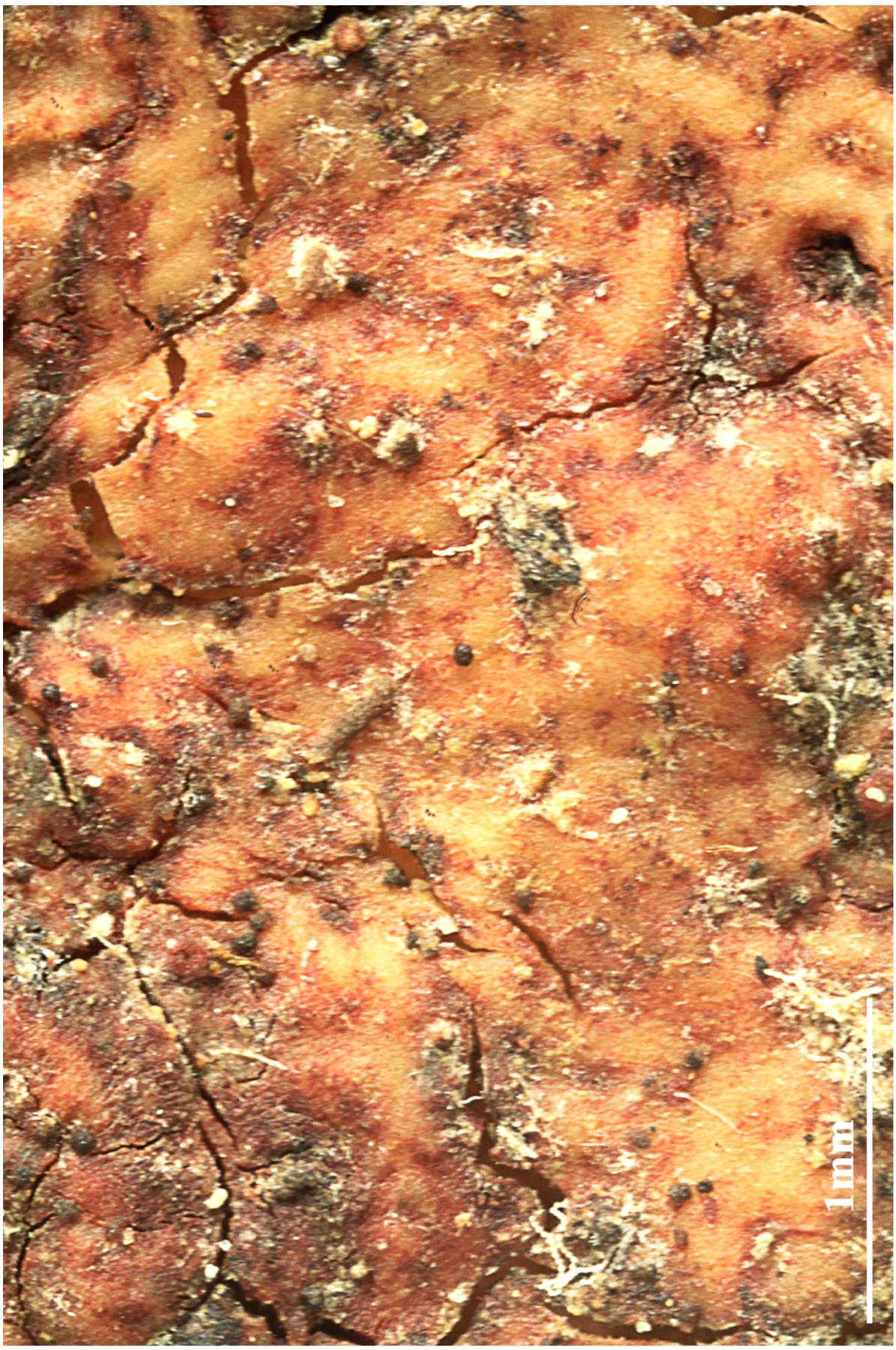


Pyrenula psoriformis

Pyrenula rubrolateralis Aptroot & M. Cáceres, in Aptroot, Andrade, Mendonça, Lima & Cáceres, Phytotaxa 197(3): 205 (2014)

[ABL48128], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'01" S, 39°24'38" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48128), 14.02.2019, det. A. Aptroot 2019. - Thallus rather thin (up to 0.1 mm thick), rather irregular in thickness, corticate, olive green, closely following the cracks and fissures in the bark, without pseudocyphellae, surrounded by a *c.* 1 mm wide black prothallus line. Ascomata immersed in raised areas of the bark, almost completely covered by the thallus, pyriform, 0.6–0.9 mm diam., single. Wall carbonized all around. Ostiole eccentric, red brown to bright red, flush to distinctly convex. Hamathecium not inspersed with oil droplets. Ascospores 8/ascus, irregularly biseriate, brown, 3-septate, 20–24 separated from the wall by a thick layer of endospore, ends pointed. Pycnidia not observed. Chemistry: Ostiole K–, thallus UV–, no substances detected with TLC.





Pyrenula rubrolateralis

Pyrenula salmonea Aptroot, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 564 (2021)

[ABL48231], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48231), 14.02.2019, det. A. Aptroot 2018. - Thallus dull, salmon pink, up to 8 cm diam., not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata globose, 0.6–1.2 mm diam., erumpent from the thallus, black, hemispherical. Ostioles apical, single, black. Hamathecium densely hyaline inspersed. Ascospores 8/ascus, uniseriate, dark brown, 3-septate, 24–27 x 13–16 µm, ellipsoid, lumina oval to somewhat angular, broader than long, without endospore between the outer lumina and the ascospore wall, sometimes with traces of additional eusepta, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–, K+ crimson. TLC: an anthraquinone.

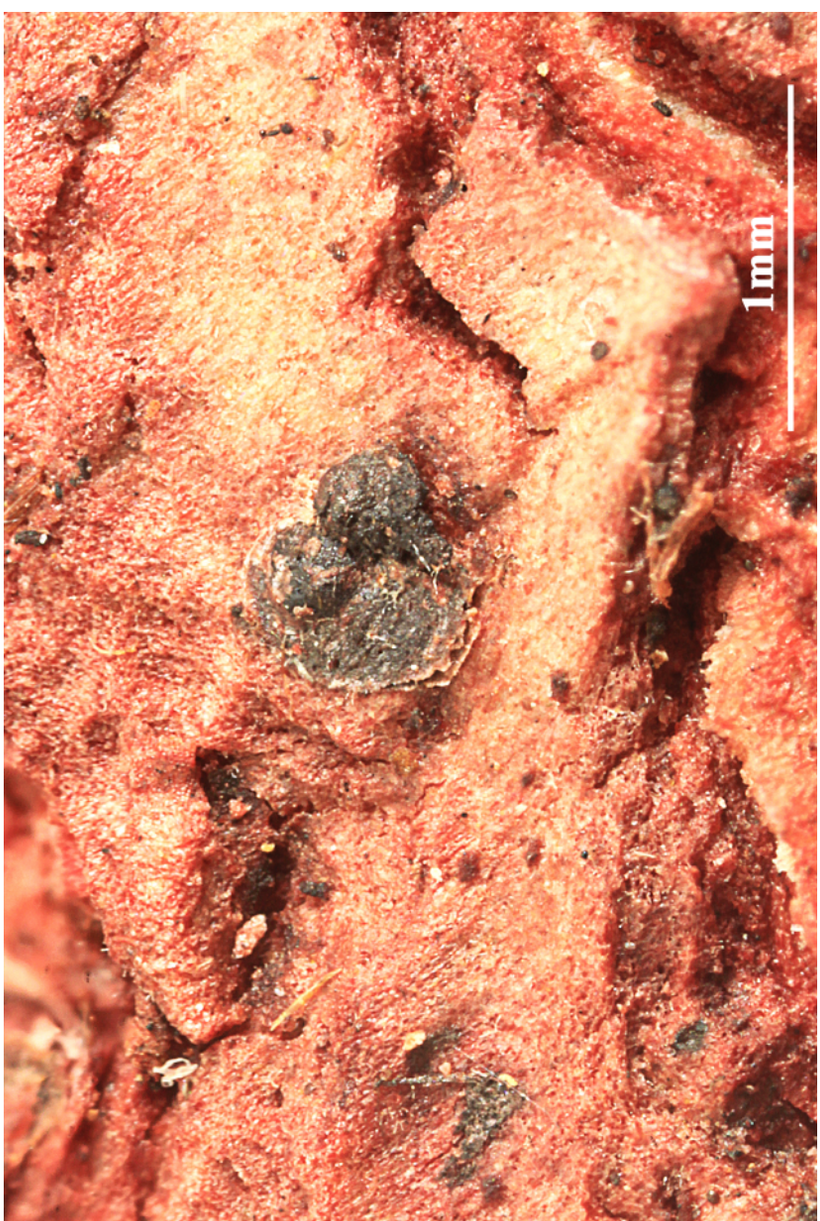




Pyrenula salmonea

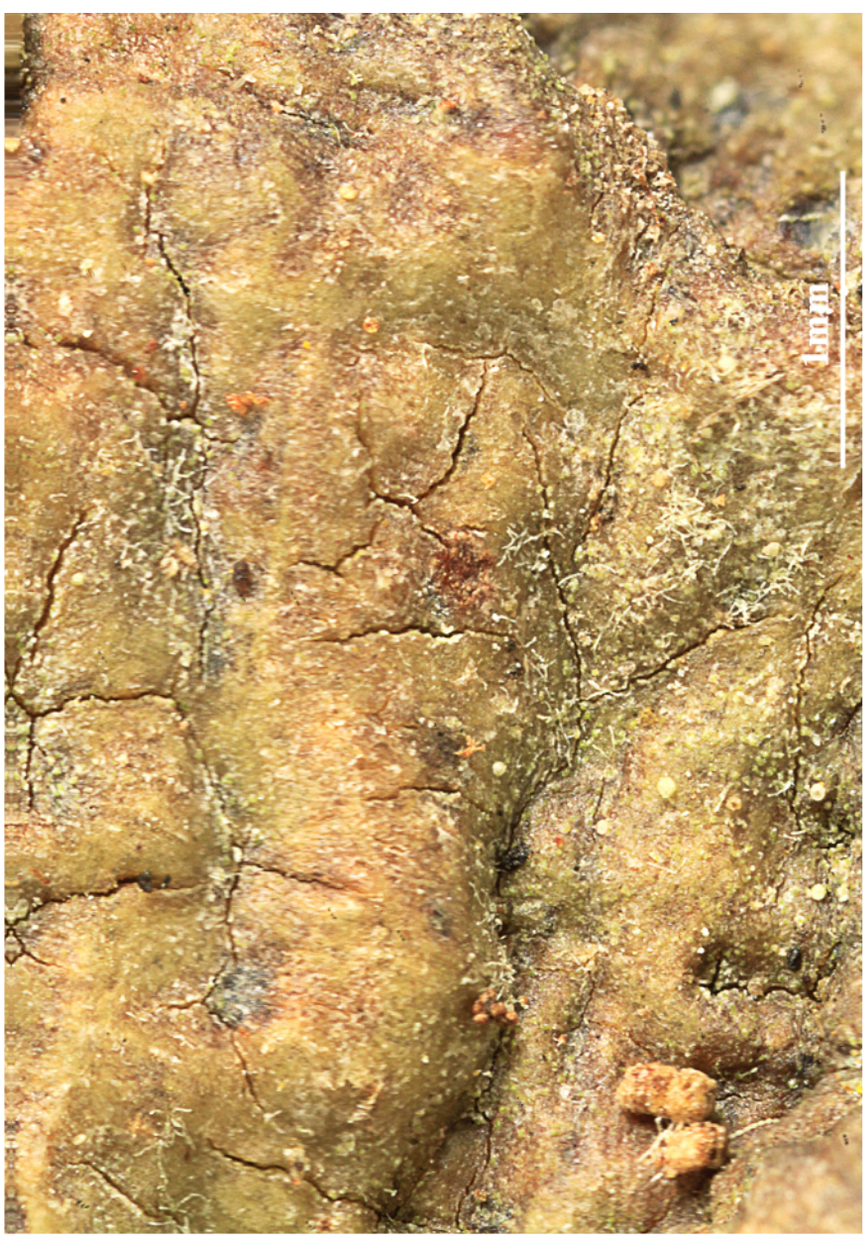
Pyrenula salmonea Aptroot, **Topotype**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 564 (2021)

[ABL48464], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48464), 15.02.2019, det. A. Aptroot 2018. - Thallus dull, salmon pink, up to 8 cm diam., not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata globose, 0.6–1.2 mm diam., erumpent from the thallus, black, hemispherical. Ostioles apical, single, black. Hamathecium densely hyaline inspersed. Ascospores 8/ascus, uniseriate, dark brown, 3-septate, 24–27 x 13–16 µm, ellipsoid, lumina oval to somewhat angular, broader than long, without endospore between the outer lumina and the ascospore wall, sometimes with traces of additional eusepta, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–, K+ crimson. TLC: an anthraquinone.



Pyrenula sanguineoastroidea Aptroot, **Isotype**, in Oliveira Junior, Aptroot & Cáceres, Bryologist 124(4): 564 (2021)

[ABL48363], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48363), 15.02.2019, det. A. Aptroot 2018. - Thallus dull to somewhat glossy, olivaceous green, up to c. 8 cm diam., not surrounded by a prothallus. Photobiont trentepohlioid. Ascomata pyriform, 0.3–0.5 mm diam., c. 3–9 fused, mostly c. 1 mm deep immersed in the bark below the thallus. Ostioles the only part visible of the ascomata from above, lateral, fused, red. Hamathecium not inspersed. Ascospores 8/ascus, brown, 3-septate, 24–27 x 10–12 µm, long-ellipsoid, lumina rhomboid, with thick endospore layer between the outer lumina and the ascospore wall, not surrounded by a gelatinous sheath. Pycnidia not observed. Chemistry: Thallus UV–, K–; ostioles K+ crimson. TLC: an anthraquinone.





Pyrenula sanguineoastroidea

Pyrenula sublaevigata (Patw. & Makhija) Upreti, Nova Hedwigia 66(3-4): 574 (1998)
= *Anthracothecium sublaevigatum* Patw. & Makhija 1981

[ABL42163D], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On tree bark near river. Leg. A. Menezes & A. Xavier-Barreto, 24. July 2017, det A. Aptroot (no 42163D), 2017. - UV-; hamathecium inspersed, filaments mostly unbranched; spores muriform, 4-8/ascus, 40 x 15 µm.





Pyrenula sublaevigata

Pyrenula violaceastroidea C.O. Mendonça, Aptroot & M. Cáceres, Phytotaxa 286(3): 174 (2016)

[ABL48802], Brazil, Bahia, Mata de São João, Parque Municipal Klaus Peters, on tree bark in restinga. 12°34' S, 38°00' W, 5 m. Leg. M. Cáceres & A. Aptroot (no 48802), 20.03.2019, det. A. Aptroot 2019. - Thallus thin, partly pale brown, but mostly wine red to purplish streaked, corticated, shiny, surrounded by a black prothallus line. Algae trentepohlioid. Ascomata immersed to erumpent, 0.3–0.5 mm diam., pyriform, aggregated by 3–6 perithecia with a shared ostiole but without joint walls (parmentarioid), mostly covered by a thin layer of thallus. Ostiole lateral, black with red pruina that extends over part of the ascomata and parts of the thallus. Hamathecium not inspersed. Asci with 8 uniseriate ascospores. Ascospores brown, not curved, 3-septate, 16–21 × 6–7 µm, somewhat clavate, lumina rounded to diamond-shaped, distoseptate, terminal lumina not directly against the outer wall, upper and lower end rounded, without ornamentation. Pycnidia not observed. Chemistry: Pigment KOH+ purple, UV–; TLC: unidentified anthraquinone.





Pyrenula violaceastroidea

Pyrgillus javanicus (Mont. & Bosch) Nyl., Mém. Soc. Imp. Sci. Nat. Cherbourg 5: 334 (1858)

= *Acolium javanicum* (Mont. & Bosch) Stizenb., Ber. Tät. St Gall. naturw. Ges.: 148 (1862) [1861-62]

= *Calicium javanicum* Mont. & Bosch, Pl. Jungh. 4: 480 (1856)

= *Pyrgillus australiensis* F. Wilson, in Bailey, Bot. Bull. Dept. Agric., Queensland 7: 31 (1891)

= *Trachylia javanica* (Mont. & Bosch) Nyl., Monogr. Calic.: 33 (1857)

[ABL48428], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'38" S, 39°24'35" W, 470 m. Leg. M. Cáceres & A. Aptroot (no 48428), 15.02.2019, det. A. Aptroot 2019. - Thallus yellowish grey. Ascomata 0.4–0.6 mm diam., 0.4–0.9 mm tall. Ascomatal wall to 200 µm thick, ostiole whitish, 250–400 µm diam. Ascospore bicolorous, fusiform, with subacute ends, (10–)13–16 × 5–6 µm, with 3 very dark distosepta 1–2 µm thick. Chemistry: Thallus UV+ yellow or UV-; lichexanthone detected with TLC in most specimens.





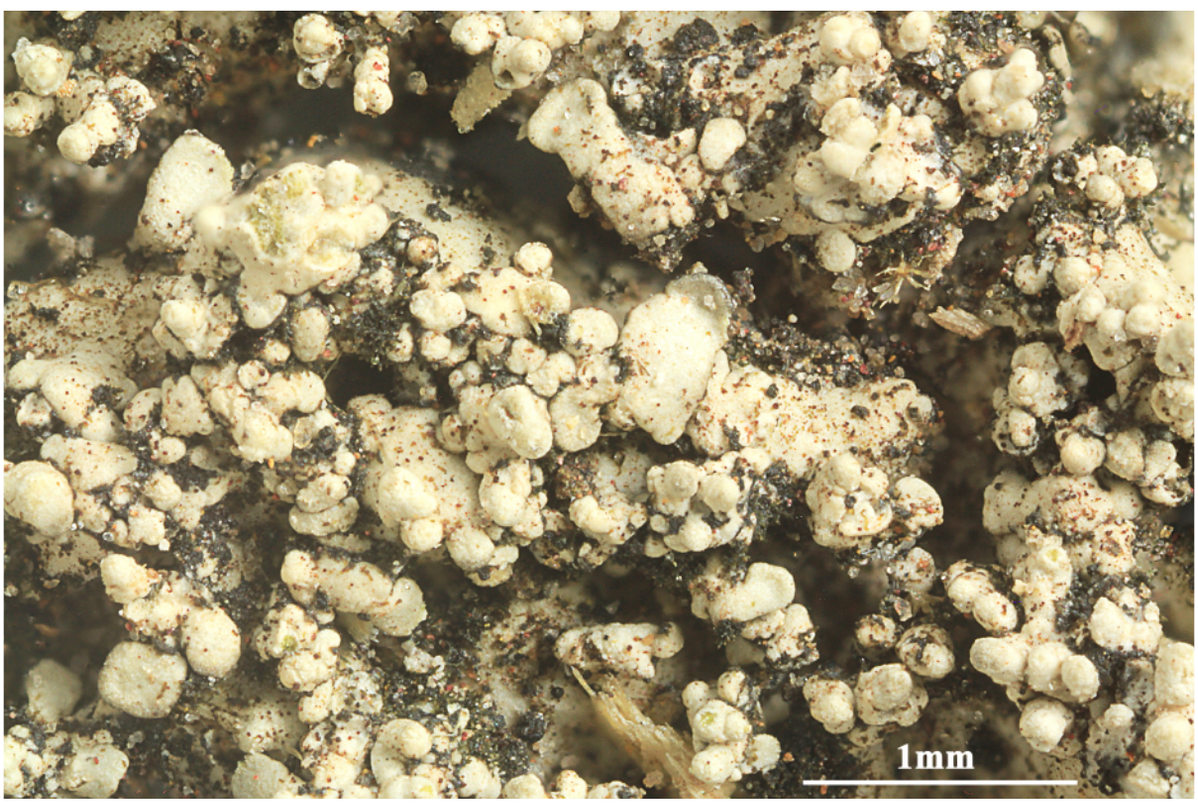
Pyrgillus javanicus

Pyxine obscurascens Malme, Bih. K. svenska VetenskAkad. Handl., Afd. 3 23(no. 13): 42 (1897)

[ABL40651], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40651), 22.07.2017, det. A. Aptroot, 2017. - Polysidiangia laminal; thallus UV-; medulla partly yellow, UV+ orange, K+ purple-black, P+ purple-black.





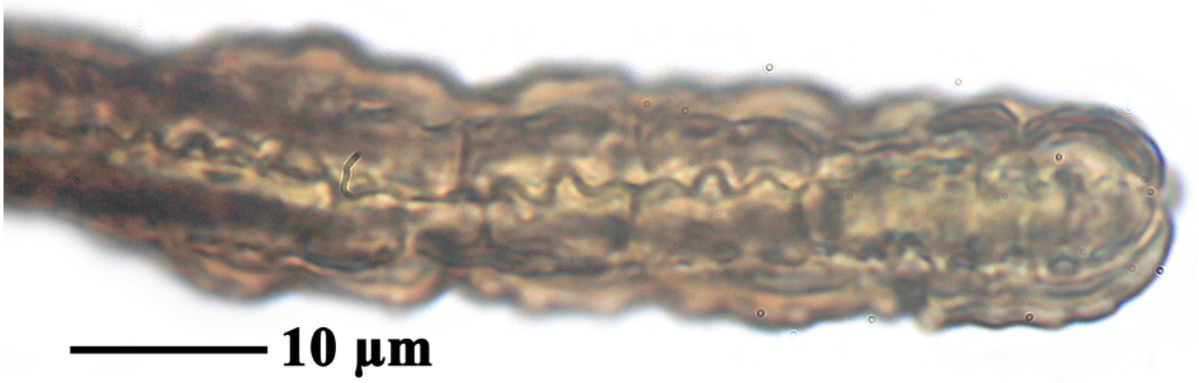


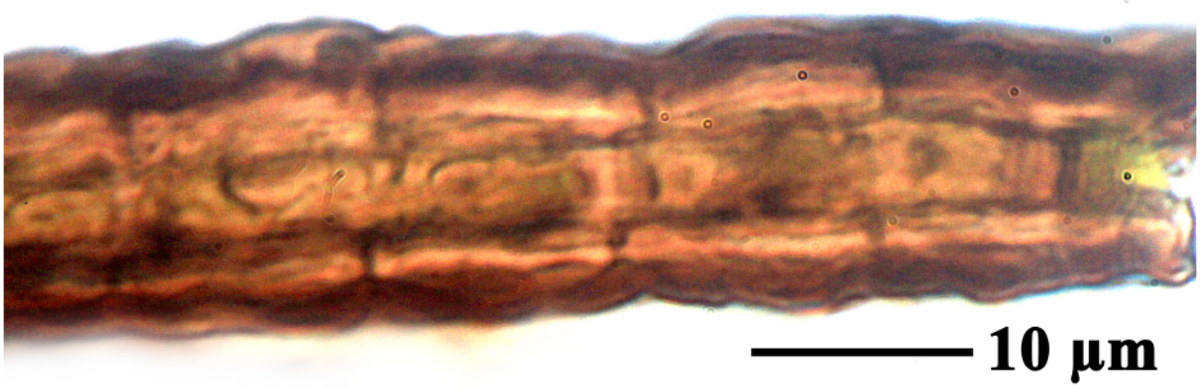
Pyxine obscurascens

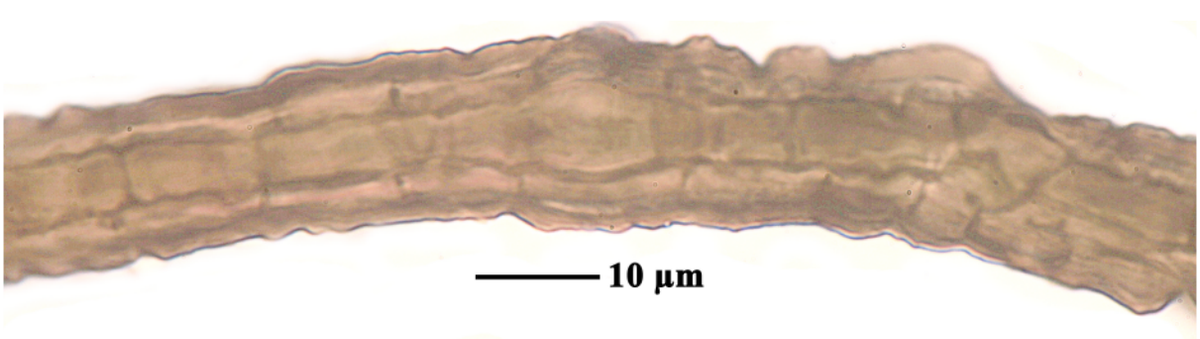
Racoleus trichophorus R. Sant. & D. Hawksw., in Hawksworth, Santesson & Tibell, IMA Fungus 2(1): 72 (2011)

[ABL40967], Brazil, Bahia, Chapada Diamantina, Lençois, Serrano, Rio de Lençois, 12°34' S, 41°23'56" W, 450-500 m. On siliceous rock near river. Leg. M. Cáceres & A. Aptroot (no 40967), 24. July 2017, det A. Aptroot , 2017.









Racoleus trichophorus

Racoplaca melanobapha (Kremp.) S.H. Jiang, Lücking & J.C. Wei, in Hongsanan et al., Fungal Diversity 105: 152 (2020)

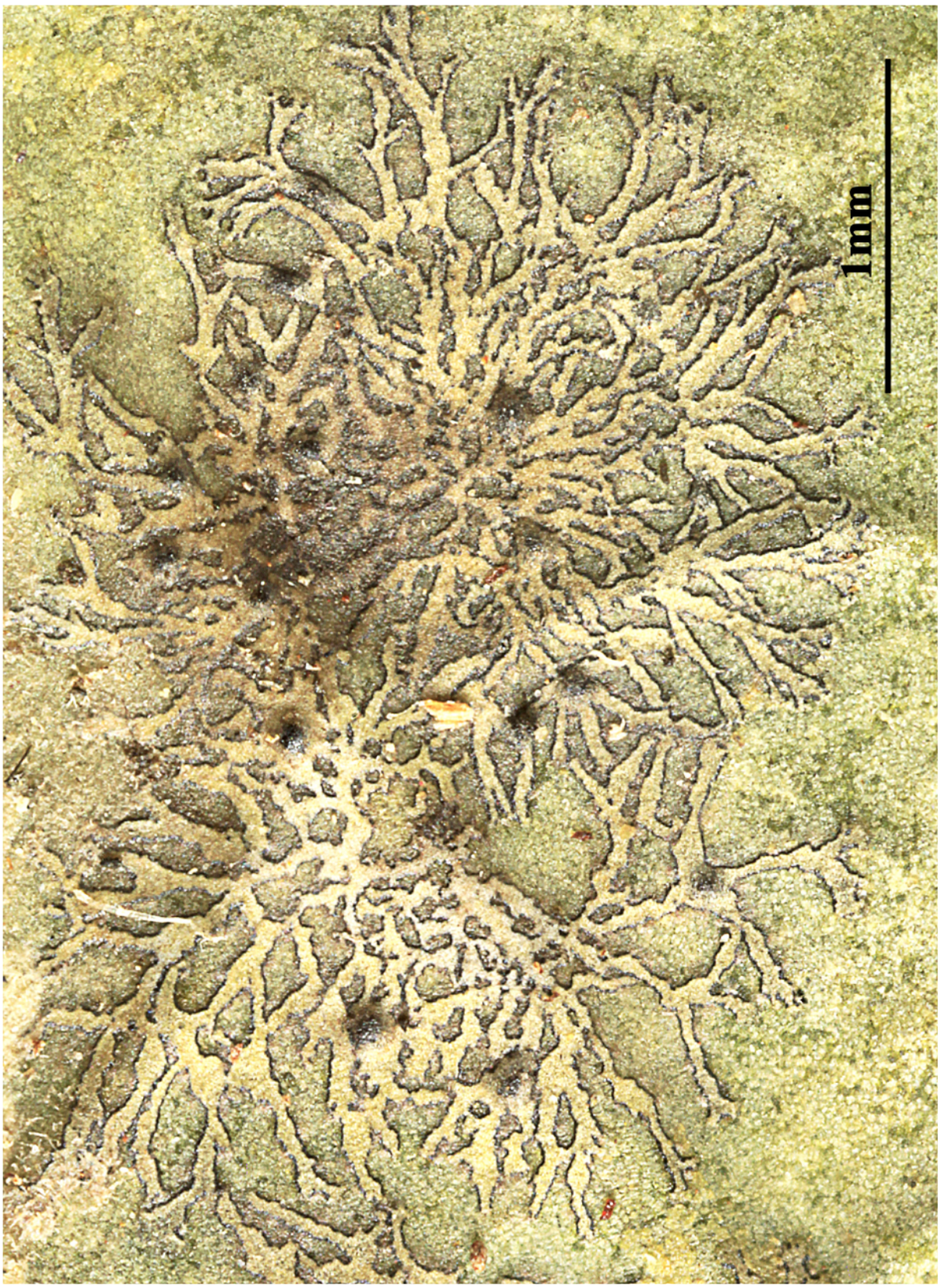
= *Racoplaca melanobapha* (Kremp.) S.H. Jiang, Lücking & J.C. Wei, in Jiang, Lücking, Xavier-Leite, Cáceres, Aptroot, Portilla & Wei, Fungal Diversity 102: 286 (2020)

= *Strigula melanobapha* (Kremp.) R. Sant., Symb. bot. upsal. 12(no. 1): 188 (1952)

= *Verrucaria melanobapha* Kremp., Lich. Foliic. Leg. Beccari: 18 (1874)

[ABL48873K], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On living leaves in Atlantic rain forest. 12°34' S, 38°02' W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48873K), 21.03.2019, det. A. Aptroot 2019. - Thallus subcuticular, ± dichotomously branched, linear lobes, the margins of the lobes bordered by a thin black line. Perithecia 0.45-0.7 mm diam., paraphyses simple. Spores 1(-3)-septate, fusiform, with acute ends, slightly constricted at the septum, 14-22 x 3-5 µm. Pycnidia 0.2-0.3 mm diam., numerous. Macroconidia 10-12 x 2-3 µm, simple, bacillar.





Racoplaca melanobapha

Ramboldia blochiana Lendemer & R.C. Harris, Opuscula Philolichenum 9: 2 (2011)

[ABL40875], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40875), 22.07.2017, det. A. Aptroot, 2017. - Thallus sorediate; soredia arising from +/- pustular soralia, coarse, granular, not pigmented. Apothecia biatorine, bright red, shiny, variably aggregated, adnate; initially round but soon becoming irregular in shape; disc plane, not convex, epruinose; margin thin, flexuous, quickly excluded as the disc expands and the apothecia mature. Exciple 90-130 µm wide, bi-layered; outer layer 50-70 µm thick, prosoplectenchymatous, with the outermost cells densely inspersed with orange-red K+ red/magenta pigment; inner layer +/- prosoplectenchymatous, 60-90 µm thick, densely inspersed with coarse yellow granules that dissolve in K producing a strong yellow effusion. Hypothecium hyaline, 30-50 µm high. Hymenium hyaline, 40-60 µm high, densely inspersed with small granules that dissolve in K. Epihymenium ~10 µm high, densely inspersed with orange-red K+ red/magenta pigment. Spores 8/ascus, hyaline, narrowly ellipsoid, non-halonate, 10-12 x 3-4 µm. CHEMISTRY: Lichexanthone, fumarprotocetraric acid, secalonic acid (?; apothecia only), russulone (apothecia only). Spot tests: thallus K- or weakly dirty yellow, C-, KC-, P+ red, UV+





Ramboldia blochiana

Ramboldia heterocarpa (Fée) Kalb, Lumbsch & Elix, Nova Hedwigia 86(1-2): 34 (2008)
= *Lecidea heterocarpa* Fée, Bull. Soc. bot. Fr. 20: 316 (1873)
= *Lecidea russula var. heterocarpa* (Fée) Müll. Arg., Nuovo G. bot. ital. 21(3): 359 (1889)

[ABL40893], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40893), 23.07.2017, det. A. Aptroot, 2017. - Usnic acid; spores 7-9 x 3.5-4 µm.



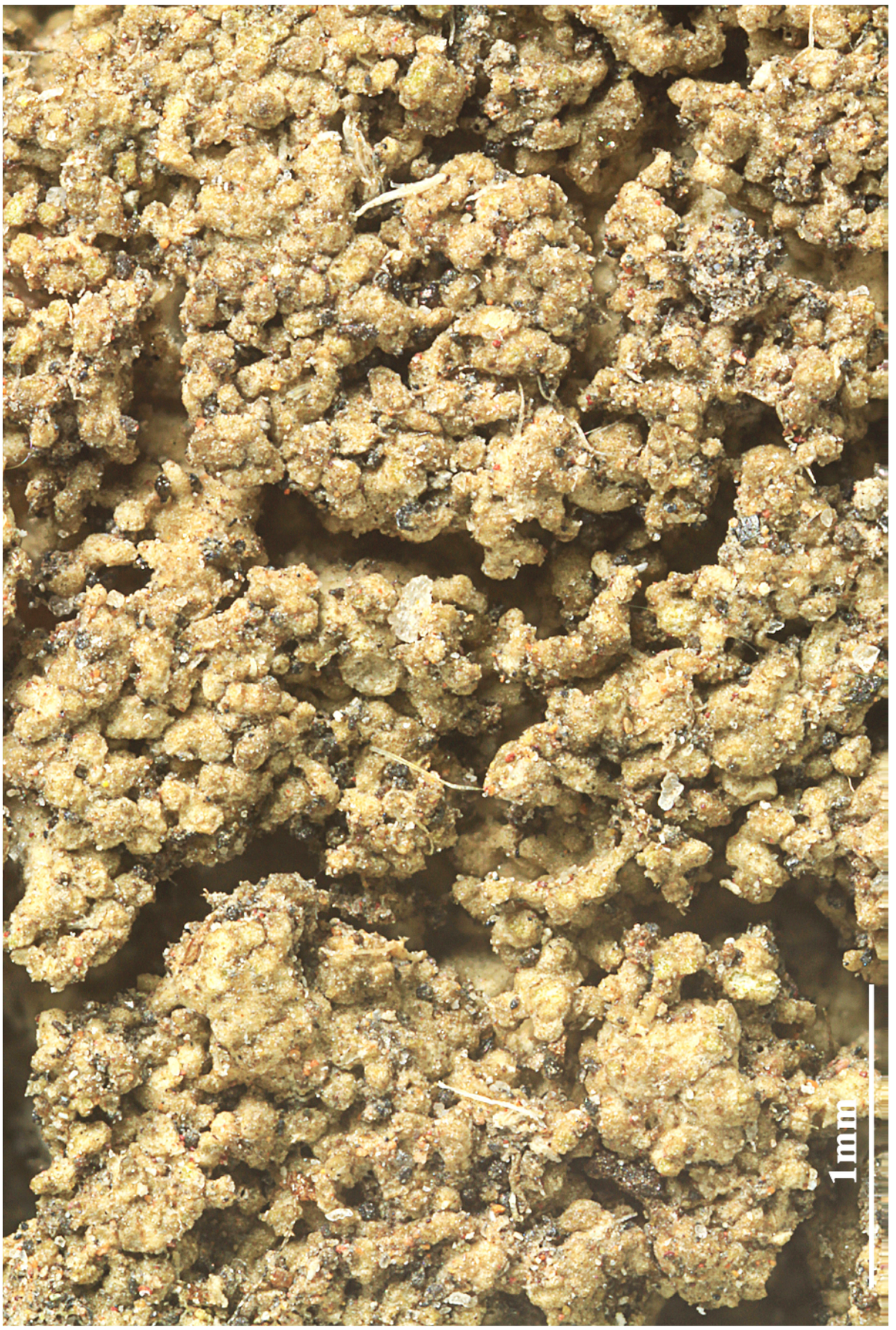


Ramboldia heterocarpa

Rinodina placynthielloides Aptroot, in Aptroot & Sparrius, Fungal Diversity 14: 40 (2003)

[ABL40636], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 406360), 22.07.2017, det. A. Aptroot, 2017.





Rinodina placynthielloides

Roccellographa circumscripta (Leight.) Ertz & Tehler, Fungal Diversity 49(1): 58 (2011)
= *Peterjamesia circumscripta* (Leight.) D. Hawksw., Lichenologist 38(2): 189 (2006)
= *Sagedia circumscripta* Leight., Brit. Sp. Ang. Lich.: 24 (1851)
= *Sclerophyton circumscriptum* (Leight.) Zahlbr., in Engler & Prantl, Nat. Pflanzenfam., Teil. I (Leipzig) 1(1*): 105 (1905)
= *Sclerophyton circumscriptum* f. *dendrizum* (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 499 (1923) [1924]
= *Sclerophytonomyces circumscripti* Cif. & Tomas., Atti Ist. bot. Univ. Lab. crittog. Pavia, sér. 5 10(1): 73 (1953)
= *Sclerophytonomyces circumscriptus* Sparrius & P. James, in Sparrius, Biblthca Lichenol. 89: 85 (2004)
= *Stigmatella circumscripta* (Leight.) Mudd, Man. Brit. Lich.: 253 (1861)
= *Stigmatidium circumscriptum* (Leight.) Carroll, J. Bot., Lond. 3: 291 (1865)
= *Stigmatidium circumscriptum* f. *dendrizum* Nyl., Flora, Regensburg 64(12): 188 (1881)
= *Verrucaria circumscripta* Taylor, in Mackay, Fl. Hibern. 2: 96 (1836)

[ABL40924], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40924), 23.07.2017, det. A. Aptroot, 2017. - Ascomata closed, punctiform, often thinly white pruinose. Spores 8/ascus, fusiform-ellipsoid, brown, (3-)4(-7)-septate, 17-26 x 5-5.5 µm. Chemistry: Thallus C-, K+ weakly yellowish, P+ yellow, UV- or pale cream; psoromic acid (major), 2´-*O*-demethylpsoromic acid (minor).

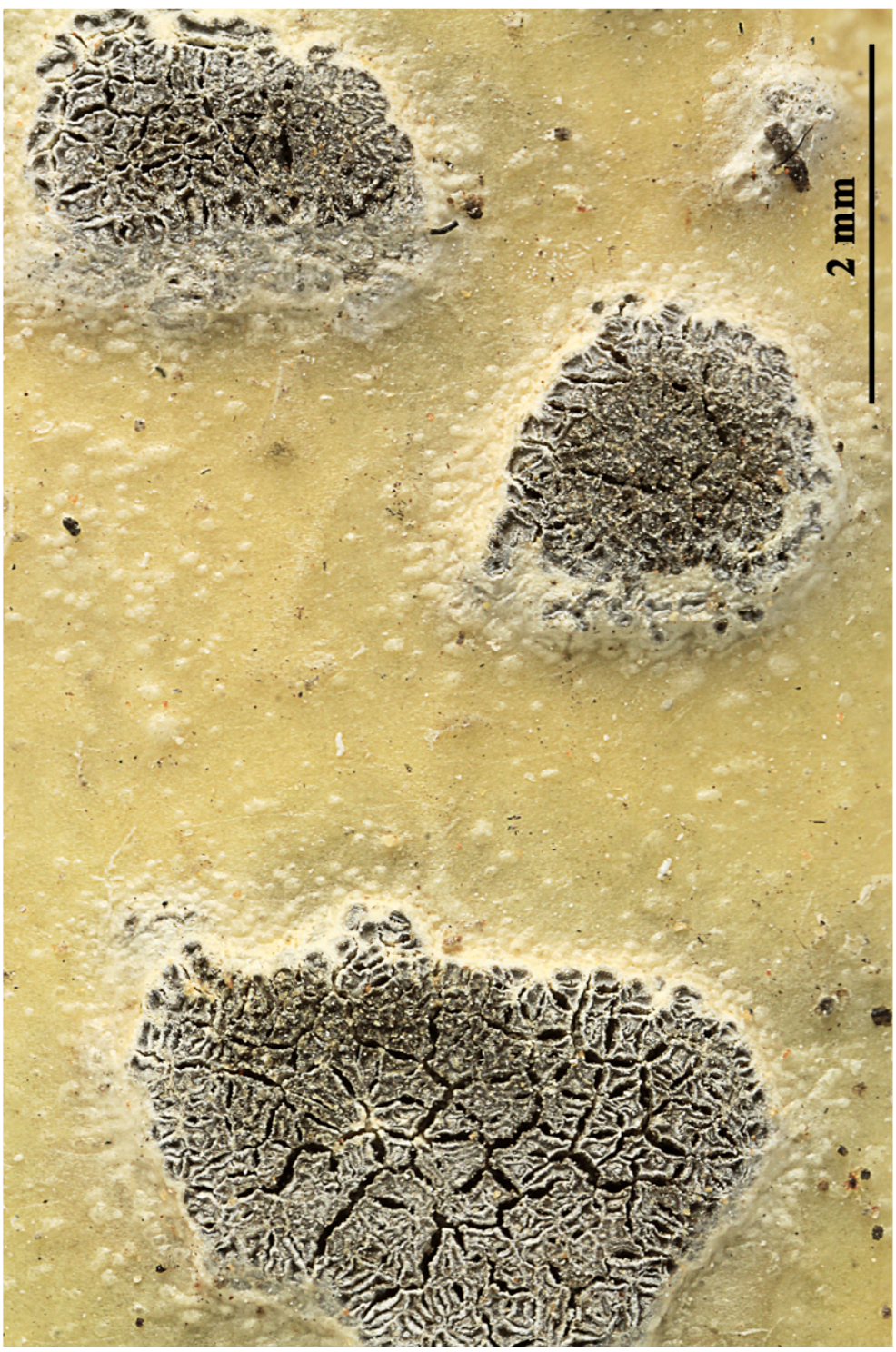




Roccellographa circumscripta

Sarcographa fissurinoides M. Cáceres & Lücking, in Cáceres, Libri Botanici 22: 145 (2007)

[ABL48641], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in cerrado forest. 16°51'56" S, 39°24'59" W, 130 m. Leg. M. Cáceres & A. Aptroot (no 48641), 18.02.2019, det. A. Aptroot 2019. - Thallus corticolous, yellow-grey. Photobiont *Trentepohlia*. Lirellae in stromata, stellately branched, stromata in section almost completely carbonized. Excipulum and hypothecium carbonized. Hymenium colourles, inspersed. Paraphyses unbranched. Spores 8/ascus, 3-septate, grey-brown, 12-17 x 5-7 µm, J+ vine-red. Chemistry: stictic acid, cryptostictic acid.





Sarcographa fissurinoides

Sclerophyton extenuatum (Nyl.) Sparrius, Biblthca Lichenol. 89: 71 (2004)
= *Chiodecton extenuatum* (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 477 (1923) [1924]
= *Enterographa extenuata* (Nyl.) Redinger, Reprium nov. Spec. Regni veg. 43: 70 (1938)
= *Platygrapha extenuata* Nyl., Annls Sci. Nat., Bot., sér. 4 19: 381 (1863)

[ABL48288], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'35" S, 39°25'09" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48288), 14.02.2019, det. A. Aptroot 2019. - Photobiont Trentepohlia. Hypothecium and epithecium black-brown, K+ green. Spores ellipsoid-fusiform, with rounded ends,17-26 x 5.0-6.5 µm, (2-)3(-4)-septate. Chemistry: K+ yellow, C-, P+ orange, UV-; protocetraric acid.





Sclerophyton extenuatum

Sclerophyton seriale (Ach.) Sparrius, Biblthca Lichenol. 89: 77 (2004)
= *Chiodecton seriale* Ach., Syn. meth. lich. (Lund): 108 (1814)
= *Leucodecton seriale* (Ach.) A. Massal., Atti Inst. Veneto Sci. lett., ed Arti, Sér. 3 5: 326 (1860) [1859-1860]

[ABL48858], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34' S, 38°02' W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48858), 18.02.2019, det. A. Aptroot 2019. - Pseudostromata pale grey. Photobiont *Trentepohlia*. Excipulum hyaline. Paraphysoids branched and anastomosed. Hypothecium dark brown to orange, K+ green. Spores 8/ascus, 3 septate, enlarged upper cell and rounded ends, 14-22 x 3-6 µm. Chemistry: K+ yellowish, C-, P+ yellow, UV-; psoromic acid.





Sclerophyton seriale

Scoliciosporum intrusum (Th. Fr.) Hafellner, Fritschiana 49: 31 (2004)
= *Biatorina intrusa* (Th. Fr.) Dombr., Konspekt Flor. Lishainikov Murmanskoioblasti i Severo-Vostochnol Finlyandii [Classification of Lichens found in the Murmansk province of the USSR and North-Eastern Finland], Leningrad: 50 (1970)
= *Carbonea intrusa* (Th. Fr.) Rambold & Triebel, in Hertel, Mitt. bot. StSamml., Münch. 30: 300 (1992) [1991]
= *Carbonea intrusa* (Th. Fr.) Rambold & Triebel, in Aptroot, Diederich, Sérusiaux & Sipman, Biblthca Lichenol. 64: 47 (1997)
= *Catillaria intrusa* (Th. Fr.) Th. Fr., Lich. Scand. (Upsaliae)(2): 479 (1874)
= *Conida intrusa* (Th. Fr.) Sacc. & D. Sacc., Syll. fung. (Abellini) 18: 187 (1906)
= *Lecidea aphanoides* Nyl., Flora, Regensburg 51: 476 (1868)
= *Lecidea intrusa* Th. Fr., Bot. Notiser: 152 (1867)
= *Lecidea melaphana* Nyl., Flora, Regensburg 52: 83 (1869)
= *Lecideopsis intrusa* (Th. Fr.) Zopf, Hedwigia 35(6): 338 (1896)
= *Micarea intrusa* (Th. Fr.) Coppins & H. Kilias, in Coppins, Bull. Br. Mus. nat. Hist., Bot. 11(2): 138 (1983)

[ABL42050], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42050), 23.07.2017, det. A. Aptroot, 2017.- Thallus black but often with brownish tinge, areolate, thallus K-, C-, Pd-. Apothecia blackish, often somewhat glossy, one to several per areole, adnate, convex from the beginning, with indistinct margin or later margin excluded and apothecia virtually immarginate. Exciple in longitudinal section pale to brownish, darker towards the outer edge, composed of radiating hyphae; excipular hyphae branched and anastomosing, the lumina c. 1–2 µm wide. Hypothecium up to 200 µm high, hyaline to slightly olivaceous. Hymenium hyaline, not inspersed, ca. 40–50 µm high, the upper part (epihymenium) olive to aeruginose to bluish; K+ green intensifying, N+ red to purplish to pale violet, hymenial gel IKI- but gel and outer layer of empty ascal walls IKI+ blue. Paraphyses numerous, branched and anastomosing, c. 1,5 µm wide, with only slightly enlarged tips, with "Pigmenthauben". Asci 8-spored, ascal wall lecanoralean, strongly thickened at the apex and forming a tholus, with a broad ocular chamber. Ascospores ellipsoid to fusiform, at least a few per preparation slightly asymmetric to somewhat curved, simple at first, later frequently with one septum, 12–17(–19) x 4–5,5(–6) µm, old spores sometimes with up to 3 transsepta and brownish walls.



Scoliciosporum intrusum



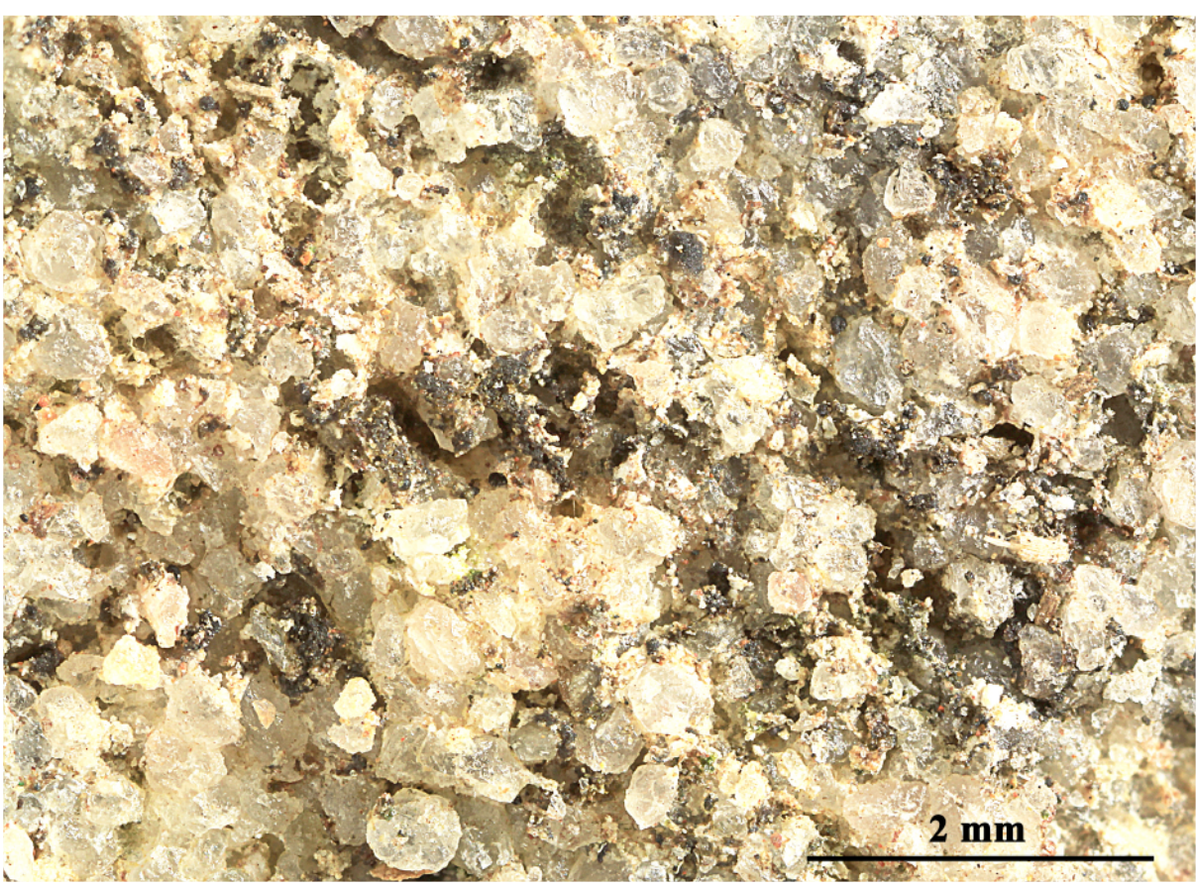
Scoliciosporum intrusum

Scoliciosporum umbrinum (Ach.) Lojka, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 19: 488 (1869)
= *Bacidia corticicola* (Anzi) Hellb., K. svenska Vetensk-Akad. Handl., ny följd 20(no. 8): 80 (1884) [1882-1883]
= *Bacidia holomelaena* c *corticicola* Anzi, Cat. Lich. Sondr.: 71 (1860)
= *Bacidia holomelaena* var. *corticicola* (Anzi) Rabenh., Hedwigia 5(6): 85 (1866)
= *Bacidia pelidna* var. *compacta* (Körb.) Boistel, Nouv. Fl. Lich. (Paris) 2: 185 (1903)
= *Bacidia pelidna* var. *pelidniza* (Nyl.) Boistel, Nouv. Fl. Lich. (Paris) 2: 185 (1903)
= *Bacidia pelidniza* (Nyl.) H. Olivier, Bull. Acad. Intern. Géogr. Bot. 11: 55 (1902)
= *Bacidia psotina* (Fr.) Dalla Torre & Sarnth., Fl. Tirol, Vorarlberg, Leichtenstein, IV Band. Die Flechten von Tirol: 355 (1902)
= *Bacidia turgida* (Körb.) Hellb., Öfvers. K. Svensk. Vetensk.-Akad. Förhandl. 24: 270 (1867)
= *Bacidia turgida* f. *psotina* (Fr.) Mig., Flora von Deutschl., Abt. II 12/2: 286 (1929)
= *Bacidia umbrina* (Ach.) Bausch, Verh. naturw. Verein. Karlsruhe 4: 103 (1869)
= *Bacidia umbrina* subsp. *corticicola* (Anzi) Sandst., Abh. naturw. Ver. Bremen 21(1): 120 (1912)
= *Bacidia umbrina* subsp. *turgida* (Körb.) Sandst., Abh. naturw. Ver. Bremen 21(1): 119 (1912)
= *Bacidia umbrina* var. *corticicola* (Anzi) Bausch [as 'corticola'], Verh. naturw. Verein. Karlsruhe 4: 104 (1869)
= *Bacidia umbrina* var. *pelidniza* (Nyl.) H. Olivier, Rev. Bot. 10: 630 (1892)
= *Bacidia umbrina* var. *psotina* (Fr.) Th. Fr., Lich. Scand. (Upsaliae)(2): 365 (1874)
= *Bacidia umbrina* var. *turgida* (Körb.) Th. Fr., Lich. Scand. (Upsaliae)(2): 365 (1874)
= *Biatora asserculorum* var. *corticicola* (Anzi) Hepp, Flecht. Europ.: no. 748 (1867)
= *Biatora fuliginea* var. *psotina* Fr., K. svenska Vetensk-Akad. Handl., ser. 3: 265 (1822)
= *Biatora rubella* subsp. *umbrina* (Ach.) Tuck., Syn. N. Amer. Lich. (Boston) 2: 48 (1888)
= *Biatora umbrina* (Ach.) Tuck., Syn. N. Amer. Lich. (Boston) 2: 48 (1888)
= *Biatora umbrina* f. *compacta* (Körb.) Willey, Enum. Lich. New Bedford: 24 (1892)
= *Lecidea luteola* var. *umbrina* (Ach.) Nyl., Not. Sällsk. Fauna et Fl. Fenn. Förh., Ny Ser. 4(no. 1): 232 (1858) [1858-59]
= *Lecidea pelidna* f. *compacta* (Körb.) Cromb., J. Bot., Lond. 14: 361 (1876)

= *Lecidea pelidna* subsp. *pelidniza* (Nyl.) Lamy, Bull. Soc. bot. Fr. 25(5): 445 (1880) [1878]
= *Lecidea pelidna* var. *compacta* (Körb.) Vain., Meddn Soc. Fauna Flora fenn. 2: 65 (1878)
= *Lecidea pelidna* var. *corticicola* (Anzi) Stizenb., Ber. Tät. St Gall. naturw. Ges.: 424 (1882) [1880-81]
= *Lecidea pelidna* var. *pelidniza* (Nyl.) Nyl., Lich. Envir. Paris: 86 (1896)
= *Lecidea pelidna* var. *turgida* (Körb.) Leight., Lich.-Fl. Great Brit., Edn 3: 360 (1879)
= *Lecidea pelidniza* Nyl., Flora, Regensburg 57(20): 318 (1874)
= *Lecidea umbrina* Ach., Lich. Univ.: 183 (1810)
= *Lecidea umbrina* f. *compacta* (Körb.) Leight., Lich.-Fl. Great Brit., Edn 3: 360 (1879)
= *Lecidea umbrina* f. *pelidniza* (Nyl.) Leight., Lich.-Fl. Great Brit., Edn 3: 360 (1879)
= *Lecidea umbrina* f. *turgida* (Körb.) Leight., Lich.-Fl. Great Brit., Edn 3: 360 (1879)
= *Lecidea umbrina* var. *compacta* (Körb.) Leight., Lich.-Fl. Great Brit., Edn 3: 360 (1879)
= *Lecidea umbrina* var. *psotina* (Fr.) Vain., Meddn Soc. Fauna Flora fenn. 10: 23 (1883)
= *Lecidea umbrina* var. *turgida* (Körb.) Wedd., Bull. Soc. bot. Fr. 21(11): 345 (1875) [1874]
= *Lichen peltatus* * *umbrina* (Ach.) Lam., Encycl. Méth. Bot., Suppl. (Paris) 3(2): 388 (1813)
= *Patellaria corticicola* (Anzi) Müll. Arg. [as 'corticola'], Flora, Regensburg 66(22): 351 (1883)
= *Placynthium nigrum* var. *psotinum* (Fr.) Trevis., Lichenoth. Veneta 3-4: no. 98 (1869)
= *Scoliciosporum compactum* Körb., Syst. lich. germ. (Breslau): 268 (1855)
= *Scoliciosporum corticicola* (Anzi) Arnold [as 'corticolum'], Flora, Regensburg 49(34): 530 (1866)
= *Scoliciosporum holomelaenum* var. *corticicola* (Anzi) Bagl. & Carestia, Comm. Soc. crittog. Ital. 2(fasc. 3): 395 (1867)
= *Scoliciosporum psotinum* (Fr.) Arnold, Flora, Regensburg 67: 583 (1884)
= *Scoliciosporum psotinum* subsp. *corticicola* (Anzi) Arnold [as 'corticicolum'], Flora, Regensburg 67(30): 583 (1884)
= *Scoliciosporum turgidum* Körb., Parerga lichenol. (Breslau) 3: 241 (1861) [1865]
= *Scoliciosporum turgidum* f. *corticicola* (Anzi) Arnold, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 30: 140 (1881) [1880]
= *Scoliciosporum umbrinum* a. *compactum* (Körb.) Arnold, Flora, Regensburg 67: 583 (1884)

= *Scoliciosporum umbrinum f. turgidum* (Körb.) Arnold, Flora, Regensburg 54: 51 (1871)
= *Scoliciosporum umbrinum* var. *compactum* (Körb.) Strasser, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 39(3): 371 (1889)
= *Scoliciosporum umbrinum* var. *corticicola* (Anzi) Clauzade & Cl. Roux [as 'corticolum'], in Roux, Bull. Soc. bot. Centre-Ouest, Nouv. sér. 13: 226 (1982)
= *Scoliciosporum umbrinum* var. *psotinum* (Fr.) Hazsl., Magyar Birodalom Zuzmó-Flórájá: 212 (1884)
= *Secoliga umbrina* (Ach.) Stizenb., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 30(no. 3): 25 (1863)
= *Secoliga umbrina* var. *corticicola* (Anzi) Stizenb. [as 'corticola'], Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 30(no. 3): 27, tab. I, fig. 11 (1863)
= *Secoliga umbrina* var. *turgida* (Körb.) Stizenb., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 30(no. 3): 26, tab. I, fig. 10 (1863)

[ABL40877], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40877), 23.07.2017, det. A. Aptroot, 2017.- Spores 3-7-septate, 15-40 x 2-3 µm, spirally twisted. All parts K-, C-, KC-, P-, no lichen substances detected by TLC.





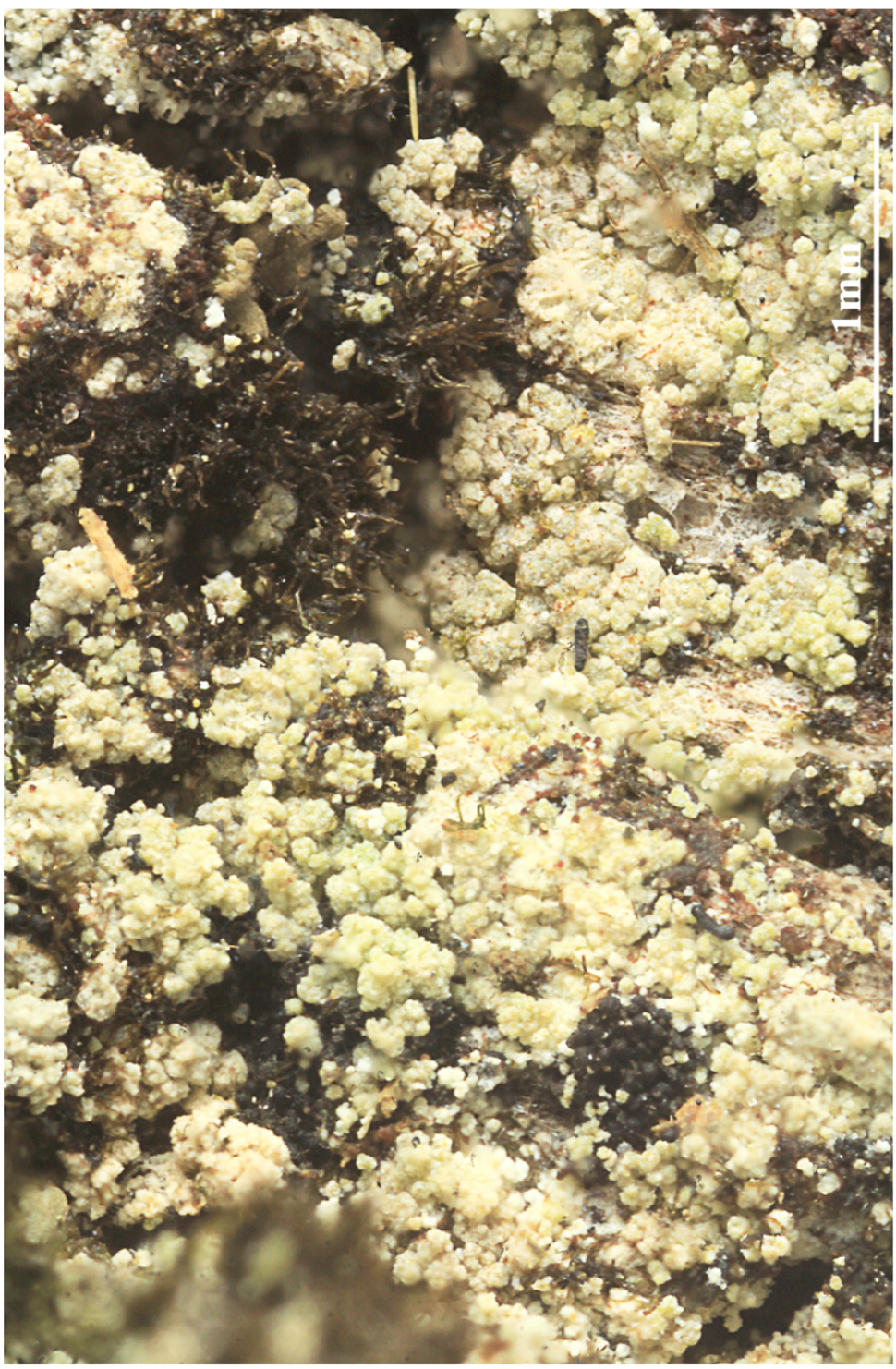
Scoliciosporum umbrinum

Septotrapelia usnica (Sipman) Kalb & Bungartz, Phytotaxa 150(1): 11 (2013)

= *Lepraria usnica* Sipman, Biblthca Lichenol. 86: 179 (2003)

= *Nelsenium usnicum* (Sipman) Lendemer & B.P. Hodk., Mycologia 105(4): 1013 (2013)

[ABL48723], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pole in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48723), 15.02.2019, det. A. Aptroot 2019. - Thallus greyish green, consisting of c. 70-100 µm diam soredia. Chemistry: usnic acid, zeorin, atranorin(trace); C+ and KC+ yellow to orange.



Siphula decumbens Nyl., Lich. Nov. Zeland. (Paris): 14 (1888)
= *Lichen torulosus* Thunb. ex Ach., Lich. suec. prodr. (Linköping): 100 (1799) [1798]
= *Siphula torulosa* (Thunb. ex Ach.) Nyl., Mém. Soc. Imp. Sci. Nat. Cherbourg 5: 98 (1858)

[ABL40920], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40920), 23.07.2017, det. A. Aptroot, 2017. - Thallus not much dissected; lobes at most twice as long as wide. Chemistry: thamnolic acid, decarboxythamnolic acid.





Siphula decumbens

Siphula fastigiata (Nyl.) Nyl., Annls Sci. Nat., Bot., sér. 4 19: 297 (1863)
= *Siphula torulosa* var. *fastigiata* Nyl., Syn. meth. lich. (Parisiis) 1(2): 263 (1860)

[ABL40919], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 40919), 23.07.2017, det. A. Aptroot, 2017. - Thallus much dissected with lobes that are much longer than wide. Chemistry: baeomycesic acid, squamatic acid.





Siphula fastigiata

Stirtonia nivea Xavier-Leite, M. Cáceres & Aptroot, Nova Hedwigia 98(3-4): 427 (2014)

[ABL48179], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'41" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48179), 14.02.2019, det. A. Aptroot 2019. - Thallus crustose, continuous, corticate and somewhat cartilagineous, pale greenish white, very thin and closely following the bark surface, partly immersed between bark flakes, without prothallus. Algae trentepohlioid. Ascigerous structures ellipsoidal to elongated or with irregular outline, disc thickly white pruinose, 0.2–0.5 mm wide, generally 0.5–1.0 mm long, but up to 1.5 mm long in some cases. Interascal tissue not inspersed, IKI+ partly reddish, partly blue (hemiamyloid). Asci clavate, 65–75 × 20–30 µm, wall 5 µm thick in upper part. Ascospores 8/ascus, hyaline, 9–11-septate, fusiform, 35–47.5 × 11–13.5 µm, lumina somewhat rounded, IKI+ reddish brown (dextrinoid). Pycnidia not observed. Chemistry: Thallus and apothecia UV–, C–, P–, K–. TLC: no substances.



Synarthonia pilosella Van den Broeck, Eb. Fisch., Killmann & Ertz, in Van den Broeck, Frisch, Razafindrahaja, Van de Vijver & Ertz, Plant Ecology and Evolution 151(3): 341 (2018)

[ABL48720], Brazil, Bahia, Itamarajú, Monte Pascoal, on wooden pale in garden. 17°01'24" S, 39°32'14" W, 120 m. Leg. M. Cáceres & A. Aptroot (no 48720), 15.02.2019, det. A. Aptroot 2019. - Thallus c. 22–33 thick, green, granular, continuous; thallus hyphae hyaline, 2.7–3.0 μm wide. Prothallus not observed. Photobiont trentepohlioid, cells 4–9 × 3–7 μm, rounded, solitary or in chains. Ascomata solitary, rounded, 0.06–0.2 × 0.04–0.2 mm, mostly aggregated in clusters of up to 8 ascomata of 0.4–1 × 0.1–0.6 mm, numerous, sessile; disc heavily white pruinose, orange below the pruina, flat, with distinct hyaline hair like extensions 1.2–2.9 μm wide. Excipulum 20–40 μm wide, composed of hyaline, loosely intricate hyphae 1.5–2.5 μm wide, orientated in all directions, inspersed with orange brown to hyaline granules, the granules K+ completely dissolving. Epihymenium 7–11 μm tall, composed of loosely intricate hyaline tips of the paraphysoids, 1.3–2.3 μm wide, not swollen, inspersed with orange-brown to hyaline granules which are K+ completely dissolving. Hymenium 46–75 μm tall, not inspersed, I+ directly red, K/I+ blue. Paraphysoids 0.9–1.4 μm wide. Hypothecium 29–32 μm thick, hyaline to yellowish, composed of loosely intricate hyphae, inspersed with orange granules which are K+ completely dissolving, I+ red, K/I+ blue. Asci 44–71 × 17–22 μm, clavate, stipitate; a K/I blue ring like structure in the tholus or an ocular chamber not observed. Ascospores 14.5–19.0 × 5.0–7.0 μm, (2–)3(–4)-septate, persistently hyaline, with enlarged apical cell, oblong-ovoid; lumina of enlarged apical cell 6.4–7.0 × 5.1–6.5 μm, other lumina 2.6–6.1 × 1.7–3.9 μm; spore ontogeny macrocephalic, unidirectional; gelatinous sheath 0.3–0.7 μm wide. Pycnidia not observed. Chemistry: Thallus K-, C-, KC-, PD+ yellow, UV-. Pruina PD+ yellow. Ascomata UV+ bright orange-yellow contrasting with the dark UV- thallus. Calcium oxalate crystals absent in ascomata and thallus. TLC: presence of the same unidentified xanthone (major) and traces of some other unknown secondary compounds.



Synarthonia pilosella



Synarthonia pilosella

Syncesia effusa (Fée) Tehler, Fl. Neotrop., Monogr. 74: 24 (1997)
= *Chiodecton effusum* Fée, Essai Crypt. Exot. (Paris): 63 (1825) [1824]
= *Chiodecton endoleucum* Müll. Arg., Hedwigia 32(2): 133 (1893)
= *Enterographa effusa* (Fée) A. Massal., Atti Inst. Veneto Sci. lett., ed Arti, Sér. 3 5: 315 (1860) [1859-1860]

[ABL40794], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40794), 22.07.2017, det. A. Aptroot, 2017. - Thallus UV+ yellow.





Syncesia effusa

Syncesia farinacea (Fée) Tehler, Fl. Neotrop., Monogr. 74: 25 (1997)
= *Chiodecton farinaceum* Fée, Annls Sci. Nat., sér. 1 17: 25 (1829)

[ABL48238A], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'59" S, 39°24'44" W, 160 m. Leg. M. Cáceres & A. Aptroot (no 48238A), 14.02.2019, det. A. Aptroot 2019. - Thallus epophloedal, tomentose to dense. Ascomata pseudo-monocarpocentral, sessile with constricted base. Hypothecium dark-brown. Spores fusiform, 25-32 x 3 µm. Chemistry: UV cream coloured; protocetraric acid, roccellic acid





Syncesia farinacea

Tephromela immersa Kalb & Elix, in Kalb, Biblthca Lichenol. 88: 322 (2004)

[ABL42037], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42037), 23.07.2017, det. A. Aptroot, 2017. - Apothecia 0.5-1.5 mm, immersed. Hymenium purplish violet, hypothecium yellowish brown. Spore 8/ascus, 10-12 x 8-9 µm. Chemistry: atranorin, physodic acid (major), alectoronic acid (major), 2´-*O*-methylphysodic acid (minor).





Tephromela immersa

Thalloloma anguiniforme (Vain.) Staiger [as 'anguinaeforme'], Biblthca Lichenol. 85: 427 (2002)

= *Thalloloma scribillans* (Nyl.) Lücking, in Lücking, Moncada, Soto-Medina, Simijaca & Sipman, Revta Acad. colomb. cienc. exact. fís. nat. 45(no. 174): 155 (2021)

= *Graphina anguiniformis* (Vain.) Zahlbr. [as 'anguinaeformis'], Cat. Lich. Univers. 2: 398 (1923) [1924]

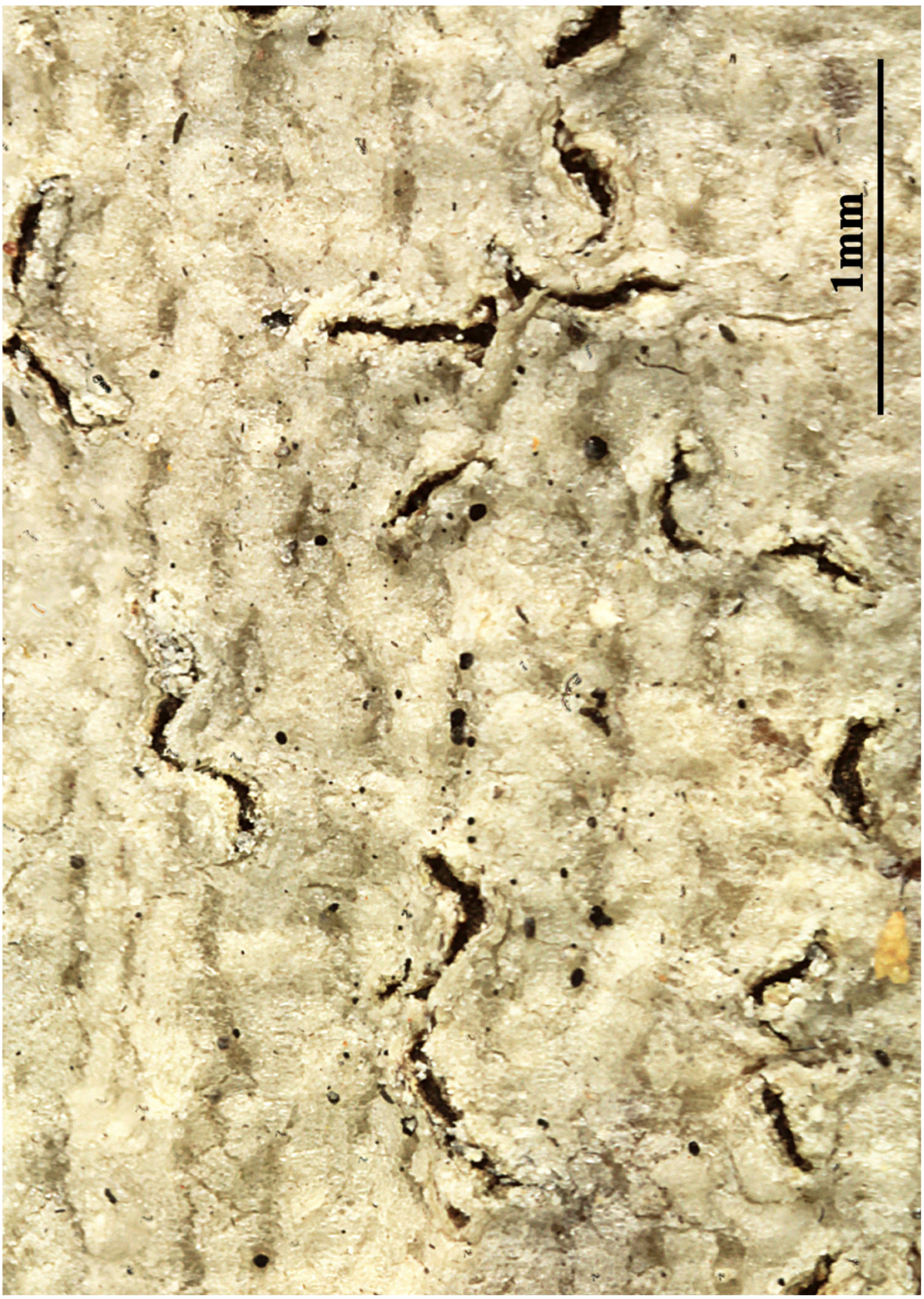
= *Graphina scribillans* (Nyl.) Zahlbr., Cat. Lich. Univers. 2: 424 (1923) [1924]

= *Graphis anguiniformis* Vain. [as 'anguinaeformis'], Acta Soc. Fauna Flora fenn. 7(no. 2): 110 (1890)

= *Graphis scribillans* Nyl., Acta Soc. Sci. fenn. 7(2): 471 (1863)

[ABL48445], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'45" S, 39°24'30" W, 550 m. Leg. M. Cáceres & A. Aptroot (no 48445), 15.02.2019, det. A. Aptroot 2019. Lirellae immersed. Excipulum not carbonized. Spores 1-2/ascus, hyaline muriform, 15-21/7-8 locular, 55-95 x 25-30 µm, J+ blue-violet. K-



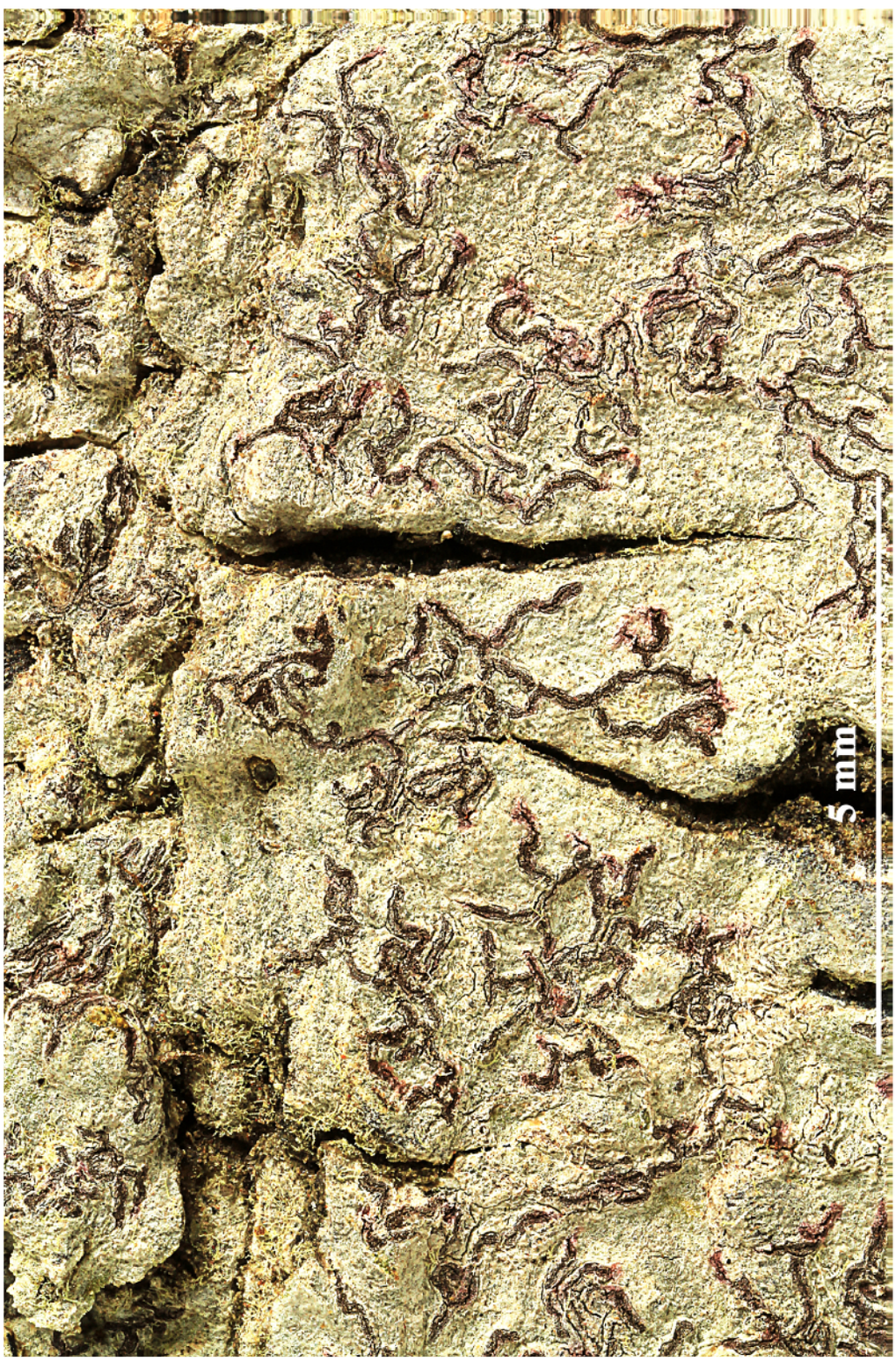


Thalloloma anguiniforme

Thalloloma buriticum (Redinger) Staiger, Biblthca Lichenol. 85: 432 (2002)

= *Graphis buritica* Redinger, Ark. Bot. 27A(no. 3): 10, 68, tab. VI, fig. 59 (1935)

[ABL40800], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40800), 22.07.2017, det. A. Aptroot, 2017.- Hymenium not inspersed; spores hyalin, 11-septate, 37 x 8 µm.





Thalloloma buriticum

Thalloloma hypoleptum (Nyl.) Staiger, Biblthca Lichenol. 85: 437 (2002)
= *Platythecium hypoleptum* (Nyl.) M. Nakan. & Kashiw., in Nakanishi, Kashiwadani & Moon, Bull. natn. Sci. Mus., Tokyo, B 29(2): 89 (2003)
= *Graphis hypolepta* Nyl., Acta Soc. Sci. fenn. 7(2): 472 (1863)

[ABL48391], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°53'36" S, 39°24'37" W, 430 m. Leg. M. Cáceres & A. Aptroot (no 48391), 15.02.2019, det. A. Aptroot 2019. - Excipulum not carbonized. Spores 8/ascus, transversaly, 4-8-septate, 20-30 x 6-8 µm, I+ blue-volet. Chemistry: K-, UV-; TLC: nil.





Thalloloma hypoleptum

Thalloloma janeirense Staiger, Biblthca Lichenol. 85: 440 (2002)

[ABL48845], Brazil, Bahia, Mata de São João, Reserva Florestal de Sapiranga. On tree bark in Atlantic rain forest. 12°34' S, 38°02' W, 25 m. Leg. M. Cáceres & A. Aptroot (no 48845), 18.02.2019, det. A. Aptroot 2019. - Excipulum not carbonized. Hymenium not inspersed. Spores 8/ascus, hyaline, muriform, 7-10/2-locular, 20-30 x 7-8 µm. Chemistry: c three unknown substances.

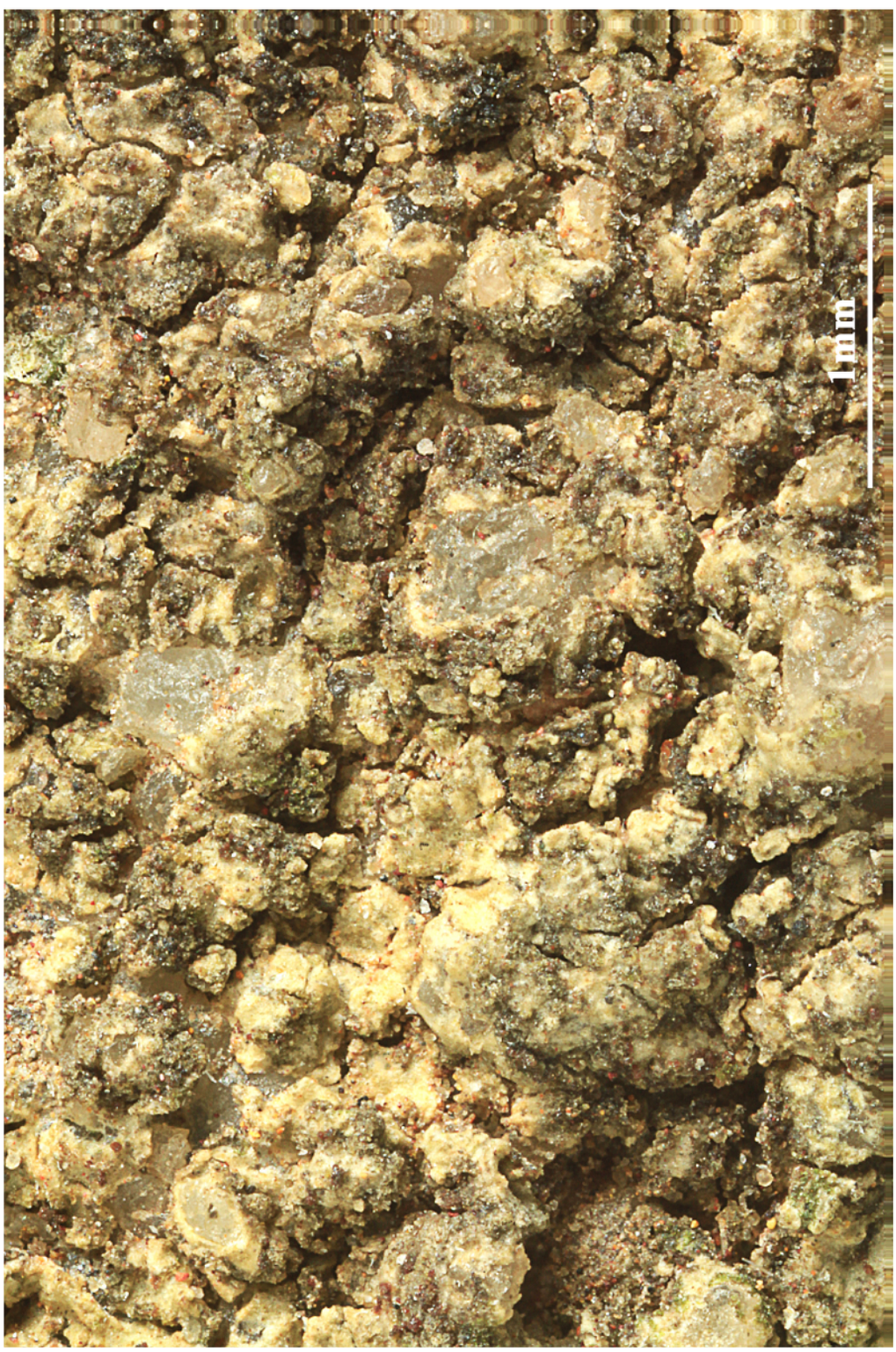




Thalloloma janeirense

Thelenella luridella (Nyl.) H. Mayrhofer, Biblthca Lichenol. 26: 45 (1987)
= *Luykenia luridella* (Nyl.) Trevis., Conspect. Verruc.: 20 (1860)
= *Microglaena luridella* (Nyl.) Zahlbr., Cat. Lich. Univers. 1: 192 (1921) [1922]
= *Verrucaria luridella* Nyl., Expos. Synopt. Pyrenocarp.: 41 (1858)

[ABL40620], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40620), 22.07.2017, det. A. Aptroot, 2017. - Spores hyaline, muriform, 2-4/ascus, 40-50 x 17 µm.





Thelenella luridella

Trypethelium astroideum Flakus & Aptroot, in Flakus, Kukwa & Aptroot, Lichenologist 48(6): 685 (2016)

[ABL48583], Brazil, Bahia, Itamarajú, Monte Pascoal, on palm bark in palm forest. 16°51'16" S, 39°24'42" W, 30 m. Leg. M. Cáceres & A. Aptroot (no 48583), 17.02.2019, det. A. Aptroot 2019. - Thallus corticate, with corticiform layer c. 40–80 µm thick, smooth to somewhat bullate, inducing swellings of the host bark, somewhat shiny, continuous, covering areas ≤7 cm diam., c. 0.5mm thick, olive-green, not surrounded by a black prothallus. Pseudostromata with a surface similar to the thallus or slightly paler, distinctly raised above the thallus surface, irregular in outline (star-like), with sloping sides, c. 1.0–1.5×1–3 mm and 0.8mm high, olive-green with paler border and black ostiolar area with rust red pigment, inside with an additional orange granular pigment and bark tissue. Ascomata pyriform, 0.3–0.6 mm diam., aggregated, immersed in pseudostromata. Wall fully carbonized, not differentiated into excipulum and involucrellum, ≤c. 100 µm wide. Ostioles eccentric to apical, fused to simple, convex, black, surrounded by a rust red pigmented spot, usually forming a black star-shaped pattern. Hamathecium clear. Asci 8-spored. Ascospores hyaline, I−, 12–22-septate, fusiform, 65–100×11–14 µm, ends rounded, lumina rounded, not surrounded by a gelatinous layer. Pycnidia not observed. Chemistry. Thallus surface UV−, K−, thallus medulla K−; pseudostromata surface UV−, rust red pigment near ostioles, UV−, K+ purple (not dissolving), granular orange pigment inside of pseudostromata K+ carmine red (dissolving). TLC: parietin (minor) and additional unidentified anthraquinone (trace) detected.



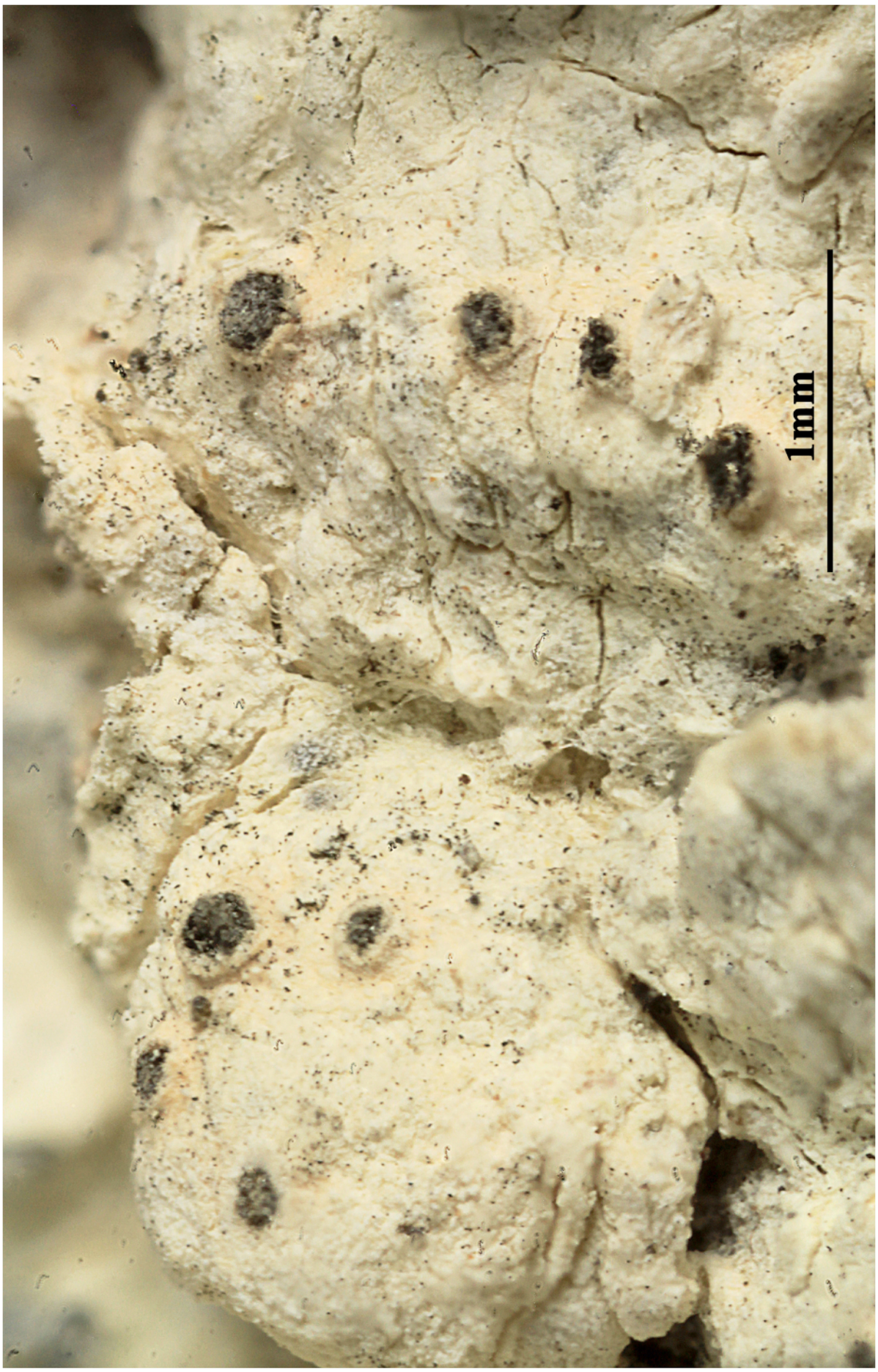


Trypethelium astroideum

Tylophoron protrudens Nyl., Bot. Ztg. 20: 279 (1862)
= *Acolium protrudens* (Nyl.) Tuck., Proc. Amer. Acad. Arts & Sci. 7: 232 (1868) [1866]

[ABL48312], Brazil, Bahia, Itamarajú, Monte Pascoal, on tree bark in Atlantic tropical rain forest. 16°52'34" S, 39°25'11" W, 135 m. Leg. M. Cáceres & A. Aptroot (no 48312), 14.02.2019, det. A. Aptroot 2019. - C+ pink, UV+ yellow. Spores brown, 1-septate, 12 x 6 µm.





Tylophoron protrudens

Usnea lunaria Motyka, Lich. Gen. Usnea, Stud. Monogr. (Leopoli) 2: 307, 328 (1937)

[ABL40867], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On tree bark in Atlantic rain forest. M. Cáceres & A. Aptroot (no 40867), 22.07.2017, det. A. Aptroot, 2017.



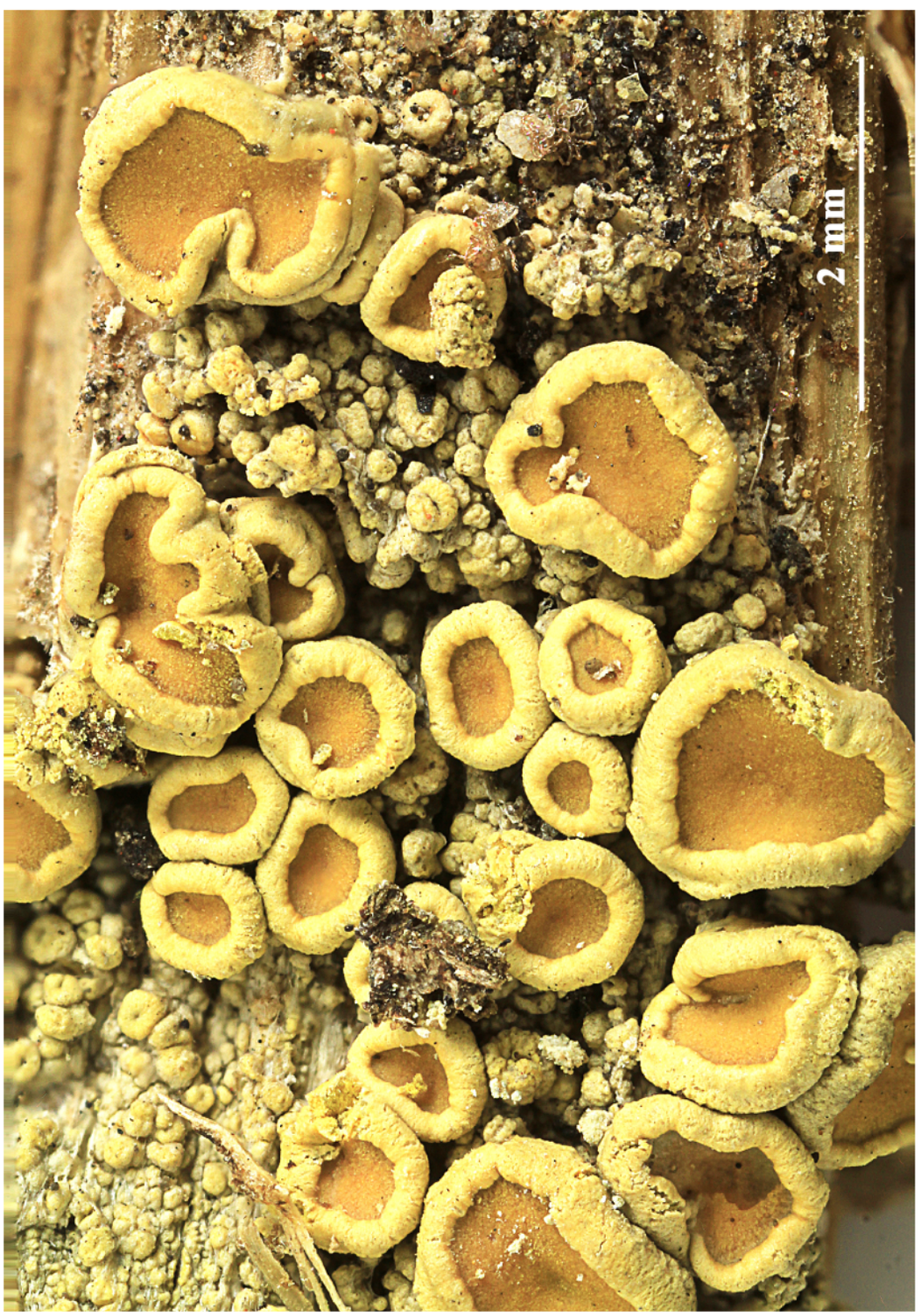


Usnea lunaria

Vainionora stramineopallens (Vain.) Kalb, Lichenes Neotropici, Fascicle 12 (nos 476-525) (Neumarkt): 3 (1991)

= *Lecanora stramineopallens* Vain., Acta Soc. Fauna Flora fenn. 7(no. 1): 88 (1890)

[ABL42027], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On tree bark on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42027), 23.07.2017, det. A. Aptroot, 2017. - TLC: Arthothelin (major), thuringion (major), 3-*O*-methylthiophansäure (major), atranorin (minor), chloroatranorin (trace).





Vainionora stramineopallens

Verrucaria aethiobola Wahlenb. ex Ach., Methodus, Suppl. (Stockholmiæ): 17 (1803)
= *Encliopyrenia catalepta* (Ach.) Trevis., Conspect. Verruc.: 19 (1860)
= *Endocarpon cataleptum* (Ach.) Servít, Rozpr. Československ. Akad. Véd. Ročn. 65(no. 3): 39 (1955)
= *Endocarpon fuscellum* var. *cataleptum* (Ach.) Ach., Lich. Univ.: 676 (1810)
= *Lichen hepaticus* * *cataleptum* (Ach.) Lam., Encycl. Méth. Bot., Suppl. (Paris) 3(2): 427 (1813)
= *Lithoicea aethiobola* (Wahlenb. ex Ach.) Stein, in Cohn, Krypt.-Fl. Schlesien (Breslau) 2(2): 324 (1879)
= *Lithoicea catalepta* (Ach.) A. Massal., Memor. Lich.: 143 (1853)
= *Lithoicea cataleptoides* (Nyl.) Arnold, Flora, Regensburg 68(4): 70 (1885)
= *Polyblastia catalepta* (Ach.) Füisting, Bot. Ztg. 26: 683 (1868)
= *Pyrenula aethiobola* (Wahlenb. ex Ach.) Ach., Mag. Gesell. naturf. Freunde, Berlin 6(1): 21 (1814)
= *Pyrenula catalepta* (Ach.) Ach., Mag. Gesell. naturf. Freunde, Berlin 6(1): 12 (1814)
= *Sphaeromphale clopima* f. *cataleptum* (Ach.) Stein, Krypt.-Fl. Schlesien (Breslau) 2(2): 315 (1879)
= *Sphaeromphale clopima* var. *cataleptum* (Ach.) Stein, in Cohn, Krypt.-Fl. Schlesien (Breslau) 2(2): 315 (1879)
= *Staurothele catalepta* (Ach.) Blomb. & Forssell, Enum. Pl. Scand.: 97 (1880)
= *Staurothele clopima* f. *catalepta* (Ach.) Zahlbr., Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 48: 350 (1898)
= *Staurothele clopima* var. *catalepta* (Ach.) Zahlbr., Annln K. K. naturh. Hofmus. Wien 25: 238 (1911)
= *Stigmatomma cataleptum* (Ach.) Körb., Syst. lich. germ. (Breslau): 338 (1855)
= *Stigmatomma clopimum* var. *cataleptum* (Ach.) Arnold, Flora, Regensburg 68: 66 (1885)
= *Stigmatomma fissum* var. *coplymoides* Bagl. & Car., Comm. Soc. crittog. Ital. 2(fasc. 3): 419 (1867)
= *Thelotrema clopimum* var. *cataleptum* (Ach.) Anzi, Cat. Lich. Sondr.: 104 (1860)
= *Verrucaria aethiobola* var. *acrotella* H. Olivier, Fl. Lich. Orne 2: 288 (1884)
= *Verrucaria aethiobola* var. *cataleptoides* (Nyl.) Vain., Meddn Soc. Fauna Flora fenn. 10: 176 (1883)
= *Verrucaria aquilella* Nyl., Flora, Regensburg 59: 237 (1876)
= *Verrucaria catalepta* (Ach.) Spreng., Syst. veg., Edn 16 4(1): 243 (1827)
= *Verrucaria cataleptoides* (Nyl.) Nyl., Bull. Soc. bot. Fr. 10(5): 268 (1863)
= *Verrucaria fuscella* var. *catalepta* Ach., Lich. Univ.: 290 (1810)

= *Verrucaria fuscocinerascens* Nyl. [as 'fusco-cinerascens'], Flora, Regensburg 59: 310 (1876)
= *Verrucaria hibernica* Zschacke, Hedwigia 67: 55 (1927)
= *Verrucaria hydrela* var. *aethiobola* (Wahlenb. ex Ach.) A. Massal., Ric. auton. lich. crost. (Verona): 174 (1852)
= *Verrucaria margacea* * *cataleptoides* Nyl., Lich. Scand. (Helsinki): 272 (1861)
= *Verrucaria margacea* f. *aethiobola* (Wahlenb. ex Ach.) Arnold, Flora, Regensburg 53(30-31): 486 (1871) [1870]
= *Verrucaria margacea* subsp. *cataleptoides* (Nyl.) Nyl., Bull. Soc. bot. Fr. 10(5): 268 (1863)
= *Verrucaria margacea* var. *aethiobola* (Wahlenb. ex Ach.) Wahlenb., Fl. lapp.: 465 (1812)
= *Verrucaria margacea* var. *cataleptoides* Nyl., Act. Soc. linn. Bordeaux 21(4): 428 (1857) [1856]
= *Verrucaria nigrescens* var. *cataleptoides* (Nyl.) Boistel, Nouv. Fl. Lich. (Paris) 2: 286 (1903)
= *Verrucaria papillosa* var. *aethiobola* (Wahlenb. ex Ach.) Arnold, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 18: 959 (1868)
= *Verrucaria umbrina* var. *aethiobola* (Wahlenb. ex Ach.) D. Dietr., Deutschl. Kryptog. Gewächse, 2 Abth.: 100 (1846)

[ABL42025], Brazil, Bahia, Chapada Diamantina, Palmeiras, Morro do Pai Inácio. On siliceous rock on table mountain. 12°27'24" S, 41°28'20" W, 1050 -1140 m. Leg. M. Cáceres & A. Aptroot (no 42025), 23.07.2017, det. A. Aptroot, 2017. - Spores simple, hyaline, 8/ascus, 21.5-35 x 8.5-14.5 µm, perispore up to 2 µm.



Verrucaria aethiobola

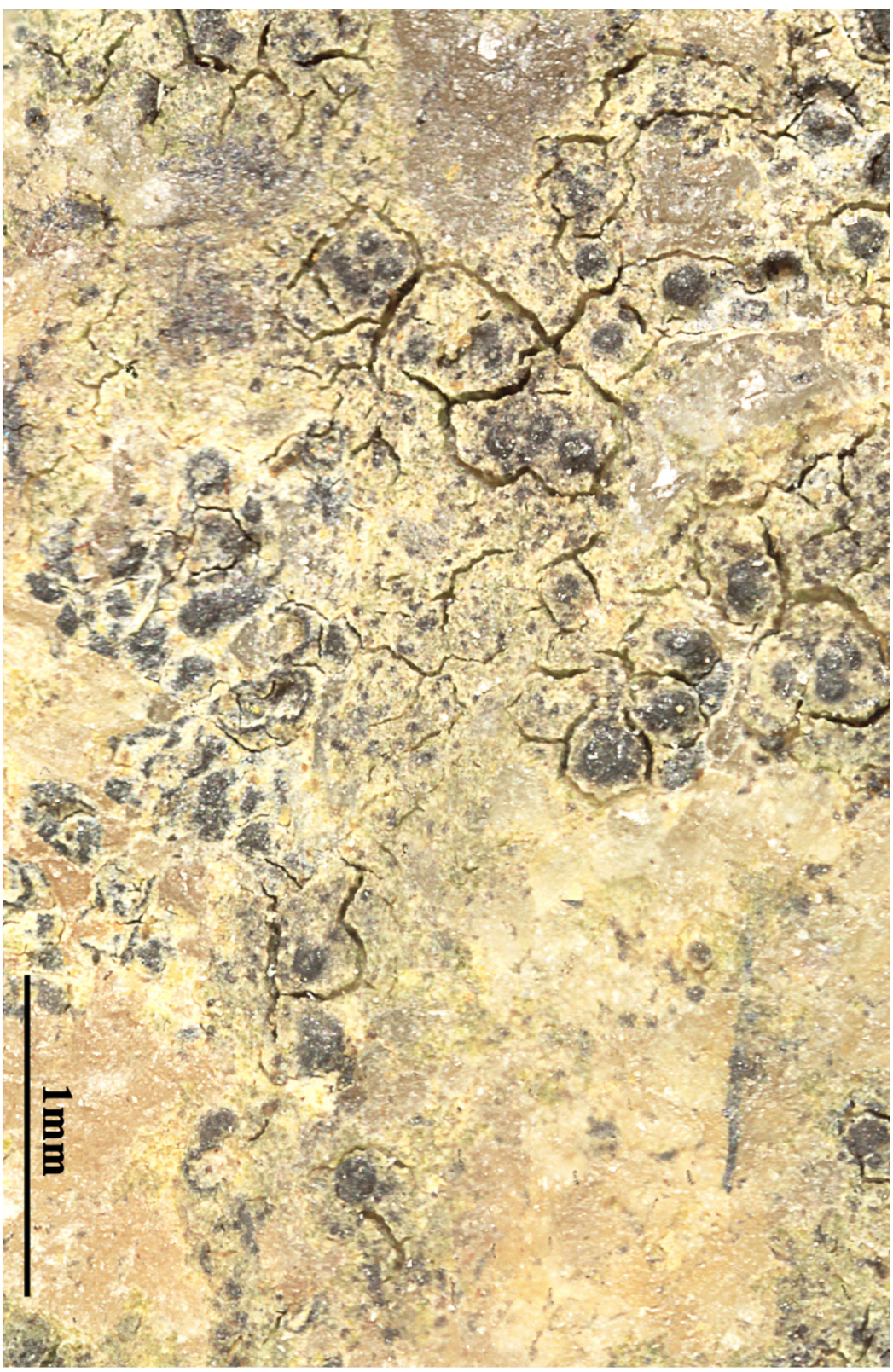


Verrucaria aethiobola

Verrucaria pachyderma Arnold, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 30: 146 (1881) [1880]

= *Verrucaria chlorotica* var. *pachyderma* Arnold, Verh. Kaiserl.-Königl. zool.-bot. Ges. Wien 22: 286 (1872)

[ABL48674], Brazil, Bahia, Itamarajú, Monte Pascoal, sacred pool on wet siliceous rock in Atlantic tropical rain forest. 16°53'08" S, 39°24'30" W, 100 m. Leg. M. Cáceres & A. Aptroot (no 48674), 17.02.2019, det. A. Aptroot 2019. - Spores simle, hyaline, 15 x 6 µm.



Xanthoparmelia crystallicola (Kalb & Hale) T.H. Nash & Elix, in Nash, Gries & Elix, Biblthca Lichenol. 56: 47 (1995)
= *Pseudoparmelia crystallicola* Kalb & Hale, in Kalb 1983

[ABL40734], Brazil, Bahia, Chapada Diamantina, Lençois Cachoeira do Mosquito, 12°23' S, 41°22'40" W, 450-500 m. On siliceous rock along river. Leg. M. Cáceres & A. Aptroot (no 40734), 22.07.2017, det. A. Aptroot, 2017.





Xanthoparmelia crystallicola

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The book illustrates in detail many tropical lichens recently collected in Bahia state in Brazil. This includes isotypes of most species that were described from this state in the present century.

New species:

Phaeographis vulcanica Aptroot, Lücking, Schumm & M. Cáceres, sp. nov.

Ocellularia fuscosubmuriformis Aptroot, L.A. Santos, Schumm & M. Cáceres, sp. nov.