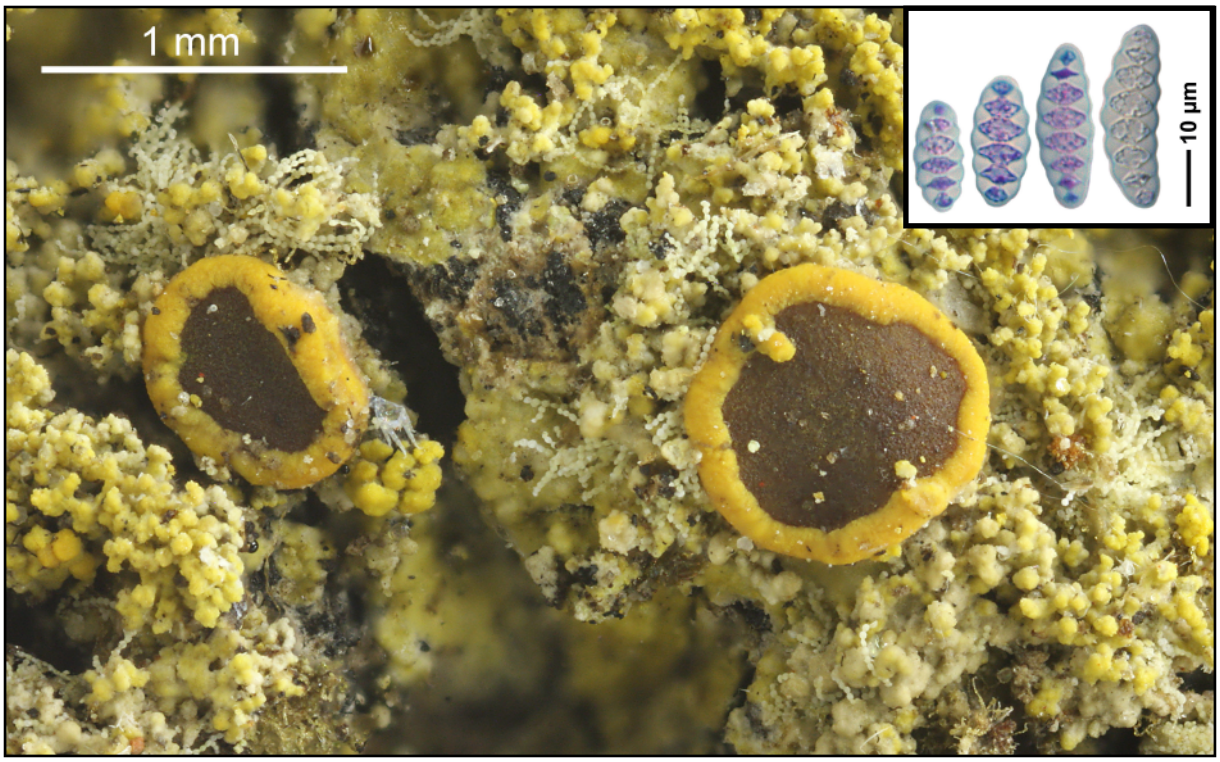


F. Schumm & A. Aptroot

A microscopical Atlas of some tropical Lichens from SE-Asia

(Thailand, Cambodia, Philippines,Vietnam)

VOLUME TWO



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A microscopical Atlas of some tropical Lichens from SE-Asia

(Thailand, Cambodia, Philippines,Vietnam)

VOLUME TWO

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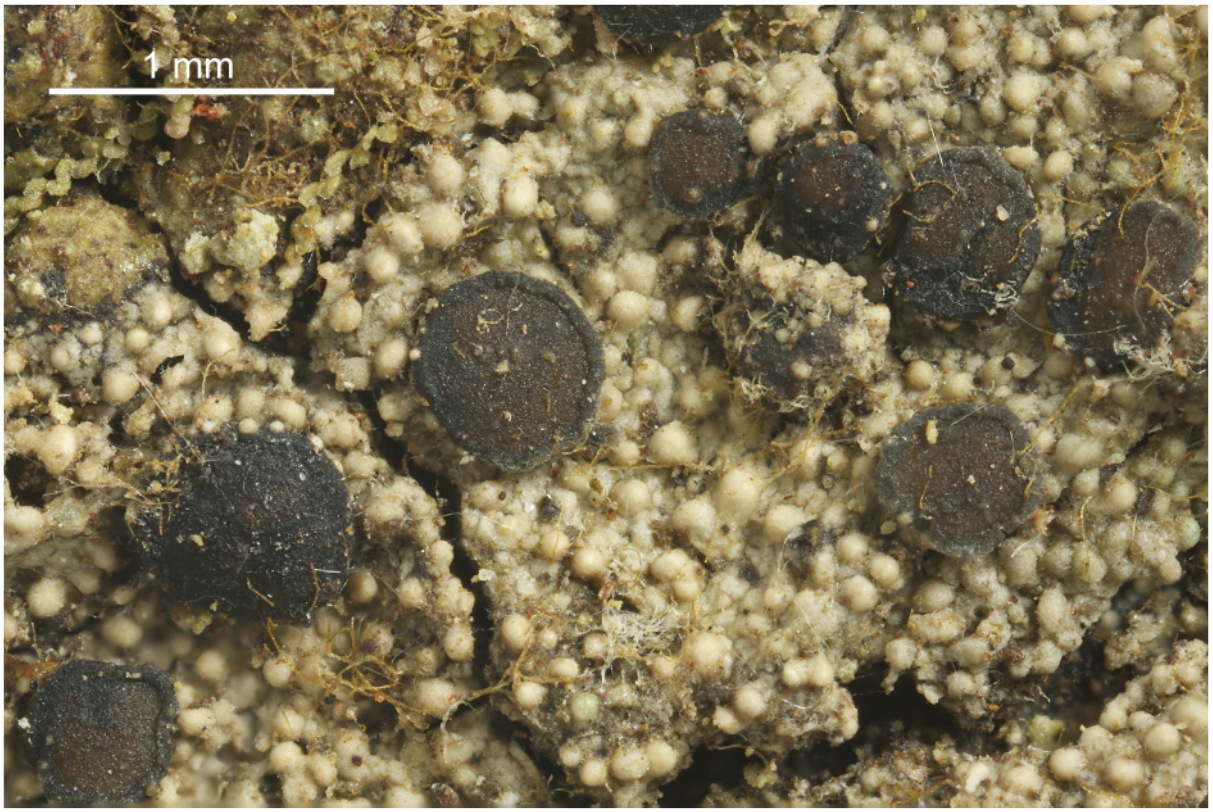
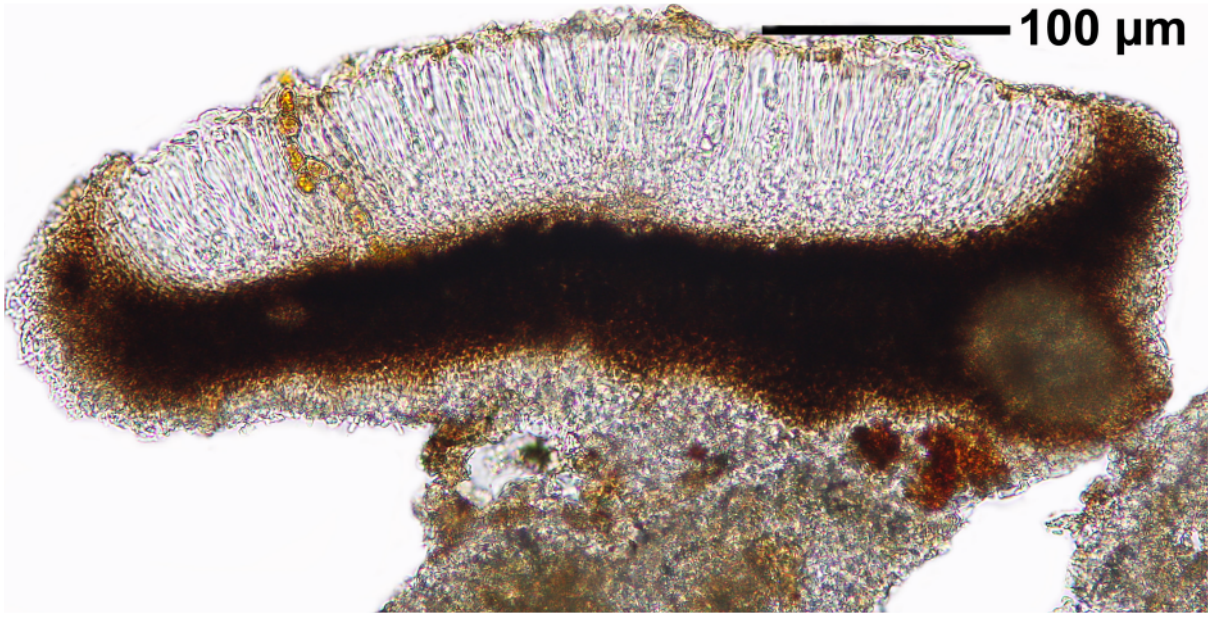
Malmidea bakeri (Vain.) Kalb, Rivas Plata & Lumbsch

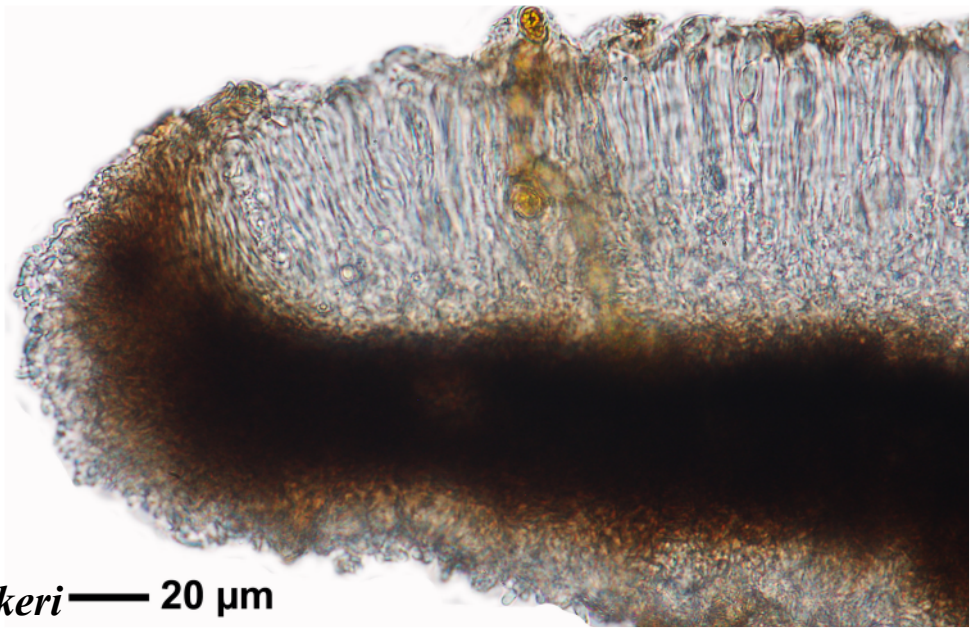
Thallus corticolous, grey, soralia absent, verrucose. Medulla white, K+ yellowish. Excipulum brown, hyaline at periphery. Internal with medullary patches, composed of loosely arranged hyphae, incrusted with granules, which are dissolving in KOH with yellowish colour. Ascospores hyaline, non-septate, 10-12 x 6-7 µm. Chemistry: atranorin (maj), several unknown xantholepinones. Lit. Kalb, K. et al (2011): Bibl. Lich. Nr. 106: 143-168.

[17519], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm (IAL7) 15.01.2012, det. Kalb 06.2012.

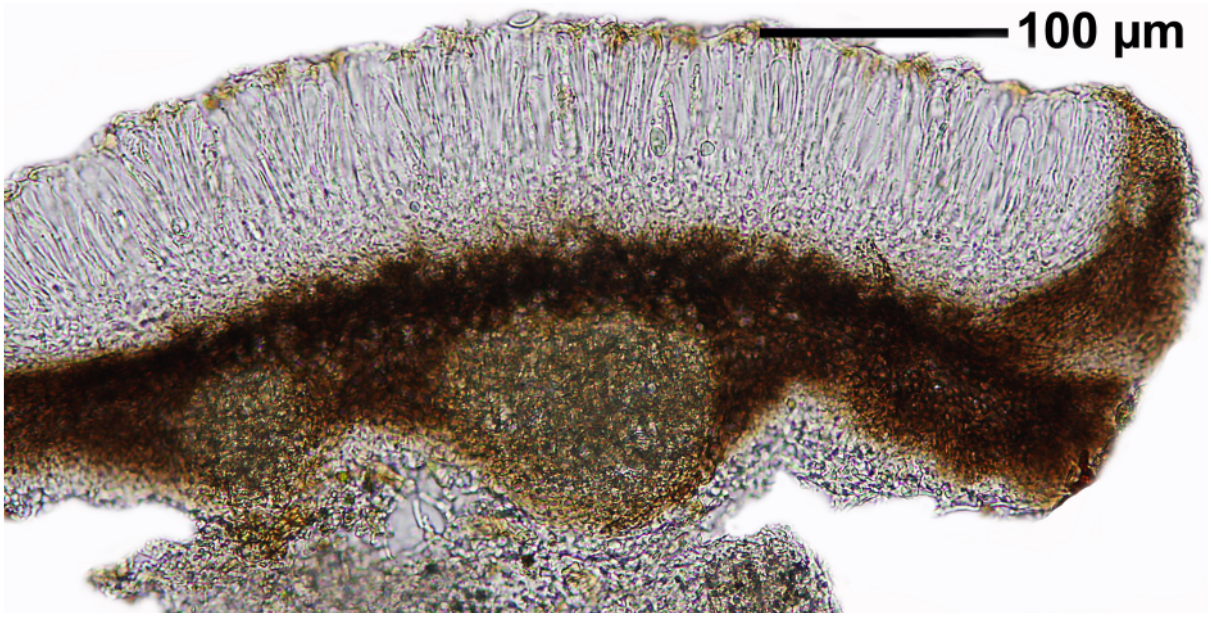


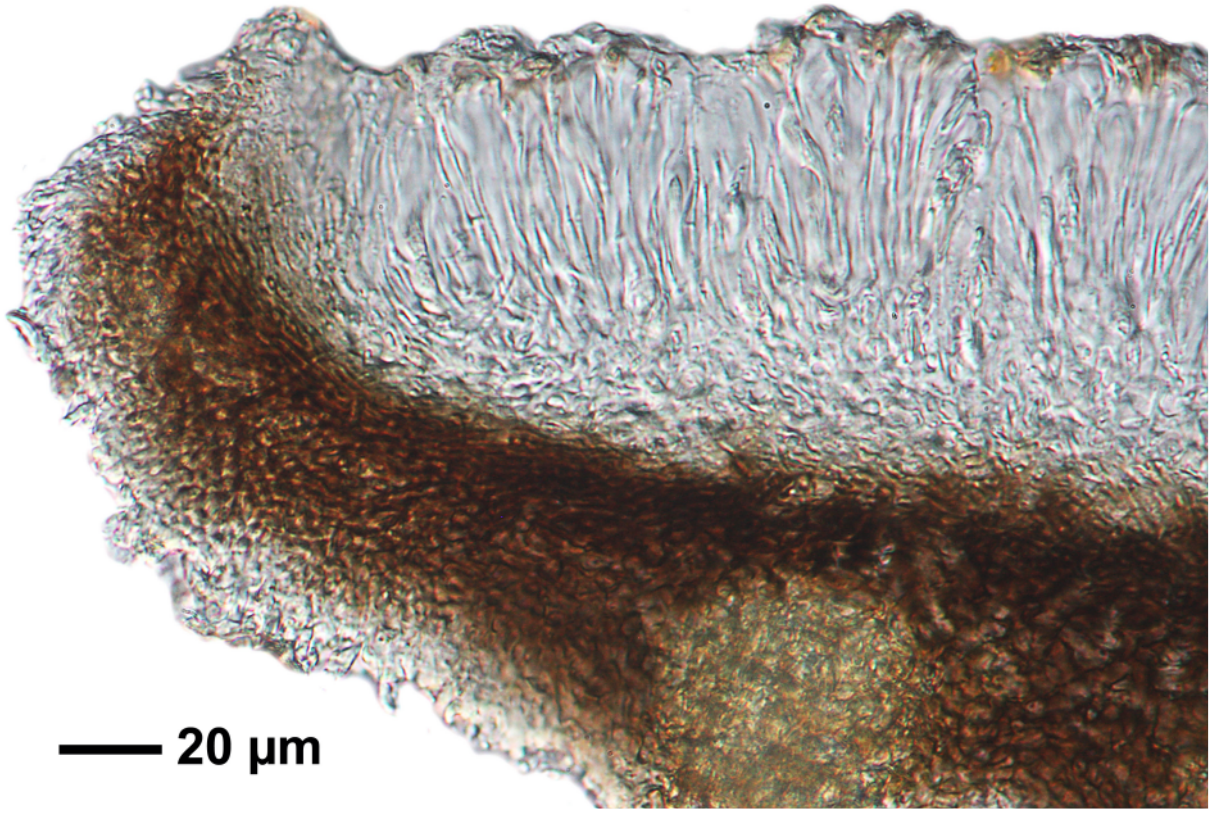


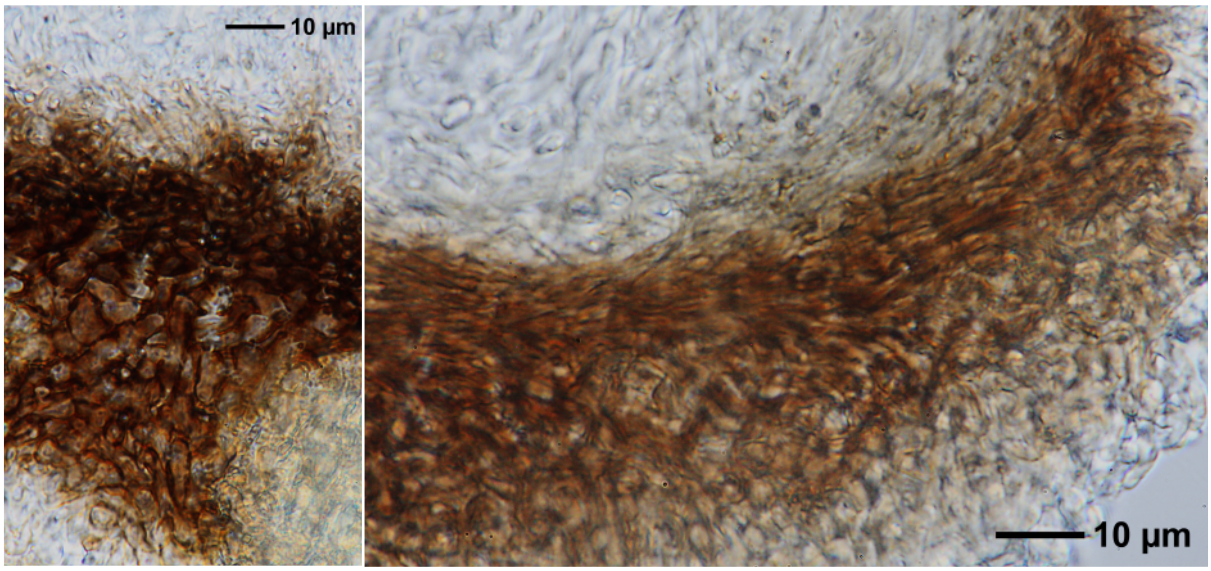




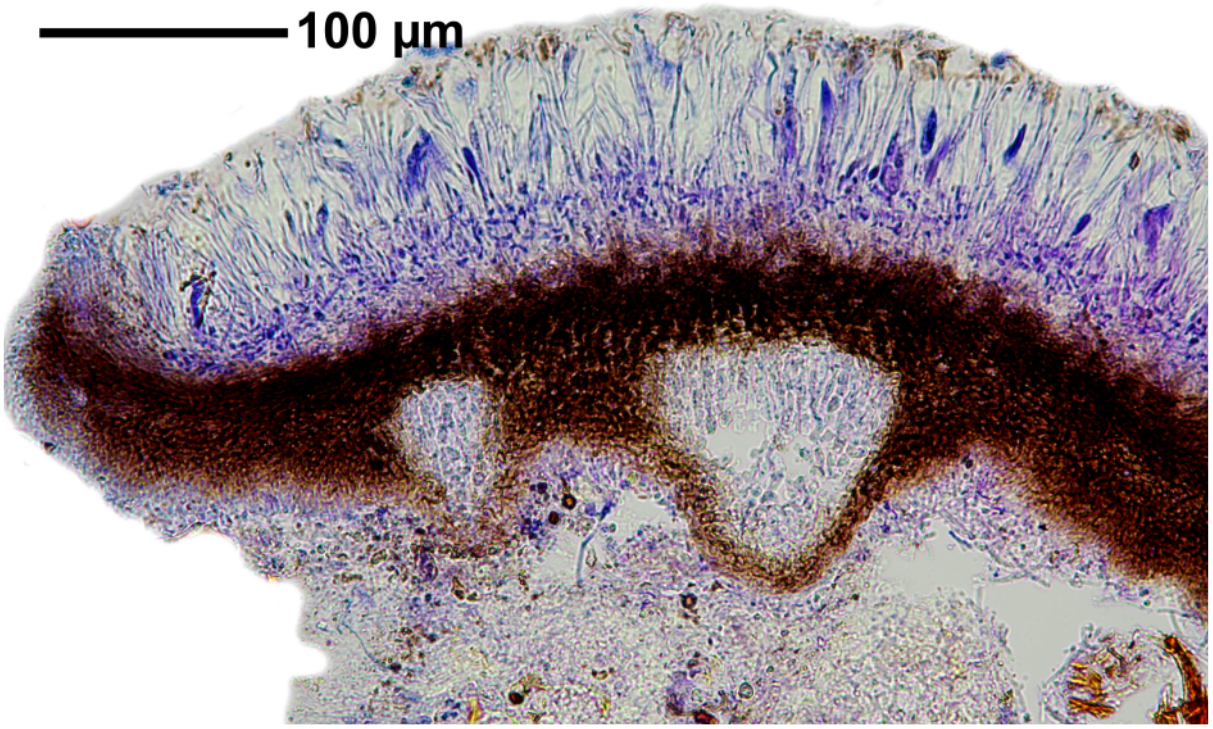
Malmidea bakeri

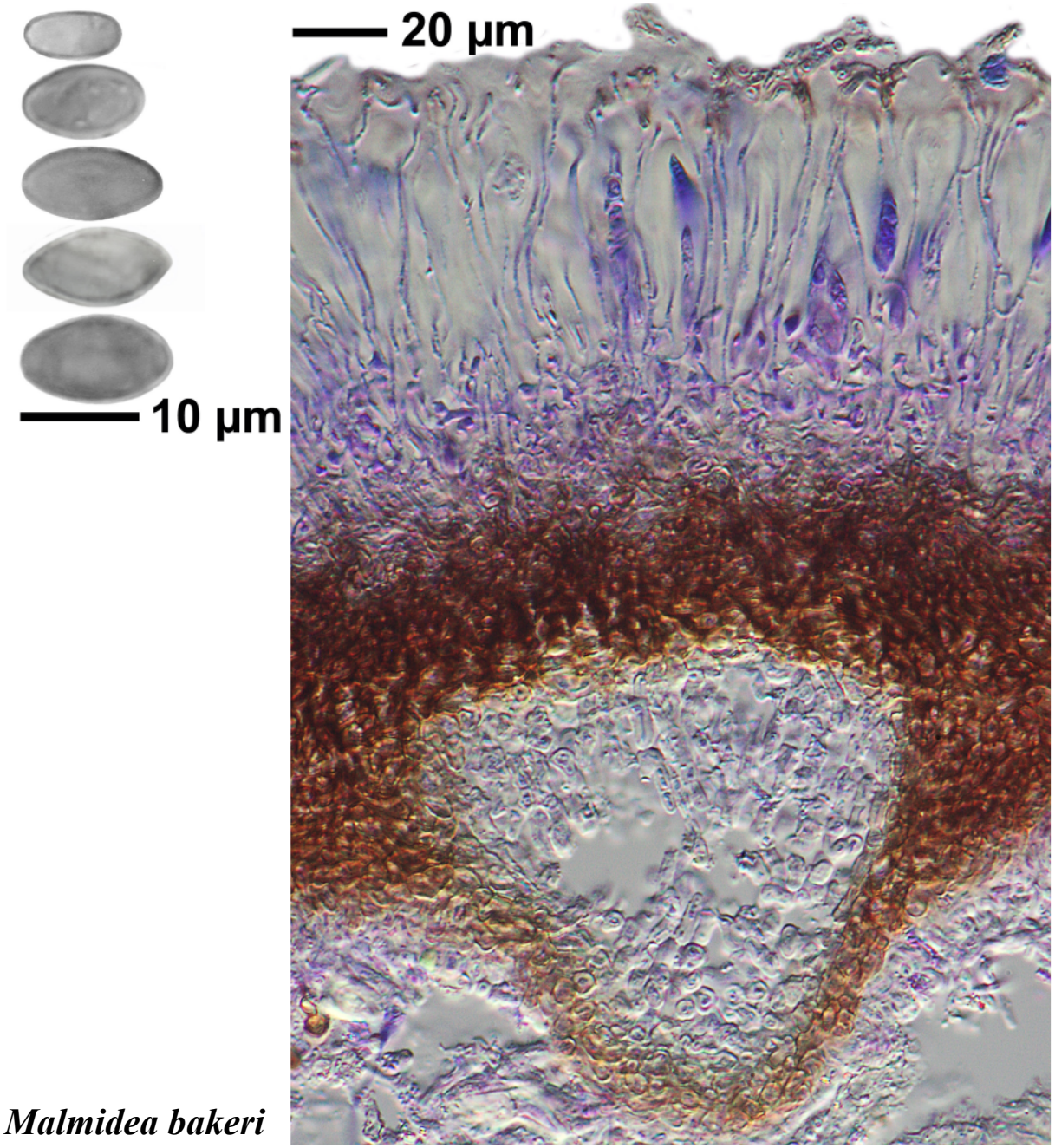




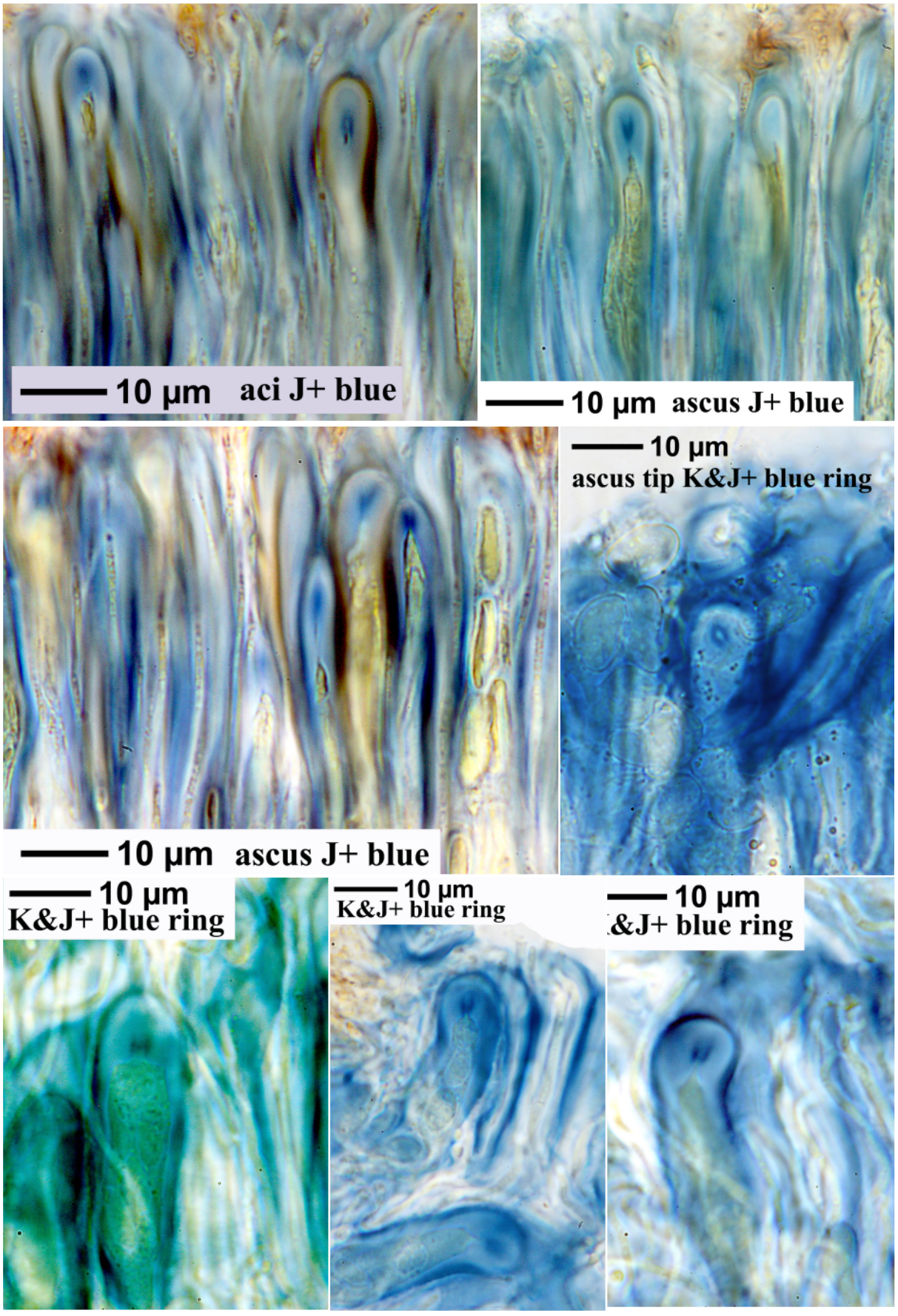


Malmidea bakeri





Malmidea bakeri



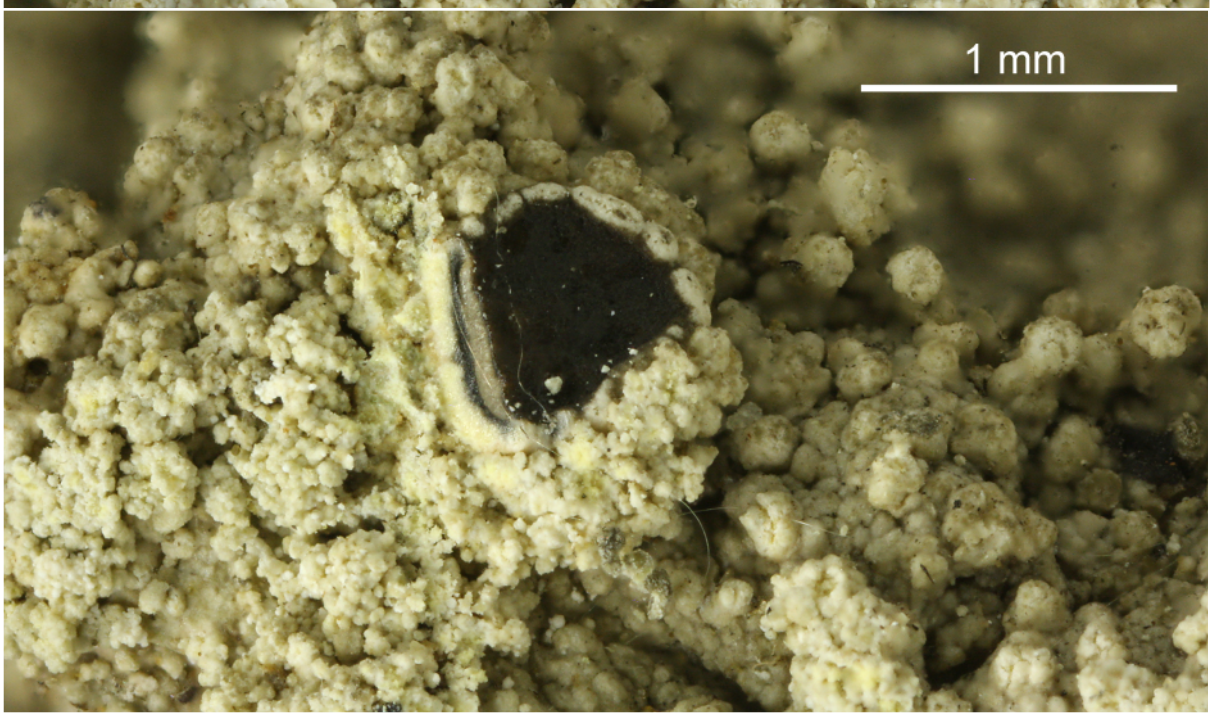
Malmidea bakeri

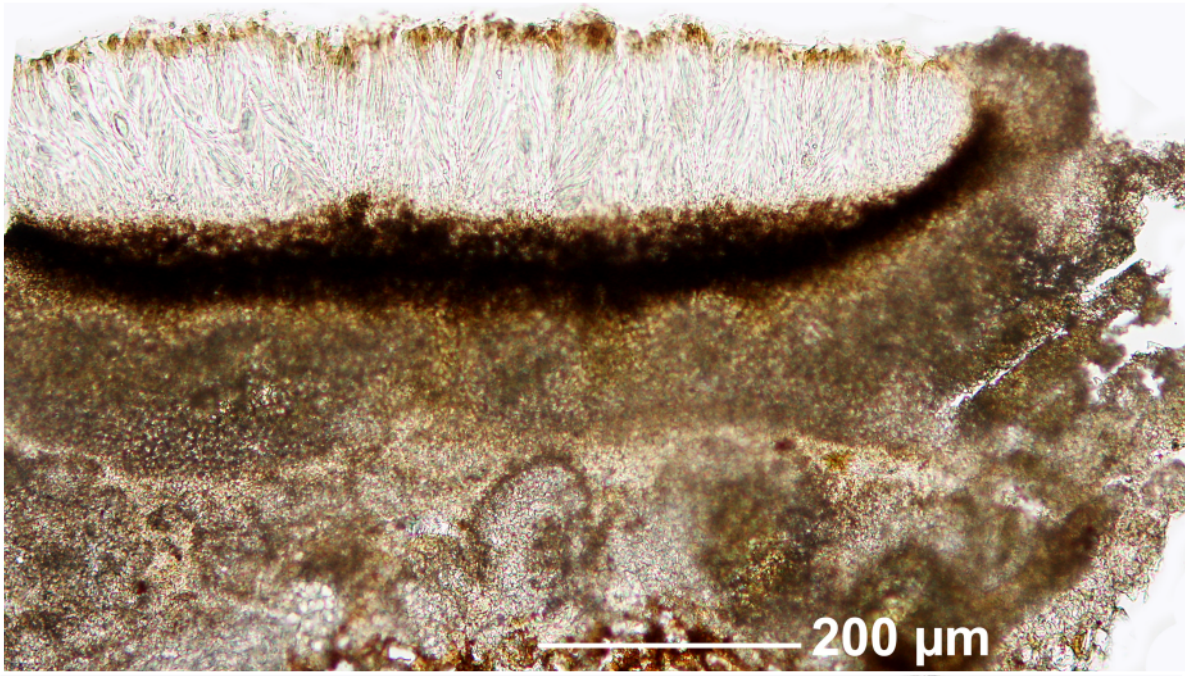
Malmidea ceylanica (Zahlbr.) Kalb, Rivas Plata & Lumbsch

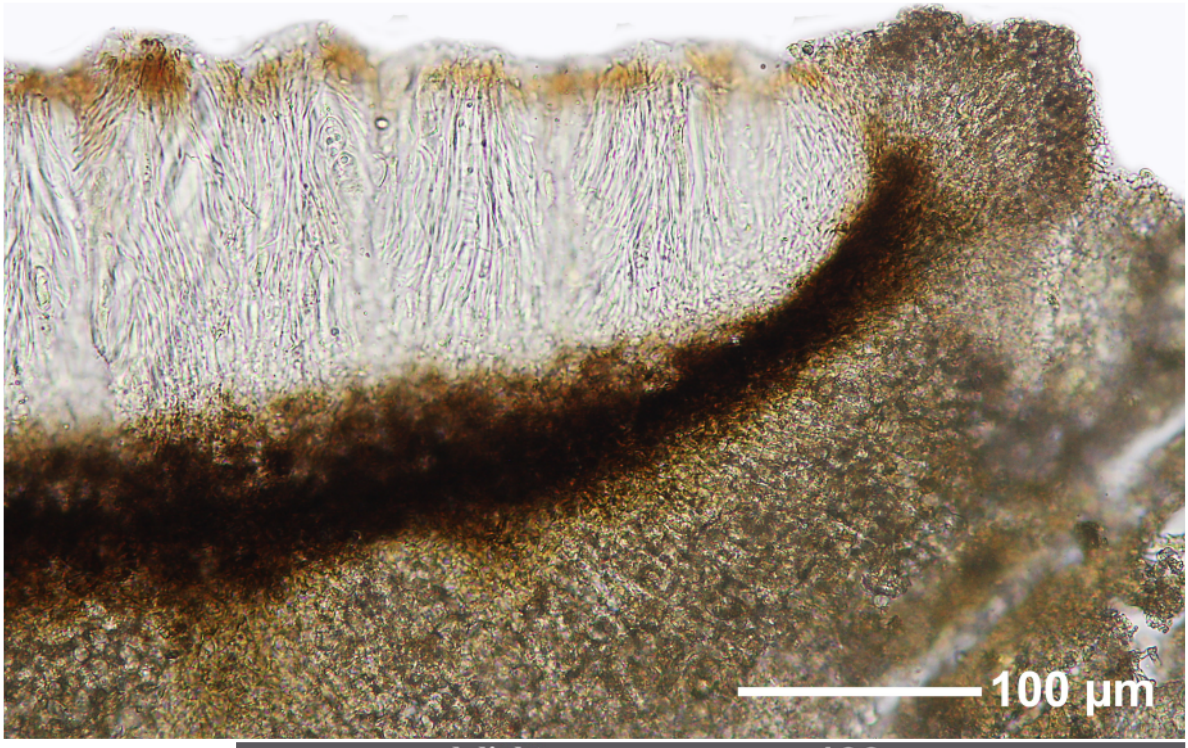
Thallus with soredia. Apothecium margin without algae, with tiny crystals (soluble in C, insoluble in K, N). Hypothecium dark brown. Epithecium brown,with K or N unchanged. Medulla under the hypothecium and in the margins of the apothecia yellowish, with K+ intense yellow. Ascospores hyaline, 1-locular, 8/ascus, 15-21 x 7-12 µm. Chemnistry: atranorin, several unknowns (xantholepinones?).Lit.: Kalb et al. (2011).

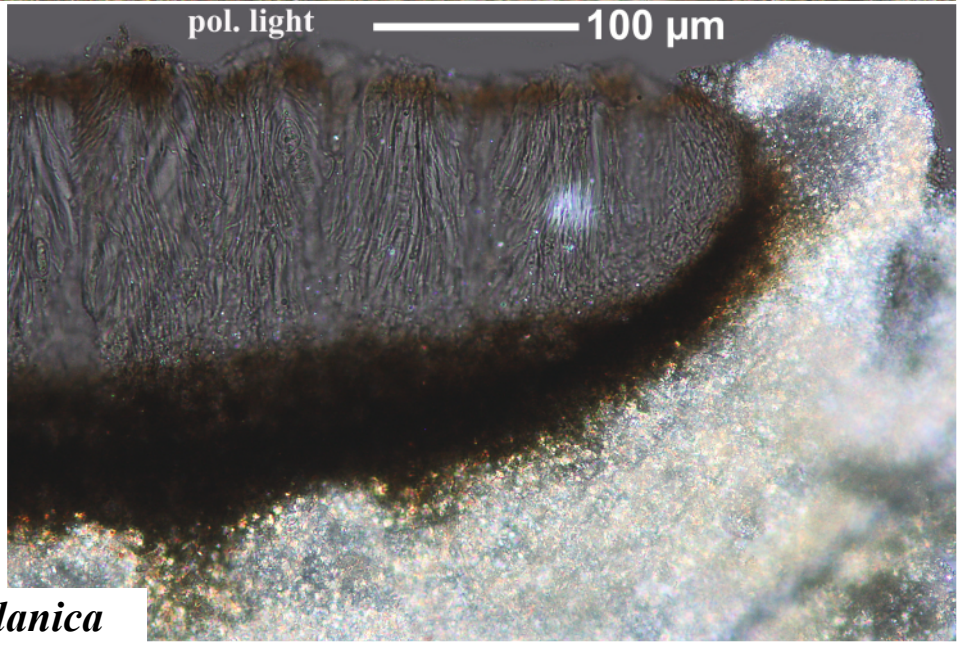
[9559], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen. 20°06.275'N, 99°37.524'E, 700 m. Leg. Schumm 31.03.2002, det. Aptroot 2009.



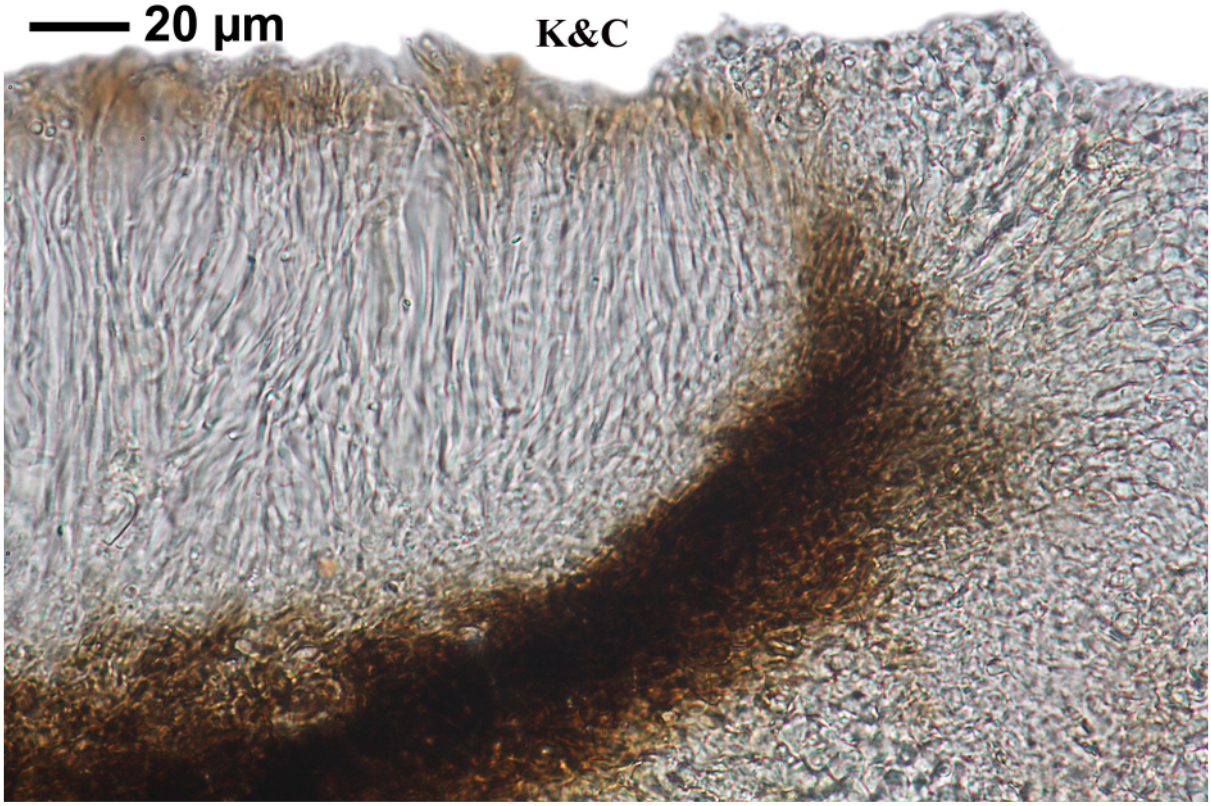


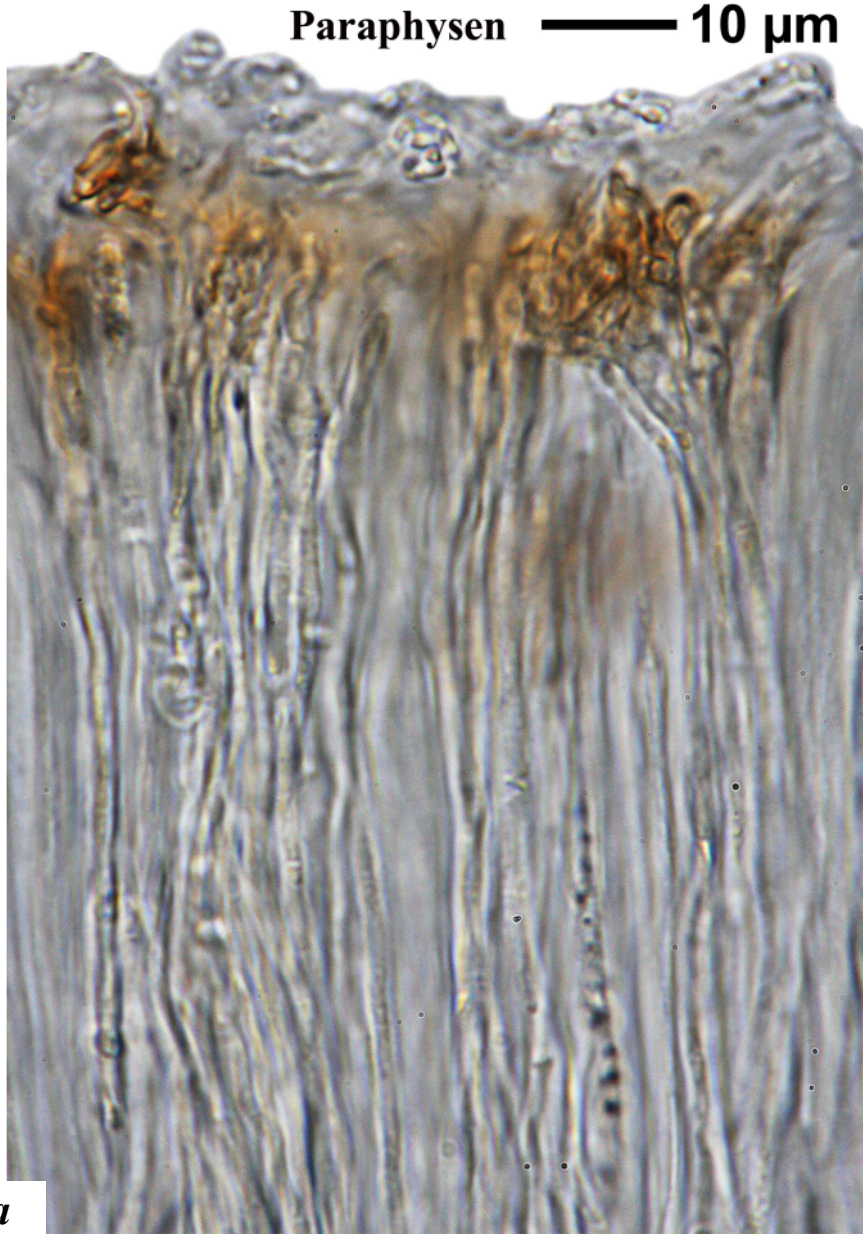




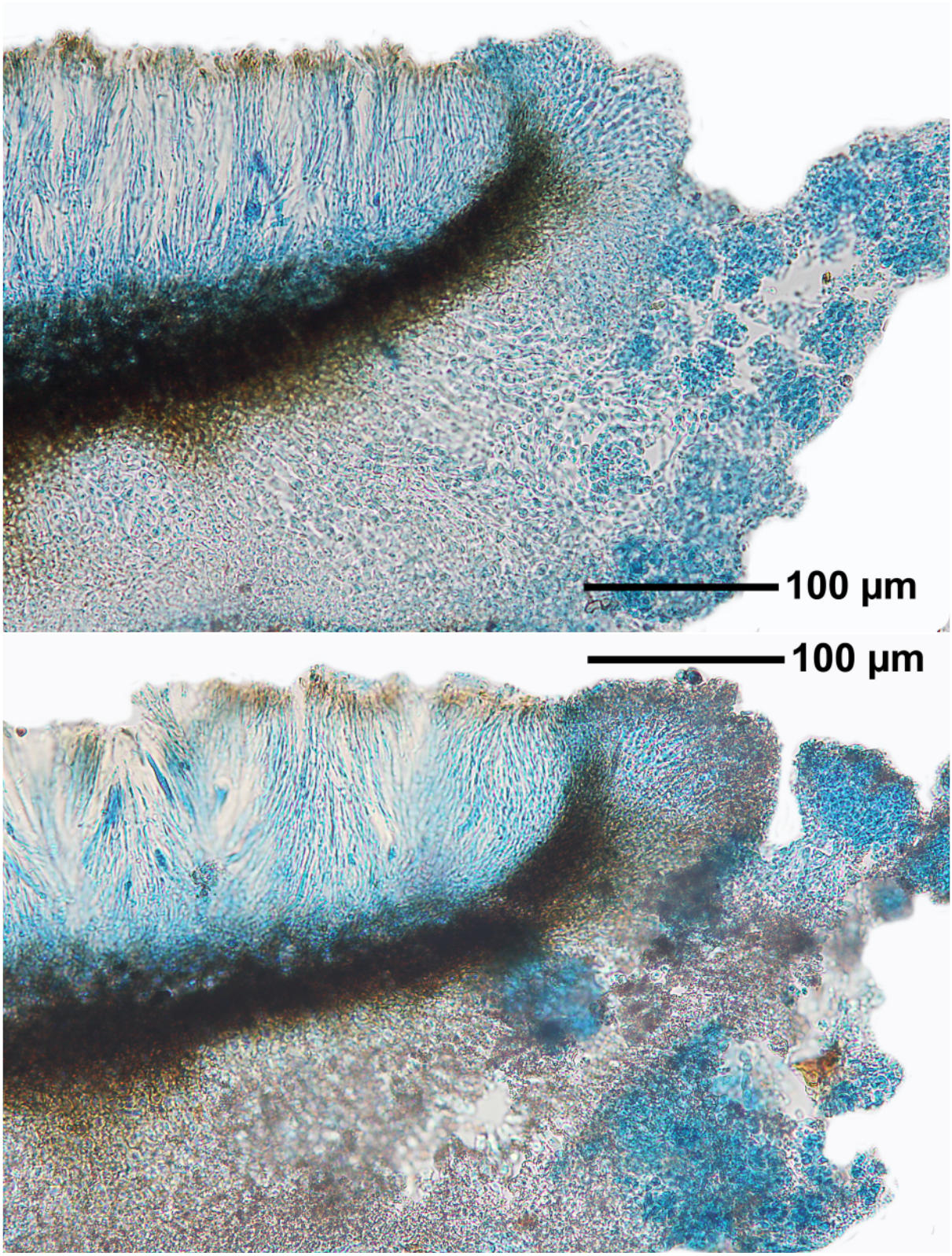


Malmidea ceylanica

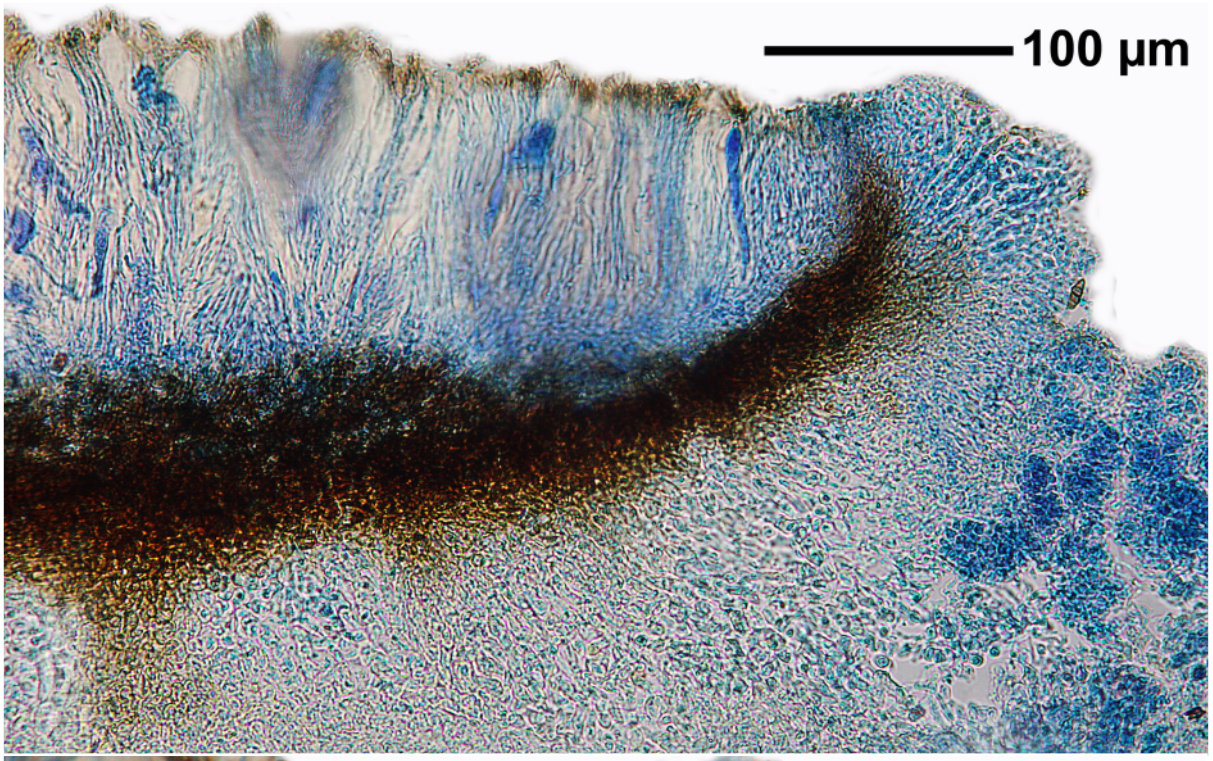


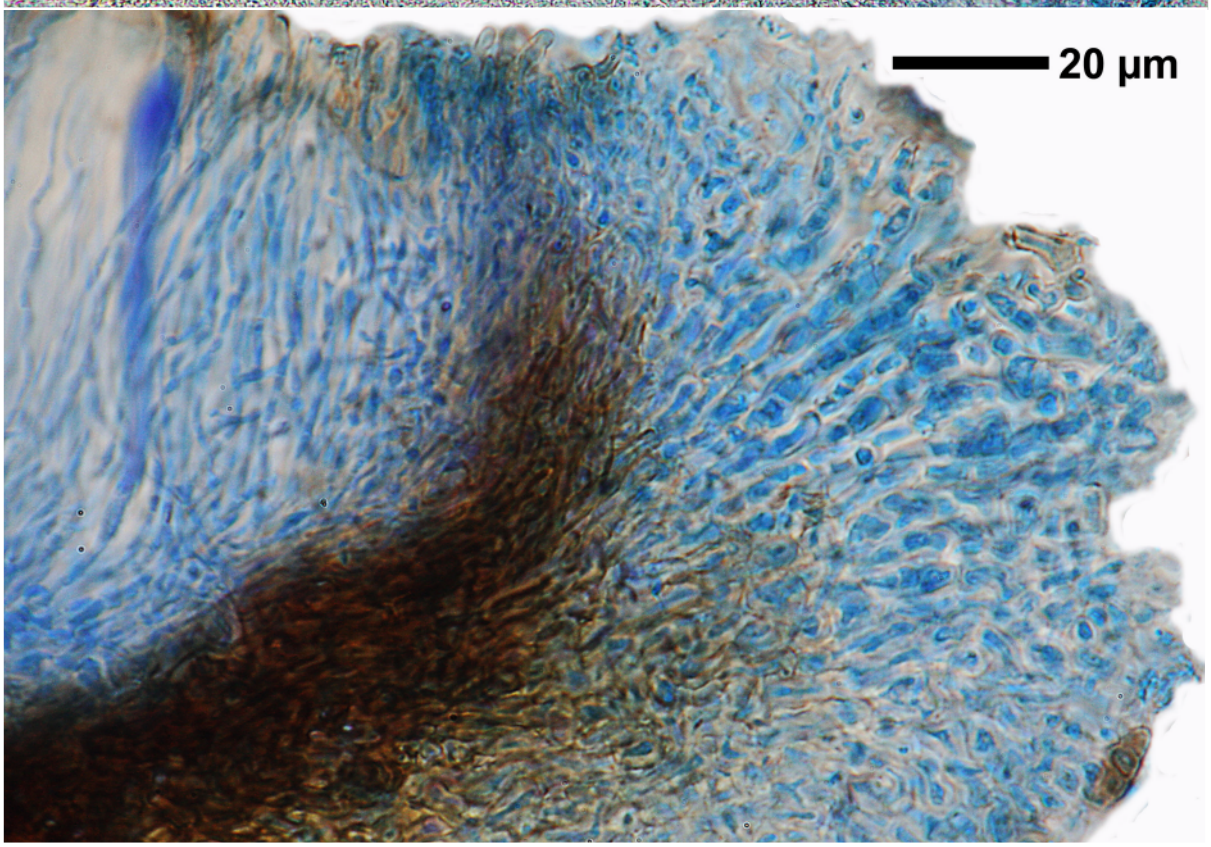


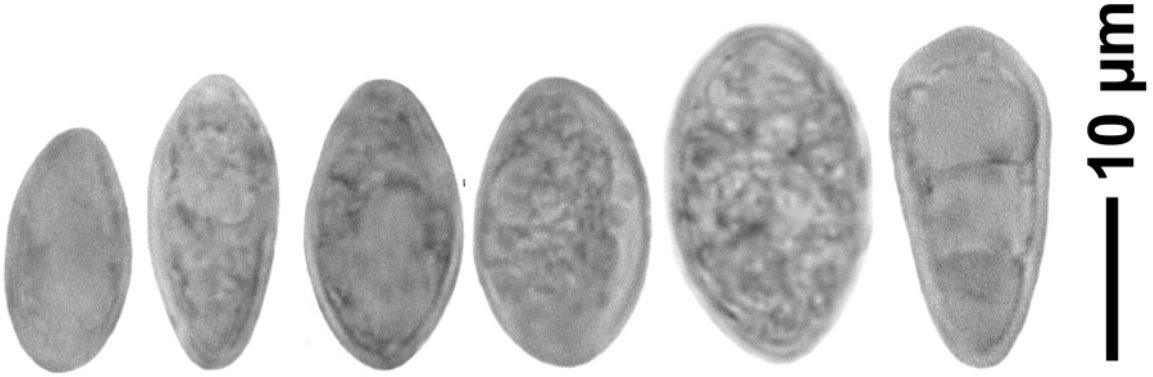
Malmidea ceylanica



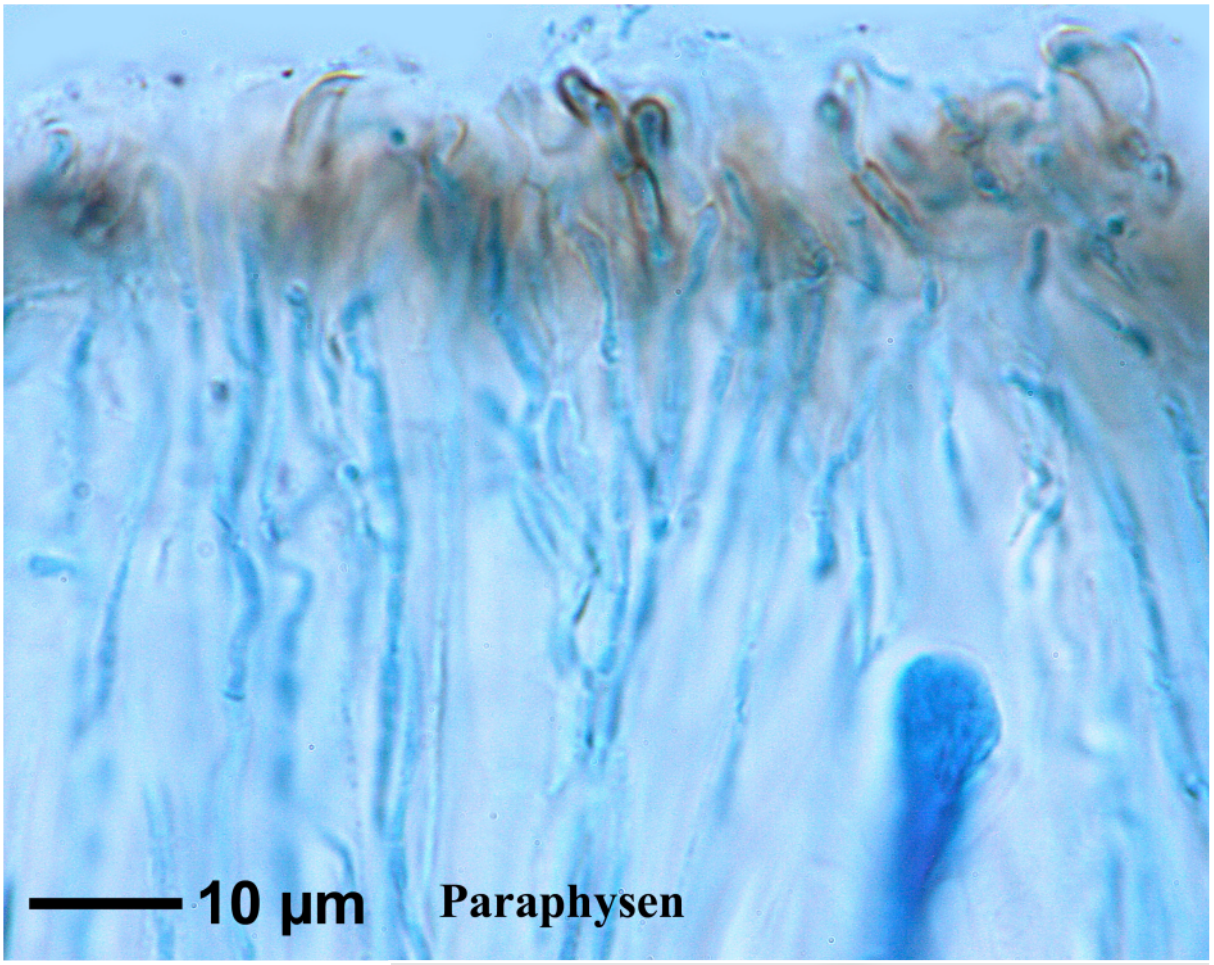
Malmidea ceylanica

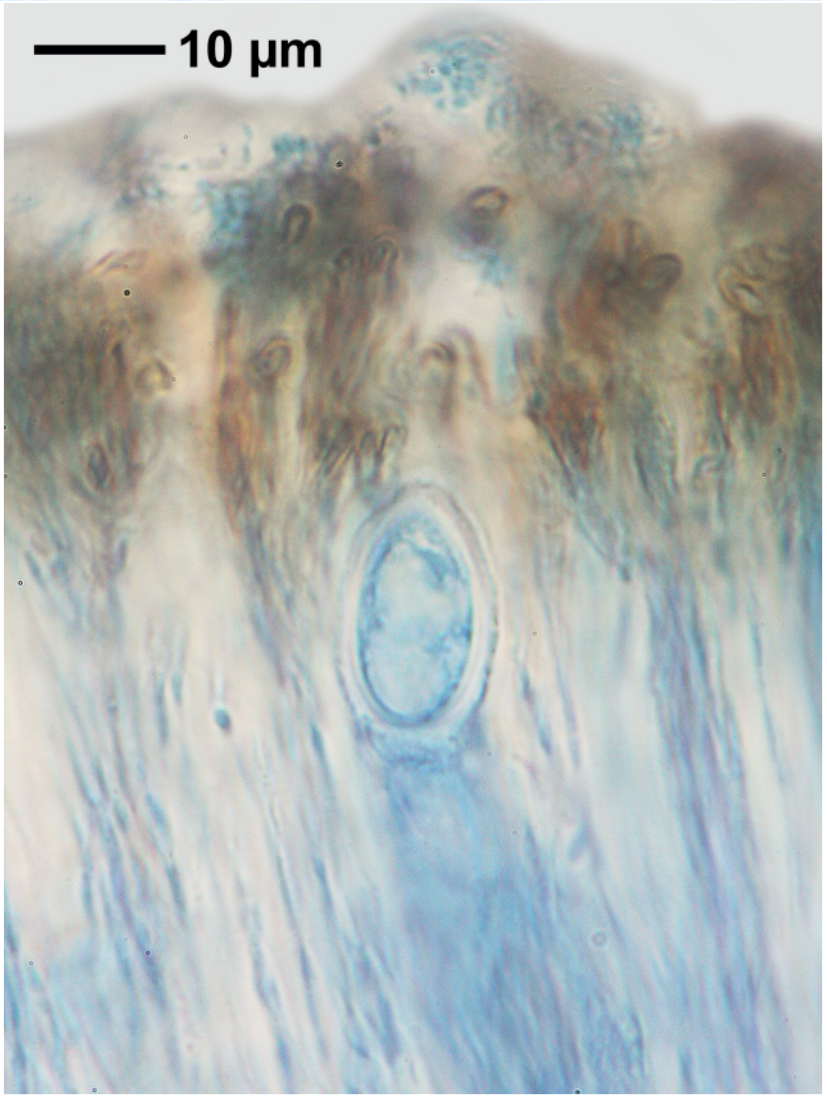






Malmidea ceylanica





Malmidea ceylanica

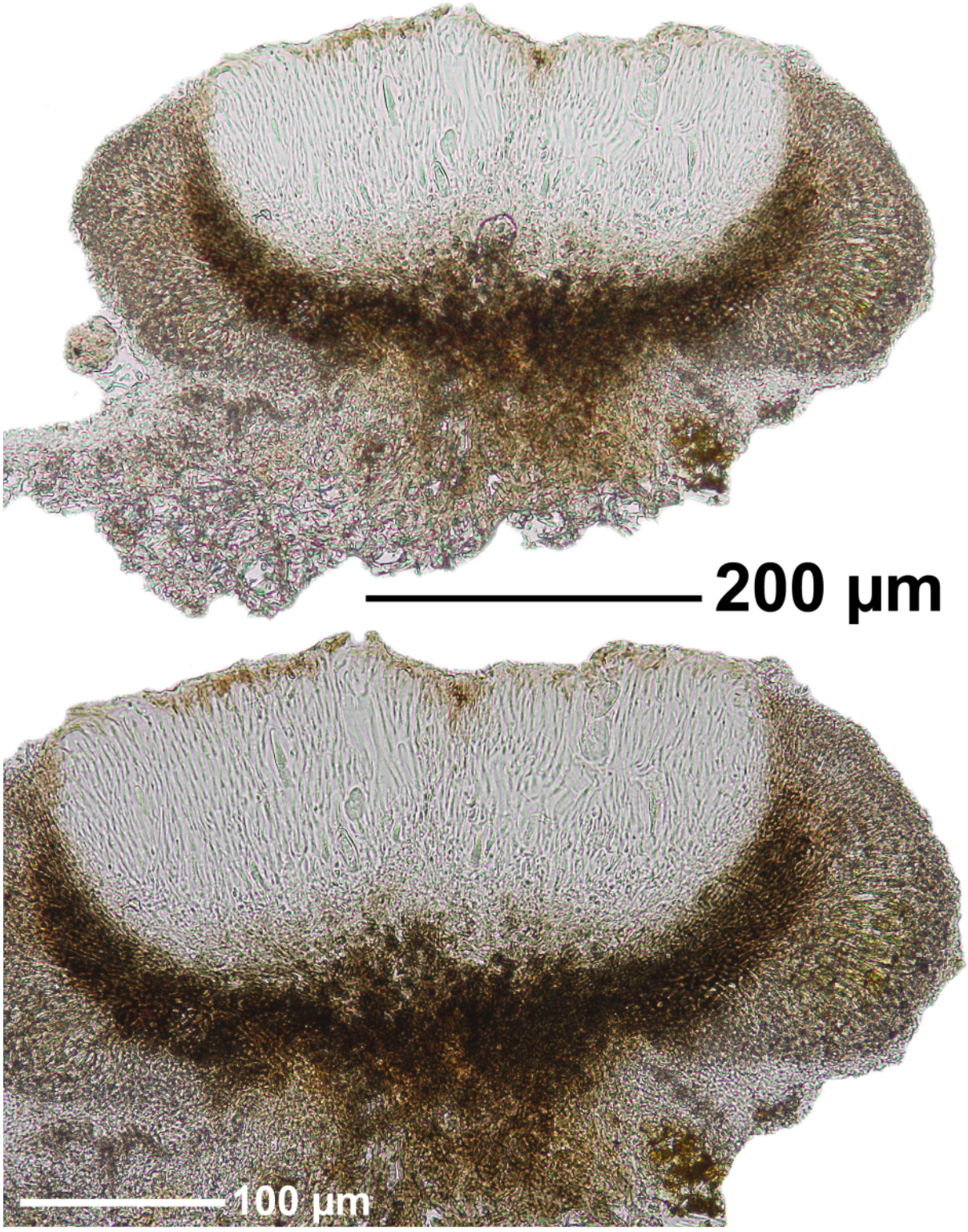
Malmidea chrysostigma (Vain.) Kalb, Rivas Plata & Lumbsch

Thallus warty, without soredia or isida. Apothecium margins without algae, cells radial. Hymenium not inspersed, appx. 110 µm high. Hypothecium dark brown. Medulla golden orange. Ascospores hyaline, 1-locular, 8/asus, 25-26 x 13-14 µm. Chemistry: atranorin (min), emodin (maj), emodin bisanthron (min), several unknowns. Lit.: Bibl. Lichenolog. Vol. 106.

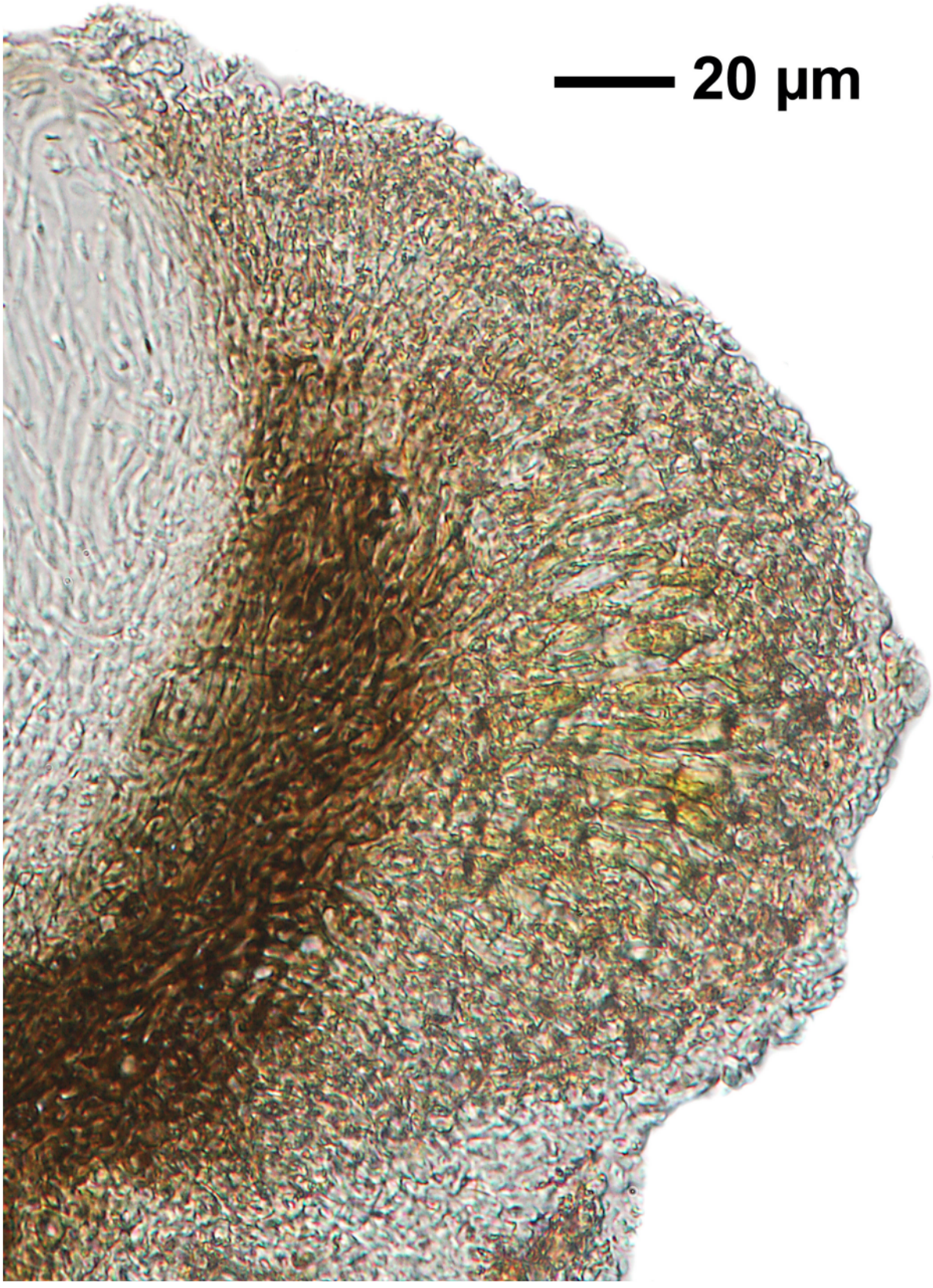
[7920], Philippinen, Leyte, Prov. Leyte, Lake Kasudsuran (11°01.539' N, 124°44.931' E, 740 m) bei Barangay Liberty (Ormoc-City). Leg. Schumm 23.08.2000, det. K.Kalb 2011.



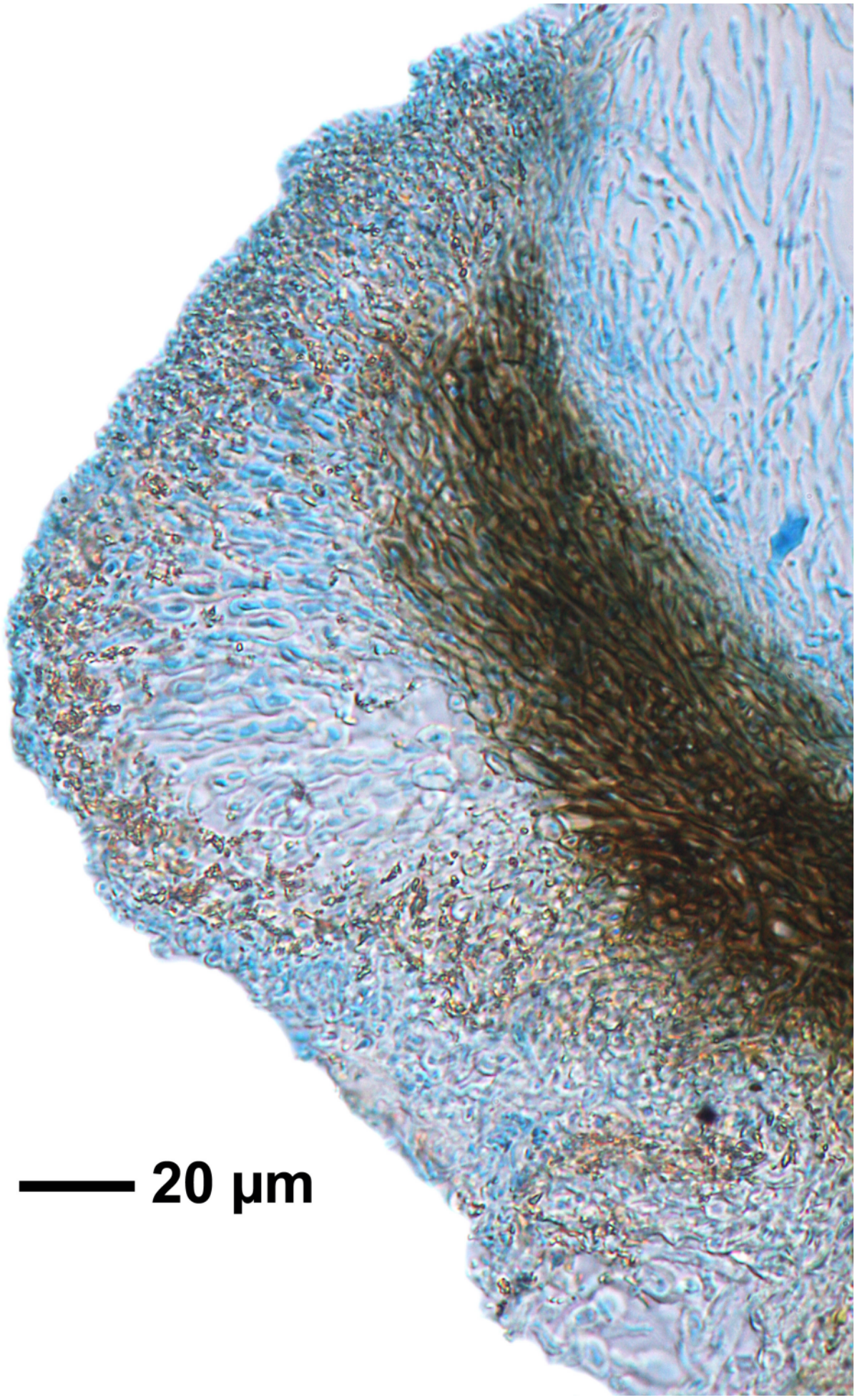




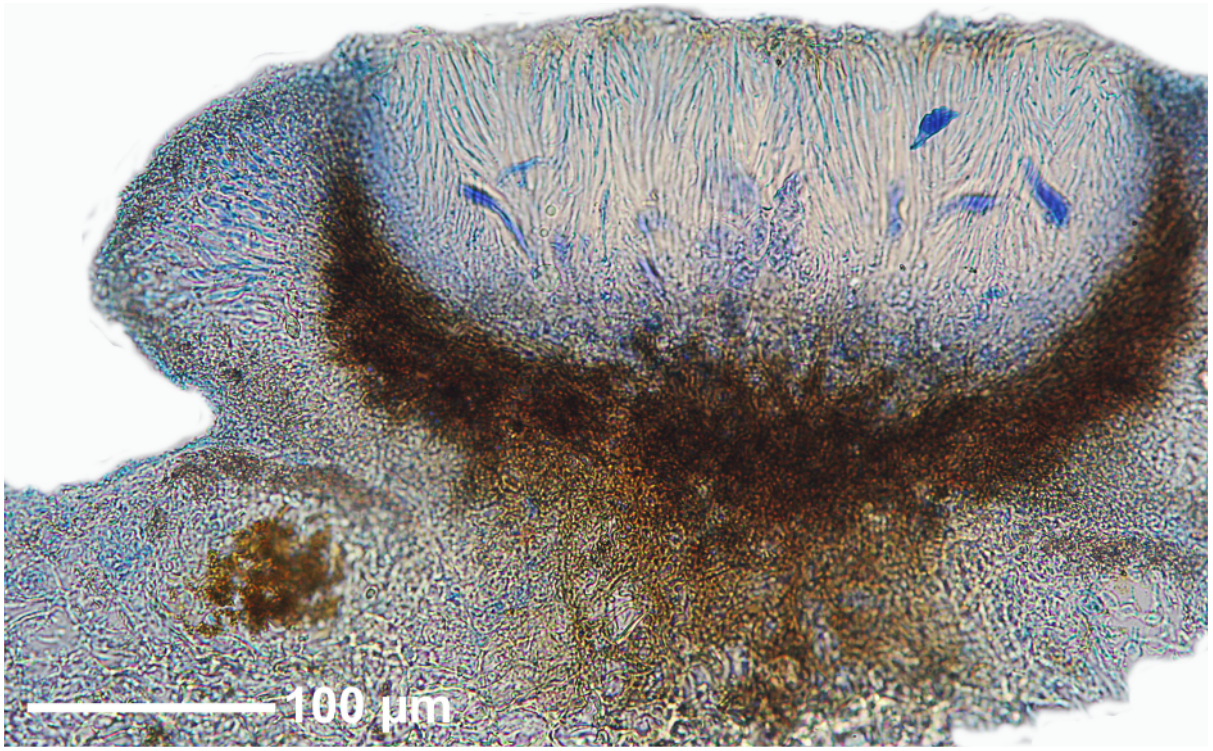
Malmidea chrysostigma

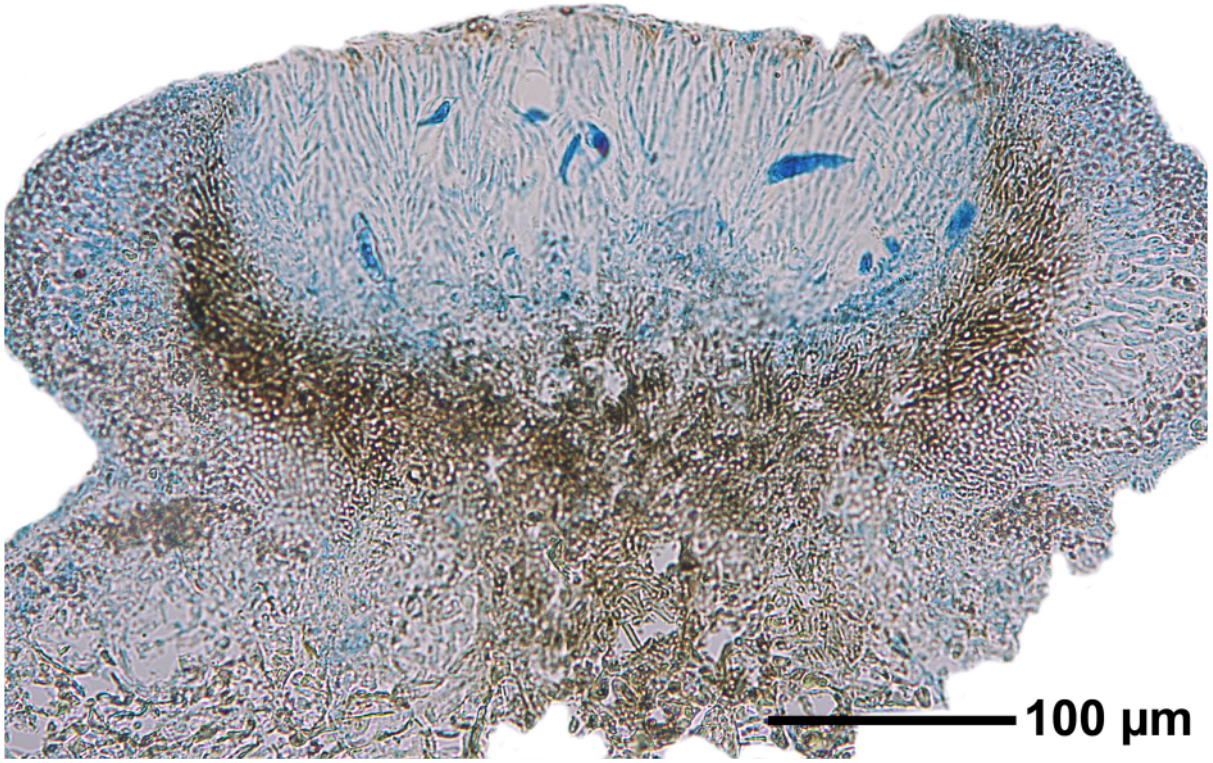


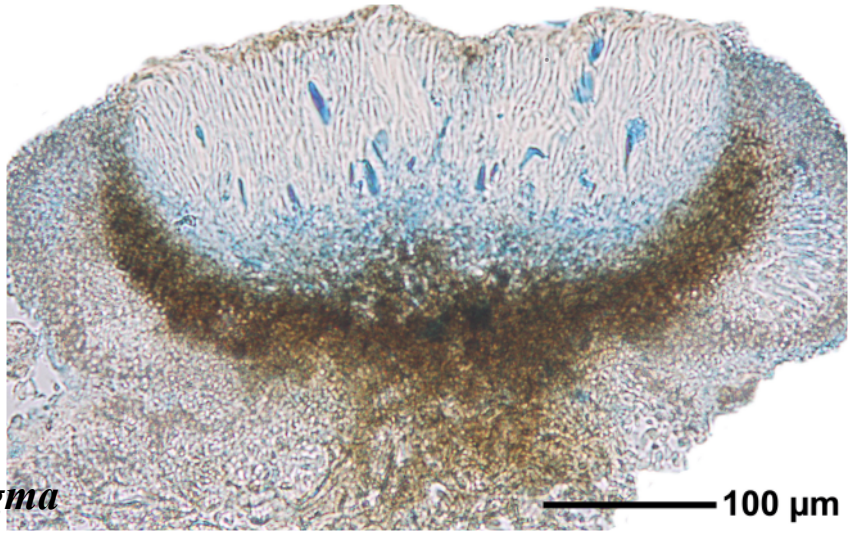
Malmidea chrysostigma



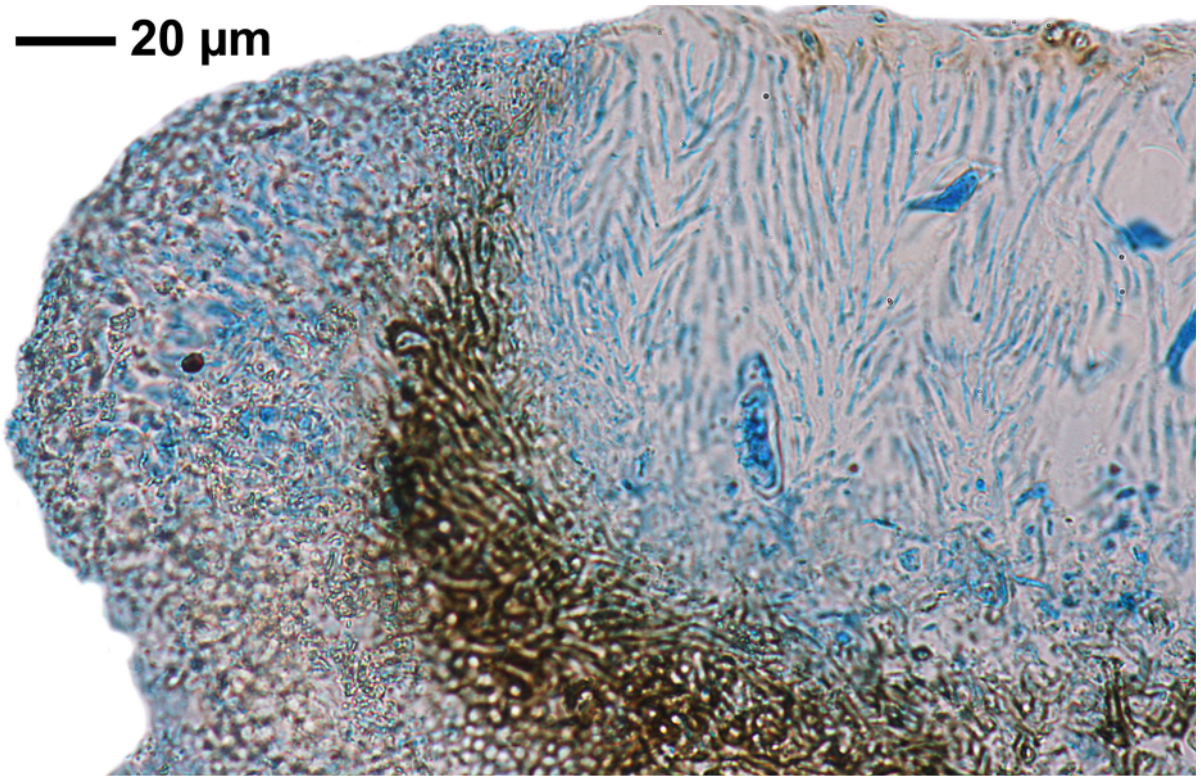
Malmidea chrysostigma

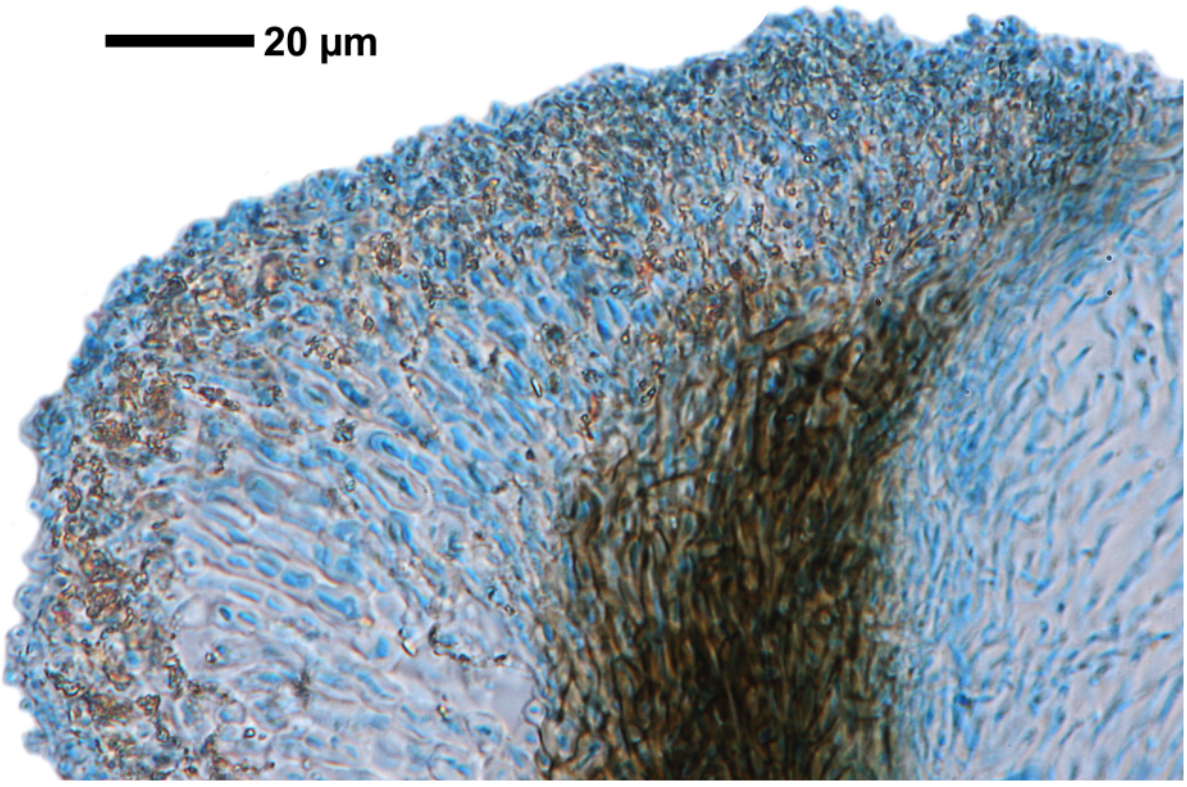


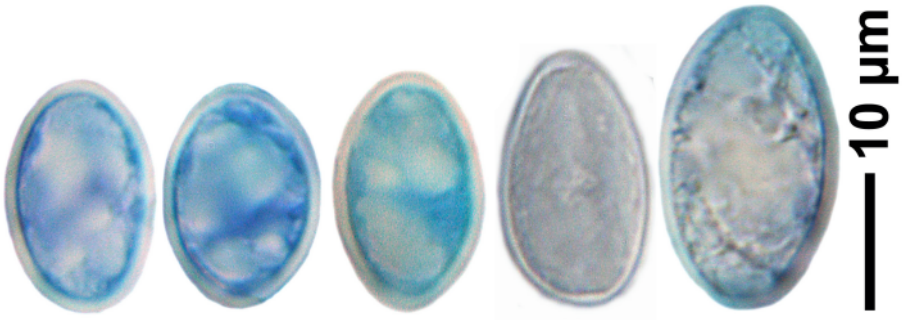




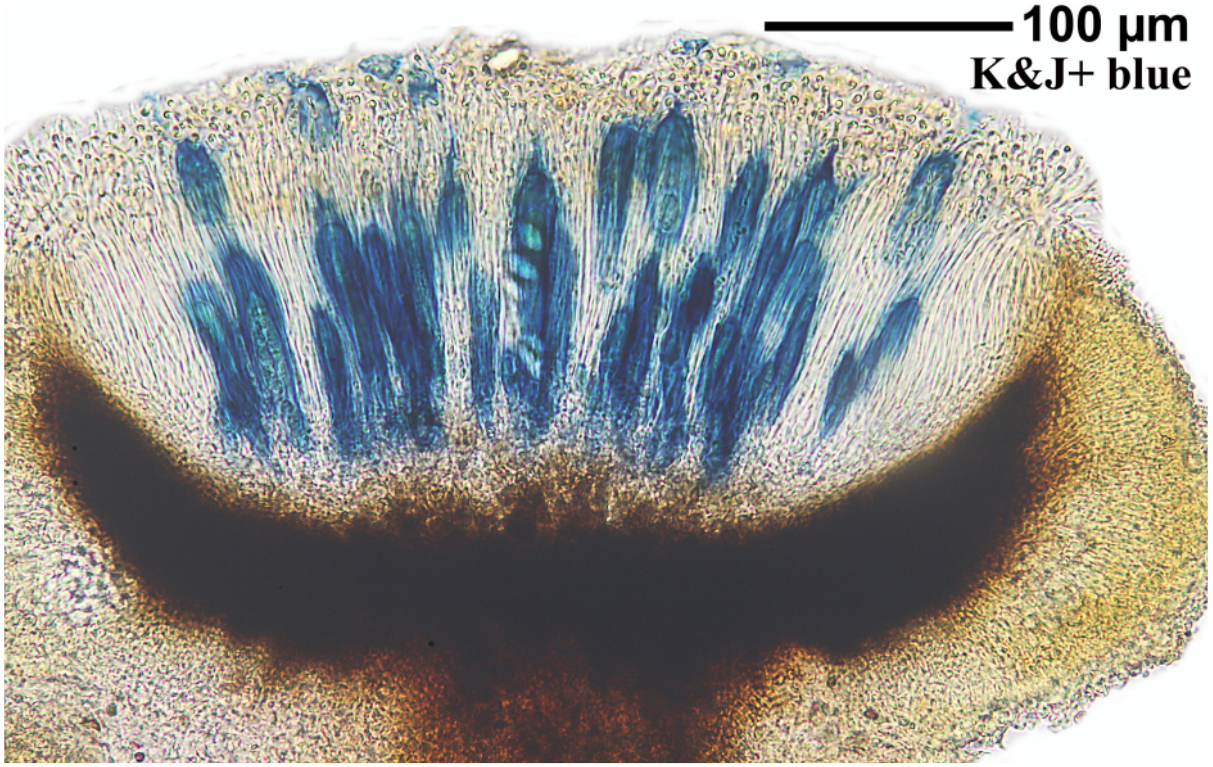
Malmidea chrysostigma

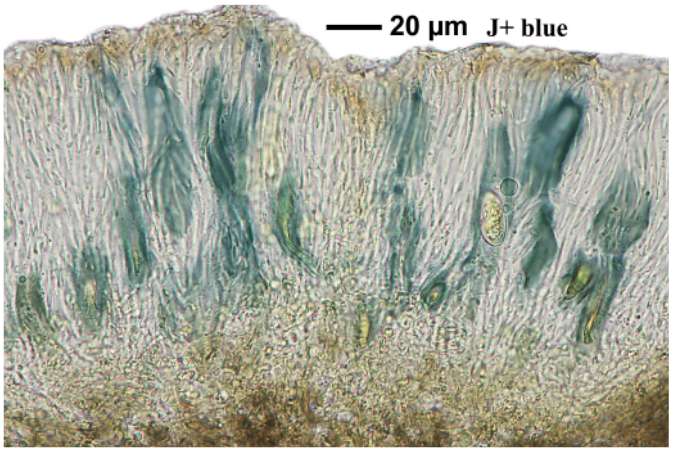


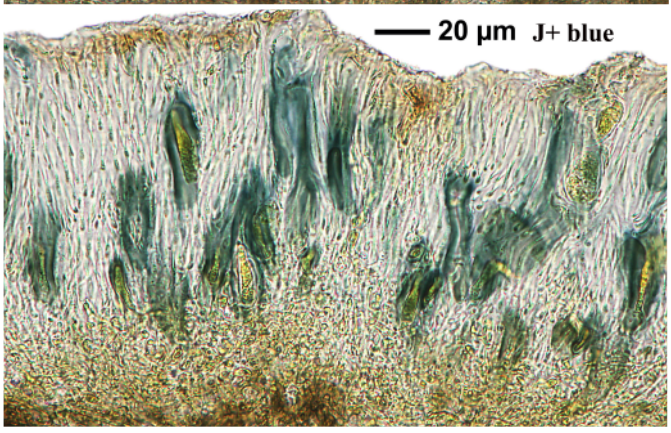


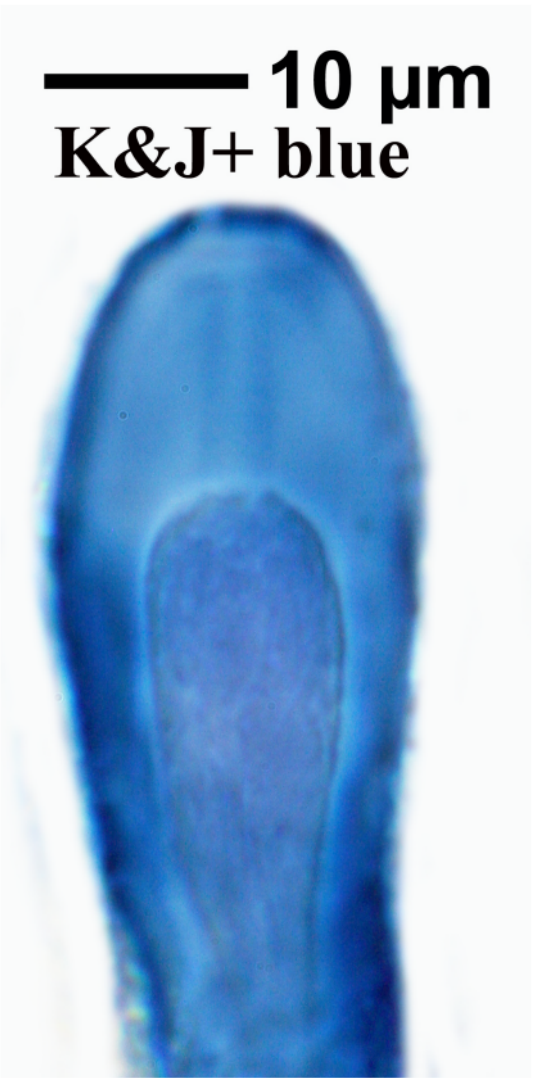


Malmidea chrysostigma







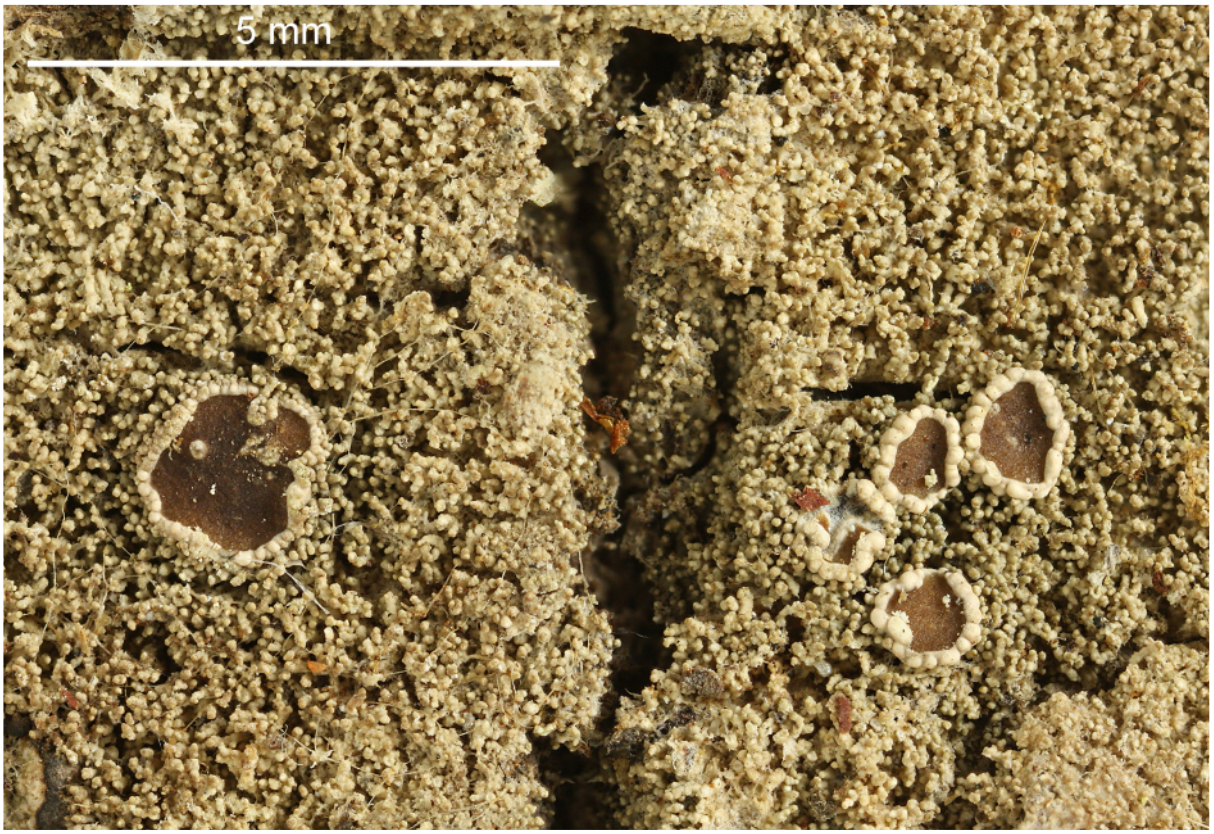


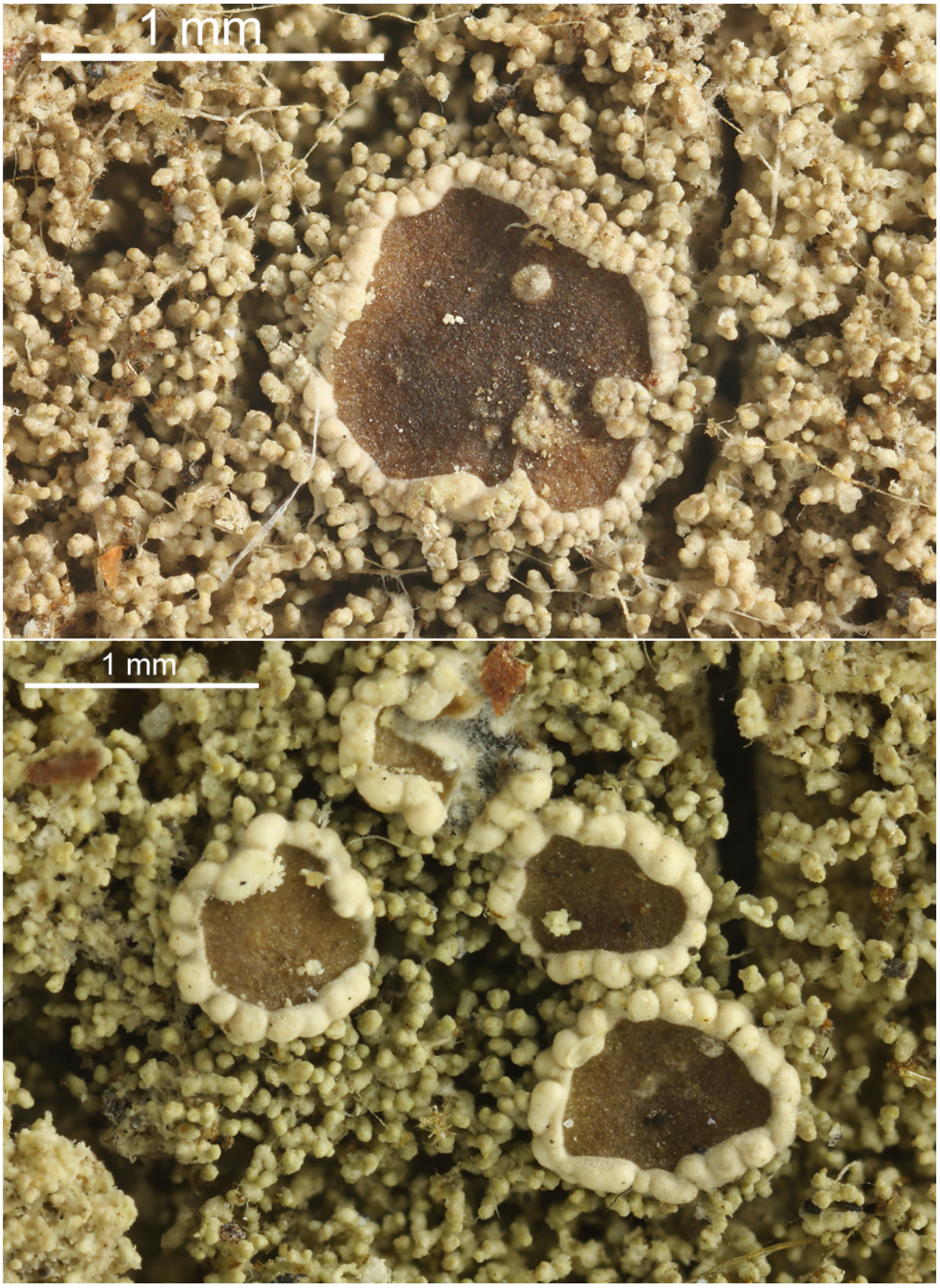
Malmidea chrysostigma

Malmidea corallophora Aptroot & Schumm sp. nov.
Holotypus: Herbarium F. Schumm Nr. 7448. Thallus corticolus, isidiosus. Hypothecium atrofuscum. Medulla thalli et isidiorum alba. Sporae 30 x 15 µm.

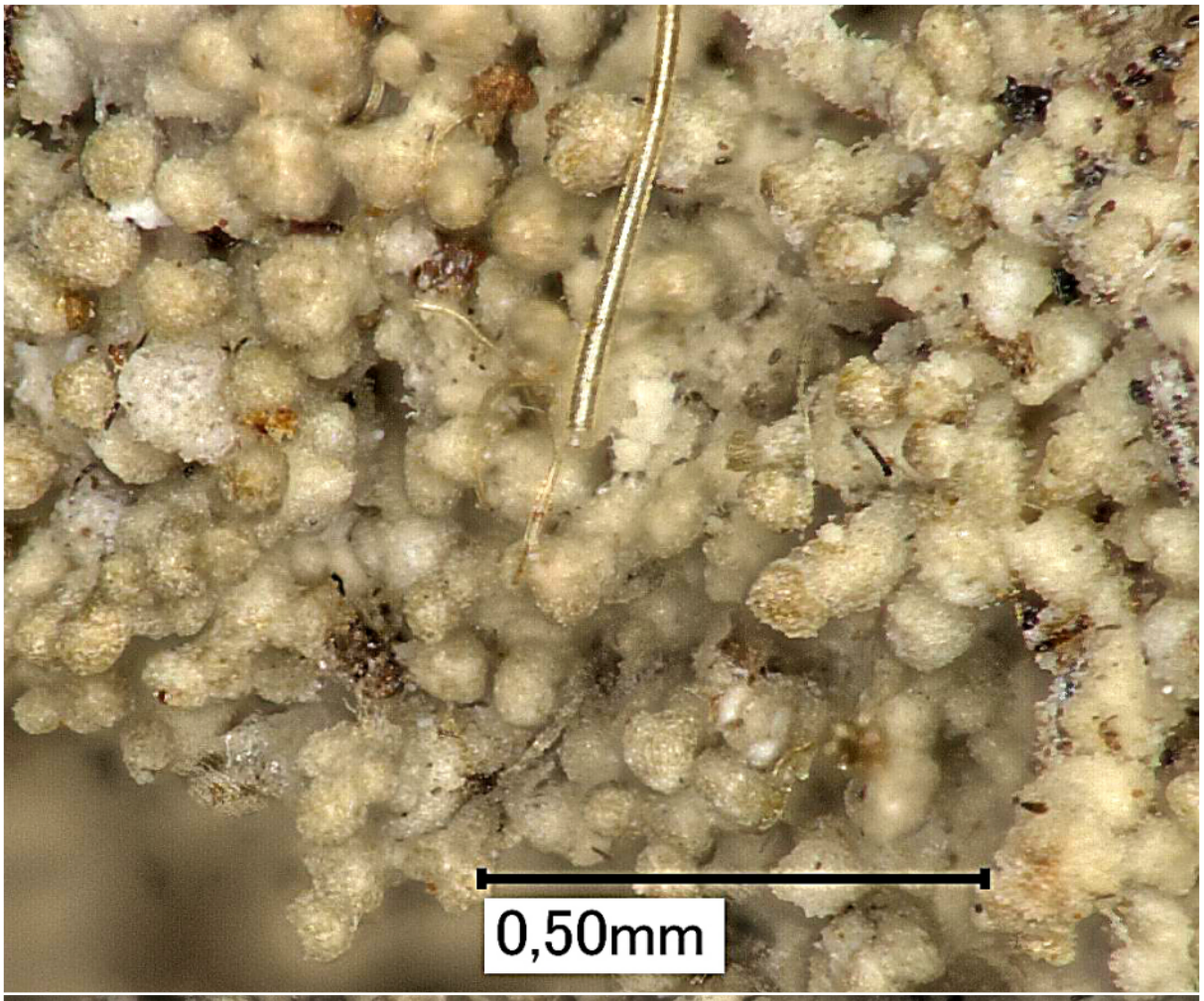
Thallus greenish grey, with cylindrical to coralloid isidia, medulla white. Epithecium pale to brownish, c. 5 µm. Hymenium not inspersed, c. 125 µm high. Paraphyses c. 1 µm, branched and with some anastomoses in the upper part. Hypothecium brown-black, 38-125 µm, with nests of spongiose medulla full of fine crystals (K+ yellow). Ascospores simple, hyalin, halonate, 8/asus, c. 30 x 15 µm. Chemistry of the Thallus: Nil (TLC). The species is characterized by the coralloid thin isidia and the white medulla.

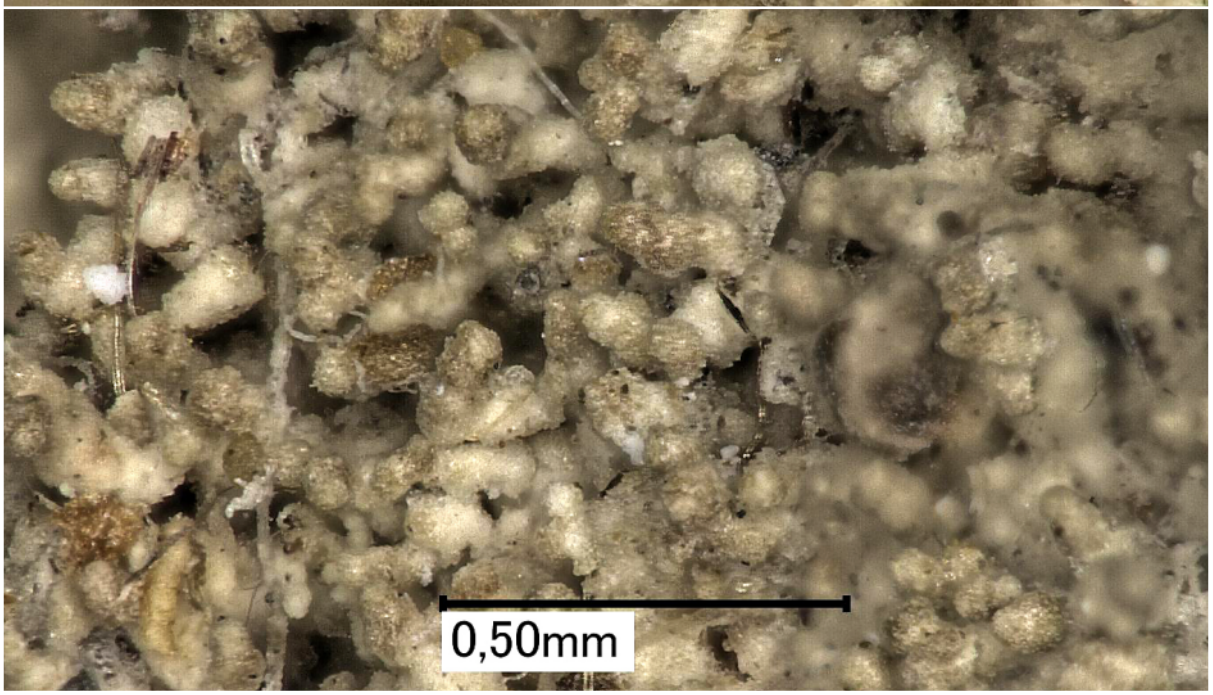
[7448], Philippines, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail von Valencia Barangay Lunga (N 9°16.676, E 123°13.839) bis zum Camp Vendiola (N 09°16.281, E 123°11.410), zwischen 530-1100 m, bei 1050 m. Leg. Schumm 09.08.2000.





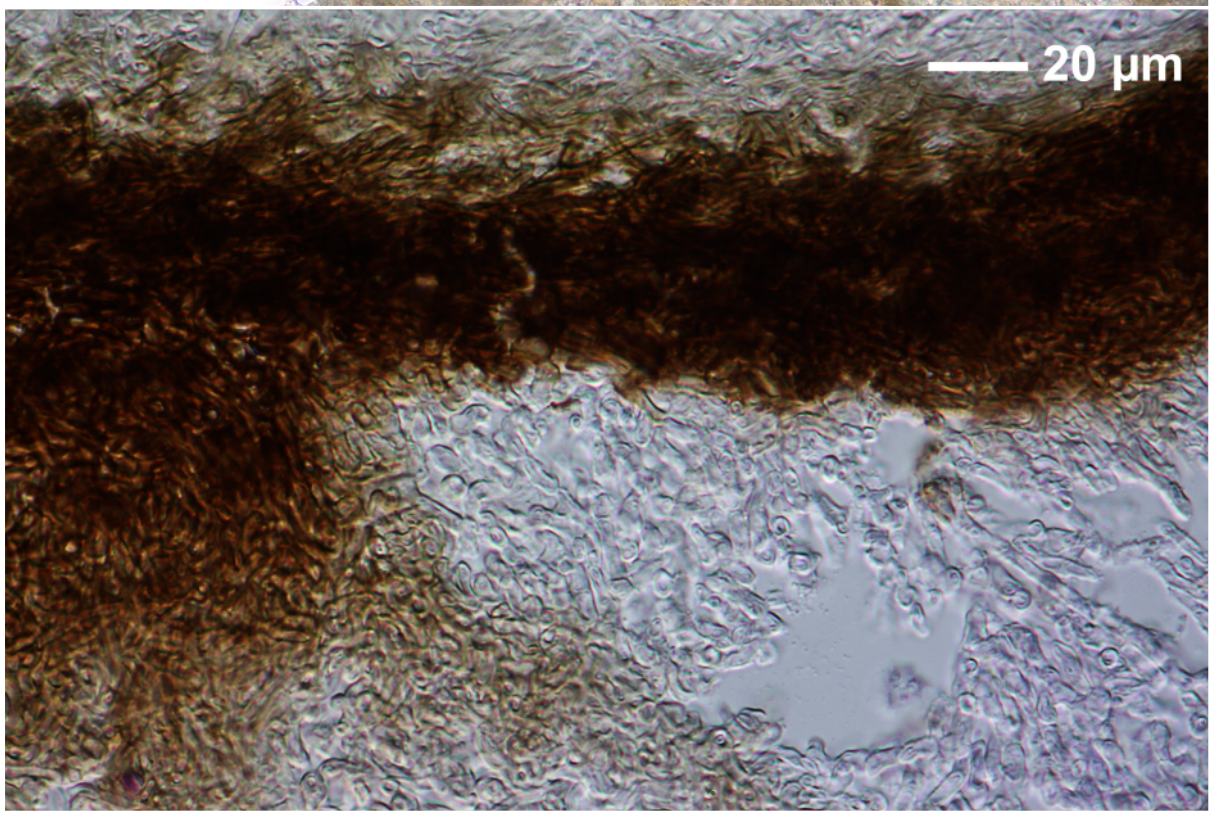
Malmidea corallophora

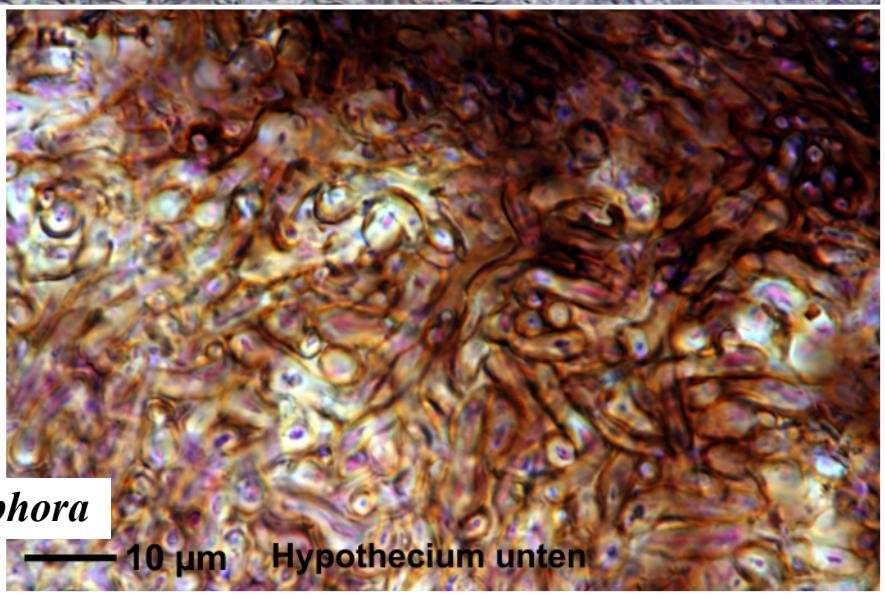




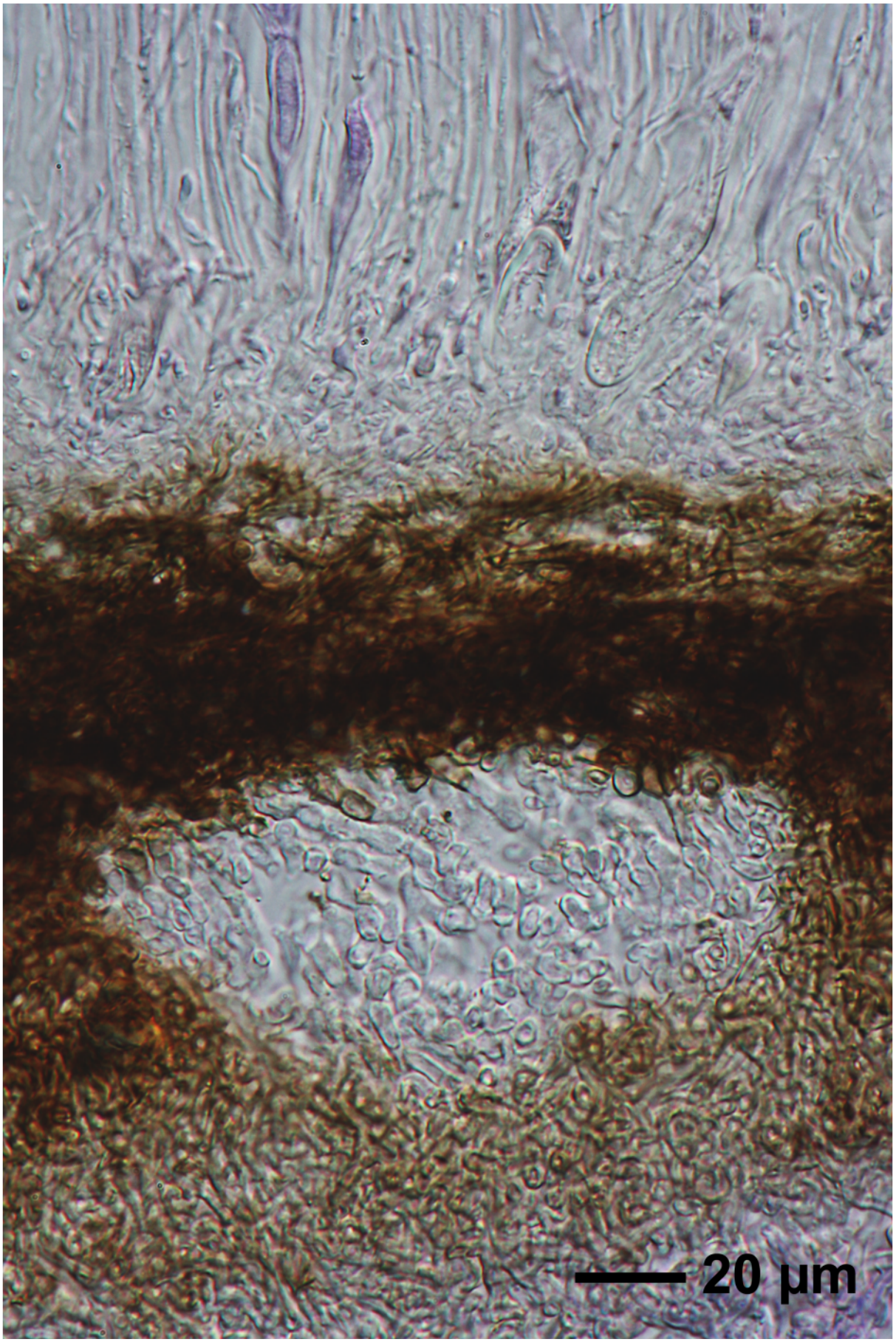
Malmidea corallophora



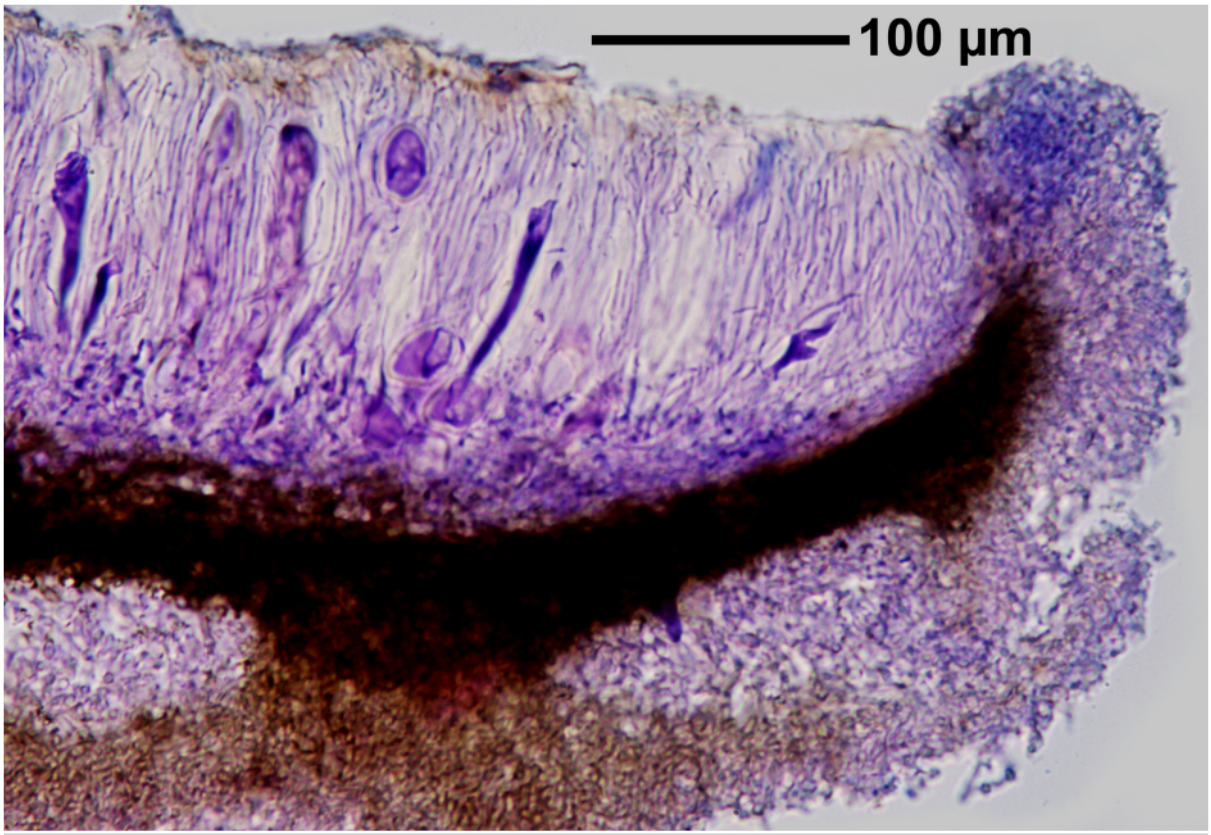


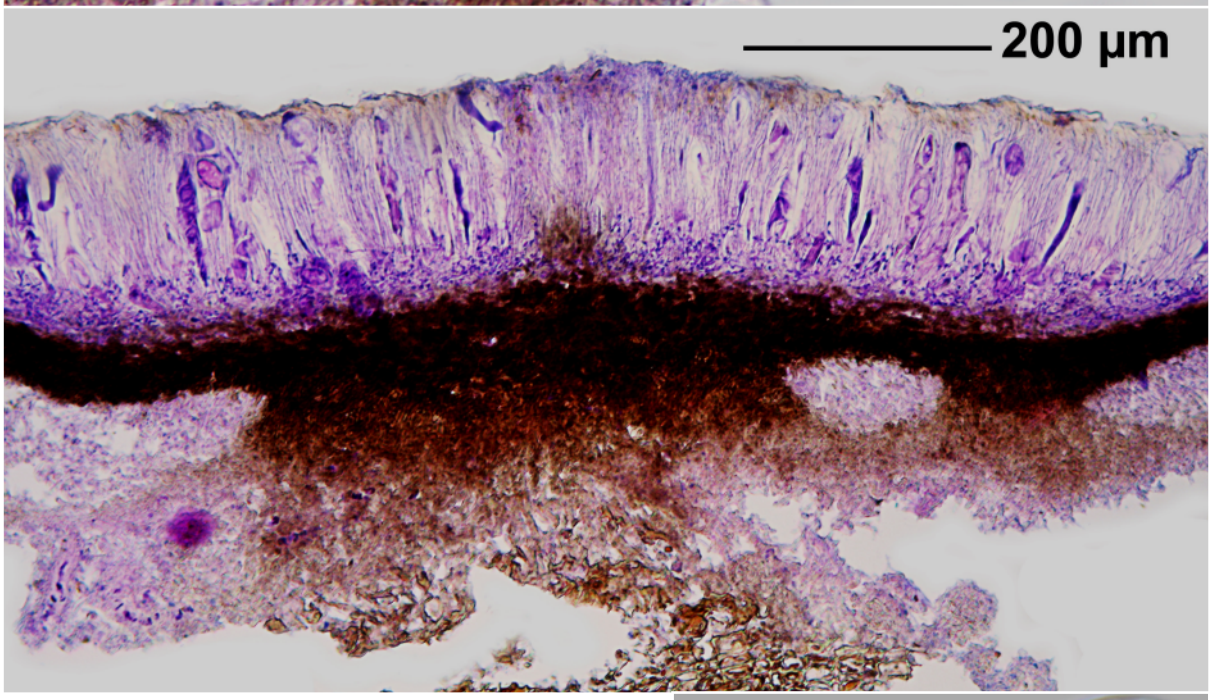


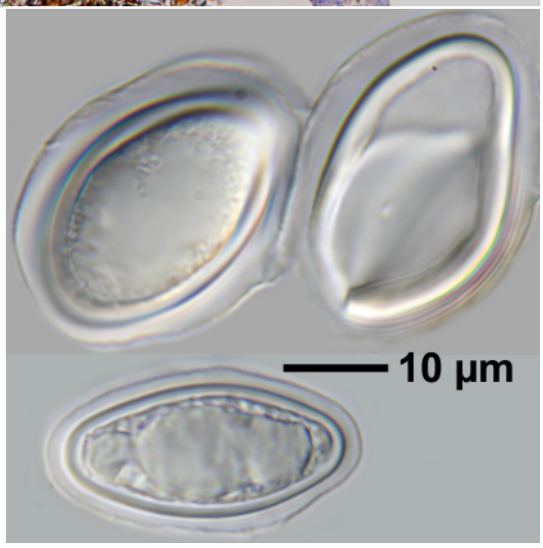
Malmidea corallophora



Malmidea corallophora







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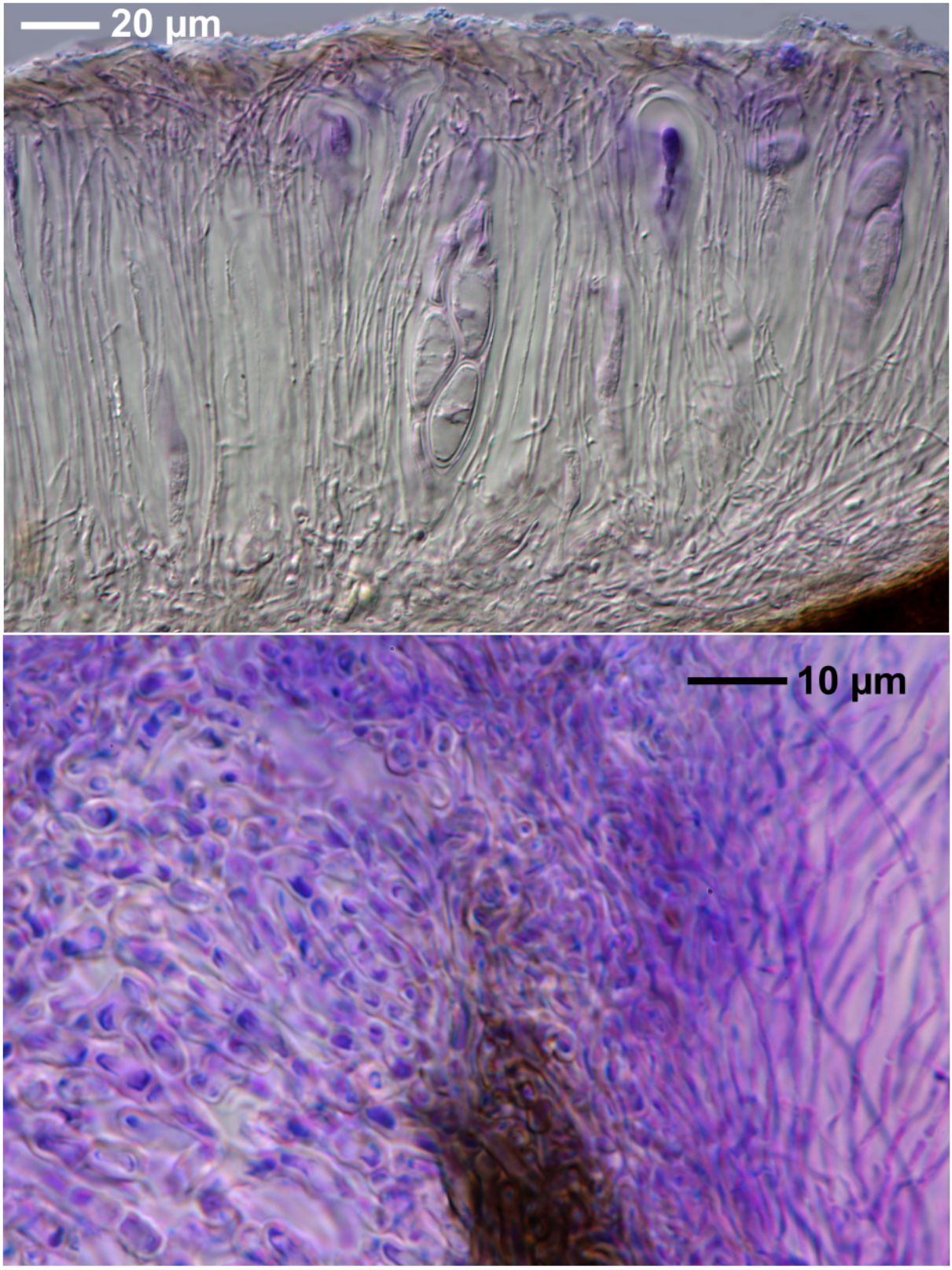
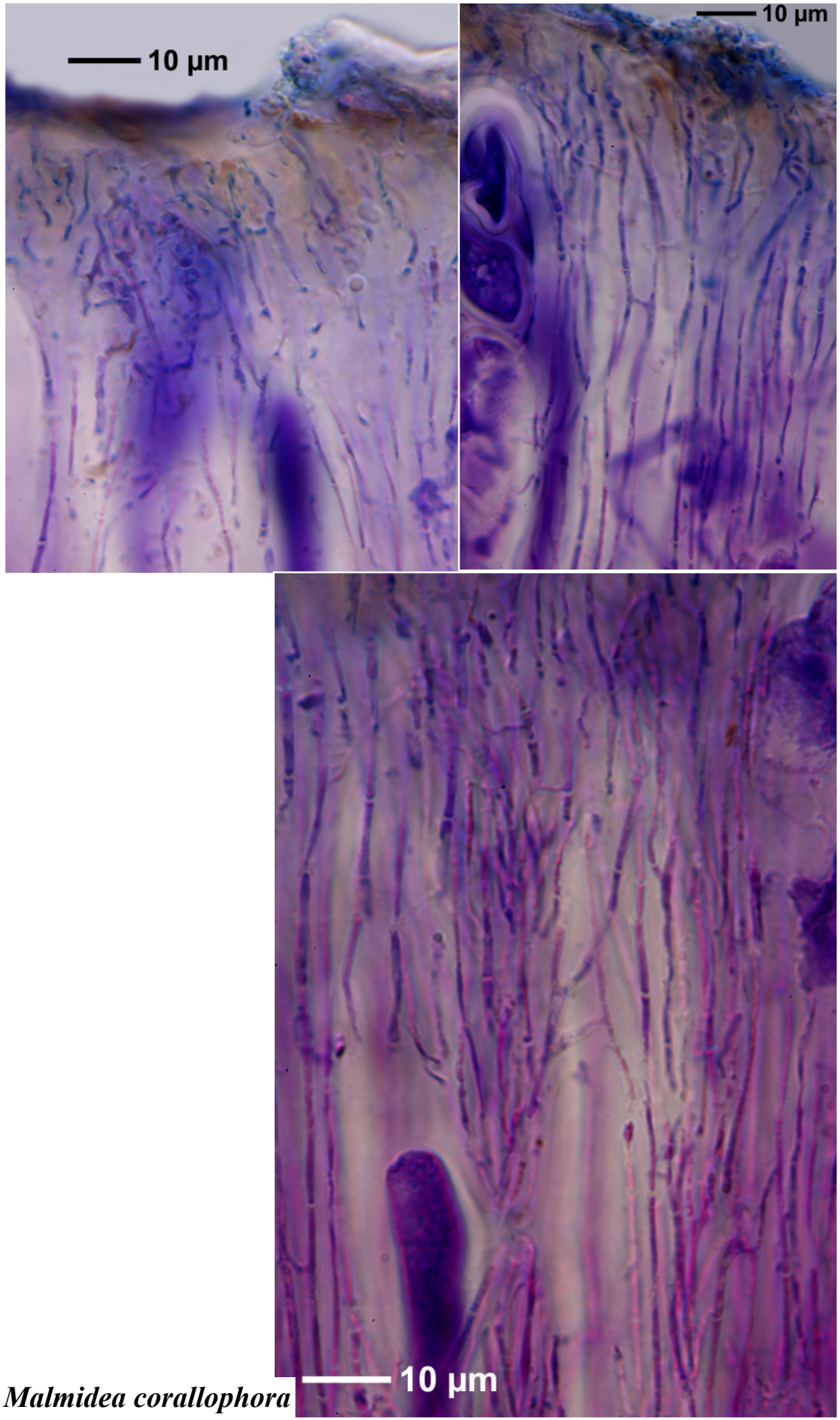


Malmidea corallophora

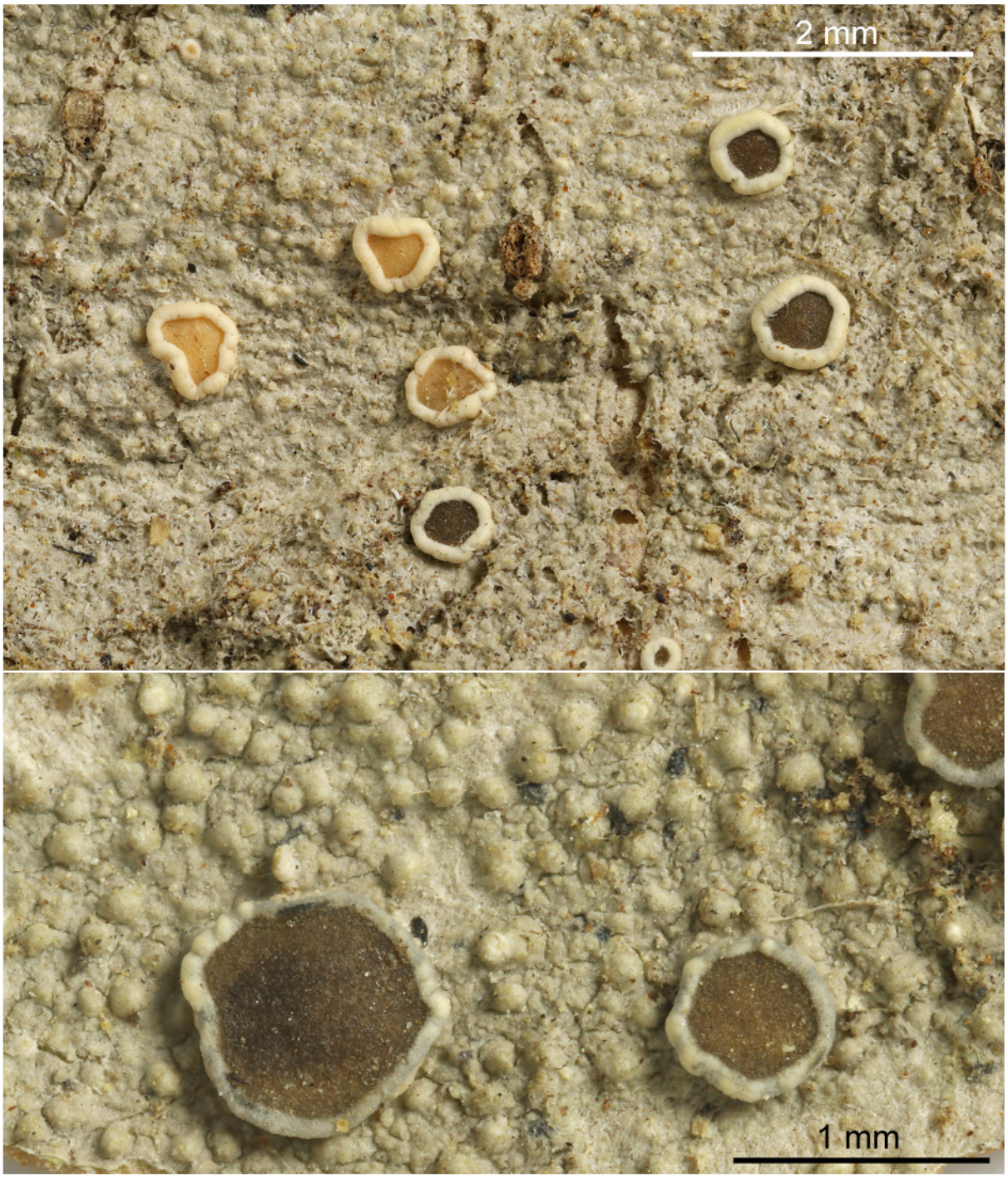


Malmidea corallophora

Malmidea sorsogona (Vain.) Kalb, Rivas Plata & Lumbsch
[= ***Lecidea sorsogona*** Vain. - Lich. Philipp. III, p. 119]

Thallus warty, without soredia or isidia. Medulla citrine yellowish, K+ intense yellow. Apothecium margin without algae, with tiny crystals. Hypothecium dark brown. Ascospores hyaline, simple, 6-8/ascus, 12-15 x 6-10 µm. Chemistry: atranorin (maj to trace), several unknowns (xantholepinones?). Lit. Vainio: Lich. Philipp. III, p. 119.

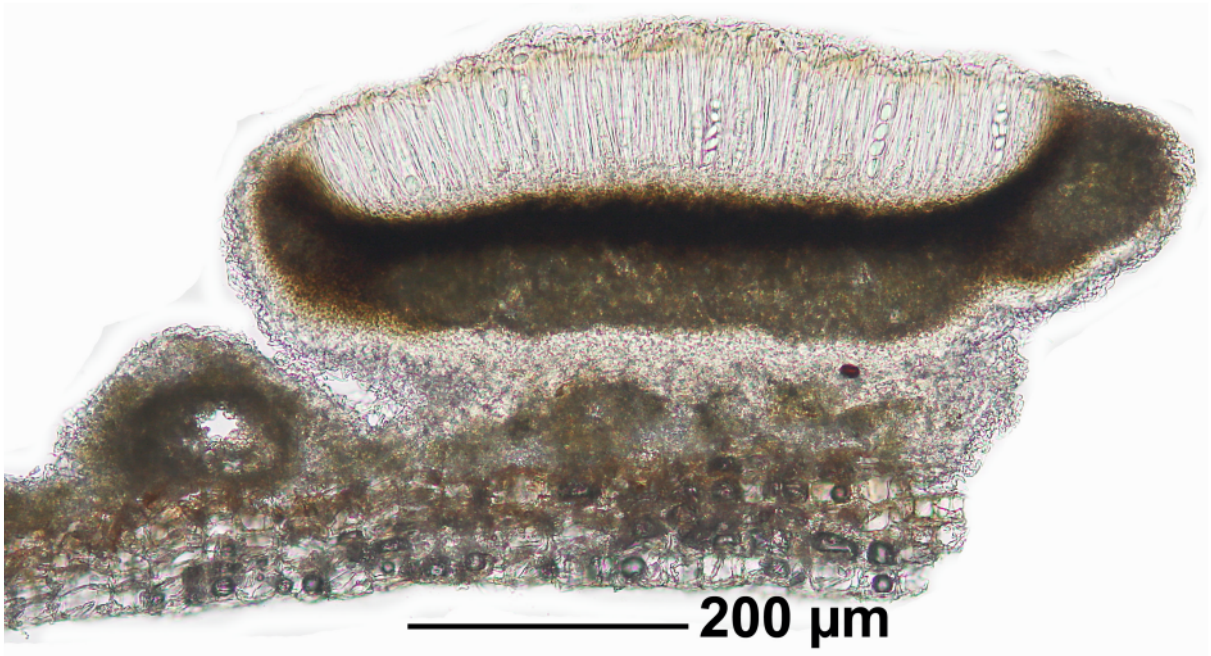
[6395], Philippinen, Povinz Camiguin, Camiguin Island, nahe dem Ardent Hot Spring Resort am unteren Teil des Mt. Hibok Hibok, ca. N 09°13.611' N, 124°41.337' E, ca. 420 m. Leg Orville L. Bernabe 22.08.1999, det Kalb 2011.







Malmidea sorsogona





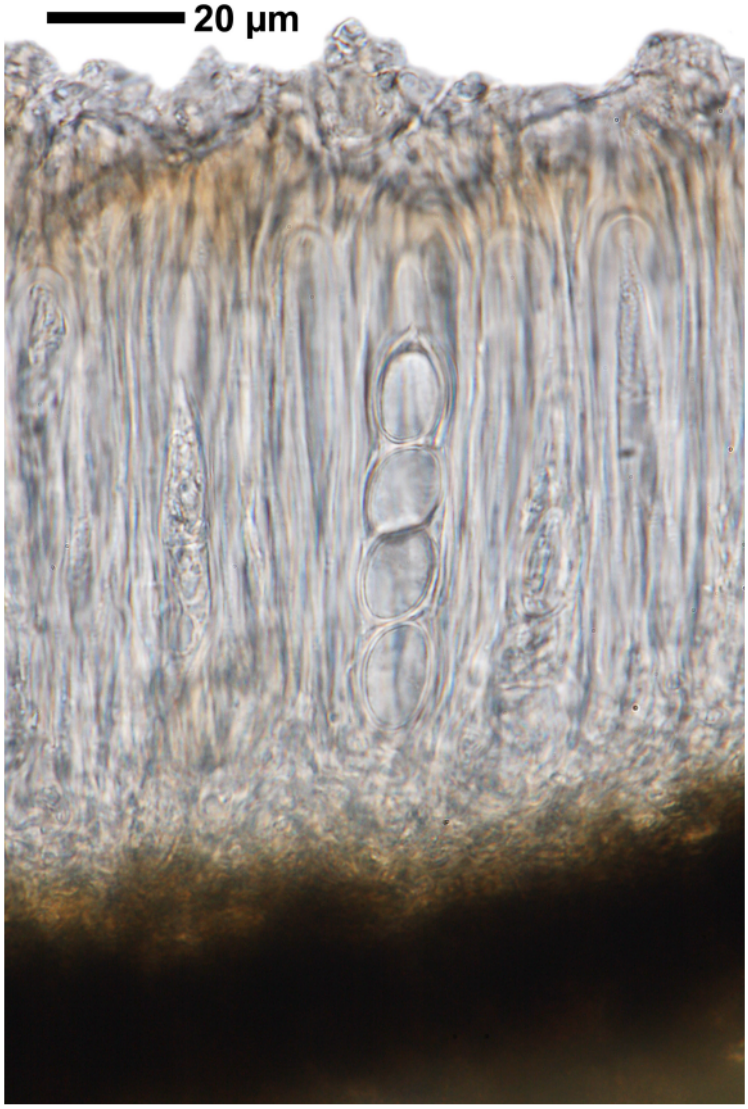


Malmidea sorsogona

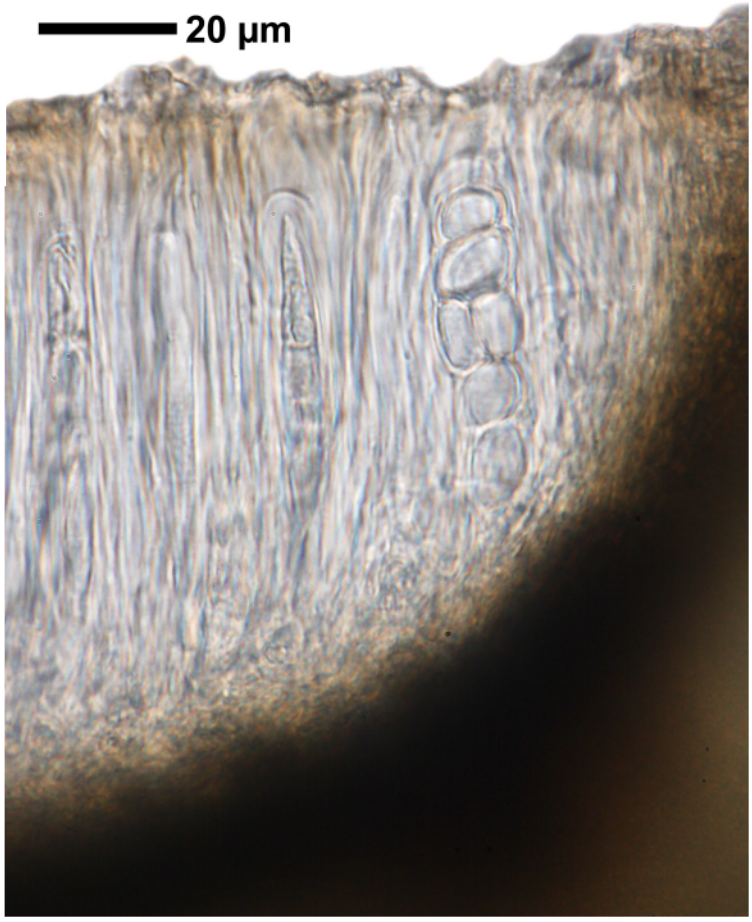


10 µm

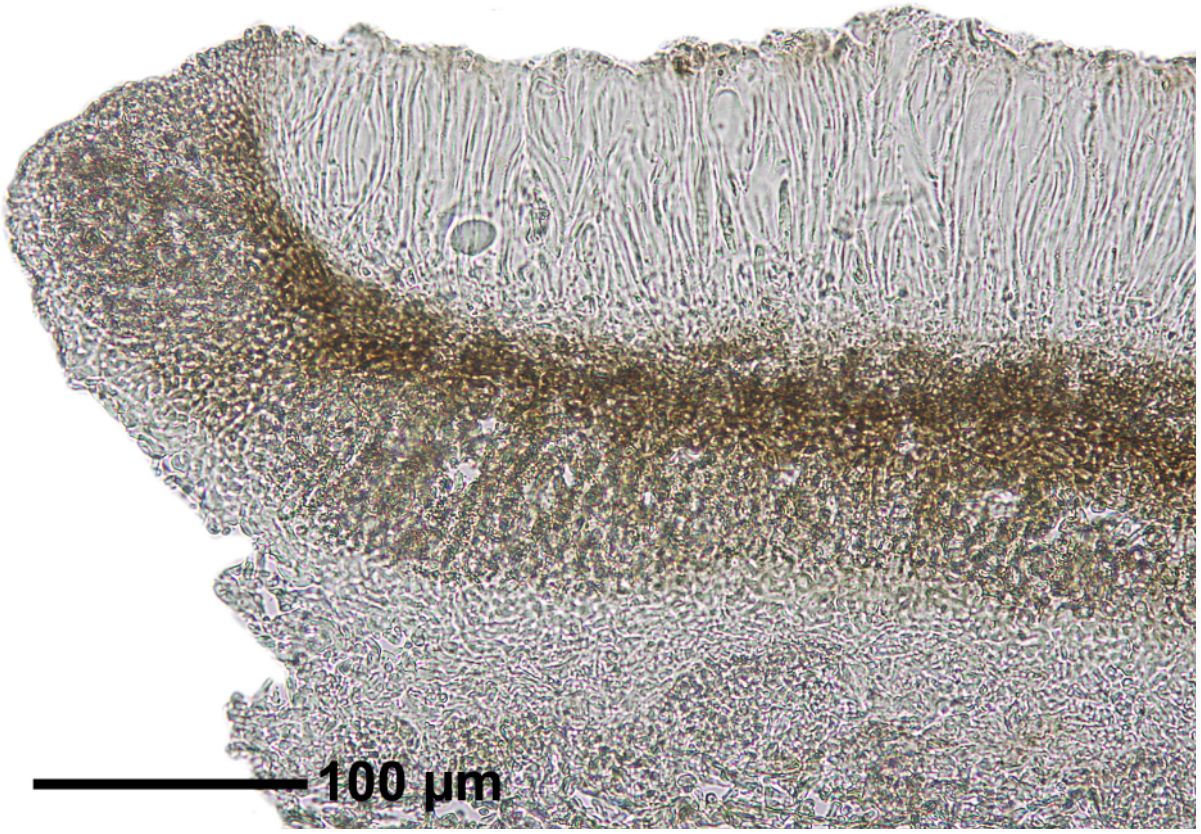
20 µm

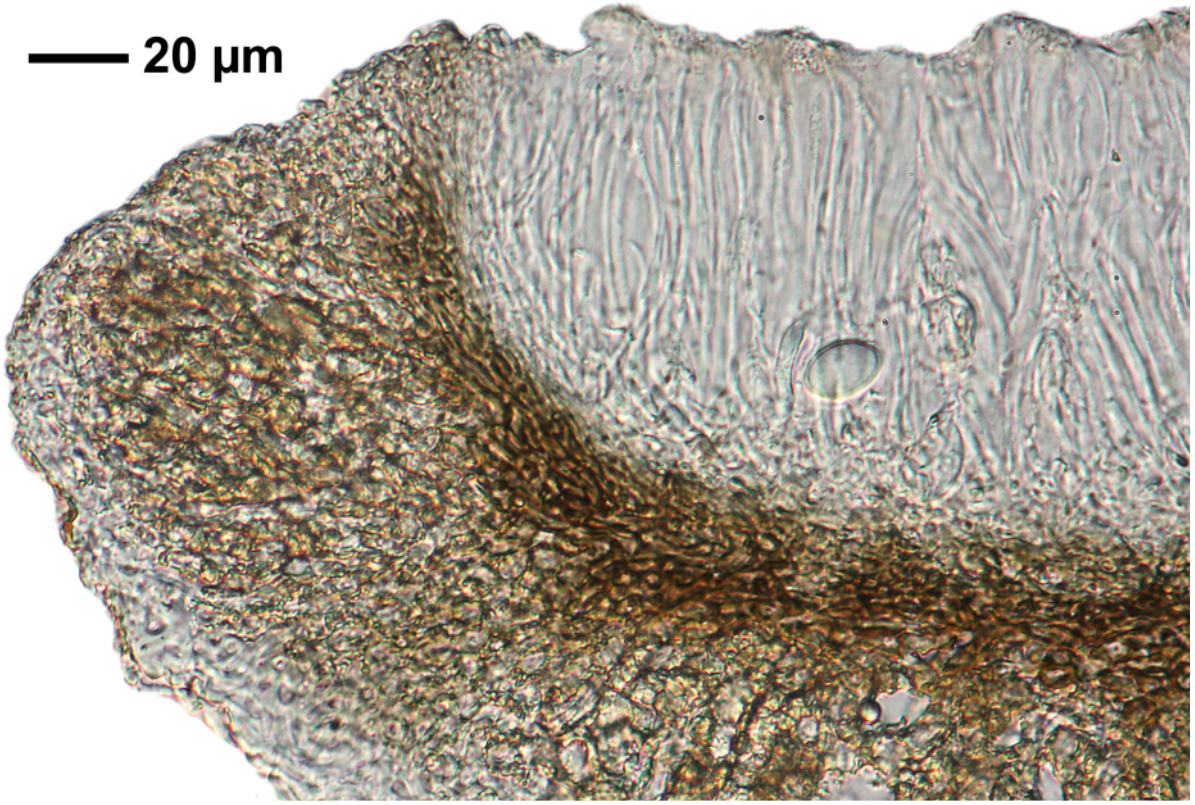


20 µm

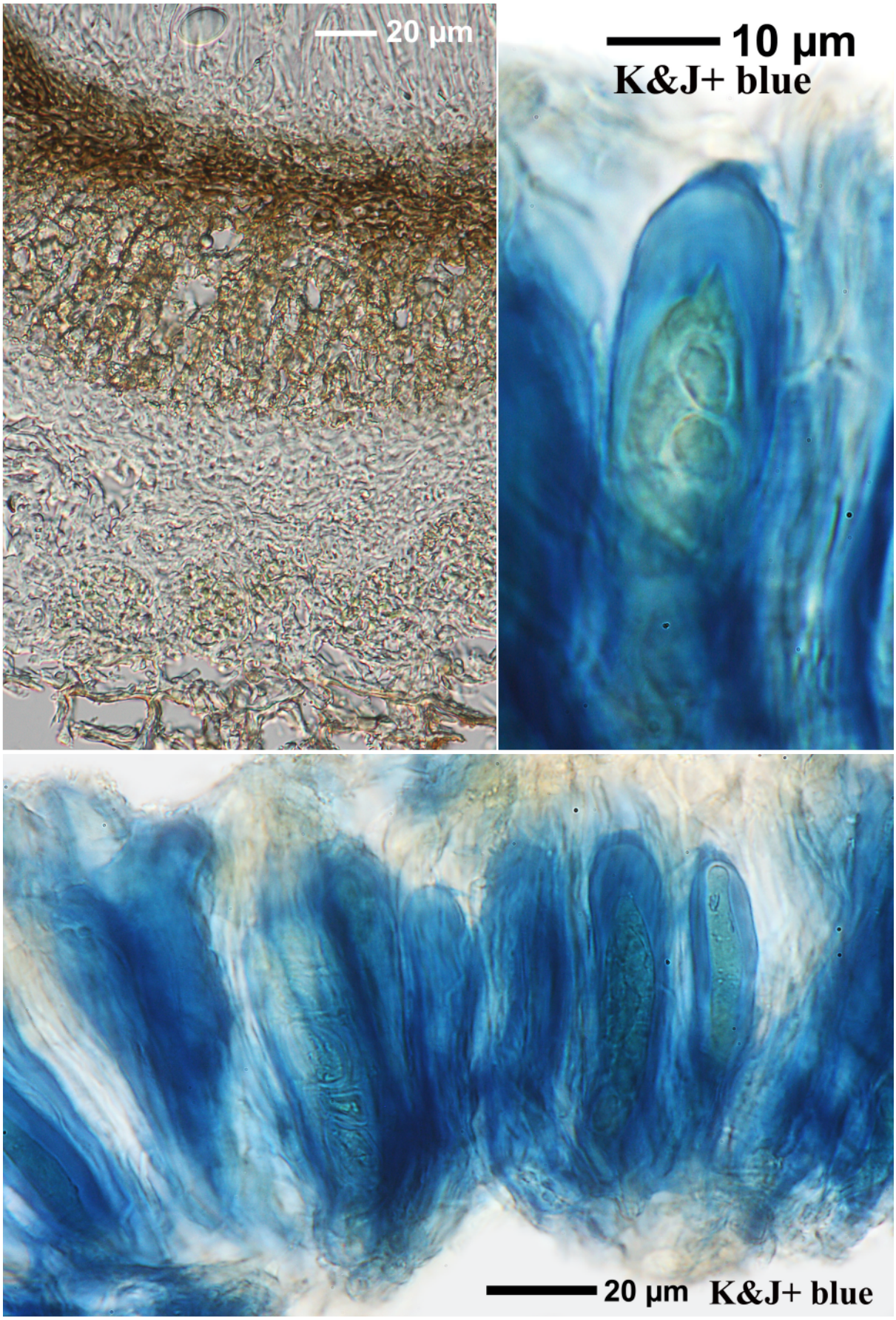


Malmidea sorsogona

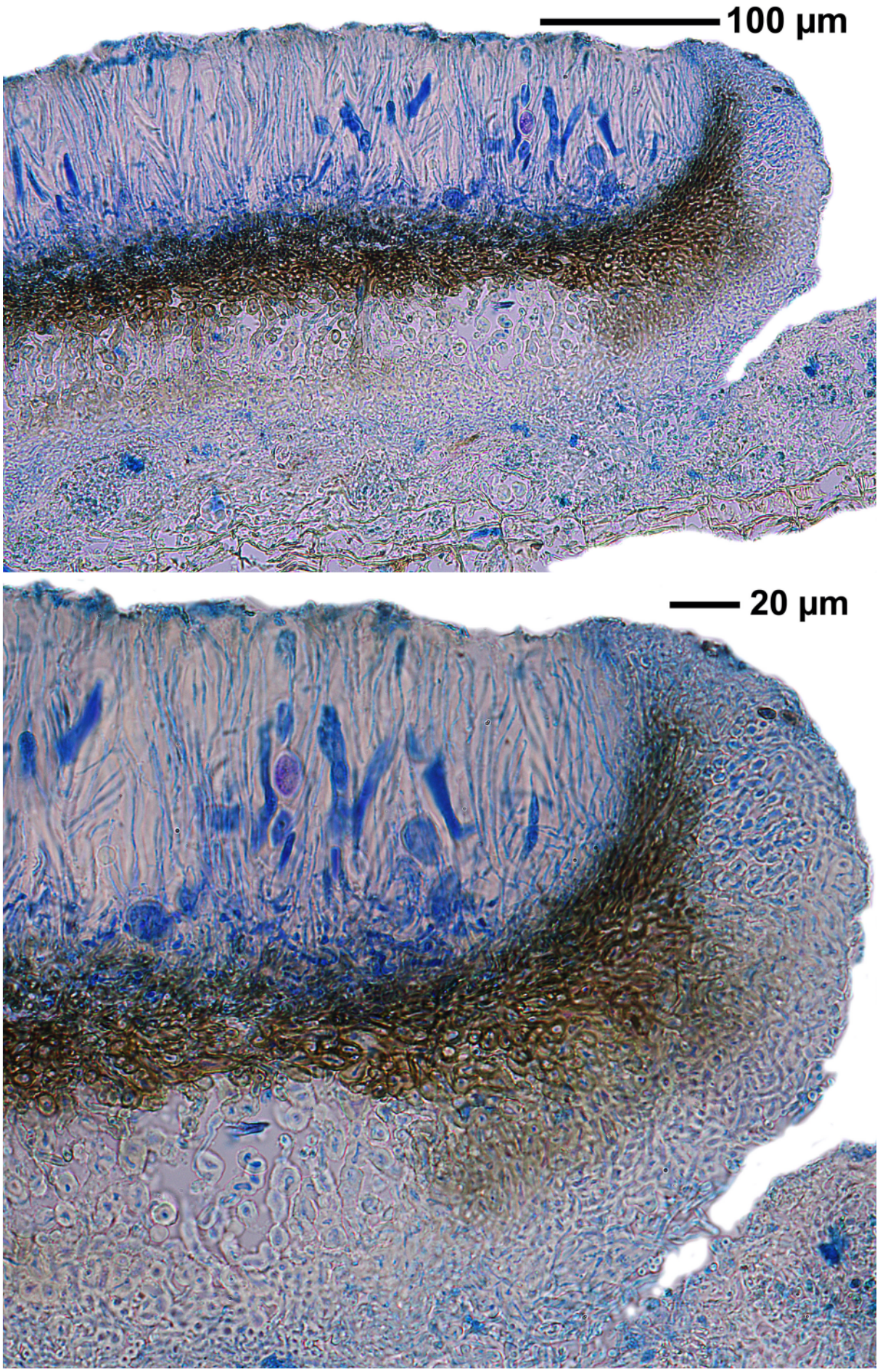




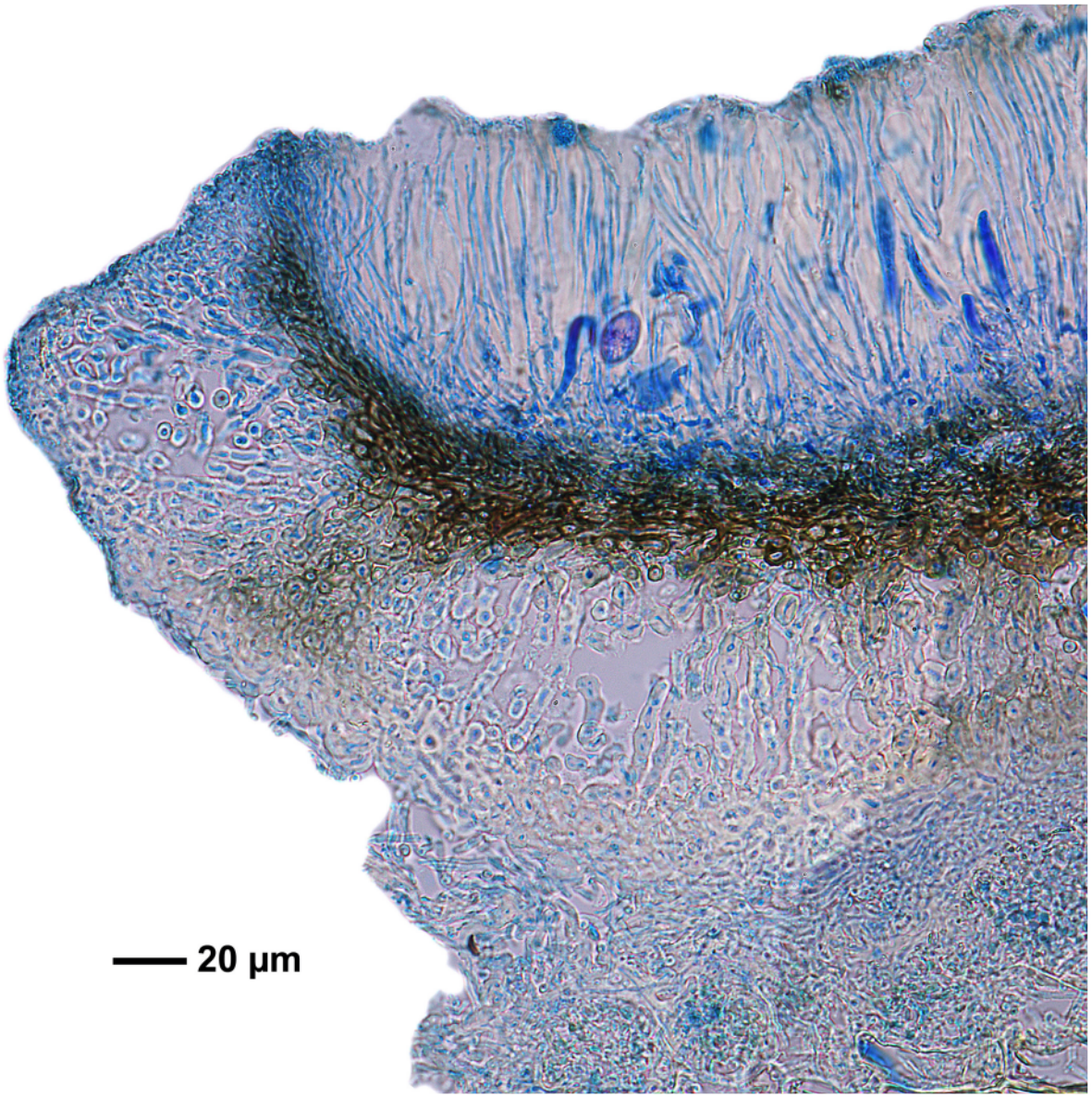
Malmidea sorsogona



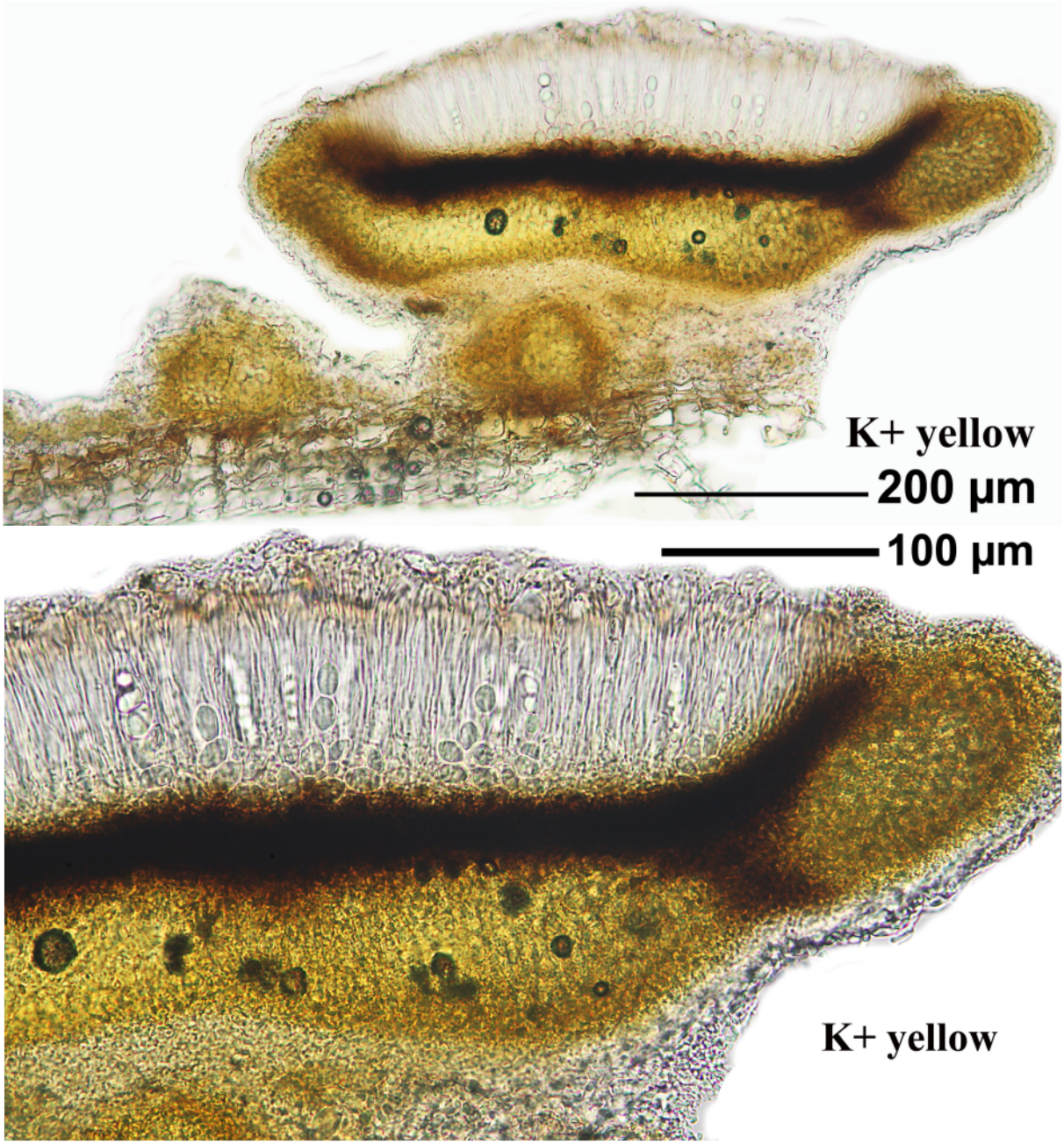
Malmidea sorsogona



Malmidea sorsogona



Malmidea sorsogona

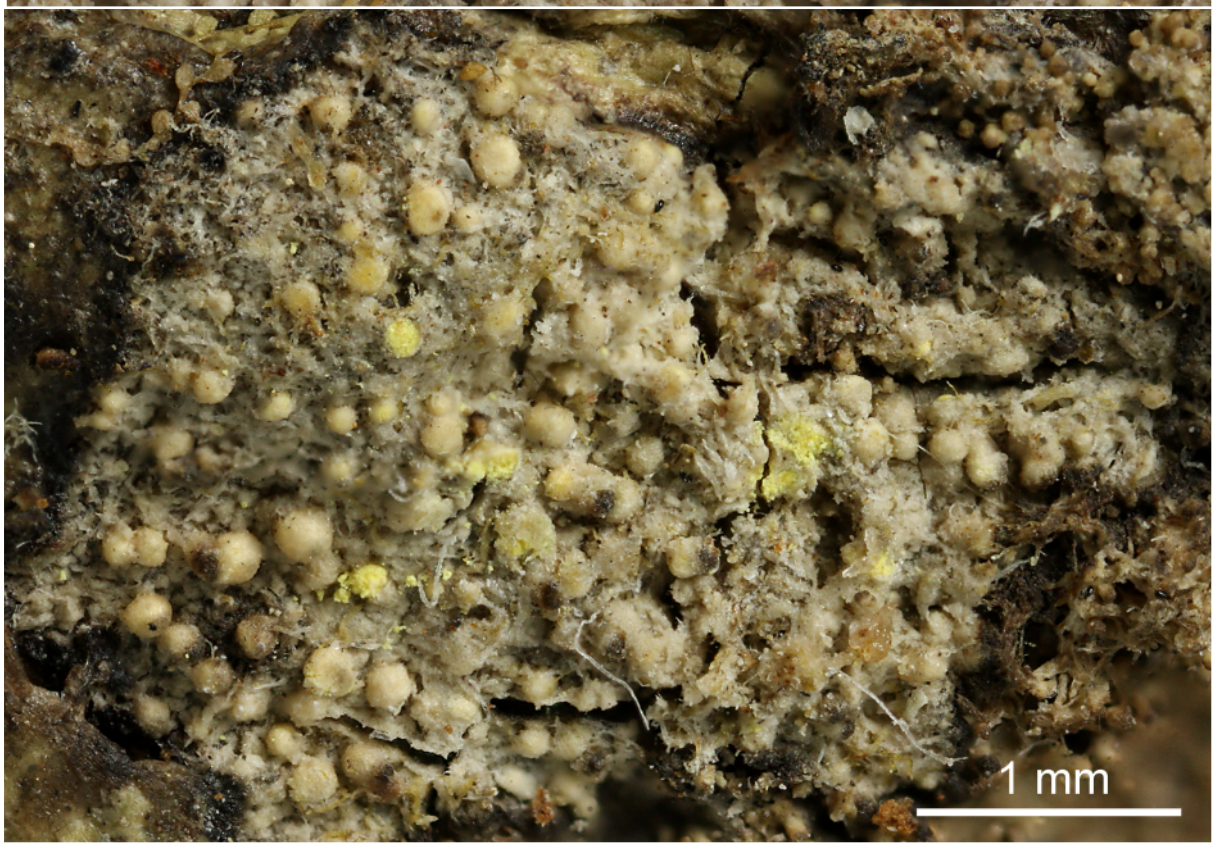


Malmidea sorsogona

Malmidea sorsogona (Vain.) Kalb, Rivas Plata & Lumbsch

[7546], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail beim Lake Yagumyum, 9°15.040’ N, 123°11.172’ E, 1360 m. Leg. Schumm 11.08.2000, det. K.Kalb 2011.



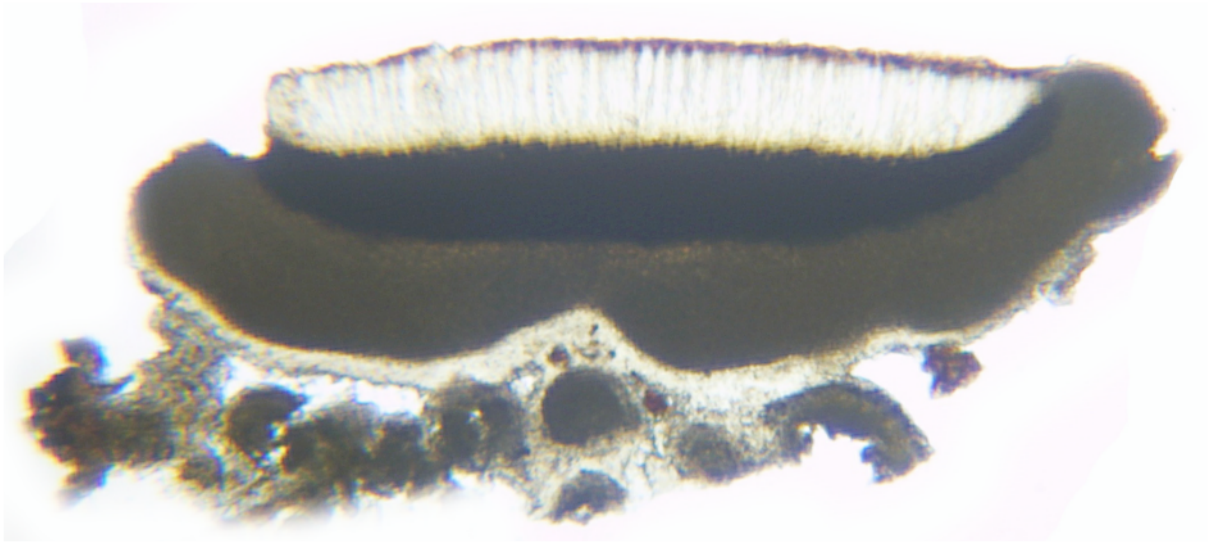


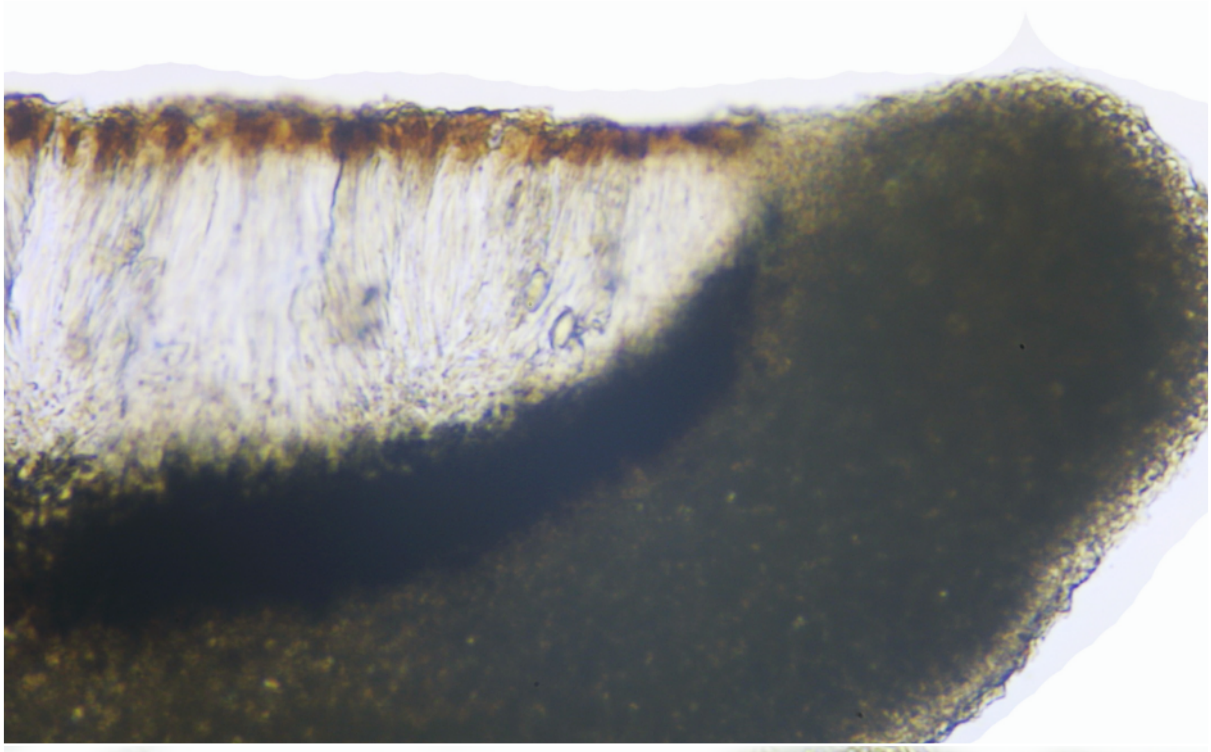
Malmidea subaurigera (Vain.) Kalb, Rivas, Plata & Lumbsch
[= ***Lecidea subaurigera*** Vain.]

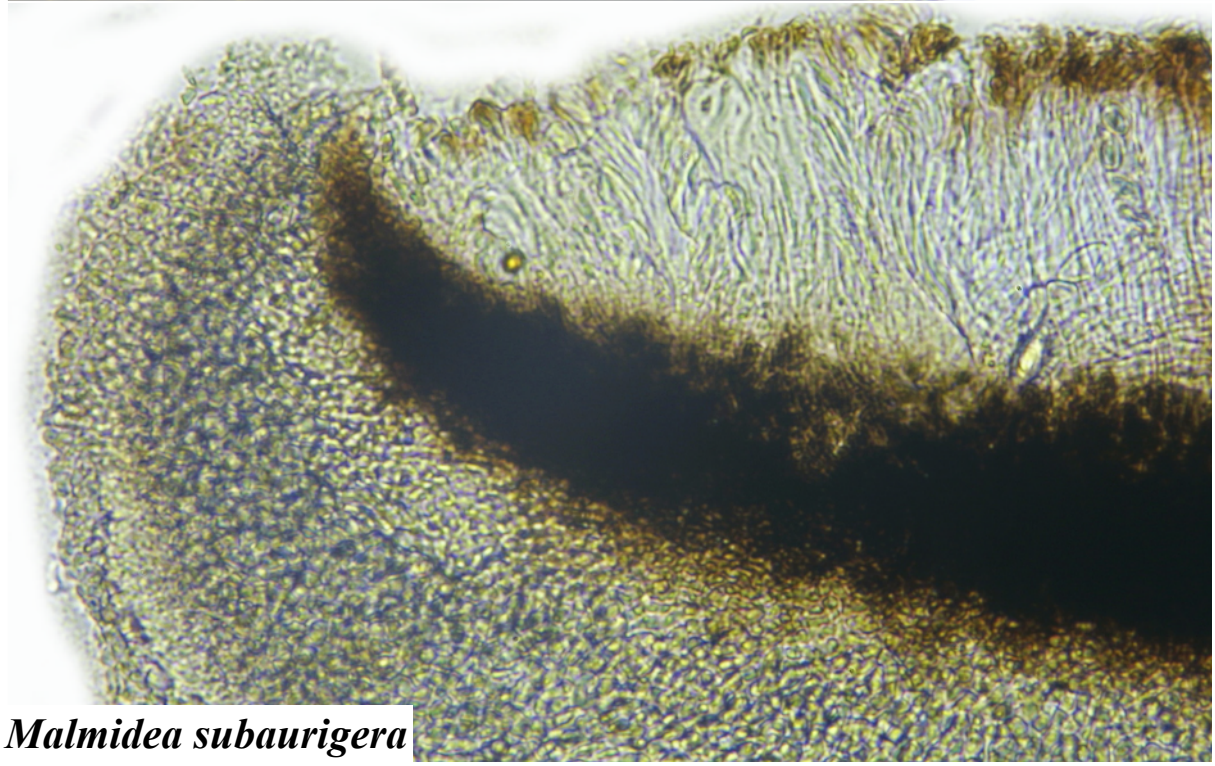
Thallus warty, without soredia and long isidia. Apothecium margin without algae, cells radial. Epithecium brown, 12 µm. Hymenium hyaline, appr. 150 µm. Hypothecium dark brown. Asospores simple, hyaline, 8/ascus, 13-23 x 9-15 µm. Medulla yellow, P-. Chemistry: atranorin, several unknowns (xantholepinone?). Note: is there really a difference to *Malcolmiella aurigera* (Fée) Aptroot ? (FS).

[7547], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail beim Lake Yagumyum, 9°15.040’ N, 123°11.172’ E, 1360 m. Leg. Schumm 11.08.2000, det. K.Kalb 2011.



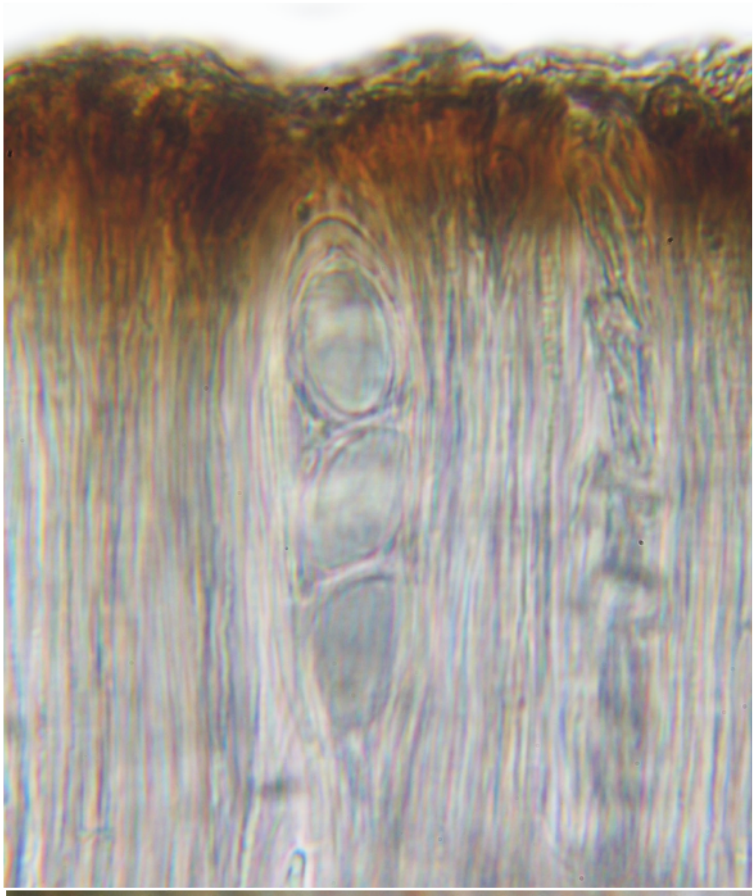


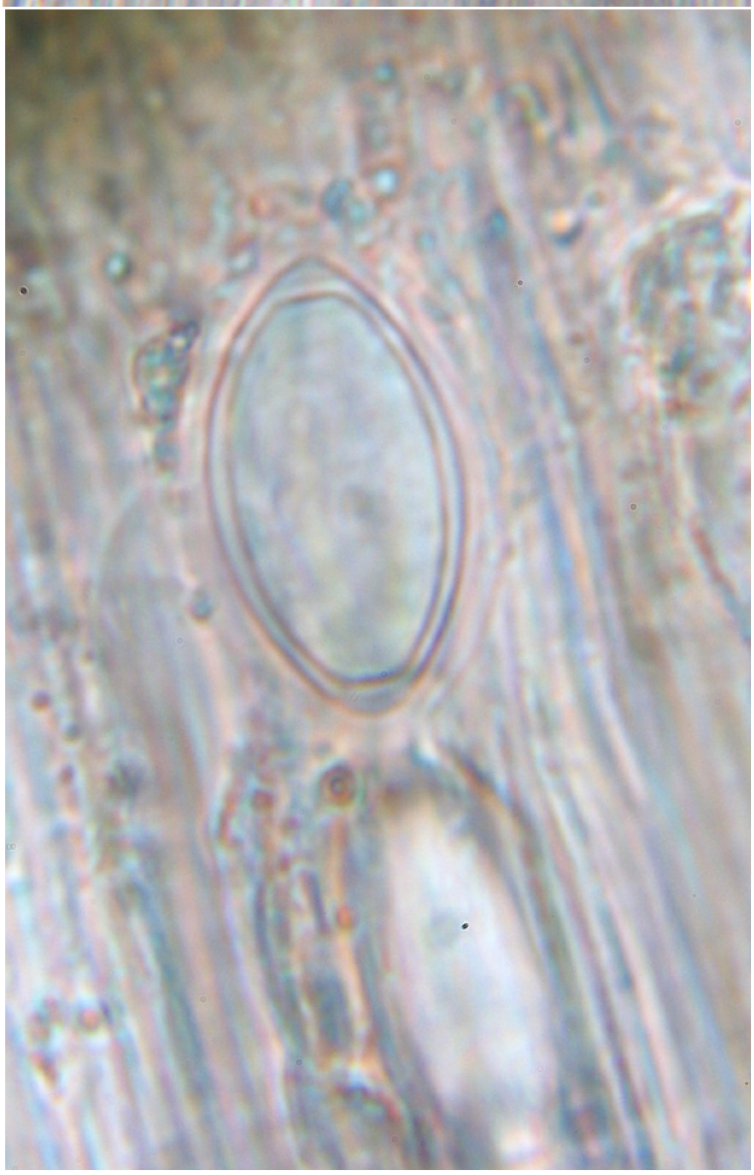




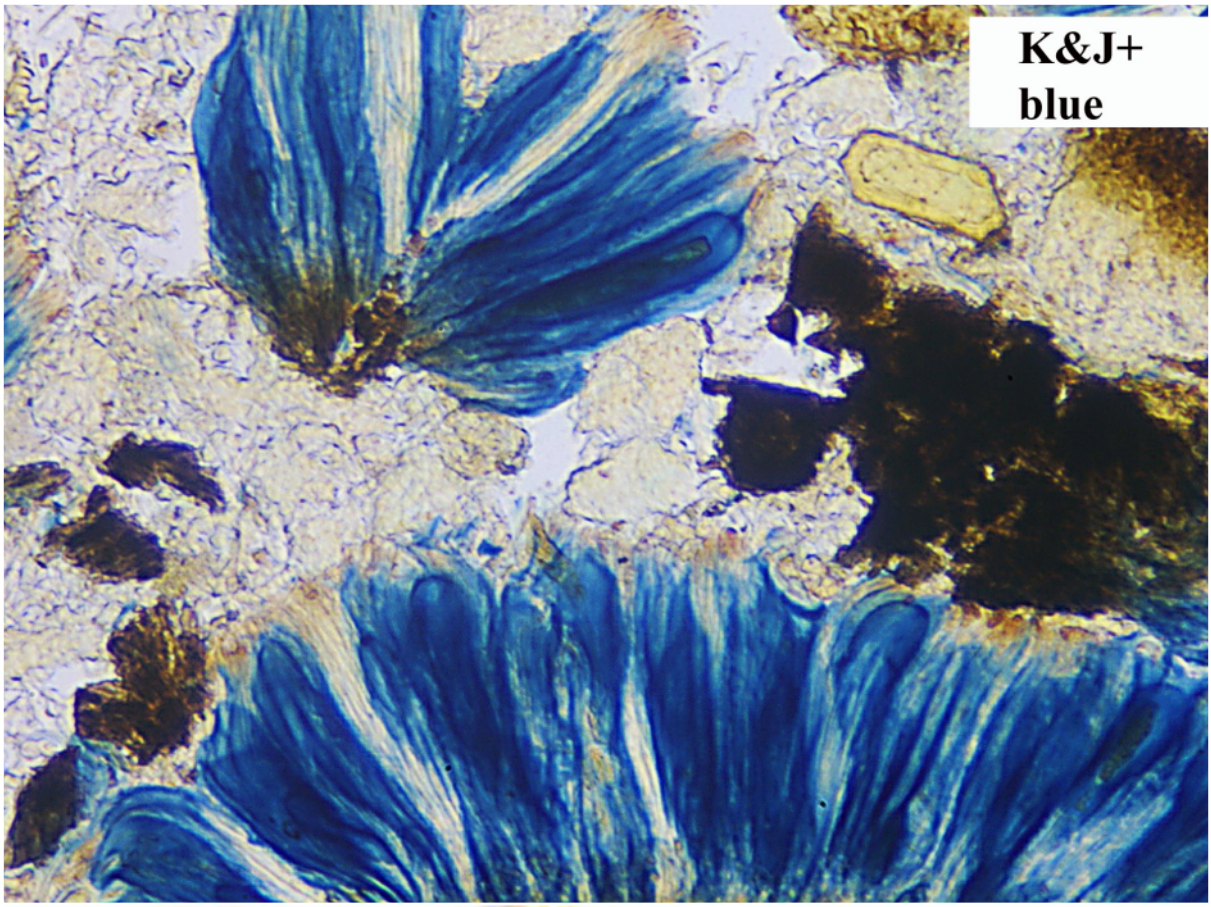
Malmidea subaurigera

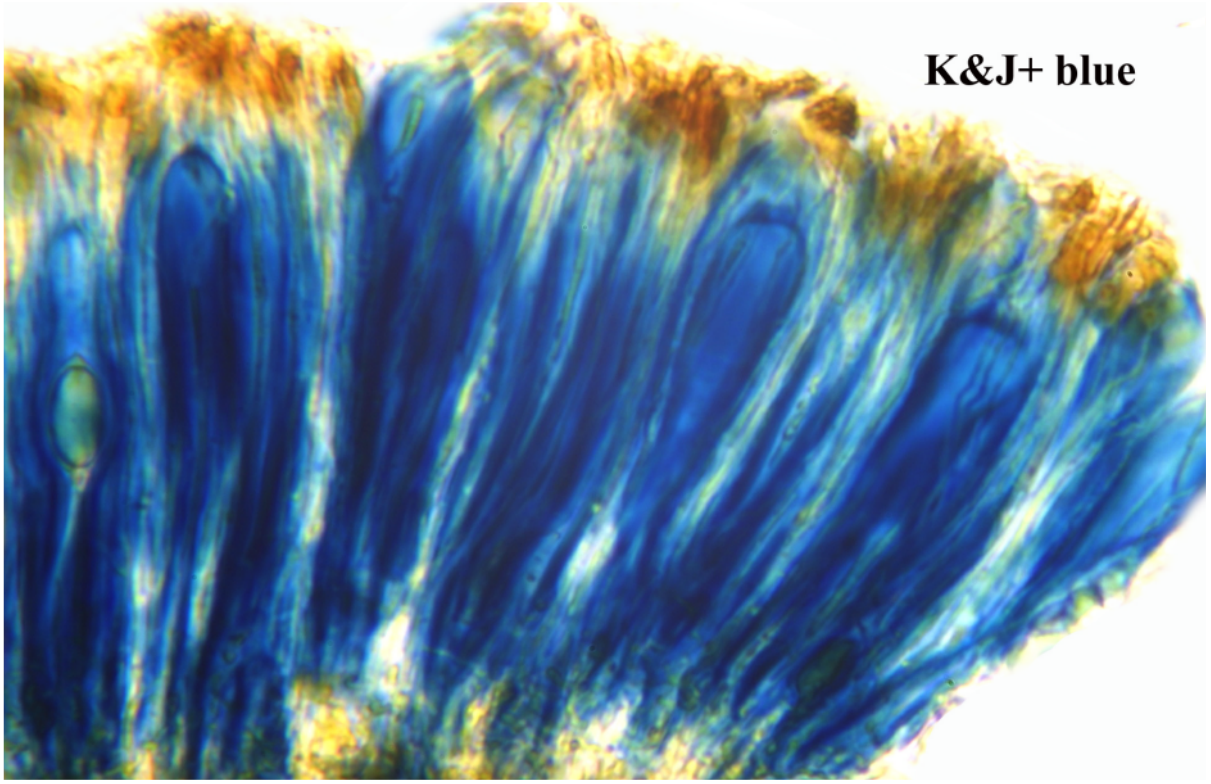




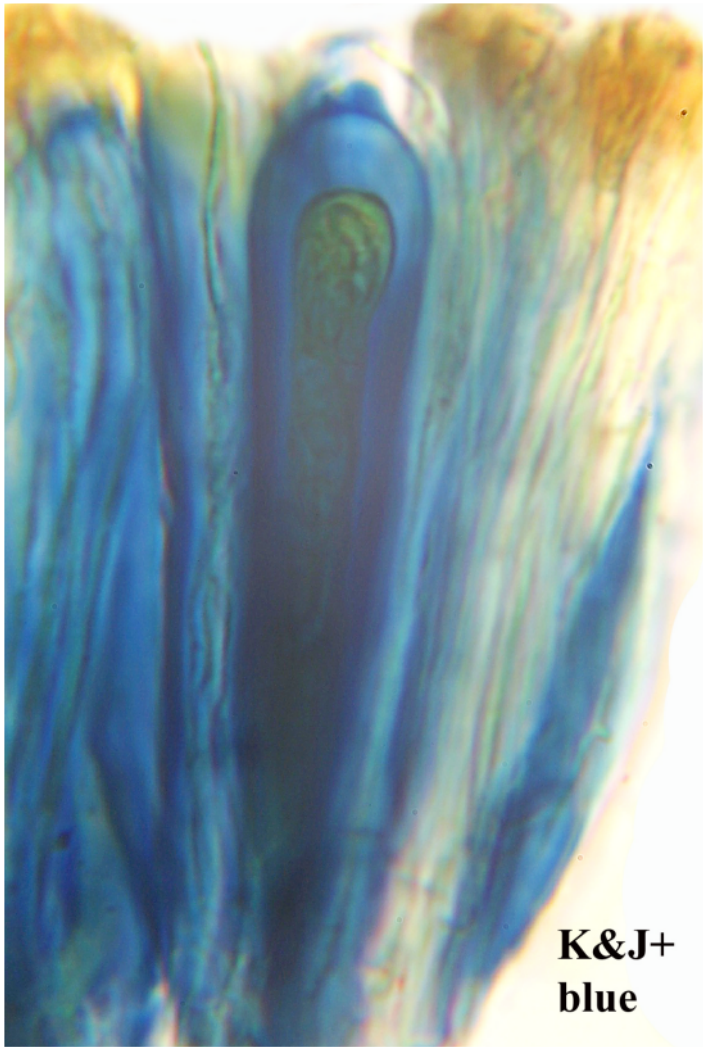


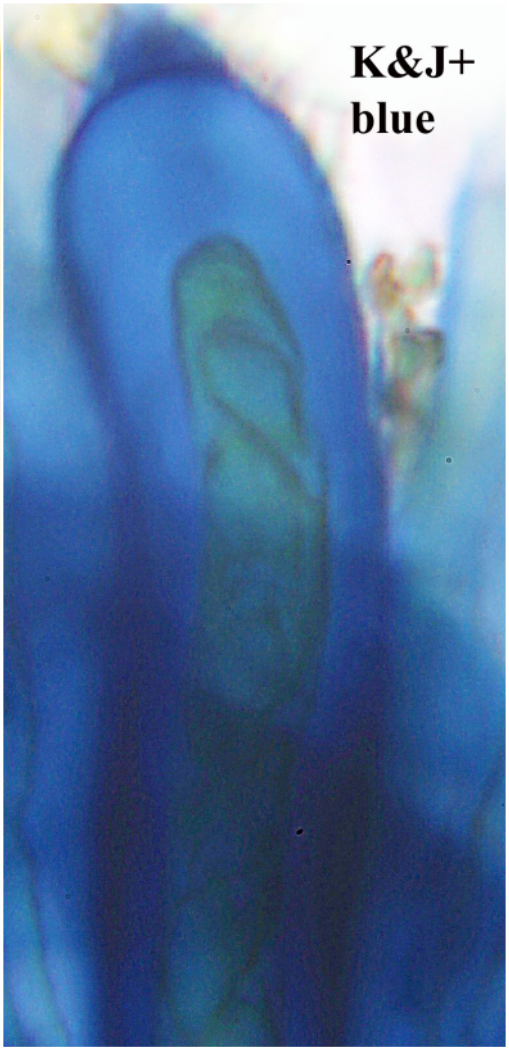
Malmidea subaurigera





Malmidea subaurigera



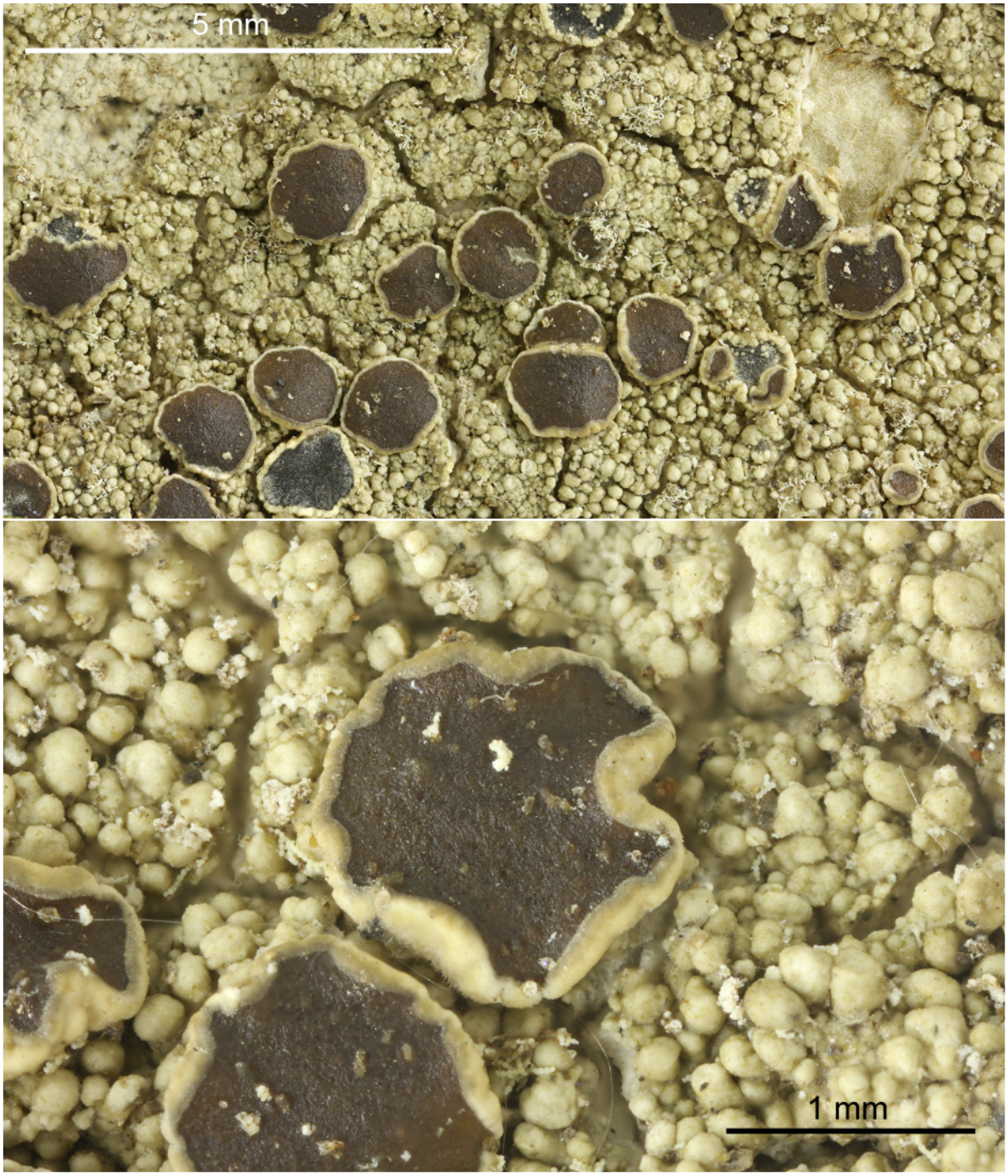


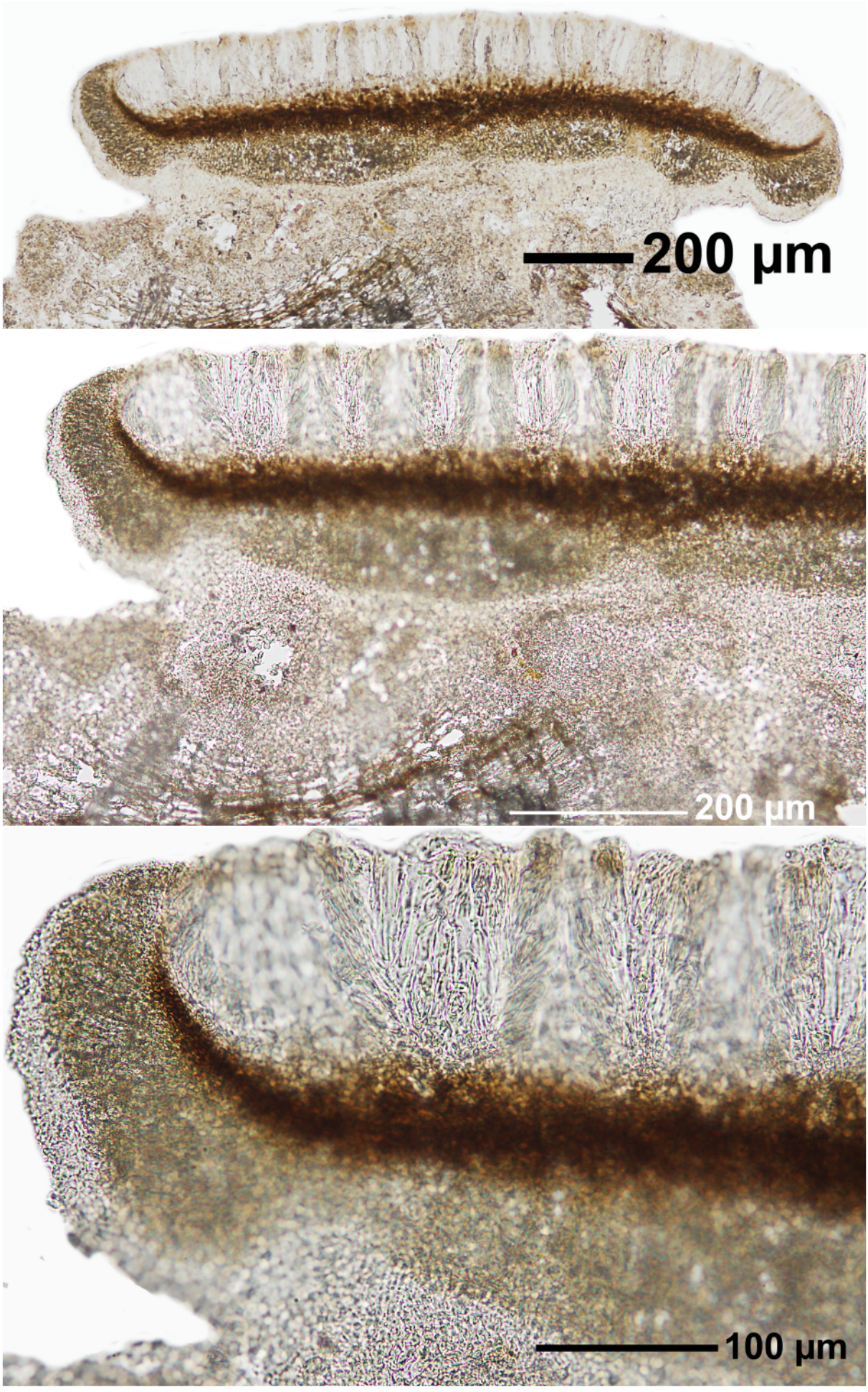
Malmidea subaurigera

Malmidea subgranifera (Kalb & Elix) Kalb & Elix
[= ***Malcolmiella subgranifera*** Kalb & Elix]

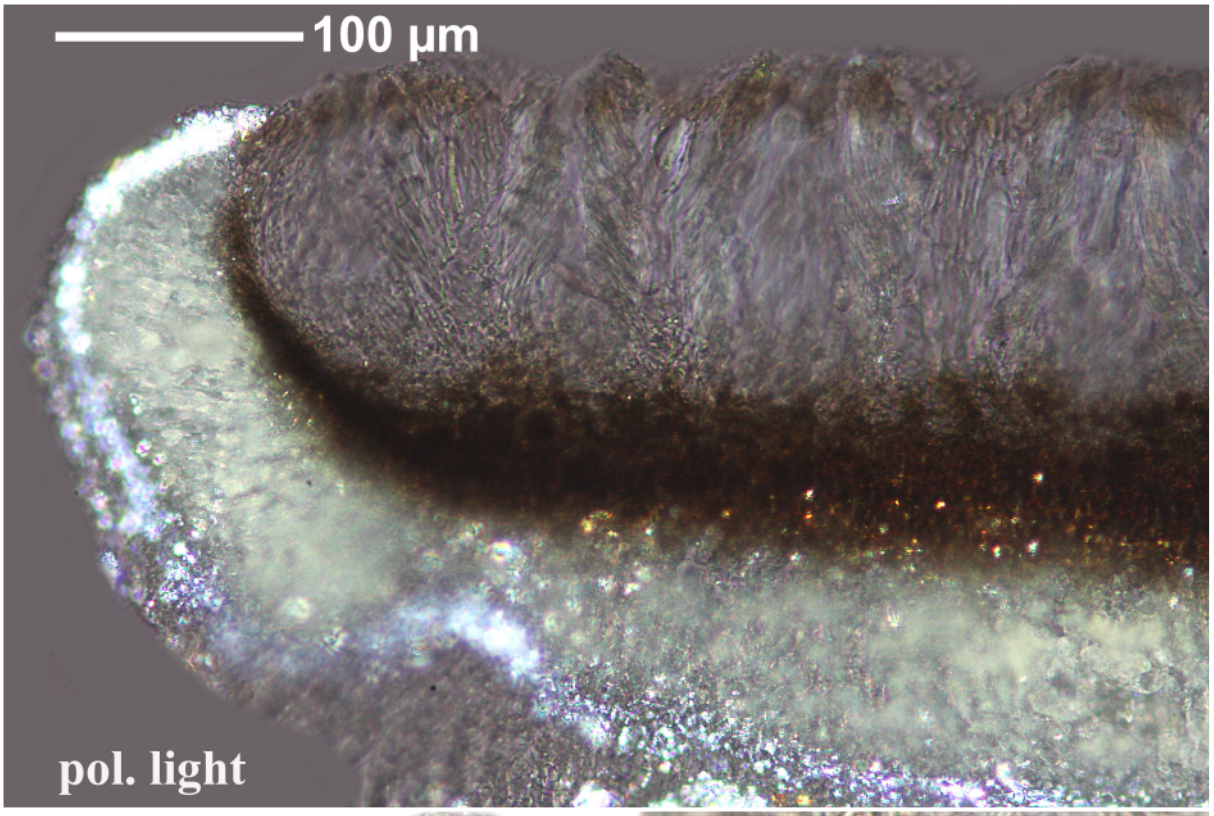
Thallus corticolous, with globose, 0.1-0.2 mm large isidia. Apothecium margin without algae. Hypothecium dark brown. Medulla white, K+ yellow. Ascospores hyaline, (11-)13-18 x (7-)10-12 µm, simple, (6-)8/Ascus (= main difference from *Malcolmiella psychotrioides*). Chemistry: atranorin, xantholepinon G (maj), C, F, H, I, J, K, L. Lit.: Kalb Lichenes Neotropici 555, Kalb et al. (2011).

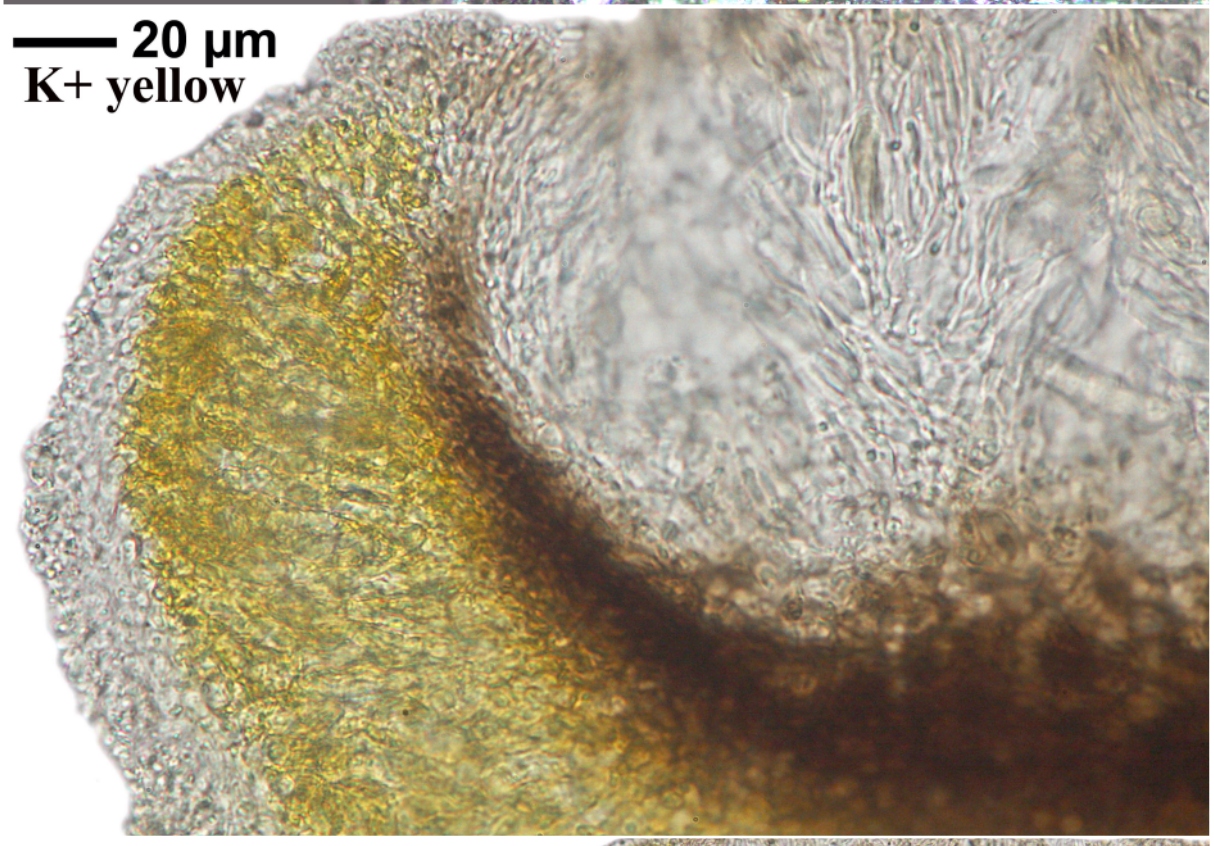
[9558], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen, 20°06.275' N, 99°37.524' E, 700 m. Leg. Schumm 31.03.2002, det. K. Kalb 2009.

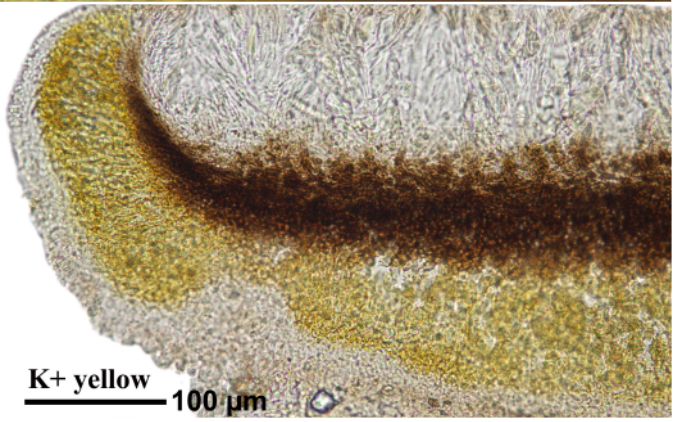




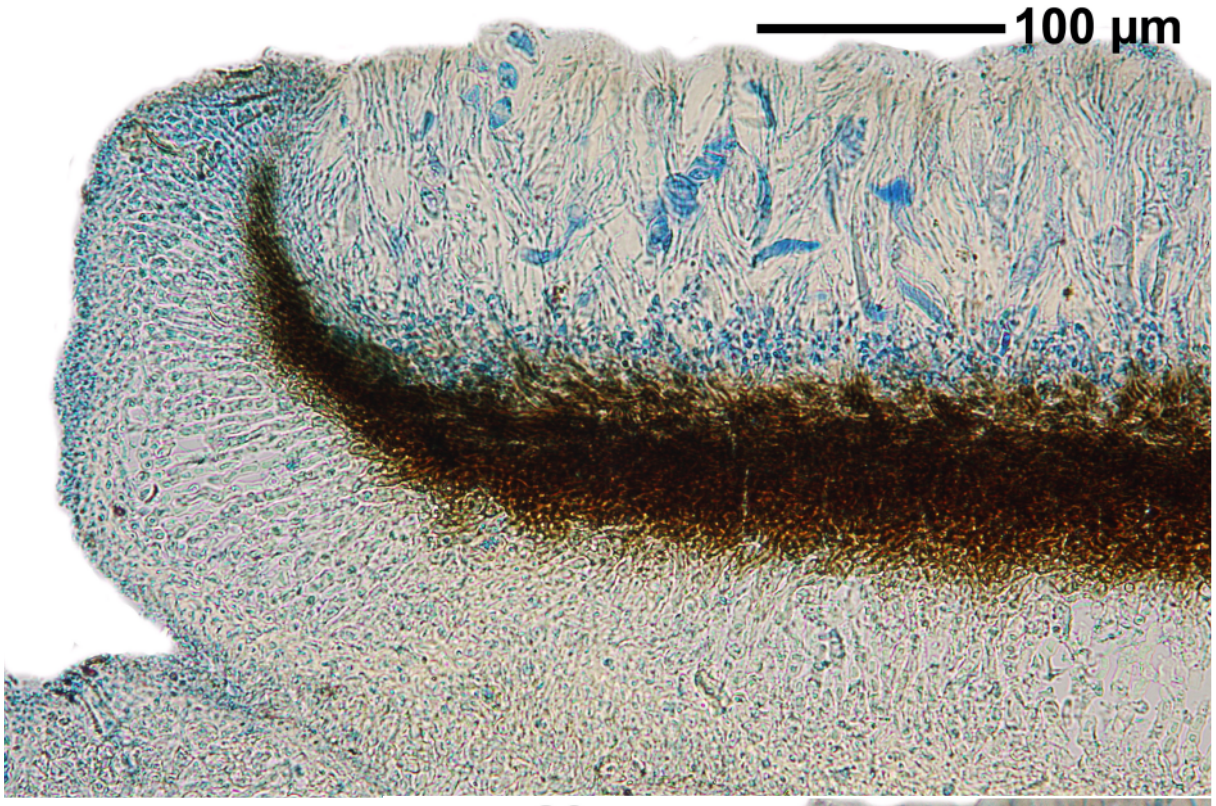
Malmidea subgranifera

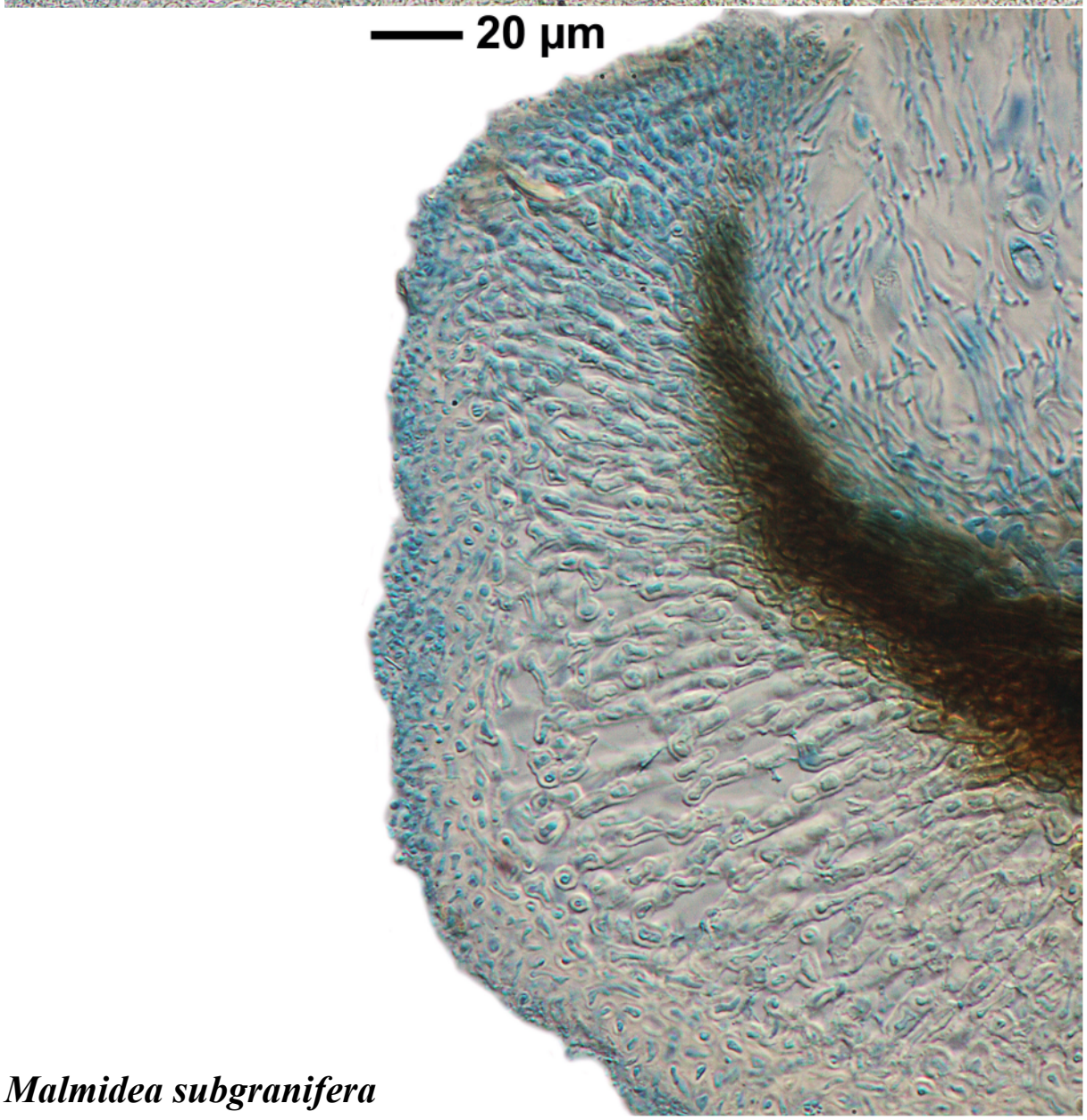




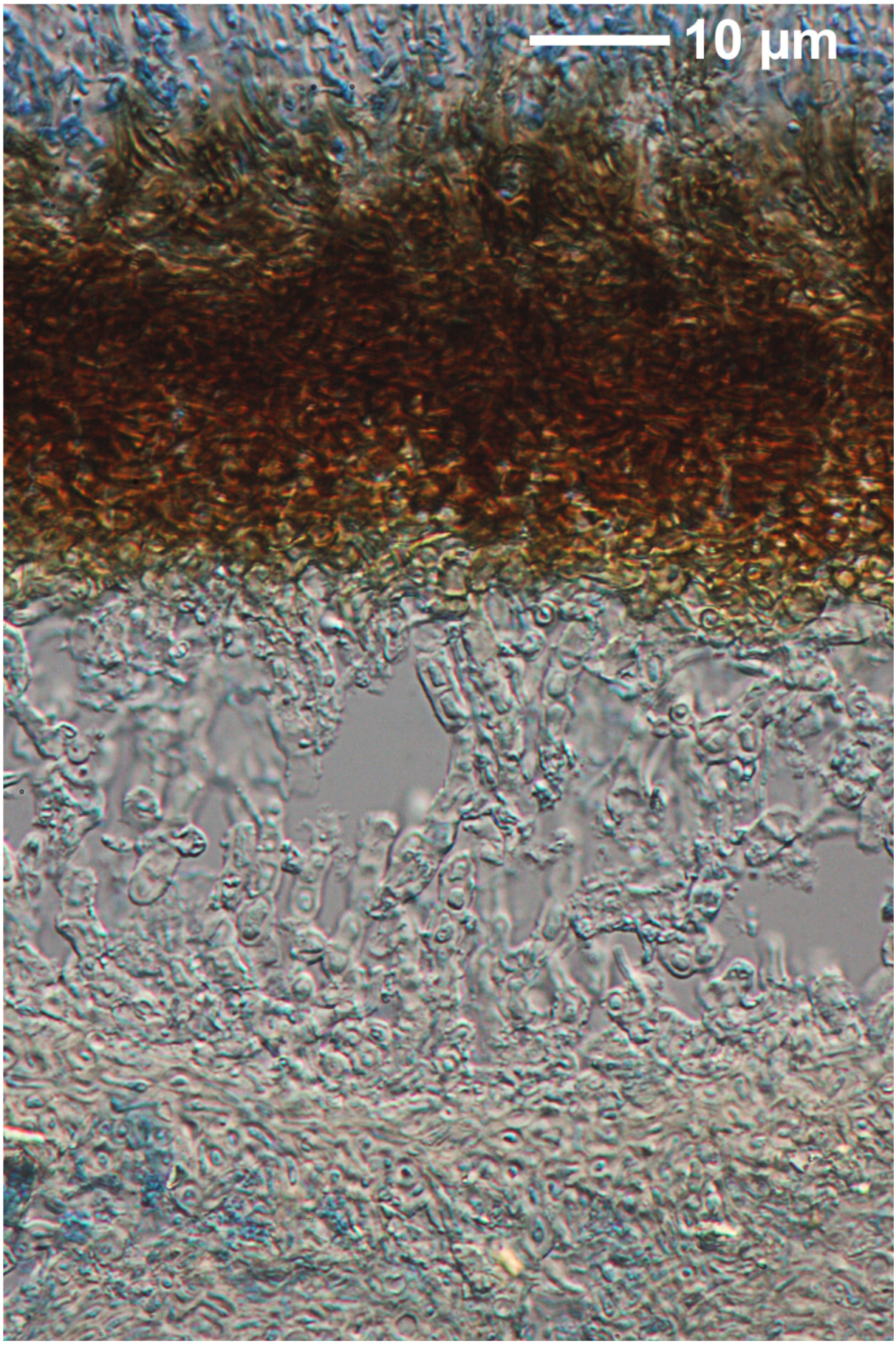


Malmidea subgranifera

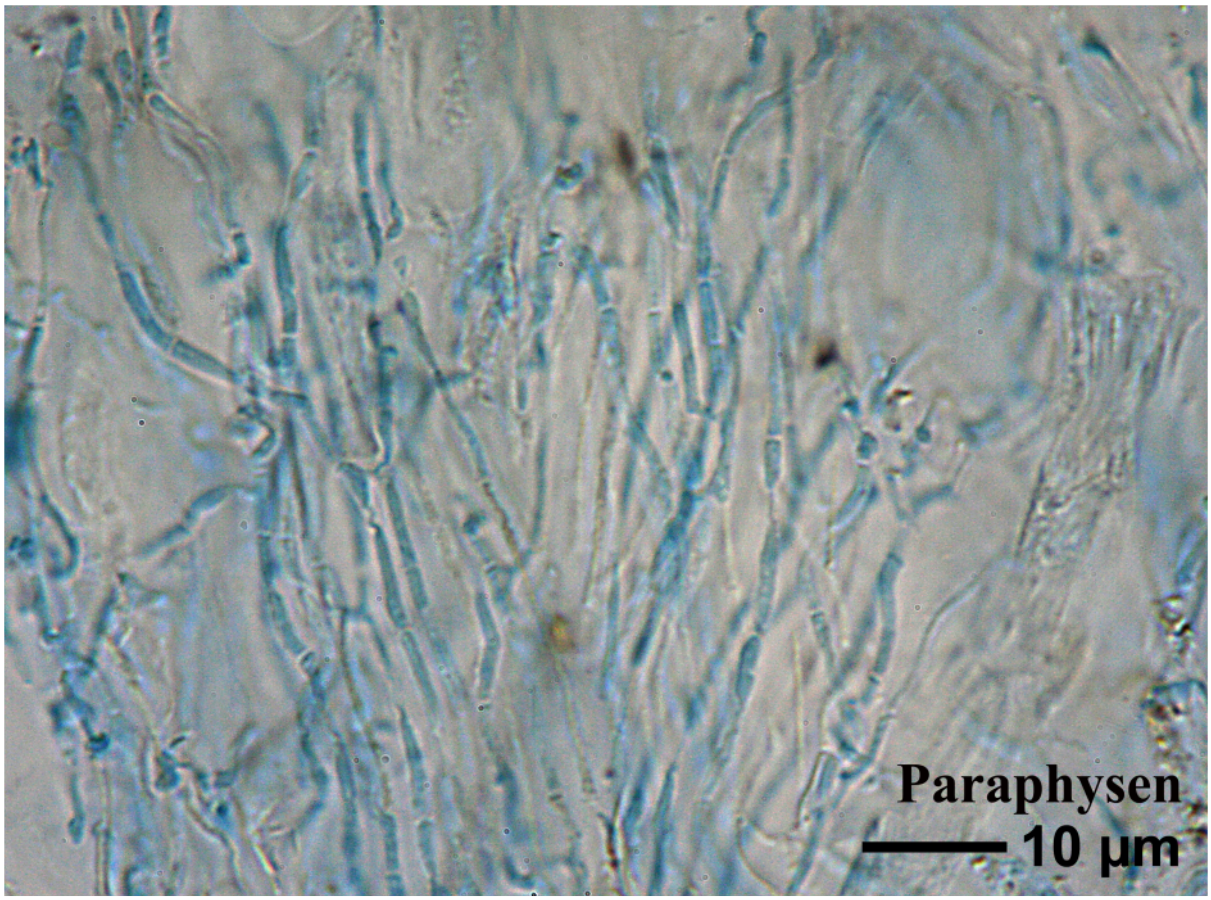




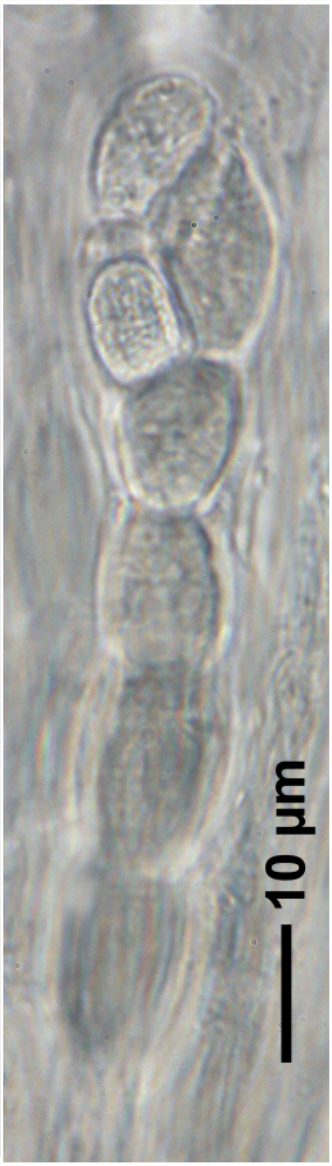
Malmidea subgranifera



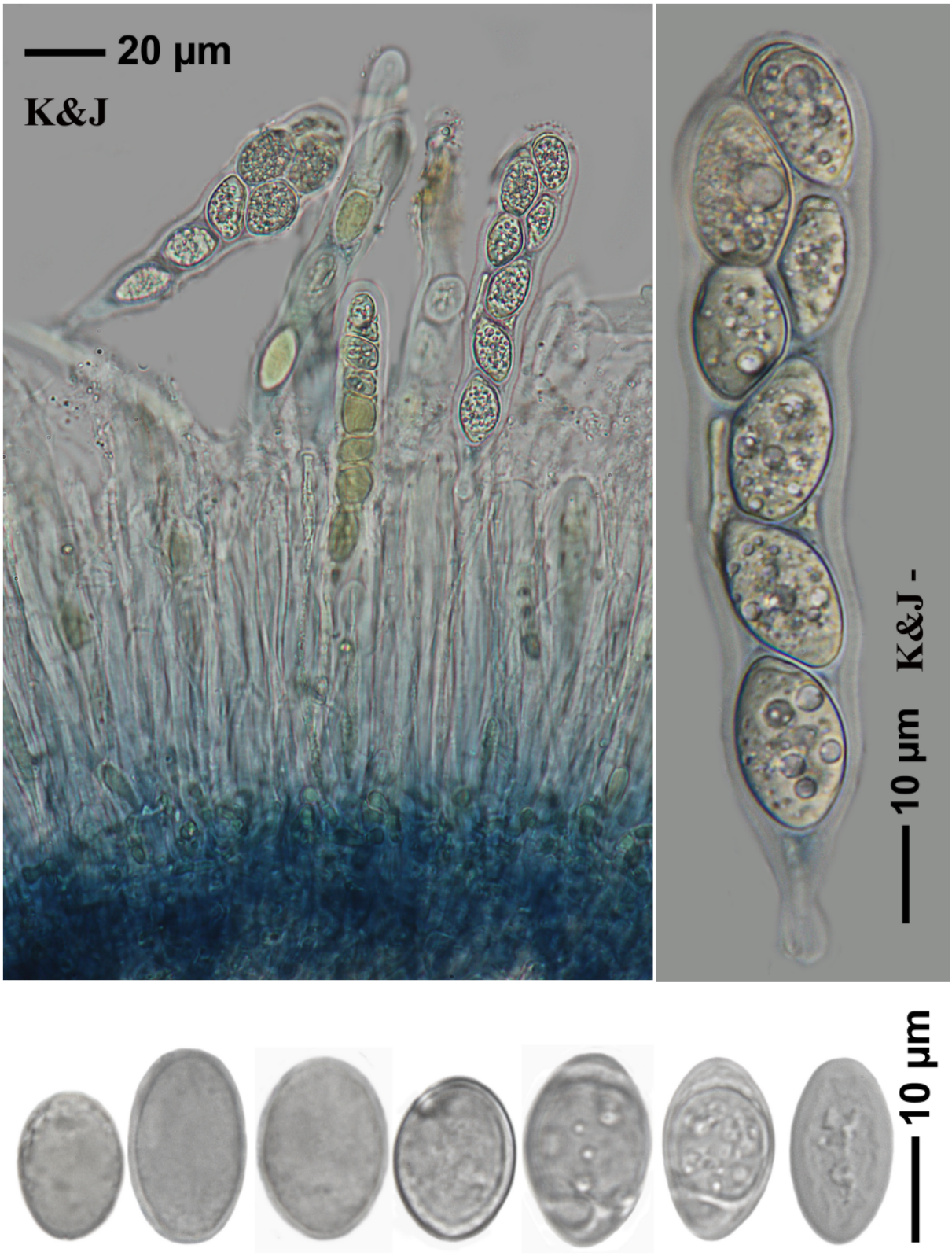
Malmidea subgranifera







Malmidea subgranifera



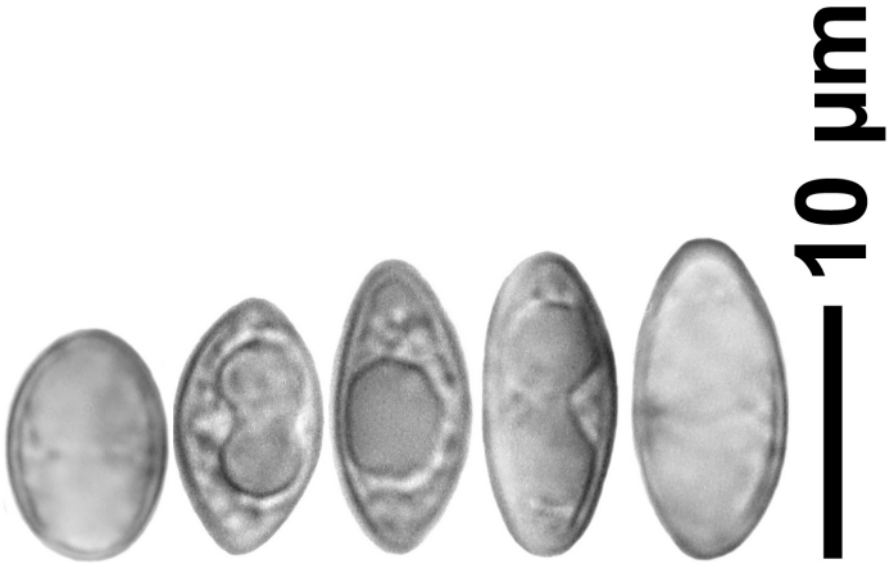
Malmidea subgranifera

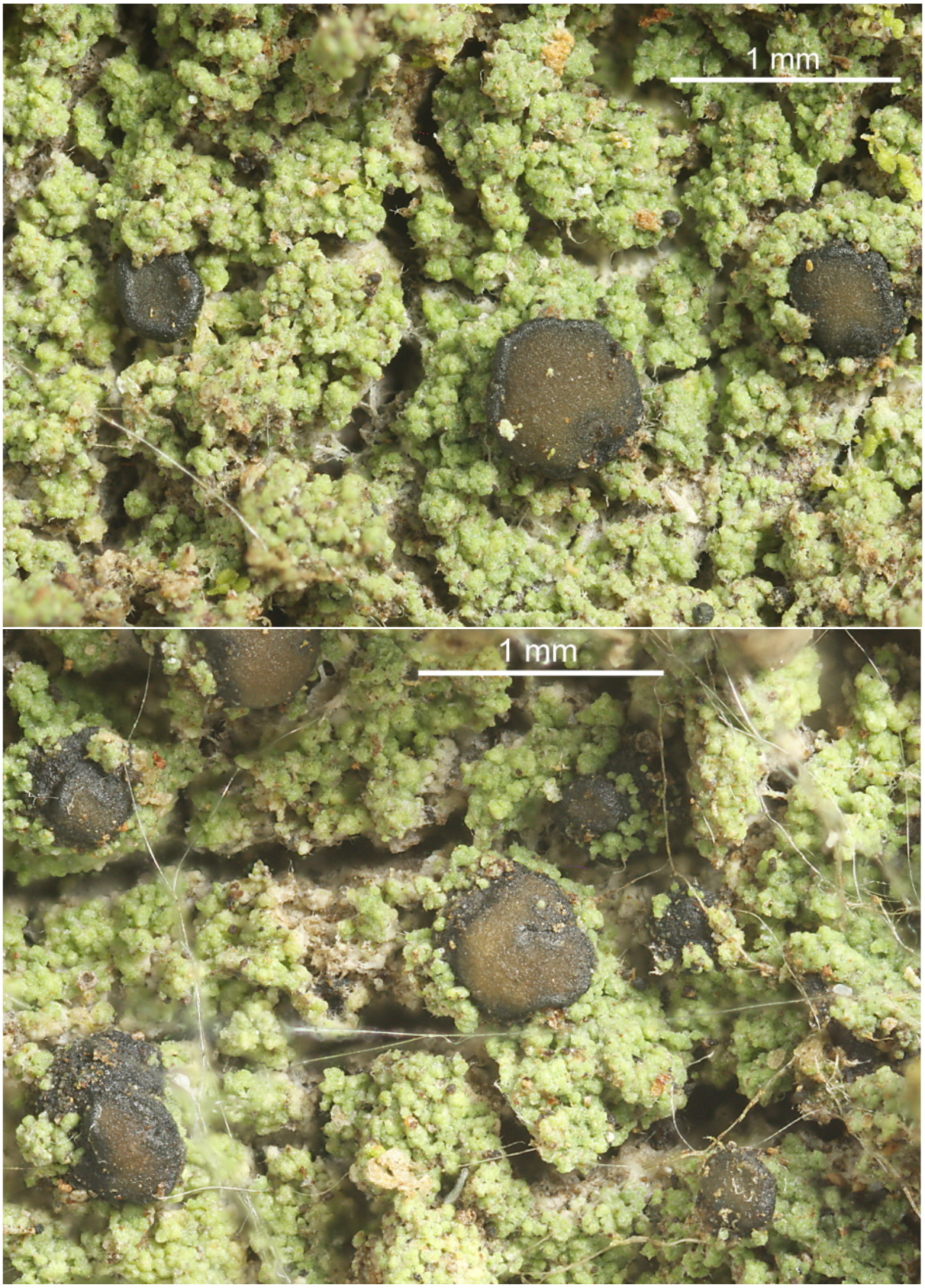
Malmidea tratiana Kalb & Mongkolsuk

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),
Lit. Kalb, K. et al. (2012): New or otherwise intersting lichens. VI.

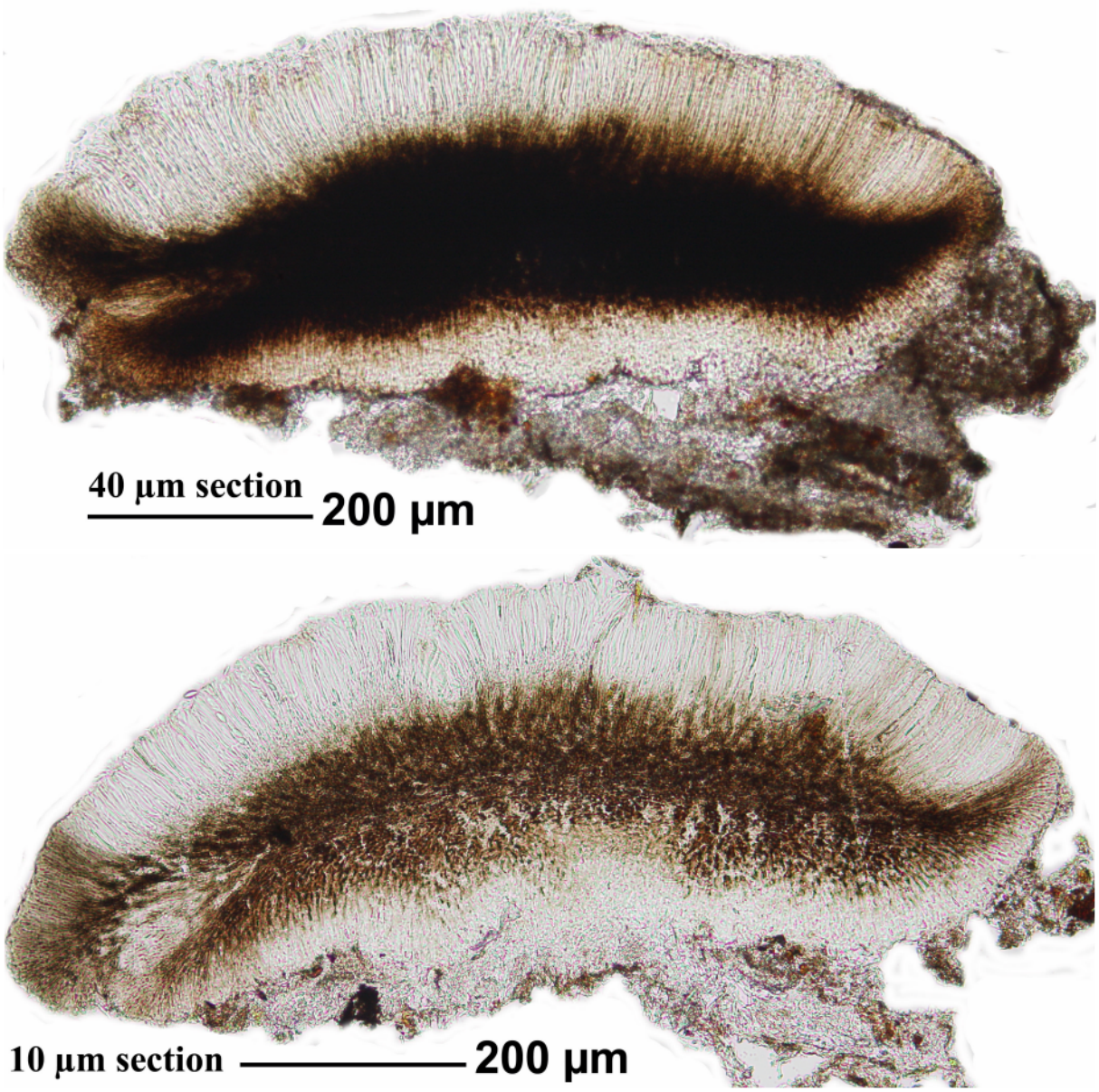
[17540], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm (IAL 7) 15.01.2012, det. Aptroot, teste Kalb 2012.



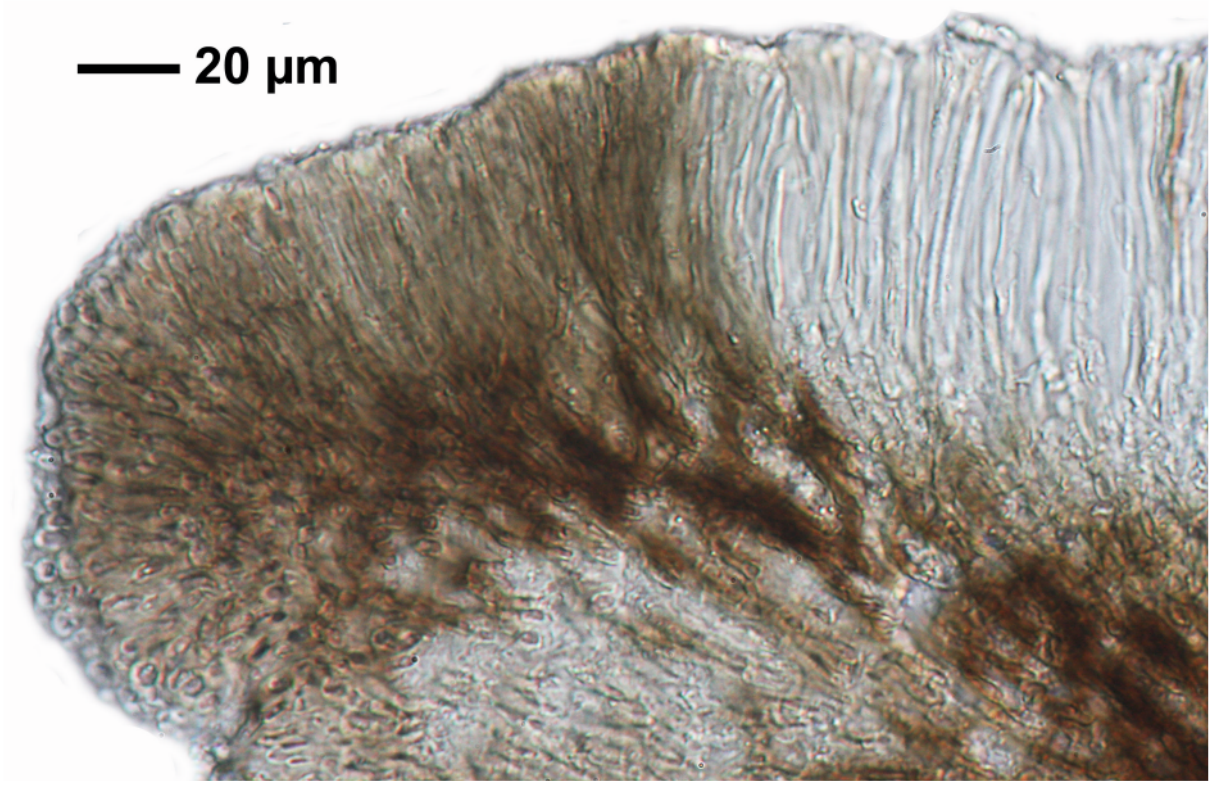




Malmidea tratiana

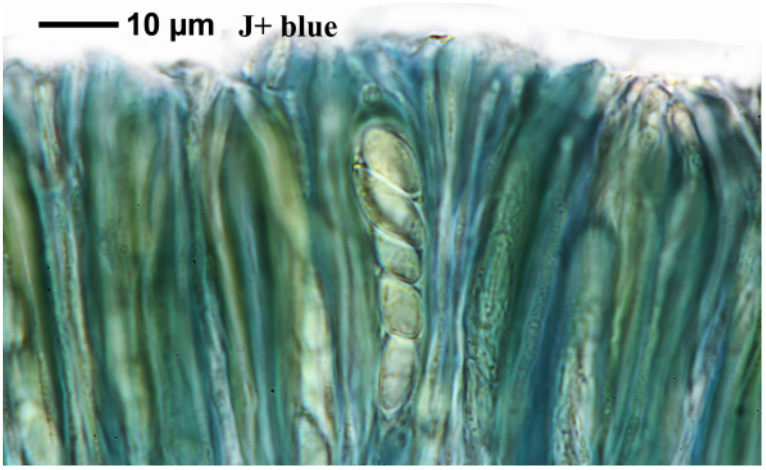


Malmidea tratiana









Malmidea tratiana

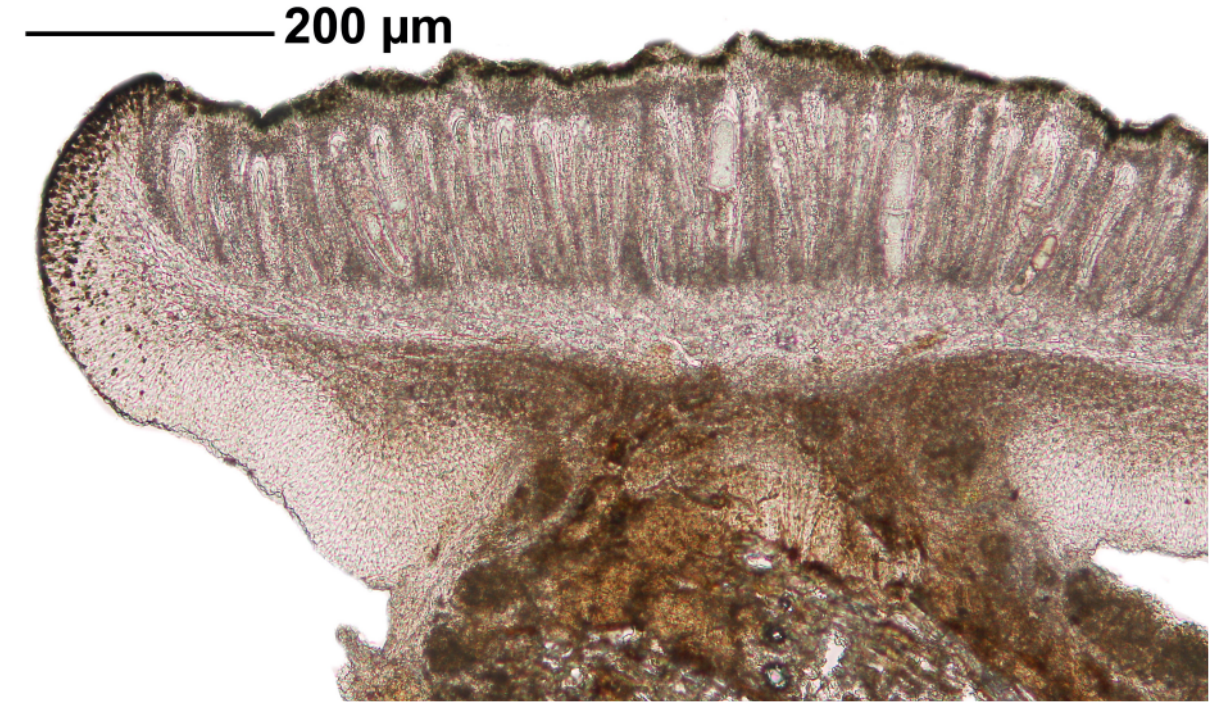
Megalospora atrorubicans (Nyl.) Zahlbr.

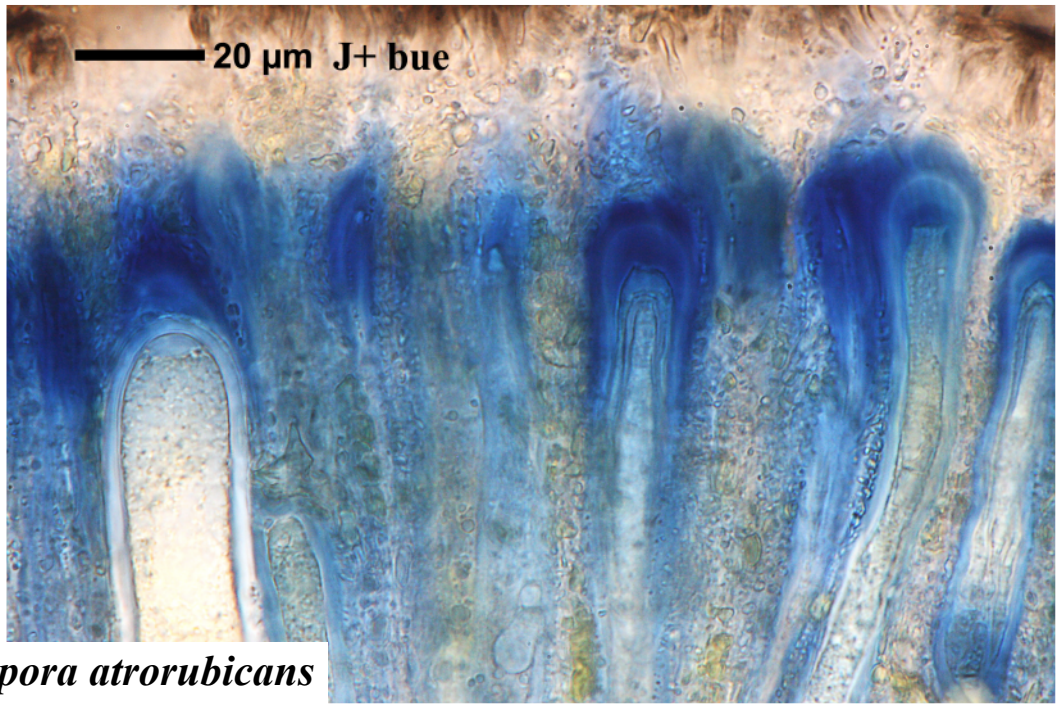
Thallus pale greenish or grey, rugulose. Isidia and soredia absent. Ascospores hyaline, 1-septate, 1/ascus, straight, 199-111 x 23-27 µm. Chemistry: Thallus K+ yellow, C-, KC+ yellow, P-, usnic acid, zeorin.

[5481], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, Sumpfgebiet am Westufer des Lake Venado, lichtoffen, Bergregenregion, halbschattig, 2210 m, 7°00.155’ N, 125°16.179' E; an Rinde. Leg. Uwe Schwarz 20.03.1999, det. Aptroot 2009









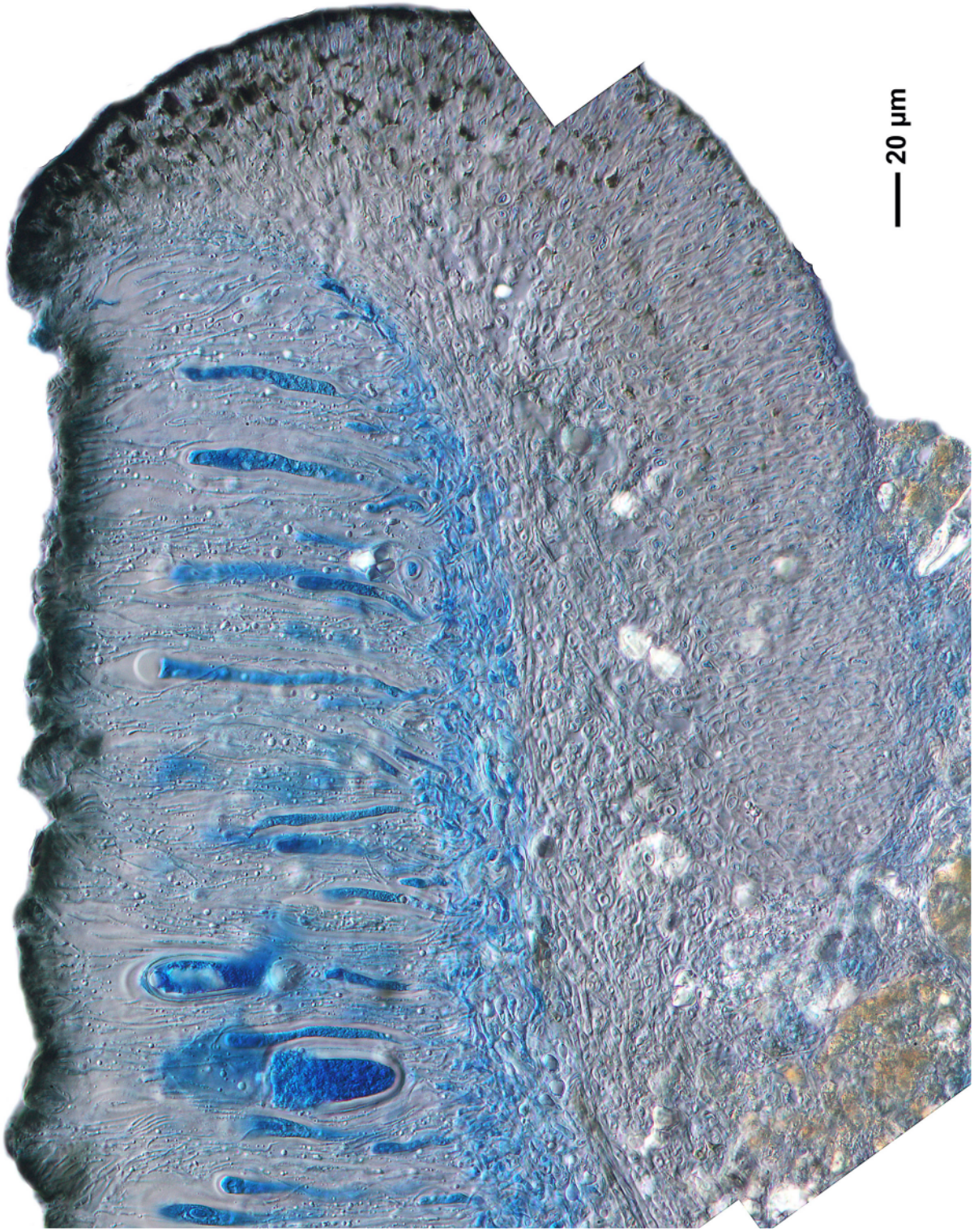
Megalospora atrorubicans







Megalospora atrorubicans



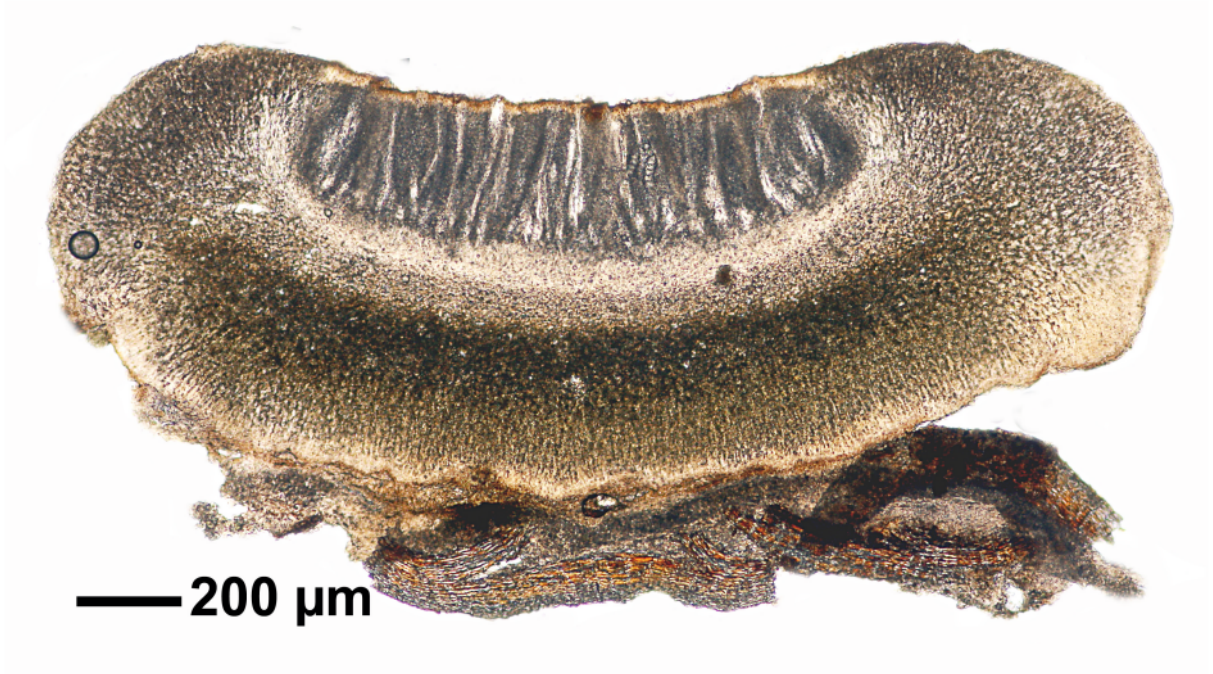
Megalospora atrorubicans

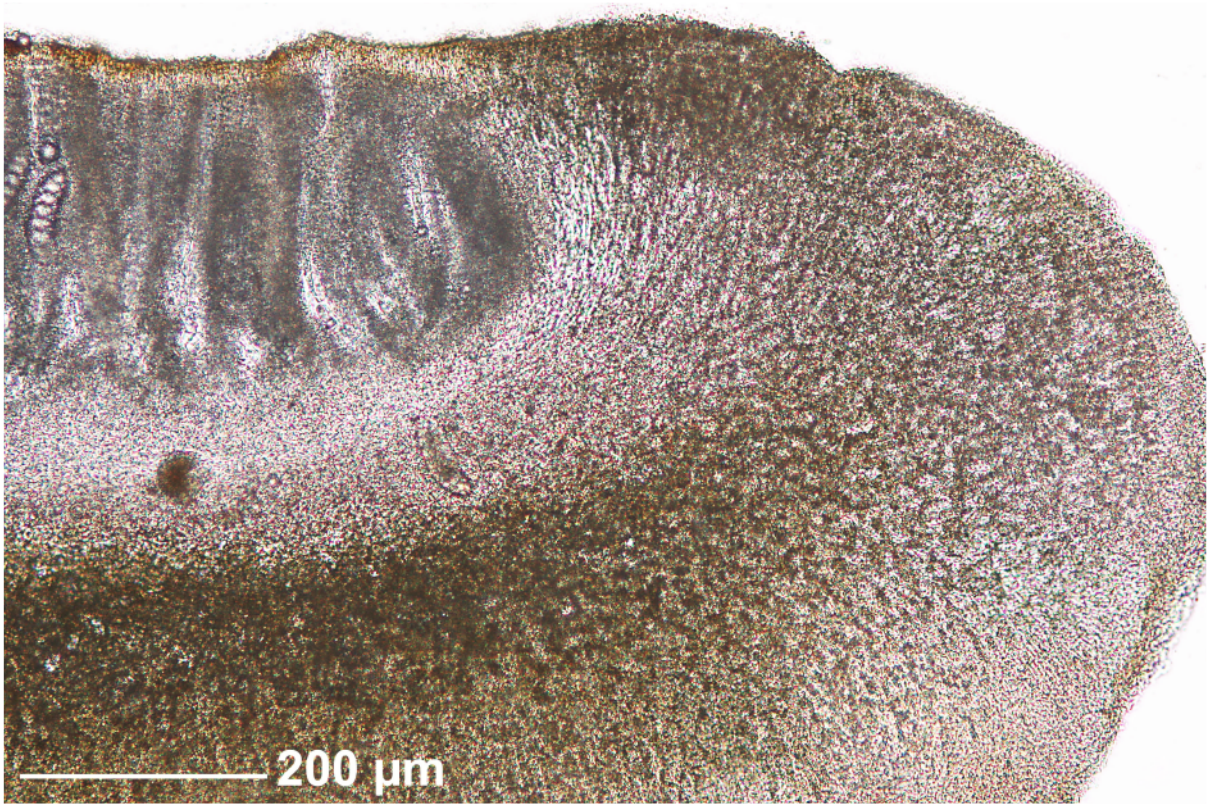
Megalospora coccodes (Bel.) Sipman

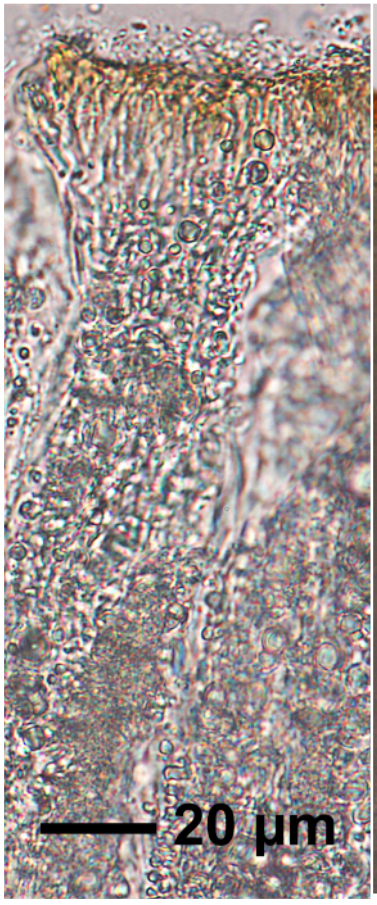
Hymenium inspersed, appr. 300 µm high. Excipulum with small yellowish crystals. Ascospores hyaline, 2/ascus, curved, 6-7-septate, 82-91 x 27-30 µm. Chemistry: zeorin, pannarin, thallus P+ orange.

[15250], La Reunion, Takamaka, feuchte waldige Felshänge bei der Elektrostation; 21,09105° S, 55,61998° E, 800 m. Leg. Schumm & Frahm 10.09.2009, det. Schumm 2010.

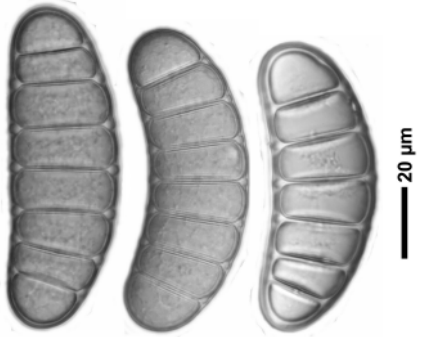












Megalospora coccodes

Megalospora halei Sipman

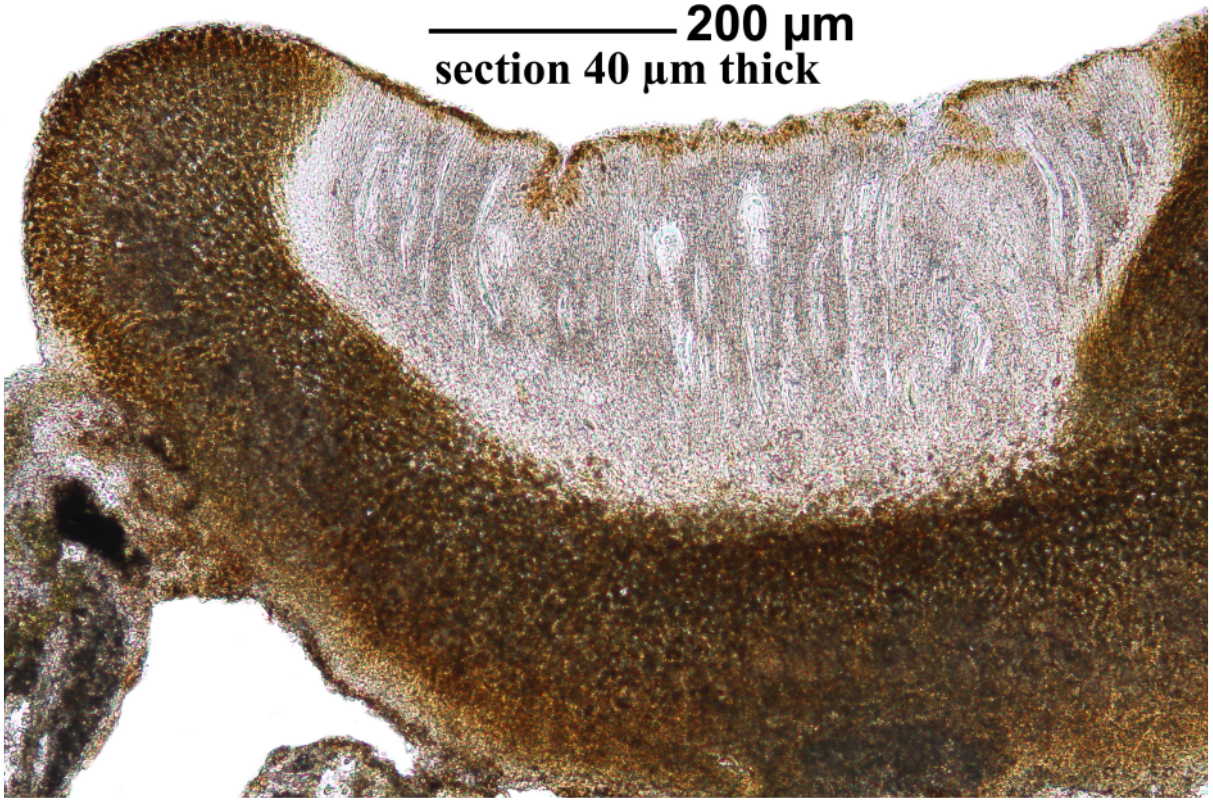
Thallus with isidia. Excipulum with many crystals, K+ intense yellow, soluble in acetone and methylene glycol, yellow drops in hot lactophenol. Hymenium inspersed, appr. 300 µm. Ascospores hyaline, straight, 1/ascus, 7-septate, c. 100 x 29 µm. Chemistry: Thallus P-, K+ sordid yellow, KC+ intensely lemon yellow. Lit. Sipman (Bibl. Lichenol. 18, 1983)

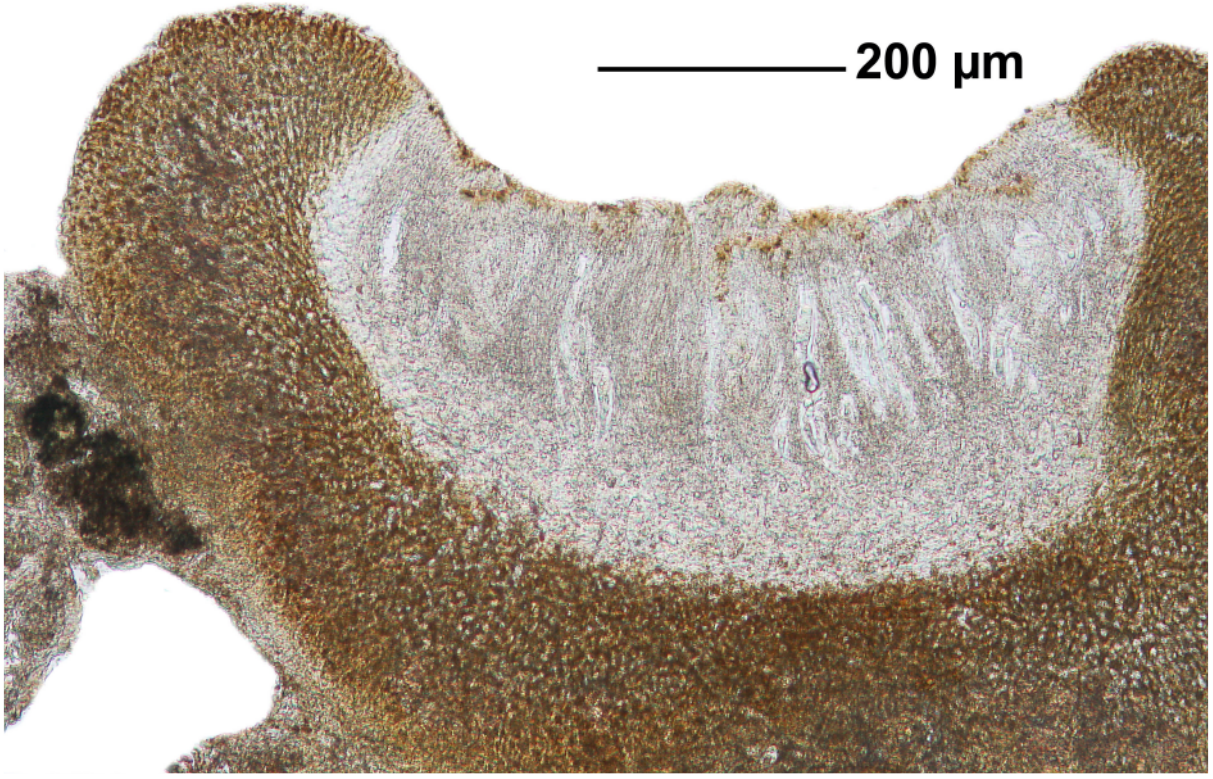
[15213], La Reunion, Picknickplatz Col de Bellevue, südwestlich La Plaina des Palmistes, nebelfeuchter Wald mit Baumfarnen, 21,16580° S, 55,5903° E, 1610 m. Leg. Schumm & Frahm 09.09.2009, det. Schumm 2011.



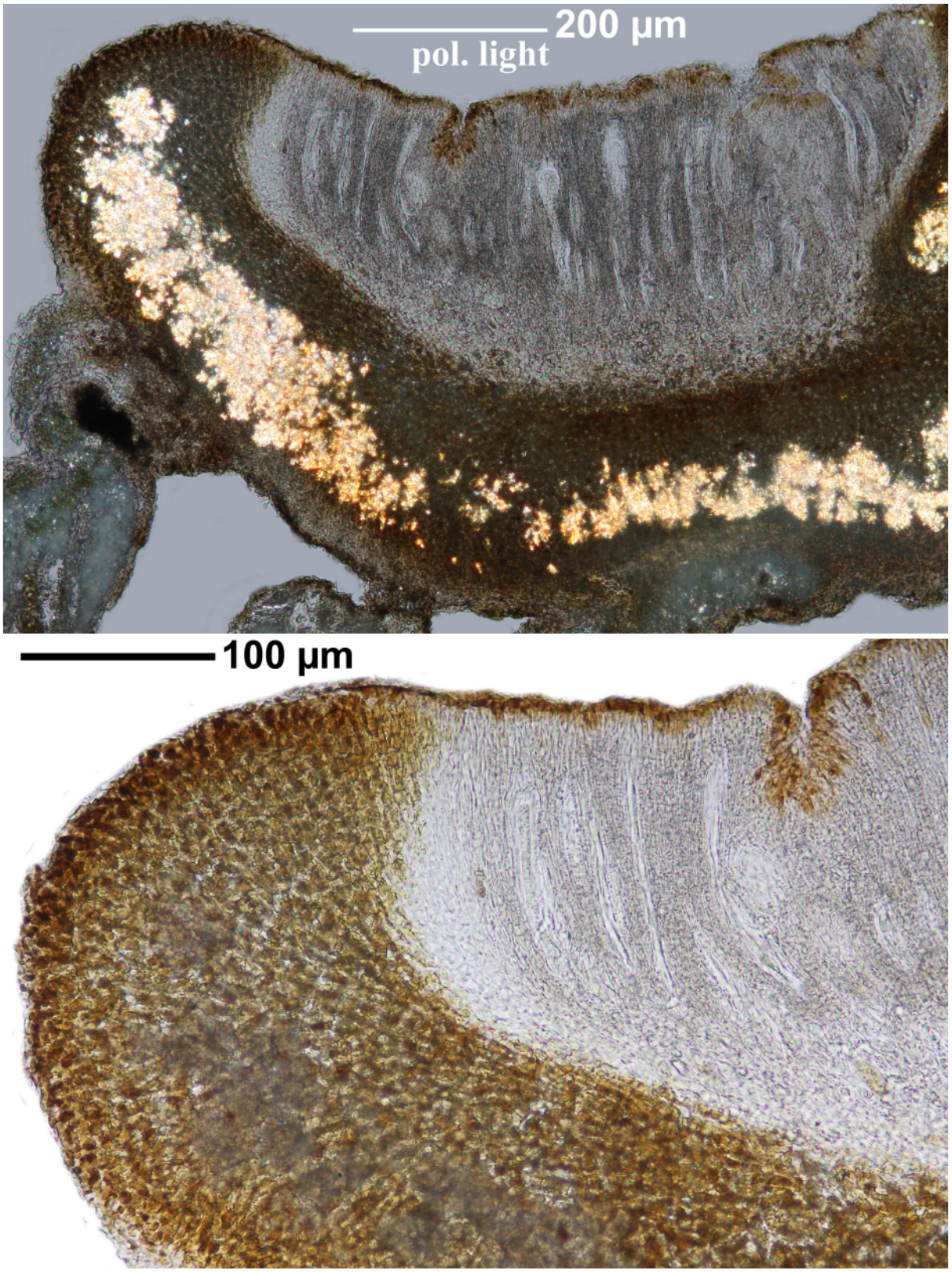


Megalospora halei

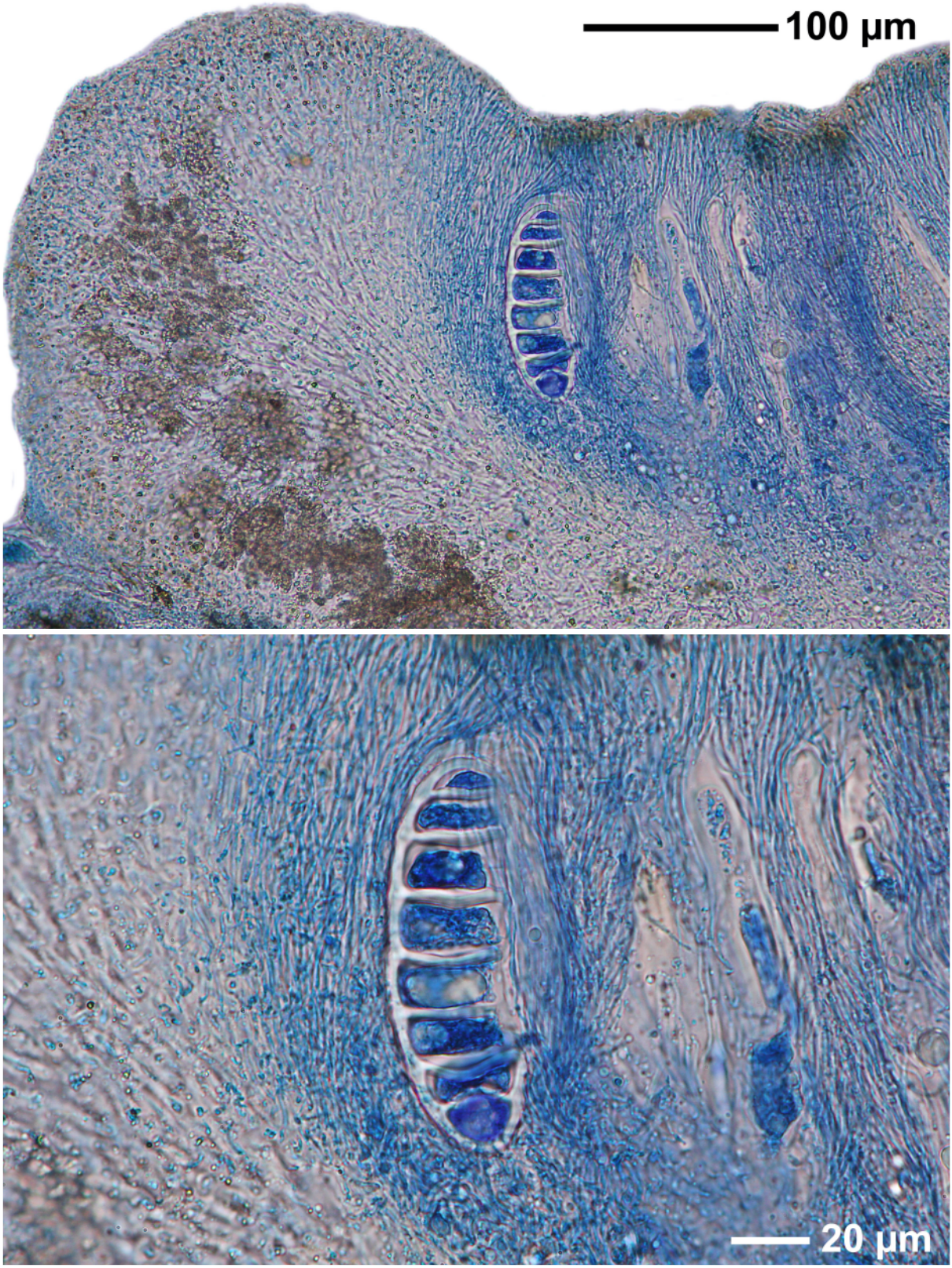




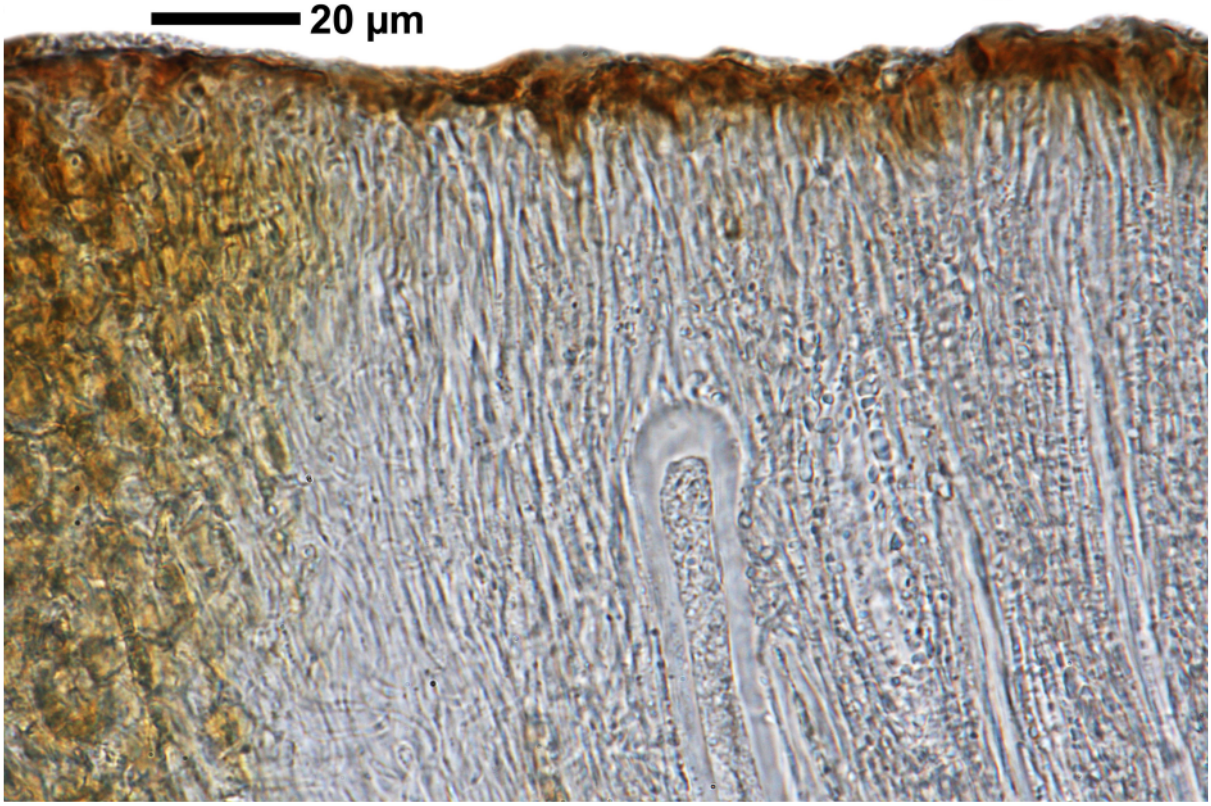
Megalospora halei



Megalospora halei



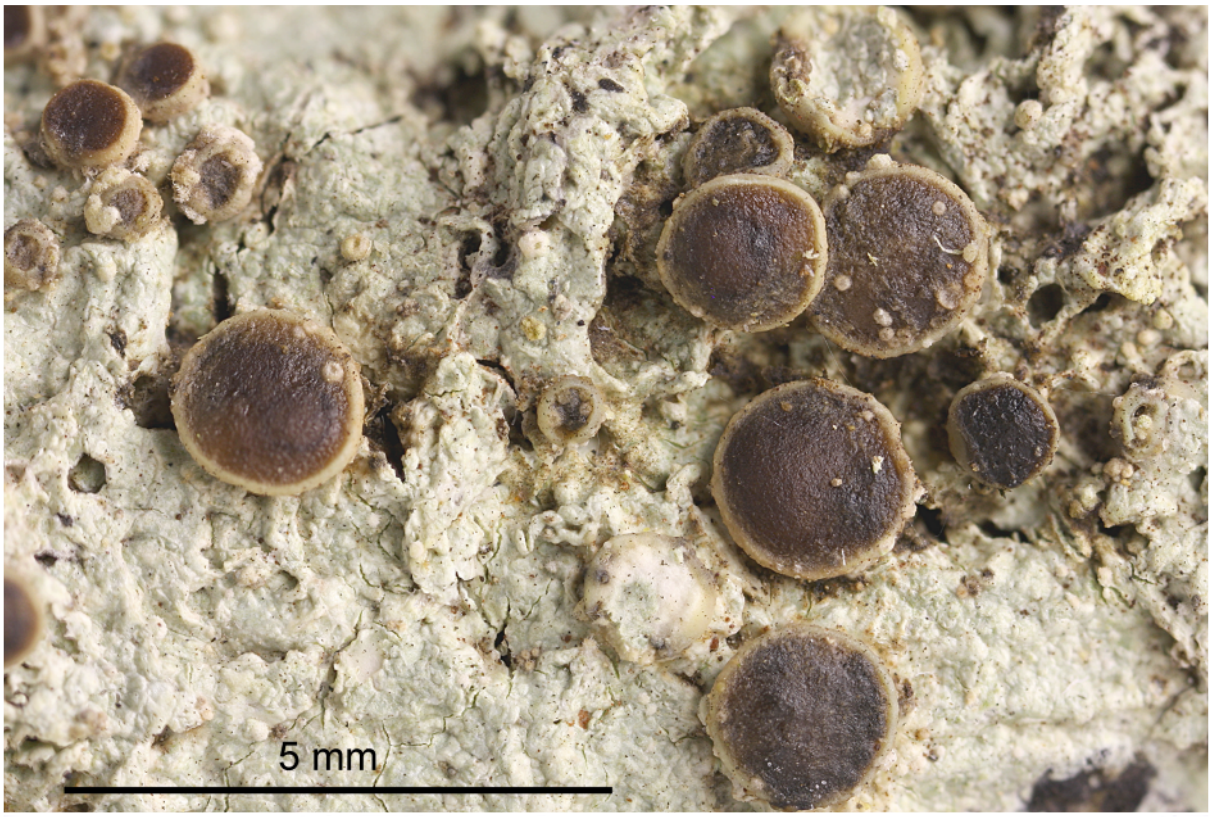
Megalospora halei

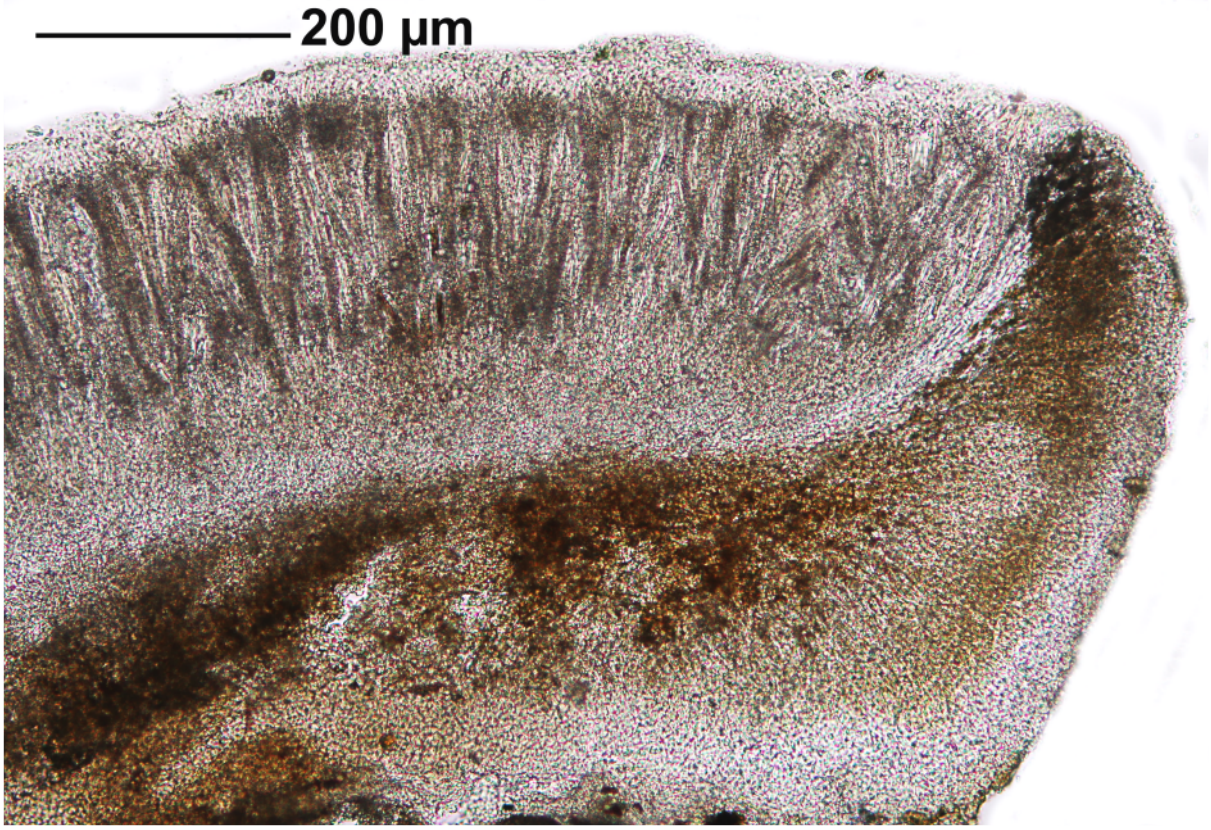


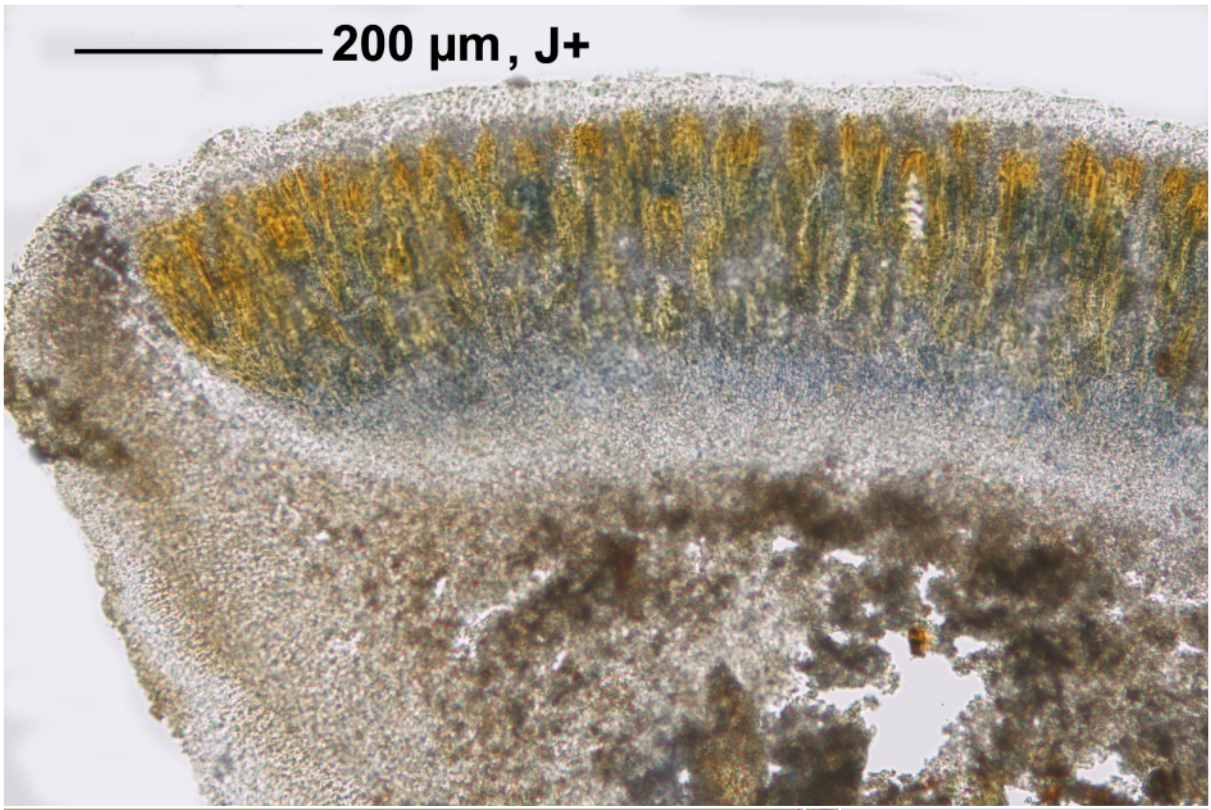
Megalospora halei

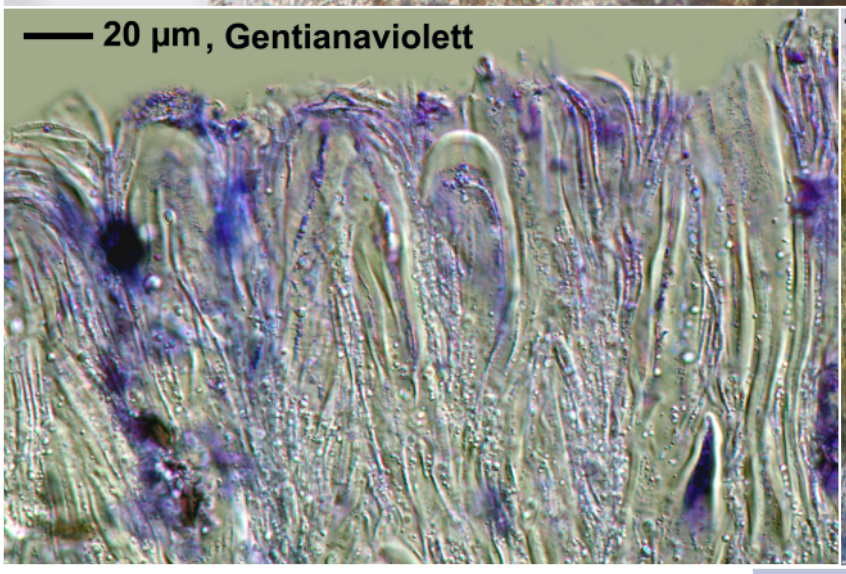
Megalospora tuberculosa (Fée) Sipman

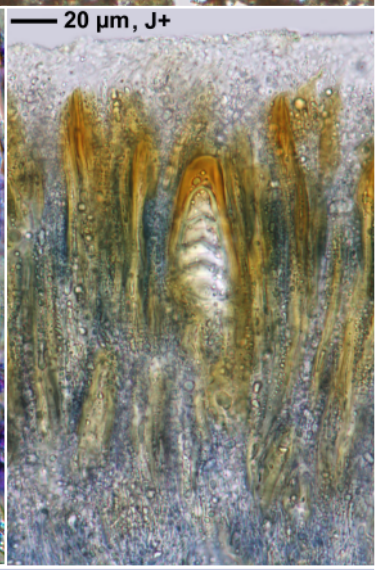
Excipulum without algae, K-. Hymenium densely inspersed, J+ first bluish then browned. Asospores c. 1/ascus, transversely 6-8(-11) septate, straight, 70-140 x 25-35 µm. Thallus P-.
[15388], La Reunion, Foret de Bébour, Sentier de Piton Bébour; 21,12860° S, 55,56962° E, 1300 m. Leg. Schumm & Frahm 12.09.2009, det. Schumm 2009.







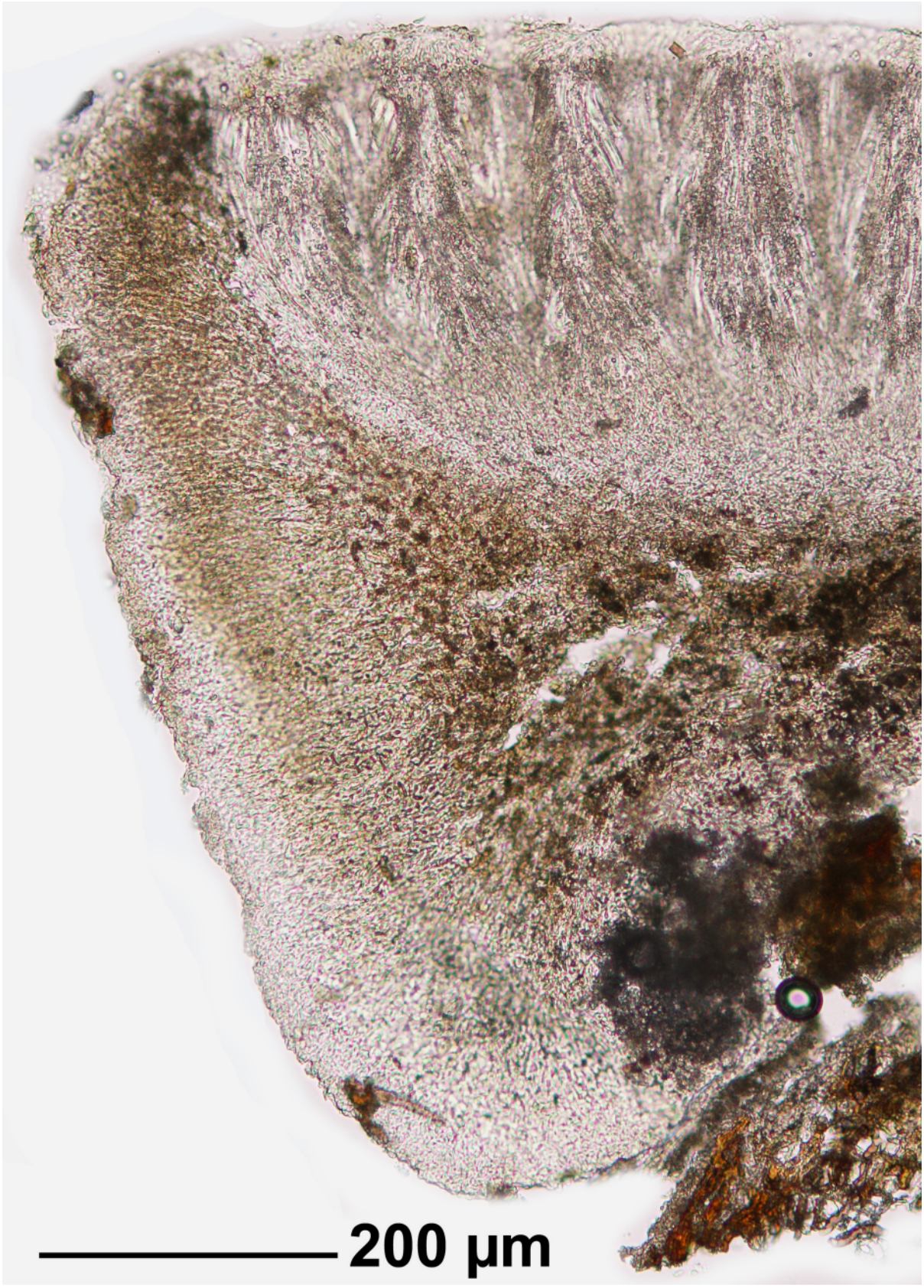








Megalospora tuberculosa

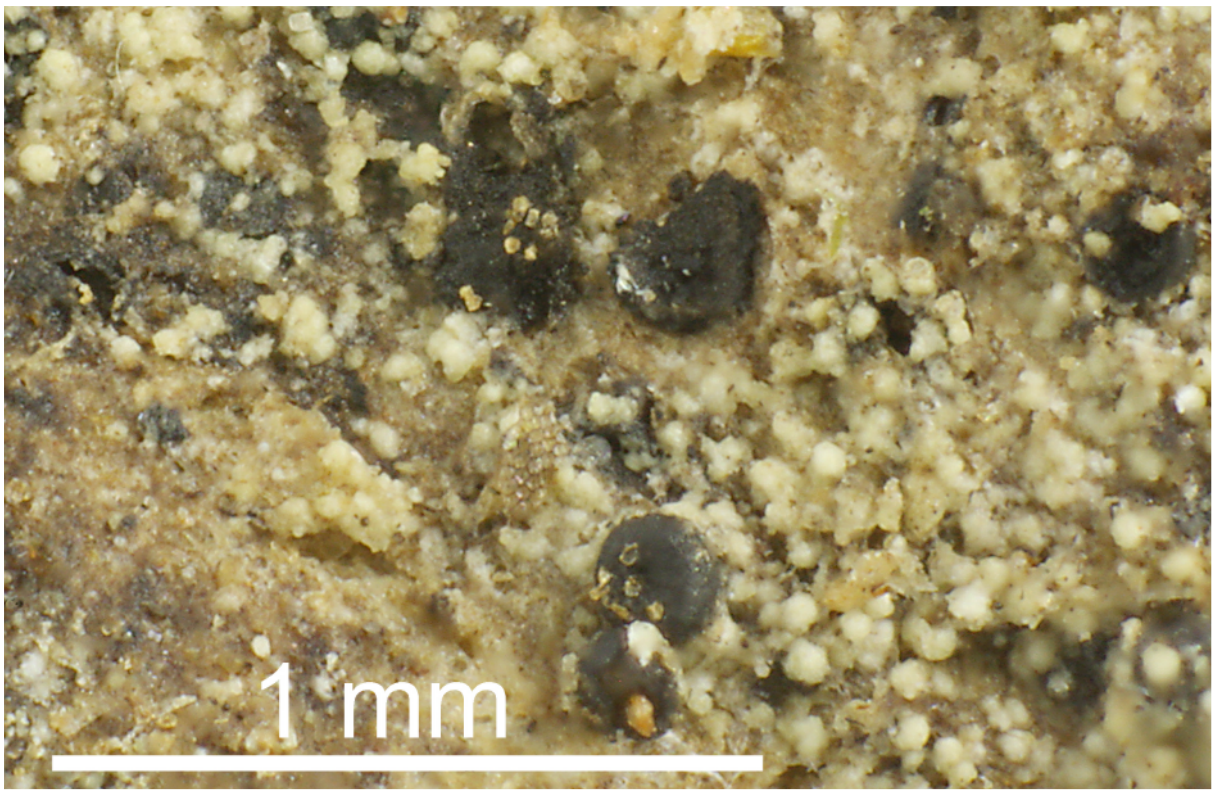


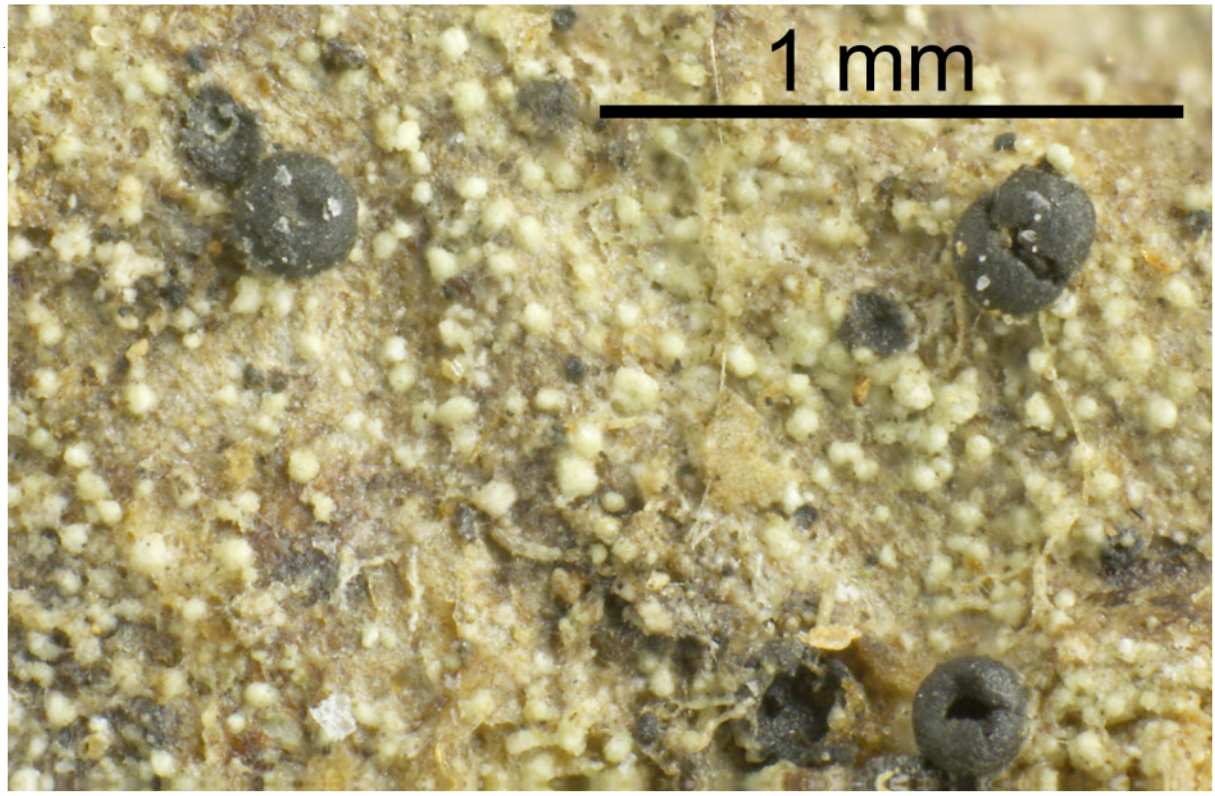
Megalospora tuberculosa

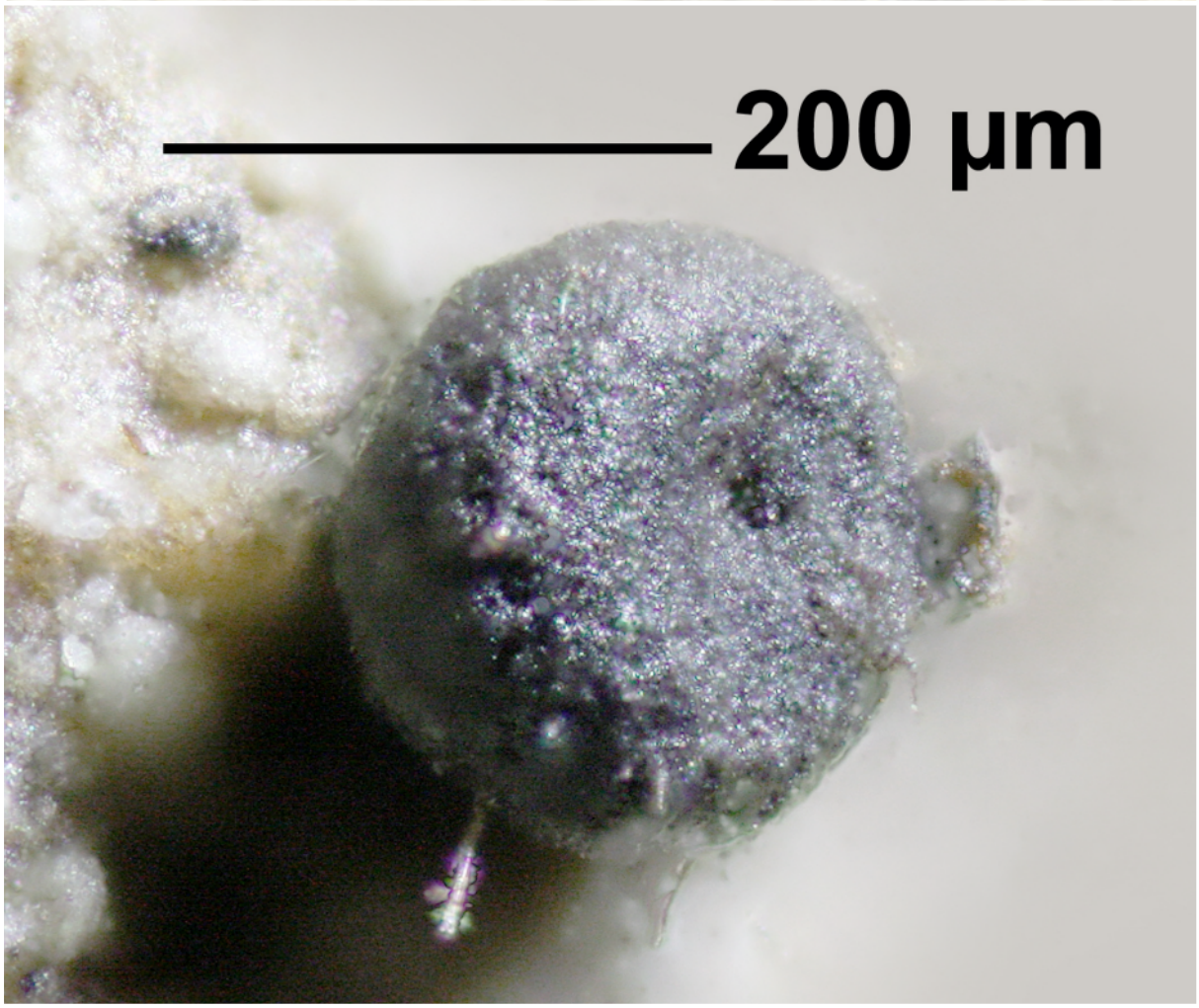
Melanophloea pacifica P.James & Vězda

Thallus smooth, dispersed, whitish to green 0.04-0.09 granules. Algae chlorococcoid, globose, 4.8-6.5 µm diam, 1 paritale chloroplast. Ascomata pyrenocarpous, black, constricted at the base, 0.15-0.2 mm diam, nearly globose but flattened at the top with preformed somwhat depressed ostiole. Exciple closed, brown to black, 33-44 µm diam, in the upper part full with crystalls (polarized light!). Inside a stratum, hyline, small cellular, 26 µm diam before the filaments. Periphyses absent. Filaments ca. 0.83 µm thick, strongly branched with many anastomoses., without discernable septa, tips unchanged, not forming an epithecium but ending in the ostiole. Asci uniformly thick-walled with wall c. 2 µm wide, at the tip the wall c. 3 µm, tip when young with flat and wide ocular chamber, bitunicate, in J+ faint bluish. Ascospores hyaline, globose, 2.7-3 µm, >500/ascus. Lit.: Aptroot & Schumm, Lichenologist 44: 501-509 (2012).

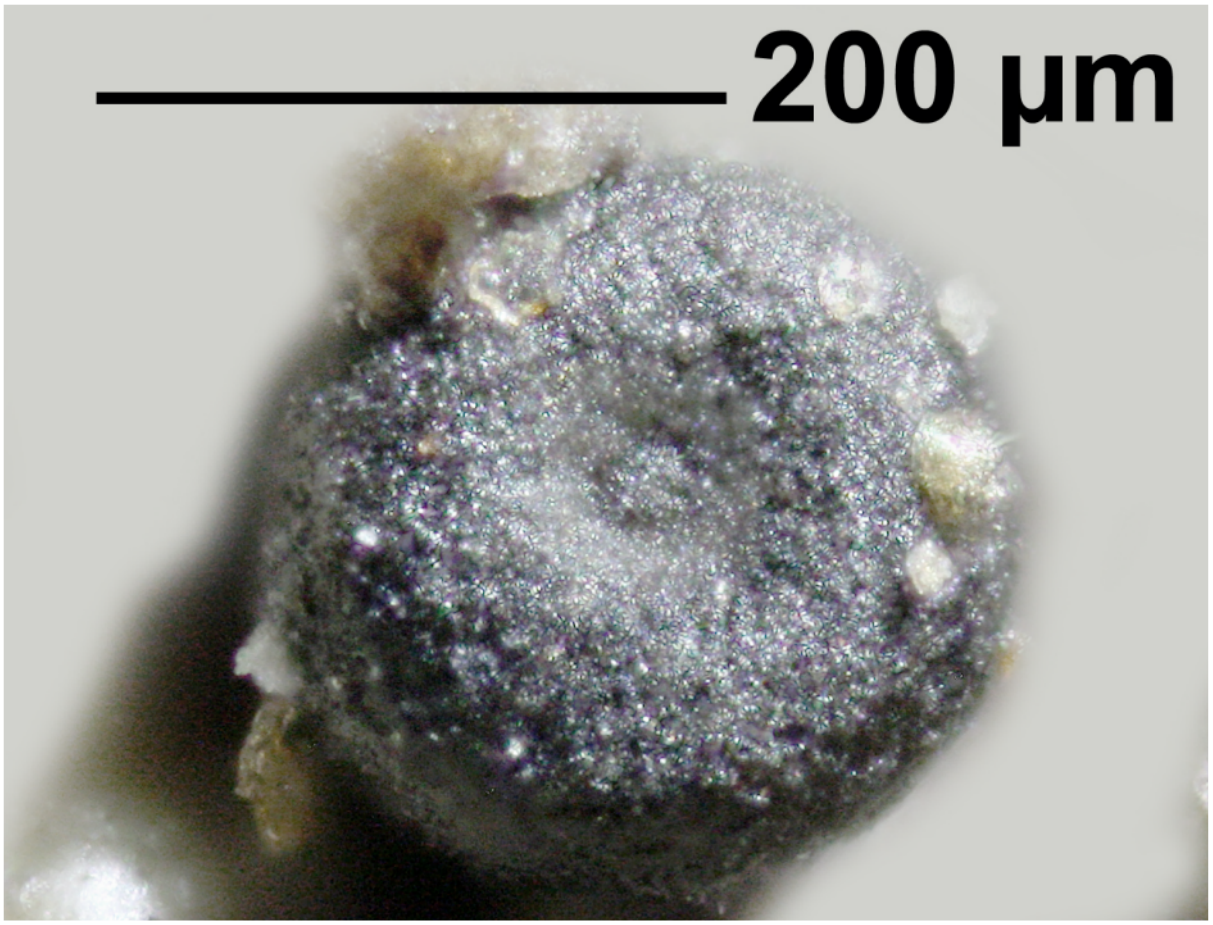
[ABL36520], Papua New Guinea, Madang Province, foothills of Finisterre range, 40.8 km along road Madang-Lae. 5°26’ S, 145°34’ E, 200 m, primary forest. Leg. Aptroot 2. Nov. 1995, det. Aptroot 1996.

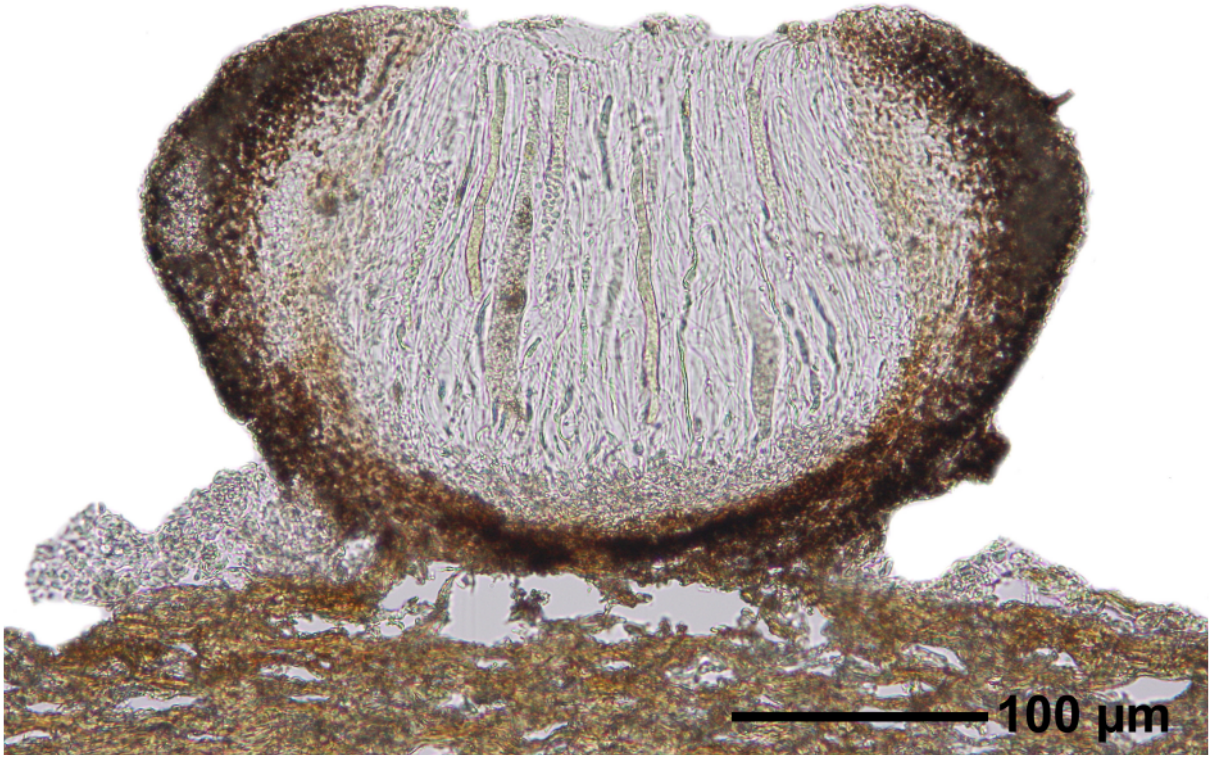




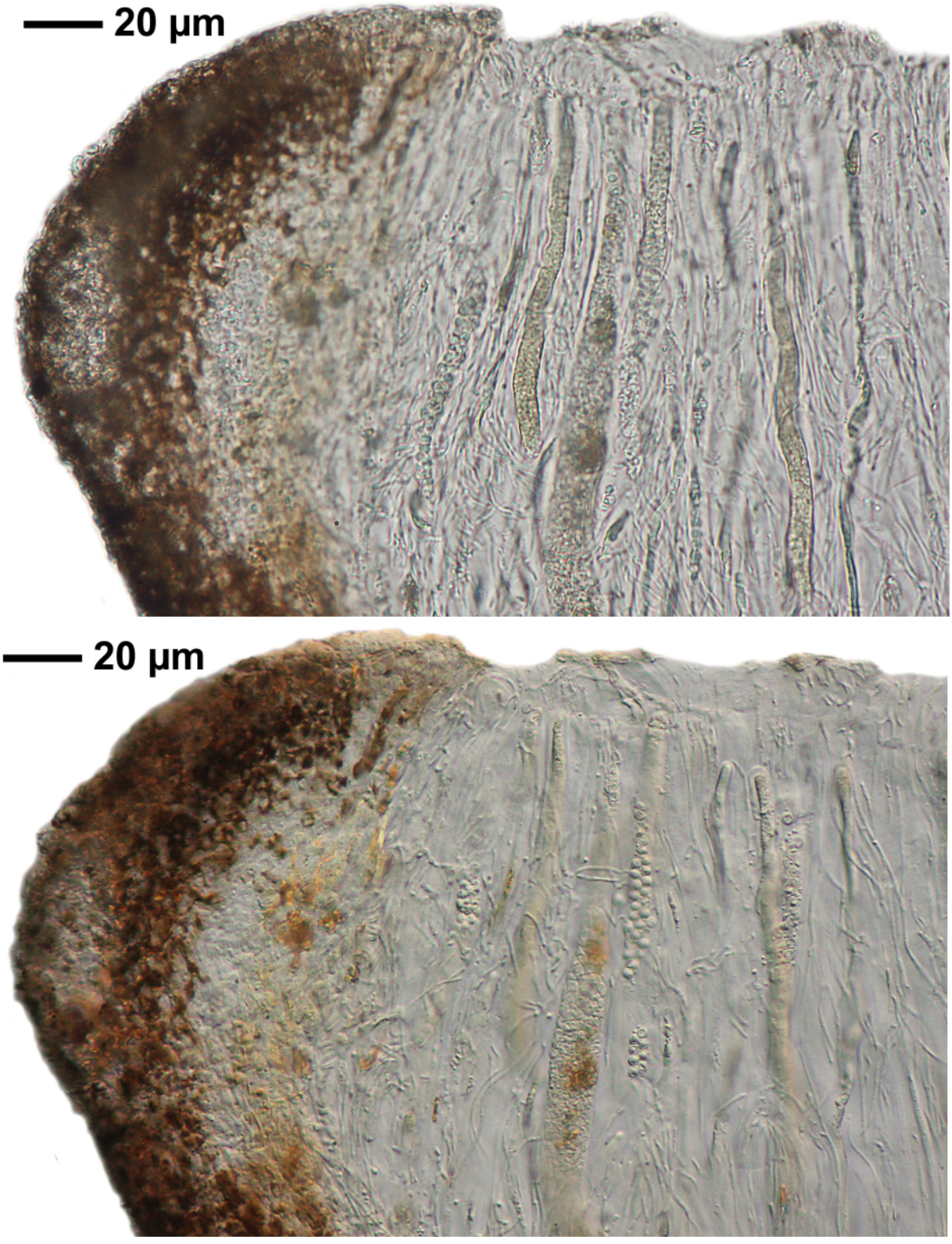


Melanophloea pacifica





Melanophloea pacifica



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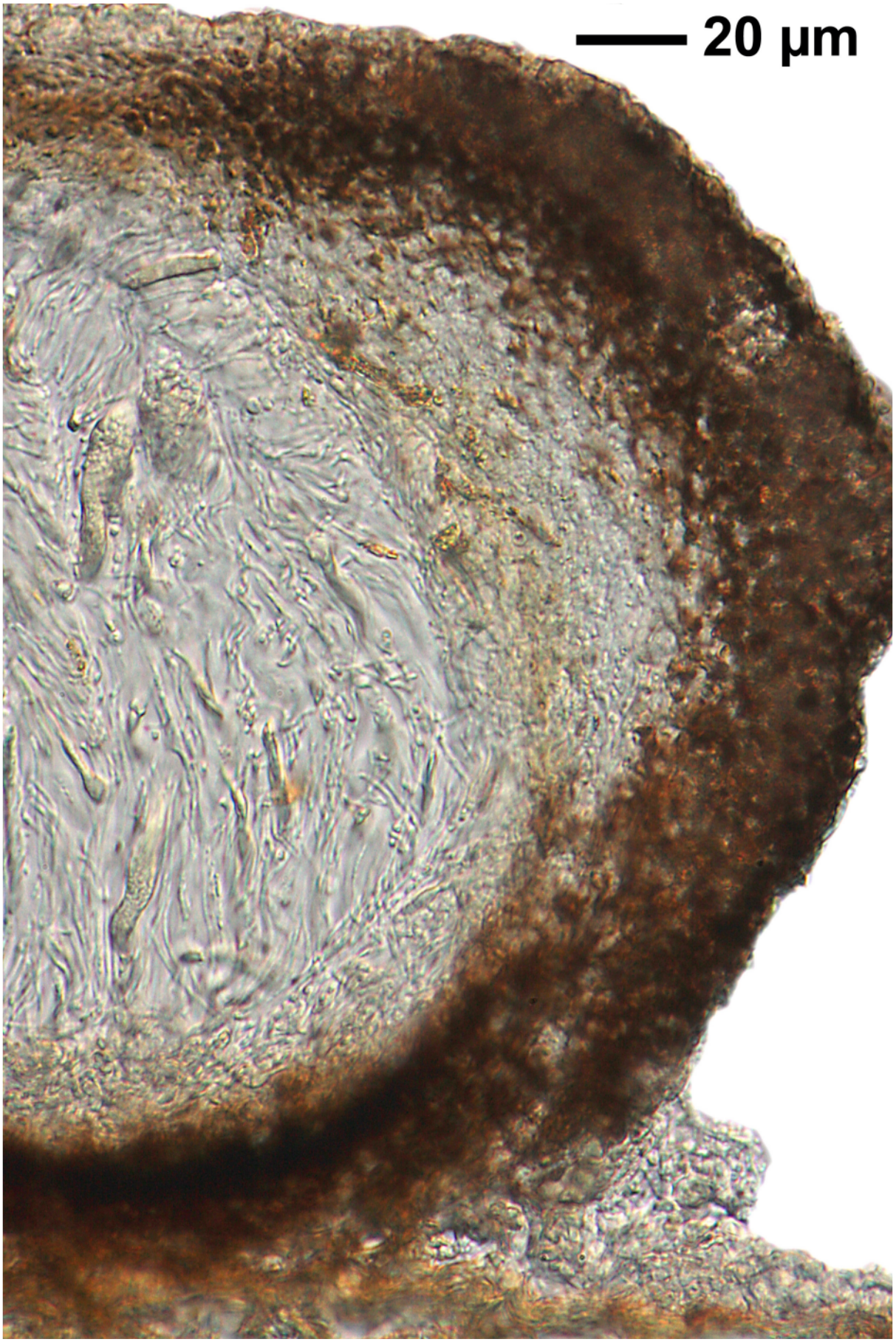
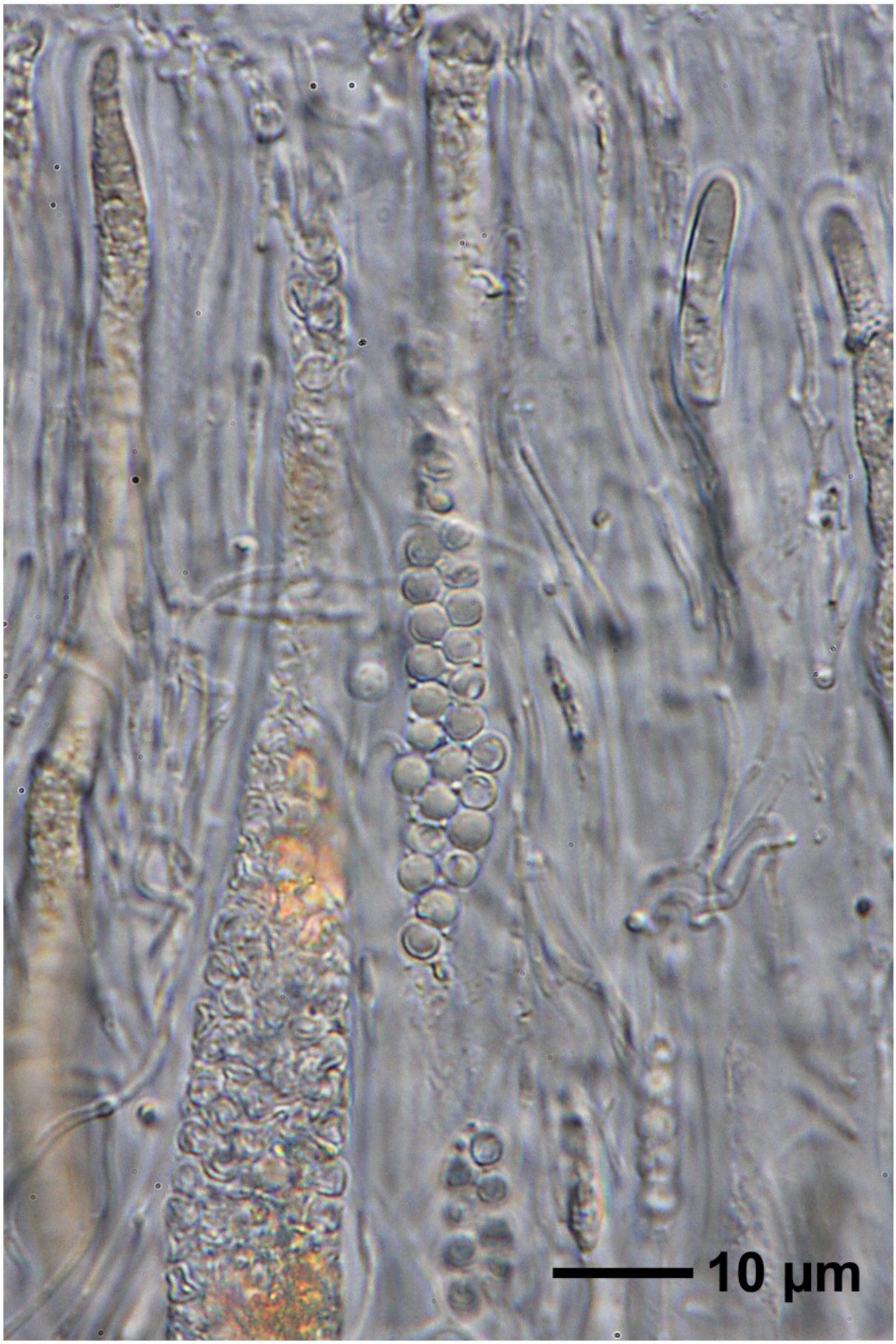
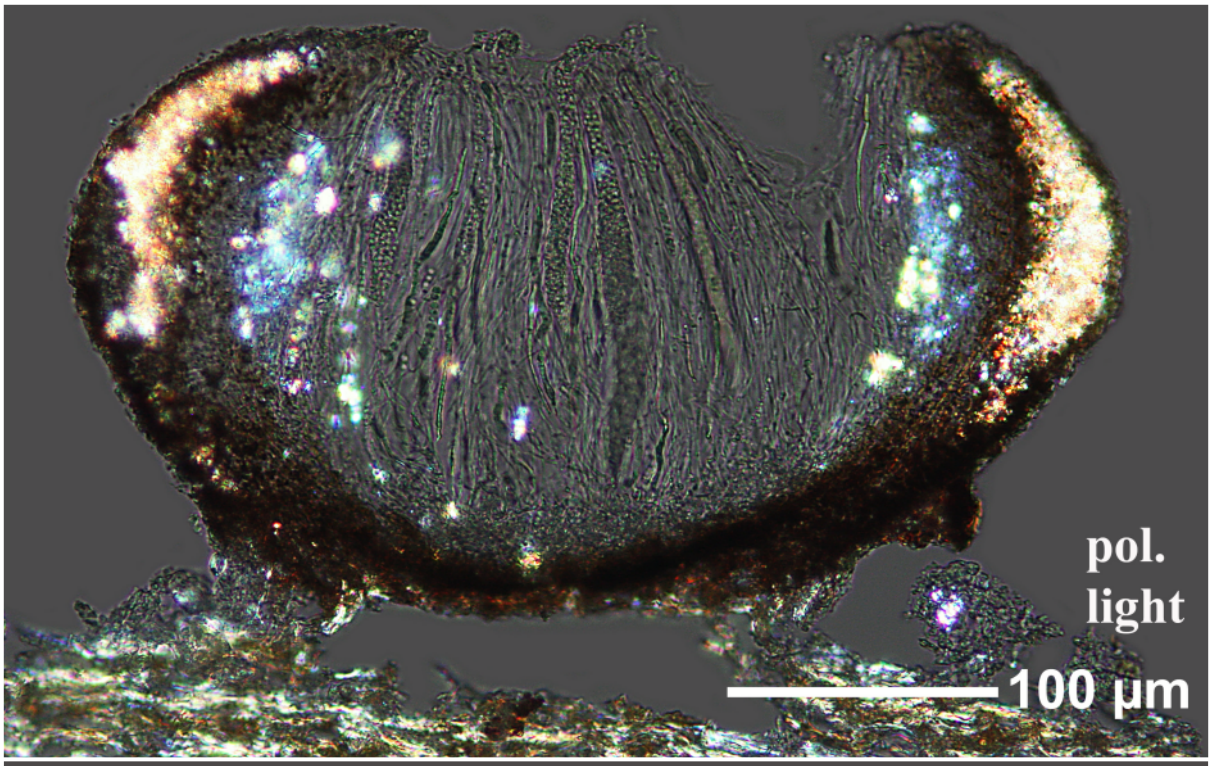
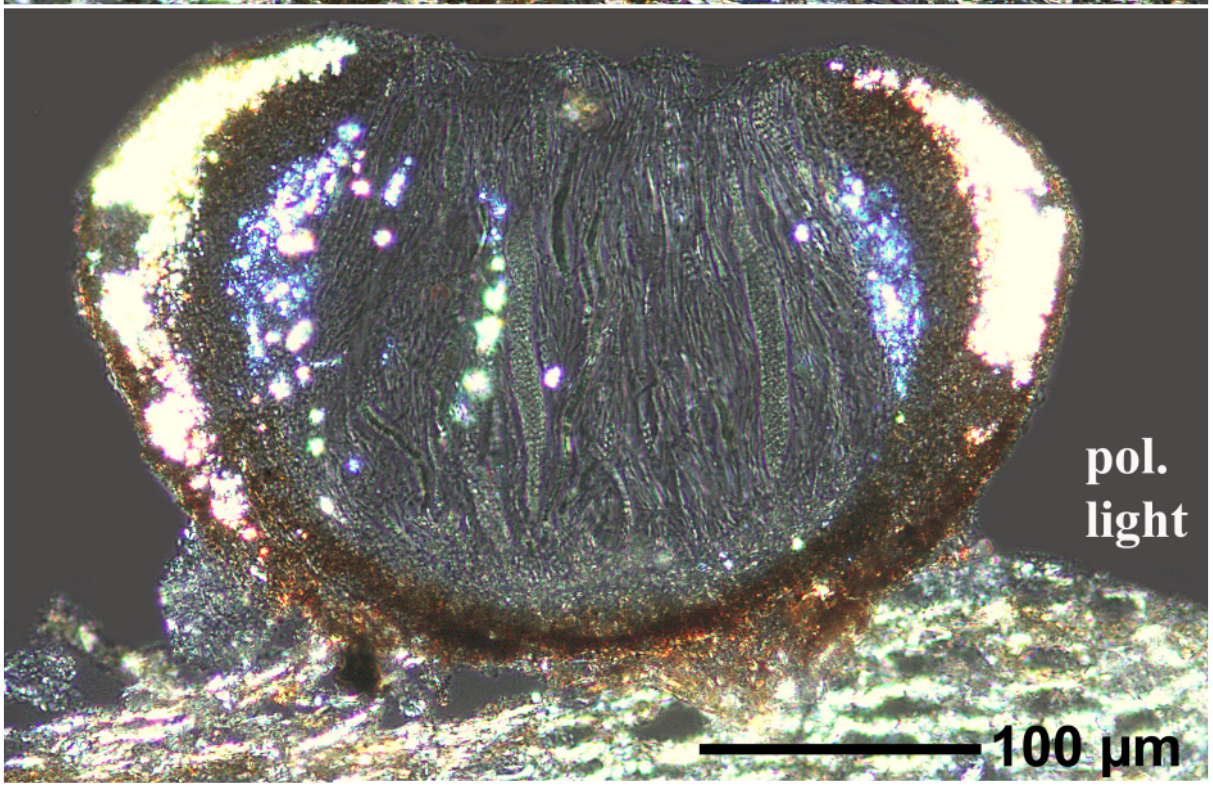


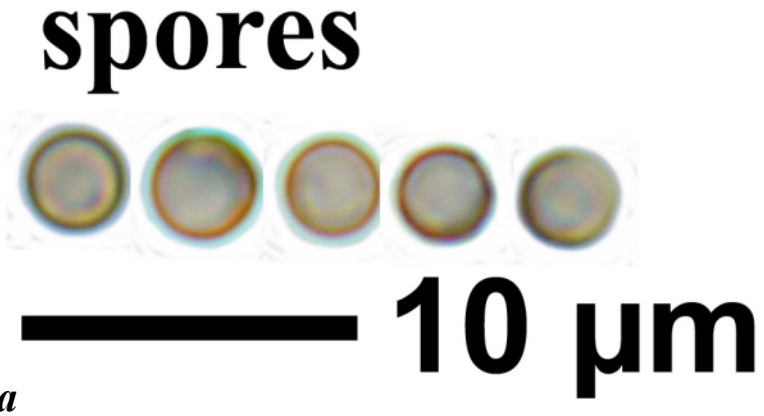
Melanophloea pacifica



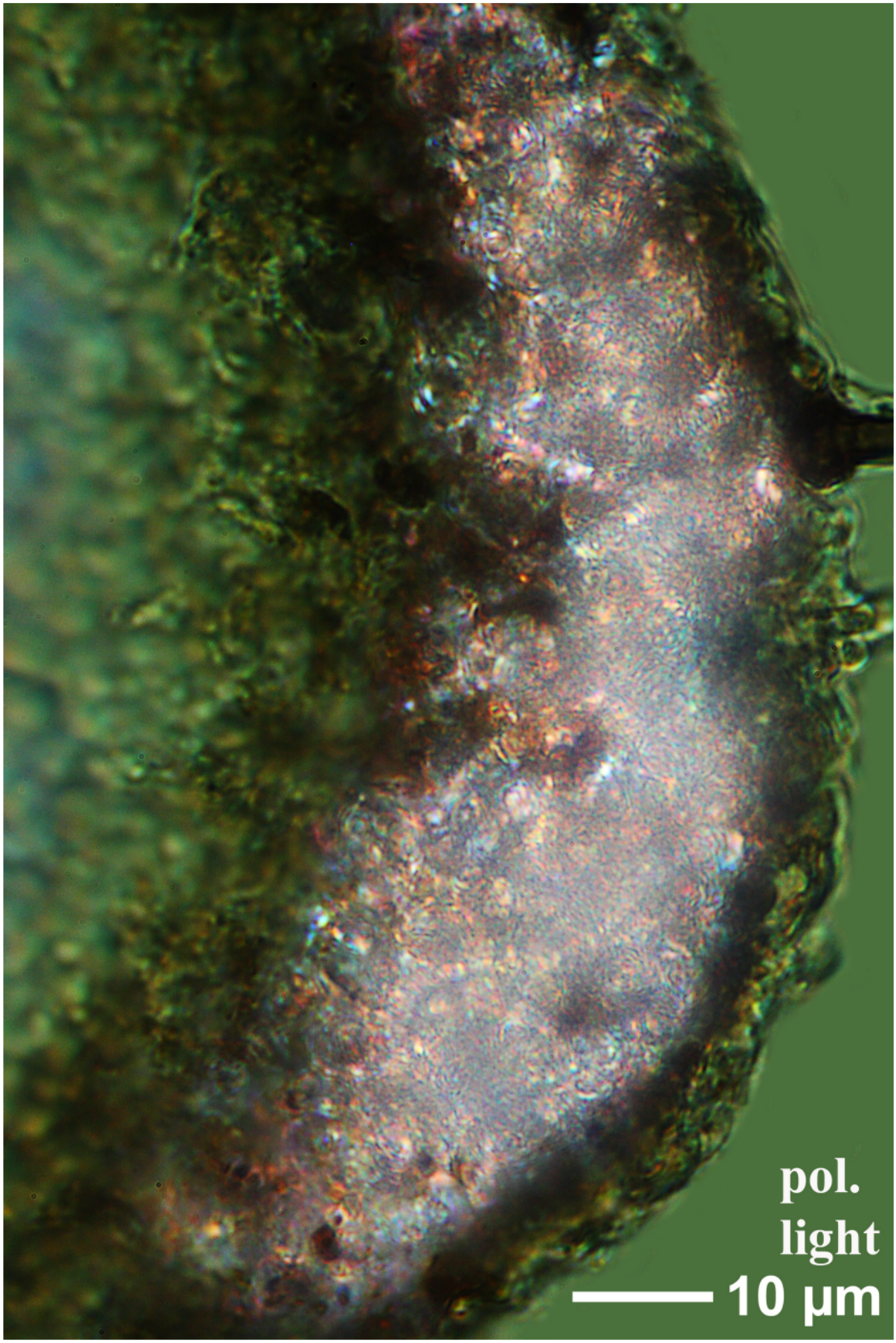
Melanophloea pacifica



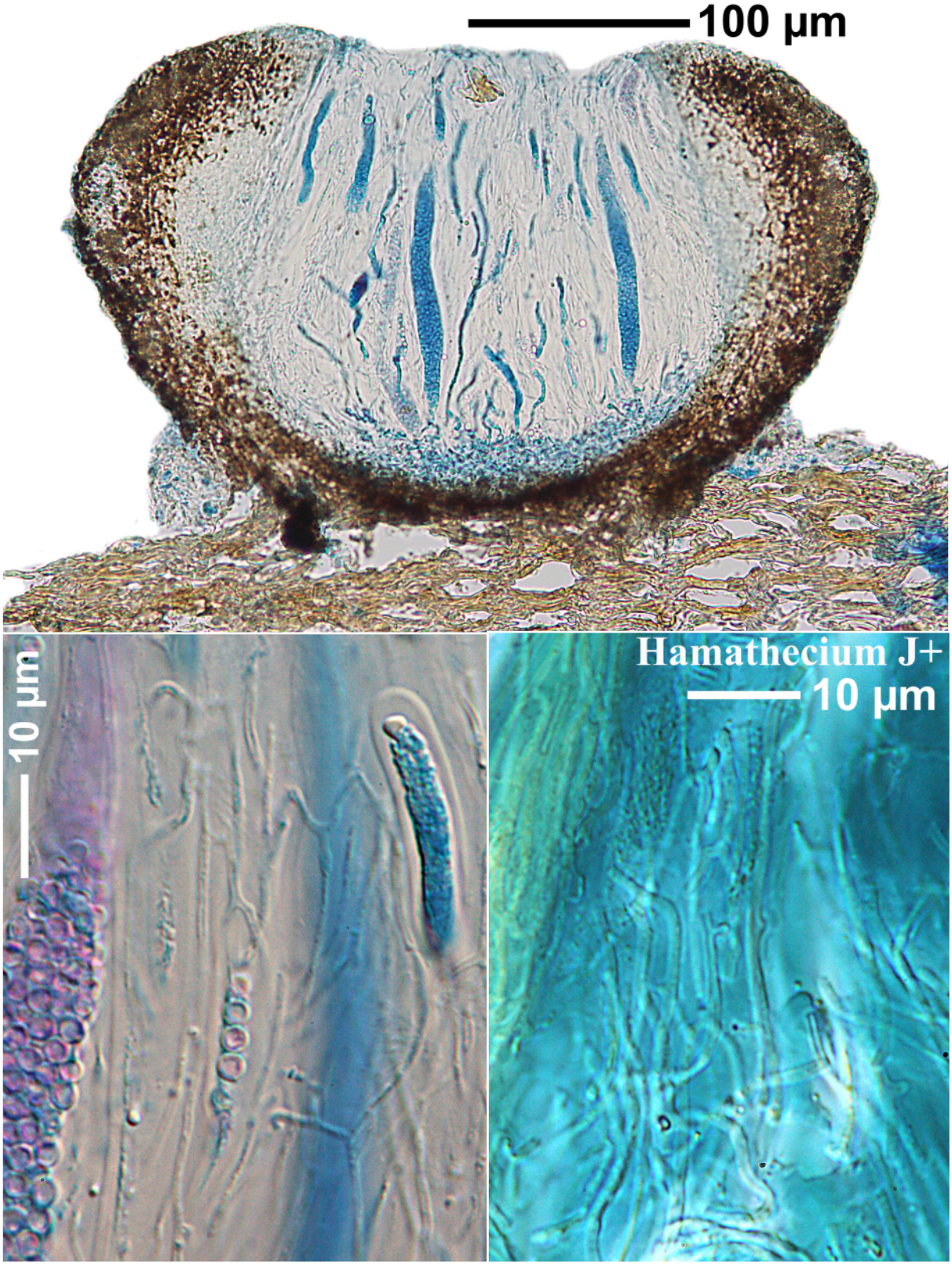




Melanophloea pacifica



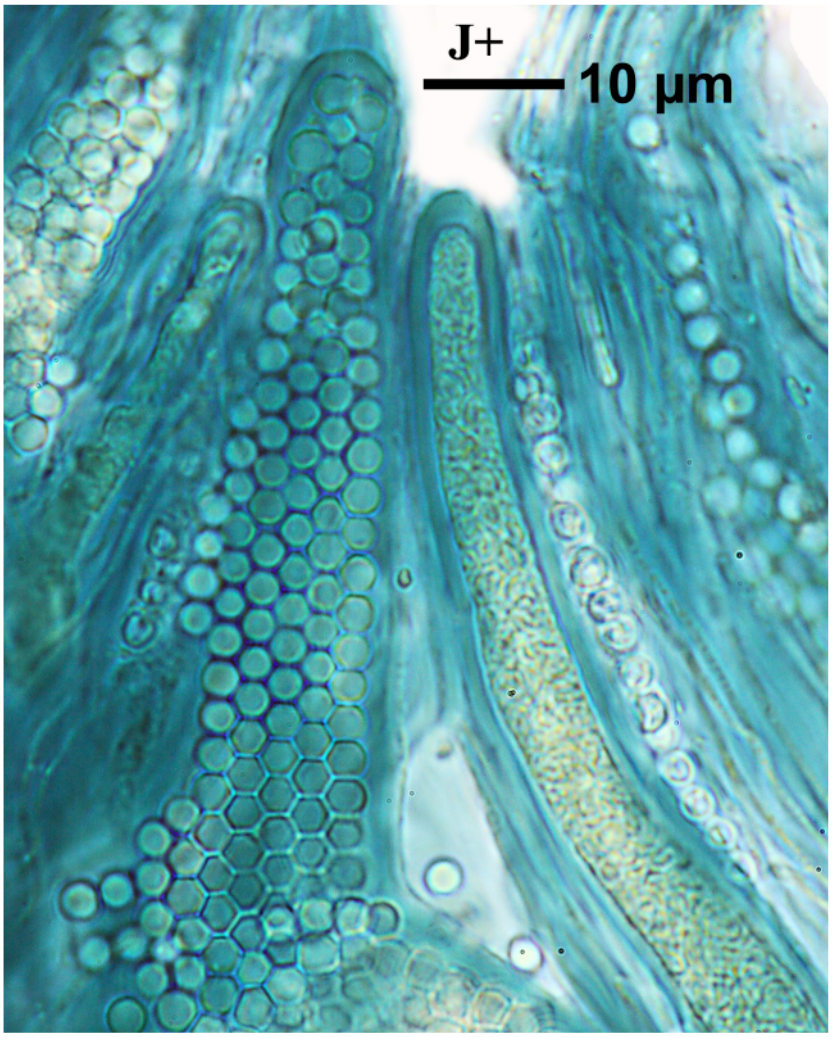
Melanophloea pacifica

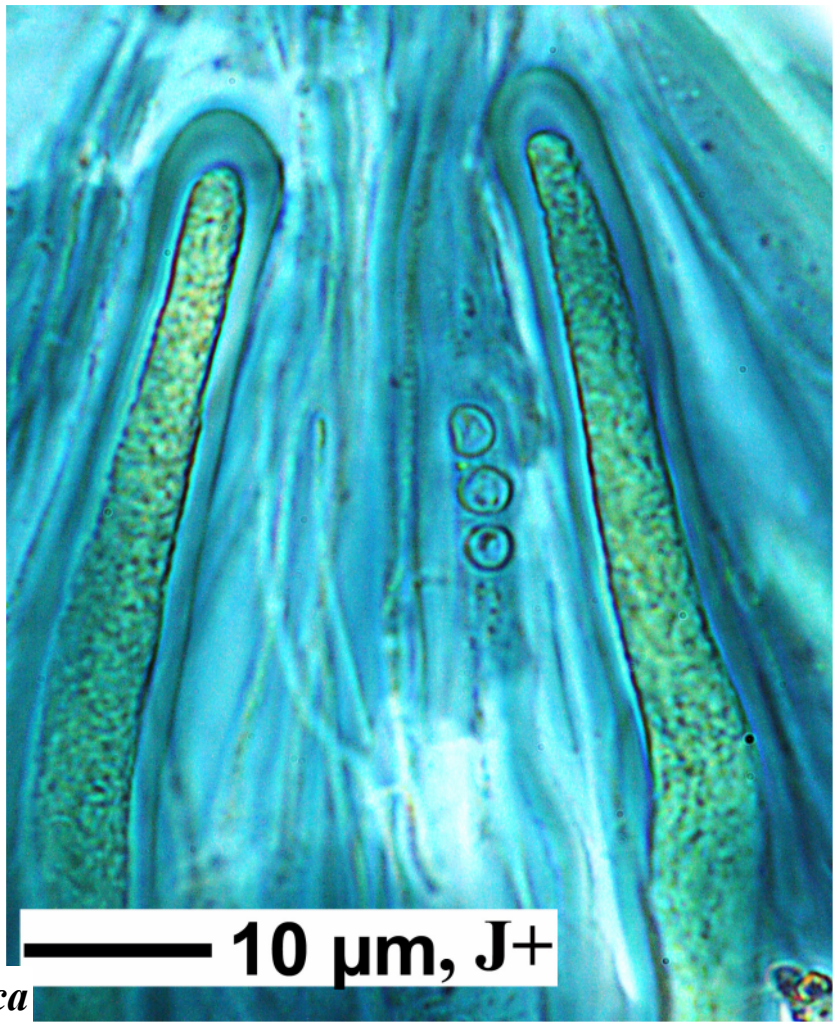


Melanophloea pacifica

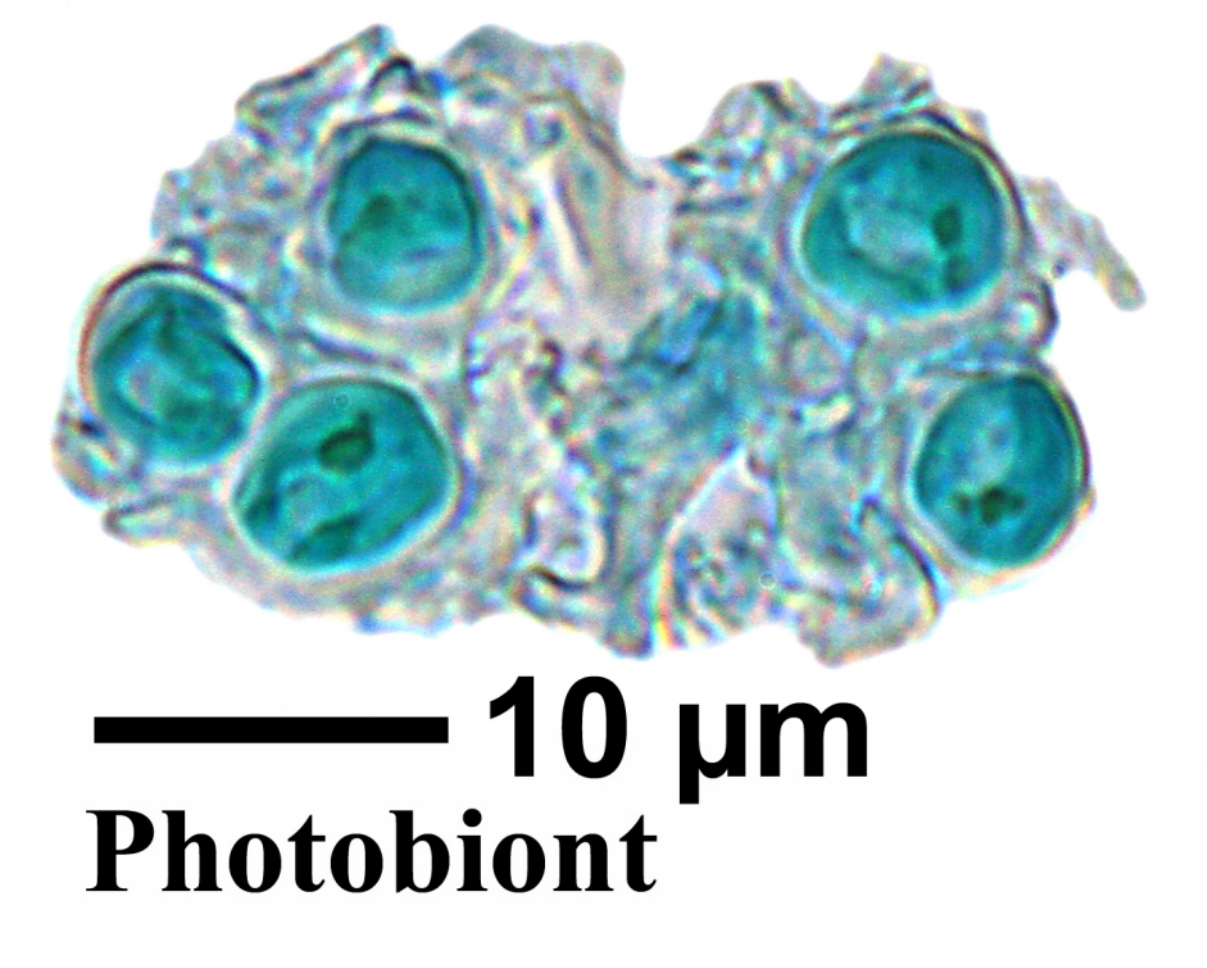


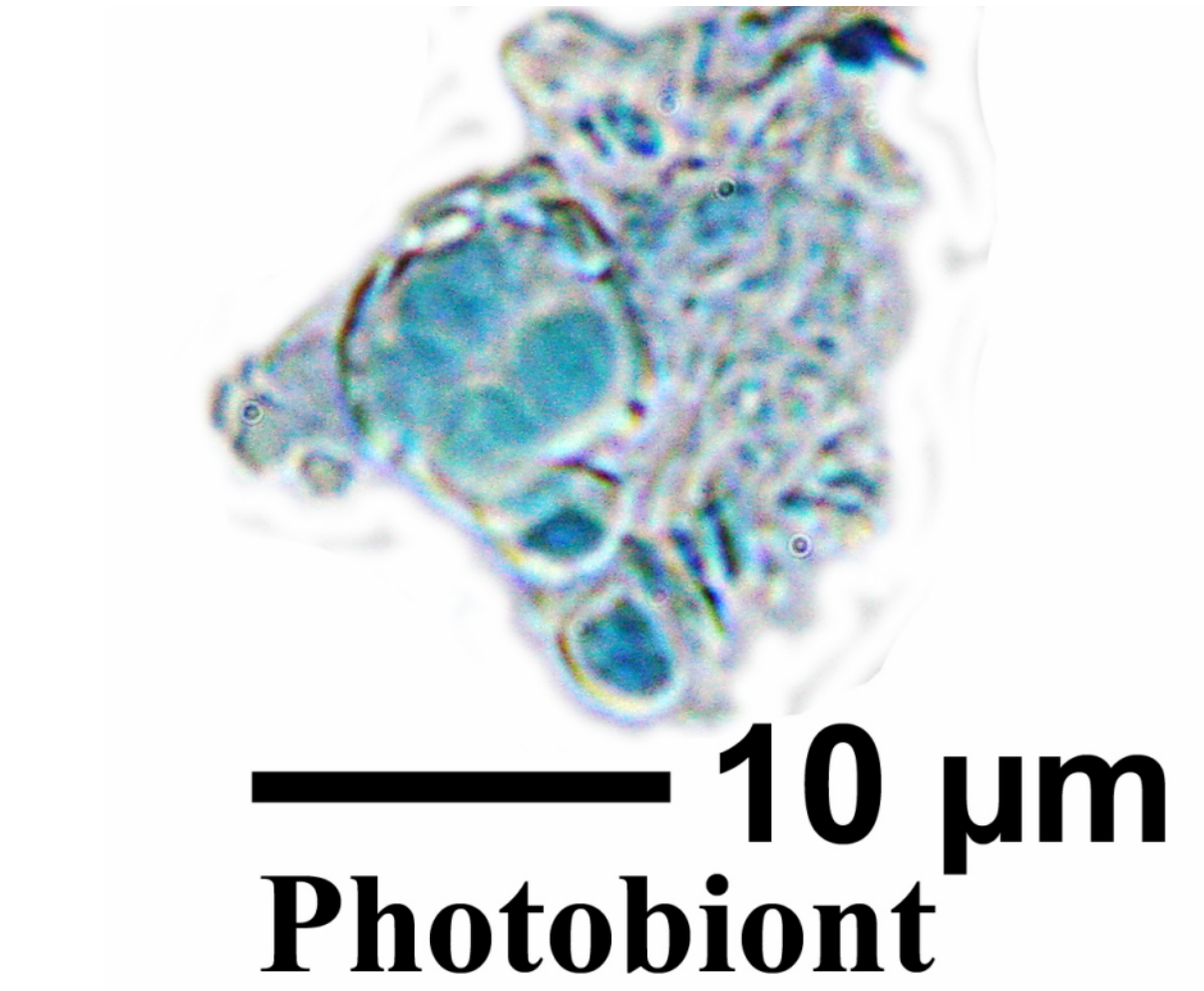
Melanophloea pacifica





Melanophloea pacifica


10 µm
Photobiont


10 µm
Photobiont

Menegazzia malesiana Elix, Bawingan & Schumm

Thallus corticolous. Lobes hollow, sublinear-elongate, fragile, 1-2 mm wide. Upper surface grey or grey-green, perforate, dactylate; dactyls inflated, isidioid, globose or cylindrical, not branched, 0.5-1.5 mm high, apices soon eroding and becoming pustulate, pustules expanding and becoming efflorescent, funnel-shaped or lacerate, densely sorediate, soredia granular; soralia more rarely developing at lobe apices, labriform to gaping with ±lacerate margins. Medulla white or pale yellow in part, darkening with age, lower side of internal cavity black. Lower surface black, shiny, wrinkled, erhizinate. Chemistry: Cortex K+ yellow; medulla K+ yellow, C-, KC-; P+ yellow-orange; atranorin (min), chloroatranorin (min), stictic acid (maj), constictic acid (min), peristictic acid (min/trace), norstictic acid (trace), ±vioxanthin (min/trace), ±pigmentosin A (min/trace), ±gyrophoric acid (min). Known from Papua New Guinea and the Philippines. Lit. Elix et al.,2006, Australasian Lichenology 56: 20-24. Note: It might well be a synonym of ***Menegazzia subsimilis*** (H.Magn.) R.Sant., which in the sense it is used recently, is the most widespread species of *Menegazzia* in Asia and worldwide, but the type of which has not been examined recently.
[5435], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, Ostufer des Lake Venado, Waldrand des Bergregenwaldes, halbschattig, 2210 m, 7°00.155’ N, 125°16.179' E, an Rinde. Leg. U. Schwarz 20.03.1999, det. Elix 2005.

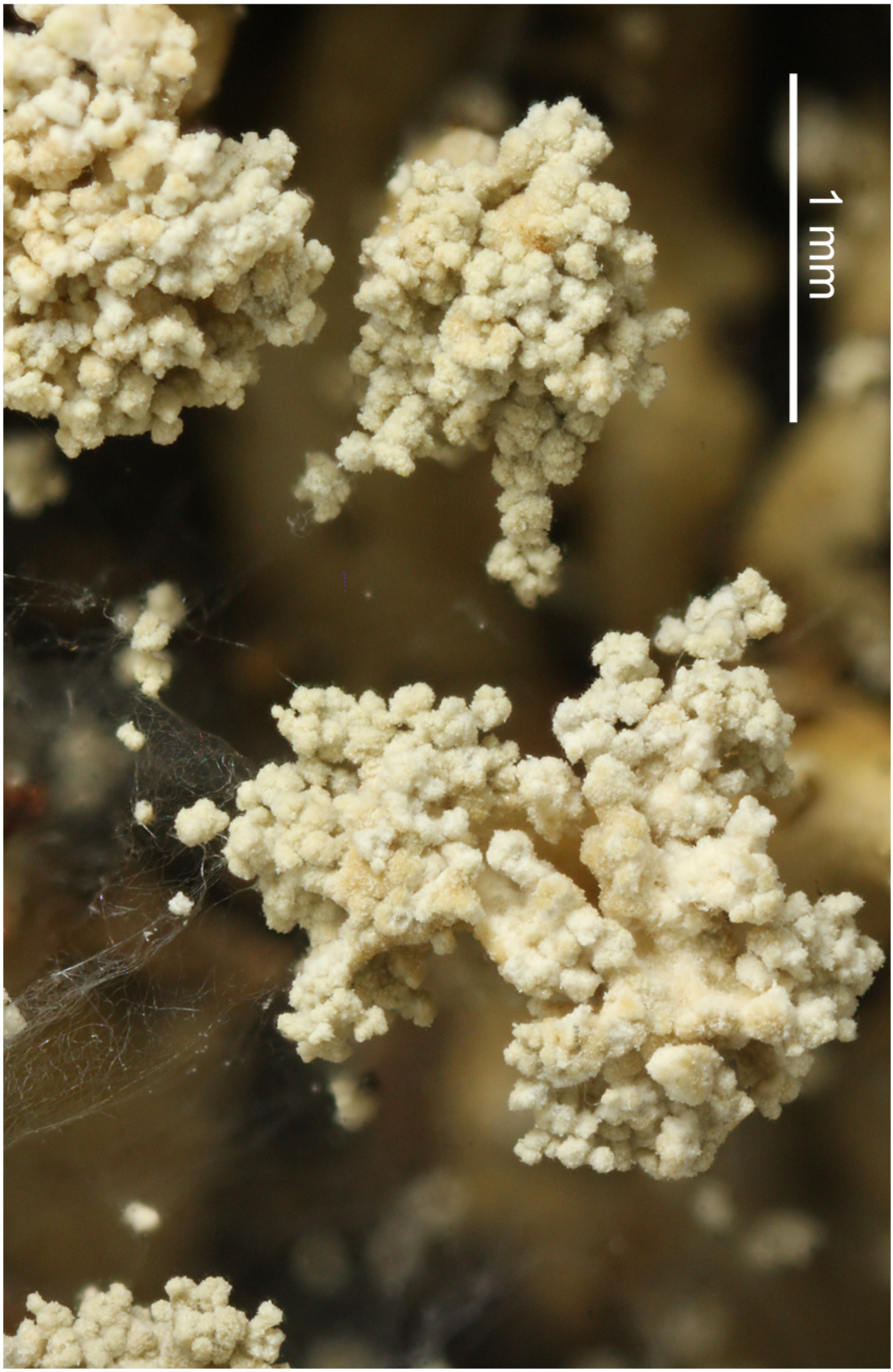




Menegazzia malesiana



Menegazzia malesiana

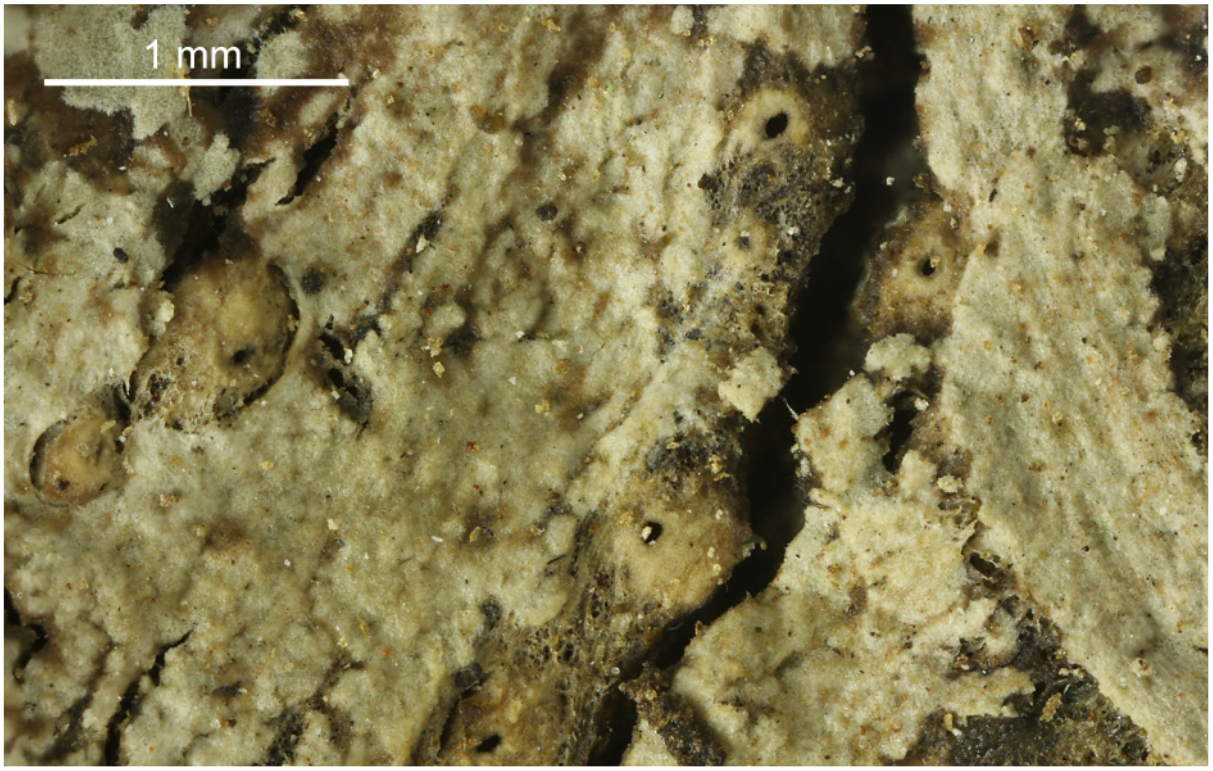


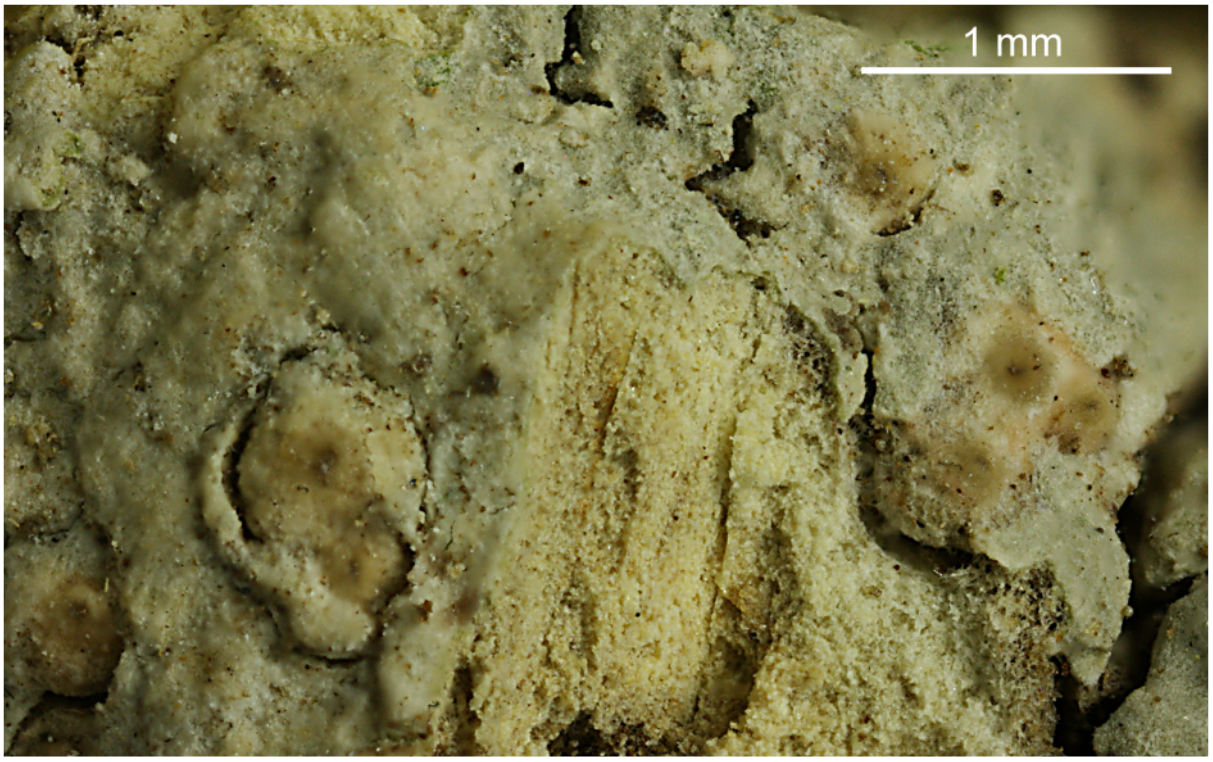
Menegazzia malesiana

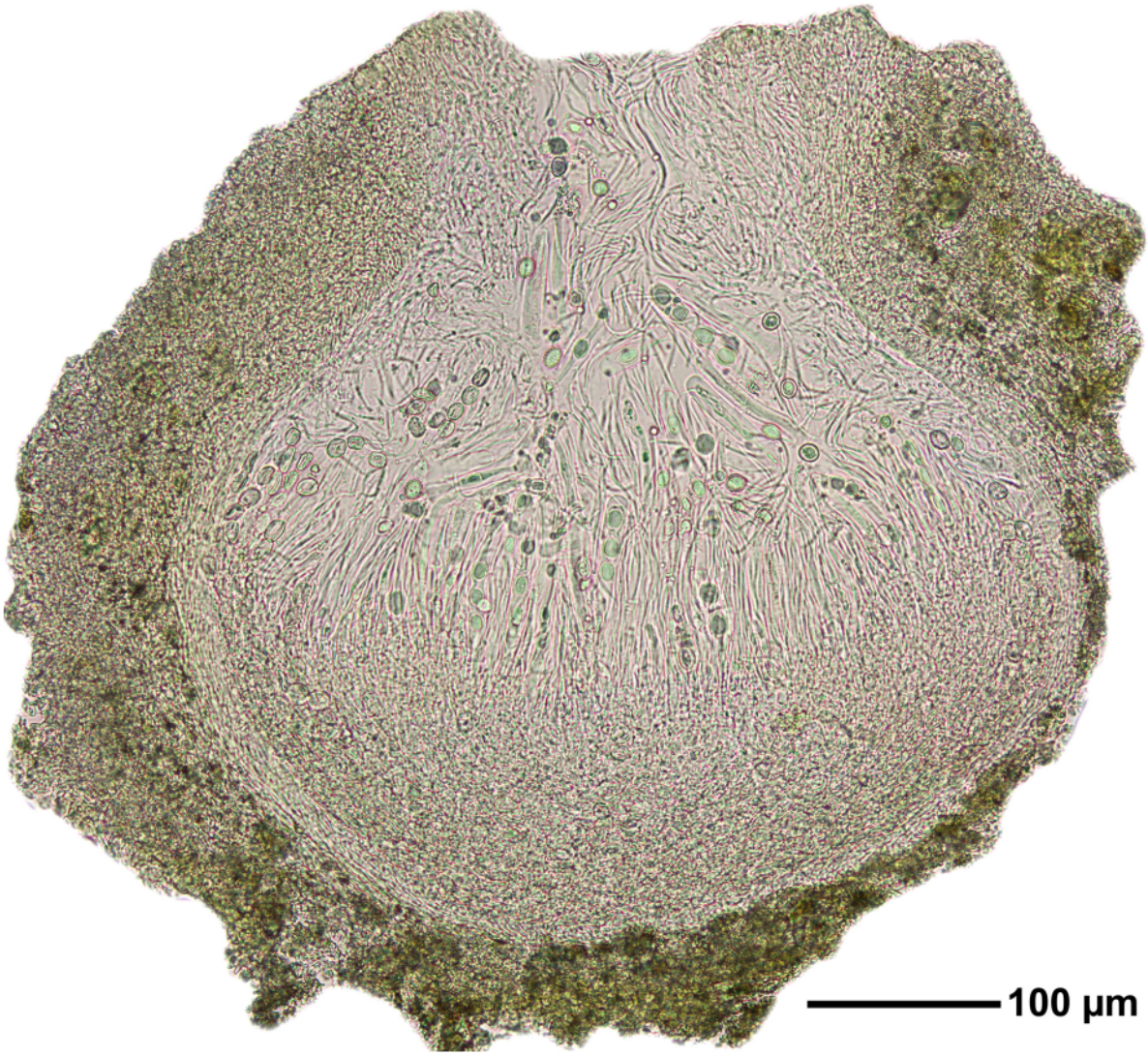
Monoblastia pellucida Aptroot ISOTYPUS

Upper surface somewhat byssoid similar looking like a *Dichosporidium,* grey, at the margin nearly lobate or somewhat squamulose. Perithecia semi-inserted, pale beige. Wall of the perithecium built out of long pachydermatous not carbonized cells. Paraphyses lax, not branched at the base, branched and anastomosing above the asci. Ascospores hyaline, 8/ascus, 1-celled, in one row, globose to broad elliptic, 9-12 x 7.5-8.5 µm. Lit. Aptroot, A. (1991): *Monoblastia pellucida*: A remarkable new lichen species from tropical coastal areas, with comments on the Monoblastiaceae.

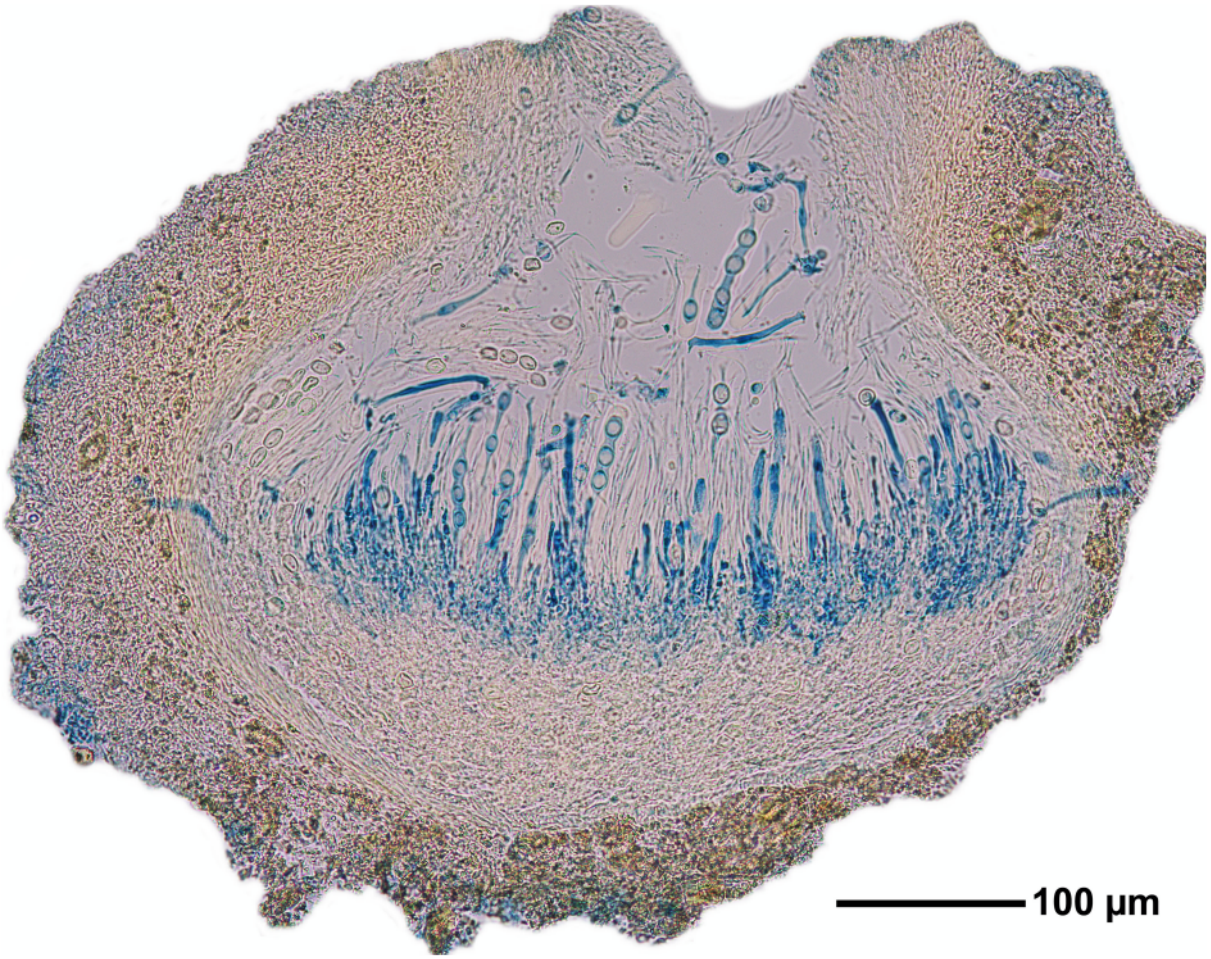
[ABL-15095], French Guyana, Cayenne, botanical garden, 4°56’ N, 52°20’ W, alt. 0 m, on Lecythidaceae. Leg. et det. A.Aptroot March 1985. ISOTYPUS

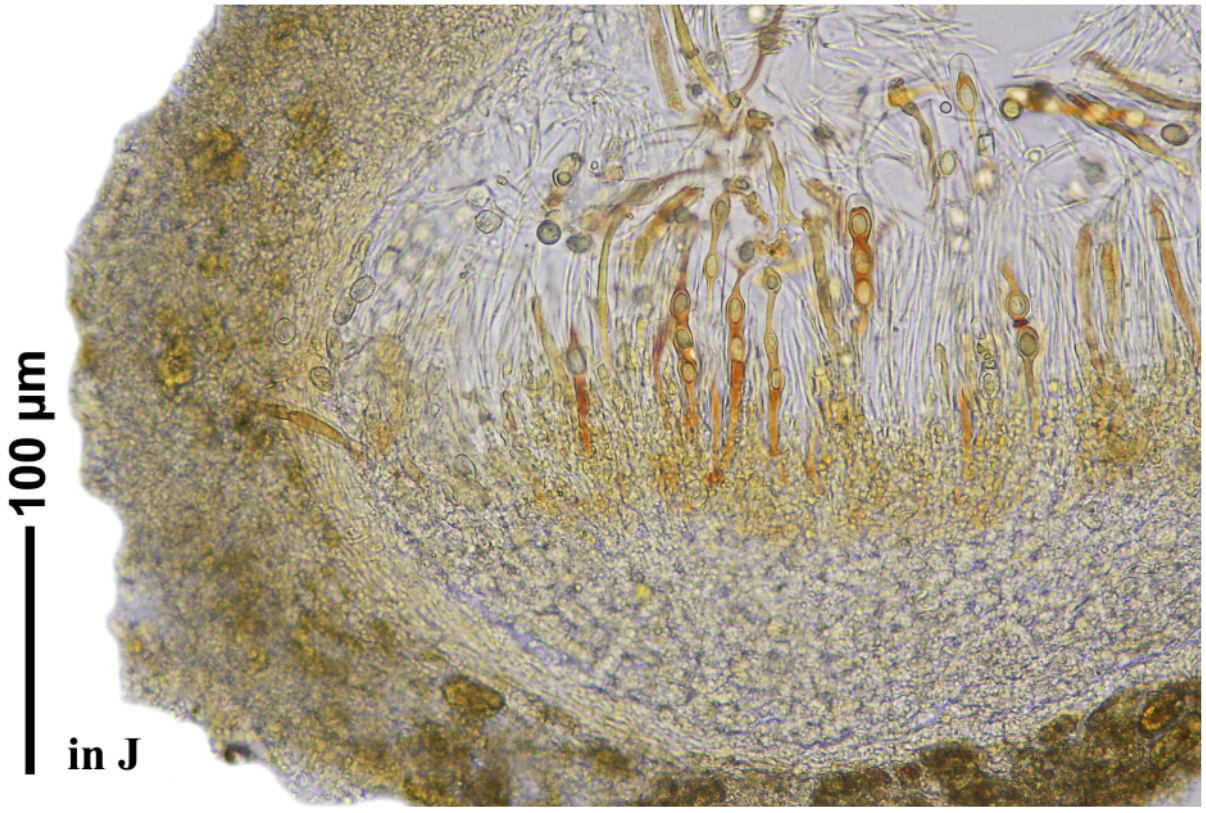




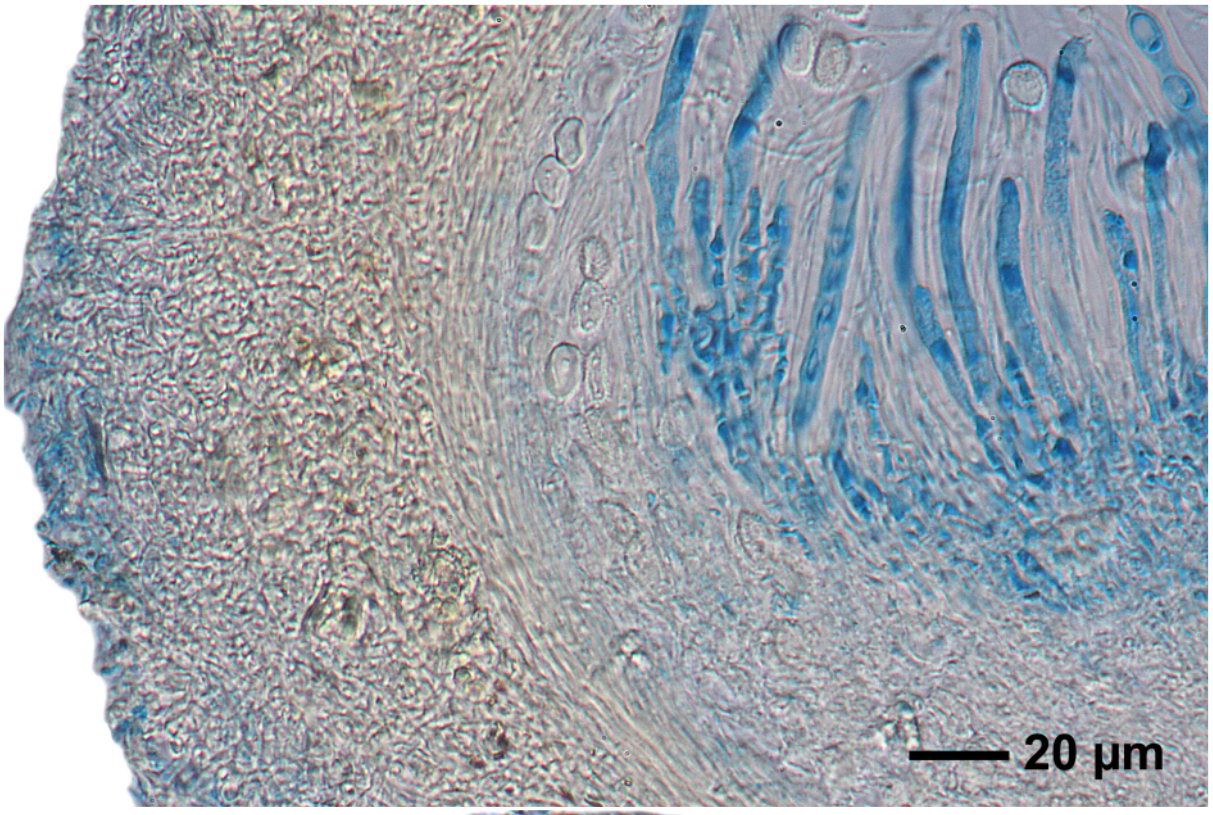


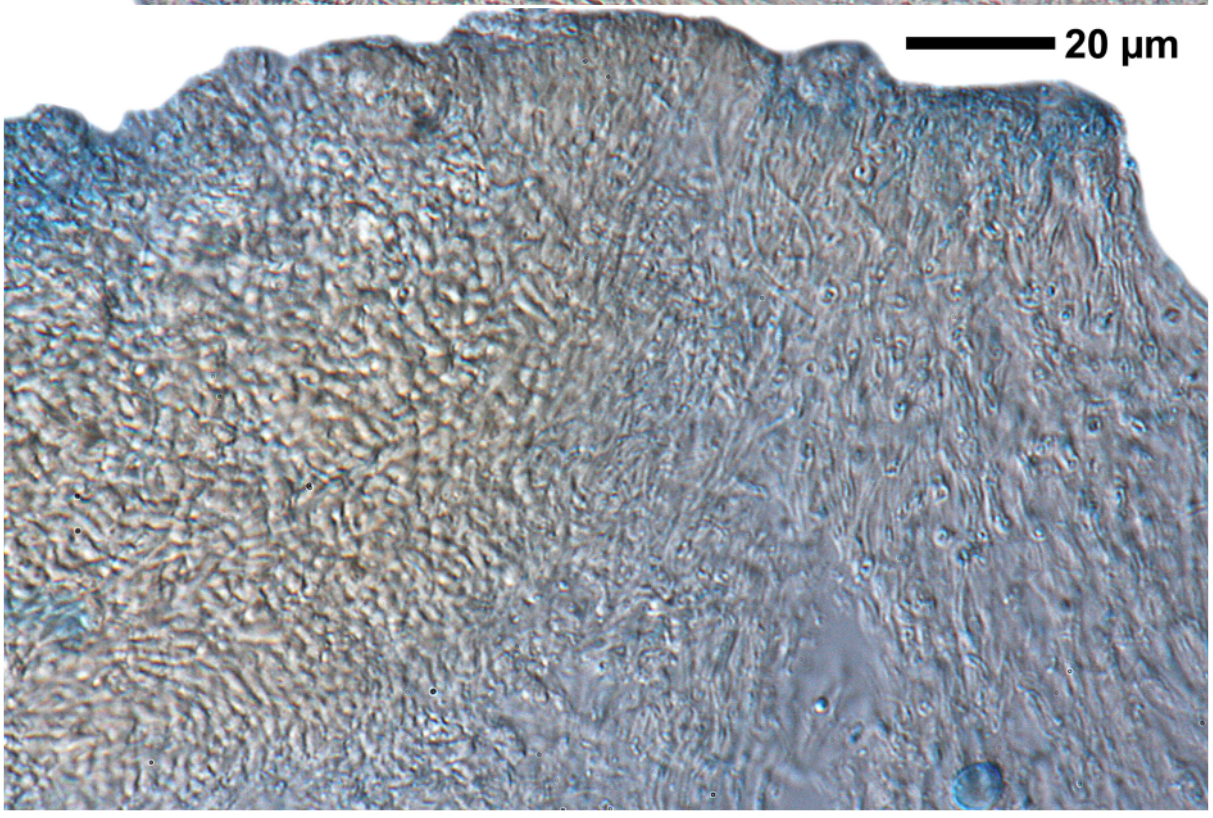
Monoblastia pellucida



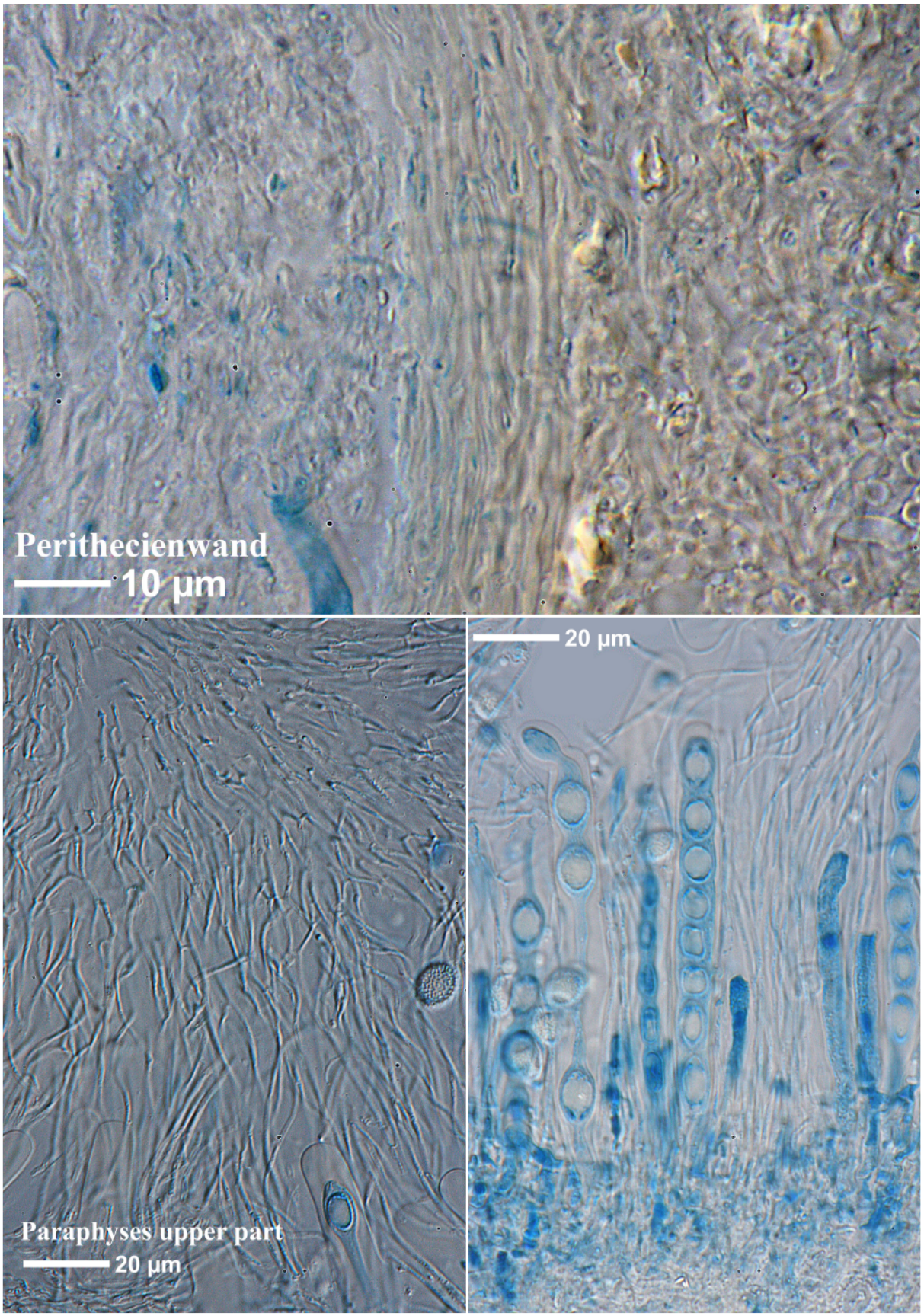


Monoblastia pellucida

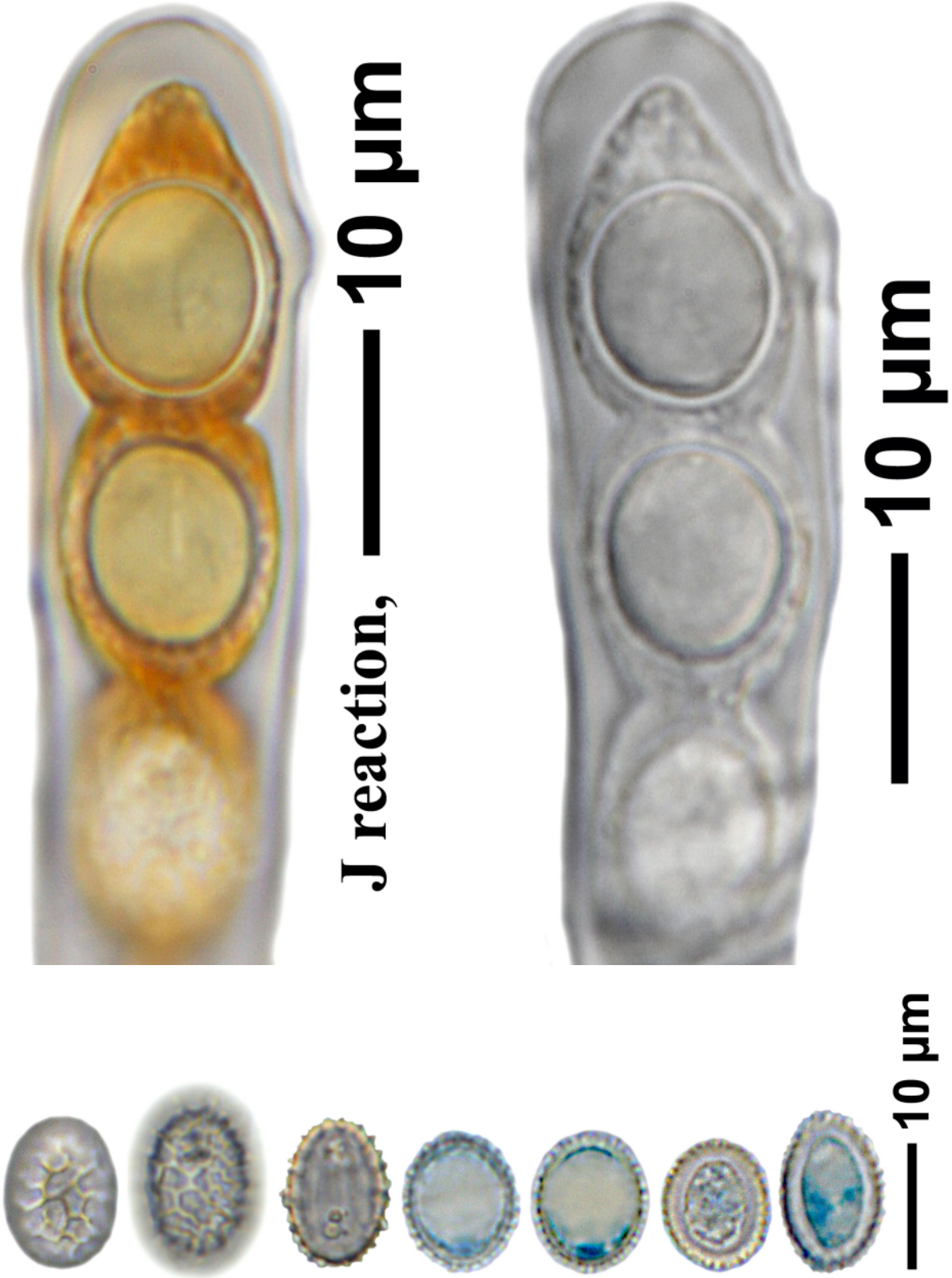




Monoblastia pellucida



Monoblastia pellucida



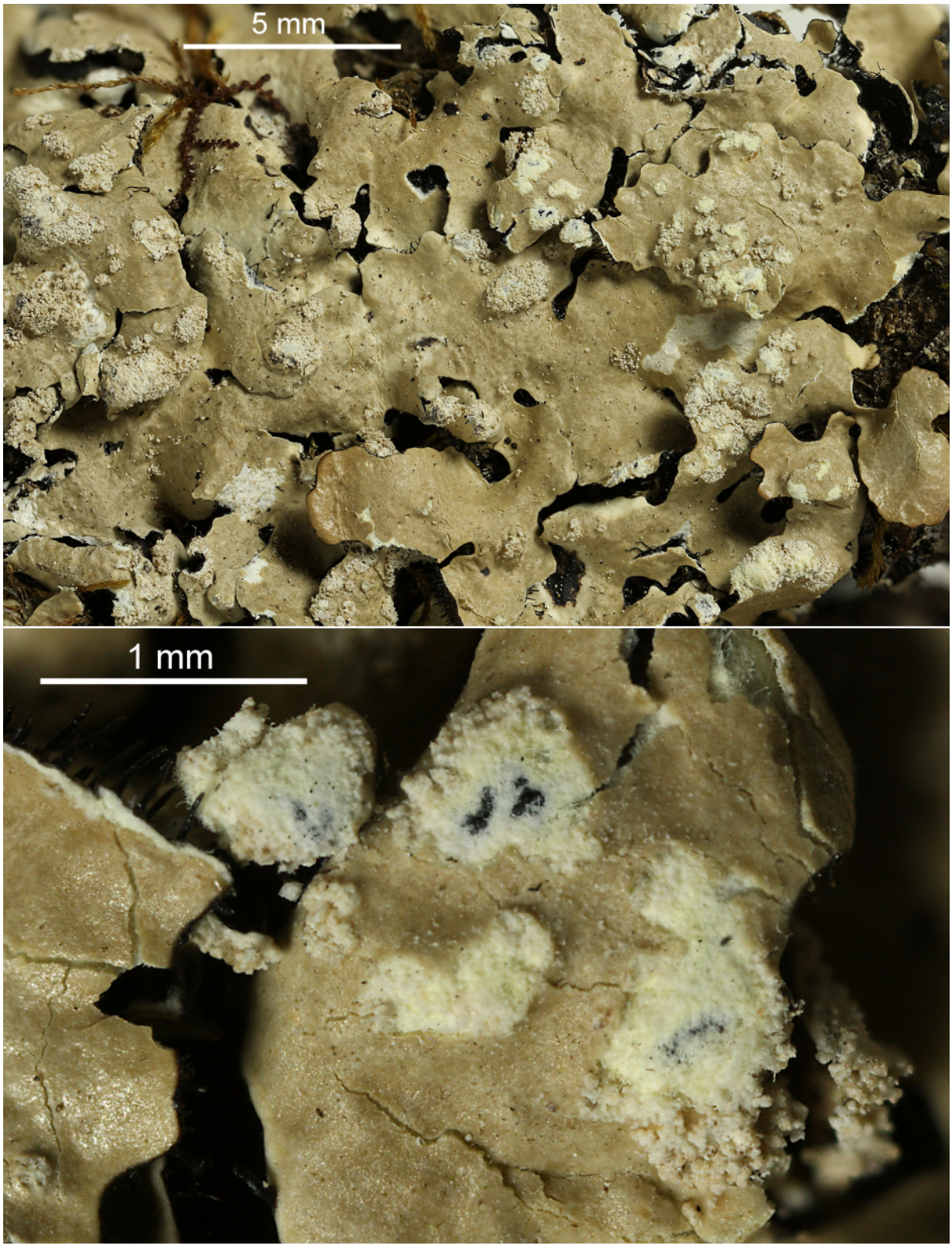
Monoblastia pellucida

Myelochroa aurulenta (Tuck.) Elix & Hale

Thallus green-gray, adnate. Lobes 2-4 mm wide, sinuous in the axils, shortly ciliate. Isidia absent. Soralia coarse pustules, becoming broad and diffuse. Soredia farinose to granular. Medulla white to pale yellow, under the soralia yellow-orange. Lower surface black, densely rhizinate, marginally with 1-5 mm wide brown zone. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K- or somewhat more yellowish, C-, KC-, P-; atranorin, zeorin, leucotylic acid, pigmented parts with secalonic acid A. Corticolous, pantropical.

[9981], USA, Wisconsin, Vilas County, Town of Arbor Vitae, Northern Highland State Forest, Trout Lake Conifer Swamp State Natural Area, just north of County Hwy. M at east end of Perch Lake, 46°00’52”' N, 89°39’26” W, 466 m, mixed conifer swamp. Leg. Robert S. Egan 28.04.2002 (EL-15,894), det. Egan.





Myelochroa aurulenta

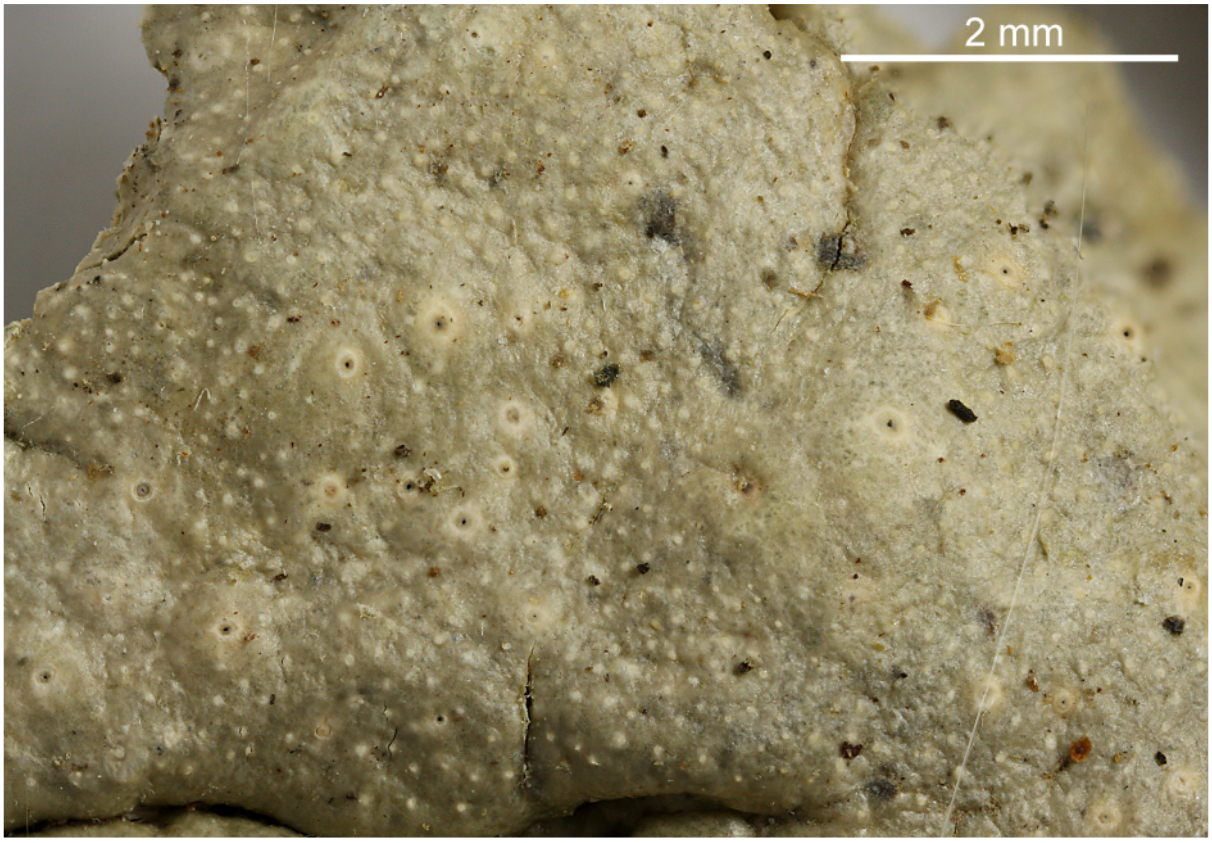


Myelochroa aurulenta

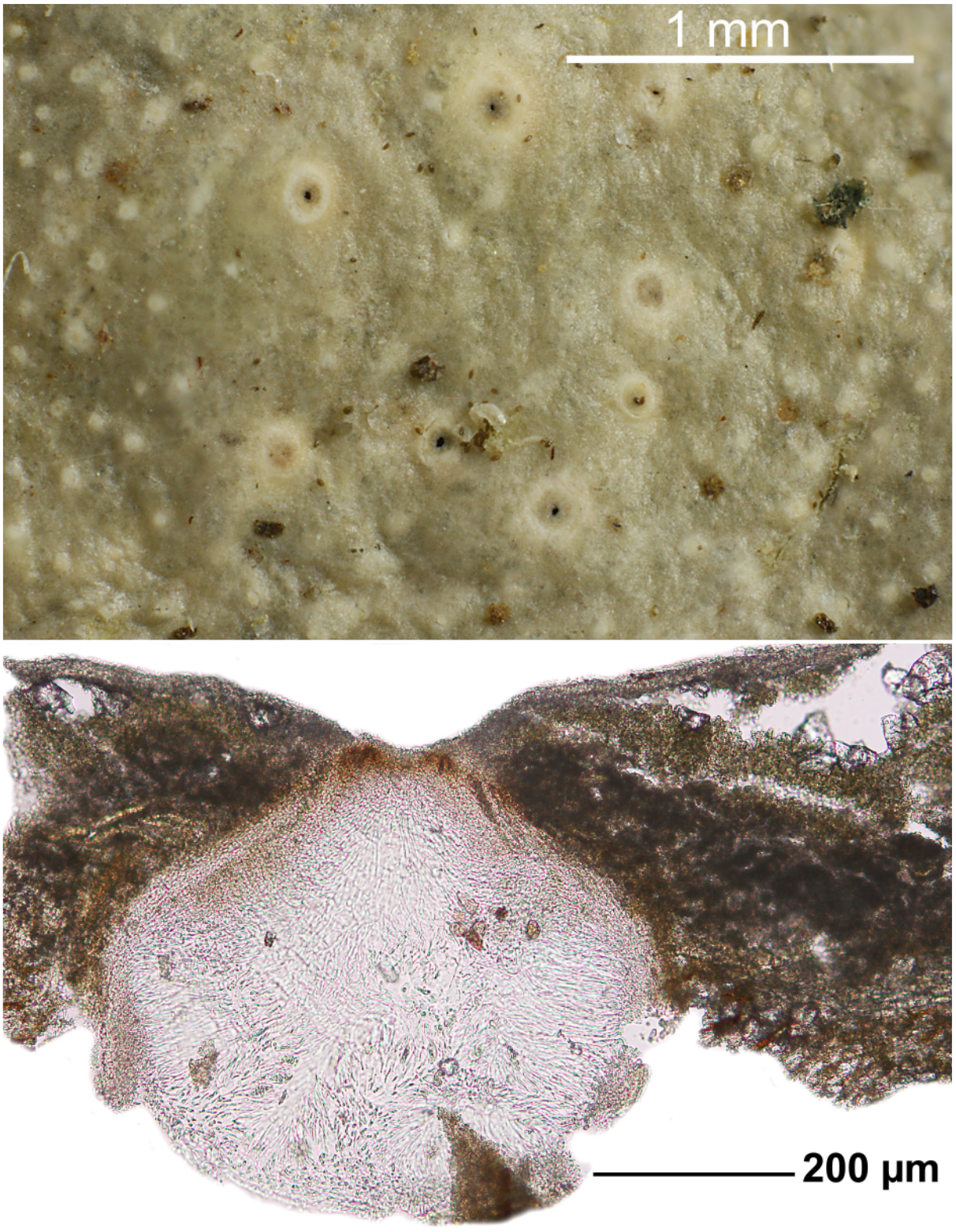
Myriotrema desquamans (Müll.Arg.) Hale

Thallus continuous, somewhat glossy, greenish grey, white maculate. Apothecia immersed. Porus white rimmed, c. 0.01-0.03 mm wide. Excipulum not carbonized, not paraplectenchymatous. Columella absent. Hymenium not inspersed. Paraphyses strongly anatomosing epecially beneath the porus. Periphyses absent. Ascospores brown, muriform, 24-29 x 12-15 µm. Chemistry: stictic acid, constictic acid etc.

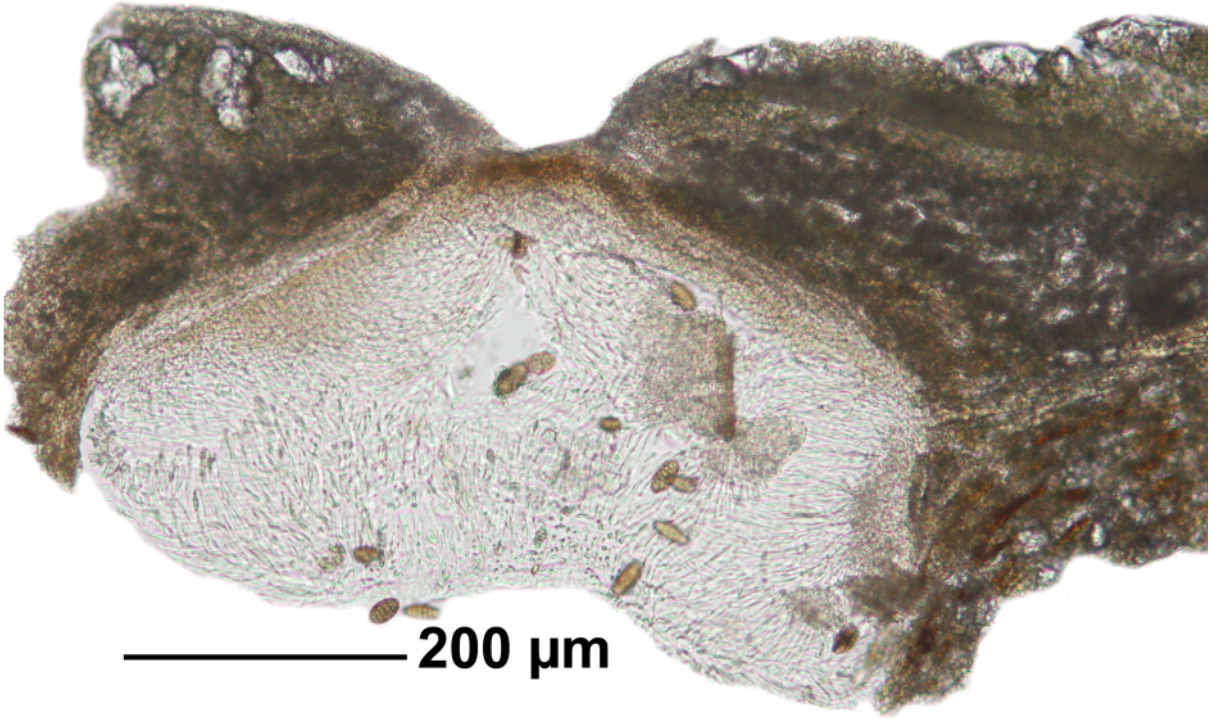
[7783], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729' N, 124°49.781' E, 885 m) nach Kadwa-An (10°46.249' N, 124°48.167' E, 195 m); bei 370 m. Leg. Schumm 18.08.2000, det. K.Kalb 2012.

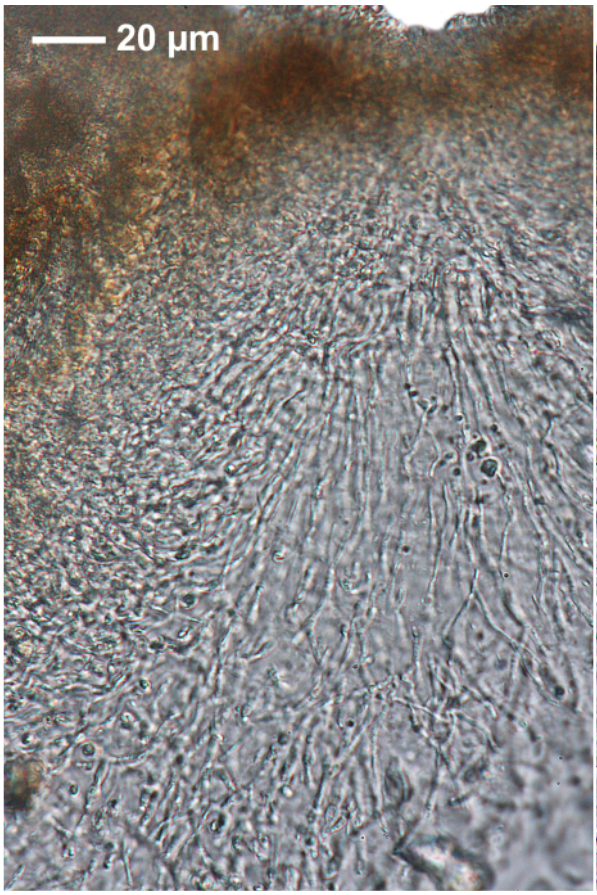


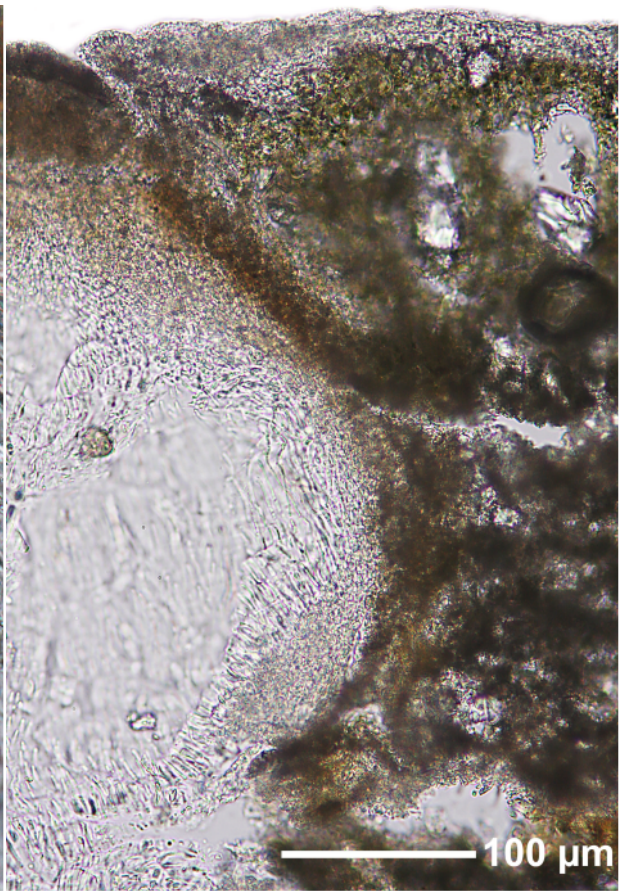




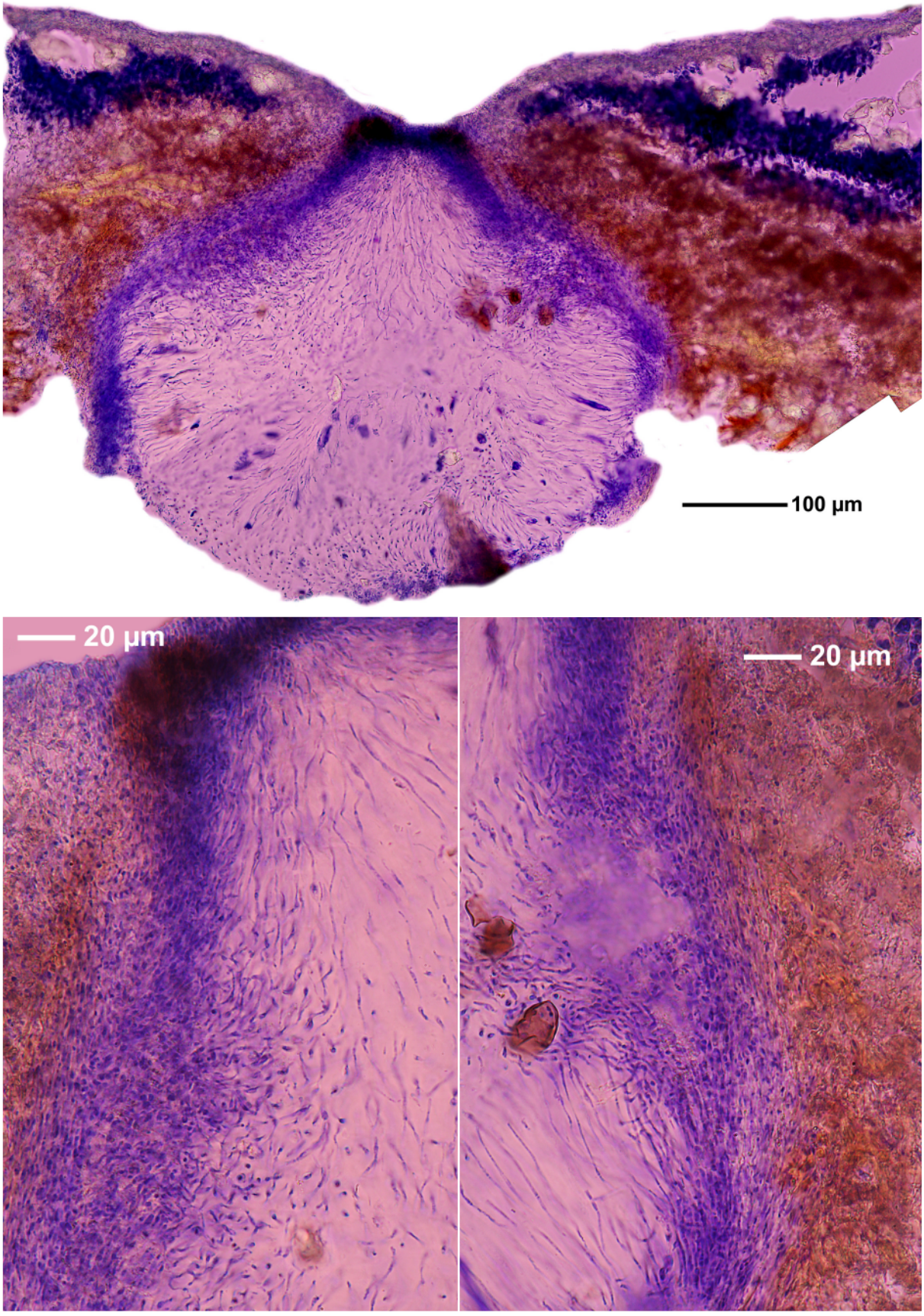
Myriotrema desquamans







Myriotrema desquamans



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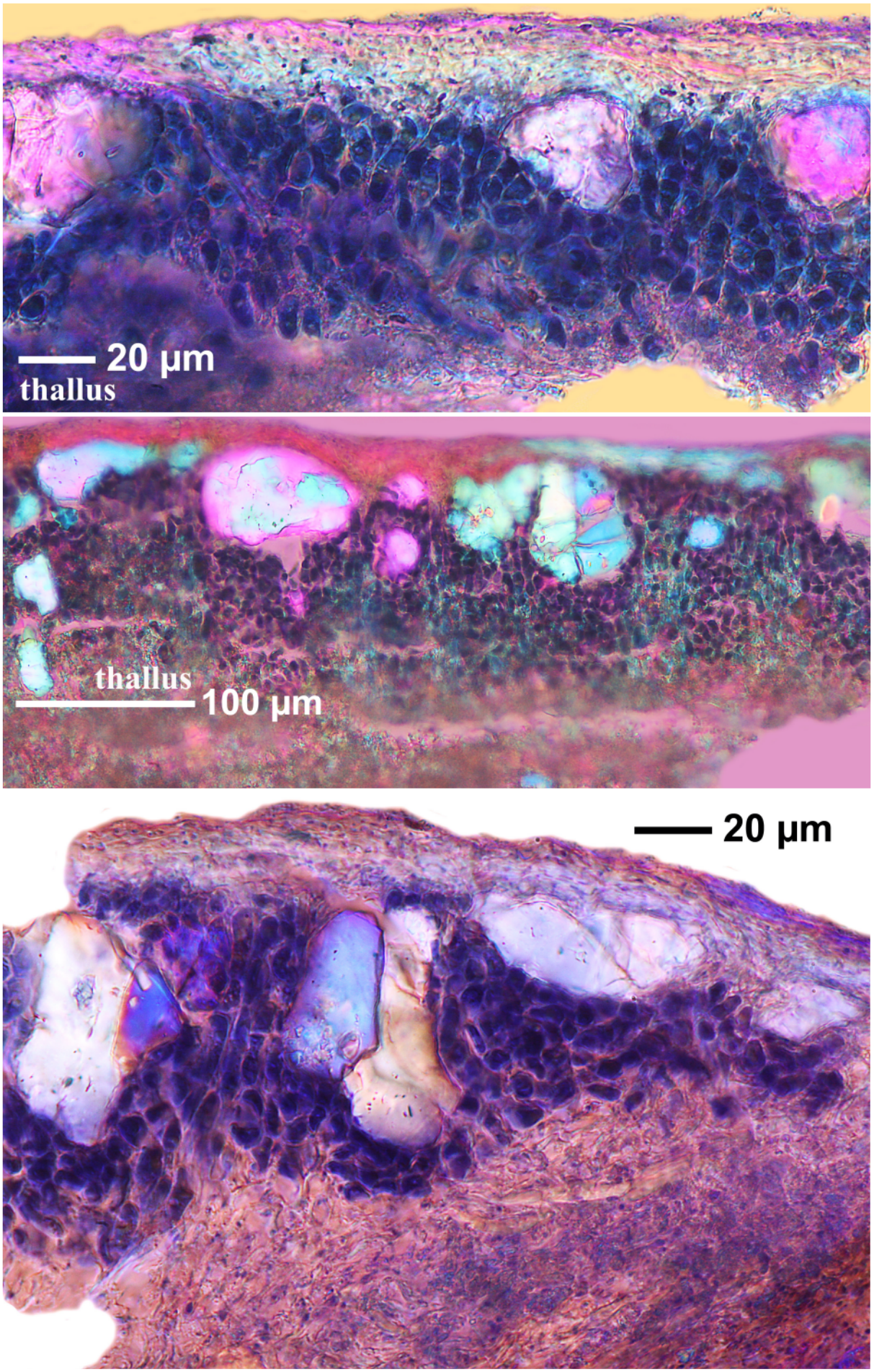
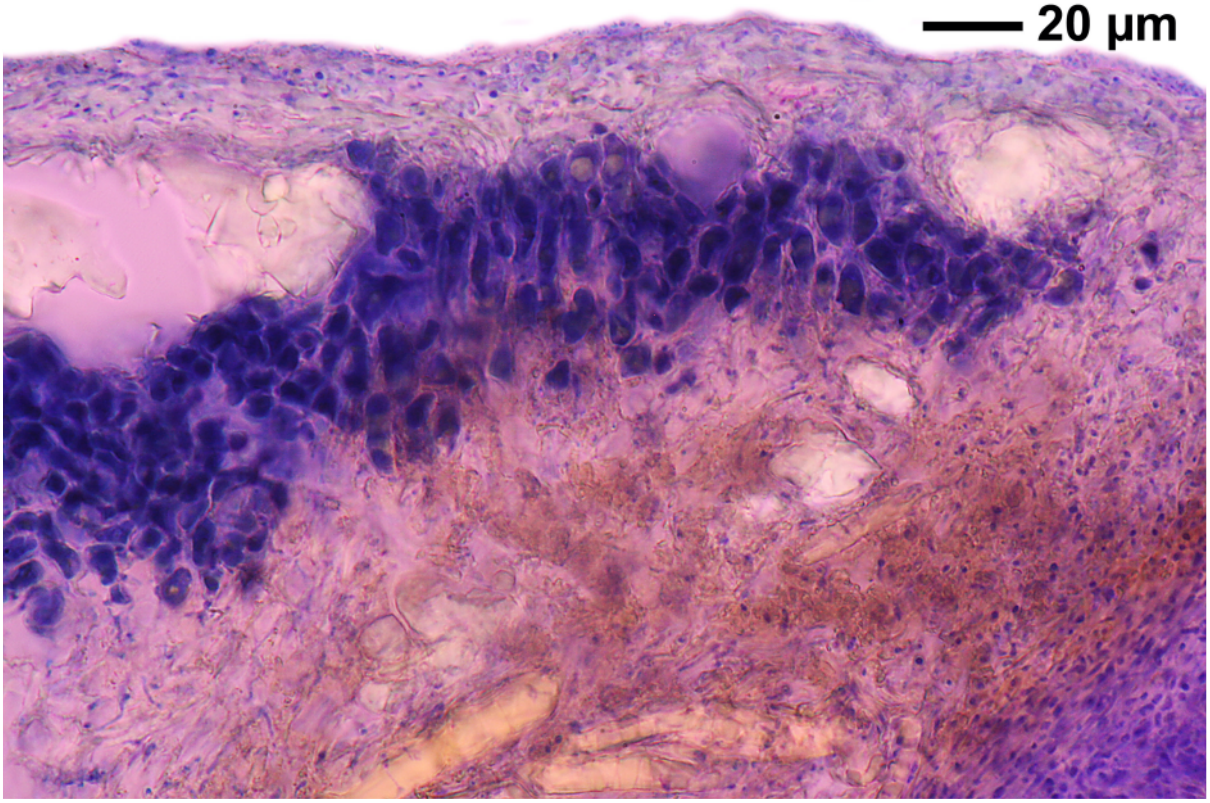
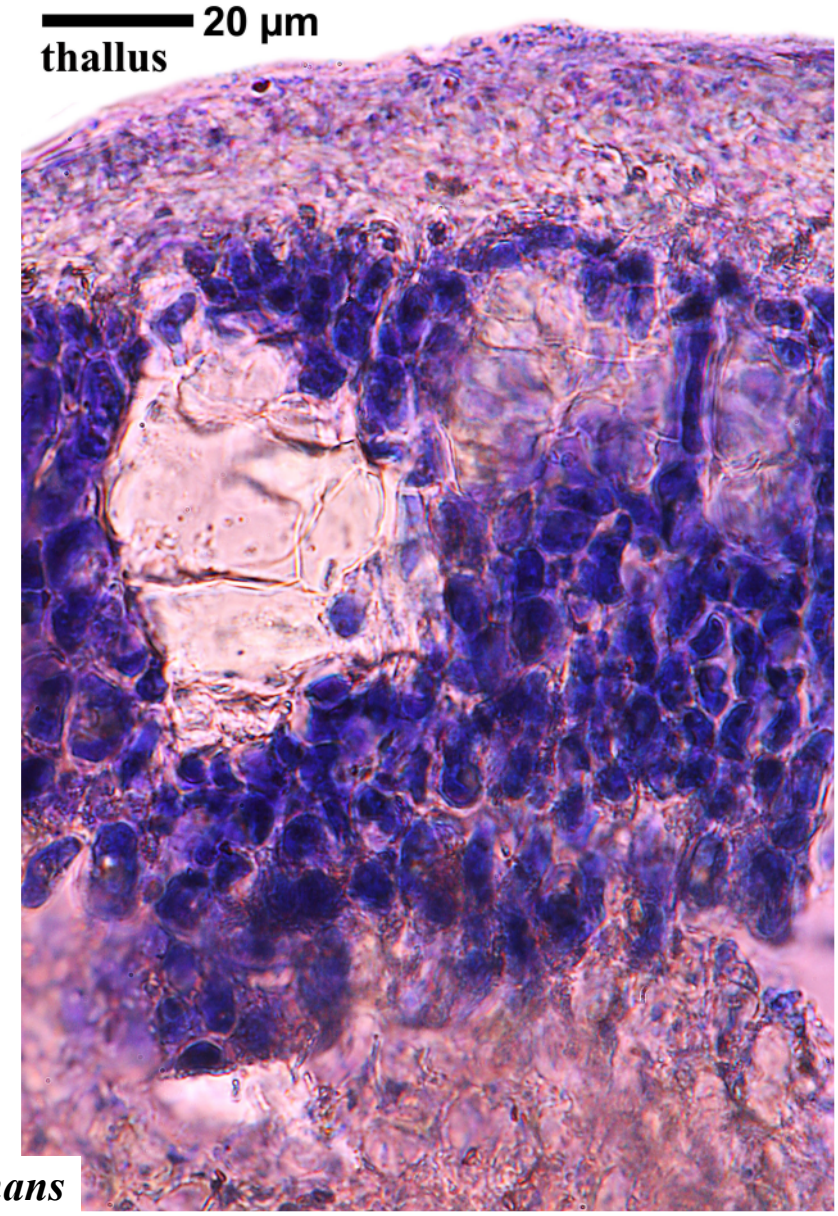


Myriotrema desquamans





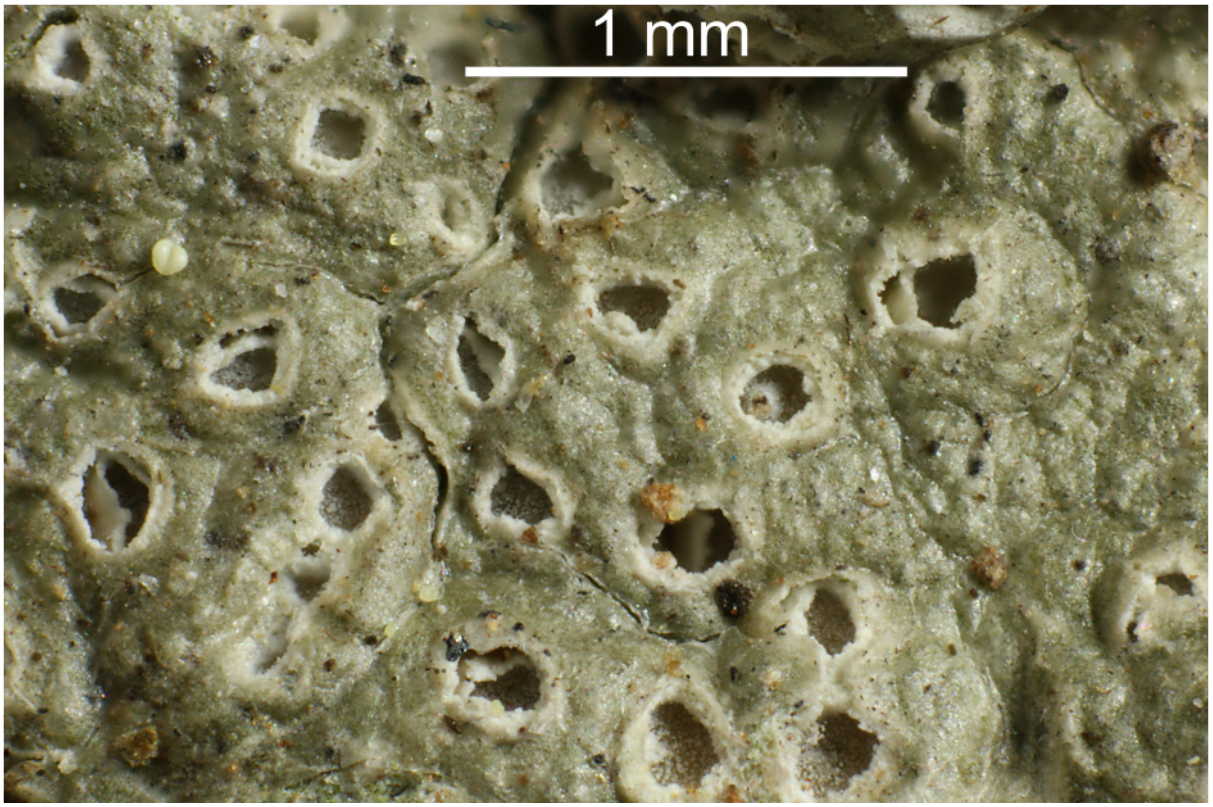
Myriotrema desquamans

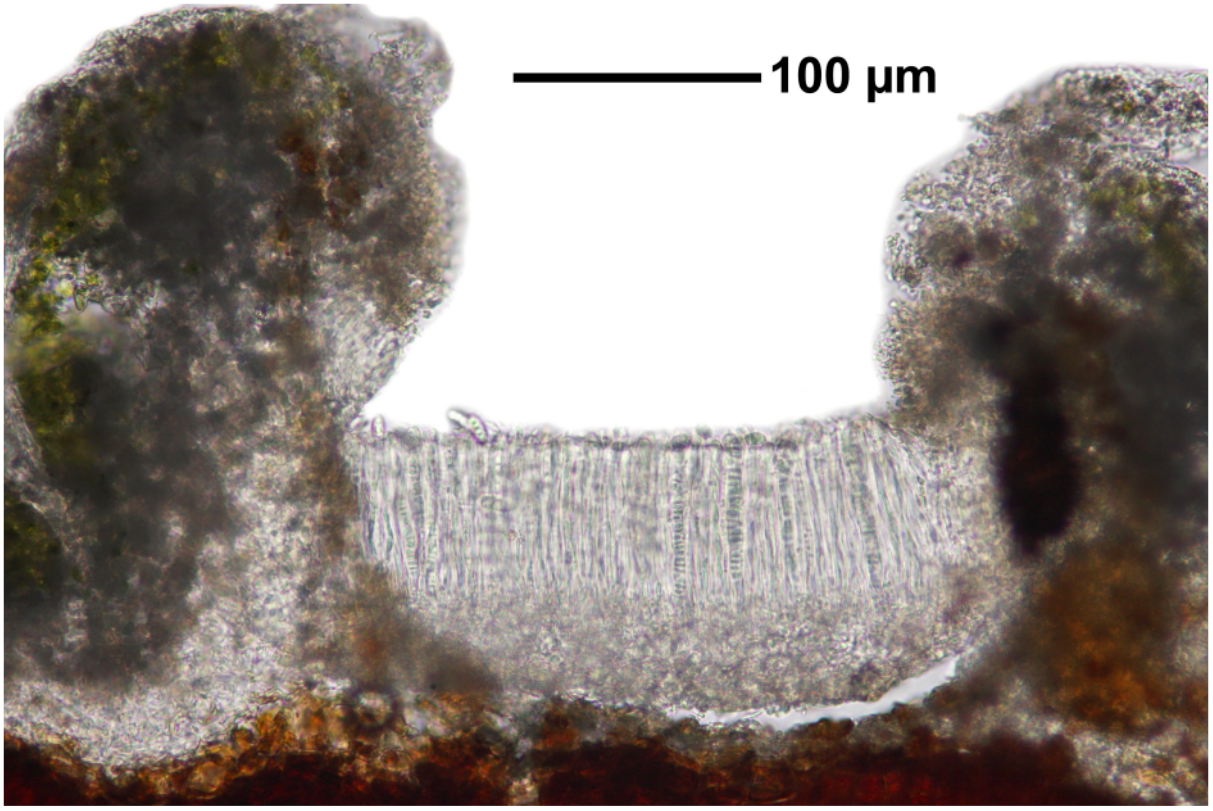
Myriotrema glaucophaenum (Kremp.) Hale
[= ***Myriotrema subcostaricense*** Sipman]

Thallus corticolous, grey-olive, continuous, verruculose to finely warty. Apothecia moderately emergent to sessile, rounded to angular, 0.5-1.1 mm wide, with a open and fissured pore. Proper exciple fused or the tips incompletely free. Columella absent. Disc covered by thin white pruina. Ascospores hyaline, transversely septate, 4-6 loculate, 13-24 x 5-8 µm, J+ blue-violet. Chemistry: psoromic acid (maj). Pantropical

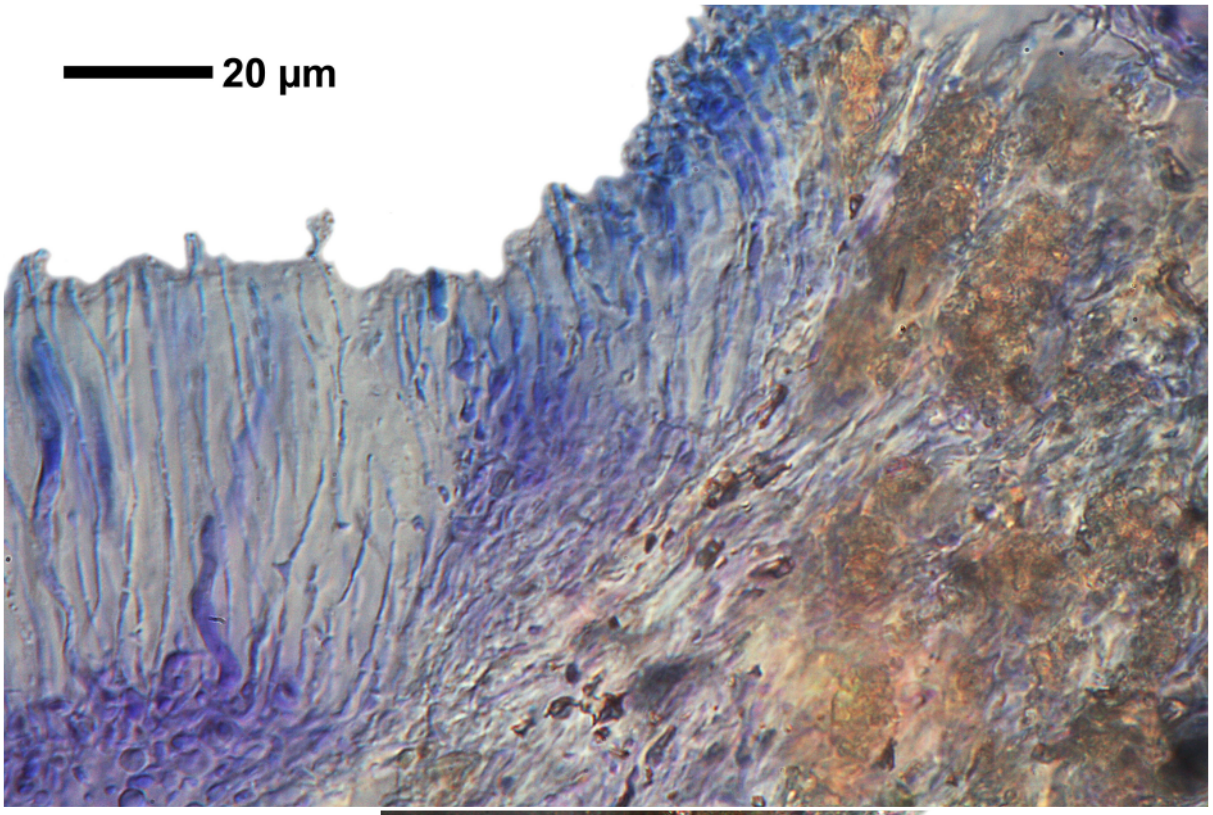
[17225], Venezuela/Aragua. Abfahrt auf der Straße von Ocumare de la Costa nach Maracay, unterhalb der biologischen Station "Dr. Alberto Fernandez Y.". An einem Laubbaum in einem stark gestörten , verbuschten Regenwald. 200 m. 10°22'32" N, 67°43'10" W. Leg. K. Kalb & J. Hernandez 05.08.2010, det. K. Kalb. Aus Kalb: Lichenes Neotropici 593.

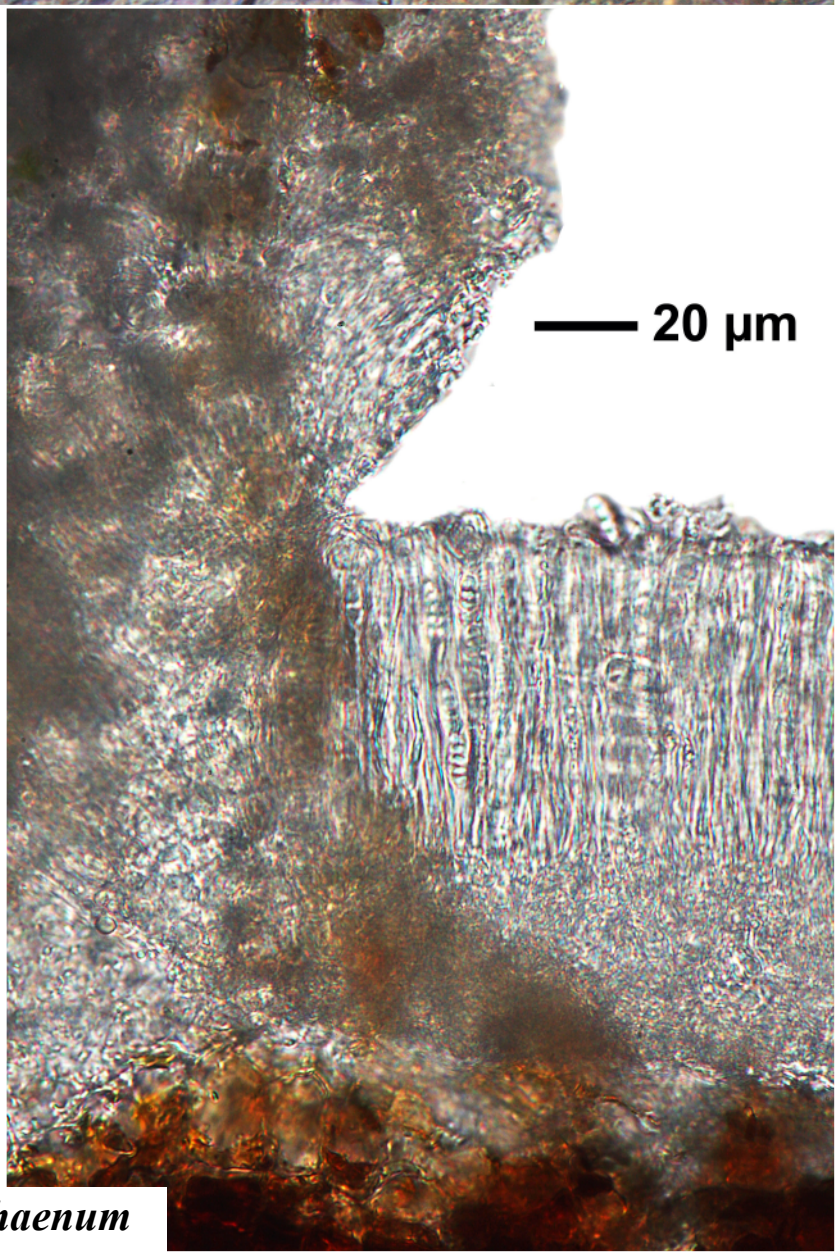




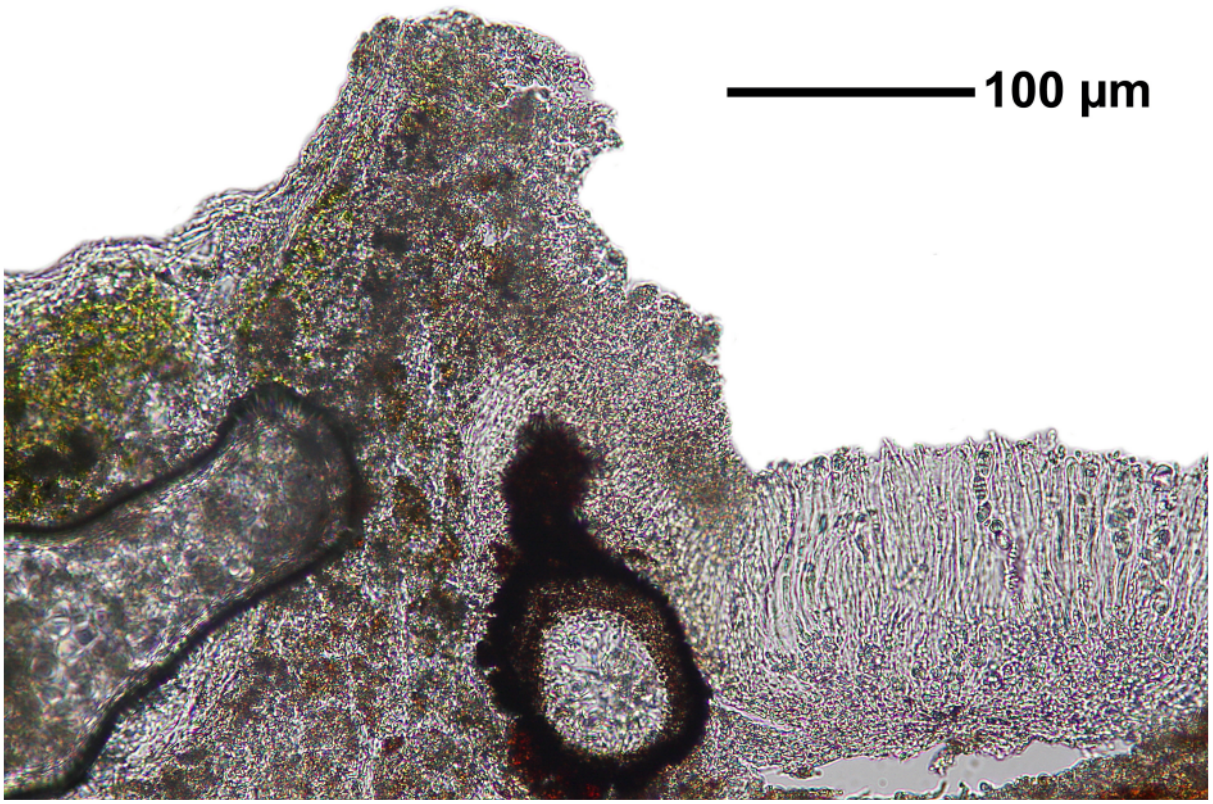


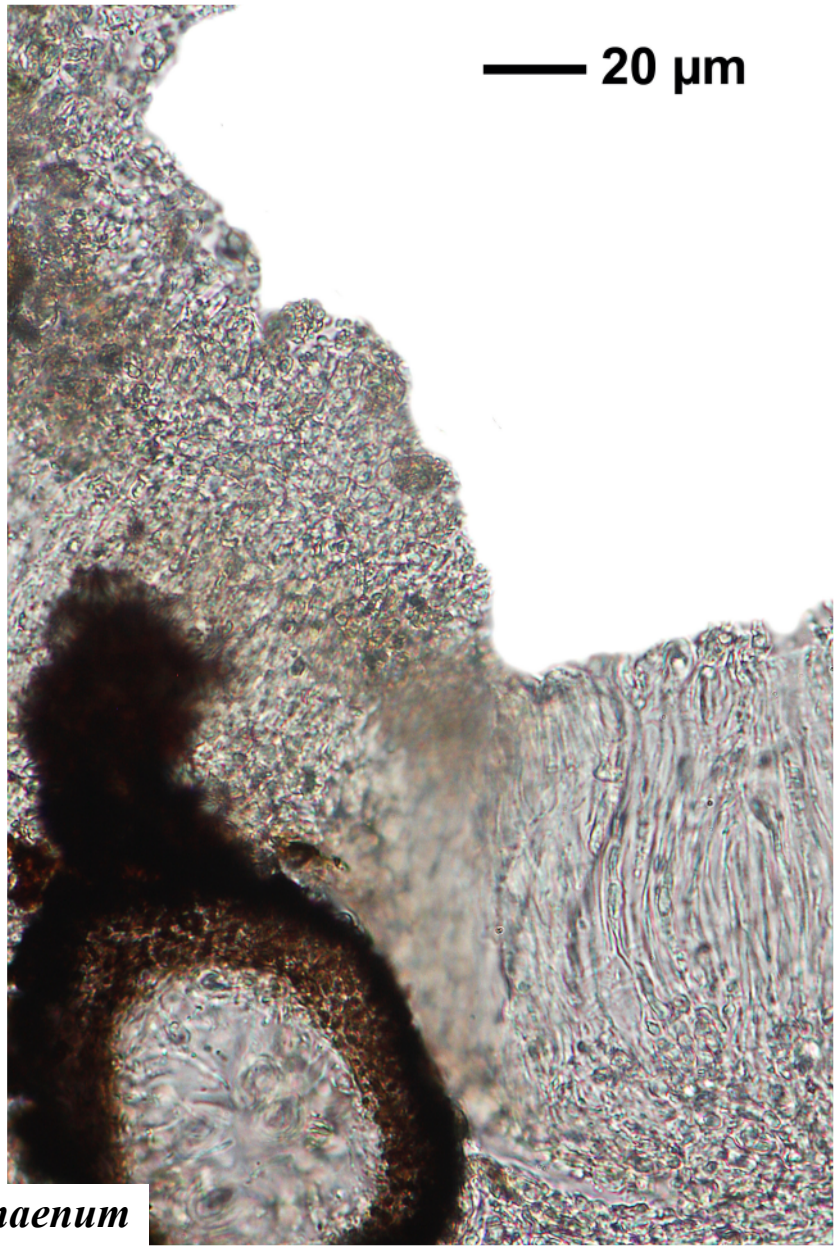
Myriotrema glaucophaenum



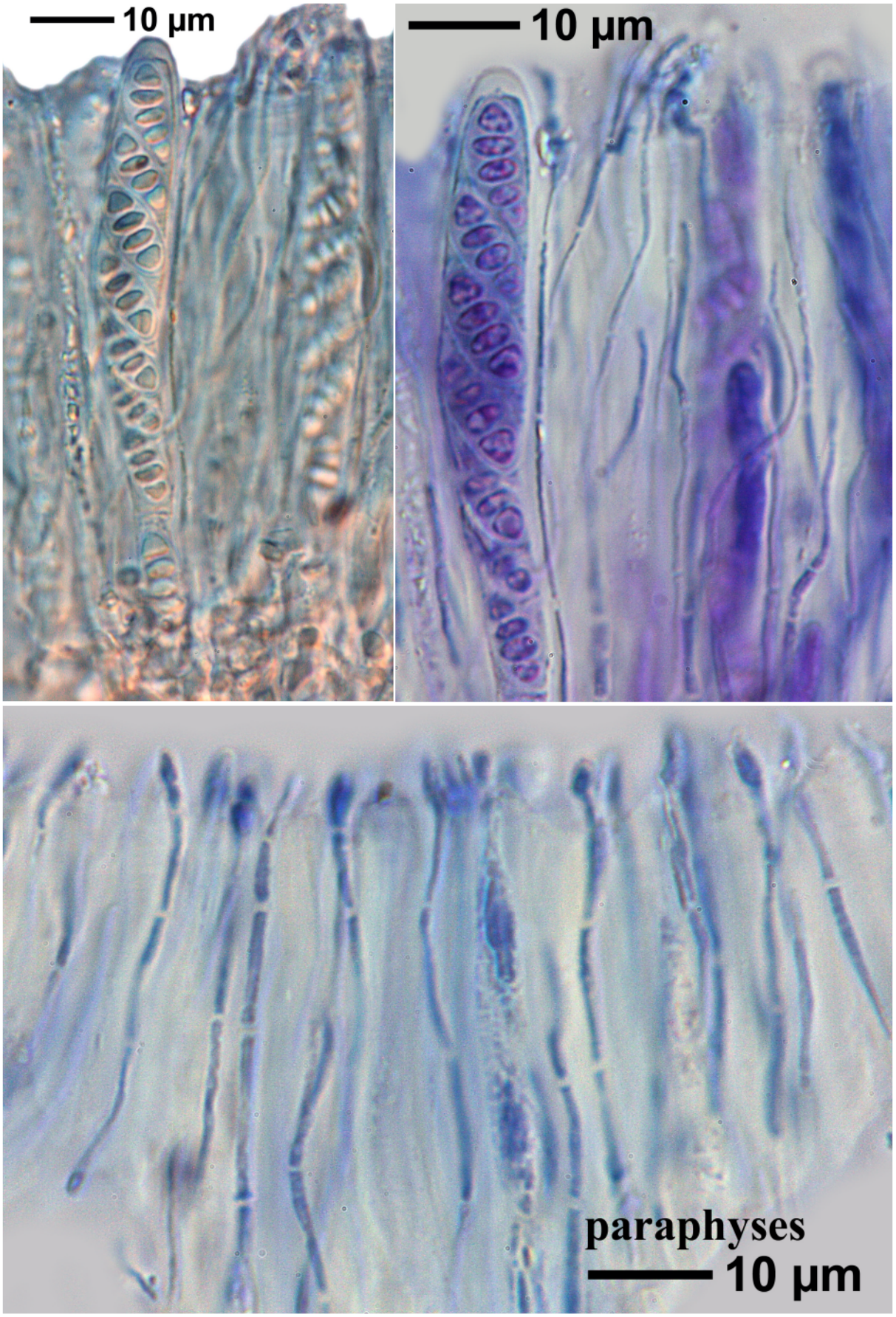


Myriotrema glaucophaenum





Myriotrema glaucophaenum



Myriotrema glaucophaenum

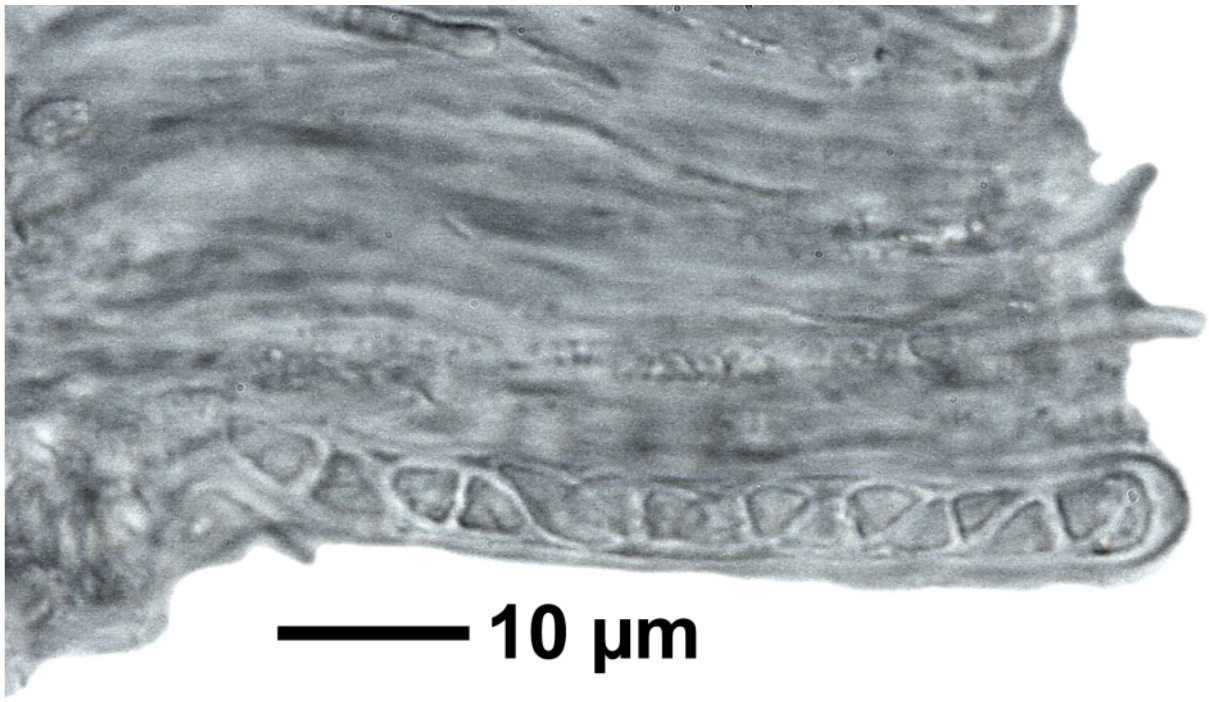


10 µm

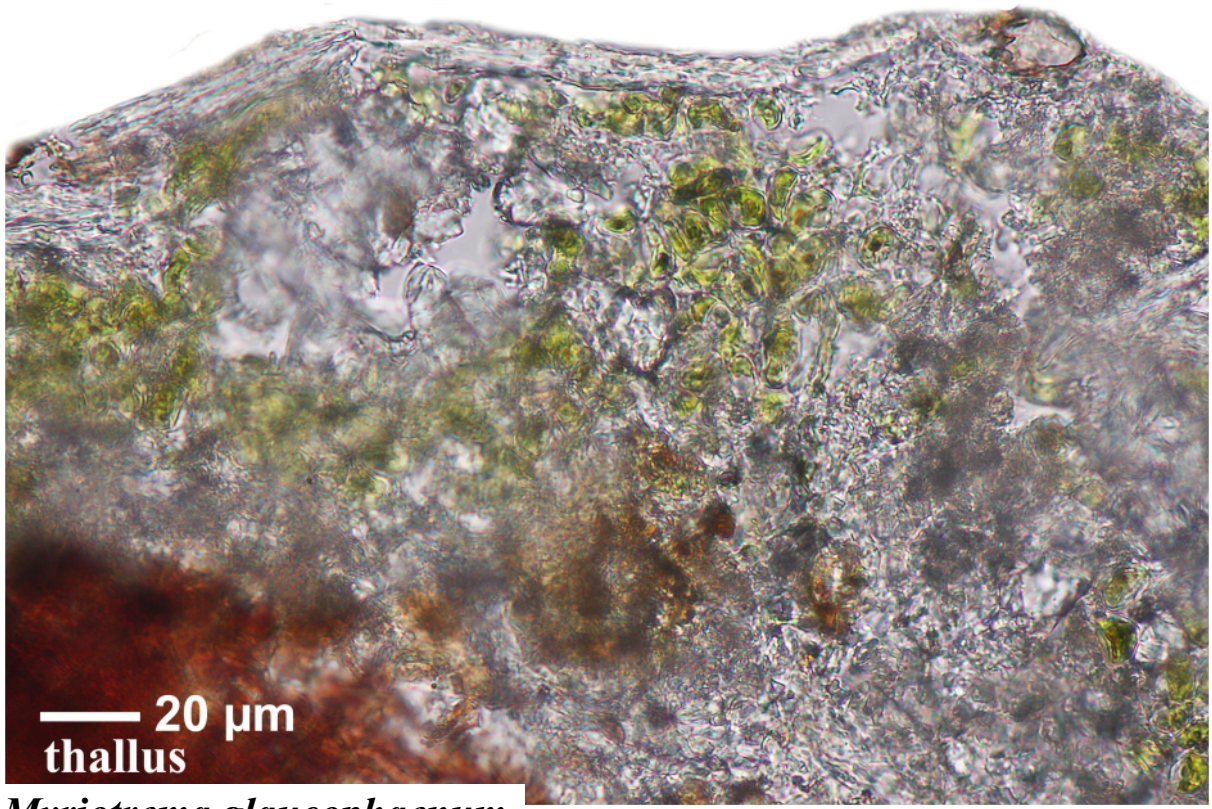


J+ violet

10 µm



10 µm



20 µm

thallus

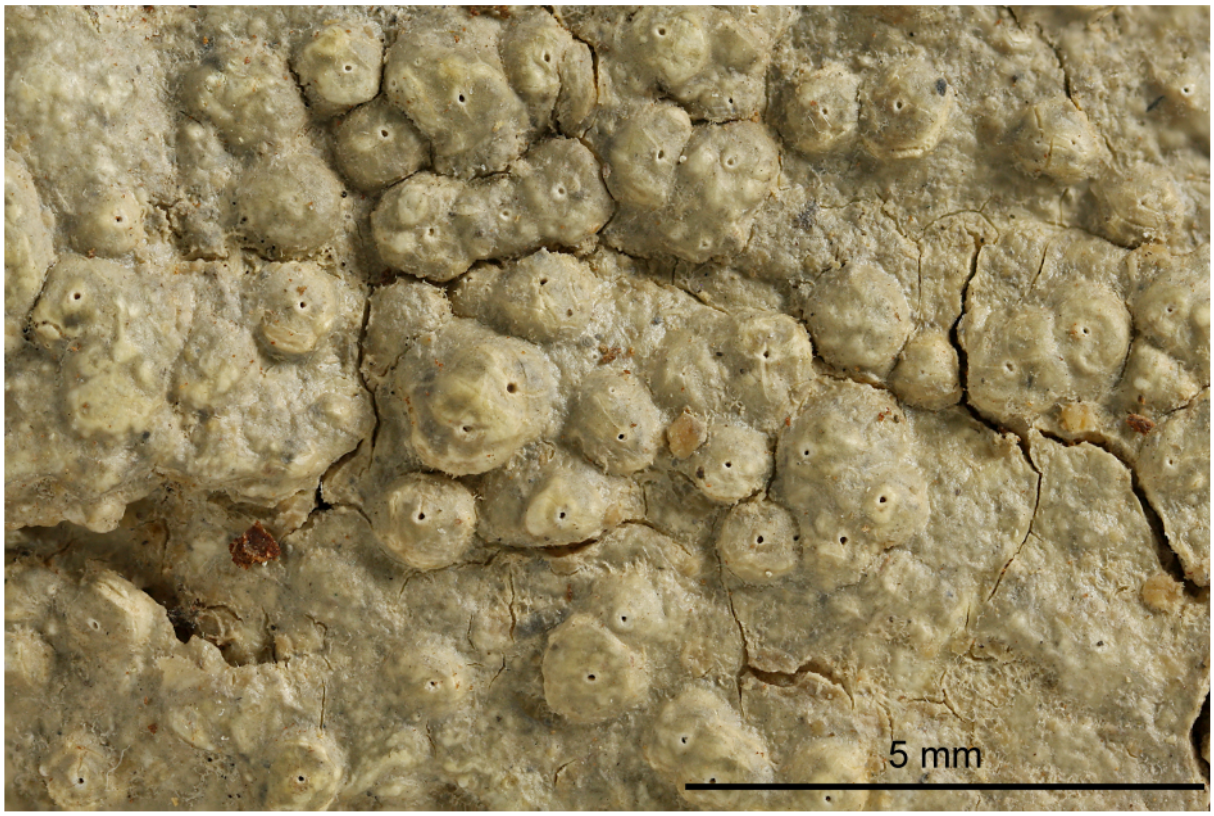
Myriotrema glaucophaenum

Myriotrema microstomum (Müll.Arg.) Hale,

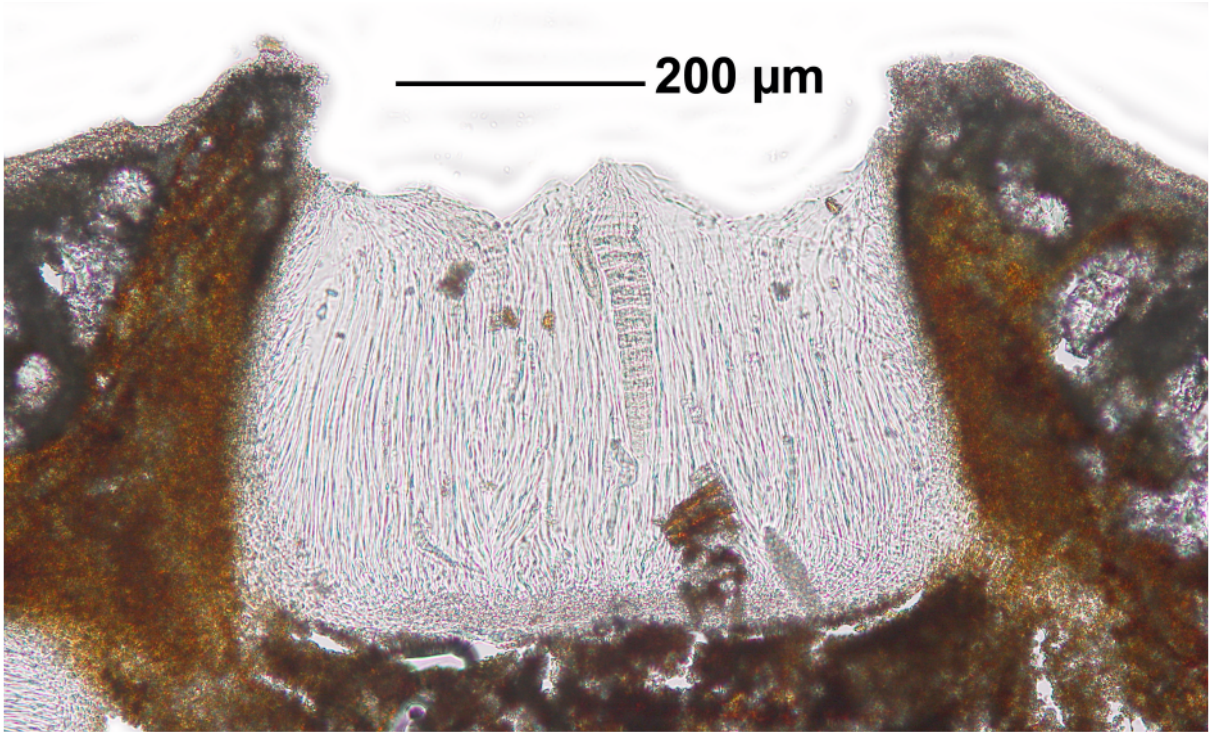
Porus c. 0.03-0.04 mm wide. Excipulum not carbonized, columella absent. Hymenium c. 320 µm high, not inspersed, periphyses absent. Ascospores hyaline, muriform, 1/ascus, J+ blue, very large (very variable in size), 170-243 x 40-55 µm, 1-2/ascus. Chemistry: protocetraric and fumarprotocetraric acids.

[7584], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail beim Lake Yagumyum, 9°15.040' N, 123°11.172' E, 1360 m. Leg. Schumm 11.08.2000, det. Schumm, test. Sipman 2012.

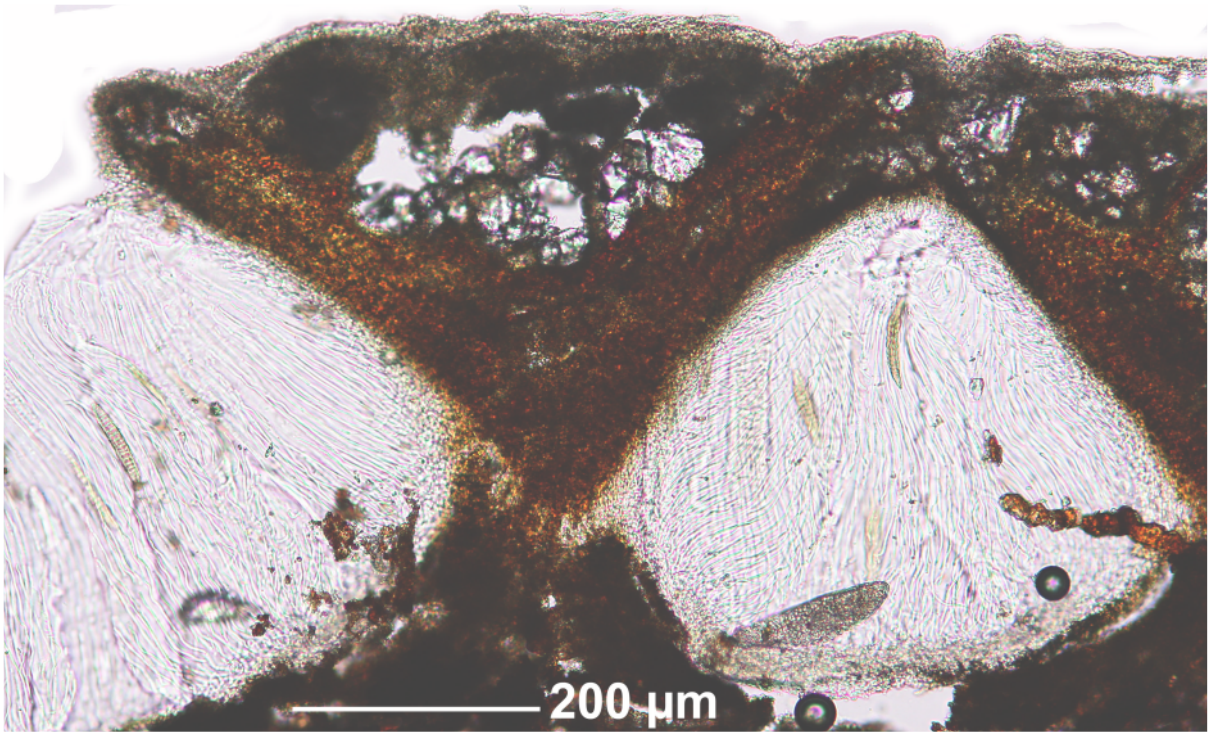
Note: Flora of Australia 57(5): 324 ***Ocellularia microstoma*** (Müll.Arg.) Hale, Mycotaxon 11: 134 (1980) is a mistake. According to Hale the species there is a *Myriotrema* and not an *Ocellularia.*

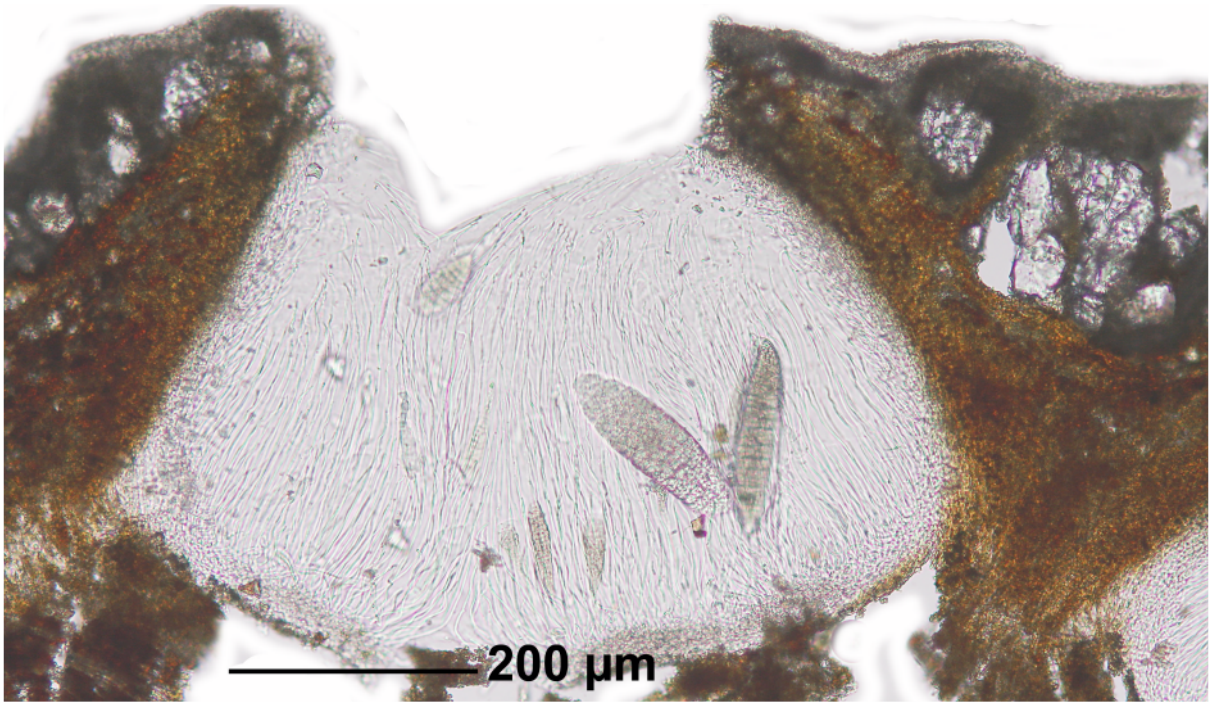




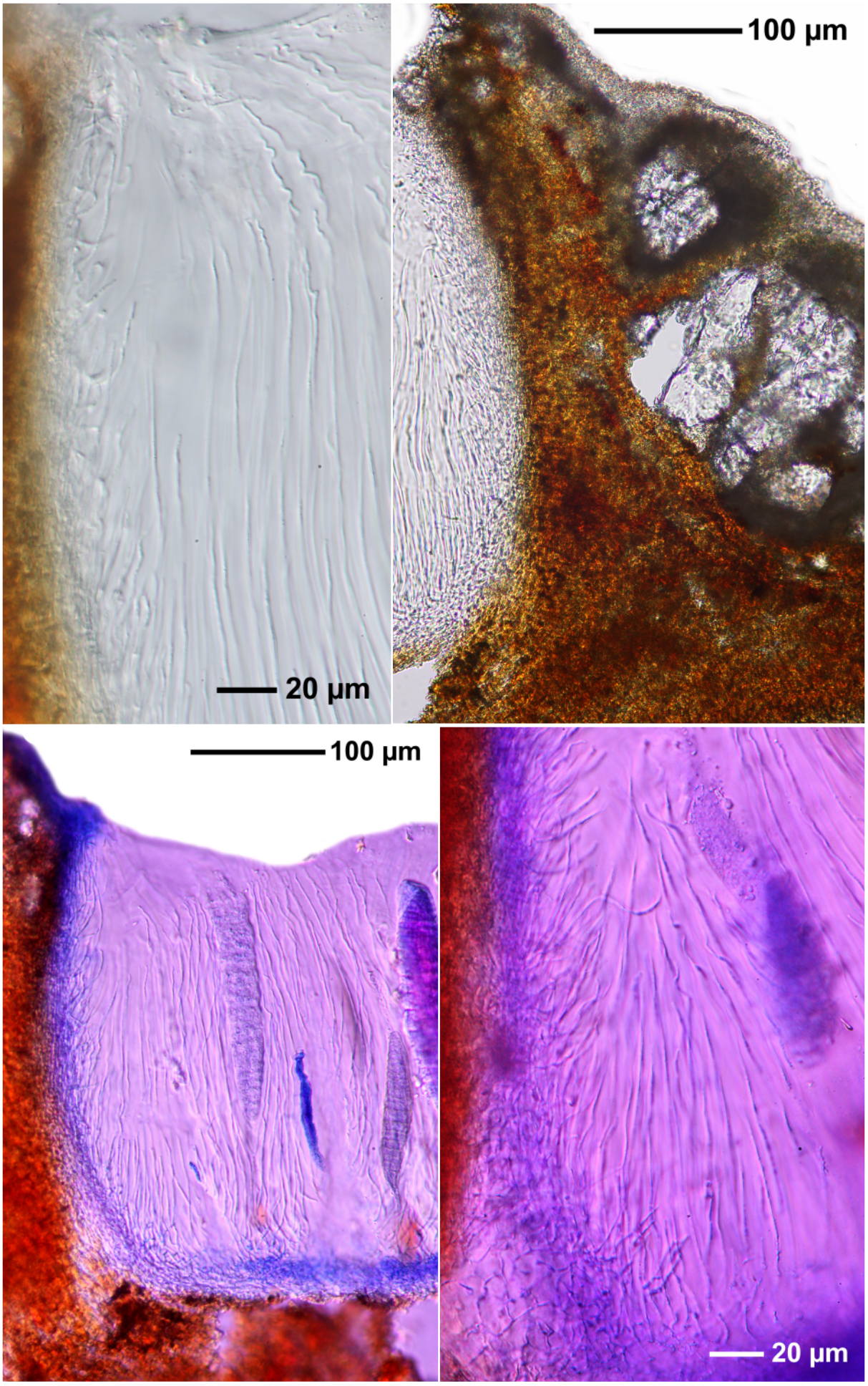


Myriotrema microstomum

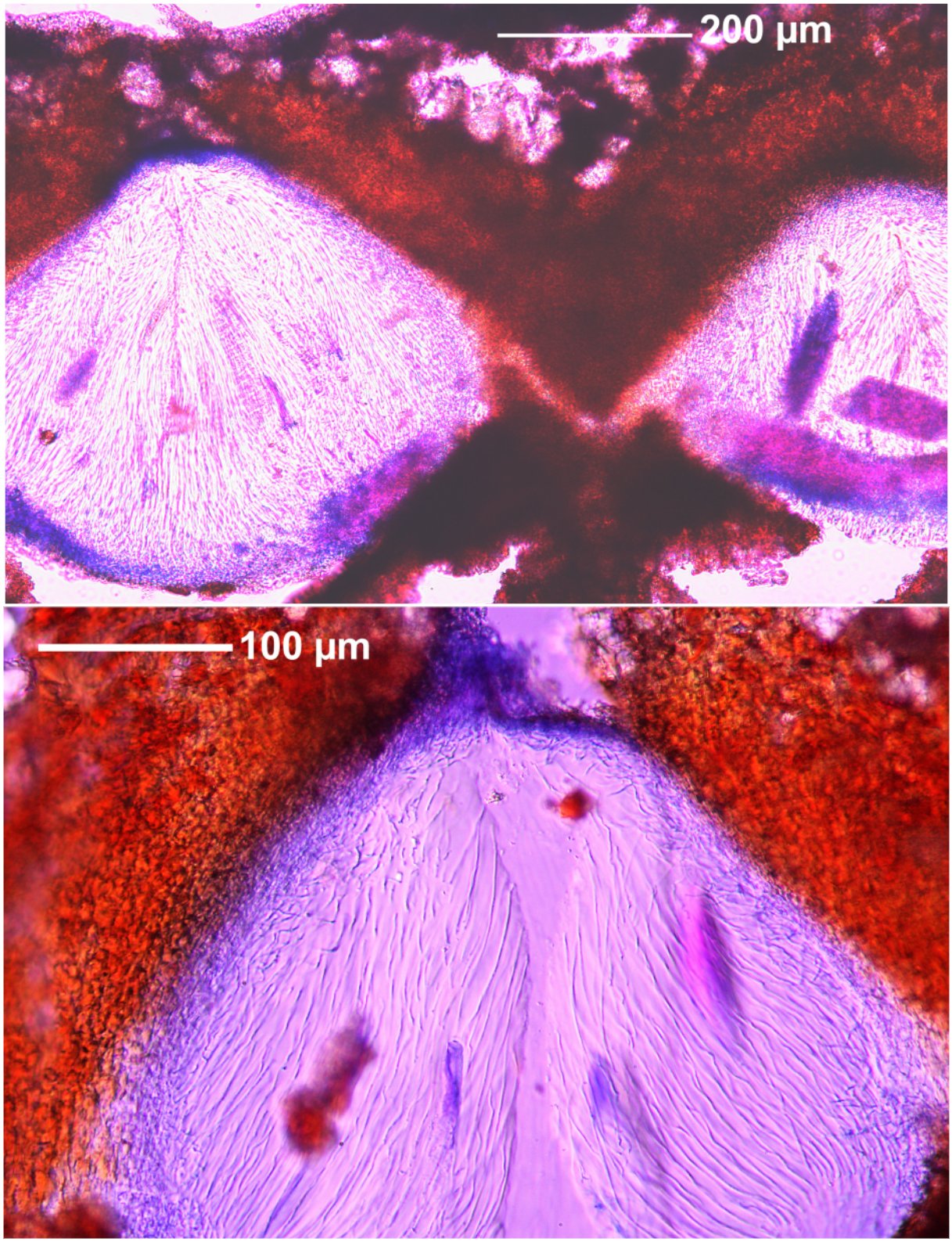




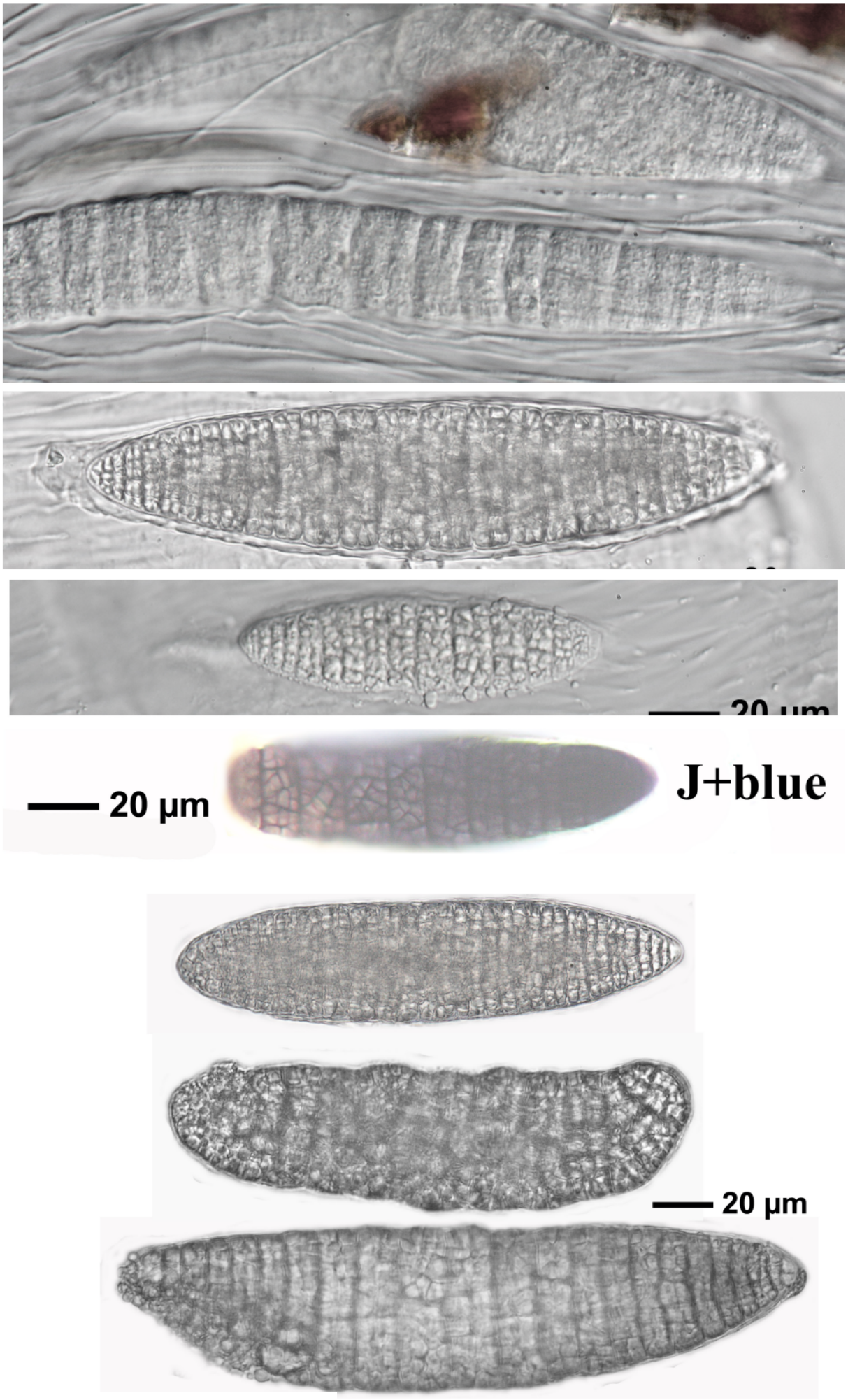
Myriotrema microstomum



Myriotrema microstomum



Myriotrema microstomum

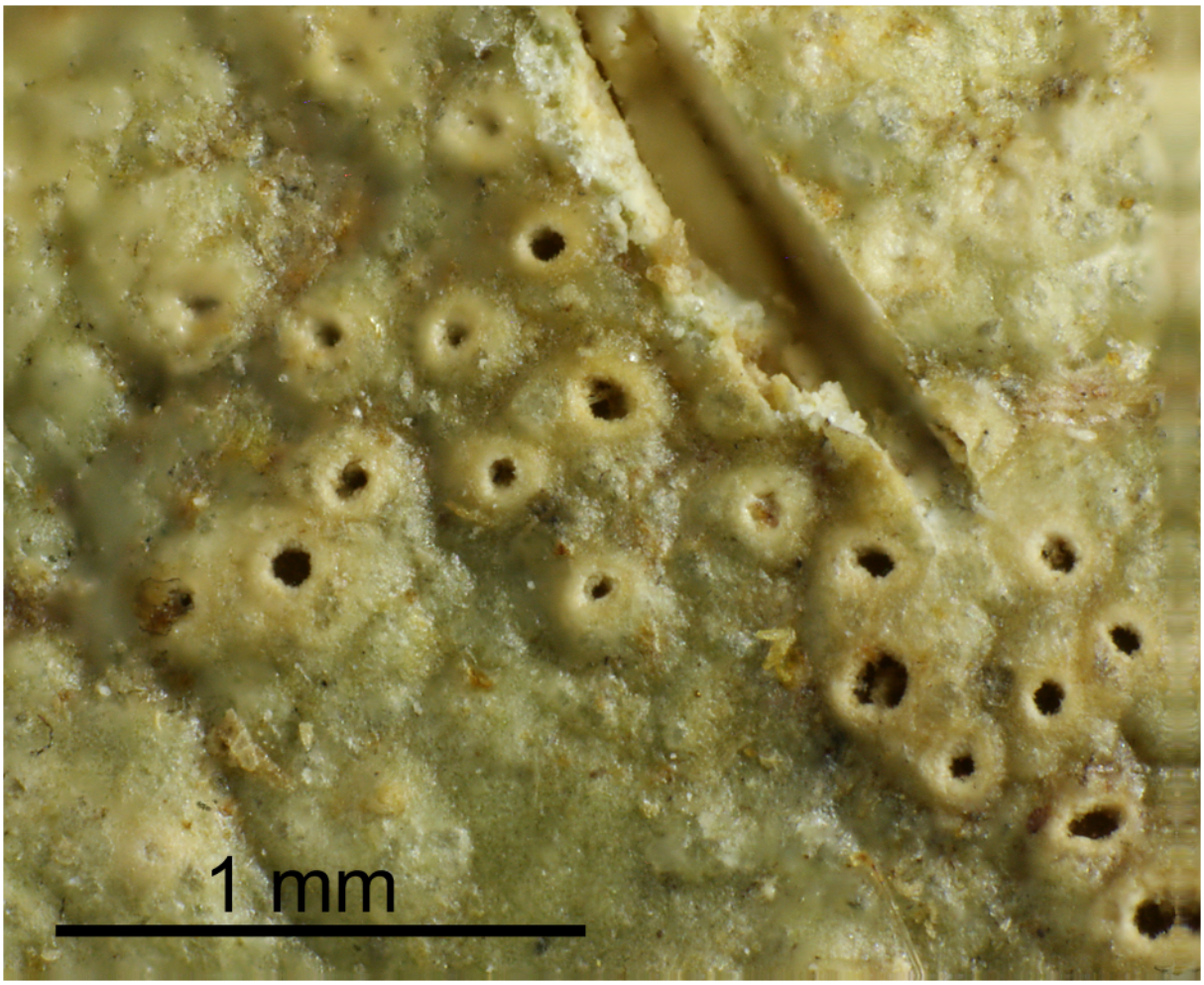


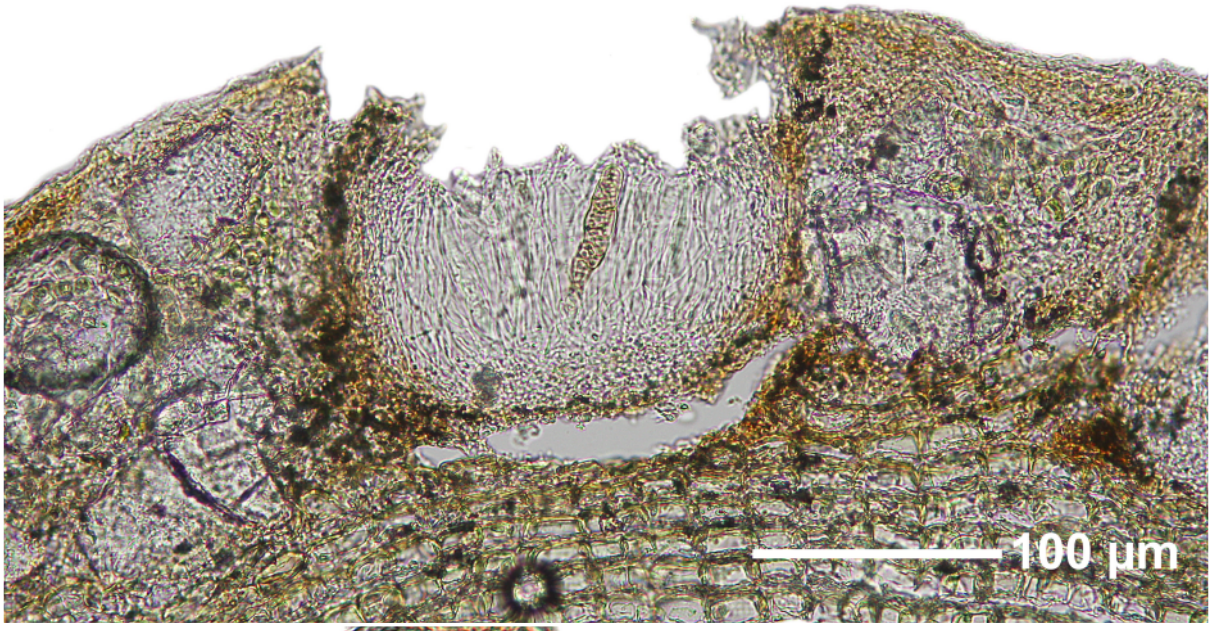
Myriotrema microstomum

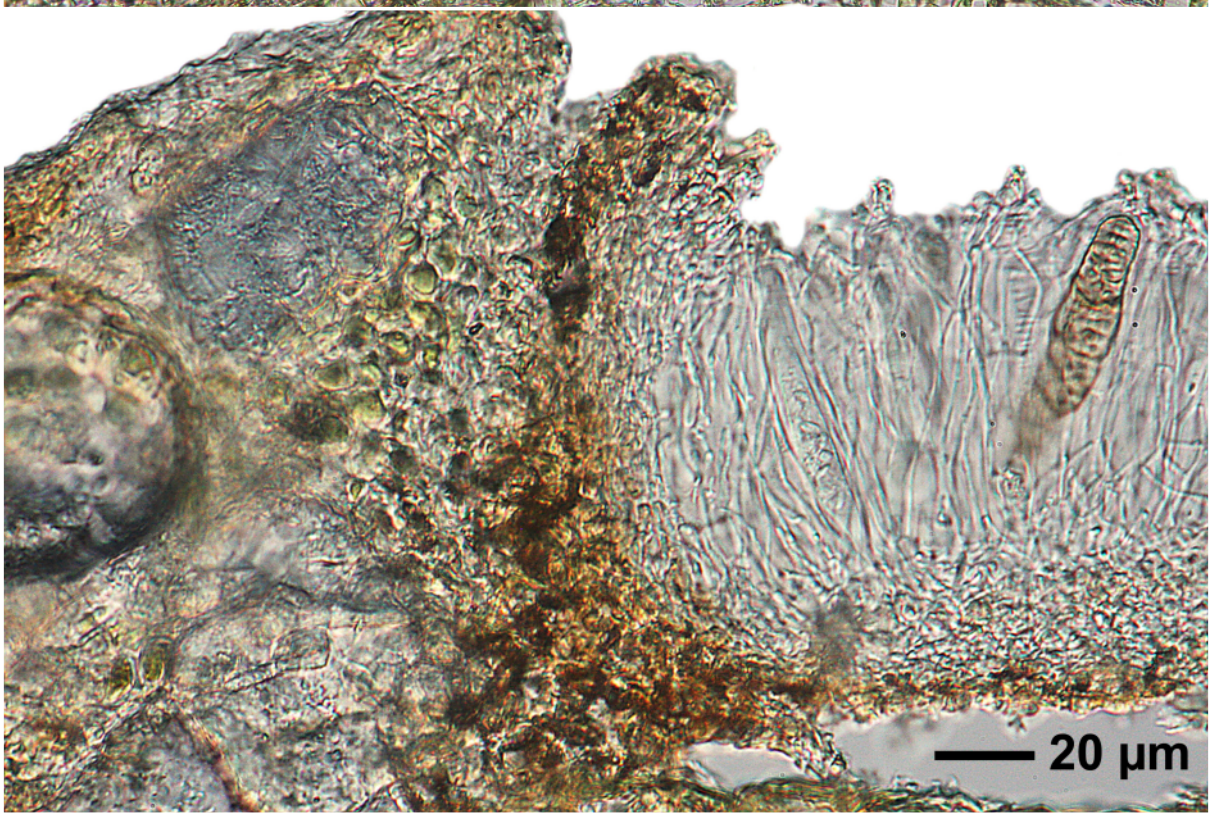
Myriotrema rugiferum (Harm.) Hale

Ascospores hyaline, transversely 3-4(-5)-septate and 0-1 longitudinal septum in each segment, 8/ascus, 17-18 x 7-9 µm. Chemistry: psoromic acid (maj), 2'-O-demethylpsoromic acid (maj to min), subpsoromic acid (tr); medulla with large calcium oxalate crystals (needles with sulfuric acid), P+ orange, K+ yellow>orange (no red crystals).

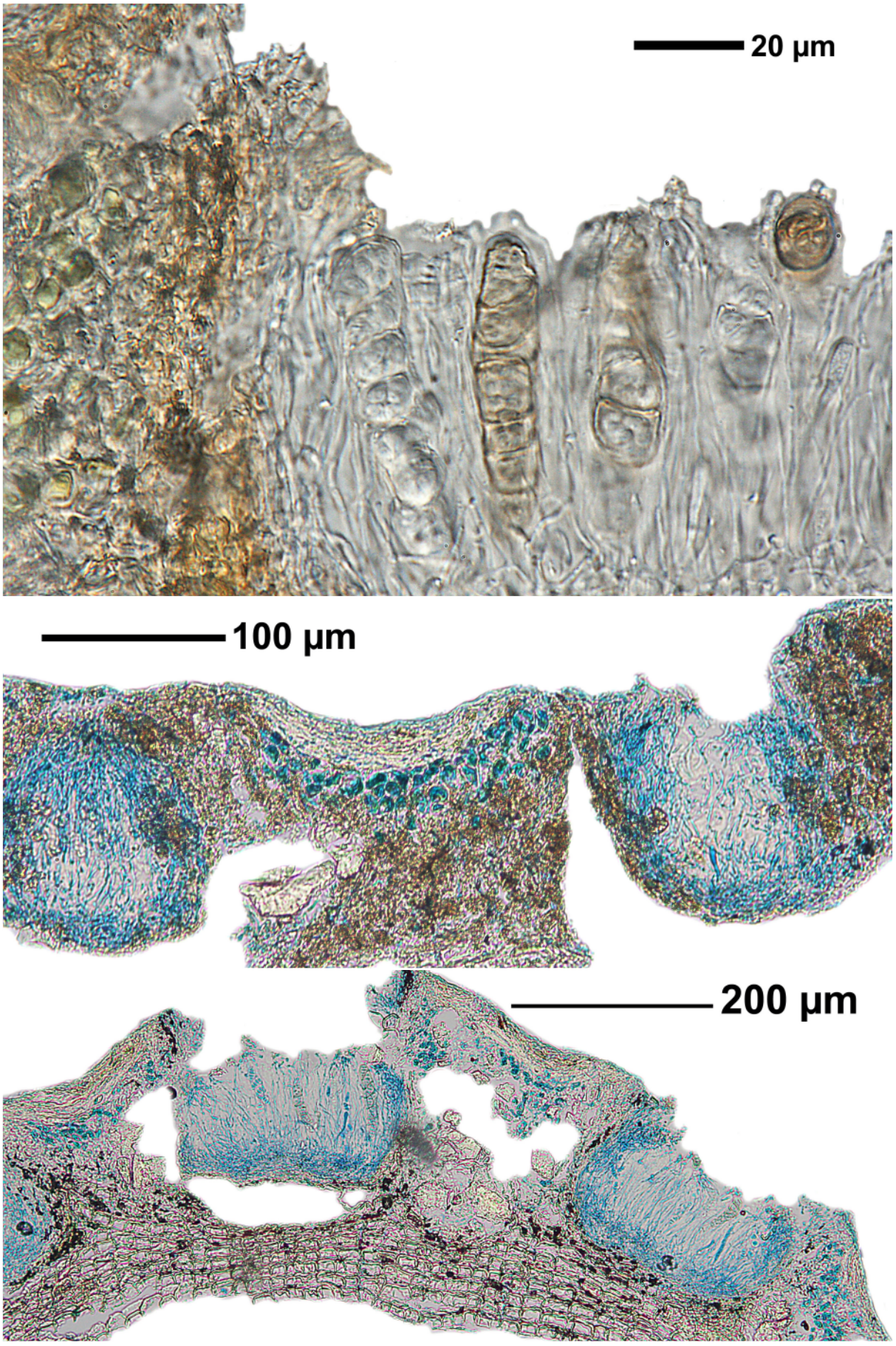
[6467], Philippinen, Mindanao, Prov. Misamis Oriental, südwestlich Gingoog City, Barangay Lunutan, 08°42.510' N, 125°01.241' E, 1120 m und am Weg auf den Mt. Lumot (Via Haruhay Trail) bis zum Zwischencamp im trop. Bergregenwald bis 08°40.713' N, 125°01.649' E, 1680 m. Leg. Schumm 24.08.1999, det. H. Sipman 08.03.2000.



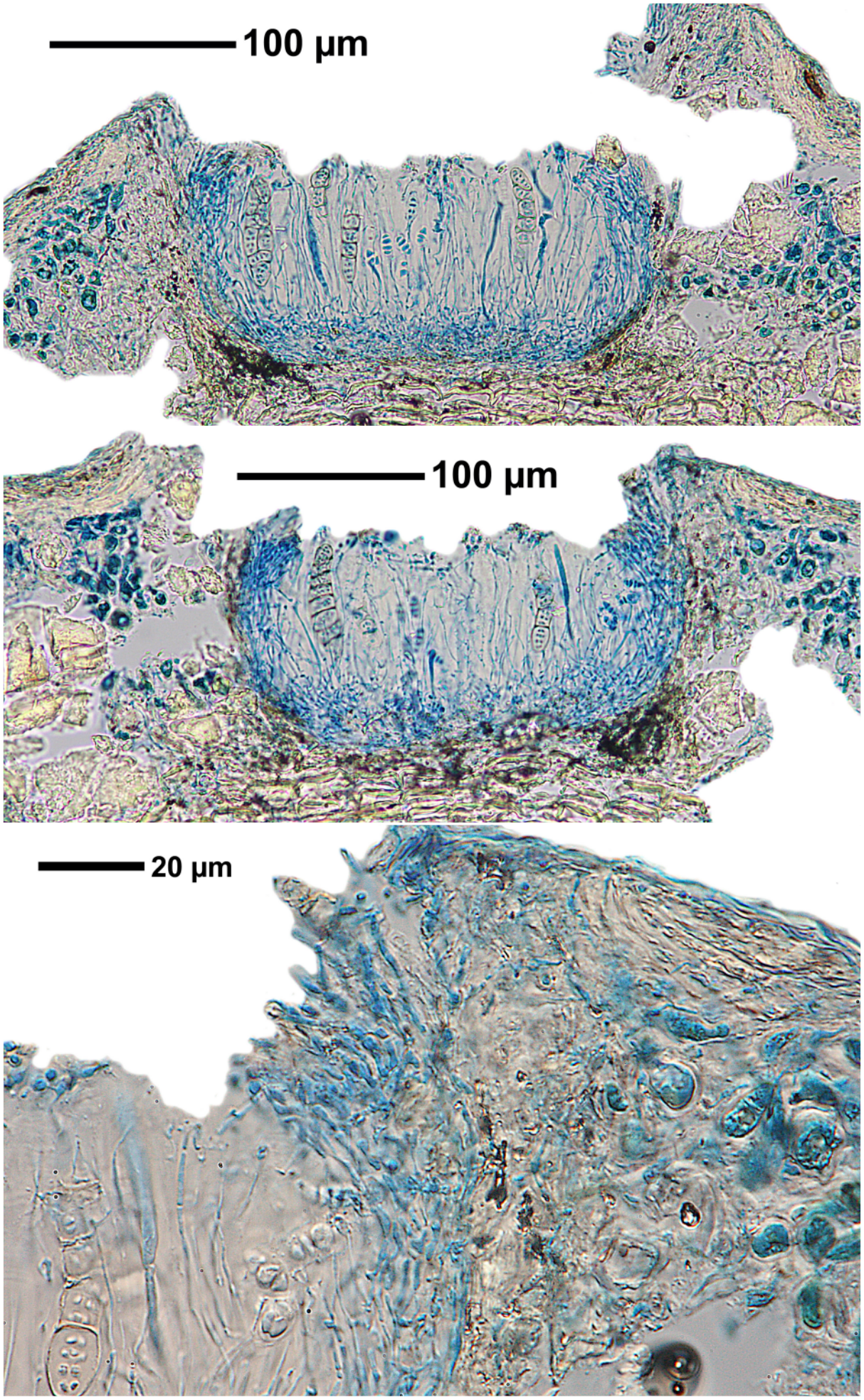




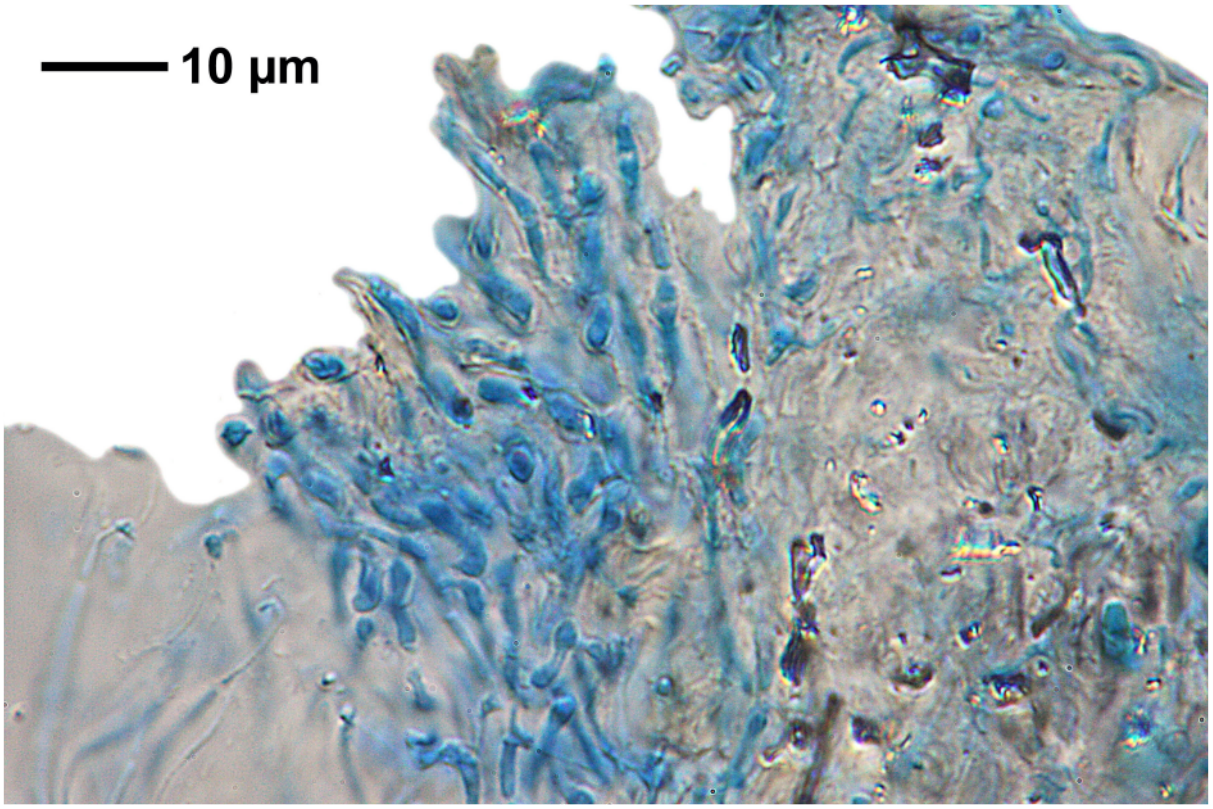
Myriotrema rugiferum

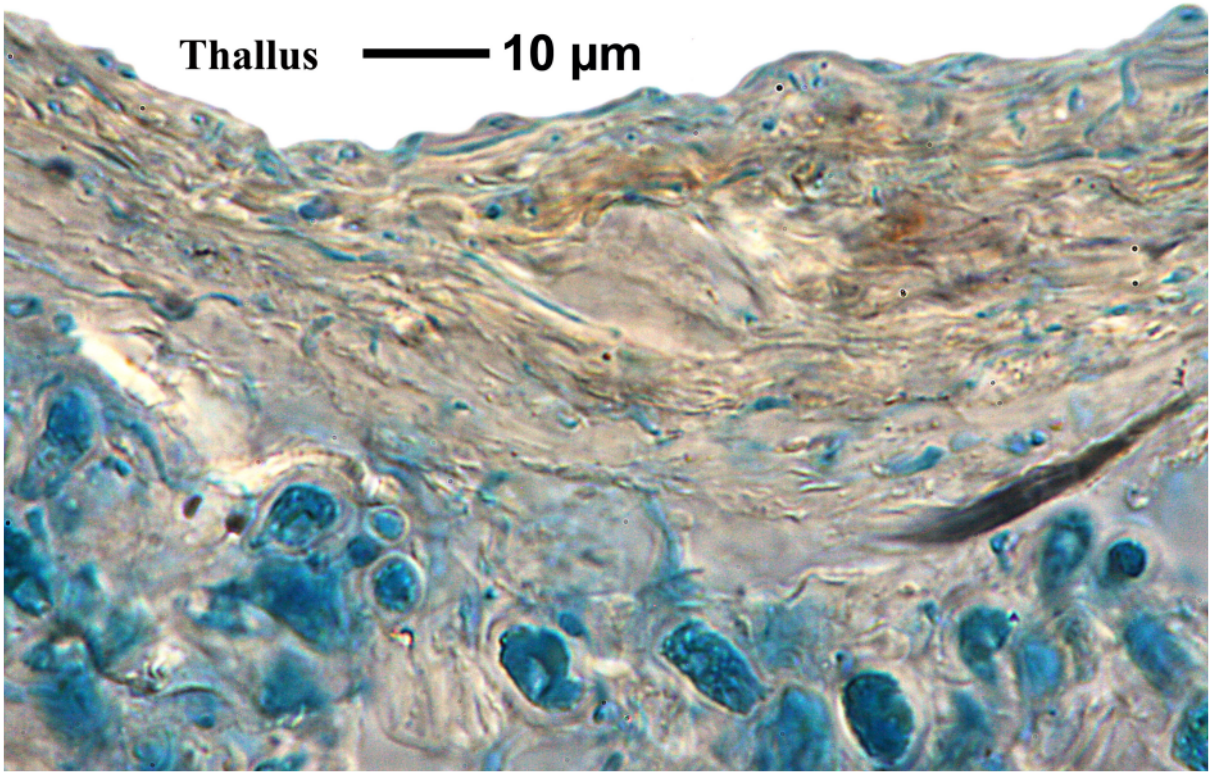


Myriotrema rugiferum

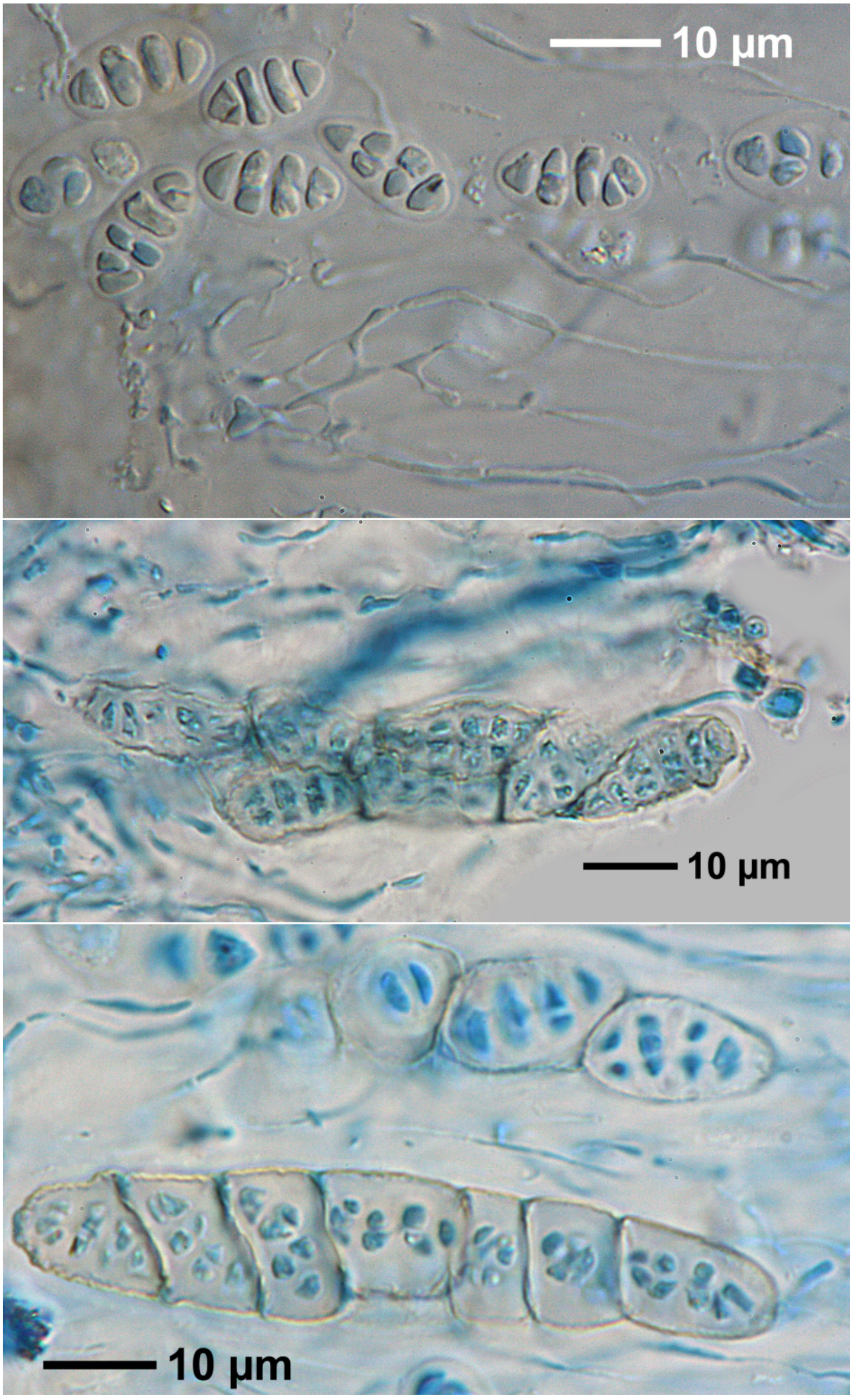


Myriotrema rugiferum

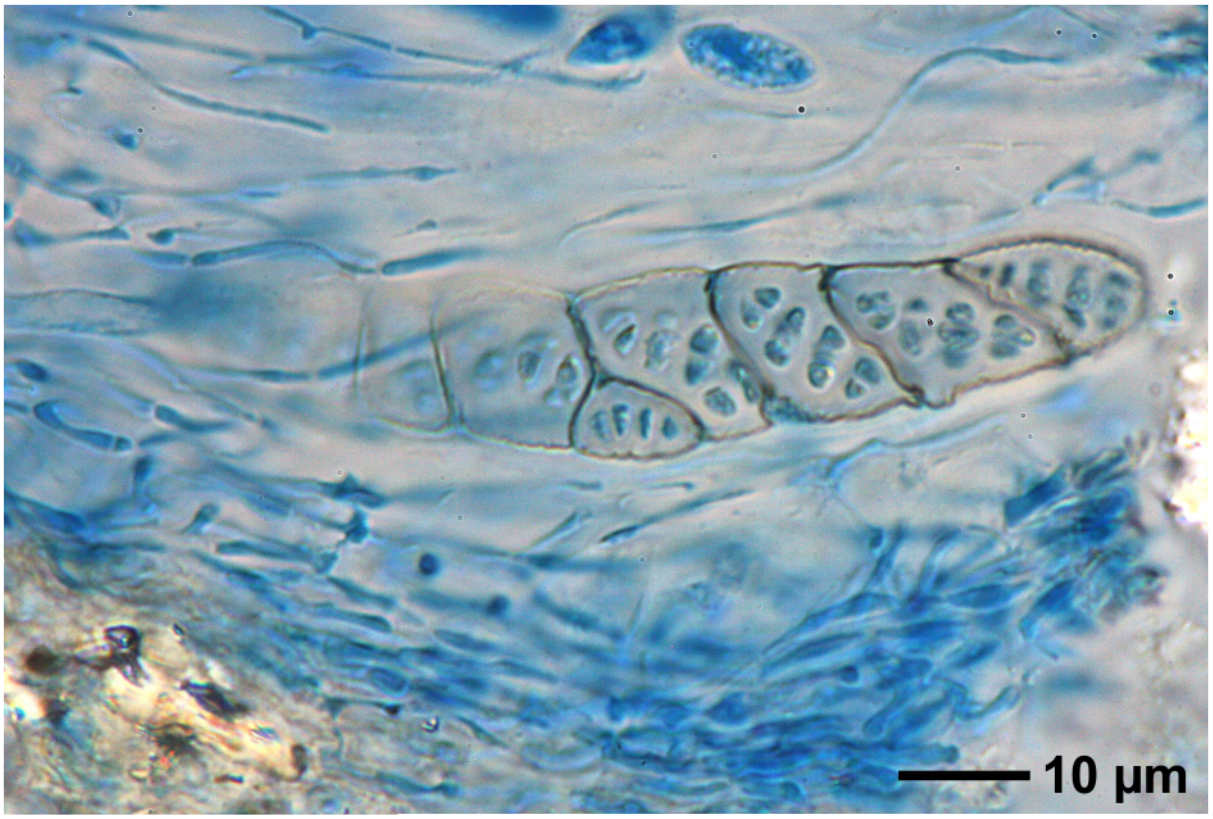


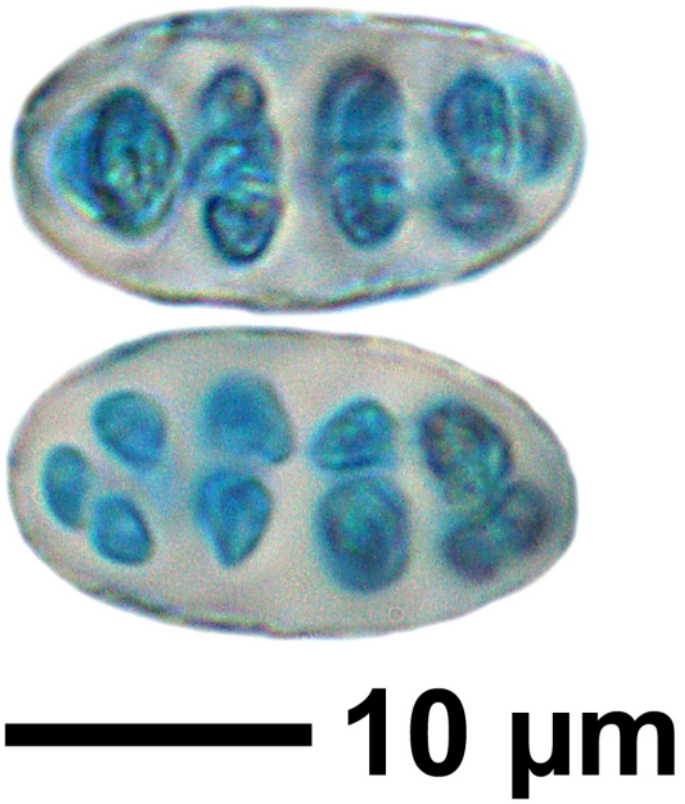


Myriotrema rugiferum



Myriotrema rugiferum



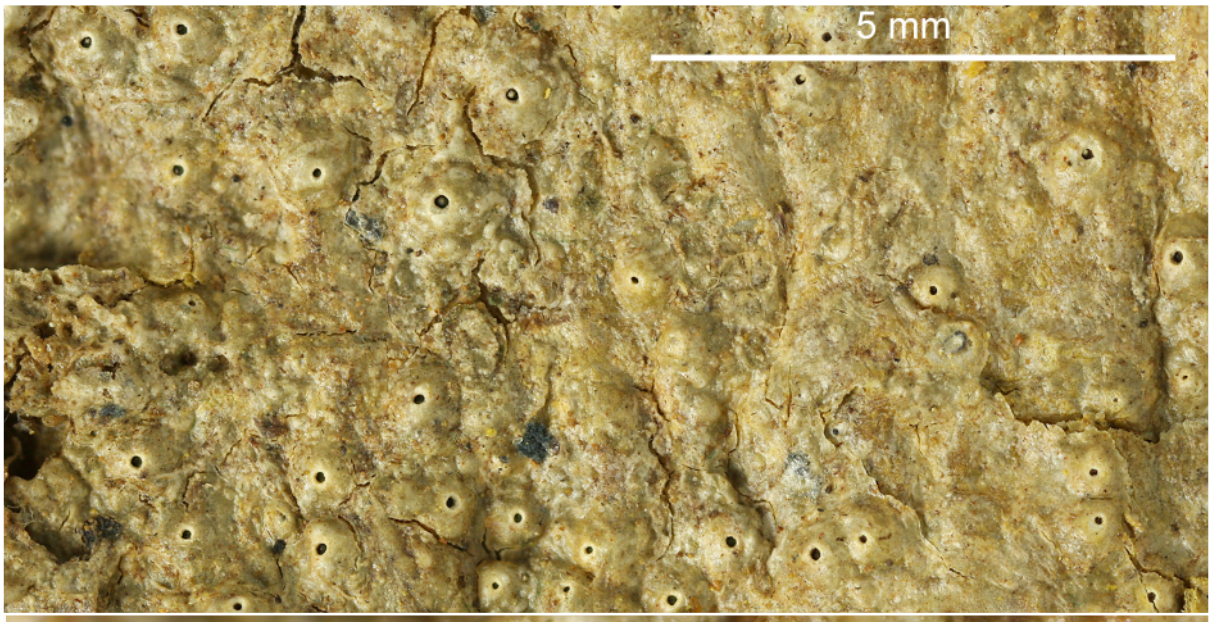


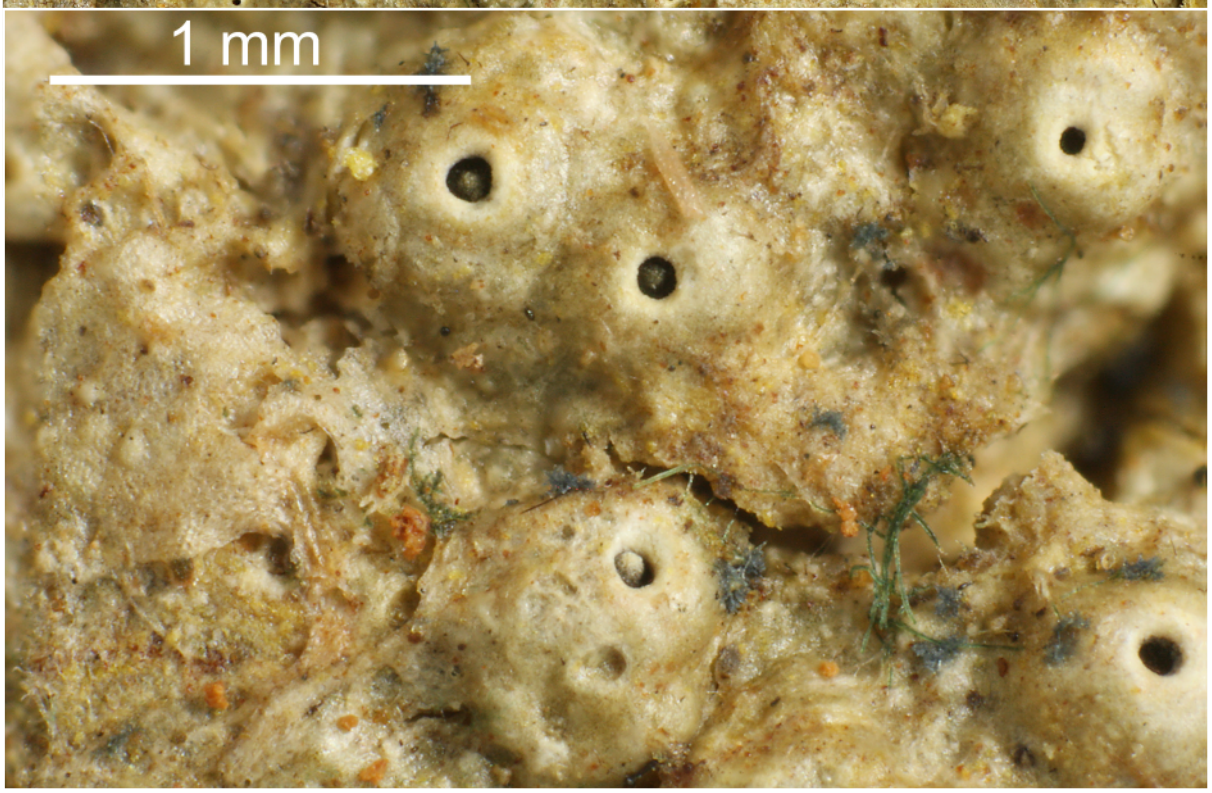
Myriotrema rugiferum

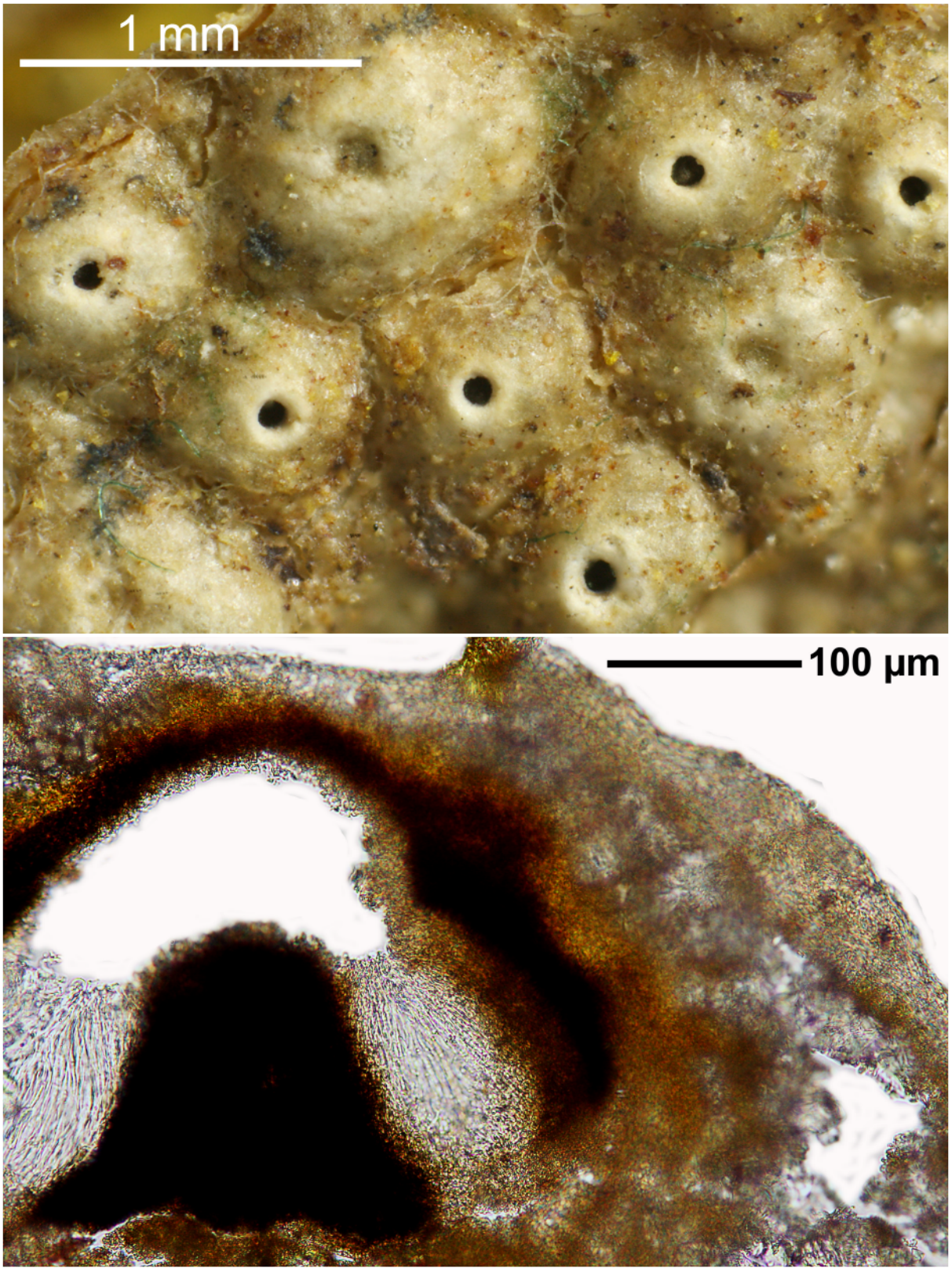
Ocellularia ascidioidea Hale

Thallus ochre, continuous. Apothecia erumpent, 0.5-0.7 mm wide. Porus 0.1 mm wide. Excipulum marginally carbonized, with carbonized columella. Periphyses absent, hymenium not inspersed. Ascospores hyaline, transverse septate, 8/ascus, 8-9 loculate, J+ blue-violet, 26-28 x 7-8 µm. Chemistry: TLC nil (only a weak grey spot remaining on the baseline in A,B',C), Medulla white, P-.

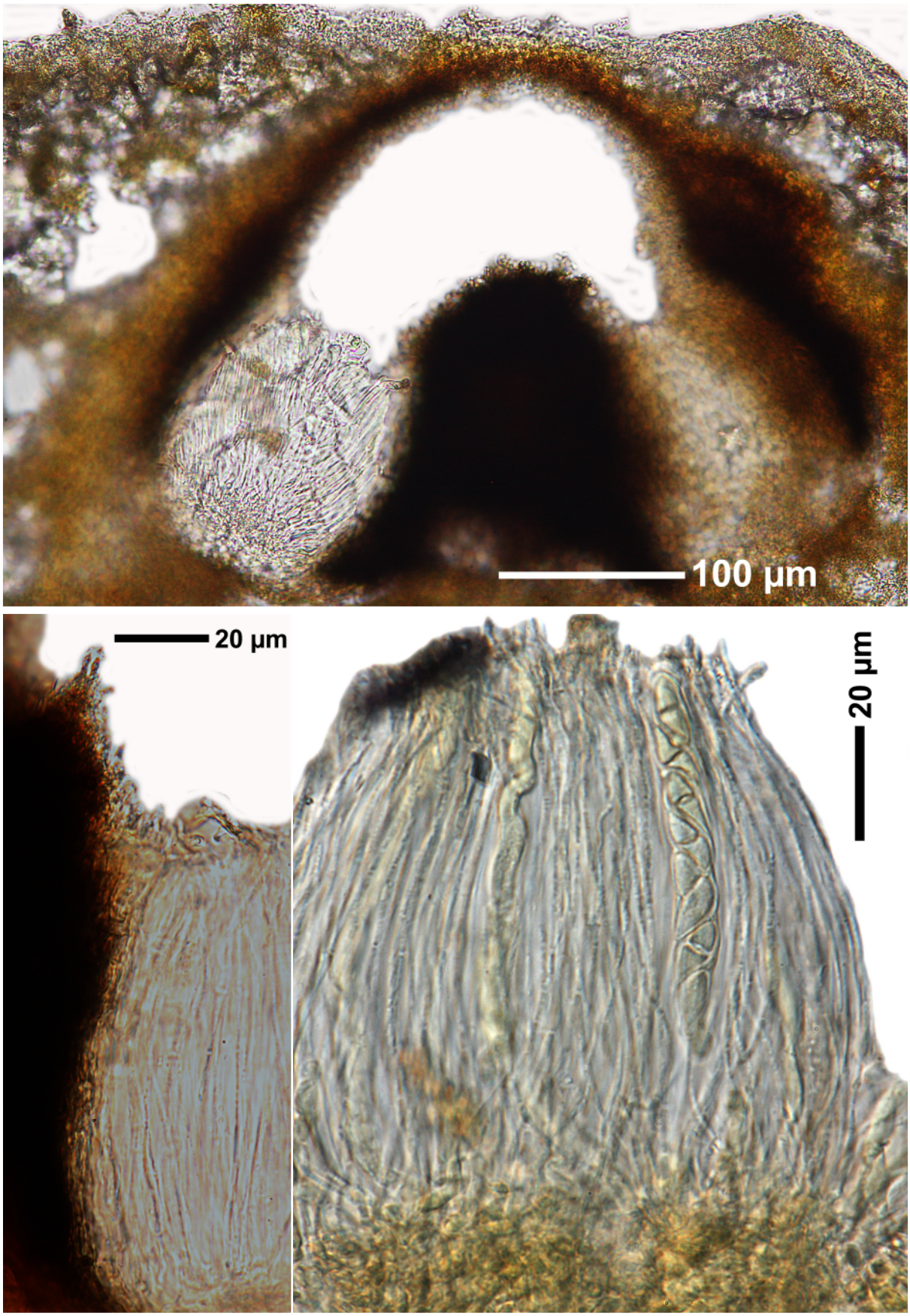
[7791], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729' N, 124°49.781' E, 885 m) nach Kadwa-An (10°46.249' N, 124°48.167' E, 195 m); bei 870 m. Leg Schumm 18.08.2000, det. Schumm, test. Sipman 2012.



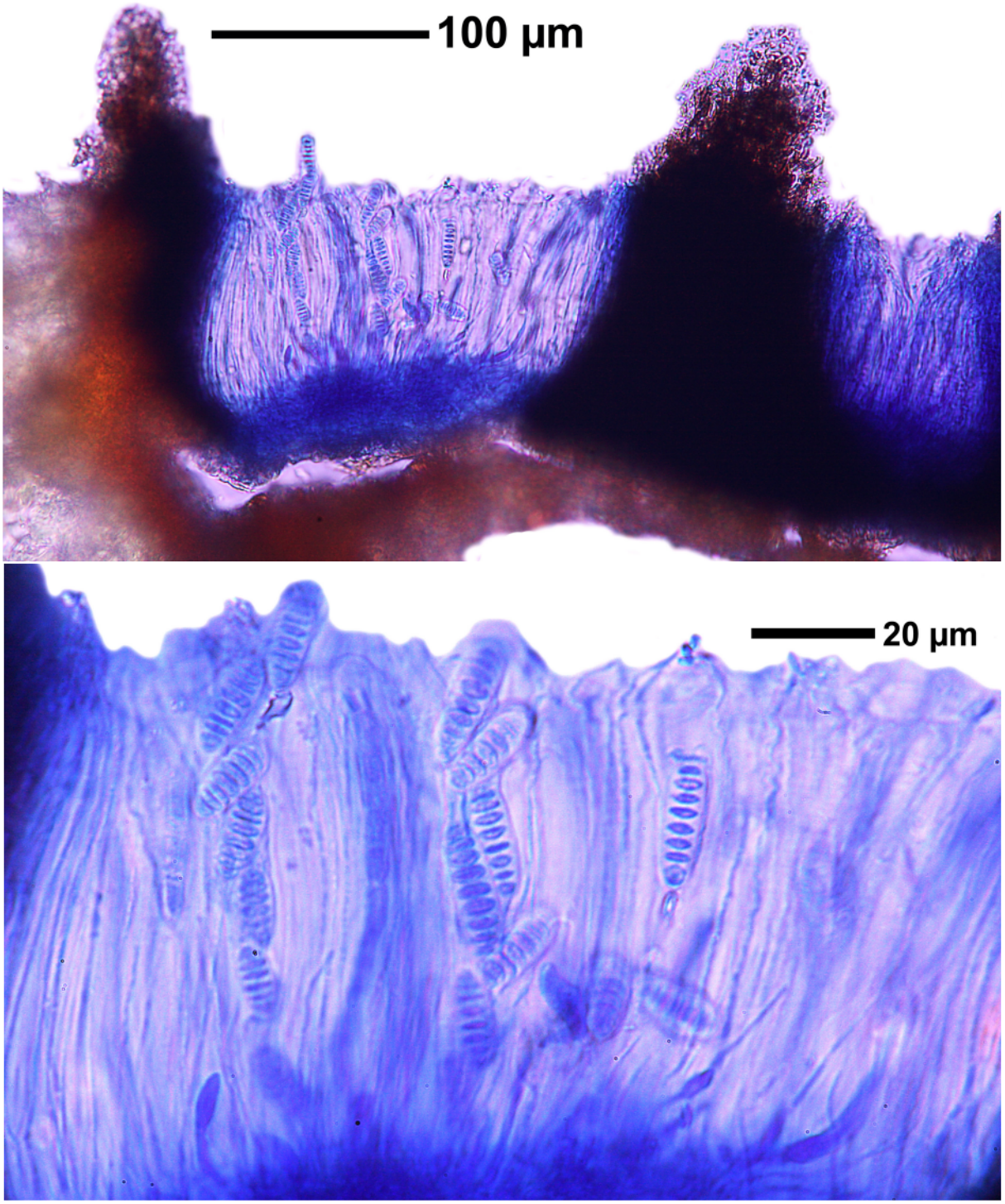




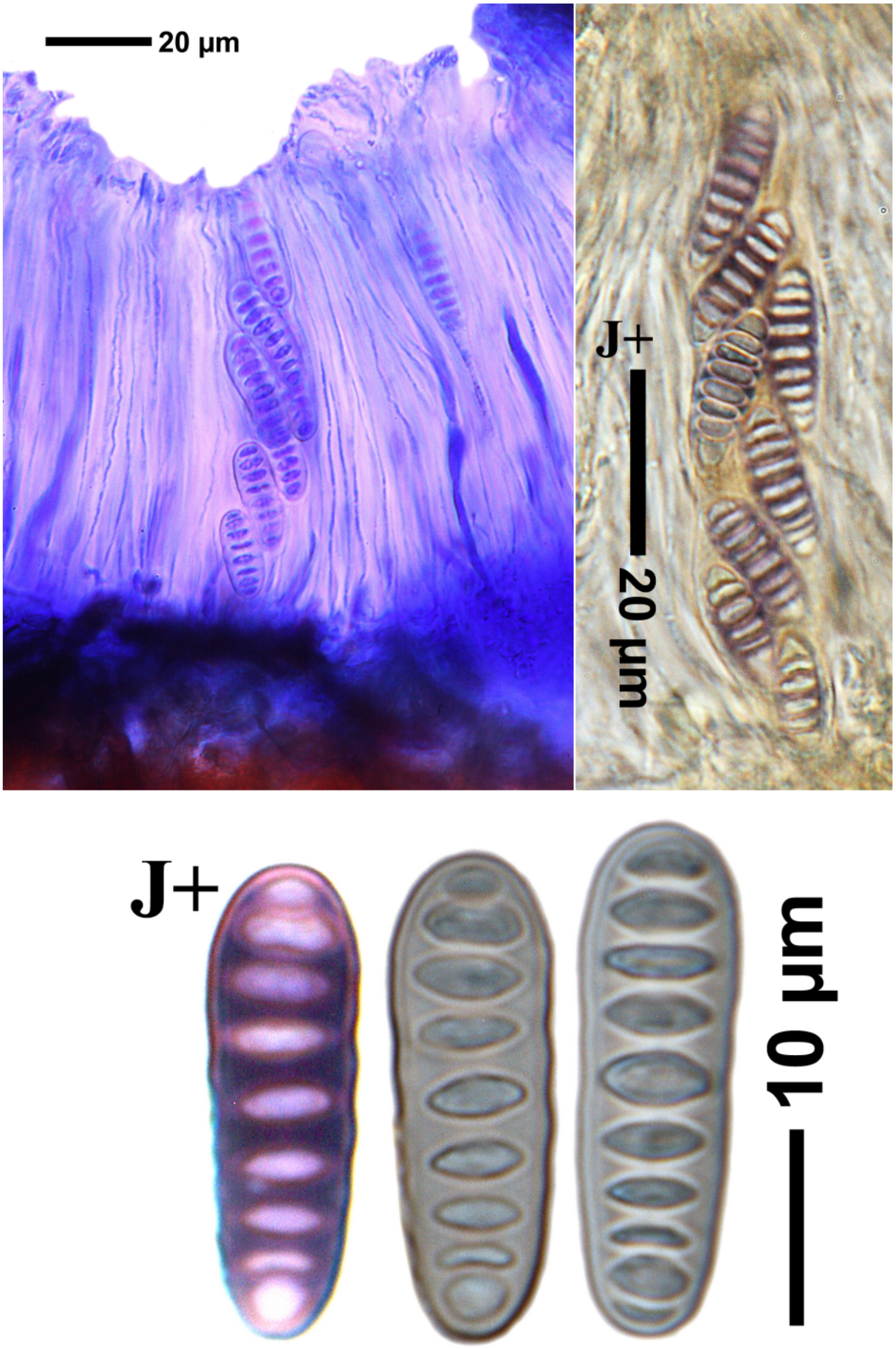
Ocellularia ascidioidea



Ocellularia ascidioidea



Ocellularia ascidioidea



Ocellularia ascidioidea

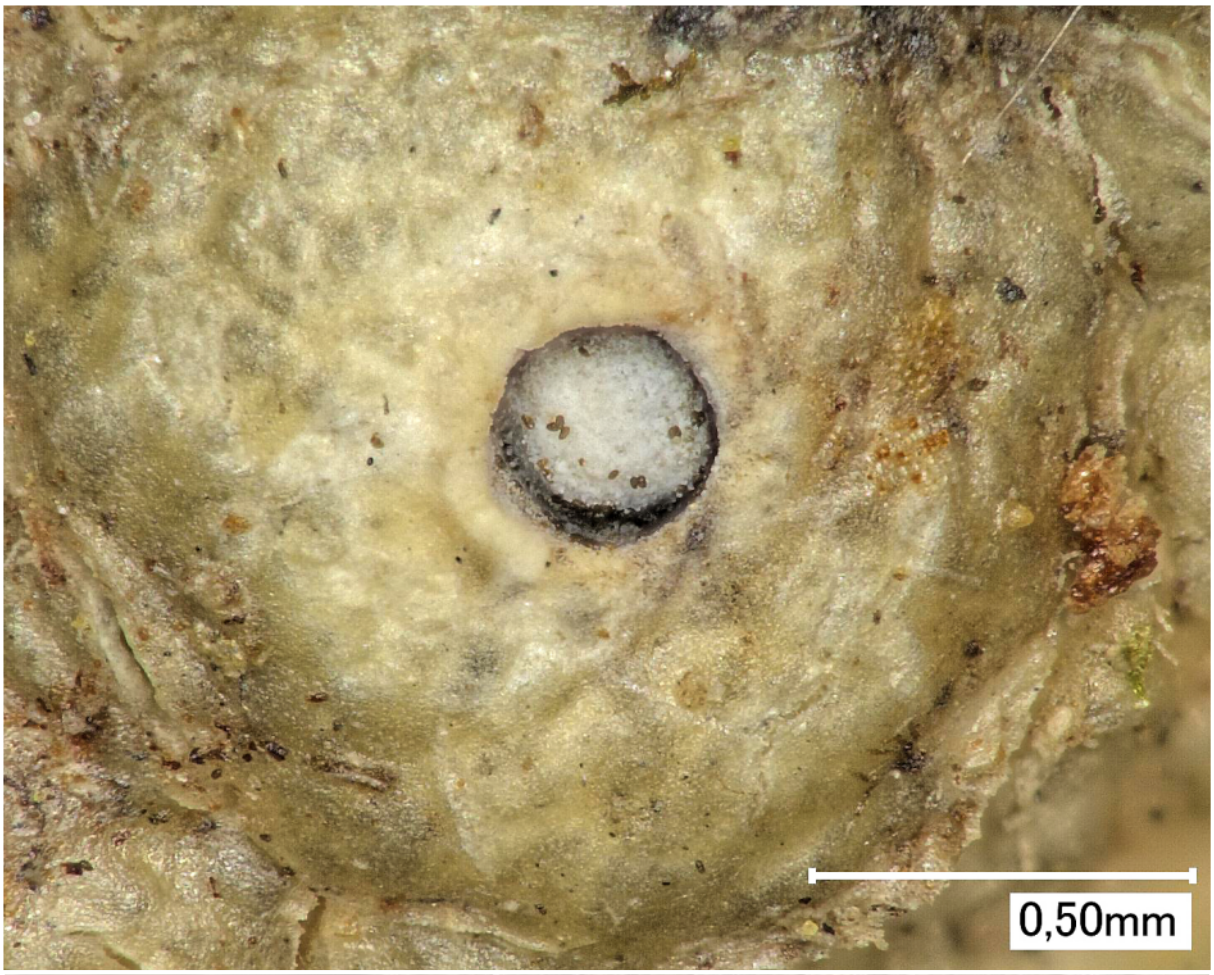
Ocellularia marivelensis (Vain.) Hale
[= ***Thelotrema marivelense*** Vain., Insul. Philipp. III, 1918, S.176]

Ascocarp lateral carbonized with carbonized columella, Hamathecium J-, not insperse. Ascospores wavy-warty, brown, muriform, J+ blue, ca. 15-21 x 8-11,5 µm, 8/ascus but only 4-5 becoming ripe. Chemistry: psoromic acid. (Lit.: See the notes in Phytotaxa 55, 2012, pp 162, 172.)

[7789], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729' N, 124°49.781' E, 885 m) nach Kadwa-An (10°46.249' N, 124°48.167' E, 195 m), bei 850 m. Leg. Schumm 18.08.2000, det. Kalb 06.2012.

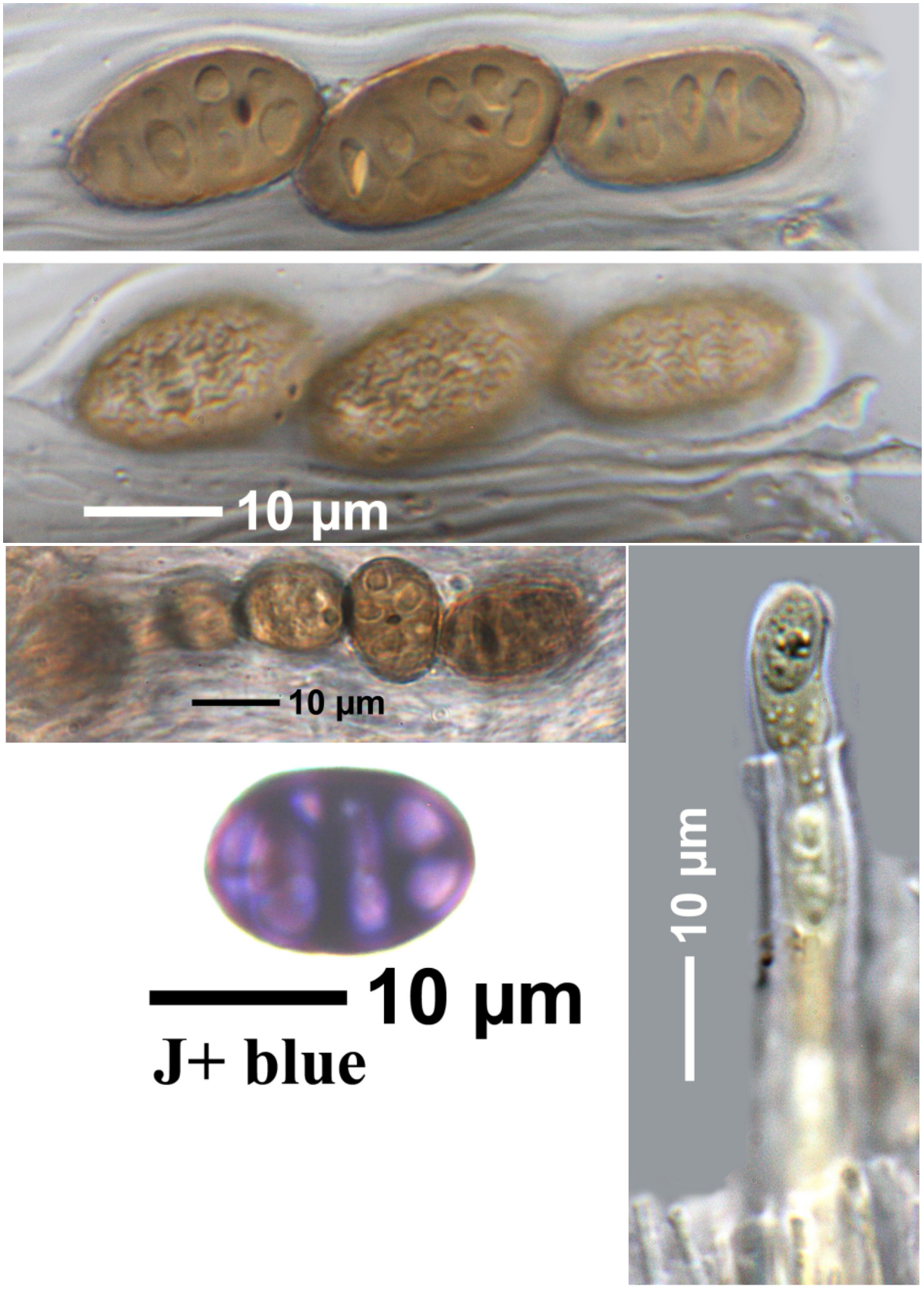




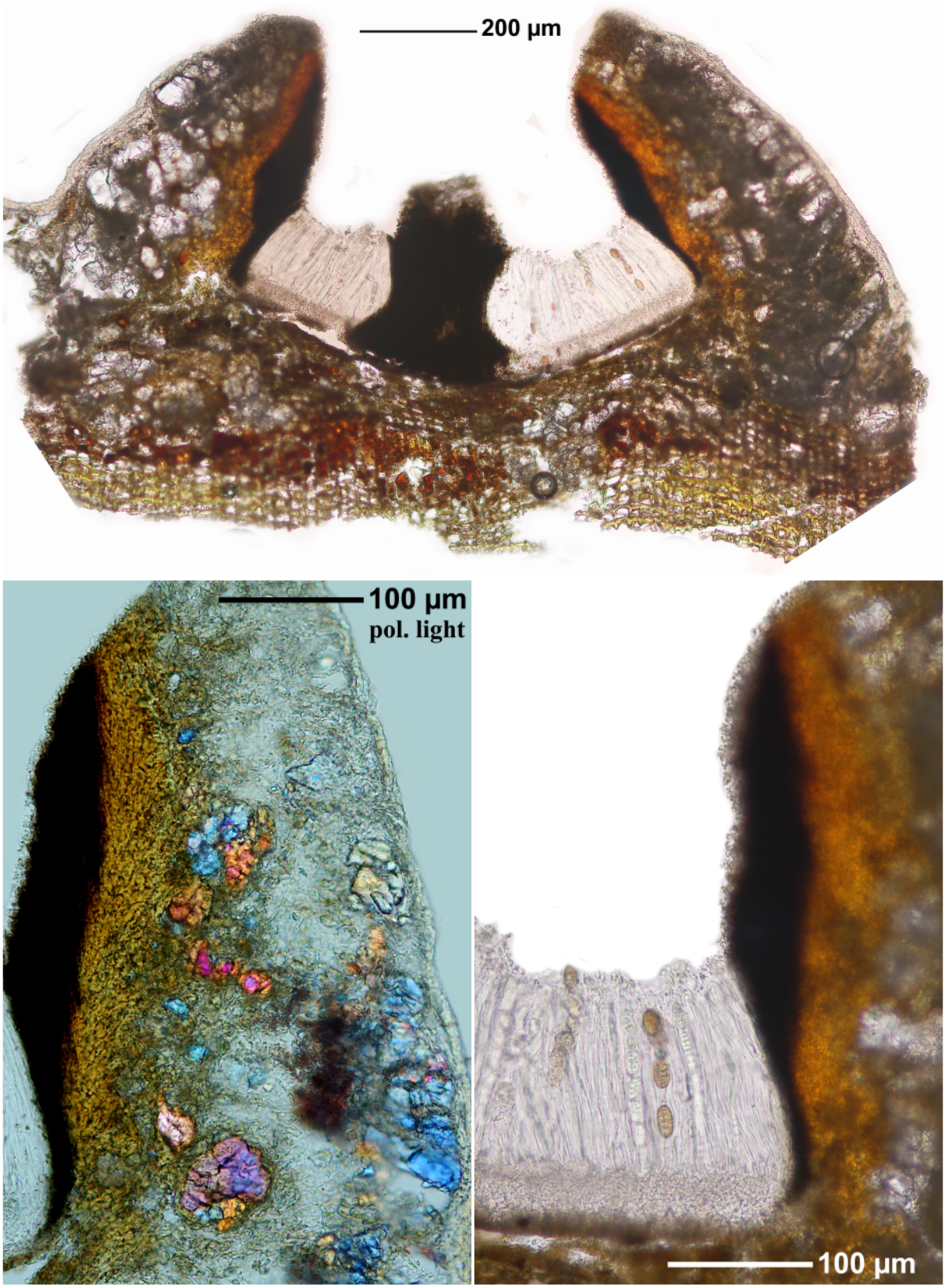




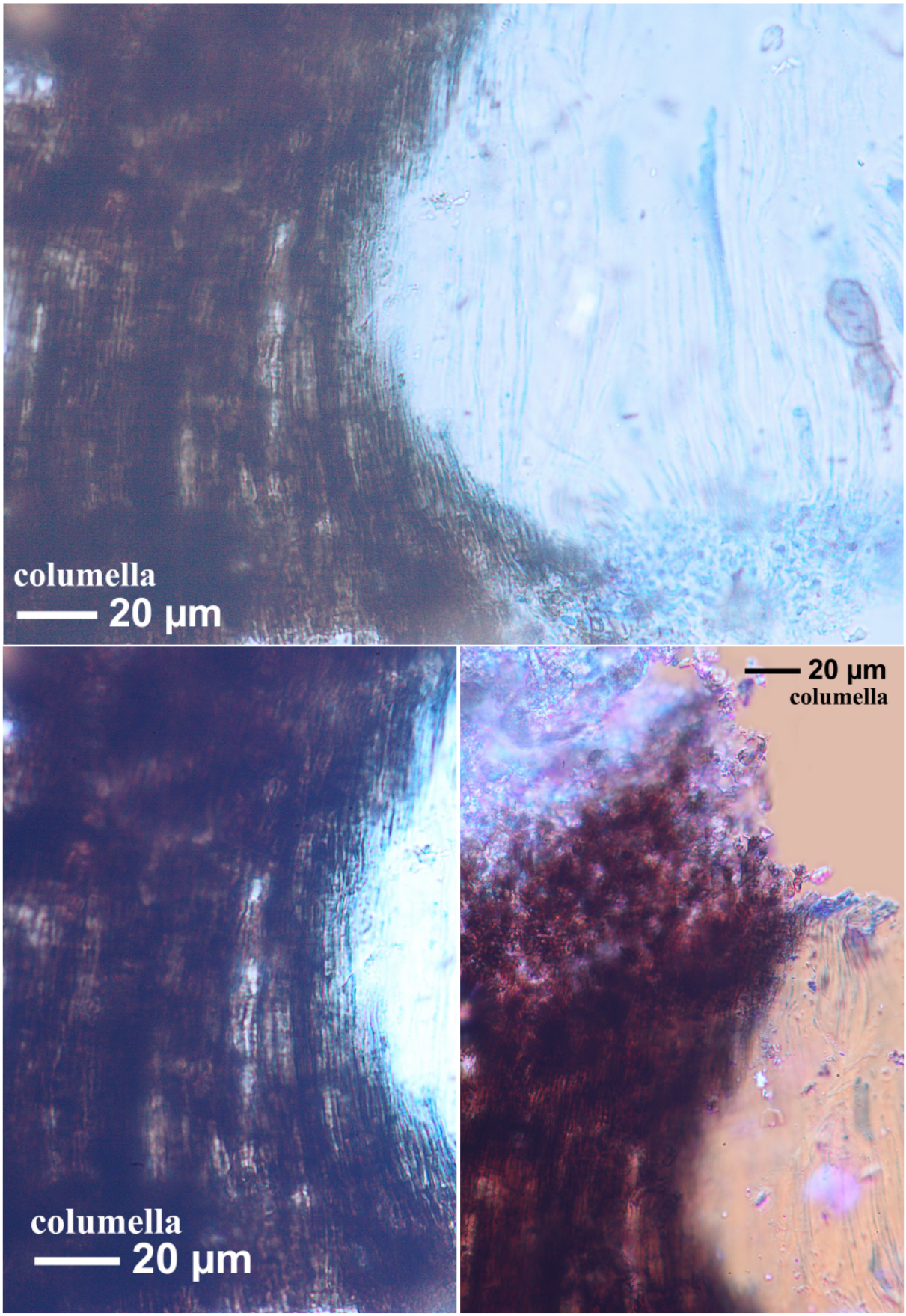
Ocellularia marivelensis



Ocellularia marivelensis



Ocellularia marivelensis



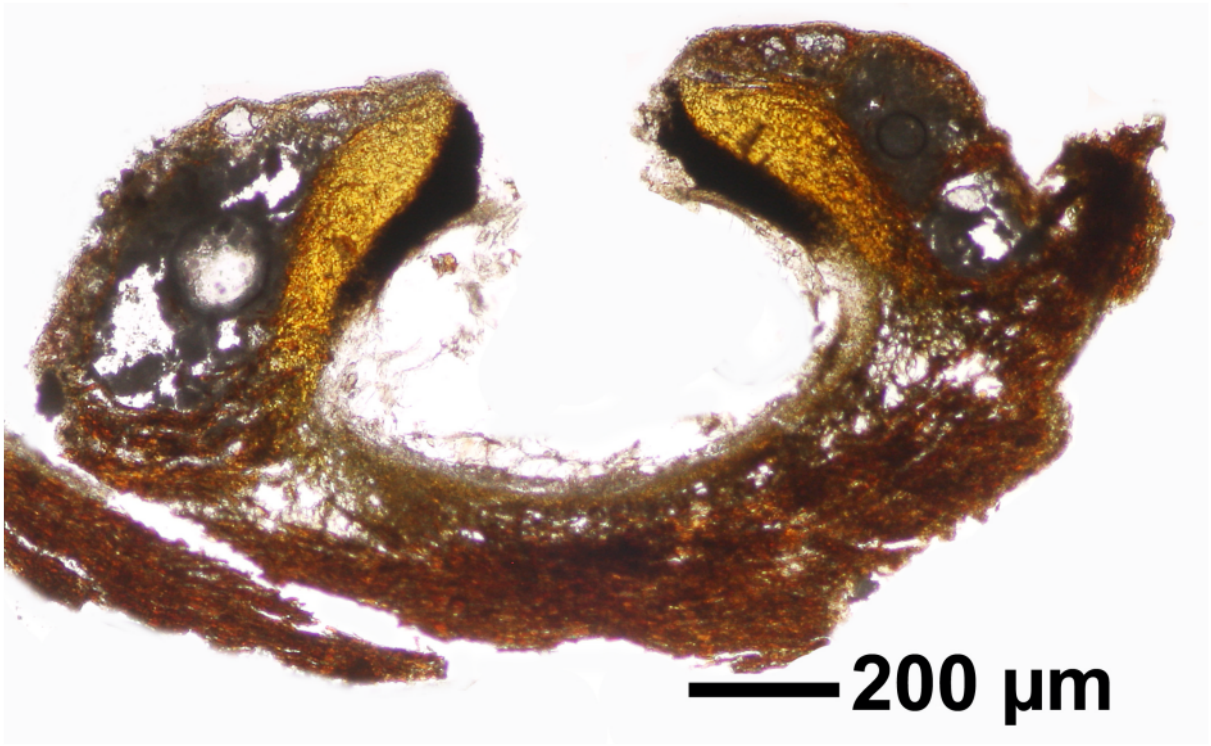
Ocellularia marivelensis

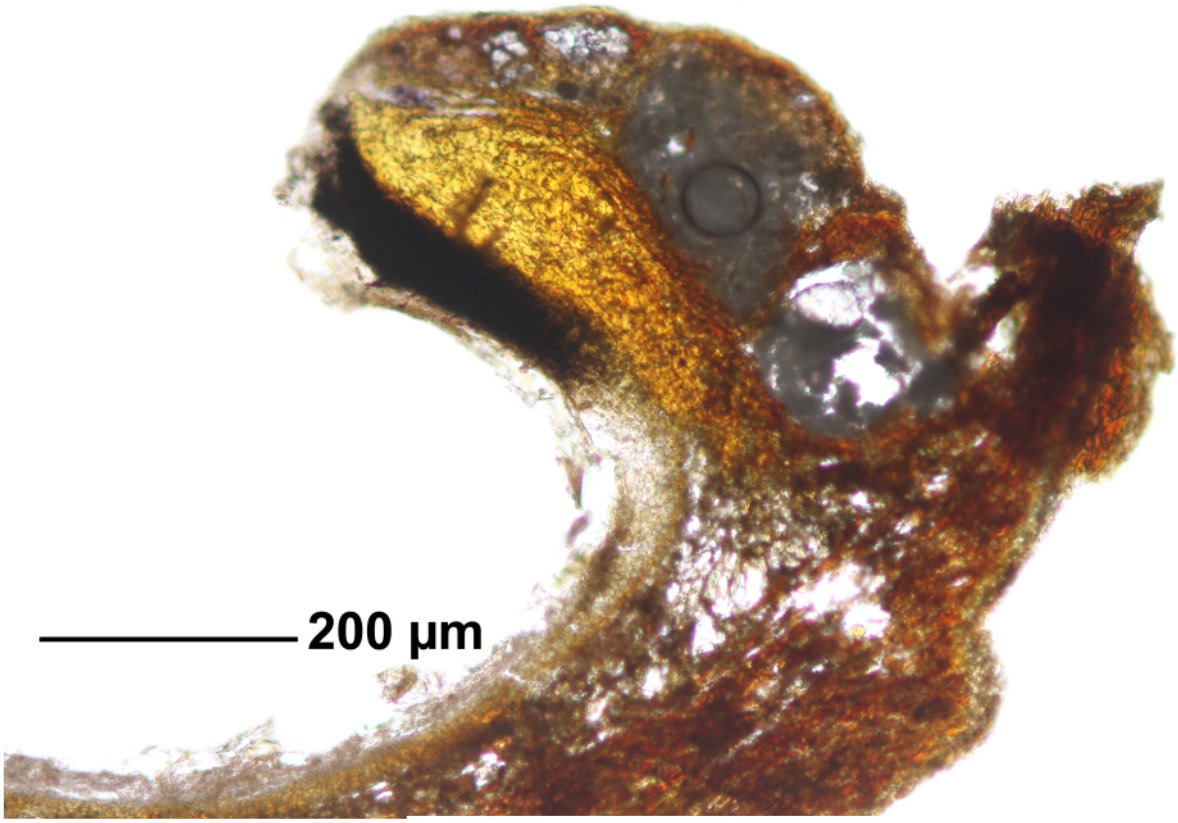
Ocellularia neopertusariiformis Hale

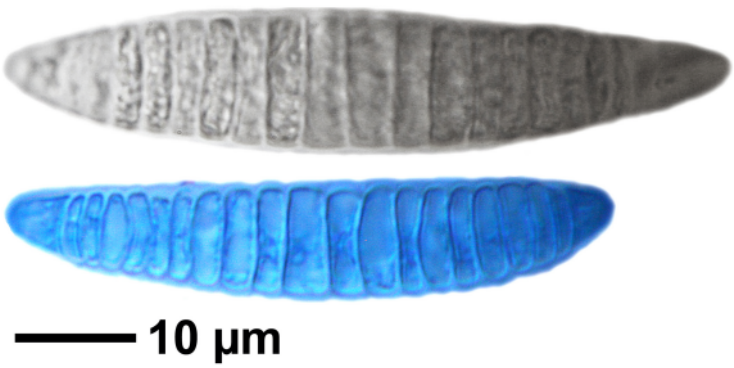
Apothecia constrricted at the base. Excipulum apical carbonized, with periderm included. Hamathecium J-, not inspersed. Without periphyses. Ascospores hyaline, transverse 19-22-septate, 40-100 x 9-13 µm. Chemistry: hypoprotocetraric acid, 4-O-demethylnotatic acid.

[7929], Philippinen, Leyte, Prov. Leyte, Lake Kasudsuran (11°01.539' N, 124°44.931' E, 740 m) bei Barangay Liberty (Ormoc-City). Leg. Schumm 23.08.2000, det. Sipman 2012.

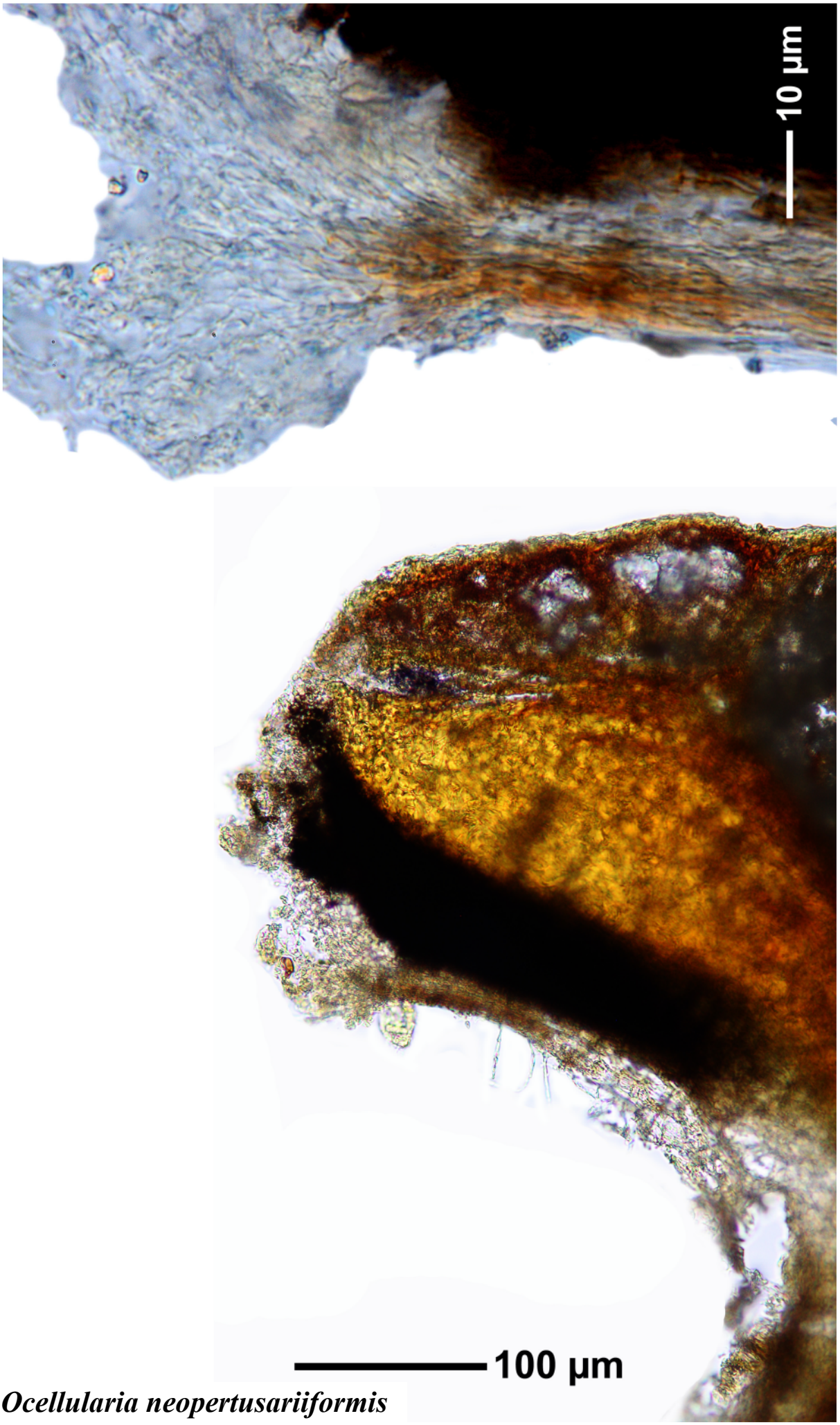






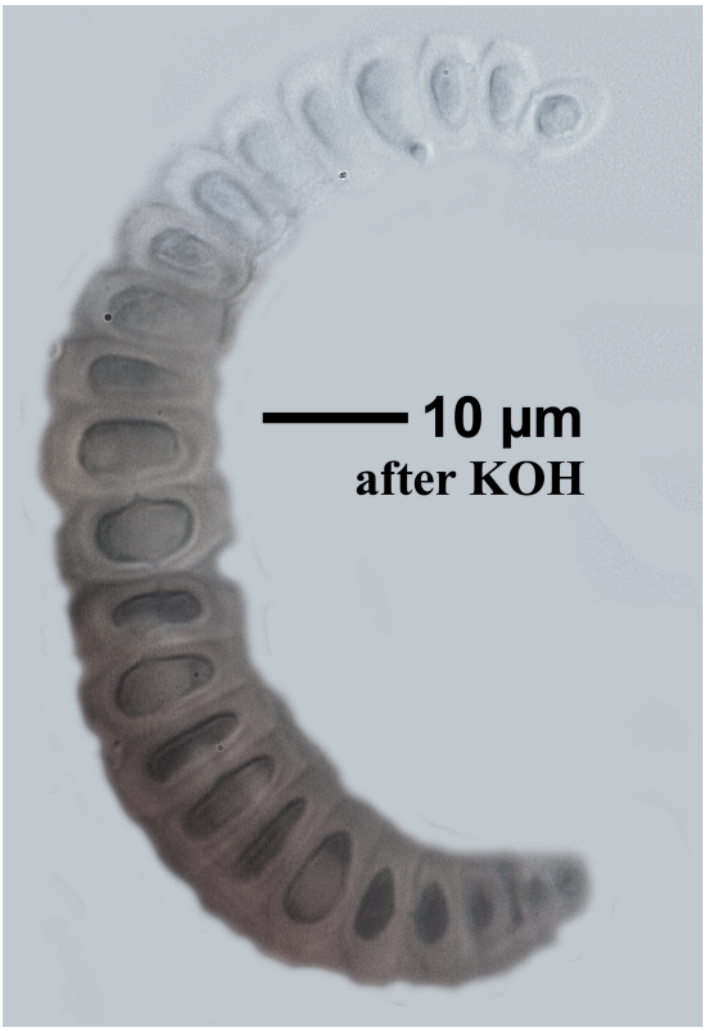


Ocellularia neopertusariiformis



Ocellularia neopertusariiformis





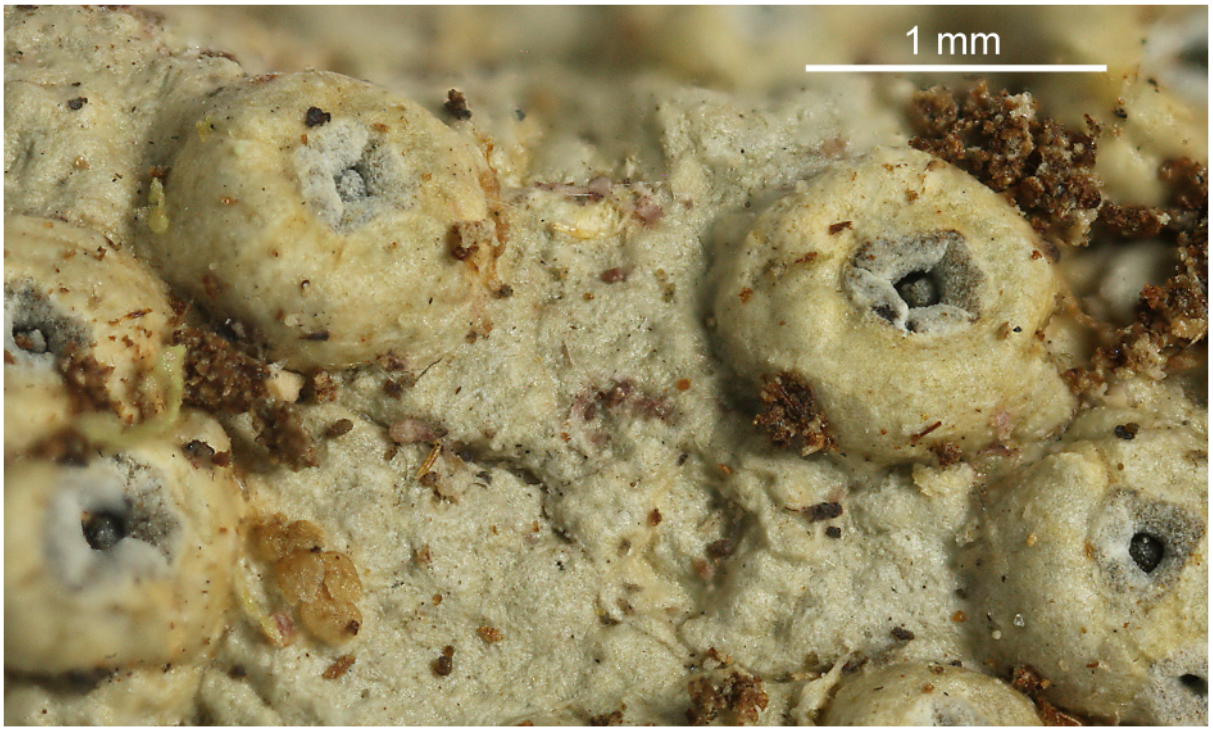
Ocellularia neopertusariiformis

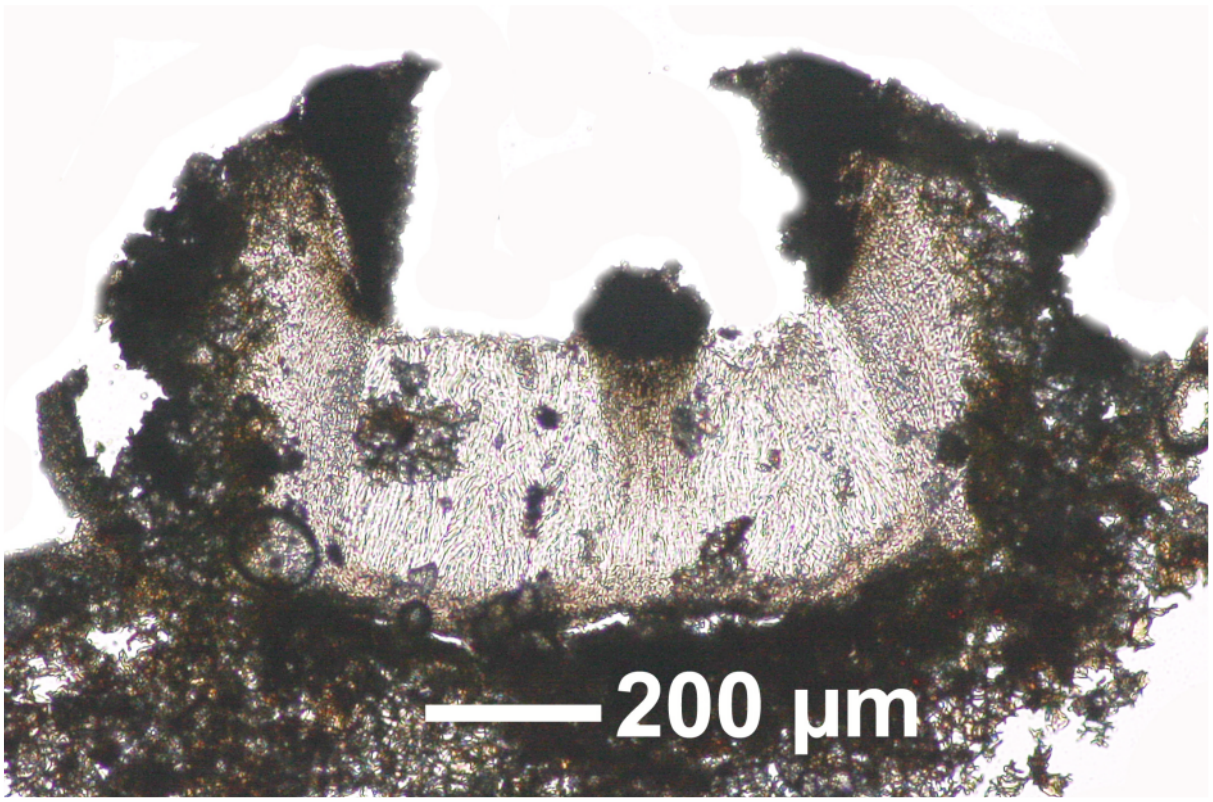
Ocellularia nylanderiana Hale

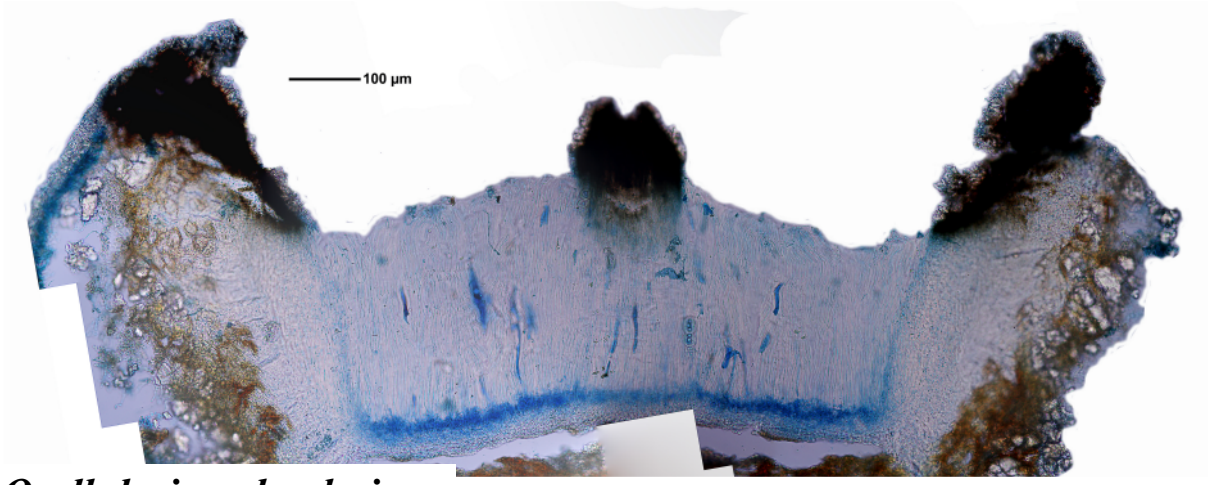
Thallus grey-white, somewhat verrucose. Apothecia emergent, 2-2.5 mm diam. Porus 0.2-0.3 mm diam, black rimmed. Excipulum marginaly carbonized, with or without a columella. Columella in upper part of the hymenium like a black button. Hymenium not insperse, 290-320 µm high. Paraphyses simple, partly with anastomoses. Ascospores hyaline, transversely 12-16 septate, 1/ascus, J+ blue, 140-200 x 30-43 µm. Chemistry: olivaceum unknown high, olivaceum unknown medium, P-.

[7598], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail beim Lake Yagumyum, 9°15.040’ N, 123°11.172’ E, 1360 m. Leg. Schumm 11.08.2000., det. Schumm 2012, test. Sipman 2012.

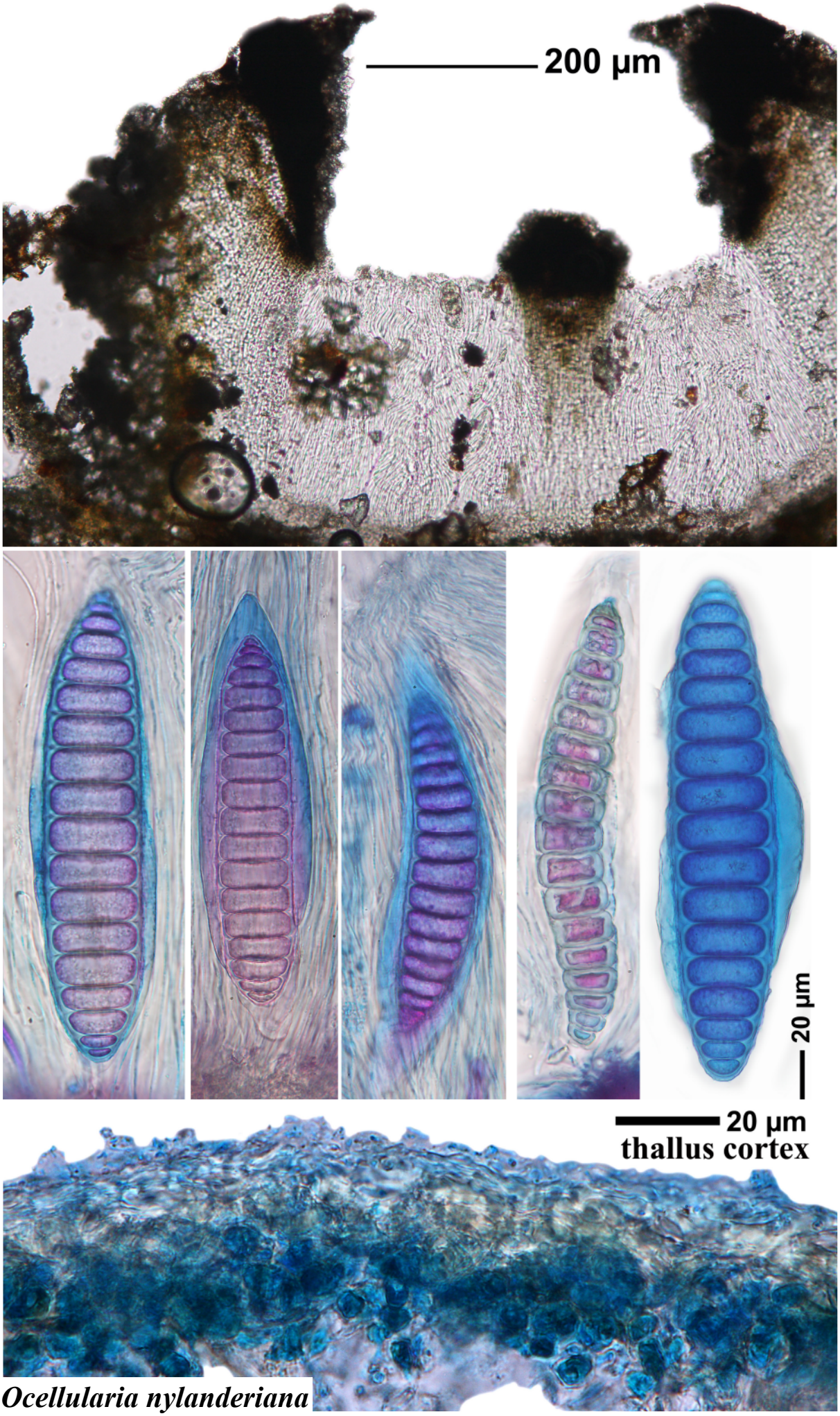




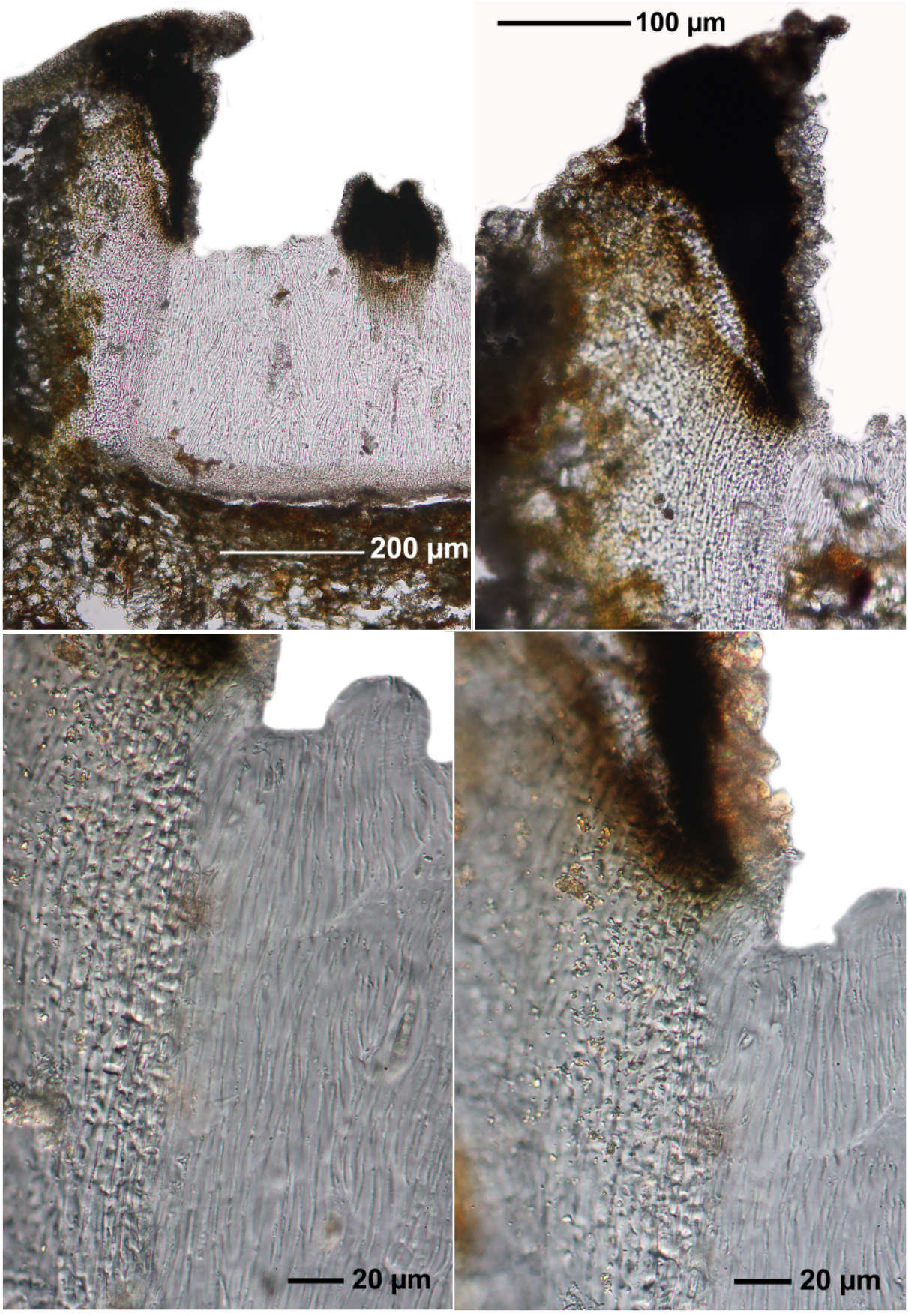




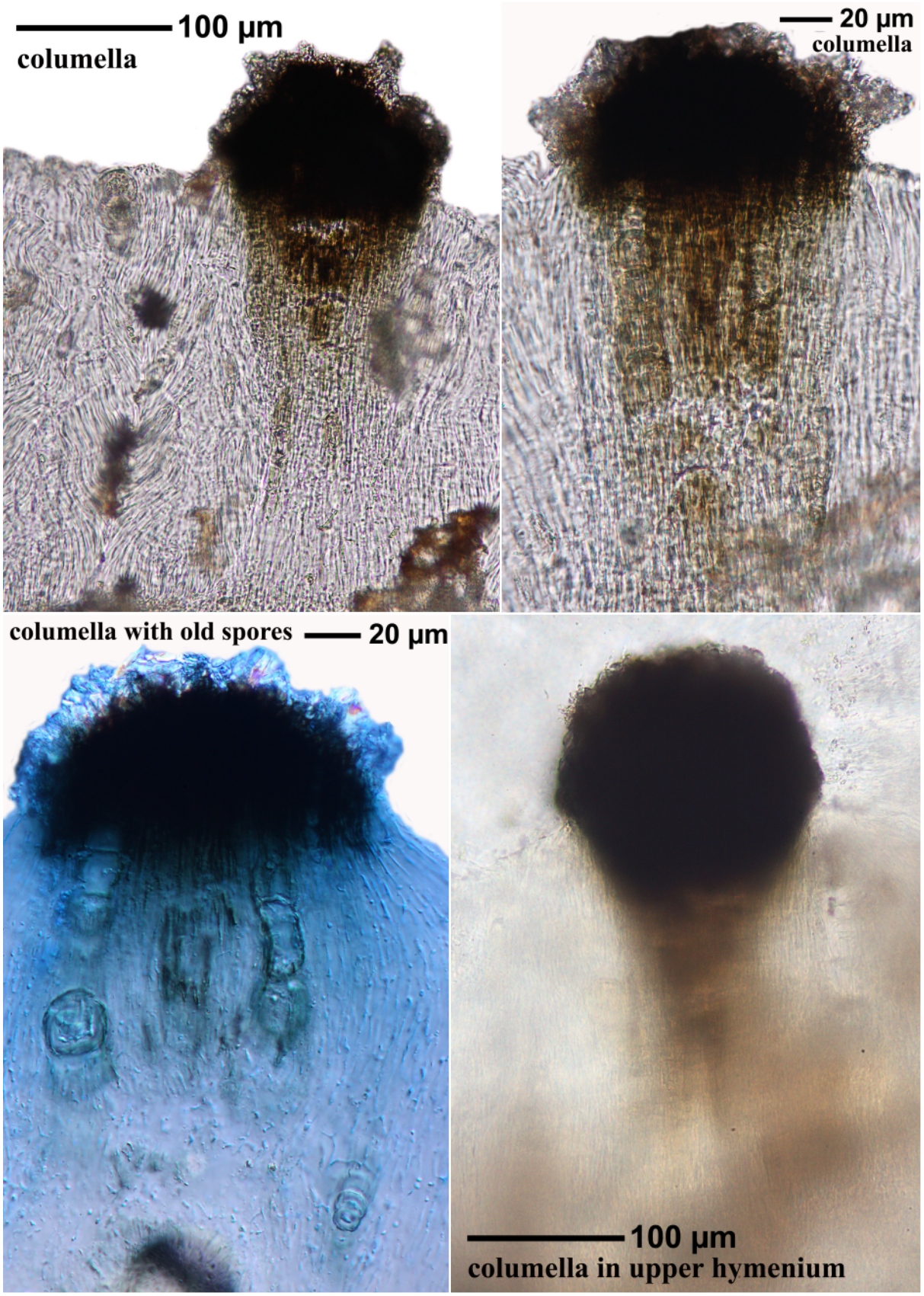
Ocellularia nylanderiana



Ocellularia nylanderiana



Ocellularia nylanderiana

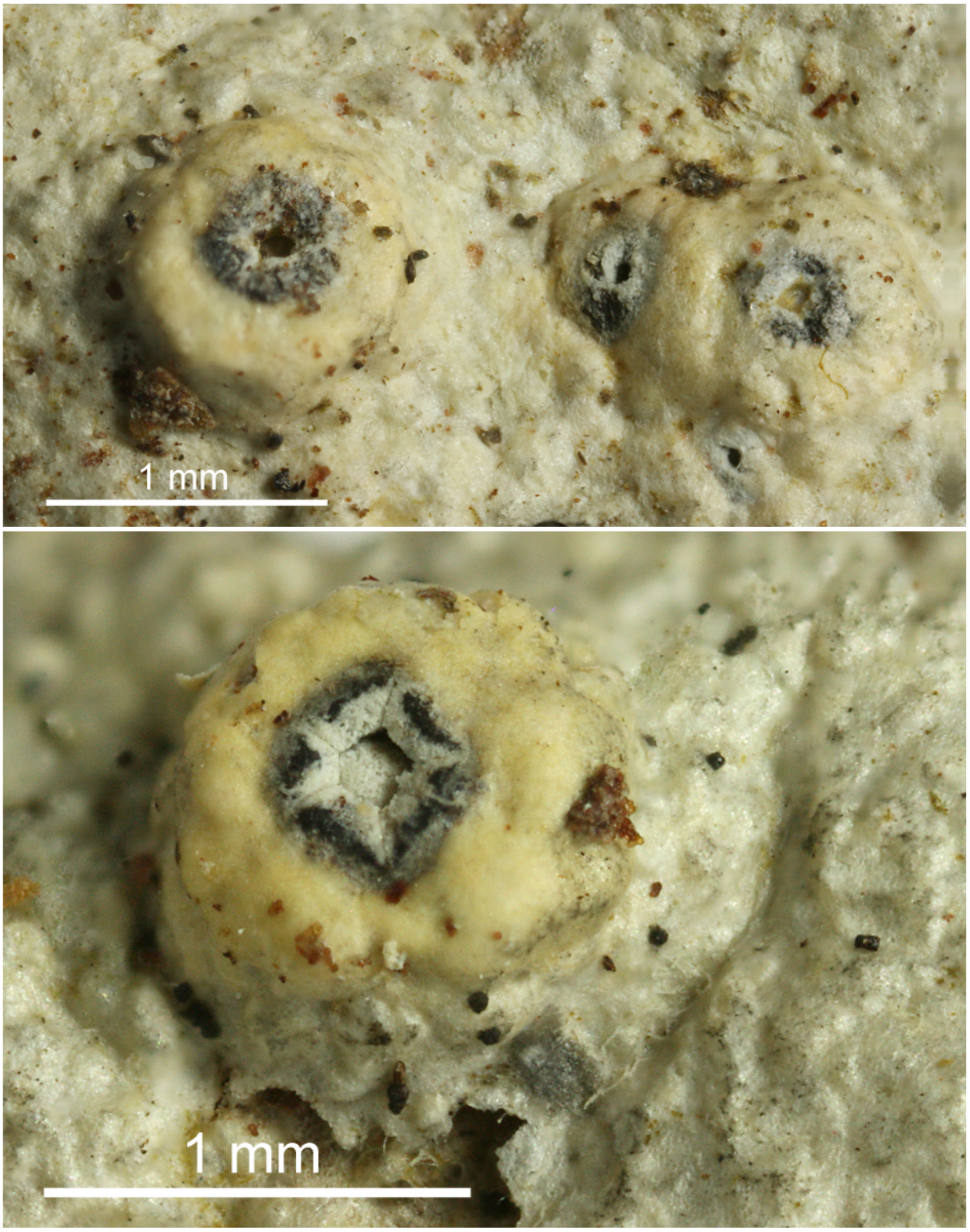


Ocellularia nylanderiana

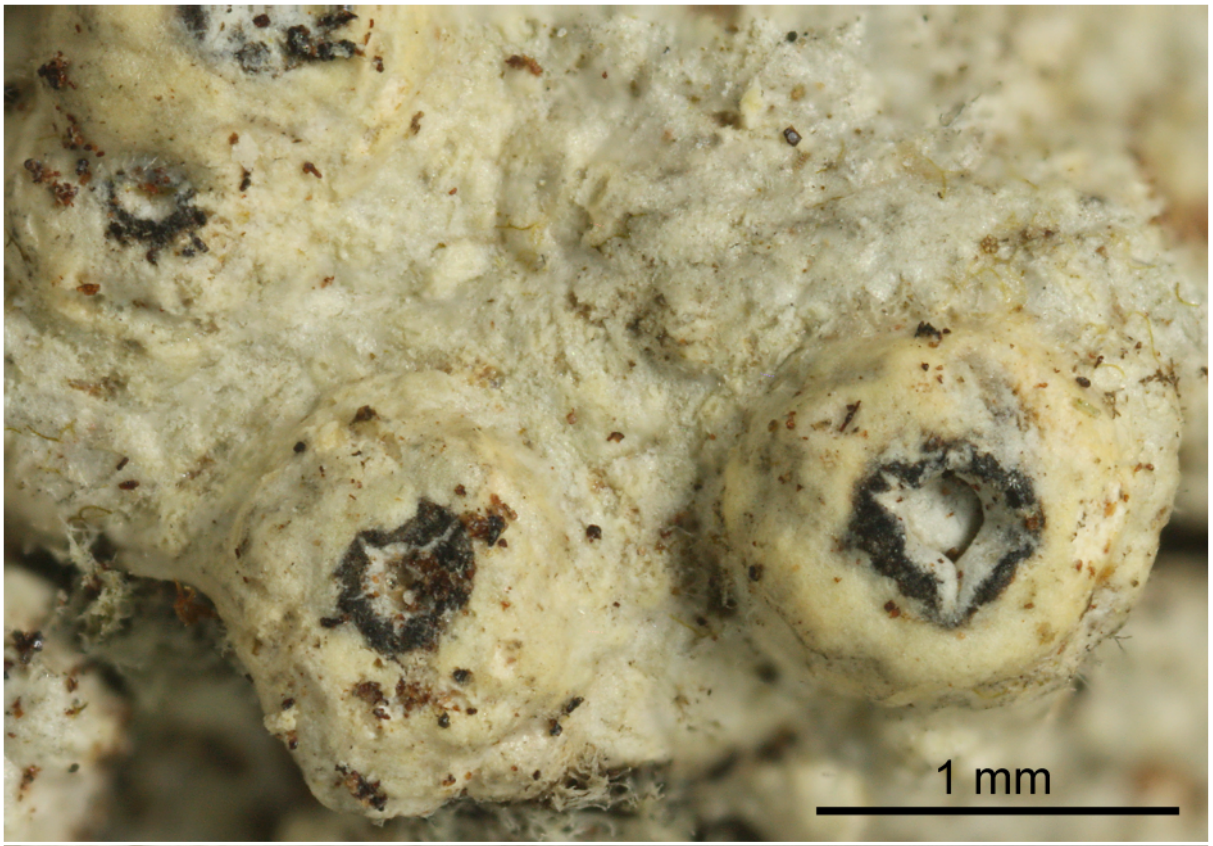
Ocellularia nylanderiana Hale

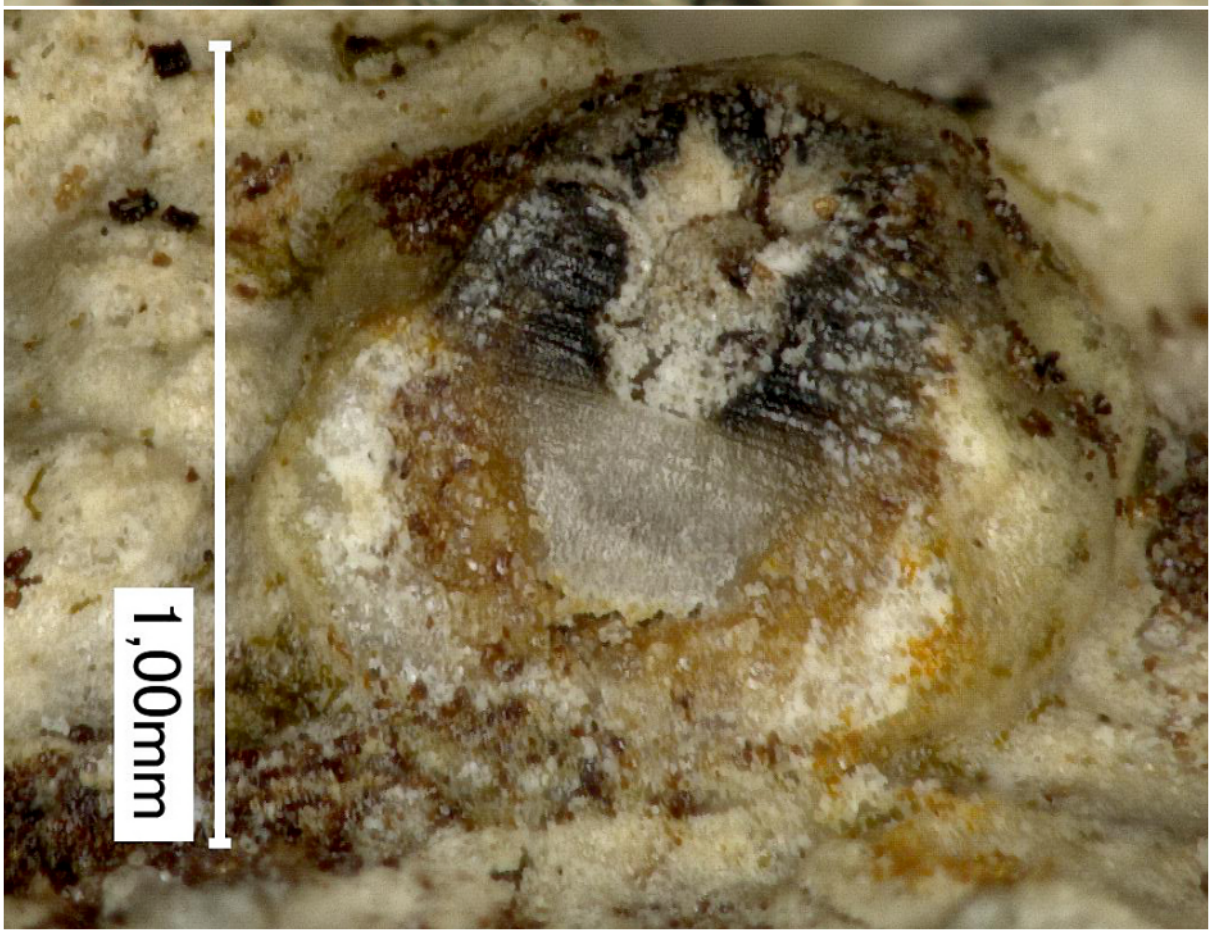
[7771], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729’ N, 124°49.781’ E, 885 m) nach Kadwa-An (10°46.249’ N, E 124°48.167’ E, 195 m), bei 750 m. Leg. Schumm 18.08.2000, det. Schumm, test Sipman 2012.





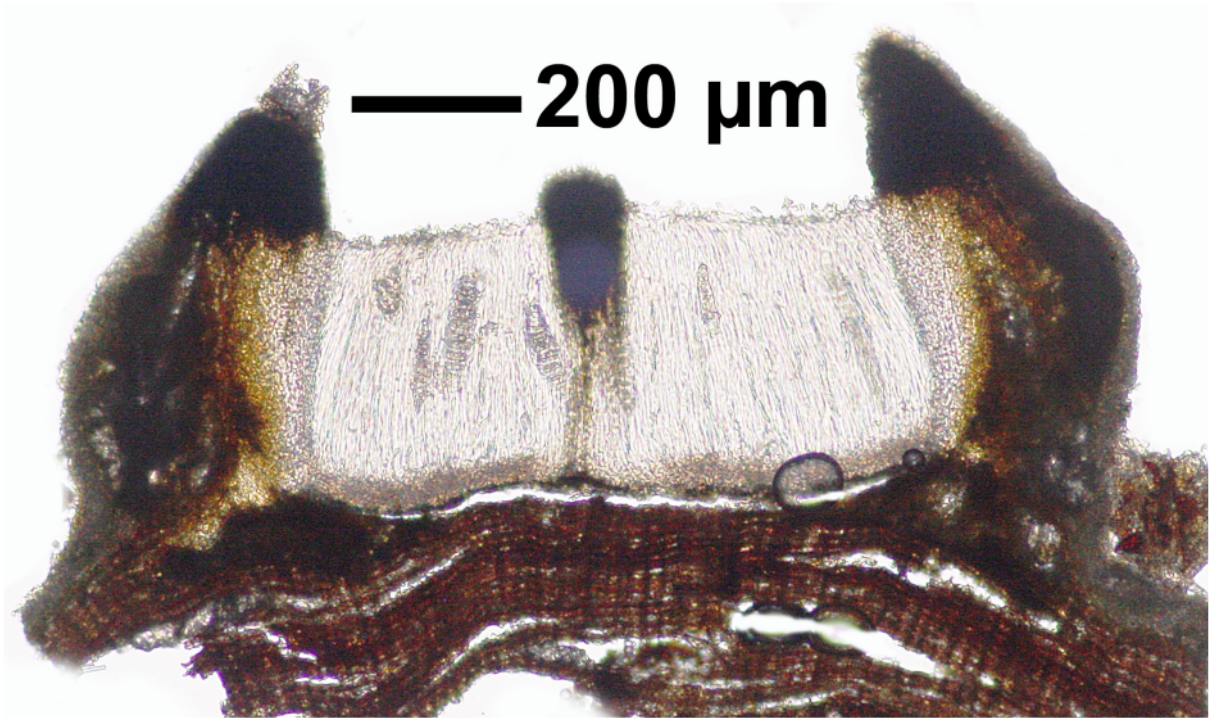
Ocellularia nylanderiana



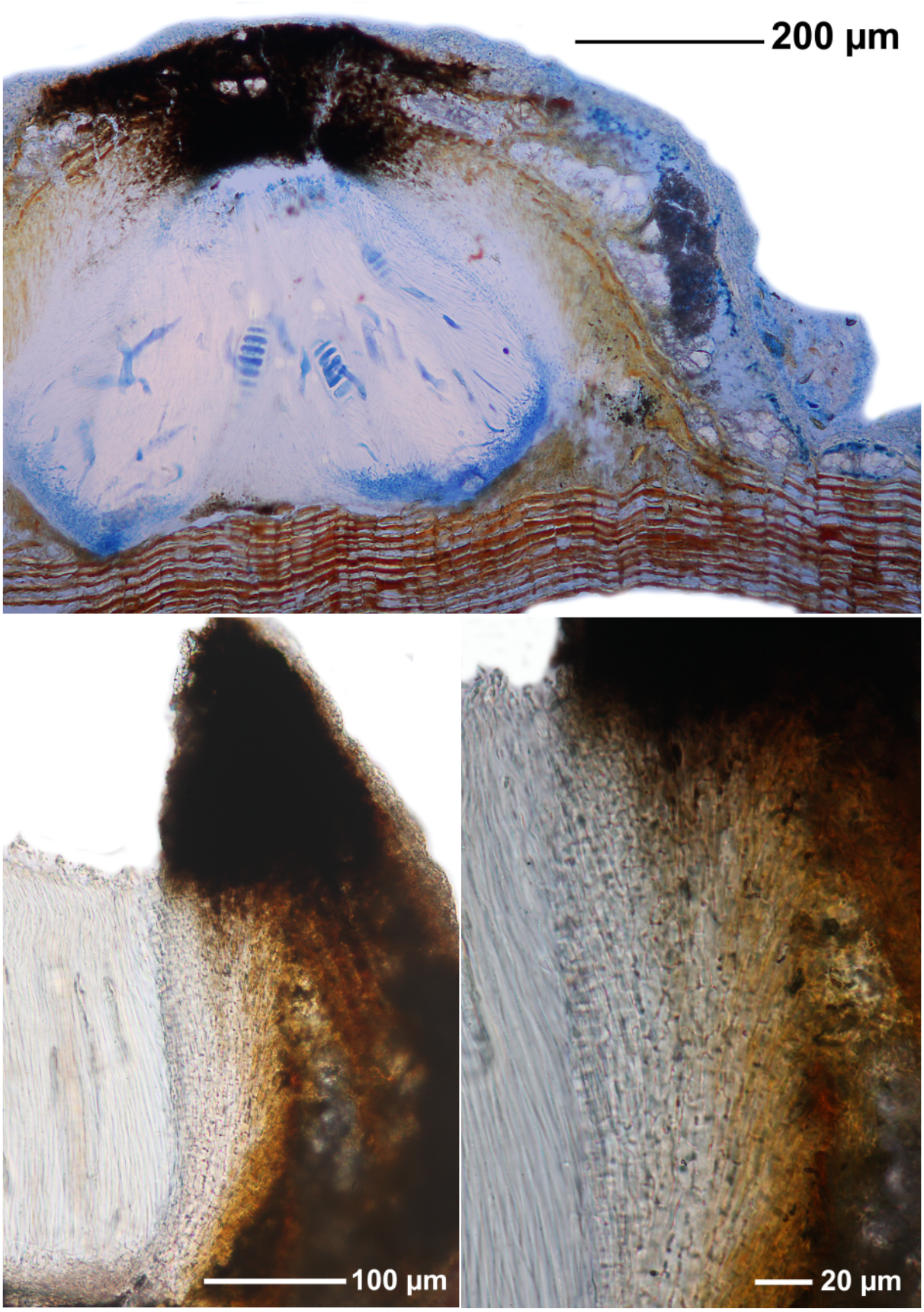


Ocellularia nylanderiana

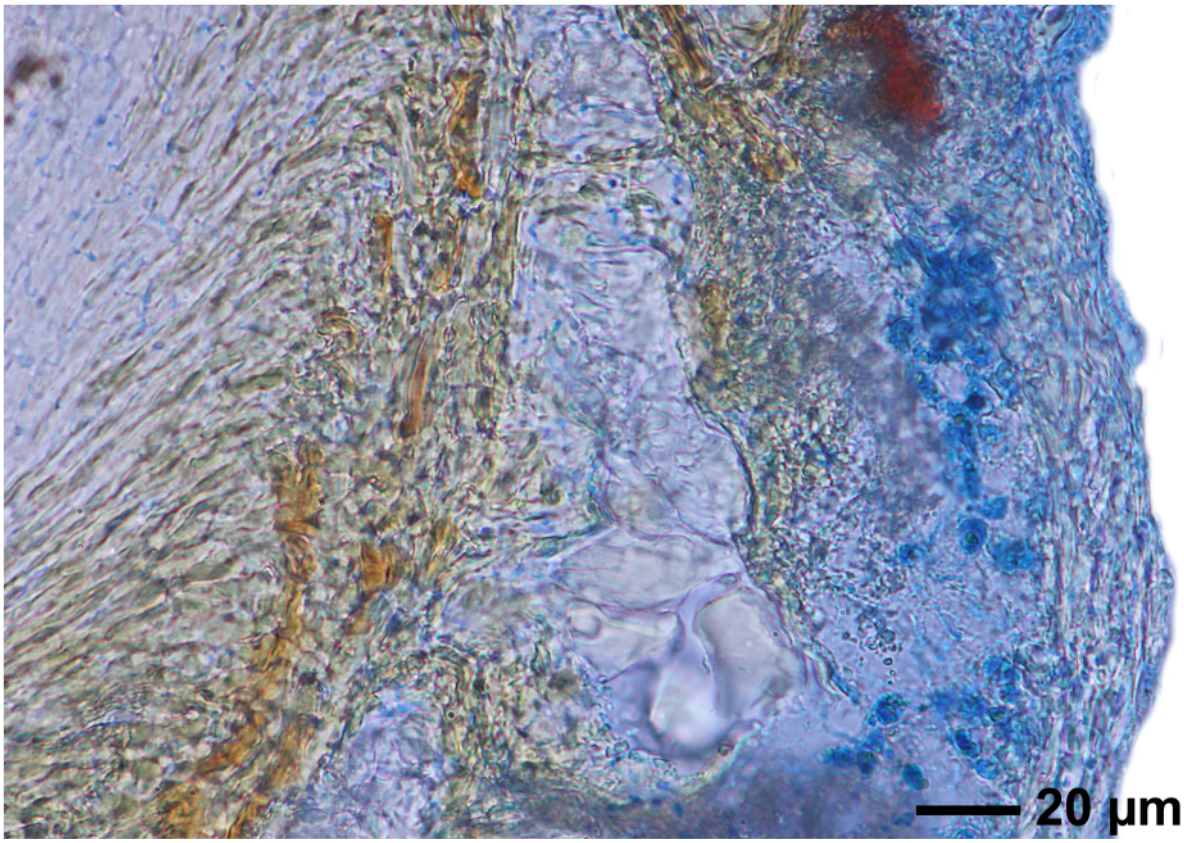


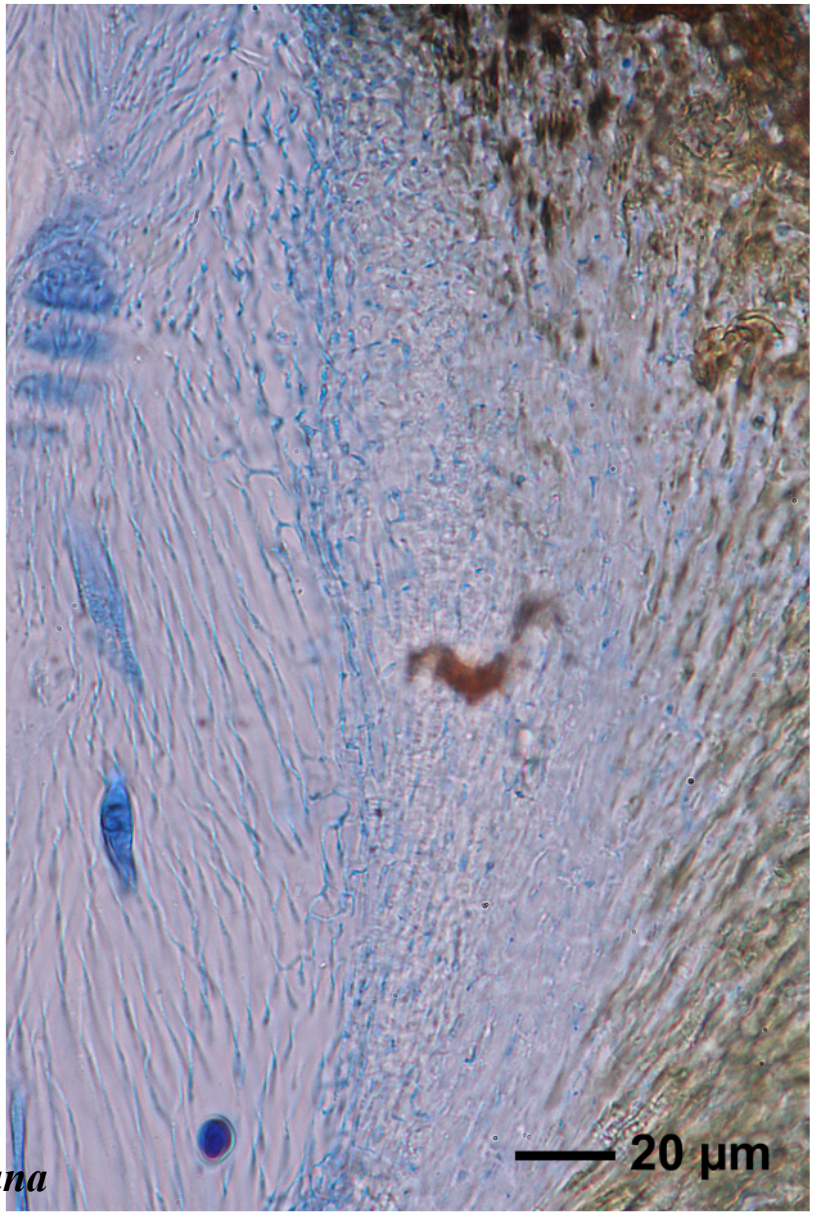


Ocellularia nylanderiana

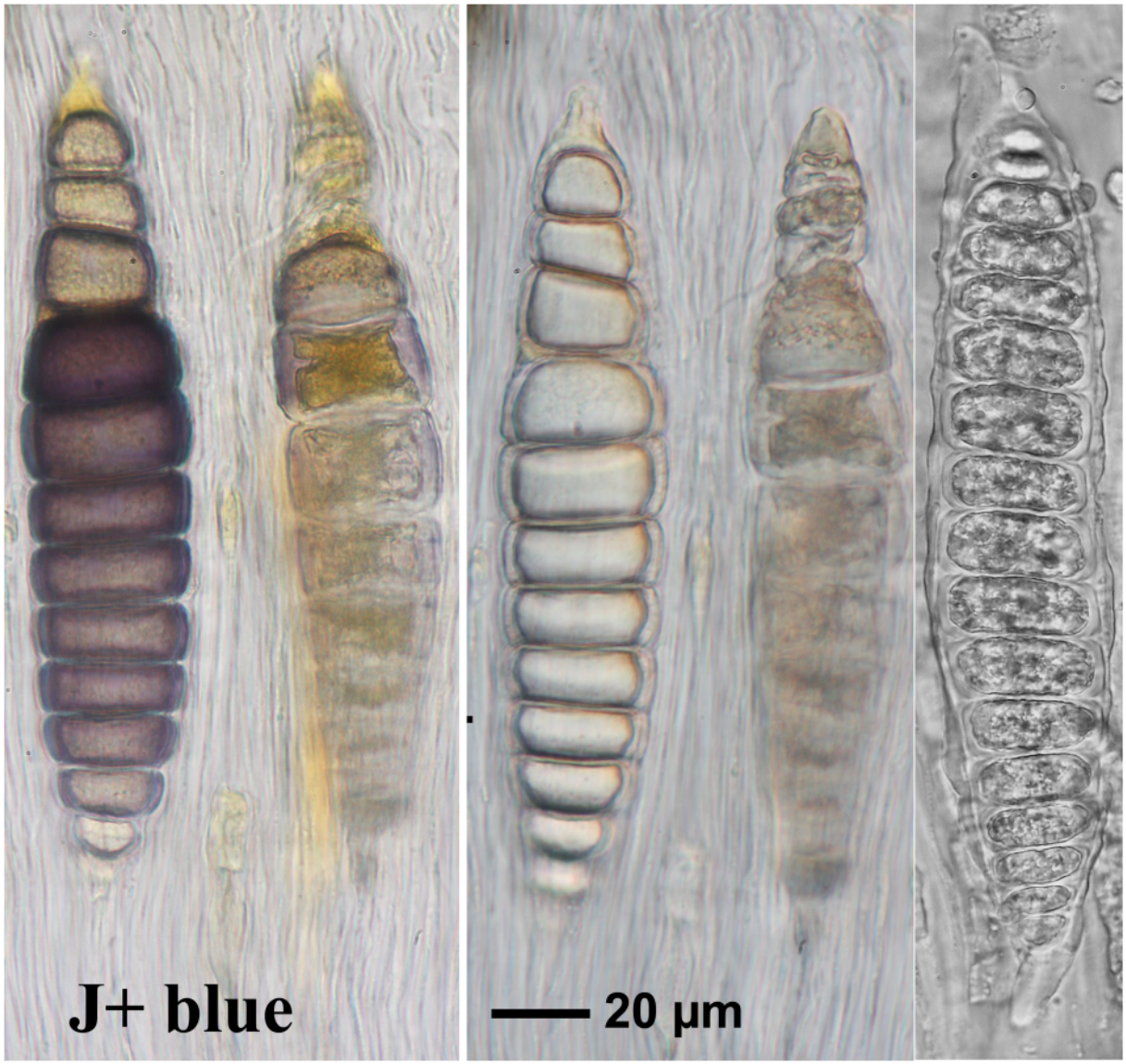


Ocellularia nylanderiana





Ocellularia nylanderiana

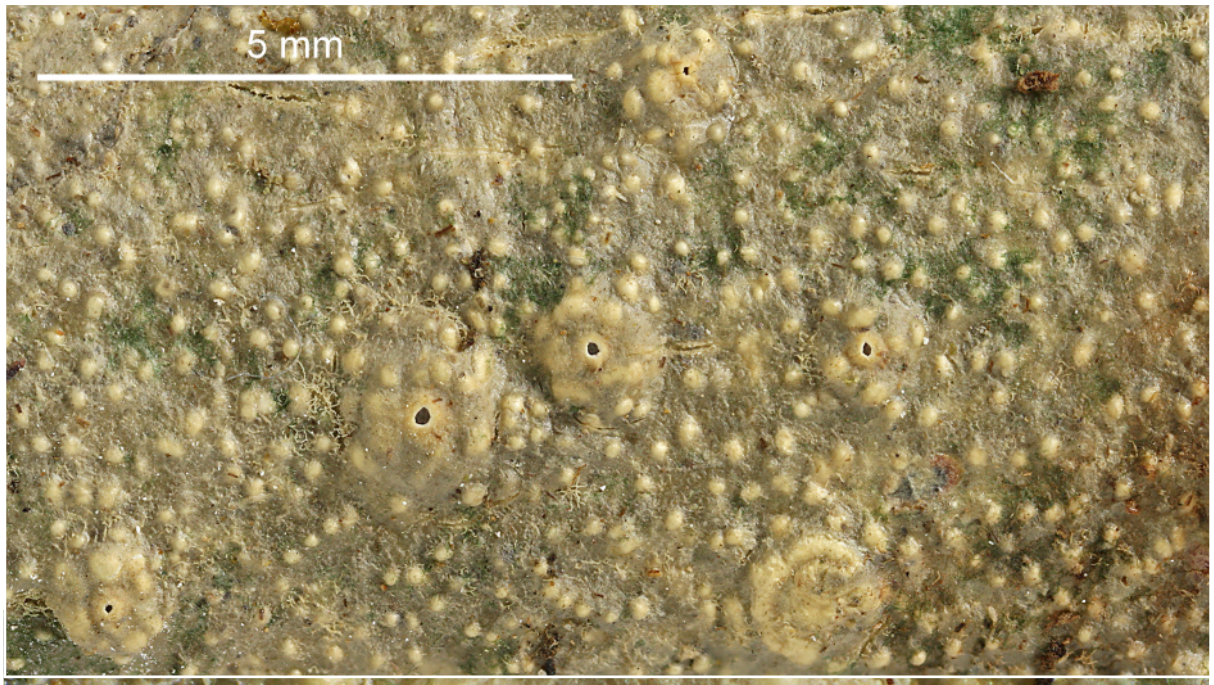


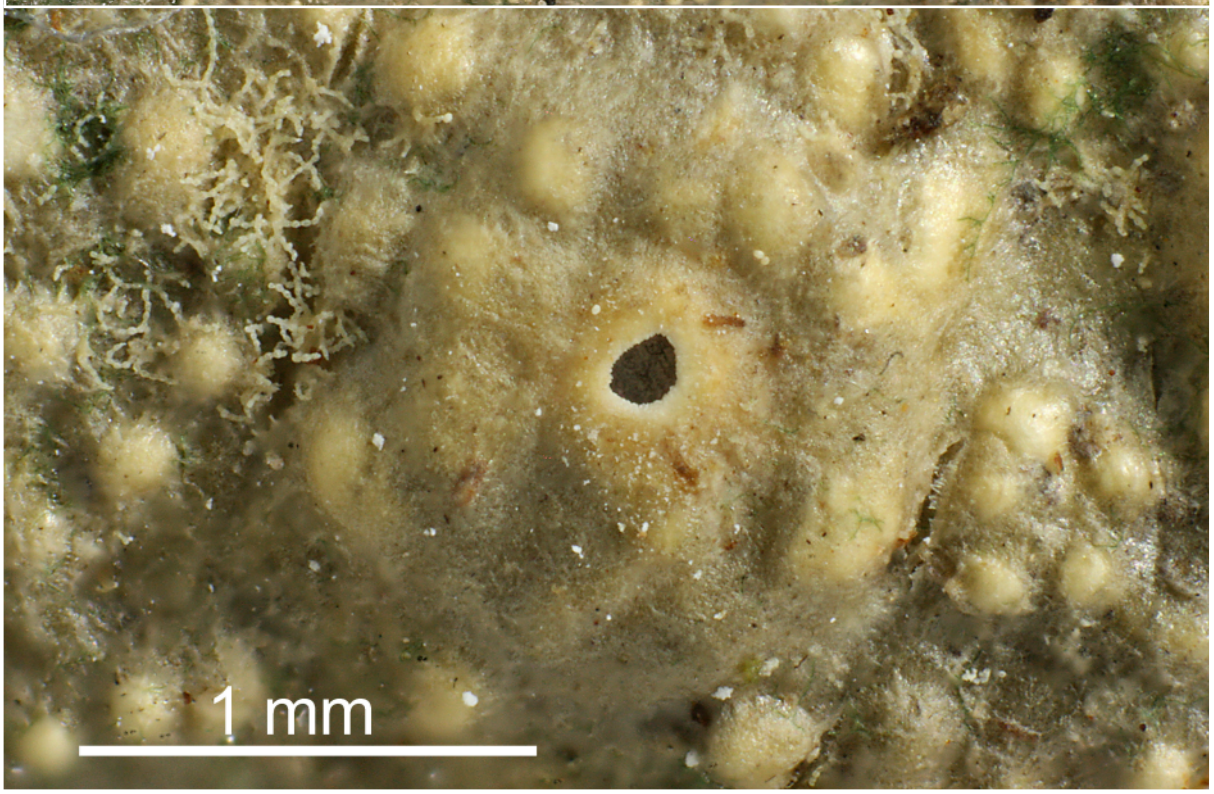
Ocellularia nylanderiana

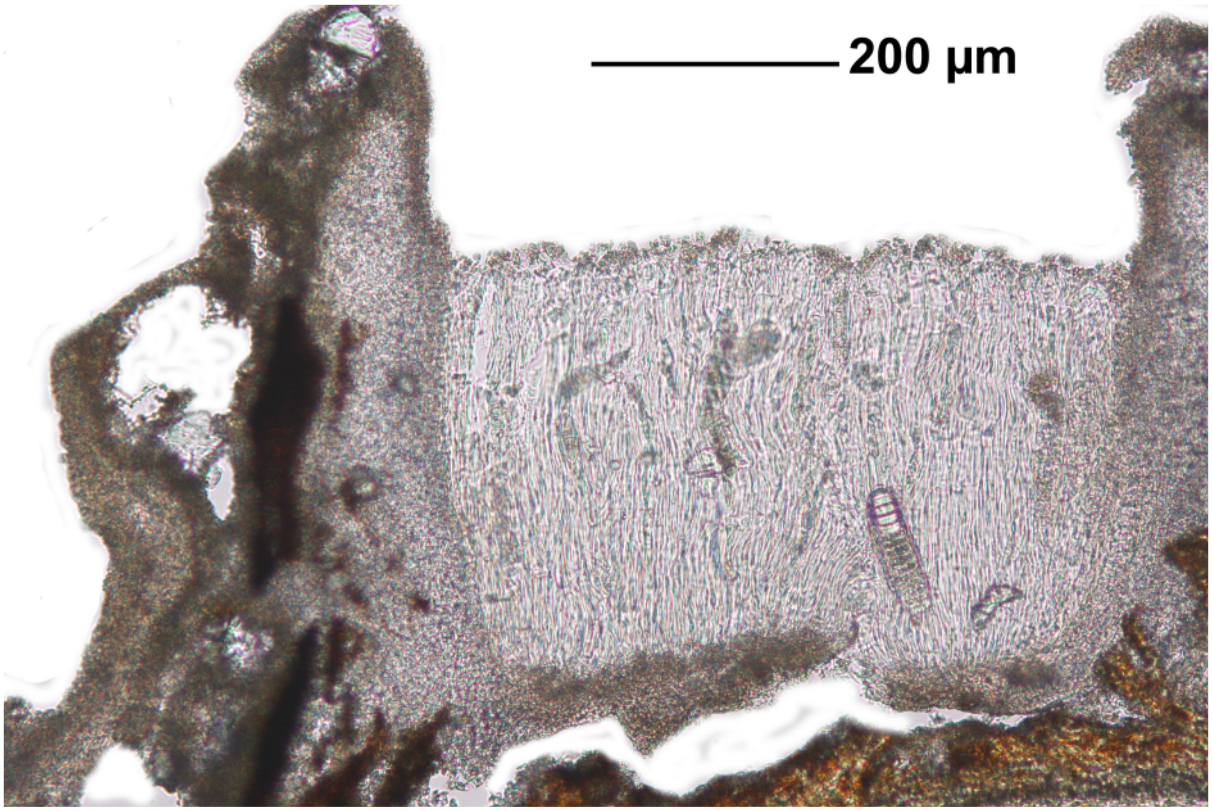
Ocellularia pertusariiformis (Leighton) Zahlbr.

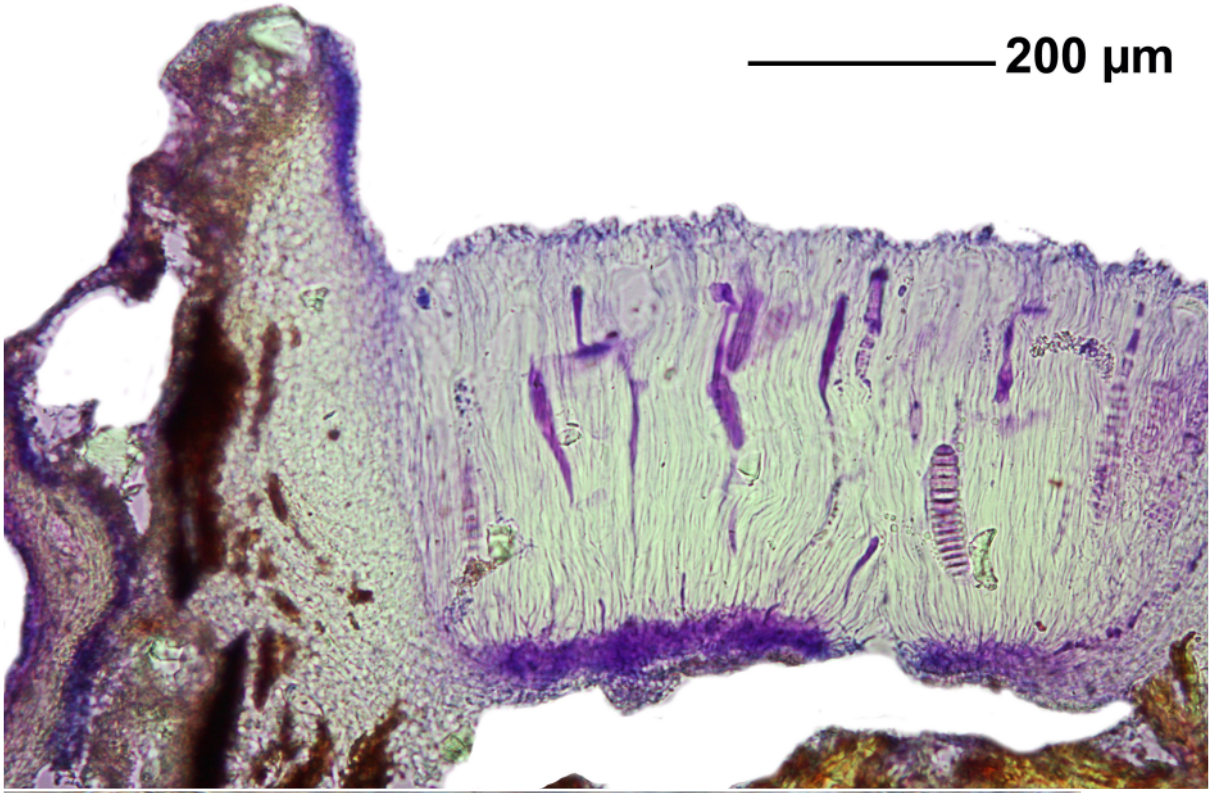
Thallus whitish grey, smooth to strongly verruculose, continuous or fissured. Exciple brown, not carbonized, with periderm cells, columella absent. Hymenium not inspersed. Ascospores hyaline, transversely septate, 11-14 loculate, 1-2/ascus, J+ blue, 72-135 x 20-33 µm. Chemistry: P-, two unidentified substances (OP-1, OP-2).

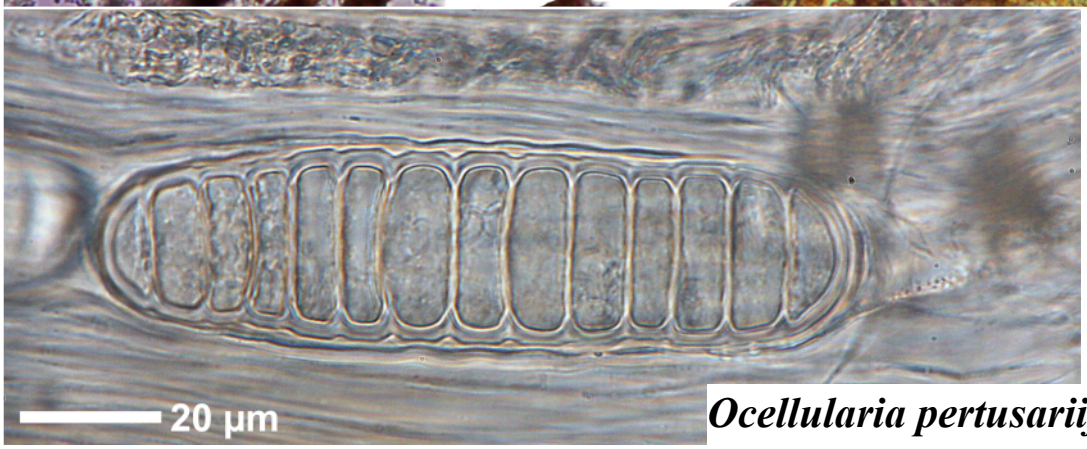
[7775], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729' N, 124°49.781' E, 885 m) nach Kadwa-An (10°46.249' N, 124°48.167' E, 195 m); bei 760 m. Leg. Schumm 18.08.2000, det. K. Kalb 06.2012.



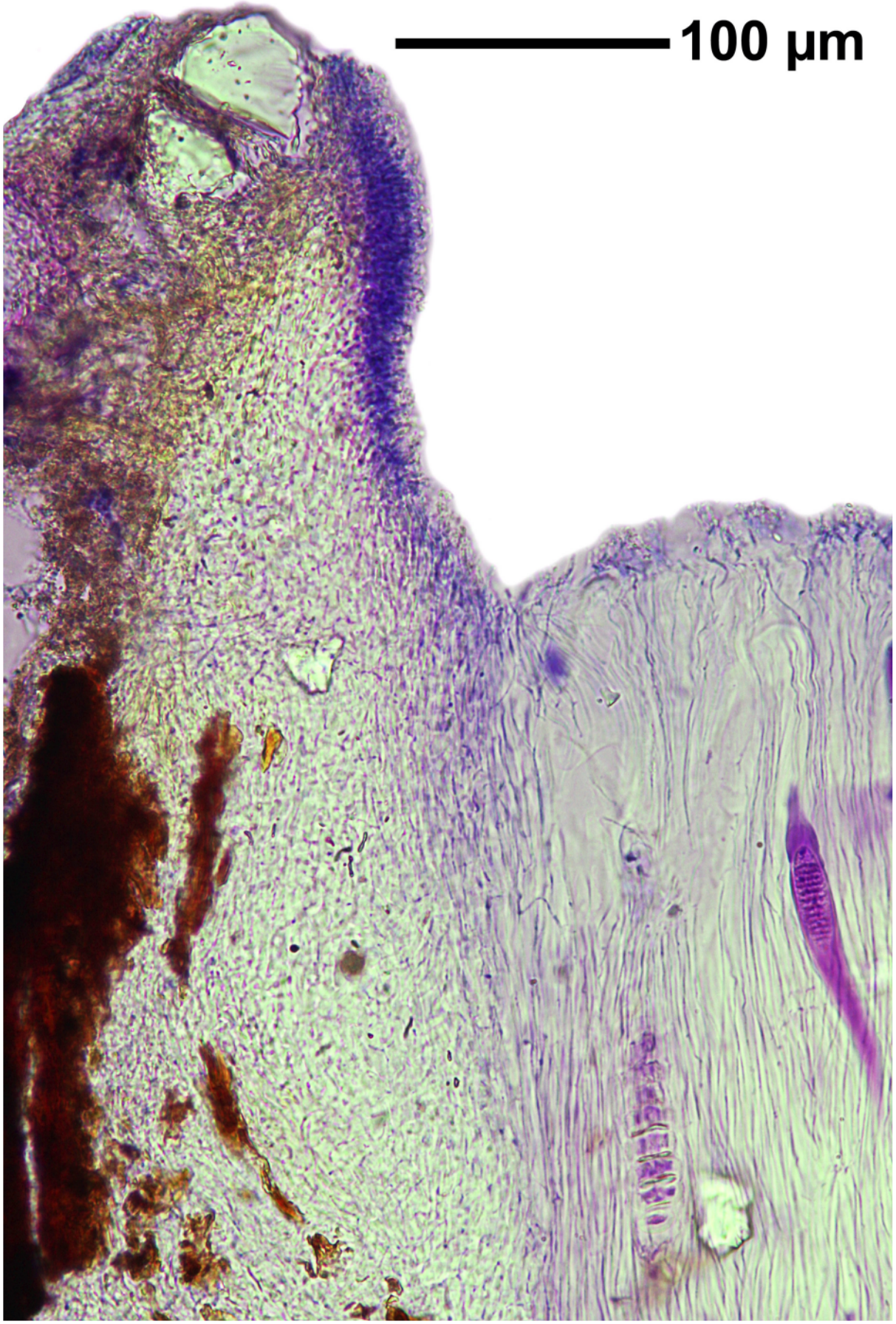




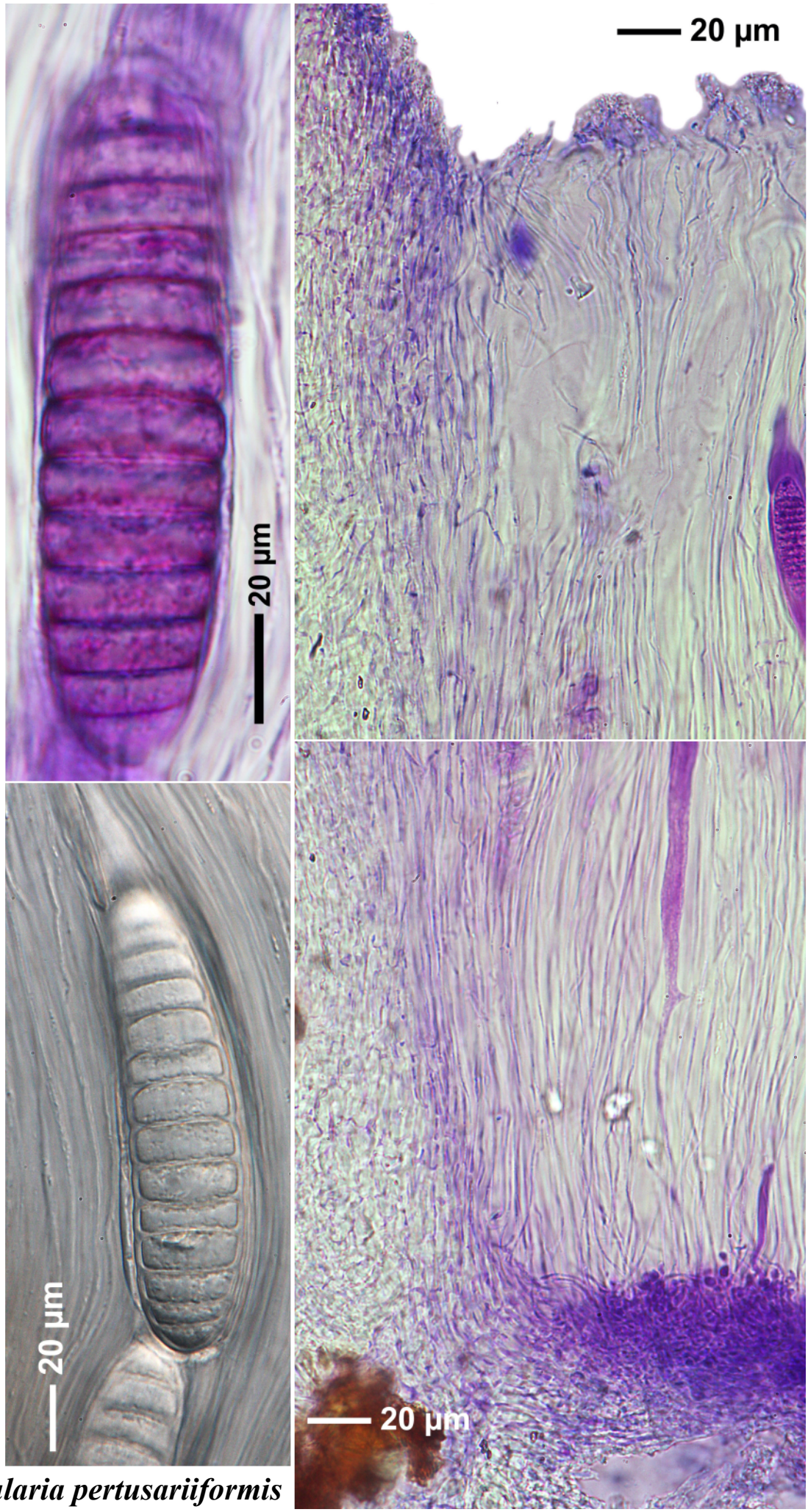




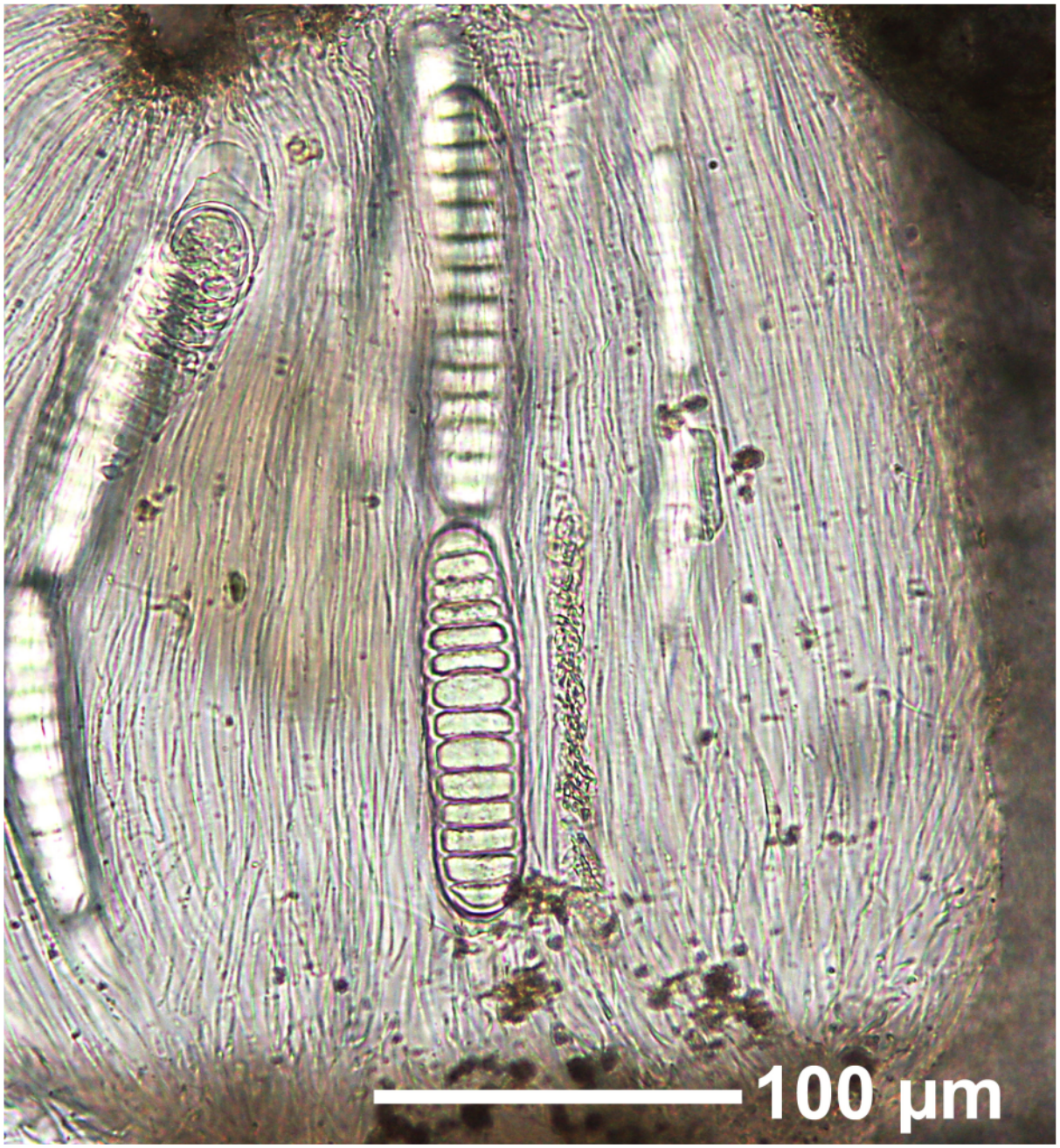
Ocellularia pertusariiformis

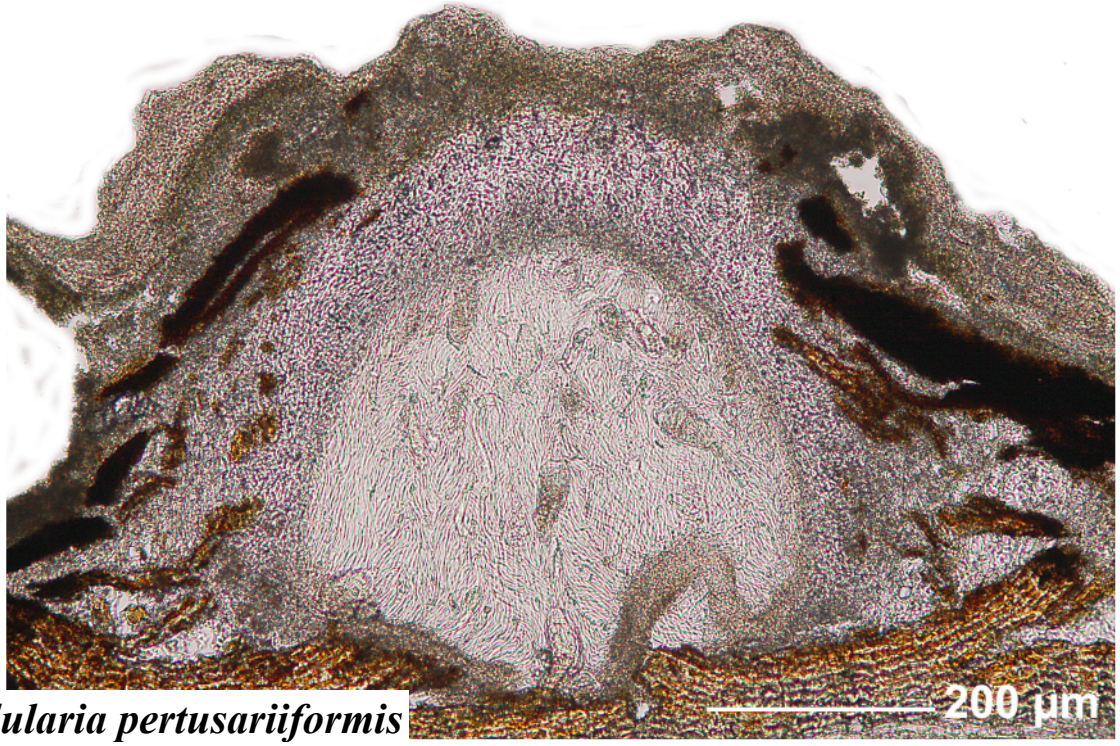


Ocellularia pertusariiformis

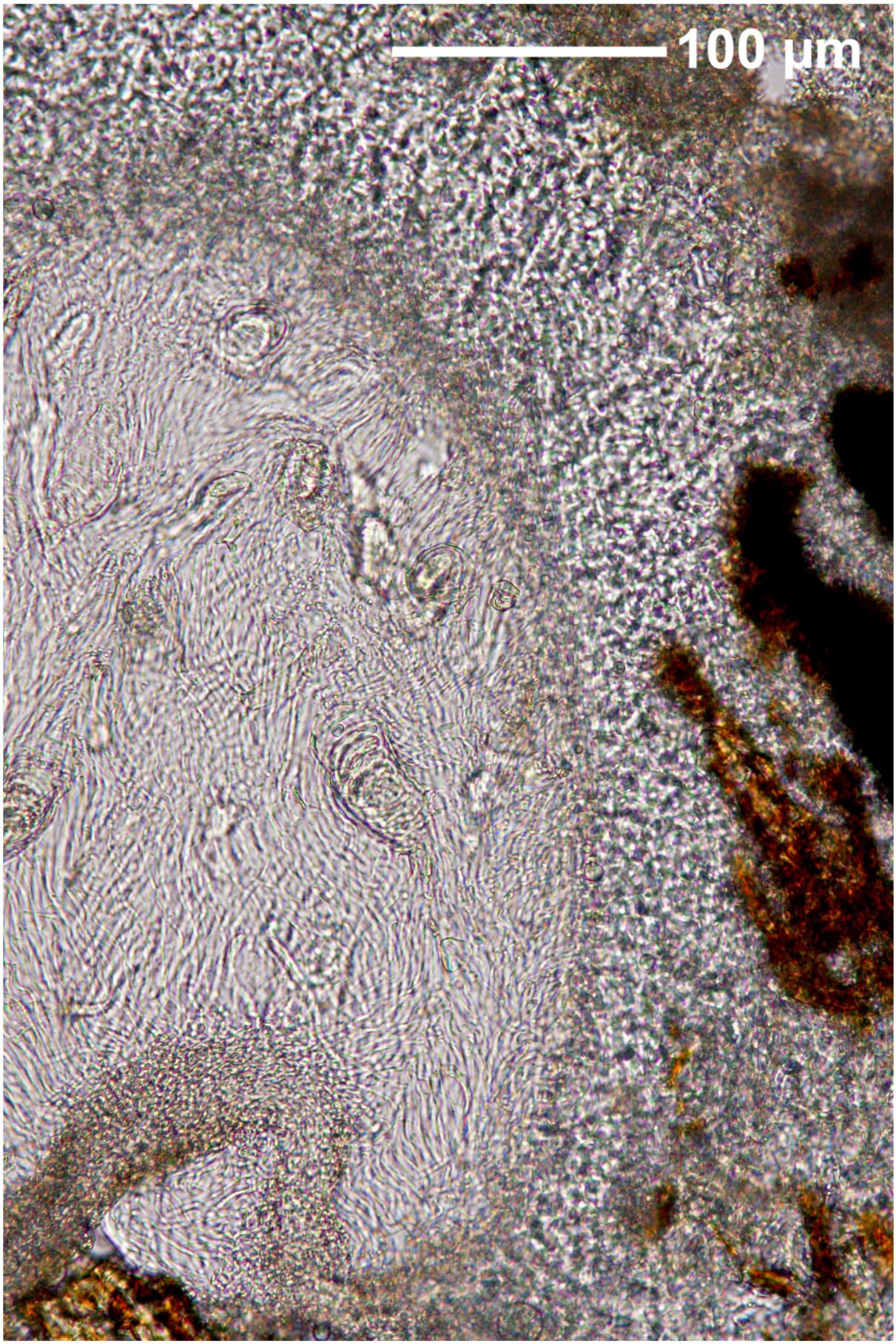


Ocellularia pertusariiformis

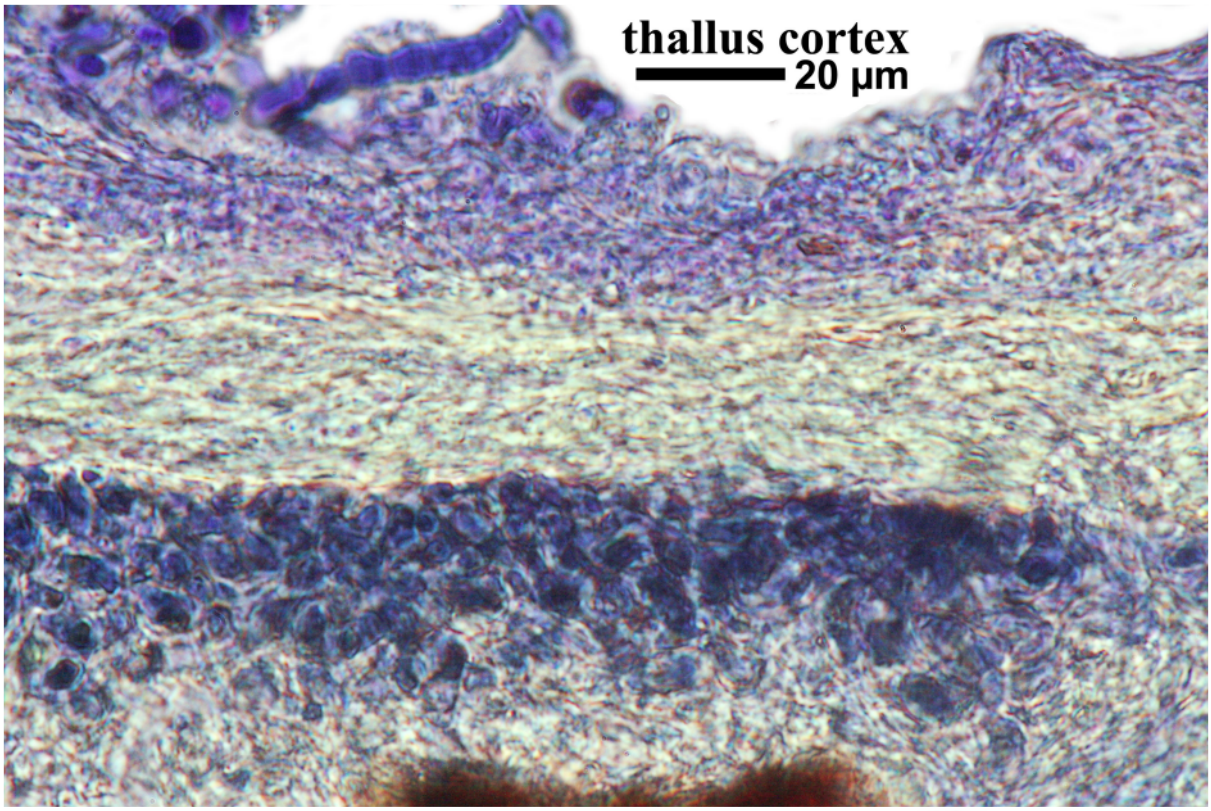


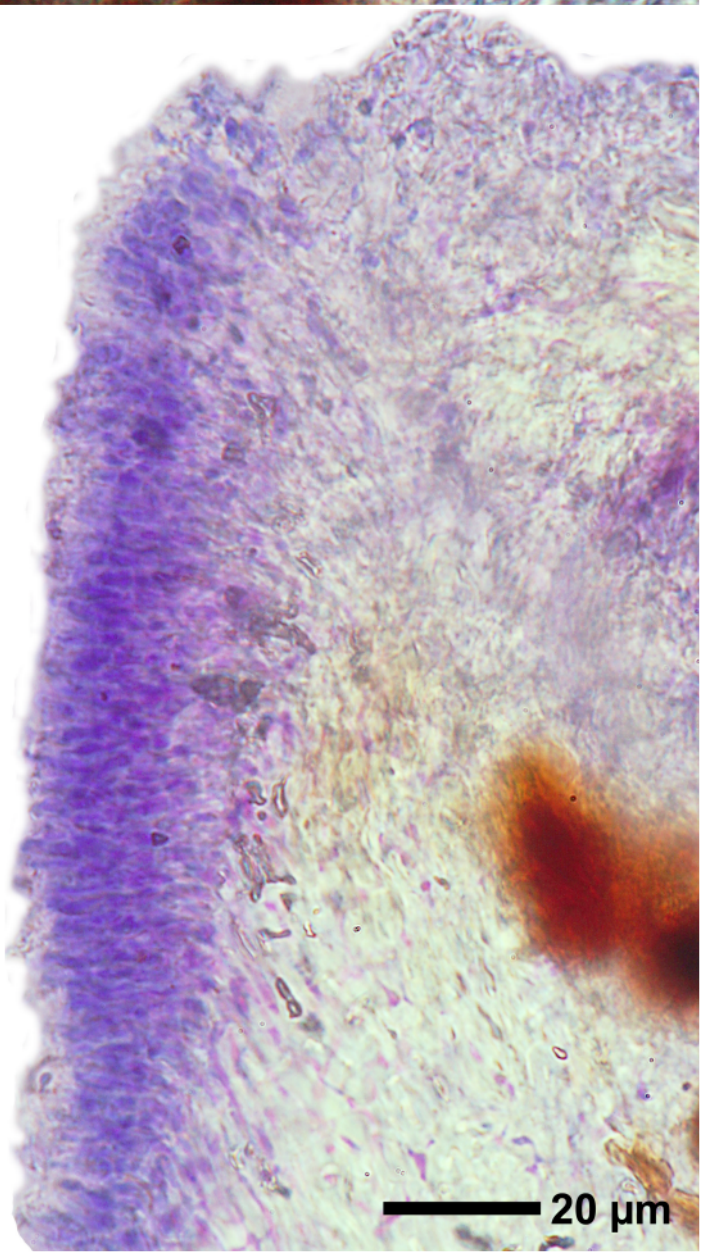


Ocellularia pertusariiformis



Ocellularia pertusariiformis





Ocellularia pertusariiformis

Ocellularia protomegaspora Aptroot & Schumm sp. nov.

Holotypus: Herbarium F. Schumm Nr. 6343. Sicut *Ocellularia chiriquiensis* (Hale) Hale, sed acidis protocetraricis et fumarprotocetraricis continens.

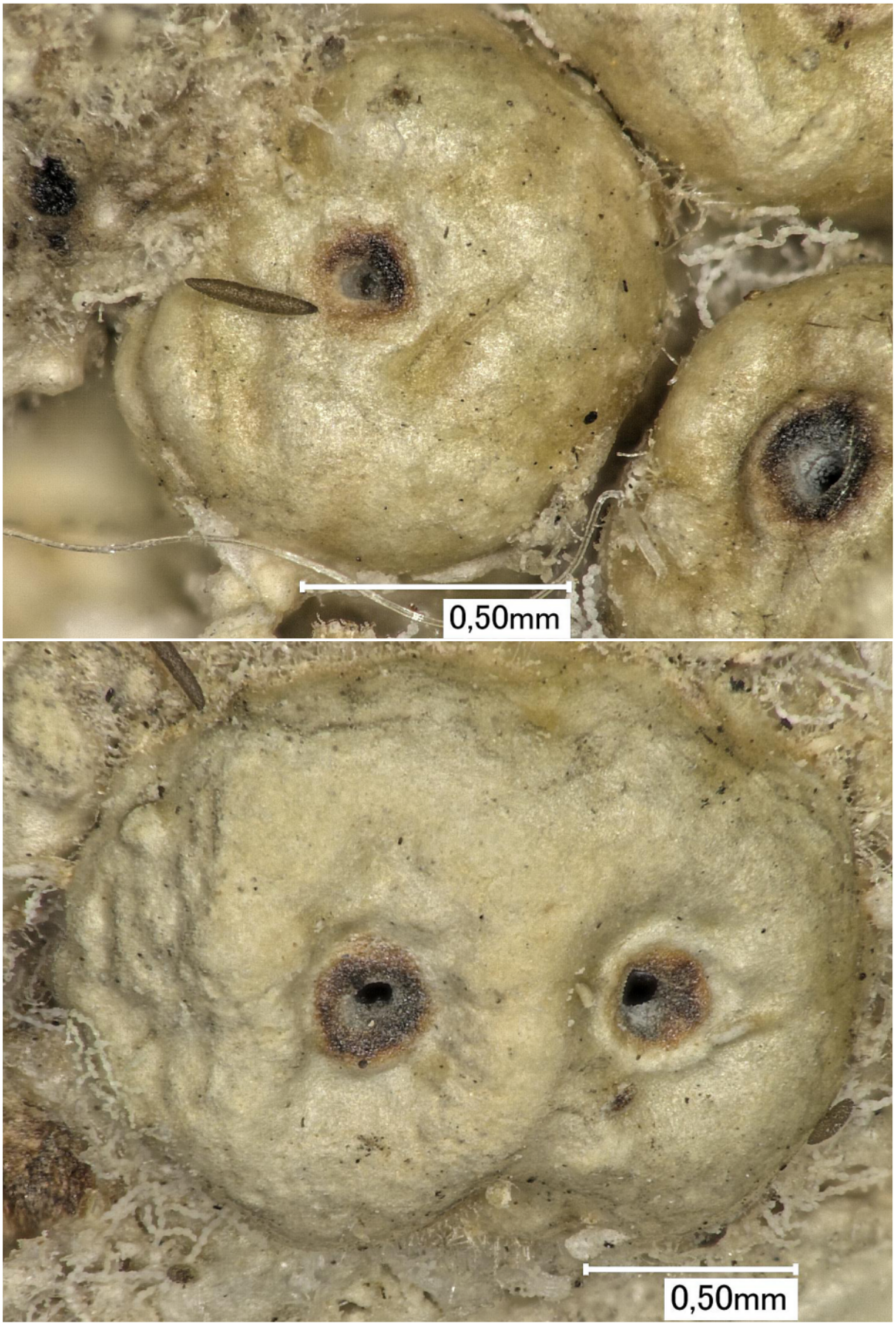
Thallus yellowish-grey, smooth to verruculose, with cortex. Apothecia emergent, excipulum brown and only carbonized at the tips. Without a columella, without lateral periphyses. Hymenium ca. 470 µm high, not inspersed. Spores muriform, ripe brown, J-, 1/ascus, 270-312 x 48-62. Chemistry: medulla P+ yellow >>red, fumarprotocetraric acid, protocetraric acid (TLC). This species is close to *Ocellularia chiriquiensis* and is characterized by the large, densely muriform, J-negative ascospores that become brown already in the hymenium and the chemistry.

[6343], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay, tropischer Regenwald am Mt. Kitanglad ab Zwischen-Campsite, 08°09.637' N, 124°55.871' E, 1870-2800 m. Leg. Schumm 19.08.1999.



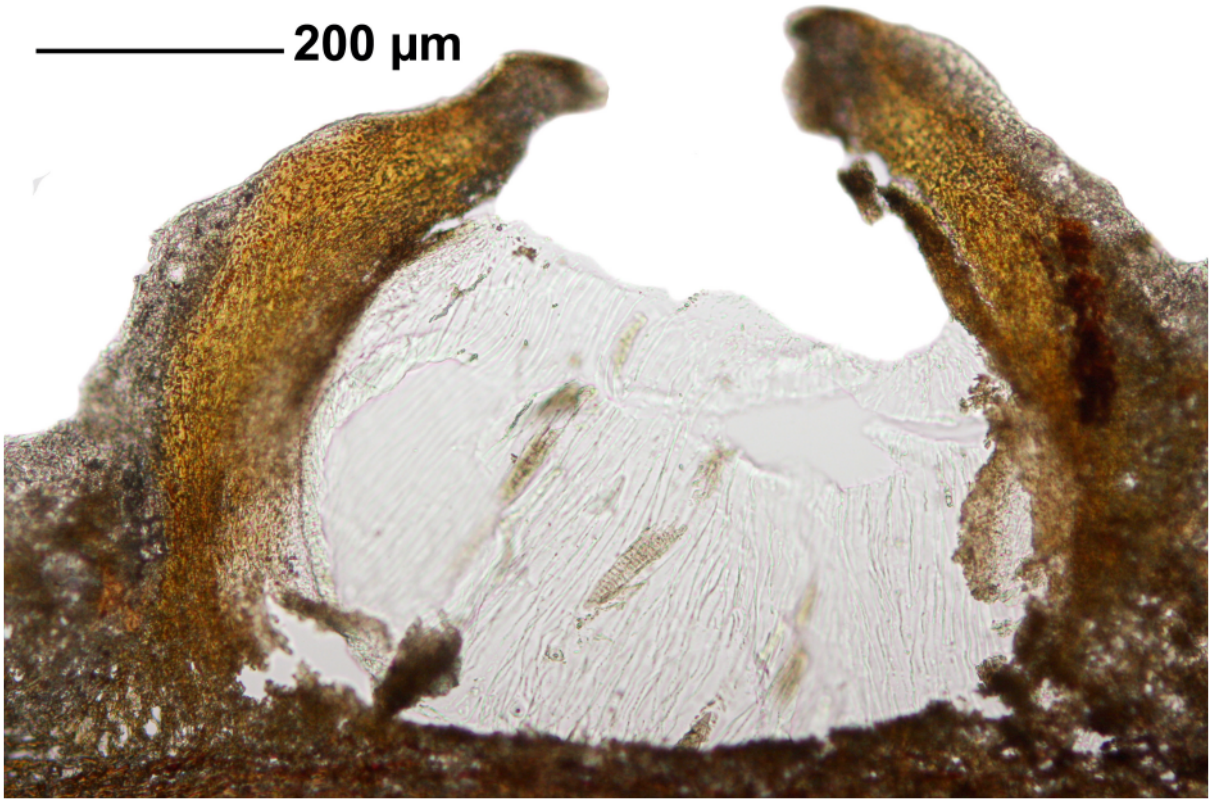


Ocellularia protomegaspora

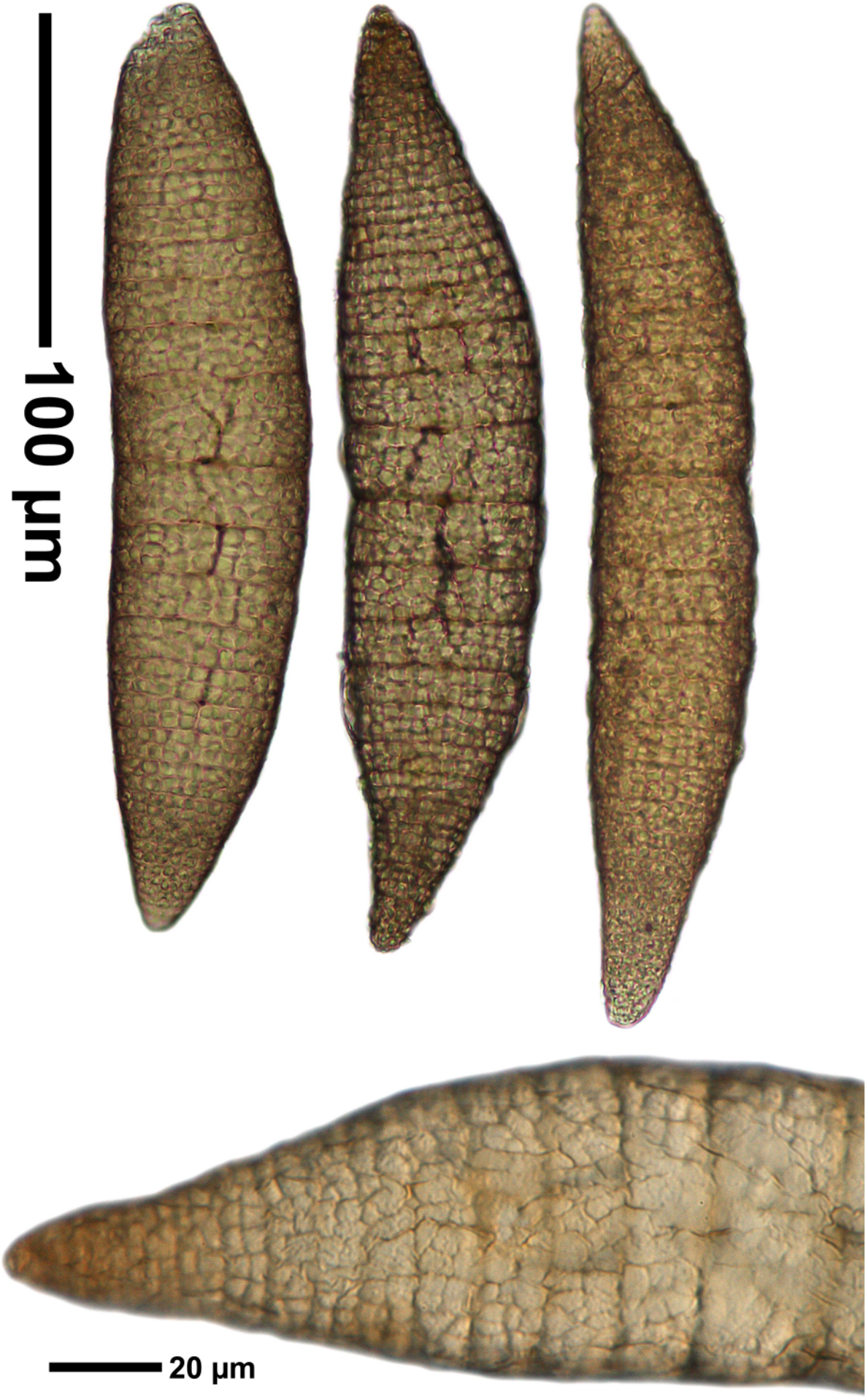


Ocellularia protomegaspora

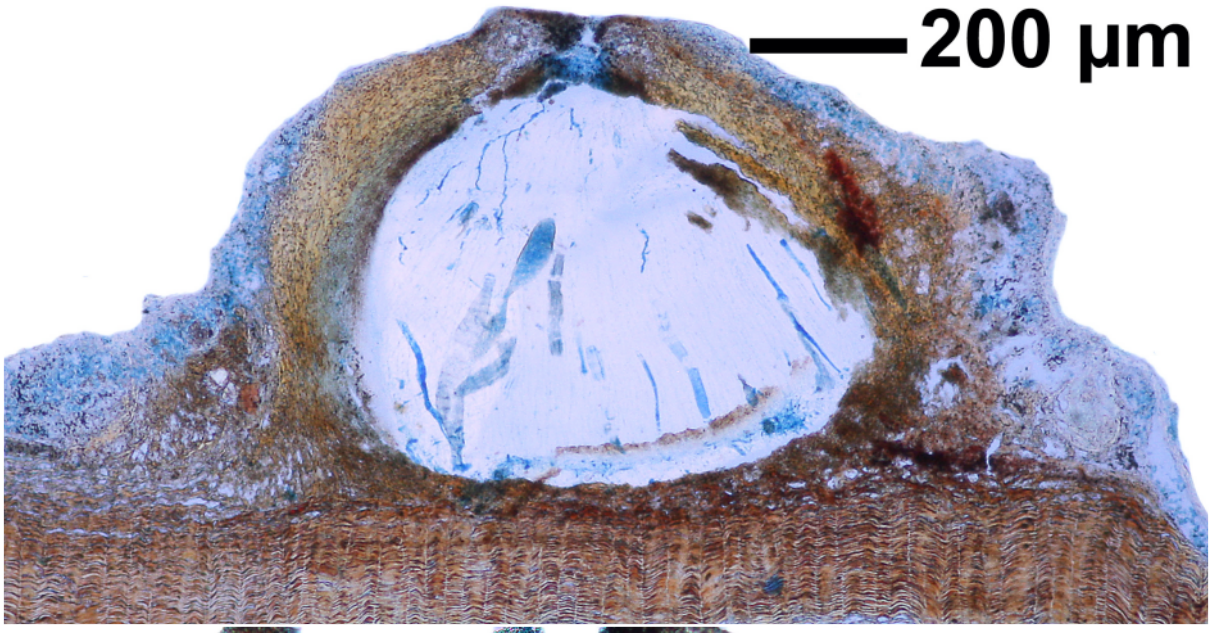


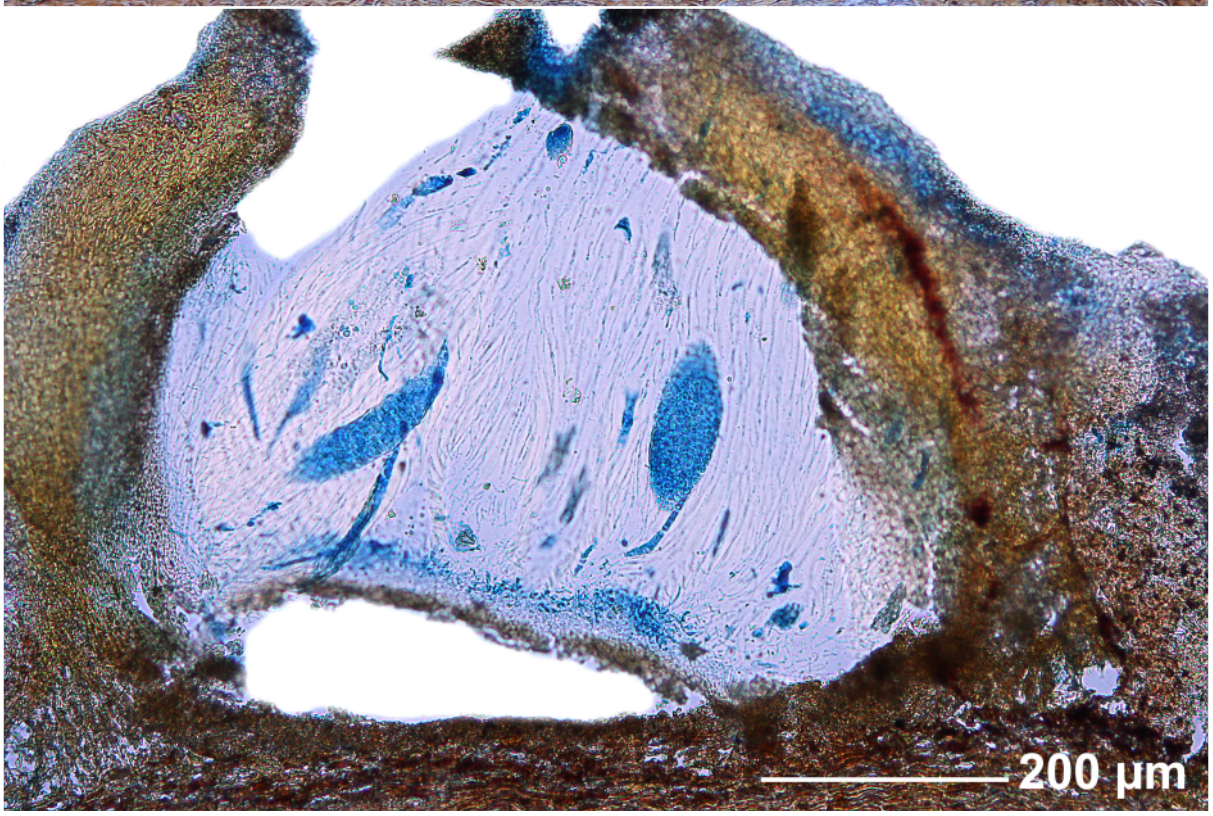


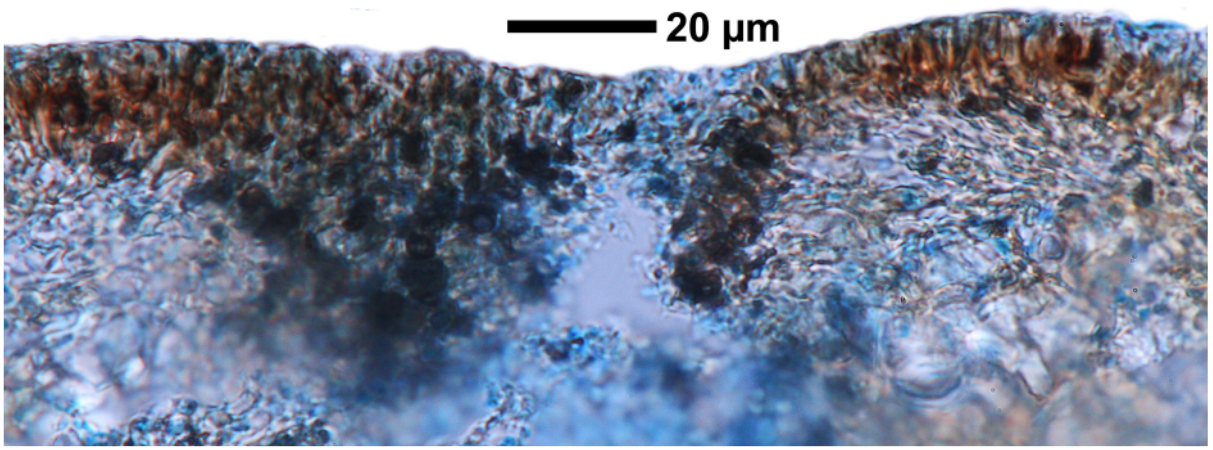
Ocellularia protomegaspora



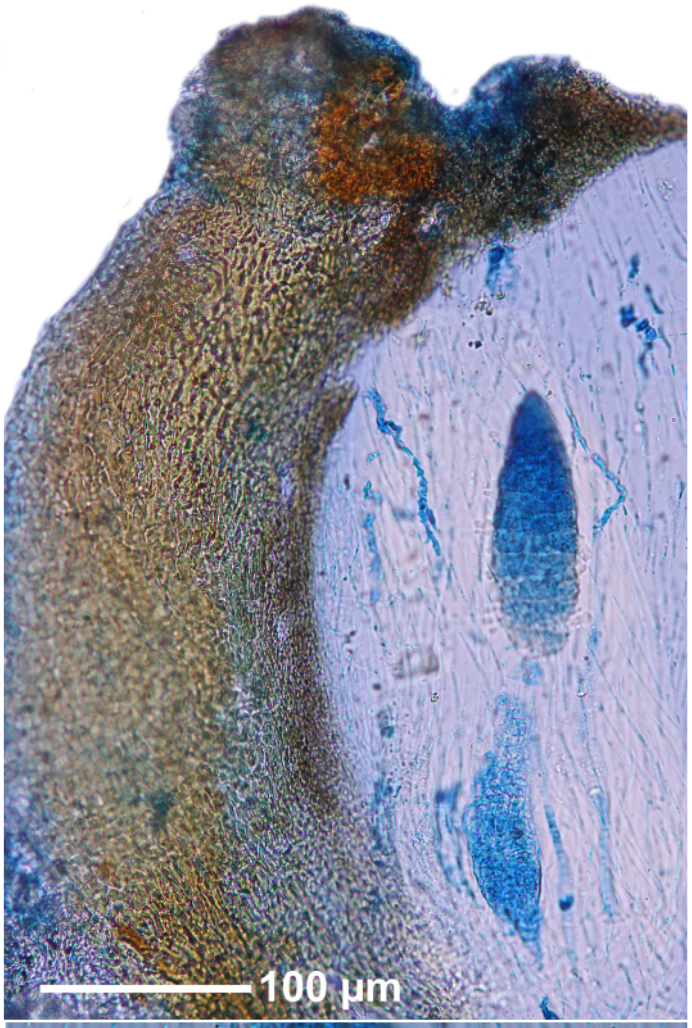
Ocellularia protomegaspora

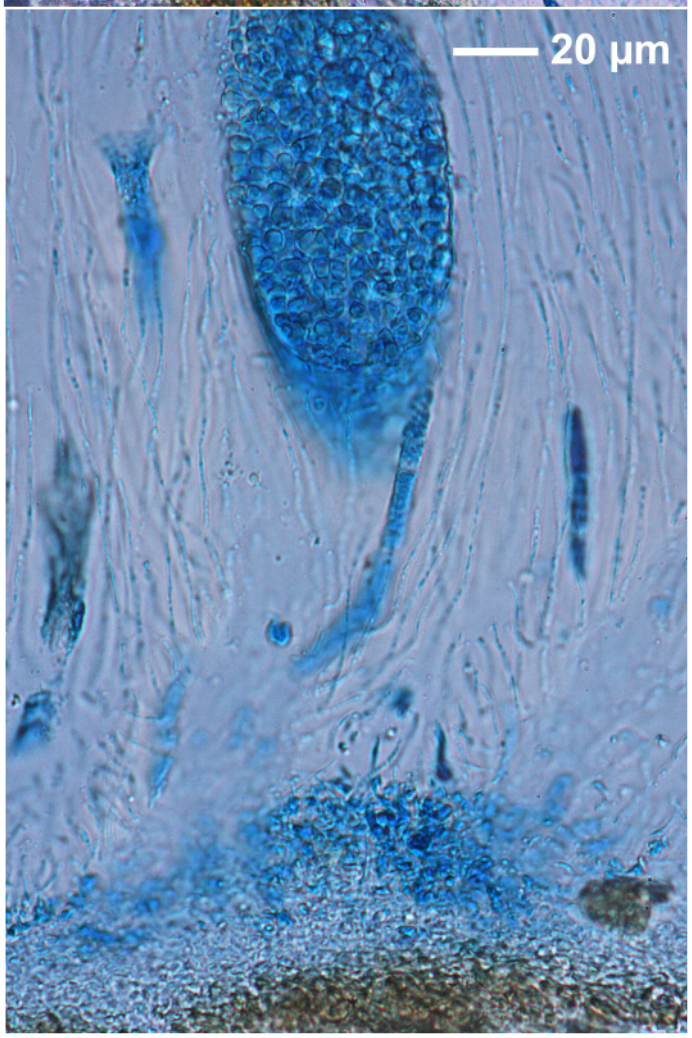




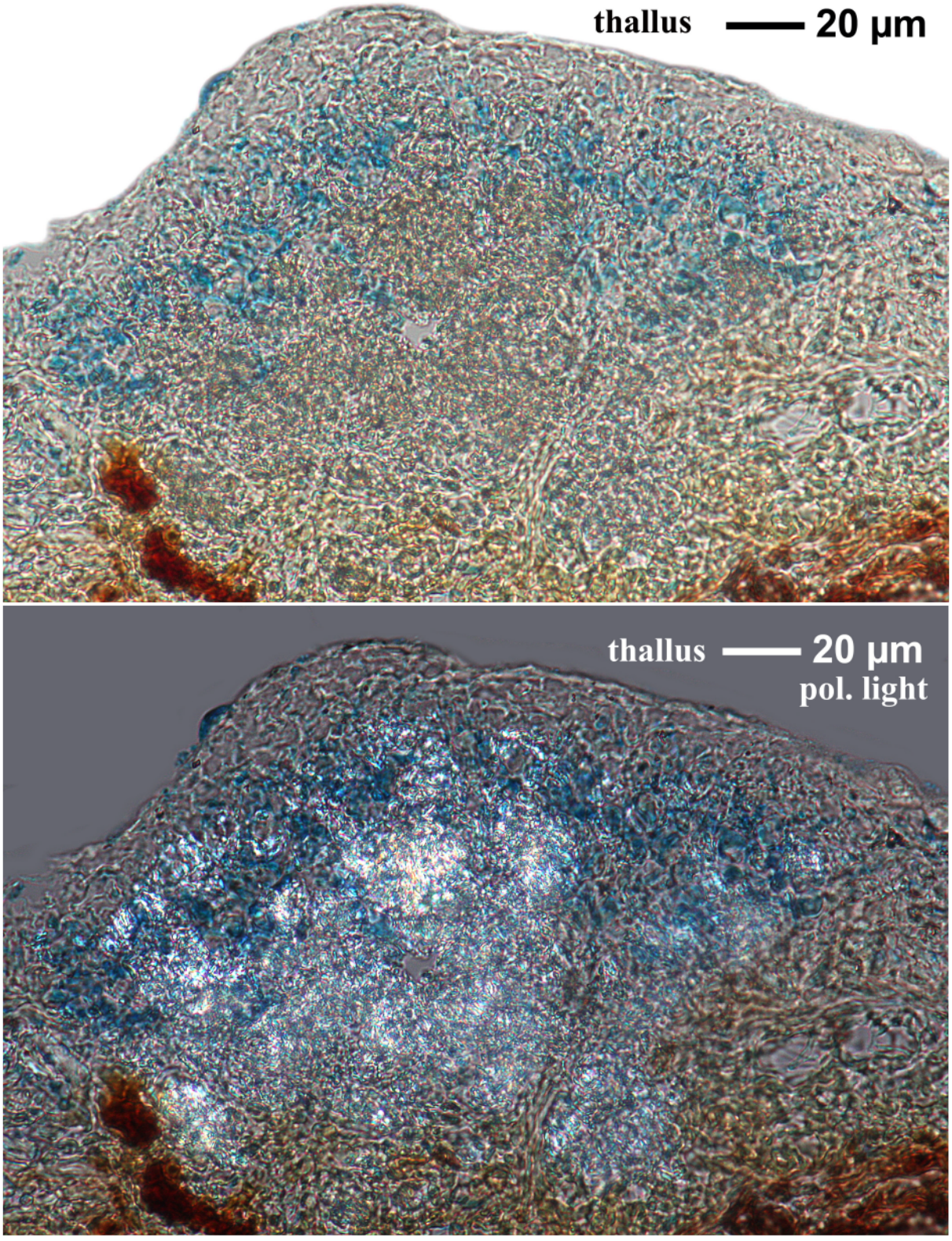


Ocellularia protomegaspora





Ocellularia protomegaspora

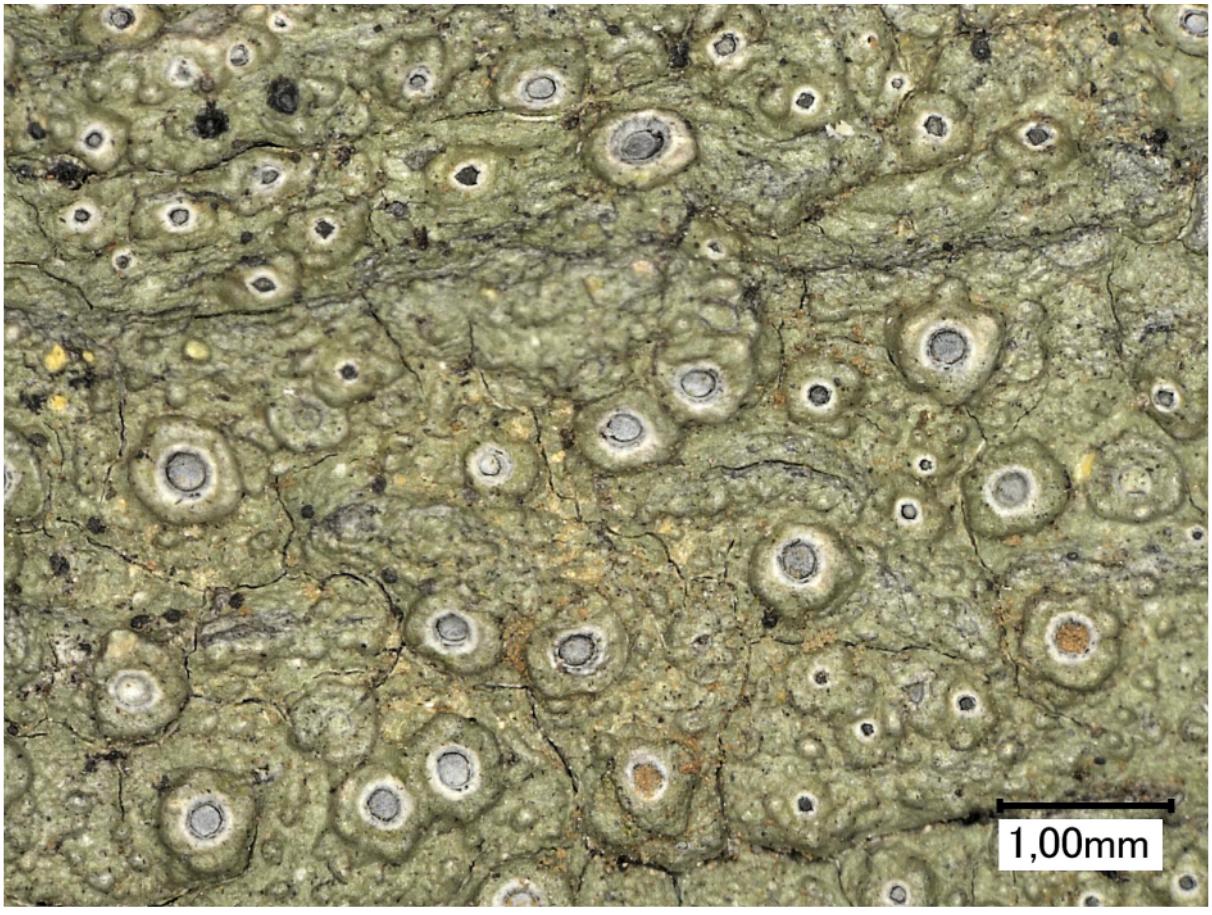


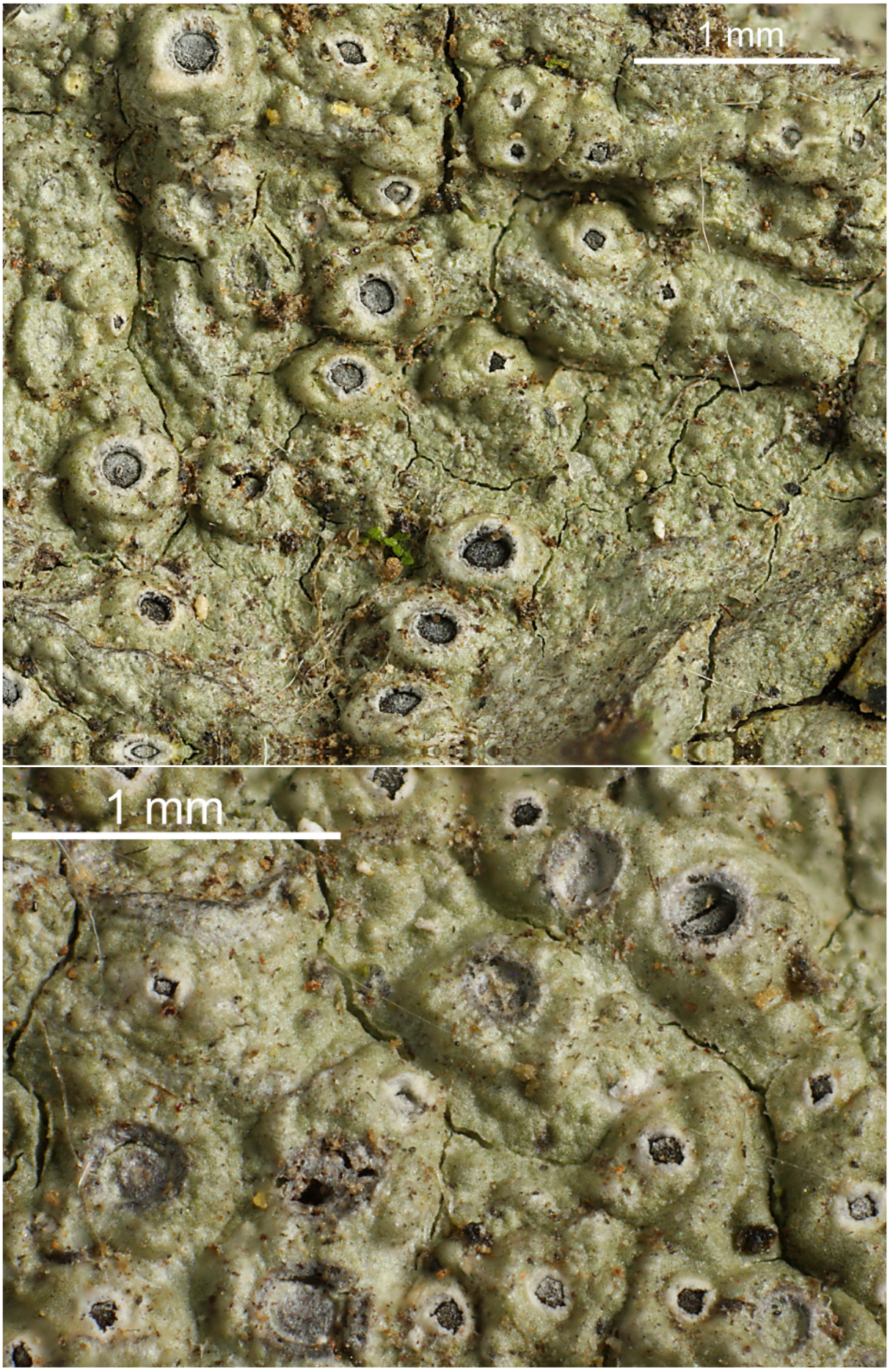
Ocellularia protomegaspora

Ocellularia punctulata (Leighton) Zahlbr.

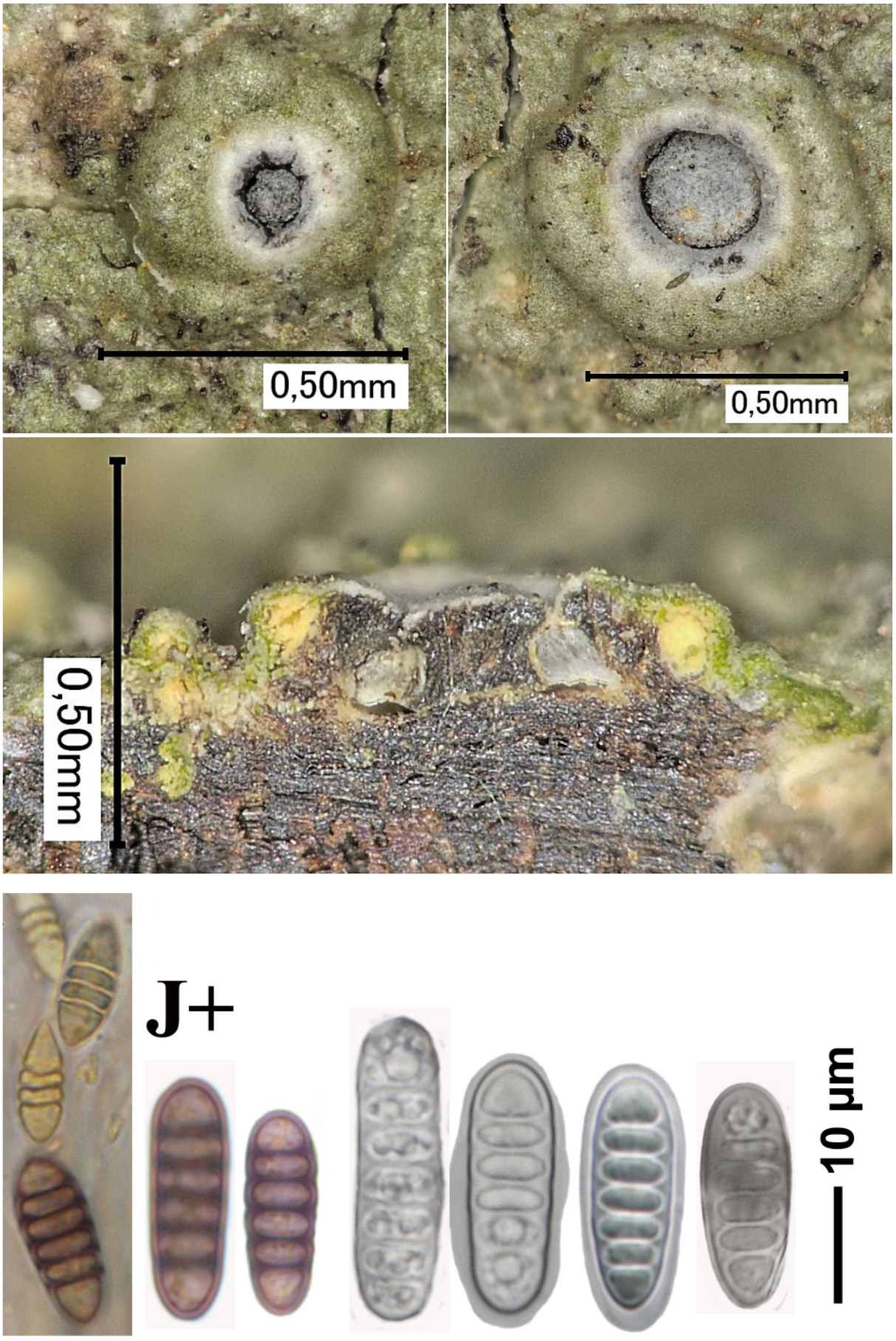
Thallus yellowish to greenish grey. Apothecia emergent. Excipulum lateral carbonized, with one carbonized large columella. Periphyses absent. Ascospores hyaline, J+ blue, 8/ascus, transverse 5-6-(10)-septate, (15-)18-26(-30) x 5-8 µm. Chemistry: medulla yellow-orange, K+ red, P+ dark red, UV+ orange, TLC: grey Spot in A,B',C near the start, but not belonging to protocetraric or fumarprotocetraric acids, = cinchonarum unkown. Lit. Hale (1981)

[17546], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm (IAL 7) 15.01.2012, det. Kalb 06.2012.

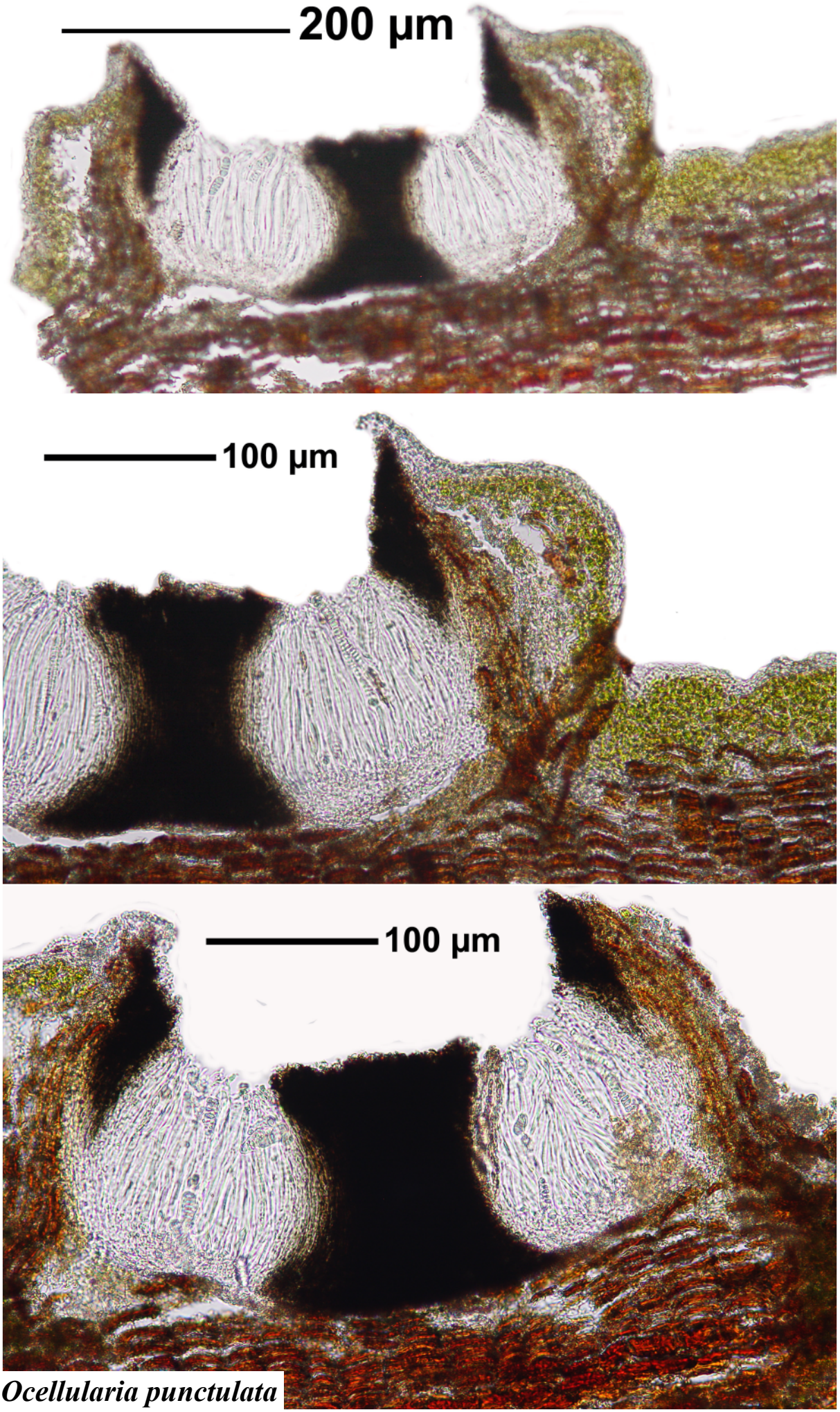




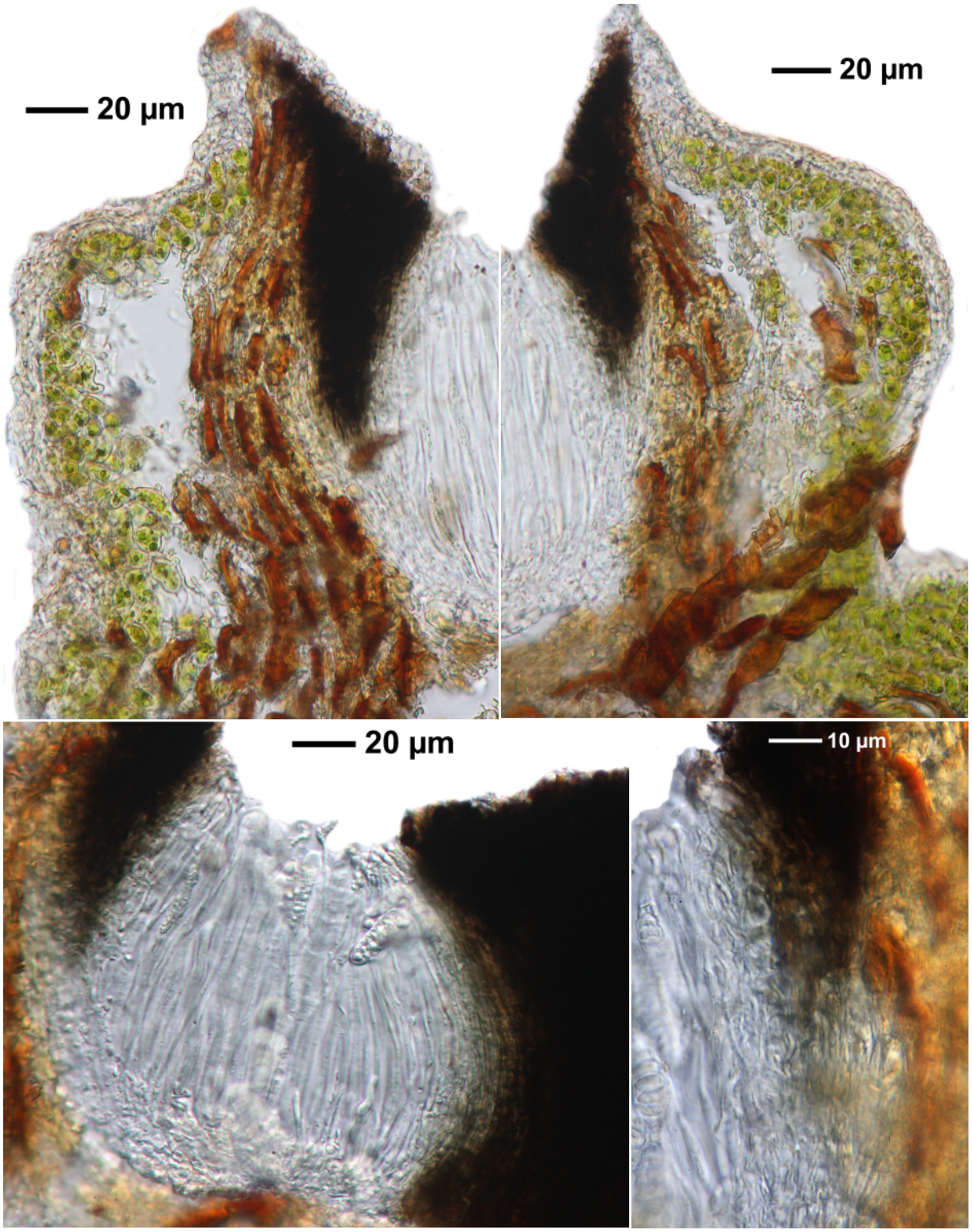
Ocellularia punctulata



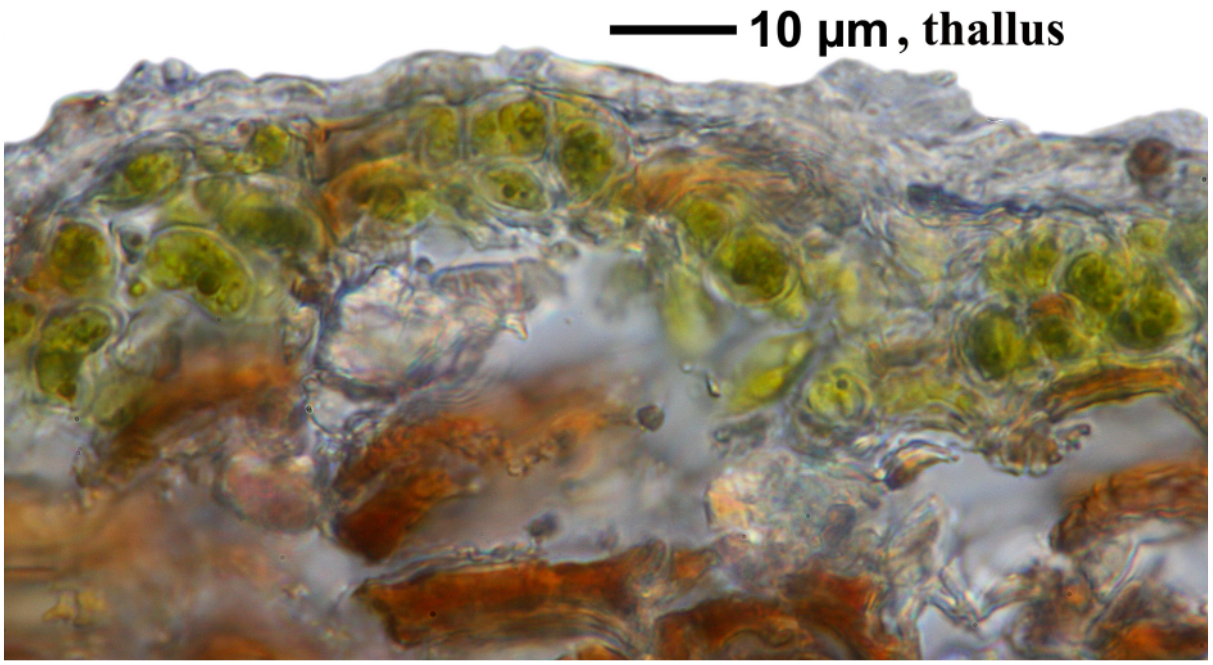
Ocellularia punctulata

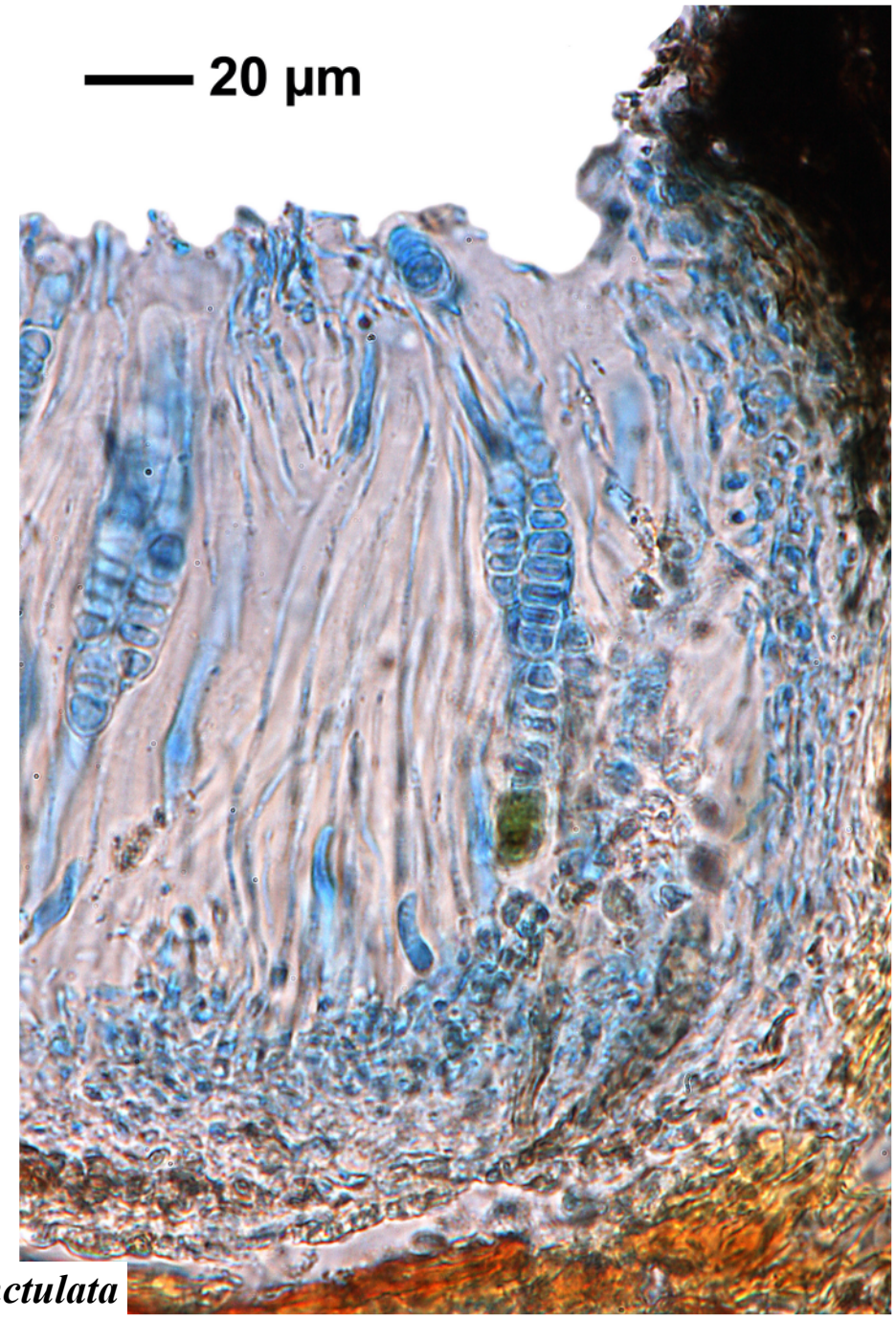


Ocellularia punctulata



Ocellularia punctulata





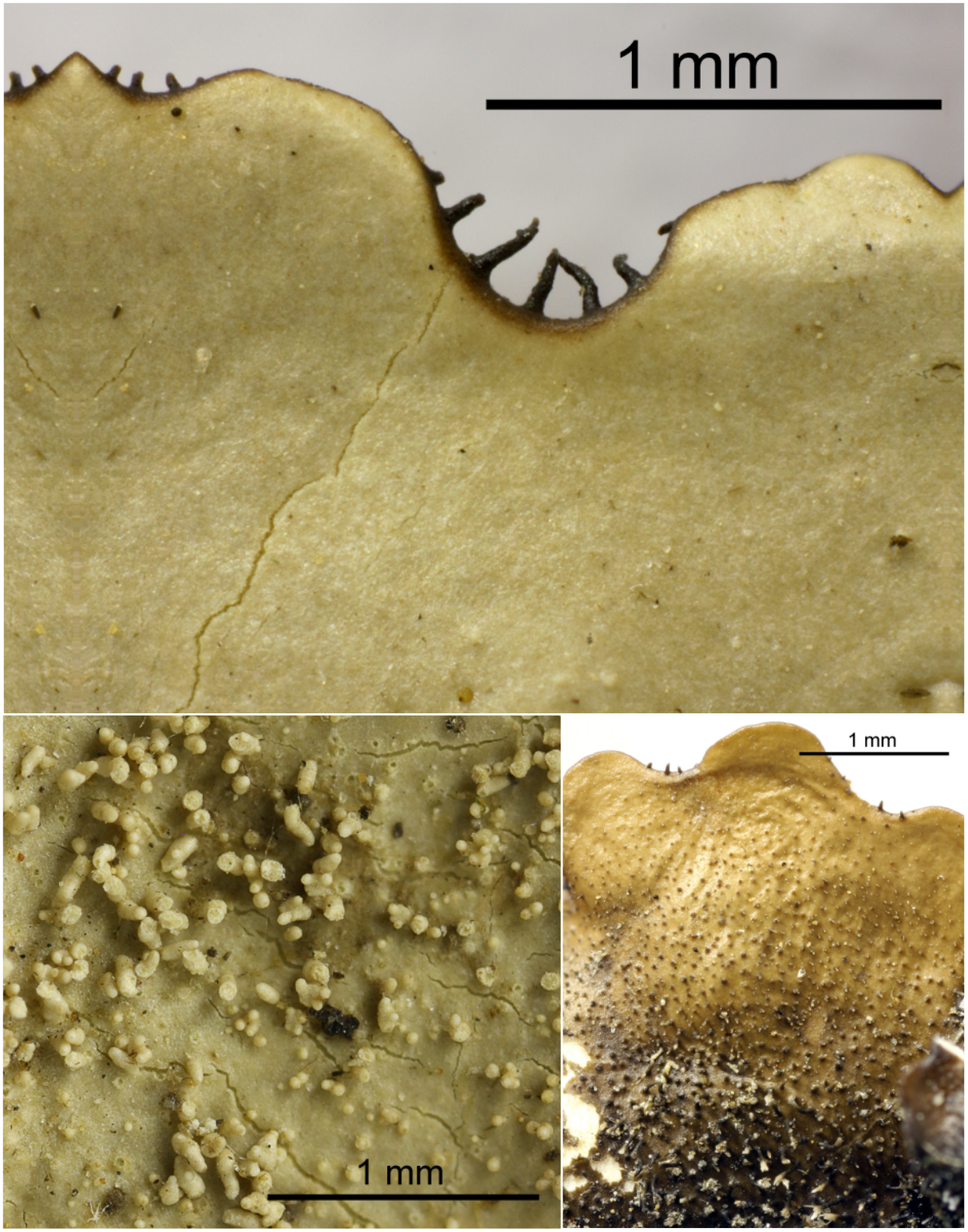
Ocellularia punctulata

Parmelinella wallichiana (Taylor) Elix & Hale
[= ***Parmelia wallichiana*** Taylor]
[= ***Parmelina wallichiana*** (Taylor) Hale]

Thallus yellowish grey to green-grey; lobes 3-10 mm wide, short ciliate, especially in the axils, cilia about 0.5 mm long; upper surface not maculate, with cylindrical isidia, without soredia; medulla white; lower surface black, short rhizinate, dark brown and naked or papilate in a rather wide zone near the tips; rhizines black, simple. Chemistry: cortex K+ yellow (atranorin); medulla K+ yellow turning red, C-, KC-, P+ orange; atranorin, salazinic acid, consalazinic acid. On bark and rock. Africa, Asia.

[5907], Philippines, Mindanao, Provinc Cotabato, bei Ilomavis an der Straße nach Kidapawan, 07°02.069’ N, 125°11.367’ E, 730 m. Leg. Schumm 07.08.1999, det. J.A. Elix 25.02.2000 (Dupl. in CANBERRA).



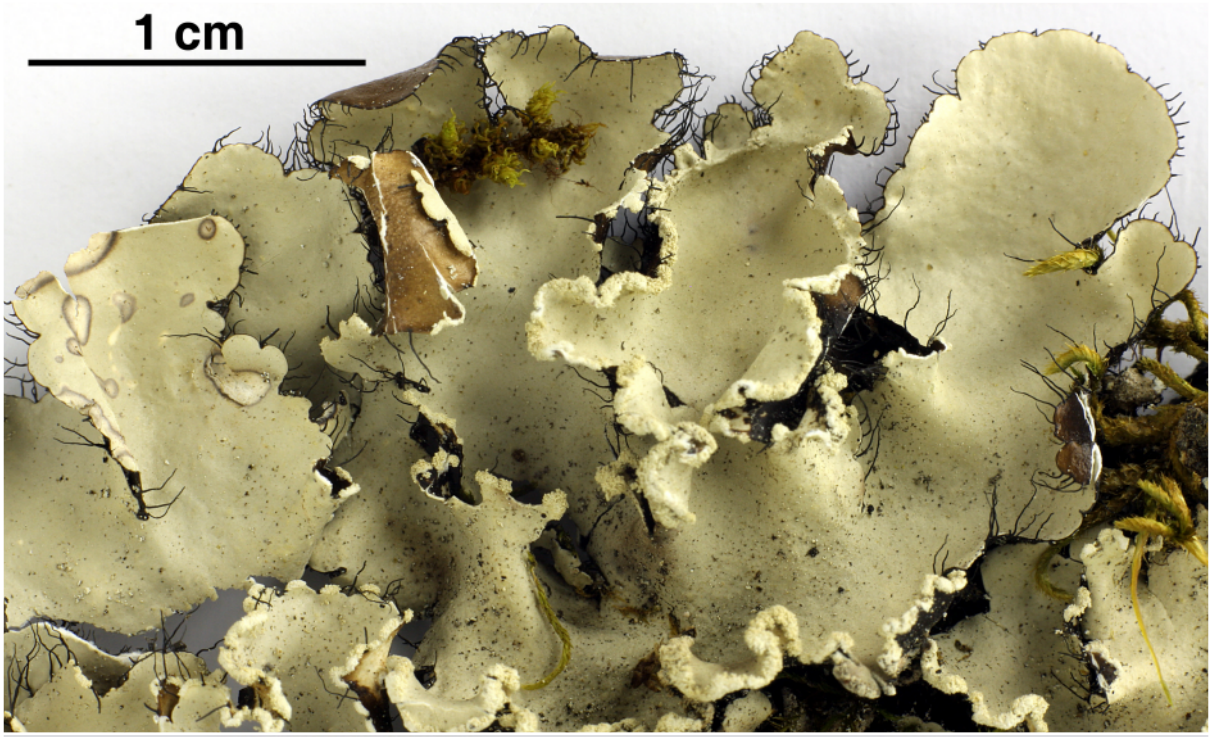


Parmelinella wallichiana

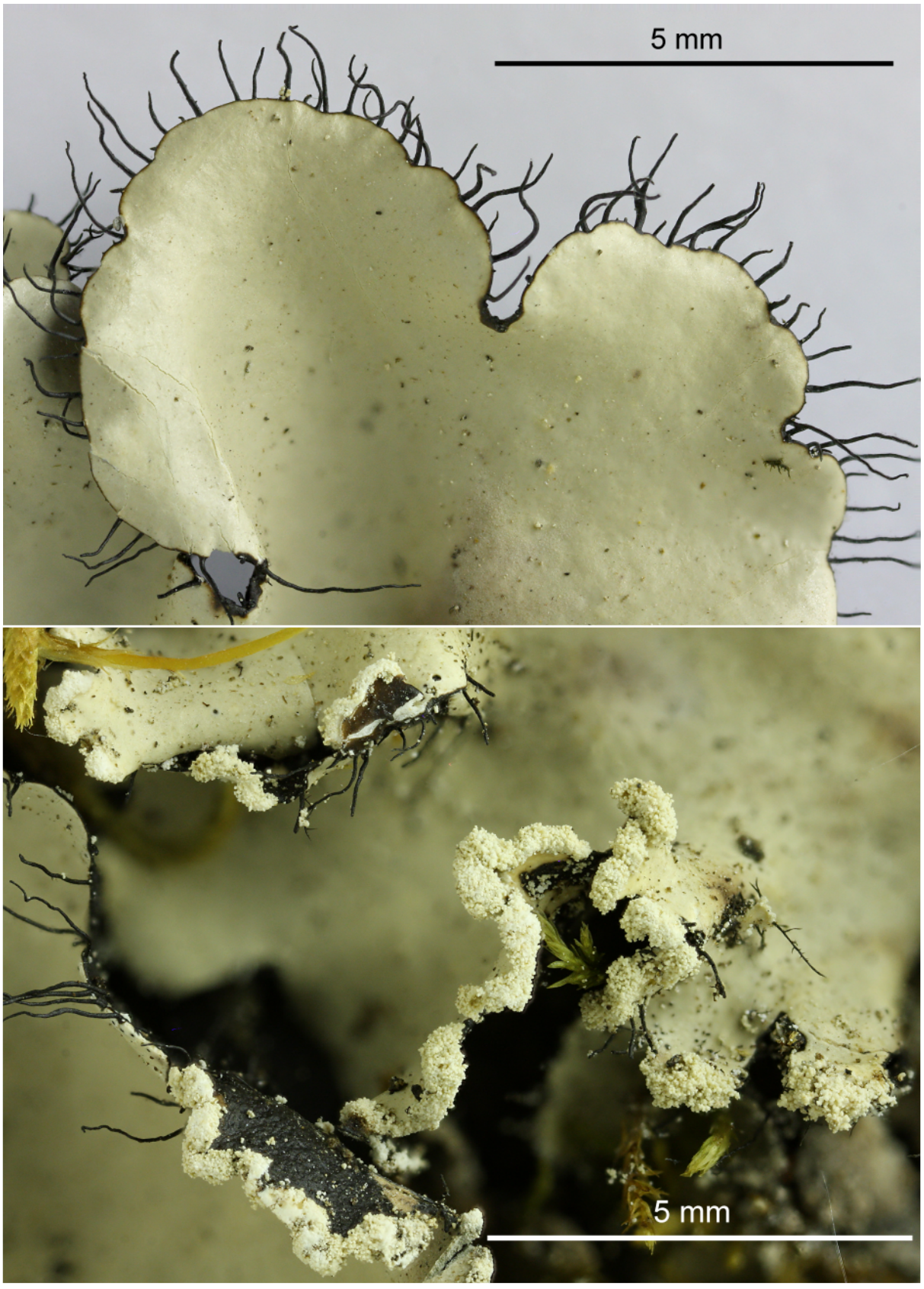
Parmotrema cooperi (J.Steiner & Zahlbr.) Sérus.

Thallus ciliate, upper surface grey, soralia marginal to submarginal, soredia granular, lower surface centrally black. Medulla white, K-, C+ red, KC+ red, P-. Lecanoric acid, atranorin.

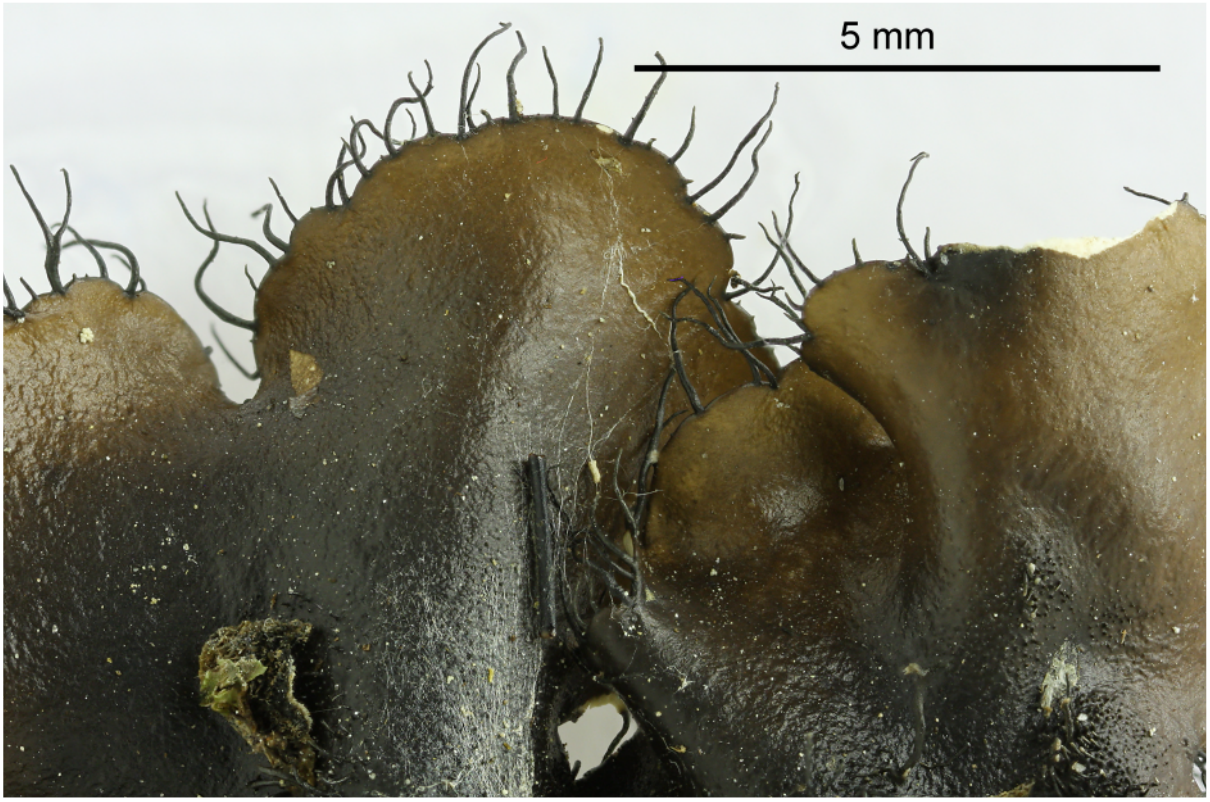
[5885], Philippinen, Mindanao, Provinc Cotabato, bei Ilomavis an der Straße nach Kidapawan, 07°02.069' N, 125°11.367' E, 730 m, an Cocos-Palme. Leg. Schumm 07.08.1999, det J.A. Elix. Dupl. in CANB.







Parmotrema cooperi

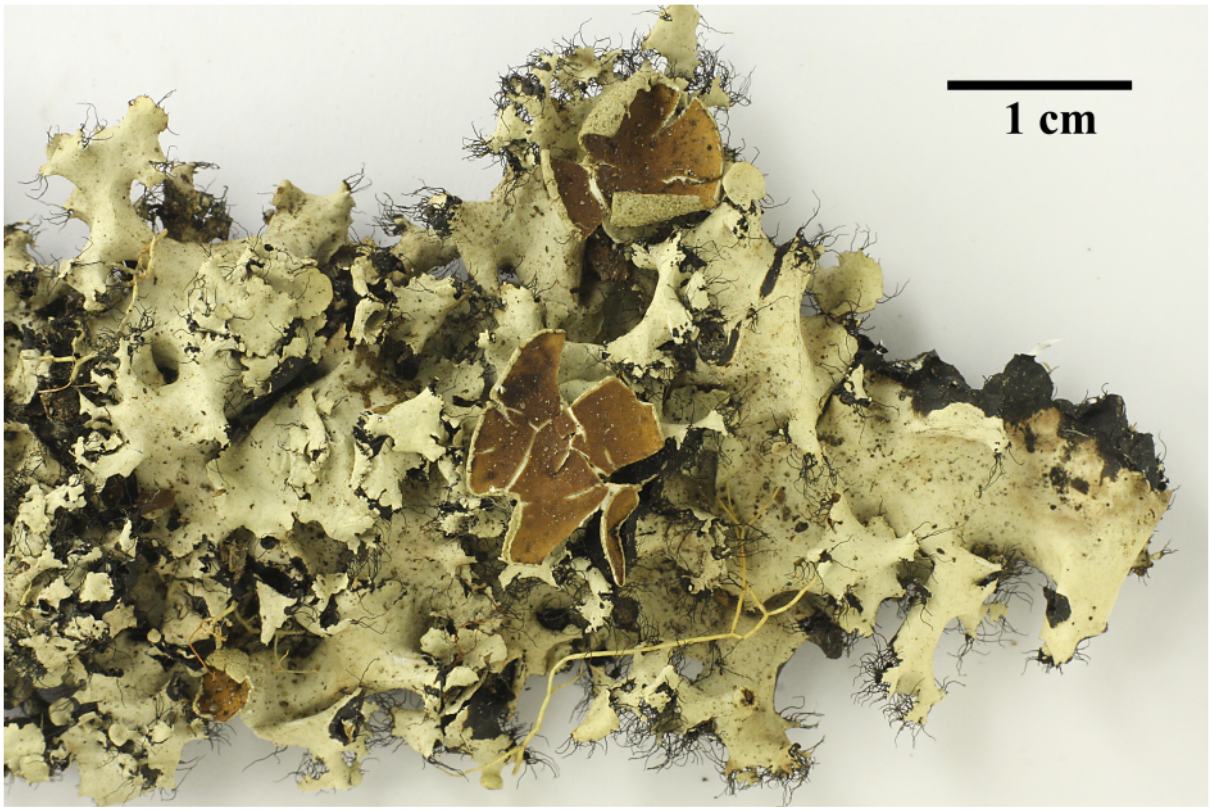


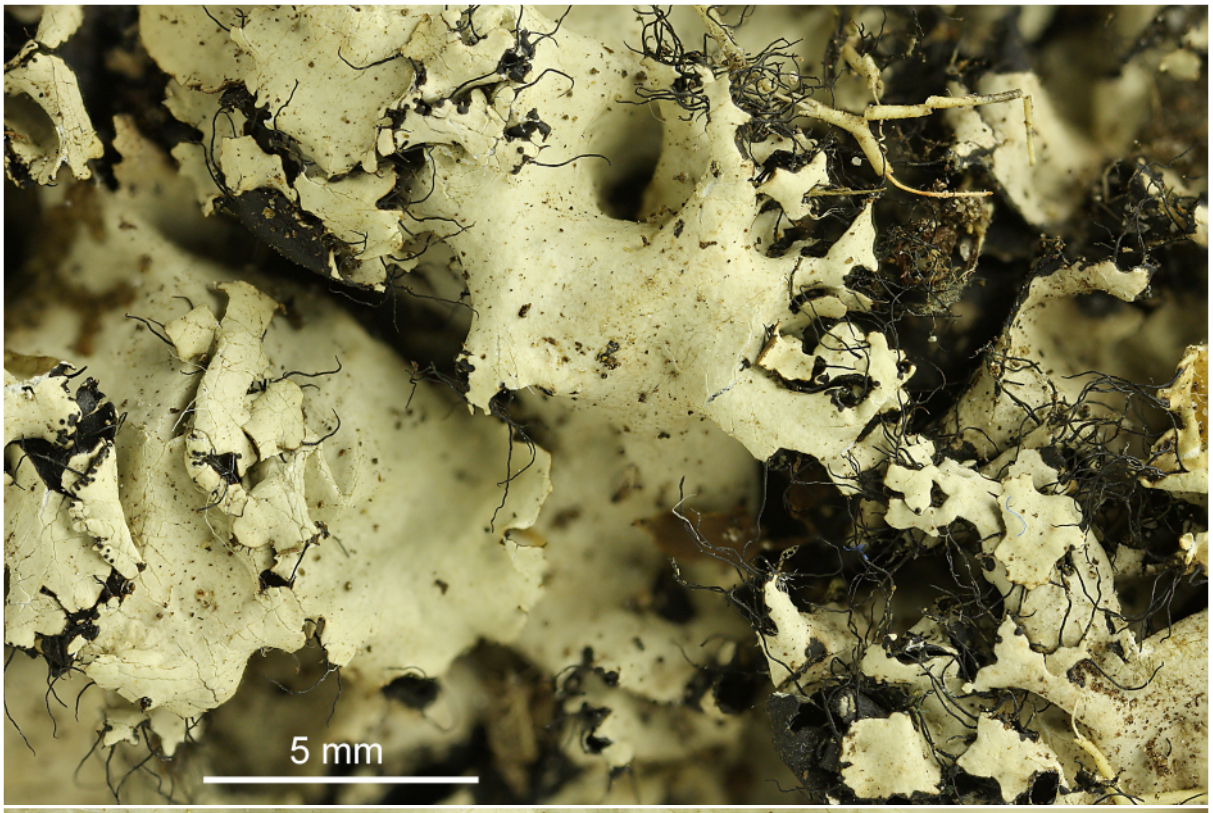
Parmotrema cooperi

Parmotrema corniculans (Nyl.) Hale

Thallus grey, lobes 10-13 mm wide, ciliate, margins more or less dentate-laciniate with age. Soredia and isidia lacking. Lower side black and sparsely rhizinate, dark brown to brown. Chemistry: Thallus K+ yellow; medulla K-, KC+ reddish orange, C-, P-. Atranorin (minor), alectoronic acid (major), α-collatolic acid (major), dehydroalectoronic acid (minor), dehydro-α-collatolic acid (minor).

[6044], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald zwischen Marbel-River-Campsite und Lake Venado, ca. 07°00.165'-07°00.181' N, 125°14.767'-125°16.166' E, 2000 m. Leg. Schumm 10.08.1999, det. Elix 22.06.2000.





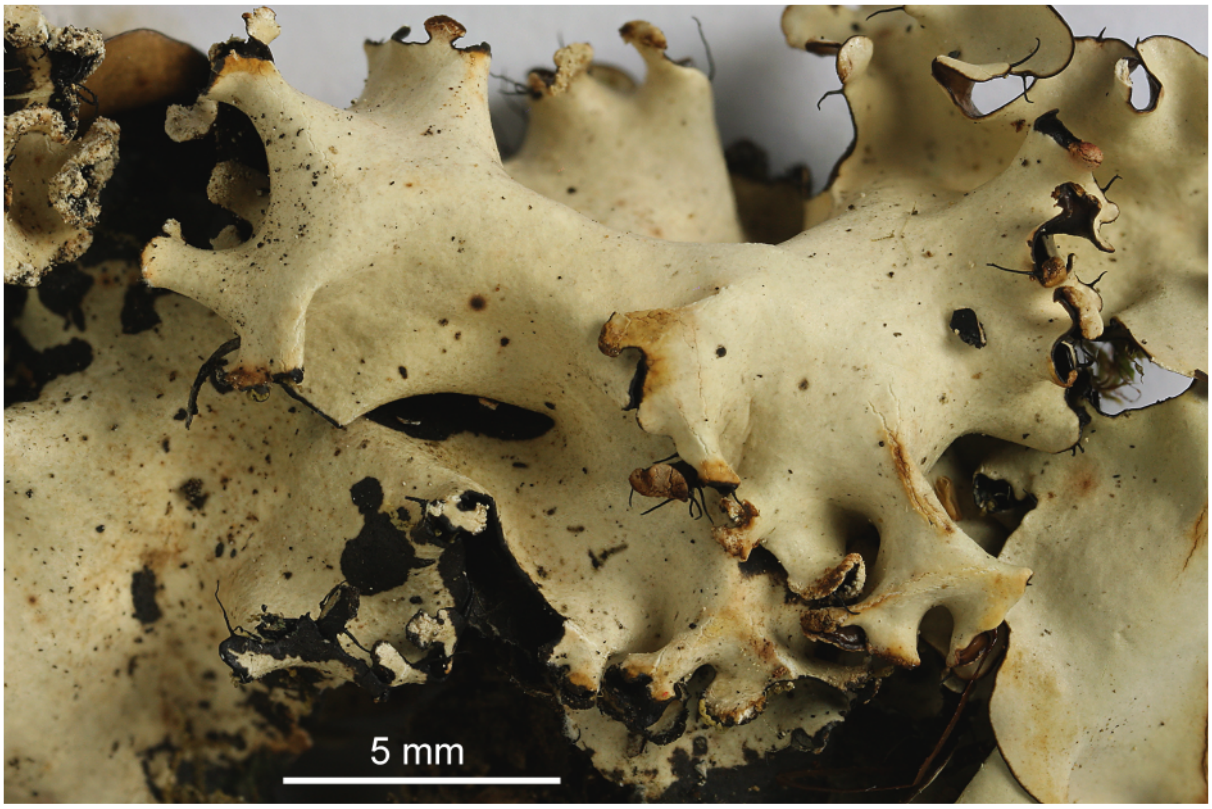


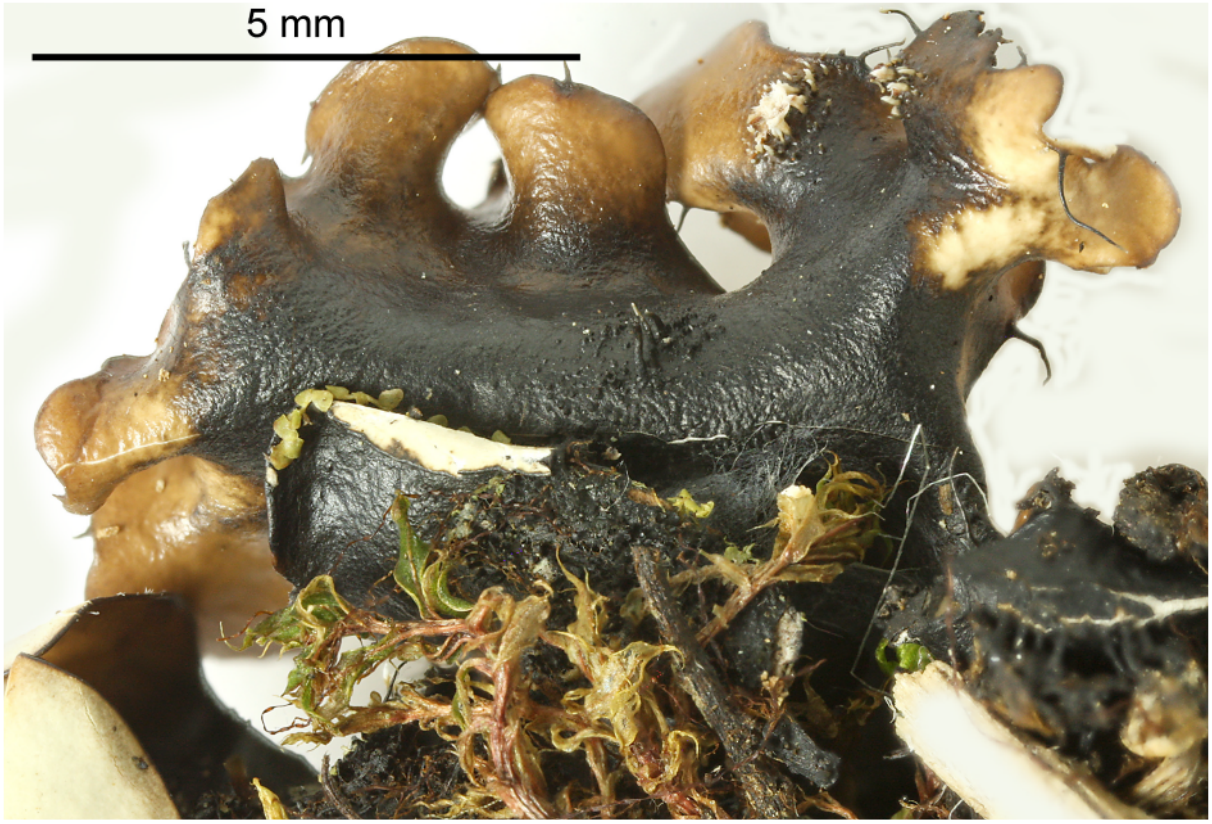
Parmotrema corniculans

Parmotrema cristiferum (Taylor) Hale

Thallus pale grey, not maculate, 3–10 cm wide. Lobes 0.5-1 cm, black ciliate but main lobes often ecilate, cilia 0.5-1.5 mm. Soralia mainly marginal on more or less ascending lateral lobes. Soredia granular. Isidia absent. Medulla white. Lower surface black, shiny with brown erhizinate marginal zone. Chemistry: atranorin, chloroatranorin, salazinic acid (maj), consalazinic acid (min); cortex K+ yellow; medulla K+ yellow>red, C-, KC-, P+ orange-red. Pantropical.

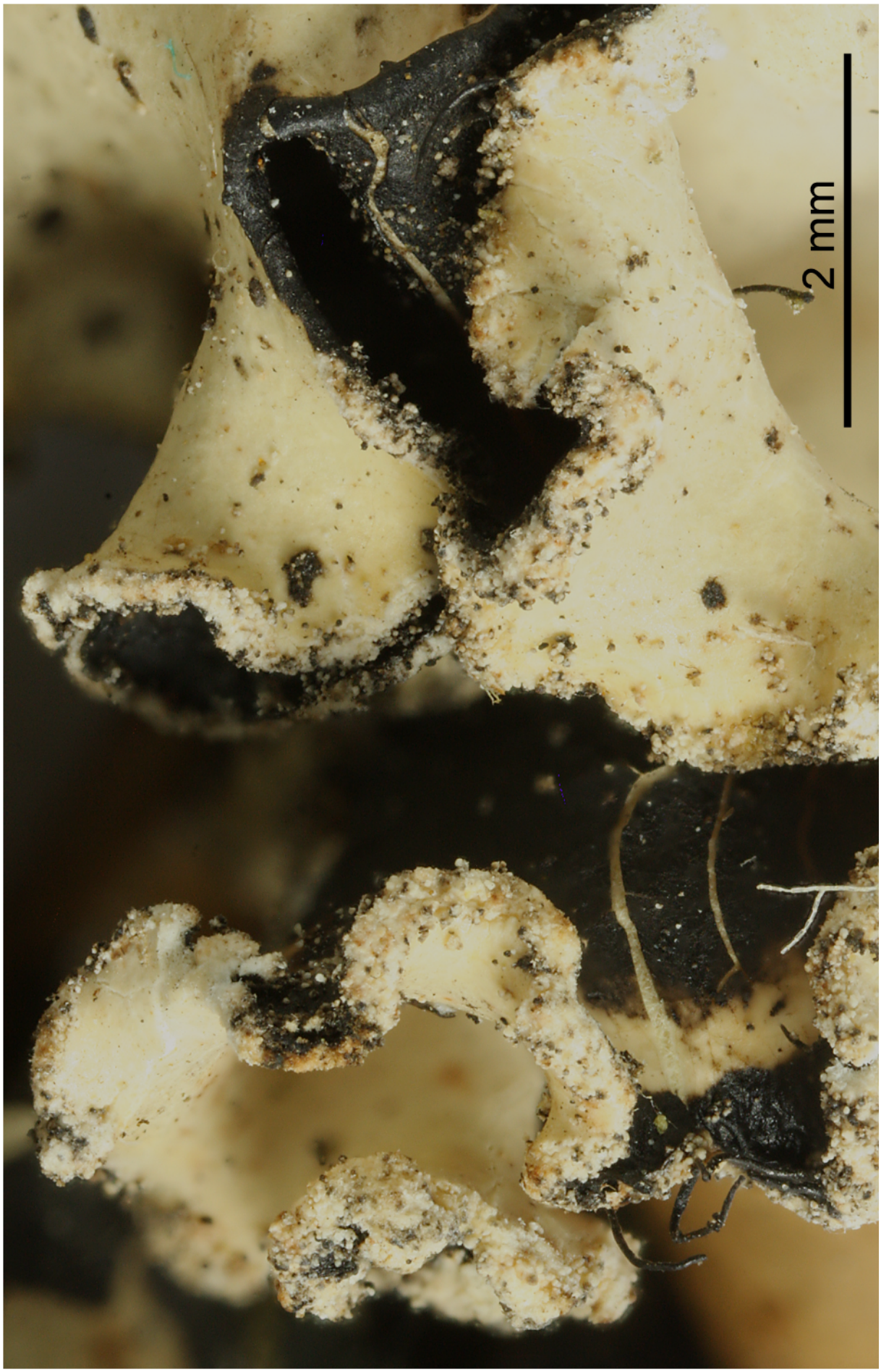
[6440], Philippinen, Mindanao, Prov. Misamis Oriental, SW Gingoog City, Barangay Lunutan (08°42.510’ N, 125°01.241’ E, 1120 m) und am Weg zum Mt. Lumot (Via Haruhay Trail) bis zum Zwischencamp (8°40.713’ N, 125°01.649’ E, 1680 m). Leg. Schumm 24.08.1999, det. J.A. Elix 2000.







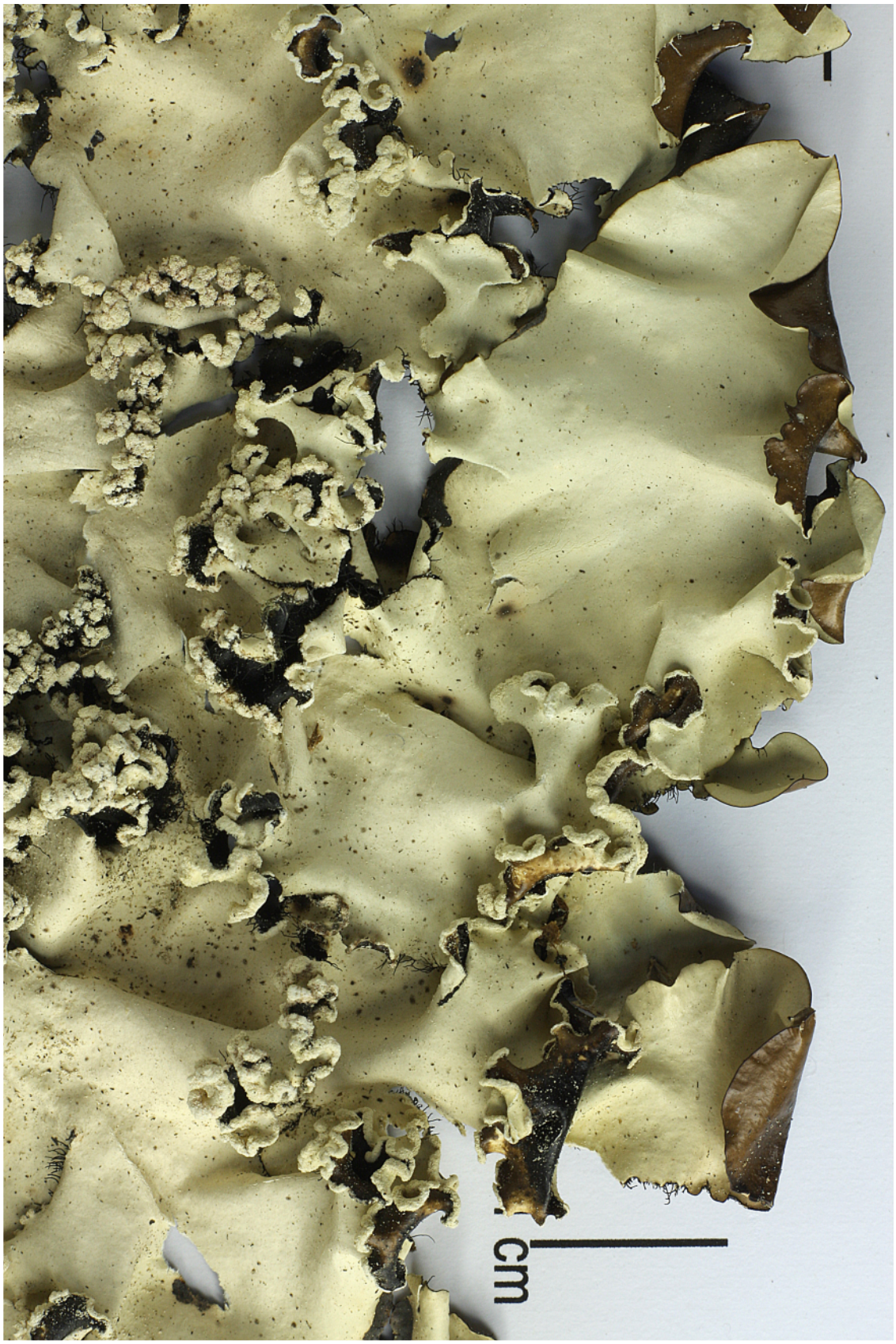
Parmotrema cristiferum



Parmotrema cristiferum

Parmotrema cristiferum (Taylor) Hale

[7421], Philippines, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail von Valencia Barangay Lunga (9°16.676’ N, 123°13.839’ E) bis zum Camp Vendiola (09°16.281’ N, 123°11.410’ E), zwischen 530-1100 m, bei 730 m, auf Cocos nucifera. Leg. Schumm 09.08.2000, det. J.A. JA Elix 10.11.2000.





Parmotrema cristiferum

Parmotrema dilatatum (Vain.) Hale

Thallus grey, 3-20 cm wide. Lobes 10-20 mm wide. Ecilate or with cilia. Soralia marginal, linear or subcapitate; soredia granular. Isidia absent. Medulla white or pigmented pale yellowish pink. Lower surface black with broad brown erhizinate marginal zone. Rhizines sparse, simple. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K- or dirty brown, C-, KC-, P+ red; atranorin (minor), chloroatranorin (minor), protocetraric acid (major), virensic acid (minor), usnic acid (trace), echinocarpic acid (trace), methylvirensate acid (trace), subvirensic acid (trace) [Elix, solvent C, HPLC]

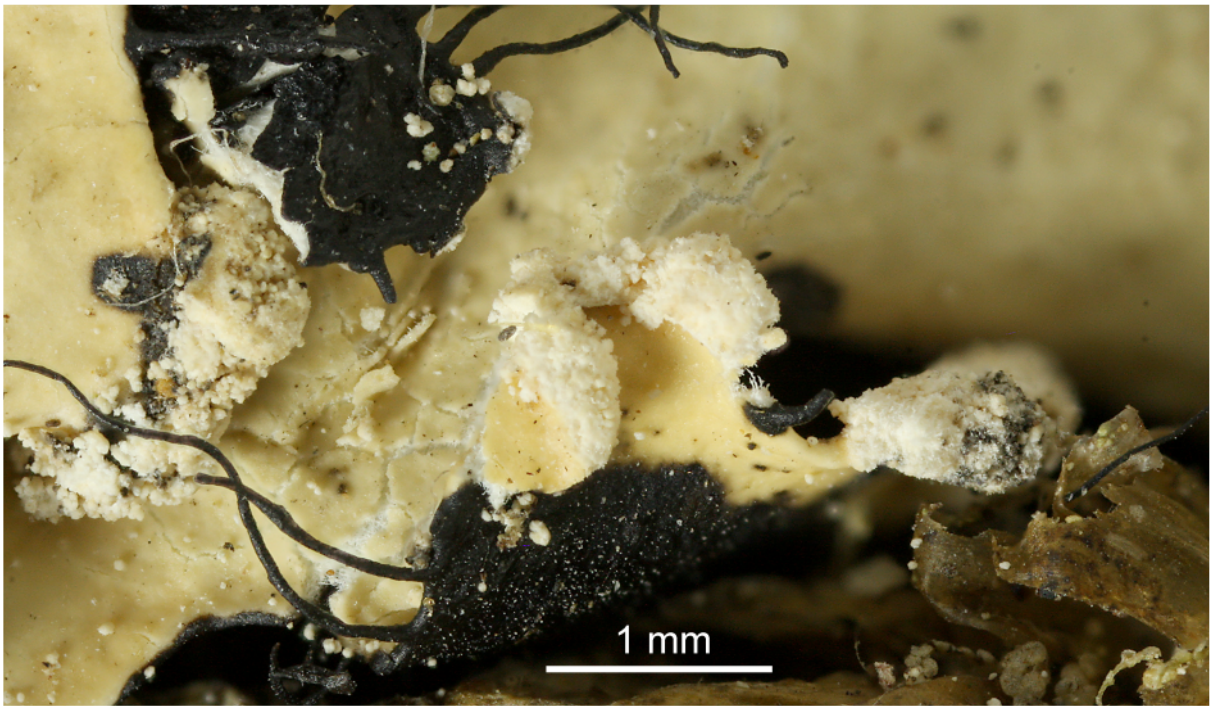
[6303], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay, tropischer Regenwald am Mt. Kitanglad ab Zwischen-Campsite , 08°09.637' N, 124°55.871' E, 1870-2800 m. Leg. Schumm 19.08.1999, det. J.A. Elix 2000.







Parmotrema dilatatum

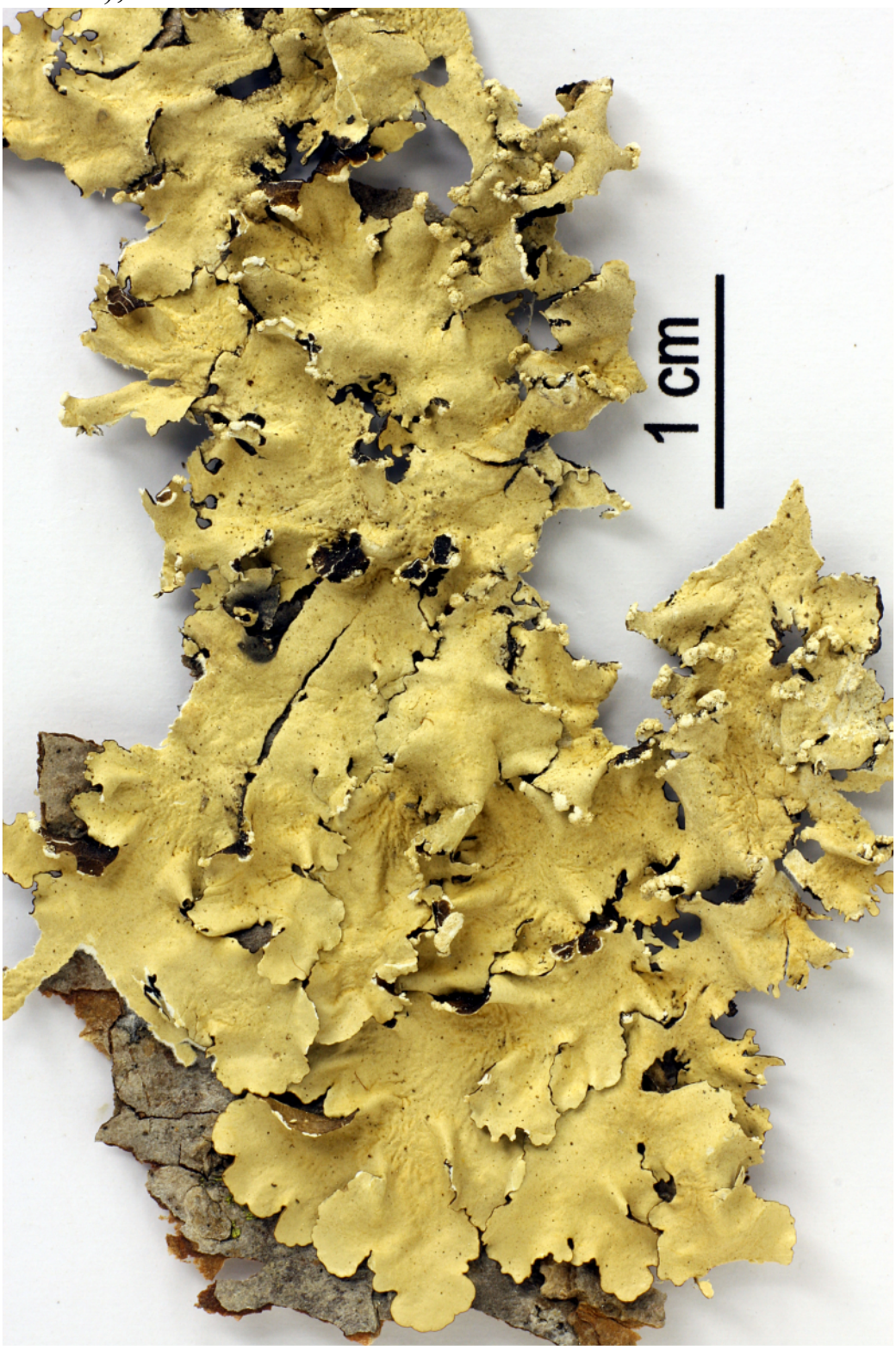


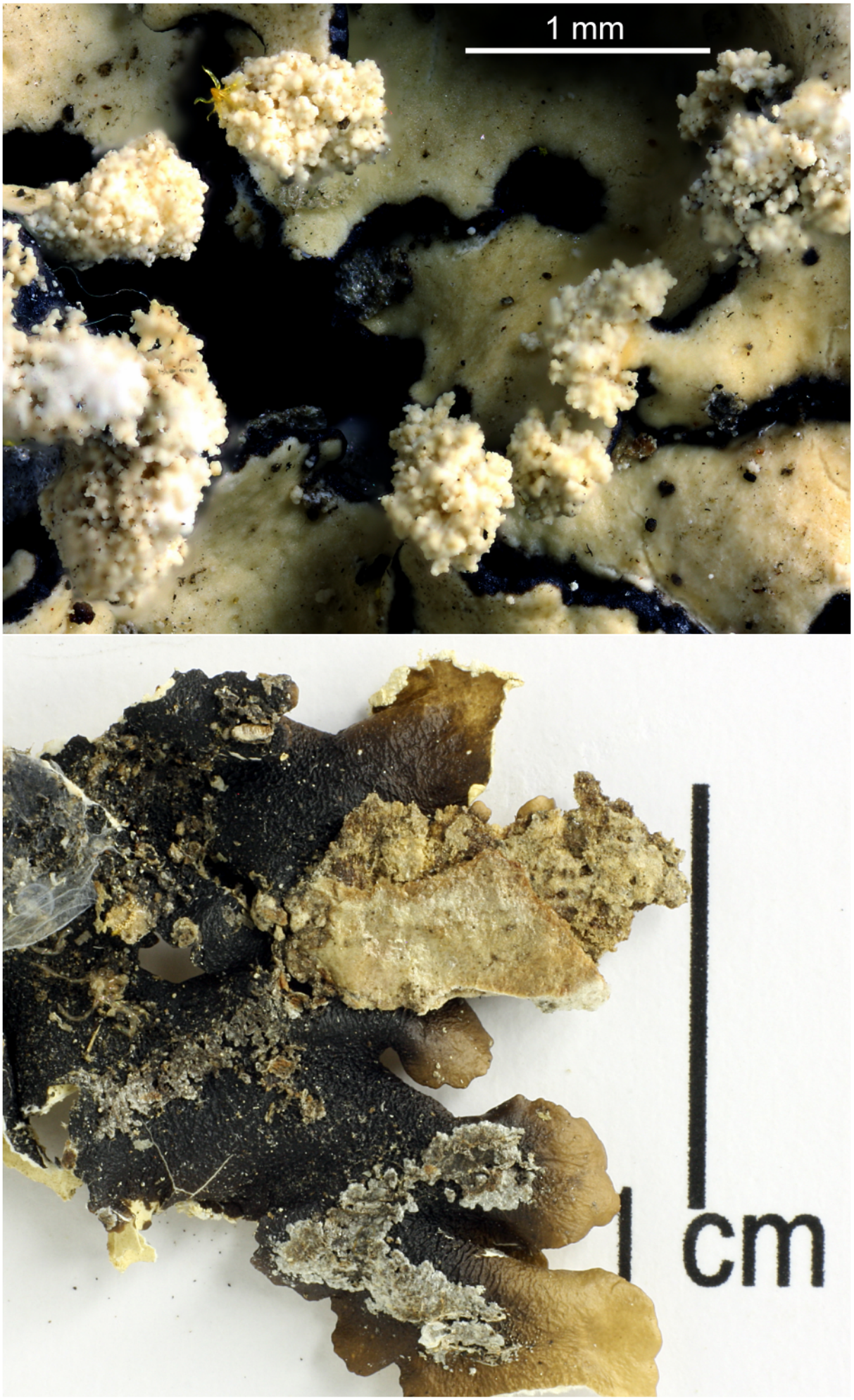
Parmotrema dilatatum

Parmotrema gardneri (C.W.Dodge) Sérus.

Soralia marginal to submarginal. Lobes ecilate or rarely sparingly ciliate. Chemistry: atranorin, protocetraric acid; upper cortex K+ yellow; medulla K+ dingy yellow the brown, C-, P+orange-red.

[9867], Australien, Queensland, 12 km S of Forrest Beach, 15 km SE of Ingham, 18°42' S, 146°18' E, 2 m. Acacia-Alphitonia dominated regrowth, on Alphitonia. Leg. J.A. Elix & H. Streimann 22.06.1984 (Nr. 15973), det. J.A. Elix.



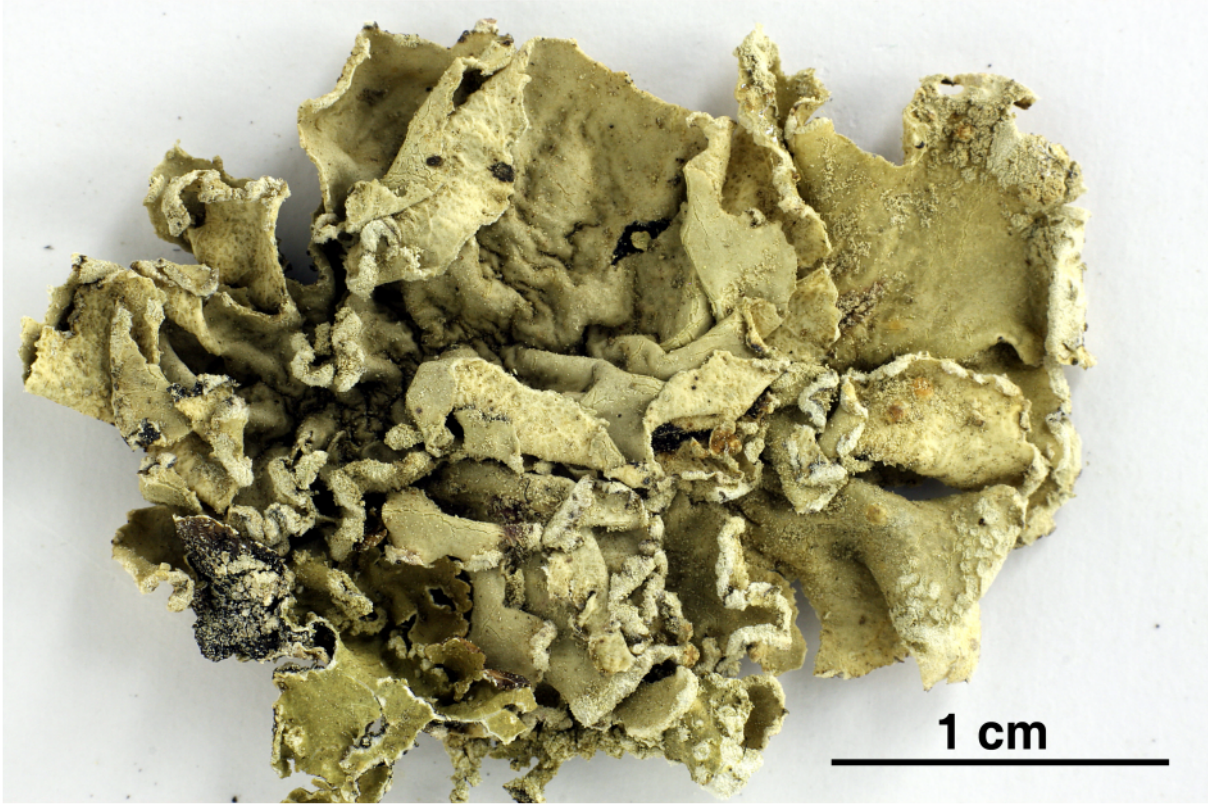


Parmotrema gardneri

Parmotrema hypoleucinum (Steiner) Hale

Thallus gray, loosely adnate, sometimes pruinose and white maculate. Isidia absent. Soredia granular, linear, marginal to submarginal. Medulla white. Lower surface black with brown to mottled white naked zone peripherally. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K+ yellow>orange, C-, KC-, P+ orange; atranorin, chloroatranorin, stictic acid (maj), constictic acid, norstictic acid (min). Pantropical.

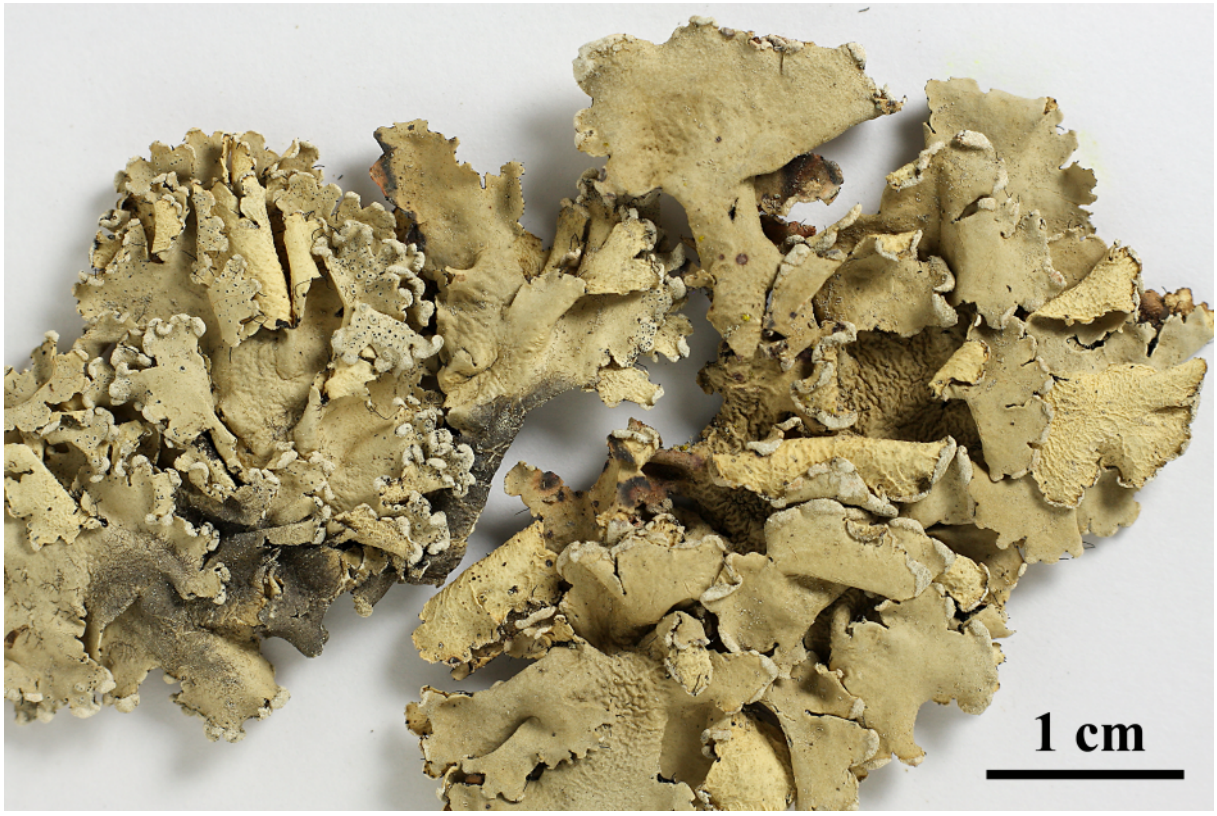
[9104], USA, California, Santa Barbara County, on *Quercus agrifolia*, grounds of Lotusland Botanical Garden, Ashley Rd., Montecito, Santa Barbara. Leg. Shirlea Tucker 04. Jan. 1996 (Nr. 34415), det. S. Tucker.

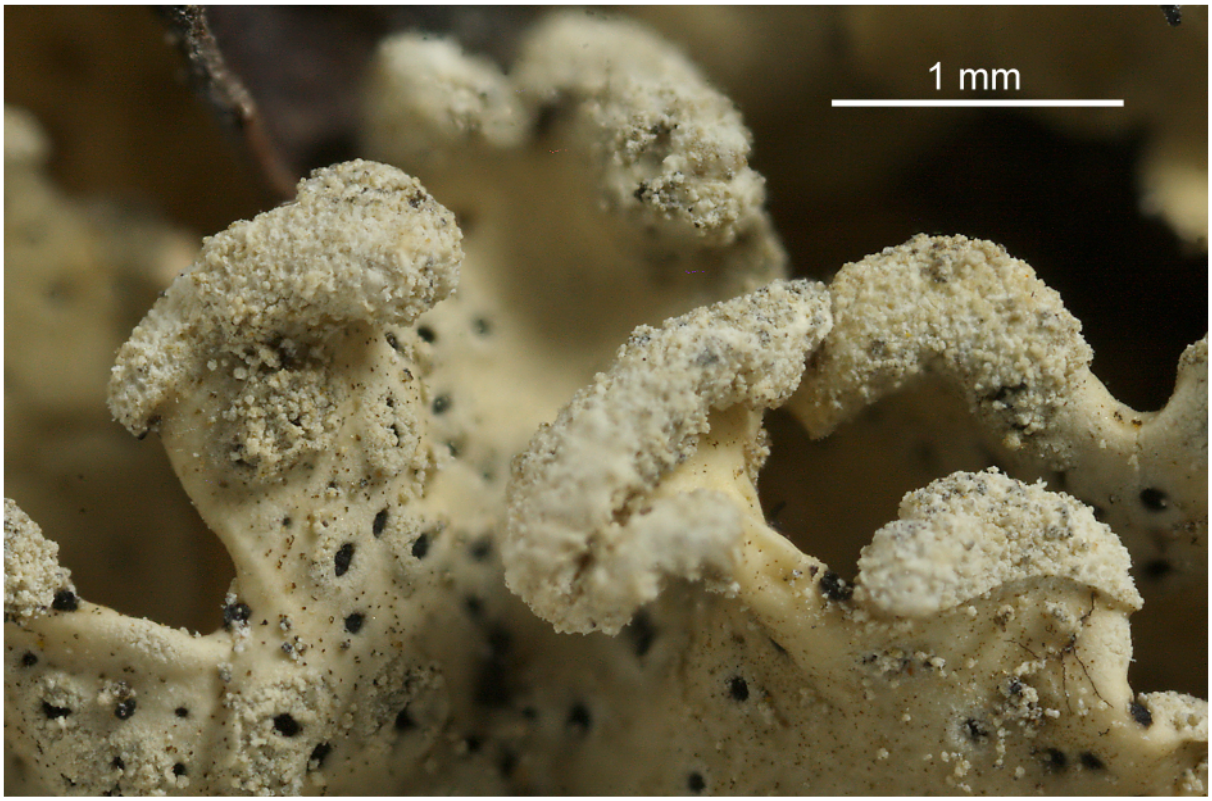


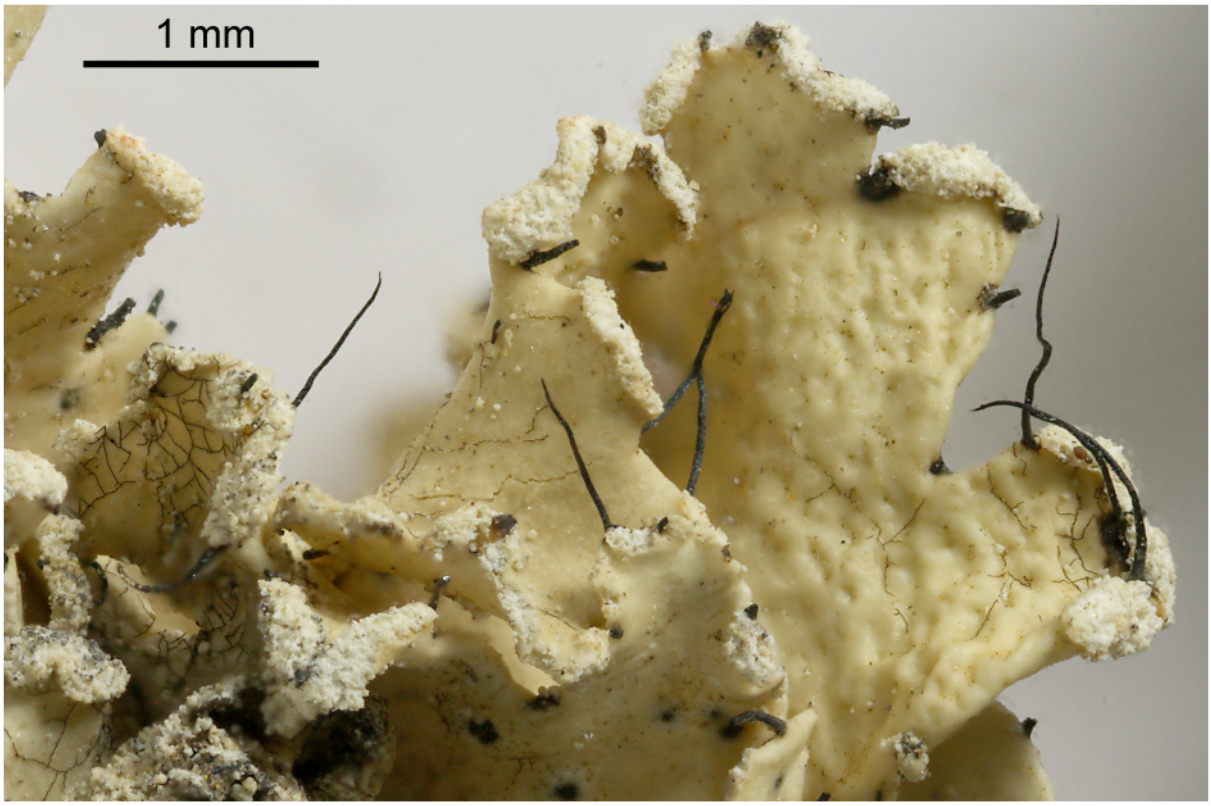
Parmotrema hypotropum (Nyl.) Hale

Thallus grey, loosely adnate, ciliate, usually distinct white maculate. Soredia granular, linear, marginal to submarginal. Isidia absent. Medulla white. Lower surface black, with broad brown to mottled white zone peripherally. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K+ yellow>orange, C-, KC-, P+ orange; atranorin, chloroatranorin, norstictic acid (maj), connorstictic acid (min). USA, Europe (unknown from Asia?). Note: Similar to *Parmotrema hypoleucinum* (Steiner) Hale and only different by chemistry.

[16779], USA, Mexico, Baja California Sur, along Rte 22, 21 km W of Ciudad Contitución, 24°59' N, 111°51' W, 30 m, southern Magdalena Region of the Sonoran Desert, on Jatropha. Leg. T.H. Nash III, 8 Jan. 1989 (Nr. 26,026), det. T.H. Nash III.

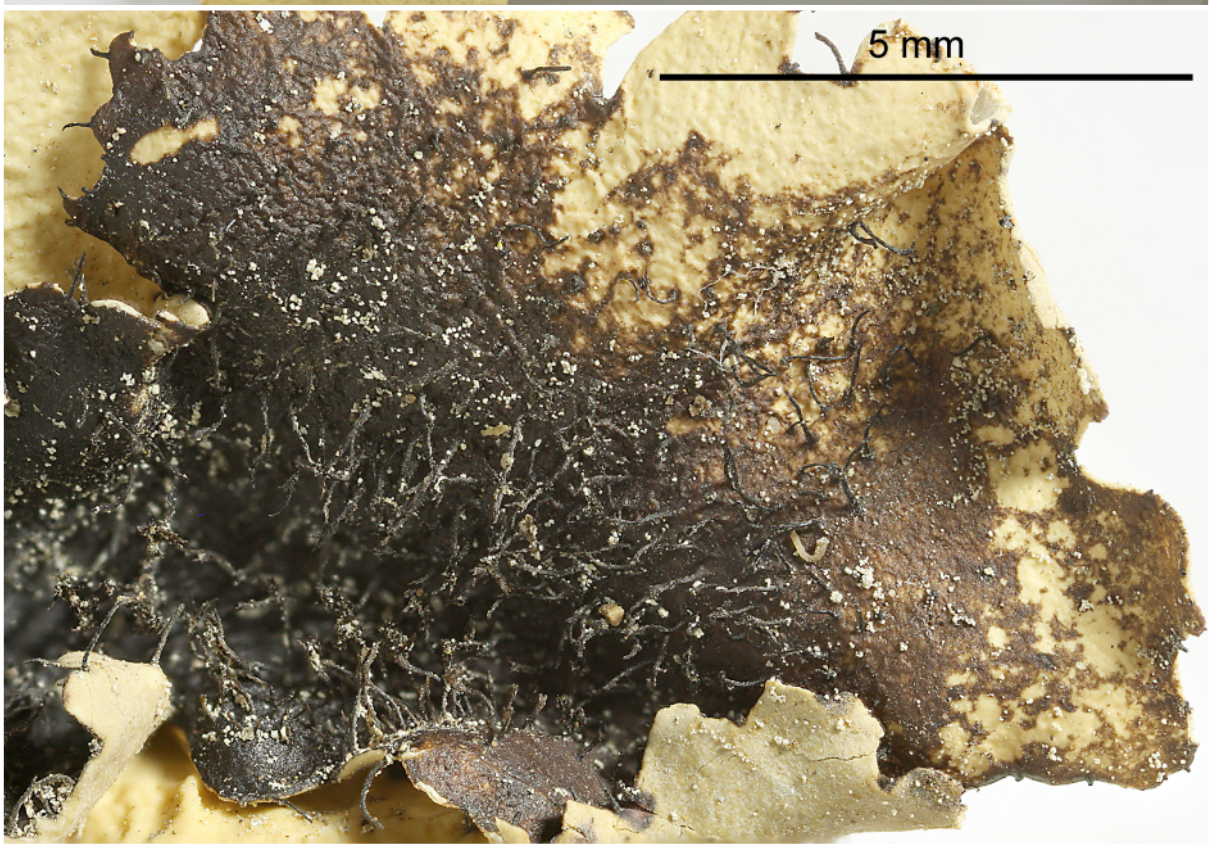






Parmotrema hypotropum





Parmotrema hypotropum

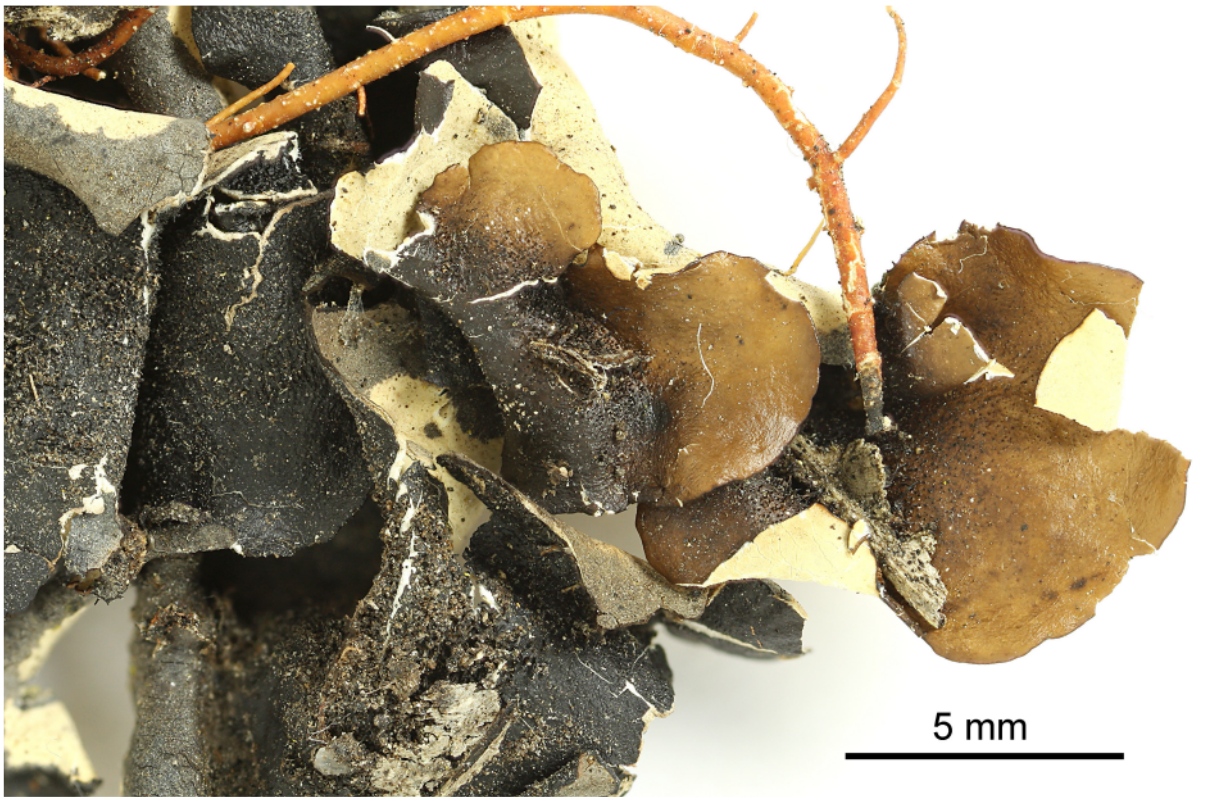
Parmotrema latissimum (Fée) Hale

Thallus grey, loosely attached, eciliate, emaculate. Isidia and soredia absent. Medulla white. Lower surface black, with up to 10 mm wide, erhizinate, dark tan marginal zone. Apothecia common, substipate, imperforate. Ascospores simple, hyaline, 8/ascus, 24-32 x 13-18 µm. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K+ yellow>>red, C-, KC-, P+ orange-red; atranorin, salazinic acid (maj), consalazinic acid (min). Corticolous, neotropical, India.

[4966], Peru, Anden, Machu Picchu, ca. 2430 m. Leg. F. Schumm 07.08.1980, det. H. Sipman 1998





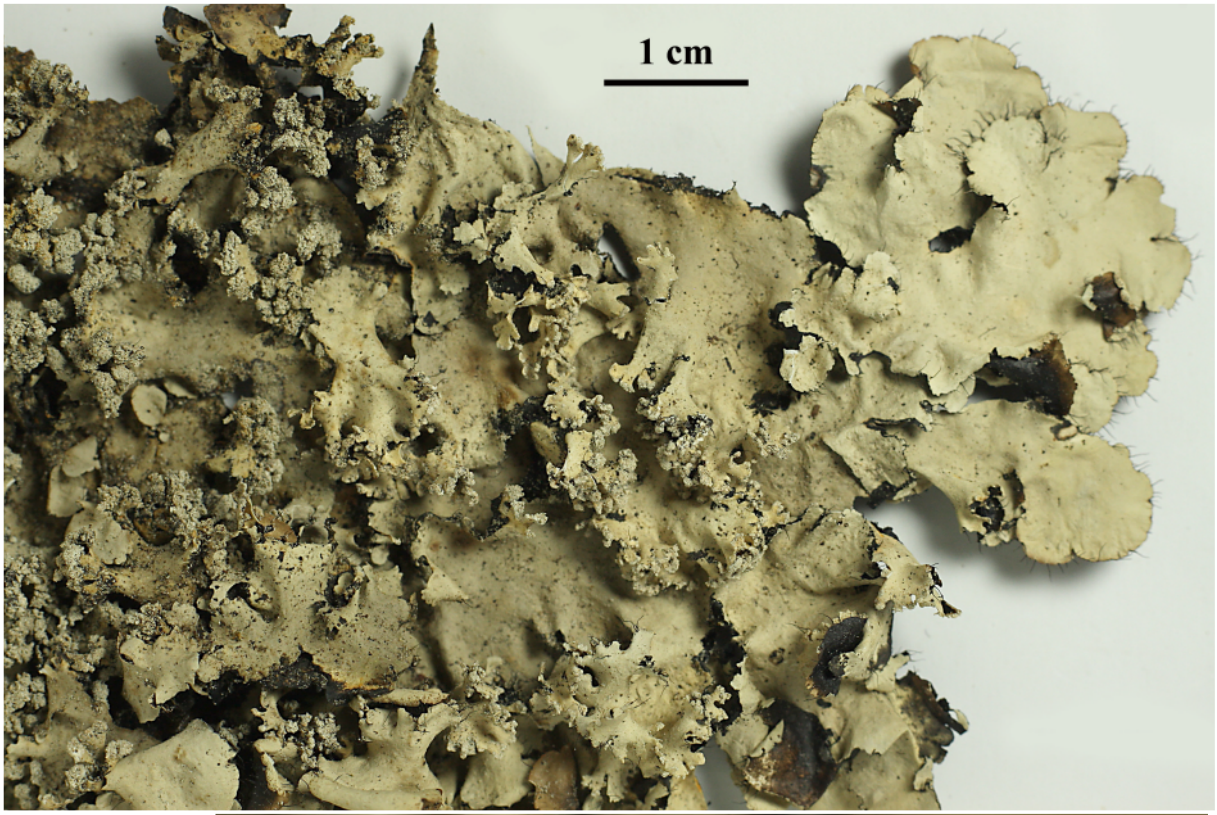


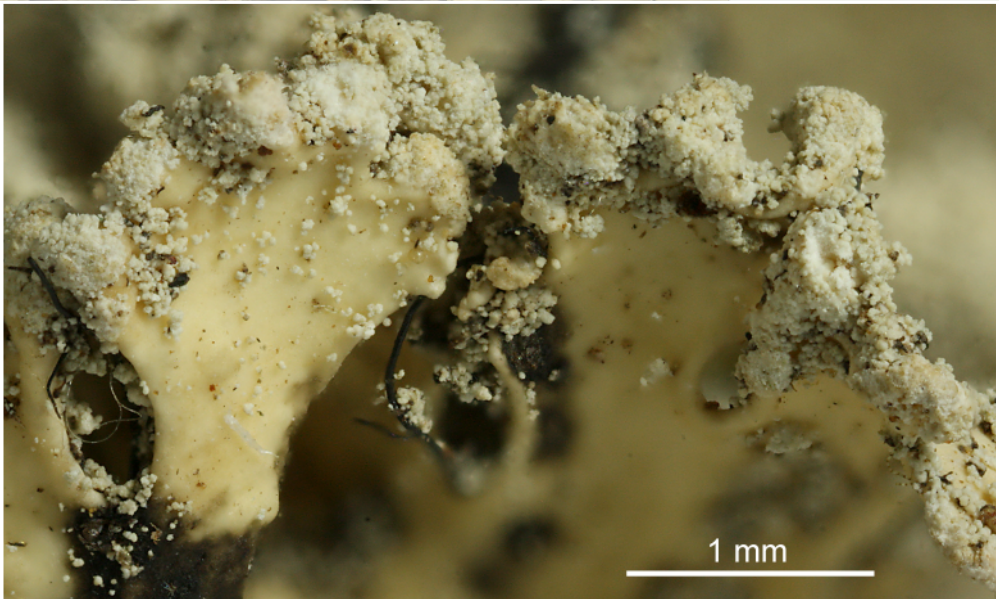
Parmotrema latissimum

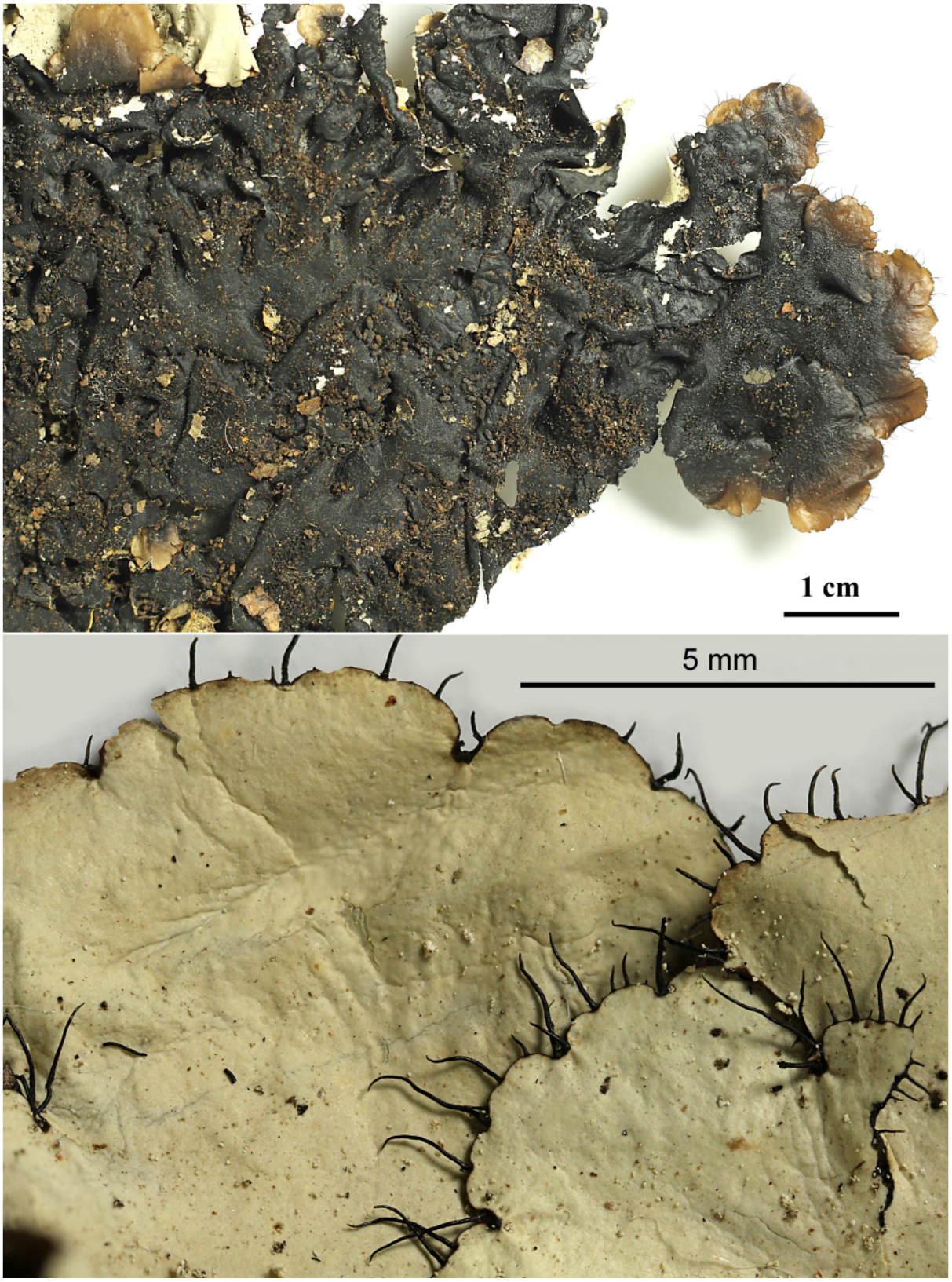
Parmotrema mellissii (C.W.Dodge) Hale

Thallus grey, 5-10 cm wide. Lobes 3-12 mm wide, margins crenate to isidiate. Cilia common, 2-4 mm long. Sorediate, sorediate-isidiate or isidiate especially near lobe margins. Medulla white with brown and K+ purple patches. Chemistry: cortex K+ yellow; medulla K- or pigmentet parts K+ purple, C-, KC+ red; atranorin (major), alectoronic acid (major), α-collatolic acid (major), dehydro-α-collatolic acid (trace), skyrin (±).

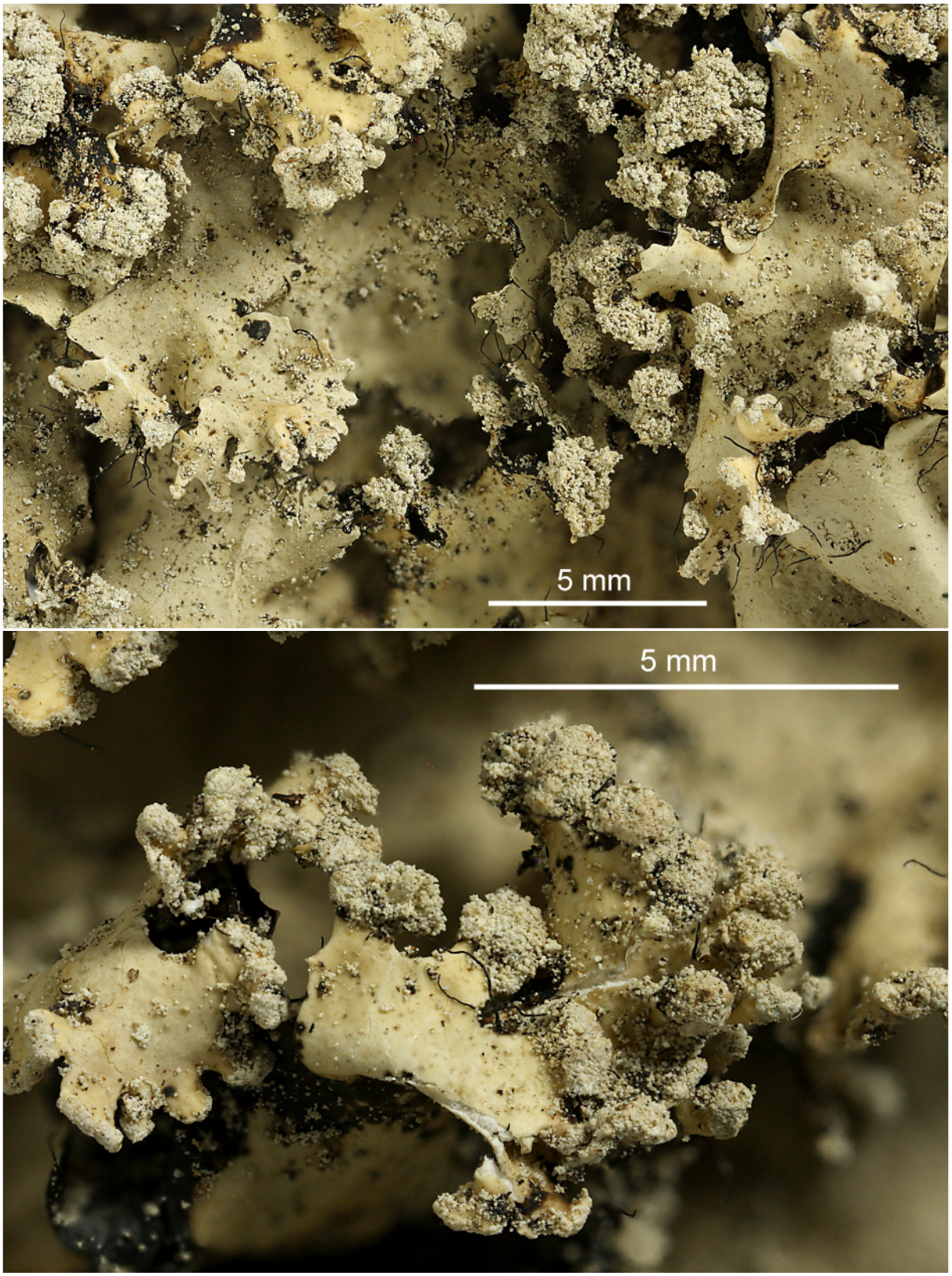
[7962], Philippinen, Leyte, Prov. Leyte, Lake Kasudsuran (11°01.539' N, 124°44.931' E, 740 m) bei Barangay Liberty (Ormoc-City), c. 700 m. Leg. Schumm 23.08.2000, det. JA Elix 28.09.2000.







Parmotrema mellissii



Parmotrema mellissii

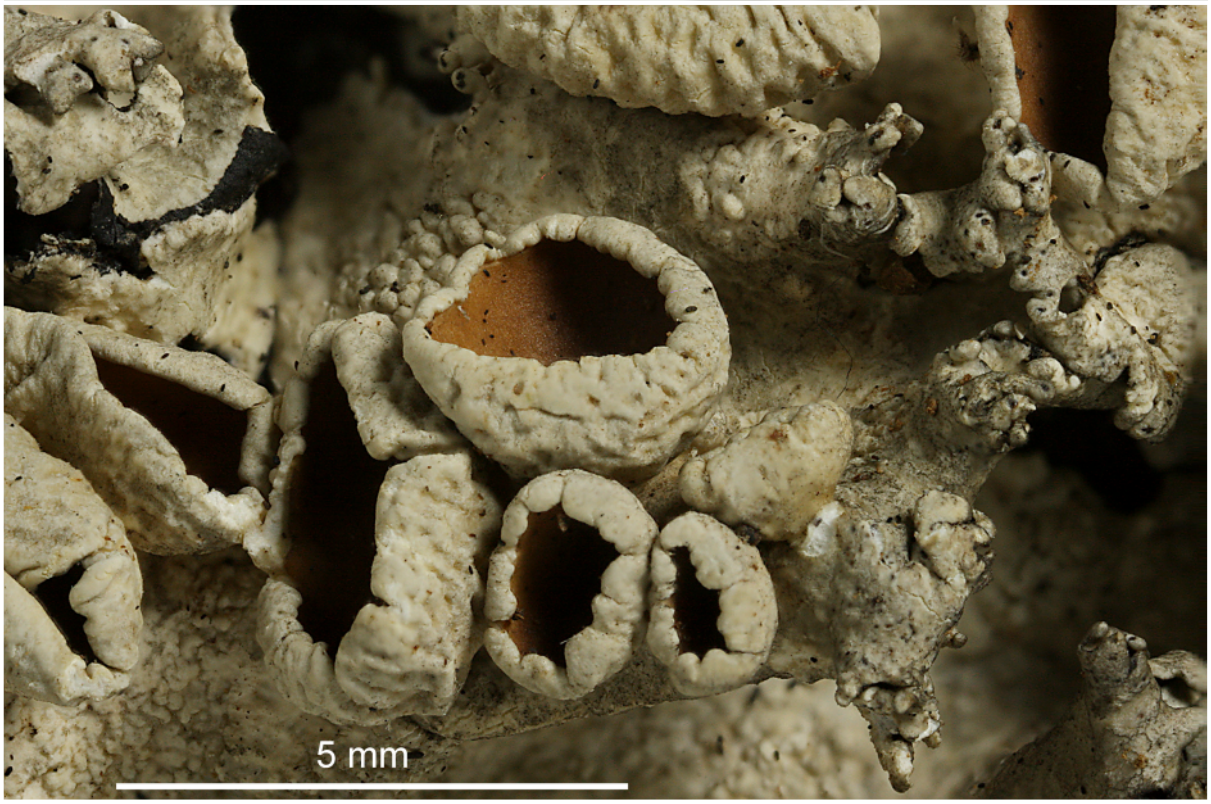
Parmotrema merrillii (Vain.) Hale

Thallus grey, 8-10 cm wide. Lobes 10-15 mm wide, not or sparsely ciliate. Isidia and soredia absent. Apothecia abundant, 4-10 mm. Chemistry: Thallus K+ yellow; medulla K-, C-, KC+ orange, P+ red; atranorin (minor), protocetraric acid (major). Note: similar to *Parmotrema corniculans* (Nyl.) Hale which contains alectoronic acid. Lit. Hale (1965).

[7757], Philippinen, Leyte, Prov. Leyte, Weg vom Gipfel des Mt. Agipo (10°46.729' N, 124°49.781' E, 885 m) nach Kadwa-An (10°46.249' N, 124°48.167'E, 195 m), bei 444 m. Leg. Schumm 18.08.2000, det. JA Elix 09.11.2000.







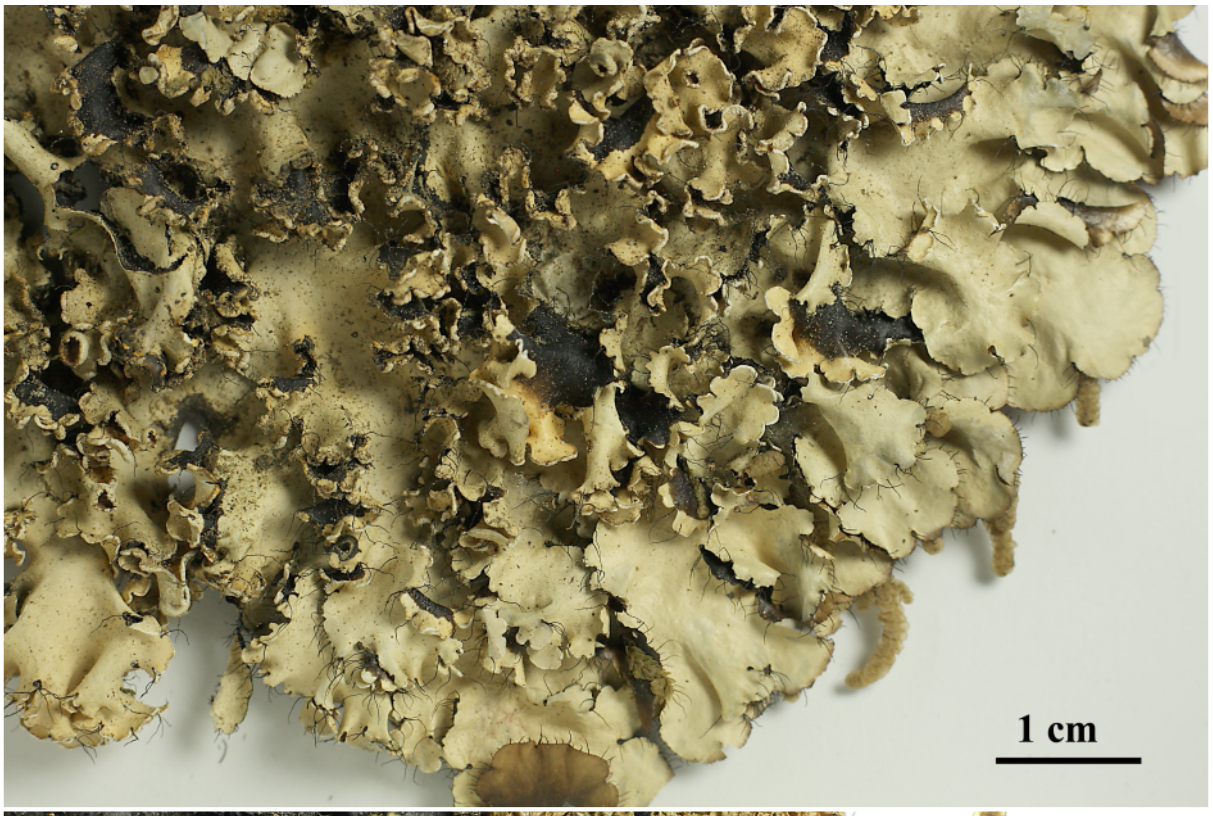
Parmotrema merrillii

Parmotrema negrosorientalum Elix & Schumm

Thallus corticolous, foliose, loosely adnate, coriaceous, to 8–12 cm wide. Lobes imbricate, subirregular, 5-12 mm wide; margins crenate or irregularly incised-dentate, ascending or revolute; cilia moderately dense, 0.2-5.0 mm long; lobules rare along the lobe margins. Upper surface pale grey to grey-green, flat, ±maculate, irregularly cracked, ±with black discoloured patches, isidia absent; soralia linear on small incised marginal laciniae or on ascending lobe margins, sometimes spreading submarginally, with marginally sorediate lobes becoming involute; soredia farinose, becoming blackened with orange patches on older lobes in the thallus centre. Medulla white, becoming orange-red in older lobes particularly adjacent to lower cortex. Lower surface black, with a white to pale brown erhizinate marginal zone; rhizines unevenly distributed, simple, slender, to 1 mm long. Apothecia rare, submarginal, stipitate to substipitate, 3-10 mm wide; disc perforate or imperforate, becoming undulate distorted; thalline exciple strongly rugose and maculate, becoming sorediate, thalline margin crenate. Ascospores ellipsoid, 26-30 x 10-17 µm. Pycnidia rare, immersed -only immature pycnidia observed. Chemistry: Cortex K+ yellow; medulla K-, C-, KC+ red, P-; pigmented medulla K+ violet; containing atranorin (minor), chloroatranorin (minor), alectoronic acid (major), α-collatolic acid (major), dehydrocollatolic acid (minor), skyrin (minor).
Parmotrema negrosorientalum closely resembles *P. rampoddense* (Nyl.) Hale, as these two species have similar loosely adnate thalli with prominent cilia, marginal soralia and contain alectoronic acid, α-collatolic acid and skyrin in the medulla. However, *P. negrosorientalum* can clearly be separated by the larger, coriaceous thallus (membranaceous in *P. rampoddense*), the often maculate upper surface (emaculate in *P. rampoddense*), ultimately perforate apothecial discs (imperforate in *P. rampoddense*), and the much larger spores (26-30 x 10-17 µm cf. 10-12 x 6-7 µm). In overall morphology P. negrosorientalum closely resembles *P. lobulascens*, but the latter species lacks the orange-red pigmentation of the lower medulla and soralia. This pigmentation is due to substantial concentrations of the bis-anthraquinone, skyrin. Lit. Elix & Schumm (2001, Mycotaxon 79)

[7521], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail vom Camp Vendiola (09°16.281’ N, 123°11.410’ E) bis zum Lake Nailig (9°14.882’ N,

123°10.490’ E), zwischen 1100-1600 m, bei 1170 m. Leg. Schumm 10.08.2000, det. JA Elix 2001. HOLOTYPUS.

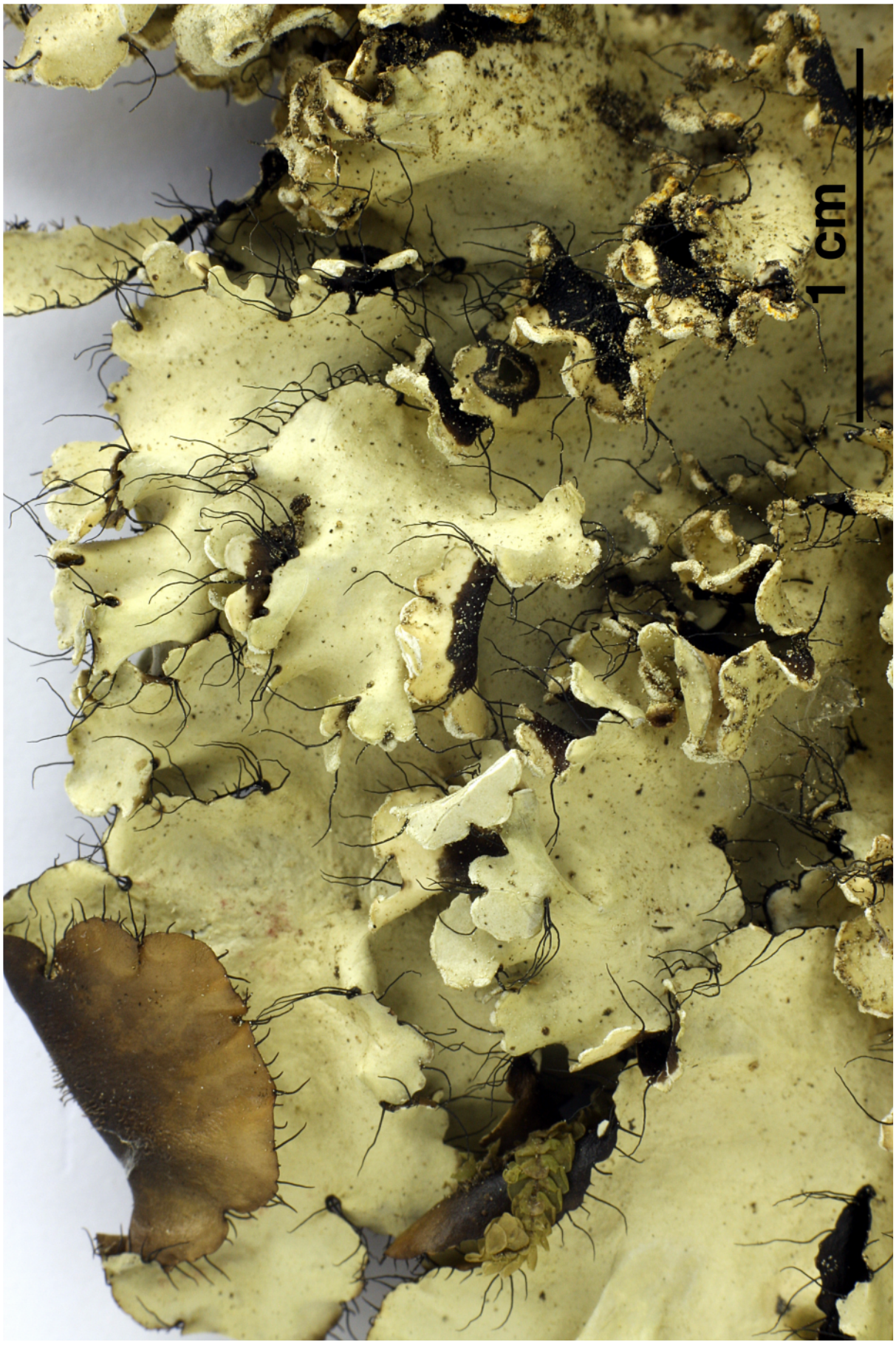




Parmotrema negrosorientalum



Parmotrema negrosorientalum



Parmotrema negrosorientalum

Parmotrema perforatum (Jaqu.) A.Massal.

Thallus grey, loosely attached, epruinose, ciliate, white maculate, reticulate cracked with age. Isidia and soralia absent. Medulla white. Lower surface black with brown erhizinate marginal zone. Apothecia substipate, up to 20 mm, perforate. Ascospores 12-16 µm, hyaline, simple, 8/ascus. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K+ yellow>orange, C-, KC-, P+ orange; atranorin, norstictic (maj), connorstictic (min) acids.

[2418], U.S.A., Texas, Guadalupe County, 10 miles south of Seguin R. Schmitt farm, County Road 419, 29°26' N, 98°00' W, on mesquite bark. Leg. Claire K. Schmitt 19.04.1976 (Nr. 634), det. Schmitt.





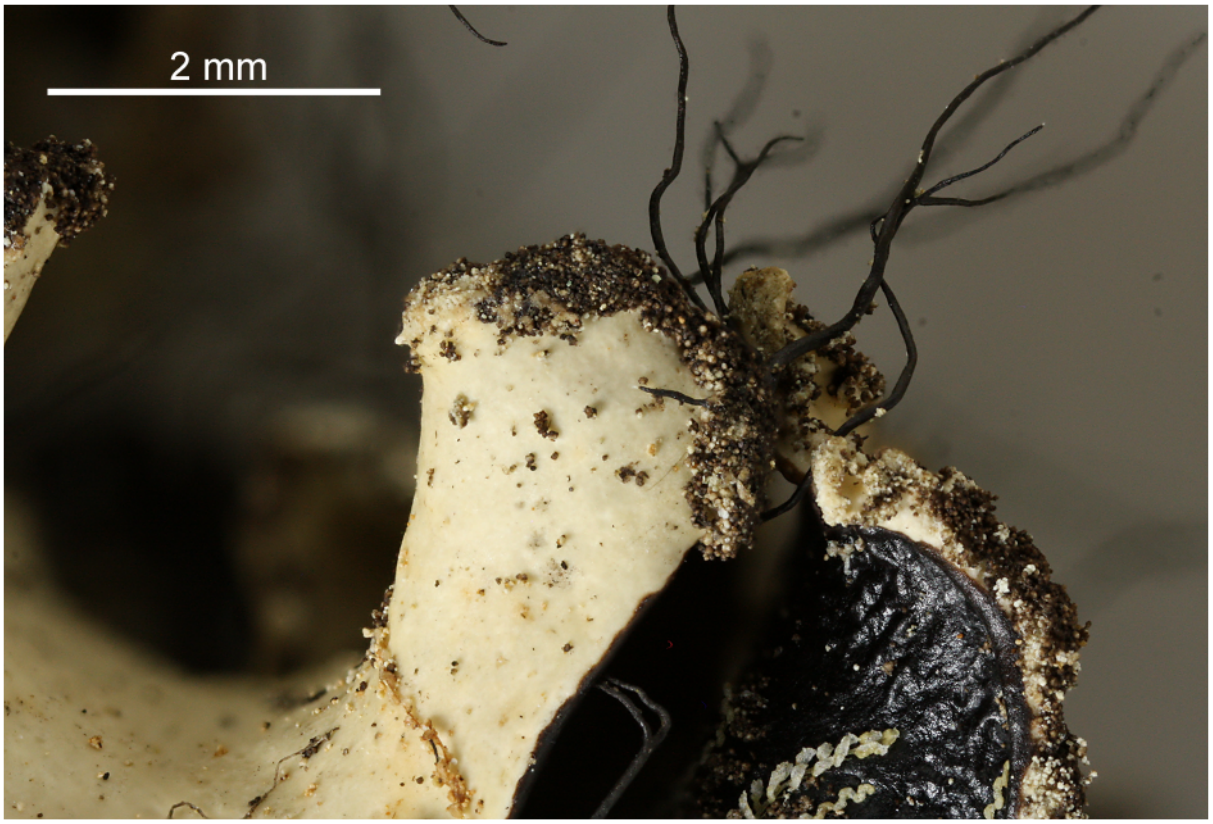
Parmotrema perforatum

Parmotrema permutatum (Stirt.) Hale

Thallus grey to grey-green, loosely adnate, ciliate, emaculate, becoming cracked. Isidia absent. Soralia linear, marginal to submarginal. Medulla white in upper half, lower part yellow or salmon pink. Lower surface black, with broad, brown, erhizinate marginal zone. Chemistry: cortex K+ yellow; medulla K-, C+ pink, KC+ pale pink, P-, pigmented medulla K-; atranorin (minor), chloroatranorin (minor), gyrophoric acid (major), lecanoric acid (minor), secalonic acid A2 (trace), eumitrin N1 (trace), orcinol (trace).

[5941], Philippinen, Mindanao, Provinz Cotabato, tropischer Bergregenwald nahe der Lake Agko campsite am Fuß des Mt. Apo, 07°01.167' N, 125°13.375' E, 1240 m. Leg. Schumm 07.08.1999, det. Elix 29.03.2000.







Parmotrema permutatum



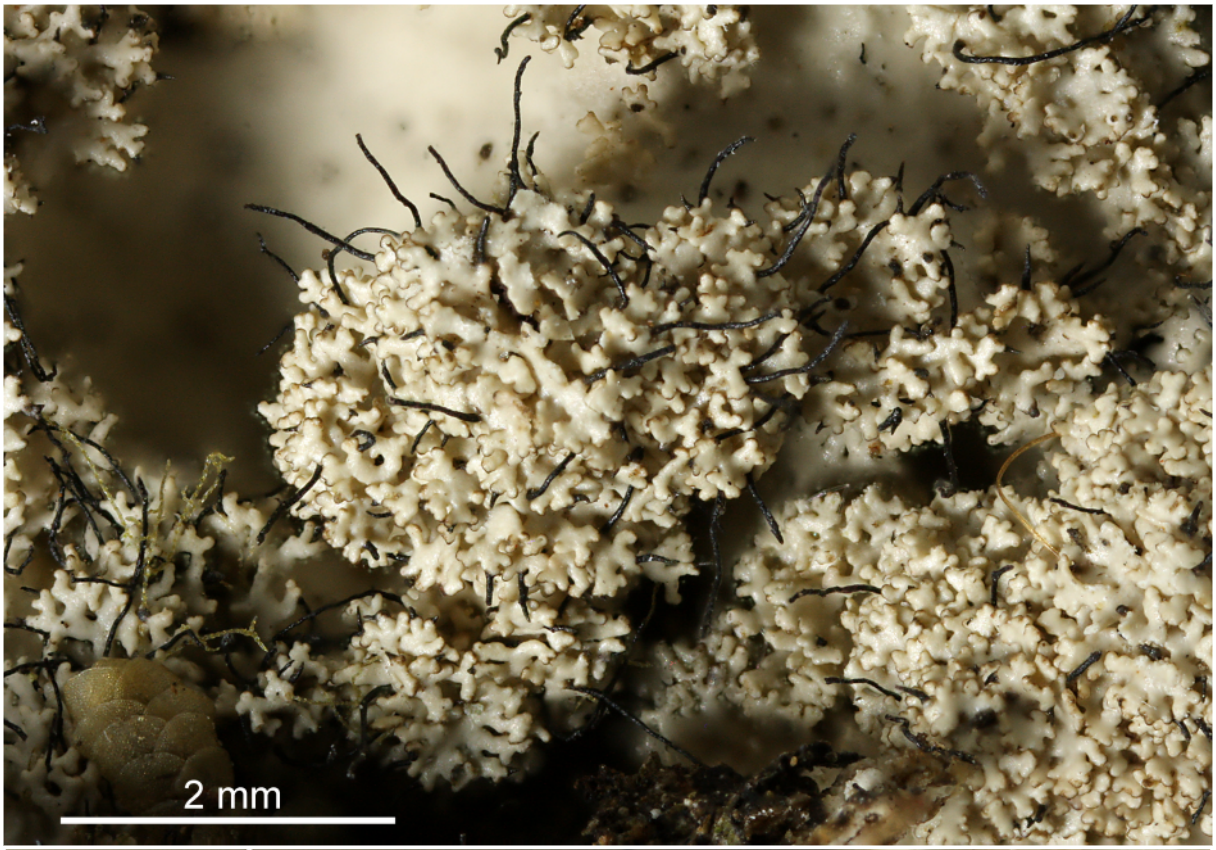
Parmotrema permutatum

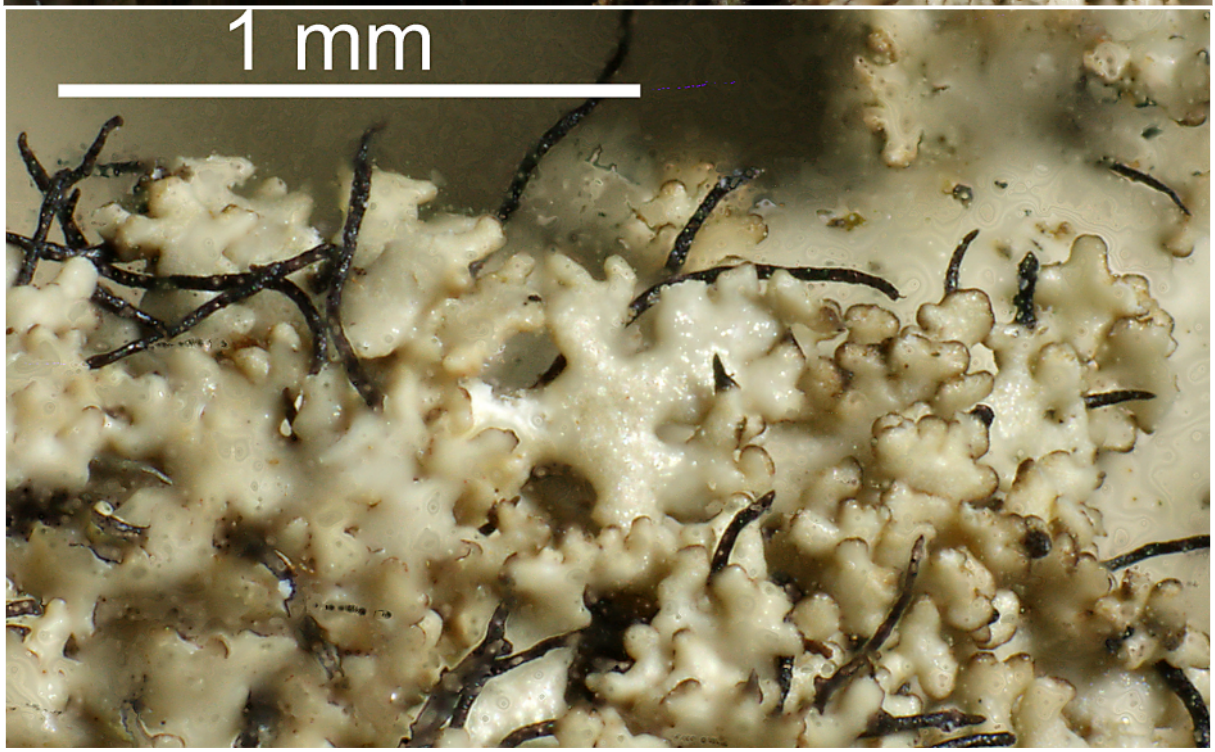
Parmotrema planatilobatum (Hale) Hale

Thallus pale grey, loosely attached, ciliate, emaculate, isidiate. Soralia absent. Isidia marginal and laminal, dorsiventral, palmately devided, coralloid, often cilate. Medulla white. Lower surface black, with 3-5 mm broad, erhizinate, brown marginal zone. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; atranorin, gyrophoric acid.

[4997], Indonesien, Java, bei einem pyramidalen Hindutempel aus dem 14. Jh., an den Hängen des Lawu, Permugaran, Candi Sukuk, ca. 1000 m. Leg. Schumm 30.12.1988, det. H.Sipman 1998.





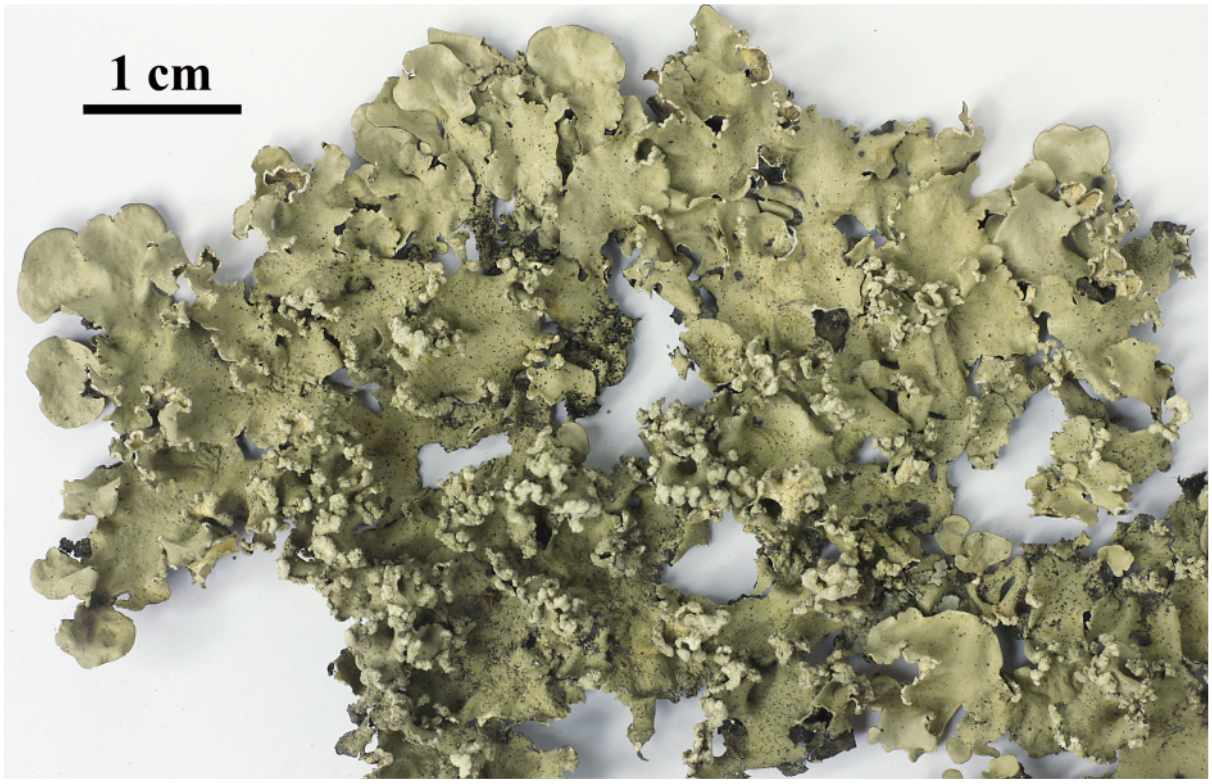


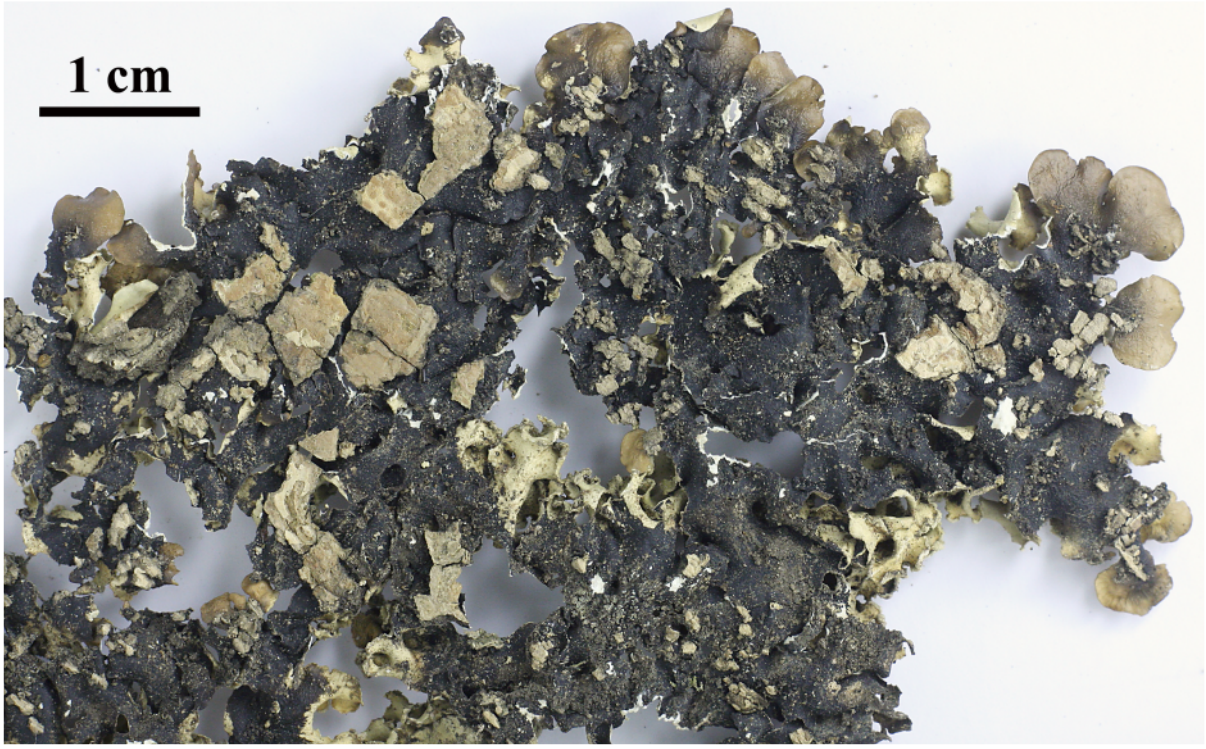
Parmotrema planatilobatum

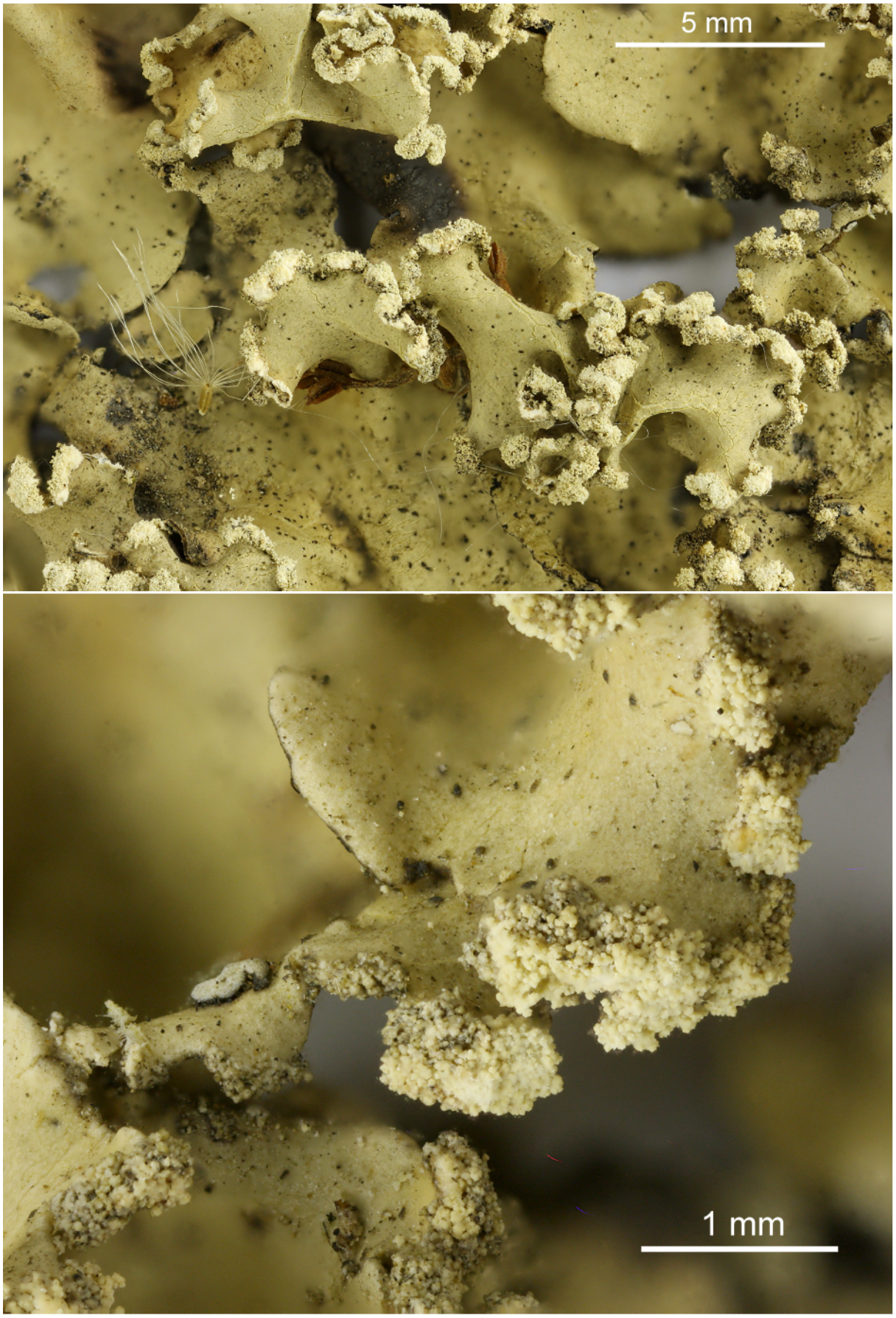
Parmotrema praesorediosum (Nyl.) Hale

Thallus 5-10 cm wide, lobes 4-8(-10) mm wide, lacking isidia. Margins ascending, sorediate, eciliate. Cortex K+ yellow, medulla K-, C-, KC-, P-, atranorin (min), chloroatranorin, protopraesorediosic acid (maj), praesorediosic acid (maj), fatty acids (min, tr).

[9552], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen. 20°06.275' N, 99°37.524' E, 700 m, on bark. Leg. Schumm 31.03.2002, det. Schumm 04.2002, test. J.A. Elix 11.2002.







Parmotrema praesorediosum

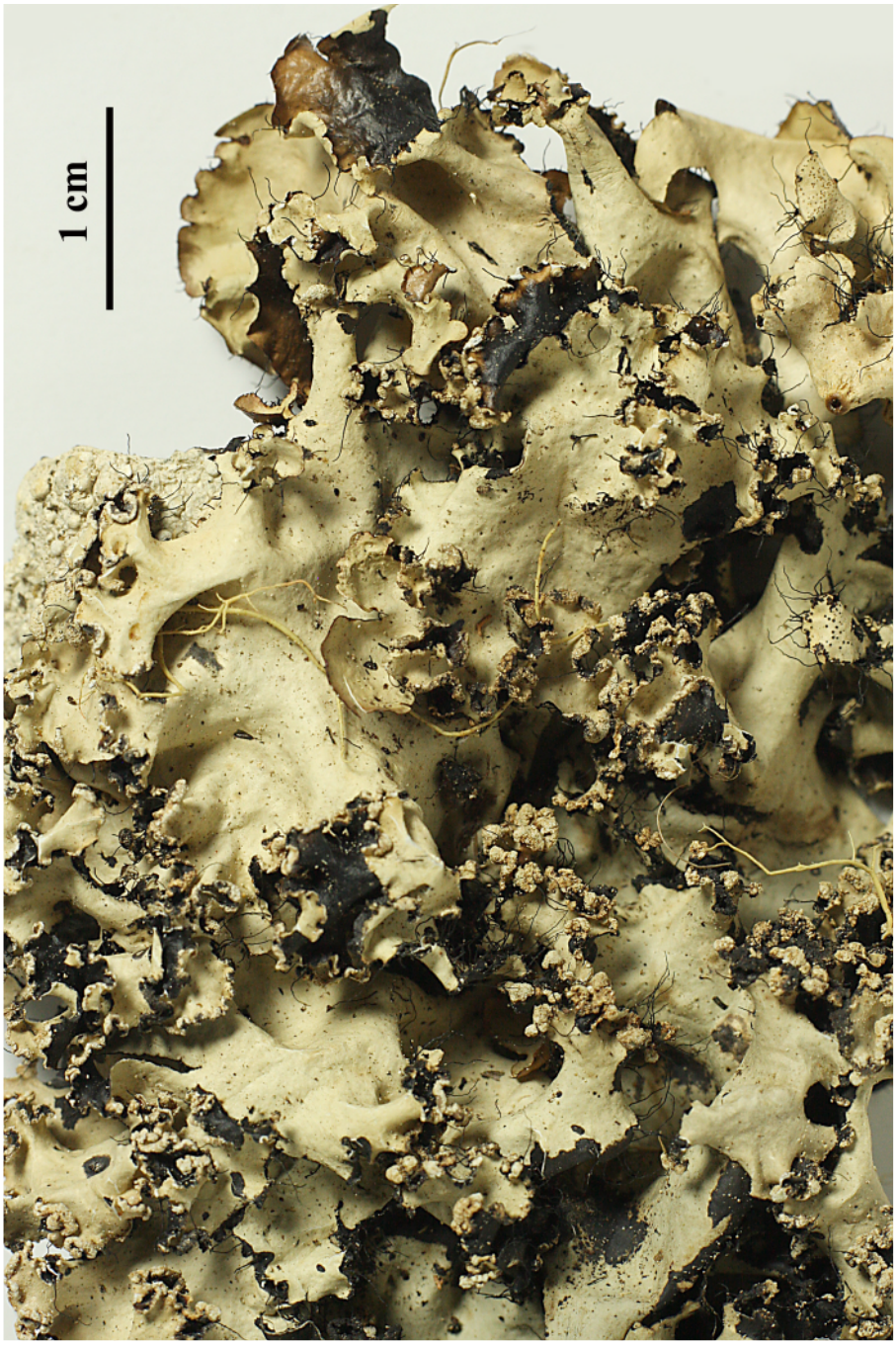


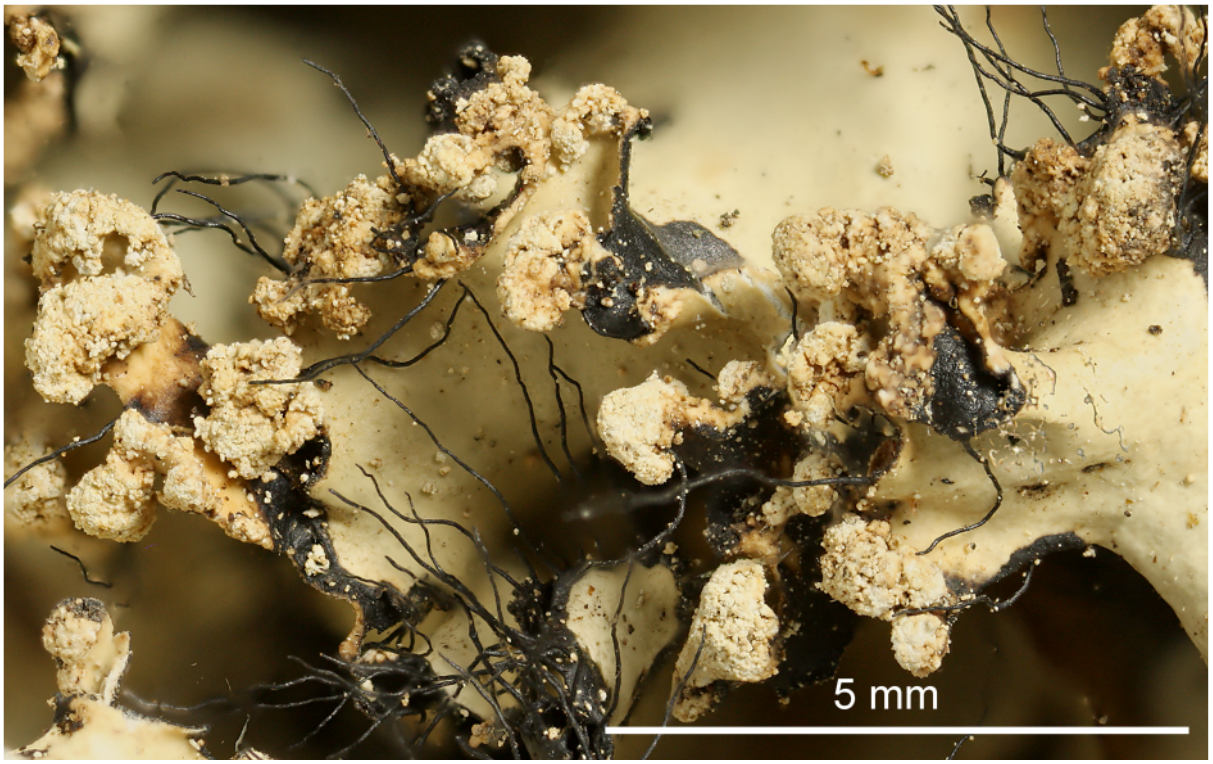
Parmotrema praesorediosum

Parmotrema pseudonilgherrense (Asahina) Hale

Thallus grey, 5-10 cm wide. Lobes 8-15 mm wide. Isidia absent. Cilia present. Soralia mainly marginal or submarginal, linear, pustular and punctiform or sometimes spreading and becoming confluent on revolute lobes. Medulla white. Chemistry: cortex K+ yellow; medulla K-, C-, KC+ red, P-; atranorin (minor), alectoronic acid (major), α-collatolic acid (major), methyl-pseudoalectoronate (minor) [det. Elix 2000, solvent C]. .Note: Very similar is *Parmotrema lobulascens* (Steiner) Hale, which contains gyrophoric acid.

[6071], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald am Lake Venado, ca. 07°00.181’ N, 125°16.166’ E, 2200 m. Leg. Schumm 10.08.1999, det. Schumm 2011.





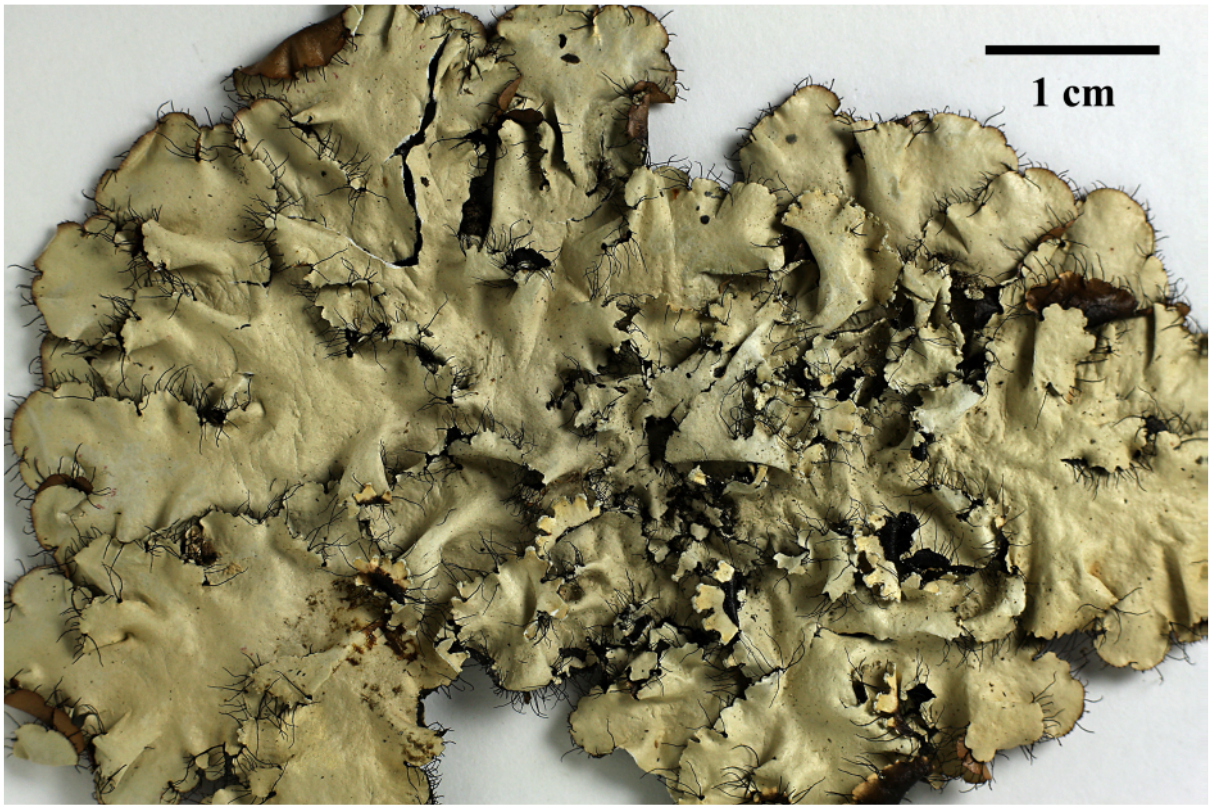


Parmotrema pseudonilgherrense

Parmotrema rampoddense (Nyl.) Hale

Thallus grey, loosely adnate, ciliate, emaculate. Isidia absent. Soralia linear, mainly marginal, sorediate lobes becoming involute. Medulla white, in part orange-red pigmented. Lower surface black, with broad, brown, erhizinate marginal zone. Chemistry: cortex K+ yellow; medulla: K-, C-, KC+ red, P-, pigmented medulla K+ purple; atranorin (minor), alectoronic acid (major), α-collatolic acid (major), ± skyrin.

[7467], Philippinen, Negros, Prov. Negros Oriental, Mt. Talinis (Cuernos de Negros), Lunga Nature Trail vom Camp Vendiola (09°16.281’ N, 123°11.410’ E) bis zum Lake Nailig (9°14.882’ N, 123°10.490’ E), zwischen 1100-1600 m, bei 1180 m. Leg. Schumm 10.08.2000, det. J.A Elix 9.11.2000.







Parmotrema rampoddense

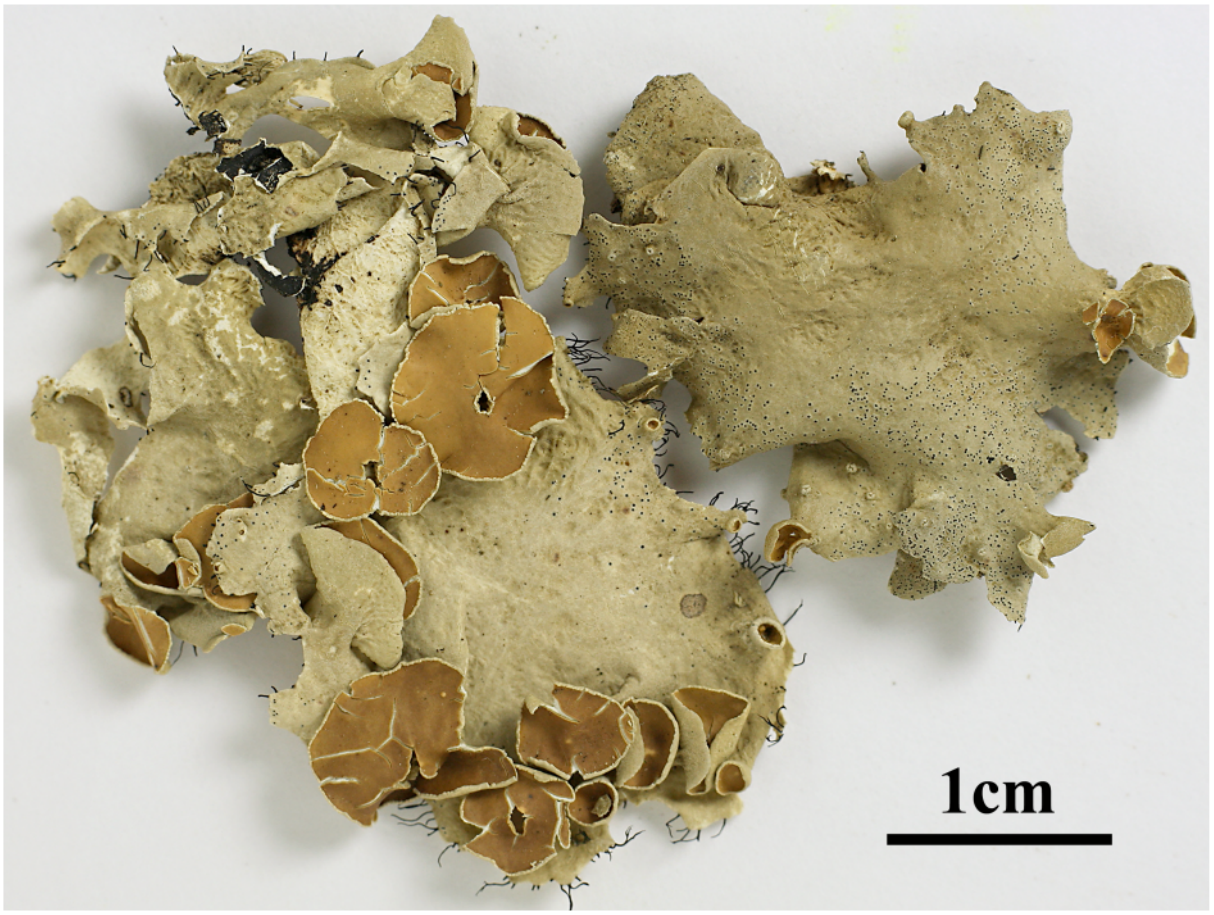


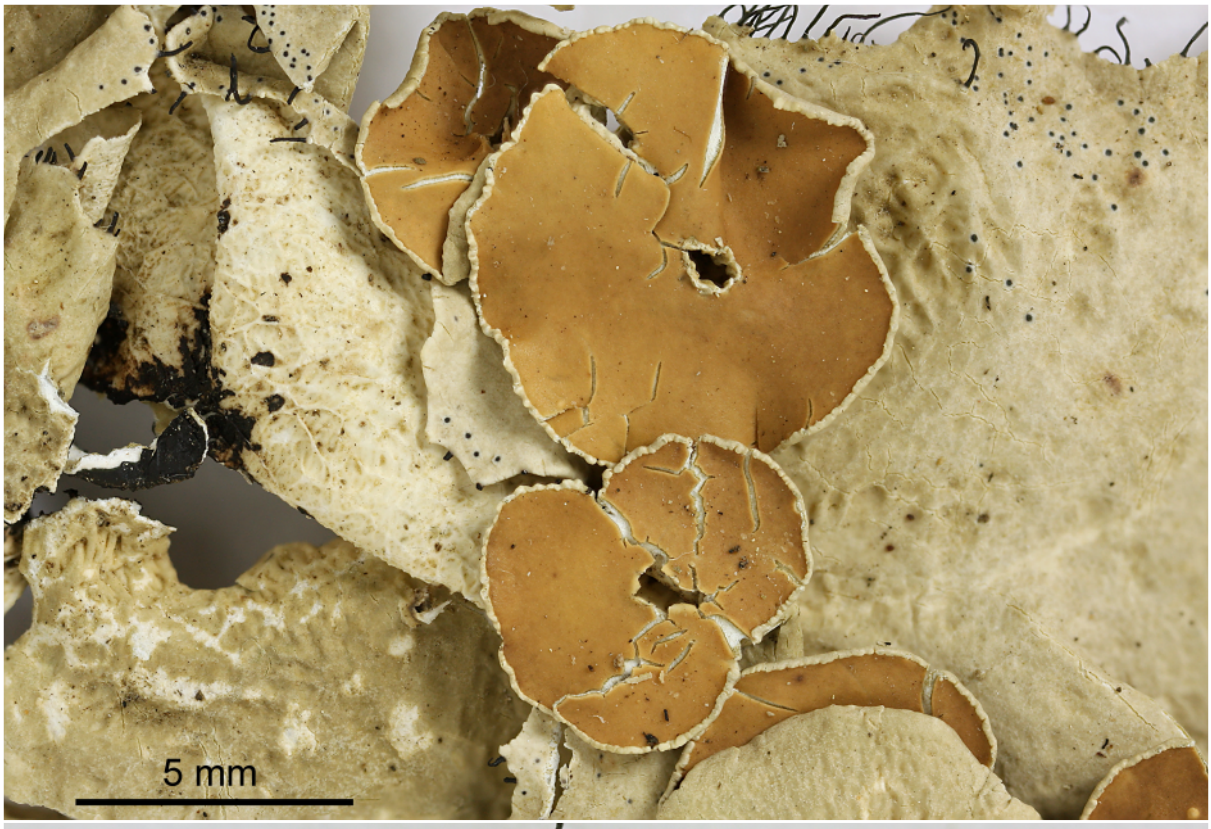
Parmotrema rampoddense

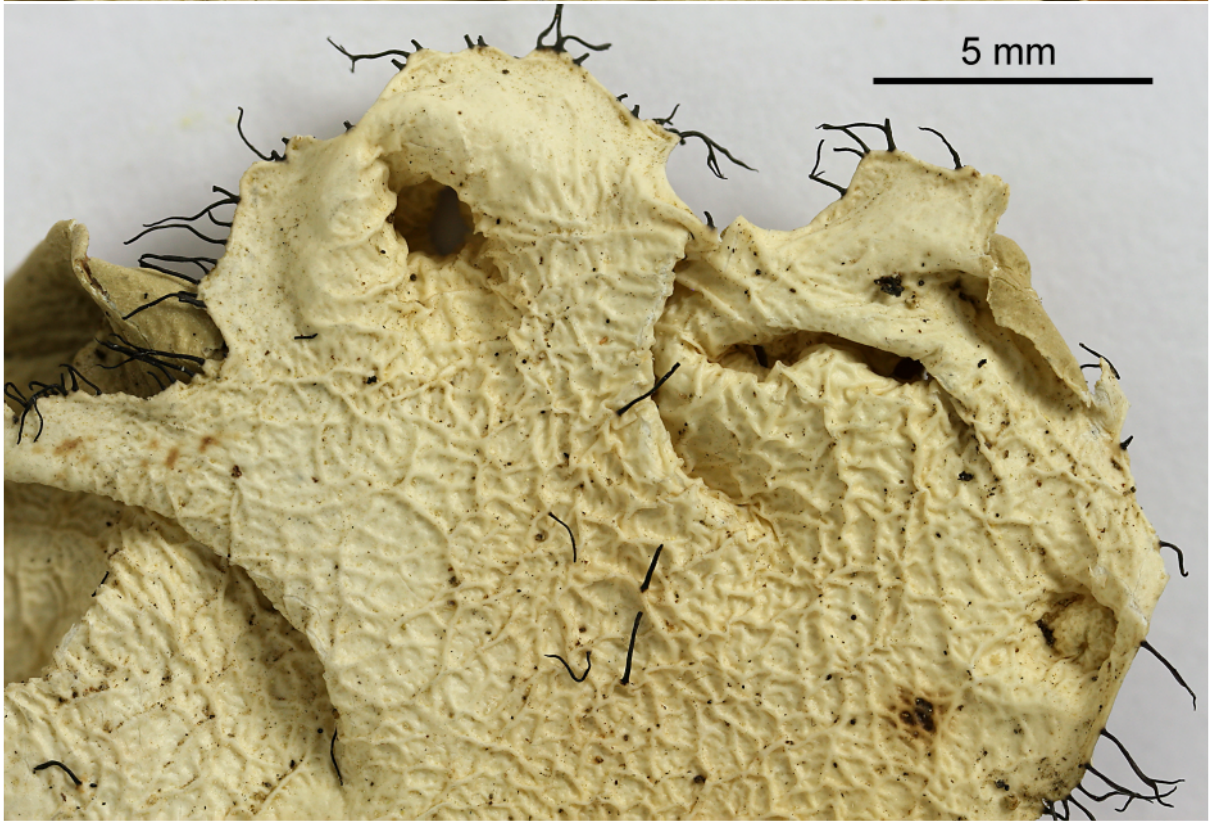
Parmotrema rigidum (Lynge) Hale (1974)

Thallus mineral grey, loosely attached, ciliate, white maculate. Isidia and soredia absent. Lower surface black, but with very broad, ± white, naked zone along the margins. Apothecia common, pedicillate, disc perforate. Ascospores hyaline, simple, 8/ascus, 7-12 x 14-19 µm. Chemistry: cortex K+ yellow; medulla K-, C-, KC+ red, P-; atranorin, alectoronic acid. Note: nearly indistinguishable from *Parmotrema perforatum* without chemical tests.

[11653], USA, North Carolina, Carteret County: Cape Lookout National Seashore, Shackleford Banks, 3 miles (4,8 km) SSE of Beaufort, 34°41'01" N, 76°38'22" W, 2 m. Maritime forest dominated by *Quercus virginiana* and *Juniperus silicicola,* on bark. Leg. Robert S. Egan 19. March 2003 (Nr. EL-16,058, Tuckerman Workshop Foray Locality 6).





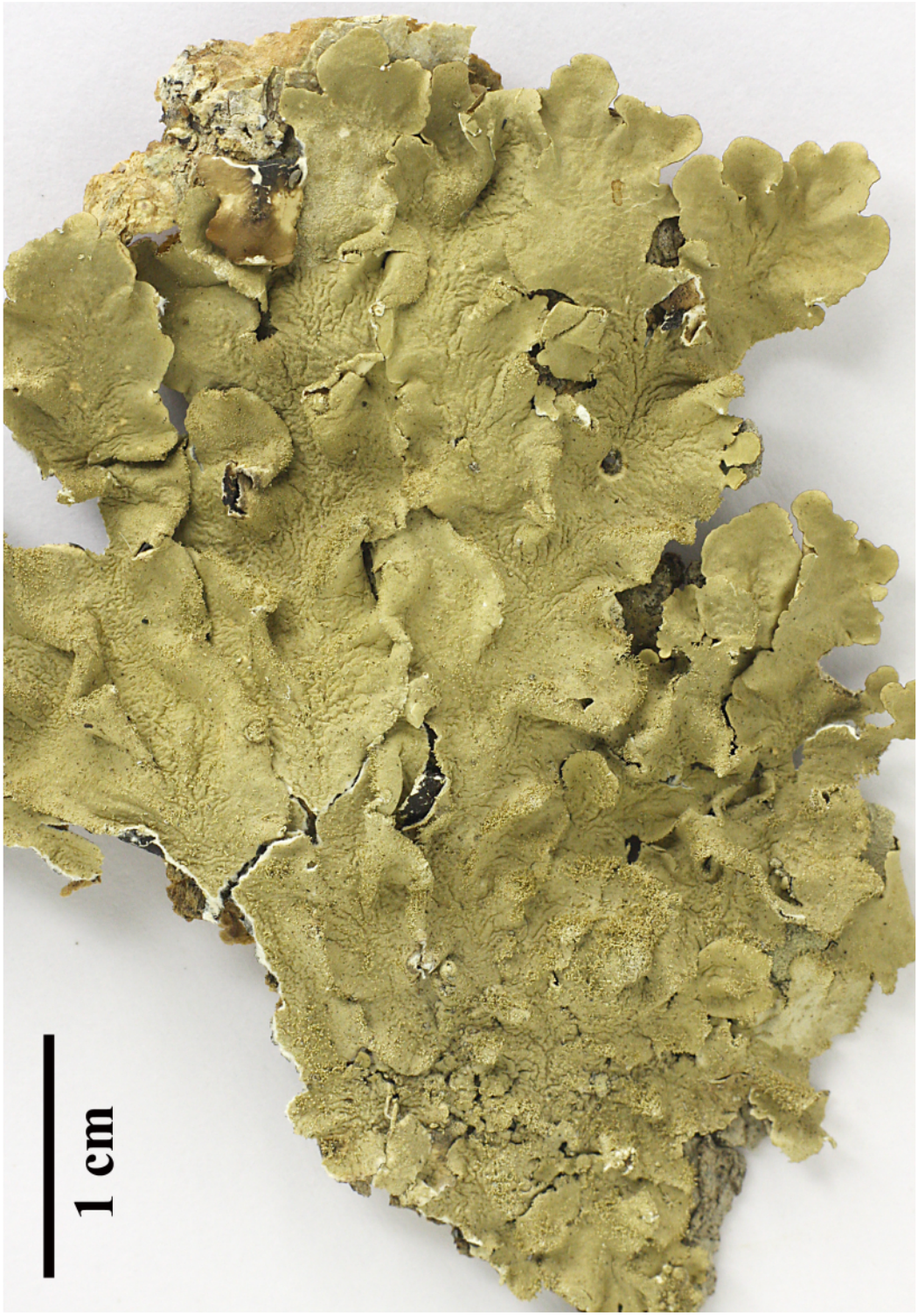


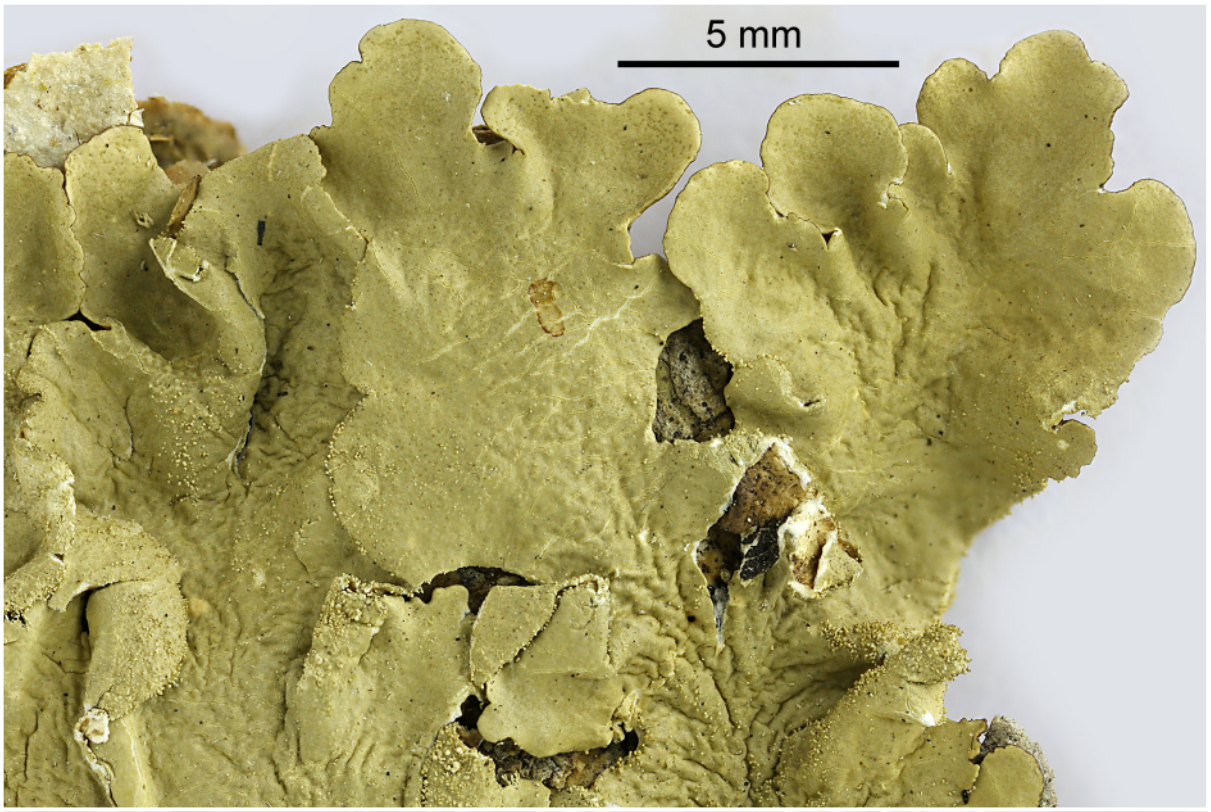
Parmotrema rigidum

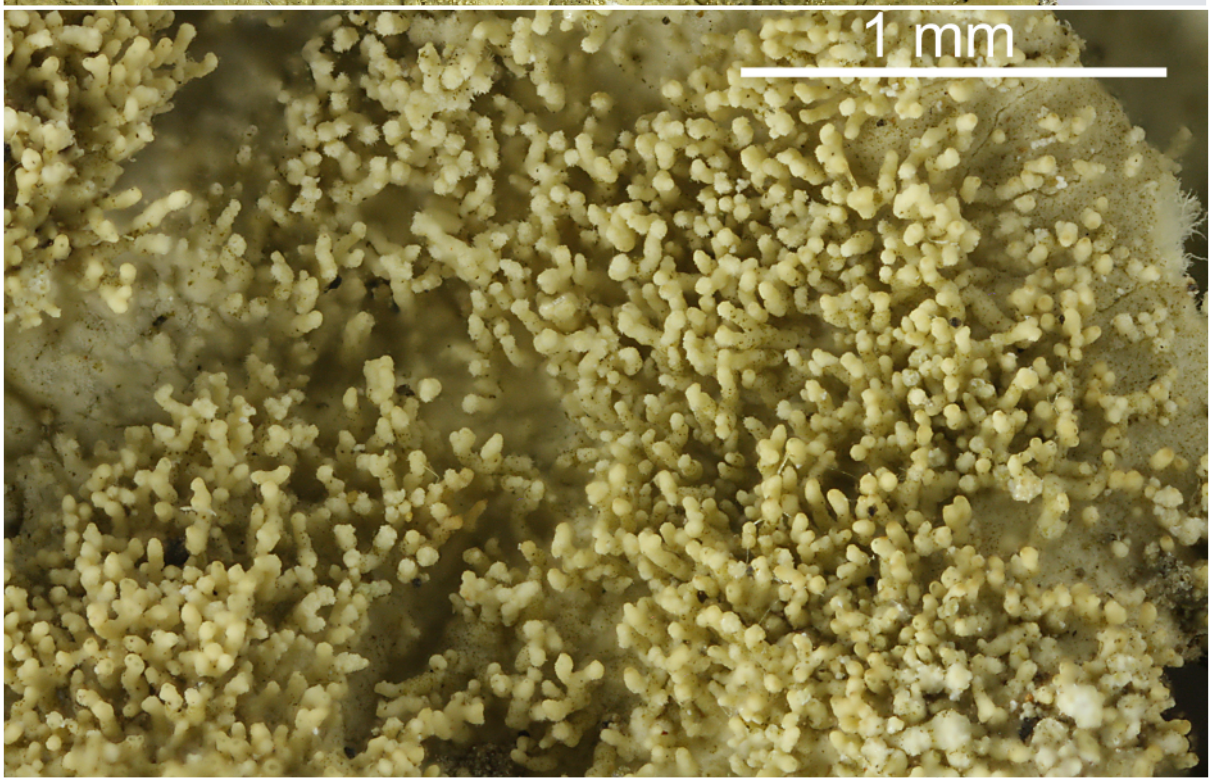
Parmotrema saccatilobum (Taylor) Hale

Thallus grey to yellowish-greenish, 8-15 cm wide, with 0.1-0.3 mm high isidia, without soralia, without cilia. Lobes 5-10 mm wide. Medulla white. Lower surface black, in a broad zone at the margins erhizinate and brown. Cortex K+ yellow, medulla K-, C-, KC+ redbrown, P+ brick-red, atranorin (maj), protocetraric acid (maj).

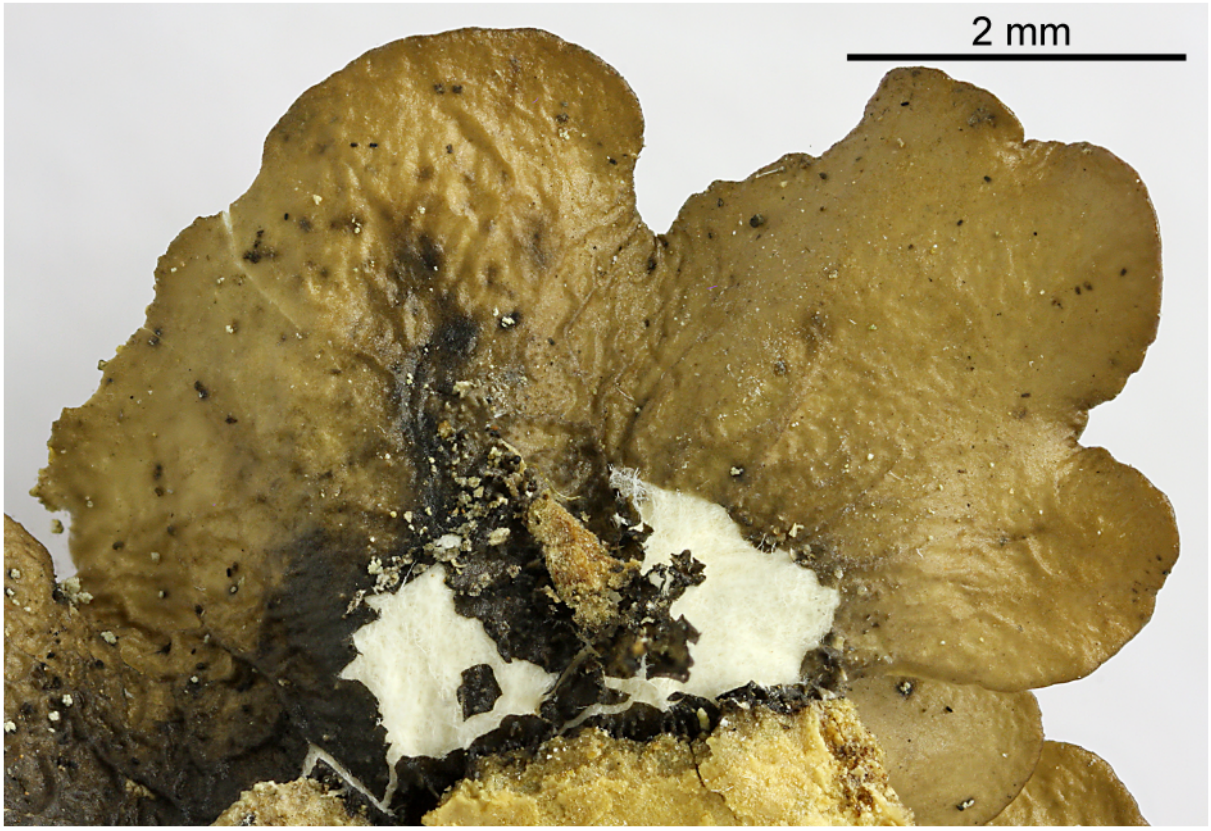
[9535], Thailand, Floatel Jungle Rafts am River Kwai Noi, 14°19.144' N, 98°58.089' E, 108 m, on bark. Leg. Schumm 27.03.2002, det. Schumm 04.2002, test. J.A. Elix 11.2002.







Parmotrema saccatilobum

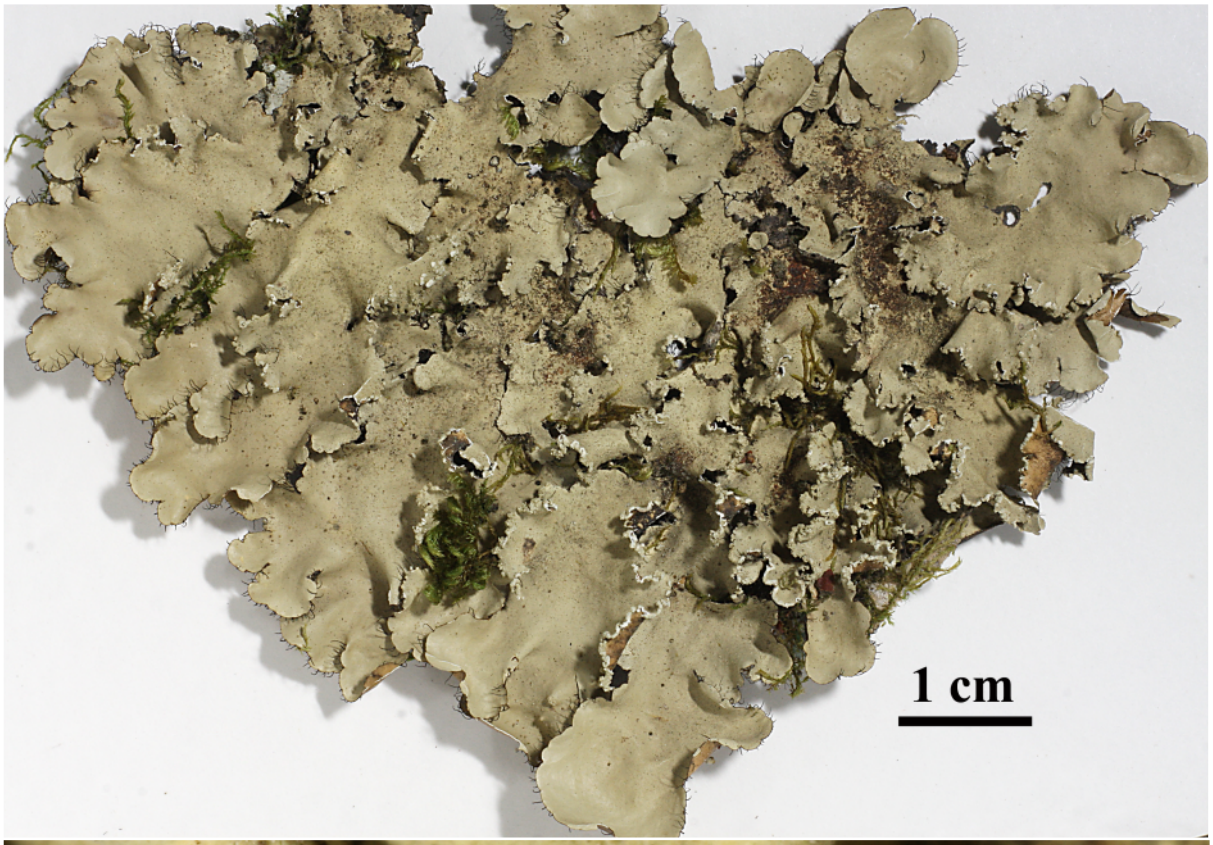


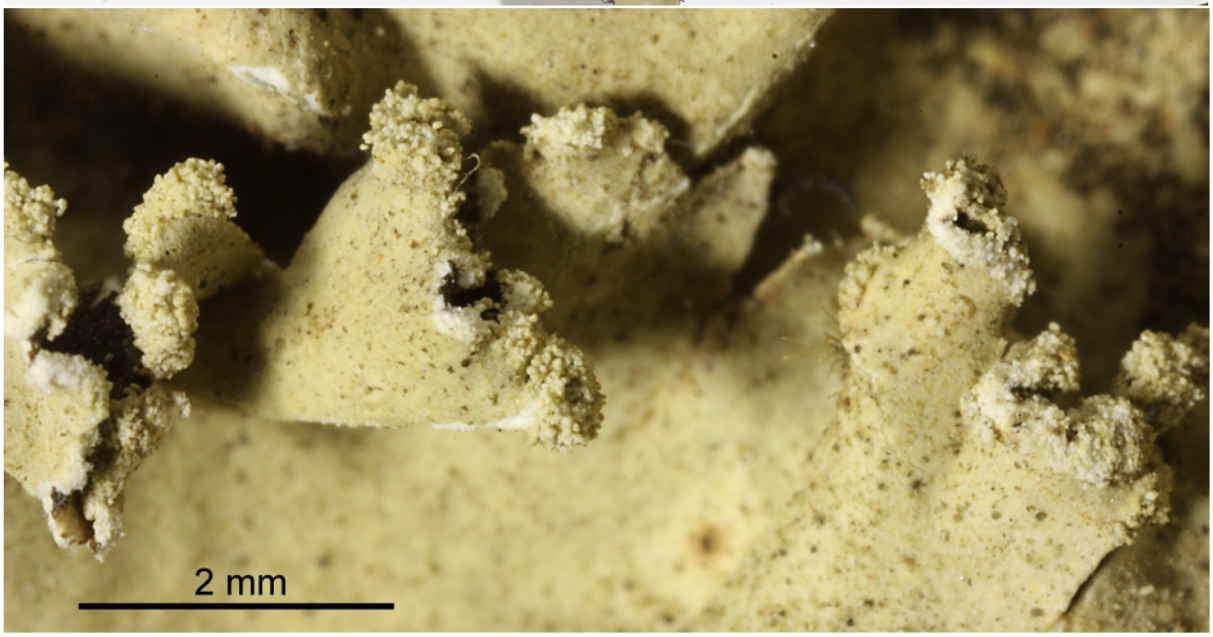
Parmotrema saccatilobum

Parmotrema sancti-angelii (Lynge) Hale

Thallus pale green to grey-green, loosely adnate, ciliate, emaculate, rugose towards thallus centre. Isidia absent. Soralia linear, mainly marginal. Medulla white. Lower surface black, with brown, erhizinate marginal zone. Chemistry: cortex K+ yellow; medulla K-, C+ pale red, KC+ pale red, P-; atranorin, gyrophoric acid (maj). Pantropical.

[5874], Philippinen, Mindanao, Provinc Cotabato, bei Ilomavis an der Straße nach Kidapawan, 07°02.069' N, 125°11.367' E, 730 m. Leg. Schumm 07.08.1999, det. J.A. Elix 2000, Dupl. in CANB.







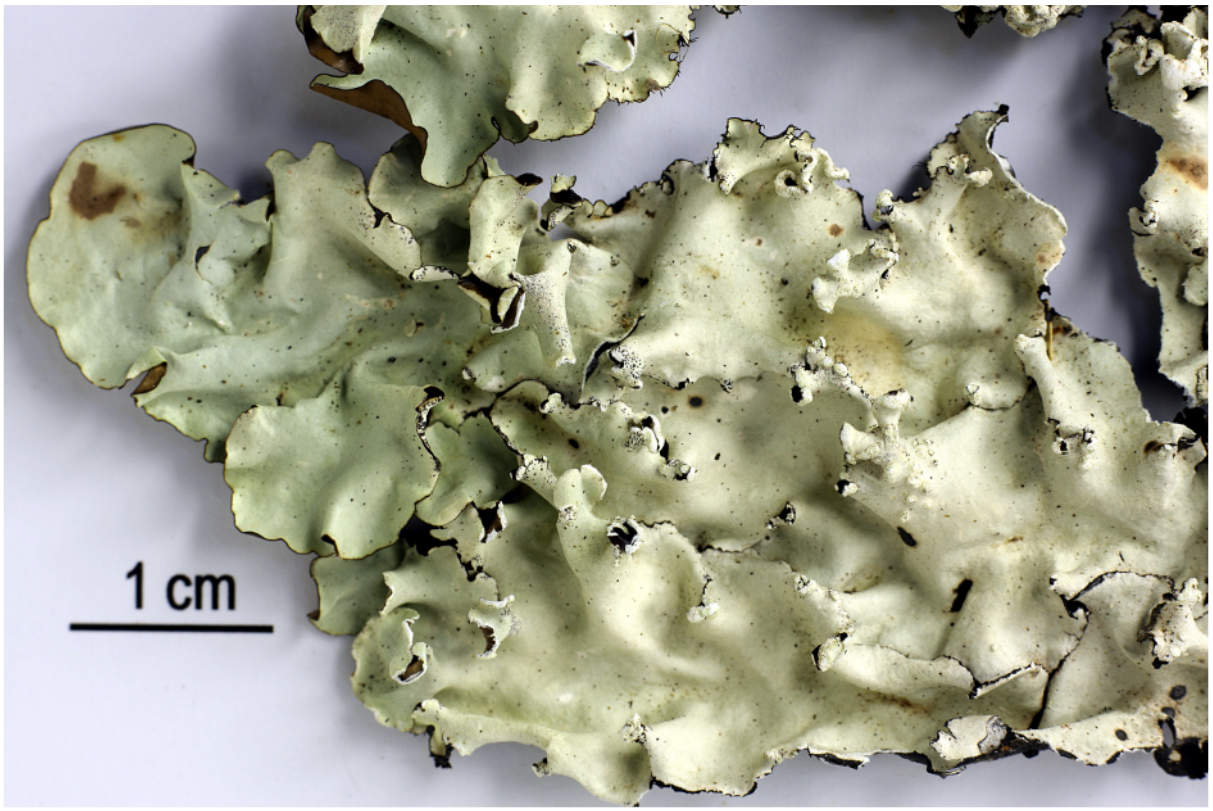


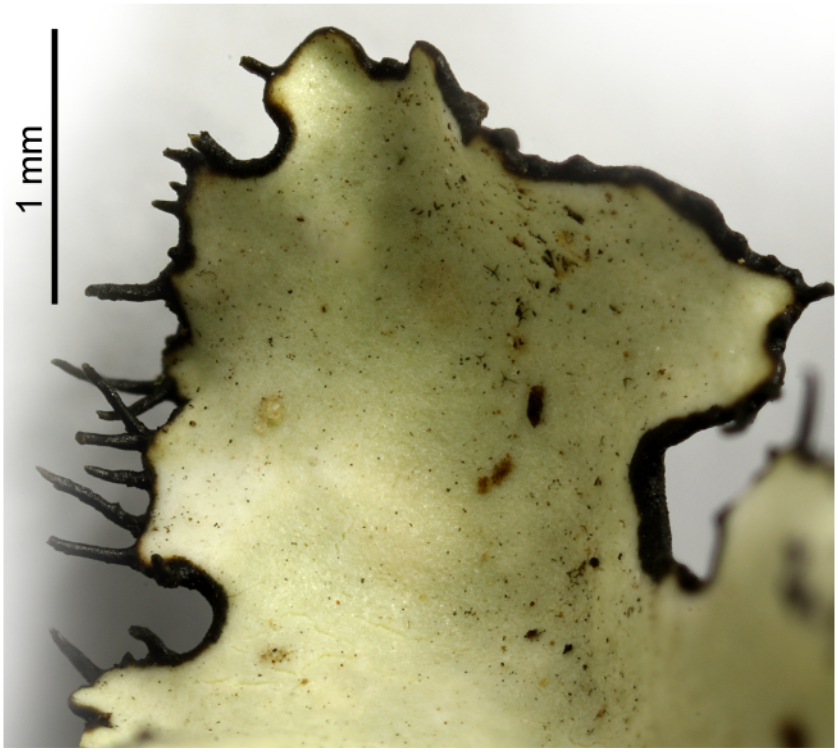
Parmotrema sancti-angelii

Parmotrema stuppeum (Taylor) Hale

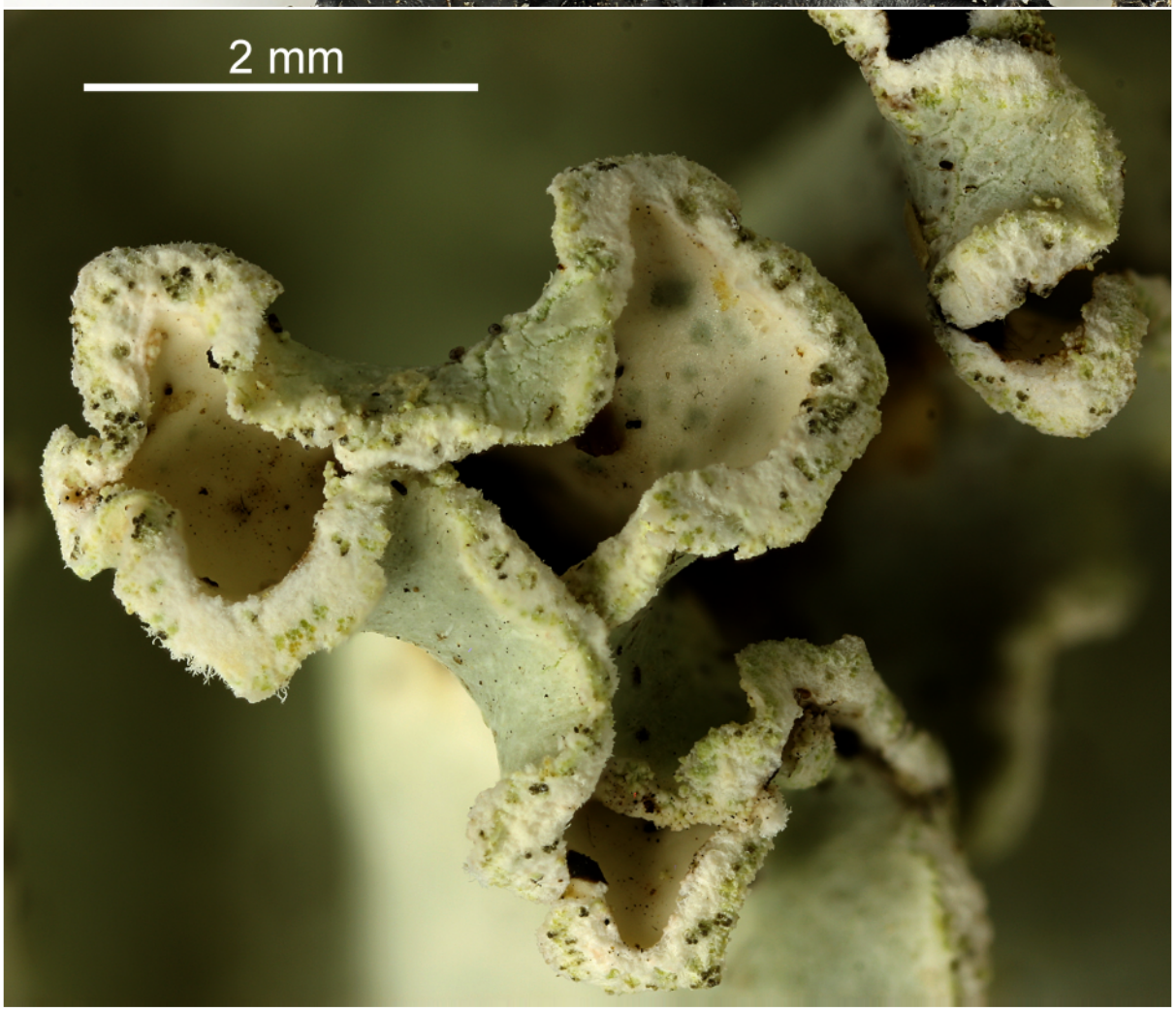
With black cilia and marginal soralia. Chemistry: upper cortex K+ yellow, C-, KC-, P-; medulla K+ yellow>>red, C-, KC+ red, P+ orange; atranorin, salazinic acid. Cosmopolitan.

[14465], Seychelles, Praslin, Nationalpark Sentier Glacier Noire, 4°19.916' S, 55°44.465' E, ca. 370 m; auf Granitfelsen. Leg. Schumm & Frahm 30.09.2008, det. Schumm test Aptroot.







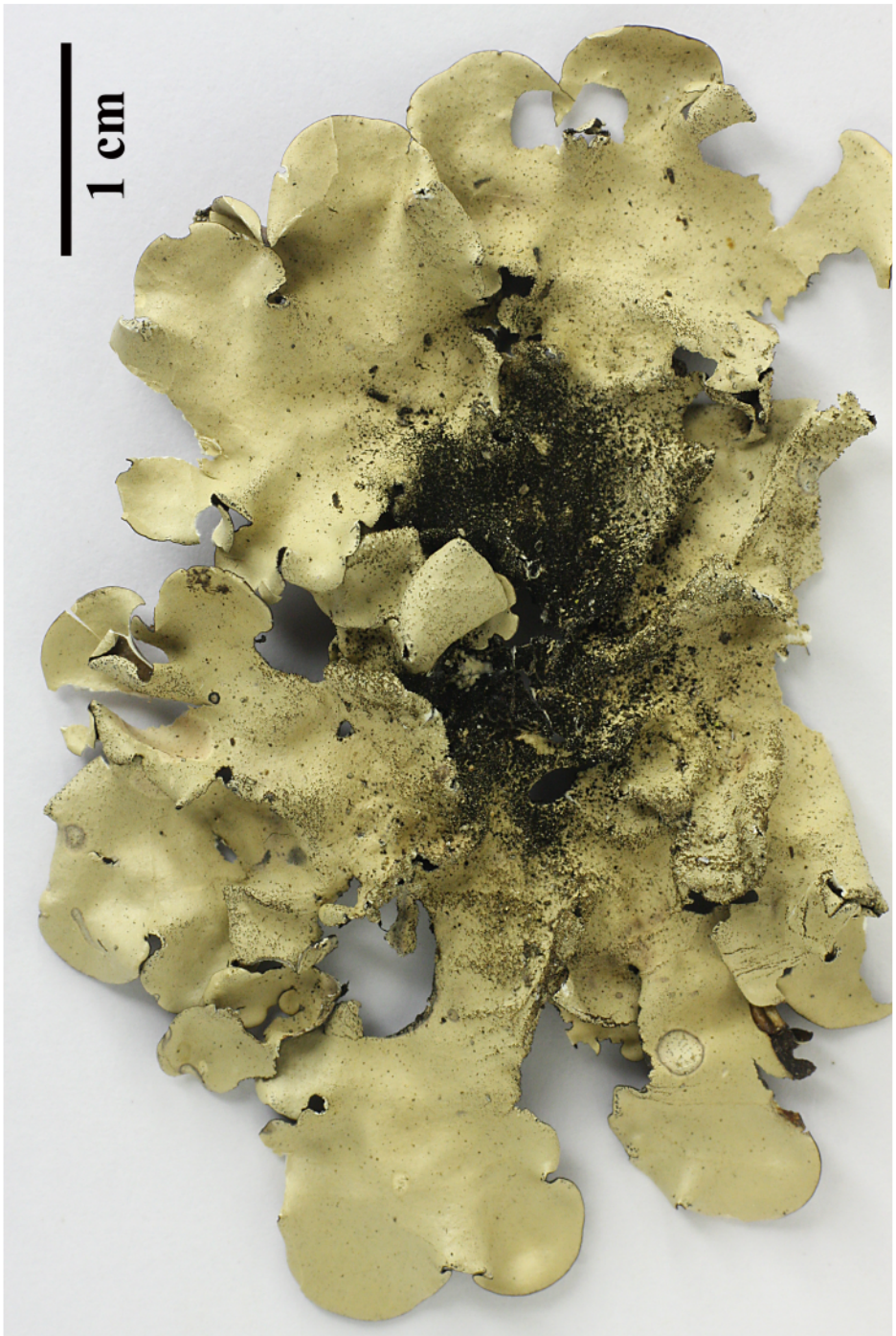


Parmotrema stuppeum

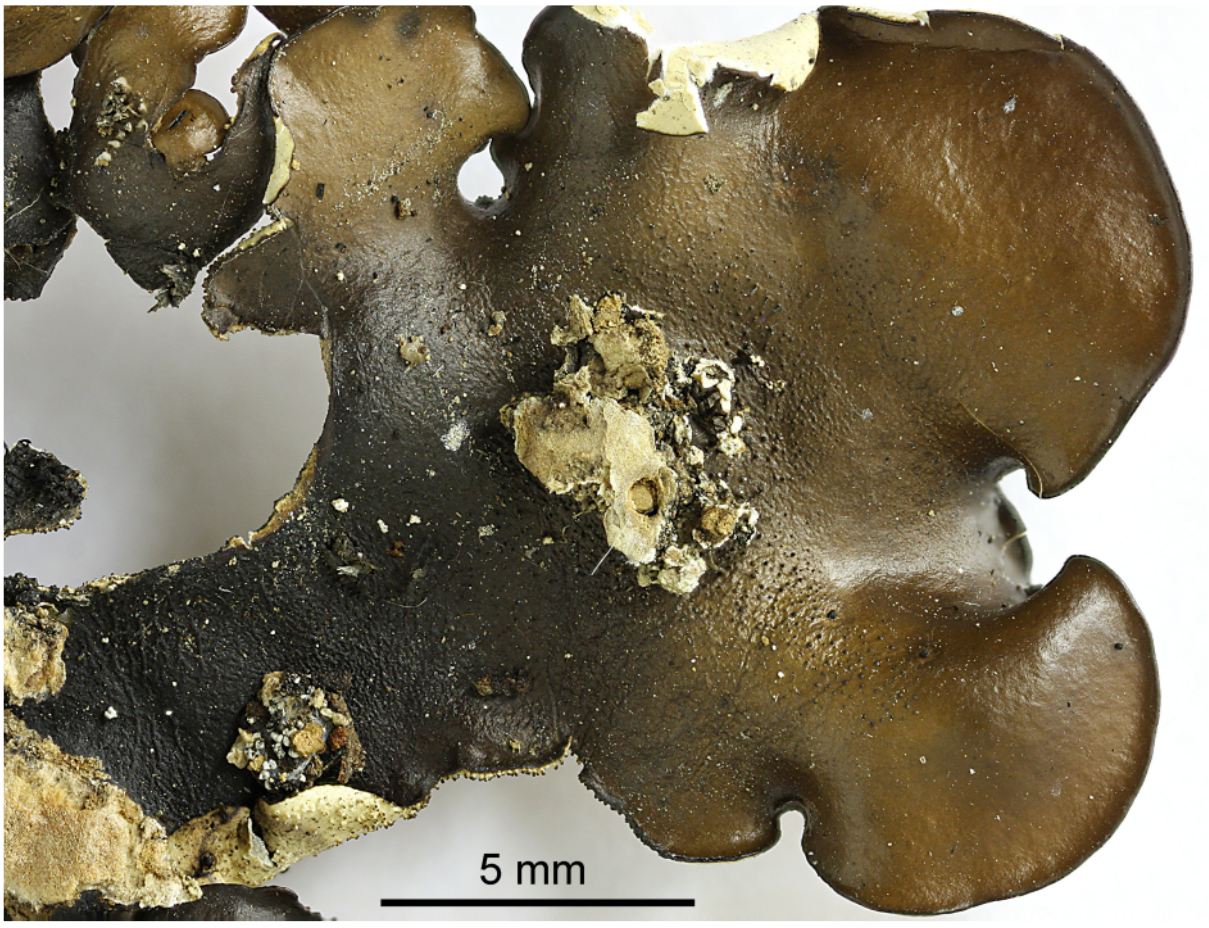
Parmotrema tinctorum (Nyl.) Hale

Thallus grey to grey-green, 10-30 cm wide. Lobes 10-20 mm wide, eciliate, without soredia. Isidia sparse to abundant, mostly laminal, sometimes also marginal, brown-tipped or concolourous. Soredia absent. Lower surface black with large brown eciliate margin. Medulla white. Chemistry: atranorin (maj), lecanoric acid (maj), orsellinic acid (tr); cortex K+ yellow, P+ pale yellowish; medulla K-, C+ red, KC+ red, P-. Corticolous and saxicolous; pantropical.

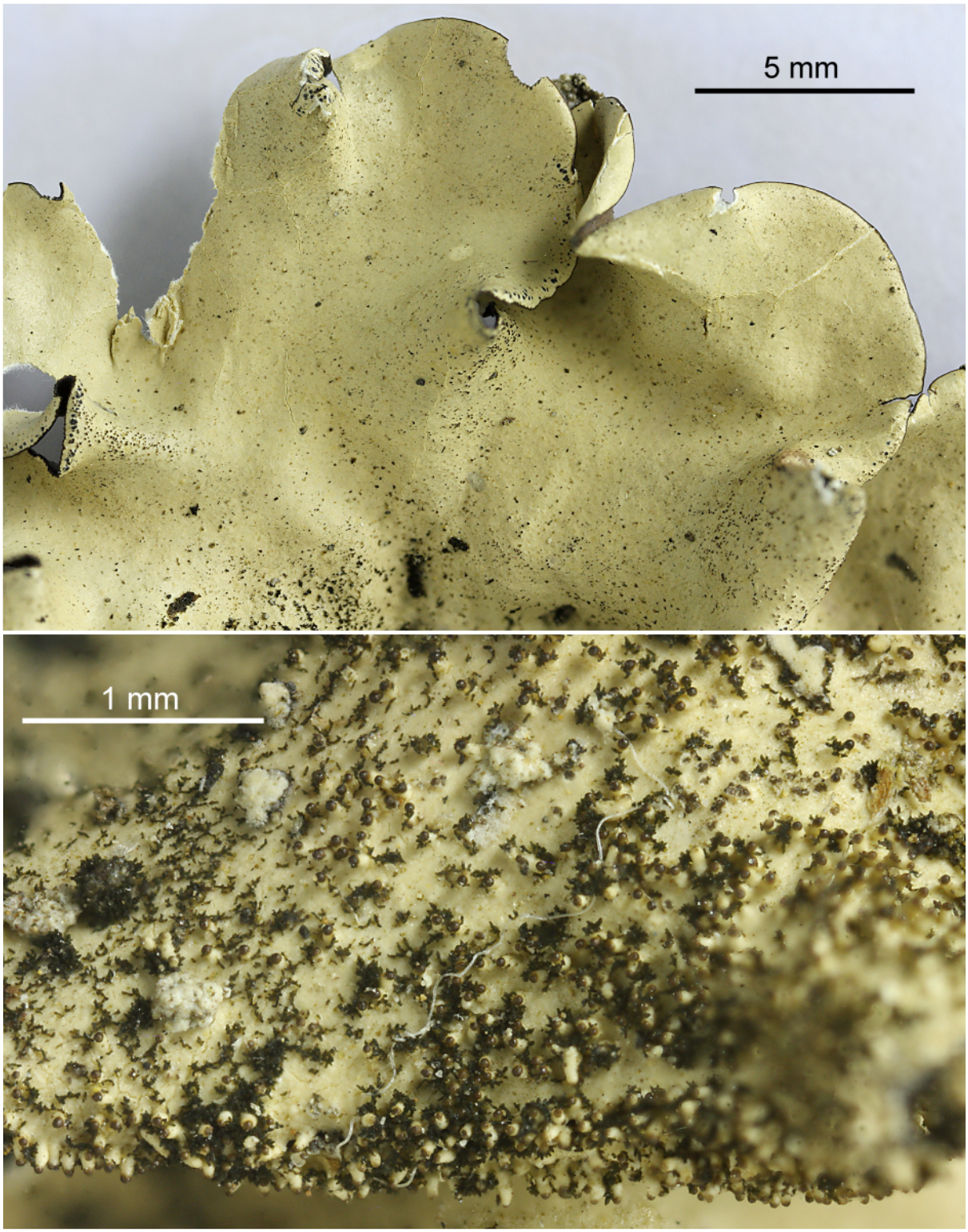
[9564], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen. 20°06.275' N, 99°37.524' E, 700 m, on bark. Leg. Schumm 31.03.2002, det. Schumm 04.2002 test. J.A. Elix 11.2002.







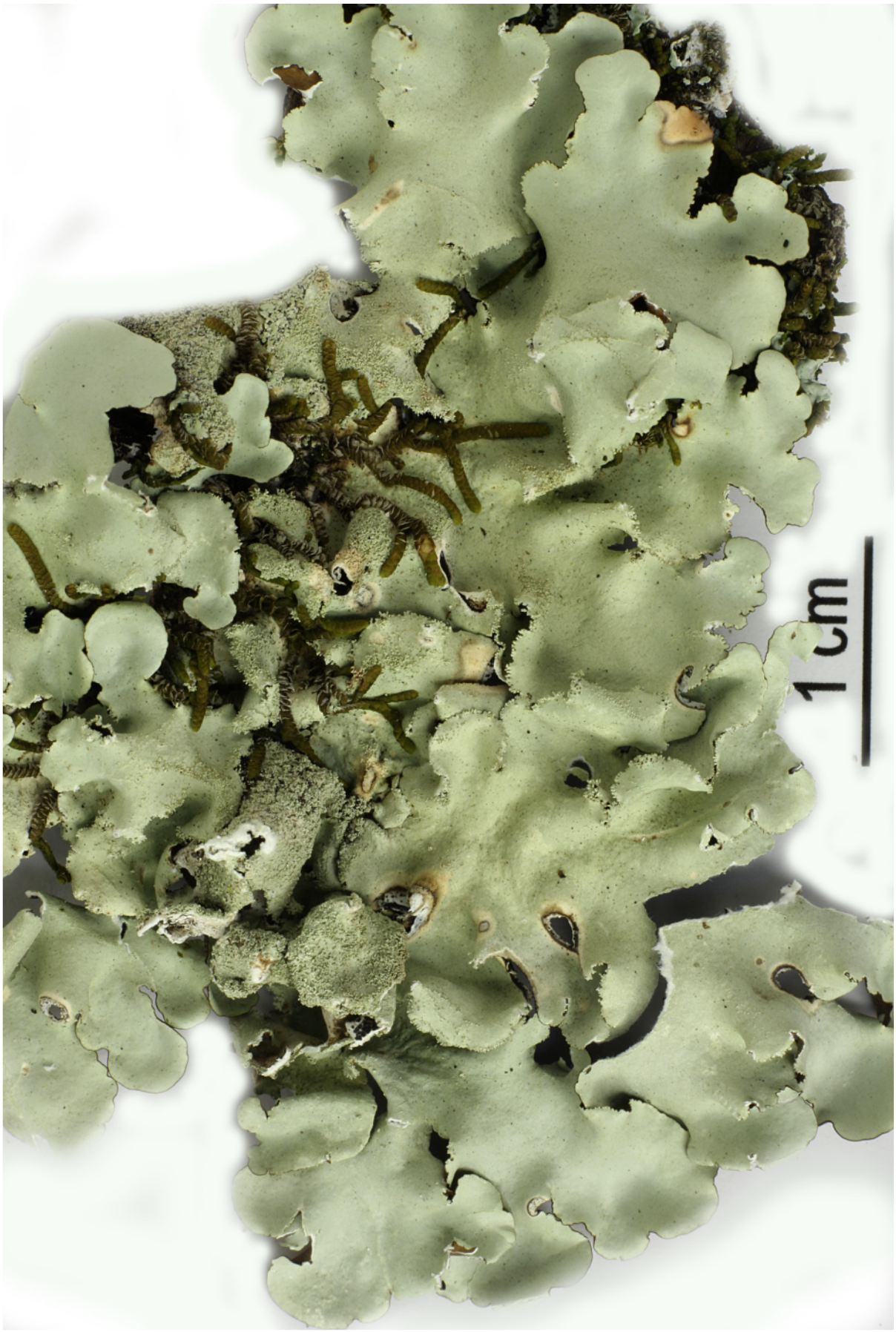
Parmotrema tinctorum

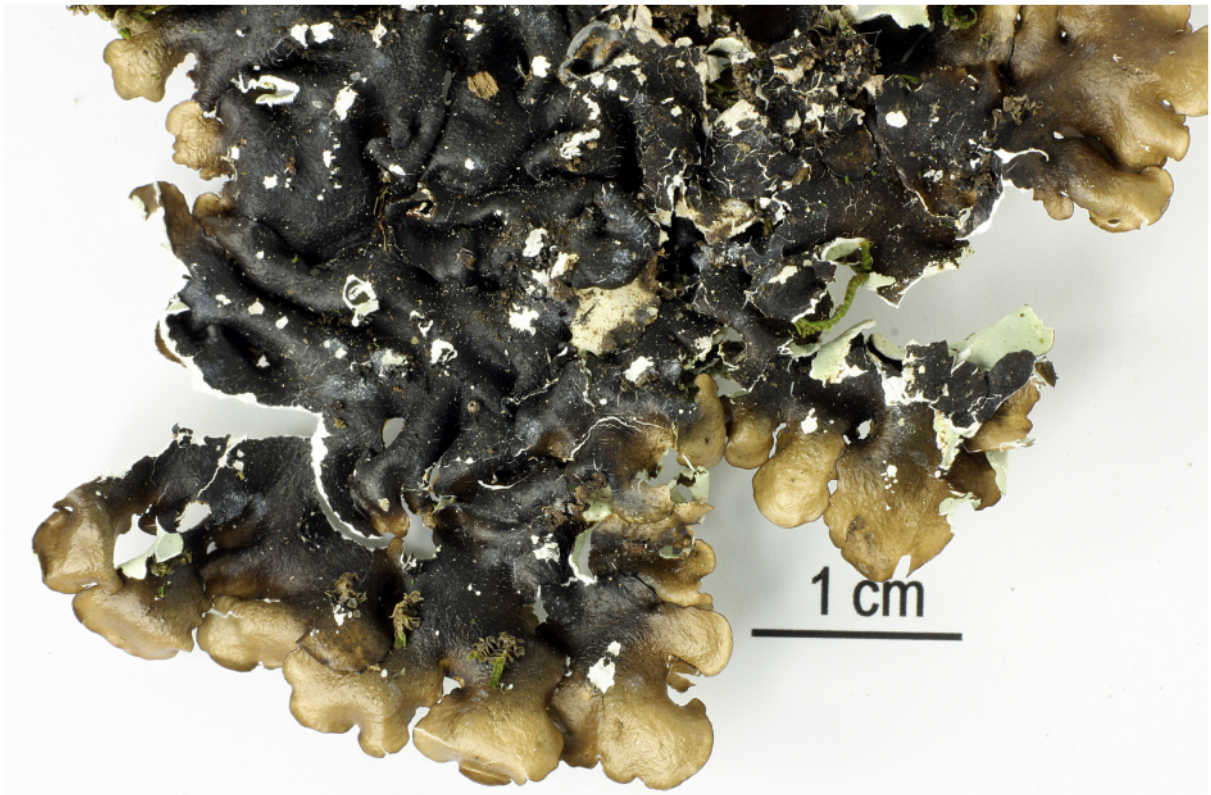


Parmotrema tinctorum

Parmotrema tinctorum (Despr. ex Nyl.) Hale

[14534], Seychelles, La Digue, Wald beim Hotel Sun Rising, 4°21.465' S, 55°49.653' E, ca. 10-20 m, an Cocos nucifera. Leg. Schumm & Frahm 04.10.2008, det. Aptroot 2008.







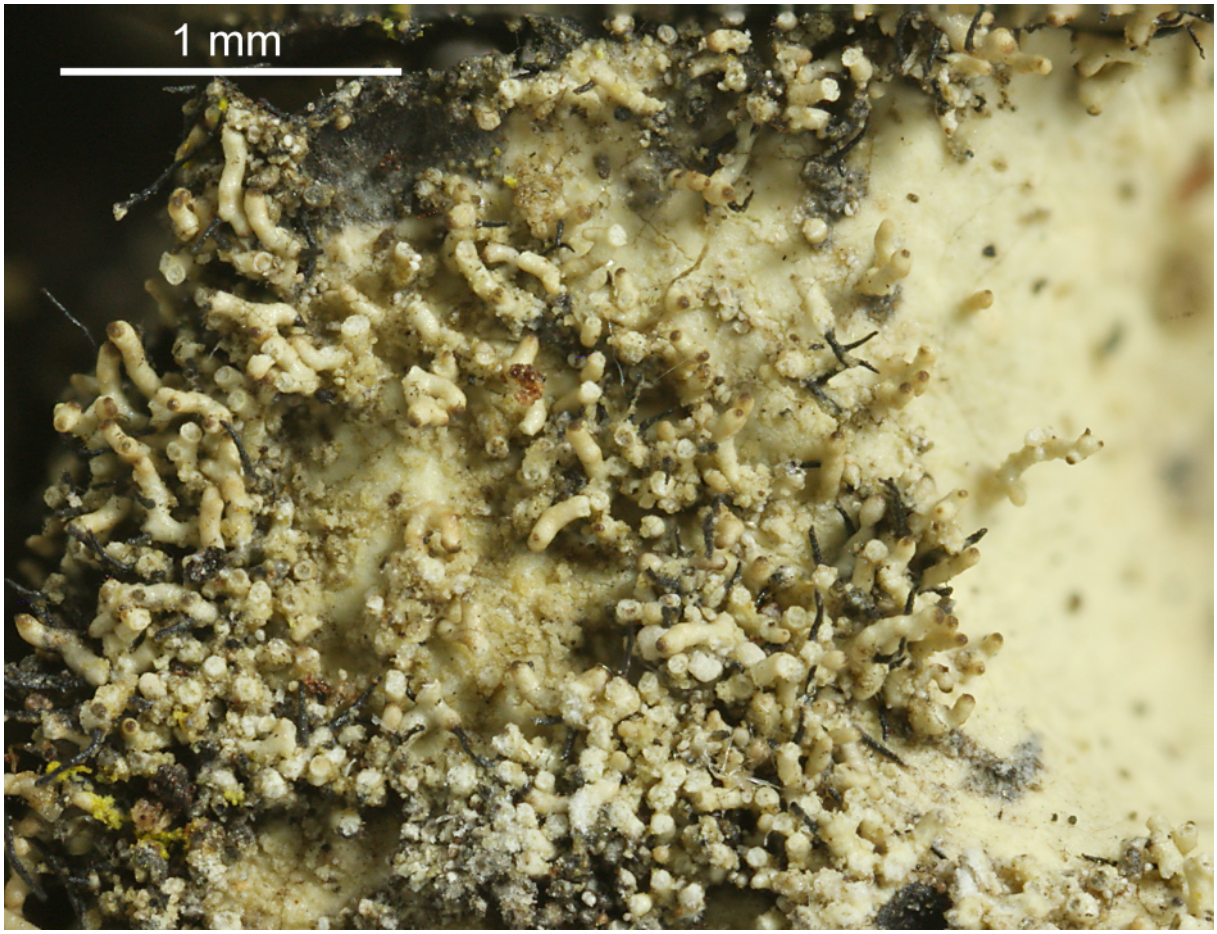
Parmotrema tinctorum

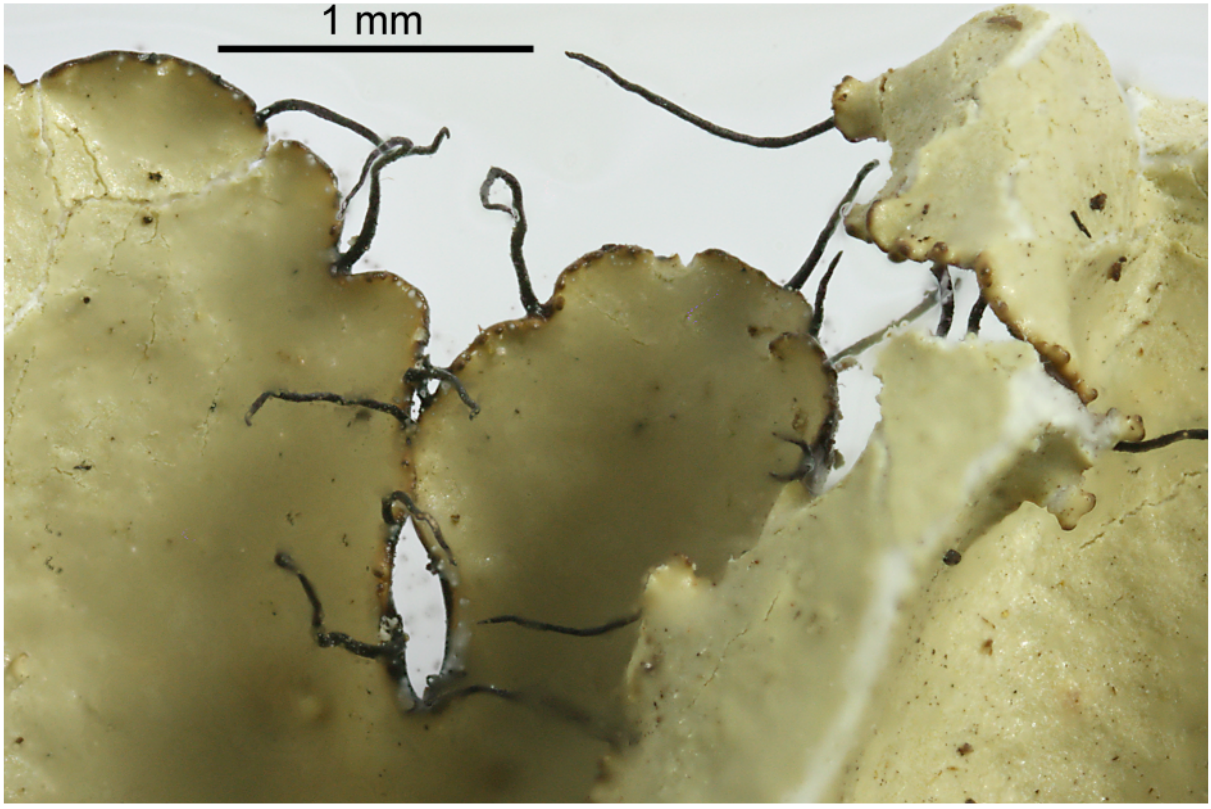
Parmotrema xanthinum (Müll. Arg.) Hale

Thallus pale yellowish-greenish grey, loosely adnate, ciliate, emaculate. Isidia simple to coralloid, laminal to marginal. Soredia absent. Medulla pale yellow. Lower surface black with brown naked zone. Chemistry: cortex K+ yellow, C-, KC-, P-; medulla K-,C-, KC± red, P-; usnic acid (maj), atranorin (trace), protolichesterinic acid (maj). Pantropical.

[11652], USA, North Carolina, Pender County: Holly Shelter Game Land, just E of Shaw Highway (SR 1523) at Lodge Road, 8,5 km S of North Carolina 53, 34°33'07" N, 77°48'41" W, 10 m. Pinus palustris-Quercus laevis dominated sand scrub, on bark of oak. Leg. Robert S. Egan 18. March 2003 (EL-16,015), Tuckerman Workshop Foray Locality 4.







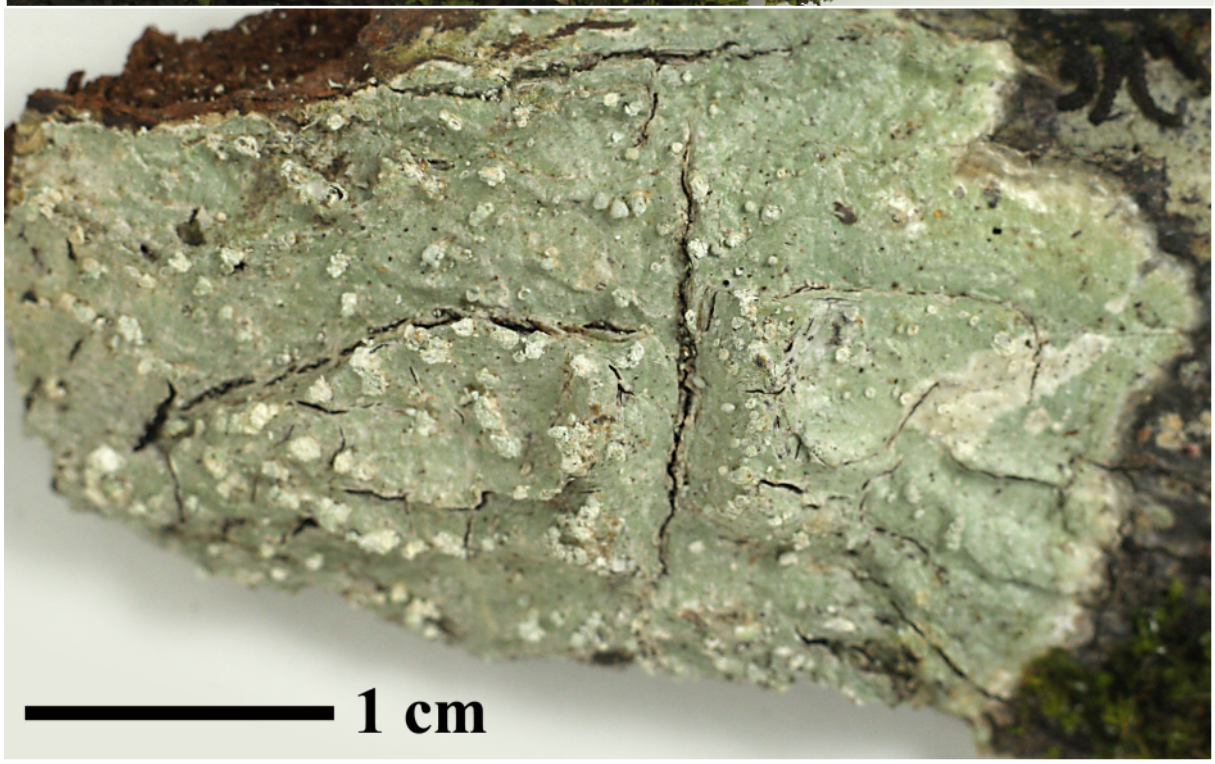
Parmotrema xanthinum

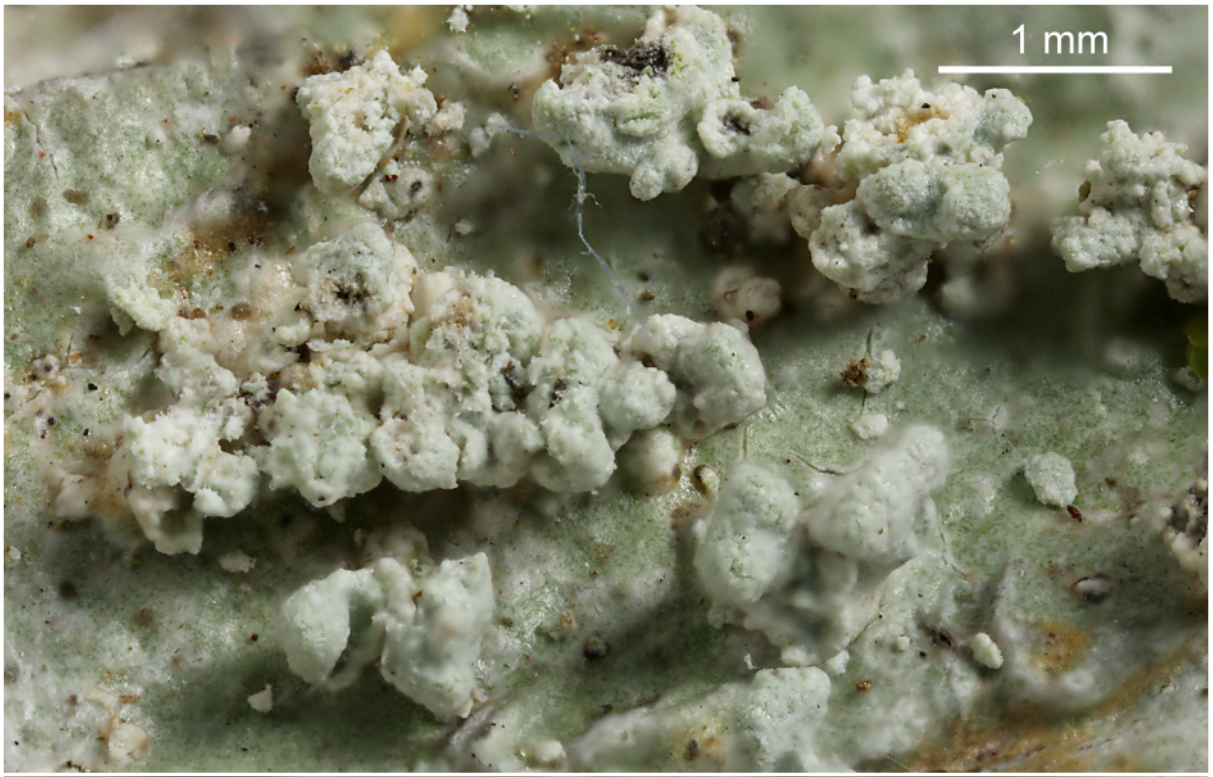
Pertusaria montpittensis A.W.Archer

Thallus greenish, thick, non lobat, with thick isidia which are first simple and later ulcerous-soredious at the tips. Medulla of the isidia white, creme, or orange-red from skyrin. Chemistry (anal. J.A.Elix): stictic acid (maj), coronatone (= 4,5-dichlorolichexanthone, maj), constictic acid (min), cryptostictic acid (trace), peristictic acid (trace), sunstictic acid (trace), skyrin; cortex K-, UV+ dark orange; medulla K+ yellow, C-, KC-, P-.

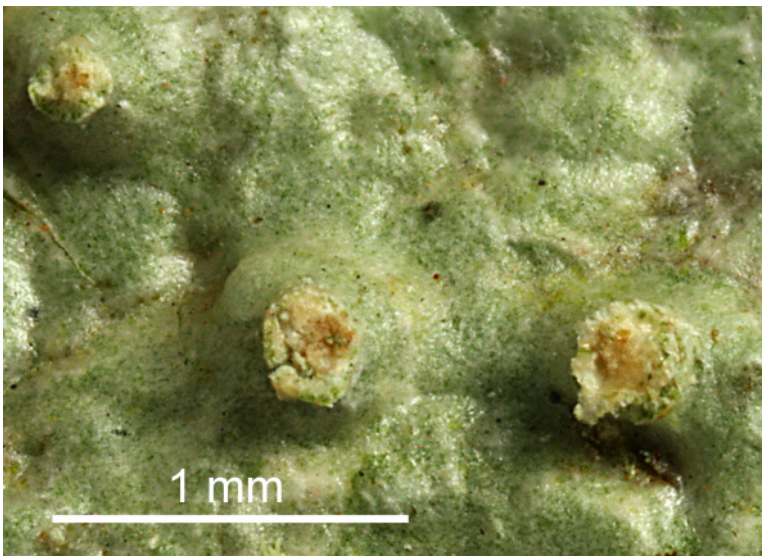
[17543], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm 15.01.2012 (IAL 7 meeting), det. Kalb.



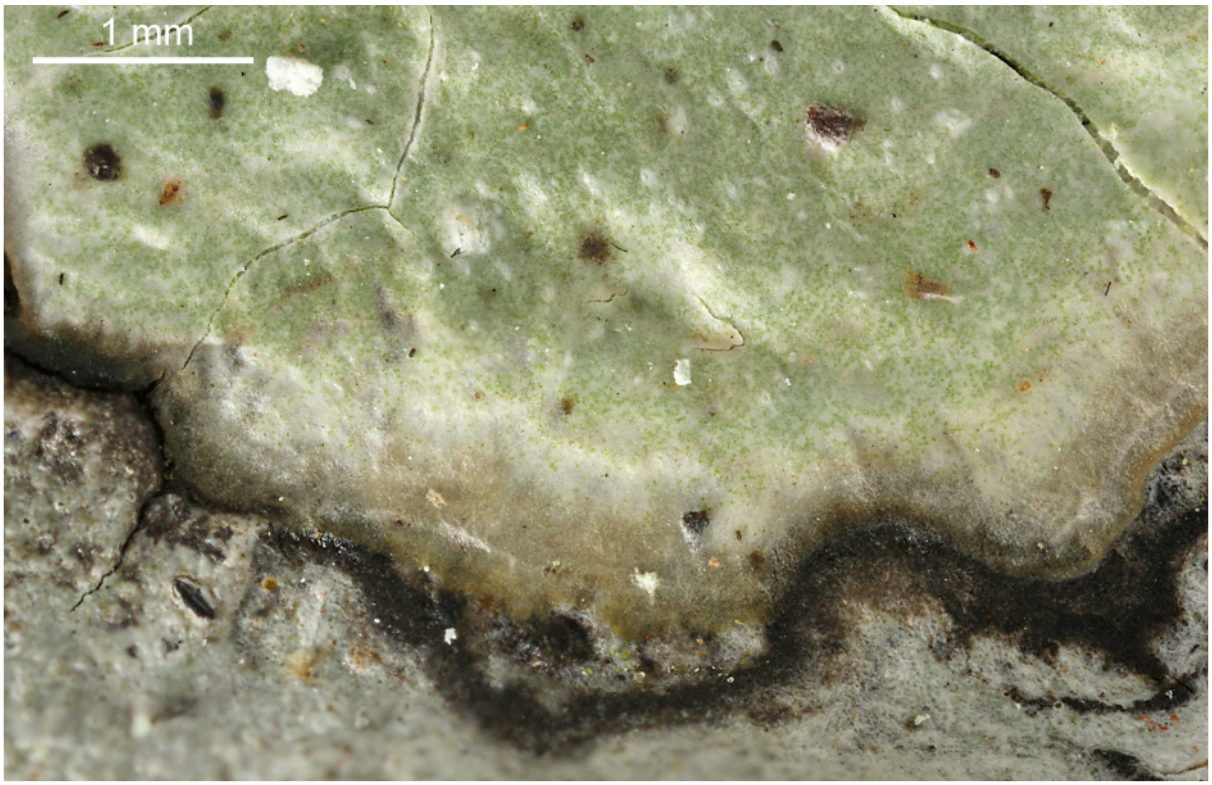








Pertusaria montpittensis



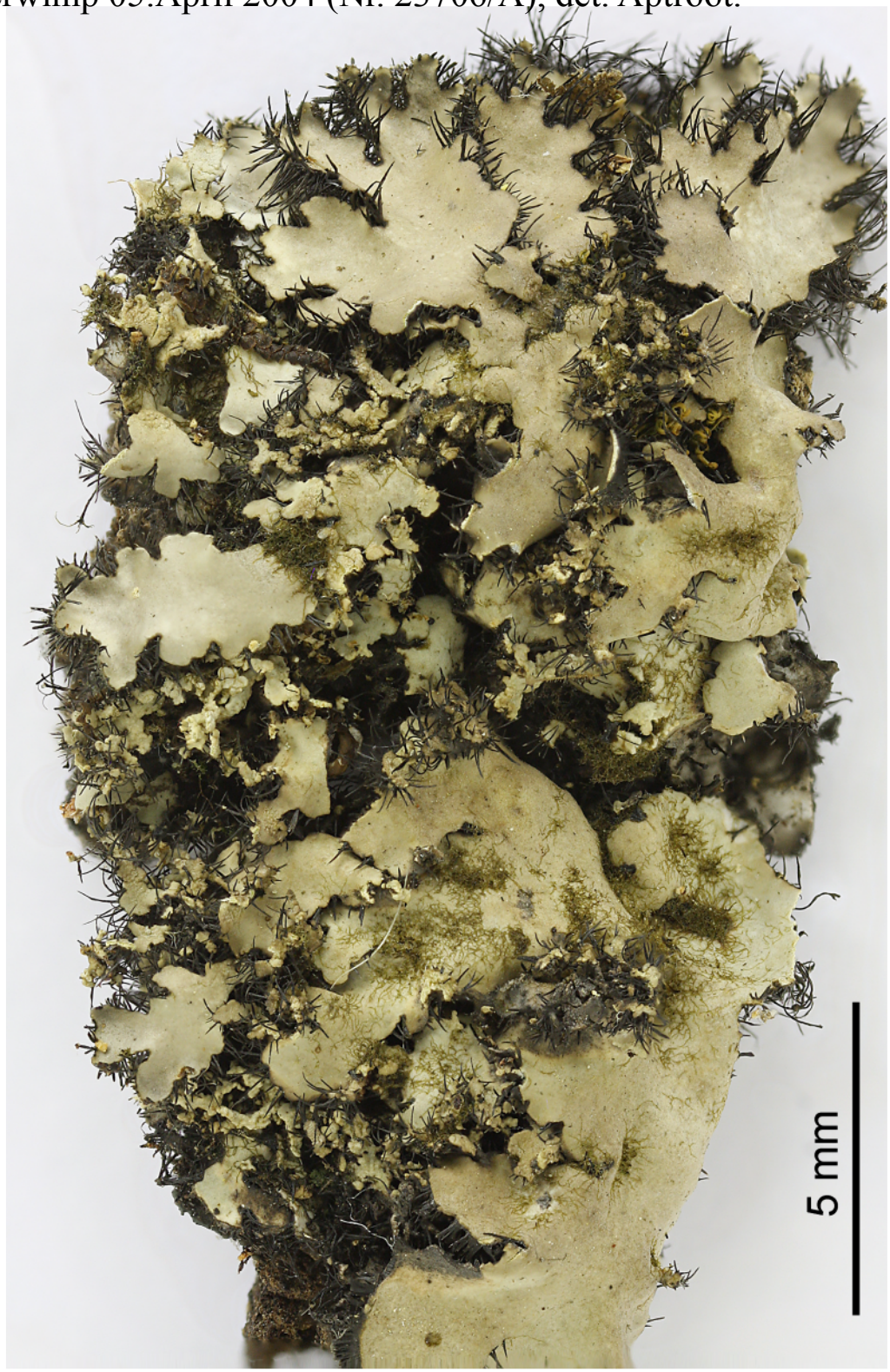


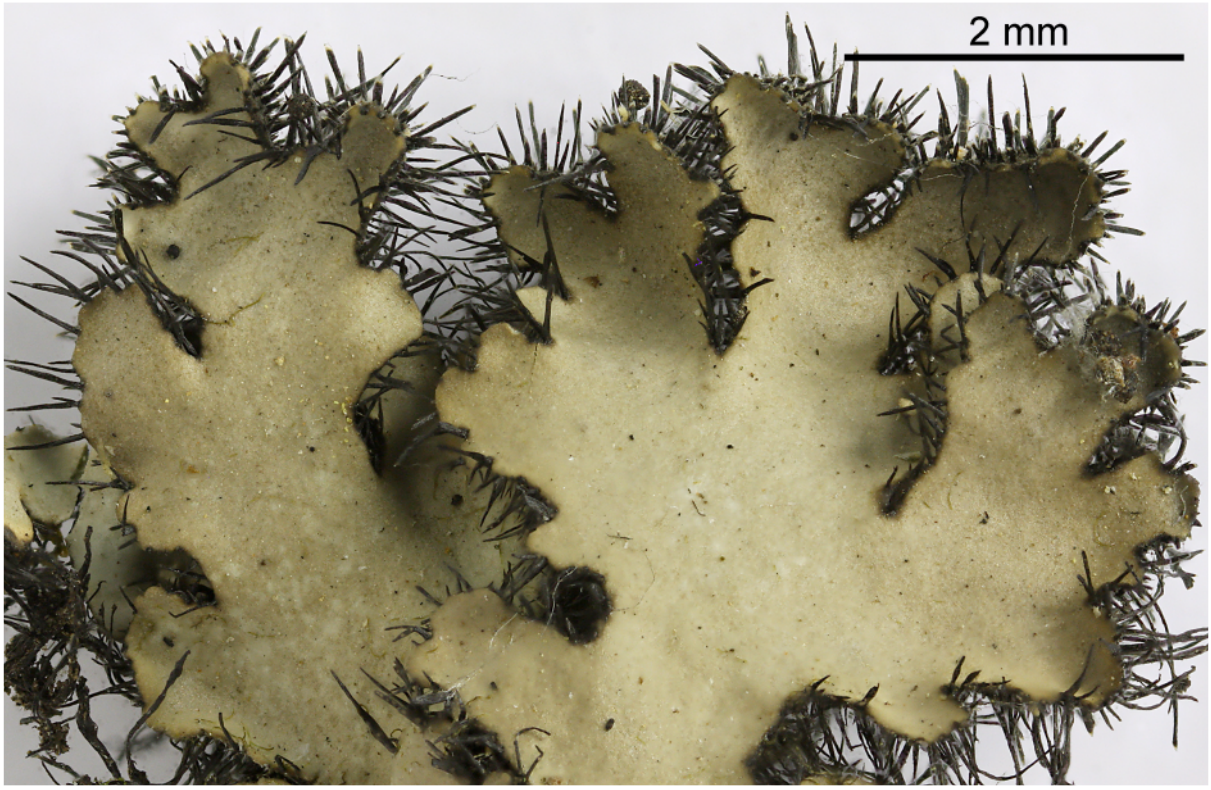
Pertusaria montpittensis

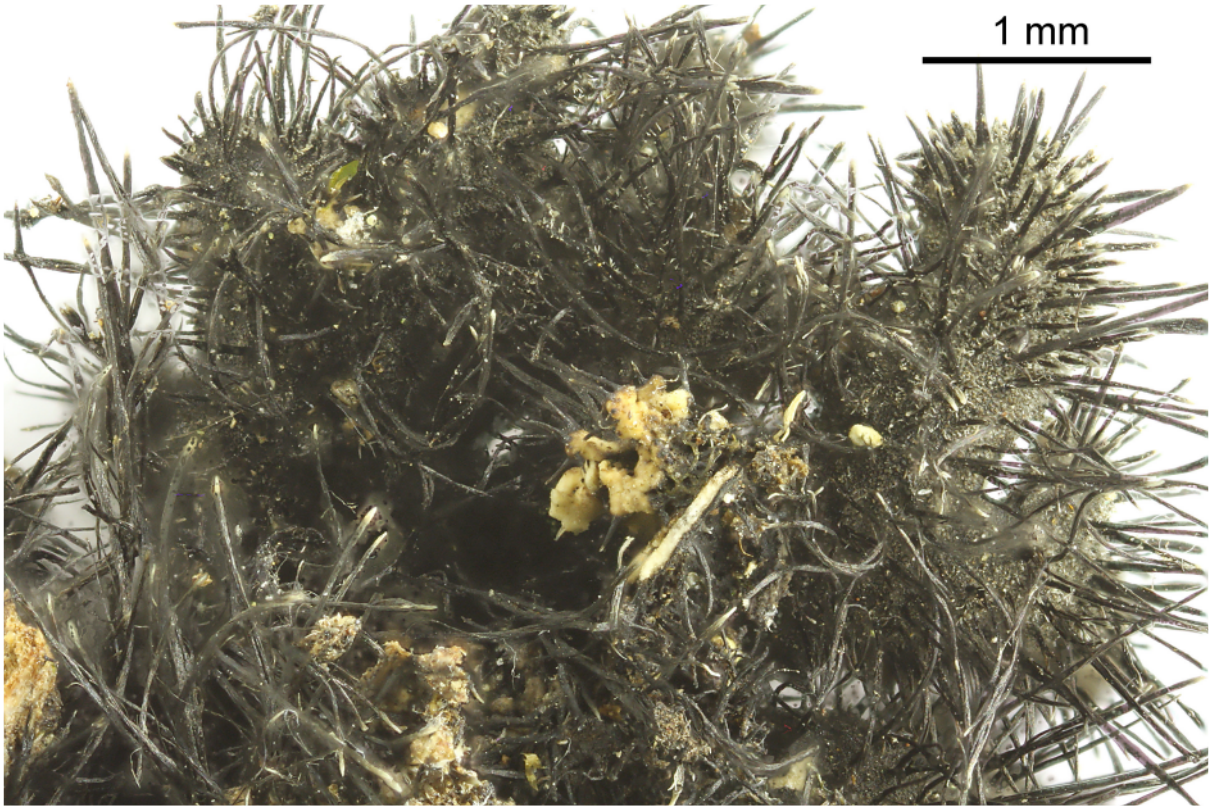
Phaeophyscia primaria (Poelt) Trass
[= ***Physcia hispidula*** ssp. ***primaria*** Poelt]

Lobes 0.7-1.5 mm wide, margins with black cilia, up to 0.75 mm long. Lower surface black, with black, simple rhizinae. Soralia and isidia are absent. Medulla white. Thallus and medulla K-, C-, KC-, P-, TLC nil.

[11773], Nord-Thailand, Prov. Chiang Mai, Chiang Mai, Doi Suthep, Monsun-Regenwald beim Phu-Ping-Palast, epiphytisch, 1300 m. Leg. Schäfer-Verwimp 05.April 2004 (Nr. 23706/A), det. Aptroot.



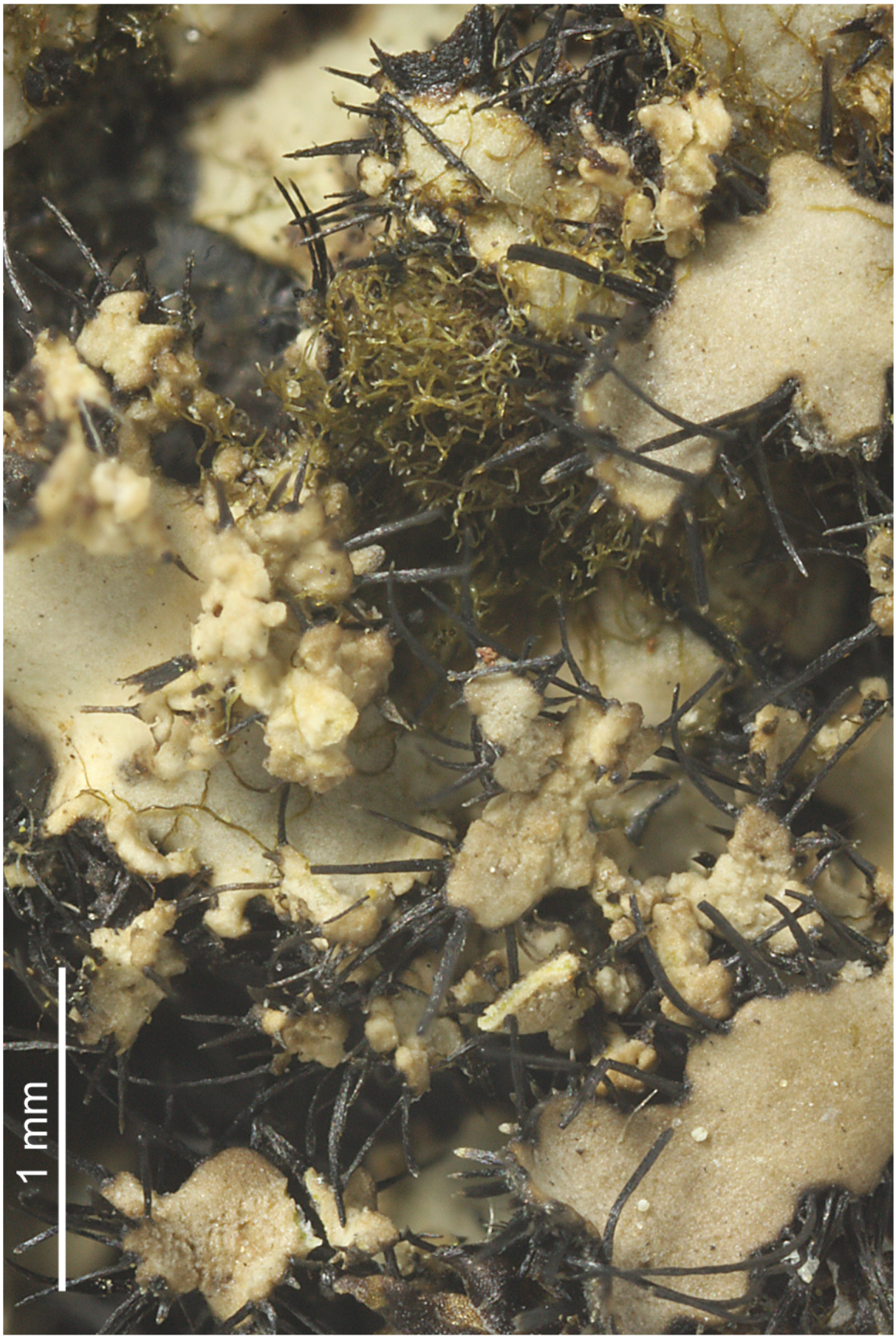




Phaeophyscia hispidula



Phaeophyscia hispidula



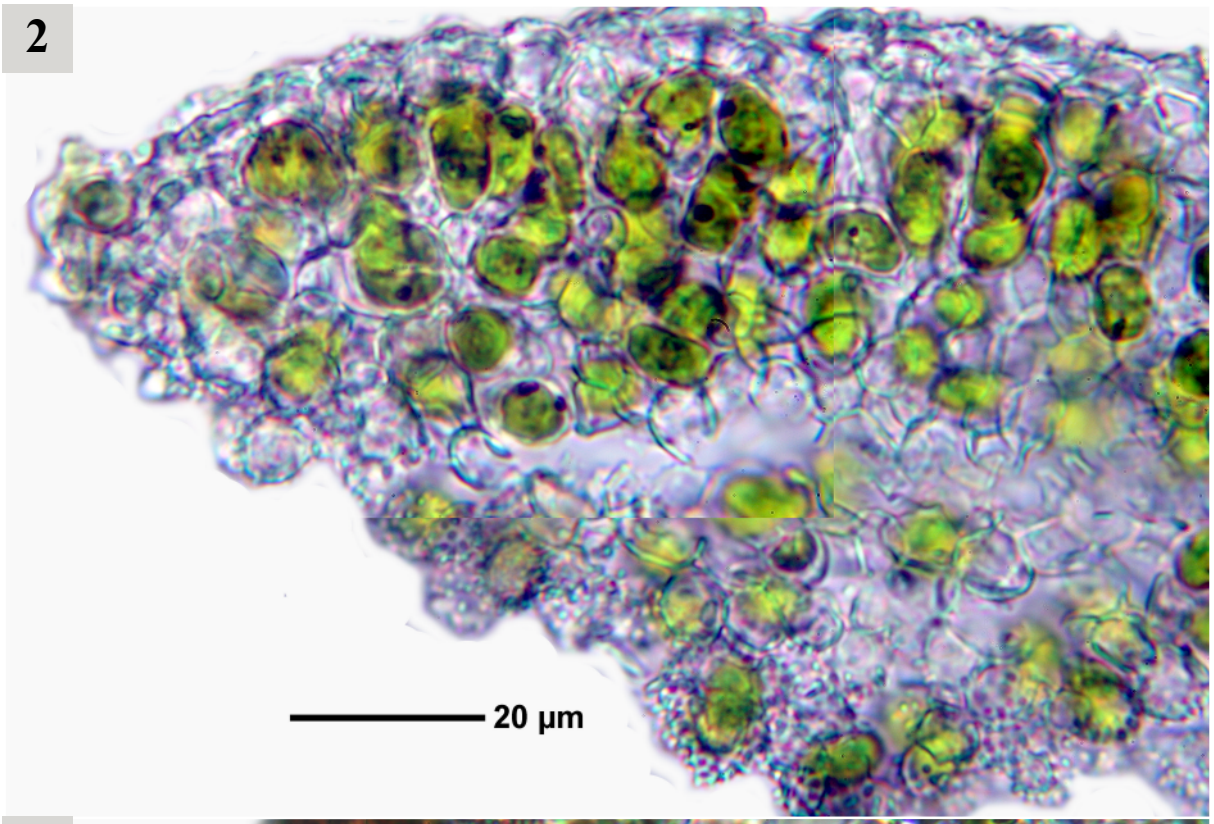
Phaeophyscia hispidula

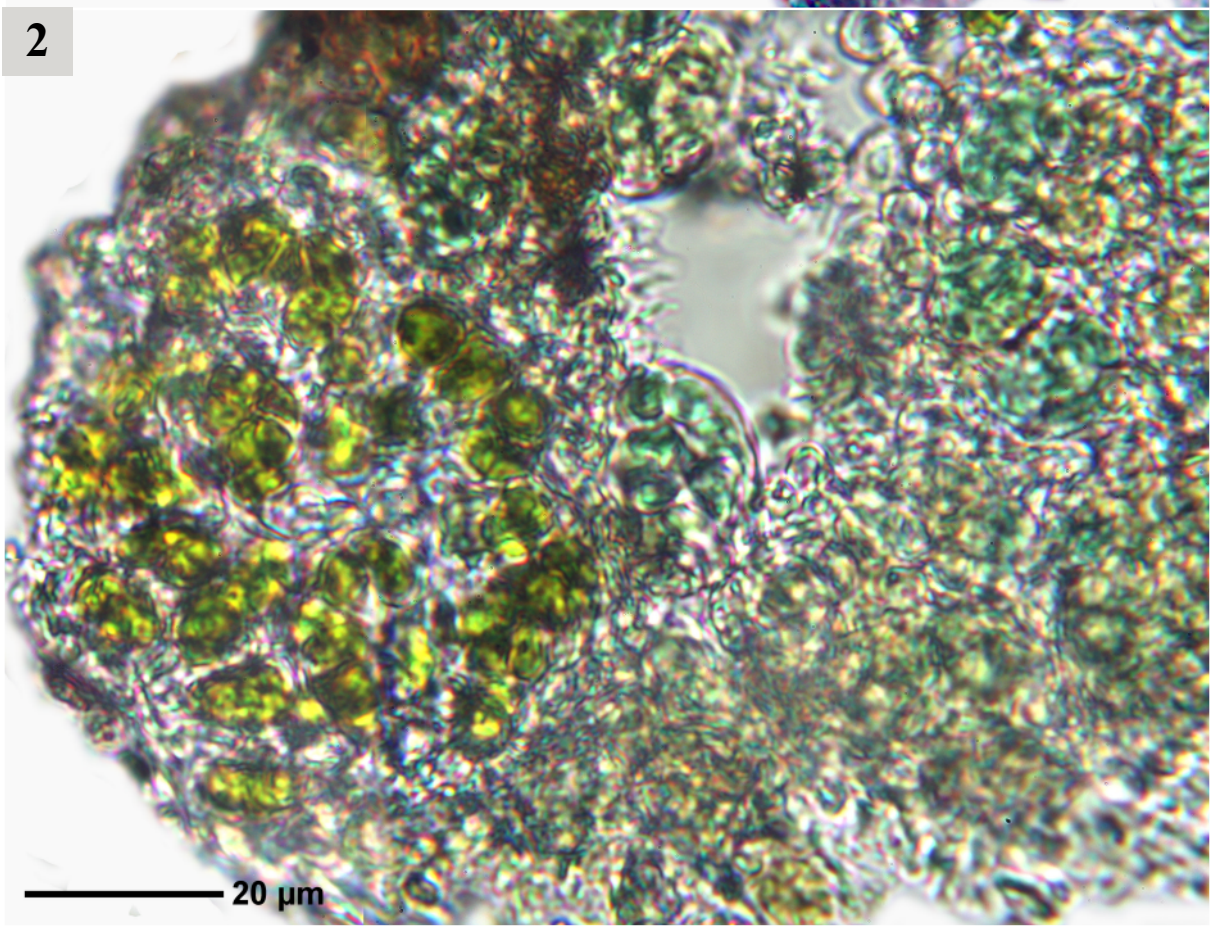
Phyllopeltula corticola (Büdel & R.Sant.) Kalb

The illustrations show a chimera of the cyanobacteria-containing *Phyllopeltula corticola* which bears folioles with green algae. 2: sections through chimera, 3: section through cyanobacteria-containing thallus, 4: soredia with green algae and papillose cells. Pantropical. Lit. Aptroot & Schumm (2010, Lichenologist 42(3): 307-310)

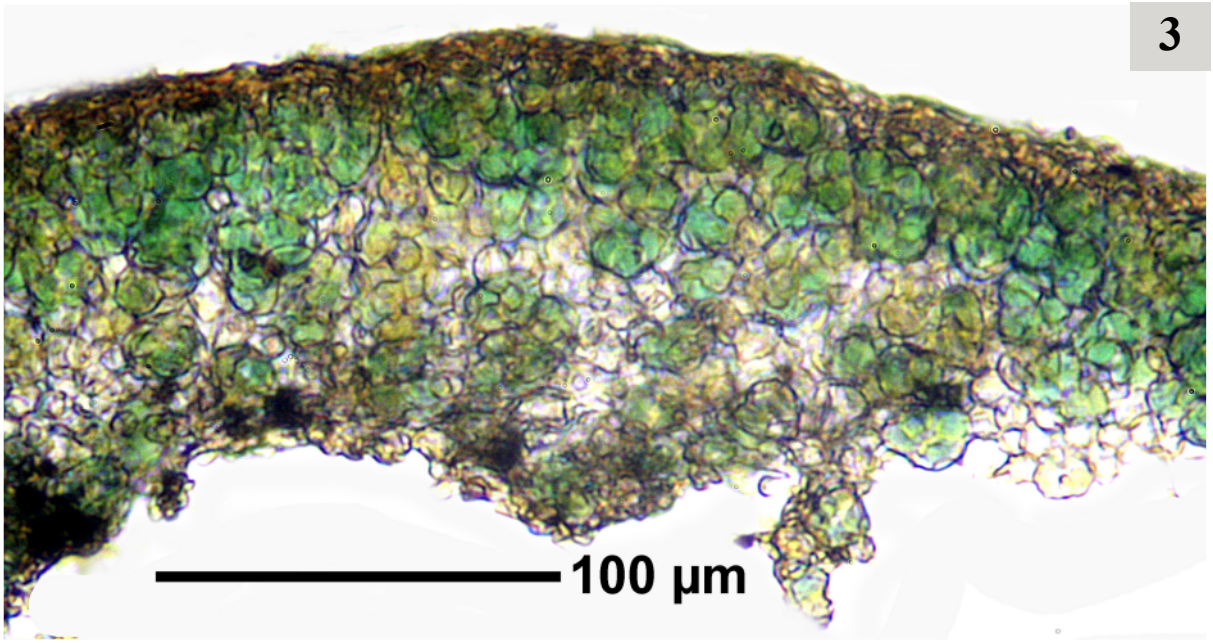
[7349], Philippinen, Negros, Prov. Negros Oriental, Dumaguete, N 9°18.620, E 123°18.475, 6 m. Leg. Schumm 08.08.2000, det. Aptroot 2009.

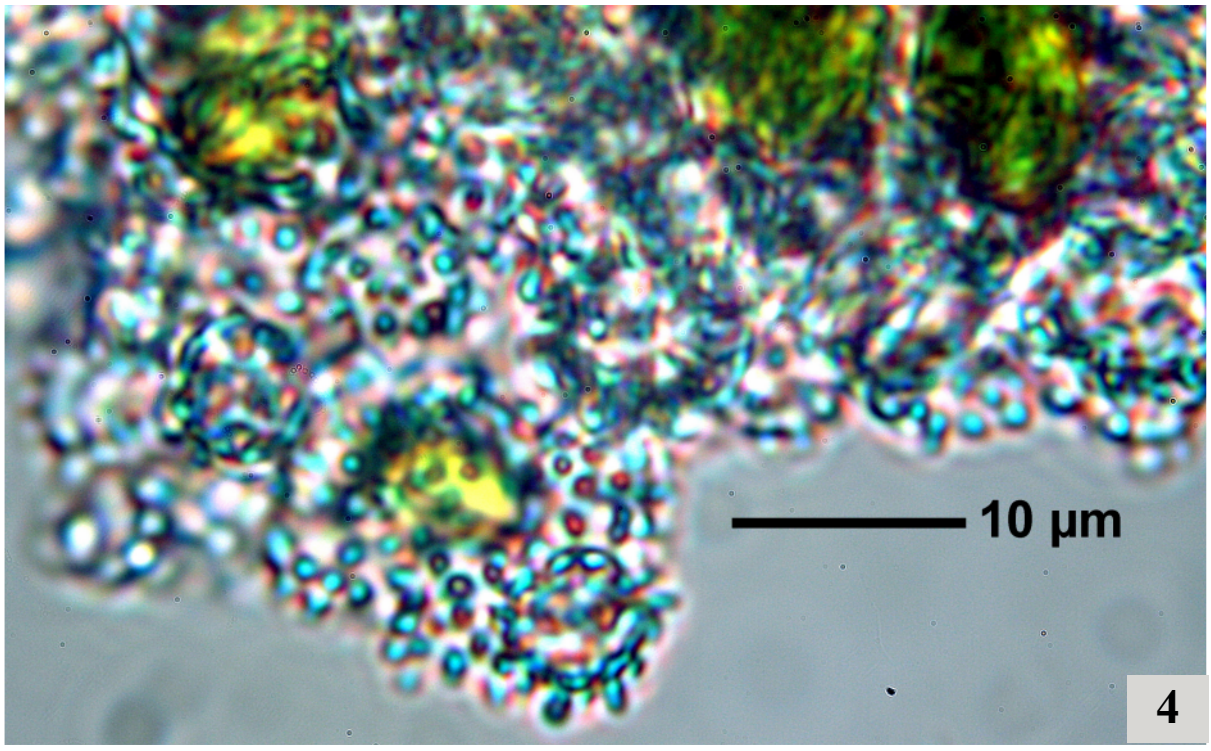






Phyllopeltula corticola



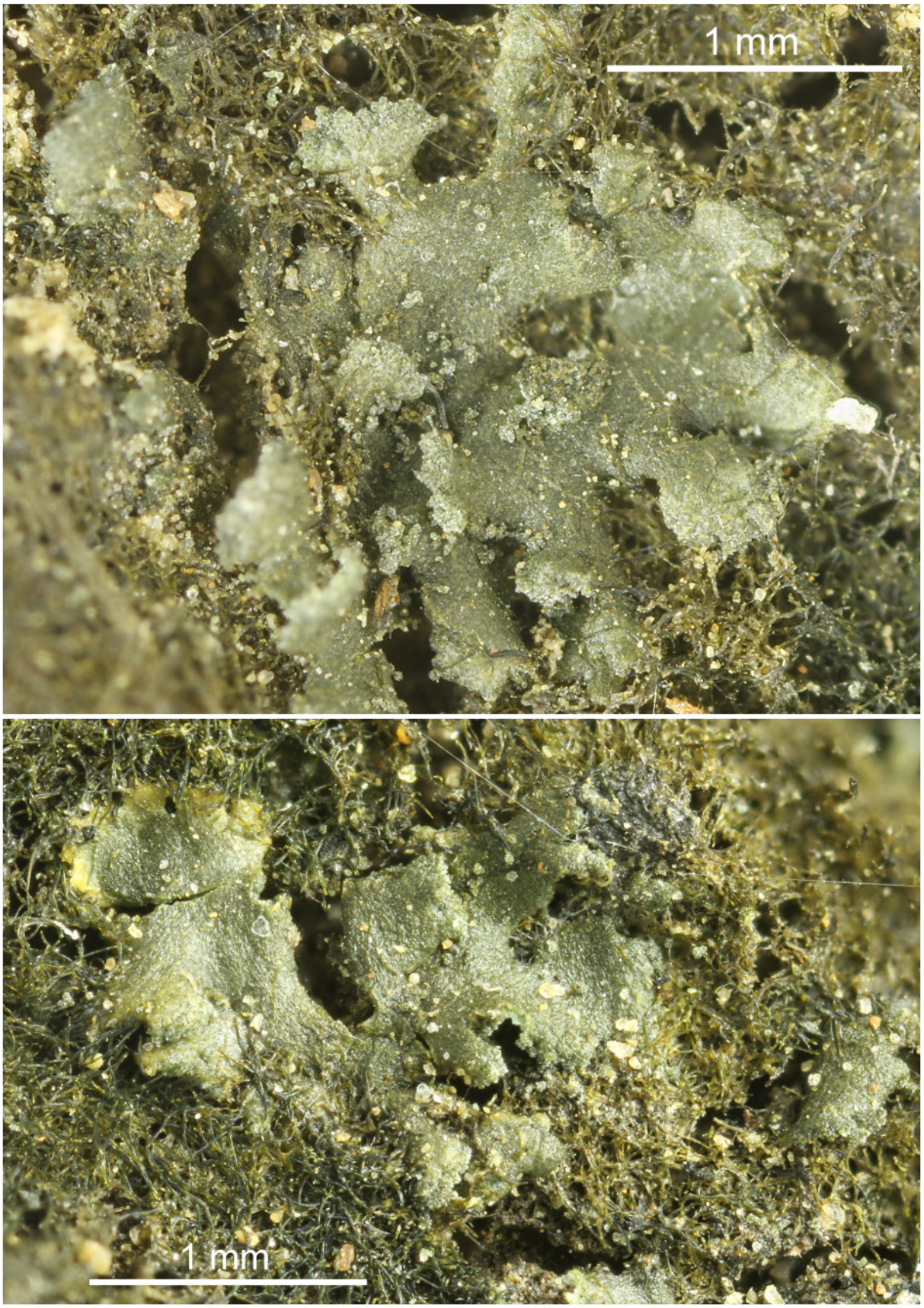


Phyllopeltula corticola

Phyllopeltula corticola (Büdel & R.Sant.) Kalb

Thallus with only cyanobacteria. Soredia present.

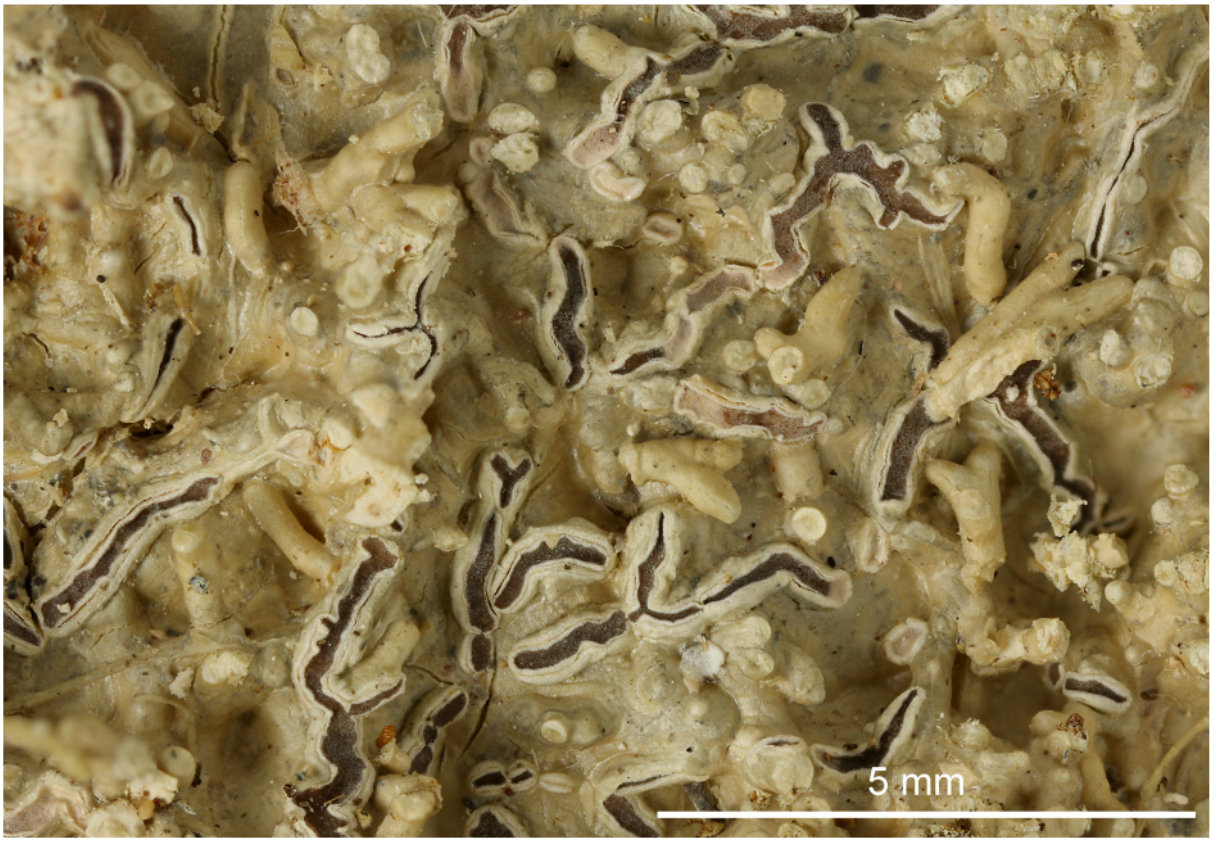
[9527], Thailand, an Straßenbäumen bei Kanchanaburi, 14°01.871' N, 99°31.597' E, 39 m. Leg. Schumm 27.03.2002, det. Aproot 2009.



Platythecium dimorphodes (Nyl.) Staiger
[= ***Graphina dimorphodes*** (Nyl.) Zahlbr.]

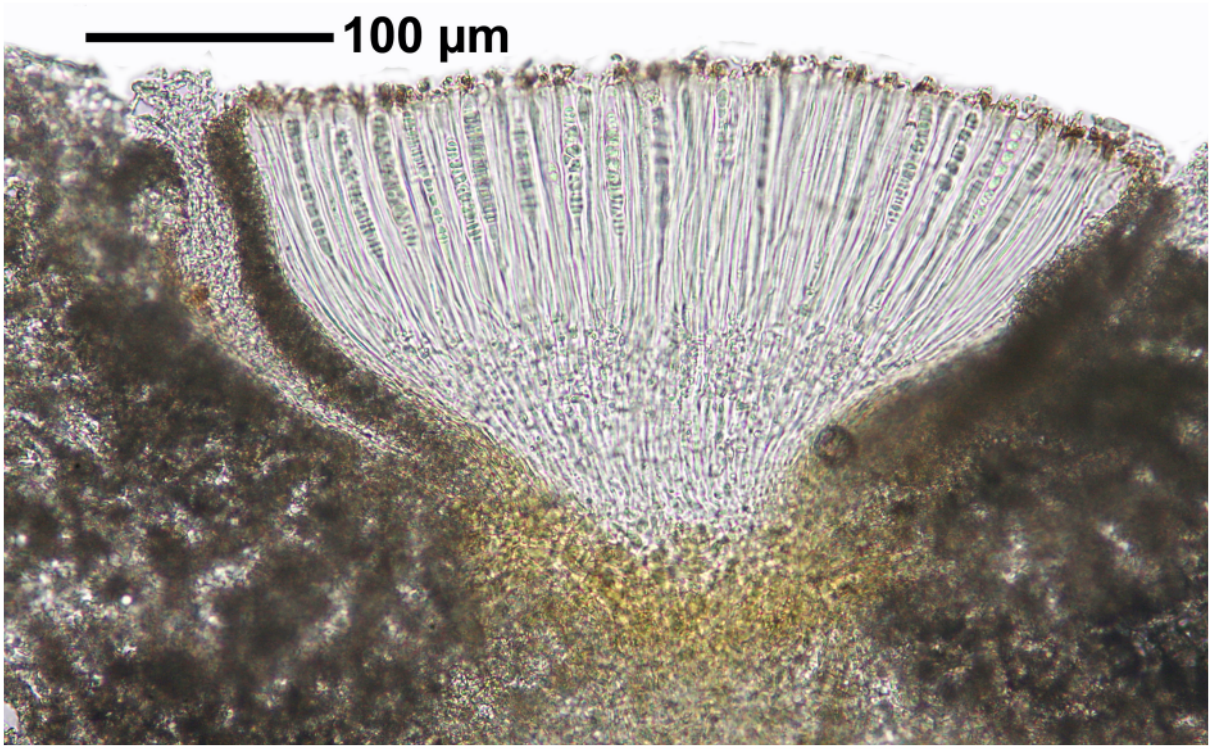
Thallus grey-green to pale brown, uneven, partly with warty outgrowths. Lirellae elongated, branched, straight or undulating, 0.5-5 x 0.4-0.6 mm, mature lirellae open. Disc brown, somewhat whitish pruinose. Labia becoming finally striate. Excipulum not carbonized, base with yellowish hyphae, laterally striped by inserted opaque layers with fine crystals. Hymenium not inspersed, 70-90 µm high, J-. Paraphyses at the tips brown and shortly branched. Ascospores hyaline, submuriform or only transversely septate, 9-16 x 5-8 µm, J+ blue-violet between the cells. Chemistry: K+ yellow>orange, P+ orange, norstictic, connorstictic acid.

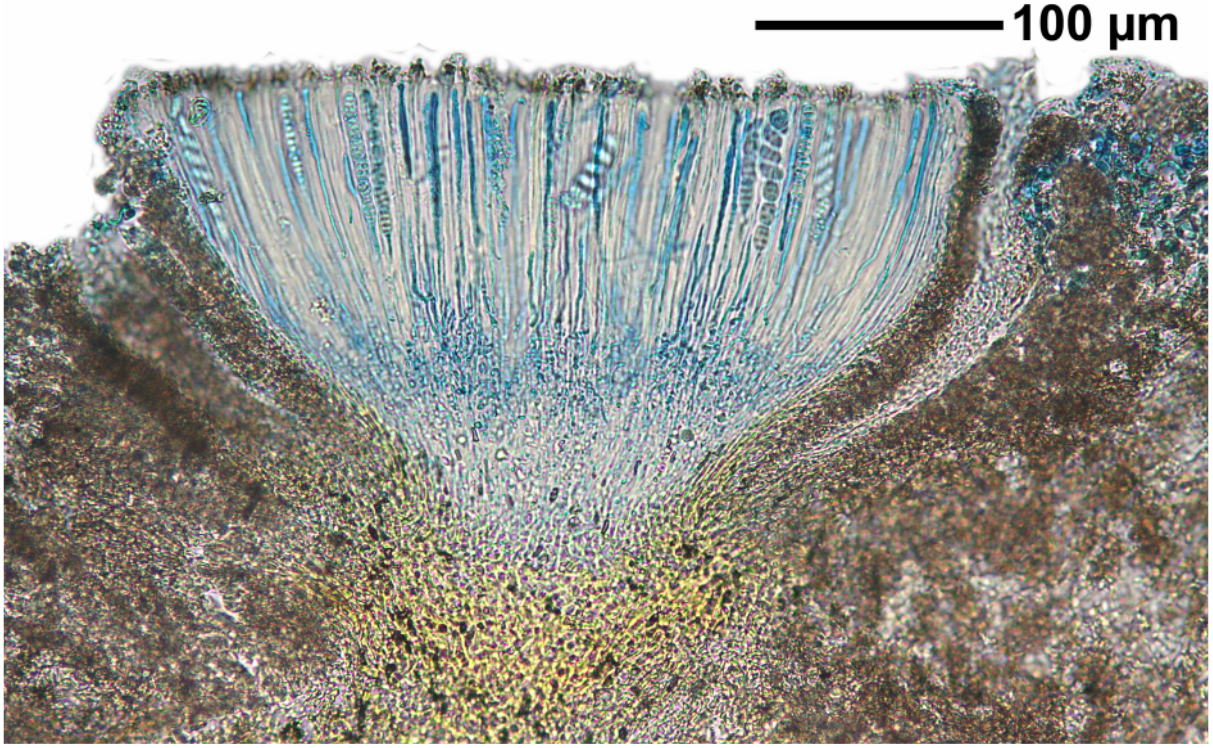
[6003], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald, Weg zwischen Lake-Agko-Campsite und Marbel-River-Campsite, ca. 07°01’07°00’ N, 125°13.3’-125°14.7’ E, 1240 m -1490 m. Leg. Schumm 07.08.1999, det. Archer 23.8.2003.Note: specimen published in Staiger (2002), Bibl. Lich. 25, p.385.

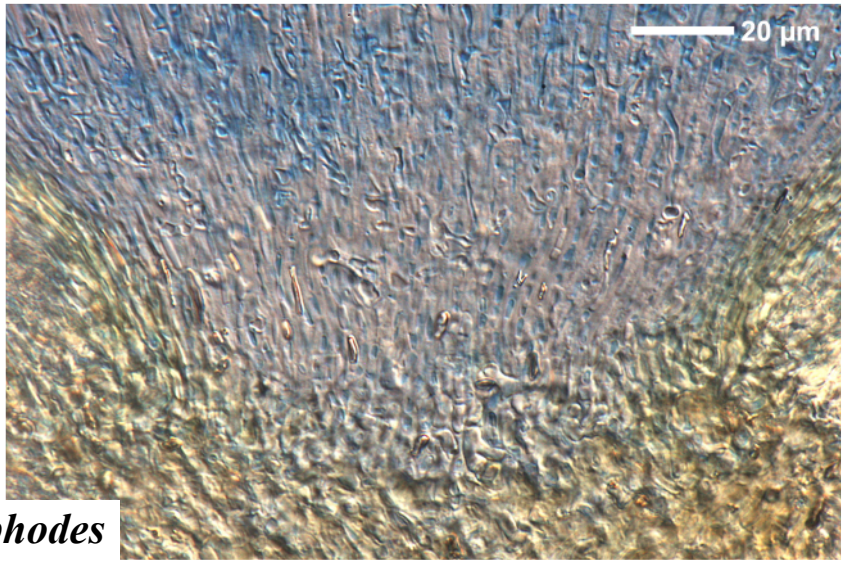




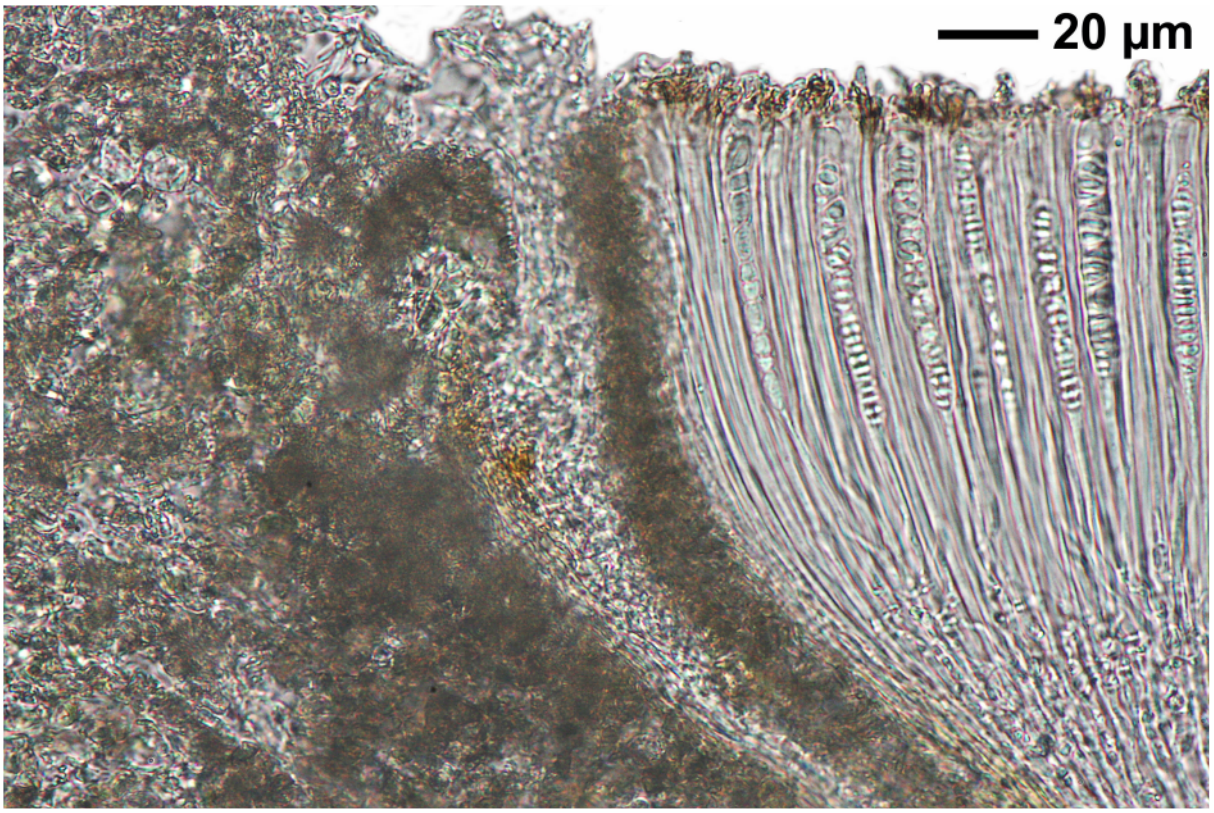
Platythecium dimorphodes

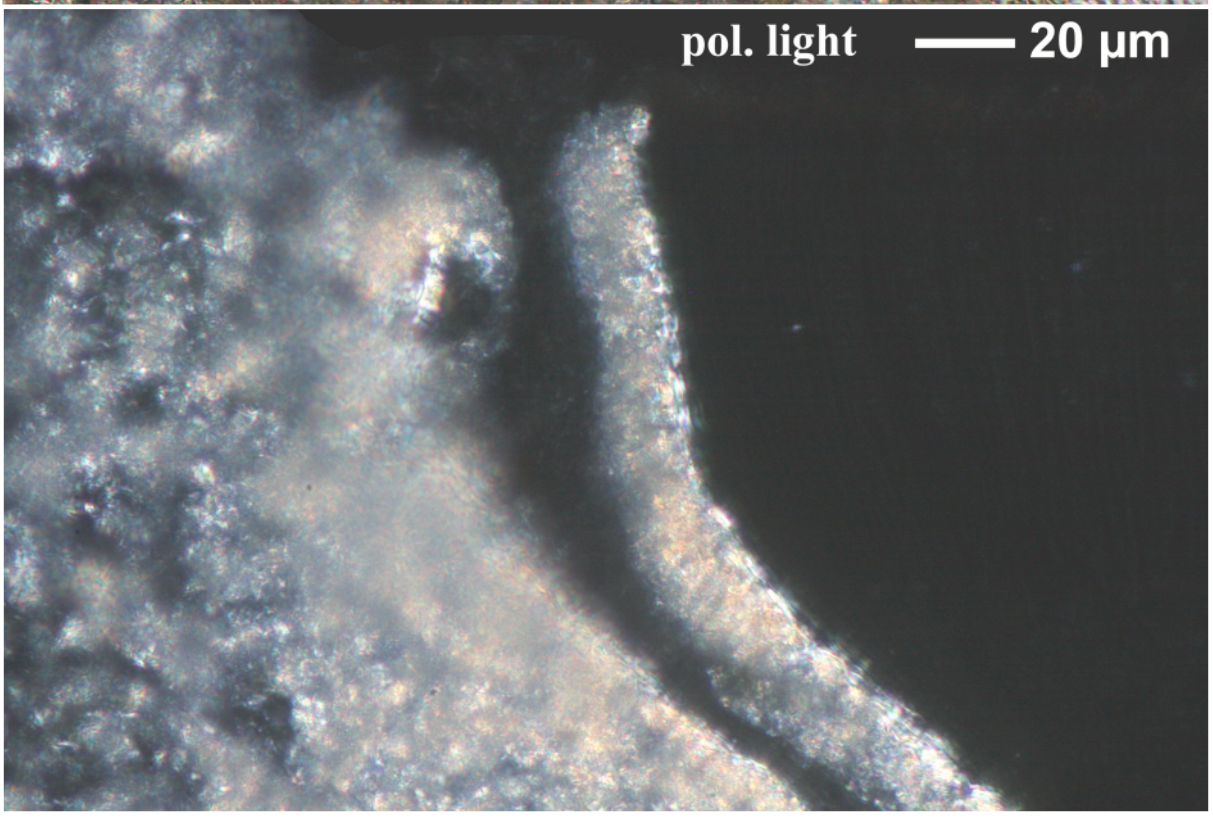




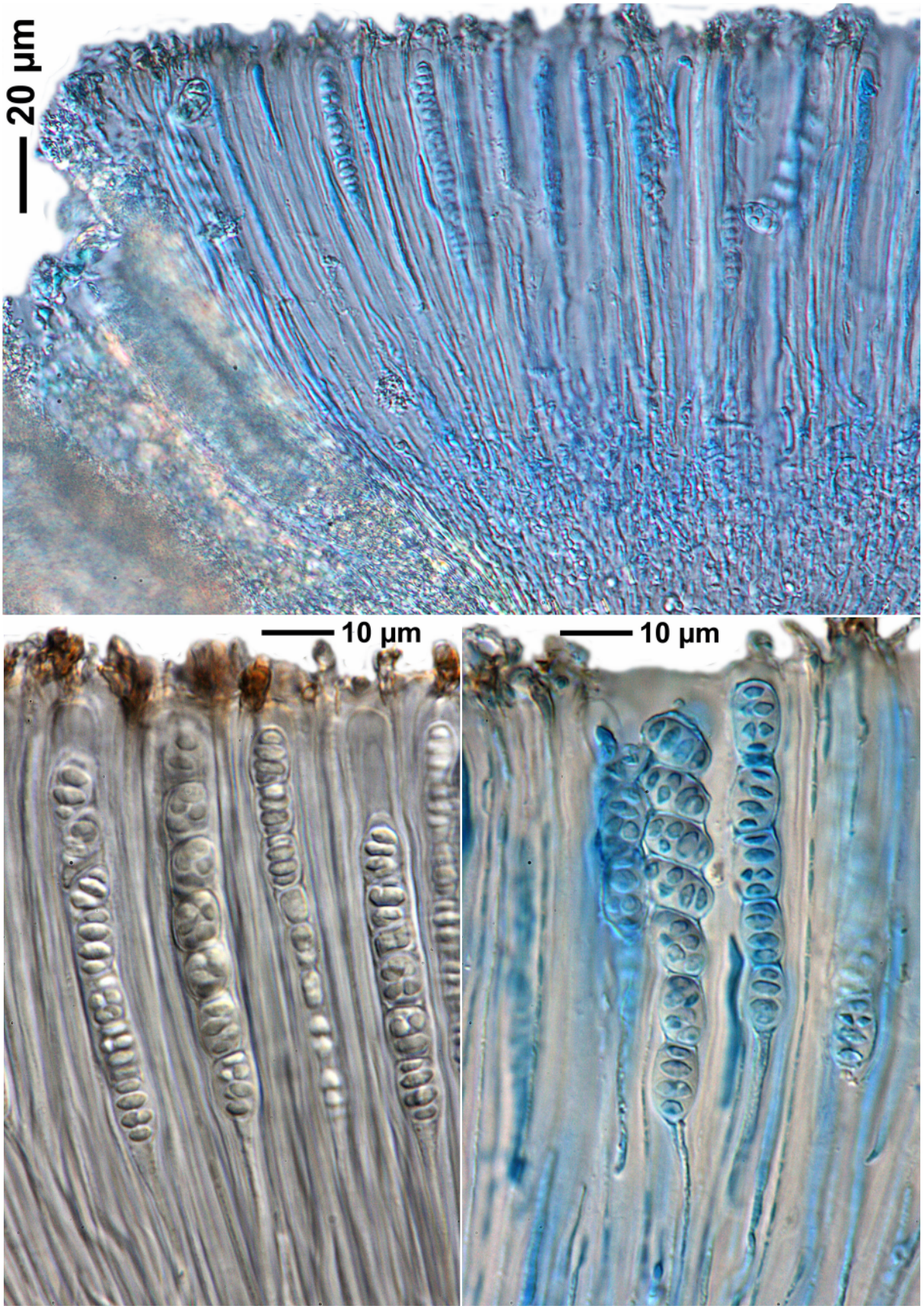


Platythecium dimorphodes

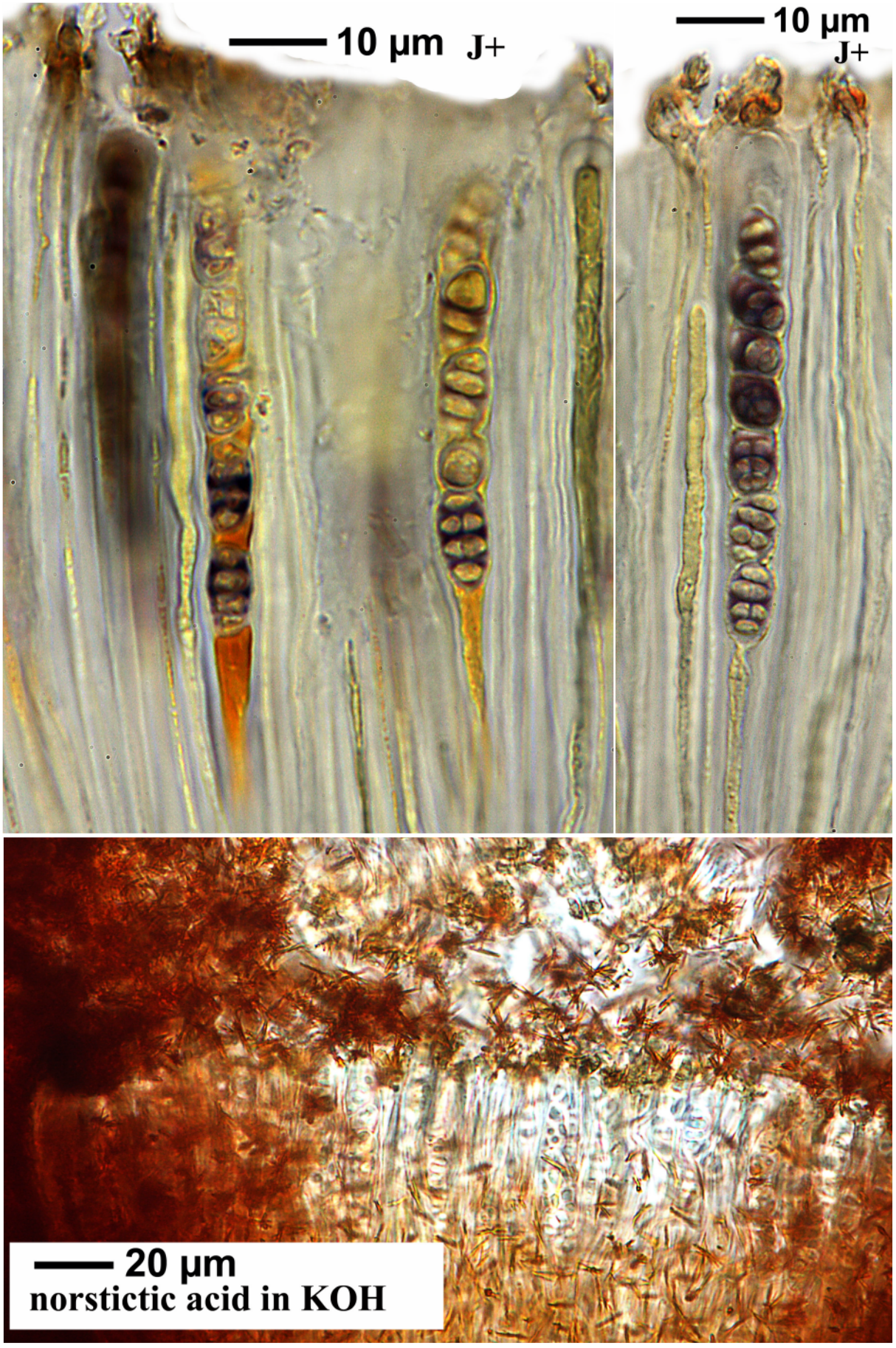




Platythecium dimorphodes



Platythecium dimorphodes

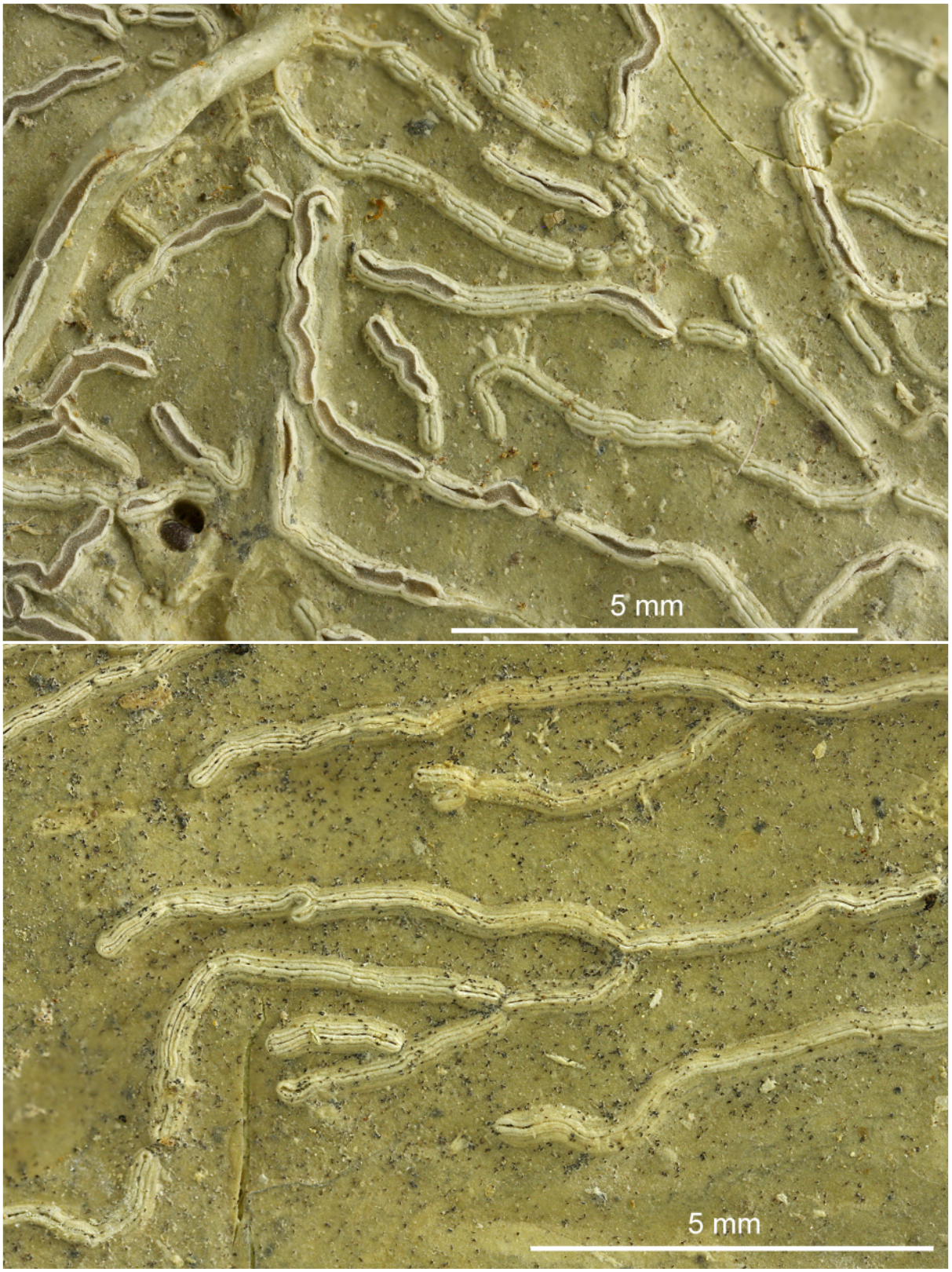


Platythecium dimorphodes

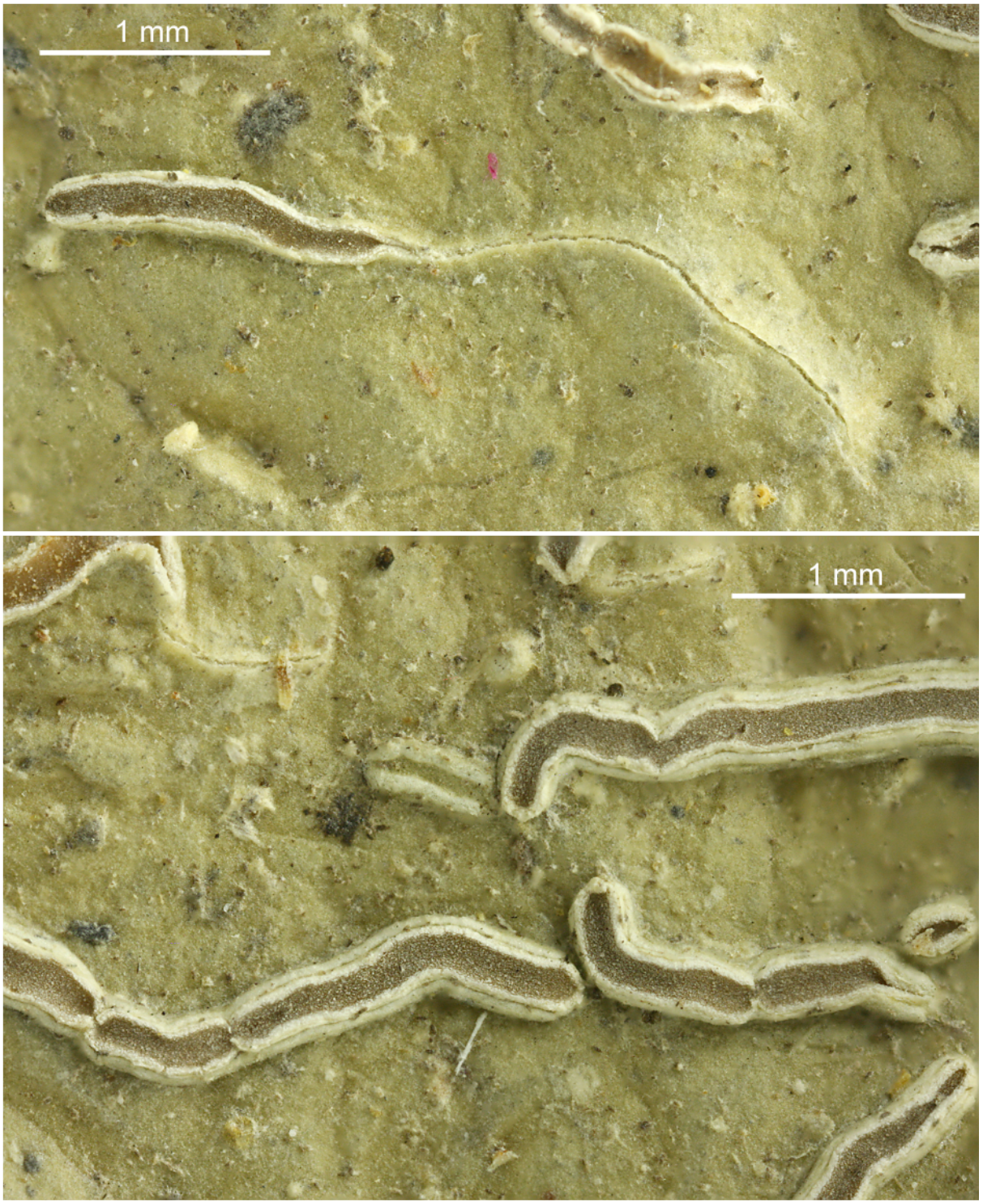
Platythecium dimorphodes (Nyl.) Staiger
[= ***Graphina dimorphodes*** (Nyl.) Zahlbr.]

[7873], Philippinen, Leyte, Prov. Leyte, Lake Kasudsuran (11°01.539' N, 124°44.931' E, 740 m) bei Barangay Liberty (Ormoc-City). Leg Schumm 23.08.2000, det. Schumm test. Kalb 2011.





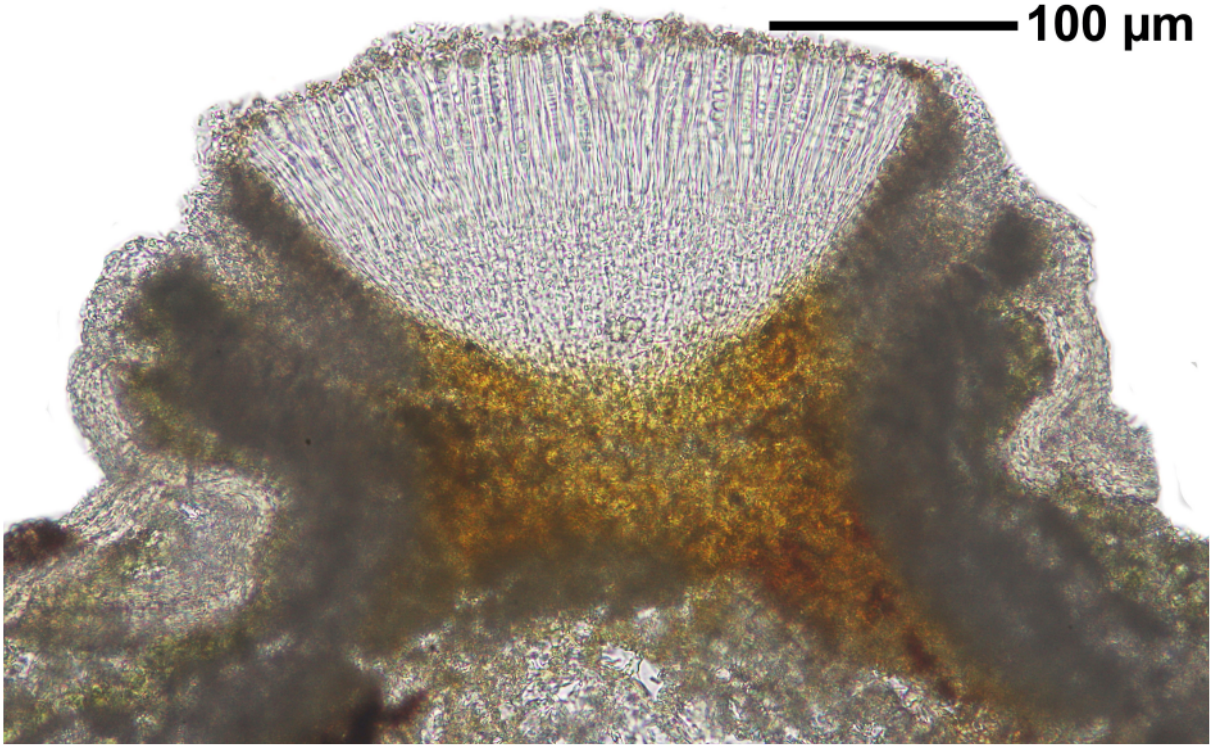
Platythecium dimorphodes

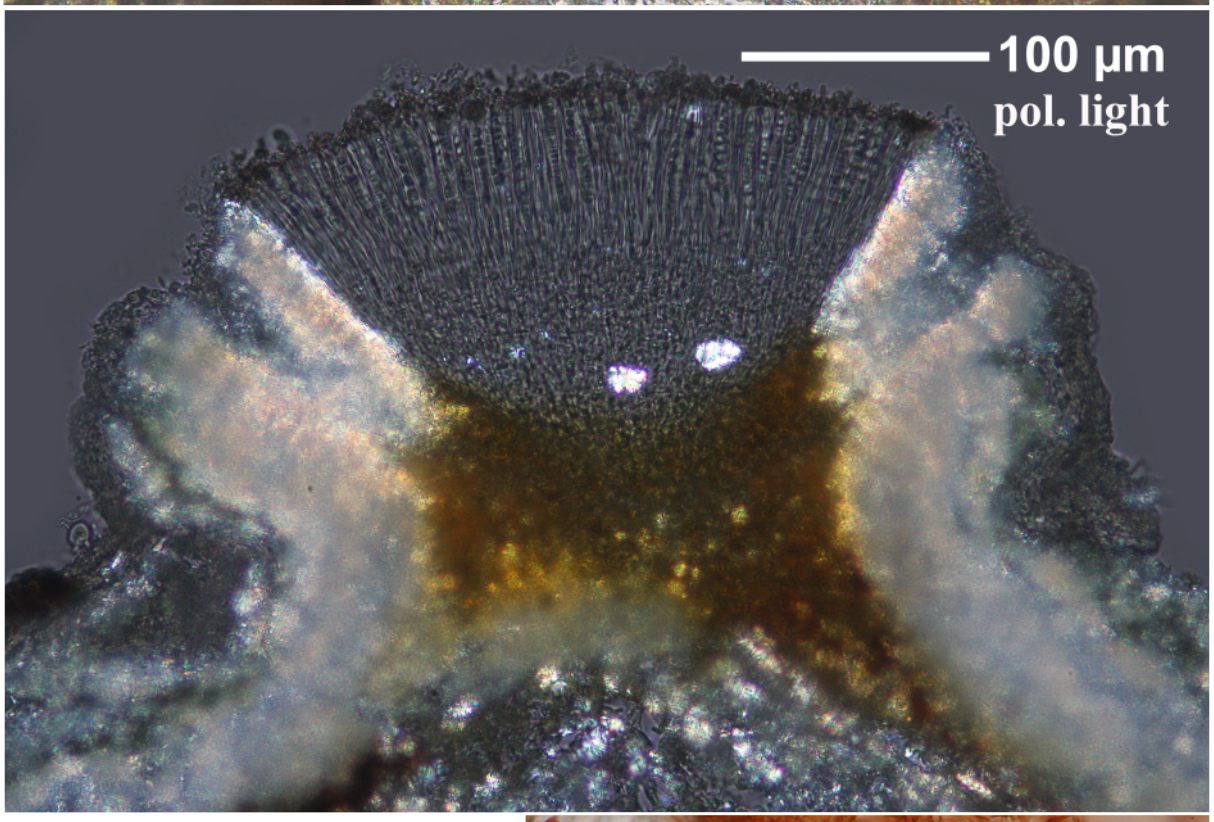


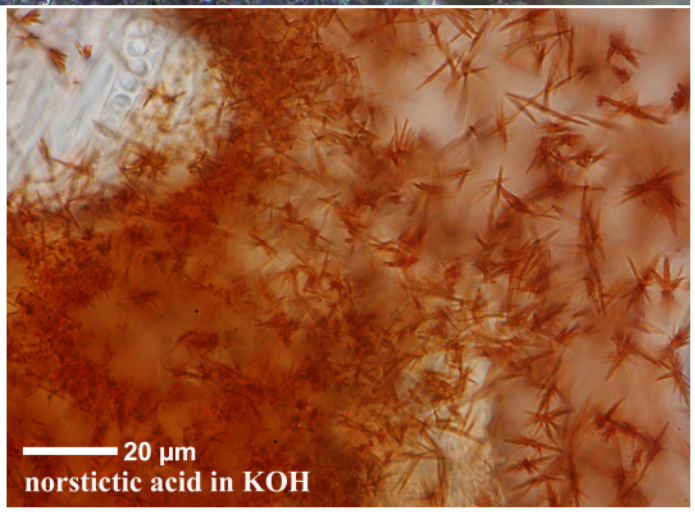
Platythecium dimorphodes



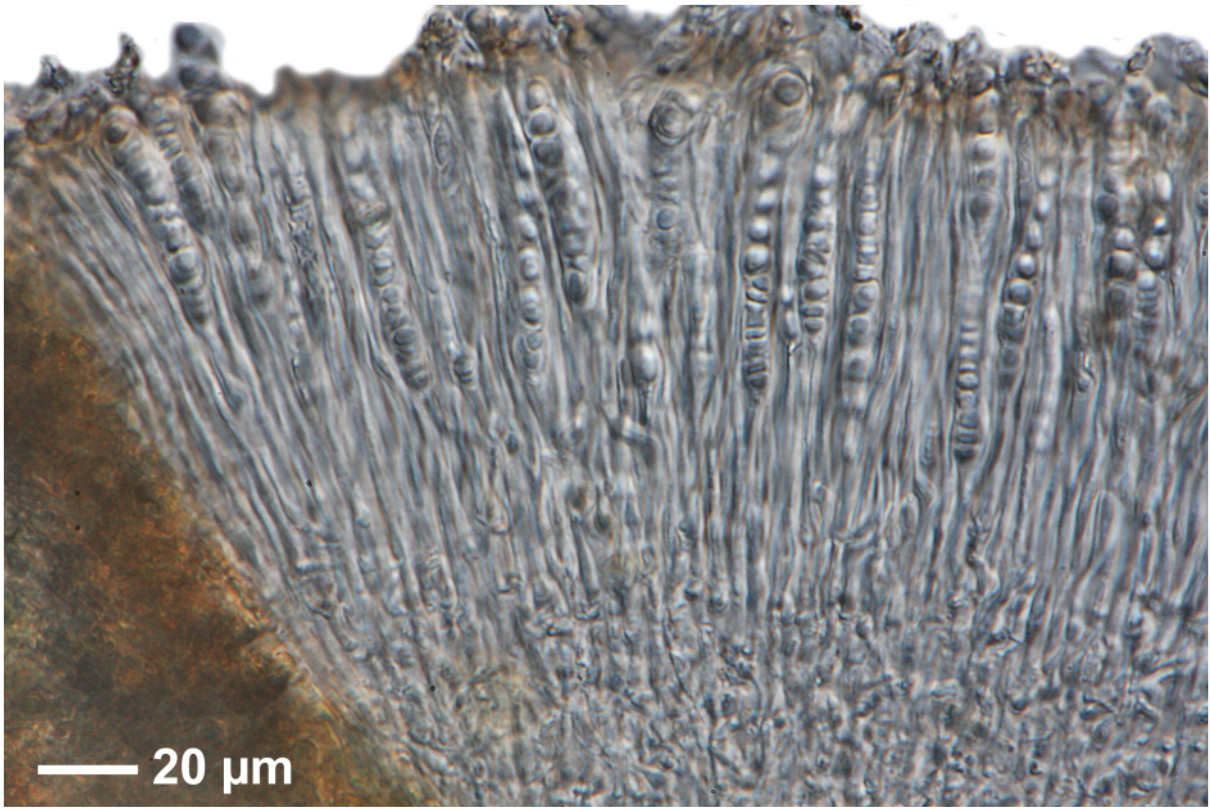
Platythecium dimorphodes



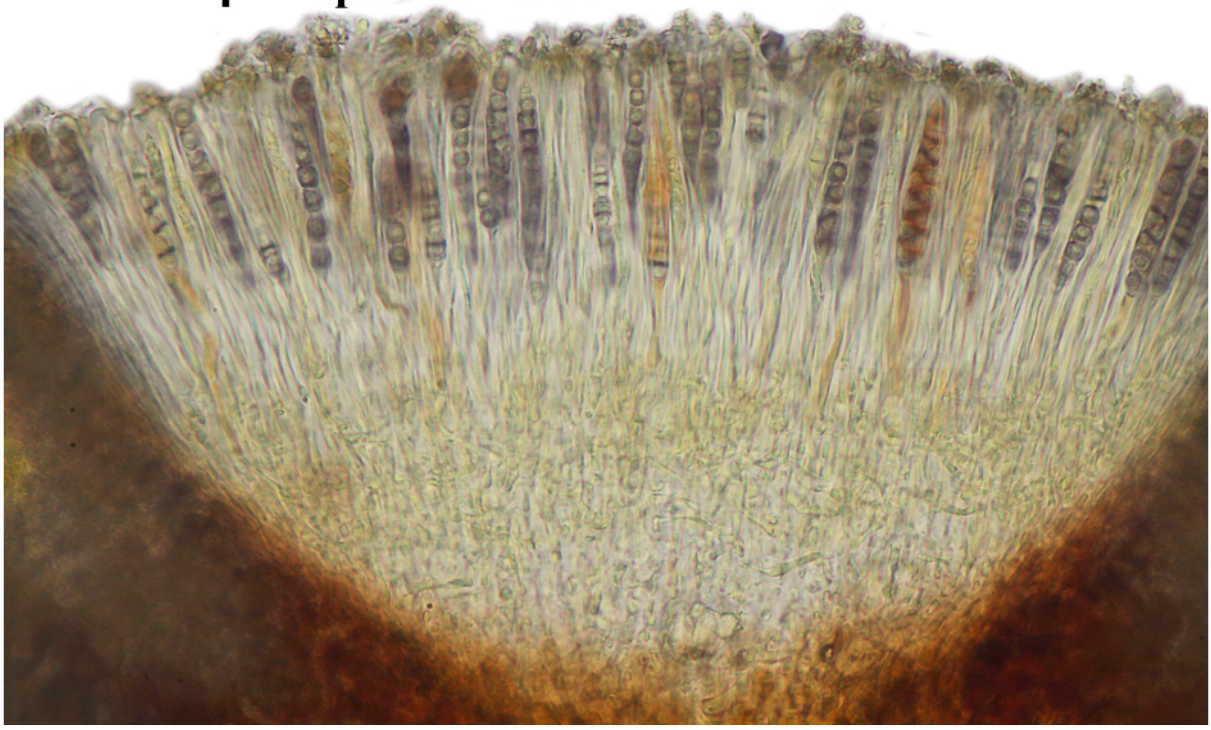




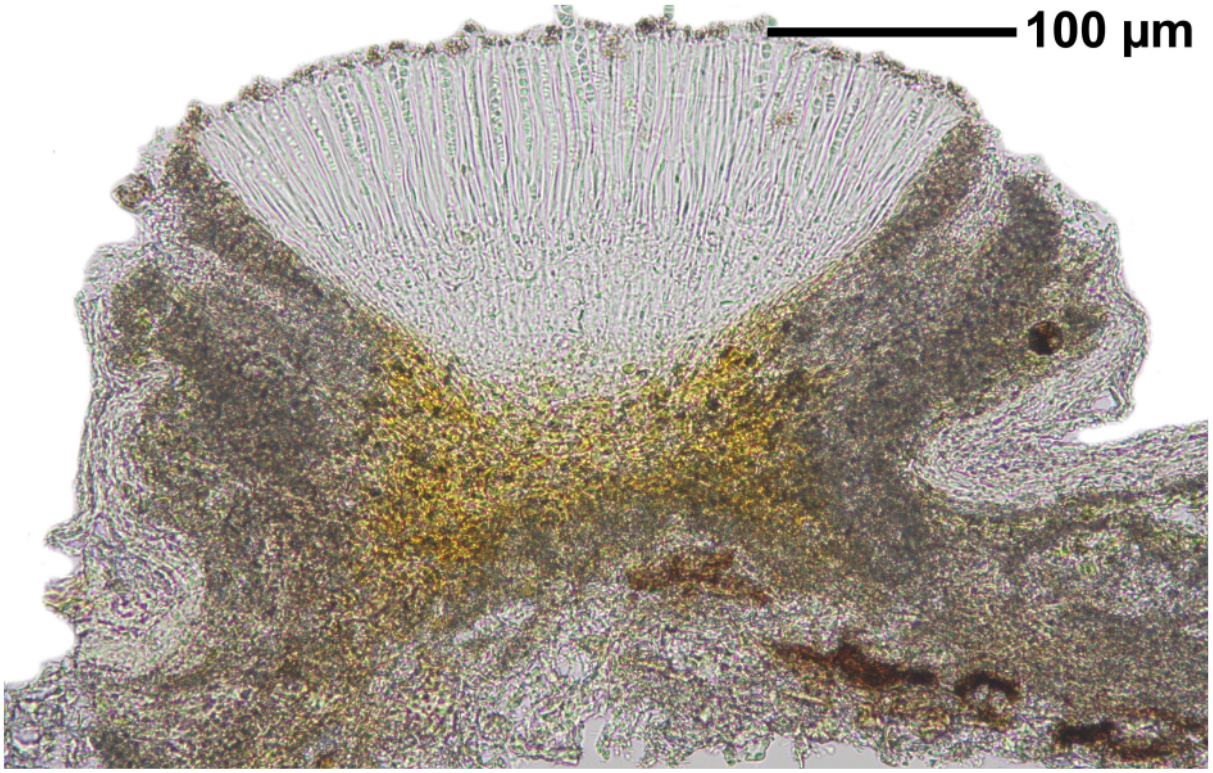
Platythecium dimorphodes

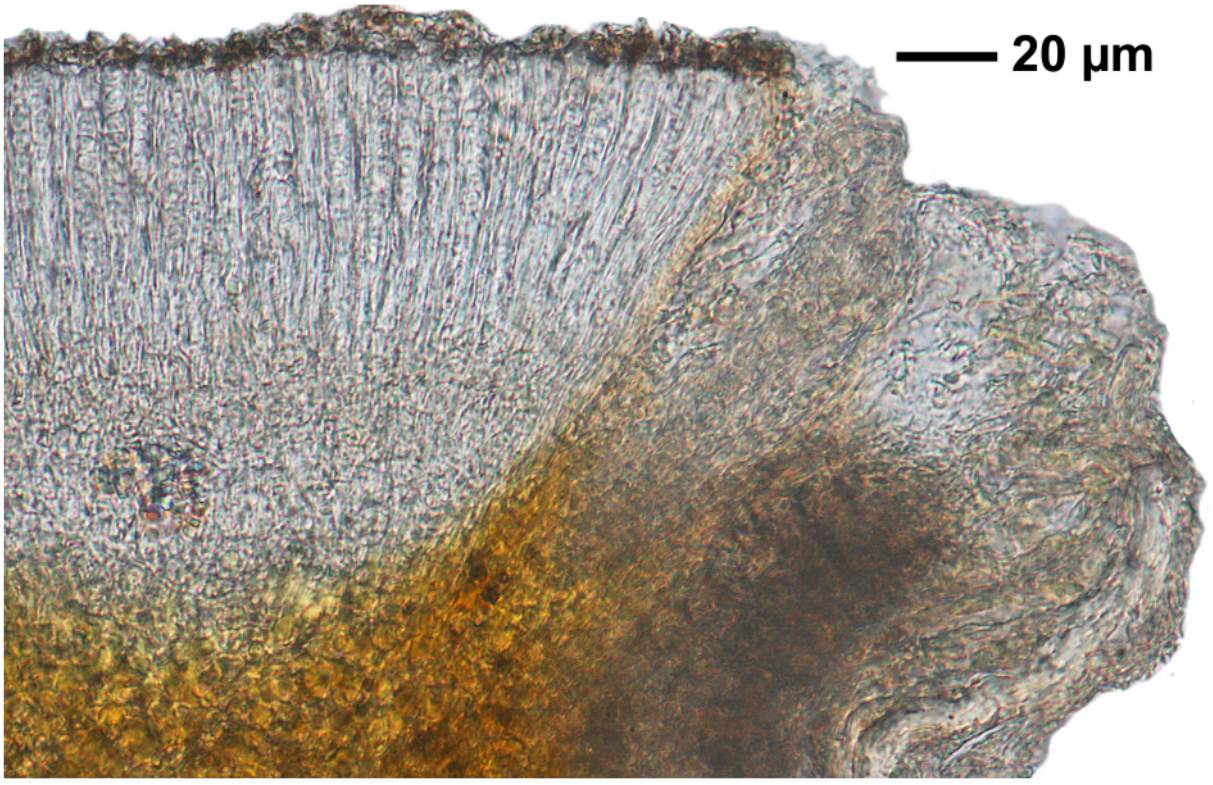


20 µm spores J+ blue

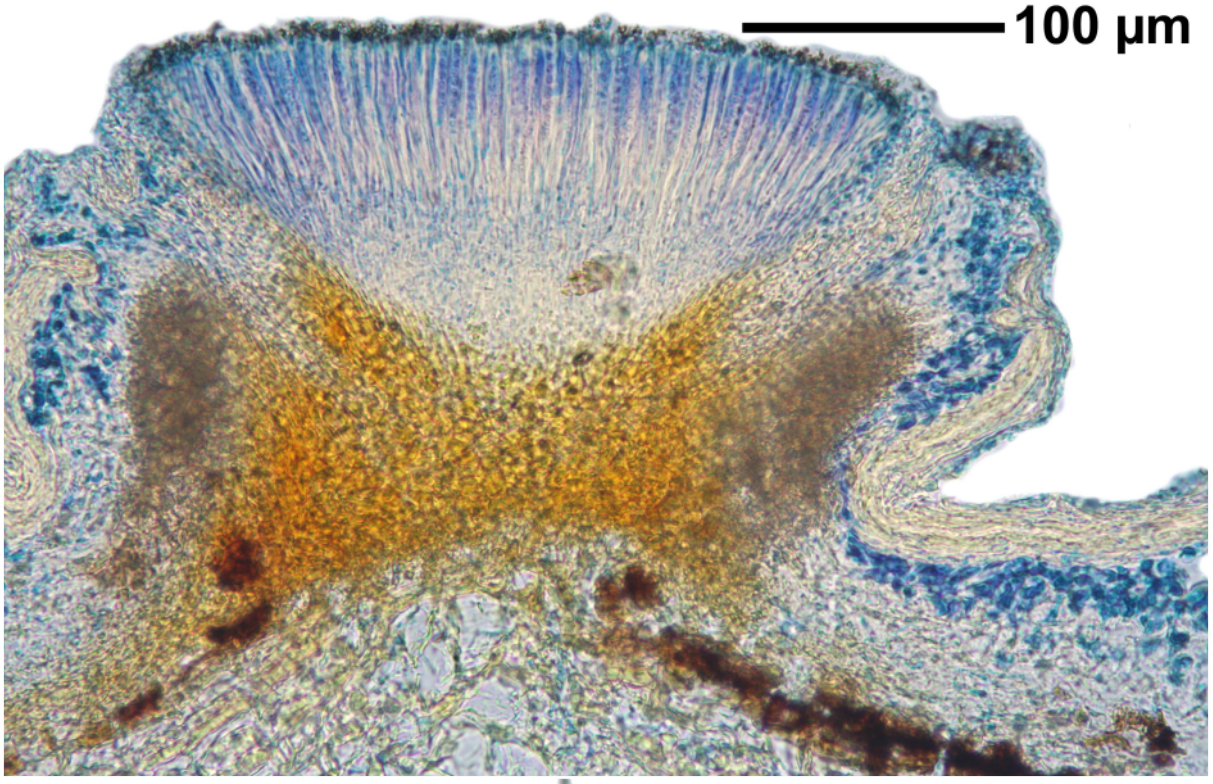


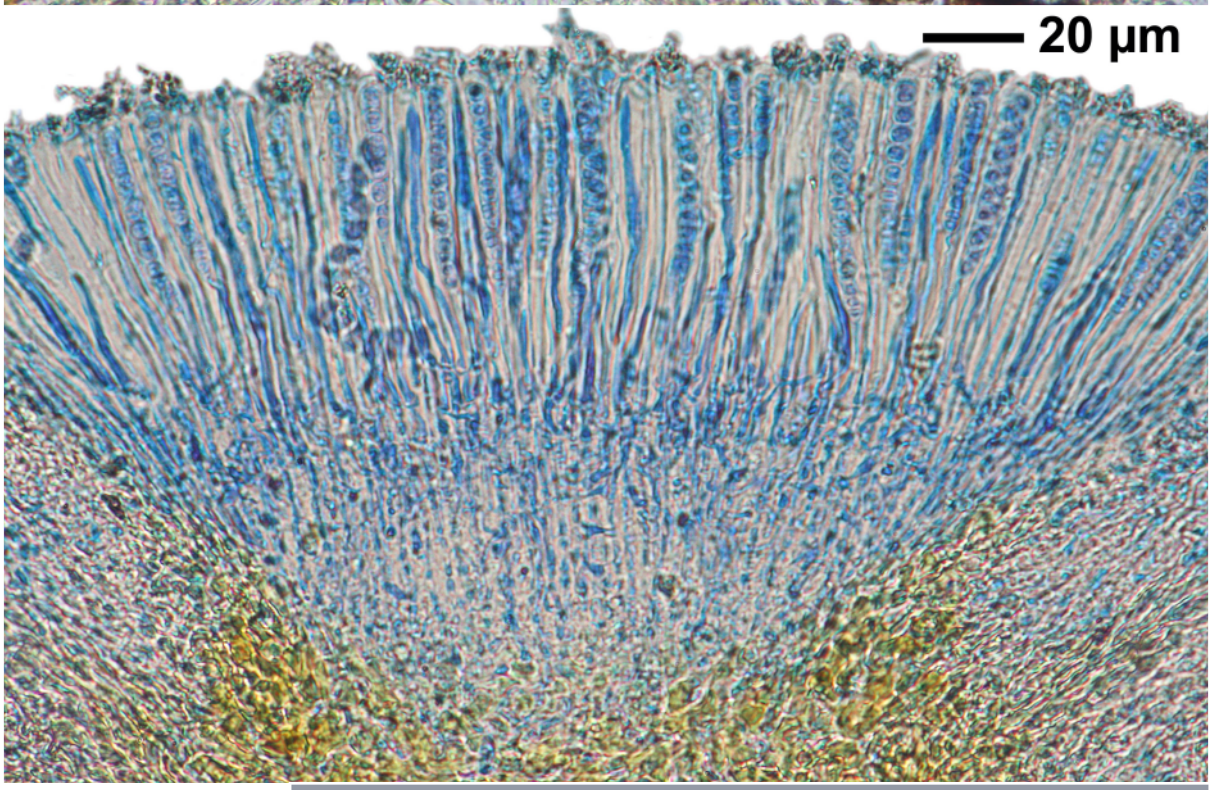
Platythecium dimorphodes

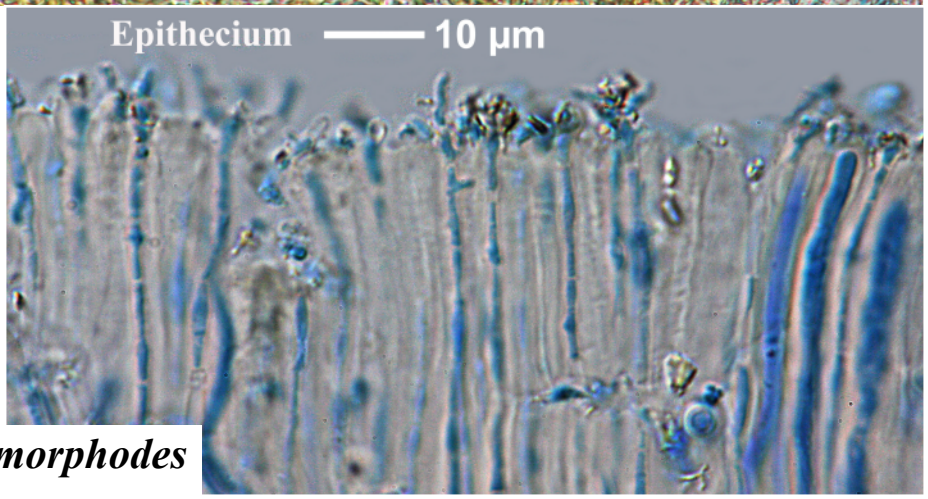




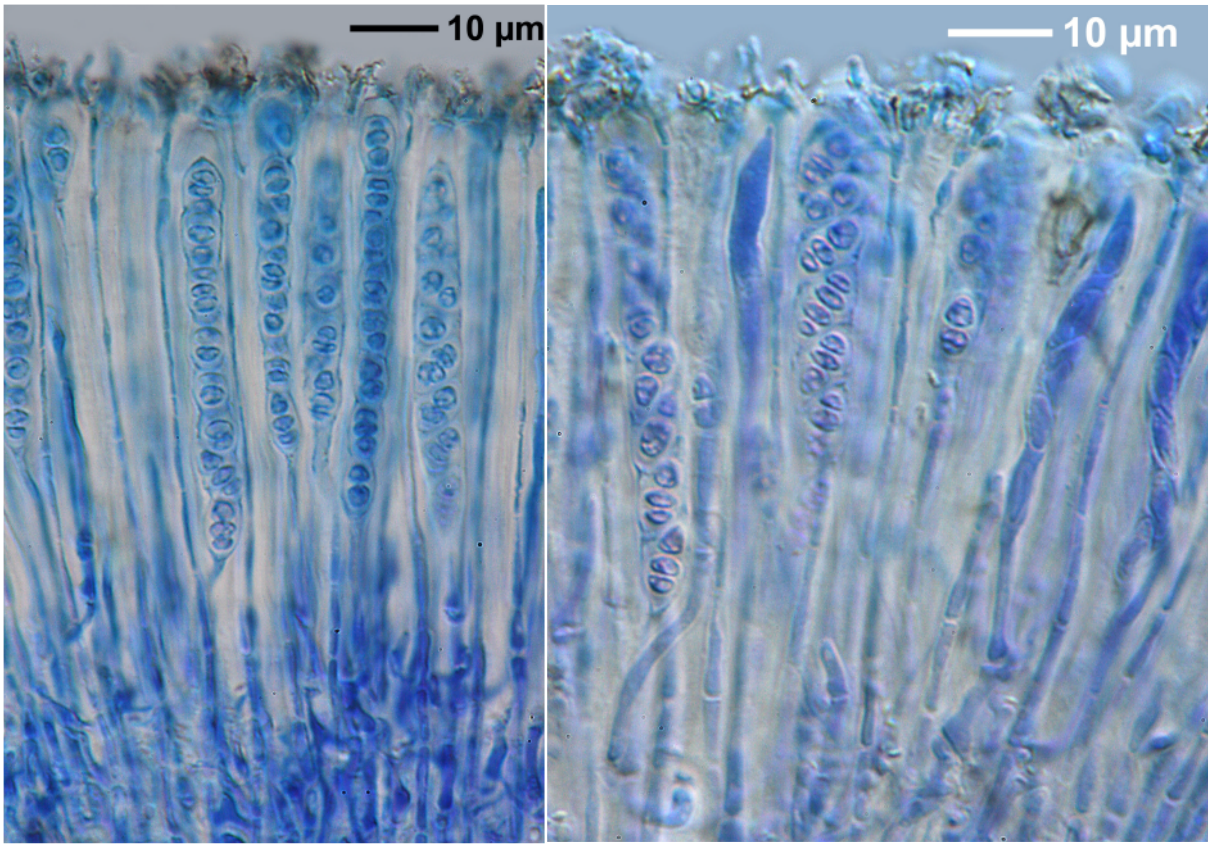
Platythecium dimorphodes

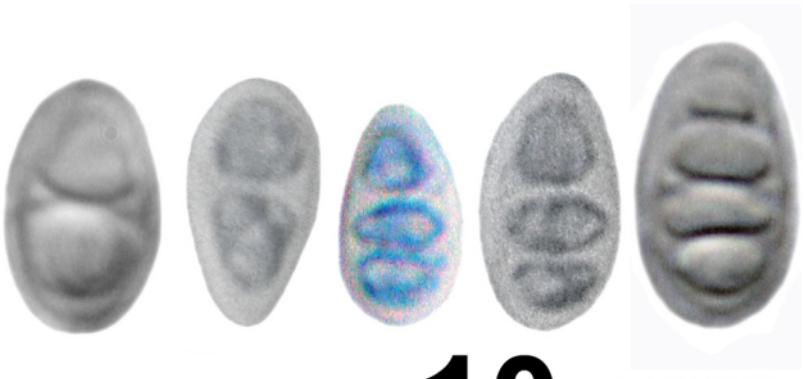






Platythecium dimorphodes







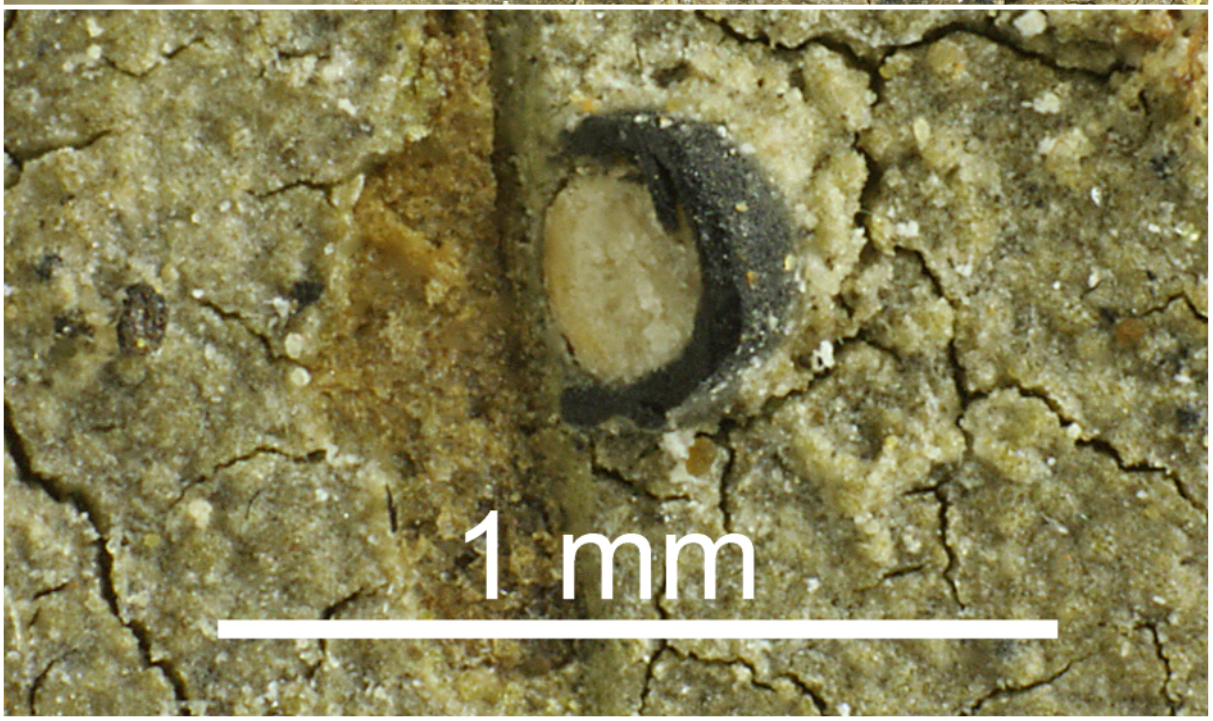
Platythecium dimorphodes

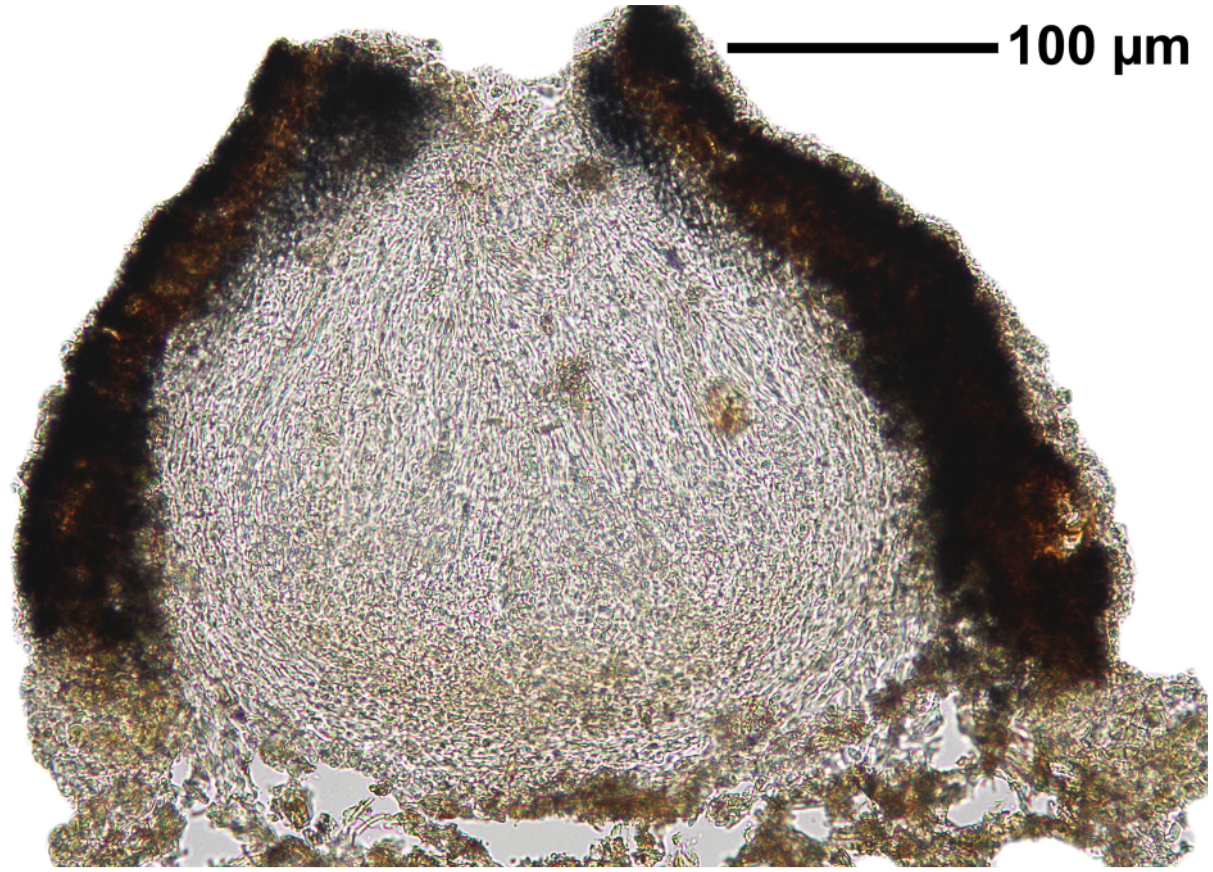
Porina borreri (Trevis) D.Hawksworth & P.James

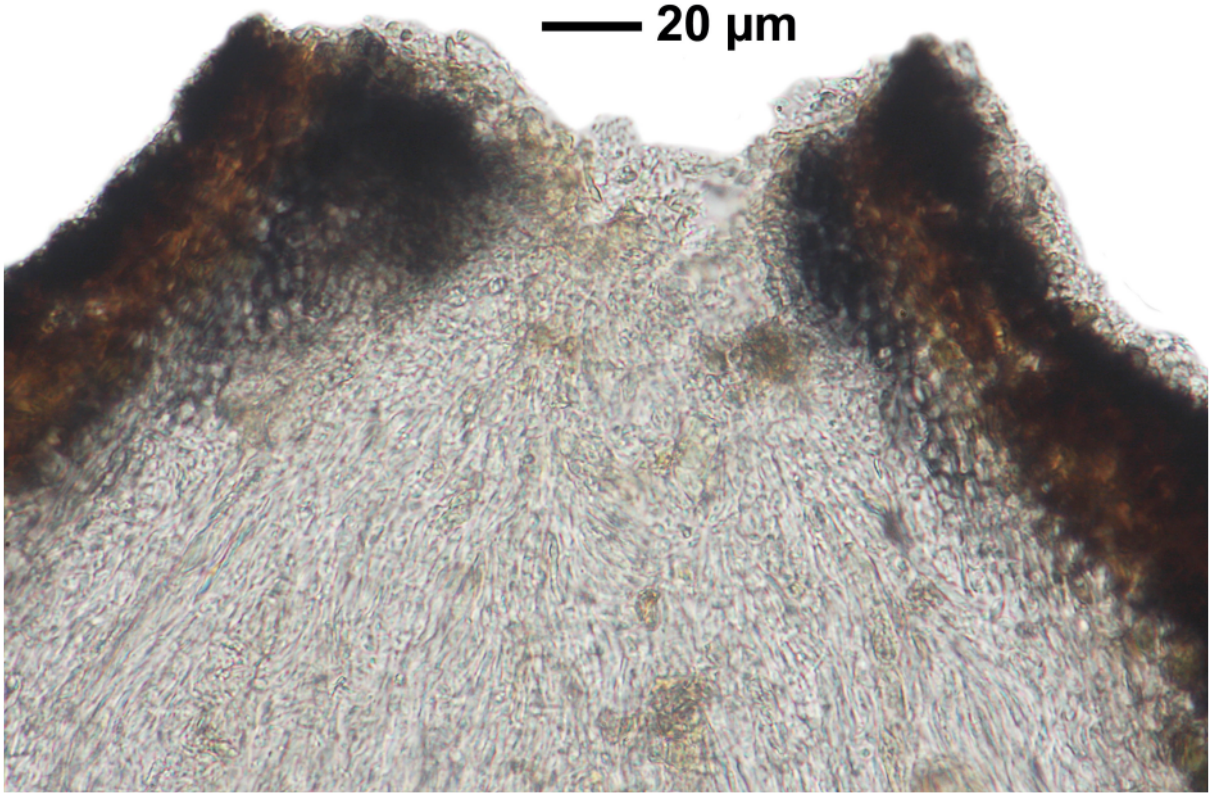
Excipulum without crystals. Periphyses absent. Paraphyses simple, rarely forked. Hymenium J-, K&J-. Asospores hyaline, 8/ascus, 5-7-septate, 27-46 x 6-8 µm

[9570], Thailand, Elefantenarbeitslager bei Chiang Mai, 19°14.859' N, 98°58.137' E, 330 m, auf Rinde. Leg. Schumm 01.04.2002, det. Aptroot 2009.

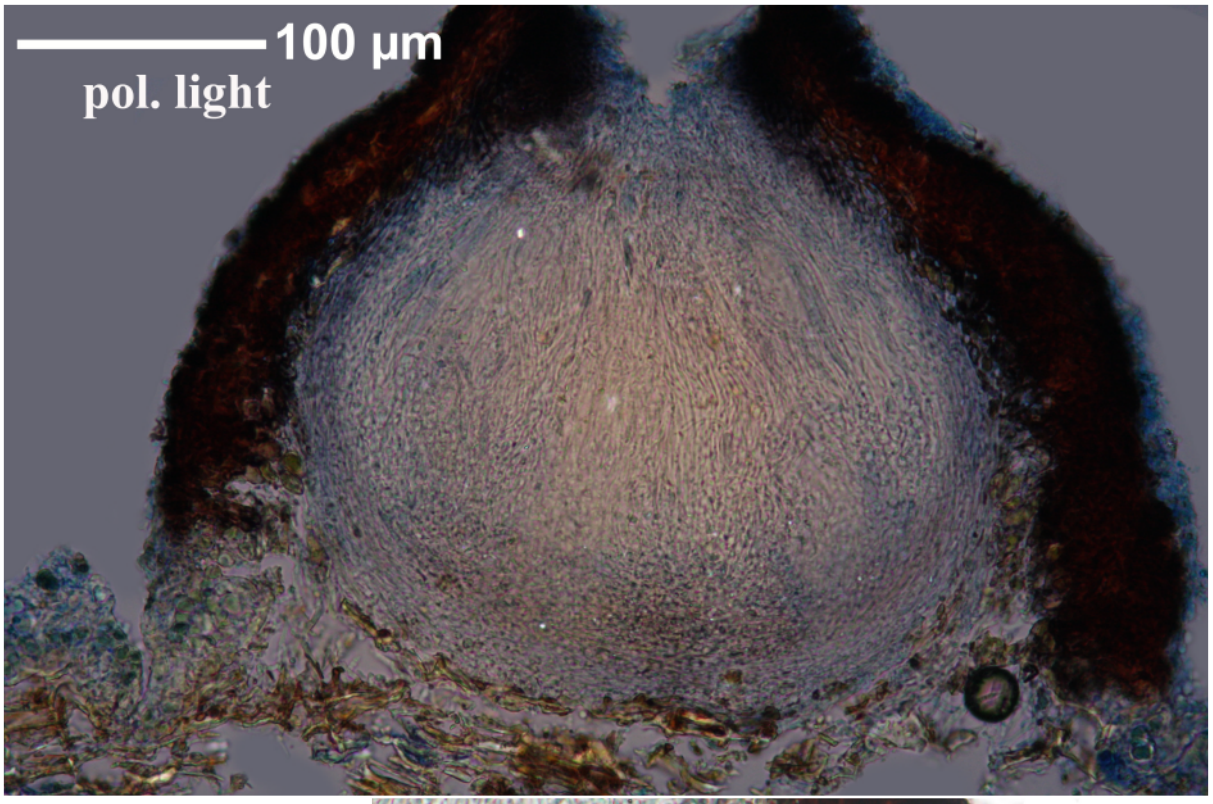




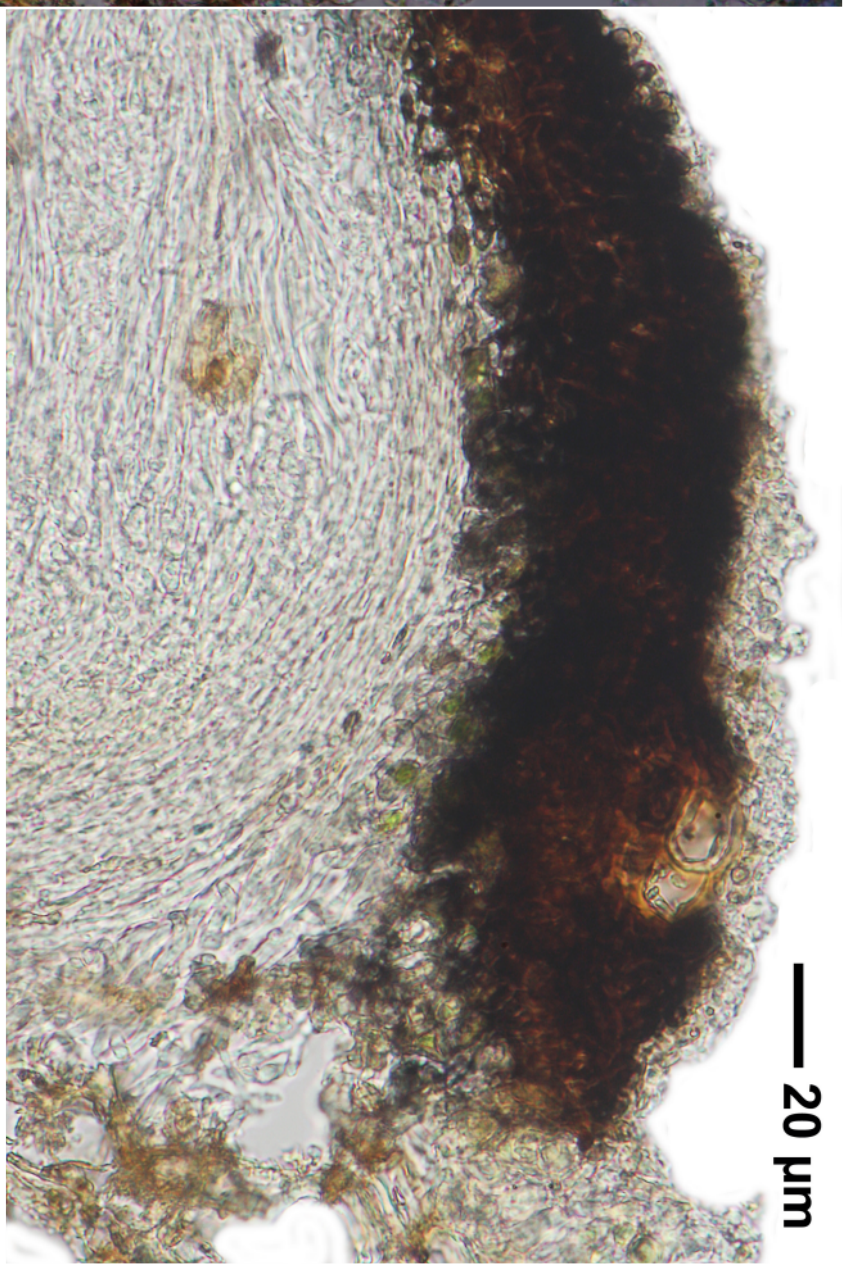




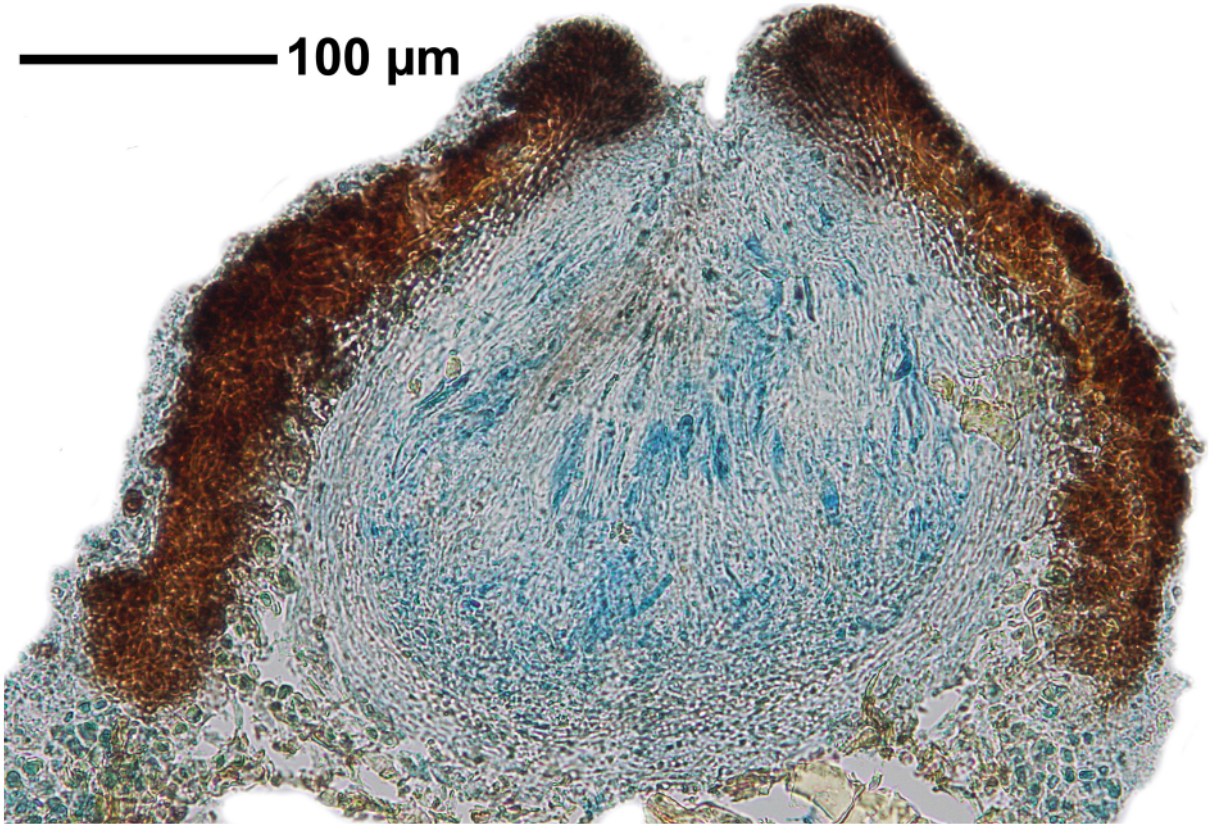
Porina borreri

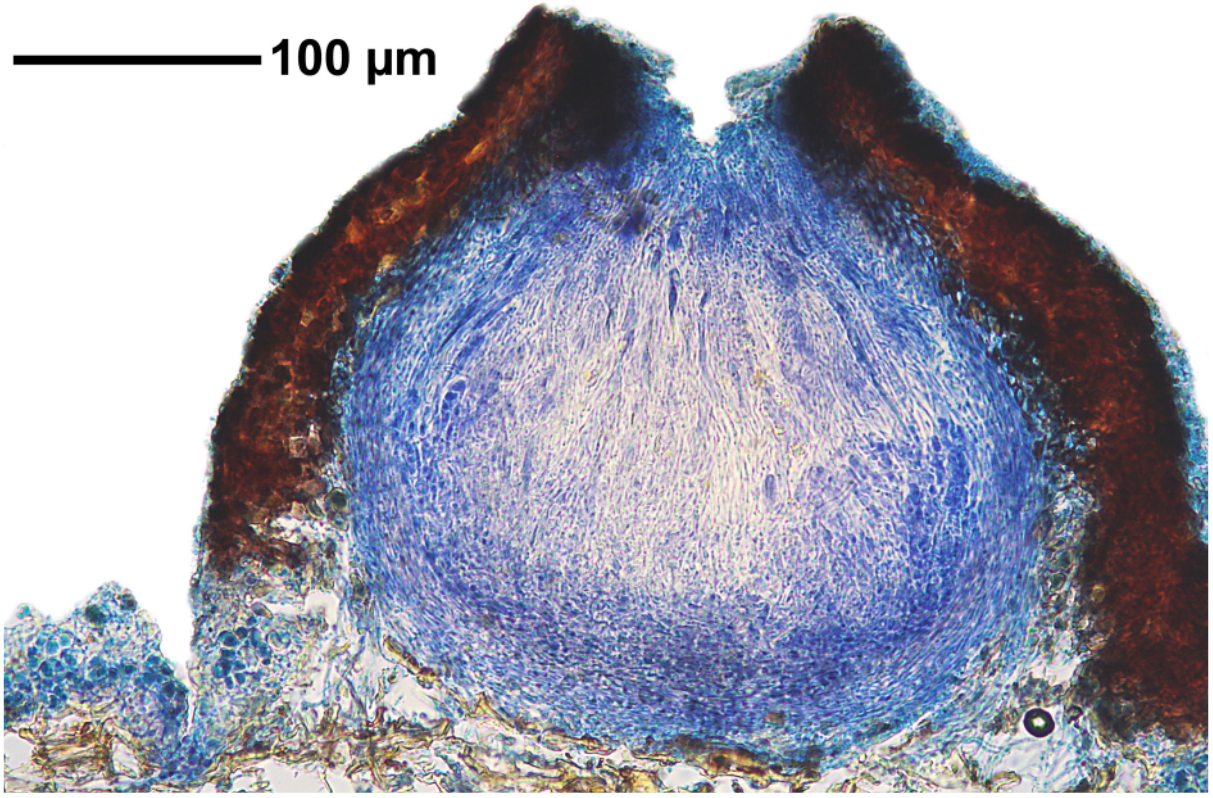




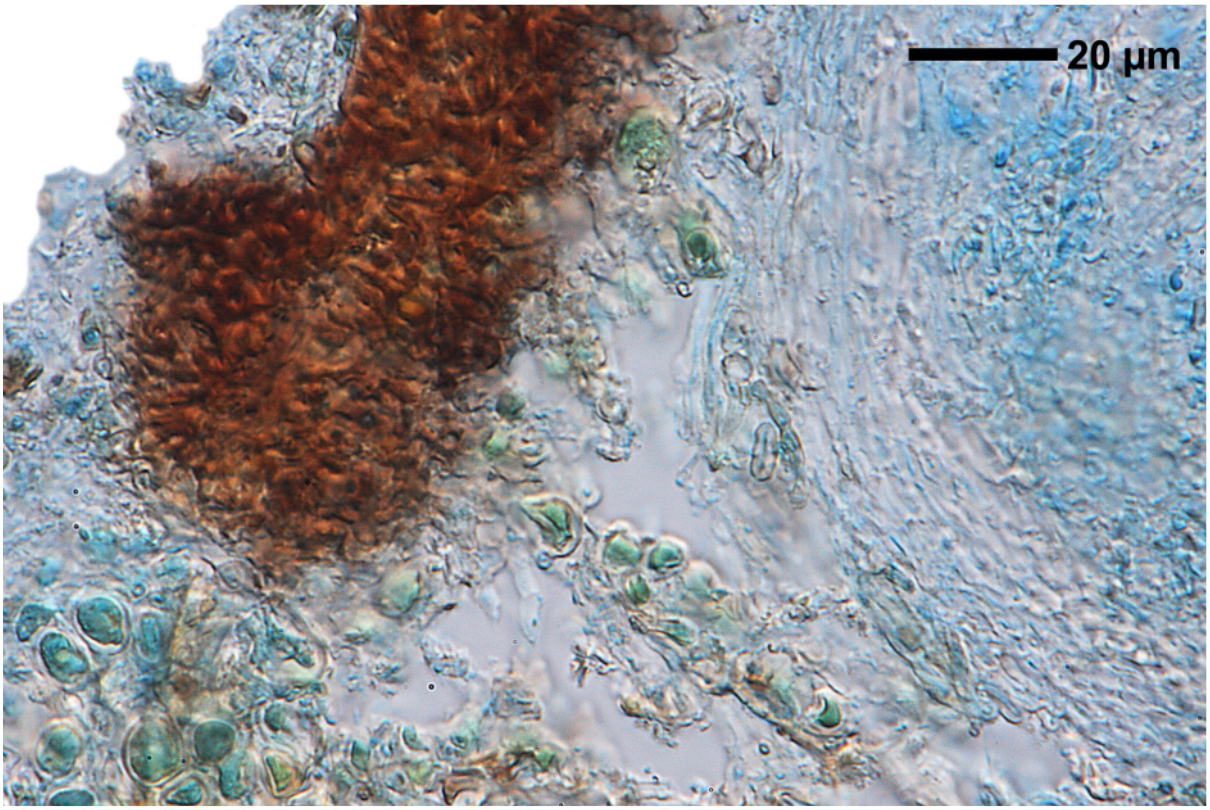


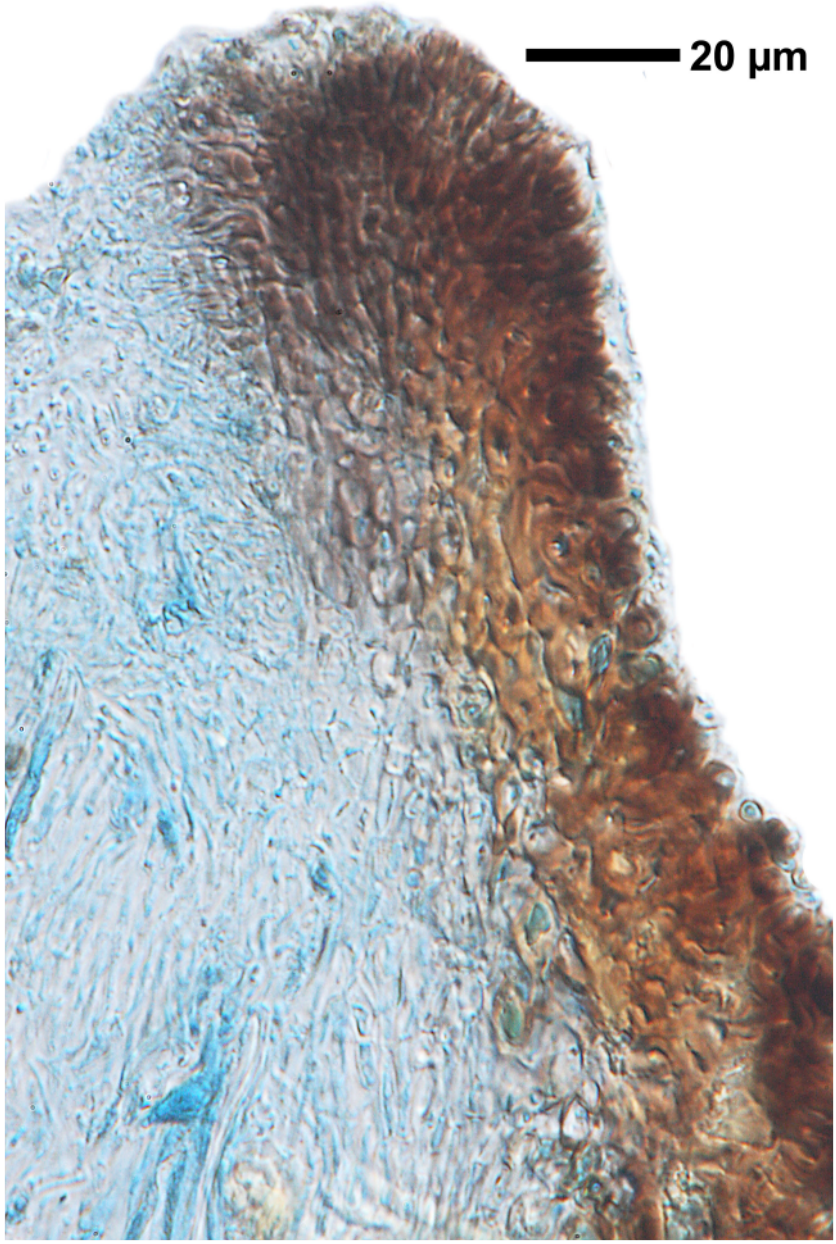
Porina borreri



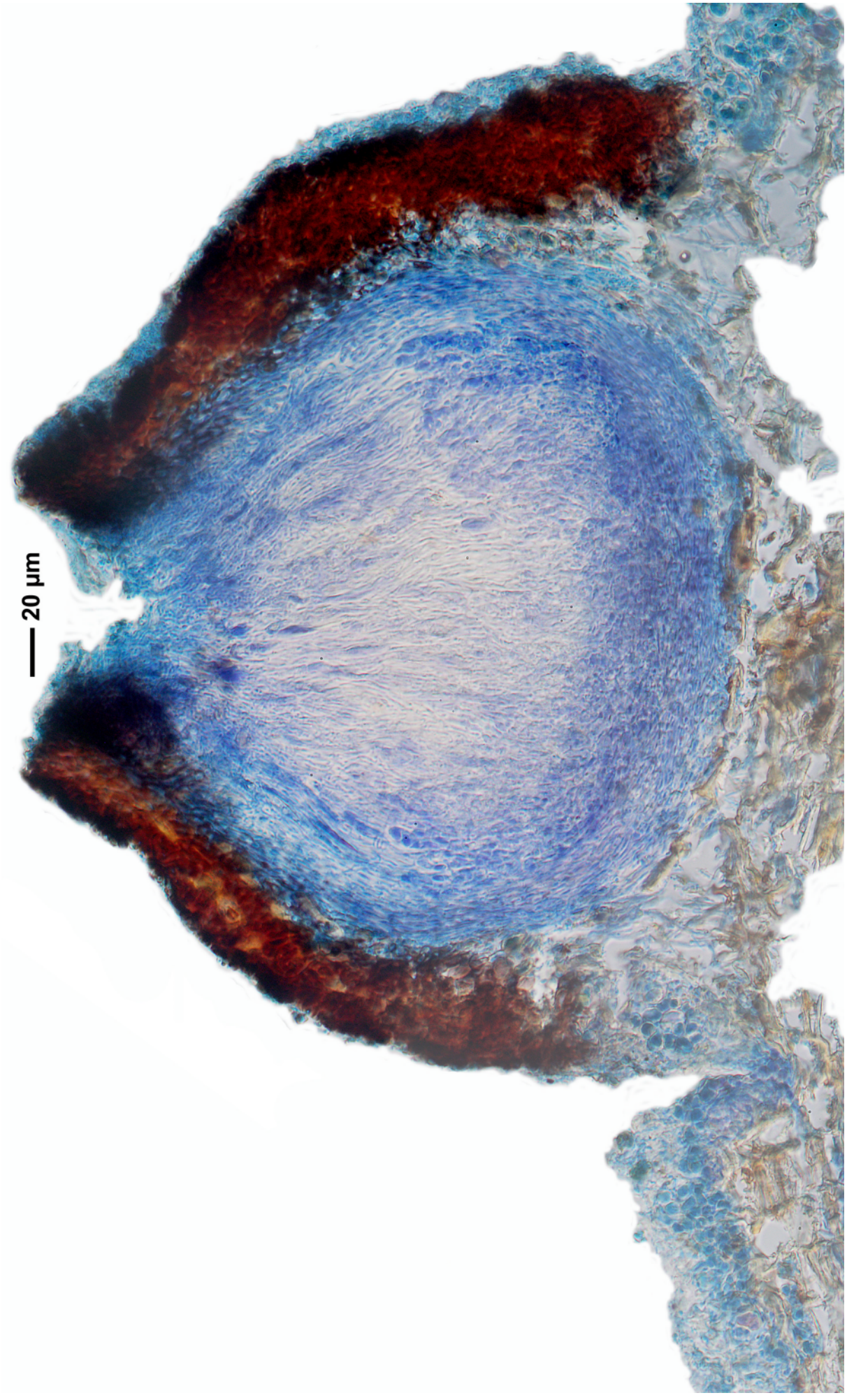


Porina borreri





Porina borreri



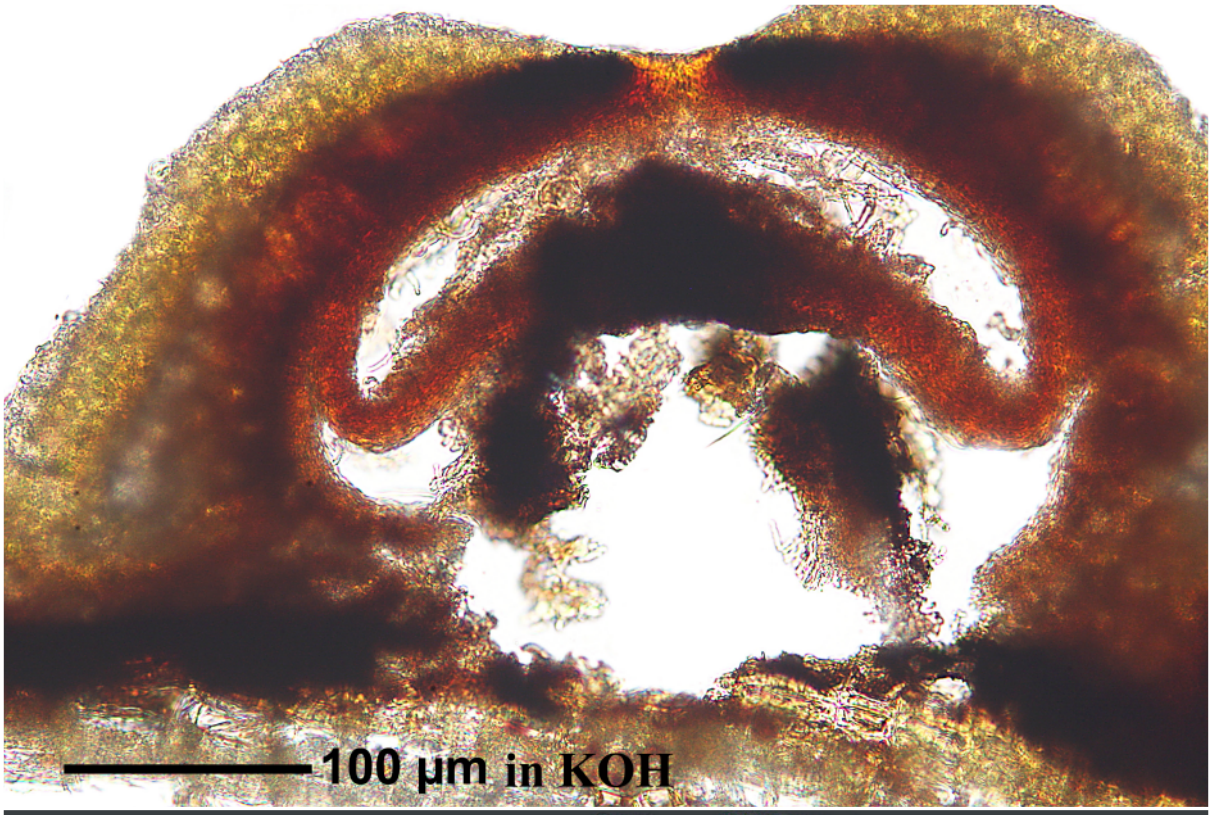
Porina borreri

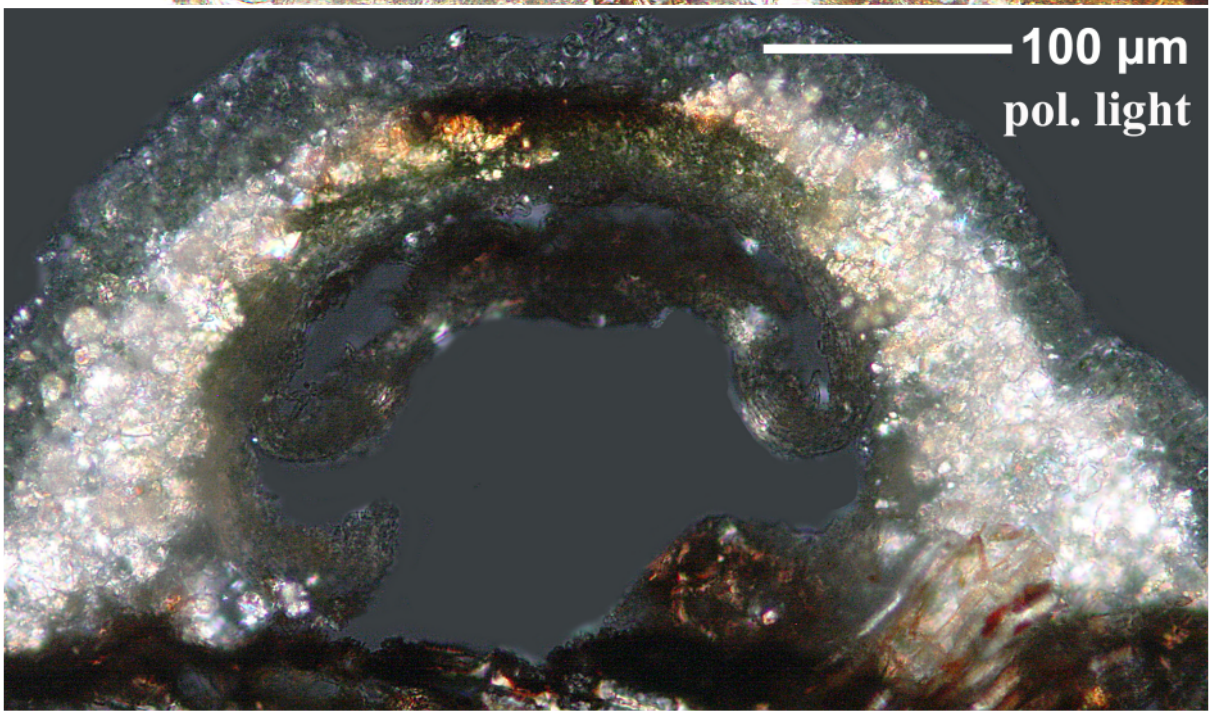
Porina internigrans (Nyl.) Müll.Arg. (1895)

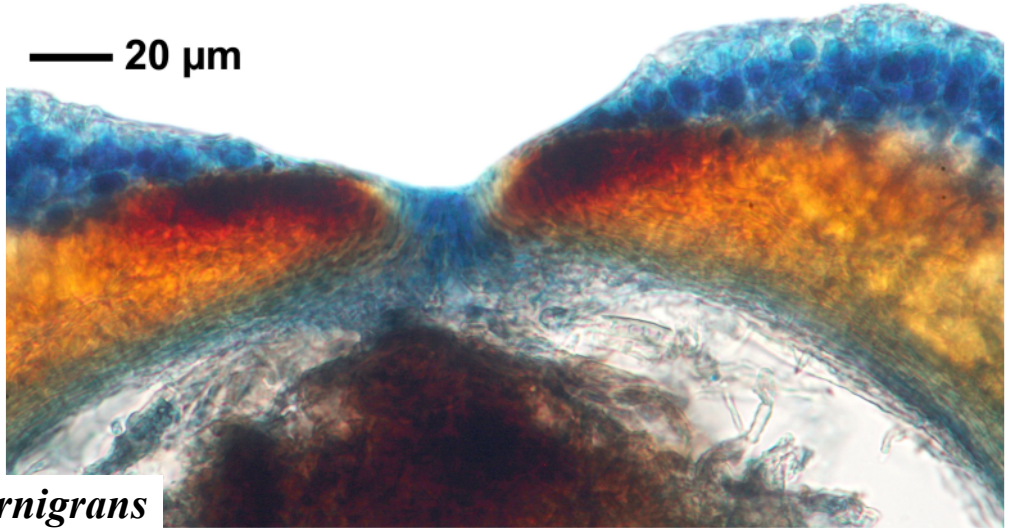
Perithecia immersed in thallus-verrucae, 0.4-0.5 mm wide. Perithecia wall covered by a crystallostratum and thallus layer. Ascospores hyaline, transversely 15-16-septate, 62-64 x 6-8 µm.

[9529], Thailand, bei den Kaeng Lava Höhlen am River Kwai Noi, 14°18.088' N, 98°59.011 E, 123 m. Leg. Schumm 27.03.2002, det. Aptroot 2009.

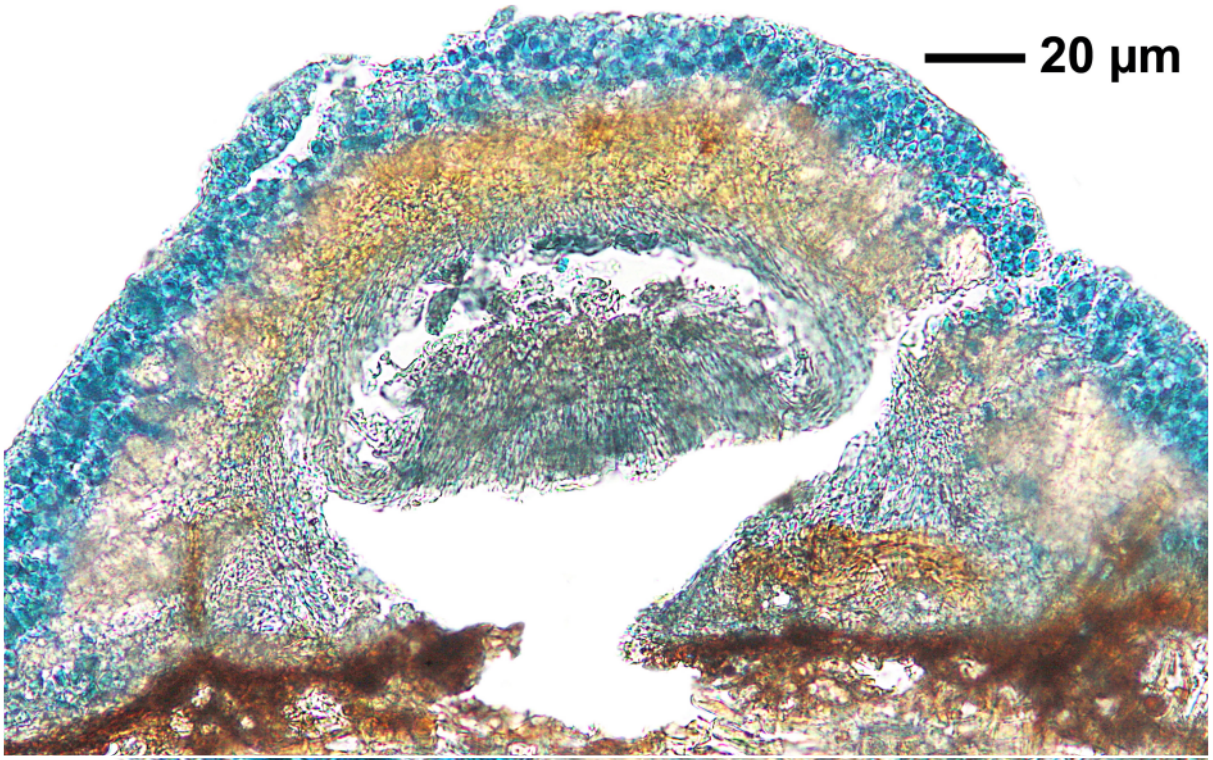


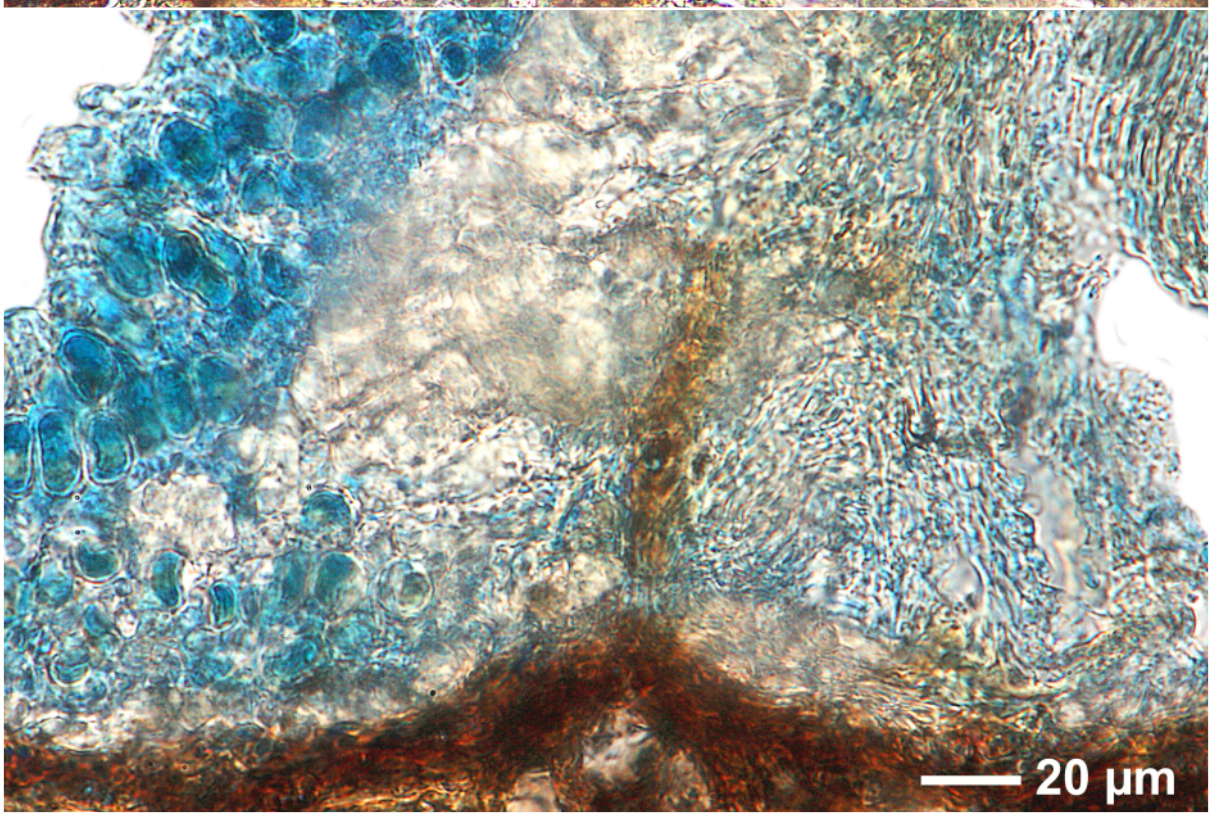


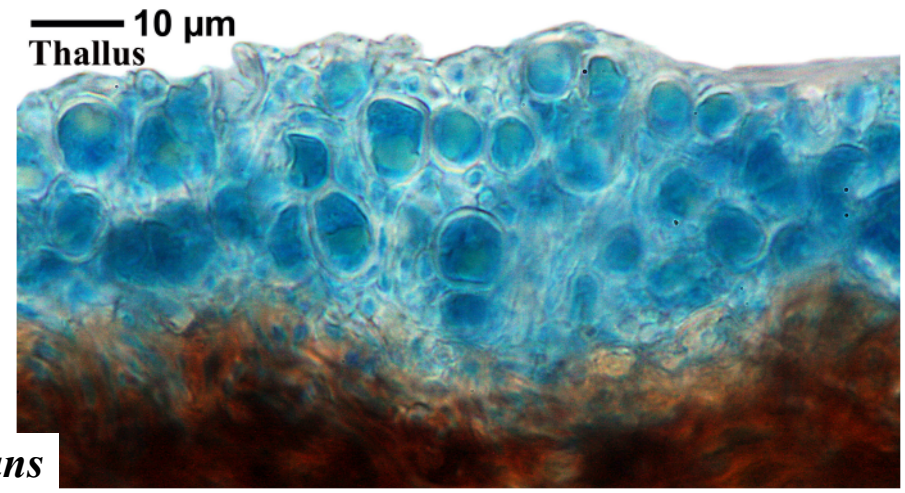




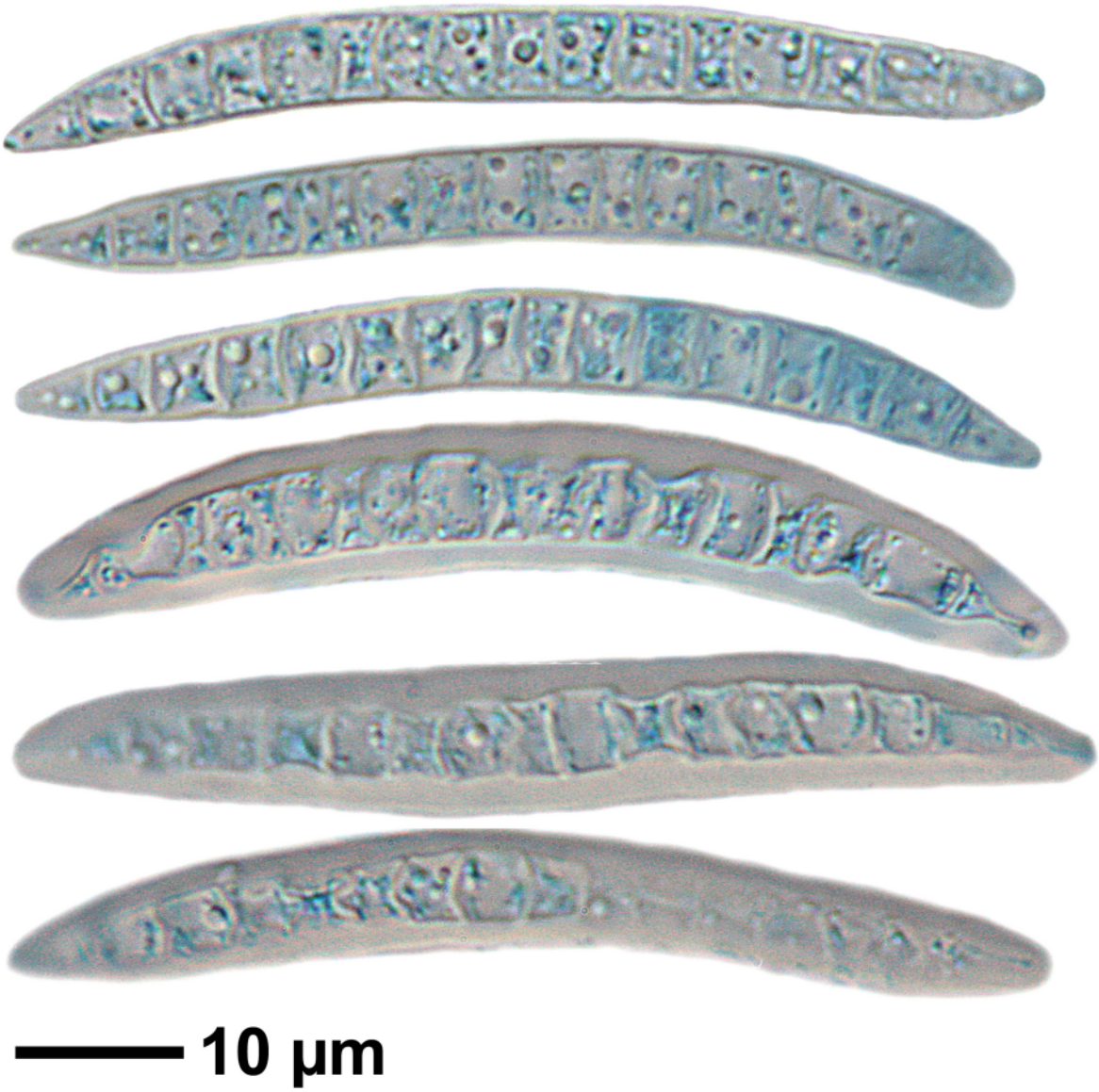
Porina internigrans

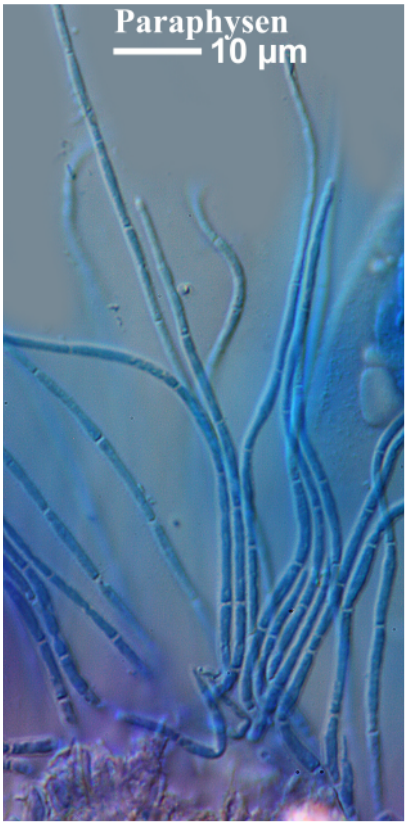






Porina internigrans



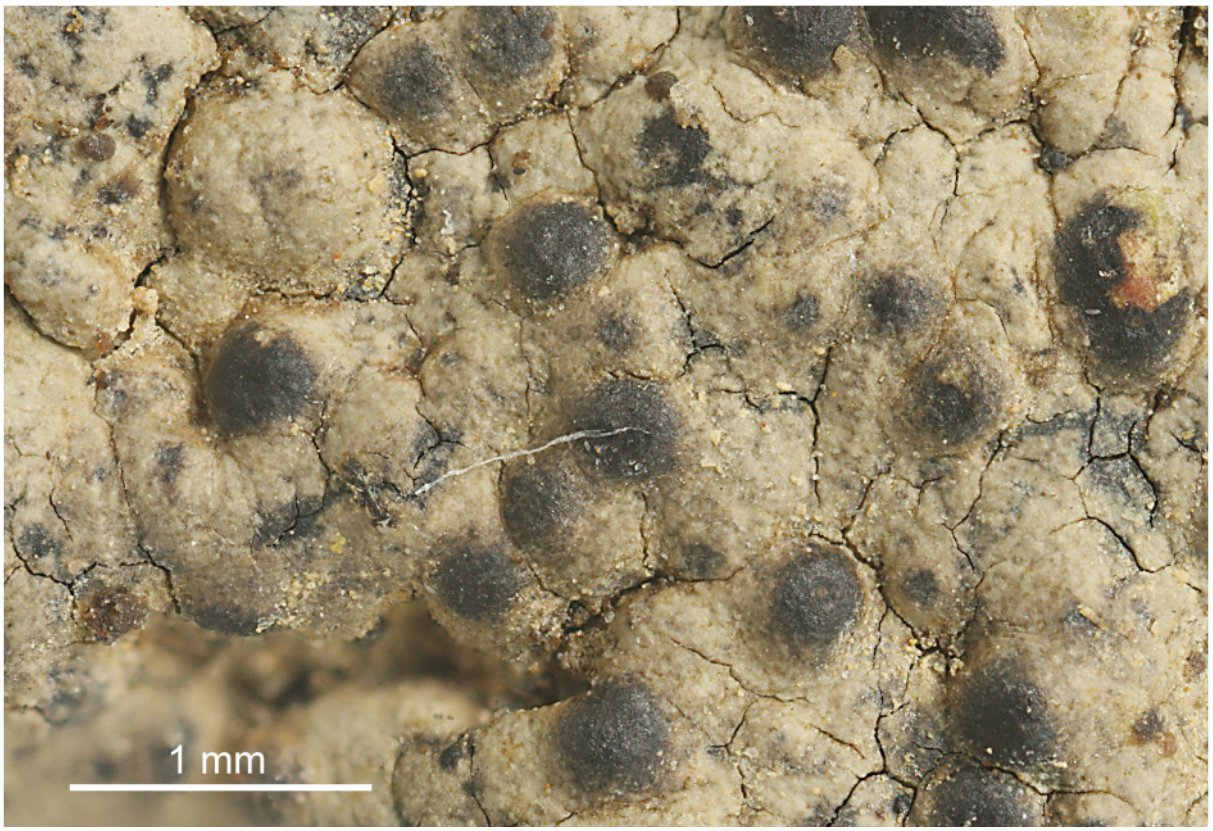


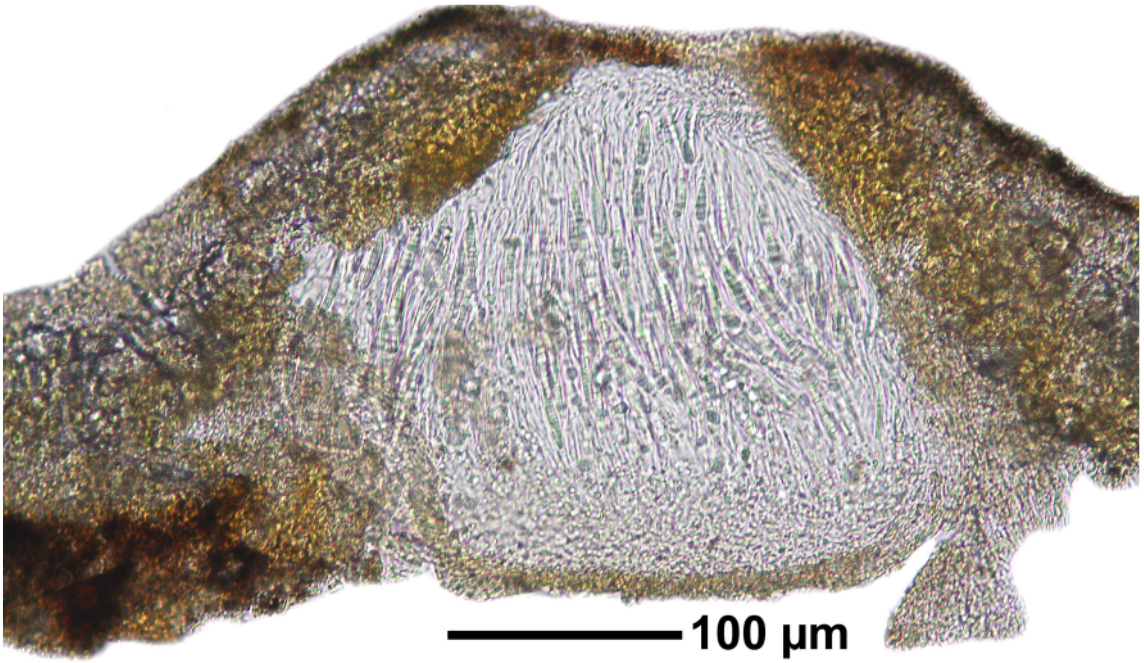
Porina internigrans

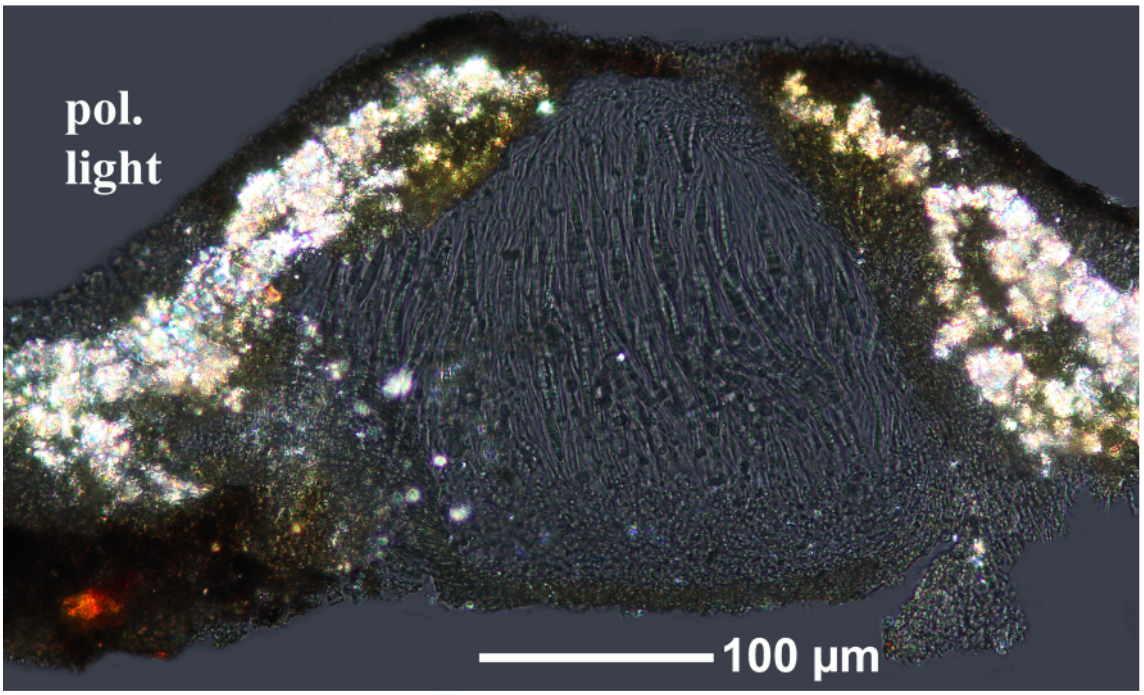
Porina tetracerae (Ach.) Müll.Arg.

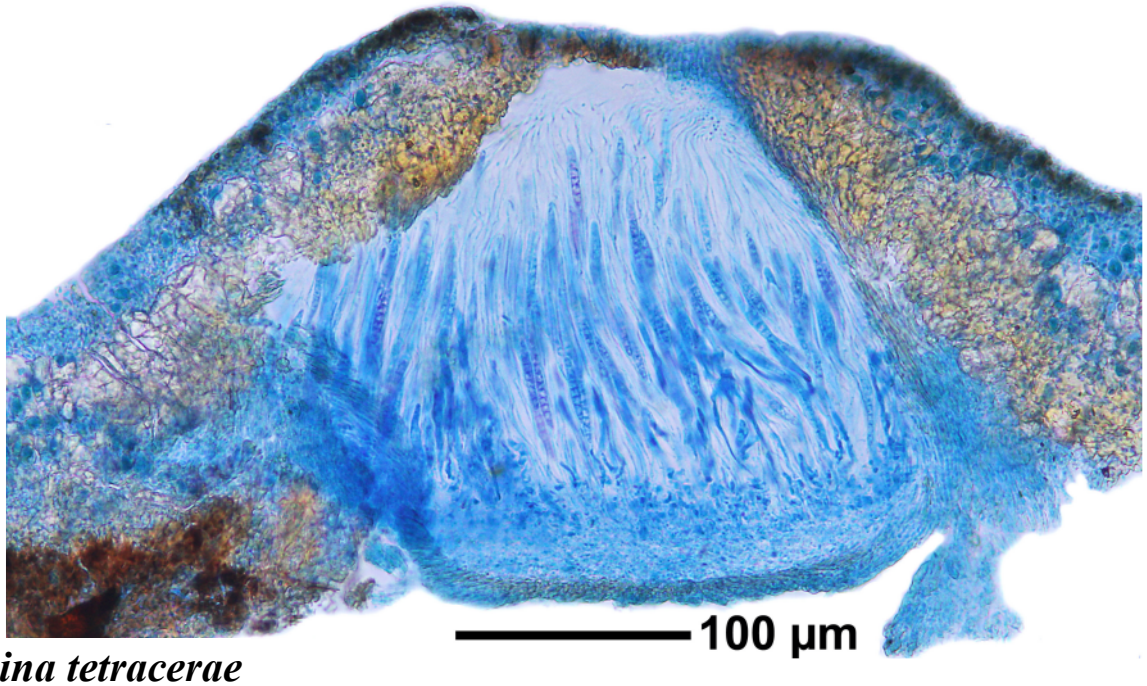
Thallus epilithic or epiphloeodal, rimose to areolate, grey-brown, UV-. Algae *Trentepohlia*. Perithecia immersed in convex verrucae. Perithecial wall with crystals. Ascospores 7-septate, hyaline, 8/ascus, 26-34 x 4-5 µm.

[14731], Kambodscha, Provinz Siem Reap, Ta Som, 13°24'18" N, 101°34'26" E, 13 km ENE Siem Reap, ca. 100 m, auf Sandstein. Leg. U. Schwarz 16.02.1998 (# 3049), det. Aptroot 2009.

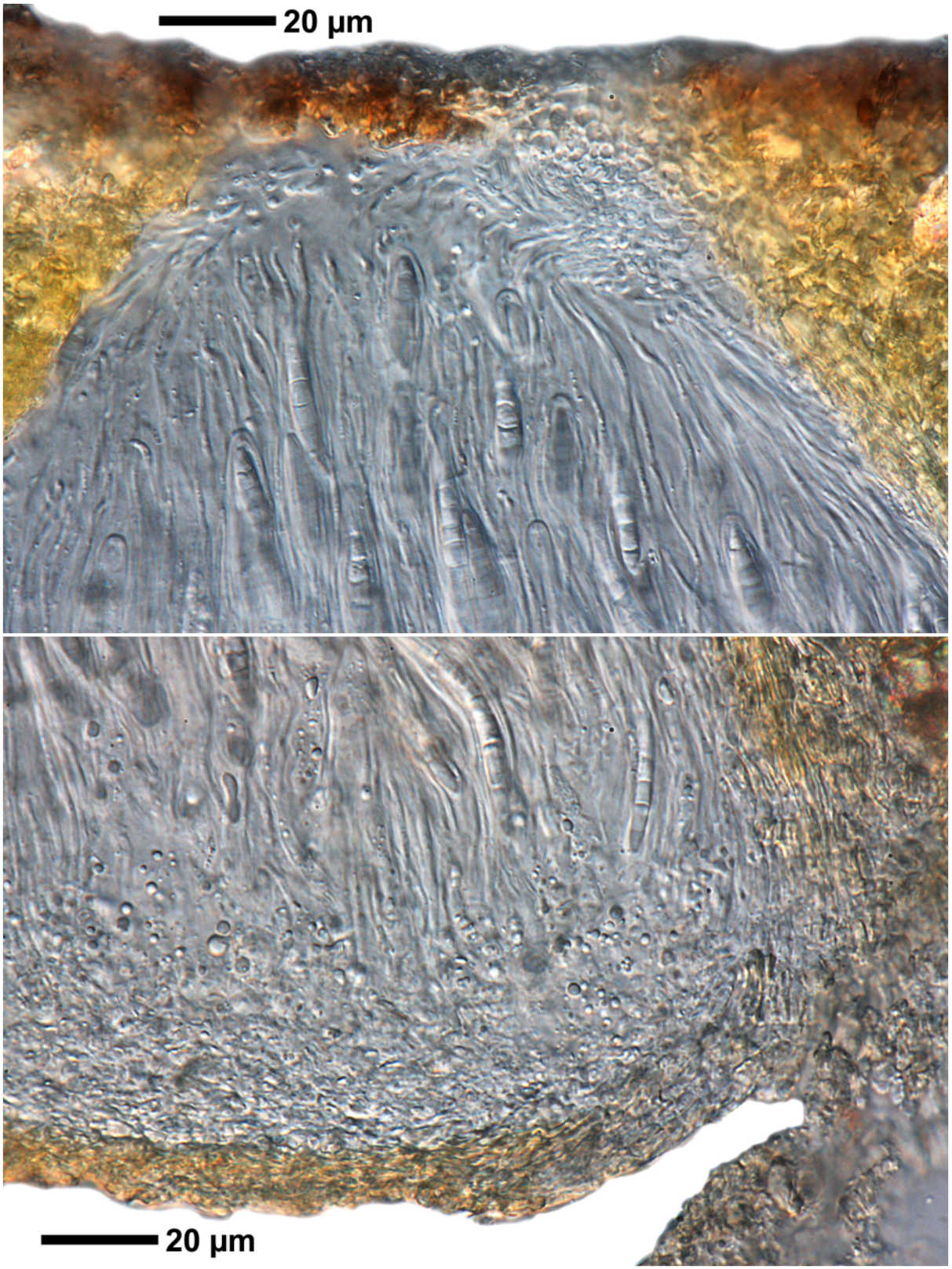






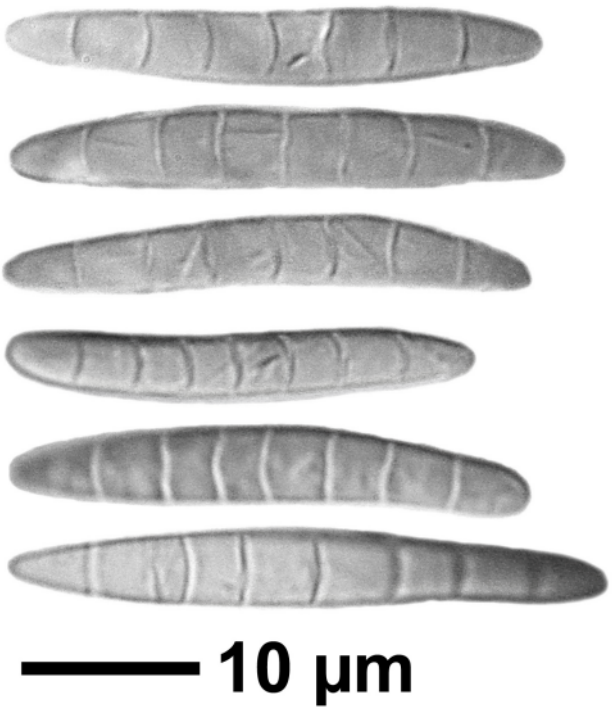


Porina tetracerae



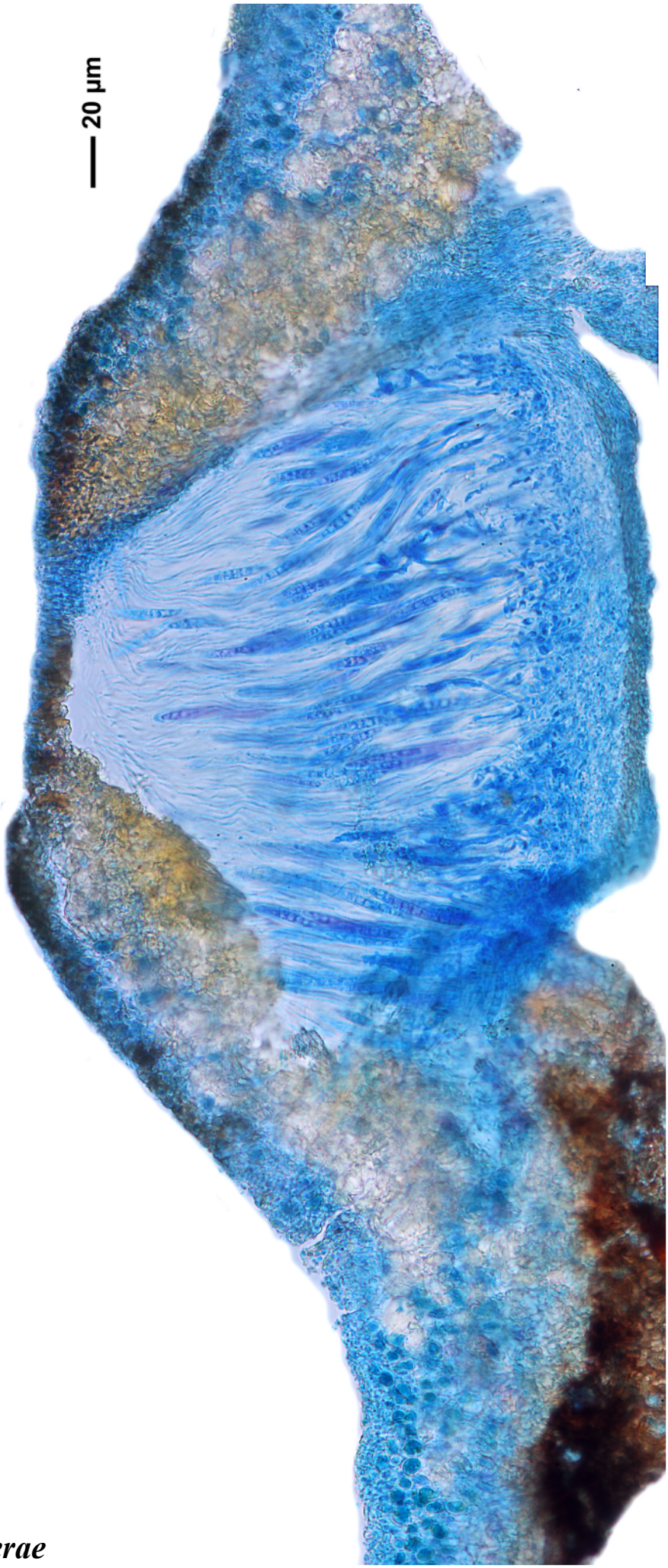
Porina tetracerae







Porina tetracerae

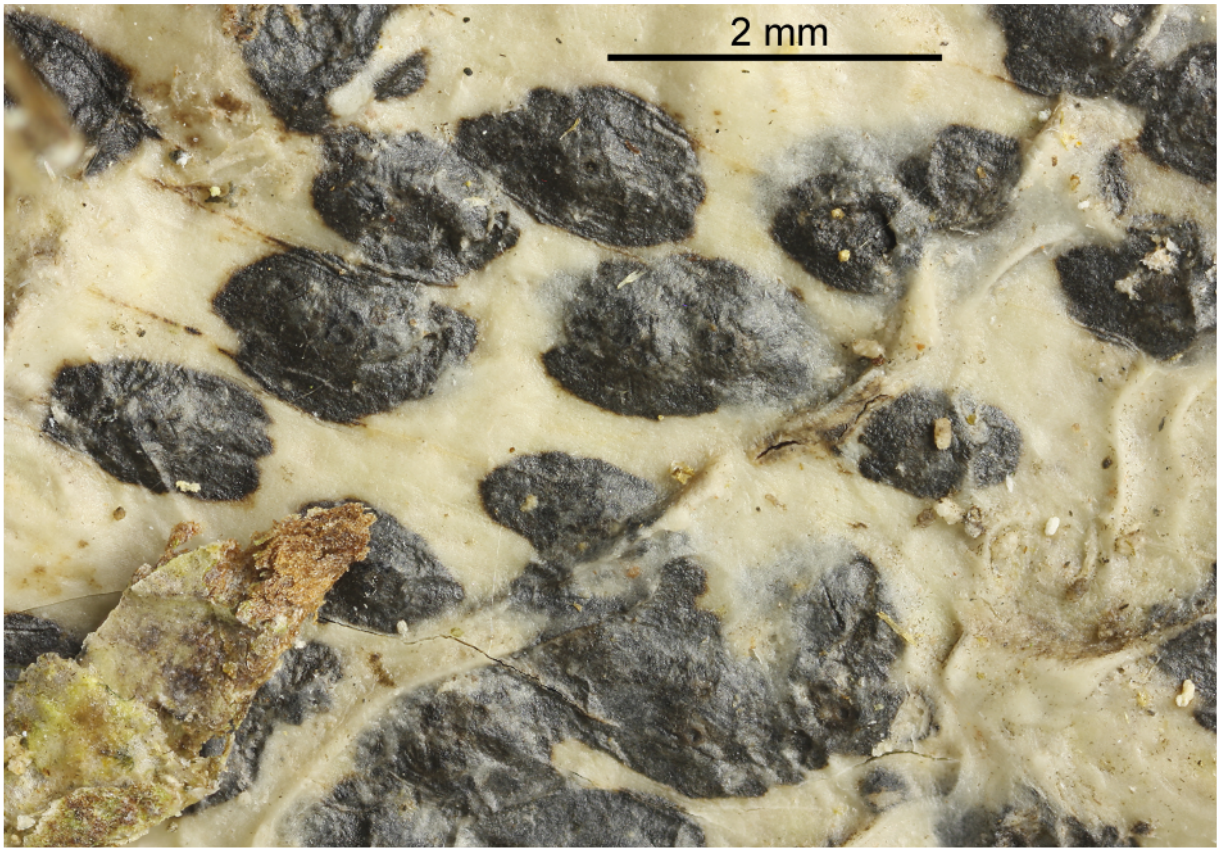


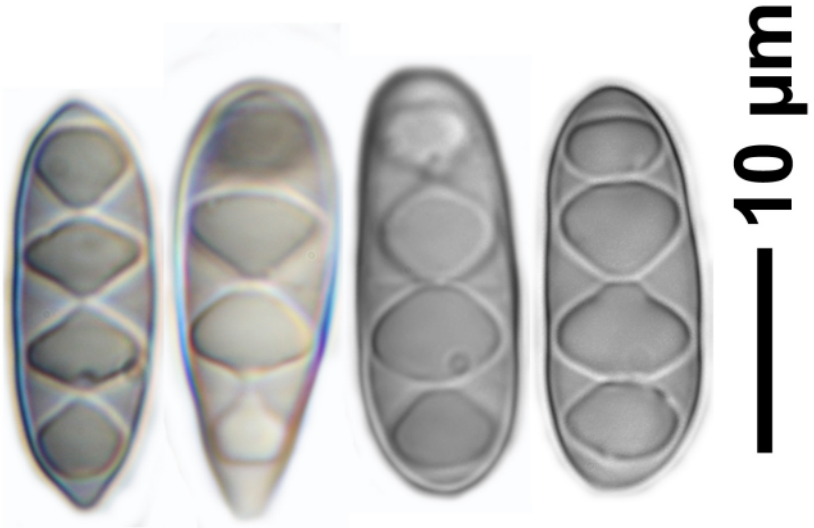
Porina tetracerae

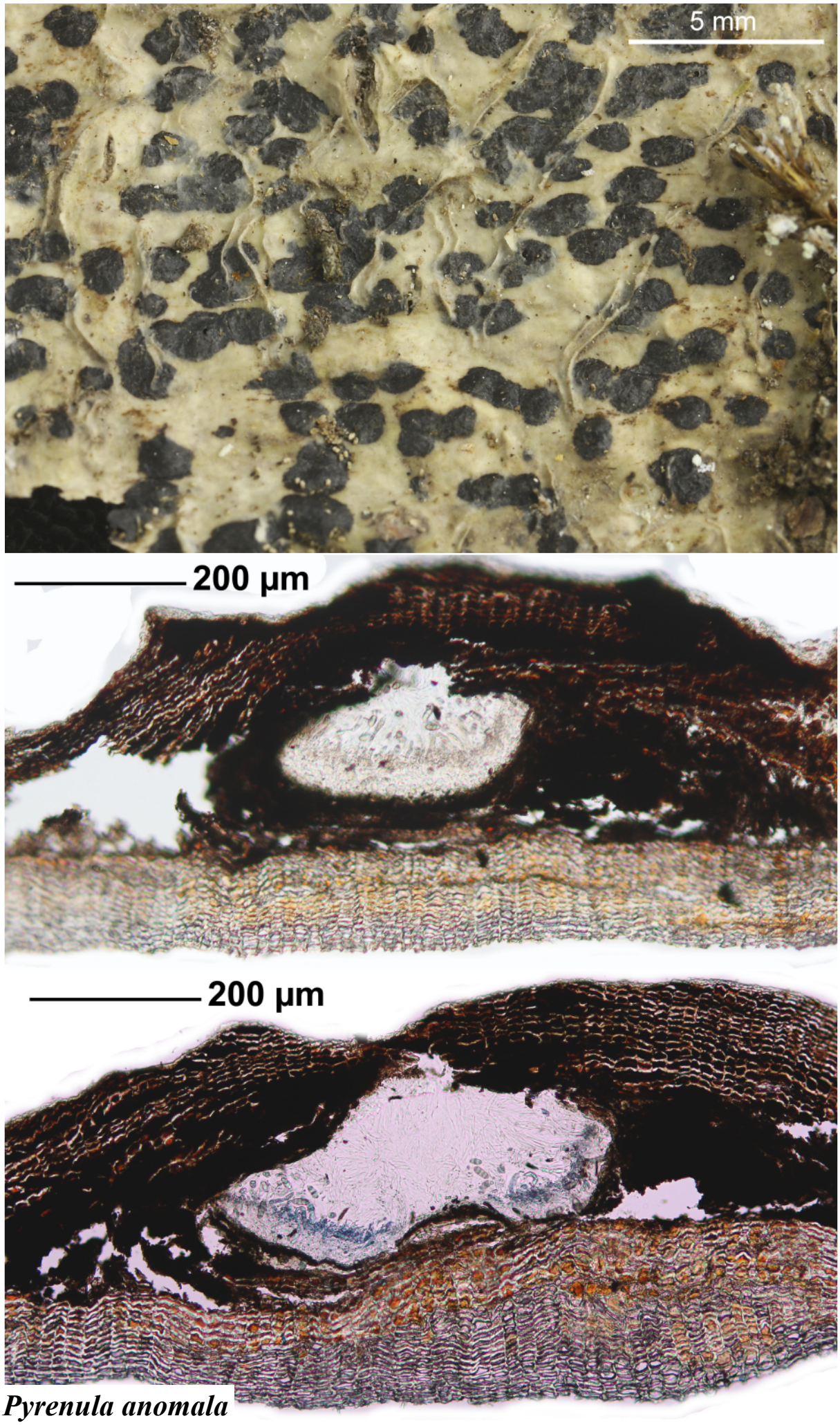
Pyrenula anomala (Ach.) Vain.

Thallus white to grey, UVL± pale yellowish but not intensely orange, c. 50 µm thick, K-, in microscopic section J+ reddish, nearly not lichenised, algae trentepohlioid. Perithecia confluent. Hamathecium J-, not inspersed. Paraphyses durable, branched. Ascospores colourless to pale brownish, 3-septate, 8/ascus, 20-22 x 6.5-8 µm.

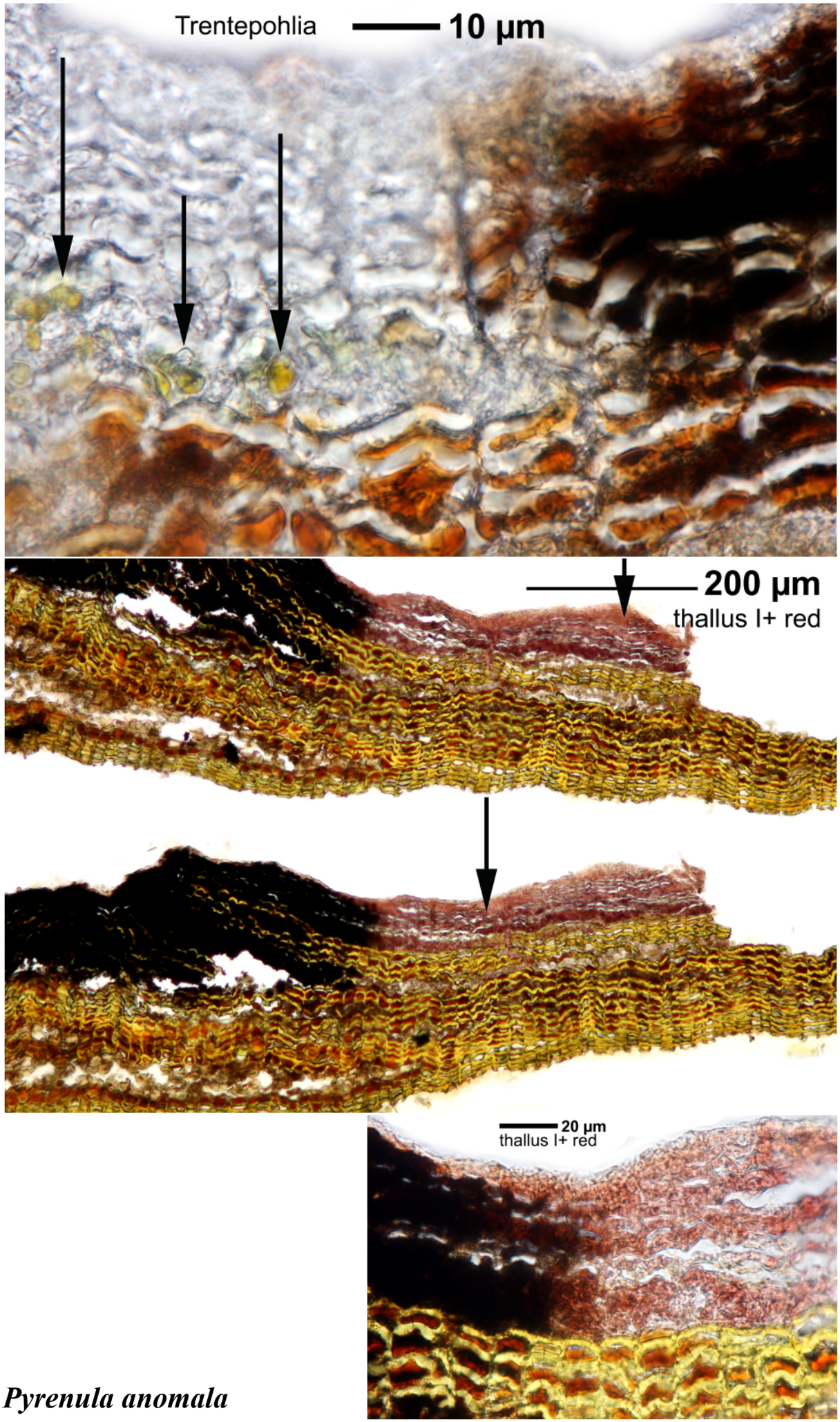
[15257], La Reunion, Takamaka, feuchte waldige Felshänge bei der Elektrostation; 21,09105°S, 55,61998°E, 800 m. Leg. Schumm & Frahm 10.09.2009, det. Schumm 02.2010, test. Aptroot.



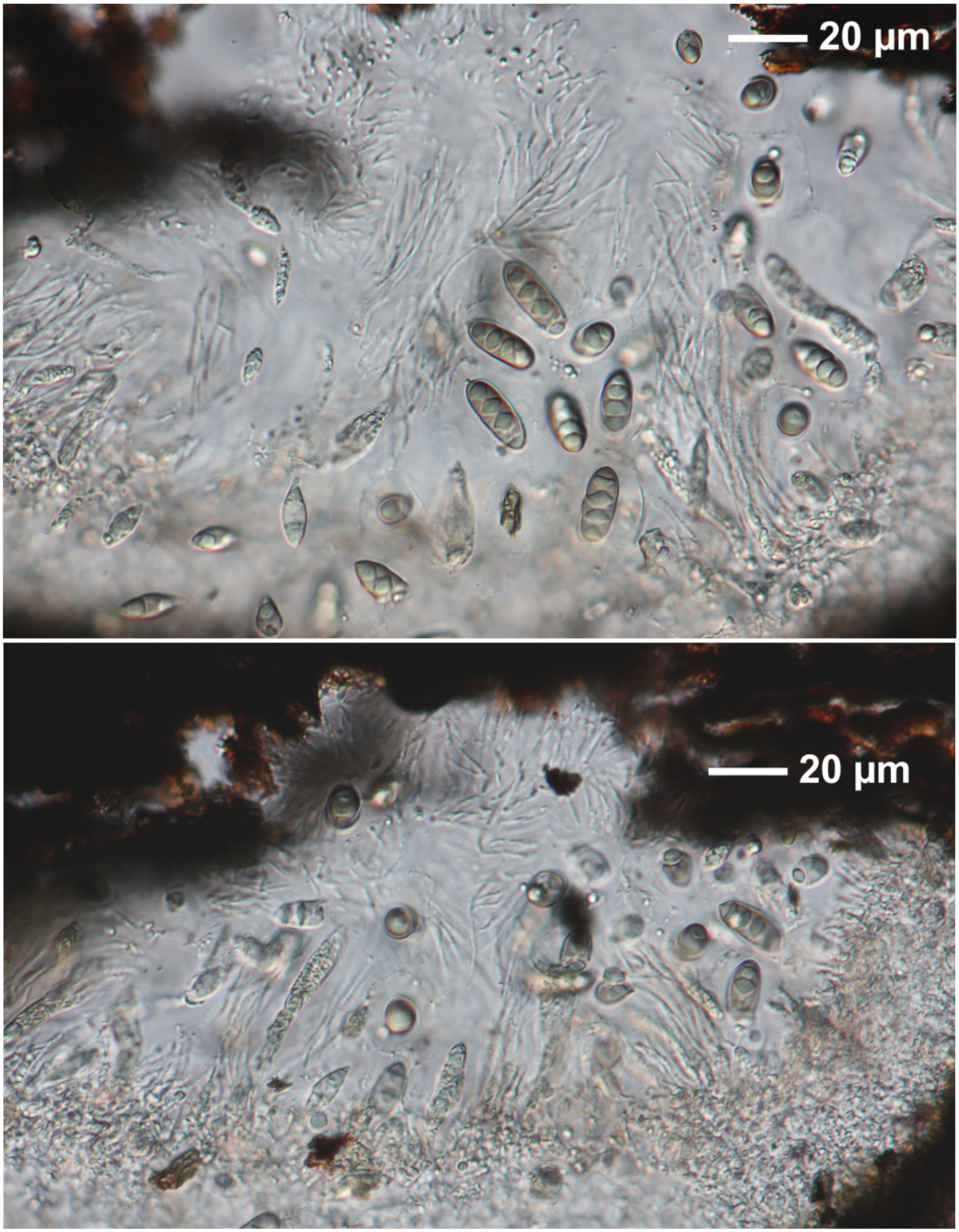




Pyrenula anomala



Pyrenula anomala

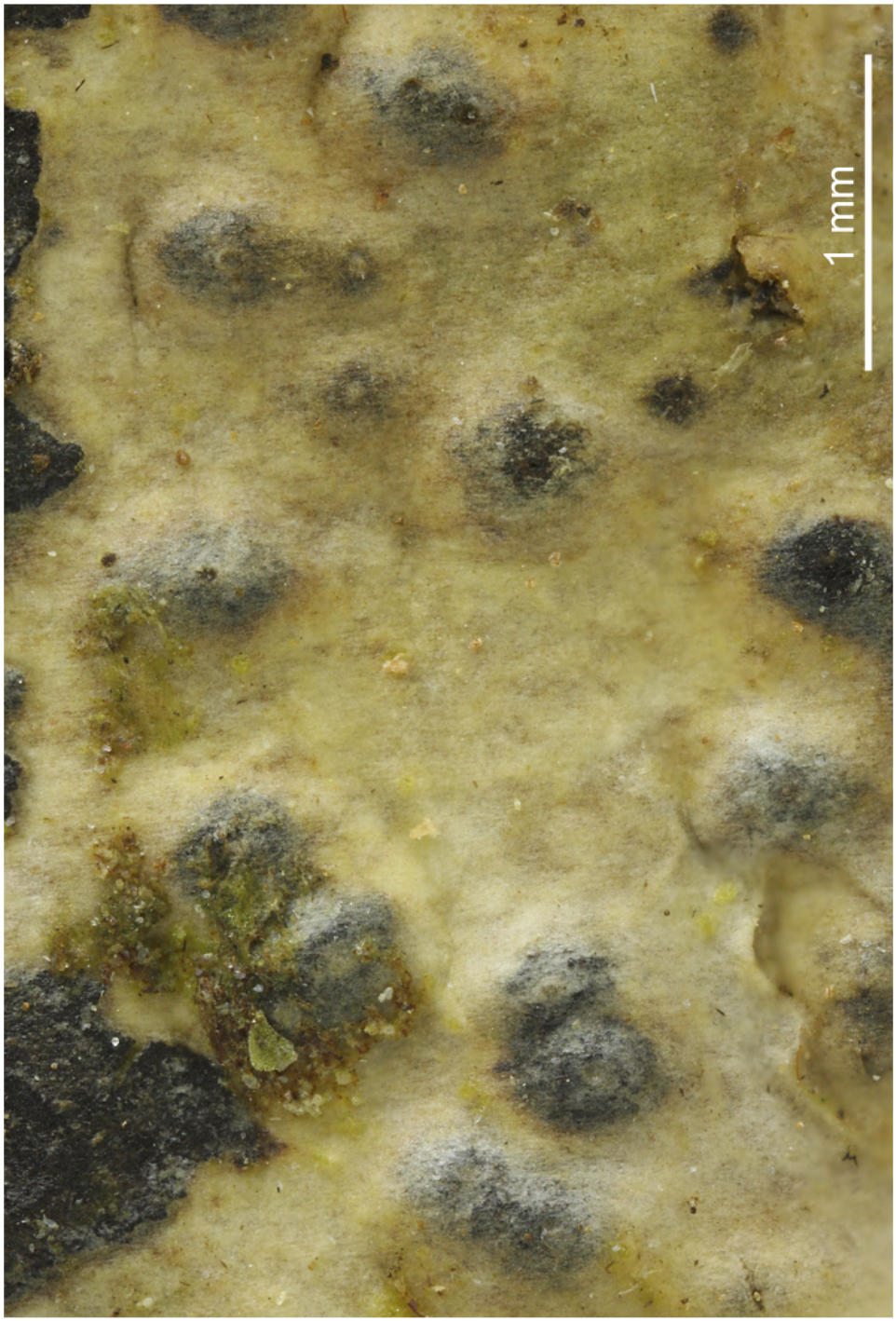


Pyrenula anomala

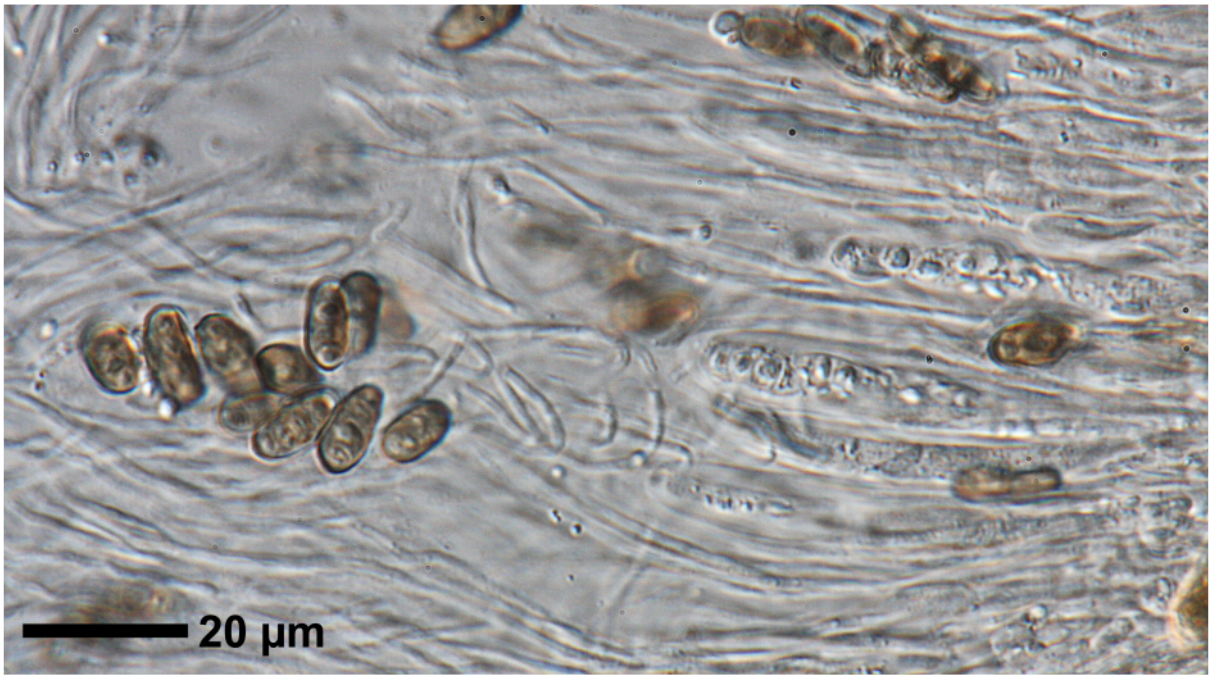
Pyrenula aspistea (Afzel.) Ach.

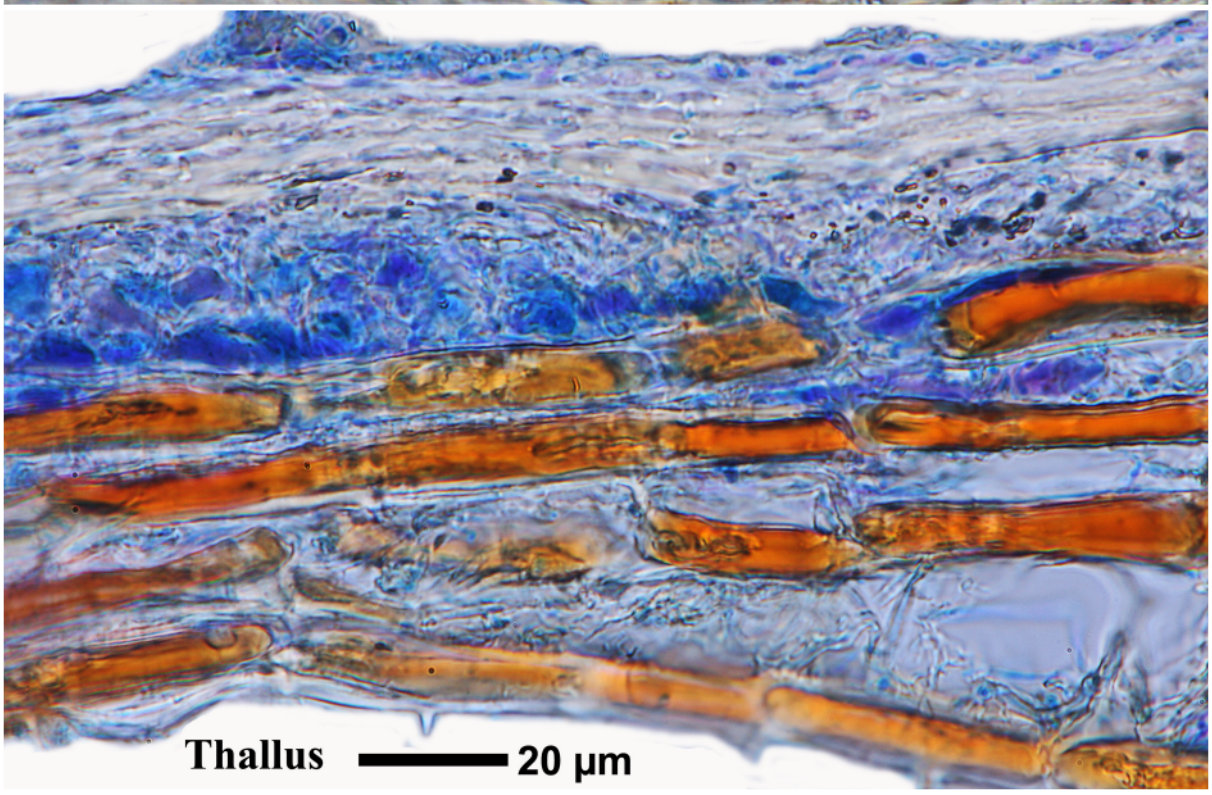
Thallus corticated, brownish to olive greenish, without pseudocyphellae. Perithecia single, flattened to conical, lateraly covered often by the thallus, c. 0.3-0.4 mm wide. Wall of the perithecium without crystals. Hamathecium not inspers, J-. Filaments not branched. Ascospores 8/ascus, grey brownish, 3-septate, 10-16 x 5-6.5 µm. Chemistry: nil. Aptroot et al (2008, Bibl. Lich. Bd. 97

[15210], La Reunion, Picknickplatz Col de Bellevue, südwestlich La Plaina des Palmistes, nebelfeuchter Wald mit Baumfarnen; 21,16580°S, 55,5903°E, 1610 m- Leg. Schumm & Frahm 09.09.2009, det. Aptroot 2011.

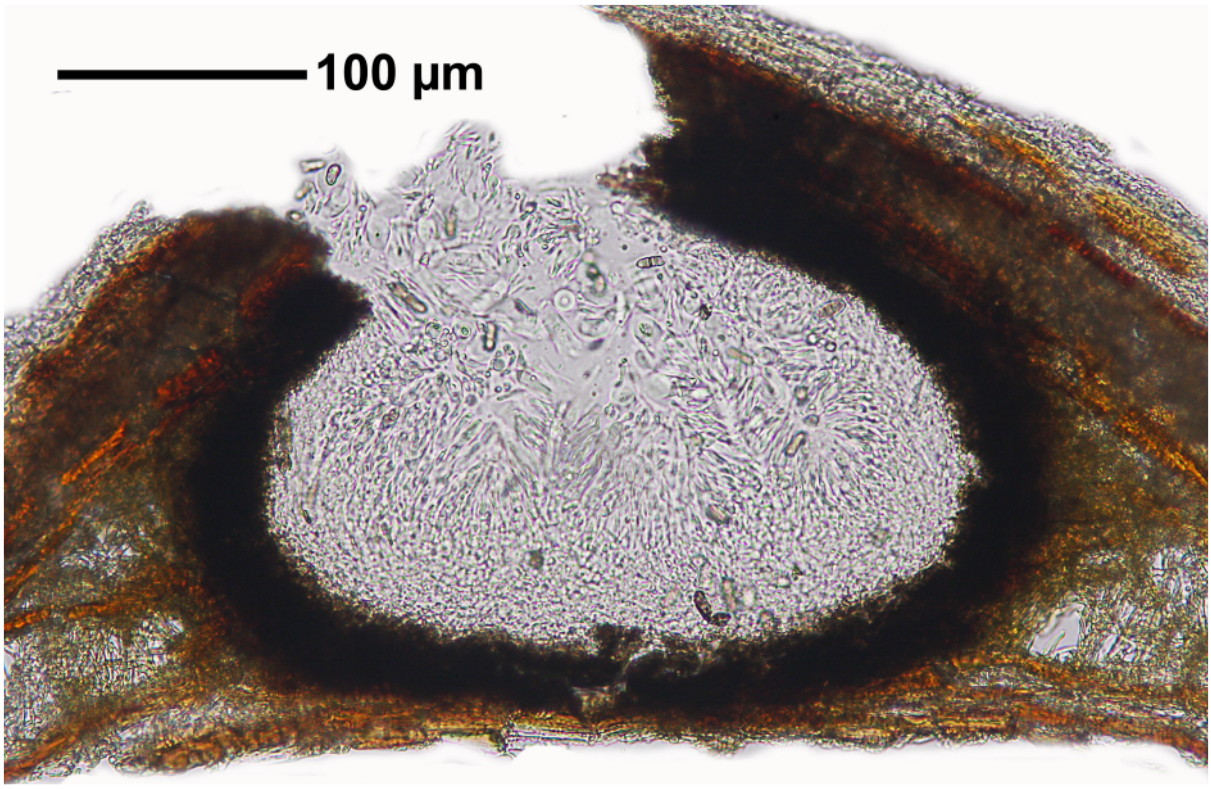


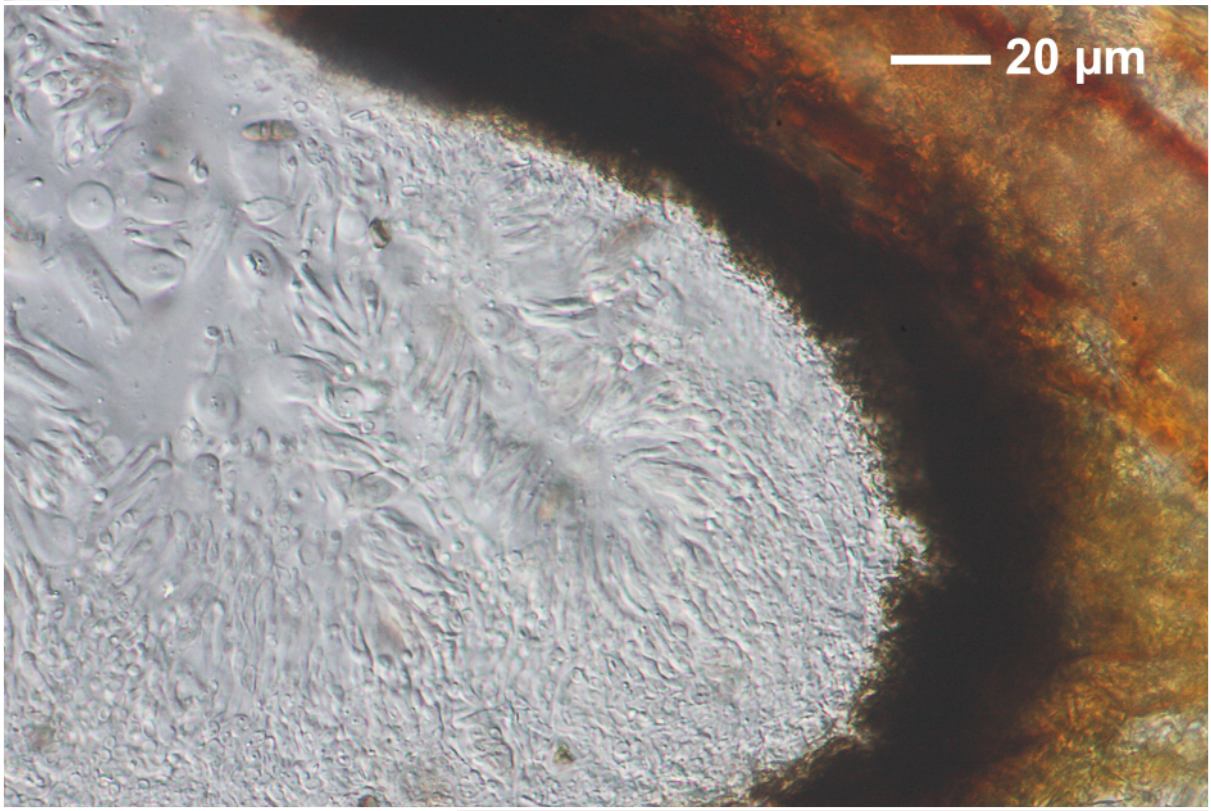






Pyrenula aspistea





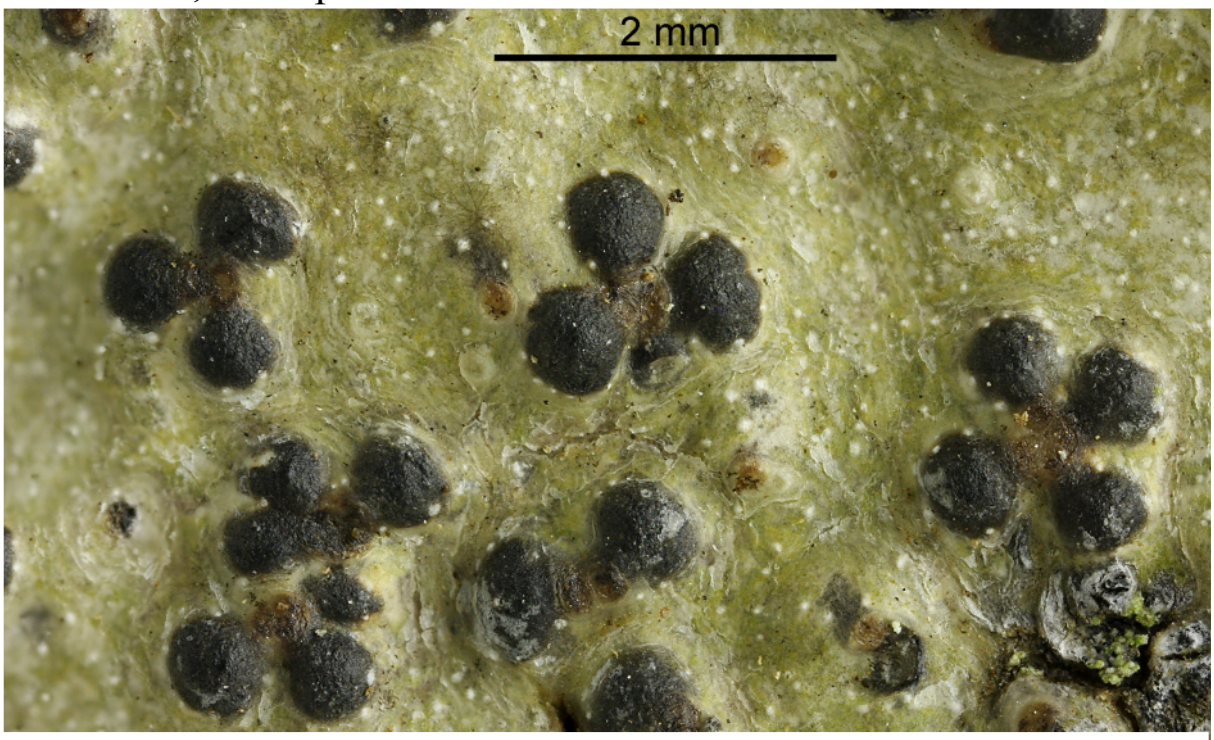


Pyrenula aspistea

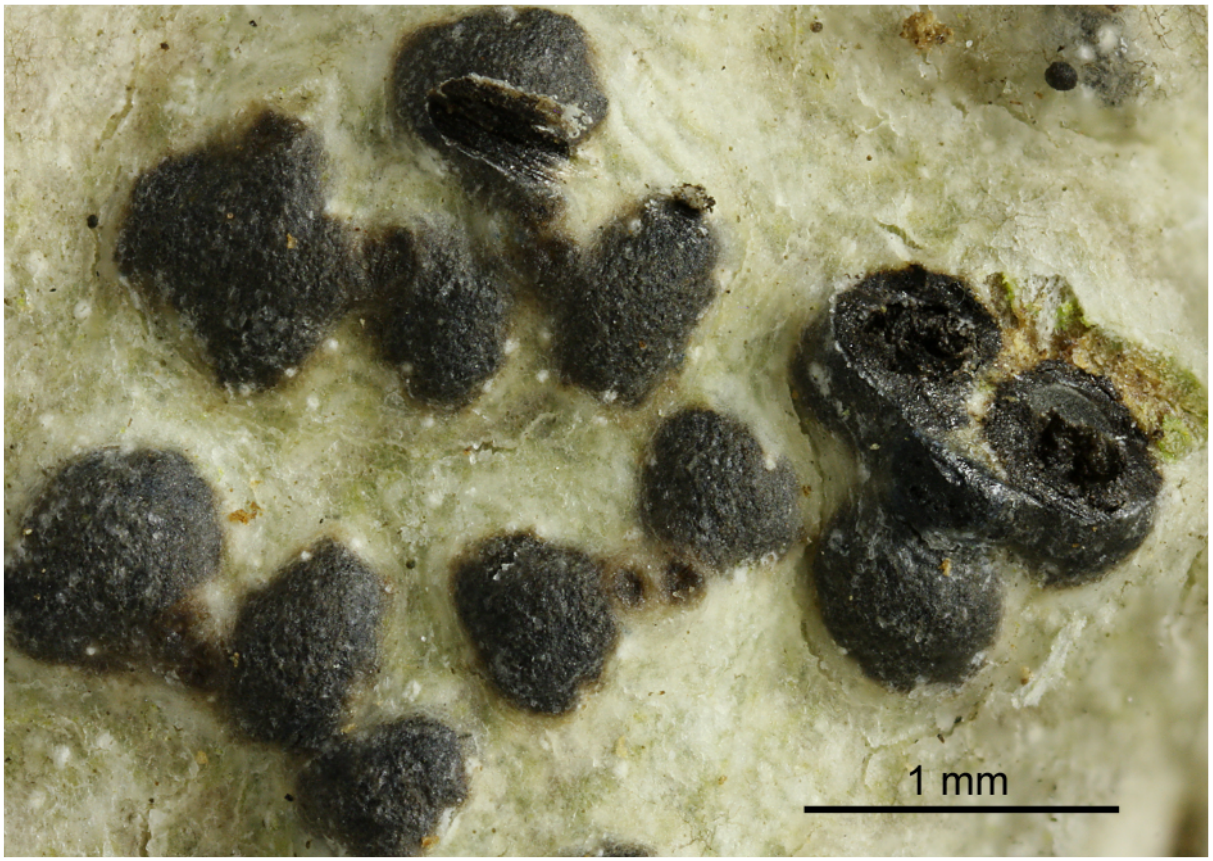
Pyrenula astroidea (Fée) R.C.Harris

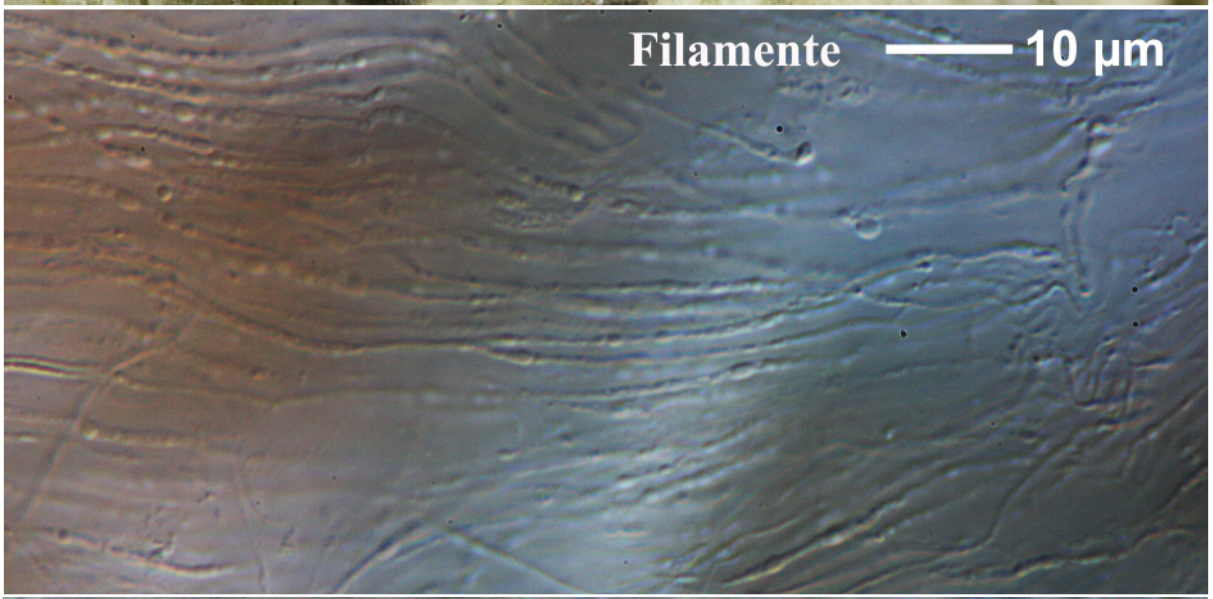
Thallus yellowish to olive green, with (or without) pseudocyphellae. Perithecia mostly 2-7 connected, 0.5-1 mm wide. Hamathecium not inspers, J+ rose. Filaments not branched. Ascospores muriform, grey-brown, 30-45 x 12-18 µm, 8/ascus, with appr. 8 rows each built out of 1-4(-9) lumina. Chemistry: nil. Lit. Aptroot et al. (2008, Bibl. Lich. Bd. 9)

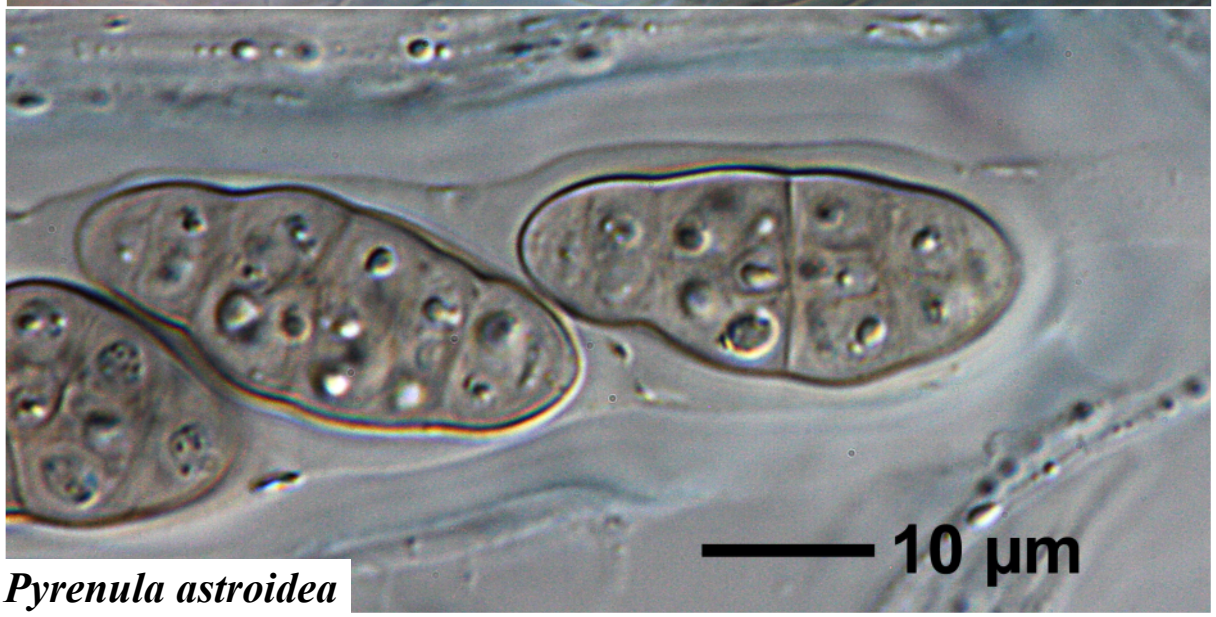
[16870], USA, Hawaii, Oahu, NE-Küste, Heeia State Park nördlich von Kaneohe, 21,43486° N, 157,81089° W, 27 m. Leg. Schumm & Frahm 10.02.2011, det. Aptroot 2011.



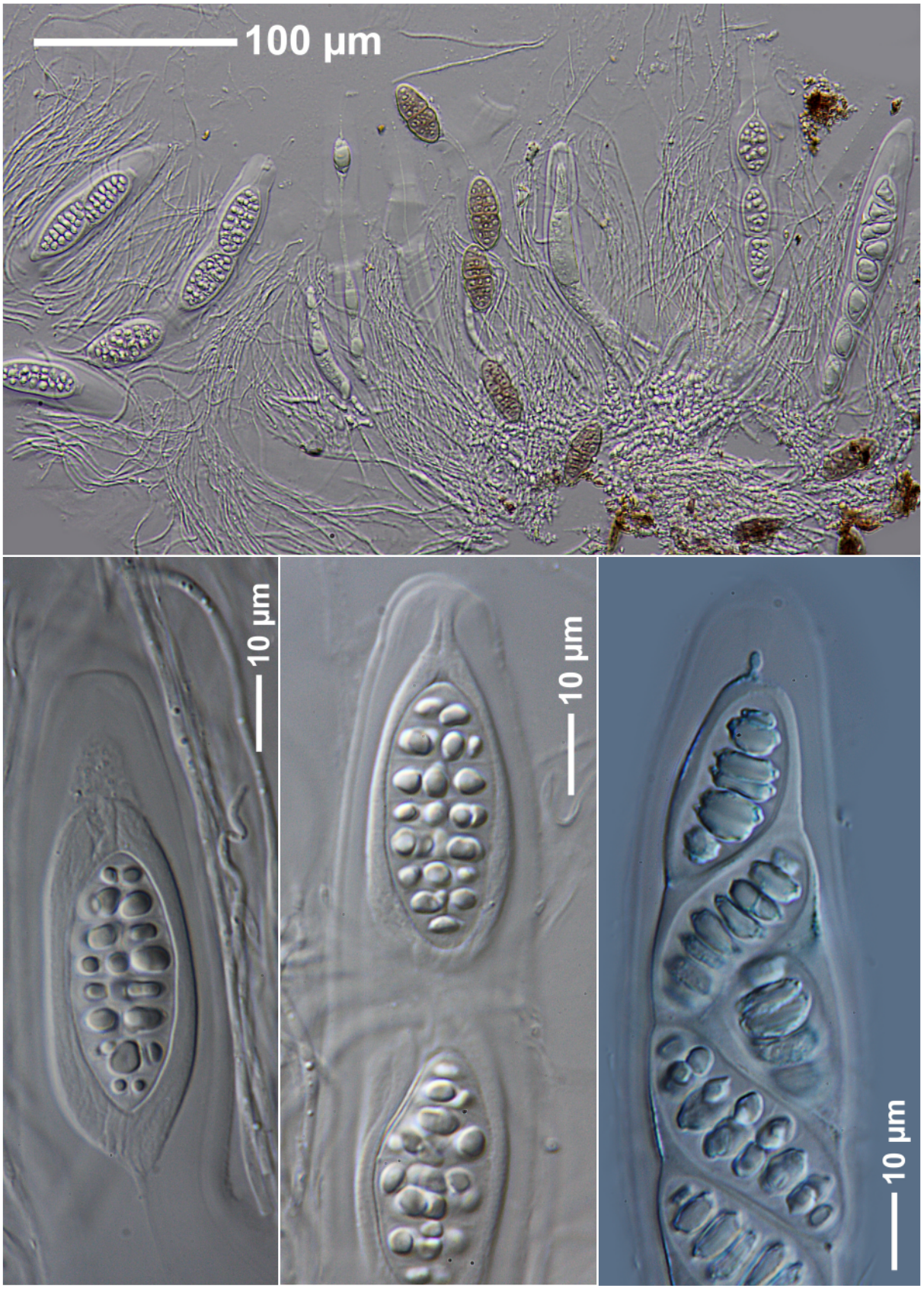








Pyrenula astroidea

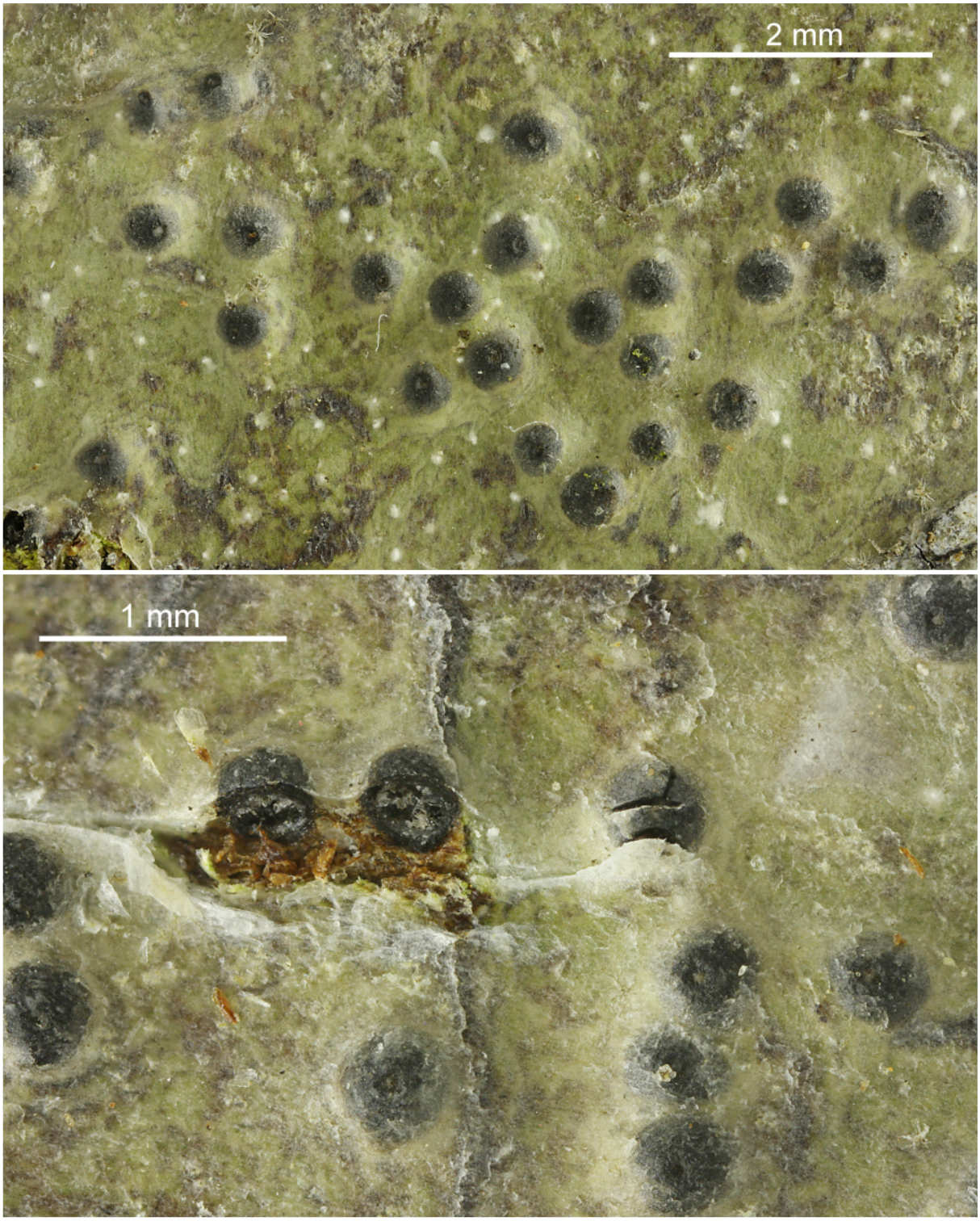


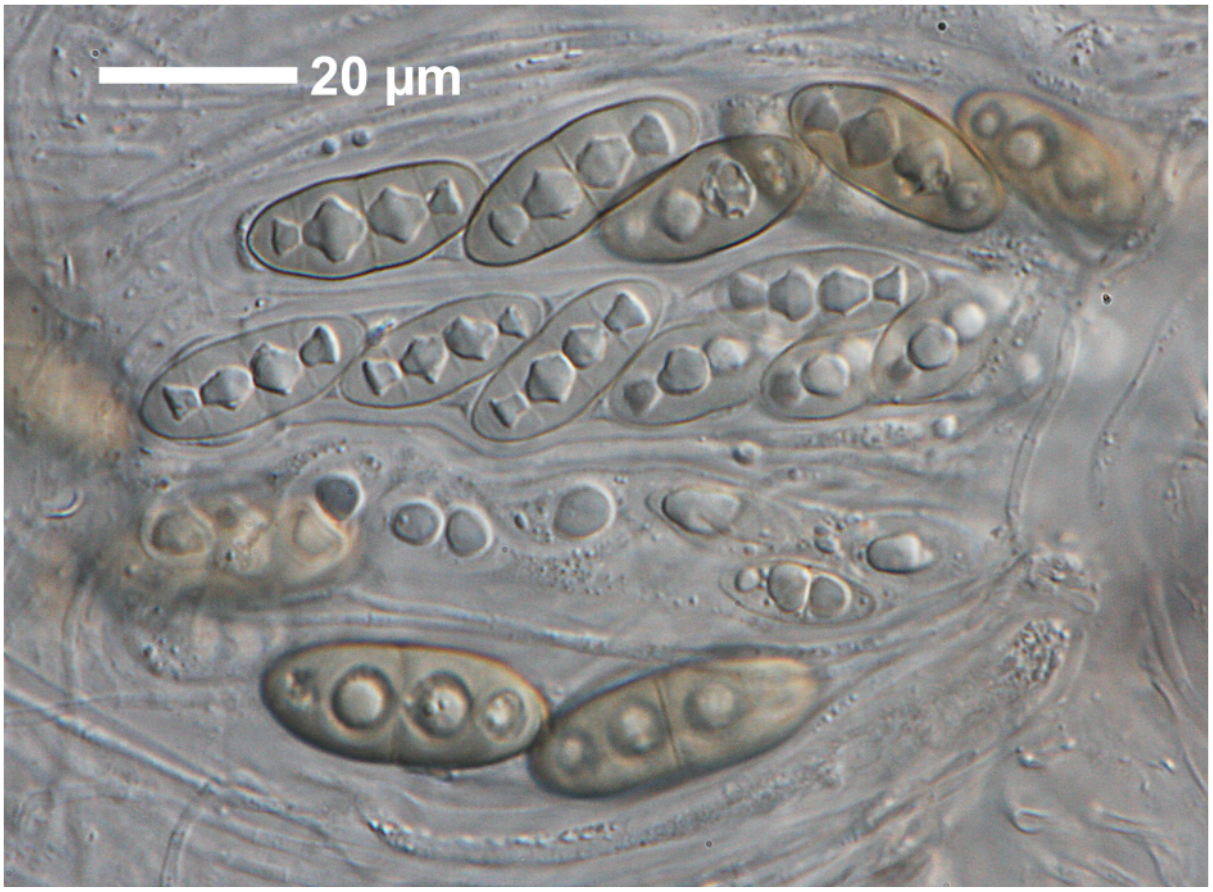
Pyrenula astroidea

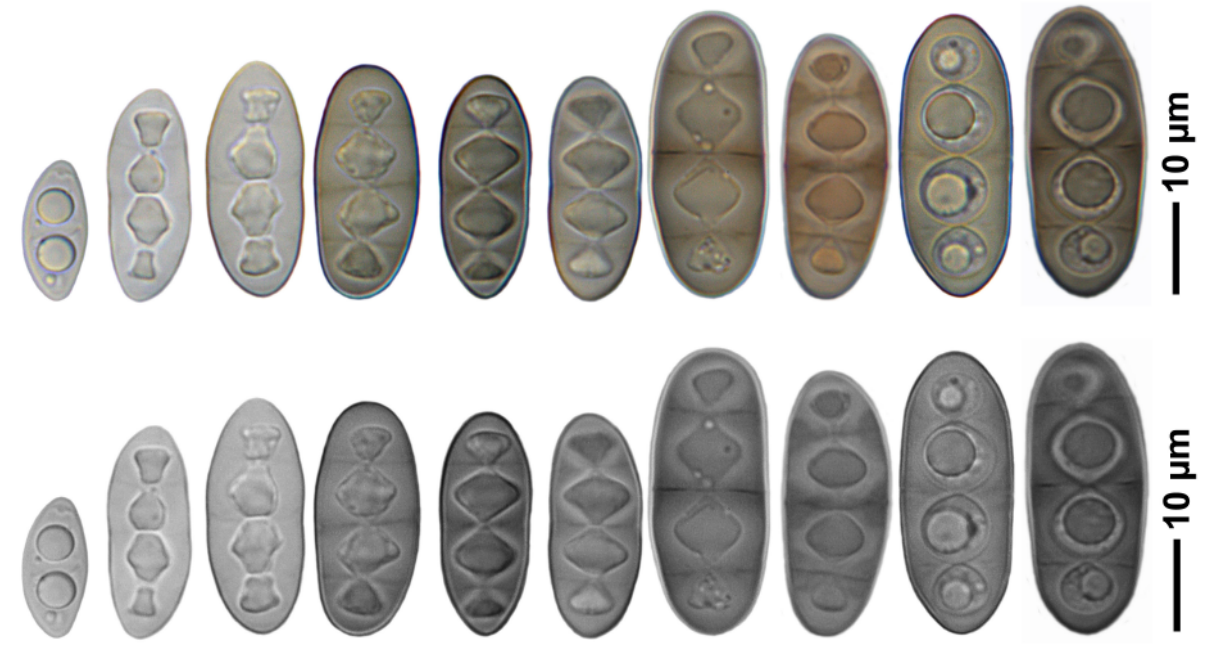
Pyrenula bahiana Malme

Ascospores first colourless and with angular lumina, later becoming grey-brown, with orange oil and rounded lumina, 3-septate, 22-31 x 8-12 µm. It is the 3-septate relative of *Pyrenula concatervans*.

[17070], USA, Hawaii, Maui, Nord-West, westlich des Waihee Trails, kleiner Wasserfall an der Straße, 20,95192° N, 156,53622° W, 237. Leg. Schumm & Frahm 15.02.2011, det. Aptroot 2011.







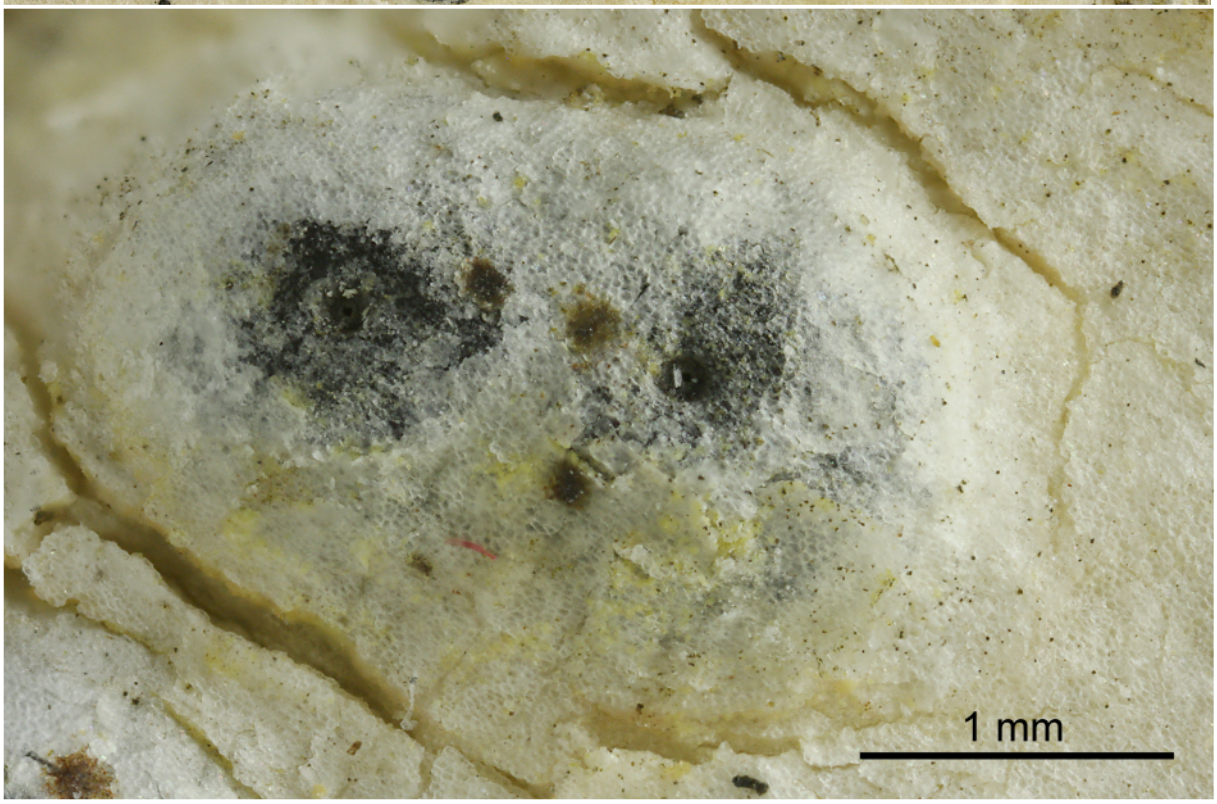
Pyrenula bahiana

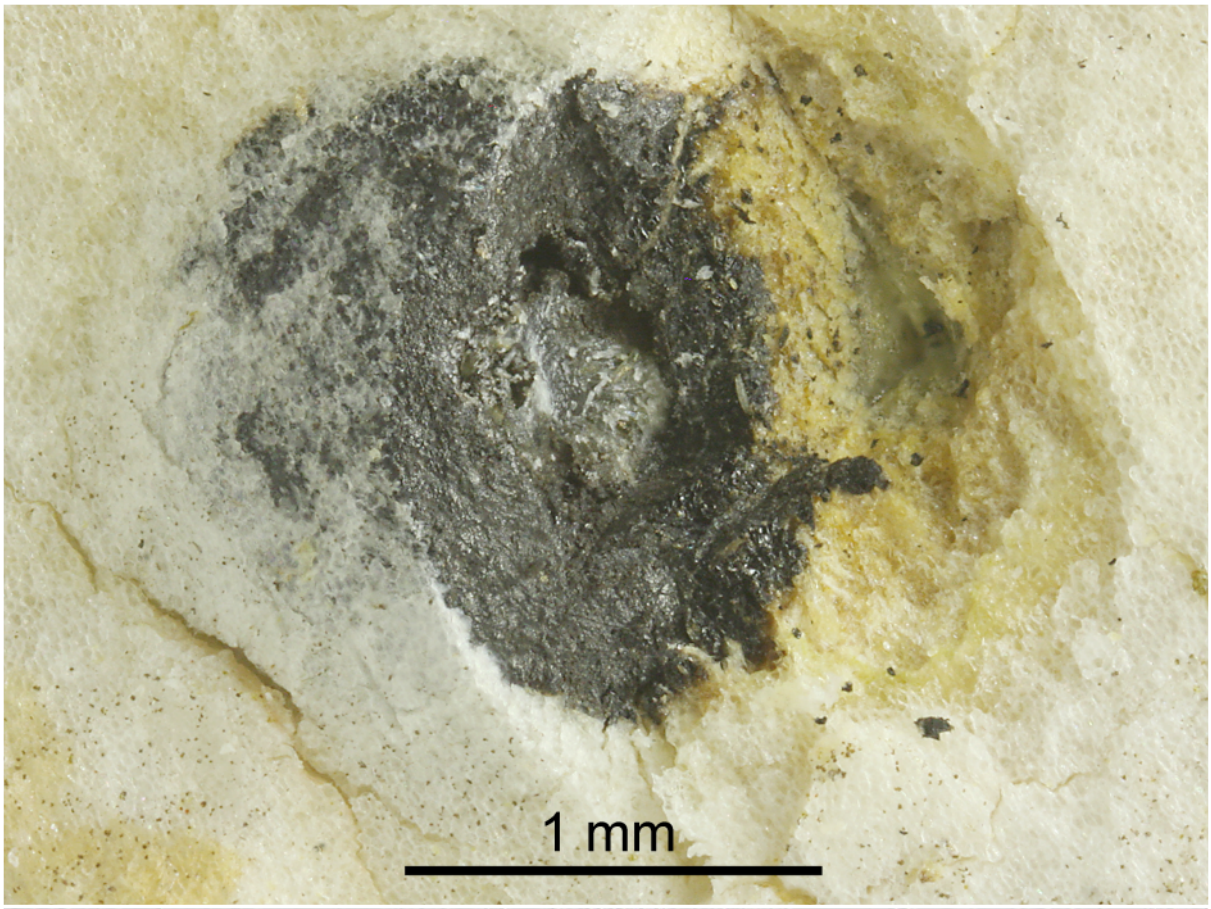
Pyrenula duplicans (Nyl.) Aptroot (2008)
[= ***Anthracothecium duplicans*** (Nyl.) Müll.Arg.]

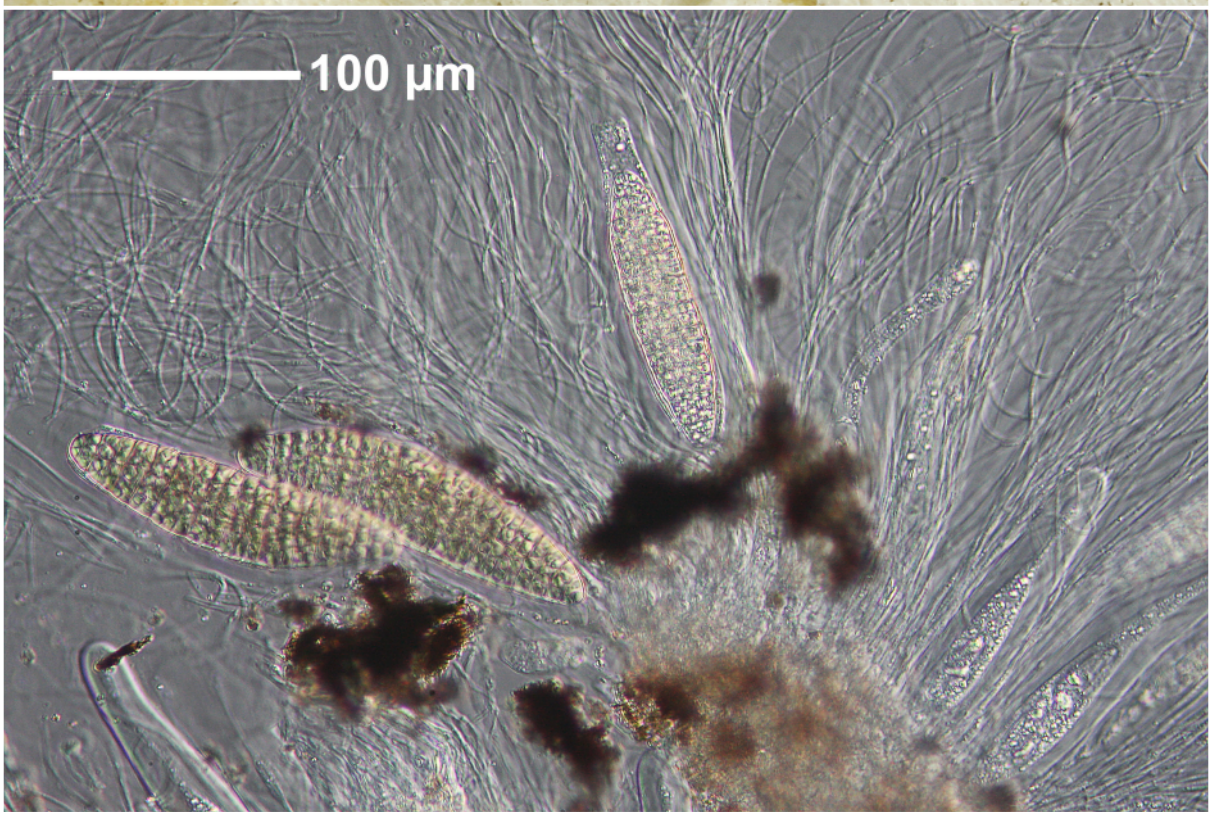
Thallus corticate, whitish. Perithecia 0.4-0.7 mm, often covered by the thallus. Hamathecium not inspersed, filaments not branched. Ascospores (1-)2/ascus, grey-brown, densely muriform, 110-162(-180) x 25-38(-45) µm. Chemistry: nil. Lit. Aptroot et al. (2008, Bibl. Lich. Bd. 97)

[15236], La Reunion, Grand Etang (See) südwestlich von St-Benoit; 21,09641° S, 55,65327° E, 540 m. Leg. Schumm & Frahm 09.09.2009, det. Aptroot 2011.

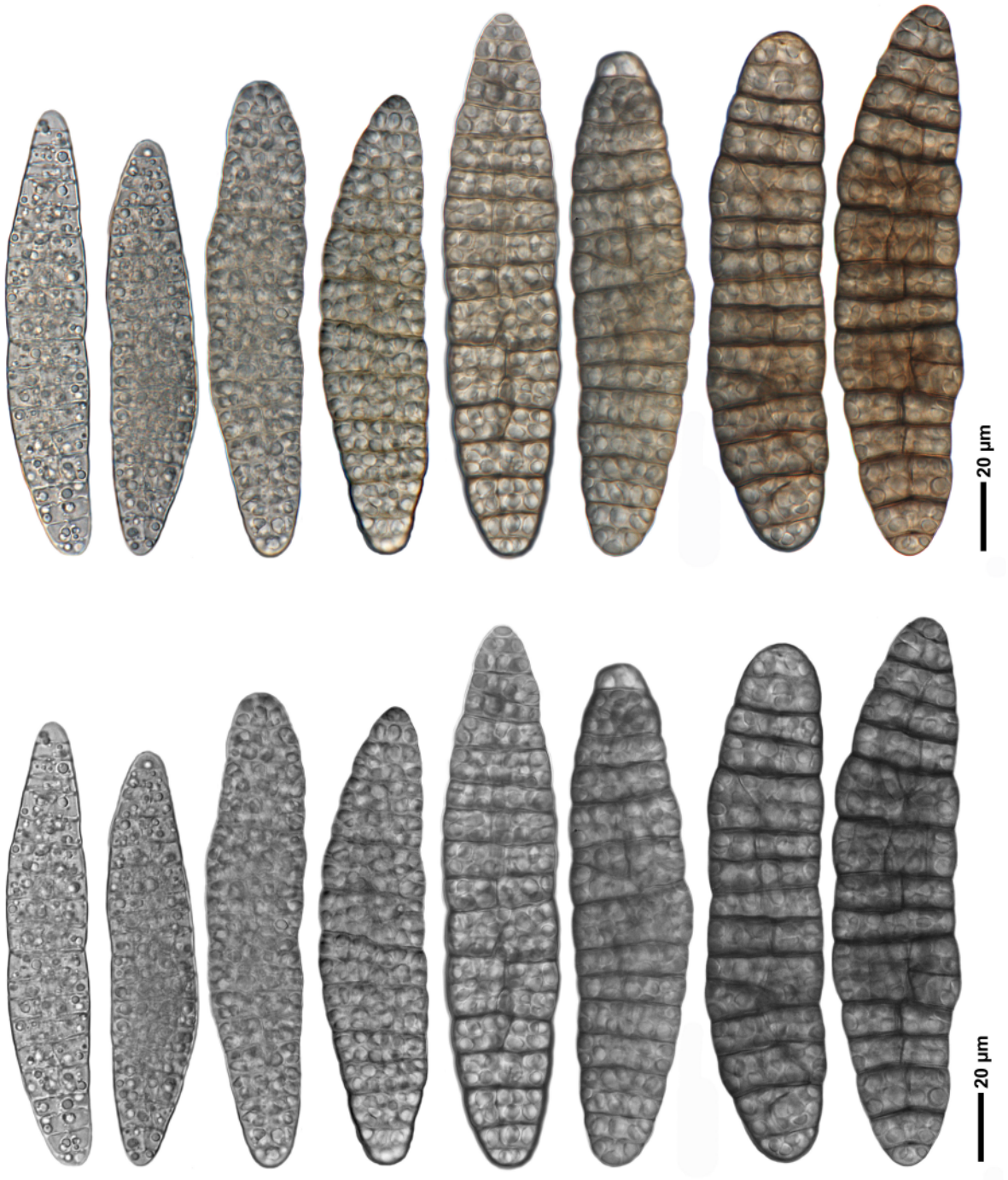








Pyrenula duplicans

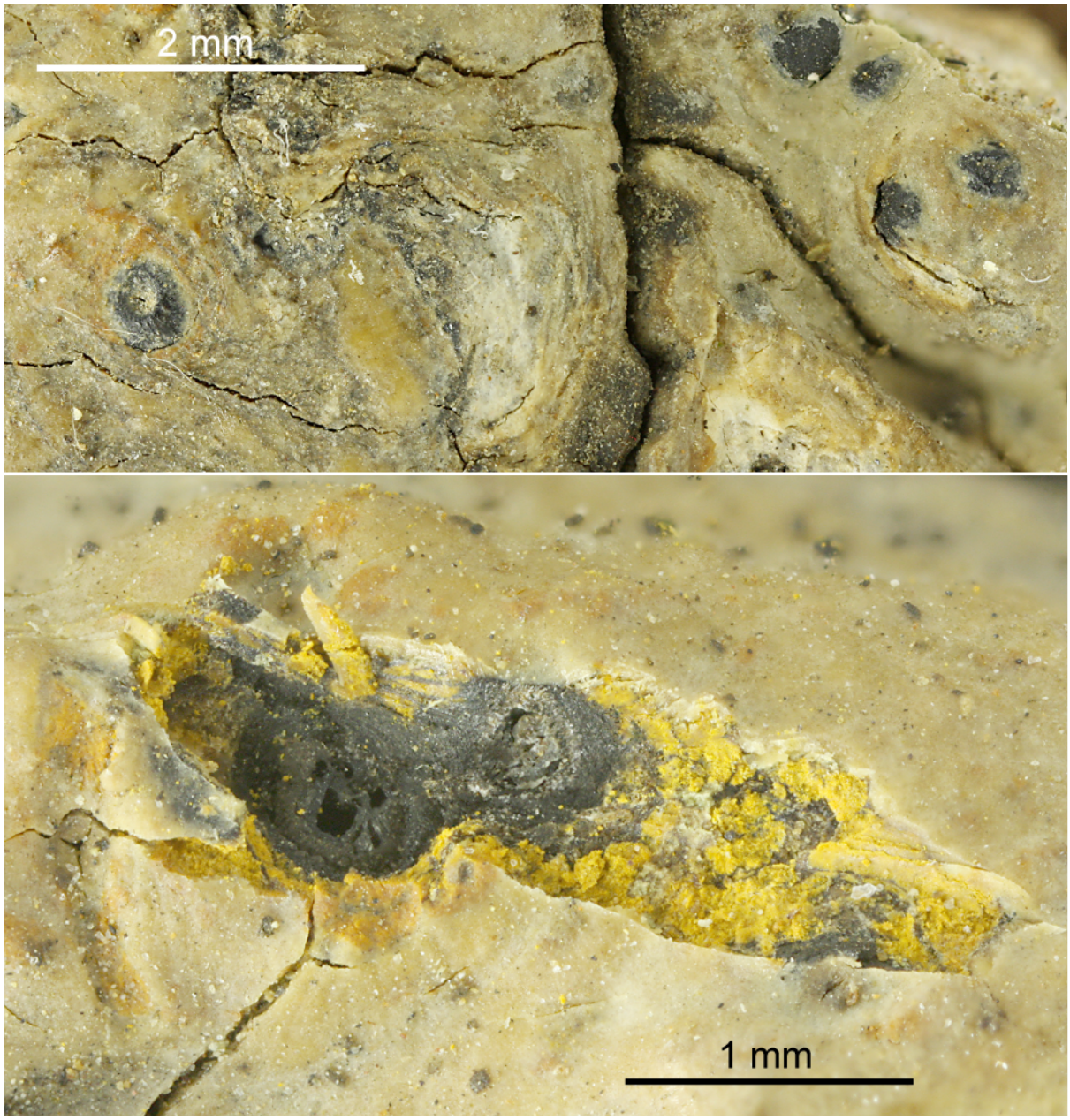


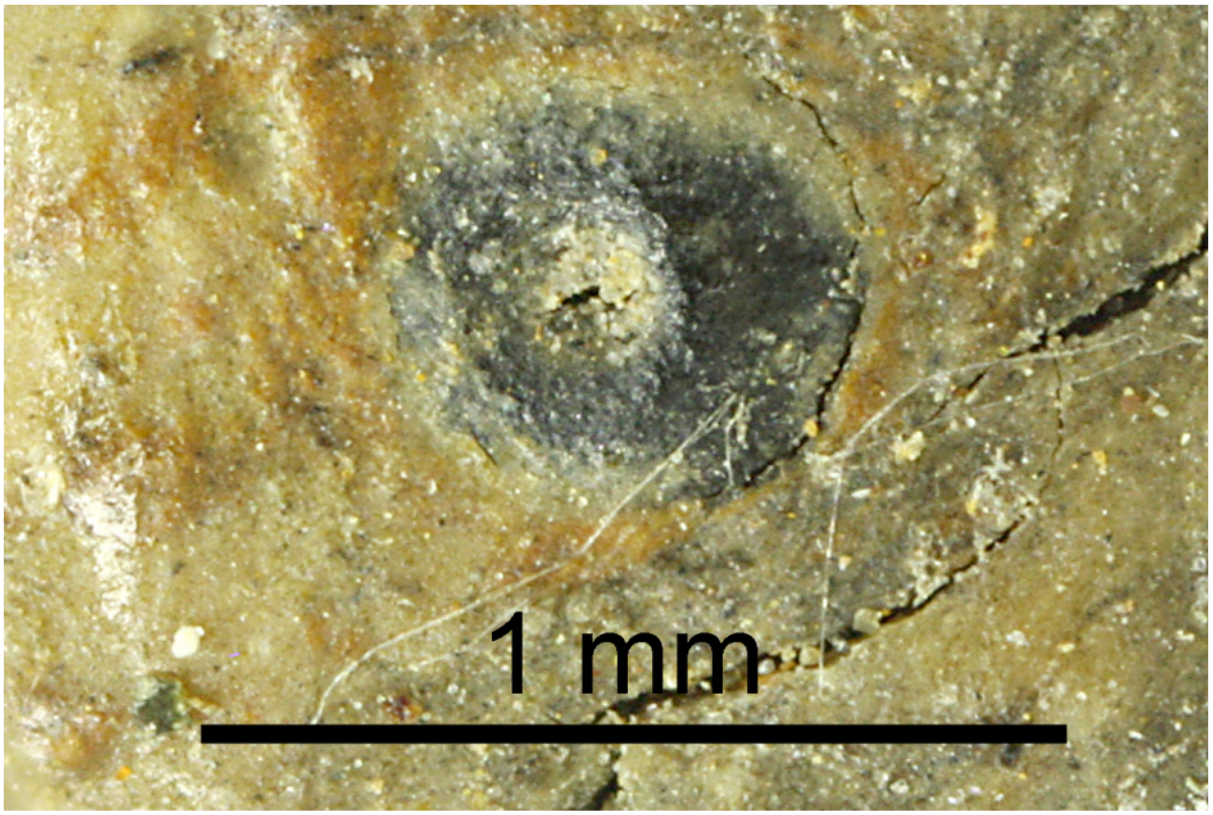
Pyrenula duplicans

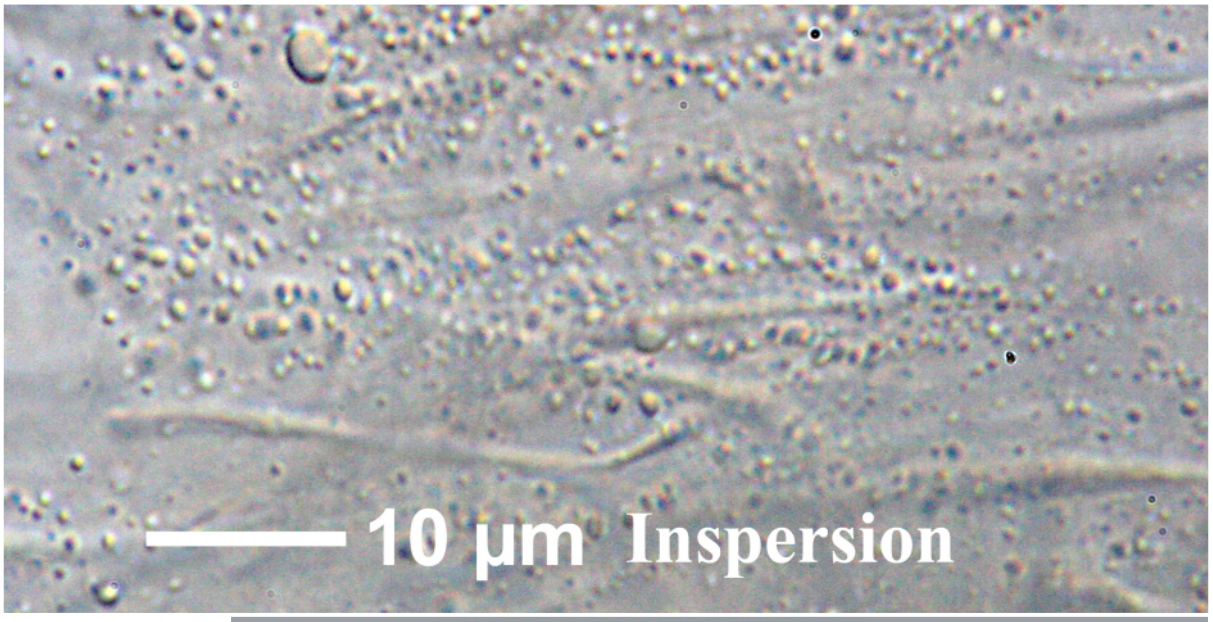
Pyrenula endocrocea Aptroot HOLOTYPUS

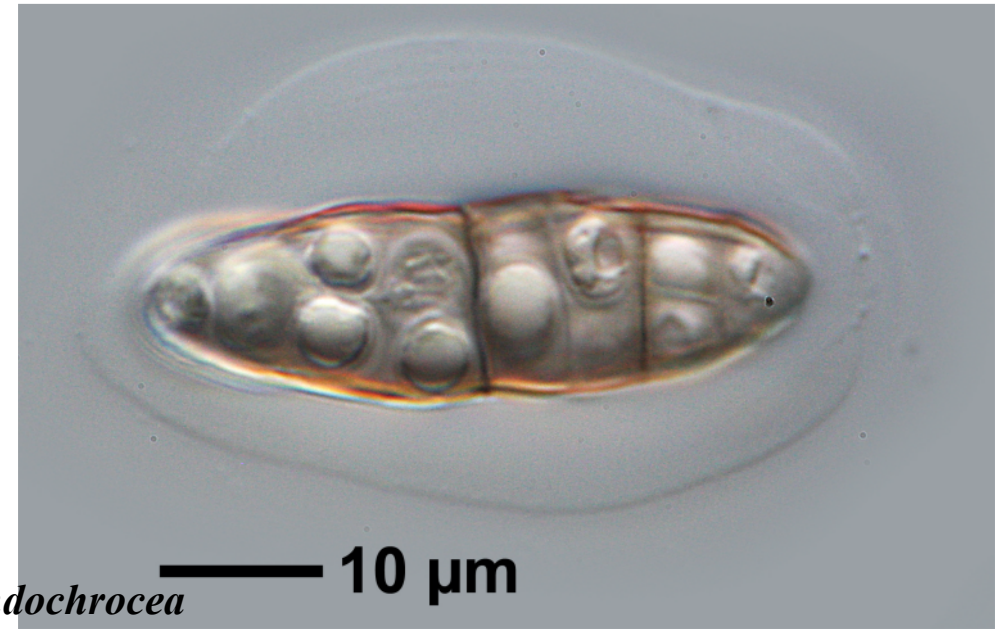
Thallus warty, medulla lax and yellow-orange (UV+ intense red). Hamathecium inspersed. Ascospores first colourless and submuriform, with 3 stronger formed transverse septa (sometimes divided additional with very thin septa), old brown and sometimes looking like 2-locular because the medium septum survived, 32-44(-50) x 13-14(-17) µm.

[ABL-20225], Philippines, Island of Luzon, Prov. Benguet, Baguio, Burnham Park, on Alnus japonica. 16°26' N, 120°33' E, 1300m. Leg. A. Aptroot 02.1987, det. A. Aptroot.









Pyrenula endochrocea

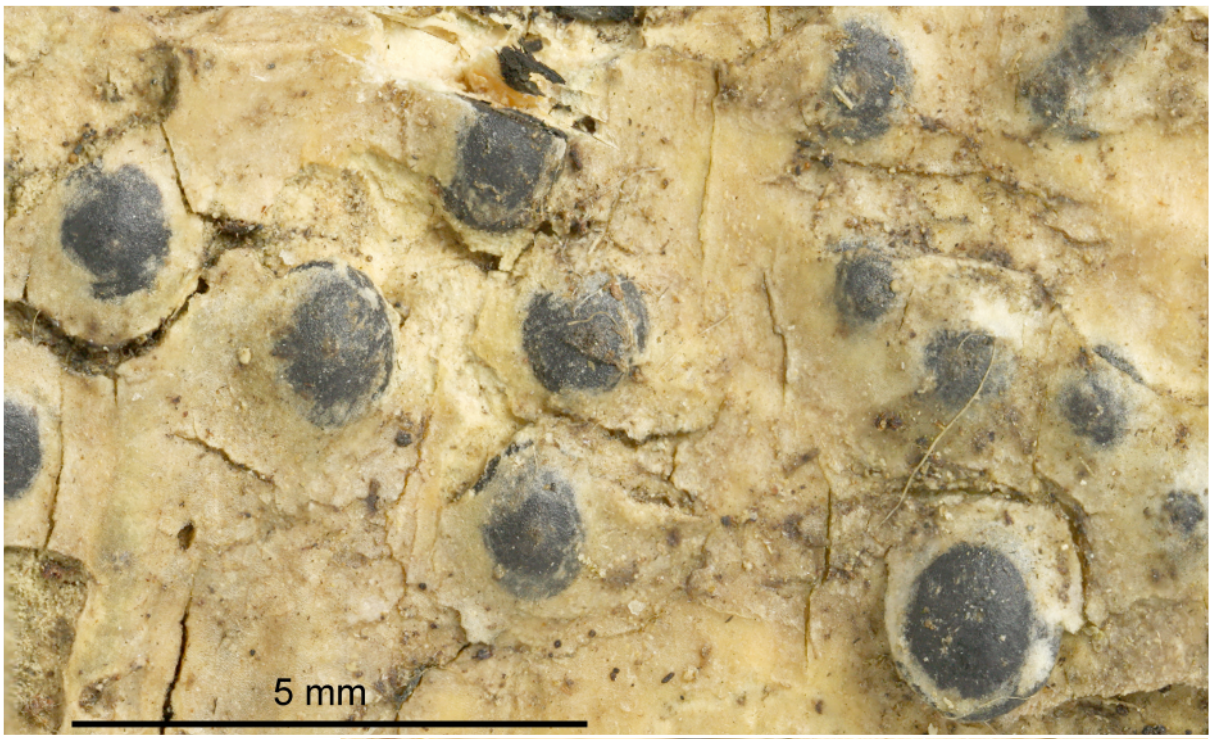


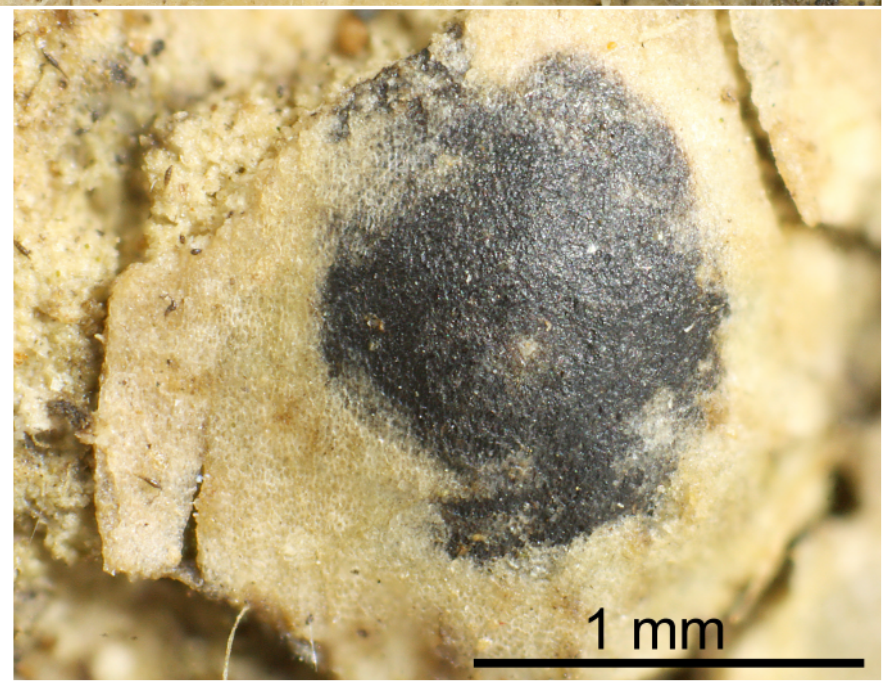
Pyrenula endochrocea

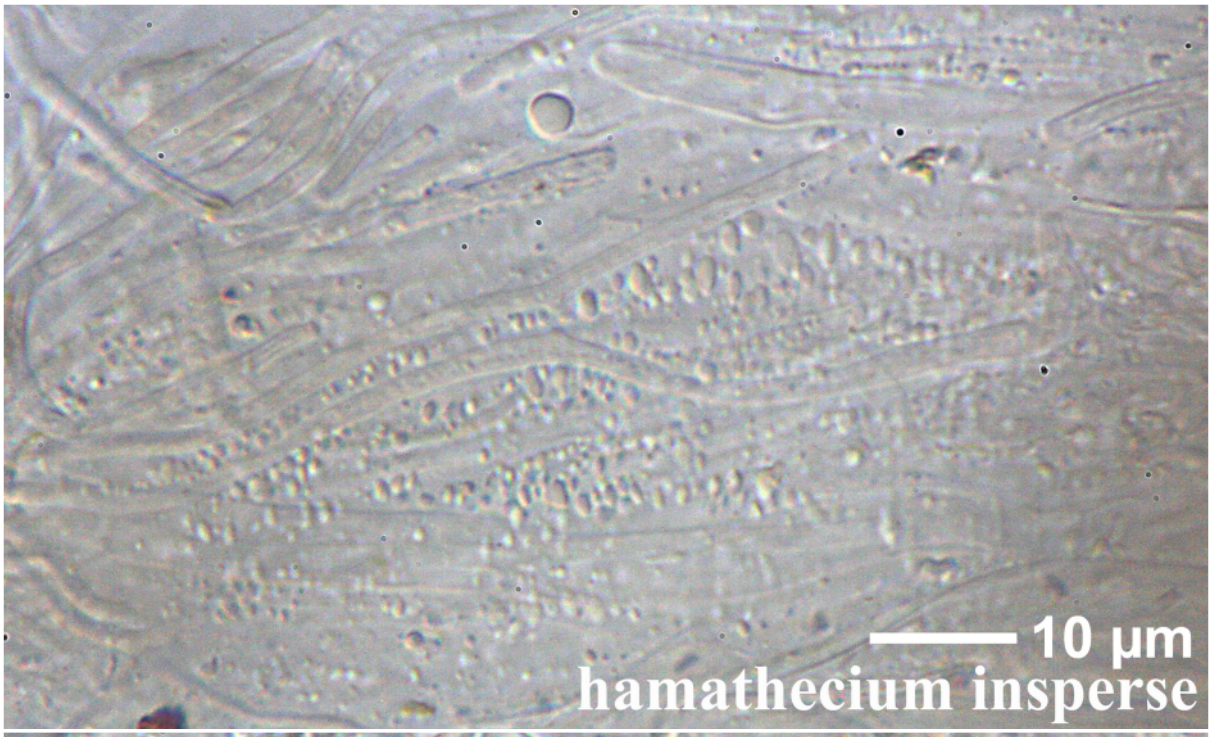
Pyrenula fetivica (Krempelh.) Müll.Arg.
[= ***Pyrenula subcongruens*** Müll.Arg.]
[= ***Pyrenula citriformis*** R.C.Harris]

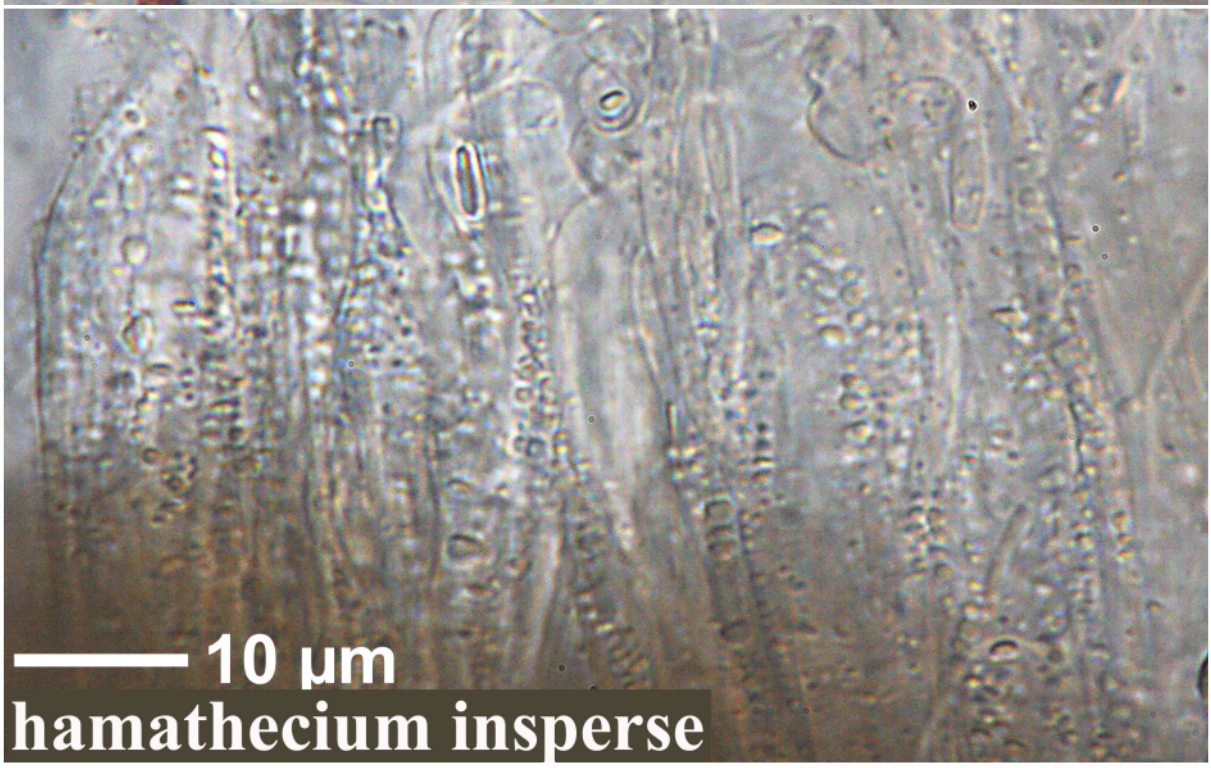
Thallus corticate, UV-, K-. Ascomata simple, not aggregated, without external orange pigments. Ostioles apical. Hamathecium inspersed. Ascospores grey to brown, 3-septate, well developed 23-25 x 9-11 µm (>16µm, < 30 µm), all lumina rounded, terminal lumina dirctly against the exospore wall, old without orange oil.

[7977], Philippinen, Leyte, Prov. Leyte, Lake Kasudsuran (11°01.539' N, 124°44.931' E, 740 m) bei Barangay Liberty (Ormoc-City). Leg. Schumm 23.08.2000, det. Aptroot 2009.









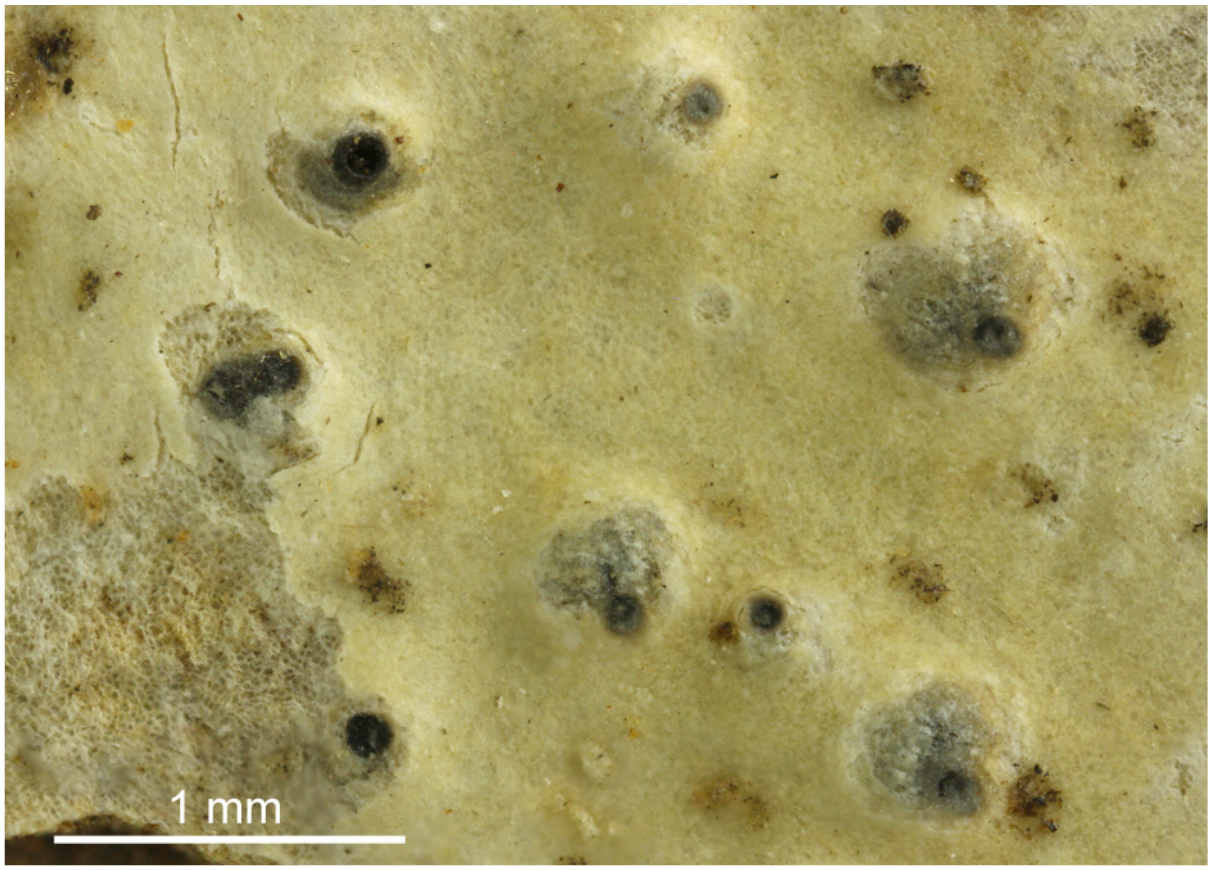


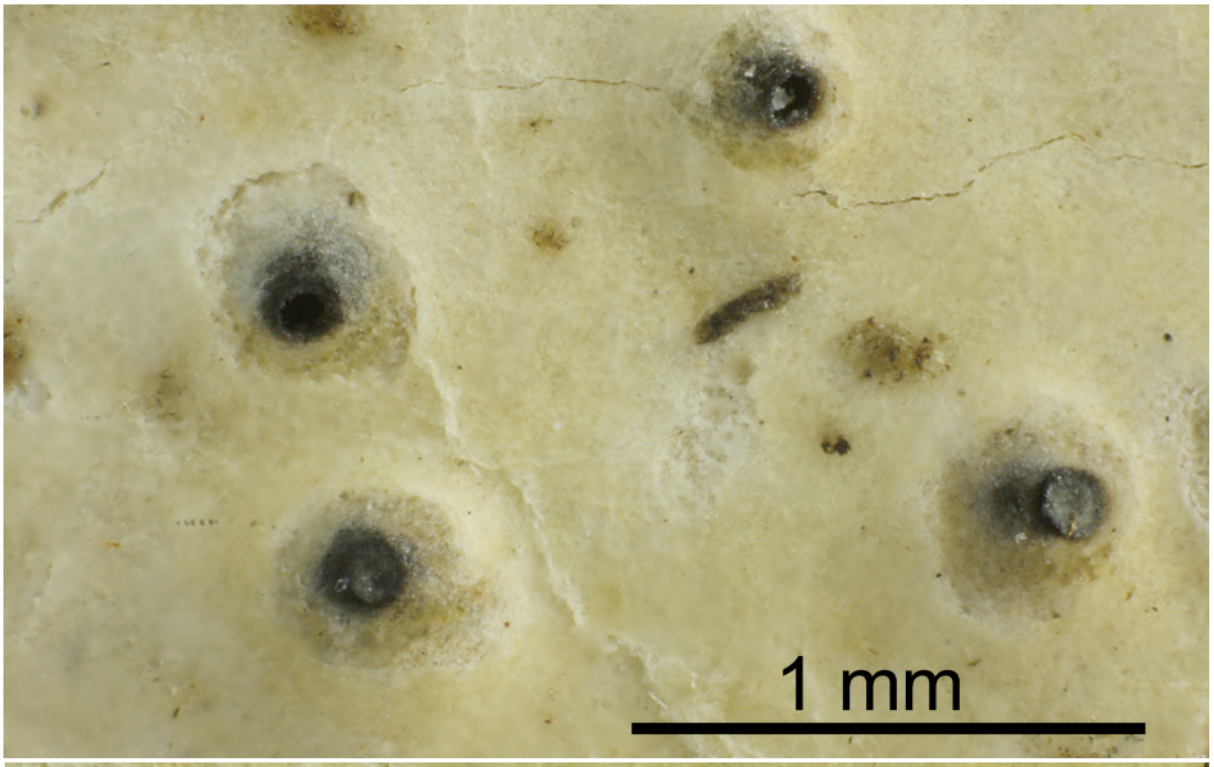
Pyrenula fetivica

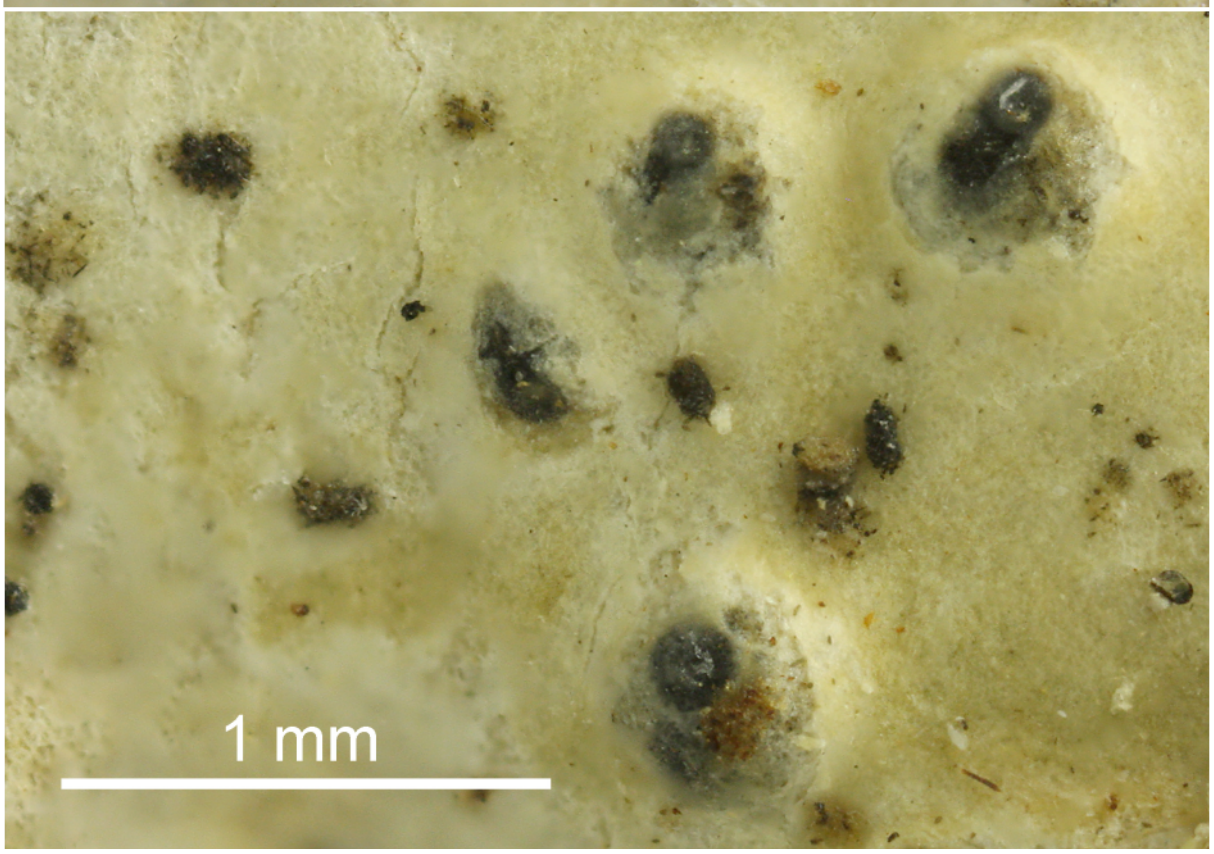
Pyrenula hawaiiensis Aptroot

Thallus corticate, smooth, continuous, thin, pale yellowish, without pseudocyphellae or pockets of crystals; algae trentepohlioid. Ascomata perithecioid, simple, dispersed, pyriform, emergent, 0.2–0.4 mm diam., black, mostly with thallus covering. Wall more or less equally carbonized, without crystals, KOH-, c. 40 ìm thick. Ostioles brown, KOH-, skewed to lateral, pointing in various directions. Hamathecium hyaline, not inspersed with oil droplets. Asci cylindrico-clavate, IKI-, with 8 irregularly arranged ascospores. Ascospores brown, J-, 3-septate, fusiform, without constrictions, 21–23 × 9.5–14 ìm, ends rather pointed, lumina mostly diamond-shaped, angles sharp, terminal lumina separated from the end wall by an endospore layer. Pycnidia not observed. Chemistry. Thallus UV+ yellow, with lichexanthone. On smooth bark of Acacia koa tree. Known only from the type. This species somewhat resembles Pyrenula dermatodes (Borrer) Schaer., but differs by the pyriform ascomata with ostioles that are pointed sideways.

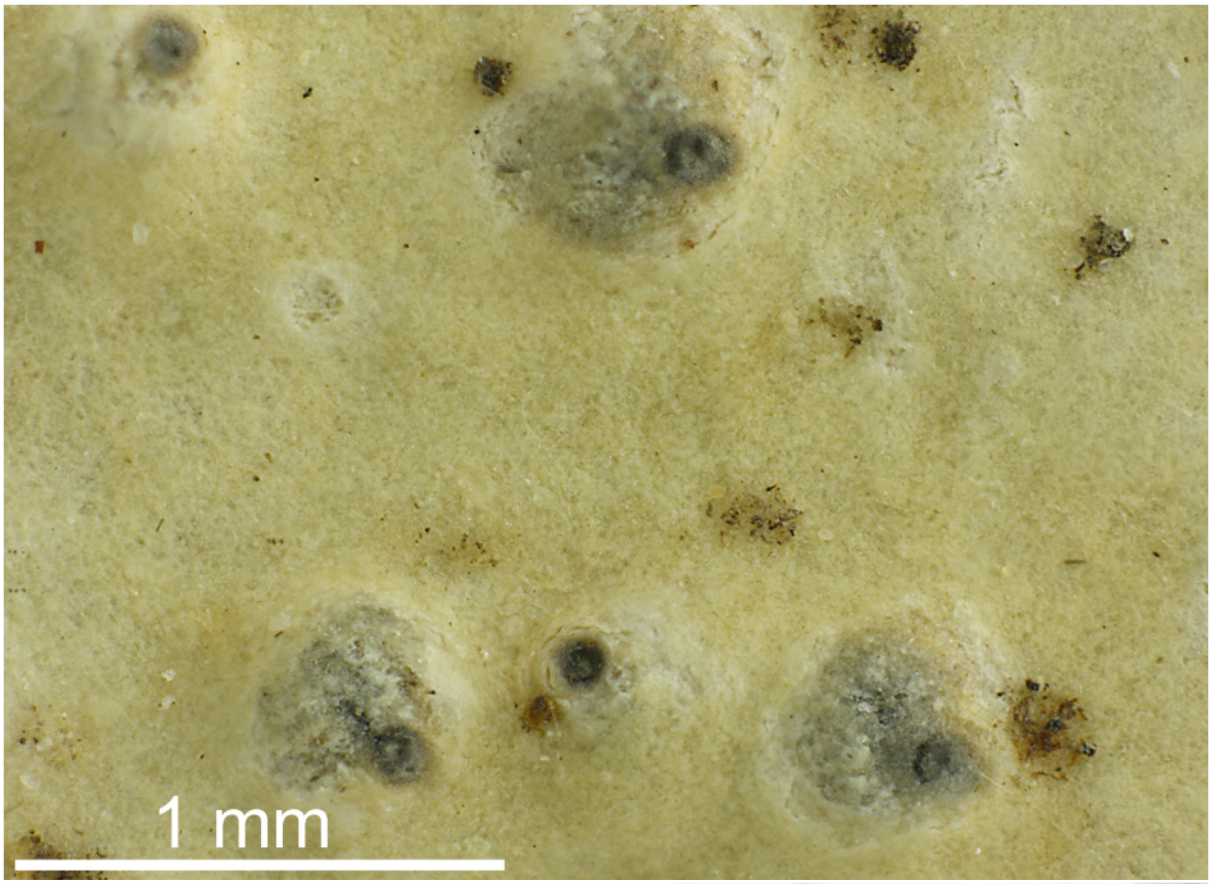
[ABL-OD34947], USA, Hawaii, Big Island: Kaumana, mauka Hilo, on fallen tranches of Acacia koa s.l.. Leg. O. Degener (Nr. 34947) 09.05.1979, det. A. Aptroot. HOLOTYPUS.

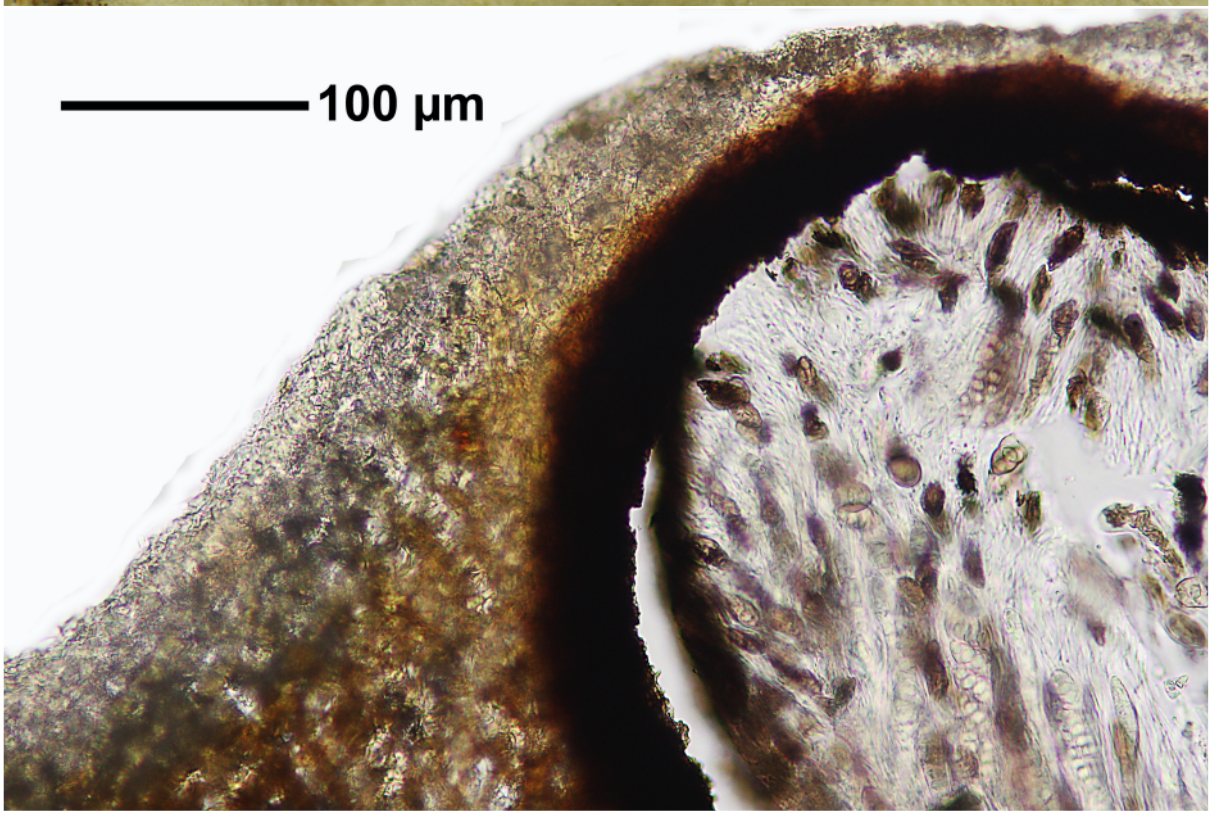




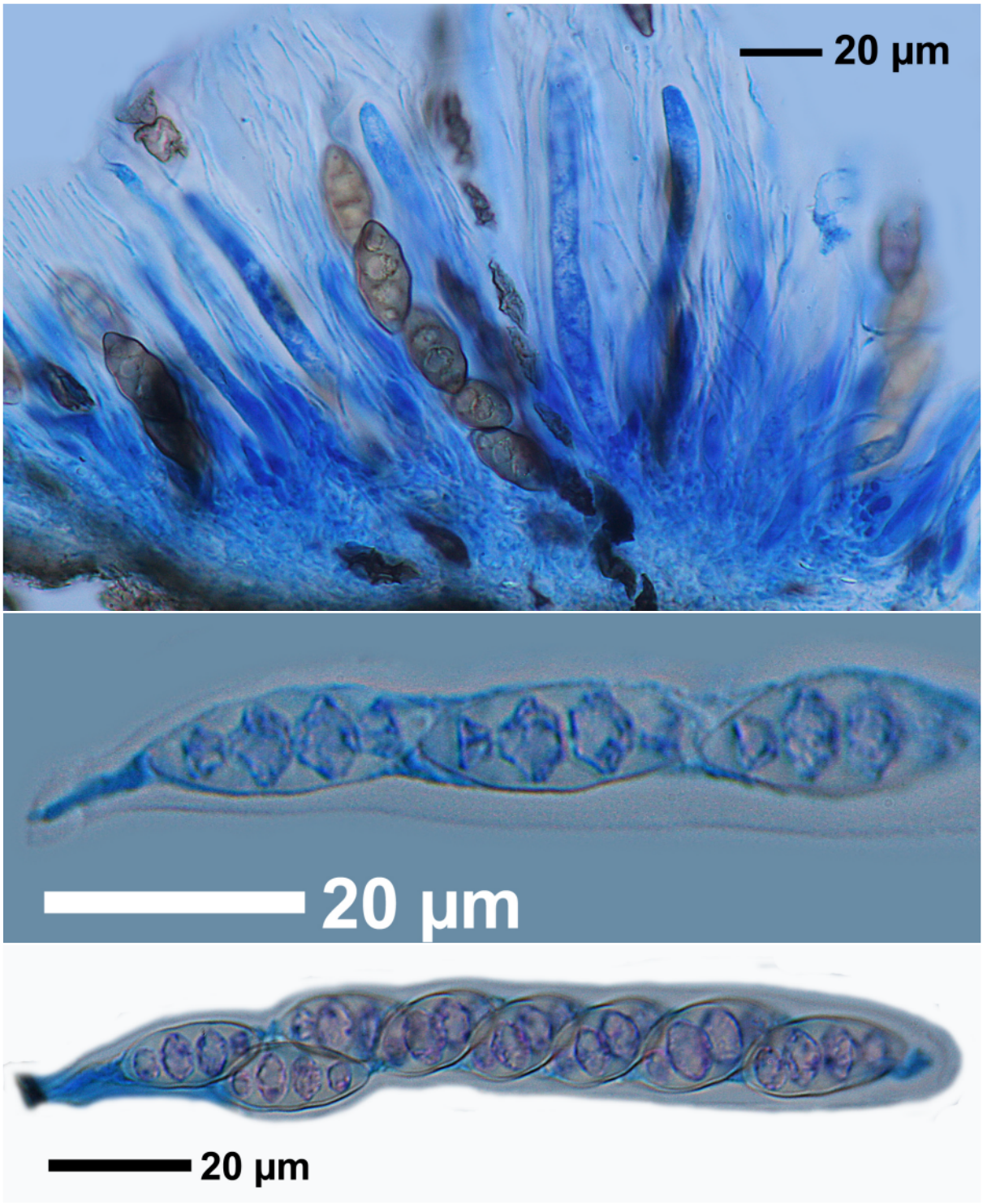


Pyrenula hawaiiensis





Pyrenula hawaiiensis

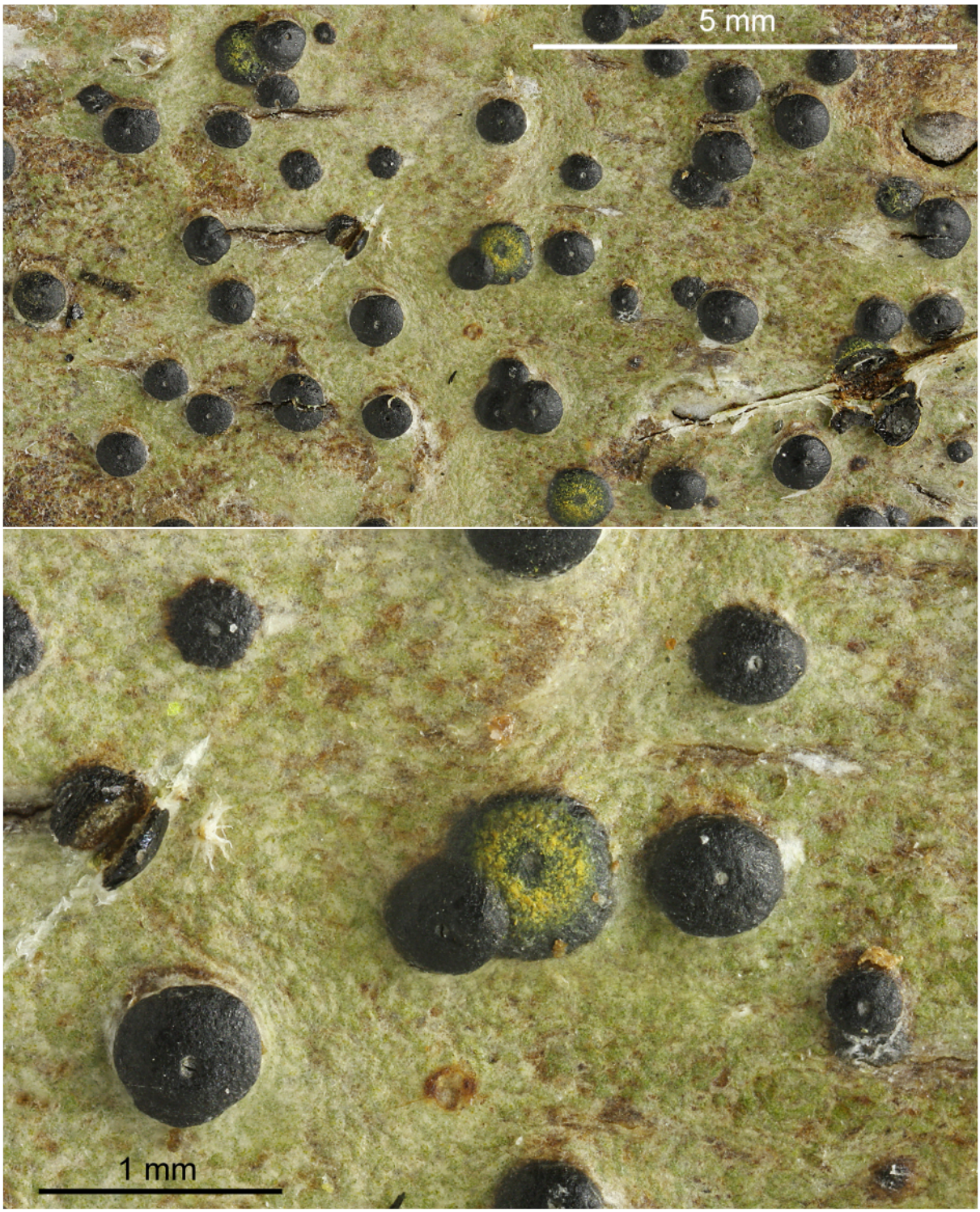


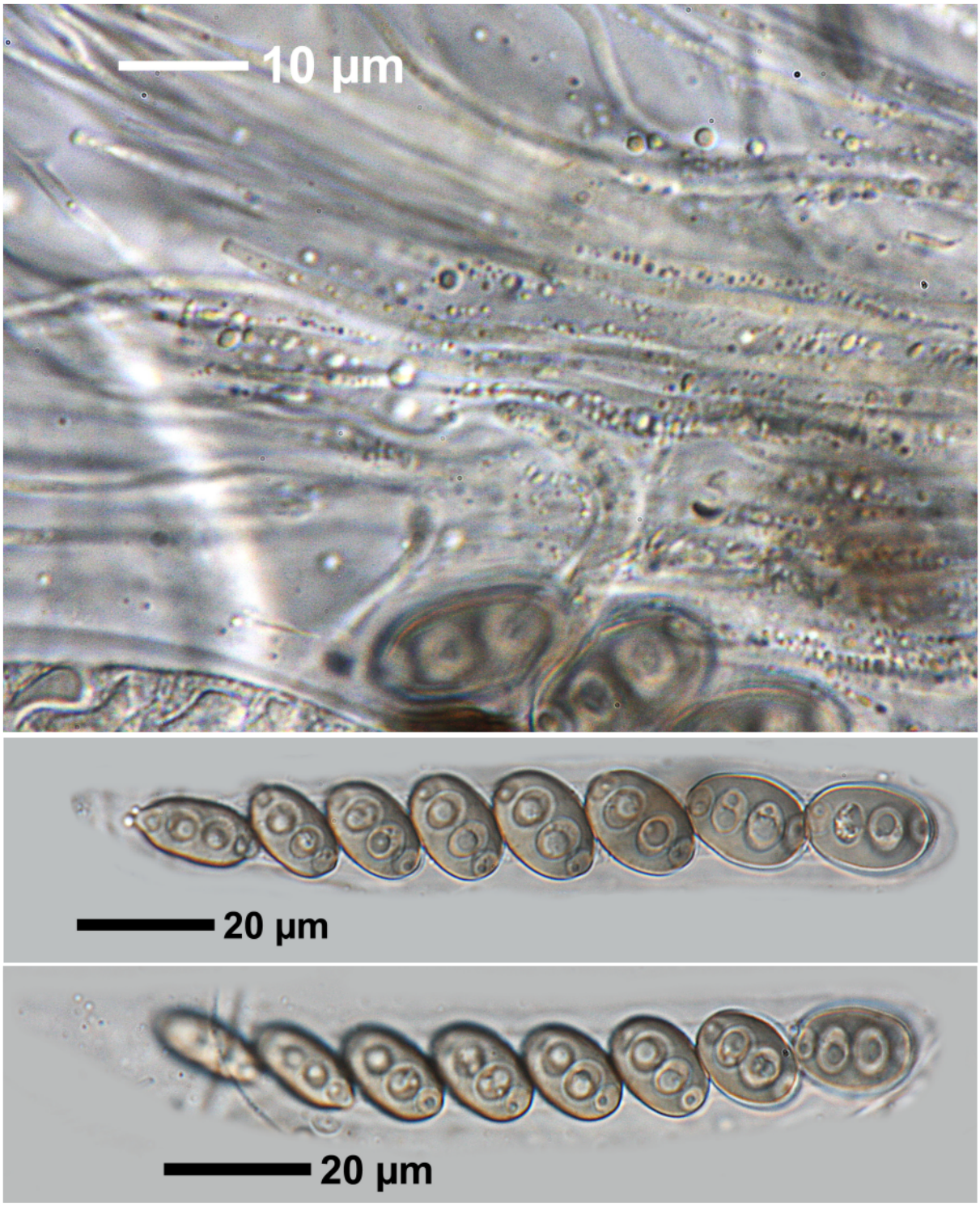
Pyrenula hawaiiensis

Pyrenula luteopruinosa Etayo & Aptroot

Thallus corticated, olive-green, mostly with pseudocyphellae. Perithecia single, ca. 0.4-0.8 mm, often with yellow pruina. Hamathecium not or somewhat inspers, J-, filaments not branched. Ascospores grey-brown, 8/ascus, 3-septate, (15-)17-20 x (7-)9-12 µm. Chemistry: pruina K+ red, anthraquinone. Lit. Lichenologist 35(3): 23

[17060], USA, Hawaii, Maui, IAO-Valley, westlich von Wailuku, 20,87543° N, 156,54715° W, 300 m. Leg. Schumm & Frahm 15.02.2011, det. Aptroot 2011.





Pyrenula luteopruinosa

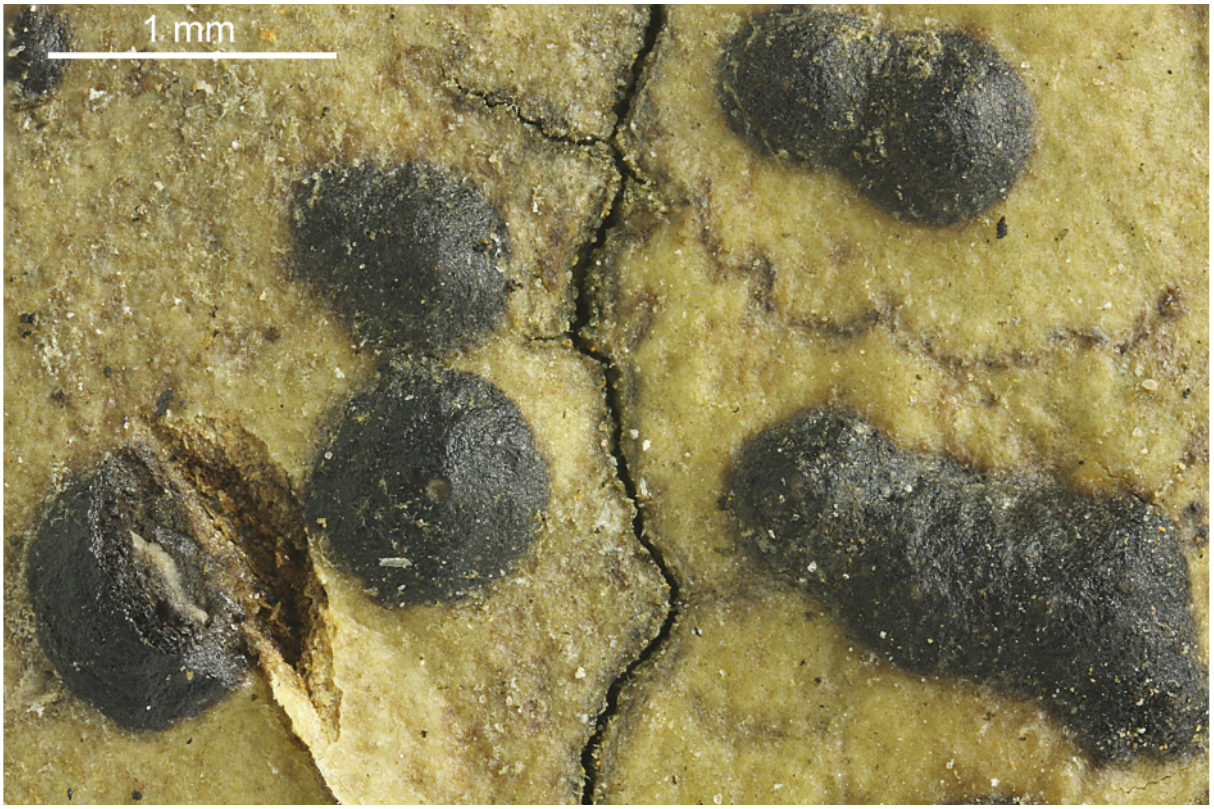


Pyrenula luteopruinosa

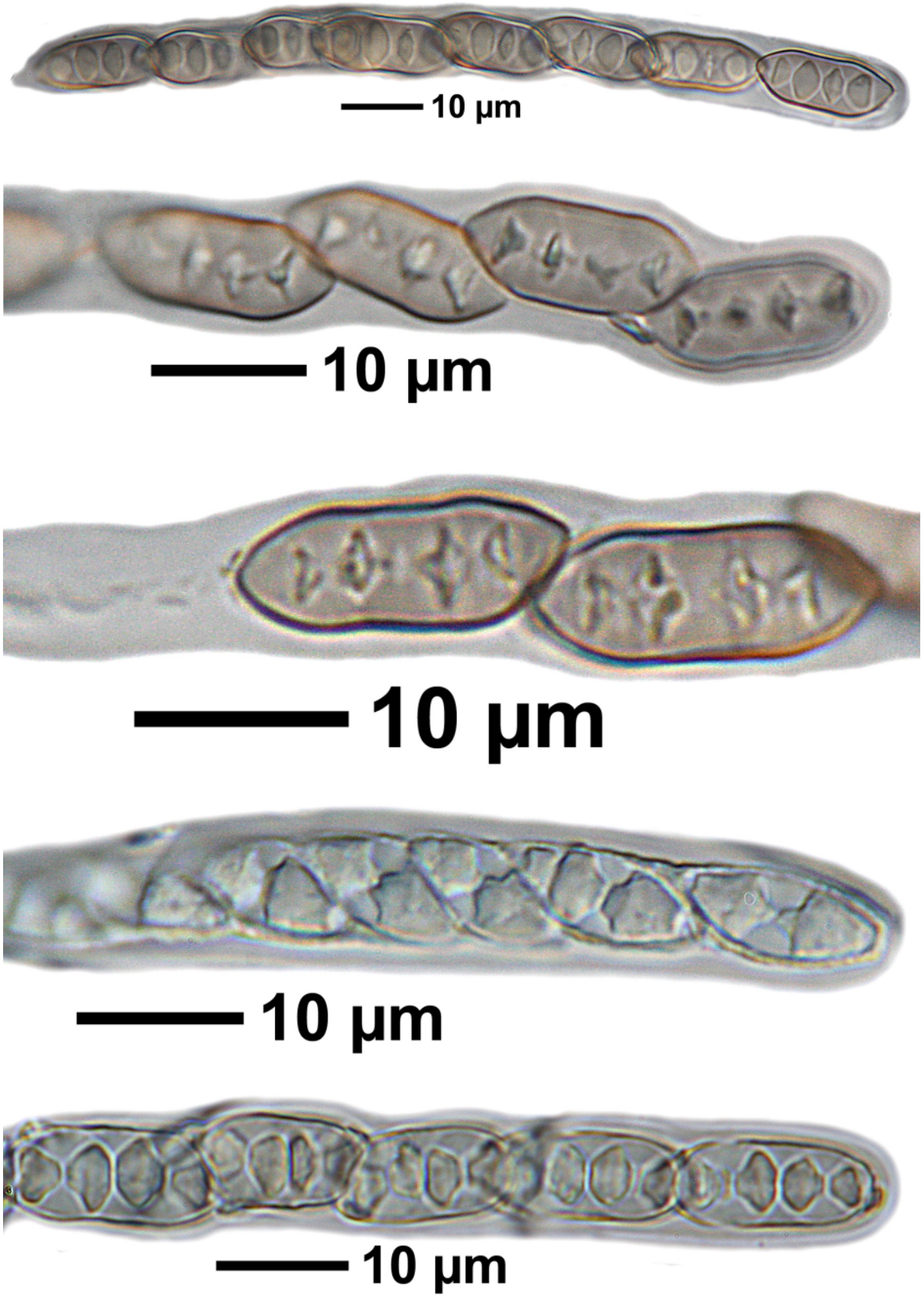
Pyrenula mamillana (Ach.) Trevis

Hymenium somewhat inspersed. Ascospores brown, 8/ascus, uniseriate, 3-septate, 15-17 x 5-6 µm. Thallus UV- to somewhat yellow-grey.

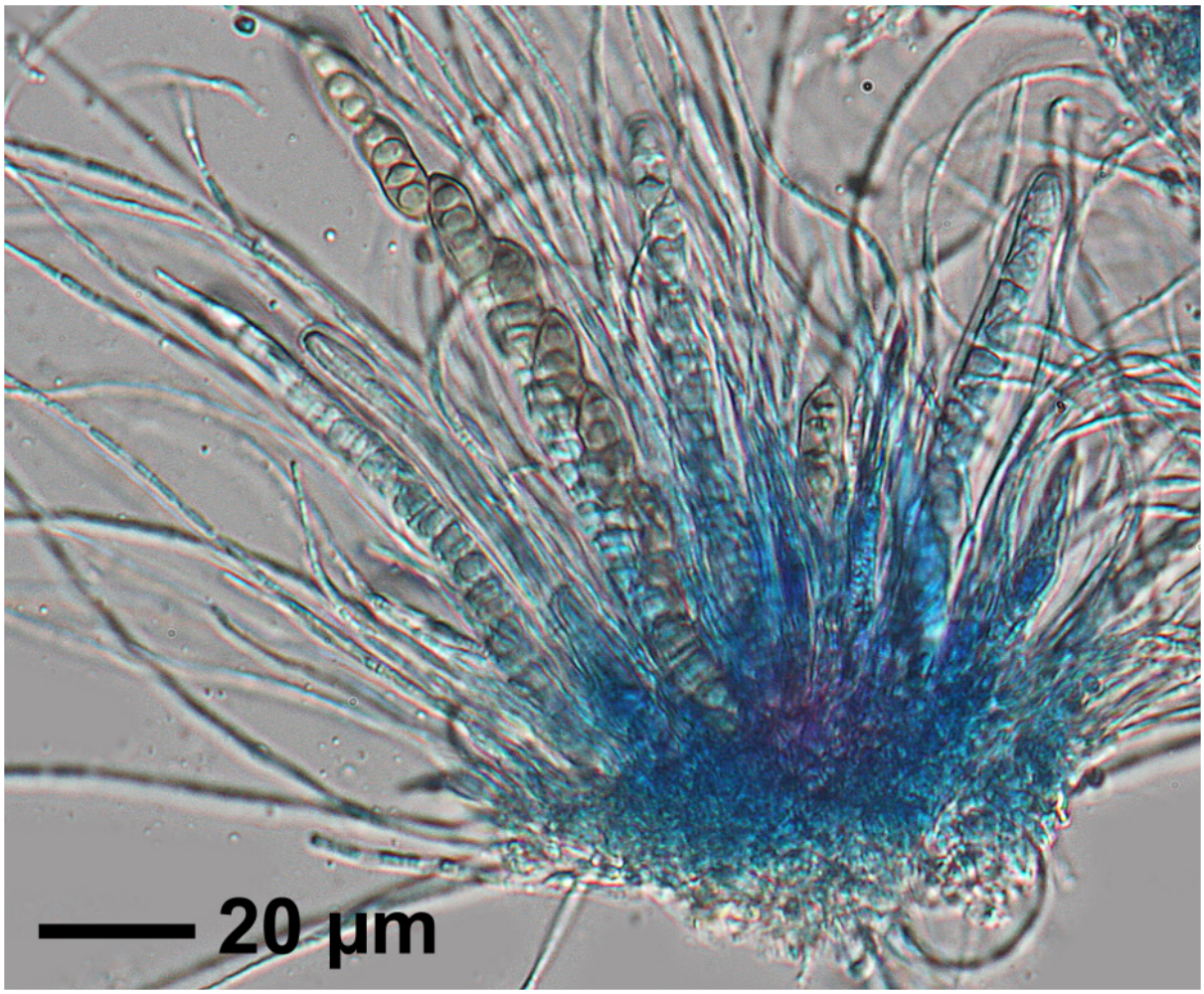
[9567], Thailand, Elefantenarbeitslager bei Chiang Mai, 19°14.859' N, 98°58.137' E, 330 m. Leg. Schumm 01.04.2002, det. Aptroot 2009.







Pyrenula mamillana



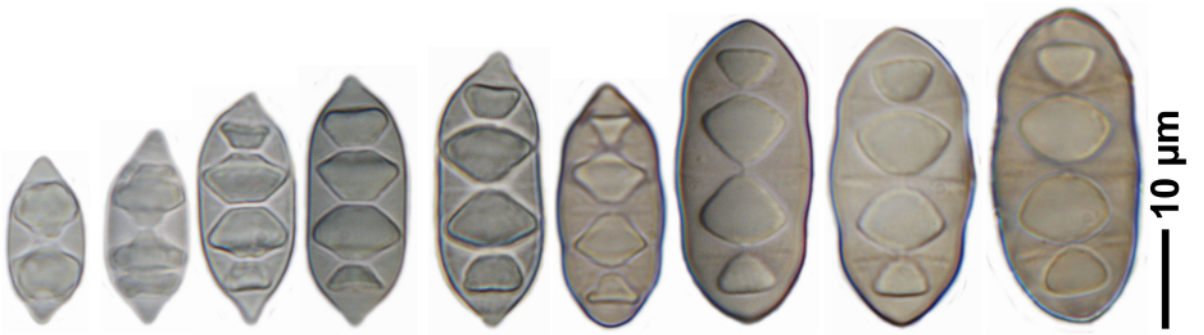
Pyrenula mamillana

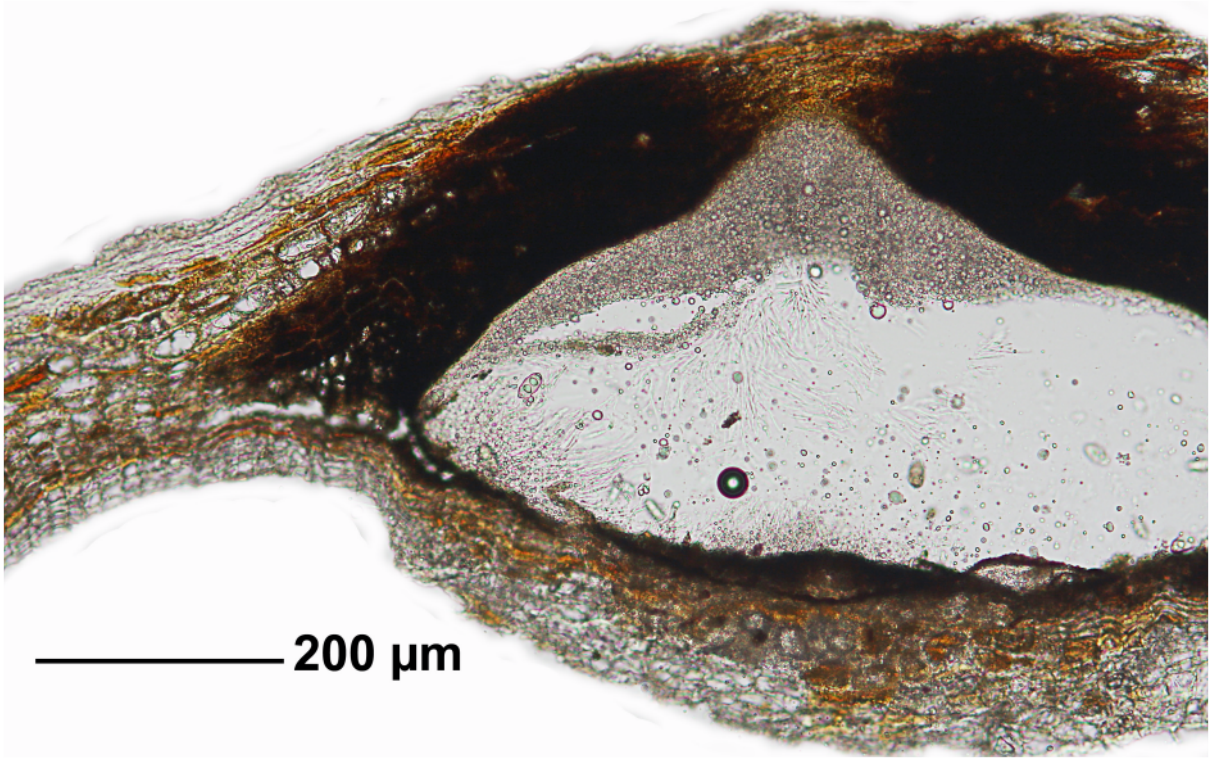
Pyrenula macrocarpa A.Massal. (1852)

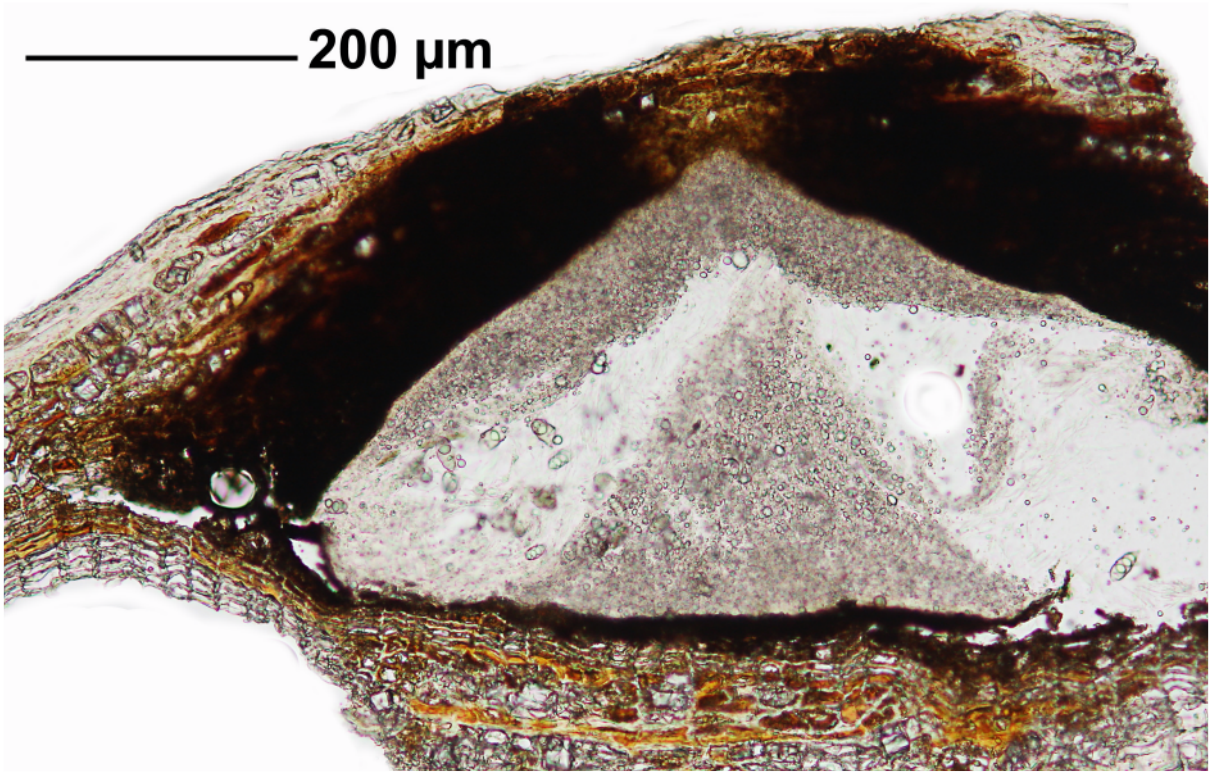
Ascospores first colourless, then grey-brown, especially when young somewhat pointed to the ends, c. 29-31 x 10-14 µm. Nucleus K-. Filaments unbranched. Hamathecium usually not inspersed (but in the pictured specimen with various big drops, which are not joined at the filaments). Lit. Aptroot et al. 2008 (Bibl. Lich. Bd. 97)

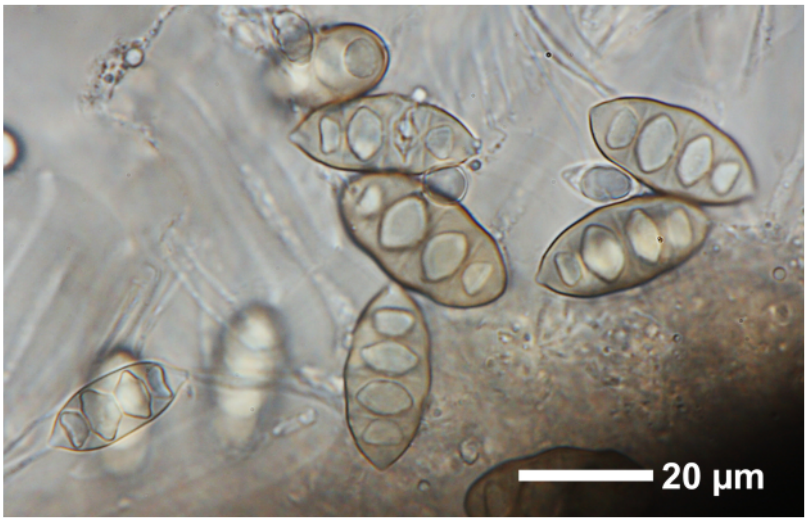
[15375], La Reunion, Foret de Bébour, Sentier de Piton Bébour; 21,12860°S, 55,56962°E, 1300 m. Leg. Schumm 12.09.2009, det. Aptroot 2011.



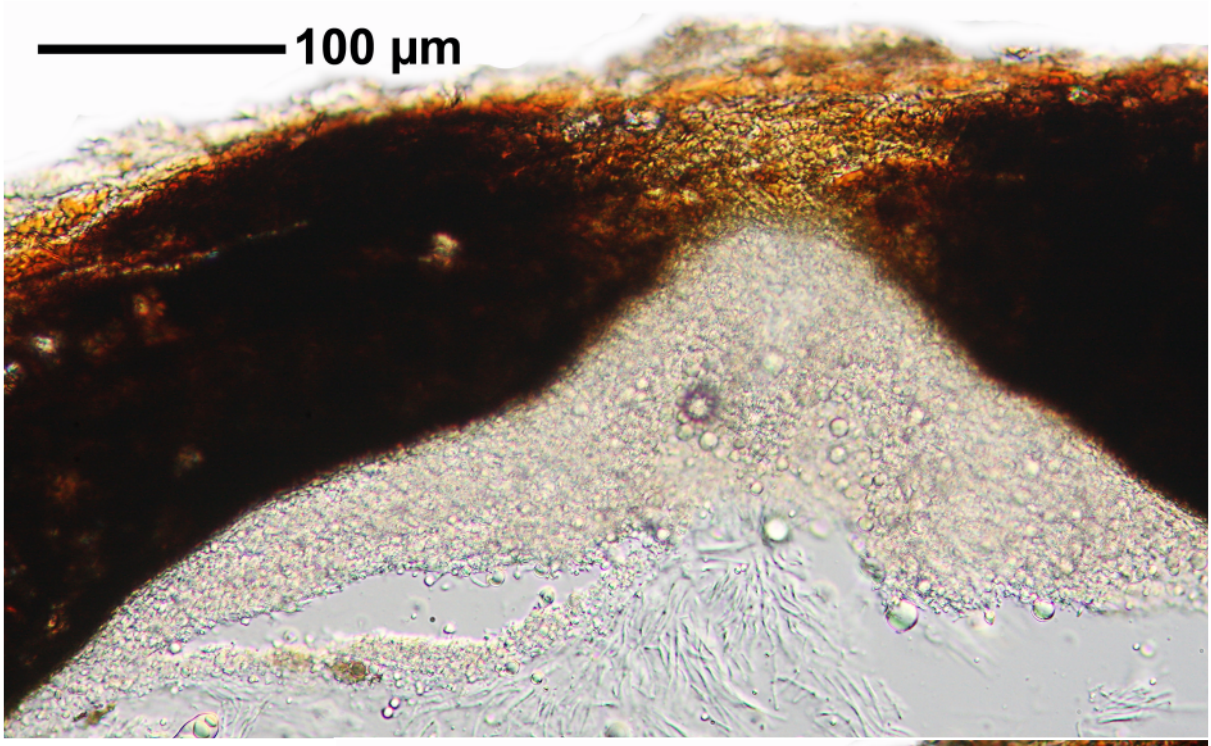


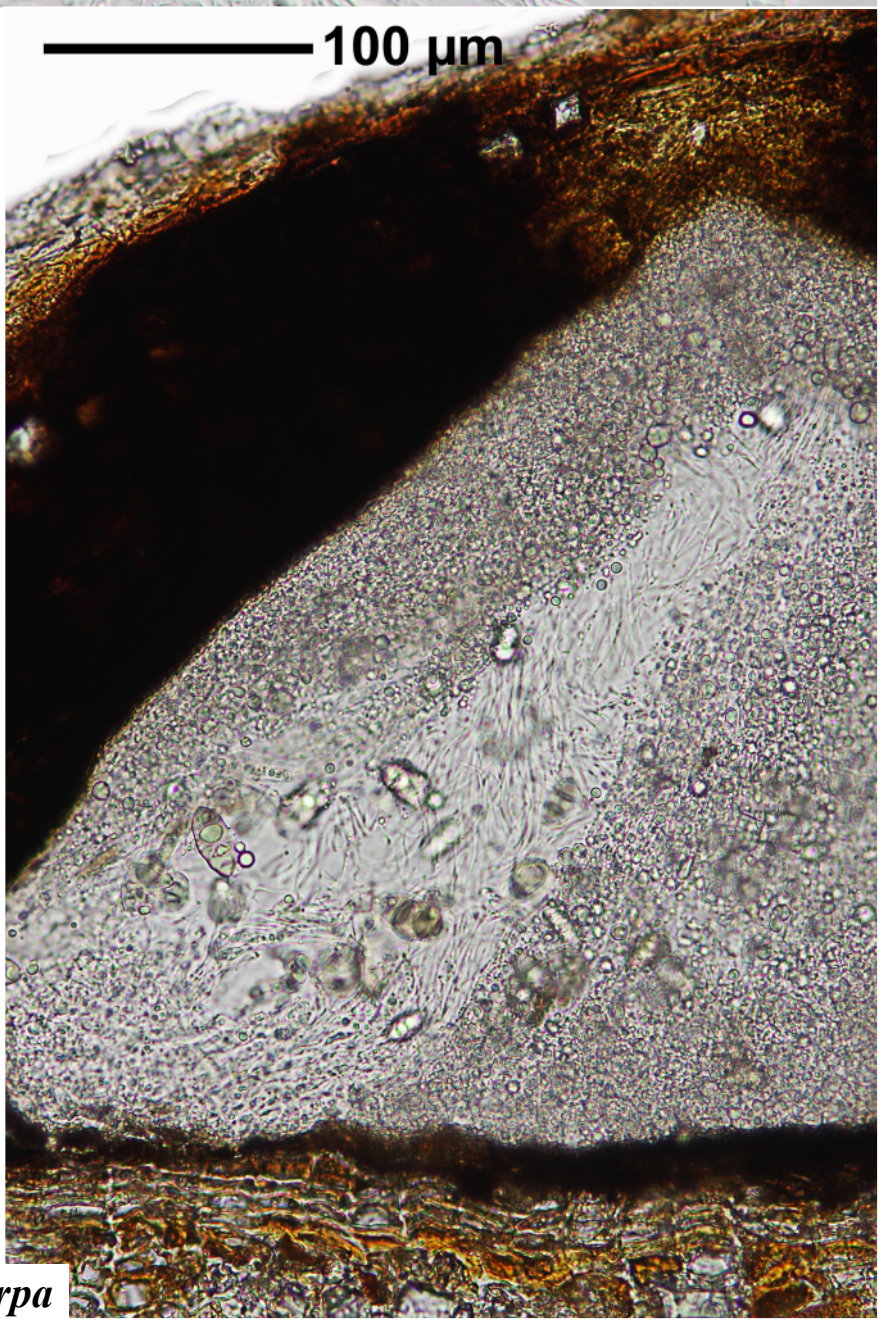






Pyrenula macrocarpa



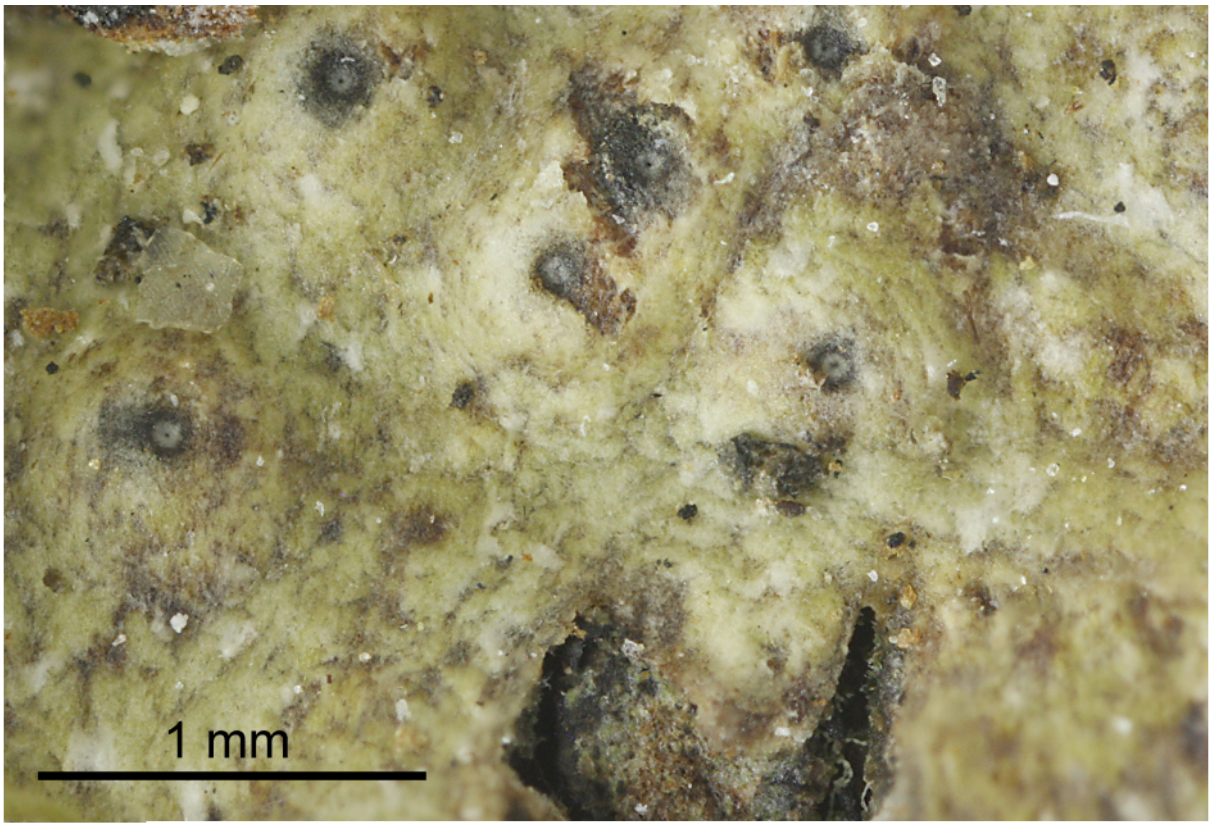


Pyrenula macrocarpa

Pyrenula mucosa (Vain.) R.C.Harris

Thallus corticate, brownish to olive-green, with pseudocyphellae. Perithecia single, nearly globose, mostly covered by the thallus, c. 0.3-0.6 mm wide. Wall of perithecium with crystals. Hamathecium not inspersed, J+ orange, filaments not branched. Ascospores 8/ascus, grey-brown, 40-65 x 15-25 µm, muriform, 8-10 segments with c. 3-8 loculi with rounded lumina. Lit. Aptroot et al. (2008, Bibl. Lichenolog. Bd. 97)

[15456], La Reunion, an der Straße von St-Andre nach Hell Bourg am Eingang zum Cirque de Salazie, 21.00292° S, 55.60452° E, 200 m. Leg. Schumm & Frahm 13.09.2009, det. Aptroot 2011.

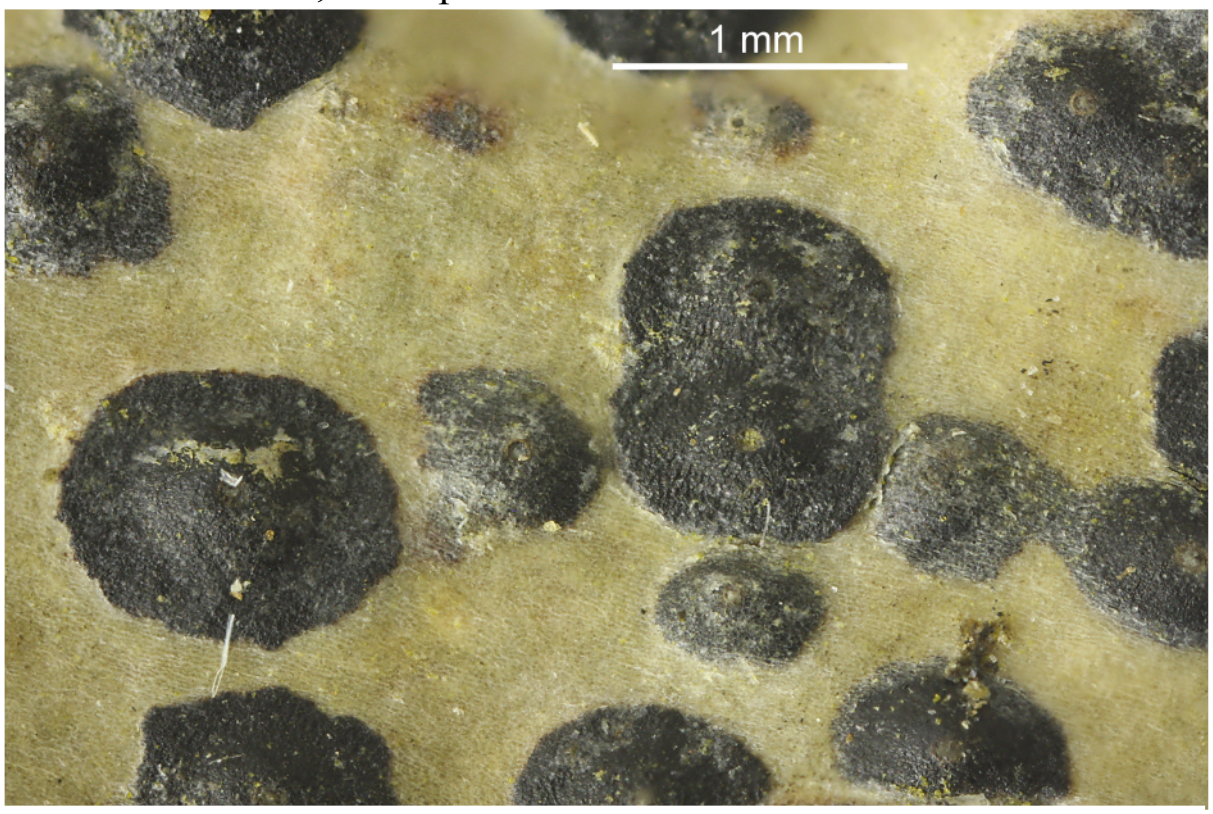




Pyrenula nitidula (Bres.) R.C.Harris

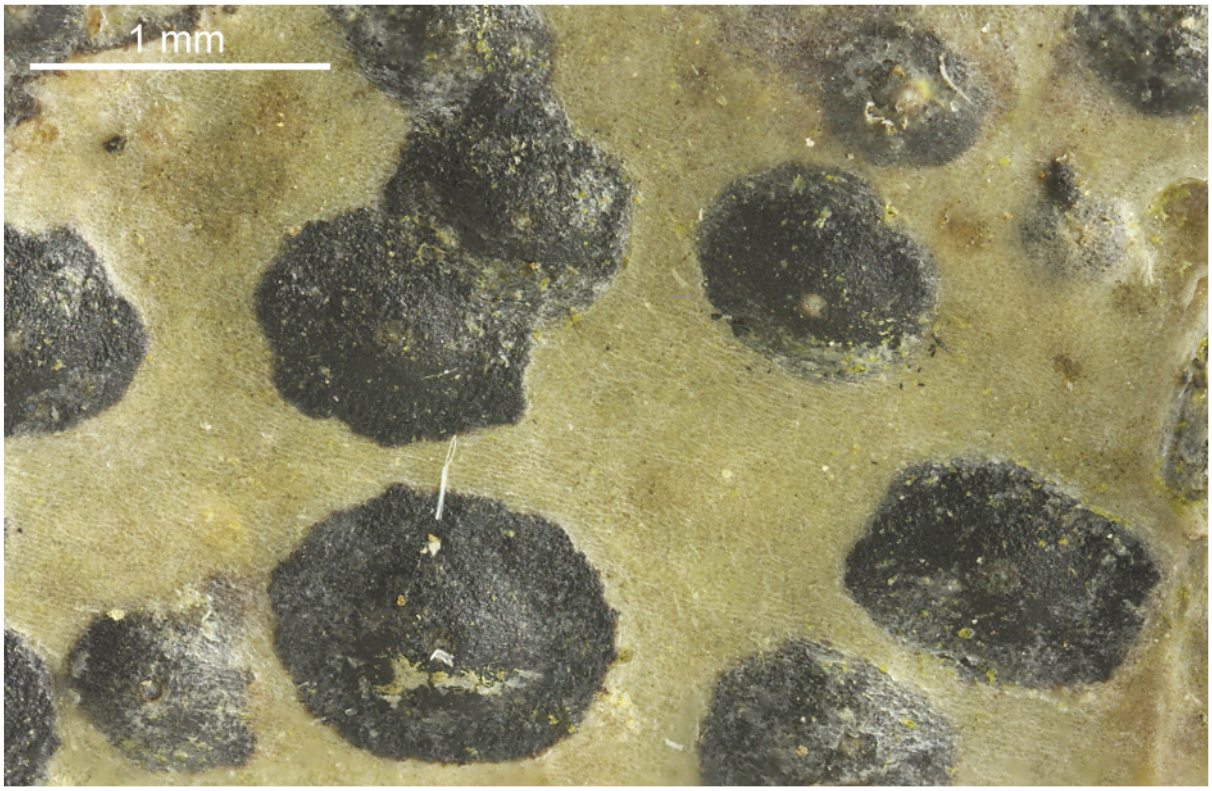
Thallus corticate, brownish to olive-green, with pseudocyphellae. Perithecia single or touching one another. Wall of perithecium with crystals. Hamathecium not inspersed, J+ blue. Filaments not branched. Ascospores grey-brown, 3-septate, 17-22 x 9-12 µm, lumina angular, not separated from the outer wall by endospore. Chemistry: nil. Lit.: Aptroot et al. (2008, Bibl. Lichenolog. Bd. 97).

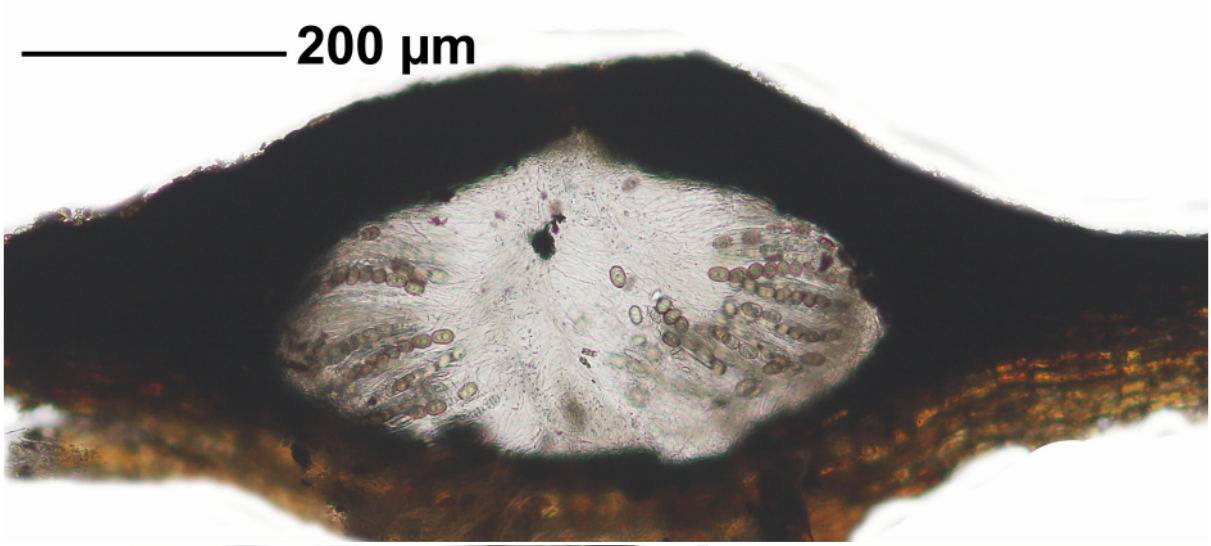
[15623], La Reunion, nördlich Langevin an der Straße zur Cascade de la Grande Ravine; 21,36107° S, 55,64667° E, 130 m. Leg. Schumm & Frahm 16.09.2009, det. Aptroot 2011.

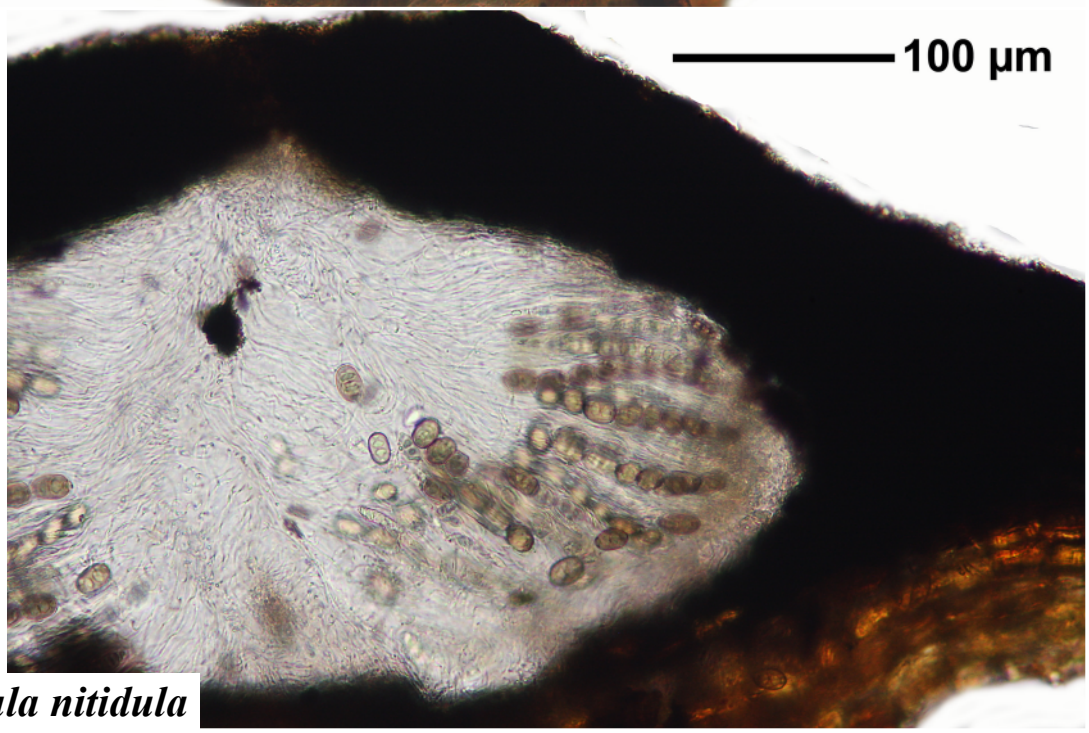




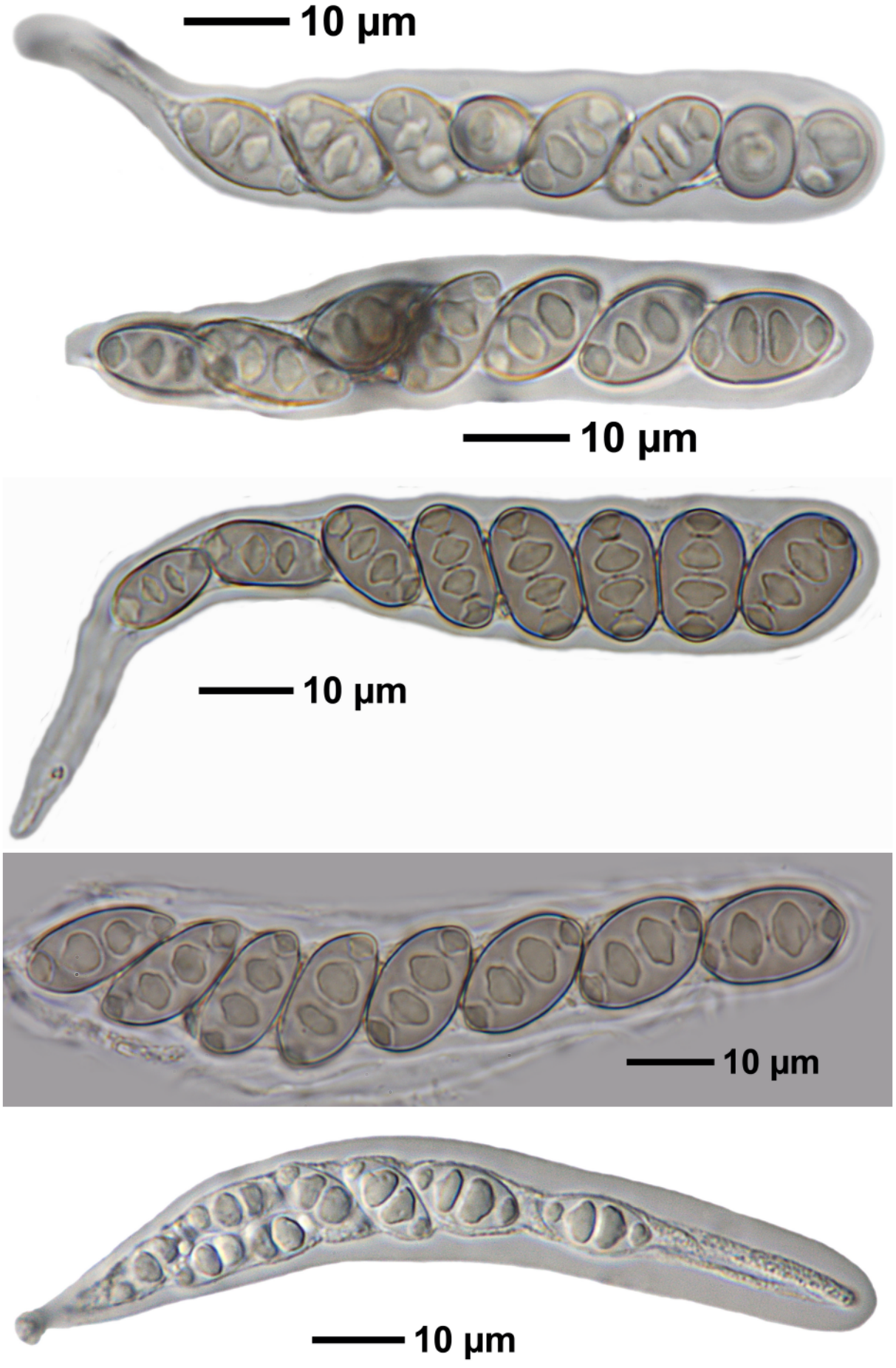








Pyrenula nitidula

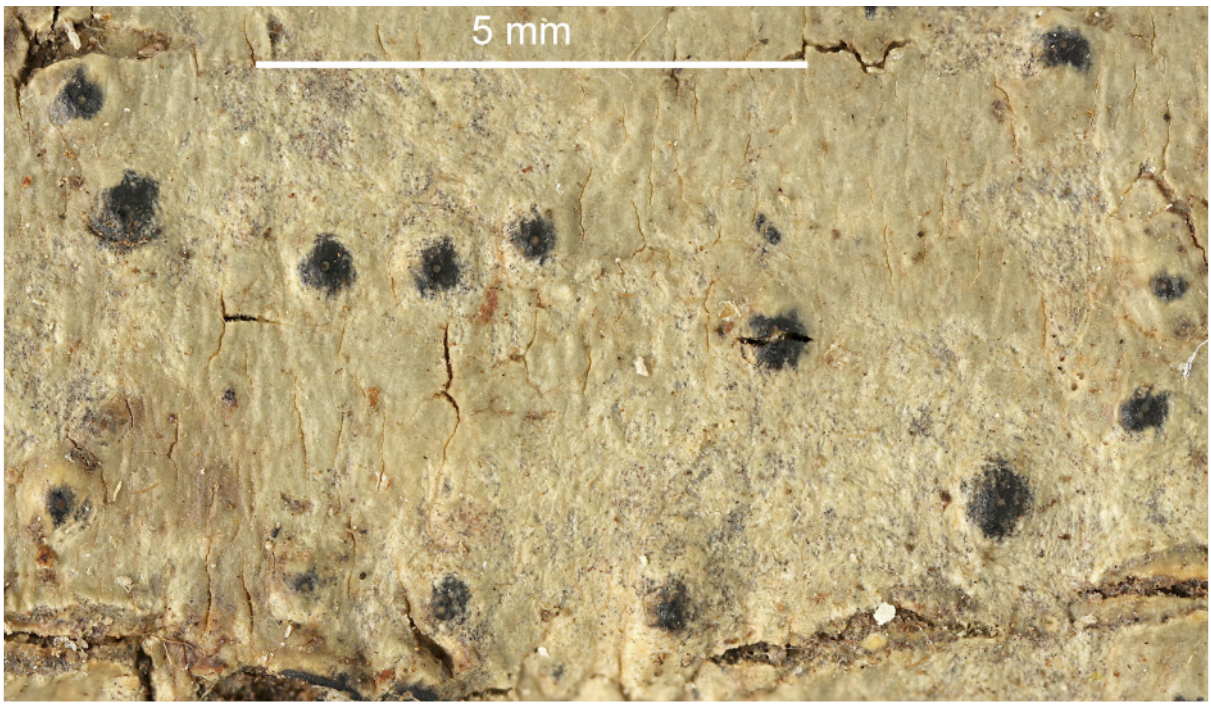


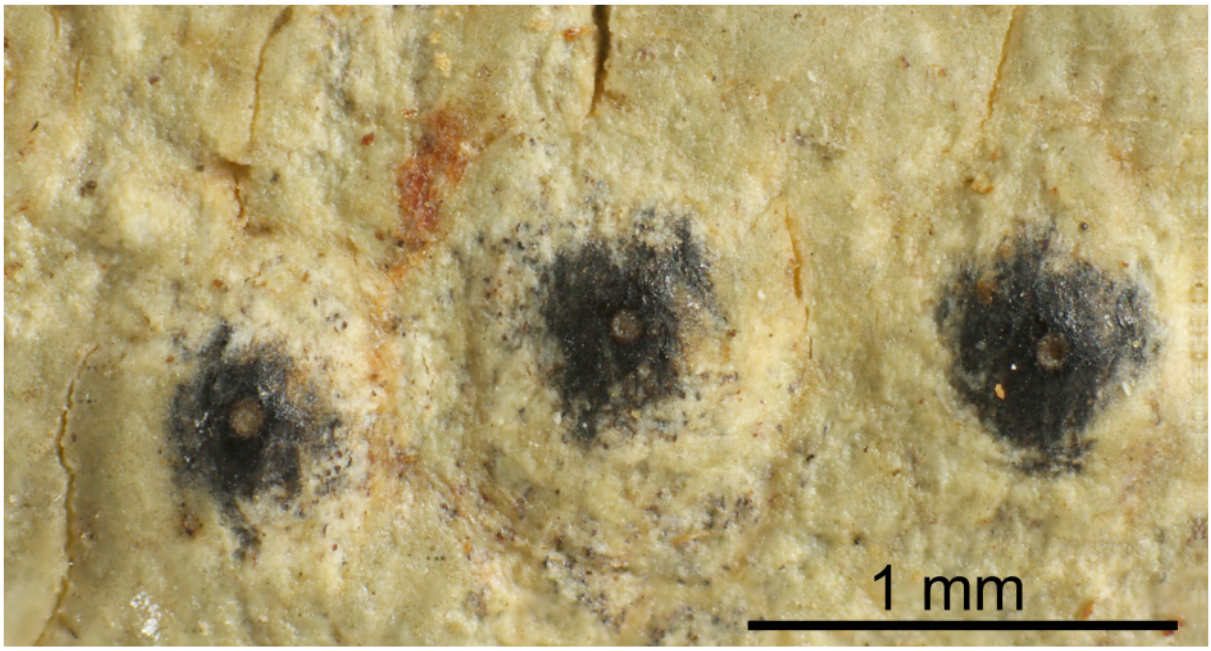
Pyrenula nitidula

Pyrenula quassiaecola (Fée) Fée

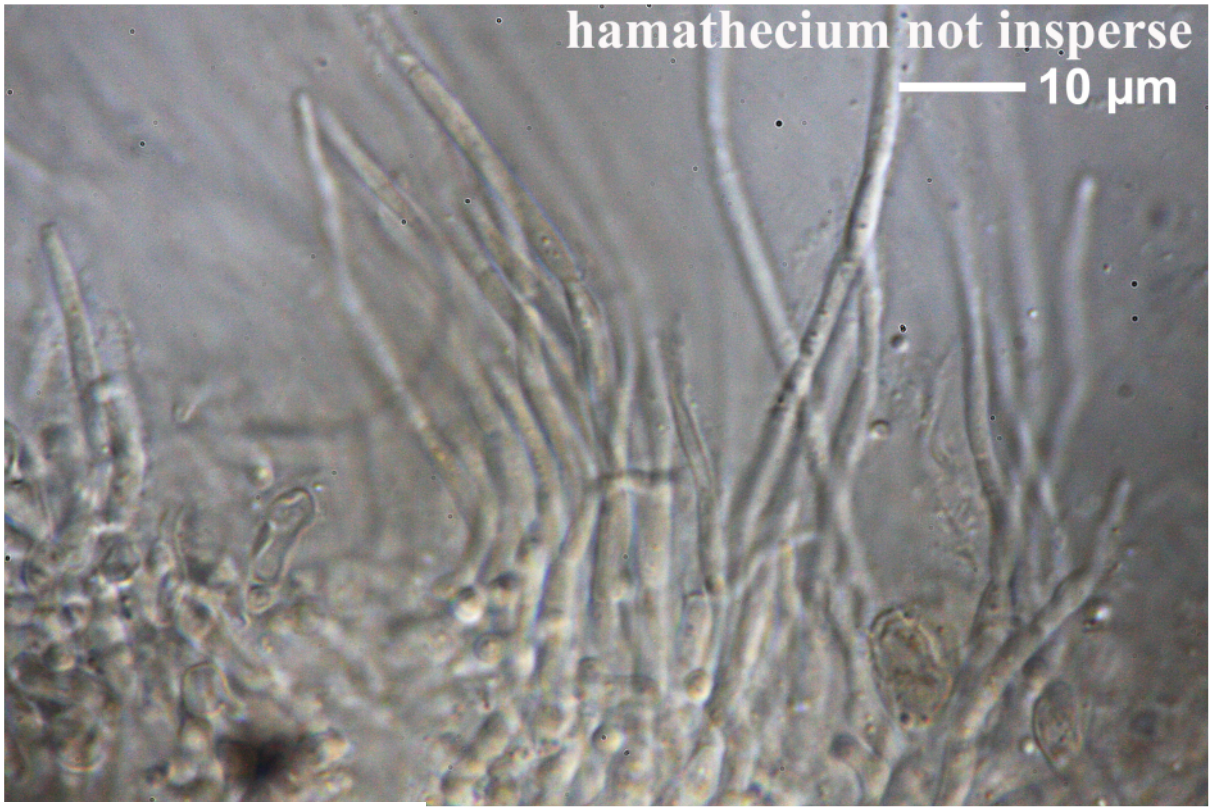
Thallus corticate, often with pseudocyphellae, UV- (not yellow). Ascomata without external orange pigments, mostly simple and not aggregated, partly immersed in the thallus, mostly < 0.7 mm. Ostioles apical. Hamathecium not inspersed. Ascospores 3-septate, distoseptate (lumina of different shape than the outer wall), 8/ascus, grey to brown, 25-27(-37) x 11-12 µm, without dark granules between lumina, end lumina separated from exospore wall by endospore thickening, but end lumina not elongated, old without red oil. Corticolous, pantropical.

[6406], Philippinen, Mindanao, Prov. Misamis Oriental, südwestlich Gingoog City, Barangay Lunutan, 08°42.510’ N, 125°01.241’ E, 1120 m und am Weg auf den Mt. Lumot (Via Haruhay Trail) bis zum Zwischencamp im trop. Bergregenwald, 08°40.713’ N, 125°01.649’ E, 1680 m . Leg. Schumm 24.08.1999, det. Aptroot 2009.







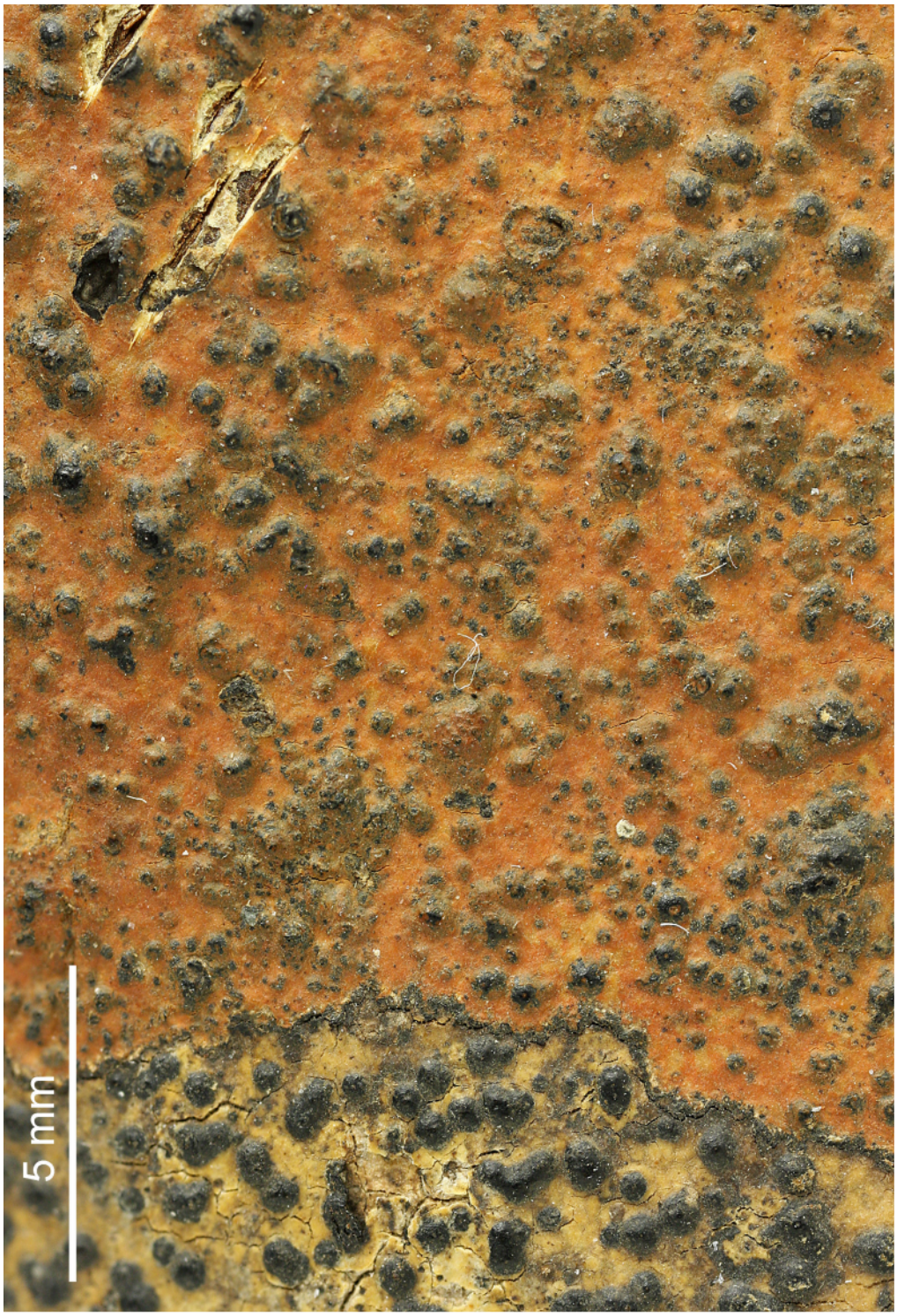


Pyrenula quassiaecola

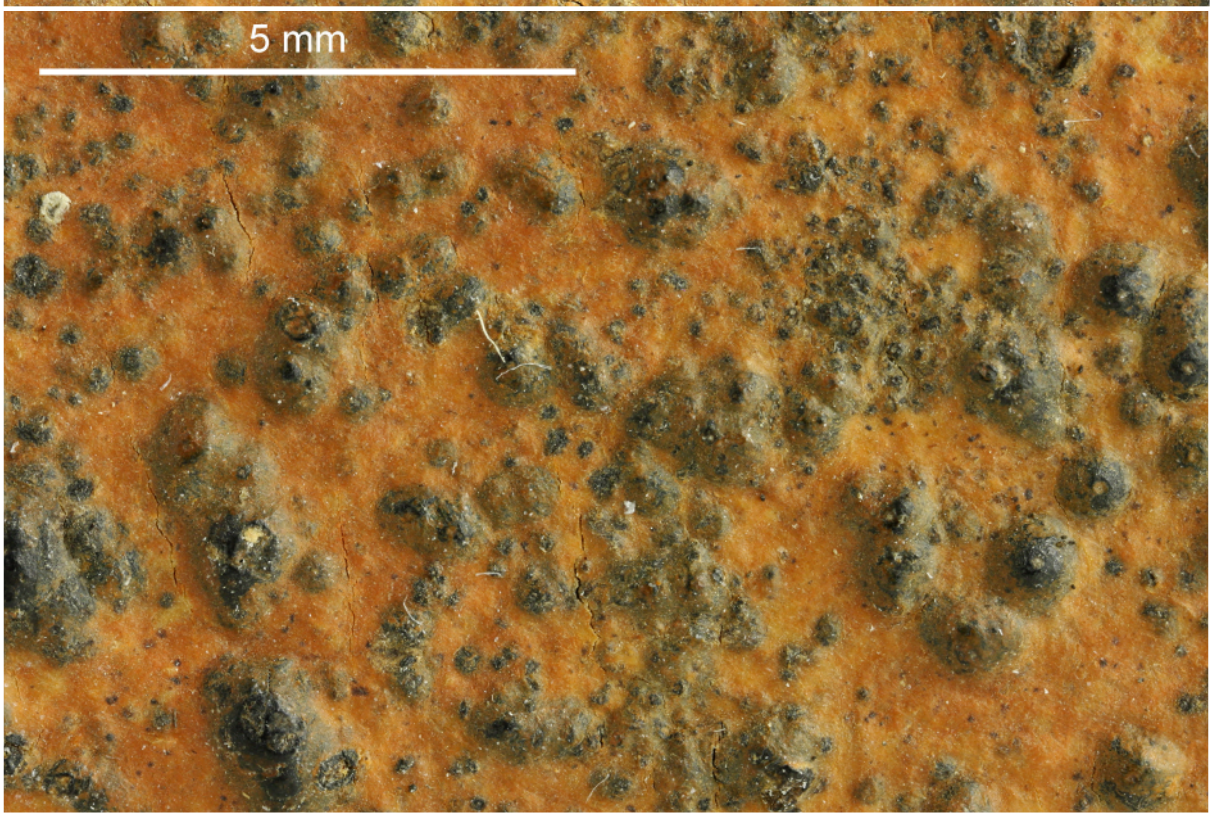
Pyrenula rubrojavanica Aptroot HOLOTYPUS

Thallus red-brown. Perithecia semi-immersed, c. 0.7 mm wide, laterally mostly covered by the thallus, black free part at the top c. 0.3-0.4 mm wide. Hamathecium partly inspersed with very fine droplets. Ascospores brown, 3-septate, lumina in water irregular diamond-shaped, in K all lumina rounded, 8/ascus, 16-20 x 7.5-8.5 µm.

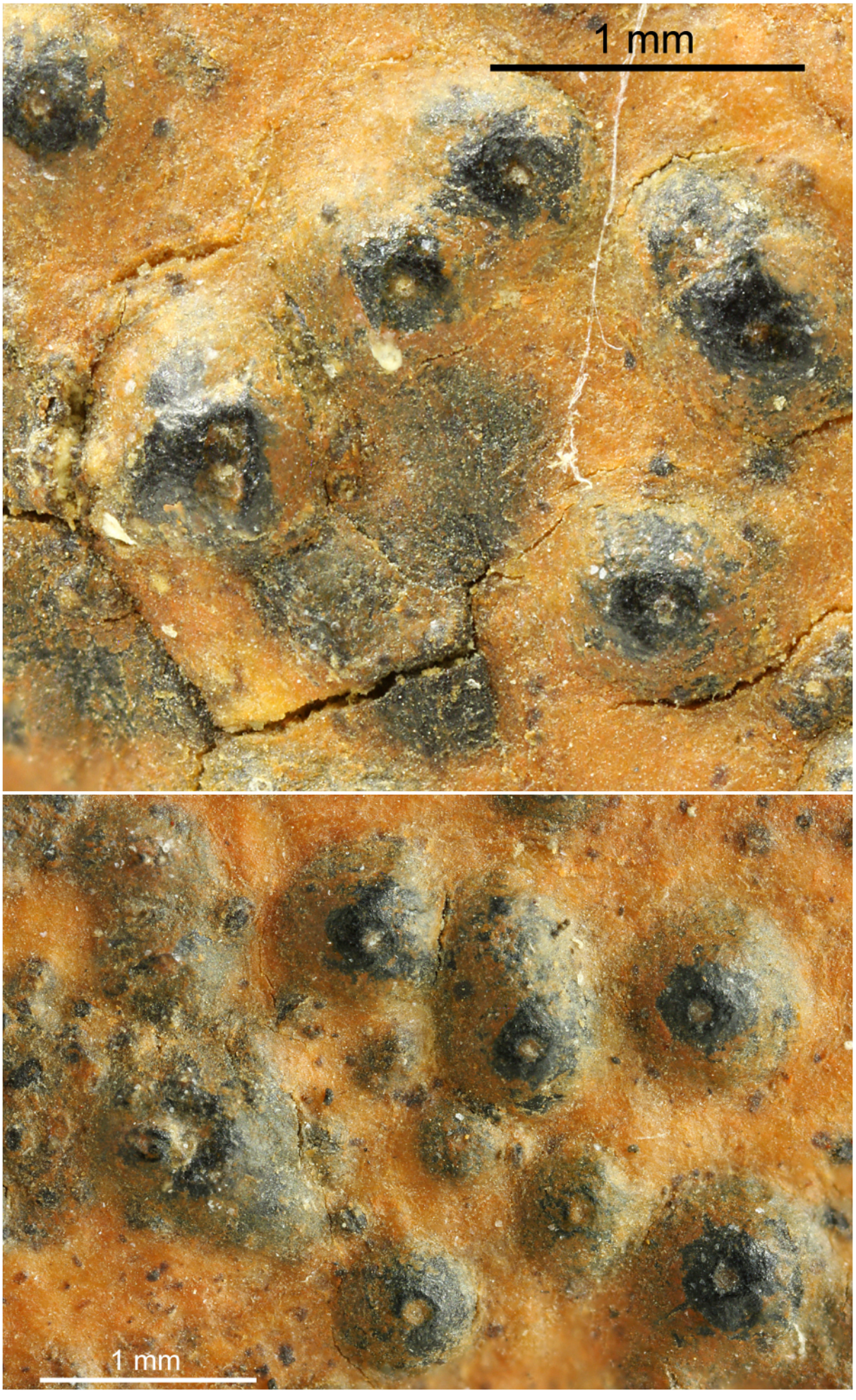
[ABL-PG7892], West Java, on teawood from an unknown estate in the neighbourhood of Bogor and brought into Camp Kedung Badak for firewood. Alt. ca. 1700 m. Leg. P. Groenhart Nr. 7892, det. Aptroot.



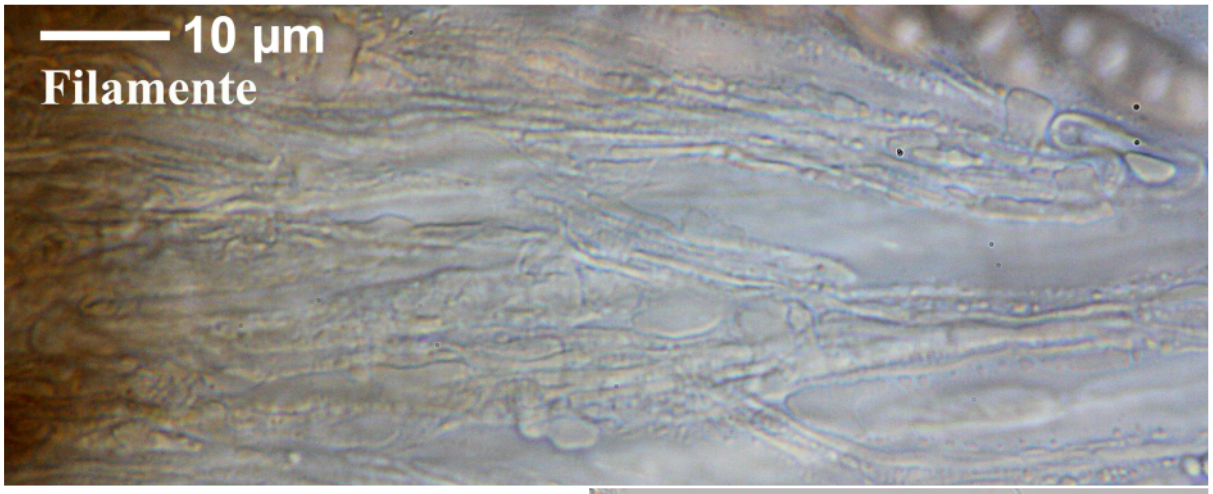


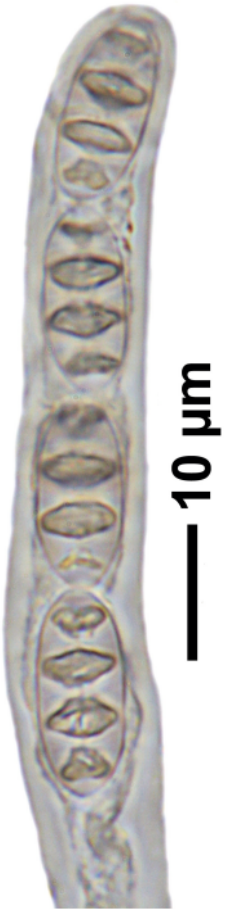


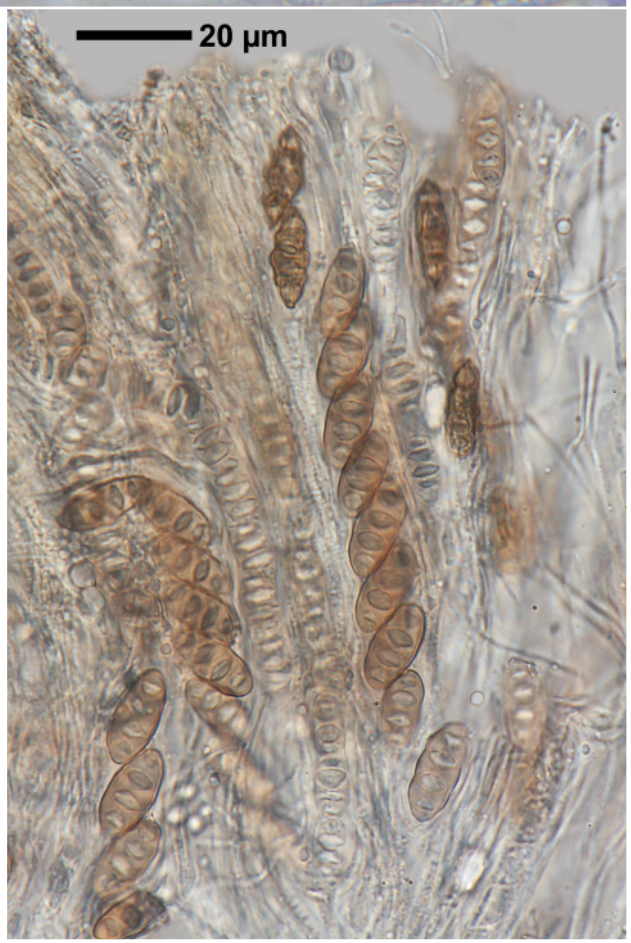
Pyrenula rubrojavanica



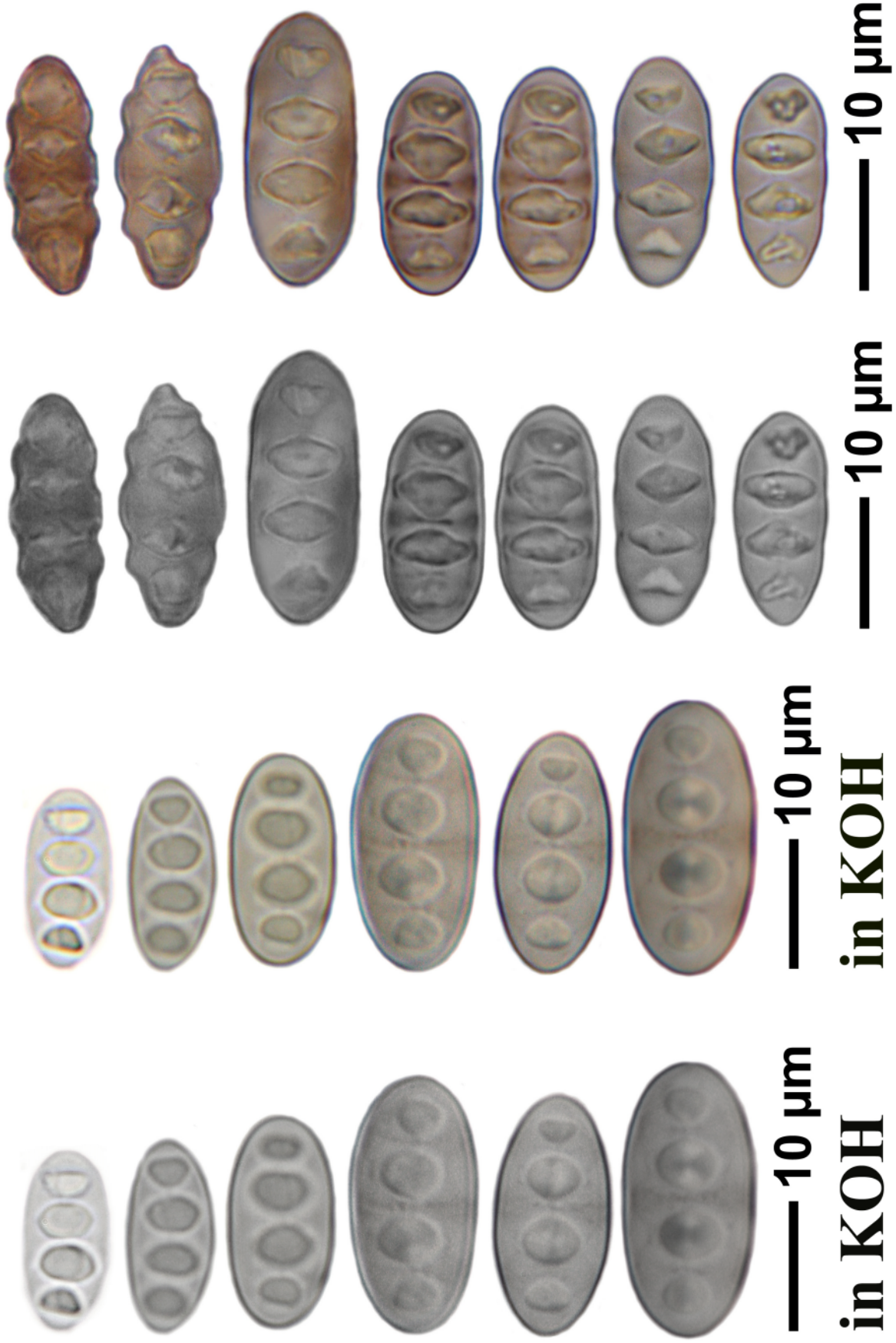
Pyrenula rubrojavanica



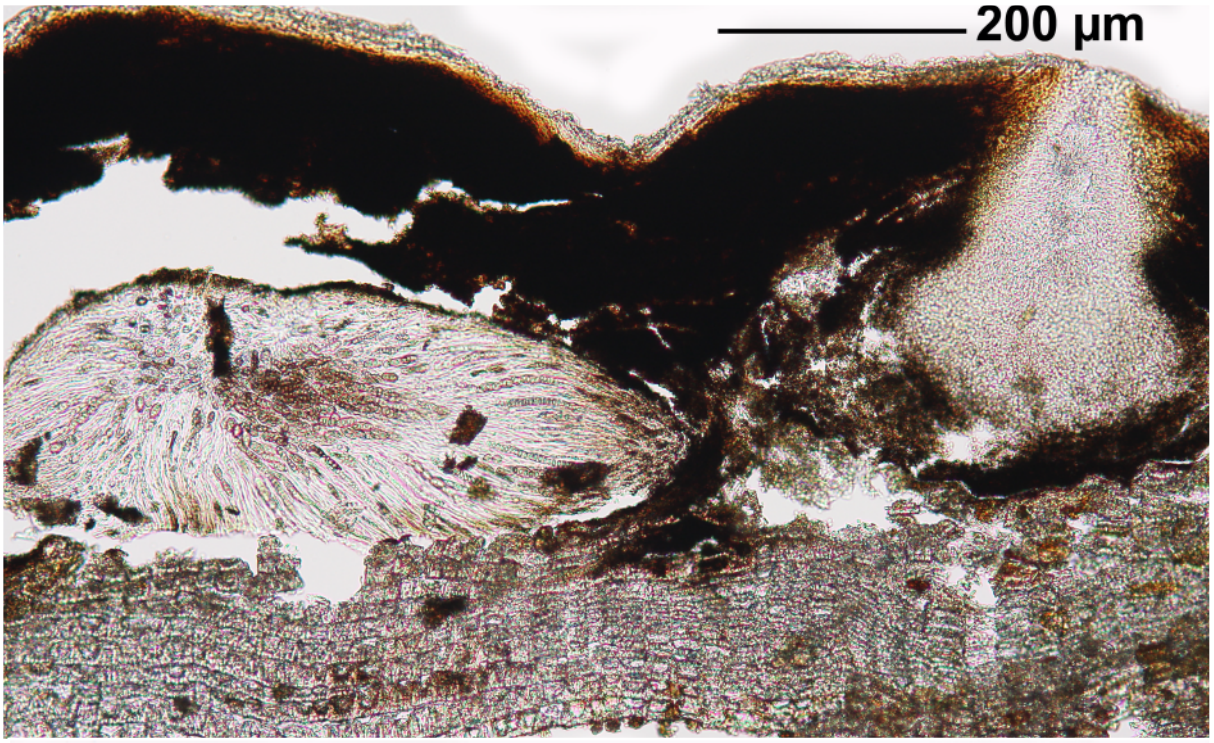


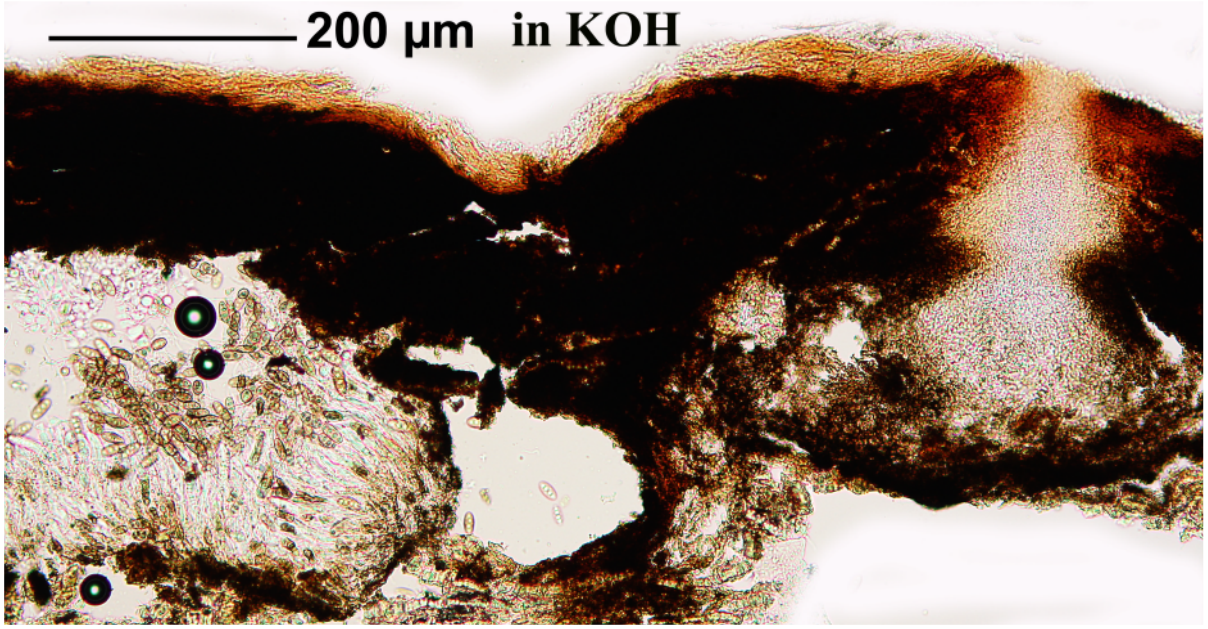


Pyrenula rubrojavanica

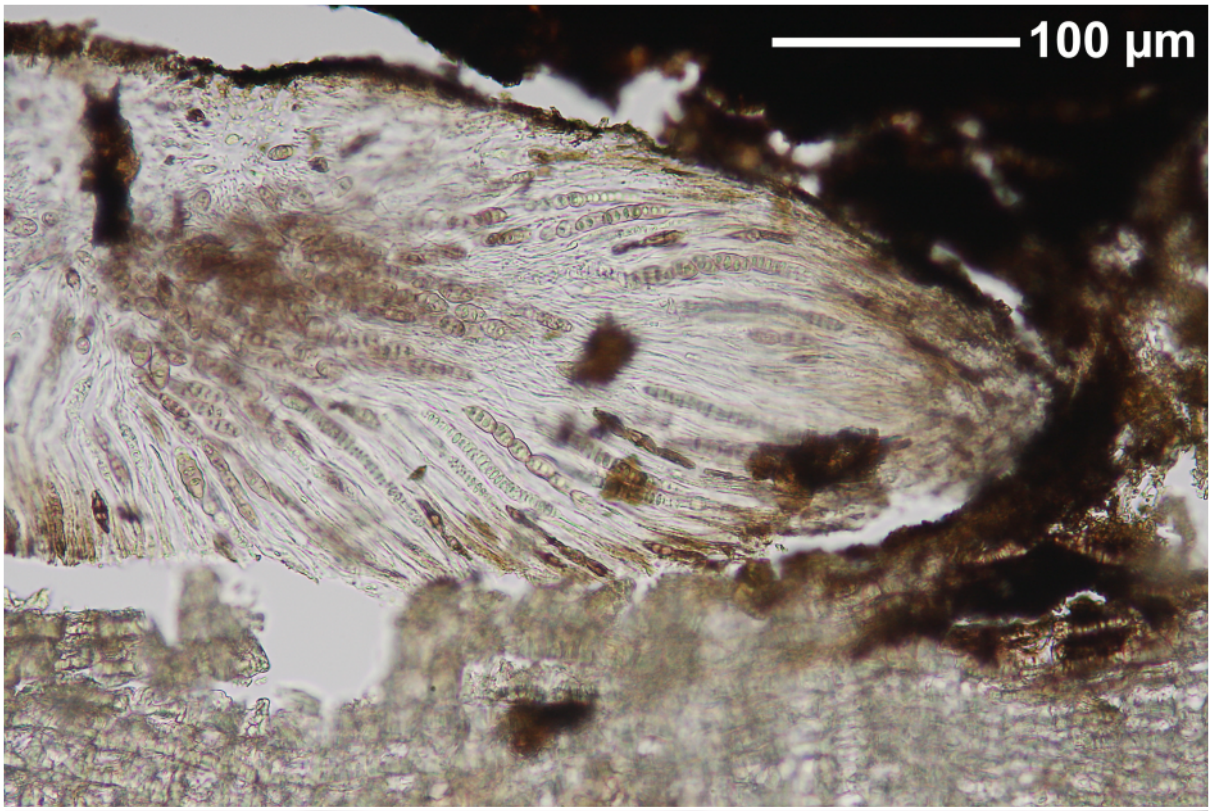


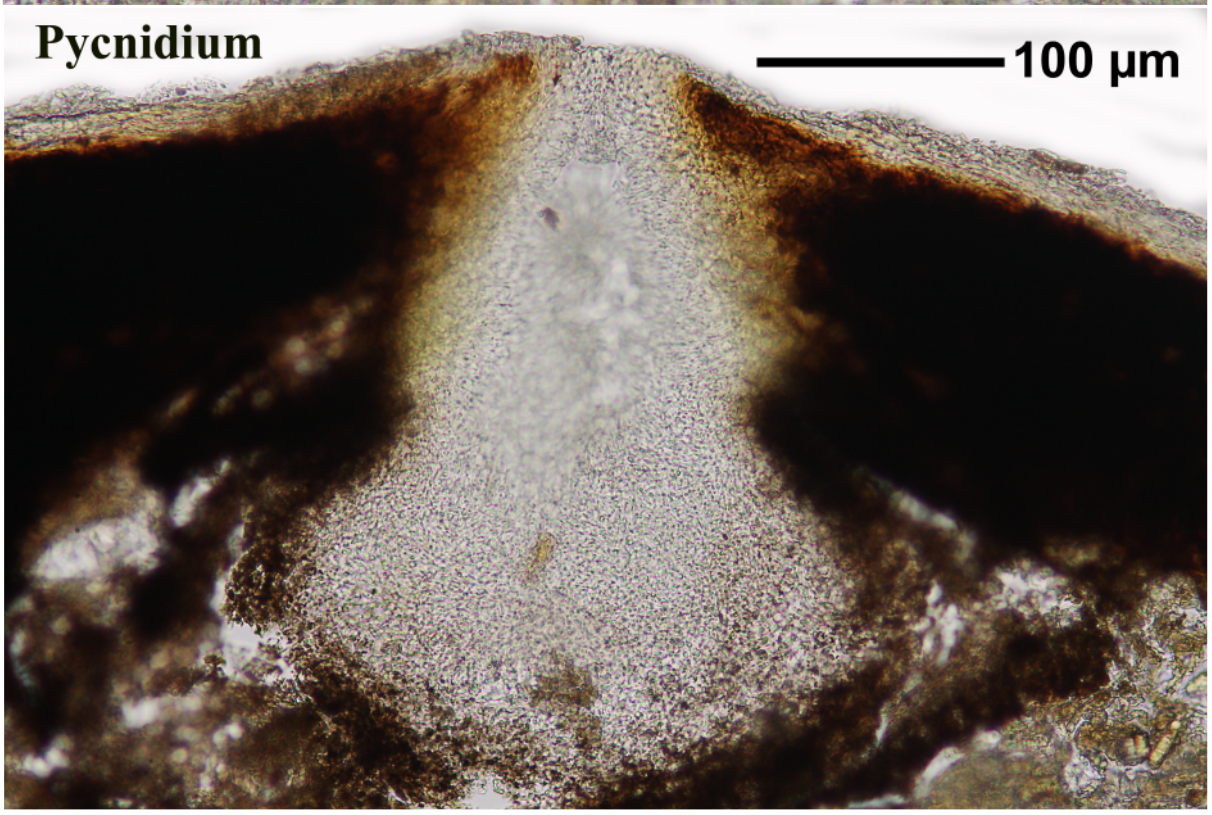
Pyrenula rubrojavanica



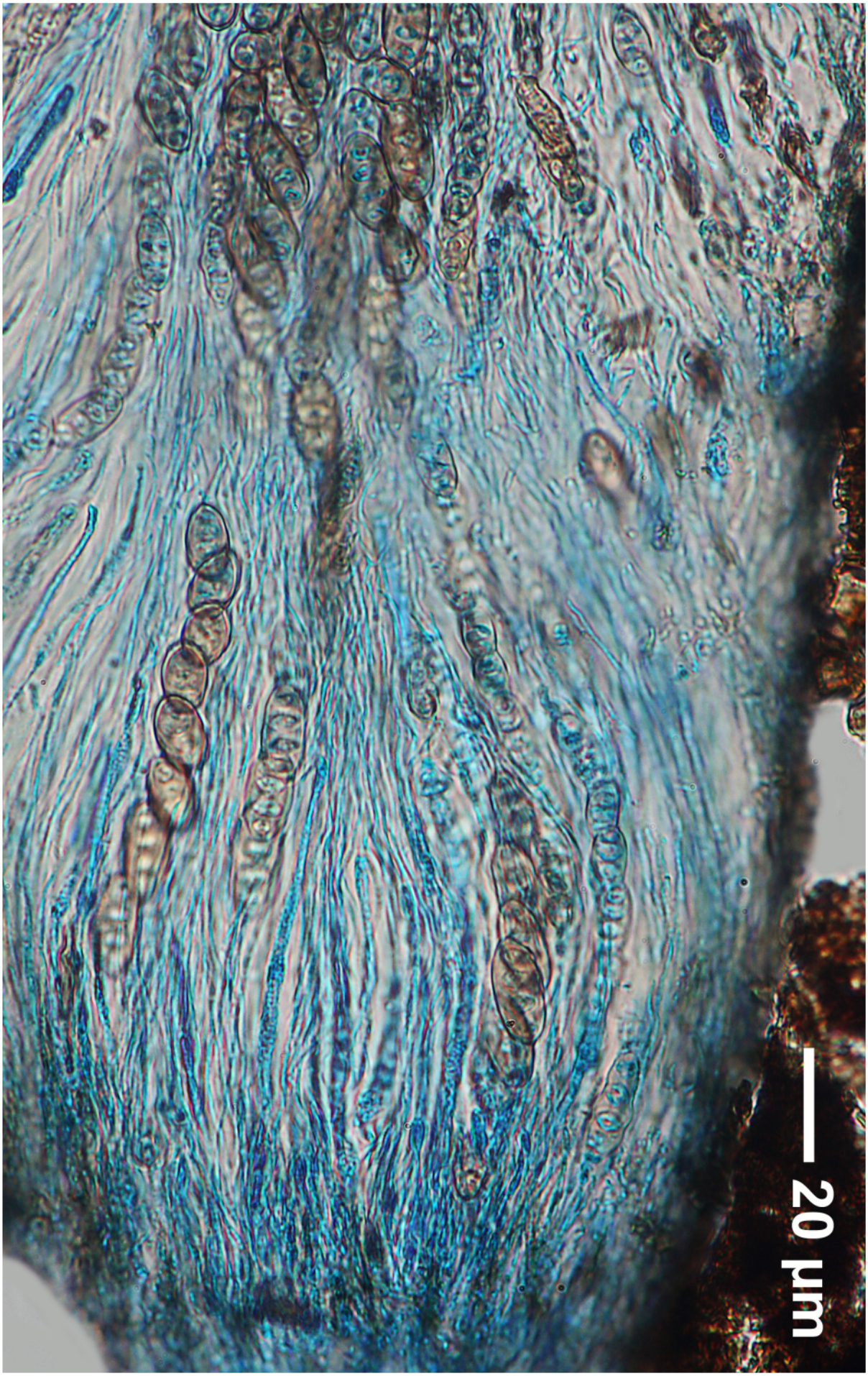


Pyrenula rubrojavanica

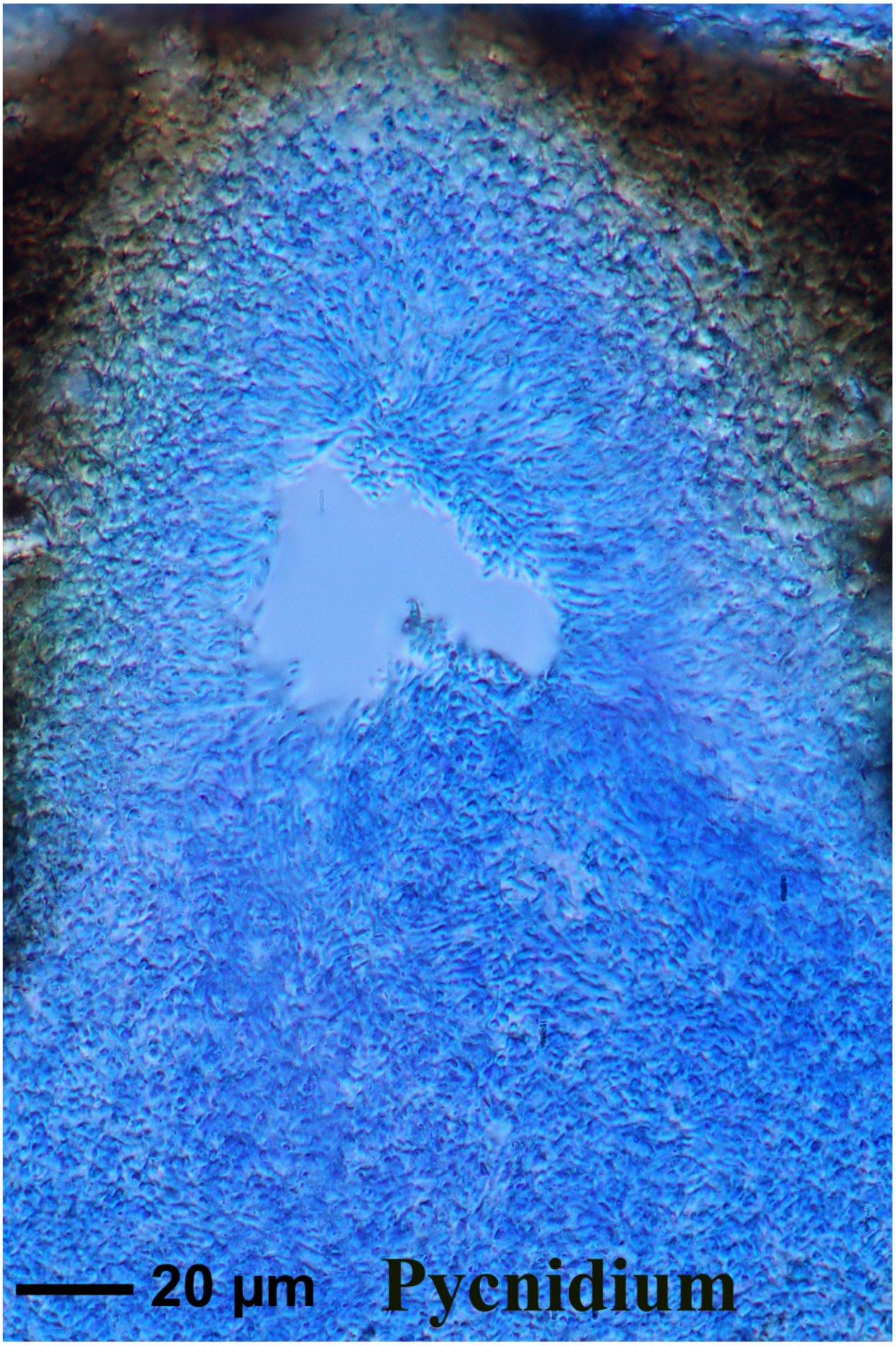




Pyrenula rubrojavanica



Pyrenula rubrojavanica



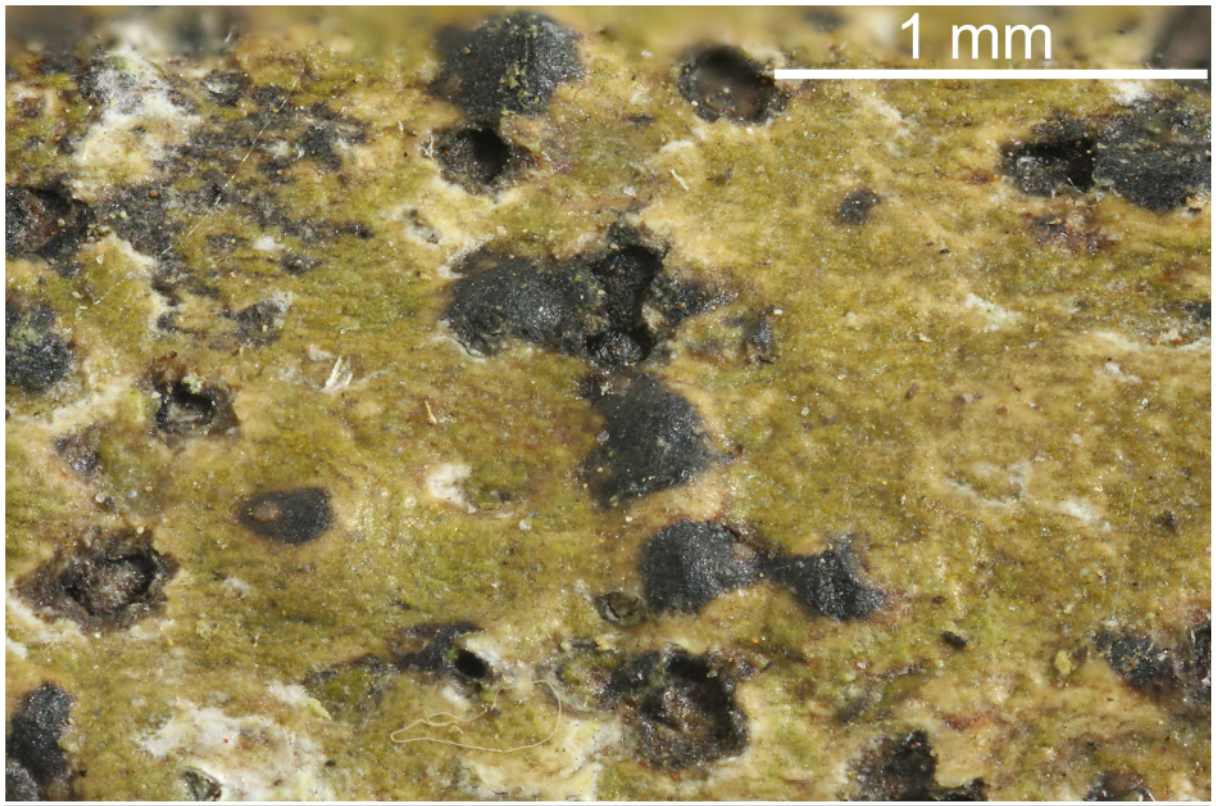
Pyrenula rubrojavanica

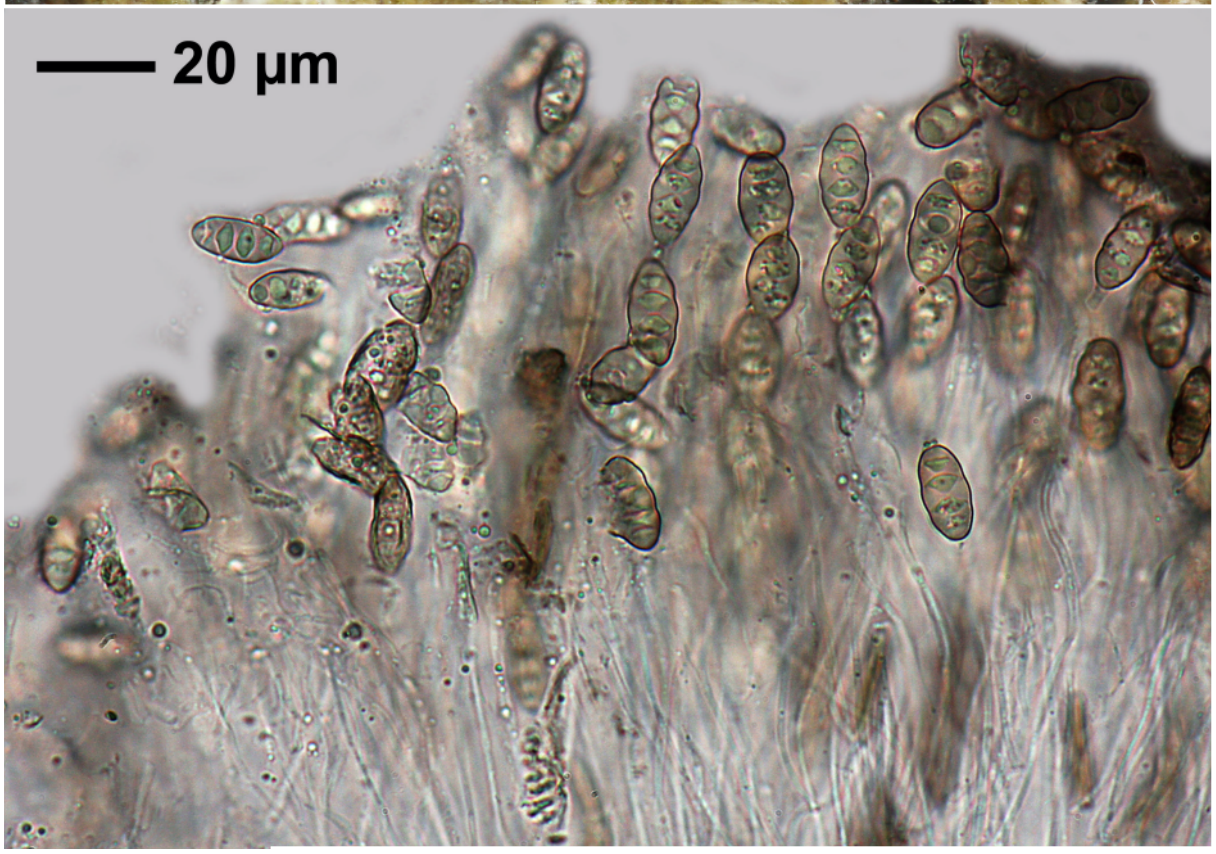
Pyrenula septicollaris (Eschw.) R.C.Harris

Thallus olive-green, UV–. Ascomata not aggregated. Ostioles strongly lateral. Ascomata and thallus without external orange or red pigments. Hamathecium not inspersed, mostly unbranched. Ascospores grey to brown, old without orange oil, distoseptate, without cilia, 8/ascus, 4-locular, lumina in a straight line, thick walled endospore at the ends, 18-20 x 8-9 µm.

[17577], Thailand, Trat province, Had Sai Dum, Mangroven Wald, 12.17332° N, 102.40616° E, 0 m. Leg. Schumm (IAL 7) 16.01.2012, det. Aptroot 2012.









Pyrenula septicollaris

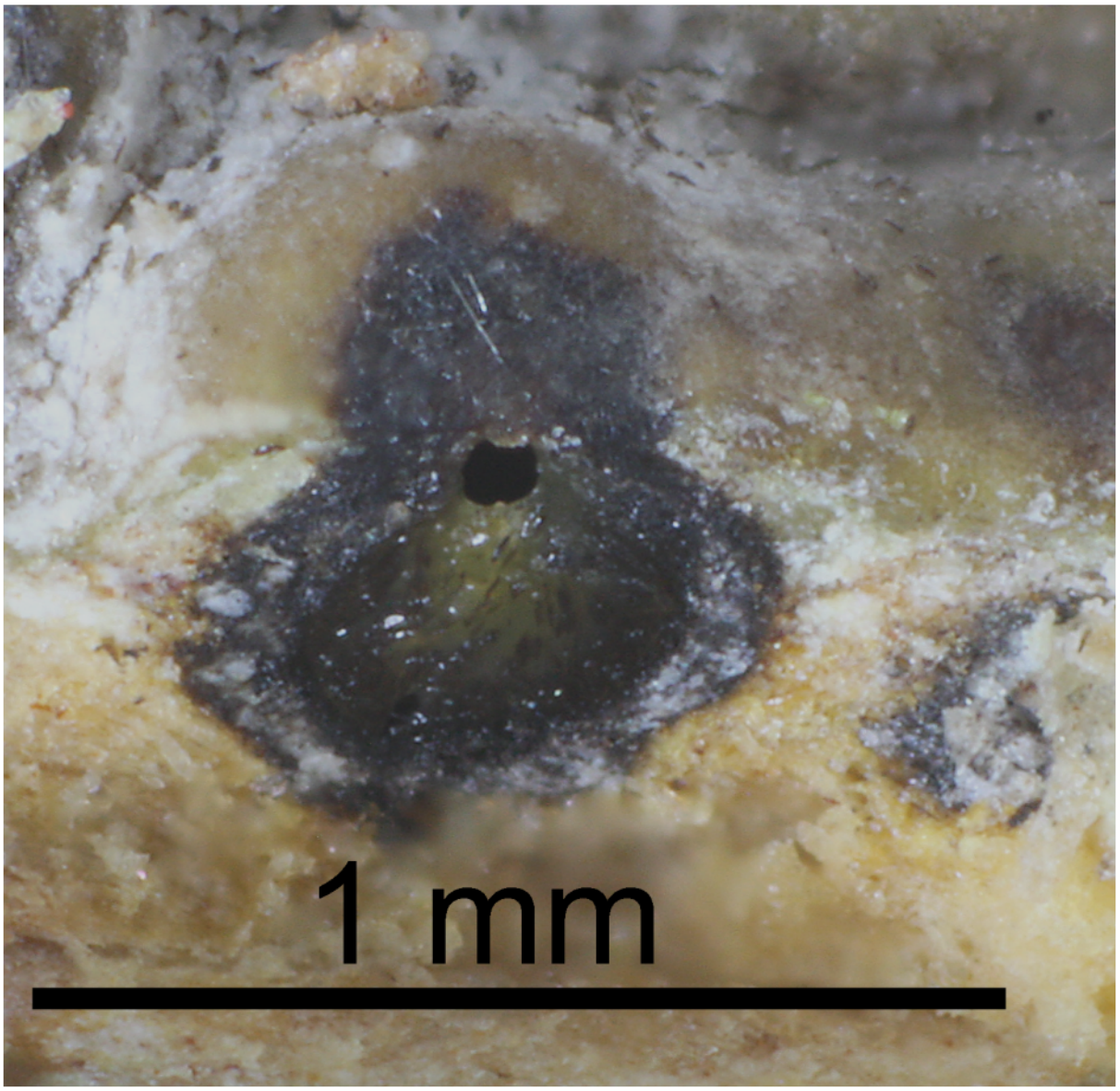
Pyrenula thailandica Aptroot

Thallus corticate, often with pseudocyphellae, UV- (whitish to yellowish white). Ascomata without external orange pigments, mostly simple and not aggregated, partly immersed in the thallus, mostly < 0.7 mm. Ostioles apical. Hamathecium inspersed. Ascospores 3-septate, distoseptate (lumina of different shape than the outer wall), 8/ascus, grey to brown, (21-)32-37(-44) x (8-)11-13(-16) µm, without dark granules between lumina, end lumina separated from exospore wall by endospore thickening, but end lumina not elongated, old with red oil. Corticolous.

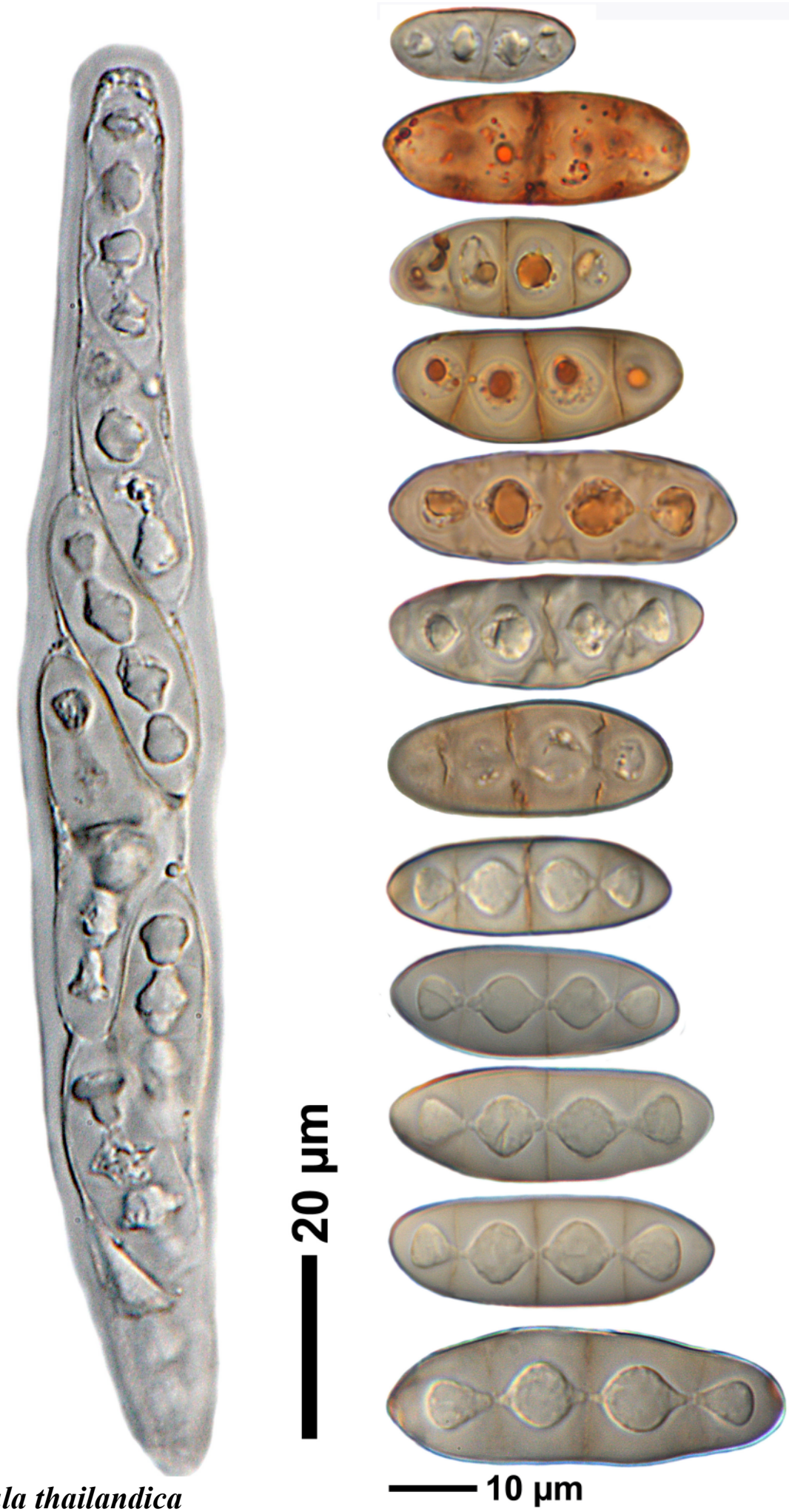
[7313], Kambodscha, Siem Reap, Angkor Wat, corticolous, 13°21.283' N, 103°51.366' E, 21 m. Leg. Schumm 01.08.2000, det. Aptroot 2009.



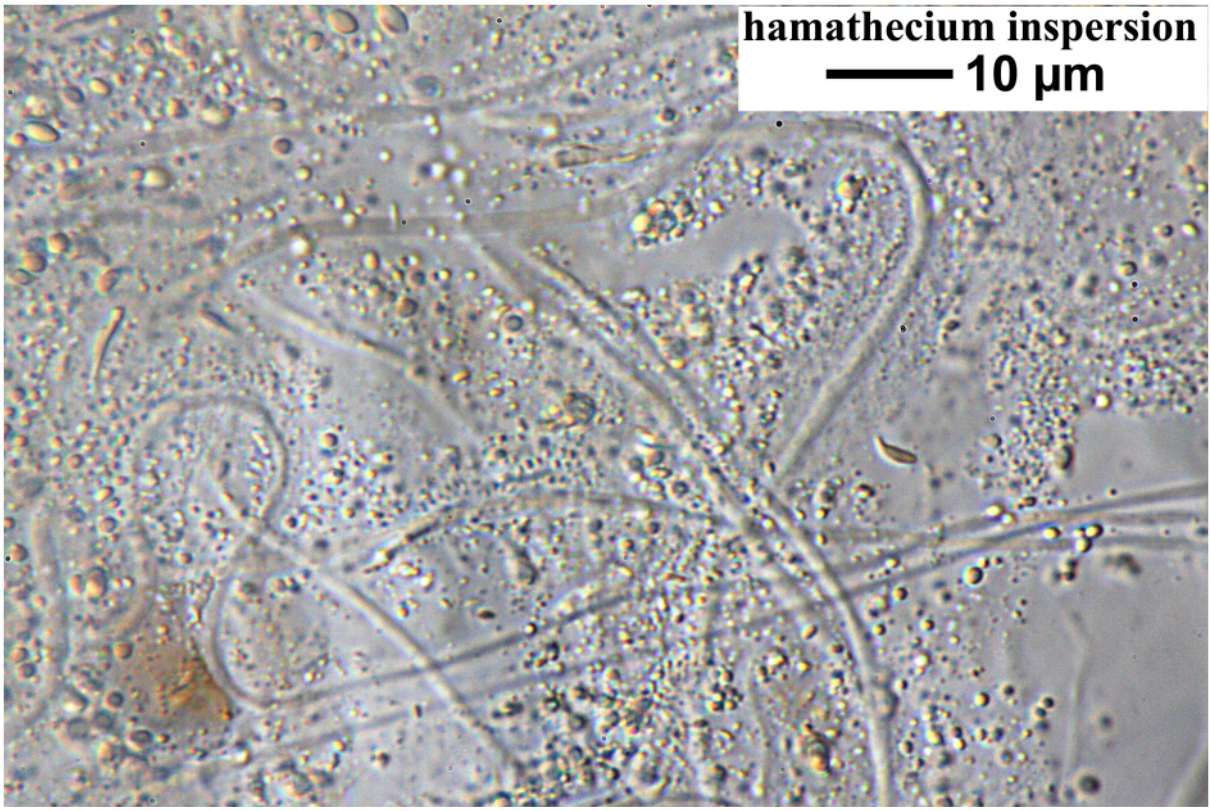




Pyrenula thailandica



Pyrenula thailandica

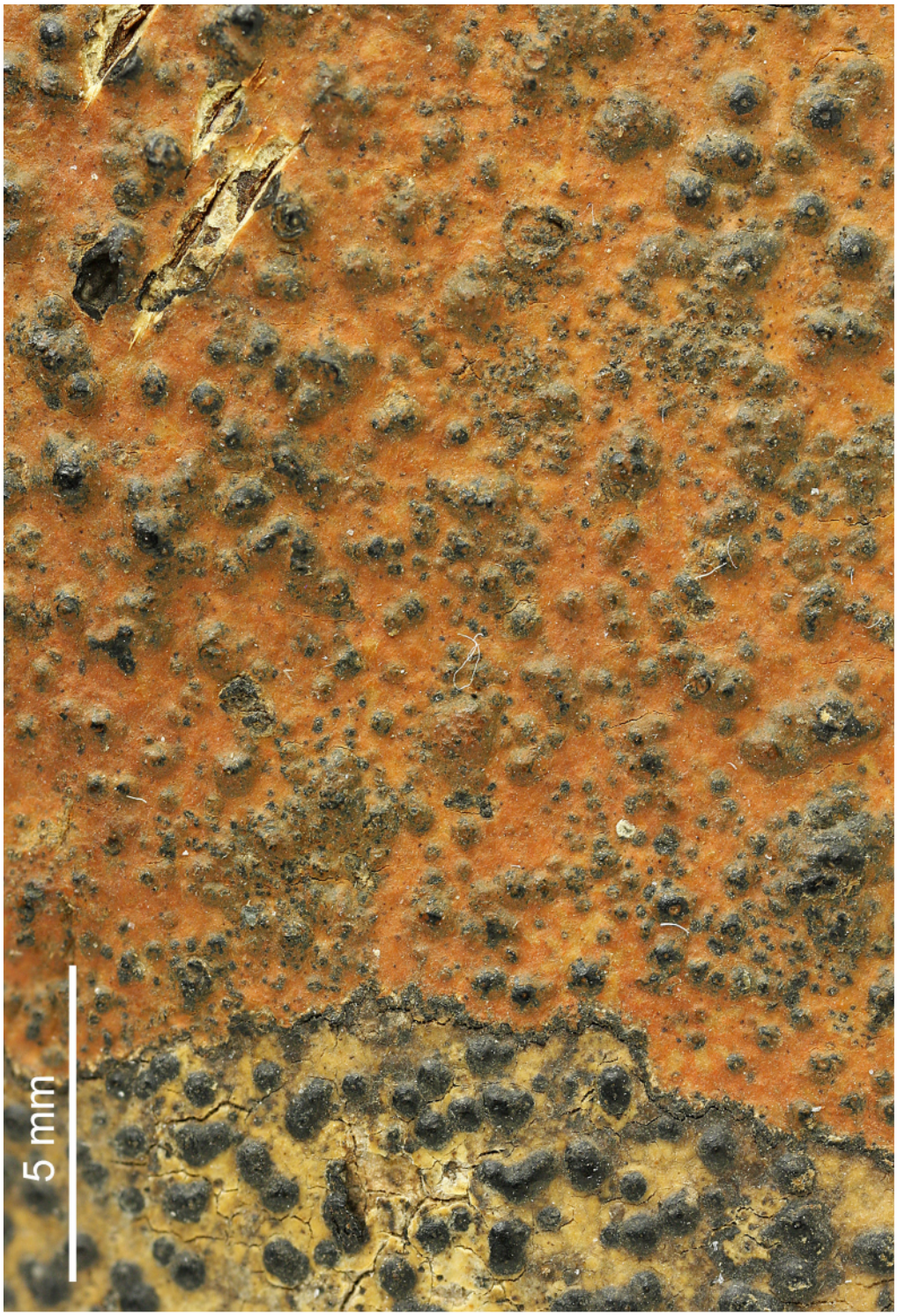


Pyrenula thailandica

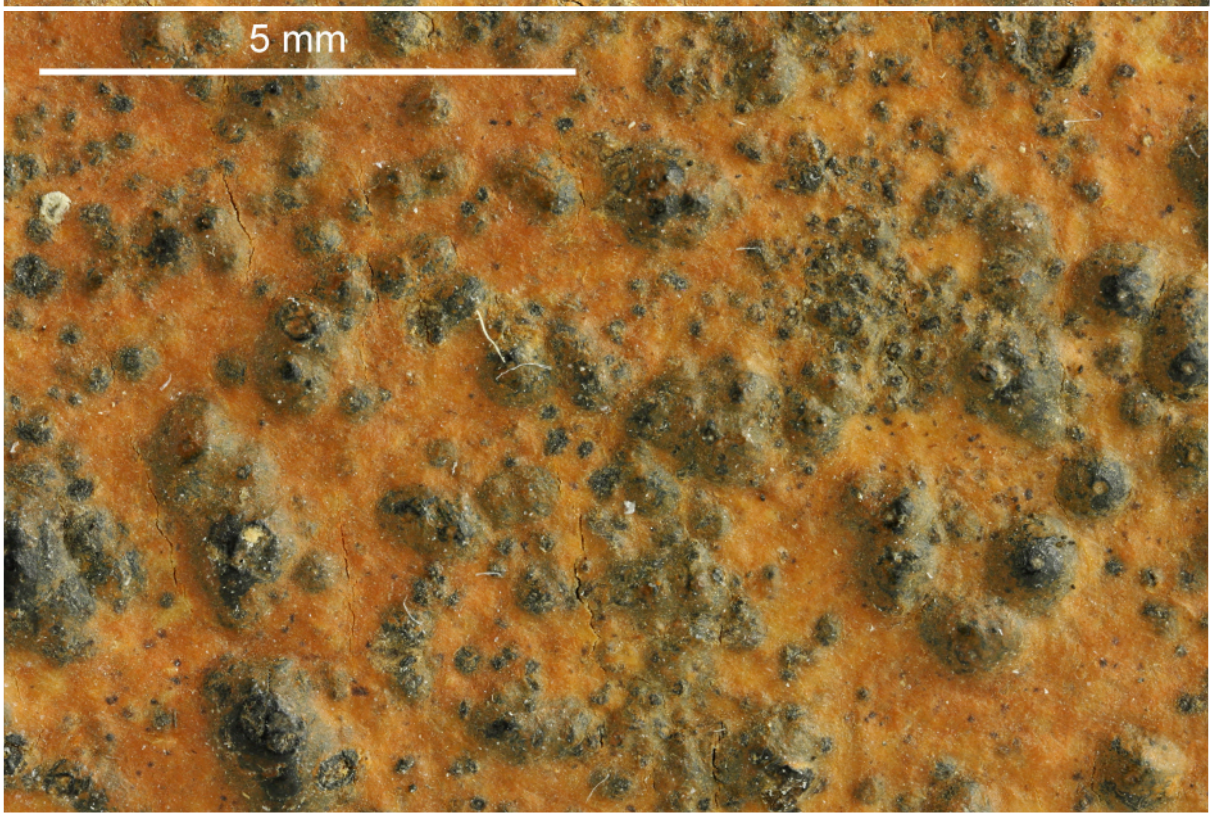
Pyrenula rubrojavanica Aptroot HOLOTYPUS

Thallus red-brown. Perithecia semi-immersed, c. 0.7 mm wide, laterally mostly covered by the thallus, black free part at the top c. 0.3-0.4 mm wide. Hamathecium partly inspersed with very fine droplets. Ascospores brown, 3-septate, lumina in water irregular diamond-shaped, in K all lumina rounded, 8/ascus, 16-20 x 7.5-8.5 µm.

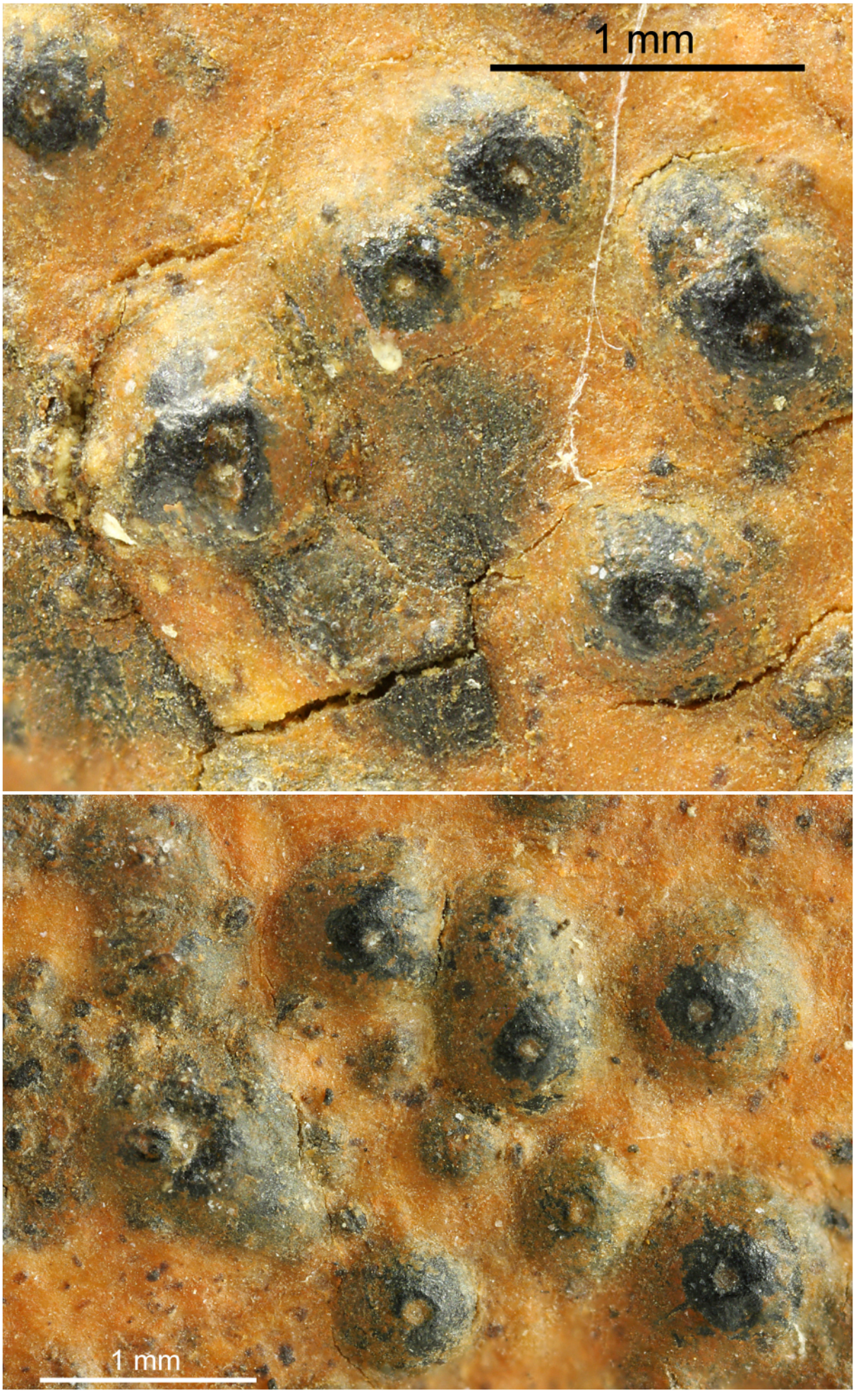
[ABL-PG7892], West Java, on teawood from an unknown estate in the neighbourhood of Bogor and brought into Camp Kedung Badak for firewood. Alt. ca. 1700 m. Leg. P. Groenhart Nr. 7892, det. Aptroot.



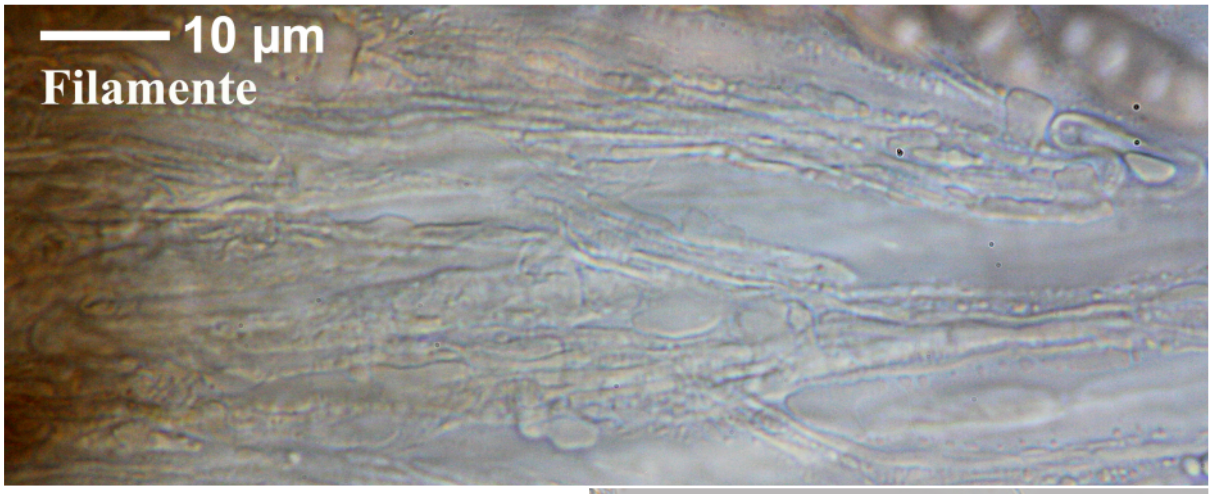


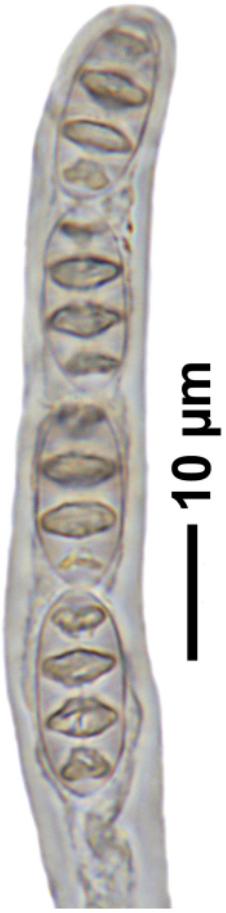


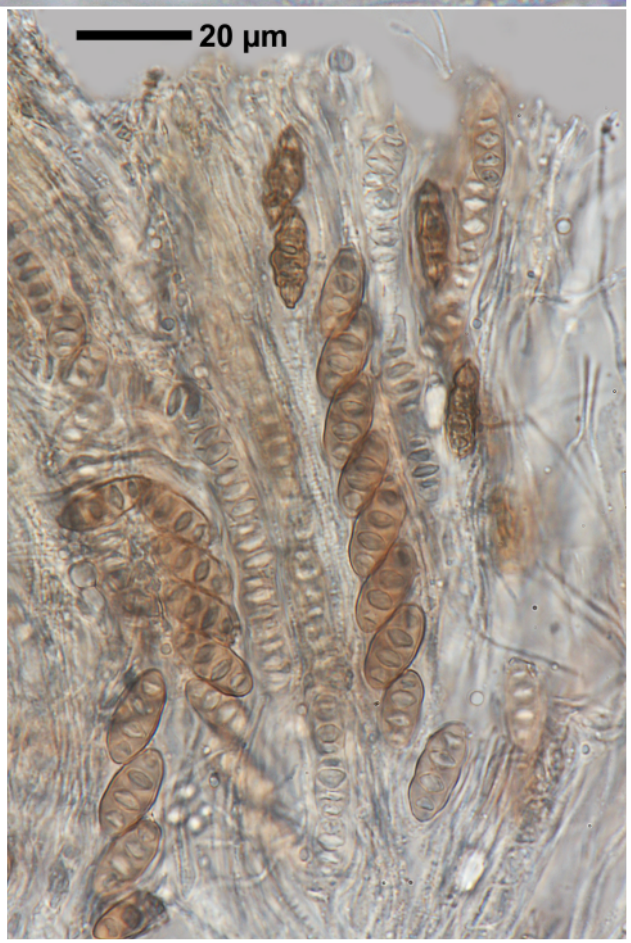
Pyrenula rubrojavanica



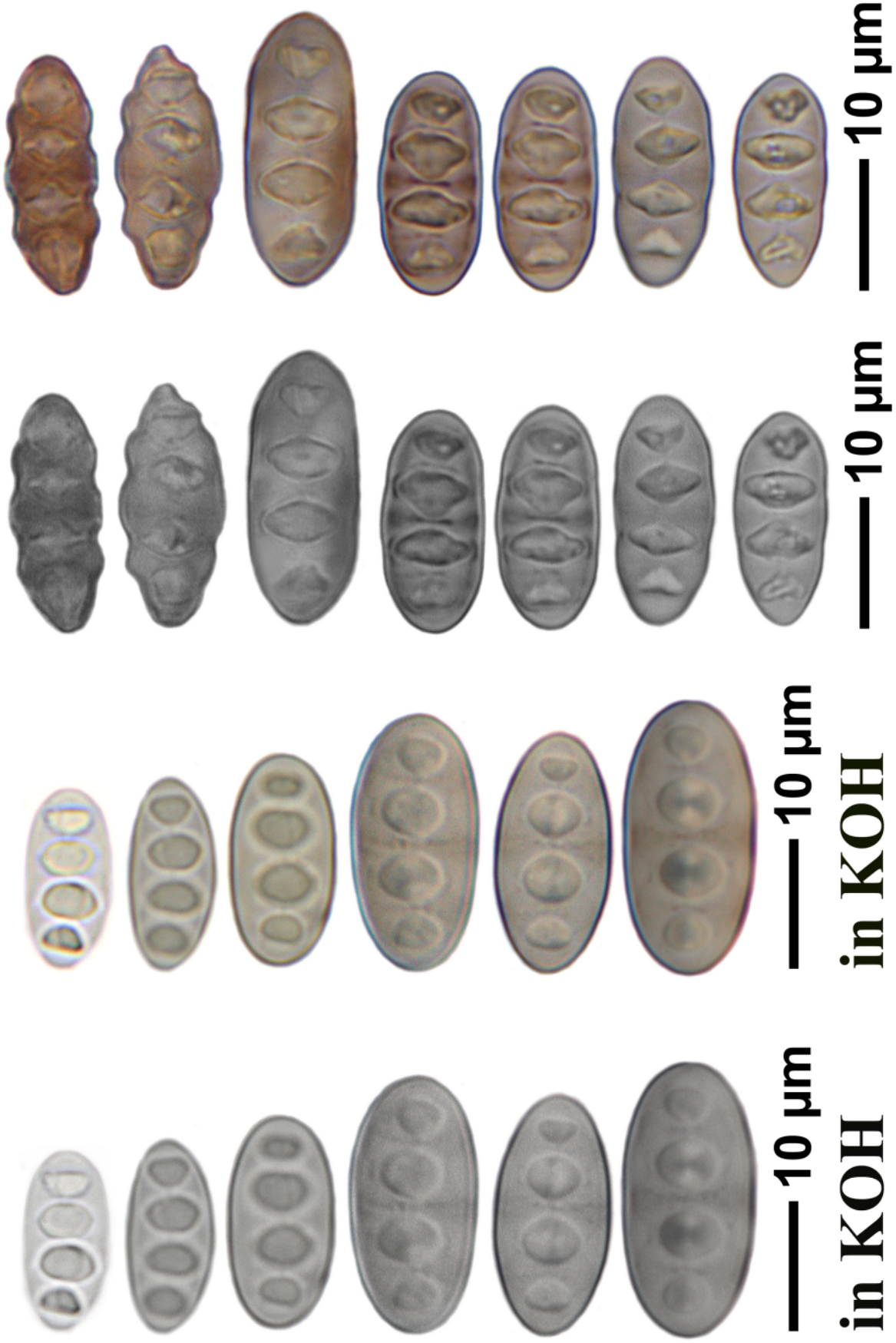
Pyrenula rubrojavanica



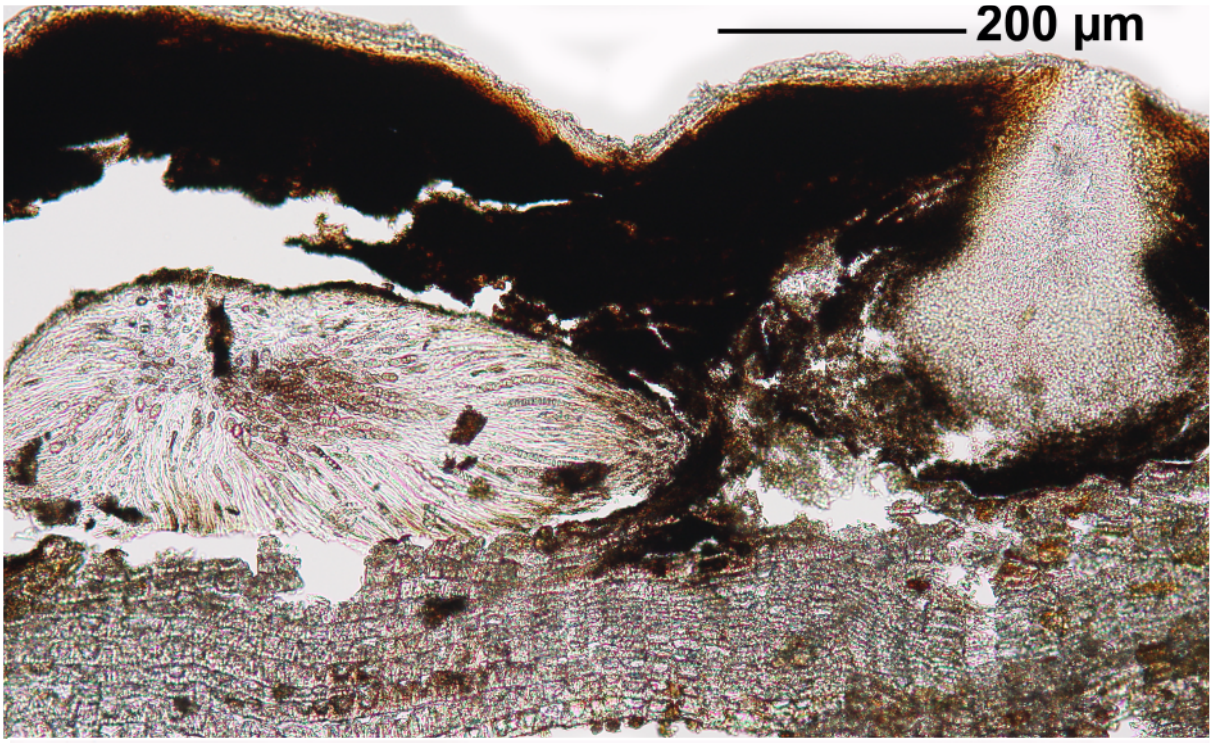


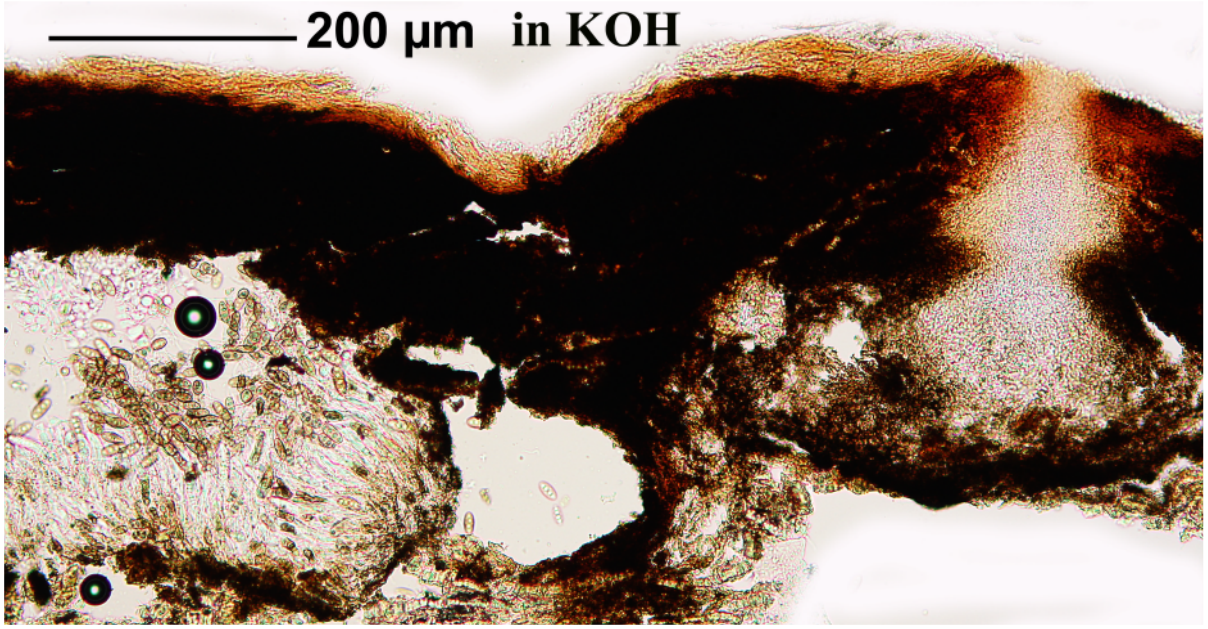


Pyrenula rubrojavanica

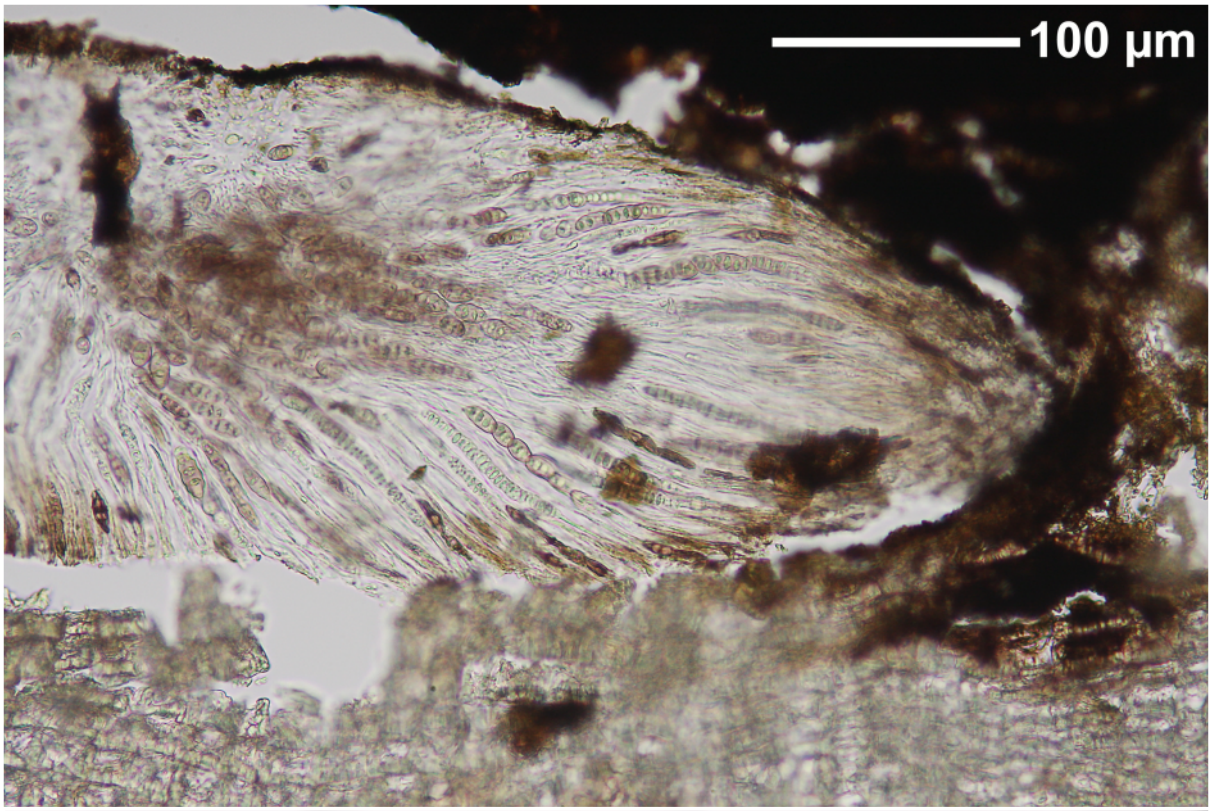


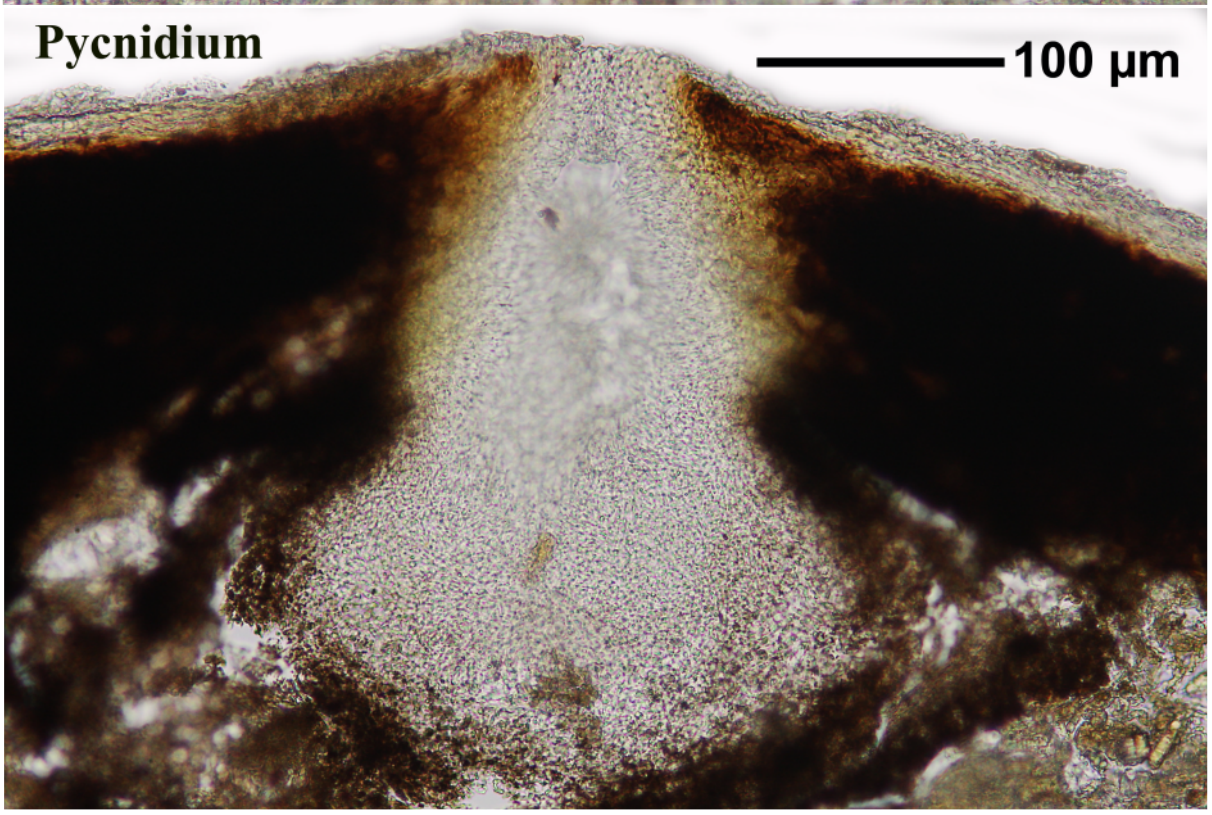
Pyrenula rubrojavanica



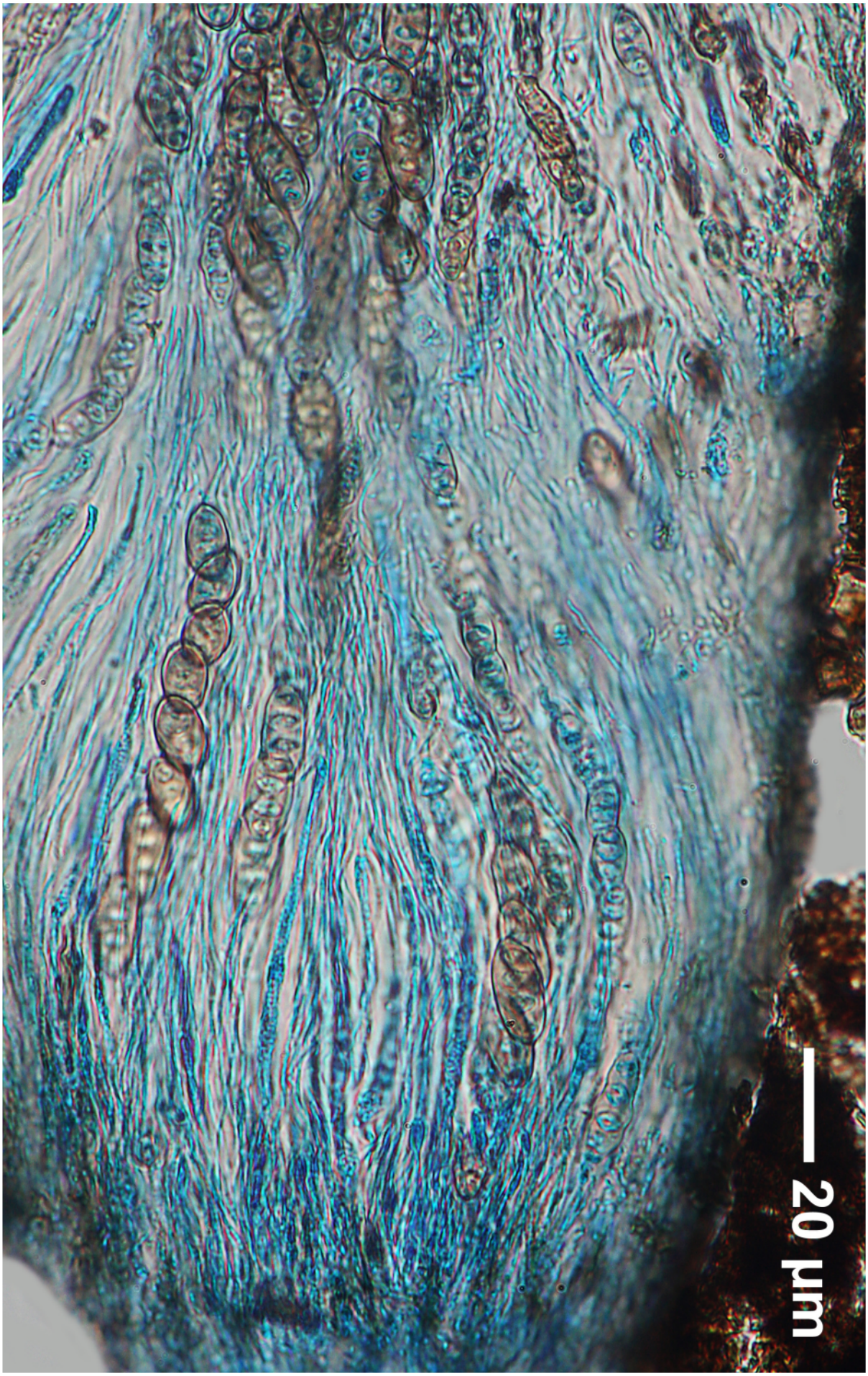


Pyrenula rubrojavanica

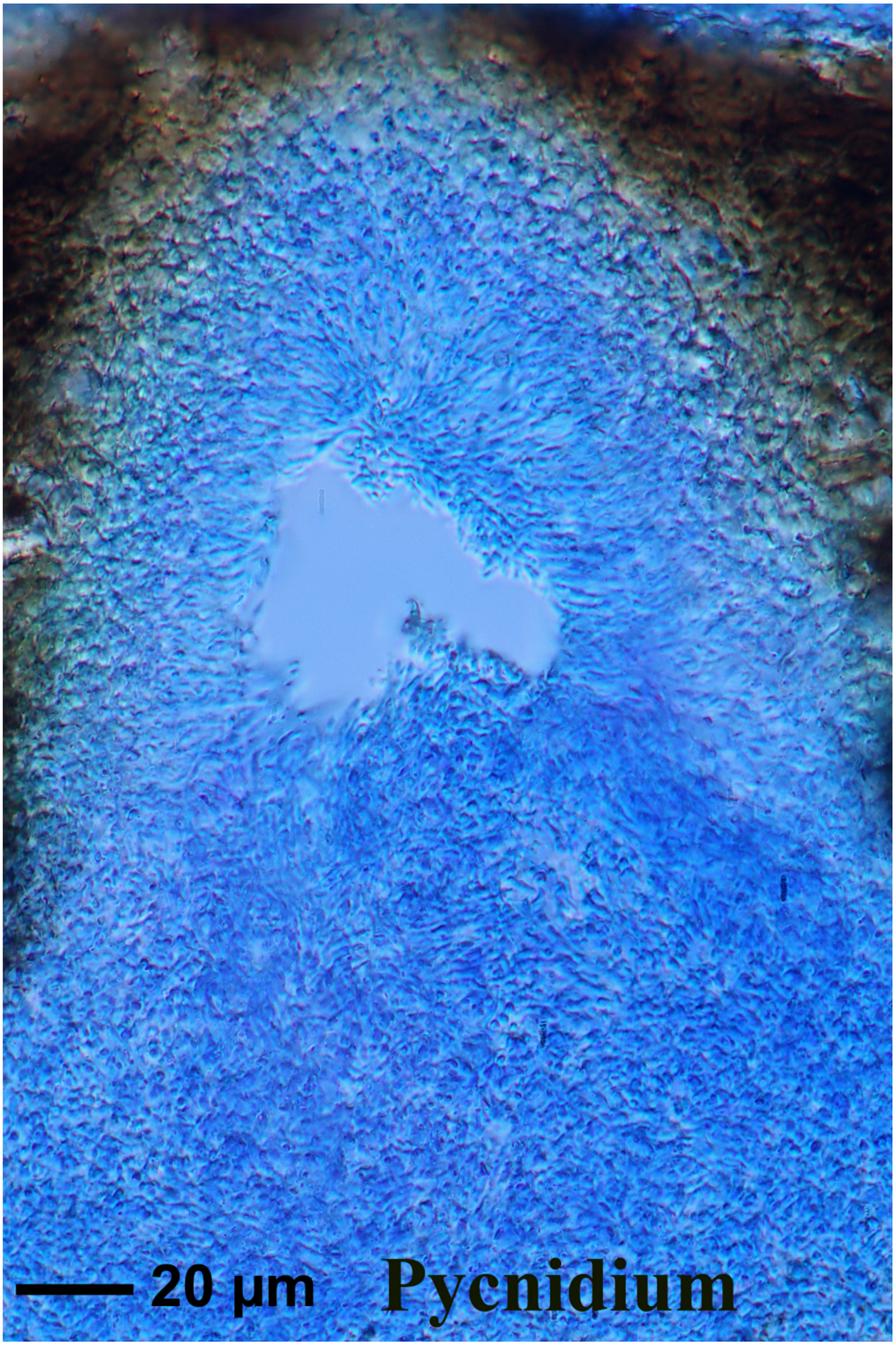




Pyrenula rubrojavanica



Pyrenula rubrojavanica



Pyrenula rubrojavanica

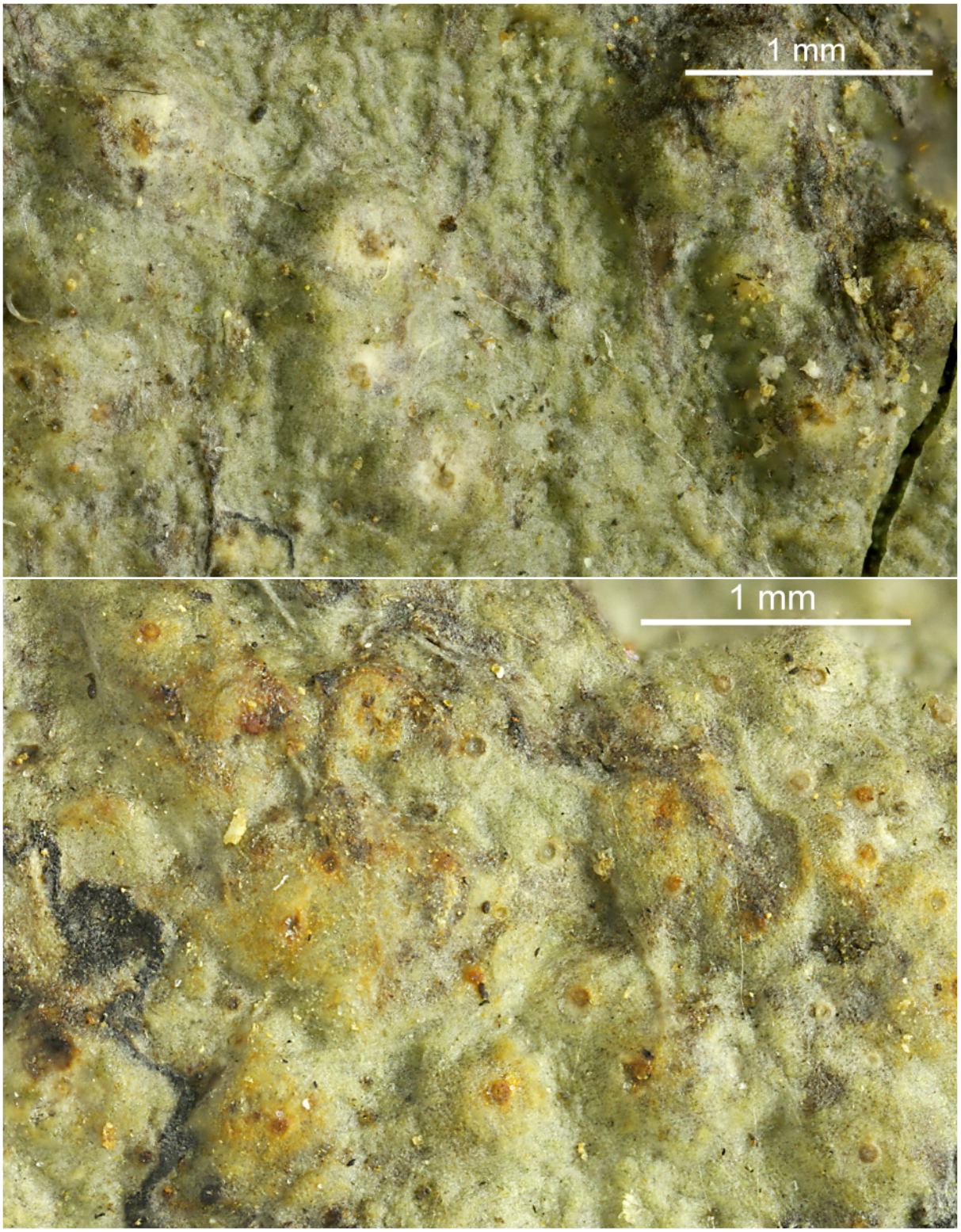
Pyrenula thelemorpha Tuck.

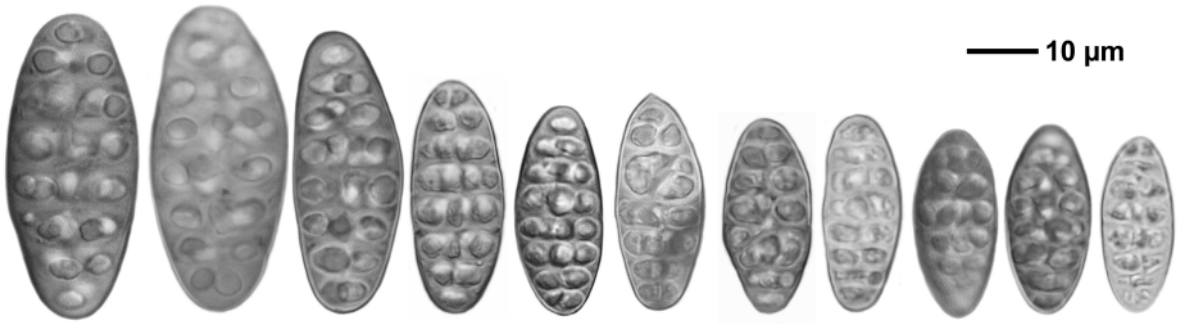
Thallus brownish to olive-green. Perithecia single, nearly globose, lifted out of the substrate, sides covered by the thallus, c. 0.4-0.7 mm wide. Ostiolum pale. Wall of perithecium with crystals. Hamathecium not inspersed. Filaments not branched. Ascospores grey-brown, 8/ascus, muriform, 27-45 x 11-19 µm. Chemistry: nil. Corticolous. Lit. Aptroot 2008.

[15624], La Reunion, nördlich Langevin an der Straße zur Cascade de la Grande Ravine. 21,36107° S, 55,64667° E, 130 m. Leg. Schumm & Frahm 16.09.2009, det Aptroot 2011.

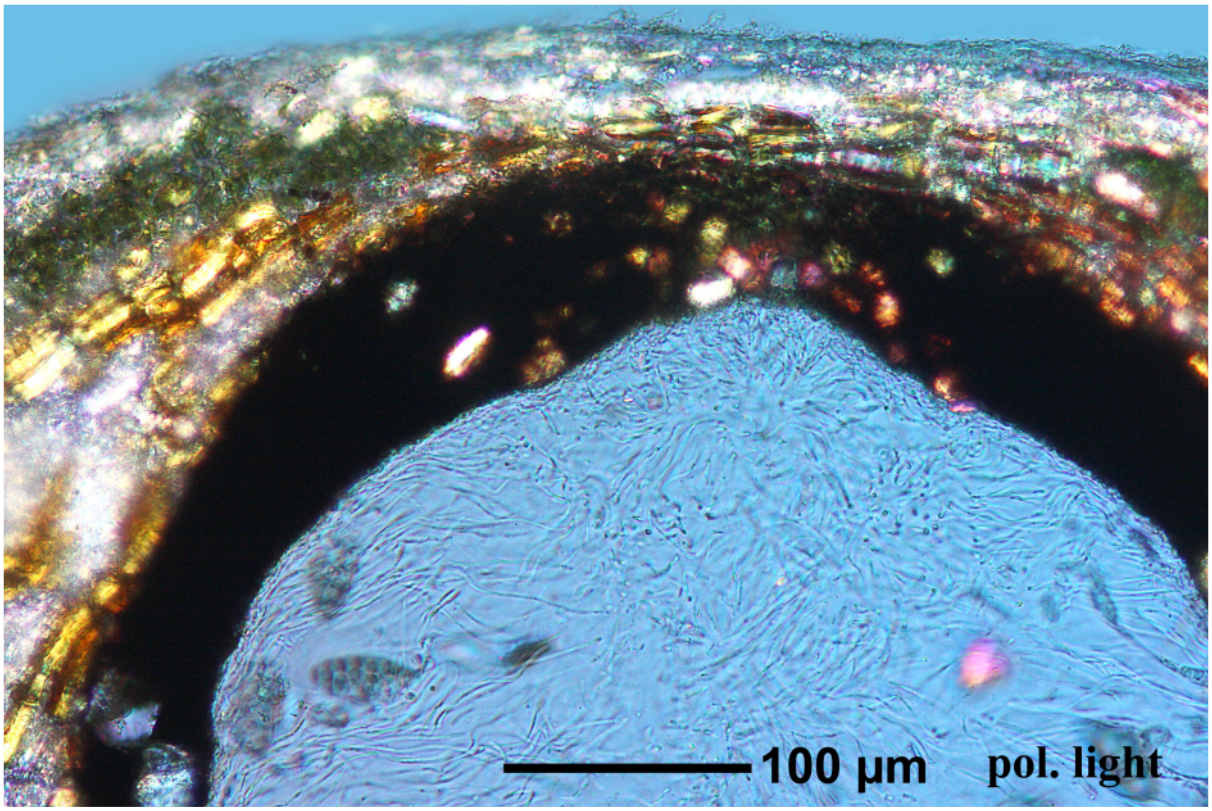


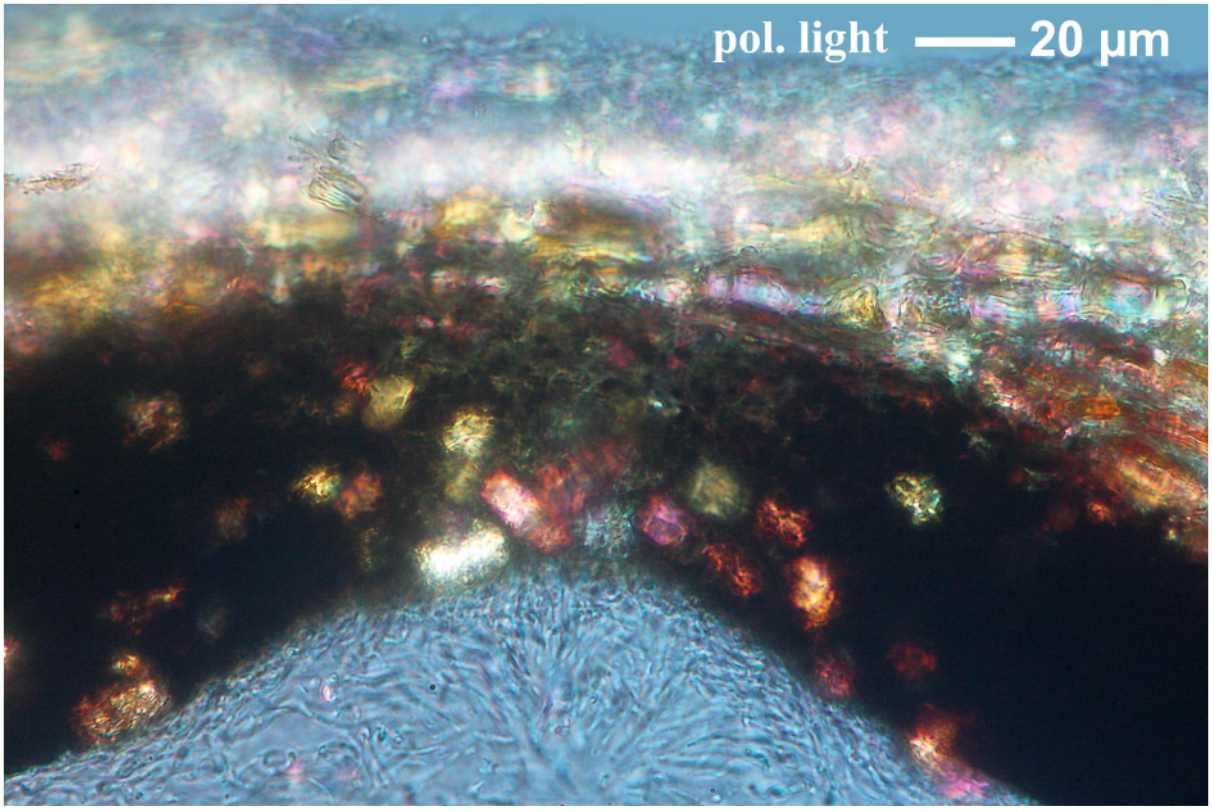




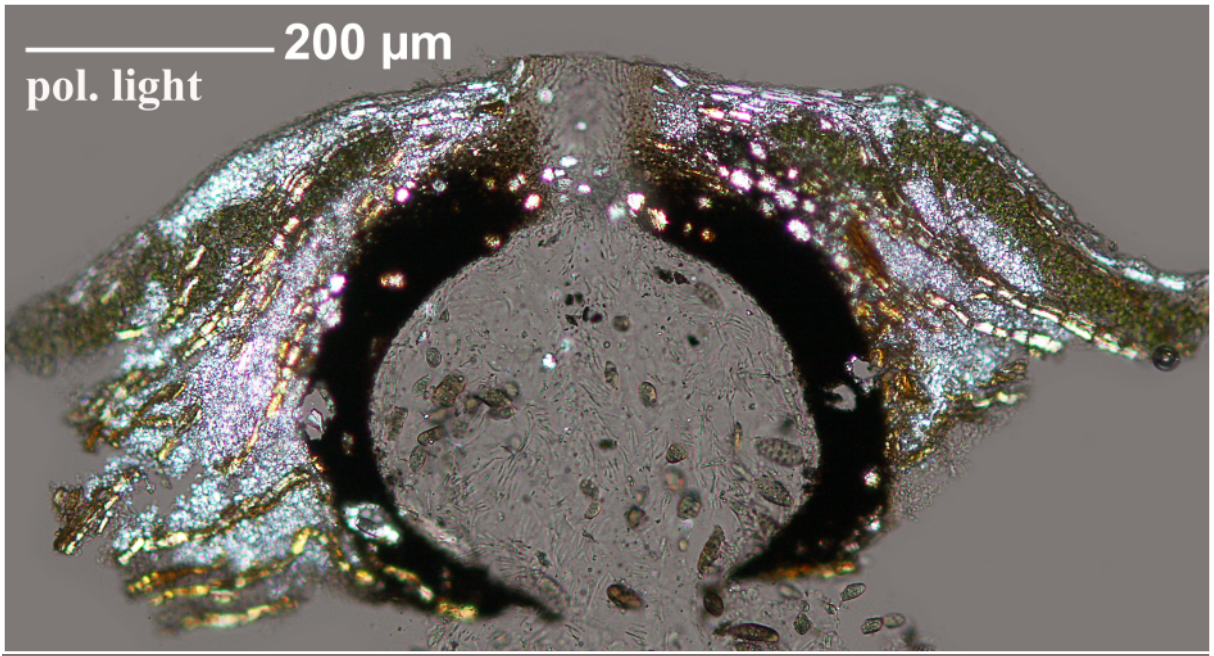


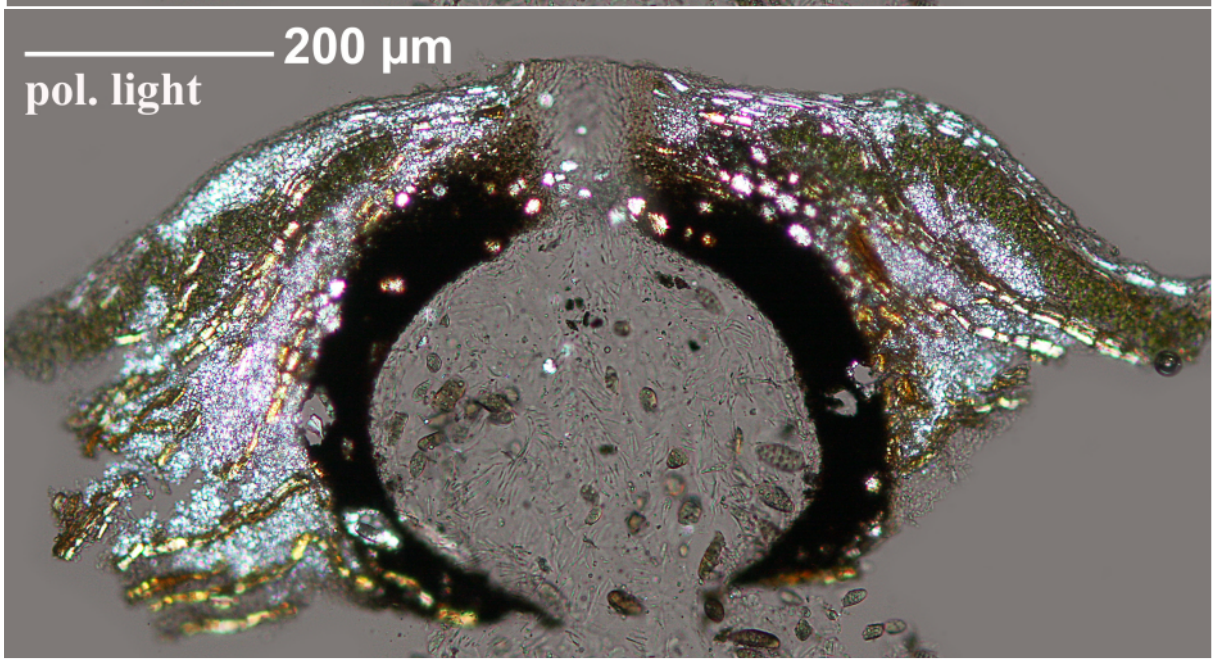
Pyrenula thelemorpha

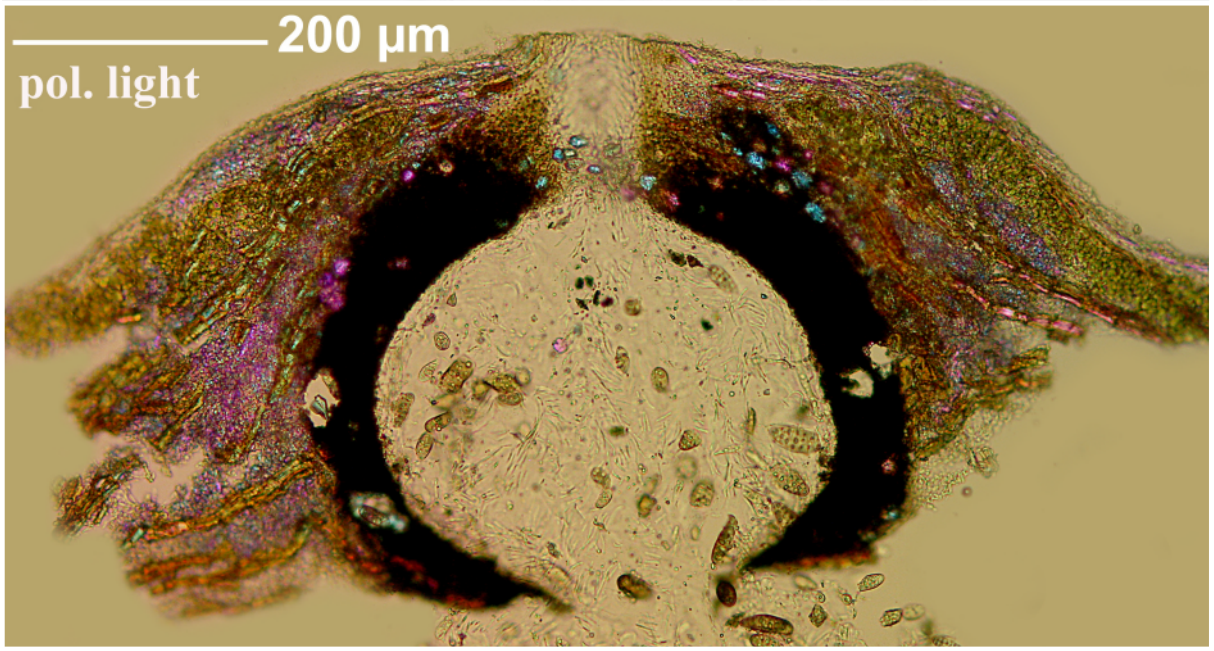




Pyrenula thelemorpha





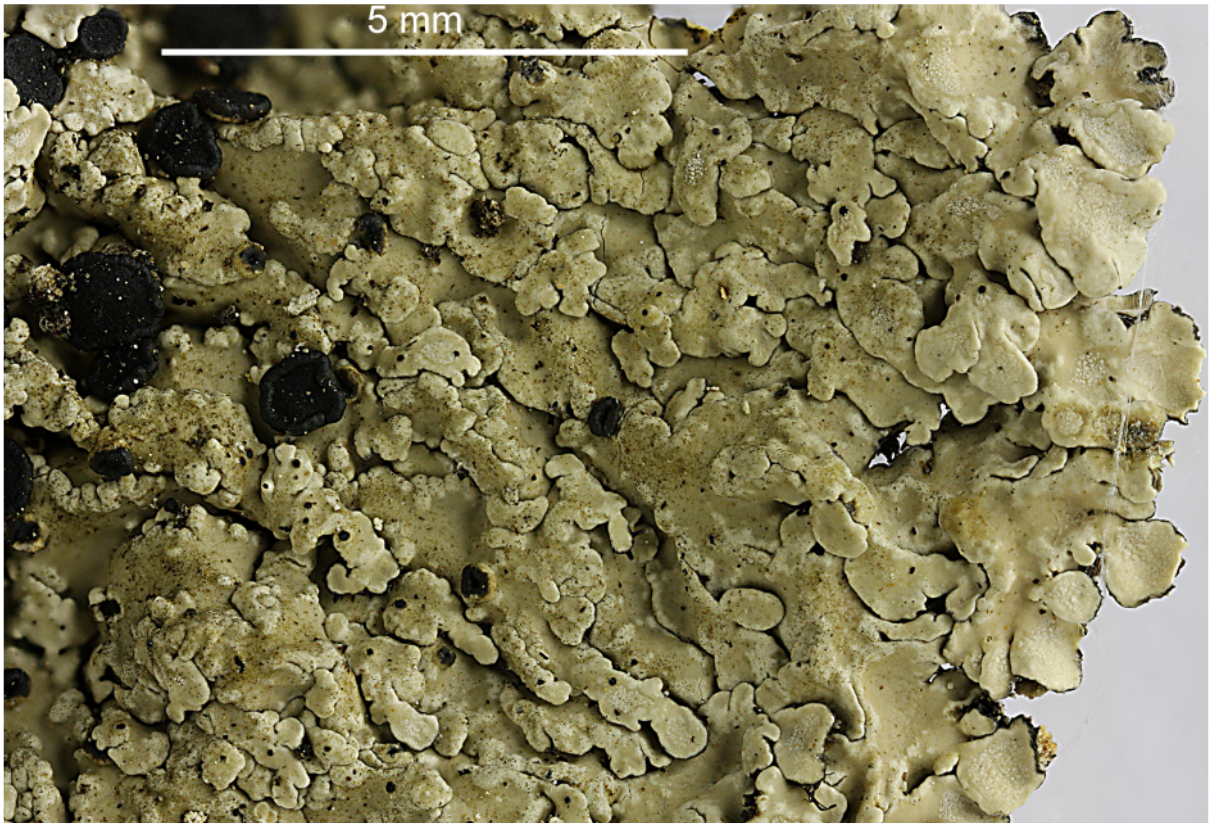


Pyrenula thelemorpha

Pyxine berteriana (Fée) Imshaug

Thallus grey, without soredia or isidia. Lobes 0.4-0.6 mm wide, point-like pruinose, close to or growing over each other. Upper cortex para-pectenchymatous, hyaline, appr. 33 µm thick, brightening in polarized light. Medulla in upper part yellow, K- (not red). Lower cortex brown-black, prosoplectenchymeous, appr. 17 µm thick. Rhizinae unbranched, black, appr. 160-170 µm long, 30 µm thick. Apothecia black, flat, with black margin, 0.4-1.5 mm wide. Epithecium and parathecium black, K+ violet. Hymenium hyaline, appr. 100 µm high. Hypothecium brown-red, K- (not violet). Stipes yellowish, K-. Ascospores brown, 1-septate,16-19 x 6-8 µm, walls at the tips and the septum thickened. Chemistry: uppercortex UV+ yellow, K-, C-, KC-, P-, medulla K-, C-, KC-, P-; lichexanthone, yellow pigment, triterpenoids.

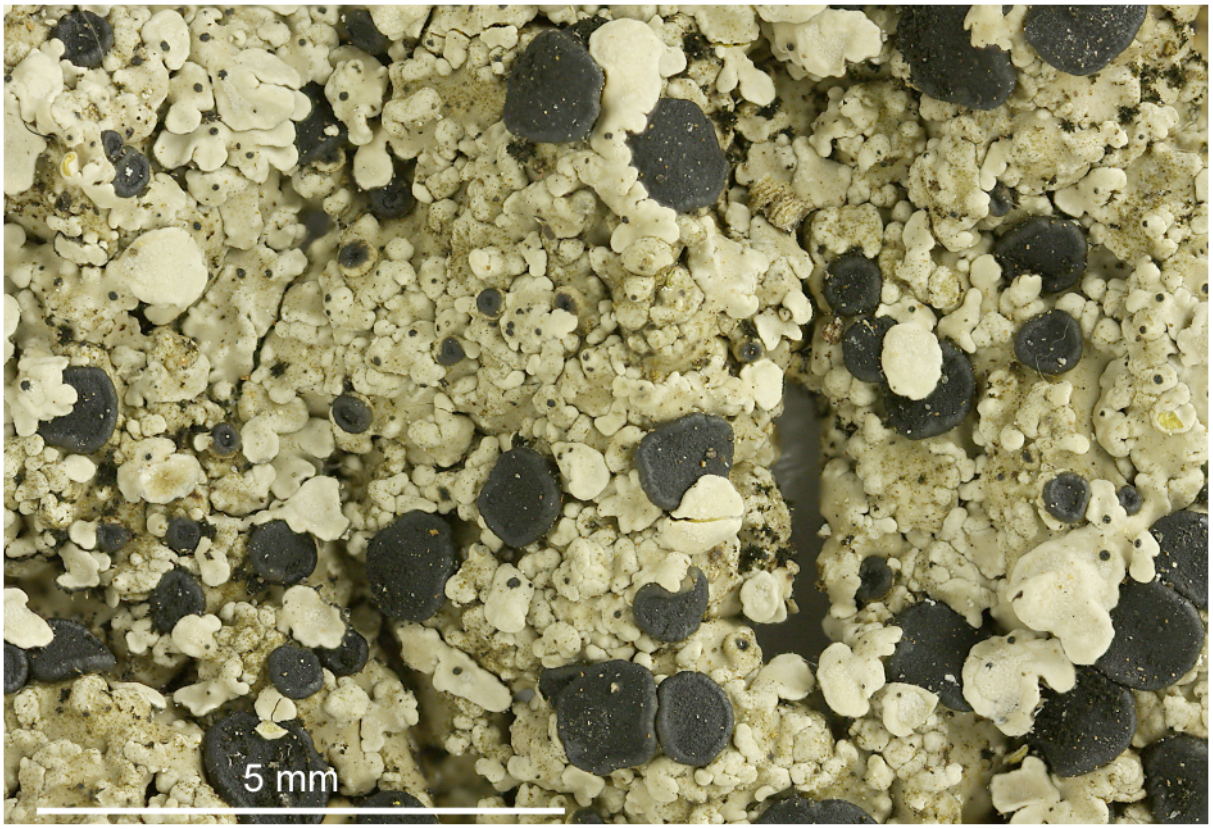
[9563], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen, 0°06.275' N, 99°37.524' E, 700 m. Leg. Schumm 31.03.2002, det. Schumm 2011.





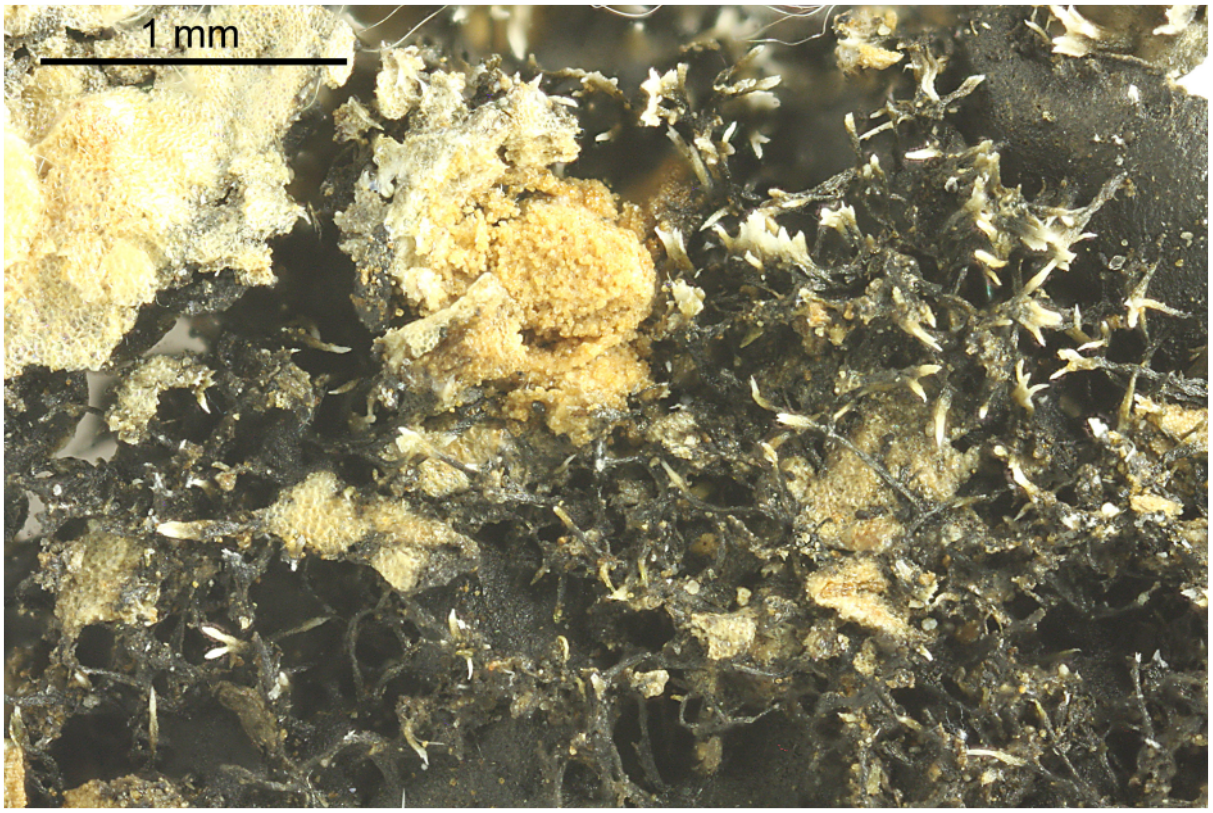


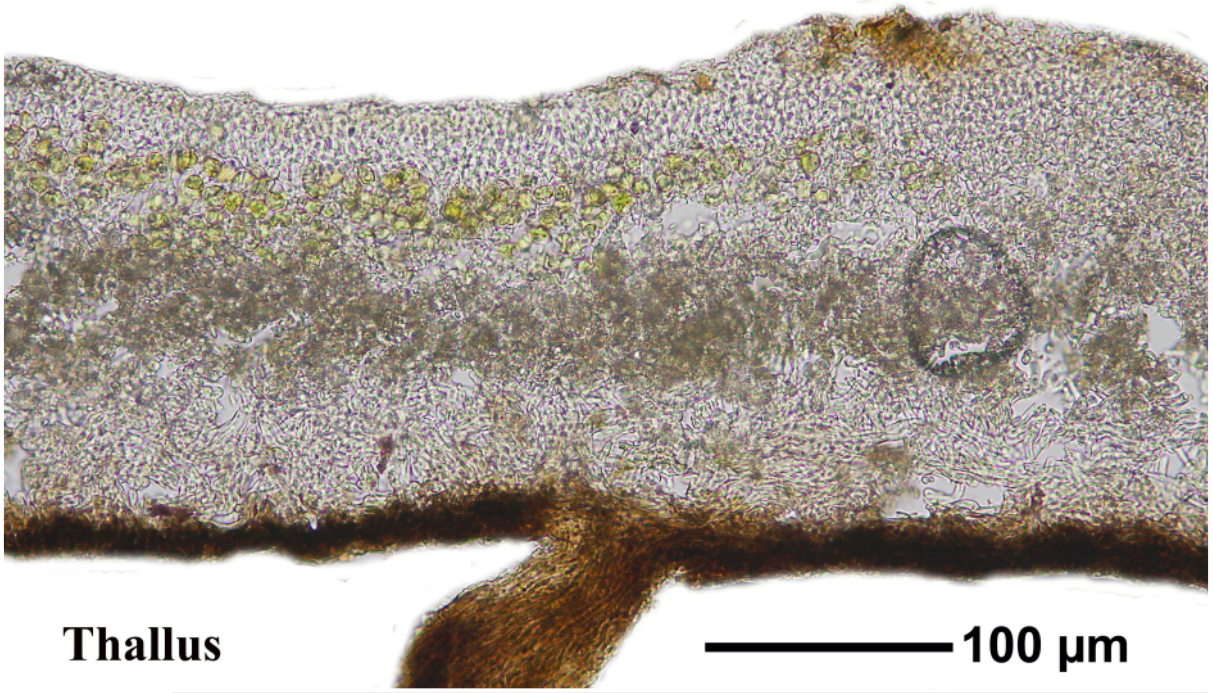
Pyxine berteriana

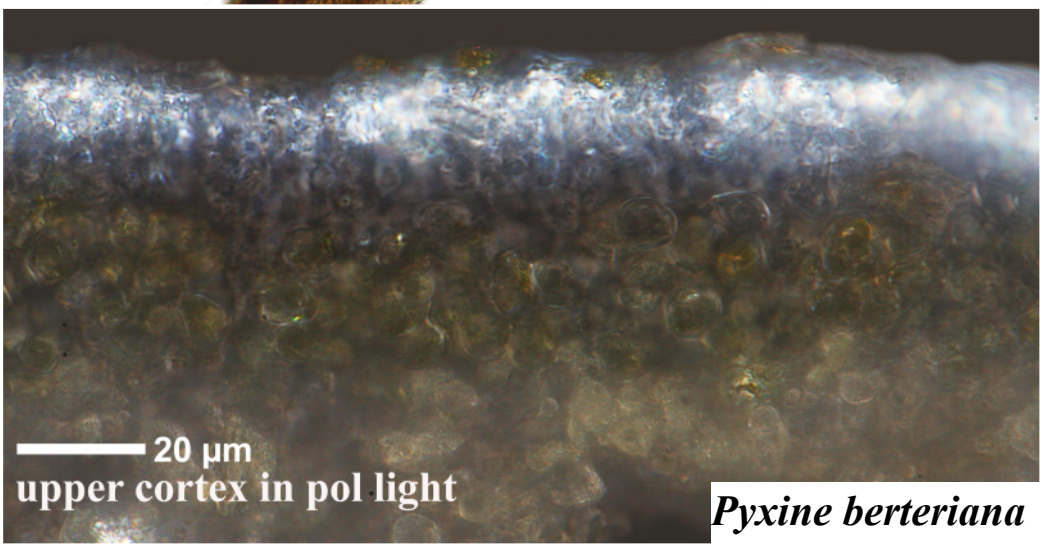




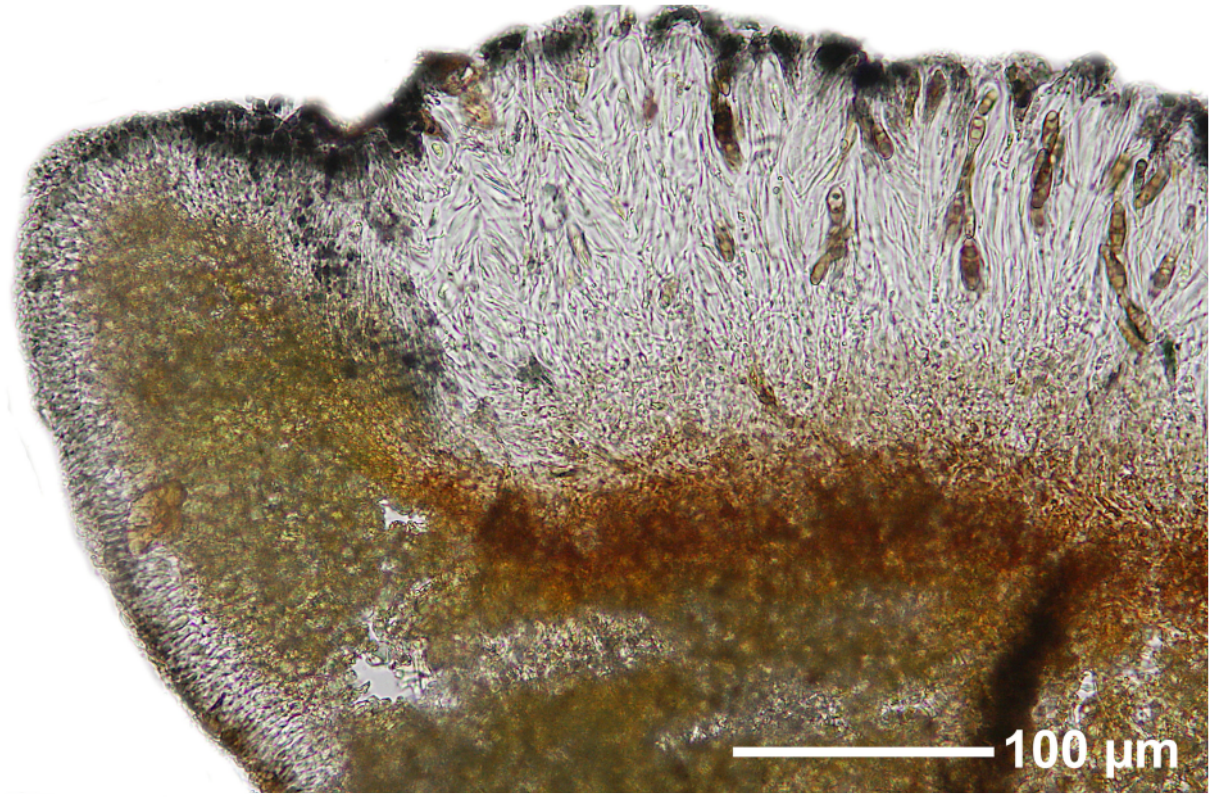
Pyxine berteriana

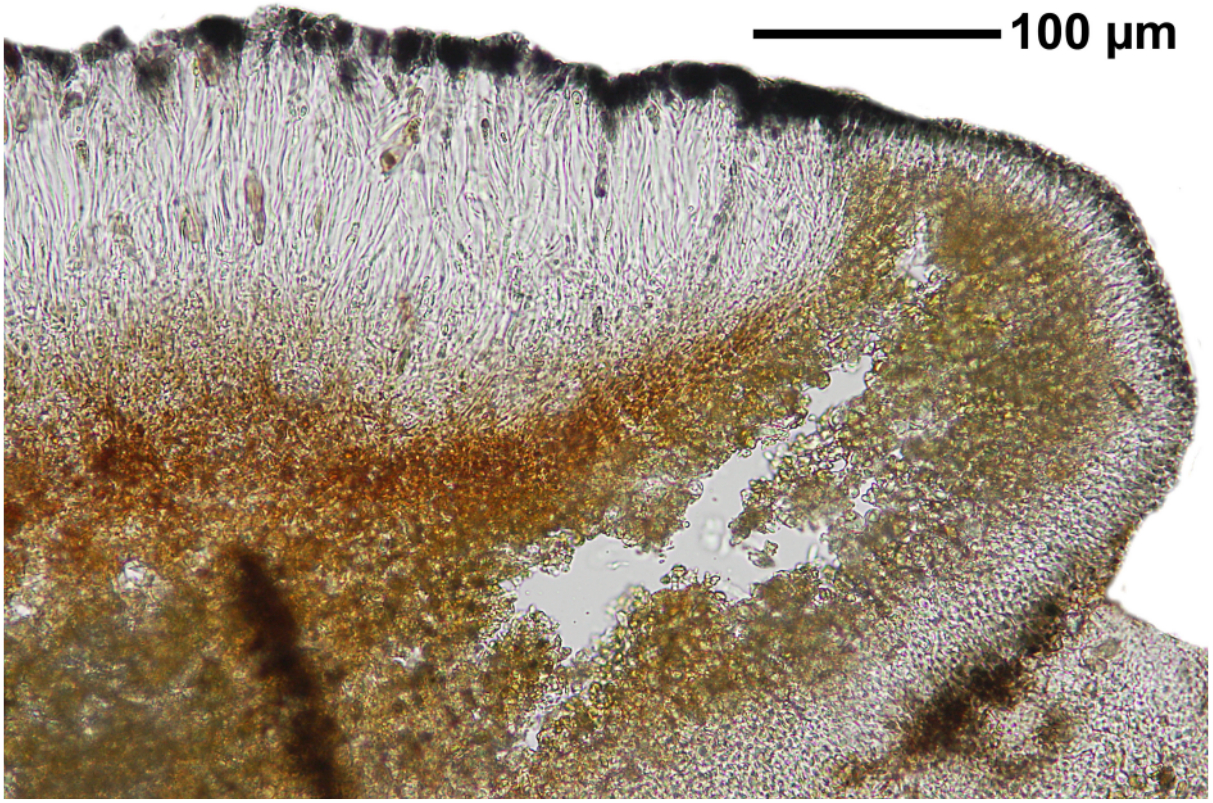




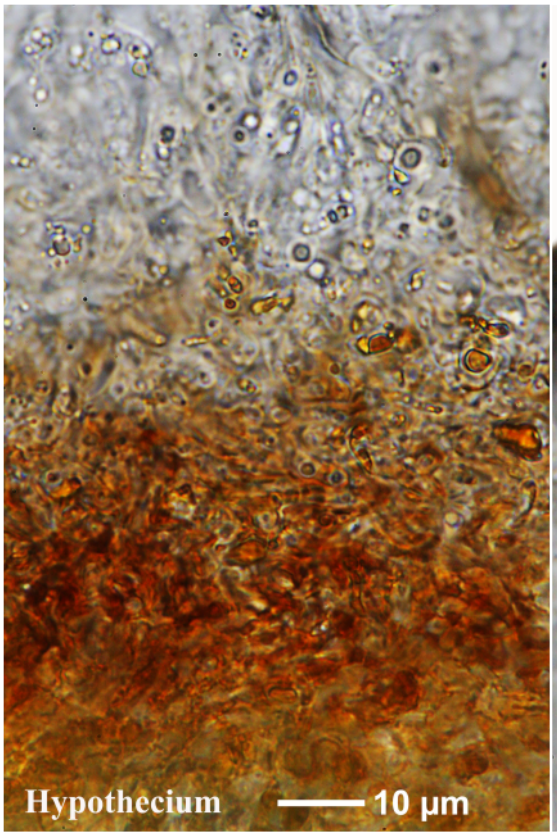


Pyxine berteriana

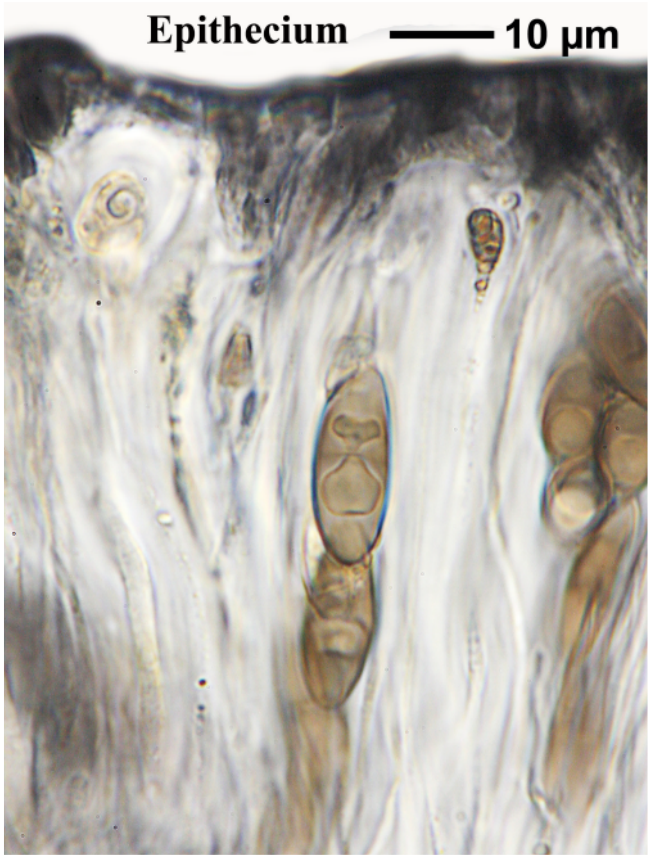




Pyxine berteriana

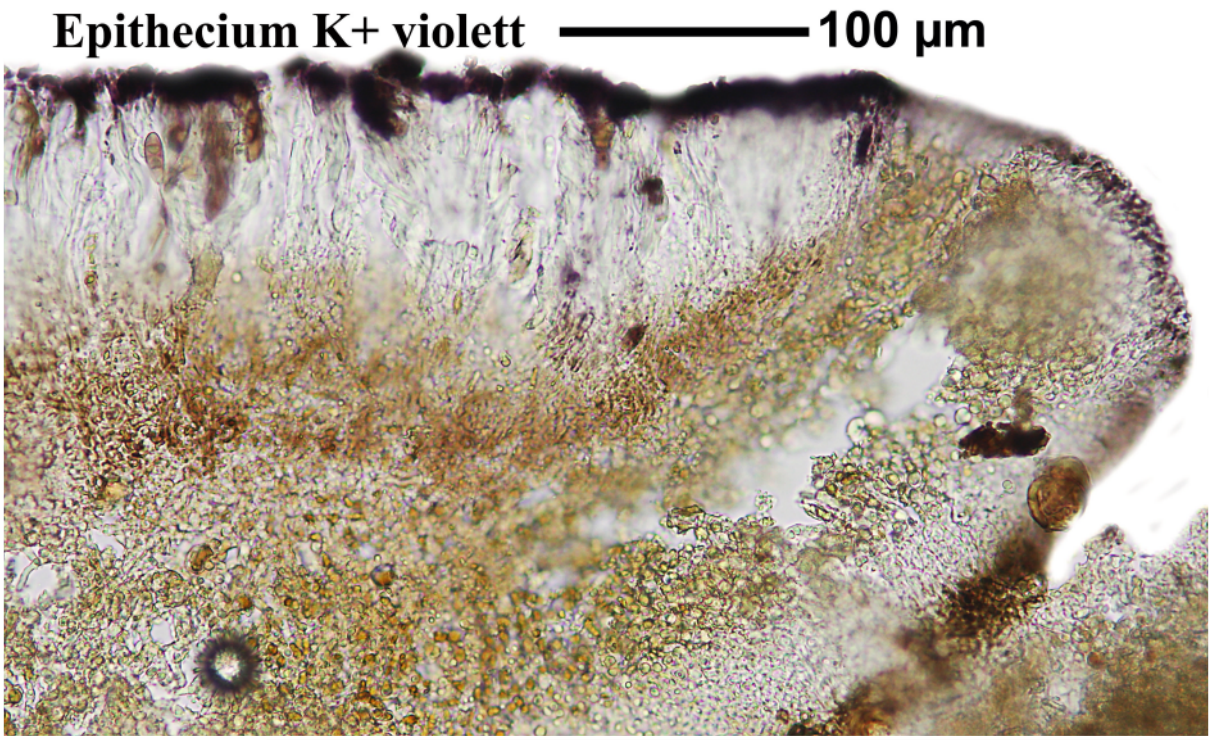


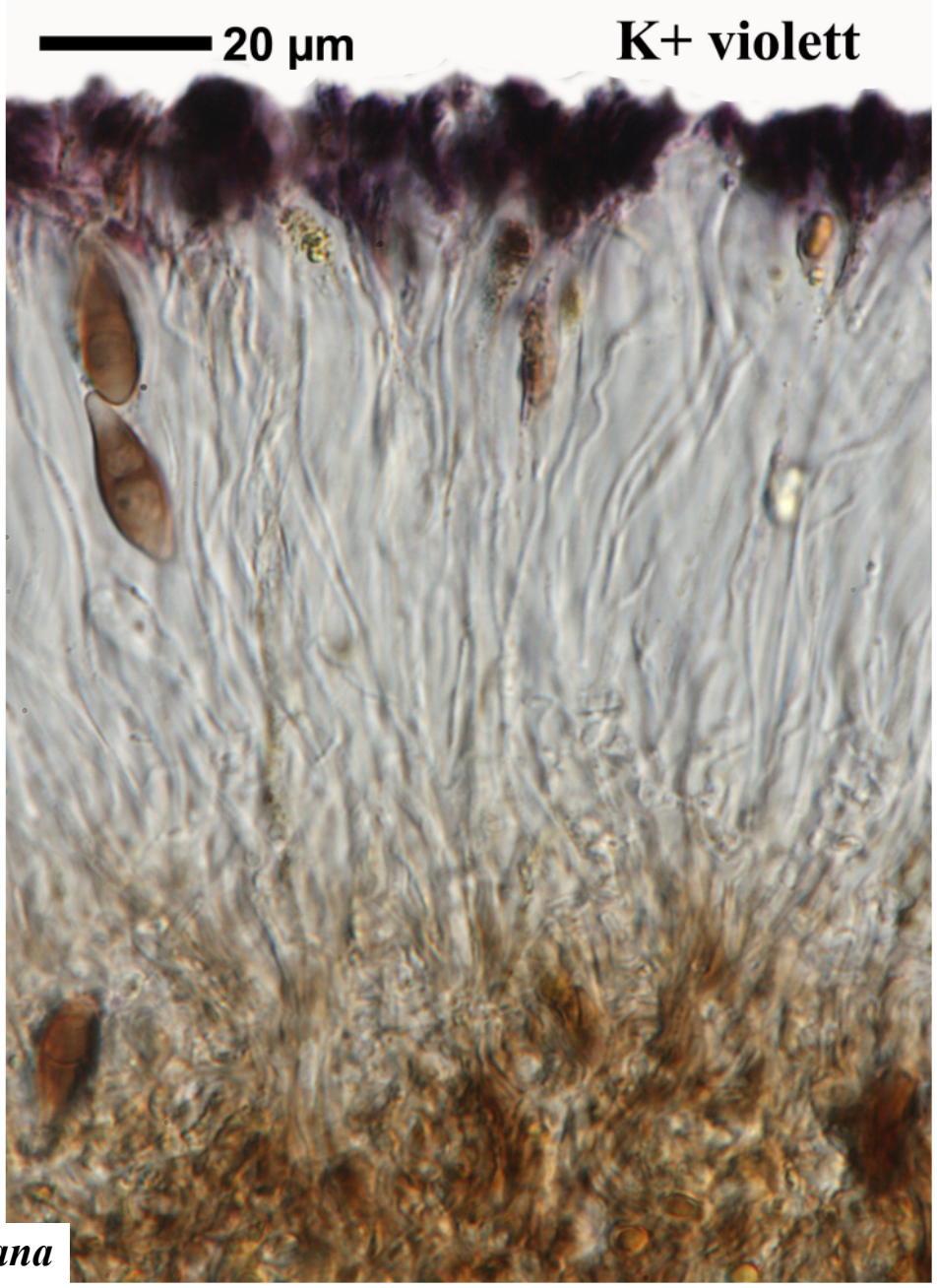




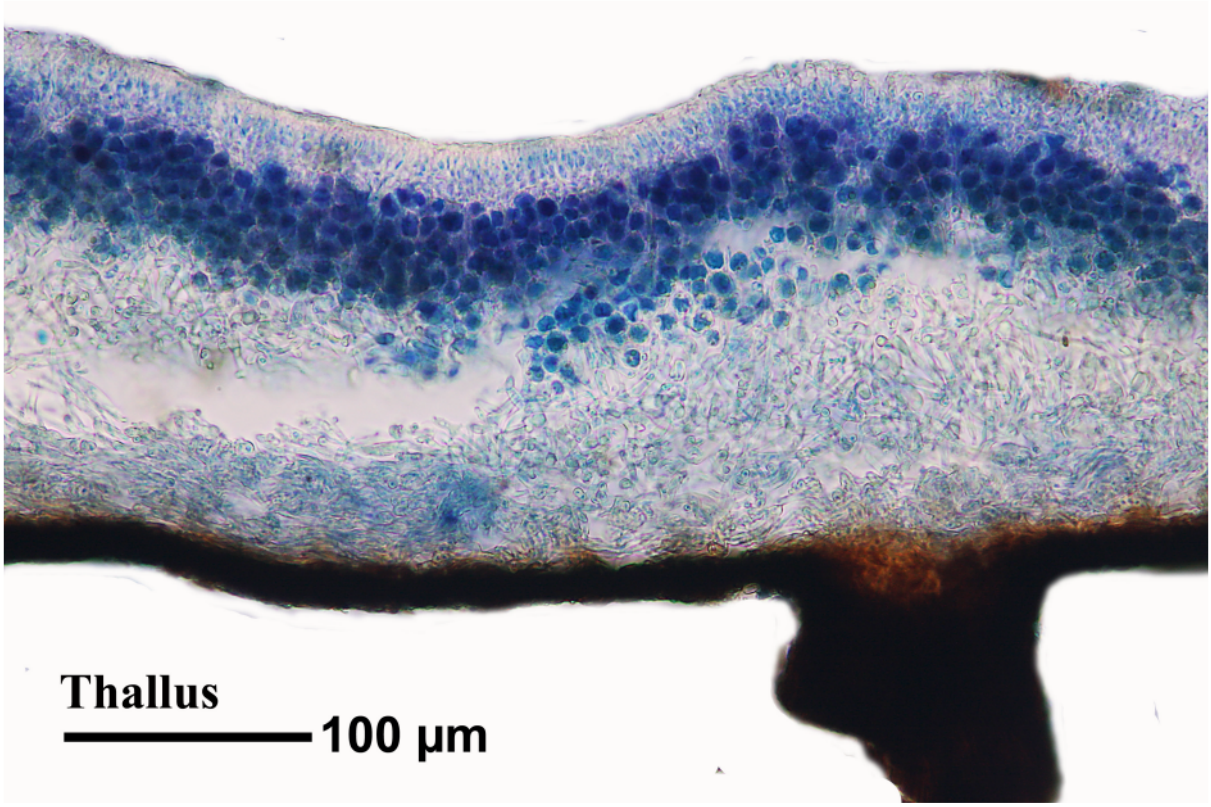


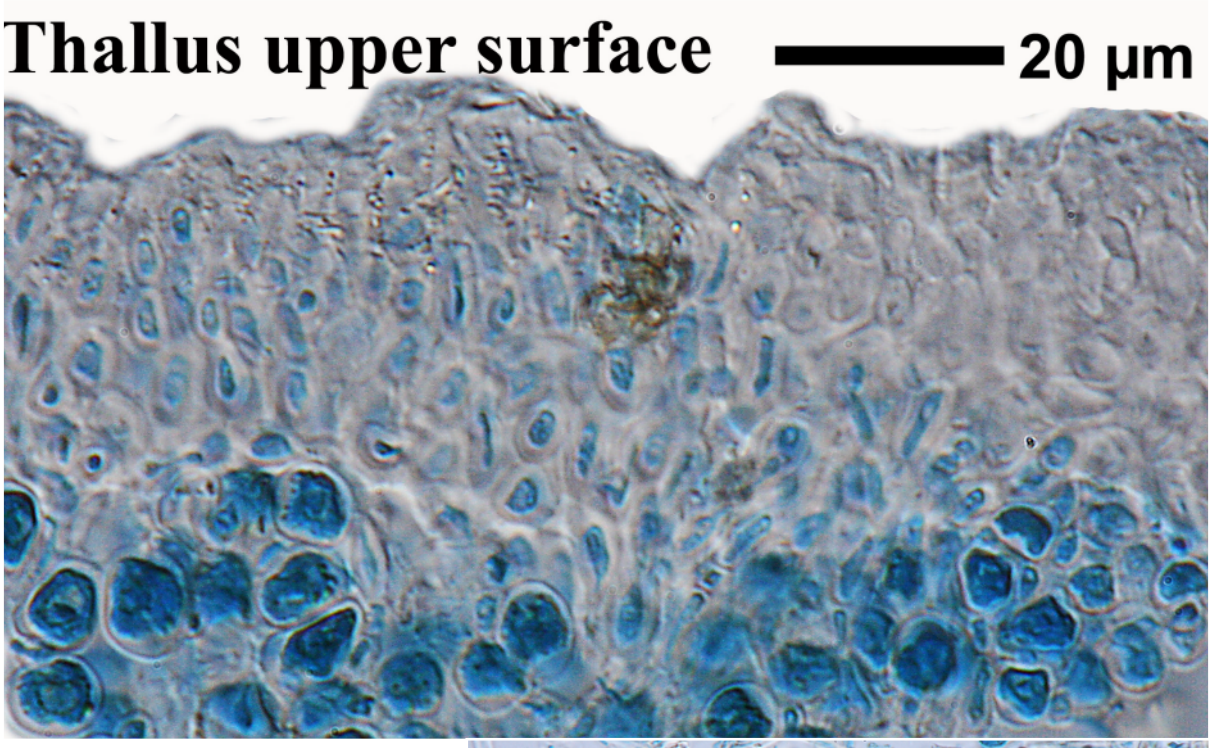
Pyxine berteriana

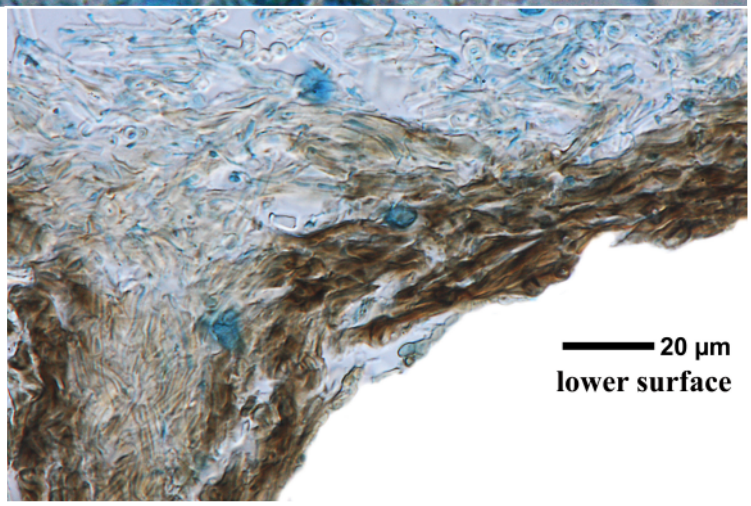




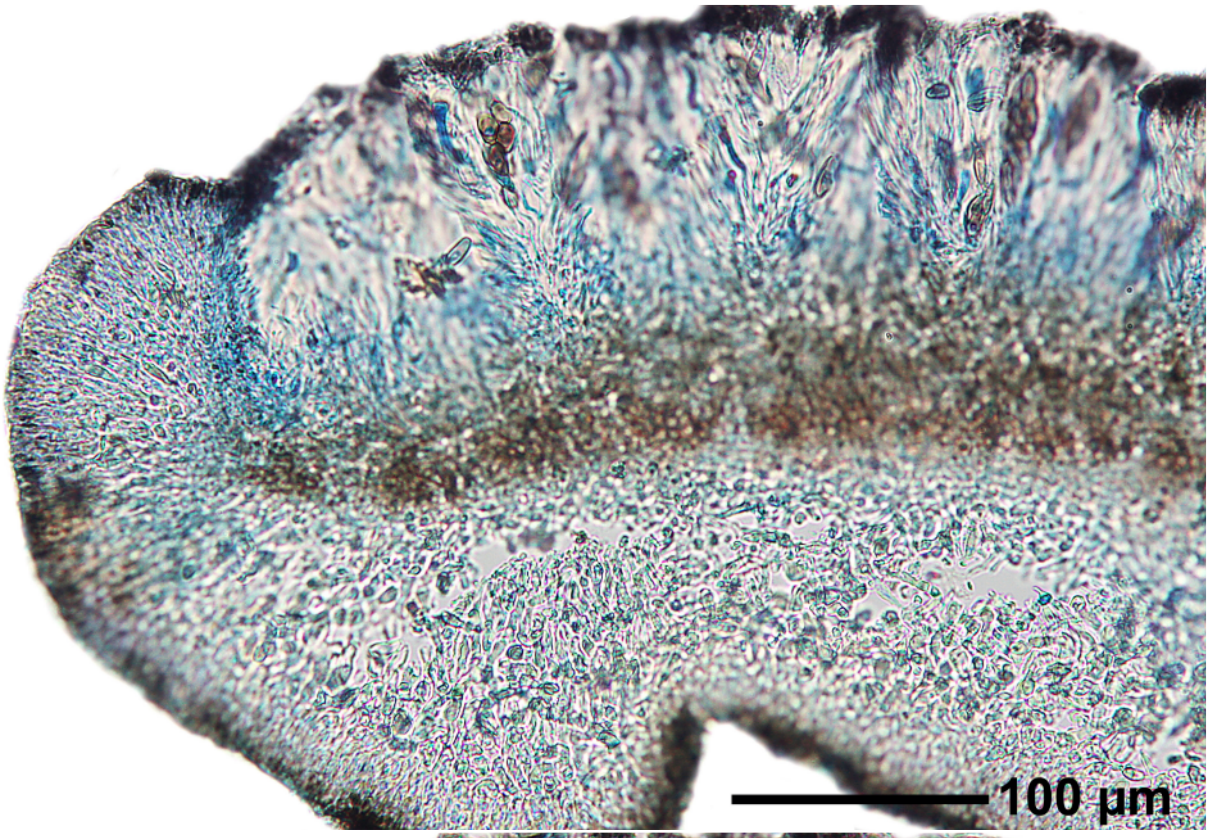
Pyxine berteriana

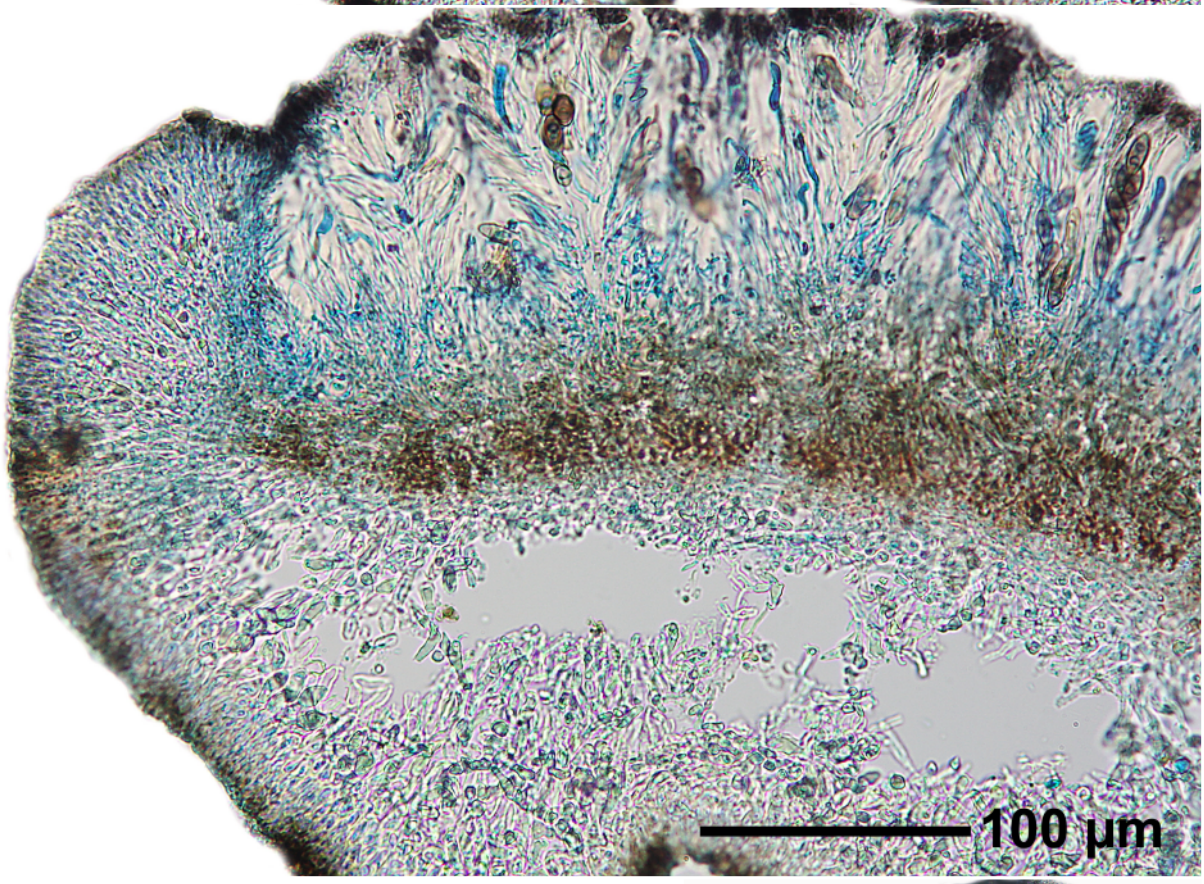


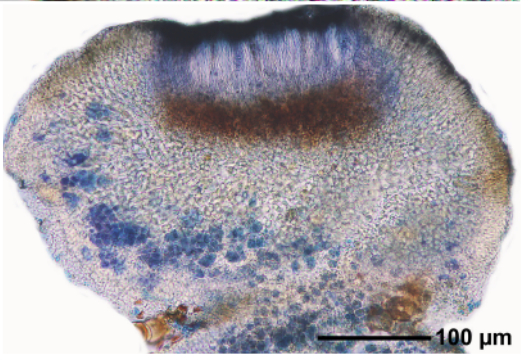




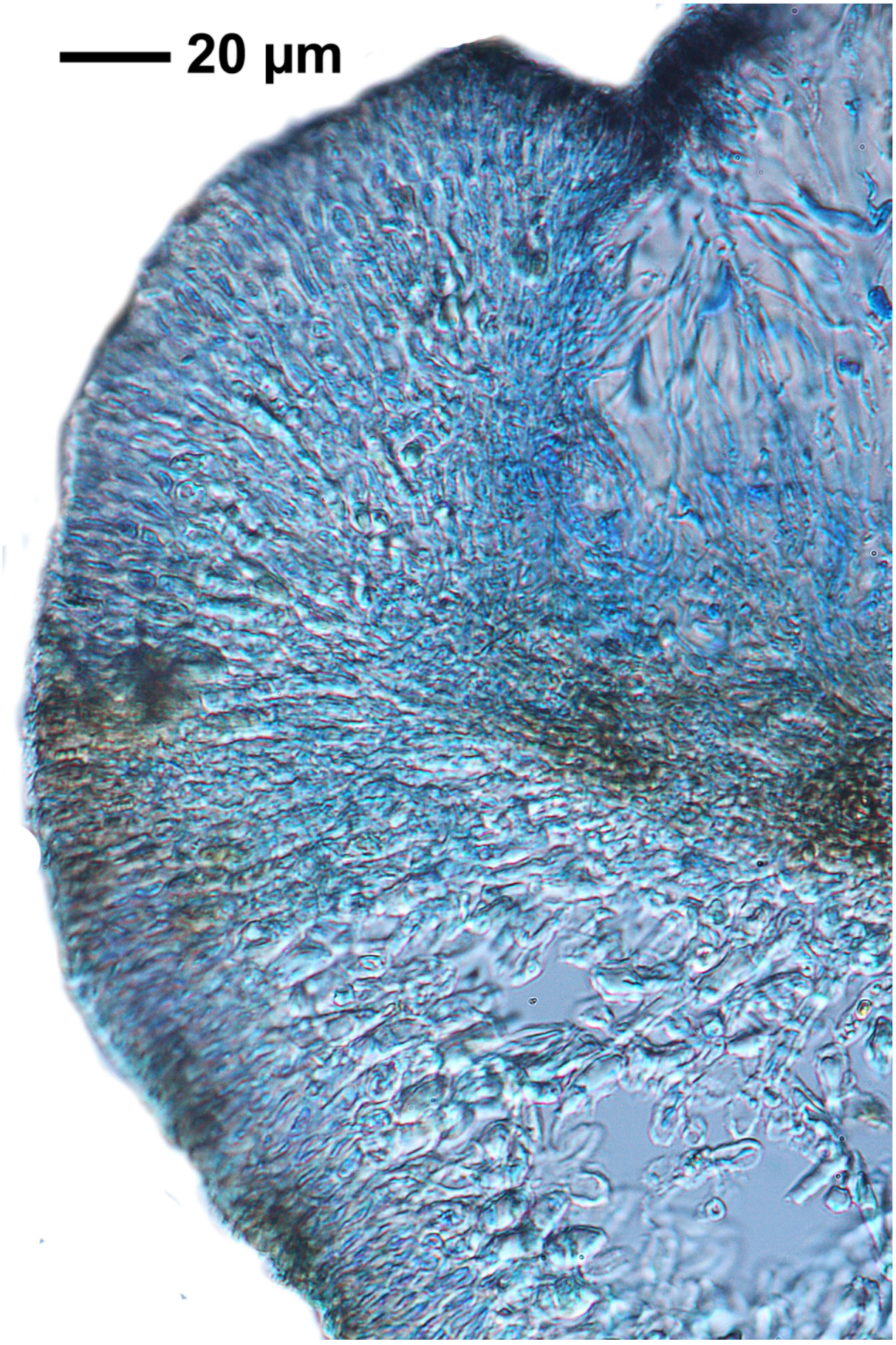
Pyxine berteriana



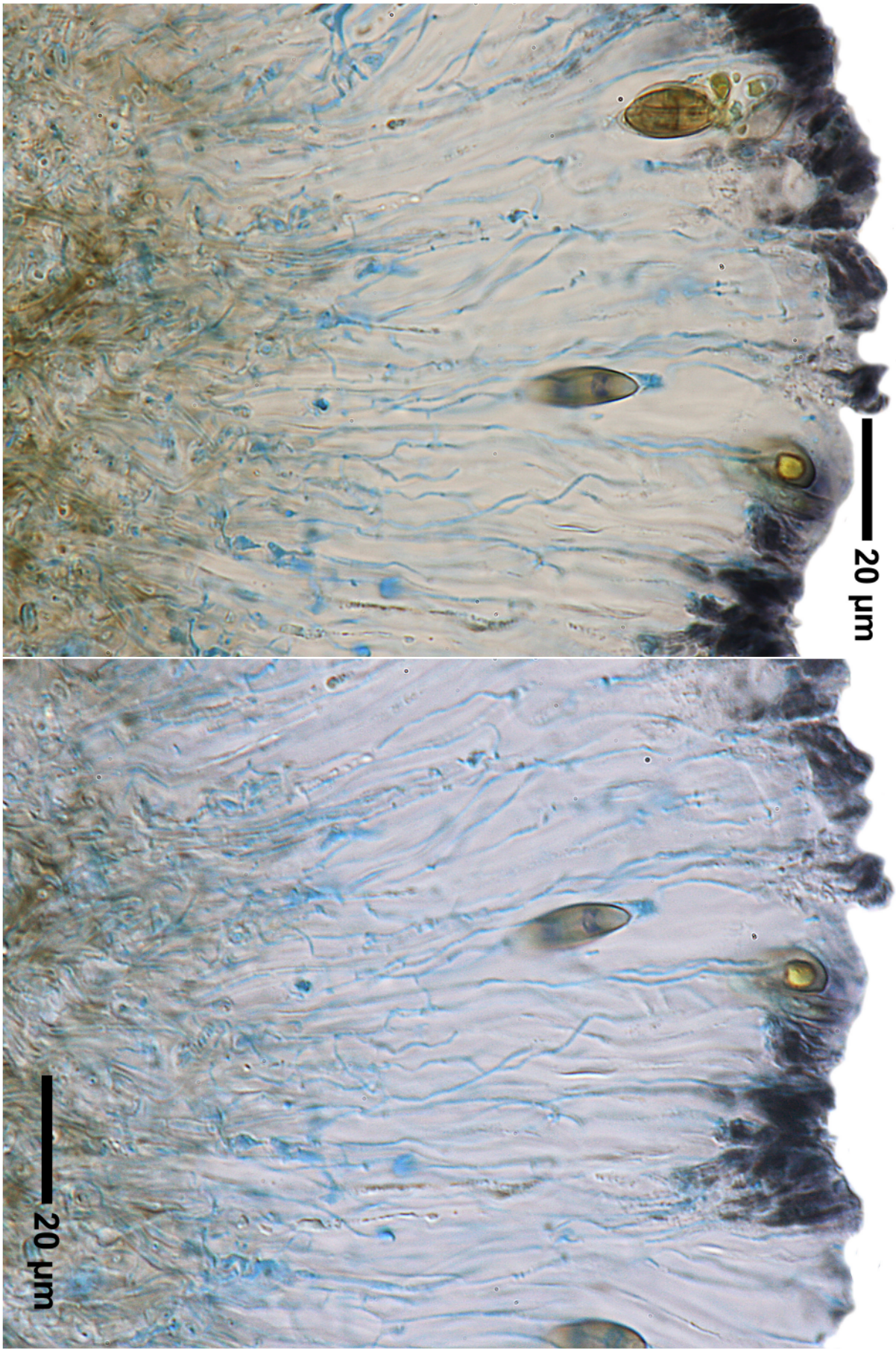




Pyxine berteriana



Pyxine berteriana

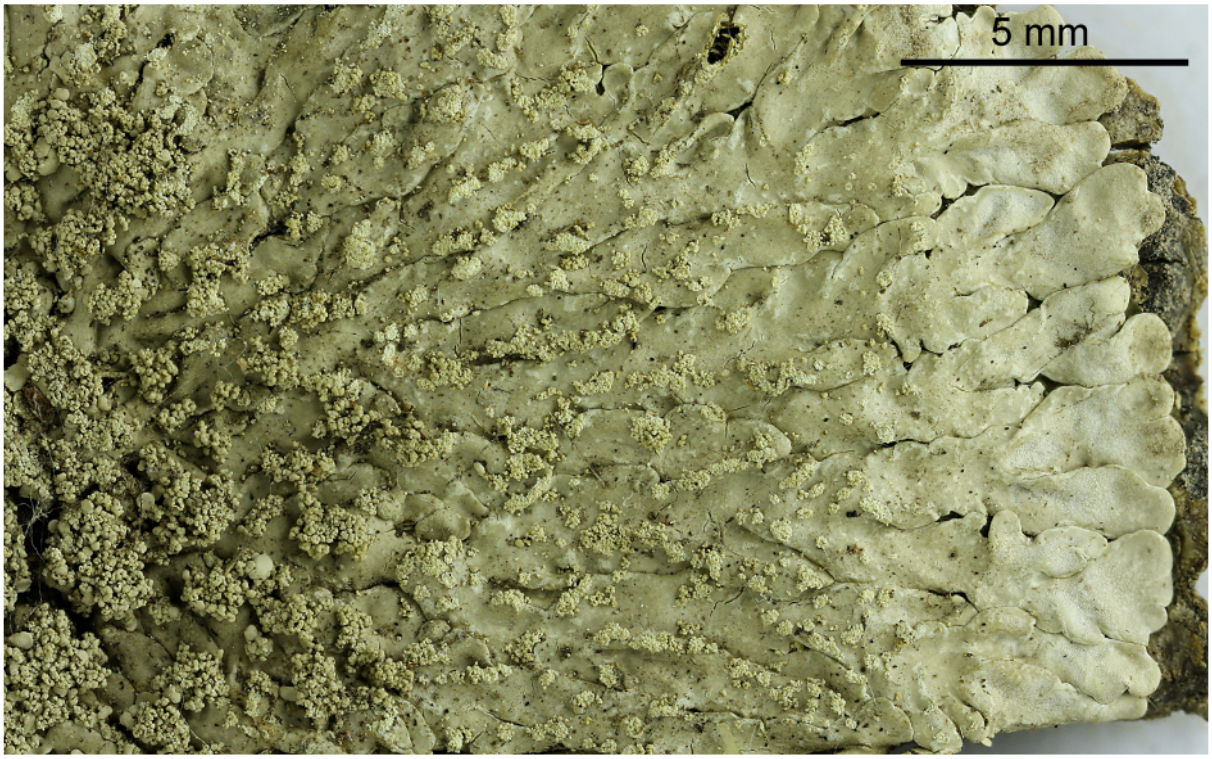


Pyxine berteriana

Pyxine cocoes (Sw.) Nyl.

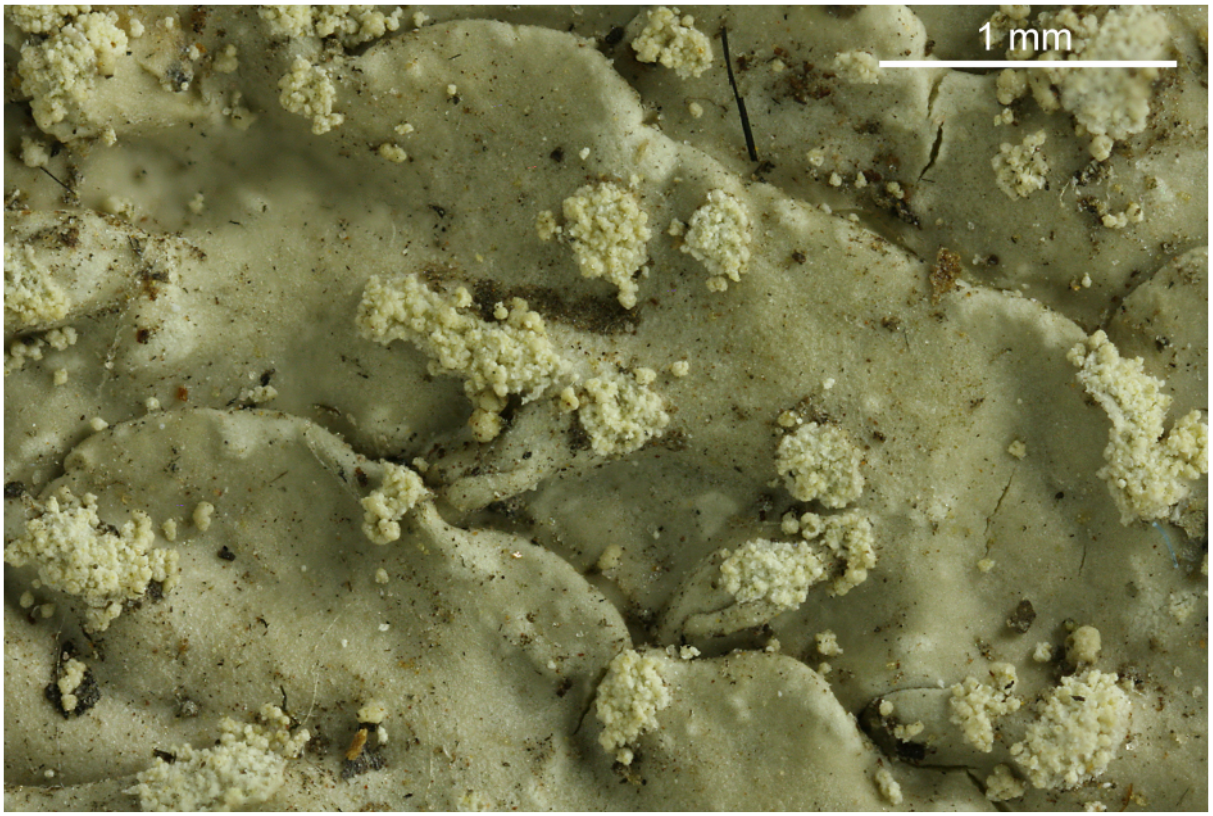
Thallus grey, 3-30 cm wide, closely attached, with laminal or marginal soralia (sometimes very coarse-grained). Lobes ± flat, 0.4-0.8 mm wide, ± maculosus, mostly plate-like pruinose. Medulla white or very pale yellow, K-. Lower surface black. Rhizinae black, mostly unbranched, 0.1-0.4 mm long. Apothecia 0.4-1.4 mm wide, disc black, not pruinose. Stipes brown-red (K+ red). Ascospores, brown, 1-septate, 8/ascus, (12-)15-18(-20) x (4-)6-7(-8) µm. Chemistry: upper cortex UV+ intense yellow-orange, K-, C-, KC-, P-; lichexanthone, triterpenoids. Mostly corticolous particularly at palm trees.

[9543], Thailand, Tempelanlage von Sukhothai. 17°01.019' N, 99°42.273 E, 78 m, corticol. Leg. Schumm 29.03.2002, det. Aptroot 2009.





Pyxine cocoes



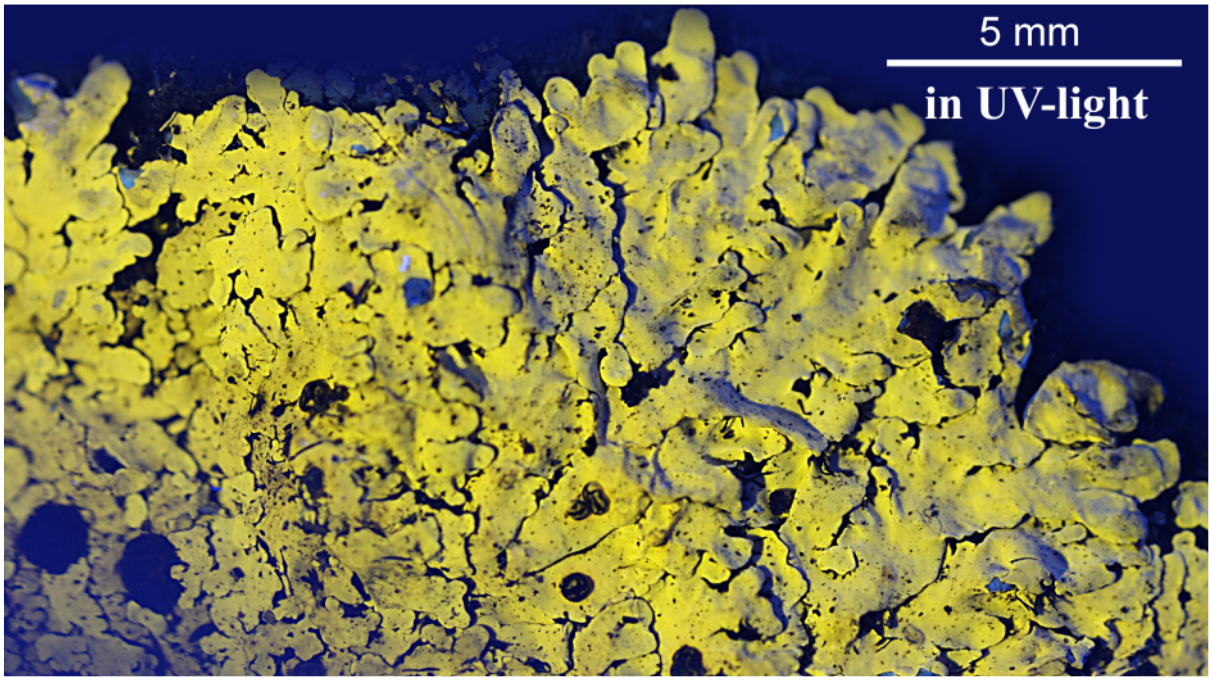
Pyxine cocoes

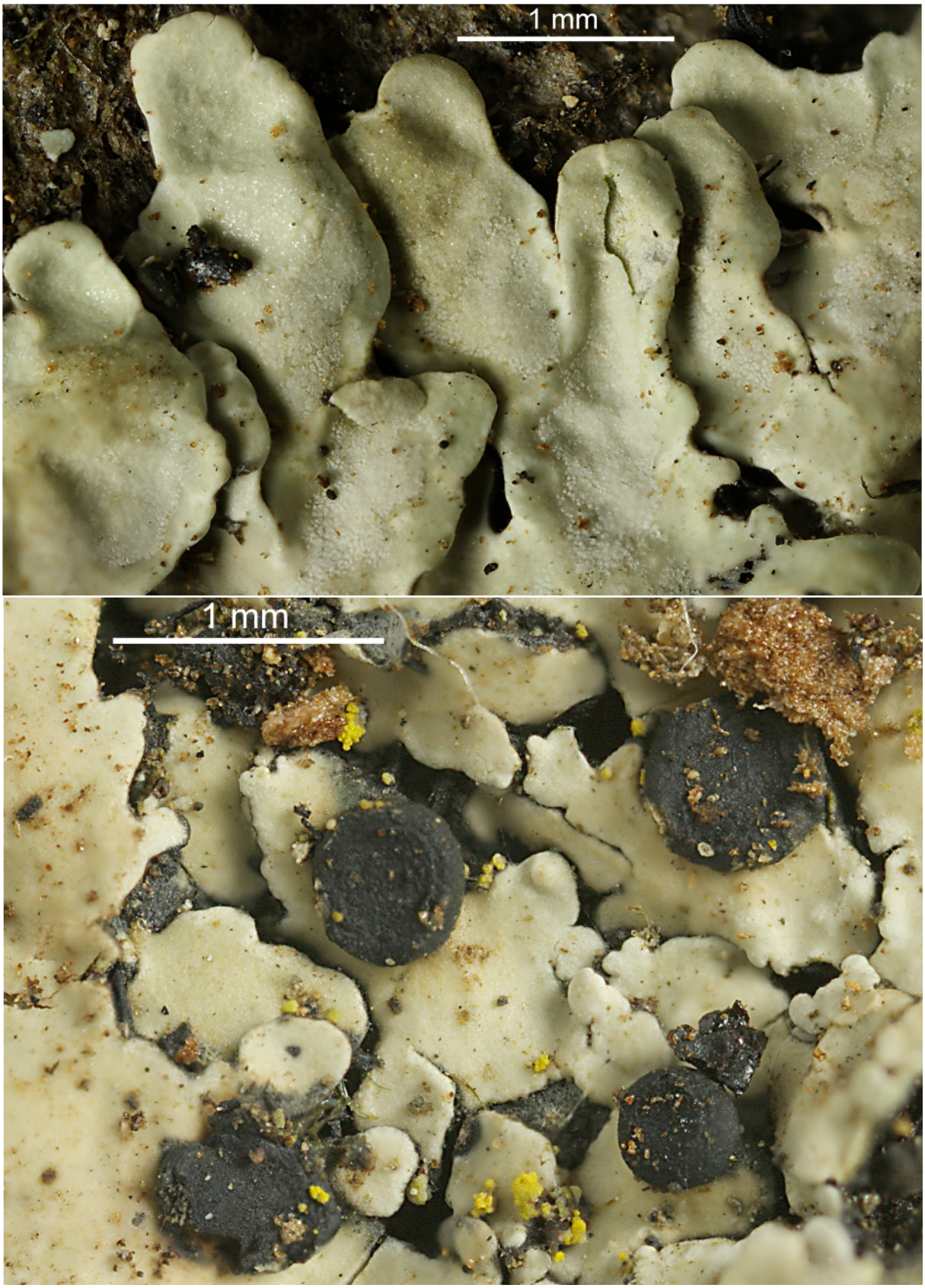
Pyxine petricola Nyl.

Thallus grey to greenish/yellowish grey, pruinose in patches, UV+ yellow. Soredia and isidia absent. Medulla white. Lower surface black, with black rhizines. Apothecia black, epruinose, stipe orange brown, K+ red. Epithecium K+ violet. Ascospores 14-22 x 5-9 µm, brown, 1-septate, 8/ascus. Chemistry: cortex K-, UV+ yellow; medulla K-, C-, KC-, P-; lichexanthone (maj), triterpenes

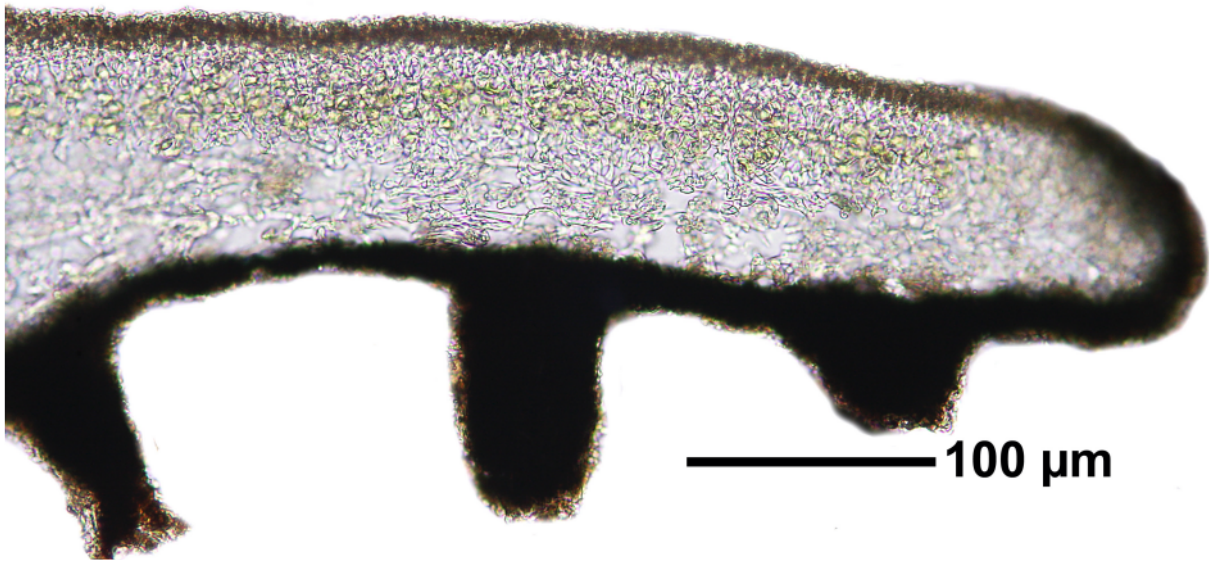
[7049], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay in Intavas am Fuß des Mt. Kitanglad, 08°11.883' N, 124°56.721' E, 1270 m. Leg. Schumm 18.08.1999, det. Schumm 2000.

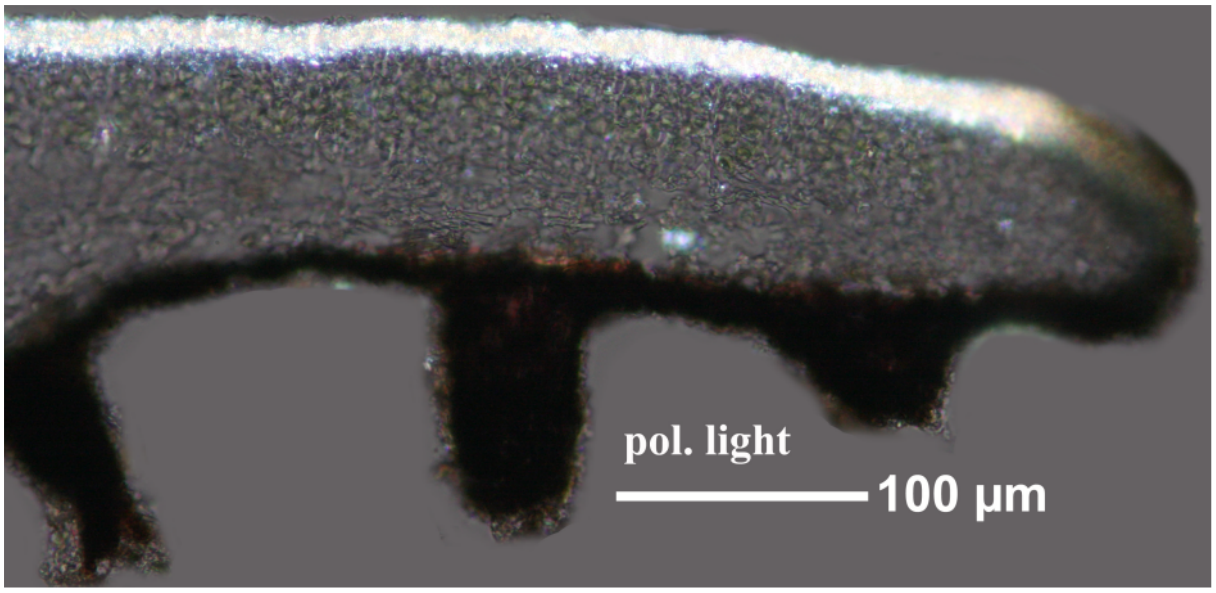


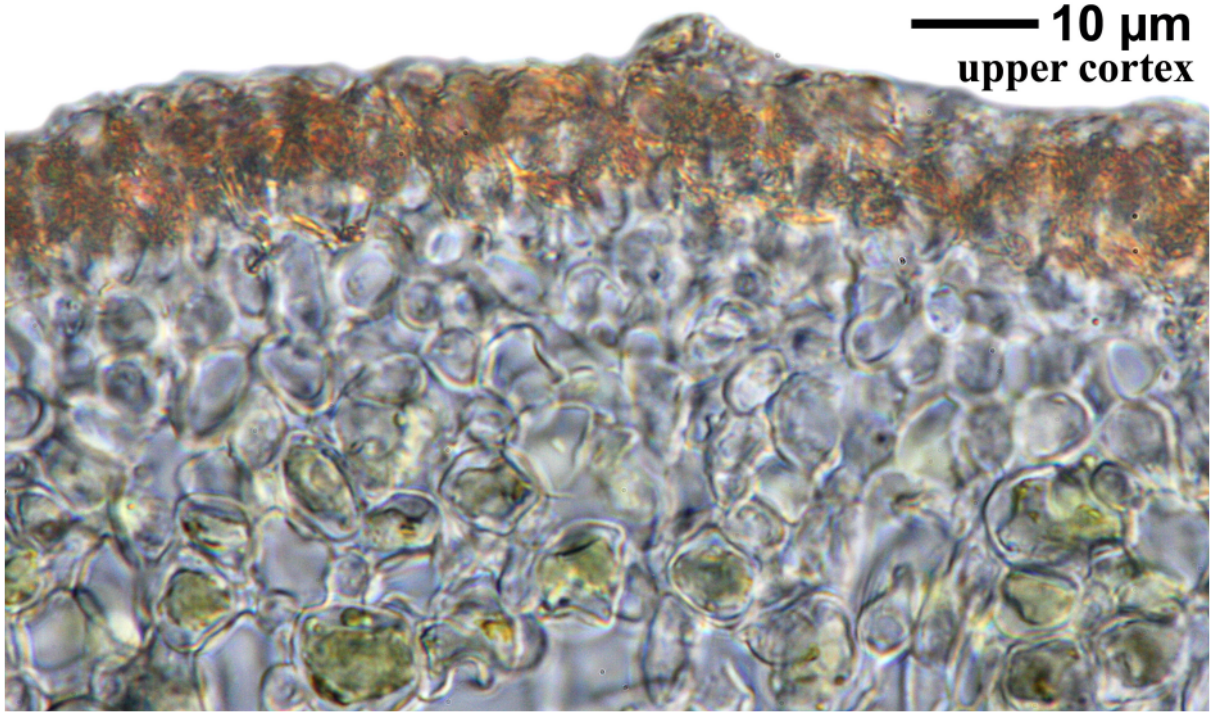




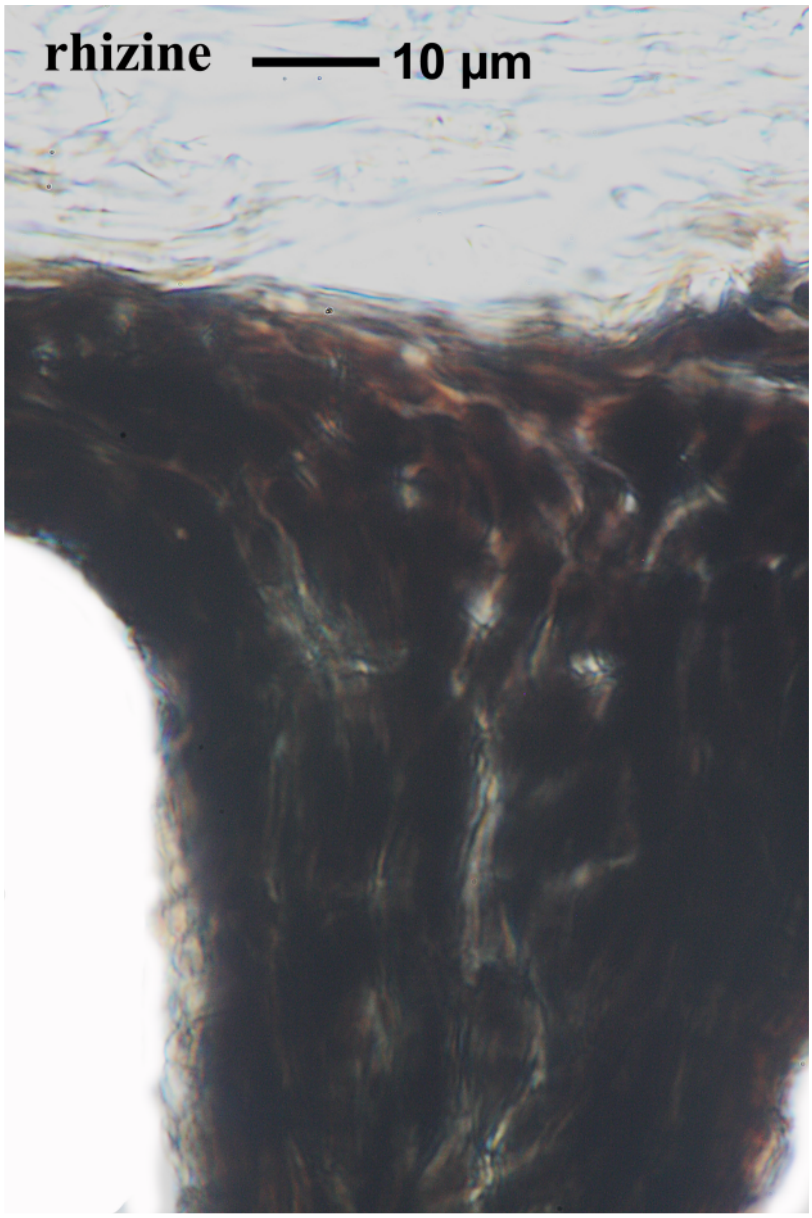
Pyxine petricola

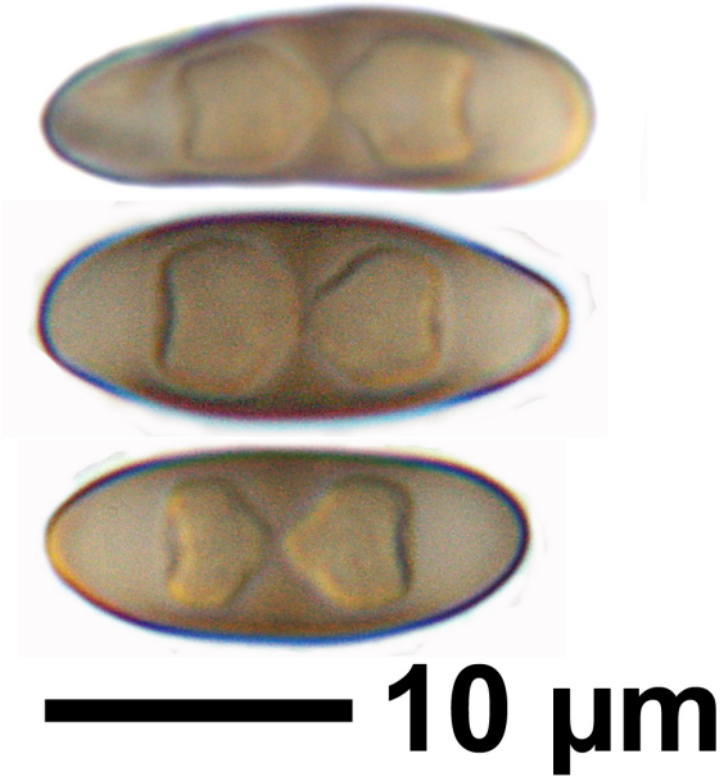






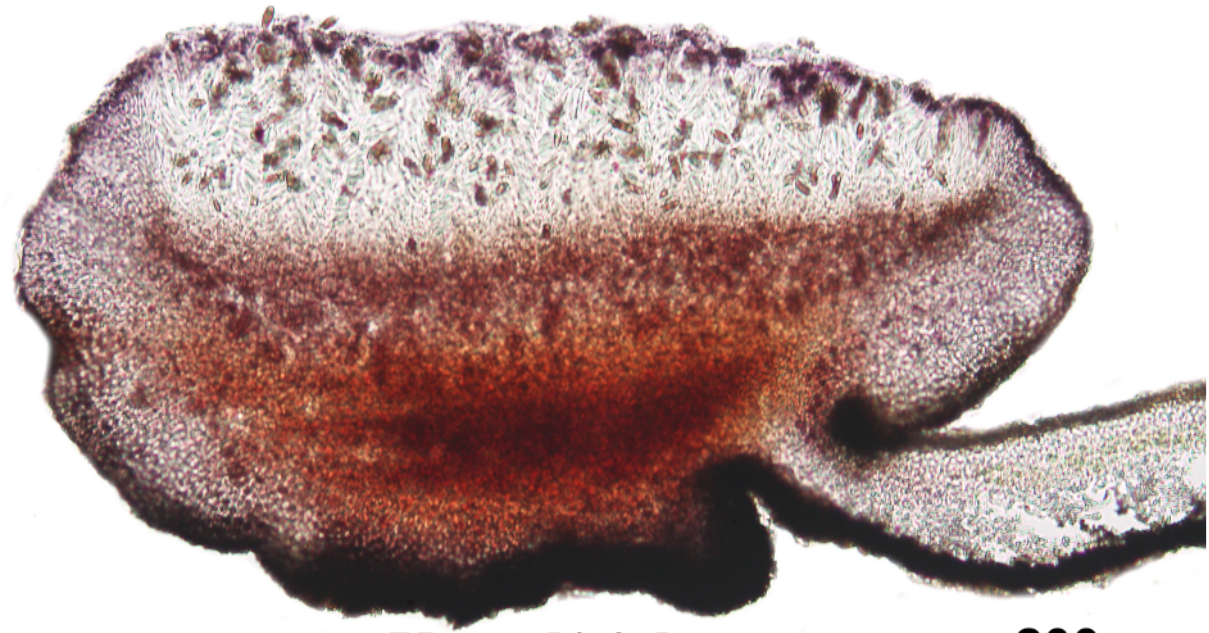
Pyxine petricola

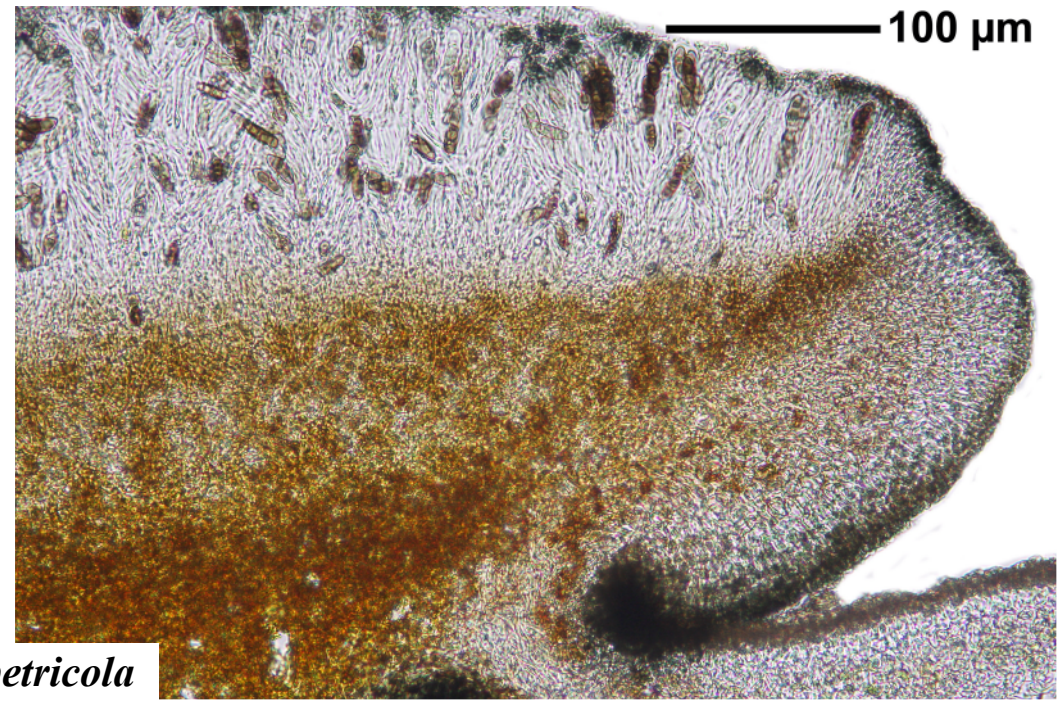




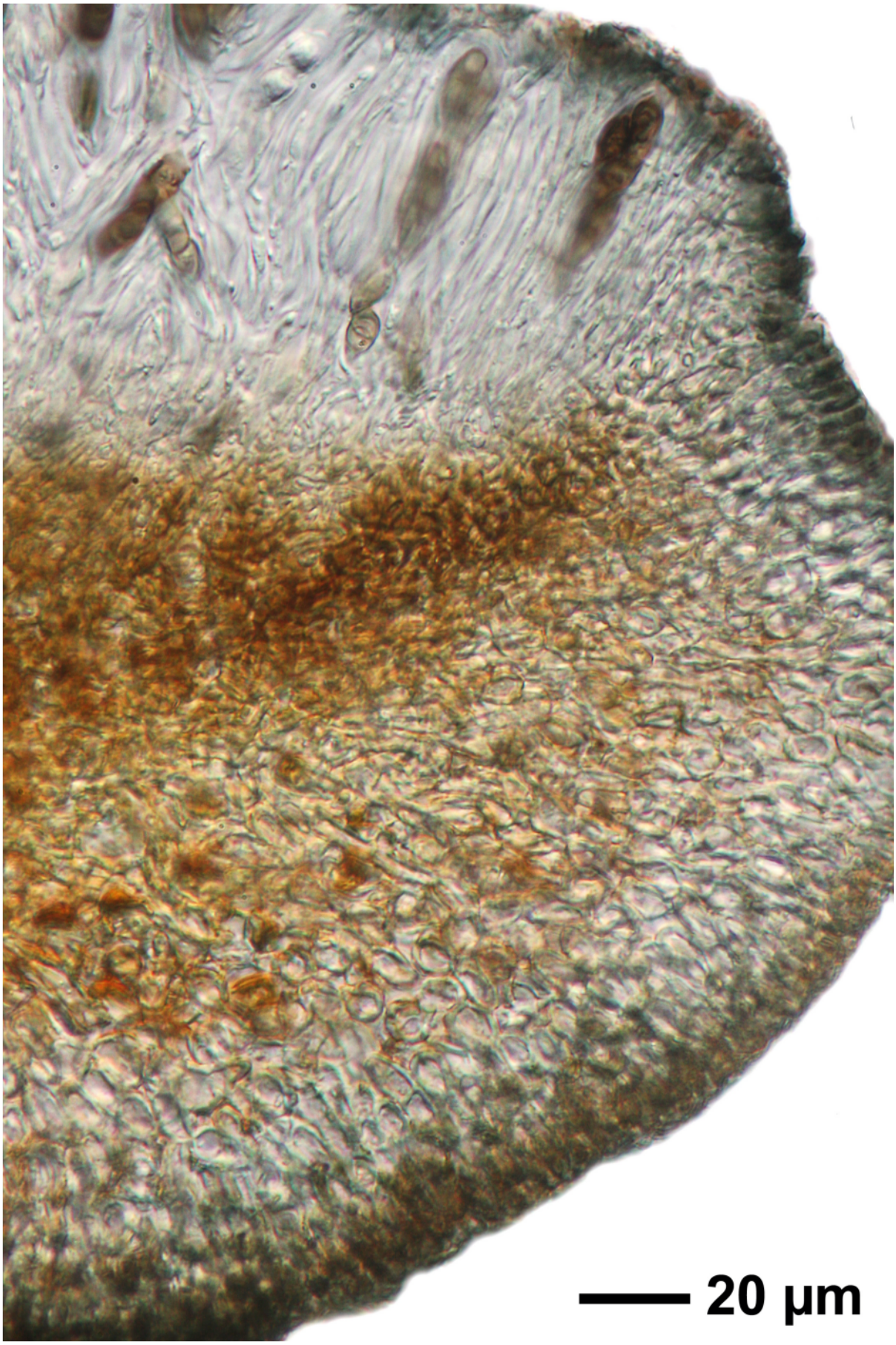
Pyxine petricola







Pyxine petricola

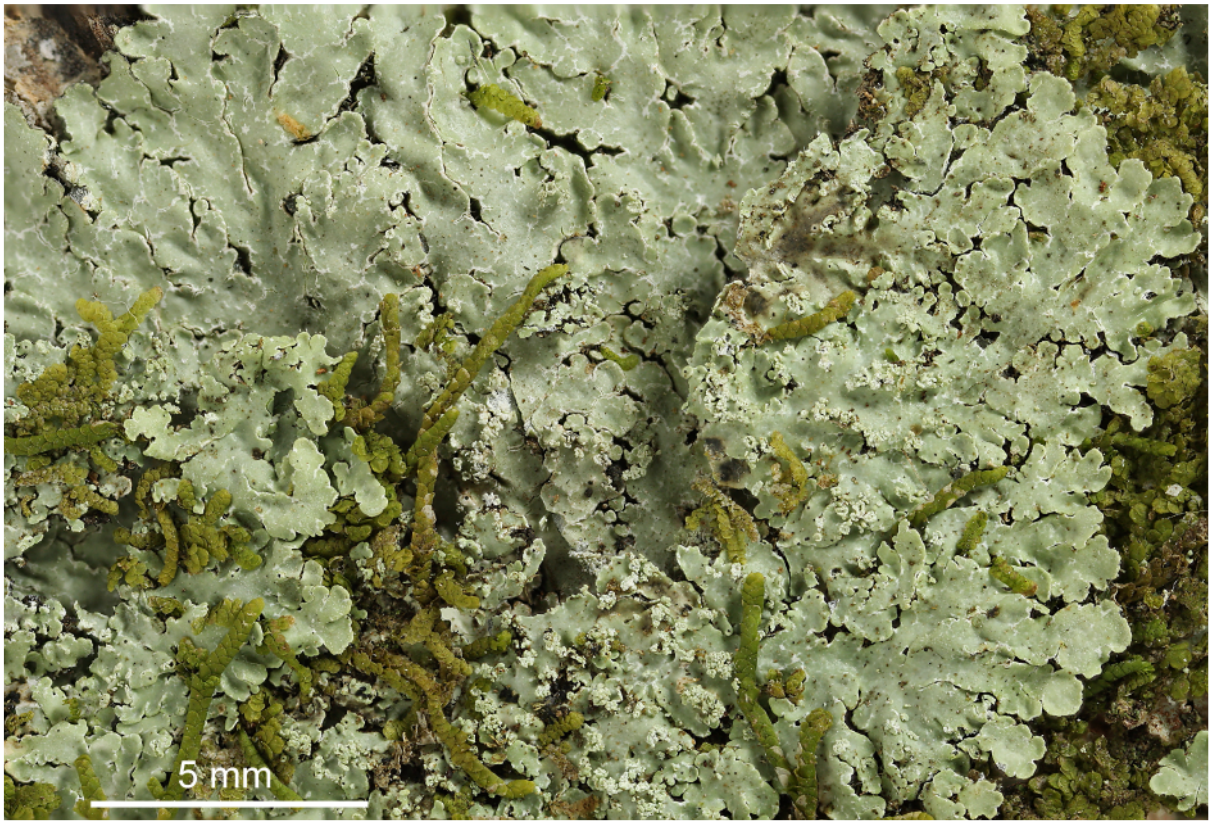


Pyxine petricola

Pyxine retirugella Nyl.
[= ***Pyxine consocians*** Vain.]

Thallus pale greenish to yellowish grey, UV-, with distinct, white linear to reticulate maculae. With dactyls, laminal and marginal, clustered, nodular, bursting apically to produce granular soredia. Lower surface black to the centre. Medula white. Apothecia rare. Chemistry: atranorin, norstictic acid (maj), testacein (min), unknown terpenes (min); cortex K+ yellow, C-, KC-, P+ yellow, UV-; medulla K+ yellow>red, P+ orange.

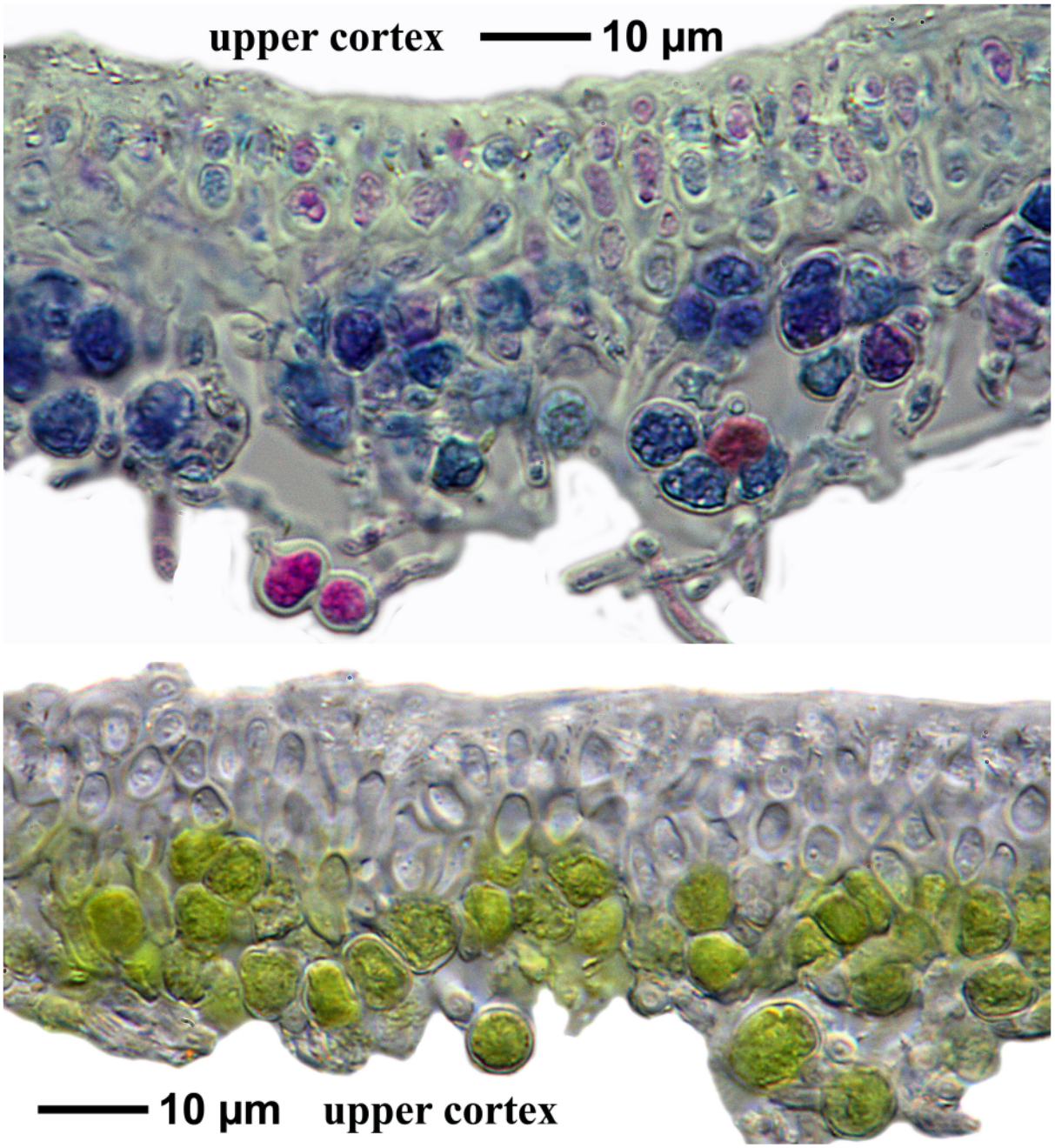
[17581], Thailand, Trat province, Had Sai Dum, Mangroven Wald, 12.17332° N, 102.40616° E, 0 m. Leg. Schumm (IAL7) 16.01.2012, det. K. Kalb 06.2012.







Pyxine retirugella



Pyxine retirugella

Ramboldia russula (Ach.) Kalb
[= ***Pyrrhospora russula*** (Ach.) Hafellner]

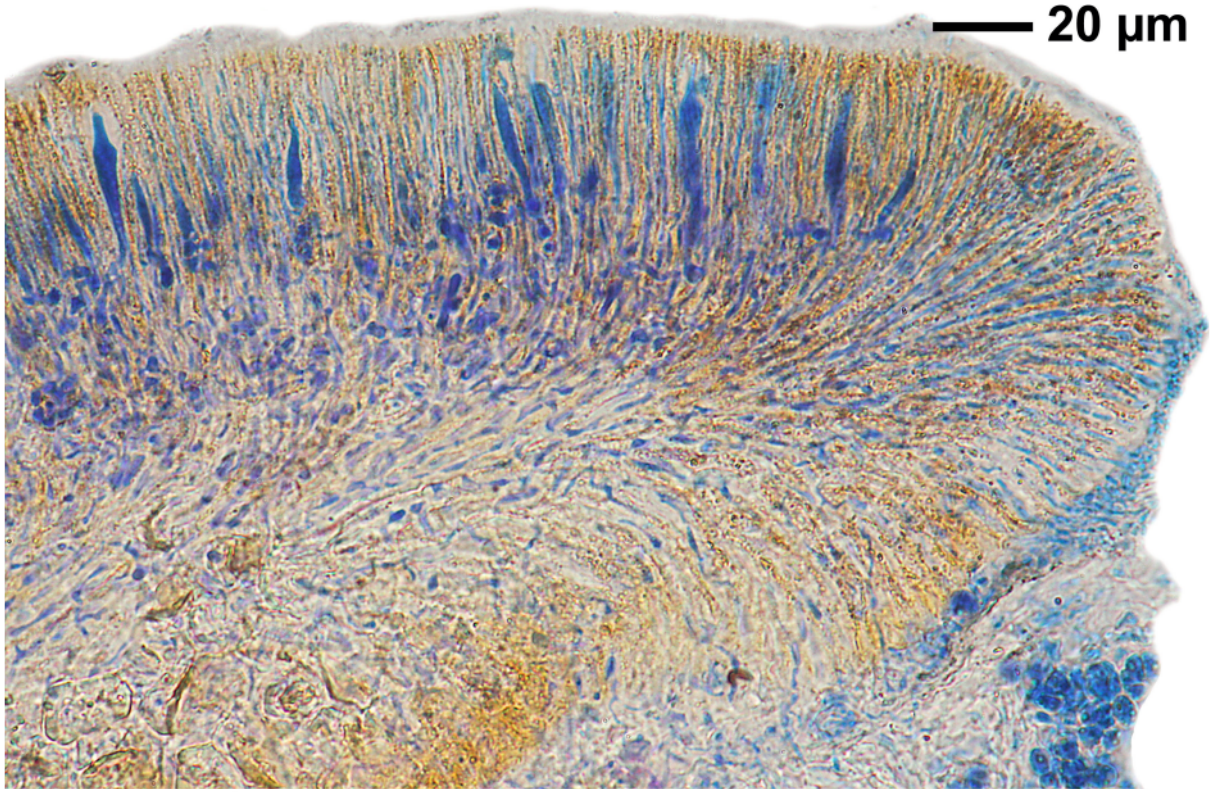
Hymenium with red, globose crystals, K+ violet (permanent, not quick bleaching out). Ascospores hyaline, 1-celled, 8/ascus, 7-11 x 2-4 µm. Chemistry: Thallus UV+ yellow-redish, lichexanthone, protocetraric acid, russulone. Lit. Kalb et al. (2008).

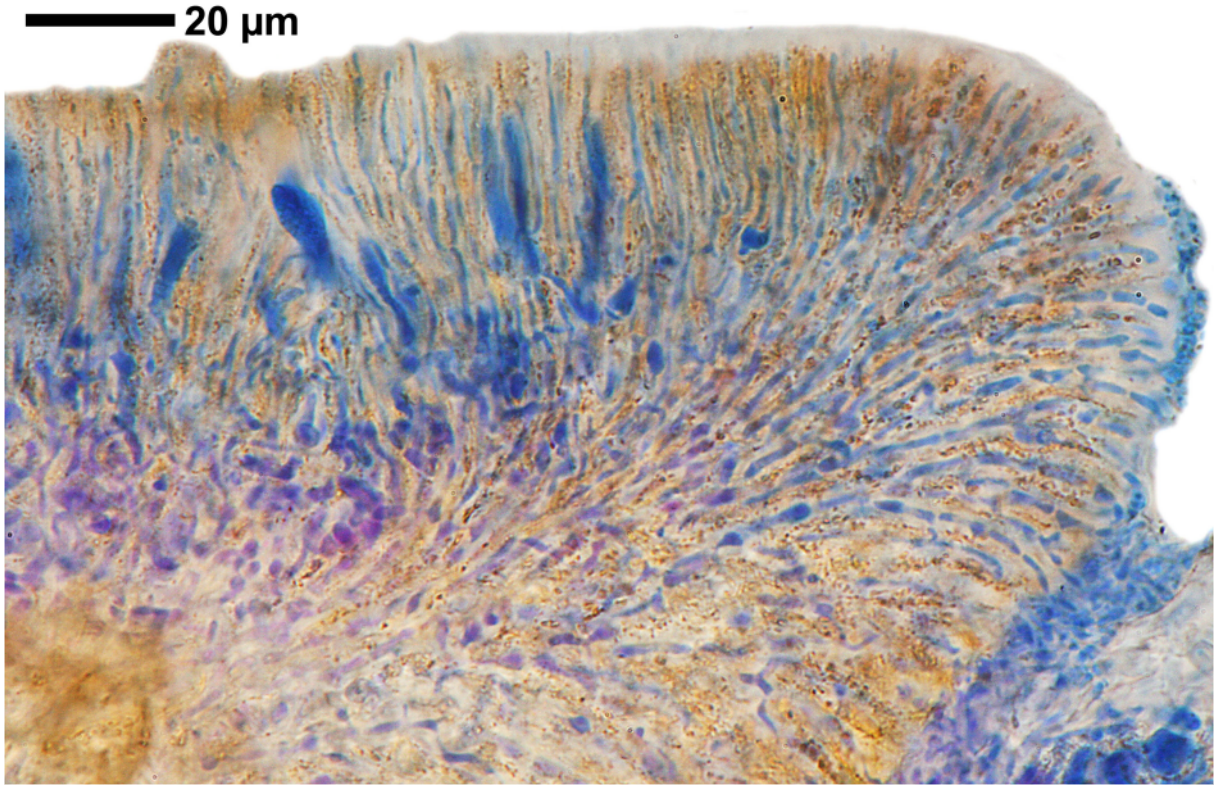
[9554], Thailand, Bergdorf der Akha in der Nähe von Chiang Saen, 20°06.275' N, 99°37.524'E, 700 m, corticol. Leg. Schumm 31.03.2002, det. Aptroot 2009.



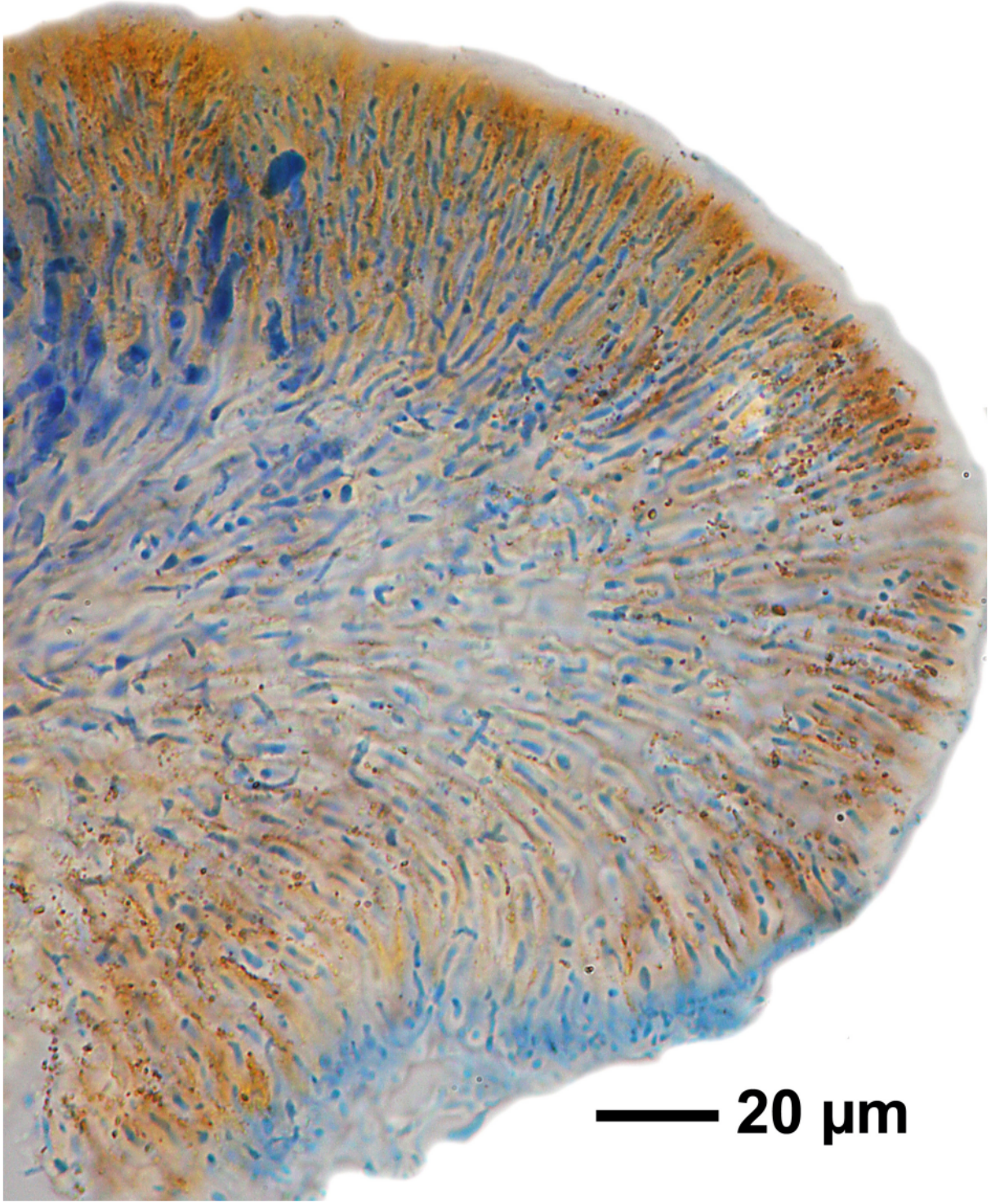


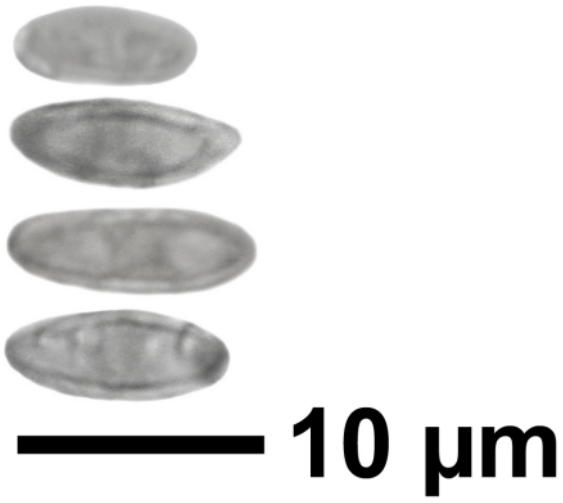
Ramboldia russula



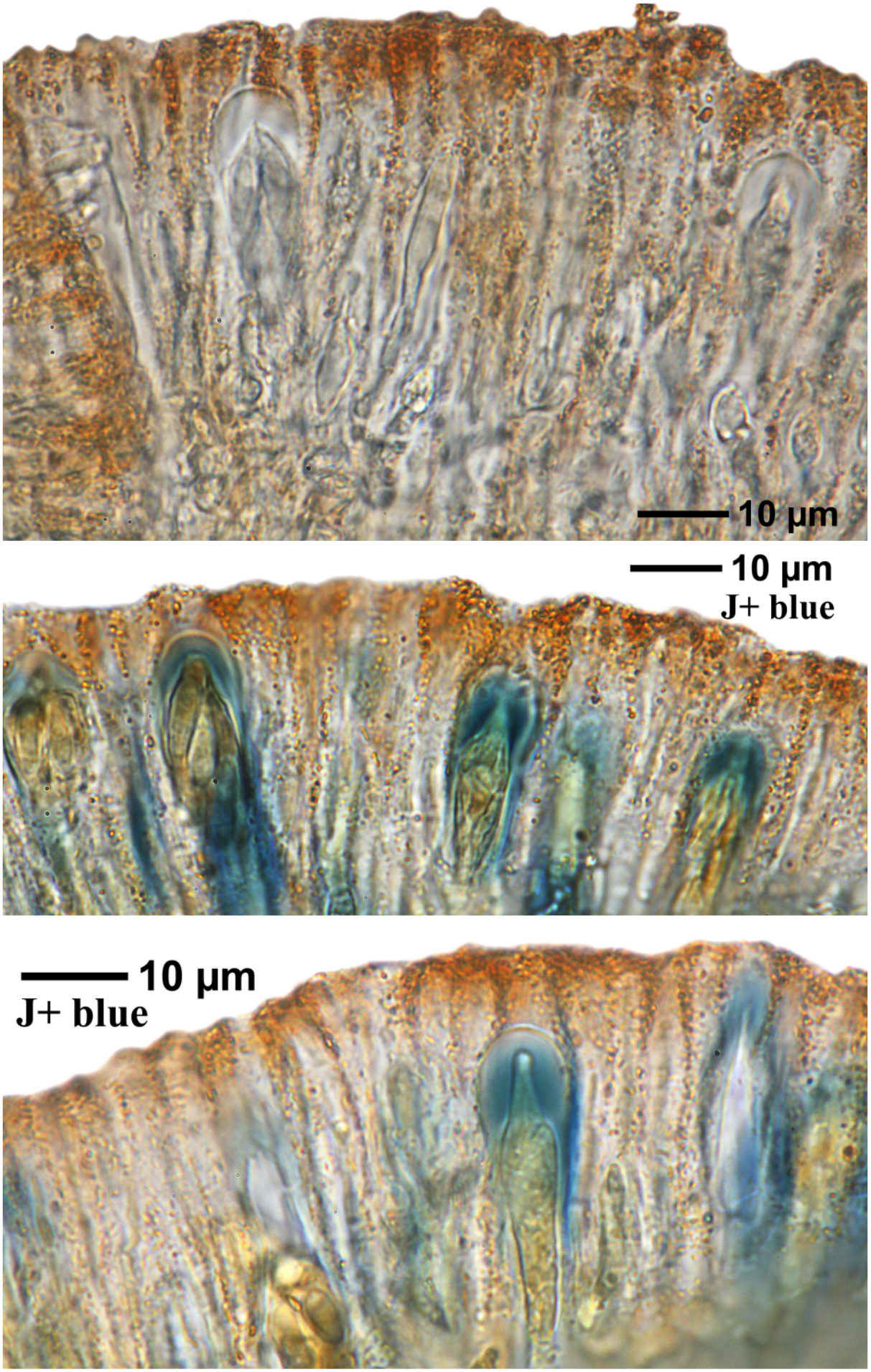


Ramboldia russula

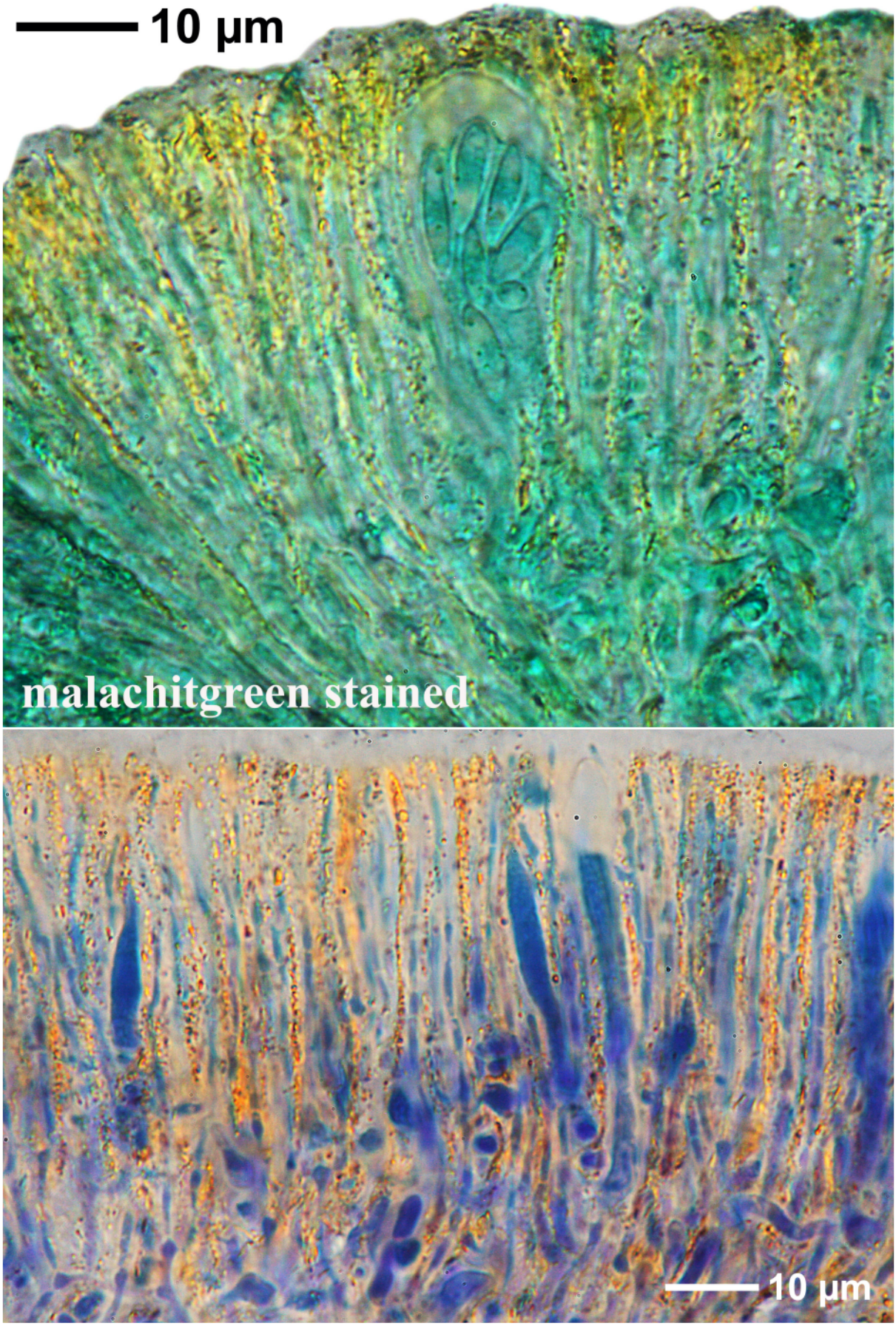




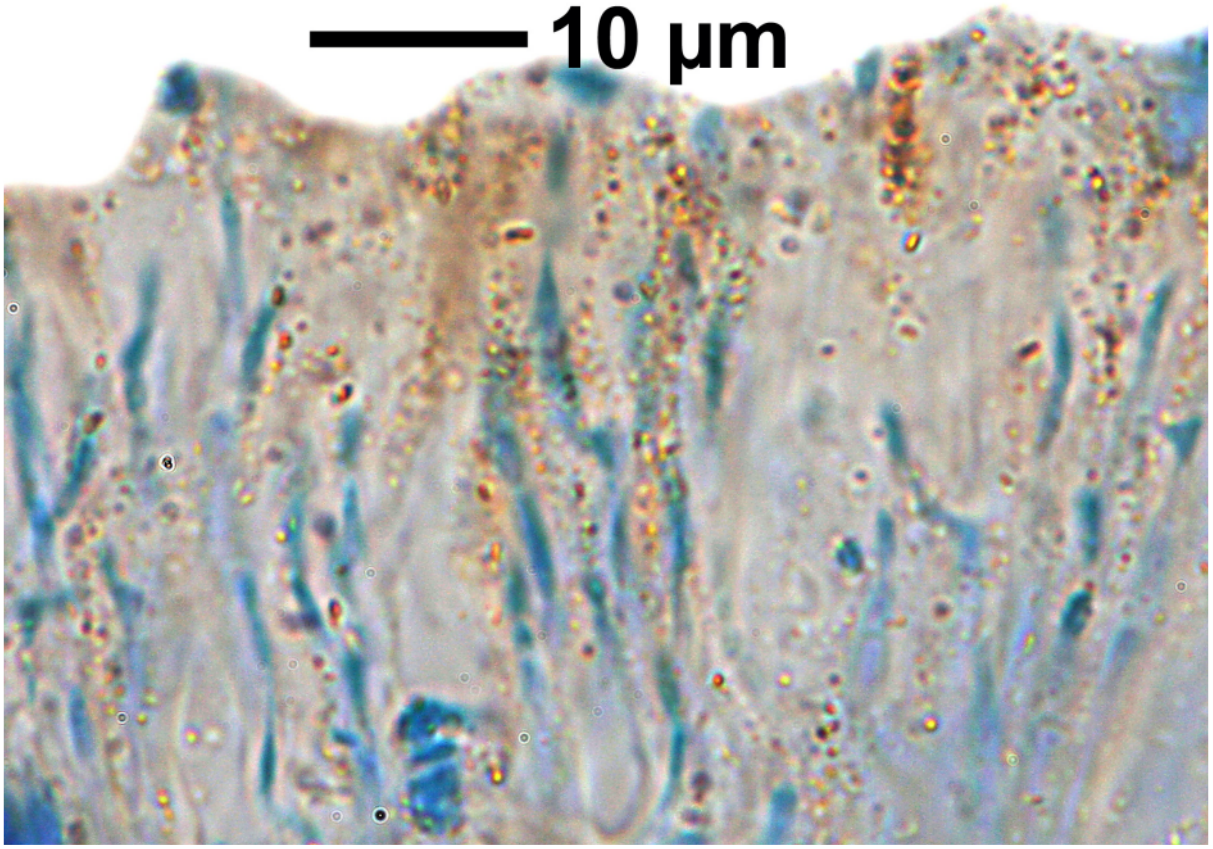
Ramboldia russula

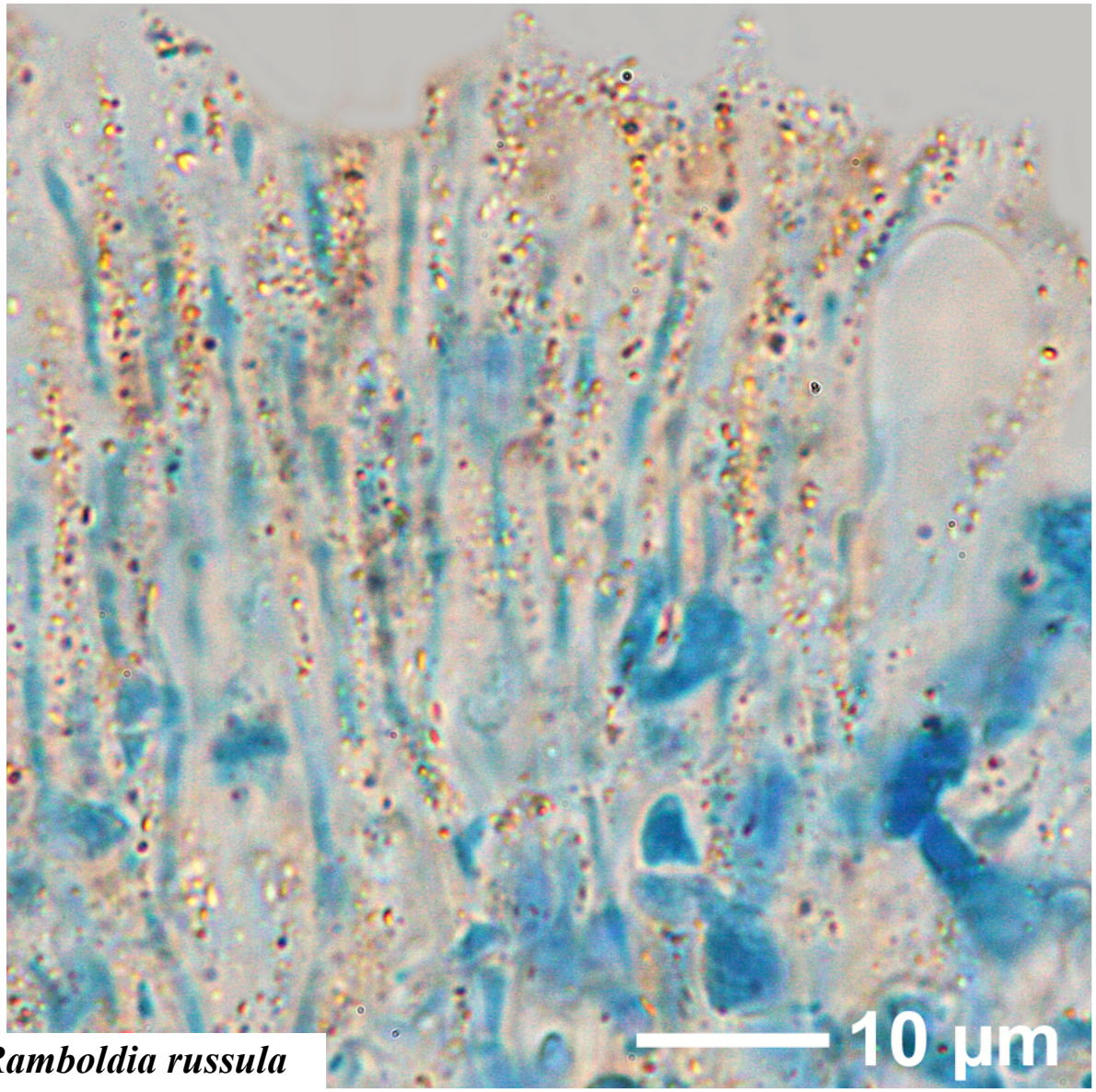


Ramboldia russula



Ramboldia russula



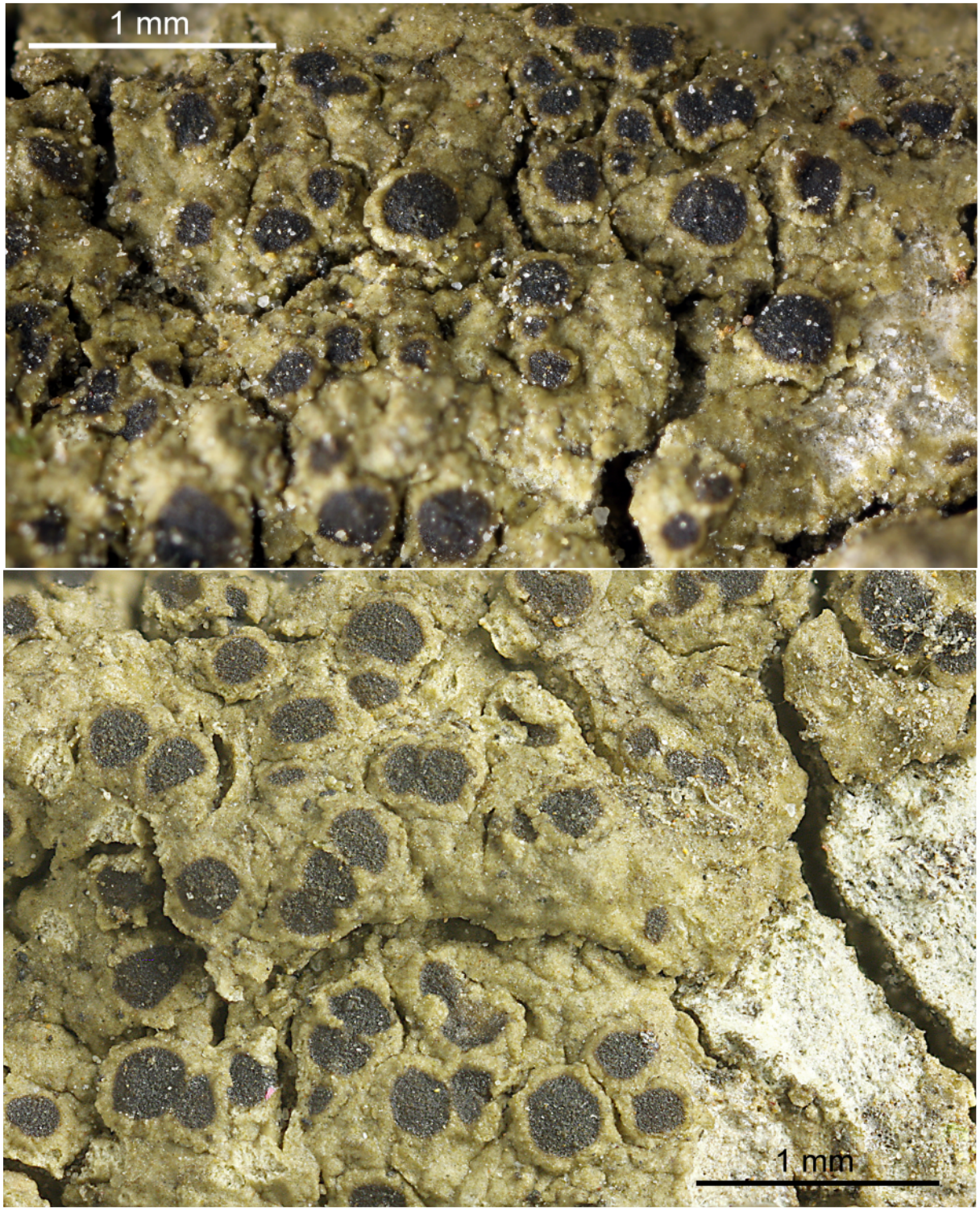


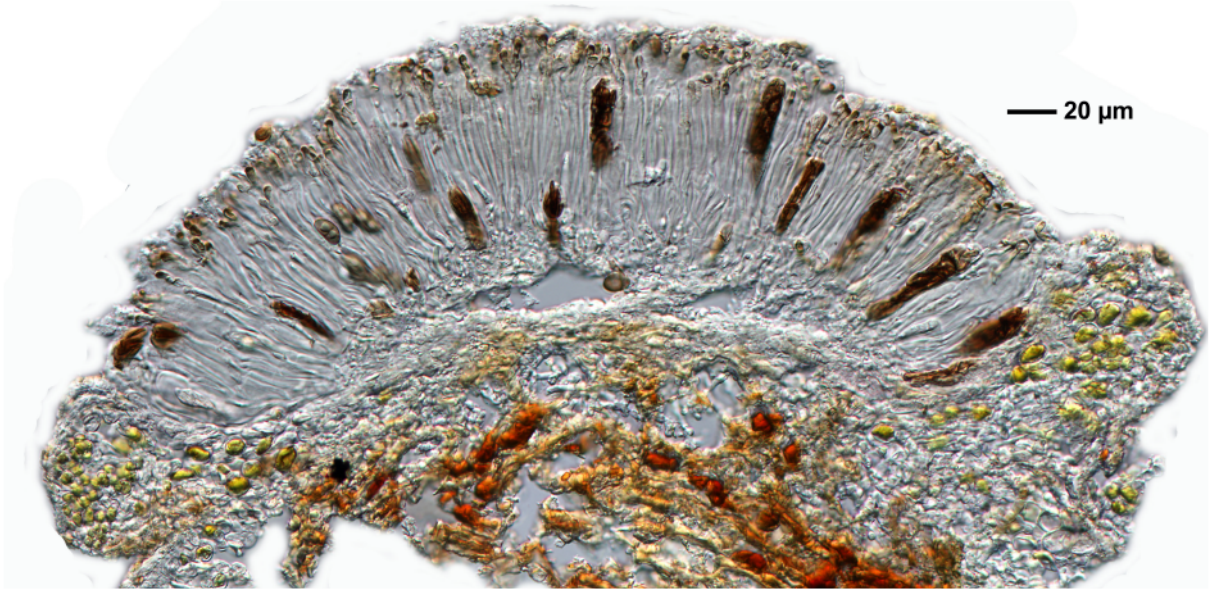
Ramboldia russula

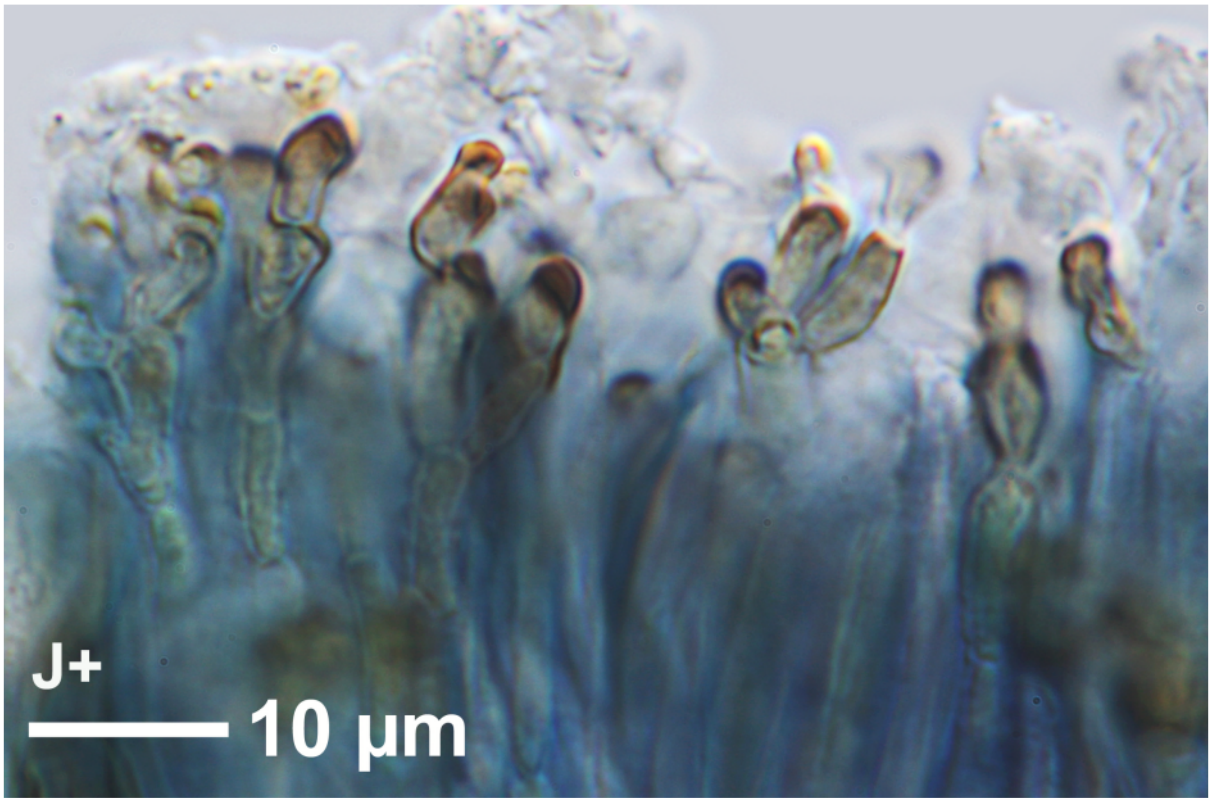
Rinodina neglecta Aptroot

Thallus warty-uneven, not areolate, greenish to brownish grey. Soredia and Isidia absent. Apothecia 0.2-0.4 mm, sessile. Hymenium 60-80 µm, not inspersed. Hypothecium colourless. Paraphyses branched to the ends, tips brown. Ascospores brown, 1-septate, 8/ascus, 14-19 x 6-11 µm. Chemistry: K-, C-, P-; TLC: nil.

[9526], Thailand, Schwimmender Markt bei Damnernsaduak nahe Bangkog, 13°31.202' N, 99°57.521' E, 11 m. Leg. Schumm 27.03.2002, det. Aptroot 2009. Dupl in GZU.









Rinodina neglecta

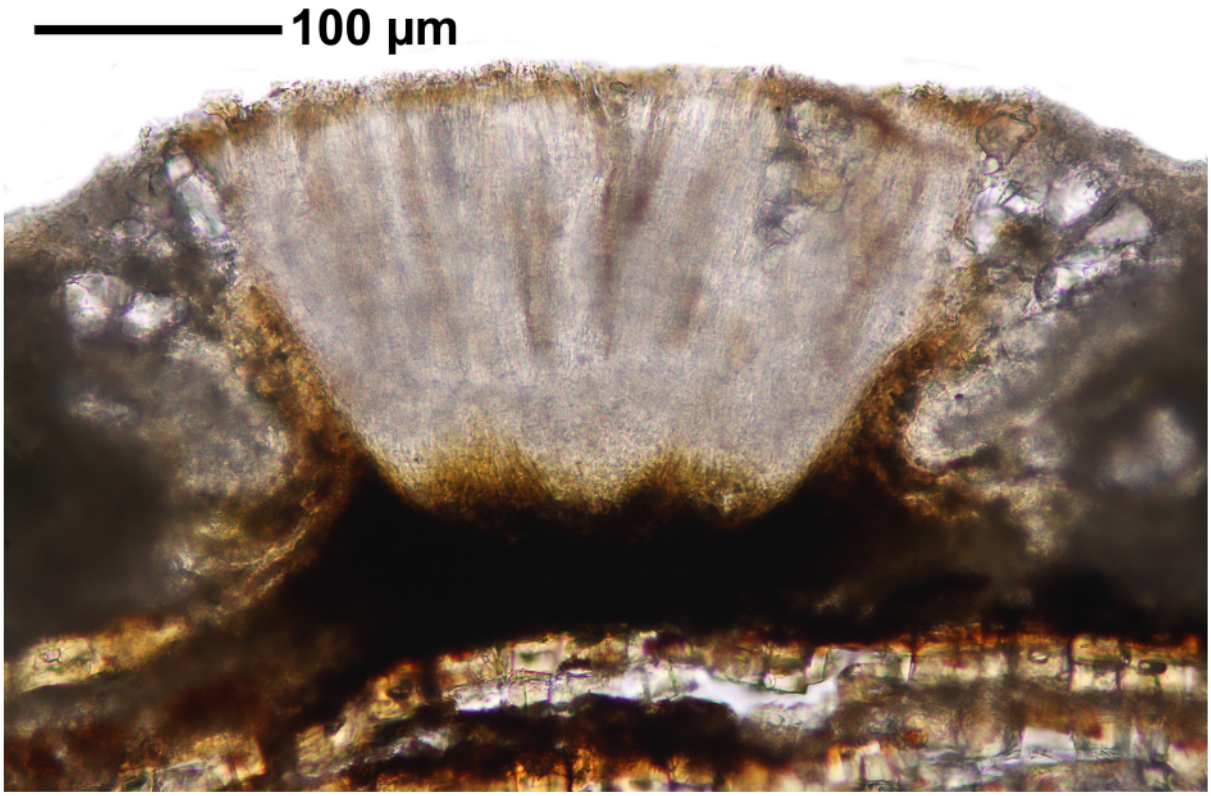
Sarcographa heteroclita (Mont.) Zahlbr.

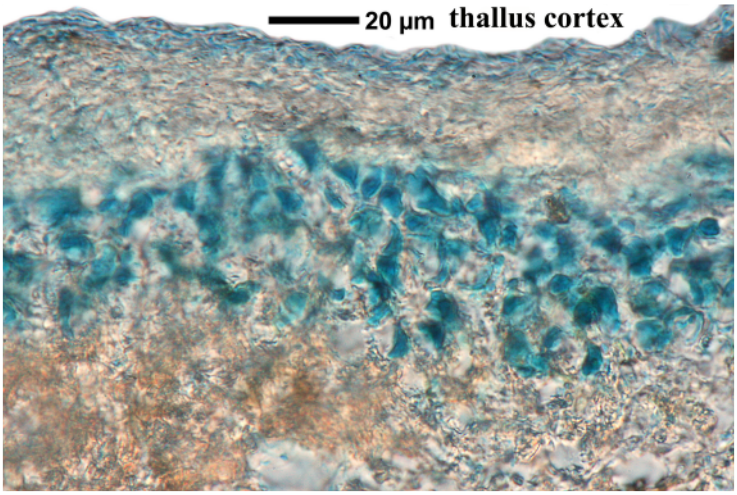
Thallus green-grey, cortex well developed. Small single lirellae (until 0.1 mm wide) aggregated in stromata which are 1-20 mm long and 0.5(-1.5) mm wide and are branched. The stromata give the impression of a single ascocarp. Hypothecium carbonized. Hymenium 80-100 µm, inspersed. Ascospores grey to brown, (3-)4-6(-7) locular, 13-25 x 6-8 µm, J- or redbrown. Chemistry: stictic acid, cryptostictic acid, hypostictic acid.

[5770], Malaysia, Tioman Islands, Jungle Track between Tekek and Juara,ca. 120 m, an Rinde. Leg. Uwe Schwarz 24.06.1999, det. Schumm 03.2000. This sample is also pictured in Staiger (2002, Bibl. Lich. 85)

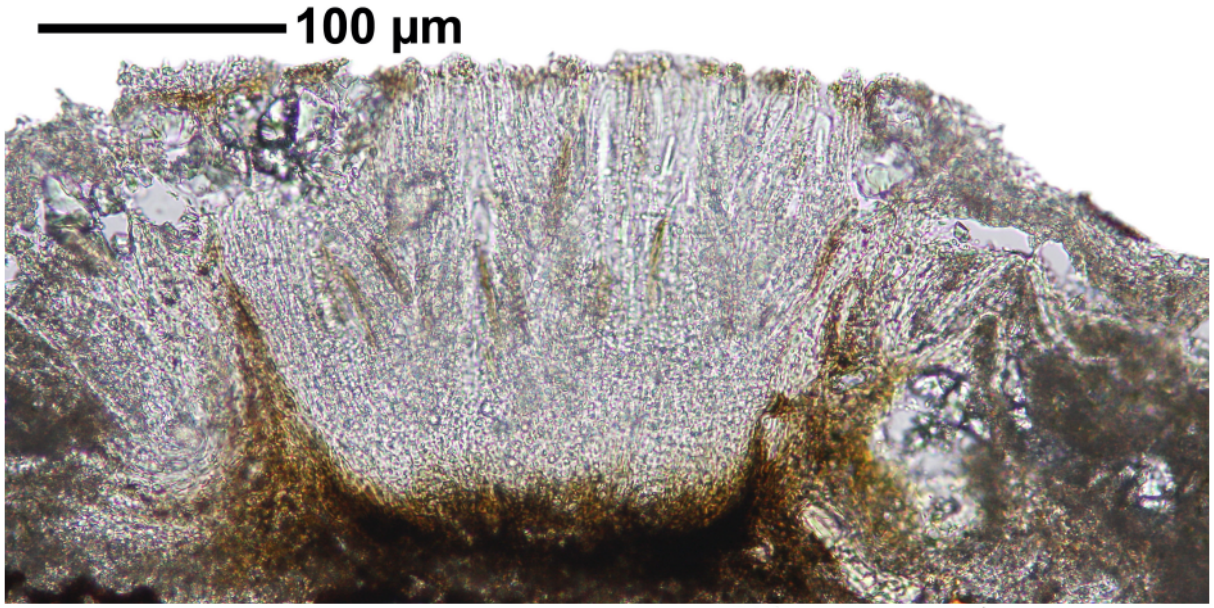


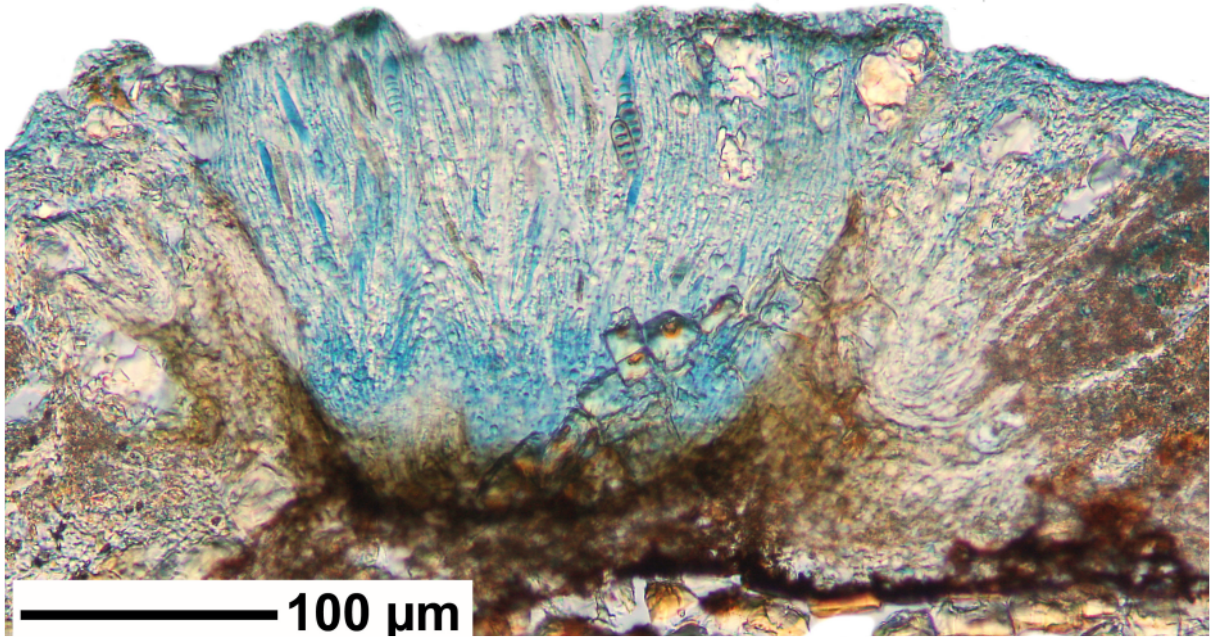


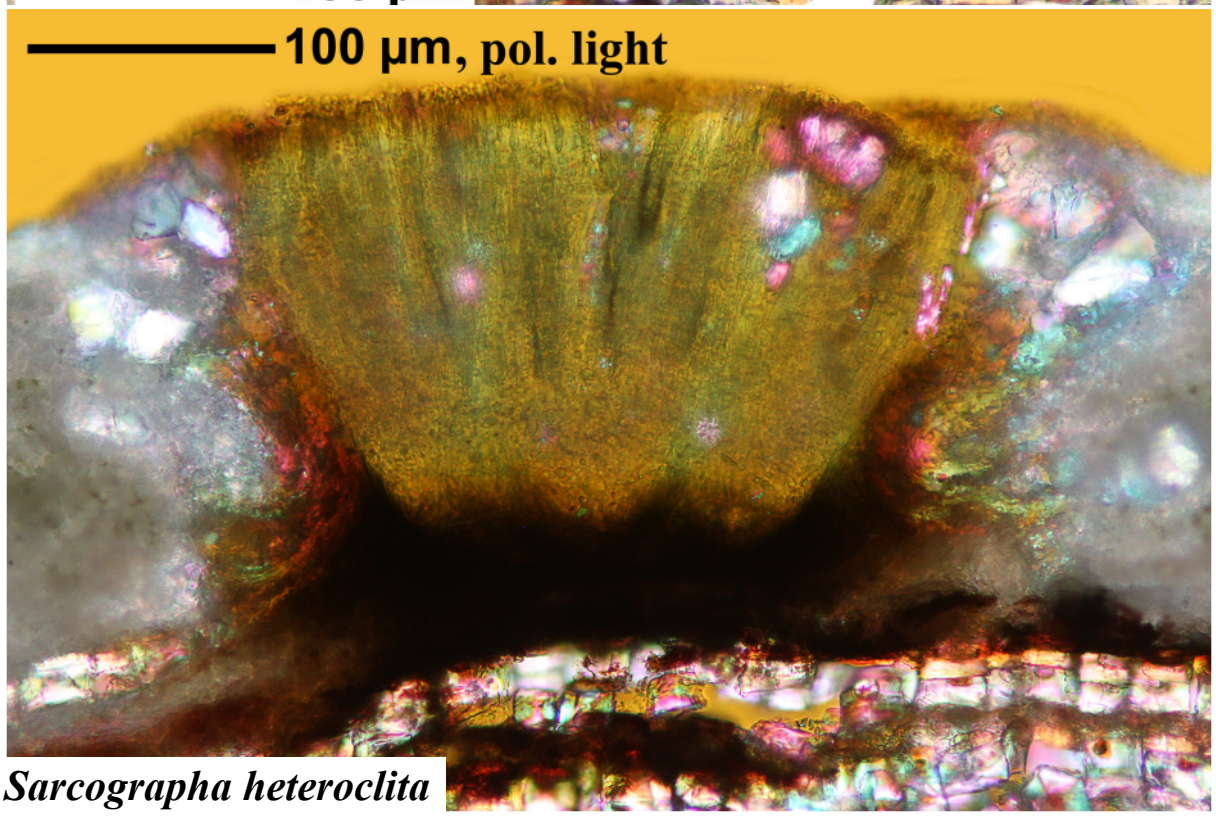




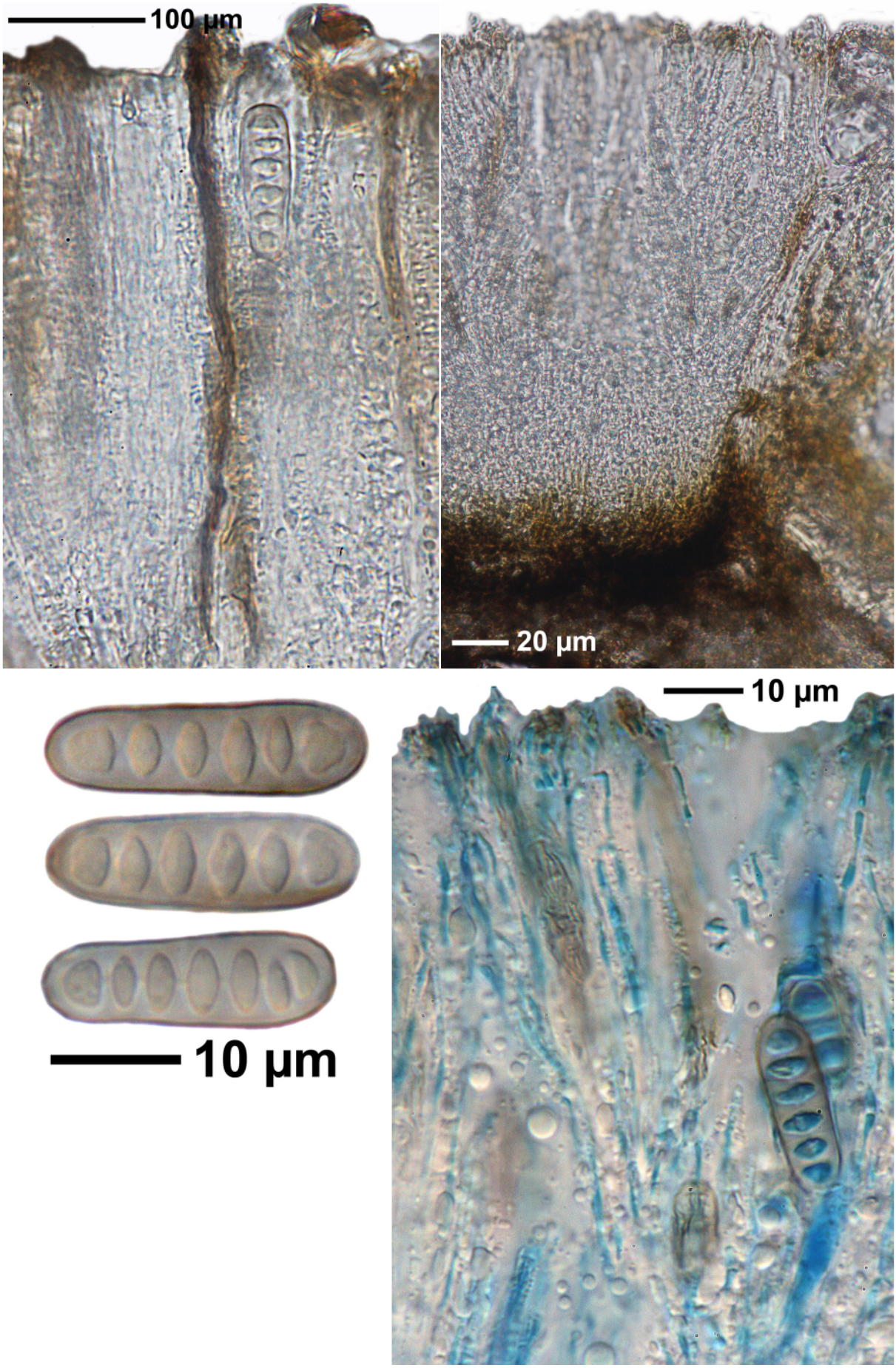
Sarcographa heteroclita







Sarcographa heteroclita



Sarcographa heteroclita

Stereocaulon graminosum Schaer.

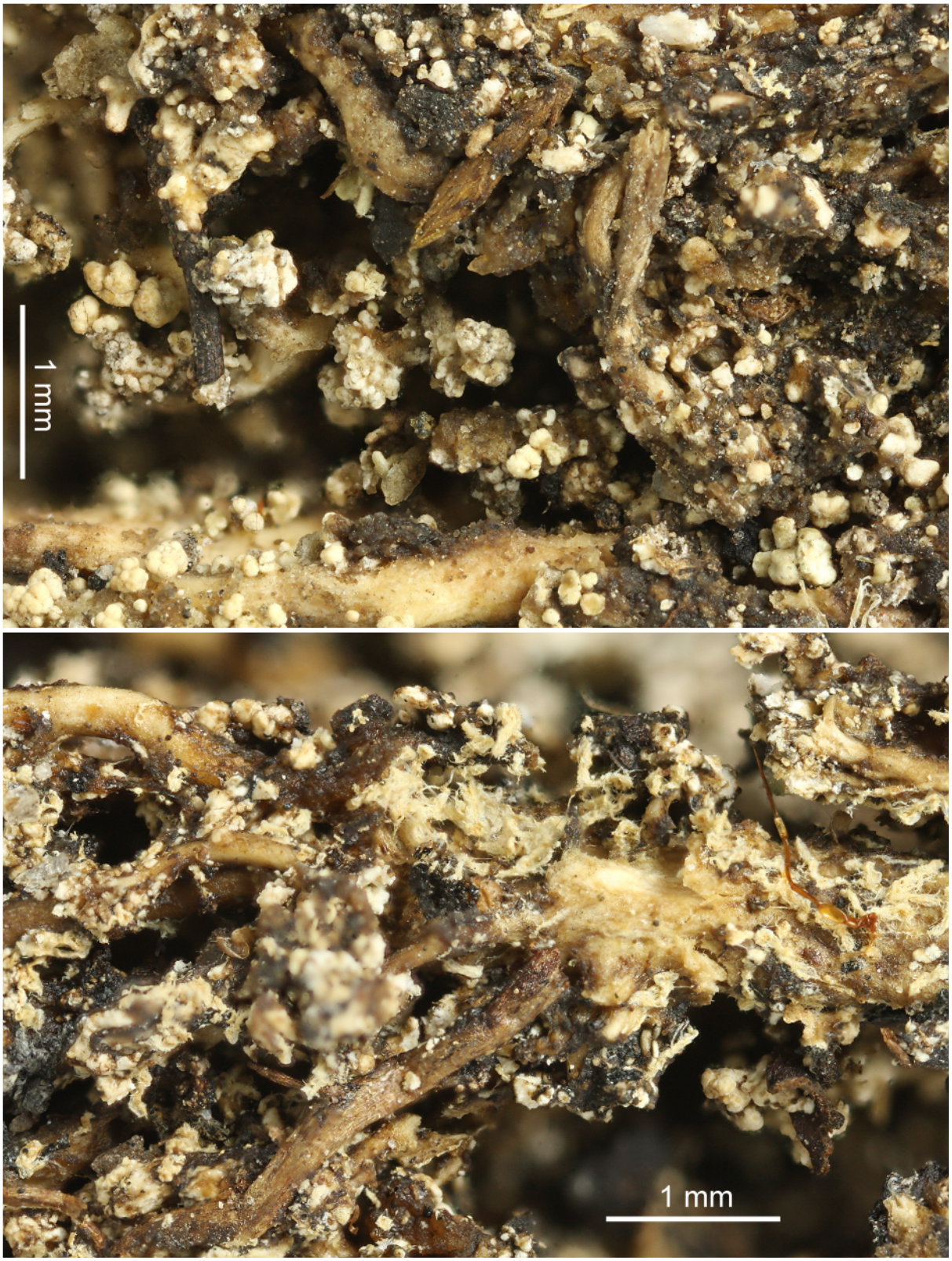
Phyllocladia wart-like to peltate, usually without soredia. Cephalodia not corticate or absent. Chemistry: P-, atranorin, stictic, cryptostictic acid, unknown traces. Lit. Sipman (1998, Cryptogamie, Bryol. Lichénol. 19: 229-245)

[6196], Philippinen, Mindanao, Provinz Cotabato, Gipfelregion des Mt. Apo, 06°59.272’ N, 125°16.195’ E, 2900 m. Leg. Orville L. Bernabe 12.08.1999, det. Schumm, test Sipman (2000), vid. Aptroot (2009).





Stereocaulon graminosum



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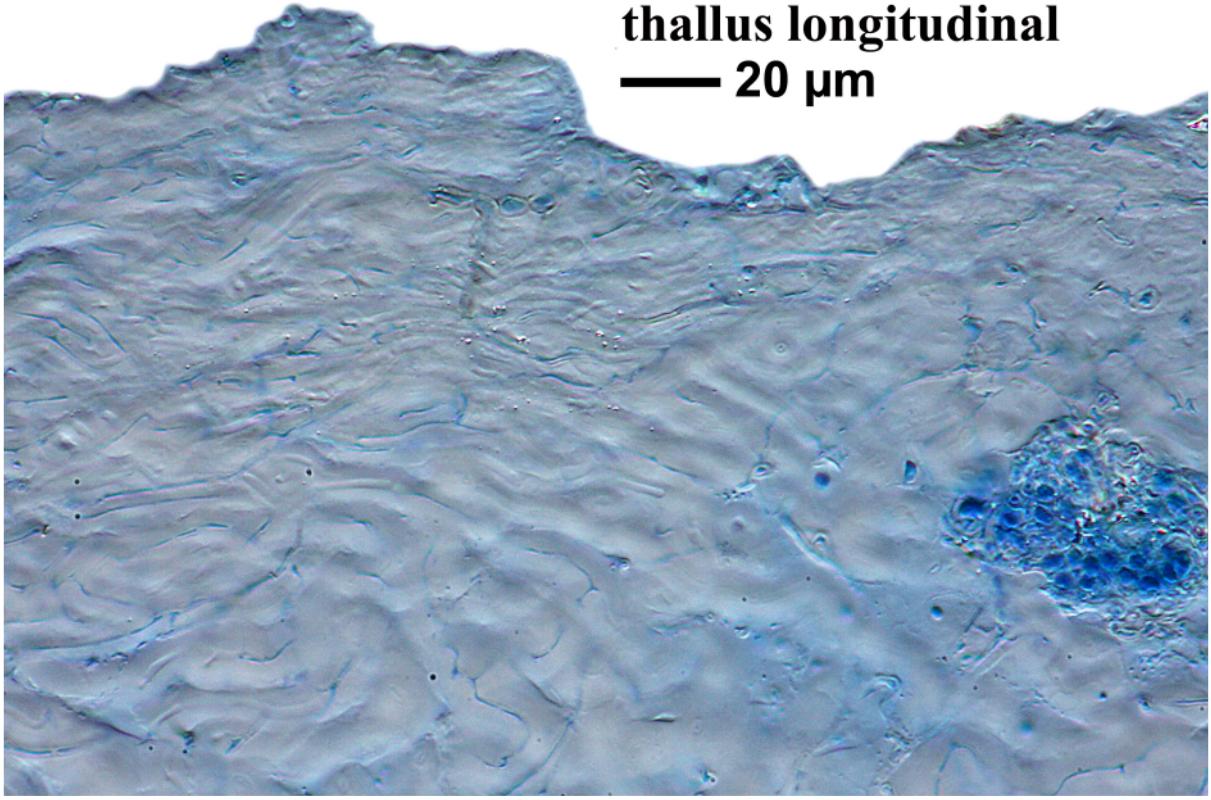
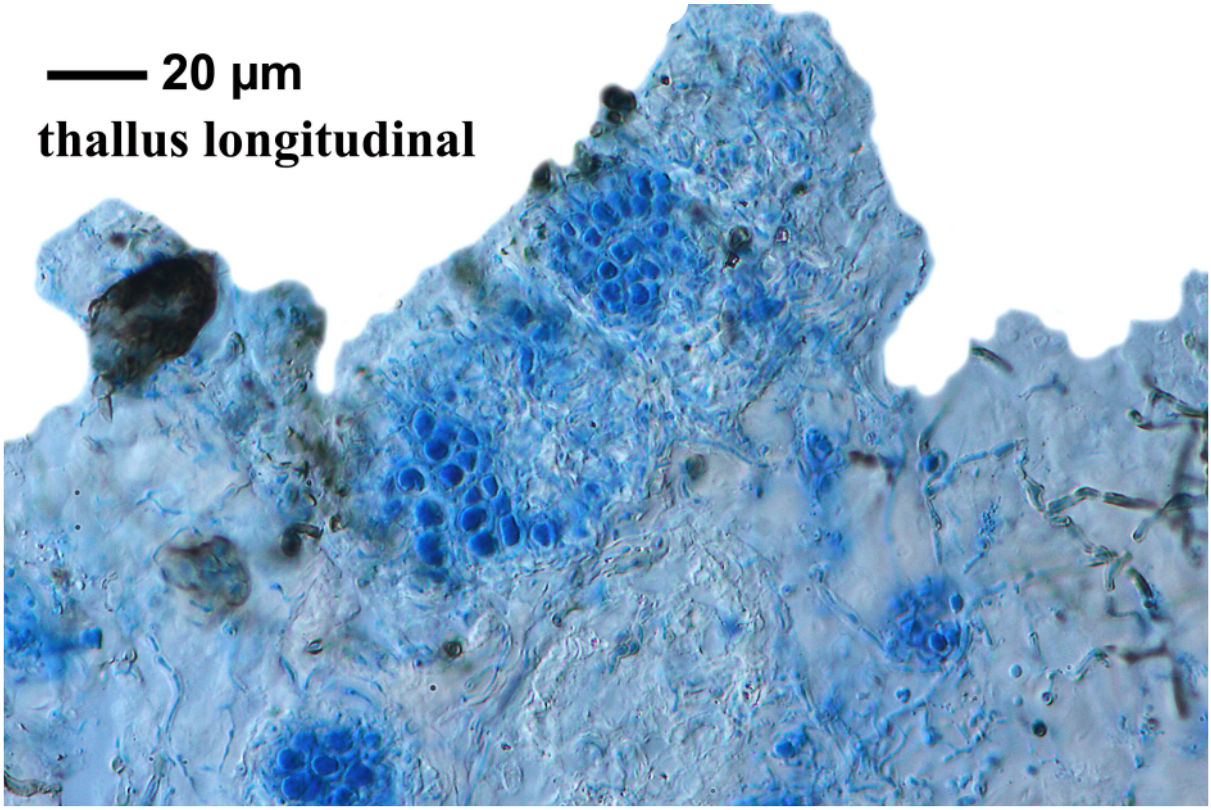




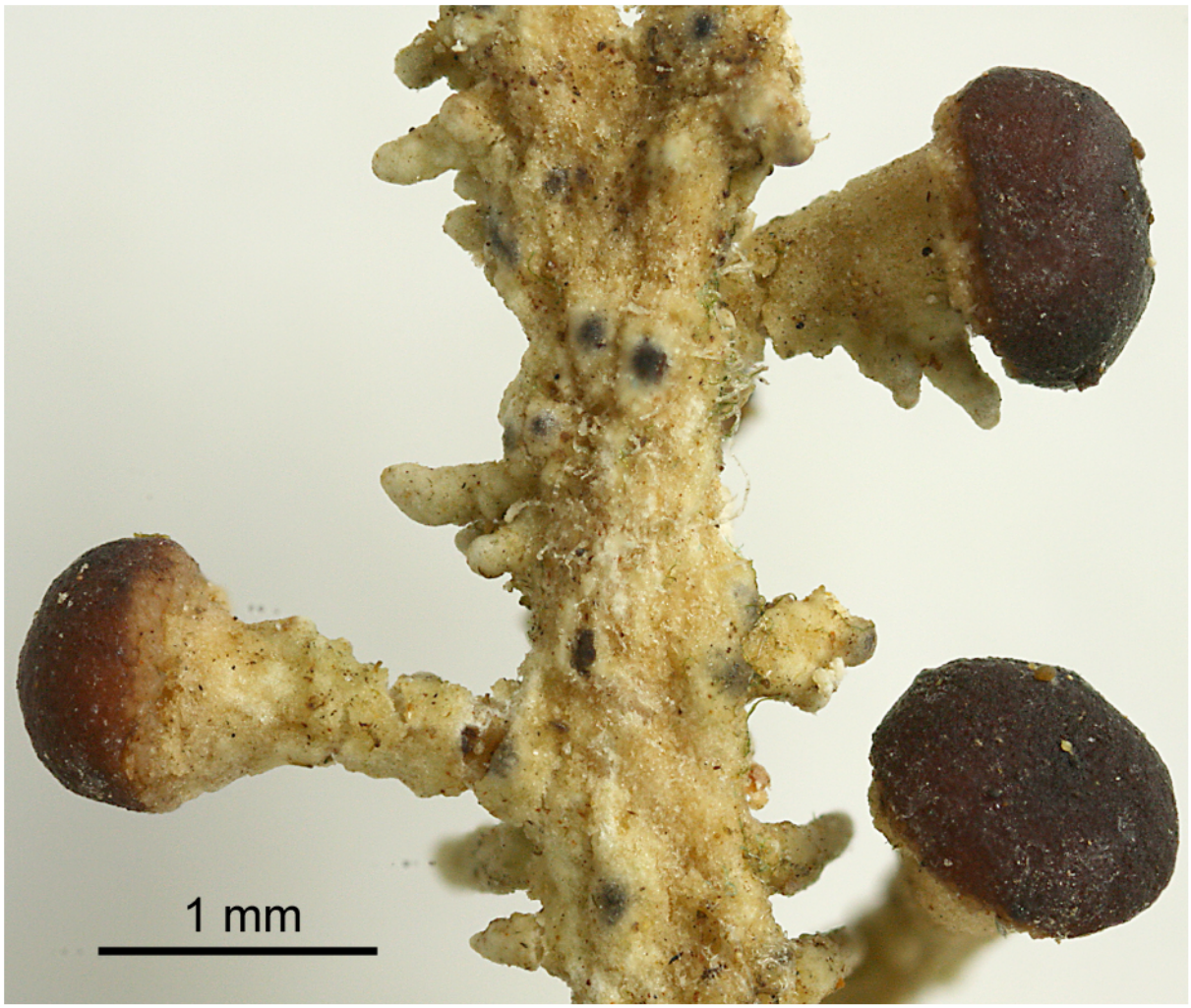
Stereocaulon graminosum

Stereocaulon massartianum Hue

Pseudopodetia slender, 0.5-1.2 mm thick. Phyllocladia cylindrical sometimes coralloid branched, all over the pseudopodetia. Cephalodia corticated (sacculate), rounded to wrinkled, blue grey. Apothecia mainly terminal, in furcately branched groups, sometimes with additional lateral ones along apical ramifications, in young conditions hypophysate. Ascospores 14-20 septate, up to 120 µm long. Chemistry: P- or yellowish; atranorin, norstictic, connorstictic acids: Lit. Sipman (1998, Cryptogamie 19:229-245), Lamb (1977, 1978)

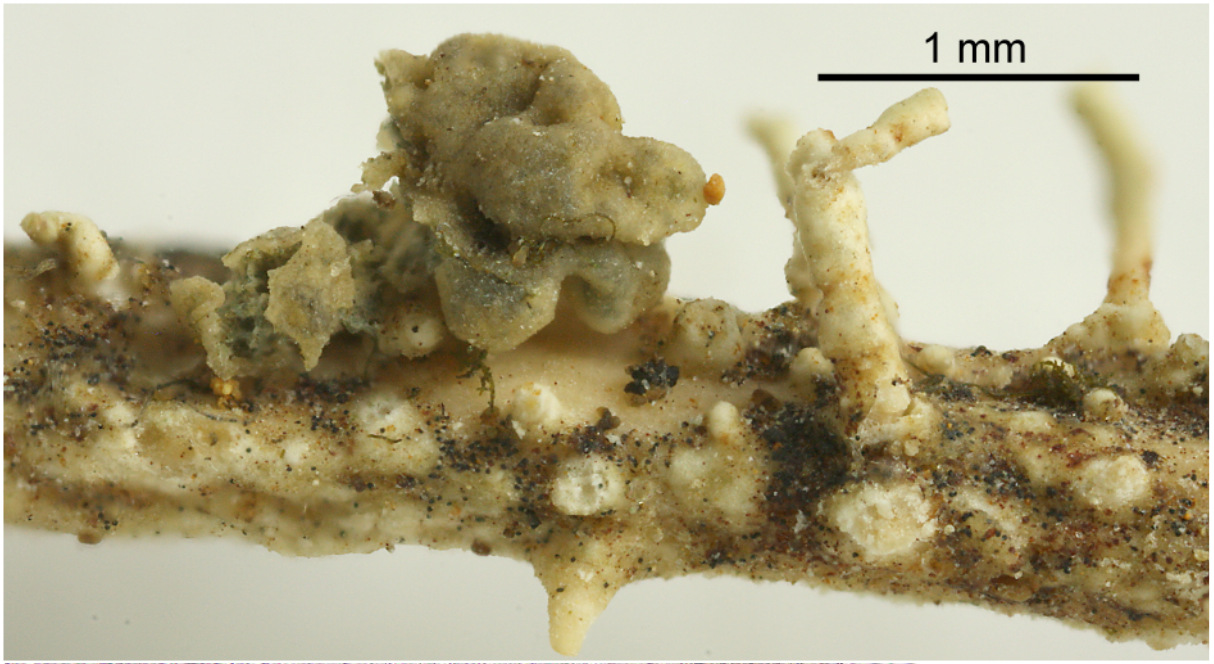
[6001], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald, Weg zwischen Lake-Agko-Campsite und Marbel-River-Campsite, ca. 07°01'-07°00' N, 125°13.3'-125°14.7' E, 1240 m -1490 m, auf Steinen am Marbel River. Leg. Schumm 07.08.1999, det. Schumm 10.1999, test. Sipman 2000, Aptroot 2009.

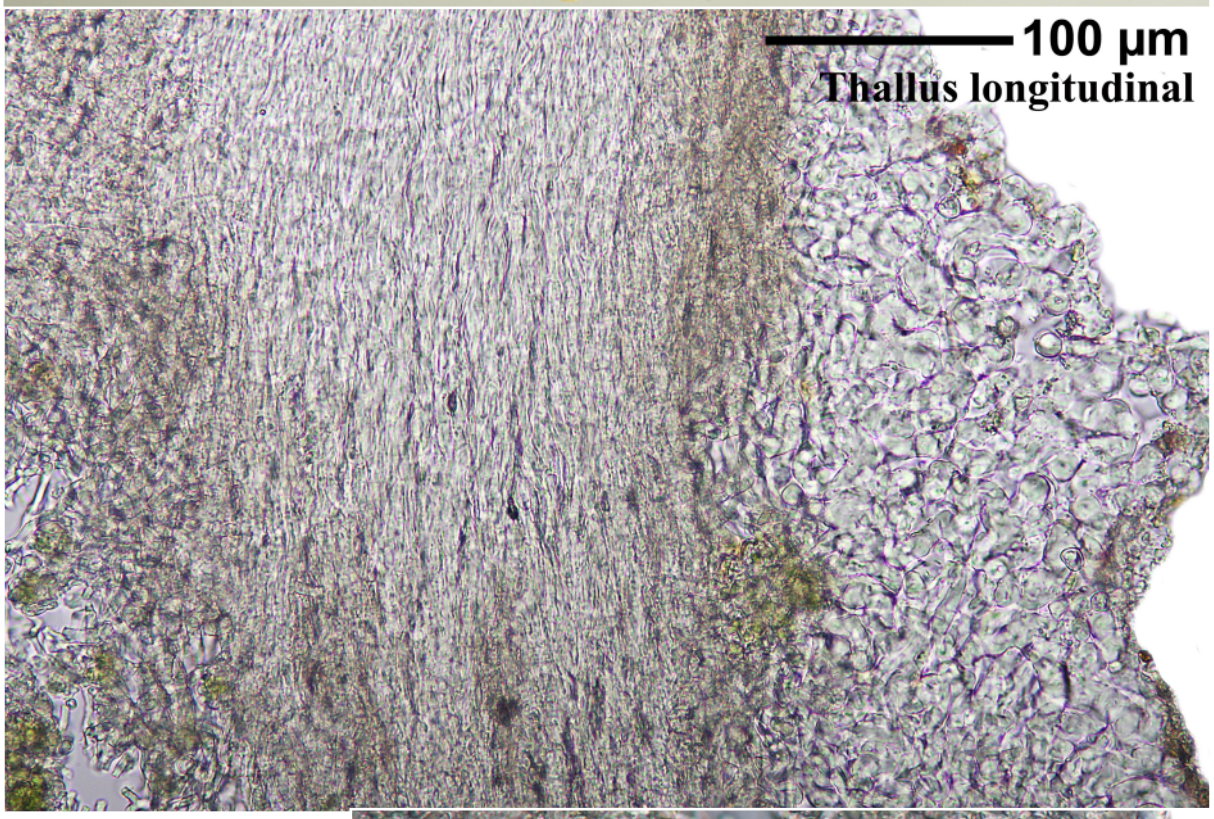


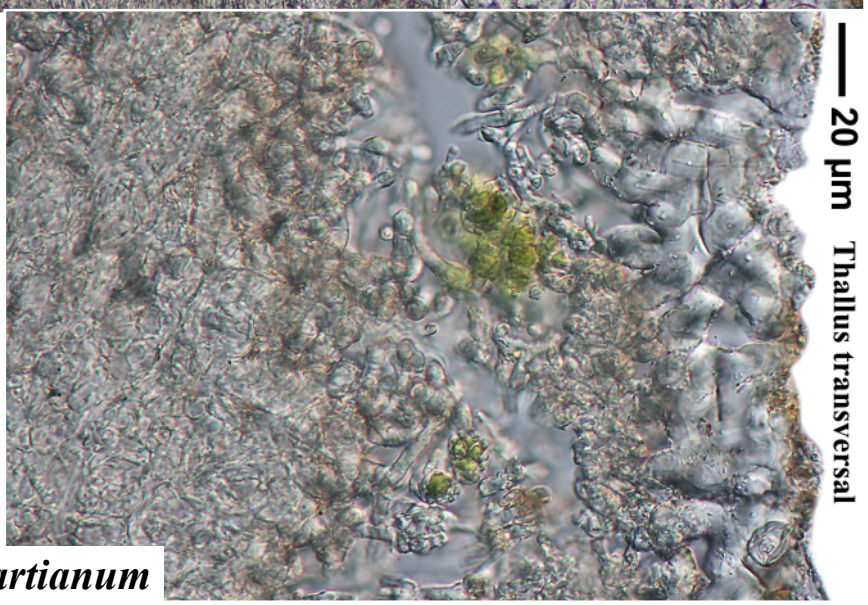




Stereocaulon massartianum







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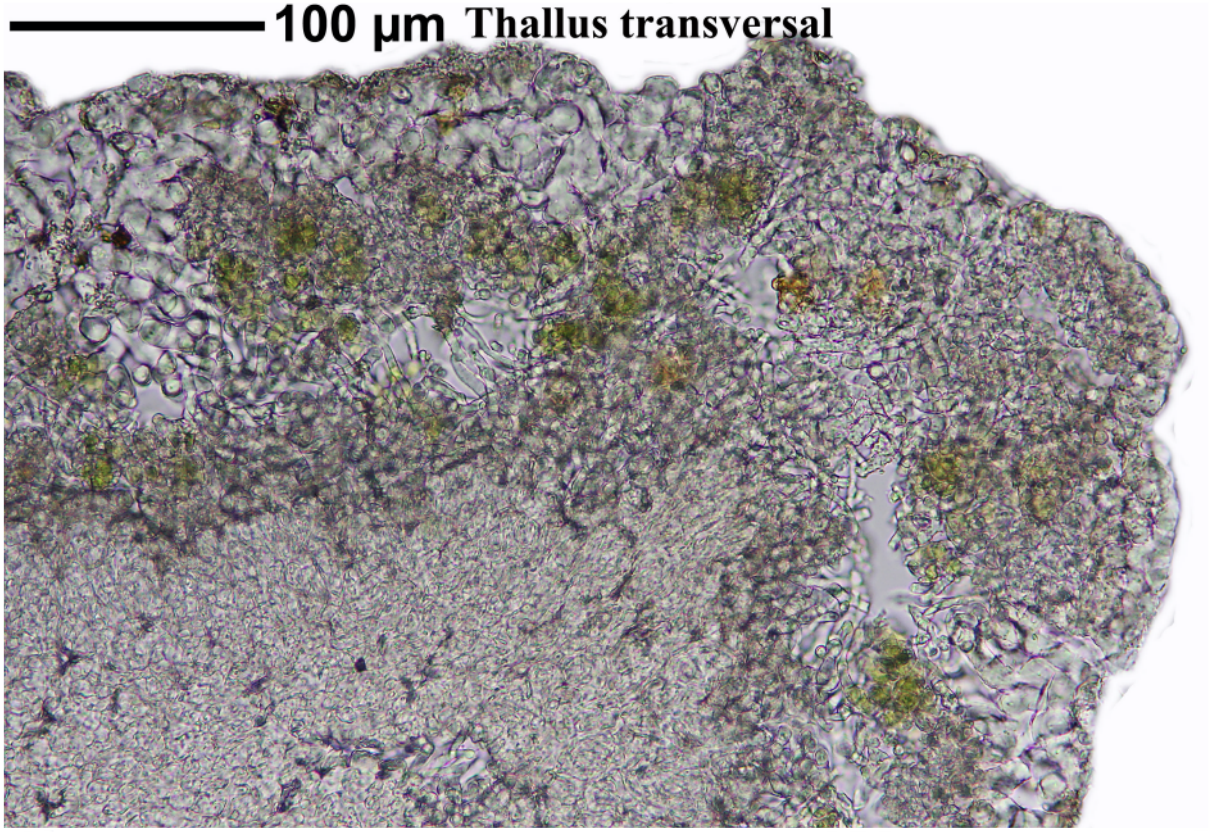

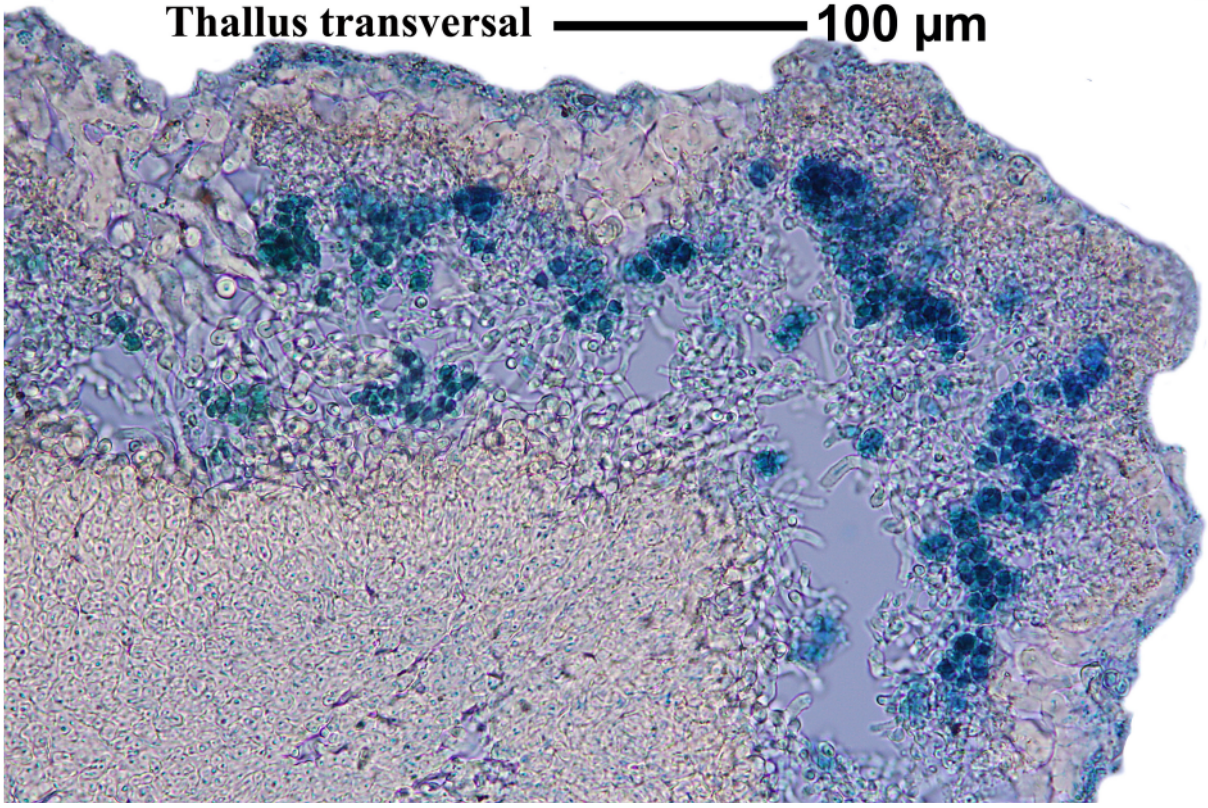

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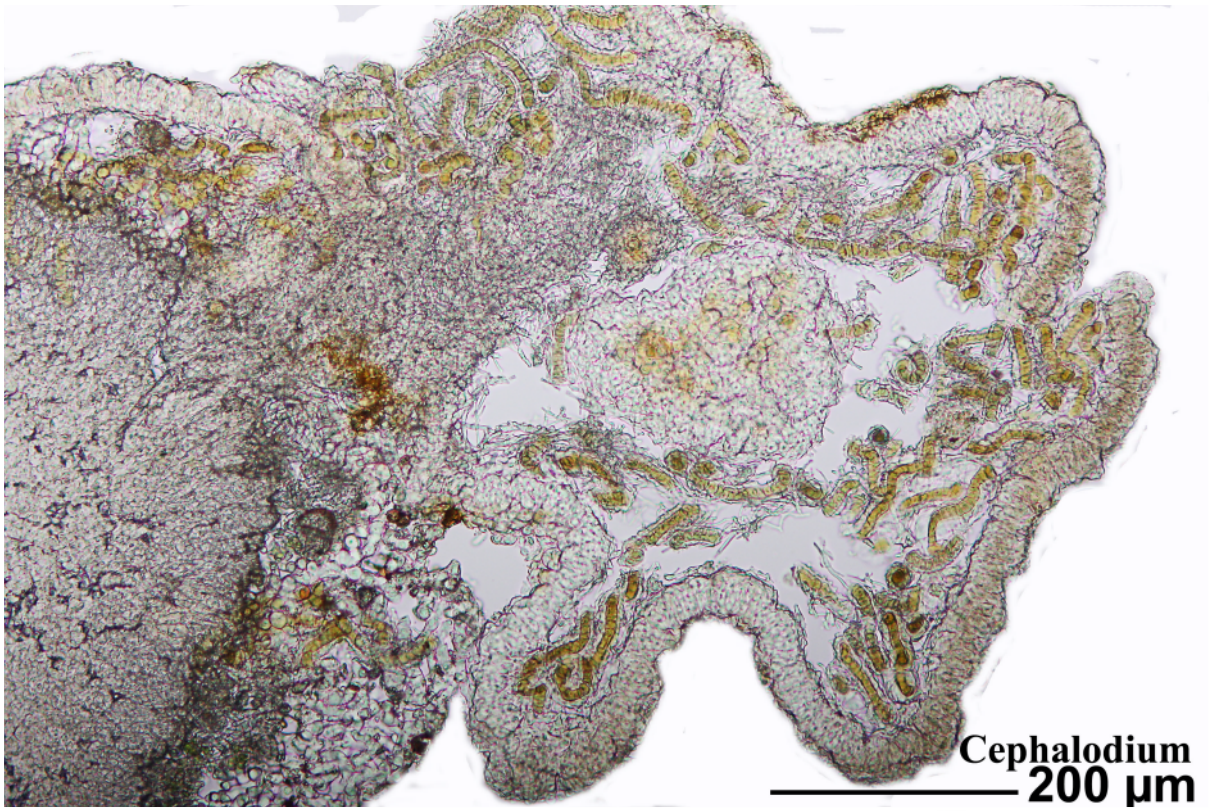
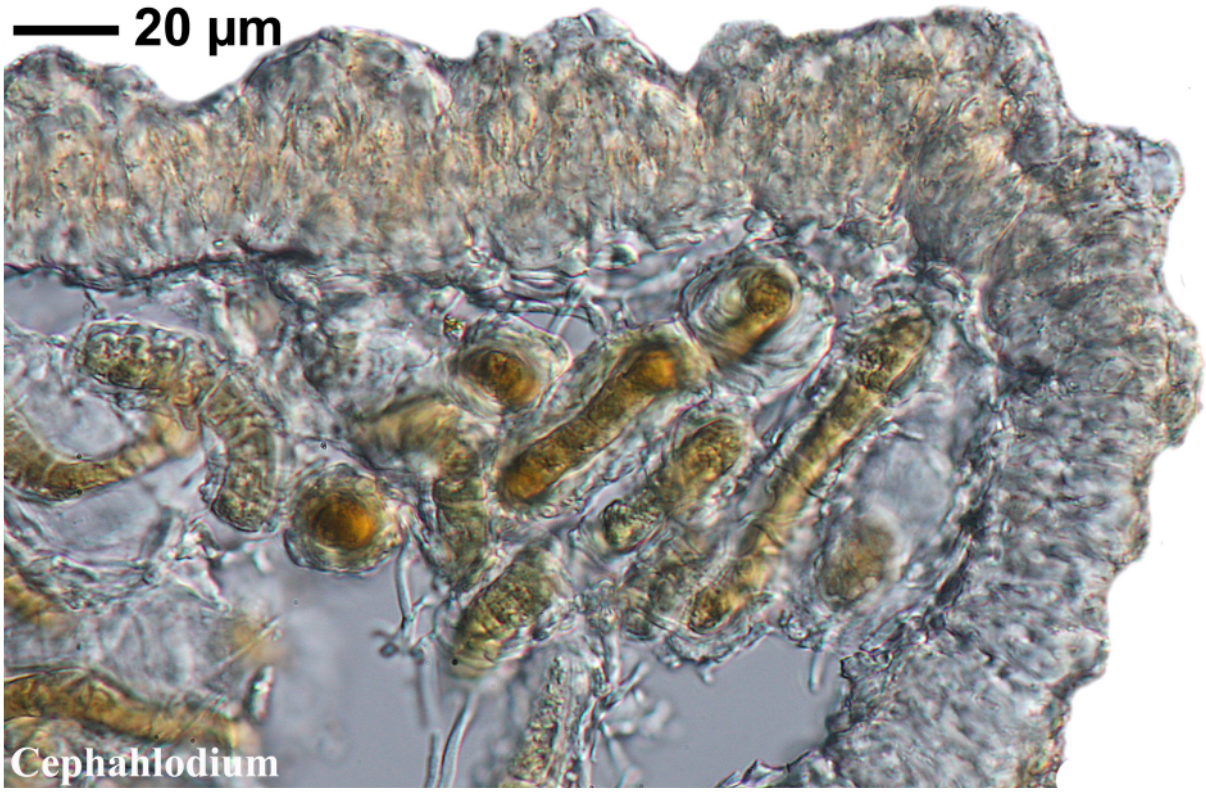
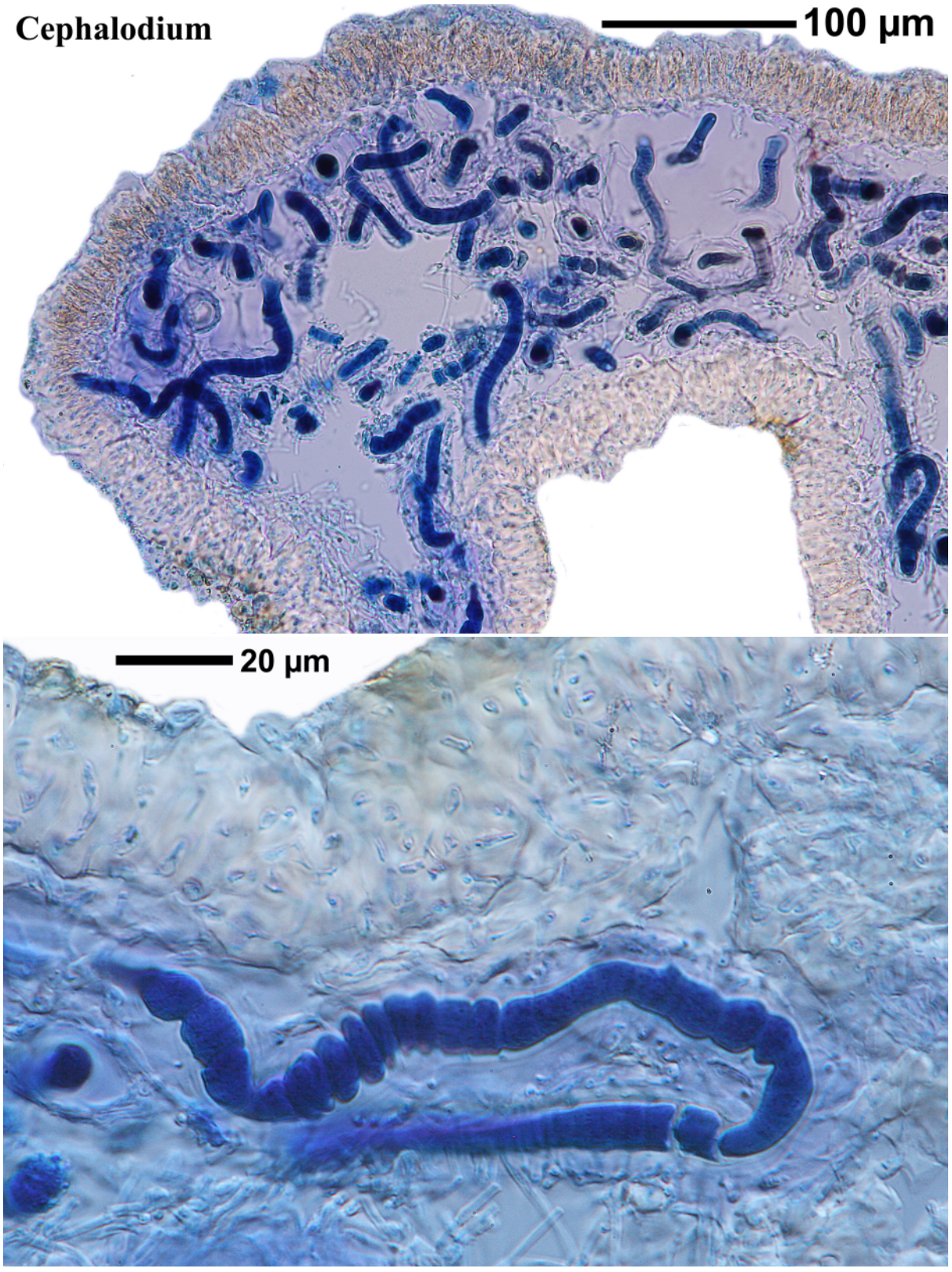




Stereocaulon massartianum



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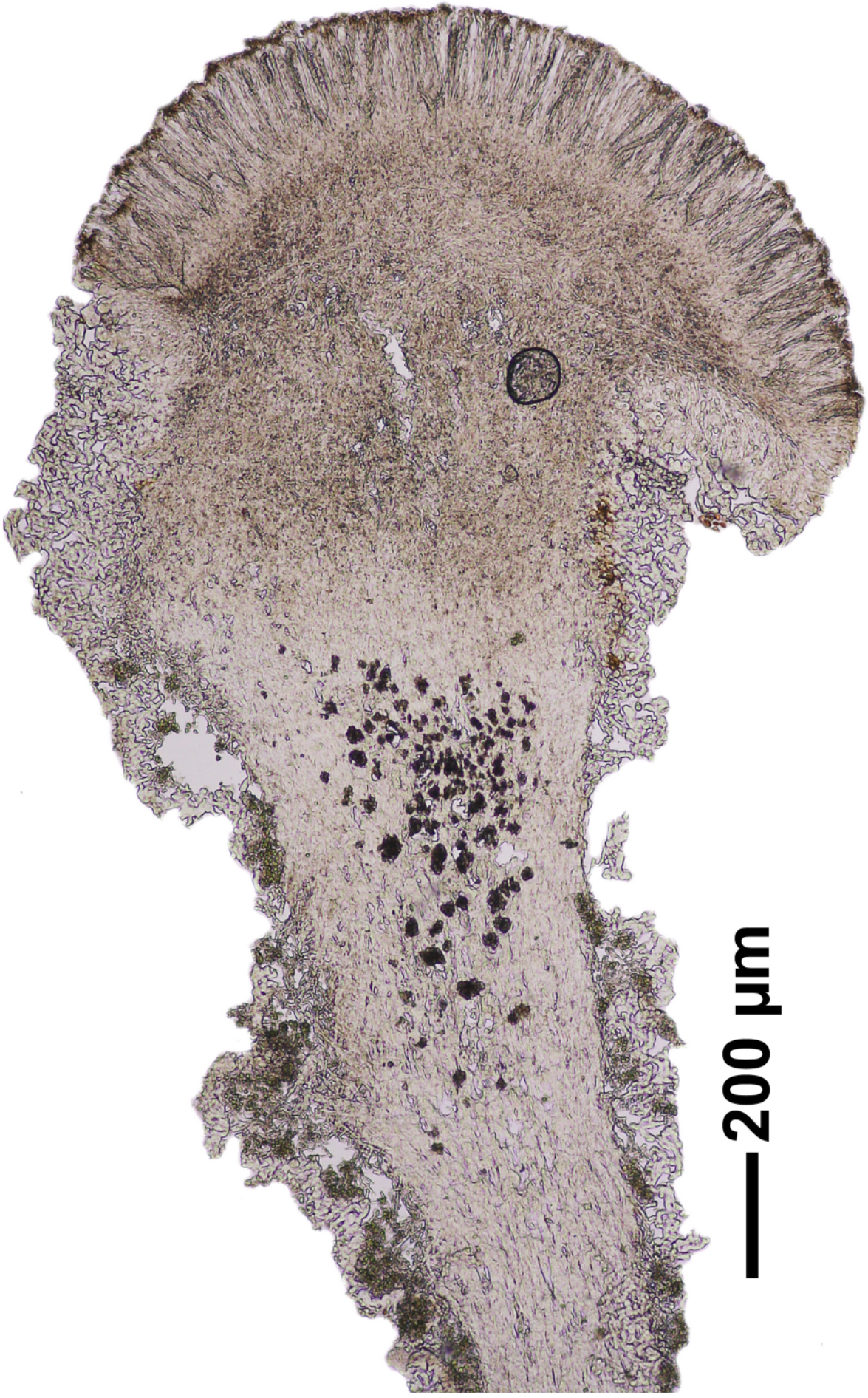
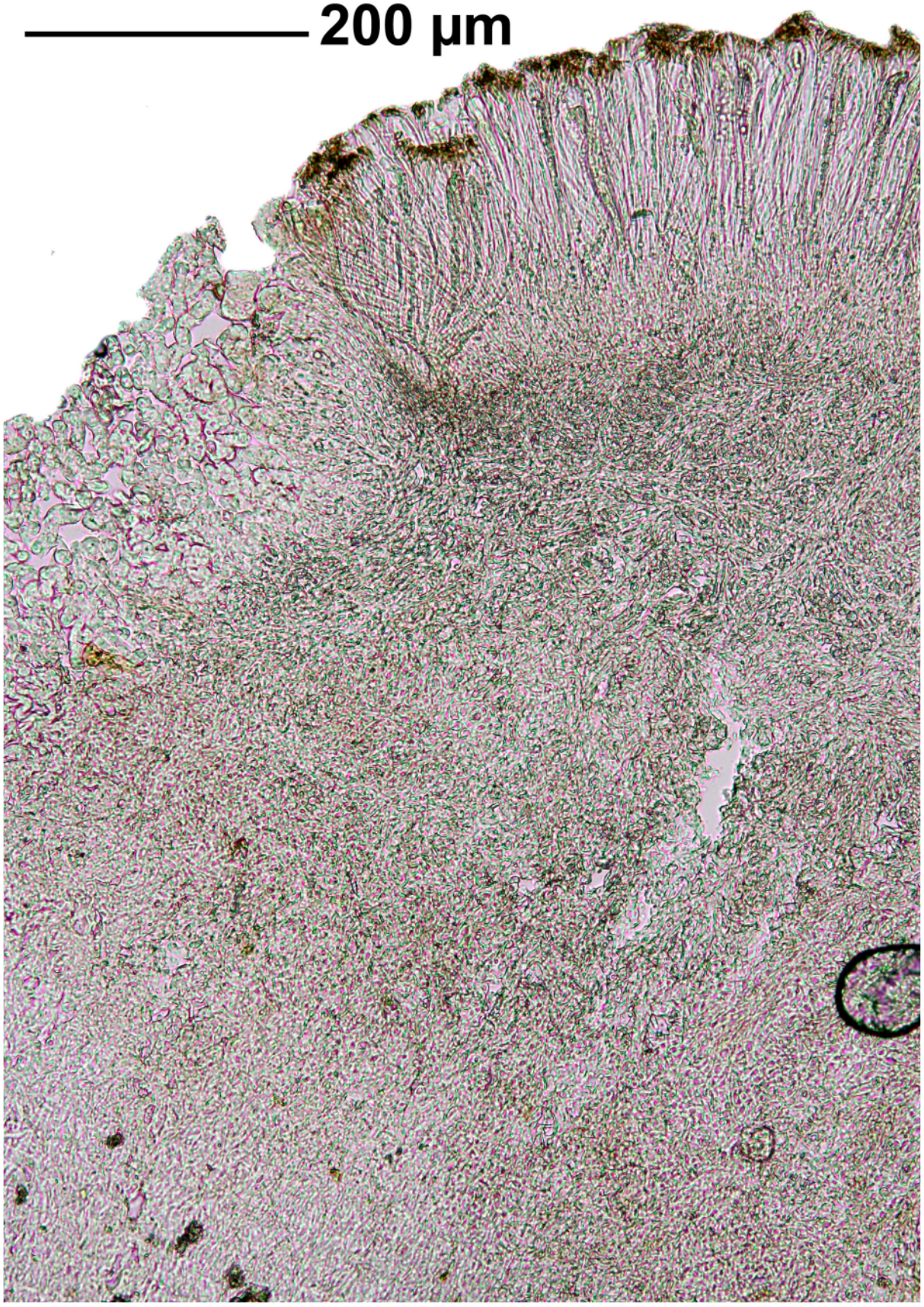
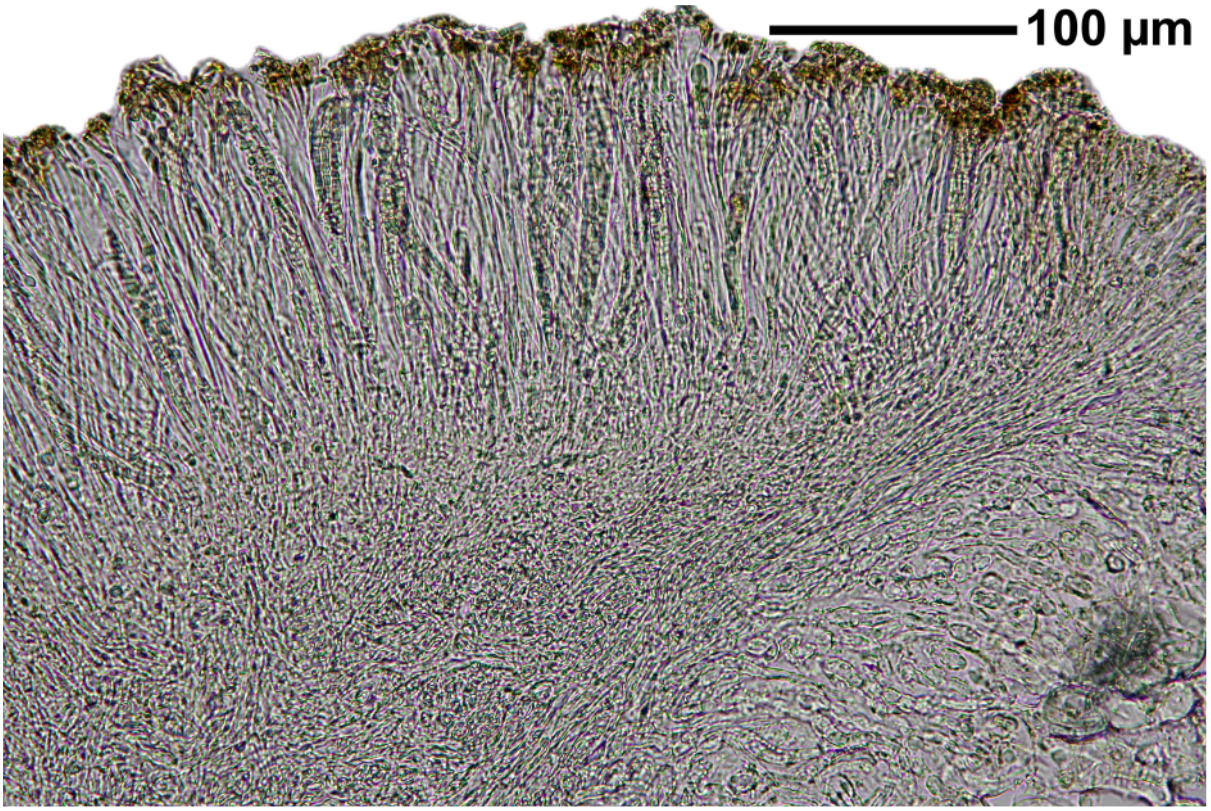


Stereocaulon massartianum

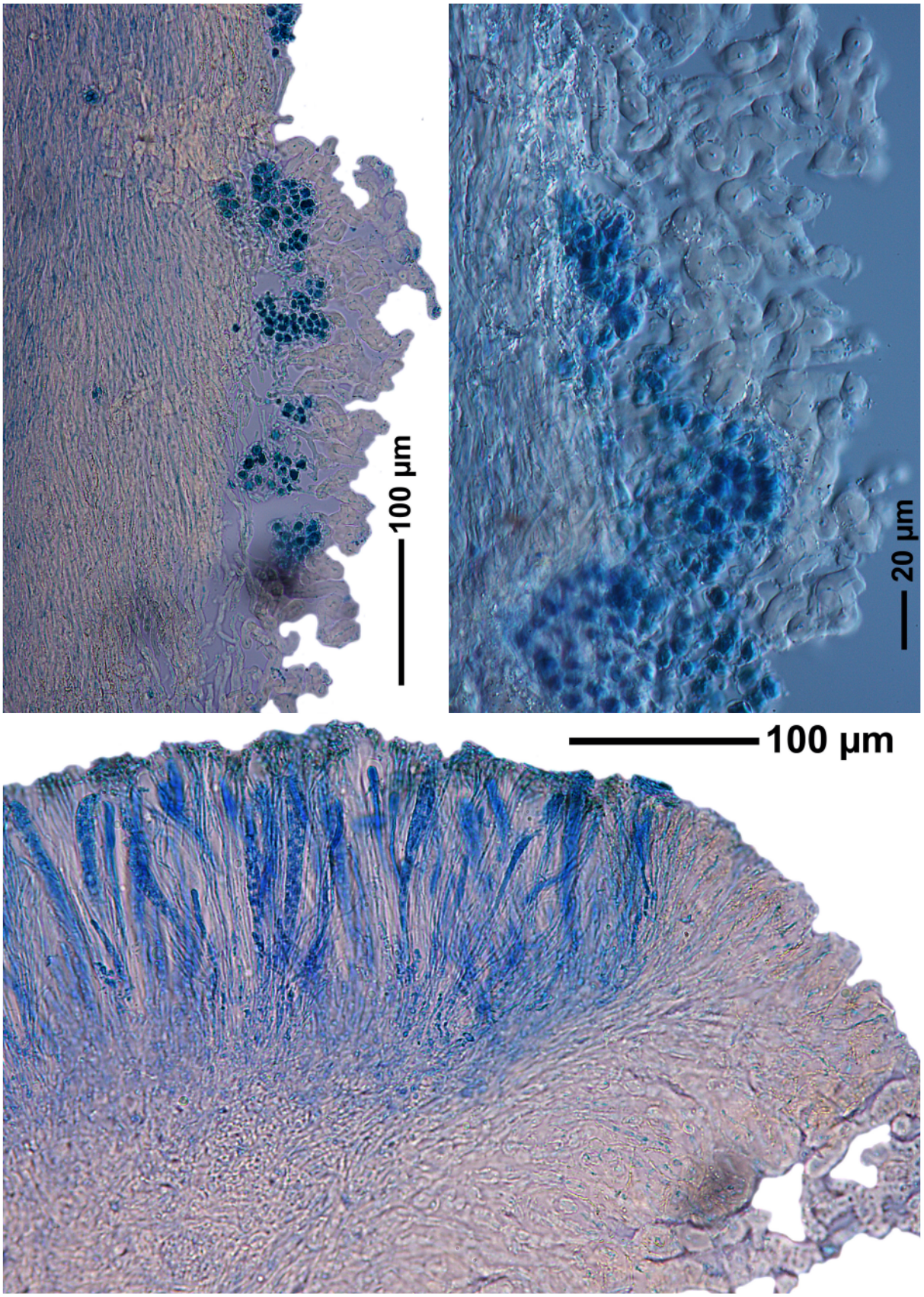


Stereocaulon massartianum

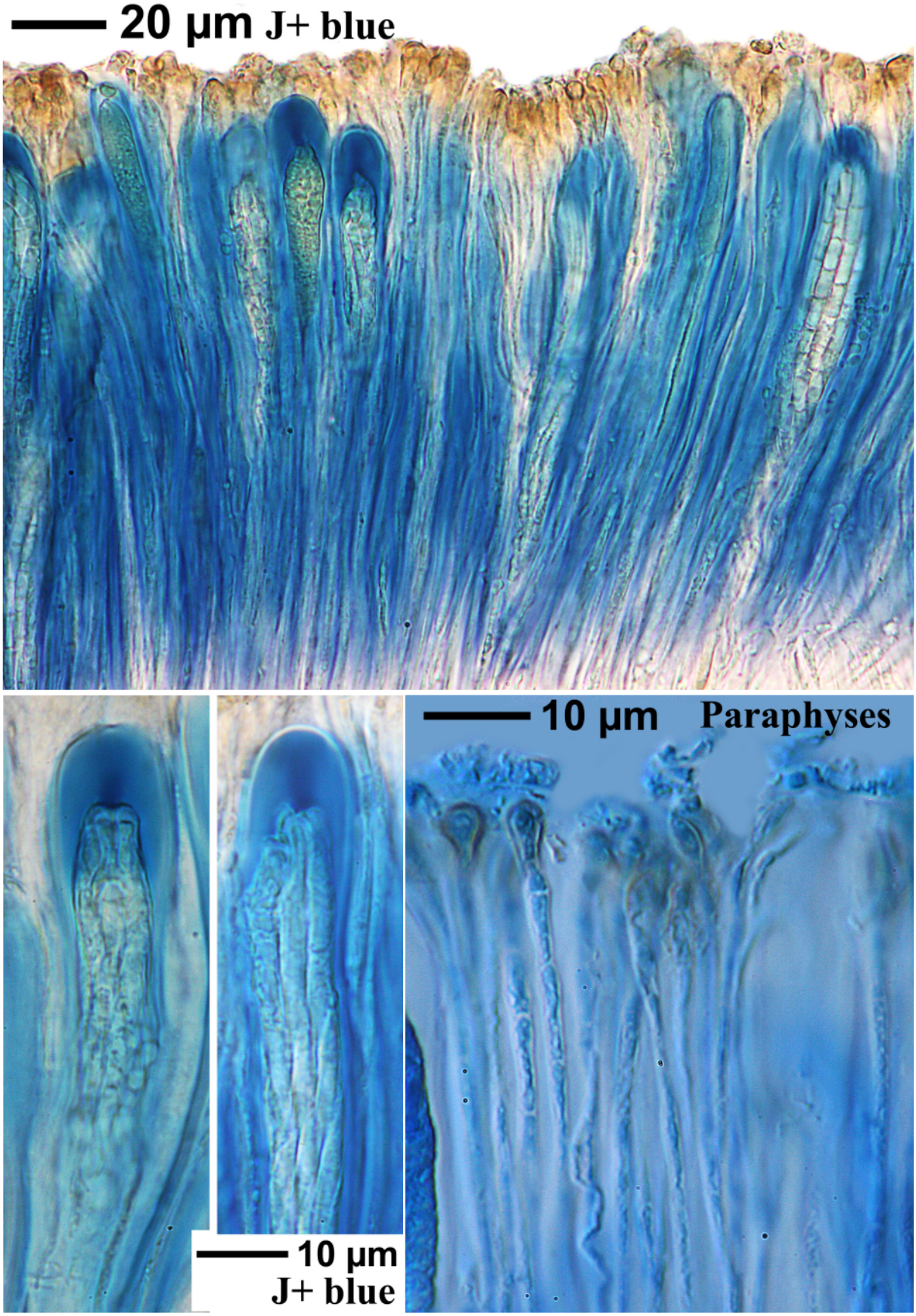




Stereocaulon massartianum



Stereocaulon massartianum



Stereocaulon massartianum



Stereocaulon massartianum

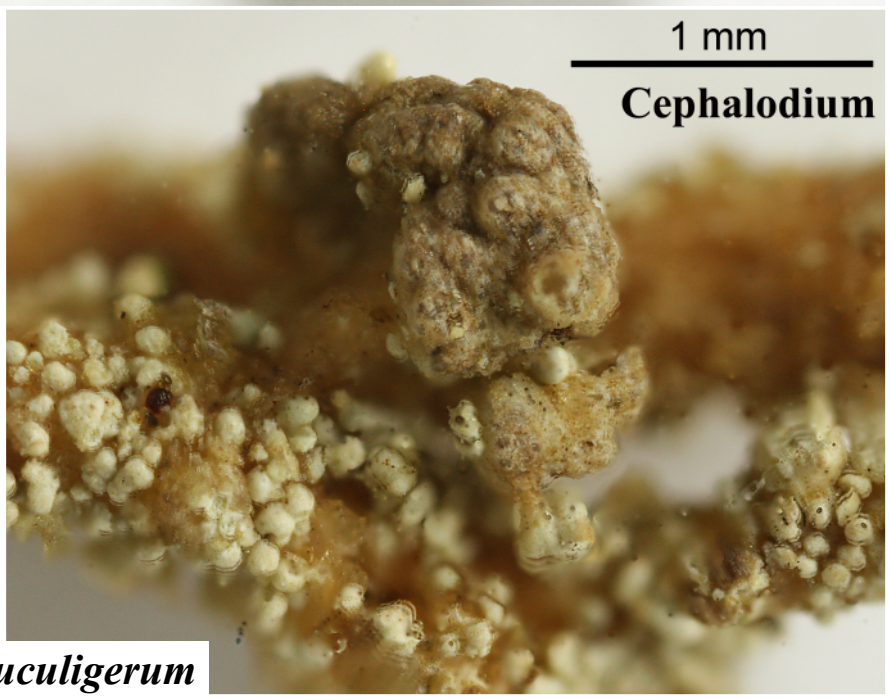
Stereocaulon verruculigerum Hue

Primary thallus for a long time persistent. Pseudopodetia erect, not dorsiventral. Cephalodia without well developed cortical layer. Phyllocladia lateral, terete-cylindrical. Hypothecium brown. Ascospores 25-55 x 4-5 µm, 3-5 septate. µm long. Chemistry: K+ yellowish, P- to pale yellow, atranorin, lobaric acid.

[6185], Philippinen, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald zwischen dem Lake Venado und dem Peak des Mt. Apo, ca. 07°00'-06°59' N, 125°16.17'-125°20' E, 2200-2800 m. Leg. Schumm 11.08.1999, det. Sipman 2000.







Stereocaulon verruculigerum

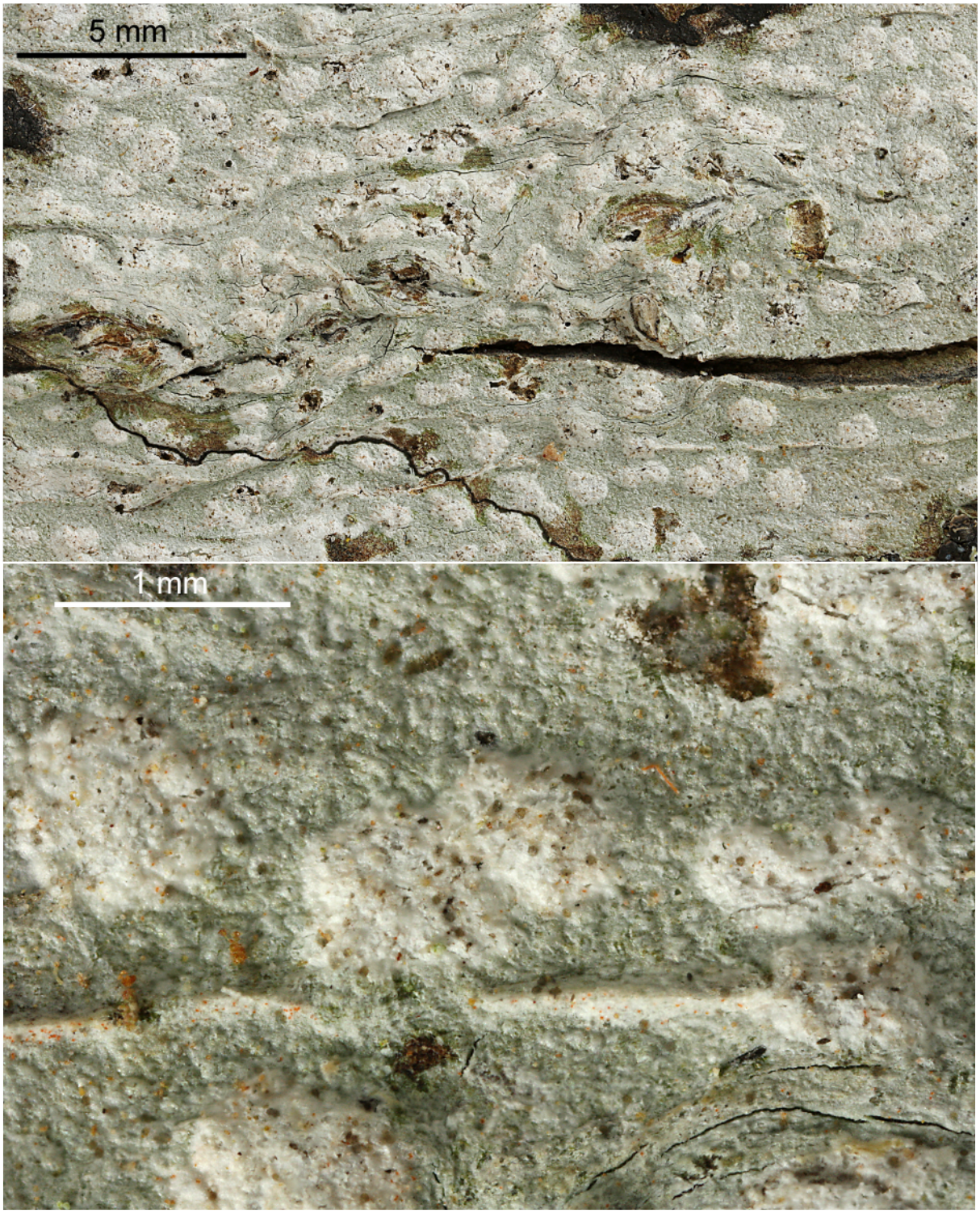


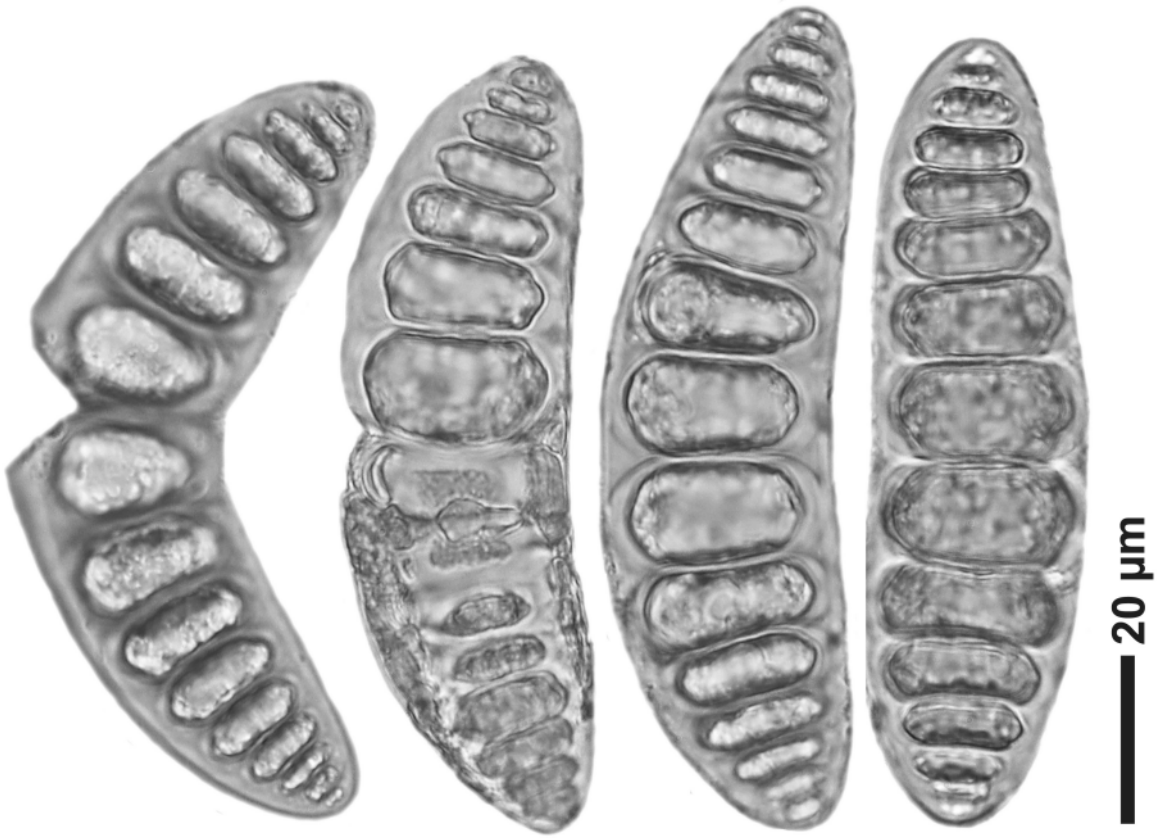
Stereocaulon verruculigerum

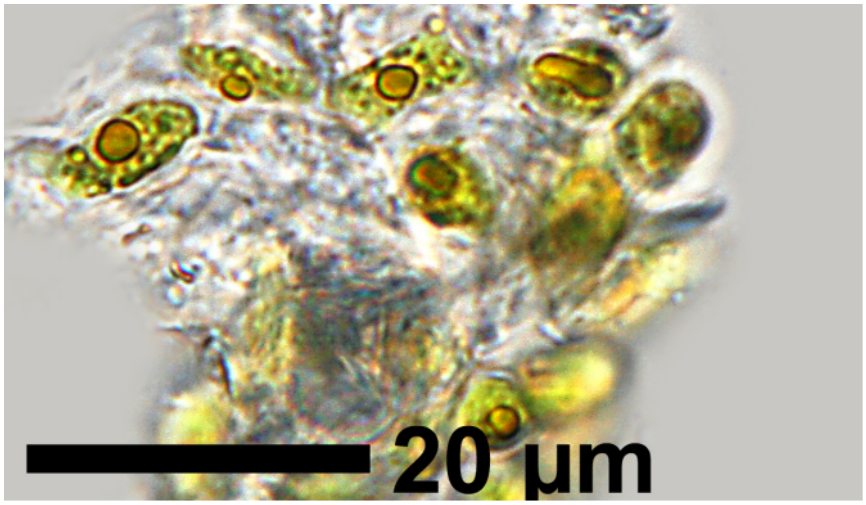
Stirtonia rhizophorae Kalb & Mongkolsuk

Thallus grey whitish, thin, K-, C-, KC-, P-, UV-, J+ blue. Photobiont: *Trentepohlia*. Ascocarps without true hamathecium between the round asci. Ascospores hyaline, transversal 14-15-septated, 93-100 x 27-20 µm. Chemistry: confluentic acid (TLC). Lit. Aptroot 2009, Kalb et. al 2012.

[17586], Thailand, Trat province, Had Sai Dum, Mangroven Wald, 12.17332° N, 102.40616° E, 0 m. Leg. Schumm (IAL 7) 16.01.2012, det. Schumm/Aptroot.







Stirtonia rhizophorae

Teloschistes flavicans (Sw.) Norman

Thallus 5-10 cm high, richly and intricately branched. Branches yellow to orange-red, green-grey in shaded habitats, 0.5-1 mm wide, rounded or somewhat flattened or angled, matt. Isidia absent. Soralia present, rounded or elongated. Apothecia seldom. Ascospores hyaline, 8/ascus, 1-septate, polarilocular. Chemistry: cortex K+ red, pyscion.

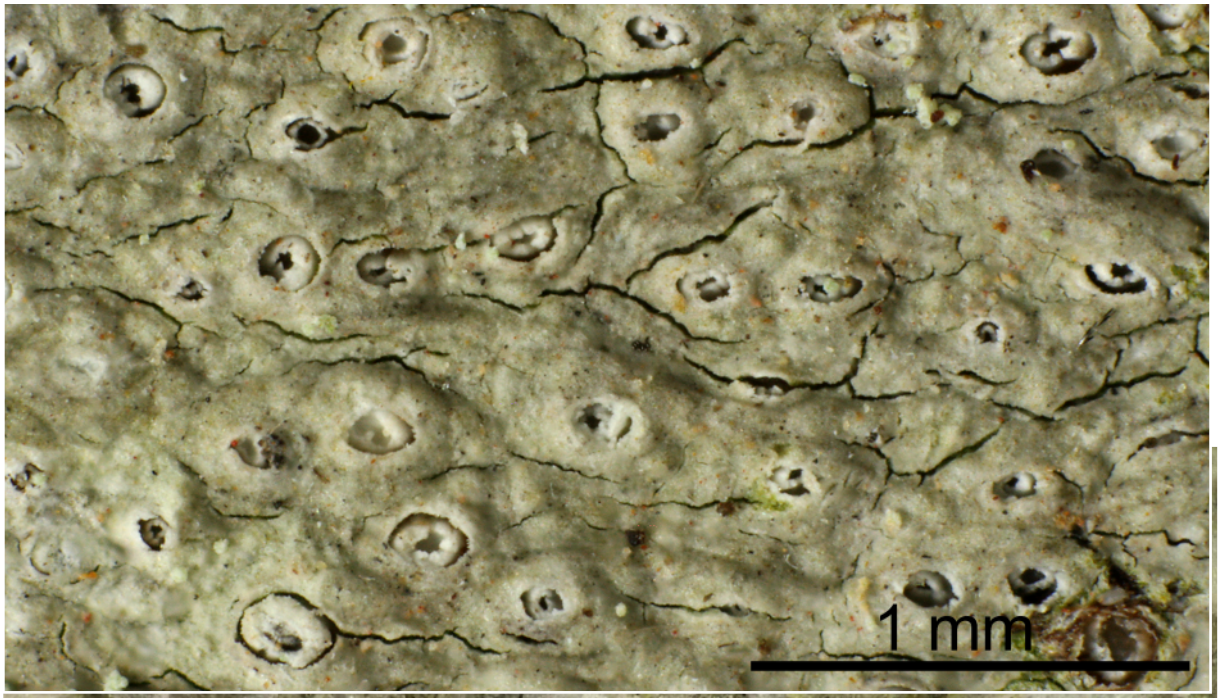
[1505], Costa Rica, Prov. Carthago: Ad viam inter oppidum Carthago et montem ignivomum Irazú dictum, 1820 m, arboricola. Leg. I.M. Lamb & U.V. Metzger 25.04.1969. Vezda: Nr. 798 Lich. Sel. Exsicc.



Thelotrema bicinctulum Nyl.

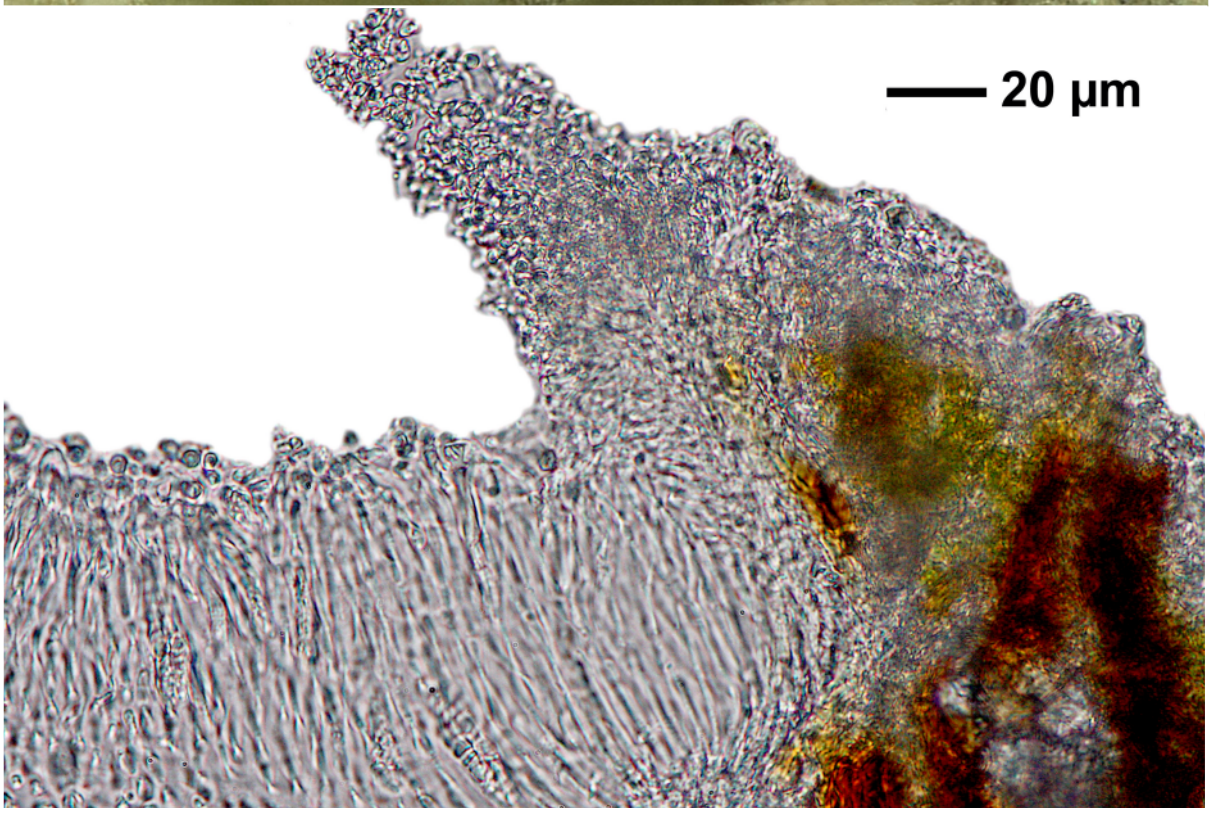
Thallus greenish-grey, glossy, somewhat rugulose, without isidia or soralia. Apothecia immersed to somewhat erumpent, c. 0.3 mm wide, ostiolum 0.16 mm wide, with slit between thalline margin and excipulum. Excipulum not carbonized, without columella, with lateral not spinulose periphysoids. Hamathecium not insperse, J-. Ascospores transversely (4-)5-7-septate, hyaline, 8/ascus, 16-21(-25) x 4-5(-7) µm, J-. Chemistry: stictic acid (maj), hypostictic acid (min), constictic aci; Thallus K+ yellow-orange, P ± yellowish.

[17575], Thailand, Trat province, Had Sai Dum, Mangroven Wald, 12.17332° N, 102.40616° E, 0 m. Leg. Schumm (IAL 7) 16.01.2012, det. Schumm 2012, test. Kalb 06.2012.

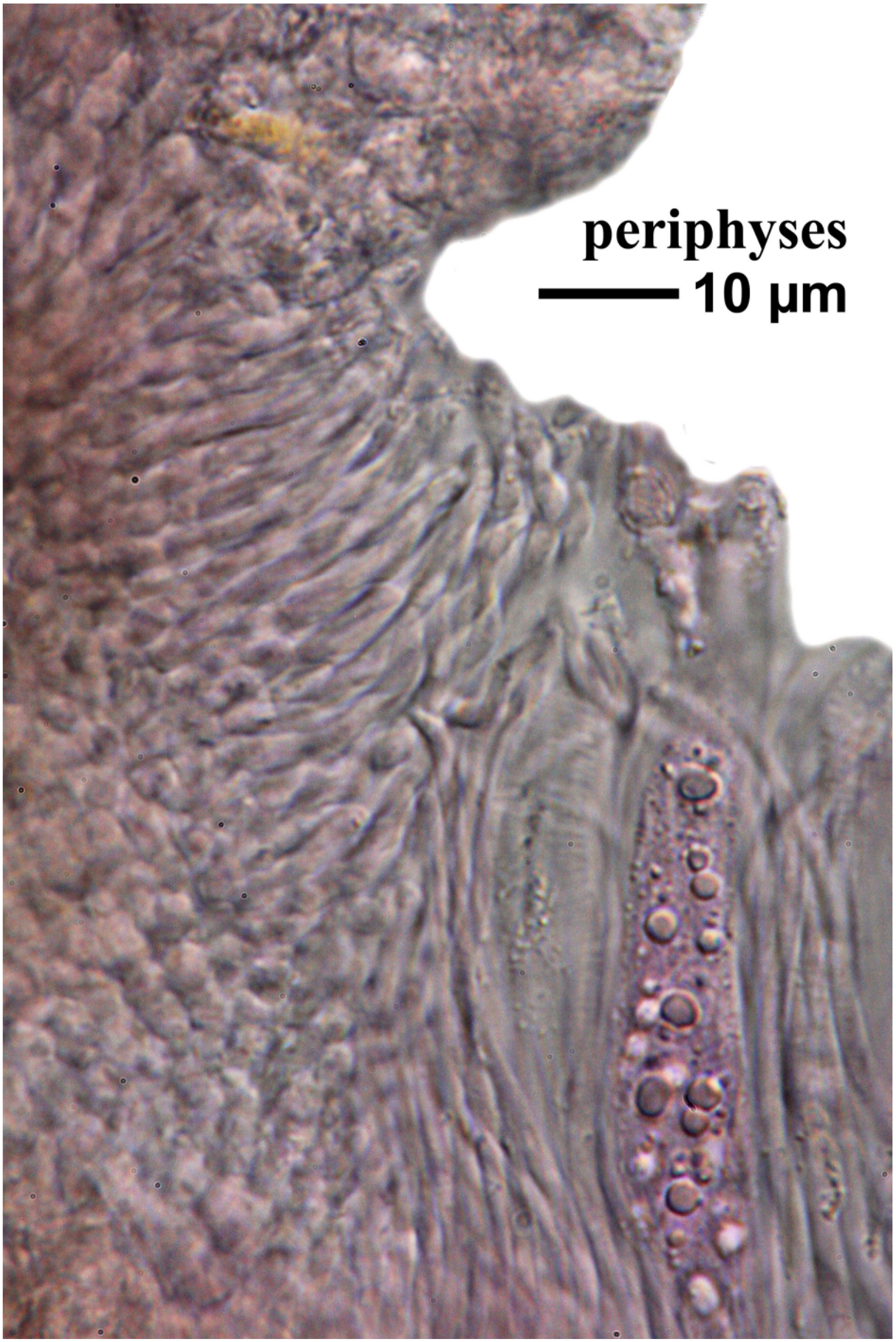




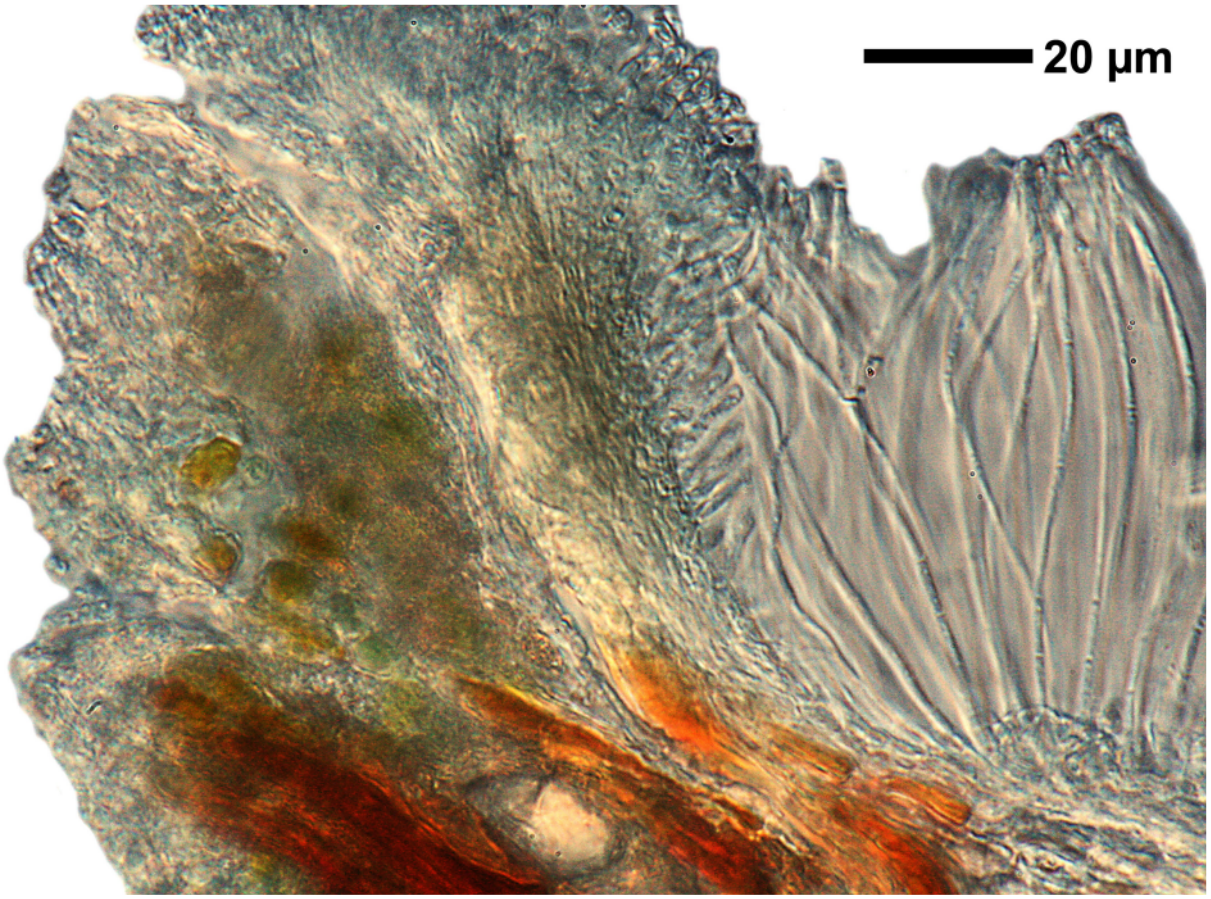




Thelotrema bicinctulum



Thelotrema bicinctulum





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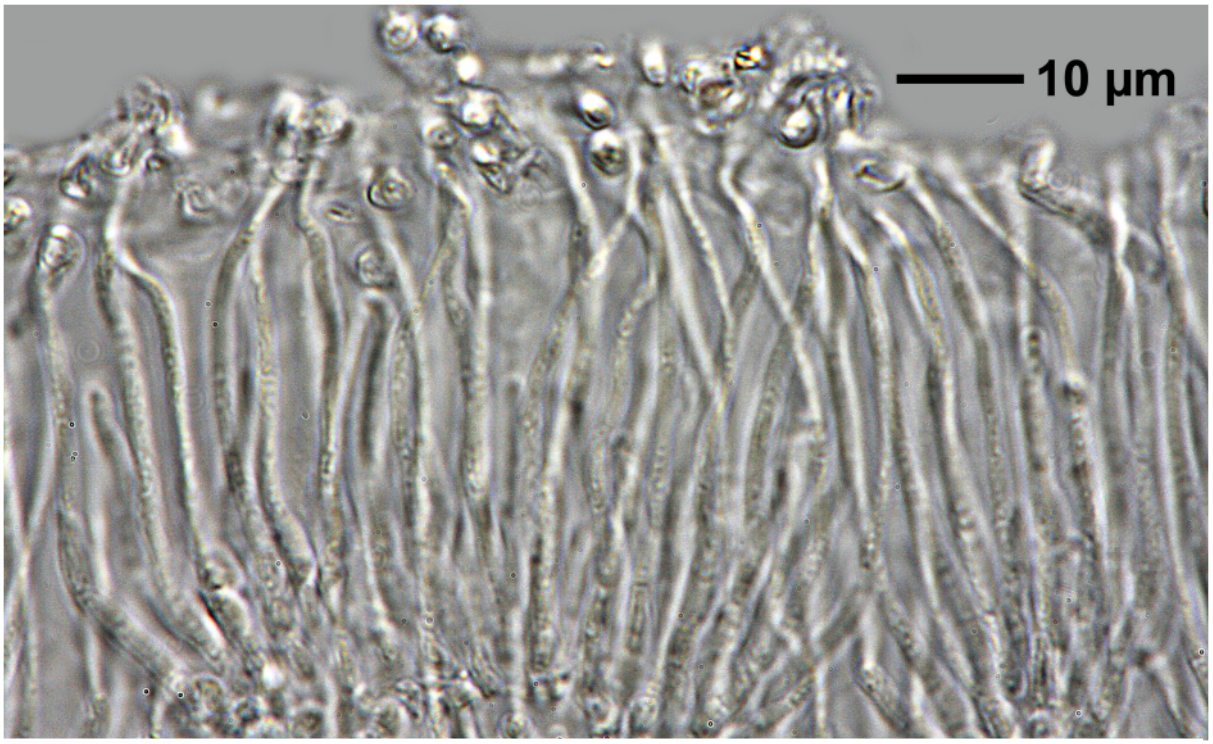
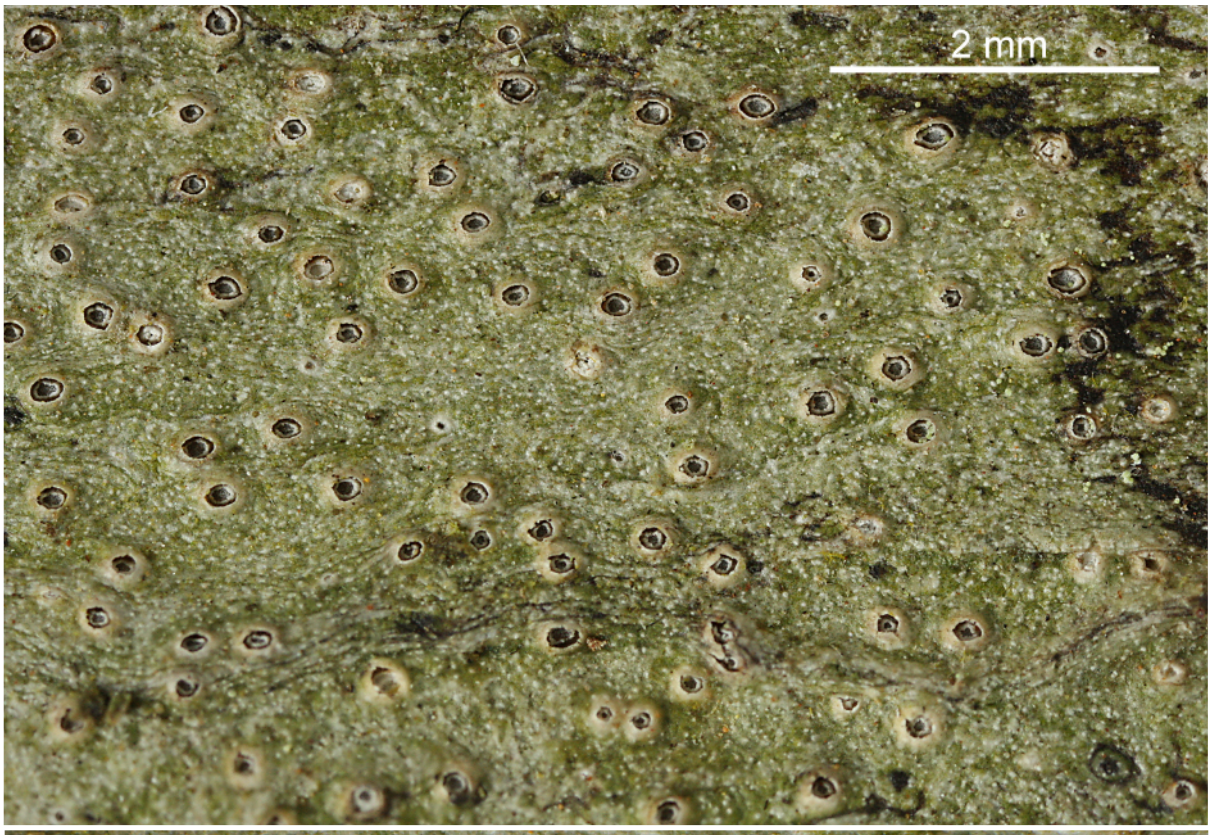




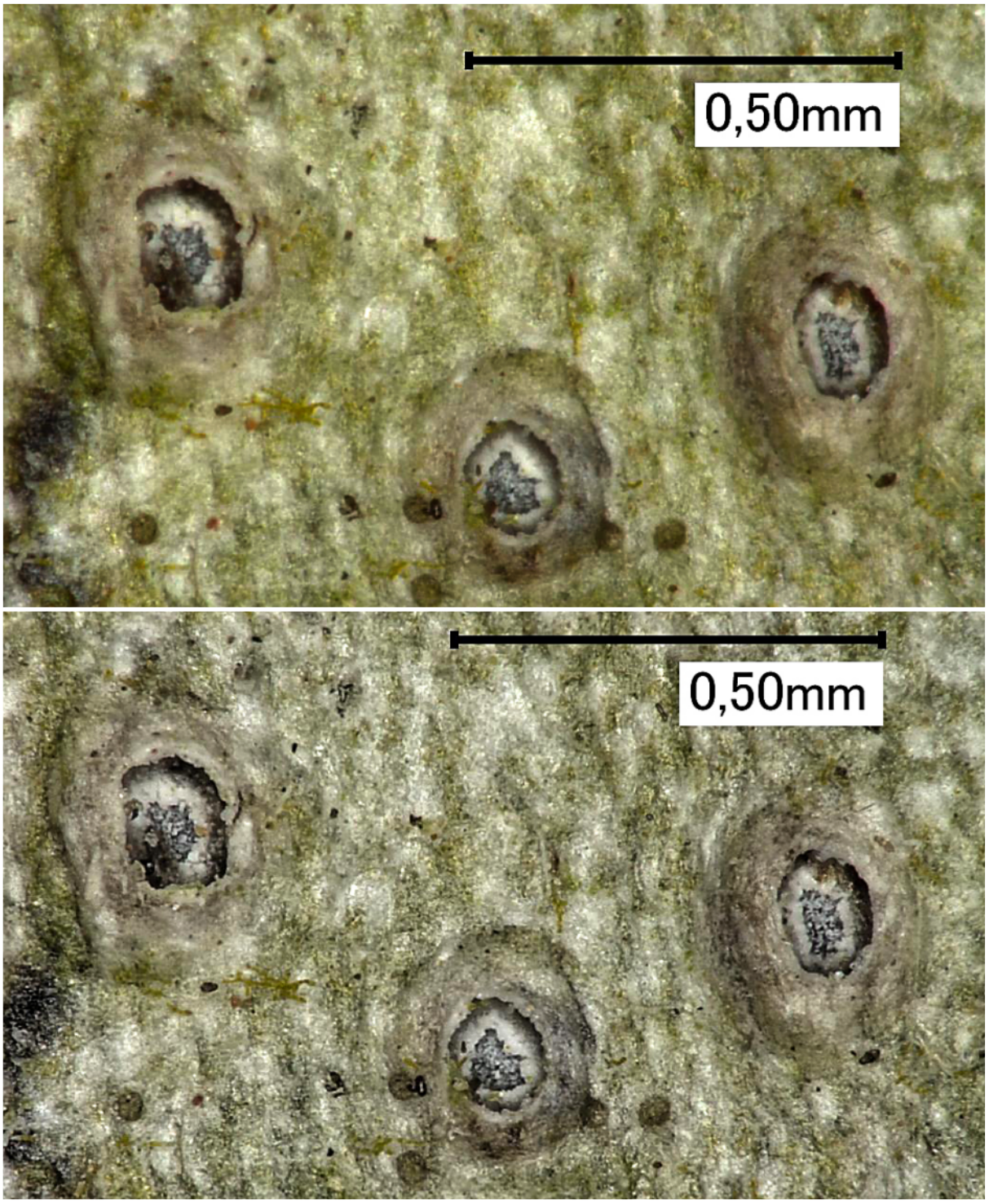
Thelotrema bicinctulum

Thelotrema bicinctulum Nyl.

[17579], Thailand, Trat province, Had Sai Dum, Mangroven Wald, 12.17332° N, 102.40616° E, 0 m. Leg. Schumm (IAL7) 16.01.2012, det. Schumm, teste Kalb 06.2012.







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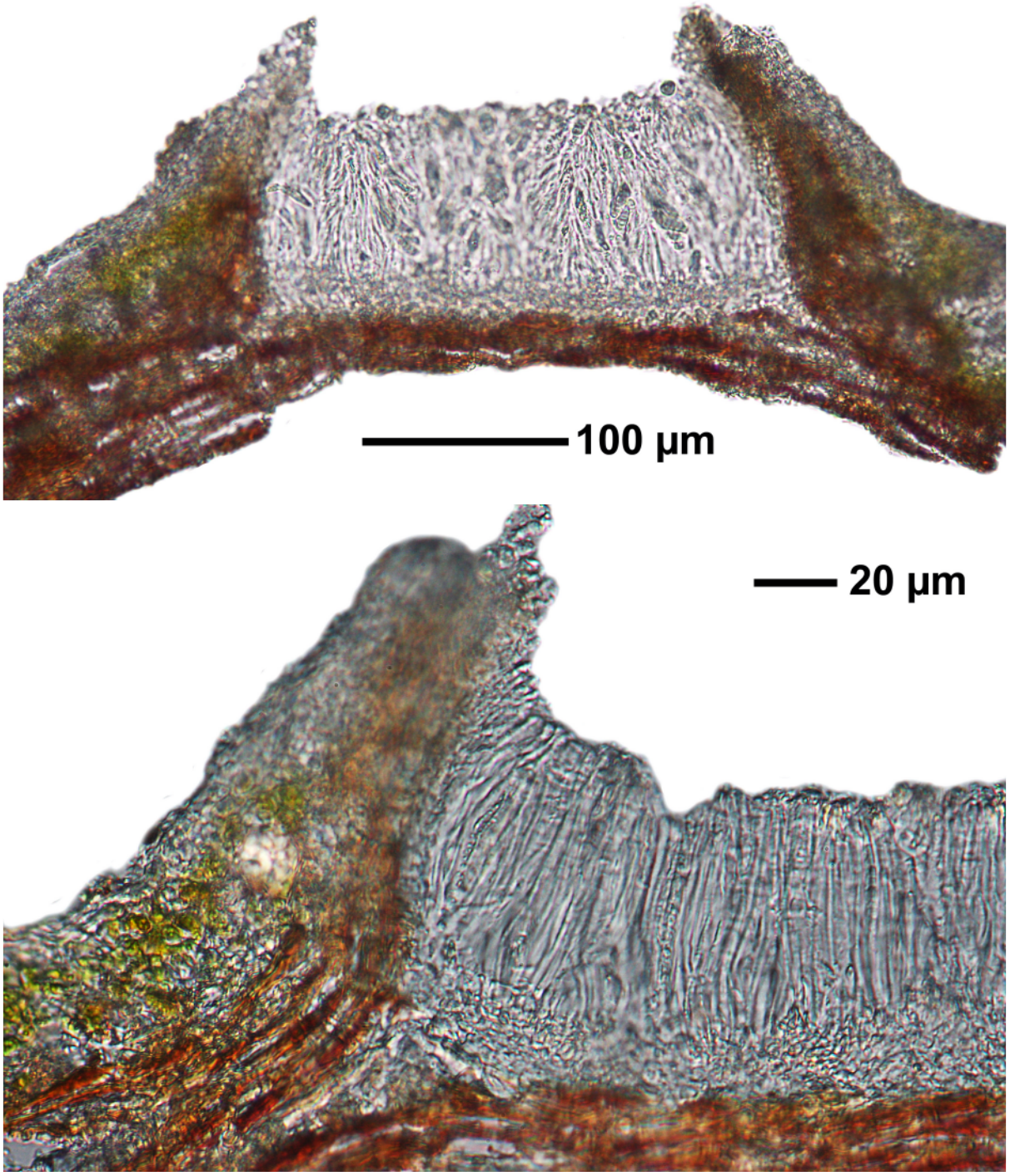

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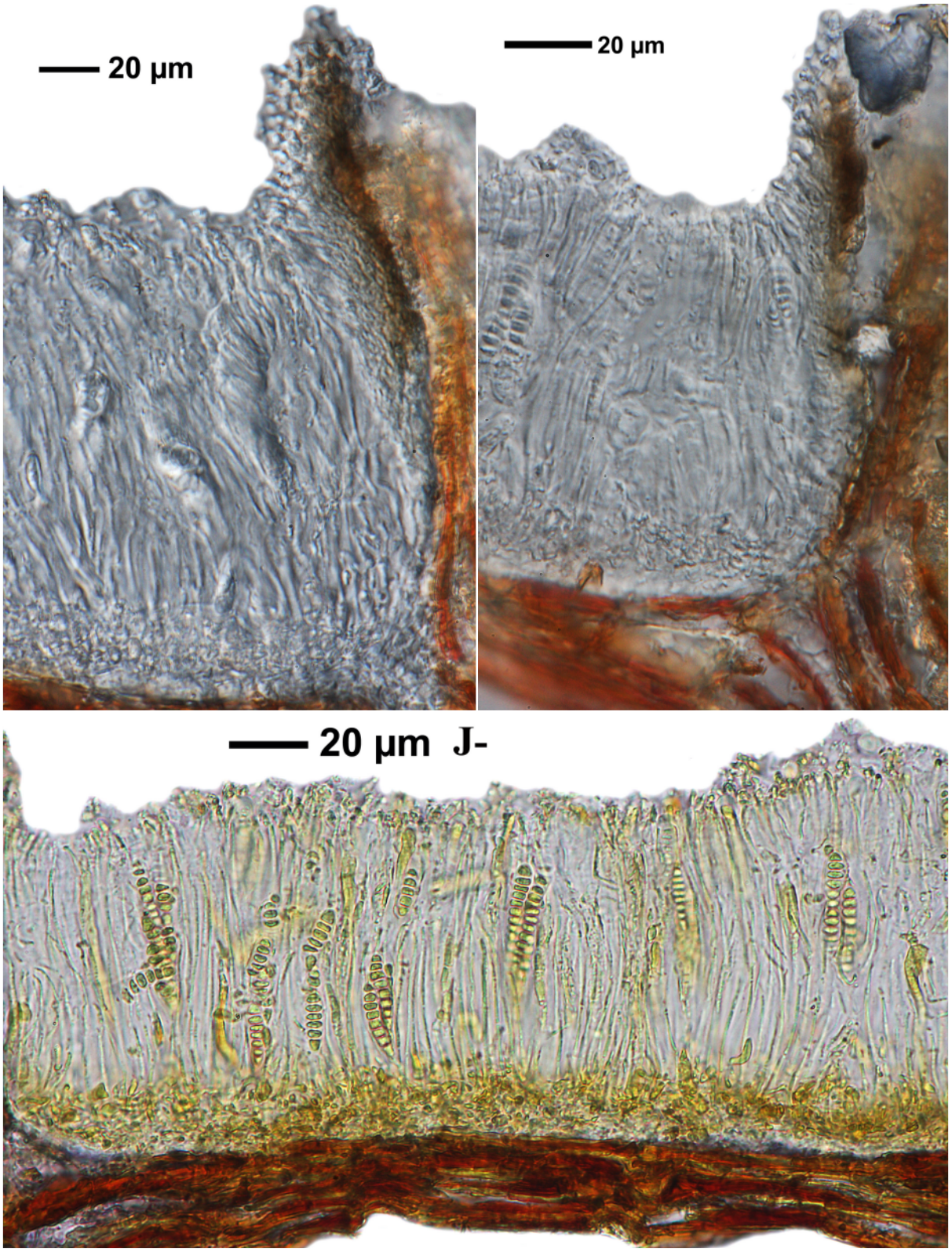

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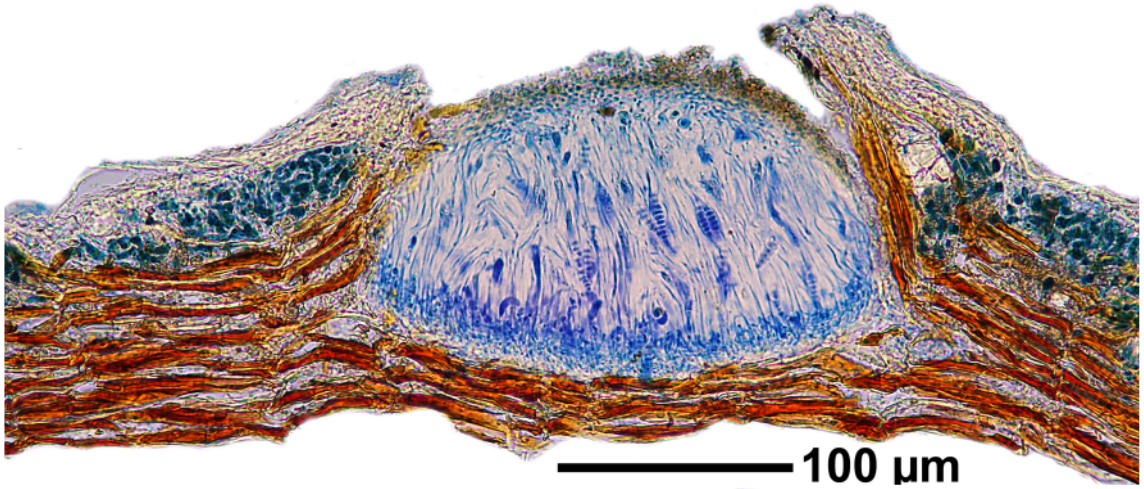

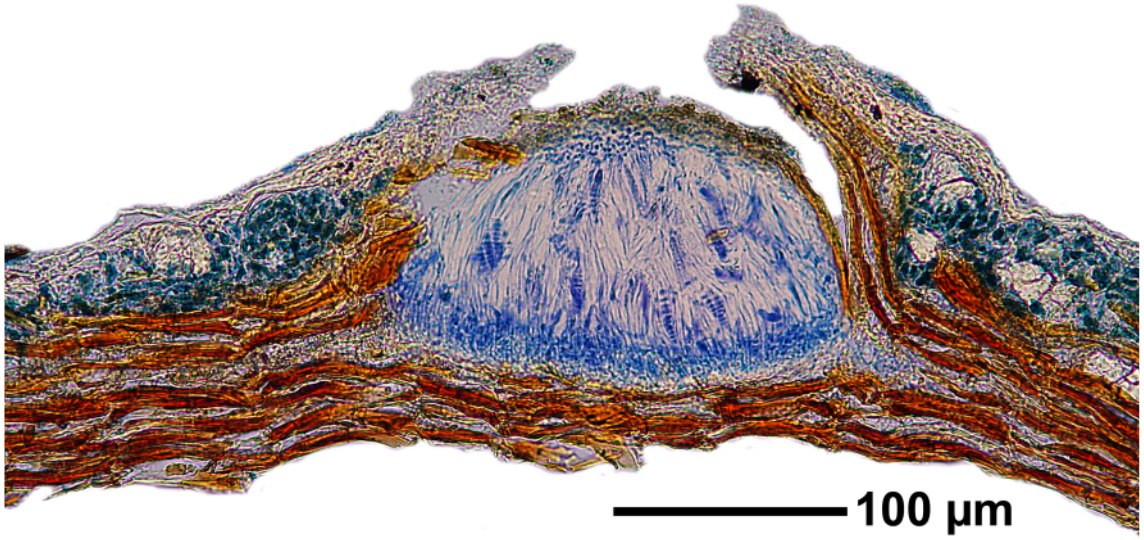

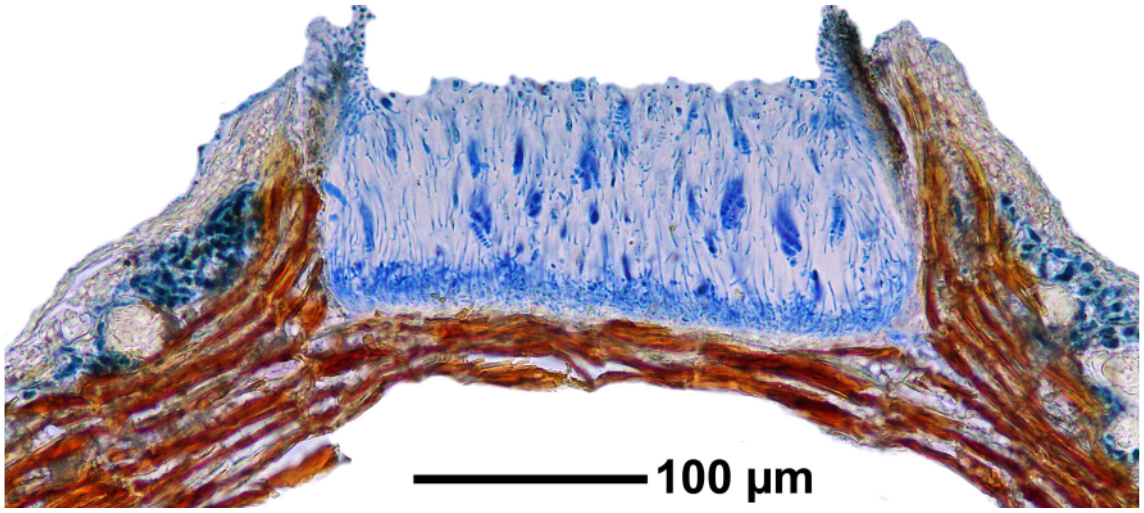

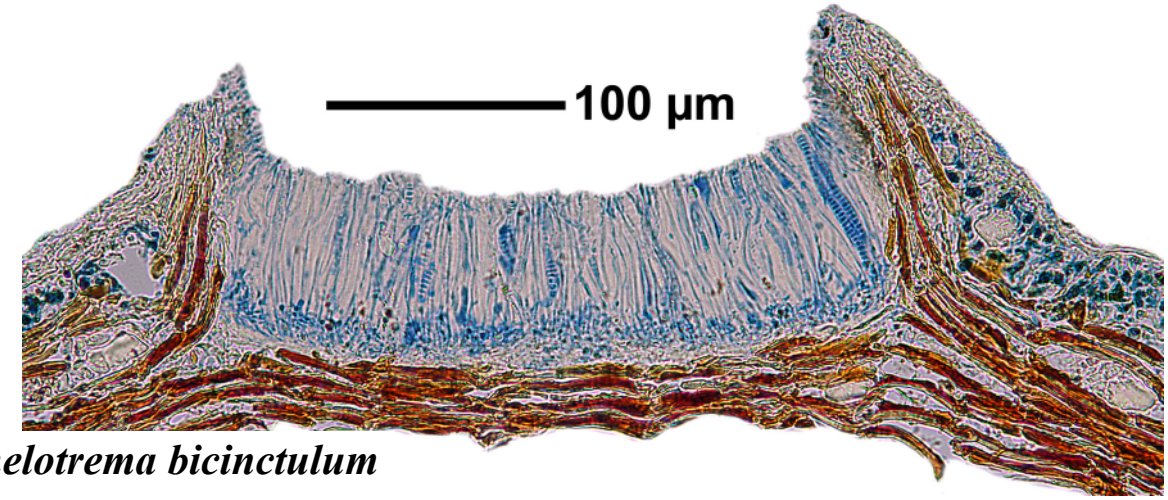

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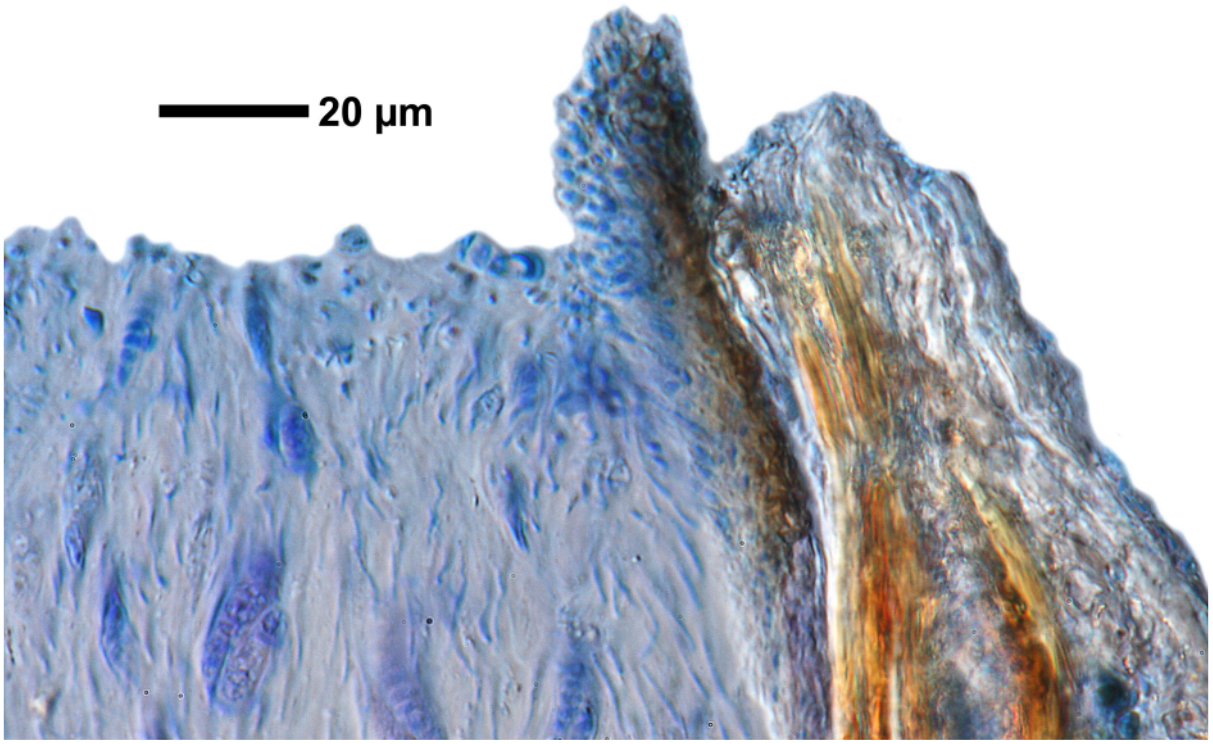
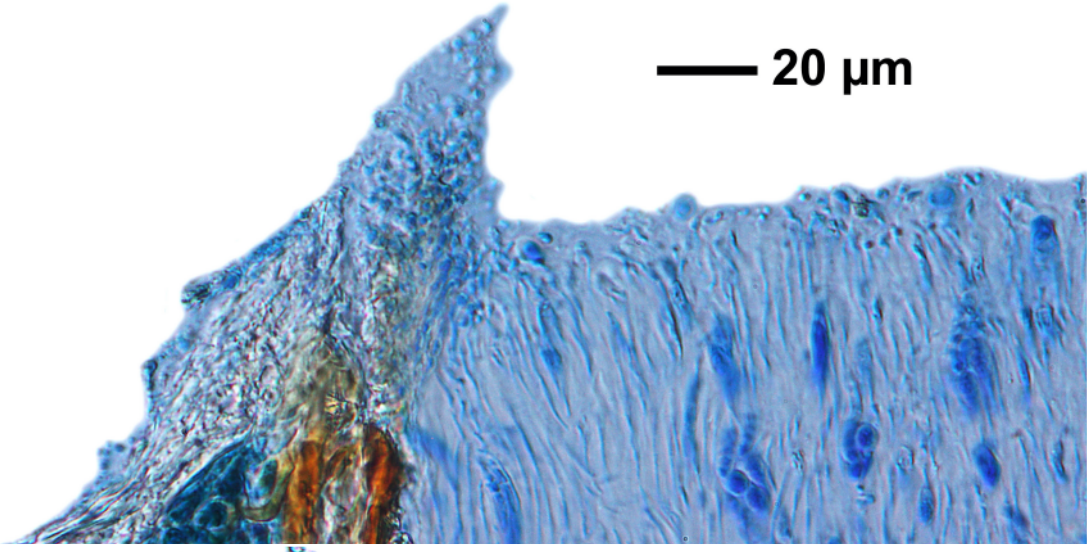
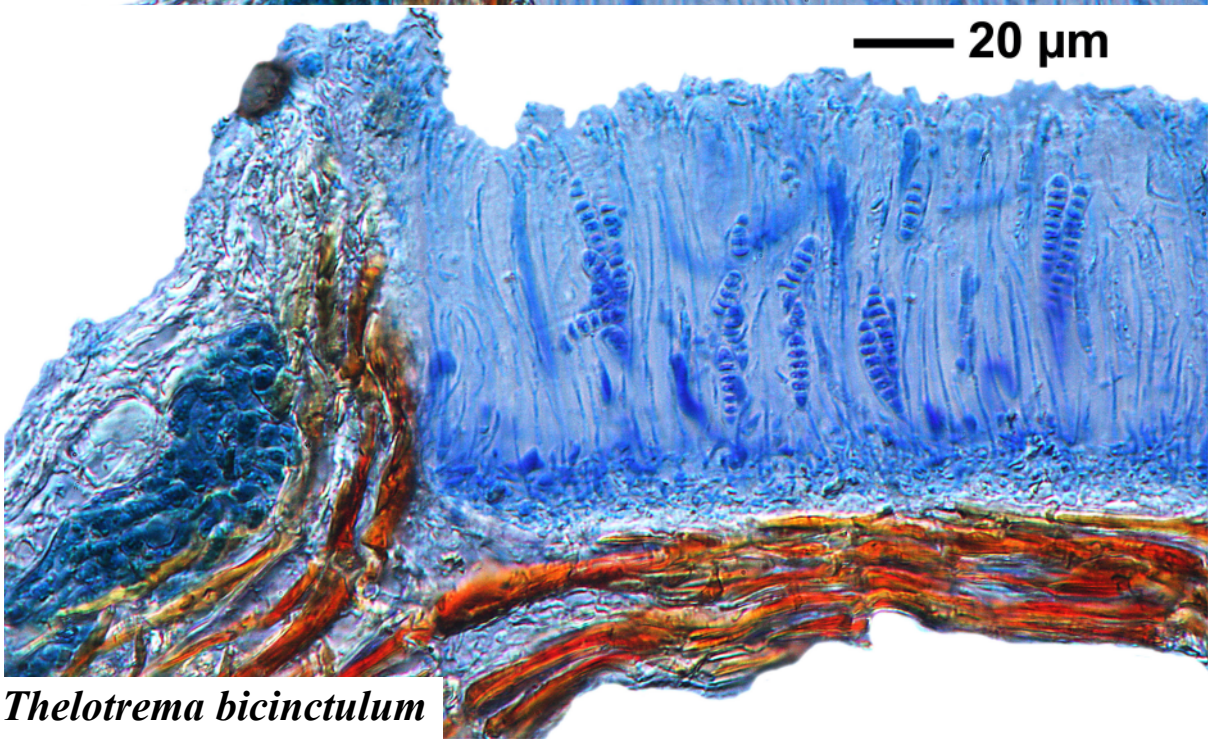
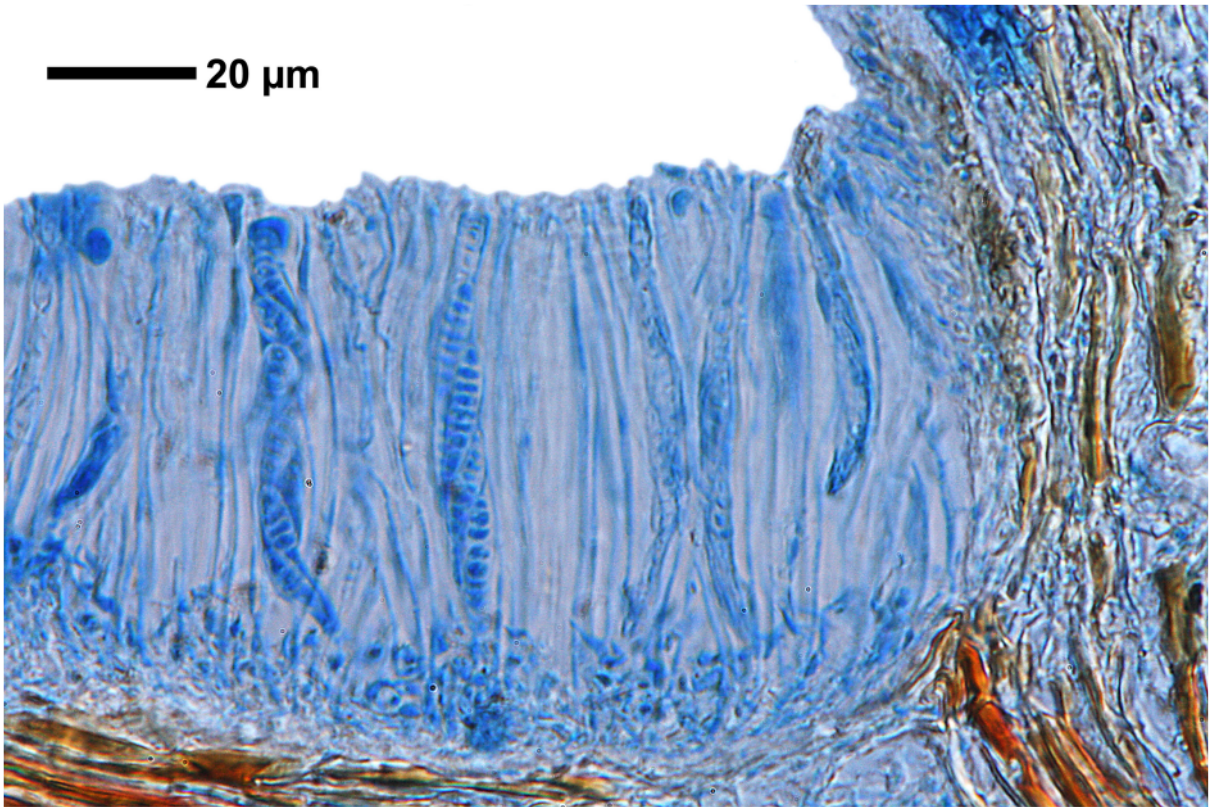






Thelotrema bicinctulum



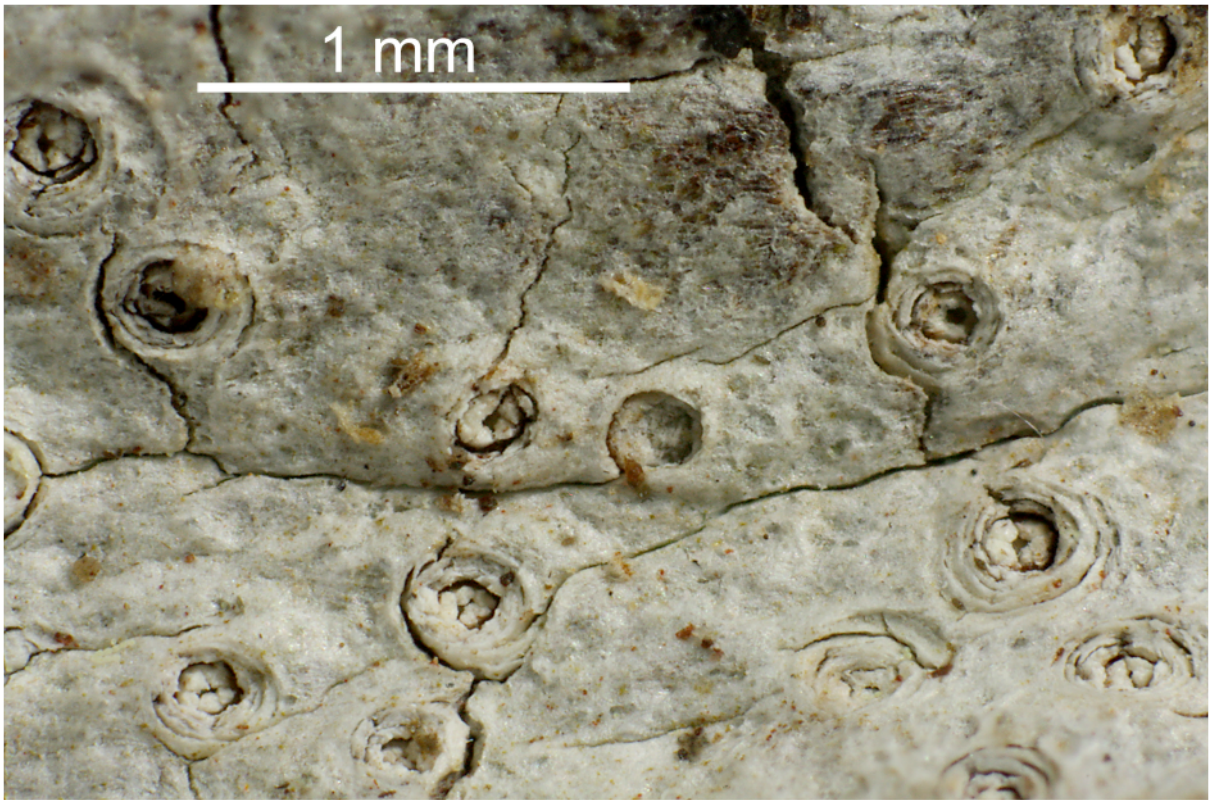
Thelotrema bicinctulum

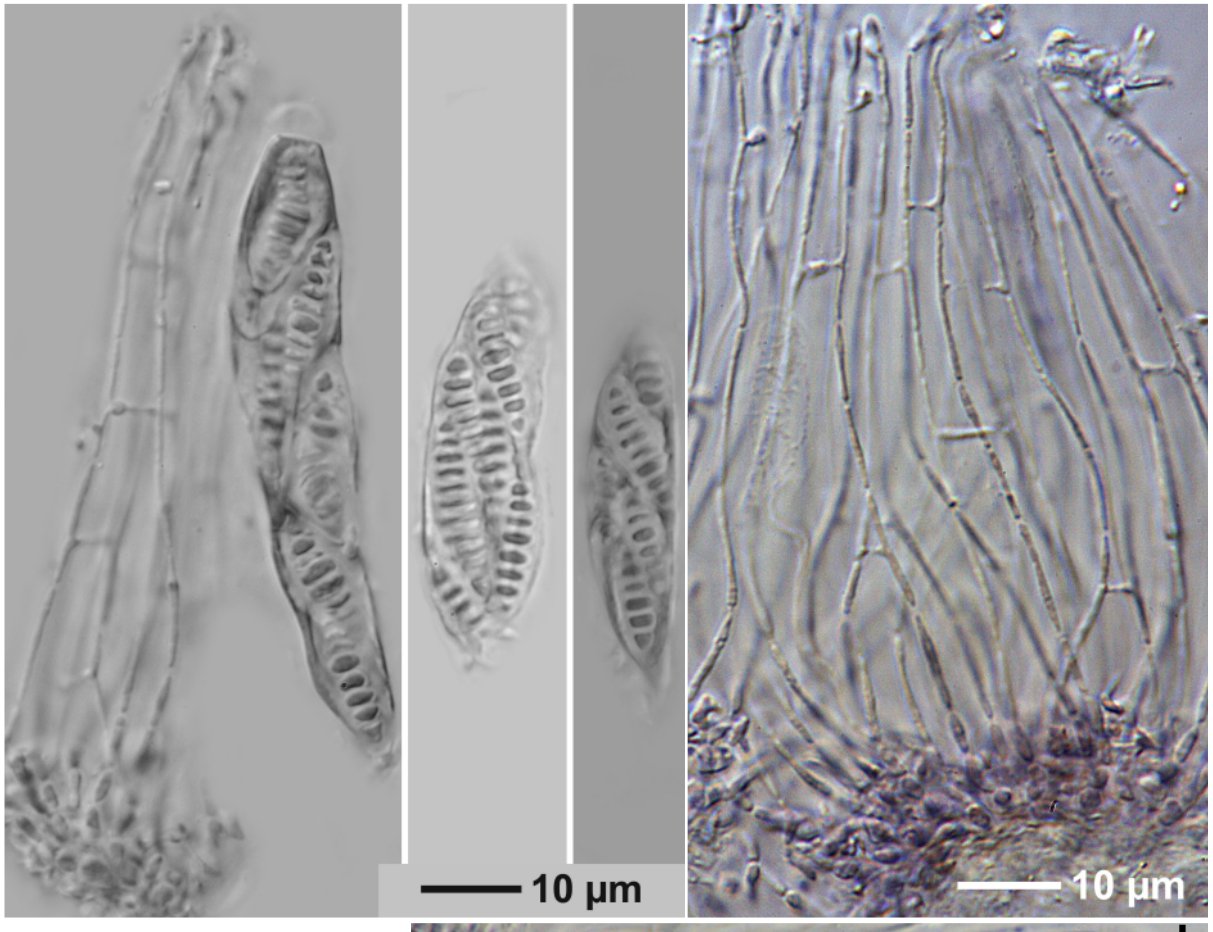
Thelotrema defossum (Müll.Arg.) Mangold
[= ***Ocellularia defossa*** Müll.Arg.]

Thallus endo- to epiphloeodal, grey, smooth, continuous. Ascomata insconspicuous, to c. 0.3 mm wide, immersed. Hymenium not insperse. Paraphyses unbranched, with anastomoses. Ascospores transversely septate, somewhat clavate, hyaline, weakly amyloid, 10-30(-40) x 5-8 µm, 4-11 loculate. Chemistry: K-, C-, P-; TLC: nil. Lit. Mangold (Diss. 2008, p. 188)

[17533], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm (IAL7) 15.01.2012, det. Kalb 06.2012.







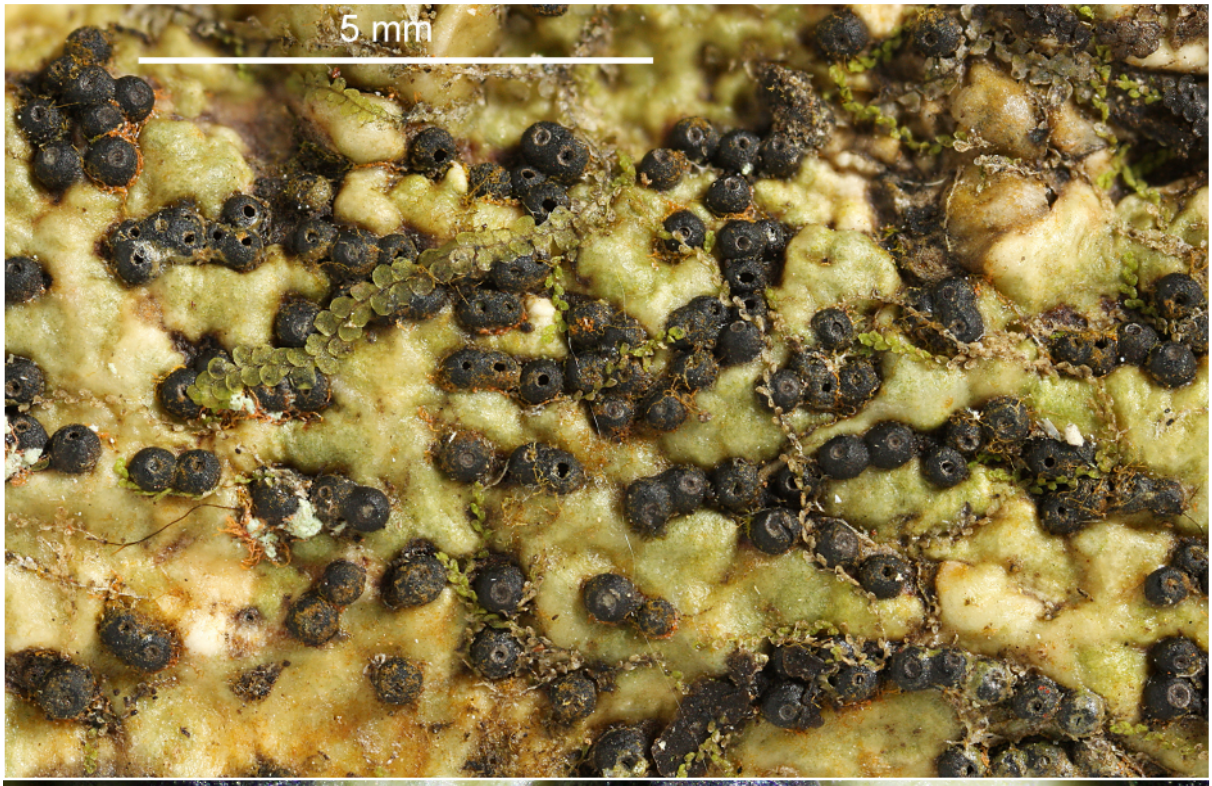


Thelotrema defossum

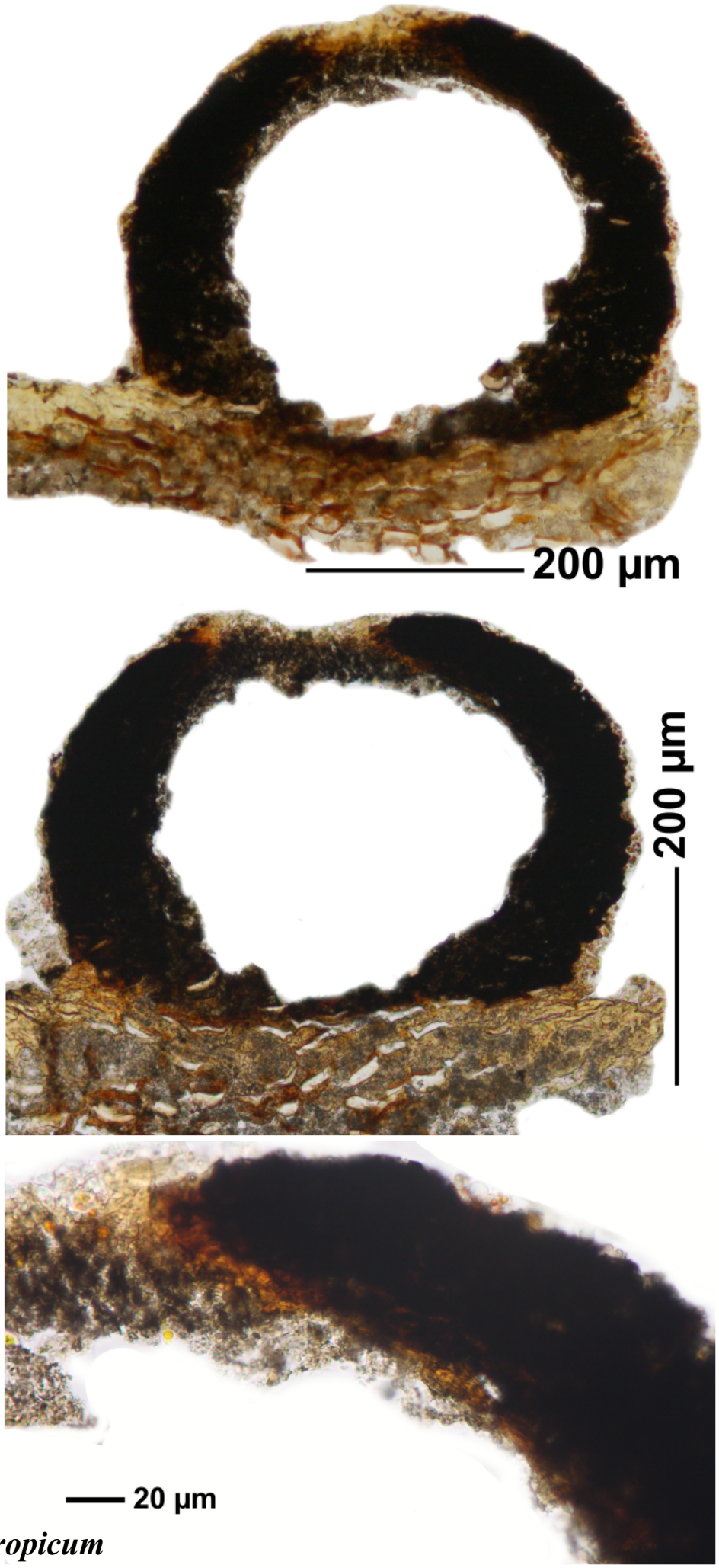
Trypethelium tropicum (Ach.) Müll. Arg.

Thallus yellowish greenish, UV+ somewhat yellowish. Perthecium black, exposed and not covered by thallus tissue, wall K-. Filaments branched, with anastomoses, 1.3 µm wide. Hamathecium somewhat inspersed, J-. Ascospores hyaline, 8/ascus, 3-septate, J-, 19-24 x 5-6µm.

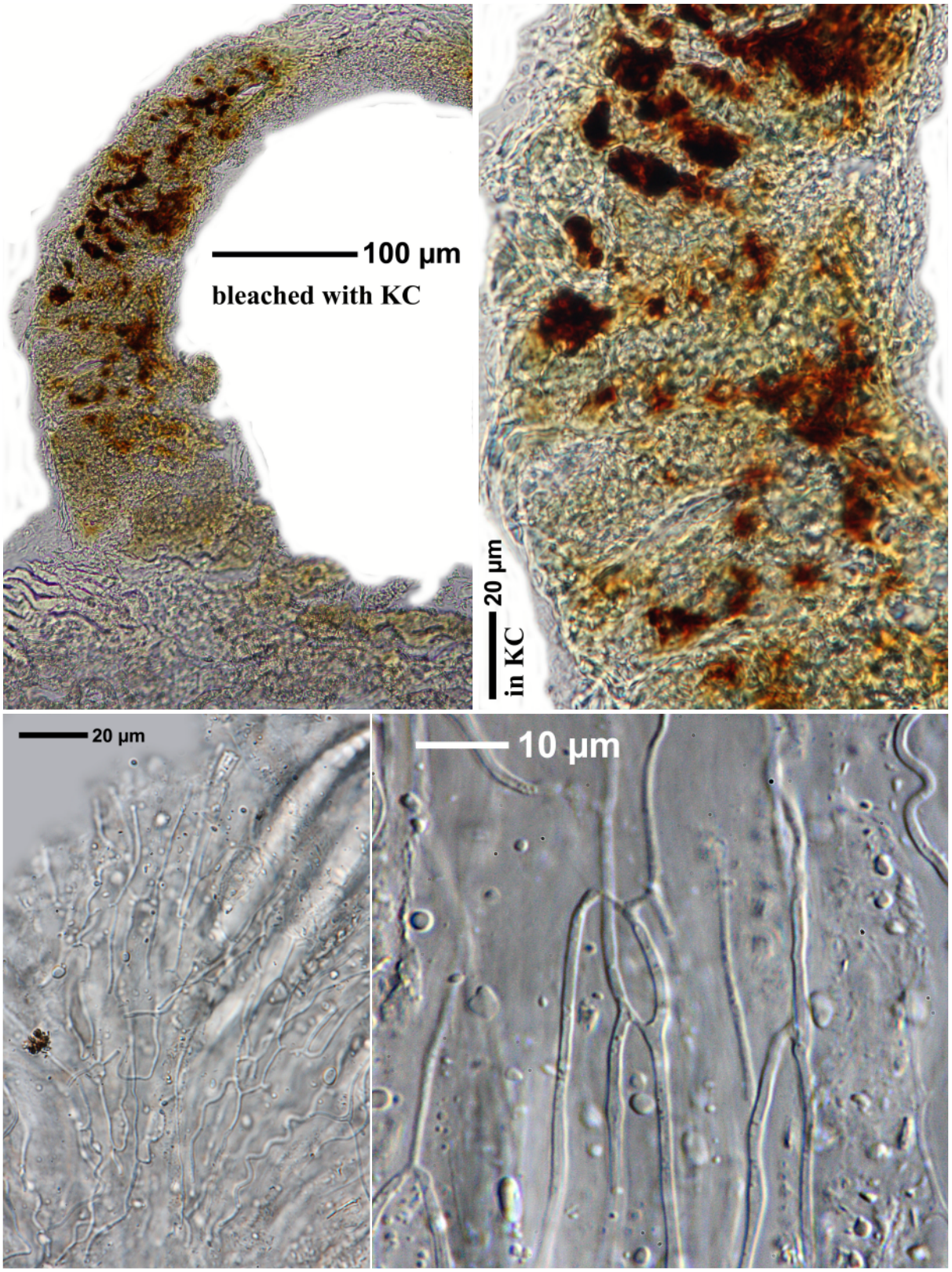
[17538], Thailand, Trat province, Ban-Dan Kao island, Mangroven Wald, 12.21359° N, 102.55290° E, 5 m. Leg. Schumm (IAL 7) 15.01.2012, det. Schumm 2012.



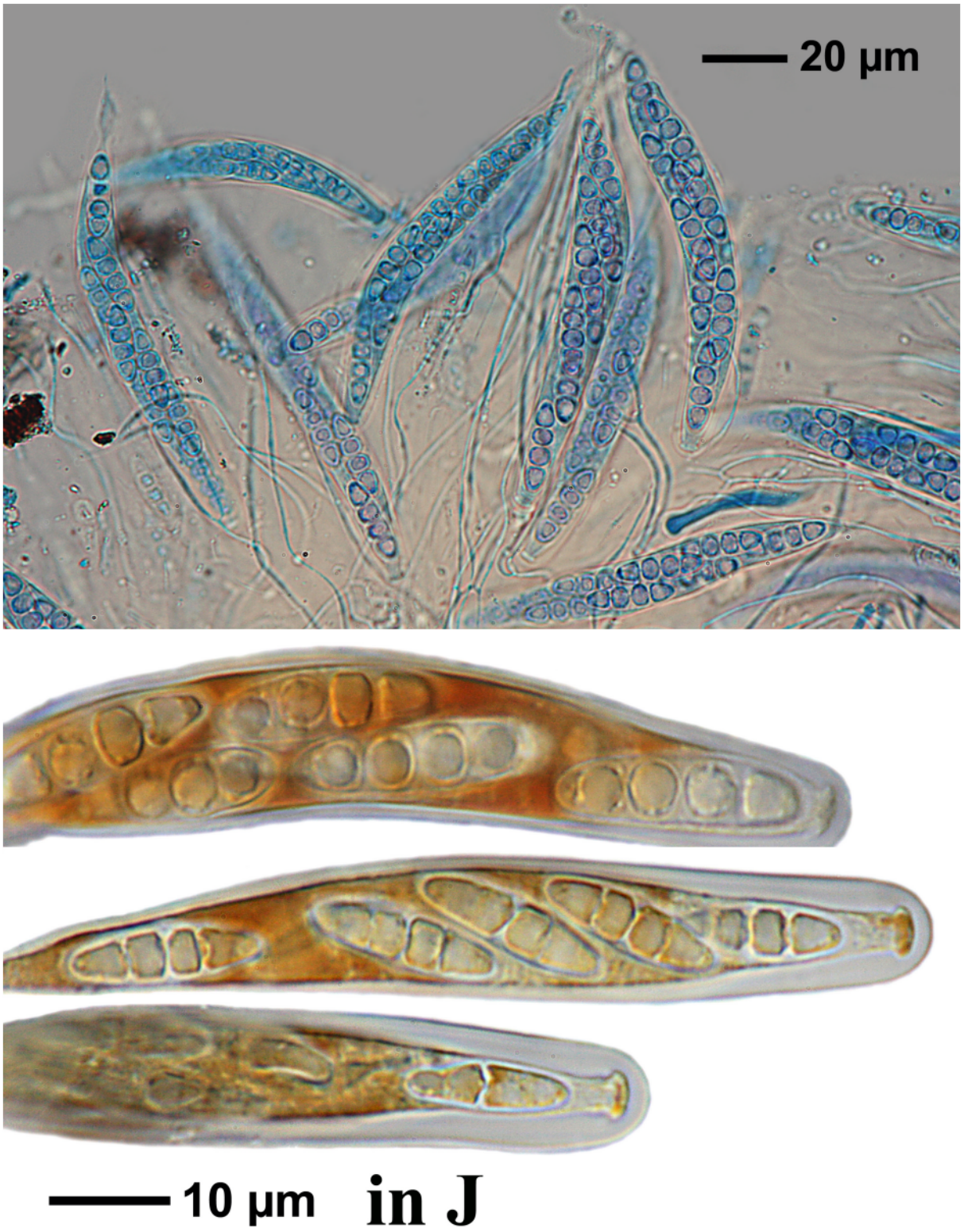




Trypethelium tropicum



Trypethelium tropicum



Trypethelium tropicum

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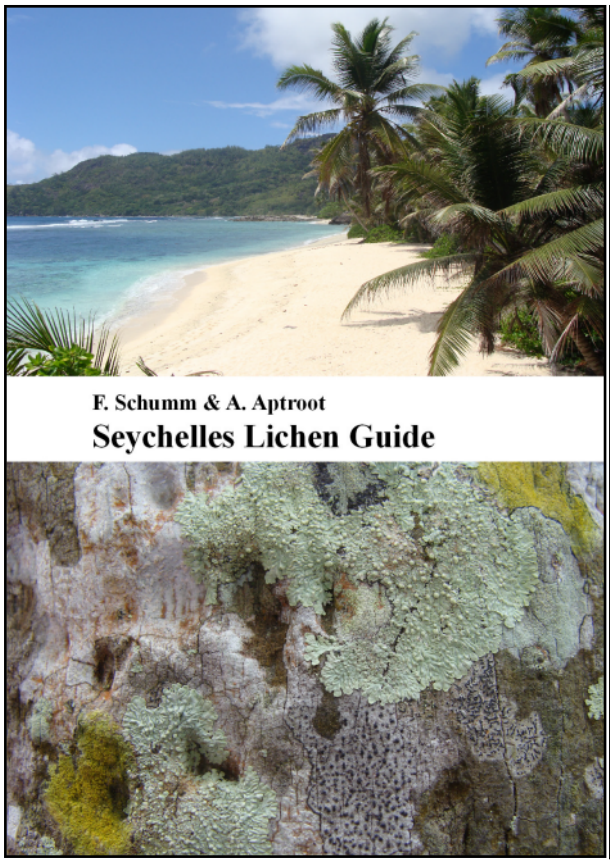

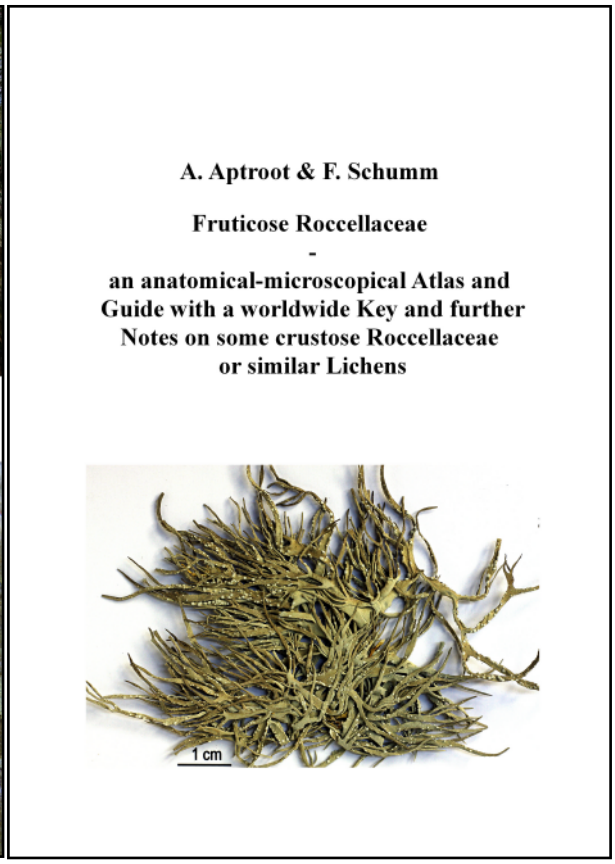

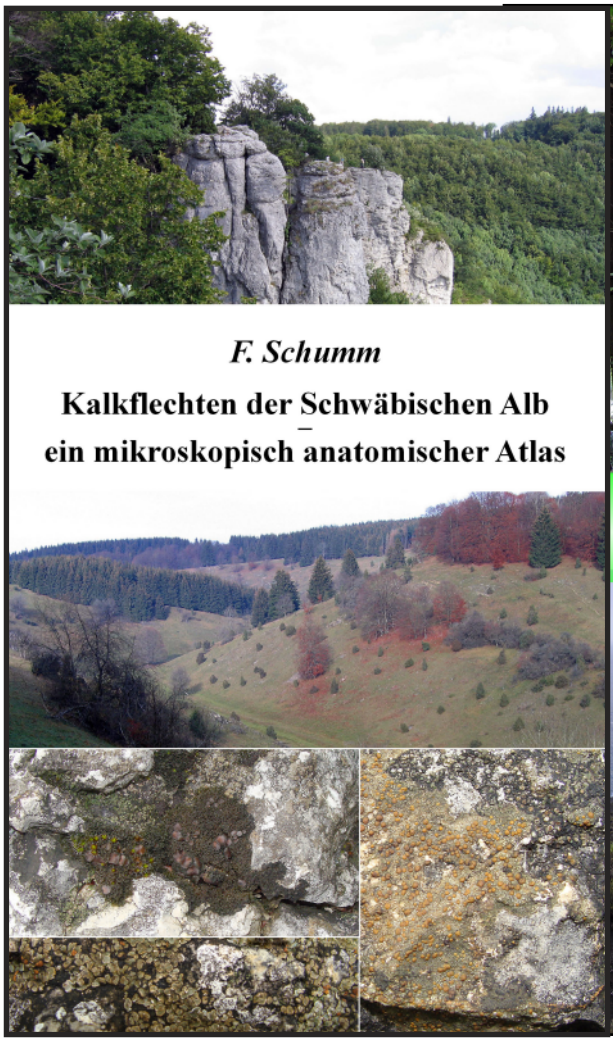

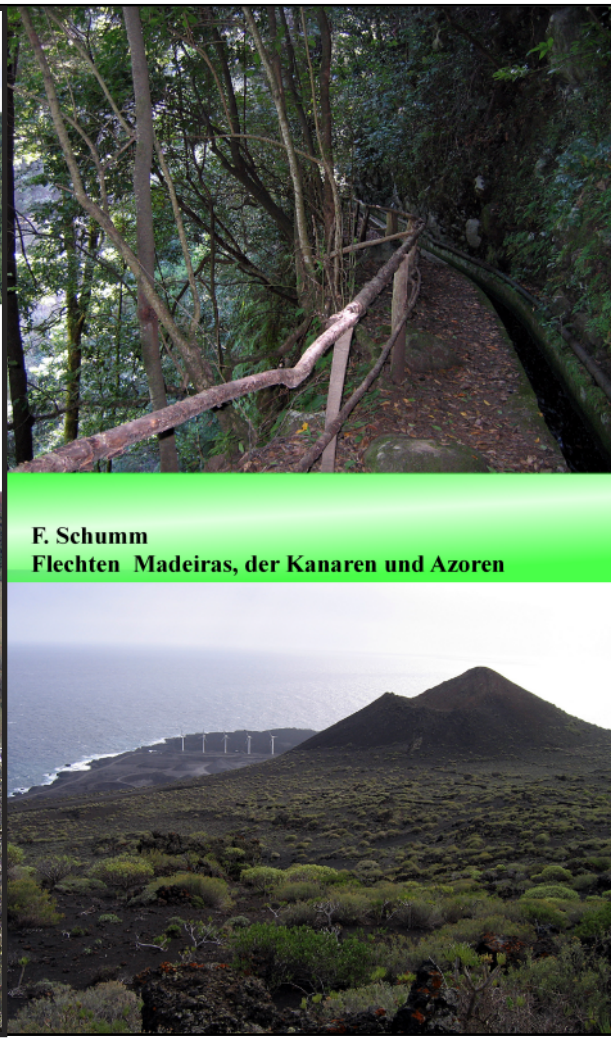

Lichens are most diverse in the tropics, where they cover most trees.
This book gives detailed illustrations and descriptions of c. 210 species which occur in East Asia.
Most of the species are illustrated for the first time ever in colour. From each species, habitus pictures are presented, but also illustrations of microscopical details. In some cases where the species are variable in some characters, more than one specimen is fully illustrated.
All illustrated specimens were found recently by the first author.

New species in this book:
Malmidea corallophora, Ocellularia protomegaspora

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