

F. Schumm (2026):

Images of Lichens

Zusatz

With this volume I document a collection of diverse spec. of different genera that may be an addition to earlier Vols in the Archives for Lichenology. I omitted the search for description from the literature because most of them could be found in th earlier Vols.

For the descriptions of europaean species I recomend the excellent descriptions that are provided in Prof. Nimis ITALIC 8 under the URL:
<https://italic.units.it/>

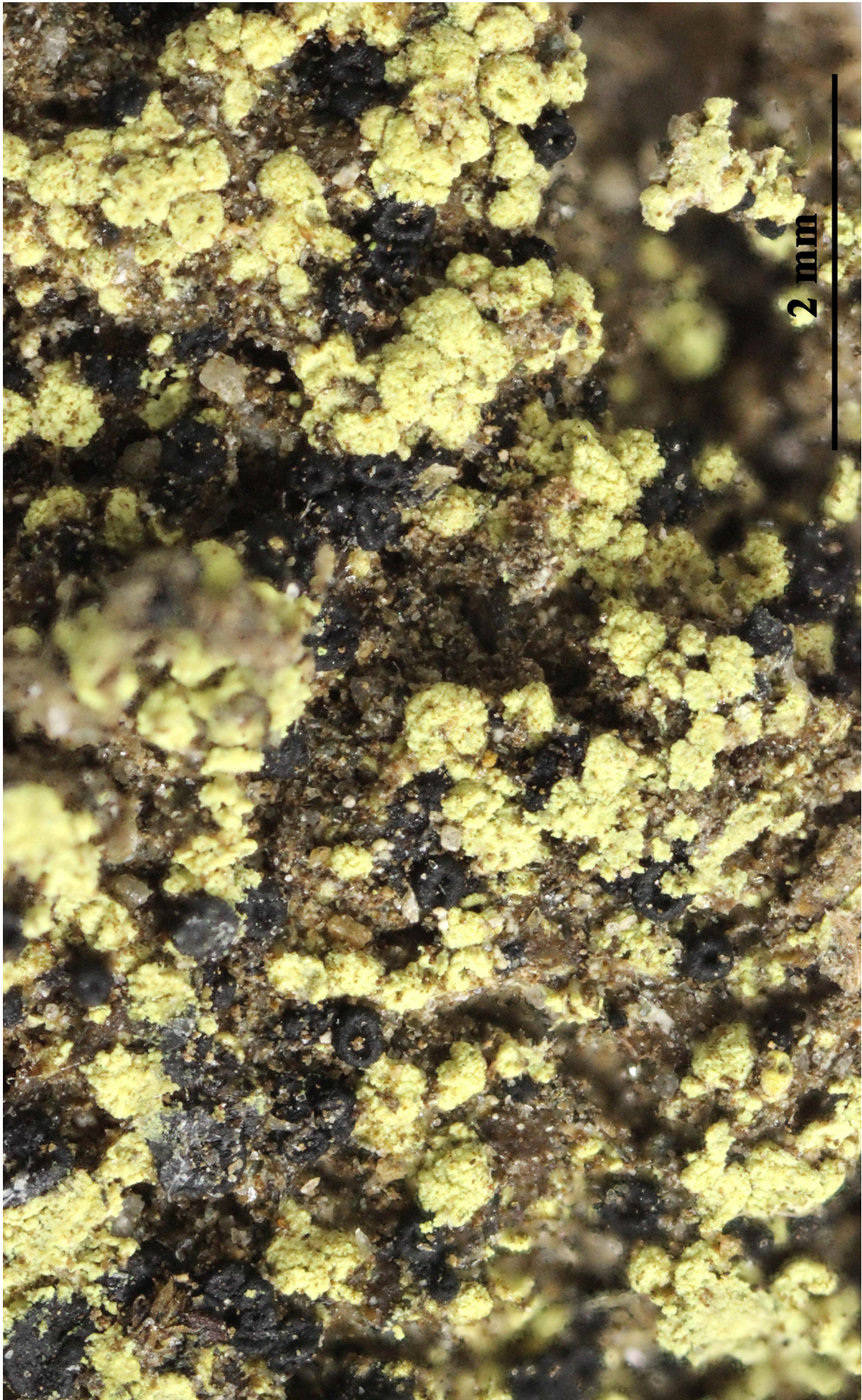
and the Australian Lichenslist under the Url:
https://www.anbg.gov.au/abrs/lichenlist/lichenchecklist_e_o.html

F. Schumm, 2026

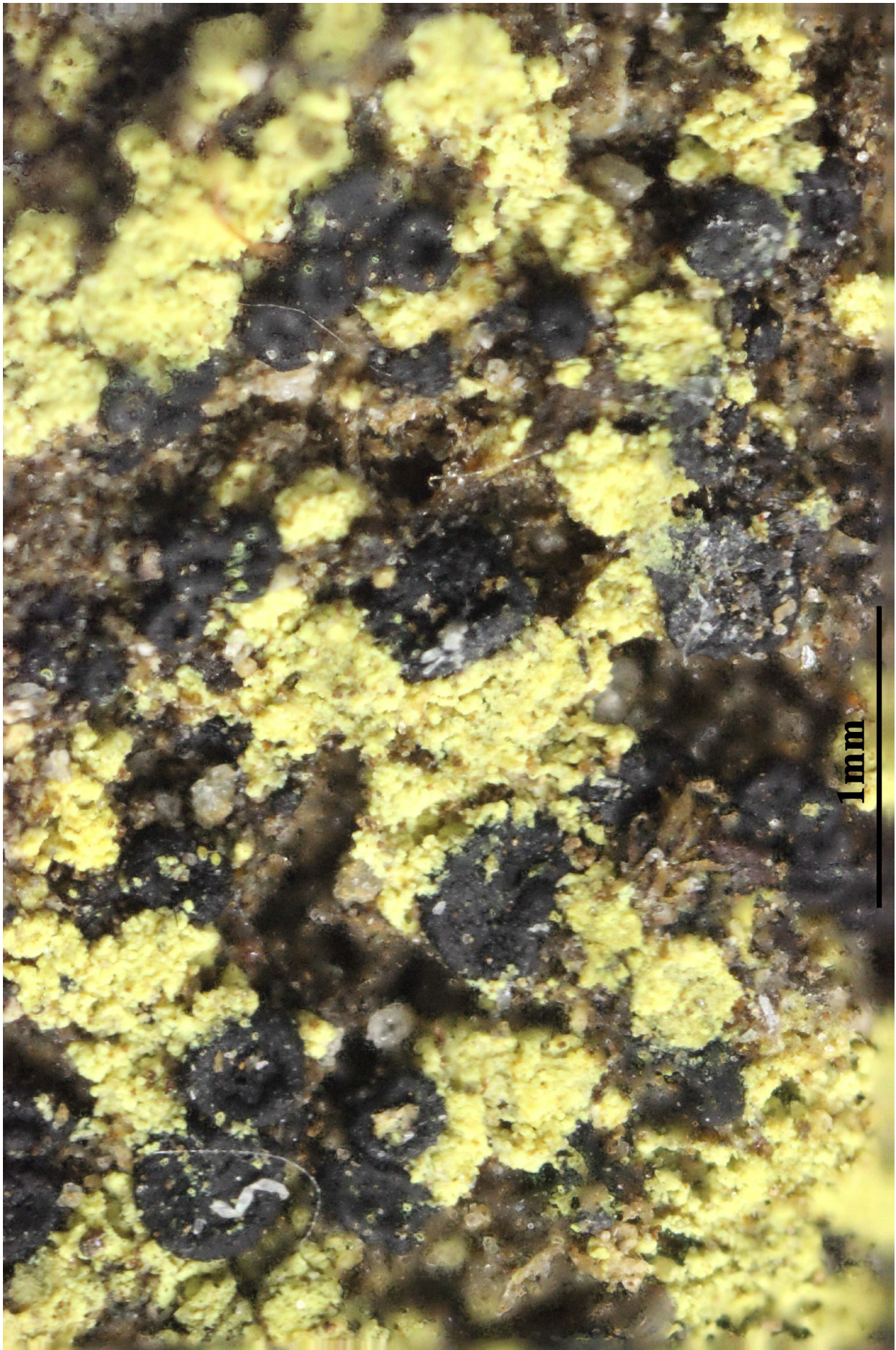
Arthrorhaphis citrinella (Ach.) Poelt, Best. europ. Flecht. (Vaduz): 126 (1969)
= *Lichen citrinellus* Ach. 1795

[21225], Österreich, nördlich des Felbertauerntunnels beim Bergwerk Wolfram. Blatt Matrei. Leg. F. Schumm, 06.09.1998, det. F. Schumm, 17.08.2056. EX HERBARIO F. SCHUMM NR. 21225.

Thallus crustose, episubstratic, forming small, irregular, up to 2.5 cm wide patches over saxicolous bryophytes, often dispersed and poorly delimited, greenish-yellow, usually entirely formed of loose, rarely compacted, coralloid aggregations of coarse granular soredia measuring 0.05-0.15(-0.2) mm. Medulla and Ca-oxalate crystals absent. Apothecia lecideine, black, matt, 0.4-1.0 mm across, laterally or centrally attached to the granular thallus, more rarely separated from the thallus, single or clustered in groups of 2-8, adnate to shortly and broadly stipitate, with a flat to distinctly convex, more or less coarsely rugose disc, the margin at first thick and protruding, later level with disc. Proper exciple 55-80 µm wide, dark dirty brown to olive green, darker towards the outer edge; epithecium brownish olive-green, N+ green, 15-25 µm high; hymenium colourless to pale olive green, densely inspersed with oil droplets, 90-140 µm high; paraphyses sparingly branched and anastomosing, 1-1.5 µm thick; hypothecium brownish olive green, 50-90 µm high. Asci 8-spored, bitunicate, clavate, I-, scarcely thickened at apex, with a small ocular chamber 100-130 x 10-13 µm. Ascospores (6-)7-11((-15))-septate, hyaline, needle-like, parallel in the asci, (45-)58-88(-102) x (2-)2.5-3.5(-4) µm. Photobiont chlorococcoid. Spot tests: thallus K-, C-, KC-, P-, UV+ orange. Chemistry: rhizocarpic acid (major), epanorin (minor).



Arthrorhaphis citrinella



Arthrorhaphis citrinella



Arthrorhaphis citrinella

Cladonia fimbriata (L.) Fr., Lich. eur. reform. (Lund): 222 (1831)
= *Lichen fimbriatus* L. 1753

Primary thallus squamulose, persistent or ephemeral, the squamules middle-sized to rather large, 2-4(-5) mm long, 1-3 mm wide, elongate and incised, grey green above, white beneath, sometimes sorediate. Podetia goblet-shaped, hollow inside, green to grey-green, mostly ecorticate and esquamulose, 0.5-3 cm tall, with small, regular, rarely marginally proliferating cups (c. 0.5 cm diam.) and long stalks which are 1-2 mm thick at base, farinose-sorediate throughout, the soredia 30-50 µm in diam. Apothecia rare, dark brown, convex, sometimes aggregated into 1-5 mm wide clusters. Asci 8-spored, clavate, thickened at apex, with a K/I+ blue tholus and a K/I+ strongly blue outer gelatinous sheath, *Cladonia*-type. Ascospores 1-celled, hyaline, ellipsoid. Pycnidia brown, mainly found along the margins of cups. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K- or K+ yellowish slowly turning brown, C-, KC-, P+ red, UV-. Chemistry: fumarprotocetraric acid, sometimes with additional quaesitic acid. - Note: a widespread temperate to arctic-alpine, holarctic species found on rotten wood, soil, at the base of trunks, with a wide ecological range and a correspondingly wide altitudinal range.



Cladonia fimbriata



Cladonia fimbriata

Cladonia pyxidata (L.) Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 121
(1796) [1795]
= *Lichen pyxidatus* L. 1753

[21224], Österreich, nördlich des Felbertauerntunnels beim Bergwerk Wolfram. Blatt Matrei. Leg. F. Schumm, 06.09.1998. -P+ orangerot.-
Ex Herbario F. Schumm Nr.21224.

Primary thallus squamulose, persistent, the squamules middle-sized, 2-7 mm long (rarely more) and up to 4 mm wide (usually less), thin (less than 0.4 mm thick), irregularly lobed or incised, the tips rounded, mostly ascending, never forming a subrosulate crust, greenish grey above, white beneath. Podetia goblet-shaped, hollow inside, greenish grey, esquamulose, 0.5-3(-5) cm tall, with broad cups gradually tapering into short stalks, the cups regular or proliferating from margin, with contiguous to scattered, corticate granules or peltate squamules (schizidia), especially inside the cups. Apothecia frequent, brown, convex. Asci 8-spored, clavate, thickened at apex, with a K/I+ blue tholus and a K/I+ strongly blue outer gelatinous sheath, *Cladonia*-type. Ascospores 1-celled, hyaline, ellipsoid. Pycnidia dark, semi-immersed on the margins of cups, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests and chemistry: four chemotypes are known from Europe (all of them C-, KC-, UV-): 1) K- or K+ yellowish slowly turning brown, P+ red (fumarprotocetraric acid complex, often with additional physodalic acid). 2) K+ yellow, P+ red (atranorin and fumarprotocetraric acid complex). 3) K- or K+ yellowish slowly turning brown, P+ red (fumarprotocetraric acid complex and psoromic acid), 4) K+ yellow, P+ red (atranorin, fumarprotocetraric and psoromic acids). Chemotype 1) is the most frequent. - Note: a widespread, very polymorphic, holarctic species with a wide altitudinal-latitudinal range and a wide ecological amplitude, found both on soil, lignum and bark at the base of trees.litt.).



Cladonia pyxidata



Cladonia pyxidata

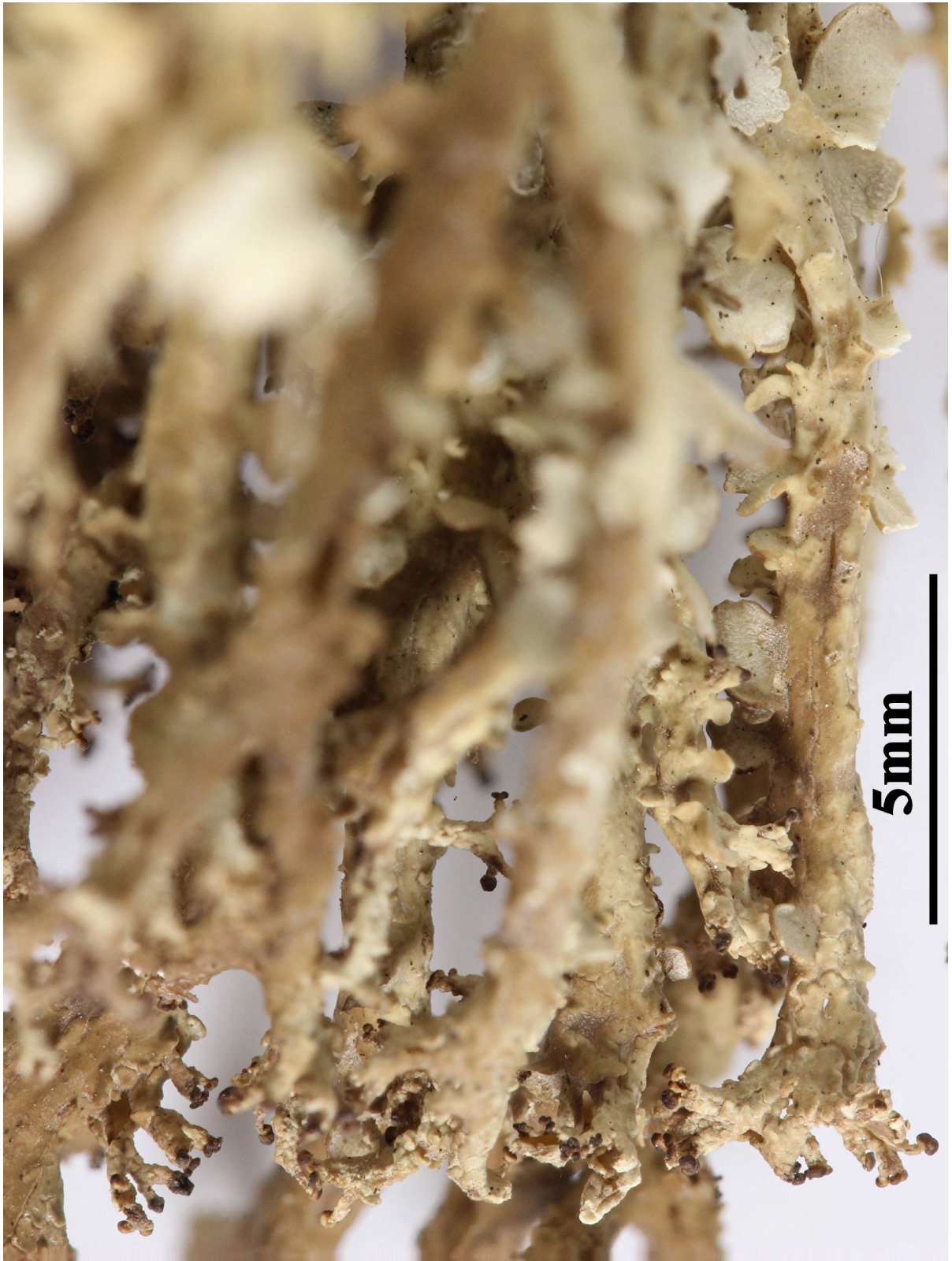
Cladonia squamosa Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 125
(1796) [1795]

[21227], Österreich, nördlich des Felbertauerntunnels beim Bergwerk Wolfram. Blatt Matri. Leg. F. Schumm, 06.09.1998, det. F. Schumm, 16.8.2026. Thallus P-, K-, UV+ weiß. Ex Herbario F. Schumm Nr. 21227.

Primary thallus squamulose, persistent or rarely disappearing, the squamules indented, 2-10 mm long, grey green above, white beneath, esorediate but sometimes granulose on the lower surface. Podetia extremely variable in shape and size, hollow inside, greenish grey to brown, not melanotic at base, 3-7(-14) cm tall, 0.5-2(-5) mm thick, simple or sparingly branched with open axils, usually expanded in upper parts to form gaping funnels which may proliferate radially, the surface often largely ecorticate exposing the stereome, more or less densely covered with microsquamules, squamules and granules, esorediate. Apothecia infrequent, brown, convex, located at the top of podetia or at the margin of funnels, often clustered. Asci 8-spored, clavate, thickened at apex, with a K/I+ blue tholus and a K/I+ strongly blue outer gelatinous sheath, *Cladonia*-type. Ascospores 1-celled, hyaline, ellipsoid. Pycnidia dark, semi-immersed on podetial tips, rarely on basal squamules, with a red or colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC-, P-, UV+ white. Chemistry: squamatic acid and variable amounts of barbatic acid (especially when fertile). - Note: a widespread holarctic lichen found on organic substrata in sheltered situations, rarely on bark, on basal parts of trunks; a very polymorphic taxon.



Cladonia squamosa

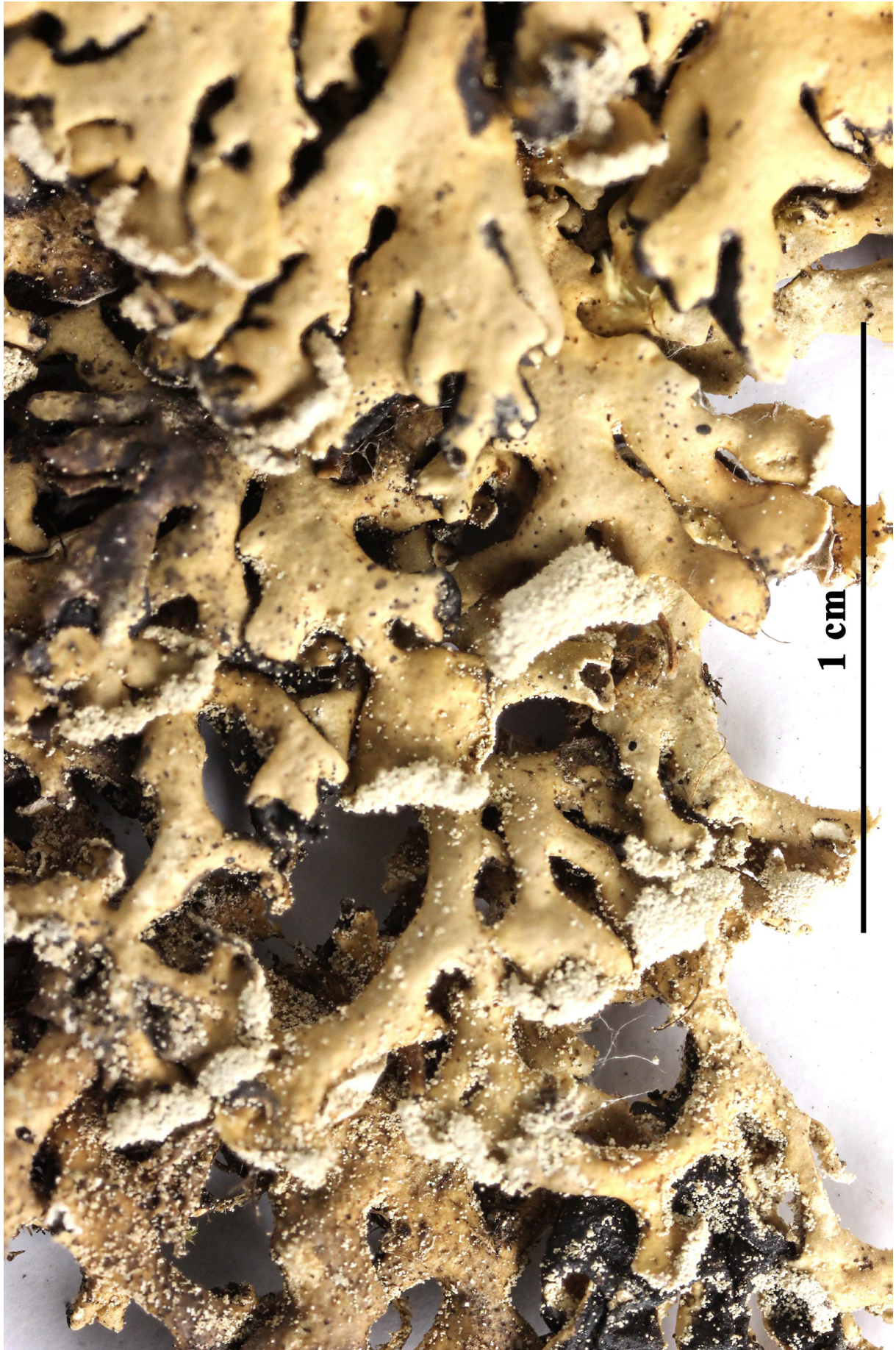


Cladonia squamosa

Hypogymnia physodes (L.) Nyl., Lich. Envir. Paris: 39 (1896)
= *Lichen physodes* L. 1753

[9351], Spanien, Kanaren, La Gomera: Los Barranquillos nordöstlich von Arure an der Strasse nach Vallehermoso im Lorbeerwald. 28°09.150 N, 17°18.299 W, 1015 m. Leg. F. Schumm, 13.02.2002, det. F. Schumm, 17.08.2056. EX HERBARIO F. SCHUMM NR. 9351.
- Mit Lippensoralen; Mark P+ rot.

Thallus foliose, heteromerous, dorsiventral, firmly (when young) to loosely attached, forming up to (4-)6-8(-10) cm broad, regular or irregular rosettes, the lobes much swollen and hollow inside, flat to mostly convex, contiguous to imbricate, often ascending at tips, grey to greenish grey, smooth and often glossy, 1-2(-3) mm broad. Soralia labriform, developing from the rupture of the underside tips of lobes. Lower surface black (brown at margins and lobe tips), rugose, erhizinate. Upper cortex of tightly packed, more or less anticlinally oriented hyphae, the cell walls with Cetraria-type lichenan; medulla soon becoming hollow, lining the cavity inside the lobes, the ceiling of the cavity white or dark, the floor dark; lower cortex dark, paraplectenchymatous. Apothecia very rare, lecanorine, shorthòy stalked, with a red-brown disc and a persistent thalline margin. Epithecium brown; hymenium and hypothecium colourless; paraphyses coherent, simple or sparingly branched in upper part. Asci 8-spored, clavate, Lecanora-type. Ascospores 1-celled, hyaline, ellipsoid, (6-)7-8(-9) x 4-5.5 µm. Pycnidia immersed, black. Conidia rod-shaped to weakly bifusiform, 2-2.5 x 0.6-0.9 µm. Photobiont chlorococcoid. Spot tests: upper cortex K+ yellow, C-, KC-, P- or P+ pale yellow, UV-; medulla and soralia K+ slowly reddish brown, C-, KC+ red, P+ orange-red, UV+ pale blue-violet. Chemistry: upper cortex with atranorin and chloroatranorin; medulla and soralia with physodic acid (major), 2'-O-methylphysodic acid (minor or accessory), 3-hydroxyphysodic acid (major), physodalic acid (major), and protocetraric acid (minor). - Note: a widespread holarctic lichen, still common throughout the country, and even occurring, albeit sporadically and with poorly developed specimens, in relatively polluted areas of the Po- plain; optimum in natural habitats, from the lowlands to the subalpine belt.



Hypogymnia physodes



Hypogymnia physodes

Hypogymnia tavaresii D. Hawksw. & P. James, in Hawksworth, Lichenologist 5(5-6): 454 (1973)

[10353], Spanien, Kanaren, La Gomera: Nördlich von Arure vor der Weggabelung Vallehermoso - San Sebastian am Parkplatz Los Barranquillos, 28°09.144' N, 17°18.305' W, 1020 m; nebelreiche Erica-Myrica Zone (mit *Hypotrachyna* und *Thelotrema*). Leg. F. Schumm 19.04.2003, det. P. L. Nimis, 17.08.2056. EX HERBARIO F. SCHUMM NR. 10353.

- Mit großen Apothecien, ohne Soredien. Mark P-, KC-, Thallus K+ gelb.

Thallus corticolus, adnatus, foliosus, 4-8 cm diametro, affixus praeter apicem; lobi marginales liberi, effusi, rectescentes ad apices; lobi dorsiventraliter complanati, plani ad apices sed convexescentes et inflatescentes in partibus centralibus, 1-3 mm lati; superficies superior glauco-grisea ad subviridi griseam, hebetata, laevigata, non valde rugosa; instructa inferior brunnea in parte centrali sed bubalina versus apices. Structura anatomica ut in aliis speciebus generis *Hypogymnia* (Nyl.)Nyl. Alga symbiotica ad genus *Trebouxia* de Puymaly pertinens. Soralia, isidia et pseudocyphellae absentia. Apothecia numerosa ad sparsa, rarissima absentia, valde pedicellata; pedicella 2-5 mm alta, superne inflata, inferne constricta, saepe plicata, aliquando 1-3 ramosa; discus imperforatus, concavus, pallide brunneus ad avellaneum, usque 2-6 mm diametro. Excipulum thallinum concolor thallo, integrum et persistens. Epithecium pallide brunneum, 6-9 µm altum; thecium incoloratum, 30-45 µm altum; hypothecium incoloratum, 15-20 µm altum. Paraphyses (? pseudoparaphyses) simplices vel sparse ramosae, septatae, conglutinatae, 1-5—2-5 µm latae, apicibus capitatis, 2-5-3-5 µm latis. Asci clavati, impedio-bitunicati, muris crassis, apicibus cum rostro interno, 8 sporis, 25-35 x 15-20 µm. Ascosporae irregulariter biseriatae in ascis, subglobosae vel ellipsoideae, simplices, hyalinae, 5-7 x 3.5-4.5 µm. Pycnidia numerosa, immersa in cortice superiore, globosa, nigra, 110-160 µm diametro; conidia cylindrica, hyalina, simplicia, 2.5-5 x 1.2 µm.

Thallus corticolous, loosely adnate, foliose, 4-10 cm diam., attached to the substrate in the central parts; marginal lobes becoming free, spreading, sometimes erect towards the apices; lobes dorsiventrally flattened, plane near the apices but becoming convex and strongly inflated

towards the centre of the thallus, 2-5 mm wide; upper surface greenish-grey* to pale bluish-green or greyish yellow-green, matt to slightly shiny, becoming strongly rugose 0.5-1.5 cm from the apices, sometimes with minute inflated lobules; lower surface brown centrally but becoming buff towards the apices. Anatomical structure as in other species of *Hypogymnia*. Phycobiont belonging to the genus *Trebouxia*. Marginal soredia absent. Soredia arising from the rugose ridges on the upper surfaces of the lobes, sparse to numerous, sometimes crowded and forming irregular pustules. Isidia and pseudocyphellae absent. Ascocarps numerous to sparse or absent, stalked, stalks 3-9 mm tall, swollen above but constricted at the base; disc imperforate, at first concave but later becoming plane to slightly convex and finally plicate, brown to bay, usually 5-15 mm diam. Excipulum thallinum concolourous with the thallus, entire and persistent. Epithecium brown, 7-12 μm tall; thecium colourless, 25-35 μm tall; hypothecium colourless, 15-22 μm tall. Paraphyses (? pseudoparaphyses) simple to sparsely branched, septate, conglutinate, 2-3 μm wide, with capitate apices, 3.3-5 μm wide. Asci elongate-clavate, arrested-bitunicate, thick walled, apices with an internal beak, 8 spored, 22-30 x 8-12 μm . Ascospores irregularly biserial in the asci, ellipsoid, simple, hyaline, 4.5-7 x 2.5-5.5 μm . Pycnidia abundant to sparse, immersed in the upper cortex, globose, black, *c.* 100-180 μm diam.; conidia cylindrical, hyaline, simple, 4-7 x 1-1.5 μm . Thallus K+ yellow, C - , KC - , P - or faintly yellow; medulla K - , C - , KC+ rose, P- ; contains atranorin, chloratranorin, physodic acid and two unidentified substances.

Hypogymnia tavaresii



Hypogymnia tavaresii



Hypogymnia tavaresii

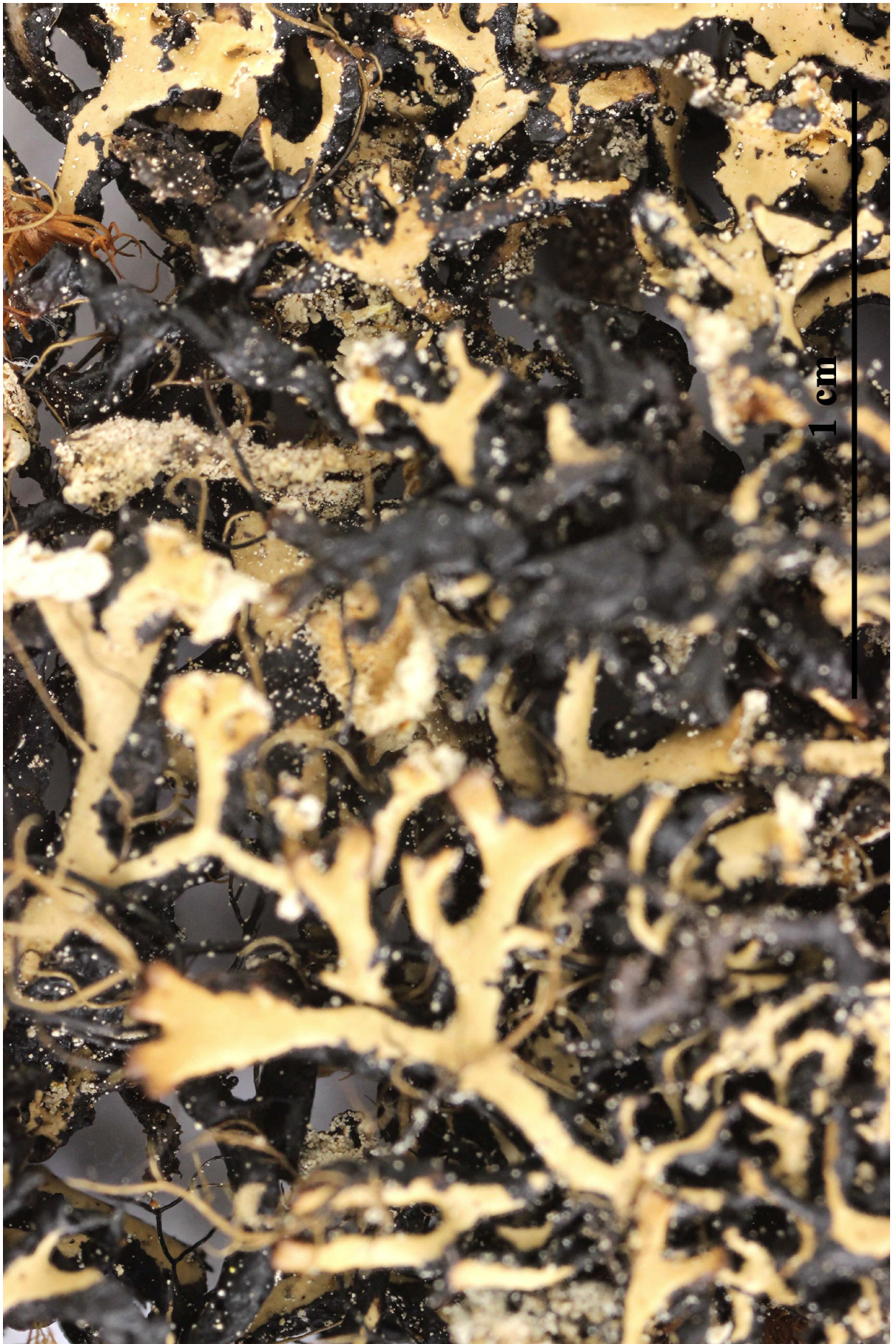


Hypogymnia tavaresii

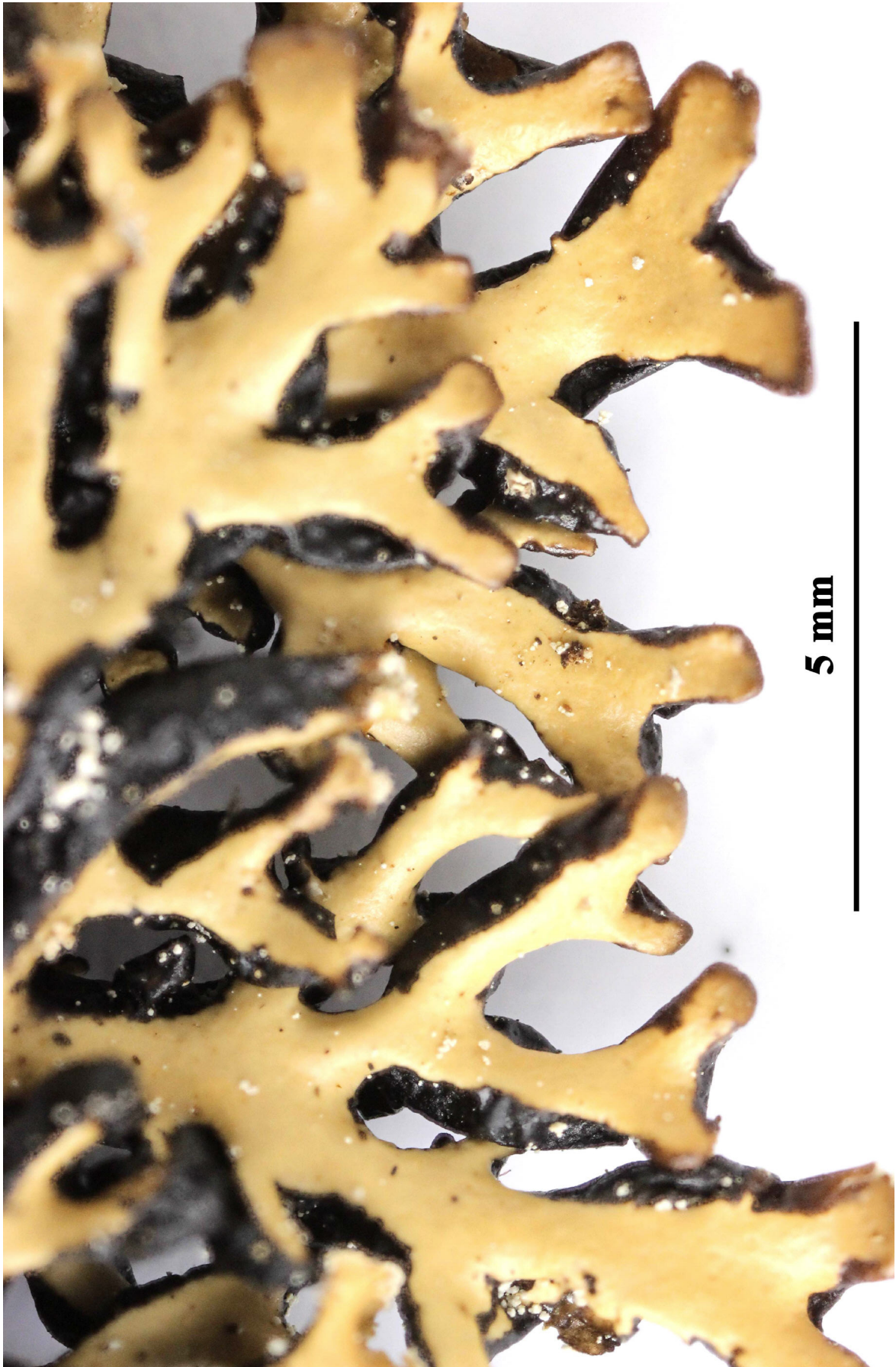
Hypogymnia vittata (Ach.) Parrique, Act. Soc. linn. Bordeaux 53: 66 (1898)
= *Parmelia physodes* var. *vittata* Ach. 1803

[21218], Schweiz, Davos-Wolfgang, Richtung Drussetschawald, Felsblockhalde mit Kiefern und Fichten, feucht, kalt schattig, Hanglage nördlich einer kleinen Moorwiese, 1665 m., Leg. F. Schumm & H.-J. Maier 21.09.1974, det. F. Schumm. 17.08.2056. EX HERBARIO F. SCHUMM NR. 21218.

Thallus foliose to subfruticose, heteromerous, dorsiventral, at first loosely adnate, but often soon ascending or pendent, forming up to 10(-15)cm broad, irregular rosettes or irregularly spreading, the lobes swollen, hollow inside, 0.5-2(-3) mm wide, elongate, slender, irregularly branching, separate to imbricate, with small, marginal secondary lobules. Soredia terminal, at first labriform, then becoming strongly lacerate. Upper surface smooth to weakly rugose, whitish, greenish grey or sometimes partially brown, often with a black border. Lower surface black to brownish black, sparsely perforate near tips and at the branching points, erhizinate, often visible from above along lobe margins. Upper cortex of tightly packed, more or less anticlinally oriented hyphae, the cell walls with *Cetraria*-type lichenan; medulla soon becoming hollow, lining the cavity inside the lobes; lower cortex dark, paraplectenchymatous. Apothecia rare, lecanorine, mainly laminal, brought by hollow stipes, 6-8(10) mm across, with a brown disc. Epithecium brown; hymenium and hypothecium colourless; paraphyses coherent, simple or sparingly branched in upper part. Asci 8-spored, clavate, *Lecanora*-type. Ascospores 1-celled, hyaline, broadly ellipsoid, 4.5-7 x 4-5.5 μm . Pycnidia frequent, laminal, black, often in clusters. Conidia narrowly cylindrical to weakly bifusiform, 4.5-6.5 x c. 1 μm . Photobiont chlorococcoid. Spot tests: upper cortex K+ yellow, C-, KC-, P- or P+ pale yellow, UV-; medulla K-, C-, KC+ orange-red, P-, UV+ pale blue-violet. Chemistry: upper cortex with atranorin; medulla with physodic acid, 3-hydroxyphysodic acid (both major), and vittatolic acid (minor/accessory). - Note: a circumboreal-montane lichen found on acid bark, often on basal parts of trunks, on acid soil and overgrowing moribund bryophytes, probably restricted to the Alps in Italy.



Hypogymnia vittata



Hypogymnia vittata

[21236}. Österreich, nördlich des Felbertauerntunnels beim Bergwerk Wolfram. Blatt Matrei. Leg. F. Schumm, 06.09.1998, det. F. Schumm, 16.08.2056. Ex Herbario F. Schumm Nr. 21236.

Thallus K⁺ blutrot (Nostictic acid), Spoem hyalin, 1-zellig, zu 8 im Ascus, 15 x 12.5 µm

Thallus crustose, episubstratic, continuous to verrucose-areolate, whitish grey, pale blue-grey or white, epruinose. Apothecia lecanorine, strongly constricted at base, 0.5-2(-2.5) mm across, with a pale red-brown to brown-black, flat to finally convex, sometimes slightly pruinose disc, and a thick, long-persistent but sometimes finally almost excluded, smooth to verruculose thalline margin. Thalline exciple corticate, the medulla with large crystals (visible under polarized light) which are insoluble in K; proper exciple colourless, lacking crystals; epithecium brown to olive-brown, K⁺ green, N⁺ purple, with coarse crystals, the pigment and the crystals dissolving in K; hymenium colourless, 60-90 µm high; paraphyses 1.5-2 µm thick at mid-level, the apical cells up to 3 µm wide; hypothecium colourless, not interspersed with oil droplets. Asci 8-spored, clavate, very thin-walled, with a K/I⁺ blue, tall tholus penetrated by a faintly amyloid apical cushion, the wall K/I⁻, surrounded by a blue outer layer, *Lecanora*-type. Ascospores 1-celled, hyaline, broadly ellipsoid, (7-)9-17(-19) x (4.5-)6-9 µm, the wall >1 µm thick. Photobiont chlorococcoid. Spot tests: thallus K⁺ yellow or K⁺ yellow turning red, C⁻, KC⁻, P⁺ pale yellow to orange. Chemistry: atranorin (major), chloroatranorin (minor), roccellic acid (major or absent), sometimes norstictic acid. - Note: a circumpolar, cool-temperate to arctic-alpine lichen of siliceous rocks, more rarely found also on hard lignum, most frequent in upland areas; common and widespread in the Alps.



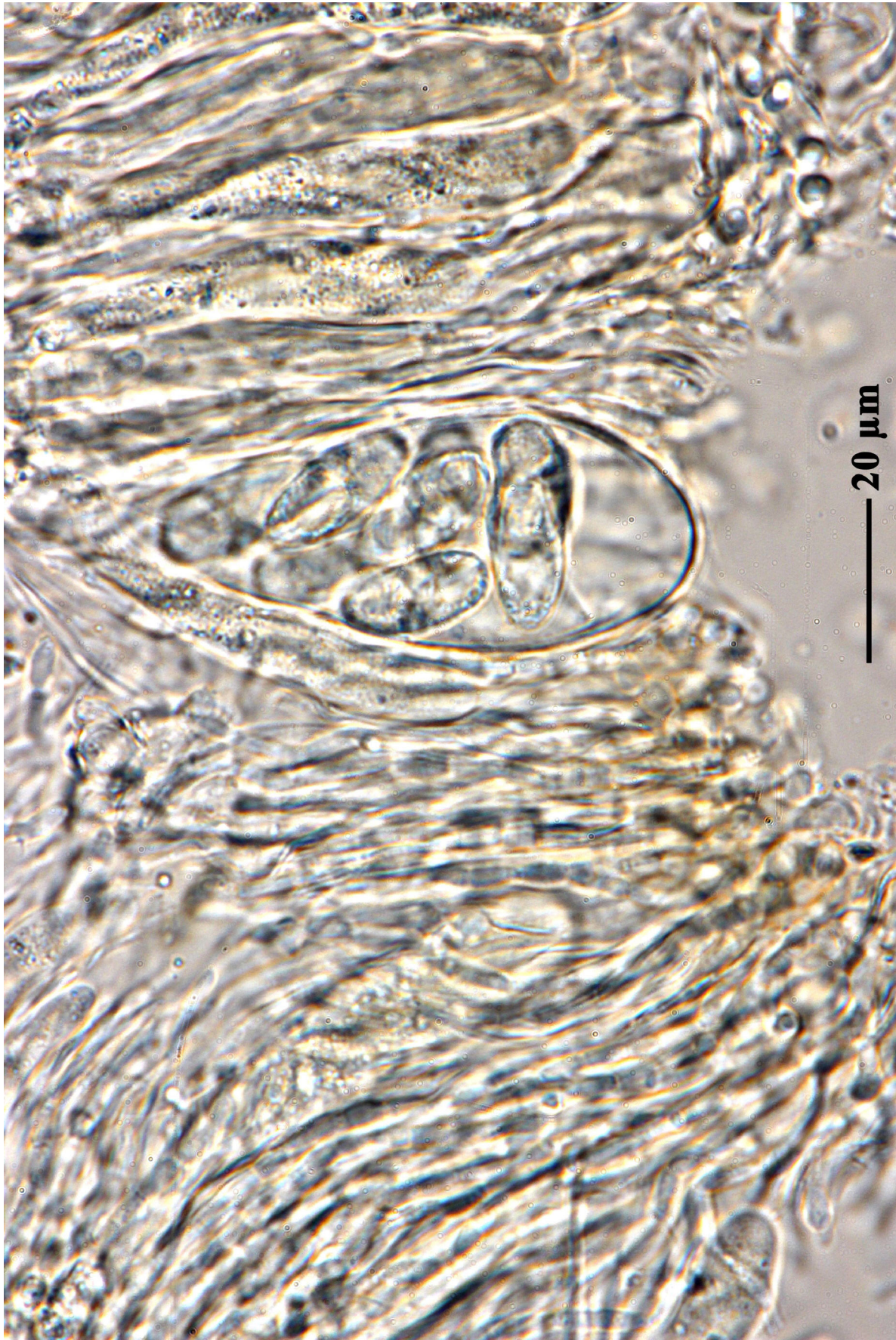
Lecanora cenisia



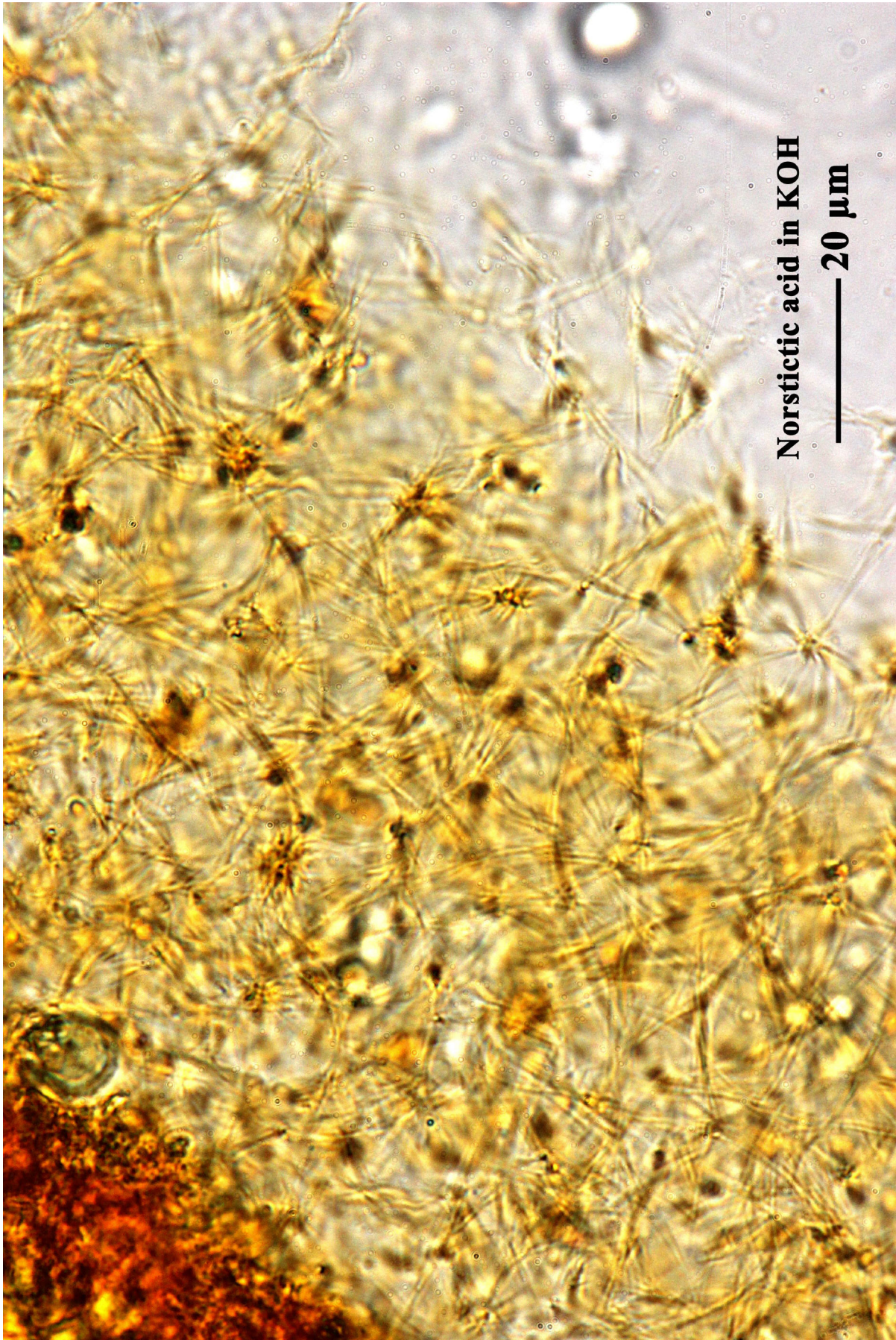
Lecanora cenisia



Lecanora cenisia



Lecanora cenisia



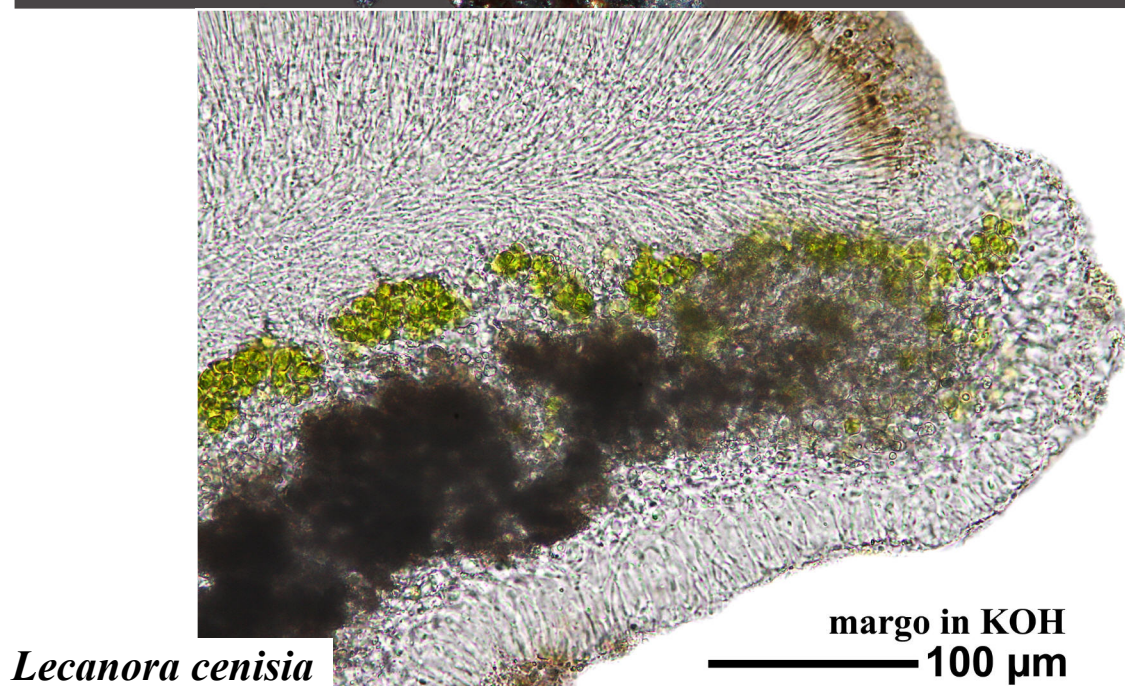
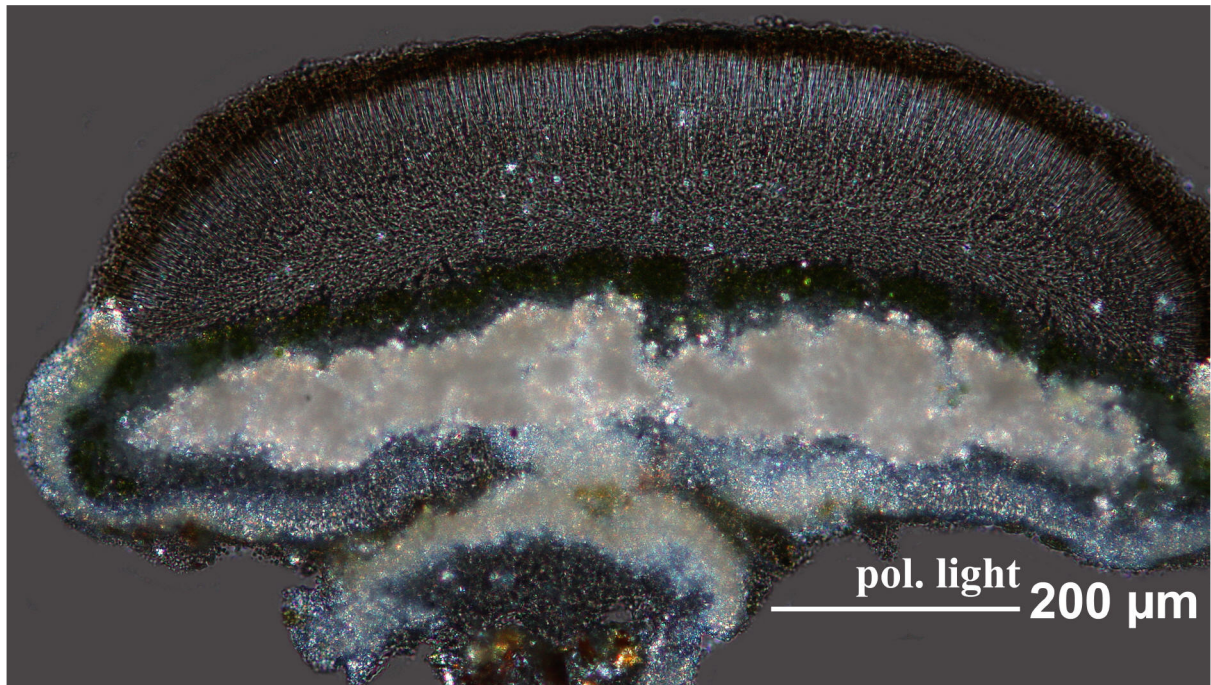
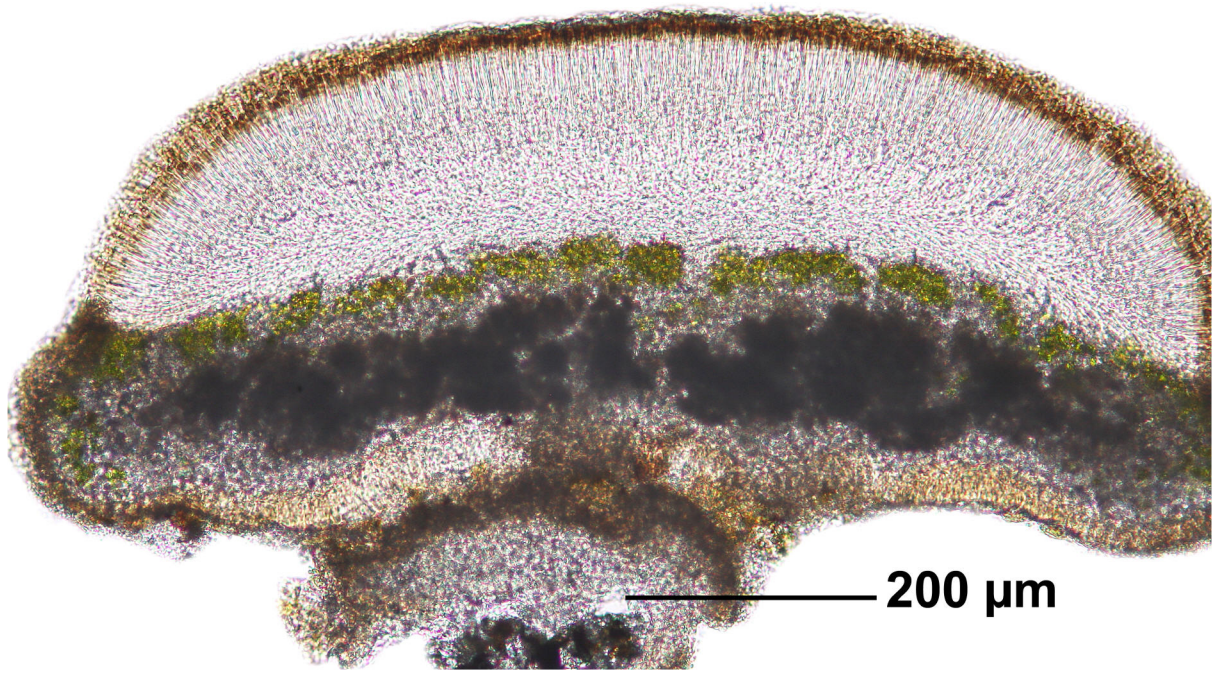
Lecanora cenisia

Lecanora cenisia Ach.

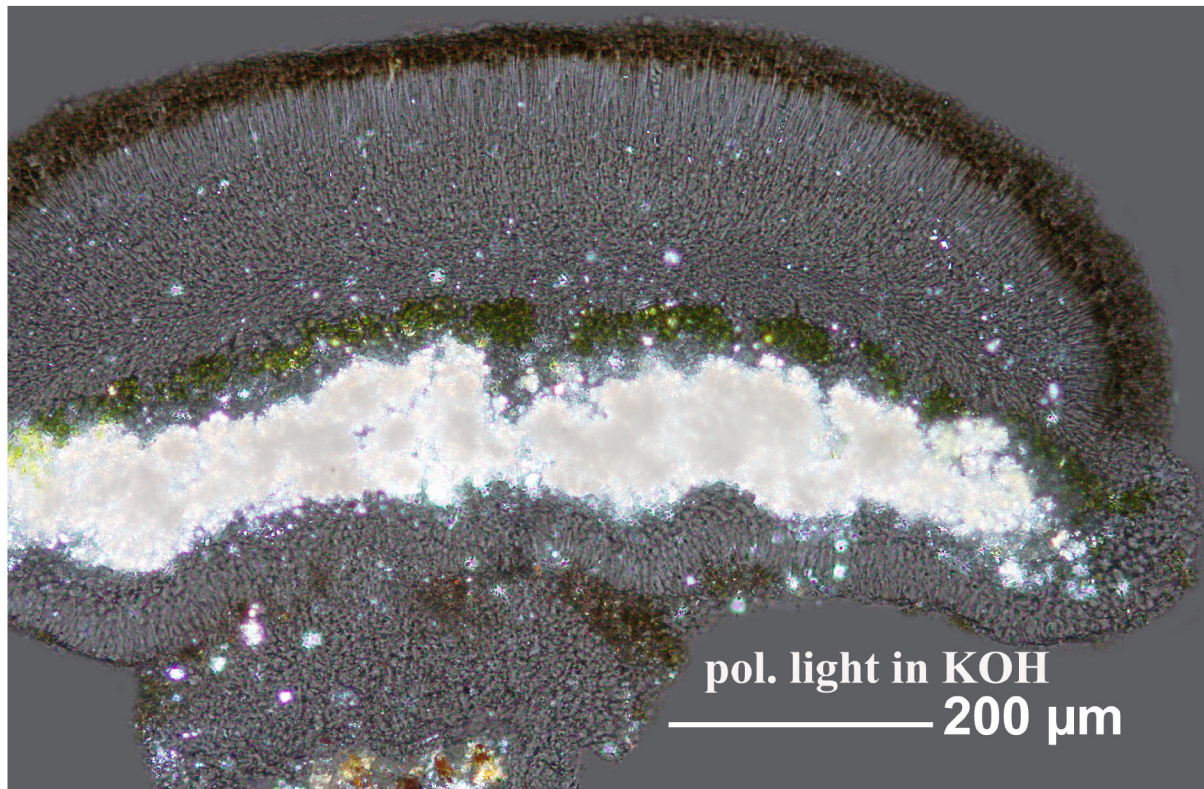
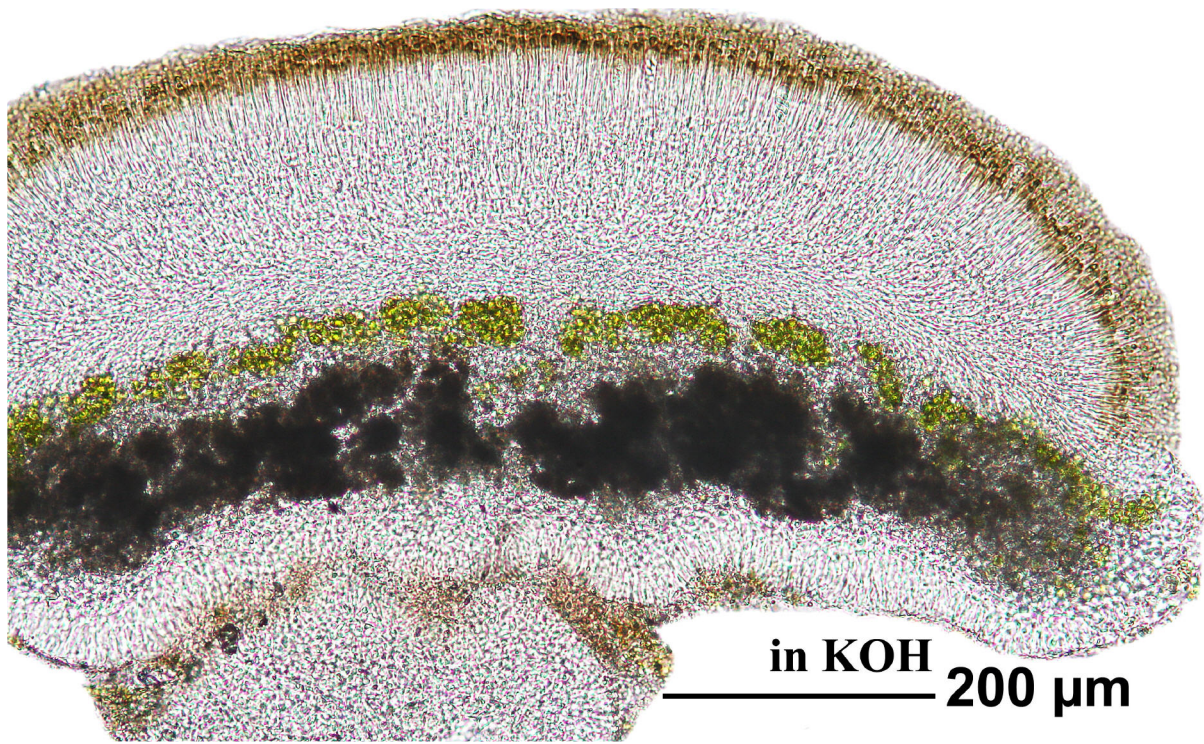
Epithecium braun, mit zahlreichen zwischen den Paraphysenenden sitzenden kleinen (Pol -) Körnern. In KOH nicht ausbleichend. Apotheci-enrand berindet, Rinde mit vielen kleinen, Pol+, in KOH löslichen Kristallen, ca. *campestris*-Typ. Hypothecium hell. Sporen hyalin, 8/Ascus, 9-10 x 4.5-6 µm. Chemie: Atranorin, ca. 3 unidentifizierte Triterpenoide. Thallus K+ gelb, P-.

[14132], Portugal, Azoren, Terceira, beim Hotel Terceira Mar, 38°39.347' N, 27°13.924' W, ca. 8 m. Leg. Aptroot & Schumm 14.07.2008, det. Schumm.

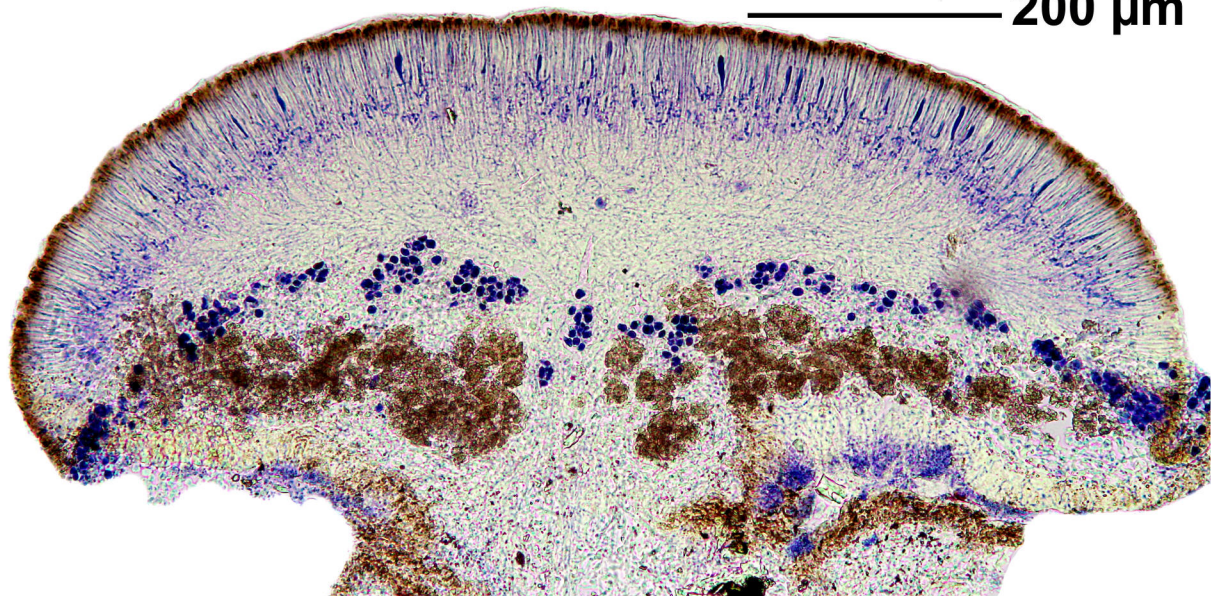
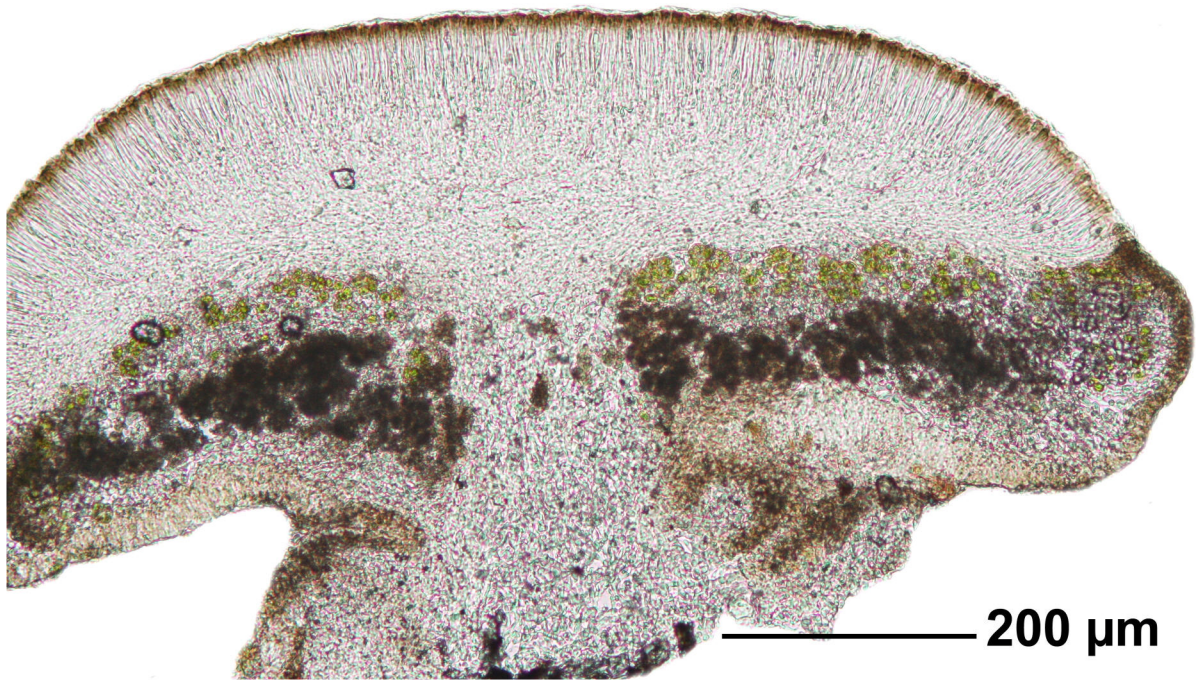




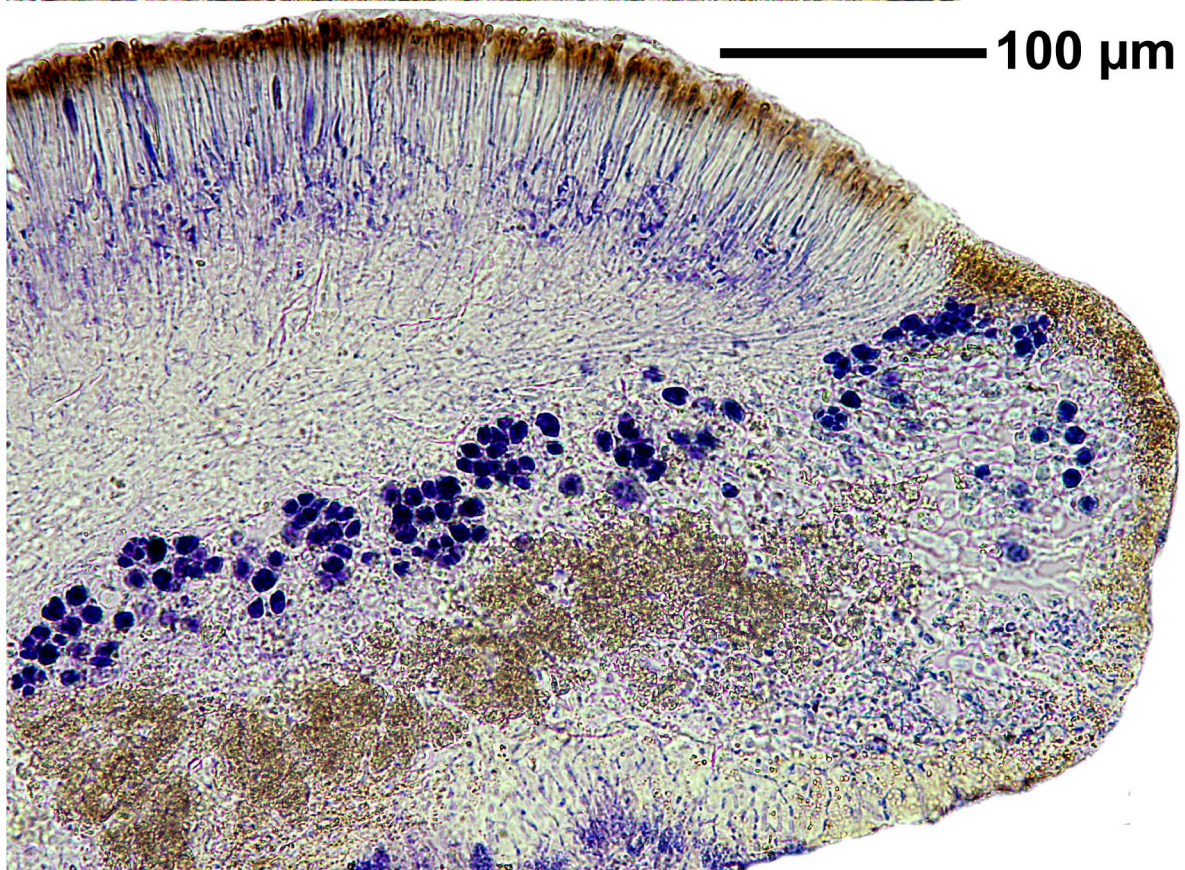
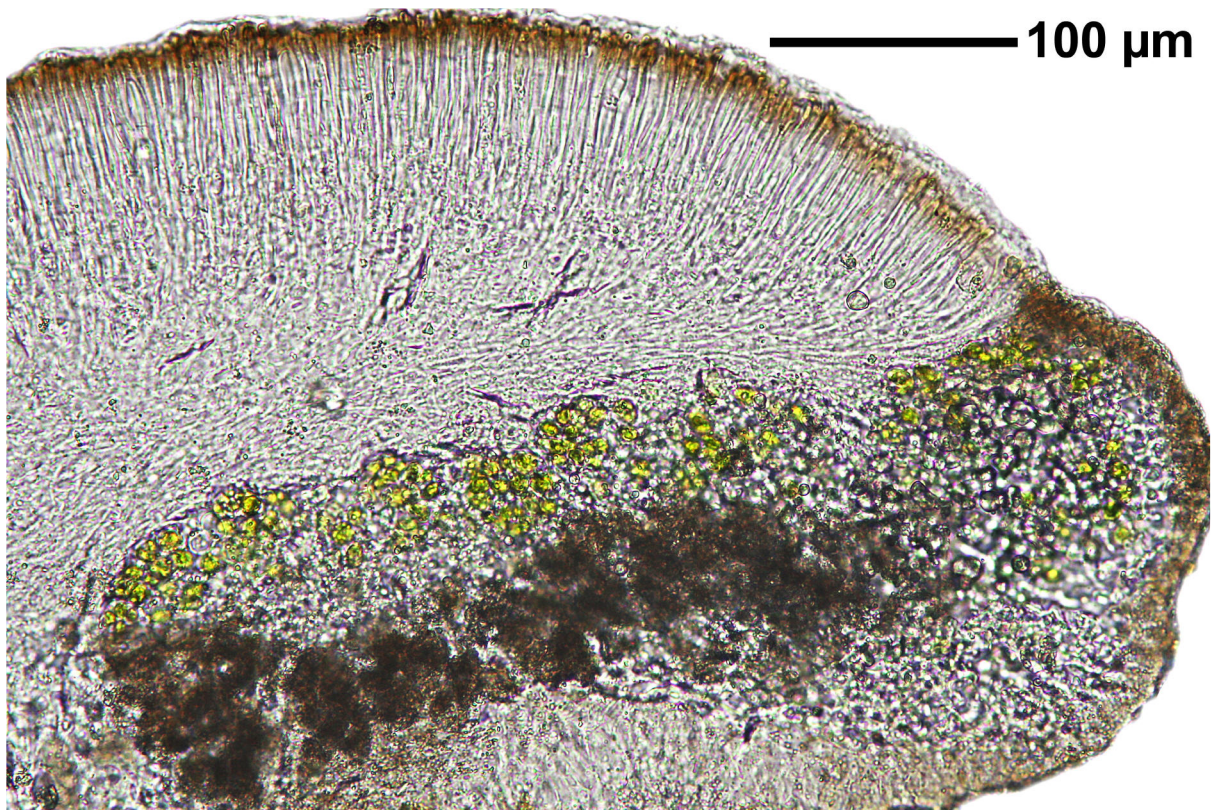
Lecanora cenisia



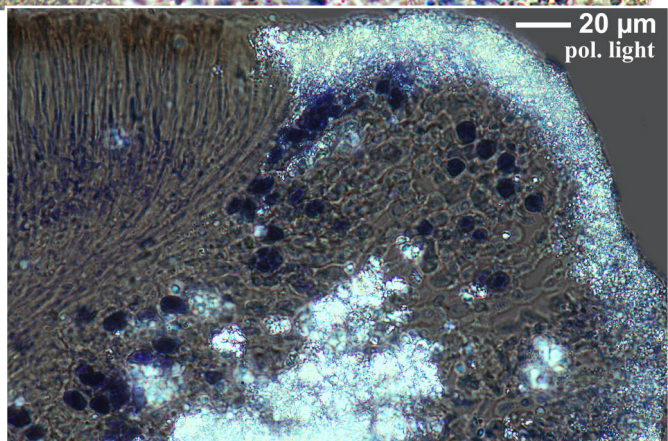
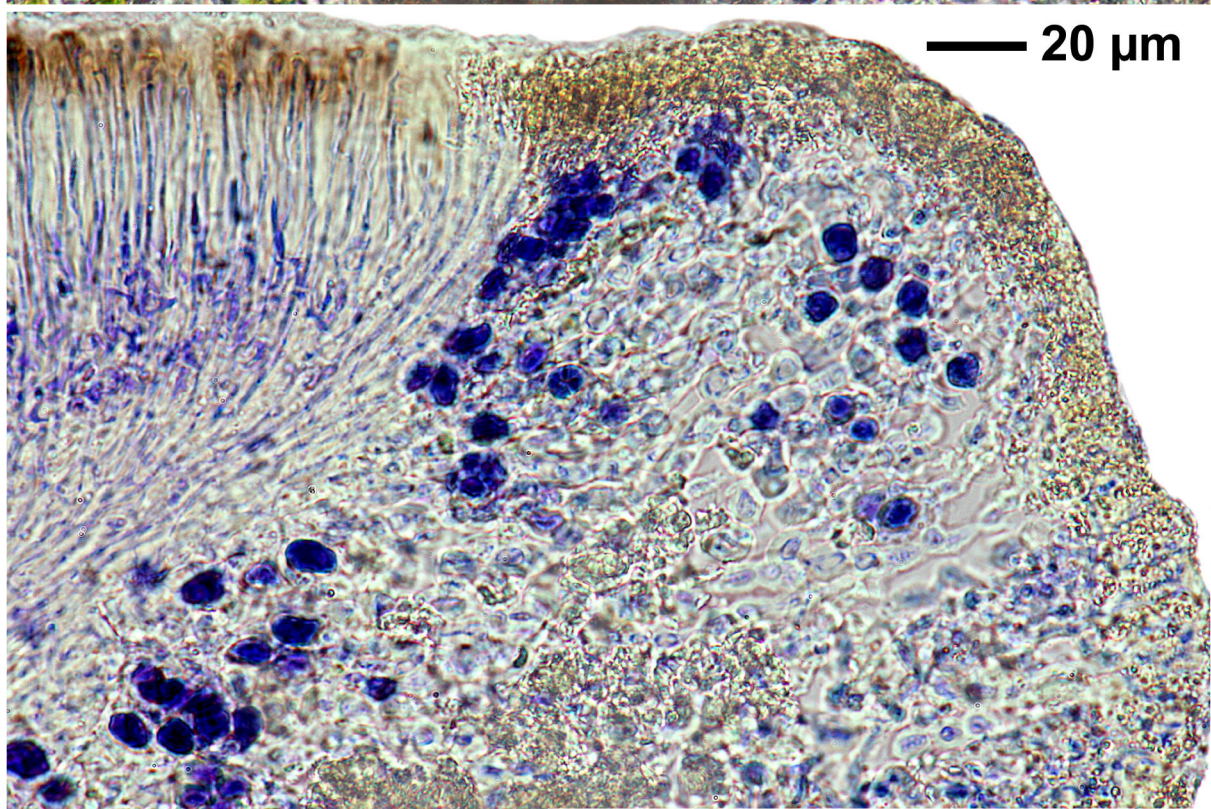
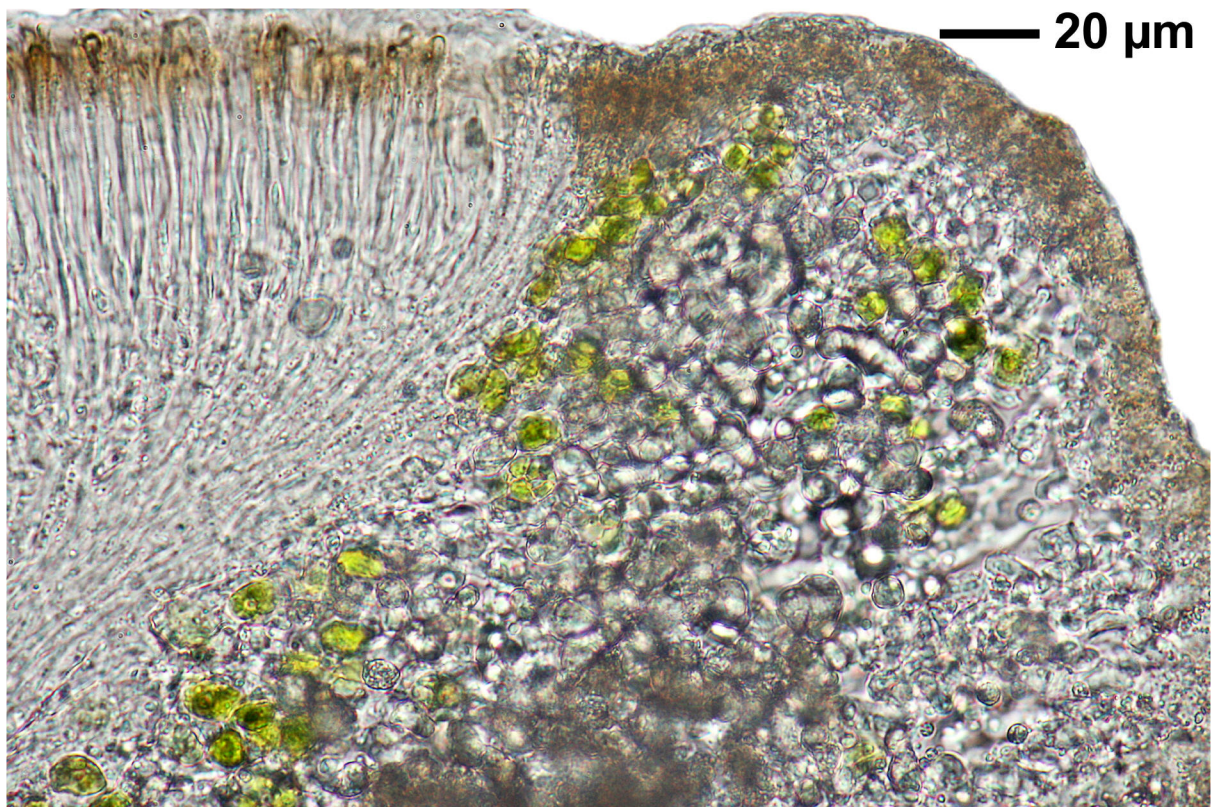
Lecanora cenisia



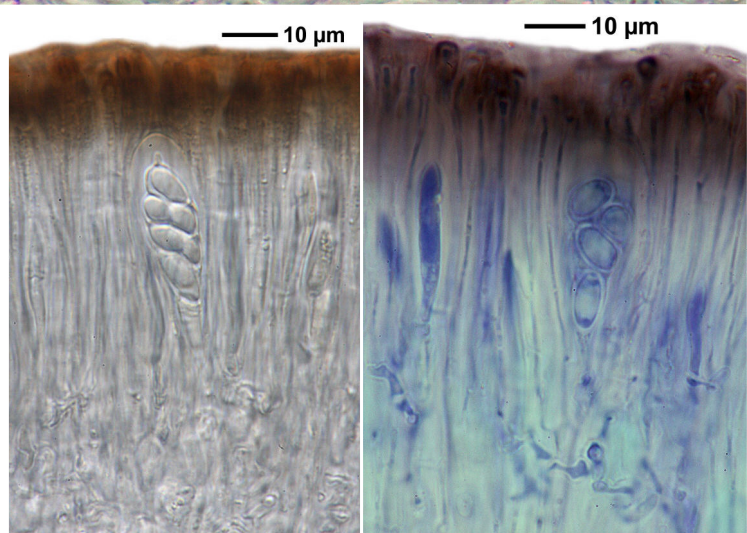
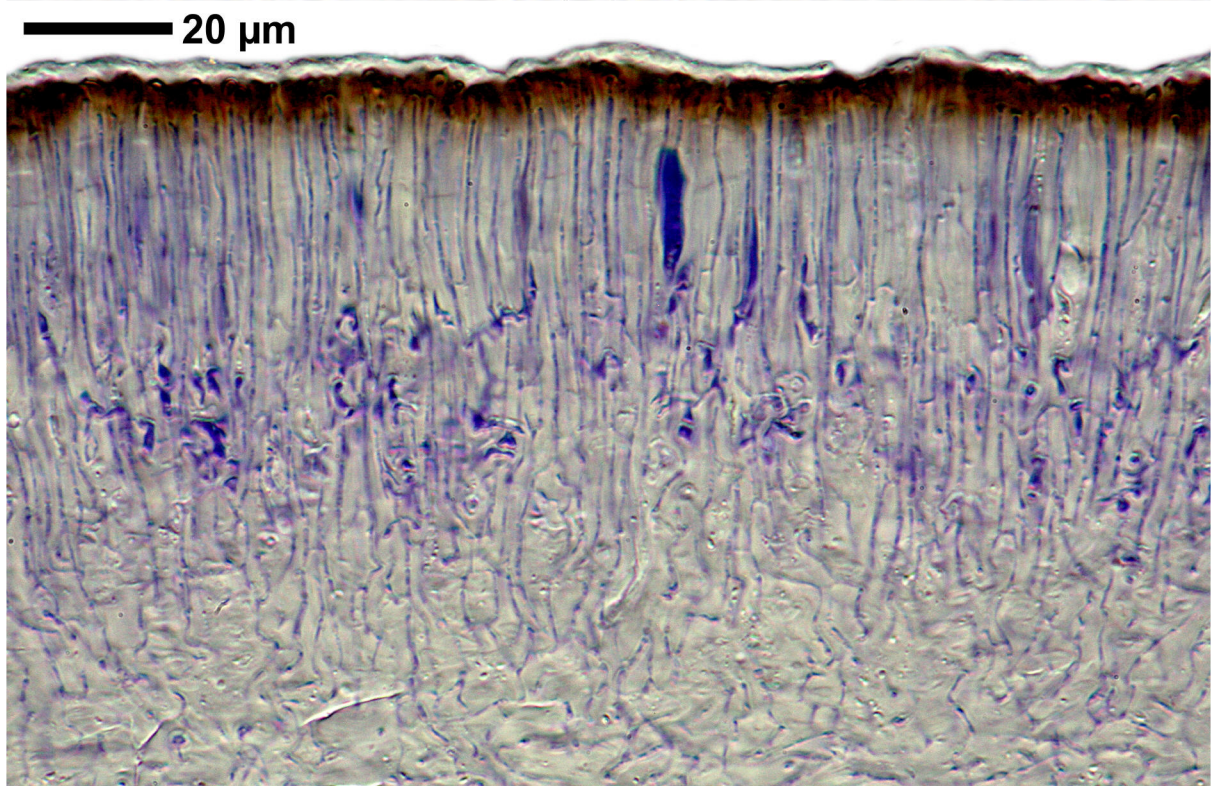
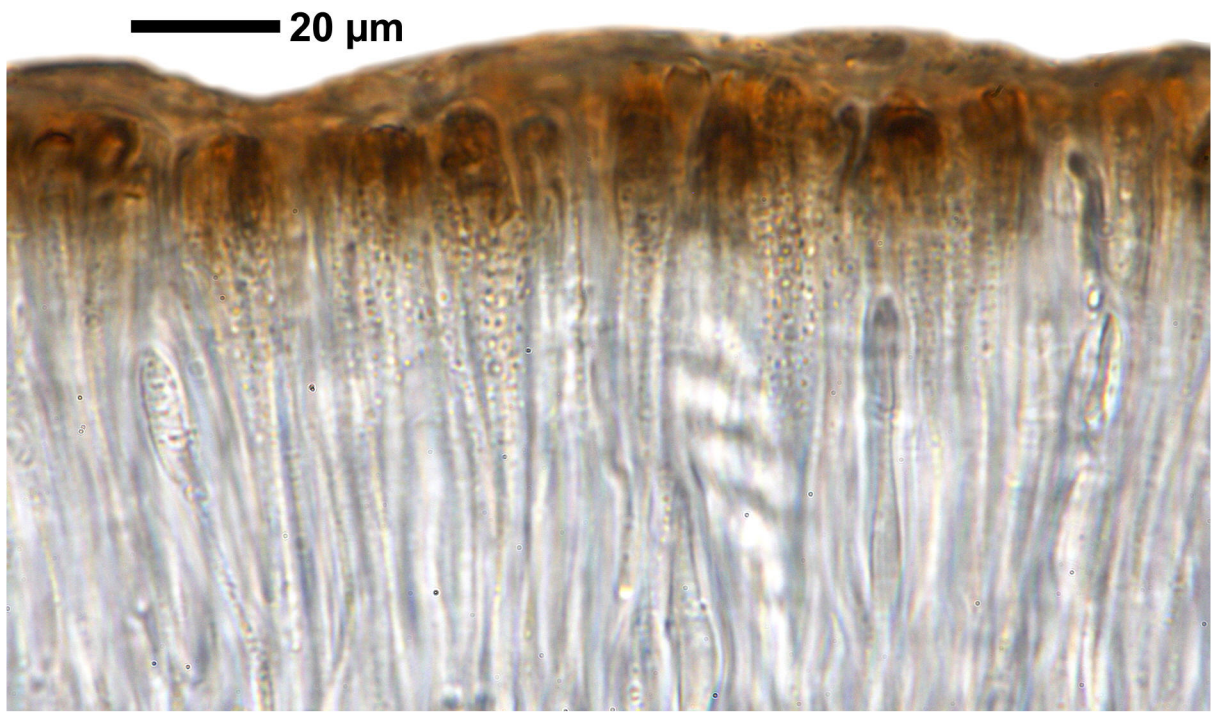
Lecanora cenisia



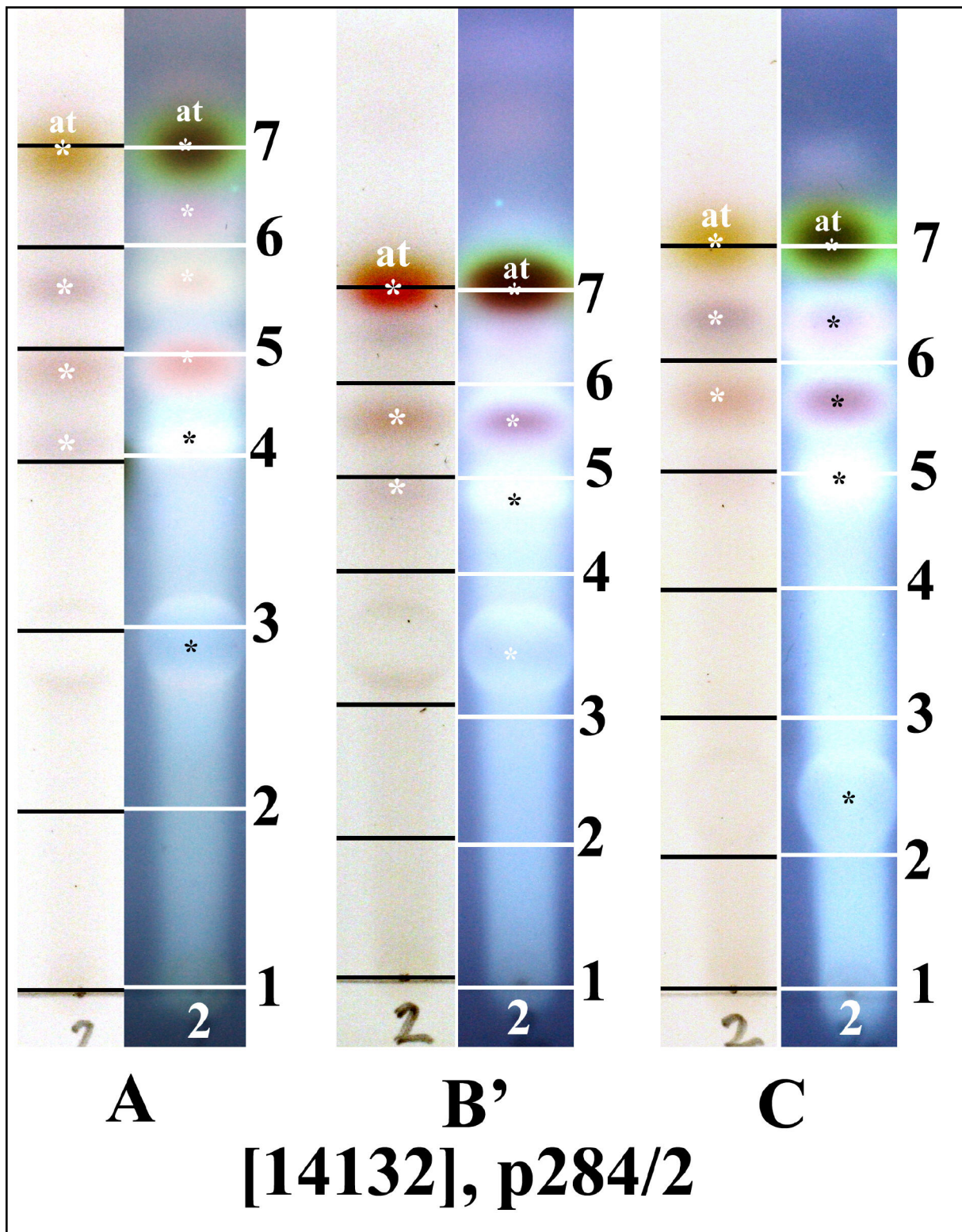
Lecanora cenisia



Lecanora cenisia



Lecanora cenisia



HPTLC in den Laufmitteln A, B' und C nach Säurebehandlung bei Tageslicht und 366 nm UV-Longwelle.

- 1: Start
- 4: Position von Norstictinsäure
- 7: Position von Atranorin
- at = Atranorin

Lecanora cenisia

Melanelia hepatizon (Ach.) A. Thell, Nova Hedwigia 60(3-4): 419 (1995)
= *Lichen hepatizon* Ach. 1799

[1958], GERMANY: Baden-Württemberg, Südschwarzwald, Belchen an Granitfelsen, schwach schattig, ca. 1400 m, TK: 8112. Leg. F. Schumm, 06.09.1971, det. V. Wirth, 1971. - Mark K gelb. EX HERBARIUM F. SCHUMM NR. 1958.

Thallus foliose, heteromerous, dorsiventral, adnate to loosely adnate, forming 1-10(-20) cm wide, orbicular rosettes. Lobes 5-20 mm long, (0.25-)1-2(-2.5) mm wide, irregularly divided and branched, slightly concave to flat, with thickened and somewhat raised margins. Upper surface dark brown to black (greenish brown in shade-forms), more or less glossy, with rounded to elongate, whitish, mostly marginal pseudocyphellae; lower surface dark brown to black, matt, somewhat paler at margins, with scattered, mostly simple, black rhizines. Upper cortex paraplectenchymatous, with a non-pored epicortex, the cell walls containing isolichenan; medulla white; lower cortex paraplectenchymatous. Apothecia lecanorine, mostly submarginal, subpedicellate, 2-5(-9) mm across, with a dark disc and a usually knobby and pseudocyphellate thalline margin. Epithecium brownish; hymenium and hypothecium colourless. Asci 8-spored, broadly clavate, the K/I+ blue tholus penetrated by a faintly amyloid apical cushion with parallel or diverging flanks, the wall K/I-, surrounded by a K/I+ blue outer layer, Lecanora-type. Ascospores 1-celled, hyaline, ellipsoid, (6-)7-10.5 x 4.5-6(-7) µm. Pycnidia frequent, mostly marginal, globose to elliptical, sessile or on up to 0.3 mm tall projections, often grouped into gall-like areas. Conidia simple, swollen at both ends, 3.5-6(-7) x 1-1.5 µm. Photobiont chlorococcoid. Spot tests: upper cortex K-, C-, KC-, P-, N-, UV-; medulla K+ yellow, C-, KC- or KC+ faintly yellow-orange, P+ yellow, I-. Chemistry: stictic and norstictic acids (major), cryptostictic, menegazziaic and constictic acids (minor). - Note: a circumpolar, arctic-alpine lichen found on hard siliceous rocks wetted by rain, with optimum above treeline; somehow less bound to cold-humid sites than the similar but unrelated *Cetraria commixta*; widespread in the Alps.



Melanelia hepatizon



Melanella hepaticzon

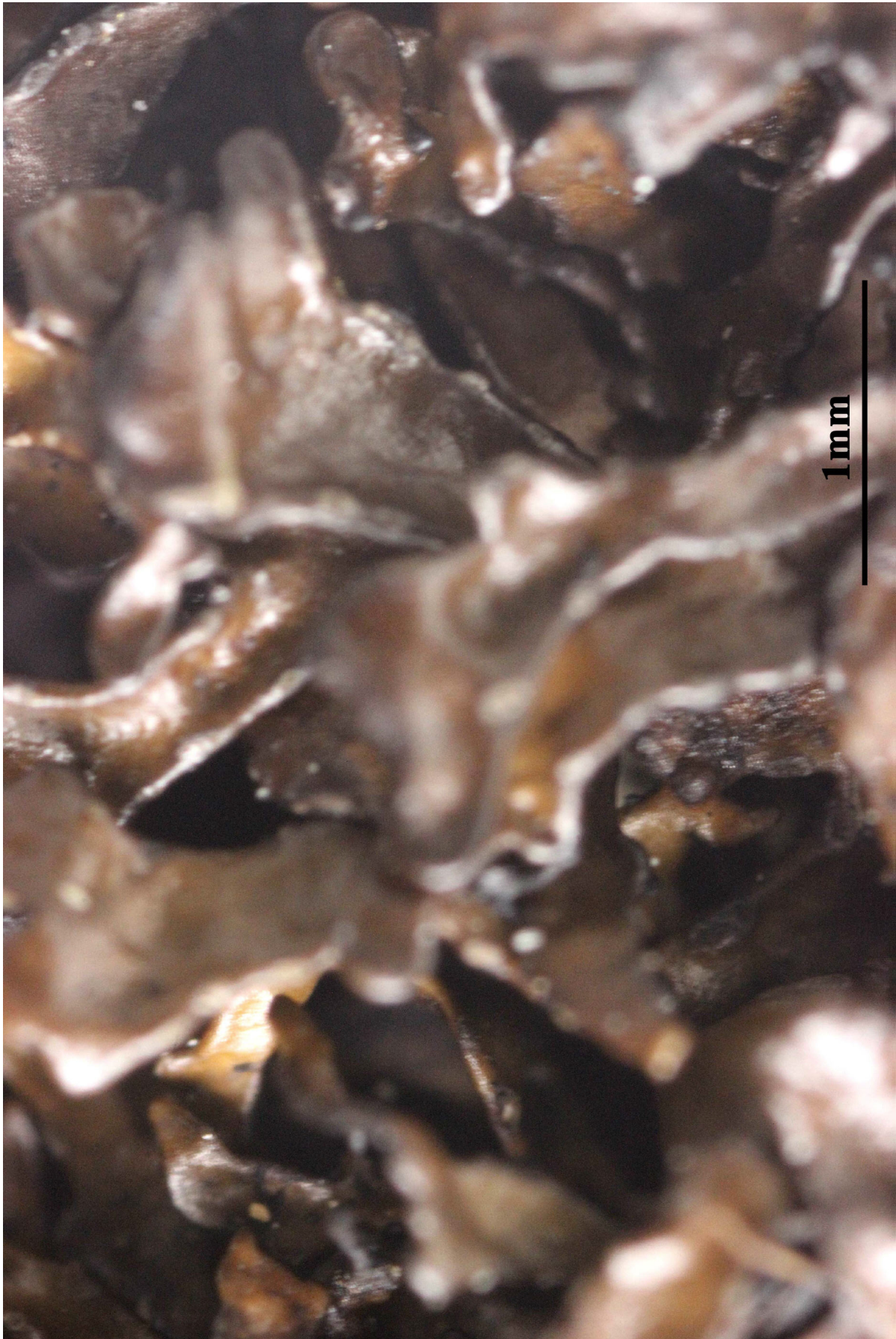
Melanelia hepatizon (Ach.) A. Thell, Nova Hedwigia 60(3-4): 419 (1995)
= *Lichen hepatizon* Ach. 1799

[21207], Schweiz, Davos-Wolfgang, Richtung Drussetscha-Wald, Felsblockhalde mit Kiefern und Fichten, feucht, kalt, schattig, Hanglage, nördlich einer kleinen Moorwiese, ca. 1665 m. Leg. F. Schumm & H.-J. Maier 21.09.1974. det. F. Schumm. EX HERBARIO F. SCHUMM NR. 21207.

Thallus foliose, heteromorous, dorsiventral, adnate to loosely adnate, forming 1-10(-20) cm wide, orbicular rosettes. Lobes 5-20 mm long, (0.25-)1-2(-2.5) mm wide, irregularly divided and branched, slightly concave to flat, with thickened and somewhat raised margins. Upper surface dark brown to black (greenish brown in shade-forms), more or less glossy, with rounded to elongate, whitish, mostly marginal pseudocyphellae; lower surface dark brown to black, matt, somewhat paler at margins, with scattered, mostly simple, black rhizines. Upper cortex paraplectenchymatous, with a non-pored epicortex, the cell walls containing isolichenan; medulla white; lower cortex paraplectenchymatous. Apothecia lecanorine, mostly submarginal, subpedicellate, 2-5(-9) mm across, with a dark disc and a usually knobby and pseudocyphellate thalline margin. Epithecium brownish; hymenium and hypothecium colourless. Asci 8-spored, broadly clavate, the K/I+ blue tholus penetrated by a faintly amyloid apical cushion with parallel or diverging flanks, the wall K/I-, surrounded by a K/I+ blue outer layer, Lecanora-type. Ascospores 1-celled, hyaline, ellipsoid, (6-)7-10.5 x 4.5-6(-7) µm. Pycnidia frequent, mostly marginal, globose to elliptical, sessile or on up to 0.3 mm tall projections, often grouped into gall-like areas. Conidia simple, swollen at both ends, 3.5-6(-7) x 1-1.5 µm. Photobiont chlorococcoid. Spot tests: upper cortex K-, C-, KC-, P-, N-, UV-; medulla K+ yellow, C-, KC- or KC+ faintly yellow-orange, P+ yellow, I-. Chemistry: stictic and norstictic acids (major), cryptostictic, menegazziaic and constictic acids (minor). - Note: a circumpolar, arctic-alpine lichen found on hard siliceous rocks wetted by rain, with optimum above treeline; somehow less bound to cold-humid sites than the similar but unrelated *Cetraria commixta*; widespread in the Alps.



Melanelia hepatizon



Melanelia hepatizon

Melanohalea exasperata (De Not.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch, Mycol. Res. 108(8): 882 (2004)
= *Parmelia exasperata* De Not. 1847

[21191], Germany, Baden-Württemberg, Südschwarzwald, Notschrei, ca. 1100 m, an Nadelbäumen, TK: 8113/1. Leg.F. Schumm, 4.09.1971. EX HERBARIO F. SCHUMM NR. 21191.

Thallus foliose, heteromerous, dorsiventral, tightly adpressed, forming 2-6 cm wide rosettes. Lobes 2-4(-6) mm wide, usually contiguous, pale to dark olive brown, dull to moderately shiny, especially at margins, sometimes white-pruinose at tips and margins, thin, rounded at tips, with numerous, more or less homogeneously scattered, conical, up to 0.1 mm wide, isidia-like papillae with a small central depression (actually raised pseudocyphellae!). Lower surface black, pale brown at margins, with simple rhizines. Upper cortex paraplectenchymatous, with a non-pored epicortex, the cell walls containing isolichenan; medulla white; lower cortex paraplectenchymatous. Apothecia almost always present, lecanorine, bowl-shaped, sessile, 2-6 mm across, with a brown disc and a thalline margin covered in numerous papillae. Epithecium brown; hymenium and hypothecium colourless. Asci 8-spored, clavate, the K/I+ blue tholus penetrated by a faintly amyloid apical cushion with parallel or diverging flanks, the wall K/I-, surrounded by a K/I+ blue outer layer, Lecanora-type. Ascospores 1-celled, hyaline, ellipsoid, 8-12 x 5-7 µm. Pycnidia common, dark, immersed, laminal. Conidia slightly dumbbell-shaped, 7-8 x 1 µm. Photobiont chlorococcoid. Spot tests: cortex and medulla K-, C-, KC-, P-, N-, UV-. Chemistry: without lichen substances. - Note: a mainly temperate to Mediterranean early coloniser of smooth bark, most common on twigs of shrubs and deciduous trees (e.g. *Prunus*, *Quercus*) below the subalpine belt.



Melanohalea exasperata

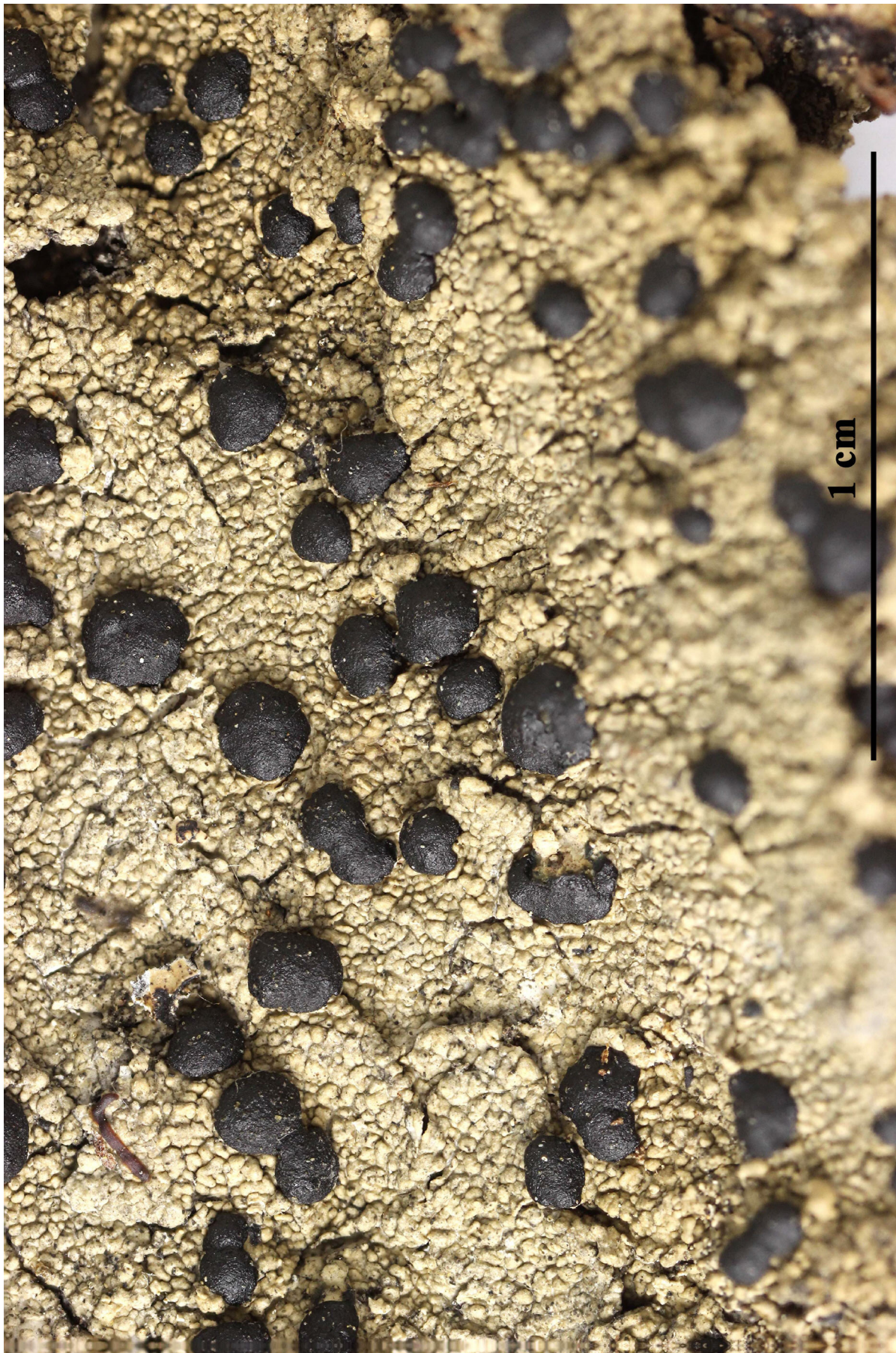


Melanohalea exasperata

Mycoblastus sanguinarius (L.) Norman [as 'sanguinaria'], Conat. Praem.
Gen. Lich.: 26 (1852)
= *Lichen sanguinarius* L. 1753

[21202], Germany, Baden-Württemberg, Südschwarzwald, Notschrei,
ca. 1100 m, an Nadelbäumen, TK: 8113/1. Leg. F.Schumm 4.09.1971,
det. F. Schumm. EX HERBARIUM F. SCHUMM NR. 21202.

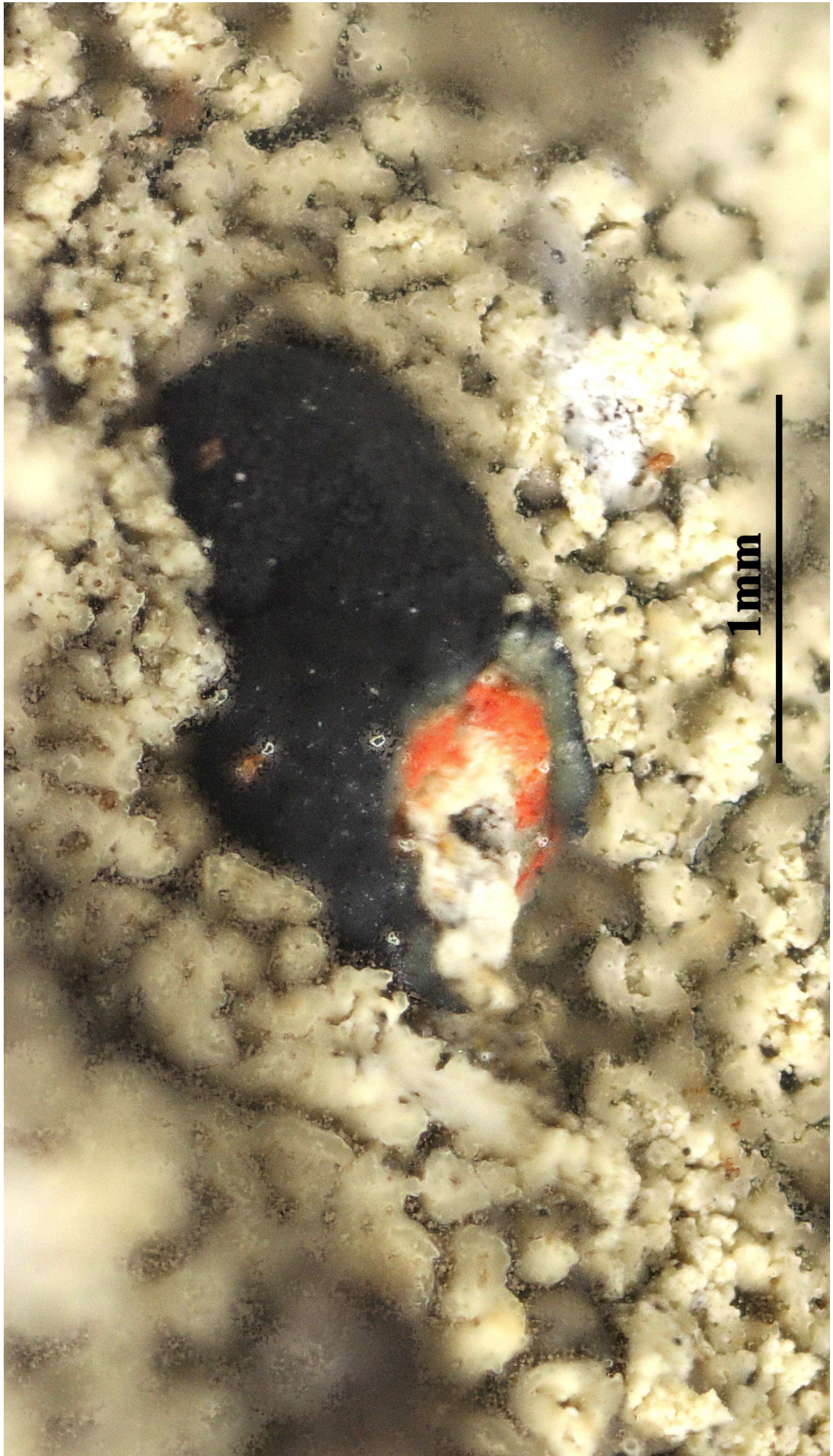
Thallus crustose, episubstratic, pale to dark grey, turning greenish when wet, thick and verrucose, continuous or cracked, sometimes delimited by a pale to dark grey prothallus. Soralia rarely present, rounded, convex, discrete, widely dispersed in scattered groups, often few in number, usually occurring together with apothecia. Apothecia common, biatorine, 0.5-2(-3) mm across, black, with a flat to strongly convex disc and a thin, soon excluded proper margin, developing on a bright carmine-red thalline cushion that may be exposed when the thallus is abraded. Proper exciple reduced, the hyphae vertically arranged and resembling paraphyses; epithecium blue-black; hymenium greenish (Cinereorufa-green pigment), without crystals visible under polarized light; paraphyses branched and anastomosing; hypothecium red-brown in upper part, carmine-red in lower part. Asci 1(-3)-spored, cylindrical-clavate, thick-walled, the apical dome K/I+ blue, with a distinct ocular chamber, the outer layer thickened and forming a K/I+ dark blue apical cap, intermediate between the Biatorella and the Bacidiella-type. Ascospores 1-celled, hyaline, oblong to cylindrical with flattened apices, 65-100 x (28-)32-50 µm, the wall 5-7 µm thick. Pycnidia common, with a dark green wall K-, N+ reddish, the conidiogenous cells short. Conidia bacilliform, 6-9 x c. 1 µm. Photobiont chlorococcoid. Spot tests: thallus K+ dirty yellow, C-, KC-, P+ yellowish or P-, UV-; hypothecium and the underlying red tissue K+ red, P-, UV-. Chemistry: thallus with atranorin, chloratranorin, rhodocladonic acid, caperatic acid. - Note: a circumboreal-montane species found on lignum and bark of conifers (especially *Larix*), mostly in the subalpine belt.



Mycoblastus sanguinarius



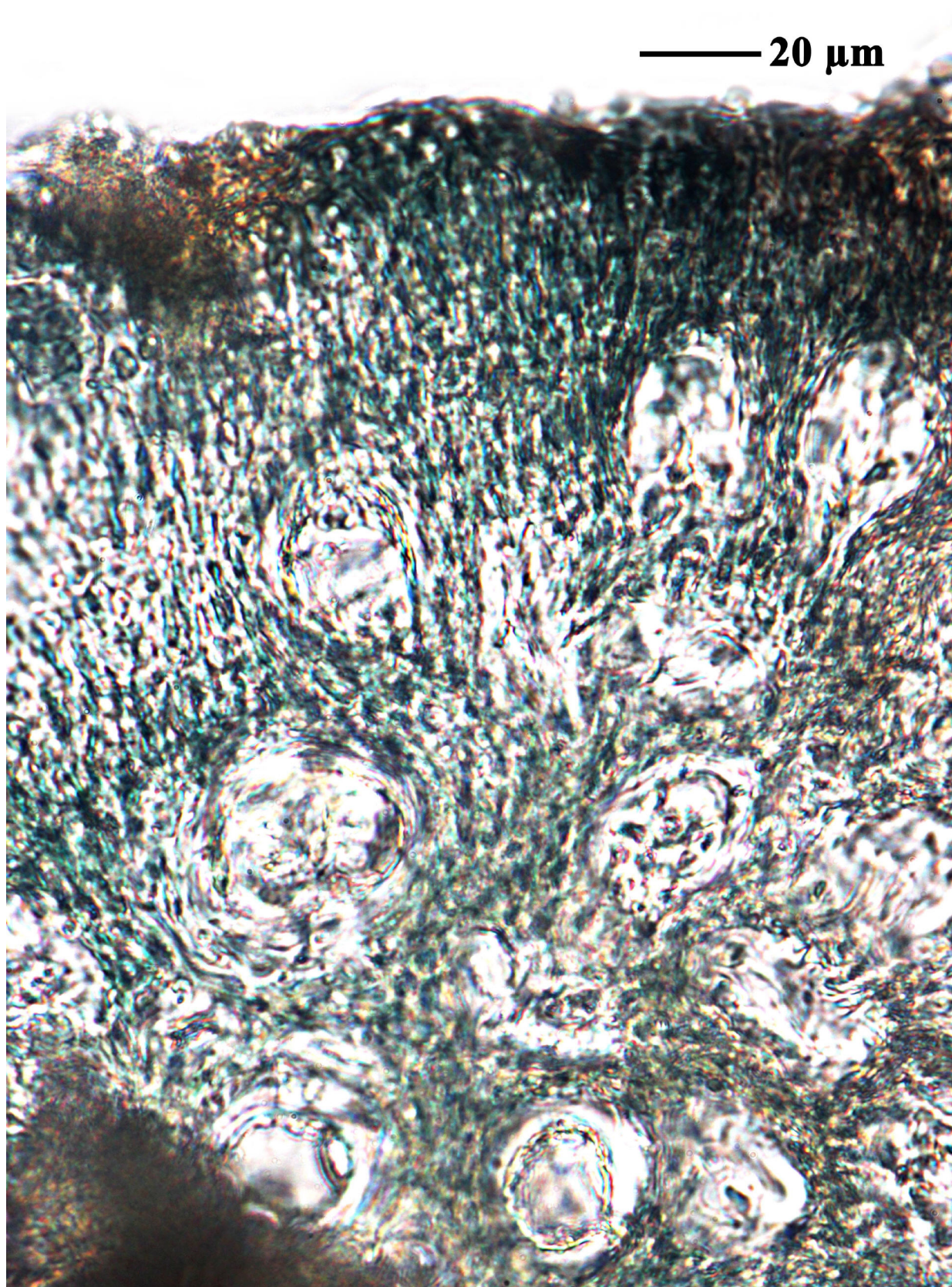
Mycoblastus sanguinarius



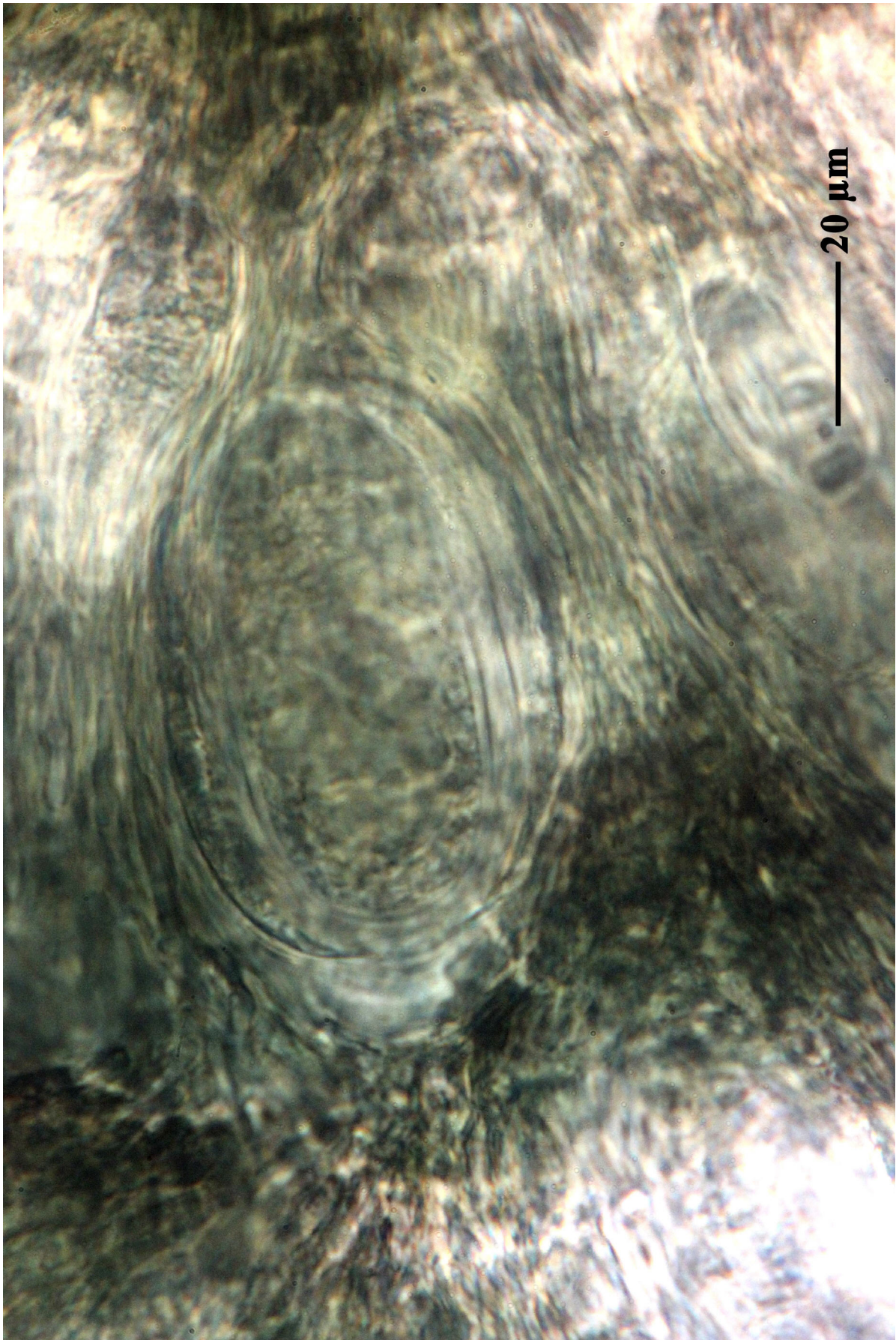
Mycoblastus sanguinarius



Mycoblastus sanguinarius



Mycoblastus sanguinarius



Mycoblastus sanguinarius

***Parmelia saxatilis* (L.) Ach.**, Methodus qua omnes detectos Lichenes
Secundum Organa Carpomorpha ad Genera, Species et Varietates
Redigere atque Observationibus Illustrare Tentavit Erik Acharius:
204 (1803)
= *Lichen saxatilis* L. 1753

[21210], Schweiz, Davos-Wolfgang, Richtung Drussetscha-Wald, Heu-
schober Dach, ca. 1665 m. Leg. F. Schumm & H.-J. Maier, 21.09.1974,
det. F. Schumm, 18.8.2056. Ex Herbario F. Schumm Nr.21210.

- Mark K+ rot, P+ rot.

Thallus foliose, heteromerous, dorsiventral, rather loosely attached, forming 4-20 cm wide, mostly regular rosettes. Lobes sublinear, contiguous, elongate, separate, flat, 1.5-2.5(-3.5) mm wide, with truncate apices, rarely lobulate. Upper surface grey (to brown in exposed situations and at lobe tips), smooth to foveolate, somehow shiny, rarely slightly white-pruinose in marginal parts, with numerous, mostly apical or marginal, elongate-linear, rarely weakly anastomosing, white pseudocyphellae. Isidia cylindrical, simple to coralloid, often darkened at tips, scattered to clustered but not developing in lines along the pseudocyphellae, mainly laminal and most abundant in central parts of thallus. Lower surface black, with simple to furcate, black rhizines present also along the margins. Upper cortex paraplectenchymatous, of 2-6 layers of densely packed cells, with a usually non-pored epicortex, the cell walls with isolichenan; medulla white; algal layer continuous; lower cortex paraplectenchymatous, thinner than upper cortex. Apothecia rare, lecanorine, 2-8 mm across, with a brown disc and a usually isidiate thalline margin. Epithecium brownish; hymenium and hypothecium colourless. Asci 8-spored, clavate, Lecanora-type. Ascospores 1-celled, ellipsoid, hyaline, (11-)13-15(-18) x 6-8(-11) μm . Pycnidia black. Conidia cylindrical to bacilliform, 5-8 x c. 1 μm . Spot tests: upper cortex K+ yellow (but often slowly turning orange-red due to medullary substances), C-, KC-, P- or P+ faintly yellow; medulla K+ yellow turning orange-red, C-, KC-, P+ orange-red, UV-. Chemistry: upper cortex with atranorin and chloroatranorin; medulla with salazinic acid (major) and consalazinic acid (minor), and often traces of lobaric and protocetraric acids; fatty acids (lichesterinic and protolichesterinic acids) absent. - Note: a mainly saxicolous species whose real distribution and ecology in Italy are very poorly known. Many Italian records

could refer either to *P. ernstiae* (especially epiphytic samples), or to *P. serrana* (especially saxicolous samples). The statement by Castellani & al. (2021) that *P. saxatilis* is the most widespread species of the complex in Italy is dubious, being merely based on an unreliable morphological analysis of samples, without confirmation by molecular data.



Parmelia saxatilis



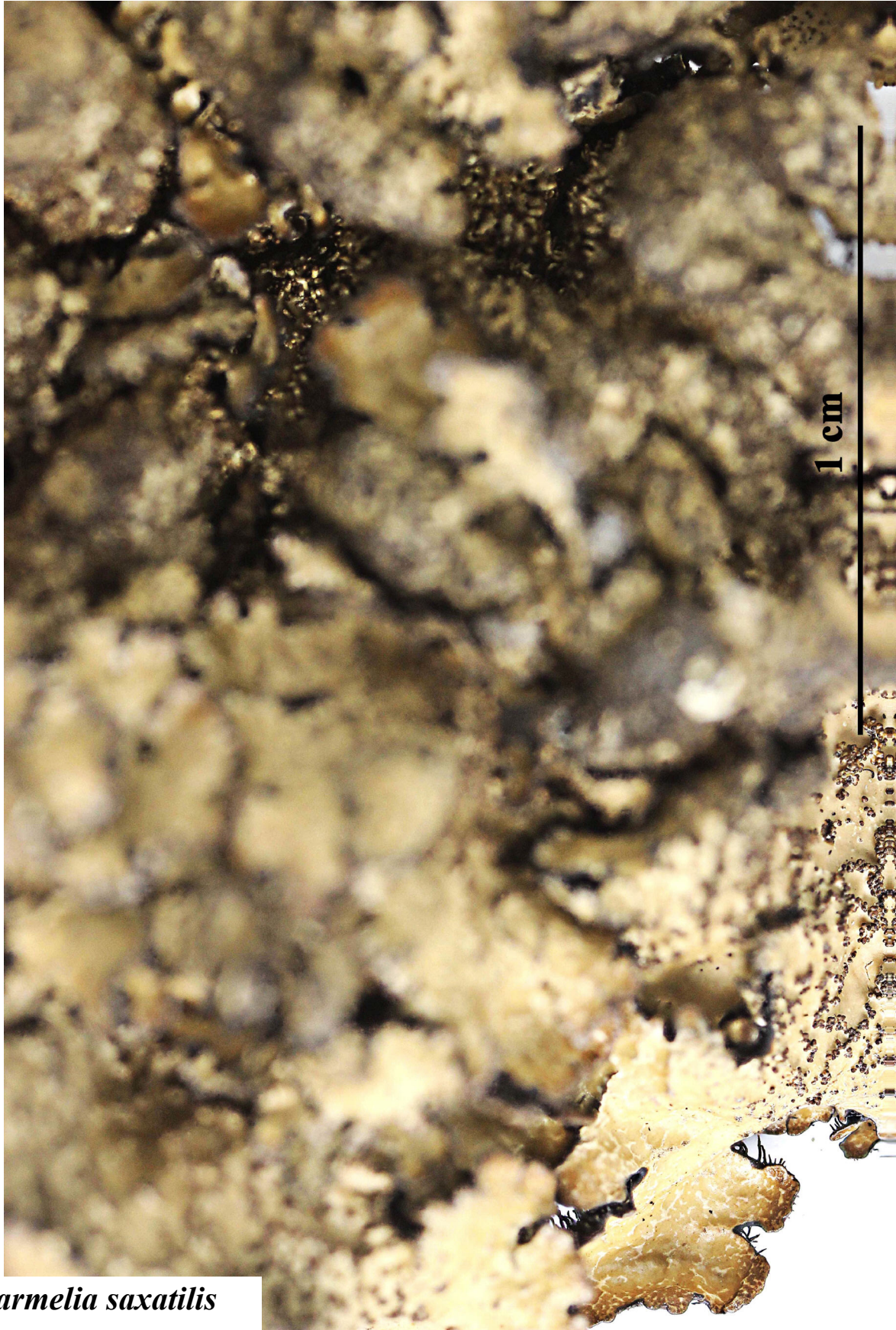
Parmelia saxatilis

Parmelia saxatilis (L.) Ach., Methodus qua omnes detectos Lichenes
Secundum Organa Carpomorpha ad Genera, Species et Varietates
Redigere atque Observationibus Illustrare Tentavit Erik Acharius:
204 (1803)
= *Lichen saxatilis* L. 1753

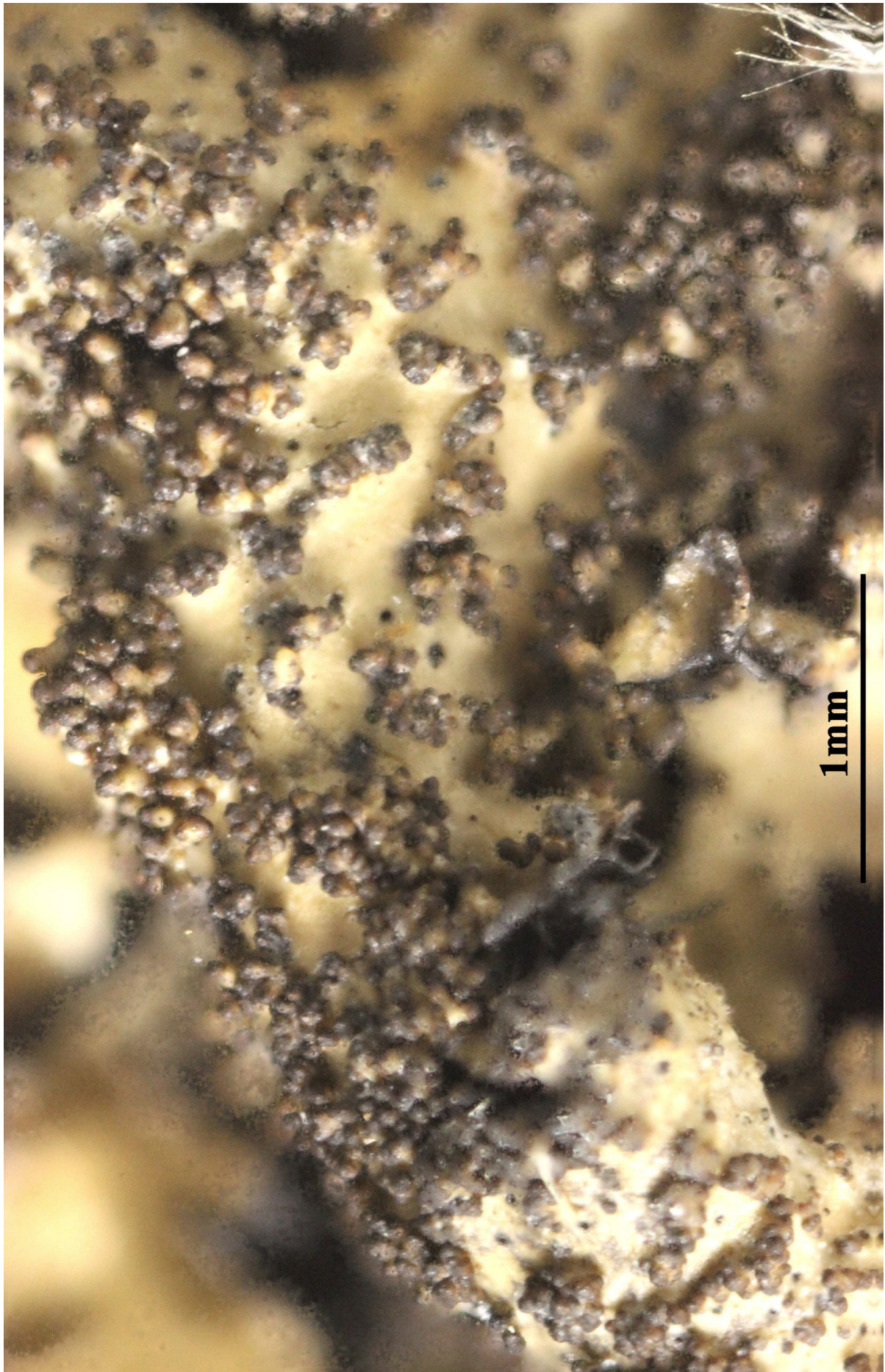
[21179], Germany, Baden-Württemberg, Südschwarzwald, Belchen,
Hochkelch, 1260, TK: 8113. Leg. F. Schumm. 06.09.1971, det. F.
Schumm, 18.8.2056. EX HERBARIO F. SCHUMM NR. 21179.

Thallus foliose, heteromerous, dorsiventral, rather loosely attached, forming 4-20 cm wide, mostly regular rosettes. Lobes sublinear, contiguous, elongate, separate, flat, 1.5-2.5(-3.5) mm wide, with truncate apices, rarely lobulate. Upper surface grey (to brown in exposed situations and at lobe tips), smooth to foveolate, somehow shiny, rarely slightly white-pruinose in marginal parts, with numerous, mostly apical or marginal, elongate-linear, rarely weakly anastomosing, white pseudocyphellae. Isidia cylindrical, simple to coralloid, often darkened at tips, scattered to clustered but not developing in lines along the pseudocyphellae, mainly laminal and most abundant in central parts of thallus. Lower surface black, with simple to furcate, black rhizines present also along the margins. Upper cortex paraplectenchymatous, of 2-6 layers of densely packed cells, with a usually non-pored epicortex, the cell walls with isolichenan; medulla white; algal layer continuous; lower cortex paraplectenchymatous, thinner than upper cortex. Apothecia rare, lecanorine, 2-8 mm across, with a brown disc and a usually isidiate thalline margin. Epithecium brownish; hymenium and hypothecium colourless. Asci 8-spored, clavate, Lecanora-type. Ascospores 1-celled, ellipsoid, hyaline, (11-)13-15(-18) x 6-8(-11) μm . Pycnidia black. Conidia cylindrical to bacilliform, 5-8 x c. 1 μm . Spot tests: upper cortex K+ yellow (but often slowly turning orange-red due to medullary substances), C-, KC-, P- or P+ faintly yellow; medulla K+ yellow turning orange-red, C-, KC-, P+ orange-red, UV-. Chemistry: upper cortex with atranorin and chloroatranorin; medulla with salazinic acid (major) and consalazinic acid (minor), and often traces of lobaric and protocetraric acids; fatty acids (lichesterinic and protolichesterinic acids) absent. - Note: a mainly saxicolous species whose real distribution and ecology in Italy are very poorly known. Many Italian records could refer either to *P. ernstiae* (especially epiphytic samples), or to *P.*

serrana (especially saxicolous samples). The statement by Castellani & al. (2021) that *P. saxatilis* is the most widespread species of the complex in Italy is dubious, being merely based on an unreliable morphological analysis of samples, without confirmation by molecular data.



Parmelia saxatilis



Parmelia saxatilis

Rhizocarpon hochstetteri (Körb.) Vain., Acta Soc. Fauna Flora fenn. 53(no. 1): 280, 332 (1922)
= *Catillaria hochstetteri* Körb. 1861
= *Poeltinula hochstetteri* (Körb.) E.J. Möller, Timdal, Haugan & Bendiksby, in Möller, Timdal, Haugan & Bendiksby, Fungal Syst. Evol. 16: 224 (2025)

[21214], Schweiz, Davos-Wolfgang, Richtung Drussetschawald, Felsblockhalde mit Kiefern und Fichten, feucht, kalt schattig, Hanglage nördlich einer kleinen Moorwiese, 1665 m. Legt. F. Schumm & H.-J. Maier, 21.09.1974, det. F. Schumm, 18.8.2056. EX HERBARIO F. SCHUMM NR. 21214.

- Sporen jung hyalin, 2-zellig, später braun; Epihymenium K+ violett. Mark J-

Thallus crustose, episubstratic, grey-brown to red-brown, rimose to areolate, usually delimited by a black prothallus. Areoles flat to convex, 0.2-0.6(-1) mm wide, 0.1-0.3 mm thick. Medulla white, I-. Apothecia, lecideine, black, developing among the areoles, (0.4-)0.6-1(-1.3) mm across, with a flat to slightly convex disc and a distinct, usually persistent but finally sometimes excluded proper margin. Proper exciple of radiating, dark brown hyphae; epithecium green to blue-black, K-, N+ red; hymenium colourless, 95-150 µm high I+ blue; paraphysoids coherent both in water and in K, branched and anastomosing, 2.5-3 µm thick at mid-level, the apical cells to 3.5 µm, with a dark cap; hypothecium dark brown. Asci 8-spored, clavate, fissitunicate, with a well-developed tholus, lacking an ocular chamber, Rhizocarpon-type. Ascospores 1-septate, hyaline or sometimes pale grey-brown when overmature, (15-)21-25(-29) x (5-)8-14 µm, halonate. Photobiont chlorococcoid, the cells 10-15(-18) µm wide. Spot tests; medulla K- or rarely K+ yellow, C-, KC-, P- or rarely P+ orange. Chemistry: medulla with stictic acid, or without lichen substances. - Note: a widespread, probably northern holarctic lichen found on mineral-rich siliceous rocks.



Rhizocarpon hochstetteri



Rhizocarpon hochstetteri



Rhizocarpon hochstetteri



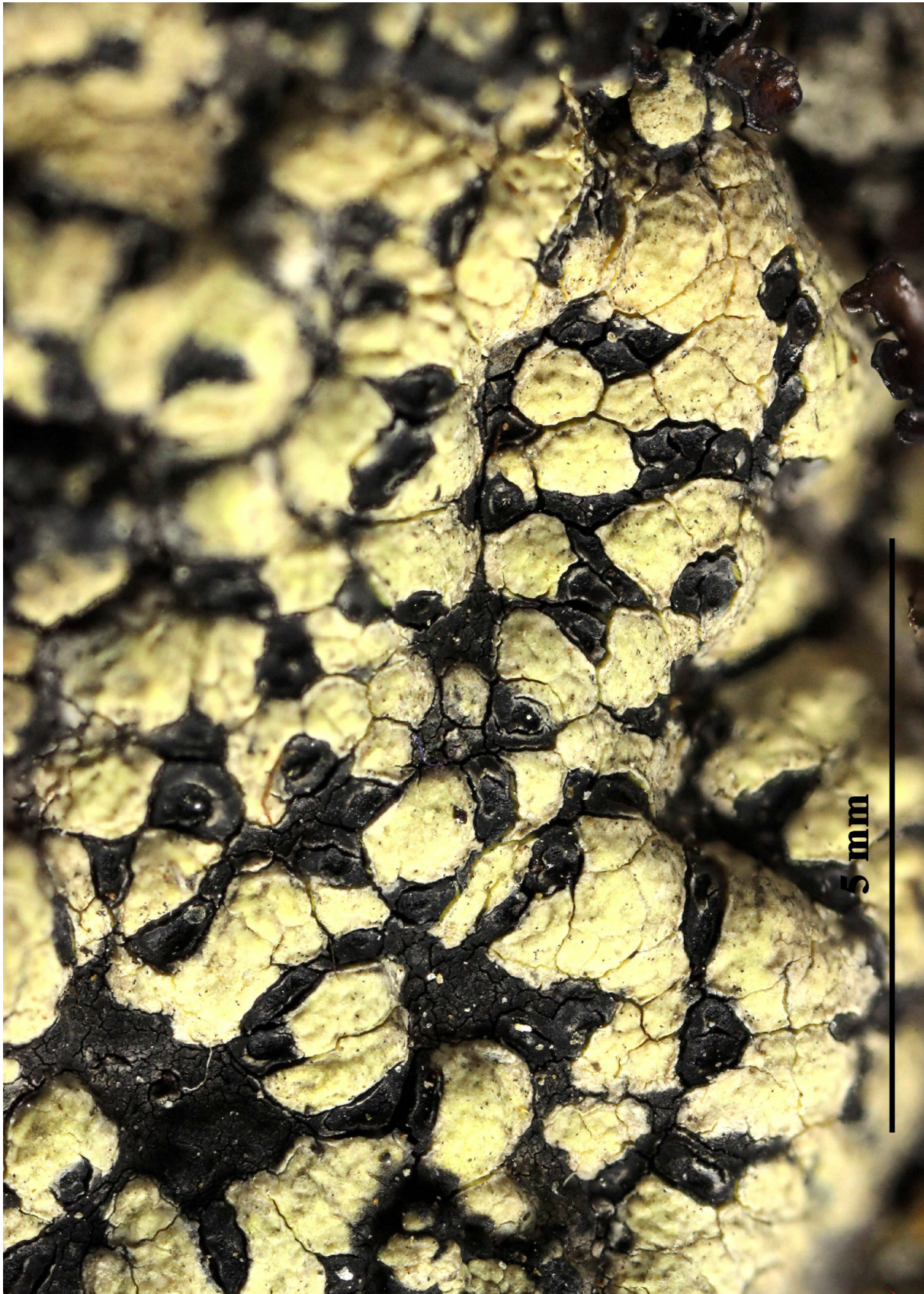
Rhizocarpon hochstetteri

Rhizocarpon rapax V. Wirth & Poelt, Mitt. bot. StSamml., Münch. 8: 196 (1970)

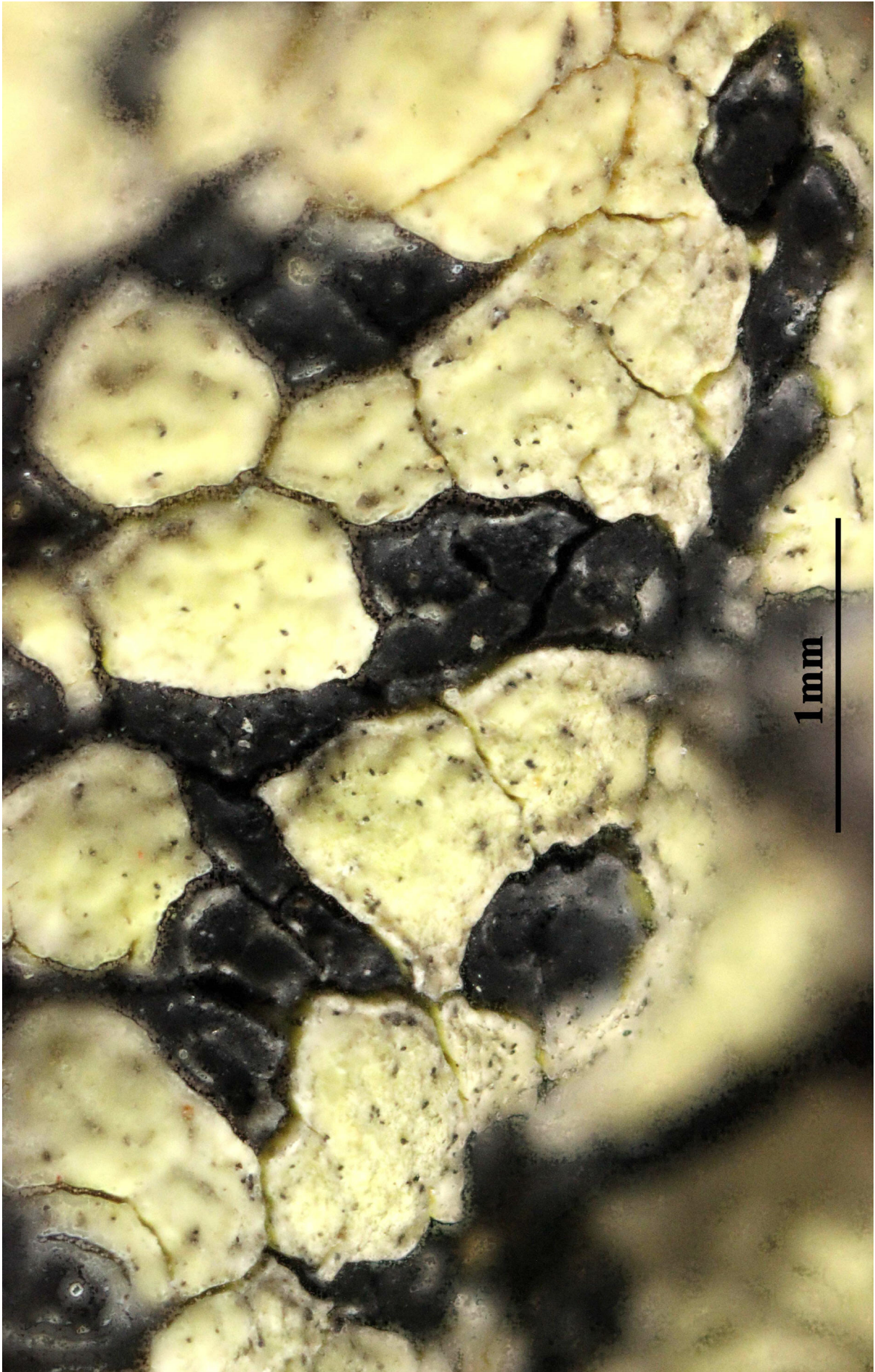
[21220], Schweiz, Davos-Wolfgang, Richtung Drussetschawald, Felsblockhalde mit Kiefern und Fichten, feucht, kalt schattig, Hanglage nördlich einer kleinen Moorwiese, 1665. Leg. F. Schumm & H.-J. Maier, 21.09.1974, det F. Schumm. EX HERBARIO F. SCHUMM NR. 21220.

- Mark J+ blau, K+ gelb; Sporen braun, mit 3 Quersepten und je Abschnitt 1 Längsseptum.

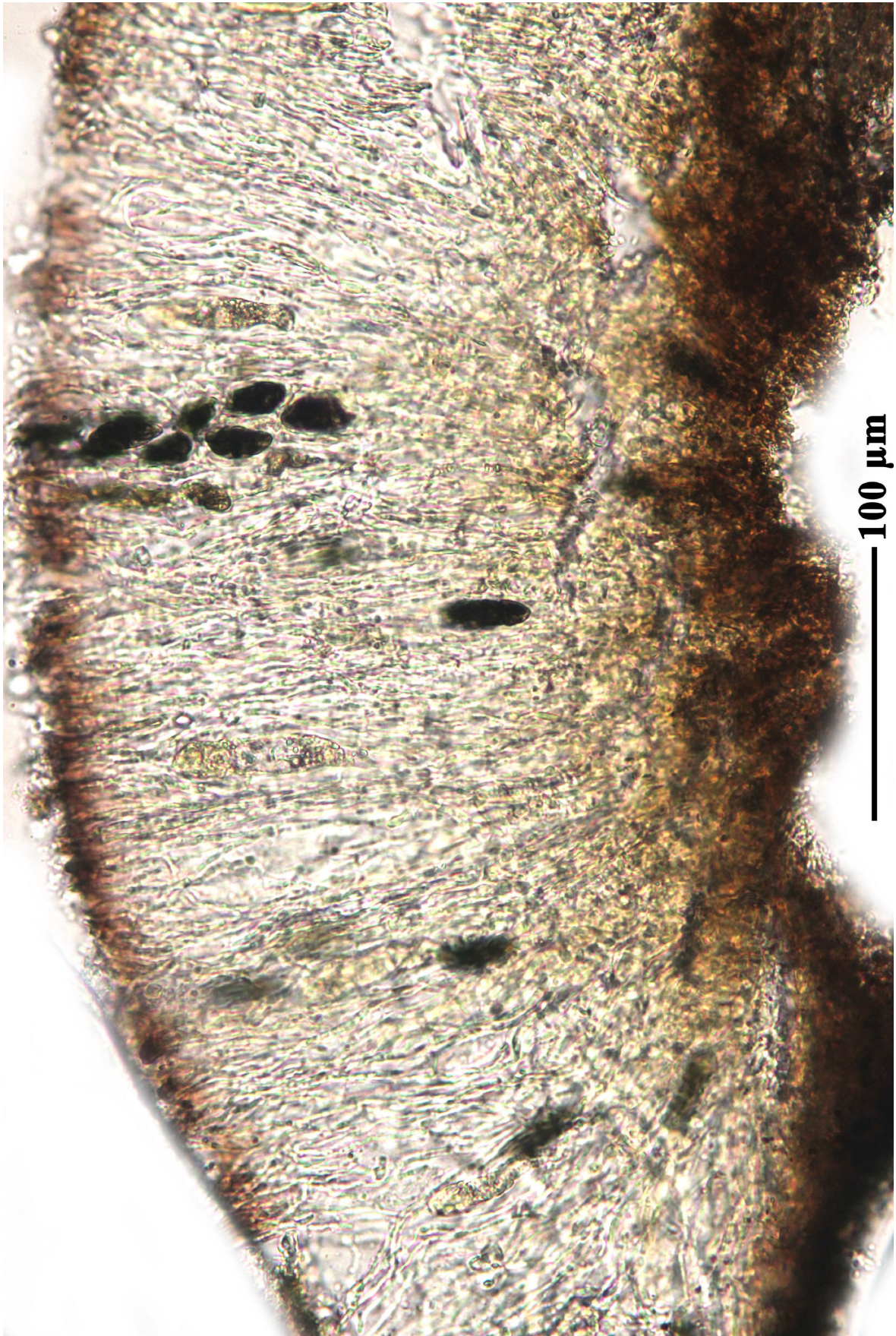
Thallus crustose, areolate, pale to bright yellow-green, forming 5-8 mm wide, sometimes confluent patches on the thalli of other crustose lichens, usually delimited by a thin, dark prothallus, the areoles developing from those of the host, angular to more or less round, 0.2-0.5(-0.8) mm wide, flat to slightly convex. Cortex indistinctly differentiated, 25-40 µm thick; medulla largely filled with algae, the lower part white, I+ blue. Apothecia lecideine, black, immersed, usually angular, 0.5-0.8 mm across, not surrounded by crescent-shaped areoles, with a usually flat disc and a thin, often persistent proper margin. Proper exciple thin, dark to red-brown in outer part, paler within; epithecium red-brown, K+ purple-red; hymenium colourless, c. 135 µm high; hypothecium brown-black. Asci (6-)8-spored, clavate, fissitunicate, with a well-developed tholus that is K/I- in lower part and K/I+ blue near the apex, lacking an ocular chamber, *Rhizocarpon*-type. Ascospores submuriform, mostly with a longitudinal and a transverse septum arranged crosswise, (2-)4-5(-6) celled in optical view, grey-brown to brown-black, very variable in outline (globose, ellipsoid to almost cubical), 14-23 x 10-16 µm, halonate at least when young. Photobiont chlorococcoid. Spot tests: medulla K-, C-, KC-, P+ yellow. Chemistry: cortex with rhizocarpic acid; medulla with psoromic acid. - Note: on siliceous rocks near and above treeline, starting the life-cycle on the thalli of different crustose lichens; related to *Rh. tinei*, but differing in the parasitic growth; probably overlooked, and more frequent in the Alps, especially in rainy areas.



Rhizocarpon rapax



Rhizocarpon rapax



Rhizocarpon rapax



Rhizocarpon rapax

— 20 μm



Rhizocarpon rapax

Zusatz

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