

F. Schumm (2026):

Images of Lichens
from Japan 04

With this volume I document a collection of images mainly out of the Exsiccats of Kashiwadani, Kurokawa and Ohmura from Japan 04. I omitted the search for description from the literature because most of them could be found in the earlier Vols. of Vezda

For the descriptions of european 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

Cladina rangiferina (L.) Nyl., Not. Sällsk. Fauna et Fl. Fenn. Förh., Ny Ser.
8: 110 (1866)
= *Lichen rangiferinus* L. 1753
= *Cladonia rangiferina* (L.) Weber, in Wiggers, Prim. fl. holsat. (Kiliae): 90
(1780)

[KU556], Chile. Magellanes: About 12 km south of Lago Parrilar, Peninsula de Brunswick. Among mosses (*Sphagnum*) in *Nothofagus* forest, 310 m. Leg. H. Kashiwadani (no. 19271), 12.12.1981, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 556.

Primary thallus crustose, ephemeral and rarely seen, consisting of thin, subglobose, 0.2-0.4 mm wide warts. Podetia shrubby, hollow inside, ash-grey, densely branched, loosely attached, anisotomically (i.e. main branches thicker) tri- or tetrachotomously branched, 3-8(-13) cm tall and up to 1.5(-2) mm thick, ecorticate, with an arachnoid surface; main axis paler towards the base, only secondarily somehow melanotic and only at the very base; tips of ramifications unilaterally deflexed, often browned, situated around an open axil. Inner side of the main axis grey, or black only at the very base. Apothecia rare, terminal, brown, convex, usually very small. 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, ovoid, semi-immersed on the tips of podetia with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow sometimes slowly turning brown, C-, KC-, P+ red, UV-. Chemistry: fumarprotocetraric acid and atranorin. - Note: a circumpolar, arctic-alpine lichen, one of the most abundant elements of lichen-rich tundra-like vegetation on mineral soil in exposed habitats.



Cladina rangiferina



Cladina rangiferina

Cladonia alpestris f. *aberrans* Abbayes, Bull. Soc. sci. Bretagne 16: 93 (1939)

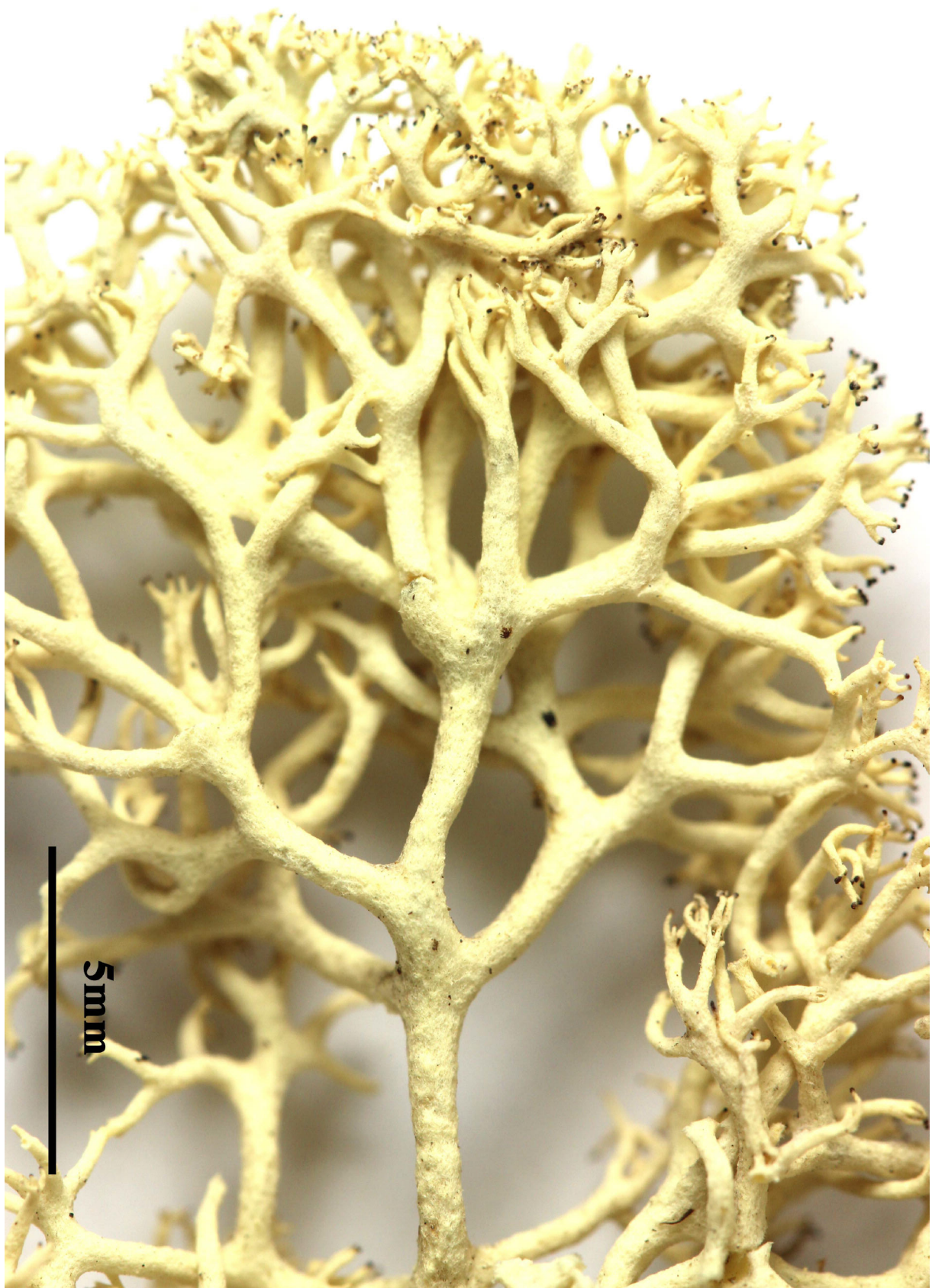
= *Cladonia stellaris* (Opiz) Pouzar & Vězda, Preslia 43: 196 (1971)

[KU507], Canada. British Columbia: Between Rainbow Lake and Prudhomme Lake on route 16. On humus, 400 ft. Leg. S. Kurokawa (no.8849), 15.8.1974, det. S. Kurokawa. EX S. KUOKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 507.

Primary thallus crustose, ephemeral and rarely seen, of dispersed, 0.15-0.3 mm wide granules. Podetia densely branched and shrubby, without a clearly defined main axis, hollow inside, pale yellowish white, isotomically-(mainly) tetrachotomously branched, 4-10(-15) cm tall, esquamulose, ecorticate, with an arachnoid surface, darkening but not melanotic at base, most branches of the same thickness, forming compact, rounded, subglobose heads which are 3-5 cm across (top of podetia regularly dome-shaped); axils between branches open or closed; terminal branchlets divergent in a star-like manner. Apothecia very rare, brown, convex, terminal. 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 tips of podetia, with a reddish jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellow, P-, UV+ pale blue. Chemistry: usnic, isousnic perlatolic and pseudonorrangiformic acid. - Note: a circumpolar subarctic-subalpine species found in wind-protected sites with a long snow-lie, restricted to upland areas of the Alps.



Cladonia alpestris f. *aberrans*



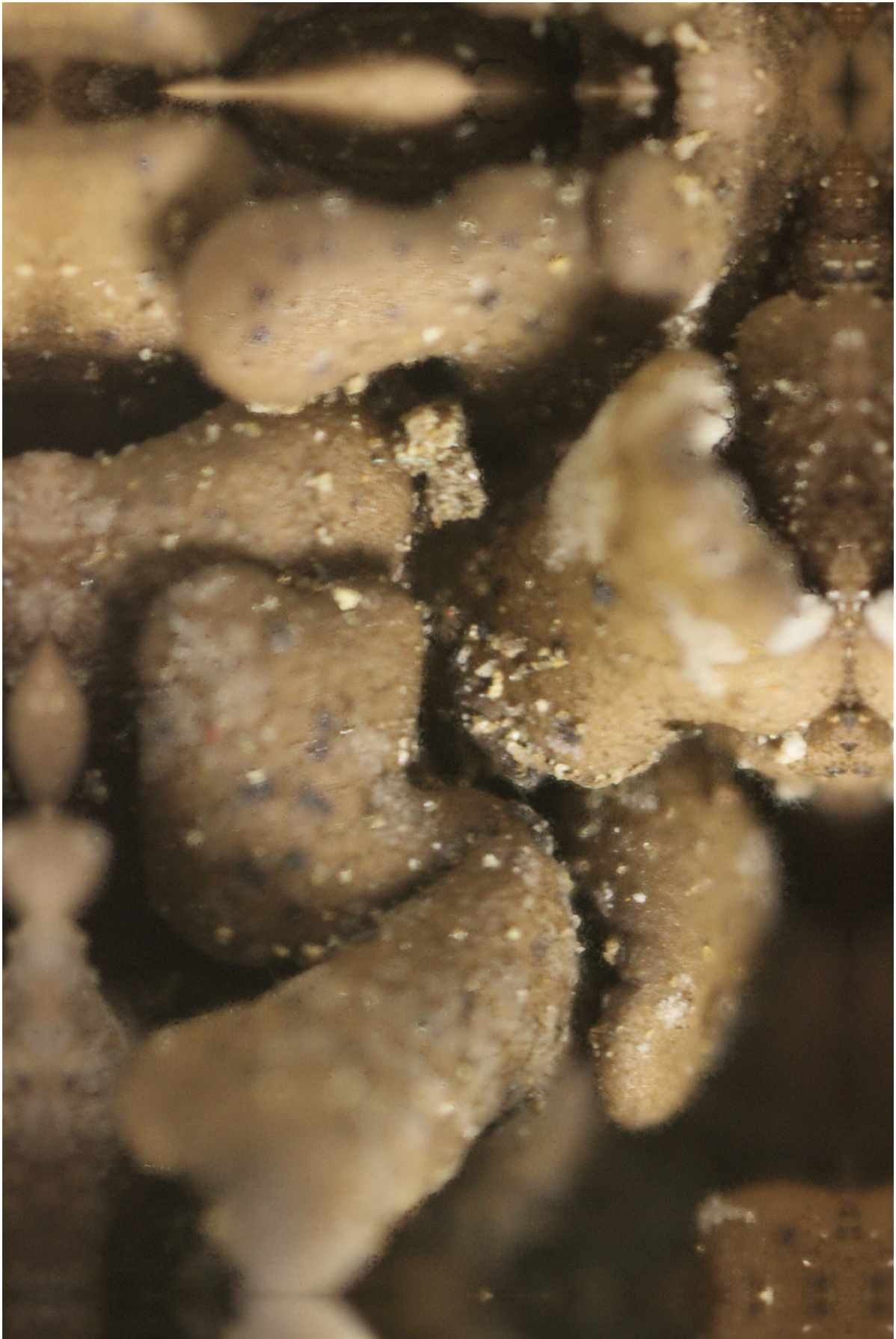
Cladonia alpestris f. *aberrans*

Dermatocarpon myogiense Asahina, J. Jap. Bot. 9(1): 64, fig. 1-2 (1933)

[KU418], Japan, Honshu. Prov. Iwashiro: Hirohata, Ryozen-cho, Date-gun. On rocks, 200 m. Leg. H. Kashiwadani (no. 15372), 9.8.1979, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 418.



Dermatocarpon myogiense



Dermatocarpon myogiense

Cladonia gonecha (Ach.) Asahina, J. Jap. Bot. 15(10): 609 (1939)
= *Baeomyces deformis* var. *gonechus* Ach. 1803
= *Cladonia sulphurina* (Michx.) Fr., Lich. eur. reform. (Lund): 237 (1831)

[KU264], Canada. British Columbia: Beside airstrip, about 15 miles south of Kinaskan Lake. On soil, 2500 ft.. Leg. S. Kurokawa (no. 8966), 20.8.1975, det. S. Kurokawa. EX S. KUOKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 264.

Primary thallus squamulose, persistent, the squamules rather large, flat or ascending, more or less round, slightly crenulate, 2-4(-8) mm long and 2.5-4(-6) mm wide, bright yellowish green above, white to yellow-brown beneath, sometimes soresiate along the margins. Podetia elongate, hollow inside, bright yellowish green, 2-5(-8) cm tall, mostly cupless and with pointed ends, sometimes with narrow, lacerated, very irregular, soresiate cups, much deformed and longitudinally split, corticate and often squamulose only at base, farinose-soresiate in upper part, the soresia 20-40 μ m in diam. Apothecia rather rare, scarlet red. 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 scarlet red, subglobose, semi-immersed along the margins of cups, with a red jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellowish, P-, UV+ white. Chemistry: usnic and sometimes squamatic acids, plus fatty acids; rhodocladonic acid in apothecia and pycnidia. - Note: a circumboreal-subarctic lichen found on organic substrata in cold-shaded situations, most common on rotting wood, e.g. on stumps and decaying fallen trunks.



Cladonia gonecha



Cladonia gonecha

Cladonia gonecha (Ach.) Asahina, J. Jap. Bot. 15(10): 609 (1939)
= *Baeomyces deformis* var. *gonechus* Ach. 1803
= *Cladonia sulphurina* (Michx.) Fr., Lich. eur. reform. (Lund): 237 (1831)

[KU263], Canada. British Columbia: Frosty Mountain Loop, Manning Park. On soil, 1750 m. Leg. S. Kurokawa (no. 8728), 5.9.1974, det. S. Kurokawa. EX S.KUROKAWA LICHENES RARIORES AND CRITICI EXSICCATI NR. 263.

Primary thallus squamulose, persistent, the squamules rather large, flat or ascending, more or less round, slightly crenulate, 2-4(-8) mm long and 2.5-4(-6) mm wide, bright yellowish green above, white to yellow-brown beneath, sometimes soresiate along the margins. Podetia elongate, hollow inside, bright yellowish green, 2-5(-8) cm tall, mostly cupless and with pointed ends, sometimes with narrow, lacerated, very irregular, soresiate cups, much deformed and longitudinally split, corticate and often squamulose only at base, farinose-soresiate in upper part, the soresia 20-40 μ m in diam. Apothecia rather rare, scarlet red. 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 scarlet red, subglobose, semi-immersed along the margins of cups, with a red jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellowish, P-, UV+ white. Chemistry: usnic and sometimes squamatic acids, plus fatty acids; rhodocladonic acid in apothecia and pycnidia. - Note: a circumboreal-subarctic lichen found on organic substrata in cold-shaded situations, most common on rotting wood, e.g. on stumps and decaying fallen trunks.



Cladonia gonecha



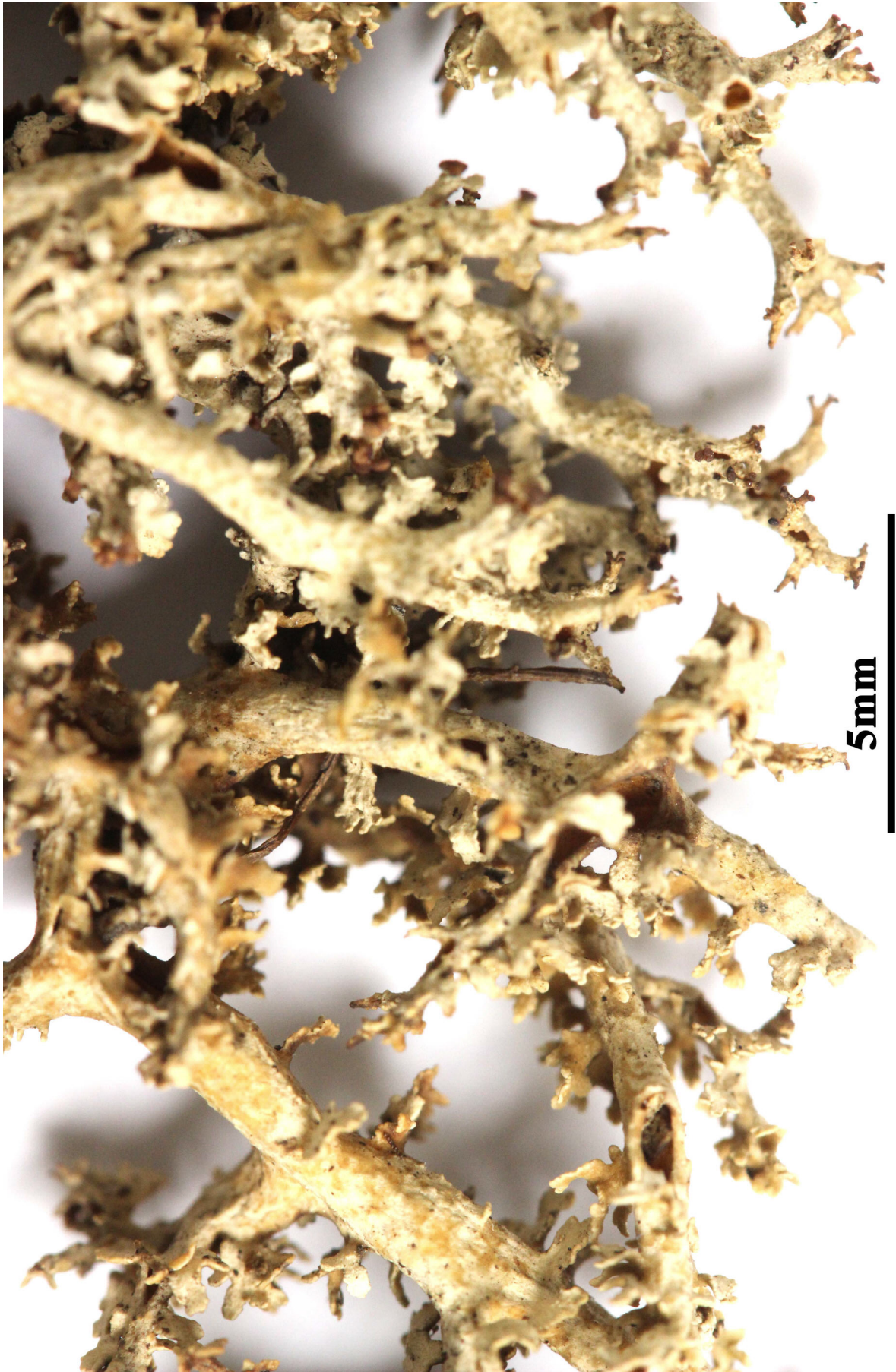
Cladonia gonecha

Cladonia hondoensis Asahina, J. Jap. Bot. 18(10): 551 (1942)

[KU161], Japan. Honshu. Prov. Shinano: Tenguppara, Mt. Shirouma.
On soil, 2200 m. Leg. Y. Asahina, 5.8.1957, det. S. Kurokawa. EX S.
KUROKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR.161.



Cladonia hondoensis



Cladonia hondoensis

Cladonia pleurota (Flörke) Schaer., Enum. critic. lich. europ. (Bern): 186 (1850)
= *Capitularia pleurota* Flörke 1808

[OH682], Japan. Honshu. Tanaba Prov. (Kyoto Pref.): Ido, Yamakuni-mura, Kitakuwada-gun (35°10' N, 135°42' E) On soil, 500 m. Leg.M. Togashi, 7.11.1955, det. Y. Asahina. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 682.

Primary thallus squamulose, persistent, the squamules variable, rounded to sparsely indented, 1-6 mm long, up to 4 mm broad, irregularly crenate, yellowish green to olivaceous green above, white beneath (sometimes yellowish near the attachment point). Podetia goblet-shaped, hollow inside, yellowish green, 0.5-2(-3) cm tall, with 0.5-1.5 cm broad, regular cups soon flaring into short, 0.5-1.5 mm thick stalks, the margins of cups sometimes dentate or proliferating, squamulose or sometimes sparsely squamulose at base, corticate only at base (more corticate in fertile specimens), granulose- or almost farinose-soeridiate, the soeridia 60-100 µm in diam., present also inside and on margins of cups. Apothecia rather rare, scarlet red, often compound and shortly stipitate. 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 scarlet red to black, stipitate or semi-immersed along the margin of cups (rarely on the primary squamules), with a red jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellow, P-, UV-. Chemistry: usnic, isousnic, porphyritic acids, and zeorin (seen as crystals on the thallus surface in herbarium specimens); rhodocladonic acid in apothecia and pycnidia. - Note: an arctic-alpine to boreal-montane, circumpolar lichen found on soil, rotting wood, more rarely on basal parts of trunks in open habitats, with optimum near or above treeline.



Cladonia pleurota

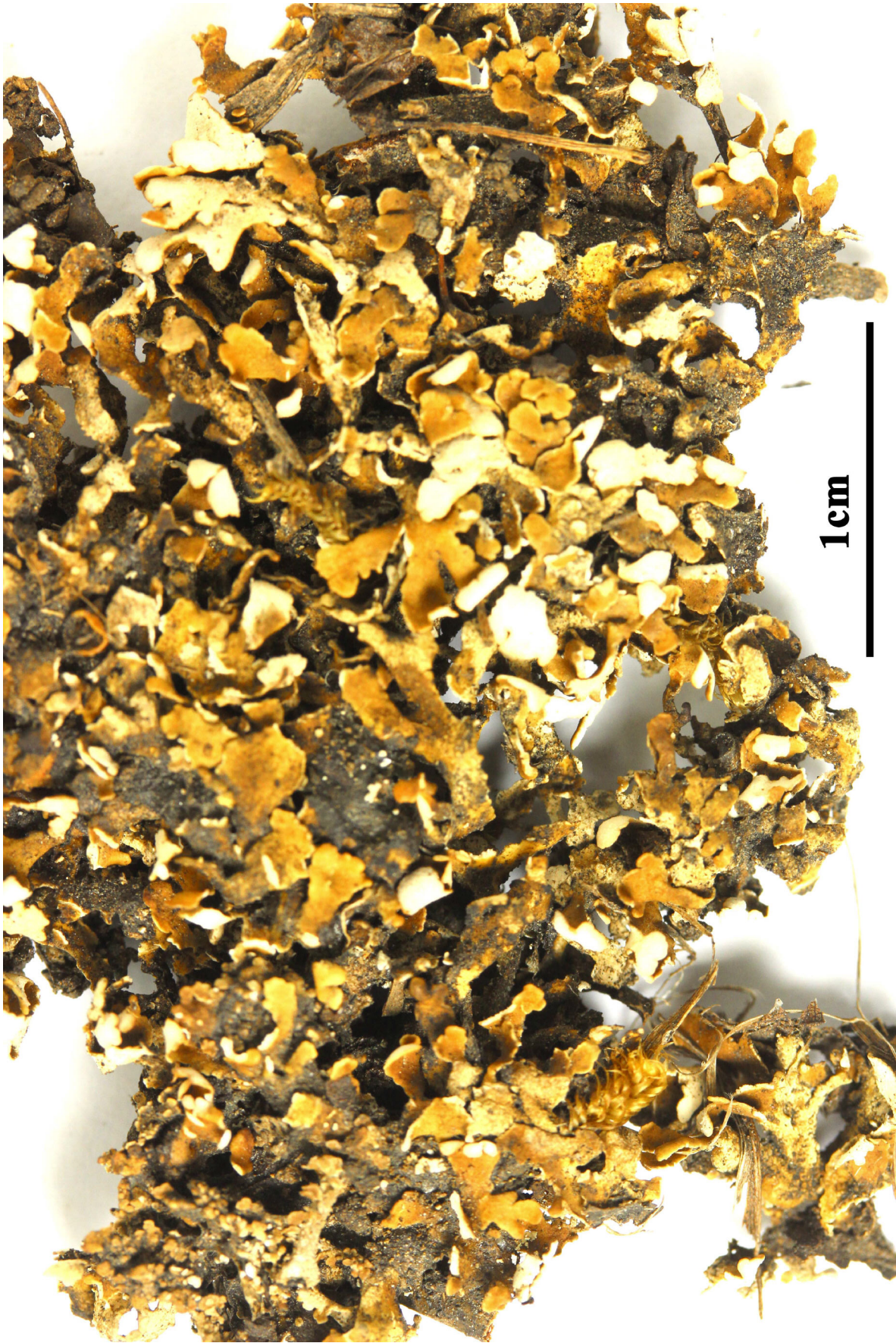


Cladonia pleurota

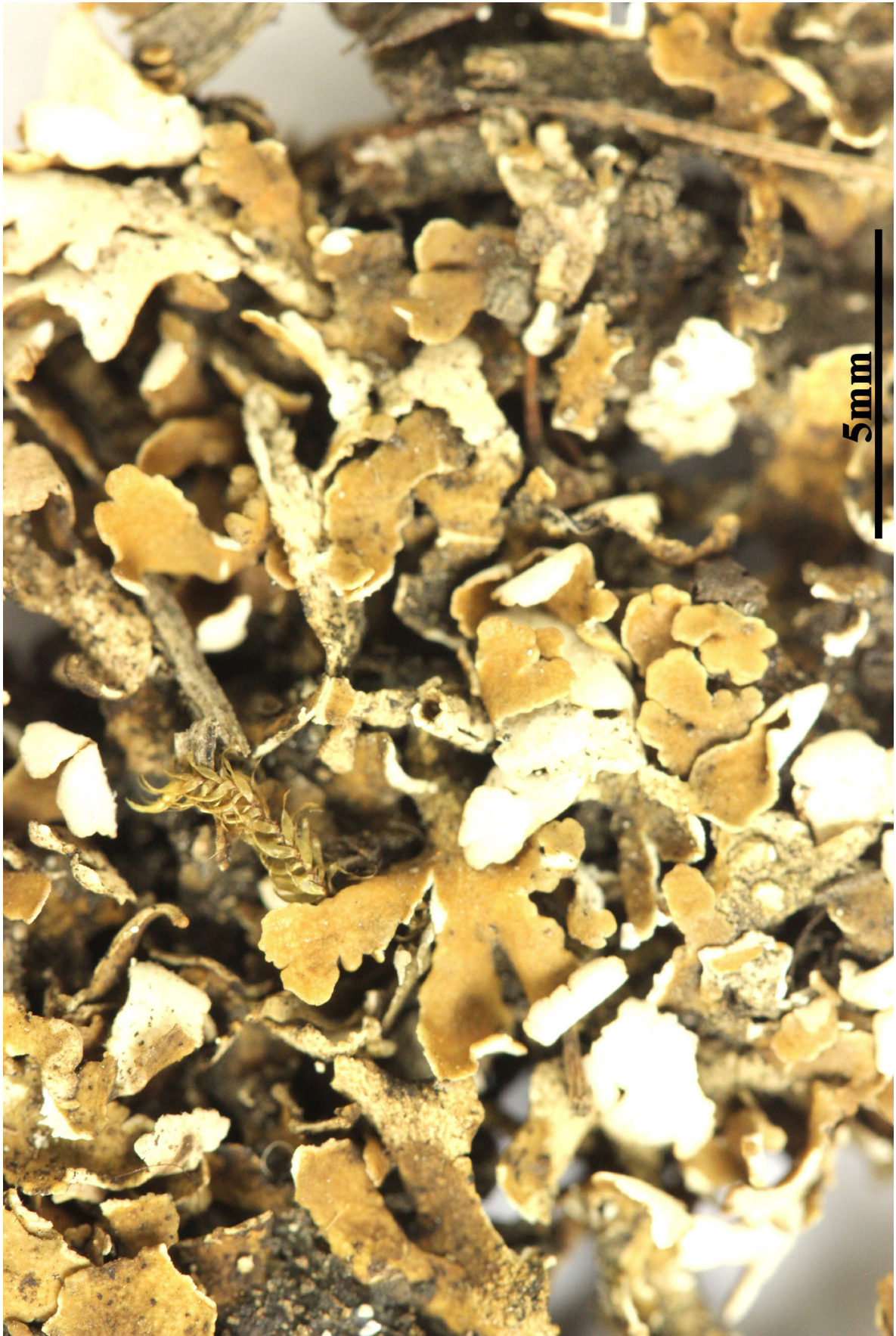
Cladonia polycarpoides Nyl., in Gasilien, Lich. Fl. St. Omer.: 125 (1894)
= *Cladonia subcariosa* Nyl., Flora, Regensburg 59: 560 (1876)

[KU309], Japan. Honshu. Prov. Kai: Lakeside of Saiko, Mt. Fuji. On soil, 800 m. Leg. H. Kashiwadani (no. 14015), 11.4.1977, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 309.

Primary thallus squamulose, persistent, the squamules large and prominent, ascending, forming dense mats, 3-10(-15) mm long, 2-5(-7) mm wide, olive-green above, white, but often becoming bluish, reddish brown or rarely brownish grey beneath. Podetia rather rare, cupless and thicker at apex, simple or rarely sparsely branched, often solid inside, olive-green to brown, 0.5-2 cm tall, c. 1.5 mm thick, almost continuously verruculose-corticate, esorediate, rarely squamulose at base. Apothecia common, dark brown, convex, forming larger subcorymbose aggregates which are 5-8 mm wide. 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 basal squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow rapidly turning red, C-, KC-, P+ yellow to red (slow reaction). UV-. Chemistry: norstictic acid, with traces of connorstictic acid, exceptionally homoheveadric acid, stictic or fumarprotocetraric acid complex, very rarely with atranorin. - Note: a mainly temperate lichen found on sandy mineral soil in open grasslands and on soil pockets on large isolated boulders.



Cladonia polycarpoides



Cladonia polycarpoides

Cladonia polycarpoides Nyl., in Gasilien, Lich. Fl. St. Omer.: 125 (1894)
= *Cladonia subcariosa* Nyl., Flora, Regensburg 59: 560 (1876)

[KU337], Japan. Honshu. Prov. Aki: Fujikane, Kimita-mura, Futami-gun. On straw-thatched roof. 200 m. Leg. T. Watanabe (no. 658), 20.5.1978, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI NR.357.

Primary thallus squamulose, persistent, the squamules large and prominent, ascending, forming dense mats, 3-10(-15) mm long, 2-5(-7) mm wide, olive-green above, white, but often becoming bluish, reddish brown or rarely brownish grey beneath. Podetia rather rare, cupless and thicker at apex, simple or rarely sparsely branched, often solid inside, olive-green to brown, 0.5-2 cm tall, c. 1.5 mm thick, almost continuously verruculose-corticate, esorediate, rarely squamulose at base. Apothecia common, dark brown, convex, forming larger subcorymbose aggregates which are 5-8 mm wide. 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 basal squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow rapidly turning red, C-, KC-, P+ yellow to red (slow reaction). UV-. Chemistry: norstictic acid, with traces of connorstictic acid, exceptionally homoheveadric acid, stictic or fumarprotocetraric acid complex, very rarely with atranorin. - Note: a mainly temperate lichen found on sandy mineral soil in open grasslands and on soil pockets on large isolated boulders.



Cladonia polycarpoides



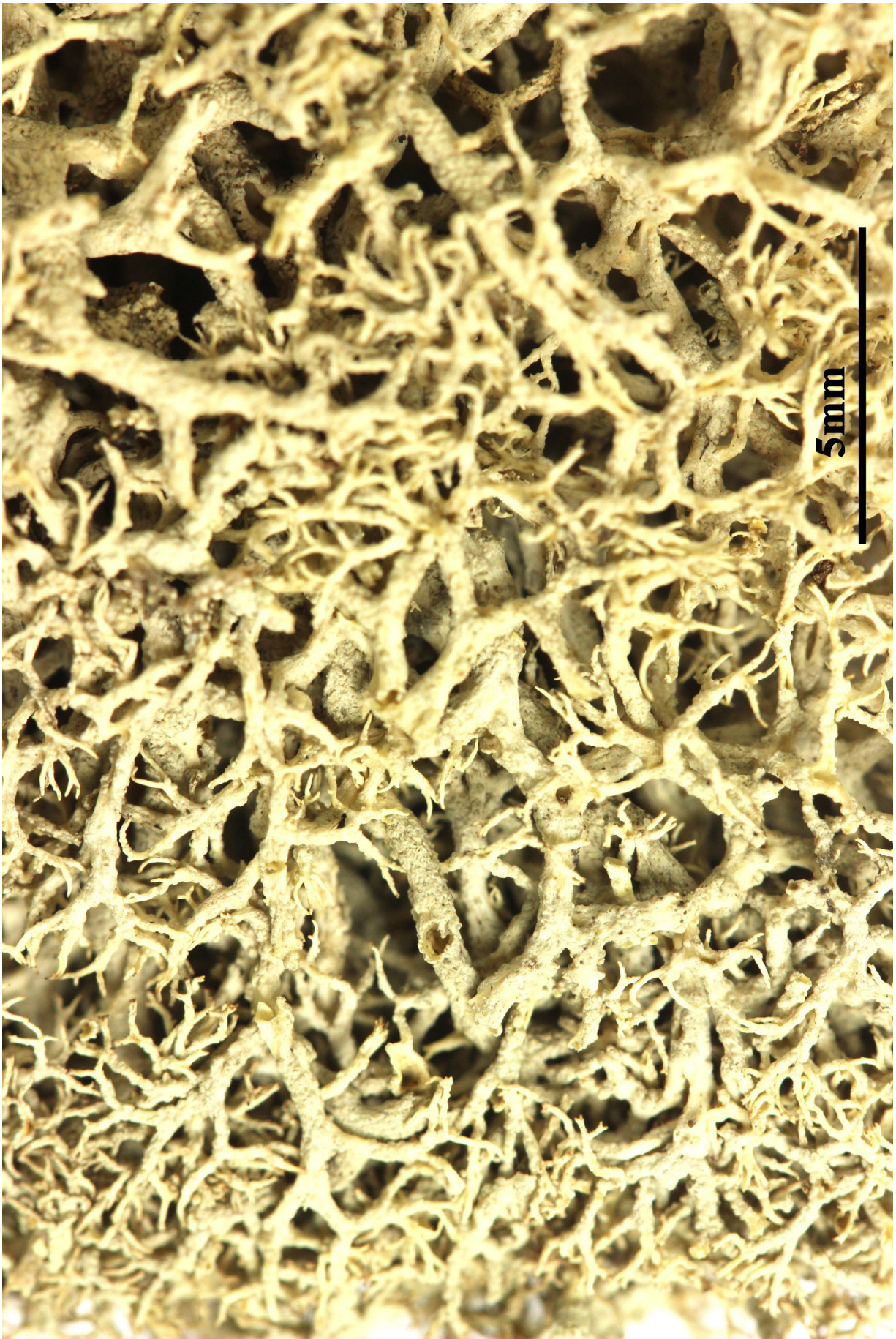
Cladonia polycarpoides

Cladonia pseudoevansii Asahina [as 'pseudoevansi'], J. Jap. Bot. 16(4): 187 (1940)

[KU469], Japan. Hokkaido. Prov. Tokachi: Mt. Goshiki, Daisetsu Mts. Among mosses, 1960 m. Leg. H. Kashiwadani (no. 16494) and Y. Endo, 7.8.1980, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 469



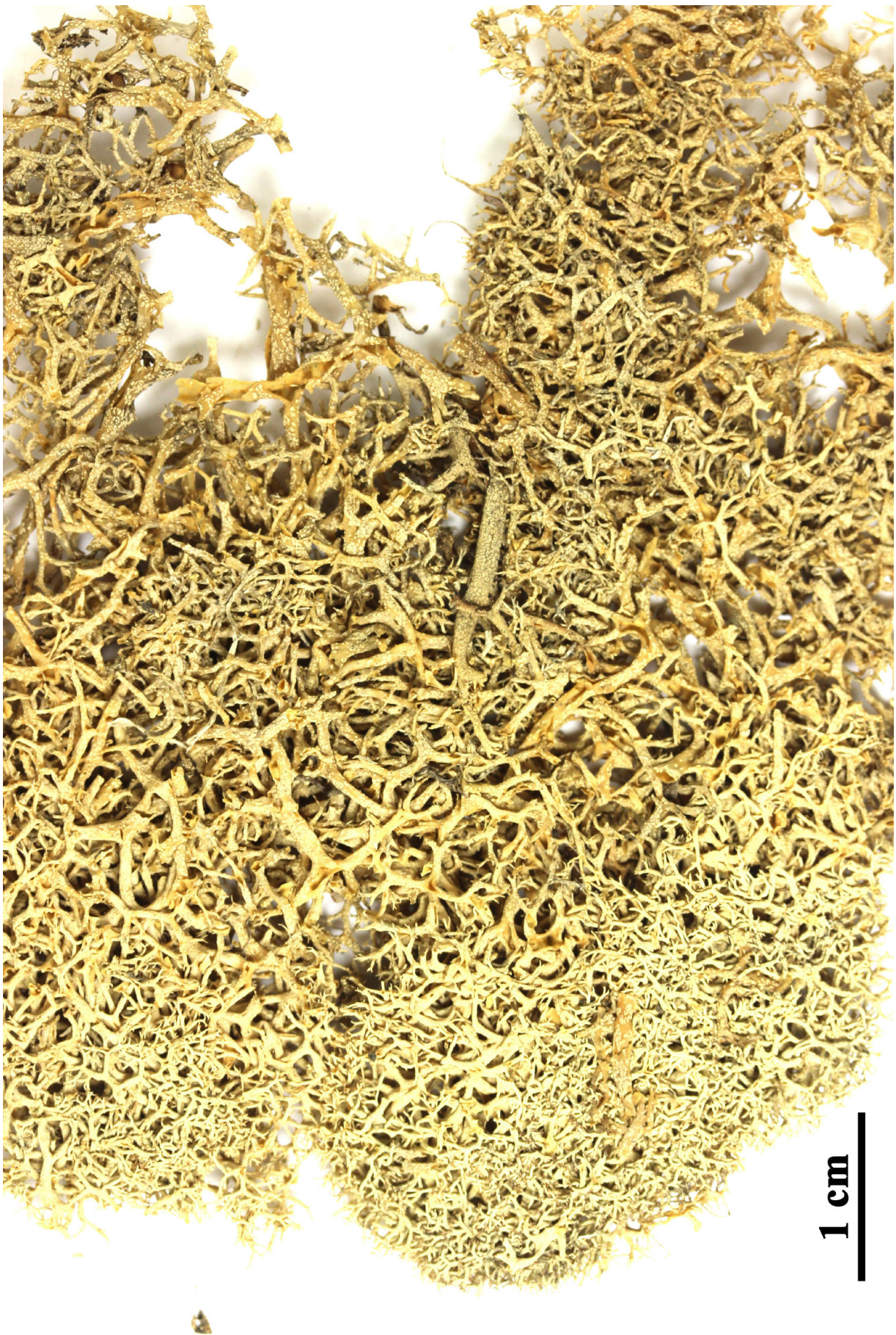
Cladonia pseudoevansii



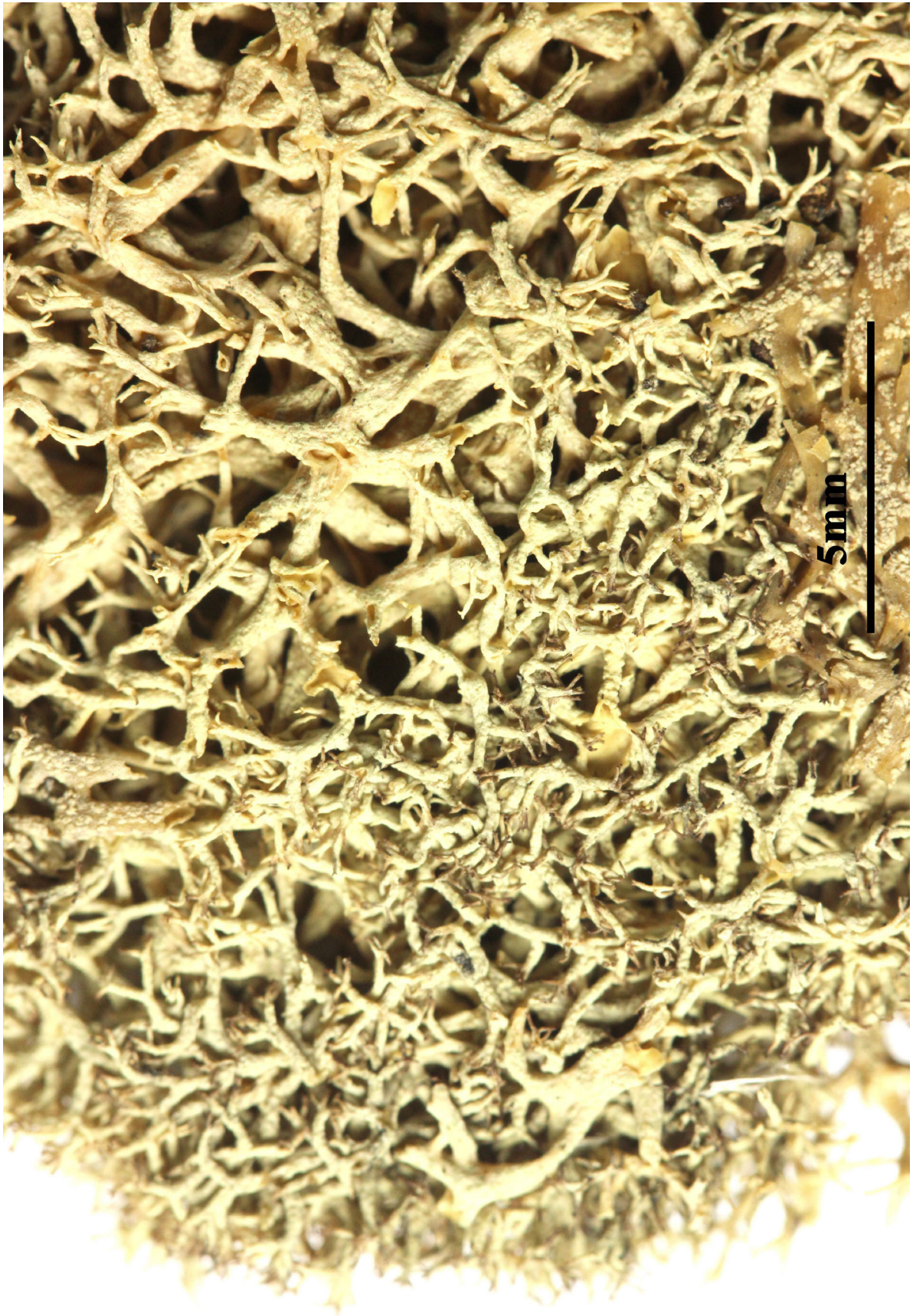
Cladonia pseudoevansii

Cladonia pseudoevansii Asahina [as 'pseudoevansi'], J. Jap. Bot. 16(4): 187 (1940)

[KU470], Japan. Hokkaido. Prov. Kitami: En route between Mt. Rausu and Mt. Ioh, Shiretoko Peninsula. On soil, 1300 m. Leg. M. Togashi, 6.7.1970, det. Y. Asahina. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 470.



Cladonia pseudoevansii



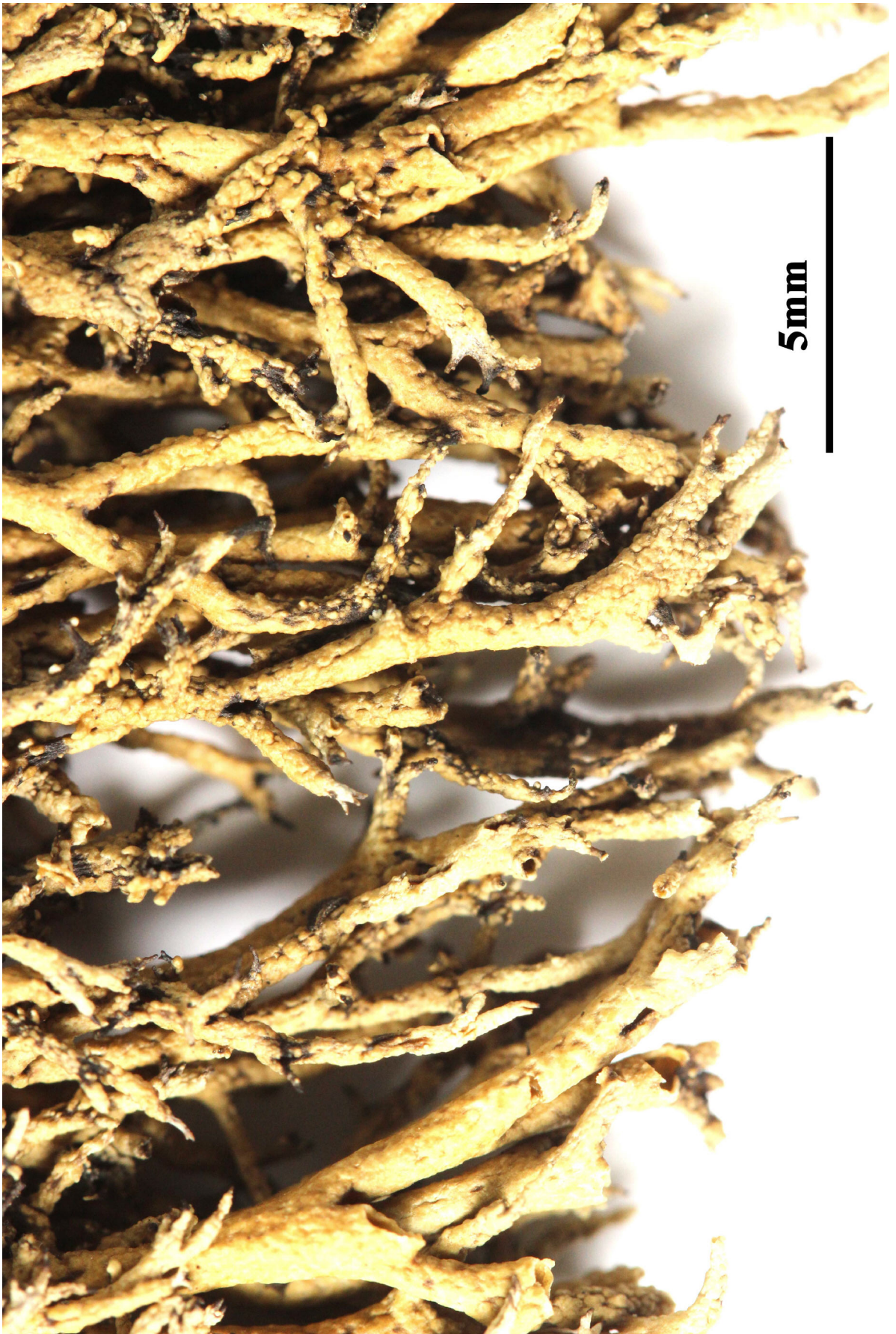
Cladonia pseudoevansii

Cladonia pseudohondoensis Asahina, J. Jap. Bot. 34(11): 348 (1959)

[KU358], Japan. Hokkaido. Prov. Iburi: Mt. Tarumae. On sandy soil, 520 m. Leg. H. Kashiwadani (no. 14804), 11.10.1978, det. H. Kashiwadani. Ex S. Kurokawa and H. Kashiwadani Lichenes Rariores Et Critici Exsiccati Nr. 358.



Cladonia pseudohondoensis



Cladonia pseudohondoensis

Cladonia ramulosa (With.) J.R. Laundon, Lichenologist 16(3): 225 (1984)
= *Lichen ramulosus* With. 1776

[OH605], Japan. Honshu. Prov. Izu (Pref. Shizuoka): Miyagahara, Nishiizu-cho, Kamo-gun (34°49'57" N, 138°51'09" E). On soil on stone wall. 340 m. Leg. Y. Ohmura (no. 12083), M. Sugimoto & H. Kashiwadani, 13.3.2019. EX Y. OHMURA LICHENES MINUS COGNITI NR. 605.

Primary thallus squamulose, persistent or evanescent, the squamules small, 0.5-2(-5) mm long, 0.5-2 mm wide, elongate and deeply indented, fragile, glaucous green to greenish brown above, white beneath, rarely granulose-soresiate. Podetia simple or sparingly branched, hollow inside, greenish brown to brown, 0.5-3(-4) cm tall, 0.5-1(-3) mm thick, with pointed apices or with irregular, dentate and often marginally proliferating, small cups, squamulose-granular to partly decorticated, the areas without cortex usually with corticate granules or squamules, most abundant inside the cups. Apothecia frequent, pale to dark brown, convex, rather small, usually forming glomerules. 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 developing on basal squamules and along margins of cups, subpedicellate, constricted at base, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K- or K+ yellowish slowly turning brown, C-, KC-, P+ red, UV-. Chemistry: fumarprotocetraric acid complex, occasionally with low amounts of atranorin and zeorin. - Note: a mainly temperate to southern boreal-montane lichen found on epilithic bryophytes, rotting wood and organic soil, most common in upland areas with siliceous substrata.



Cladonia ramulosa



Cladonia ramulosa

Cladonia rangiferina* subsp. *grisea Ahti, Ann. bot. Soc. Zool.-Bot. fenn.
Vanamo 32(no. 1): 96 (1961)
= *Cladonia grisea* (Ahti) J.C. Wei, Enumer. Licheniz. Fung. China (Beijing):
168 (2020)

[OH661], Japan. Honshu. Echigo Prov. (Niigata Pref.): Oshirokawa
Irihiro-se-mura, Kita-Uonuma-gun. On humus, 600 m. Leg. H. Izumi,
19.7.1977, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI
EXSICCATI NR. 66.



Cladonia rangiferina subsp. *grisea*



Cladonia rangiferina subsp. *grisea*

Cladonia rappii A. Evans, Trans. Ky Acad. Sci. 38: 297 (1952)

[KU668], Papua New Guinea. Central District: Around Woitape, 1600 m. Leg. S. Kurokawa (no9233), 17.10.1975, det. S. Stenroos. EX S. KUROKAWA AND H. KASHIWADANI LICHENS RARIORES ET CRITICI EXSICCATI NR. 668.

Thallus dimorphic. Primary thallus squamulose; squamules 2-5 x 2-3.5 mm, sparsely lobed. Podetia slender to robust, 2-11 cm tall by 0.5-1.5 mm thick, pale gray to brownish, dark brown at base, sparsely branched, producing centrally proliferating cups in 2-16 tiers; internodes 3-14 mm long; cups flaring, shallow, 2-6 mm diam., margins upturned to toothed. Podetial surface corticate, areolate, sometimes squamulose. Photobiont *Asterochloris* alga. Ascomata biatorine apothecia on cup margins, brown, flat to convex, 1-3 mm diam.; ascospores oblong, 11-12 x 4 μ m. Pycnidia on cup margins, 0.2-0.25 diam., globose; pycnidial jelly hyaline; conidia curved, 7-9 x 1 μ m. - Chemistry. K- or rarely K⁺ yellow, PD⁺ red, rarely PD⁺ yellow. Three major chemotypes are recognized: (I) psoromic and 2'-O-demethylpsoromic acid; (II) marprotocetraric acid and traces of protocetraric, convirensic (subconstant), and confumarprotocetraric acids; and (III) additional atronorin (rare, in Caribbean). Substrate and Habitat. On roadbanks, rocks, sandy area and on stumps. Distribution. Pantropical; in North Carolina in Coastal Plain and eastern Piedmont ecoregions. Literature: Ahti, T. (2002) Cladoniaceae. Flora Neotropica 78: 1-362.



Cladonia rappii



Cladonia rappii

Cladonia rei Schaer., Lich. helv. spicil. 1: 34 (1823)

[OH684], Japan. Kyushu. Satsuma Prov. (Kagoshima Pref.): Sakurajima. On soil. Leg. Y. Asahina, 3.1.1938, det. Y. Ohmura. EX Y. OHMURA LICHENS MINUS COGNITI EXSICCATI NR. 684.

Primary thallus squamulose, persistent or evanescent, the squamules small, up to c. 3 mm long, incised, greenish to pale brownish grey above, white beneath. Podetia elongate, hollow inside, pale brownish grey, (1-)3-5 cm tall, 1.5-2 mm thick, simple or sparingly branched, with pointed apices, more rarely with irregular small cups, often corticate and squamulose in lower half (the cortex verrucose-granular), granulose-soeridiate in upper part, the soresidia (20-)30-60 μm in diam. Apothecia rather rare, terminal, 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. Spores 1-celled, hyaline, ellipsoid. Pycnidia brown, at the tips of podetia or rarely on the margins of squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: podetia K-, C-, KC-, P+ red or P-, UV+ white or UV-. Chemistry: homosekikaic and sekikaik acids, sometimes with additional fumarprotocetraric acid. - Note: a mainly temperate, probably holarctic species.. Spier & Aptroot (2007) considered it as a synonym and chemotype of *C. subulata* (but see Pino-Bodas & al. 2010b).



Cladonia rei



Cladonia rei

Cladonia rei Schaer., Lich. helv. spicil. 1: 34 (1823)

[KA356], Japan. Honshu. Prov Ugo (Pref. Akita): Horikawa, Iijima, Akita-city. On ground (sandy soil with humus), 10 m. Leg. H. Kashiwadani (no.48179), 30.11.2003, det. H. Kashiwadani. EX H. KASHIWADANI LICHENES MINUS COGNITI NR. 356.

Primary thallus squamulose, persistent or evanescent, the squamules small, up to c. 3 mm long, incised, greenish to pale brownish grey above, white beneath. Podetia elongate, hollow inside, pale brownish grey, (1-)3-5 cm tall, 1.5-2 mm thick, simple or sparingly branched, with pointed apices, more rarely with irregular small cups, often corticate and squamulose in lower half (the cortex verrucose-granular), granulose-soeridiate in upper part, the soresidia (20-)30-60 µm in diam. Apothecia rather rare, terminal, 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. Spores 1-celled, hyaline, ellipsoid. Pycnidia brown, at the tips of podetia or rarely on the margins of squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: podetia K-, C-, KC-, P+ red or P-, UV+ white or UV-. Chemistry: homosekikaic and sekikaik acids, sometimes with additional fumarprotocetraric acid. - Note: a mainly temperate, probably holarctic species.. Spier & Aptroot (2007) considered it as a synonym and chemotype of *C. subulata* (but see Pino-Bodas & al. 2010b).



Cladonia rei



Cladonia rei

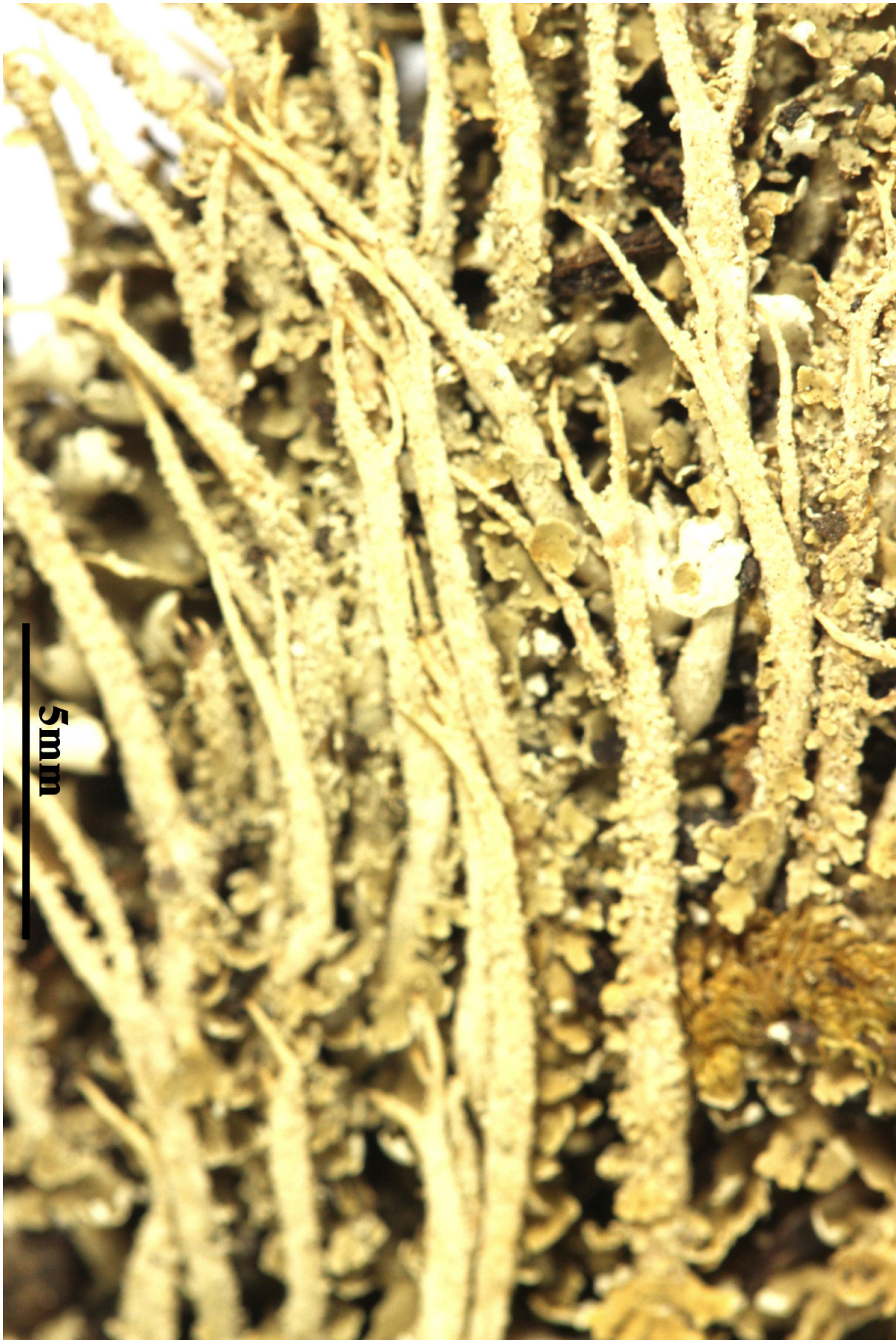
Cladonia scabriuscula (Delise) Nyl., C. r. hebd. Séanc. Acad. Sci., Paris 83:
88 (1876)
= *Cenomyce scabriuscula* Delise 1830

[OH553], Japan. Honshu. Prov. Aki (Pref. Hiroshima): Momijidani, Miyajima Island. On humus, 25 m. Leg. M. Togashi, 31.10.1955, det. Y. Ohmura. ExY. Ohmura Lichenes Minus Cogniti Exsiccati Nr. 553.

Primary thallus squamulose, usually evident only in young specimens, the squamules middle-sized, 1-3(-4) mm long and broad, crenate, adnate and often forming rosettes with raised margins, glaucescent above, white beneath. Podetia slender, dichotomously branched, hollow inside, with mostly open axils, 2-5(-10) cm tall, 2-5 mm thick, forming irregular tufts, with pointed apices, pale greenish grey, smoothly corticate but towards tips scabrous due to granules, microsquamules and disintegrating cortex, sometimes slightly and sparsely sorediate at tips. Apothecia very rare, dark brown, convex, small, crowded on the terminal branchlets. 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 tips of podetia, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K- or K+ yellowish slowly turning brown, C-, KC-, P+ red, UV-. Chemistry: fumarprotocetraric acid complex, rarely with traces of atranorin. - Note: a mainly temperate, widespread but rare lichen found on soil and amongst mosses in humid-sheltered situations, such as open woodlands.



Cladonia scabriuscula



Cladonia scabriuscula

Cladonia scabriuscula (Delise) Nyl., C. r. hebd. Séanc. Acad. Sci., Paris 83:
88 (1876)
= *Cenomyce scabriuscula* Delise 1830

[KU360], Japan. Honshu. Prov. Kii: Yanoko Pass, Owase-city. On rocks, 800 m. Leg. H. Kashiwadani (no. 14691), 27.7.1978, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 360.

Primary thallus squamulose, usually evident only in young specimens, the squamules middle-sized, 1-3(-4) mm long and broad, crenate, adnate and often forming rosettes with raised margins, glaucescent above, white beneath. Podetia slender, dichotomously branched, hollow inside, with mostly open axils, 2-5(-10) cm tall, 2-5 mm thick, forming irregular tufts, with pointed apices, pale greenish grey, smoothly corticate but towards tips scabrous due to granules, microsquamules and disintegrating cortex, sometimes slightly and sparsely sorediate at tips. Apothecia very rare, dark brown, convex, small, crowded on the terminal branchlets. 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 tips of podetia, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K- or K+ yellowish slowly turning brown, C-, KC-, P+ red, UV-. Chemistry: fumarprotocetraric acid complex, rarely with traces of atranorin. - Note: a mainly temperate, widespread but rare lichen found on soil and amongst mosses in humid-sheltered situations, such as open woodlands.



Cladonia scabriuscula



Cladonia scabriuscula

Cladonia sobolescens Nyl. ex Vain., Acta Soc. Fauna Flora fenn. 4(no. 1):
80 (1887)
= *Cladonia subcariosa* Nyl.

[KA279], Japan. Honshu. Prov. Hitachi (Pref. Ibaraki): Shishikura, Kasumigaura-cho, Niiharu-gun. On thatched roof, 20 m. Leg. H. Kashiwadani (no. 46670), 12-2-2003, det. H. Kashiwadani. EX H. KASHIWADANI LICHENES MINUS COGNITI EXSICCATI NR. 279.

Thallus dimorphic. Primary thallus squamulose, squamules 3-8(-10) x 0.5-1.5(-5) mm, ends obtuse, necrotic ends blackening. Podetia gray, smooth, slender, 0.4-1.5(-2.5) cm tall x 0.8-2.5 mm thick, flexuose, uniformly thick, unbranched or 2-4 times dichotomously branched. Podetial surface corticate, verruculose-areolate. Ascomata biatorine apothecia atop of podetia, brown, up to 1.5 mm diam. Ascospores hyaline, simple, oblong, 8-13 x 2-3.5 μ m. Pycnidia on squamules, frequent, globular, 150-300 μ m, pycnidial jelly clear; conidia strongly curved, 7-10 x 1 μ m. Chemistry. K⁺ yellow turning red or K⁻; PD⁺ red or yellow. According to Ahti (2000), *Cladonia subcariosa* consists of six major chemotypes, each of which has been considered a separate species:

- I. *C. subcariosa* s. str. – atranorin, norstictic and connorstictic (inconstant) acids, homoheveadride;
- II. *C. polycarpia* – those in I plus stictic, cryptostictic and constictic acids;
- III. *C. polycarpoides* – norstictic and connorstictic acids and homoheveadride;
- IV. *C. sobolescens* – fumarprotocetraric, protocetraric, and confumarprotocetraric acids;
- V. *C. subclavulifera* – norstictic and fumarprotocetraric acids as major substances;
- VI. *C. brevis* – psoromic, 2'-O-demethylpsoromic, and rangiformic acids.

Substrate and Habitat. Terricolous on sandy or rocky soil. Distribution. Eastern North America, Neotropics, western Europe, eastern Asia, New Guinea, Australia; in North Carolina throughout.



Cladonia sobolescens



Cladonia sobolescens

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

[OH554], Japan, Honshu. Prov. Ohmi (Pref. Shiga): Mt. Tanakami, Sato, Shimotamakami-mura, Kurita-gun. On soil- Leg. M. Togashi, 26.5.1955, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 554.

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

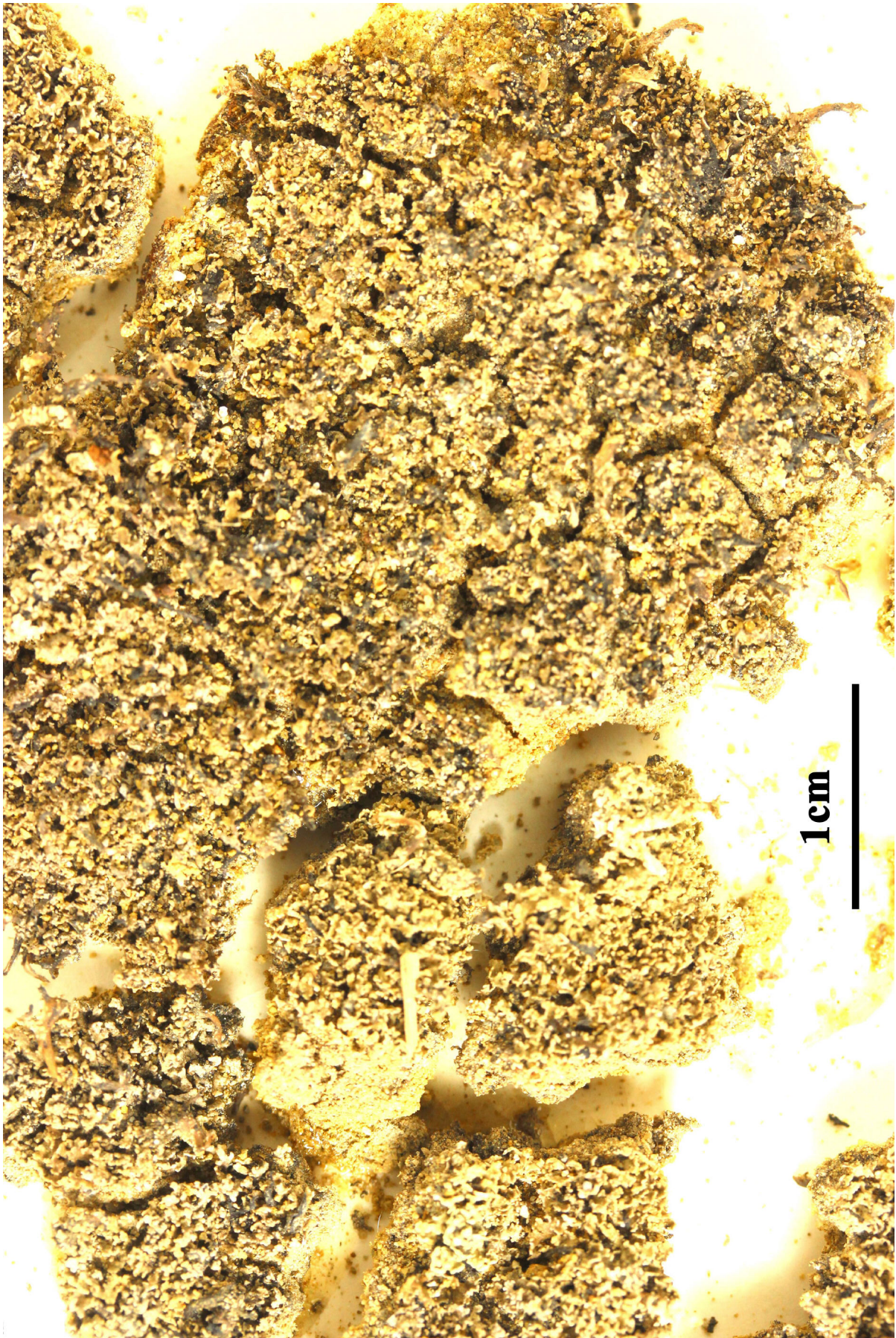


Cladonia squamosa

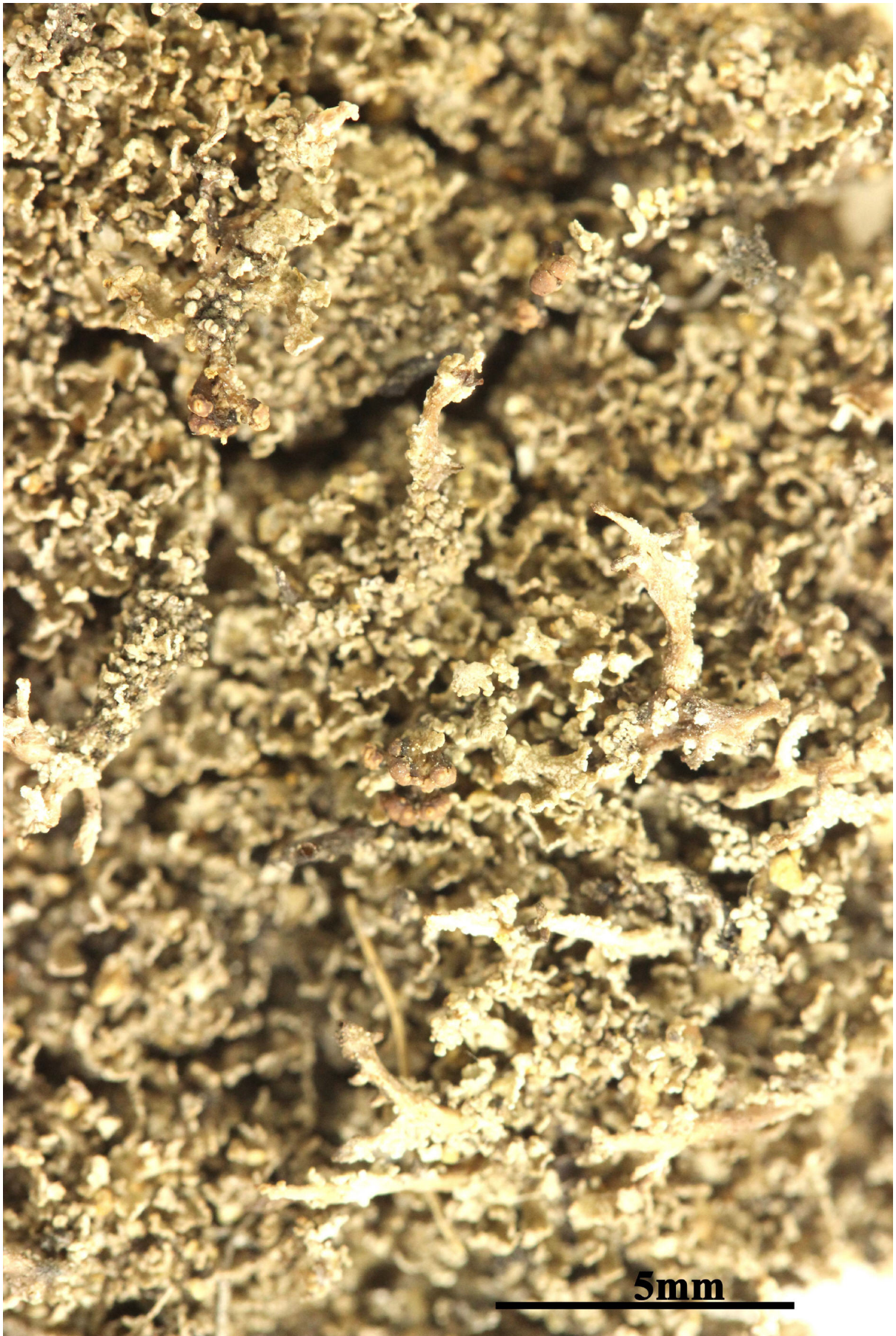
Cladonia squamosa Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 125 (1796) [1795]

[OH507], Japan. Kyushu. Prov. Satsuma (Pref. Kagoshima): 2 km NE of Yanagihara, Nishino-omote-city, Tanegashima Island (30°47' N, 131°04' E). On bark of *Machilus japonica*, 80 m. Leg. H. Kashiwadani (no. 47726), det. H. Kashiwadani. EX Y OHMURA LICHENES MINUS COGNITI EXSICCATI NR.507.

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

Cladonia squamosa* var. *subsquamosa (Nyl. ex Leight.) Vain., Meddn
Soc. Fauna Flora fenn. 6: 113 (1881)
= *Cladonia delicata* var. *subsquamosa* Nyl. ex Leight. 1866
= *Cladonia squamosa* Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 125
(1796) [1795]

[KA330], Chile. Aisén: Parque Nacional de Rio Simpson, along route 245. On decayed wood, 200 m. Leg. H. Kashiwadani (no. 18218, 24.11.1981, det. H. Kashiwadani. EX H. KASHIWADANI LICHENES MINUS COGNITI EXSICCATI NR. 330.

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, 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+ yellow, C-, KC-, P+ yellow, UV-. Chemistry: thamnolic and barbatic acids, the former mostly present in fertile specimens, and unknown terpenoids. - Note: more hygrophytic than the typical variety, and more bound to higher altitudes, this chemical variety has been often considered as an independent species. According to Aptroot (in litt.) the type material belongs to *C. ramulosa*



Cladonia squamosa var. *subsquamosa*



Cladonia squamosa var. *subsquamosa*

Cladonia straminea (Sommerf.) Flörke, Clad. Comm.: 87 (1827)
= *Cenomyce straminea* Sommerf. 1826

[OH662], Japan. Honshu. Etchu Orov, (Toyama Pref.): Mt Etchuzawadake, Kami-Nikawa-gun, 2500 m. Leg. M. Nuno & M. Togashi, 6.8.1970, det. M. Nuno. Ex Y. Ohmura Lichenes Minus Cogniti Exsiccati Nr. 662.

Primary thallus squamulose, persistent, the squamules up 4 mm wide, flattened, moderately divided into small, rounded lobes, dark yellowish green above, white beneath. Podetia goblet-shaped, dark yellowish green, hollow inside, with narrow cups, 4.5-7.5 mm tall, 2-4 mm wide, 1.5-2 mm thick at base, corticate, covered with numerous squamules and microsquamules, sometimes mixed with granules; basal areas and margins of cups often decorticate, with a visible blackened stereome. Apothecia scarlet red, mostly on the margins of cups. 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 red, most frequent along the margins of cups, with a red slime. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: chemotype a): K-, C-, KC+ pale yellow, P-, UV+ white; chemotype b): K+ yellow, C-, KC+ pale yellow, P+ yellow, UV-. Chemistry: chemotype a): usnic, didymic and squamatic acids; chemotype b): usnic, didymic and thamnolic acids. Rhodocladonic acid in apothecia of both chemotypes. - Note: a very rare species growing on mosses between siliceous boulders in oceanic areas, mostly in sites with a short snow-lie, in the montane to subalpine belts.



Cladonia straminea

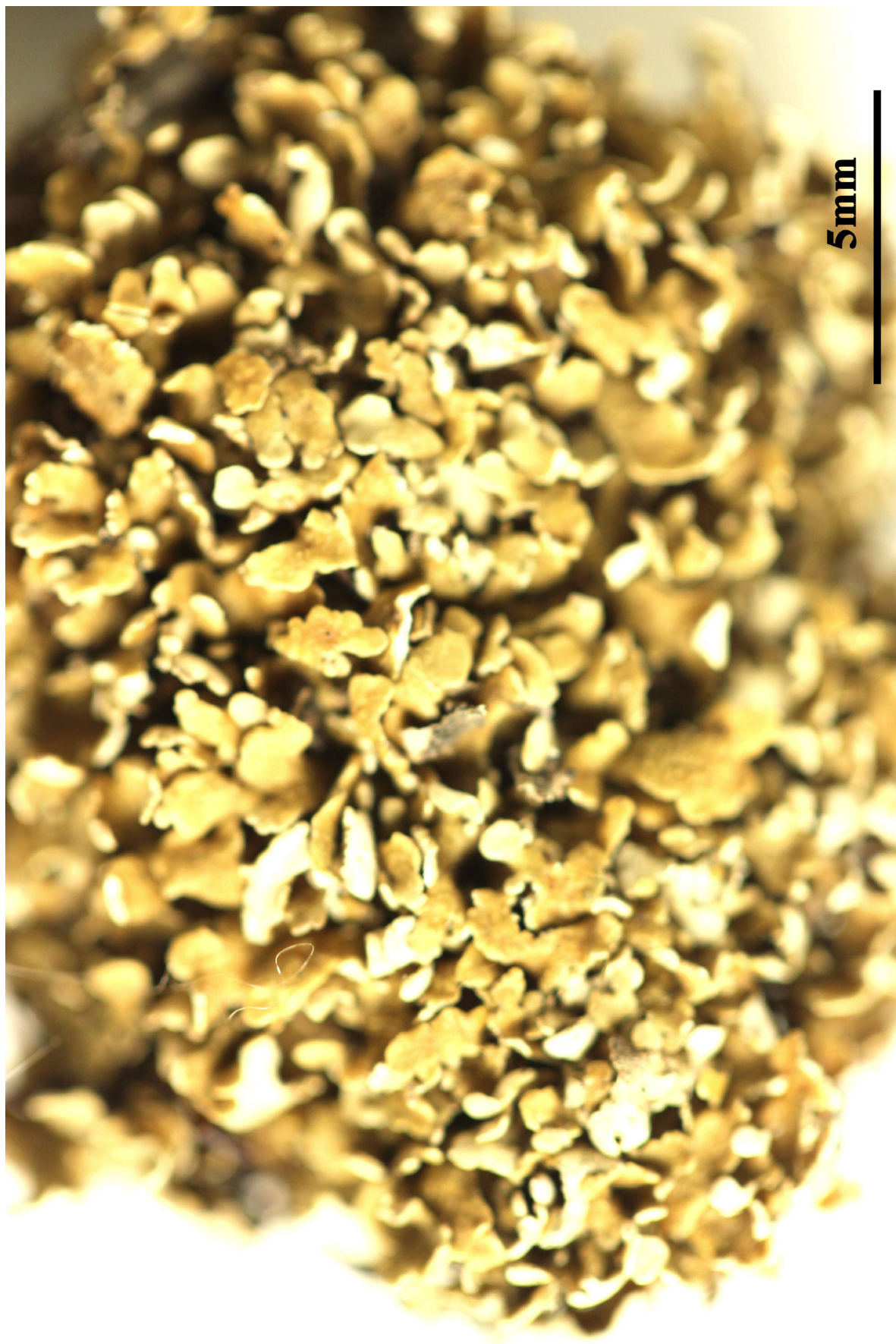


Cladonia straminea

Cladonia strepsilis (Ach.) Mont., Annls Sci. Nat., Bot., sér. 2 12: 48 (1839)
= *Baeomyces strepsilis* Ach. 1803

[KU310], Japan. Honshu. Prov. Harima: Umaze, Kati-gun. Among mosses on soil, 80 m. Leg. H. Kashiwadani (no. 13206) 1.1.1976, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR.310.

Primary thallus squamulose, the squamules persistent, prominent, stiff, elongate-crenate, up to 5 mm long, 0.5-3.5 mm wide, grey-green to bronze-green above, white and corticate beneath, forming dense, often convex, up to 10 cm wide (usually smaller) cushions. Podetia rather rare, small, 0.3-0.8(-1) cm tall, 1-3 mm thick, greenish brown to yellowish brown, irregularly cylindrical to clavate, cupless, continuously corticate, sometimes with small cracks, often squamulose at the base. Apothecia normally present when podetia are well-developed, brown, convex, usually forming aggregates. 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, semi-immersed in the basal squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, KC-, C+ bright emerald green, P+ yellow, UV+ whitish. Chemistry: baeomycesic and squamatic acids, strepsilin, sometimes traces of barbatic and 4-O-demethylbarbatic acids. - Note: a boreal-montane to tropical lichen found on humus-rich soil overlaying siliceous rocks and amongst bryophytes in humid depressions periodically filled by water, in open situations.



Cladonia strepsilis

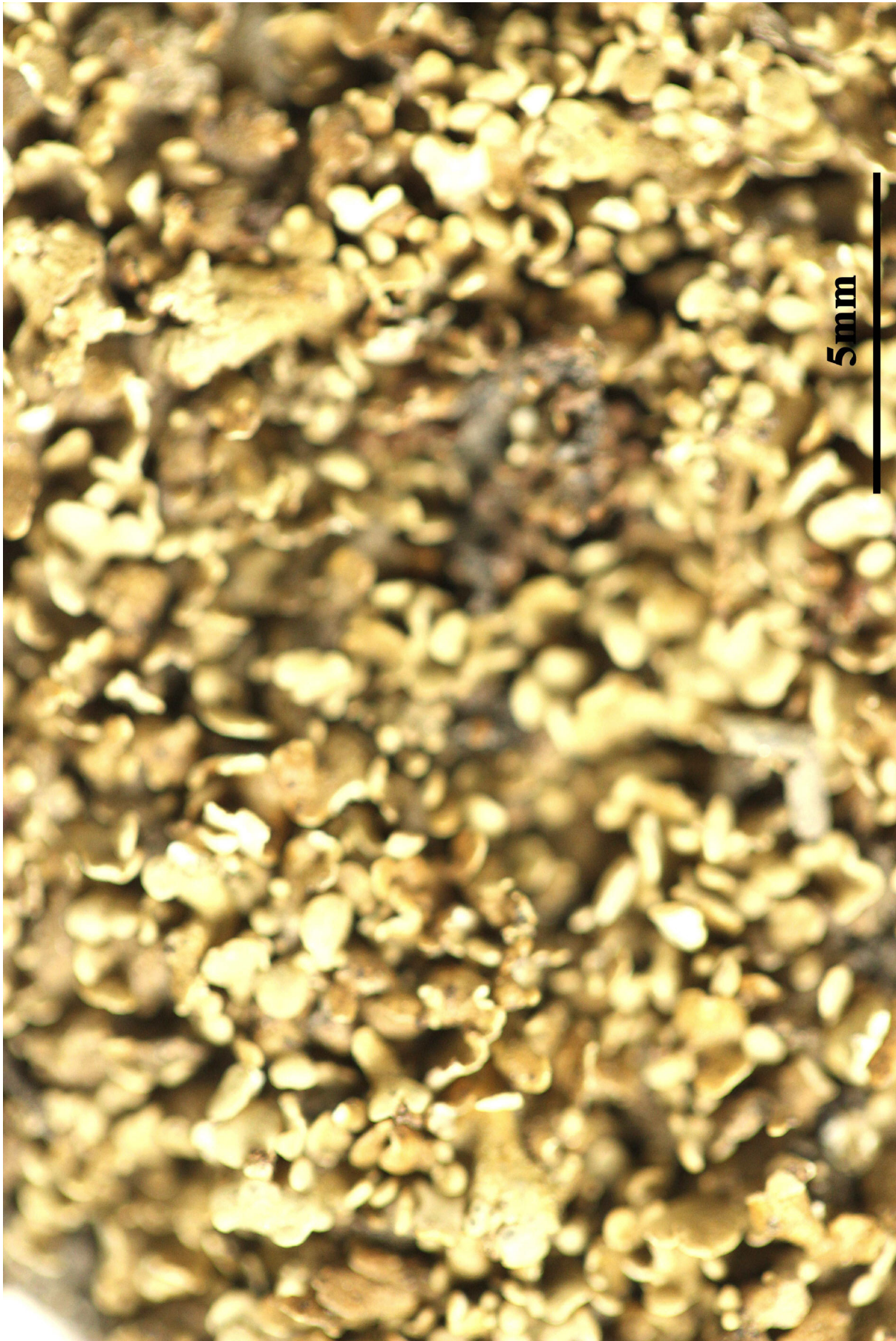


Cladonia strepsilis

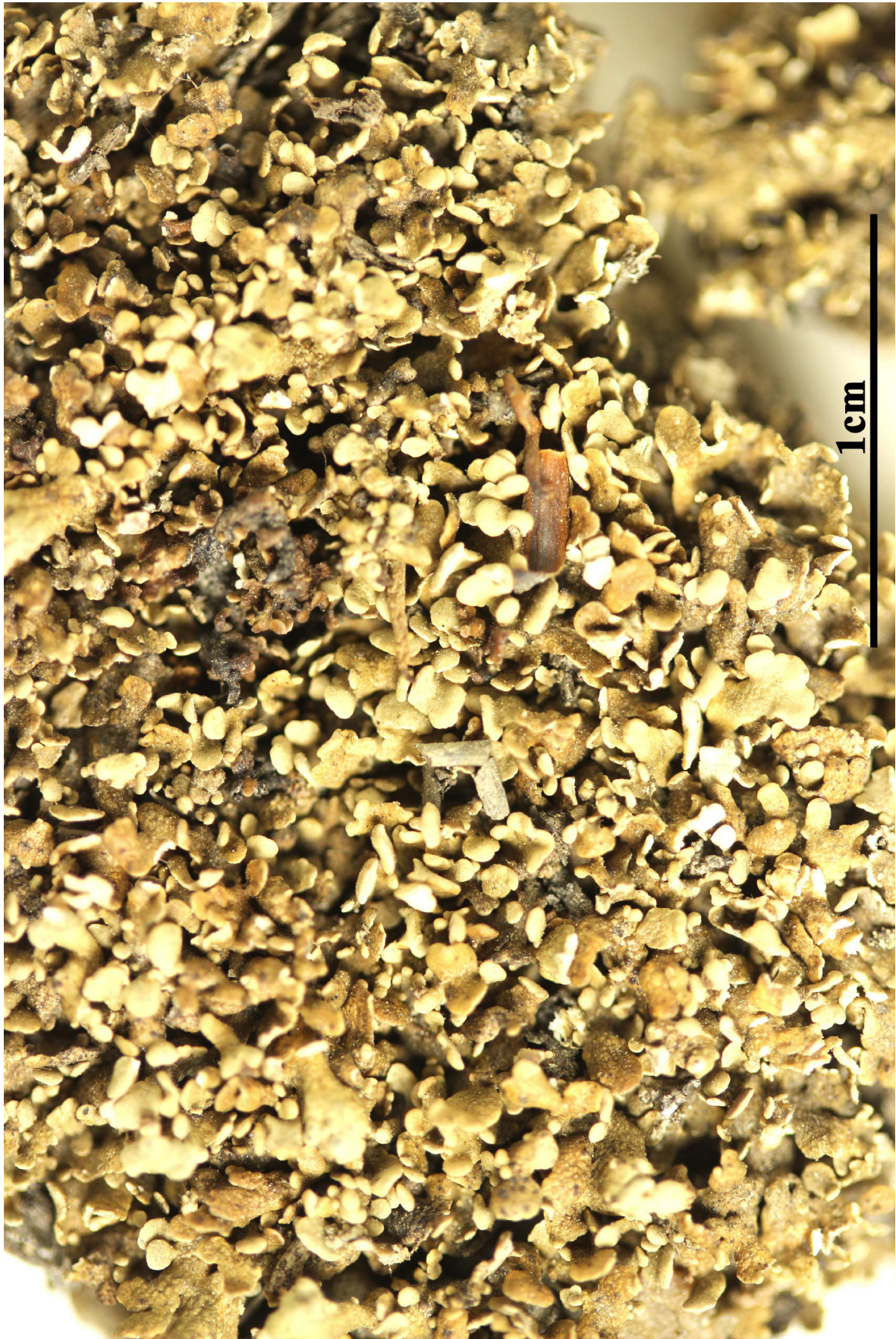
Cladonia strepsilis (Ach.) Mont., Annls Sci. Nat., Bot., sér. 2 12: 48 (1839)
= *Baeomyces strepsilis* Ach. 1803

[KU416], Japan. Honshu. Prov. Bizen: Kurotani, Kurashiki-city. On soil. 220 m. Leg. H. Kashiwadani (no. 14972), 27.3.1979, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 416.

Primary thallus squamulose, the squamules persistent, prominent, stiff, elongate-crenate, up to 5 mm long, 0.5-3.5 mm wide, grey-green to bronze-green above, white and corticate beneath, forming dense, often convex, up to 10 cm wide (usually smaller) cushions. Podetia rather rare, small, 0.3-0.8(-1) cm tall, 1-3 mm thick, greenish brown to yellowish brown, irregularly cylindrical to clavate, cupless, continuously corticate, sometimes with small cracks, often squamulose at the base. Apothecia normally present when podetia are well-developed, brown, convex, usually forming aggregates. 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, semi-immersed in the basal squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, KC-, C+ bright emerald green, P+ yellow, UV+ whitish. Chemistry: baeomycesic and squamatic acids, strepsilin, sometimes traces of barbatic and 4-O-demethylbarbatic acids. - Note: a boreal-montane to tropical lichen found on humus-rich soil overlaying siliceous rocks and amongst bryophytes in humid depressions periodically filled by water, in open situations.



Cladonia strepsilis

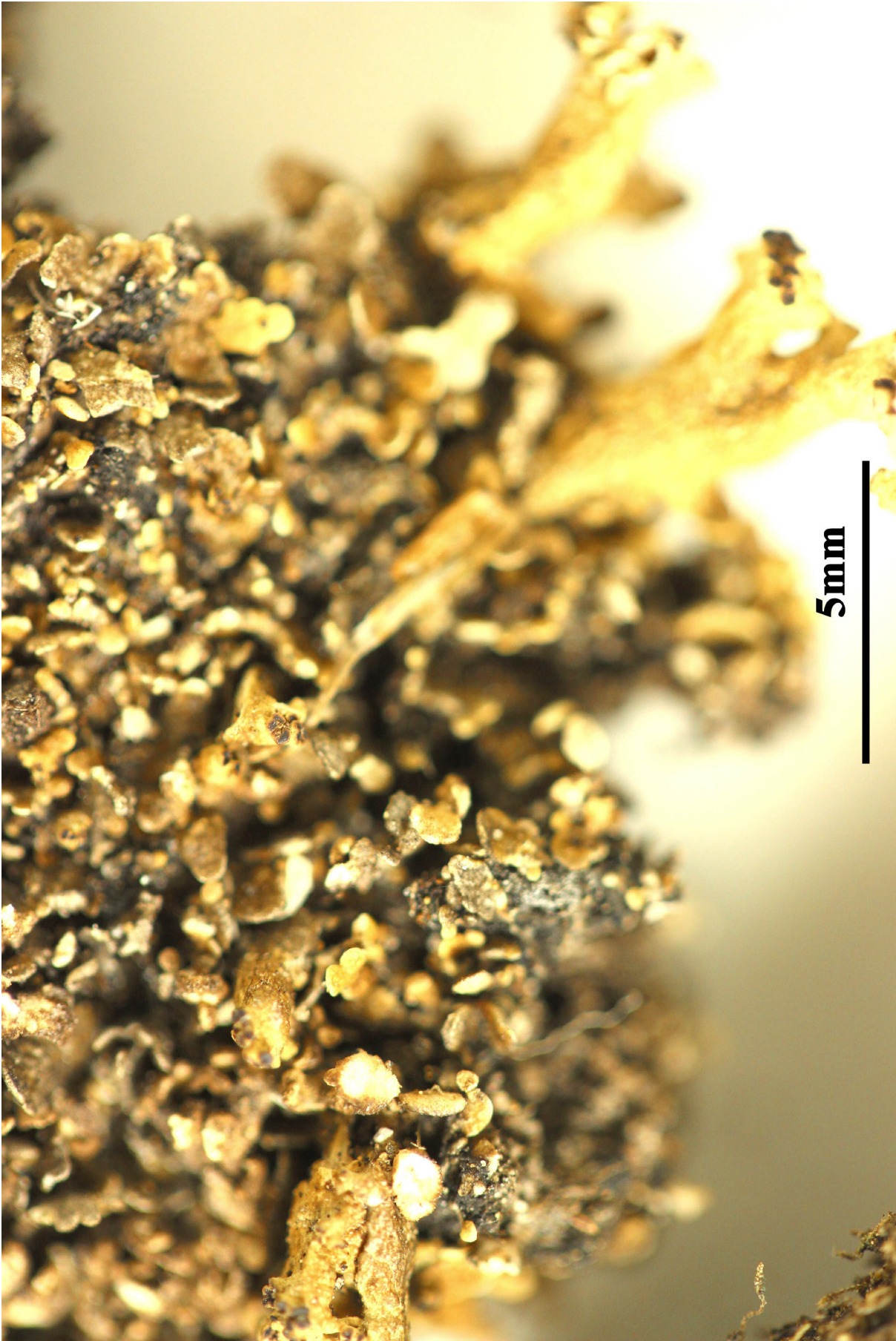


Cladonia strepsilis

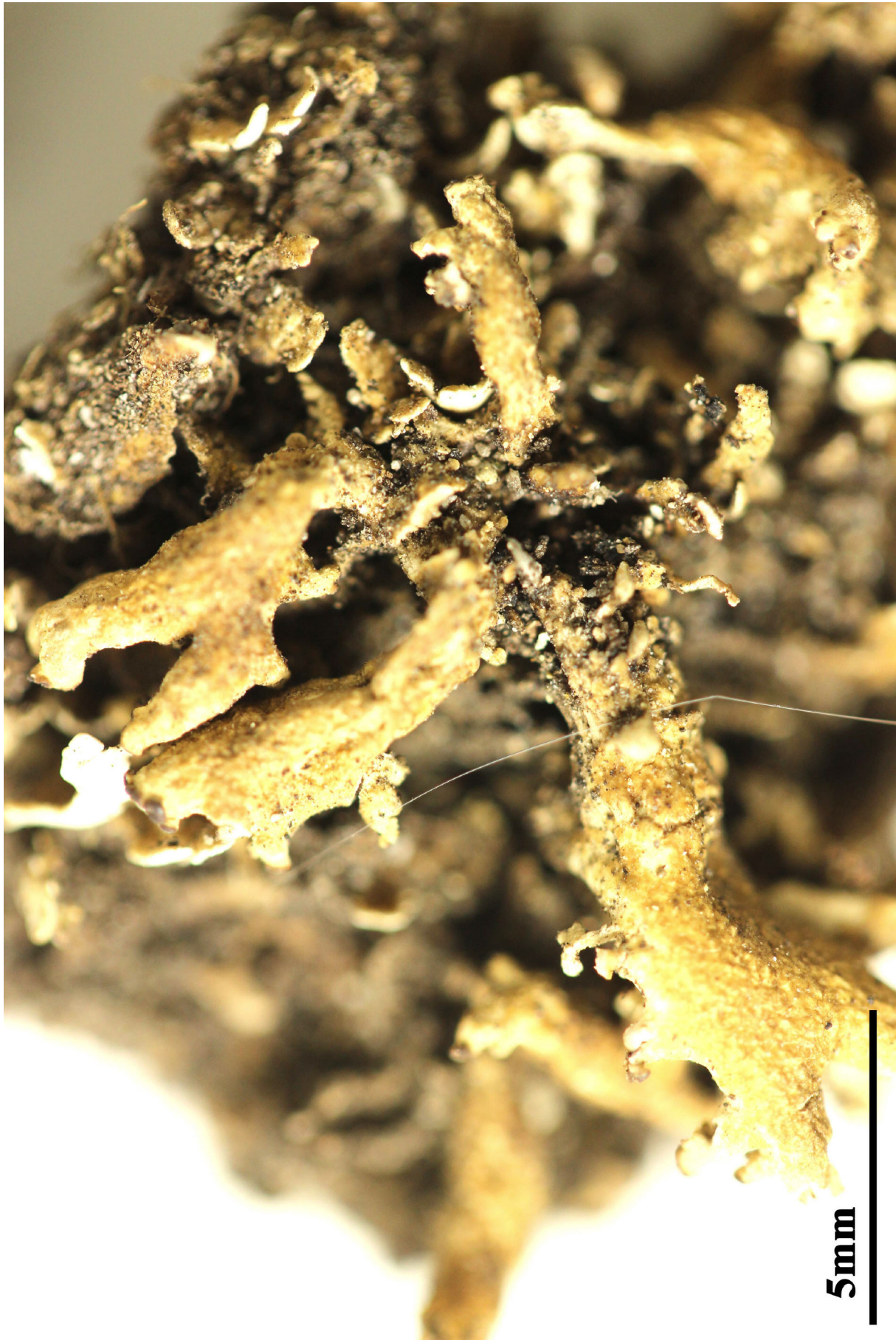
Cladonia strepsilis (Ach.) Mont., Annls Sci. Nat., Bot., sér. 2 12: 48 (1839)
= *Baeomyces strepsilis* Ach. 1803

[KU417], Japan. Hokkaido. Prov. Tokachi: Mt. Hakuun, Kami-Shihorocho, Kato-gun. On soil, 1100 m. Leg. H. Kashiwadani (no. 15433), 26.8.1979, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 417.

Primary thallus squamulose, the squamules persistent, prominent, stiff, elongate-crenate, up to 5 mm long, 0.5-3.5 mm wide, grey-green to bronze-green above, white and corticate beneath, forming dense, often convex, up to 10 cm wide (usually smaller) cushions. Podetia rather rare, small, 0.3-0.8(-1) cm tall, 1-3 mm thick, greenish brown to yellowish brown, irregularly cylindrical to clavate, cupless, continuously corticate, sometimes with small cracks, often squamulose at the base. Apothecia normally present when podetia are well-developed, brown, convex, usually forming aggregates. 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, semi-immersed in the basal squamules, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, KC-, C+ bright emerald green, P+ yellow, UV+ whitish. Chemistry: baeomycesic and squamatic acids, strepsilin, sometimes traces of barbatic and 4-O-demethylbarbatic acids. - Note: a boreal-montane to tropical lichen found on humus-rich soil overlaying siliceous rocks and amongst bryophytes in humid depressions periodically filled by water, in open situations.



Cladonia strepsilis



Cladonia strepsilis

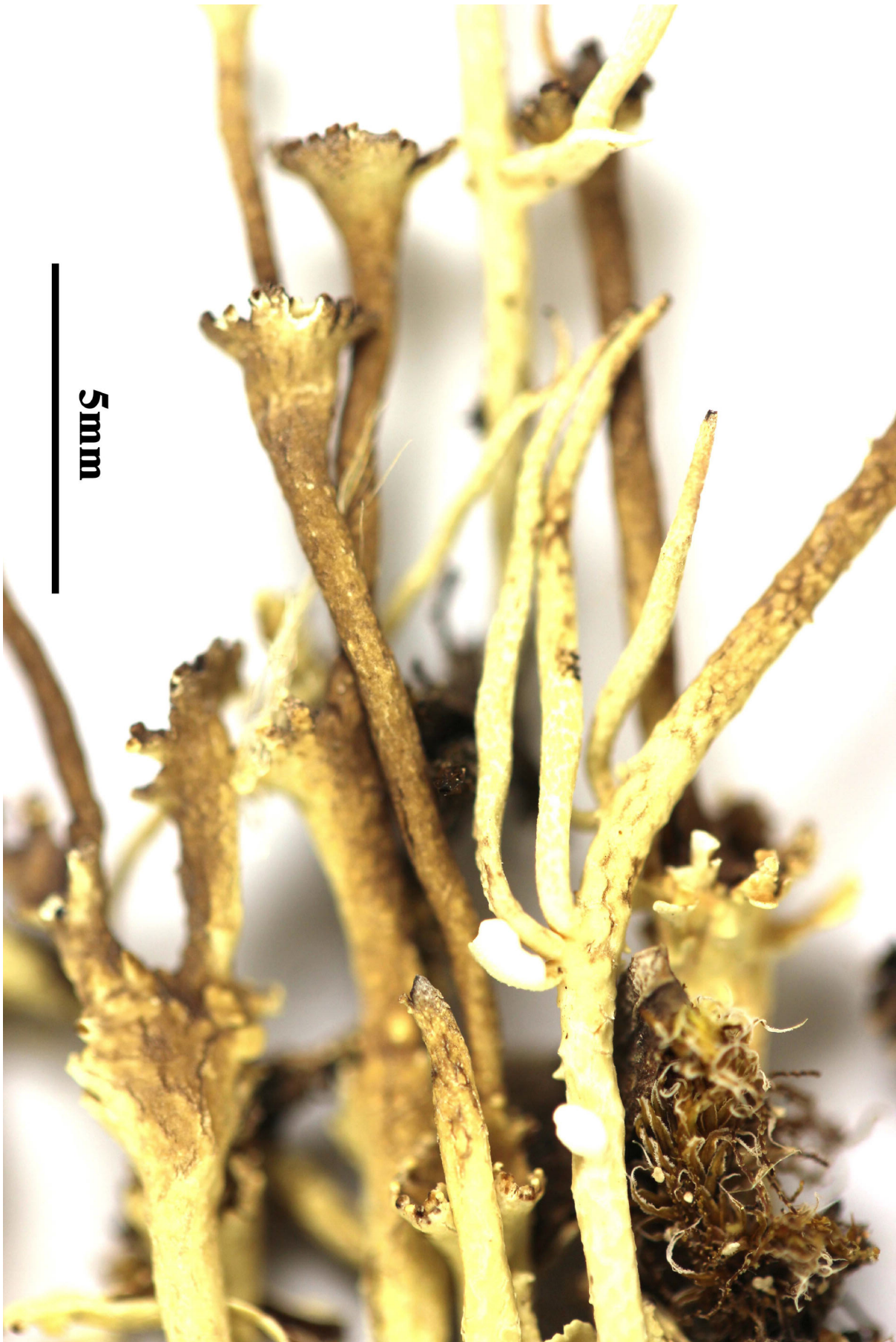
Cladonia subchordalis A. Evans, Rev. Bryol. Lichénol. 24: 133 (1955)

[KU564], Chile. Llanquihue. About 2 km west of Ensenada along route 225, south of Volcan Osorno. On gravelly soil in open *Nothofagus* forest, 50 m. Leg. H. Kashiwadani (no. 17182), 13.11.1981, det H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 564.

This species was described from Los Alerces National Park, Provo Chubut, Argentina, where is very close to the Chilean boundary in Provo Llanquihue. AHTI (1980b) gave an extended description and was inclined to place the species in the section *Unciales*, especially because some specimens were reported to contain squamatic acid. However, now fumarprotocetraric acid besides usnic acid was found in one specimen from Provo Magallanes (this specimen has an unusually verruculose cortex, but is otherwise quite identical with *C. subchordalis* in morphology). We could not confirm the report of squamatic acid, which is unlikely to occur in the species containing fumarprotocetraric acid (HUOVUNEN & AHTI 1982). Judging from morphological and chemical characters found in this species, it is apparently closely related to *C. gracilis* and definitely belongs to section *Cladonia* as originally treated by EVANS (1955). Chemistry: 1) usnic acid only (all specimens except no. 18966 belong here); 2) usnic acid and fumarprotocetraric acid.



Cladonia graciliformis



Cladonia graciliformis

Cladonia theiophila Asahina, J. Jap. Bot. 15(10): 619 (1939)

[KU616], Japan, Honshu. Prov. Sagami: Ohwakudani, Hakone. On soil, 1000 m. Leg. A. Watanabe, 3.6.1956, det. Y. Asahina. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 616.



Cladonia theiophila



Cladonia theiophila

Cladonia submitis A. Evans, Rhodora 45: 435 (1943)

[KU217], Japan. Honshu. Prov. Musashi: Karisaka Pass, Chichibu-gu. On soil, 2020 m. Leg. H. Shibuichi (no. 4841), 2.8.1973, det. S. Kurokawa. EX S. KUROKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 217.

Thallus dimorphic to fruticose. Primary thallus rarely seen, crustose, disappearing, visible only when growing on wood. Podetia yellow-green, highly branched with thick, twisted stems, 0.7-3 mm diam., forming prostrate colonies with erect branches in the center. Podetial surface ecorticate, strongly wrinkled in older stems, often with short, isidia-like side branches; medulla thick, compact. Photobiont *Asterchloris glomerata* alga. Ascomata biatorine apothecia, brown. Pycnidia tiny, brown, often on branch tips. Chemistry. UV-, K-, KC+ yellow, C-, PD-; usnic and pseudonorrangiformic acids. - Substrate and Habitat. On wood or humus over sand or sandy soil. - Distribution. Eastern North America, Japan; in North Carolina throughout.



Cladonia submitis

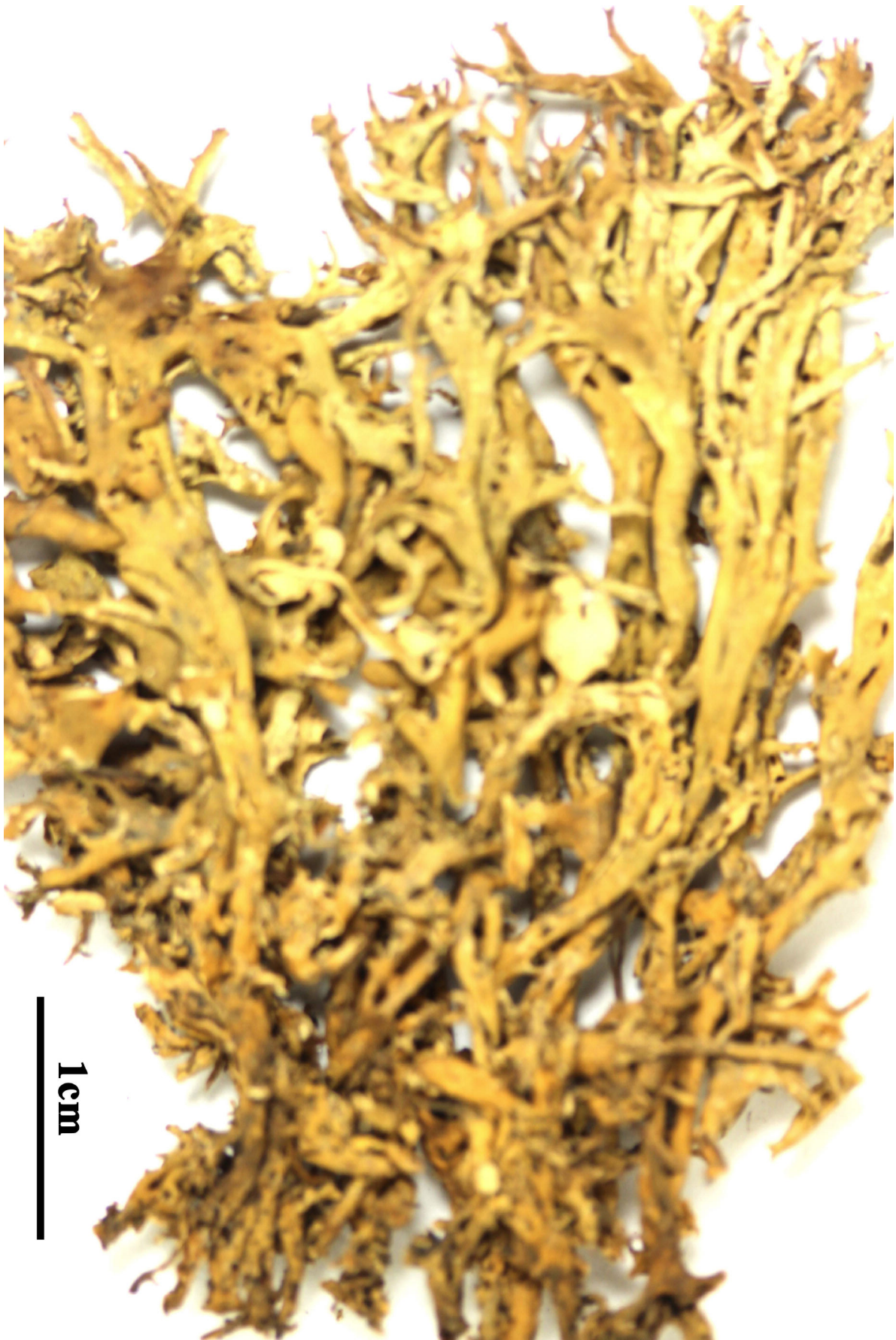


Cladonia submitis

Cladonia turgida Ehrh. ex Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen):
124 (1796) [1795]

[KU125), Japan. Honshu. Prov. Shinano: Tenguppara. Mt. Shirouma. On soil, 2200m. Leg. Y. Asahina, M. Togashi and M. Nuno, 5.8.1957, det. Y. Asahina. EX S. KUROKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 125.

Primary thallus squamulose, usually persistent, the squamules large, 0.5-2.5 cm long, 2-7 mm wide, coarse, with broad and rounded divisions, grey-green to glaucous green above, white beneath, often darkened but not melanotic at base. Podetia robust, hollow inside, greyish-green, somehow glaucescent, 0.5-7 cm tall, 2-3(-5) mm thick, simple to irregularly branched, the terminal branches usually subulate, cupless or with irregular cups, esorediate, with a smooth to areolate cortex, the areoles separated by white lines and cracks, also inside the cups. Apothecia rare, brown, convex, 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 common both on basal squamules and on tips of podetia, sessile, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow sometimes slowly turning brown (rarely K-), C-, KC-, P+ red (rarely P-), UV-. Chemistry: atranorin (rarely scarce or absent) and fumarprotocetraric acid (almost always present). - Note: a mainly boreal-montane, circumpolar species found on more or less acid soil in open habitats, with optimum near treeline.



Cladonia turgida

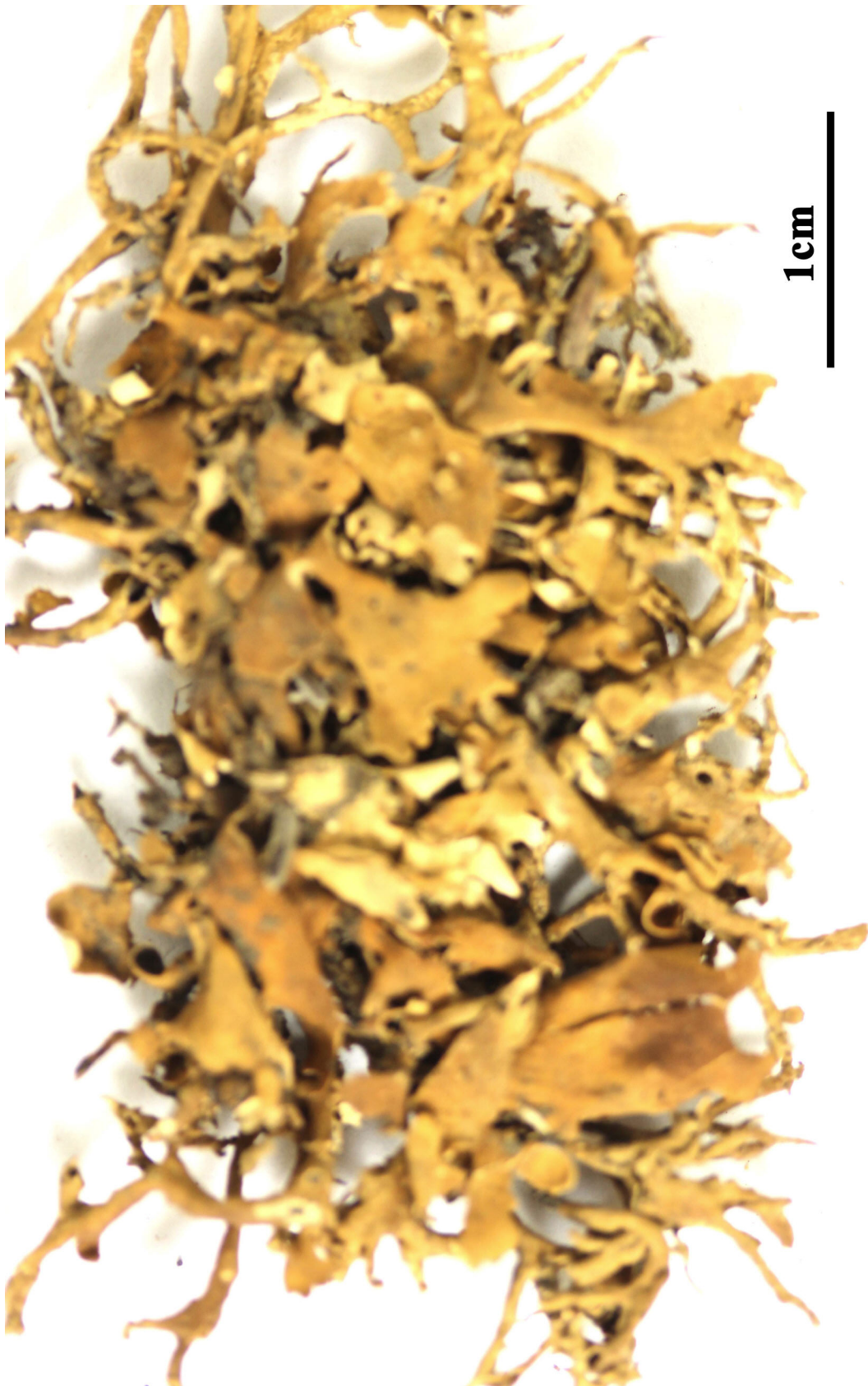


Cladonia turgida

Cladonia turgida Ehrh. ex Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen):
124 (1796) [1795]

[OH663], Japam. Honshu. Shinano Prov. (Nagano Pref.): around the summit of Mt. Shirouma-Norikura. On rock, 2350 m. Leg. M. Nuno & H. Izumi, 16.10.1977. EX Y. OHMURA LICHENES MINUS COGNITI NR. 663.

Primary thallus squamulose, usually persistent, the squamules large, 0.5-2.5 cm long, 2-7 mm wide, coarse, with broad and rounded divisions, grey-green to glaucous green above, white beneath, often darkened but not melanotic at base. Podetia robust, hollow inside, greyish-green, somehow glaucescent, 0.5-7 cm tall, 2-3(-5) mm thick, simple to irregularly branched, the terminal branches usually subulate, cupless or with irregular cups, esorediate, with a smooth to areolate cortex, the areoles separated by white lines and cracks, also inside the cups. Apothecia rare, brown, convex, 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 common both on basal squamules and on tips of podetia, sessile, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow sometimes slowly turning brown (rarely K-), C-, KC-, P+ red (rarely P-), UV-. Chemistry: atranorin (rarely scarce or absent) and fumarprotocetraric acid (almost always present). - Note: a mainly boreal-montane, circumpolar species found on more or less acid soil in open habitats, with optimum near treeline.



Cladonia turgida



Cladonia turgida

Cladonia turgida Ehrh. ex Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen):
124 (1796) [1795]

[KU165]. Japan. Hokkaido. Prov. Kitami: 2 km north-east of Hamatonbetsu, Esashi-gun: On soil, 2m. Leg.S. Kurokawa (nr. 70839), 18.8.1870, det. S. Kurokawa. EX S. KUOKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR.165.

Primary thallus squamulose, usually persistent, the squamules large, 0.5-2.5 cm long, 2-7 mm wide, coarse, with broad and rounded divisions, grey-green to glaucous green above, white beneath, often darkened but not melanotic at base. Podetia robust, hollow inside, greyish-green, somehow glaucescent, 0.5-7 cm tall, 2-3(-5) mm thick, simple to irregularly branched, the terminal branches usually subulate, cupless or with irregular cups, esorediate, with a smooth to areolate cortex, the areoles separated by white lines and cracks, also inside the cups. Apothecia rare, brown, convex, 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 common both on basal squamules and on tips of podetia, sessile, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K+ yellow sometimes slowly turning brown (rarely K-), C-, KC-, P+ red (rarely P-), UV-. Chemistry: atranorin (rarely scarce or absent) and fumarprotocetraric acid (almost always present). - Note: a mainly boreal-montane, circumpolar species found on more or less acid soil in open habitats, with optimum near treeline.



Cladonia turgida



Cladonia turgida

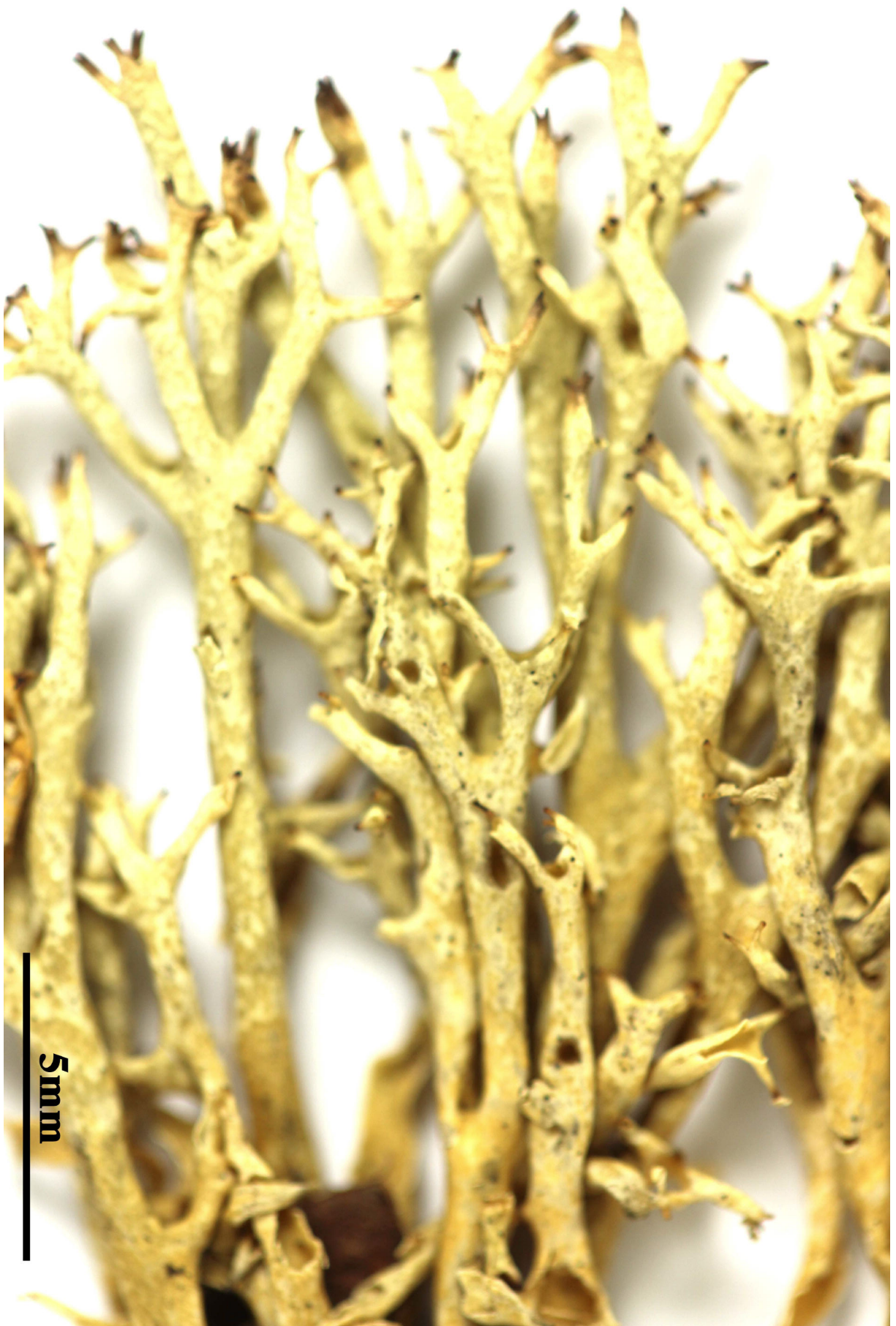
Cladonia uncialis (L.) F.H. Wigg., Prim. fl. holsat. (Kiliae): 90 (1780)
= *Lichen uncialis* L. 1753

[KU269], Japan. Hokkaido. Prov. Ishikari: Mt. Yubari. On soil, 1600 m.
Leg. H. Kurokawa (no. 72164), 5.9.1972, det. Kurokawa. EX S. KURO-
KAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 269.

Primary thallus squamulose, ephemeral and rarely seen, the squamules to 1 mm long, white below. Podetia forming compact tufts, hollow inside, pale yellowish green, paler towards the base, often with brownish tips, esquamulose, mostly tri- to tetrachotomously branched, up to 6(-10) cm tall, c. 1.5(-2) mm thick, subcylindrical in section, cupless, with pointed apices and divergent terminal branchlets, the axils mostly perforate. Cortex smooth, maculate; surface of central canal not powdery. Apothecia rare, brown, convex, up to 2 mm across. 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, apical, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellow, P-, UV- (rarely UV+ white). Chemistry: usnic acid, rarely also squamatic acid. - Note: an arctic-alpine to northern boreal-montane, circumpolar species found on soil and amongst mosses in very open habitats with a long snow-lie near or above treeline.



Cladonia uncialis

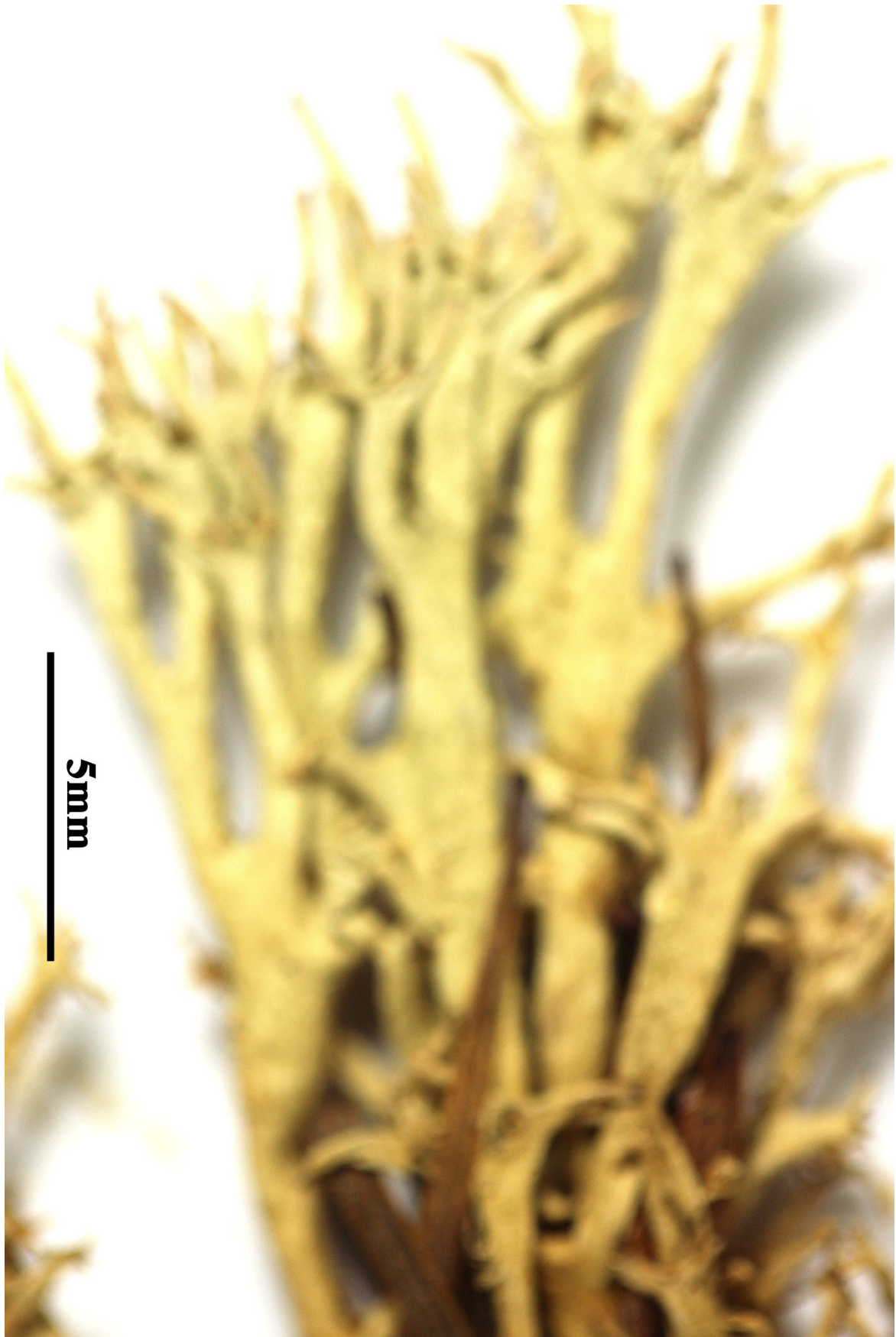


Cladonia uncialis

Cladonia uncialis (L.) F.H. Wigg., Prim. fl. holsat. (Kiliae): 90 (1780)
= *Lichen uncialis* L. 1753

[OH686], Japan. Honshu. Shinano Prov. (Nagano Pref): Mt. Azusayama. Leg. A. Asahina, M. Togashi, S. Kurokawa & M. Nuno, 25. 8 1960, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 686.

Primary thallus squamulose, ephemeral and rarely seen, the squamules to 1 mm long, white below. Podetia forming compact tufts, hollow inside, pale yellowish green, paler towards the base, often with brownish tips, squamulose, mostly tri- to tetrachotomously branched, up to 6(-10) cm tall, c. 1.5(-2) mm thick, subcylindrical in section, cupless, with pointed apices and divergent terminal branchlets, the axils mostly perforate. Cortex smooth, maculate; surface of central canal not powdery. Apothecia rare, brown, convex, up to 2 mm across. 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, apical, with a colourless jelly. Conidia hyaline, curved. Photobiont chlorococcoid. Spot tests: K-, C-, KC+ yellow, P-, UV- (rarely UV+ white). Chemistry: usnic acid, rarely also squamatic acid. - Note: an arctic-alpine to northern boreal-montane, circumpolar species found on soil and amongst mosses in very open habitats with a long snow-lie near or above treeline.



Cladonia uncialis



Cladonia uncialis

Cladonia verticillaris (Raddi) Fr., Lich. eur. reform. (Lund): 465 (1831)
= *Cenomyce verticillaris* Raddi 1820

[KU270], Brazil, Paraiba: Open grass-land along evergreen forest, Conde. On soil, 150 m. Leg. S. Kurokawa (no. 8101), 29.6.1971, det. S. Kurokawa. EX S. KUOKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 270.



Cladonia verticillaris



Cladonia verticillaris

Cladonia verticillaris (Raddi) Fr., Lich. eur. reform. (Lund): 465 (1831)
= *Cenomyce verticillaris* Raddi 1820

[18199], Brasilien, Rio de Janeiro, Serra do Mar, zwischen Paratí und Cunha. Am Rande eines Regenwaldes zwischen Moosen; hell und nebelfeucht. 500 m. Leg. K. Kalb & G. Plöbst, 02.11.1979. EX K. KALB LICHENES NEOTROPICI NR. 308.



Cladonia verticillaris



Cladonia verticillaris



Cladonia verticillaris



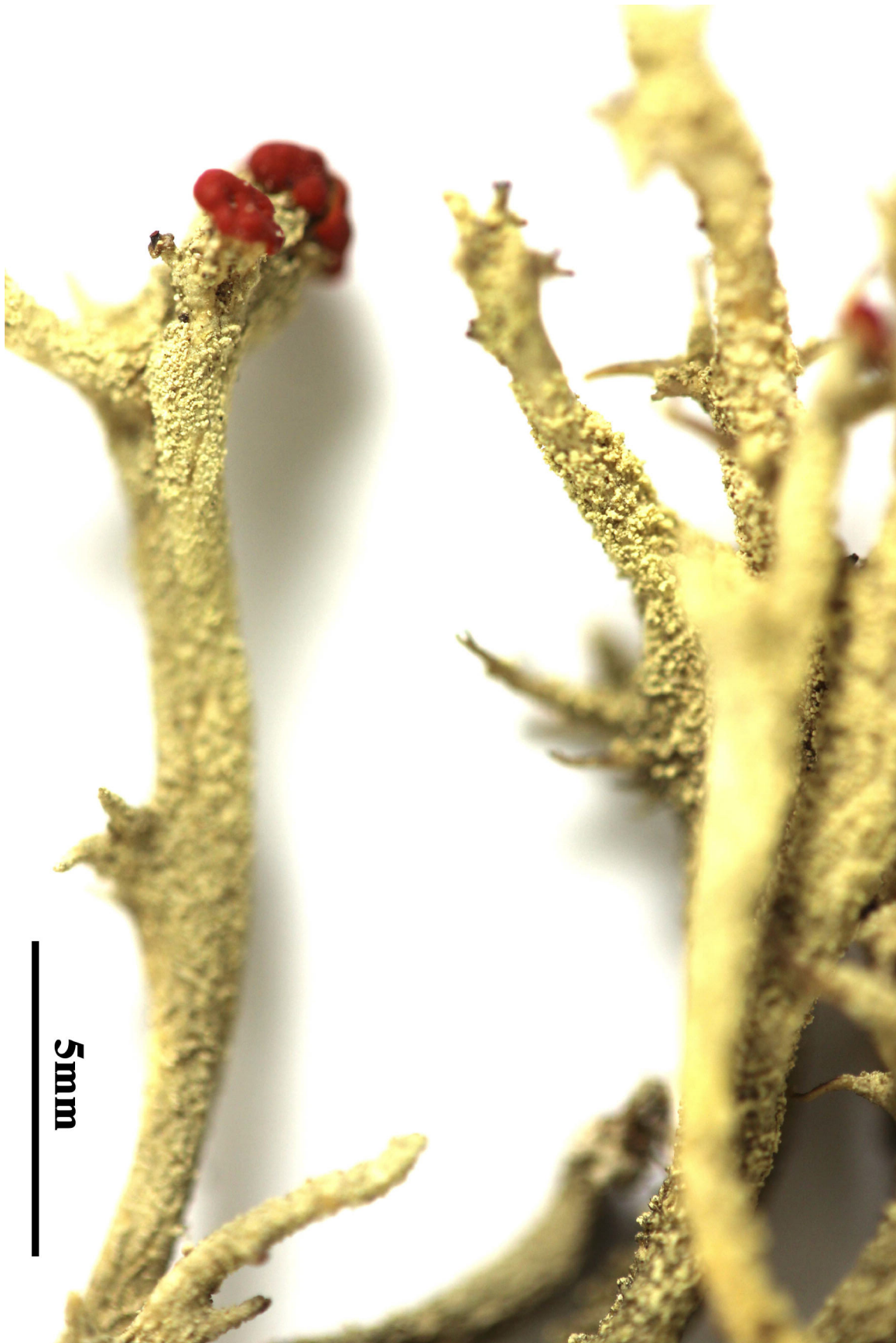
Cladonia verticillaris

Cladonia vulcani Savicz, Bull. Jard. Imp. Bot. Pierre le Grand 14: 124 (1914)

[OH482], Japan. Honshu. Prov. Kozuke (Pref. Gunma): Kusatsu Hot-spring, Azuma-gun. On sulphur-rich soil, 1200 m. Leg. H. Kashiwadani & K. Yoshida, 25-11-2013, det. Y. Ohnmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 482.



Cladonia vulcani



Cladonia vulcani

Cladonia vulcani Savicz, Bull. Jard. Imp. Bot. Pierre le Grand 14: 124 (1914)

[OH482], Japan. Honshu. Prov. Kozuke (Pref. Gunma): Kusatsu Hot-spring, Azuma-gun. On sulphur-rich soil, 1200 m. Leg. H. Kashiwadani & K. Yoshida, 25-11-2013, det. Y. Ohnmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 482.



Cladonia vulcani

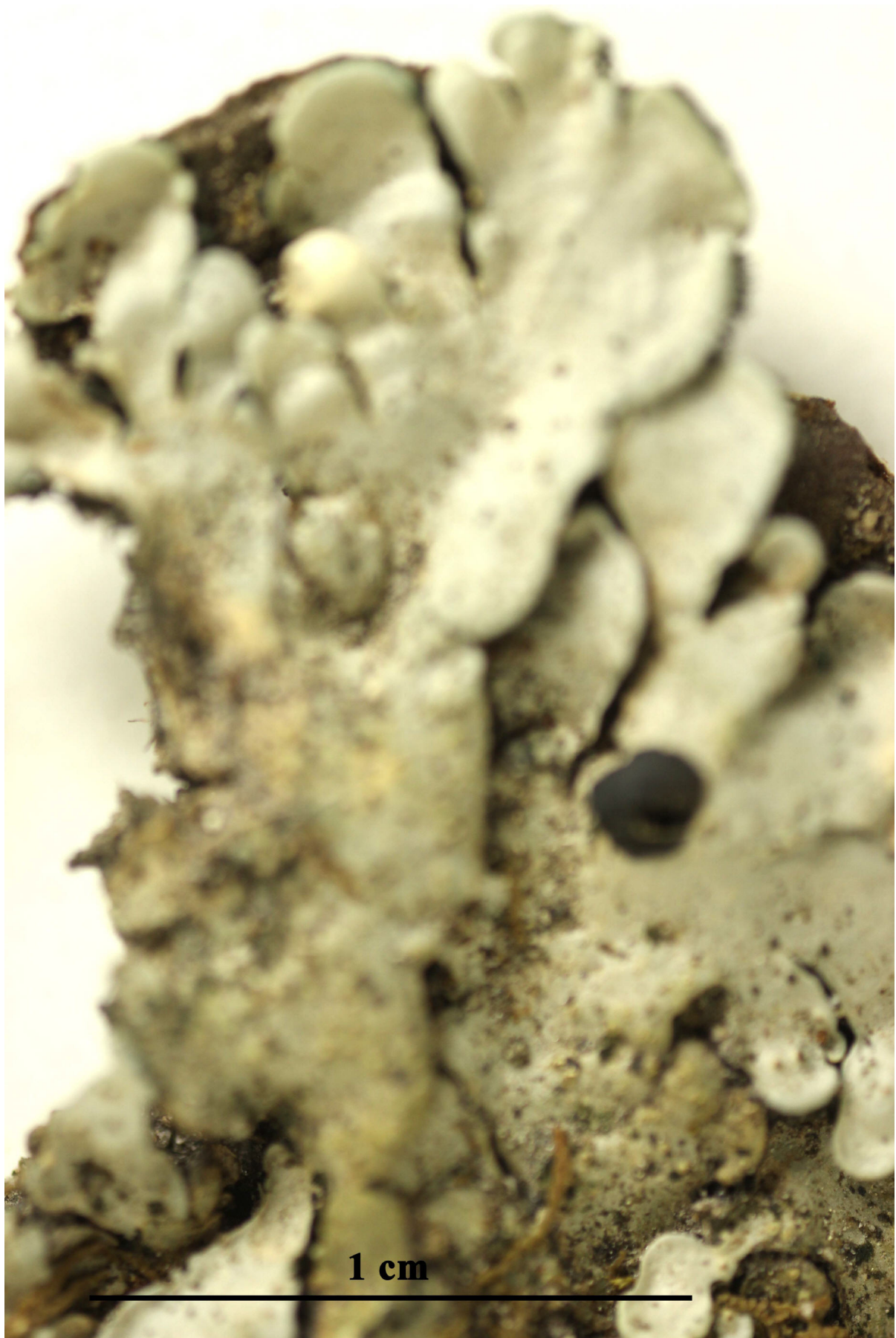


Cladonia vulcani

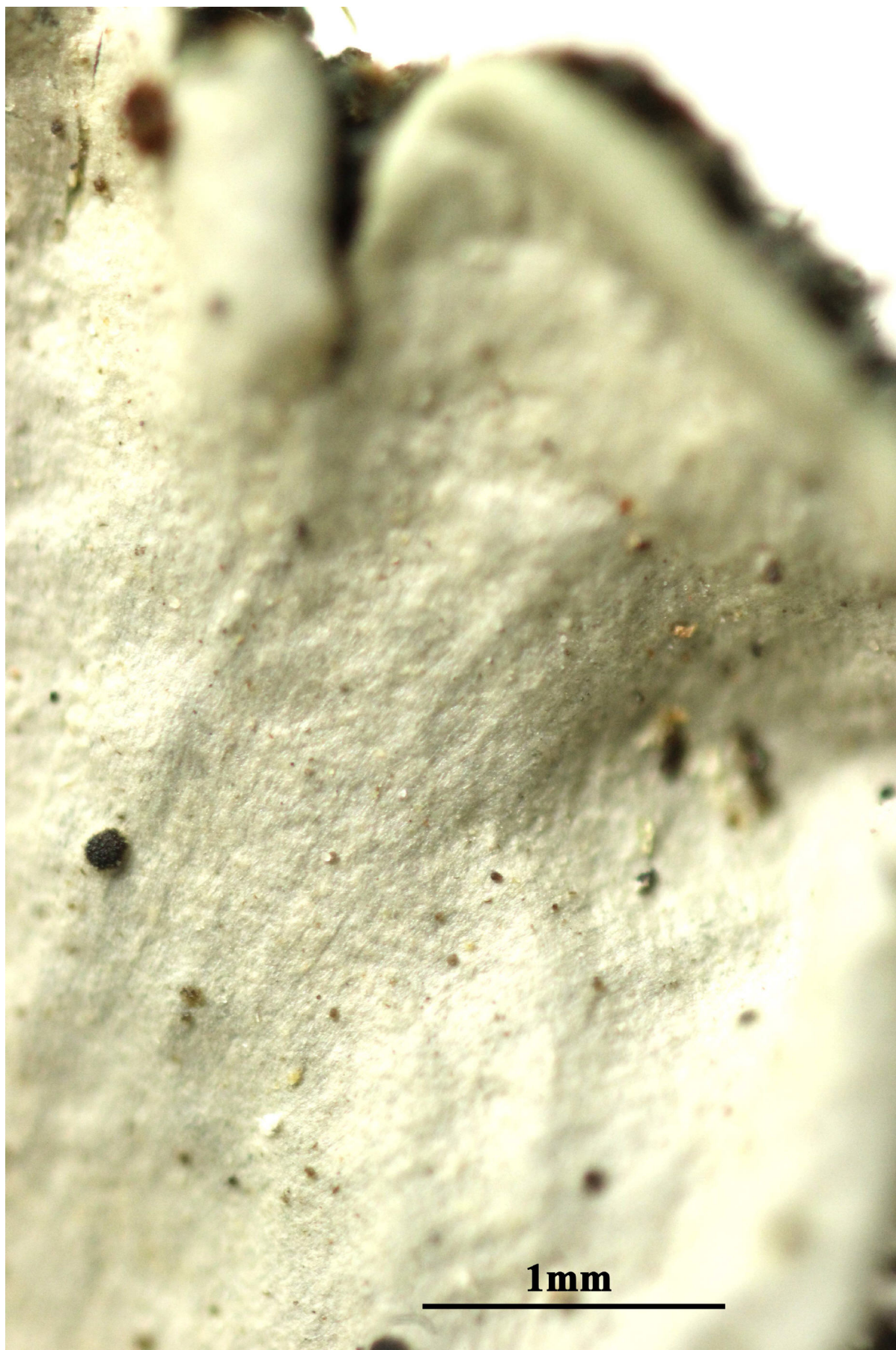
Coccocarpia parmelioides (Hook.) Trevis., Geol. Nat. Hist. Surv. N. Carol.
3: 80 (1867)
= *Lecidea parmelioides* Hook. 1822
= *Coccocarpia erythroxyli* (Spreng.) Swinscow & Krog [as 'erythroxyli'],
Norw. Jl Bot. 23(4): 254 (1976)

[KU473], Japan- Kyushu. Prov. Ohsumi: Shibushi, Sooo-gun. Onbark
of *Pinus thunbergii*, 5m. Leg. K. Yoshida (no. 4245), 1.11.1979, det. H.
Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES
RARIORES ET CRITICI EXSICCATI NR. 473.

Thallus orbicular, loosely attached. Lobes adjacent and somewhat
imbricate, broadly cuneate to flabellate, rotund at apices, up to 1 cm
wide. Upper side bluish grey, with ridges concentric with thallus.
Rhizines bluish black, some white tipped, projecting
beyond lobes. Isidia and soredia absent. Apothecia cameous or brow-
nish red to black, irregularly orbicular, often with sinuous margin.
Spores 8-15 x 4-5 μm , sometimes biguttulate. CHEMISTRY: No lichen
substances. ECOLOGY: Locally frequent among bryophytes on shady
tree trunks in montane forest at 1800 to 3000 m.



Coccocarpia parmelioides



Coccocarpia parmelioides

Coccotrema cucurbitula (Mont.) Müll. Arg., Nuovo G. bot. ital. 21(1): 51 (1889)
= *Pertusaria cucurbitula* Mont. 1852

[OH454], Japan. Kyushu. Prov. Ohsumi (Pref. Kagoshima): en route from Yakusugi-land to Yodogawagoya-iriguchi, Yaku-cho, Kumage-gun. Yakushima Island. On bark of *Cryptomeria japonica*, 1280 m. Leg. H. Kashiwadani (no. 47656), 27.9.2005, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 454.

Thallus crustose, granular, warted or lumpy, 0.1-0.15 mm thick, continuous or $\pm$ areolate-cracked, corticolous, rarely saxicolous. Upper surface whitish-grey or creamish or yellowish-cream. Cephalodia plane to subglobose, pale pinkish or creamish-pink, best seen when wet. Apothecia immersed, singly in small, subglobose warts scattered on the upper surface, 0.5-1.4 mm diam., with a small, round, apical pore and a pale pinkish margin. Ascospores 8 per ascus, simple, ellipsoid, 52-67 $\times$ 26-31 μm , wall to 4 μm thick. Chemistry: K⁺ yellow $\rightarrow$ red, C⁻, KC⁺, red, Pd⁺ orange. Stictic, norstictic and salazinic acids.



Coccotrema cucurbitula



Coccotrema cucurbitula

Coccotrema cucurbitula (Mont.) Müll. Arg., Nuovo G. bot. ital. 21(1): 51 (1889)
= *Pertusaria cucurbitula* Mont. 1852

[KU617], Japan. Kyushu. Prov. Ohsumi: Mt. Kuromi-dake, Yakushima Island. On rocks (granite), 1800 m. Leg. H. Shibuichi (no. 7631), 26.7.1984, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 617.

Thallus crustose, granular, warted or lumpy, 0.1-0.15 mm thick, continuous or $\pm$ areolate-cracked, corticolous, rarely saxicolous. Upper surface whitish-grey or creamish or yellowish-cream. Cephalodia plane to subglobose, pale pinkish or creamish-pink, best seen when wet. Apothecia immersed, singly in small, subglobose warts scattered on the upper surface, 0.5-1.4 mm diam., with a small, round, apical pore and a pale pinkish margin. Ascospores 8 per ascus, simple, ellipsoid, 52-67 $\times$ 26-31 μ m, wall to 4 μ m thick. Chemistry: K⁺ yellow $\rightarrow$ red, C⁻, KC⁺, red, Pd⁺ orange. Stictic, norstictic and salazinic acids.



Coccotrema cucurbitula



Coccotrema cucurbitula

Coenogonium geralense (Henn.) Lücking, Fl. Neotrop., Monogr. 103: 579 (2008)
= *Ombrophila geralensis* Henn. 1899

[OH455], Japan. Honshu. Prov. Hitachi (Pref. Ibaraki): 600 m NE the Department of Botany, National Museum of Nature and Science, Amakubo, Tsukuba-city. On base of *Chamaecyparis obtusa* in dense plantation of *Chamaecyparis obtusa*, 32 m. Leg. G. Thor (no. 27784), 30.6.2012, det. G. Thor. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 455.

Thallus continuous, thin, smooth, green. Photobiont cells angular-rounded, in irregular plates or short threads. Apothecia epiphyllous or marginally hypophyllous on mycelium free of algae, sessile, rounded, 0.4–1 mm diam. and 130–180 mm high; disc in epiphyllous apothecia slightly concave, bright yellow, in marginally hypophyllous apothecia plane, pale to bright yellow; margin thin, slightly prominent, smooth, pale wax-colored to white. Excipulum 30–60 µm broad, colorless. Hypothecium 10–15 µm high, colorless to pale yellow. Hymenium 50–60 µm high, colorless. Asci 45–55 x 6–8 µm. Ascospores irregularly biseriate, narrowly ellipsoid, 1-septate, 6–9 x 1.8–2.5 µm, 3–4 times as long as broad. Pycnidia rather common but not dense, applanately wartshaped, 0.1–0.3 mm diam., pale greenish to chamois colored. Conidia ellipsoid, non-septate, 2.5–3.5 x 1.7–2 µm. Chemistry: no substances detected by TLC. Distribution and Ecology. Pantropical. Next to *Coenogonium subluteum*, one of the most common species of the genus, more often found at higher elevations.



Coenogonium geralense



Coenogonium geralense

Coenogonium pineti (Ach.) Lücking & Lumbsch, in Lücking, Stuart & Lumbsch, Mycologia 96(2): 290 (2004)
= *Lecidea pineti* Ach. 1810

[OH555], Japan. Honshu. Prov. Musashi (Tokyo Metropolis): Institute for Nature Study, National Museum of Nature and Science, Shirokanedai, Minato-ku (35°38'10" N, 138°43'17" E). On bark of *Pinus thunbergii*, 30 m. Leg. Y. Ohmura (no.11146), 12.12.2016, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 555.

Thallus crustose, thinly episubstratic, continuous, smooth to finely granulose, dark green or grey-green, sometimes evanescent. Apothecia biatorine, 0.1-0.4(-0.5) mm across, sessile, round, slightly constricted at base, with a concave to flat, whitish to cream-coloured disc (turning yellowish or pinkish in the herbarium) and a thin, smooth, persistent proper margin. Proper exciple well-developed, paraplectenchymatous, composed of globose to angular cells with an outer layer of weakly vertically oriented hyphae; hymenium colourless, 70-90 µm high, I+ blue, then rapidly dirty green and finally red-brown, K/I+ blue; paraphyses simple or sparingly branched in upper part, 1-2 µm thick at mid-level, the apical cells c. 4 µm wide; hypothecium colourless. Asci 8-spored, subcylindrical-clavate, the wall thin, K/I+ blue, the apex slightly thickened to give an amyloid ring around the pore, approaching the Catillaria-type. Ascospores 1-septate, hyaline, fusiform to ellipsoid, 9-13(-15) x 2-3.5(-4.5) µm. Pycnidia more or less immersed, hemispherical, 0.1-0.2 mm across, the wall colourless. Conidia oblong, 6-7(-8) x 1.8-2.8 µm, often constricted in the middle. Photobiont trentepohlioid. Spot tests: K-, C-, KC-, P-, UV-. Chemistry: without lichen substances. - Note: a probably holarctic lichen, most common on acid bark, both of conifers and of broad-leaved trees.



Coenogonium pineti

Coenogonium subluteum (Rehm) Kalb & Lücking, in Lücking & Kalb,
Bot. Jahrb. Syst. 122(1): 34 (2000)
= *Biatorina sublutea* Rehm 1913

[OH580], Japan. Kyushu. Prov. Hyuga (Pref. Miyazaki): along the trail around the Aya Power Plant No. 2, Kitamata, Aya-cho, Higashimorokata-gun. On bark, 220-310 m. Leg. H. Kashiwadani (no. 46430), 202.22004, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNTI EXSICCATI NR. 580.



Coenogonium subluteum

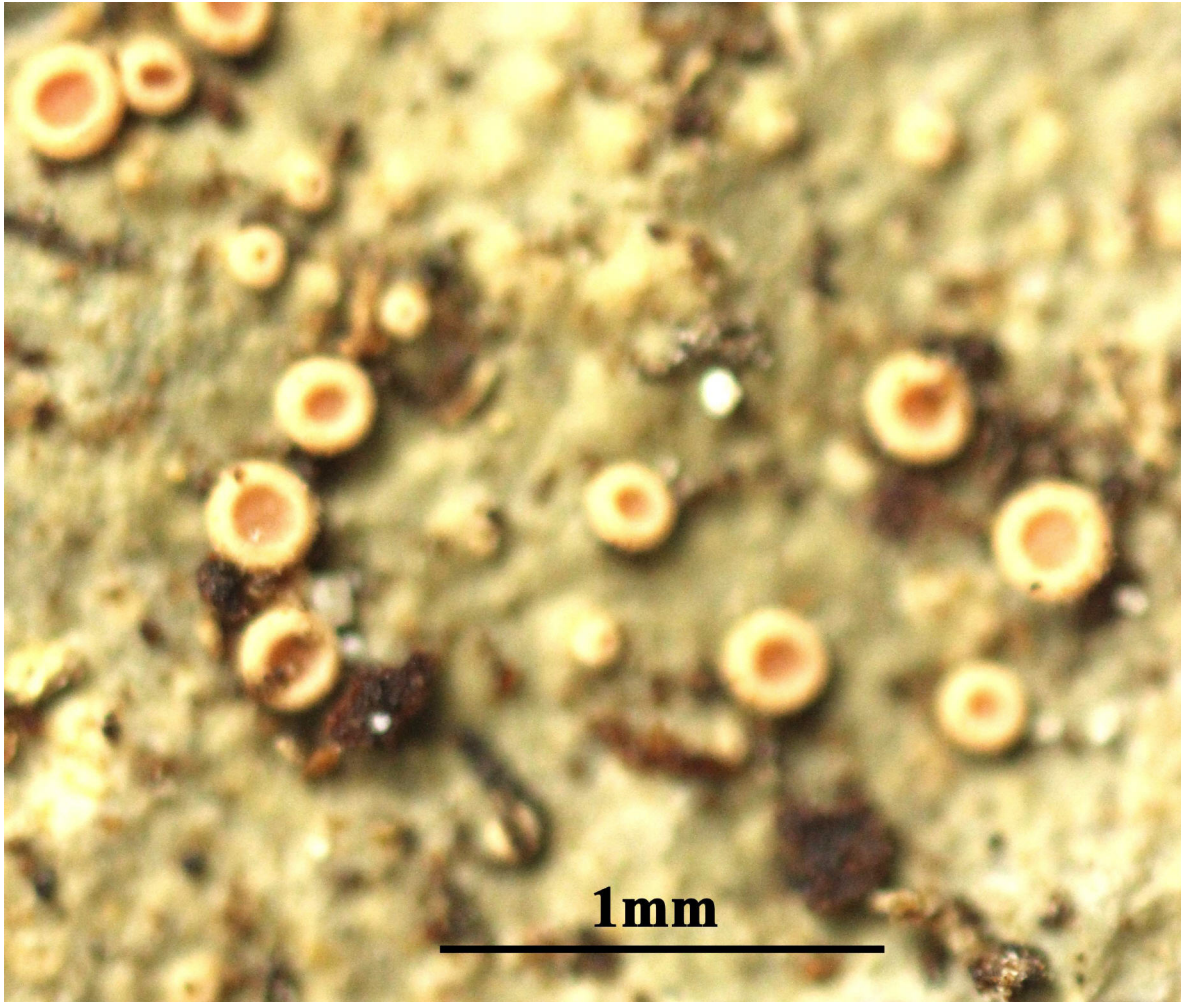


Coenogonium subluteum

Coenogonium subluteum (Rehm) Kalb & Lücking, in Lücking & Kalb,
Bot. Jahrb. Syst. 122(1): 34 (2000)
= *Biatorina sublutea* Rehm 1913

[OH432], Japan Yaeyama Islands. Iriomote Island. Haemida Beach.
Taketomi-cho, Yaeyama-gun. On leaf, 10 m. Leg. Y. Ohmura /no. 8023)
& G. Tanaka, 10.3.2011, det. Y. Ohmura & A. Frisch. EX Y. OHMURA
LICHENES MINUS COGNITI EXSICCATI NR. 432.

Thallus continuous but often lacinate when young, thin, smooth (but appearing coarsely verrucose due to abundant pycnidia), green. Photobiont cells angular-rounded, in irregular plates or short threads. Apothecia sessile, rounded, 0.2–0.5 mm diam. and 80–130 µm high; disc plane, wax-colored to pale orange; margin slightly prominent, smooth, pale wax-colored to yellow. Excipulum 20–40 µm broad, colorless. Hypothecium 5–10 µm high, colorless. Hymenium 45–65 µm high, colorless. Asci 40–50 x 5–7 µm. Ascospores irregularly uniseriate, ellipsoid, 1-septate, 6–12 x 3–4 µm, 2–3 times as long as broad. Pycnidia wart-shaped, 0.1–0.15 mm diam., pale green. Conidia bacillar, 1-septate, 12–17 x 2–3 µm. Chemistry: no substances detected by TLC.



Coenogonium subluteum



Coenogonium subluteum

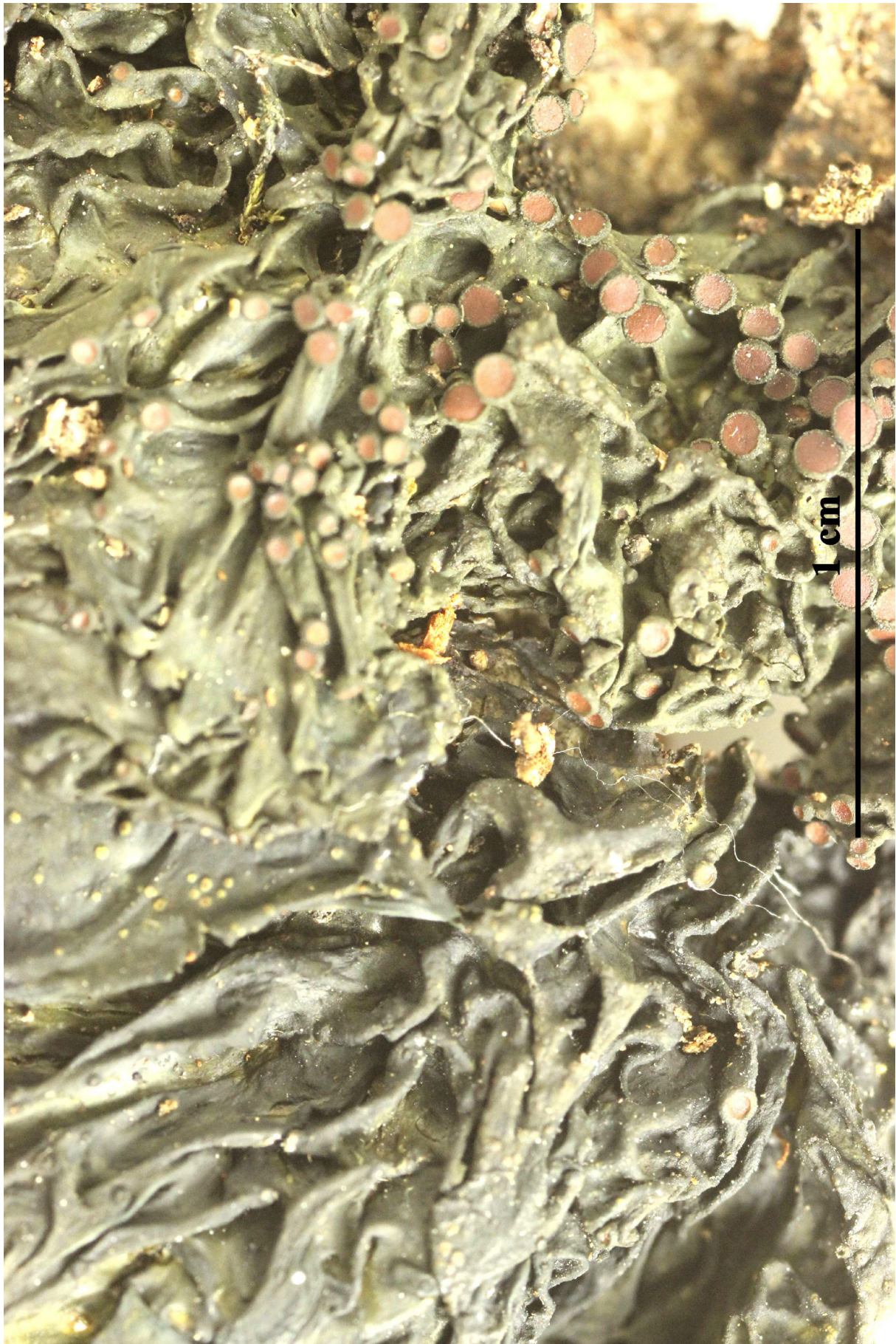
Collema complanatum Hue, J. Bot., Paris 20: 85 (1906)

[KU566], Japan. Honshu. Prov. Ugo: Yanagisawa, at the foot of Mt. Yakeishi, Higashinaruse-mura, Okachi-gun. On bark of *Fagus crenata*, 700 m. Leg. H. Kashiwadani (no. 20405) & K. Sasaki, 27.8.1983, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 566.

Thallus of nigrescens (subnigrescens) type. medium-sized to large (up to c. 10 cm diam. though usually less. often a few cm), foliose. membranous, thin (see below). $\pm$ rounded but often unilaterally developed. adnate, strongly ridged (ridges radiating, denser or looser. long or short, $\pm$ narrow. rather high. straight or flexuose, simple or somewhat branched and anastomosing). in marginal parts often more pustulate, $\pm$ deeply and broadly lobate (sometimes rather indistinctly lobate). usually dark olive-green (lower surface concolorous or paler, sometimes greyish or bluish), matt or in part somewhat glossy, without isidia. Lobes and lobules few, $\pm$ rounded or extended, $\pm$ imbricate. margin entire and often bent downwards or upwards; lobules up to 1.5 cm broad but usually less. Thallus (lobes) 56-90 μ m thick (when moist). -Hyphae of about same type as in *C. subnigrescens* ; no typical pseudocortex seen. -Nostoc-cells in chains. globose 3-4 μ m or oblong; heterocysts up to 6.5 μ m; gelatine 1-. Apothecia usually numerous and dense, sometimes crowded, superficial (mainly on ridges). sessile with constricted base (sometimes broadly stipitate), 0.6- 0.8 (-1) mm diam. (rarely more, see Variability, below). Discus plane to (later on) a little convex. paler or darker red (sometimes very dark). matt or a little glossy. epruinose (rarely. in young apoth. slightly pruinose). Margo thallinus $\pm$ thin. entire, smooth (or finely rugose), generally not prominent. persistent or (in convex apoth.) disappearing. Apothecia studied c. 430-530 μ m thick (when moist). Excipulum thallinum with about same structure and J-reaction as thallus; a $\pm$ well developed primitive pseudocortex usually occurs (cells from outside seen rounded, small), in some specimens a typical one (pseudocortex at times lacking). Excipulum proprium in central part up to at least 60 μ m thick (in marginal part thinner). euparaplectenchymatous (cells in central part up to 18 μ m diam. though usually less: to 8.0 or 10.5 or 13 μ m; in margo part smaller), in some specimens prevalingly euthyplectenchymatous (to subparaplectenchymatous). colourless or pale yellow, J-. Subhymenium up to 105 μ m thick. pale or yellowish (or somewhat reddish), J + constantly blue.

Hymenium J + rapidly and constantly blue. Paraphyses simple or (sometimes strongly) branched, 1-1.5 (2) μm thick, in (KOH). sometimes distinctly septate (submoniliform). often thickened at apices (up to 5 μm). Asci narrowly clavate to subcylindrical, 90-110 x 10-19 μm , wall towards apex thickened. Spores usually 8 per ascus, straight or twisted in asci. polystichous, acicular (to subbacillar or narrowly fusiform), straight or curved. 6-8-10-celled (in "C. Faurit", according to Hue op.cit., upto 12-celled), not constricted at septa, colourless, (40)65-90(110) x (3)4-5(6) μm (in KOH often narrower: 2-3 μm) . Pycnidia hardly common but in some specimens very numerous. superficial. rather dark. immersed. $\pm$ globose, 200 μm diam., pale yellow or pale brown within. Pycnoconidia straight. of uniform thickness or slightly swollen towards the ends. 4.5-5 x 1-1.2 μm .

Collema complanatum



Collema complanatum



Collema complanatum

Collema complanatum Hue, J. Bot., Paris 20: 85 (1906)

[KA302, Japan. Hokkaido. Prov. Kushiro: Horoto, Hamanaka-cho, Akkeshi-gun. On bark of *Salix subrafilis*, 30m. Leg. H. Kashiwadani (no. 47429), 09.10.2004, det. H. Kashiwadani. - Ex H. KASHIWADANI: LICHENES MINUS COGNITI EXSICCATI NR. 302.

Thallus of *nigrescens* (*subnigrescens*) type. medium-sized to large (up to c. 10 cm diam. though usually less. often a few cm), foliose. membranous, thin (see below). $\pm$ rounded but often unilaterally developed. adnate, strongly ridged (ridges radiating, denser or looser. long or short, $\pm$ narrow. rather high, straight or flexuose, simple or somewhat branched and anastomosing). in marginal parts often more pustulate, $\pm$ deeply and broadly lobate (sometimes rather indistinctly lobate). usually dark olive-green (lower surface concolorous or paler, sometimes greyish or bluish), matt or in part somewhat glossy, without isidia. Lobes and lobules few, $\pm$ rounded or extended, $\pm$ imbricate. margin entire and often bent downwards or upwards; lobules up to 1.5 cm broad but usually less. - Thallus (lobes) 56-90 μ m thick (when moist). *Hyphae* of about same type as in *C. subnigrescens*; no typical pseudocortex seen. - *Nostoc-cells* in chains. globose (3-4 μ m) or oblong; heterocysts up to 6.5 μ m; gelatine I-. - Apothecia usually numerous and dense, sometimes crowded, superficial (mainly on ridges). sessile with constricted base (sometimes broadly stipitate), 0.5-0.8 mm diam. (rarely more). *Discus* plane to (later on) a little convex. paler or darker red (sometimes very dark). matt or a little glossy. epruinose (rarely. in young apothecia slightly pruinose). *Margo thallinus* $\pm$ thin. entire, smooth (or finely rugose), generally not prominent. persistent or (in convex apothecia) disappearing. - Apothecia studied c. 430-530 μ m thick (when moist); *Excipulum thallinum* with about same structure and I-reaction as thallus; a $\pm$ well developed primitive pseudocortex usually occurs (cells from outside seen rounded, small), in some specimens a typical one (pseudocortex at times lacking). *Excipulum proprium* in central part up to at least 60 μ m thick (in marginal part thinner). euparaplectenchymatous (cells in central part up to 18 μ m diam. though usually less: to 8.5 μ m or 10.5 μ m 13 μ m (in margo part smaller), in some specimens prevailingly euthyplectenchymatous (to subparaplectenchymatous), colourless or pale yellow, I-. *Subhymenium* up to 105 μ m thick, pale or yellowish (or somewhat reddish), I + constantly blue. *Hymenium* 100-150 μ m high. I + rapidly and constantly blue. *Paraphyses* simple or (sometimes strongly) branched, 1-1.5 μ m thick

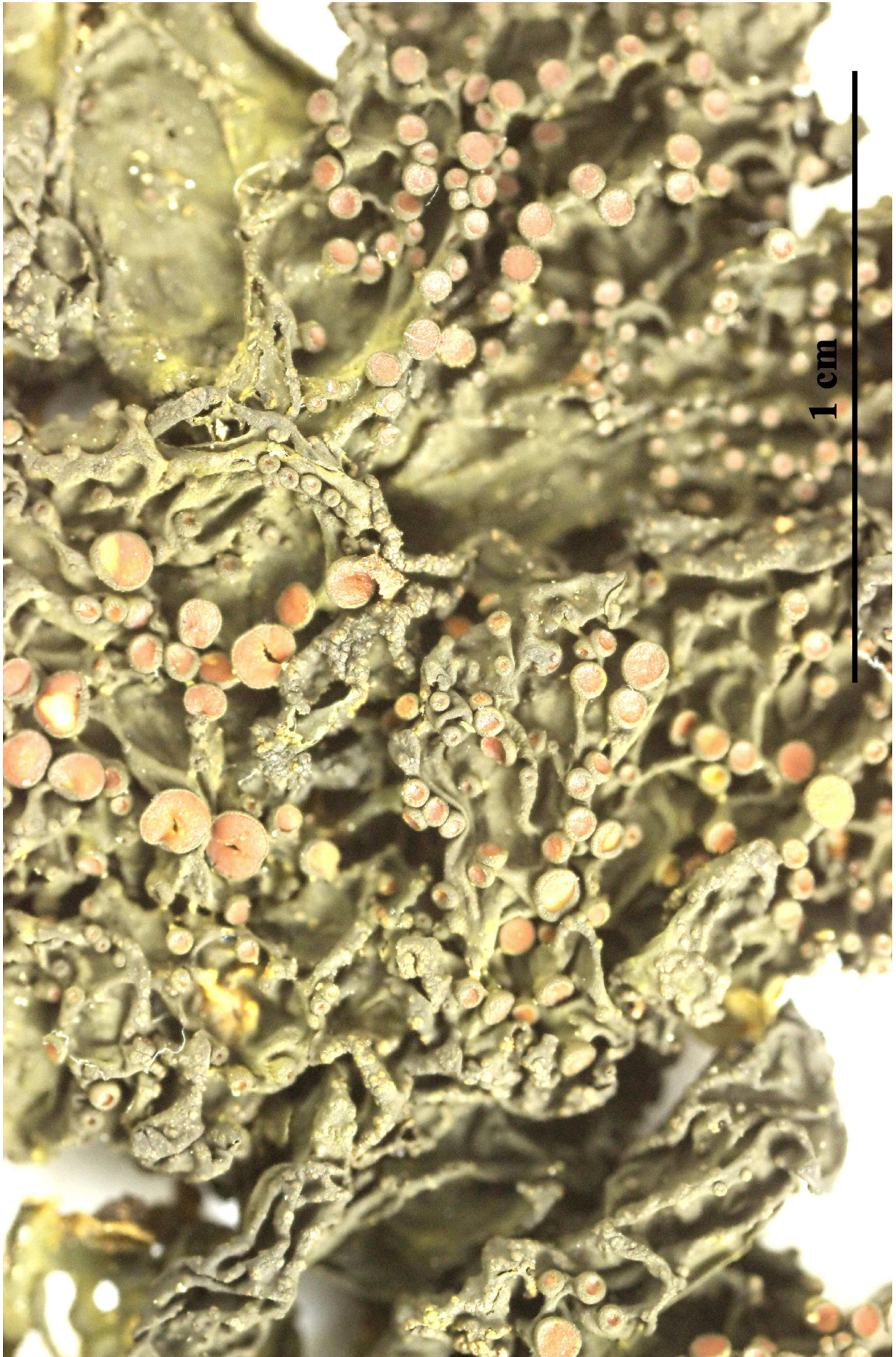
(KOH). sometimes distinctly septate (submoniliform). often thickened at apices (up to 5 μm). *Asci* narrowly clavate to subcylindrical, 90-110 x 15-18 μm , wall towards apex thickened. *Spores* usually 8 per ascus, straight or twisted in asci. polystichous, acicular (to subbacillar or narrowly fusiform). straight or curved. 6-8-10-celled, not constricted at septa, colourless, (40)65-90(110) x (3)4-5(6) μm (in KOH often narrower: 2-3 μm). Pycnidia hardly common but in some specimens very numerous, superficial, rather dark, immersed. $\pm$ globose, c. 200 μm diam., pale yellow or pale brown within. *Pycnoconidia* straight, of uniform thickness or slightly swollen towards the ends. 4.5-5 x 1-1.2 μm .



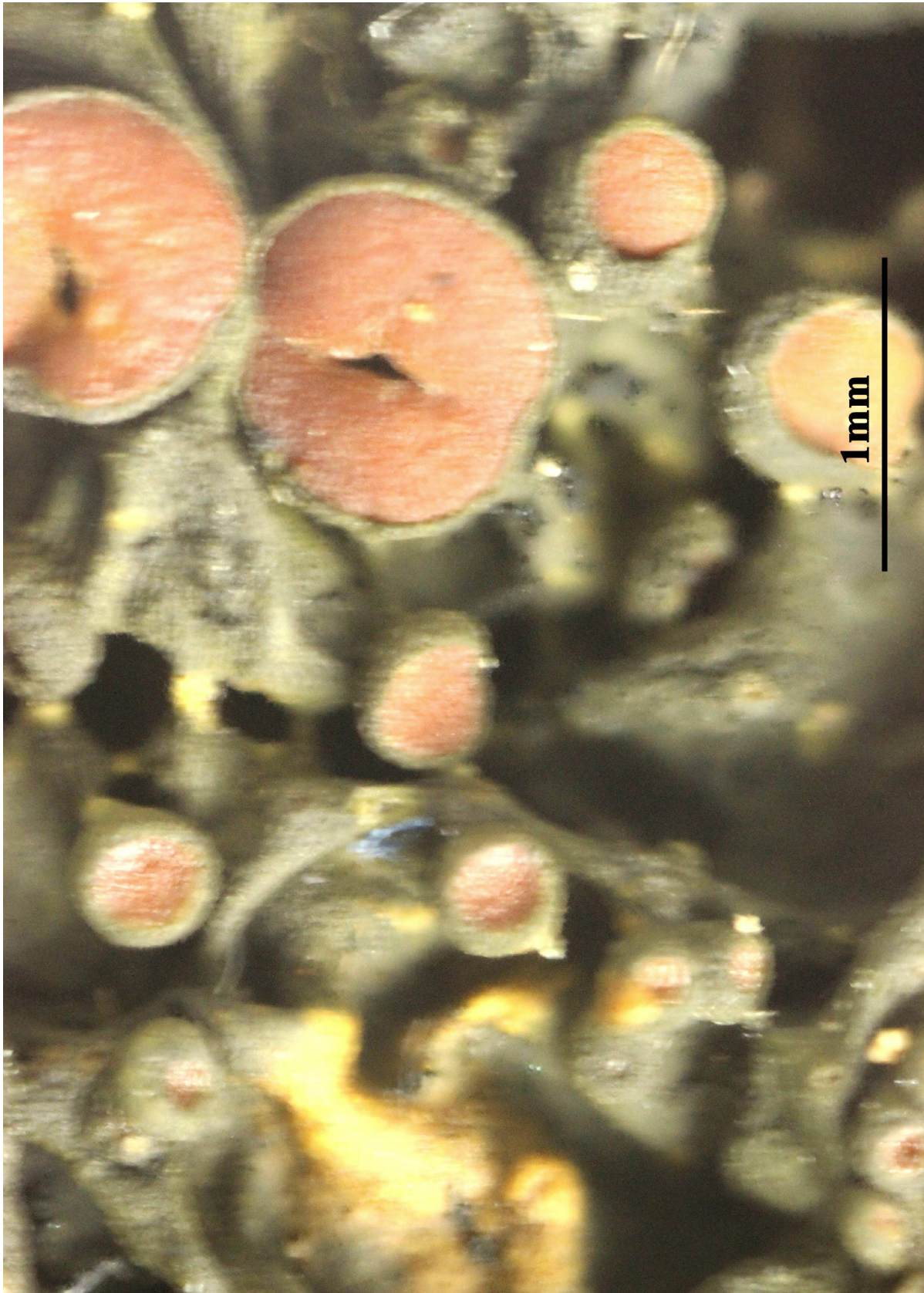
Collema complanatum



Collema complanatum



Collema complanatum



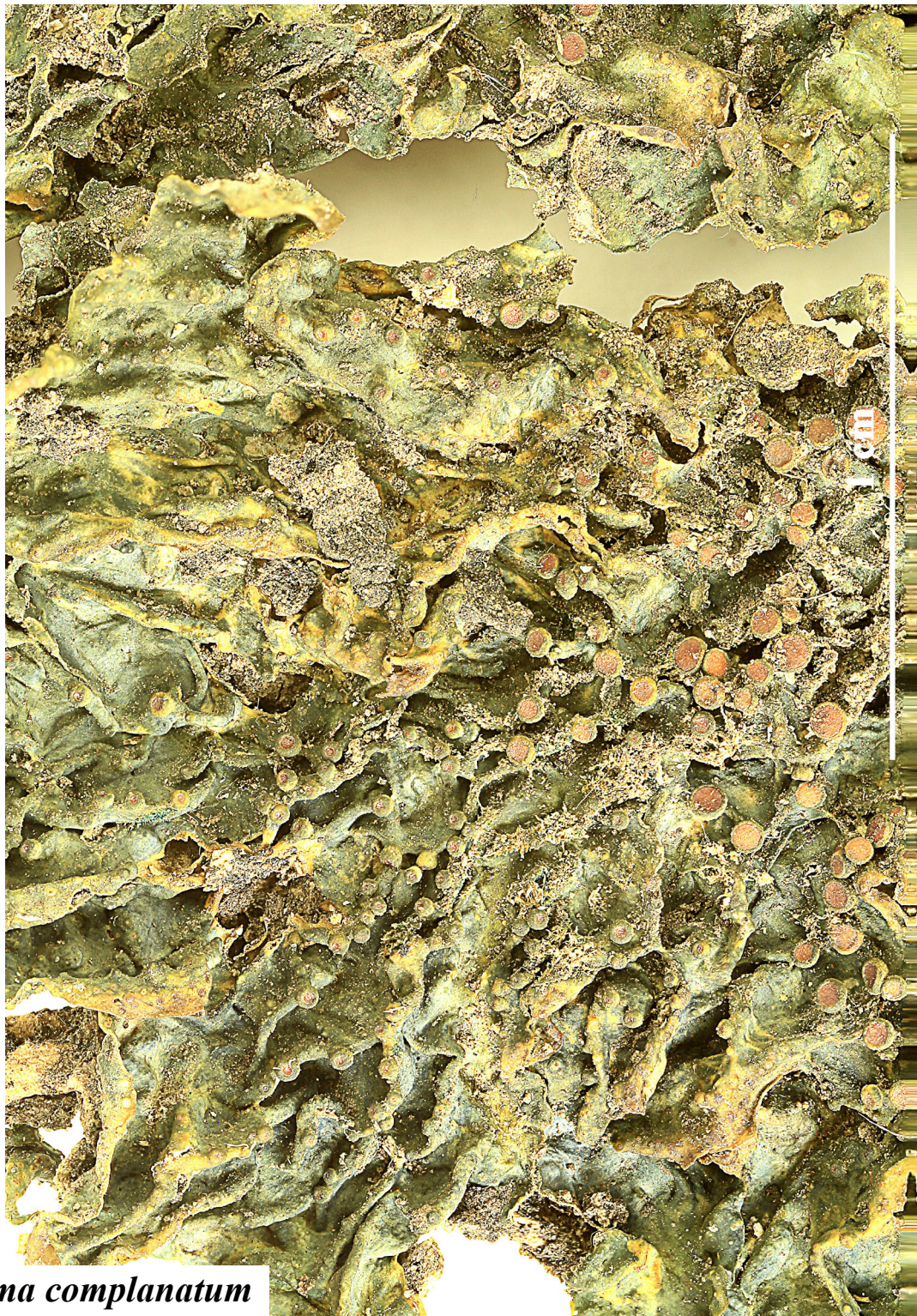
Collema complanatum

Collema complanatum Hue, J. Bot., Paris 20: 85 (1906)

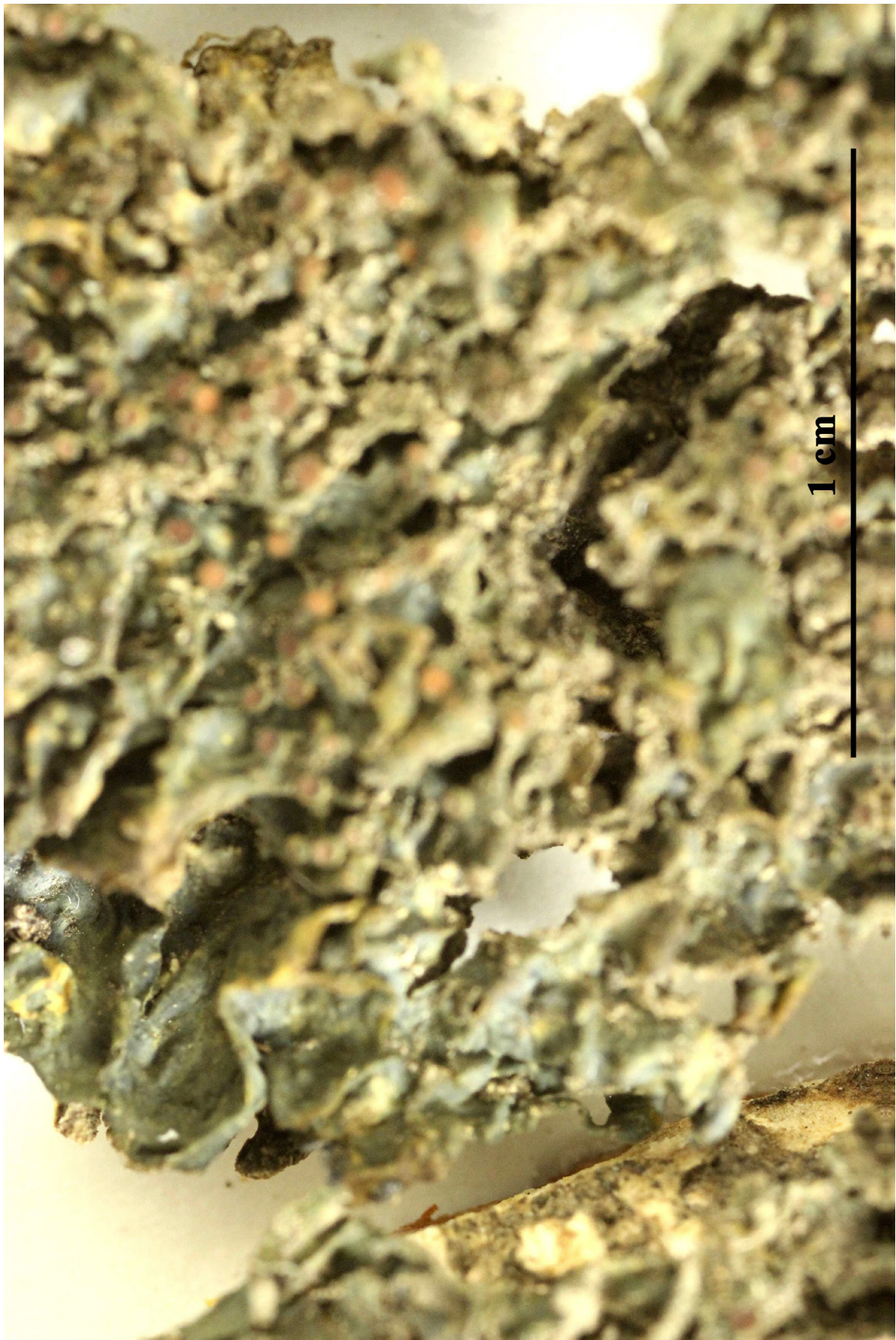
[KU219], Japan. Izu Islands: Eigoh. northern part of Hachijo-Island. Leg. S. Kurokawa (no.70054), 15.03.1970, det. G. Degelius. - Ex S. KUROKAWA: LICHENES RARIORES ET CRITICI EXSICCATI NR. 219.

Thallus of *nigrescens* (*subnigrescens*) type. medium-sized to large (up to c. 10 cm diam. though usually less. often a few cm), foliose. membranous, thin (see below). $\pm$ rounded but often unilaterally developed. adnate, strongly ridged (ridges radiating, denser or looser. long or short, $\pm$ narrow. rather high, straight or flexuose, simple or somewhat branched and anastomosing). in marginal parts often more pustulate, $\pm$ deeply and broadly lobate (sometimes rather indistinctly lobate). usually dark olive-green (lower surface concolorous or paler, sometimes greyish or bluish), matt or in part somewhat glossy, without isidia. Lobes and lobules few, $\pm$ rounded or extended, $\pm$ imbricate. margin entire and often bent downwards or upwards; lobules up to 1.5 cm broad but usually less. - Thallus (lobes) 56-90 μ m thick (when moist). *Hyphae* of about same type as in *C. subnigrescens*; no typical pseudocortex seen. - *Nostoc-cells* in chains. globose (3-4 μ m) or oblong; heterocysts up to 6.5 μ m; gelatine I-. - Apothecia usually numerous and dense, sometimes crowded, superficial (mainly on ridges). sessile with constricted base (sometimes broadly stipitate), 0.5-0.8 mm diam. (rarely more). *Discus* plane to (later on) a little convex. paler or darker red (sometimes very dark). matt or a little glossy. epruinose (rarely. in young apothecia slightly pruinose). *Margo thallinus* $\pm$ thin. entire, smooth (or finely rugose), generally not prominent. persistent or (in convex apothecia) disappearing. - Apothecia studied c. 430-530 μ m thick (when moist); *Excipulum thallinum* with about same structure and I-reaction as thallus; a $\pm$ well developed primitive pseudocortex usually occurs (cells from outside seen rounded, small), in some specimens a typical one (pseudocortex at times lacking). *Excipulum proprium* in central part up to at least 60 μ m thick (in marginal part thinner). euparaplectenchymatous (cells in central part up to 18 μ m diam. though usually less: to 8.5 μ m or 10.5 μ m 13 μ m (in margo part smaller), in some specimens prevailingly euthyplectenchymatous (to subparaplectenchymatous), colourless or pale yellow, I-. *Subhymenium* up to 105 μ m thick, pale or yellowish (or somewhat reddish), I + constantly blue. *Hymenium* 100-150 μ m high. I + rapidly and constantly blue. *Paraphyses* simple or (sometimes strongly) branched, 1-1.5 μ m thick (KOH). sometimes distinctly septate (submoniliform). often thickened

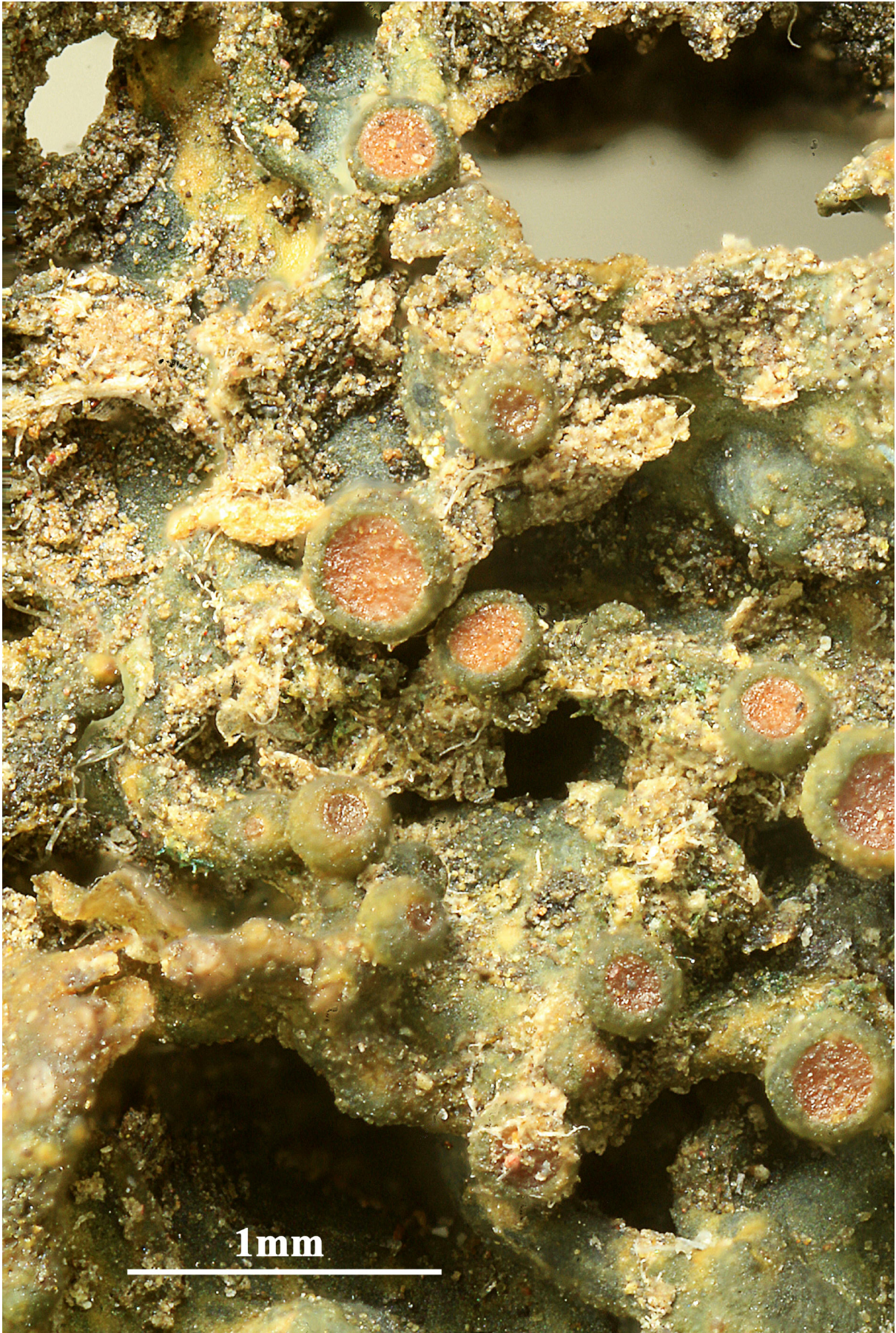
at apices (up to 5 μm). *Asci* narrowly clavate to subcylindrical, 90-110 x 15-18 μm , wall towards apex thickened. *Spores* usually 8 per ascus, straight or twisted in asci. polystichous, acicular (to subbacillar or narrowly fusiform). straight or curved. 6-8-10-celled, not constricted at septa, colourless, (40)65-90(110) x (3)4-5(6) μm (in KOH often narrower: 2-3 μm). Pycnidia hardly common but in some specimens very numerous, superficial, rather dark, immersed. $\pm$ globose, c. 200 μm diam., pale yellow or pale brown within. *Pycnoconidia* straight, of uniform thickness or slightly swollen towards the ends. 4.5-5 x 1-1.2 μm .



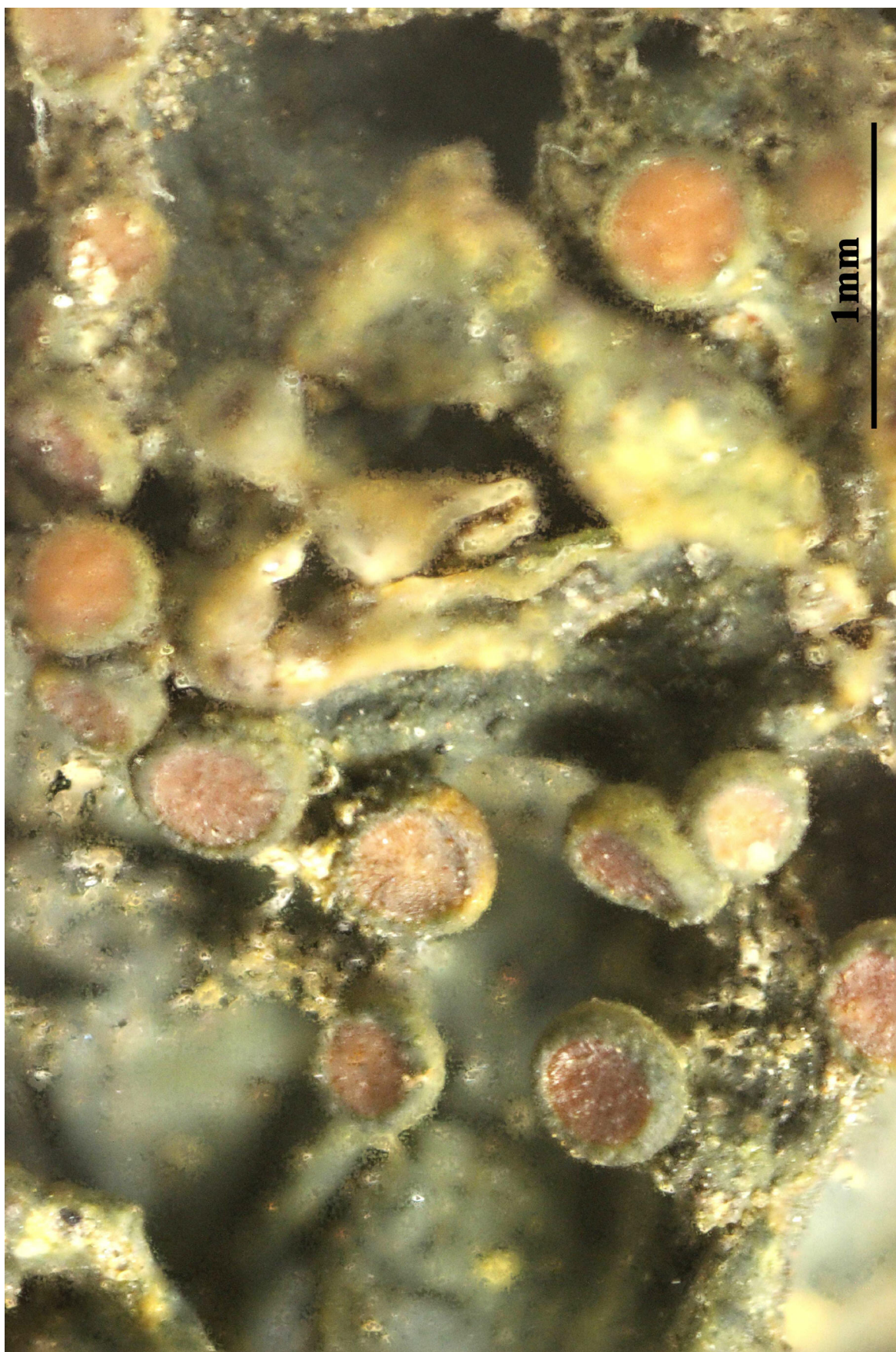
Collema complanatum



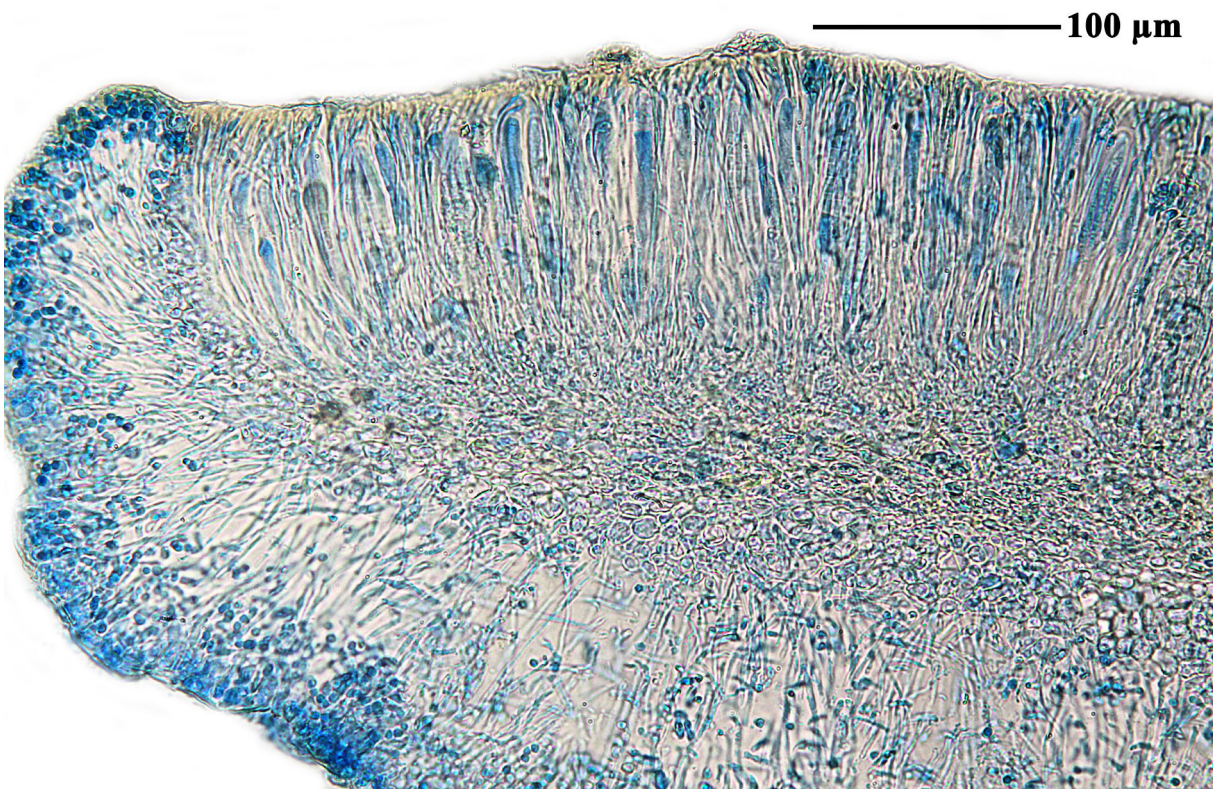
Collema complanatum



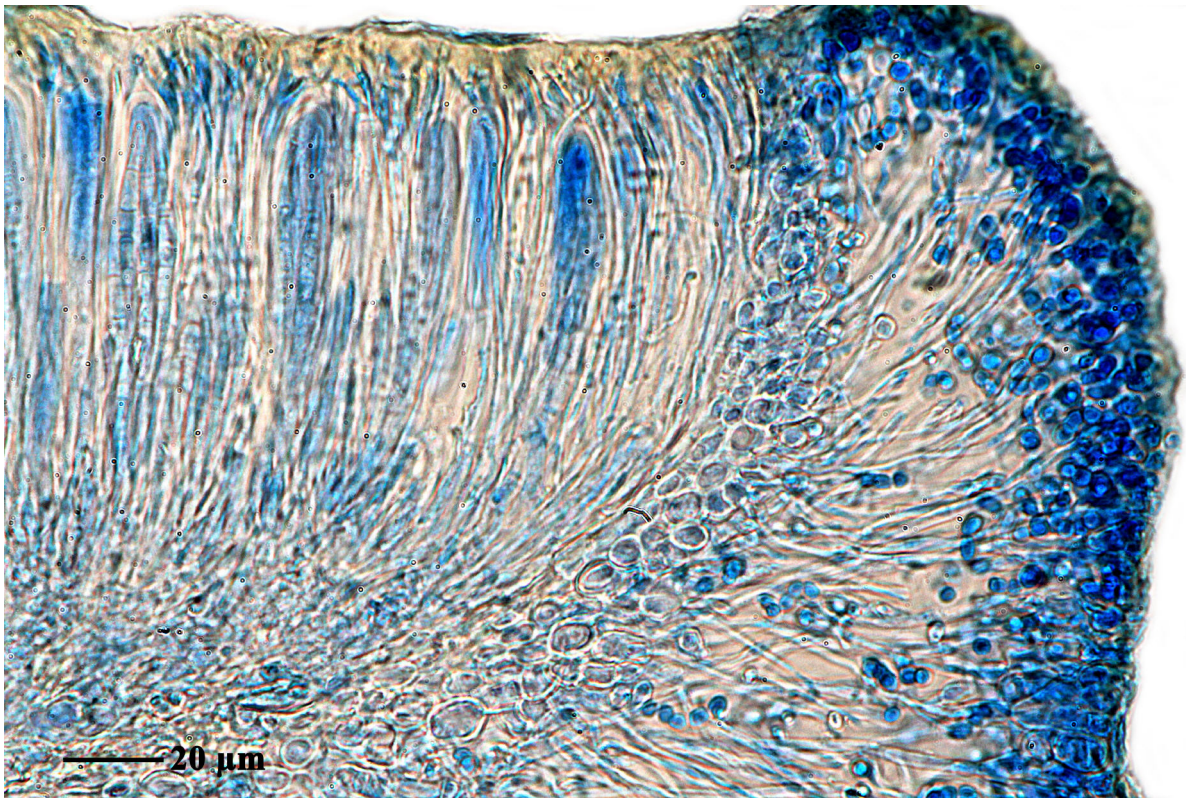
Collema complanatum



Collema complanatum



Collema complanatum



Collema complanatum



Collema complanatum

***Collema cristatum* var. *marginale* (Huds.) Degel.**

= *Lichen marginalis* Huds.

= *Lichen cristatus* L. 1753

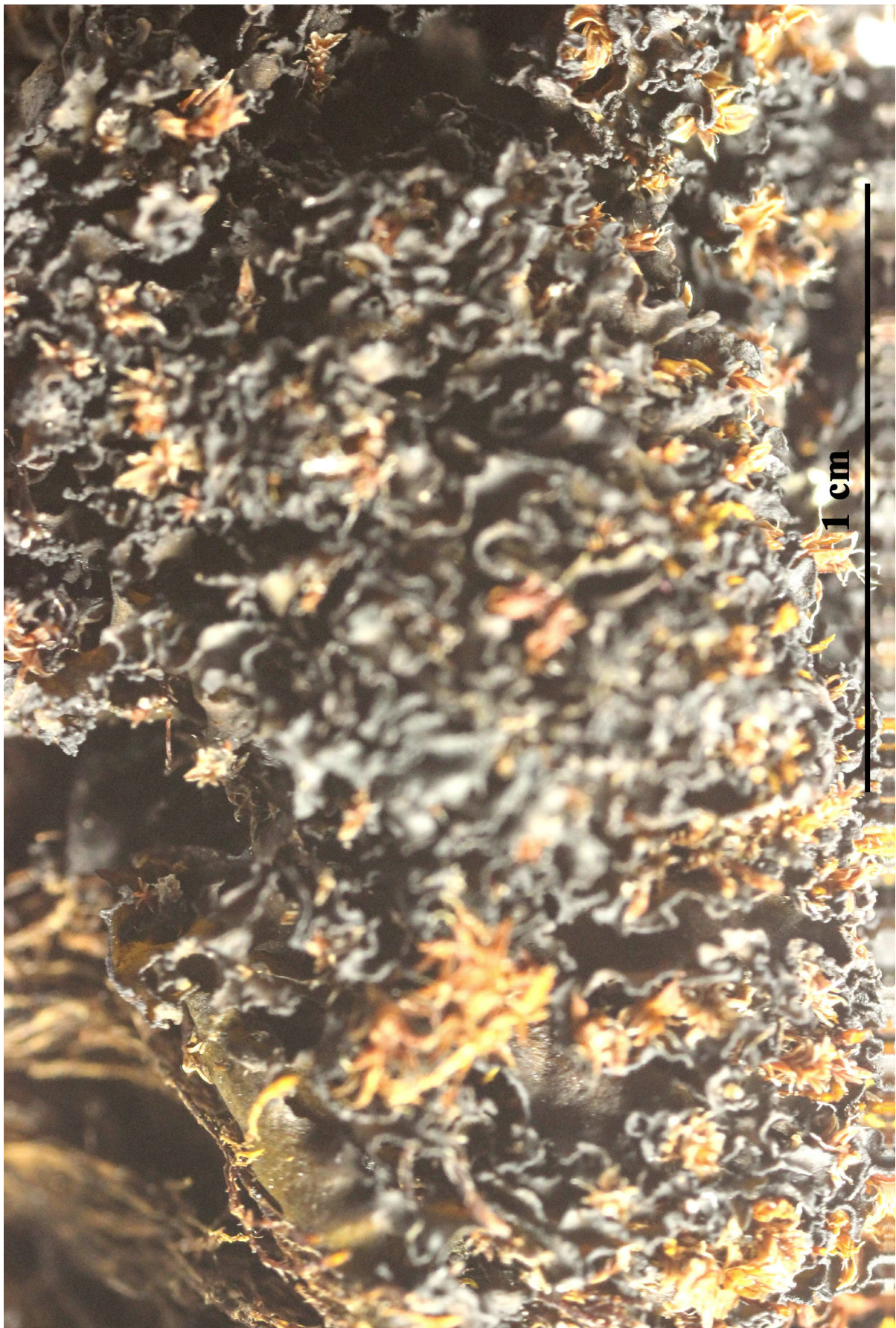
= *Lathagrium cristatum* (L.) Otálora, P.M. Jørg. & Wedin 2013, Fungal Divers., 64: 287, 2013

[KU671], Svalbard. Sitzbergen. Ny-London, the opposite shore of Ny-Ålesund, Kongsfjorden. On calcareous rock with mosses, 0-50 mm. Leg. H. Kashiwadani (no. 23031), 20.07.1985, det. H. Kashiwadani. - Ex S. KUROKAWA & H. KASHIWADANI: LICHENES RARIORES ET CRITICI EXSICCATI NR. 671.

Thallus foliose, homoiomerous, gelatinous and 130-200 (rarely more) μm thick when wet, firmly attached to rock, deeply lobed, forming orbicular, from a few cm to more than 20 cm wide rosettes, often dying from the center. Lobes linear, up to 3 mm wide, radiating, furcate, distinctly channelled with ascending, wavy margins, dark olive-green to black; isidia-like outgrowths sometimes present, marginal, globose to broadly clavate; lower surface paler, with scattered tufts of white hapters. Upper and lower cortex absent. Apothecia not always present, lecanorine, usually marginal, up to 5 mm across, sessile to stipitate, with a concave to slightly convex, red-brown to brown-black disc and a thin, smooth to granulose thalline margin. Thalline exciple ecorticate; proper exciple rather thick, euparaplectenchymatous; epithecium brownish; hymenium colourless, 90-130 μm high, I+ blue; paraphyses simple or sparingly branched in upper part, 2-3 μm thick at mid-level, the apical cells clavate, up to at least 5 μm wide; hypothecium yellowish to pale yellowish brown, I+ blue. Asci 8-spored, cylindrical-clavate, the apex strongly thickened, the apical dome K/I+ pale blue, with a downwardly projecting K/I+ deep blue tubular structure. Ascospores usually submuriform (rarely 4-celled or eumuriform), with 3(-4) transverse septa and 1(-2) longitudinal septa, hyaline, ellipsoid with more or less acute ends, 18-32(-40) x 8-13 μm . Pycnidia usually marginal, pale, immersed in isidia-like warts. Conidia bacilliform or with slightly swollen ends, 4-5 x 1-2 μm . Photobiont cyanobacterial (*Nostoc*, the cells in long chains). Spot tests: all negative. Chemistry: without lichen substances.



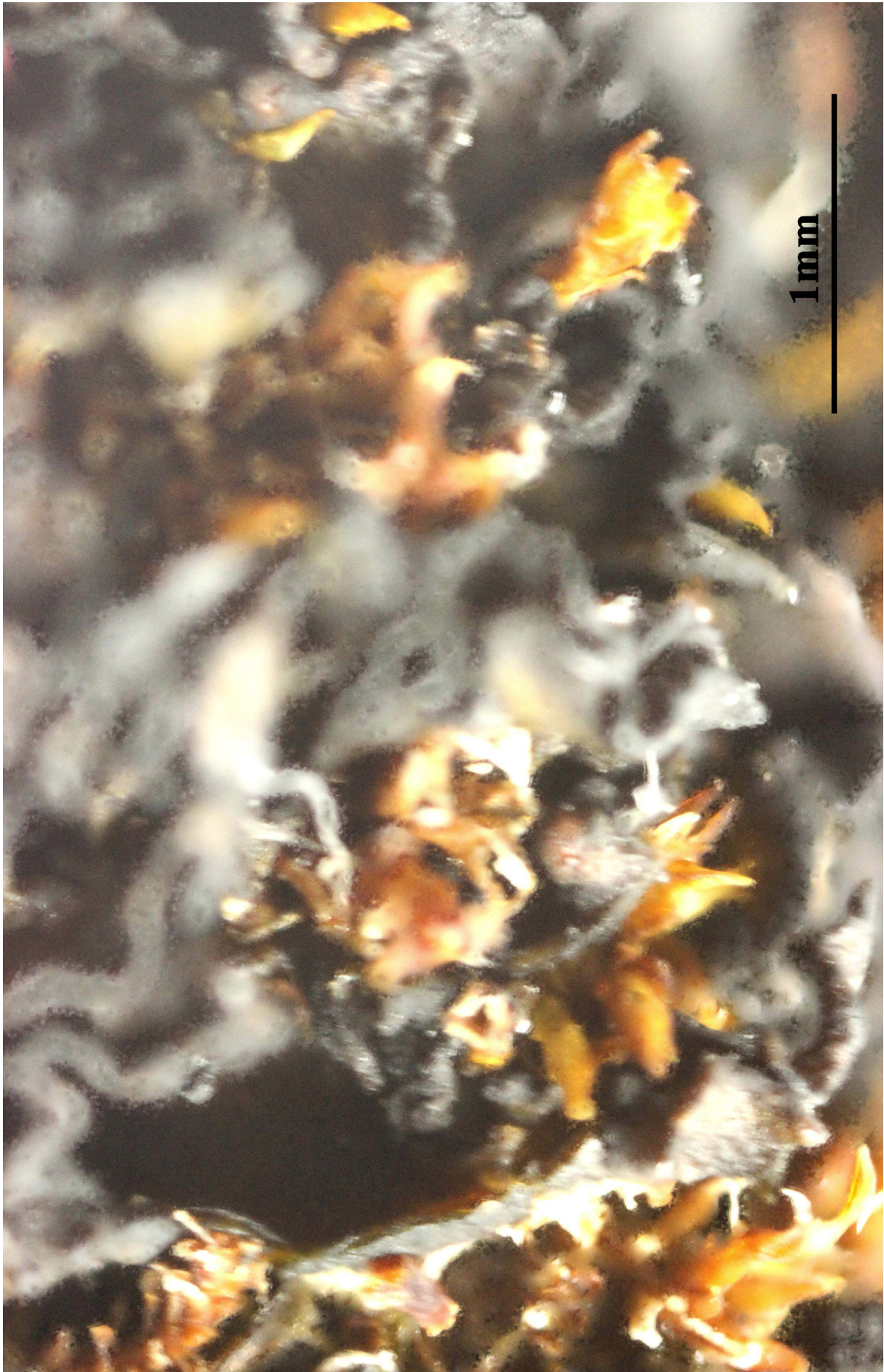
Collema cristatum



Collema cristatum



Collema cristatum



Collema cristatum

Collema furfureolum Müll. Arg., Flora, Regensburg 72: 142 (1889)
= *Blennothallia furfureola* (Müll. Arg.) Otálora, P.M. Jørg. & Wedin 2013

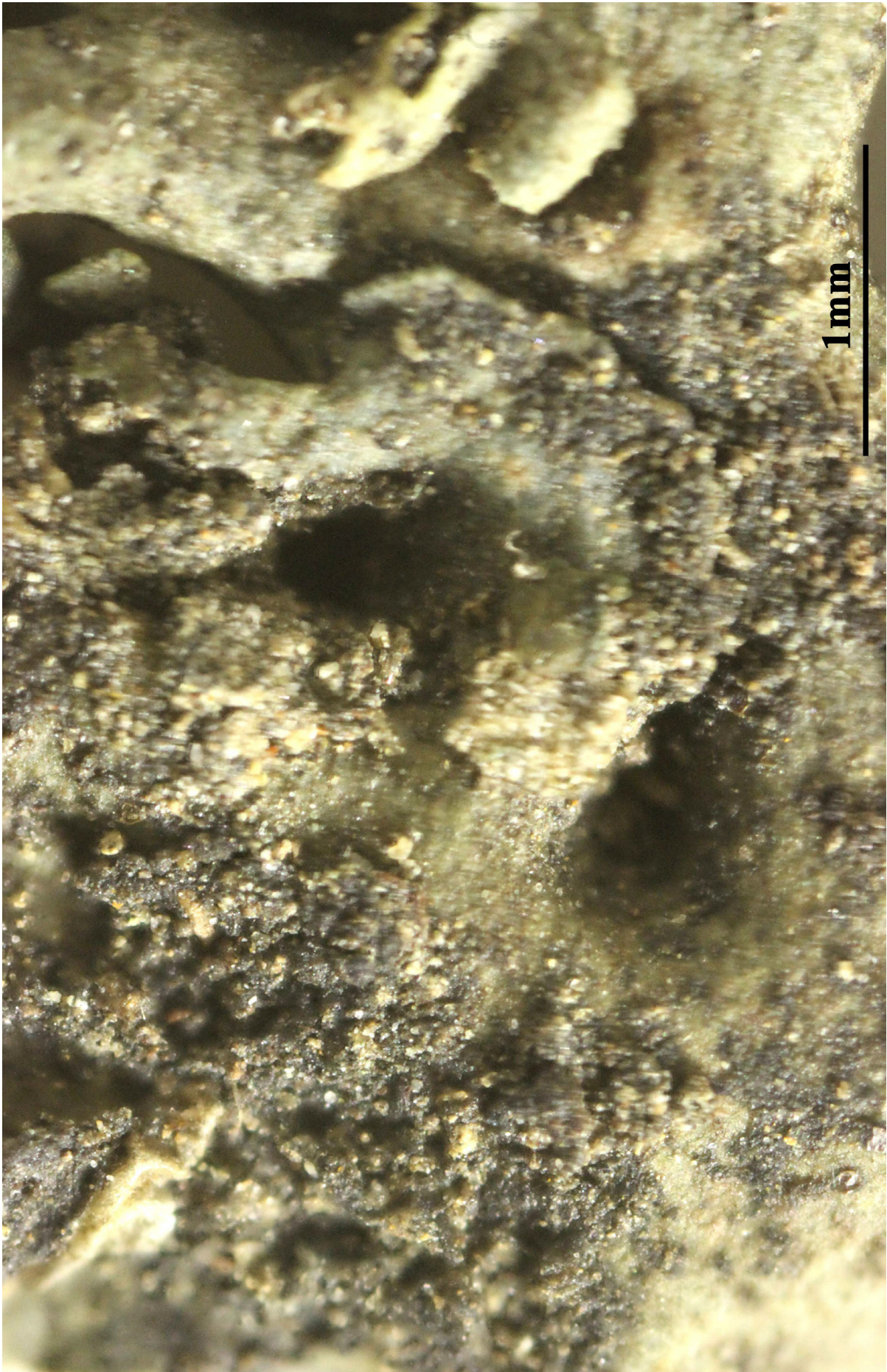
[KU271], Japan, Honshu. Prov. Ise: Mt. Fujiwara-dake, Inabe-gun. On calcareous rocks, 320 m. Leg. H. Kashiwadani (no. 13273), 20.03.1976, det. G. Degelius. - Ex S. KUROKAWA & H. KASHIWADANI: LICHENES RARIORES ET CRITICI EXSICCATI NR. 271.

Thallus rather small to medium-sized (usually up to a few cm diam.), foliose, ± rounded. ± thin and of uniform thickness. adnate but often with ascending margin, ± deeply and broadly lobate, paler or darker olive-green (lower surface concolorous or paler, often grayish to whitish or bluish), not glossy or only a little so, isidiate, for the rest smooth. Lobes rather few, rounded or somewhat extended, ± imbricate, lobulate (lobules usually not very numerous. rounded or somewhat extended, flat to concave and undulate. up to c. 5 mm broad but often narrower. margin entire or incised in different ways, sometimes strongly incised, often isidiate, in some cases bent downwards). Isidia numerous and dense to rather sparse, superficial (also marginal), concolorous with thallus or darker. squamiform (entire or a little incised) or some more teretiform, when young ± globular (often they grow out still remaining on thallus, forming small accessory lobules as in *C. crispum*.). Thallus(lobes) c. 65-130(200) µm thick (when moist). Hyphae and *Nostoc-cells* of about same type as in *C. crispum*. Sometimes a well developed typical pseudocortex occurs on both sides of thallus. Gelatine I- or in part I + wine-red. Apothecia rare, sparse to rather sparse when occurring, scattered to somewhat crowded, superficial, sessile with ± constricted base, flattened, small (up to 1 mm diam.). Discus plane or finally somewhat convex. paler or darker red. matt. epruinose. Margo thallinus thin to moderately thick. entire and sometimes a little isidiate, not prominent or only slightly so. often disappearing. Excipulum thallinum without pseudocortex. Excipulum proprium thinner than subhymenium, subparaplectenchymatous (in part euparaplectenchymatous with small cells). Subhymenium up to c. 85 µm thick, pale yellow to yellowish brown. Hymenium c. 105-110 µm high. Paraphyses simple or (sometimes ± richly) branched, c. 2 µm thick (KOH), apices often thickened (up to 5 µm), distinctly septate (especially in upper part) and often constricted at septa. Asci ± clavate, 65-80 x 17-24 µm, wall towards apex thickened. Spores 6-8 per ascus, broadly oblong or ellip-

soid, with obtuse or rounded (rarely more acute) ends, submuriform (3 transversal septa), sometimes constricted at septa, colourless, 15-20 x 7-8.5 μm . Pyrenidia sparse, superficial, on both sides of thallus visible as very small elevations (pale or concolorous with thallus), immersed, globose (up to 300 μm diam.) to subglobose or flattened, colourless or pale yellow within, with dark apex. Pycnoconidia straight, slightly swollen towards the ends, 4.3-5 x 1.2-1.5 μm .



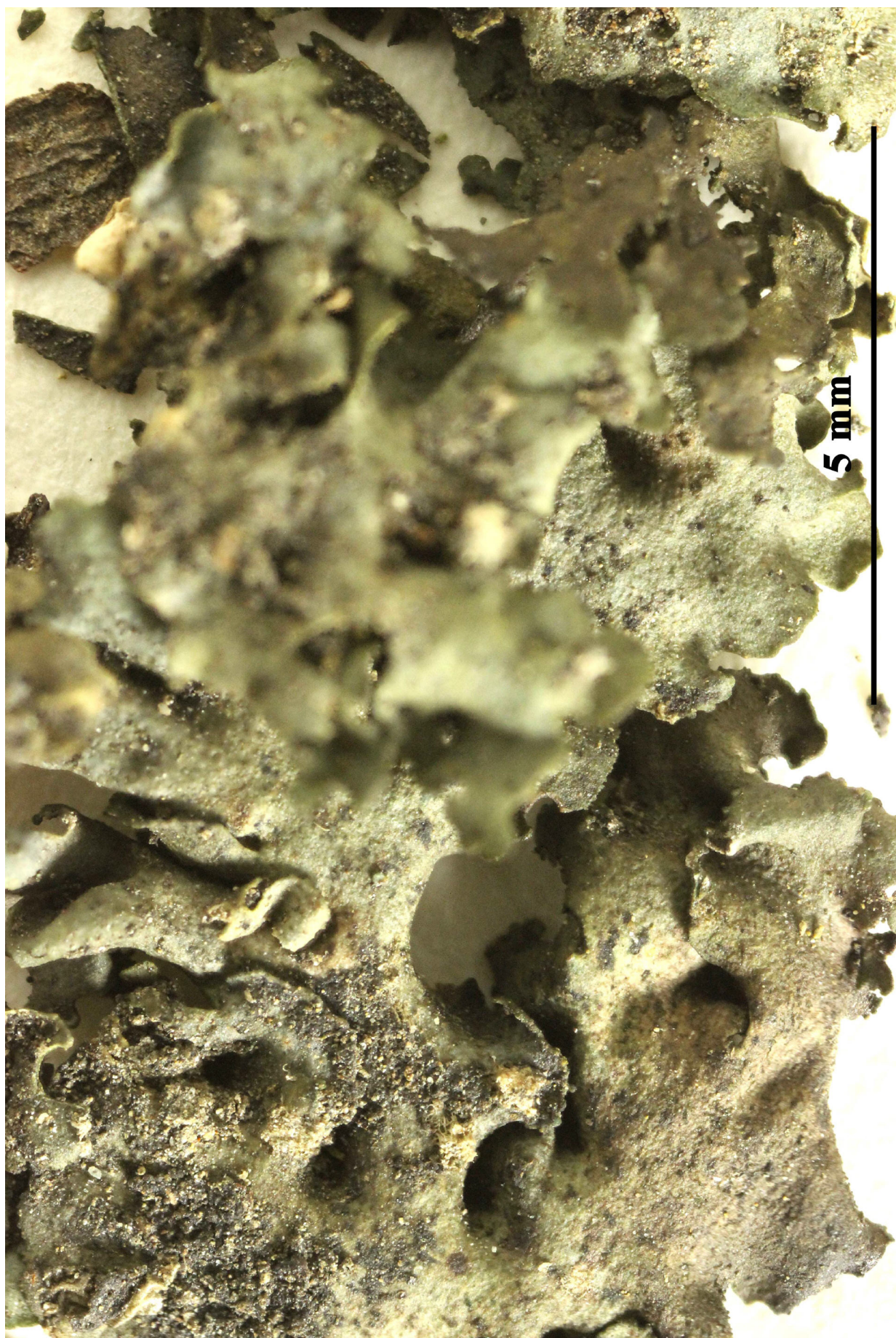
Collema furfureolum



Collema furfureolum



Collema furfureolum



Collema furfureolum



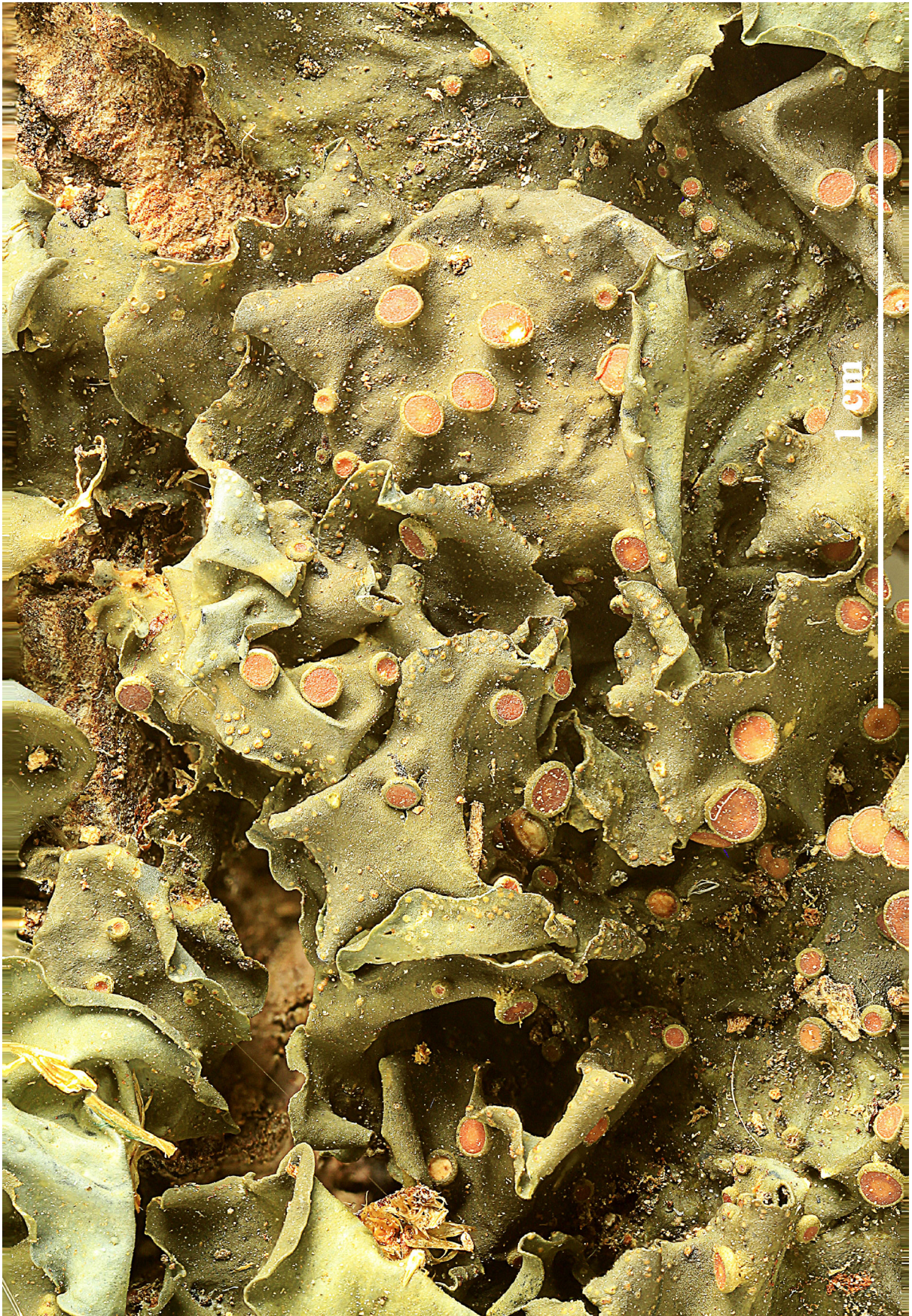
Collema furfureolum

Collema japonicum (Müll. Arg.) Hue, Nouv. Arch. Mus. Hist. Nat., Paris, 3 sér. 10: 220 (1898)

= *Synechoblastus japonicus* Müll. Arg., Flora, Regensburg 63(2): 17 (1880)

[KU618], Japan. 'Shikoku. Prov. Awa: Nagoro, Higashi-Iyayama-mura, Miyoshi-gun. On bark of *Zelkova serrata*, 800m. Leg. M. Togashi, 14.08.1956, det. Y. Asahina. - Ex S. KUROKAWA & H. KASHIWADANI: LICHENES RARIORES ET CRITICI EXSICCATI NR. 618.

Thallus to 10 cm wide, foliose, membranous, rounded to irregular, adnate or ascending, sometimes deeply and broadly lobate, smooth or sparsely ridged, matt or partly glossy, olive-green; isidia if present sparse, marginal or at damaged spots, often globose becoming squamiform. Lobes few, rounded or extended, imbricate, sometimes lobulate; margin entire or sparsely incised. Apothecia scattered to crowded, to 2 mm wide, sessile or with constricted base; disc flat, matt or slightly glossy, epruinose, pale or dark red; thalline exciple thin, entire, smooth or finely rugulose, usually not prominent. Asci 65-80 x 13-20 μm . Ascospores 30-56 x 4.0-8.5 μm , fusiform to broadly acicular, straight or somewhat curved, rarely crooked at one end, sometimes end-cells tail-like, 6-celled, rarely 4- or 7-8-celled, usually not constricted. Pycnidia common, to 200 μm wide; pycnidial gel hyaline to pale yellow. Conidia c. 4 x 1 μm , straight, usually slightly swollen towards ends. Occurs in Asia, the Pacific Islands, N.Z. and northern Australia. Grows on bark.



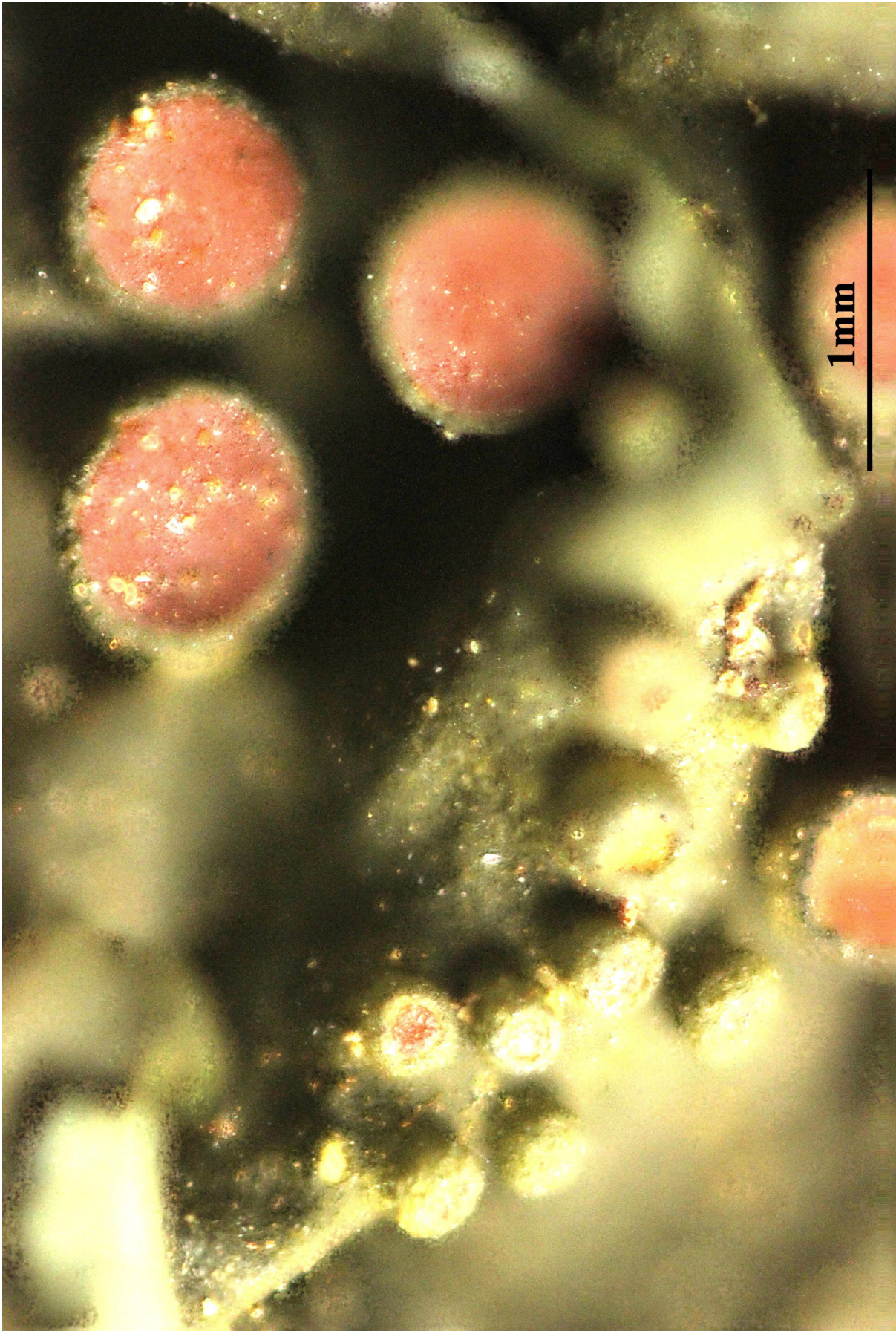
Collema japonicum



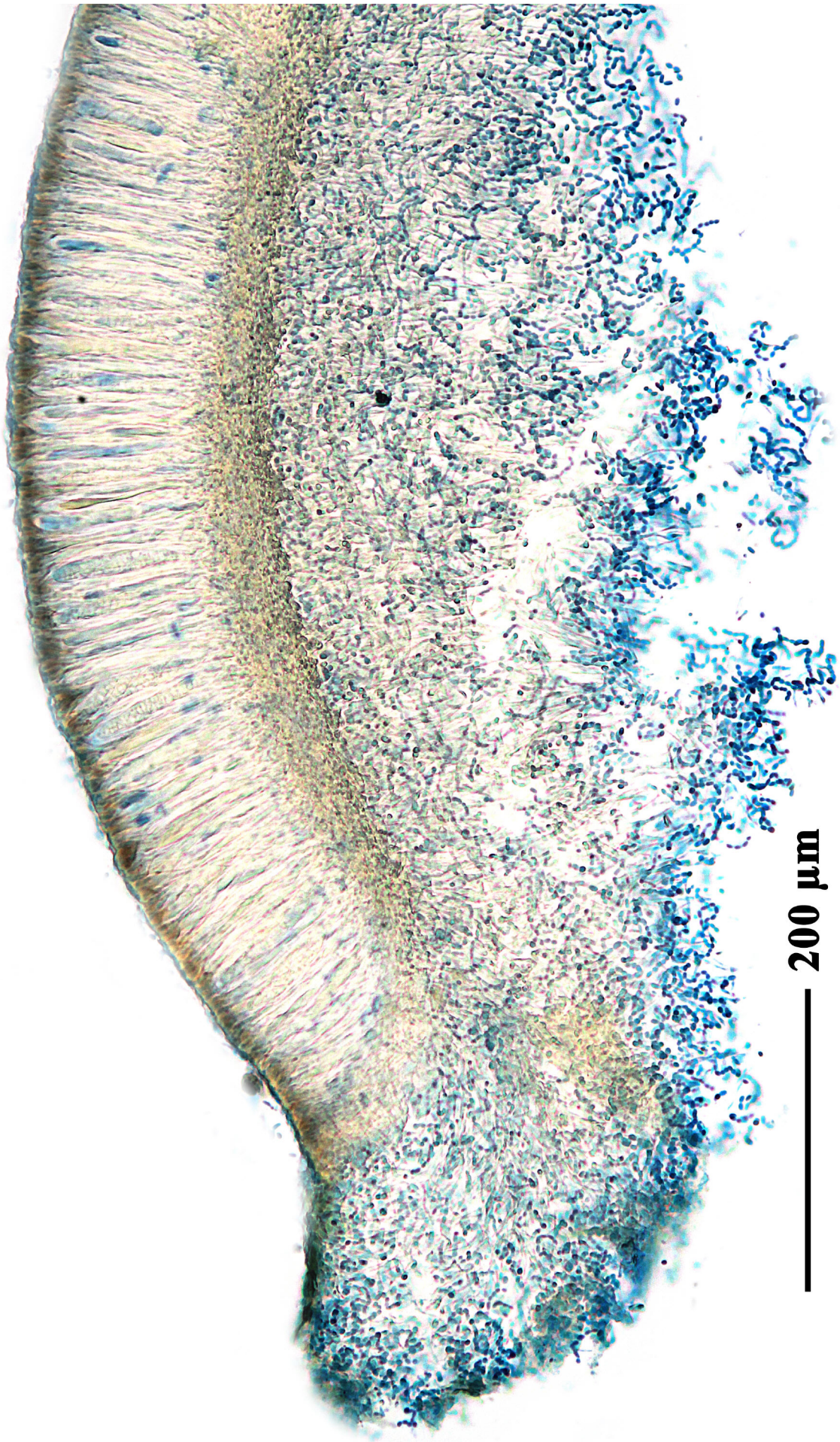
Collema japonicum



Collema japonicum



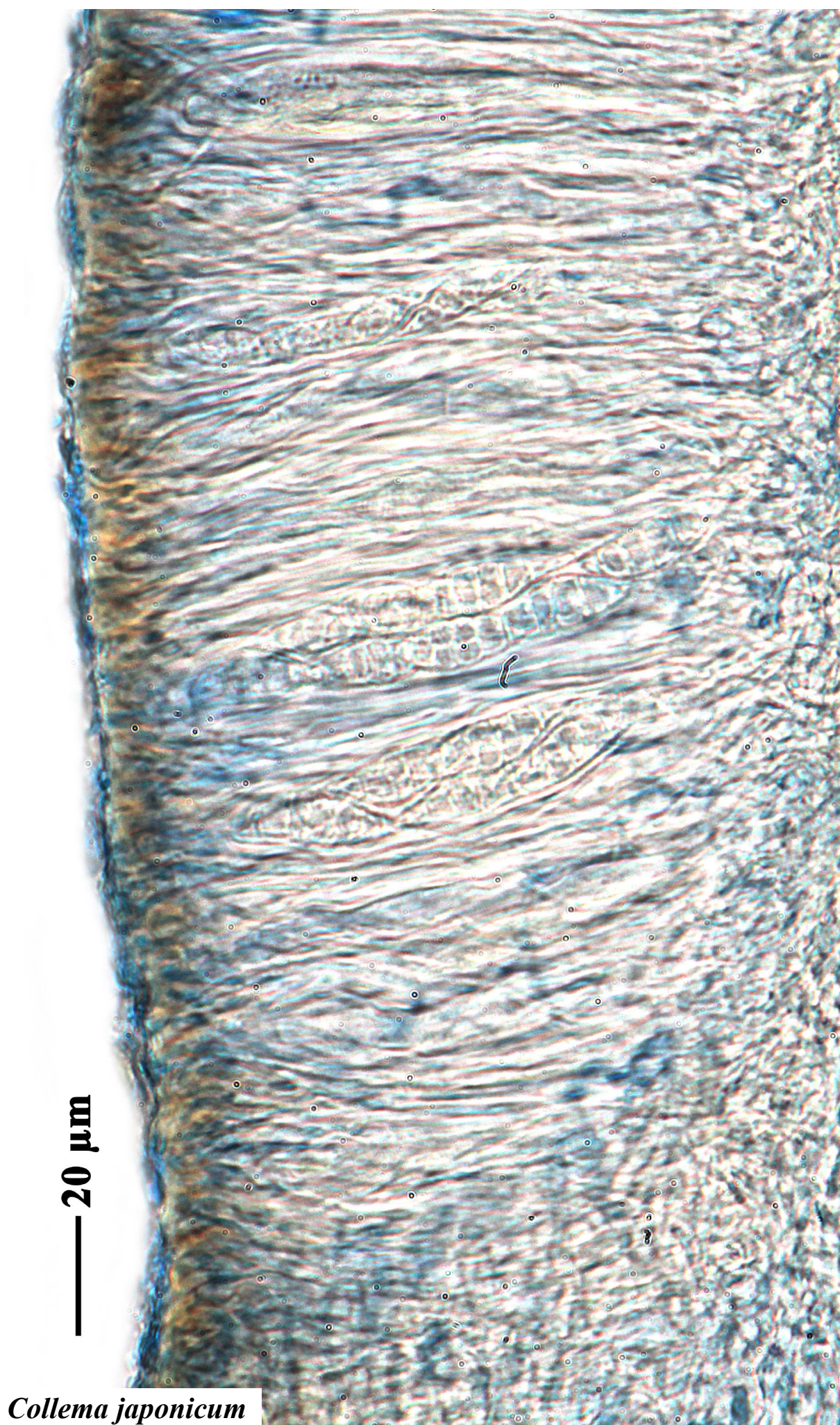
Collema japonicum

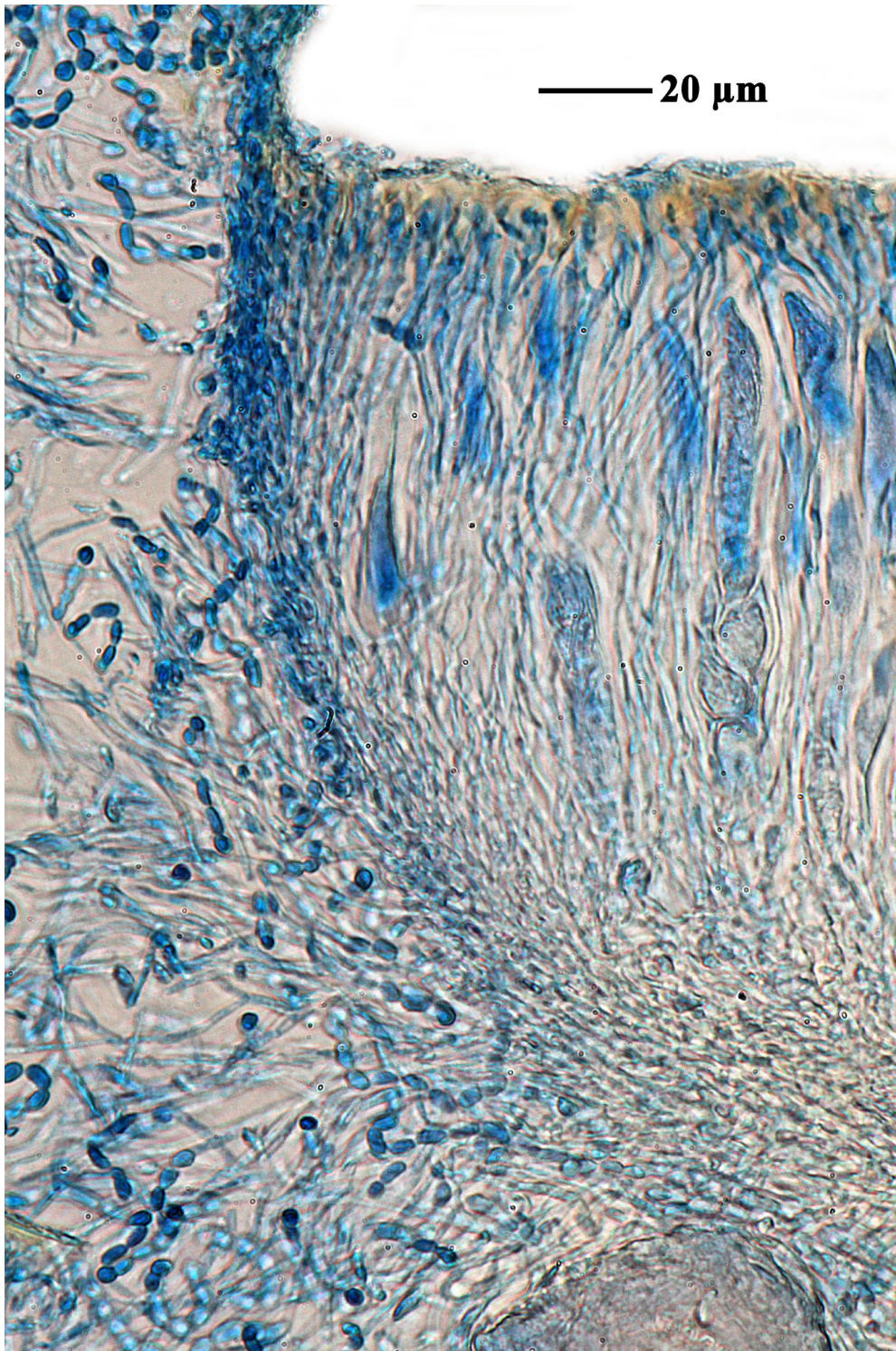


Collema japonicum

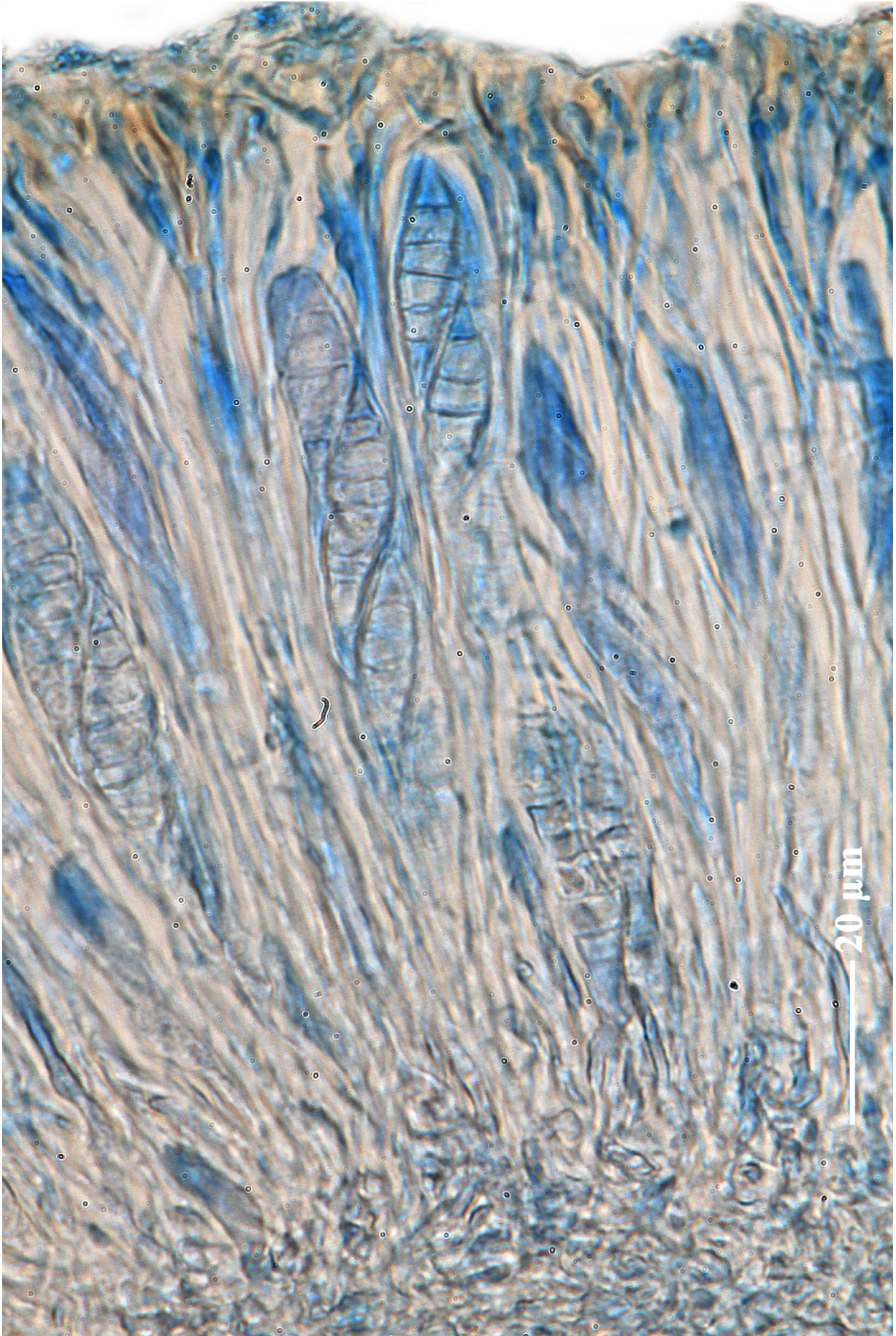


Collema japonicum

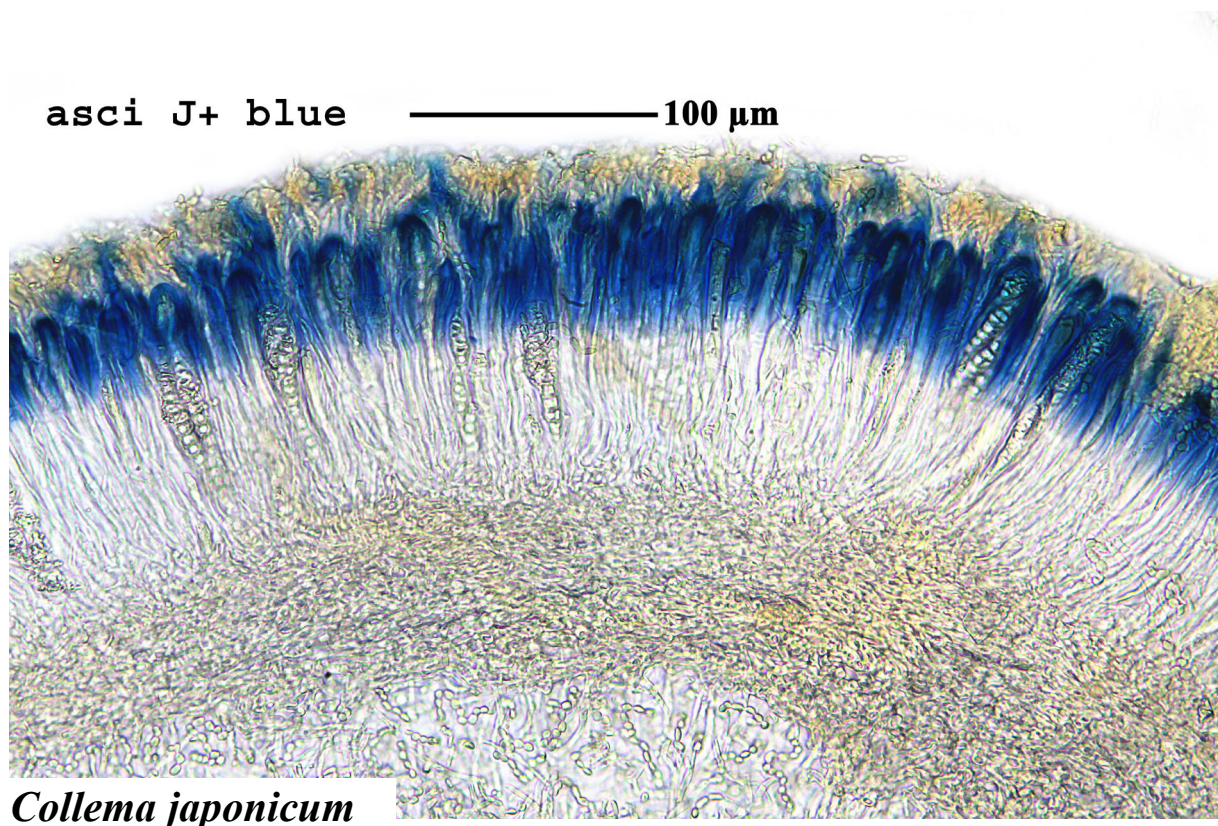
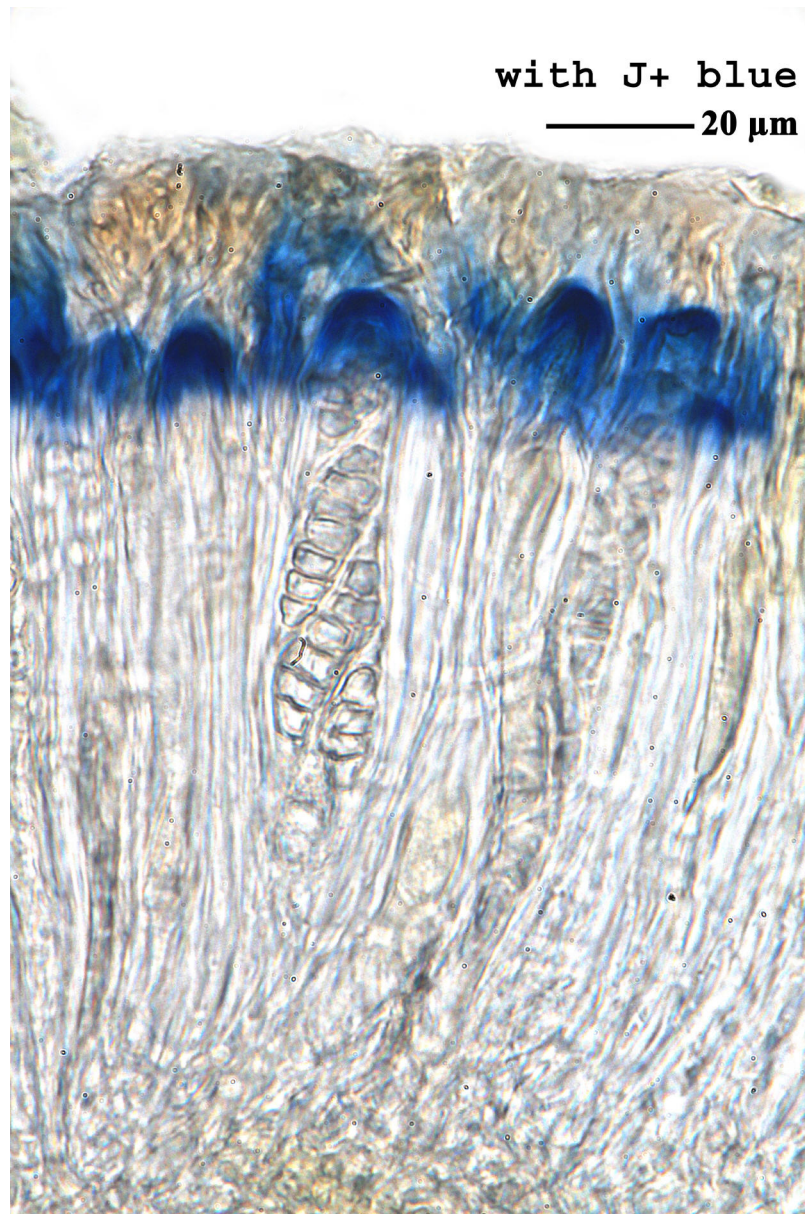




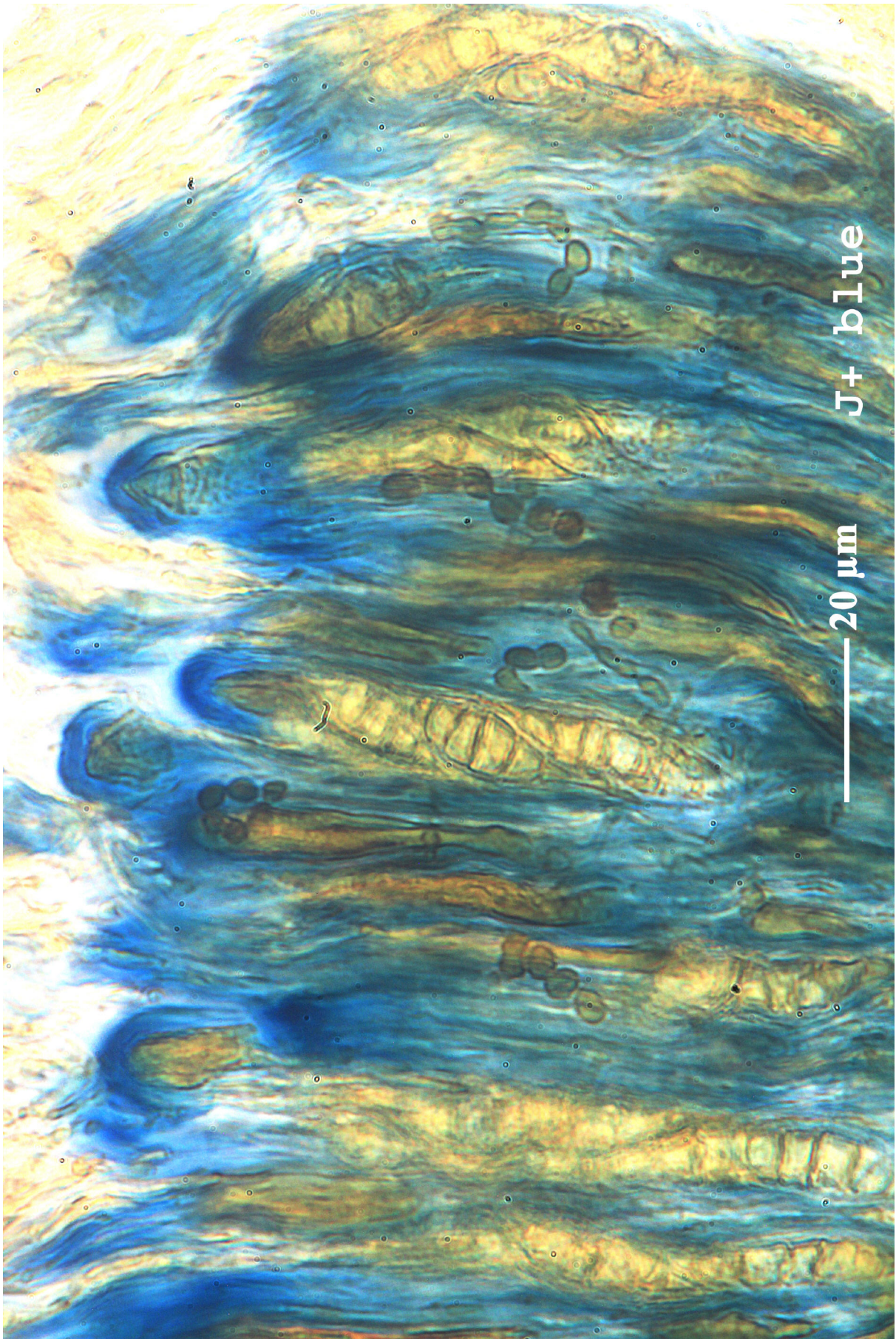
Collema japonicum



Collema japonicum



Collema japonicum



Collema japonicum

Collema leptaleum Tuck., Proc. Amer. Acad. Arts & Sci. 6: 263 (1866) [1864]
= *Collema aggregatum* subsp. *leptaleum* (Tuck.) Tuck., Syn. N. Amer.
Lich. (Boston) 1: 146 (1882)
= *Collema gwytheri* Stirt., in Bailey, Queensland Agric. J. 5: 484 (1899)
= *Synechoblastus leptaleus* (Tuck.) Fink, Lich. Fl. U.S.: 153 (1935)

[KU303], Japan, Honshu. Prov. Hitachi (Pref. Ibaraki): Mt. Sashiro-san, Kasama-city. On bark of *Paulownia tomentosa*, 60 m. Leg. H. Kashiwadani, 04.06.2005 (no. 47393), det. H. Kashiwadani. - Ex KASHIWADANI: LICHENES MINUS COGNITI CRITICI EXSICCATI NR. 303.

Thallus usually rather small to medium-sized (one to some few cm diam., rarely up to 5 cm). crustose to subfoliose (sometimes with few. irregular lobes, up to at least 1 cm broad). ± rounded, adnate or (margin) somewhat ascending, thin to rather thick (varying in one and the same specimen, membranous. ± fenestrate, smooth or irregularly rugose (wrinkles dense or sparse, often forming a network), sometimes finely knotty or papillose (lower surface smooth or uneven). paler or darker olive-green (sometimes yellowish brown or bluish; lower surface paler or bluish), matt or (thinnest parts) glossy, margin very often finely lobulate. Lobules usually small to very small, short and narrow (up to 1 or 2 mm broad), imbricate or not so, flat or (generally) canaliculate, of uniform thickness or sometimes a little swollen in margin, margin entire to somewhat notched or incised and often undulate. Without isidia, but occasionally with small somewhat isidia-like outgrowths. Thallus sometimes cushion-like (pulvinate). Thallus (lobes) c. 65-360 µm thick (when moist). -*Hyphae* loose (at times more dense), running in all directions (or mainly parallel to surfaces), branched and anastomosing (often forming a network), 1-4.5 µm thick, ± thin-walled, thicker ones with distinct septa; no pseudocortex observed. -*Nostoc*-cells in chains, usually most numerous towards surfaces. globose (3-6.5 µm, generally 4-4.5 µm) or oblong; heterocysts up to 8.5 µm; gelatine I-or in part I + wine-red (sometimes strongly wine-red).

Apothecia ± numerous (sometimes sparse or lacking), scattered to dense, sometimes crowded and ± covering thallus, superficial (also marginal), appressed to sessile with constricted base, sometimes stipitate, < 1-1.5 mm (in some specimens up to 3 or 4 mm) diam. *Discus* plane (to convex or concave). pale red to dark red, matt or somewhat glossy, epruinose. *Margo thallinus* thin to moderately thick (rarely

thick), entire, smooth to rugose (or knotty), usually not prominent, persistent or occasionally disappearing. *Margo proprius* very thin (and pale) or lacking. Apothecia studied c. 235-450 μm thick (when moist). -*Excipulum thallinum* $\pm$ thick, of about same structure as thallus; no pseudocortex. *Excipulum proprium* in its central part 40-70 (90) μm thick, in marginal part thinner, euparaplectenchymatous (cells thin-walled, rarely more thick-walled, varying in size, colourless to yellowish, I-. *Subhymenium* (30) 40-65 μm thick, pale yellow, I + constantly blue. *Hymenium* 50-85 (105) μm high, I+ rapidly and constantly blue. *Paraphyses* simple or branched, 1.5-2 (3) μm thick (KOH), often with clavate to globose apices (up to 6.5 μm thick, usually less). often moniliform towards apices. *Asci* clavate to subcylindrical, (30) 40-65 x 10.5-20 μm , wall towards apex thickened. *Spores* 8 (at times 4 or 6) per ascus, usually tristichous or polystichous, imbricate, bacillar (sometimes a little thickened at one end or both ends or in middle; ends $\pm$ obtuse or rounded) or in other specimens for the most part linear-oblong (broadly bacillar) and narrowing (rarely thickening) towards one end or both ends (with rather acute or obtuse, rarely rounded ends), straight or (slightly to strongly) curved, sometimes plastic, 4-celled, but also 8-10-celled seen (cells of about equal size). colourless. (17) 26-50(58) x (1.5) 2-4.5(5) μm (in KOH a little narrower). Pycnidia in some samples not rare, superficial and marginal, immersed or slightly prominent. from outside visible as pale dots (with dark centre). globose. up to at least 170 μm diam., colourless to yellowish within. *Pyrenoconidia* straight, slightly swollen towards the ends, 3.5-5 x 1-1.5 (1.8) μm .



Collema leptaleum

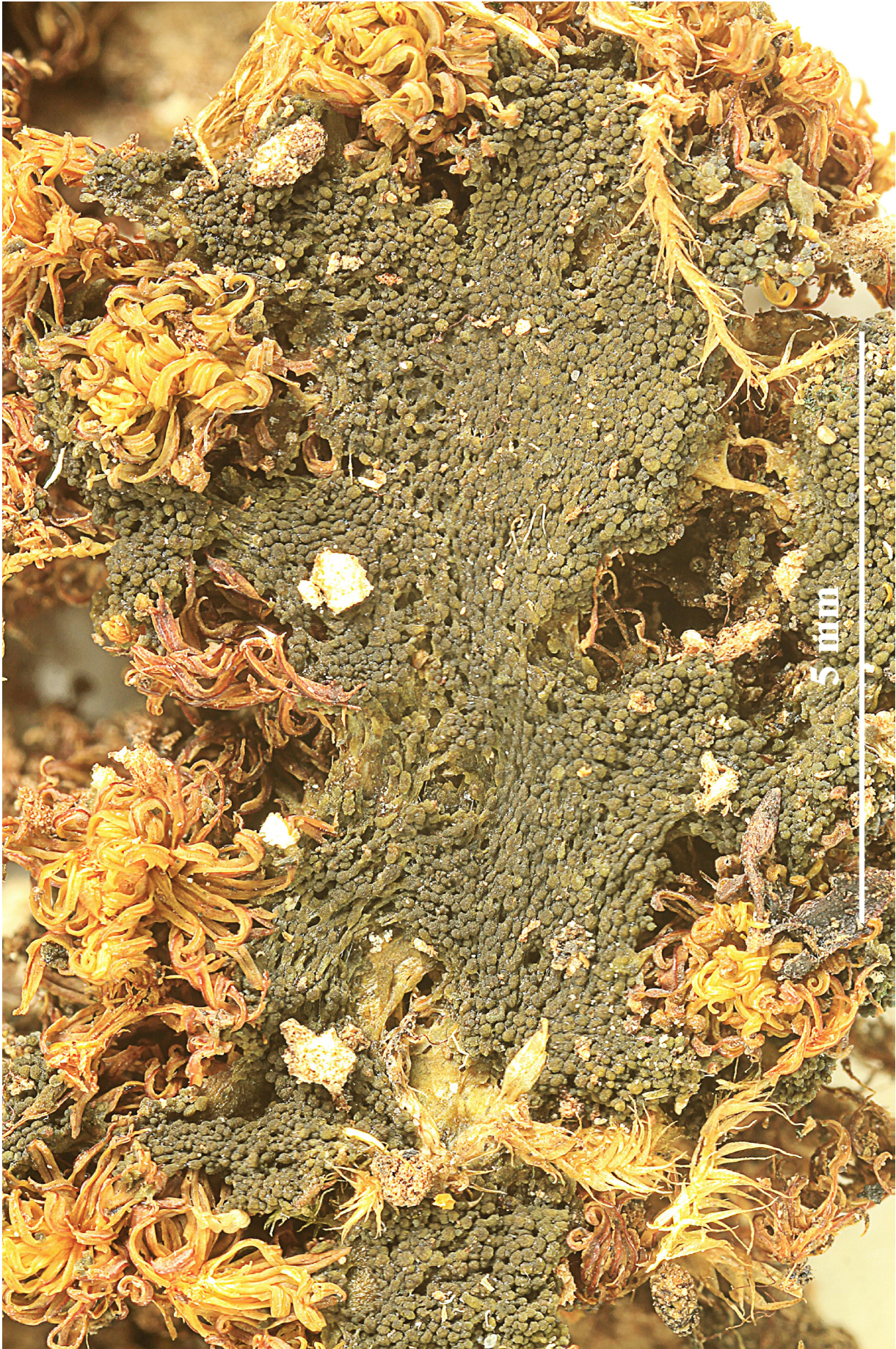


Collema leptaleum

Collema leptaleum var. *biliosum* (Mont.) Degel., Symb. bot. upsal. 20(no. 2): 105 (1974)
= *Collema nigrescens* . *biliosum* Mont. 1842

[KU619], Japan, Honshu. Prov. Satsuma: Mt. Noma, Kasasa-cho. Kawanabe-gun. On bark of *Cinnamomum camphora*, 360 m. Leg. H. Kashiwadani (no. 20599), 18.02.1984, det. G. Degelius. - Ex S. KUROKAWA & H. KASHIWADANI: LICHENES RARIORES ET CRITICI EXSICCATI NR. 619.

Thallus medium-sized to rather large (up to 5 cm diam. but usually a few cm), in several collections strongly stunted. usually subcrustose to subfoliose, sometimes fenestrate (not as often as in var. *lept.*), varying considerably in thickness in different specimens and sometimes in one and the same specimen (c. 90-700 μm when moist), darker or pale rolive-green or pale brown to yellowish brown (or in part yellowish), surface smooth or a little uneven or (especially in well developed specimens) with radiating wrinkles or ridges and pustules. Lobes and lobules (when occurring) few, rounded to extended, imbricate or not so. of varying breadth. with entire margin (margin of small lobules often undulate). Isidia usually numerous and dense. on ridges and pustules or more equally distributed on upper surface. globular (< 0.1-0.15 mm diam.) or a little extended (rarely squamiform ones admixed), concolorous with thallus or somewhat darker. Algal gelatine I-. Apotheta (when occurring) numerous and dense or sparse and scattered. c. 0.8-1.5 mm (seldom up to 2 mm) diam., 350-560 μm thick (when moist). margin finely rugose to more coarsely rugose or verrucose or isidiate. Excipulum proprium in its central part with 8.5-17 μm large cells (extended cells up to 26 x 13 μm). Spores 4-8 celled, (22)28-40 (59) x 2-4.5 μm . Pycnidia hardly common; pycnoconidia 5-6 x 1.2-1.5 μm , Other details as in var. *leptaleum* from which var. *biliosum* is not sharply separated.



Collema leptaleum var. *biliosum*



Collema leptaleum var. *biliosum*

Collema subflaccidum Degel., Symb. bot. upsal. 20(no. 2): 140 (1974)

[OH606], Japan, Hokkaido, Prov. Kitami: Utanoboripenkenai, Esashi-cho, Esashi-gun (44°47'121" N, 142°31'08"). On trunc of *Ulmus davidiana* var. *japonica*, 100m. Leg. Y Ohmura (no.11183), 20.06.2016, det. Y. Ohmura. - EX Y. OHMURA: LICHENES MINUS COGNITI EXSICCATI NR. 606.

Thallus to 8 cm wide, foliose, membranous, loosely adnate. Lobes to 1.5 (-2) mm wide, irregularly folded, undulate, sometimes partly ascending, matt, dark olive-green to blackish green to dark brown; margins entire; isidia crowded, sometimes covering centre of thallus, to 0.3 mm tall, globose, sometimes becoming cylindrical. Apothecia scattered, to 2.5 mm wide, sessile, constricted at base; disc flat, becoming convex, smooth, matt, epruinose, pale to dark red; thalline exciple thin, entire, smooth or subrugulose. Asci 70-100 x 15-20 µm. Ascospores 42-65 x 4-6.5 µm, narrowly ellipsoidal to fusiform, usually straight with acute and sometimes extended ends, 4-5-celled, not constricted. Pycnidia common, to 200 µm wide, laminal; pycnidial gel pale yellow. Conidia 4-4.5 x 1-1.5 µm, straight, slightly swollen towards ends. Widely distributed in the northern hemisphere, occurring also in south-eastern Australia and N.Z.



Collema subflaccidum



Collema subflaccidum



Collema subflaccidum

Cornicularia pseudosatoana Asahina, J. Jap. Bot. 15(6): 356 (1939)
= *Bryocaulon pseudosatoanum* (Asahina) Kärnefelt, Op. bot. 86: 28 (1986)

[KU474], Japan. Honshu. Prov. Iwashiro: Toriko-daira, Mt. Higashi-Azuma. On bark of *Tsuga diversifolia*. 1699 m. Leg. H. Kashiwadani (no. 15403), 10.8.1979, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 474.



Cornicularia pseudosatoana



Cornicularia pseudosatoana

Cornicularia pseudosatoana Asahina, J. Jap. Bot. 15(6): 356 (1939)
= *Bryocaulon pseudosatoanum* (Asahina) Kärnefelt, Op. bot. 86: 28 (1986)

[KU514], Japan. Honshu. Prov Shumotsuke: Mt Nantai, Nikko. On bark of *Tsuga diversifolia*, 1780 m. Leg. H. Kashiwadani (no. 16946), 14.6.1981, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 514.



Cornicularia pseudosatoana

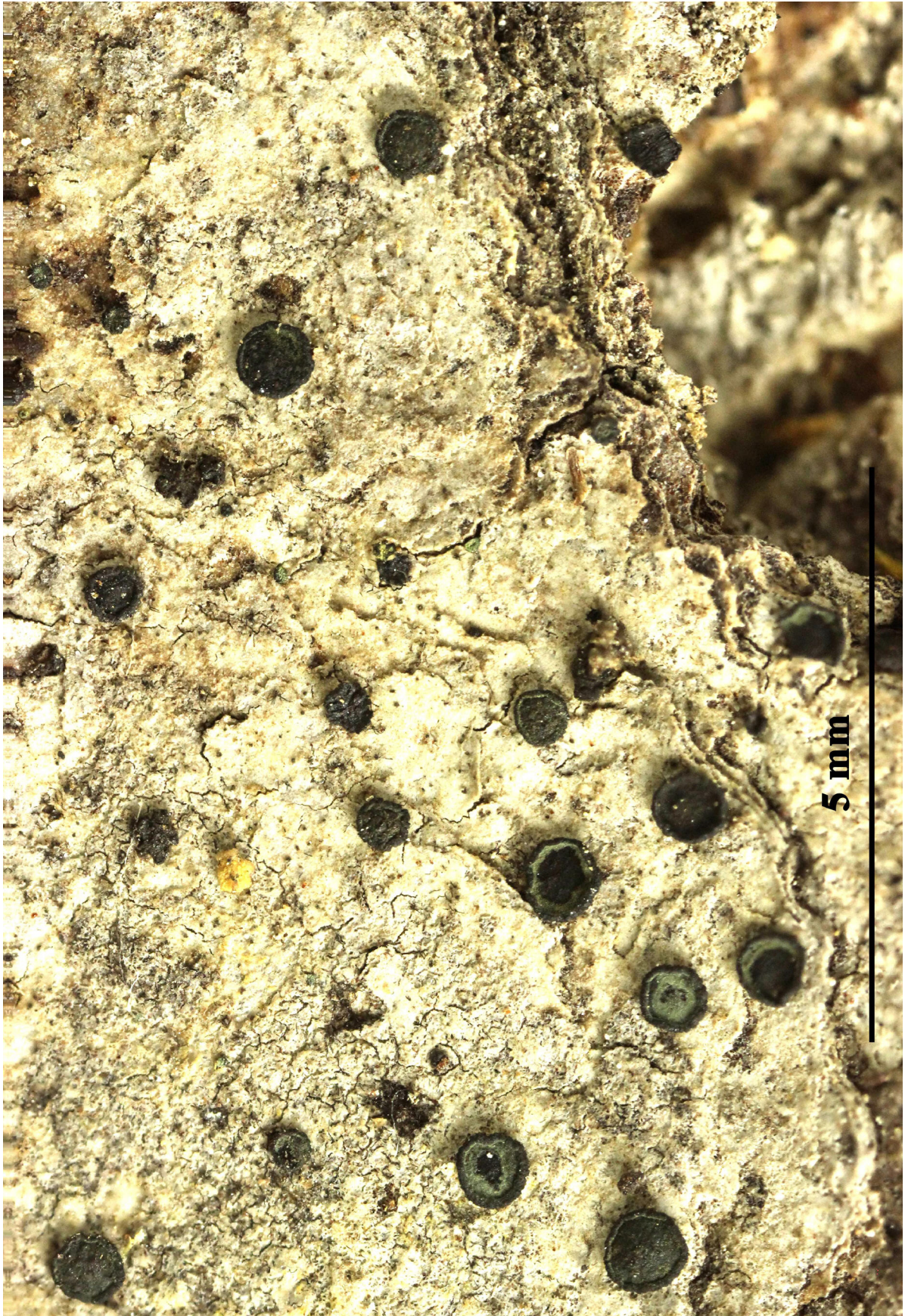


Cornicularia pseudosatoana

Cresponea proximata (Nyl.) Egea & Torrente, Mycotaxon 48: 328 (1993)
= *Lecidea proximata* Nyl. 1863

[OH607], Russia. Primorsky Territory: 4 km N of Mt Livadiyskaya (N43°06'19" N, 132°42'31" E). On bark of coniferous tree, 400 m. Leg. Y. Ohmura (no. 12095), 23.9.2013, det Y. Ohmura. Ex Y. Ohmura Lichenes Minus Cogniti Nr.607.

Thallus corticolous, continuous, cracked-areolate, smooth, gray to green. Hypothallus ± present, brownish. Photobiont *Trentepohlia*. Apothecia numerous, scattered, sessile, constricted at base, 0.3–1.2 mm diam., with a smooth to ± crenulate margin. Disc plane to slightly convex, black, with green to ochraceous-yellowish pruina. Hymenium I+ reddish. Paraphysoids with thickened apical cell having dark brown cap formed in the outer part of cell wall. Spores hyaline, fusiform, 25–35(–38) × 5–7 µm, (1–)5–7 septate, straight to slightly curved. Chemistry: Spot test reactions: thallus K–, C–, KC–, P–. Secondary metabolites: none detected.



Cresponea proximata



Cresponea proximata

Cresponea proximata (Nyl.) Egea & Torrente, Mycotaxon 48: 328 (1993)
= *Lecidea proximata* Nyl. 1863

[14456], Seychellen, Praslin, Nationalpark Sentier Glacier Noire, 4°19.916' S, 55°44.465' E, ca. 200-320 m. Leg- F. Schumm & J.-P. Frahm, 30.09.2008. Det, A. Aptroot, 2008. EX HERBARIO F. SCHUMM NR. 14456.

Notes: Sporen hyalin, 6-7 septiert, 29-38 x 4,4-5,5 µm; Hymenium 136 µm, J+ braunrot; Epithecium braun, körnig, ca. 30 µm; Gehäuse kohlig schwarz, unten ca. 95 µm.

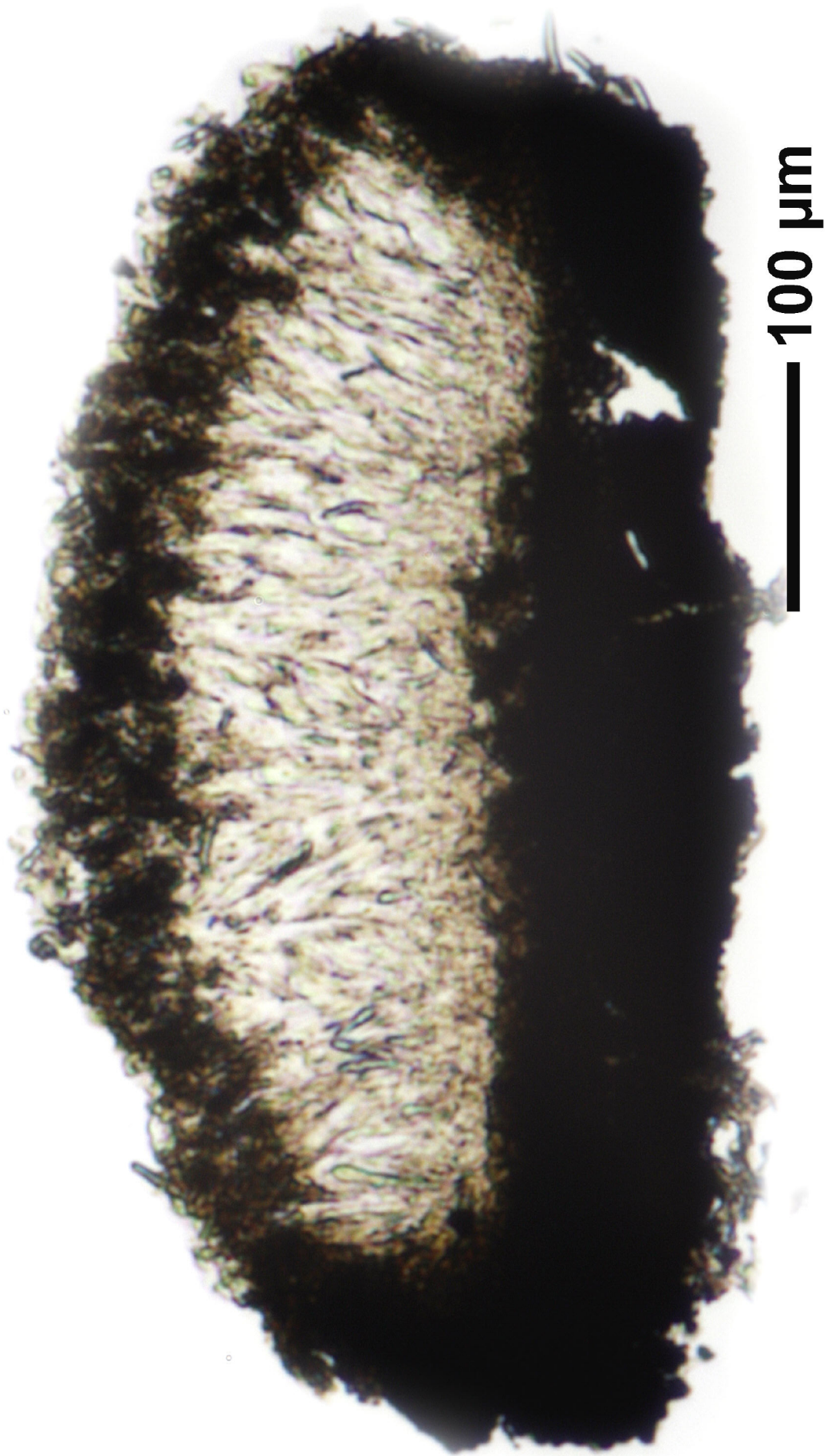
Thallus corticolous, continuous, cracked-areolate, smooth, gray to green. Hypothallus ± present, brownish. Photobiont *Trentepohlia*. Apothecia numerous, scattered, sessile, constricted at base, 0.3–1.2 mm diam., with a smooth to ±crenulate margin. Disc plane to slightly convex, black, with green to ochraceous-yellowish pruina. Hymenium I+ reddish. Paraphysoids with thickened apical cell having dark brown cap formed in the outer part of cell wall. Spores hyaline, fusiform, 25–35(–38) × 5–7 µm, (1–)5–7 septate, straight to slightly curved. Chemistry: Spot test reactions: thallus K–, C–, KC–, P–. Secondary metabolites: none detected.



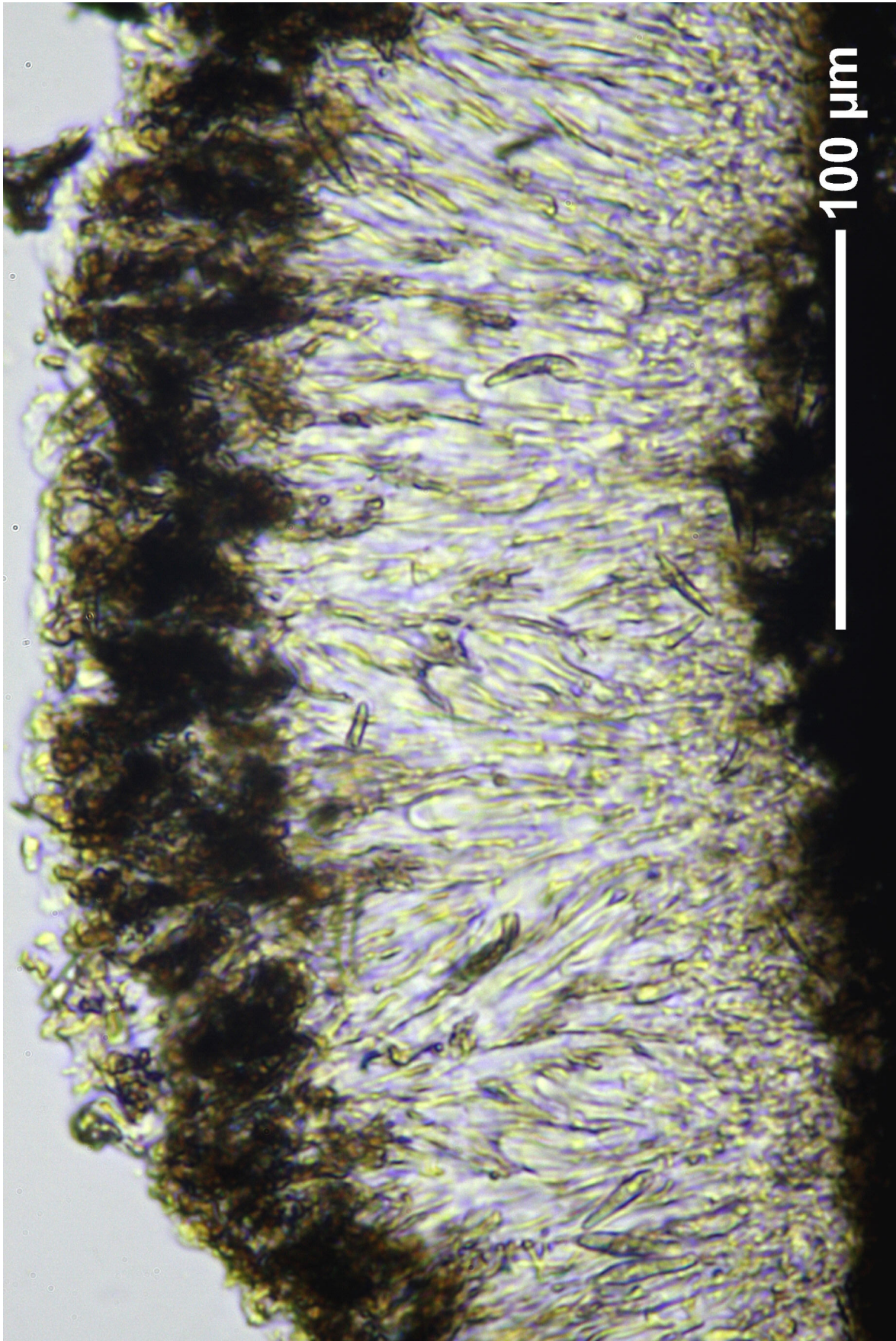
Cresponea proximata



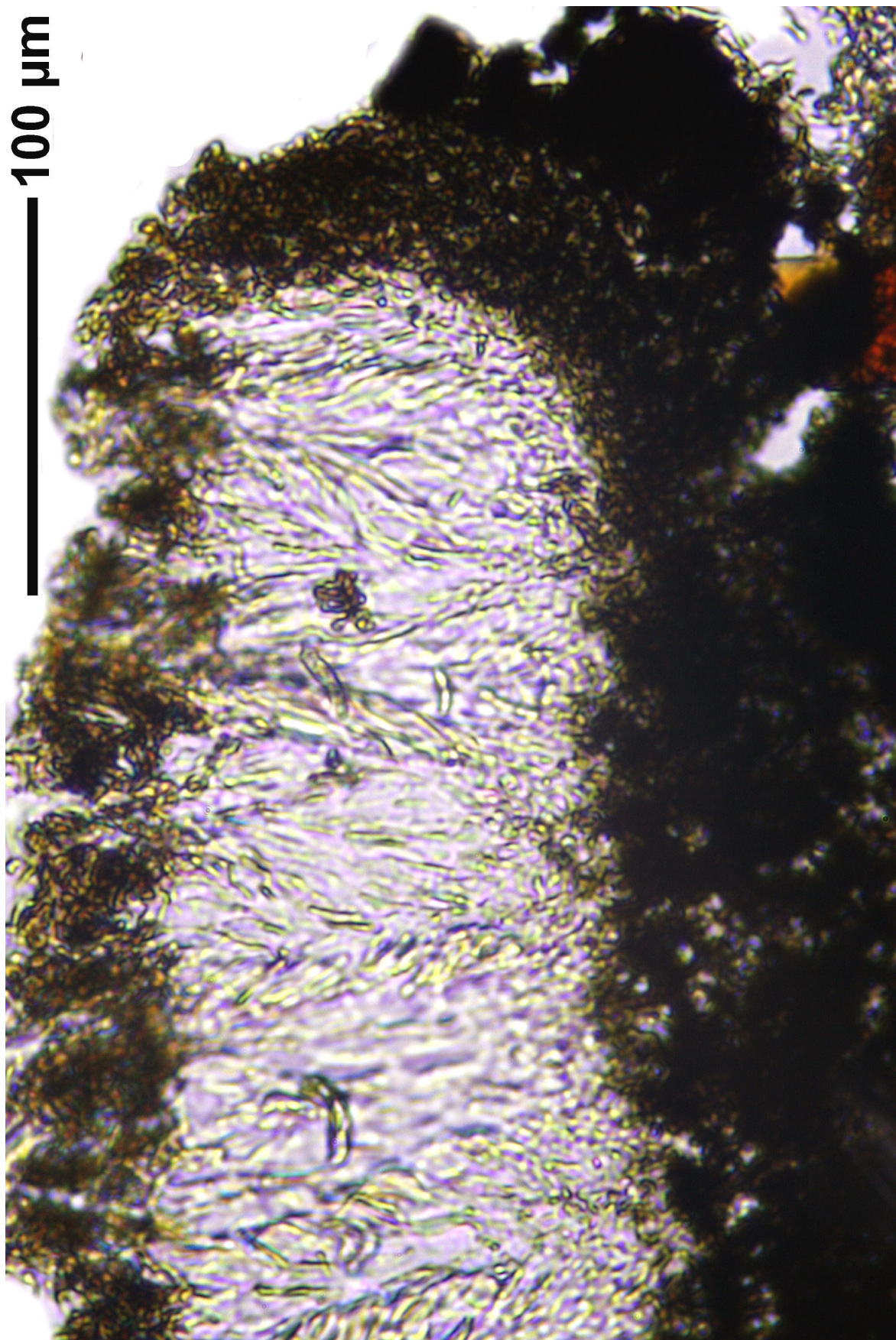
Cresponea proximata



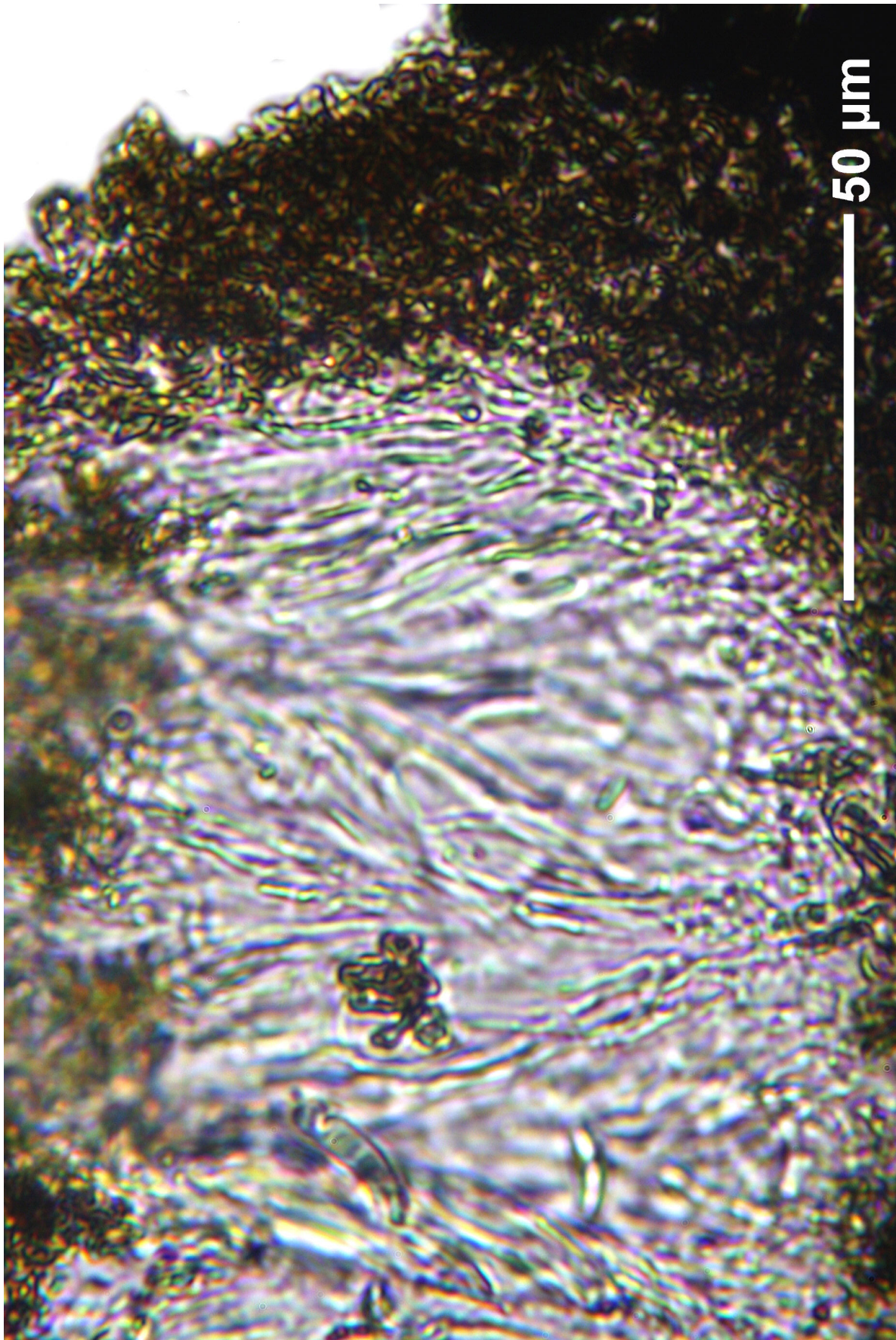
Cresponea proximata



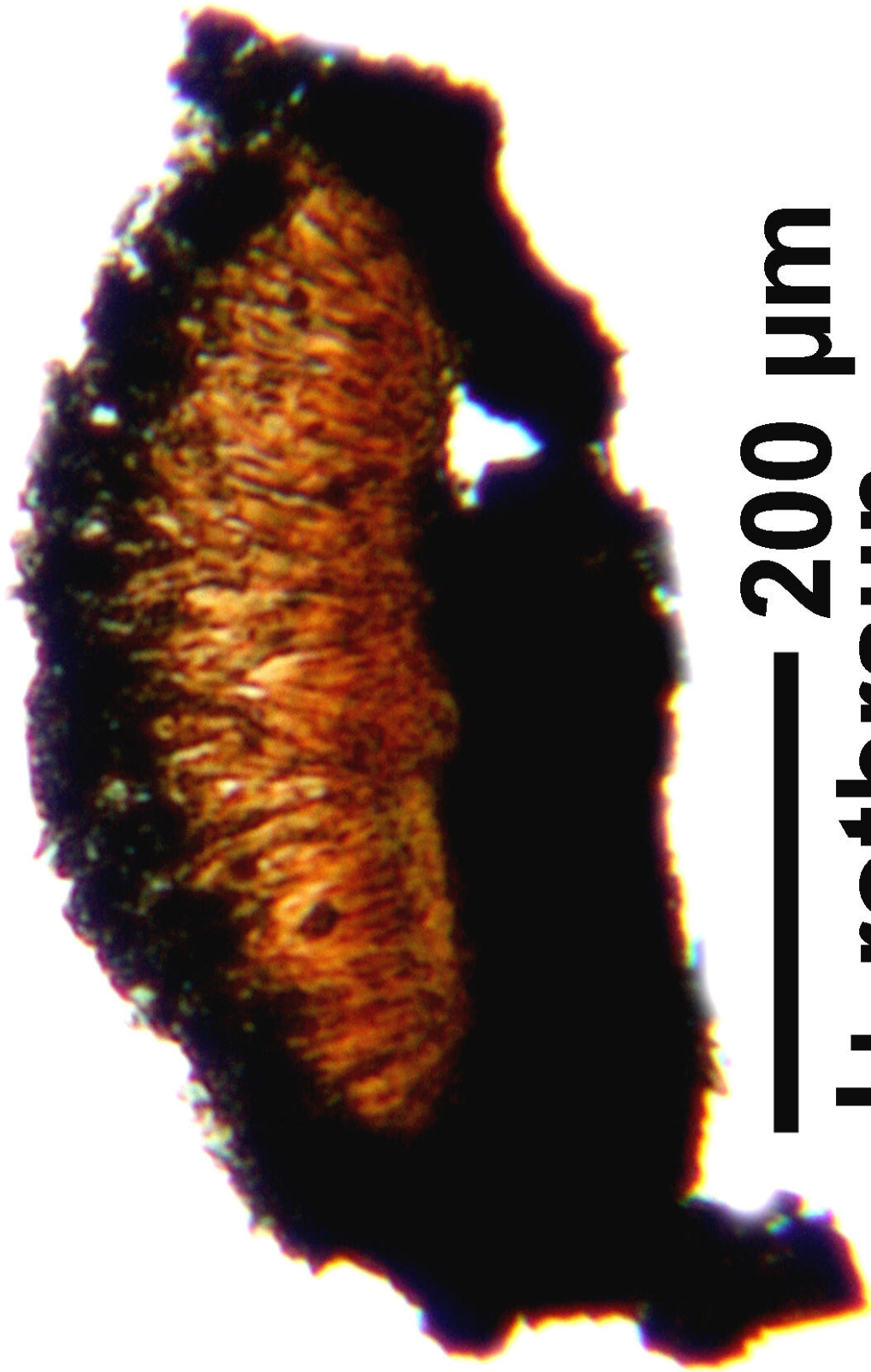
Cresponea proximata



Cresponea proximata

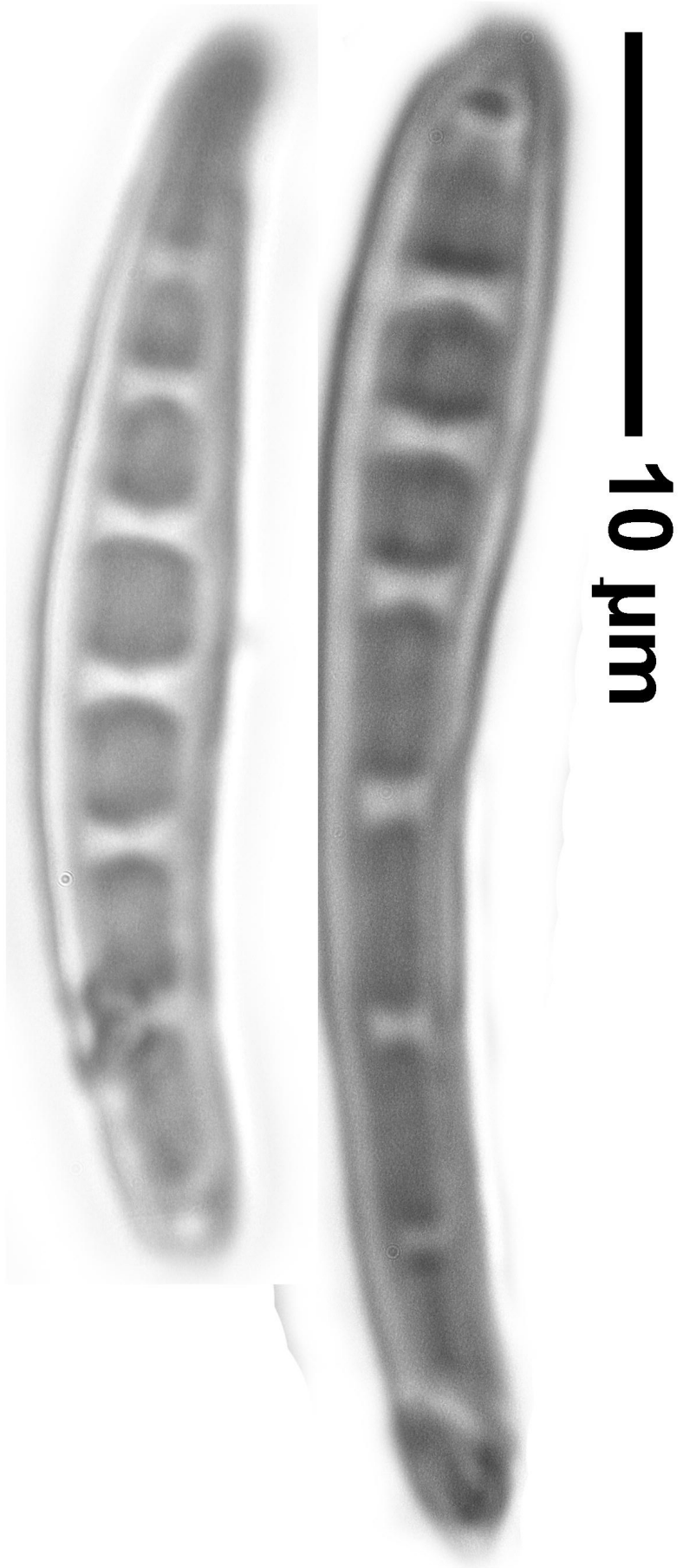


Cresponea proximata



— 200 μm
J+ rotbraun

Cresponea proximata

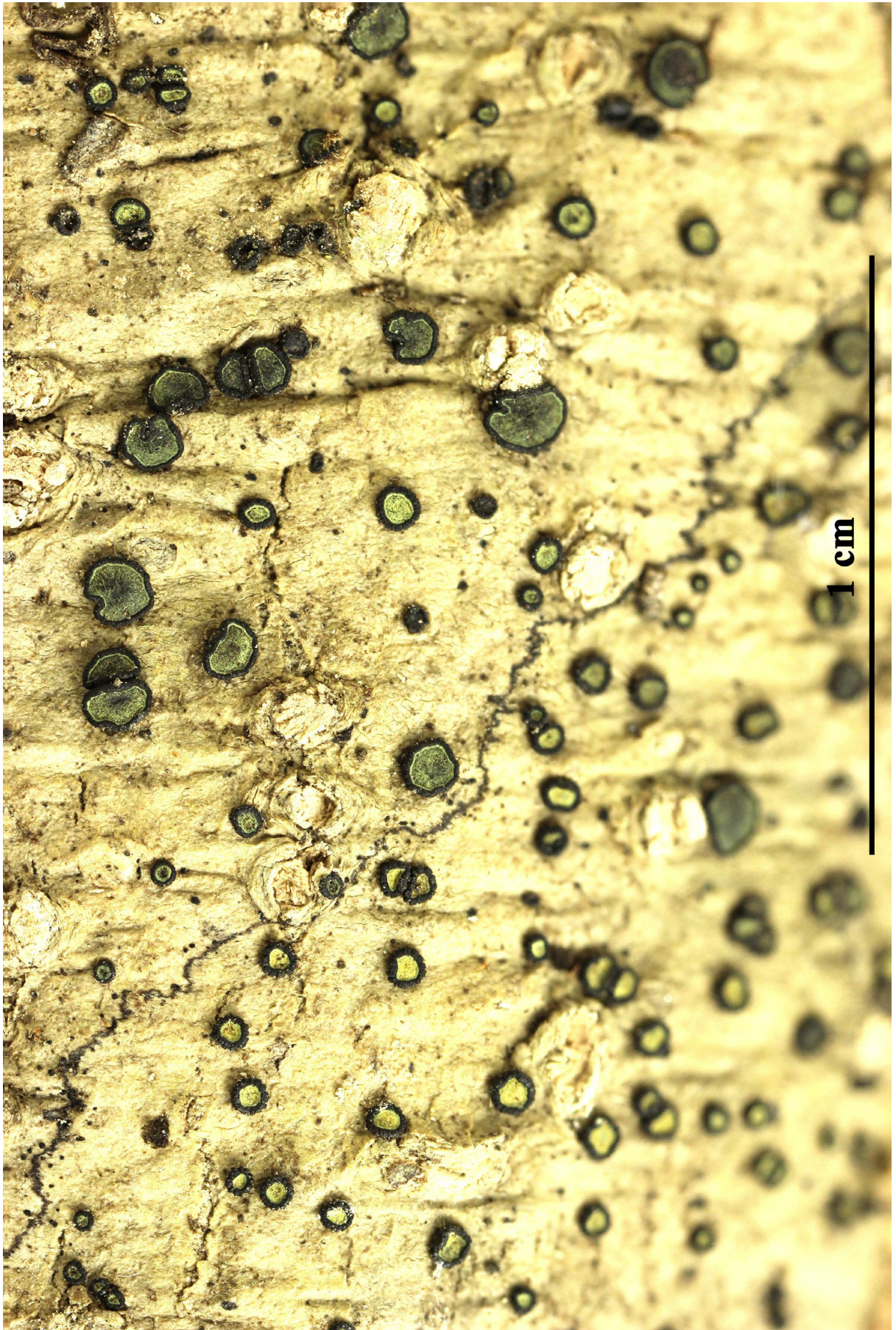


Cresponea proximata

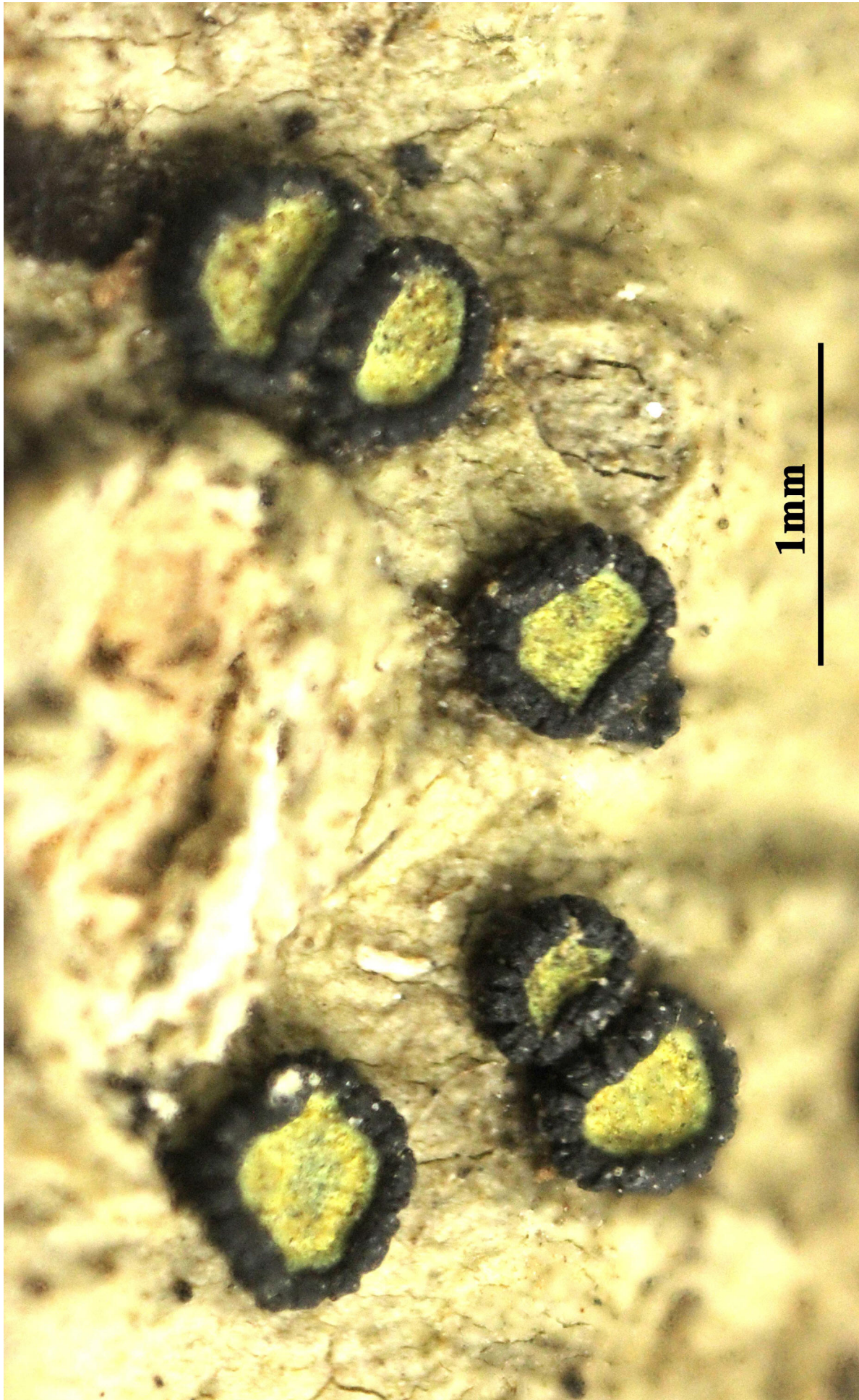
Cresponea macrocarpoides (Zahlbr.) Egea & Torrente, Mycotaxon 48:
320 (1993)

= *Lecanactis macrocarpoides* Zahlbr. 1933

[OH456], Japan. Honshu. Prov. Izu (Pref. Shizuoka): Mt. Nesugata, Shimoda-city. On bark of *Machilus thunbergii*, 170 m. Leg. Y. Ohmura (no. 5450) and A. Frisch, 8.2.2012, det. Y. Ohmura. EX Y. OHMURA LICHENES MINUS COGNITI NR. 456.



Cresponea macrocarpoides



Cresponea macrocarpoides

Cyphelium tigillare (Ach.) Ach., K. Vetensk-Acad. Nya Handl. 3: 261 (1815)
 = *Calicium tigillare* (Ach.) Pers., Ann. Wetter. Gesellsch. Ges. Naturk. 2(1): 14 (1810)
 = *Acolium tigillare* (Ach.) Gray, Nat. Arr. Brit. Pl. (London) 1: 482 (1821)
 = *Lecidea tigillaris* (Ach.) Ach., Methodus, Sectio prior (Stockholmiaë): 46 (1803)
 = *Lichen tigillaris* Ach., Lich. suec. prodr. (Linköping): 67 (1799) [1798]
 = *Patellaria tigillaris* (Ach.) DC., Fl. franç., Edn 3 (Paris) 5/6: 181 (1815)
 = *Trachylia tigillaris* (Ach.) Fr., Corpus Fl. Prov. Suec. 1: 282 (1835)

[OH457], Russia, Oblast Magadan: ca. 120 km NE of Atoka (61°12'01" N, 153°54'13" E), On branches of *Larix kaempferi*. 1040 m. Leg. Y. Ohmura (no. 9601), L. Yakovchenko & E. Zheludeva, 10.08.2012, det. L. Yakovchenko & Y. Ohmura. EX Y. OHMURA: LICHENES MINUS COGNITI EXSICCATI No. 457.

Thallus crustose, usually verrucose, rarely almost endosubstratic, intensely yellowish green (but grey forms without rhizocarpic acid are known from the Alps). Cortex 14-25 µm thick, with numerous small yellowish green crystals in lower part. Apothecia black, epruinose, immersed in thalline warts, (0.2-)0.4-1 mm across, with a black mazae-dium. Exciple uniformly thin throughout, 14-28 µm wide, blackish brown, of sclerotized, strongly intertwined hyphae with thickened walls; hypothecium very thin, pale to medium brown. Asci pyriform, dissolving early, with 2-3-seriately arranged spores. Ascospores 1-sep-tate and constricted at septum, brown, broadly ellipsoid, 17-22 x (6-)7-10(-11) µm, with a smooth wall. Pycnidia rather rare, at first globose to ellipsoid, later confluent and forming irregular, up to 0.4 mm wide aggregates. Conidia simple, hyaline, ellipsoid, 3-4 x c. 1.5 µm. Spot tests: thallus K-, C-, KC-, P-. Chemistry: thallus with rhizocarpic acid (rarely lacking in some forms), epanorin and two unidentified substances. - Note: a mainly boreal-montane, circumpolar lichen found in upland areas on hard, dry wood, especially of conifers, on wooden fences and fence-posts.



Cyphelium tigillare

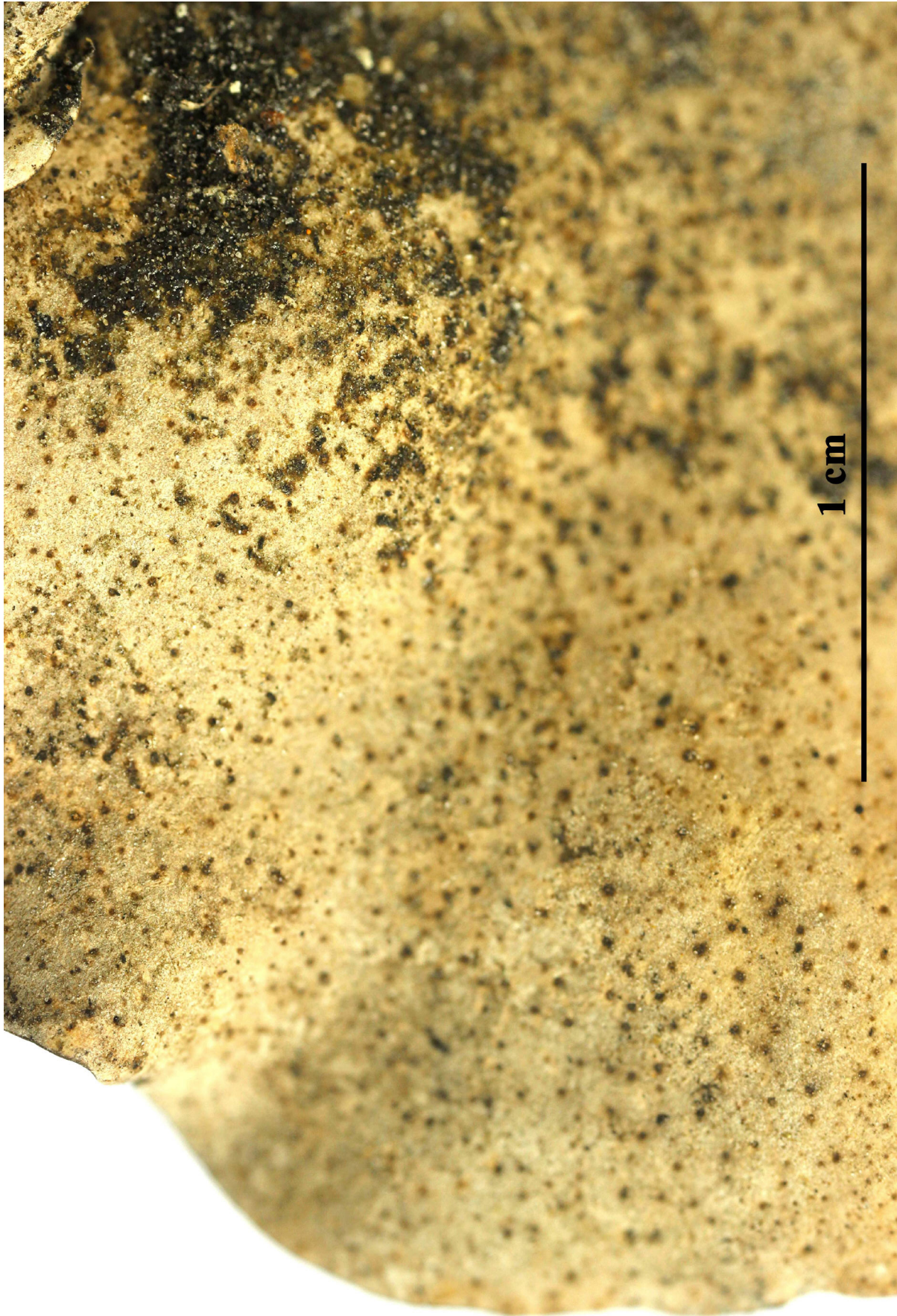


Cyphelium tigillare

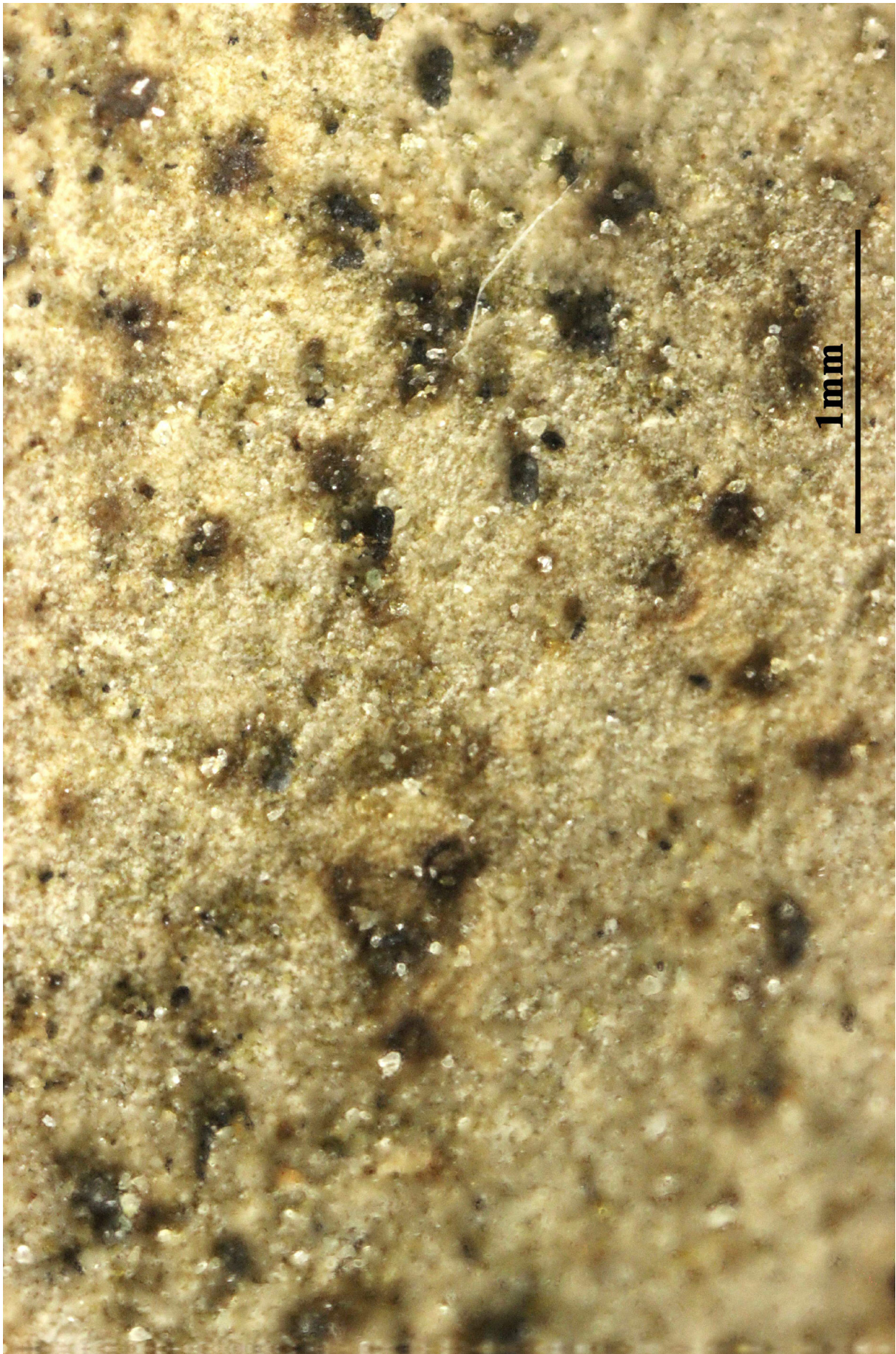
Dermatocarpon miniatum (L.) W. Mann, Lich. Bohem. Observ. Dispos.:
66 (1825)
= *Lichen miniatus* L. 1753

[KA282], Taiwan. Hualien Co: Luoshau, Shioliu Hshiang (24°12' N, 121°26' E). On rock along R8, 1150 m. Leg. H. Kashiwadani (no. 46982), 12.3.2004, det. H. Kashiwadani. EX H. KASHIWADANI LICHENES MINUS COGNITI EXSICCATI NR. 282.

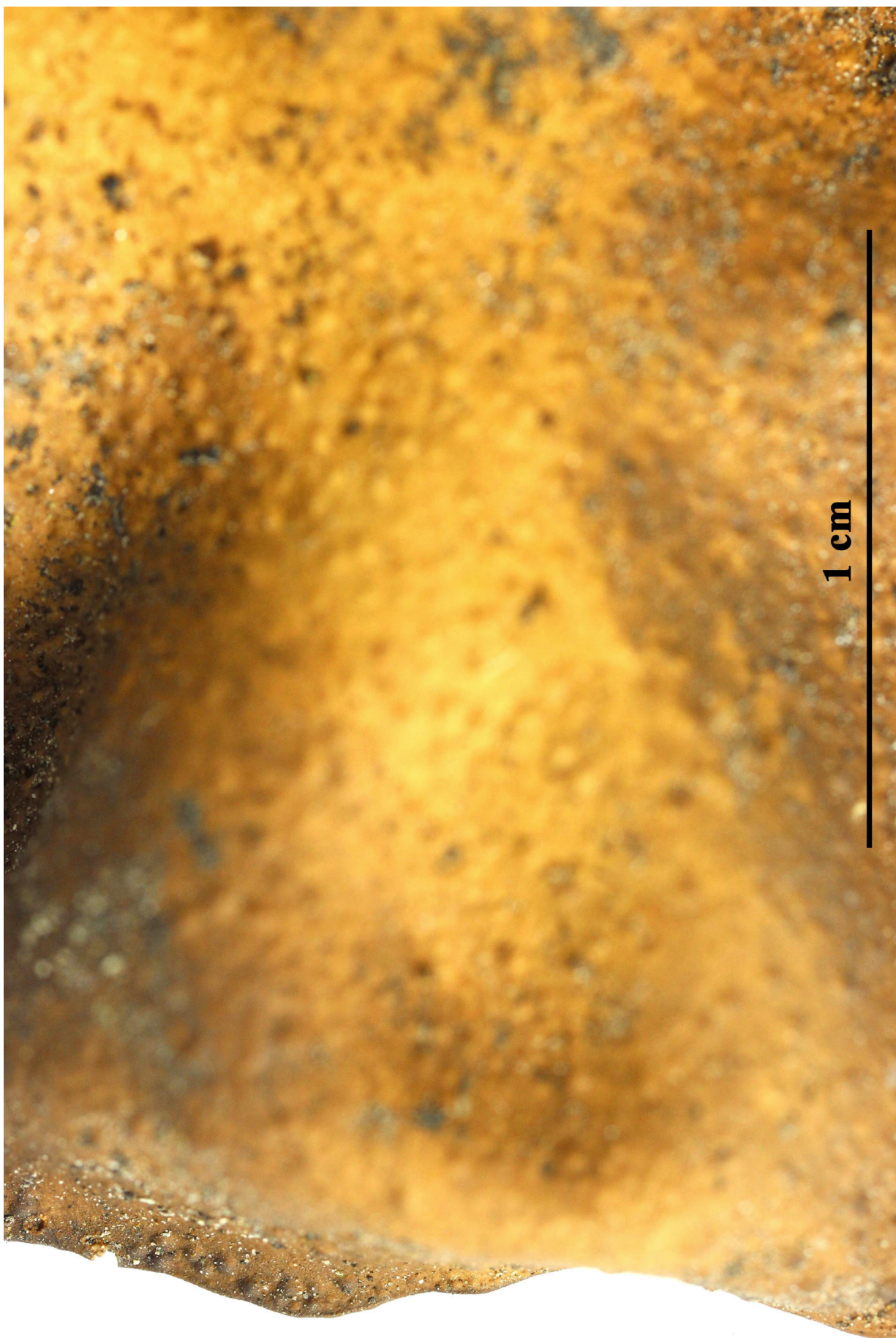
Thallus foliose-umbilicate, heteromerous, dorsiventral, attached by a central holdfast, monophyllous or with many individual lobes close together, 1-5 cm broad (polyphyllous thalli tending to be smaller), (0.2-)0.3-0.5 mm thick. Upper surface smooth or slightly rippled, grey to (rarely) grey-brown, usually densely grey-pruinose. Lower surface smooth to weakly ridged but not veined, pale to dark brown, erhizinate. Upper cortex (40-)50- 90(-110) µm thick, brown in the uppermost part, with an epinecral layer of air-filled hyphae; medulla white, I-; lower cortex c. of the same thickness as the upper one, paraplectenchymatous, sometimes with crystals soluble in K, visible under polarized light. Perithecia numerous, immersed in the thallus and scattered over almost the whole upper surface (appearing as black dots), without involucrellum. Exciple colourless except in the brown uppermost part; hamathecium of periphyses and periphysoids, interascal filaments absent; hymenial gel hemiamyloid. Asci 8-spored, clavate, I-, fissitunicate, the wall thickened above, with an ocular chamber, dehiscent by extrusion of an endotunica to form a delicate rostrum, Verrucaria-type. Ascospores 1-celled, hyaline, ellipsoid to subglobose (8-)9-14(-17) x (4.5-)5-7(-8.5) µm. Pycnidia common, especially in multi-lobed thalli. Conidia short-bacilliform, 4-5 x c. 1 µm. Photobiont chlorococcoid. Spot tests: cortex and medulla K-, C-, KC-, P-, UV-. Chemistry: without lichen substances. - Note: this species grows on more or less calciferous and on basic siliceous rocks, from calcareous schists to limestone and dolomite, especially on steeply inclined to rain-sheltered surfaces, but also in rain-tracks, from sea level to the alpine belt.



Cladonia graciliformis



Cladonia graciliformis

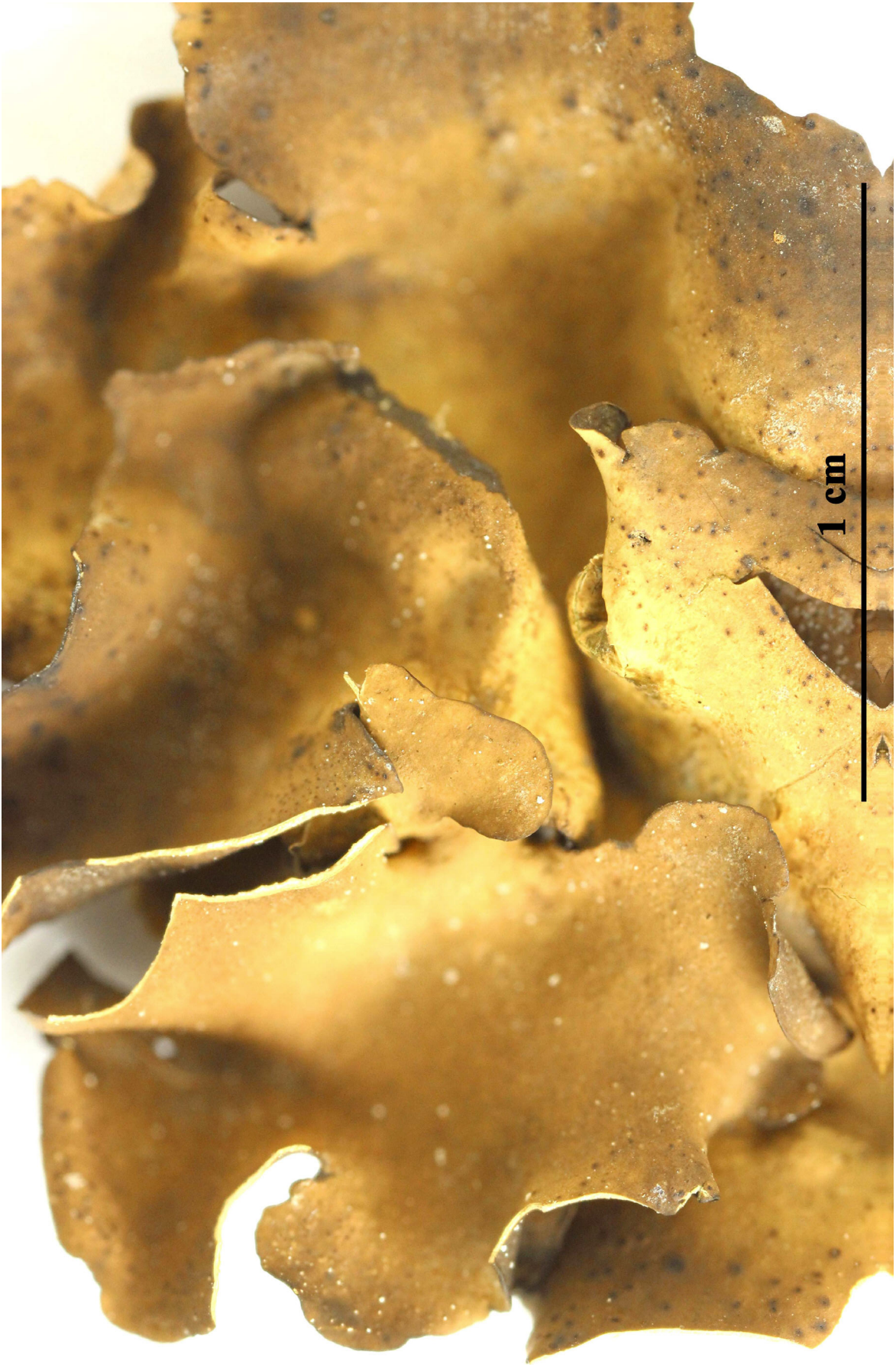


Cladonia graciliformis

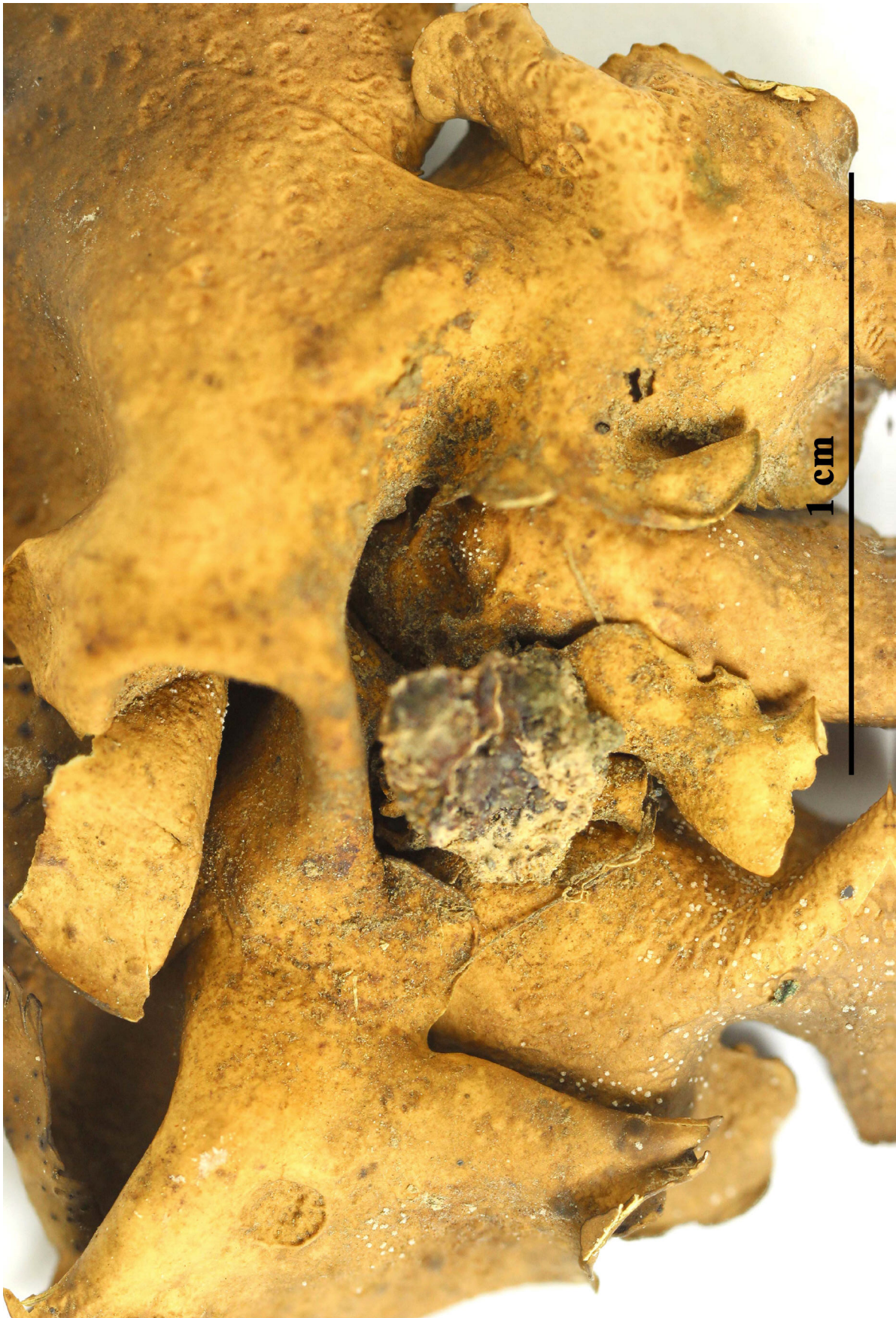
Dermatocarpon miniatum (L.) W. Mann, Lich. Bohem. Observ. Dispos.:
66 (1825)
= *Lichen miniatus* L. 1753

[OH406], Japan. Honshu. Prov. Ugo (pref. Akita): Samata, Moriyoshi-cho. Kita-akita-gun. On rock along river, 165 m. Leg. H. Kashiwadani (no. 47832), 1.10.1996, det. H. Kashiwadani. EX Y. OHMURA LICHENES MINUS COGNITI EXSICCATI NR. 406.

Thallus foliose-umbilicate, heteromorous, dorsiventral, attached by a central holdfast, monophyllous or with many individual lobes close together, 1-5 cm broad (polyphyllous thalli tending to be smaller), (0.2-)0.3-0.5 mm thick. Upper surface smooth or slightly rippled, grey to (rarely) grey-brown, usually densely grey-pruinose. Lower surface smooth to weakly ridged but not veined, pale to dark brown, erhizinate. Upper cortex (40-)50- 90(-110) μm thick, brown in the uppermost part, with an epinecral layer of air-filled hyphae; medulla white, I-; lower cortex c. of the same thickness as the upper one, paraplectenchymatous, sometimes with crystals soluble in K, visible under polarized light. Perithecia numerous, immersed in the thallus and scattered over almost the whole upper surface (appearing as black dots), without involucrellum. Exciple colourless except in the brown uppermost part; hamathecium of periphyses and periphysoids, interascal filaments absent; hymenial gel hemiamyloid. Asci 8-spored, clavate, I-, fissitunicate, the wall thickened above, with an ocular chamber, dehiscent by extrusion of an endotunica to form a delicate rostrum, Verrucaria-type. Ascospores 1-celled, hyaline, ellipsoid to subglobose (8-)9-14(-17) x (4.5-)5-7(-8.5) μm . Pycnidia common, especially in multi-lobed thalli. Conidia short-bacilliform, 4-5 x c. 1 μm . Photobiont chlorococcoid. Spot tests: cortex and medulla K-, C-, KC-, P-, UV-. Chemistry: without lichen substances. - Note: this species grows on more or less calciferous and on basic siliceous rocks, from calcareous schists to limestone and dolomite, especially on steeply inclined to rain-sheltered surfaces, but also in rain-tracks, from sea level to the alpine belt.



Cladonia graciliformis

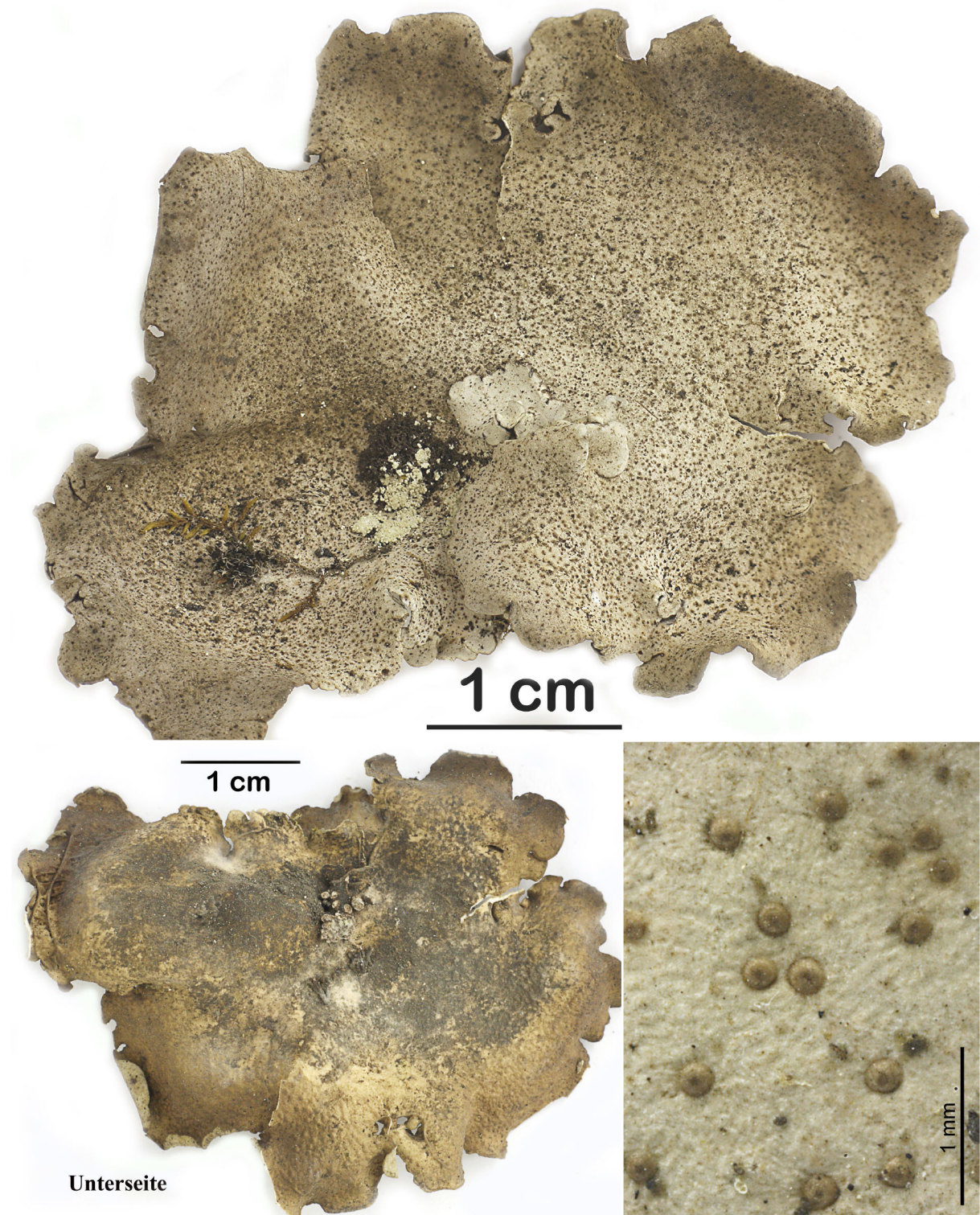


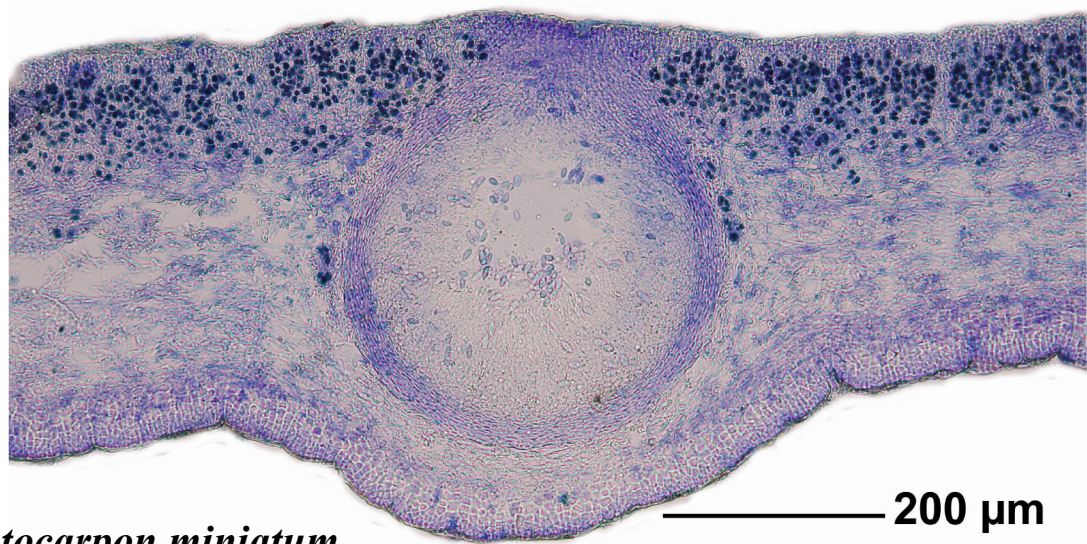
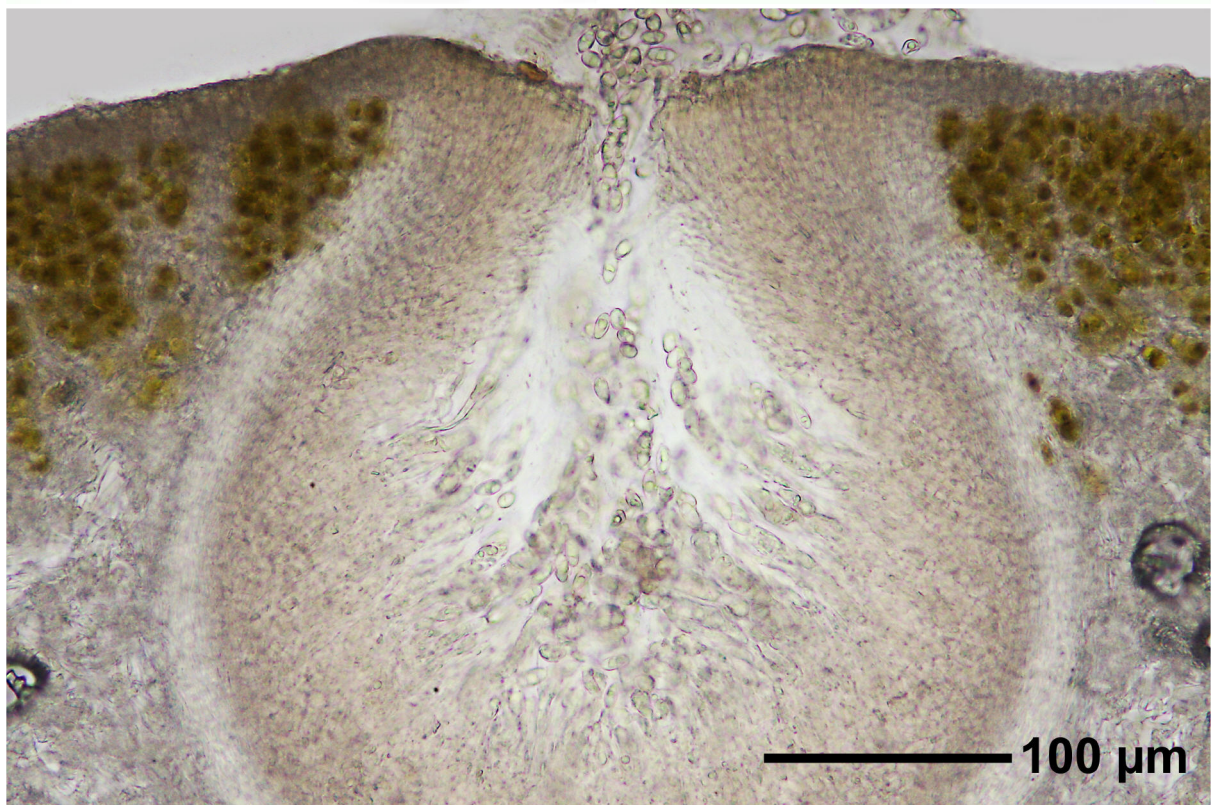
Cladonia graciliformis

***Dermatocarpon miniatum* (L.) Mann**

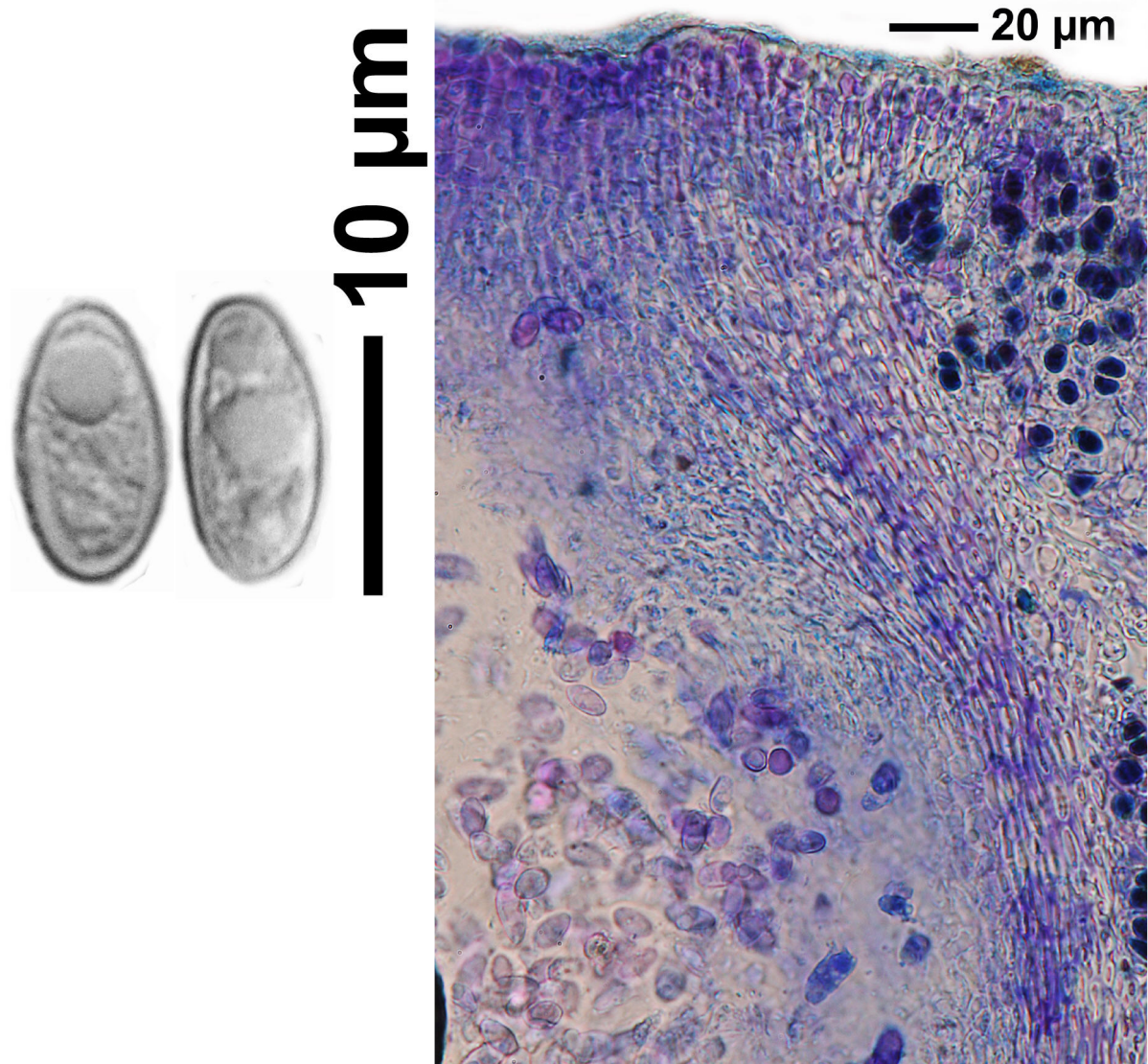
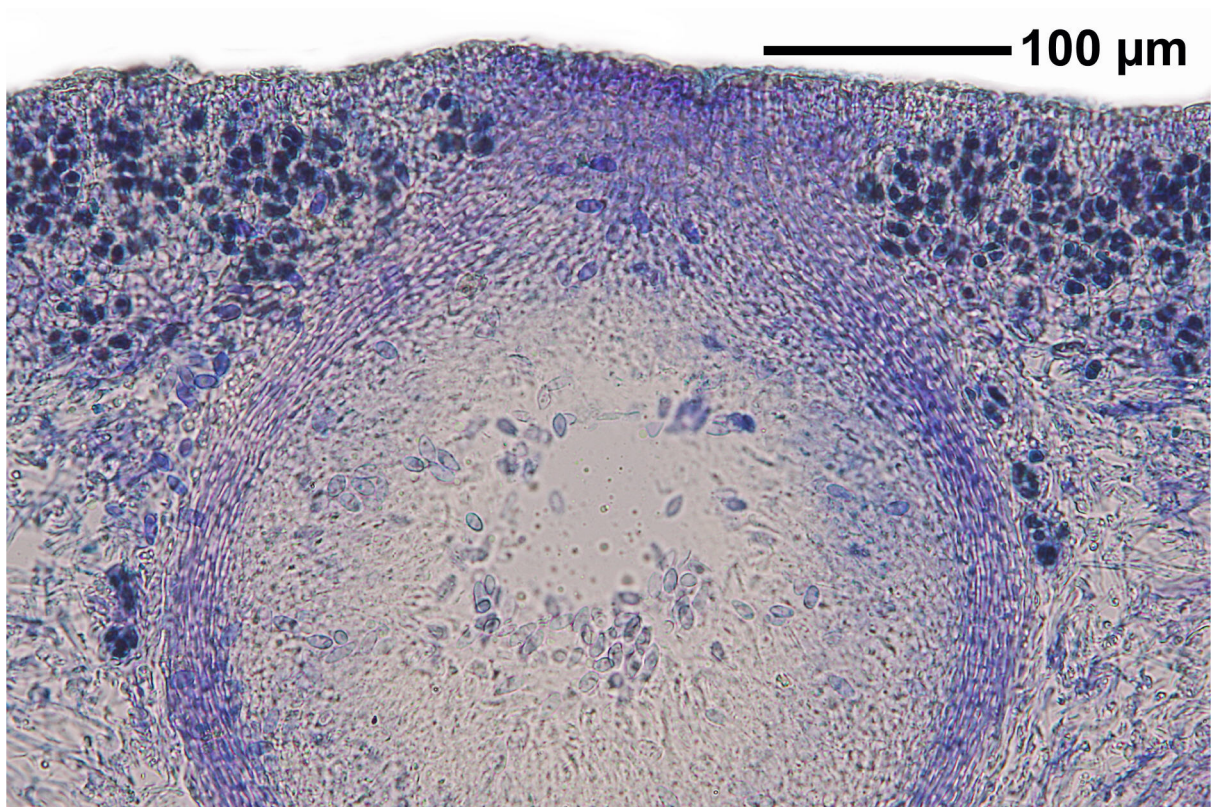
[5554], Germany, Baden-Württemberg, Zollernalbkreis, Lochenstein südlich von Balingen, an Weißjurafelsen, ca. 964 m, 48°13,048' N, 8°51,075' E. Leg. et det. Schumm 25.04.1999. Ex Herbario F. Schumm Nr. 5554.

Thallus 1-6 cm, 0,3-0,6 mm dick, weiß bereift, hellgrau unter dem Reif bräunlich. Sporen hyalin, 1-zellig, 8/Ascus, 8-16 x 5-8 µm.

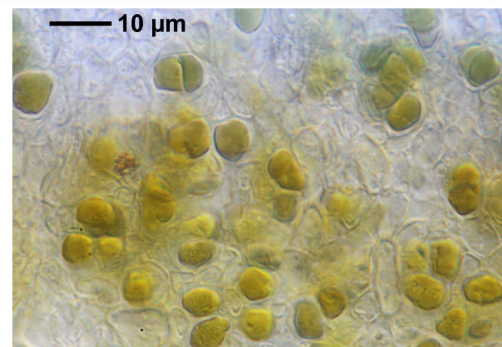
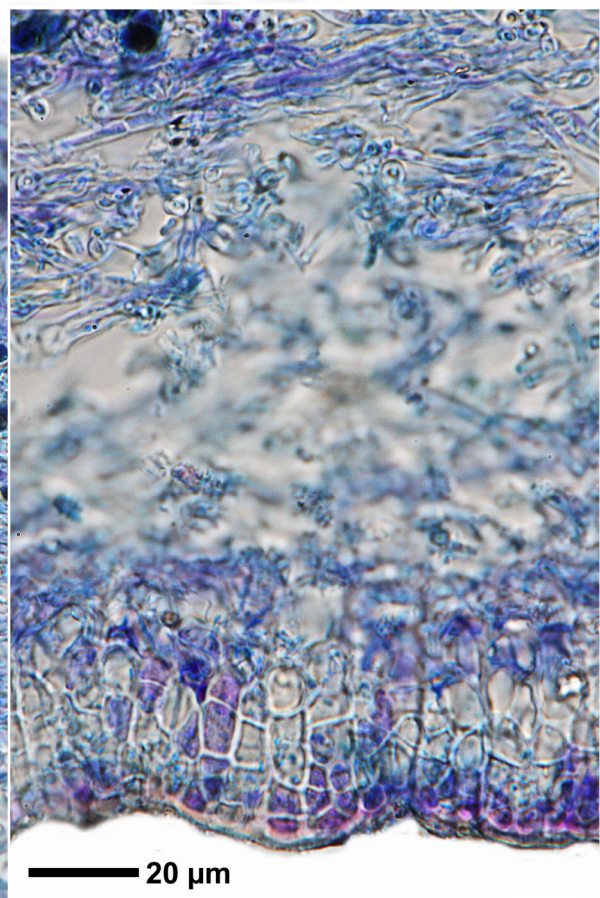
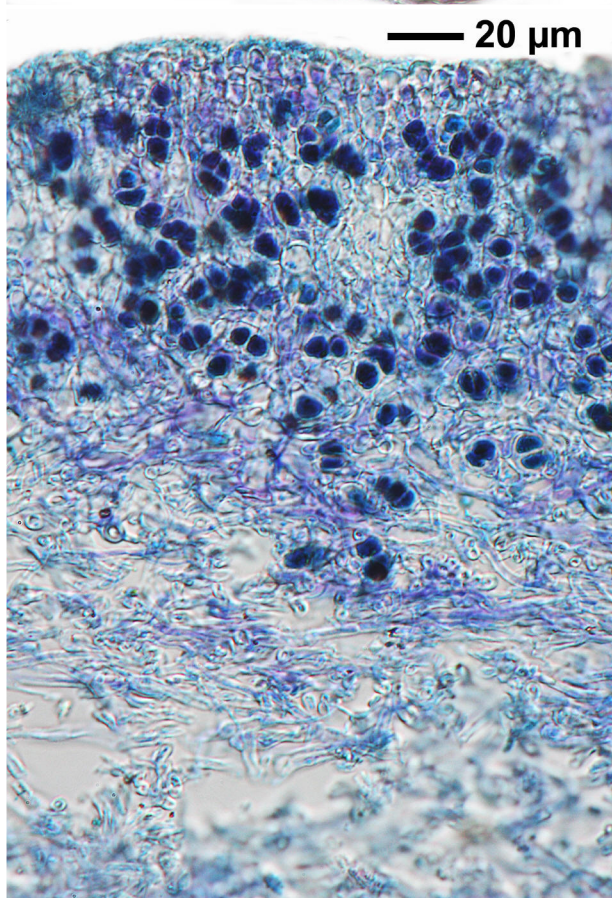
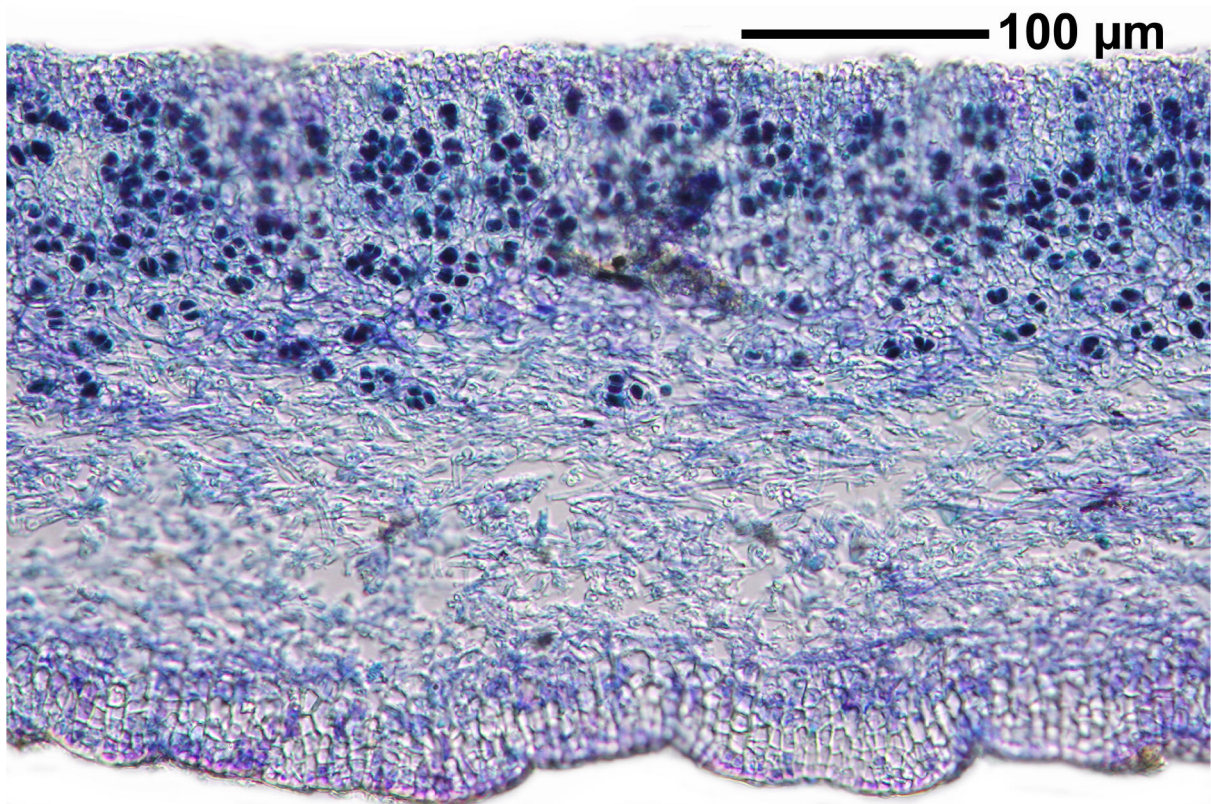




Dermatocarpon miniatum



Dermatocarpon miniatum

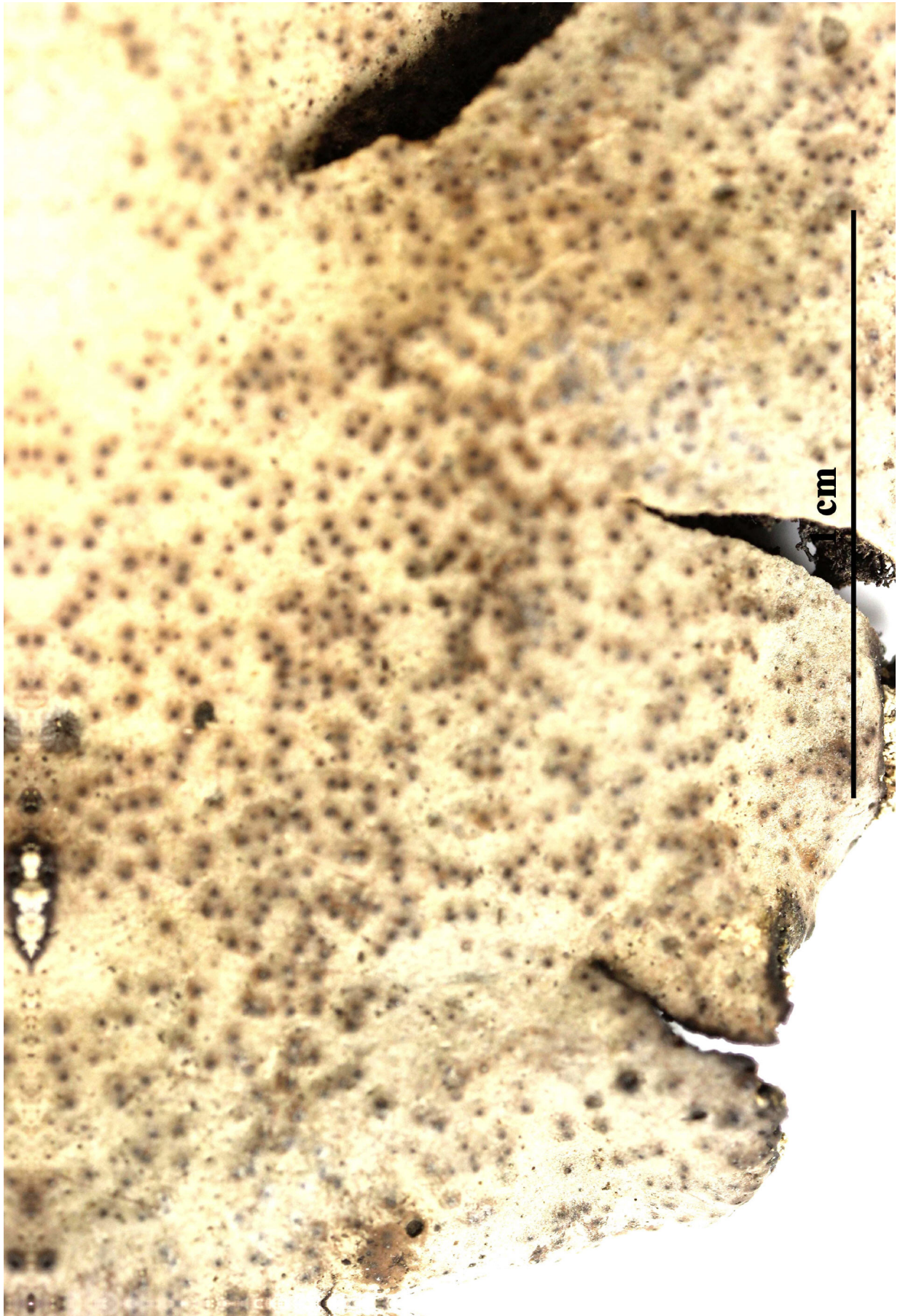


Dermatocarbon miniatum

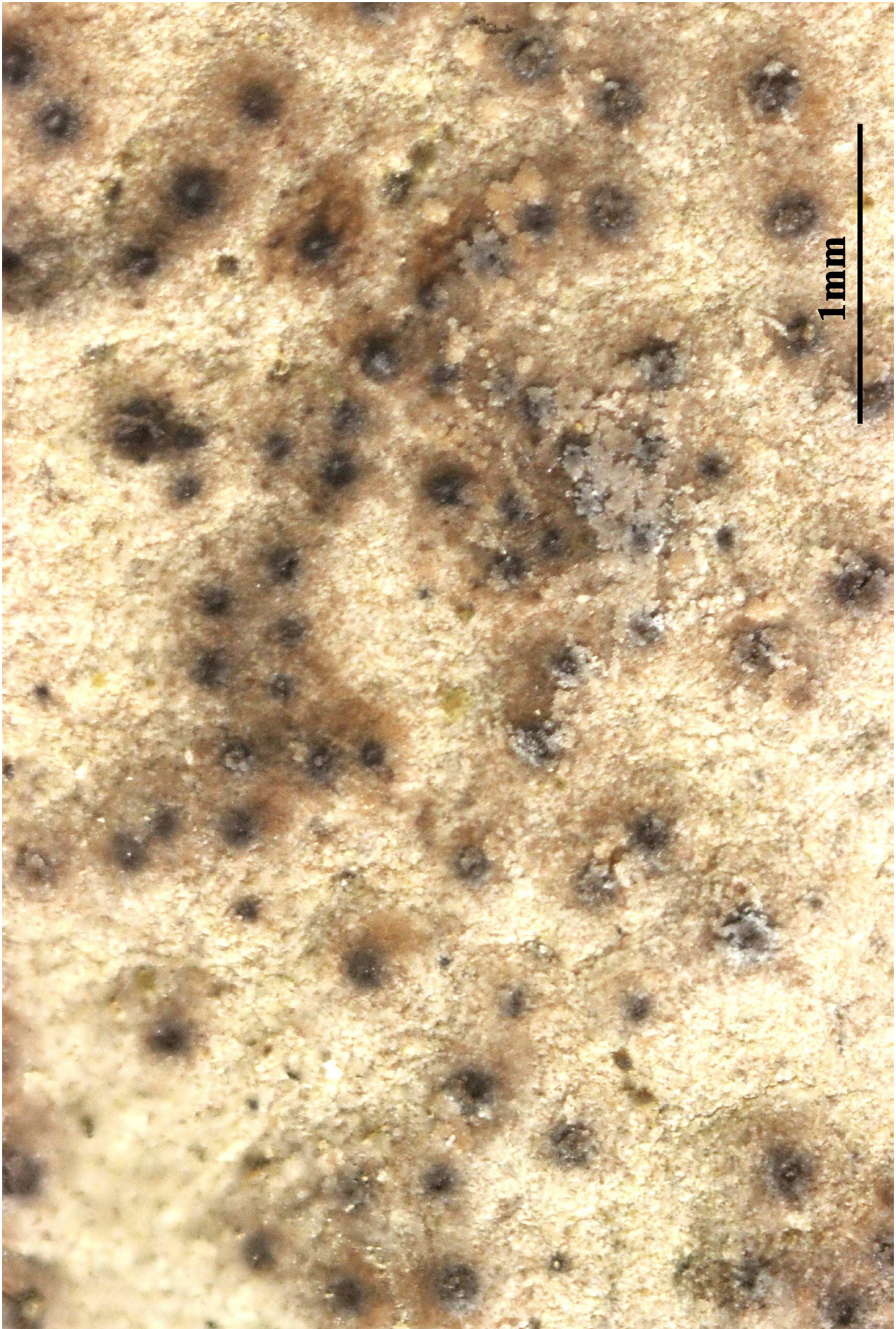
Dermatocarpon moulinsii (Mont.) Zahlbr., in Engler & Prantl, Nat. Pflanzenfam., Teil. I (Leipzig) 1(1*): 60 (1903)
= *Endocarpon moulinsii* Mont. 1843

[KU272], Japan. Hokkaido. Prov. Ishikari: Mt. Yubari. On rocks, 1600 m. Leg. S. Kurokawa (no. 72132), 5.9.1972, det. S. Kurokawa. EX S. KUROKAWA LICHENES RARIORES ET CRITICI EXSICCATI NR. 272.

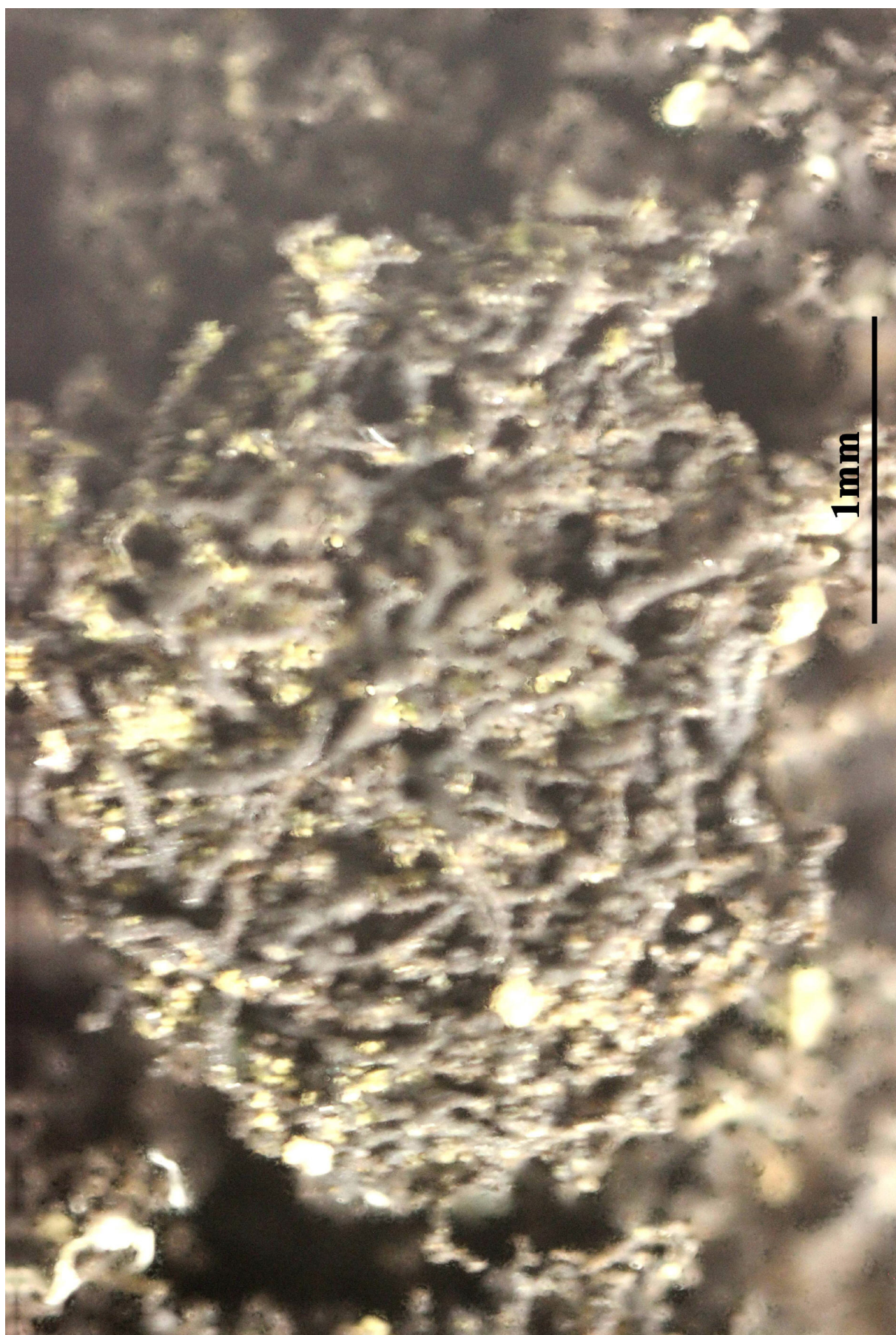
Thallus foliose-umbilicate, heteromerous, dorsiventral, monophyllous, 15-32 mm wide, attached by a central holdfast. Upper surface grey; lower surface pale to dark brown, with 30-70 µm thick rhizinomorphs which lack an inner medullary layer. Upper cortex pseudoparenchymatous, of anticlinally arranged hyphae, 70-100 µm thick, hyaline except the brown outermost part, with an epinecral layer of air-filled hyphae; medulla white, 110-220 µm thick, I+ reddish brown; lower cortex 50-70 µm thick, hyaline except the brown outermost part. Perithecia black, obpyriform to globose, immersed, without involucrellum. Exciple colourless, except in the brownish upper part; hamathecium or periphyses and periphysoids, interascal filaments absent; hymenial gel hemiamyloid. Asci 8-spored, clavate, I-, fissitunicate, the wall thickened above, with an ocular chamber, dehiscent by extrusion of an endotunica to form a delicate rostrum, Verrucaria-type. Ascospores 1-celled, hyaline, ellipsoid, 10-13 x 5-8 µm. Photobiont chlorococcoid. Spot tests: cortex and medulla K-, C-, KC-, P-, UV-. Chemistry: without lichen substances. - Note: a silicicolous, holarctic species of periodically wetted rocks.



Dermatocarpon moulinsii



Dermatocarpon moulinsii



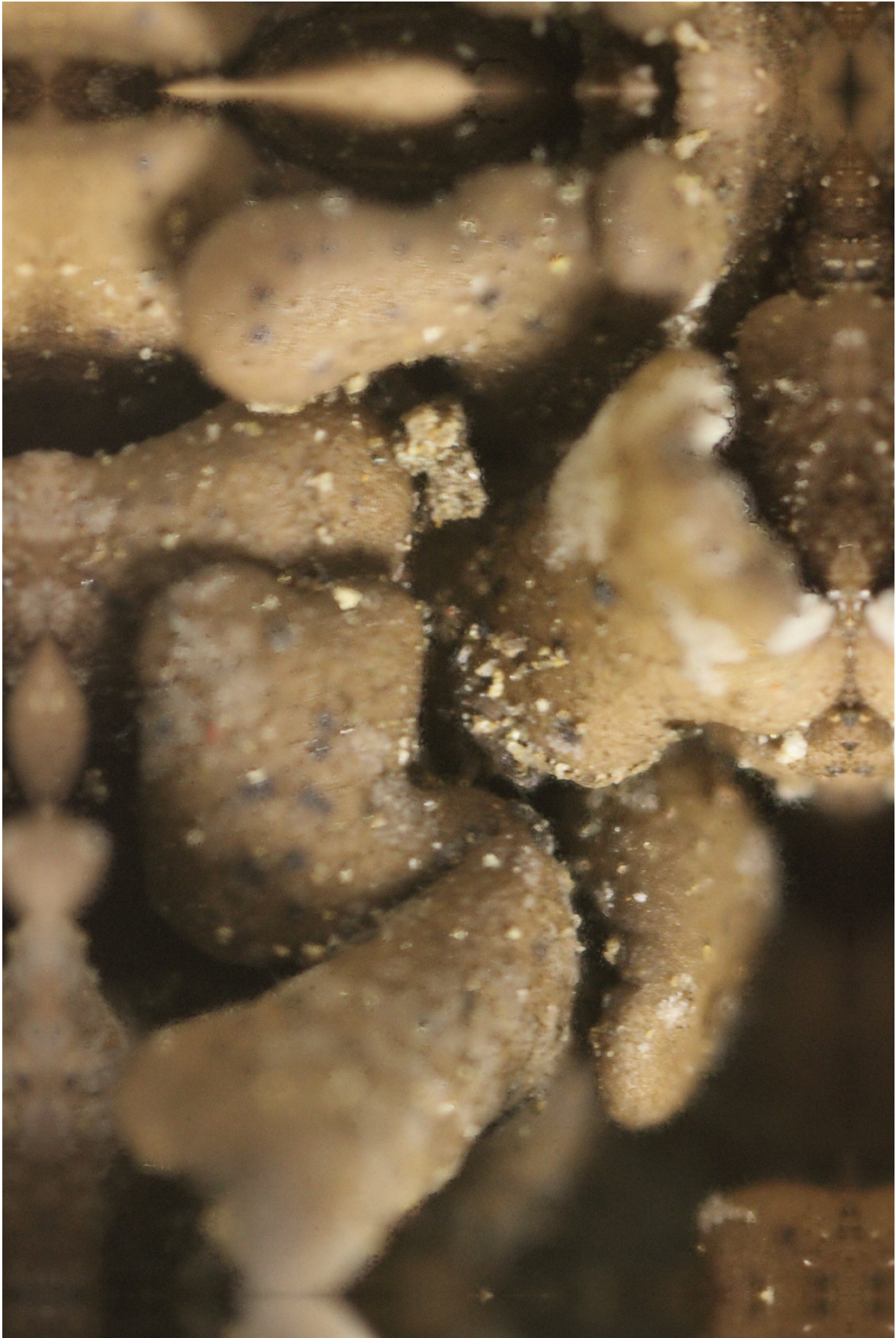
Dermatocarpon moulinsii

Dermatocarpon myogiense Asahina, J. Jap. Bot. 9(1): 64, fig. 1-2 (1933)

[KU418], Japan, Honshu. Prov. Iwashiro: Hirohata, Ryozen-cho, Date-gun. On rocks, 200 m. Leg. H. Kashiwadani (no. 15372), 9.8.1979, det. H. Kashiwadani. EX S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 418.



Dermatocarpon myogiense



Dermatocarpon myogiense

Dermatocarpon myogiense Asahina, J. Jap. Bot. 9(1): 64, fig. 1-2 (1933)

[KU311], Japan, Honshu. Prov. Kozuke: Mt. Myogi. On rocks, 850 m. Leg. M. Nuno and H. Izumi, 3.11.1977, det. M. Nuno. Ex S. KUROKAWA AND H. KASHIWADANI LICHENES RARIORES ET CRITICI EXSICCATI NR. 311.



Dermatocarpon myogiense



Dermatocarpon myogiense

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