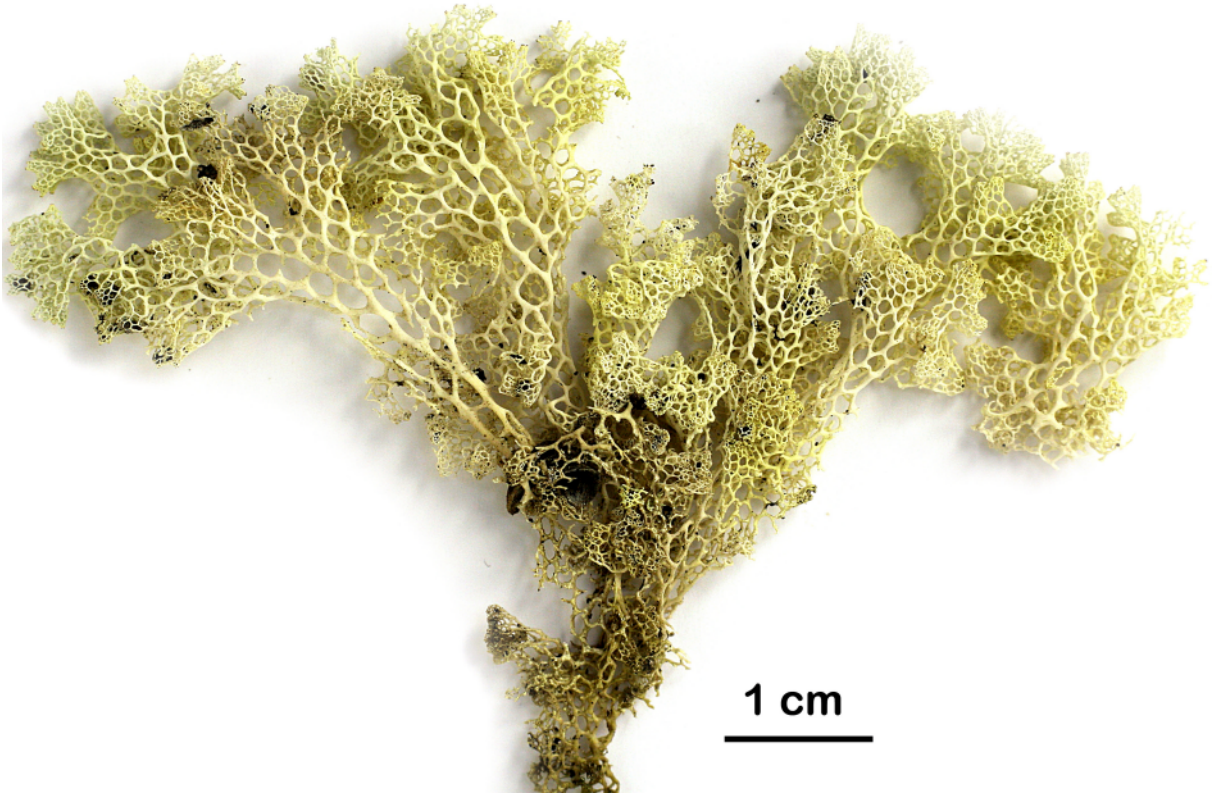
Felix Schumm & John A. Elix

Images from Lichenes Australasici Exsiccati and of other characteristic Australasian Lichens



VOLUME ONE

Felix Schumm & John A. Elix

Images from Lichenes Australasici Exsiccati and of other characteristic Australasian Lichens

VOLUME ONE

Felix Schumm, Mozartstr. 9, D-73117 Wangen, Deutschland

John A. Elix, 24 Marulda Street, Aranda, ACT 2614, Australia

1. Auflage 2014
Alle Rechte bei den Autoren
Email: fschumm@online.de

© 2014 Felix Schumm
Herstellung und Verlag: Books on Demand GmbH, Norderstedt
ISBN: 978-3-7386-8386-9

CONTENTS

VOLUME ONE

Preface..... 1 - 3
Acarospora - Pannaria..... 4 - 665

VOLUME TWO

Pannoparmelia-Xanthoria ..... 666 - 1311
Herbarnumbers 1312
Literature.....1313 - 1316
Index to species and synonyms .....1317 - 1327

Preface

This book includes photographs of a selection of typical Australasian lichens, many of which have been distributed in the Lichenes Australasici Exsiccati as well as some additional species. The goal was to make images of these lichenological treasures available to a wider circle of interested people. We hope that the images will complement the literature and aid in the determination of further Australasian species.
The imagies had been made from an exsiccat-set which presently deposited in the Herbarium F. Schumm and will subsequently be transferred to the Botanical Museum Berlin-Dahlem (B).

Arrangement of the photographic material

We begin each entry with a short description of the species, using primarily volumes 54-58 of the Flora of Australia. This is followed by a bracket [] with the number in the Herbarium F. Schumm and the text written on the label of the particular exsiccata.

Overall photographs of the particular species follow as well as images of important details with precise scales and for crustose species many thick, thin, unstained and stained sections. Particular emphasis was paid to the excipulum, which is often difficult to describe in words and in this way we belive that the images complement published descriptions. Naturally many colours of the older collections have faded to yellow-brownish by comparison to that of freshly collected material.

Technical equipment

The sections were made with a Kryomat MIKROM HM 560 and the photographs with an OLYMPUS BX51 and a CANON EOS 600D camera.

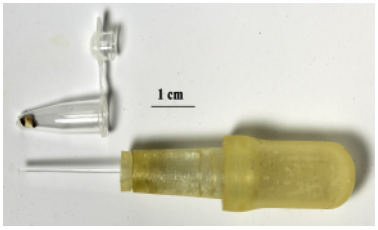
HPTLC

A special feature of the Lichenes Australasici Exsiccati is that nearly all collections have been analysed in Canberra by chromatographic techniques and the results appended to the labels. In an effort to provide the amateur lichenologist access to this information, we repeated the thin layer chromatography of each collection with small, inexpensive equipment using 5 x 5 cm HPTLC plates. This can be done at home by amateurs with a limited budget (Schumm 2002). Photographs of many of the small HPTLC plates are shown with identifications of particular spots, in order to exemplify what can be achieved with these plates even

though their resolution is not as definitive as with professional 20 x 20 cm plates. Detailed instructions for TLC can be found in Elix (2014), Orange et al. (2001) and Huneck et al. (1996). Here we briefly describe how the HPTLC was performed with the small plates for this book.

Brief instructions

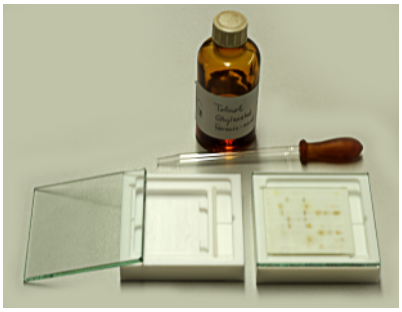
a) Extraction of 1-2 apothecia for example, in 0.2 ml PCR-tubes with 1-3 drops acetone.



b) Apply the extracts with a 0.5 µl microcapillary and a stencil for 9 positions (spots) on a 5 x 5 cm HPTLC-plate (Merck HPTLC Kieselgel 60 F254, no. 1.05635.0001). The 3rd row is always reserved for an extract of *Cladonia symphycarpia* with norstictic acid and atranorin as reference standards.



c) Develop the plates in the horizontal chamber following Ljubomir Kraus (1994) in the three solvents A, B' and C, stored in 50 ml bottles



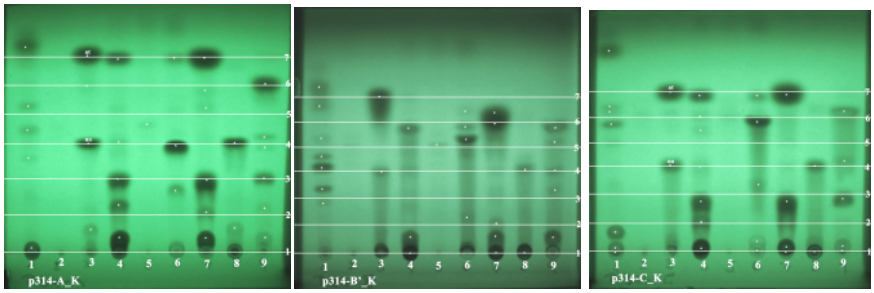
A = Toluene : Dioxane : Glacial acetic acid = 39.13 : 9.78 : 1.09 ml

B' = n-Hexane : Methyl tert-butyl ether : Formic acid = 30.43 : 15.65 : 3.91 ml [note methyl tert-butyl ether is a potent allergen]

C = Toluene : Glacial acetic acid = 42.39 : 7.61 ml

d) Dry the plates. Images of the plates in longwave (366 nm, =L) and shortwave (254 nm, =K) UV-light and after spraying with water (=W). For pigments are also recorded dry in daylight (=P). For the UV-photographs we use a small UV lamp and the UV in transmission mode.

K

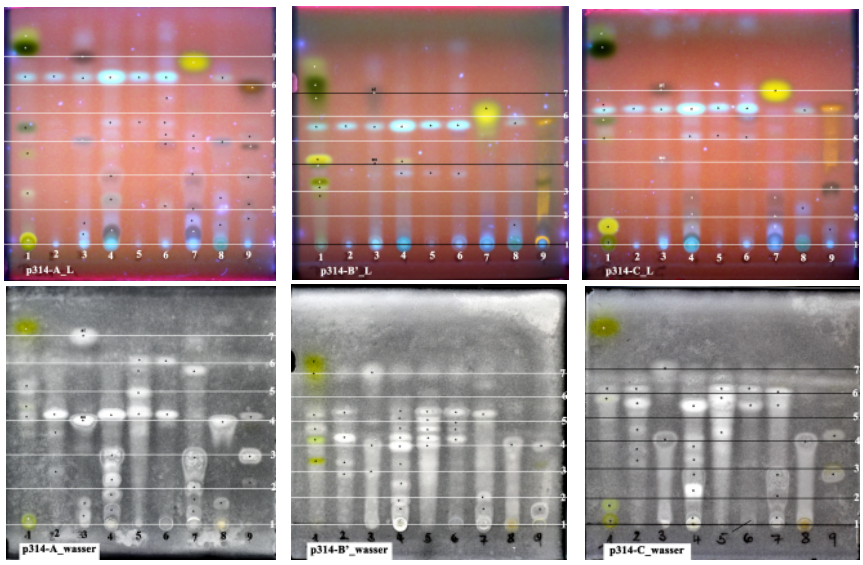


A B' C



L

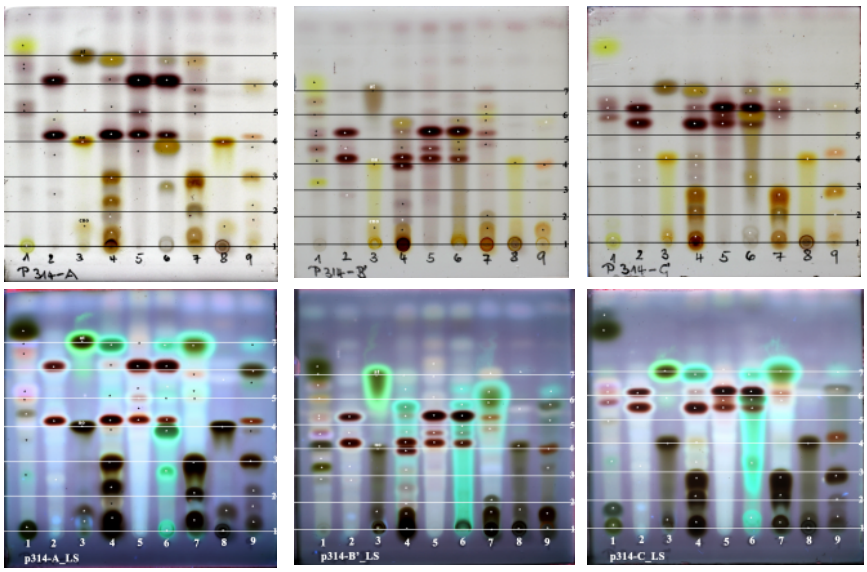
W



A B’ C

e) Spray with 10% sulphuric acid and dry at 90-100°C for 20-30 min in a oven [beware fumes]. Images then recorded in daylight and longwave UV-light (=LS).

LS



A B’ C

For better comparisons of the resultant spots we devided the plates in two sections by drawing the three horizontal lines. 1= origin, 4= position of norstictic acid, 7= position of atranorin. Further we drew additional lines 2, 3 and 5,6 in the two segments. For the images of the plates illustrated in the book, we collected the relevant rows for a particular specimen. Each plate is labelled with the herbarium number [.] (F.Schumm) and the plate number p.. The plates are stored in Wangen.

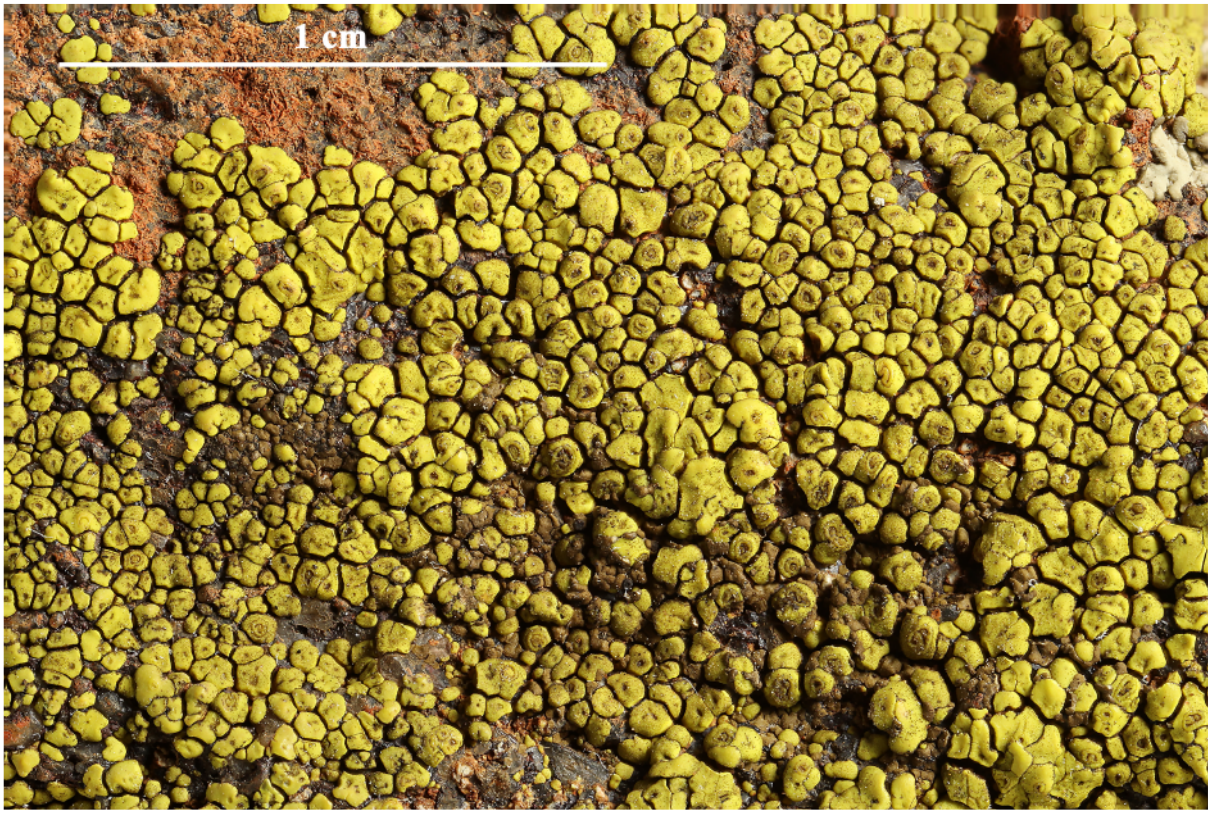
Felix Schumm
Wangen
Germany

John A. Elix
Canberra
Australia

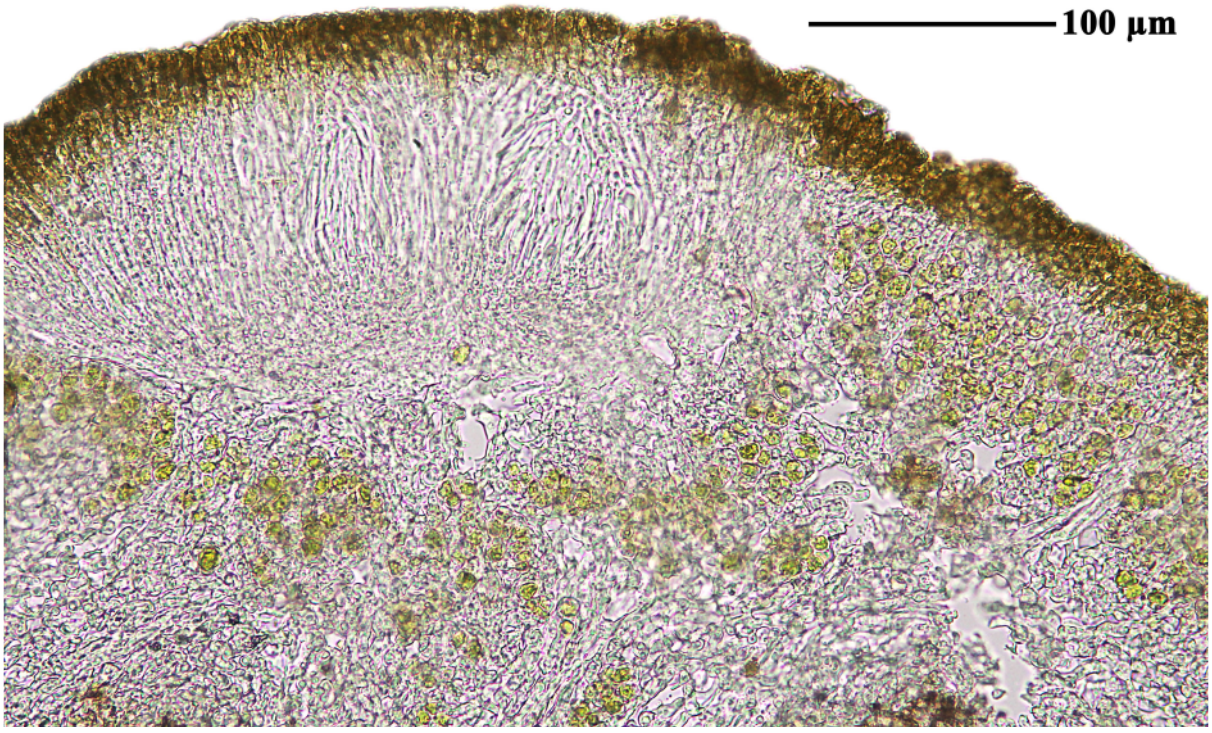
Acarospora citrina (Taylor) Zahlbr.

Thallus crustose to squamulose, areolae scattered or sometimes contiguous but then the margins never become sublobate, thick, below 0.5 mm large, greenish-yellow, pale below. Apothecia solitary 0.1-0.2 mm wide, concave; disk pale to dark brown; margin prominent or absent. Hymenium 65-75(-85) µm high; Hypothecium 25-50 µm, greyish. Ascospores 100-200/ascus, 3.5-5 x 1.7-1.9 µm, narrowly ellipsoid. Chemistry: K-, C-; rhizocarpic acid (major), acarenoic acid.

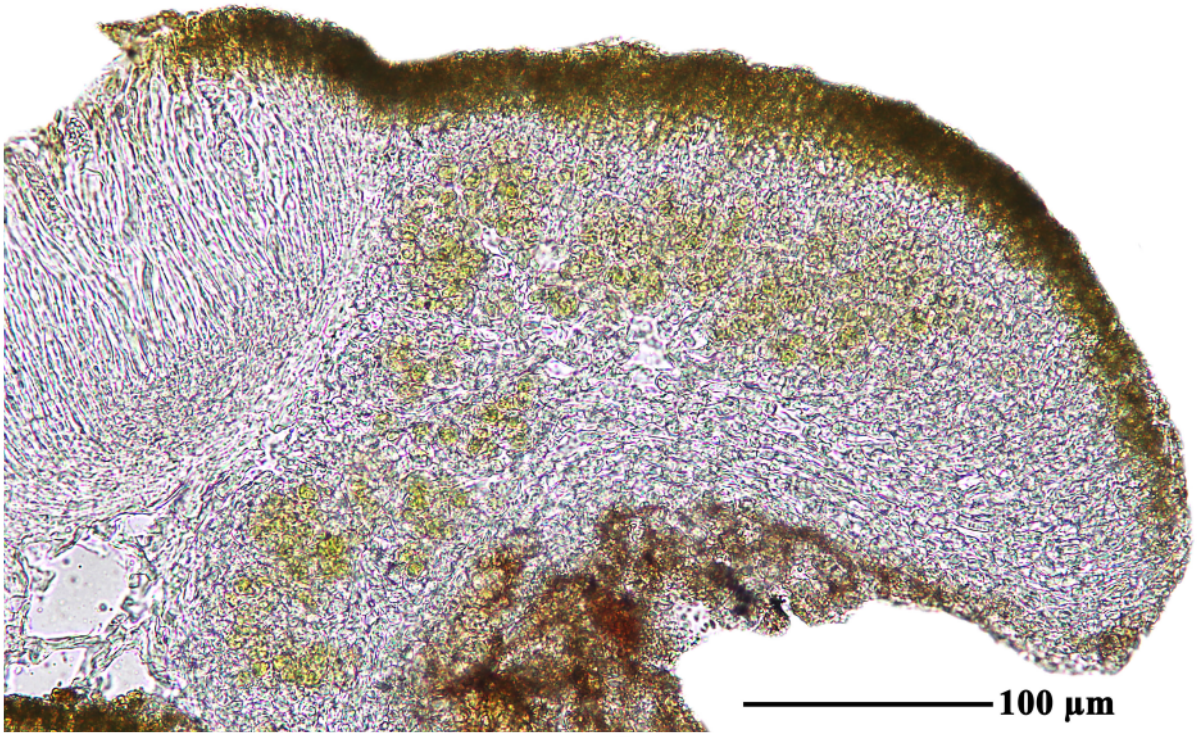
[19182], Australia, Western Australia, Erskine Range, Great Northern Highway, between Derby and Fitzroy Crossing, 17°51' S, 124°20' E, 120 m, growing on lateritic rocks with south-west aspect along the escarpment, in *Triodia* dominated grassland. Leg. J.A. Elix (22298) & H. Streiman, 18.05.1988. Chemistry: rhizocarpic acid (major), acarenoic acid (trace), unknowns (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 176.

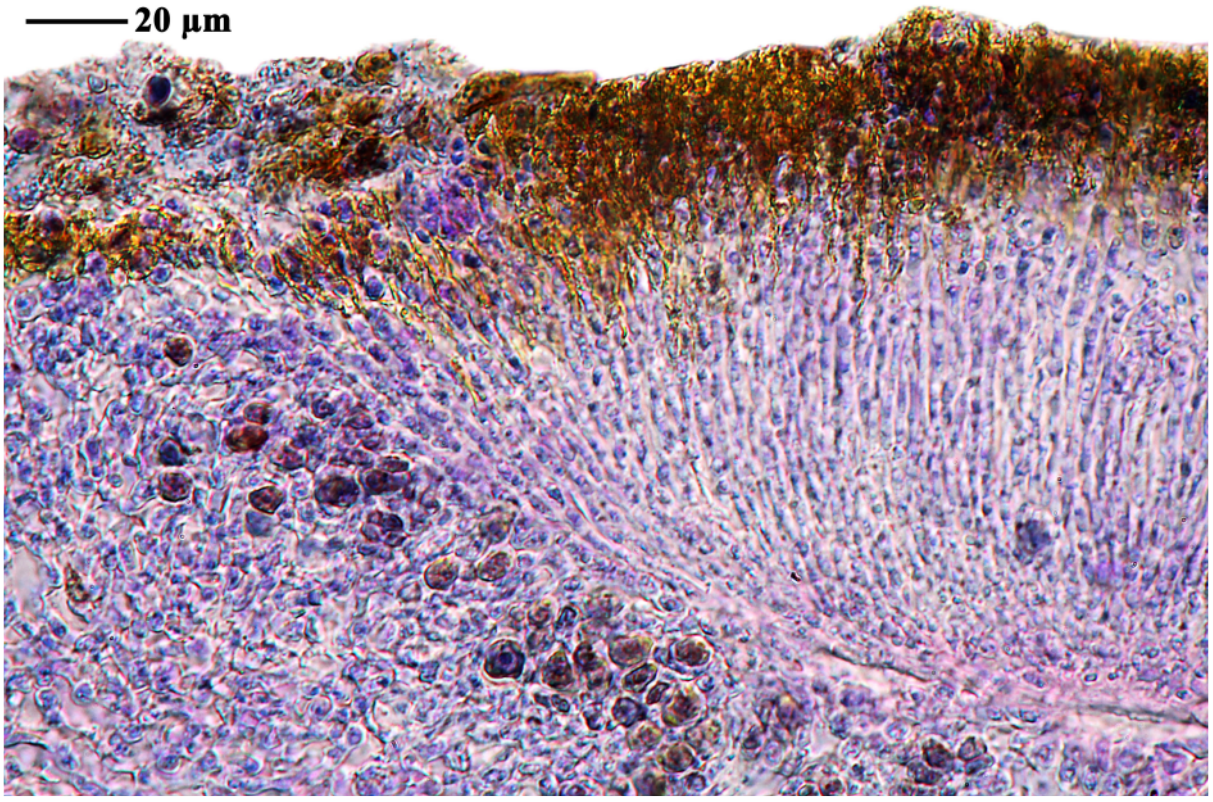




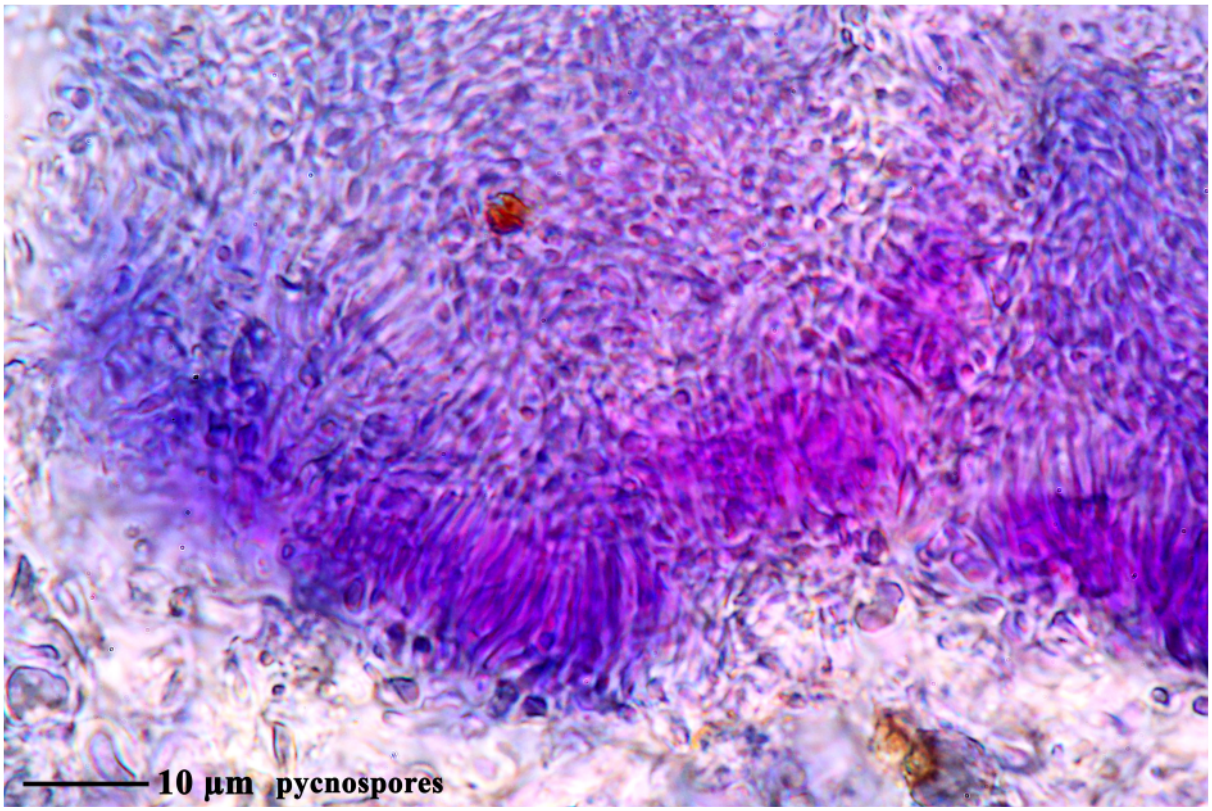


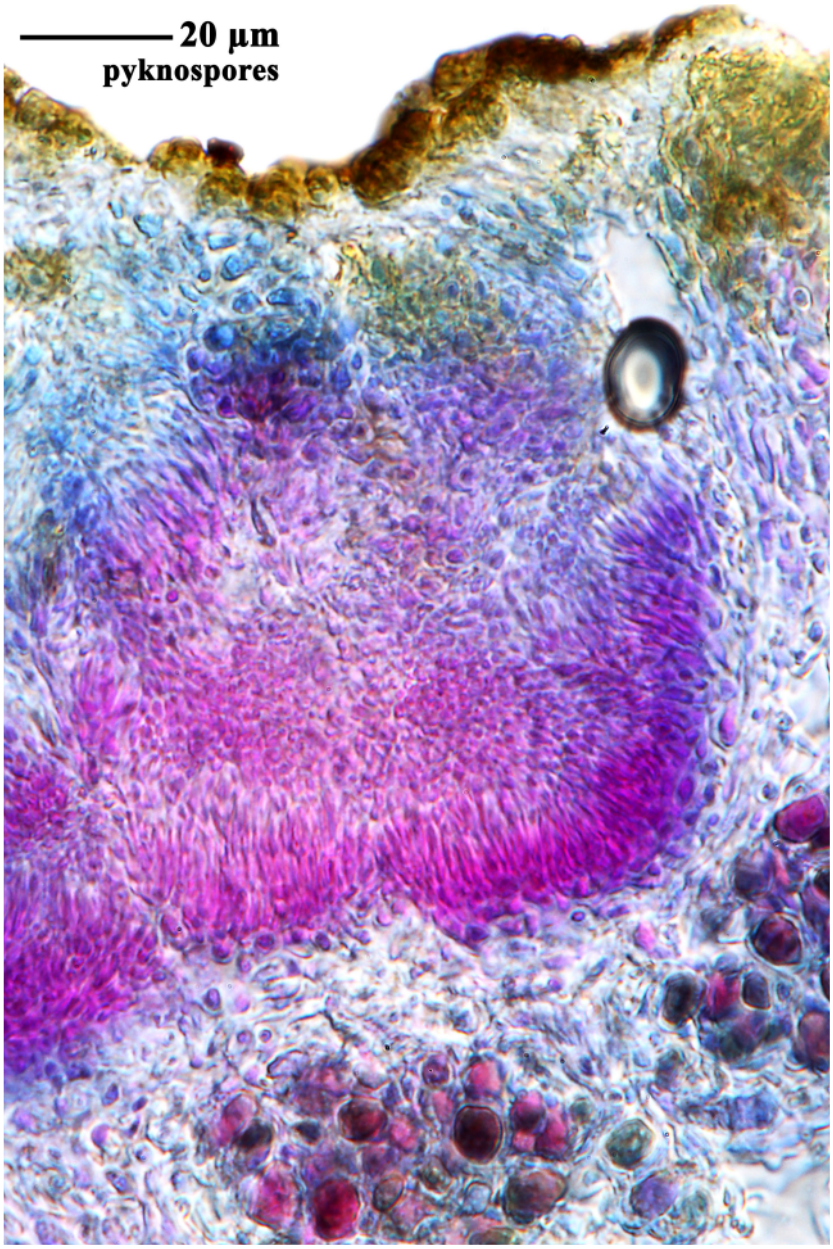
Acarospora citrina



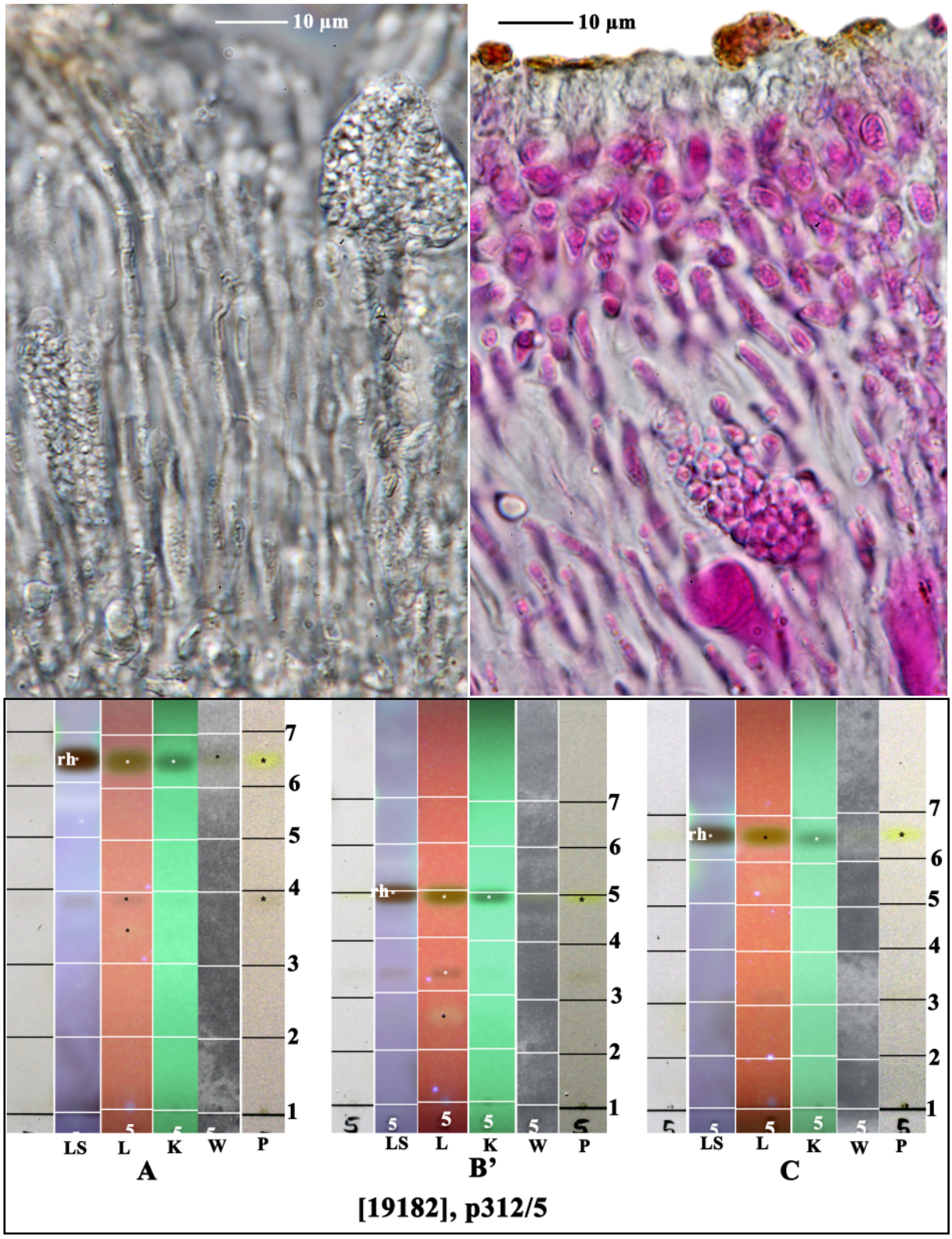


Acarospora citrina





Acarospora citrina



rh: rhizocarpic acid

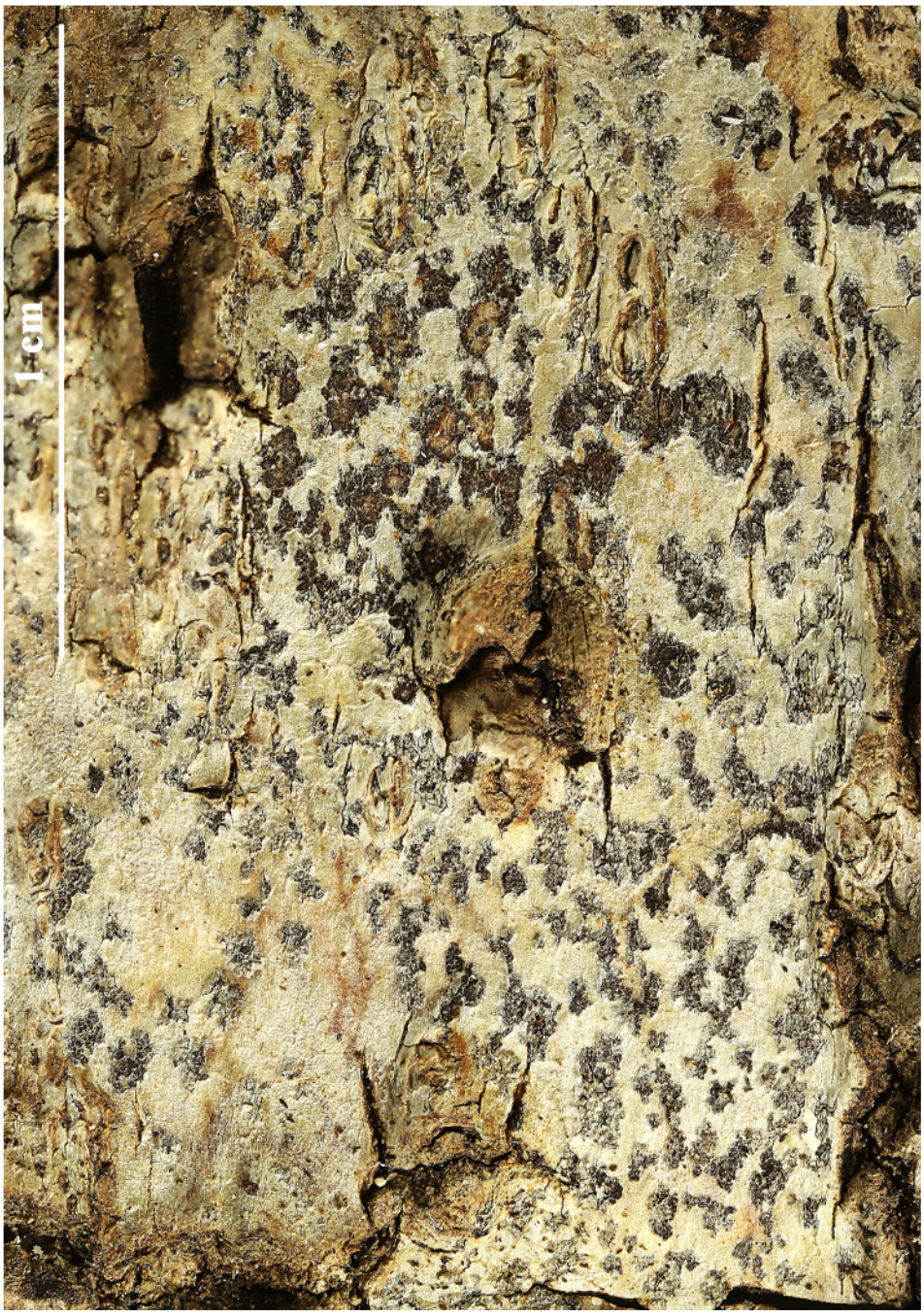
Acarospora citrina

Arthothelium sp. [16282]

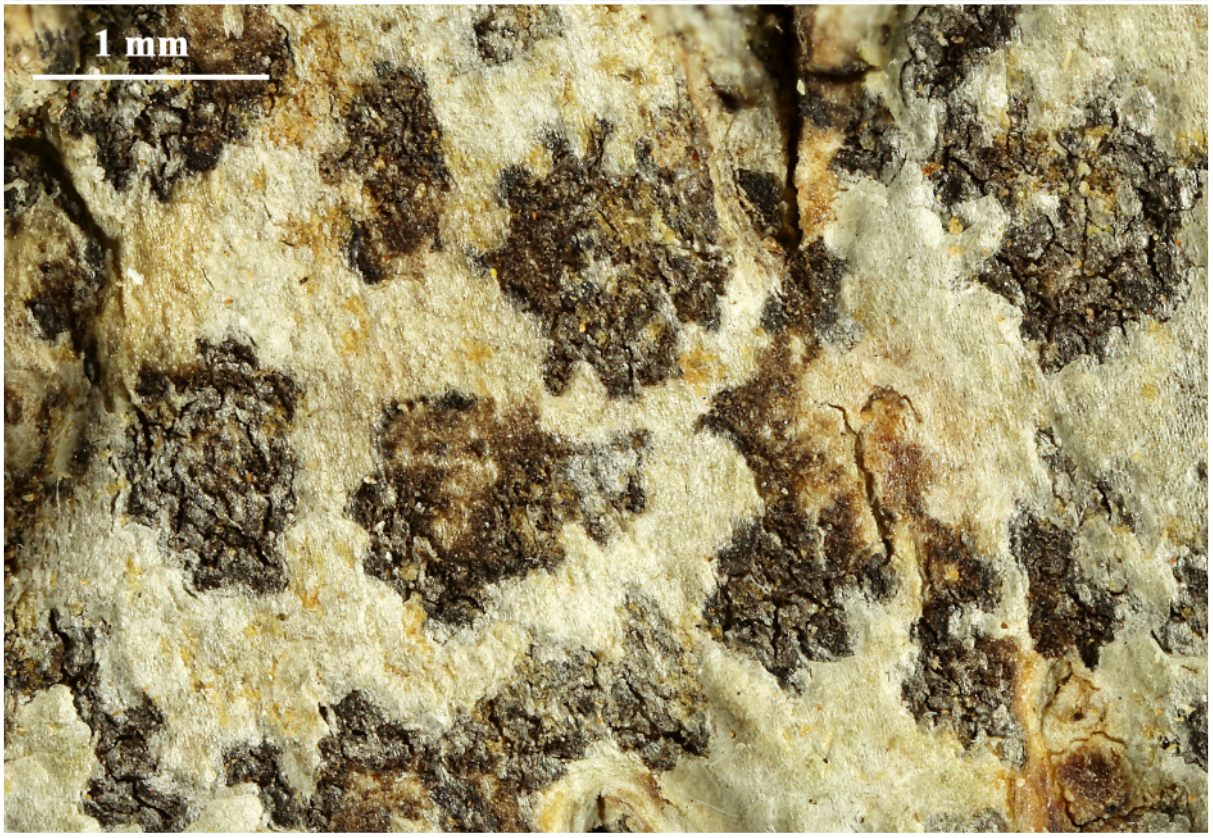
The spore data does not fit any of the species described by Kantvilas; cf. Arthothelium abnorme (Ach.) Müll.Arg.

Thallus grey-white, without soredia and isidia, thin. Ascocarp black, flat, outline irregular, development subcuticular. Hymenium without red crystals, IKI red-brown, hypothecium brown. Brown parts of the ascocarps greenish with KOH. Ascospores hyaline, muriform, c. 6 transverse septae, 1-2 longitudinal septae per segment, 19 x 6.8 µm

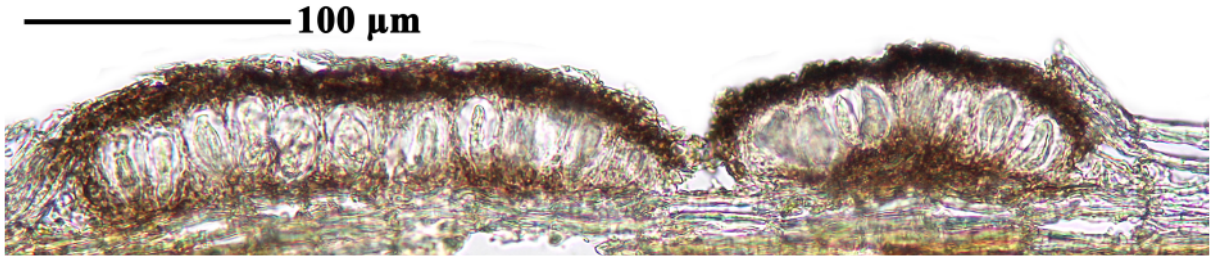
[16282], Australia, New South Wales, Brown Mountain near Cooma, Fred Piper Memorial Lookout, 36.597° S, 149.445° E, 910 m. Leg. F. Schumm & E. Stocker-Wörgötter, 13.11.2009.

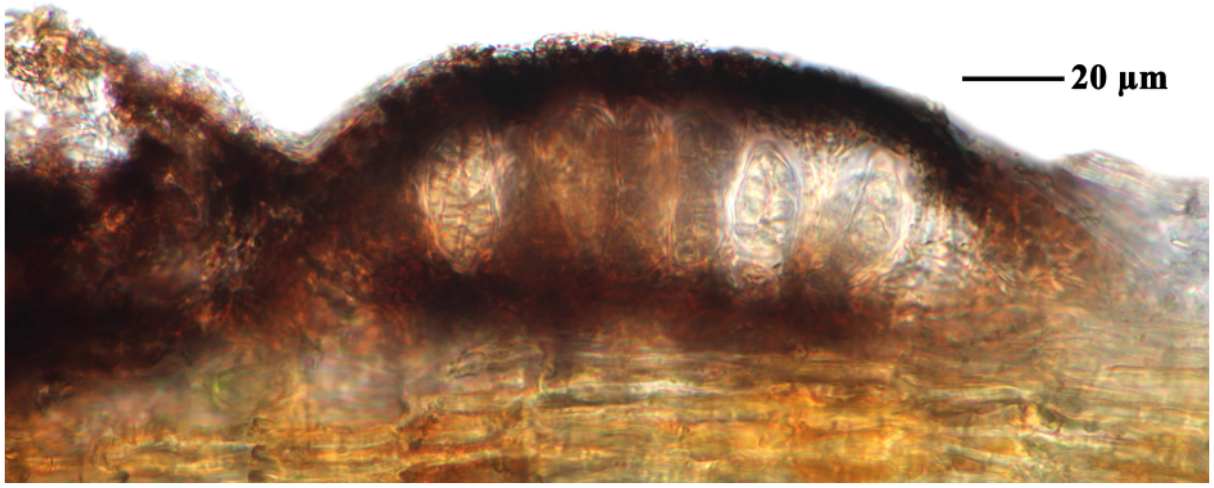


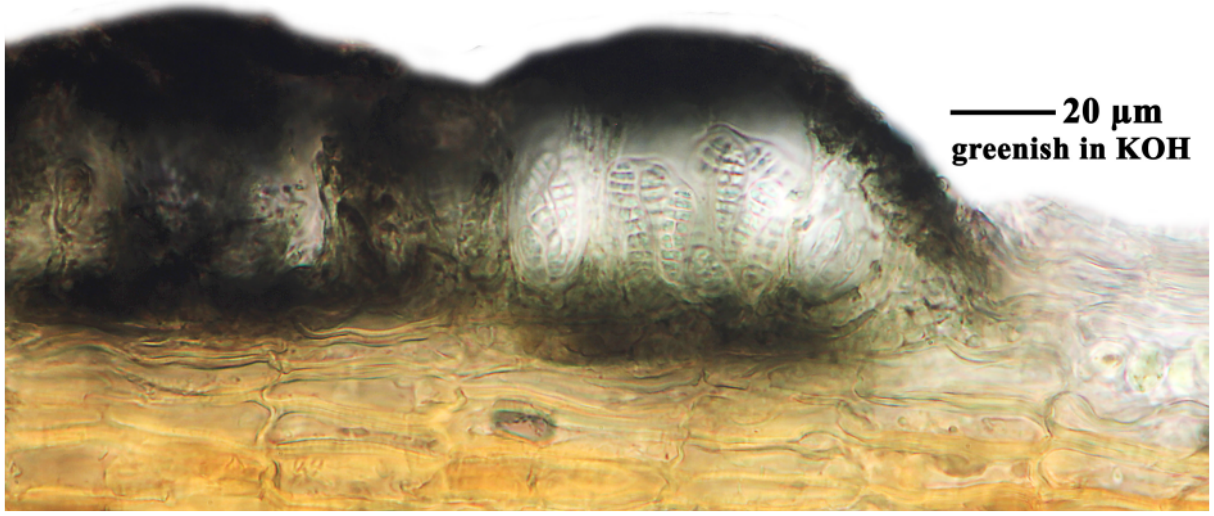




Arthothelium sp.

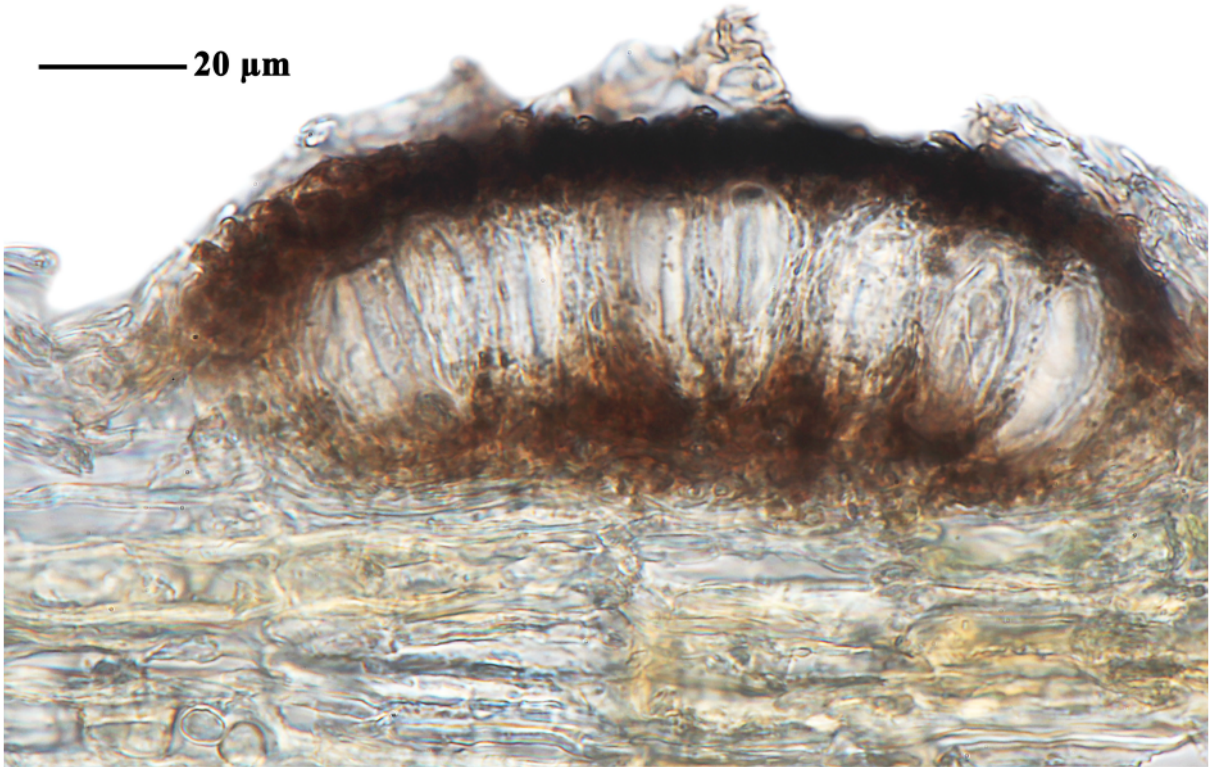


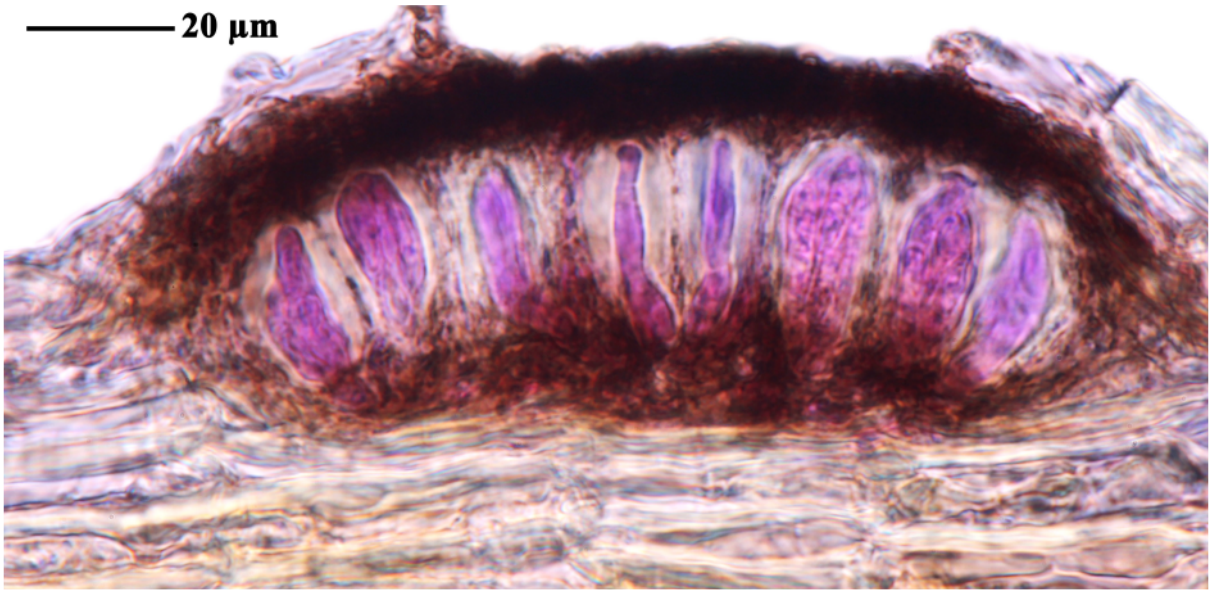




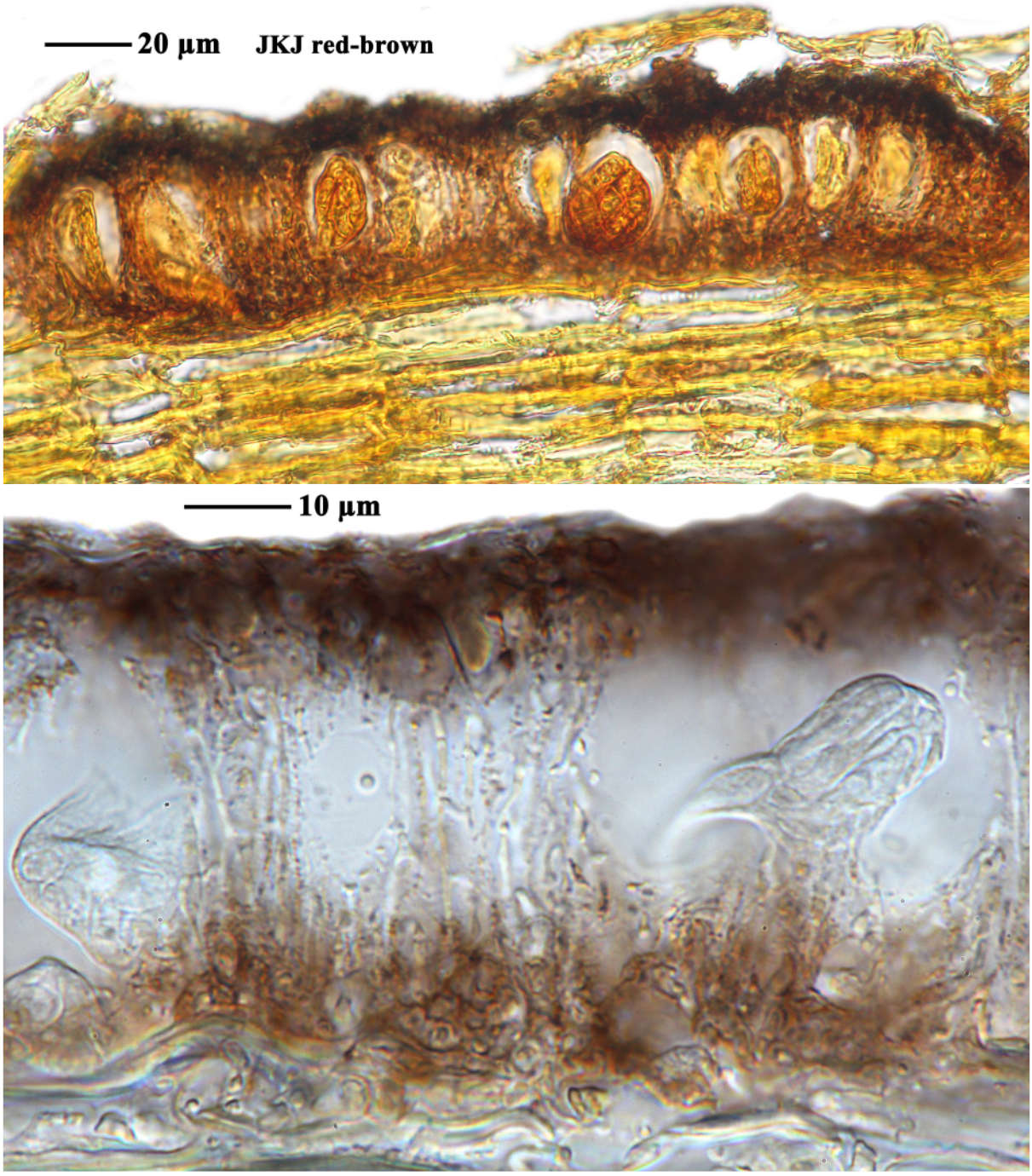


Arthothelium sp.

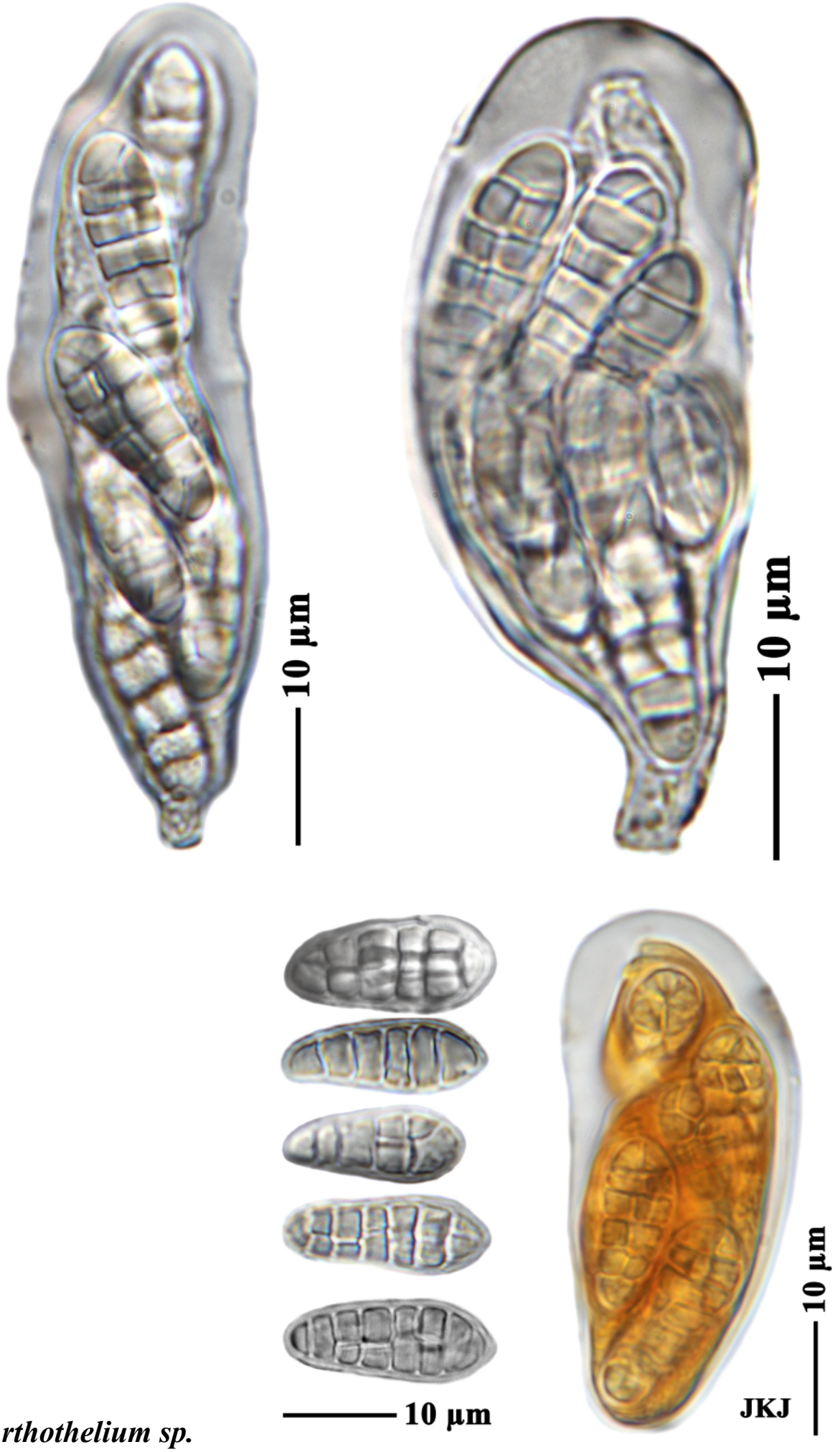




Arthothelium sp.



Arthothelium sp.

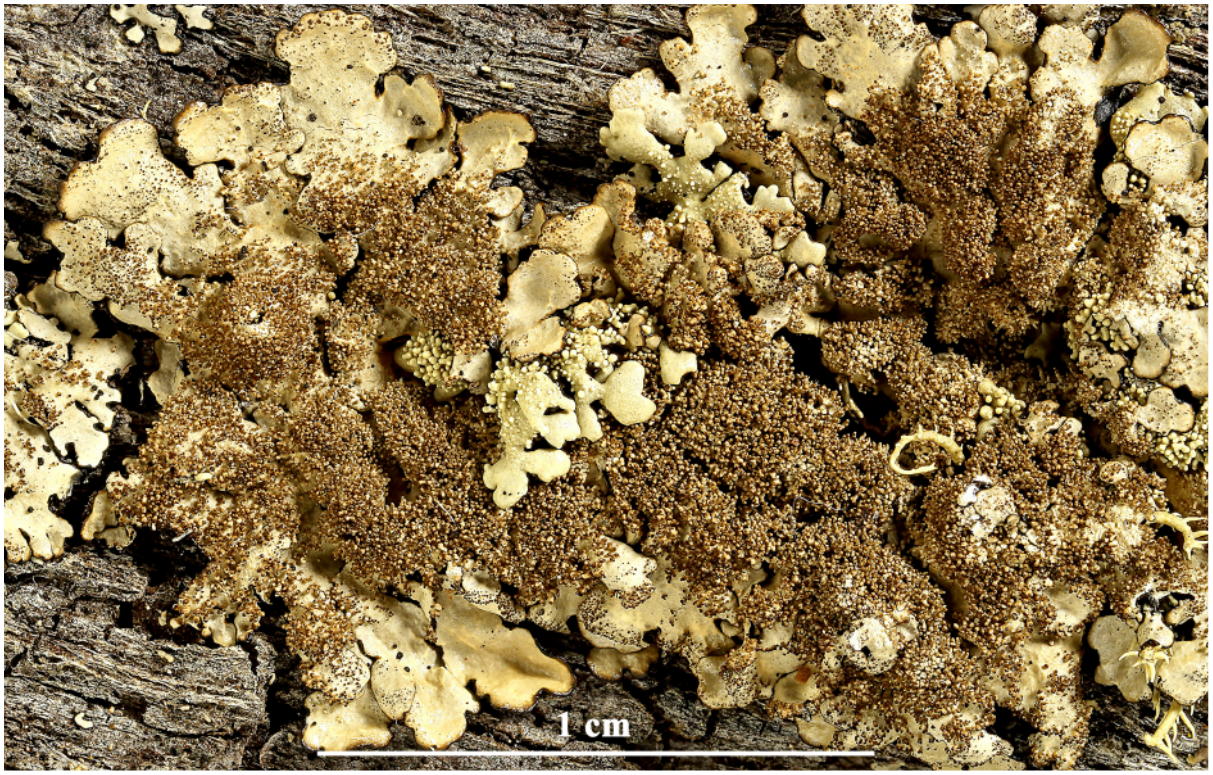


Arthothelium sp.

Austroparmelina conlabrosa (Hale) A.Crespo, Divakar & Elix
[= ***Parmelina conlabrosa*** (Hale) Elix & J.Johnst.]
[= ***Parmelia conlabrosa*** (Hale) Elix & G.N.Stevens]

Thallus adnate. Lobes imbricate, variable, sublinear-elongate to subirregular and apically rounded, 1-3 mm wide; cilia sparse to moderately dense, 0.1-0.5 mm long, black. Upper surface pale grey to greenish grey, shiny, emaculate, without soredia; isidia moderately dense to dense, cylindrical, often branched, less than 0.5 mm high. Medulla white. Lower surface black, rhizines simple, black. Ascospores 9-13 x 5-9 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, P-; atranorin, chloroatranorin, lecanoric acid (major), ±orsellinic acid (trace). *Parmelinopsis minarum* could be confused with *Austroparmelina conlabrosa* but it contains gyrophoric acid and 5-*O*-methylhiascic acid and has sparingly branched rhizines.

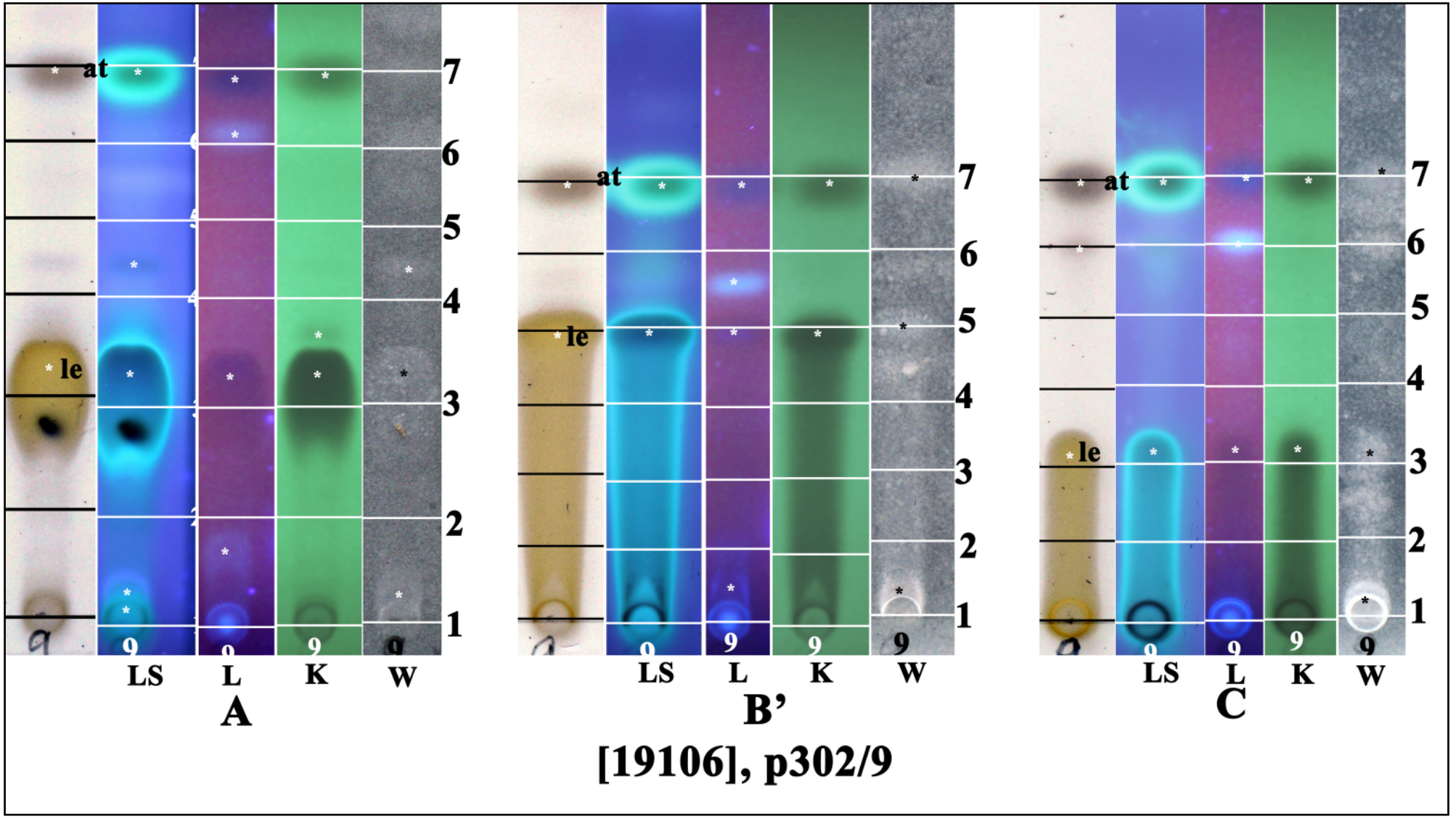
[19106], Australia, New South Wales, Goorooyarroo Reserve, 15 km north of Queanbeyan along the Sutton road, 35°14' S, 149°15' E, 740 m, growing on trunk of old *Eucalyptus macrorhyncha* in open woodland. Leg. J.A. Elix (11404),11.10.1983. Lichenes Australasici Exsiccati No. 056. Distributed as ***Parmelia conlabrosa*** (Hale) Elix & G.N. Stevens.







Austroparmelina conlabrosa

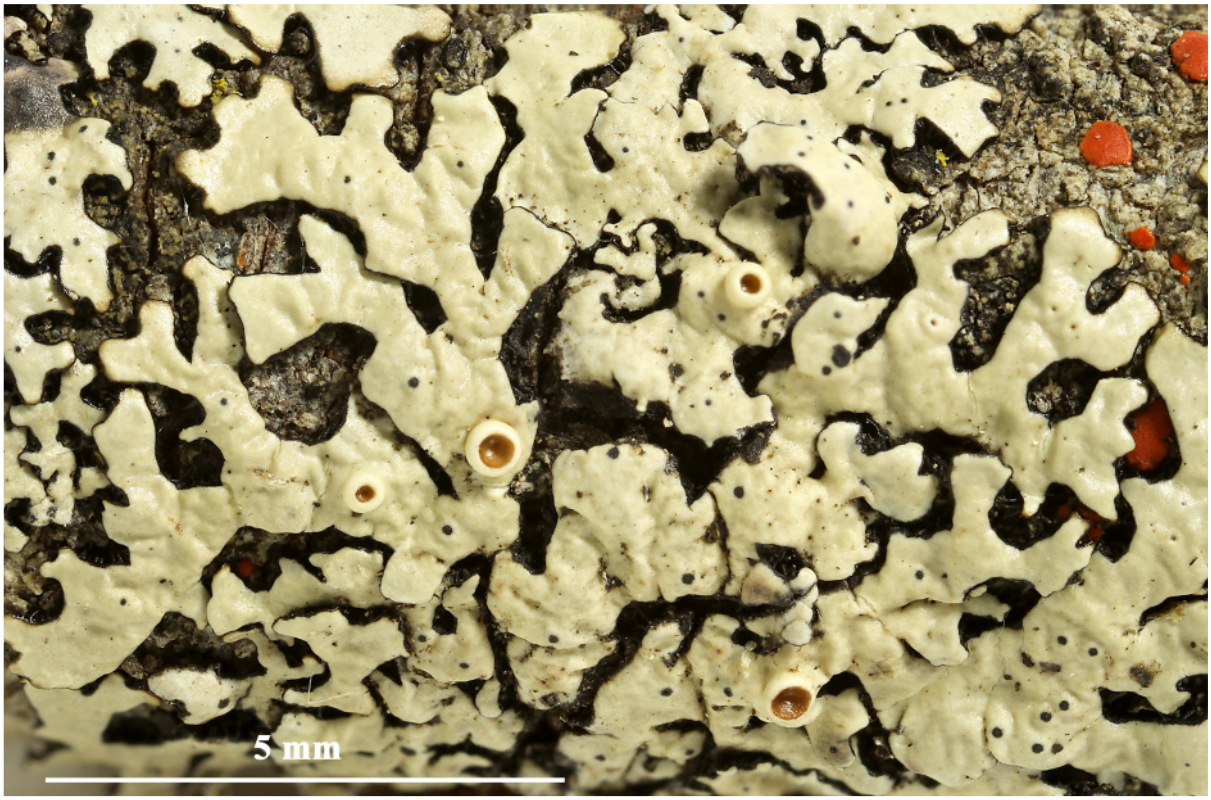


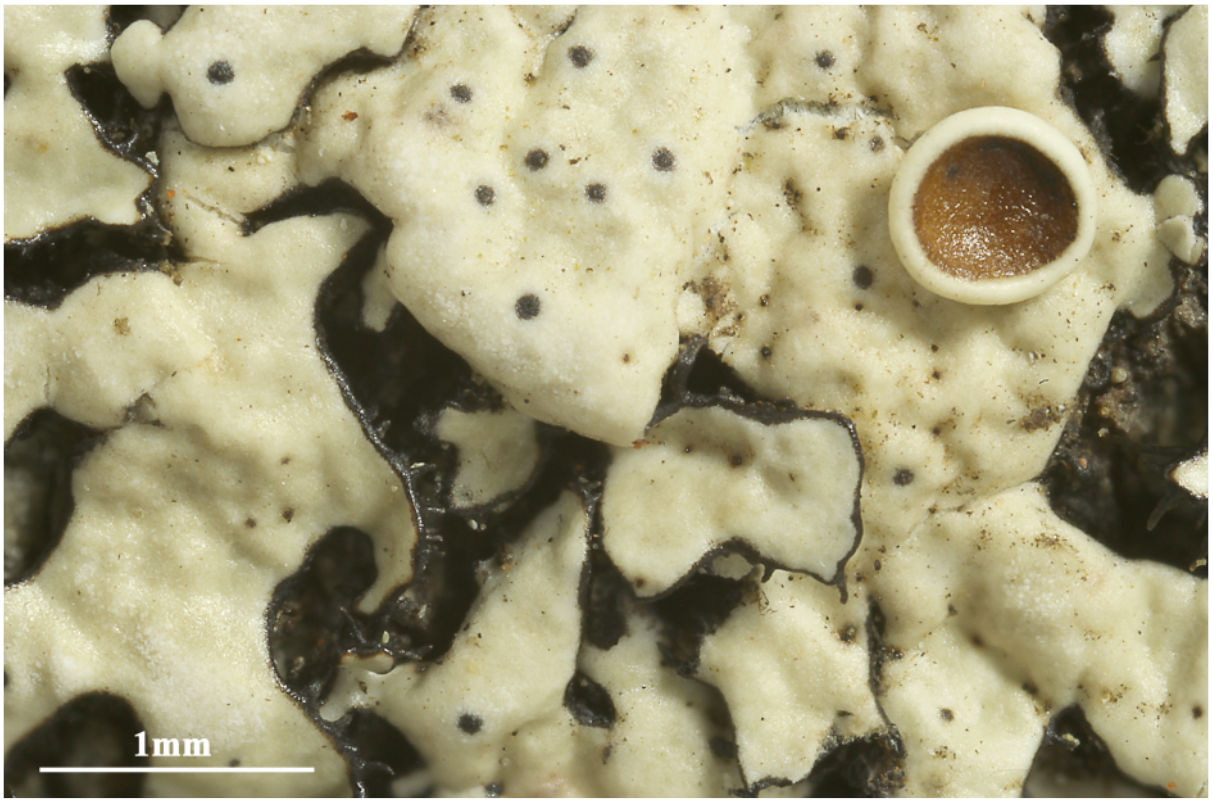
at: atranorin, le: lecanoric acid

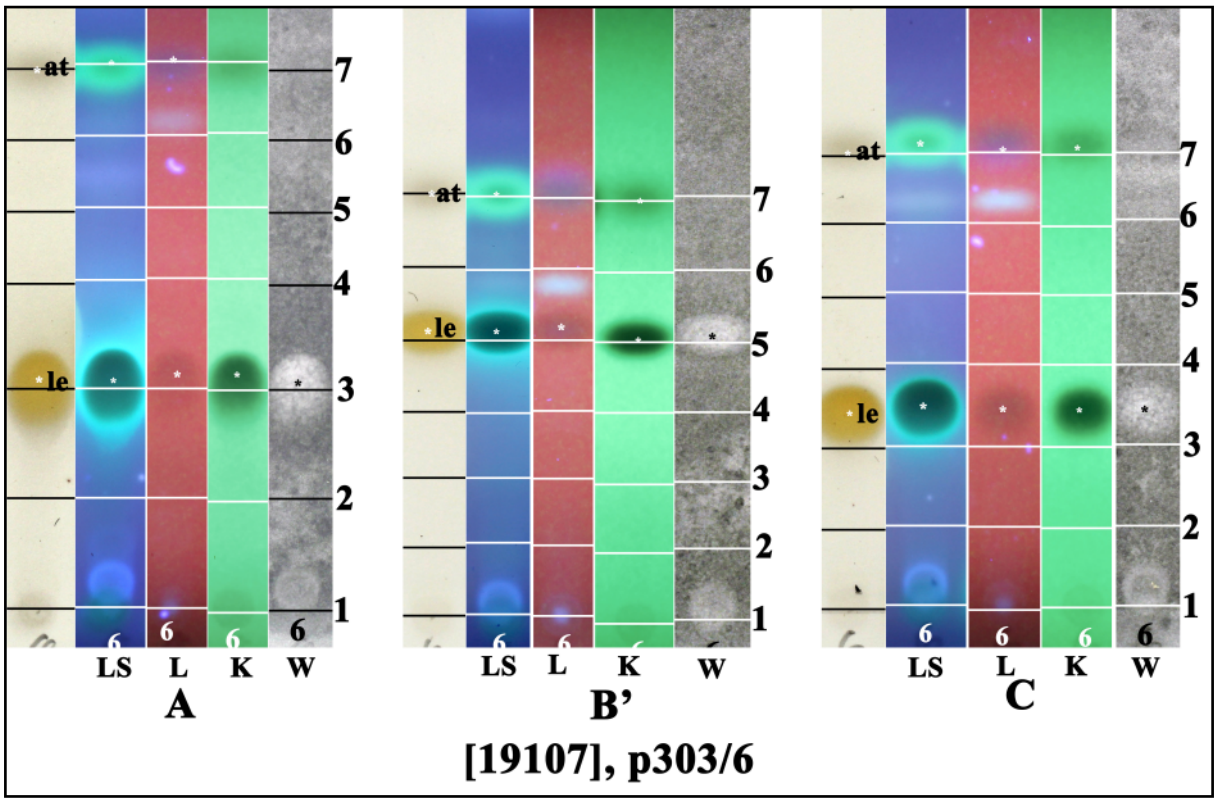
Austroparmelina pseudorelicina (Jatta) A.Crespo, Divakar & Elix
[= ***Parmelina pseudorelicina*** (Jatta) Kantvilas & Elix]
[= ***Parmelina stevensiana*** Elix & J.Johnst.]
[= ***Parmelia pseudorelicina*** Jatta]

Thallus adnate. Lobes imbricate, sublinear-elongate, irregularly branched, 0.5-3 mm wide; cilia sparse, 0.1-0.3 mm long, black. Upper surface pale grey to grey green, shiny, emaculate, lacking soredia and isidia. Medulla white. Lower surface black. Rhizines black, simple, moderately dense to dense. Apothecia common. Ascospores 9-13 x 7-9 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; atranorin, chloroatranorin, lecanoric acid (major), ±orsellinic acid (trace).

[19107], Australia, Australian Capital Territory, trail to summit of Mt Coree, Brindabella Range, 31 km west of Canberra, 35°18' S, 148°49' E, 1300 m, growing on *Acacia dealbata* in *Eucalyptus pauciflora-Acacia* woodland. Leg. J.A. Elix (19811) & H. Streimann, 18.10.1985. Chemistry: atranorin, chloroatranorin, lecanoric acid (major), orsellinic acid (trace) by HPLC, TLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 139. Distributed as ***Parmelina stevensiana***.







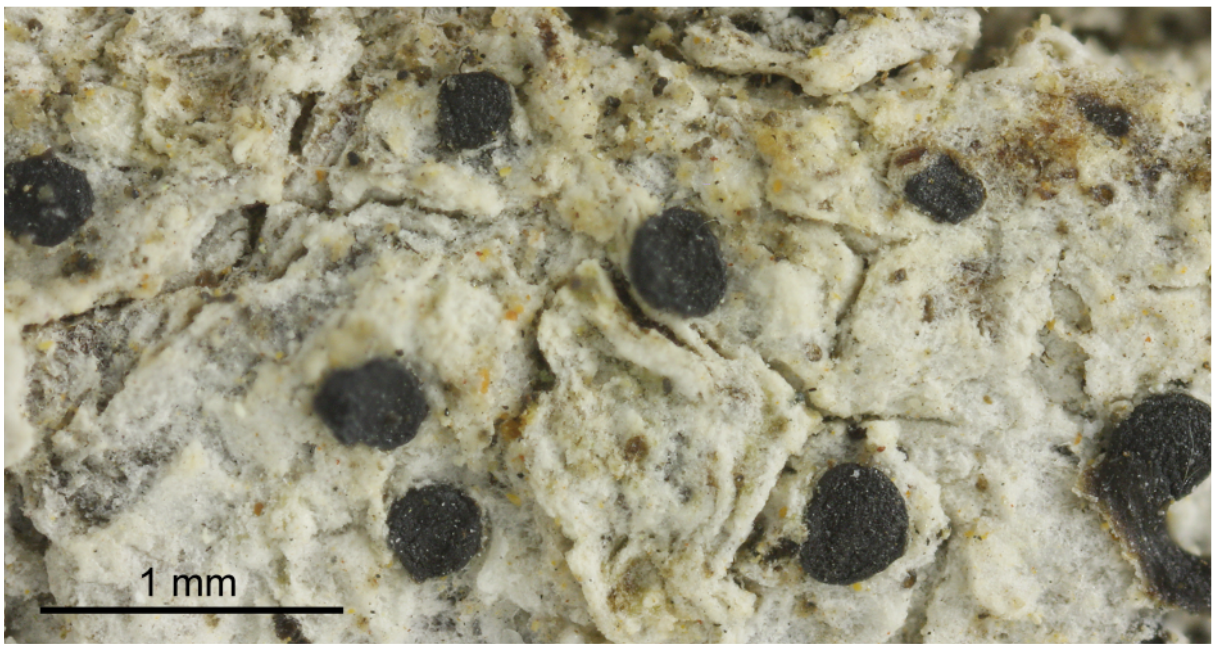
at: atranorin, le: lecanoric acid

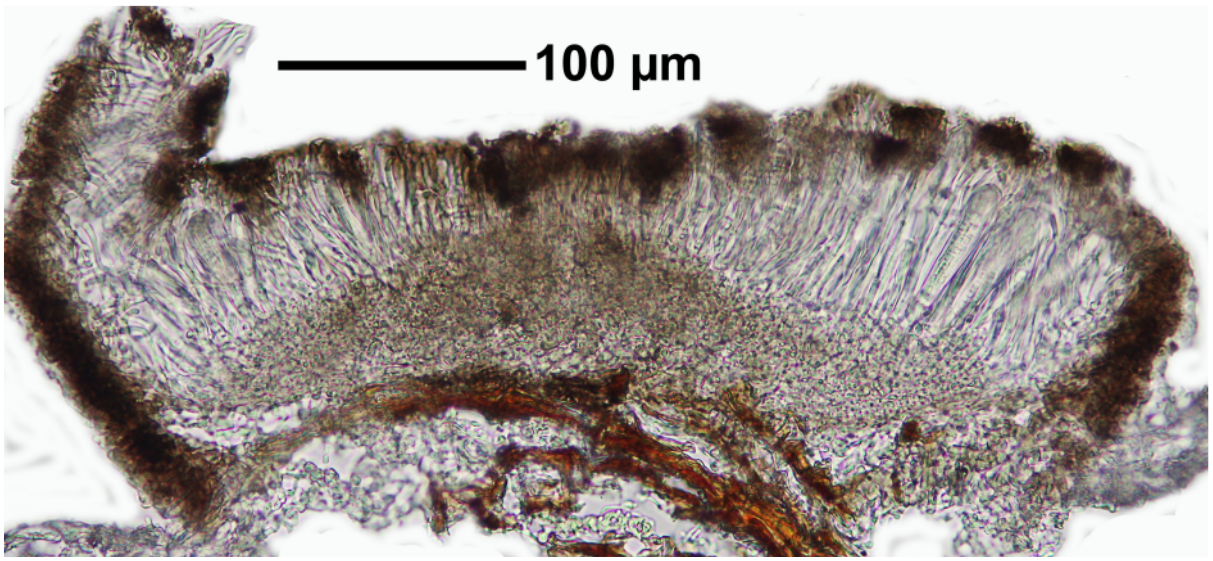
Austroparmelina pseudorelicina

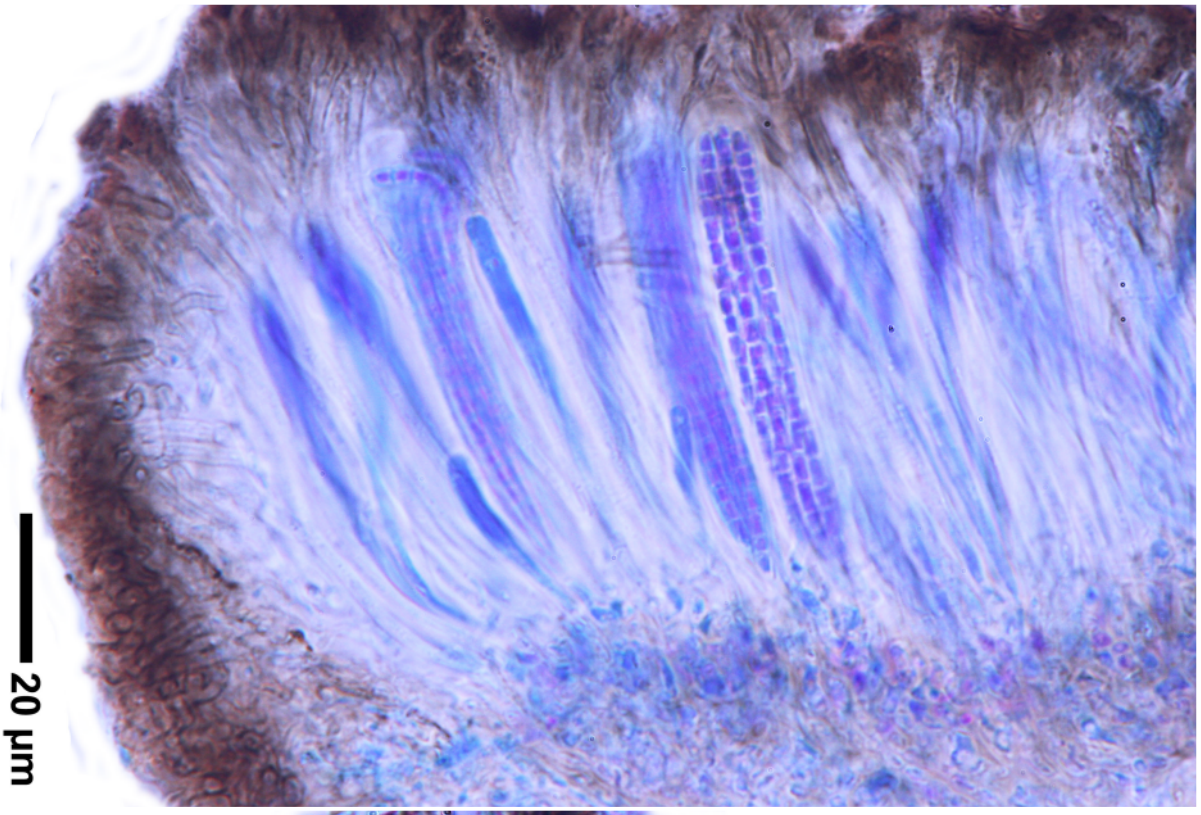
Bactrospora myriadea (Fée) Egea & Torrente

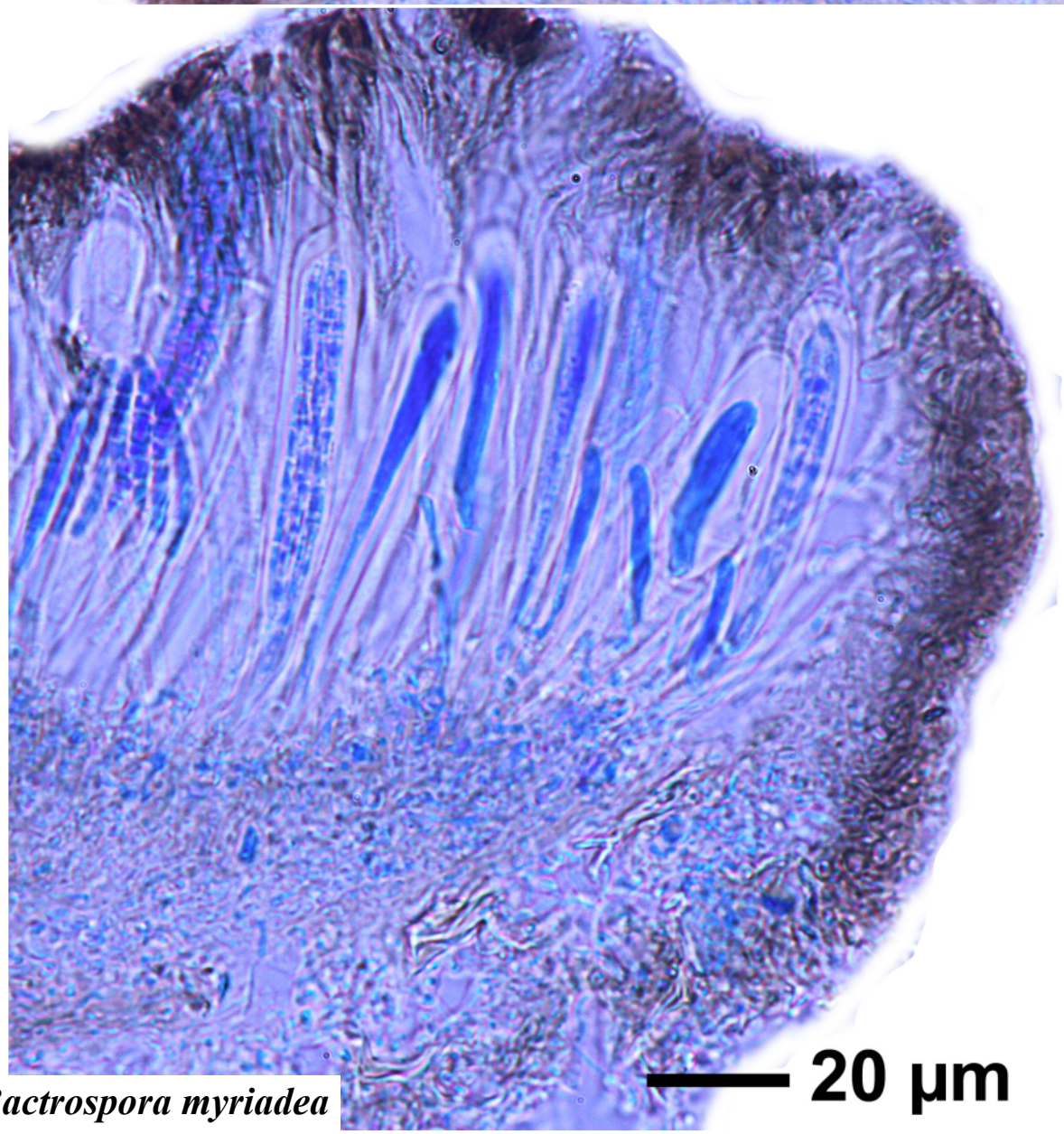
Ascospores hyaline, 12-14 septate, 33-40 x 12-14 µm. Epithecium brown, 15 µm. Hymenium hyaline, not inspersed, c. 100 µm. Hypothecium pale, c. 40 µm. Excipulum lateral brown, c. 17 µm. Asci 66 x 13,3 µm. Lit. Egea & Torrente (1993): The lichen genus Bactrospora. – Lichenologist 25: 211–255.

[15755], Australia, Western Australia, between Manjimup and Mt. Baker, Lake Muir, 34.441° S, 116.648° E, 186 m. Leg. F. Schumm & E. Stocker-Wörgötter, 23.10.2009, det. A. Aptroot 2011. Chemistry: no lichen substances detected by TLC, anal. F. Schumm.



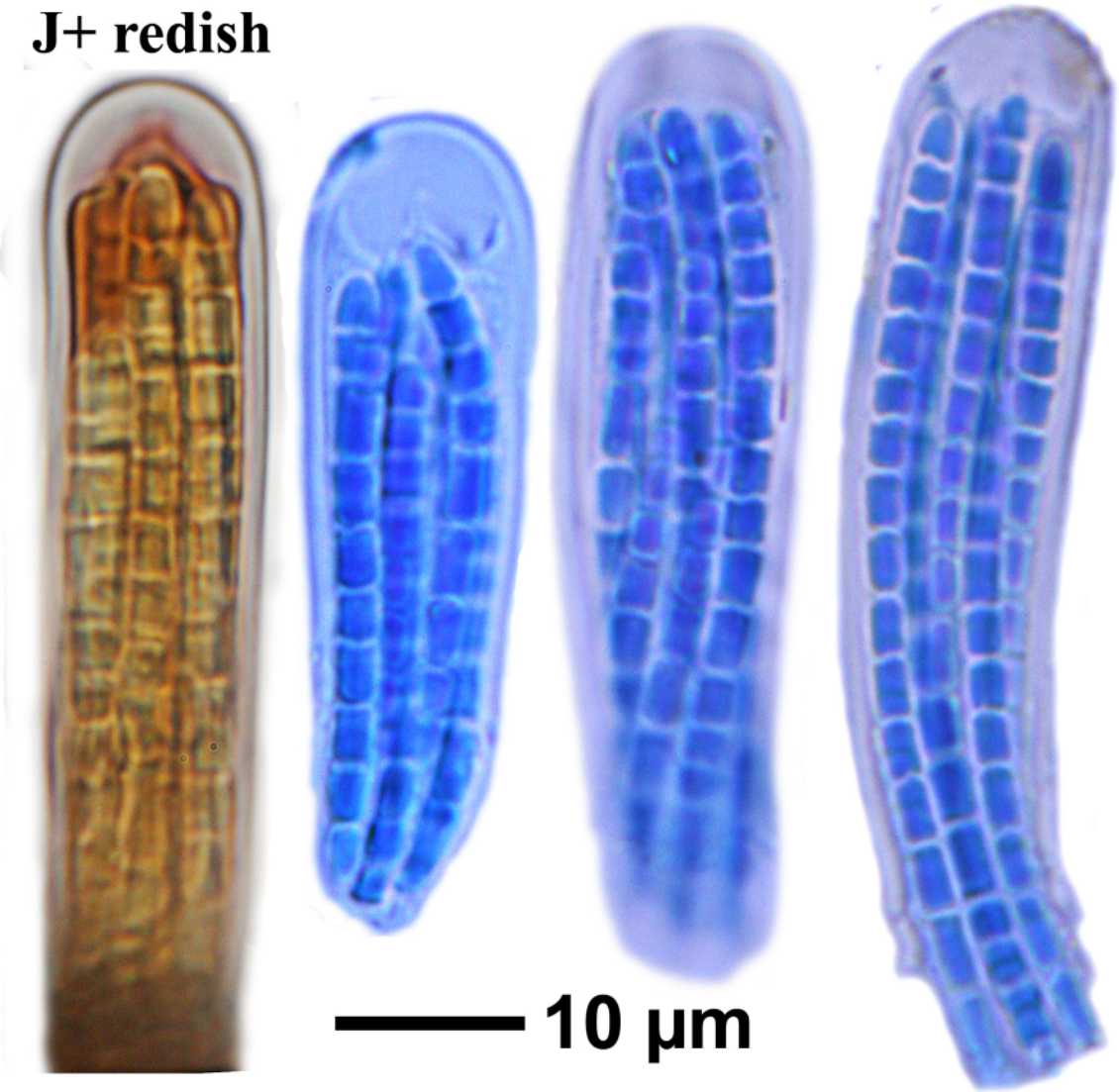




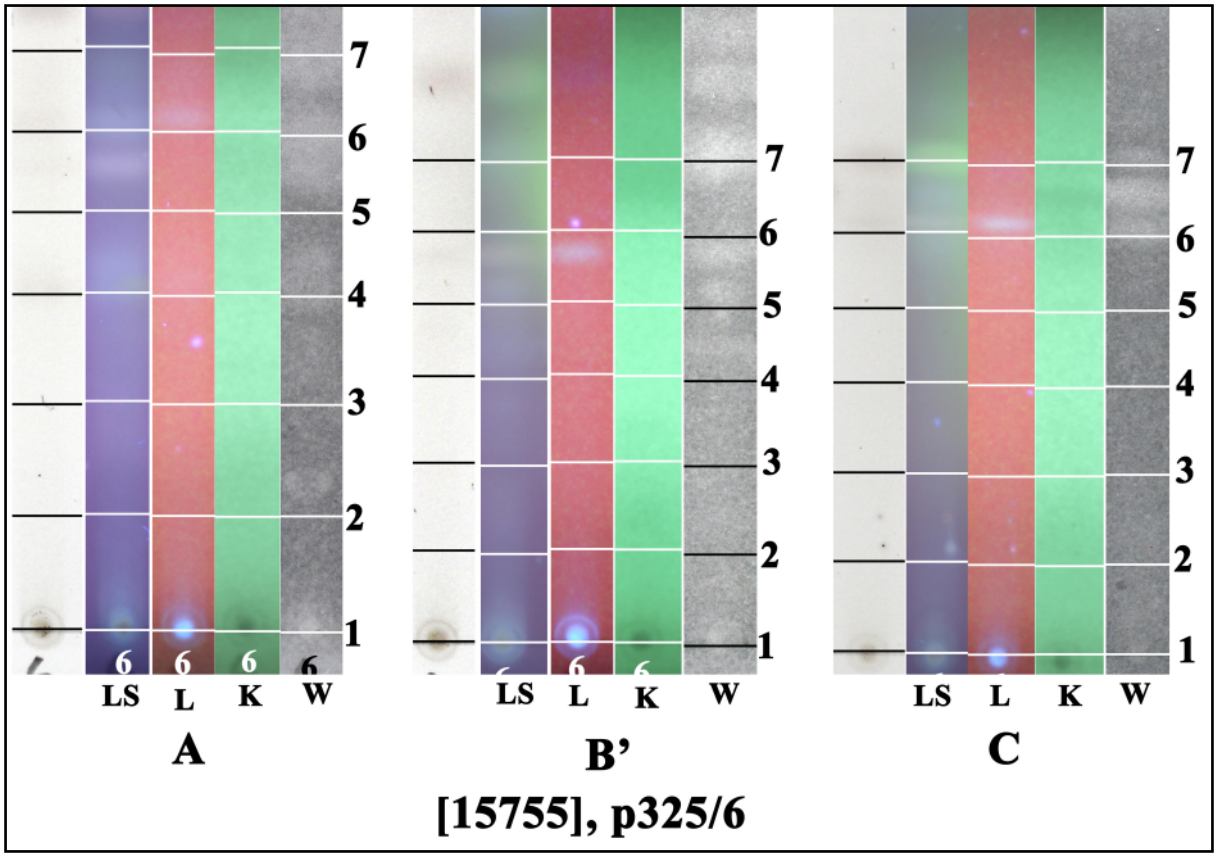


Bactrospora myriadea





Bactrospora myriadea



no lichen substances detected

Bactrospora myriadea

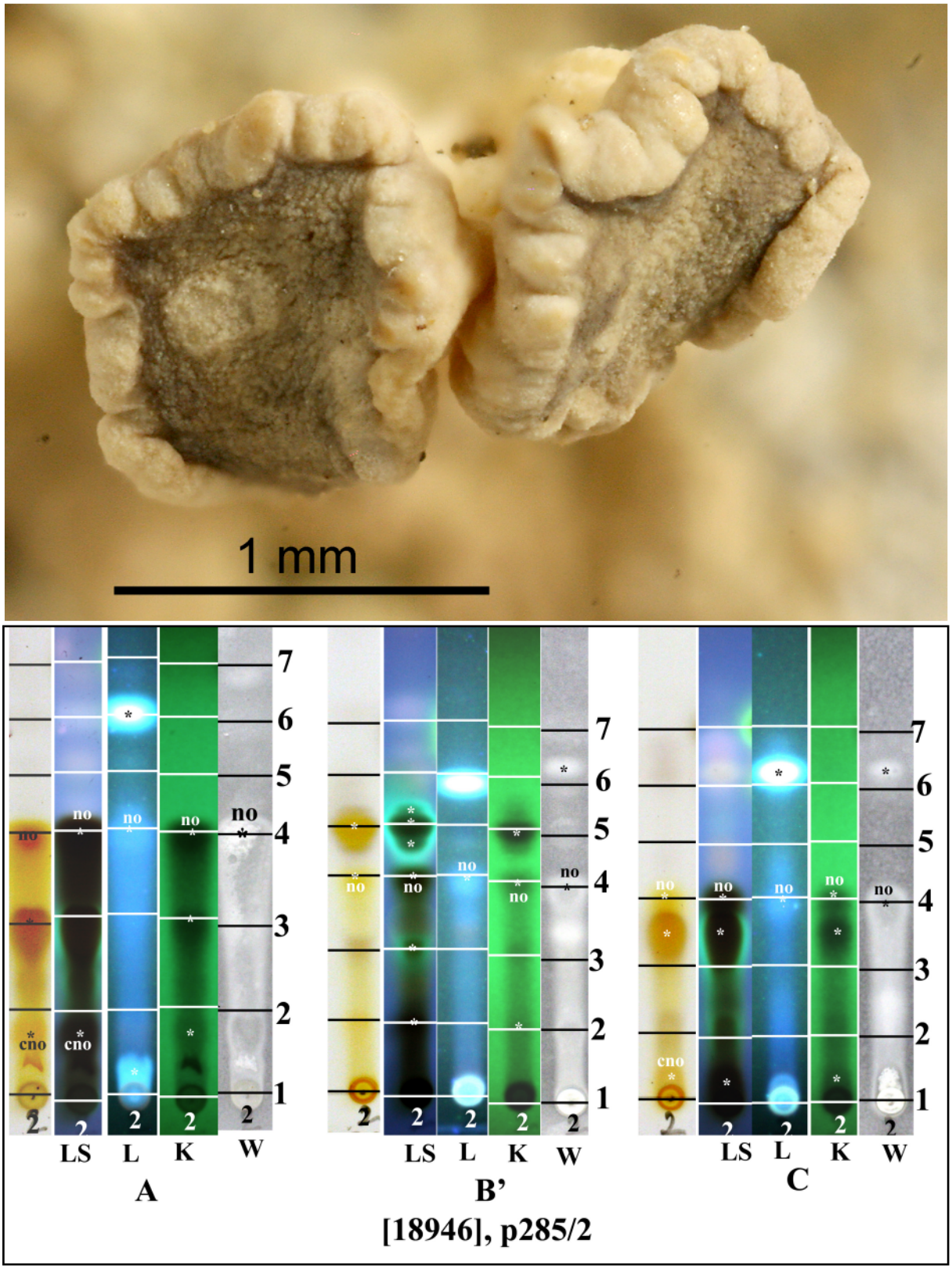
Baeomyces heteromorphus Nyl. ex C.Bab. & Mitt.

Thallus K+ yellow then red, P+ orange, UV-. Ascospores c. 8-11 x 3-4 µm, hyaline , 8/ascus, 1-celled.

[18946] Australia, New South Wales, Saddle, Mt. Dromedary, 13 km south-west of Narooma, 36°18' S, 150°02' E, 780 m, growing on soil along the margin of wet sclerophyll forest. Leg. J.A. Elix (21572) & H. Streimann 14.07.1987. Chemistry: norstictic acid (major), connorstictic acid (trace), unknown (traces) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 151.







no: norstictic acid, cno: connorstictic acid

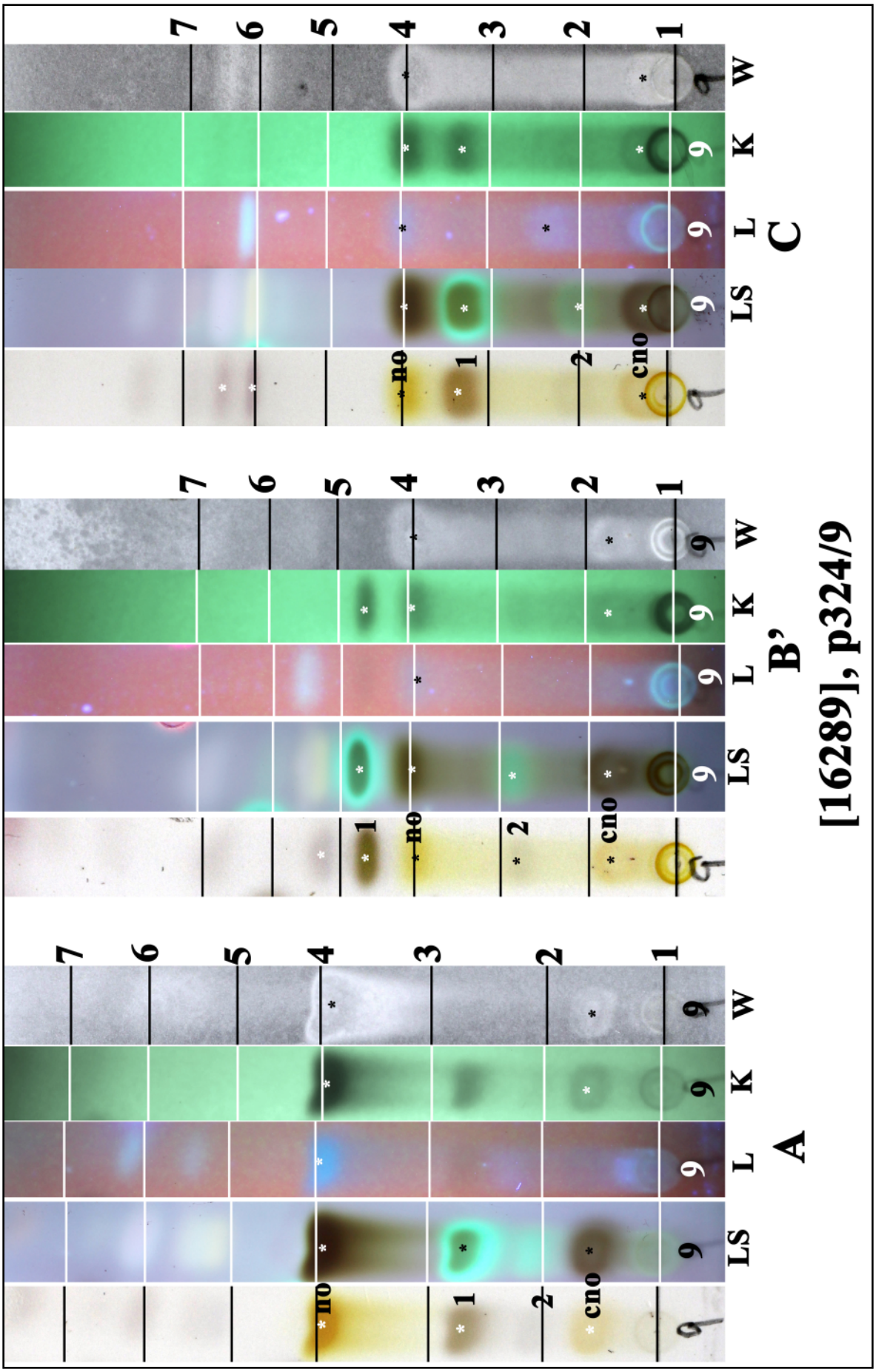
Baeomyces heteromorphus

Baeomyces heteromorphus Nyl. ex C.Bab. & Mitt.

[16289], Australia, New South Wales, Brown Mountain near Cooma, Fred Piper Memorial Lookout, 36°34’ S, 149°27’ E, 910 m, growing on soil. Leg. F. Schumm & E. Stocker-Wörgötter, 13.11.2009.







no: norstictic acid, cno: connorstictic acid,
1: gyrophoric acid, 2: crustinic acid

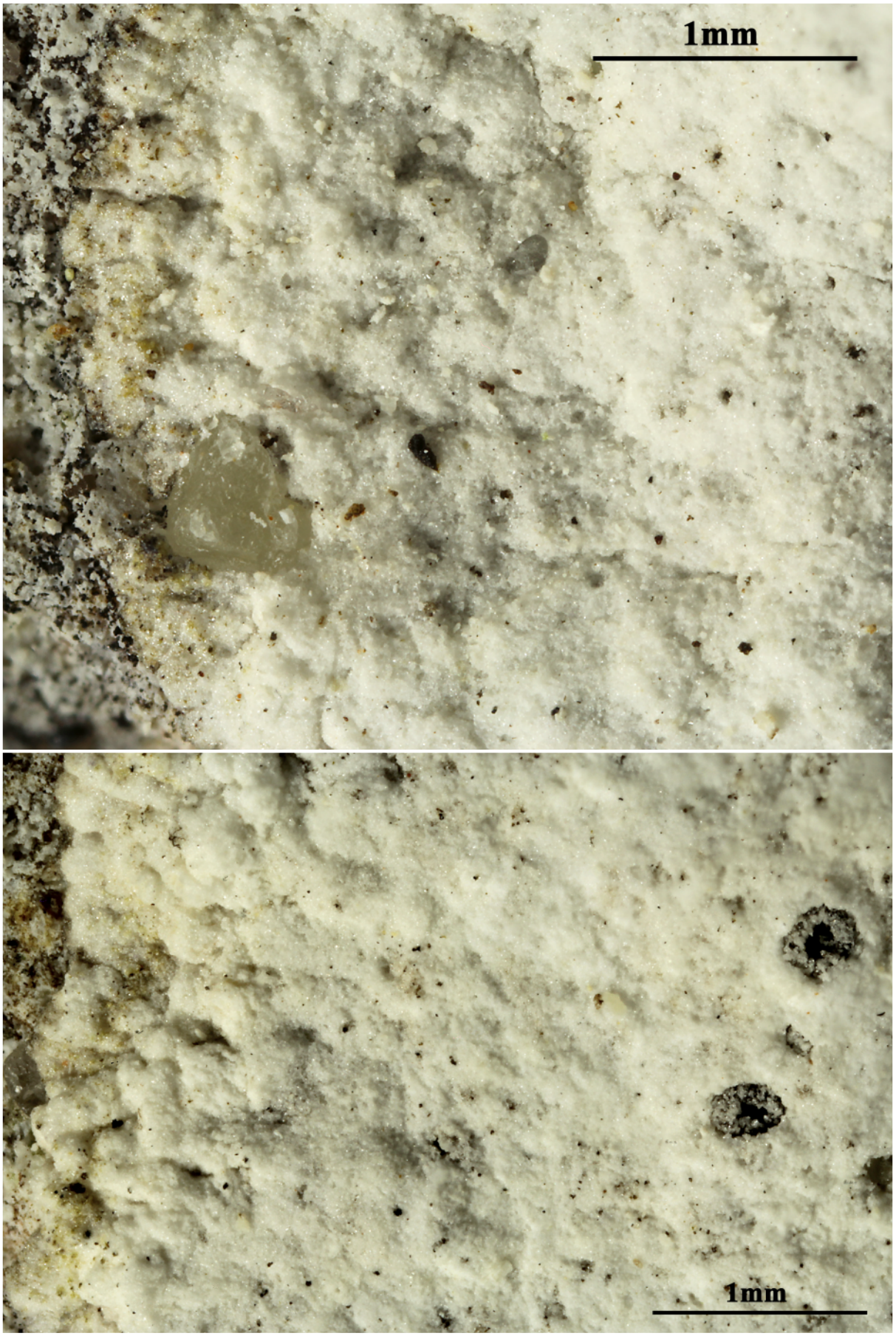
Baeomyces heteromorphus

Buellia albula (Nyl.) Müll.Arg.

Thallus white, margins somewhat indistinct short-lobate. Apothecia sessile to emergent, disc black (UV-), margin same colour as the thallus. Epithecium brown, 12 µm; hymenium not inspersed, hyaline, 100 µm; hypothecium brown (colour not changed in KOH or HCl, 63 µm; paraphyses thickened at the apices and with dark brown pigmented caps. Asocpores brown, 1-septate, 8/ascus, 8 x 5 µm.

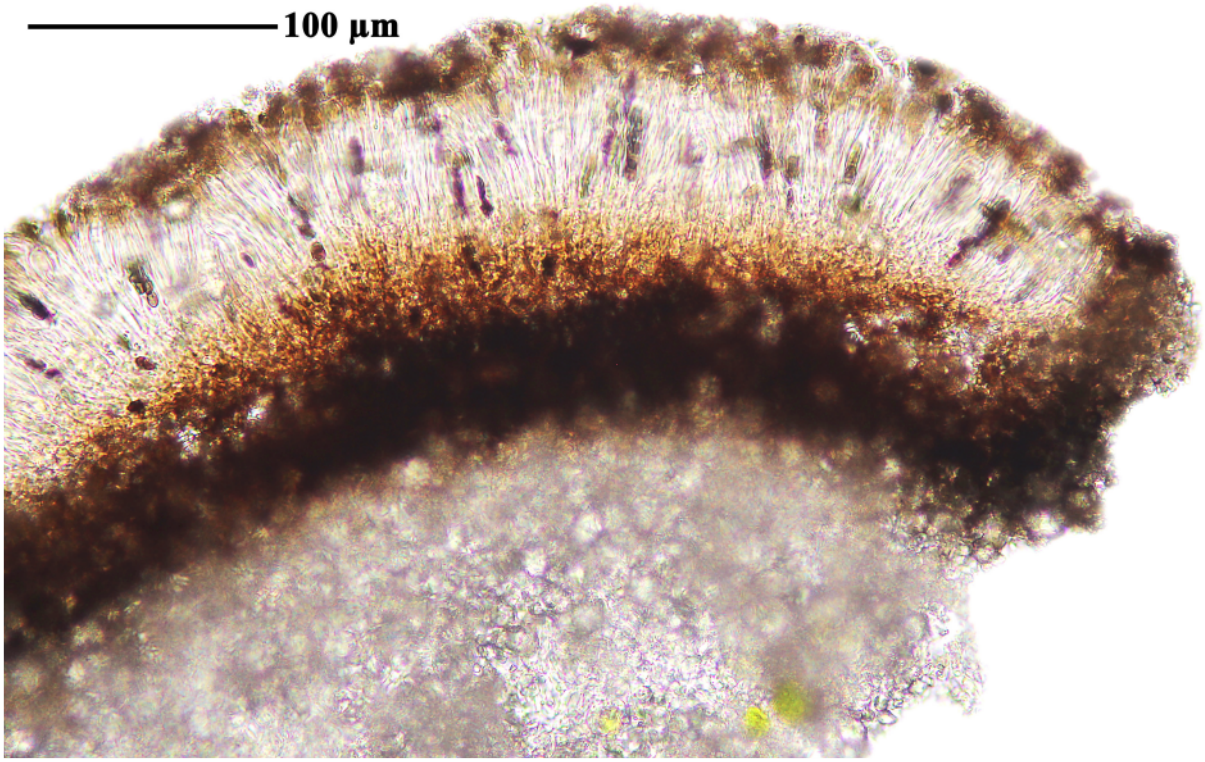
[15821], Australia, Western Australia, coastal calcareous sandstone rocks near Windy Harbour, 34.839° S, 116.003° E, 90 m. Leg. F. Schumm & E. Stocker-Wörgötter, 24.10.2009, det. J.A. Elix. Chemistry: norstictic acid by HPTLC, anal. F. Schumm.



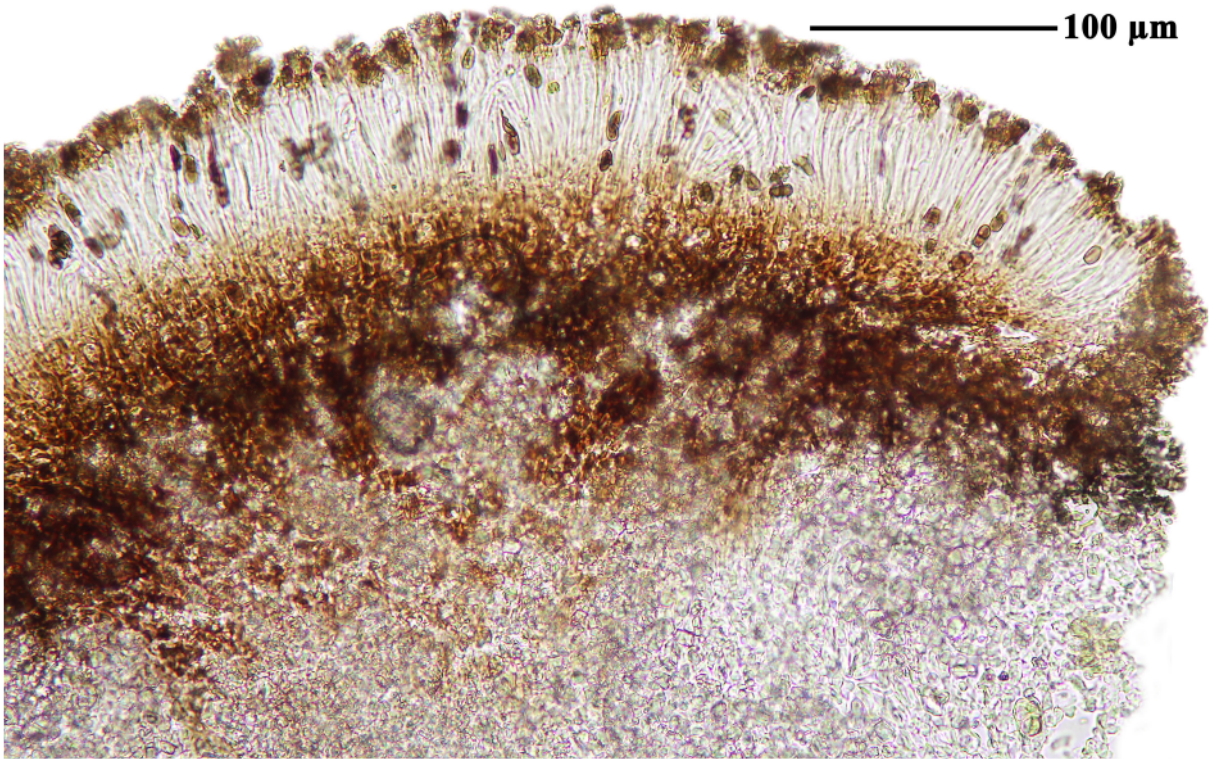


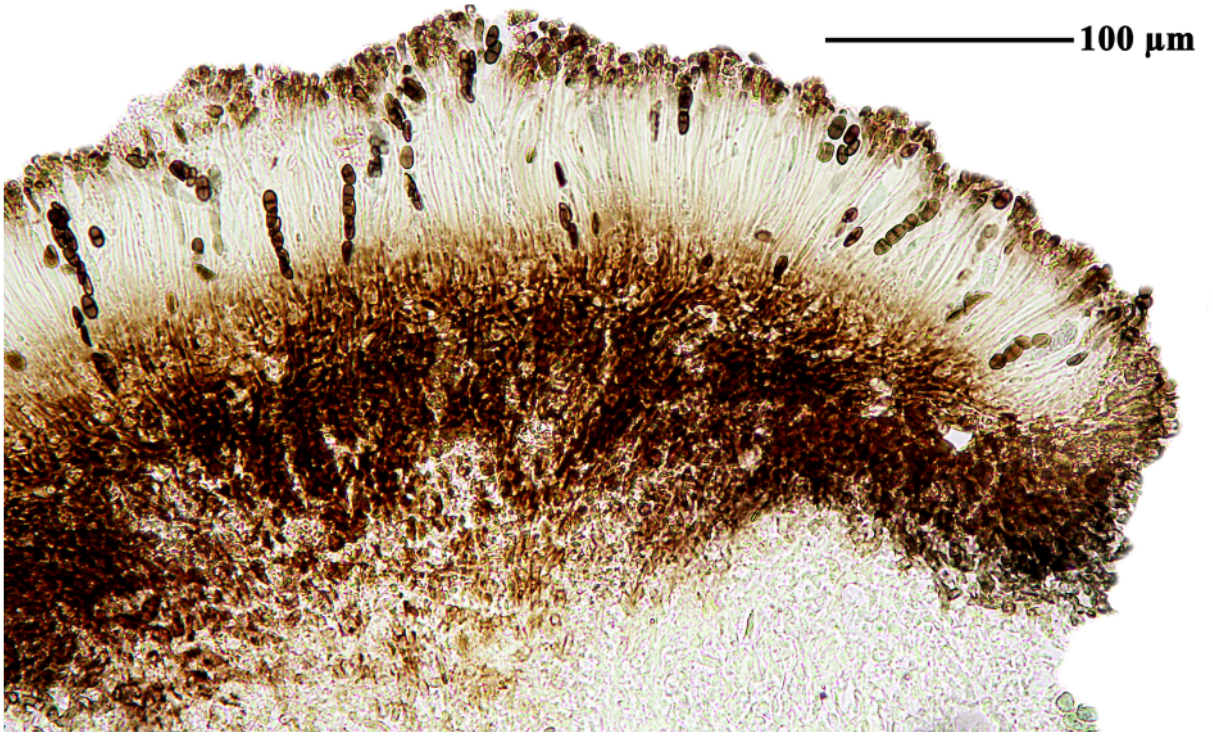
Buellia albula

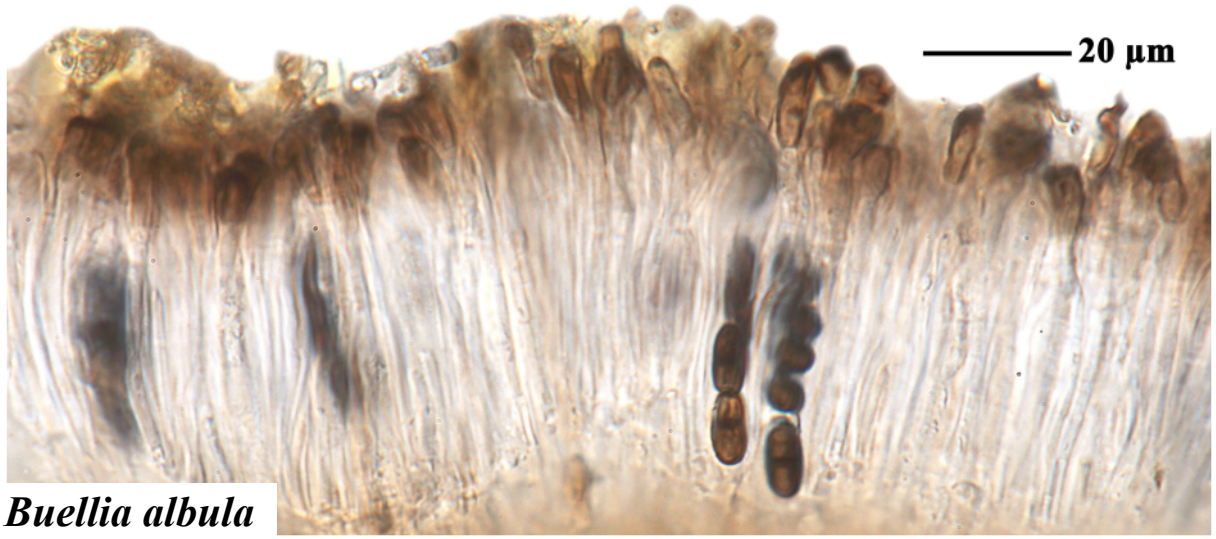




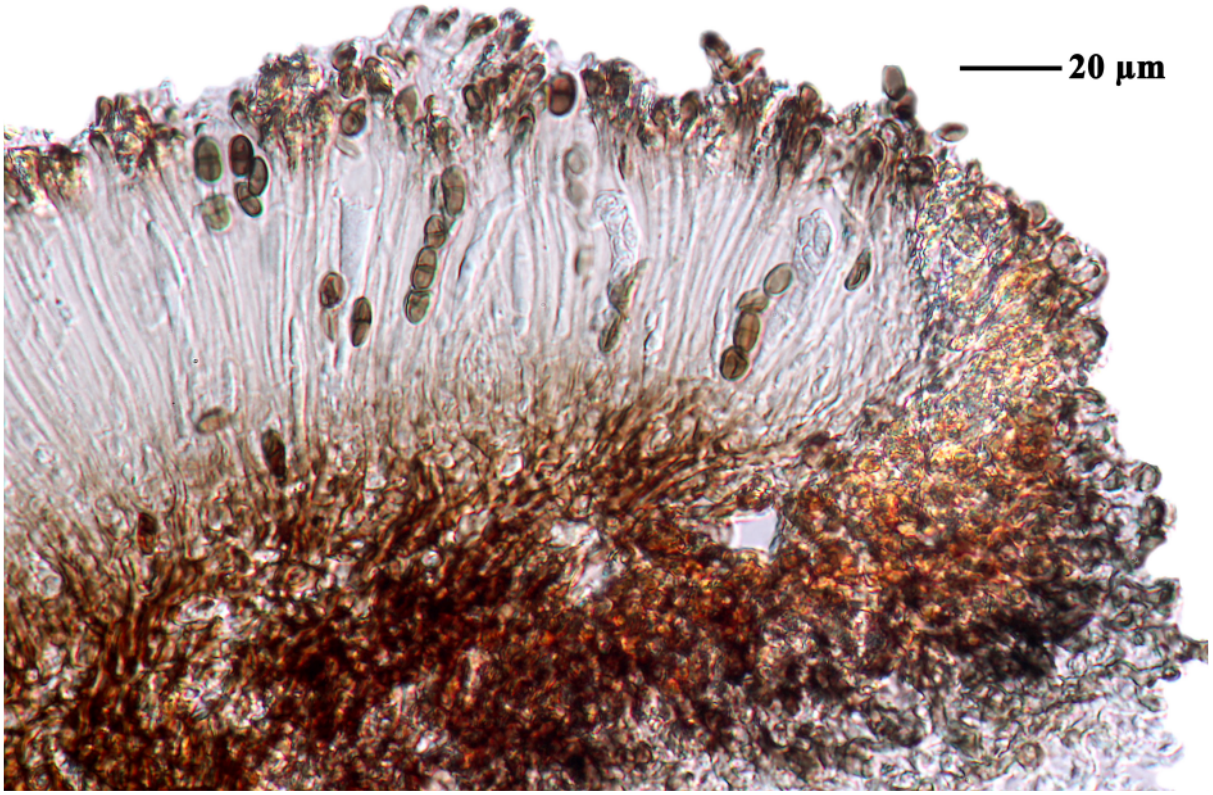
Buellia albula

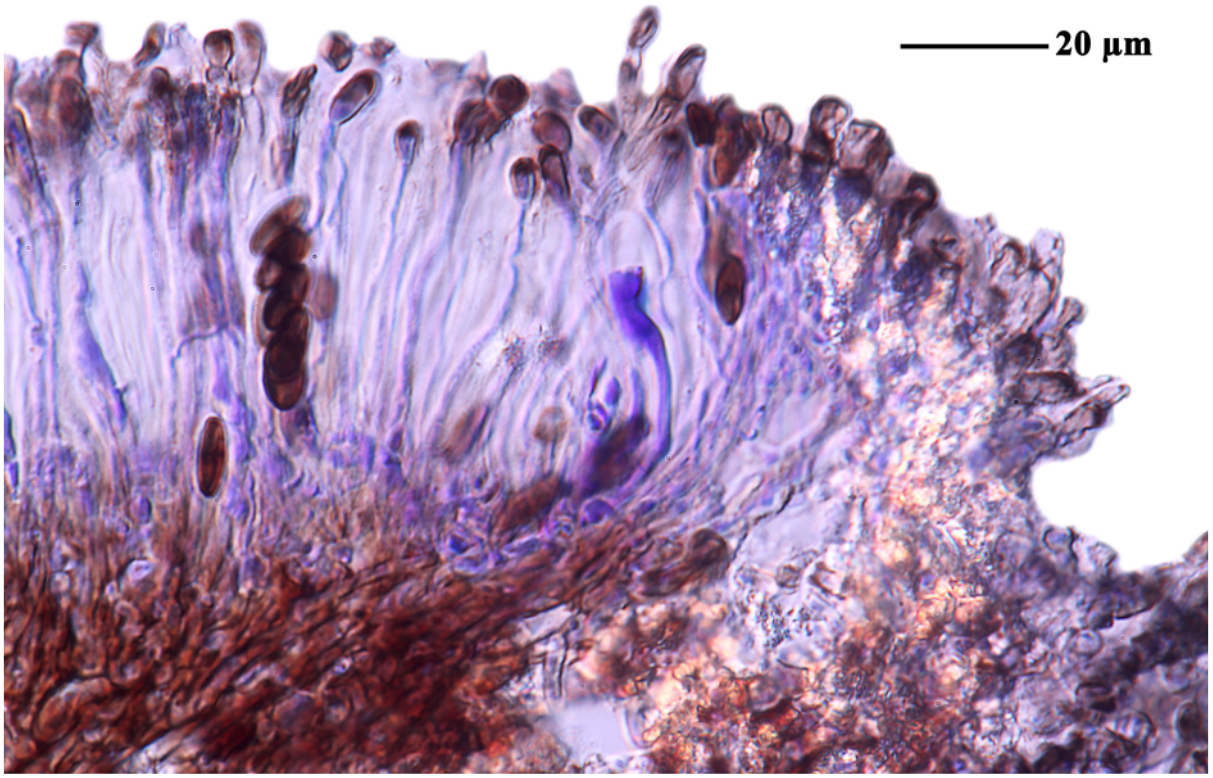


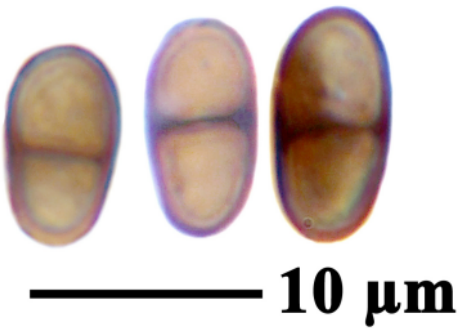




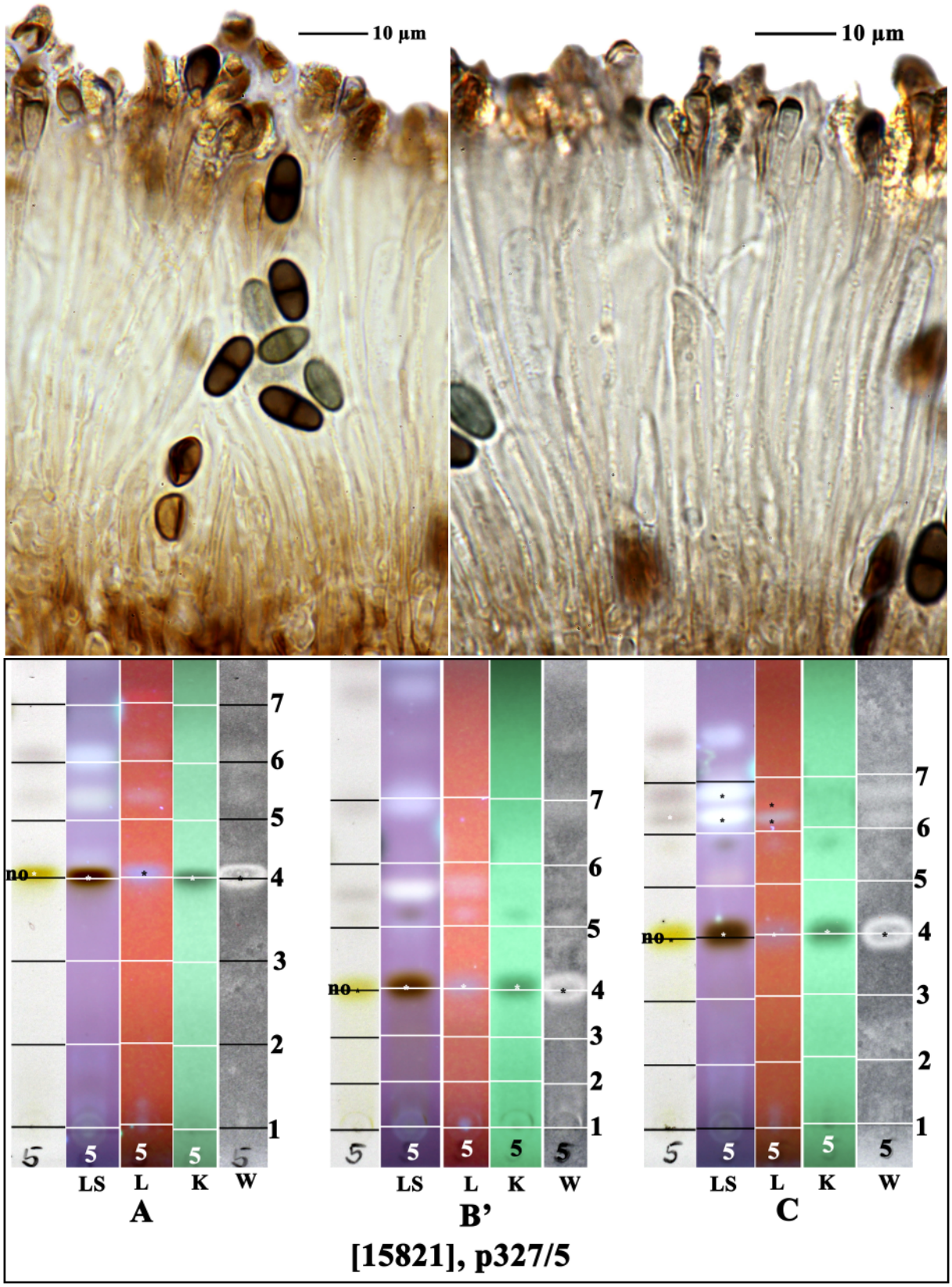
Buellia albula







Buellia albula



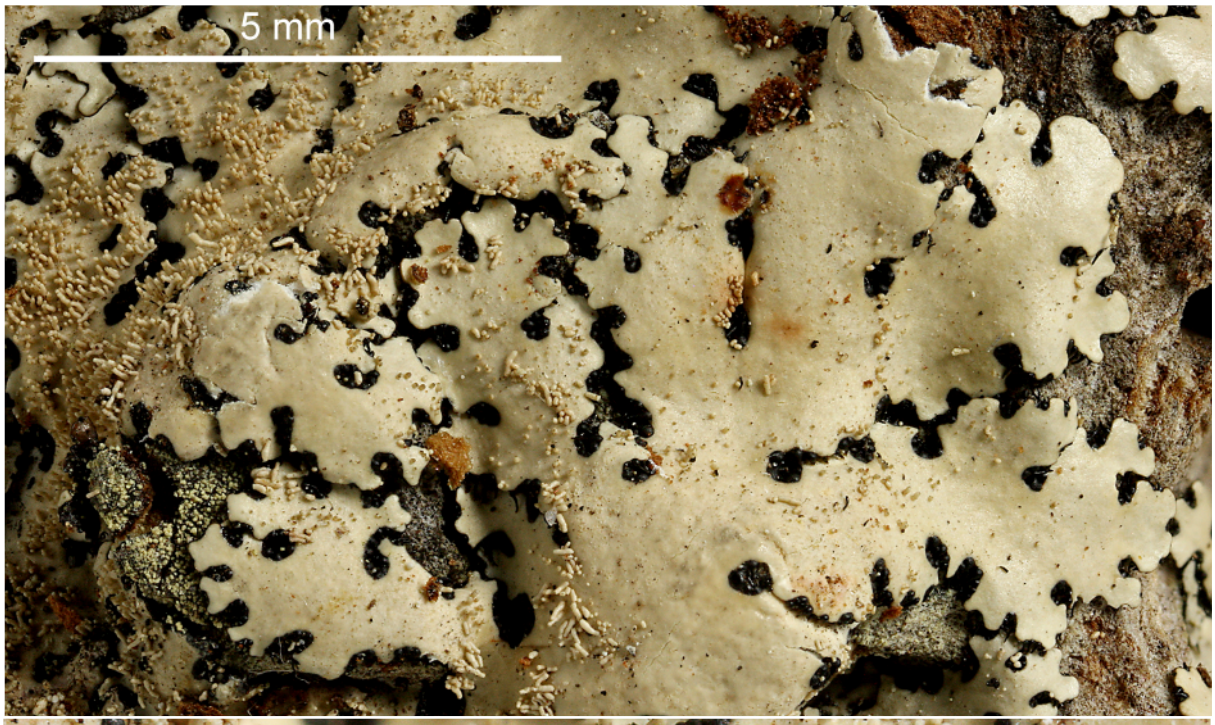
no: norstictic acid

Buellia albula

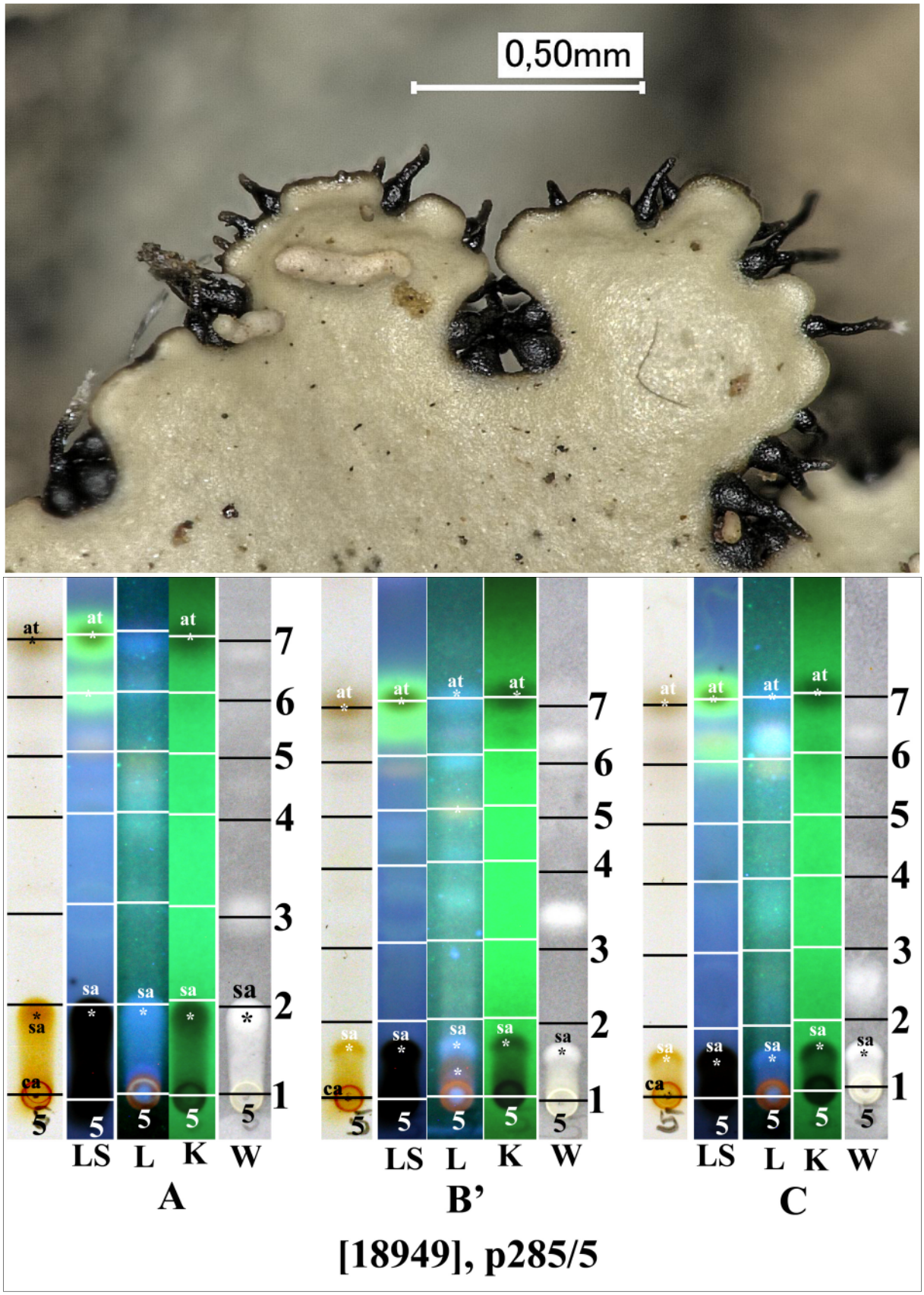
Bulbothrix isidiza (Nyl.) Hale
[= ***Parmelia isidiza*** Nyl.]

Thallus isidiate, lobes broad, 2.5-5 mm wide, upper surface maculate, lower surface brown. Chemistry: atranorin, chloroatranorin, salazinic acid; cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange.

[18949], Australia, Queensland, along the foreshore of Tin Can Inlet, Tin Can Bay, 26°54' S, 153°01' E, 1 m, strand vegetation, on base of Eucalyptus. Leg. J.A. Elix (22884), 04.07.1989 (CANB). Chemistry: atranorin, salazinic acid, consalazinic acid by TLC, anal. J.A. Elix.







at: atranorin, sa: salazinic acid, ca: consalazinic acid

Bulbothrix isidiza

Bunodophoron australe (Laurer) A.Massal.
[= ***Sphaerophorus australis*** Laurer]

Thallus grey, solid, partly flattened. Ascomata terminal on the lower surface, fertile branches richly branched. Mazaedium black. Ascospores globose, 6-7 µm diam, covered by an irregularly black ornamentation, which dissolves rapidly in C. Chemistry: medulla K+ yellow, P+ orange red; placodiolic acid (major, in the ascomata), sphaerophorin (minor), stictic acid (major), constictic acid, norstictic acid (trace).

[19271], Australia, Victoria, Errinundra River West Branch, Errinundra Plateau, 20 km south of Bendoc, 37°19' S, 148°50' E, 960 m, growing on dead stump in *Atherosperma moschatum*-tree fern dominated forest. Leg. J.A. Elix (19881) & H. Streimann, 9.04.1986. Chemistry: sphaerophorin (major), stictic acid (major), constictic acid (minor), cryptostictic acid (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 222. Distributed as ***Sphaerophorus melanocarpus*** (Swartz) DC.



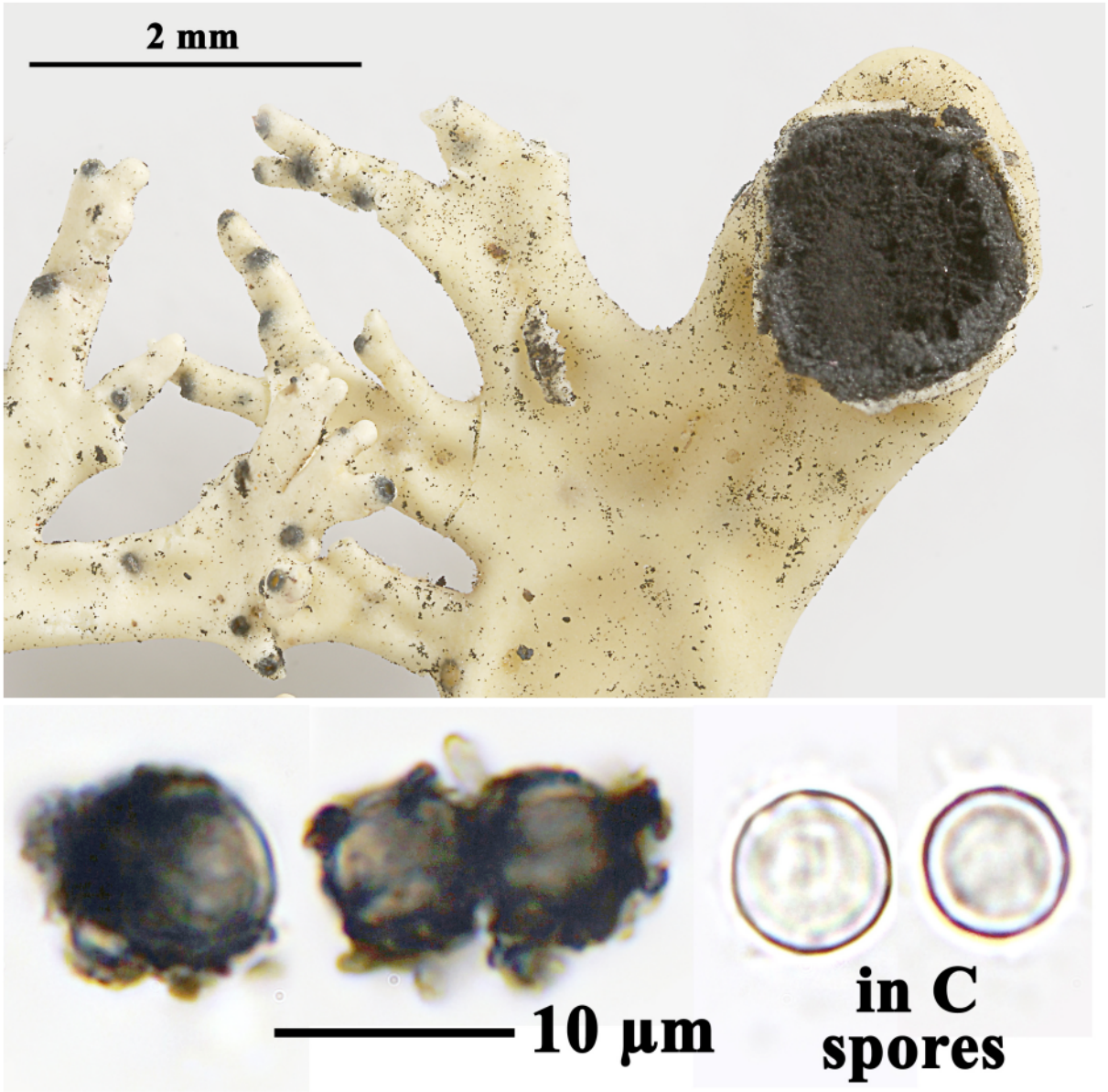




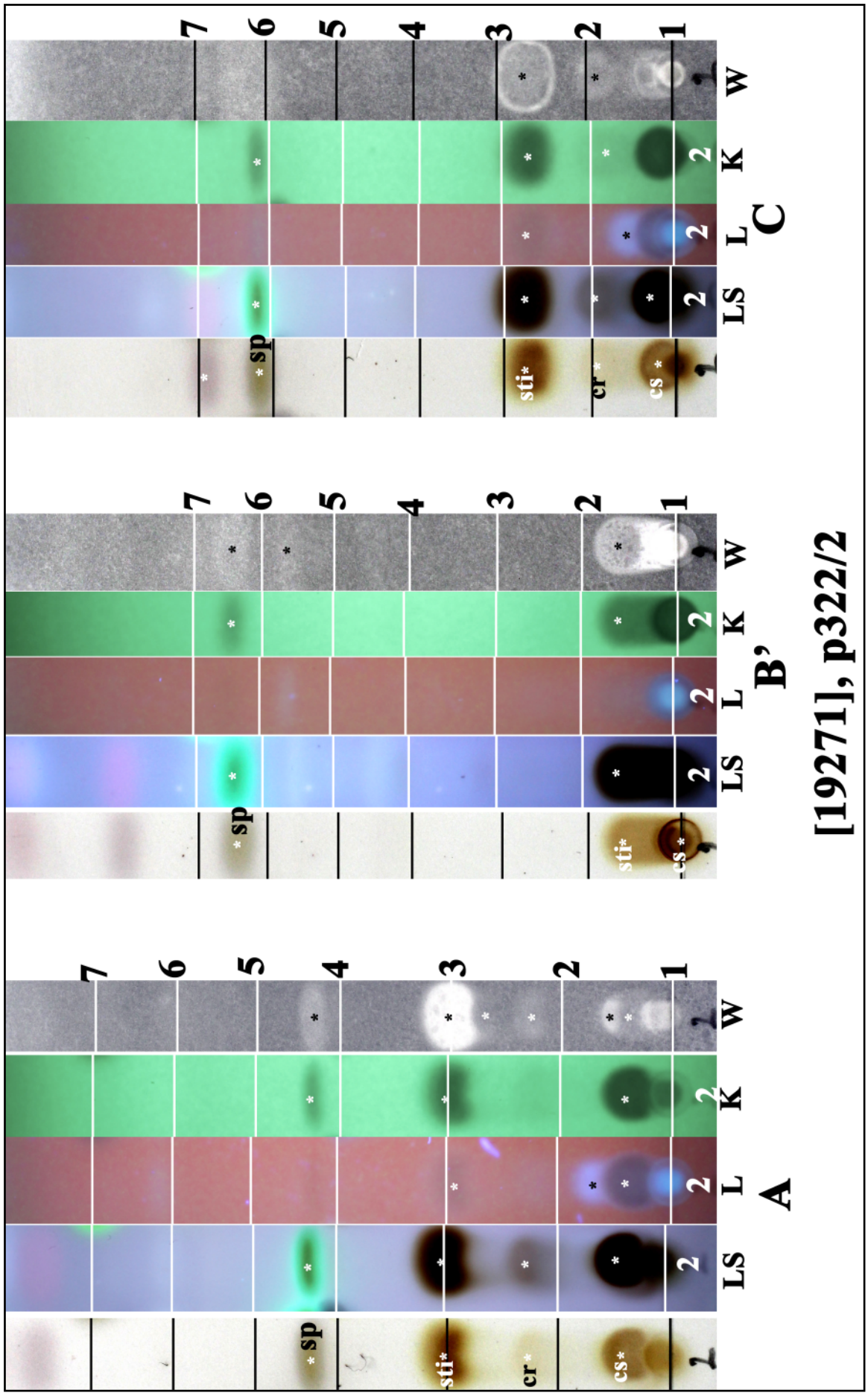
Bunodophoron australe



Bunodophoron australe



Bunodophoron australe



sp: sphaerophorin, sti: stictic acid, cr: cryptostictic acid, cs: constictic acid

Bunodophoron australe

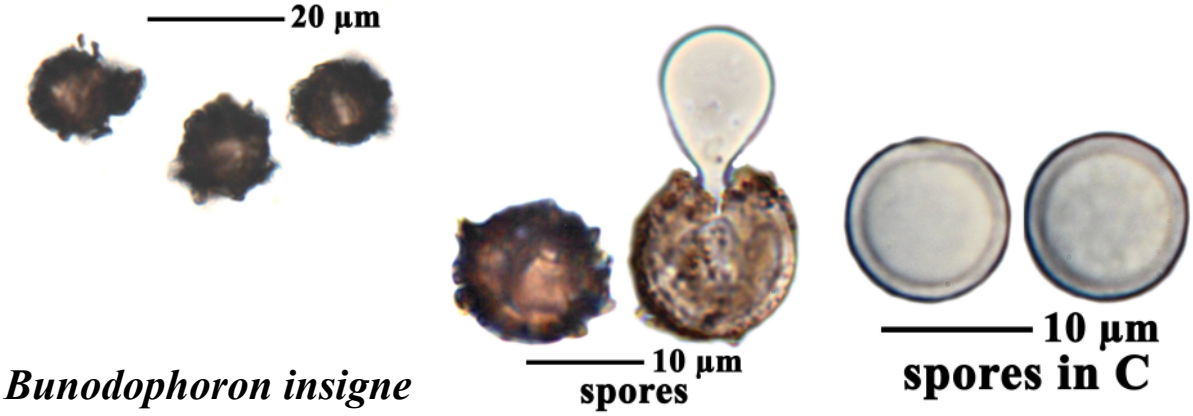
Bunodophoron insigne (Laurer) Wedin
[= ***Sphaerophorus insignis*** Laurer]

Thallus forming patches to large colonies of crowded and imbricate weakly decumbent to horizontal branches. Fertile branches narrowly to broadly flattenmed, 1.8-5(-8.5) cm long, 1.5-3.5(-5.5) mm wide, usually sparingly and irregularly branched. Apothecia usually abundant, terminal, 2.5-5(-8.5) mm wide. Mazaedia large, ventrally exposed through usually irregular cracks in the thalline receptacle which covers the mature mazaedium. Ascospores (7.5-)11-13.5(-16.5) µm diam., reddish brown, with black, warty, external layer which is rapidly soluble in C. Chemistry: medulla K-, P+ red; sphaerophorin, protocetraric acid, ascomatic acid, methyl ascomatate, unknowns (trace). Lit. Wedin, M. (2001, Flora of Australia 58A)

[19269], Australia, Victoria, Junction of Coast Range Road and Cabon Road, Errinundra Plateau, 18.5 km south-south-east of Bendoc, 37°18' S, 148°51' E, 980 m, growing on dead log in *Eucalyptus* forest. Leg. J.A. Elix (19998) & H. Streimann, 10.04.1986, det. M. Wedin. Chemistry: sphaerophorin (minor/trace), protocetraric acid (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 220. Distributed as ***Sphaerophorus insignis*** Laurer.







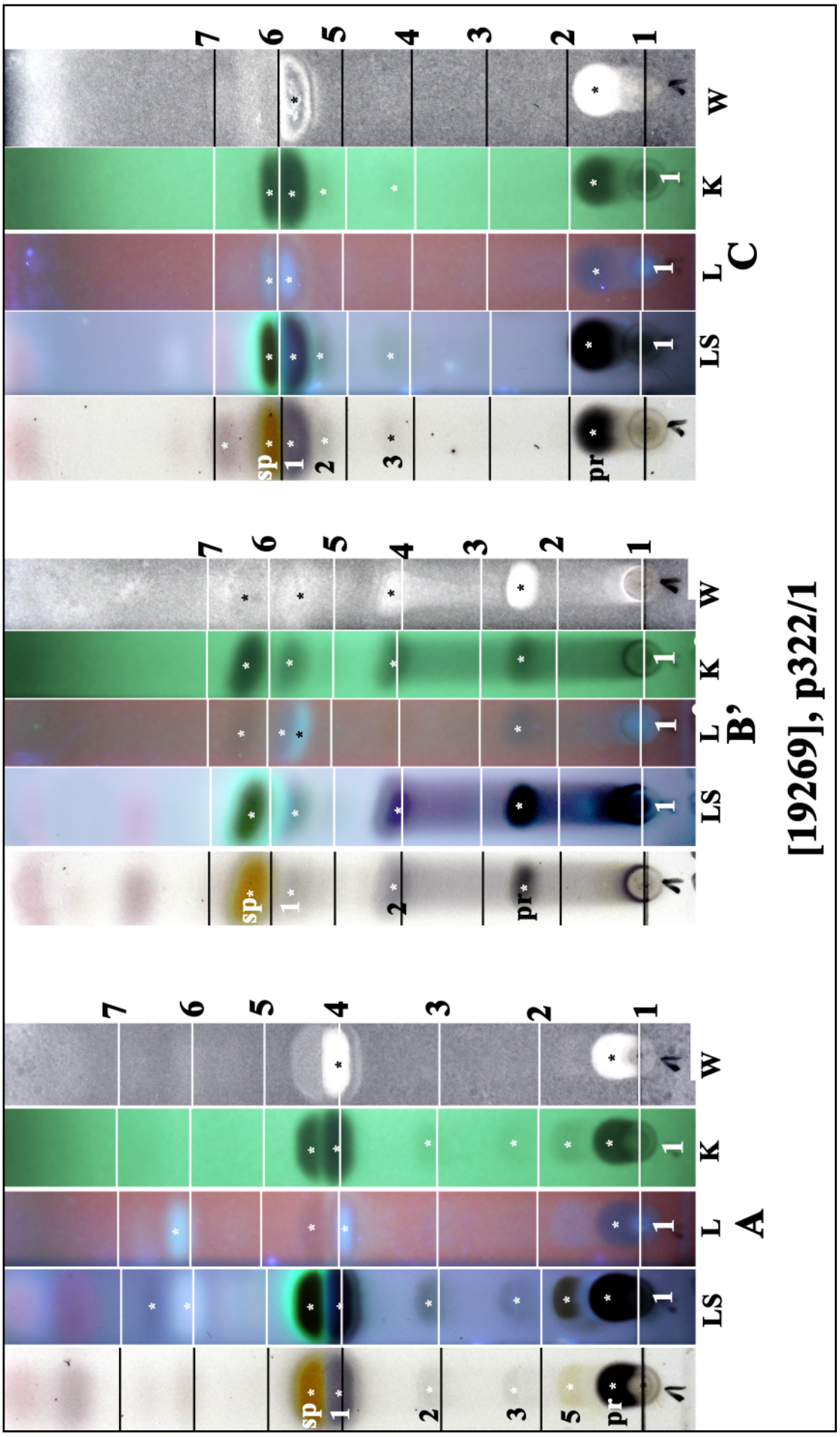
Bunodophoron insigne



Bunodophoron insigne



Bunodophoron insigne



sp: sphaerophorin, pr: protocetraric acid, 1: ascomatic acid, 2,3,4: unknowns

Bunodophoron insigne

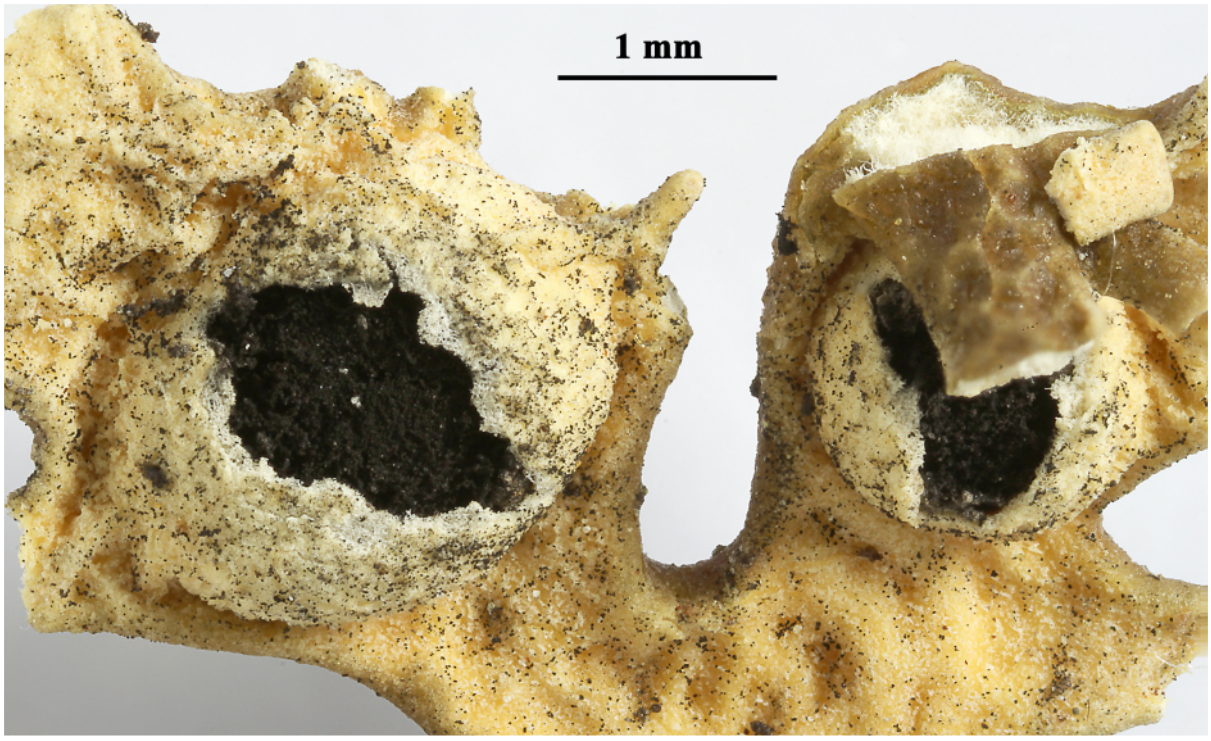
Bunodophoron insigne (Laurer) Wedin
[= ***Sphaerophorus insignis*** Laurer]

[19270], Australia, Victoria, Goonmirk Rocks, Errinundra Flora Reserve, 14 km south of Bendoc, 37°17' S, 148°53' E, 1200 m, growing on base of *Telopea oreades* in cool temperate forest on moderate slope, dominated by *Podocarpus*, *Pittosporum* and *Telopea*. Leg. J.A. Elix (21915) & H. Streimann, 29.03.1988, det. M. Wedin. Chemistry: sphaerophorin (minor/trace), protocetraric acid (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 221.



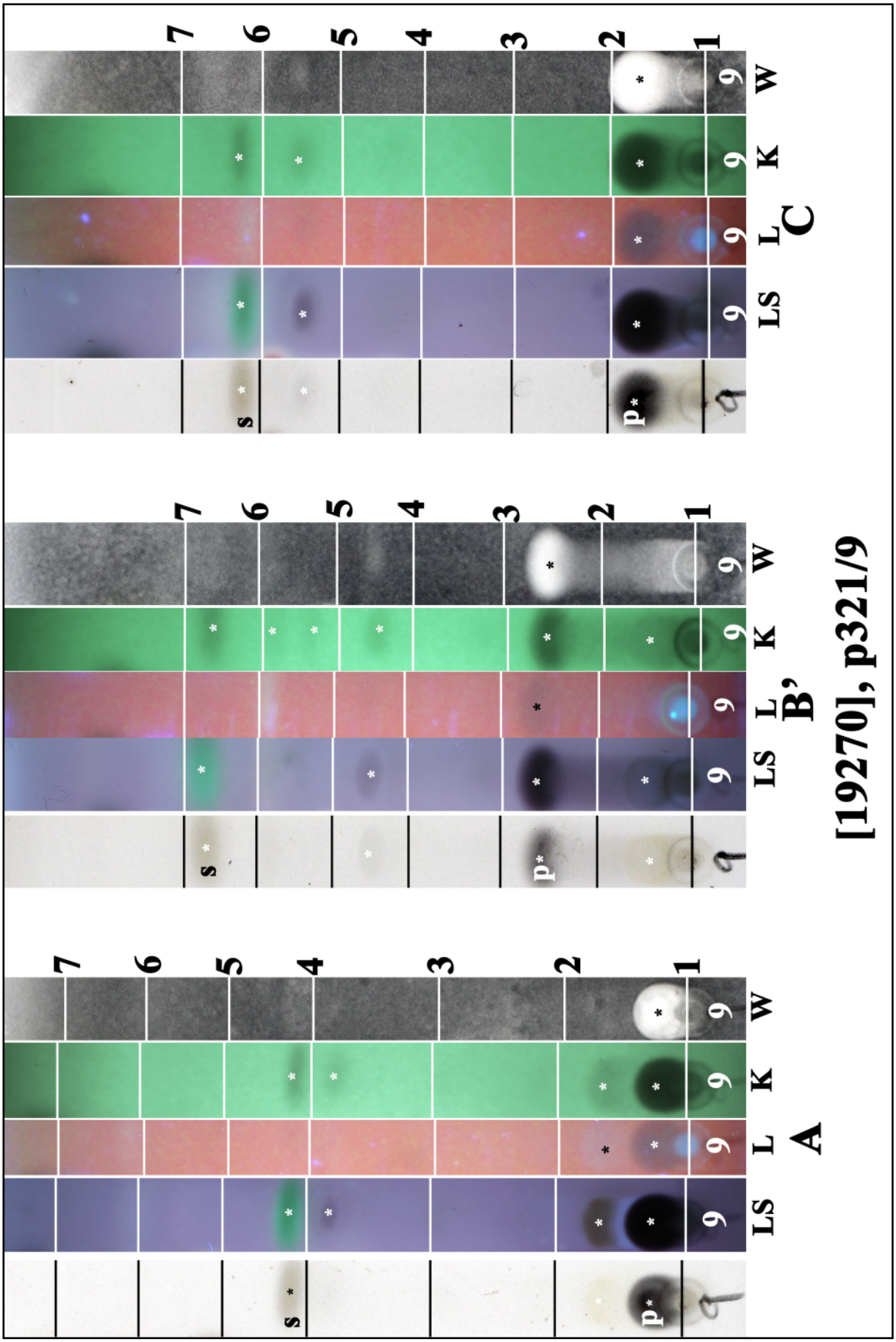


Bunodophoron insigne





Bunodophoron insigne



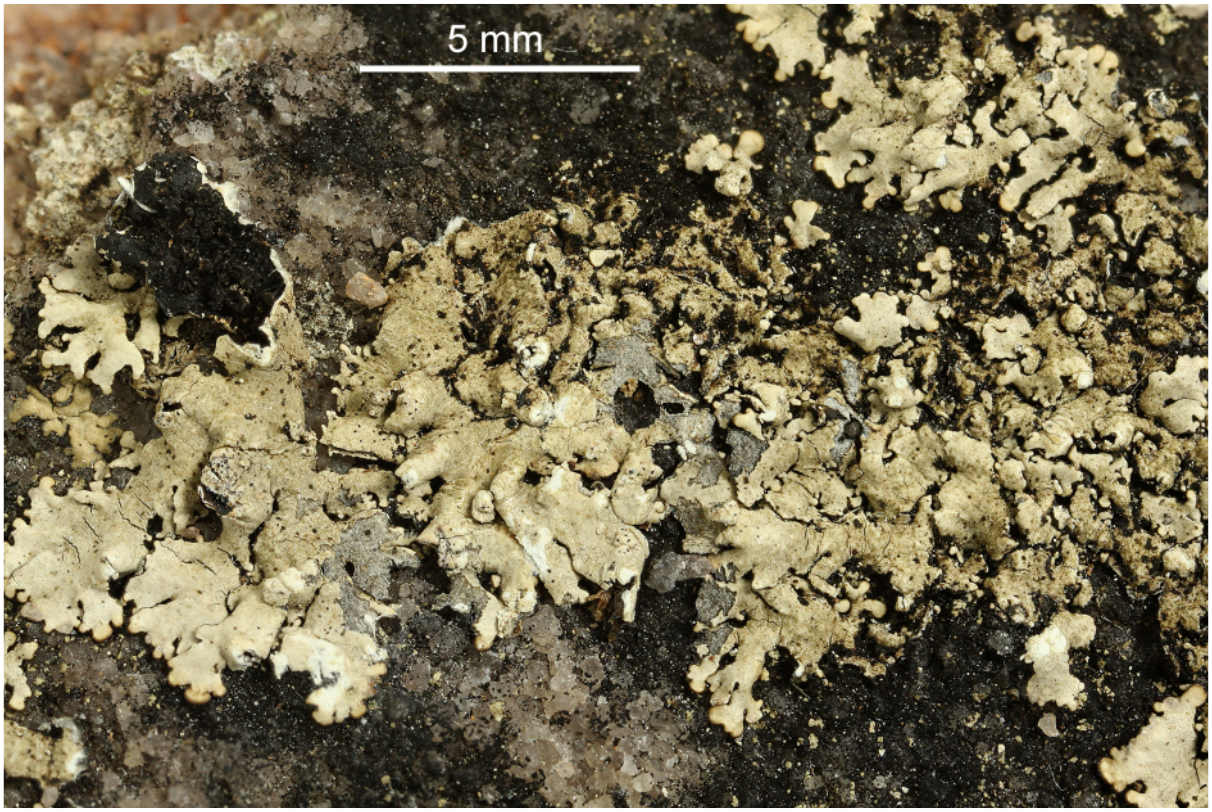
s: sphaerophorin. p: protocetraric acid

Bunodophoron insigne

Canoparmelia raunkiaeri (Vain.) Elix & Hale
[= ***Parmelia raunkiaerei*** Vain.]

Thallus adnate. Lobes imbricate, 2-4 mm wirde. Upper surface pale grey, smooth but rugose towards centre, without isidia, pustulate-sorediate, pustules coalescing in coarsely sorediate mass on older portions of the thallus. Medulla white. Lower surface black, with brown zone at margins. Rhizines sparse, simple, black. Cortex K+ yellow; medulla K-, P+ orange red, C-, KC- or C+ rose, KC+ rose.

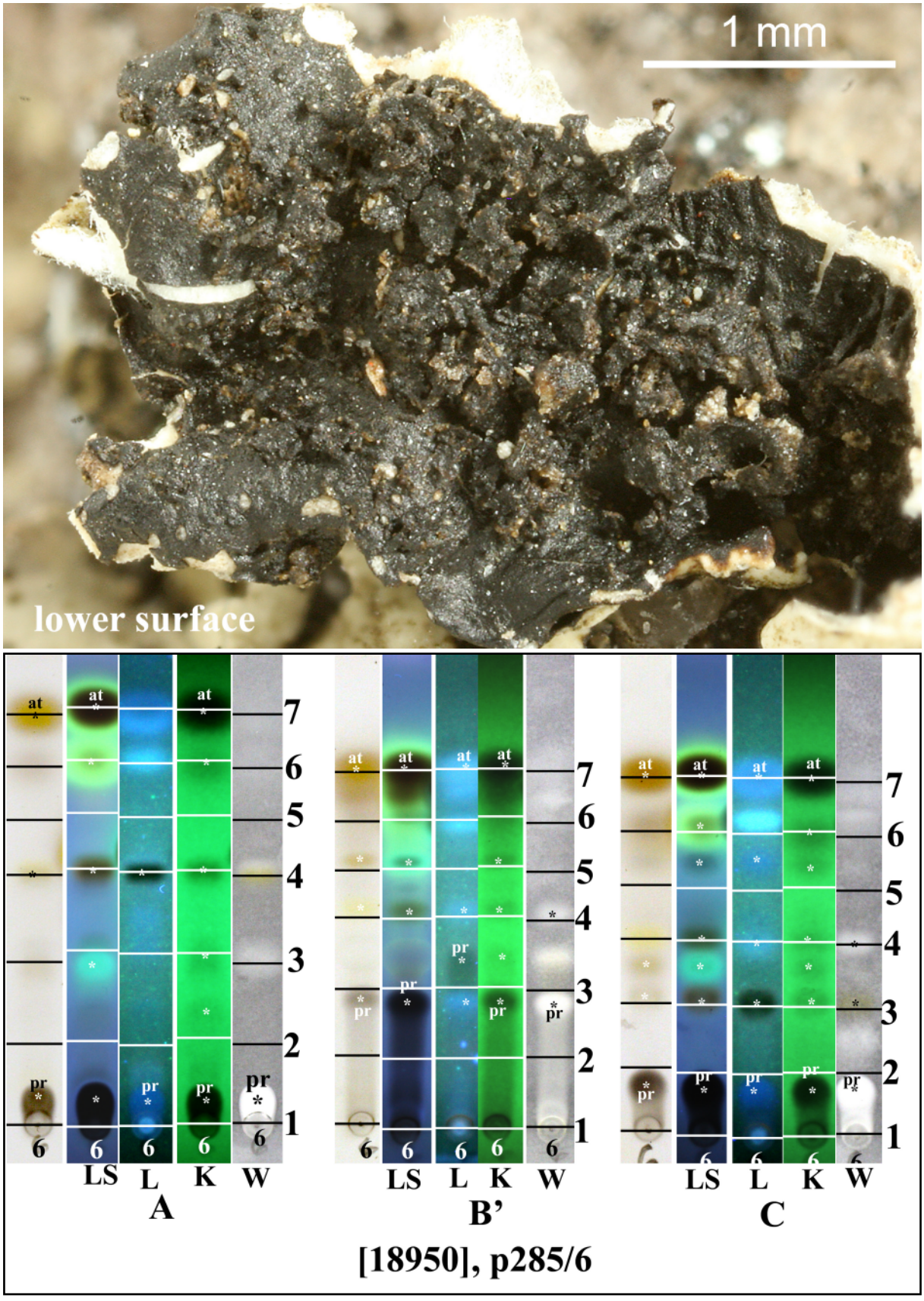
[18950], Australia, Northern Territory, Arnhem Land, 18 km east-north-east of Jabiru airfield, 12°37' S, 133°03' E, 220 m, growing on flat, shaded sandstone outcrops in Allosyncarpia dominated vegetation amongst deeply dissected sandstone outcrops. Leg. H. Streimann & J.A. Curnow, 17.04.1989. Chemistry: atranorin, chloroatranorin, protocetraric acid (major), gyrophoric acid (trace), unknowns (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 178.







Canoparmelia raunkiaeri



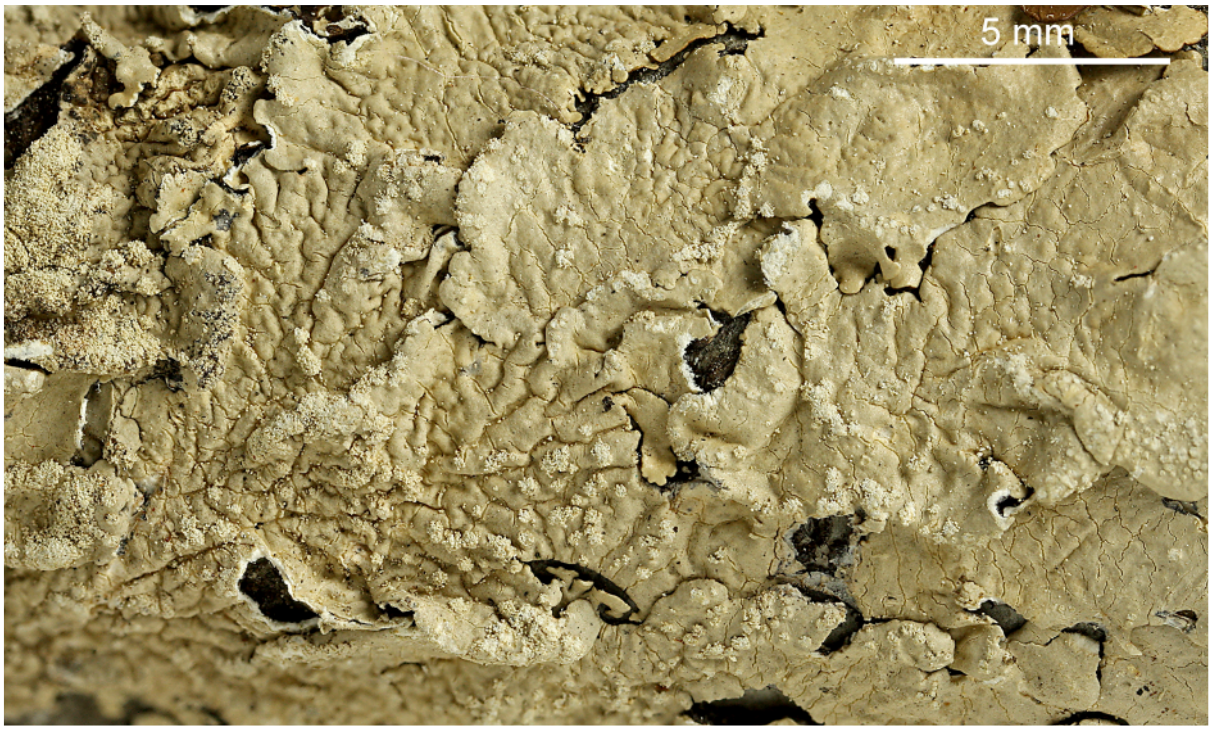
at: atranorin, pr: protocetraric acid

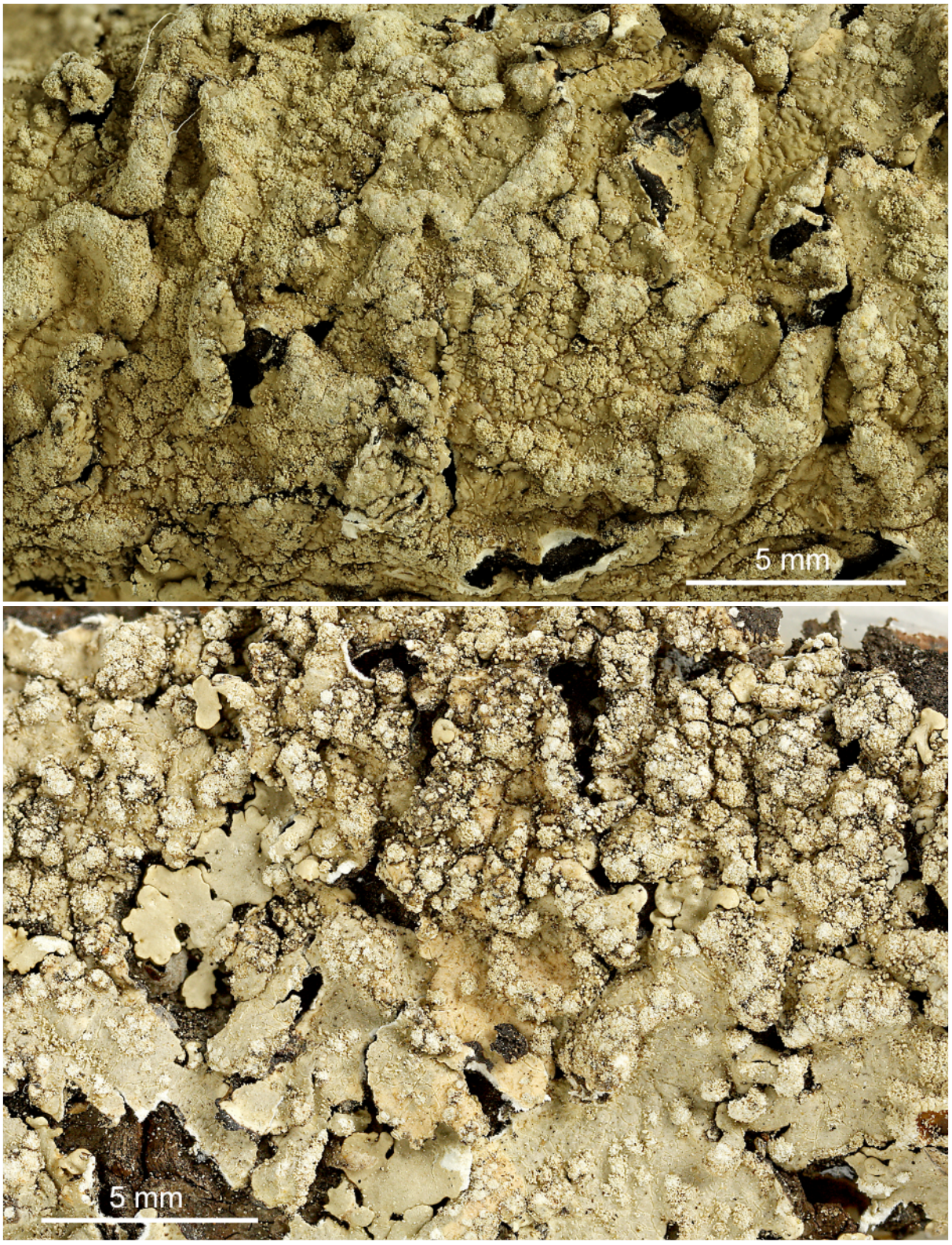
Canoparmelia raunkiaeri

Canoparmelia texana (Tuck.) Elix & Hale
[= ***Parmelia texana*** Tuck.]

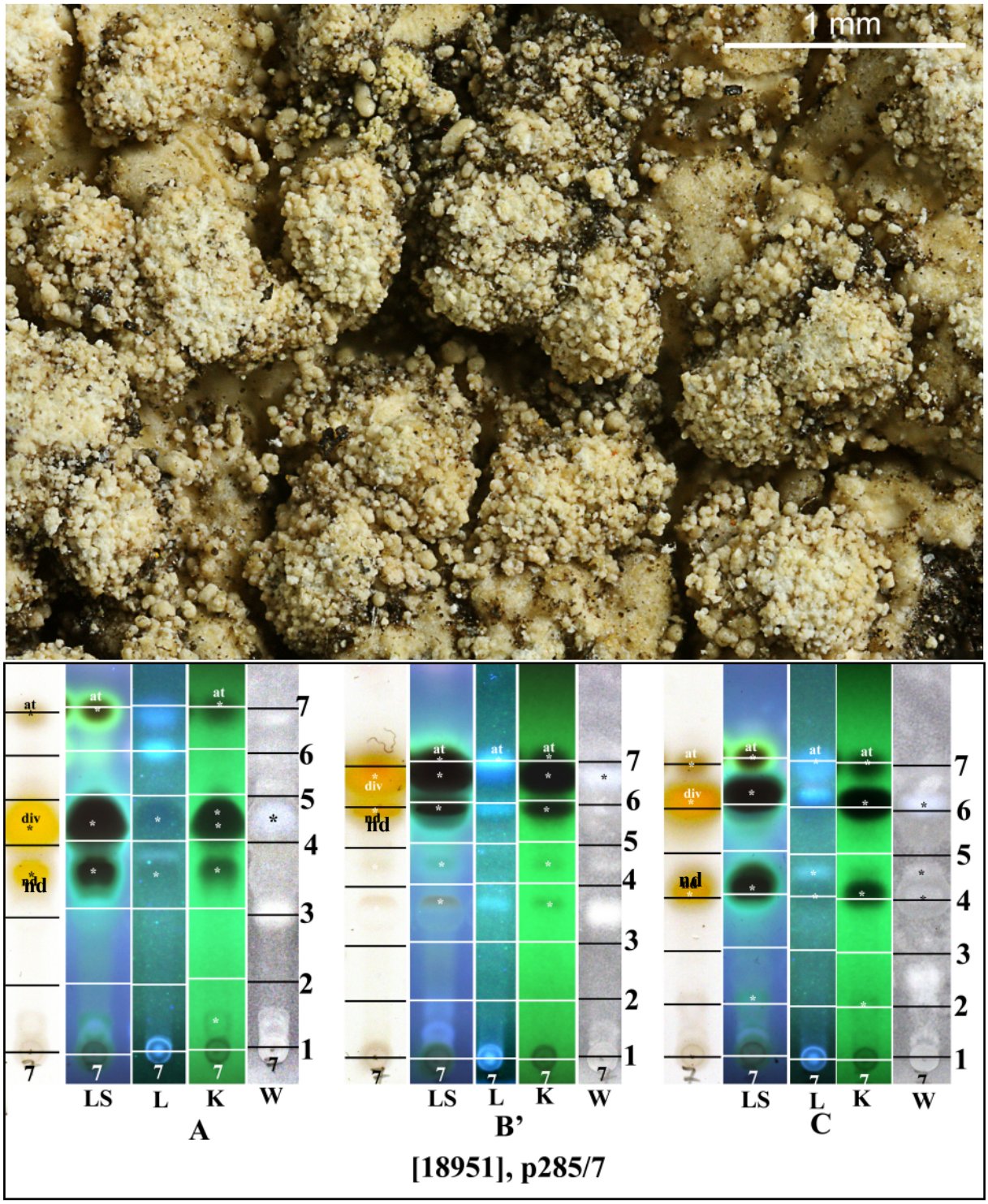
Thallus adnate. Lobes often imbricate, sublinear, 3-5 mm wide. Upper surface pale grey to grey-green, smooth to rugulose, maculate, usually cracked, without isidia. Soralia laminal, initially pustulate, becoming punctiform to capitate. Soredia coarse, granular. Medulla white. Lower surface black, with brown marginal zone. Rhizines sparse to moderately dense, simple, black. Cortex K+ yellow; medulla K-, C-, KC-, P-.

[18951], Australia, Queensland, Kelvin Grove, Brisbane, 27°21' S, 153°00' E, 15 m, growing on branches of dead tree in cultivated garden. Leg. J.A. Elix (22610), 08.07.1988. Chemistry: atranorin, chloroatranorin, divaricatic acid (major), nordivaricatic acid (trace), stenosporic acid (trace), unknowns (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 177.





Canoparmelia texana



at: atranorin, div: divaricatic acid, nd: nordivaricatic acid

Canoparmelia texana

Carbonicola foveata (Timdal) Bendiksby & Timdal
[= ***Hypocenomyce foveata*** Timdal]

Thallus squamulose, brown, ± glossy. Squamules 0.2-0.6 mm wide, adnate, convex, often with a central depression. Soredia and isidia absent. Ascospores narrow fusiforme, simple, rarely 1- or 3-septate, 6-10 x 1.5-2.5 µm. Chemistry: medulla K-, C-, KC+ purple, P-, UV+ blue-white; colensoic acid (major), 4-*O*-methylphysodic acid (major), physodic acid (minor), norcolensoic acid (minor). Lit. Bendiksby & Timdal (2013).

[19034], Australia, New South wales, Great Dividing Range, Tuena-Binda road, 30 km north-west of Crookwell, 34°13' S, 149°20' E, 920 m, growing on base of Eucalyptus macrorhyncha in dry sclerophyll forest on gentle slope. Leg. J.A. Elix (27483), 12.09.1990. Chemistry: colensoic acid (sub-major), 4-*O*-methylphysodic acid (major), physodic acid (minor), norcolensoic acid (trace), 4-*O*-methyllividic acid (minor), perlatolic acid (minor) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 230. Distributed as *Hypocenomyce foveata* Timdal.



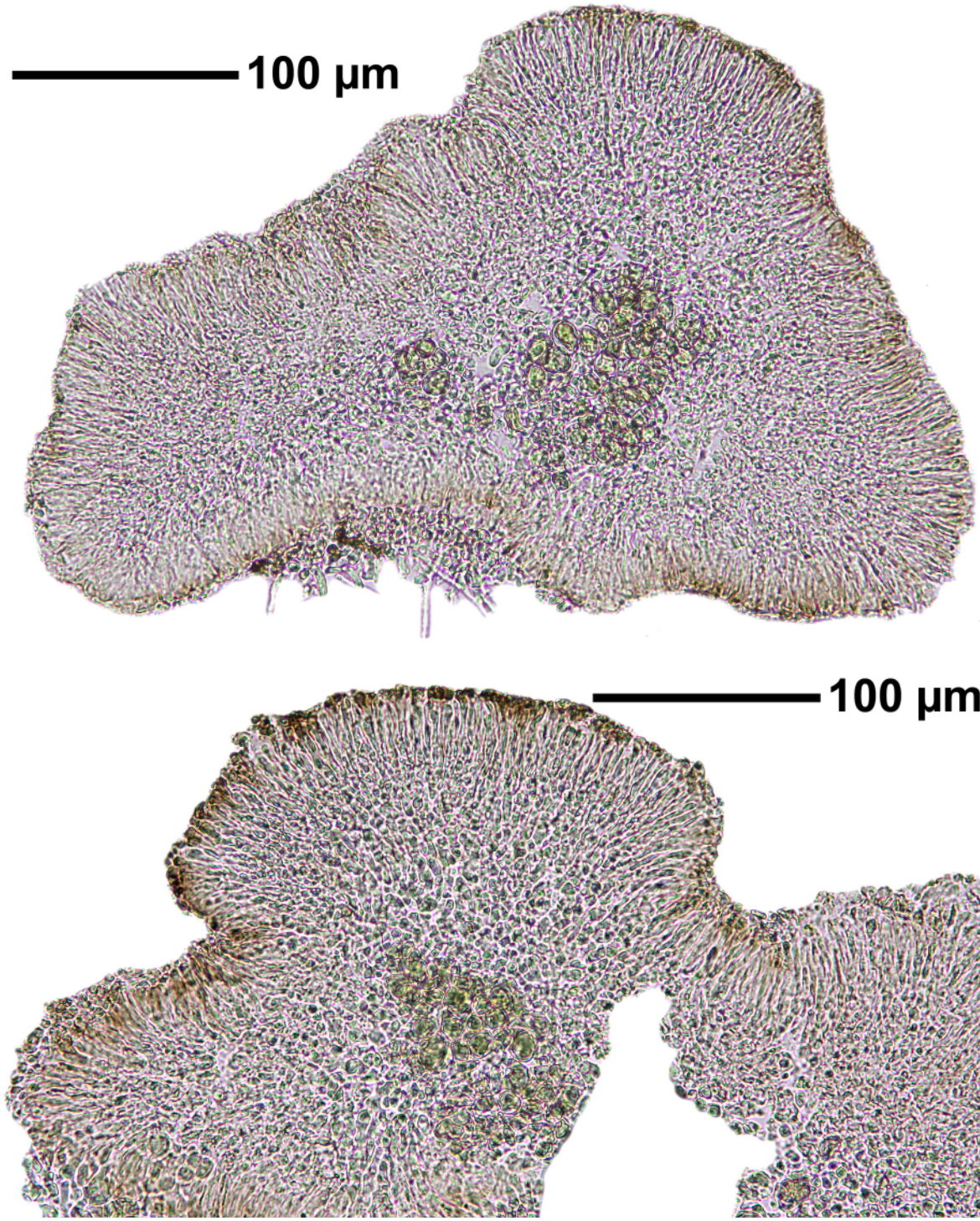




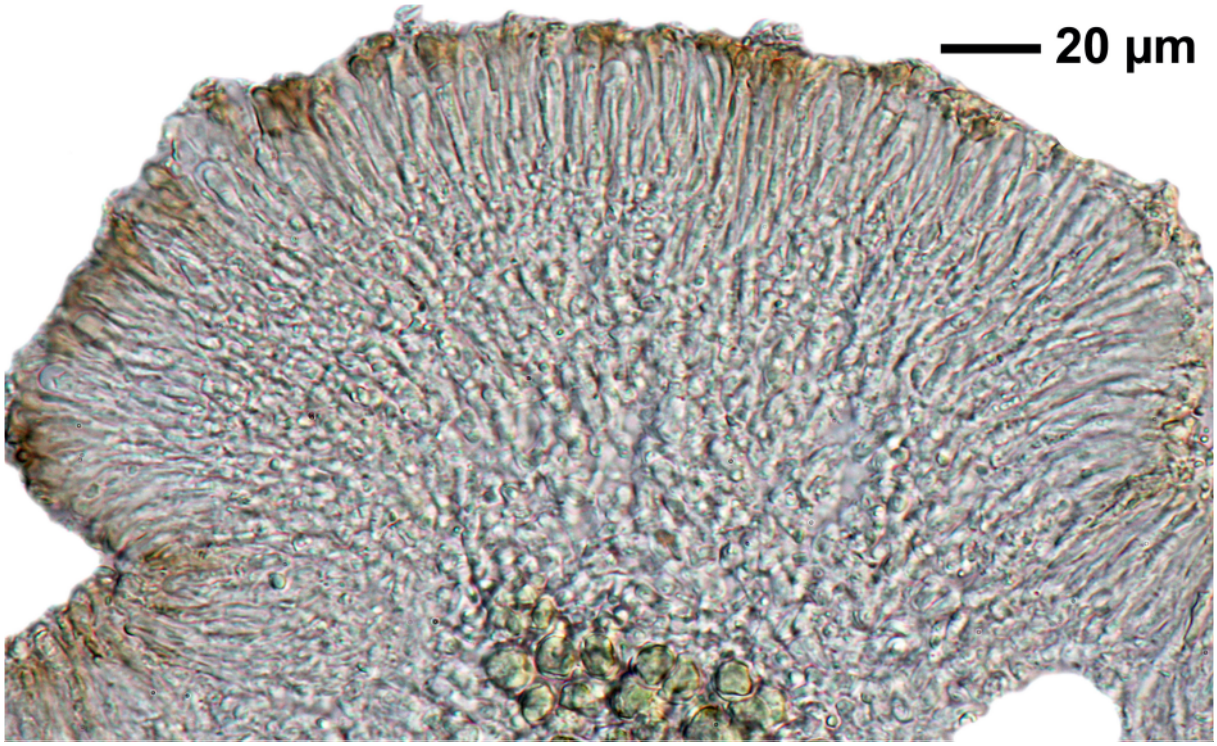
Carbonicola foveata

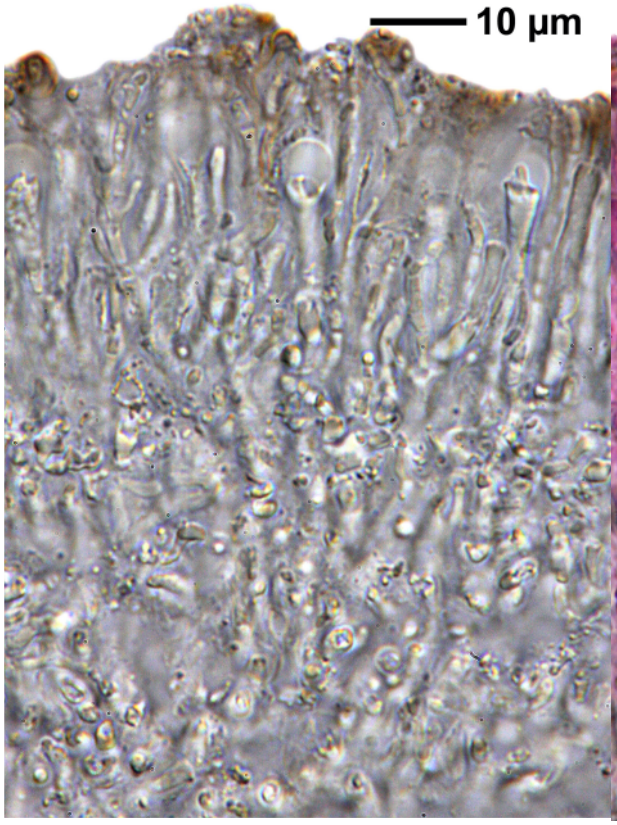


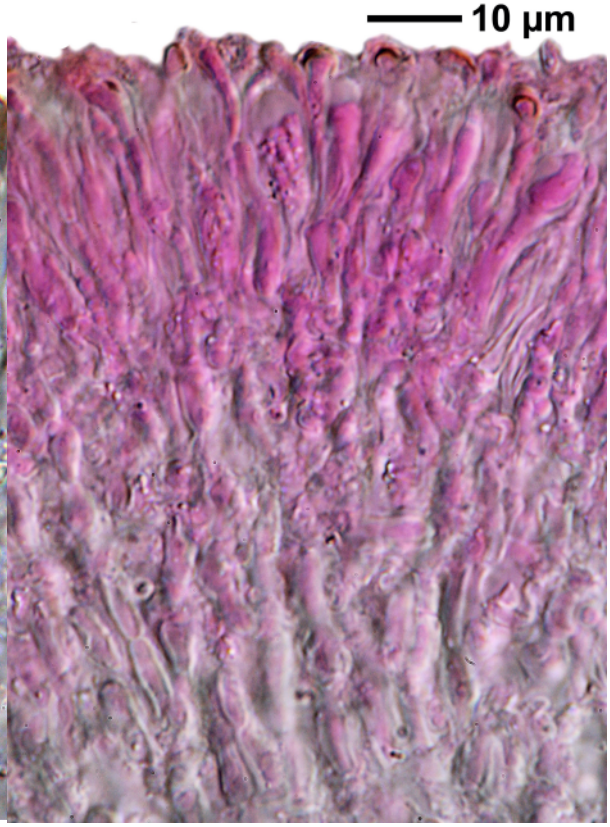
Carbonicola foveata

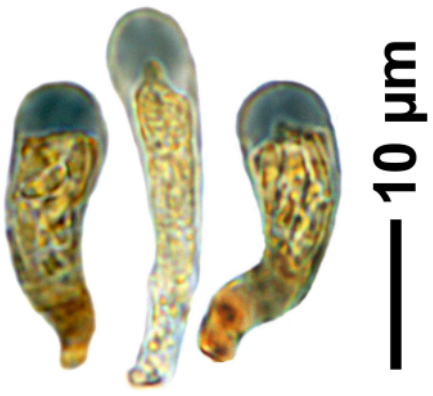


Carbonicola foveata



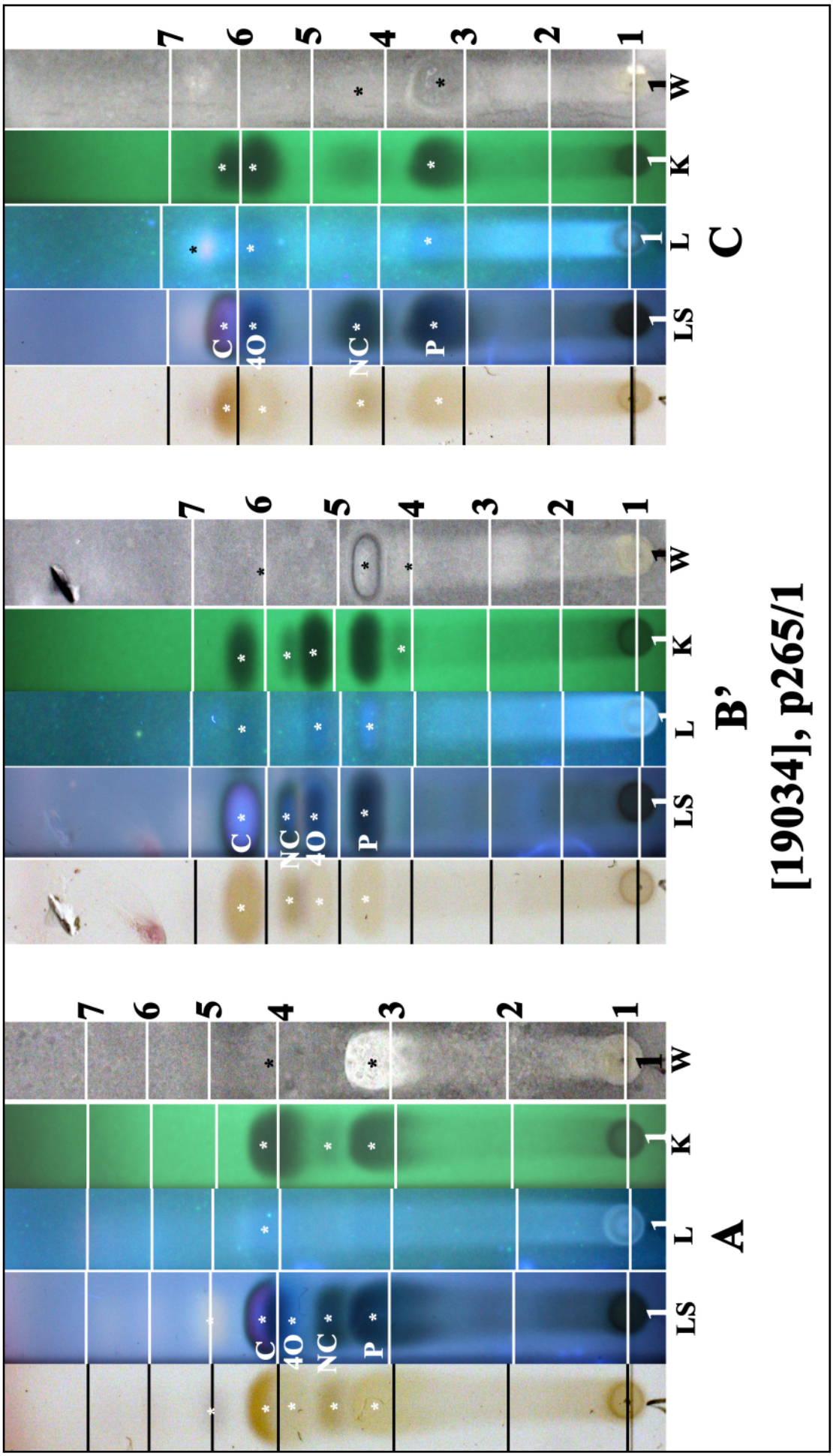






Carbonicola foveata

Asci J+ blue reaction



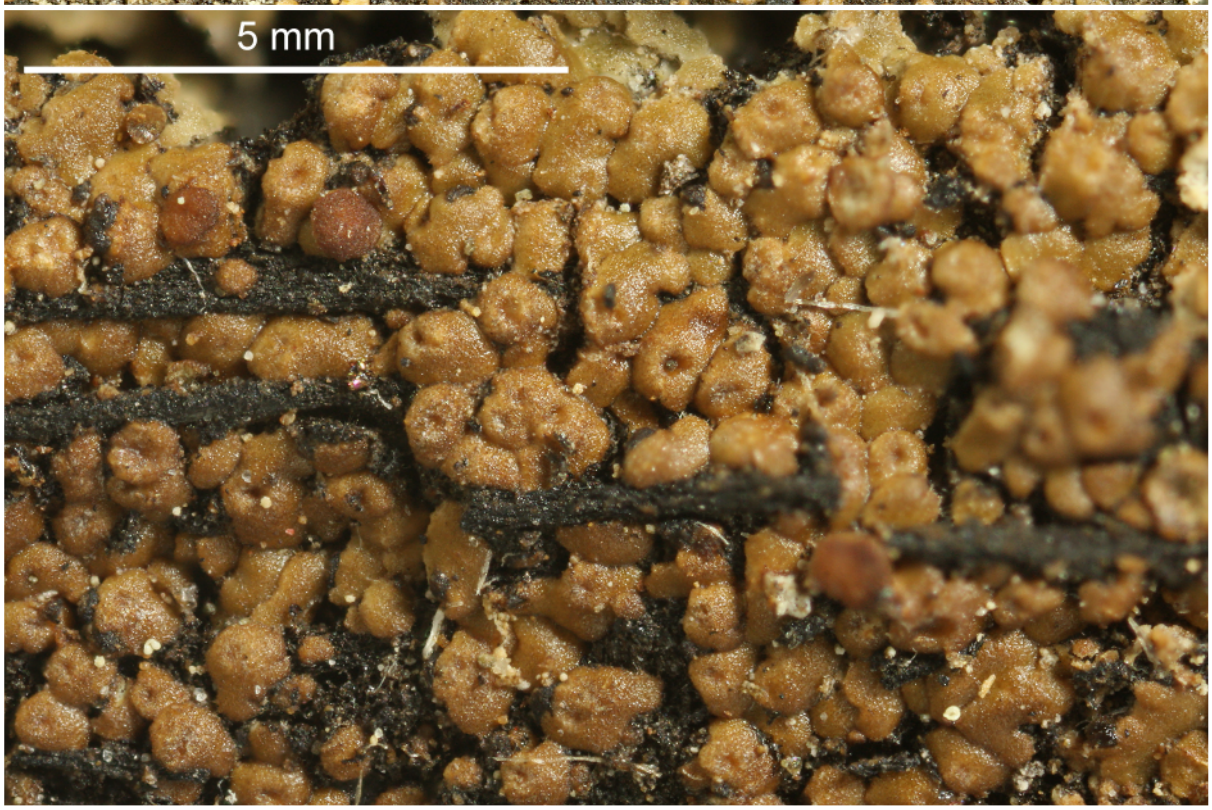
C: colensoic acid, NC: norcolensoic acid, 4O: 4-*O*-methylphysodic acid, P: physodic acid

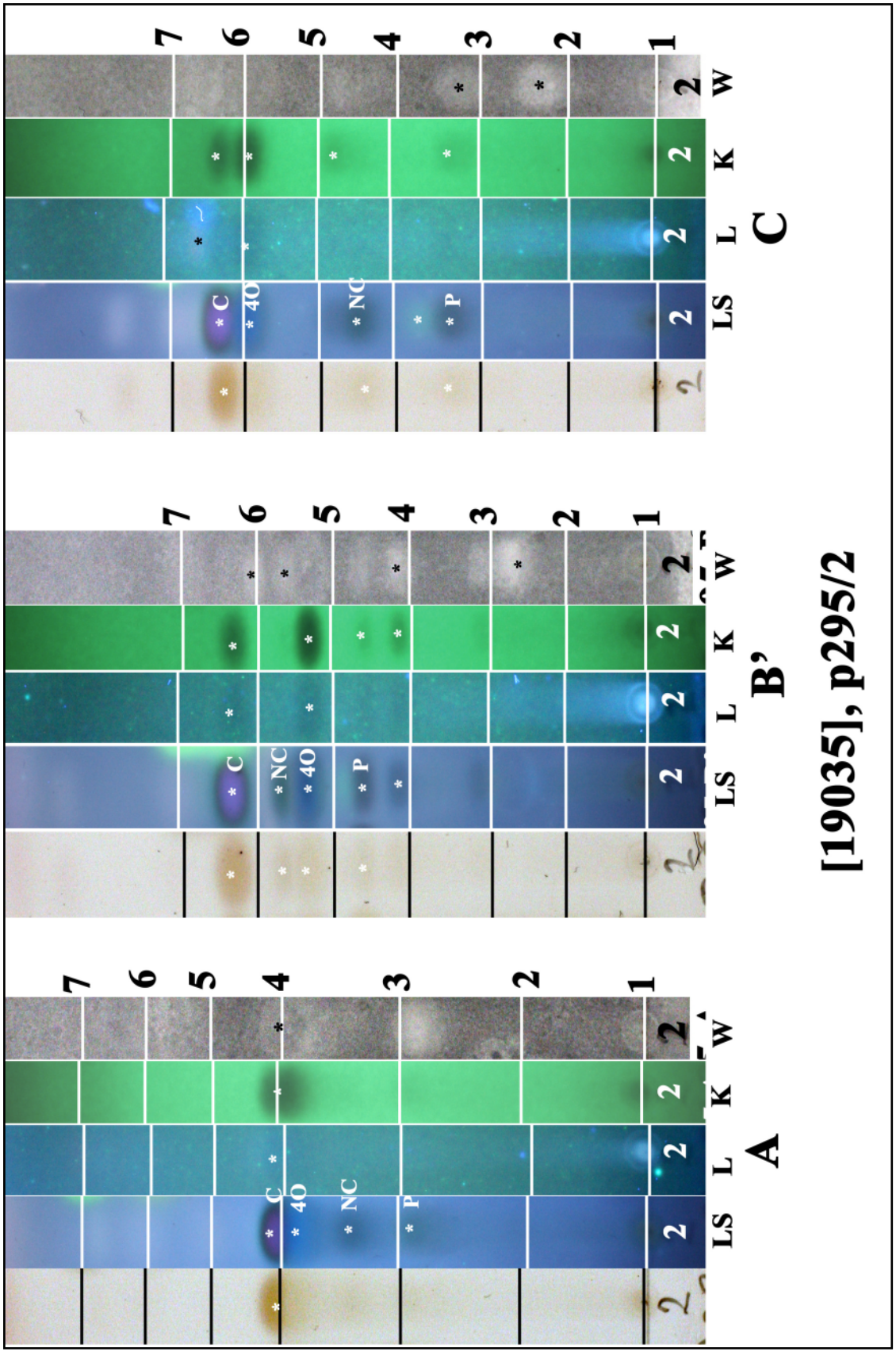
Carbonicola foveata

Carbonicola foveata (Timdal) Bendiksby & Timdal
[= ***Hypocenomyce foveata*** Timdal]

[19035], Australia, Australian Capital Territory, Canberra Nature Park, Bruce Ridge, 35°515' S, 149°05' E, 640 m, growing on trunk of *Eucalyptus macrorhyncha* in dry *Eucalyptus* woodland. Leg. J.A. Elix (27485), 26.01.199. Chemistry: colensoic acid (sub-major), 4-*O*-methylphysodic acid (major), physodic acid (minor), norcolensoic acid (minor), 4-*O*-methyllividic acid (minor), perlatolic acid (minor), ursolic acid by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 231. Distributed as *Hypocenomyce foveata* Timdal.







C: colensoic acid, NC: norcolensoic acid, 4O: 4-*O*-methylphysodic acid, P: physodic acid

Carbonicola foveata

Cetraria aculeata (Schreb.) Fr.
[= ***Cornicularia aculeata*** (Schreb.) Ach.]
[= ***Coelocaulon aculeatum*** (Schreb.) Link]

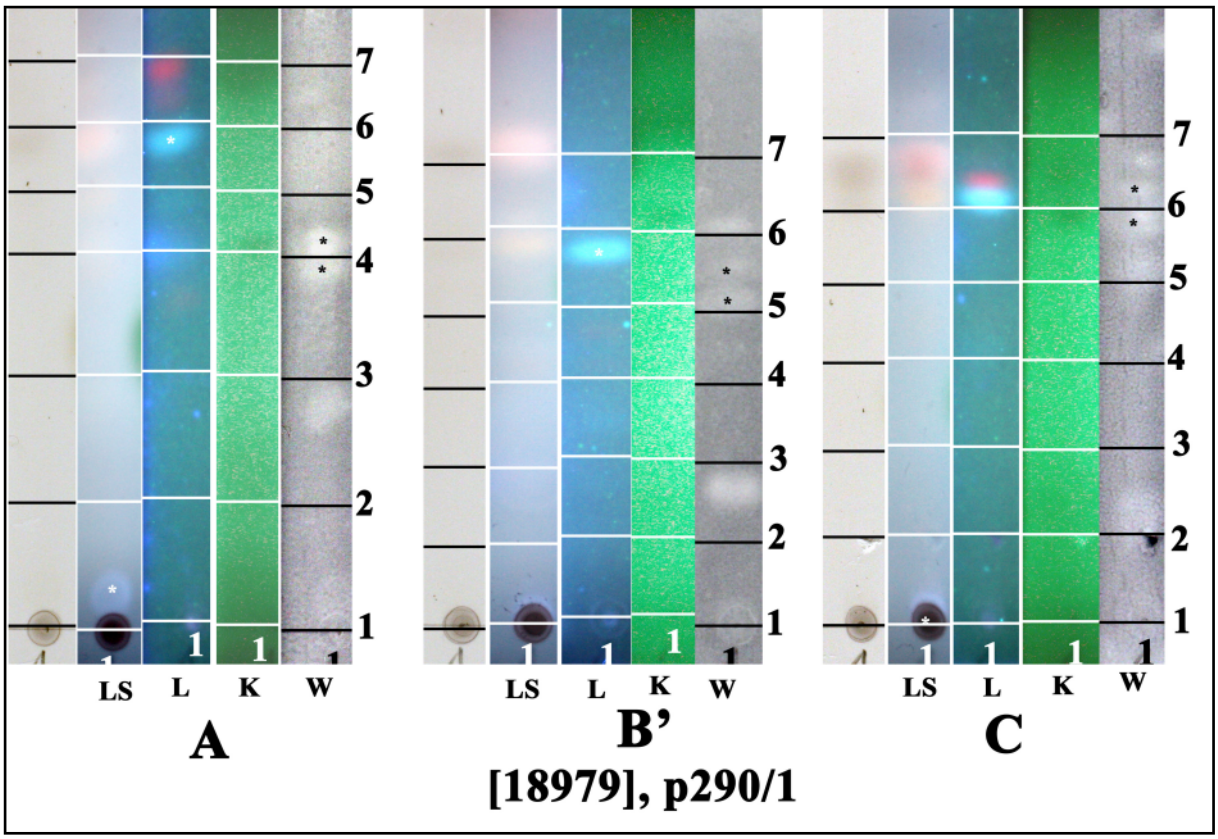
[18979], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°53' S, 147°18 E, 1650 m, growing on soil and debris in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40374) & H. Streimann 17.02.1994. Chemistry: lichesterinic acid (major), protolichesterinic acid (major) by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 278, distributed as ***Coelocaulon aculeatum*** (Schreb.) Link.







Cetraria aculeata



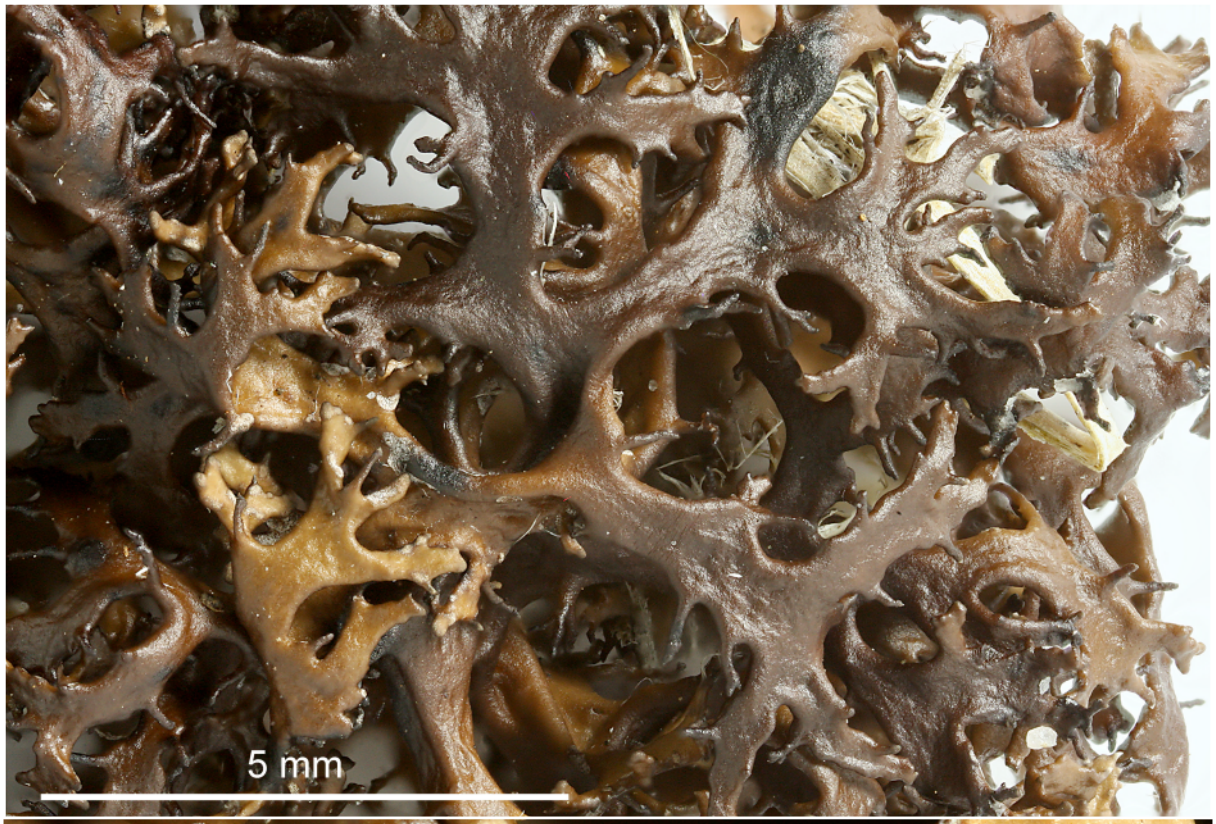
Cetraria aculeata

Cetraria australiensis W.A.Weber ex Kärnefelt

Thallus to 3 cm tall; lobes to 2 mm wide; marginal pseudocyphellae very small, punctiform; laminal pseudocyphellae absent.

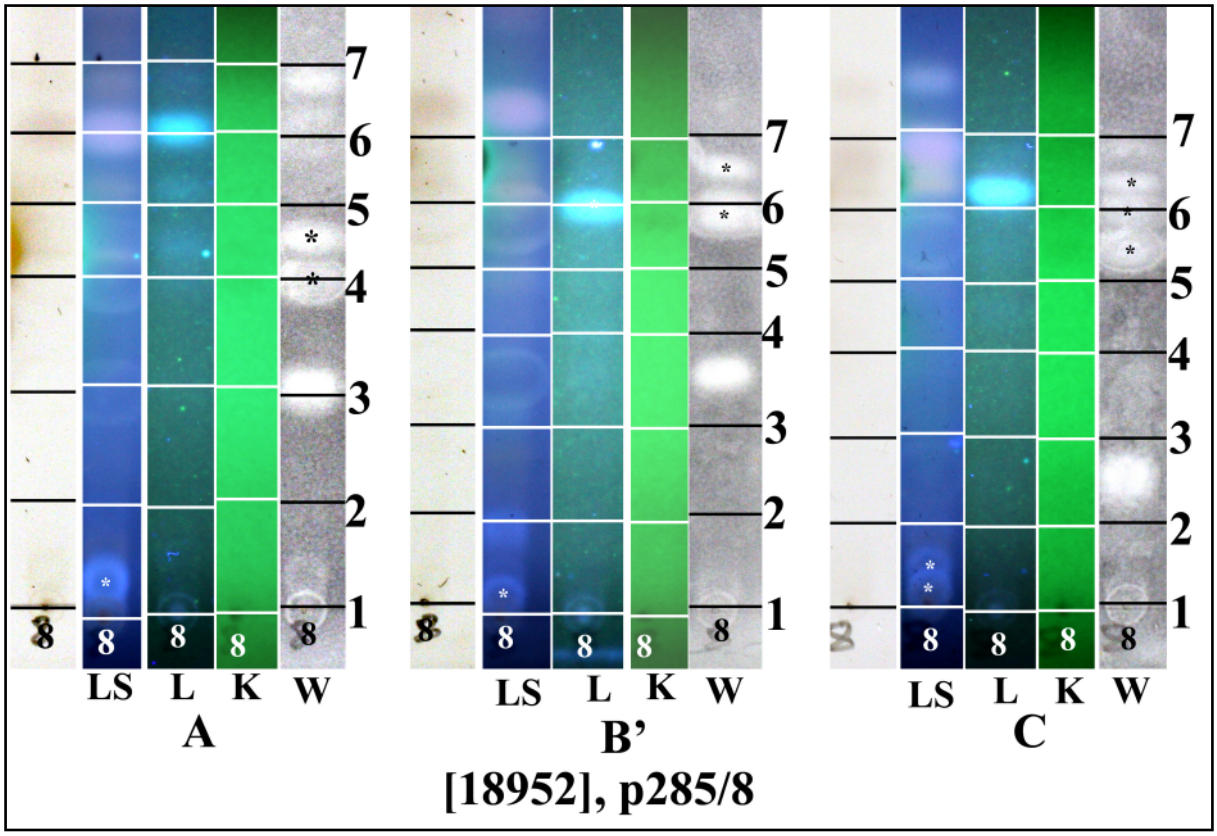
[18952], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°53' S, 147°18' E, 1650 m, growing on soil and debris in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40373) & H. Streimann 17.02.1994. Chemistry: lichesterinic acid (major), protolichesterinic acid (major) by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 276.







Cetraria australiensis



Cetraria australiensis

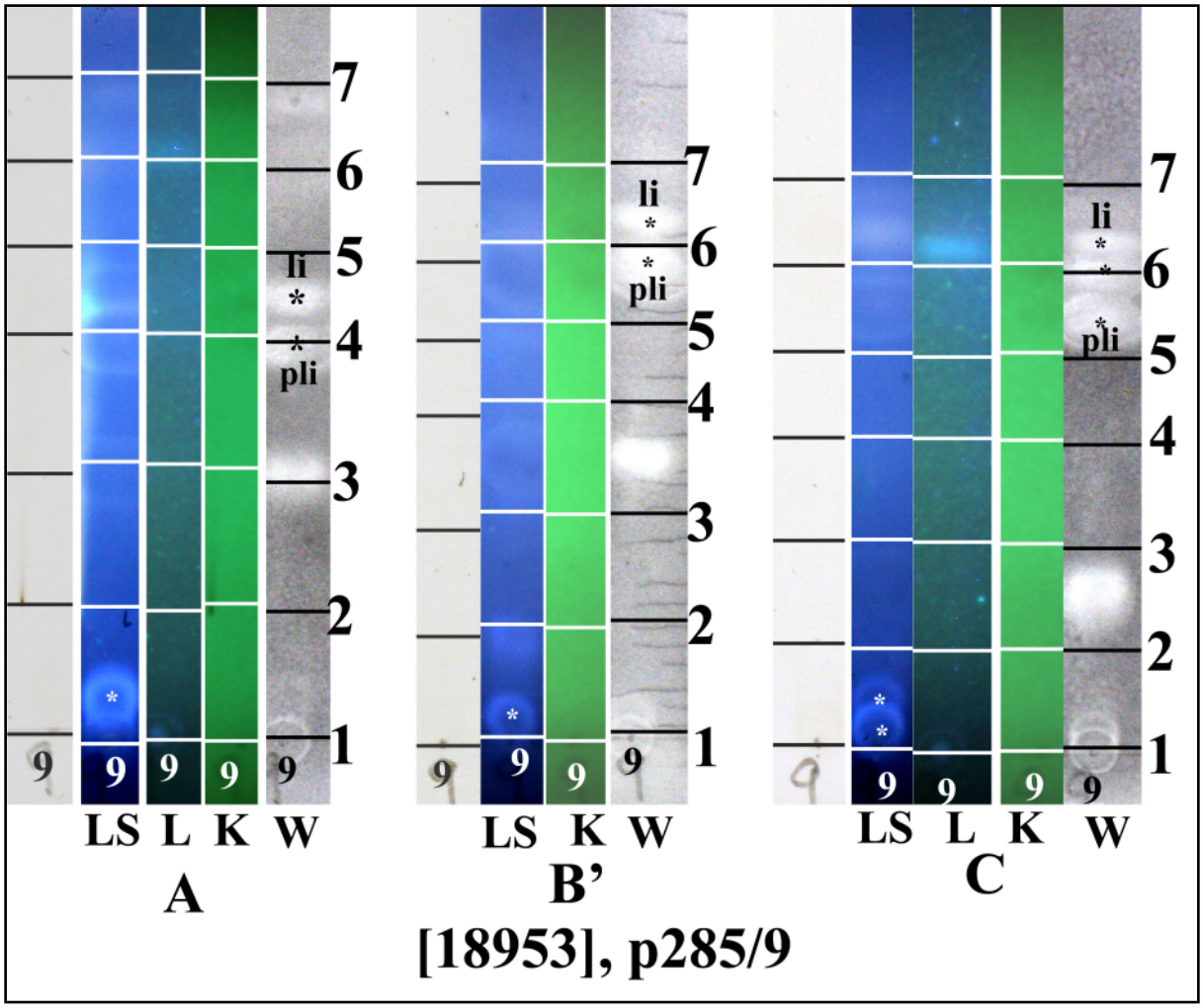
Cetraria australiensis W.A.Weber ex Kärnefelt

[18953], Australia, New South Wales, Koszciusko National Park, northern slopes of Mount Stilwell, 36°26' S, 148°19' E, 1980 m, growing on soil and debris in alpine herbfield. Topotype specimen. Leg. J.A. Elix (21483), 27.02.1987. Chemistry: lichesterinic acid (major), protolichesterinic acid (major), ursolic acid (minor), unknown fatty acids (trace) by TLC, anal. Jen Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 127.





Cetraria australiensis



li: lichesterinic acid, pli: protolichesterinic acid

Cetraria australiensis

Cetraria islandica (L.) Ach. ssp. ***antarctica*** Kärnefelt

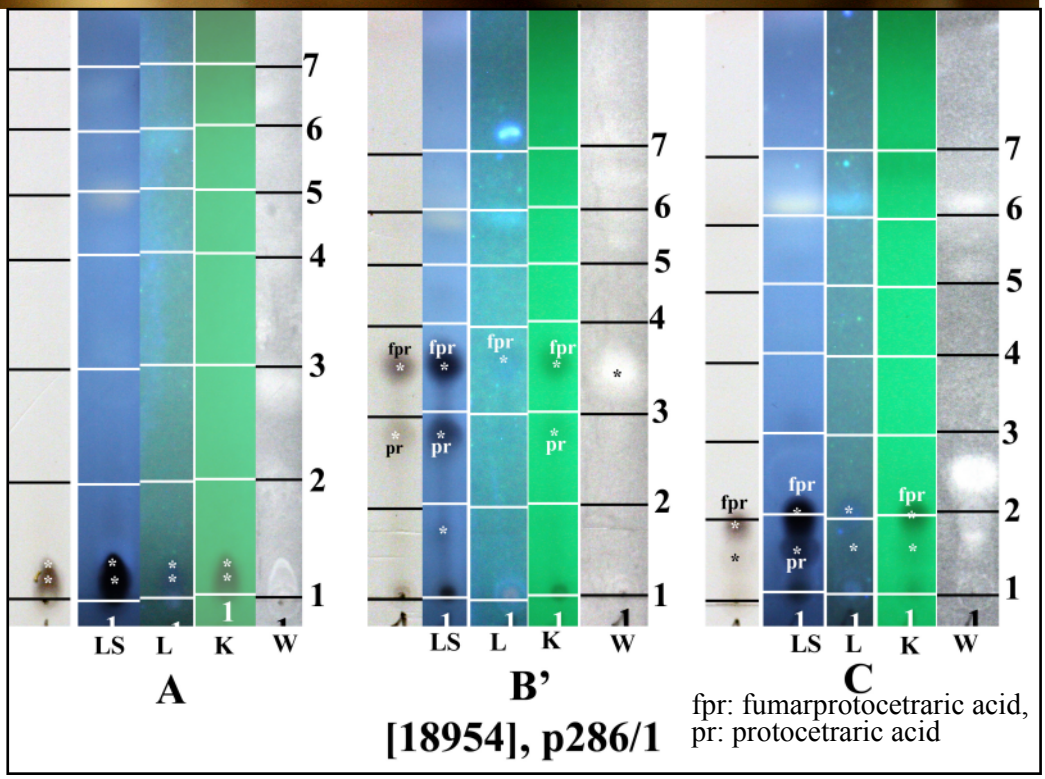
This lichen differs from ssp. *islandica* in its usually smaller and stiffer lobes, the few laminal pseudocyphellae and the frequently abundant marginal projections. The marginal pseudocyphellae are dots along the the margins and are somtimes confluent and then forming a continuous line.

[18954]; Australia, New South Wales, Koszciusko National Park, northern slopes of Mount Stilwell, 36°26' S, 148°19' E, 1980 m, growing on soil and debris in alpine herbfield. Leg: J.A. Elix (21482), 27.02.1987. Chemistry: lichesterinic acid (major), protolichesterinic acid (major), fumarprotocetraric acid (minor), succinprotocetraric acid (trace), protocetraric acid (trace), ursolic acid (trace) by TLC, anal. Jen Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 128.









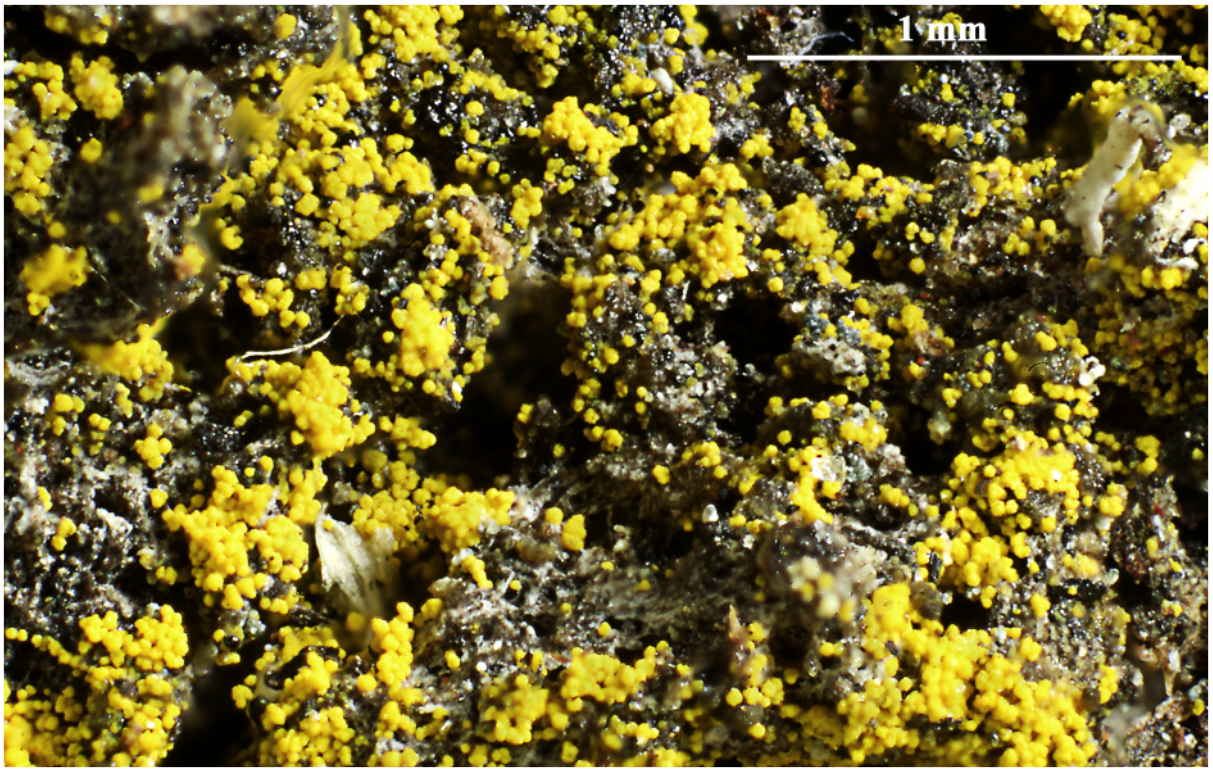
Cetraria islandica ssp. ***antarctica***

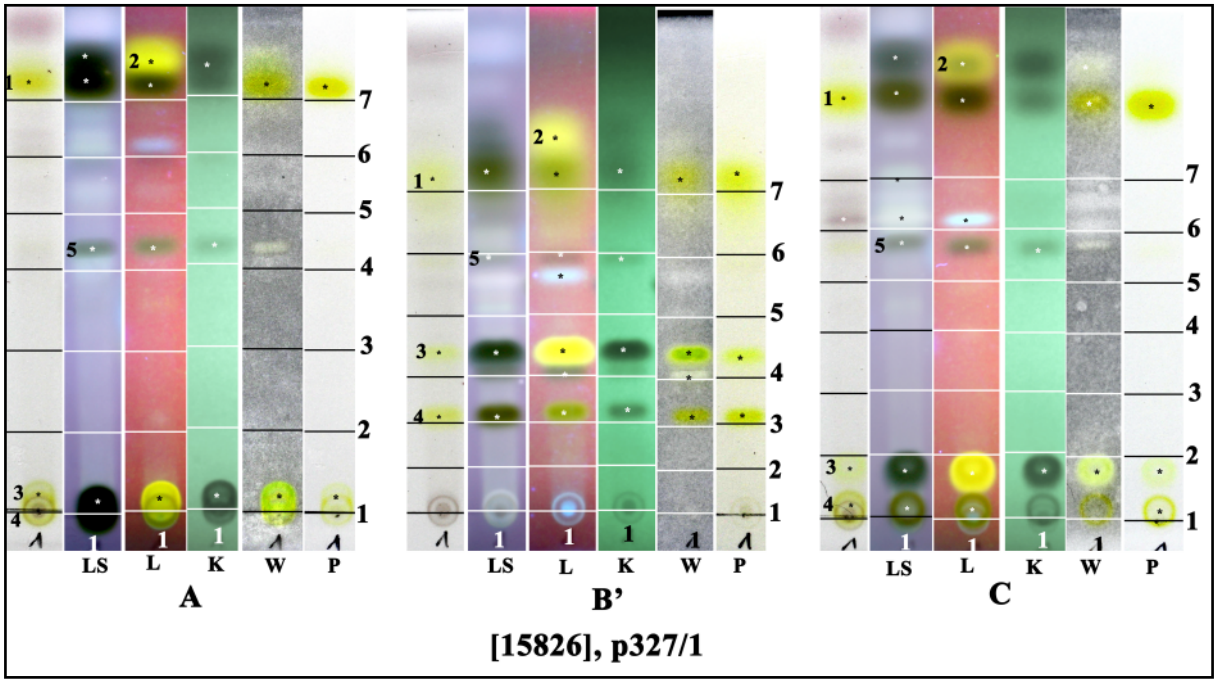
Chrysothrix xanthina (Vain.) Kalb

Thallus crustose-leprose, bright yellow, unstratified, granules 20-80 µm wide. Chemistry: K-, C-, KC-, P-, UV+ pale orange; pinastric acid (major), pulvinic acid (minor or trace), pulvinic dilactone (minor or trace).

[15826], Australia, Western Australia, North Boundary Rock c. 20 km north-northeast of Manjimup off North Boundary Road, granite outcrop associated with *Allocasuarina huegeliana* und *Corymbia calophylla,* 34.072° S, 116,325° E, 320 m, growing on bark. Leg. F. Schumm & E. Stocker-Wörgötter, 25.10.2009.







1: pinastric acid, 2: pulvinic dilactone, 3: pulvinic acid, 4,5: unknown

Chrysothrix xanthina

Cladia aggregata (Sw.) Nyl.

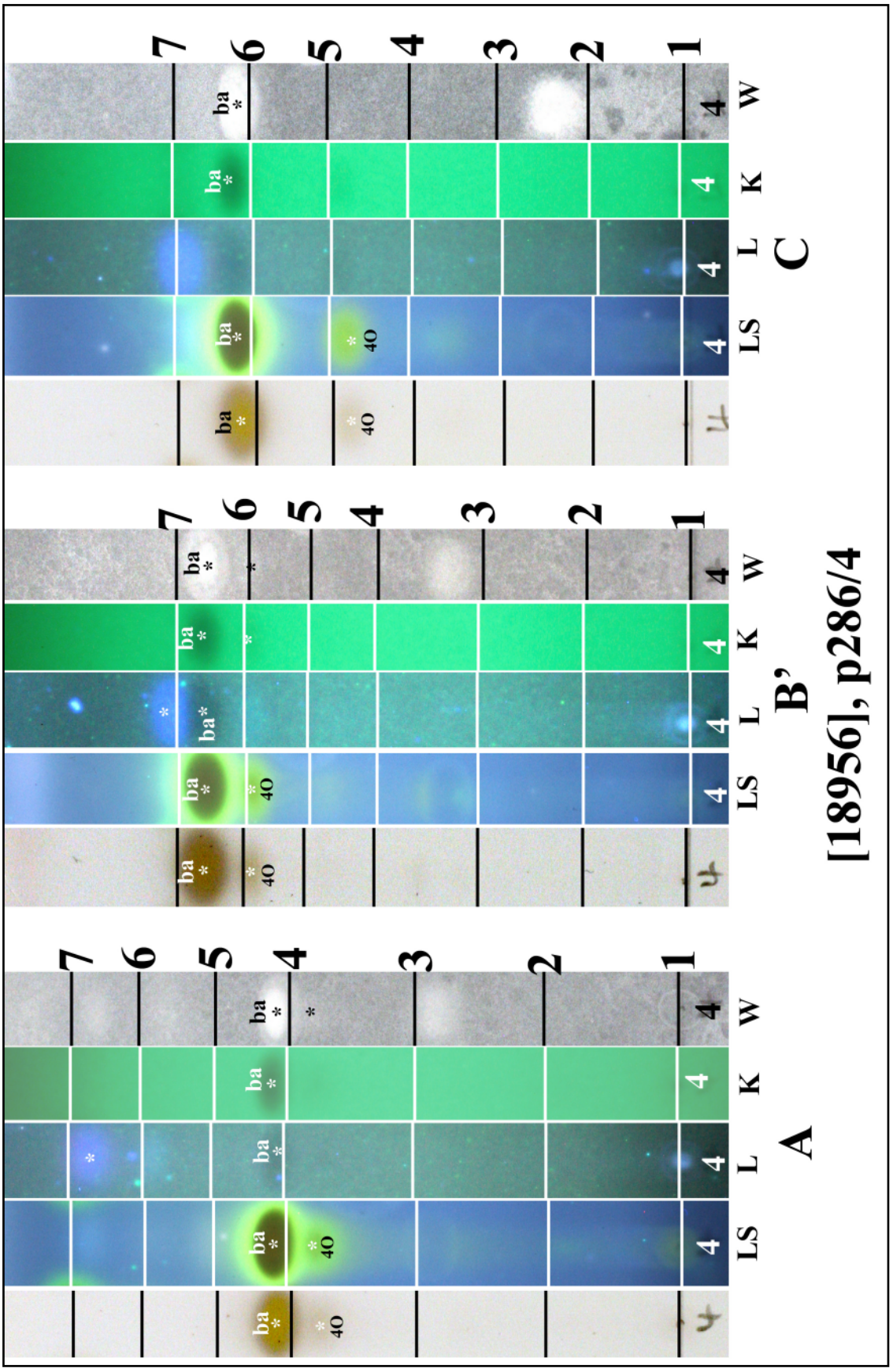
Thallus without inner-medulla. Fenestrations few. Pseudopodetia not net-like and not or only slightly inflated.

[18956], New Zealand, South Island, Fiordland, Southern Lakes, 9 km south of Te Anau on road to Manapouri, growing on soil and debris in swampy paddock along the highway. Leg. M.E. Hale (63254), 27.01.1984, det. M.E. Hale. Chemistry: barbatic acid (major), 4-*O*-demethylbarbatic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 076. Lit. Filson (1981), Jahns (1972).





Cladia aggregata



ba: barbatic acid, 4O: 4-*O*-demethylbarbatic acid

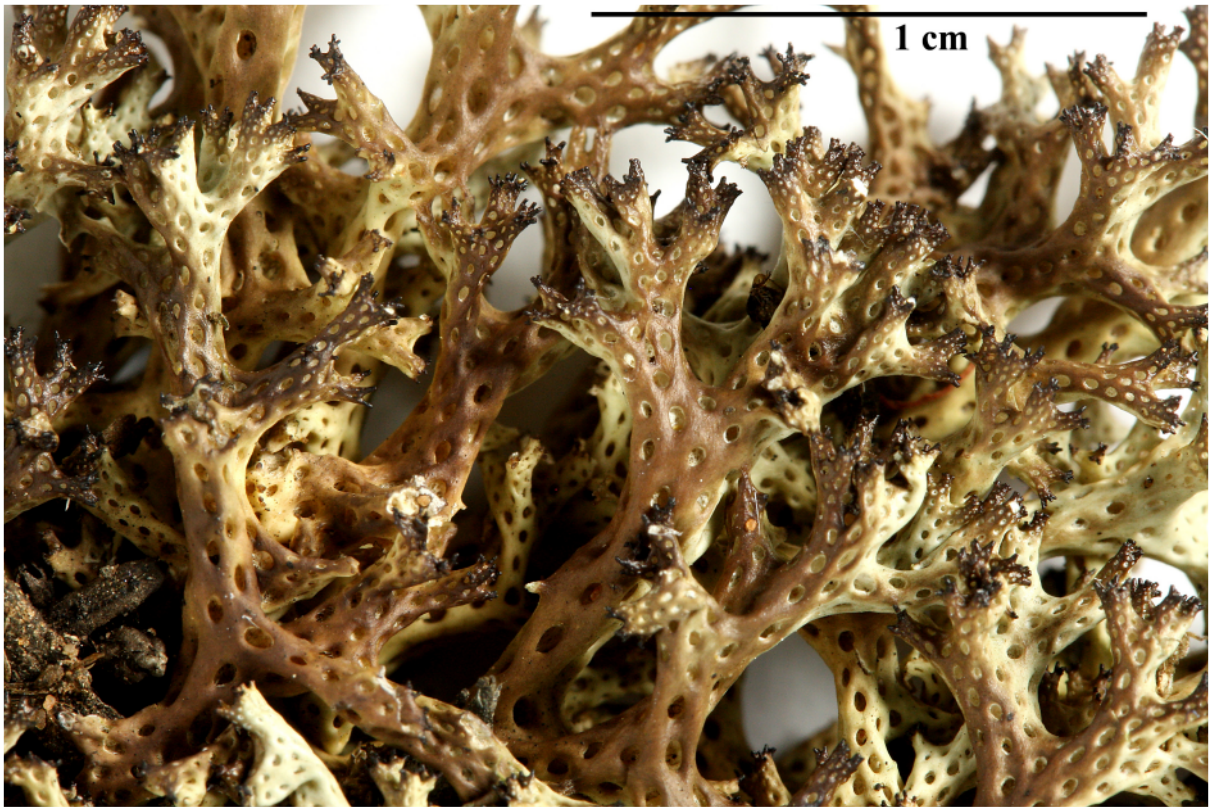
Cladia aggregata

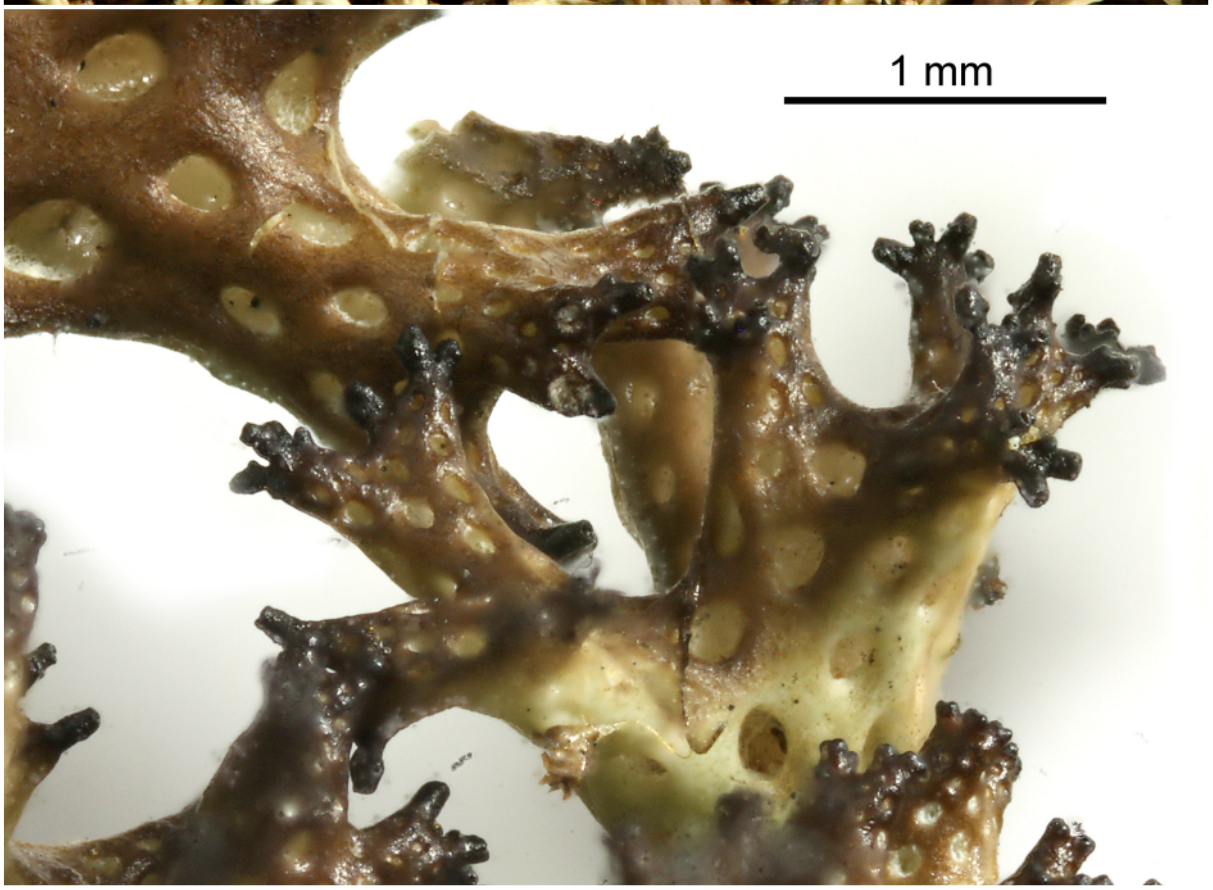
Cladia corallaizon F.Wilson ex R. Filson

Thallus grey to brown, with an inner, compact not stranded, white medula. Cortex smooth not granular.

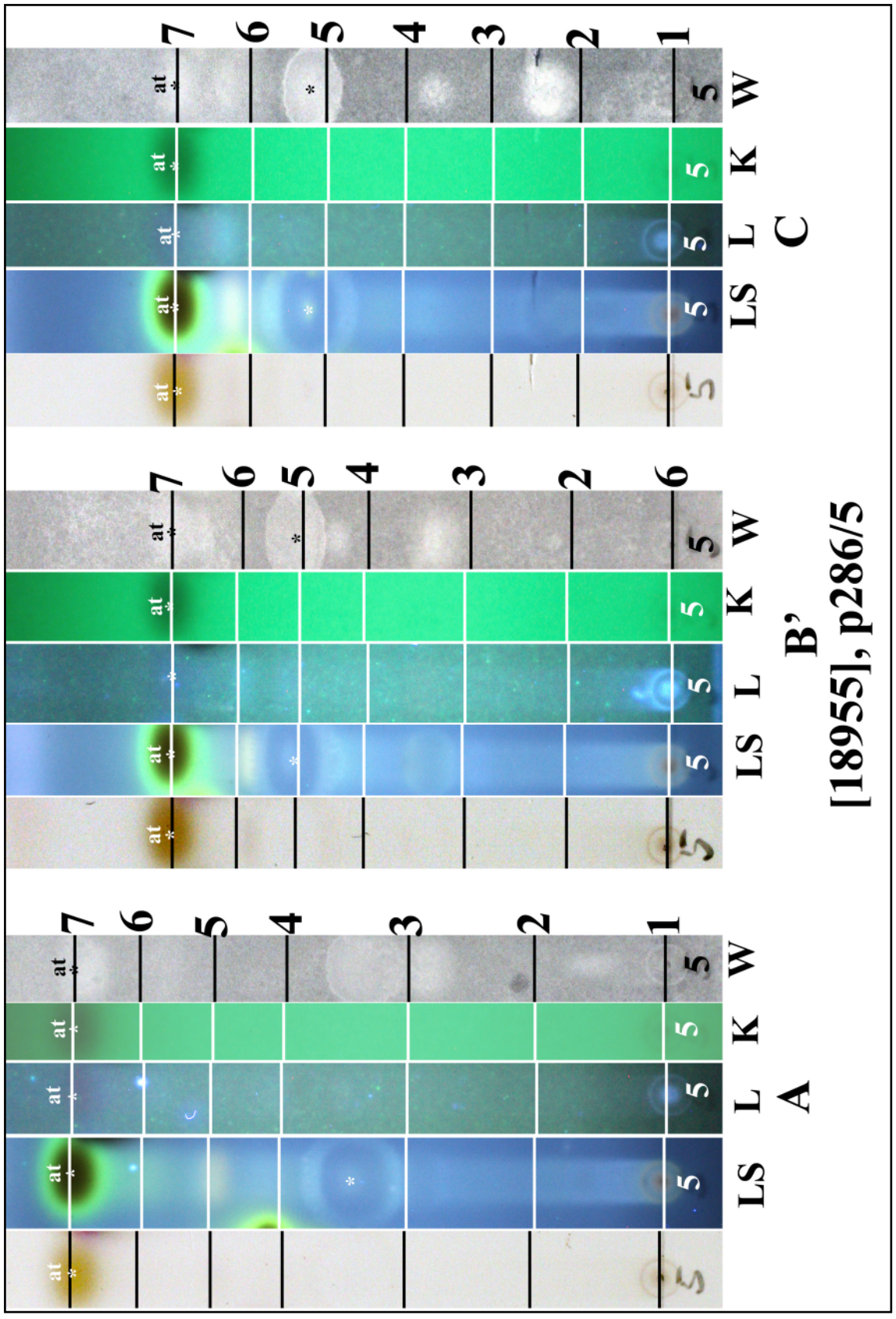
[18955], Australia, New South Wales, Wedding Range, at foot of Wedding Mountains, 15 km west of Grenfell, 33°54' S, 148°01' E, 430 m, growing on soil in *Callitris* woodland. Leg. J.A. Elix (17676) & H. Streimann 17.10.1984. Chemistry: atranorin, ursolic acid, unknown aliphatic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 077.







Cladia corallaizon



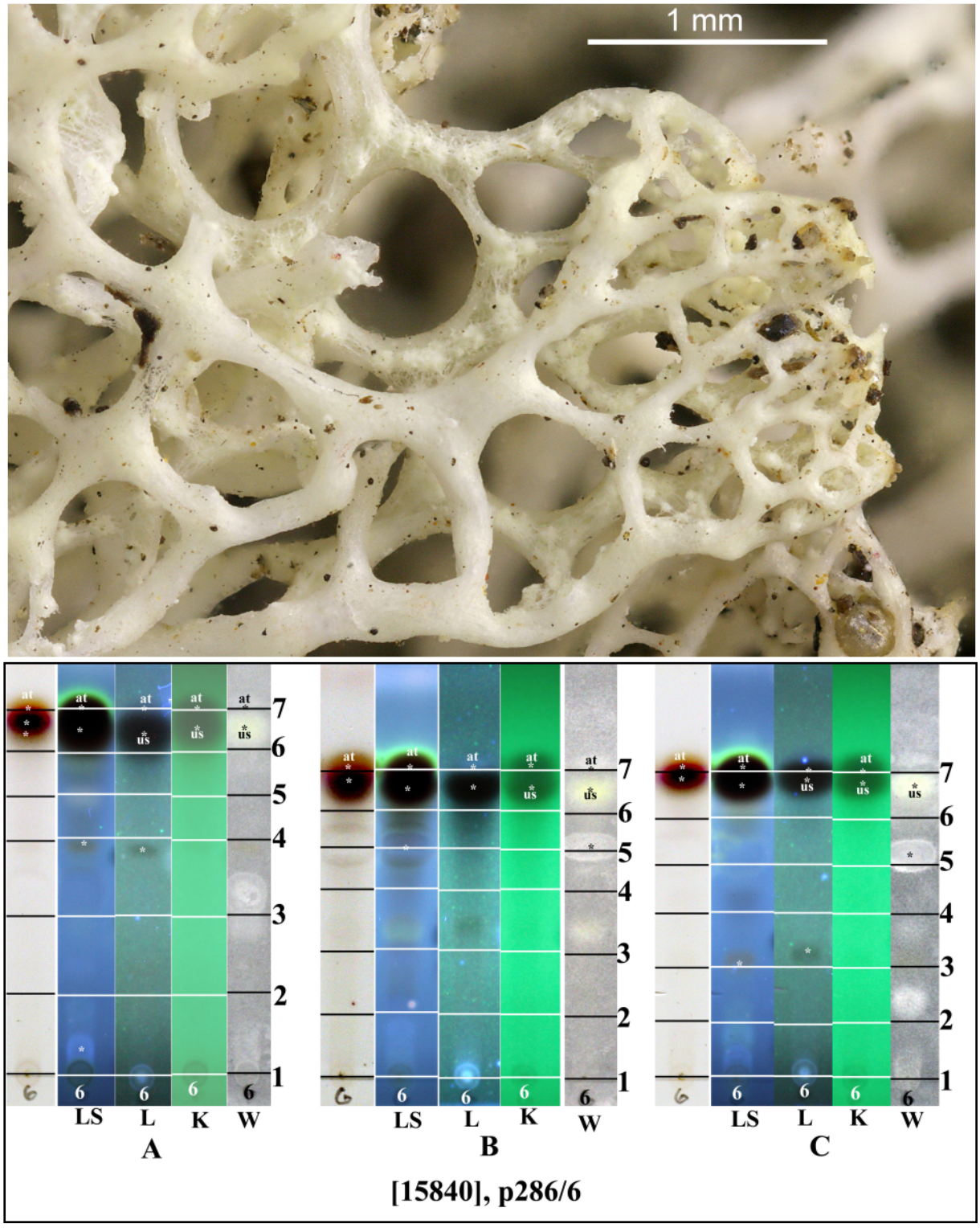
Cladia corallaizon

Cladia ferdinandii (Müll.Arg.) Filson

Podetia hollow, net-like, with many fenestrations, lacking an inner medulla. Chemistry: Usnic, ursolic, rangiformic acids and atranorin. Thallus K+ yellow, C-, KC-, P-.

[15840], Australia, Western Australia, North Boundary Rock ca. 20 km NNE of Manjimup off North Boundary Road, 34,07196° S, 116,32507° E, 320 m, growing on granite outcrop associated with *Allocasuarina huegeliana* und *Corymbia calophylla*. Leg. Schumm & Stocker 25.10.2009 (Herb. Schumm).





at: atranorin, us: usnic acid

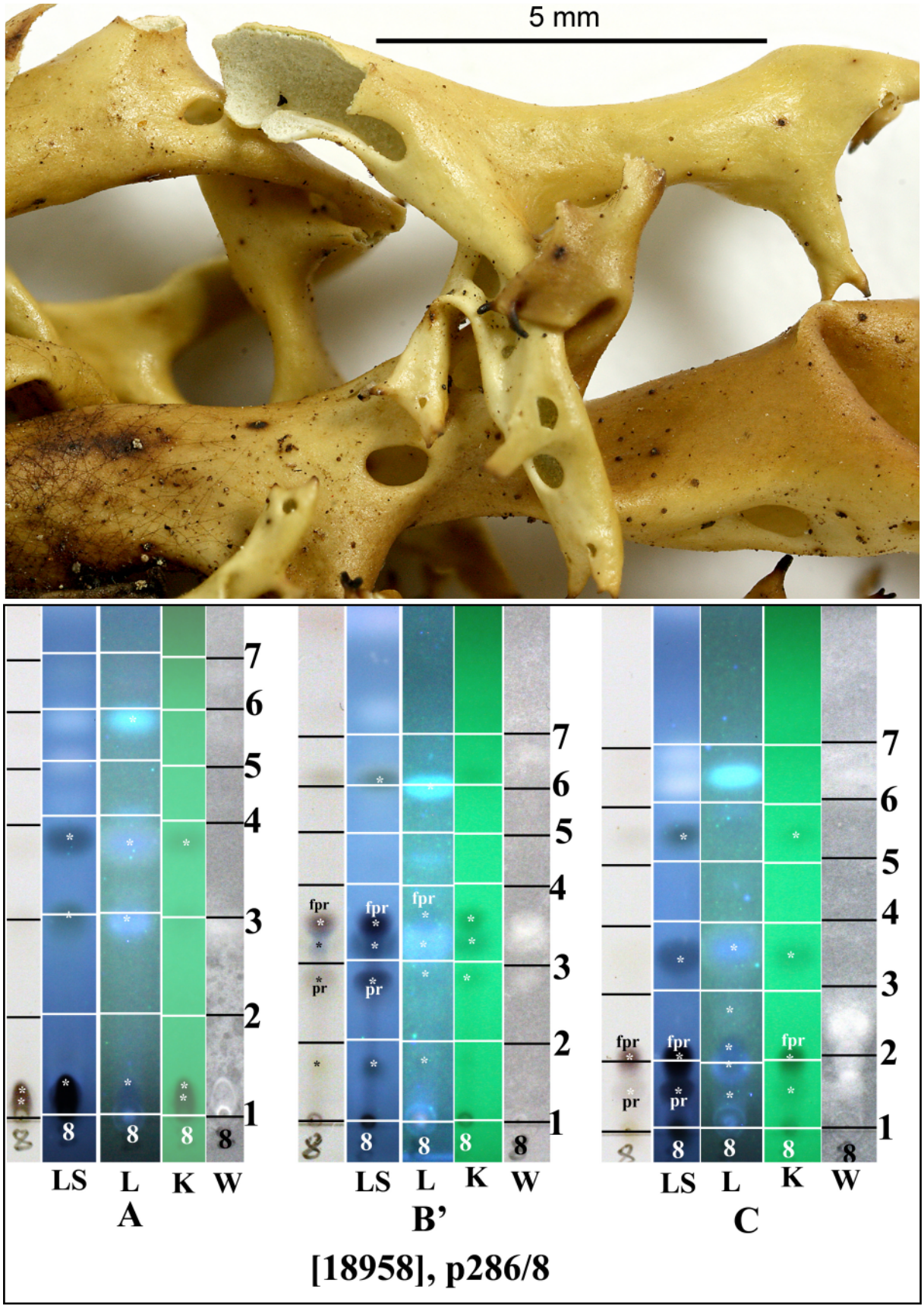
Cladia ferdinandii

Cladia inflata (F.Wilson) D.J.Galloway

Thallus without an inner medulla. Fenestrations few. Pseudopodetia inflated, not constricted at base and axils of branches.

[18958], Australia, New South Wales, Sassafras Tip, 1 km north-west of Sassafras along Turpentine Road, 35°07' S, 150°14' E, 740 m, growing on soil over sandstone rocks in heath. Leg. J.A. Elix (19272) & J. Johnston, 26.06.1985. Chemistry: fumarprotocetraric acid (major), physodalic acid (trace), protocetraric acid (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 101.





fpr: fumarprotocetraric acid, pr: protocetraric acid

Cladia inflata

Cladia inflata (F.Wilson) D.J.Galloway

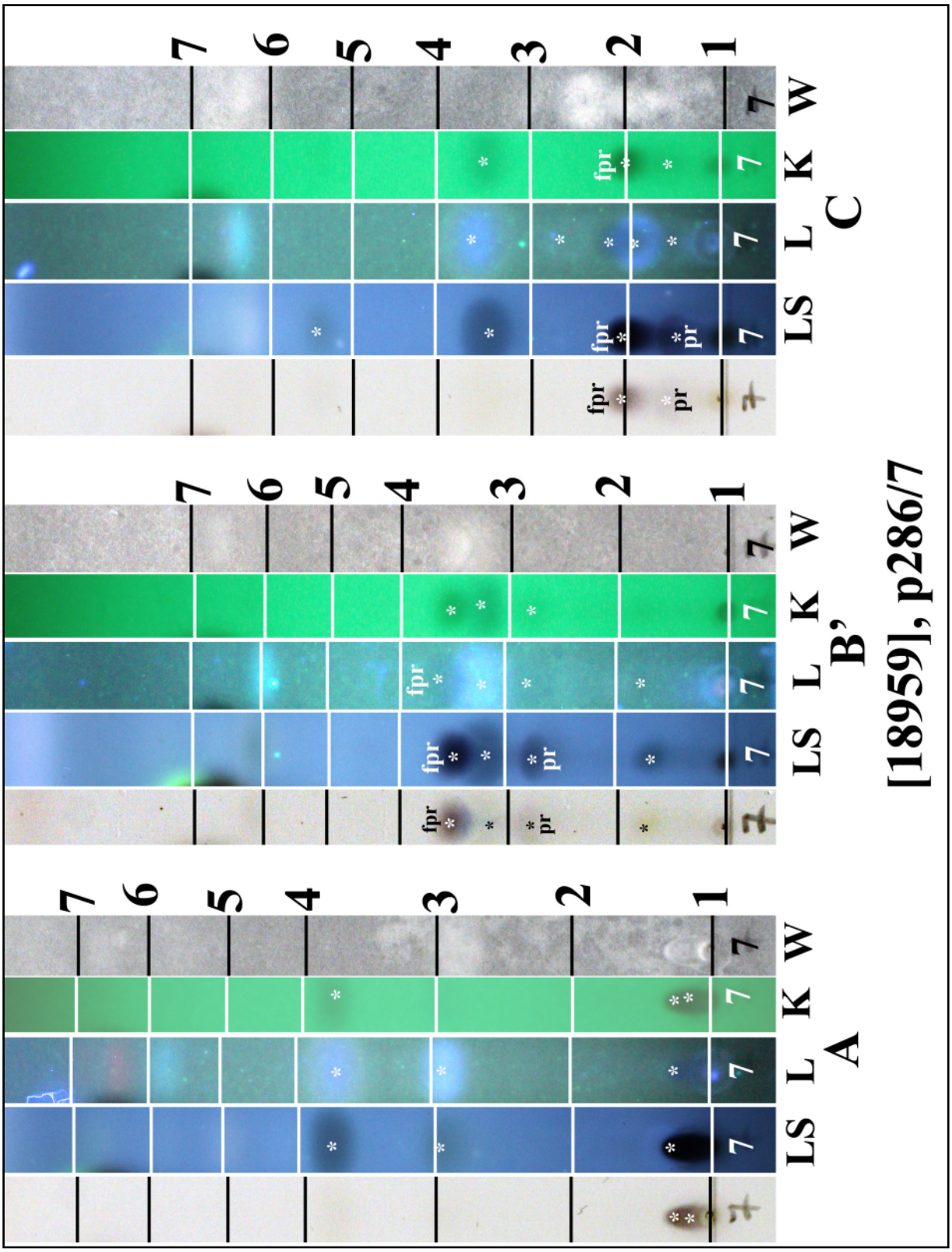
[18959], Australia, New South Wales, Morton National Park, 8 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on soil over sandstone rocks in heath. Leg. J.A. Elix (19281) & J. Johnston, 26.06.1985. Chemistry: fumarprotocetraric acid (major), physodalic acid (trace), protocetraric acid (trace), virensic acid (trace) by TLC, HPLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 102







Cladia inflata



fpr: fumarprotocetraric acid, pf: protocetraric acid

Cladia inflata

Cladia moniliformis Kantvilas & Elix

Thallus fruticose, consisting of hollow, loosely clustered pseudopodetia, very fragile when dry, yellow-brown to dark brown or becoming blackened. Sterile pseudopodetia very inflated, bulbous or cylindrical, irregularly constricted, to 80 mm long and 12 mm broad at the widest point. Medulla thin, white, tomentose, blackened in older pseudopodetia. Apothecia terminal, lecideine, black and shiny, 0.05-0.15 mm diam. Ascospores hyaline, simple, 8/ascus, 8-10 x 2.5-4 µm. Chemistry: homosekikaic acid (major), 4'-*O*-methylnorhomosekikaic acid, sekikaic acid.

[19179], Australia, Tasmania, Scotts Peak Road near airstrip, 43°02' S, 146°19' E, 340 m, growing on peaty soil in button grass moorland. Leg. G. Kantvilas & J. Jarman (86/91), 12.03.1991. Chemistry: homosekikaic acid (major), 4'-*O*-methylnorhomosekikaic acid (minor), sekikaic acid (trace) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 227.

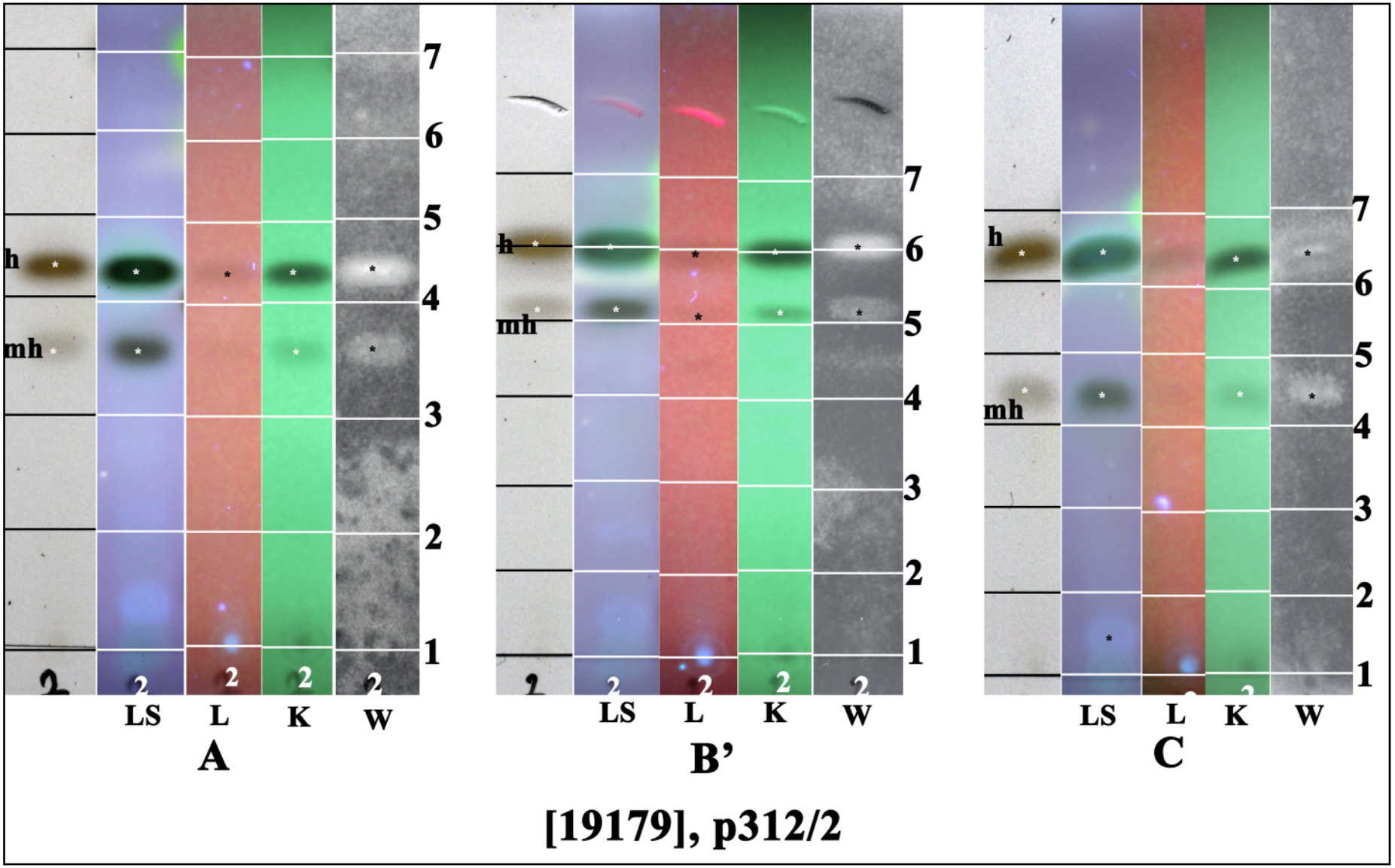




Cladia moniliformis



Cladia moniliformis



h: homosekikaic acid, mh: 4'-*O*-methylnorhomosekikaic acid

Cladia retipora (Labill.) Nyl.

Pseudopodetia in pulvinate clumps to 0.5 m wide, to 5 cm high, white to pale grey, sometimes yellowing at tips of branches. Inner medulla stranded, sometimes becoming corticate. Apothecia to 0.14 mm wide, dark reddish brown to black; excipe thin, dissappearing at maturity. Ascospores 11-14 x 3-4.5 µm. Chemistry: K- or K+ yellow, C-, Kc- or KC+ orange, P-; usnic acid, protolichesterinic acid, ursolic acid, rangiformic acid, norrangiformic acid, atranorin, unknown triterpenes and four unidentified substances.

[19181], Australia, New South Wales, Morton National Park, 8 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on soil over sandstone rocks in heath. Leg. J.A. Elix (19280) & J. Johnston, 26.06.1985. Chemistry: usnic acid, atranorin, rangiformic acid, norrangiformic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 103.

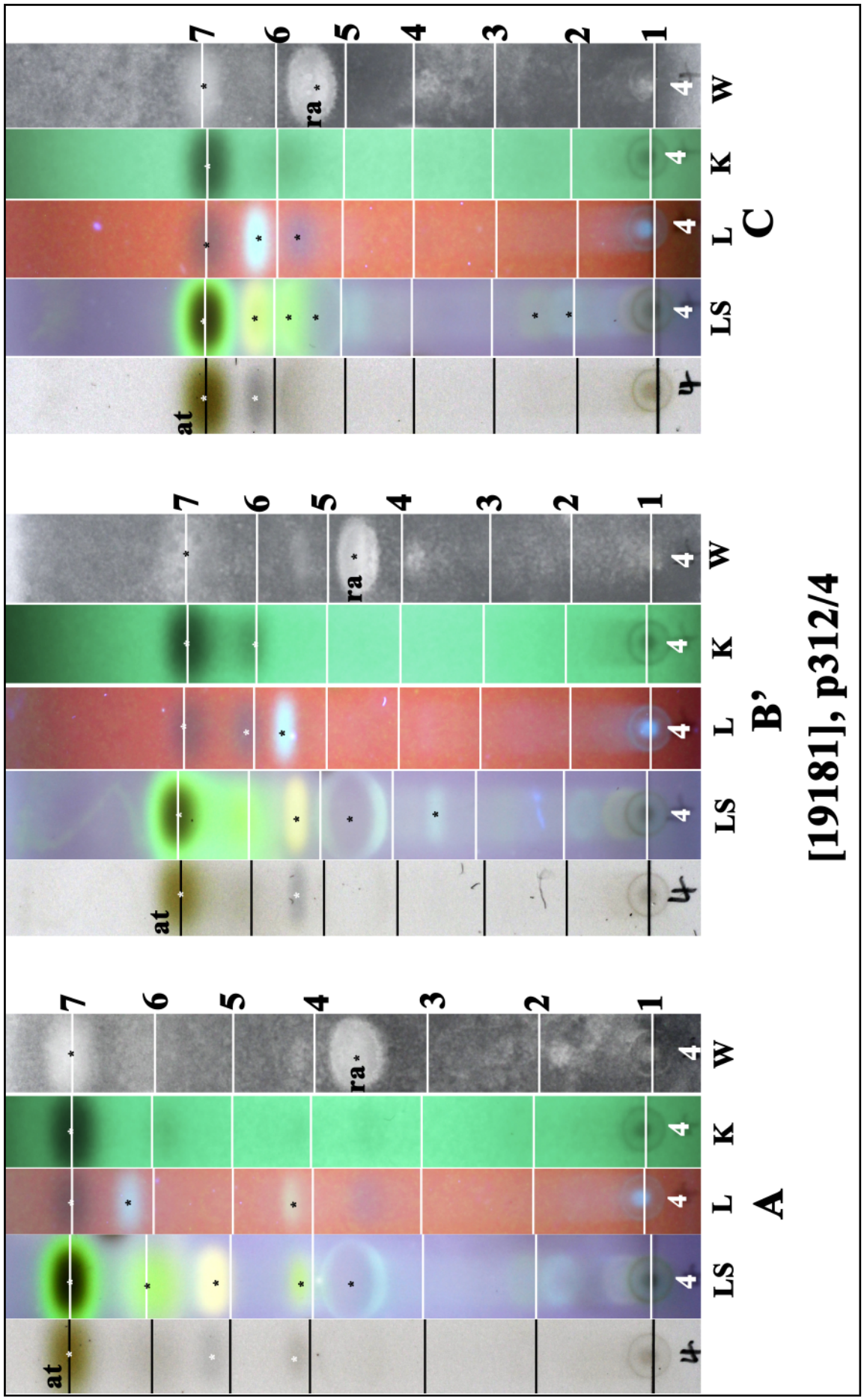




Cladia retipora



Cladia retipora



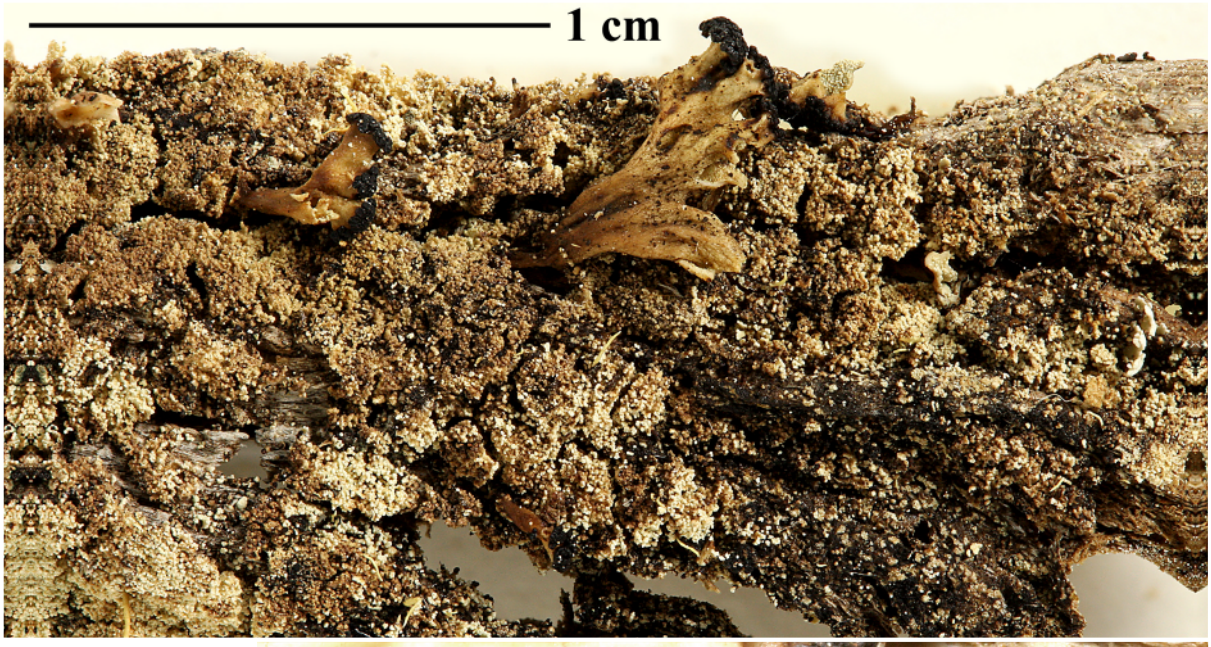
Cladia retipora

Cladia schizopora (Nyl.) Nyl.

Thallus without inner-medulla, short, sterile pseudopodetia mostly less than 3 mm tall, sorediose, sometimes reduced to a powdery, sorediate mass.

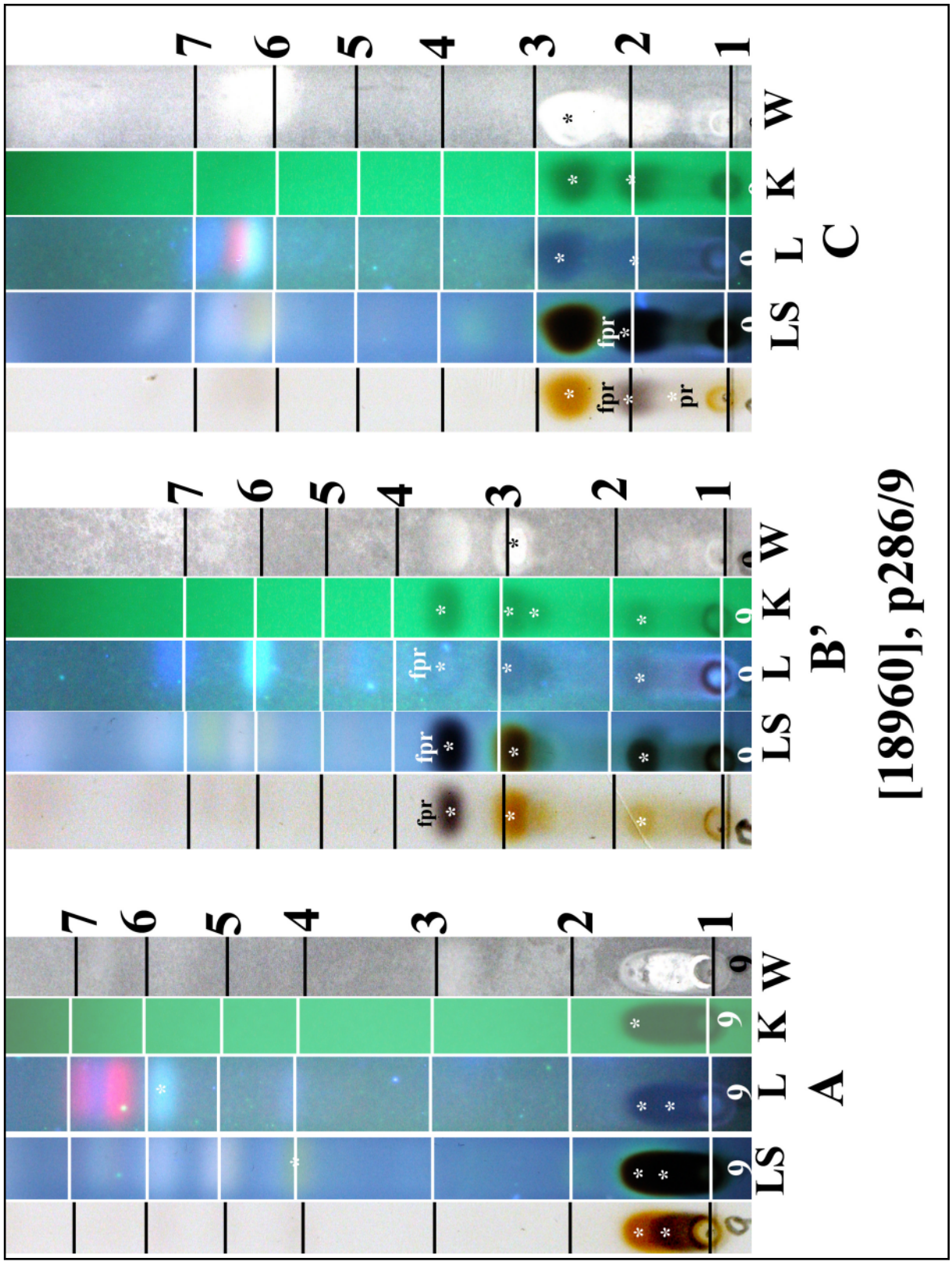
[18960], Australia, Australian Capital Territory, Nursery Creek, 42 km south-south-west of Canberra, 35°40' S, 148°59' E, 1150 m, growing on rotten *Eucalyptus* logs in *Eucalyptus* woodland, on moderate slope with granite boulders. Leg. H. Streimann (36343), 28.10.1985. Chemistry: fumarprotocetraric acid (major), protocetraric acid (trace) by HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 104.







Cladia schizopora



fpr: fumarprotocetraric acid, pr: protocetraric acid

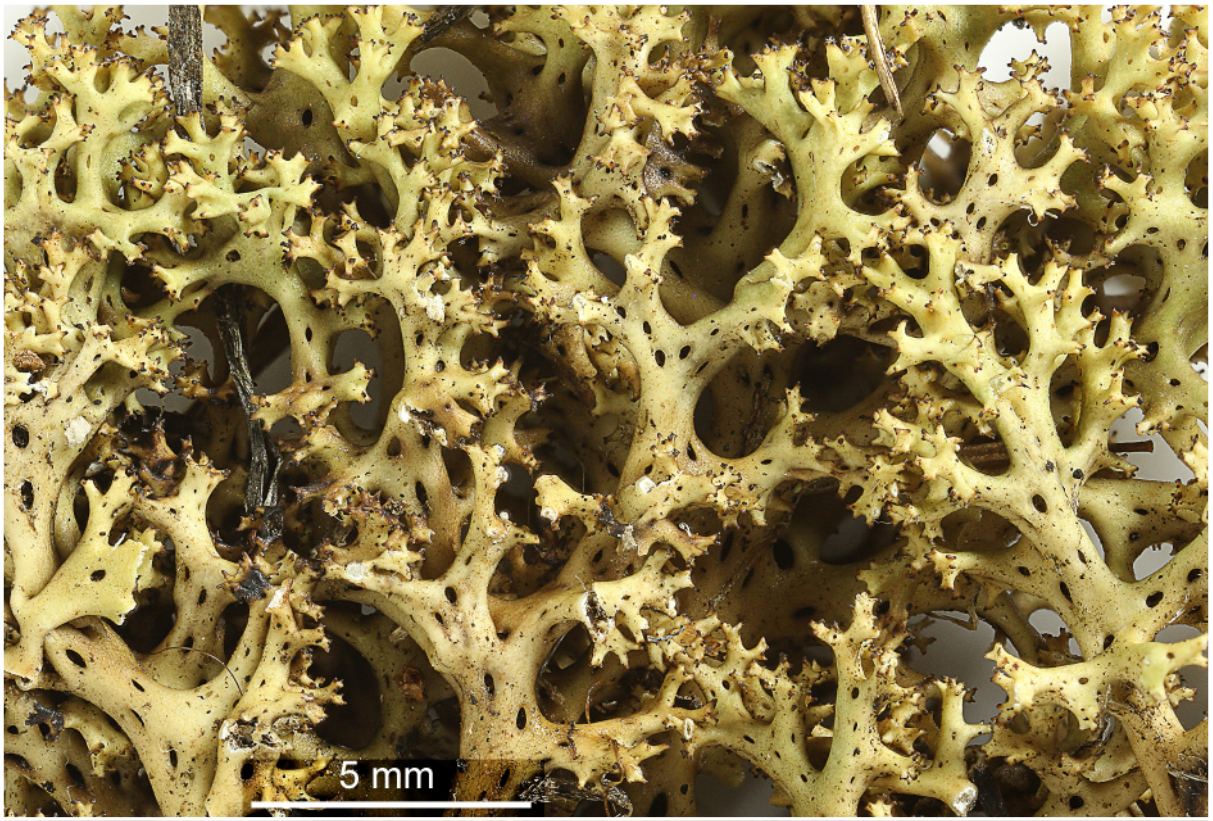
Cladia schizopora

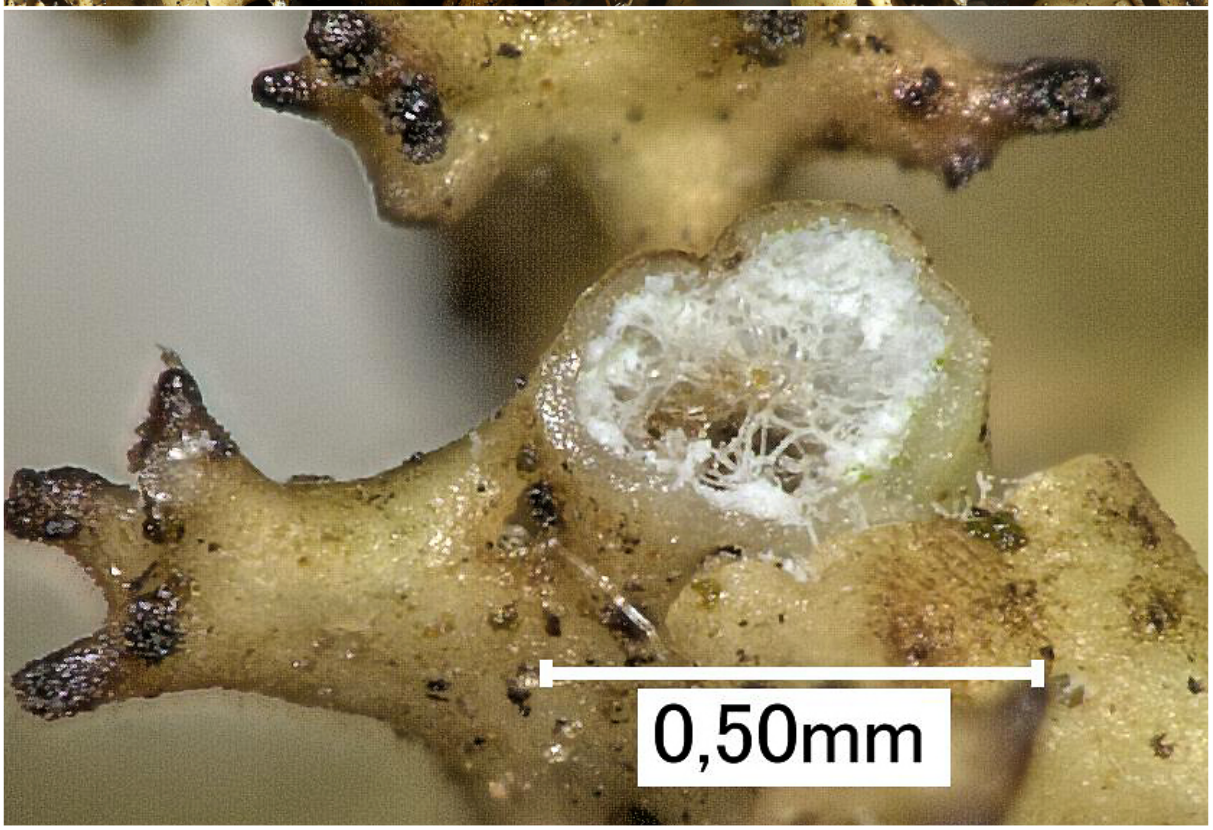
Cladia sullivanii (Müll.Arg.) Martin

Pseudopodetia yellow to yellow-brown, 1-14 cm tall, with an inner compact, white (but partly becoming black also) medulla. Perforations irregular round to elliptic.

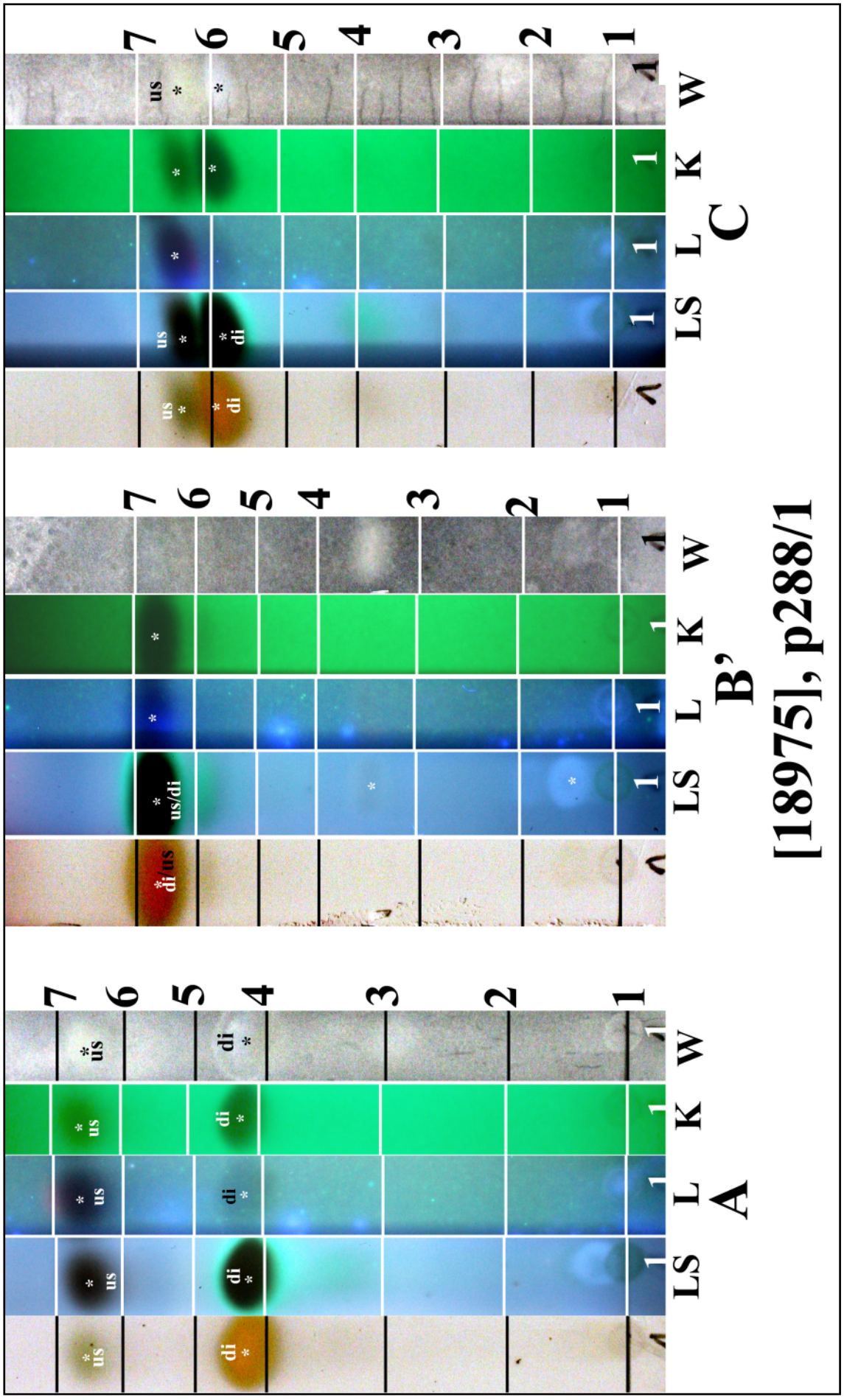
[18975], Australia, New South Wales, Murphys Track, Dora Dora State Forest, 18 km south-east of Holbrook, 35°51' S, 147°27' E, 620 m, growing on soil over rock outcrops beside stream, in dry sclerophyll forest on gentle slope. Leg. J.A. Elix (22851), 15.11.1989. Chemistry:divaricatic acid (major), nordivaricatic acid (trace), usnic acid (minor), ursolic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 201.







Cladia sullivanii



us: usnic acid, di: divaricatic acid

Cladia sullivanii

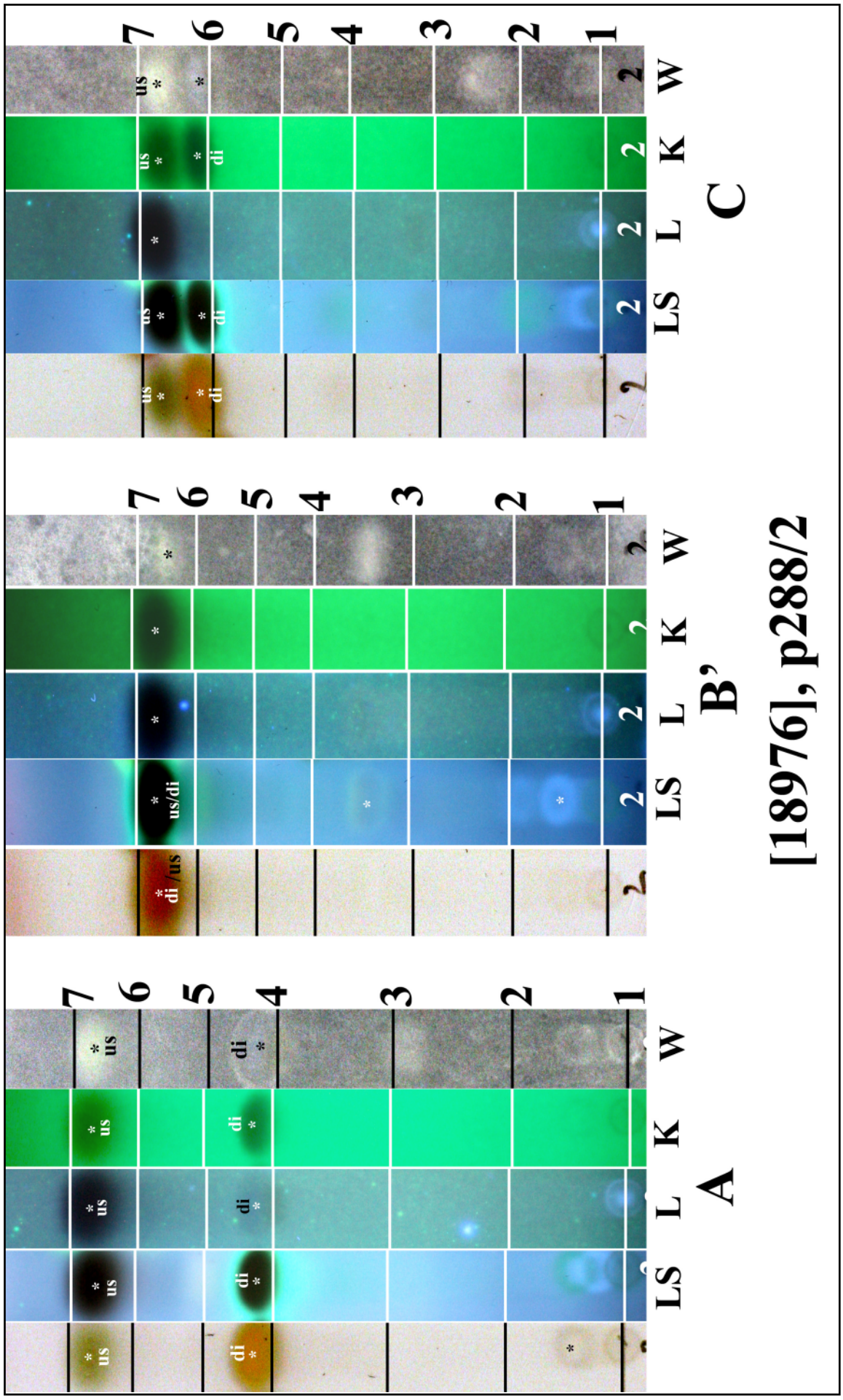
Cladia sullivanii (Müll.Arg.) Martin

[18976], Australia, New South Wales, Morton National Park, 18 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on soil over sandstone rocks in heath. Leg. J.A. Elix (19282) & J. Johnston, 26.06.1985. Chemistry: divaricatic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 105.





Cladia sullivanii



Cladia sullivanii

Cladonia capitellata (Hook.f. & Taylor) C.Bab. var. ***capitellata***

Apothecia brown. Podetia simple or branching near apices, escyphiferous, 1-5 cm tall, 0.5-2 mm diam, yellowish-green, usnic acid present, corticate, esorediate, axils open. Basal squamules inconspicuous, evanescent.

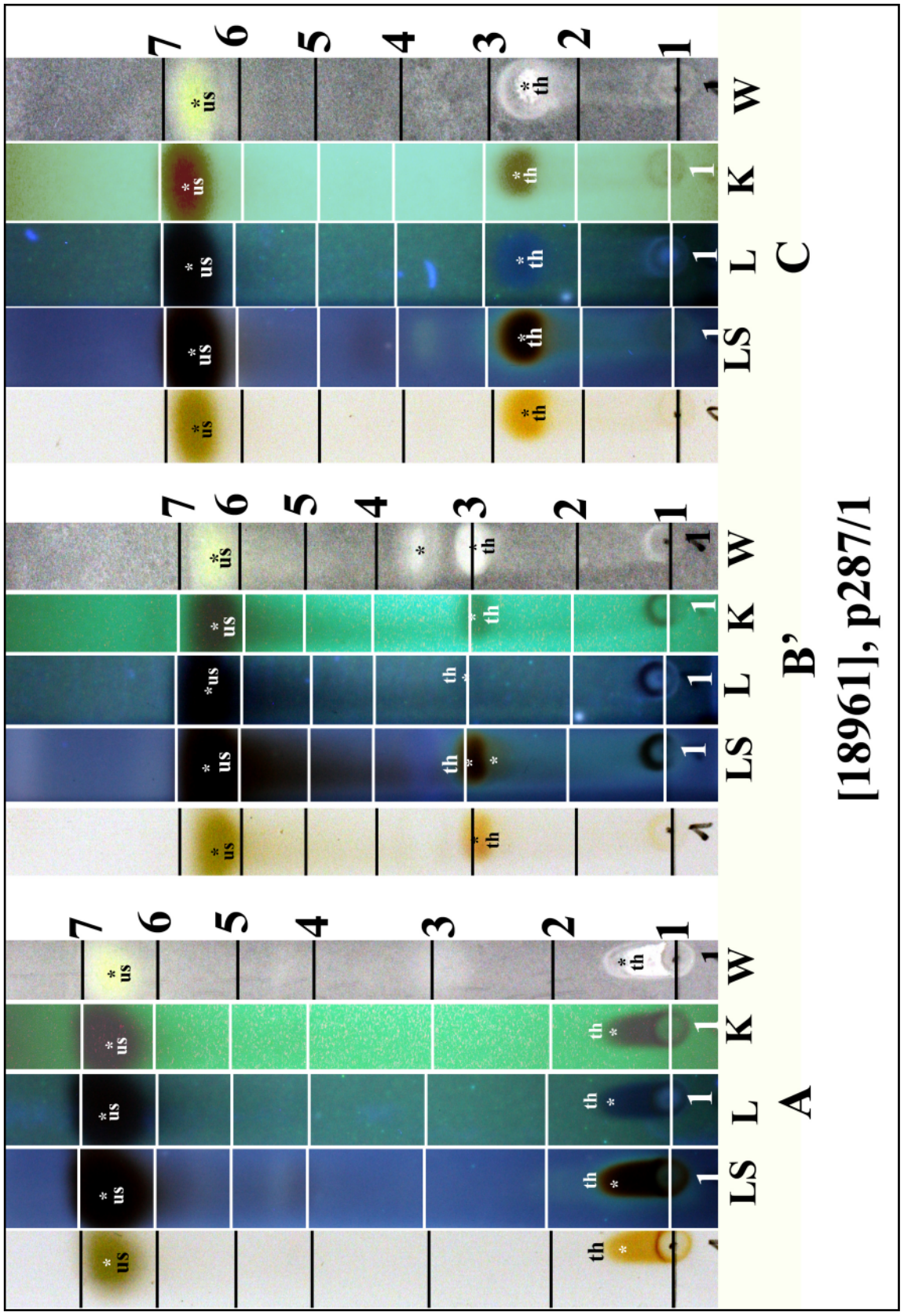
[18961], New Zealand, South Island, Canterbury, SW slopes of Foggy Peak, Porter's Pass, Torlesse Range, 1000 m, subalpine heath, on soil among litter and mosses. Leg. J. Johnston (1756), 8.03.1985 (CANB). Chemistry: usnic acid, thamnolic acid.







Cladonia capitellata var ***capitellata***


LS L K W
A
B'
C
[18961], p287/1
us: usnic acid, th: thamnolic acid

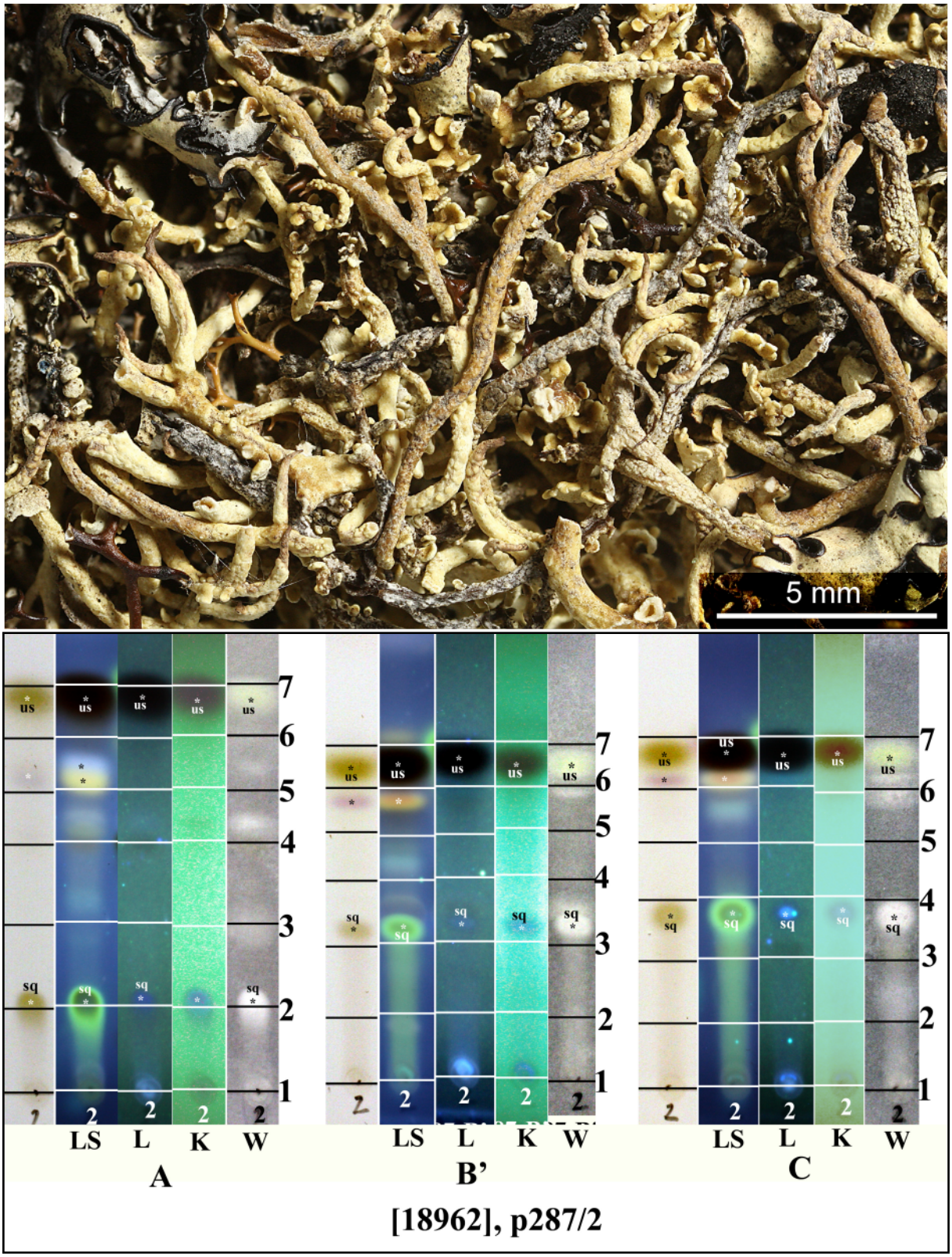
Cladonia capitellata (Hook.f. & Taylor) C.Bab. var. ***squamatica*** A.W.Archer

Distinguished from var. *capitellata* by containing squamatic acid, rather then thamnolic acid.

[18962], Australia, New South Wales, Southern Tablelands, Tinderry Mountains, 9 km ESE of Michelago, 35°45' S, 149°15' E, 1250 m, over bryophytes and litter on granite outcrop with *Leptospermum* scrub in open subalpine eucalypt woodland. Leg. J. Johnston (2518), 9.09.1987 (CANB).







us: usnic acid, sq: squamatic acid

Cladonia capitellata var ***squamatica***

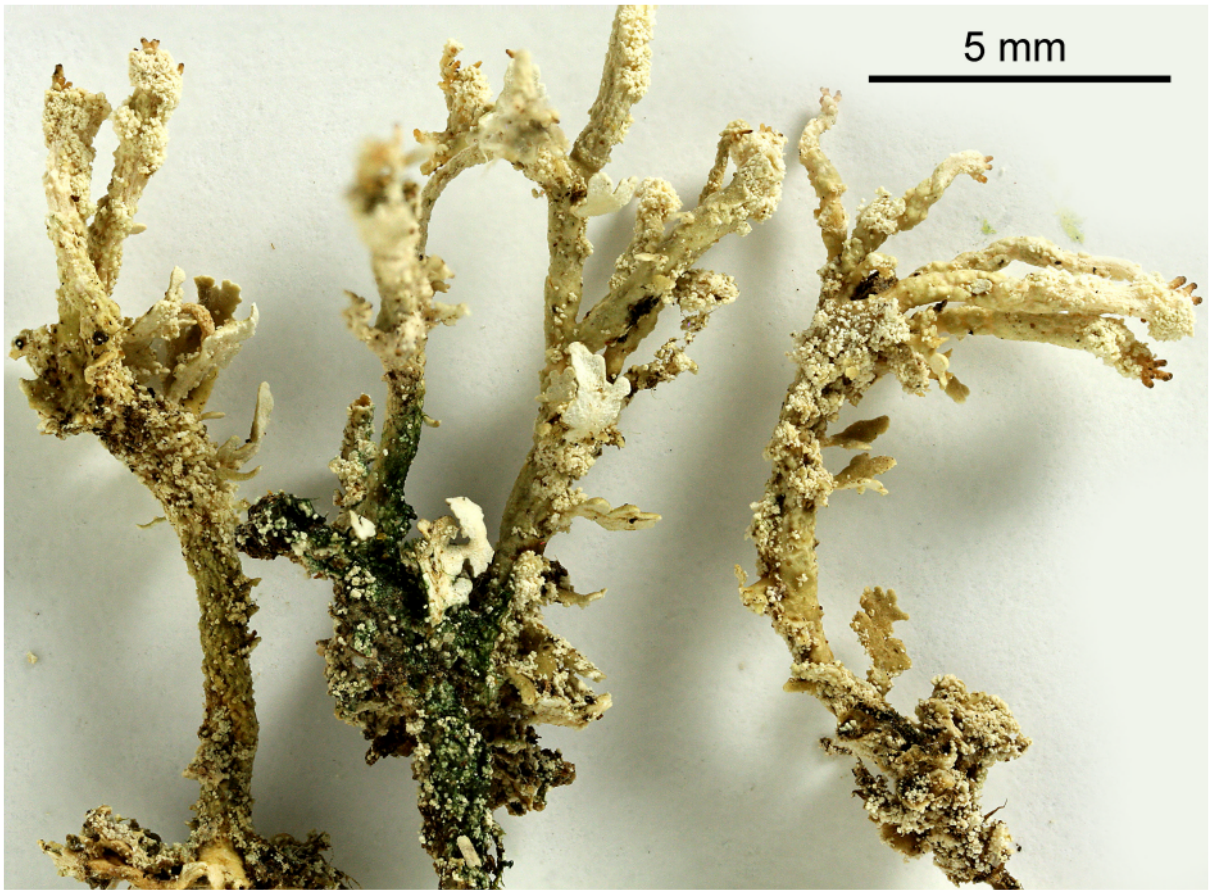
Cladonia fruticulosa Krempelhuber

Apothecia brown. Basal squamules persistent, 2-4 mm long, ocasionally granular-sorediate on margins or below. Podetia 0.5-2(-4) cm tall, 0.5-1 mm diam, simple, rarely branching, scyciferous, often partly squamulose, corticate or upper part ecorticate or almoist completely ecorticate and then granular-sorediate. Chemistry: K-, KC-, P+ red or strong yellow; fumarprotocetraric (major) and protocetraric (trace) acids, or psoromic (major) and conpsoromic (minor) acids, rarely usnic acid (major).

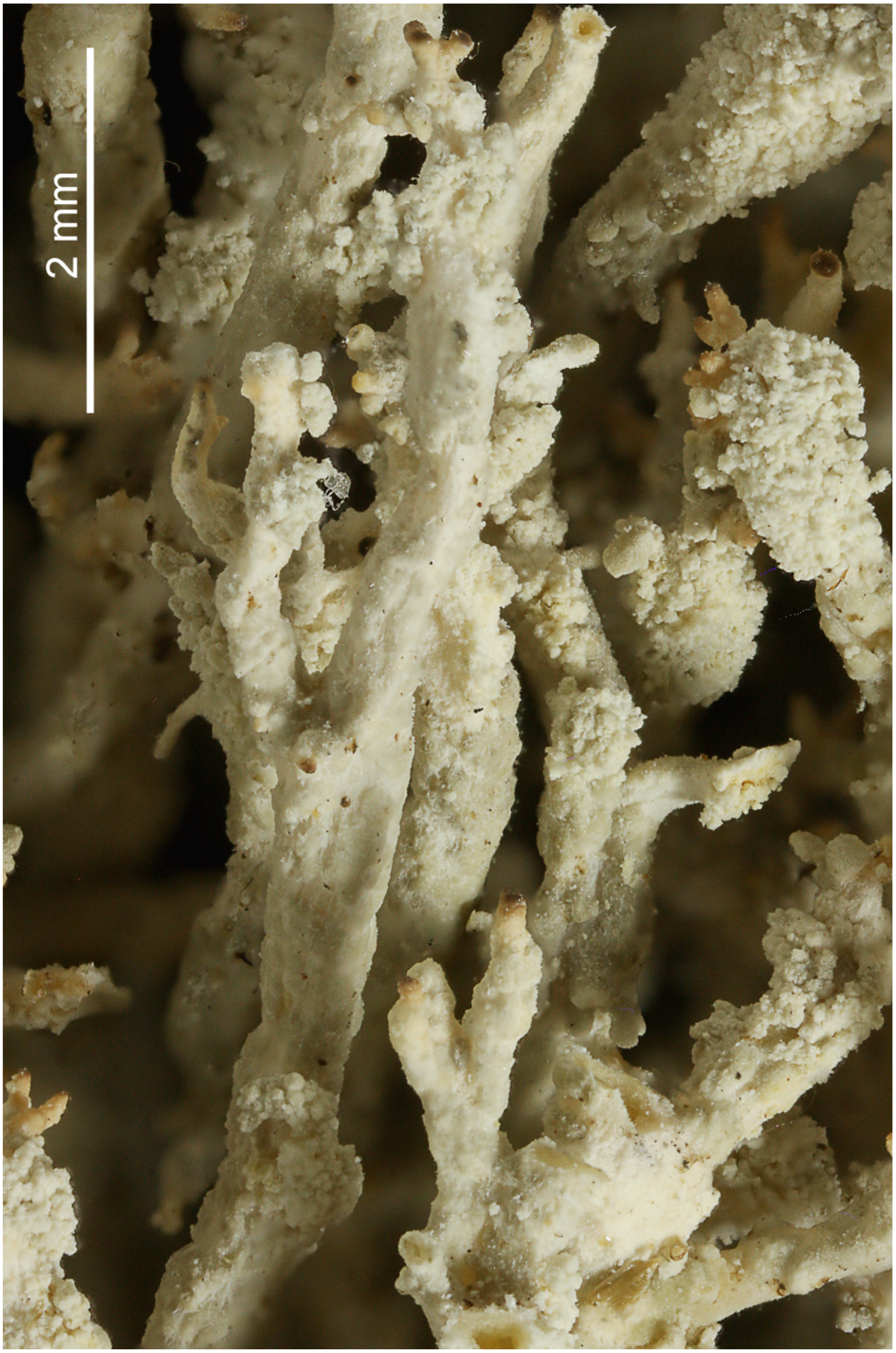
[18964], Australia, Queensland, Main Coast Range, Windmill Creek, 14 km north-north-west of Mt. Molloy, 16°34' S, 145°17' E, 1000 m, growing on soil of road bank in disturbed rainforest. Leg. J.A. Elix (16974) & H. Streimann, 30.06.1984, det. A.W. Archer. Chemistry: fumarprotocetraric acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 106.



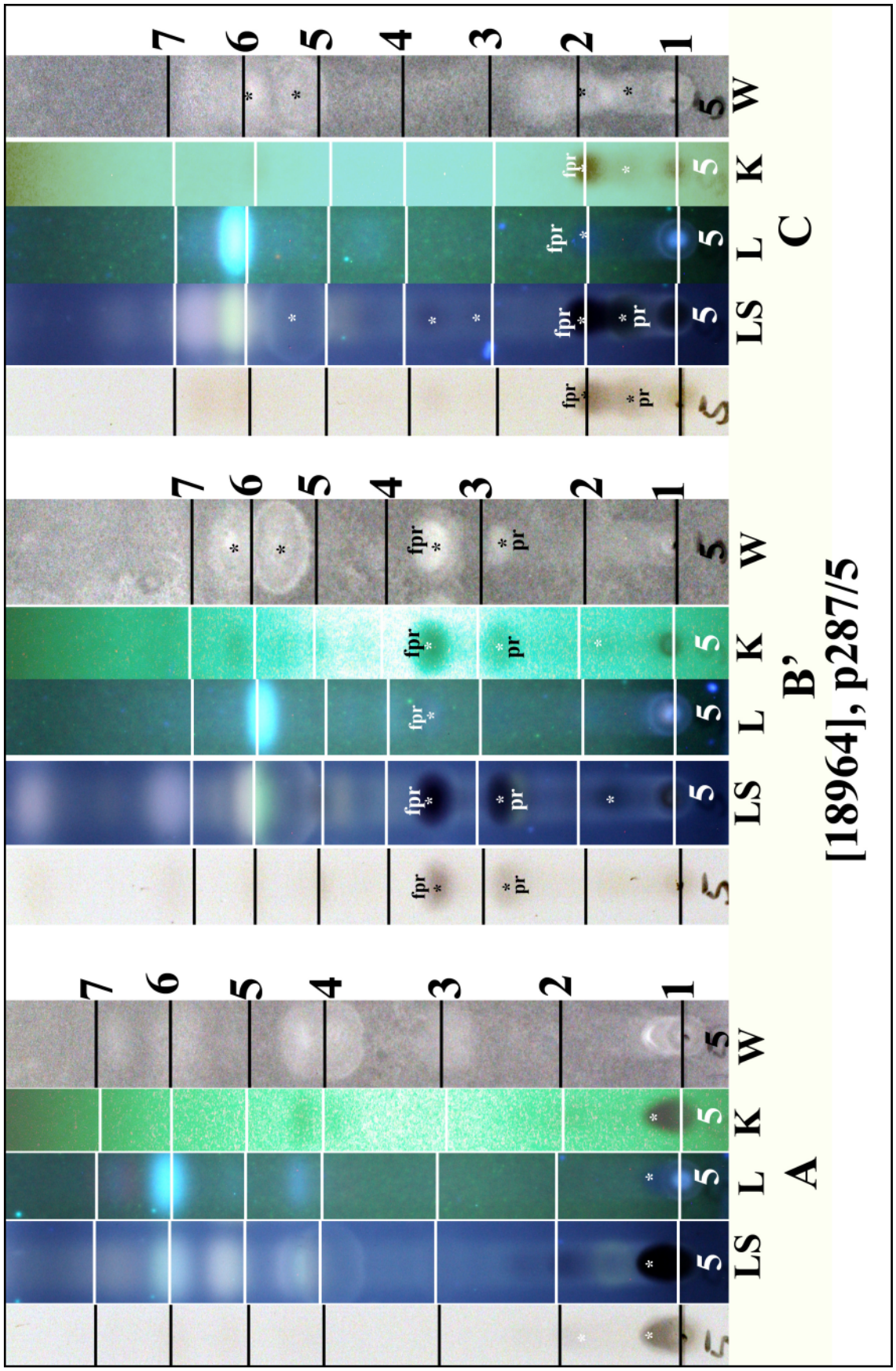




Cladonia fruticulosa



Cladonia fruticulosa



fpr: fumarprotocetraric acid, pr: protocetraric acid

Cladonia fruticulosa

Cladonia furcata (Huds.) Schrad.

Apothecia brown, terminal on podetia. Basal squamules evanescent. Podetia 2-8 cm tall, 0.5-2 mm diam., richly branched, axils, open, corticate, esorediate, escypherous; cortex continuous to areolate with or without squamules on podetia. K-, KC-, P+ red.

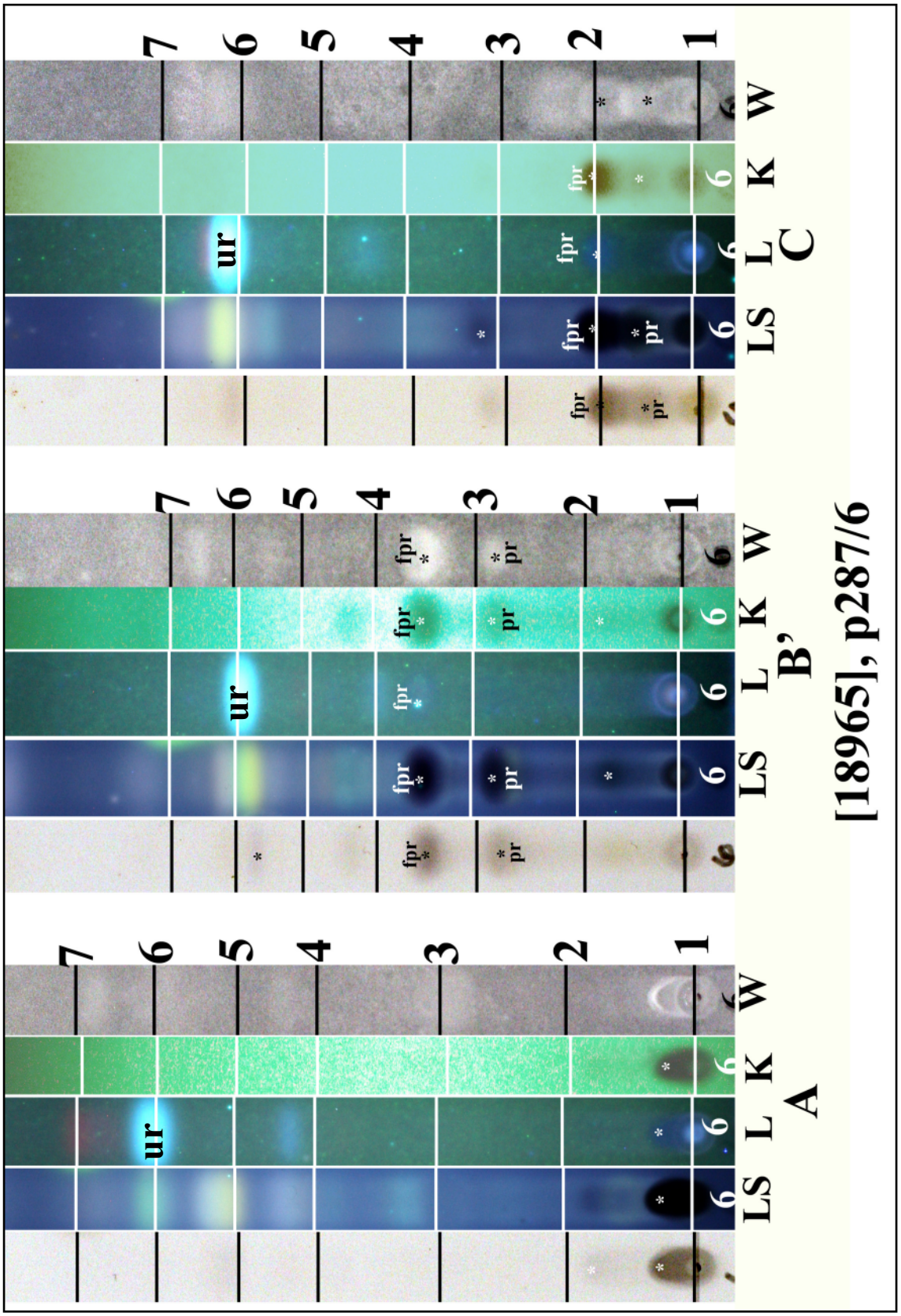
[18965], Australia, New South Wales, Polblue Swamp, Barrington Tops State Forest, 50 km west-north-west of Gloucester, 31°58' S, 151°26' E, 1450 m, growing on soil beneath shrubs in *Eucalyptus pauciflora*, *Leptospermum* and Epacridaceae fringed swampy area. Leg. J.A. Elix (22903) & H. Streimann, 25.04.1990. Chemistry: fumarprotocetraric acid (major), protocetraric acid (minor), ursolic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 202.







Cladonia furcata



fpr: fumarprotocetraric acid, pr: protocetraric acid, ur: ursolic acid

Cladonia furcata

Cladonia krempelhuberi (Vain.) Vain.

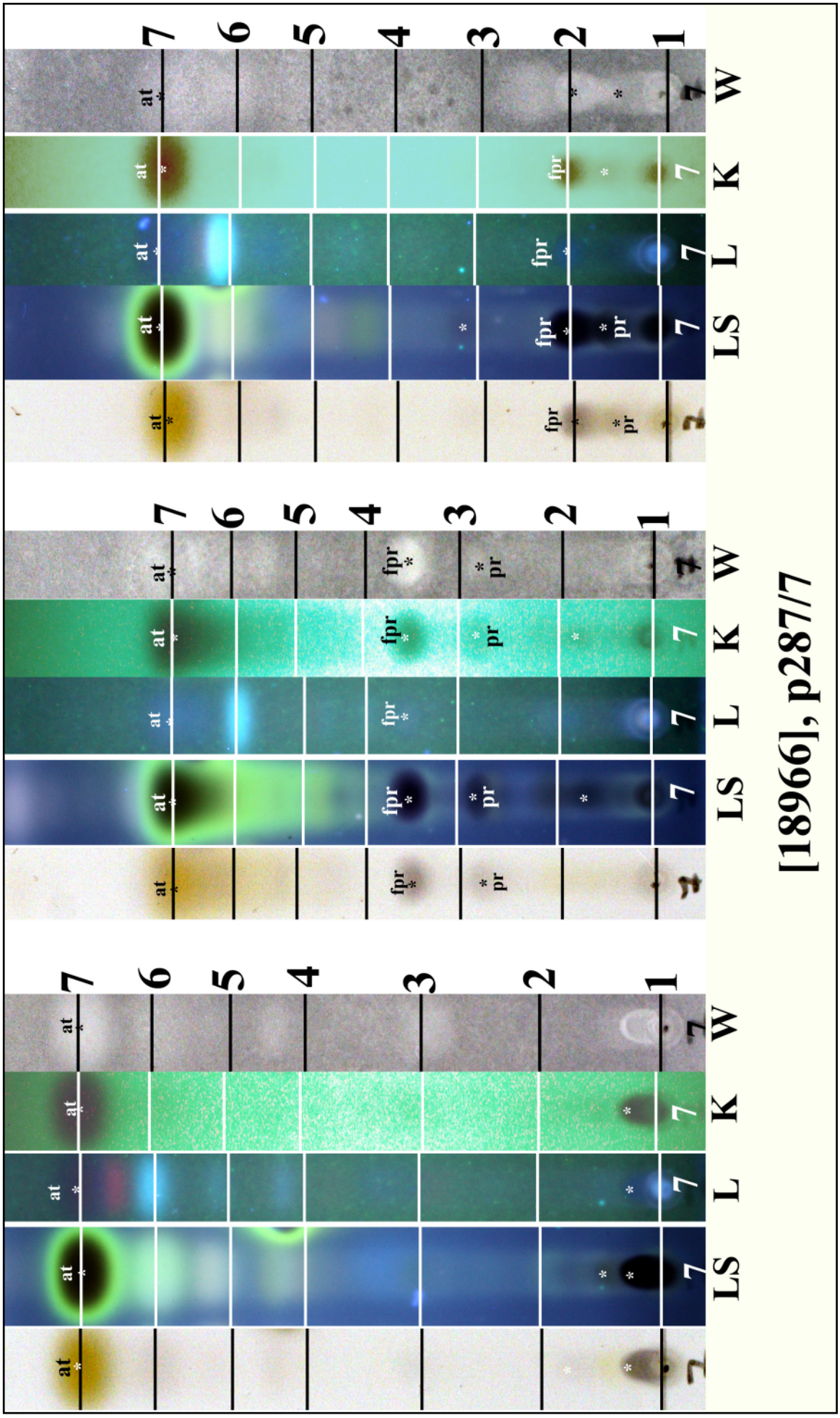
Basal squamules persistent or evanescent, 2-4 mm long, 1-2 mm diam., laciniate to palmate, esorediate. Podetia 2-8(-10) cm tall, 0.5-1.5 mm diam., simple, esorediate, rarely with squamules, scyphiferous, greyish-green; cortex continuous to subverrucose. Apothecia on margins of scyphi, brown. Podetia K+ yellow, KC-, P+ red. Distinguished from *Cladonia cervicornis* by the presence of atranorin.

[18966], New Zealand, South Island, Canterbury, SW slopes of Foggy Peak, Porters Pass, Torlesse Range, 1000 m, subalpine heath, amongst litter beneath shrubs. Leg. J. Johnston (1742), 08.03.1985. Chemistry: fumarprotocetraric acid, atranorin by TLC, anal. Jen Johnston.





Cladonia krempelhuberi



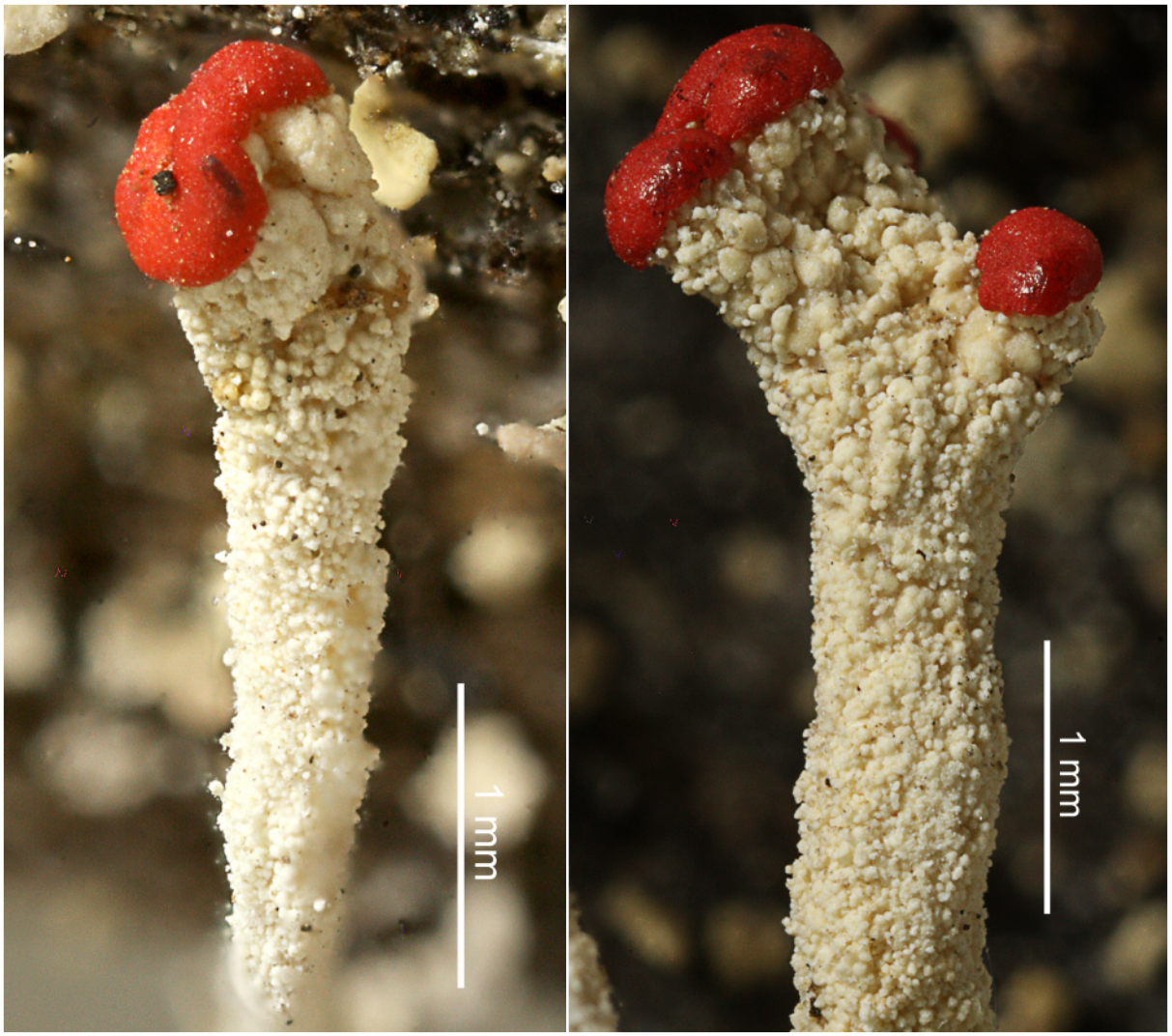
Cladonia krempelhuberi

Cladonia macilenta Hoffm.

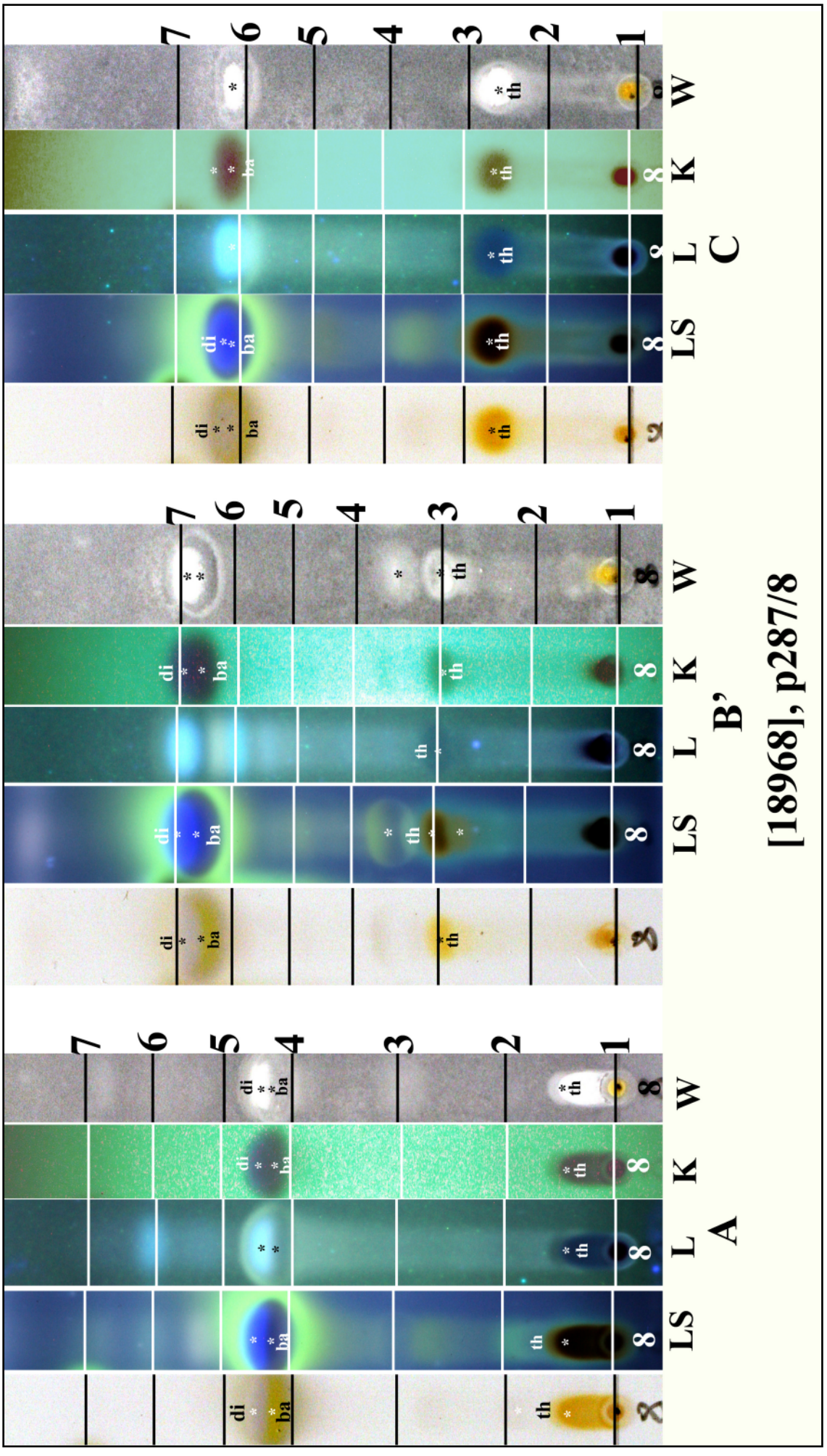
Apothecia red. Basal squamules small, inconspicuous, 1-2 mm long, 0.5-1 mm diam., margins with or without soredia. Podetia 1-2(-3) cm tall, 0.5-1.5 mm diam, simple or branching near apices, escyphifereous, ecorticate and floury-sorediate apart from short corticate areas at base and under apothecia. K+ yellow, KC-, P+ yellow.

[18968], Australia, Queensland, Crediton State Forest, 16 km south-west of Finch Hatton, 21°15' S, 148°31' E, 700 m, growing on dead logs in *Eucalyptus grandis* dominated woodland. Leg. J.A. Elix (21094) & H. Streimann, 01.07.1986, det. A.W. Archer. Chemistry: didymic acid (major), barbatic acid (minor), thamnolic acid (minor), condidymic acid (trace), obtusatic acid(trace), 4-*O*-demethylbarbatic acid (trace), rhodocladonic acid (minor), unknown (trace) by TLC/HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 152
.





Cladonia macilenta



di: didymic acid, ba: barbatic acid, th: thamnolic acid

Cladonia macilenta

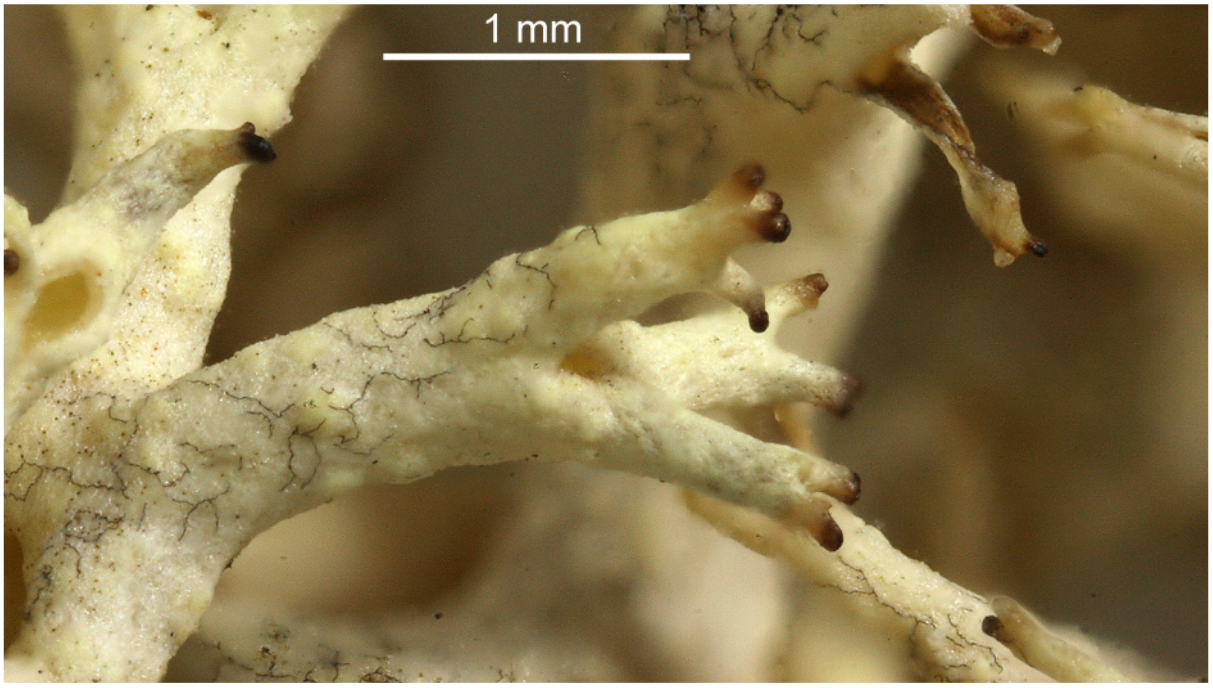
Cladonia mitis Sandstede
[= ***Cladina mitis*** (Sandstede) Hustich]

Podetia 3-6 cm tall, branches 0.5-0.8 mm diam., branching anisotomic, predominantly trichotomous; surface cobwebby, white or off-white. K-, KC+ yellow, P- or yellow.

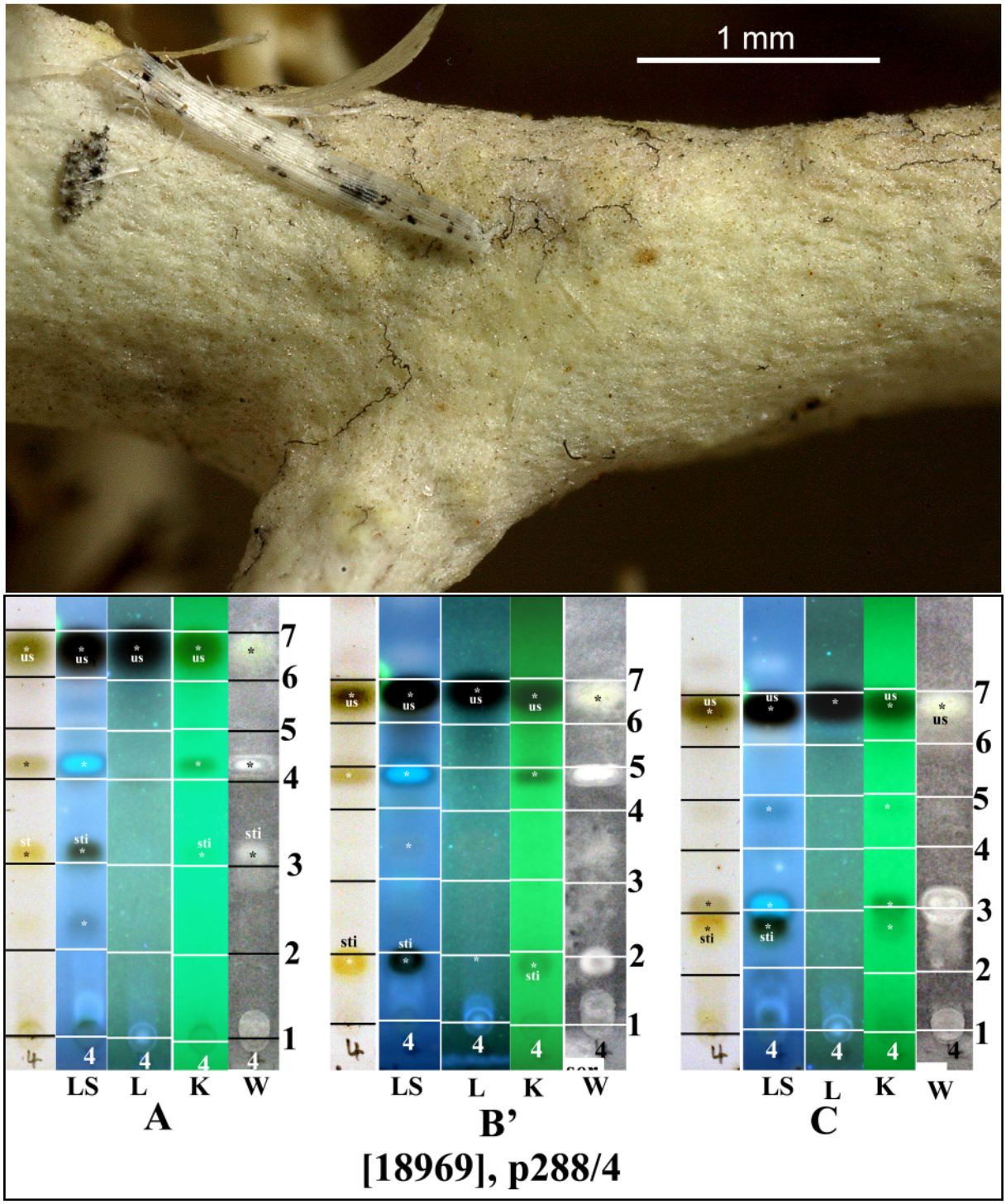
[18969], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°53' S, 147°18' E, 1650 m, growing on soil and debris in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40372) & H. Streimann, 17.02.1994. Chemistry: usnic acid (major), stictic acid (major), norstictic acid (trace), cryptostictic acid (trace), caperatic acid by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 277, distributed as ***Cladina mitis*** (Sandstede) Hustich.







Cladonia mitis



us: usnic acid, sti: stictic acid

Cladonia mitis

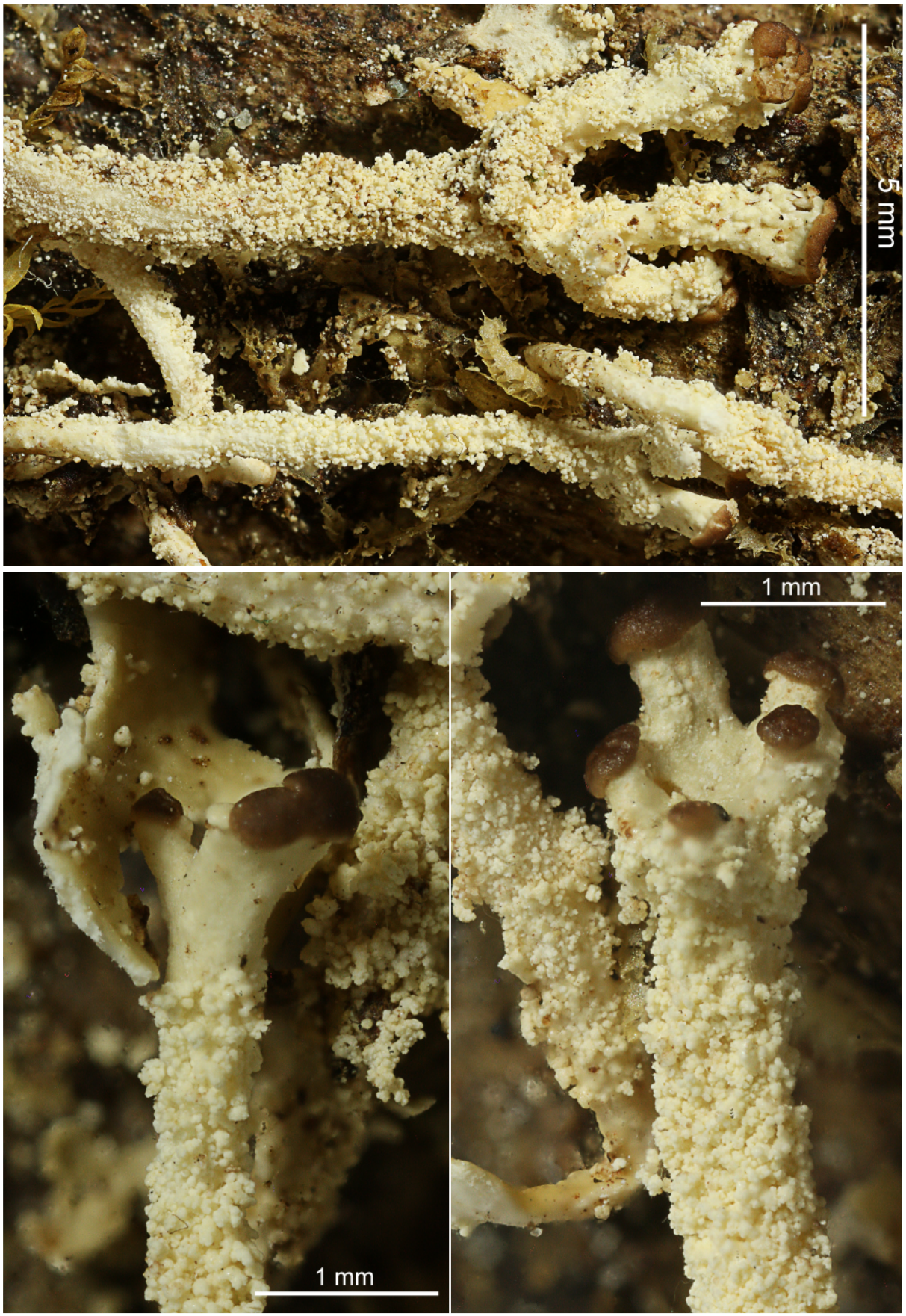
Cladonia ochrochlora Flörke

[18970], New Zealand, South Island, Westland, Waiatoto State Forest, near Hannan's Flat, lowland forest with Rimu, on rotten fence post at roadside. Leg. J. Johnston (2040), 13.03.1985. Chemistry: fumarprotocetraric acid (major), protocetraric acid (trace), confumarprotocetraric acid (trace), grey unknown (trace) by TLC in solvent C, anal. J. Johnston.

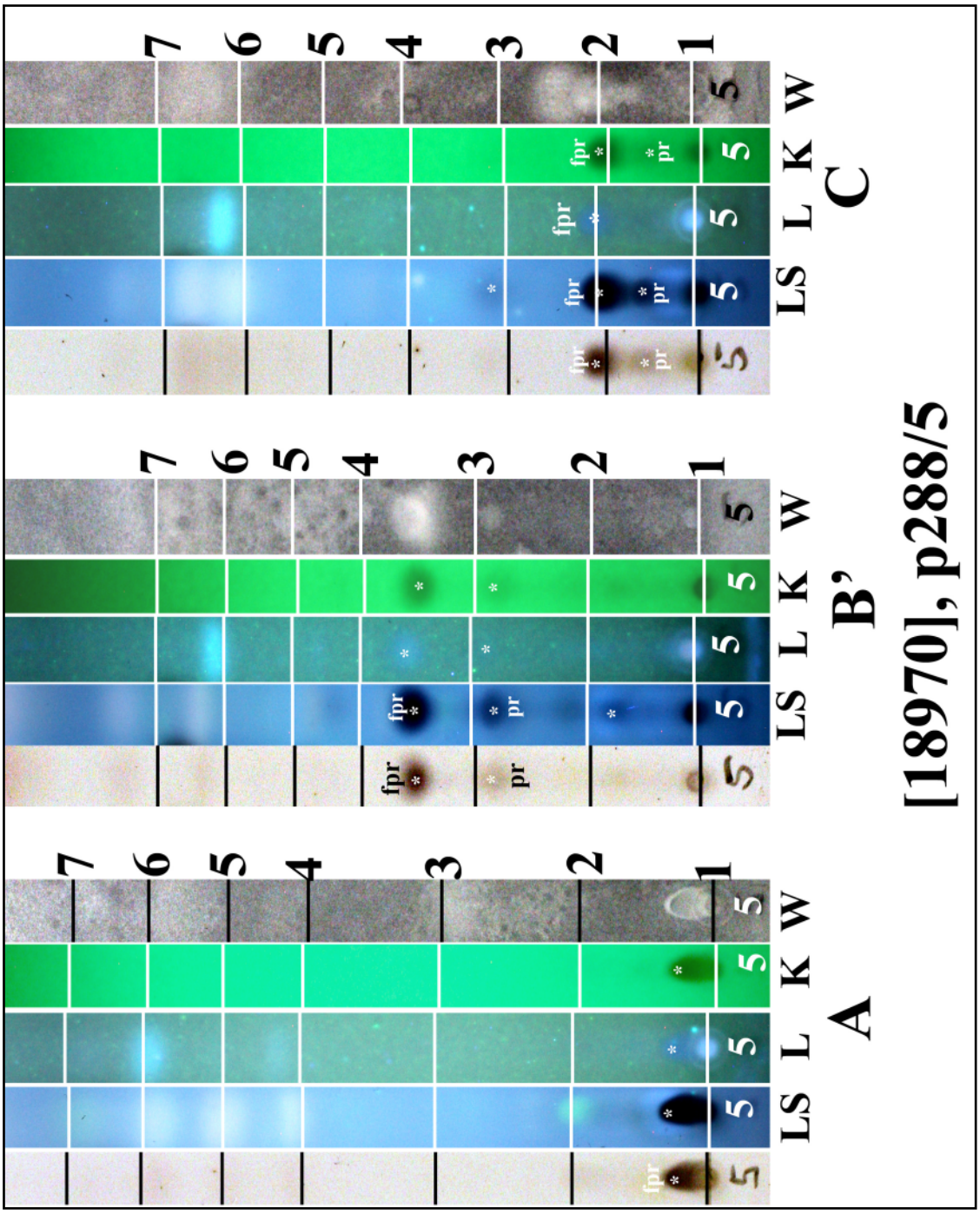




Cladonia ochrochlora



Cladonia ochrochlora



fpr: fumarprotocetraric acid, pr: protocetraric acid

Cladonia ochrochlora

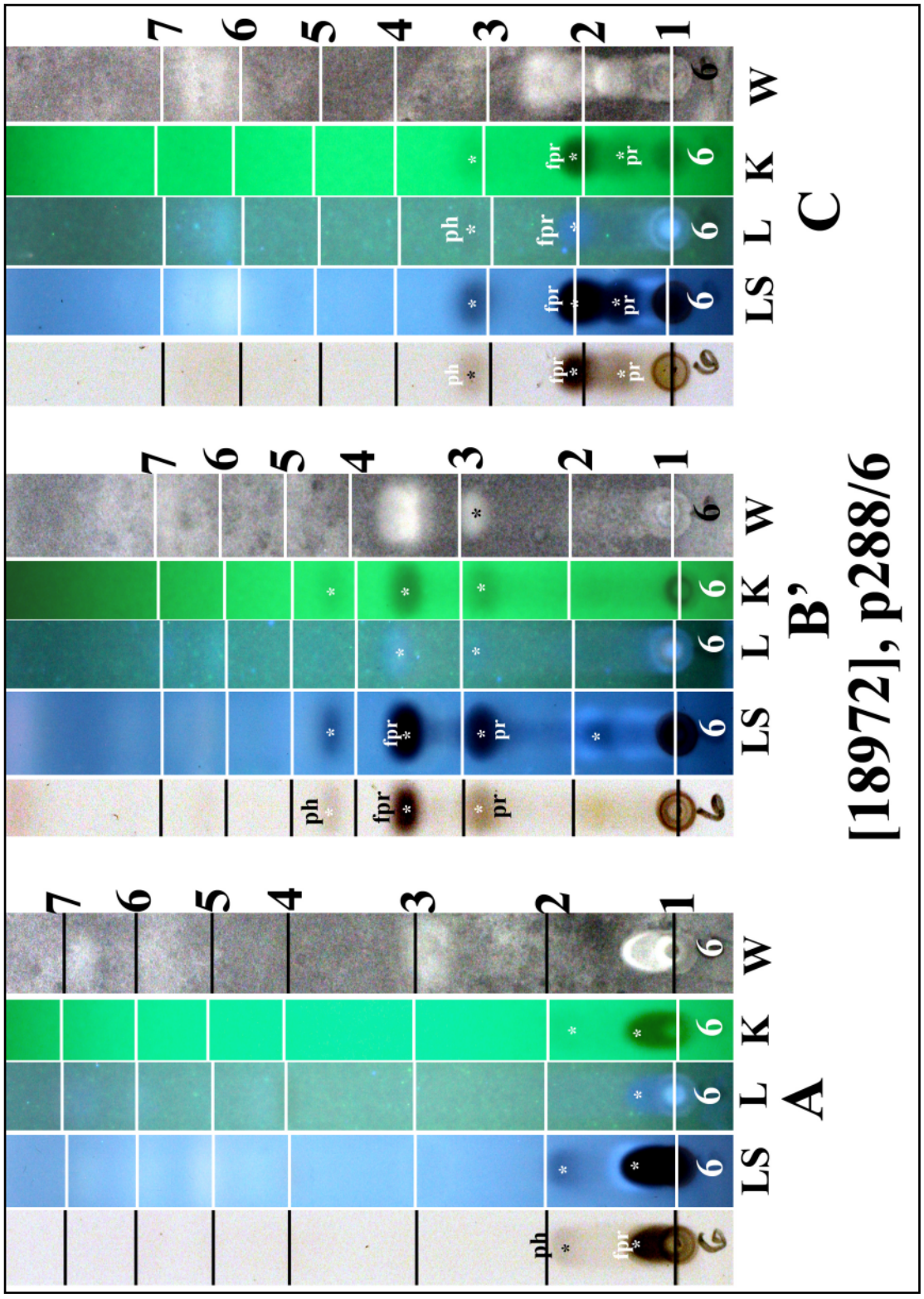
Cladonia ochrochlora Flörke
[= ***Cladonia physodalica*** Elix]

[18971], Australia, Queensland, Cardwell Range, 23 km west-north-west of Cardwell, 18°12' S, 145°49' E, 730 m, growing on rocks along the margin of rainforest. Leg. J.A. Elix (17624) & H. Streimann 08.07.1984. Chemistry: fumarprotocetraric acid (major), physodalic (minor), protocetraric (trace), ursolic acid (trace) by TLC, HPLC, anal. J.Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 179, distributed as ***Cladonia physodalica*** Elix





Cladonia ochrochlora



fpr: fumarprotocetraric acid, pr: protocetraric acid, ph: physodalic acid

Cladonia ochrochlora

Cladonia ochrochlora Flörke
[= ***Cladonia physodalica*** Elix]

[18972], Australia, Queensland, Main Coast Range, Mt. Lewis Track, Mary Creek, 15 km north-north-west of Mt. Molloy, 16°32' S, 145°16' E, 1160 m, growing on soil on large boulder in clearing in rainforest. Leg. J.A. Elix (16947) & H. Streimann, 30.06.1984. Chemistry: fumarprotocetraric acid (major), physodalic acid (minor), protocetraric acid (trace), ursolic acid (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 204, ISOTYPE, distributed as ***Cladonia physodalica*** Elix.





ph: physodalic acid, pr: otocetraric acid, fpr: fumarprotocetraric acid

Cladonia ochrochlora

Cladonia ochrochlora Flörke

Apothecia brown. Basal squamules evanescent or pesistent, 3-5 mm long, 1-2 mm diam, with crenate to incised margins. Podetia 1-2 mm tall, 0.5-1 mm diam.,simple,tapering with narrow terminal scyphi, corticate at base and below apothecia, remainder farinose-sorediate. Podetia K-, KC-, P+ red.

[18967], Australia, Queensland, Crediton State Forest, 16 km south-west of Finch Hatton, 21°15' S, 148°31' E, 700 m, growing on dead logs in *Eucalyptus grandis* dominated woodland. Leg. J.A. Elix (21095) & H. Streimann, 01.07.1986, det. A.W. Archer. Chemistry: fumarprotocetraric acid by TLC, anal. A.W. Archer. LICHENES AUSTRALASICI EXSICCATI NO. 153.

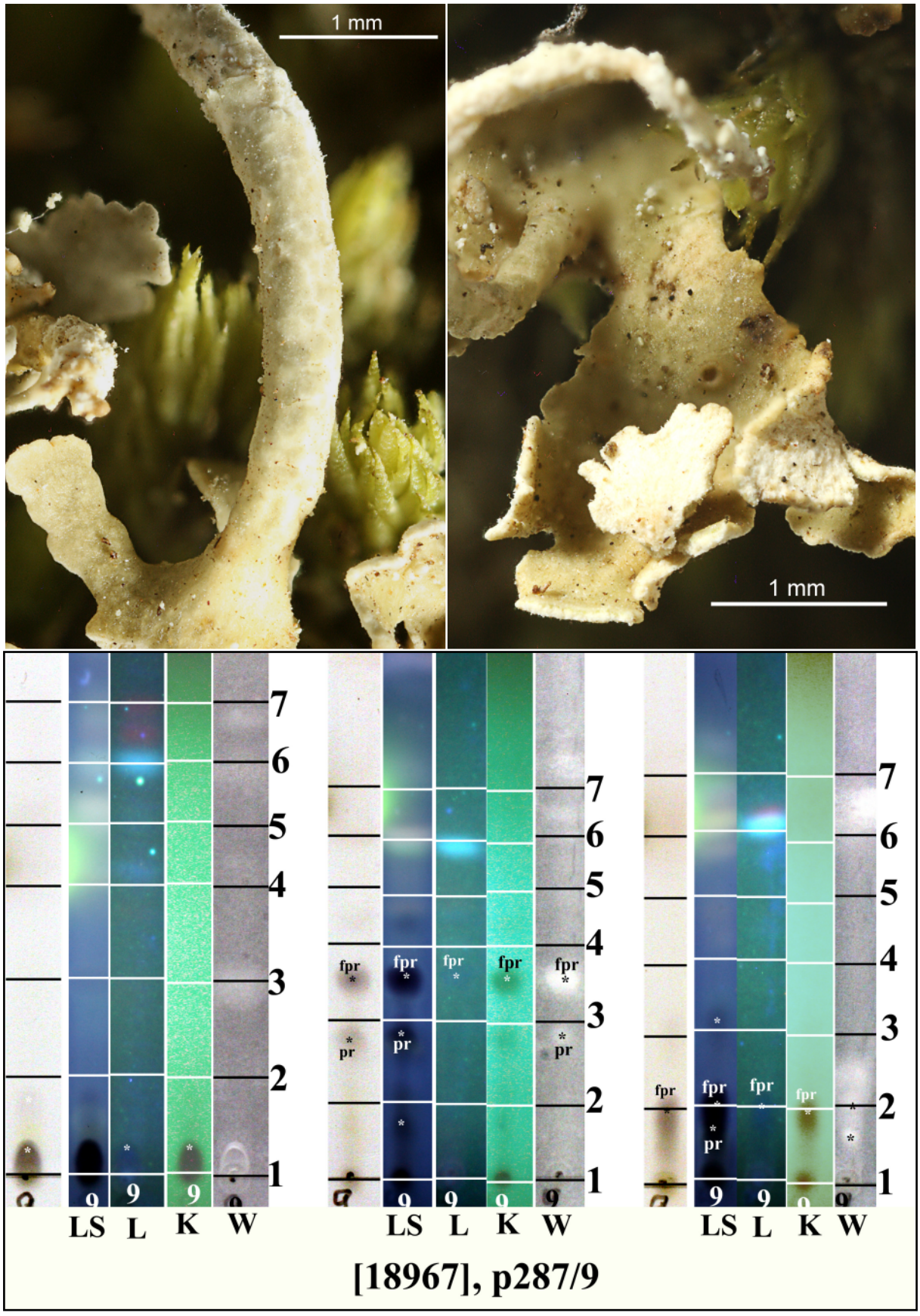








Cladonia ochrochlora



fpr: fumarprotocetraric acid, pr: protocetraric acid

Cladonia ochrochlora

Cladonia pertricosa Kremp.

Basal squamules inconspicuous, persistent or evanescent, 2-3 mm long, 0.5-1 mm wide, esorediate. Podetia often dying at base, 1-3 cm tall, sterile podetia 0.2-0.5 mm diam., much branched, with open or closed axils, mainly with irregularly dichotomous branching, escyphiferous, esorediate, greyish white. Apothecia terminal, clustered, brown to dark brown. Chemistry: K+ yellow, KC-, P- or P+ yellow; thamnolic acid (major), barbatic acid (major) or rarely squamatic acid (major), cons-quamatic acid.

[19180], Australia, New South Wales, Barrington Tops State Forest, Dilgry Circle Road, 40 km north-west of Gloucester, 31°52' S, 151°31' E, 1260 m, growing on soil among mosses on exposed granite rocks along edge of *Eucalyptus* and *Nothofagus* forest. Leg. J.A. Elix (22880) & H. Streimann, 26.04.1990. Chemistry: squamatic acid (major), cons-quamatic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 203.





sq: squamatic acid, csq: consquamatic acid

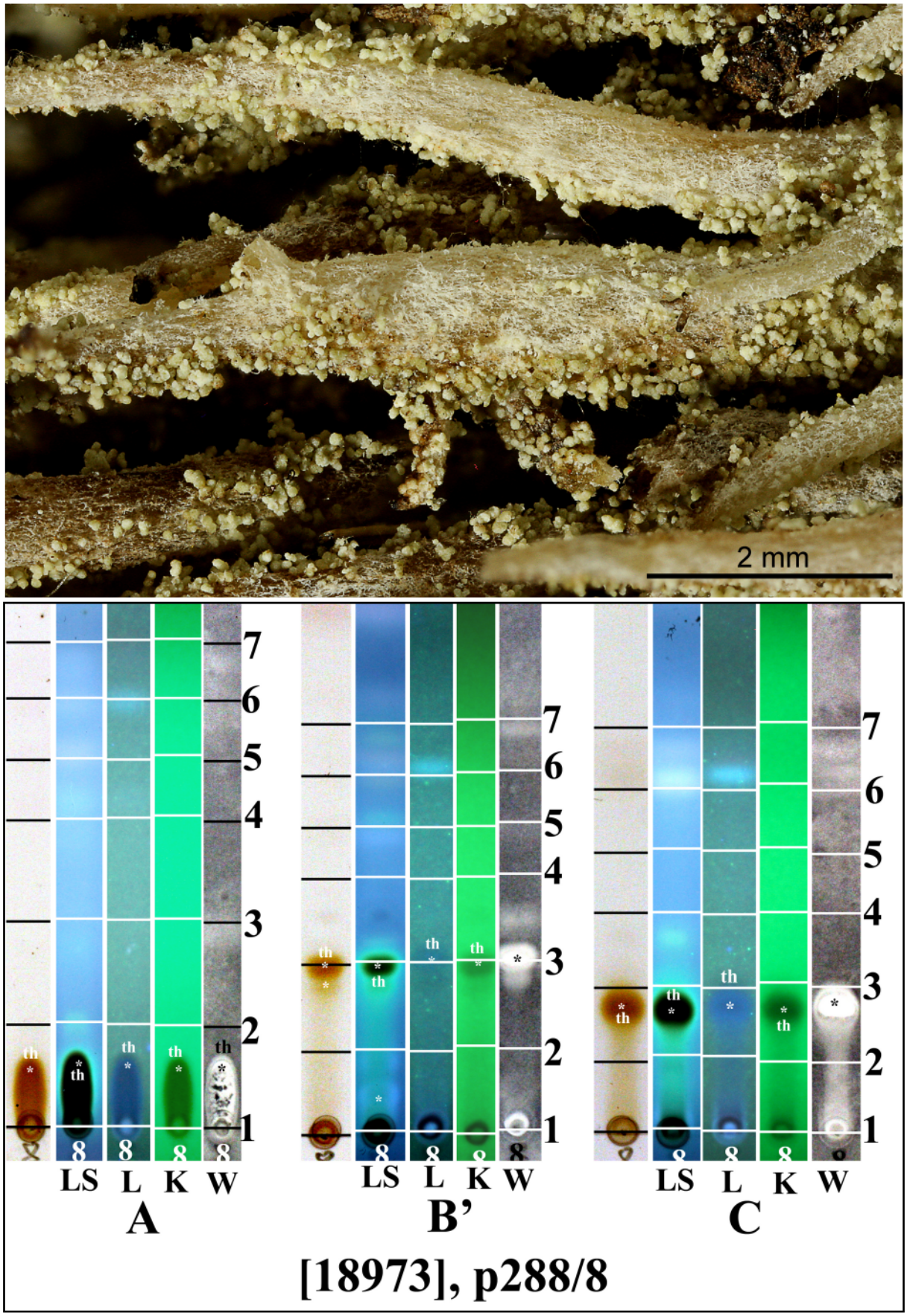
Cladonia pertricosa

Cladonia rigida (J.D.Hooker & Taylor) Hampe

Basal squamules persistent, 1-3 mm long, 0.5-1 mm diam., with crenate margins. Podetia 1-2.5 mm tall, 0.5-1.5 mm diam., simple or rarely branching, ecorticate, squamulose to granular or isidioid-squamulose, scyphi absent, K+ yellow, P+ yellow. Apothecia brown.

[18973], Australia, New South Wales, Murphys Track, Dora Dora State Forest, 18 km south-east of Holbrook, 35°51' S, 147°27' E, 620 m, growing on dead wood in dry sclerophyll forest on gentle slope. Leg. J.A. Elix (22850), 15.11.1989. Chemistry: thamnolic acid (major), conthamnolic acid (minor), ursolic acid by TLC, anal. J.A. ELIX. LICHENES AUSTRALASICI EXSICCATI NO. 205.





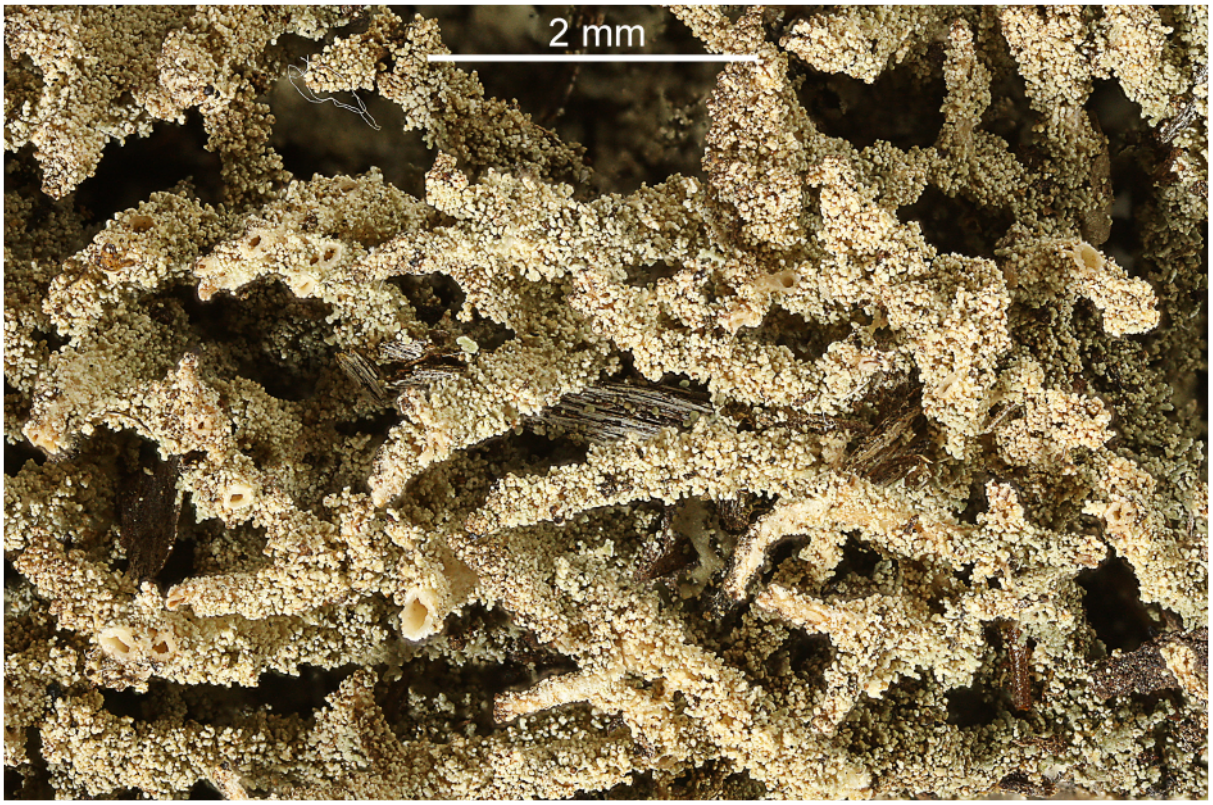
th: thamnolic acid

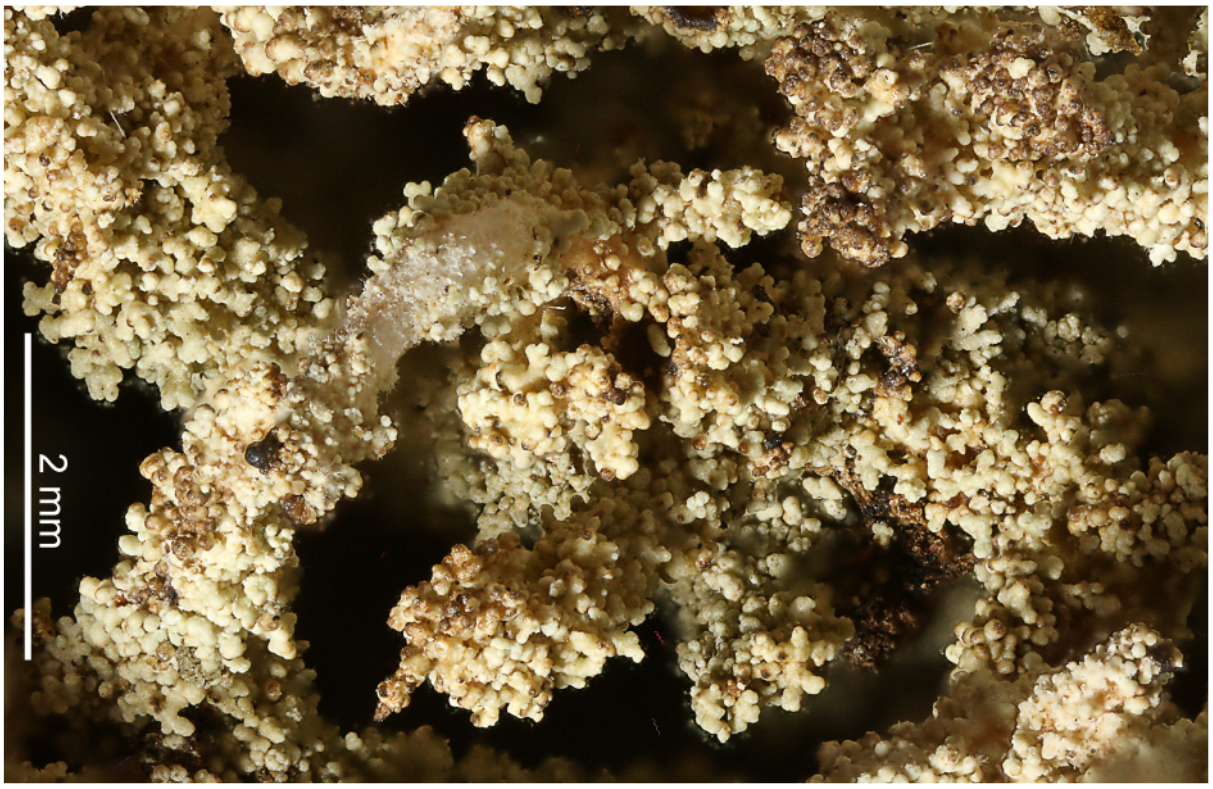
Cladonia rigida

Cladonia rigida (J.D.Hooker & Taylor) Hampe

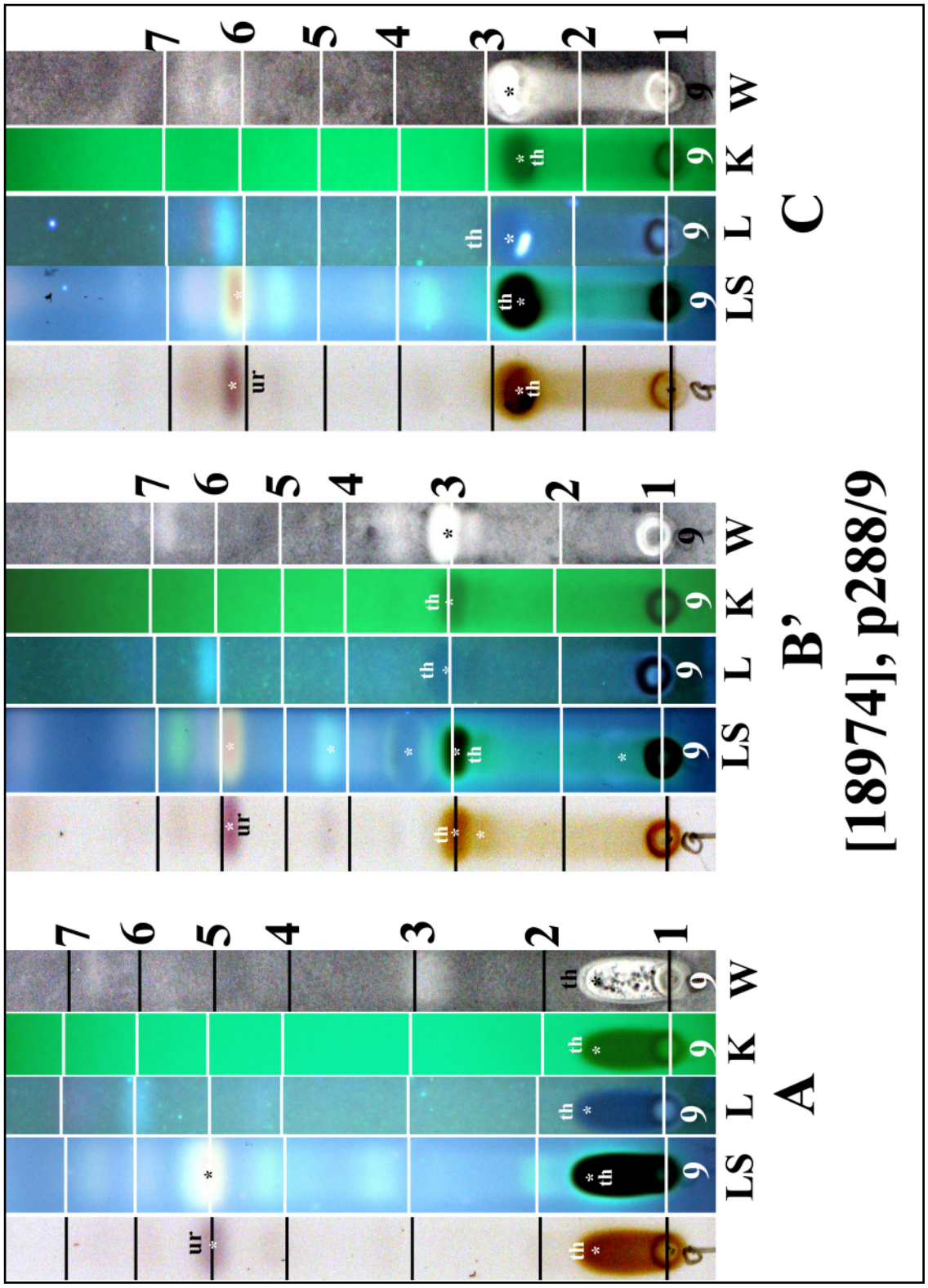
[18974], Australia, New South Wales, Great Dividing Range, Tuena.Binda road, 30 km north-west of Crookwell, 34°13' S, 149°20' E, 920 m, growing on base of Eucalyptus macrorhyncha in dry sclerophyll forest on gentle slope. Leg. J.A. Elix (23143), 2.10.1990. Chemistry: thamnolic acid (major), conthamnolic acid (minor), ursolic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 206.







Cladonia rigida



Cladonia rigida

Cladonia subradiata (Vain.) Sandst.

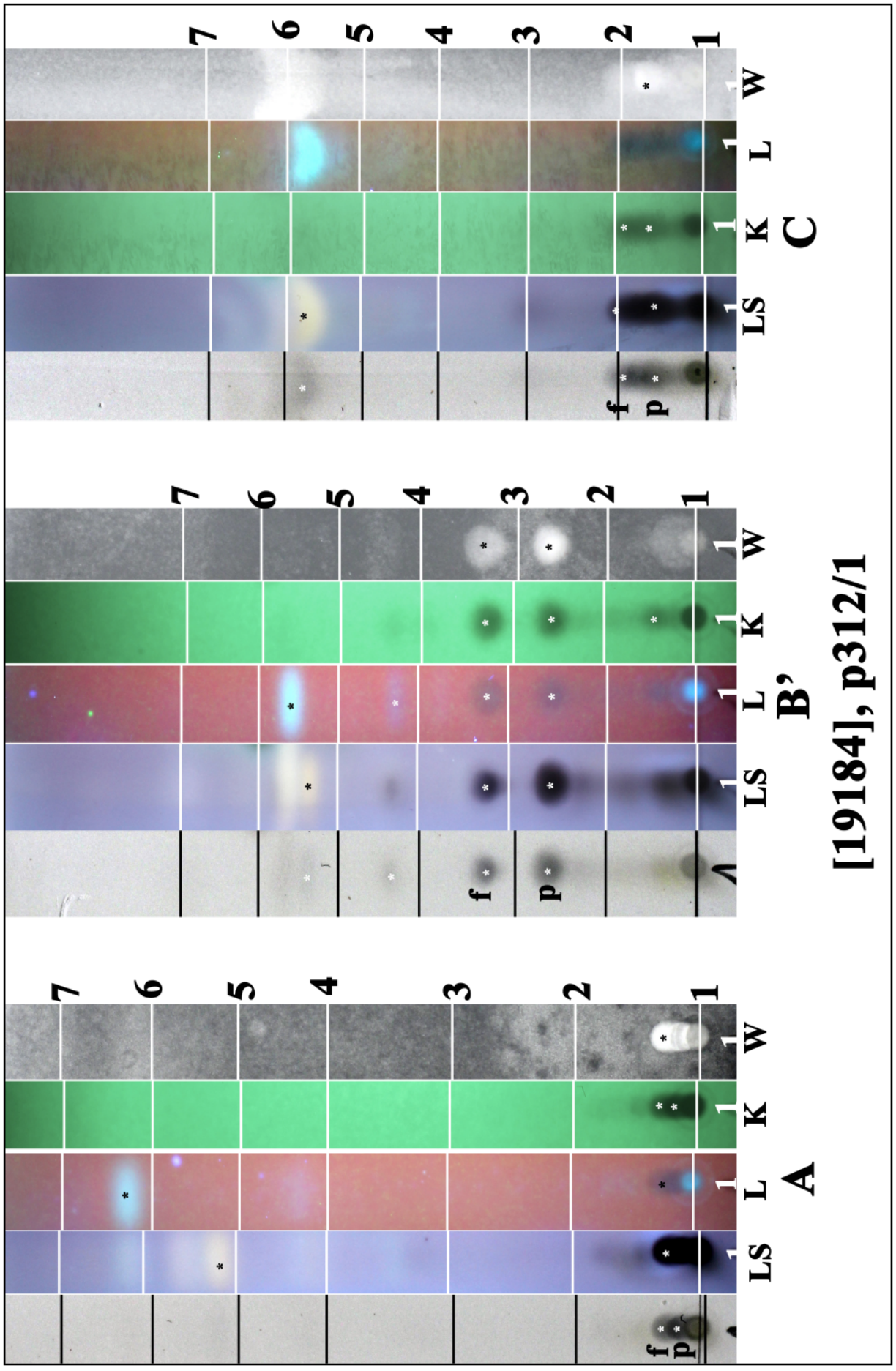
Basal squamules small, inconspicuous, 0.5-2 mm long, 0.25-0.5 mm wide, lobed, with crenate margins. Podetia 1-2 cm tall, 1-2(-3) mm diam., simple, subulate or cylindrical, or with narrow terminal often deformed scyphi. Ecorticate, partly squmulose near podetia base, in upper parts squamules becoming isidioid or granular. Chemistry: K-, KC-, P+ red; fumarprotocetraric acid (major), protocetraric acid (trace).

[19184], Australia, Queensland, near summit of Mount Leswell, 32 km south of Cooktown, 15°46' S, 145°15' E, 440 m, growing on soil over granite rocks on rocky ridge in *Eucalyptus* dominated woodland. Leg. J.A. Elix (17362) & H. Streimann, 5.07.1984, det. A.W. Archer. Chemistry: fumarprotocetraric acid by TLC anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 107.





Cladonia subradiata



f: fumarprotocetraric acid, p: protocetraric acid

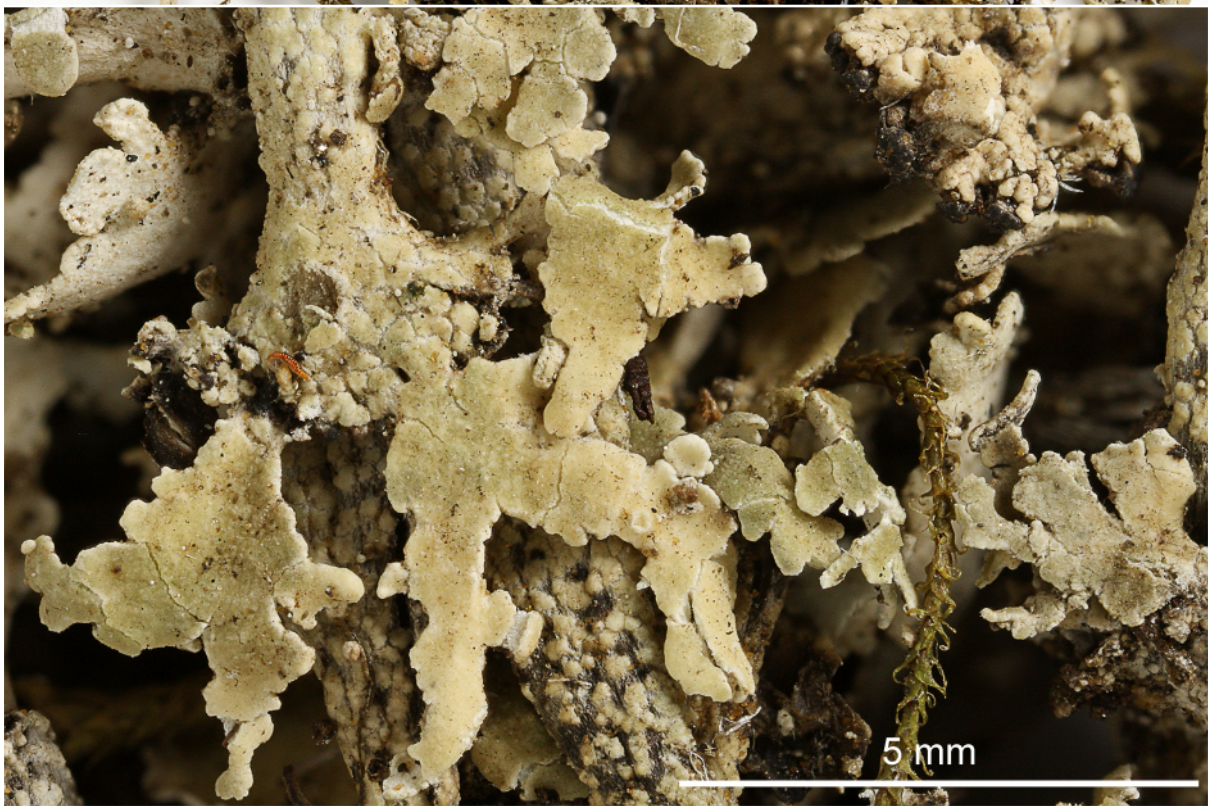
Cladonia subradiata

Cladonia verticillata (Hoffm.) Schaer.
[= ***Cladonia cervicornis*** (Ach.) Flotow ssp. ***verticillata*** (Hoffm.) Ahti]

Apothecia brown. Podetia greyish green, simple, scyphiferous, scyphi with central proliferations, 1.5-6 cm tall; cortex smooth, completely corticate, esorediate. Podetia K-, KC-, P+ red.

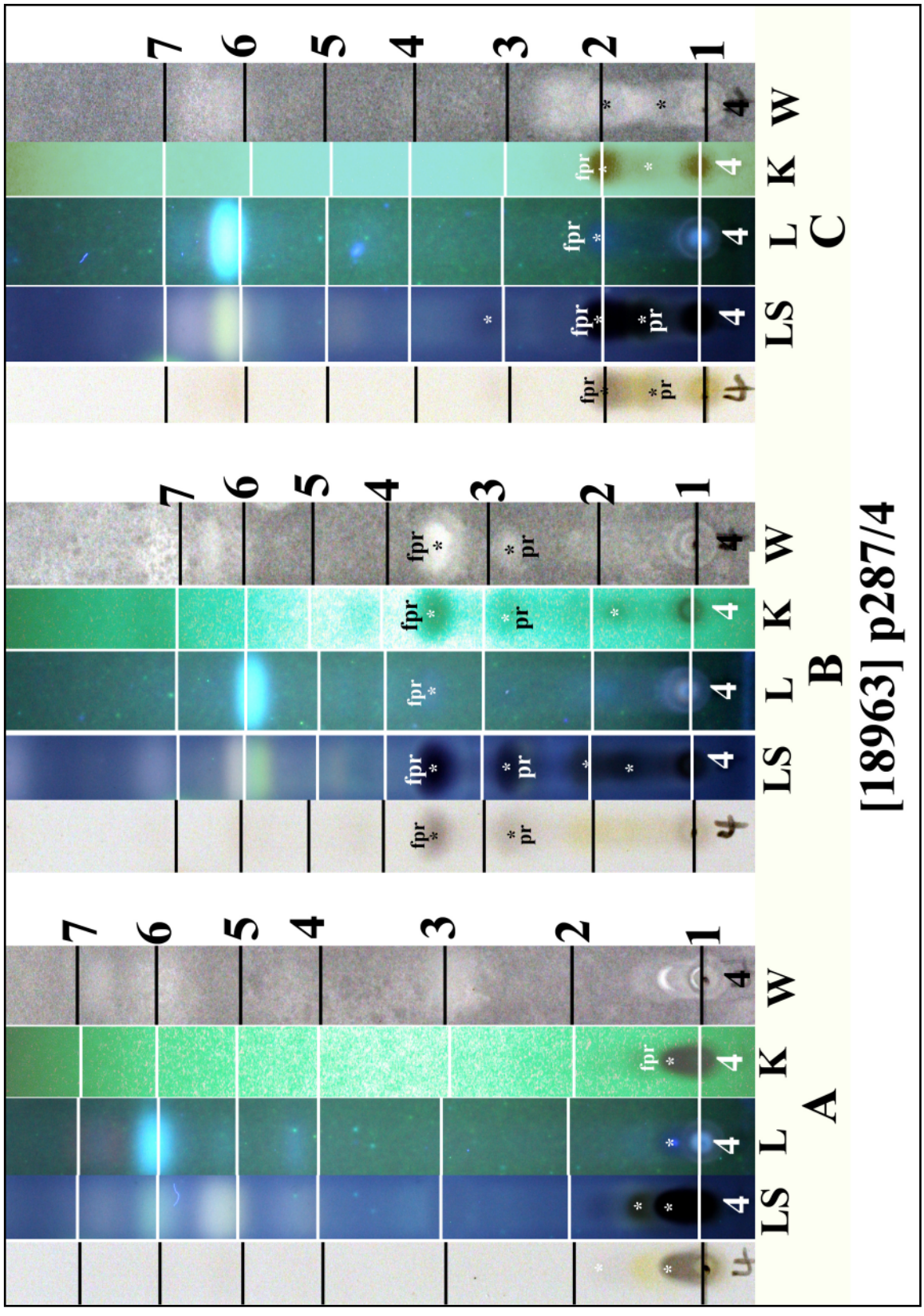
[18963], Australia, New South Wales, Glenbog State Forest, ca. 7.6 km west of Bemboka on Snowy Mountains Highway, growing on soil in Eucalyptus woodland, 800 m. Leg. M.E. Hale (66366) 19.02.1984, det. T. Ahti. Chemistry: fumarprotocetraric acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 078.







Cladonia verticillata



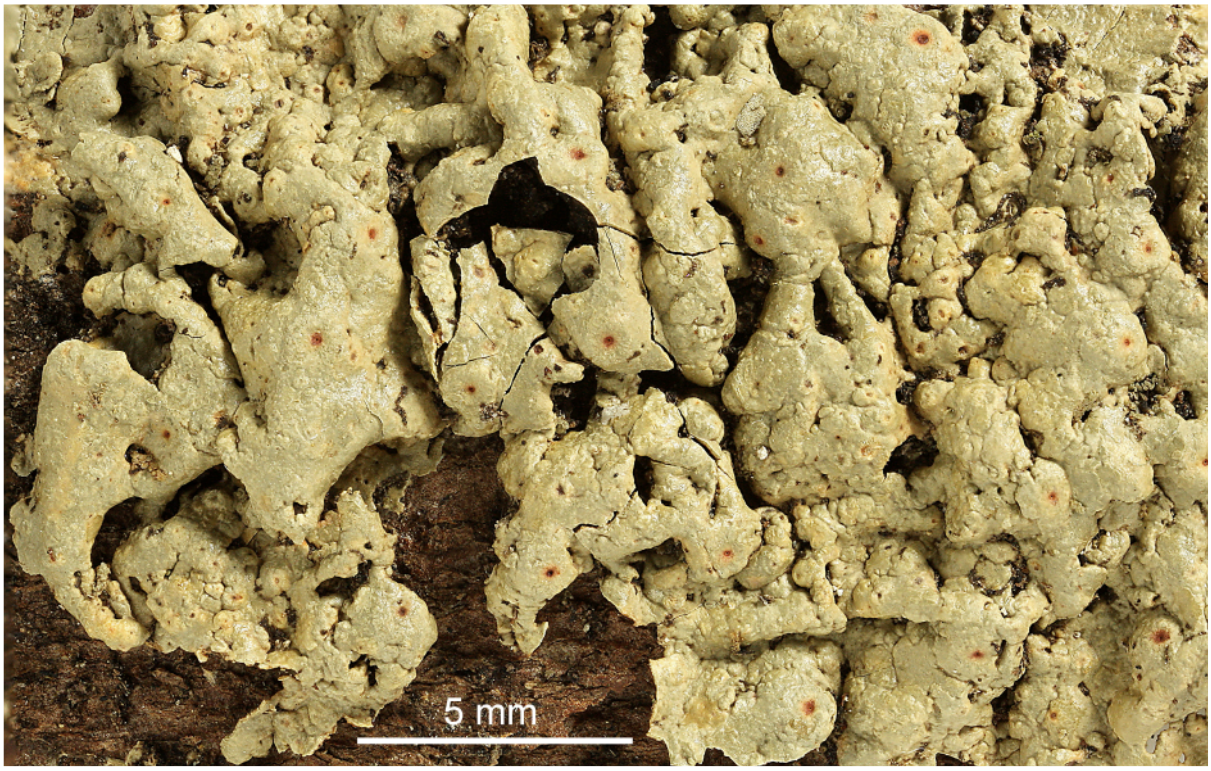
fpr: fumarprotocetraric acid, pr: protocetraric acid

Cladonia verticillata

Clathroporina exocha (Nyl.) Müll.Arg.
[= ***Porina exocha*** (Nyl.) P.M.McCarthy]

Thallus grey-green, continuous, smooth, with thin cortex and a crystallostratum beneath the algae. Perithecia subglobose to immersed, forming globose swellings on the underside of raised thalli. Periphyses 25-50 µm long. Ascospores muriform, with thick perispore, 68-168 x 20-45 µm.
Clathroporina differs from *Porina* in having muriform ascospores, rounded instead truncate ascus tips and in lacking a chitinoid ring-structure in the ascus apices. Lit.Hafellner, J. & Kalb, K. (1995).

[18977], Norfolk Island, Red Road Track to Mt. Bates, 29°00'30" S, 167°56'30" E, 220 m, growing on *Elaedendron* and other saplings in dense subtropical rainforest. Leg. J.A. Elix (18624) & H. Streimann, 06.12.1984. LICHENES AUSTRALASICI EXSICCATI NO. 079.

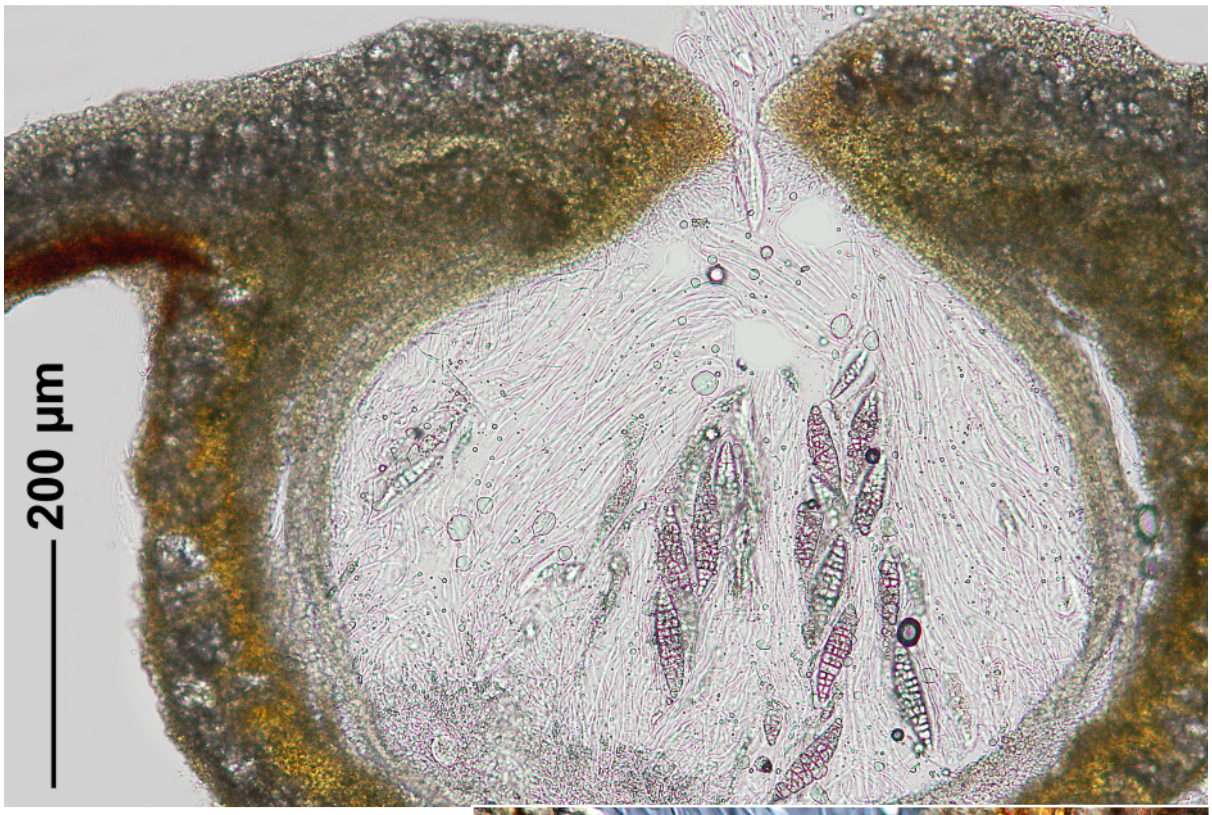


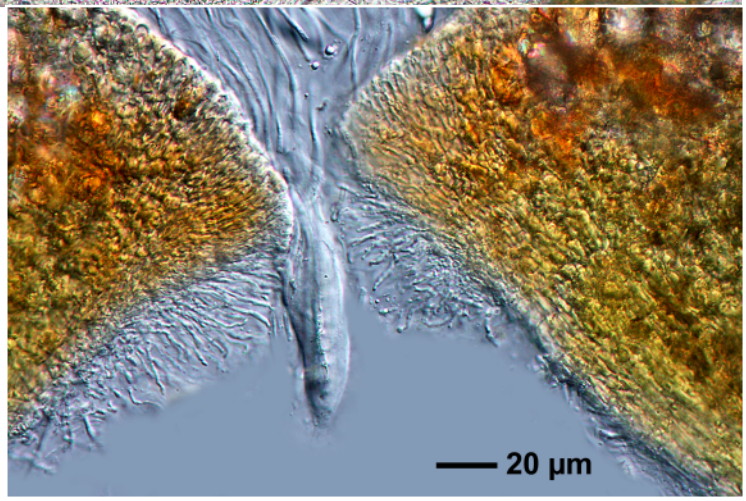




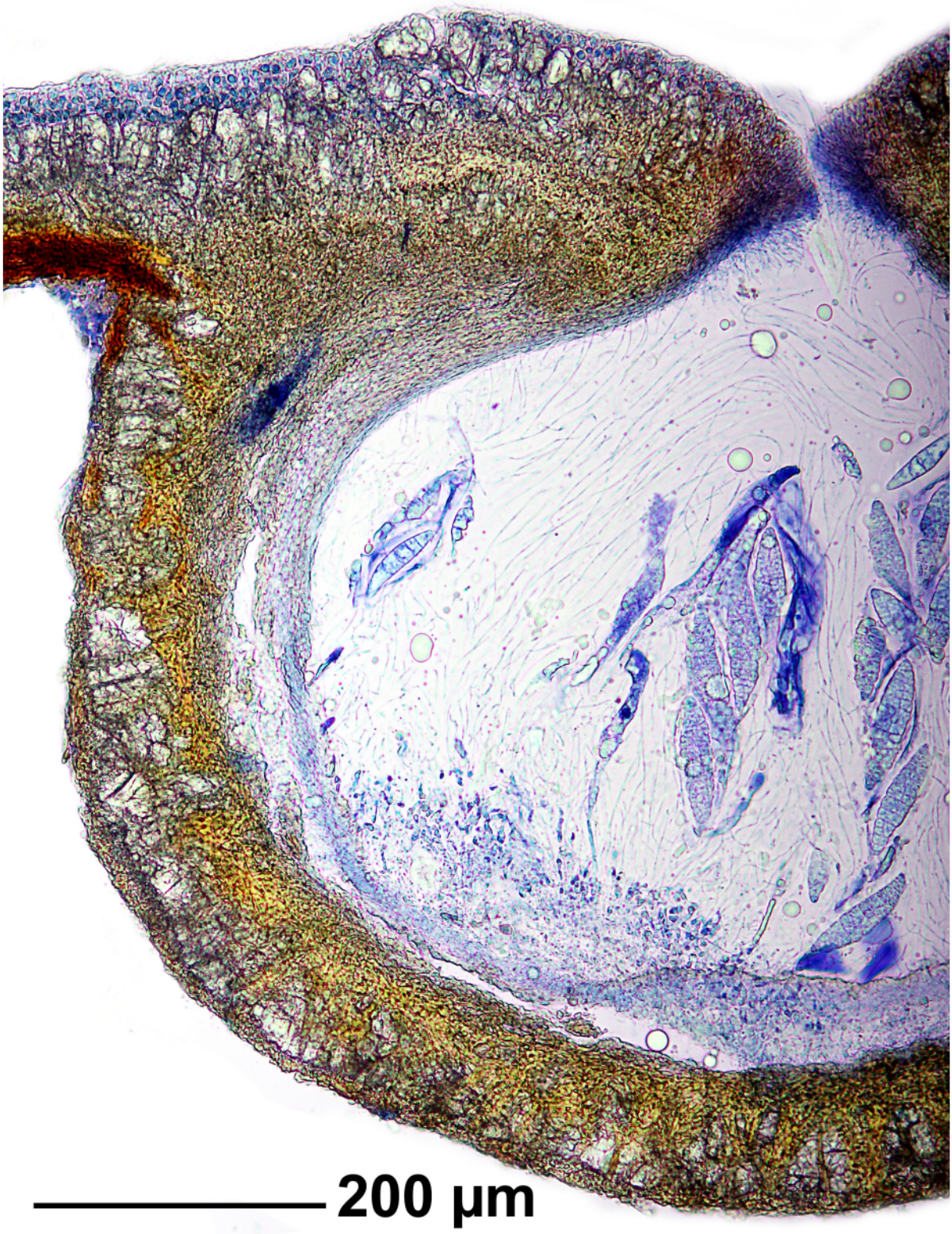
Clathroporina exocha



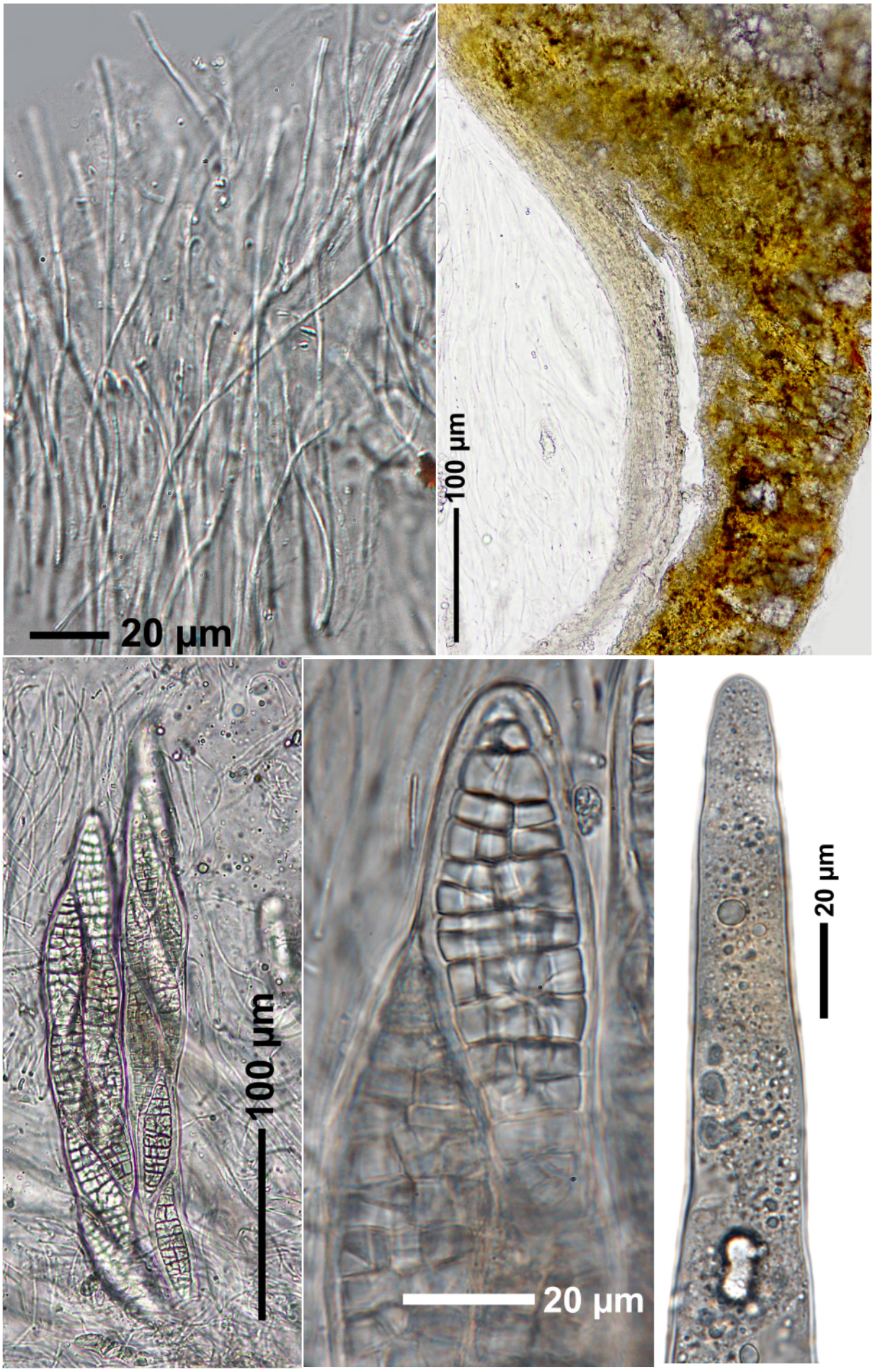




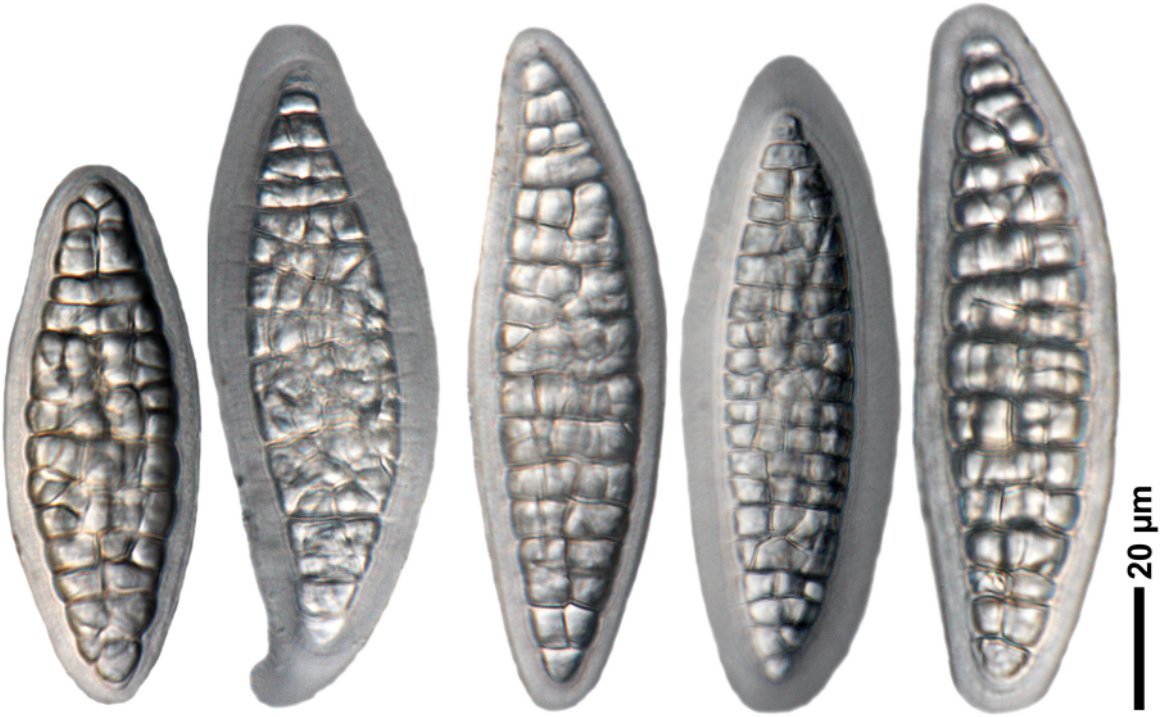
Clathroporina exocha

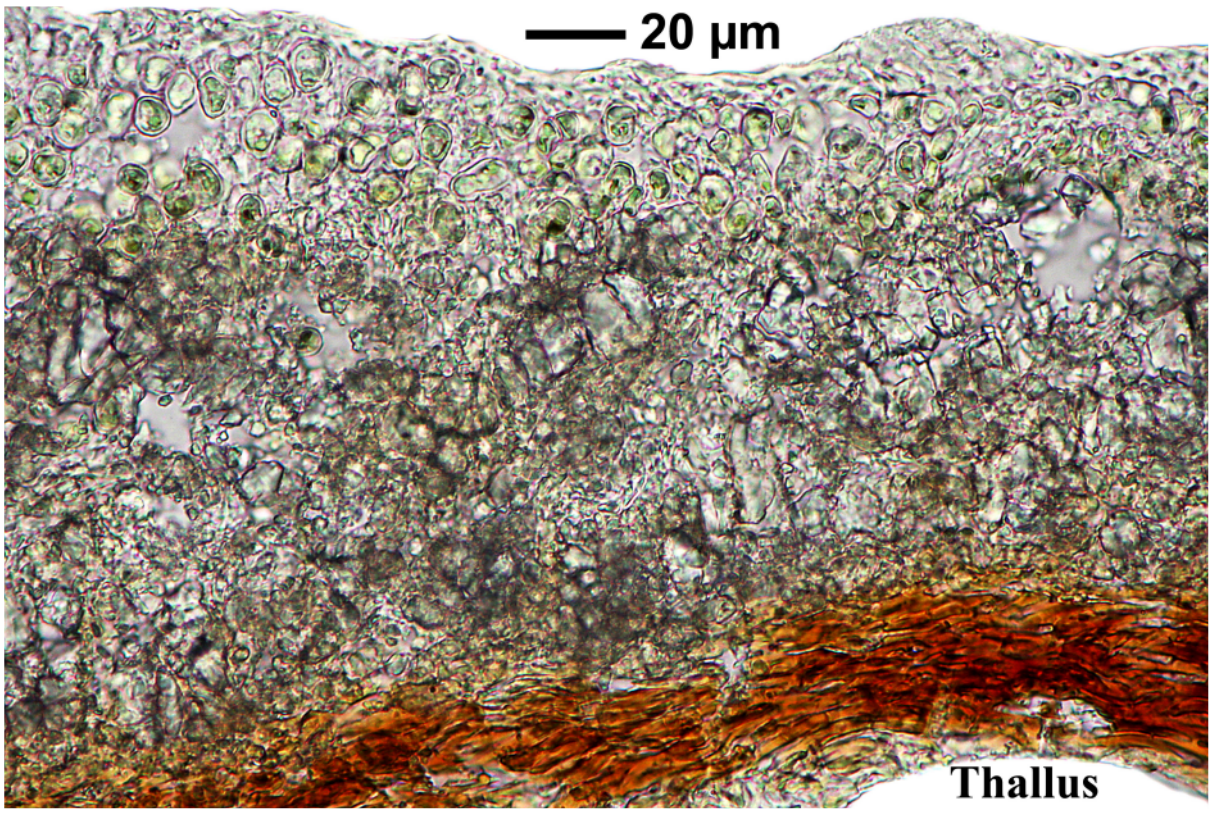


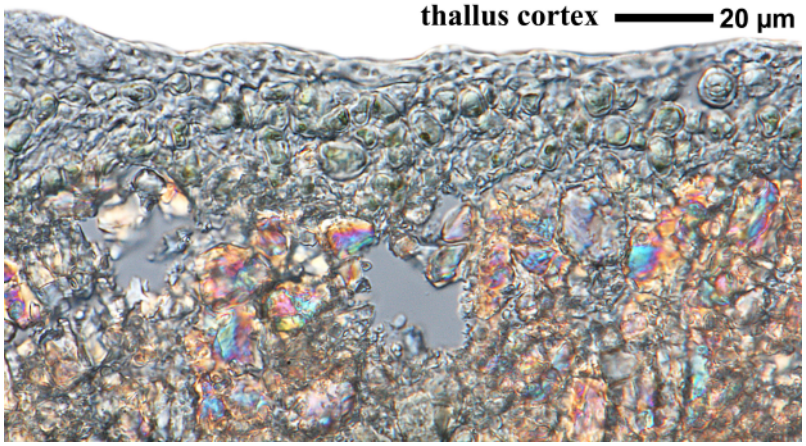
Clathroporina exocha



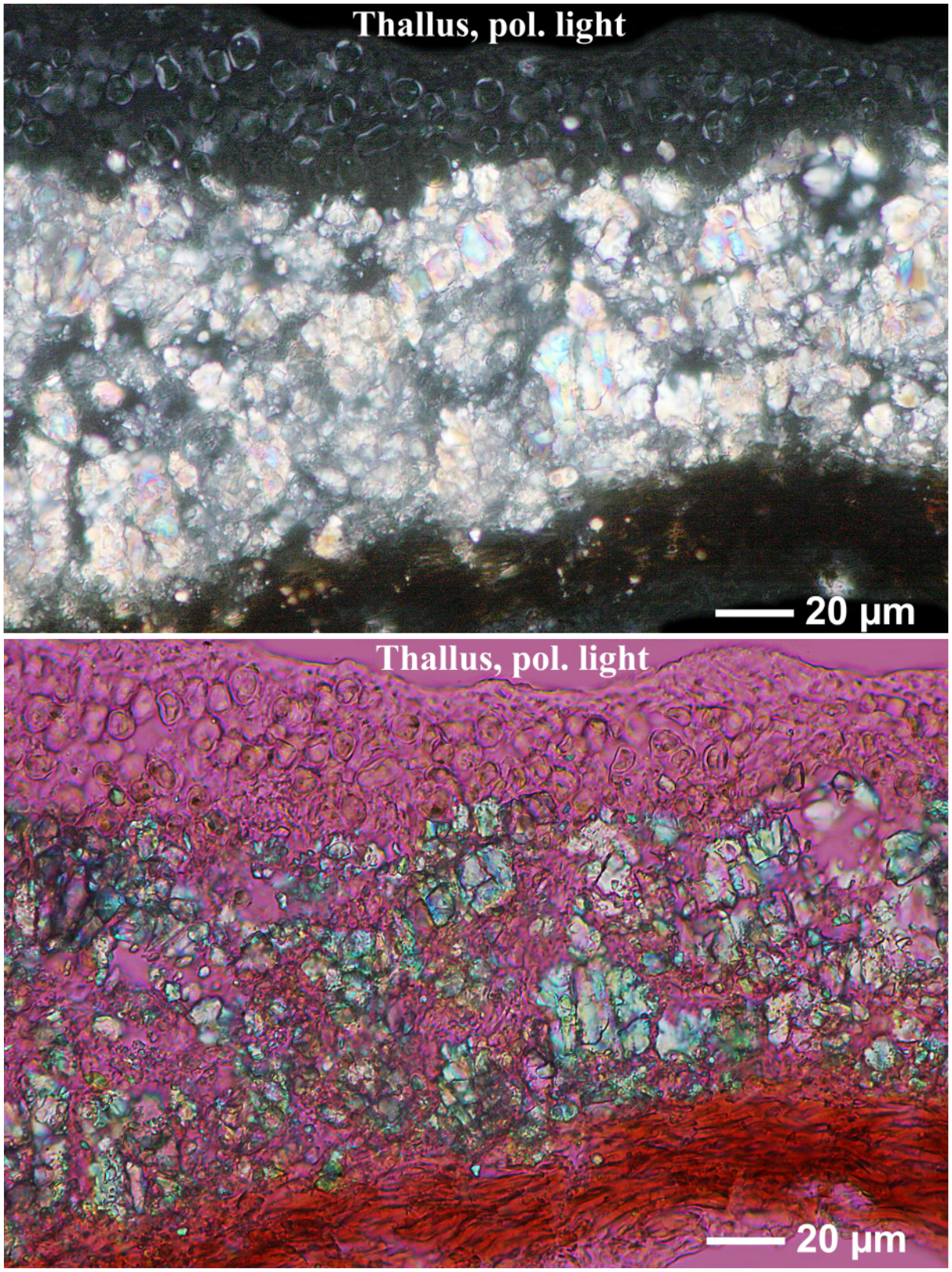
Clathroporina exocha



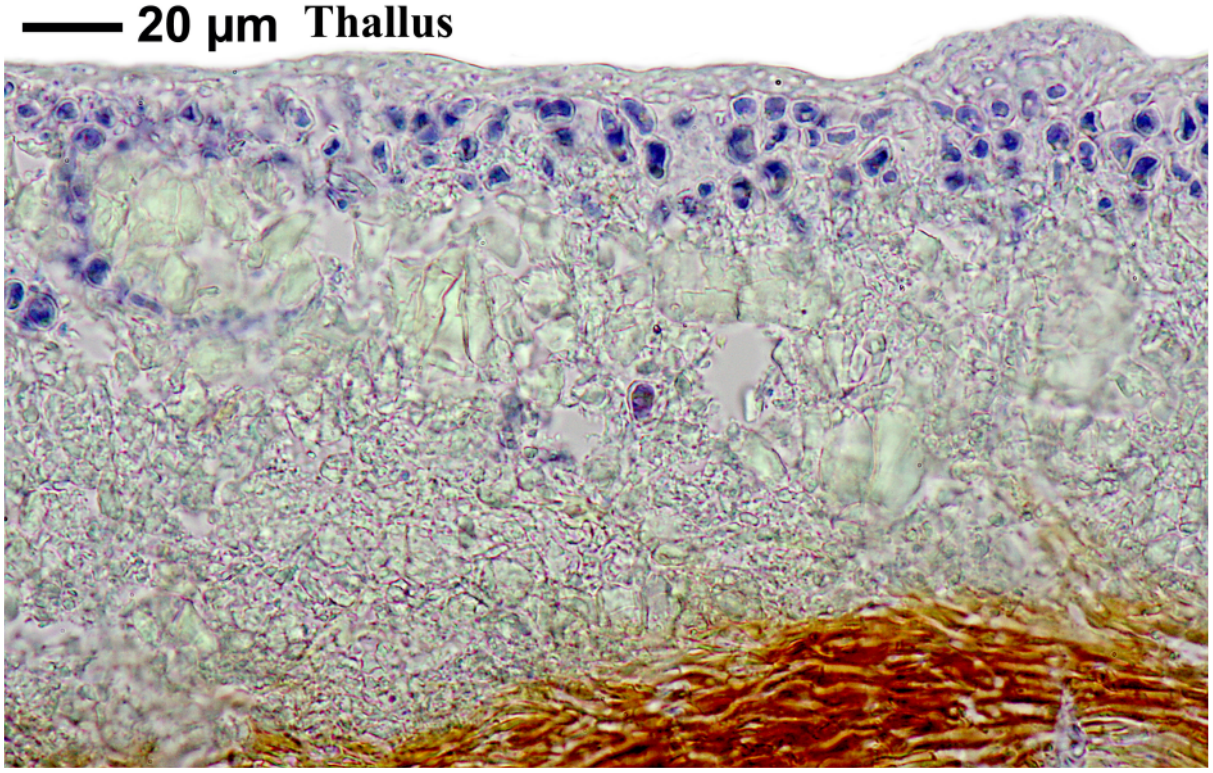


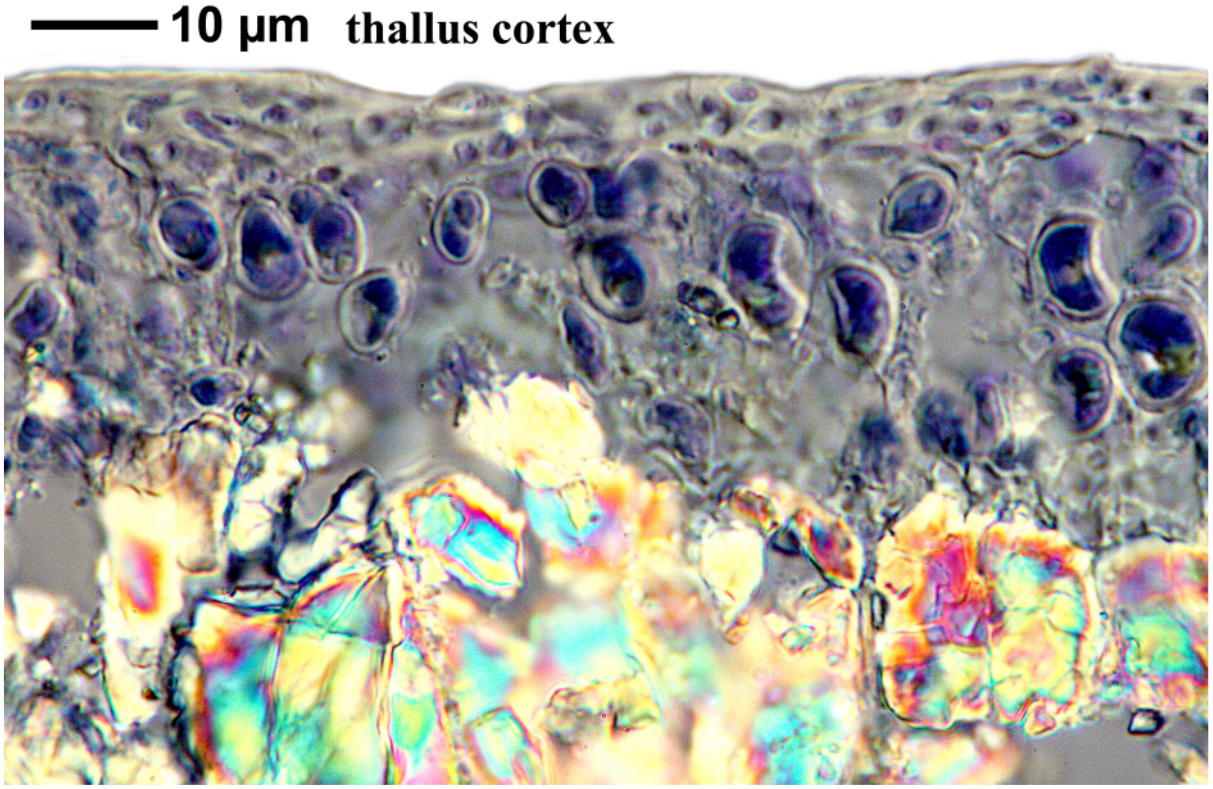


Clathroporina exocha



Clathroporina exocha



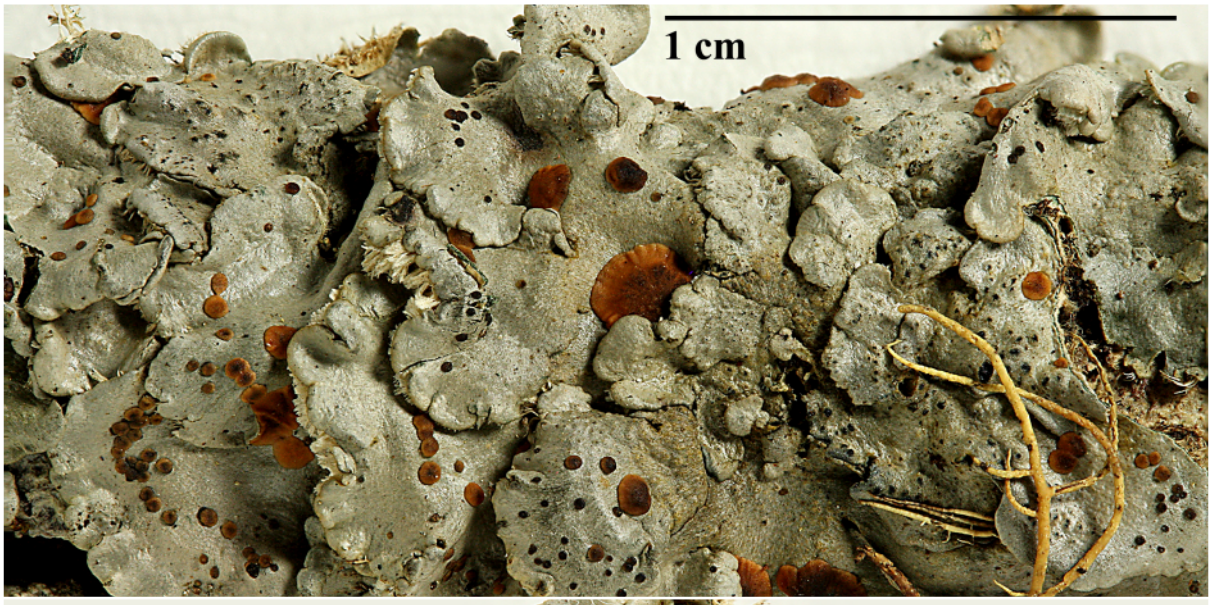


Clathroporina exocha

Coccocarpia erythroxyli (Spreng.) Swinscow & Krog

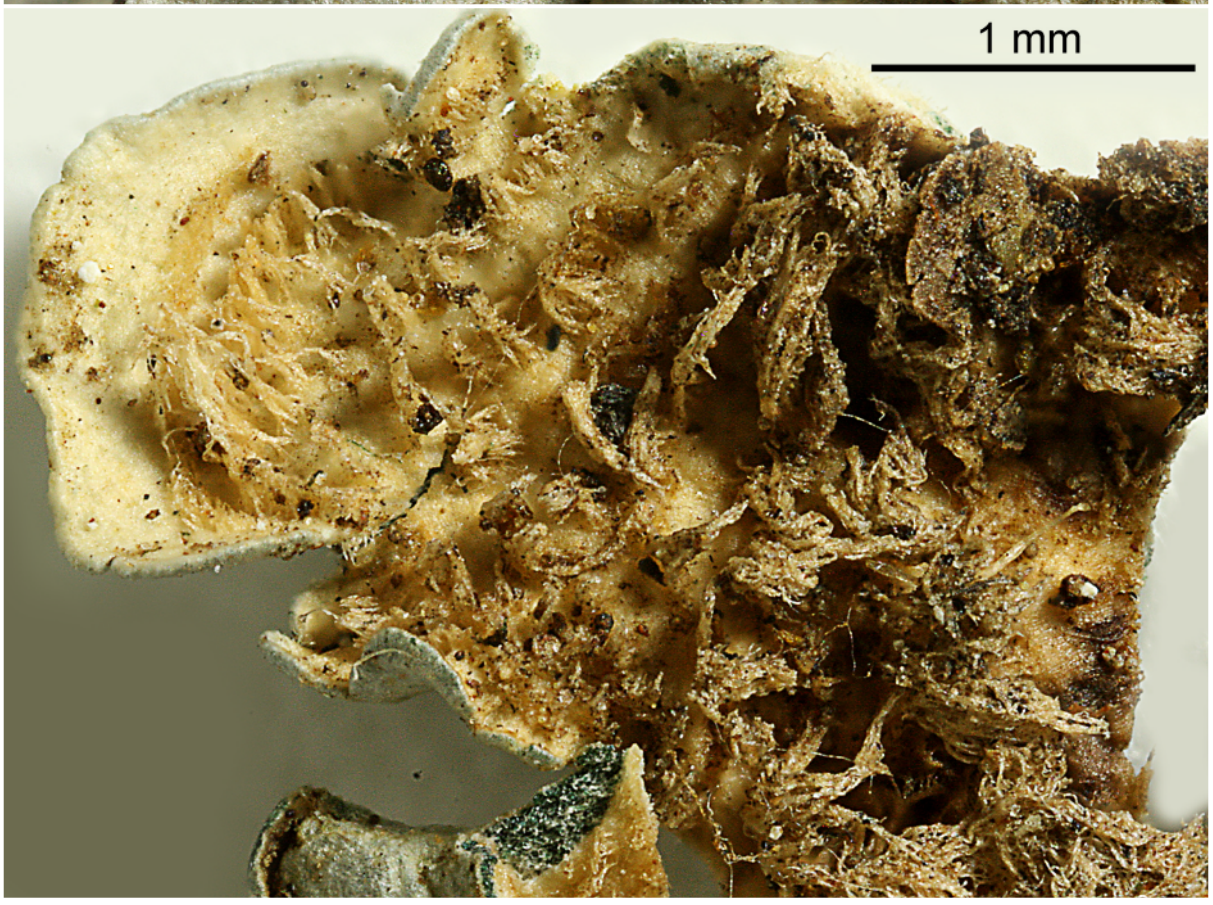
Thallus without isidia. Lobes (0.6-)1-7(-14) mm wide, adjacent or ± imbricate. Spores hyaline, simple, 8/ascus, (6-)7-14(-16) x (2-)3-5 µm. Upper cortex K-, C-, KC-, P-, no substances detected by TLC.

[18978], Australia, New South Wales, Polblue Swamp, Barrington Tops State Forest, 50 km west-north-west of Gloucester, 31°58' S, 151°26' E, 1450 m, growing on base and trunk of *Eucalyptus pauciflora* in open *Eucalyptus*, *Leptospermum* and Epacridaceae fringed swampy area. Leg. J.A. Elix (22901) & H. Streimann 25.04.1990. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 207.

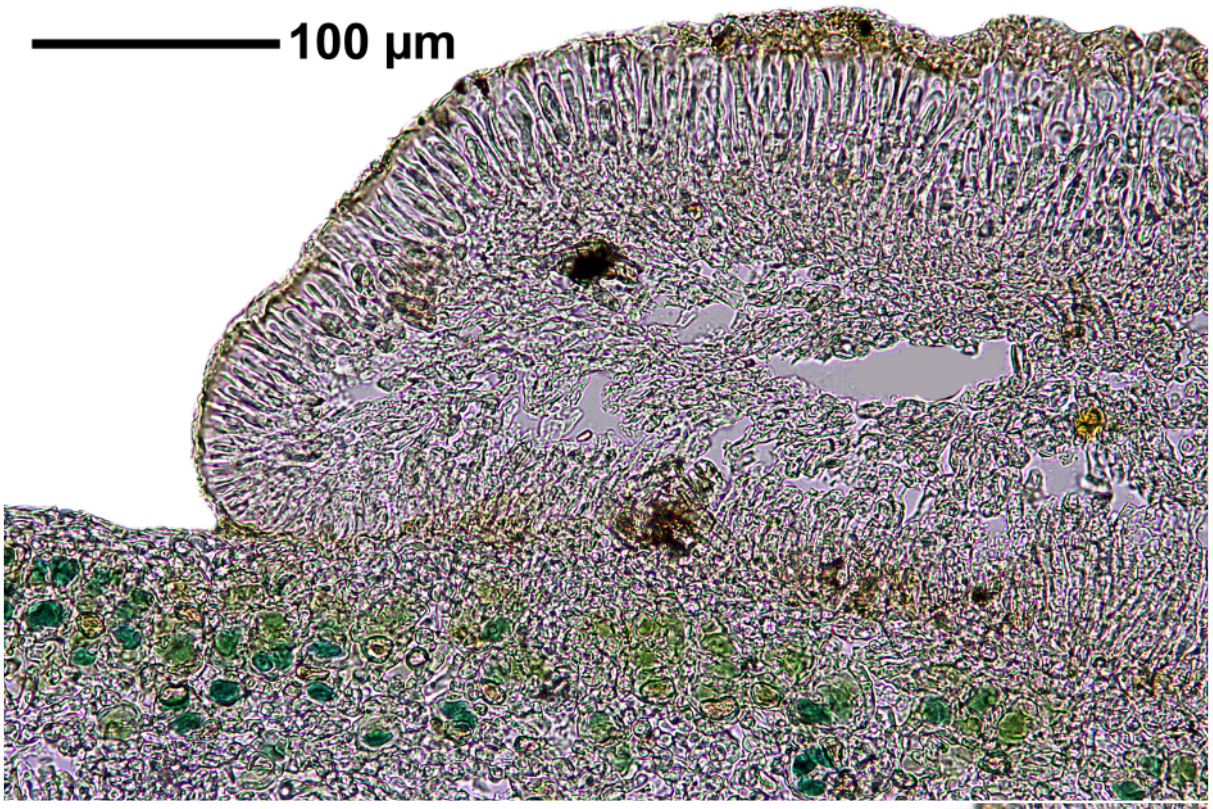


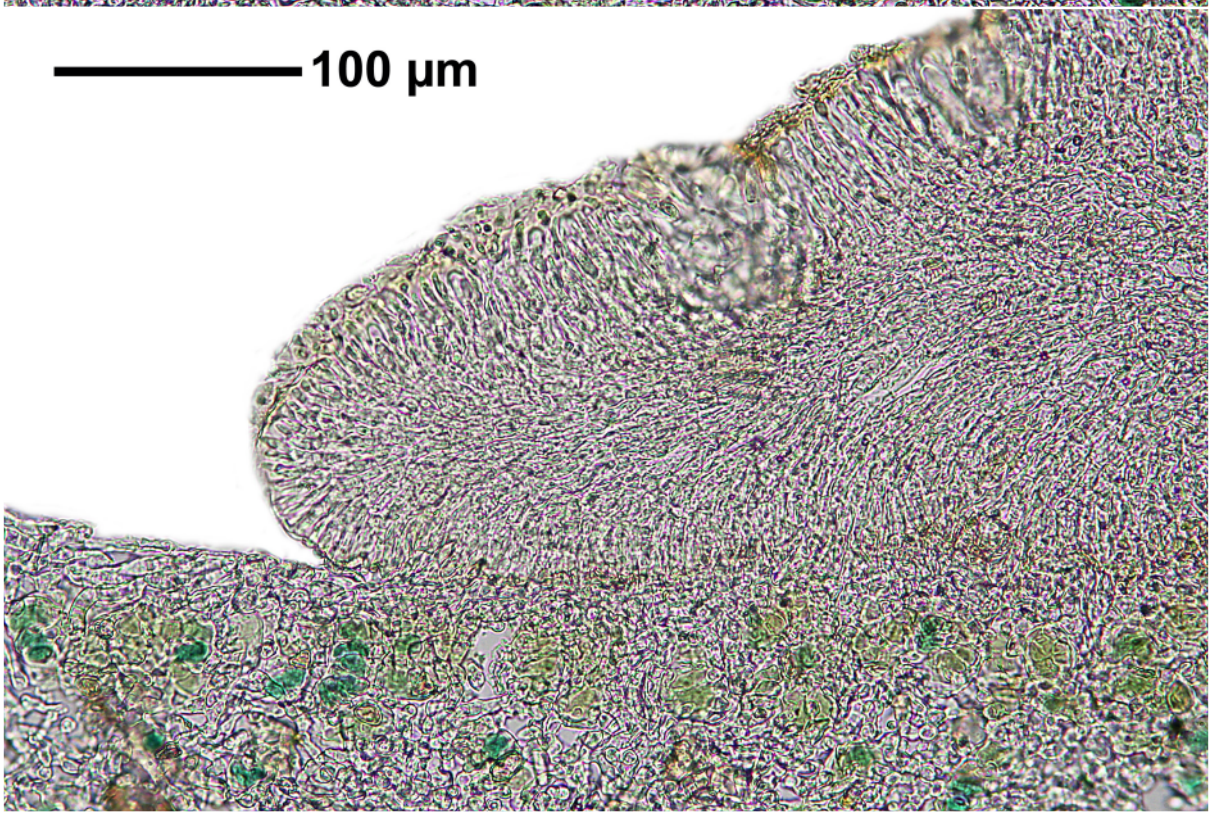




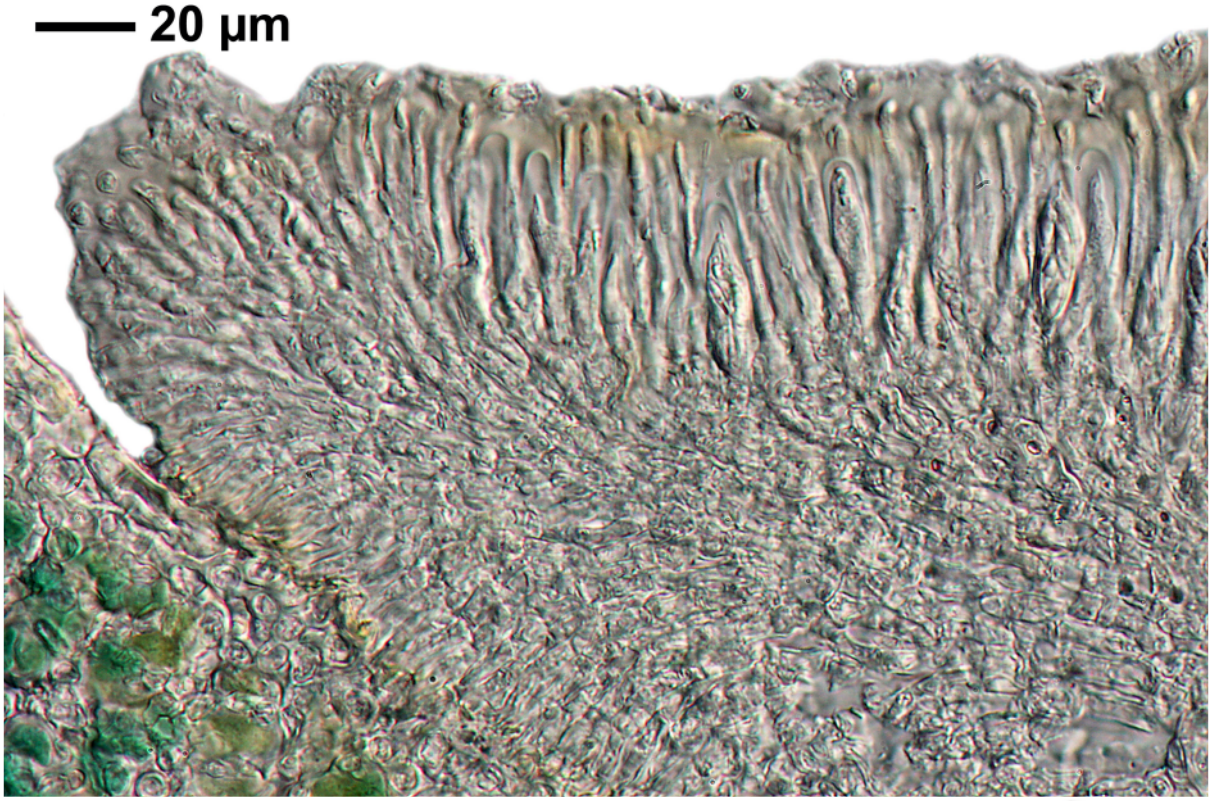


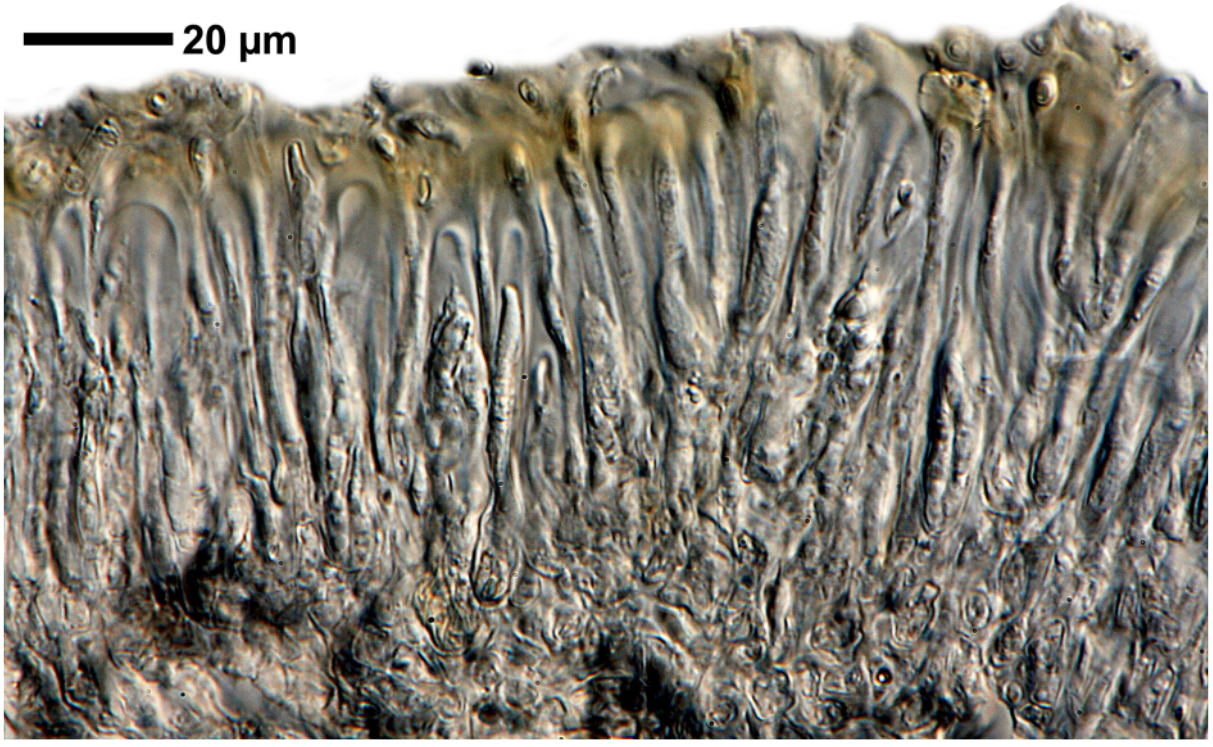
Coccocarpia erythroxyli

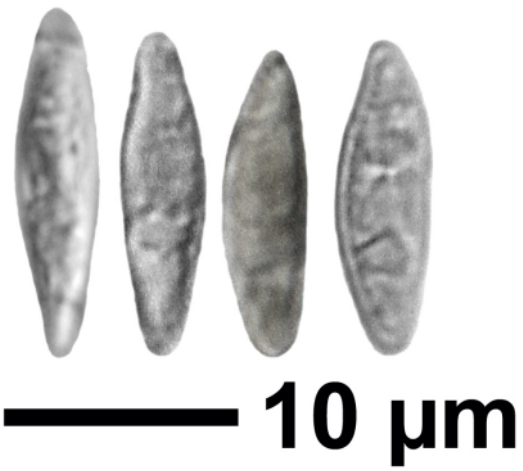




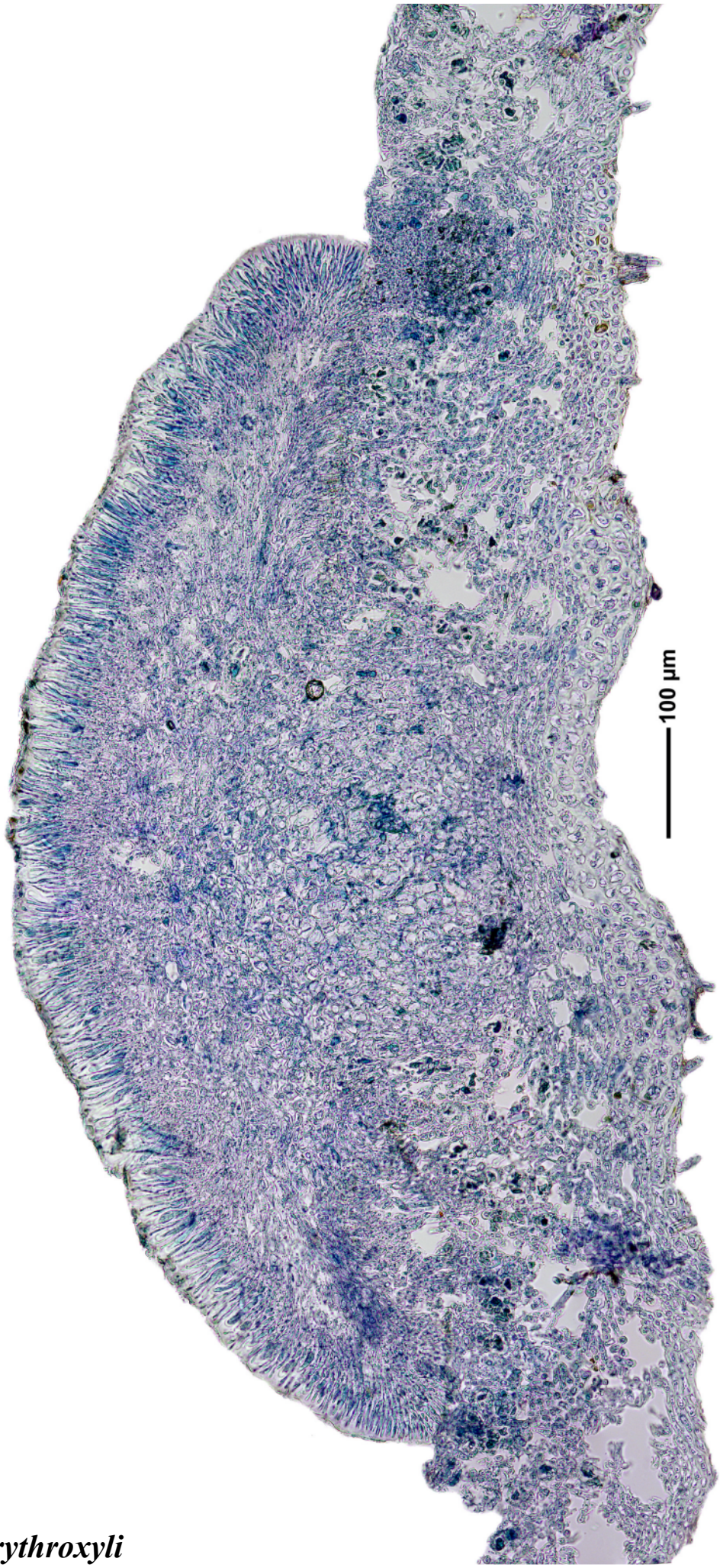
Coccocarpia erythroxyli







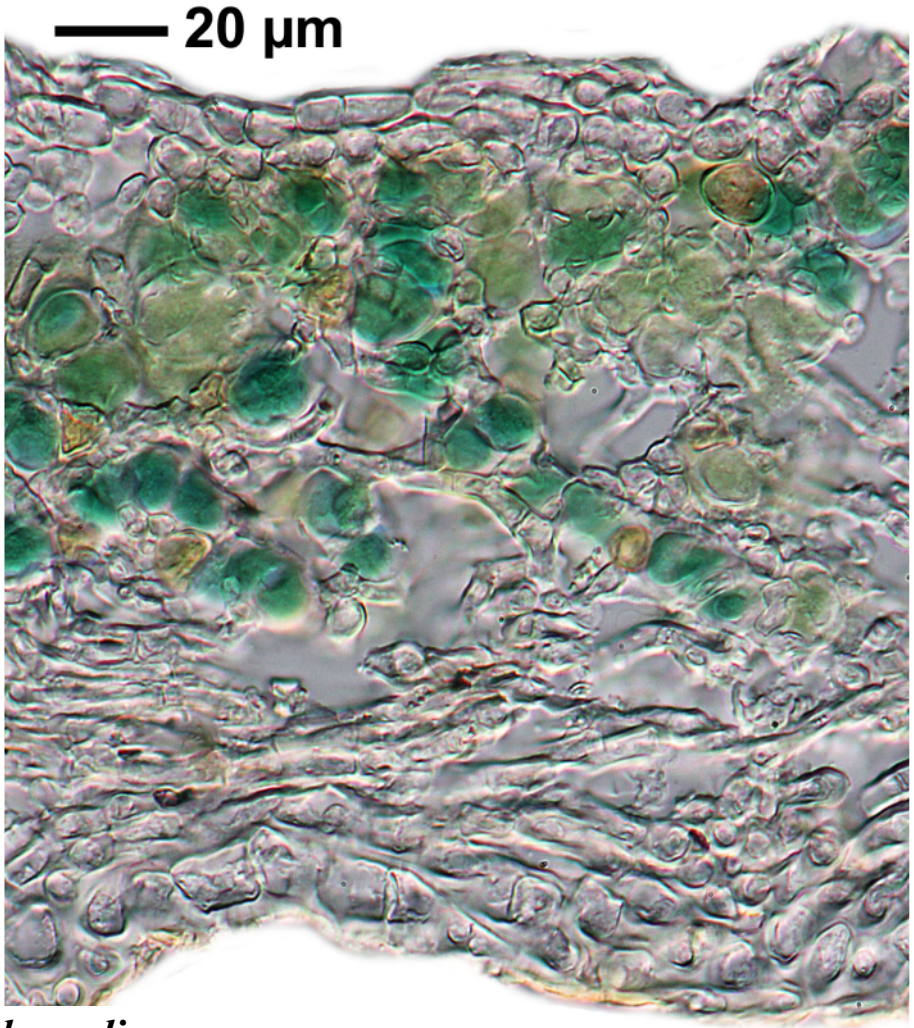
Coccocarpia erythroxyli



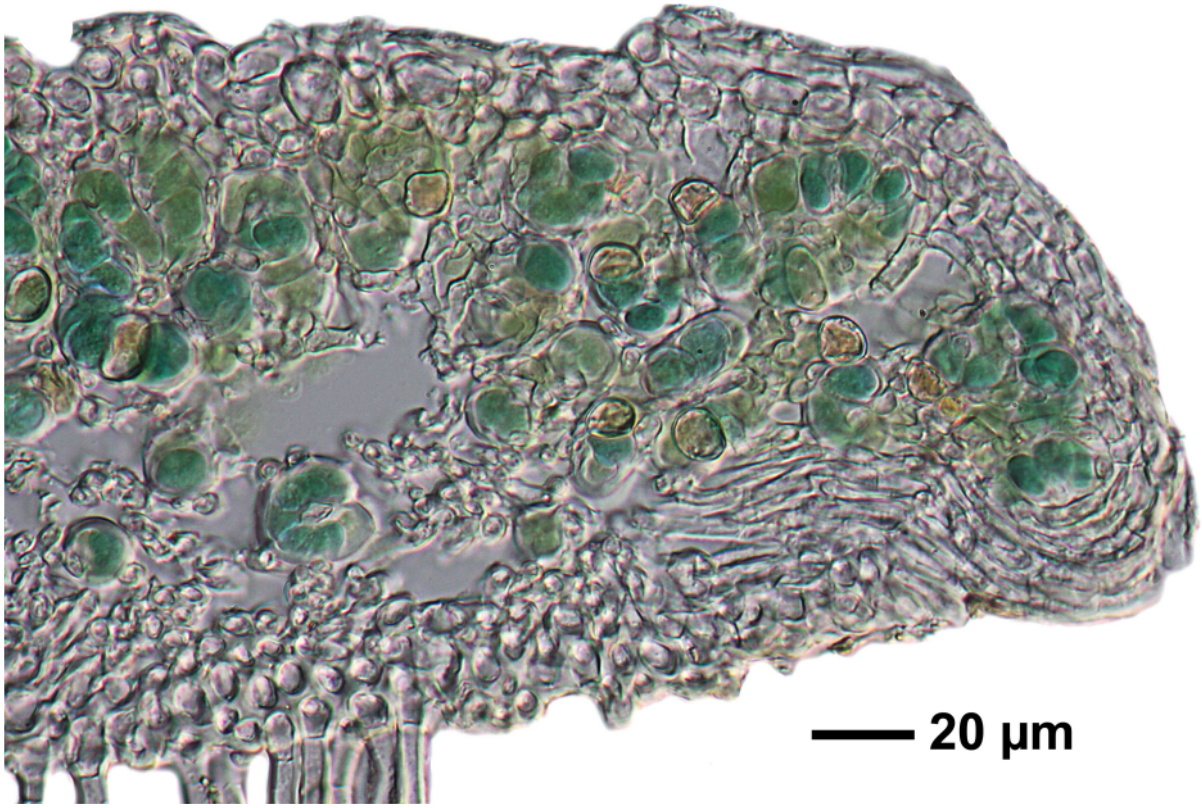
Coccocarpia erythroxyli

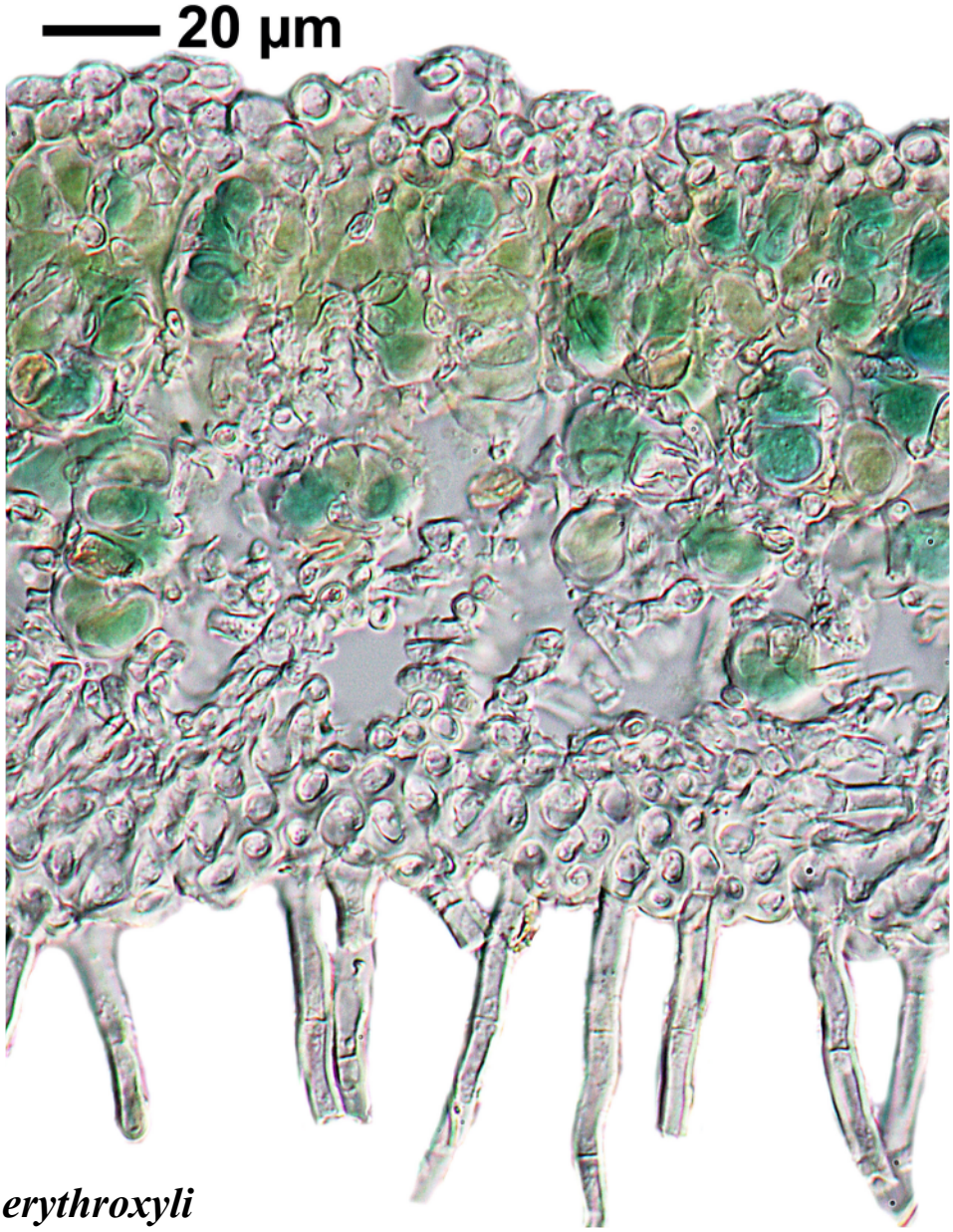






Coccocarpia erythroxyli





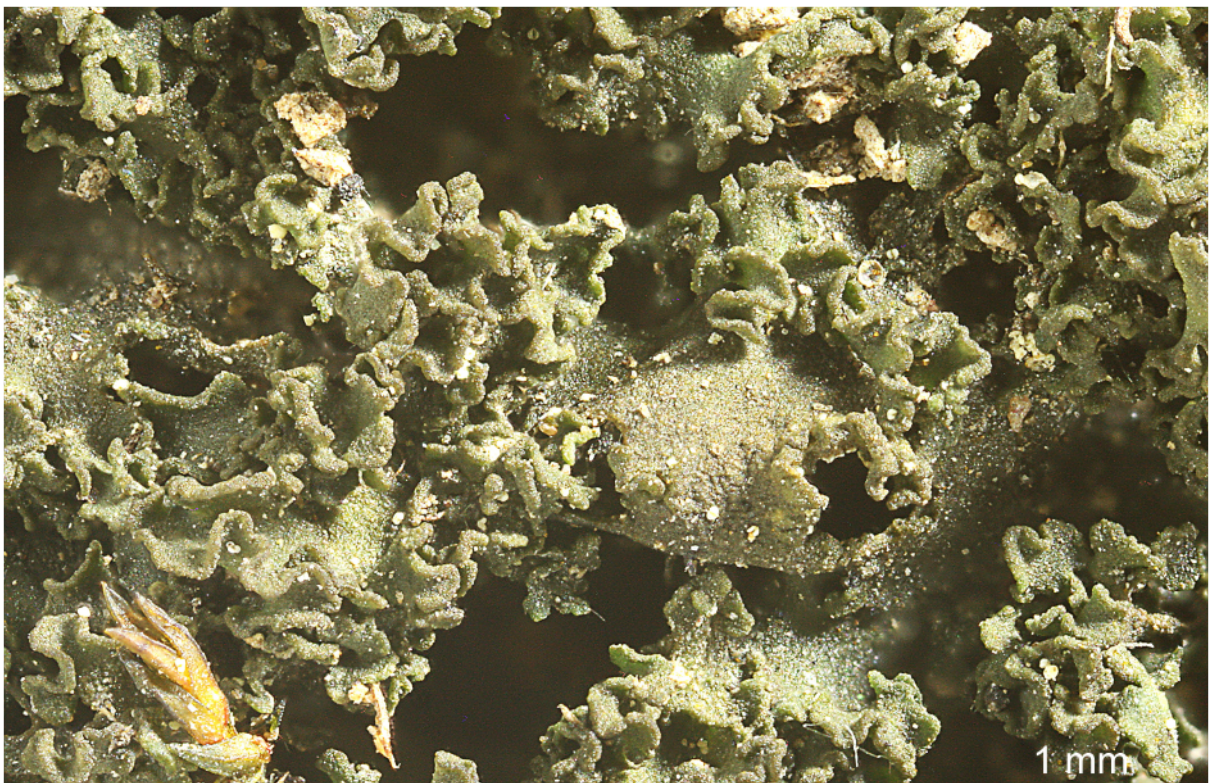
Coccocarpia erythroxyli

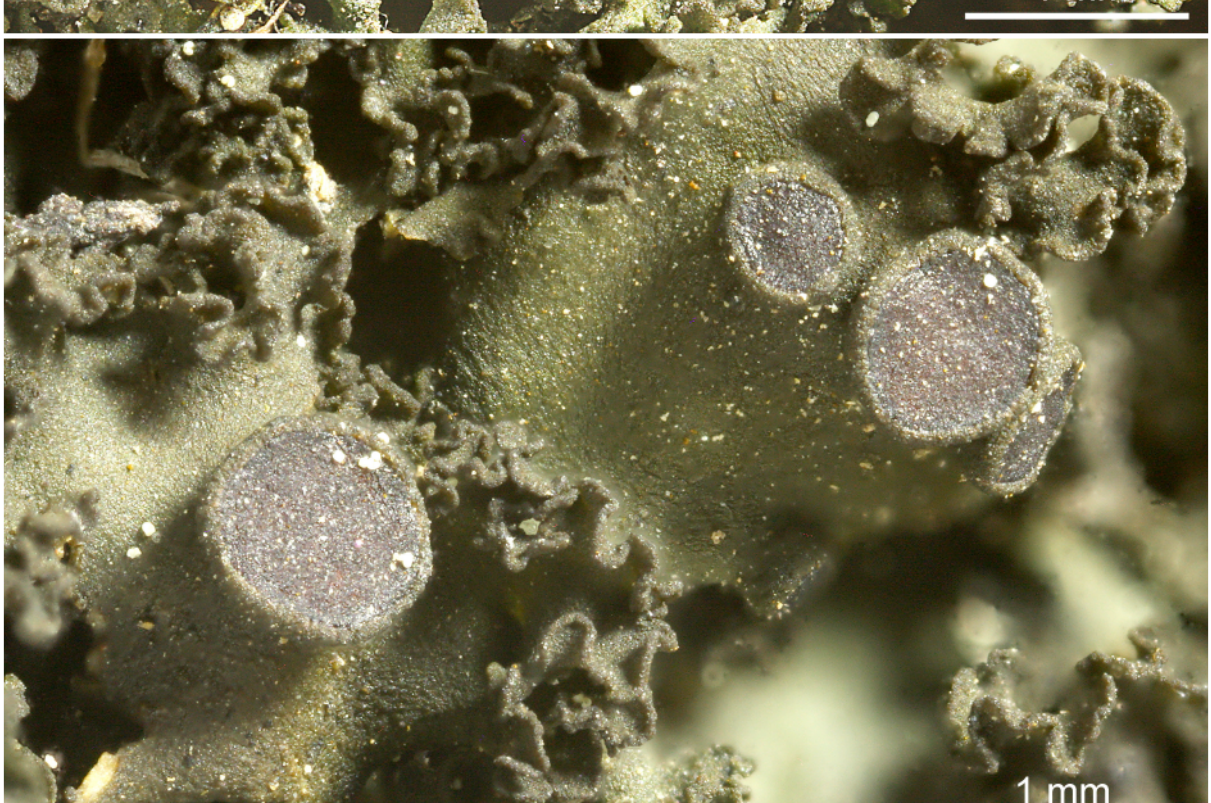
Collema durietzii Degelius

Thallus lobulate. Apothecial disc epruinose. Excipulum proprium 65-85 (-130 central part) µm thick, euparaplectenchymatous, subhymenium 56-70 µm thick, greyish, yellowish or brownish. Ascospores 6-celled, straight or curved, colourless, 40-70 x 4.5-6.5 µm, with one end (sometimes both ends) narrow and strongly extended, not contricted at septa.

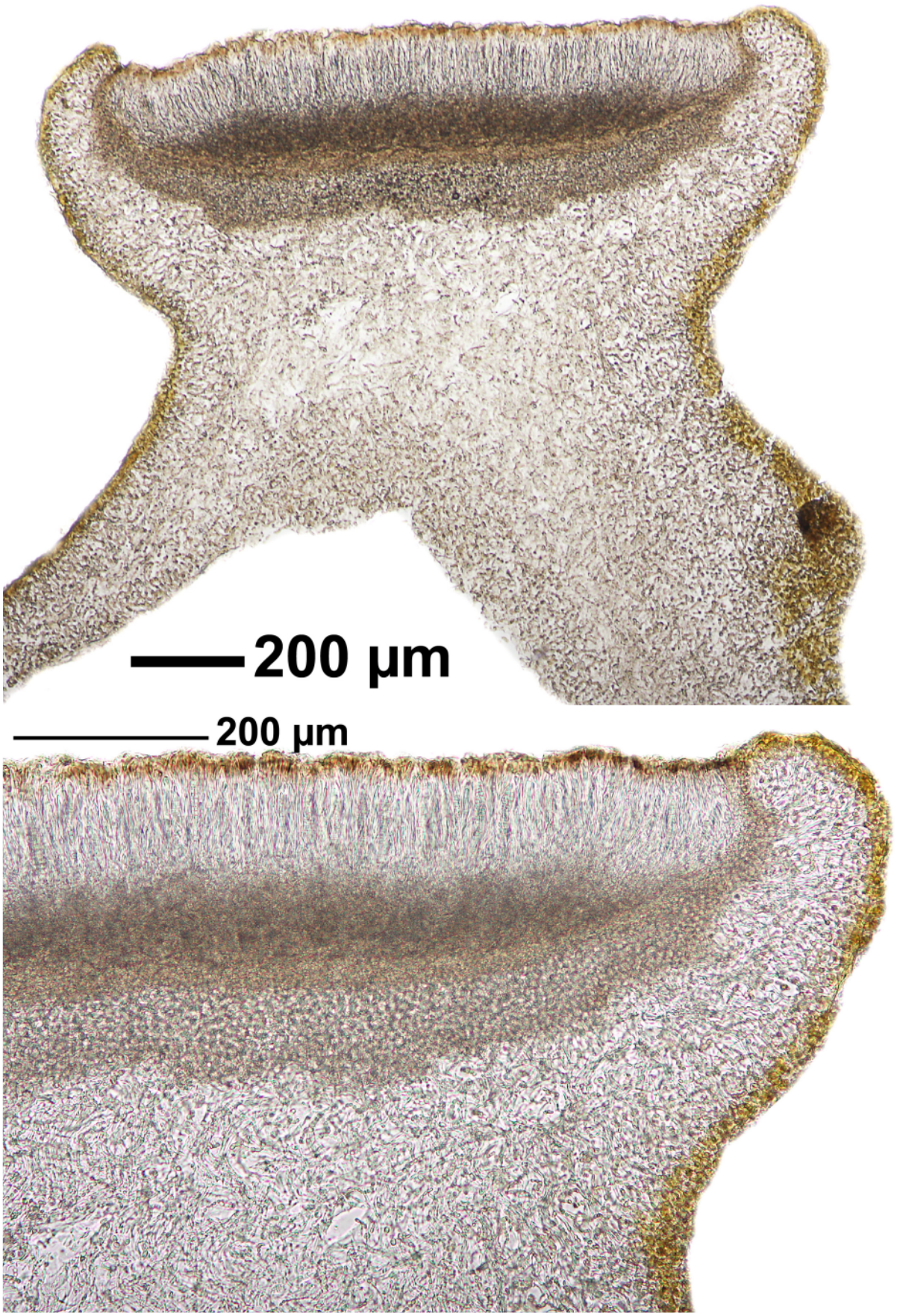
[18980], Australia, Australian Capital Territory, Molonglo Gorge Reserve, 15 km east of Canberra, 35°16' S, 149°,16' E, 650 m, growing on shale rocks in dry creek bed, in dry *Eucalyptus* woodland. Leg. J.A. Elix (33141) & H. Mayrhofer, 26.07.1992, det. D. Verdon. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 252.



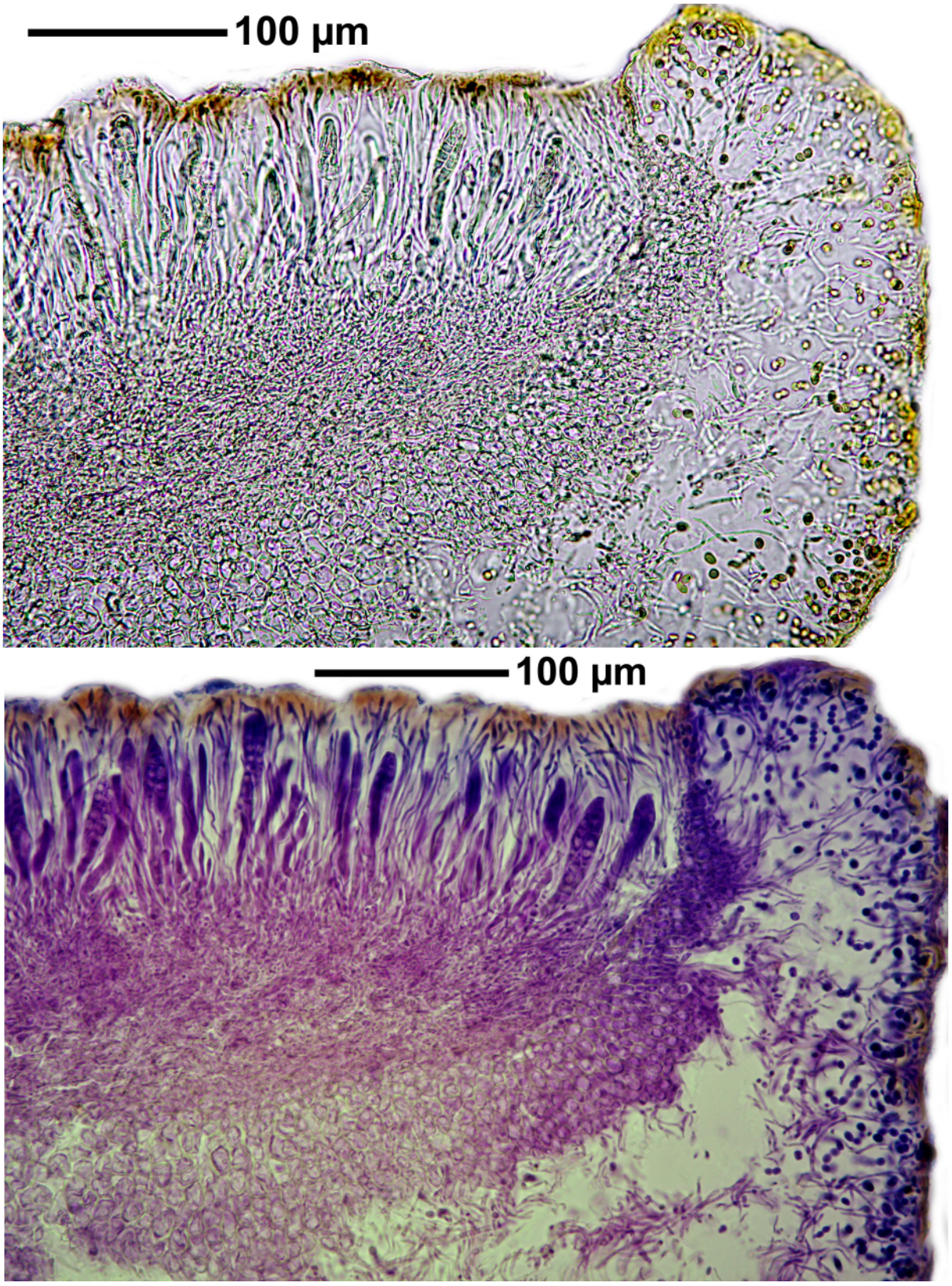




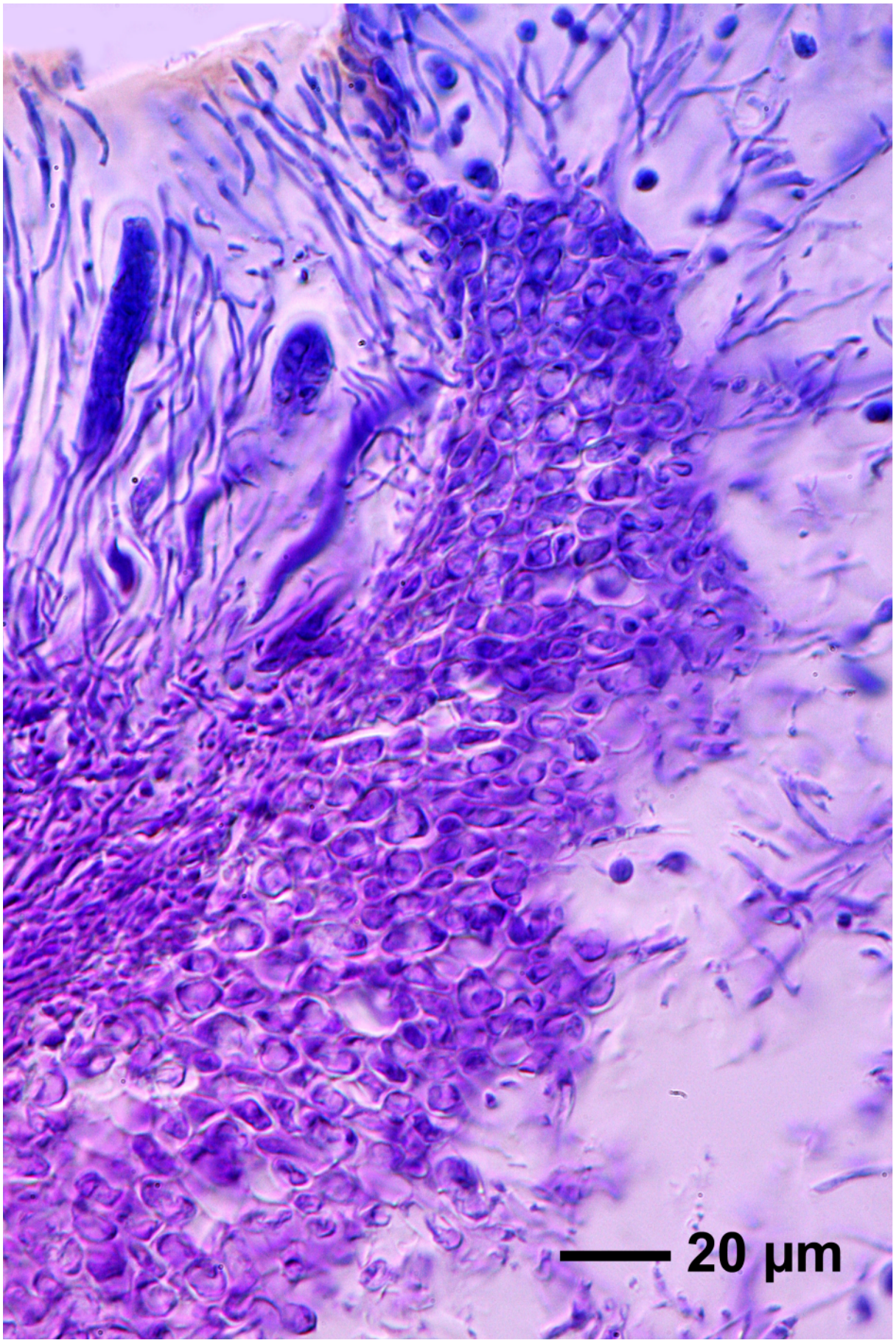
Collema durietzii



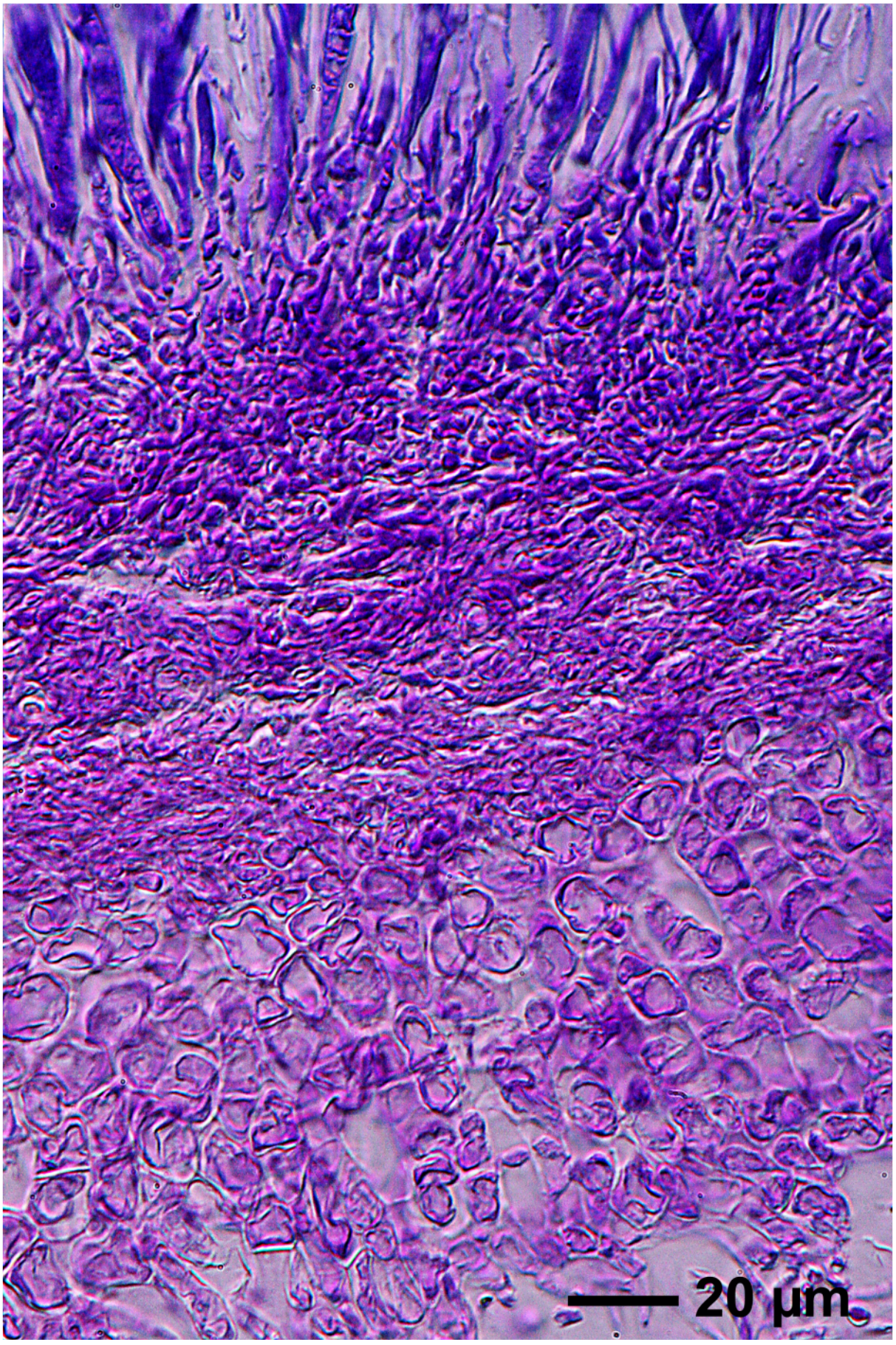
Collema durietzii



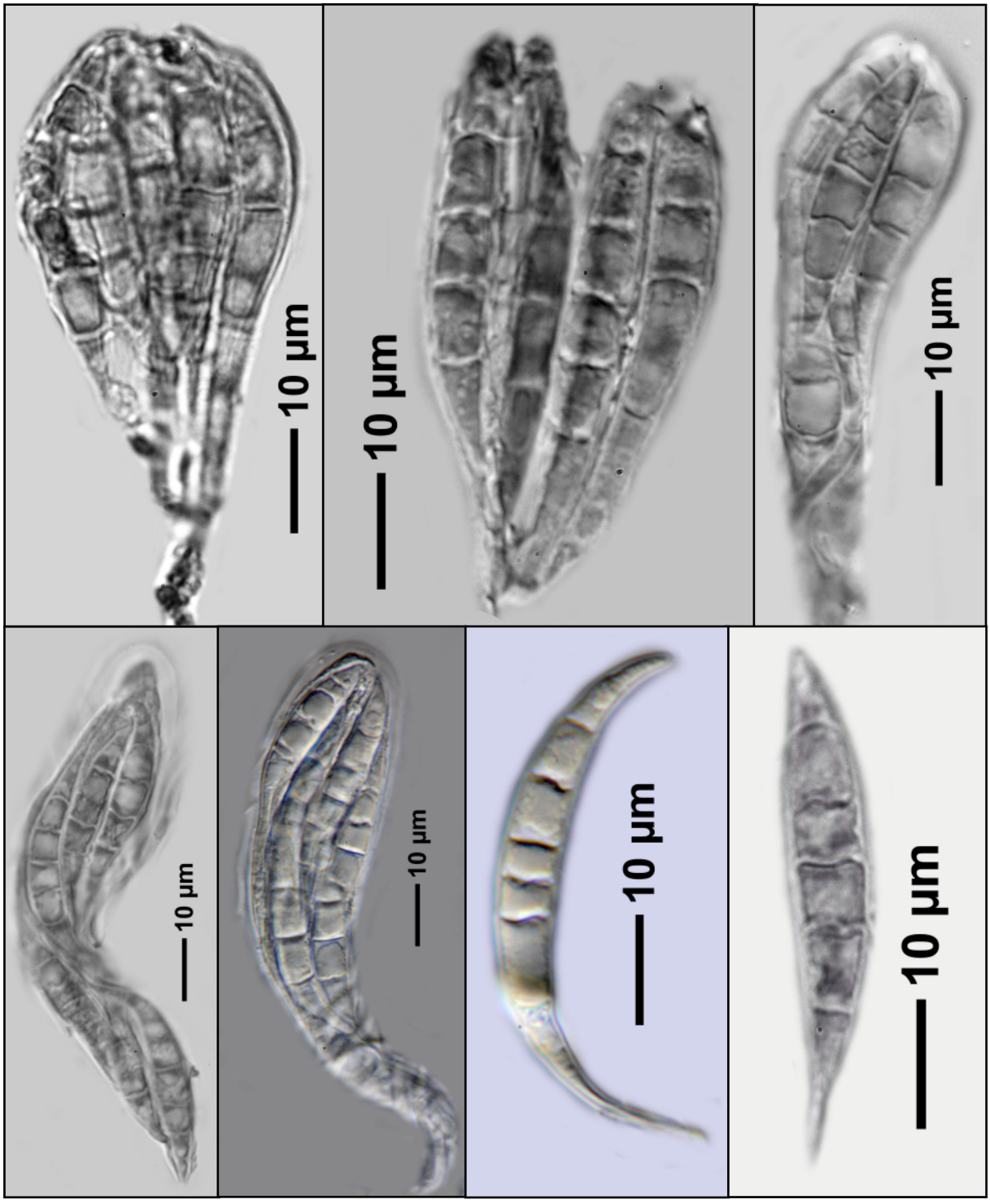
Collema durietzii



Collema durietzii



Collema durietzii



Collema durietzii

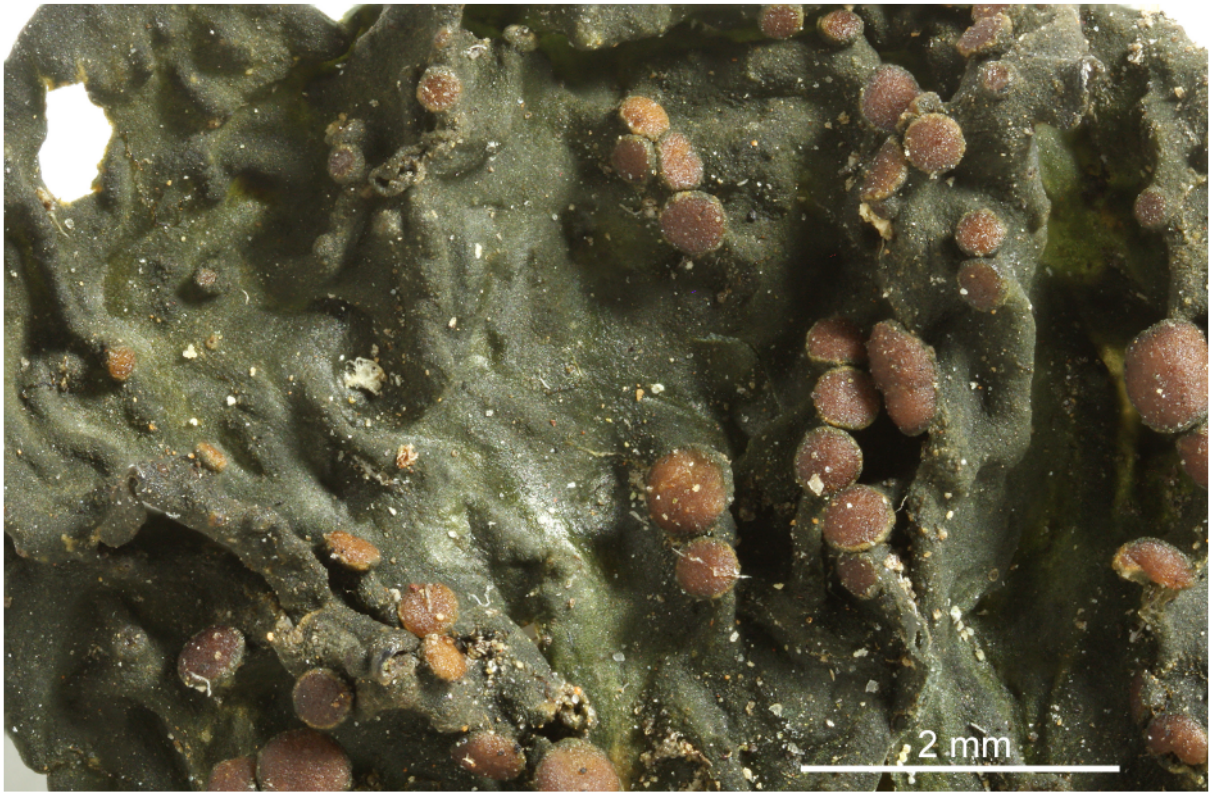
Collema implicatum Nyl.

Thallus lacking isidia, cortex a primitive pseudocortex. Apothecia epruinose, epihymenium brown, 16-17 µm thick, hymenium 70 µm high, subhymenium 20 µm thick, excipulum proprium 20 µm thick, subparaplectenchymateous. Spores 8/ascus, 5-7-septate, 37-47 x 2.5-3.5 µm. Appears very similar to ***Collema complanatum*** from Japan.

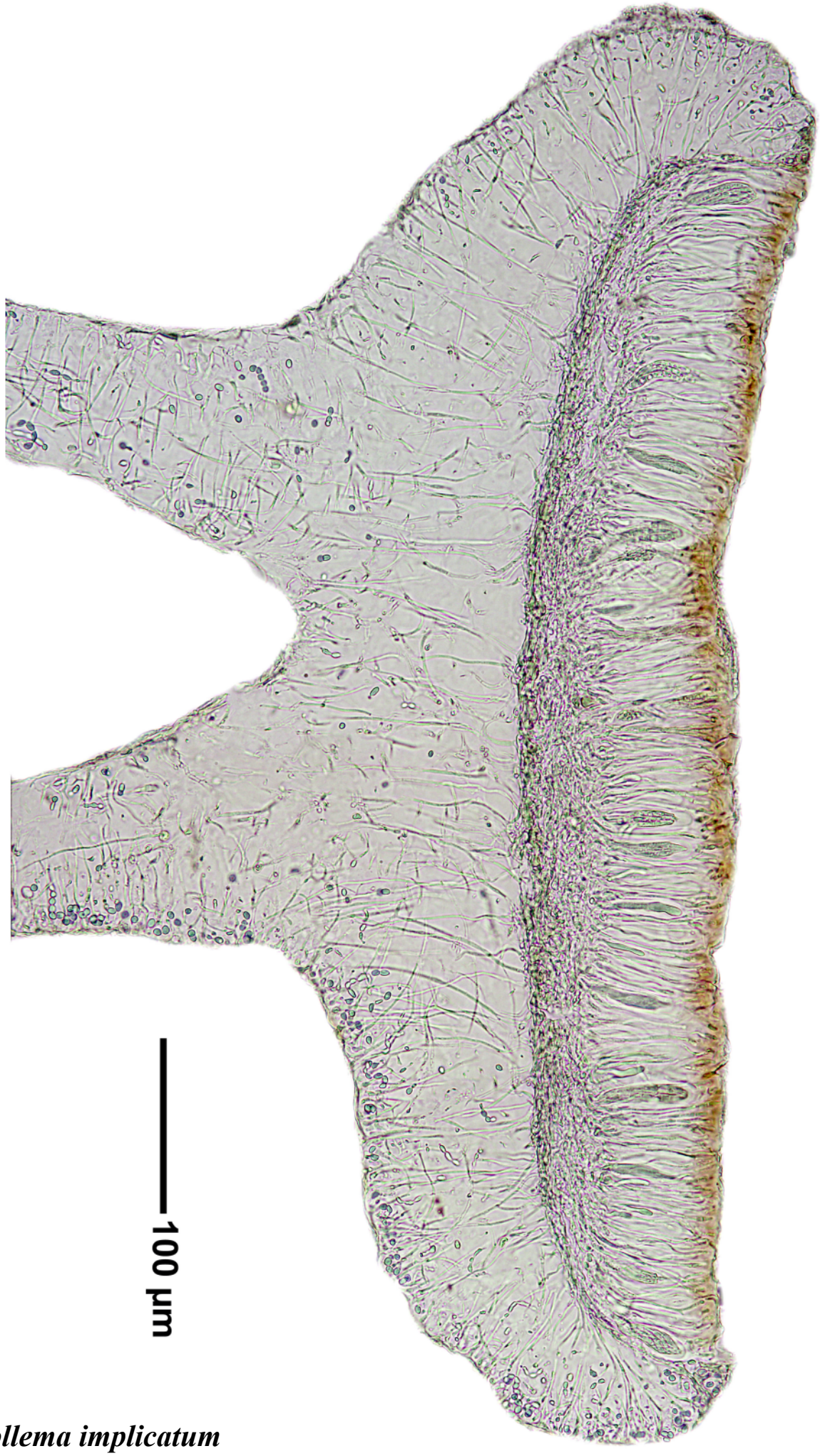
[16245], Australia, New South Wales, between Bermagui and Tathra, along the road from Aragunnu Beach to Mimosa Rocks, 36,58529° S, 150,05618° E, 10 m, leg. Schumm 12.11.2009, det. Schumm.



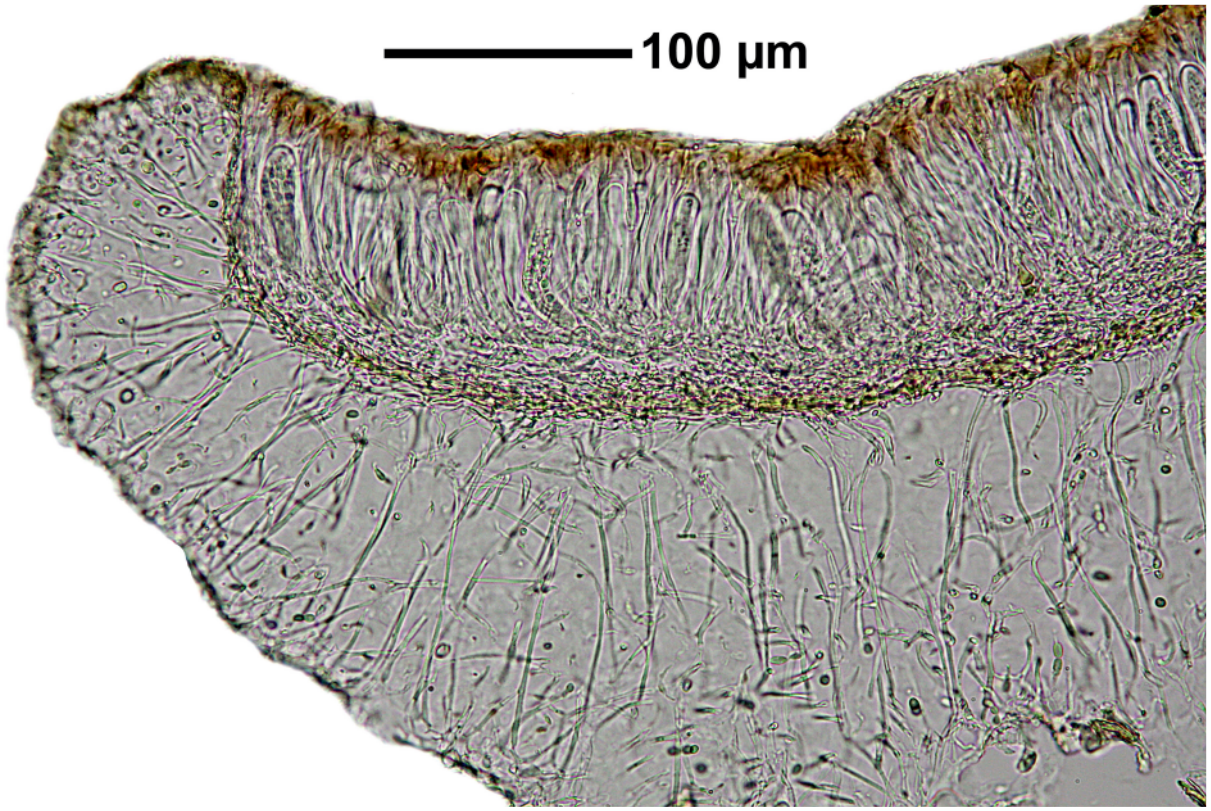


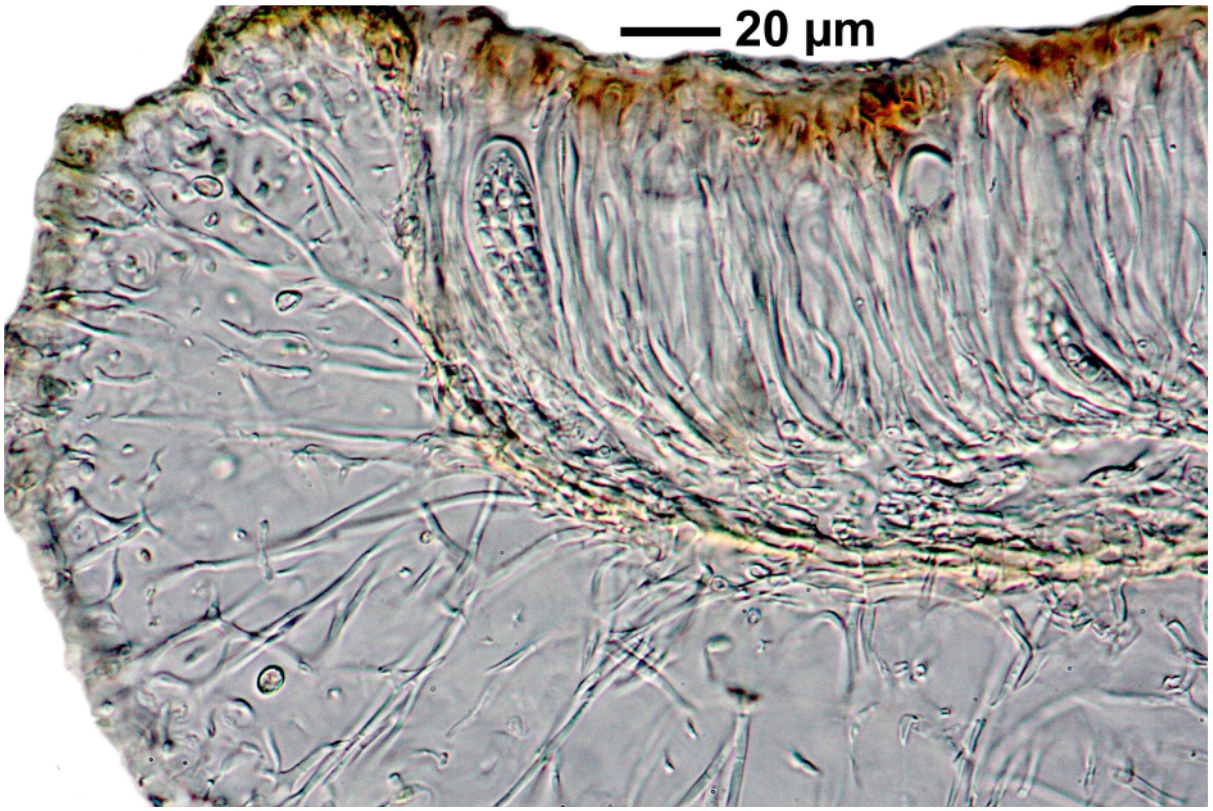


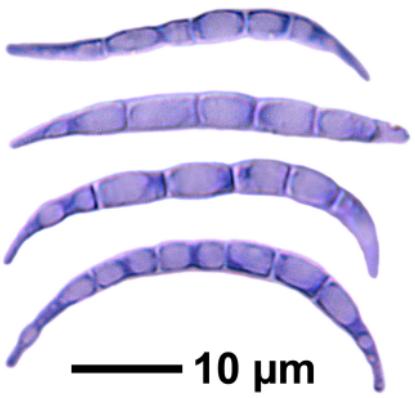
Collema implicatum



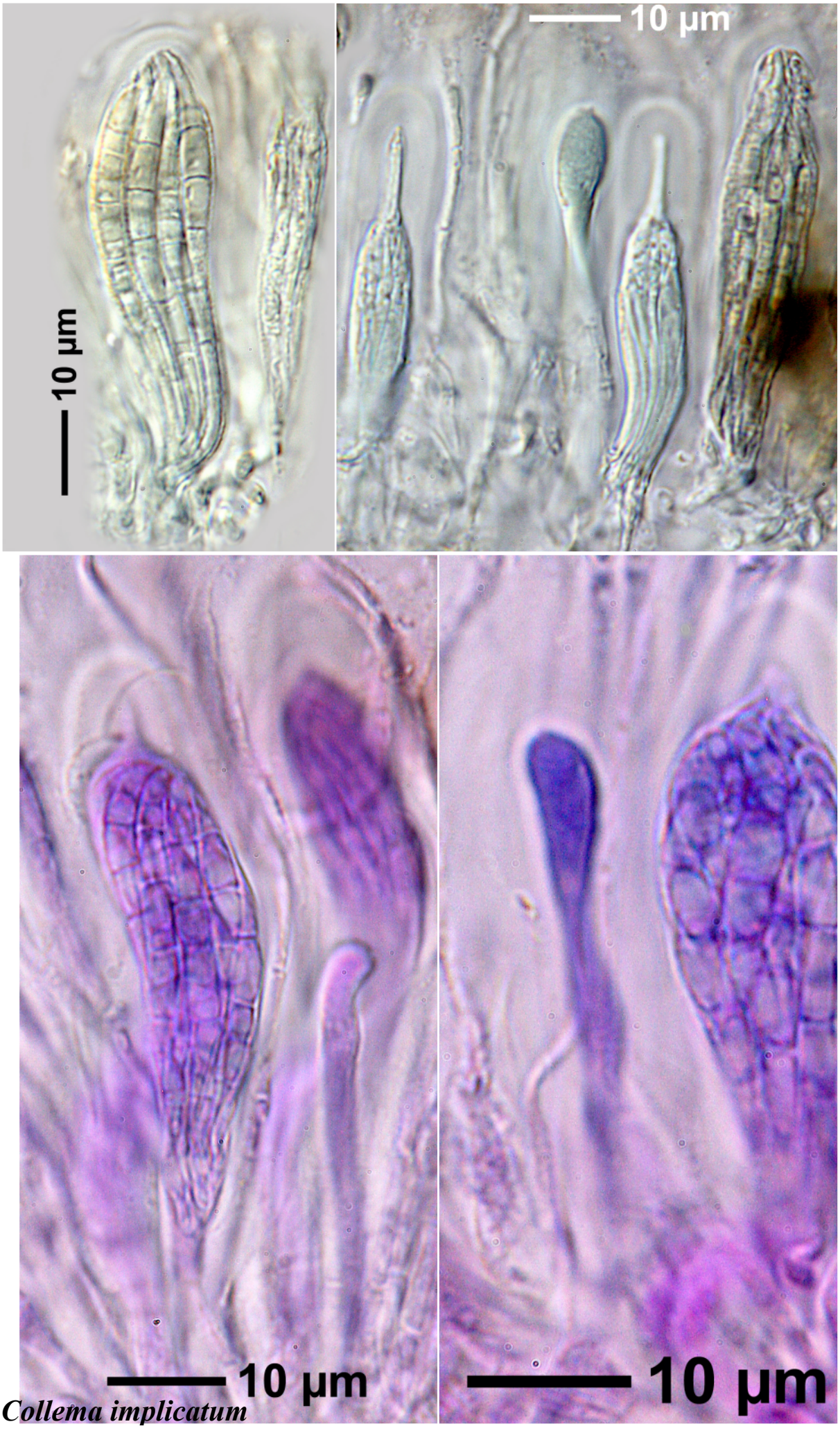
Collema implicatum







Collema implicatum



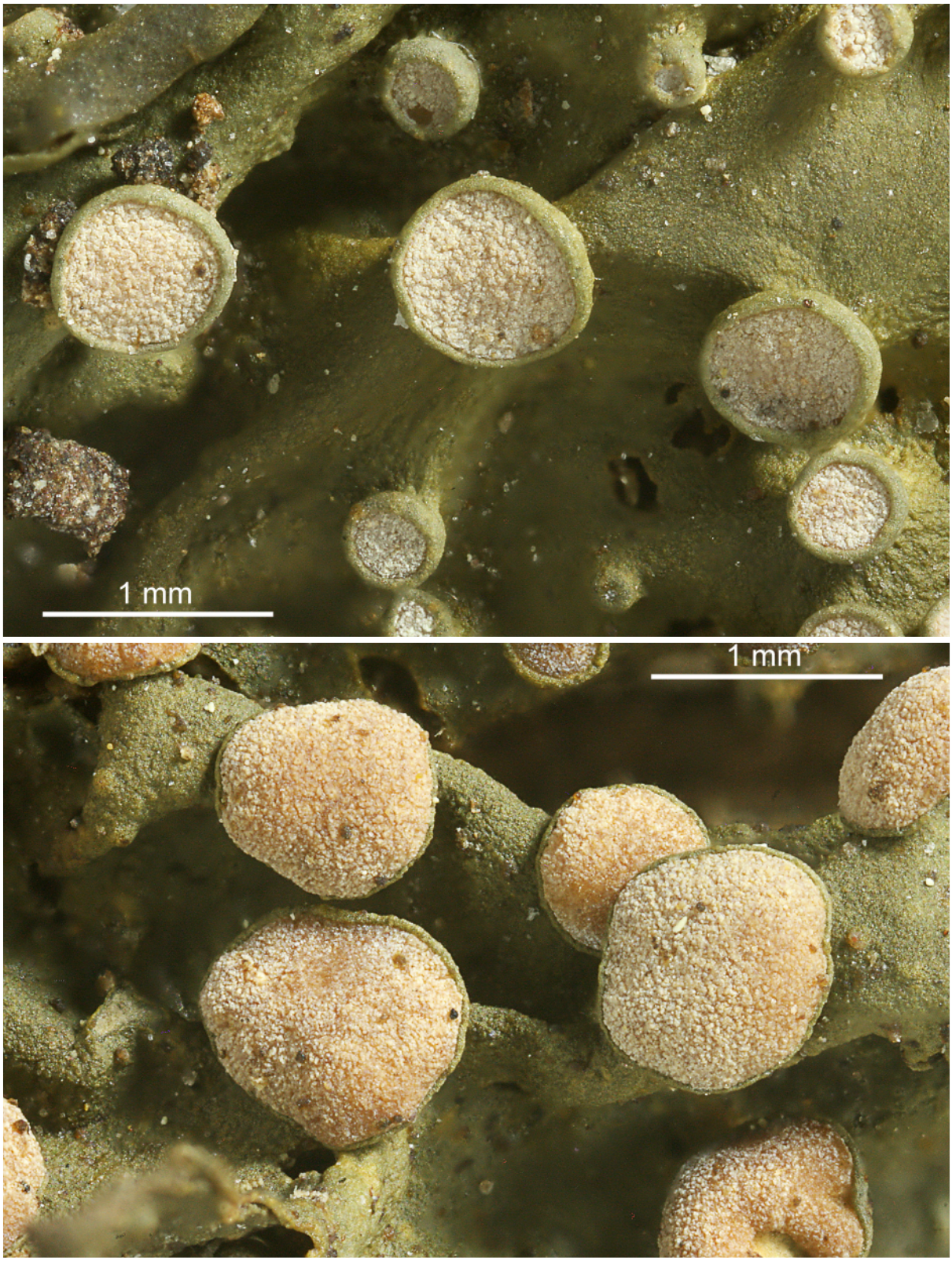
Collema implicatum

Collema leucocarpum J.D.Hooker & Taylor

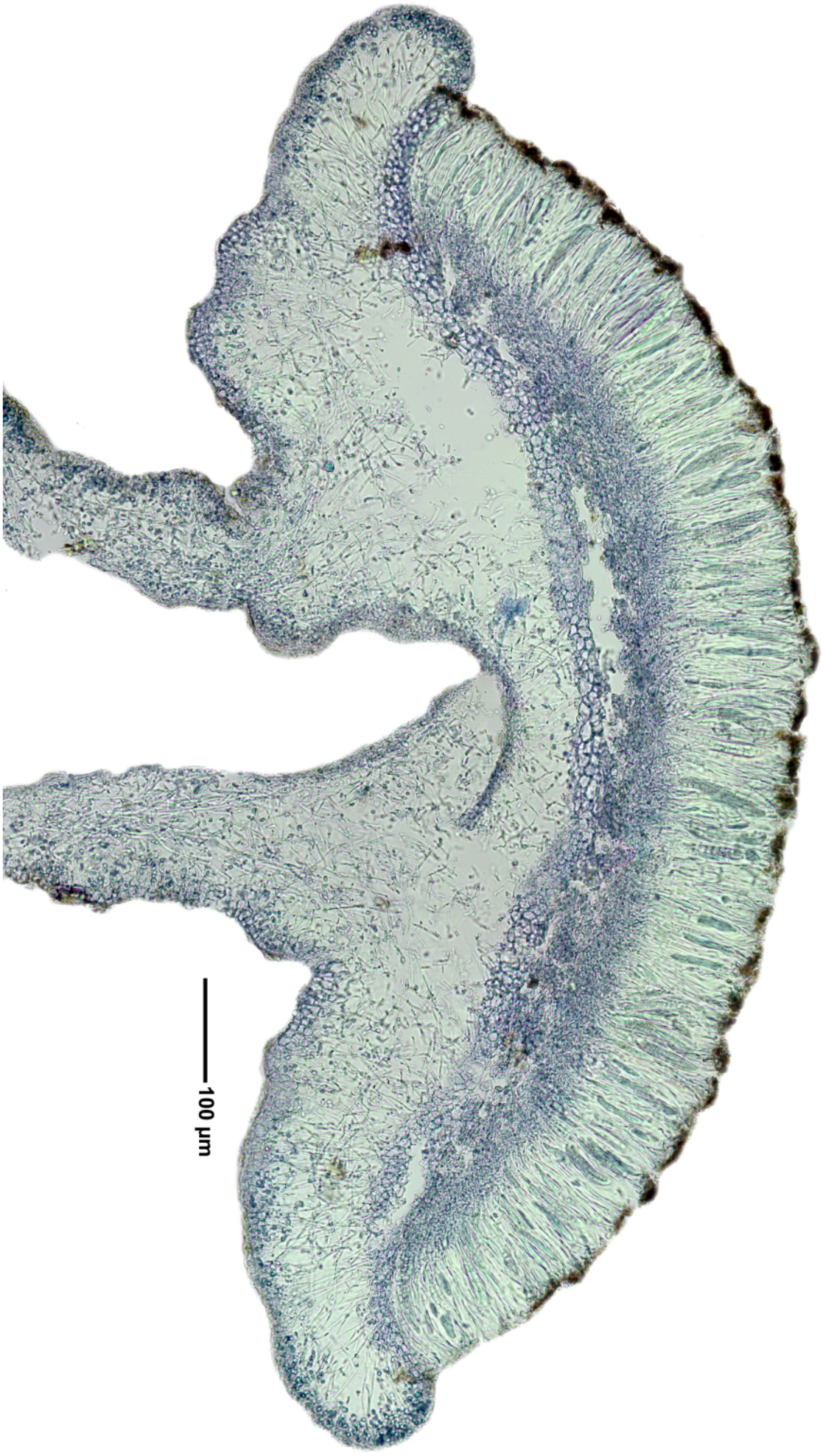
Apothecia mostly laminal, sessile with constricted base, up to 1.5(-3.5) mm diam. Disc strongly white-pruinose, seldom yellow-pruinose. In sections the pruina fluorescing in polarized light and dissolving in KOH to form a yellowish solution. Excipulum proprium euparaplectenchchymatous, up to 50 µm thick. Subhymenium up to 90 µm thick. Spores 6-8/ascus, 6(-8)-celled, 30-73 x 4.5-8.5 µm.

[18981], Australia, New South Wales, Great Dividing Range, Tallaganda State Forest, 10 km east of Captains Flat, 35°38' S, 149°31' E, 1240 m, growing on base of *Eucalyptus viminalis* in wet sclerophyll forest. Leg. J.A. Elix (19029) & D. Verdon 22.03.1985, det. D. Verdon. LICHENES AUSTRALASICI EXSICCATI NO. 129.

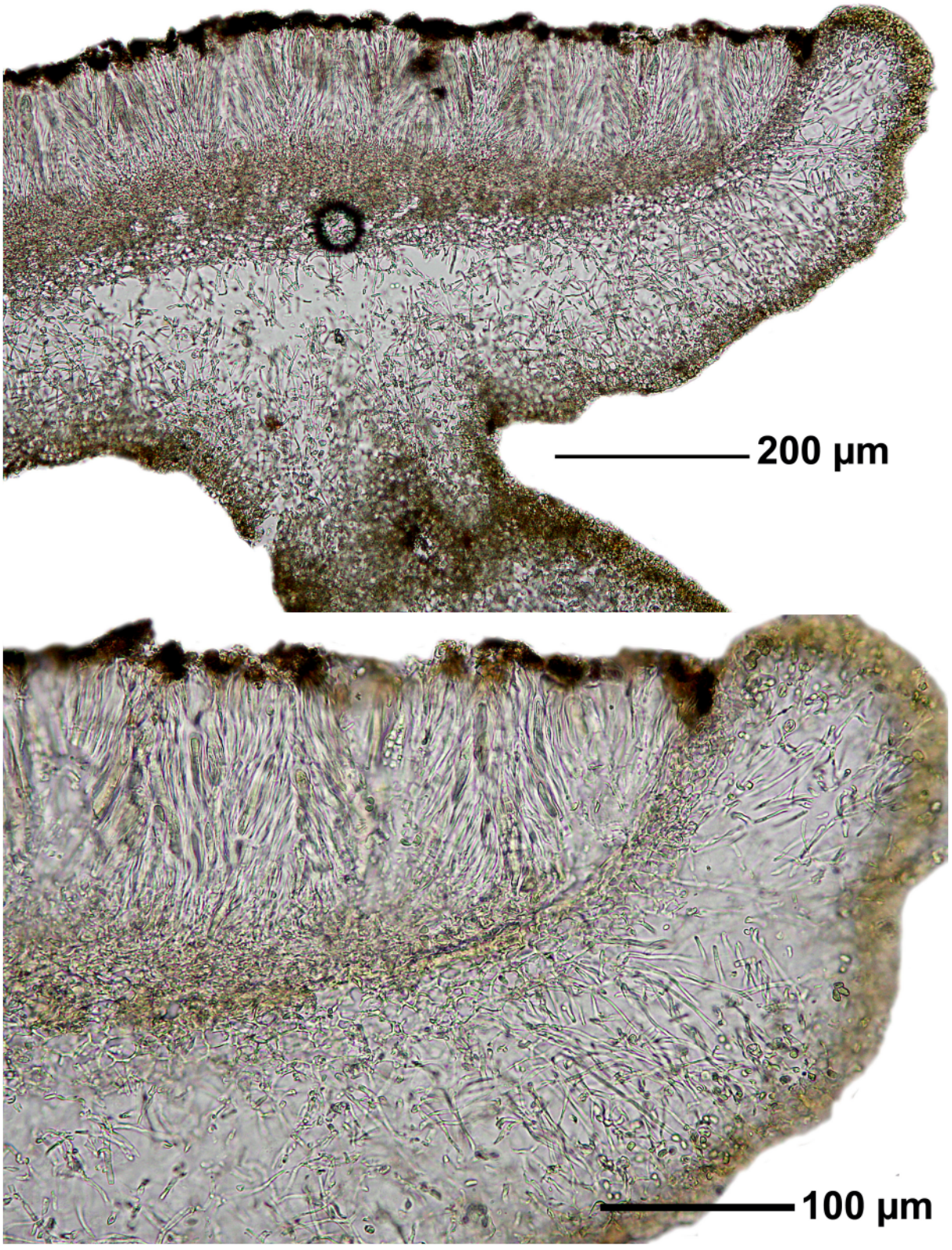




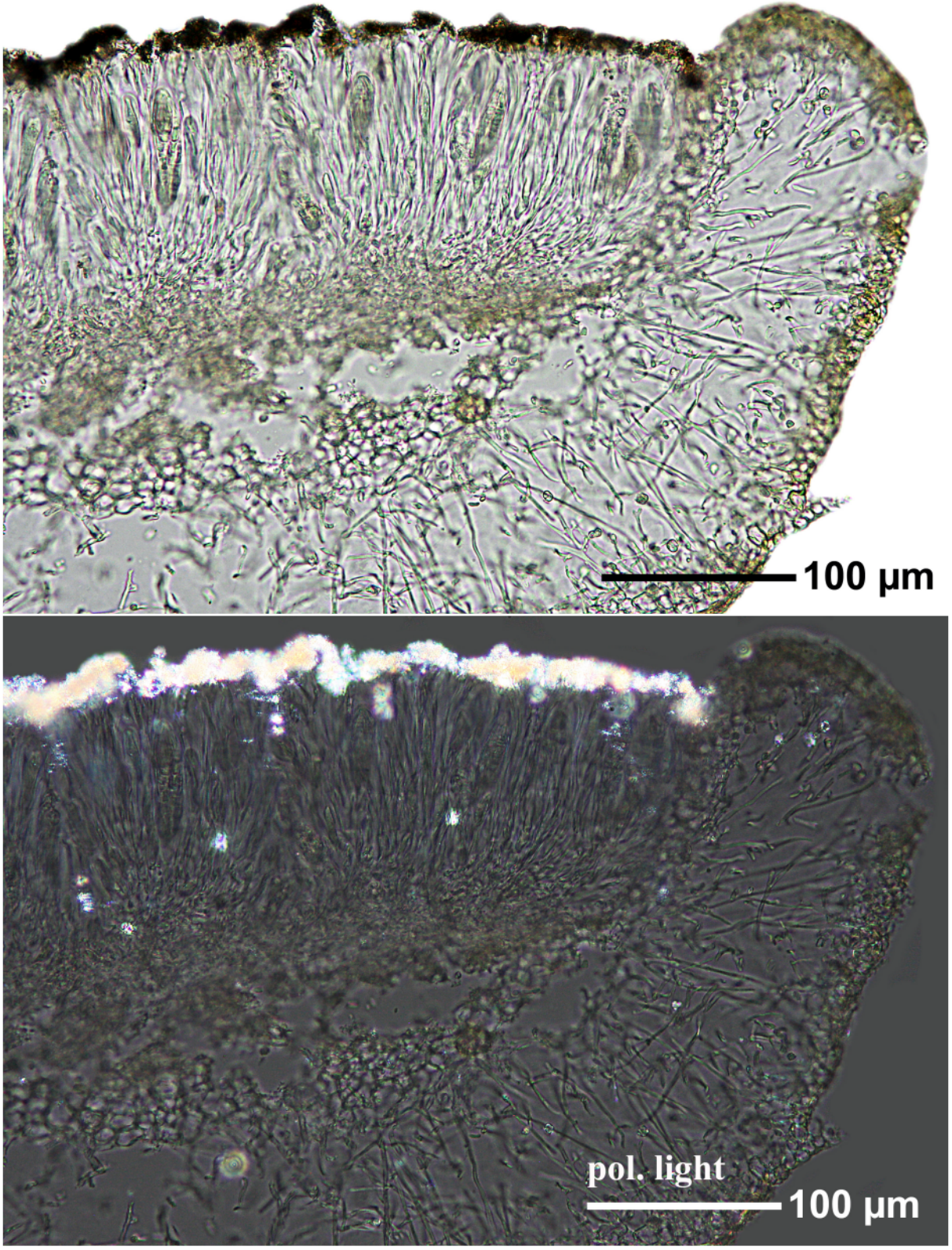
Collema leucocarpum



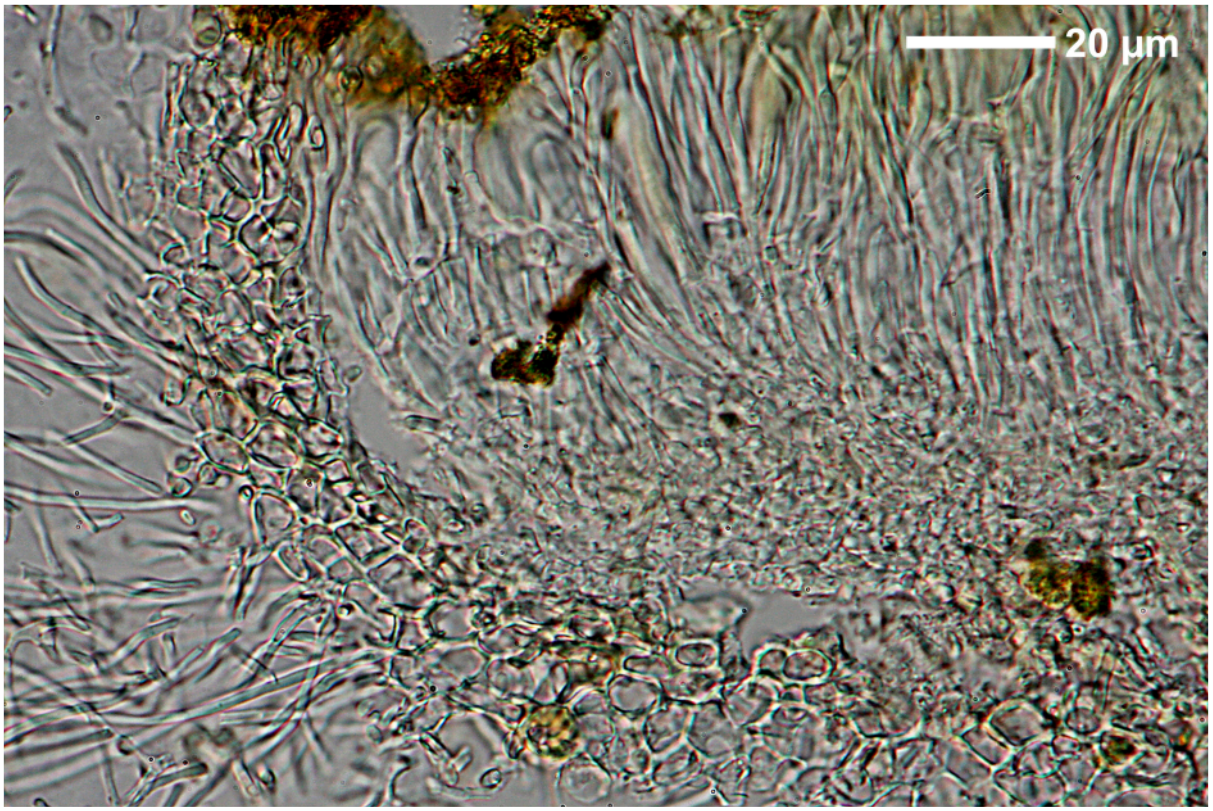
Collema leucocarpum

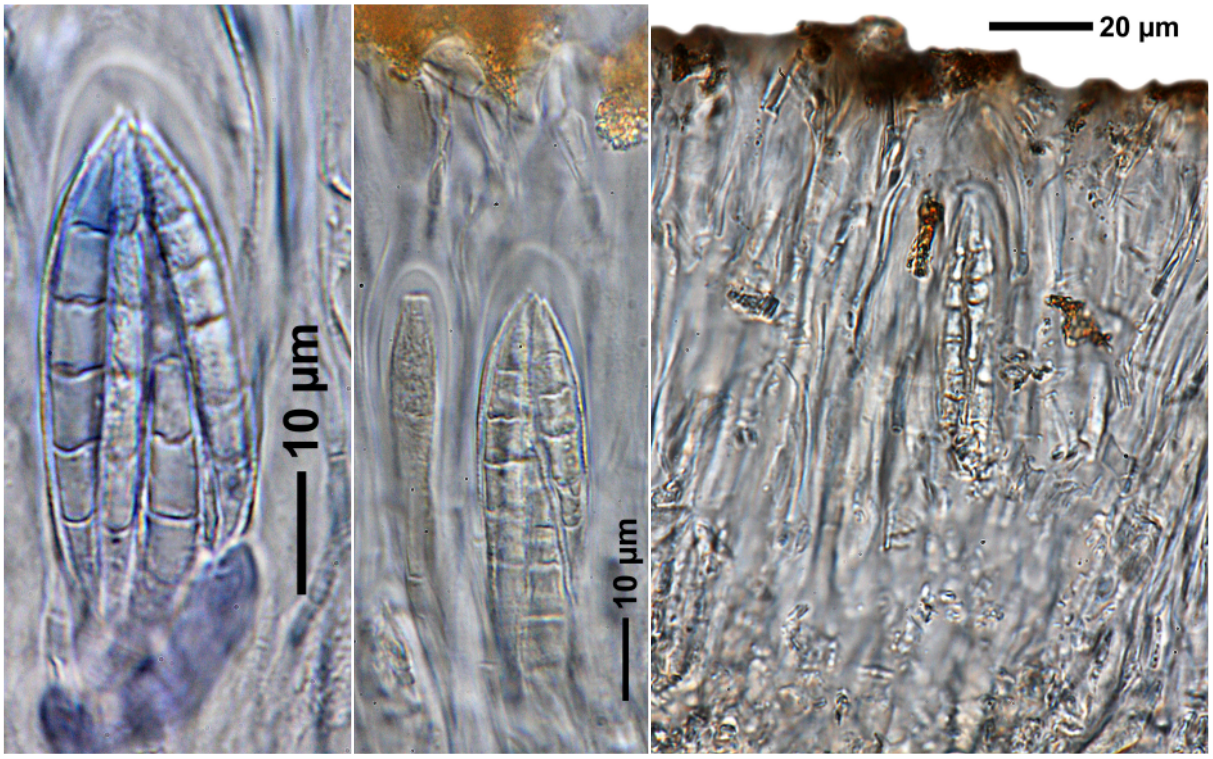


Collema leucocarpum



Collema leucocarpum







Collema leucocarpum

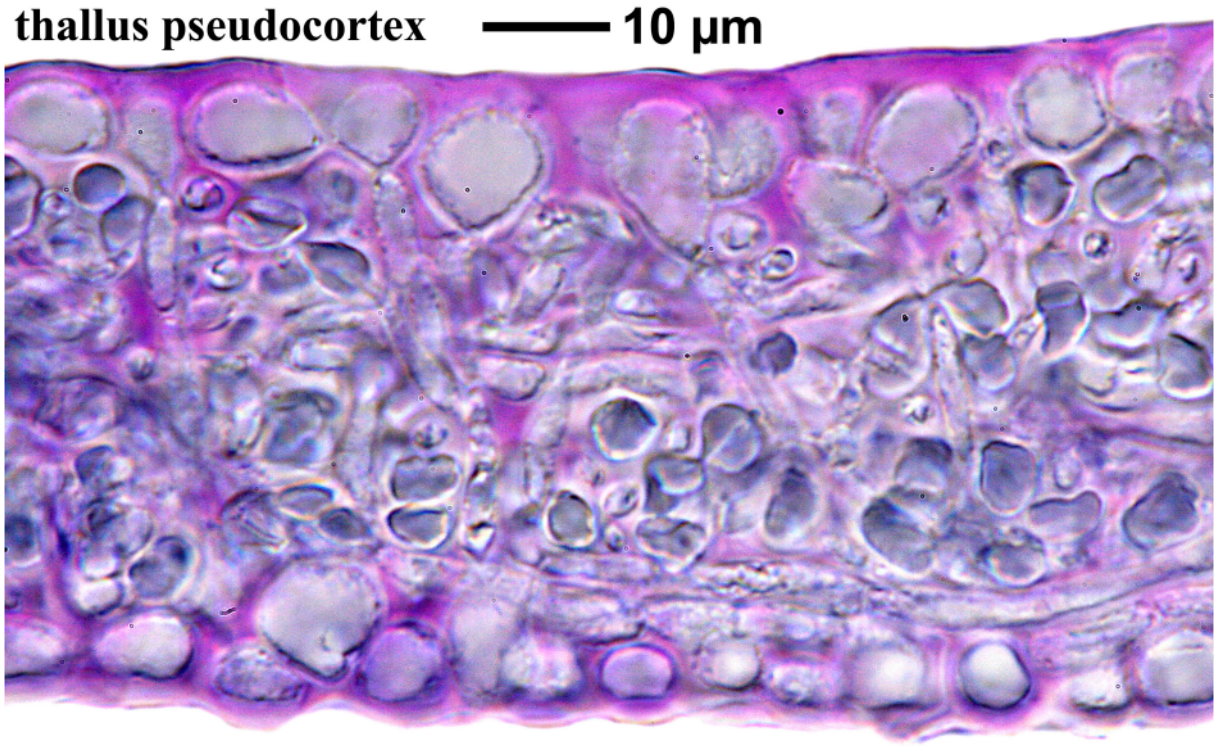
Collema subconveniens Nyl.

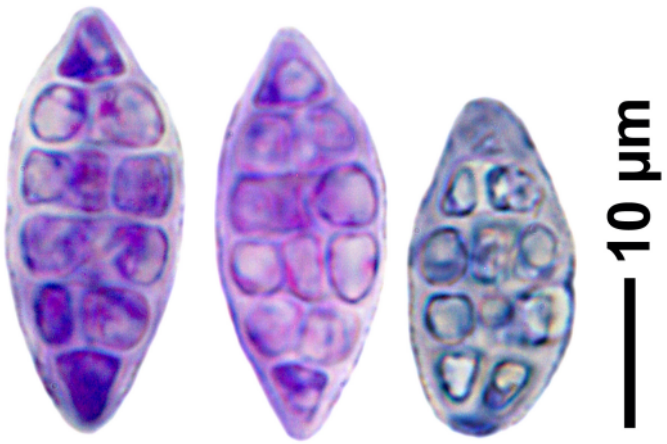
Thallus lacking isidia. Apothecia laminal, disc epruinose. Spores muriform, fusiform to broadly ellipsoidal, 8/ascus, 20-40 x 8-10.5 µm

[18982], Australia, New South Wales, Great Dividing Range, 6 km east of Captains Flat, 2 km north of Parkers Gap, 35°37' S, 149°30' E, 1260 m, growing on Bedfordia salicina in wet sclerophyll forest. Leg. J.A. Elix (19025) & D. Verdon 22.03.1985, det. D. Verdon. LICHENES AUSTRALASICI EXSICCATI NO. 130.





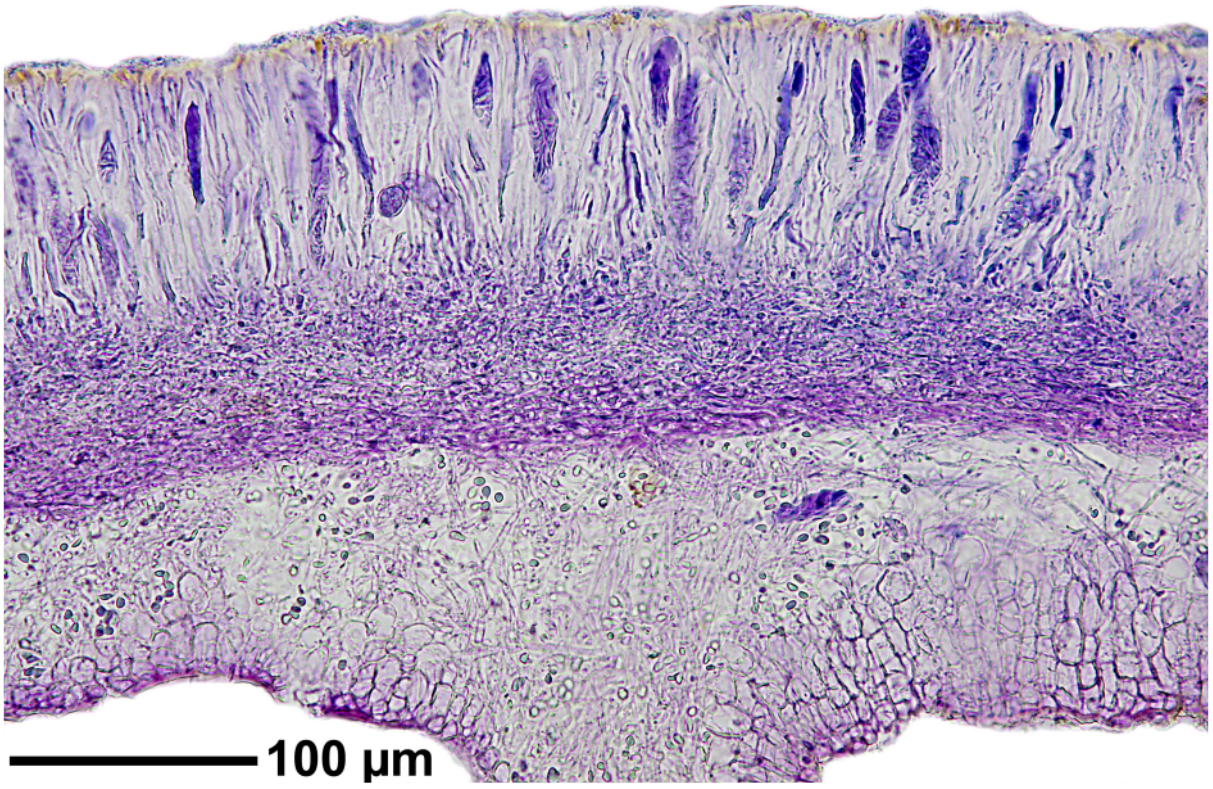


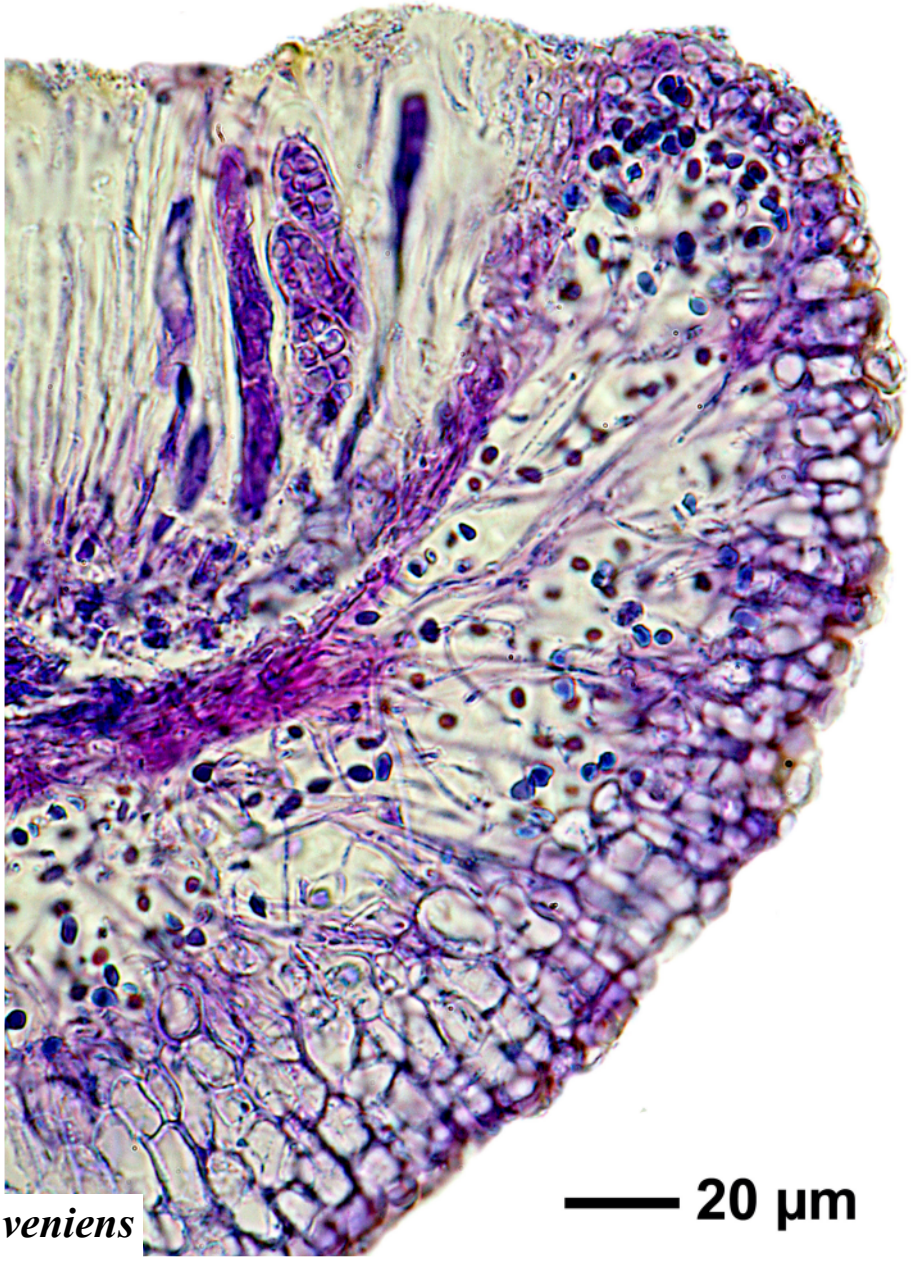


Collema subconveniens

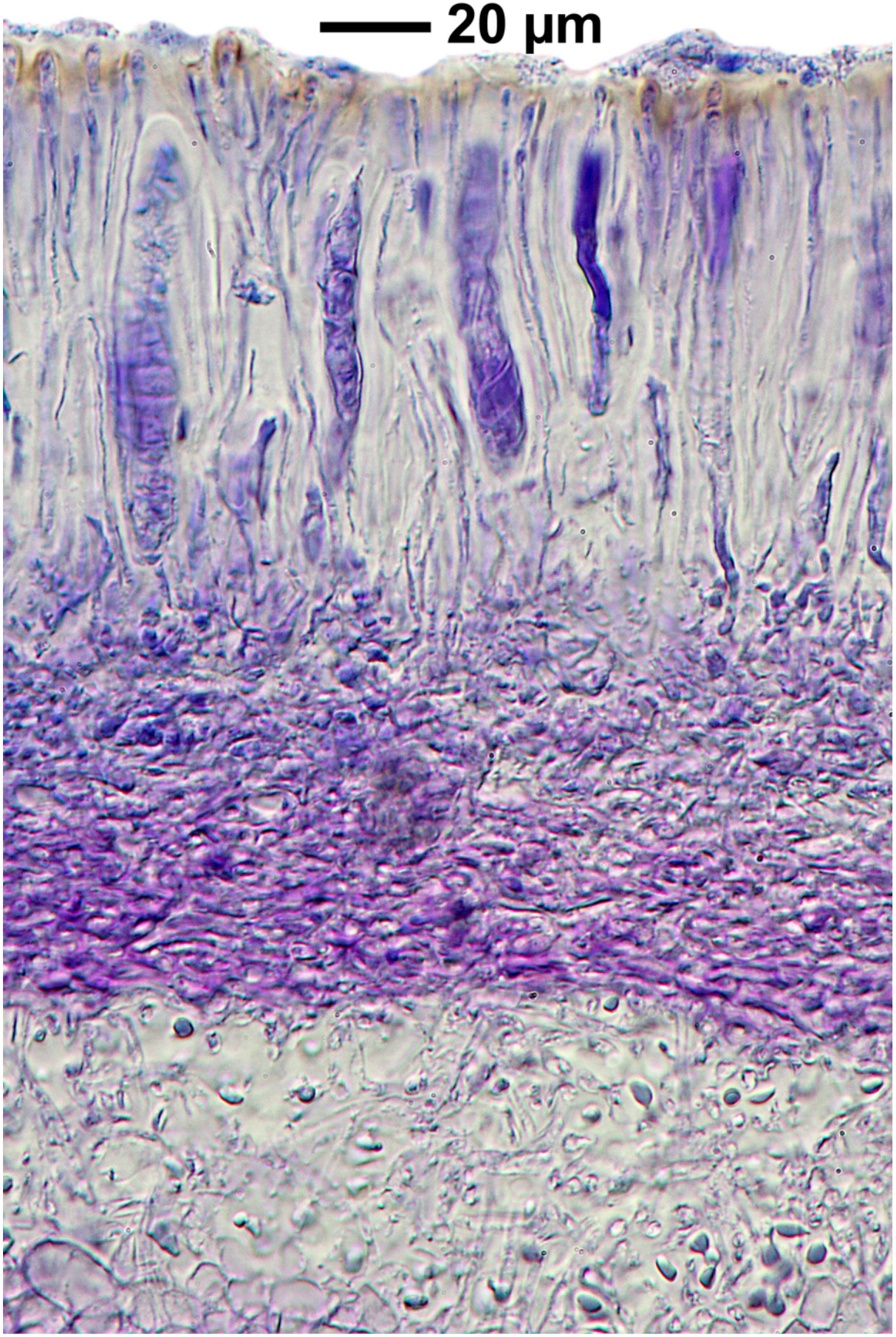


Collema subconveniens





Collema subconveniens

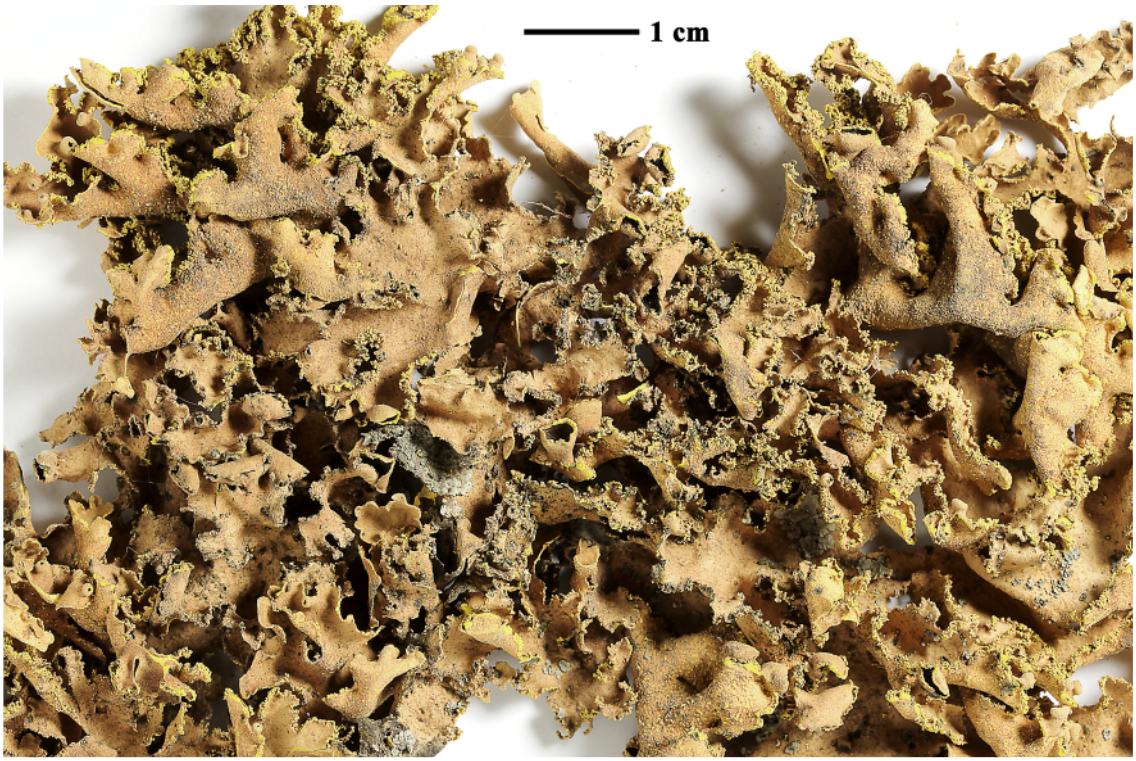


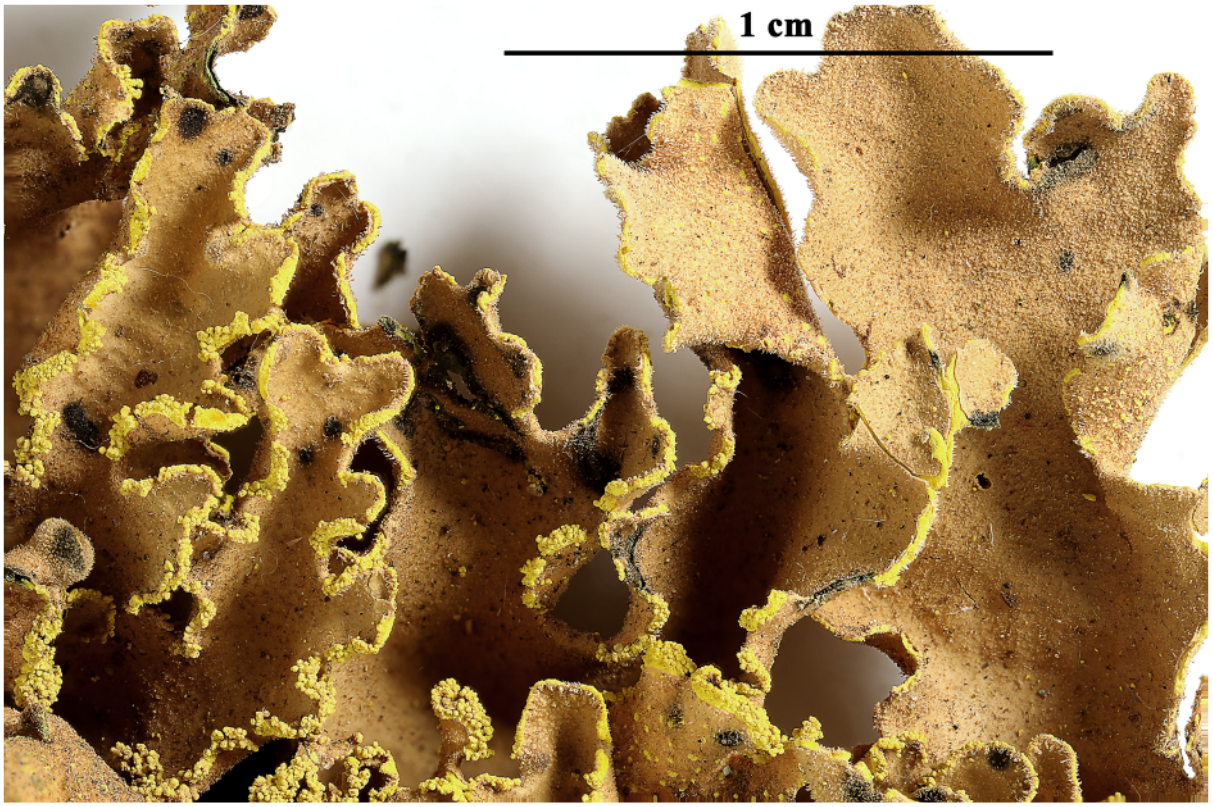
Collema subconveniens

Crocodia poculifera (Müll.Arg.) D.J.Galloway & Elix
[= ***Pseudocyphellaria poculifera*** (Müll.Arg.) D.J.Galloway & P.James]

Lobes dissected laciniate, 1-4 cm long, 4-10 mm wide, discrete, irregularly branched. Upper surface pale glaucous buff when dry (reddish on storage), lettuce-green when wet, wrinkled or pitted in parts, minutely pubescent toward margins. Isidia mainly marginal or regenerating from laminal cracks, densely clustered, minutely coralloid, eroding and appearing sorediate. Medulla yellow. Photobiont green. Lower surface pale buff or yellowish, patchely tomentose centrally. Pseudocyphellae conspicuous, scattered, yellow. Apothecia pedicellate, 1-5(-10) mm diam. Ascospores pale to dark red-brown, 3-septate, 18-25 x 5.5-7.5 µm. Chemistry: pulvinic acid, pulvinic dilactone, calycin, 3β-acetoxyfern-9(11)en-12-one, fern-9(11)-en-3β,12β-diol, 3β-hydroxyfern-9(11)-en-12-one, 3β-acetoxyfern-9(11)-en-12β-ol, 3β-acetoxyfern-9(11)-3-en-19β-ol and unidentified triterpenoids. Lit.: Galloway, D.J. & J. A. Elix, J.A. (2013)

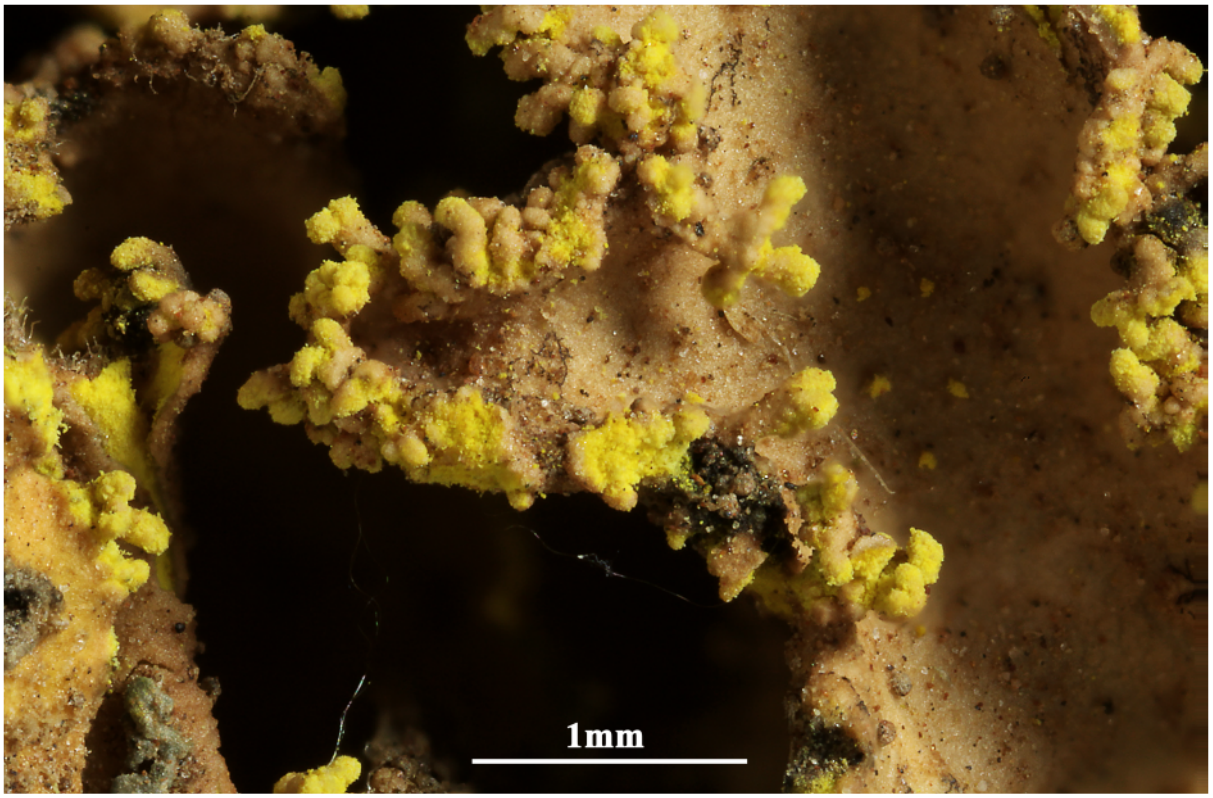
[19210], Norfolk Island. Mt. Pitt Reserve, in the vicinity of Broken Pine, 29°00'30" S, 167°56'30" E, 320 m, growing on *Cythea* truncks in dense regrowth forest. Leg. J.A.Elix (18315) & H. Streimann, 2.12.1984. Chemistry: pulvinic dilactone, pulvinic acid, calycin, lupeol acetate, 3β-acetoxyfern-9(11)-en-12-one, 3β-hydroxyfern-9(11)-en-12-one, fern-9(11)-en-3β,12ß-diol, 3β-acetoxyfern-9(11)-en-12β-ol, 3β-acetoxyfern-9(11)-en-19β-ol by TLC, anal. J. Johnston & A.L. Wilkins. LICHENES AUSTRALASICI EXSICCATI NO. 091.

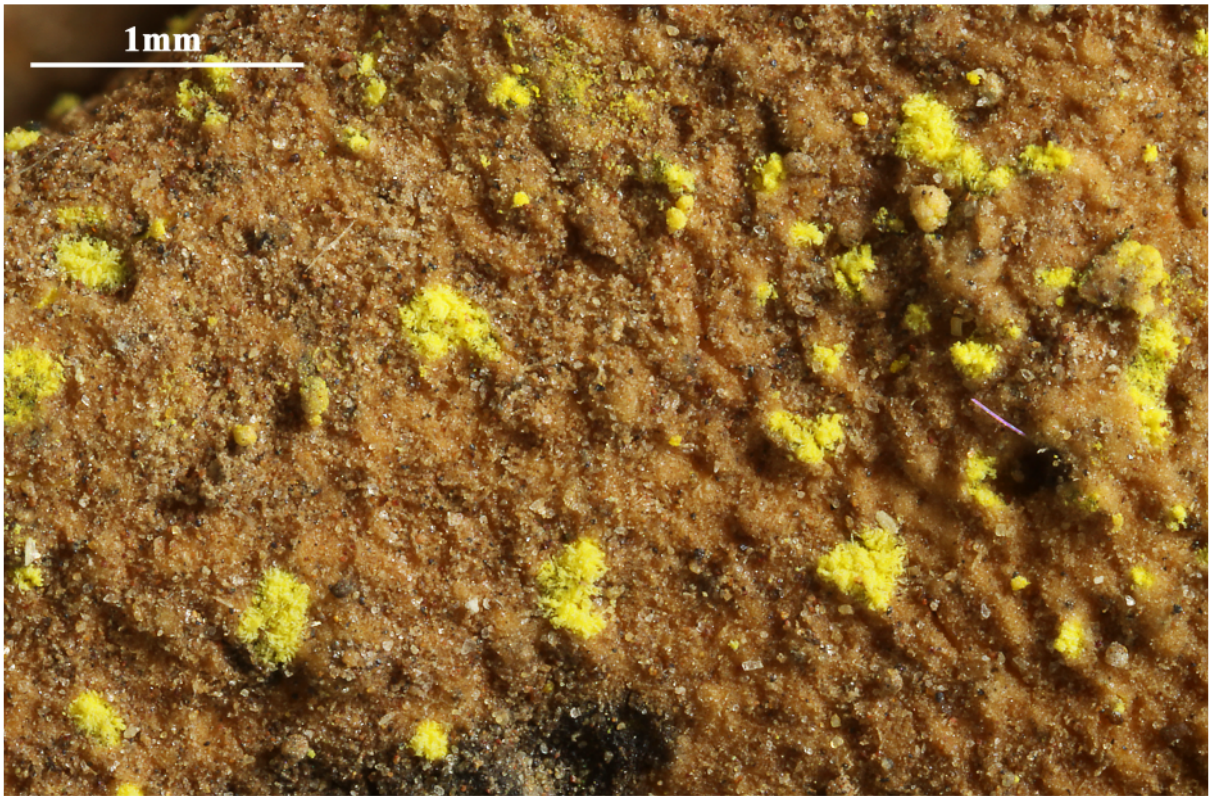




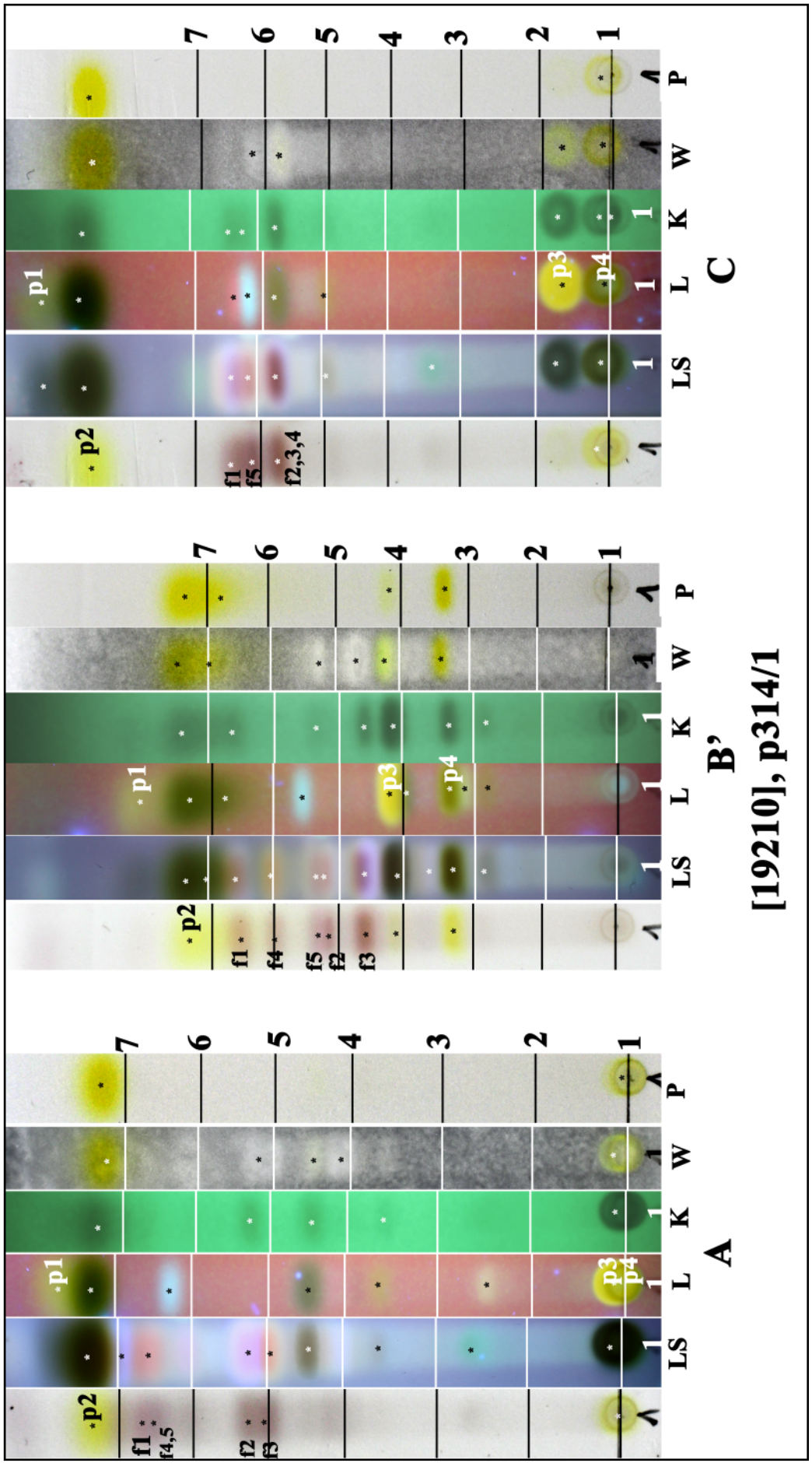


Crocodia poculifera





Crocodia poculifera



p1: pulvinic dilactone, p2: calycin, p3: pulvinic acid, p4: unknown, f1: 3β-acetoxyfern-9(11)-en-12-one, f2: 3β-hydroxyfern-9(11)-en-12-one, f3: fern-9(11)-en-3β,12β-diol, f4: 3β-acetoxyfern-9(11)-en-12β-ol, f5: 3β-acetoxyfern-9(11)-en-19β-ol.

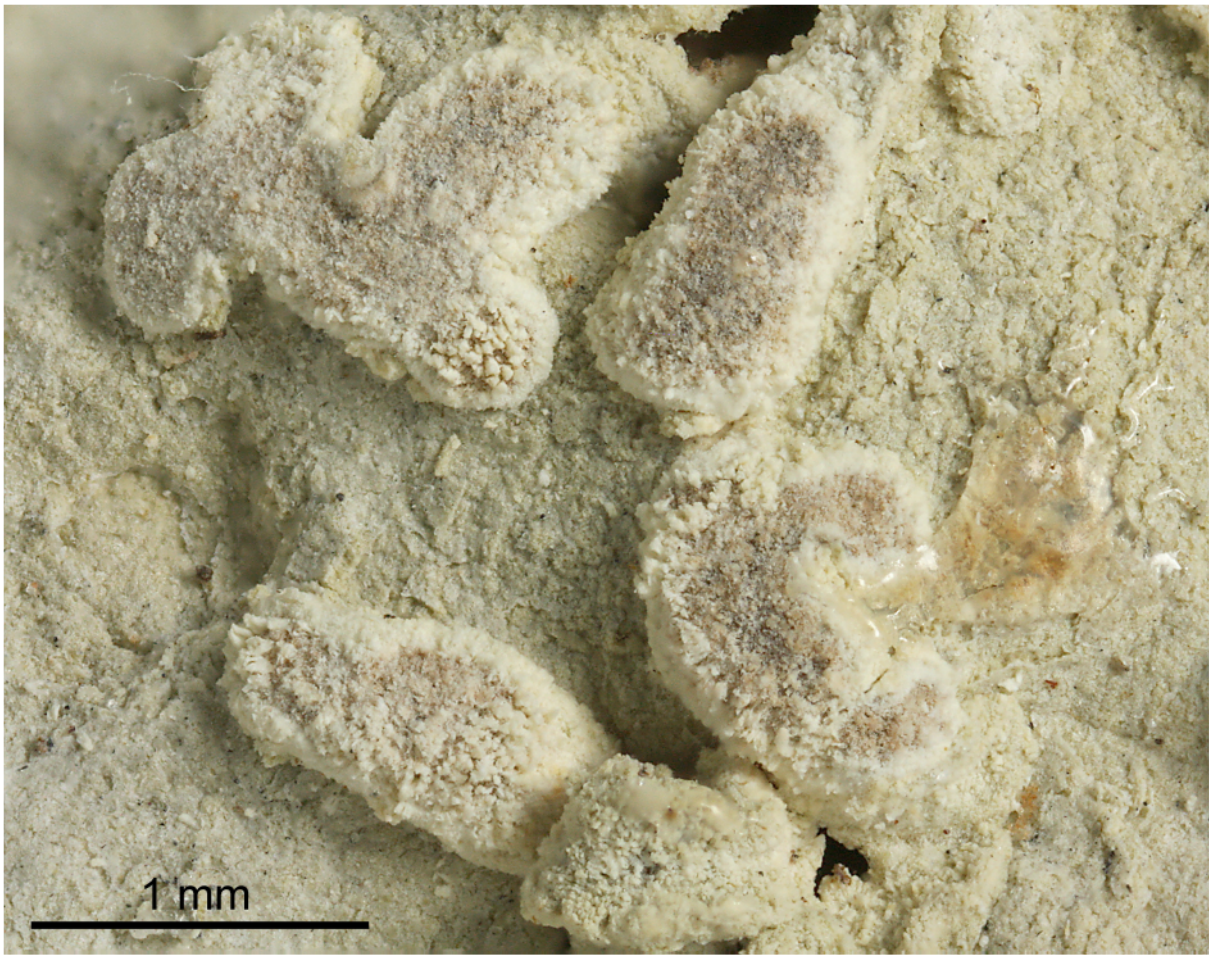
Crocodia poculifera

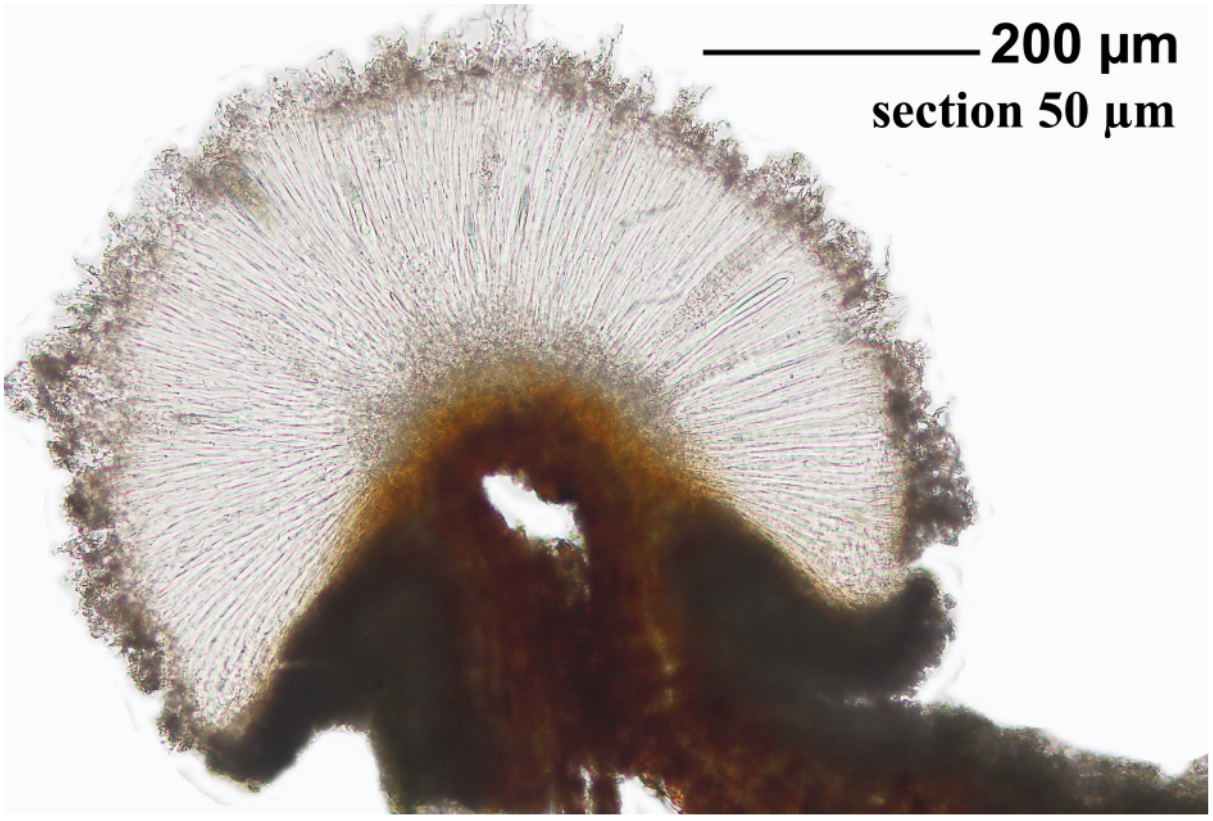
Diorygma rufopruinosum (A.W.Archer) Kalb, Staiger & Elix

Thallus corticolous, whitish, pale grey, 70-100 µm thick; surface matt, farinose-granular; medulla white with many crystals. Lirellae 1-4 x 0.4-0.8 mm; disc wide or narrow, flat with thick whitish brown to pale brown, lax pruina; exciple uncarbonised, rudimentary, yellowish hyphae only present basally. Hymenium not inspersed, I- or I+ pale bluish; epithecium well developed, over 40 µm high in part. Ascospores 1/ascus, hyaline, muriform, 120-155(-215) x 30-45(-63) µm, I+ blue-violet. Chemistry: protocetraric acid (major), ± salazinic acid, ± norstictic acid. Lit. Kalb, Staiger & Elix (2004, Symb. Bot. Ups. 34:1).

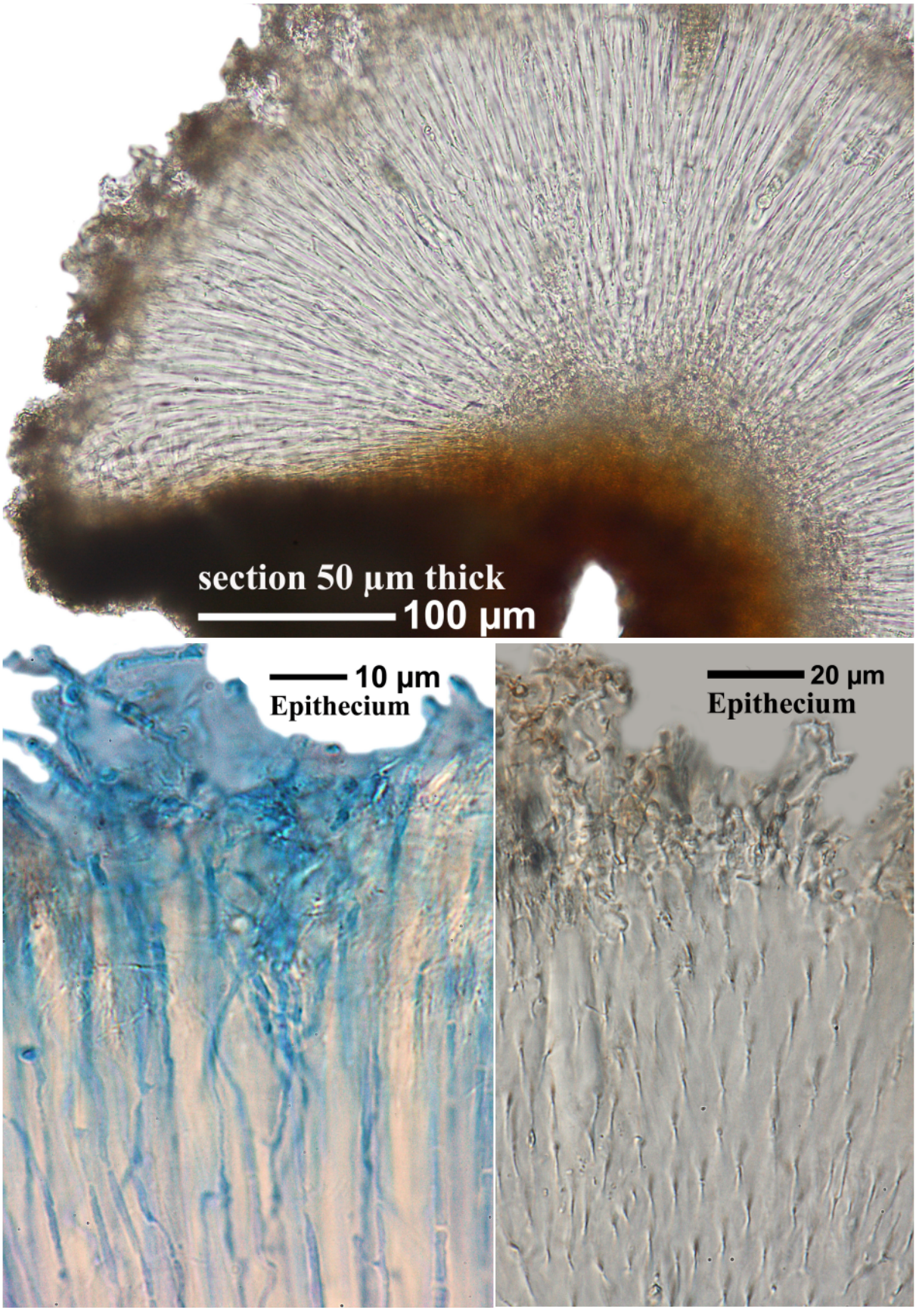
[17222], Kalb: Lichenes Neotropici 588. Australia, Queensland, some km north of Cardwell, 18°12'48" S, 146°00'44" E, 5 m, growing in a tropical coast-rainforest with *Avicennia mariana*, *Lumnitzera ramosa*, *Xylocarpus granatum* etc. Leg. K. & J. Kalb, 23.08.2002, det. K. Kalb.



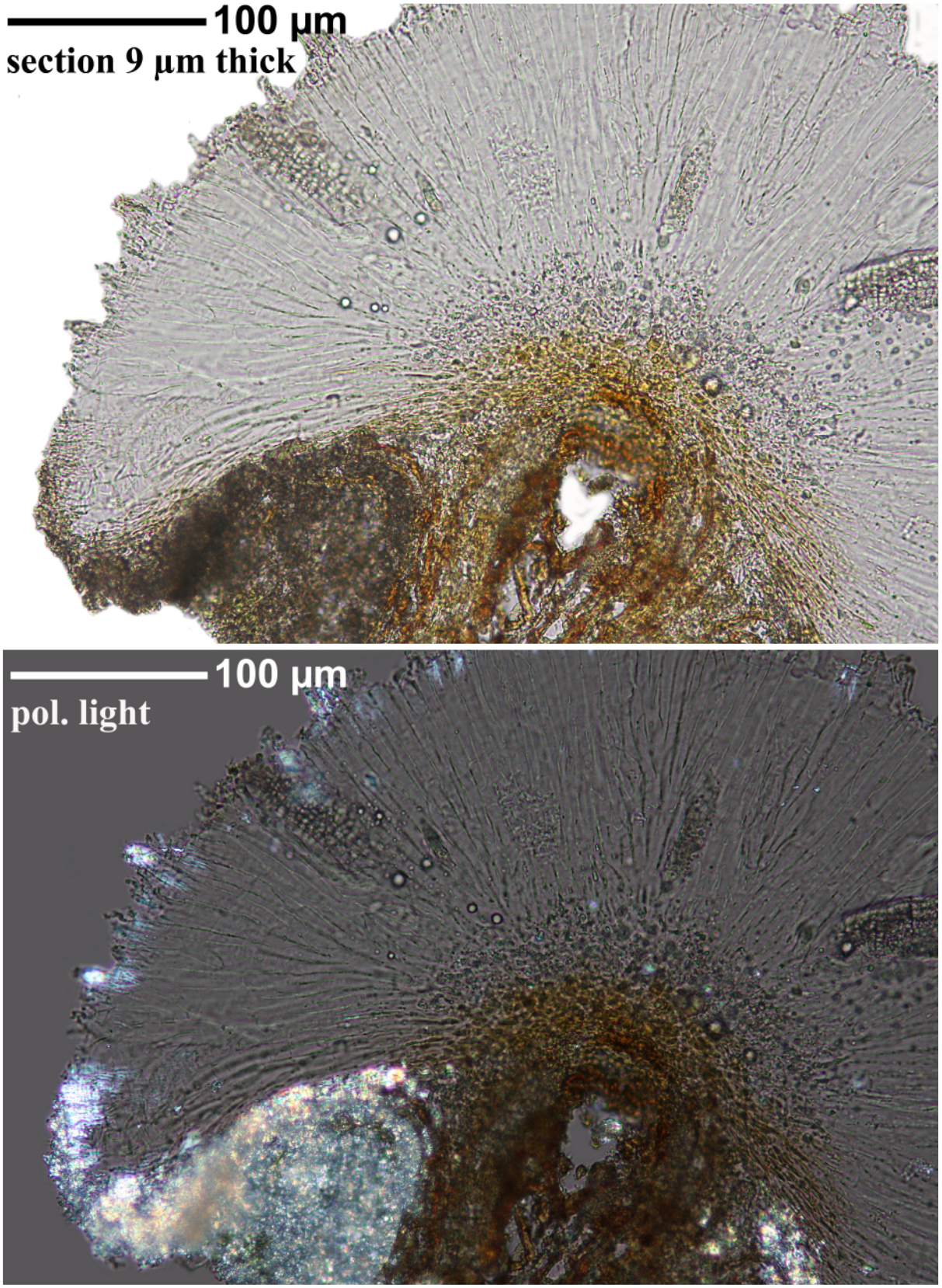




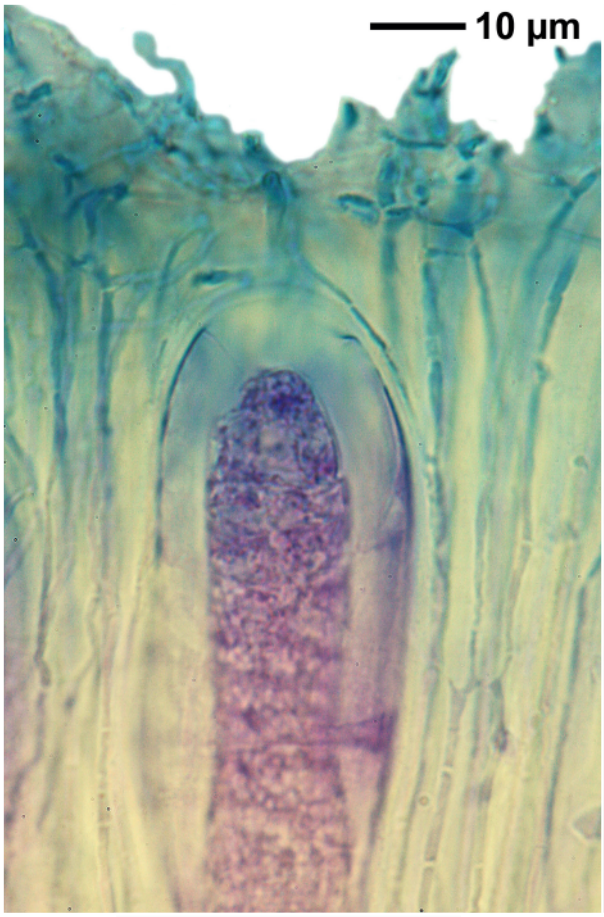
Diorygma rufopruinosum

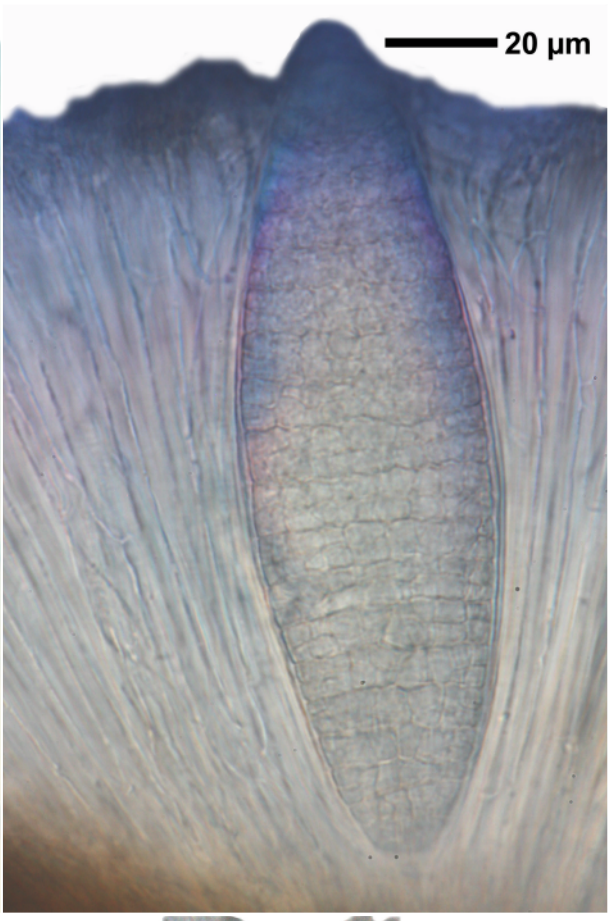


Diorygma rufopruinosum



Diorygma rufopruinosum

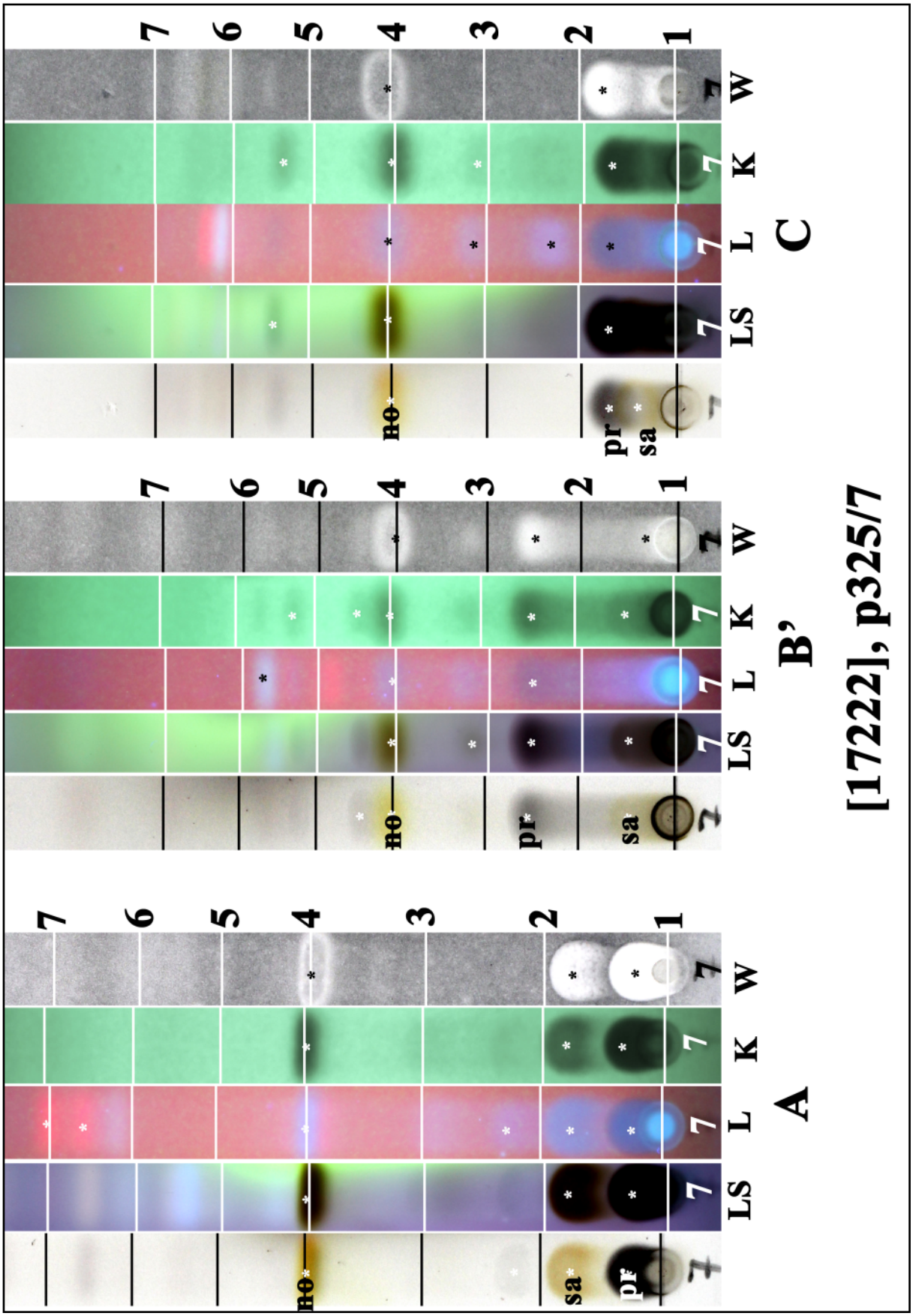








Diorygma rufopruinosum



no: norstictic acid, pr: protocetraric acid, sa: salazinic acid

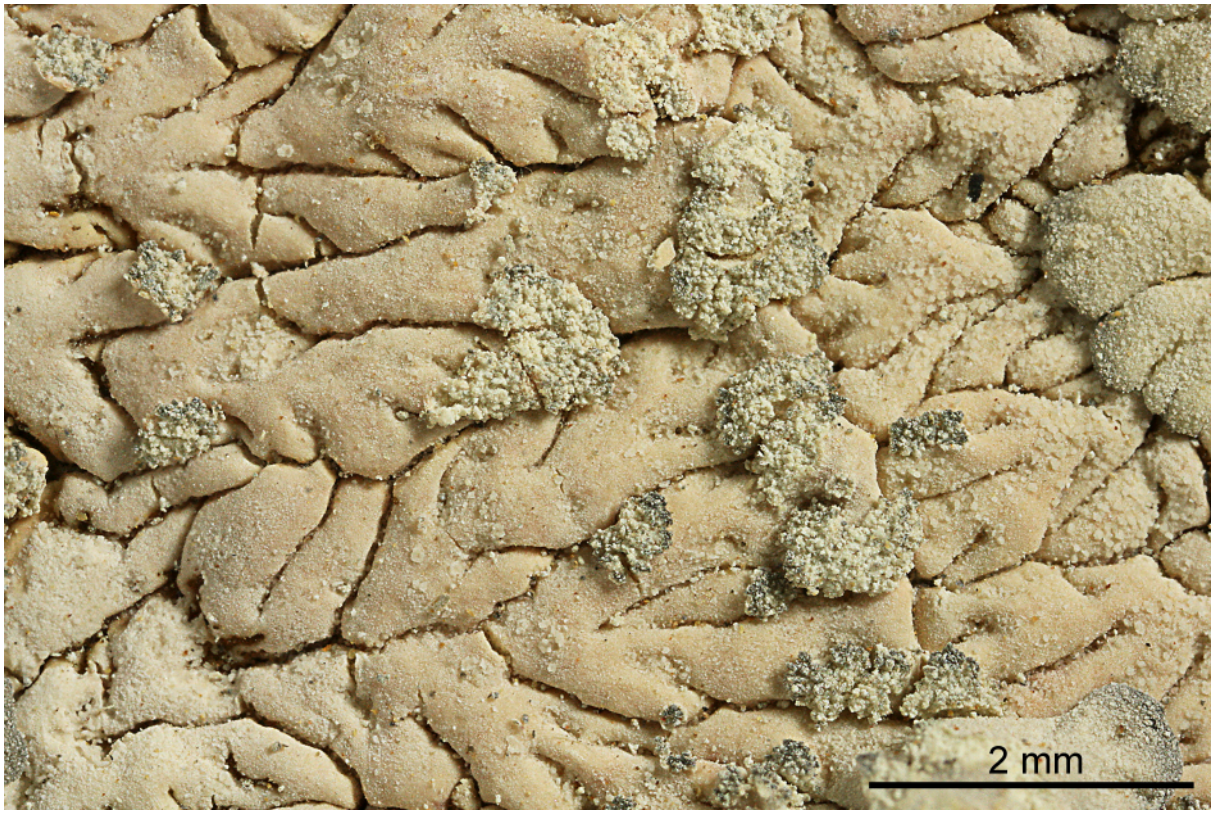
Diorygma rufopruinosum

Diploicia canescens (Dicks.) A.Massal.
ssp. ***australasica*** Elix & Lumbsch

Thallus placodioid, adnate on rocks. Marginal lobes pinnate, contiguous, convex, 0.7-0.9 mm long, 0.4-0.7 mm wide, shorter in the centre, becoming crustose-areolate in part. Upper surface white to pale pink, pruinose. Soralia subterminal to laminal, orbicular, somewhat convex. Lower medulla lax, orange-brown, lacking a lower cortex. Chemistry: atranorin, secalonic acids B and C, unknown pigments (acetone extract orange). Lit. Elix et al, 1988, Mycotaxon 33: 457-466.

[16162], Australia, New South Wales, Tomakin, on coastal rocks, 35.830° S, 150.206° E, sea level. Leg. F. Schumm 10.11.2009, det. F. Schumm, conf. J.A. Elix 12.2013.







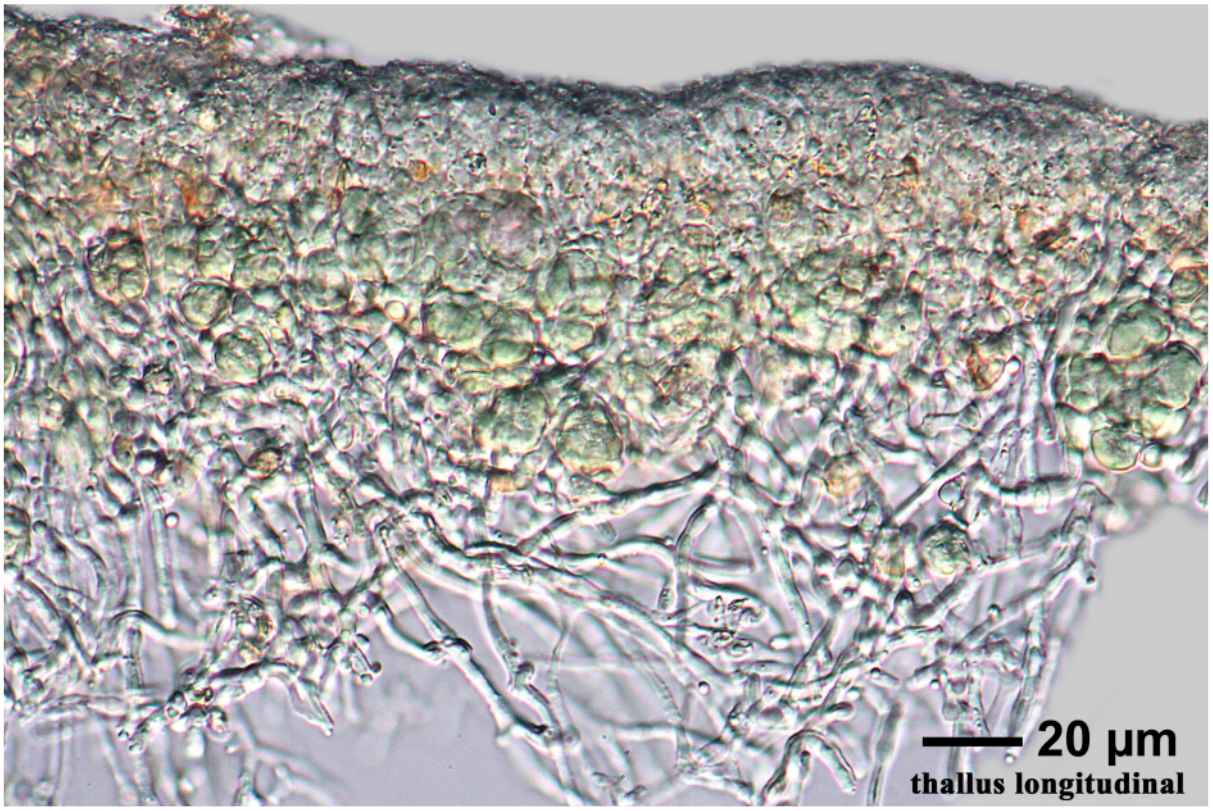
Diploicia canescens ssp. ***australasica***



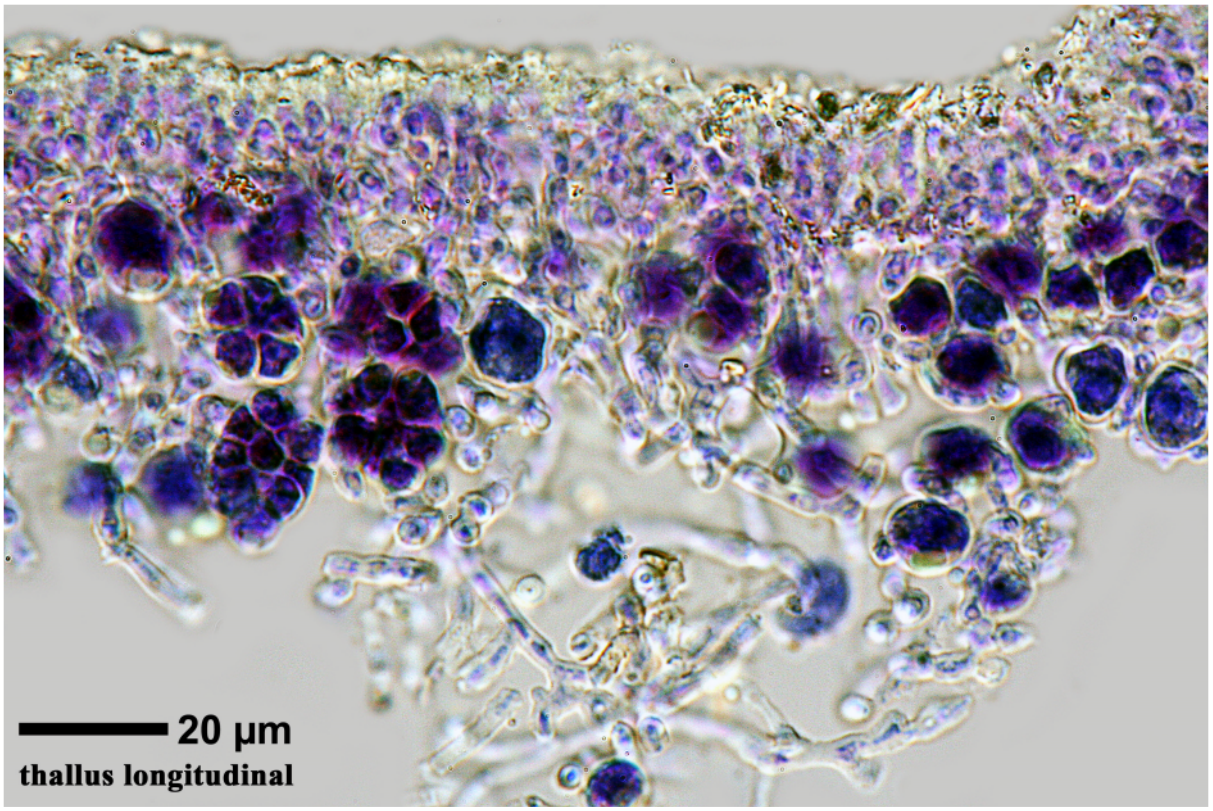


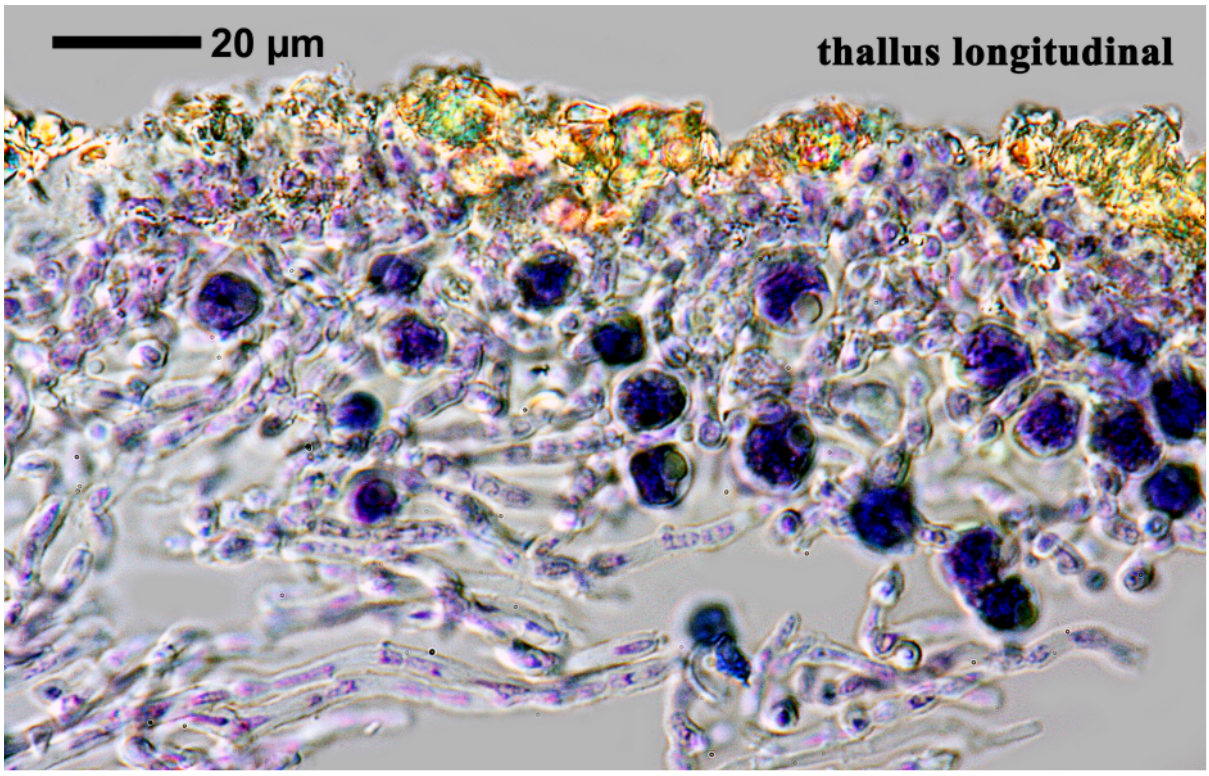
Diploicia canescens ssp. ***australasica***



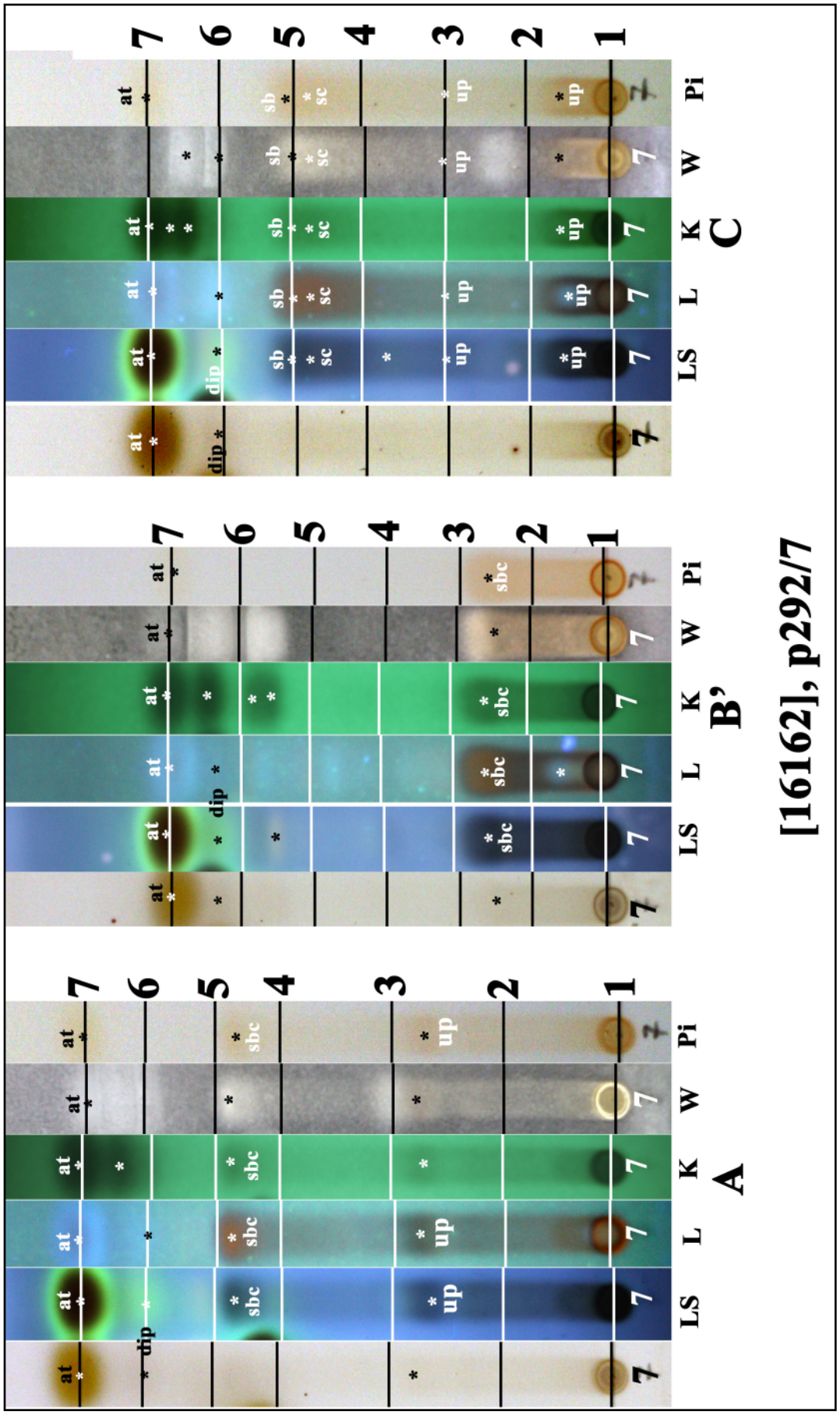


Diploicia canescens ssp. ***australasica***





Diploicia canescens ssp. ***australasica***

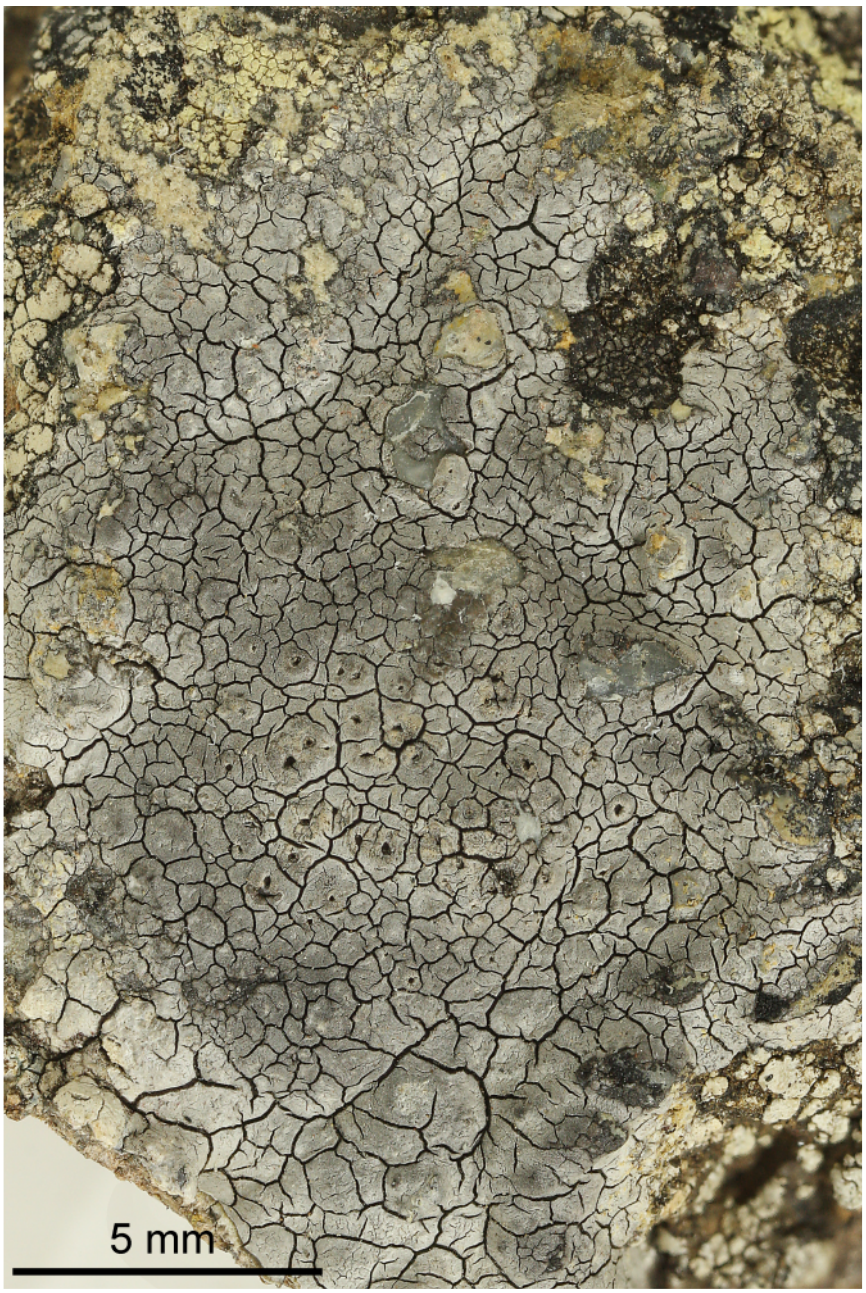


at: atranorin, sbc: secalonic acids B+C, sb: secalonic acid B, sc: secalonic acid C, up: unknown pigments, dip: diploicin.

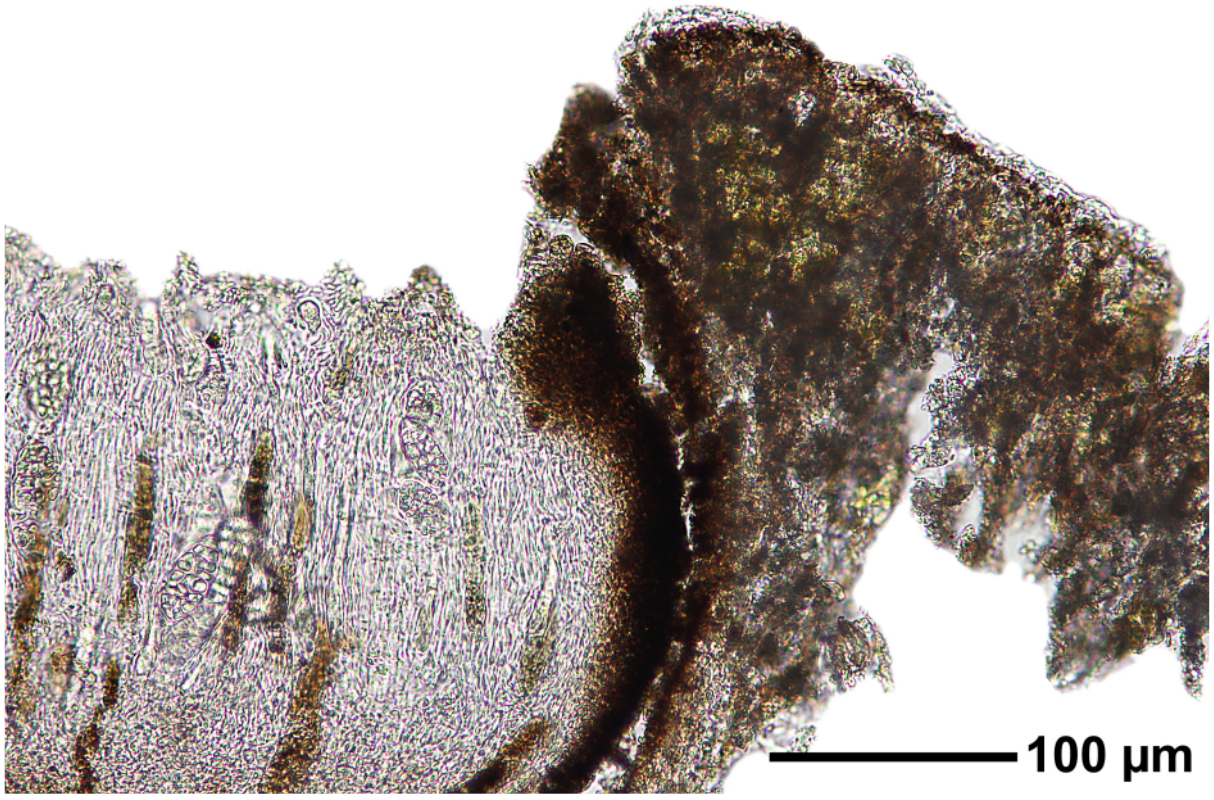
Diploschistes actinostomus (Pers. ex Ach.) Zahlbr.

Thallus epilithic, whitish grey to grey, to c. 1.5 mm thick, rimose-areolate. Apothecia blackish, to c. 3 mm diam, rounded, perithecioid, immersed. Asci 4-6(-8)-spored. Spores ellipsoidal, with rounded to subacute ends, hyaline then brown when overmature, K and IKI blue depending on the state of development, 16-37(-50) x 10-23 µm. Thallus K-, C+ red, P-.

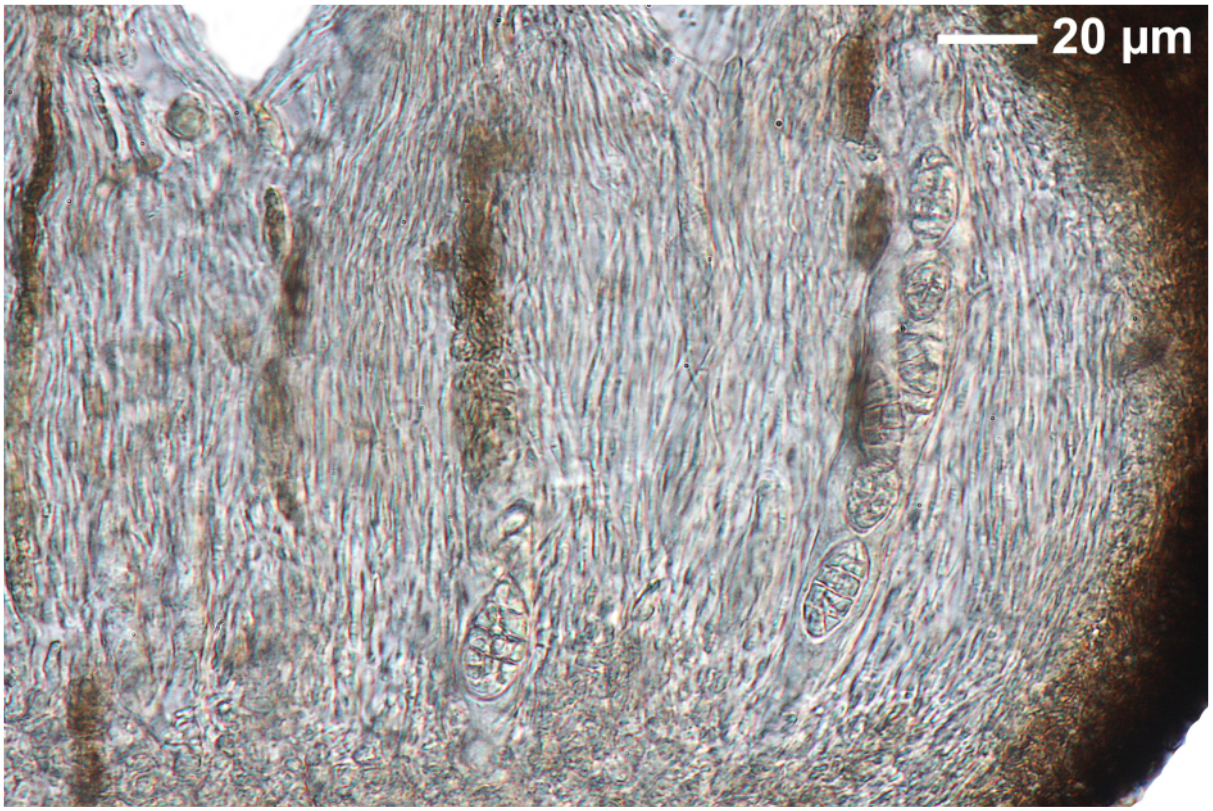
[19009], Australia, Queensland, Brisbane area, Esk Shire, 5 km south of Toogoolawah, growing on W-exposed granite outcrops in pasture. Leg. H.T. Lumbsch (5669b), 22.09.1987, det. H.T. Lumbsch. Chemistry: lecanoric acid (major), diploschistesic acid (minor), orsellinic acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 154

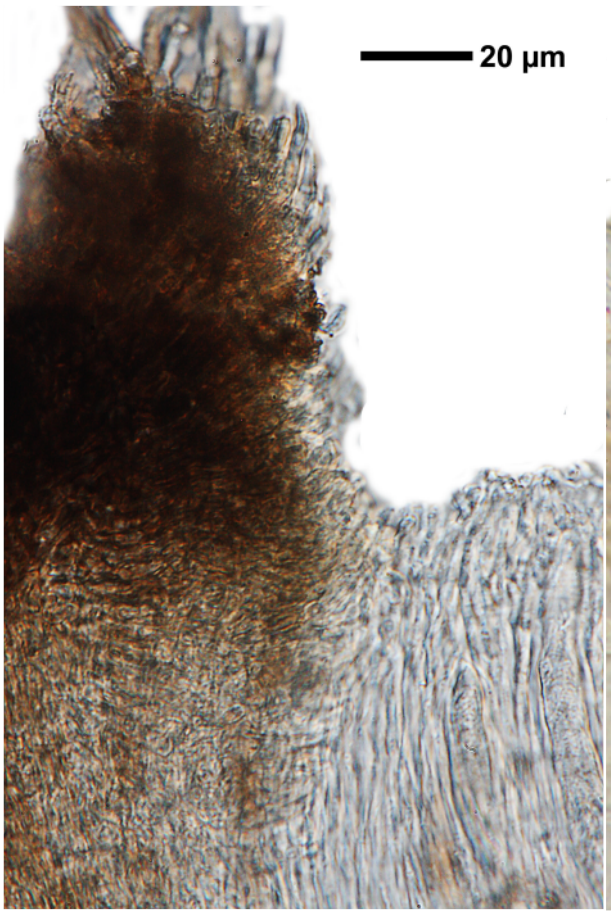


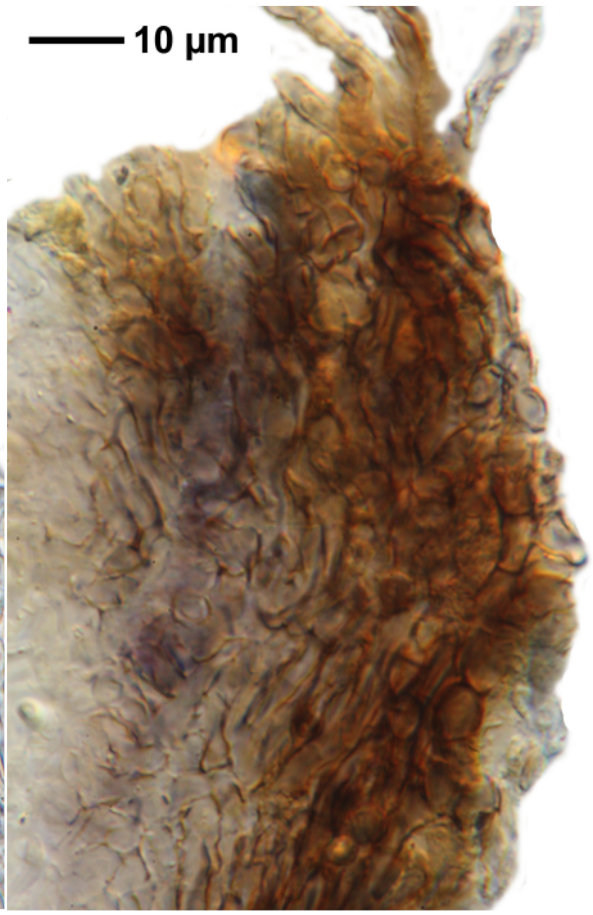




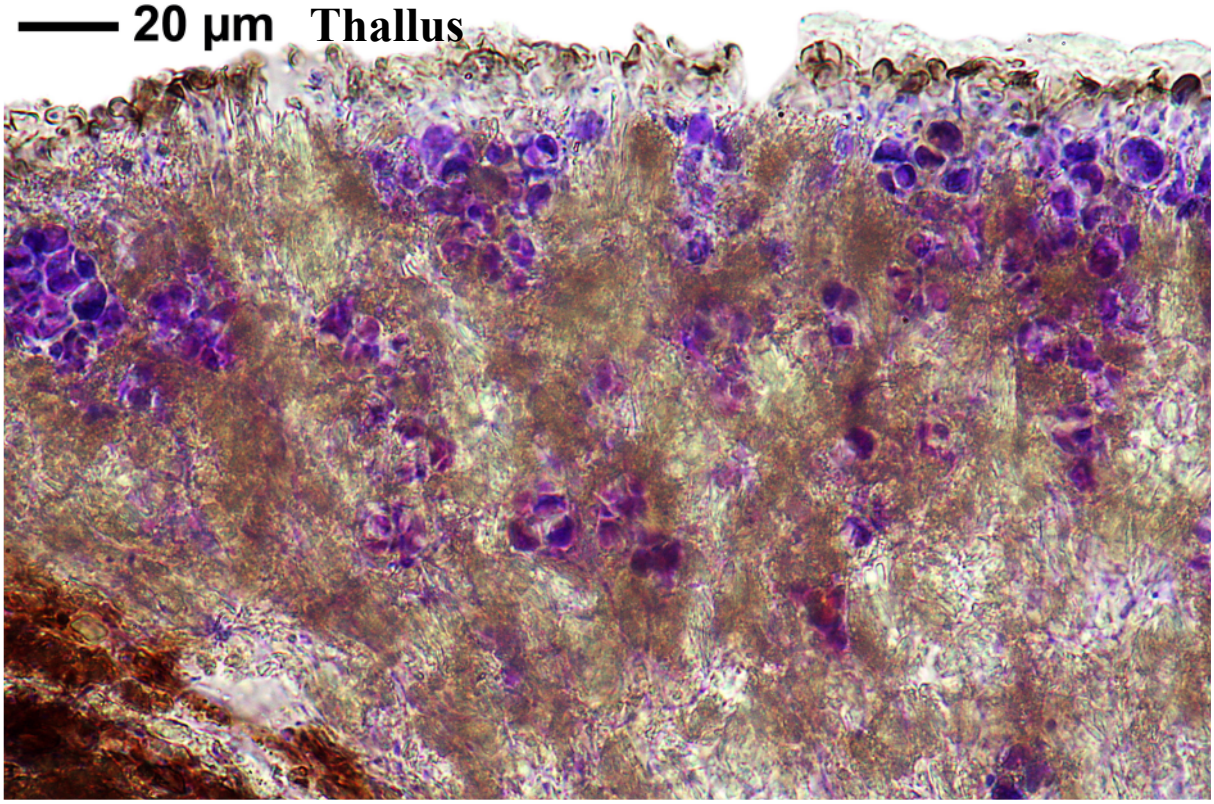
Diploschistes actinostomus

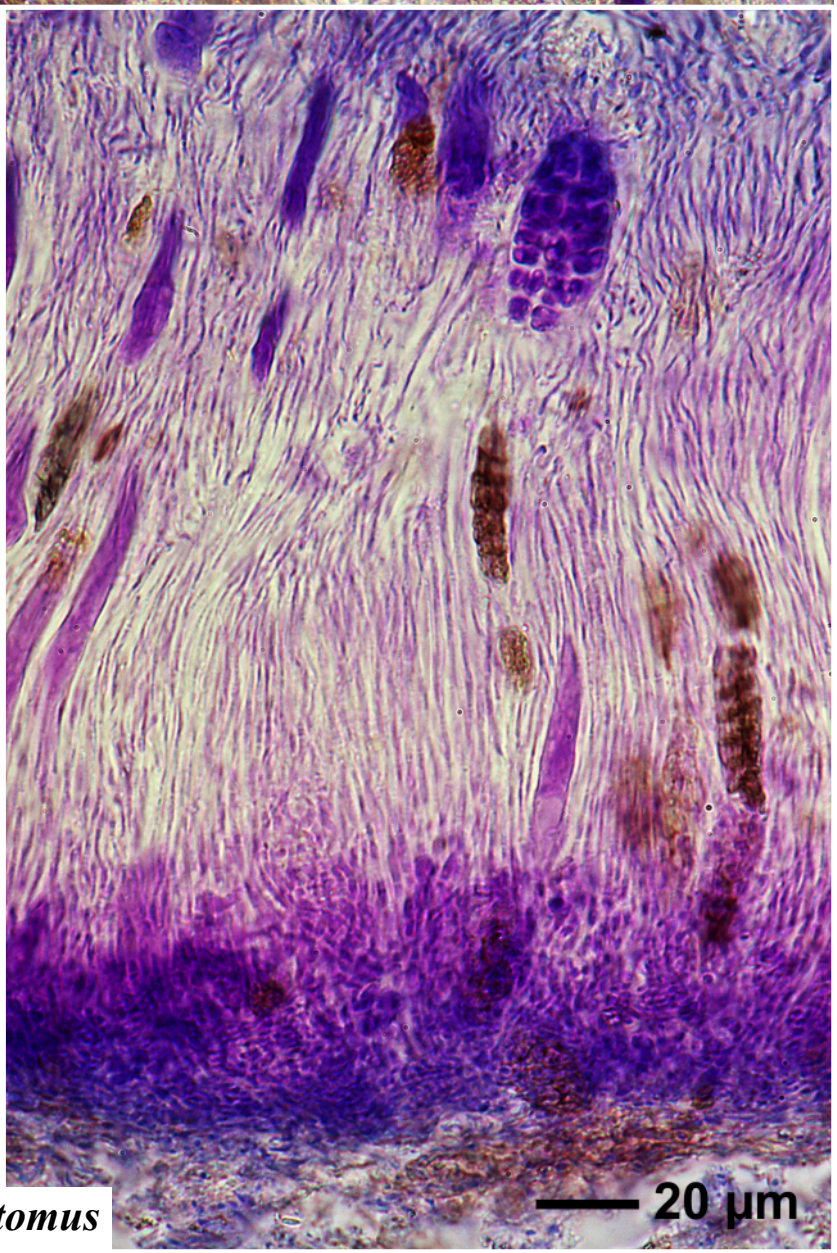




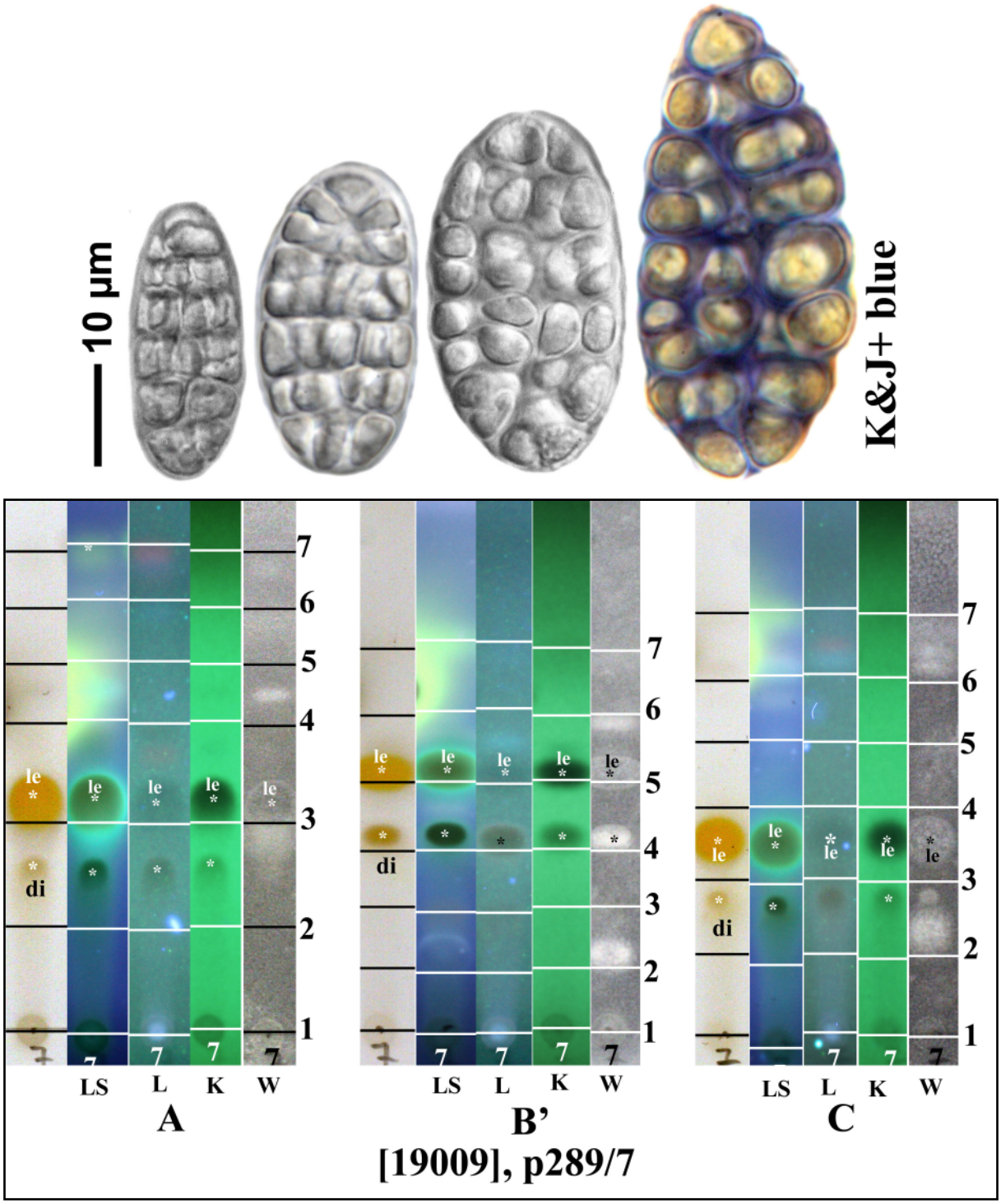


Diploschistes actinostomus





Diploschistes actinostomus

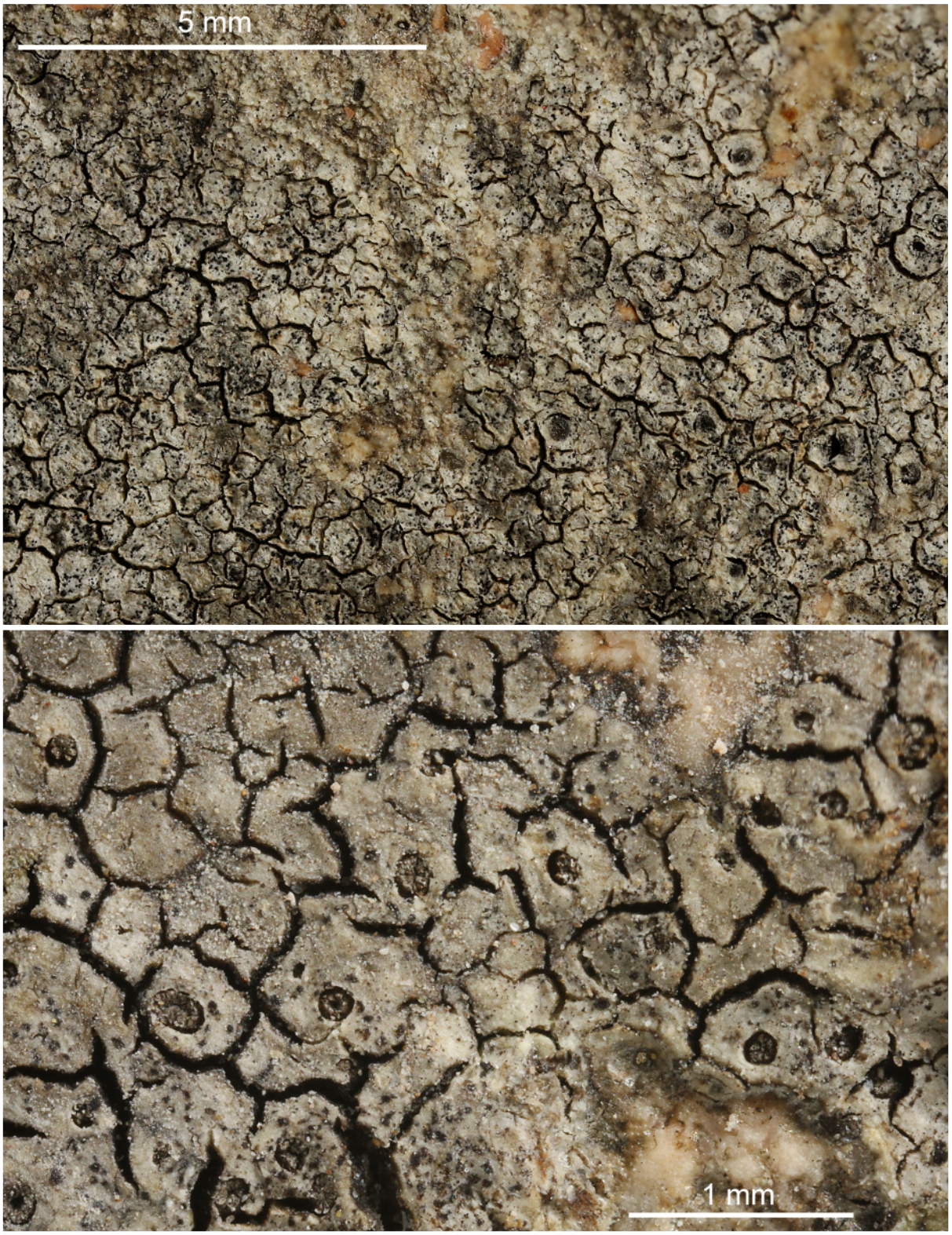


le: lecanoric acid, di: diploschistesic acid

Diploschistes actinostomus

Diploschistes actinostomus (Pers. ex Ach.) Zahlbr.

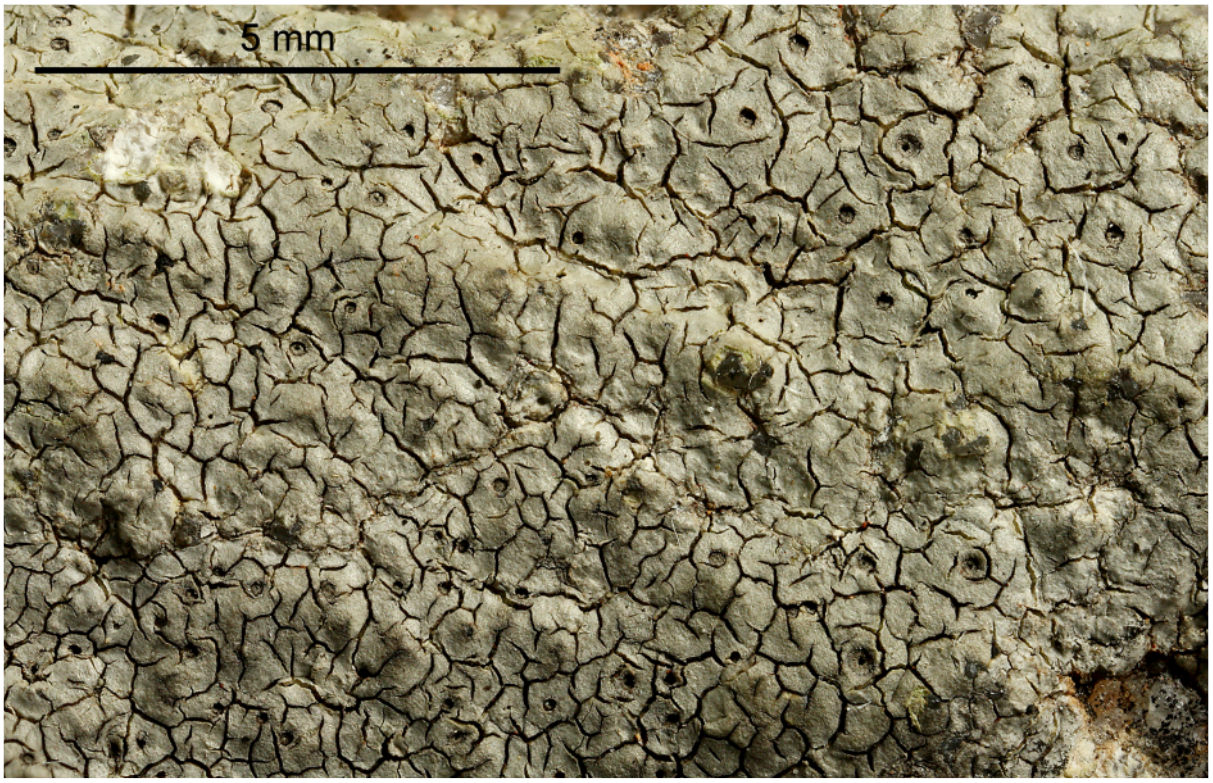
[19010], Australia, New South Wales, Stroud-Gloucester Road, 37 km south of Gloucester, 32°20' S, 151°55' E, 80 m, growing on volcanic rocks in dry sclerophyll forest on steep rocky westerly slope. Leg. J.A. Elix (27480) & H. Streimann, det. H.T. Lumbsch. Chemistry: lecanoric acid (major), diploschistesic acid (trace), orsellinic acid (trace), atranorin (trace), chloroatranorin (trace) by HPLC, TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 228



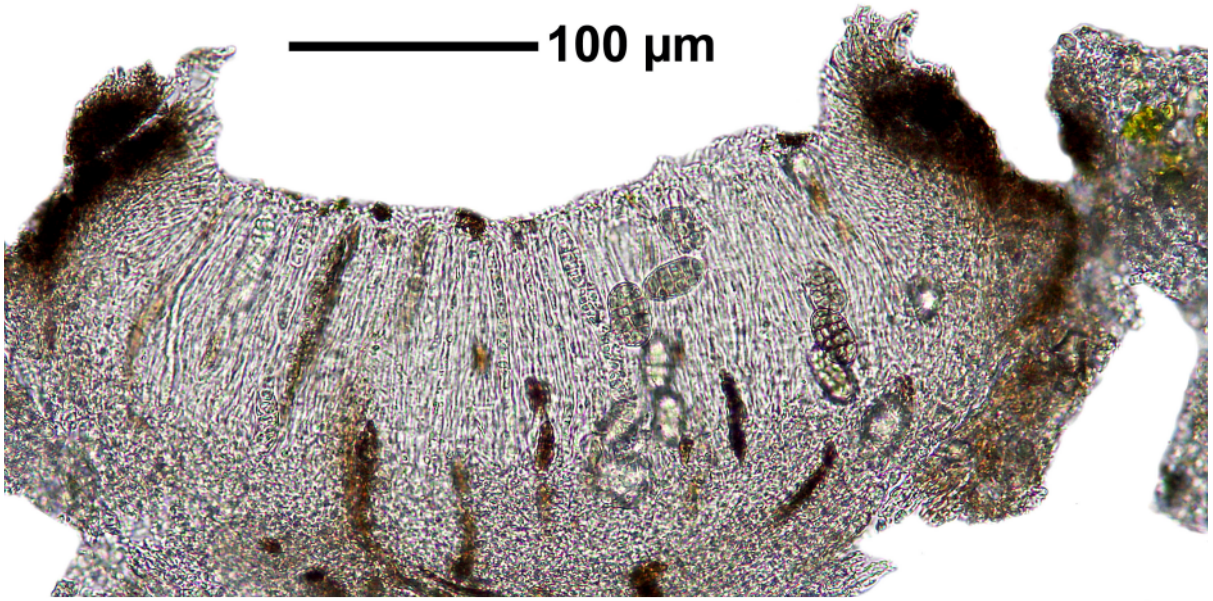
Diploschistes diploschistoides (Vain.) G. Salisb.
[= ***Diploschistes almbornii*** C.W.Dodge]

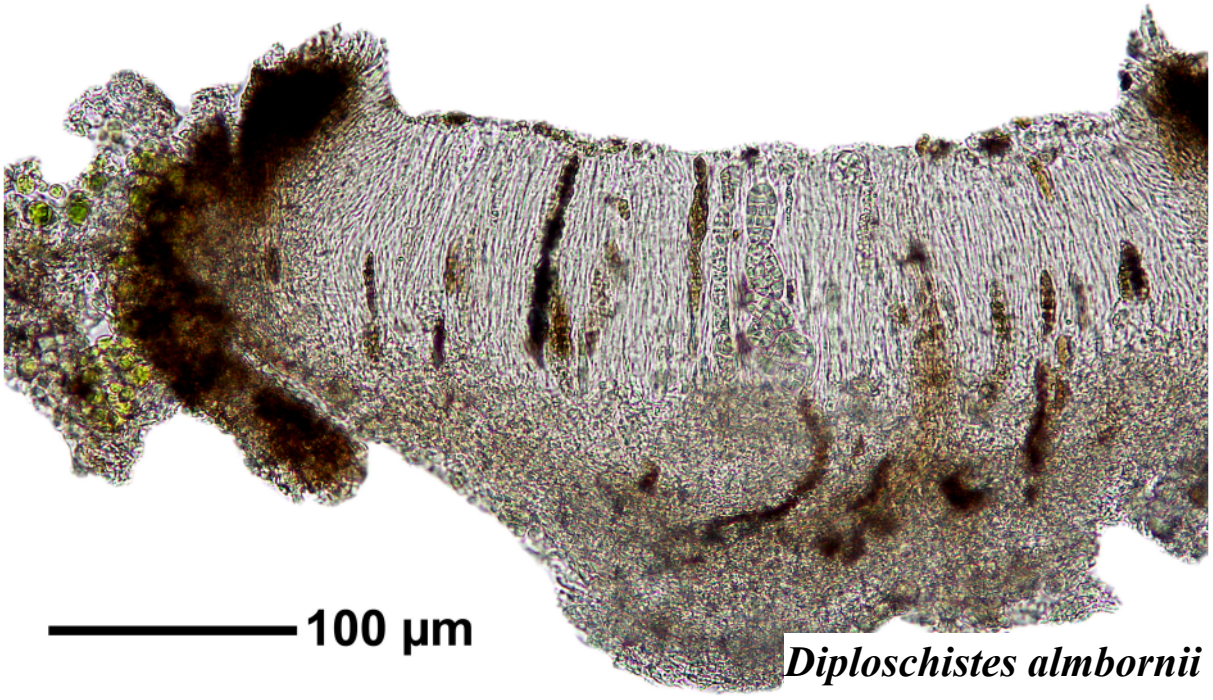
Thallus bluish grey to dark grey, epruinose, to c. 1.7 mm thick, C+ red, growing on siliceous rocks. Ascomata perithecioid. Spores (24-)30-52 x (13)15-26 µm. Containing lecanoric acid as major compond.

[19013], Australia, Western Australia, Gibb River Range, Gibb River Road, 38 km north-east of Gibb River Station, 16°06'S, 126°36'E, 480 m, growing on sandstone rocks in *Eucalyptus* dominated grasslands on gently sloping rocky ridge. Leg. J.A. Elix (27941), H.T. Lumbsch & H. Streimann, 13.07.1991, det. H.T. Lumbsch. Chemistry: lecanoric acid (major), diploschistesic acid (minor), gyrophoric acid (trace) by HPLC, TLC, anal. J.A. Elix & C.E. Barclay. LICHENES AUSTRALASICI EXSICCATI NO. 253. Distributed as *Diploschistes almbornii*.

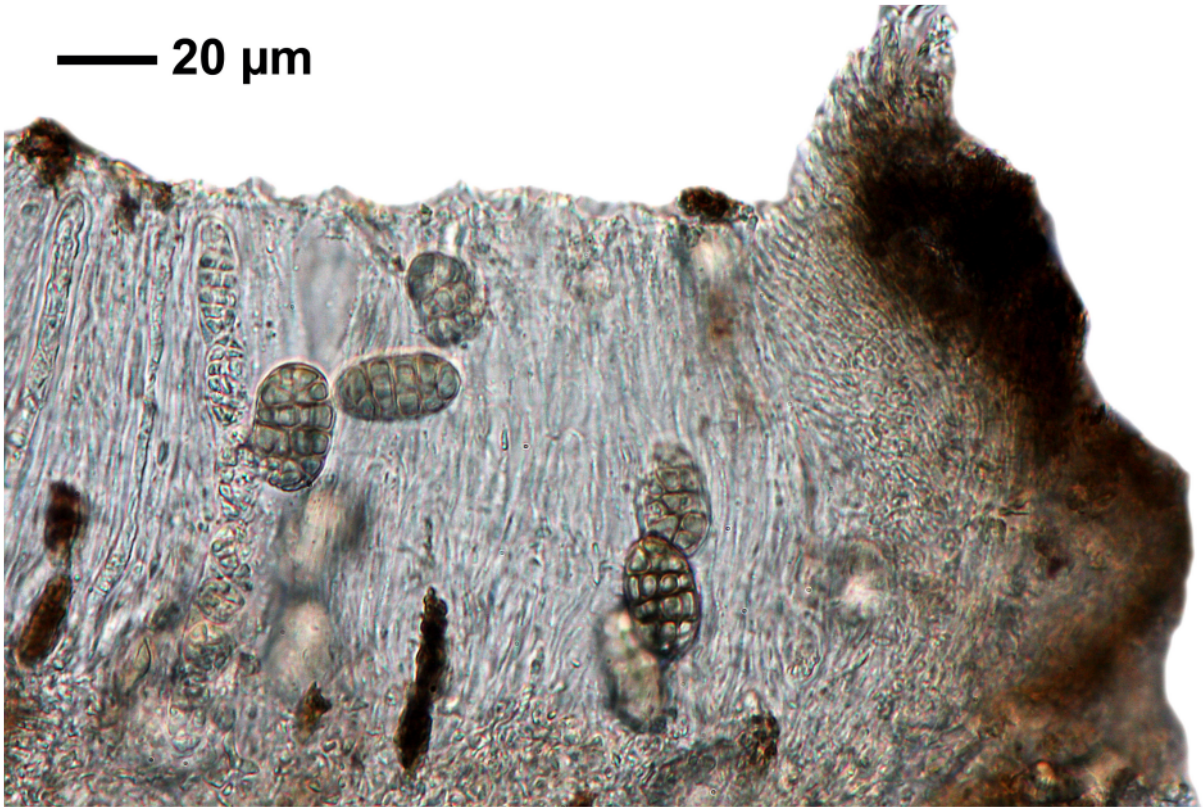


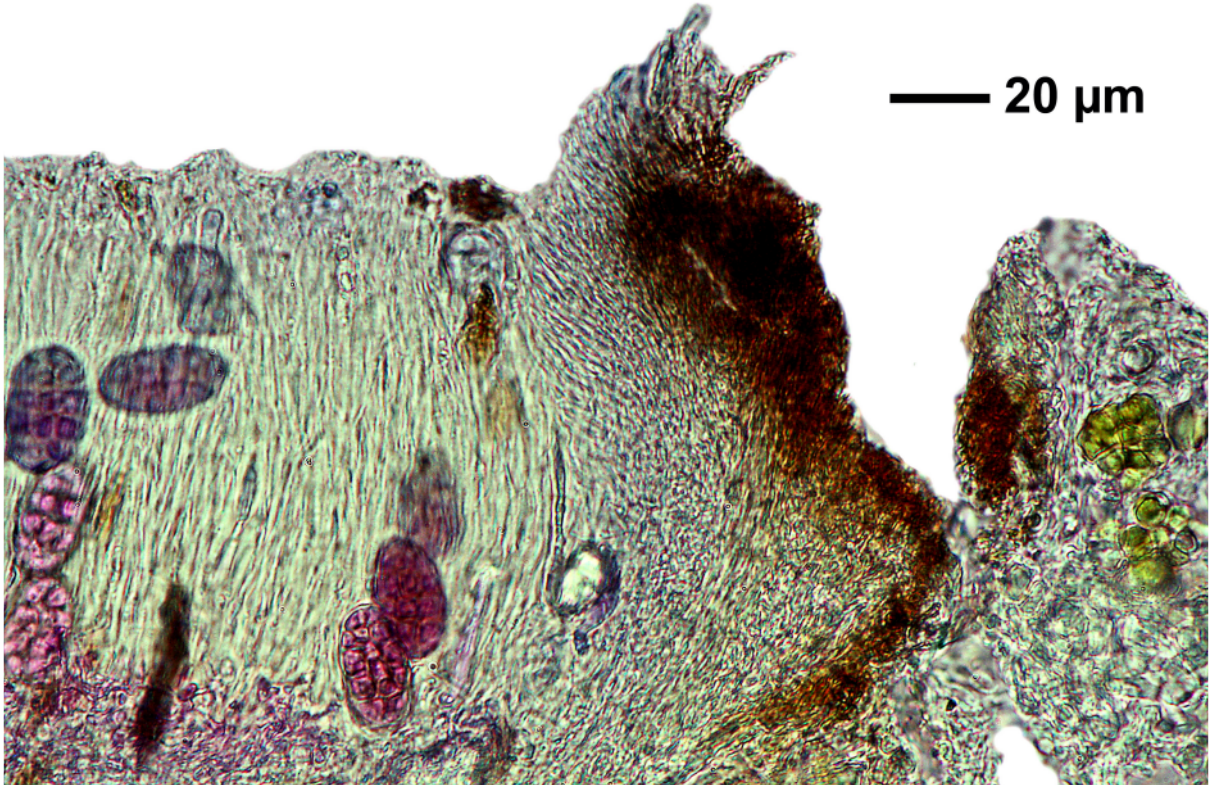




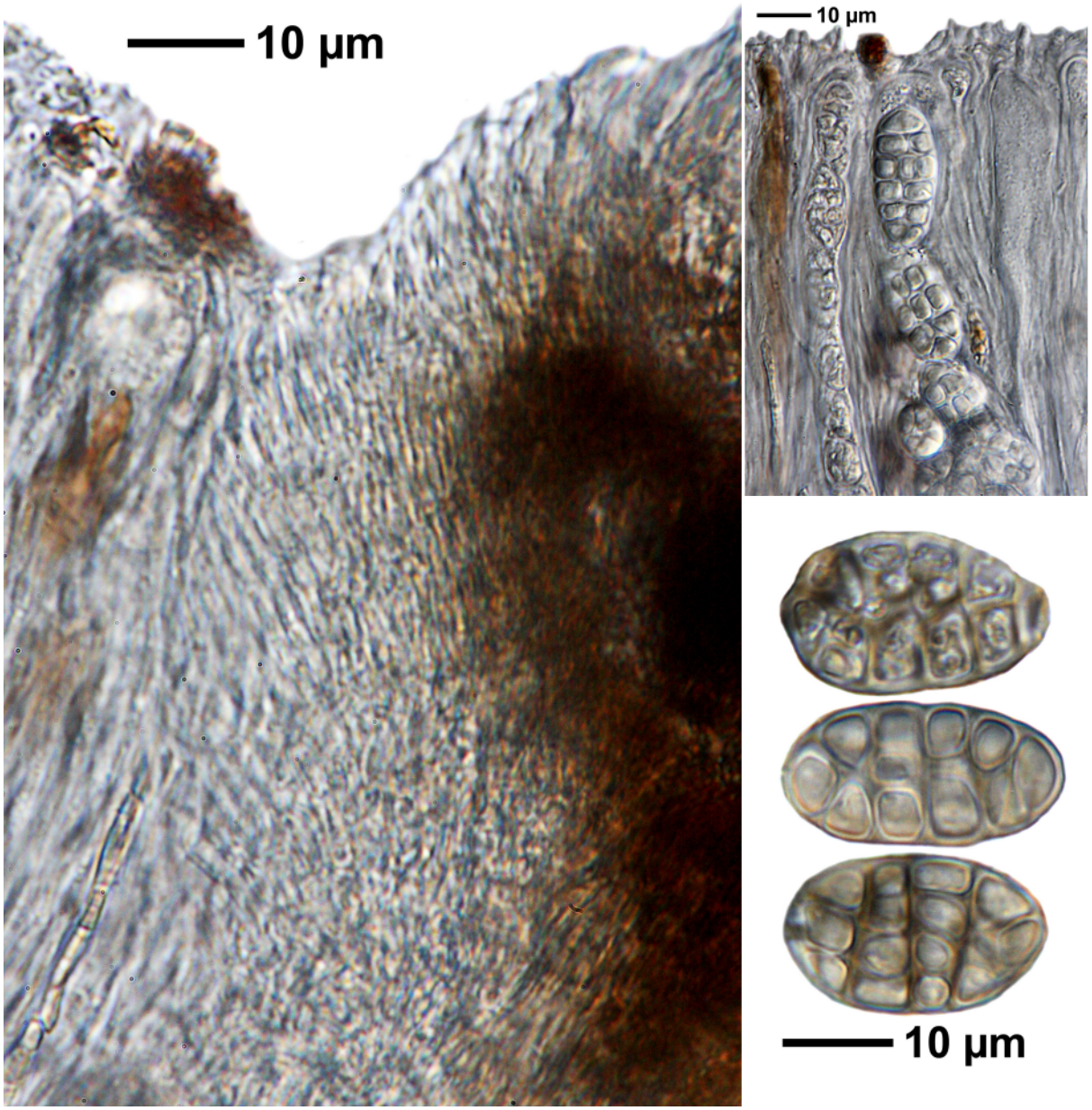


Diploschistes almbornii

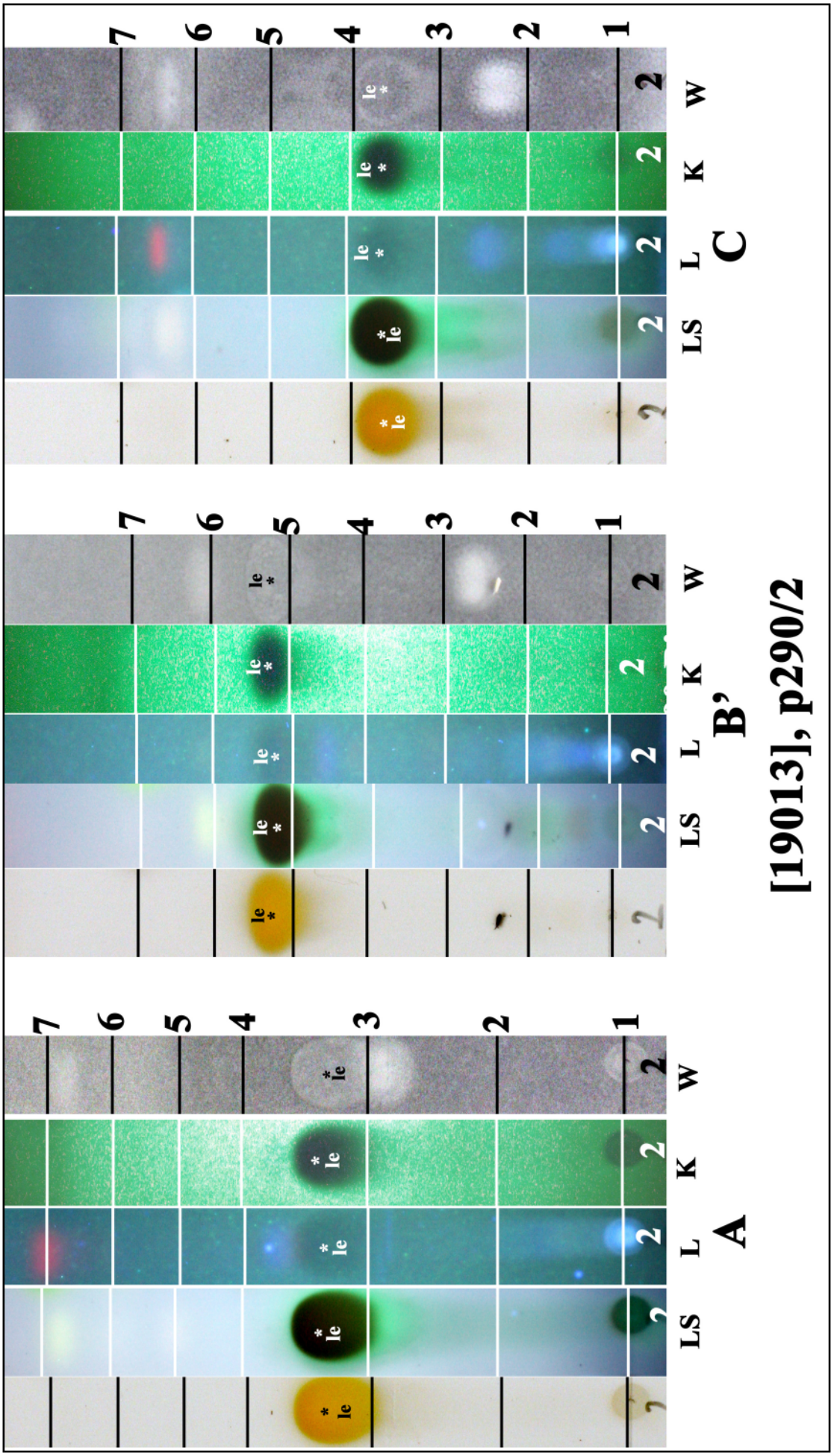




Diploschistes almbornii



Diploschistes almbornii



Diploschistes almbornii

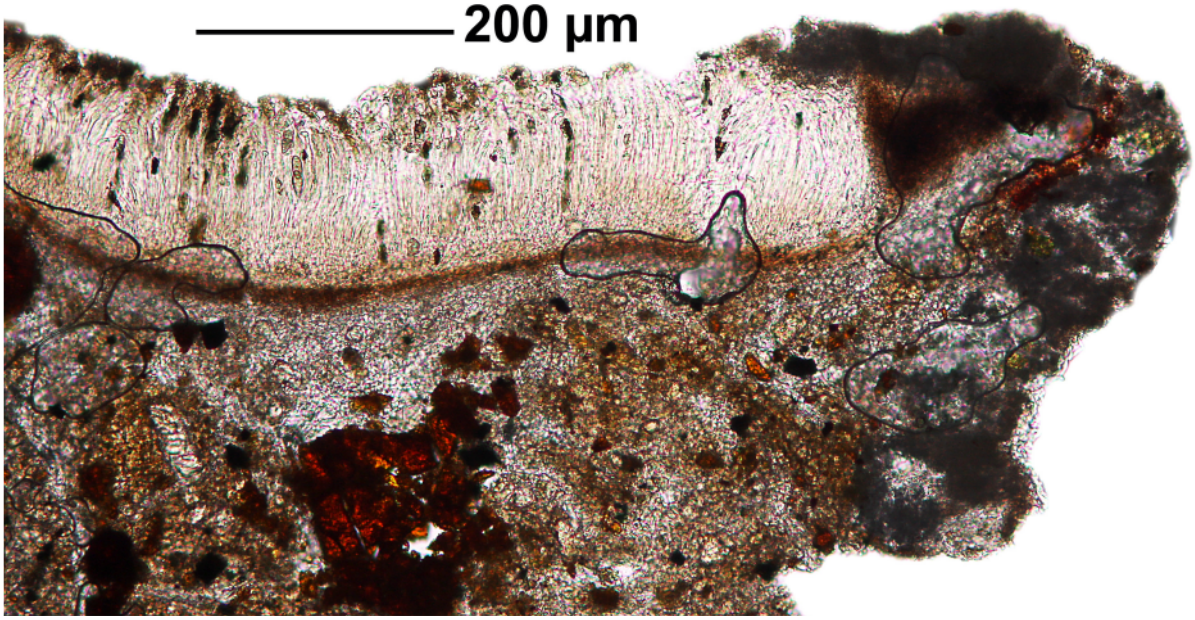
Diploschistes muscorum (Scop.) R.Sant. ssp. ***barlettii*** Lumbsch

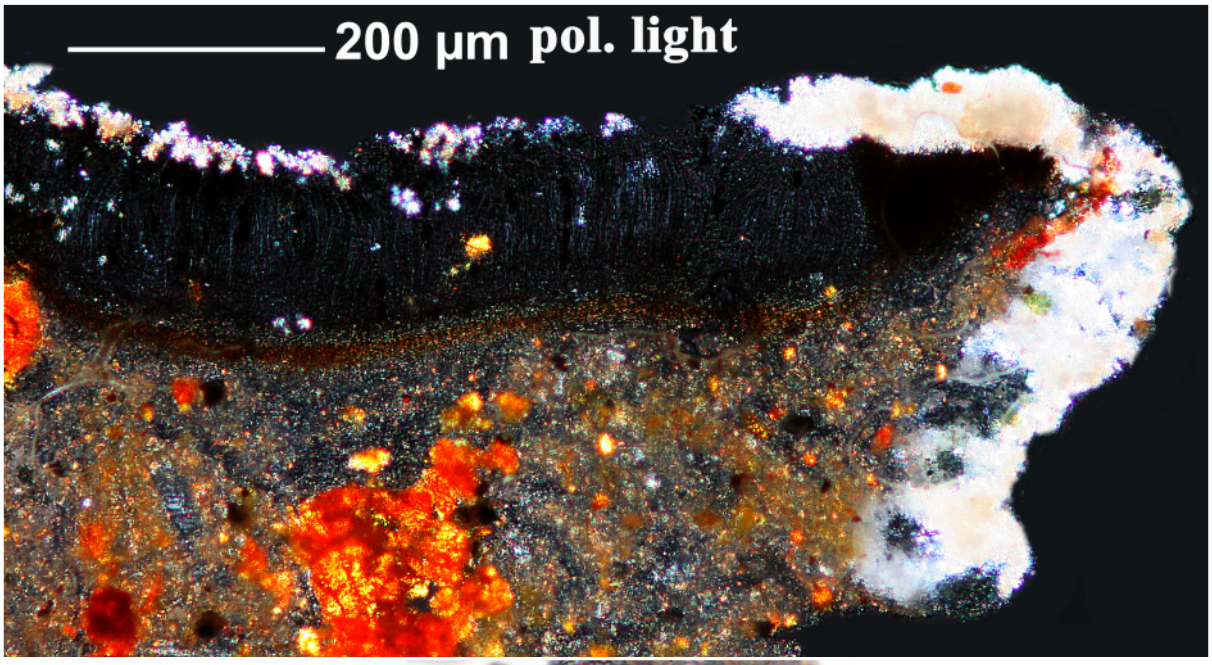
Juvenile thallus a parasite on *Cladonia sp*., fragments of the host can often be found at the margins of mature specimens. Ascomatal disc urceolate. Spores brown, 8/ascus, 19-30 x 5-14 µm. Containing lecanoric acid, diploschistesic acid. C+ red, P-, K+ yellowish to red.

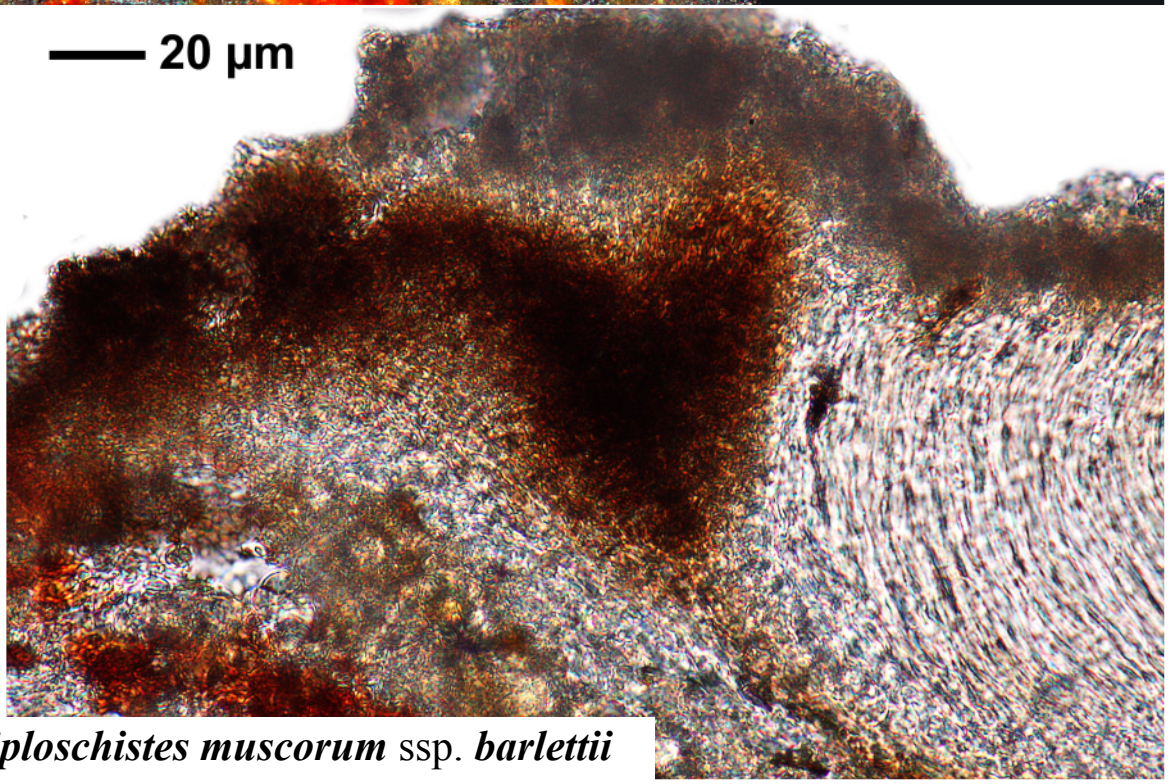
[19014], Australia, Queensland, Atherton Tableland, Palmerston Highway near Millaa Millaa, 17°31' S, 145°37' E, growing on soil near the road. Leg. H.T. Lumbsch (4534a) & A. Titze 16.08.1987, det. H.T. Lumbsch. Chemistry: lecanoric acid (major), diploschistesic acid (trace), orsellinic acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 155



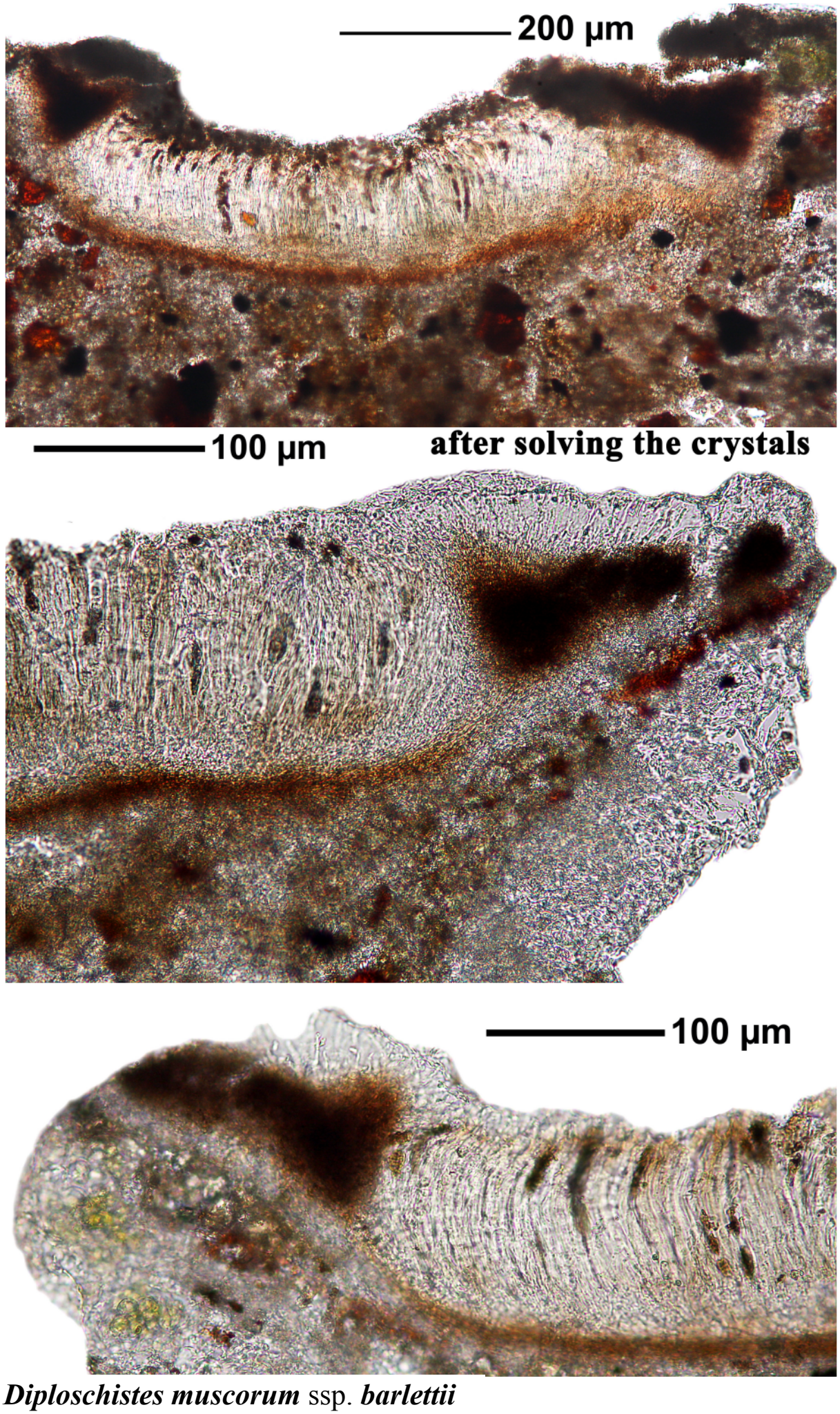




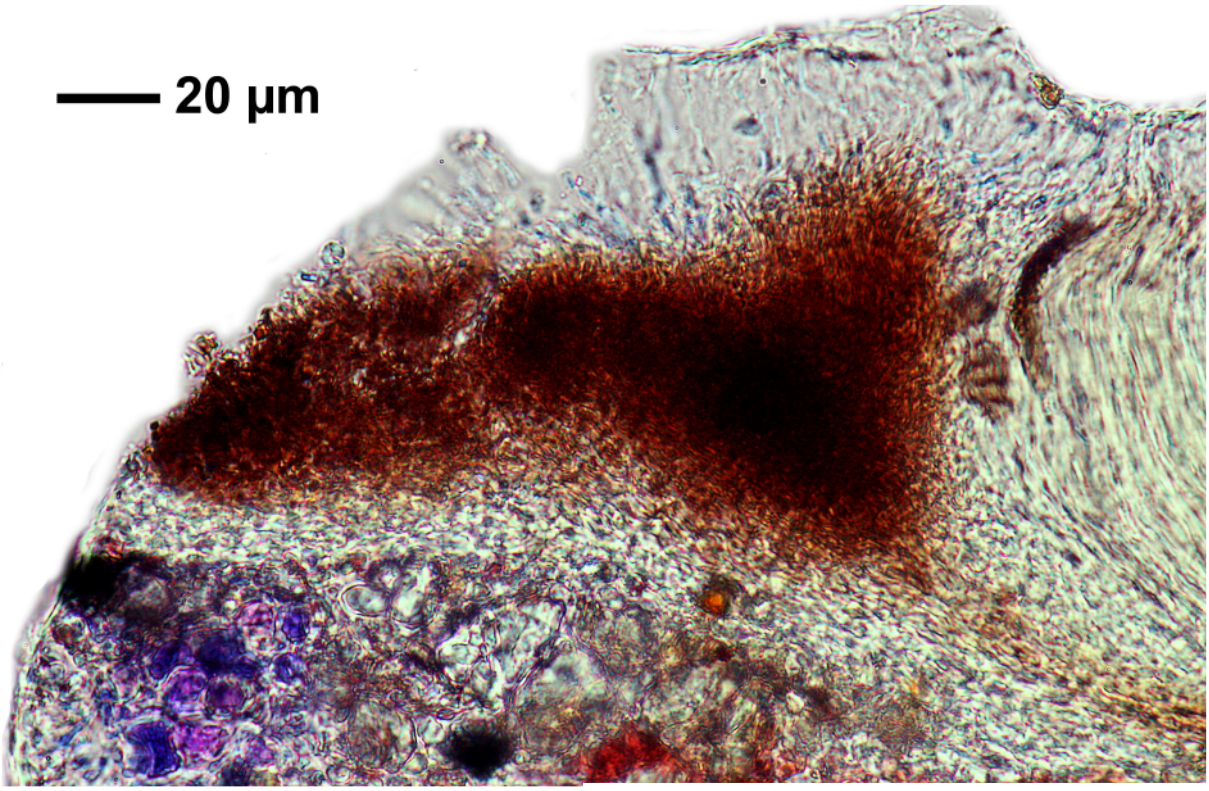




Diploschistes muscorum ssp. ***barlettii***

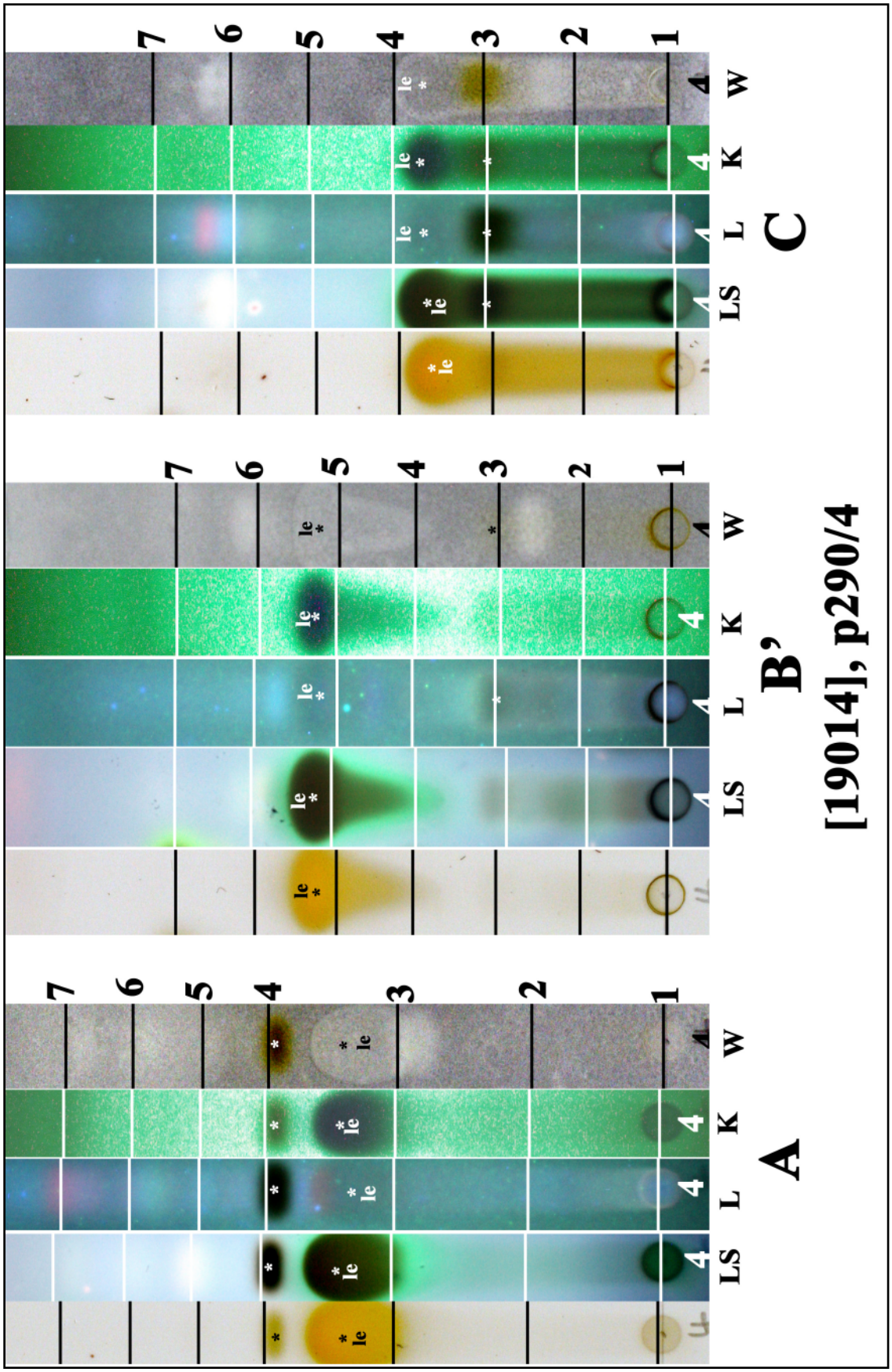


Diploschistes muscorum ssp. ***barlettii***





Diploschistes muscorum ssp. ***barlettii***



le: lecanoric acid

Diploschistes muscorum ssp. ***barlettii***

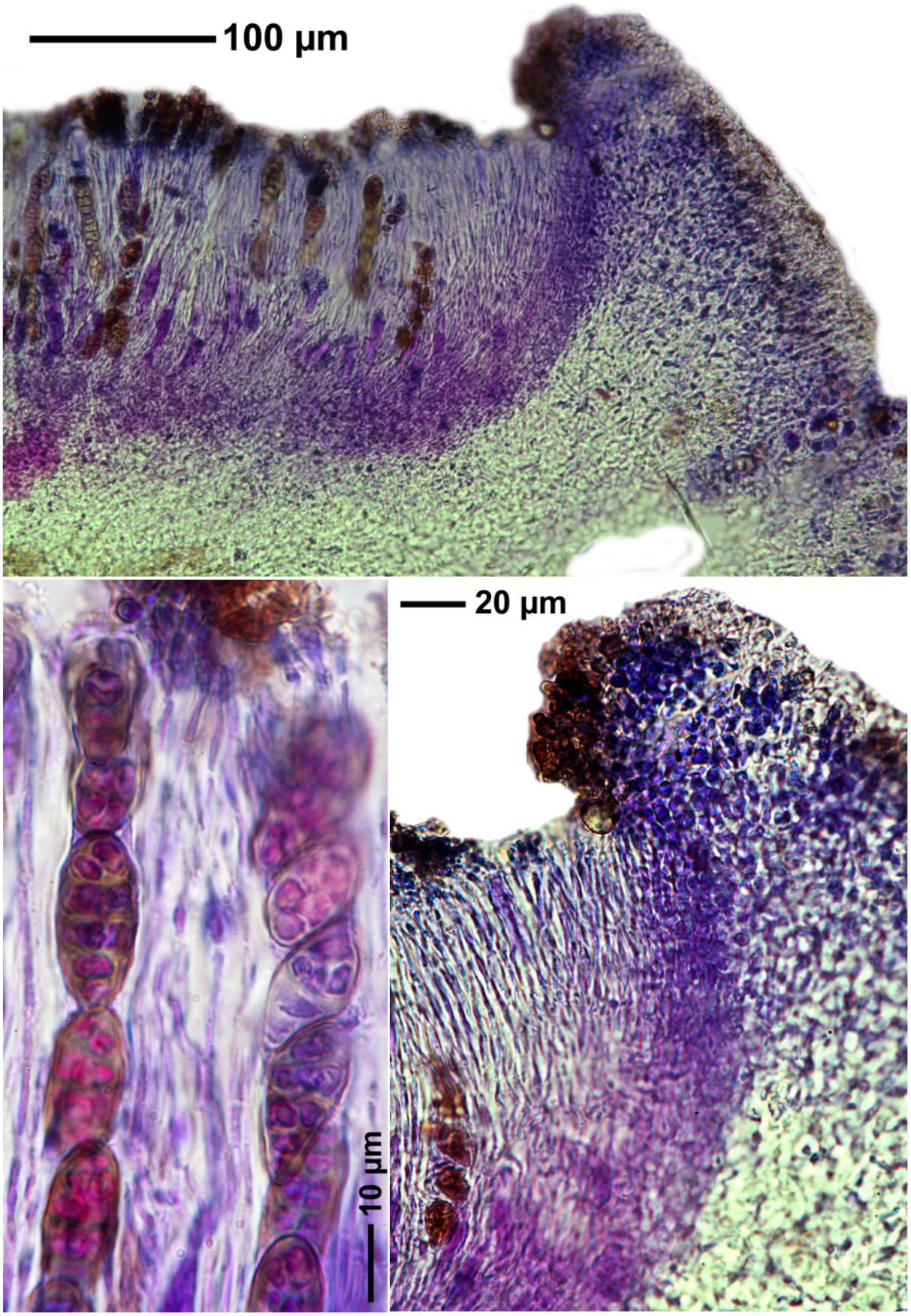
Diploschistes ocellatus (Vill.) Norman

Thallus to c. 4 mm thick, bullate to verrucose-areolate, whitish-pruinose. Apothecia to c. 4 mm diam, sessile, apothecioid. Spores 8/ascus, hyaline to pale brown, non-amyloid, 20-32 x 7-15 µm. Thallus K+ yellow then red, C-, P+ orange, containing norstictic acid (major)

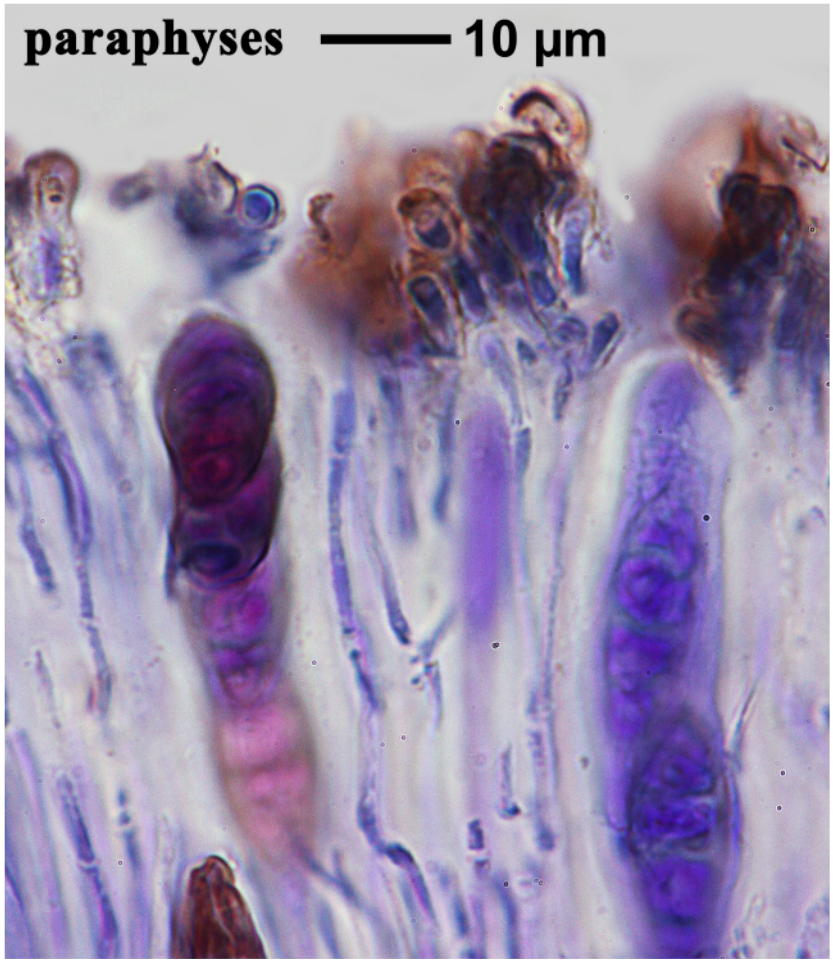
[19015], Australia, South Australia, Eyre Peninsula, 19 km west of Iron Knob, 32°50' S, 137°01' E, 250 m, growing on soil in savannah with *Casuarina*, *Myoporum* and *Santalum* with an understorey of *Chenopodium* and *Maireana*. Leg. H.T. Lumbsch (10734c) & J. Curnow, 05.09.1994, det. H.T. Lumbsch. Chemistry: norstictic acid (major), connorstictic acid (minor), unknown (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICIC EXSICCATI NO. 279

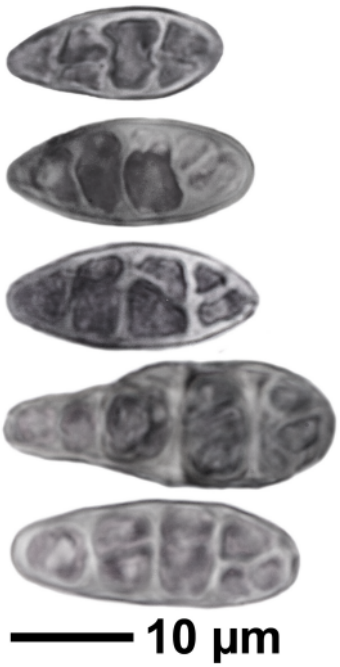


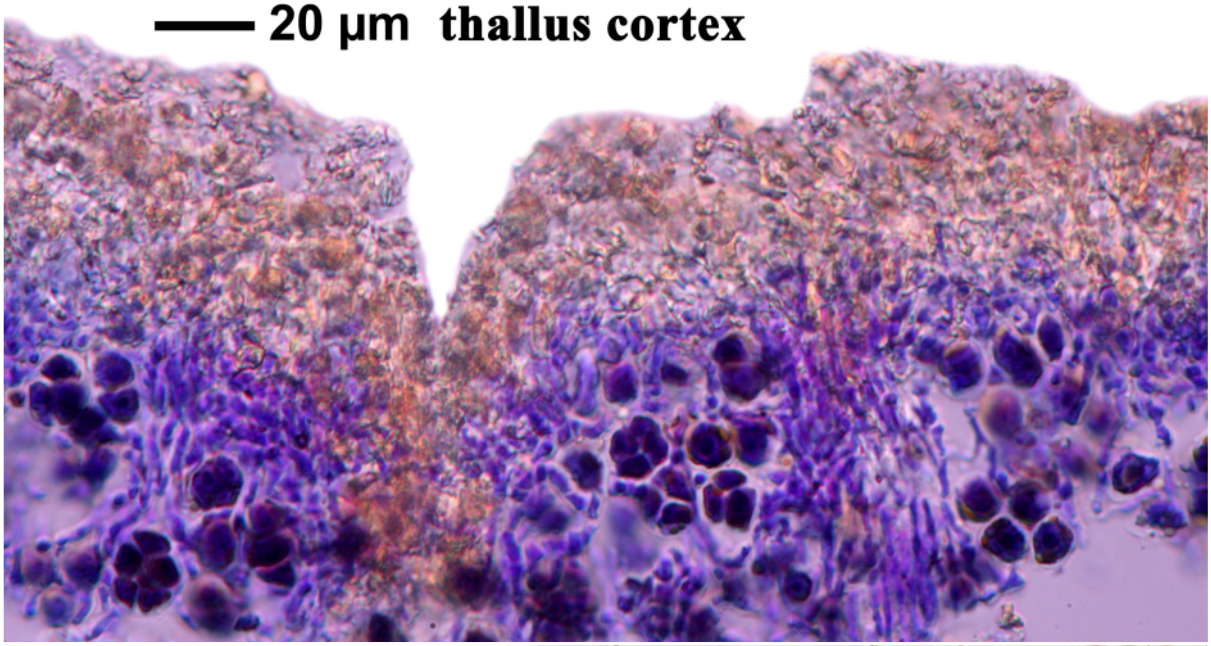


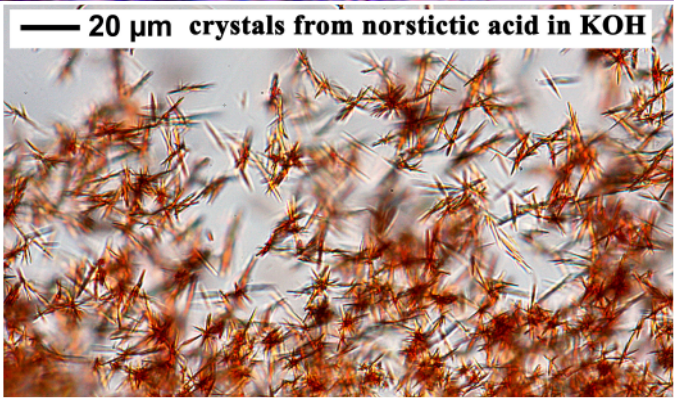


Diploschistes ocellatus

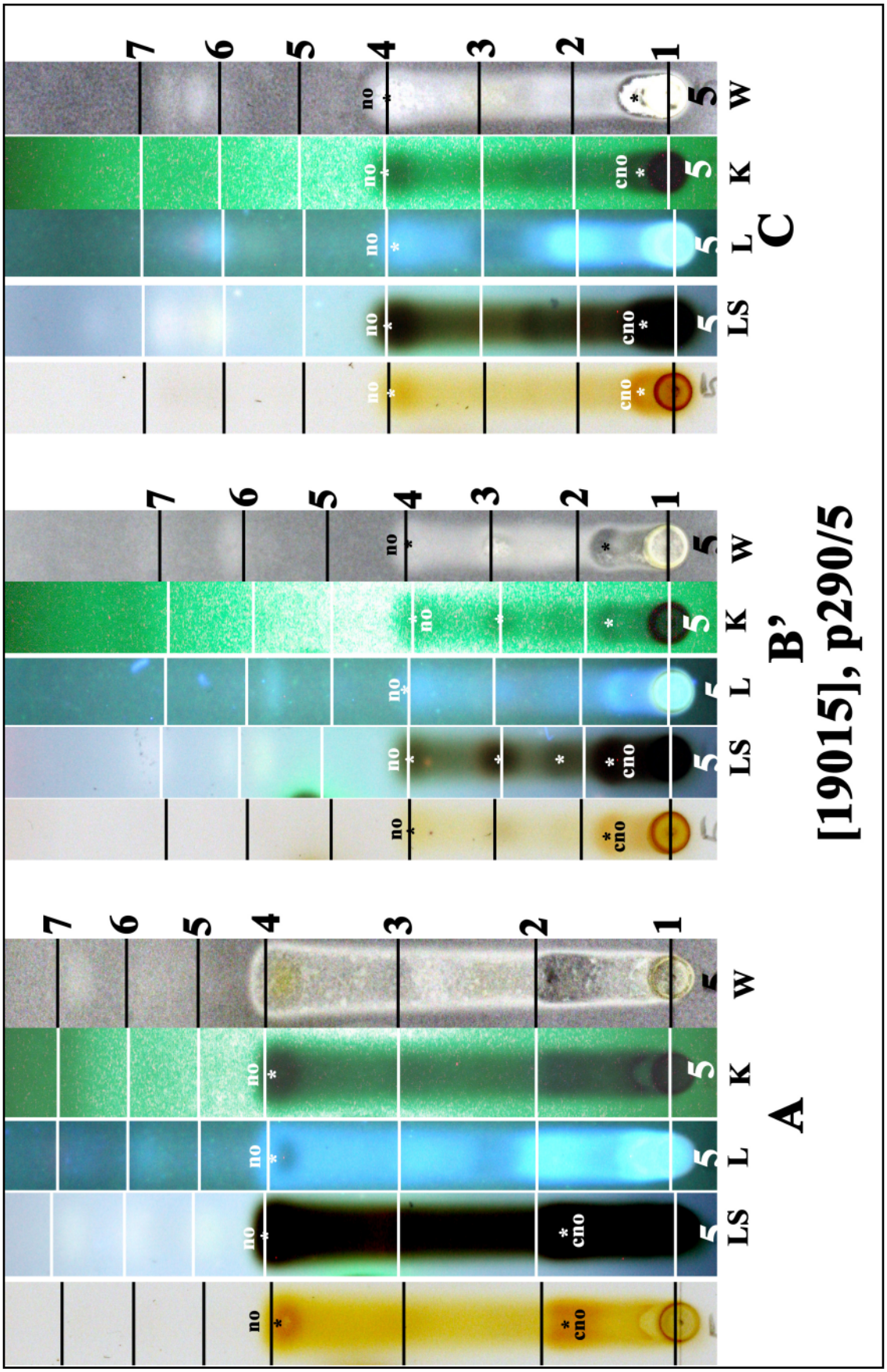








Diploschistes ocellatus



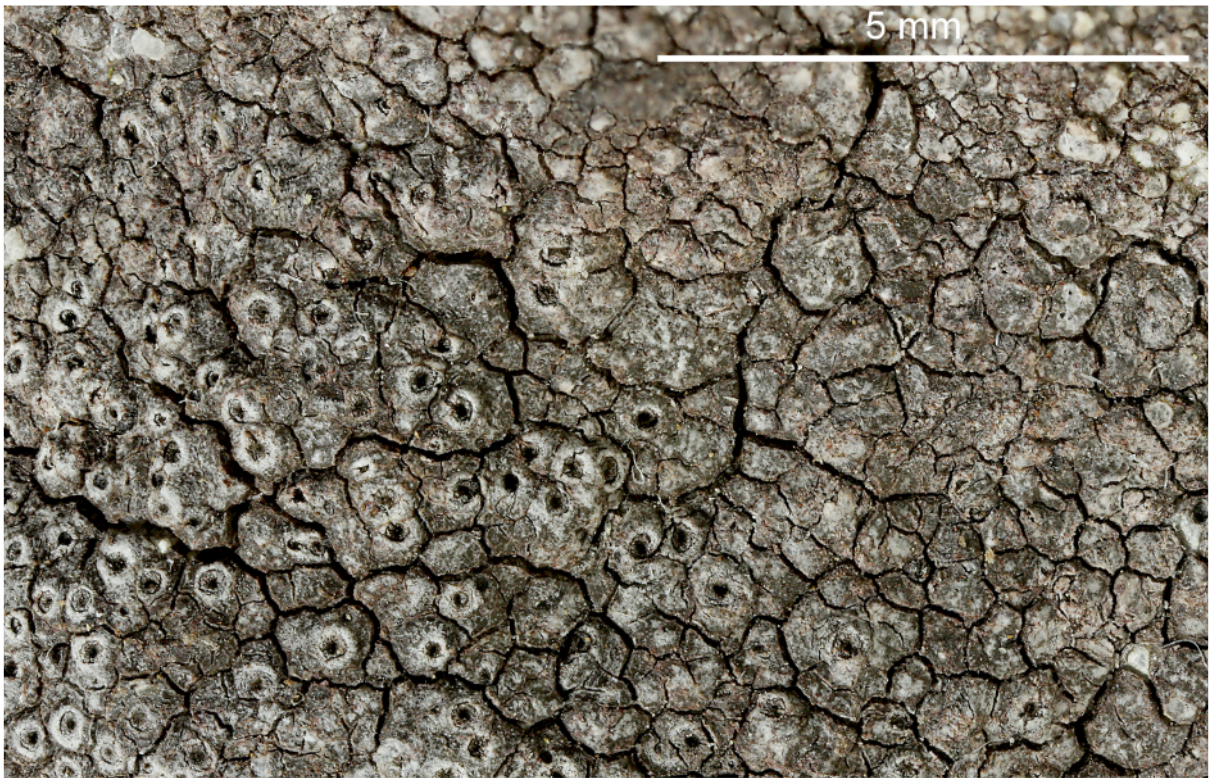
no: norstictic acid, cno: connorstictic acid

Diploschistes ocellatus

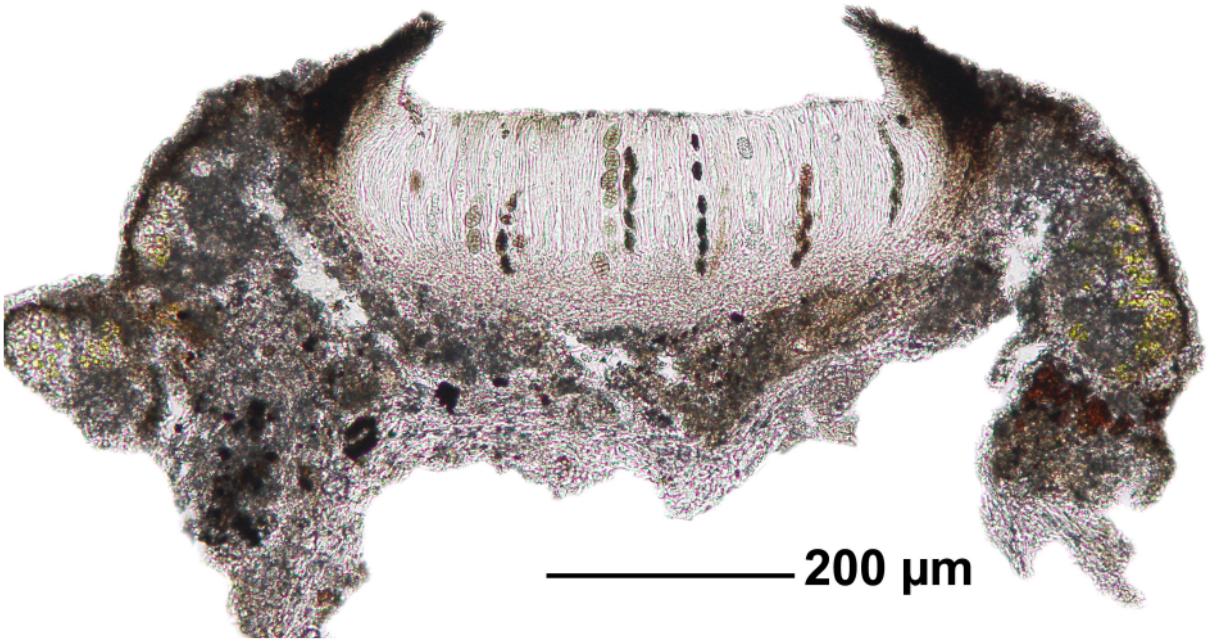
Diploschistes sticticus (Körb.) Müll.Arg.

Thallus bluish grey to brown, smooth, rimose-areolate, epruinose, growing on siliceous rocks, C+ red, containing gyrophoric acid (major), lacking 2''-*O*-methylgyrophoric acid, K-, C+ red, P-. Apothecia perithecioid, to c. 0.75 mm diam. Pores minute, to c. 0.1 mm diam. Spores 6-8/ascus, 18-29 x 10-15 µm.

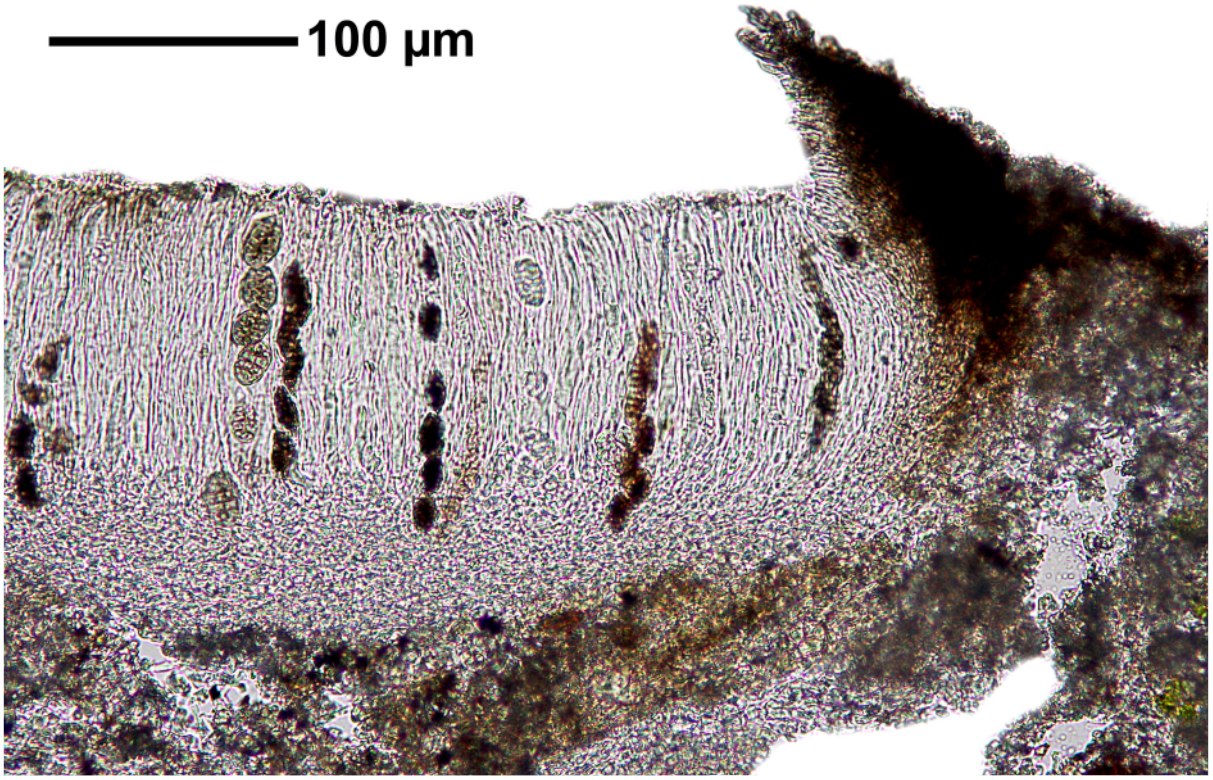
[19017], Australia, Queensland, Mount Mistake, near Doggs Falls, 28°20' S, 152°20' E, growing in rocks in pasture. Leg. H.T. Lumbsch (5699a) & R.W. Rogers, 29.09.1987, det. H.T. Lumbsch. Chemistry: gyrophoric acid, unknown (traces) by HPLC, TLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 156

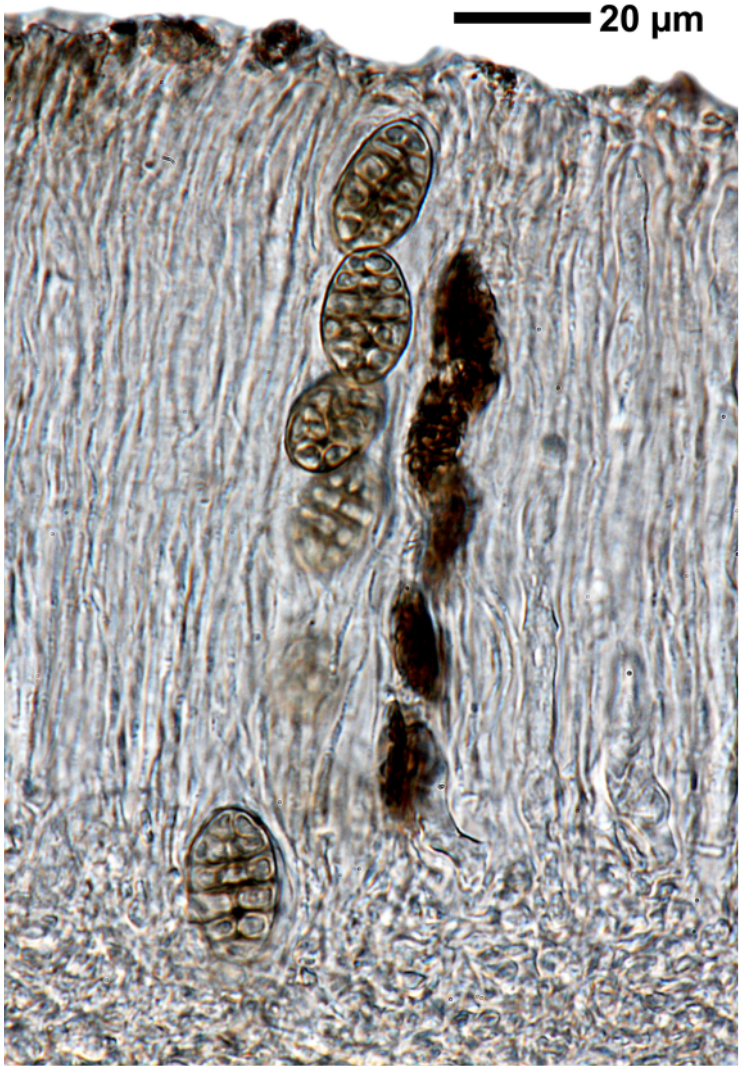






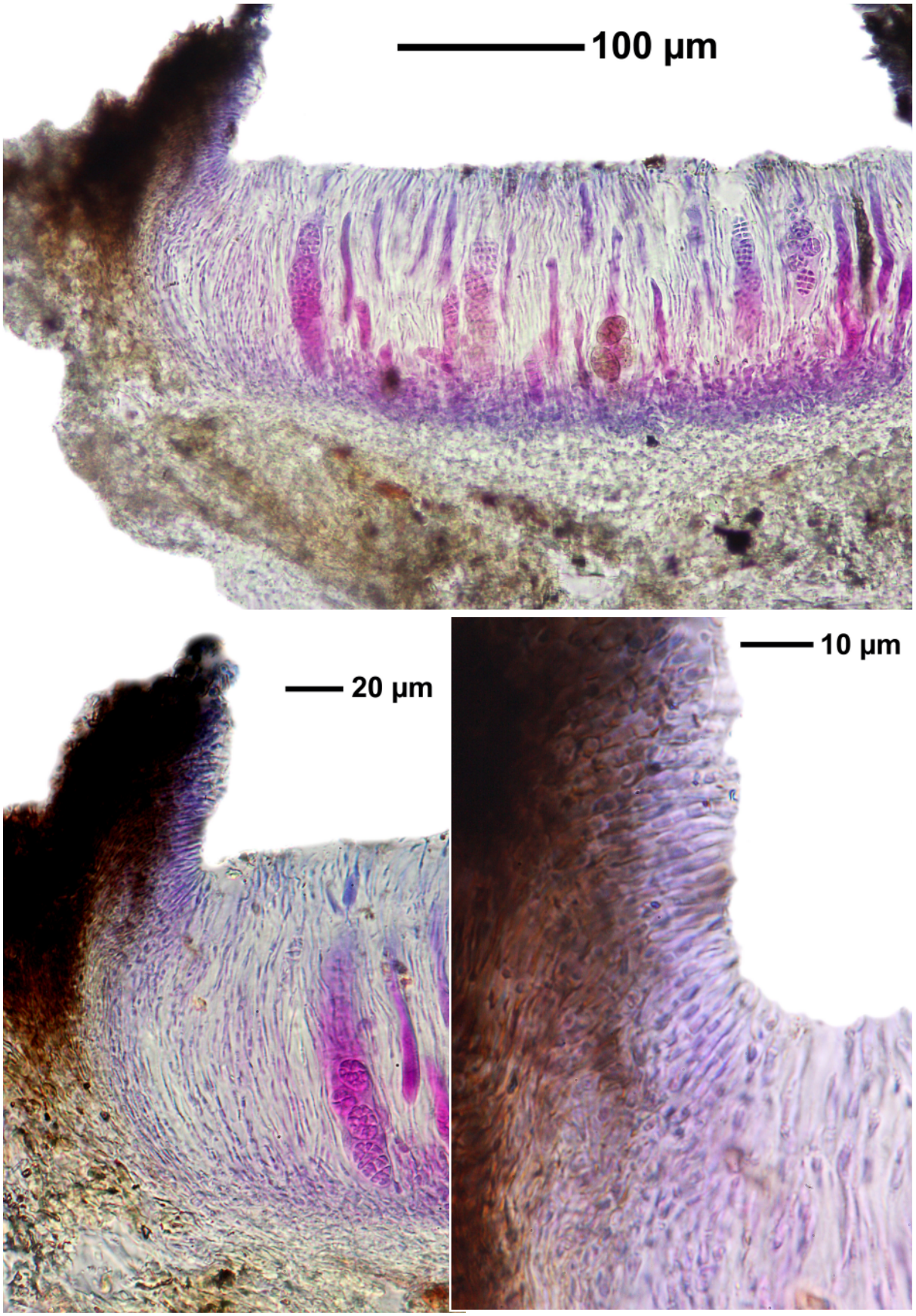
Diploschistes sticticus







Diploschistes sticticus

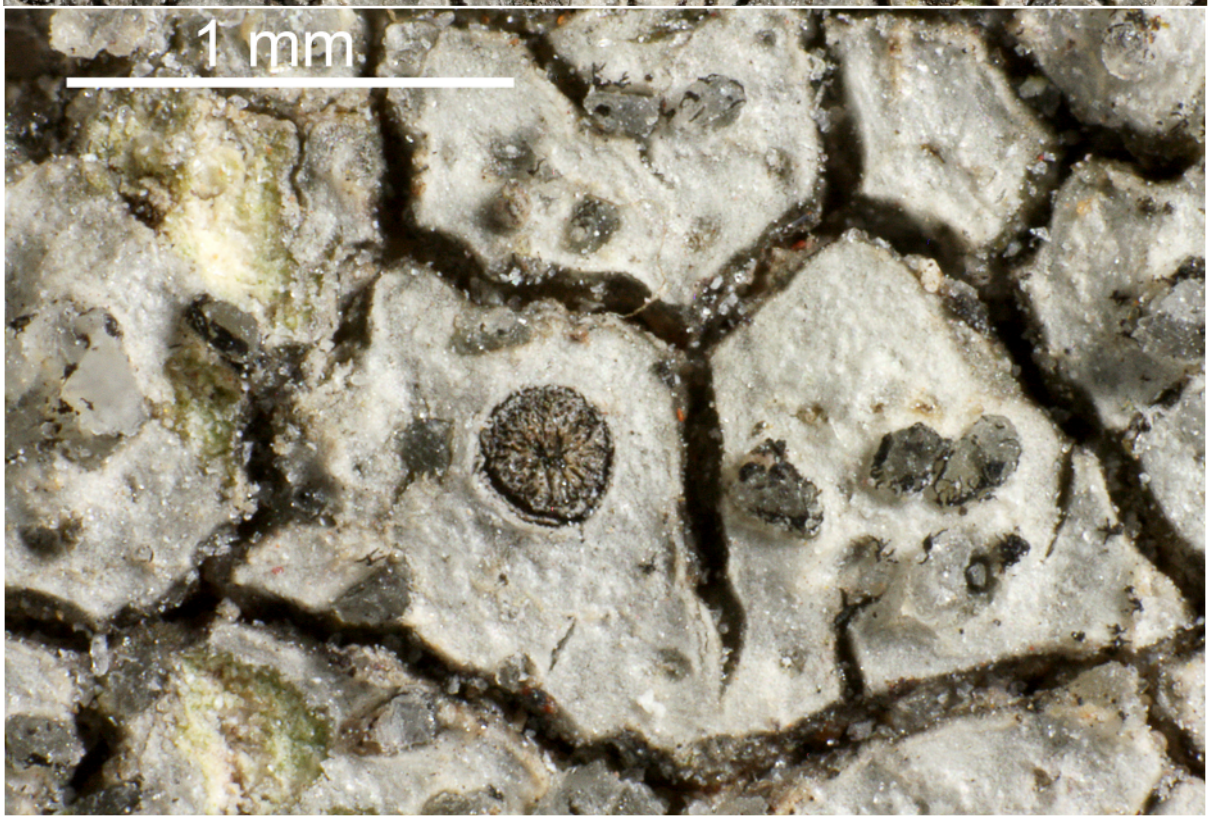


Diploschistes sticticus

Diploschistes sticticus (Körber) Müll.Arg.

[19045], Australia, Western Australia, along the Gibb River Road, 74 km south-west of Wyndham, 15°44' S, 127°31' E, 300 m, growing on sandstone rocks in Eucalyptus dominated grasslands with Xanthostemum, Gordenia and Glochidion on rocky slope. Leg. J.A. Elix (27877), H.T. Lumbsch & H. Streimann, 11.07.1991, det. H.T. Lumbsch. Chemistry: gyrophoric acid by HPLC, TLC, anal. J.A. Elix & C.E. Barclay. LICHENES AUSTRALASICI EXSICCATI NO. 254

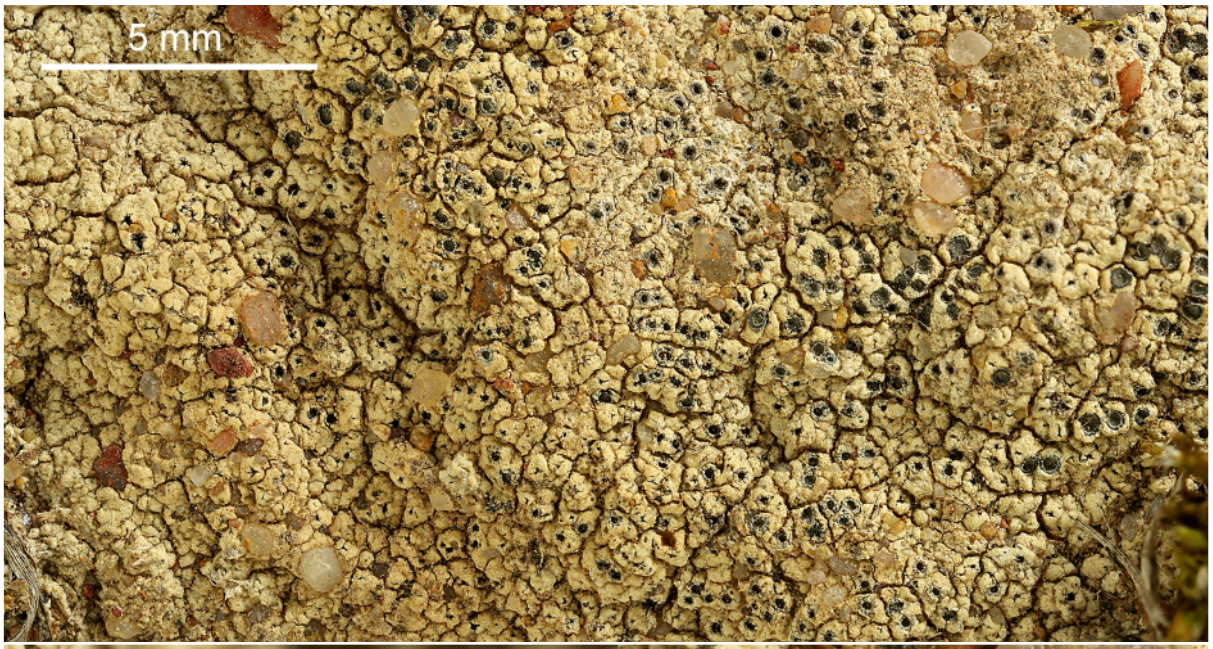


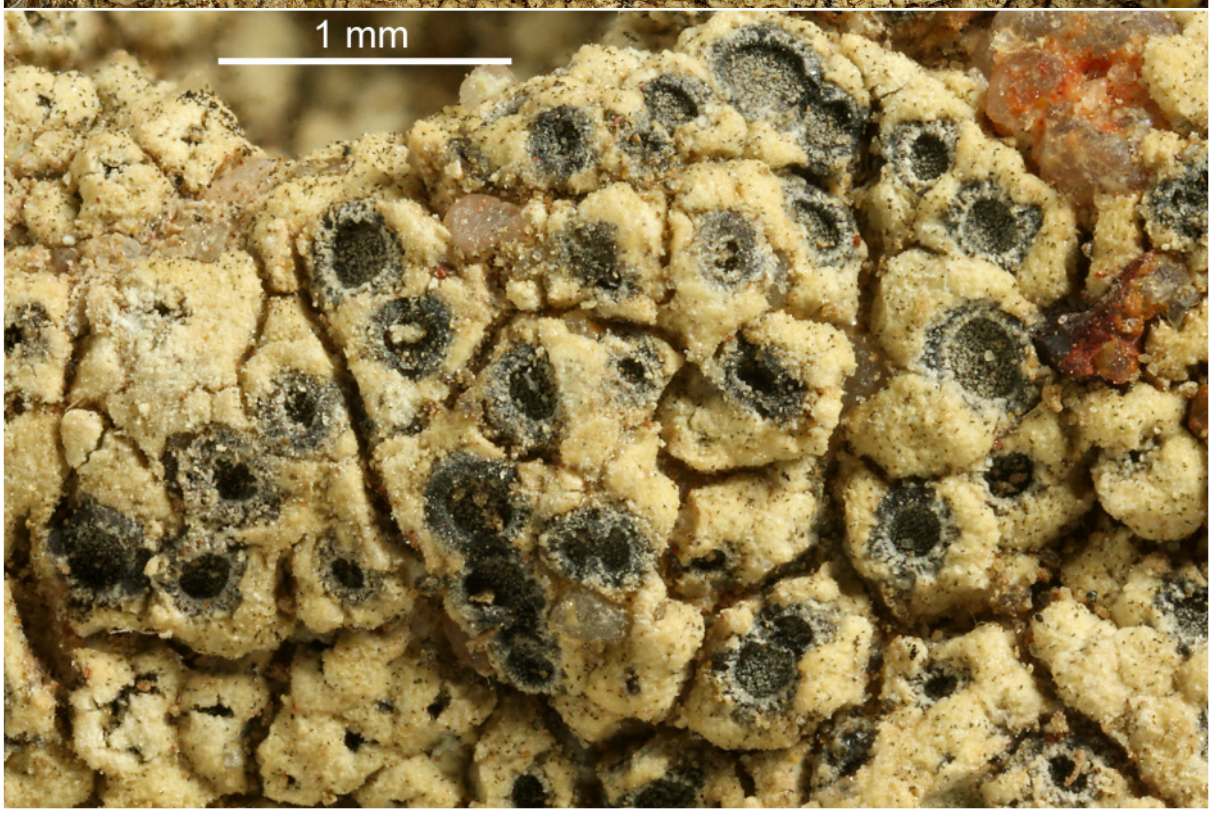


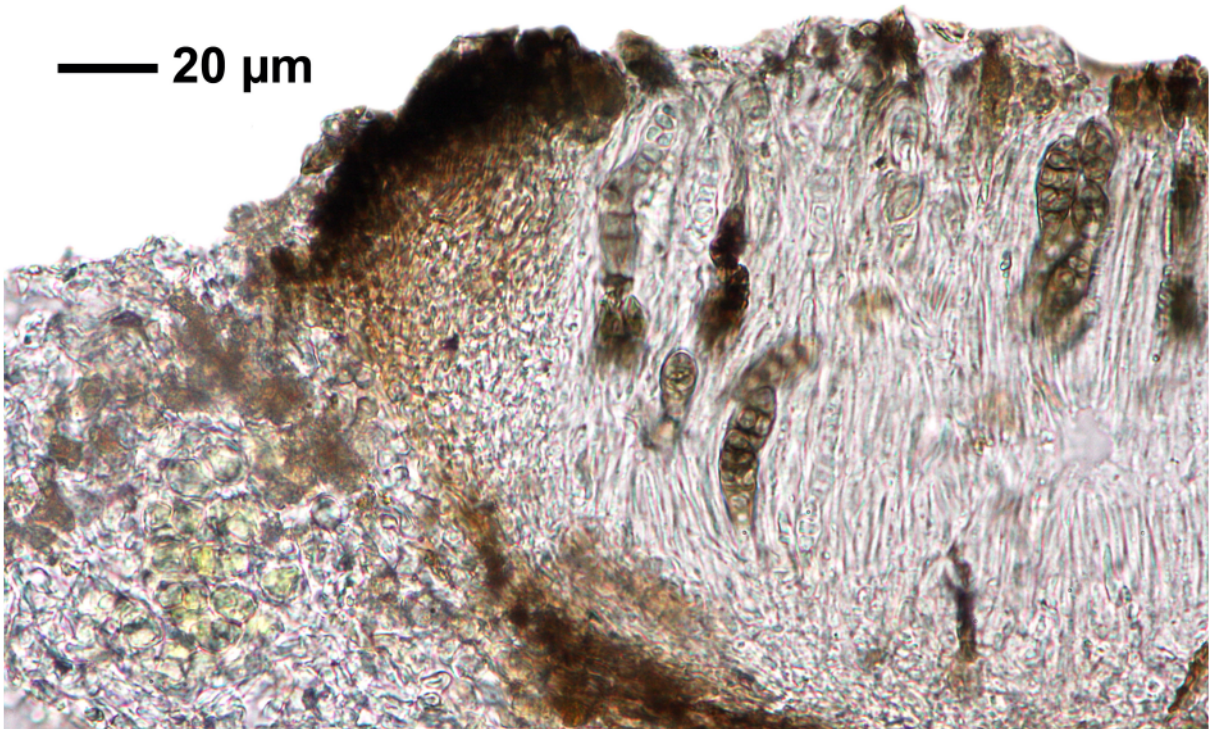
Diploschistes thunbergianus Lumbsch & Vězda

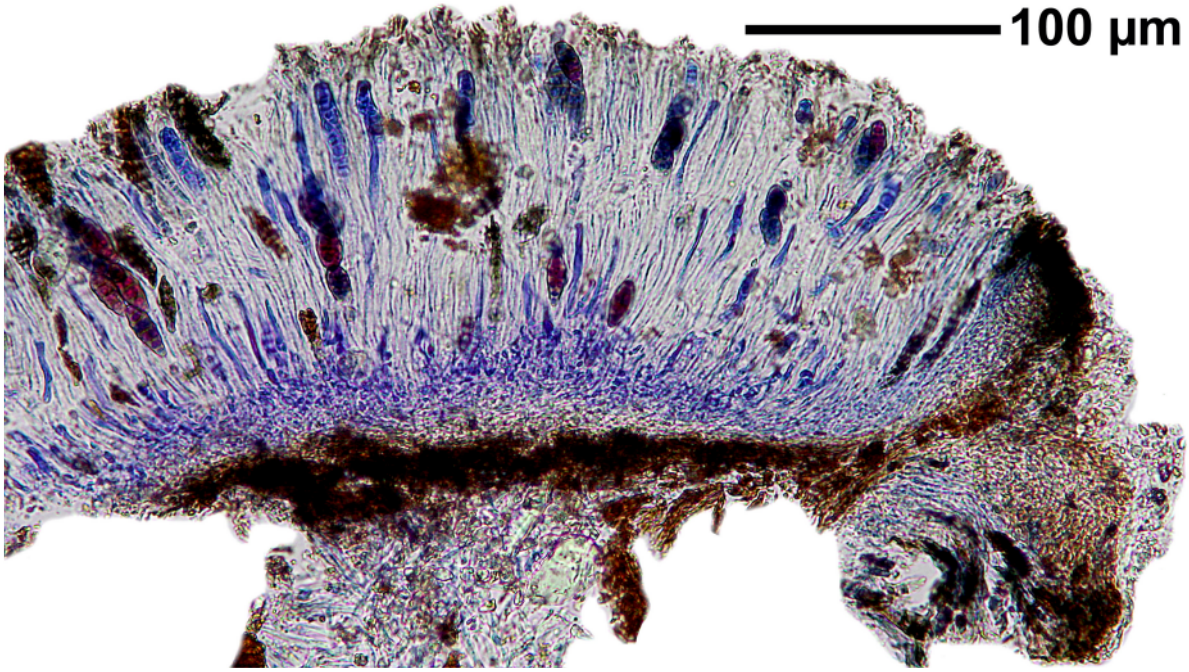
Thallus whitish pruinose, on soil, not lichenicolous. Ascomatal disc urceolate, immersed. Spores 4-8/ascus, 16-28 x 6-16 µm. C+ red, P-, K+ yellowish to red. Containing lecanoric acid, diploschistesic acid.

[19018], Australia, Western Australia, "Box Gorge", between Northhampton and Port Gregory, growing on soil with an easterly aspect. Leg. H.T. Lumbsch (5558d), 01.09.1987, det. H.T. Lumbsch. Chemistry: lecanoric acid (minor), diploschistesic acid (major), gyrophoric acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 255





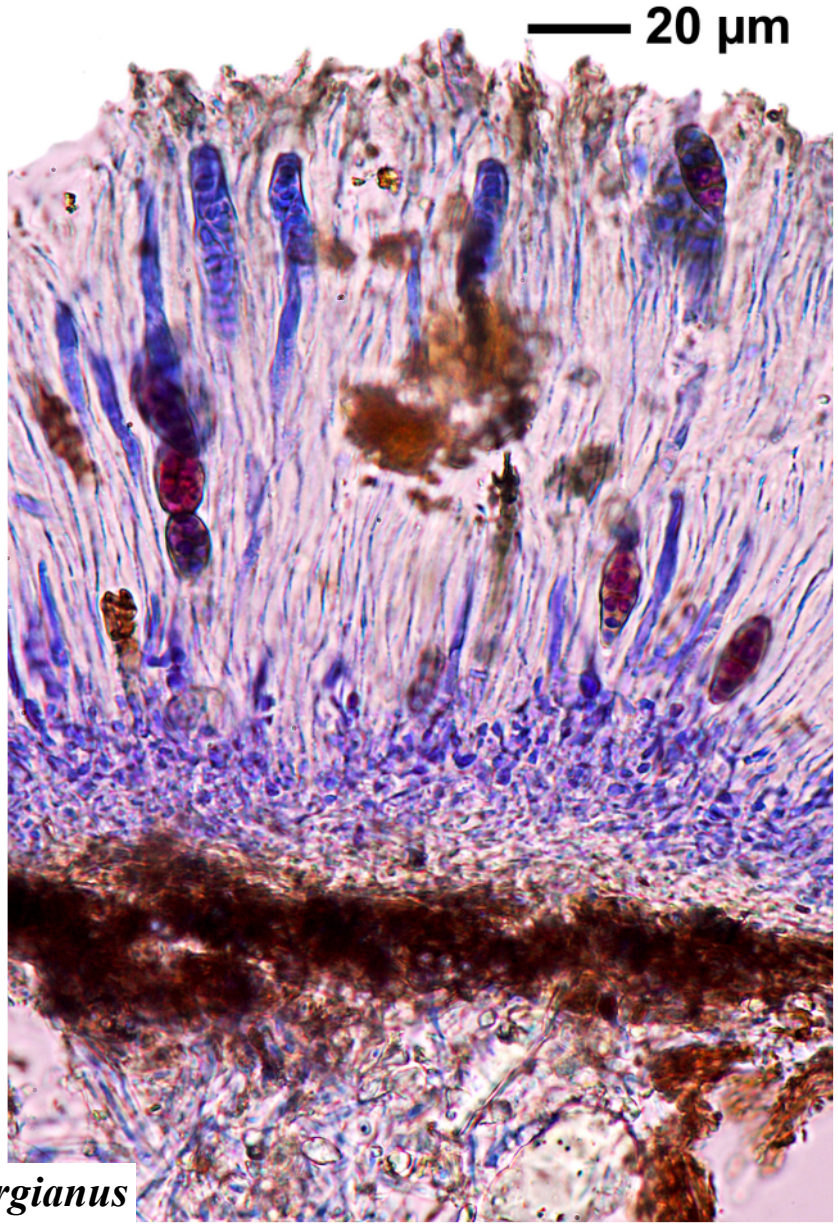




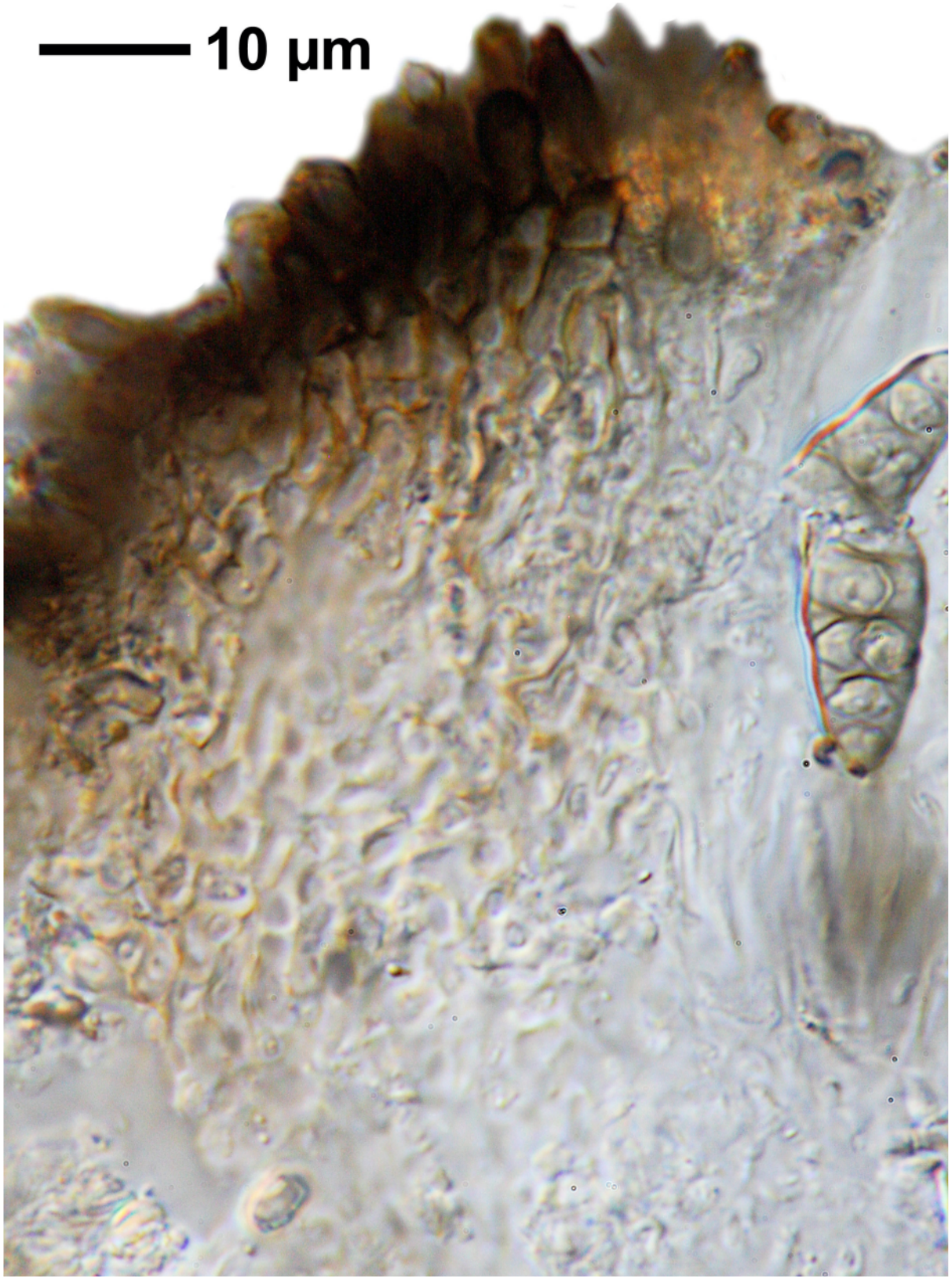


Diploschistes thunbergianus

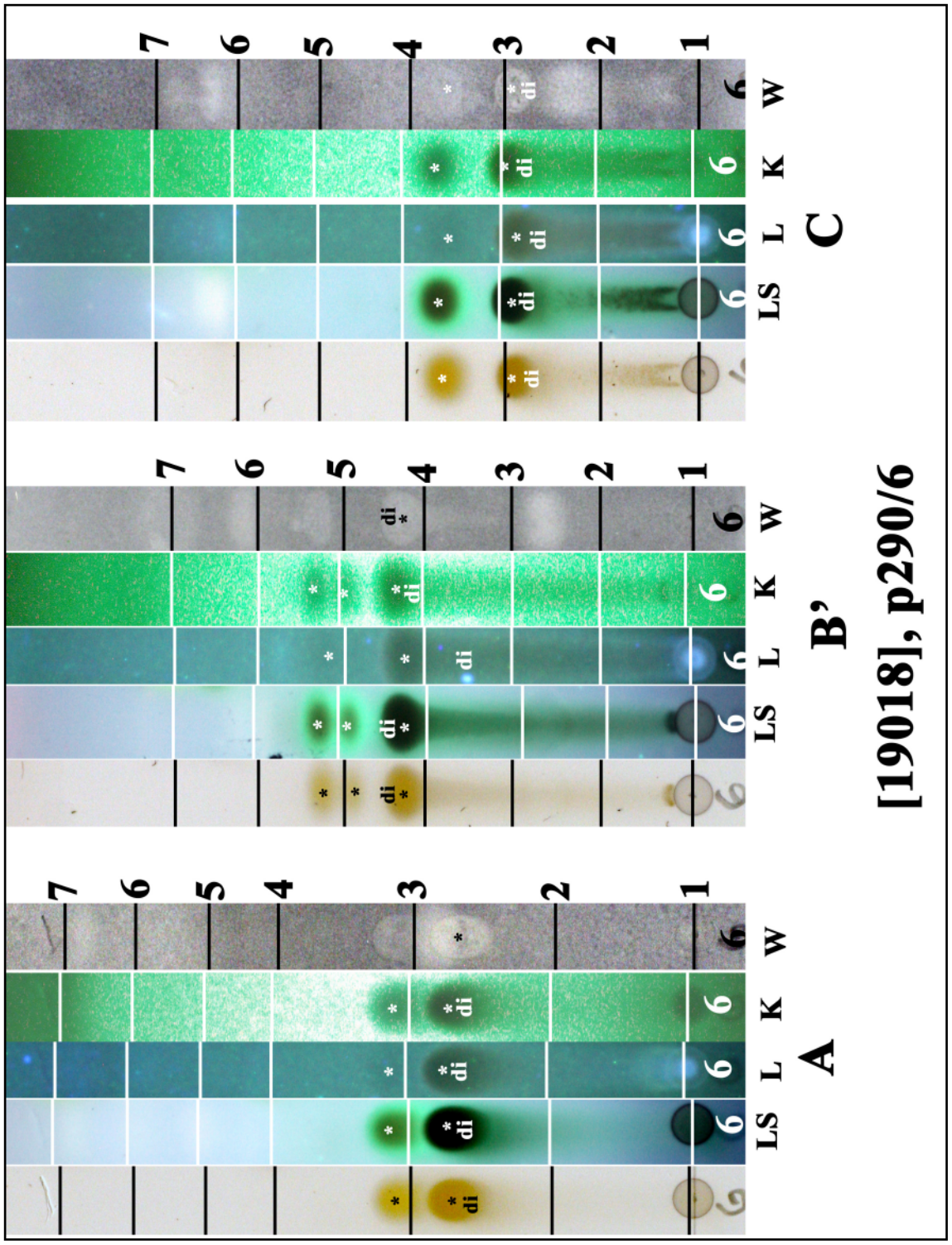




Diploschistes thunbergianus



Diploschistes thunbergianus

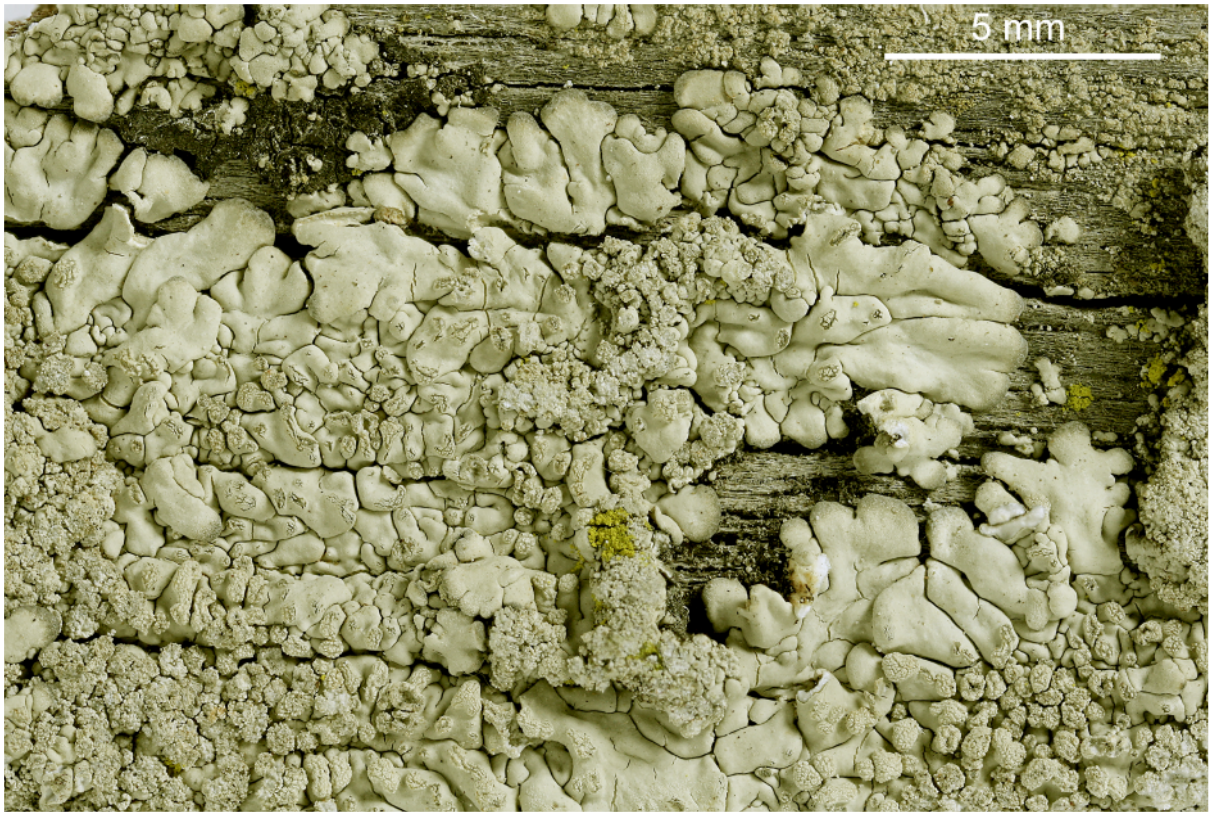


Diploschistes thunbergianus

Dirinaria aegialita (Afzel. ex Ach.) B.J.Moore

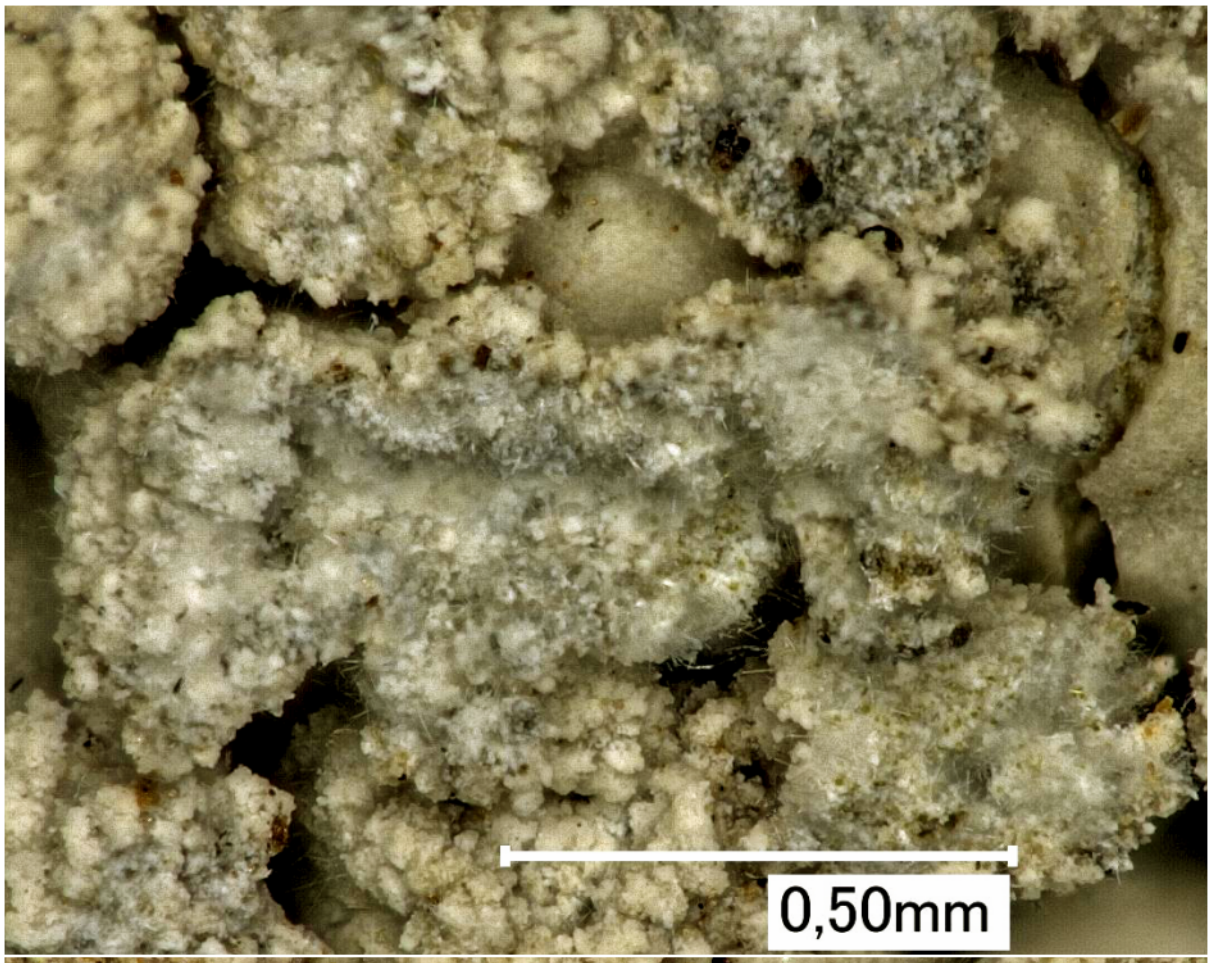
Thallus dactylate; dactyls clavate, bursting open at the apices and producing corticate granules and soredia. Medulla white in the upper part, lower medulla often orange. Lower surface black in the centre, brown at the margins. Hypothecium dark brown to brown-black. Spores 16-22 x 7-9 µm. Chemistry: atranorin (minor), chloroatranorin (minor), divaricatic acid (major), 3β-acetoxyhopane-1β,22-diol, ± unknown triterpenes.

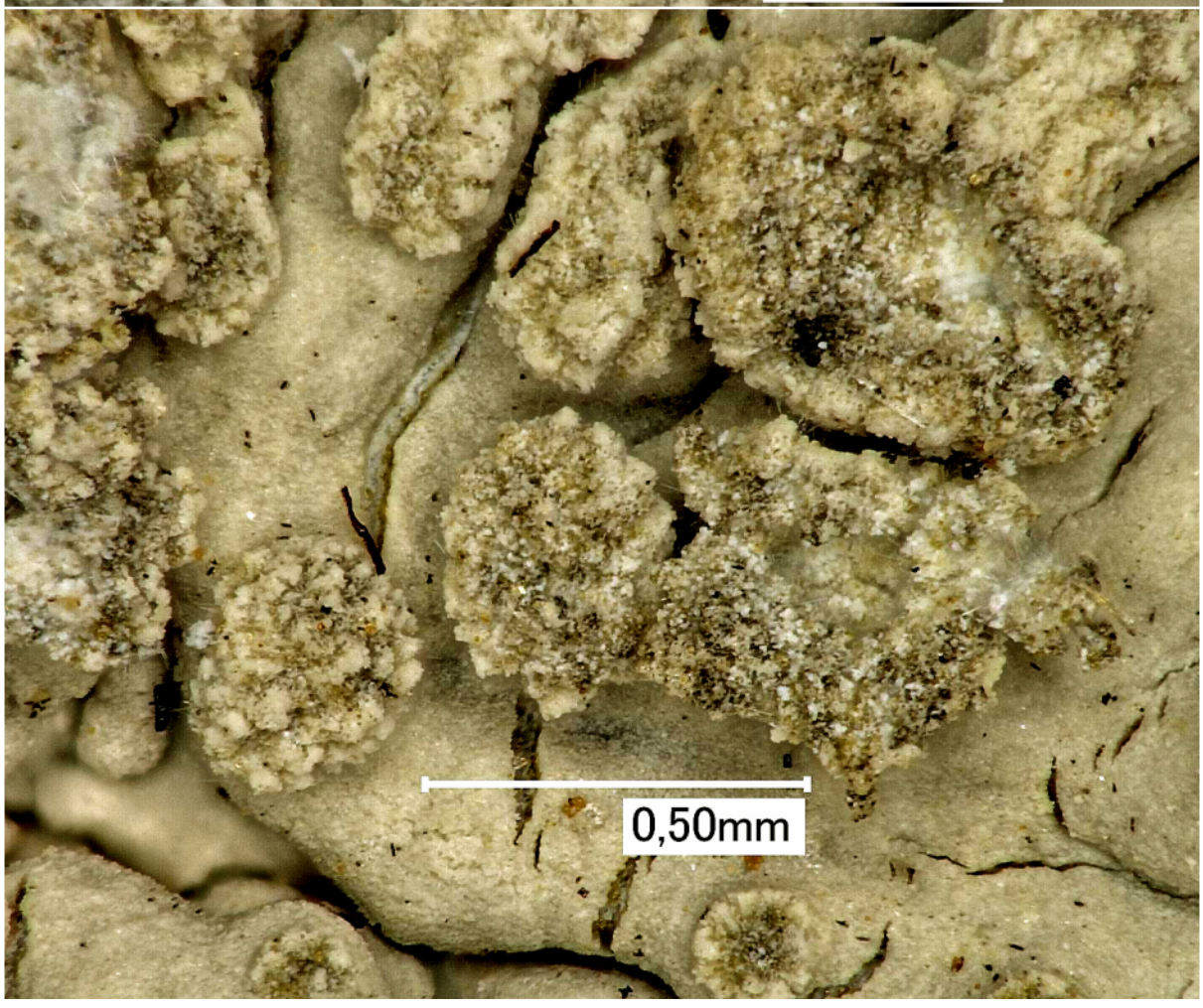
[16203], Australia, New South Wales, south of Narooma, Bega Valley, Camel Rock. 36.378° S, 150.077° E, sea level. Leg. F. Schumm & E. Stocker 11.11.2009, det. F. Schumm.



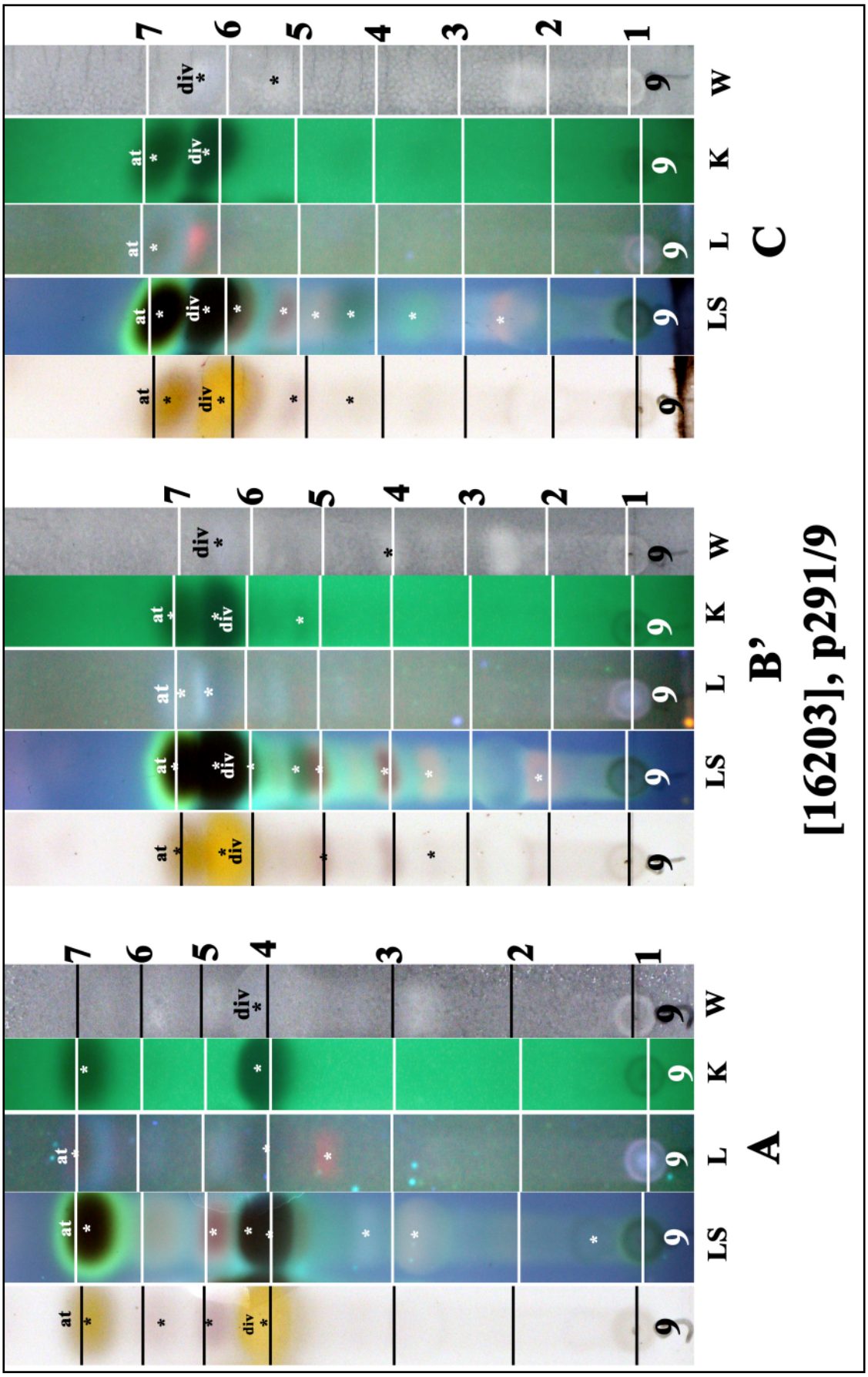


Dirinaria aegialita





Dirinaria aegialita



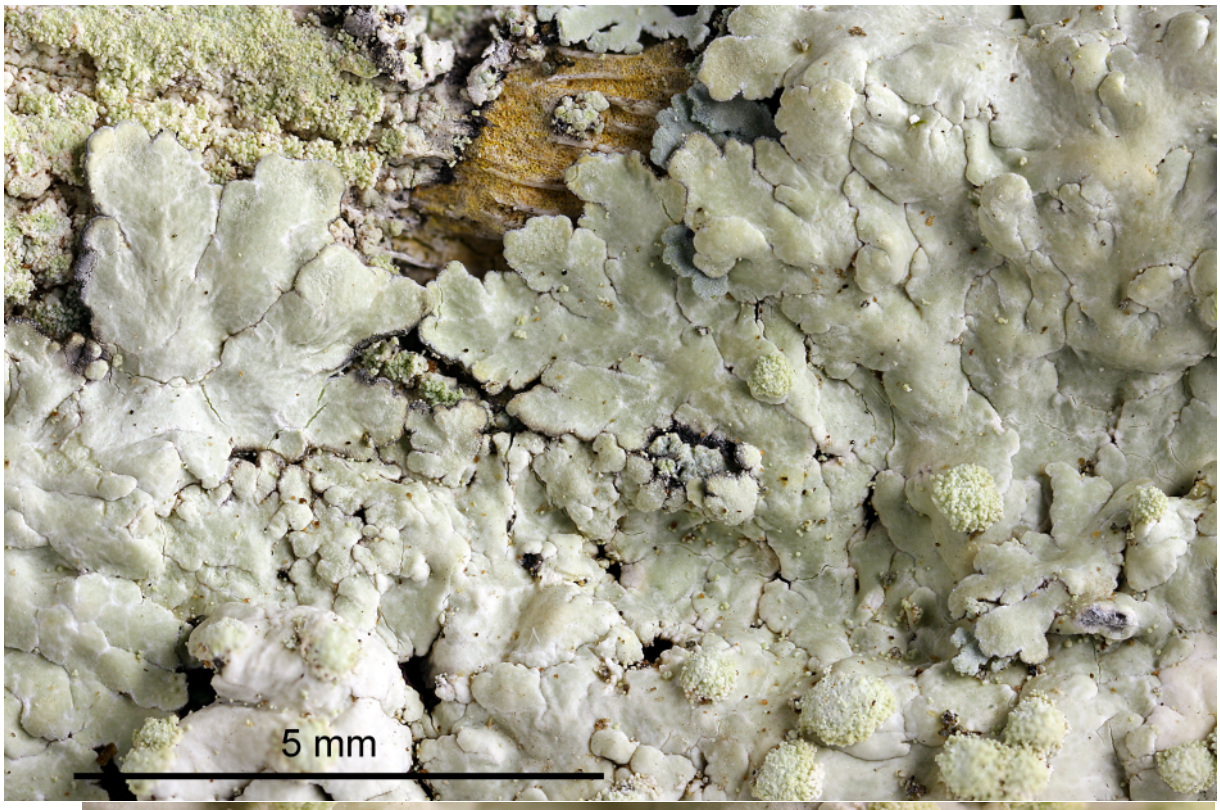
at: atranorin, div: divaricati acid, 3b: 3β-acetoxyhopane-1β,22-diol

Dirinaria aegialita

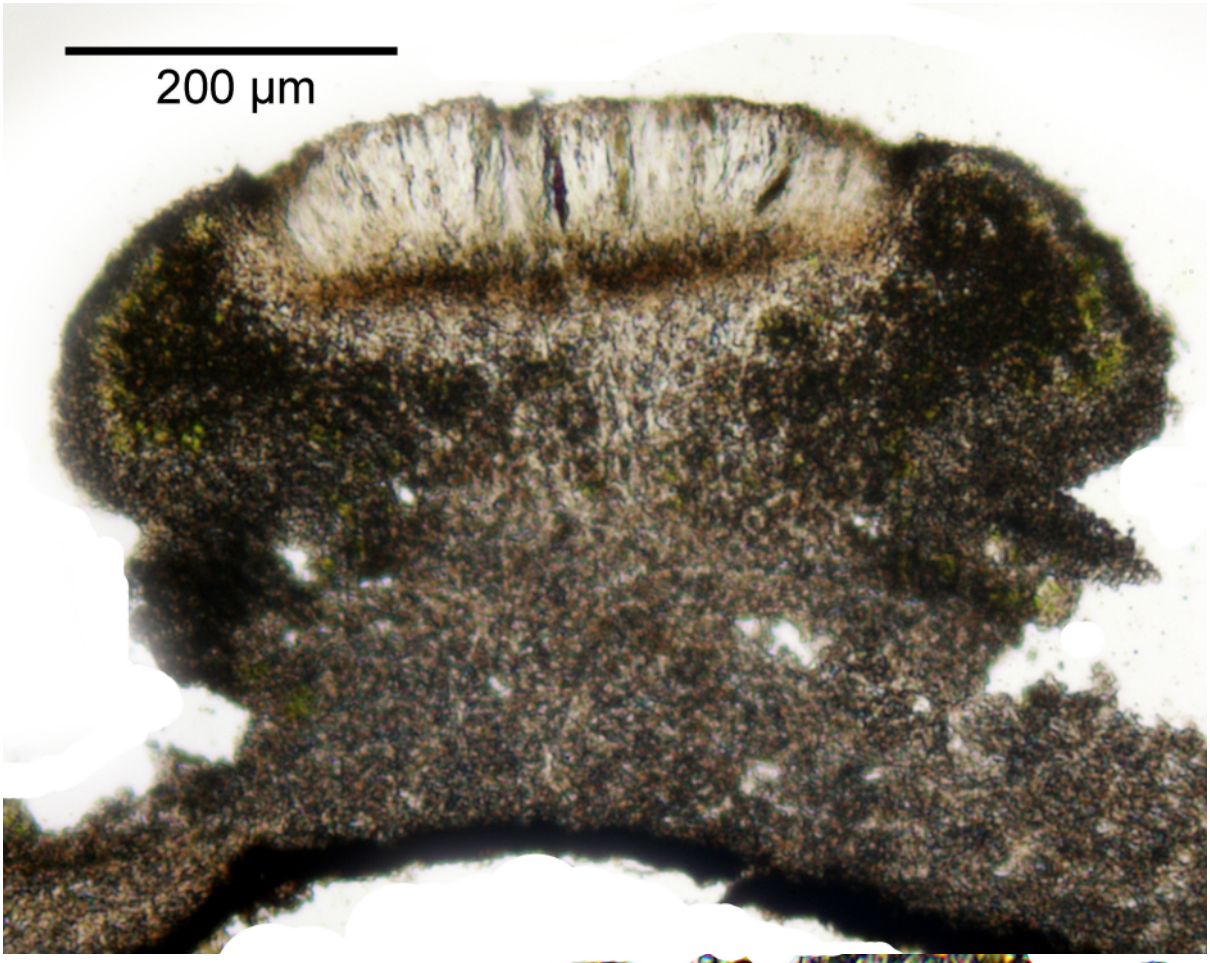
Dirinaria applanata (Fée) D.D.Awasthi

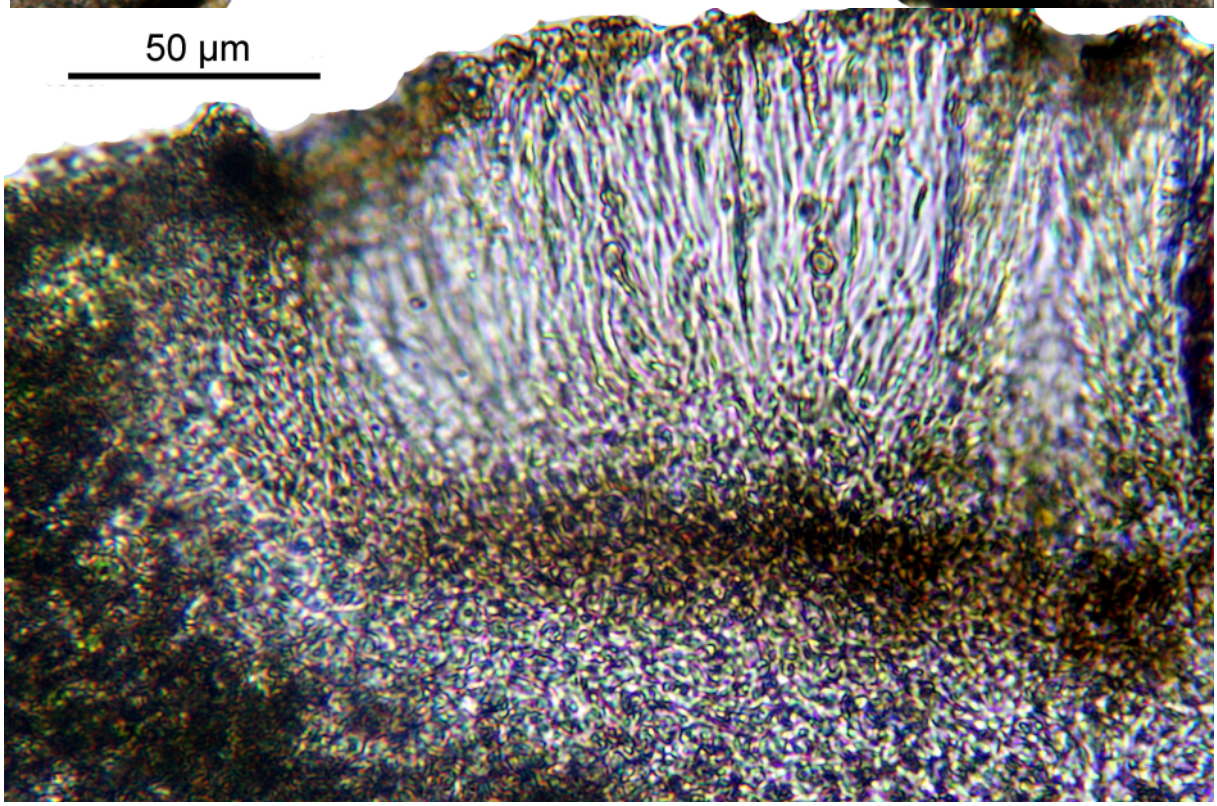
Thallus with globose soralia. Lobes confluent. Cortex K+ yellow. Medulla K+ yellow, C-, KC-, P-, UV+white; atranorin, divaricatic acid, 4 terpenoids. Pantropical.

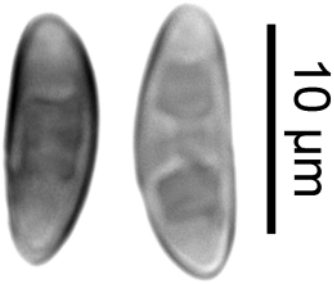
[14439], Seychelles, Praslin, Anse Lazio, beim Hotel Bonbon Plume, 4°17.611' S, 55°42.131' E, ca. 2 m. Leg. Schumm & Frahm 29.09.2008, det. F. Schumm, conf. A. Aptroot 2008.











Dirinaria applanata

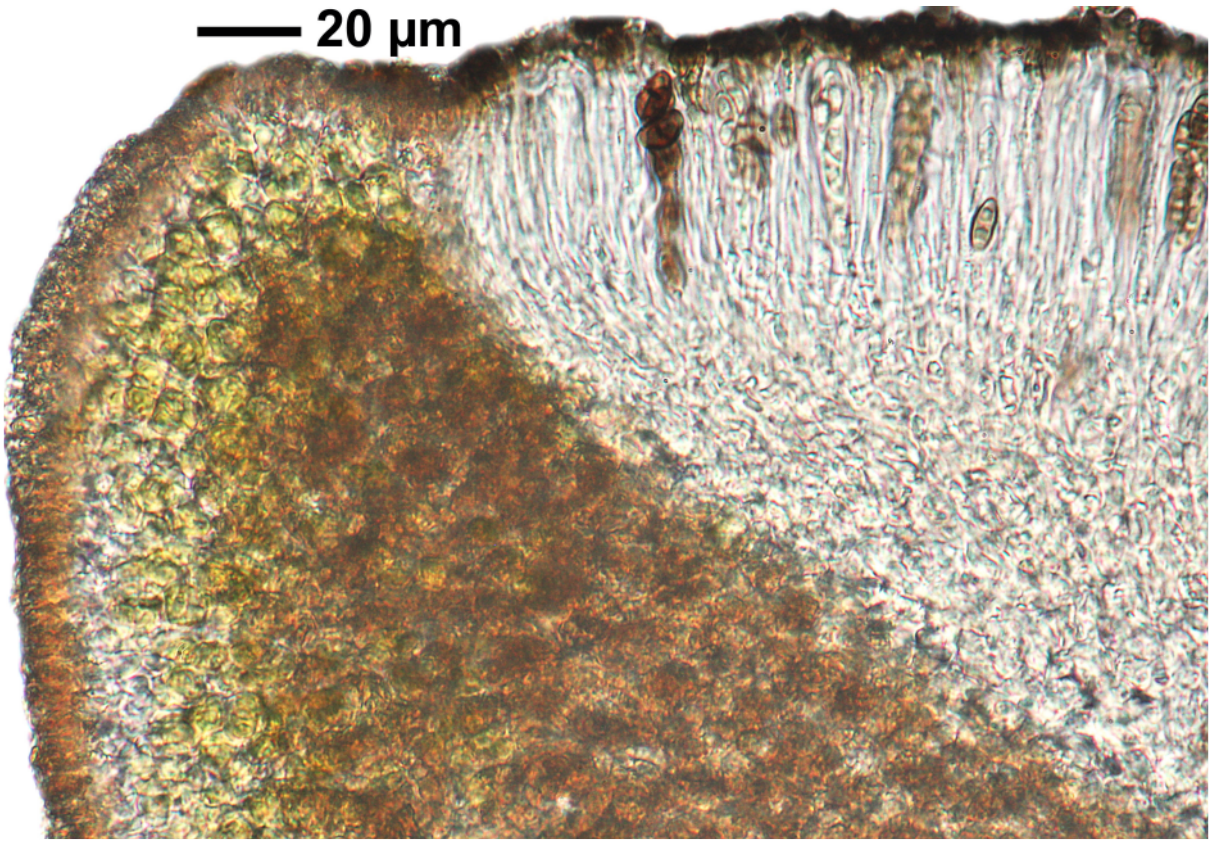
Dirinaria batavica D.D.Awasthi

Thallus on rocks, nearly crustose, placoid lobate at the margins, closely appressed to adglutinate up to the lobe tips; margins with lobes 0.5-1 mm wide, lobe apices plane to somewhat convex. Upper surface yellowish grey to grey, lacking soralia or isidia. Lower surface black in the centre, erhizinate. Apothecia laminal, 0.4-1 mm wide, disc black. Hymenium c. 55 µm high. Hypothecium hyaline but with brownish crystals, hypothecium becomes colourless in KOH. Spores brown, 1-septate, 8/ascus, 10-14 x 4.5-6 µm. Cortex K+ yellowish, C-, KC-, P+ yellowish. Medulla K-, C-, KC-, P-. Chemistry: atranorin (in the cortex), divaricatic acid (in the hypothecium and the medulla).
Note: Similar species with divaricatic acid and no vegetative propagules are: ***Dirinaria neotropica*** Kalb (hypothecium brown, spores 10-15 x 4.5-6 µm), ***Dirinaria confluens*** (Fr.) D.D.Awasthi (hypothecium brown, spores 15-19 x 6-7 µm, end of lobes often 2 mm wide, plane to somewhat concave).

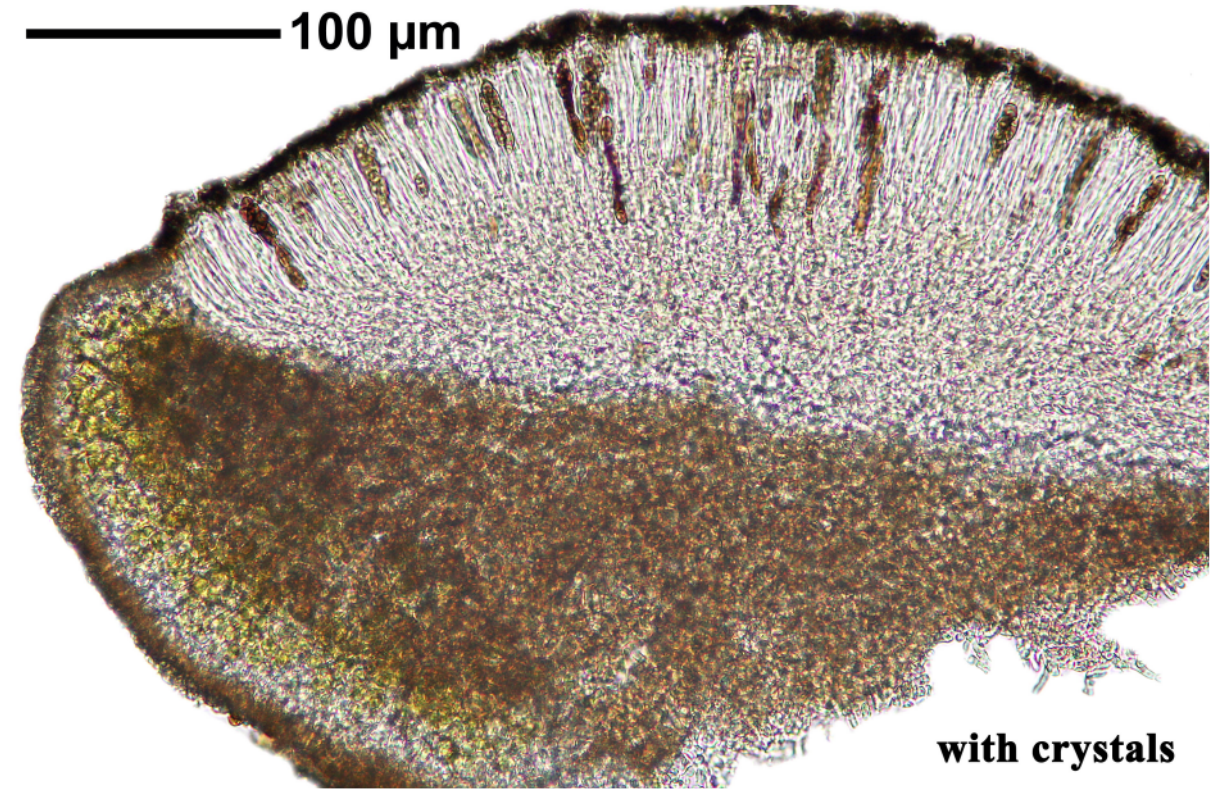
[19019], Australia, Western Australia, along road to Mount Joseph Yard, 25 km east of Lennard River crossing, along the Gibb River road, 17°23' S, 125°00' E, 370 m. growing on exposed schistose rocks in Triodia dominated grassland with scattered treelets and schistose outcrops. A collection from the Kimberley Research Project 1988. Leg. J.A. Elix (22264) & H. Streimann, 17.05.1988, det. K. Kalb & F. Schumm. Chemistry: atranorin (minor), chloroatranorin (minor), divaricatic acid (major), nordivaricatic acid (trace), 3β-acetoxyhopane-1β,22-diol, unknown triterpene by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICIC EXSICCATI NO. 208, distributed as ***Dirinaria confluens*** (Fr.) D.D.Awasthi.

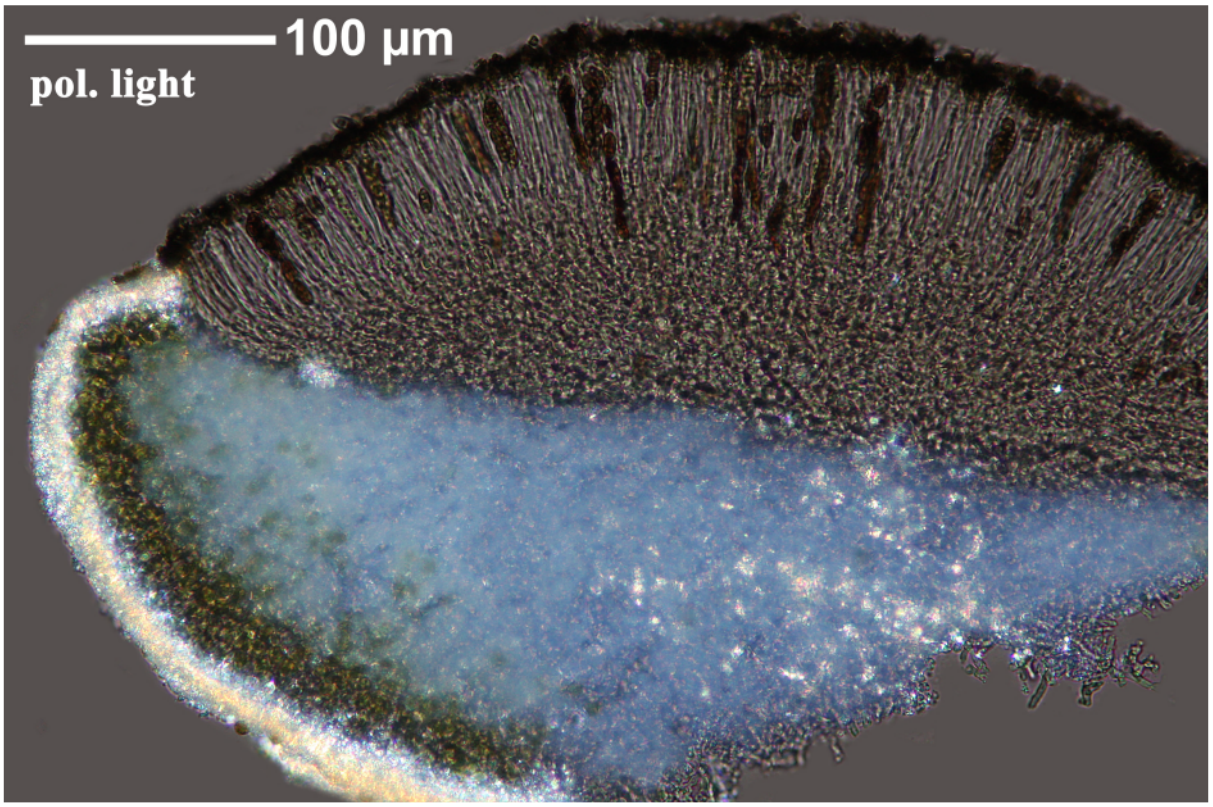




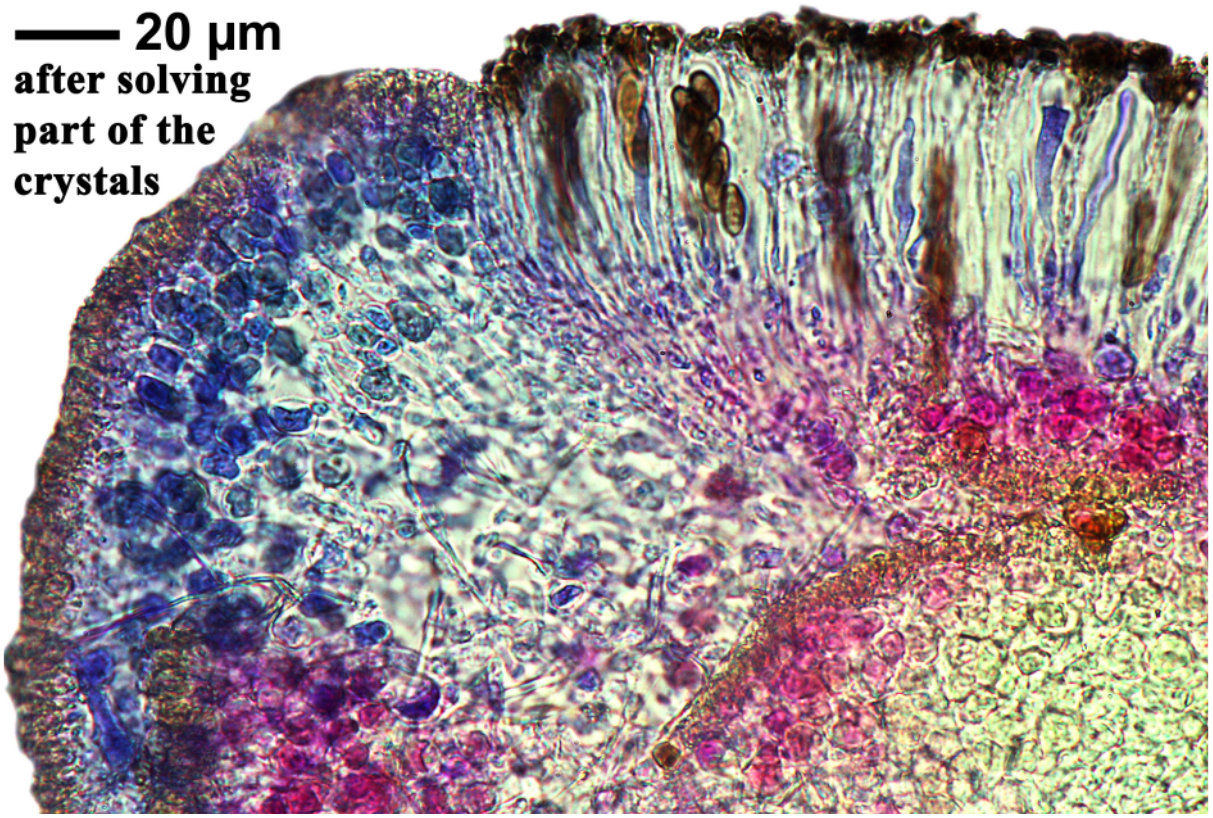


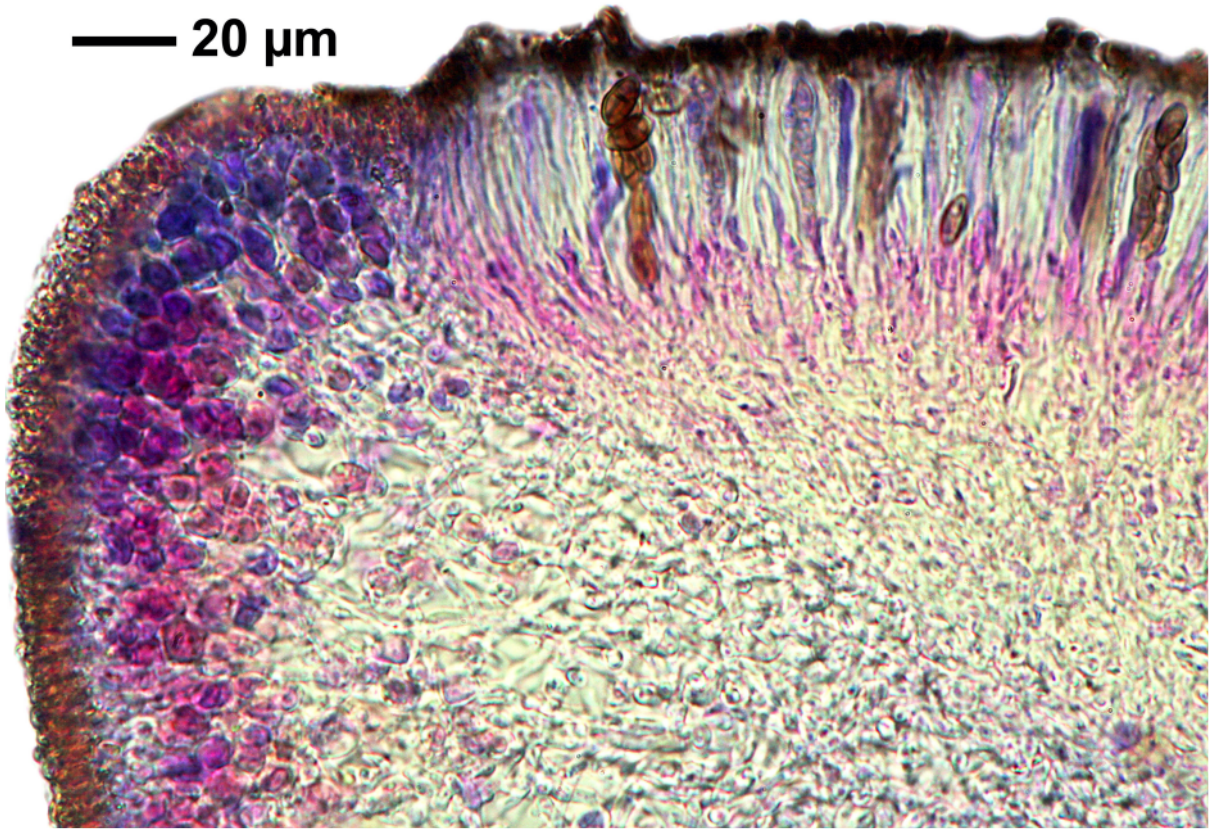
Dirinaria batavica



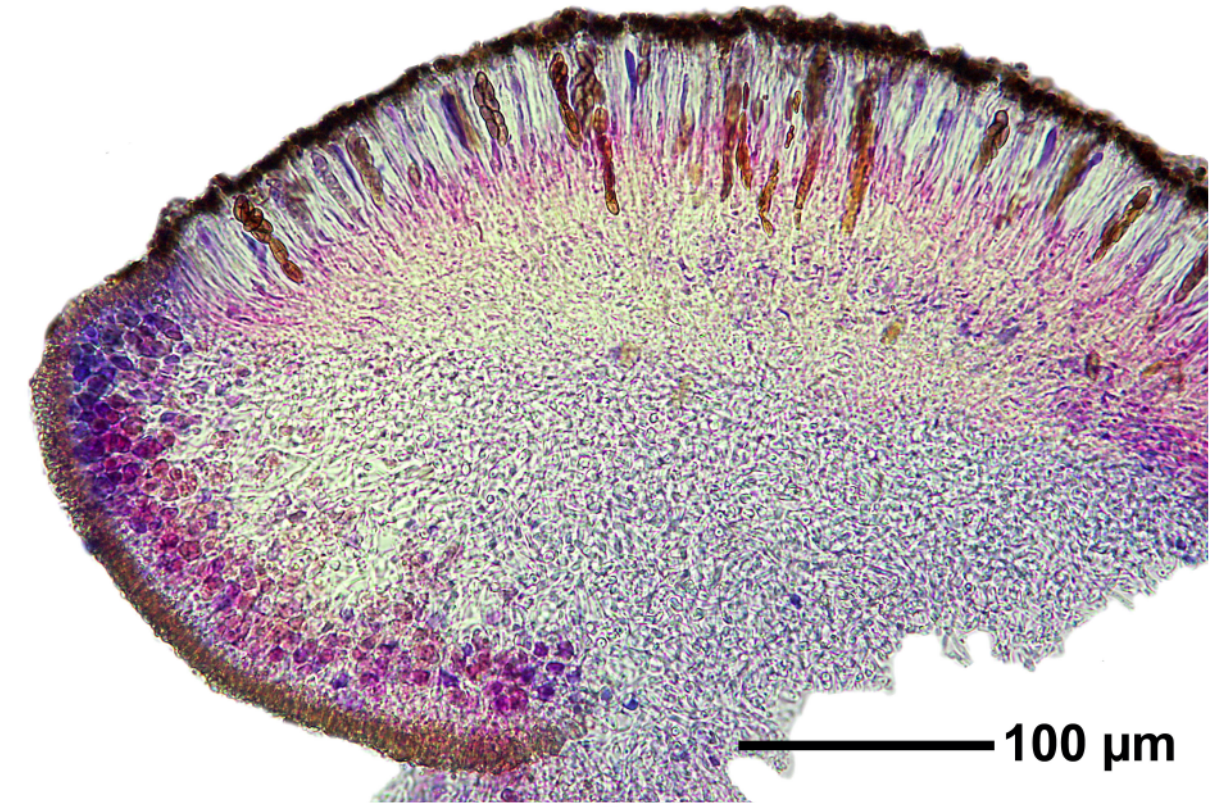


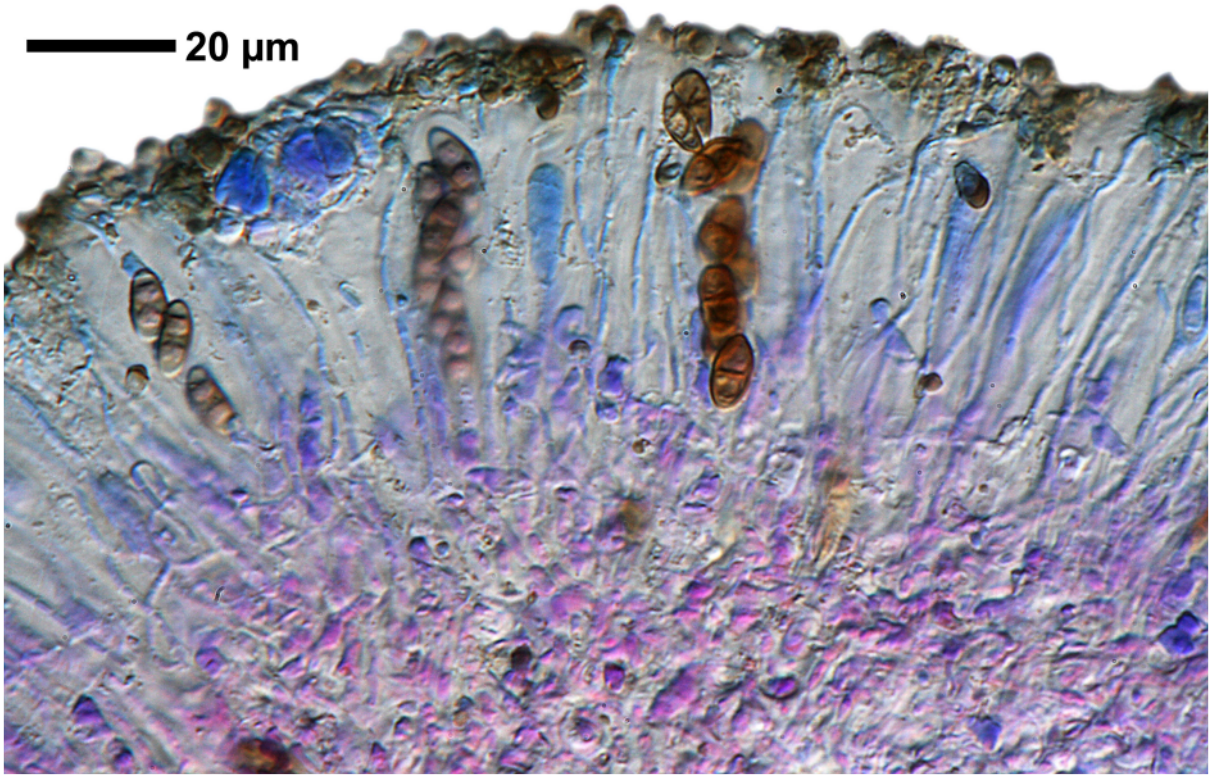
Dirinaria batavica





Dirinaria batavica





Dirinaria batavica







Dirinaria batavica

Dirinaria batavica D.D.Awasthi

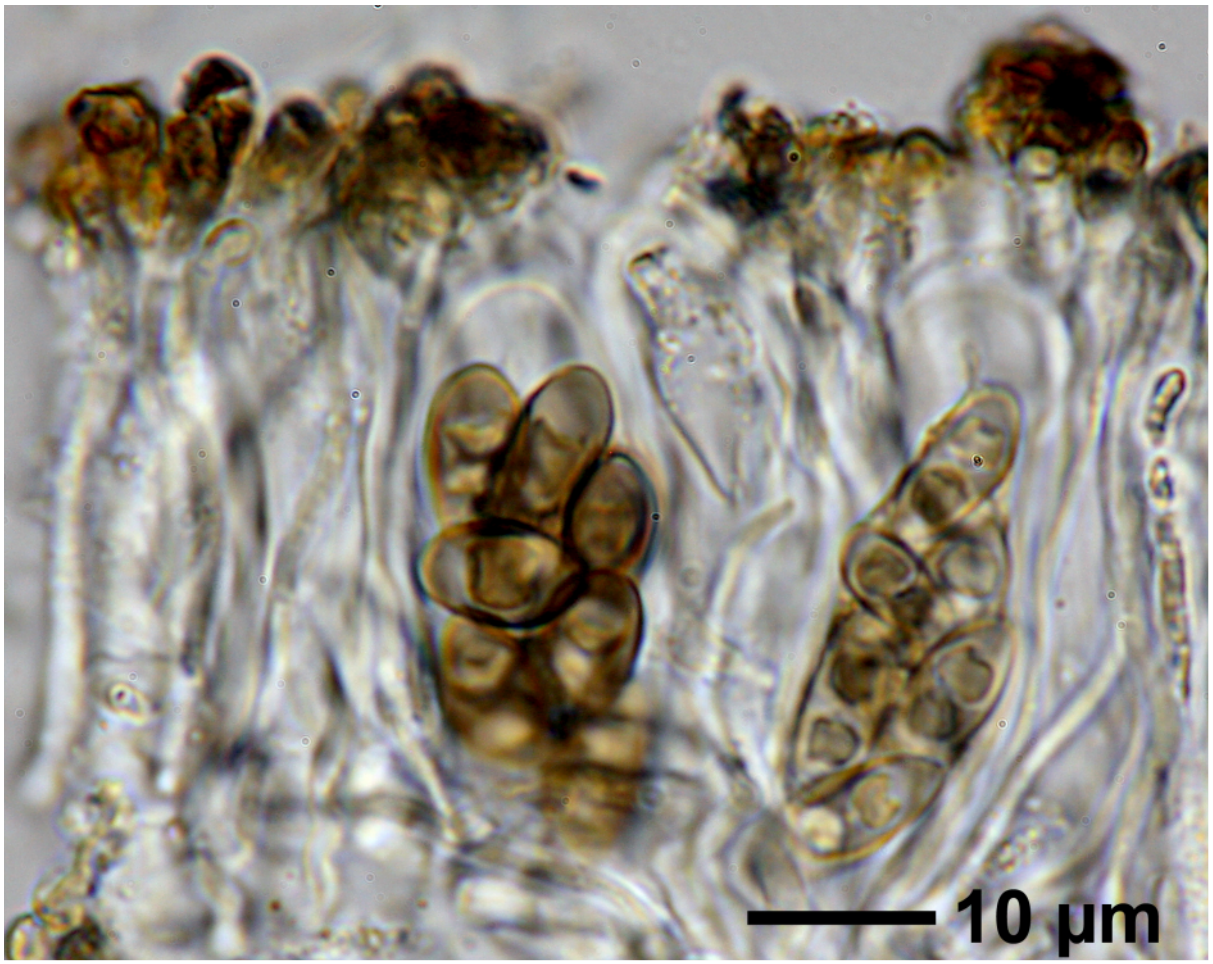
[19016], Australia, Western Australia, along the Gibb River Road, 74 km south-west of Wyndham, 15°44' S, 127°31' E, 300 m, growing on sandstone rocks in *Eucalyptus* dominated grasslands with *Xanthostemum*, *Gordenia* and *Glochidion* on rocky slope. Leg. J.A. Elix (27877), H.T. Lumbsch & H. Streimann, 11.07.1991. LICHENES AUSTRALASICI EXSICCATI NO. 254.
Distributed as *Diploschistes sticticus* (Körber) Müll.Arg. but in my sample of the exsiccata, *Dirinaria batavica* is a well developed additional species on the rocks distributed.

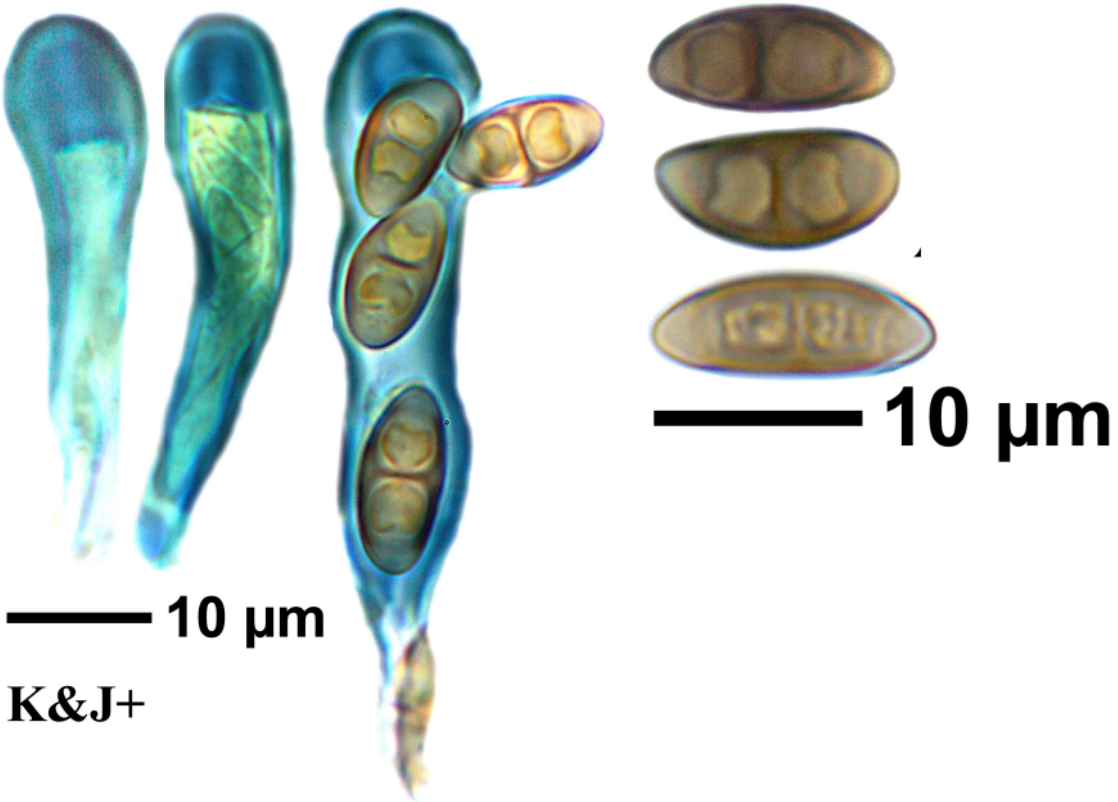




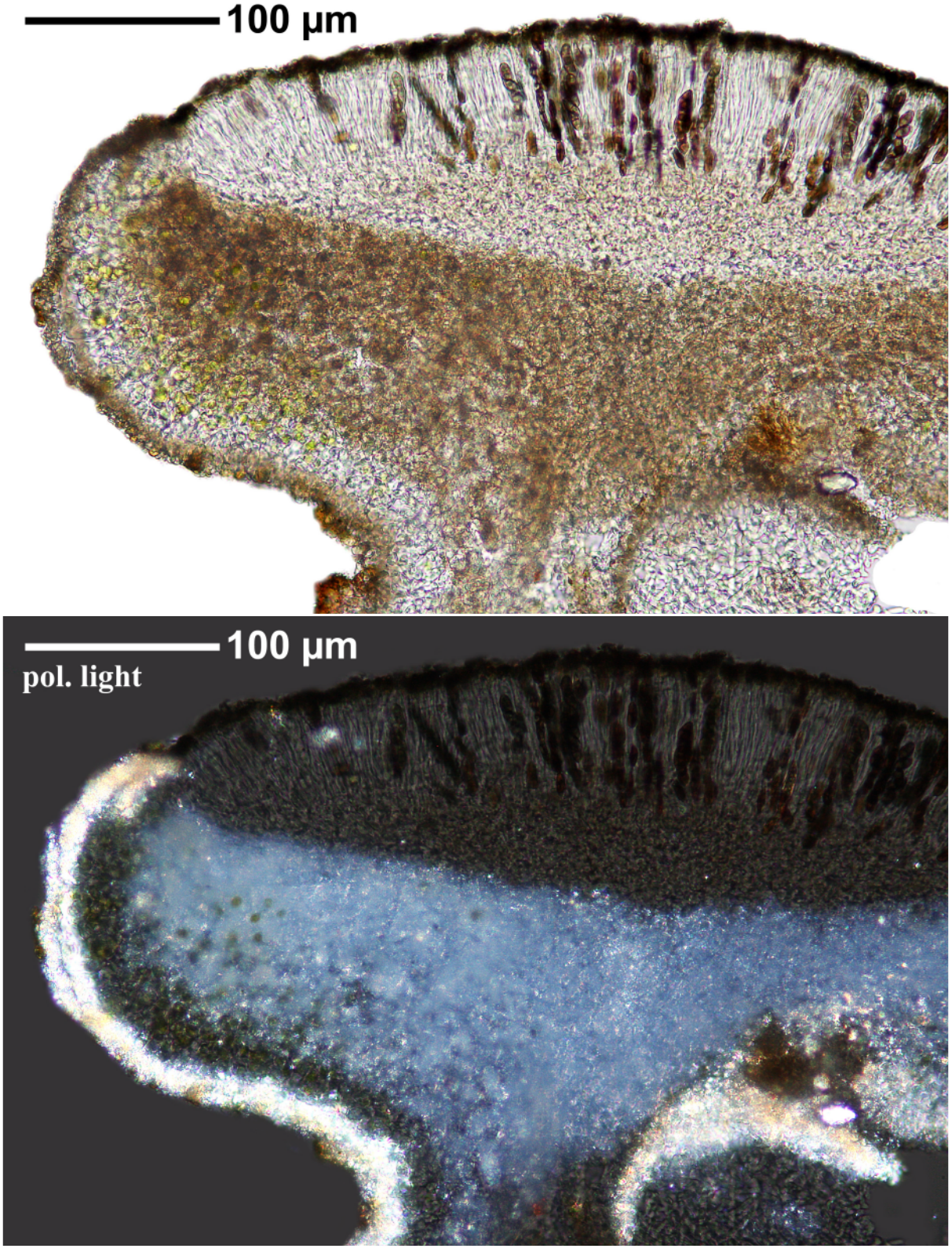


Dirinaria batavica

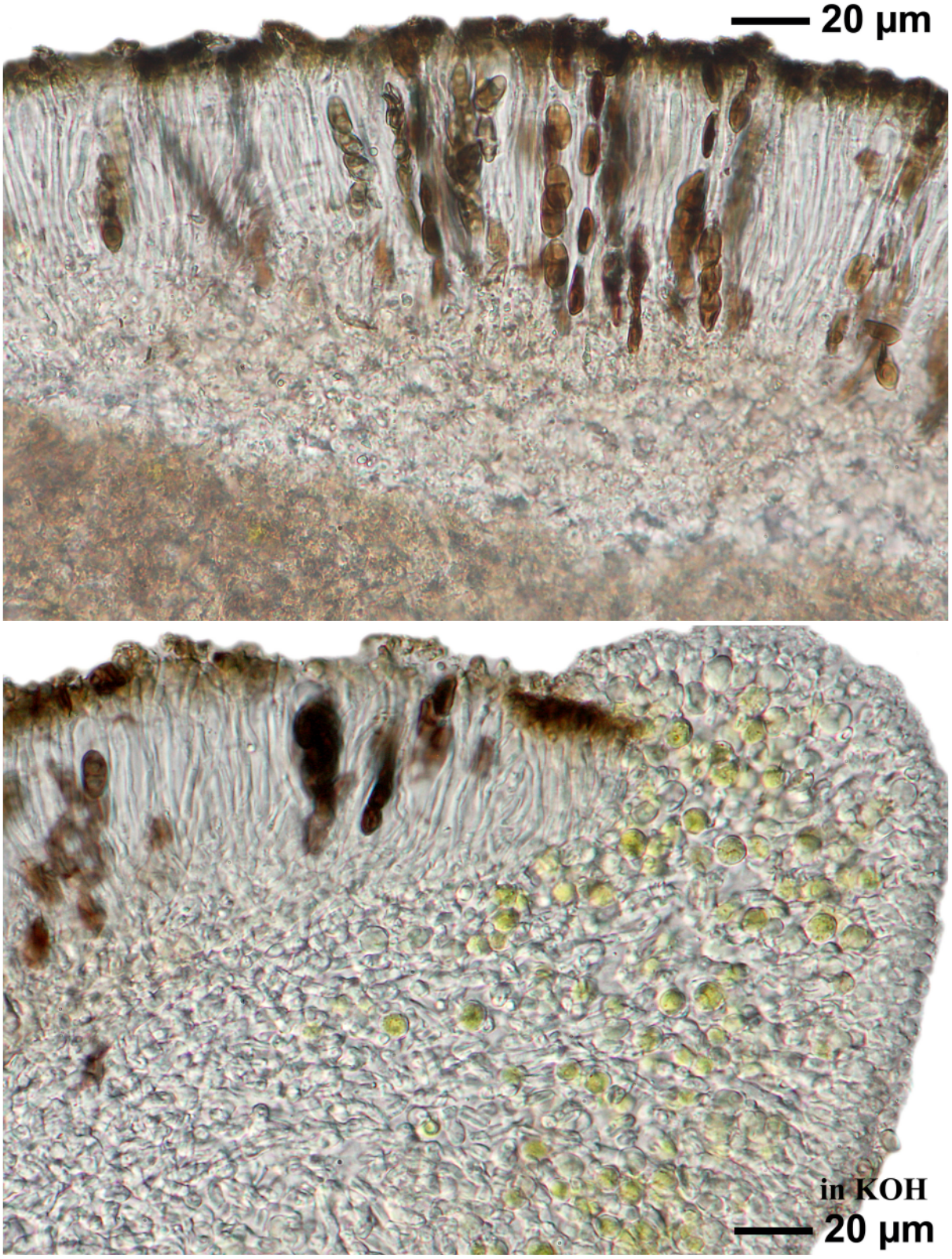




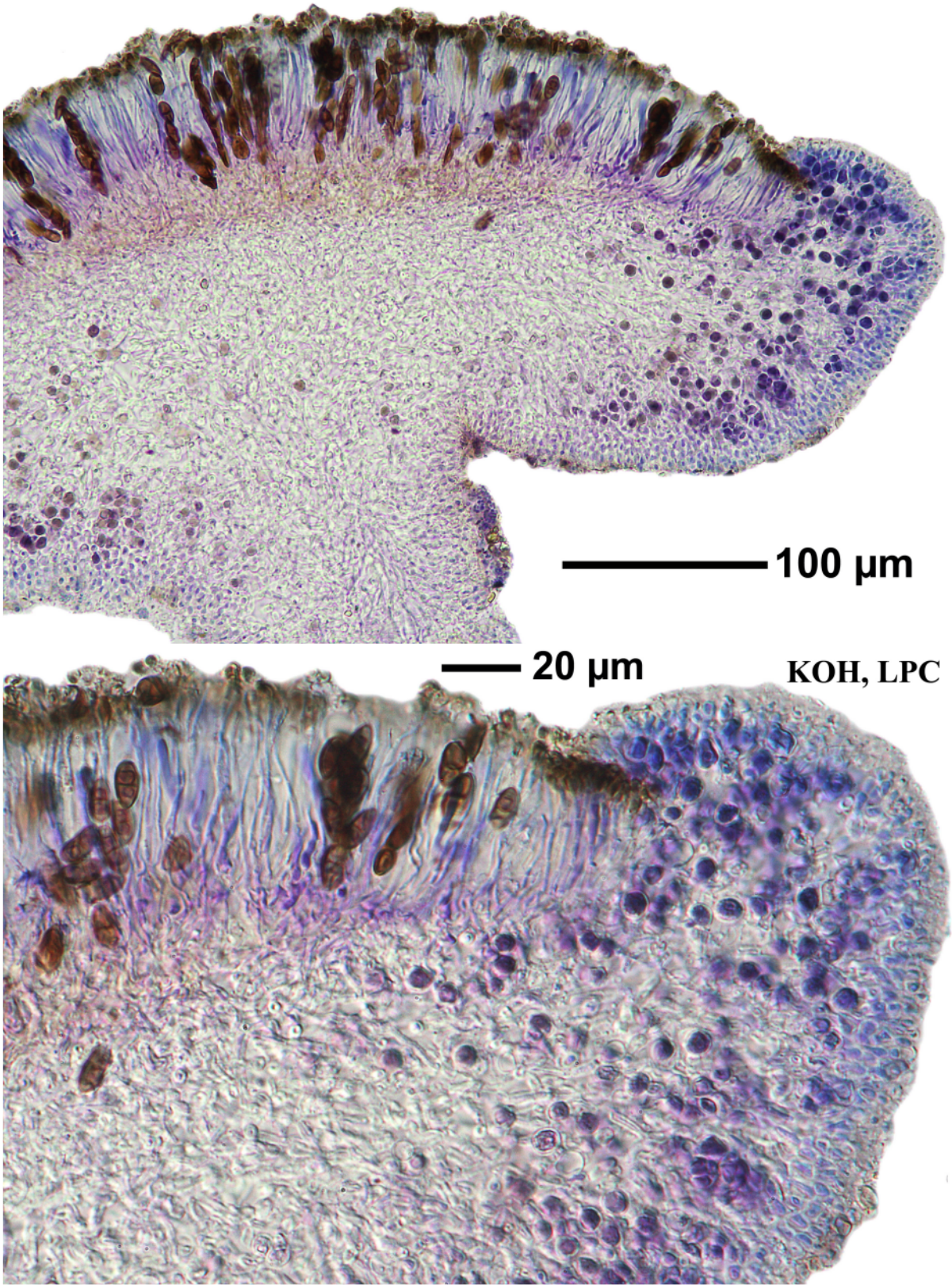
Dirinaria batavica



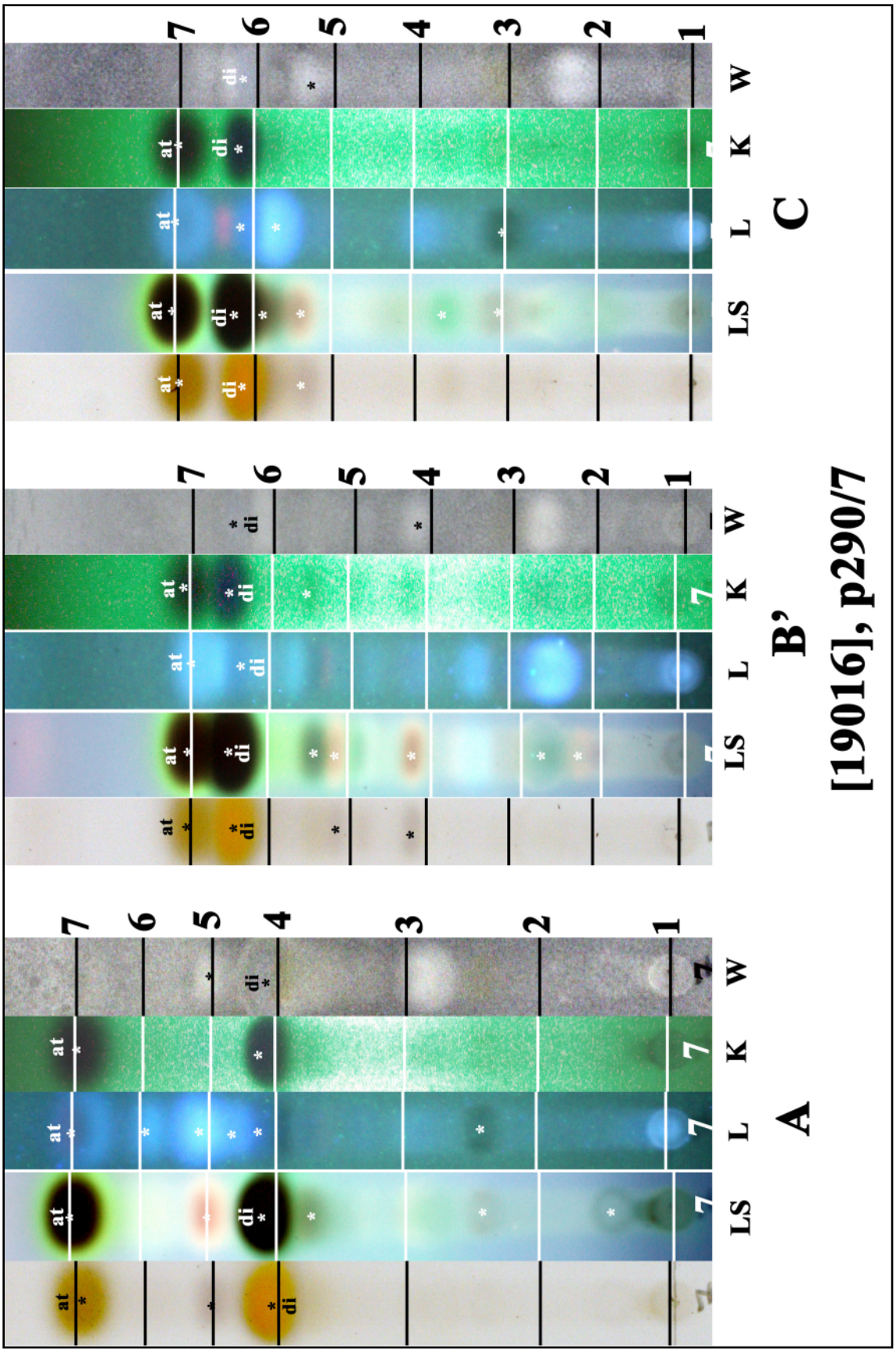
Dirinaria batavica



Dirinaria batavica



Dirinaria batavica



at: atranorin, di: divaricatic acid

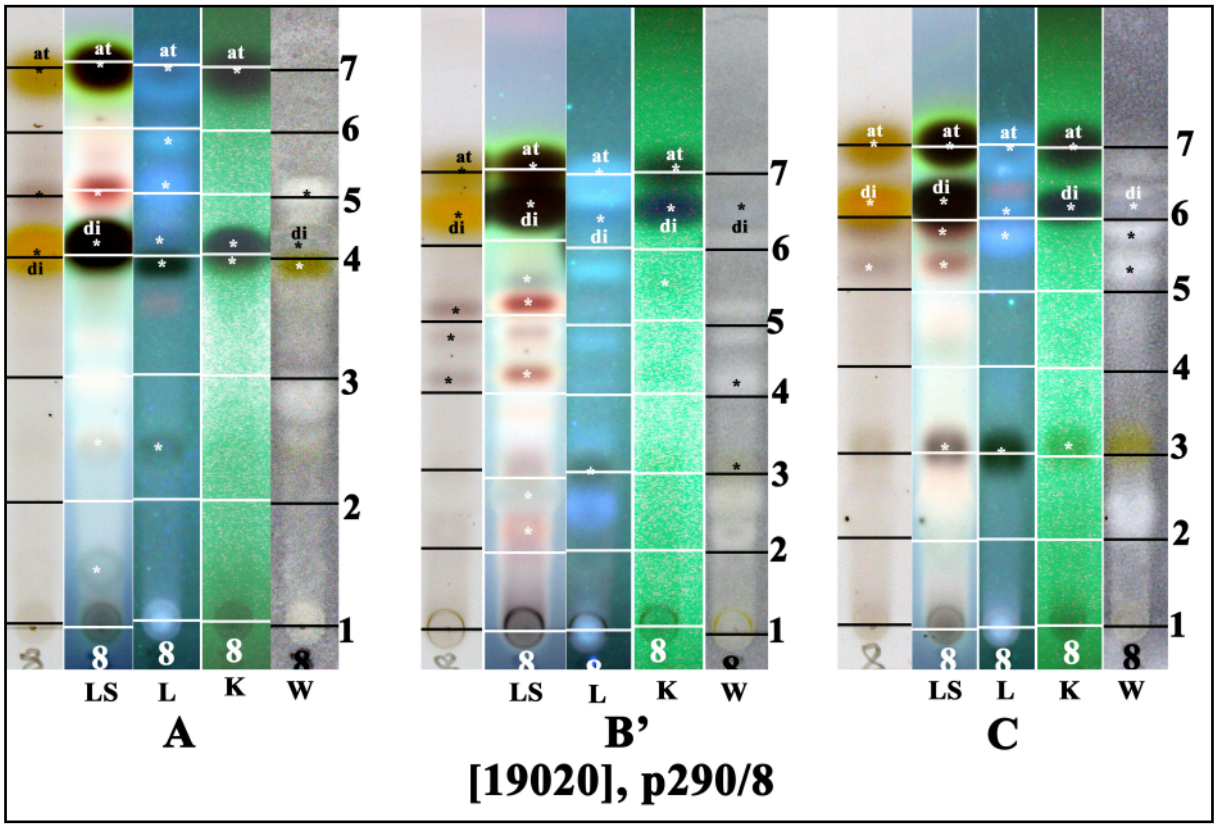
Dirinaria batavica

Dirinaria batavica D.D.Awasthi

[19020], Australia, Western Australia, Erskine Range, Great Northern Highway, between Derby and Fitzroy Crossing, 17°51' S, 124°20' E, 120 m, growing on lateritic rocks with south-west aspect along the escarpment, in *Triodia* dominated grassland. Leg. J.A. Elix (22297), 18.05.1988, det. F. Schumm & K. Kalb. Chemistry: atranorin (minor), chloroatranorin (minor), divaricatic acid (major), nordivaricatic acid (trace), 3β-acetoxyhopane-1β,22-diol, unknown triterpene by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICIC EXSICCATI NO. 209, distributed as ***Dirinaria confluens*** (Fr.) D.D.Awasthi







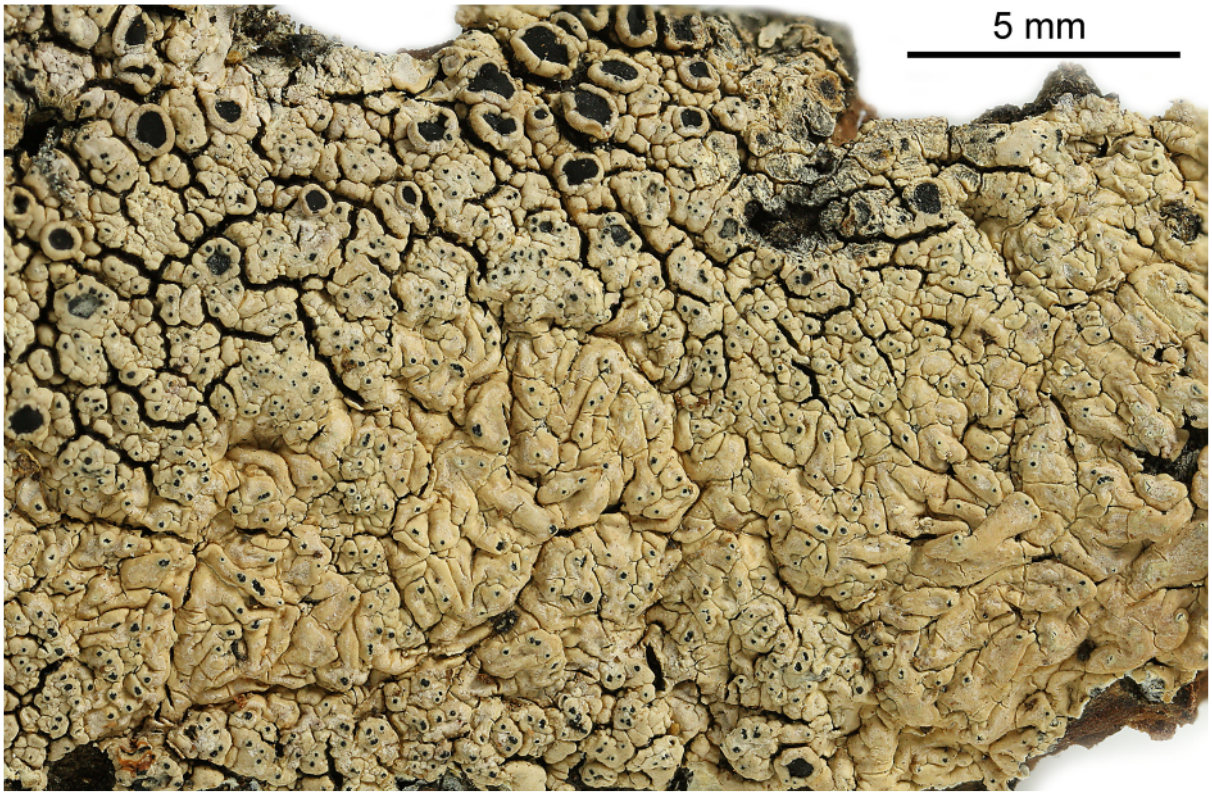
at: atranorin, di: divaricatic acid

Dirinaria batavica

Dirinaria confluens (Fr.) D.D.Awasthi

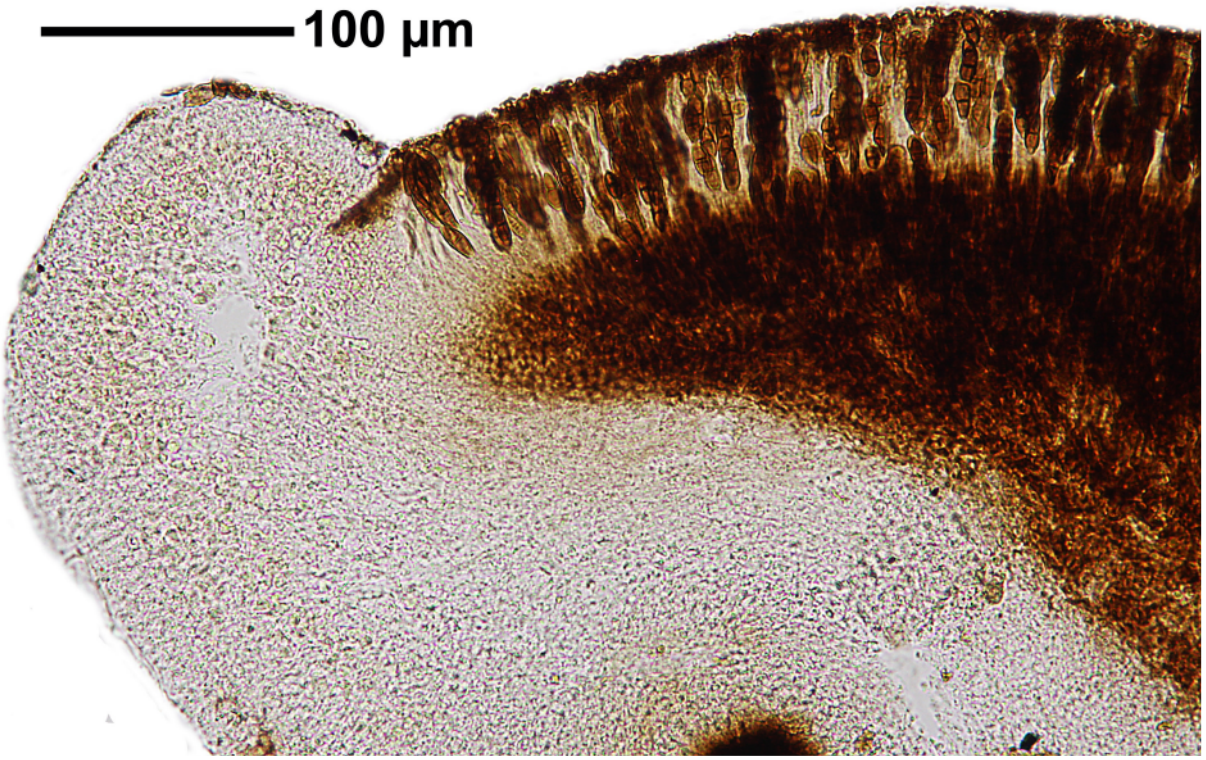
Thallus lacking vegetative propagules. Lower surface black. Medulla mostly white, lower medulla occasionally orange. Apothecial disc black, epruinose or weakly grey-pruinose. Hymenium colourless to pale yellow, 80-110 µm high. Hypothecium dark brown. Spores 14.5-17(-24) x 5-7(-10) µm. Chemistry: Cortex K+ yellow, C-, KC-, P+ yellow, UV-; medulla K-, C-, KC-, P-; atranorin (major), divaricatic acid (major), 3β-acetoxyhopane-1β,22-diol, ± unknown terpenes.

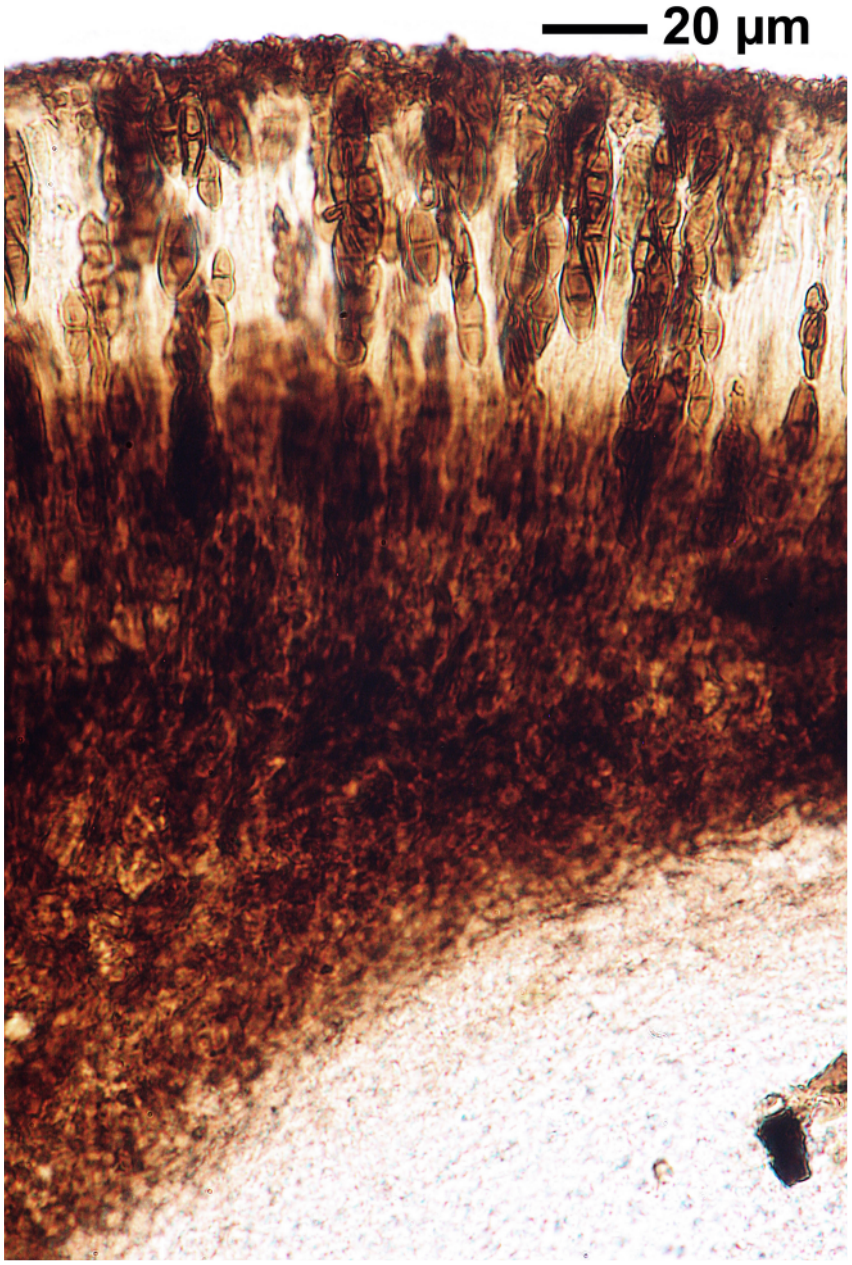
[5782], Madagascar, South-Madagascar, Berenti Park, on tree trunk, c. 100 m. Leg. F. Schumm 28.12.1992, det. F. Schumm 22.06.2000.





Dirinaria confluens

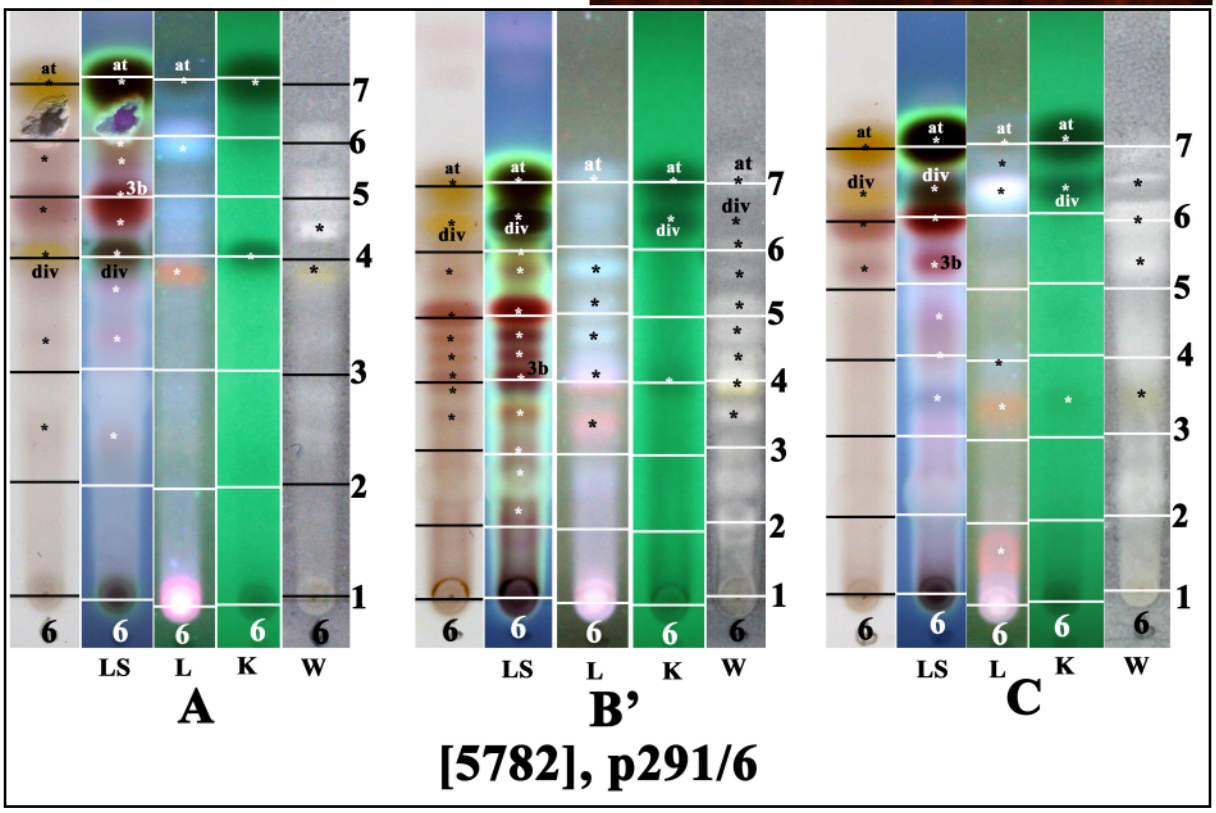




Dirinaria confluens







at: atranorin, div: divaricatic acid, 3b: 3β-acetoxyhopane-1β,22-diol, ± unknown terpenes

Dirinaria confluens

Dirinaria confusa D.D.Awasthi

Thallus without vegetative propagules. Lobes radiating, confluent, flat to somewhat concave towards the lobe tips. Medulla white or orange in the lowest part. Apothecia 0.5-1.5 mm diam., disc black. Hypothecium dark brown. Spores 12-19 x 4.5-7 µm. Chemistry: cortex K+ yellow, C-, KC-, P+ yellow; Medulla K-, C-, KC-, P-; atranorin, sekikaic acid (major), 3β-acetoxyhopane-1-β,22-diol, unknown terpenes.

[12168], USA, Louisiana, East Baton Rouge Parish, on Cypress (*Taxodium distichum*), Bottomland hardwood forest, Burden Plantation, Essen Lane, Baton Rouge, 30°24'30" N, 91°06'45" W, leg et det. Shirley C. Tucker 29. Aug. 1991 (Nr. 31248).



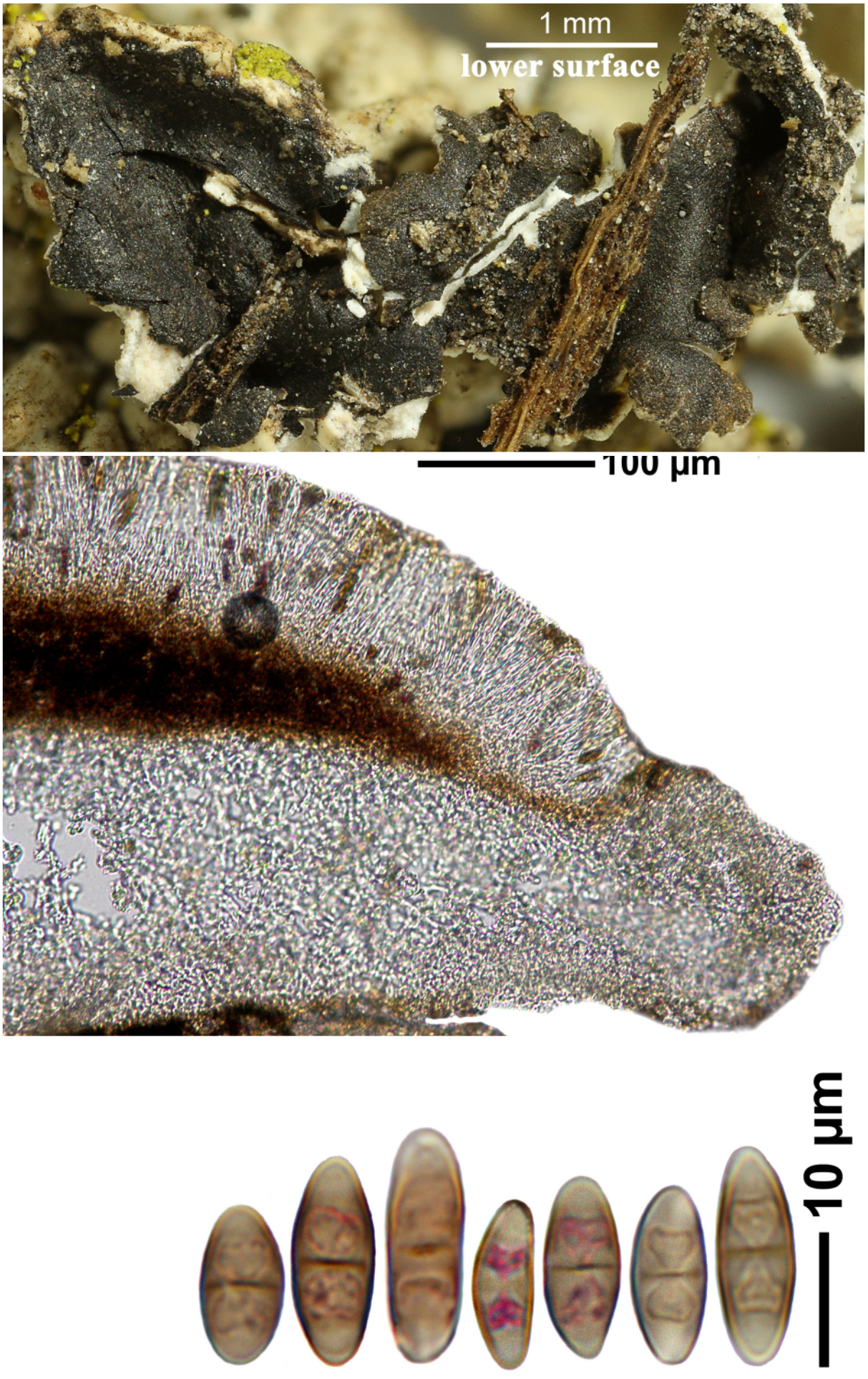


Dirinaria confusa

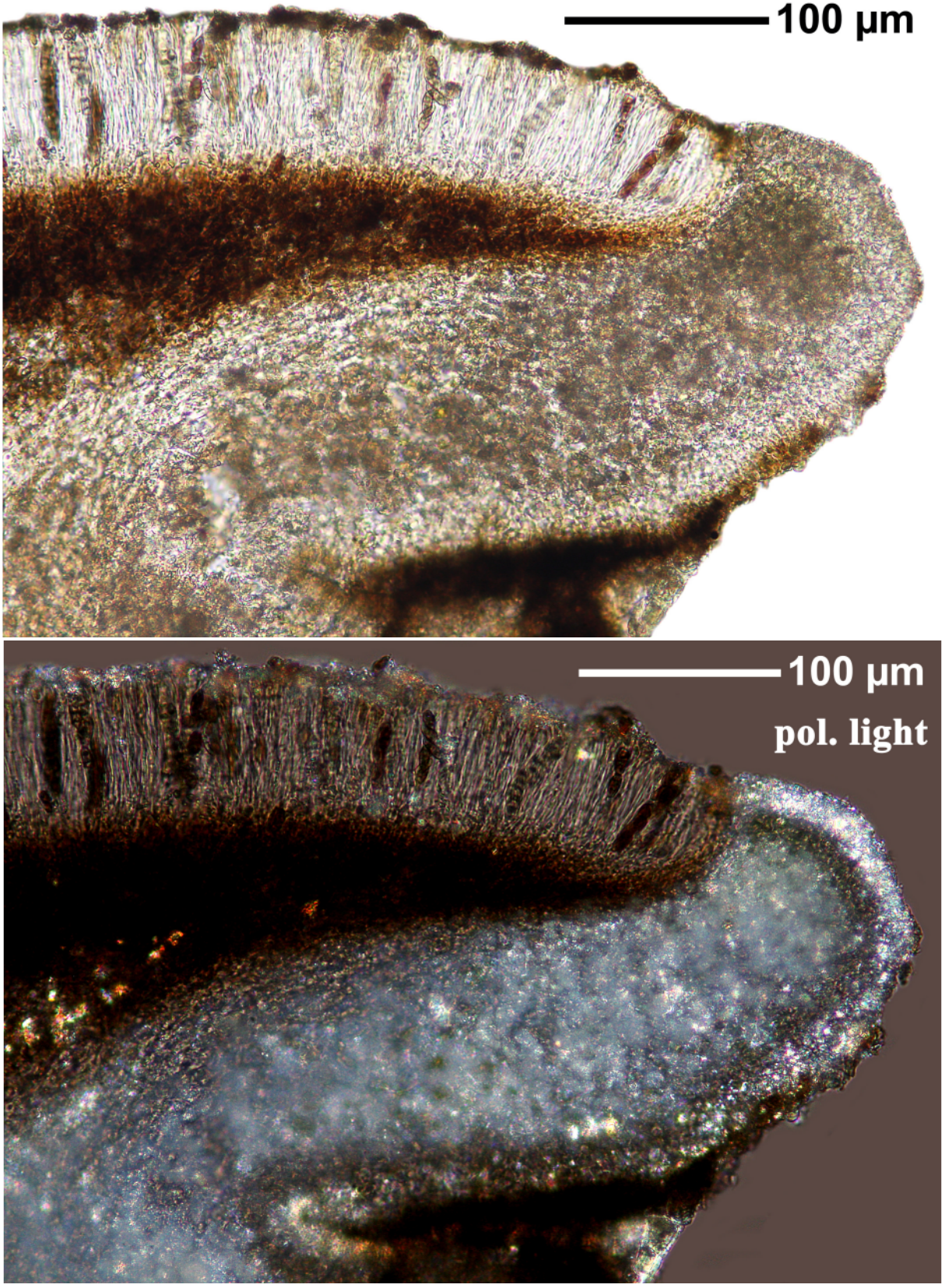




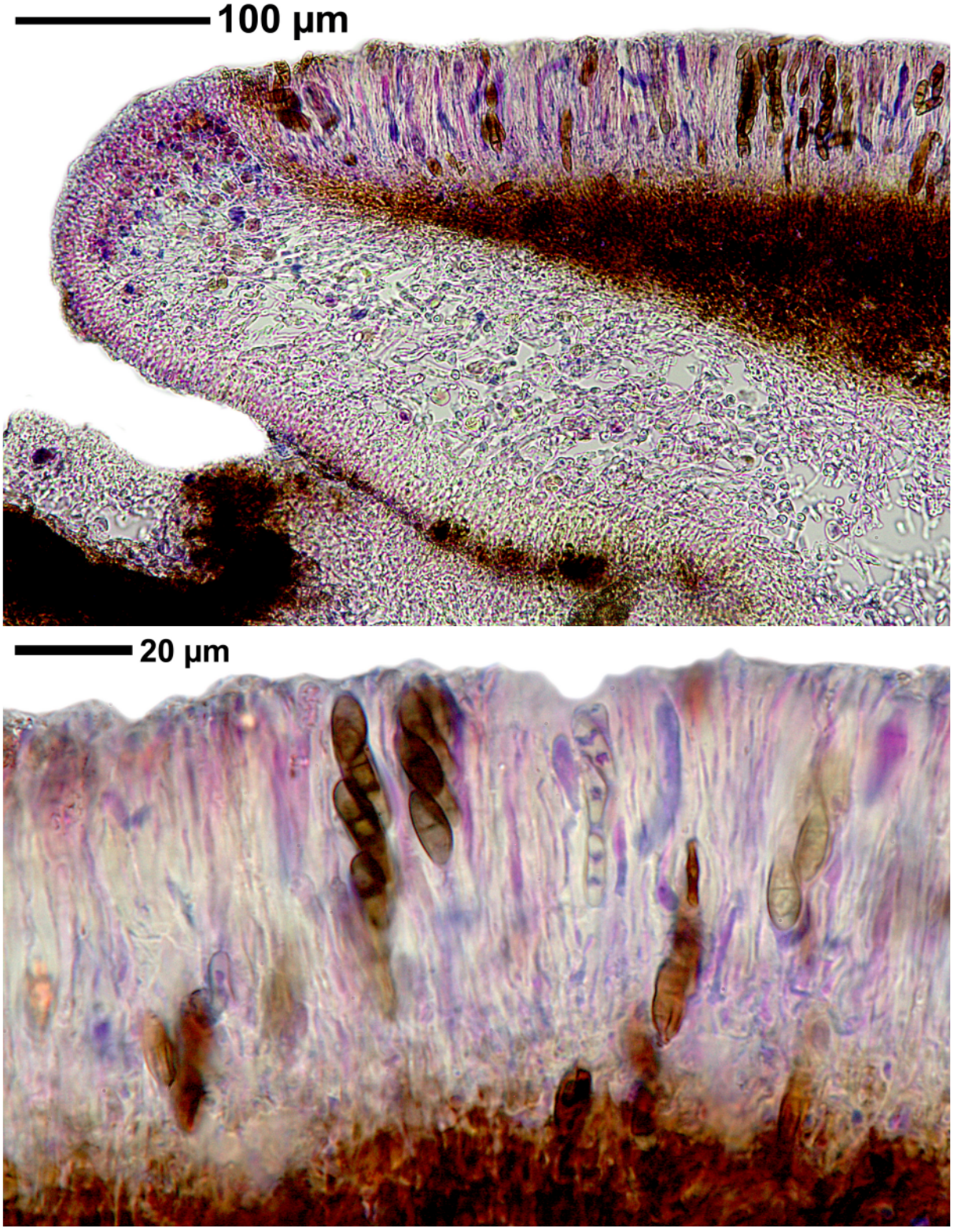
Dirinaria confusa



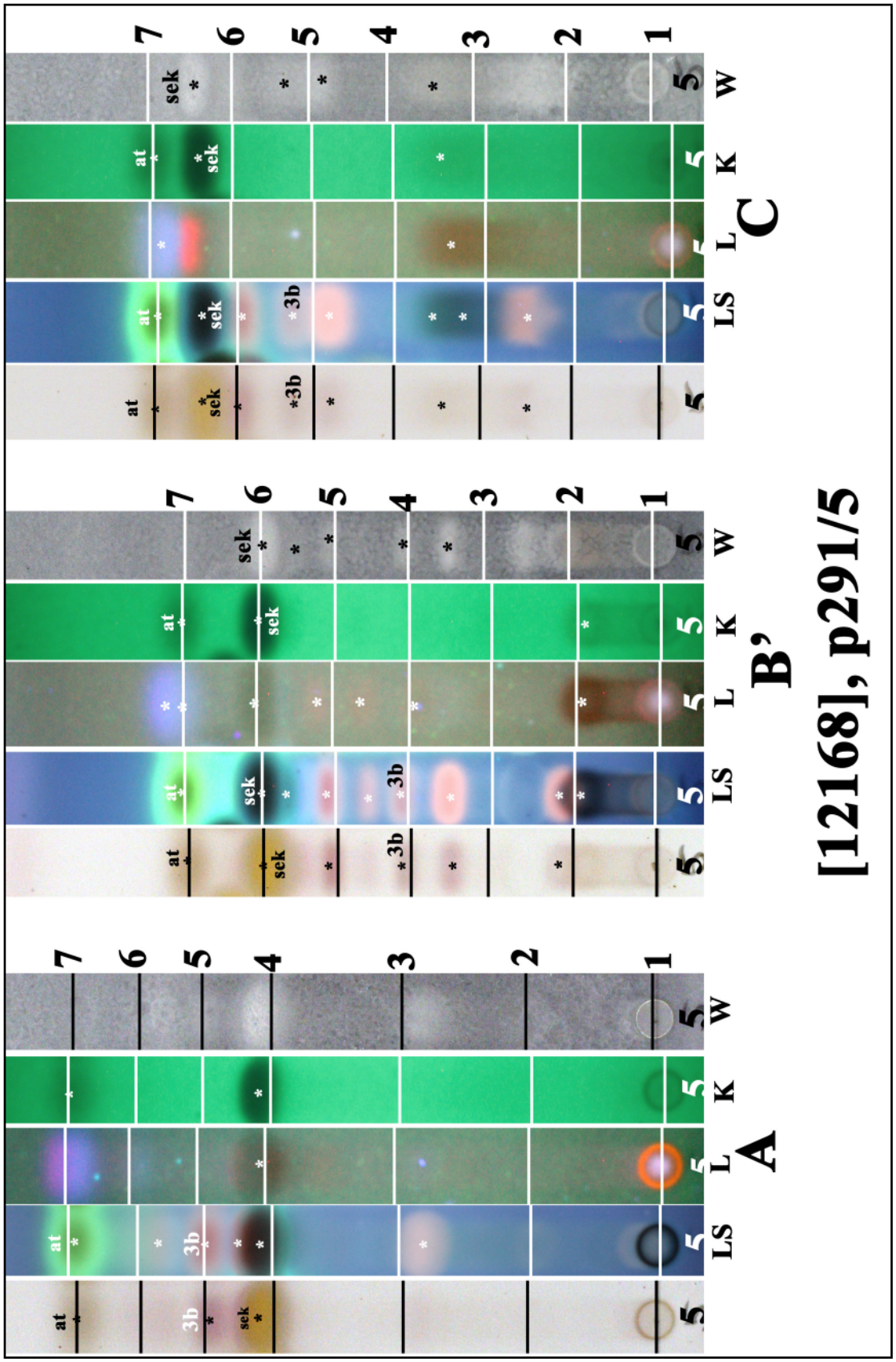
Dirinaria confusa



Dirinaria confusa



Dirinaria confusa



at: atranorin, sek: sekikaic acid, 3b: 3β-acetoxyhopane-1-β,22-diol

Dirinaria confusa

Dirinaria flava (Müll.Arg.) C.W.Dodge

Lobes 0.5-1.5 mm wide. Upper surface yellow, apices finely pruinose. Soralia laminal, globose to capitate, 0.2-0.3 mm wide. Medulla pale yellow to yellow. Chemistry: cortex K+ yellow, C+ orange-red, KC+ red, P-, UV+ orange; medulla K-, C-, KC-, P-. Atranorin (minor), chloroatranorin (minor), divaricatic acid (major), arthothelin (major), 4,5-dichloronorlichexanthone (minor), 3β-acetoxyhopane-1β,22-diol (minor).

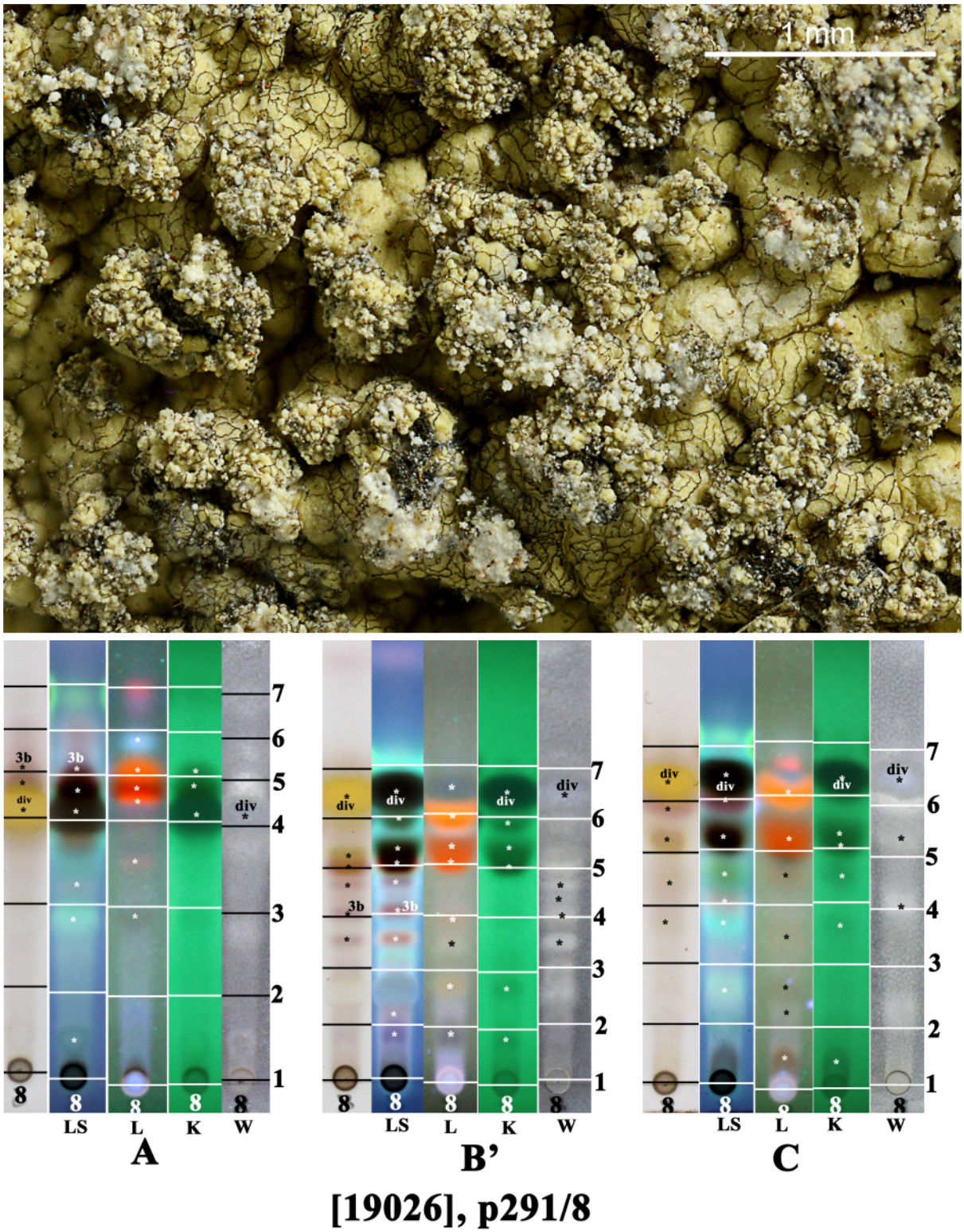
[19026], Tanzania, Morogoro region, distr. Kilosa, prope locum Magubike dictum, ad viam Morogoro - Dodoma in montibus Mamboya, 880 m, in ramulis arborum, ad corticem. Leg. T. Pócs (89217) & H. Krog, 25.08.1989. Det. A. Vězda, conf. K. Kalb (anal. K. Kalb: divaricatic acid, 2 xanthones, some terpenes). VĚZDA, LICHENES RARIORES EXSICCATI NR. 13.







Dirinaria flava



div: divaricatic acid, 3b: 3β-acetoxyhopane-1β,22-diol, arthothelin, 4,5-dichlornorlichexanthon

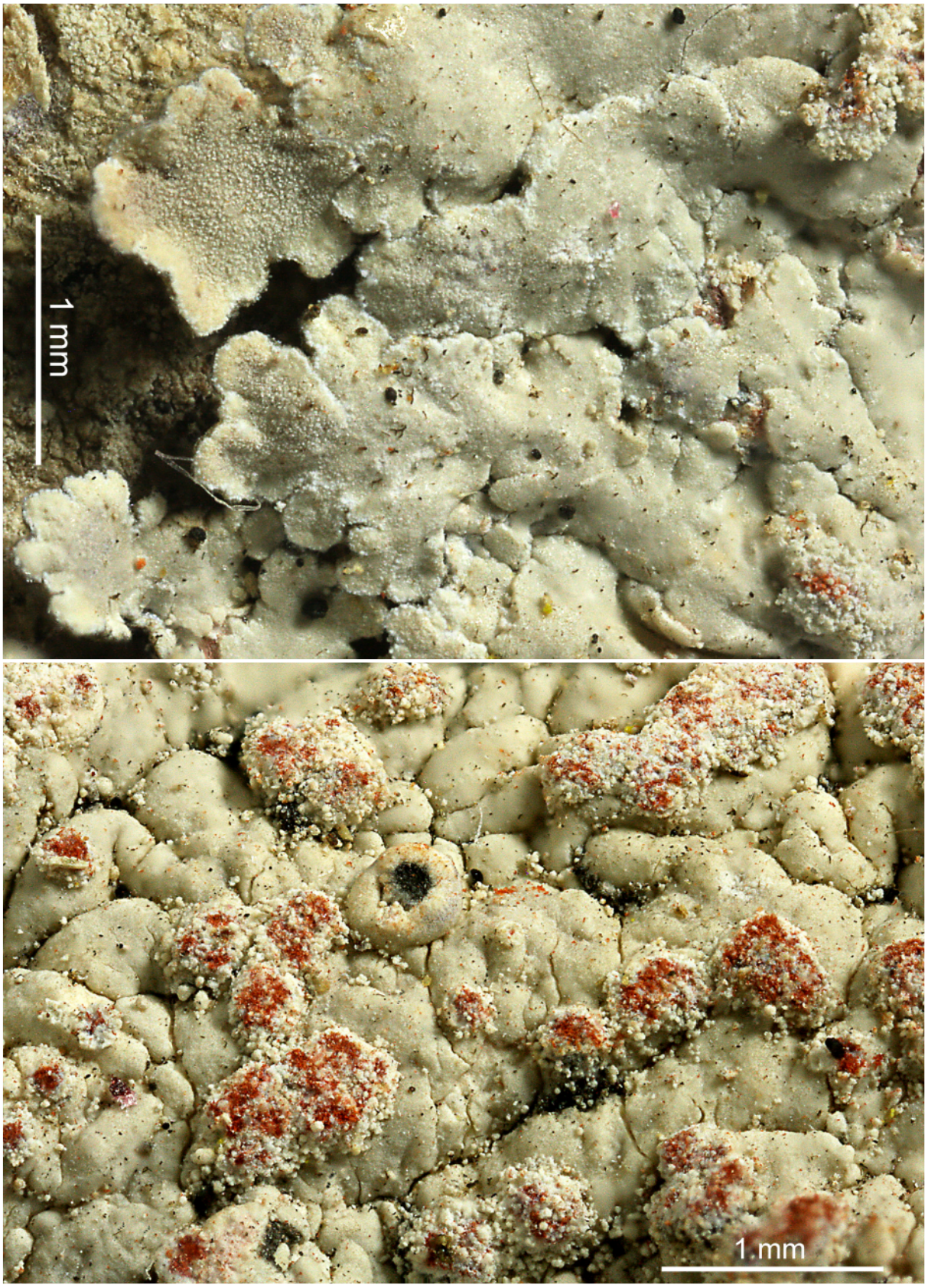
Dirinaria flava

Dirinaria leopoldii (Stein) D.D.Awasthi

Thallus closely appressed to the substratum, grey, finely pruinose, lobes 1-1.3 mm wide. Soralia capitate, globose, 0.5-0.7 mm diam., soredia farinose, ± reddish-purple tinged. Medulla colourless or coccineous in part. Hypothecium dark brown. Spores 8/ascus, brown, 14-18 x 6-8 µm. Chemistry: cortex K+ yellow, C-, P-; medulla K- or pigmented regions K+ purple; atranorin. sekikaic acid, several triterpenes.

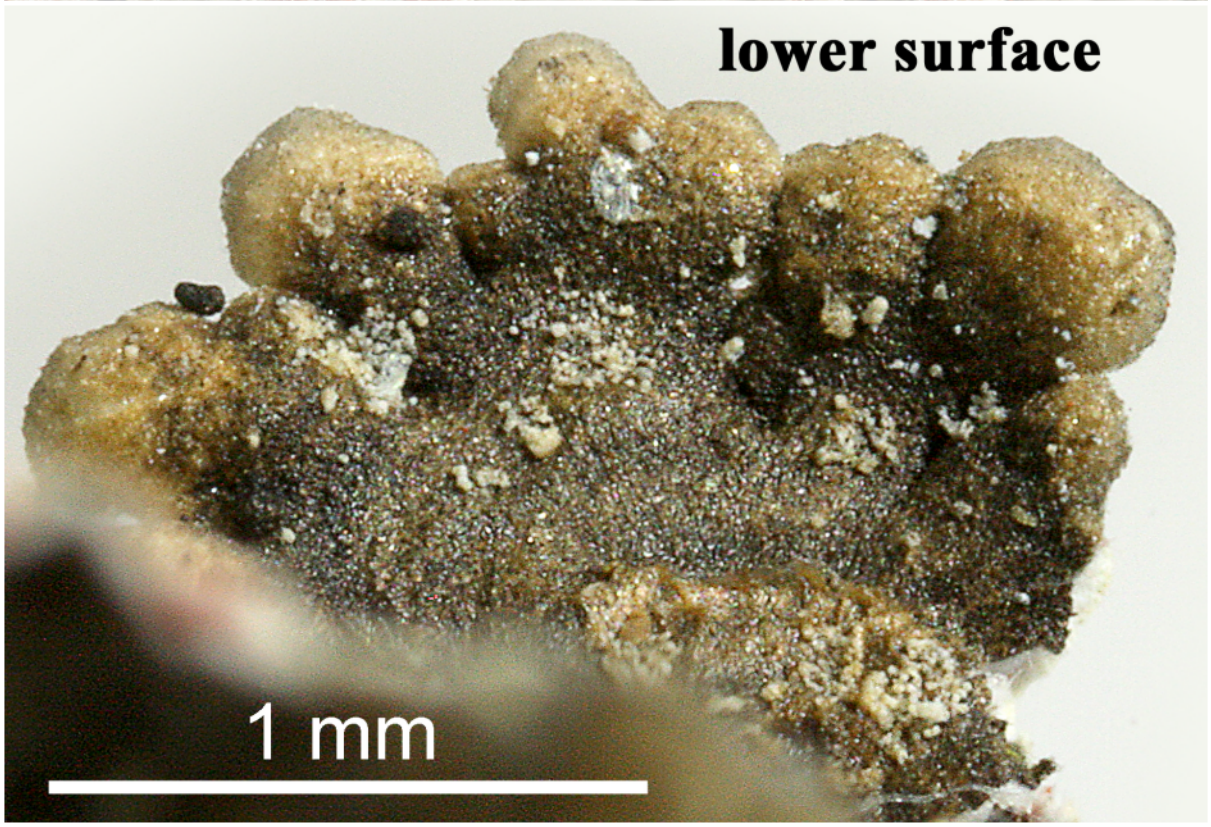
[18027], Brasilien/ Bahia. Zwischen Feira de Santana und Milagres, etwa 10 km vor Milagres, in einer lichten Castinga an dünnen Ästen. 200 m. Leg. K. Kalb & M. Marcelli 21.07.1980, det. K. Kalb. Chemie: Atranorin, Sekikasäure, Pigment (3, 1, 3 gelb), anal. by K.Kalb (170/2210). KALB, LICHENES NEOTROPICI NR. 62.



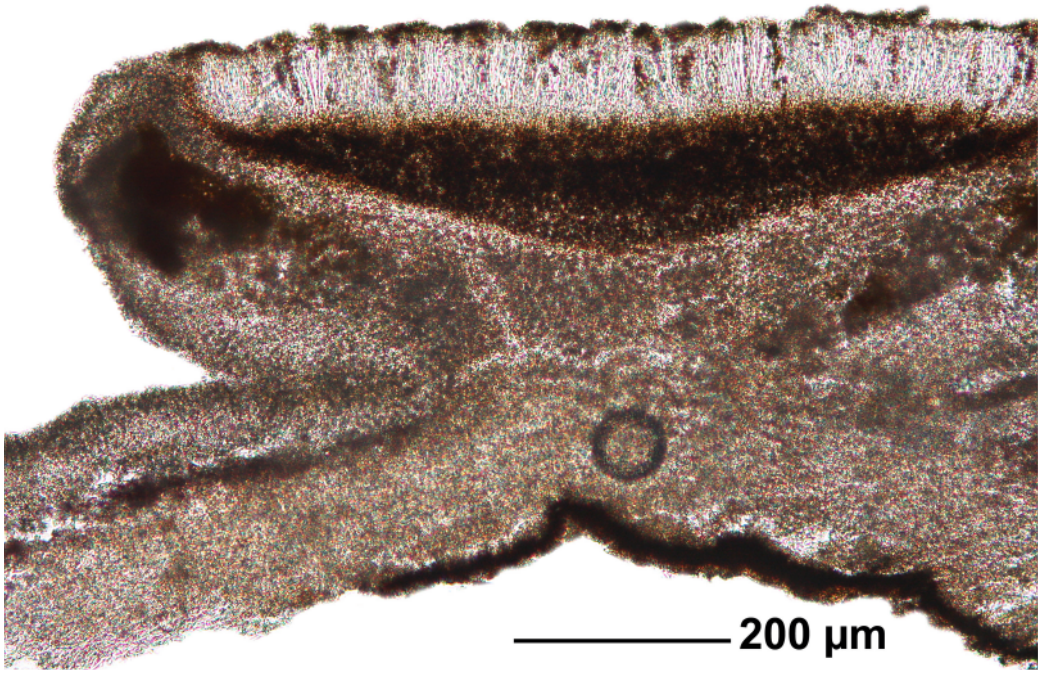


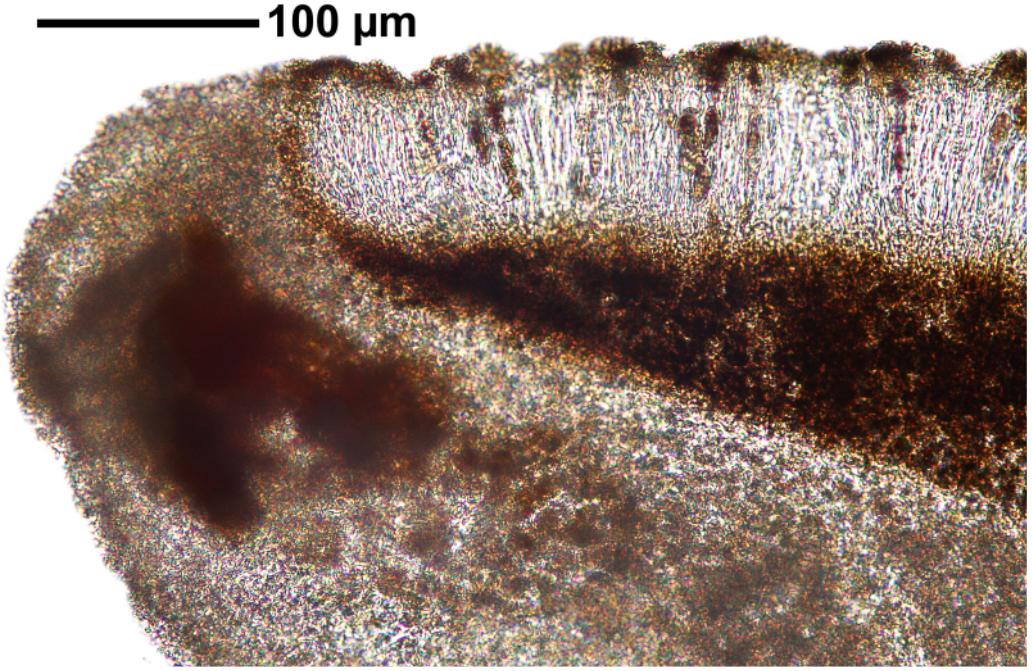
Dirinaria leopoldii

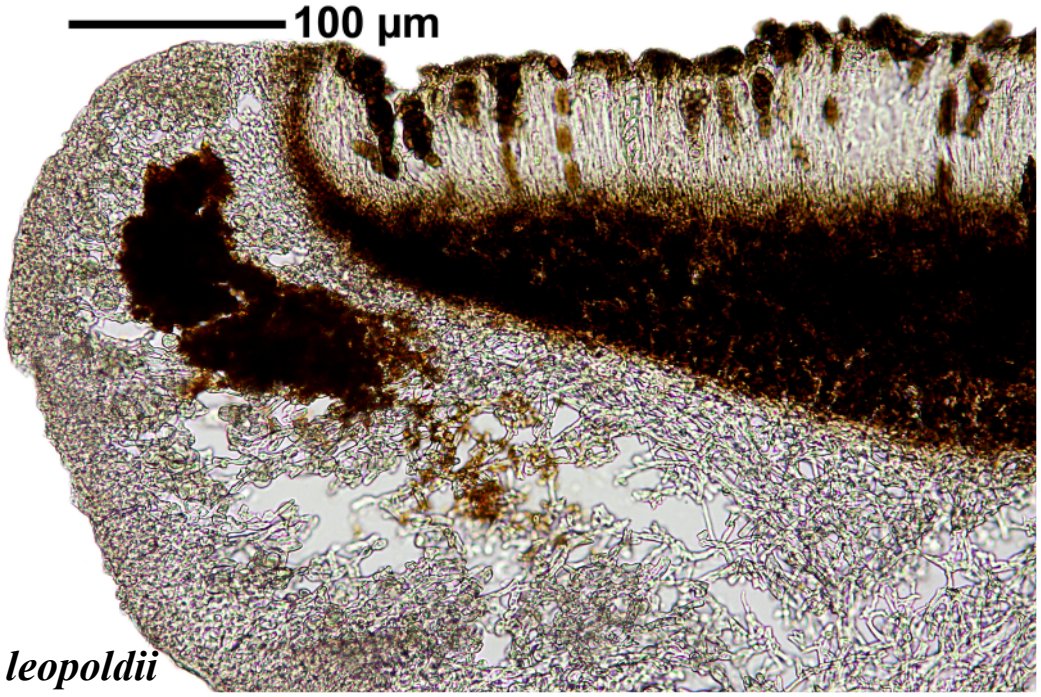




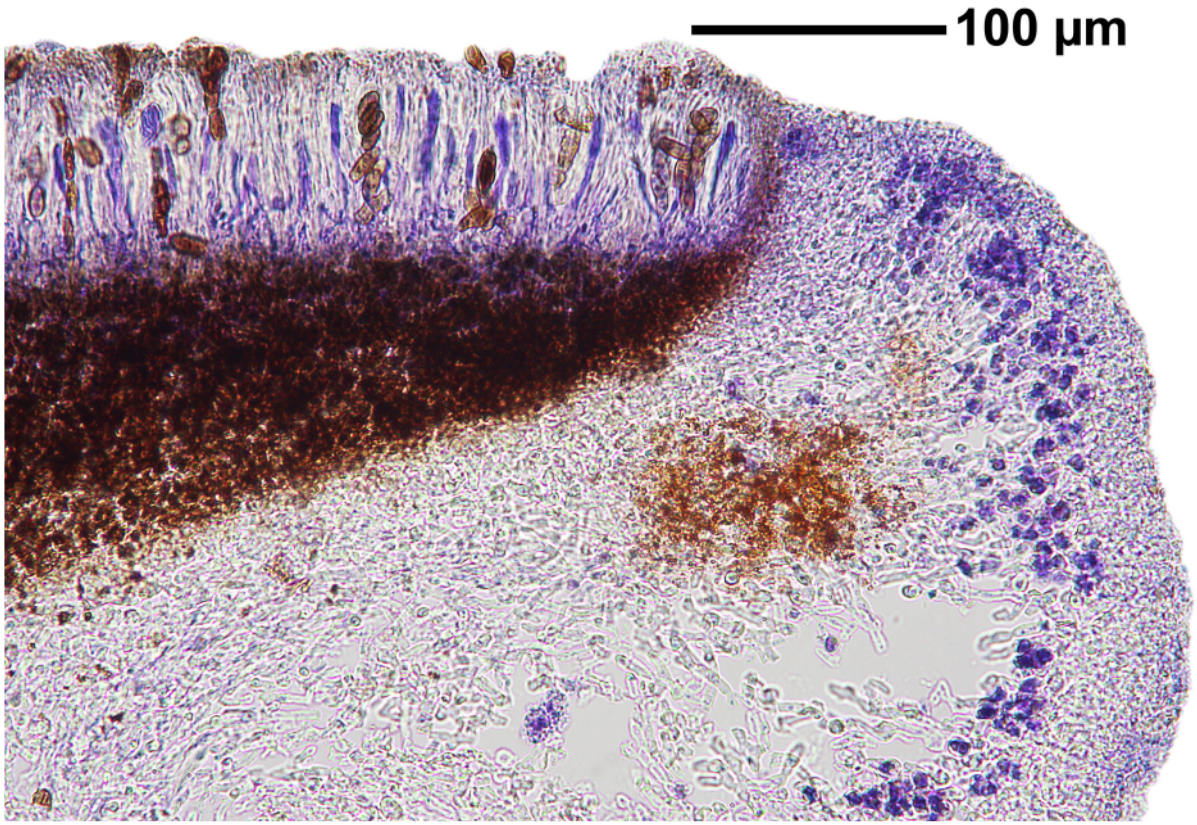
Dirinaria leopoldii

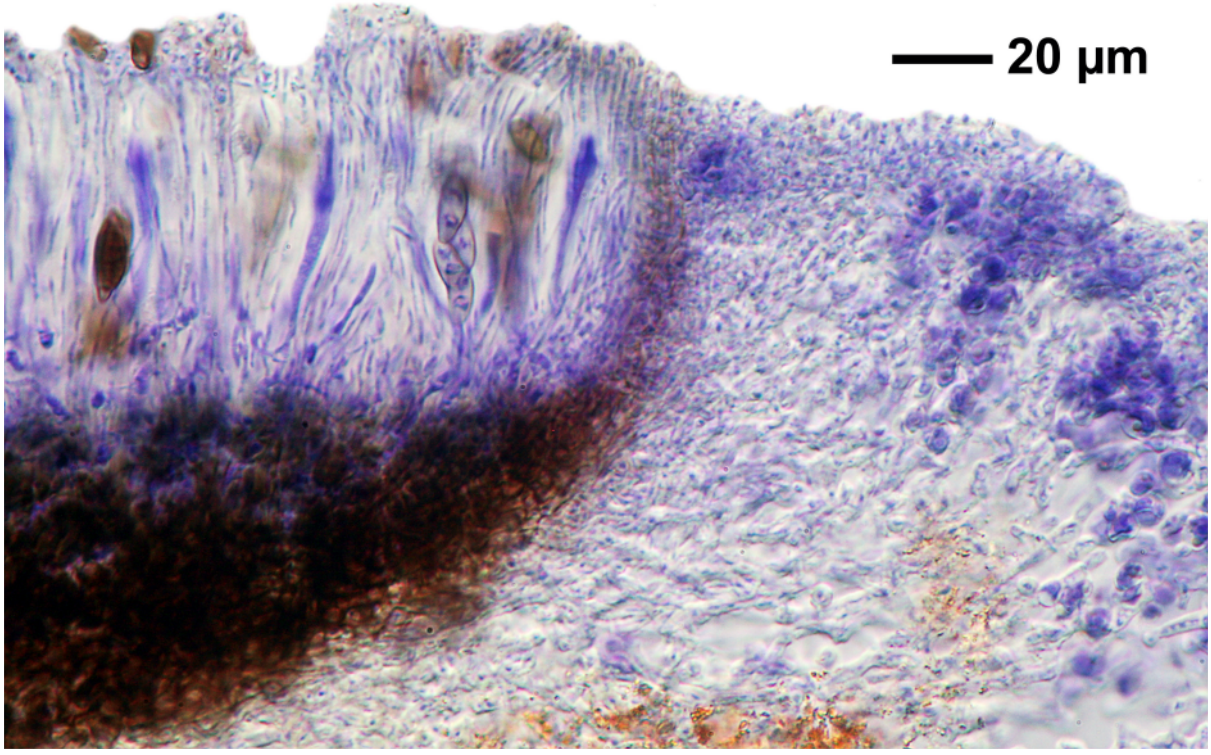




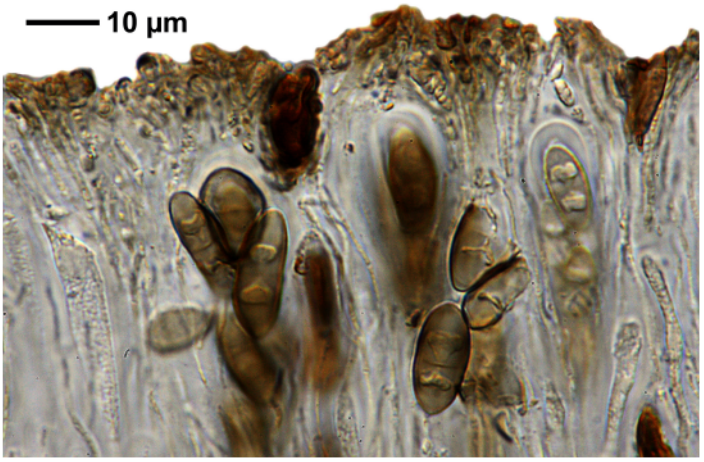


Dirinaria leopoldii

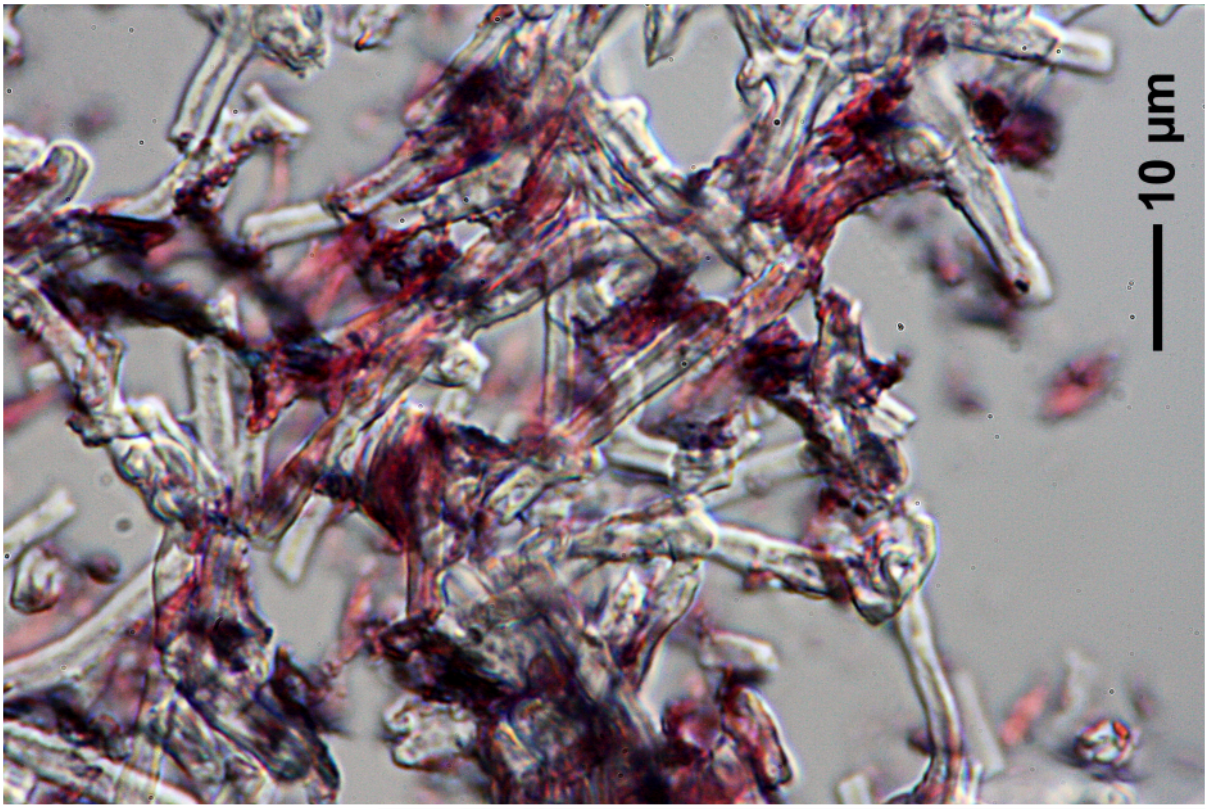


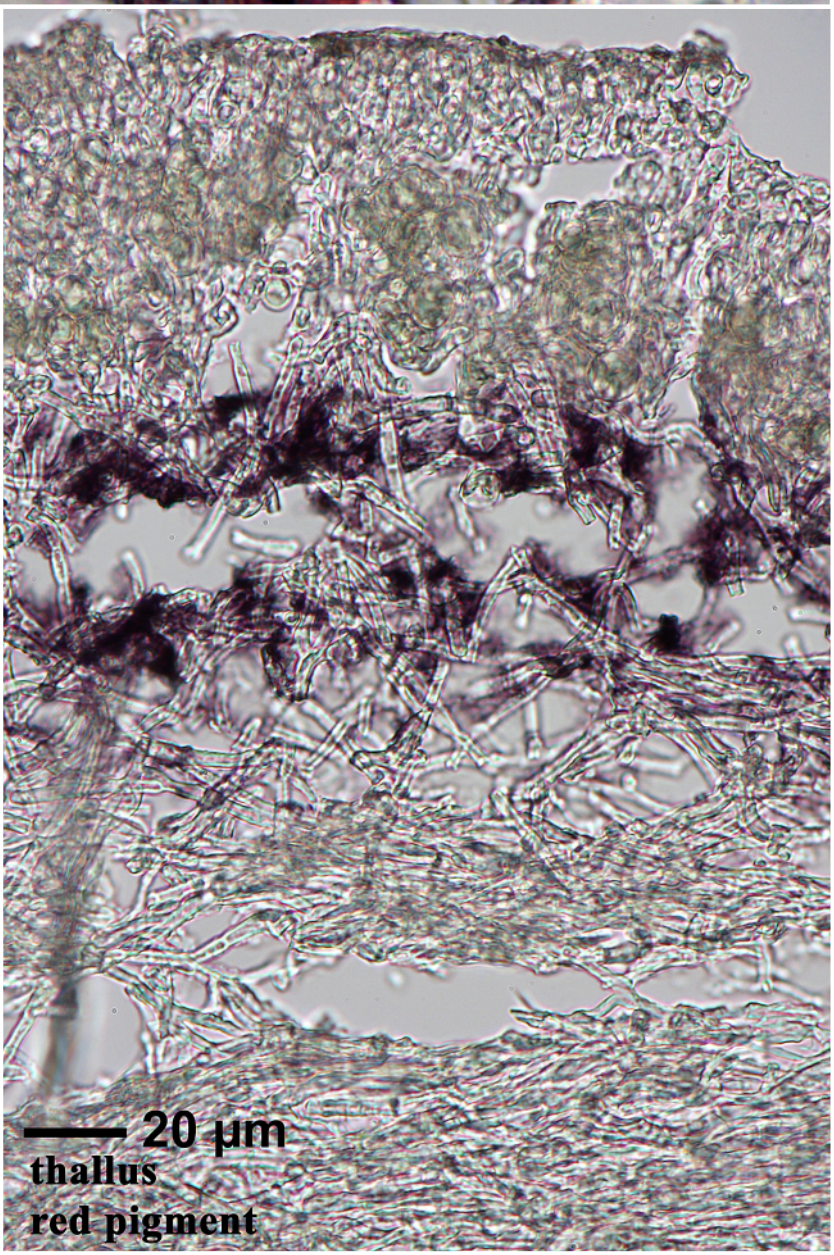




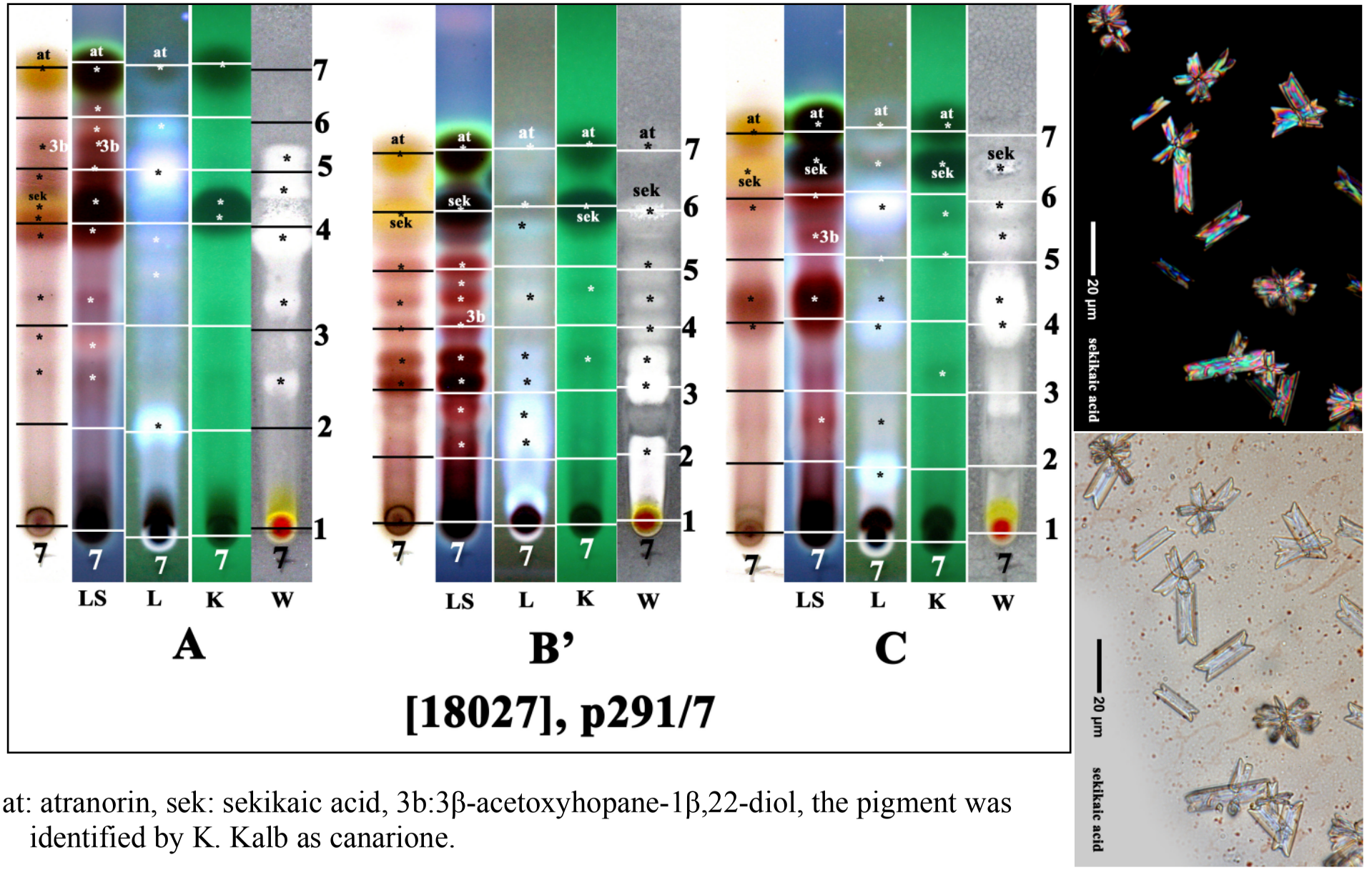


Dirinaria leopoldii





Dirinaria leopoldii



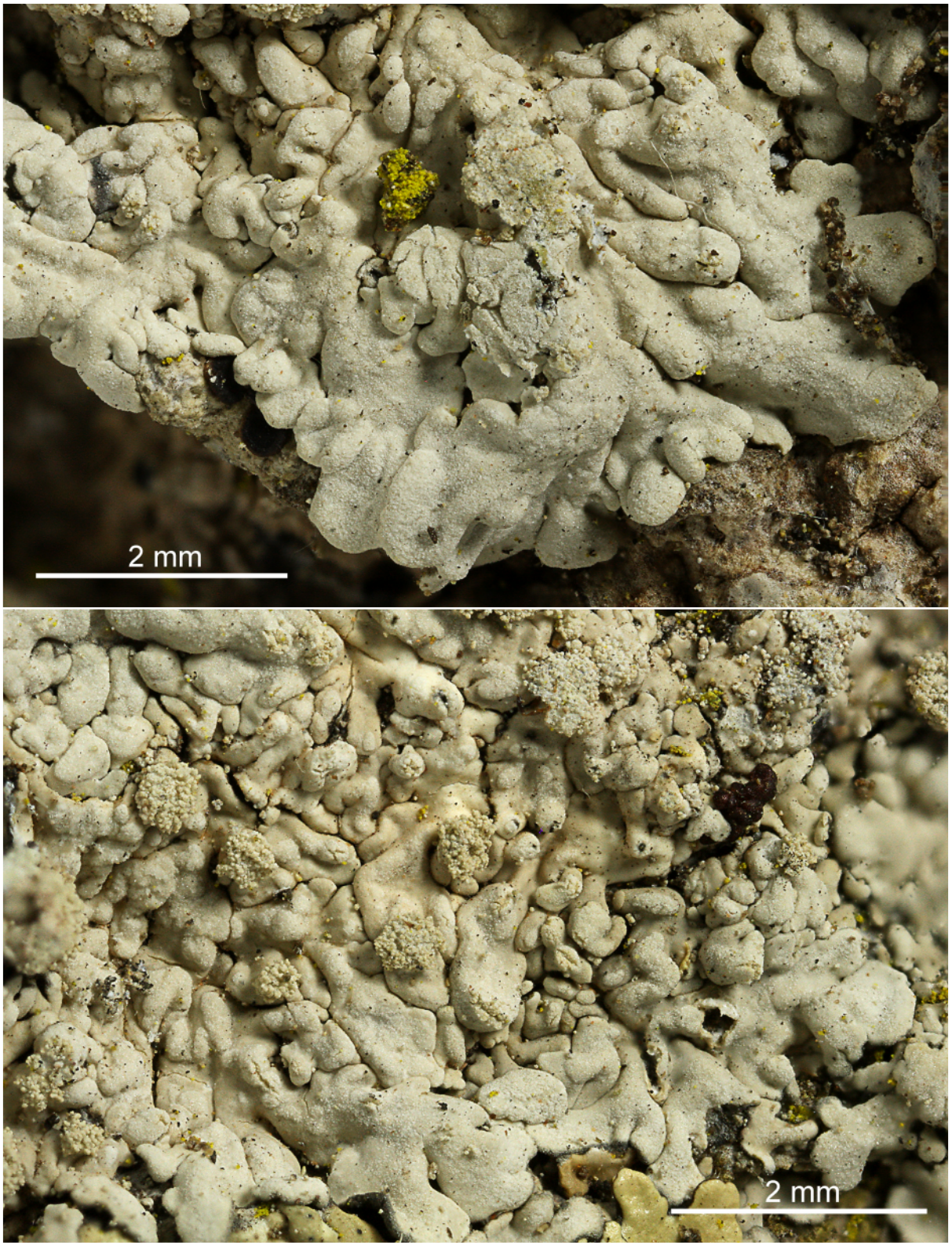
at: atranorin, sek: sekikaic acid, 3b:3β-acetoxyhopane-1β,22-diol, the pigment was identified by K. Kalb as canarione.

Dirinaria picta (Sw.) Clem. & Shear

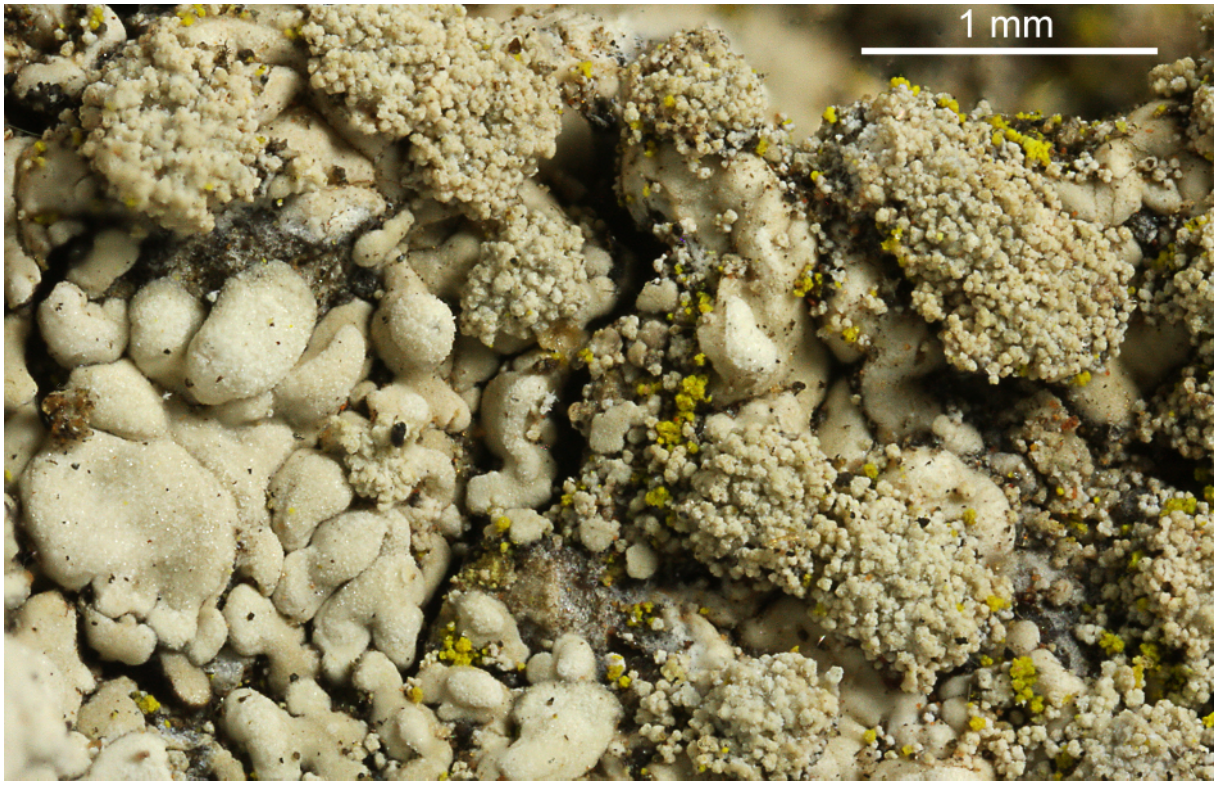
Thallus appressed up to the lope tips, subpinnately lobate, not flabellate towards the lobe tips. Lobes slightly disjunct or adjacent, not longitudinally plicate. Upper surface grey, not or very faintly pruinose, dactyls absent, with laminal, globose soralia. Soredia farinose. Lower surface erhizinate, black in the centre.

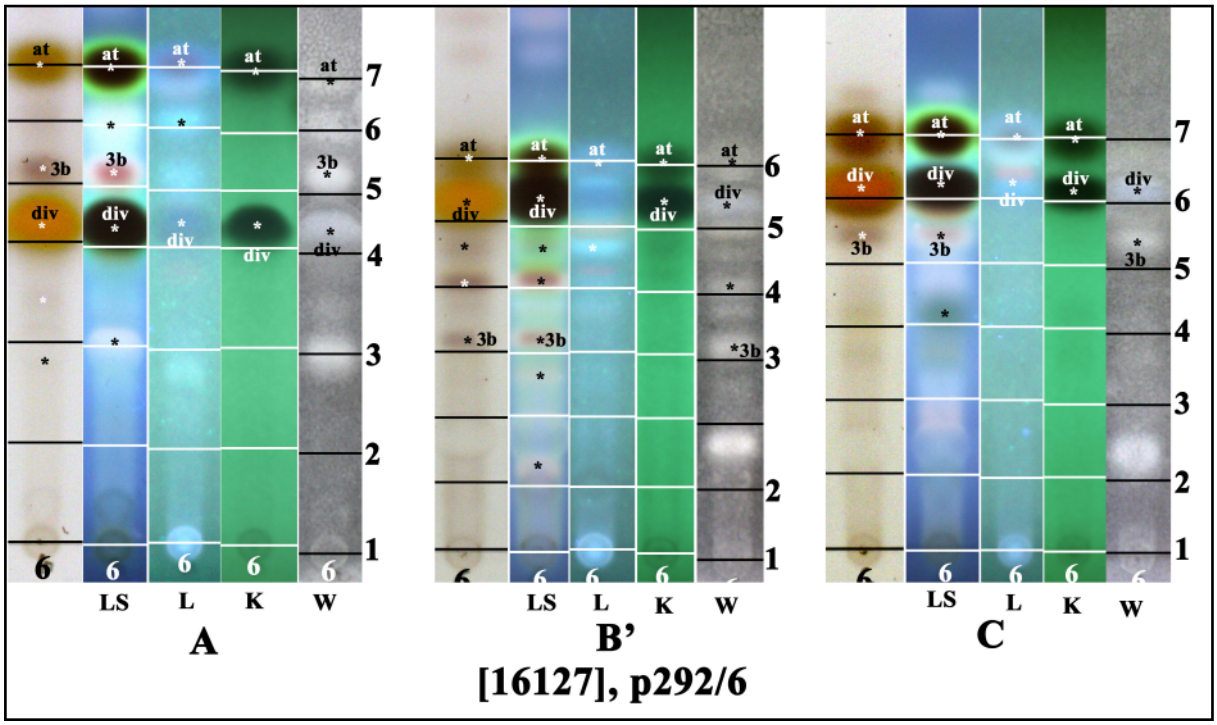
[16127], Australia, New South Wales, north of Batemans Bay, Cullendulla Creek Nature Reserve (mangroves), corticolous, 35.701° S, 150.199° E, 3 m. Leg. F. Schumm, 10.11.2009. Chemistry: atranorin (major), divaricatic acid (major), 3β-acetoxyhopane-1β,22-diol, several further terpenes by TLC (p292/6), anal. F. Schumm.





Dirinaria picta





at: atranorin, div: divaricatic acid, 3b: 3β-acetoxyhopane-1β,22-diol

Dirinaria picta

Dirinaria sekikaica Elix, ISOTYPUS

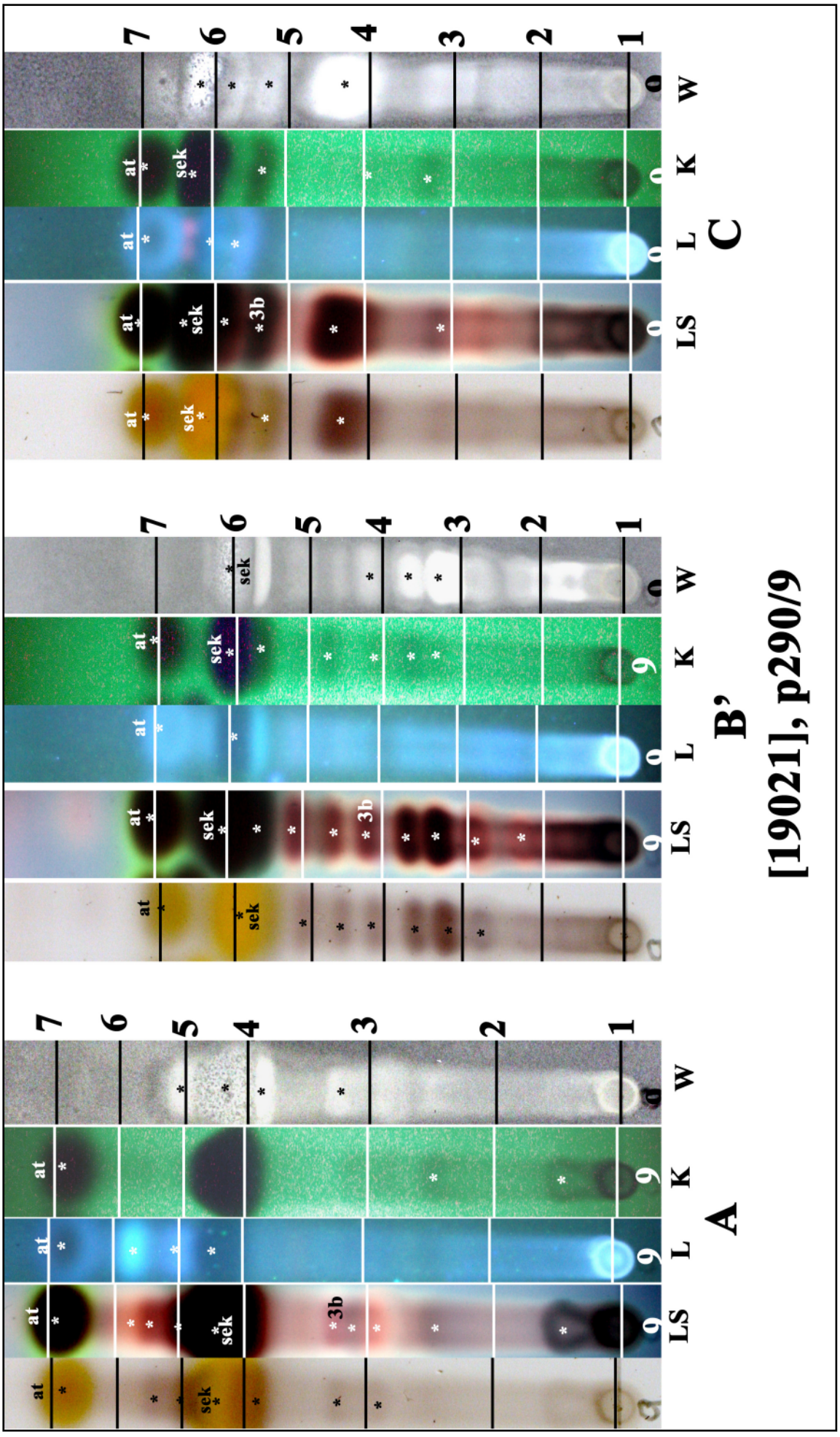
Thallus lobes contiguous, longitudinally plicate, with flabellate apices. Soralia orbicular, with farinose soredia, lacking dactyls. Differs from *Dirinaria applanata* by containing sekikaic acid instead of divaricatic acid.

[19021], Australia, New South Wales, Old Maclay River estuary, Stuarts Point, 30°49' S, 153°00' E, 1 m, growing on *Casuarina glauca* in strand vegetation adjacent to a mangrove swamp. Leg. J.A. Elix (21346), 18.01.1987, det. J.A. Elix. Chemistry: atranorin (minor), chloroatranorin (minor), sekikaic acid (major), 4'-*O*-demethylsekikaic acid (minor), ramalinolic acid (trace), 3β-acetoxyhopane-1β,22-diol (minor), unknown triterpenes by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 157. Distributed as *Dirinaria consimilis* (Stirt.) D.D.Awasthi.





Dirinaria sekikaica



Dirinaria sekikaica

Lecanora austrosorediosa Lumbsch
[= ***Biatora sorediosa*** G.Rambold]

Thallus rimose, 0.1-0.2 mm thick, with distinct roundish soralia of o.25-0.5 mm. Apothecia round, dispersed, sessile, 0.4-0.7 mm diam. Disc convex, pale yellow-brown, epruininose. Margin first distinct, later mostly vanishing. Hypothecium colourless. Hymenium I-. Ascospores 8-13 x 4-6 µm. Chemistry: Cortex K+ yellow, P+ yellow, C-; medulla and excipulum K-, P-, C-.

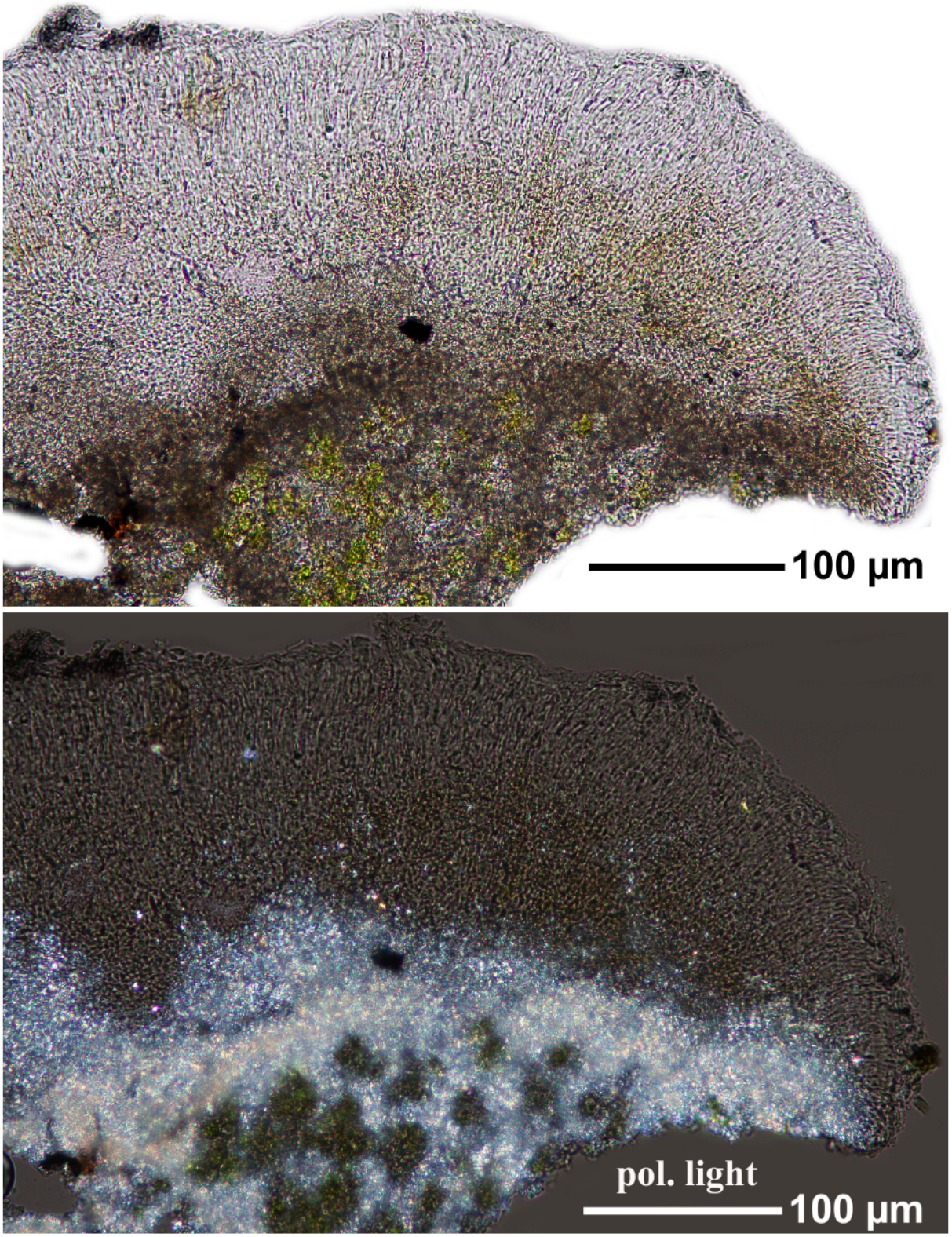
[18947], Australia, Western Australia, Lake Argyle Road, 31 km south of Kununurra, 16°03' S, 128° 45' E, 160 m, growing on rocks along steep sided, rocky creek valley with Buchanania, Terminalia and Xanthostemon. Leg. J.A. Elix, H.T. Lumbsch & H. Streimann 08.07.1991. Chemistry: atranorin (major), chloroatranorin (minor), 2'-*O*-methylperlatolic acid (minor), 2'-*O*-methylisohyperlatolic acid (minor), 2'-*O*-methylsuperlatolic acid (trace) by TLC, anal. J.A.Elix. LICHENES AUSTRALASICI EXSICCATI NO. 226, distributed as *Biatora sorediosa* G.Rambold



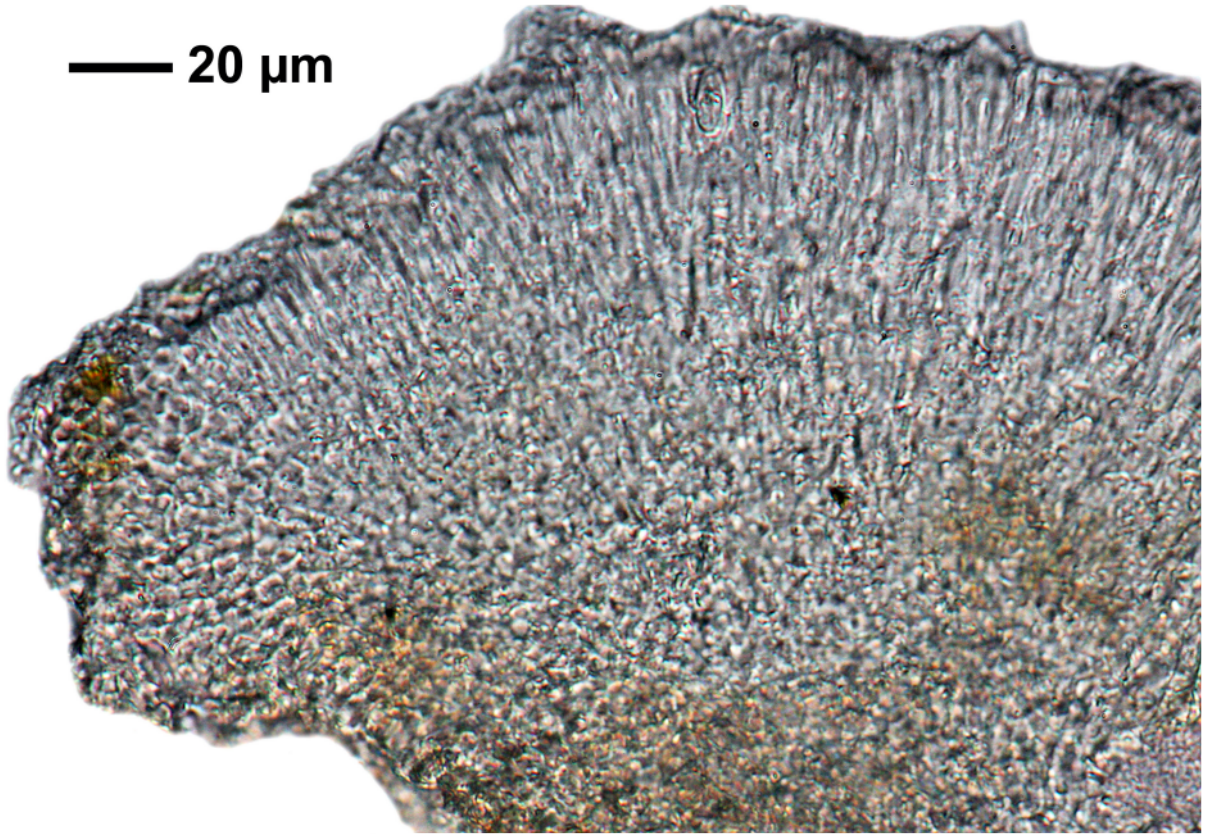
Lecanora austrosorediosa Lumbsch
[= ***Biatora sorediosa*** G.Rambold]

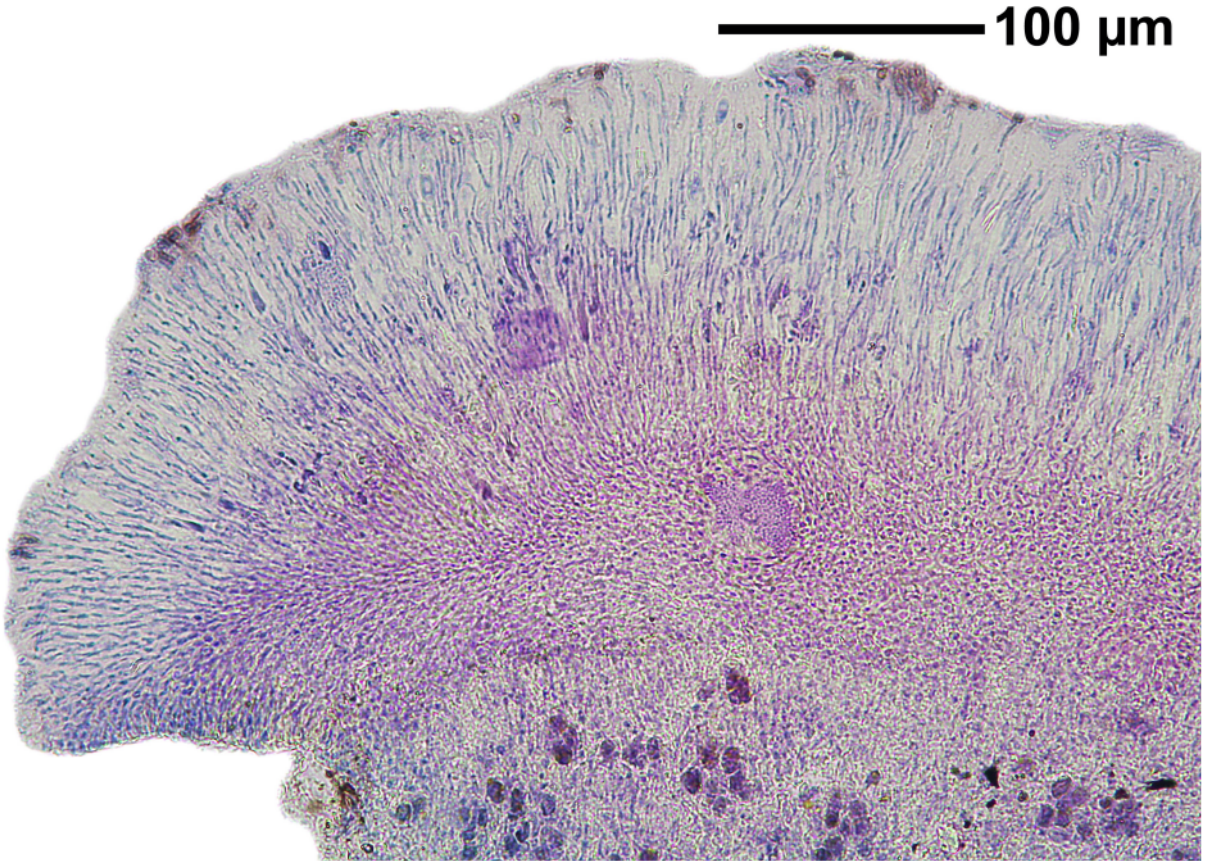
[18948], Australia, Northern Territory, Umbrawarra Gorge, 22 km south-west of Pine Creek, 13°58' S, 131°42' E, 210 m,growing on sandstone rocks in steep sided, rocky gorge with *Melaleuca*, *Psychotria*, *Ilex*, *Corallia* and *Ficus*. Leg. J.A. Elix, H.T. Lumbsch & H. Streimann 17.07.1991. Chemistry: atranorin (major), chloroatranorin (trace), 2'-*O*-methylperlatolic acid (trace), 2'-*O*-methylisohyperlatolic acid (minor), 2'-*O*-methylhyperlatolic acid (minor), 2'-*O*-methylsuperlatolic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 251, distributed as *Biatora sorediosa* G.Rambold



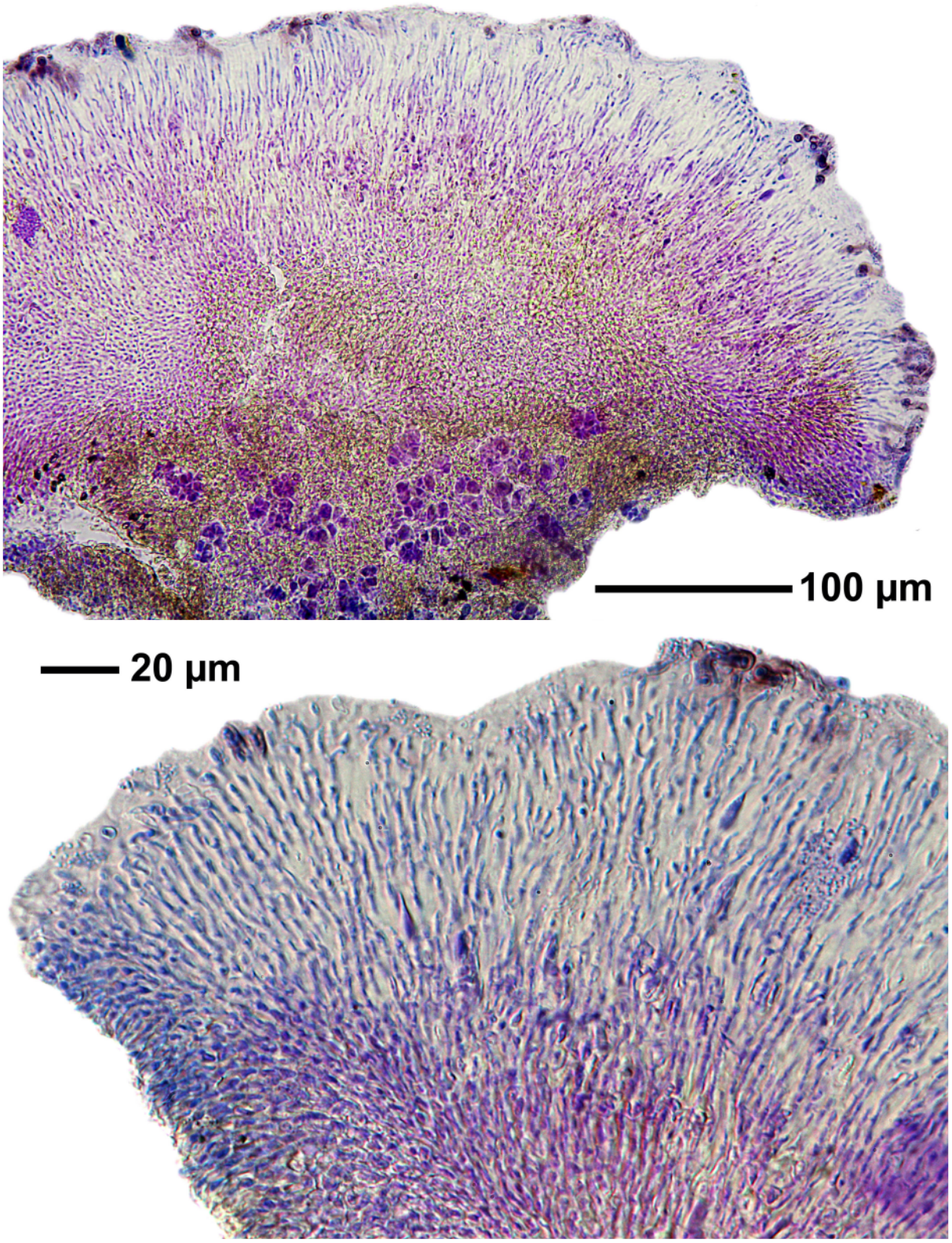


Lecanora austrosorediosa

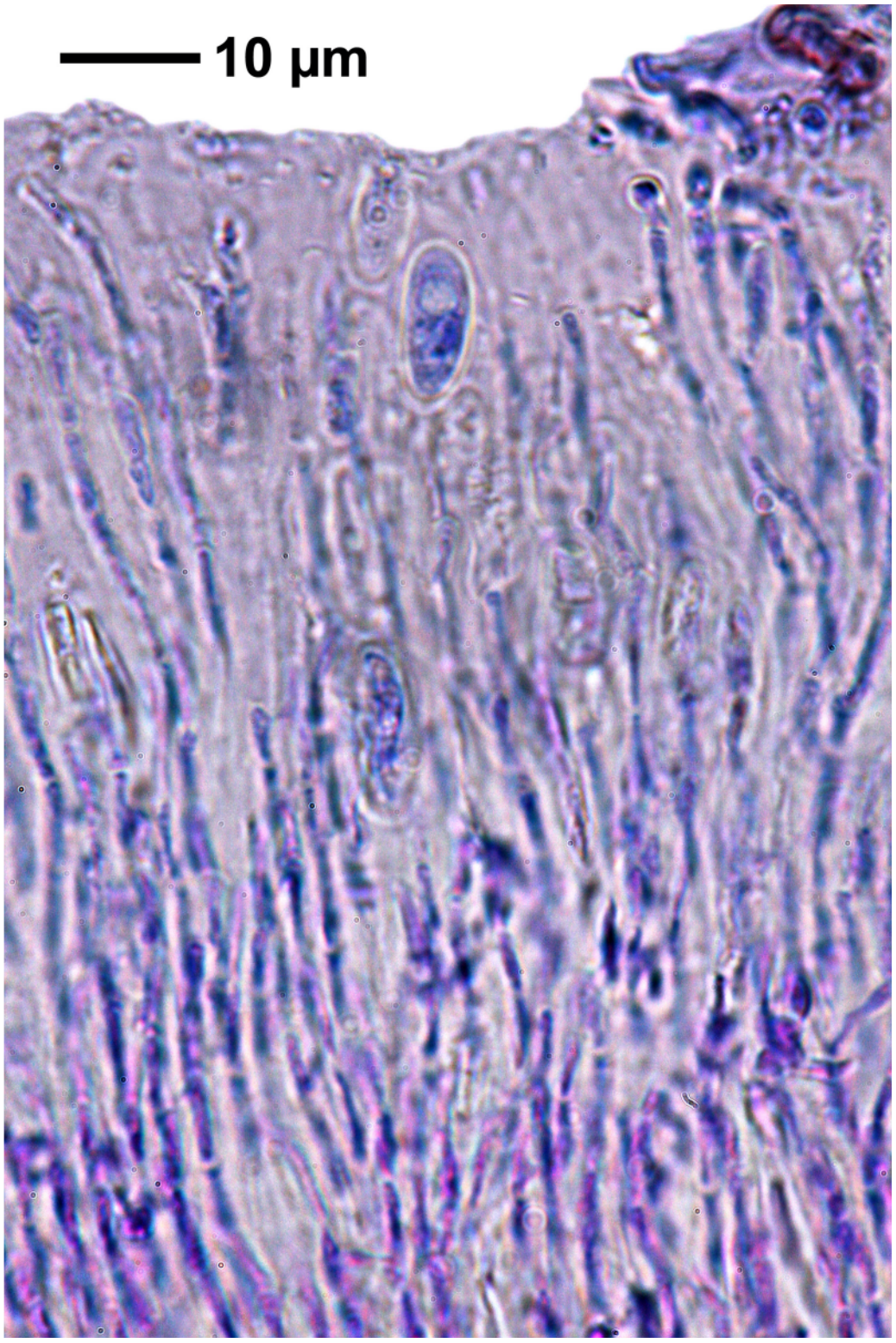


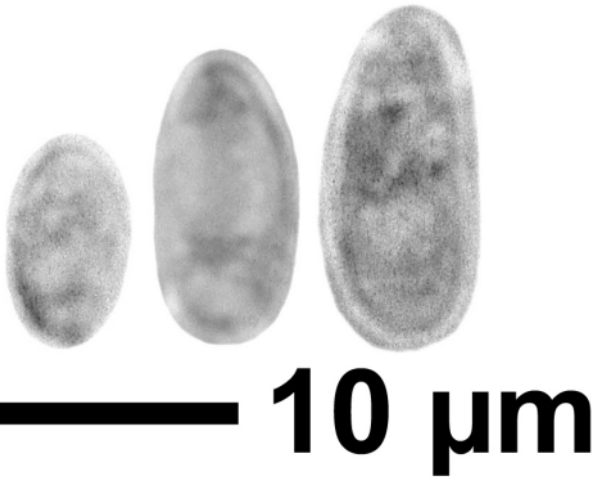


Lecanora austrosorediosa

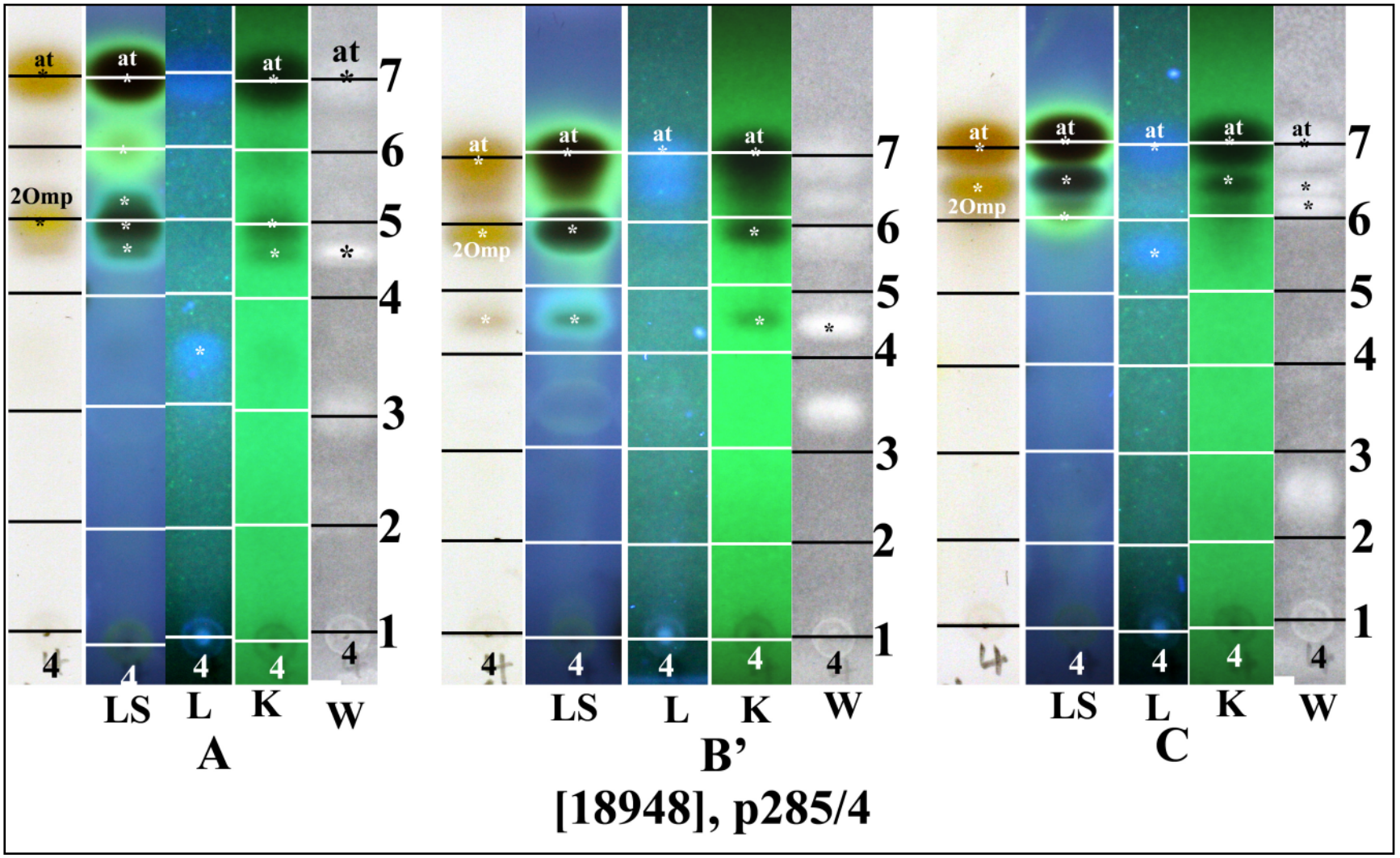


Lecanora austrosorediosa





Lecanora austrosorediosa



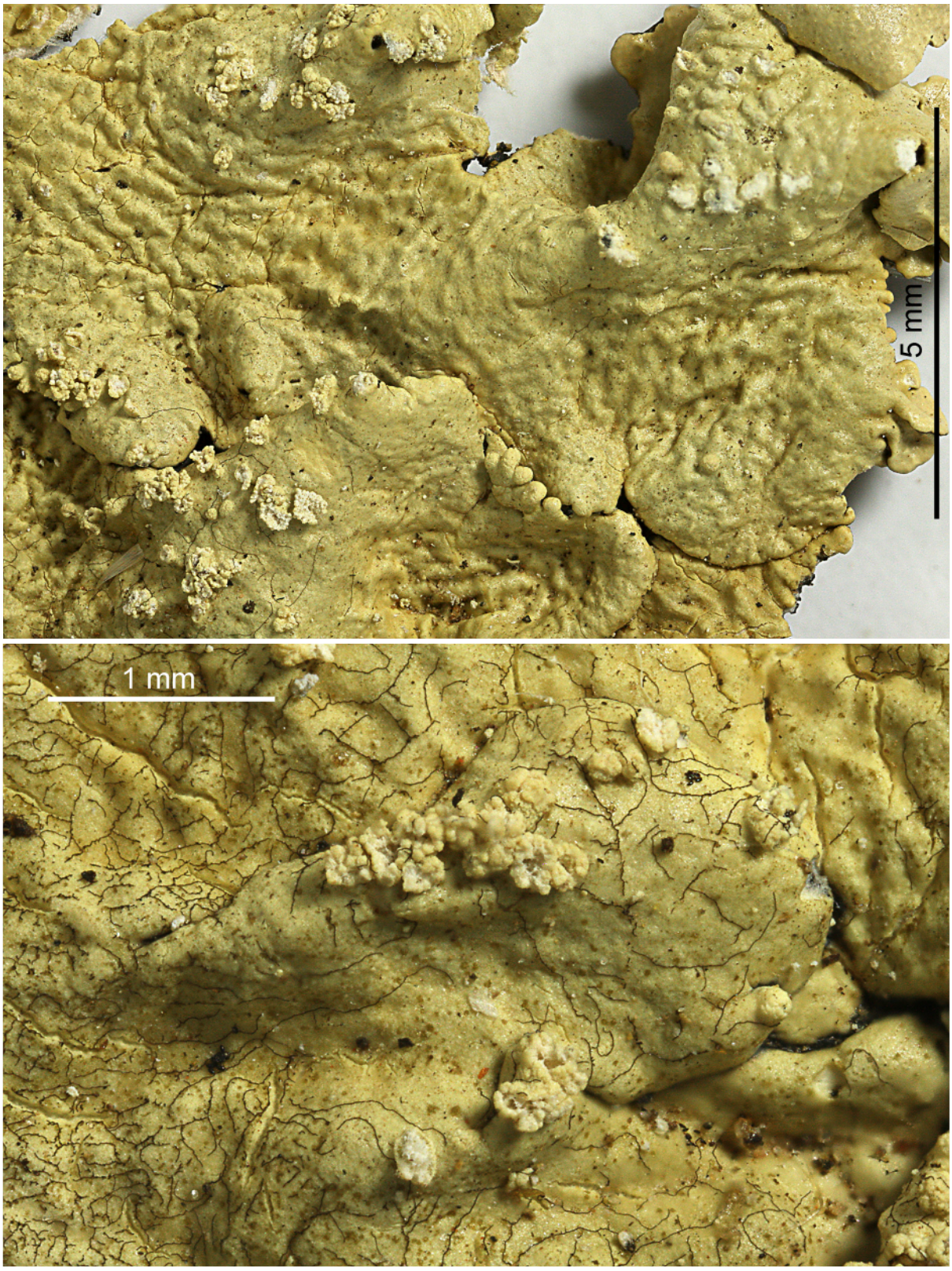
at: atranorin, 2Omp: – in A,C composite spots containing 2'-*O*-methylperlatolic acid, 2'-*O*-methylhyperlatolic acid, 2'-*O*-methylisohyperlatolic acid, 2'-*O*-methylsuperlatolic acid, – in B 2'-*O*-methylperlatolic acid is somwhat slower and the other three form a broad composite spot.

Flavoparmelia euplecta (Stirt.) Hale
[= ***Parmelia euplecta*** Stirt.]

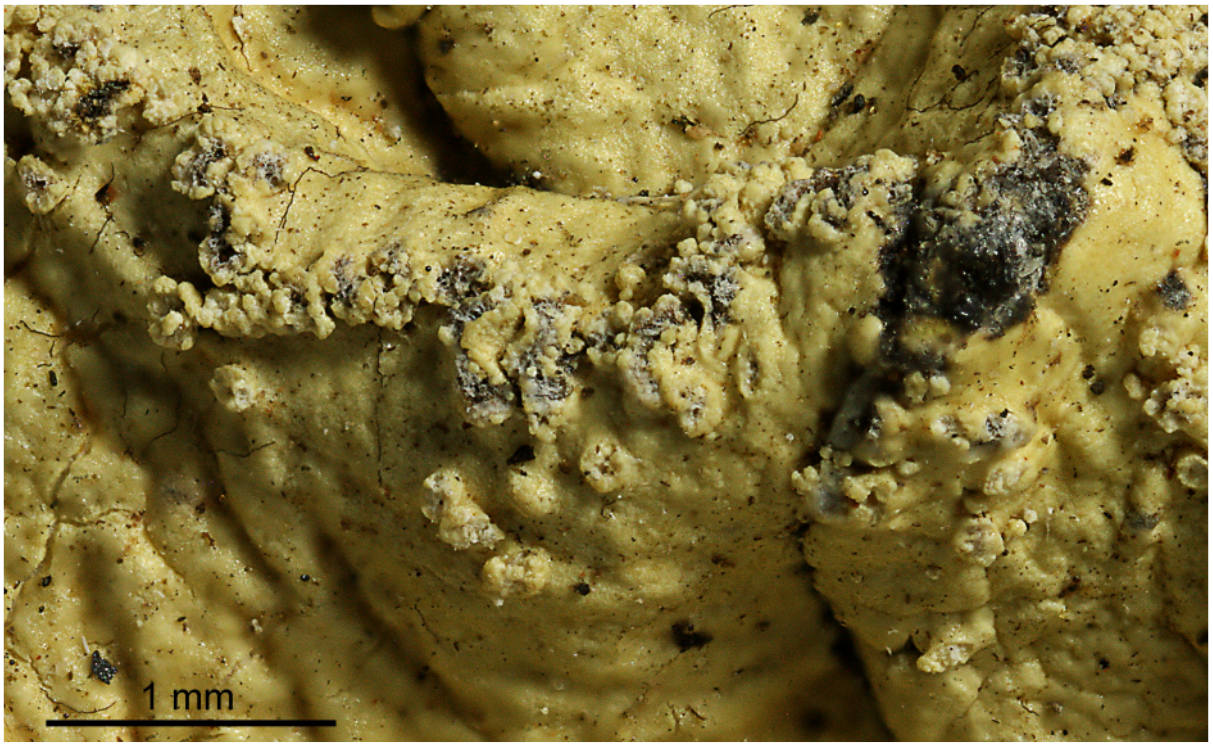
Thallus green to yellow-green, adnate, thick, leathery, with pustulate soredia, lacking dactyls and isidia. Lower medulla yellow. Chemistry: cortex K-, UV-; medulla C-, KC- ,P+ red, white upper parts K-, yellow lower parts K+ purple (euplectin). Usnic acid, protocetraric acid (major), euplectin, ± atranorin.

[19023], Australia, New South Wales, 1 km north of Kioloa, 35°33' S, 150°22' E, 10 m, on weathered granite rocks in pasture. Leg. J.A. Elix (22933), 2.11.1989.





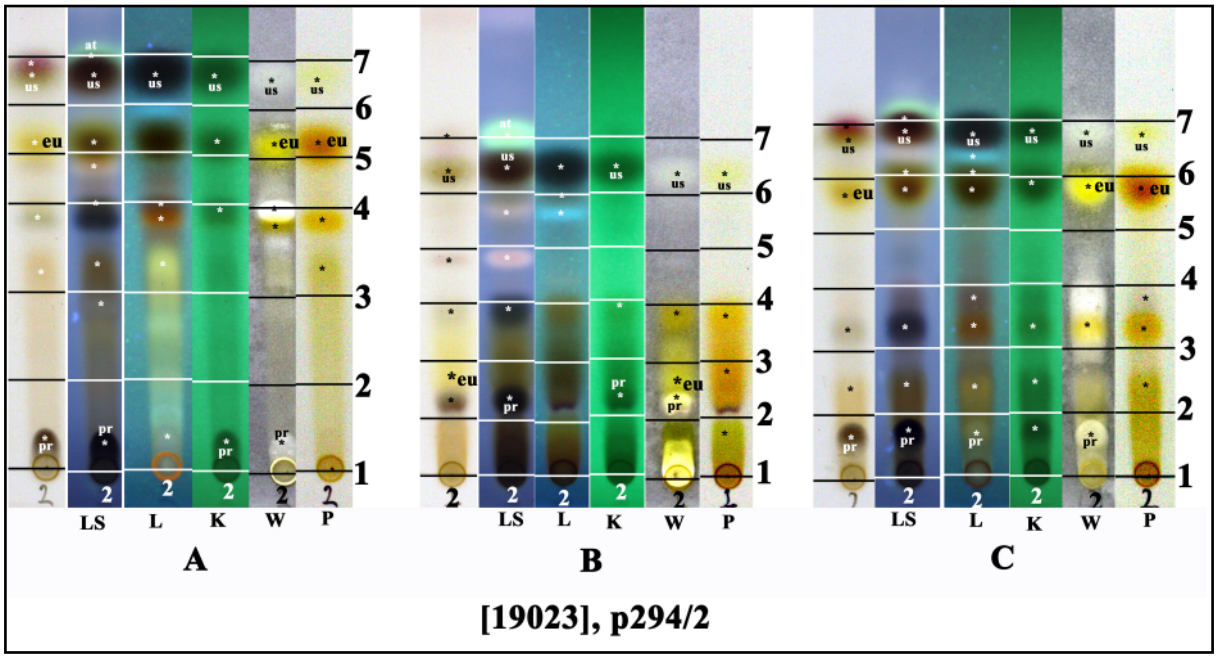
Flavoparmelia euplecta





Flavoparmelia euplecta





at: atranorin, us:usnic acid, pr: protocetraric acid, eu: euplectin

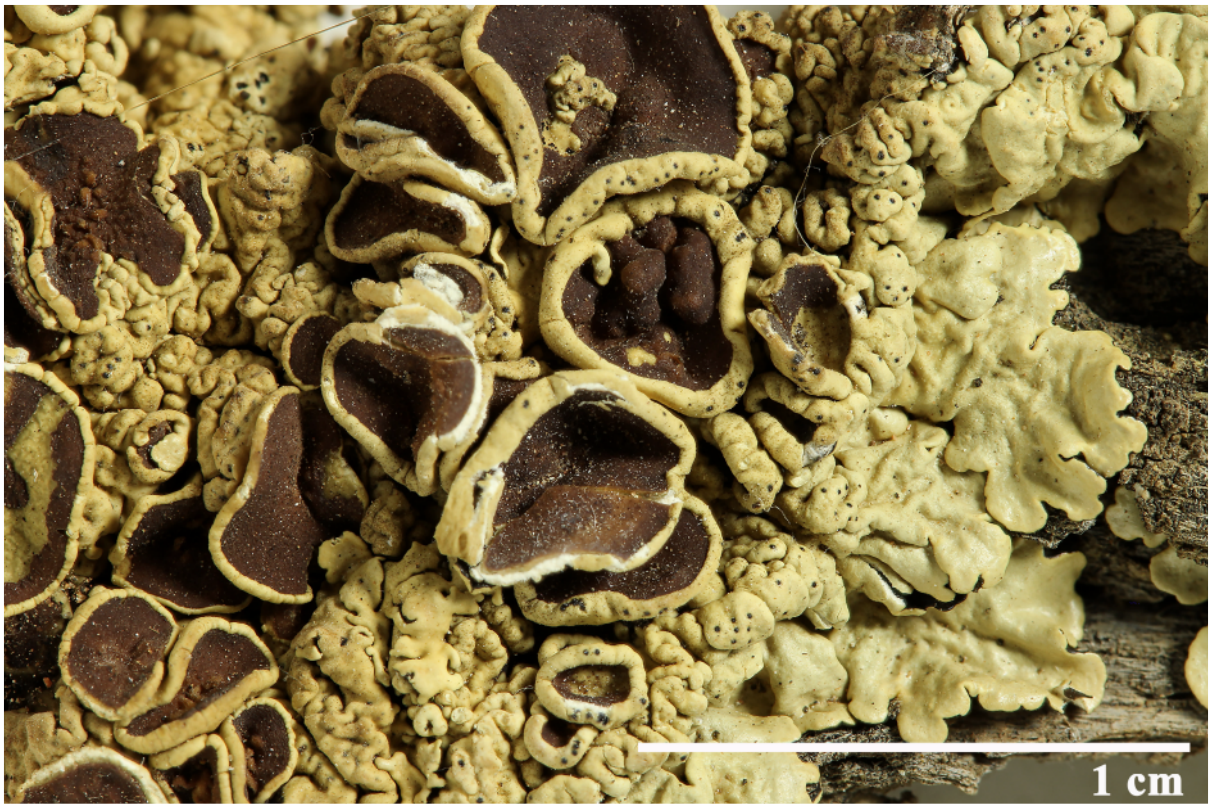
Flavoparmelia euplecta

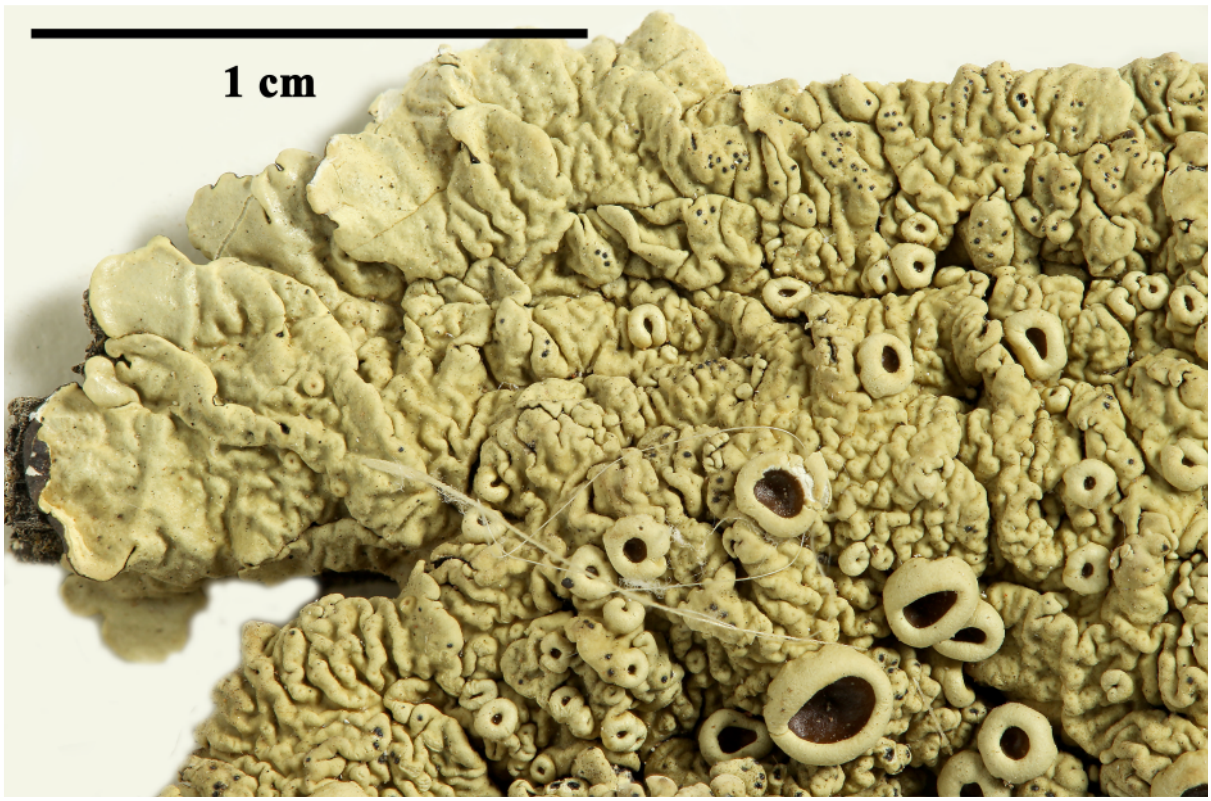
Flavoparmelia ferax (Müll.Arg.) Hale
[= ***Parmelia ferax*** Müll.Arg.]

Thallus adnate. Lobes imbricate, elongate, sometimes becoming lobulate, 2-3 mm wide. Upper surface pale yellow-green, ±rugulose at lobe margins, densely rugose in thallus centre, lacking soredia, dactyls and isidia. Medulla white. Ascospores 13-15 x 7-8 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC-, P+ deep orange; usnic acid, physodalic acid (major), conphysodalic acid (minor), protocetraric acid (trace).

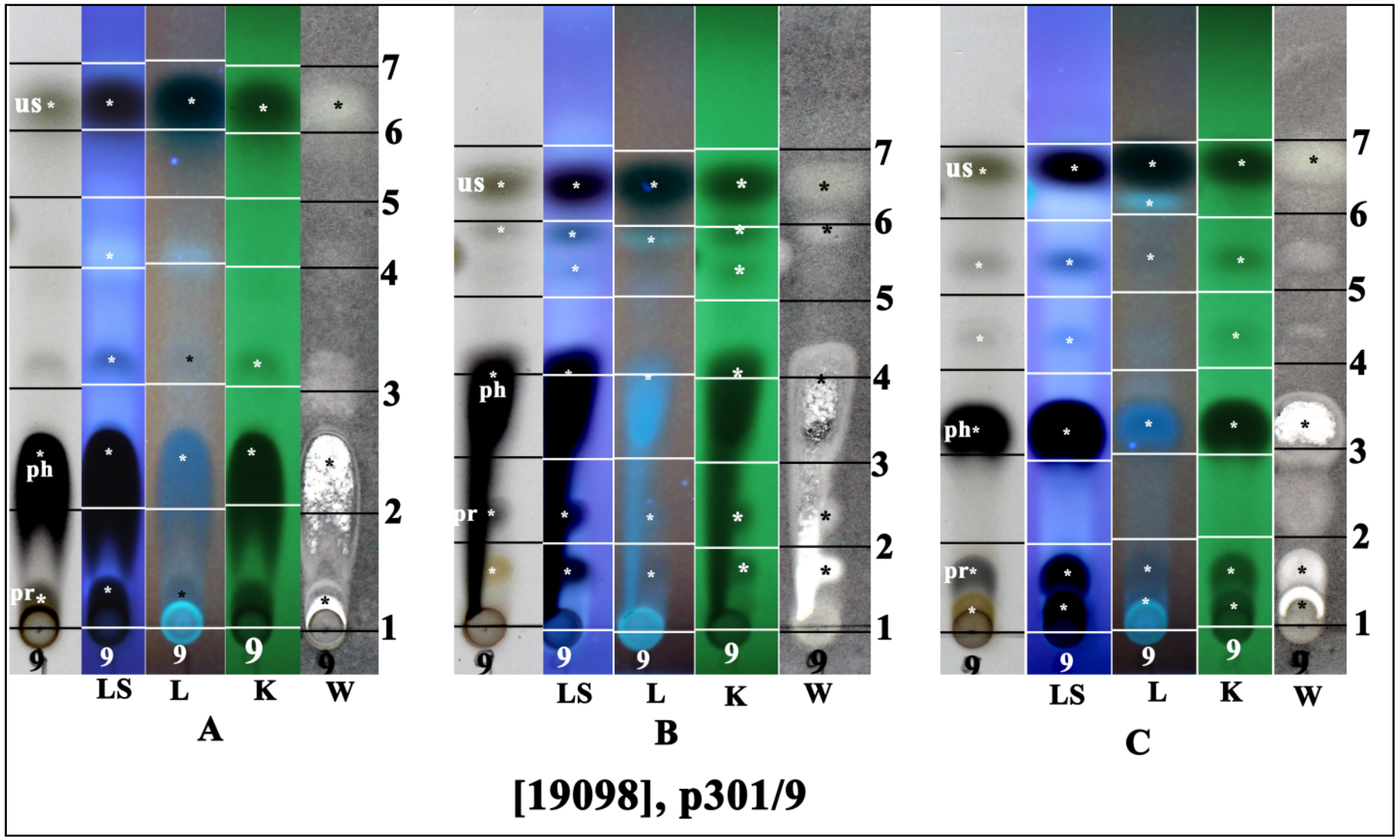
[19098], Australia, New South Wales, 29 km west of Narrandera along the Sturt Highway, 34°40' S, 146°10' E, 80 m,growing on *Callitris columellaris* in *Callitris* woodland. Leg. J.A. Elix (11480), 22.12.1983. LICHENES AUSTRALASICI EXSICCATI NO. 058. Distributed as ***Parmelia ferax*** Müll.Arg.







Flavoparmelia ferax

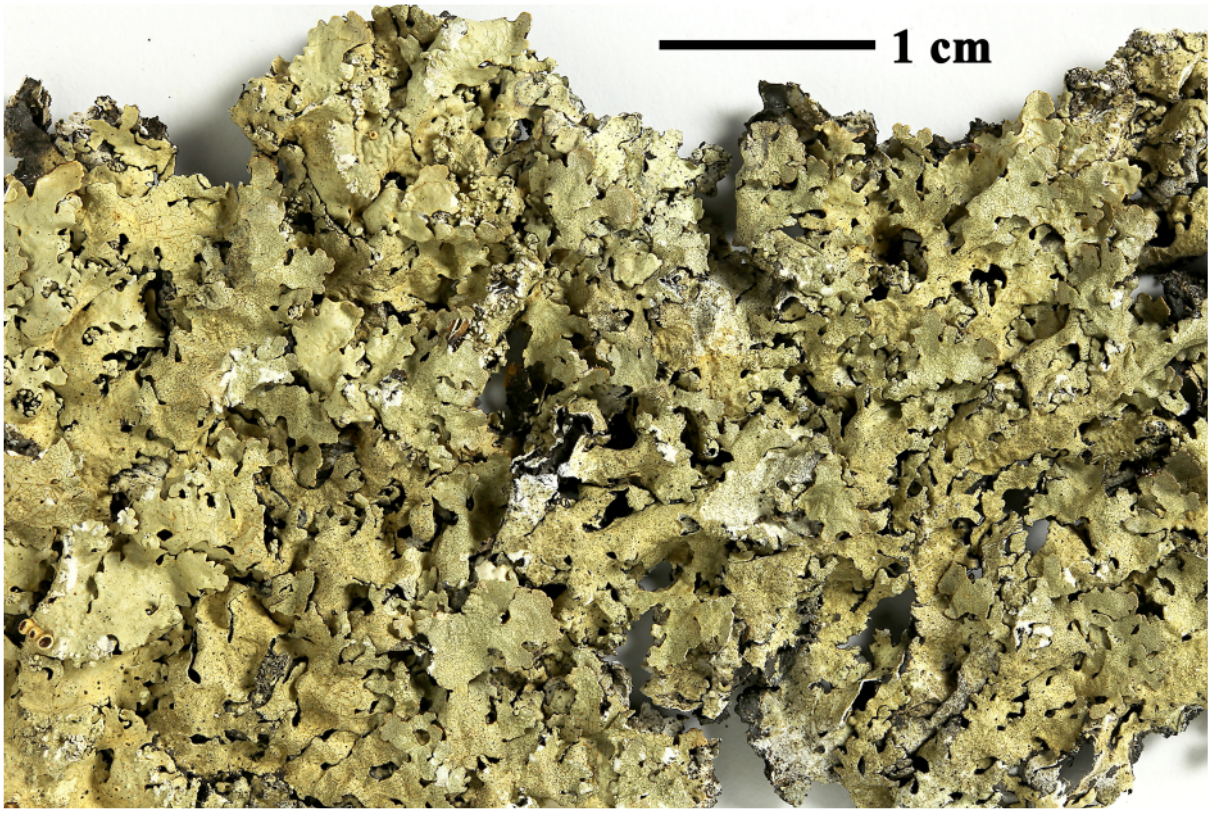


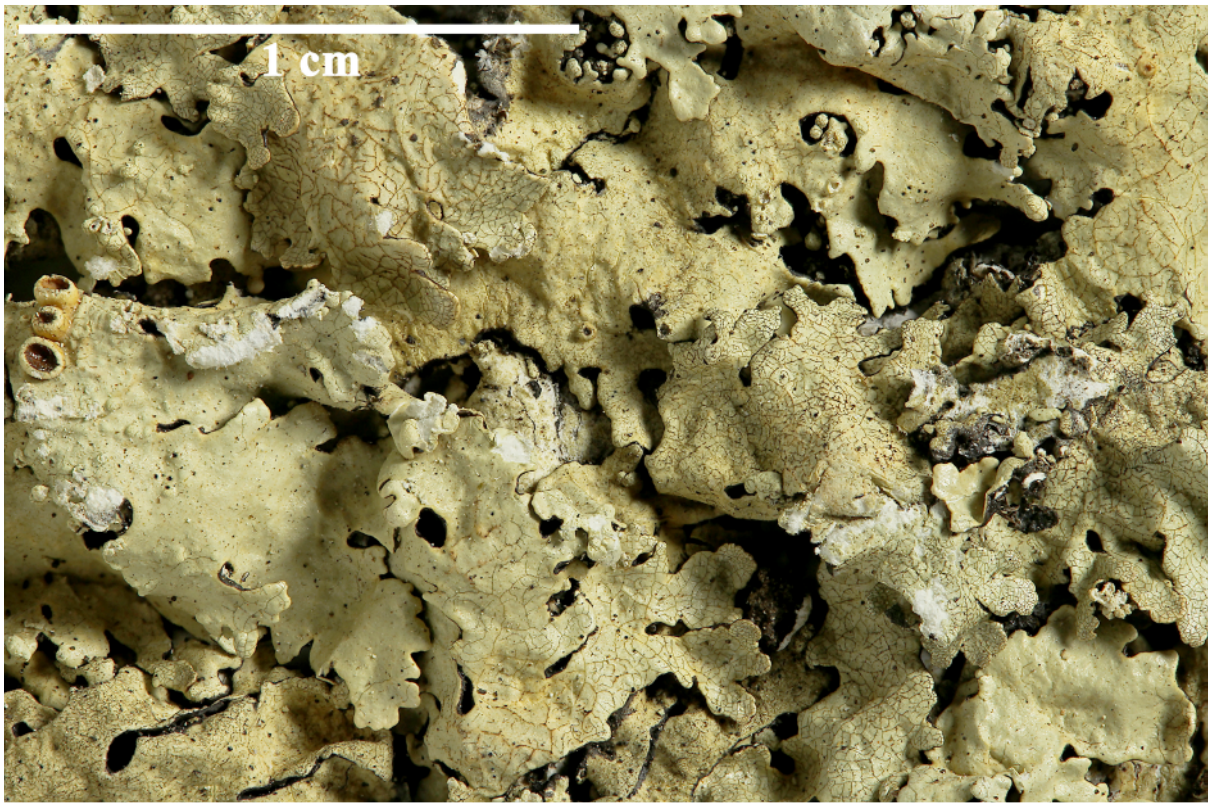
us: usnic acid, ph: physodalic acid, pr: protocetraric acid

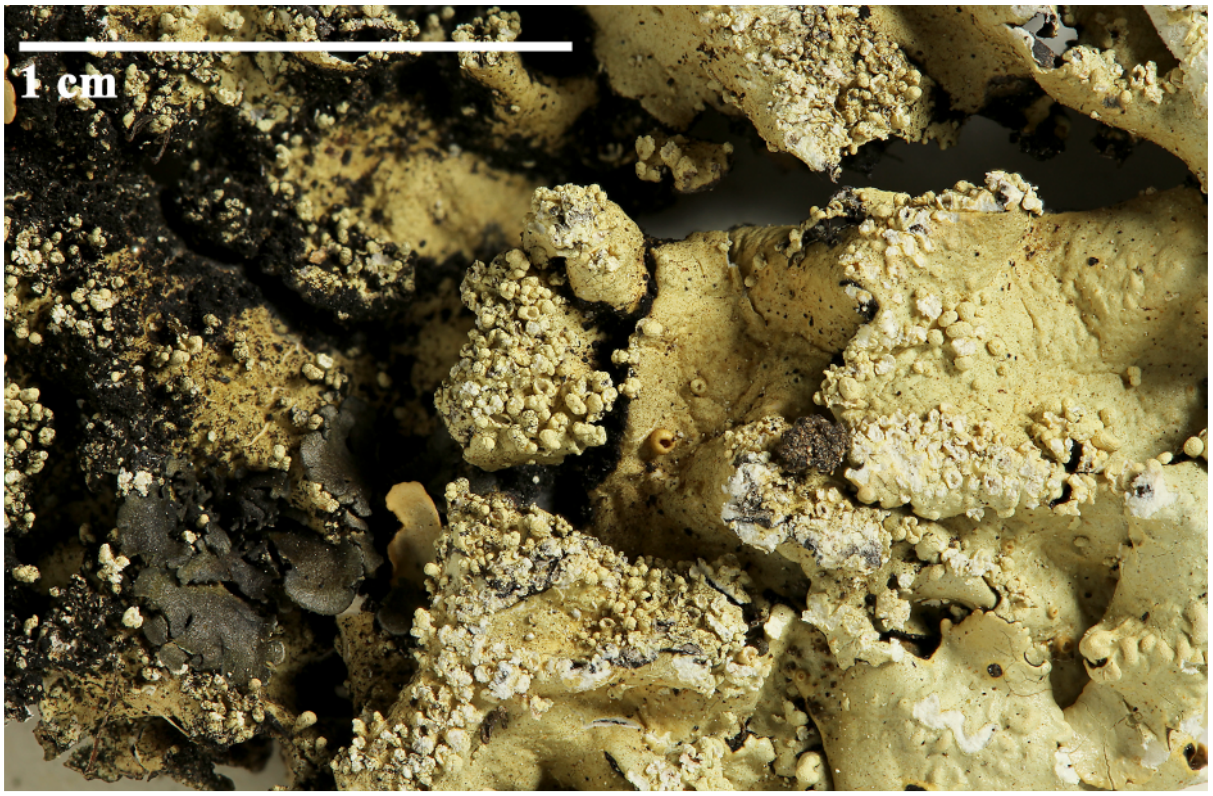
Flavoparmelia haysomii (C.W.Dodge) Hale
[= ***Parmelia haysomii*** C.W.Dodge]

Thallus loosely adnate to adnate. Lobes laterally imbricate to ±contiguous, 1-3 mm wide; apices rotund. Upper surface pale straw-coloured to yellow-green, broadly undulating, rugose centrally, often with reticulate white maculae towards lobe apices, lacking isidia; dactyls laminal on older lobes, simple or sparingly branched, forming pustules rarely forming granular soredia. Medulla white or lower medulla yellow. Lower surface black in thallus centre. Apothecia rare. Ascospores 12-15 x 7-8 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC-, P+ orange-red; pigmentet medulla K+ purple; usnic acid, protocetraric acid (major), caperatic acid (major), ±skyrin (in pigmented medulla), ±gyrophoric acid.

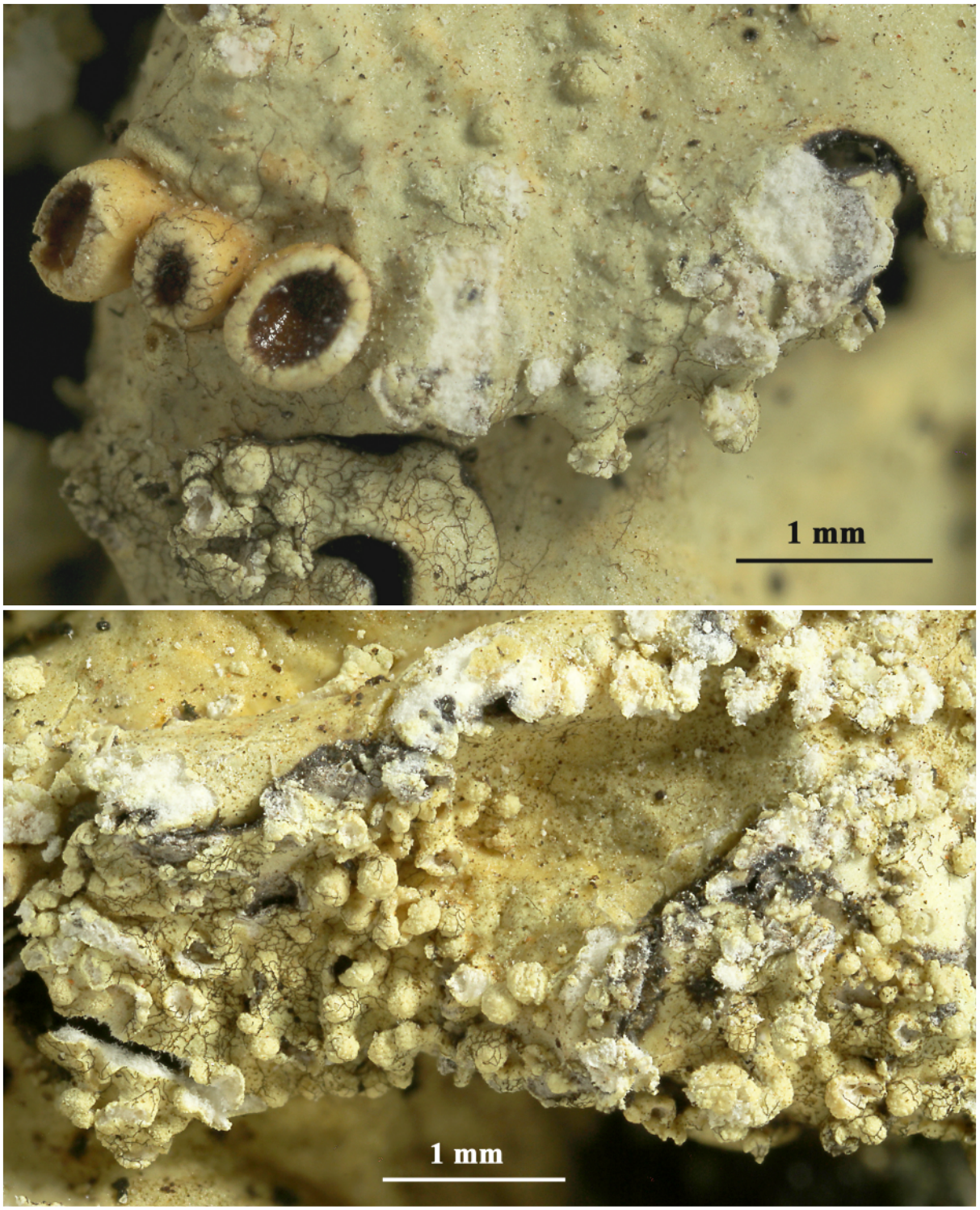
[19099], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing on sheltered granite rocks along the river bank. Leg. J.A. Elix (10908), 10.04.1983. LICHENES AUSTRALASICI EXSICCATI NO. 035. Distributed as ***Parmelia haysomii*** C.W.Dodge.



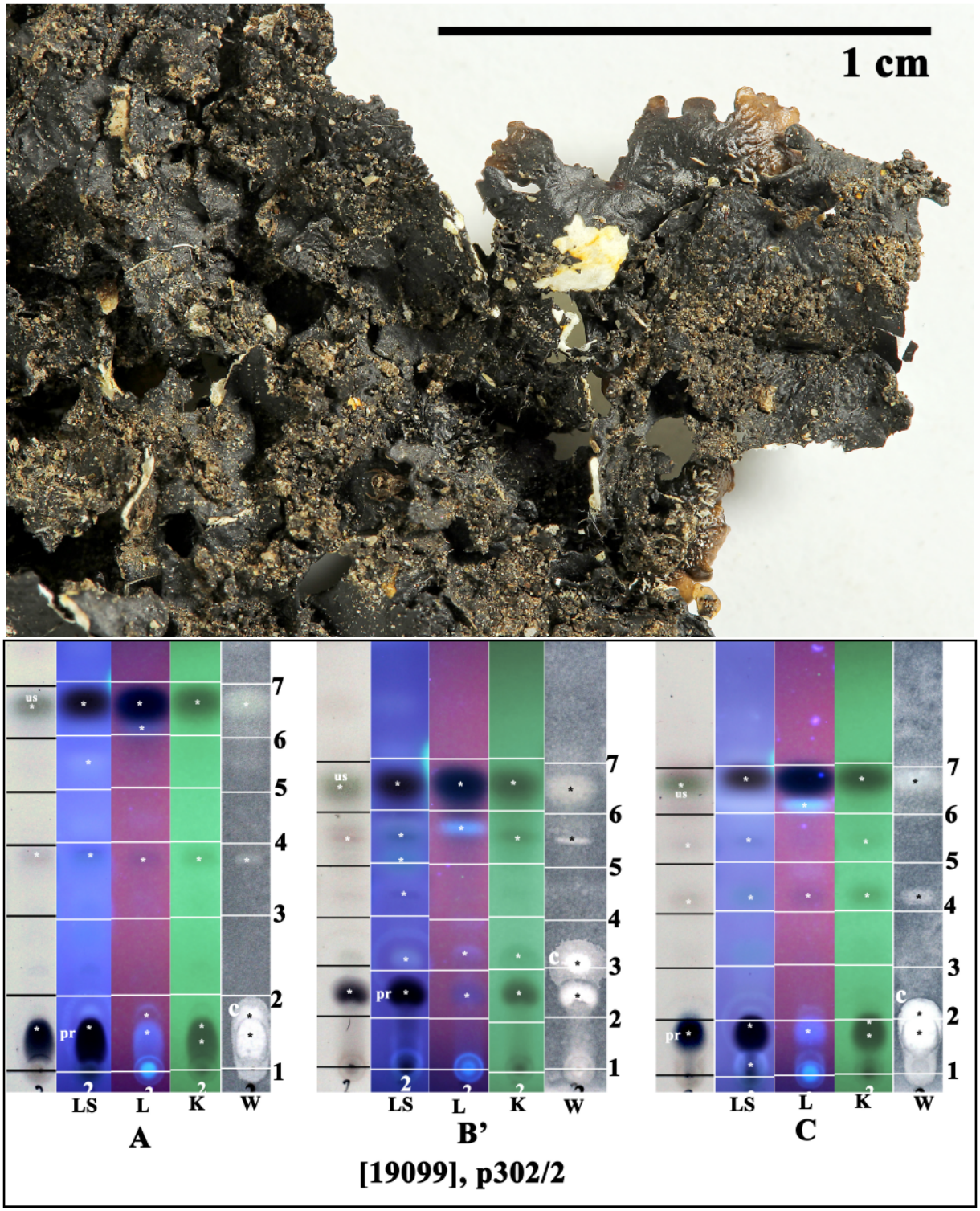




Flavoparmelia haysomii



Flavoparmelia haysomii



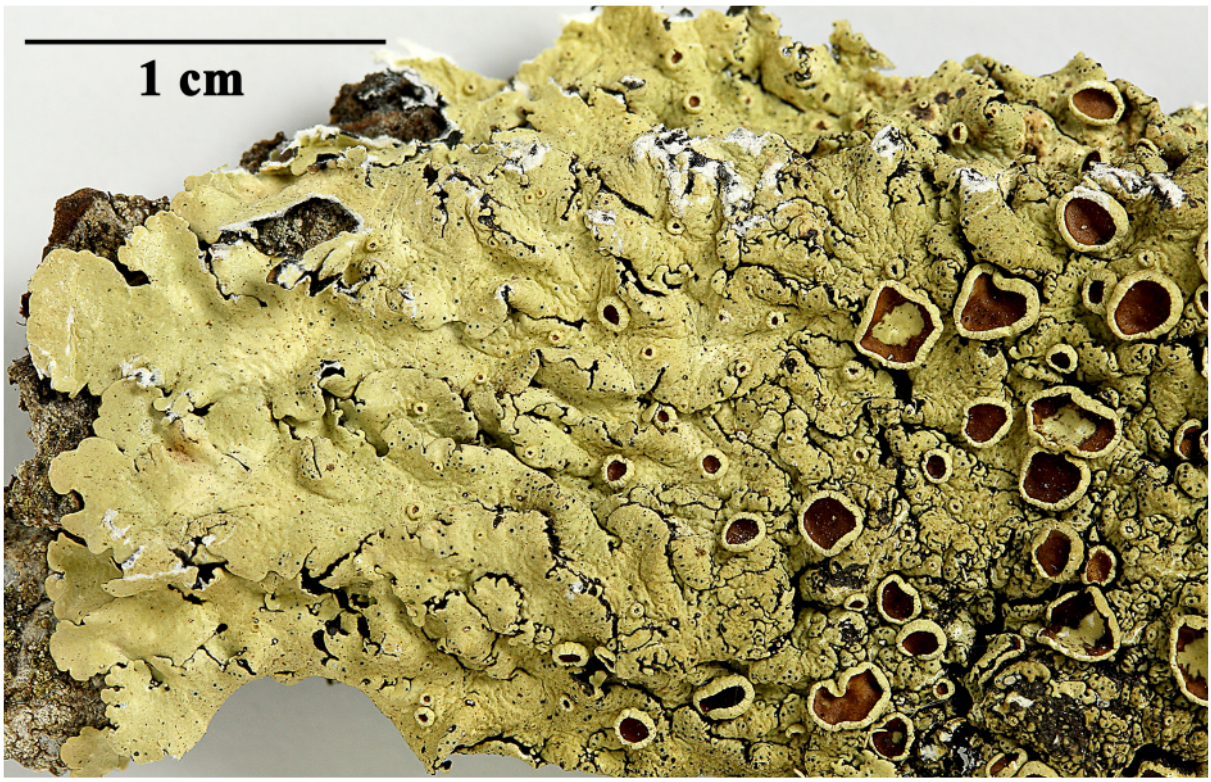
us: usnic acid, pr: protocetraric acid (major), c: caperatic acid (major)

Flavoparmelia haysomii

Flavoparmelia rutidota (Hook.f. & Taylor) Hale
[= ***Parmelia rutidota*** Hook.f. & Taylor]

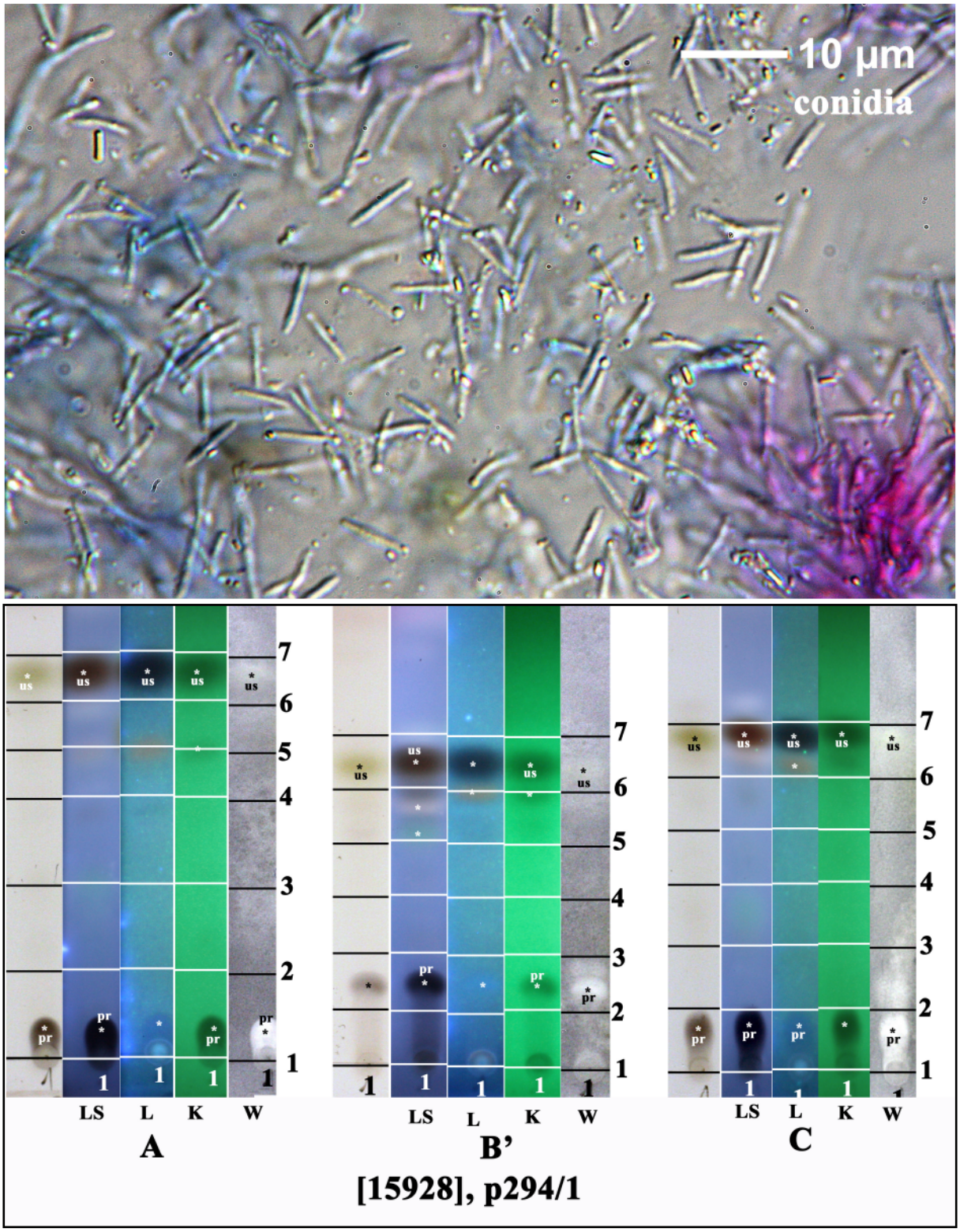
Thallus yellow-green to pale green, becoming rugose towards centre, lacking soredia and dactyls. Medulla mostly white, often with scattered cream to yellow patches (secalonic acid A, K-), especially in lower medulla. Apothecia sessile, 2-7 mm wide. Spores 12-16 x 8-11 µm. Conidia bacilliform, 7-8 x 1 µm. Chemistry: medulla K-, C-, KC-, P+ orange; usnic acid, protocetraric acid (major), caperatic acid, ± secalonic acid A.

[15928], Australia, Western Australia, Dwellingup, 32.715° S, 116.062° E, 277 m. Leg. F. Schumm, det. F. Schumm. Chemistry: usnic acid, protocetraric acid by HPTLC, anal. F. Schumm (p294/1).





Flavoparmelia rudidota

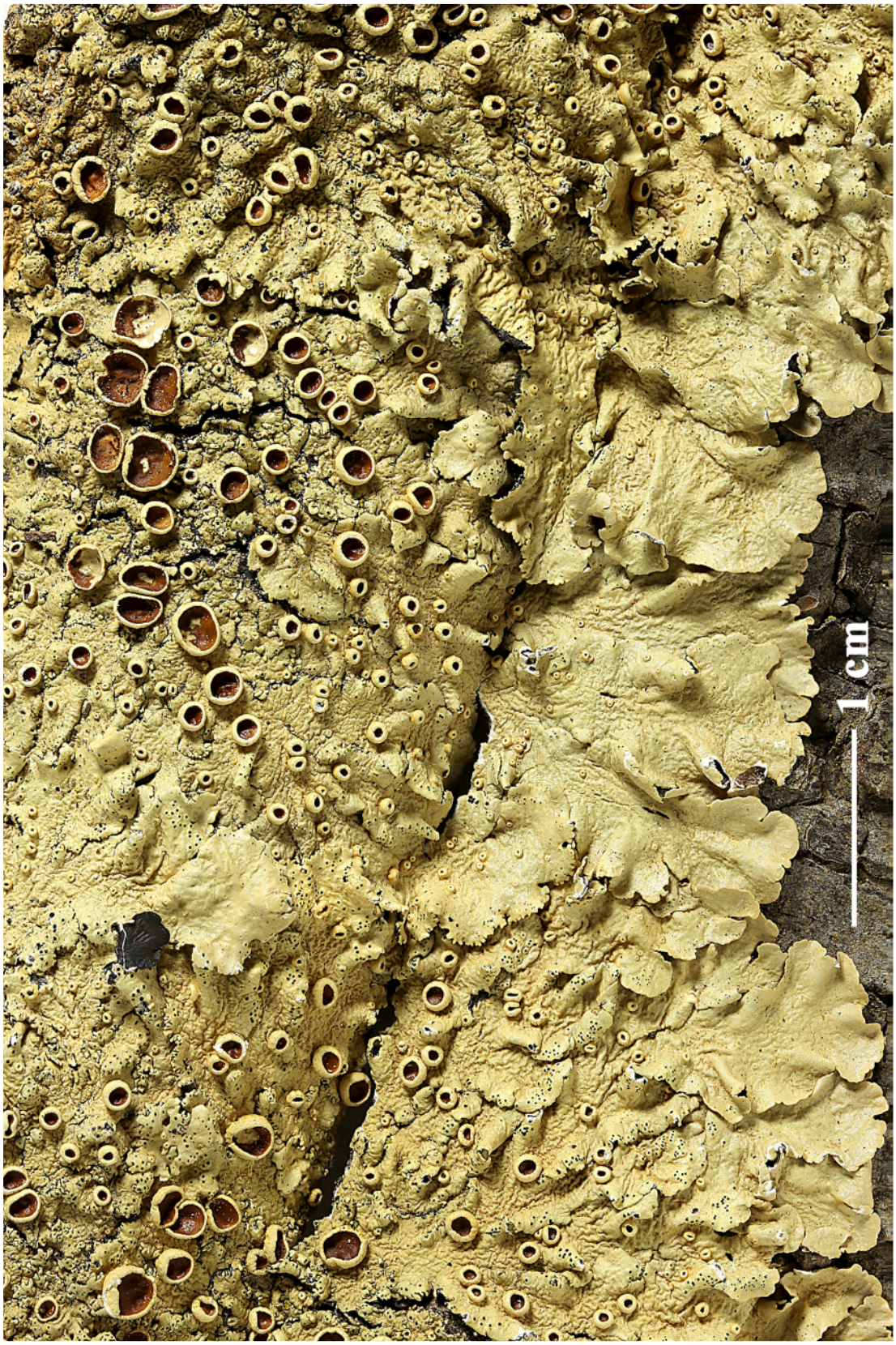


us: usnic acid, pr: protocetraric acid

Flavoparmelia rudidota

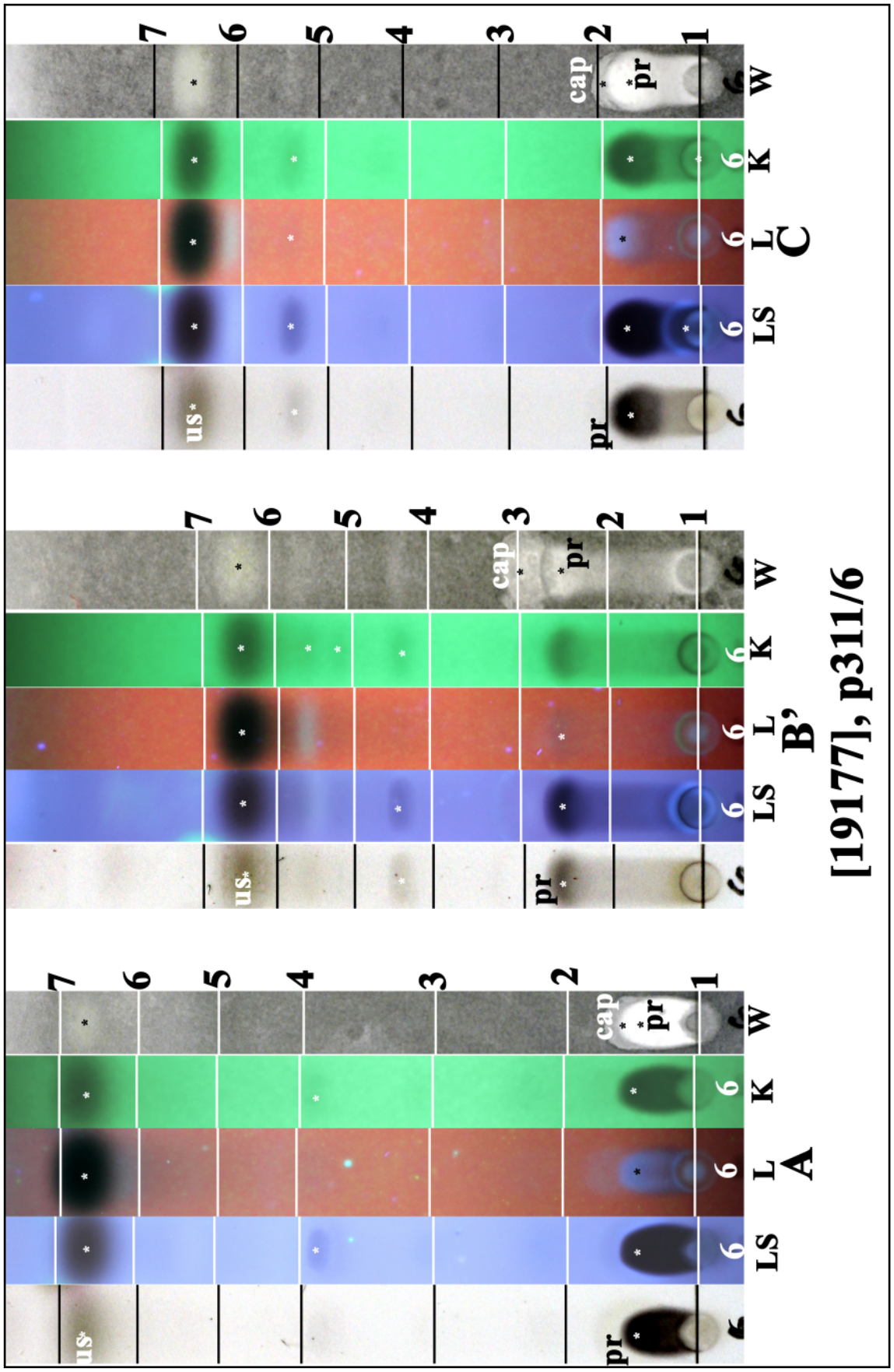
Flavoparmelia rutidota (Hook.f. & Taylor) Hale
[= ***Parmelia rutidota*** Hook.f. & Taylor]

[19177], Australia, Australian Capital Territory, Mount Stomlo Pine Plantation, 12 km west of Canberra, 35°20' S, 149°00' E, 700 m, growing on trunks of dead *Pinus radiata*. Leg. J.A. Elix (10815) & M.J. Elix, 13.11.1982. LICHENES AUSTRALASICI EXSICCATI NO. 043. Distributed as ***Parmelia rutidota*** Hook.f. & Taylor.





Flavoparmelia rutidota



Flavoparmelia rutidota

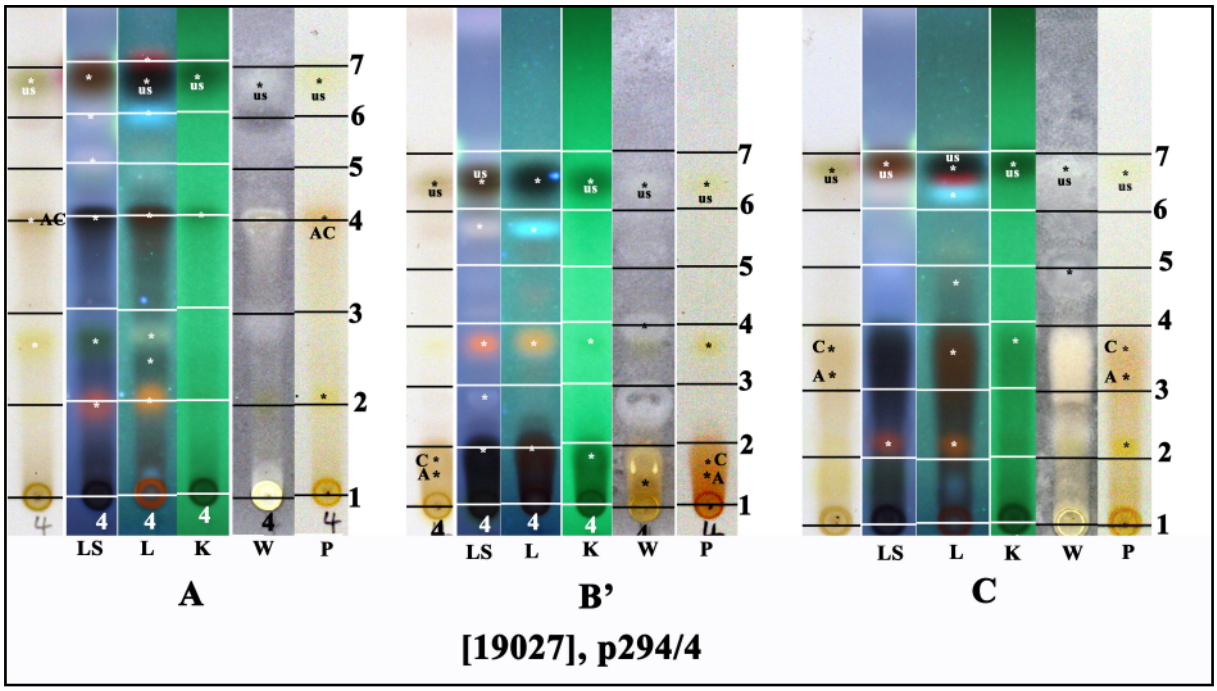
Flavoparmelia secalonica Elix & J.Johnst.

Thallus dark yellow-green to deep olive-green, rugose centrally, lacking soredia dactyls and isidia. Medulla yellow throughout. Spores 14-16 x 6-8 µm, Conidia weakly bifusifurm, 6-7 x 1 µm. Restricted to bark of trees. Chemistry: medulla K-, C-, KC-, P-; usnic acid, secalonic acid A (major), secalonic acid C (minor), ± unidentified secalonic acid (trace), ± unidentified fatty acid (trace)

[19027], Australia, Western Australia, along roadside, 10 km south-east of Corrigin along road to Kilin, 32°21' S, 117°53' E, growing on *Acacia acuminata* in pasture. Leg. J.A. Elix (21654) & M.V. Sargent, 19.08.1987. Chemistry usnic acid, secalonic A (major), secalonic C (minor), unknown secalonic acid (trace), unknown fatty acid (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NR. 180.







us: usnic acid, A: secalonic acid A, C: secalonic acid C

Flavoparmelia secalonica

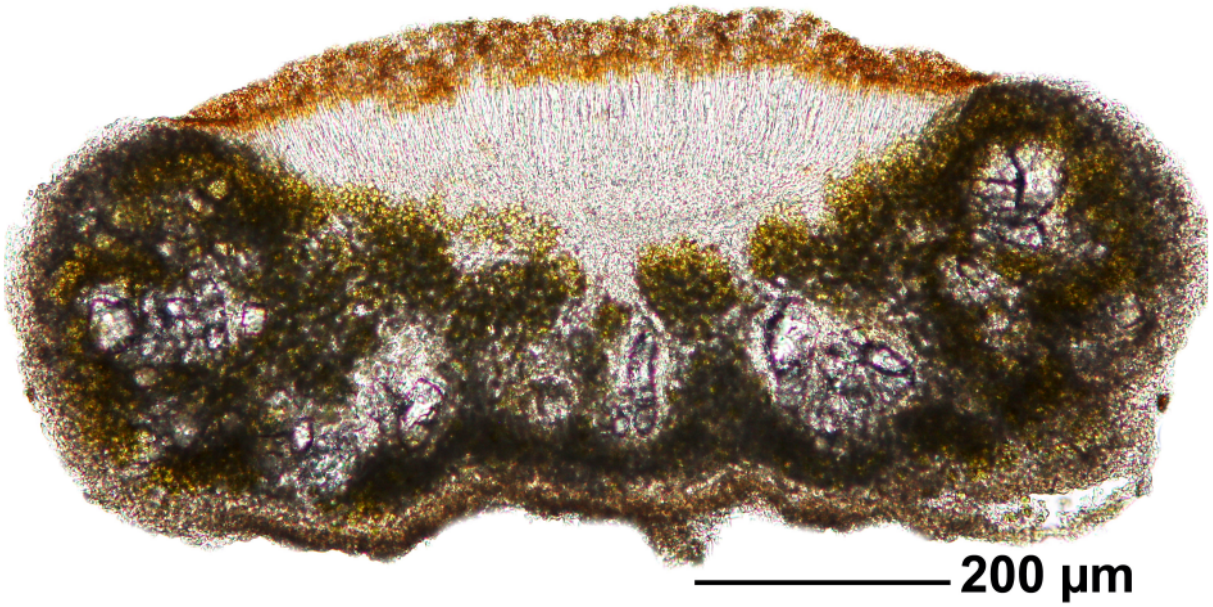
Haematomma eremaeum R.W.Rogers

Thallus esorediate, rugulose or warty, cream-coloured. Apothecia constricted at the base, disc cinnabar-red, ± white pruinose. Aphithecium with large crystals. Epihymenium with K+ permanent purple and forming tiny crystals (russulone). Ascospores 5-11 septate, 35-65 x 3.5-5.5 µm.

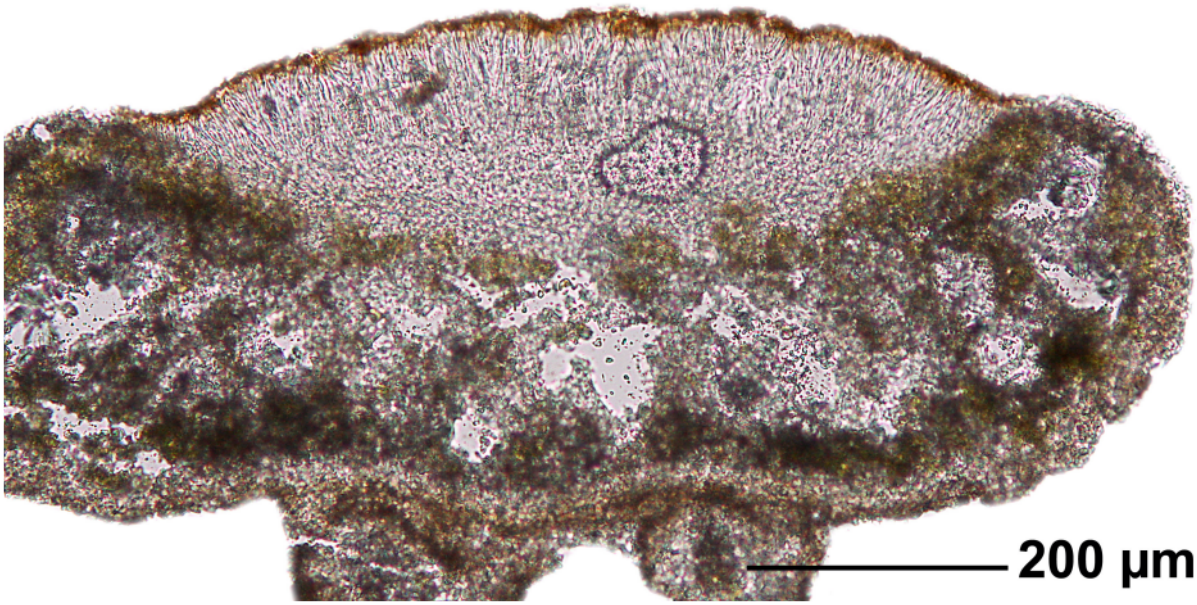
[19028], Australia, Western Australia, Pumphreys Bridge, 21 km southwest of Pingelly, 32°40' S, 116°54' E, 260 m, growing on dead *Acacia* in *Eucalyptus-Acacia* woodland on flats. Leg. J.A. Elix (40899), H.T. Lumbsch & H. Streimann, 11.09.1994. Chemistry: Thallus K+ yellow, C-, KC-, P+ yellow, placodiolic acid (major), atranorin (major), russulone (minor, in the epihymenium) by HPLC, TLC, LMS, anal. J.A. Elix & J.H. Wardlaw. LICHENS AUSTRALASICI NR. 280.

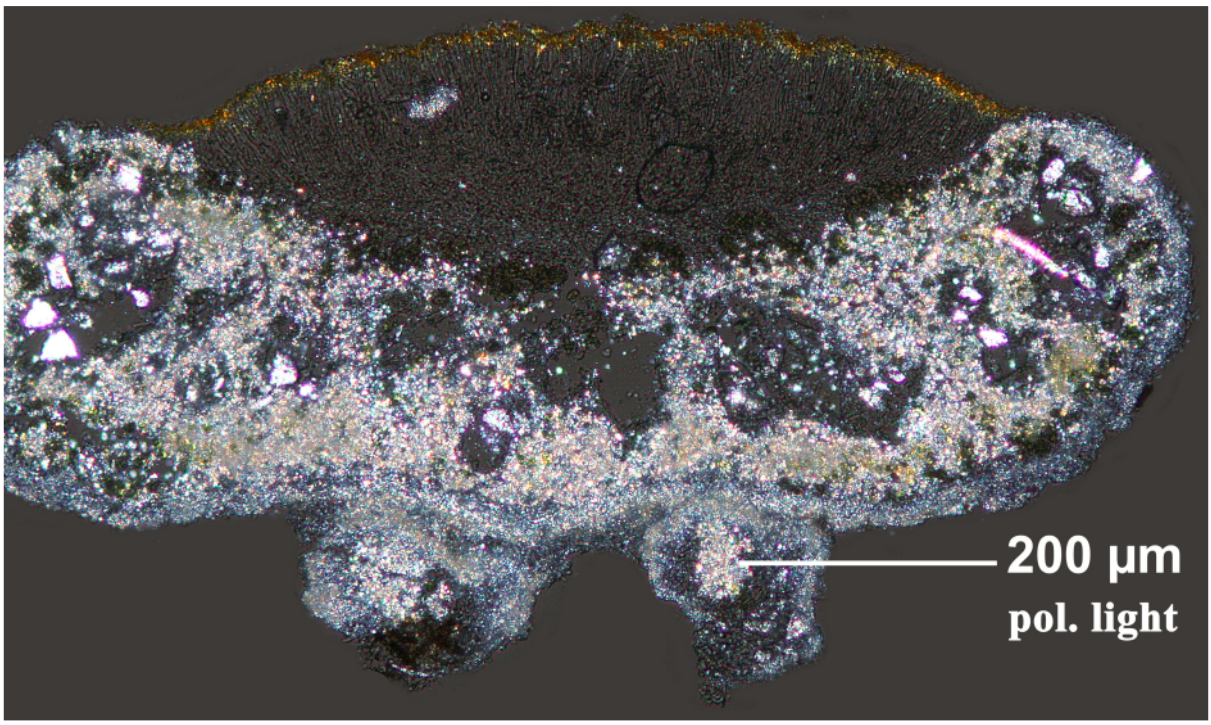




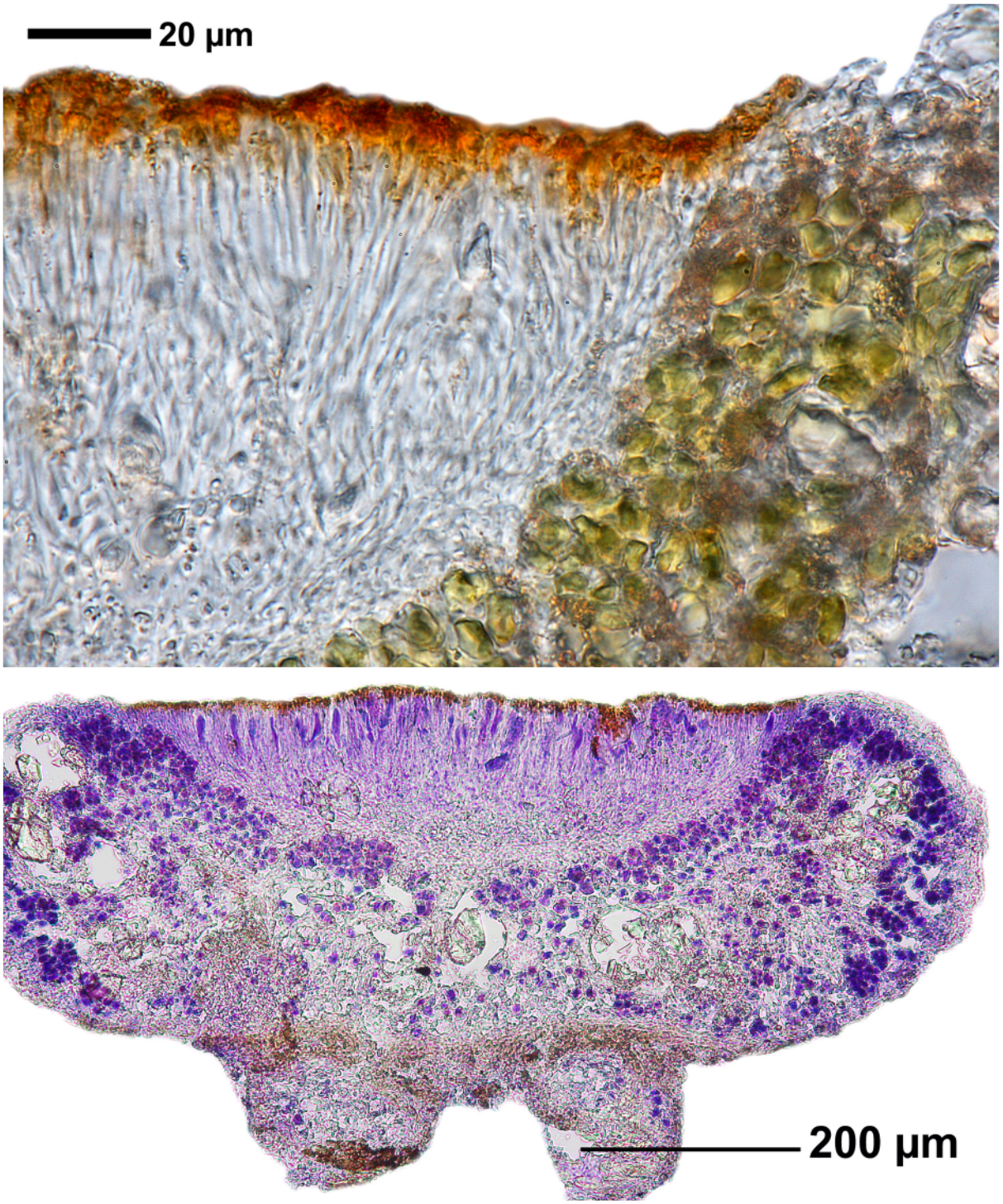


Haematomma eremaeum

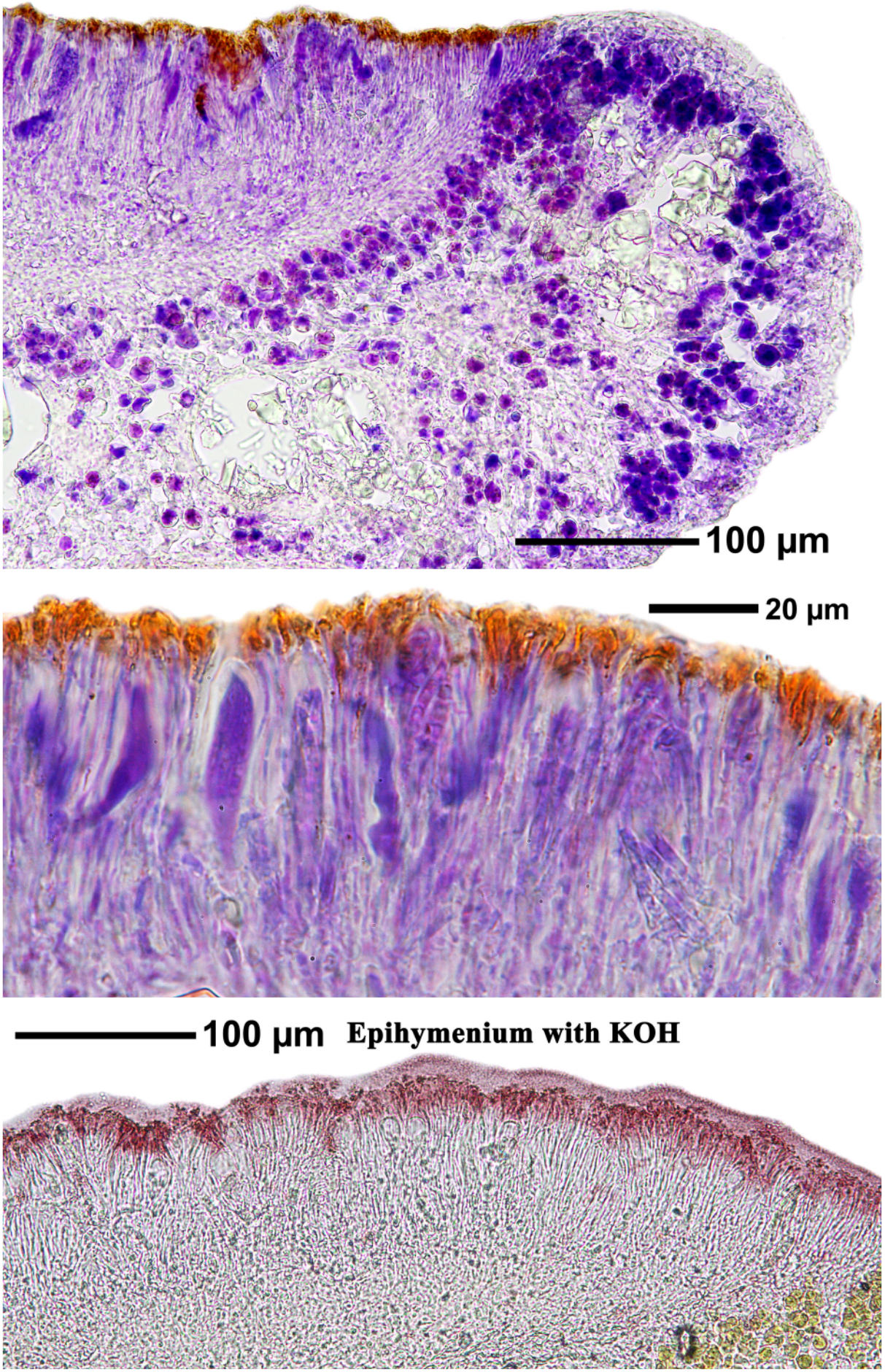




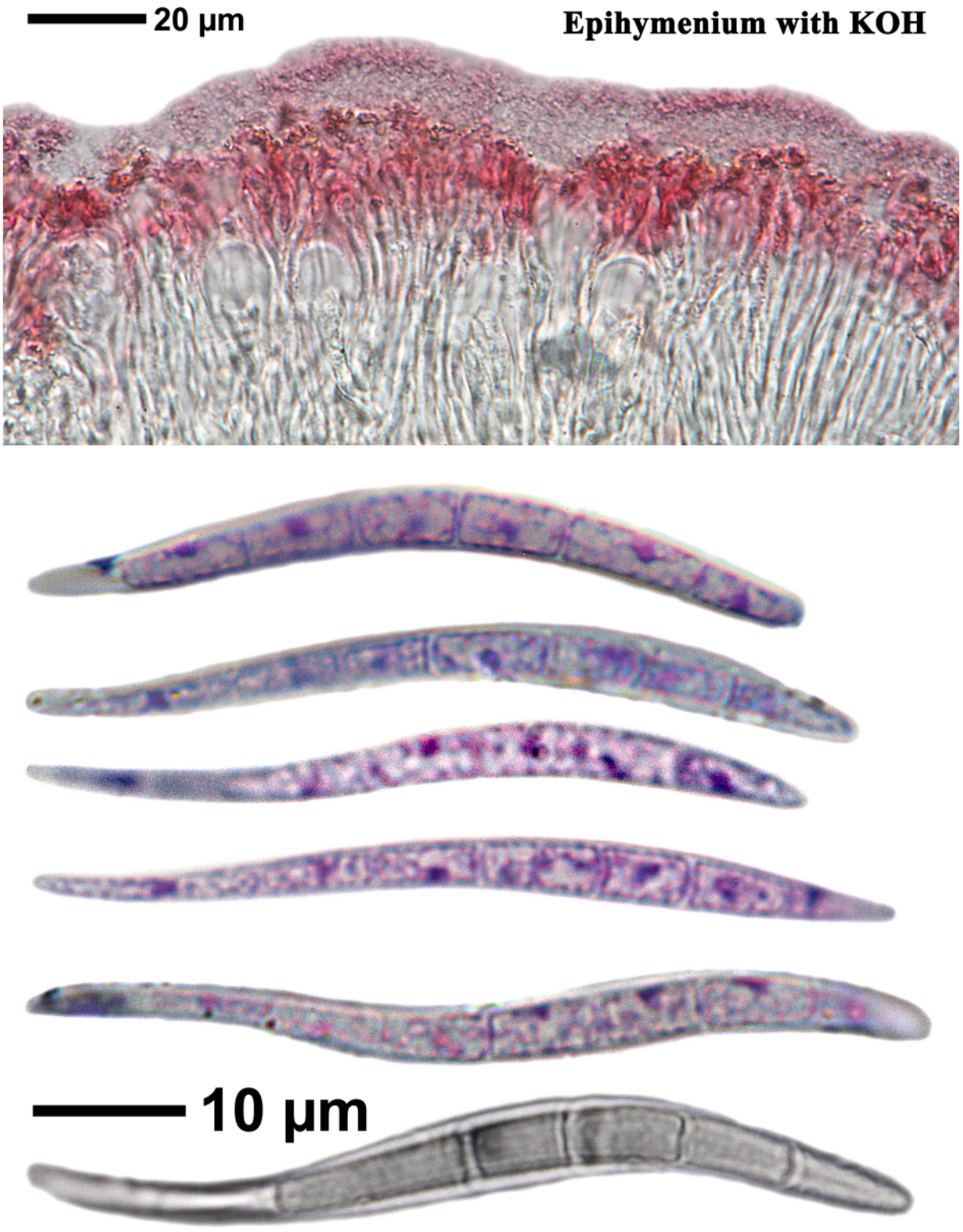
Haematomma eremaeum



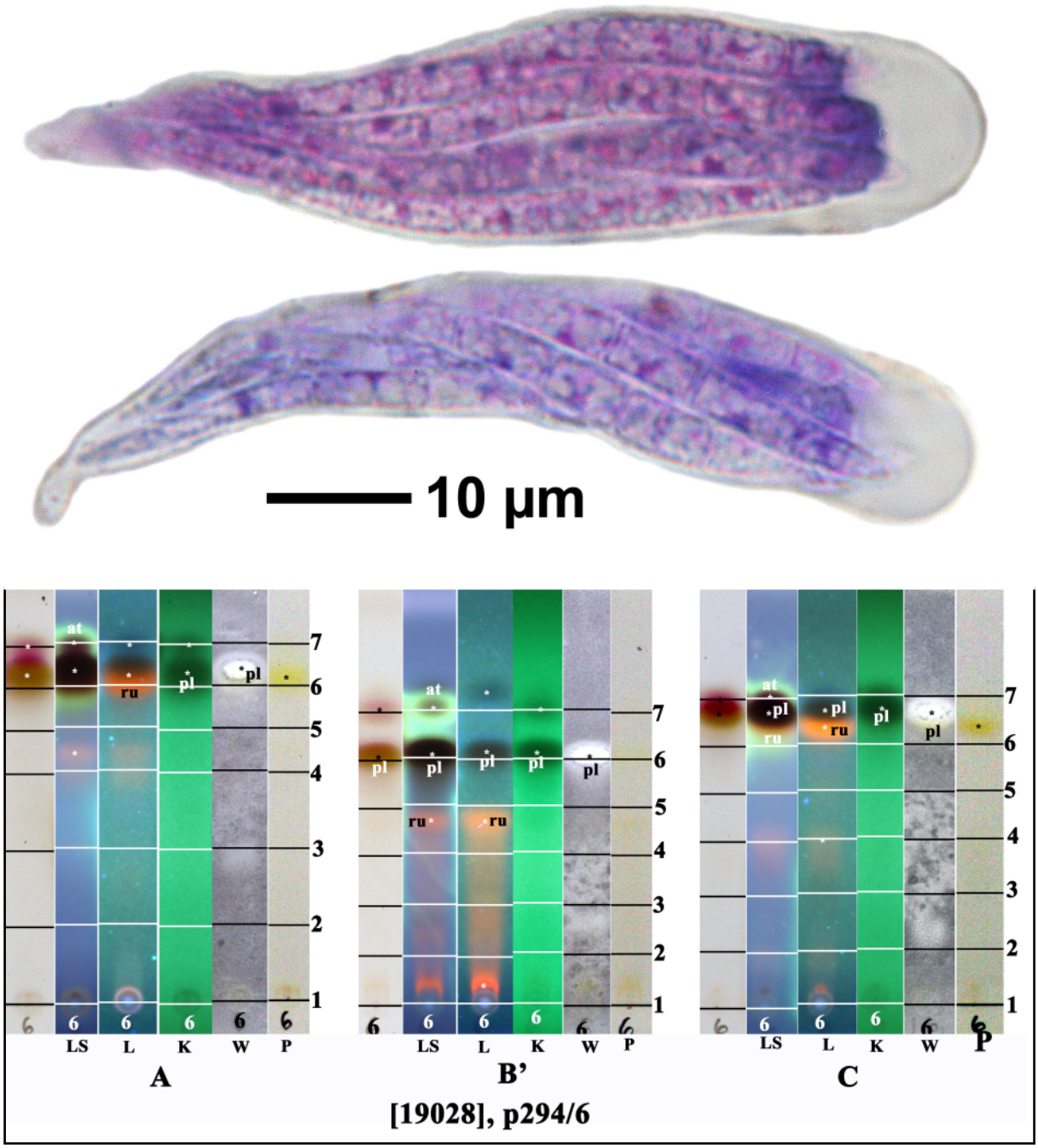
Haematomma eremaeum



Haematomma eremaeum



Haematomma eremaeum



at: atranorin, pl: placodiolic acid, ru: russulone

Haematomma eremaeum

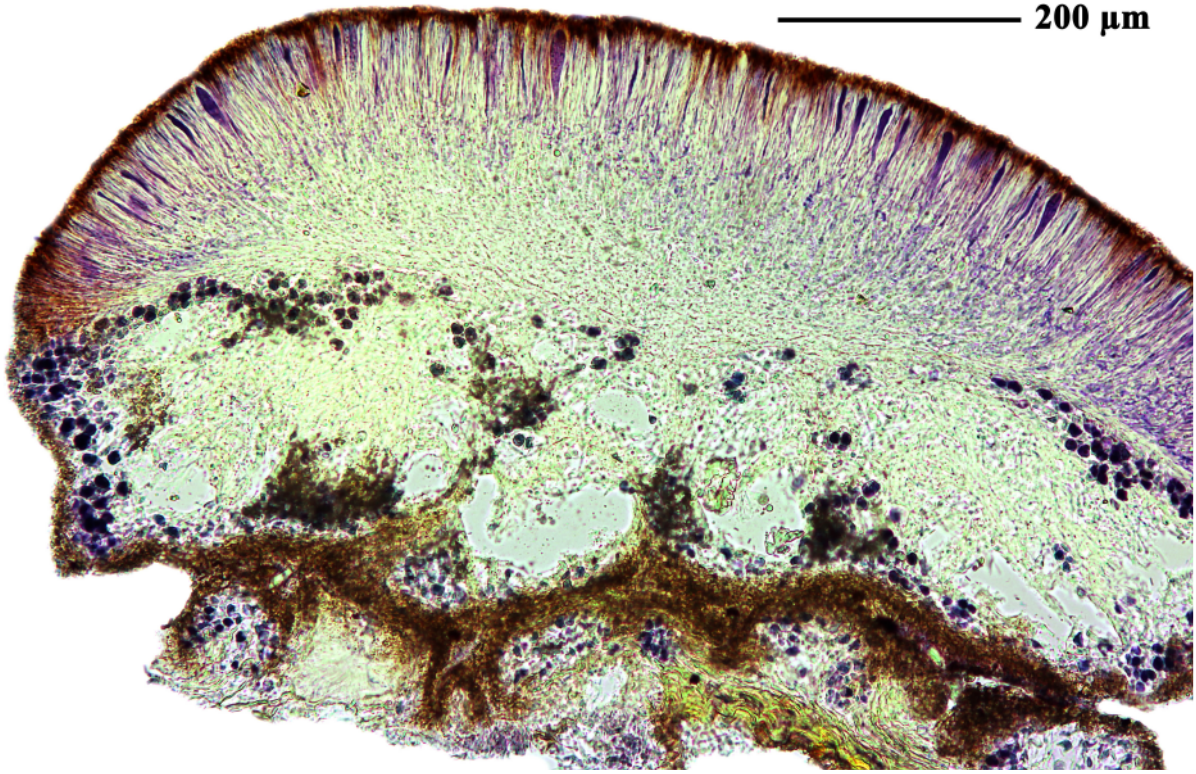
Haematomma eremaeum R.W.Rogers

Epithecium orange-red, K+ permanent purple, forming tiny crystals (russulone). Hypothecium pale. Excipulum with clusters of crystals. Ascospores curved, hyaline, up to 7 septate. Chemistry: atranorin, russulone, placodiolic acid. Lit. Staiger, B. & Kalb, K. (1995, Bibl. Lich. 59).

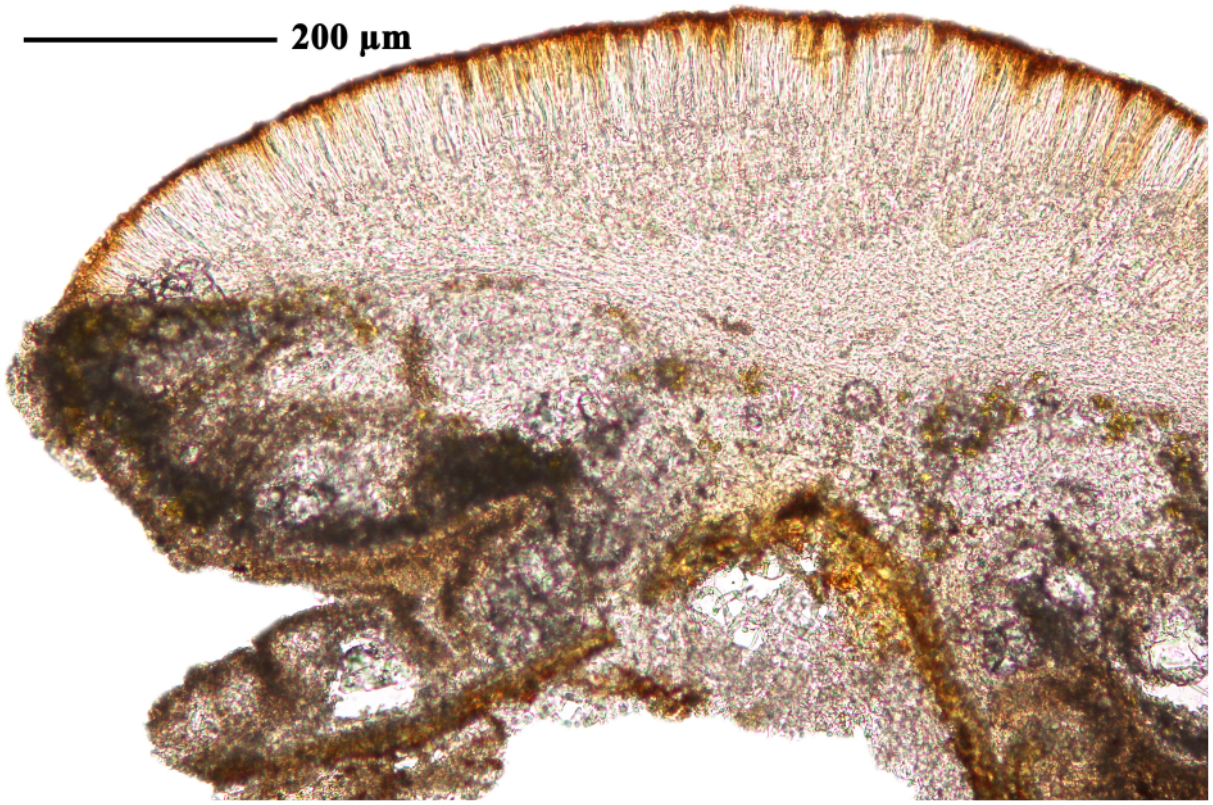
[15675], Australia, Western Australia, between Narrogin and Williams, 32.982°S, 117.067° E, 336 m, trees along the street. Leg. F. Schumm & E. Stocker-Wörgötter, 22.10.2009, det. J.A. Elix. Chemistry atranorin, russulone, placodiolic acid by TLC, anal. F. Schumm.

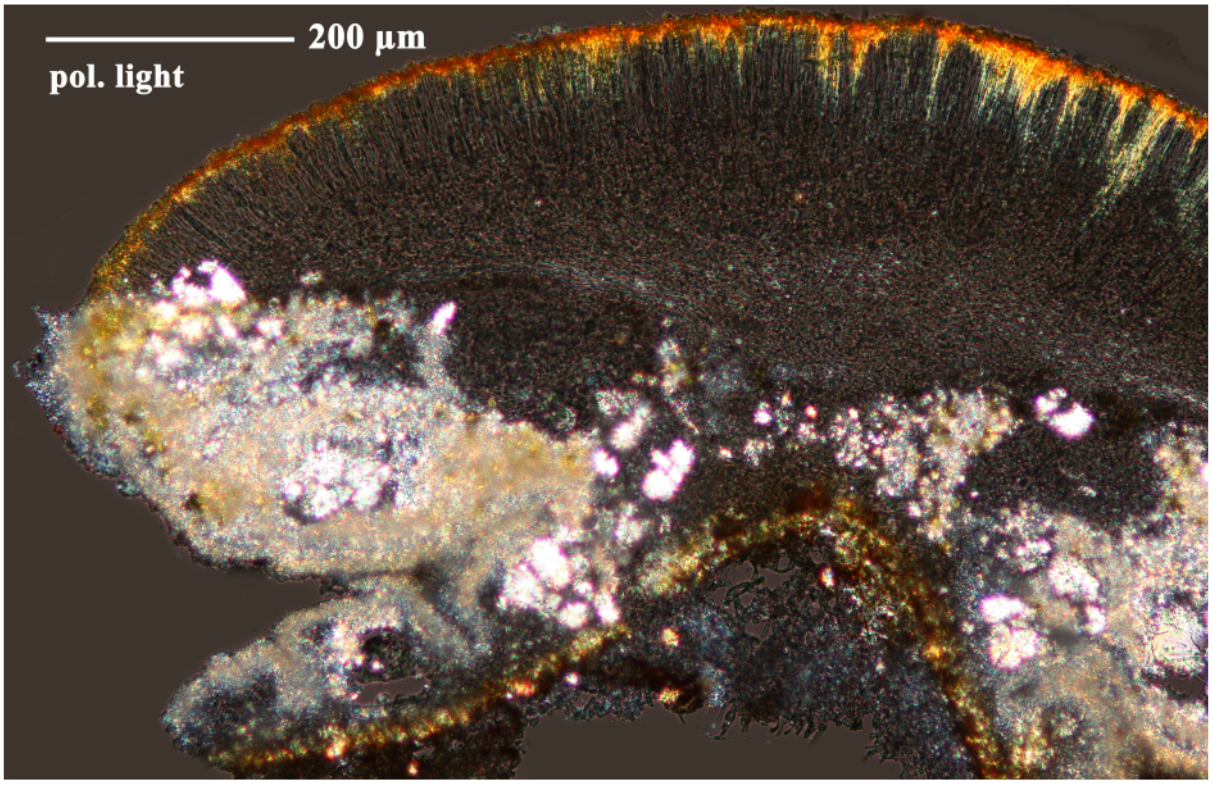




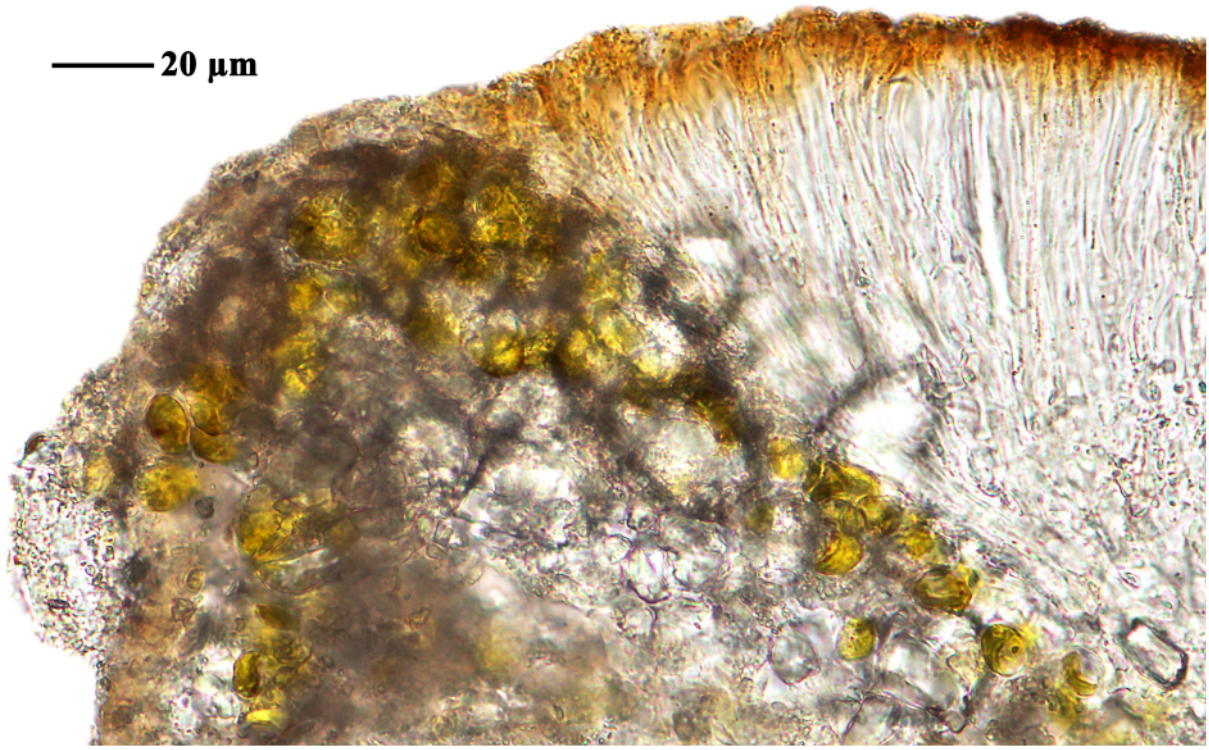


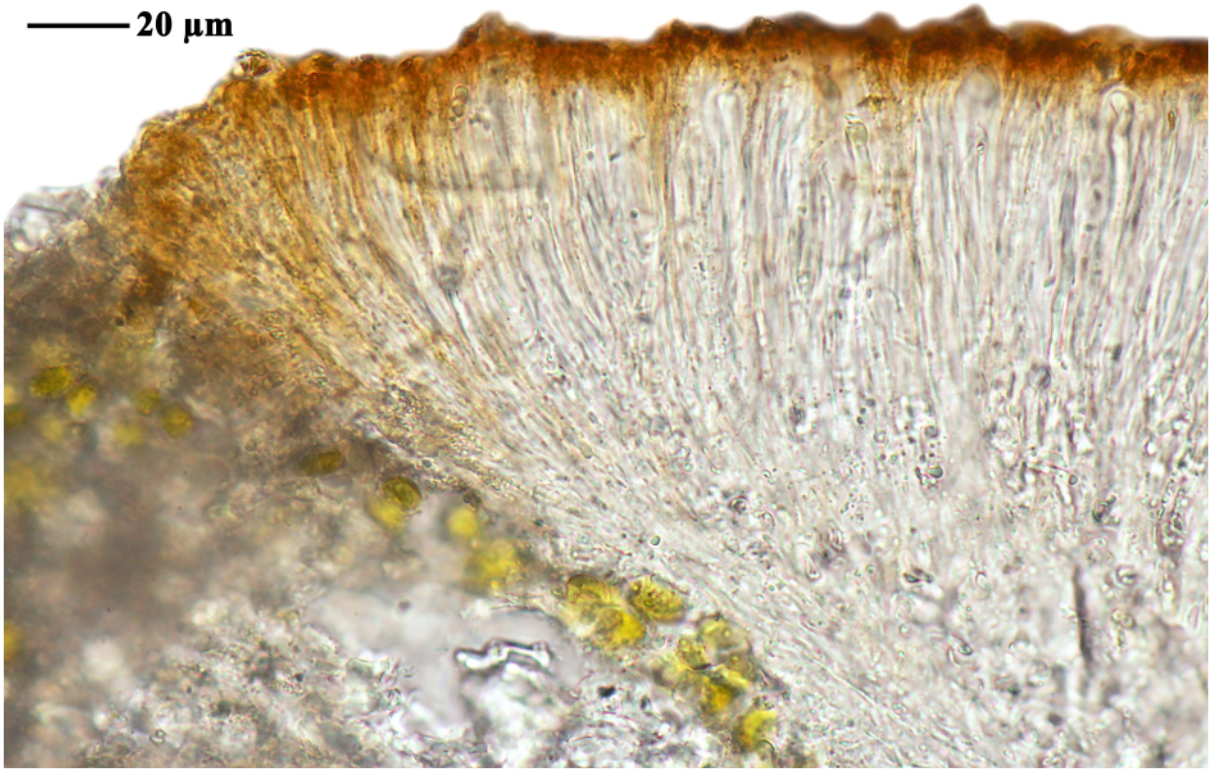
Haematomma eremaeum



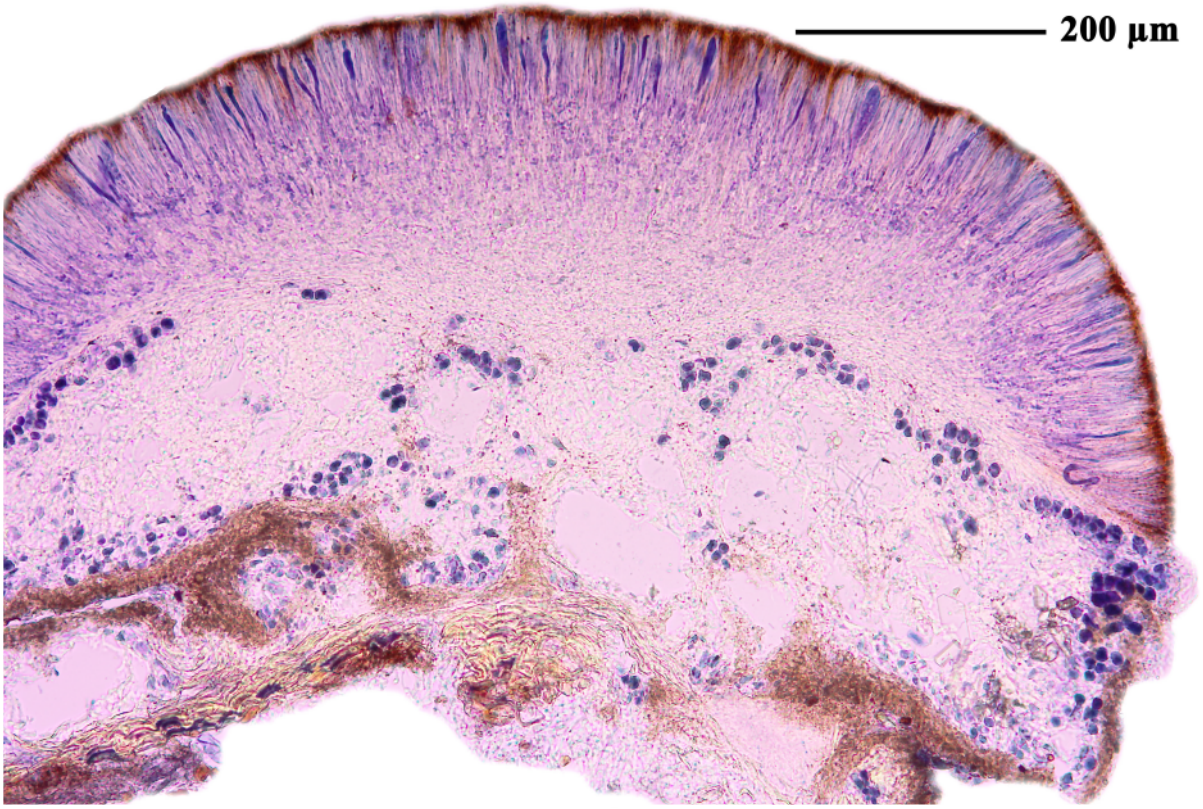


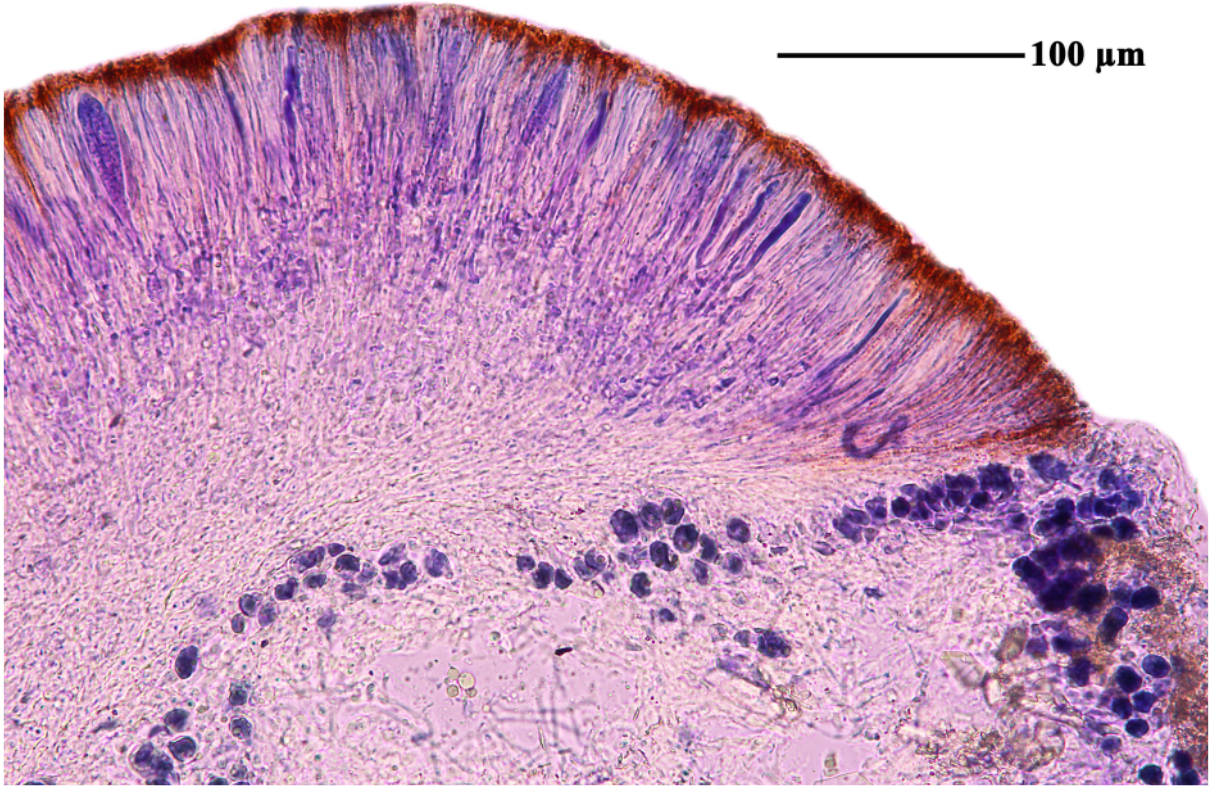
Haematomma eremaeum



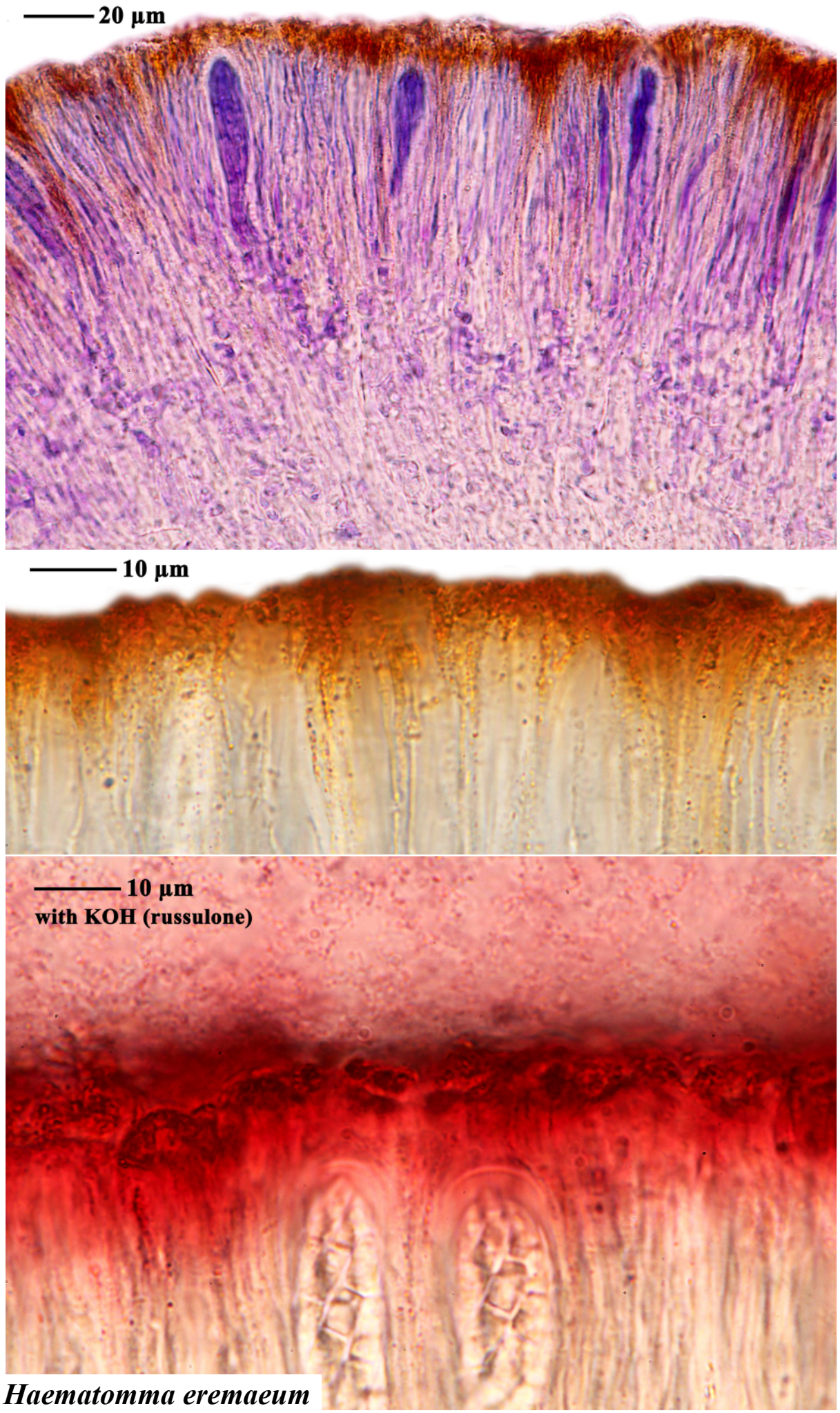


Haematomma eremaeum





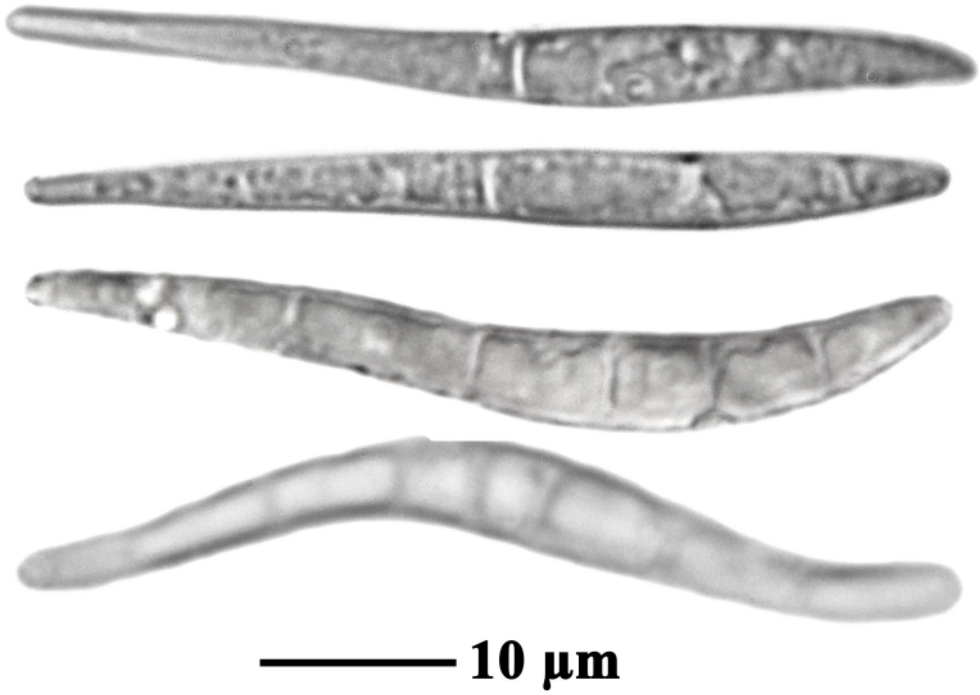
Haematomma eremaeum



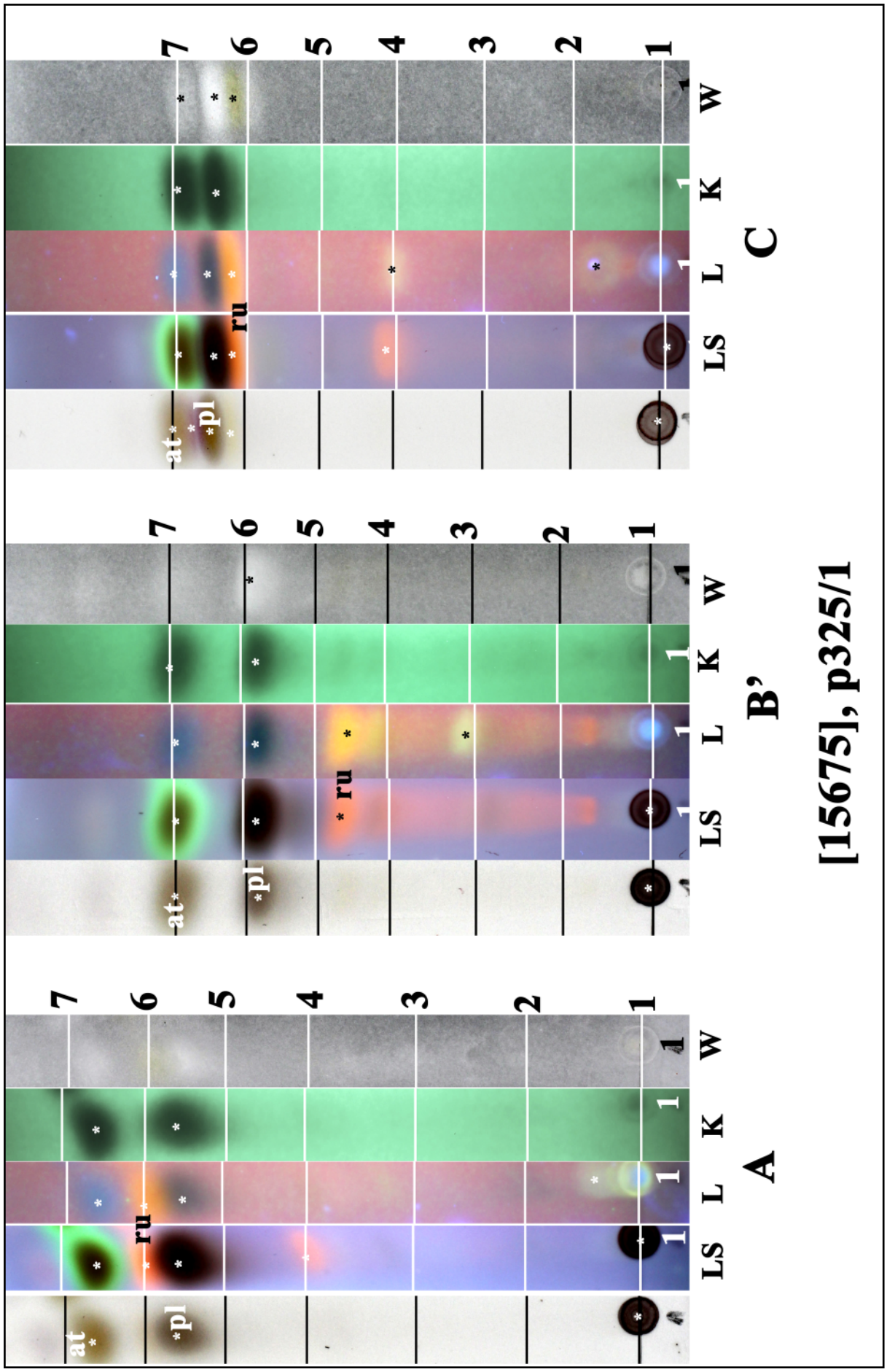
Haematomma eremaeum







Haematomma eremaeum



at: atranorin, pl: placodiolic acid, ru: russulone

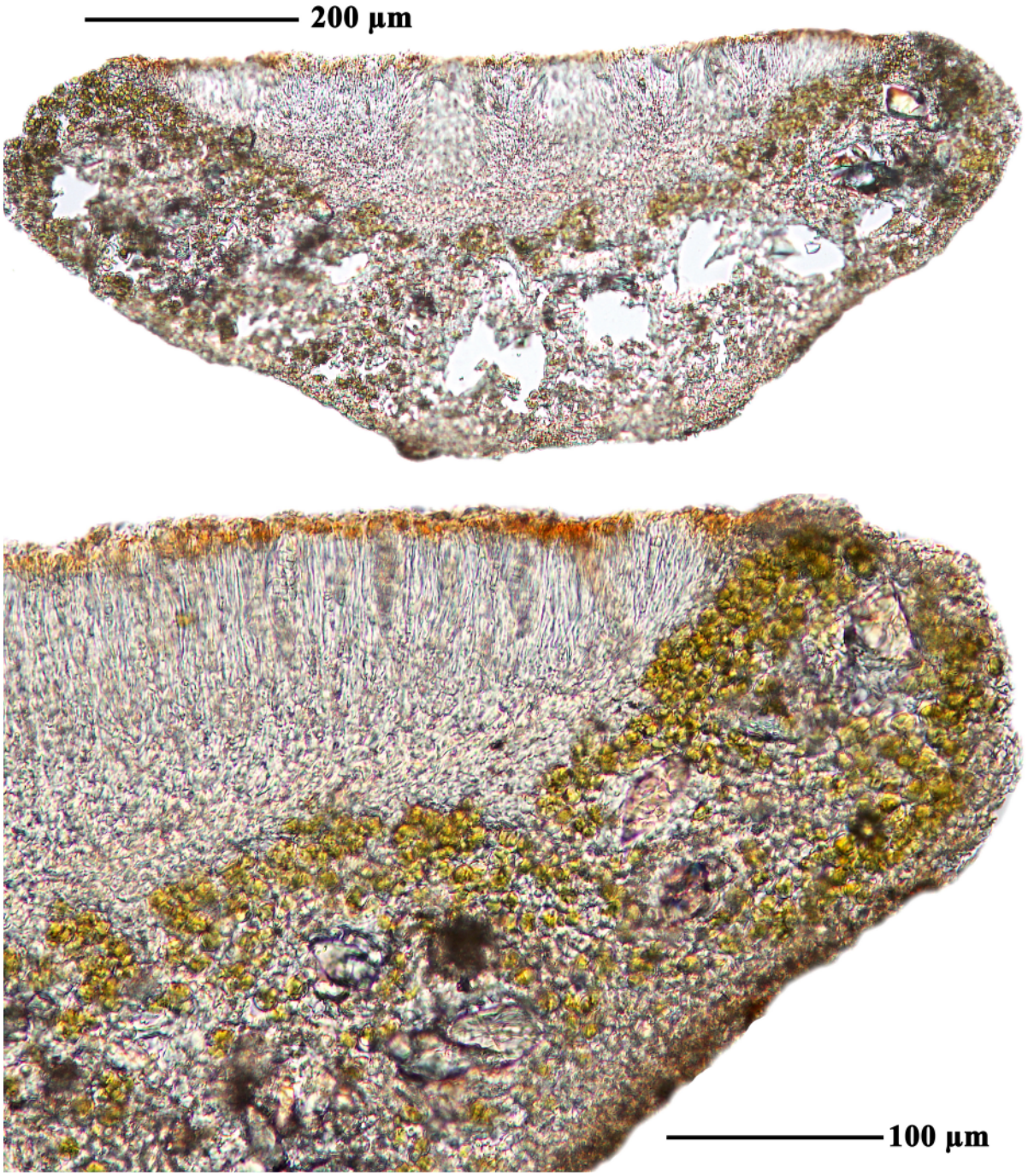
Haematomma eremaeum

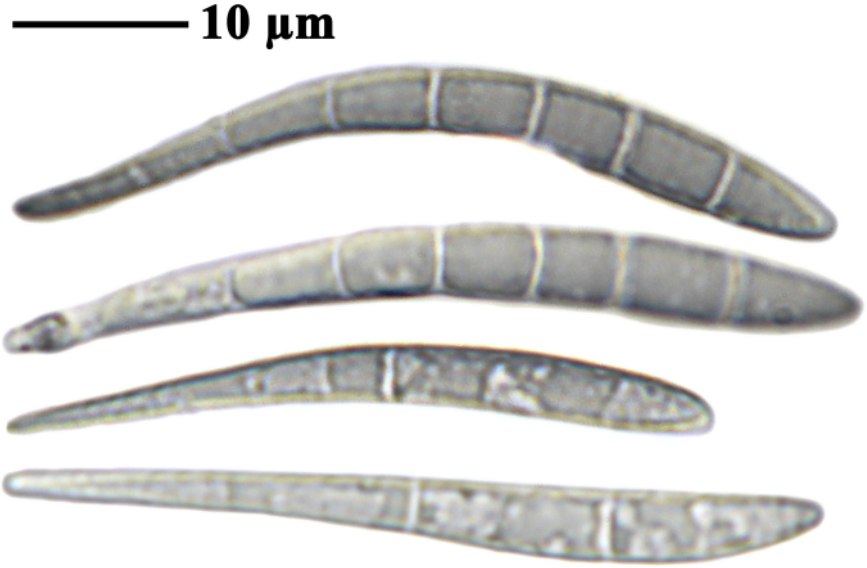
Haematomma eremaeum R.W.Rogers

Spores c. 6-7 septate, 40-50 x 4.5-5 µm.

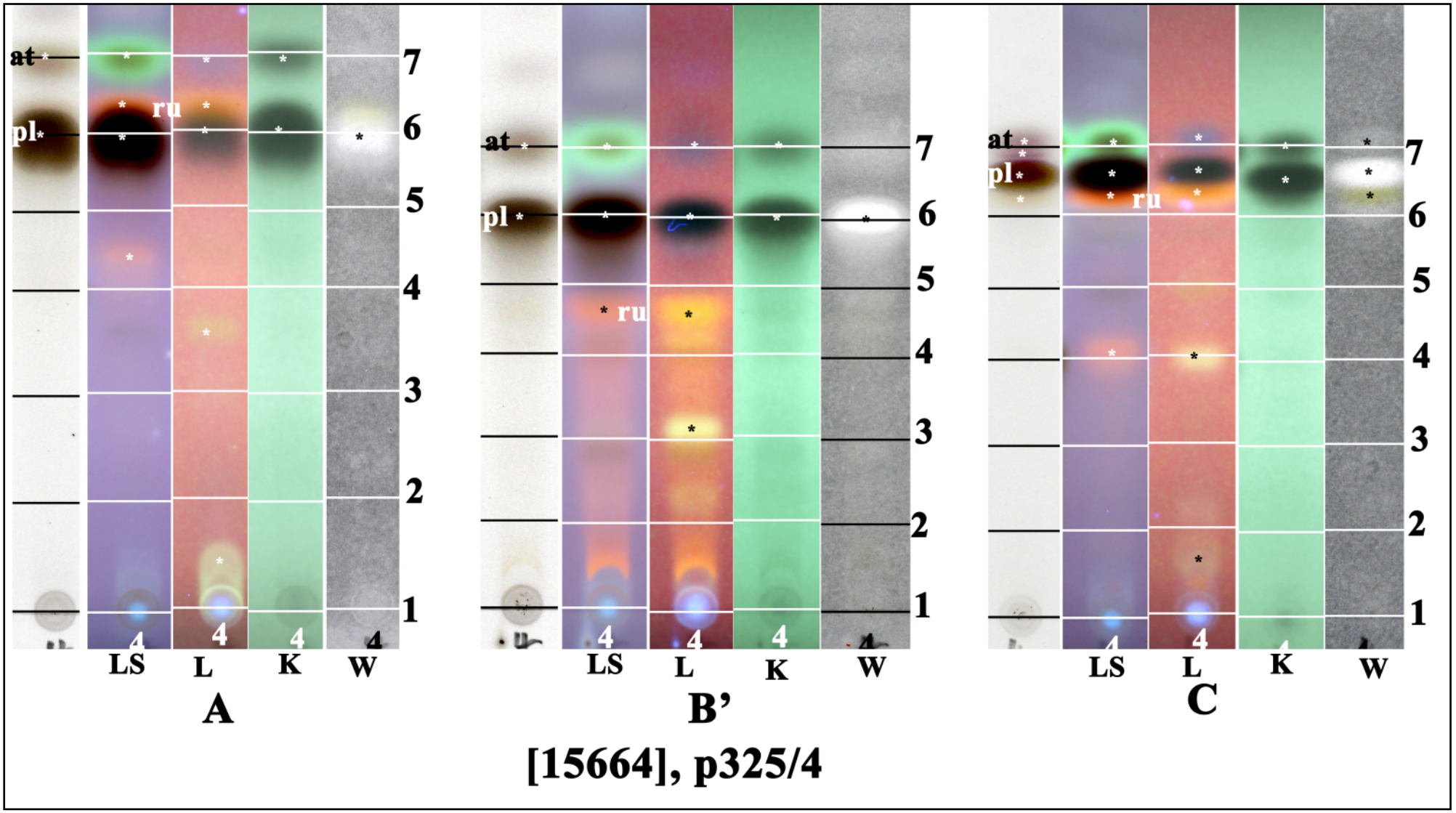
[15664], Australia, Western Australia, between Narrogin und Williams, allee beside the street, 32.983°S, 117.067° E, 336 m. Leg. F. Schumm & E. Stocker-Wörgötter, 22.10.2009, det. J.A. Elix. Chemistry: atranorin, russulone, placodiolic acid (major) by TLC, anal. F. Schumm.







Haematomma eremaeum



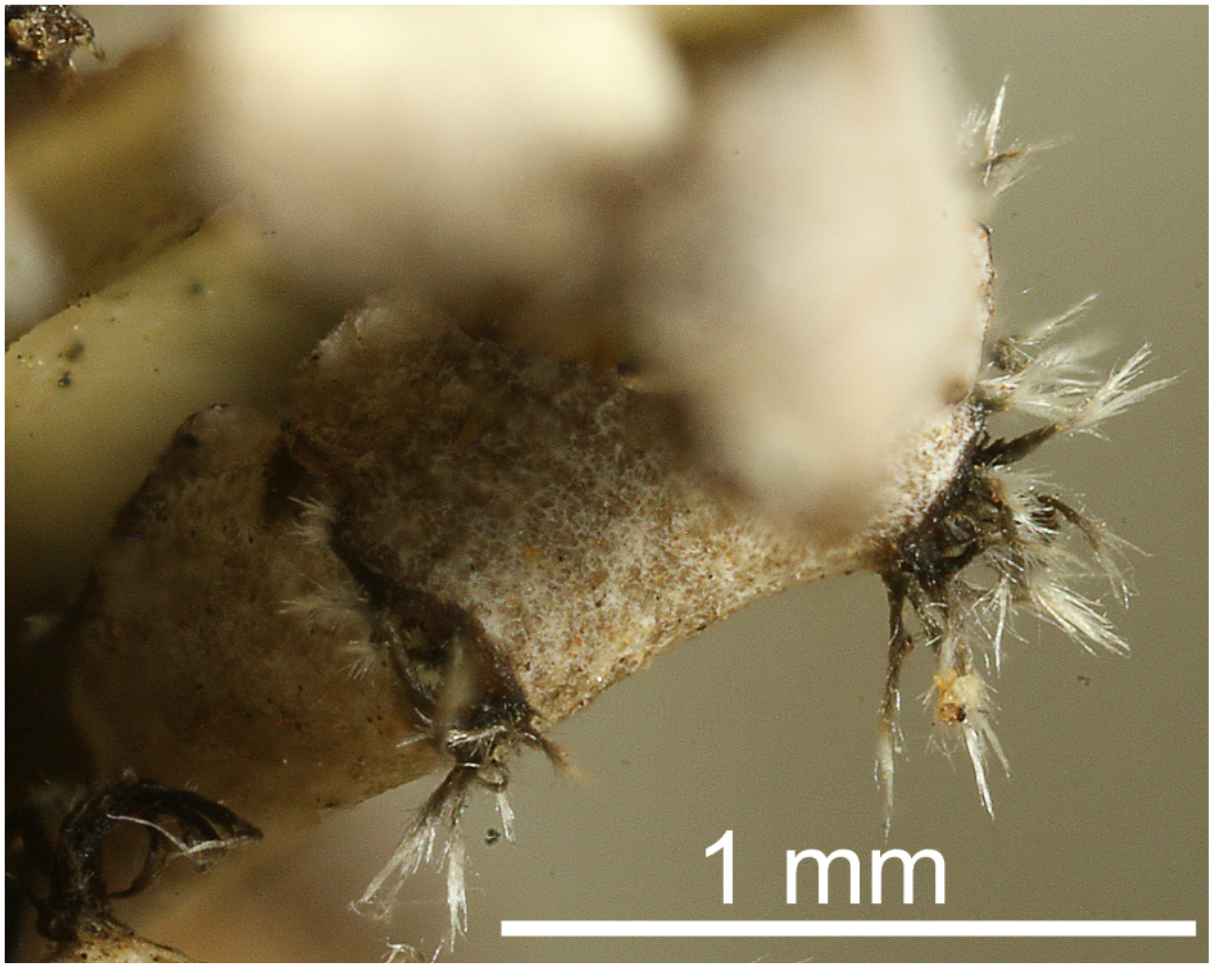
at: atranorin, pl: placodiolic acid, ru: russulone

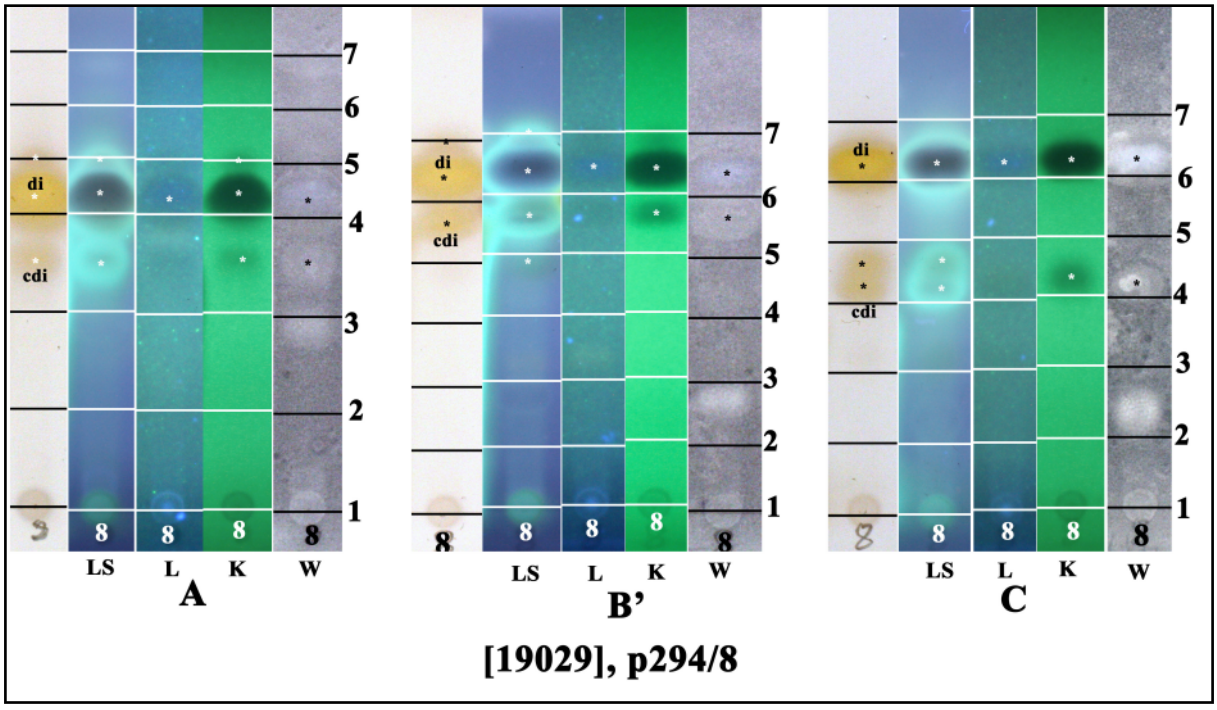
Heterodea beaugleholei R.Filson
[= ***Cladia beaugleholei*** (R.Filson) Parnmen & Lumbsch]

Lobes to 12 mm wide, ascending at margins, brittle when dry, growing on soil. Upper surface grey-green to yellow-green. Lower surface ecorticate, dirty white to pale grey, lacking a network of black veins. Rhizines scattered, fasciculate. Apothecia to 3 mm wide, terminal on marginal lobes, reddish brown. Ascospores 1-celled, hyaline, 8/ascus, 12-15 x 4 µm. Chemistry: medulla K-, C-, CK+ rose, P-; usnic acid (trace), divaricatic acid (major) nordivaricatic acid (minor).

[19029], Australia, New South Wales, Jerrabomberra Hill, 2 km south-west of Qeanbeyan, 35°23' S, 149°13' E, 740 m, growing on soil and debris in dry sclerophyll forest. Leg. J.A. Elix (10900) & M.J. Elix, 2.4.1983. LICHENES AUSTRALASICI EXSICCATI NR. 027. Lit. Elix (1977), Filson (1978), Jahns et al. (1973), Parnmen & Lumbsch (2012).







di: divaricatic acid, cdi: condivaricatic acid = nordivaricatic acid

Heterodea beaugleholei

Heterodea muelleri (Hampe) Nyl.
[= ***Cladia muelleri*** (Hampe) Parnmen & Lumbsch]

Lobes 6-10 mm wide, ascending, recurved at margins, growing loosely on the ground among grasses and litter. Upper surface yellow-green to yellow-brown. Lower surface ecorticate, felt-like or woolly, brown to black, with paler depressions or spots, sometimes pale with a network of dark veins. Apothecia on lobe margins, to 1 mm wide, brown. Hypothecium hyaline. Ascospores 8/ascus, hyaline, simple, 10-12 x 4-5 µm. Chemistry: medulla K-, C-, CK+ yellow, KC-, P-; usnic acid (trace), diffractaic acid (major).

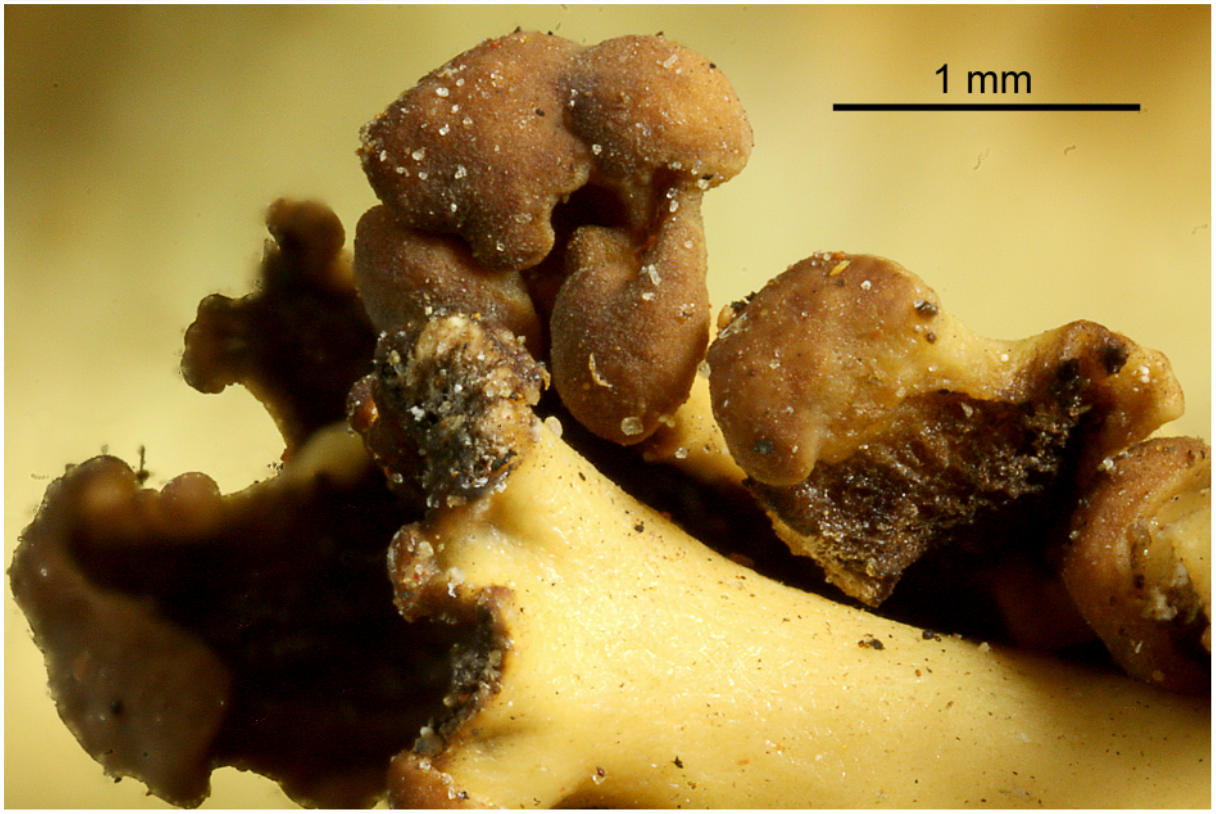
[19030], Australia, Australian Capital Territory, Black Mountain Reserve, Aranda, Canberra, 35°16' S, 149°05' E, 680 m, growing on soil and debris in dry sclerophyll forest. Leg. J.A. Elix (10899) & M.J. Elix, 1.04.1983. LICHENES AUSTRALASICI EXSICCATI NR. 028. Lit. Blackman at al. (1973), Filson (1978), Parnmen & Lumbsch (2012).



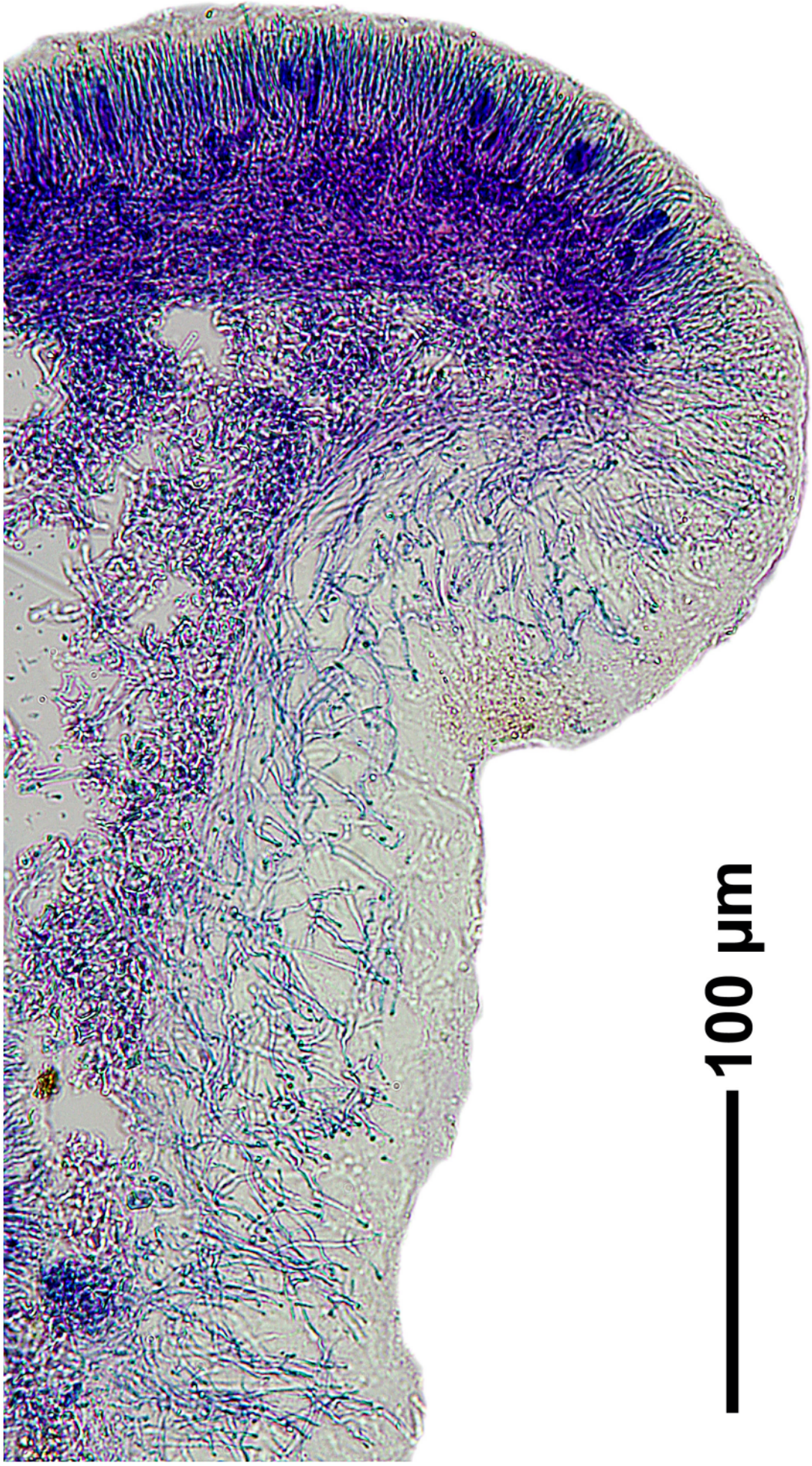


Heterodea muelleri

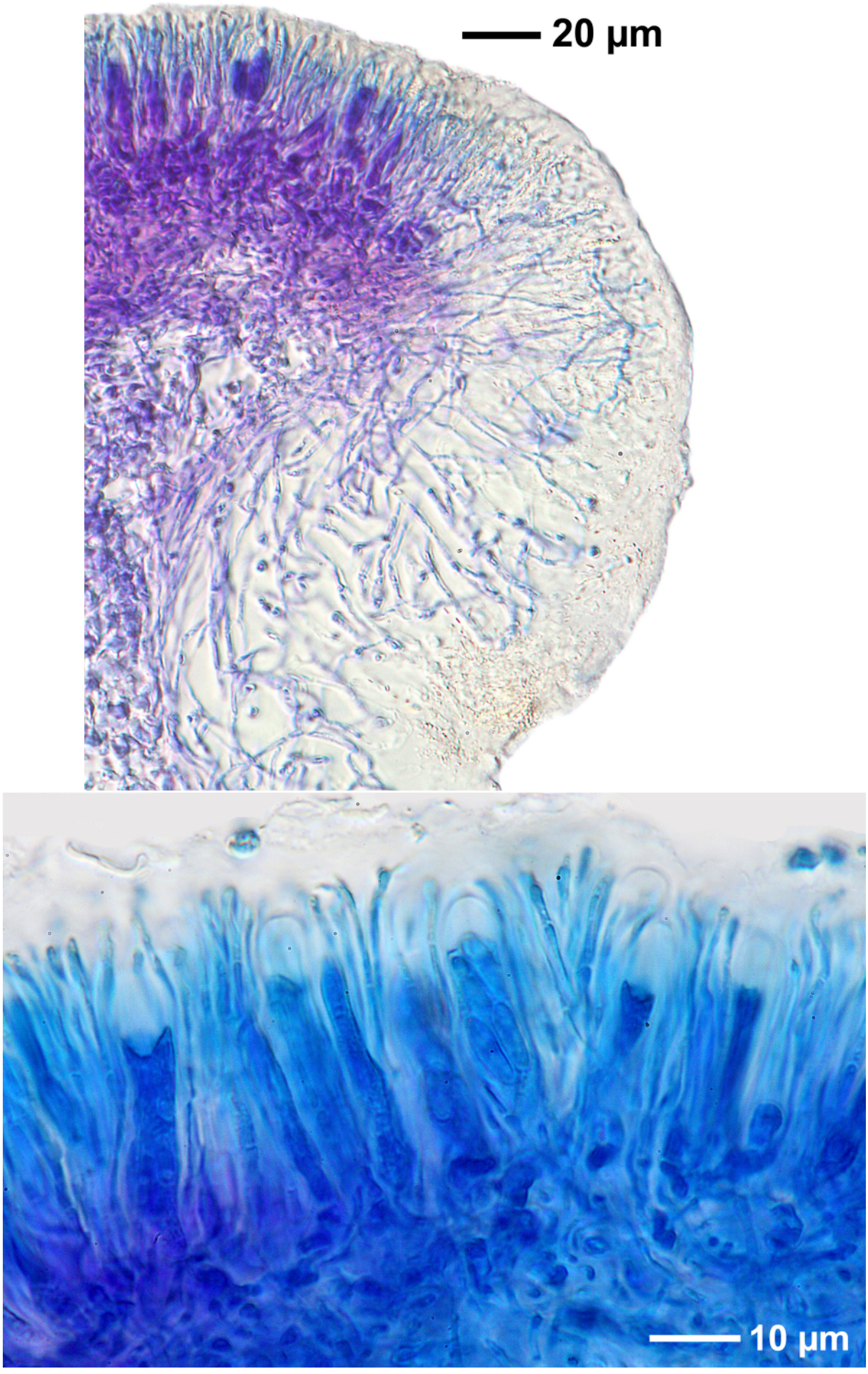




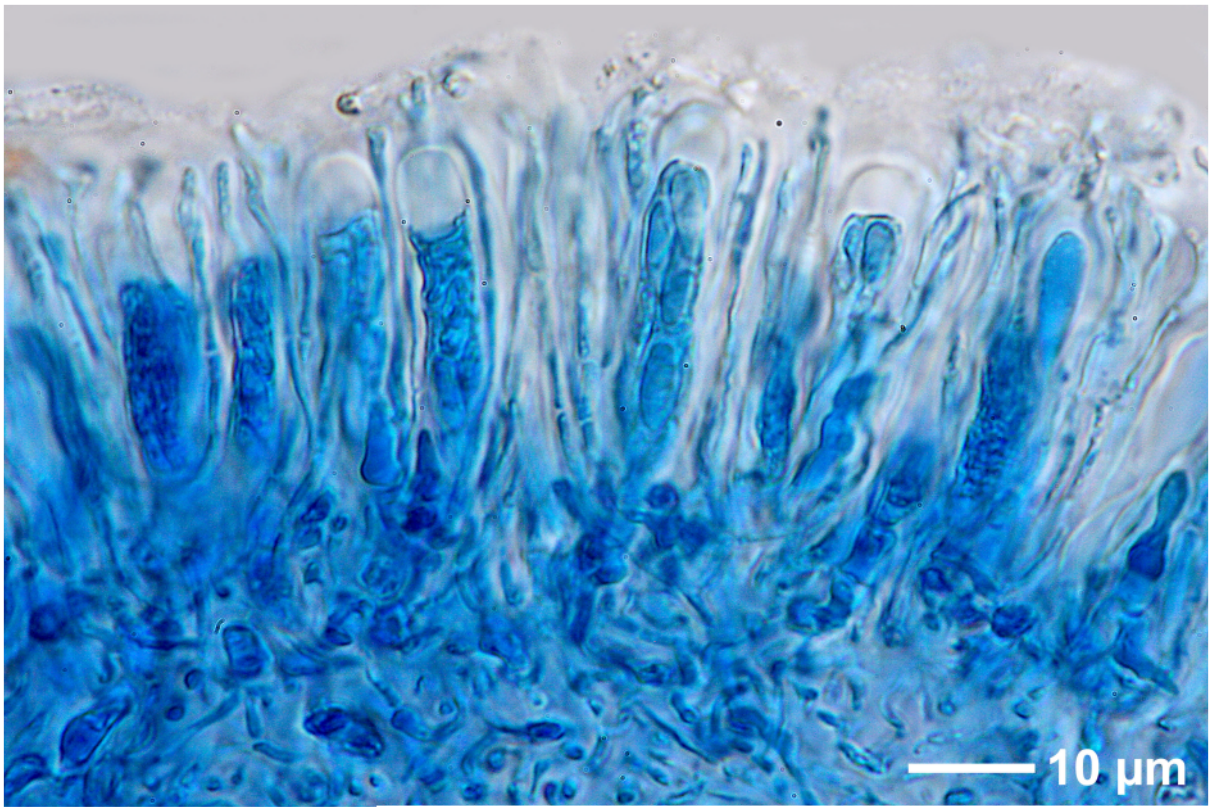
Heterodea muelleri

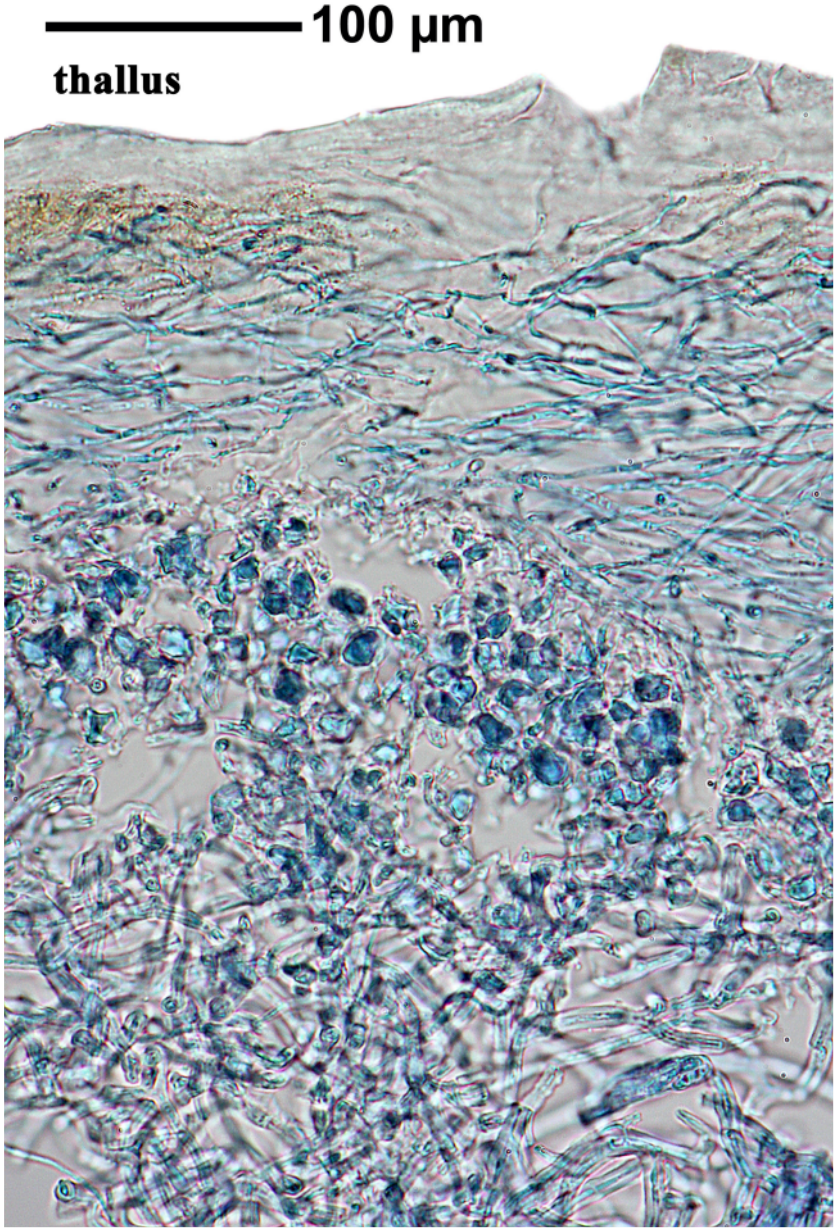


Heterodea muelleri

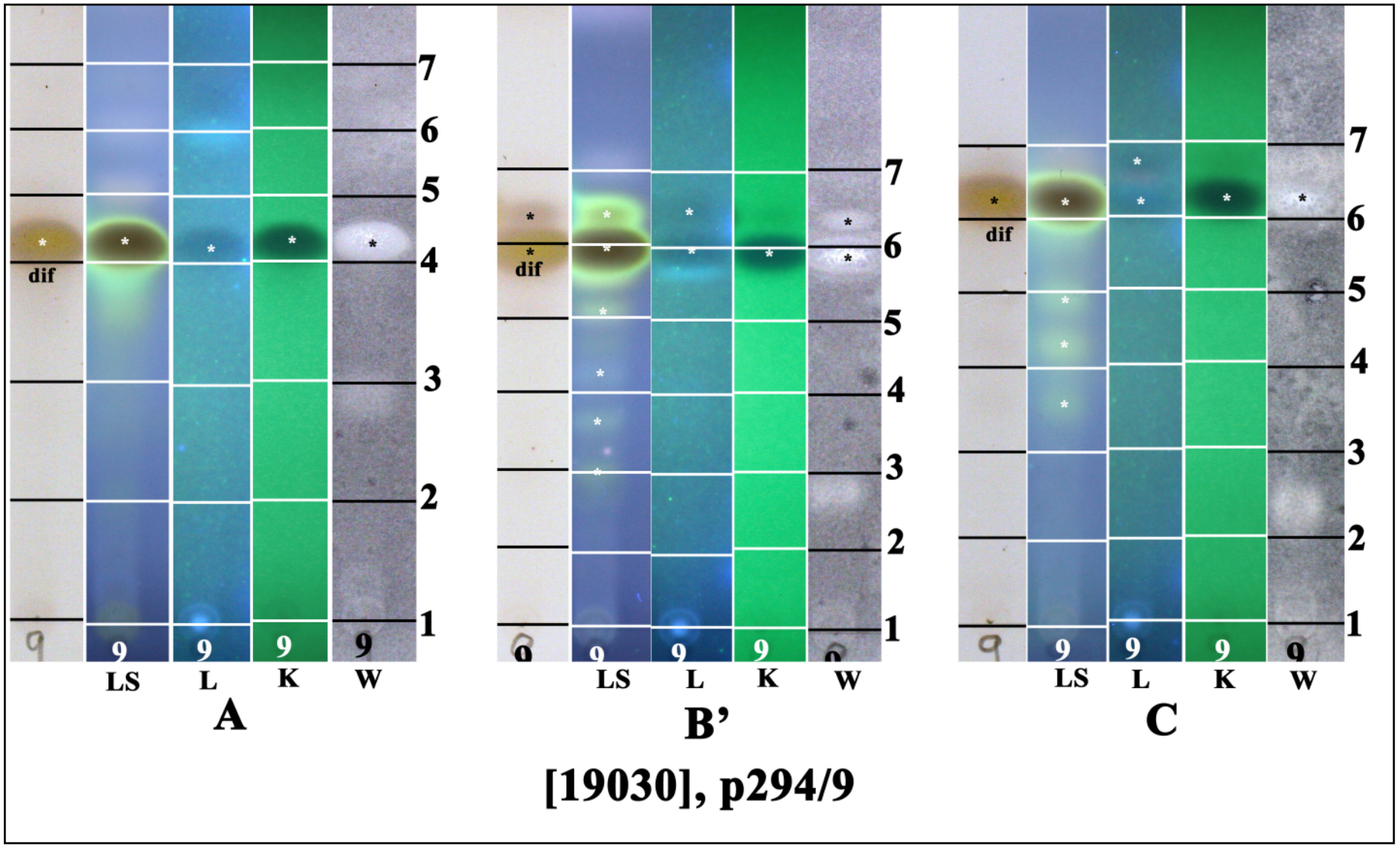


Heterodea muelleri





Heterodea muelleri



dif: diffractaic acid

Heterodermia hypocaesia (Yasuda) D.D.Awasthi

Thallus adnate. Marginal rhizines (= black cilia) absent. Soralia farinose to granular, labriform to capitate on lateral or terminal lobes. Lower surface ecorticate, arachnoid, at the margins white, to the centre black, with yellow (K+ red) granular pigment. Rhizines black, simple or squarrosely branched, difficult to see from above. Ascospores with 2-3 sporoblastidia, 35-45 x 16-20 µm. Chemistry: Cortex K+ yellow, C-, KC-, P+ yellow; medulla K+ yellow then red; atranorin (major), zeorin (major), japonin (major), salazinic acid (major), ±norstictic acid (trace), hybocarpone (minor), subhybocarpone (trace), 6α-acetoxy-22-hydroxyhopane-25-oic acid (trace), ±7-chloroemodin (trace).

[16239], Australia, New South Wales, between Bermagui and Tathra, on way from Aragunnu Beach to the Mimosa Rocks, 36.585° S, 150,056° E, 10 m. Leg. F. Schumm & E. Stocker-Wörgötter, 12.11.2009.



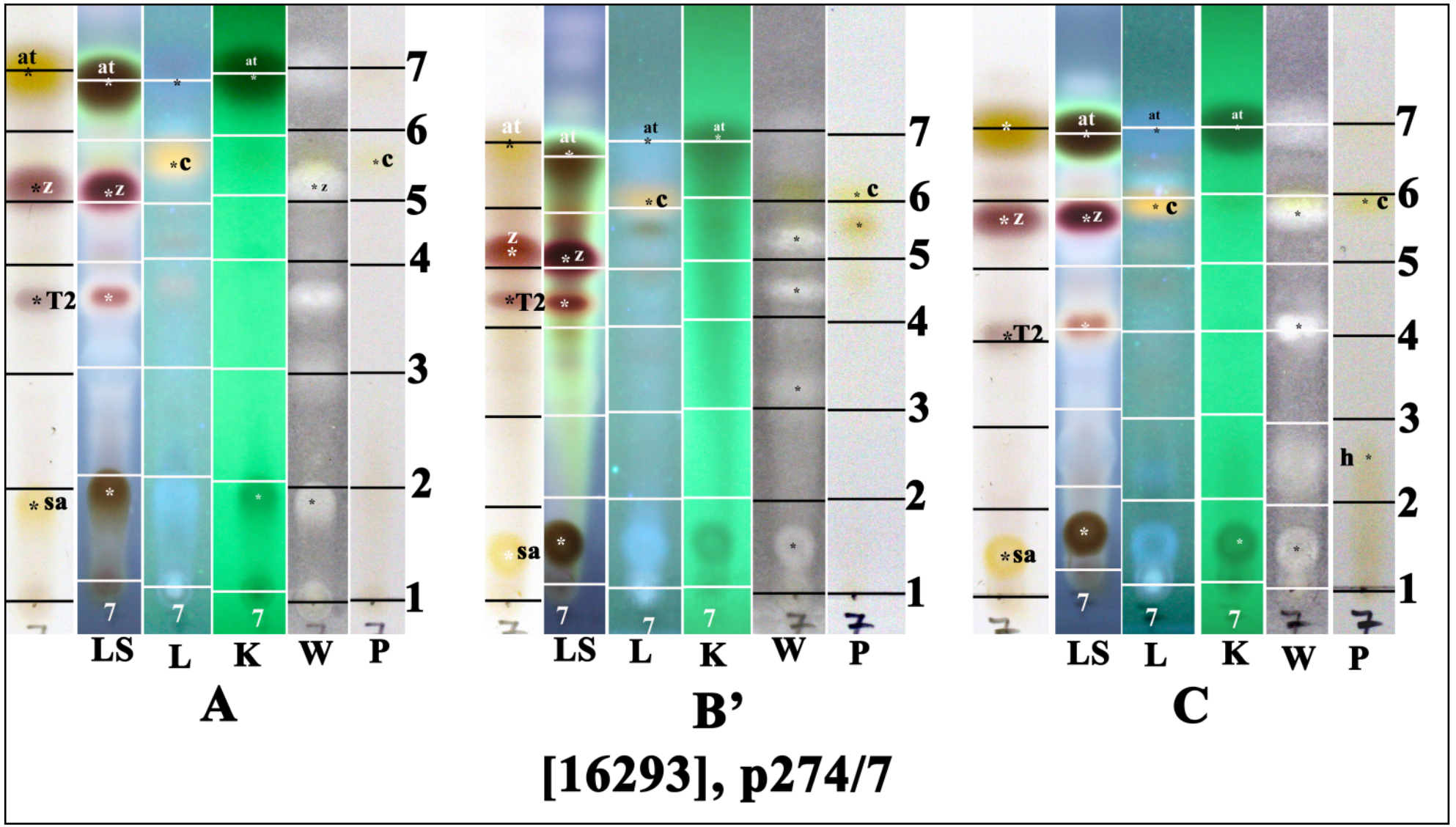




Heterodermia hypocaesia



Heterodermia hypocaesia



at: atranorin, z: zeorin, T2: japonin, sa: salazinic acid, c: 7-chloroemodin, h: hybocarpone

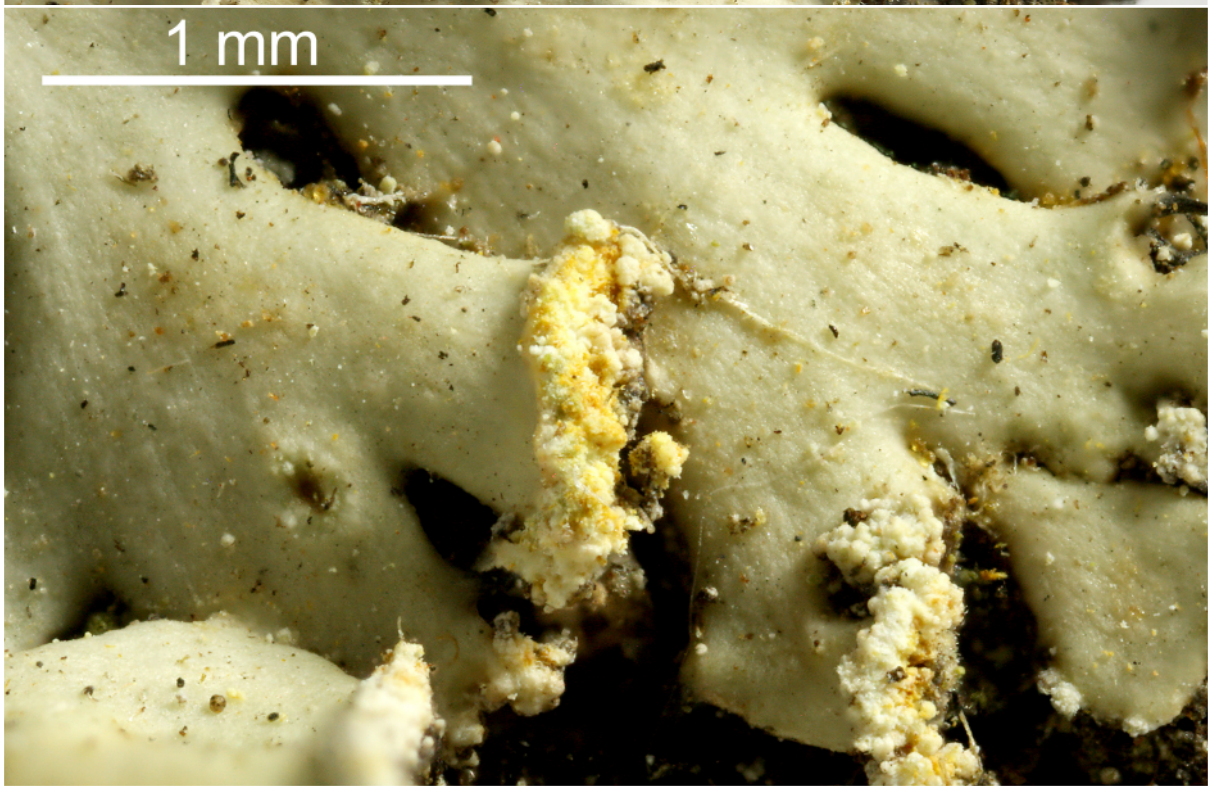
Heterodermia obscurata (Nyl.) Trevis.

Lobes adnate, not ascending, eciliate. Soralia labriform to capitate on recurved apices of lobes. Lower surface ecorticate, arachnoid, with ochraceous orange hyphae overlying medulla (K+ red). Rhizines black, thick, simple or squarosely branched. Ascospores with 2-3 sporoblastidia, 25-35 x 15-19 µm. Chemistry: Cortex K+ yellow, C-, KC-, P+ yellow; medulla K+ yellow, C-, P-; atranorin (major), zeorin (major), 16β-acetoxyhopane-6α,22-diol (major), leucotylin (minor), 7-chloroemodin (minor), flavoobscurins A, B1, B2 (minor), 5,7-dichloroemodin (trace), AO-1 anthrone (trace), AO-2 anthrone (trace), emodin (minor). Lit. Elix (2011, Australasian Physciaceae).

[16244], Australia, New South Wales, between Bermagui and Tathra, on way from Aragunnu Beach to the Mimosa Rocks, 36.585° S, 150.056° E, 10 m, growing on rocks. Leg. F. Schumm & E. Stocker-Wörgötter, 12.11.2009.



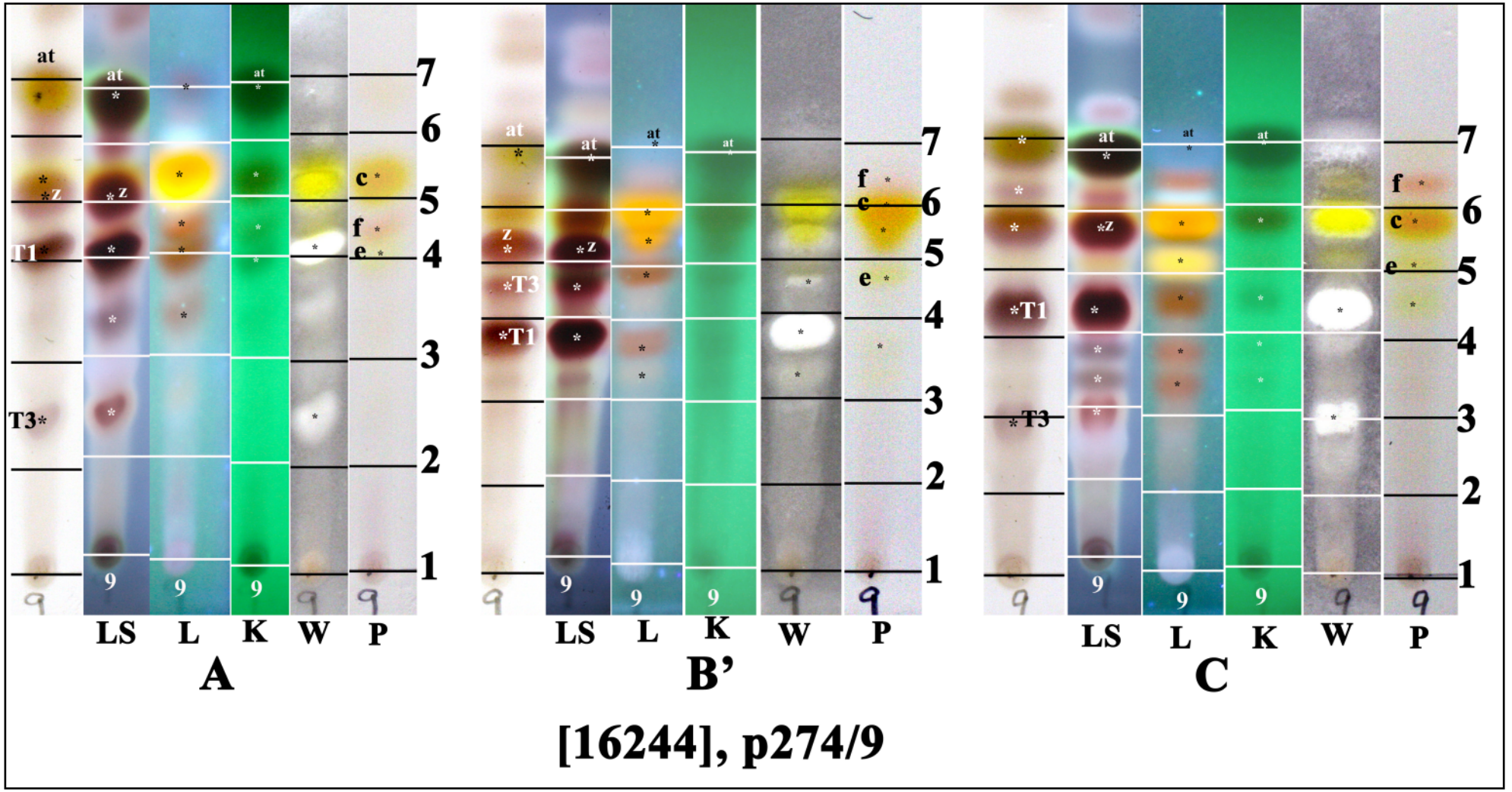




Heterodermia obscurata



Heterodermia obscurata



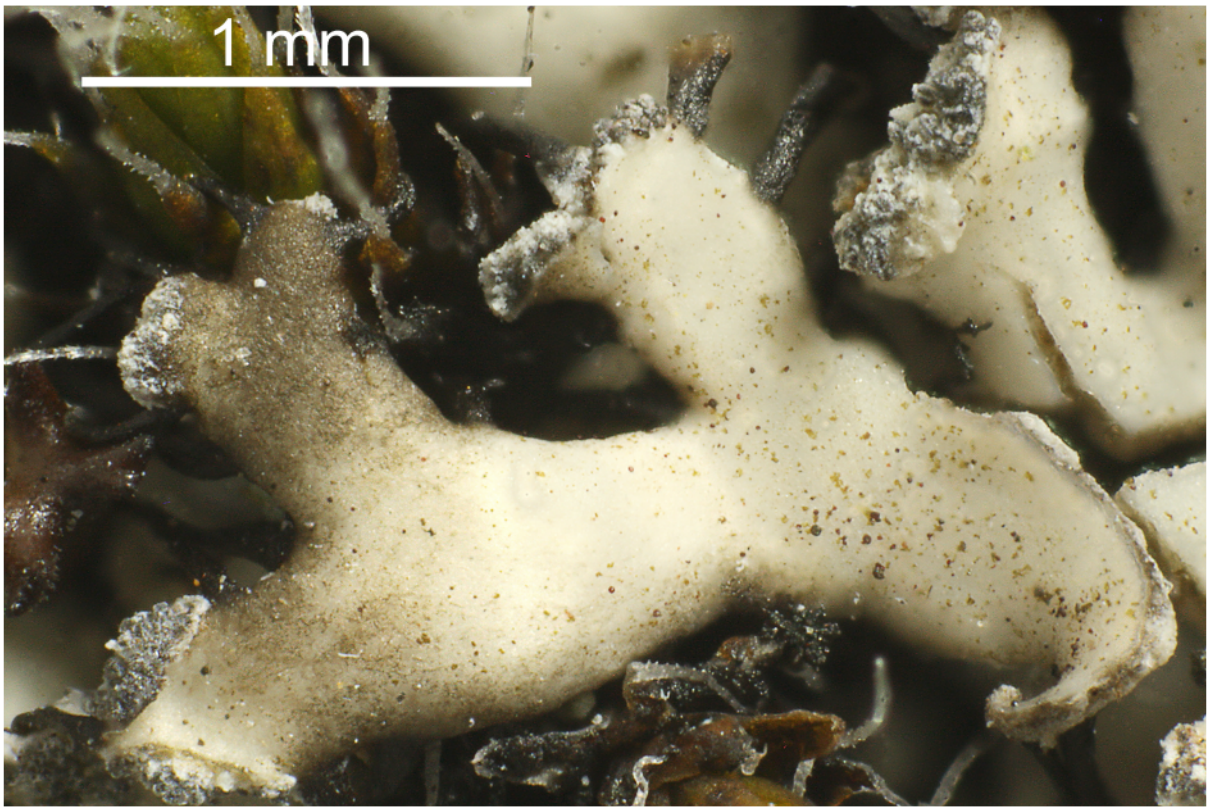
at: atranorin, z: zeorin, T1: 16β-acetoxyhopane-6α,22-diol, T3: leucotylin,
c: 7-chloroemodin. e: emodin, f: flavoobscurins

Heterodermia obscurata (Nyl.) Trevis.

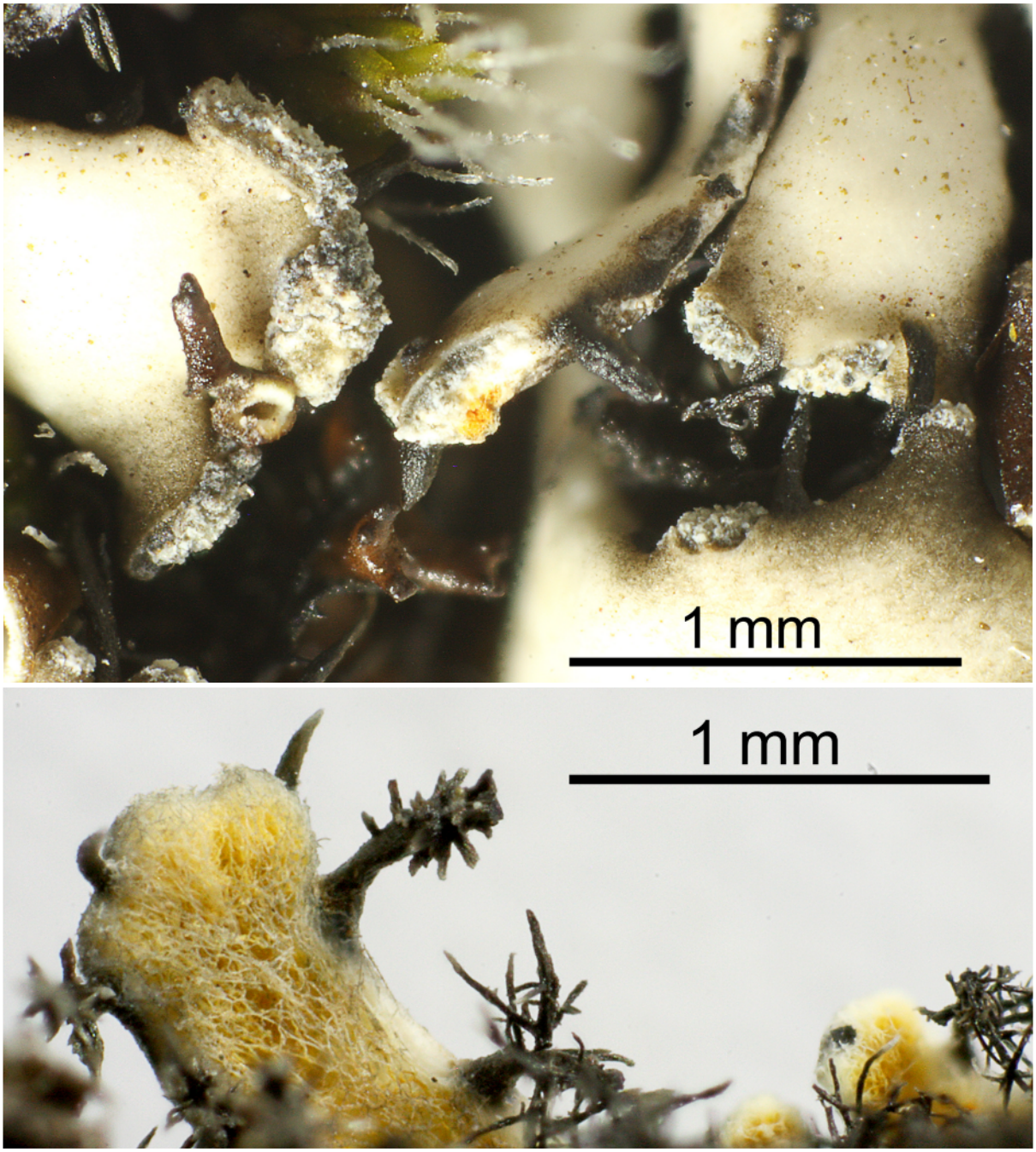
[15803], Australia, Western Australia, 75 km south of Mt. Chudalup, wetland with *Agonis junipera* and *Eucalyptus marginata,* 34.734° S, 116,088° E, 75 m. Leg. F. Schumm & E. Stocker-Wörgötter, 24.10.2009. Chemistry: atranorin (major), zeorin (major), 16β-acetoxyhopane-6α, 22-diol (major), leucotylin (major), 7-chloroemodin (submajor), emodin (minor), flavoobscurins (trace) by HPTLC, anal. F. Schumm.



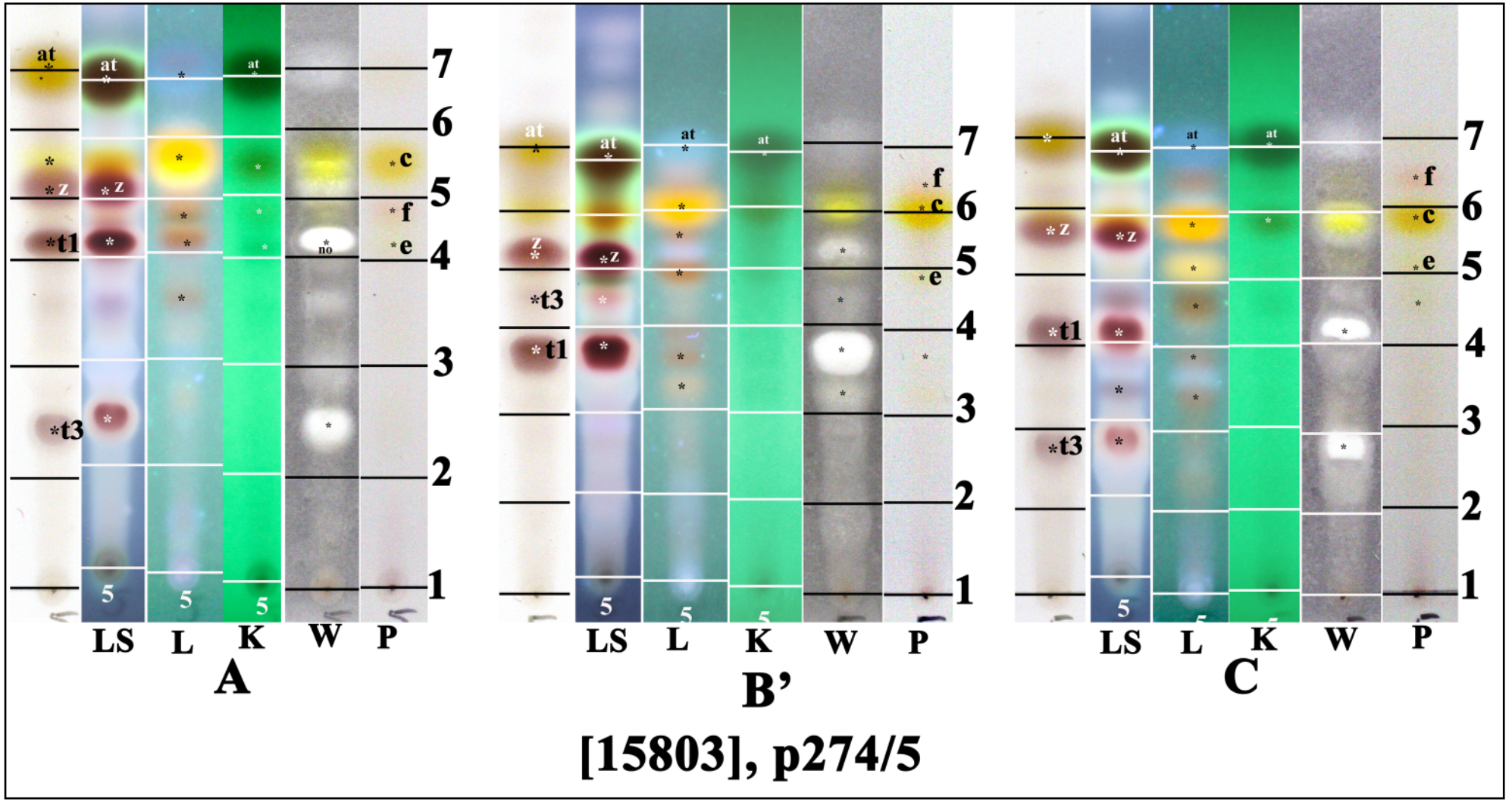




Heterodermia obscurata



Heterodermia obscurata



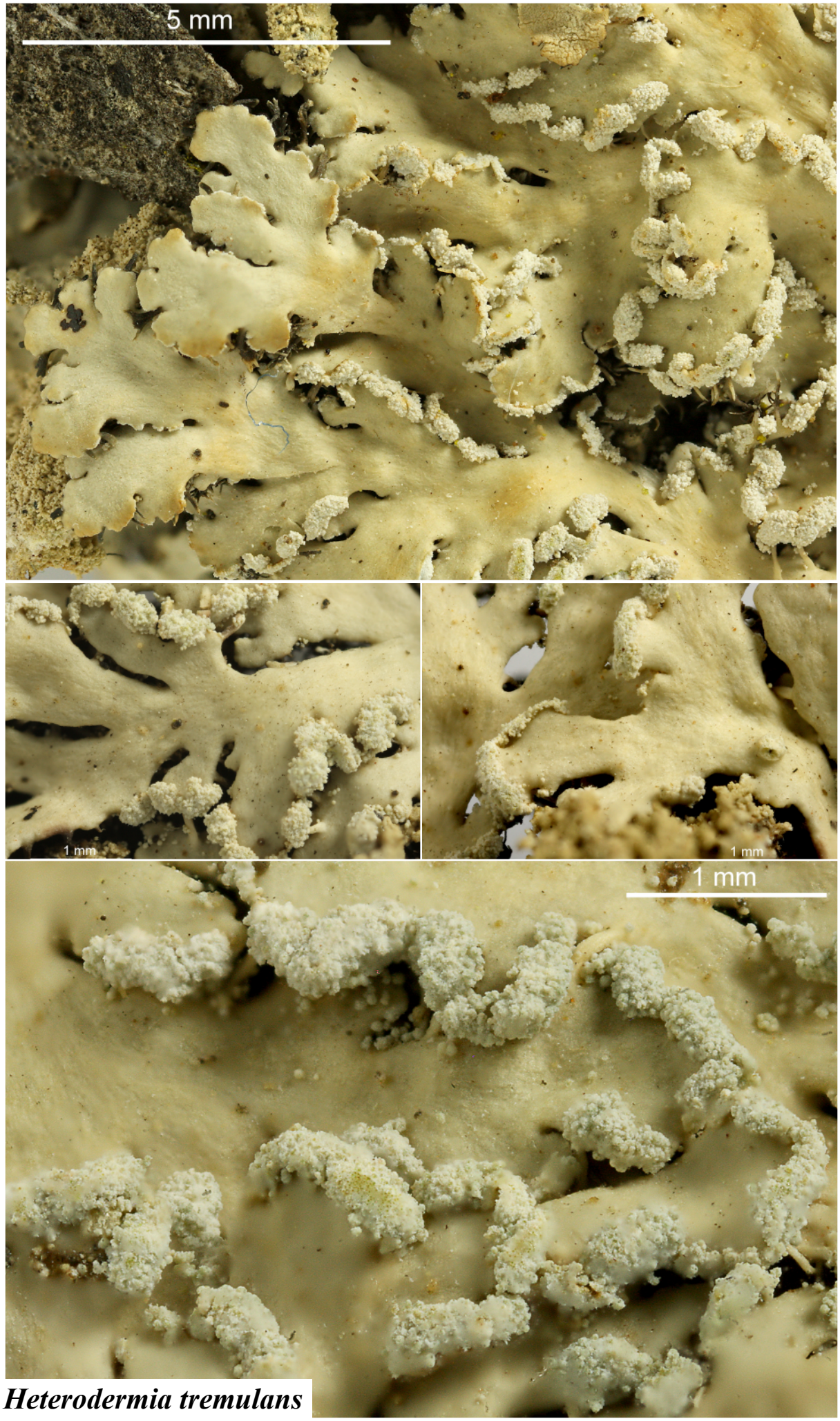
at: atranorin, z: zeorin, t1: 16β-acetoxyhopane-6α,22-diol, t3: leucotylin,
c: 7-chloroemodin, e: emodin, f: flavoobscurins

Heterodermia tremulans (Müll.Arg.) Kurok.

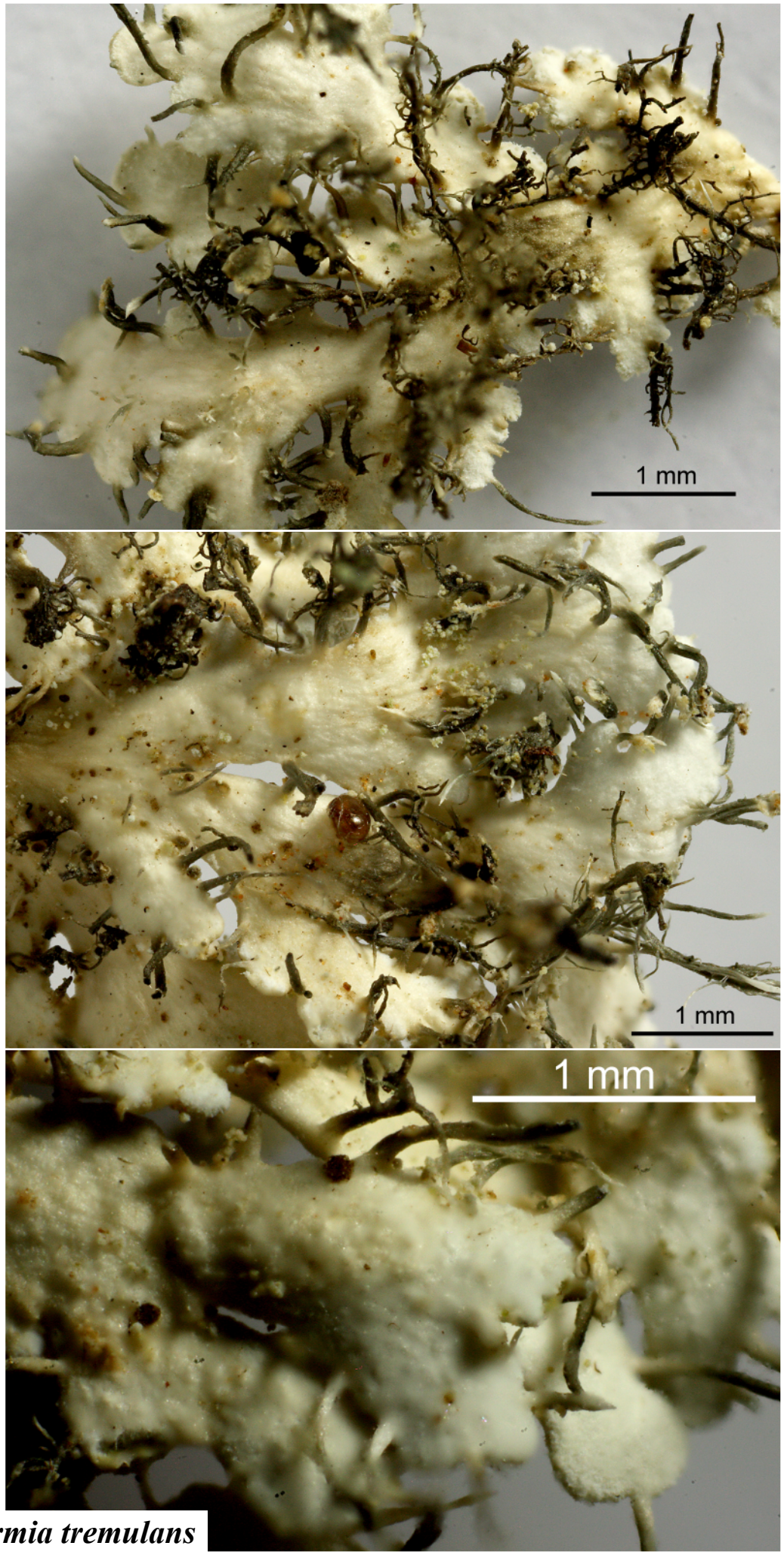
Upper surface with marginal capitate-labriform soralia. Lower surface corticate, not arachnoid, whitish to yellowish-brown, but lacking special yellow pigments, somewhat glossy. Lower cortex c. 40-50 µm thick, hyphae periclinalous orientated and glued together, rapidly separated from the loosely medulla. Rhizines grey or blackened, simple or squarrosely branched, growing out of the lower margin but also out of the lower surface.

[16151], Australia, New South Wales, Burrewarra Point near Tomakin, Guerilla Bay, Banksia Walk, 35.831° S, 150,229° E, 36 m. Leg. F. Schumm & E. Stocker-Wörgötter, 10.11.2009. Chemistry: atranorin (major), zeorin (major), 16β-acetoxyhopane-6α,22-diol, 6α-acetoxyhopane-16β,22-diol, leucotylin by HPTLC, anal. F. Schumm.

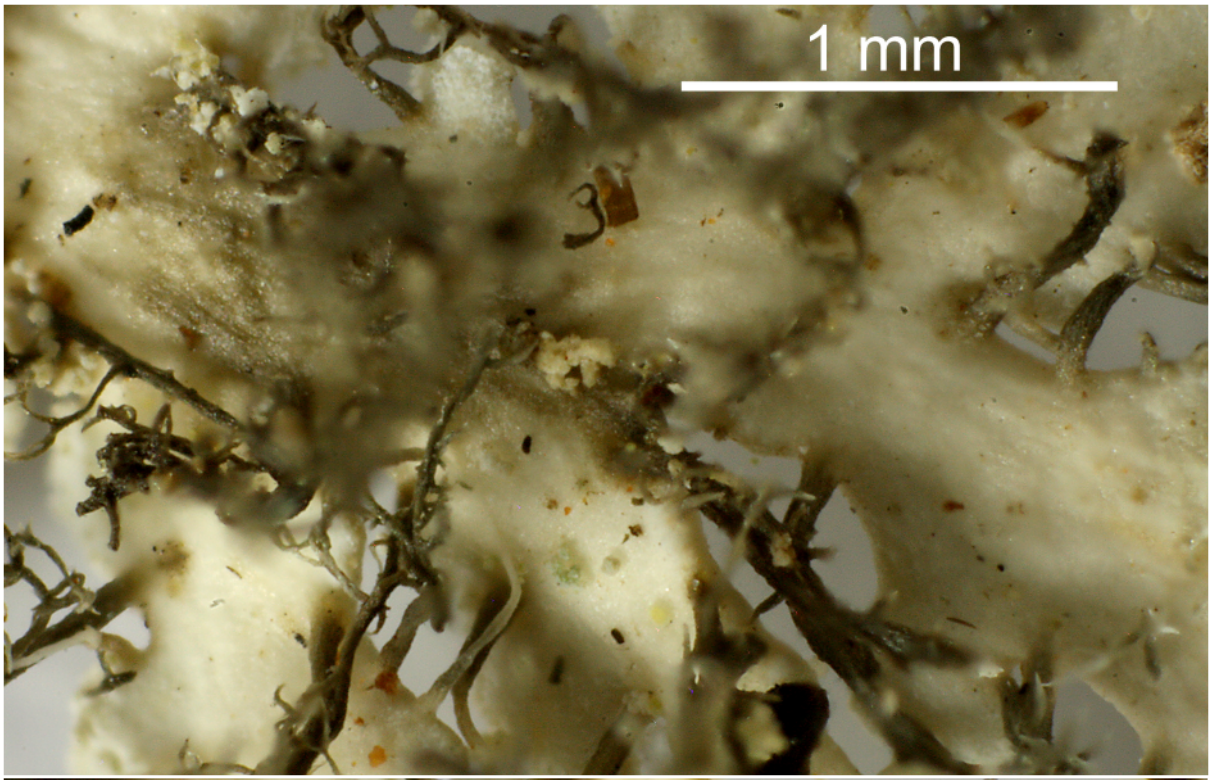


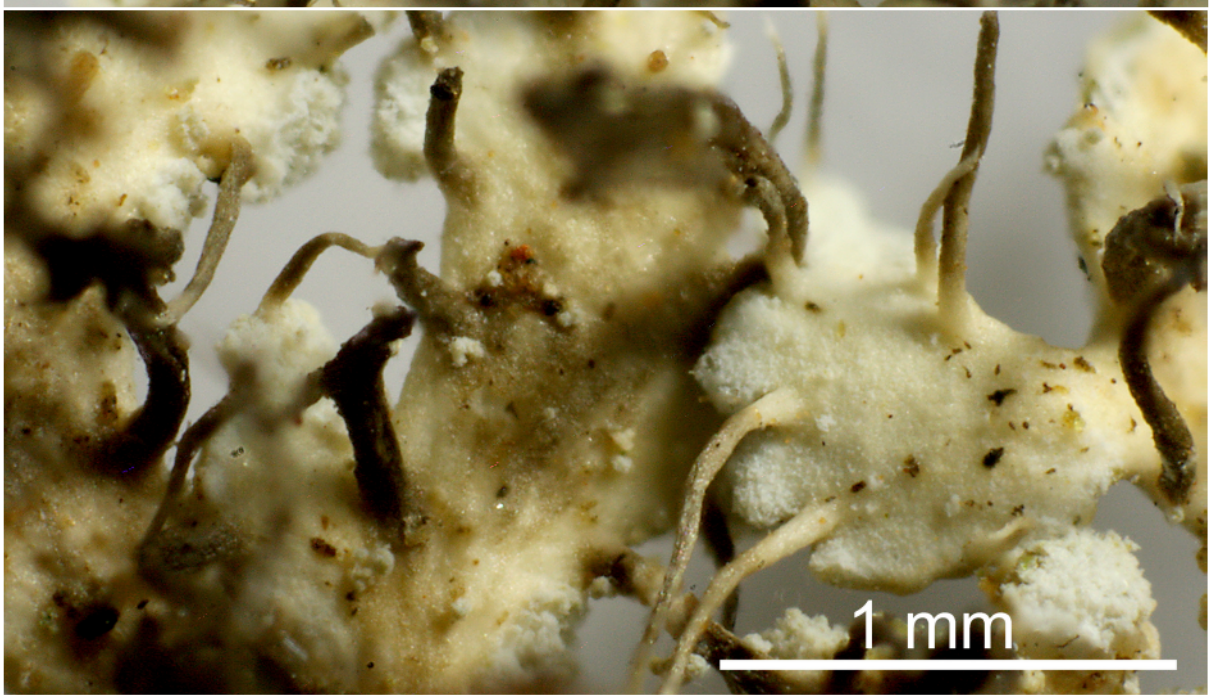


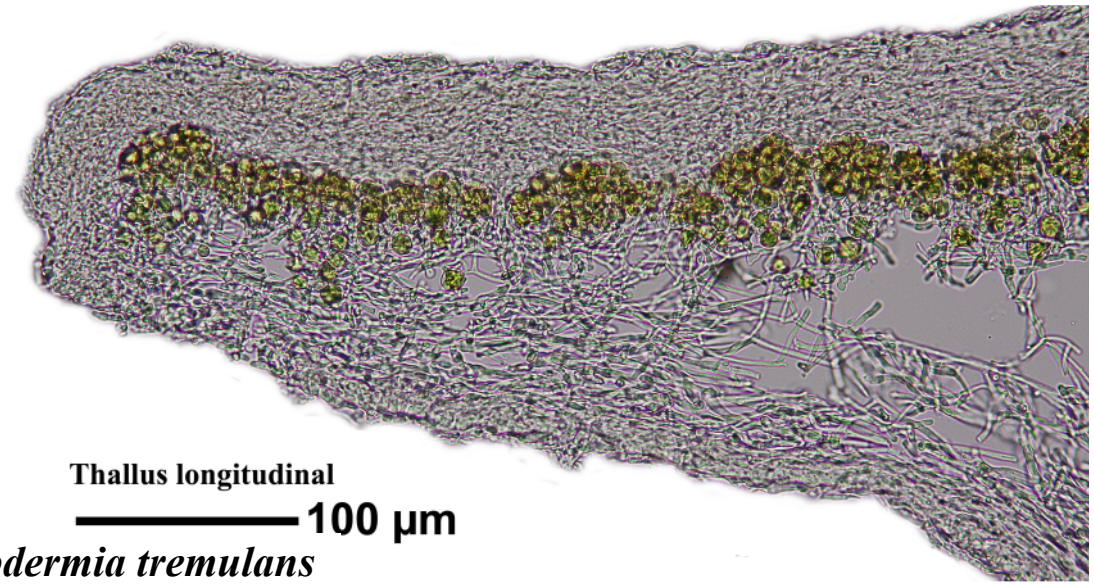
Heterodermia tremulans



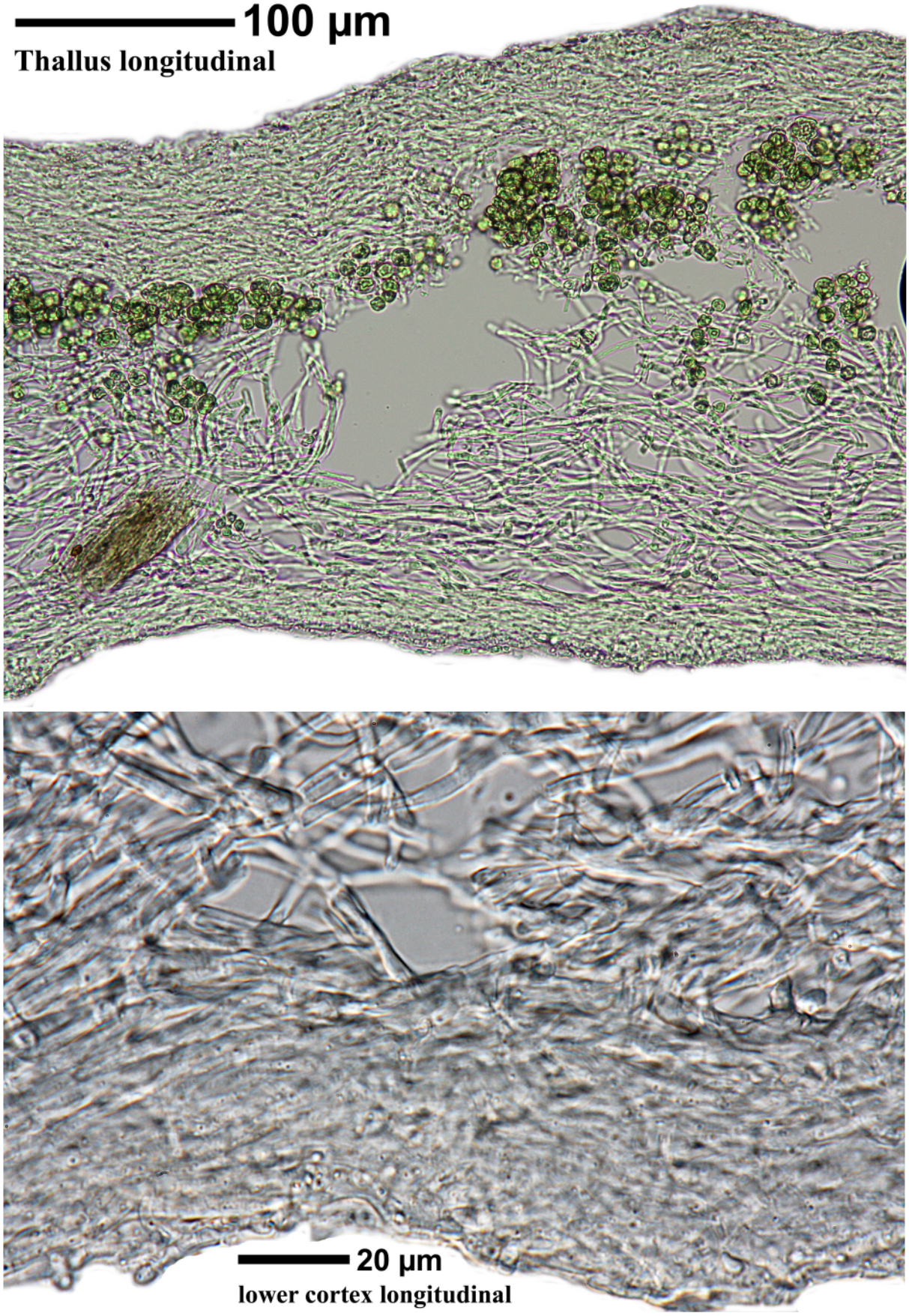
Heterodermia tremulans



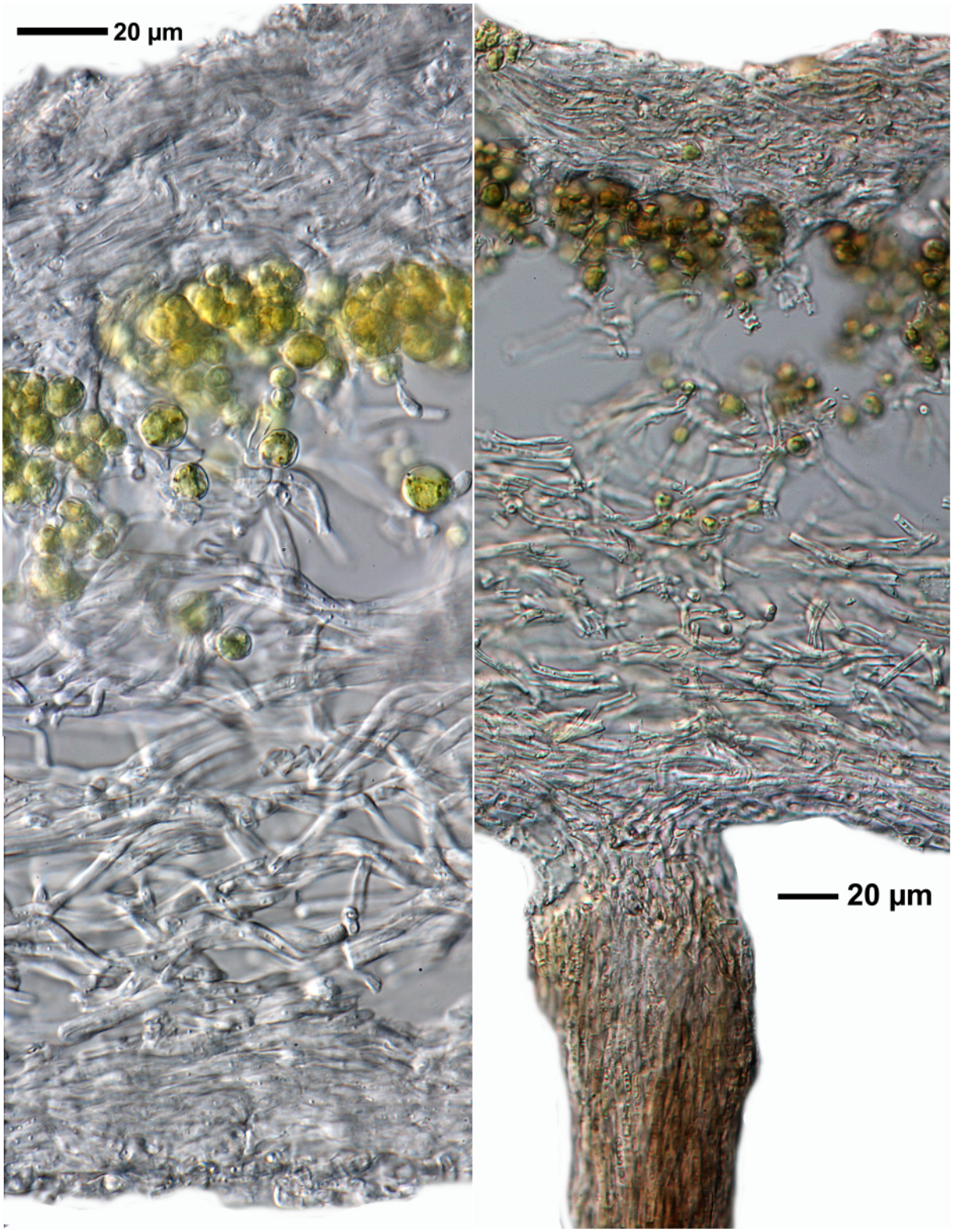




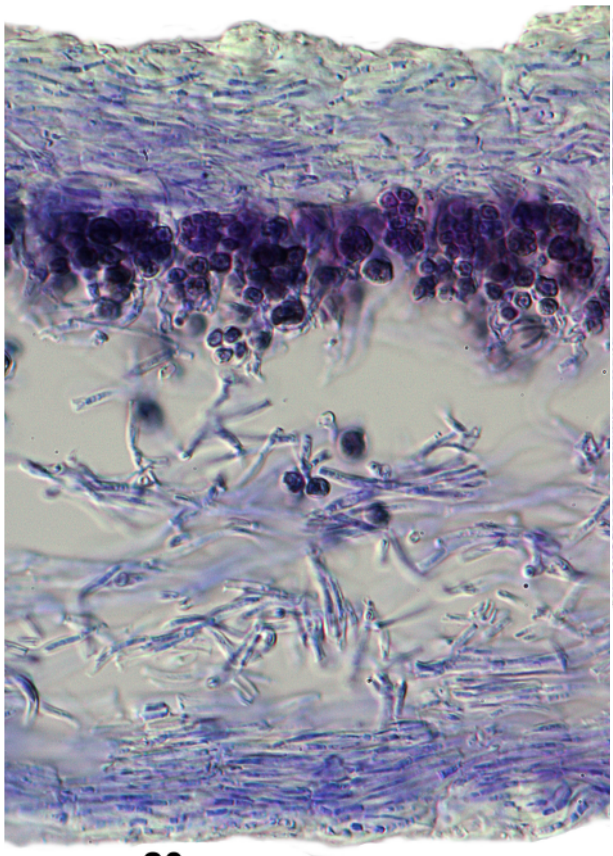
Heterodermia tremulans

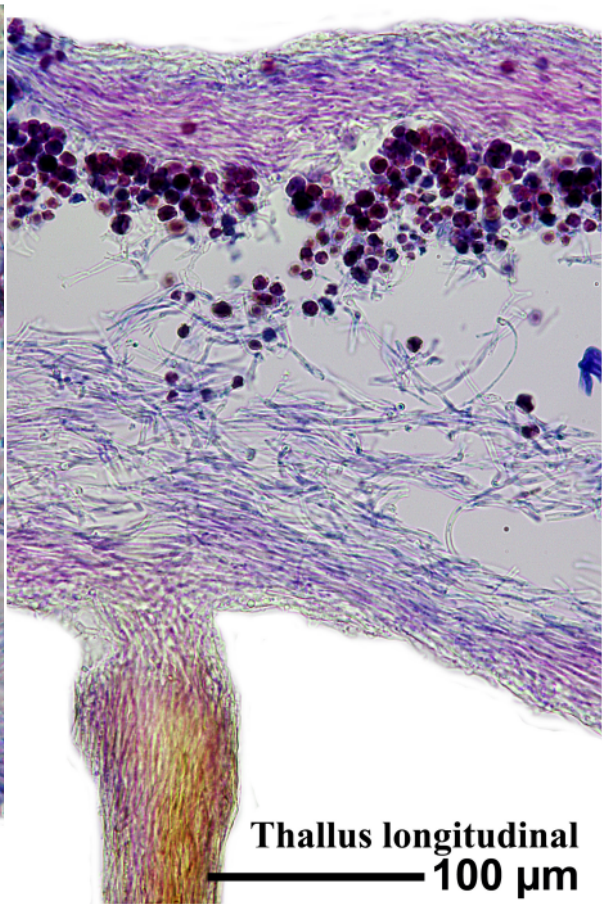


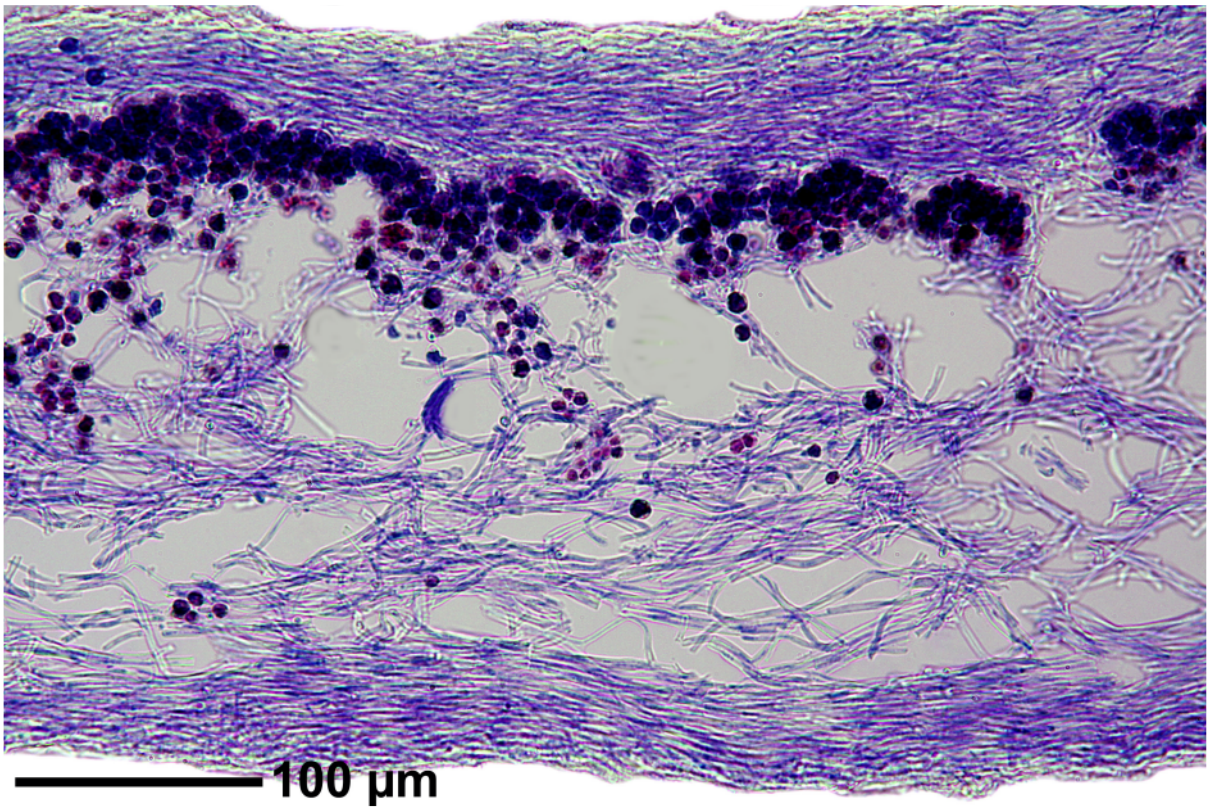
Heterodermia tremulans



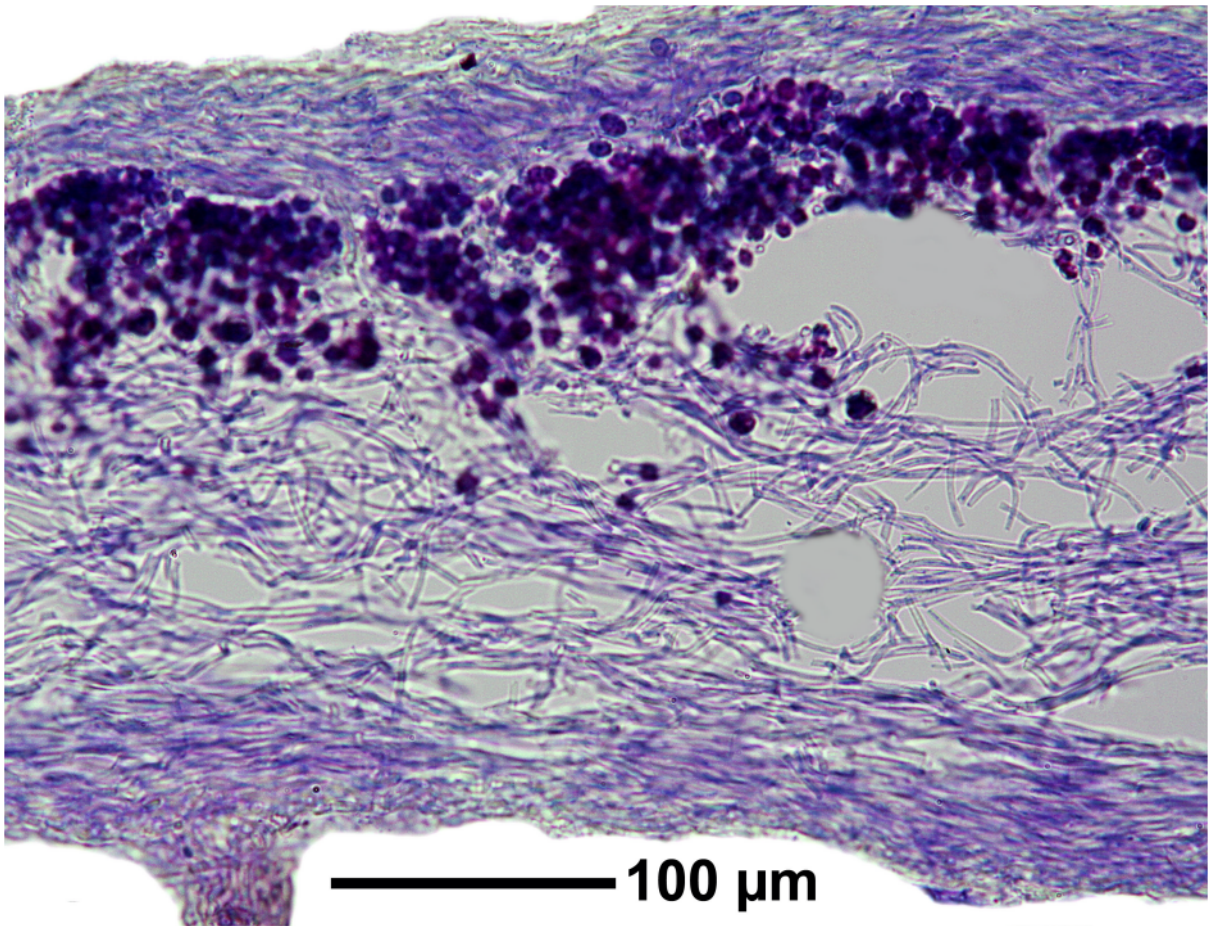
Heterodermia tremulans

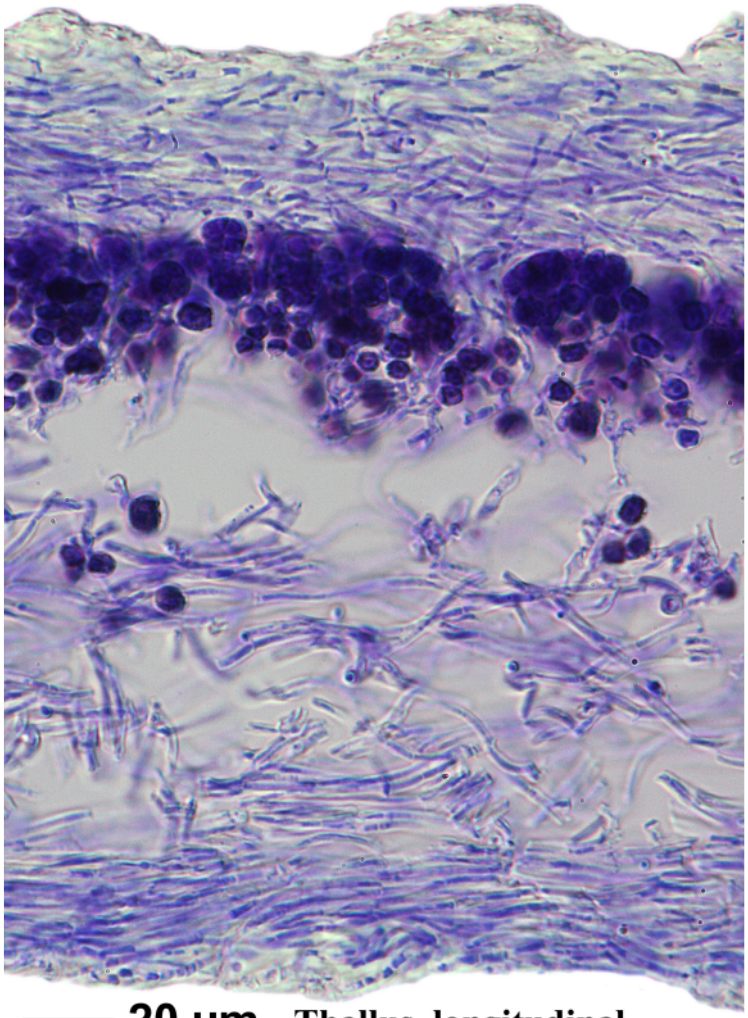




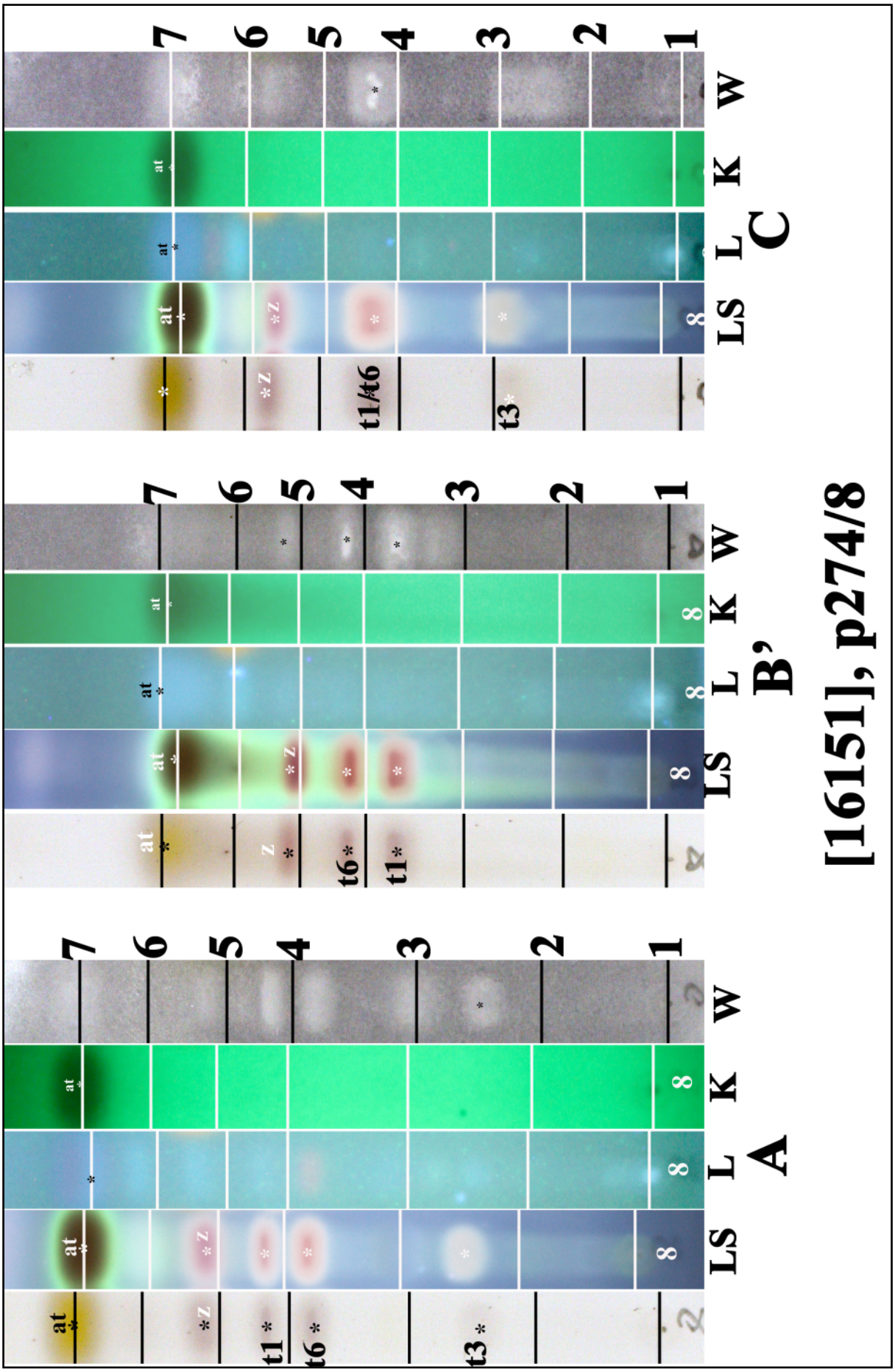


Heterodermia tremulans





Heterodermia tremulans Thallus longitudinal



at: atranorin, z: zeorin, t1: 16β-acetoxyhopane-6α, 22-diol,
t6: 6α-acetoxyhopane-16β,22-diol, t3: leucotylin

Heterodermia tremulans

Heterodermia subcomosa (Nyl.) Elix

Lobes ascending, with long white marginal rhizines, also some cila on the upper surface of the lobes. Apothecia with long to short, marginal cilia. Lower surface ecorticate, arachnoid, white, lacking yellow pigments, with conspicuous ridges. Ascospores with sporoblastidia, 30-32 x 14-28 µm, 8/ascus.

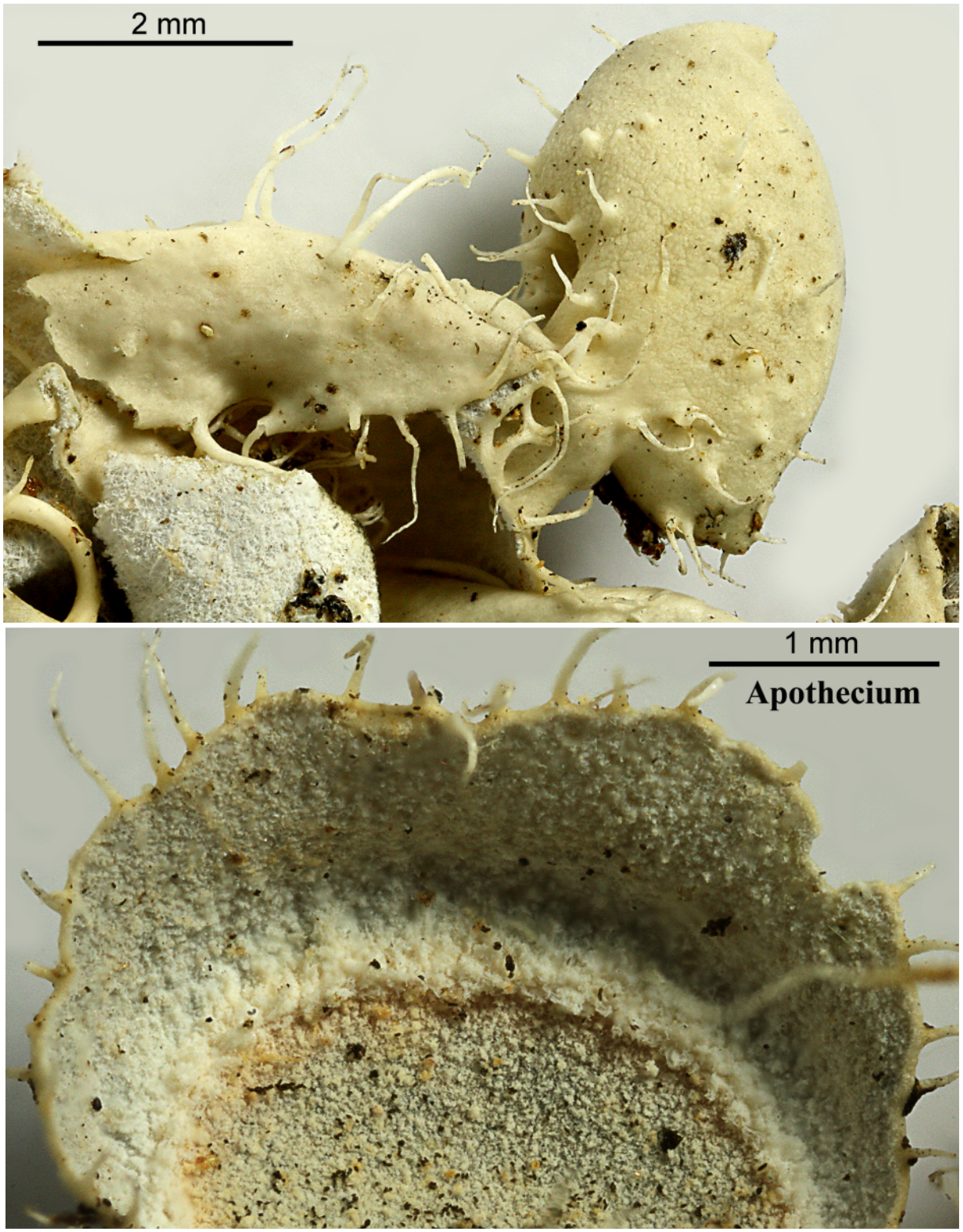
[18909], Australia, Norfolk Island, Mt. Pitt Reserve, summit trail below Mt. Bates, 29°00'30" S, 167°56'30" E, 300 m, growing on *Citrus limonia* in dense subtropical rainforest. Leg. J.A. Elix & H. Streimann, 6.12.1984, det. P.W. James. LICHENES AUSTRALASICI EXSICCATi No. 080. Chemistry: atranorin, zeorin, unknown triterpene by TLC, anal. J.A. Elix.







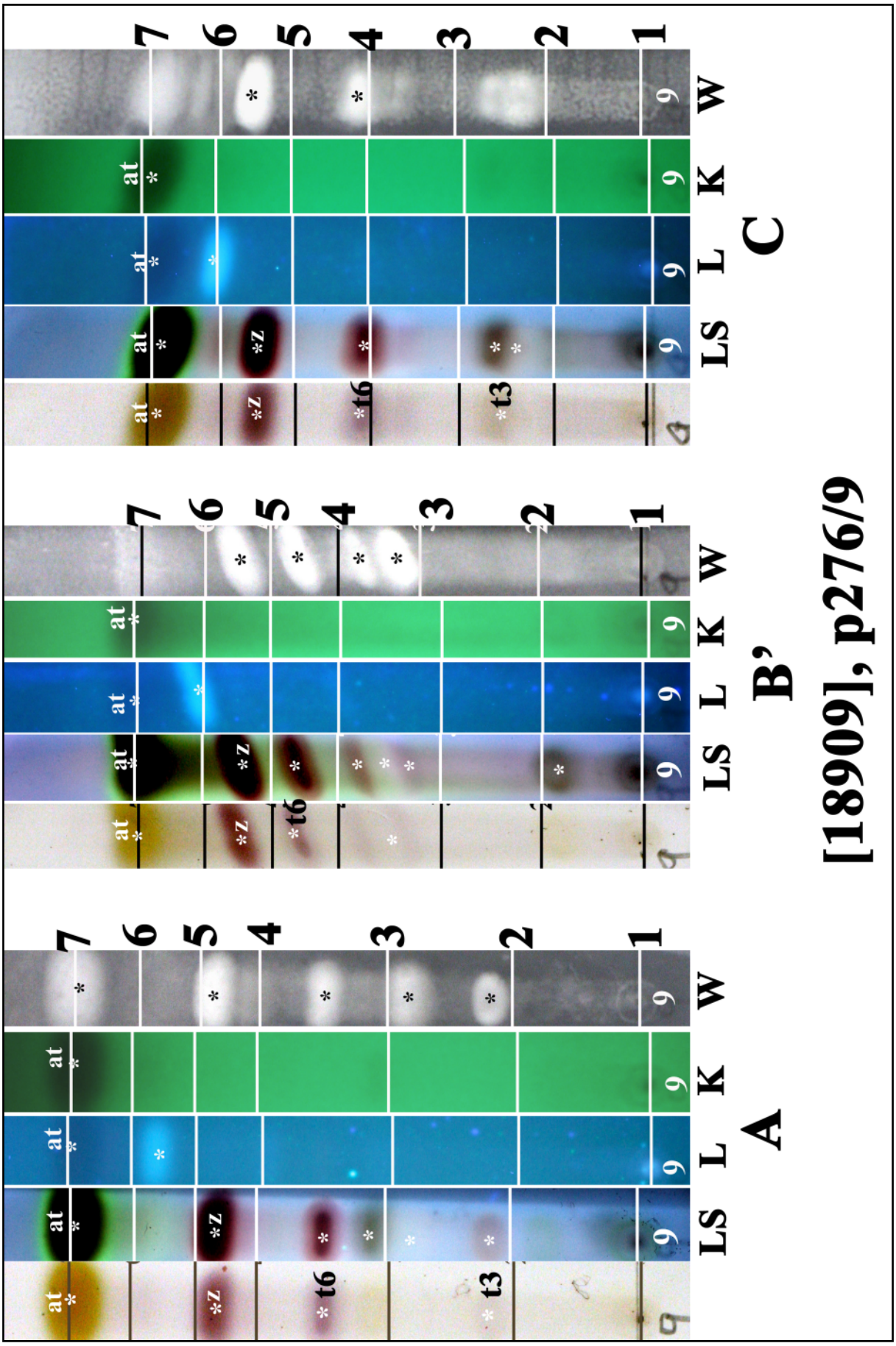
Heterodermia subcomosa



Heterodermia subcomosa



Heterodermia subcomosa



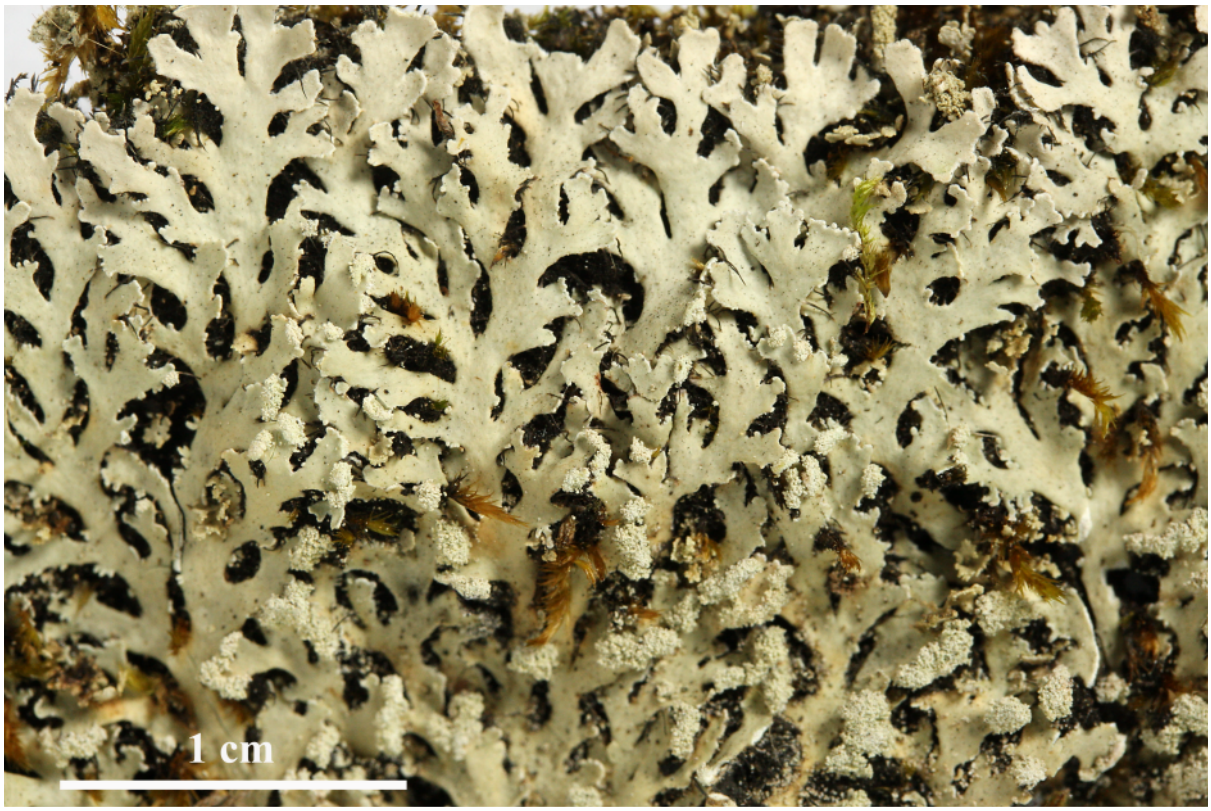
at: atranorin, z: zeorin, t6: 6α-acetoxyhopane-16β,22-diol, t3: leucotylin

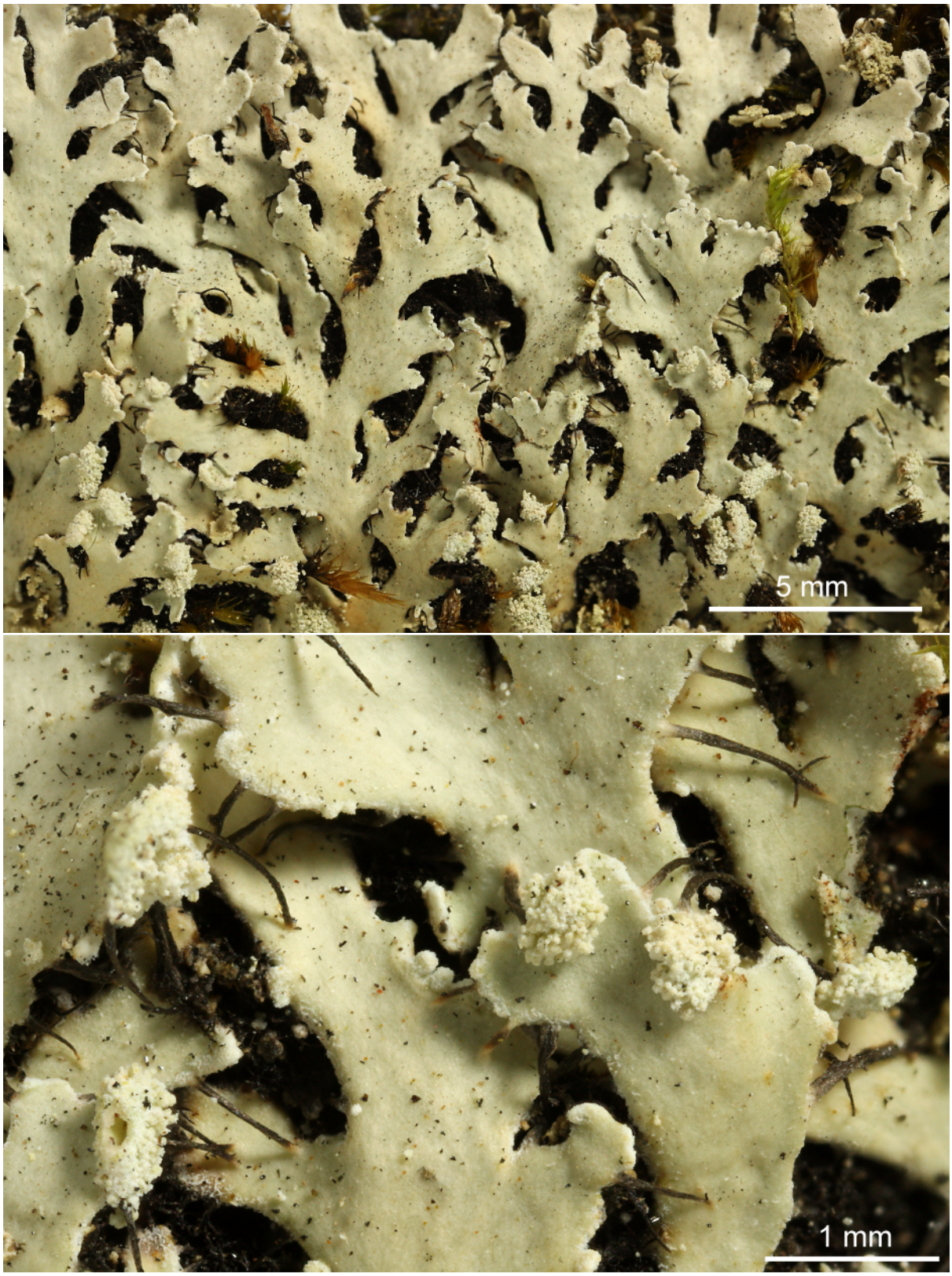
Heterodermia subcomosa

Heterodermia subneglecta Elix

Upper surface with marginal, capitate to labriform soralia. Lower surface ecorticate, arachnoid, white, grey to the centre, with granular, yellow pigment (K+ red) at the margins, but no coloured hyphae as in *Heterodermia obscurata*. Rhizines black, simple to squarrosely branched, marginal rhizines (cilia) black, not branched to strongly squarrose. Chemistry: atranorin (major), zeorin (major), japonin (major), 6α-acetoxy16β,22-dihydroxyhopane-25-oic acid (trace), 6α-acetoxy-22-hydroxyhopane-25-oic acid (trace), dissectic acid (trace), hybocarpone (trace), norhybocarpone (trace), chloroatranorin (trace), 7-chloroemodin (minor or trace), anaptychin-5 (minor), anaptychin 1 (trace). Lit. Elix (2011).

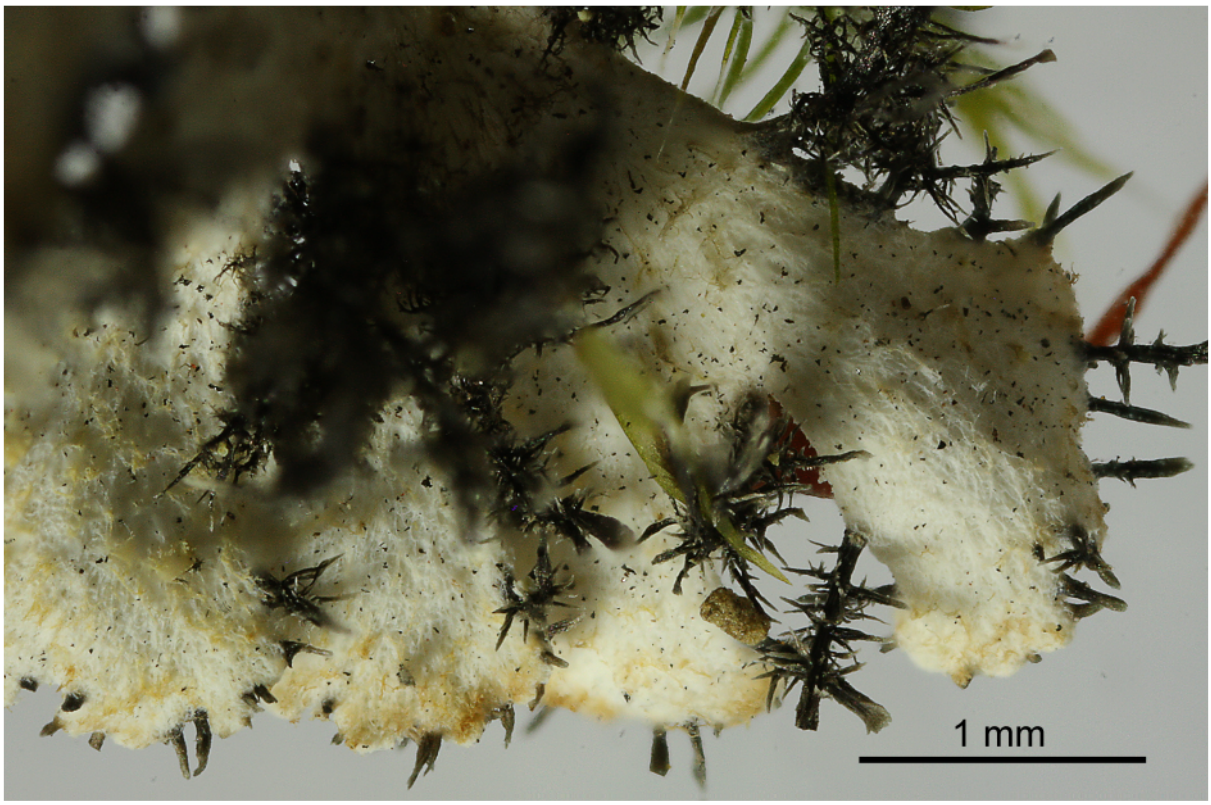
[15873], Australia, Western Australia, Donnelly Well south of Yornup along SW Highway, wetland associated with *Eucalyptus rudis* and *Melaleuca preissiana,* 34.073° S, 116,180° E, 260 m. Leg. F. Schumm & E. Stocker-Wörgötter, 25.19 2009. Chemistry: atranorin (major), zeorin (major), japonin (minor) by HPTLC, anal. F. Schumm.



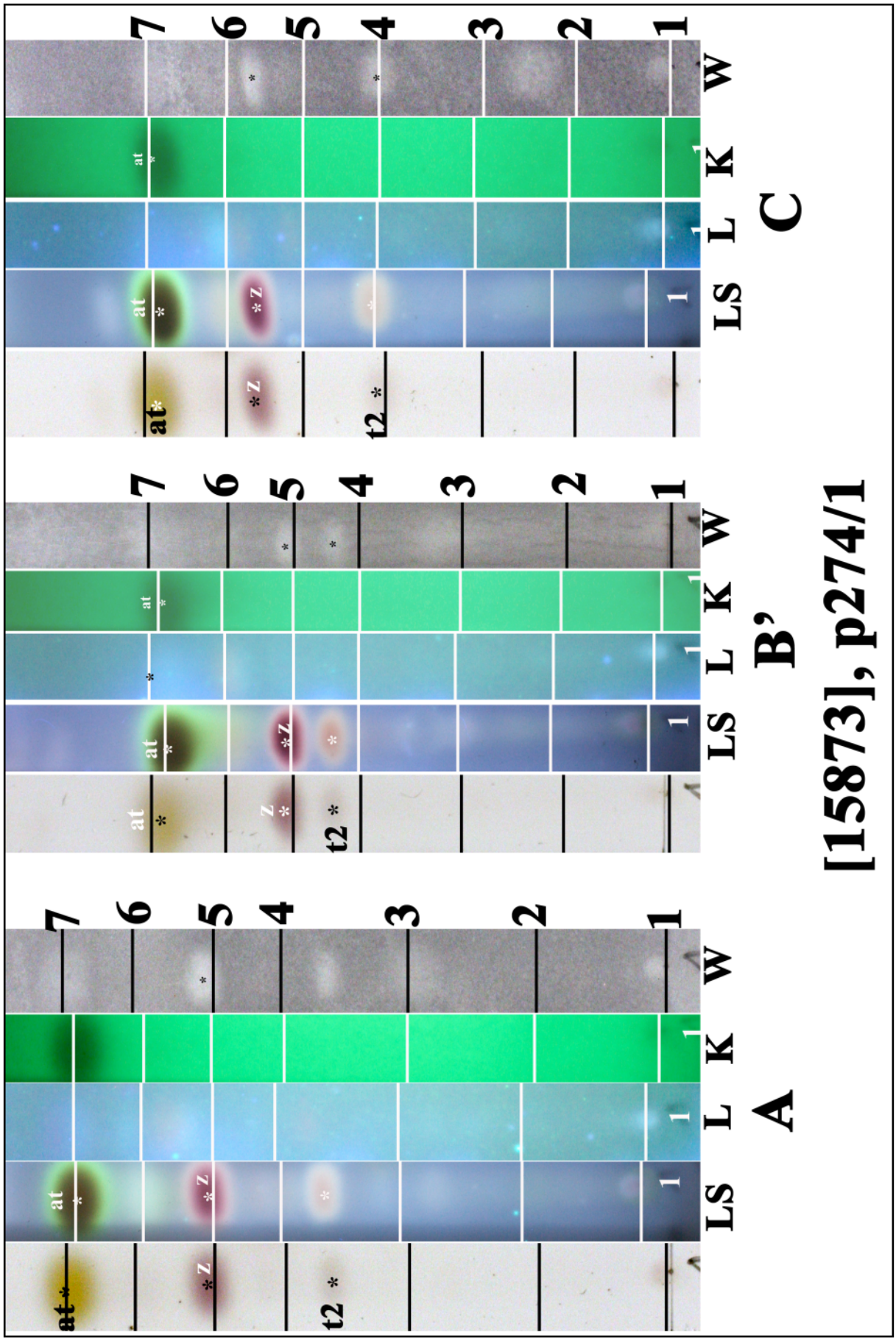


Heterodermia subneglecta





Heterodermia subneglecta



at: atranorin, z: zeorin, t2: japonin

Heterodermia subneglecta

Heterodermia subneglecta Elix

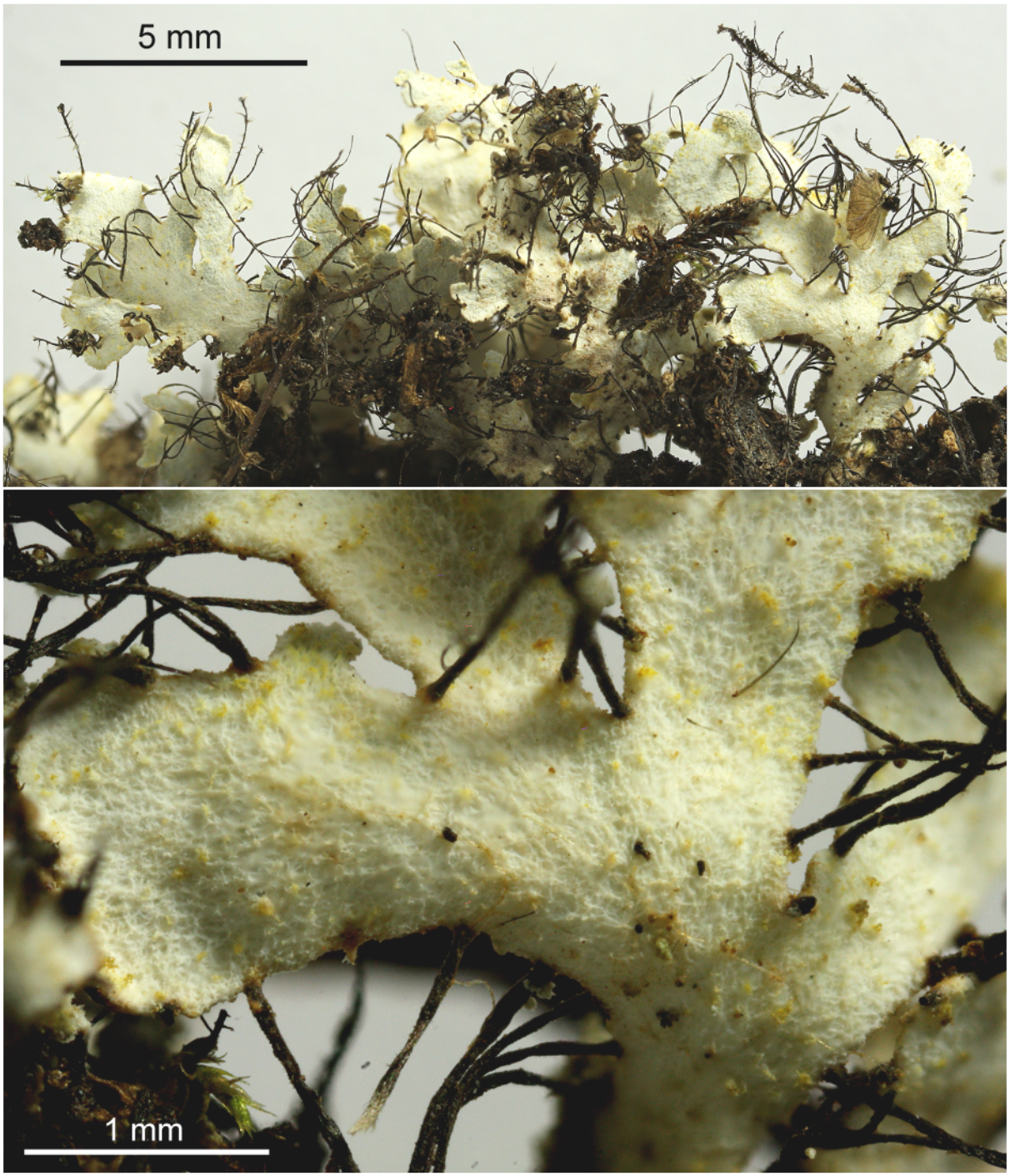
[16263], Australia, New South Wales, Brown Mountain, near Cooma, Fred Piper Memorial Lookout, 36.597° S, 149.444° E, 910 m. Leg. F. Schumm & E. Stocker-Wörgötter, 13.11.2009. Chemistry: atranorin (major), zeorin (major), japonin (minor) by HPTLC, anal. F. Schumm.



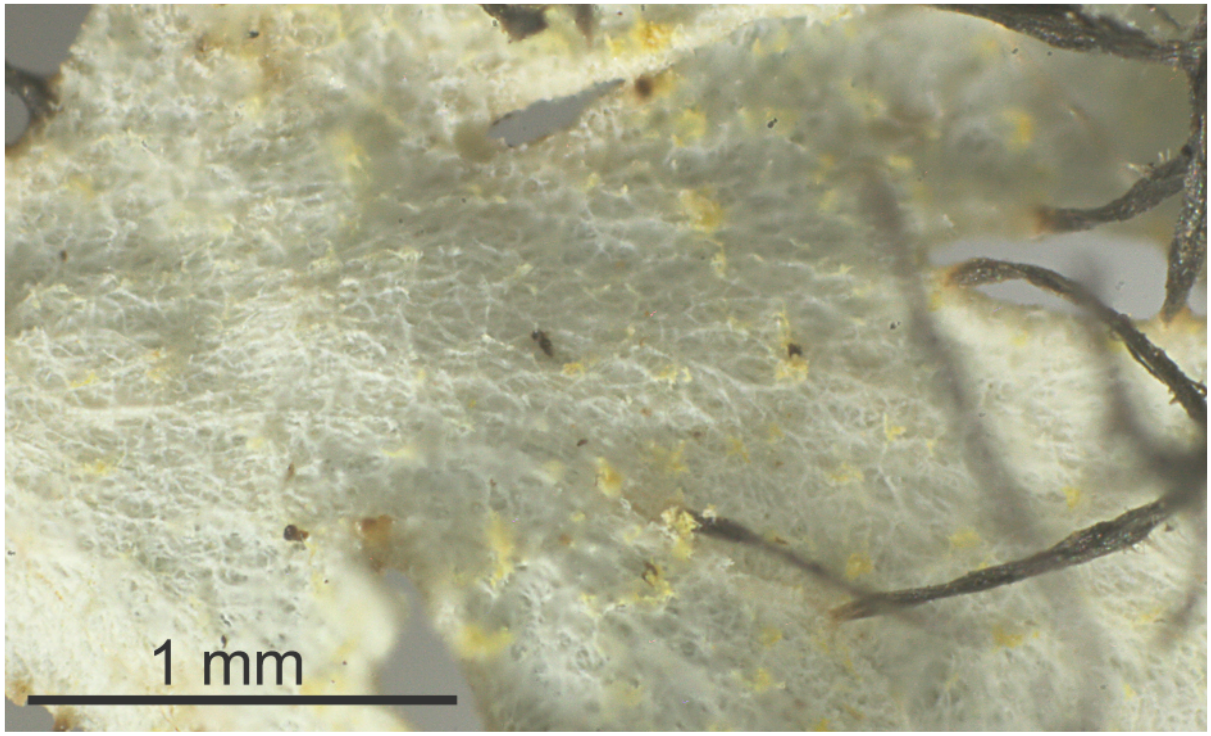


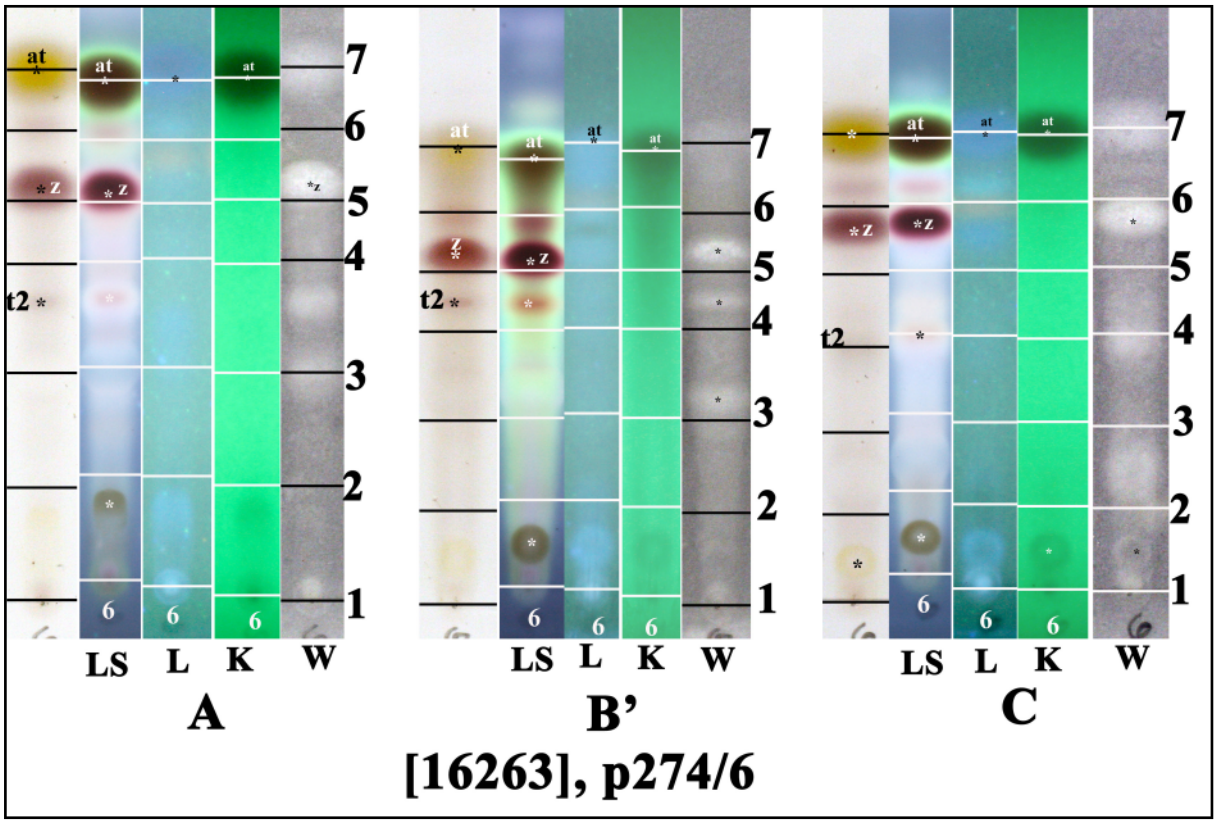


Heterodermia subneglecta



Heterodermia subneglecta





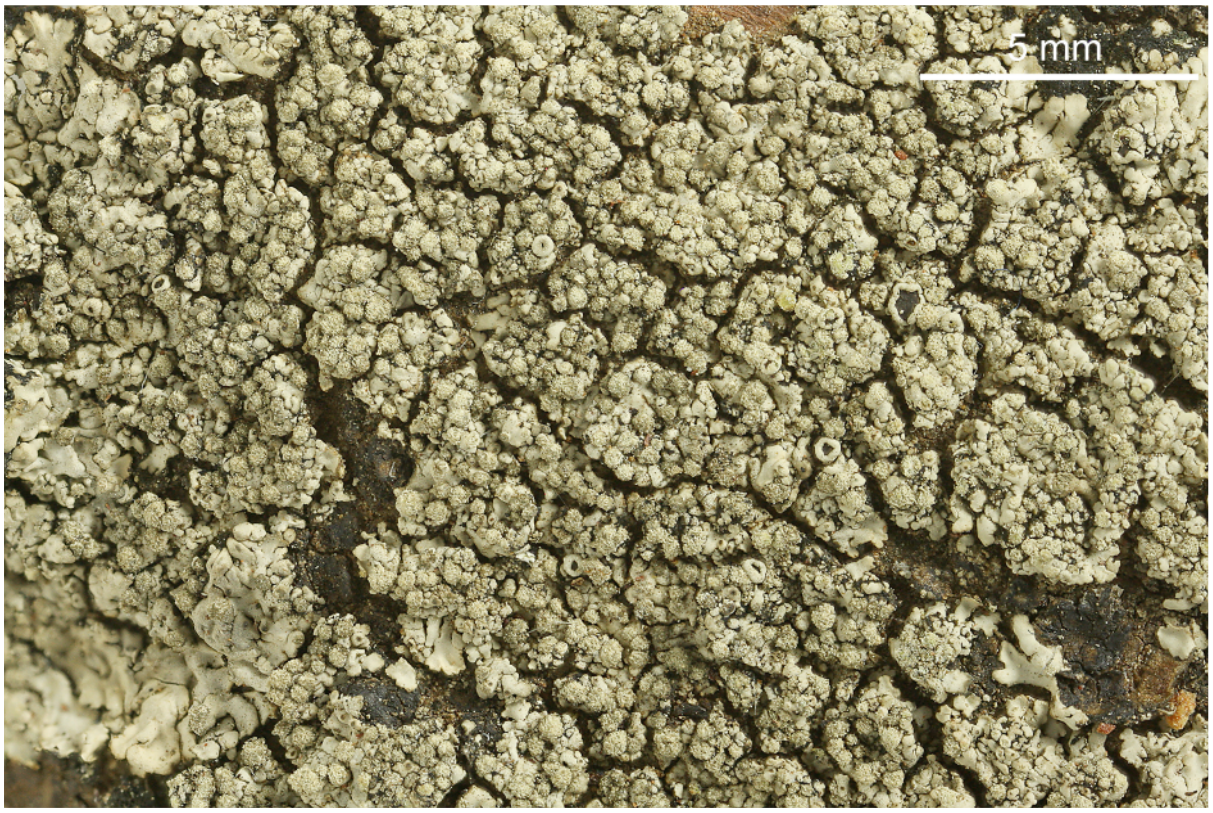
at: atranorin, z: zeorin, t2: japonin

Heterodermia subneglecta

Hyperphyscia adglutinata (Flörke) H.Mayrhofer & Poelt

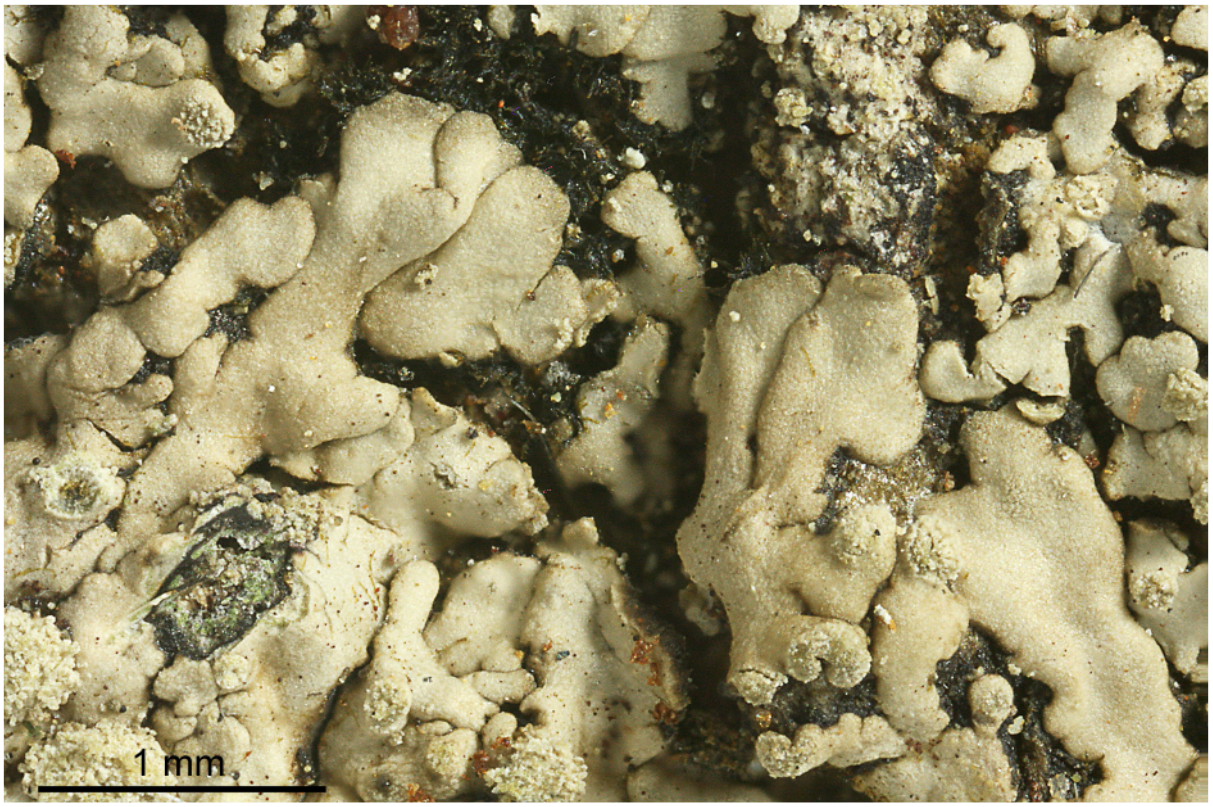
Thallus foliose, closely adnate, lacking rhizines, often merging with other thalli. Lobes 0.2-0.5 mm wide, often crowded. Upper surface grey-green to olive or brown, sorediate, isidia absent, not or sparingly pruinose. Soralia laminal, maculiform. Medulla white. Apothecia c. 1 mm. Ascospores grey-brown, 8/ascus, 1-septate, 15-20 x 7-8 µm. On bark or wood, rarely on rock. Chemistry: cortex and medulla K-, C-, KC-, P-, TLC: nil.

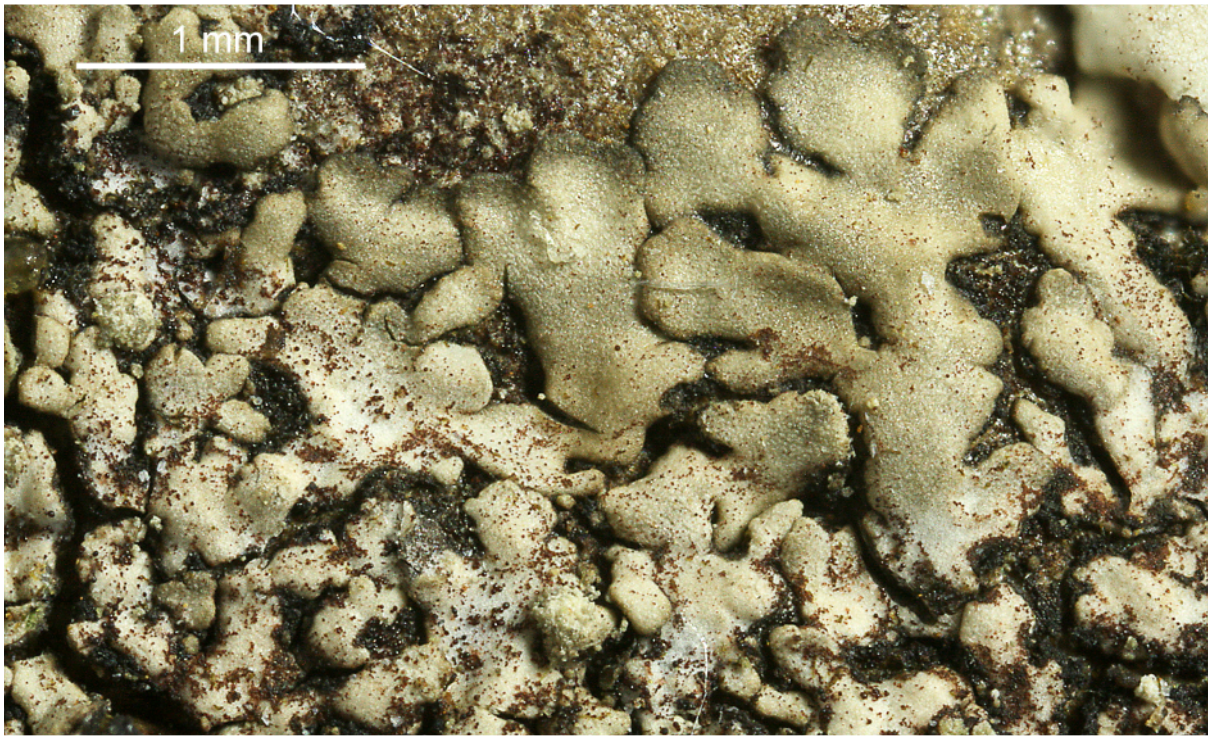
[19032], Norfolk Island, Flat Rock Bay Picnic Area, 29°01'30" S, 167°55' E, 40 m, growing on base of *Araucaria heterophylla* in open grassland. Leg. J.A. Elix (18712) & H. Streiman, 7.12.1984. LICHENES AUSTRALASICI EXSICCATI NR. 081.



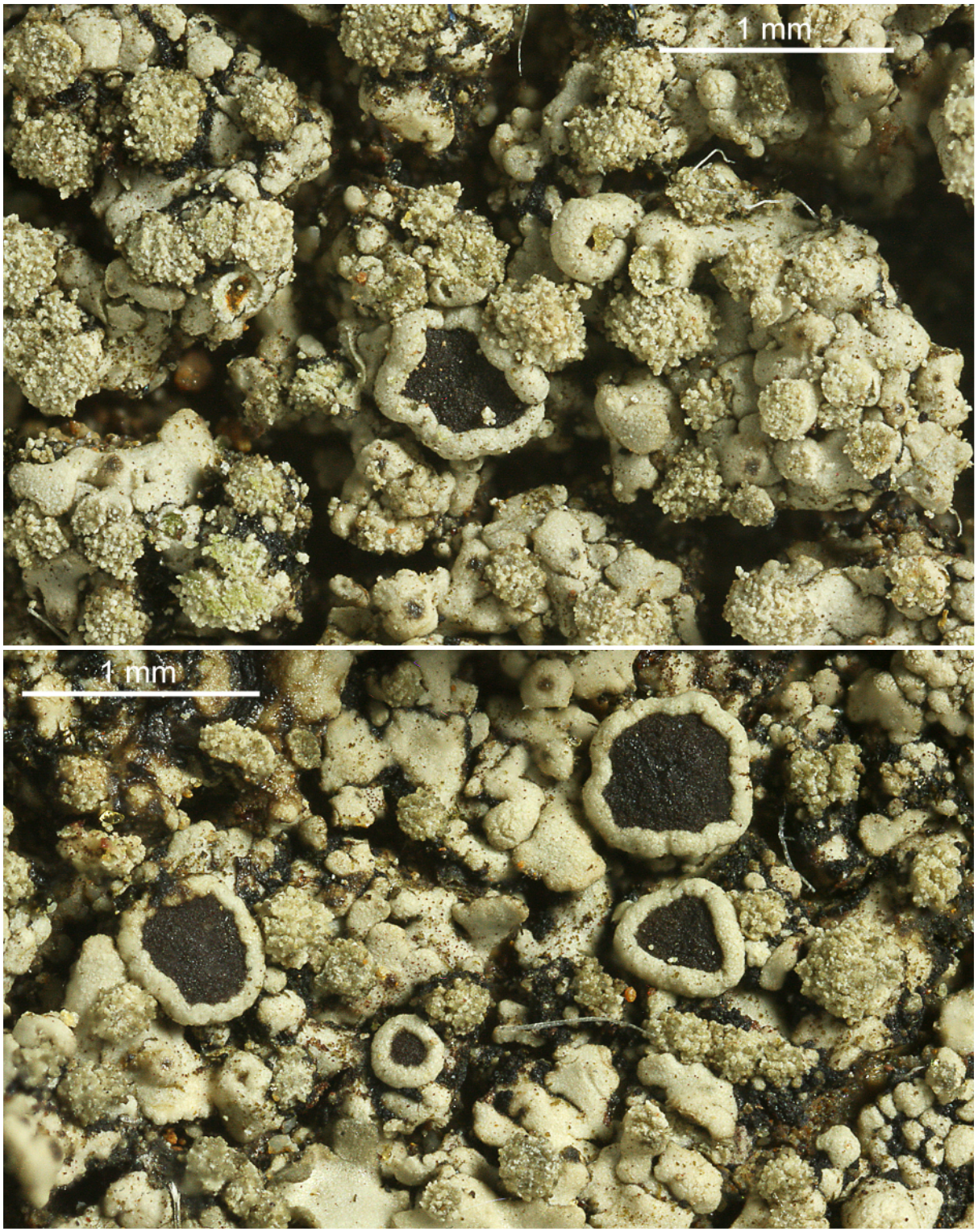


Hyperphyscia adglutinata

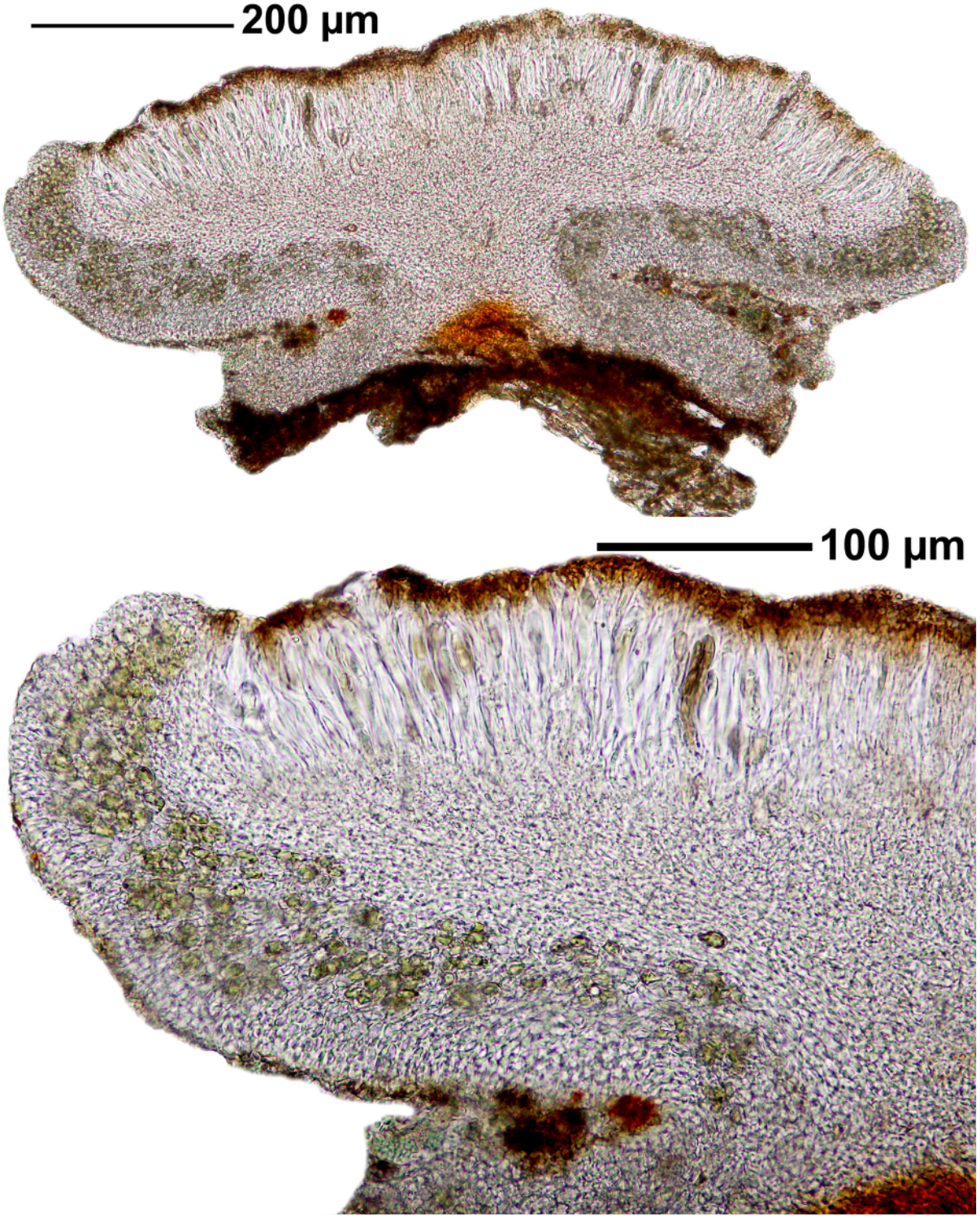




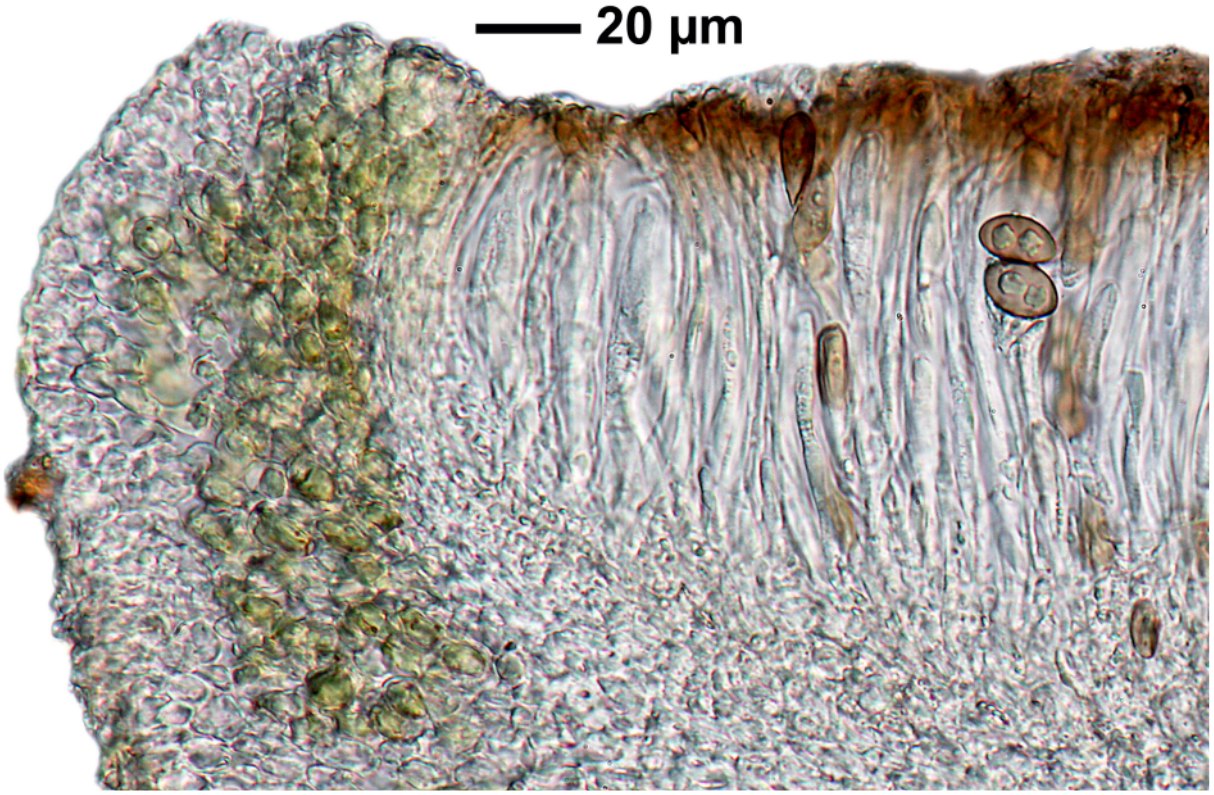
Hyperphyscia adglutinata

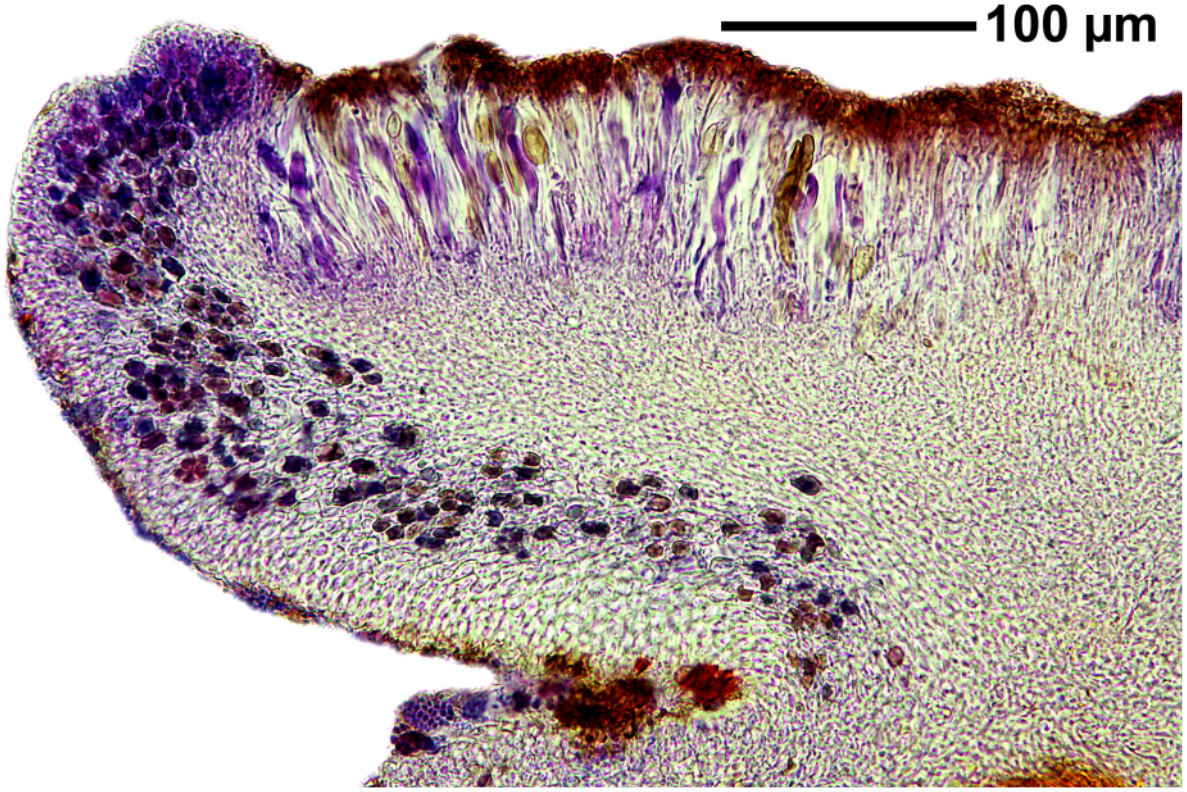


Hyperphyscia adglutinata

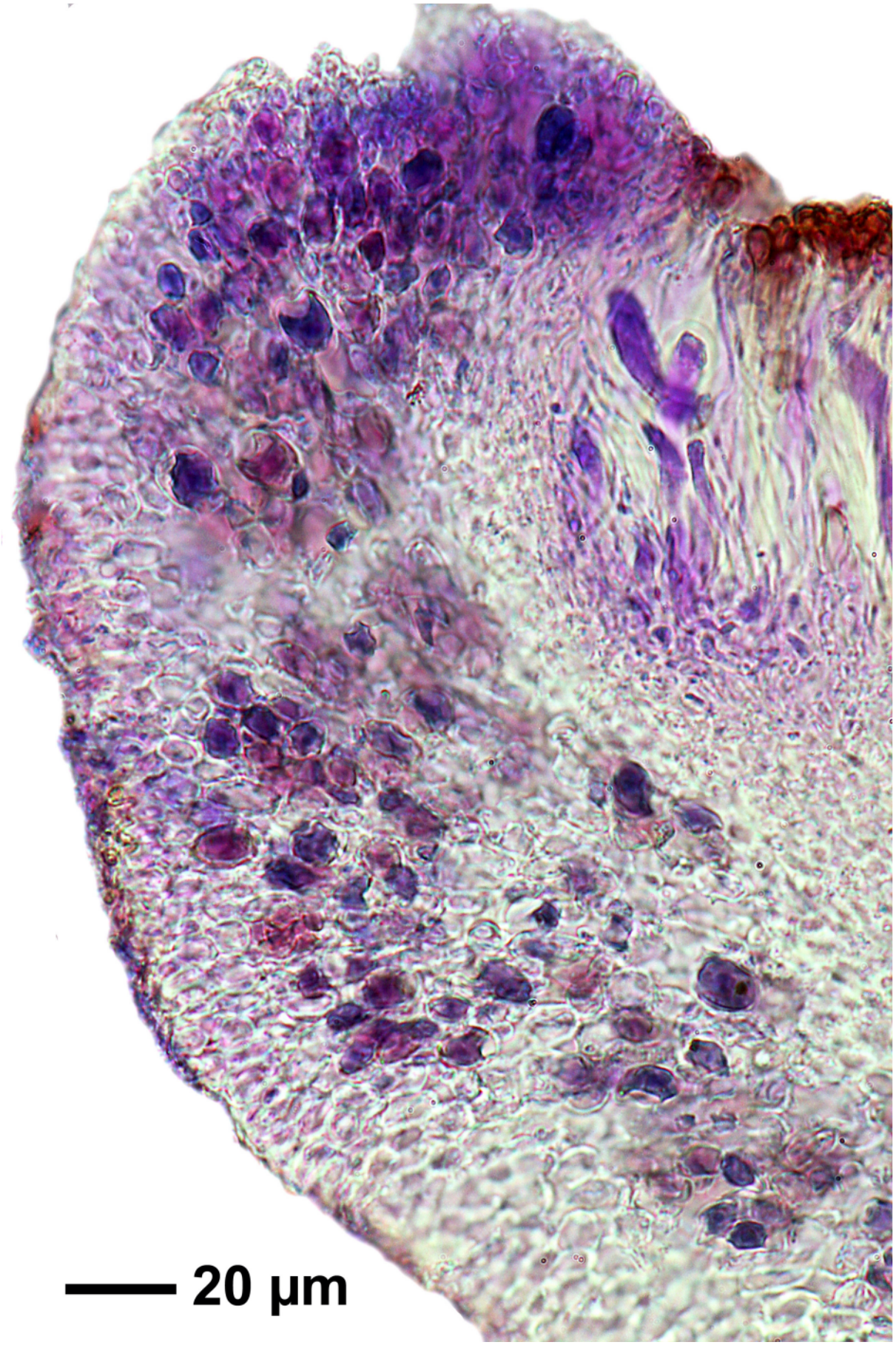


Hyperphyscia adglutinata

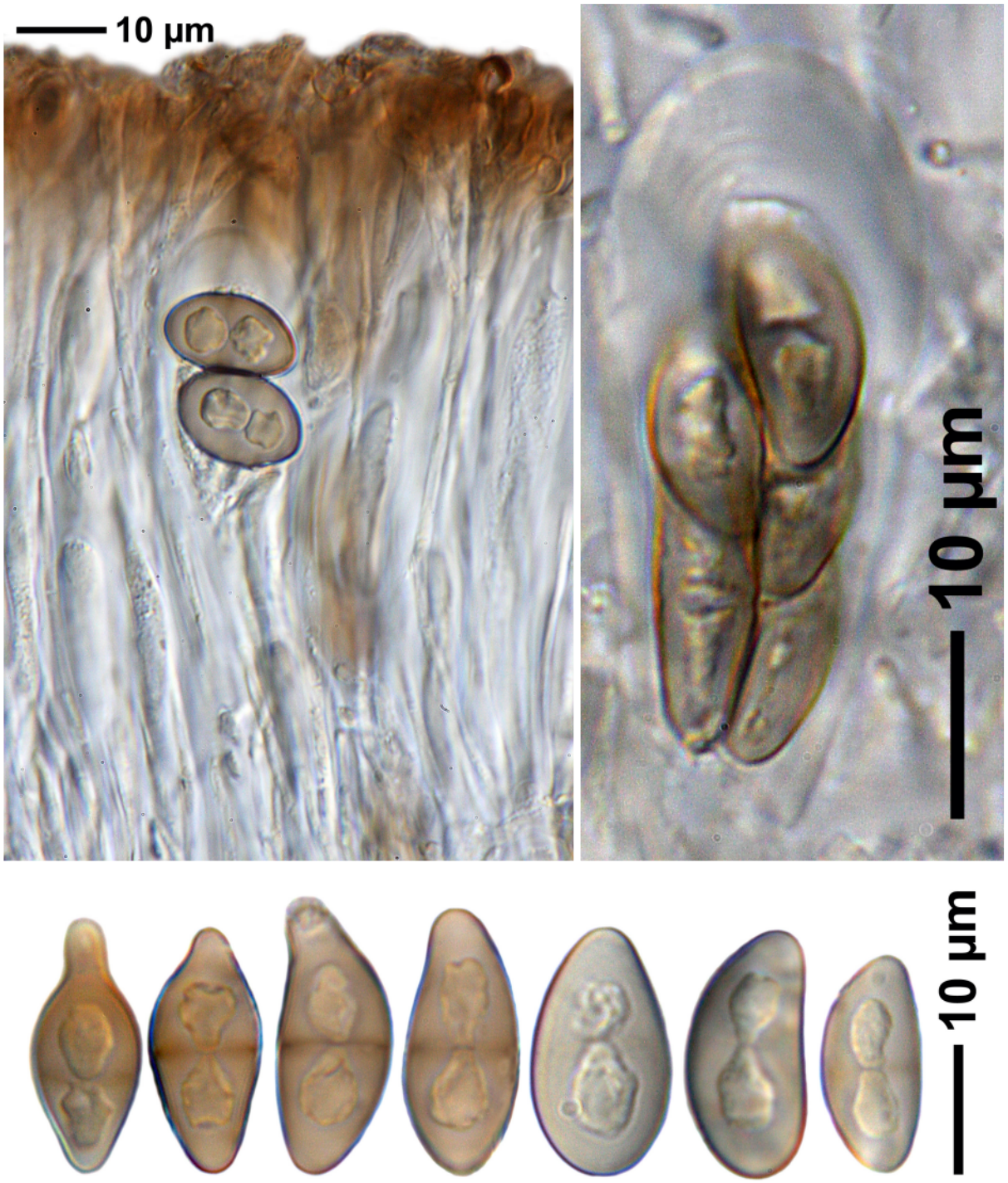




Hyperphyscia adglutinata



Hyperphyscia adglutinata



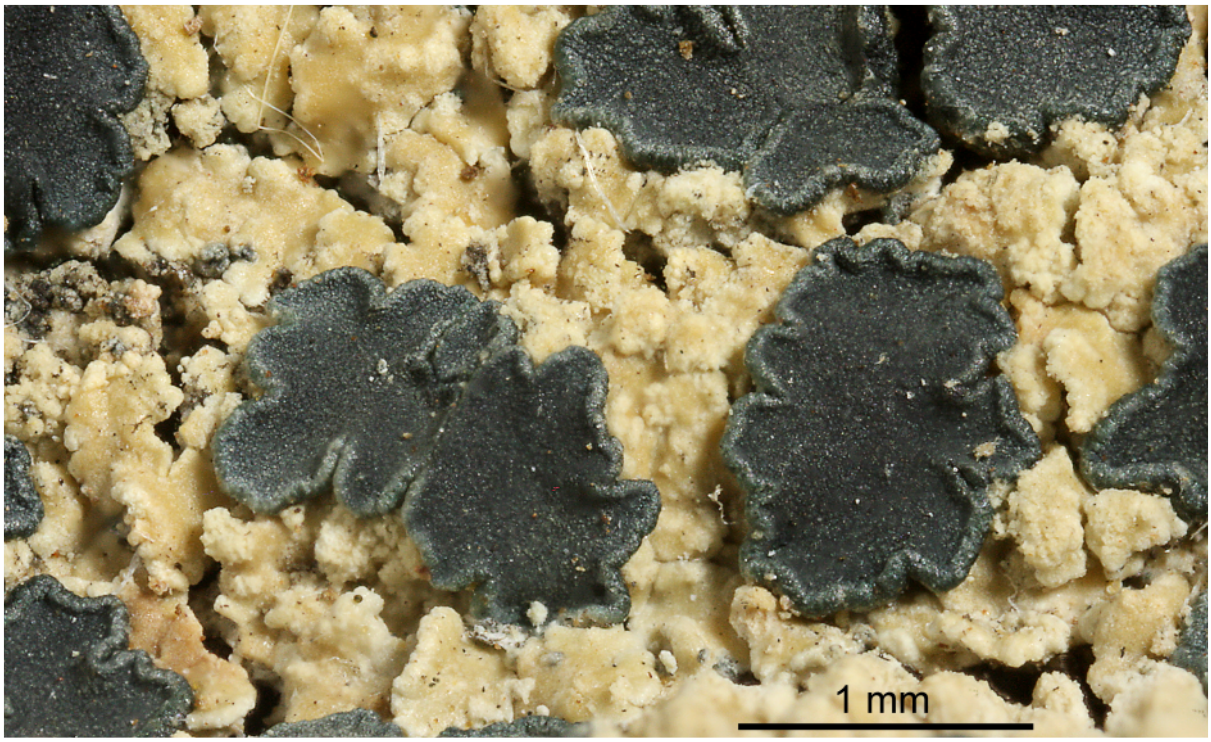
Hyperphyscia adglutinata

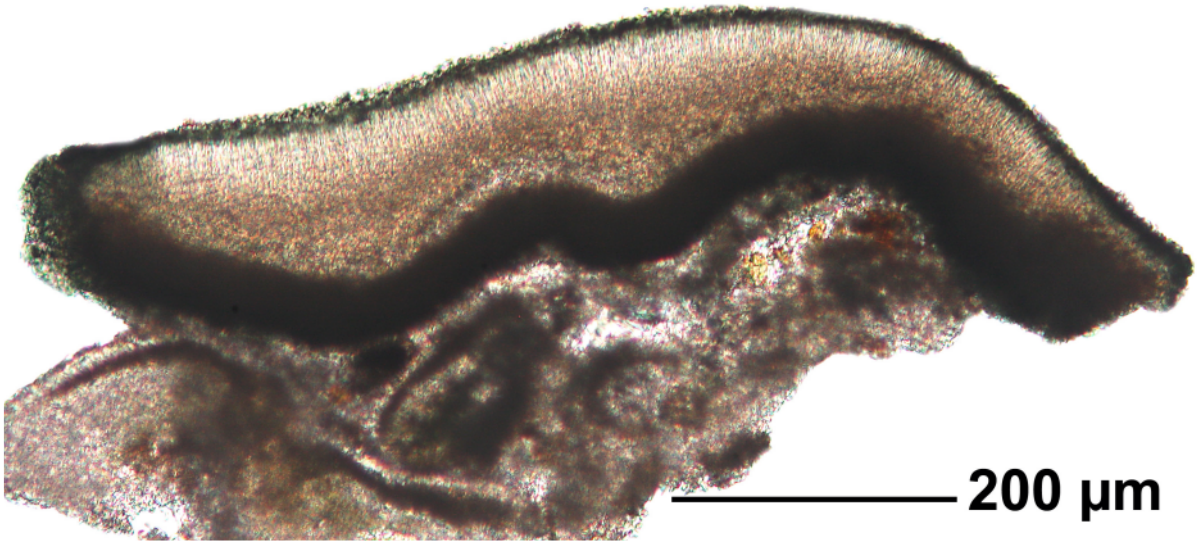
Hypocenomyce australis Timdal

Thallus white to yellow-brown, squamulose, adnate, esorediate, not isidiate, C+ red, lecanoric acid present. Apothecia 0.4-1.2 mm wide, disc black, margin persistent, becoming somewhat flexuose. Epihymenium green, 5 µm wide. Hymenium hyaline, 70 µm high. Hypothecium, 65-70 µm high, appearing dark brown, but after dissolving the crystals of lecanoric acid it becomes hyaline. Ascospores not seen.

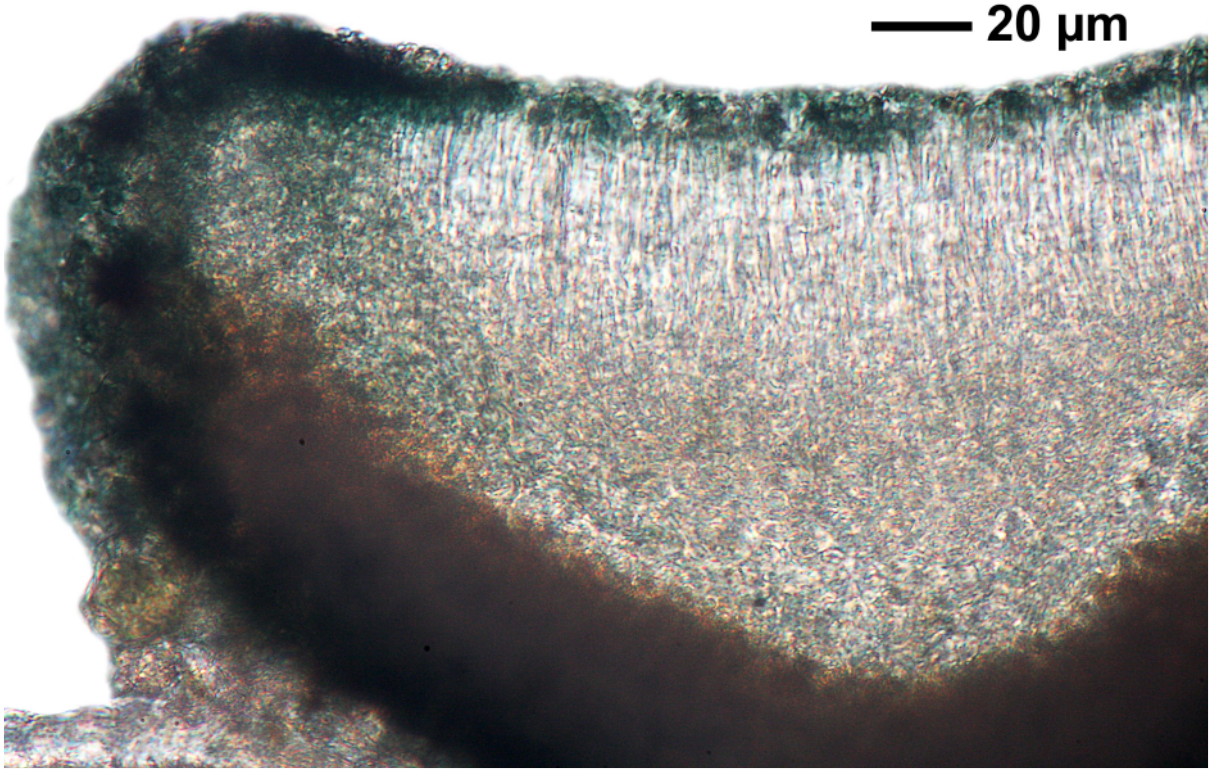
[19033], Australia, Australian Capital Territory, 0.5 km north of summit of Mt. Coree, 31 km west of Canberra, 35°18' S, 148°49' E, 1400 m, growing on base of trunk of dead *Eucalyptus* in *Eucalyptus pauciflora* woodland. Leg. J.A. Elix (19801), 18.12.1985. Chemistry: lecanoric acid (major), ursolic acid by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NR. 229.

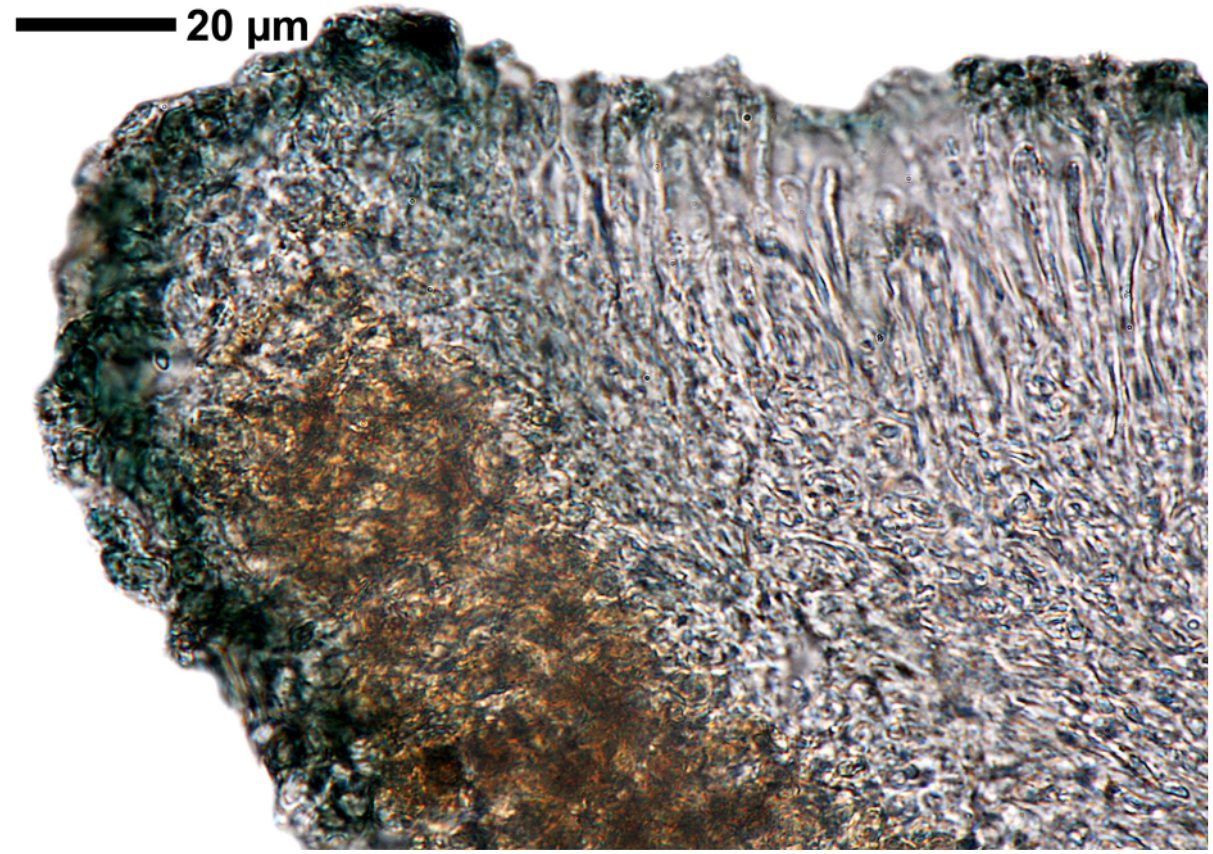




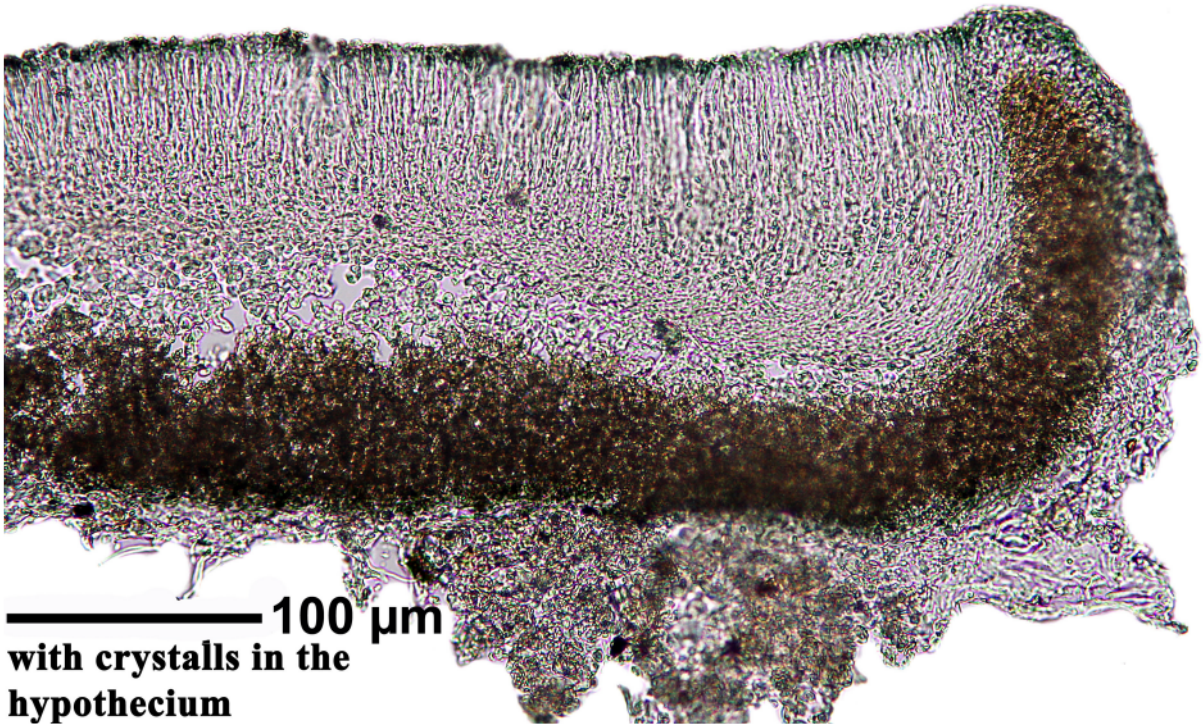


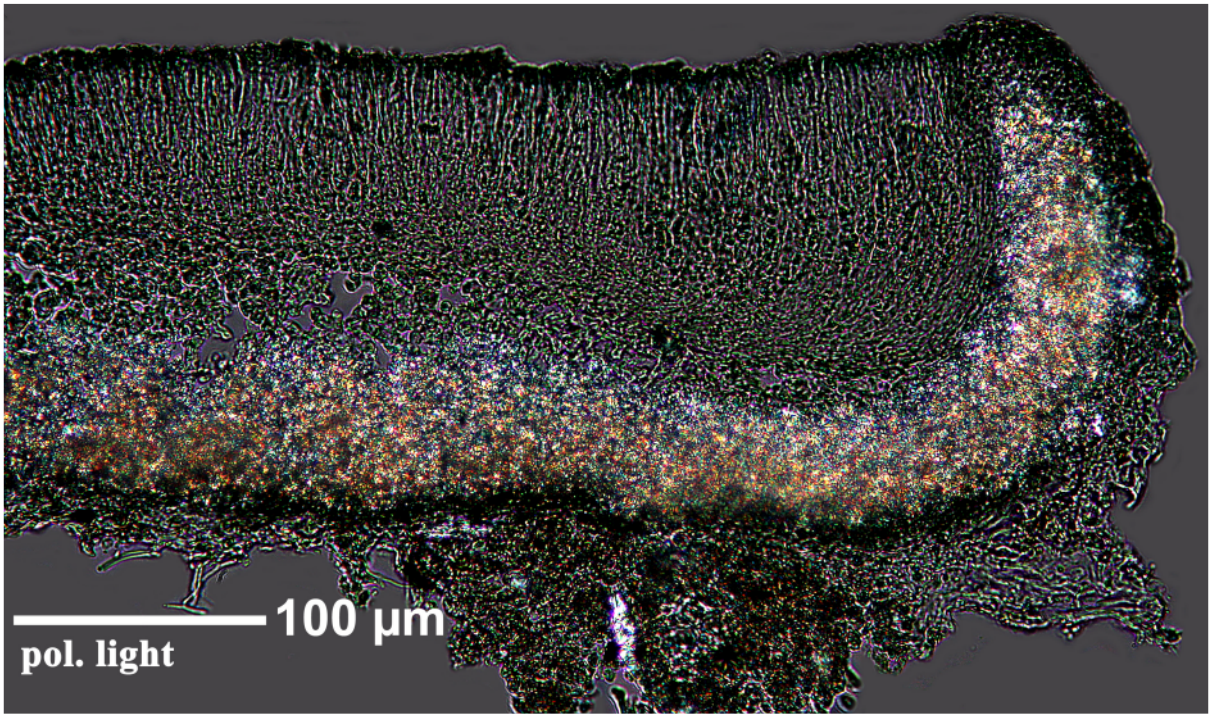
Hypocenomyce australis



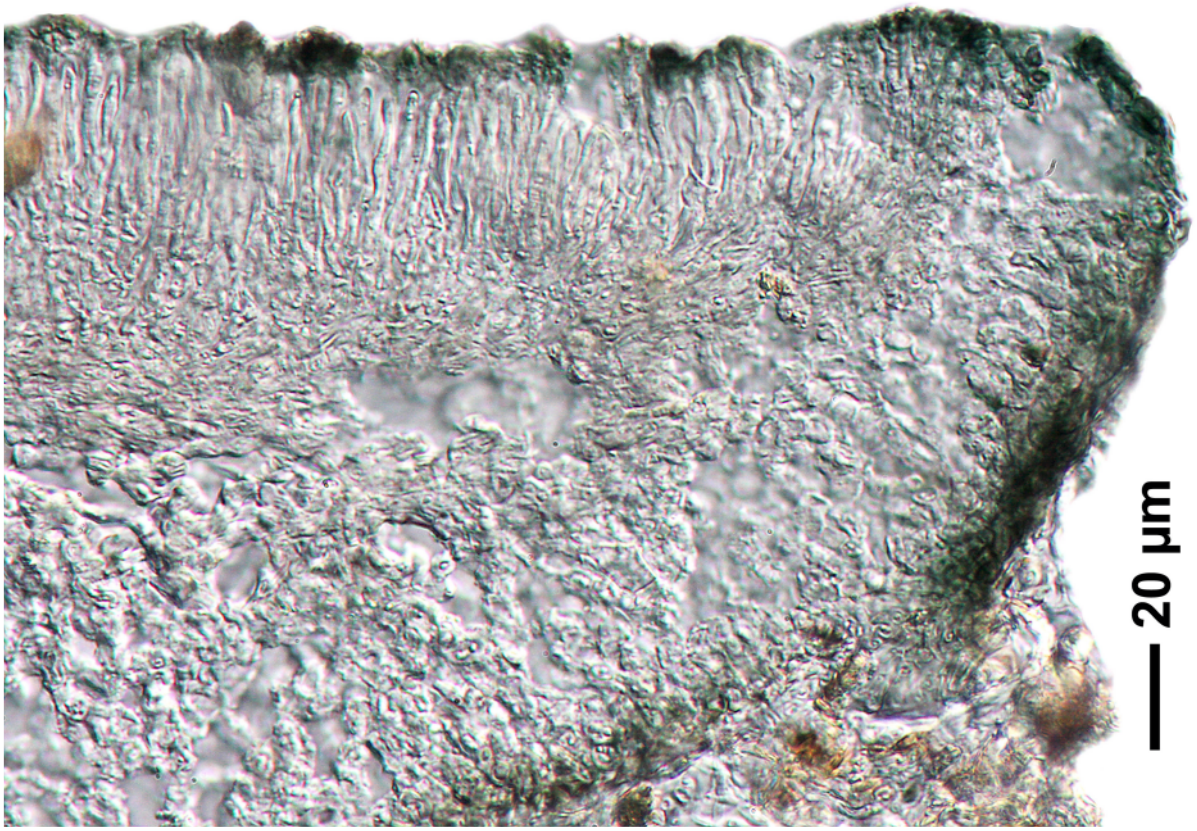


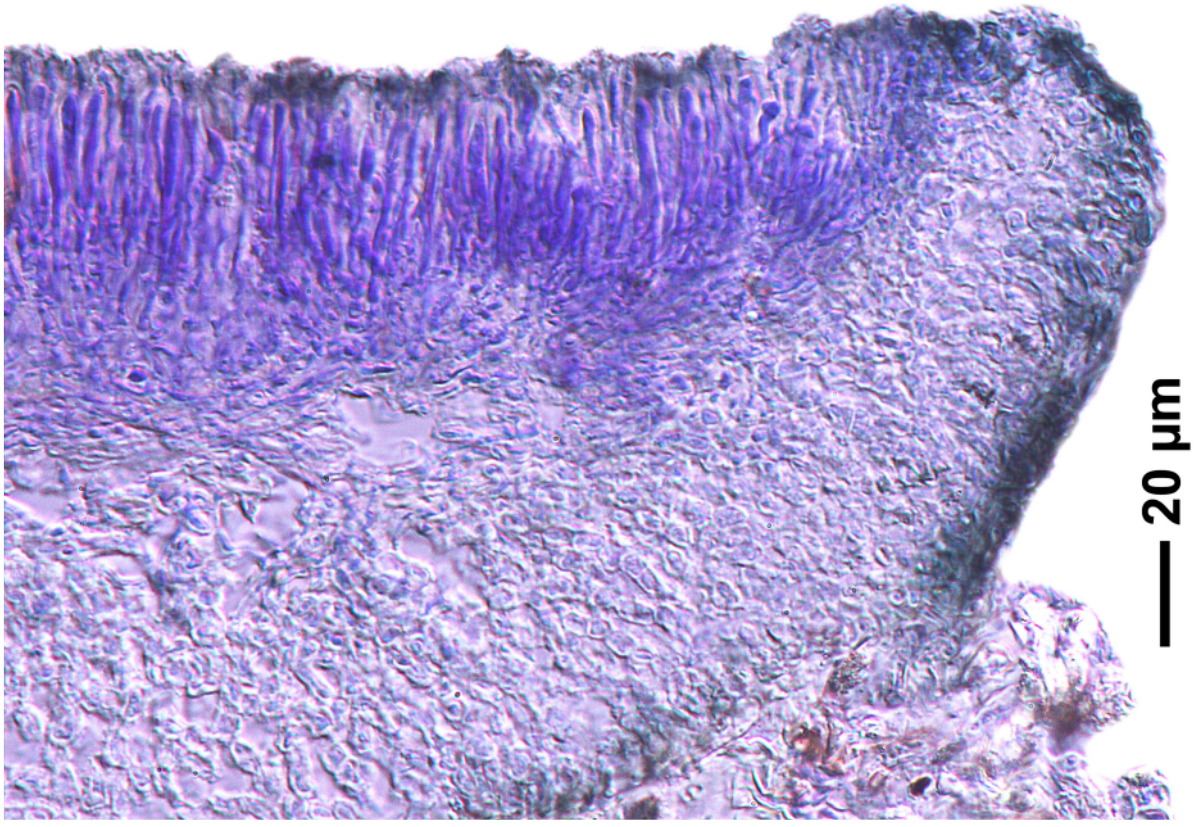
Hypocenomyce australis



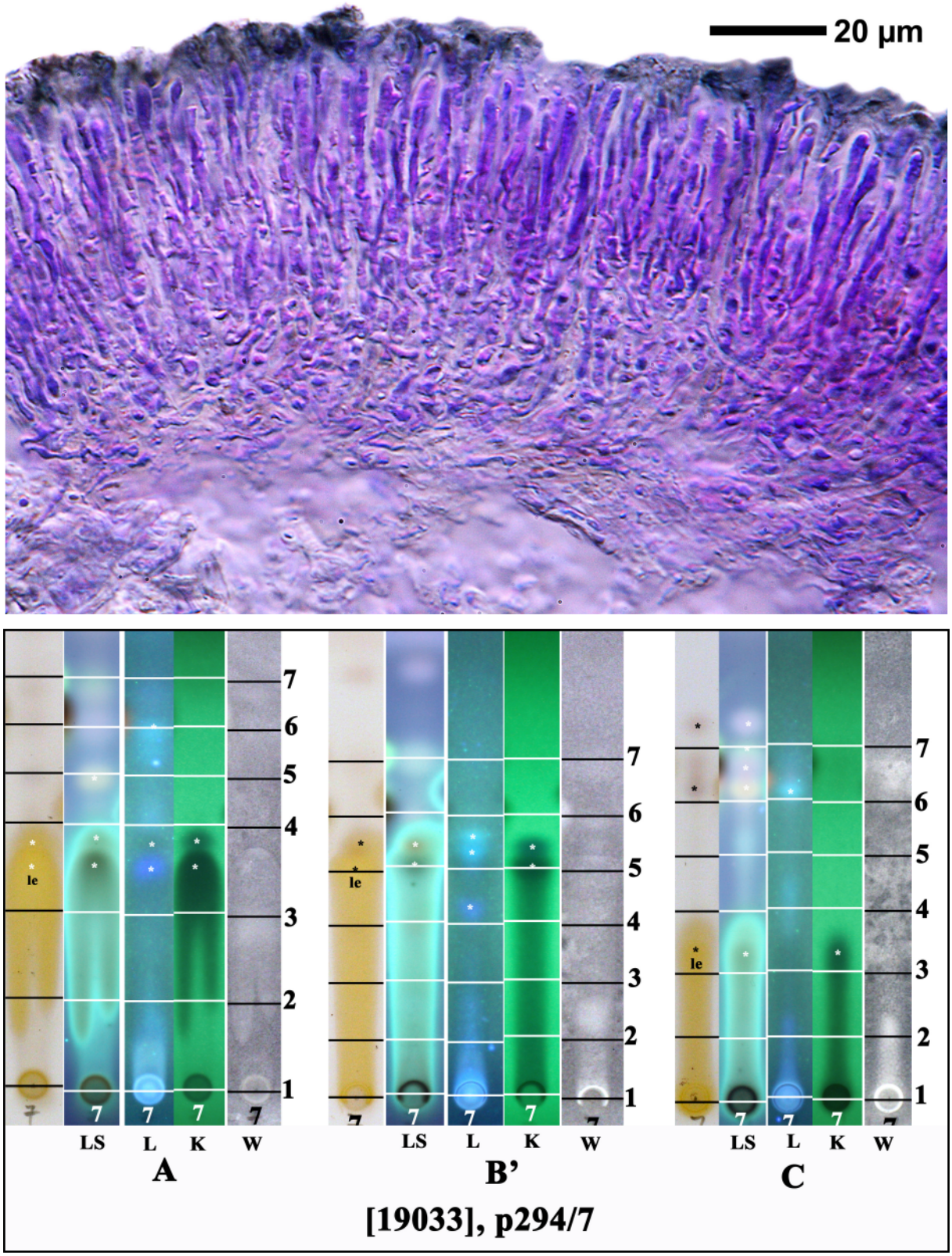


Hypocenomyce australis





Hypocenomyce australis



le: lecanoric acid

Hypocenomyce australis

Hypocenomyce scalaris (Ach.) M.Choisy

Thallus sqamulose. Squamules 0.4-1.5 mm wide, grey-green to brown, ascending, geotropically orientated. With soredia on the lower surface and along the margin. Apothecia not observed in Australian specimens. Chemistry: cortex and medulla K-, + rred, KC+ red, P-; lecanoric acid (major), ±orsillinic acid (trace).

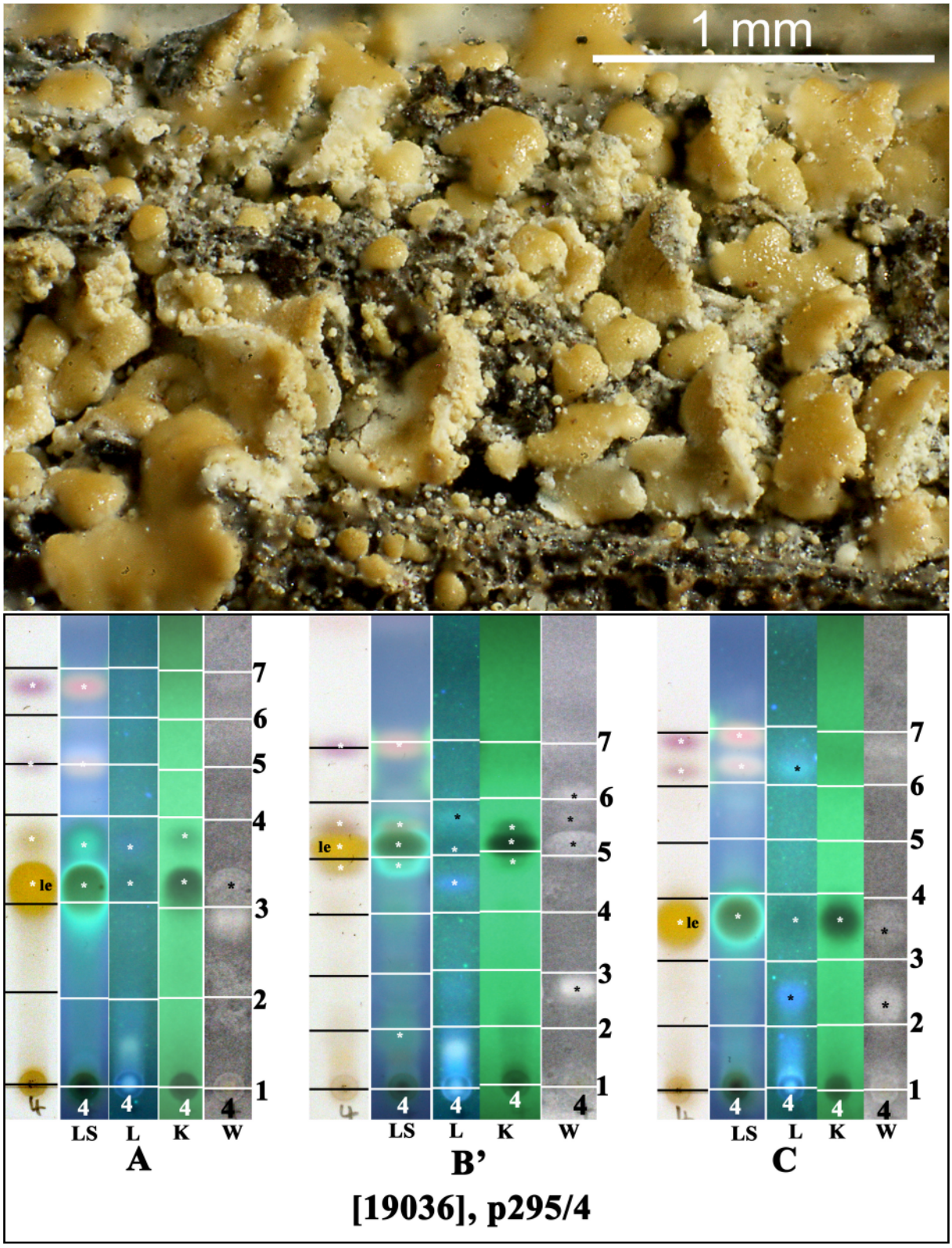
[19036], Australia, Australian Capital Territory, Canberra Nature Park, Bruce Ridge, 35°515' S, 149°05' E, 640 m, growing on trunk of *Eucalyptus macrorhyncha* in dry *Eucalyptus* woodland. Leg. J.A. Elix (27484), 26.01.1991. Chemistry: lecanoric acid (major), orsellinic acid (trace) by HPLC, TLC, anal. J.A. Elix & C.E. Barclay. LICHENES AUSTRALASICI EXSICCATI NO. 232.







Hypocenomyce scalaris



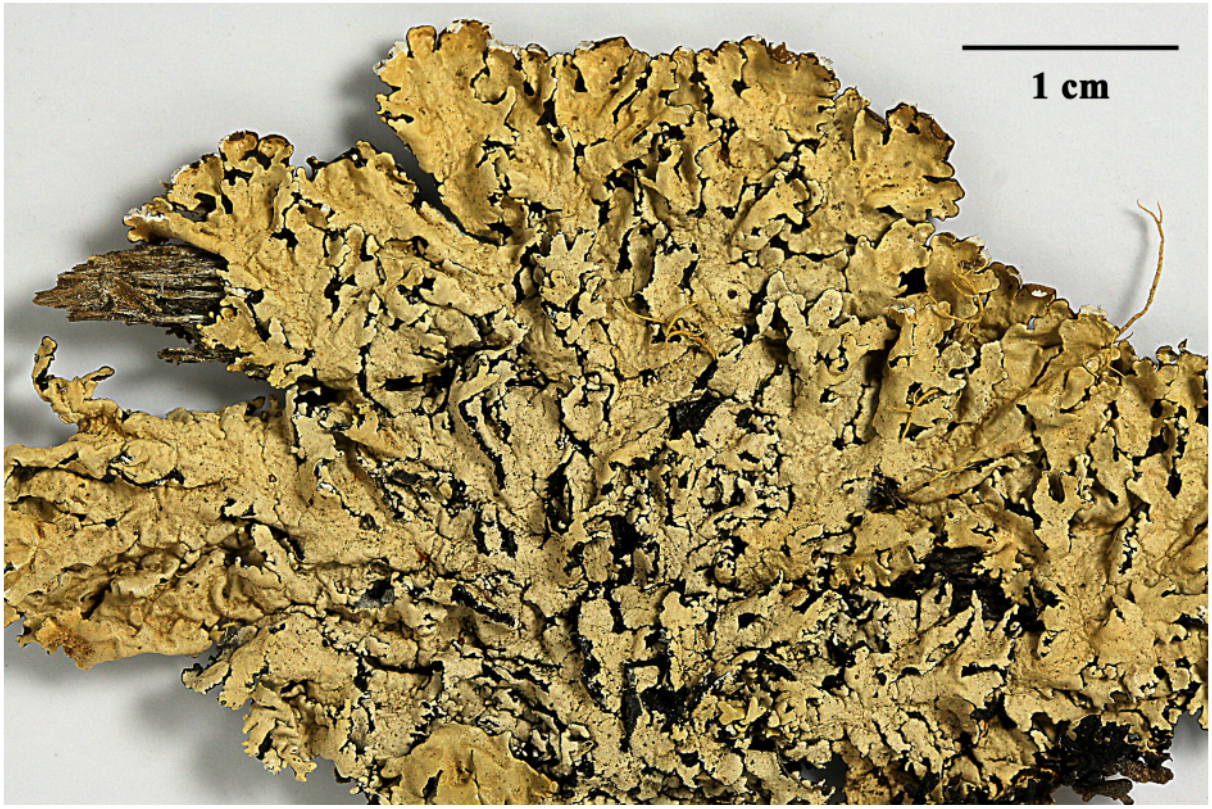
le: lecanoric acid

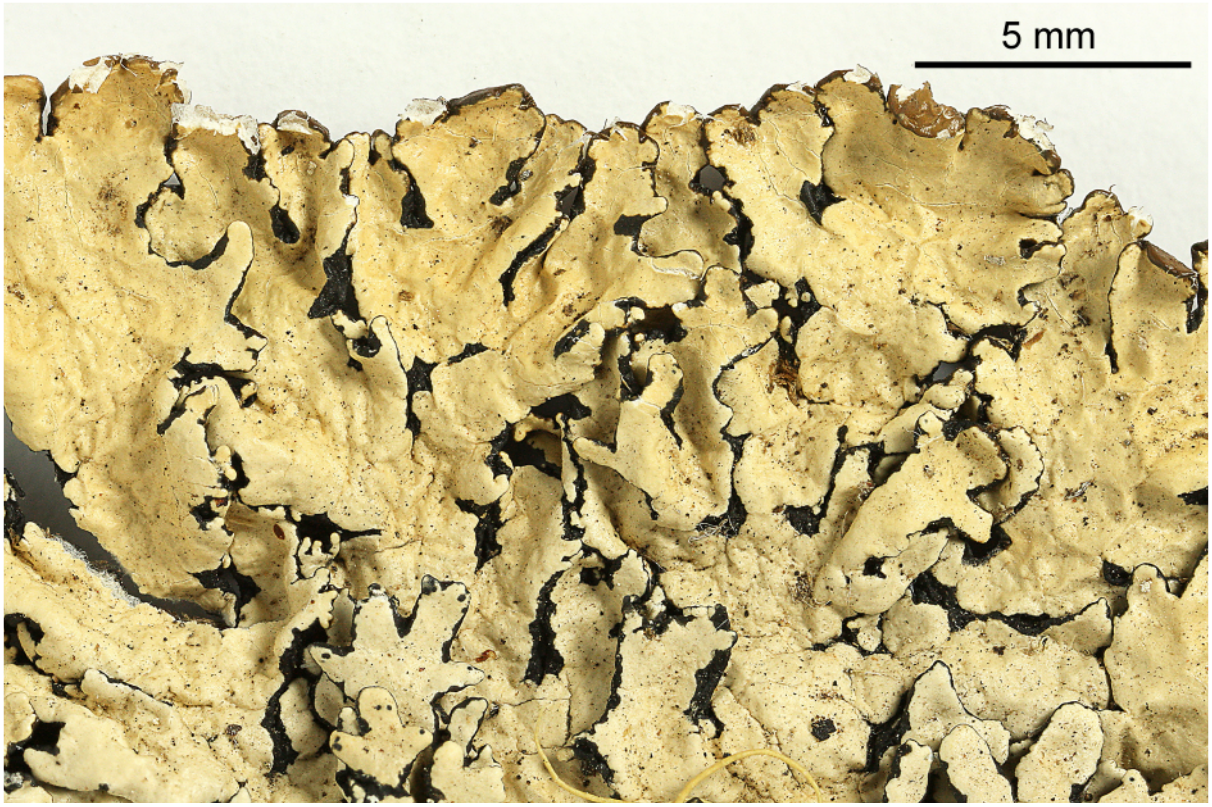
Hypocenomyce scalaris

Hypogymnia billardierei (Mont.) Filson
[= ***Parmelia billardierei*** (Mont.) Zahlbr.]

Thallus placodioid, esorediate, with contigous compact lobes. Lobes short and irregularly divided, with lateral contacts. Medulla mostly solid. Apothecia 2-12 mm wide, subpedicellate. Ascospores 5-8 x 3.5-6.5 µm. Chemistry: cortex K+ yellow, medulla KC+ red, P-; atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid, 2'-*O*-methylphysodic acid (minor), alectoronic acid (trace).

[19037], Australia, New South Wales, Jerrabomberra Hill, 2 km southwest of Queanbeyan, 35°23' S, 149°13' E, 700 m, growing on dead eucalypt logs and stumps in dry sclerophyll forest. Leg. J.A. Elix (10901) & M.J. Elix, 2.4.1983. LICHENES AUSTRALASICI EXSICCATI NO. 029.



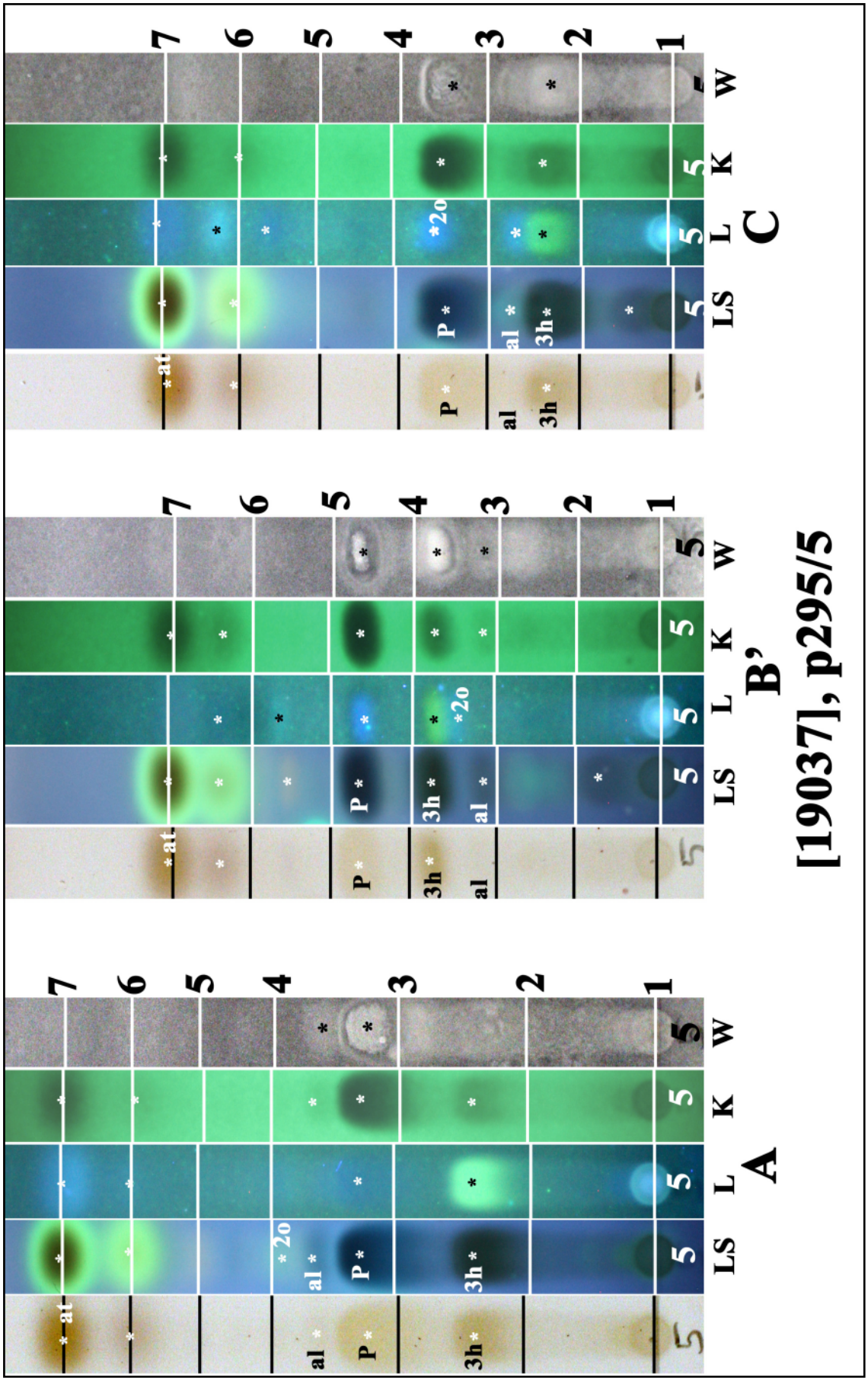




Hypogymnia billardierei



Hypogymnia billardierei

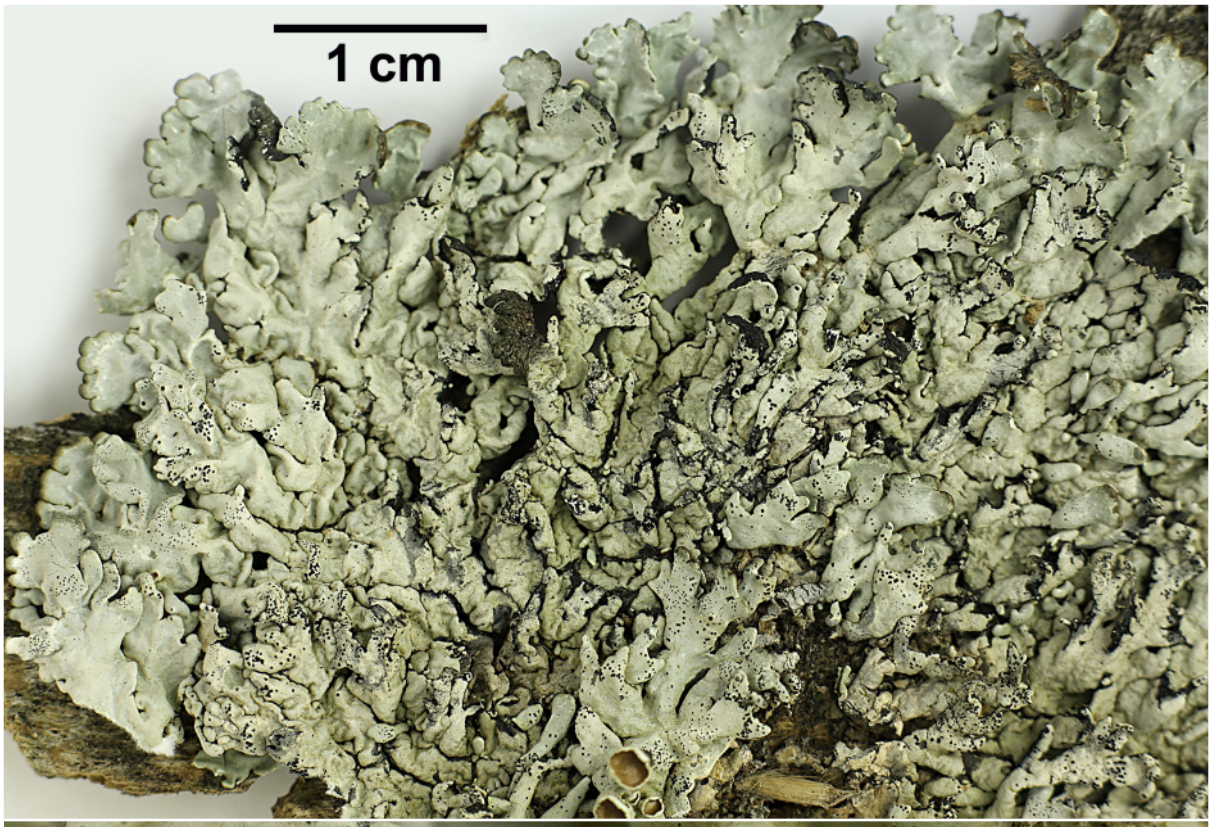


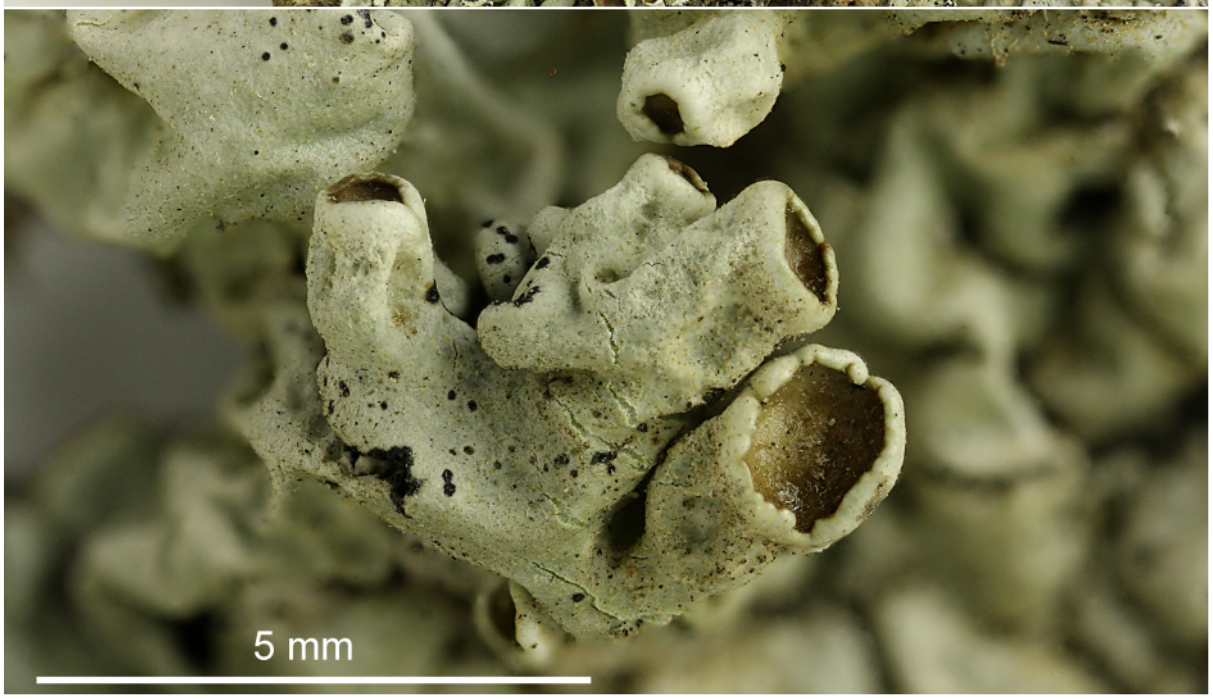
at: atranorin, chloroatranorin, p: physodic acid (major), 3h: oxyphysodic acid, 2o= 2'-*O*-methylphysodic acid (minor), al: alectoronic acid (trace)

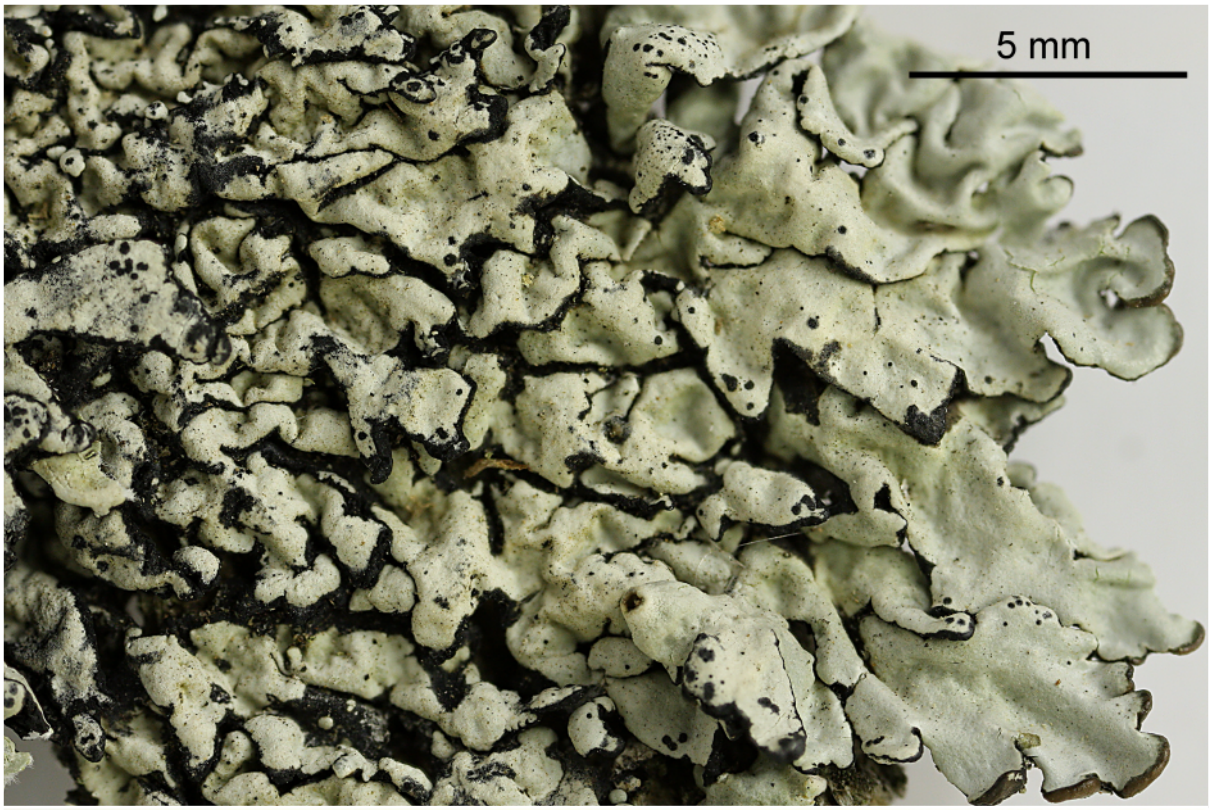
Hypogymnia billardierei

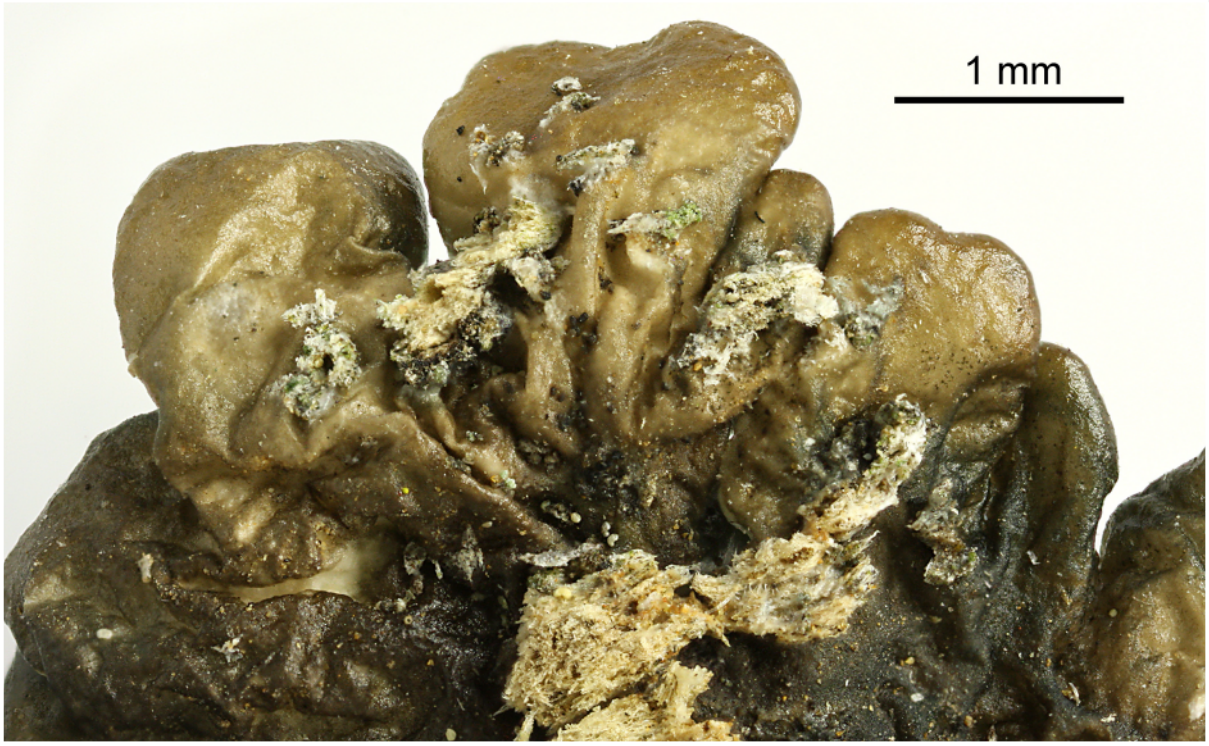
Hypogymnia billardierei (Mont.) Filson
[= ***Parmelia billardierei*** (Mont.) Zahlbr.]

[16027], Australien, Canberra, Black Mountains Reserve, corticolous, 35.276° S, 149.096° E, 760 m. Leg. J.A. Elix, F. Schumm & E. Stocker-Wörgötter 07.11.2009, det. J.A. Elix.







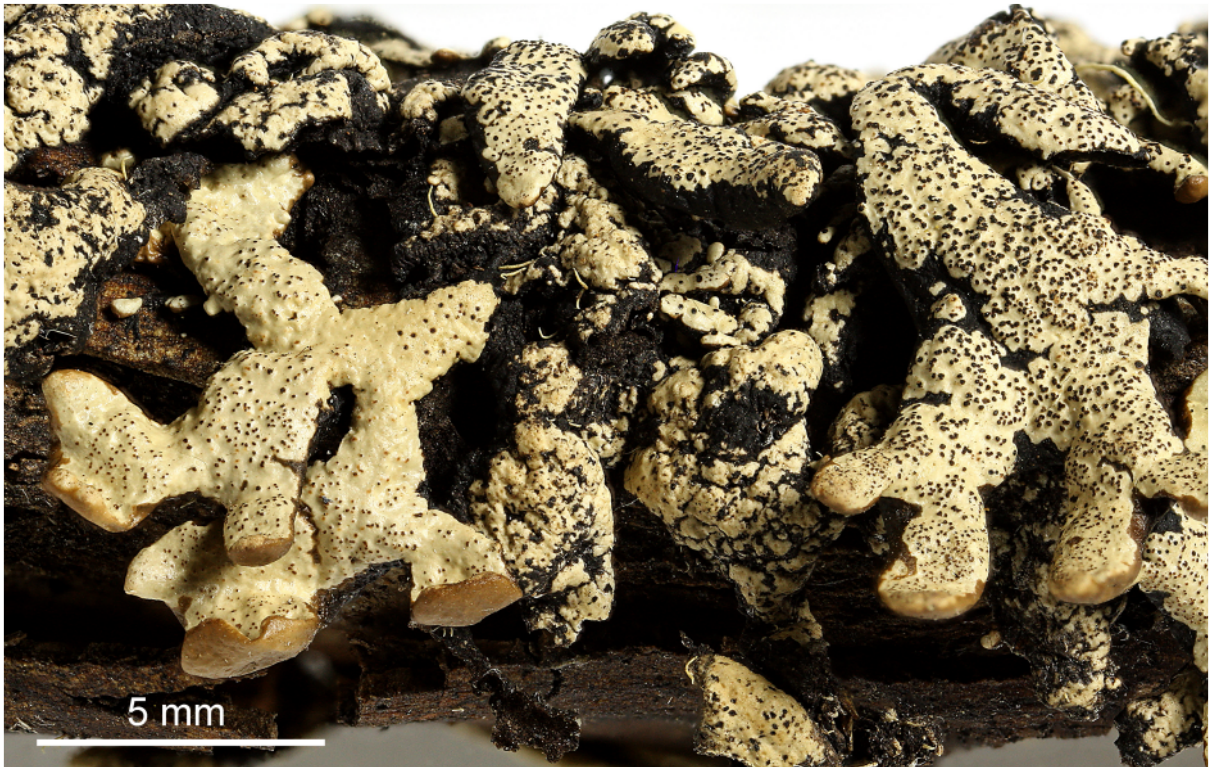


Hypogymnia billardierei

Hypogymnia enteromorphoides Elix

Thallus grey, esorediate. Marginal lobes, 3-6 mm wide, deeply devided or elongated, without extensive lateral contacts. Central lobes contiguous. Medulla hollow. Chemistry: cortex K+ yellow, medulla KC+ red, P+ red. Atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid (minor), physodalic acid, protocetraric acid, alectoronic acid.

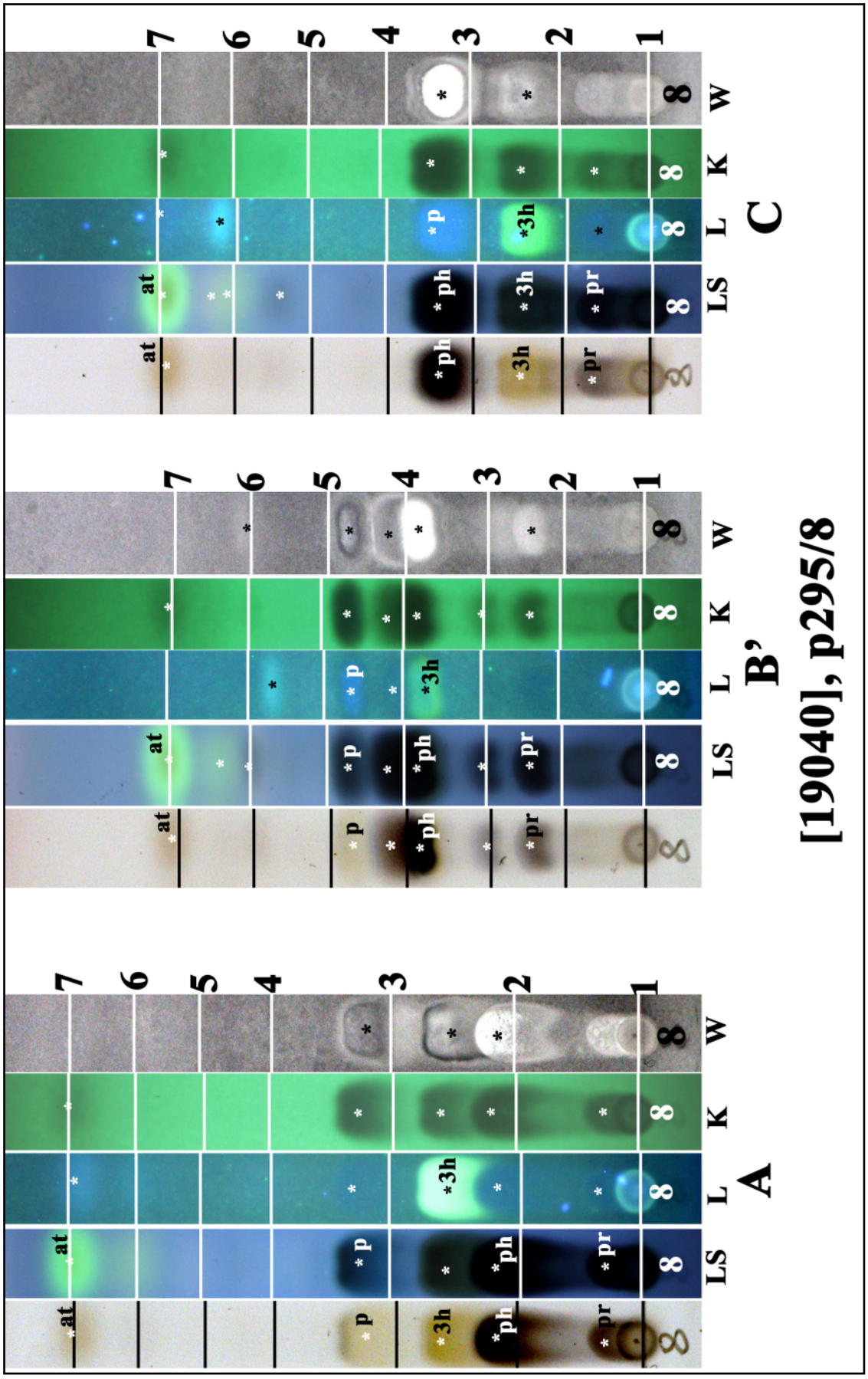
[19040], Australia, New South Wales, Kosciuszko National Park, Wilsons Valley, 11 km north-west of Jindabyne, 36°19' S, 148°32' E, 1360 m, growing on *Bossia* shrubs in subalpine eucalypt forest. Leg. J.A. Elix (9693), 24.02.1982. LICHENES AUSTRALASICI EXSICCATI NR. 002.







Hypogymnia enteromorphoides



at: atranorin, p: physodic acid, 3h: oxyphysodic acid, ph: physodalic acid, pr: protocatraric acid

Hypogymnia enteromorphoides

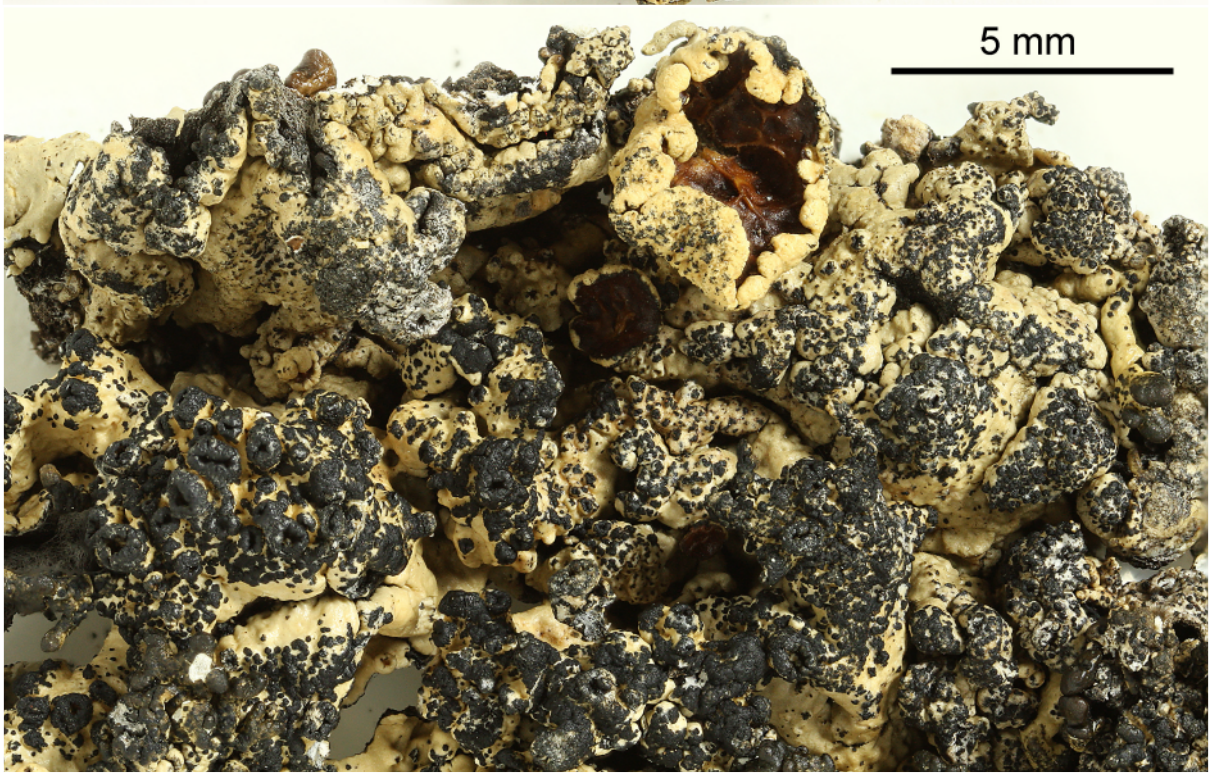
Hypogymnia kosciuskoensis Elix

Thallus with contiguous, compact, tubular lobes, in the centre with lobulate-isidioid projections. Upper surface grey with black variegations, esorediate. Apothecia rare, to 5 mm wide, sessile or shortly pedicellate. Asospores 5-8 x 4-6 µm. On rocks in high alpine areas.Chemistry: cortex K+ yellow, medulla KC+ red, P ± red. Atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid (major), physodalic acid, 2'-*O*-methylphysodic acid, protocetraric acid (present or abesent).

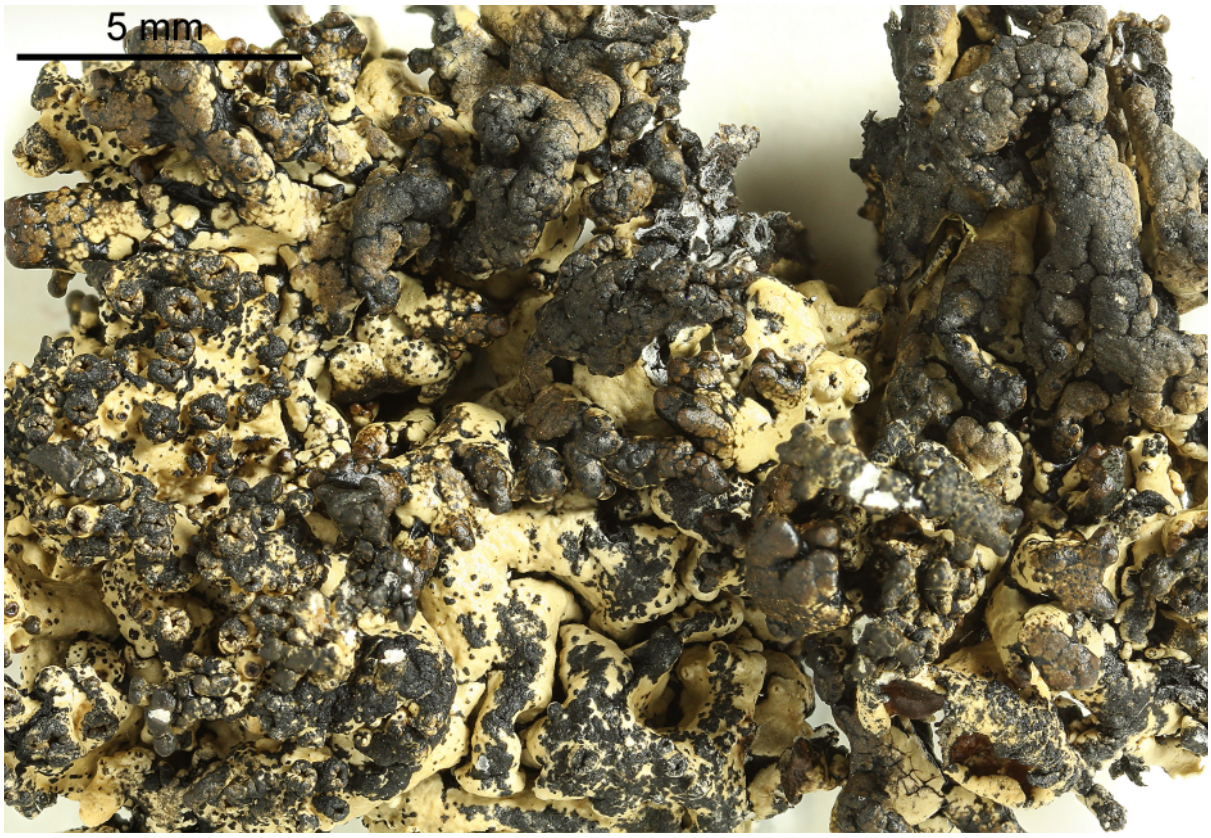
[19041], Australia, New South Wales, Kosciuszko National Park, northern slopes of Mount Stillwell, 36°26' S, 148°19' E, 1980 m, growing over other lichens on granite rocks in alpine herbfield. Leg. J.A. Elix (9684), 22.02.1982. LICHENES AUSTRALASICI EXSICCATI NR. 030.







Hypogymnia kosciuskoensis





Hypogymnia kosciuskoensis



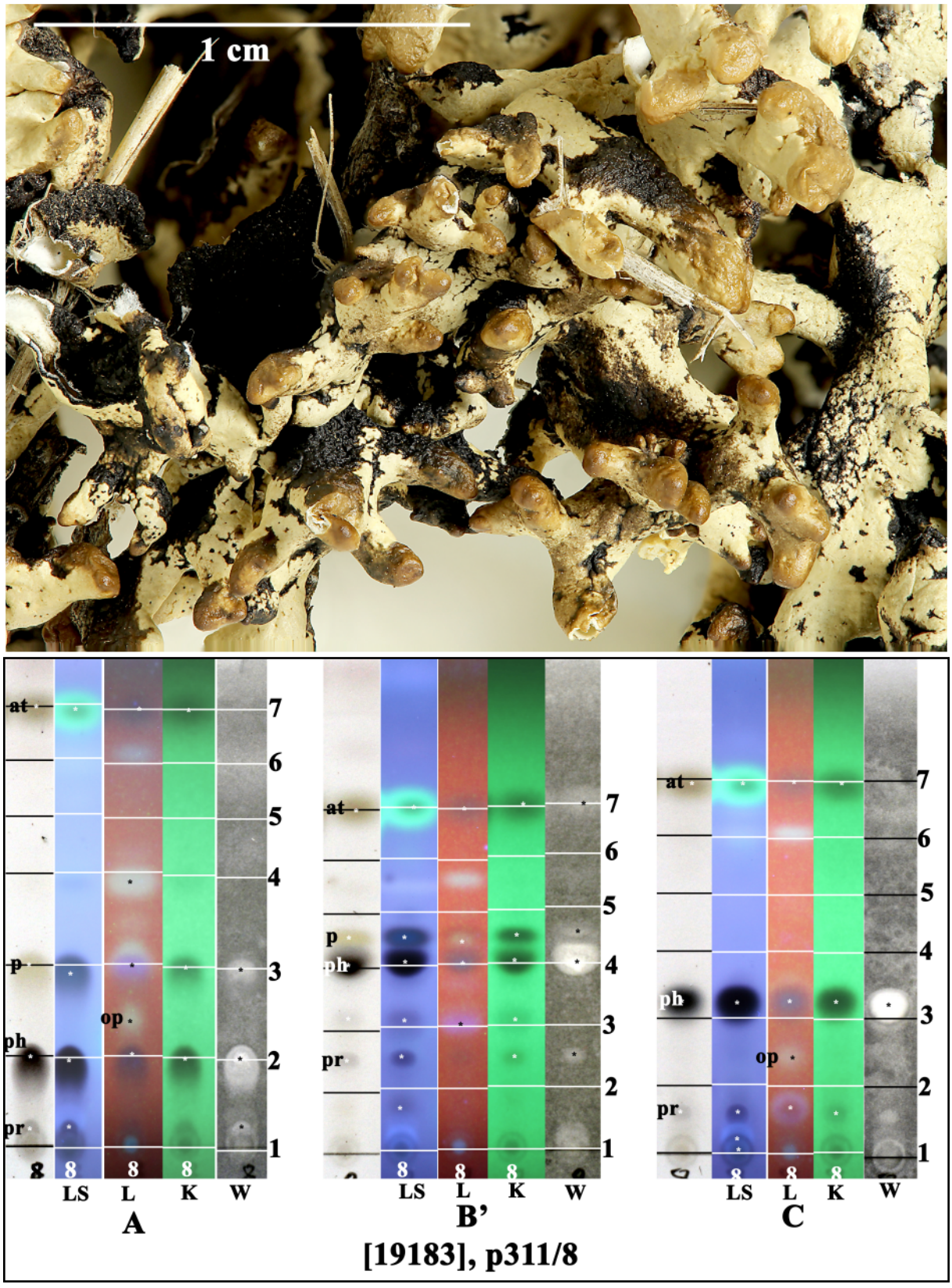
Hypogymnia kosciuskoensis

Hypogymnia lugubris (Pers.) Krog var. ***compactior*** (Zahlbr.) Elix

Thallus sometimes subfruticose; upper and lower surfaces often similar. Lobes irregularly branched, crowded, markedly imbricate, 1-3 mm wide; upper surface with sparse black markings; apices brown.

[19183], Australia, New South Wales, Kosciuszko National Park, northern face of Mount Stillwell, 36°26' S, 148°19' E, 2000 m, growing on twigs of *Podocarpus lawrencii* in alpine herbfield. Leg. J.A. Elix (9683), 22.02.1982. LICHENES AUSTRALASICI EXSICCATI NO. 003.





at: atranorin, p: physodic acid, ph: physodalic acid,
pr: protocetraric acid, op: oxyphysodic acid

Hypogymnia lugubris var. ***compactior***

Hypogymnia lugubris (Pers.) Krog var. ***lugubris***
[= ***Parmelia lugubris*** Pers.]

Thallus loosely attached to substratum. Lobes 1-2.5(-4 mm) wide, elongated, erect or procumbent, esorediate. Upper surface grey to white, usually with black lines, bands and patches; margins often blackened. Medulla thin, hollow, darkened or not. Chemistry: cortex K+ yellow, medulla KC+ red, P+ red; atranorin, chloroatranorin, physodic acid (major), physodalic acid (major), oxyphysodic acid (minor), protocetraric acid, 2'-*O*-methylphysodic acid (trace), alectoronic acid (trace), vittatolic acid (present or absent).

[19043], New Zealand, South Island, Canterbury, Porters Pass, southwest slopes of Foggy Peak, Torlesse Range, growing on soil and debris in subalpine heath, 1000 m. Leg. J.A. Elix (19033) & J. Johnston, 8.03.1985. Chemistry: atranorin, chloroatranorin, physodic acid (major), 2'-*O*-methylphysodic acid (trace), alectoronic acid (trace), physodalic acid (minor), conphysodalic (trace), protocetraric (trace), by TLC, HPLC, anal. J.Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 132.

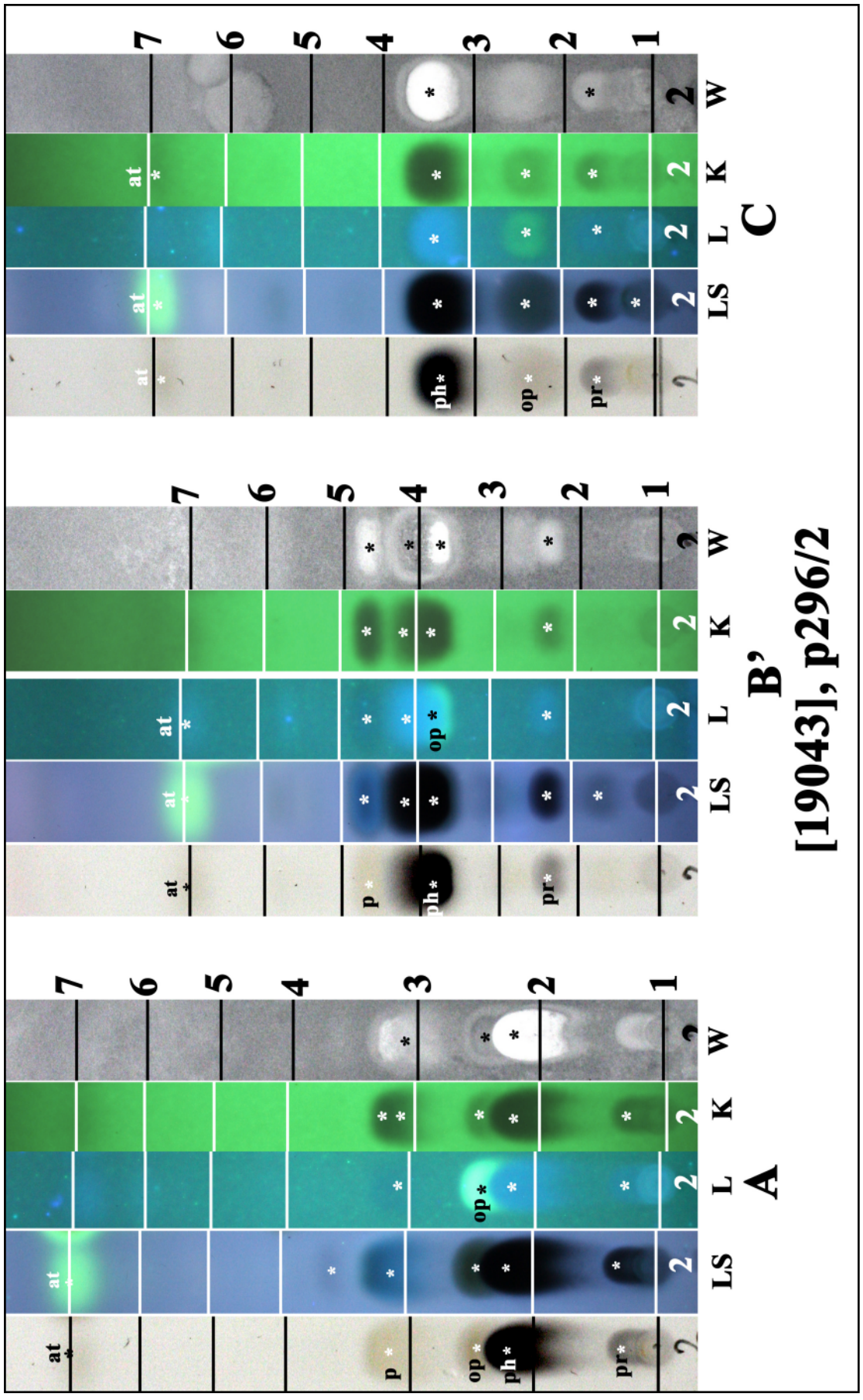




Hypogymnia lugubris var. ***lugubris***



Hypogymnia lugubris var. ***lugubris***



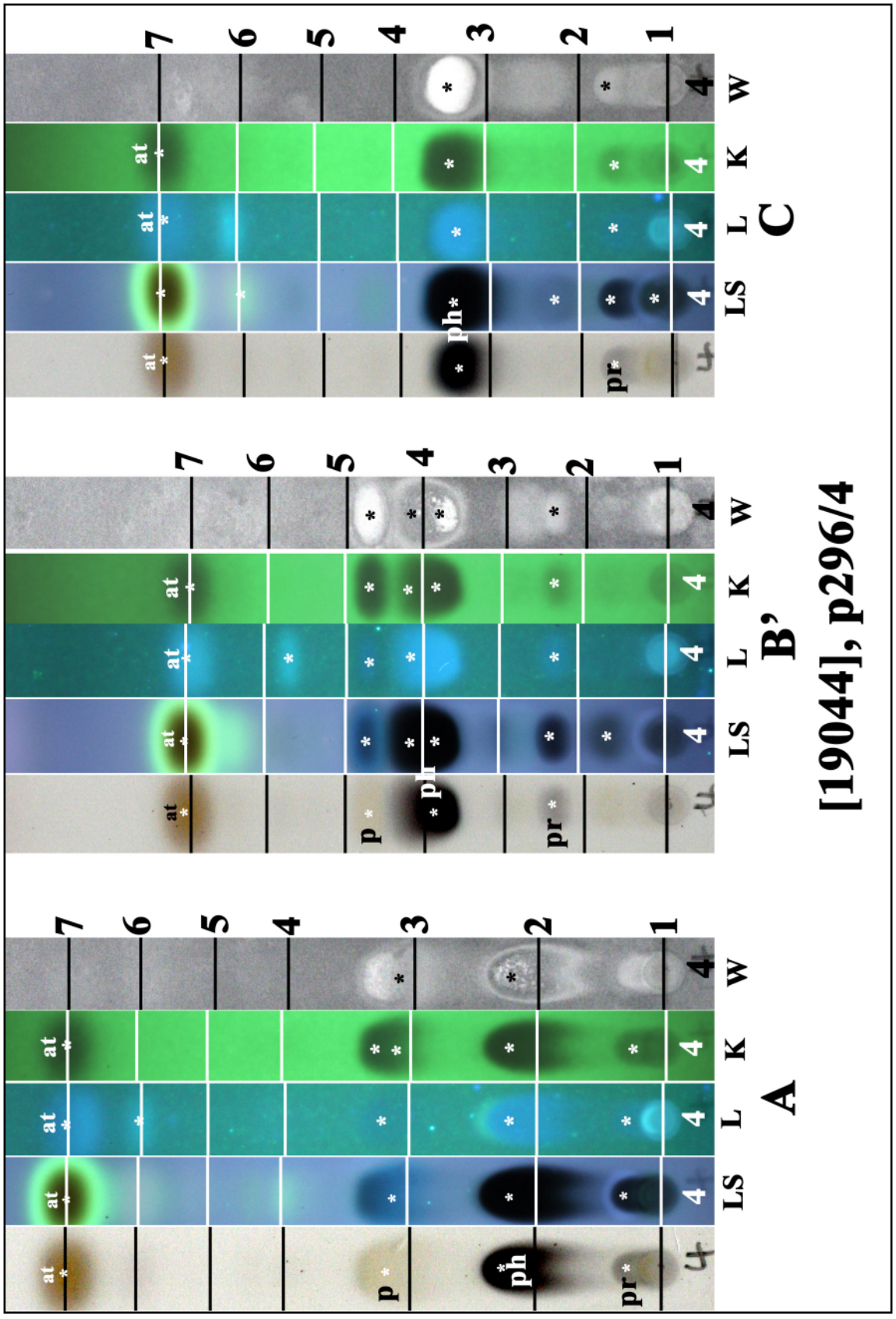
at: atranorin, p: physodic acid, op: oxyphysodic acid, ph: physodalic acid, pr: protocetraric acid

Hypogymnia lugubris (Pers.) Krog var. ***lugubris***

[19044], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°35' S, 147°18' E, 1650 m, growing on soil and debris in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40392) & H. Streimann, 12.02.1994. Chemistry: atranorin, chloroatranorin, physodic acid (minor), physodalic acid (major), protocetraric acid (minor), 2'-*O*-methylphysodic acid (trace), alectoronic acid (trace), by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 281.







a: atranorin, p: physodic acid, ph: physodalic acid, pr: protocetraric acid

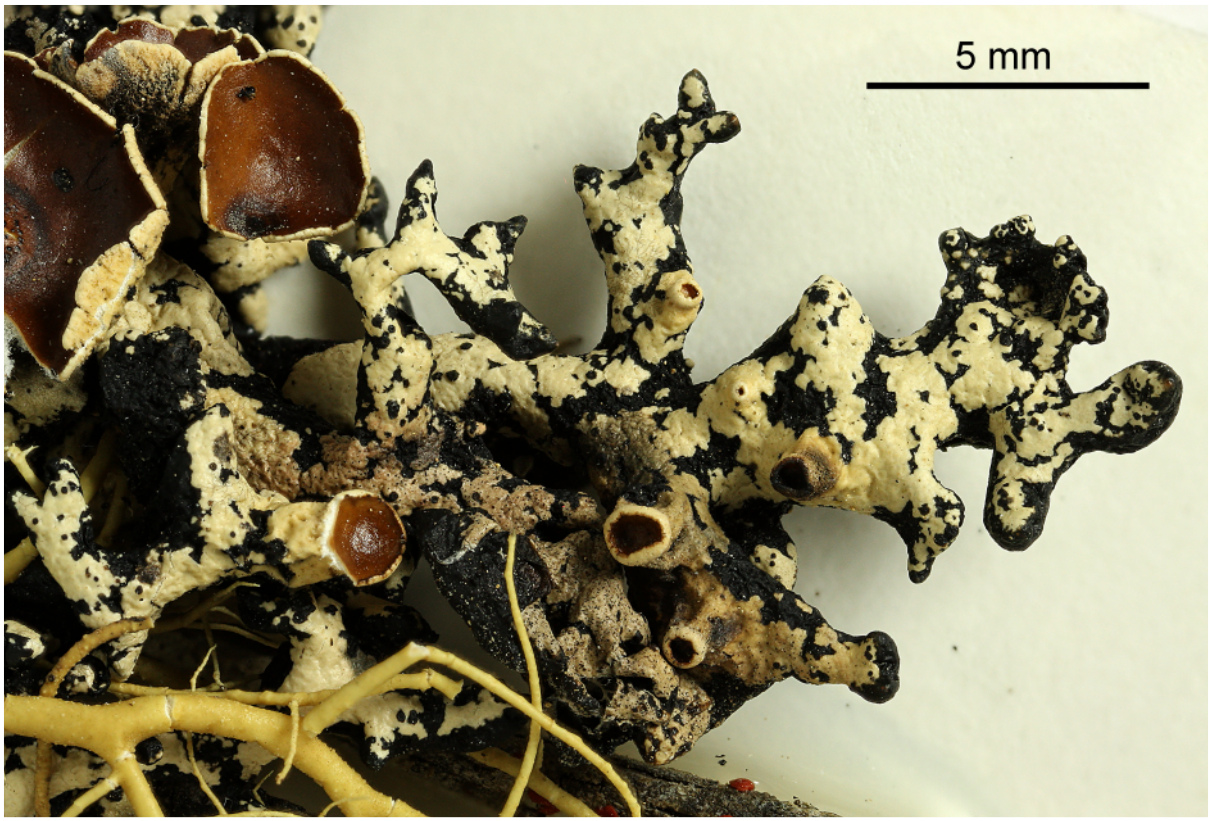
Hypogymnia lugubris (Pers.) Krog var. ***sublugubris*** (Müll.Arg.) Elix

Lobes short, regularly and densely branched, 1-2 mm wide. Thallus compact at least near the centre. Chemistry: oxyphysodic acid (major), physodic acid, atranorin.

[19042], New Zealand, South Island, Canterbury, Porters Pass, south-west slopes of Foggy Peak, Torlesse Range, growing on *Dracophyllum* shrubs in subalpine heath, 1000 m. Leg. J.A. Elix (19032) & J. Johnston, 8.03.1985. Chemistry: atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid (major), 2'-*O*-methylphysodic acid (trace), physodalic acid (trace/minor), unknown (trace), by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 182.







Hypogymnia lugubris var. ***sublugubris***

a: atranorin, p: physodic acid, op: oxyphysodic acid

Hypogymnia pulverata (Nyl. ex Crombie) Elix
[= ***Parmelia mundata*** var. ***pulverata*** Nyl.]

Thallus adhering to substratum, marginal lobes 3-10 mm wide; often with peripheral and secondary lobes which are linear, suberect, elongated, 1-2 mm wide, lacking lateral contacts. Upper cortex sorediate, finally covered with granular soredia often in confluent glomerules, 3-5 mm wide. Medulla mostly solid. Apothecia rare, subpedicellate. Ascospores 6-9 x 4-5 µm. Chemistry: cortex K+ yellow, medulla KC+ red, P± red; atranorin (minor), chloroatranorin, physodic acid (major), oxyphysodic acid (major), 2'-*O*-methylphysodic acid, alectoronic acid, physodalic acid, protocetraric acid (present or absent).

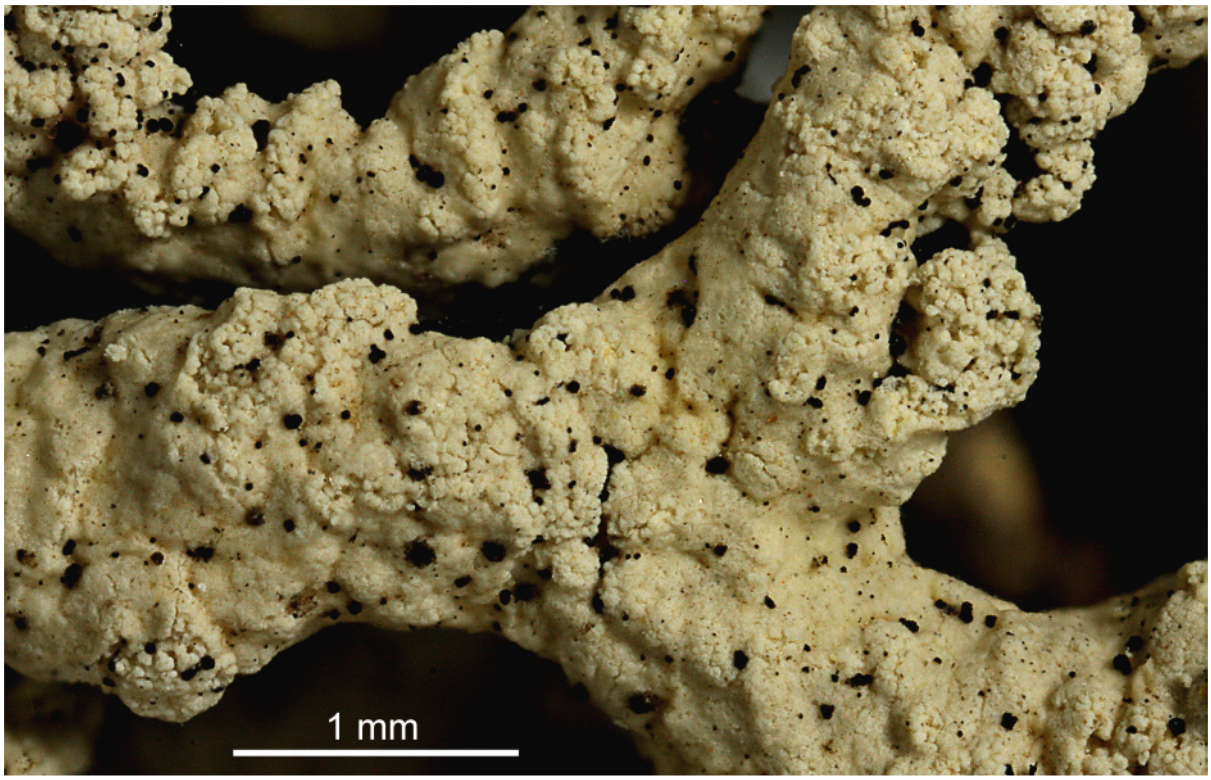
[19046], Australia, Australian Capital Territory, Honeysuckle Creek, 30 km south-west of Canberra, 35°36' S, 148°59' E, 1200 m, growing on dead eucalypt logs in open *Eucalyptus* woodland. Leg. J.A. Elix (10281), 13.06.1982. LICHENES AUSTRALASICI EXSICCATI NO. 007.







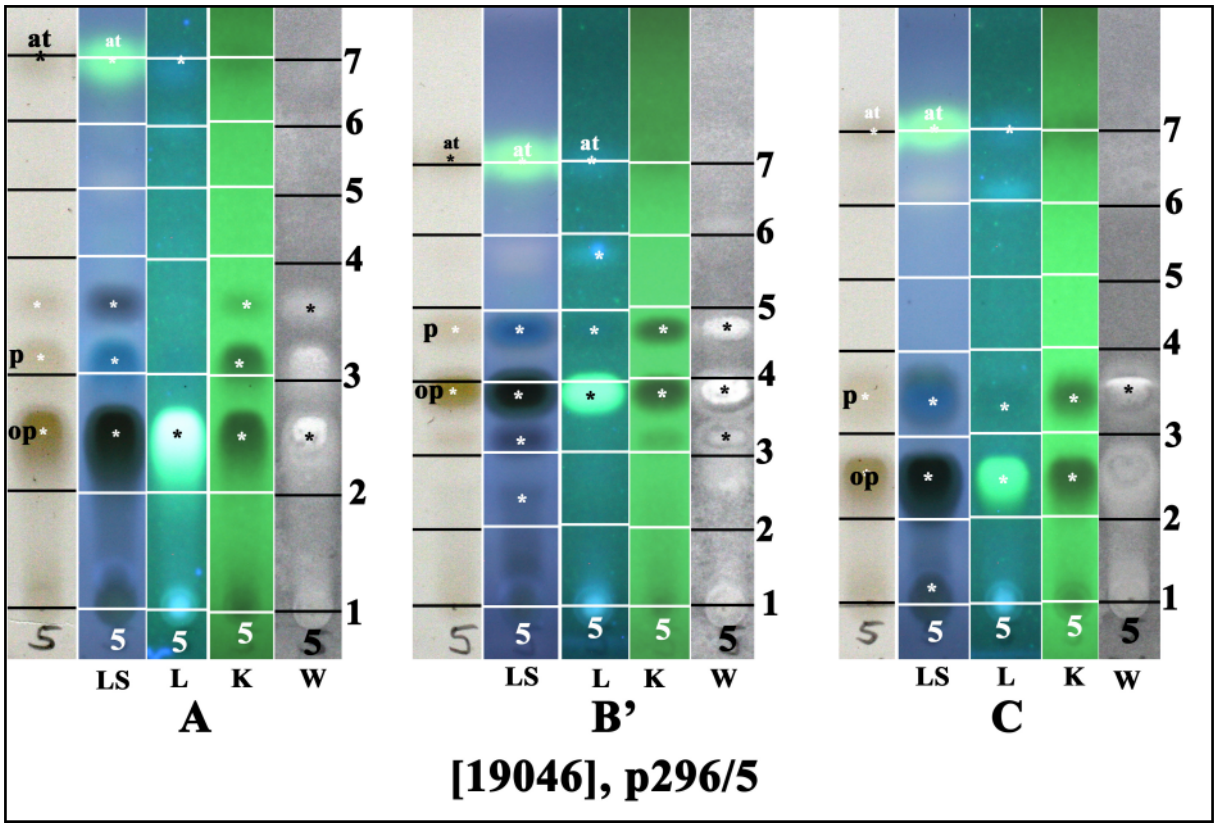
Hypogymnia pulverata





Hypogymnia pulverata





a: atranorin, p: physodic acid, op: oxyphysodic acid

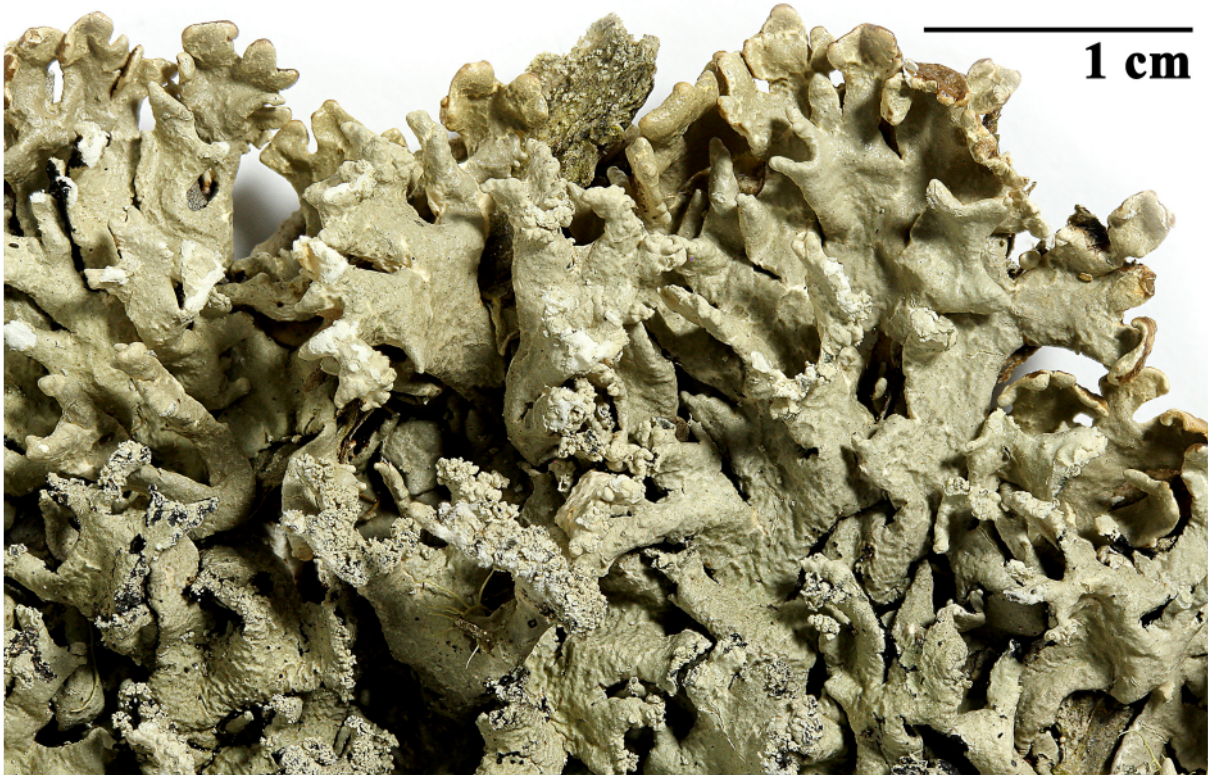
Hypogymnia pulverata

Hypogymnia subphysodes (Kremp.) Filson var. ***austerodioides*** Elix

Lobes mostly hollow, usually subcontiguous; marginal lobes placodiform. Upper surface diffusely sorediate; soredia granular, sometimes developing into sorediate isidia. Chemistry: cortex K+ yellow; medulla KC+ red, P ± red; atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid (minor), 2'-*O*-methylphysodic acid, alectoronic acid, ±physodalic acid, ±protocetraric acid.

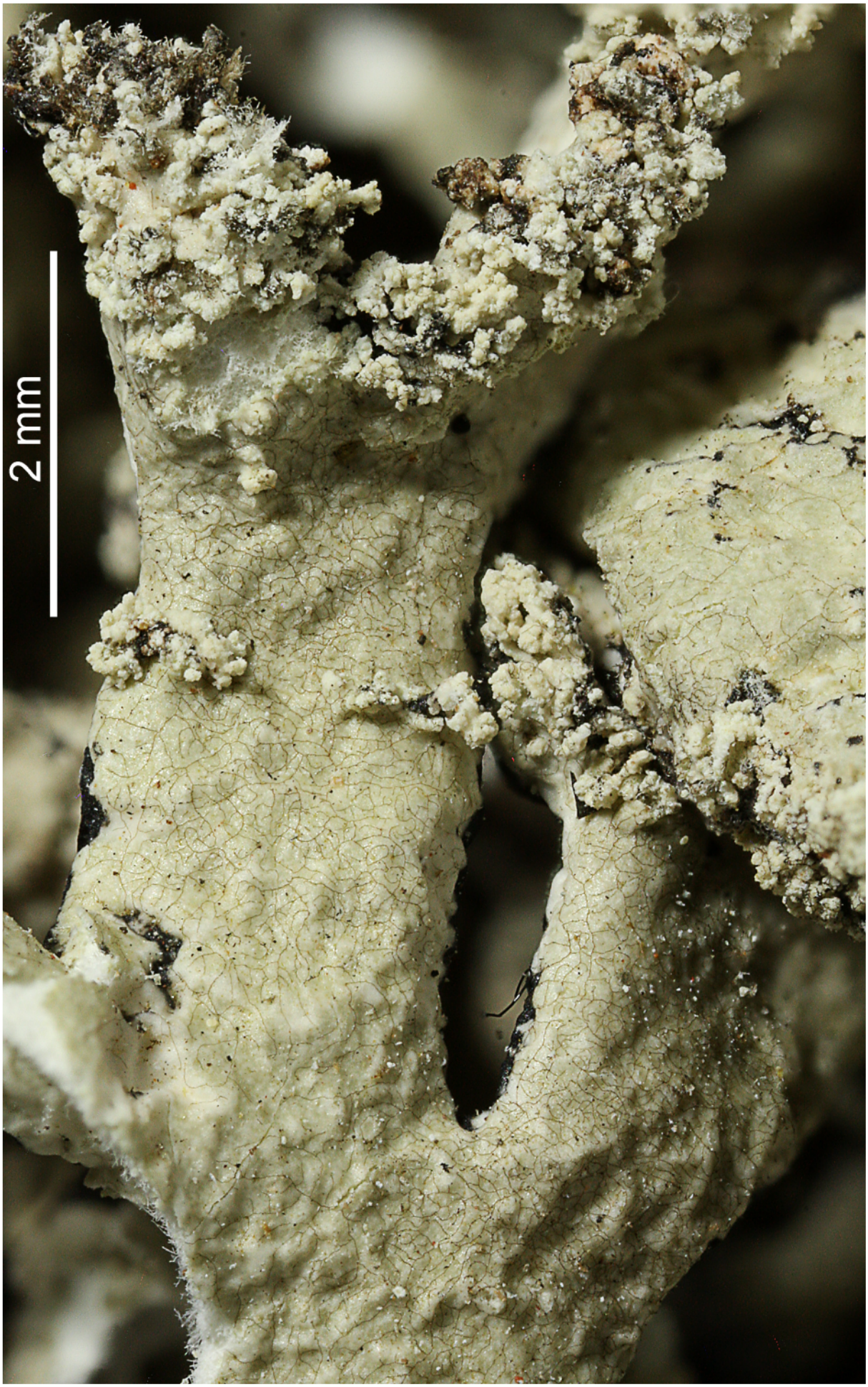
[15876], Australia, Western Australia, Donnelly Well south of Yornup along SW Hwy, wetland association with *Eucalyptus rudis* and *Melaleuca preissiana,* 34,073° S, 116,180° E, 260 m. Leg. F. Schumm & E. Stocker-Wörgötter, 25.10.2009.



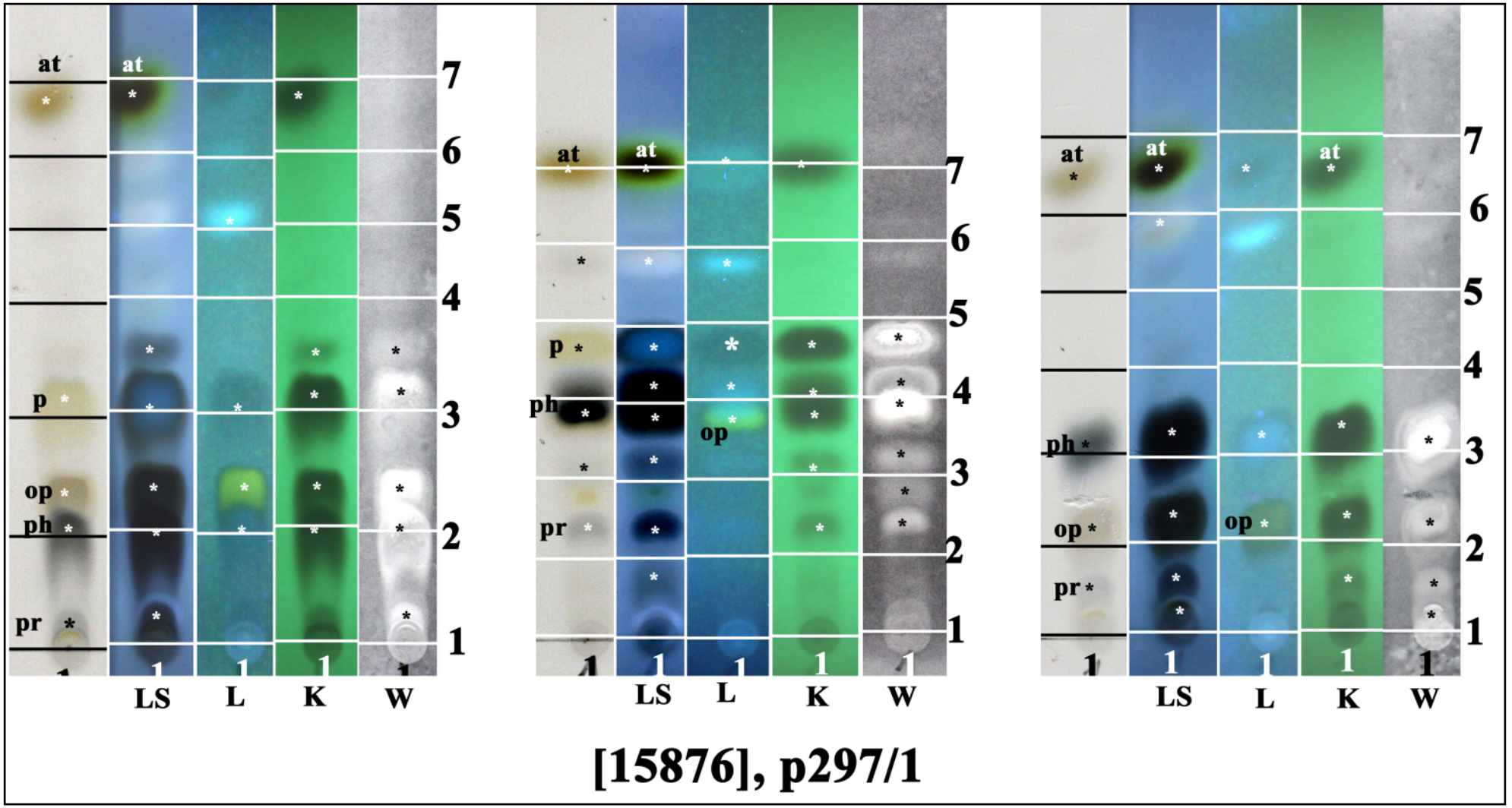




Hypogymnia subphysodes var. ***austerodioides***



Hypogymnia subphysodes var. ***austerodioides***



at: atranorin, p: physodic acid, ph: physodalic acid, op: oxyphysodic acid, pr: protocetraric acid

Hypogymnia tubularis (Taylor) Elix
[= ***Parmelia tubularis*** Taylor]

Lobes attenuate without lateral contacts, often almost terete especially near the thallus centre, 1-4 mm wide. Medulla thick or solid; lobe cavity narrow or absent. Apothecia common, sessile to subpedicellate, disc 5-8 mm wide. Ascospores 6-9 x 4.5-5.5 µm. Chemistry: cortex K+ yellow; medulla KC+ red, P± orange; atranorin (major), chloroatranorin, physodic acid (major), oxyphysodic acid (major), physodalic acid (major), 2'-*O*-methylphysodic acid (minor), alectoronic acid, protocetraric acid (present or absent).

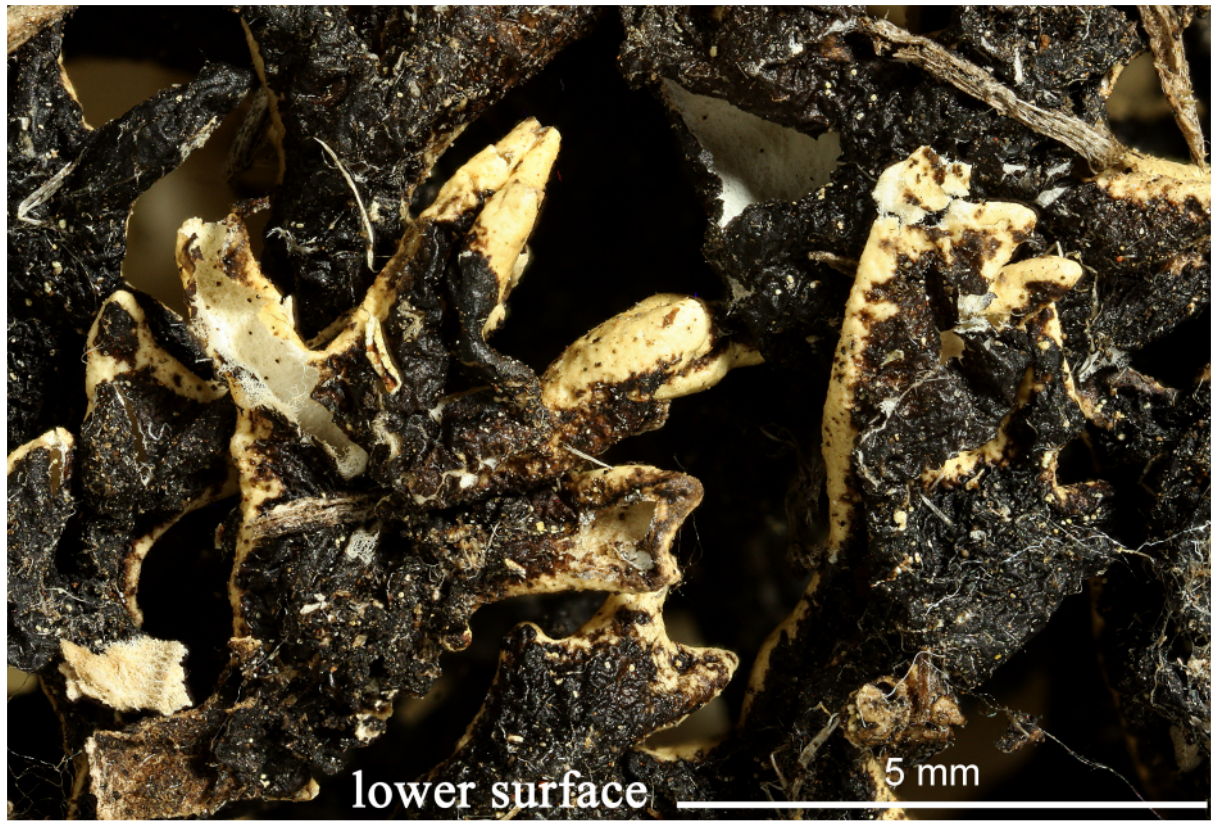
[19047], Australia, Australian Capital Territory, Summit of Mt. Aggie, Bridabella Range, 1490 m, on exposed schistose rocks. Leg. J.A. Elix (5838), 28.03.1979. Chemistry: atranorin, chloroatranorin, physodic acid, oxyphysodic acid, 2'-*O*-methylphysodic acid, physodalic acid, protocetraric acid, anal. J.A. Elix.

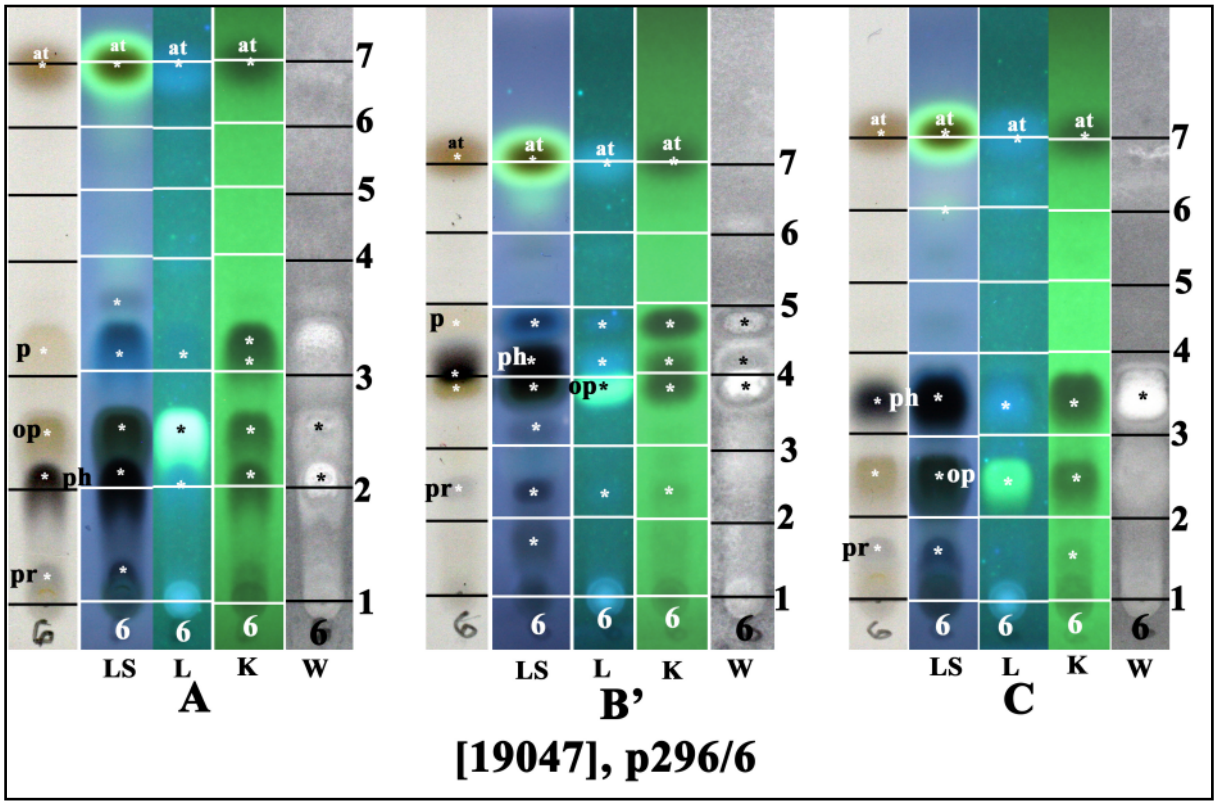






Hypogymnia tubularis





at: atranorin, p: physodic acid, op: oxyphysodic acid,
ph: physodalic acid, pr: protocetraric acid

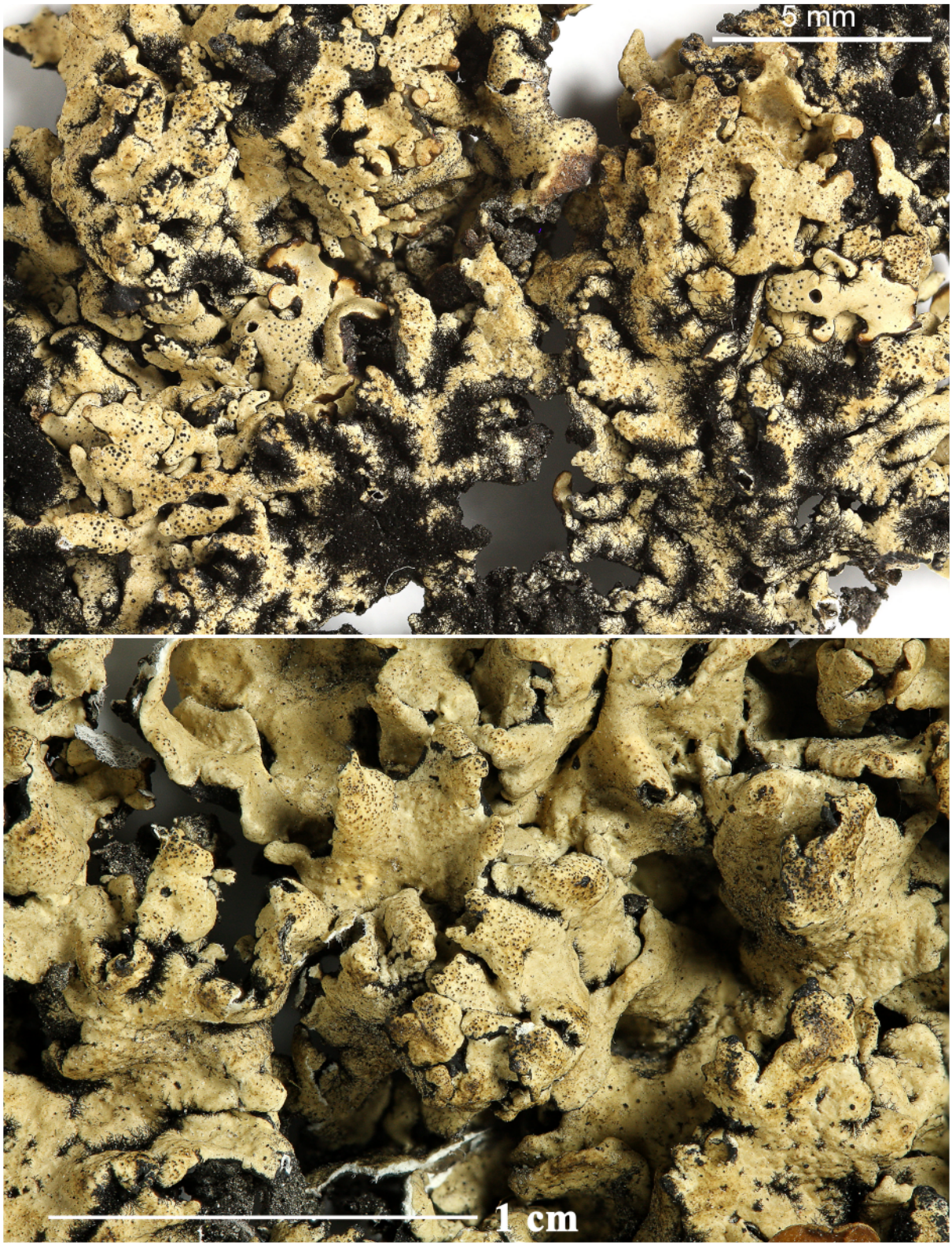
Hypogymnia tubularis

Hypogymnia turgidula (Bitter) Elix
[= ***Parmelia turgidula*** Bitter.]

Lobes inflated, 1-3.5 mm wide, contiguous, esorediate, marginal lobes usually suberect. Medulla hollow. Apothecia common, 1.5- 10 mm wide, shortly pedicellate. Ascospores 7-8.5 x 4-5.5 µm. Chemistry: cortex K+ yellow,; medulla KC+ red, P-; atranorin (minor), chloroatranorin, physodic acid (major), oxyphysodic acid (major), 2'-*O*-methylphysodic acid (minor), alectoronic acid (trace).

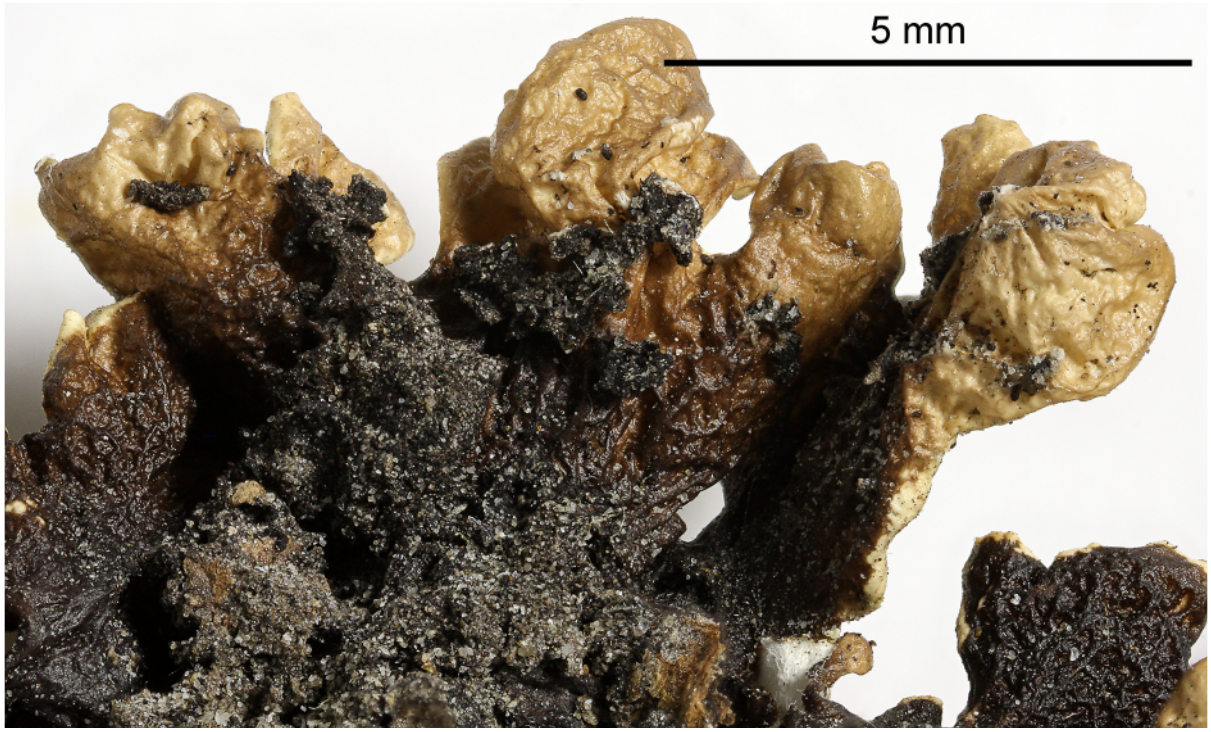
[19048], New Zealand, South Island, Canterbury, eastern entrance to Arthurs Pass National Park, 670 m, growing on trunk of *Nothofagus fusca* in open *Nothofagus* woodland. Leg. J.A. Elix (19020) & J. Johnston, 04.03.1985. Chemistry: atranorin, chloroatranorin, physodic acid (major), oxyphysodic acid (major), unknown (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 108.



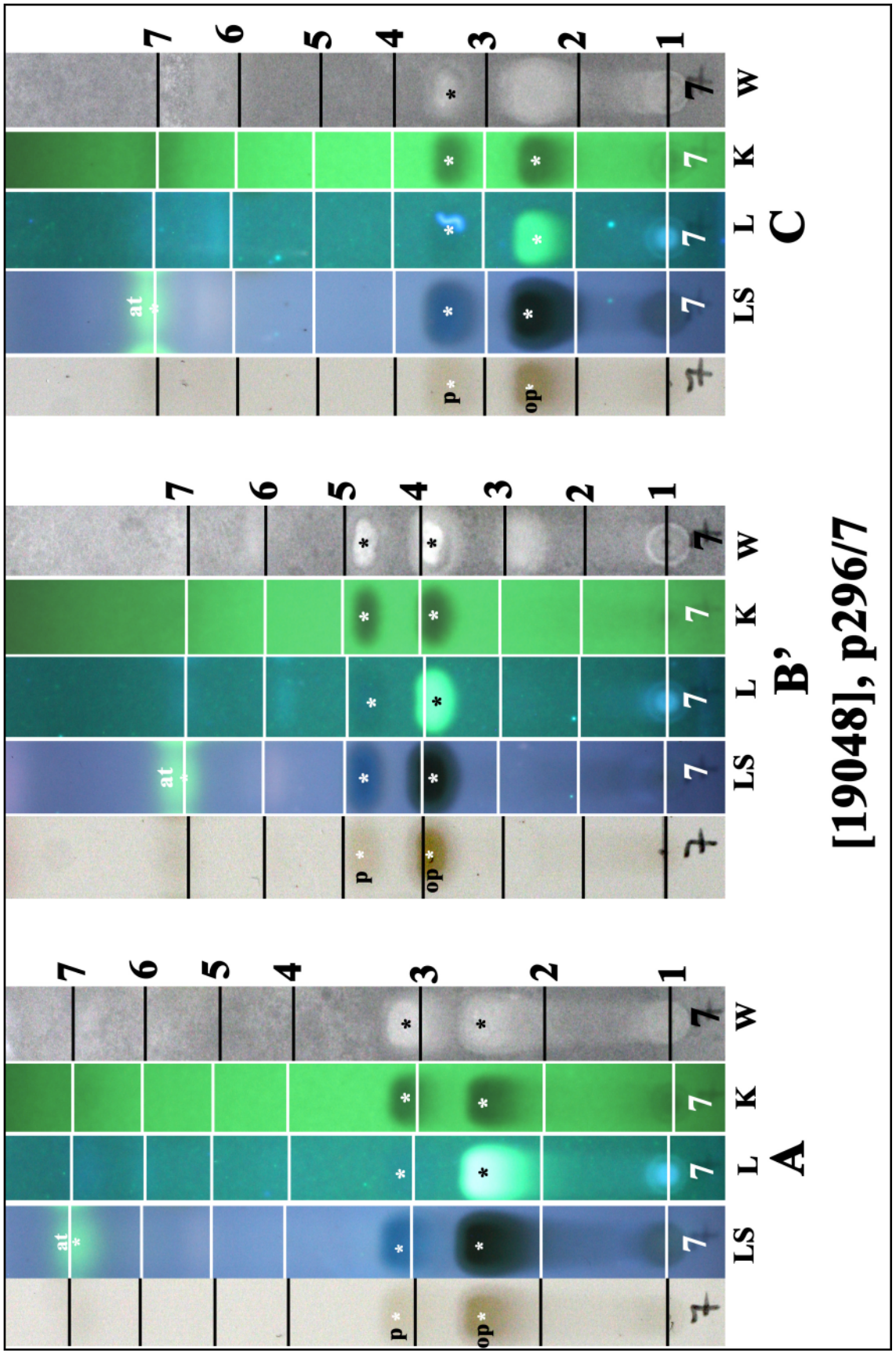


Hypogymnia turgidula





Hypogymnia turgidula



at: atranorin (trace), p: physodic acid, op: oxyphysodic acid

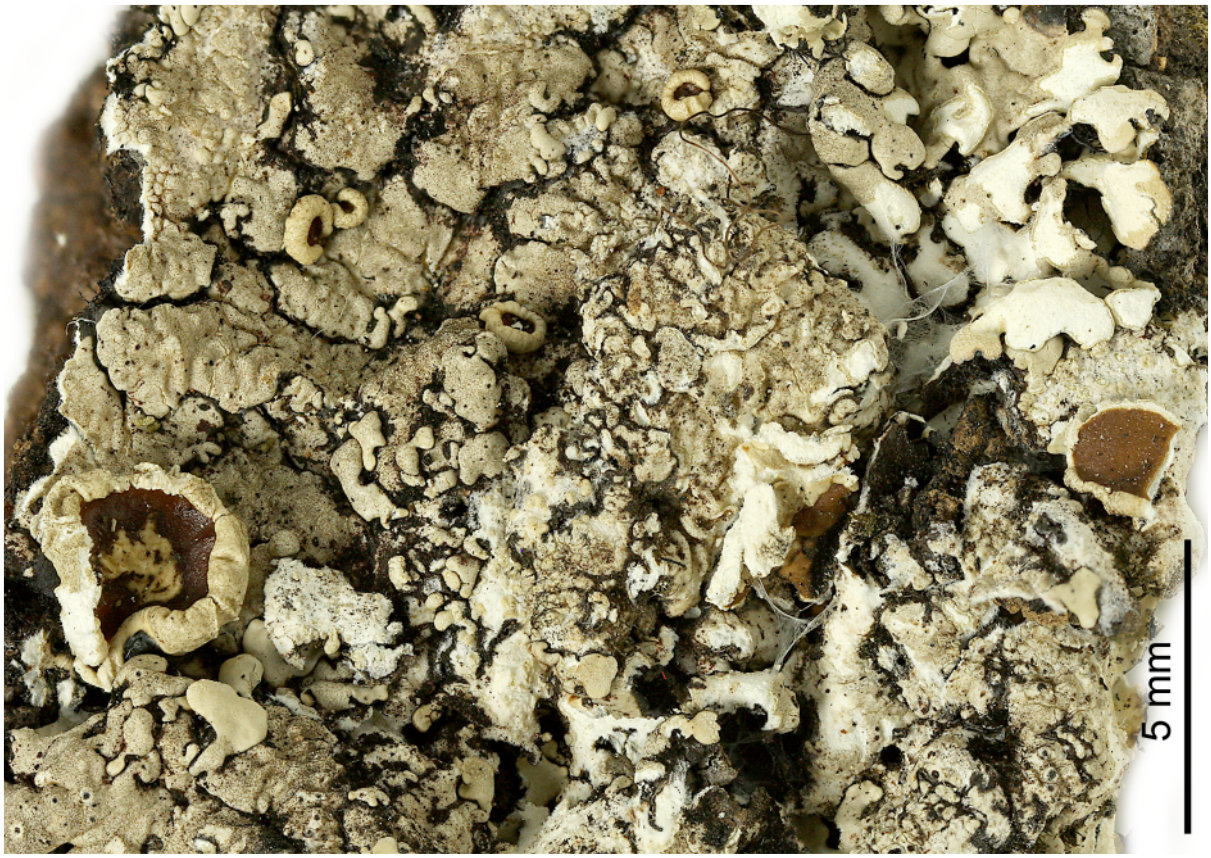
Hypogymnia turgidula

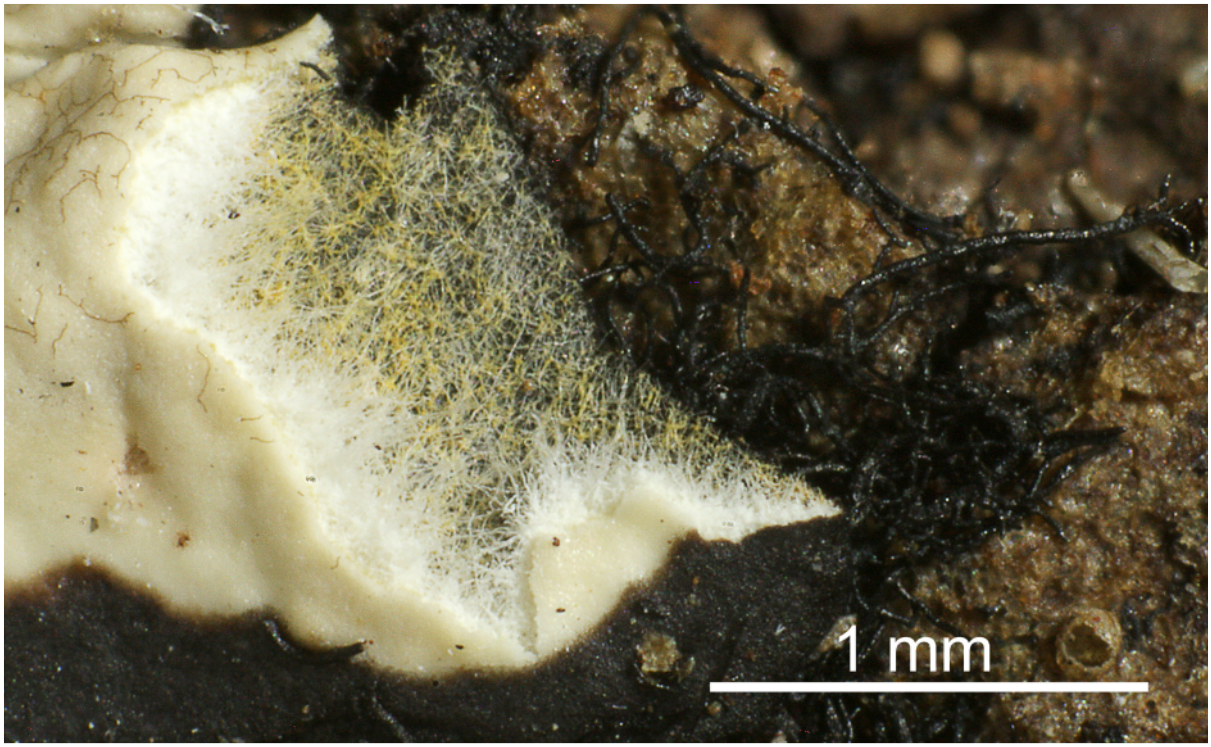
Hypotrachyna heterochroa (Hale & Kurok.) Elix
[= ***Parmelia heterochroa*** Hale & Kurok.]

Upper surface grey, UV-, lacking isidia, soredia and pustules, Medulla mostly white, lower medulla orange-brown. Rhizines densely dichotomous branched. Chemistry: Cortex K+ yellow, UV-; medulla K-, C- P+ orange red; lower medulla K+ violet; atranorin, chloroatranorin, protocetraric acid (major), euplectin (major, in lower medulla).

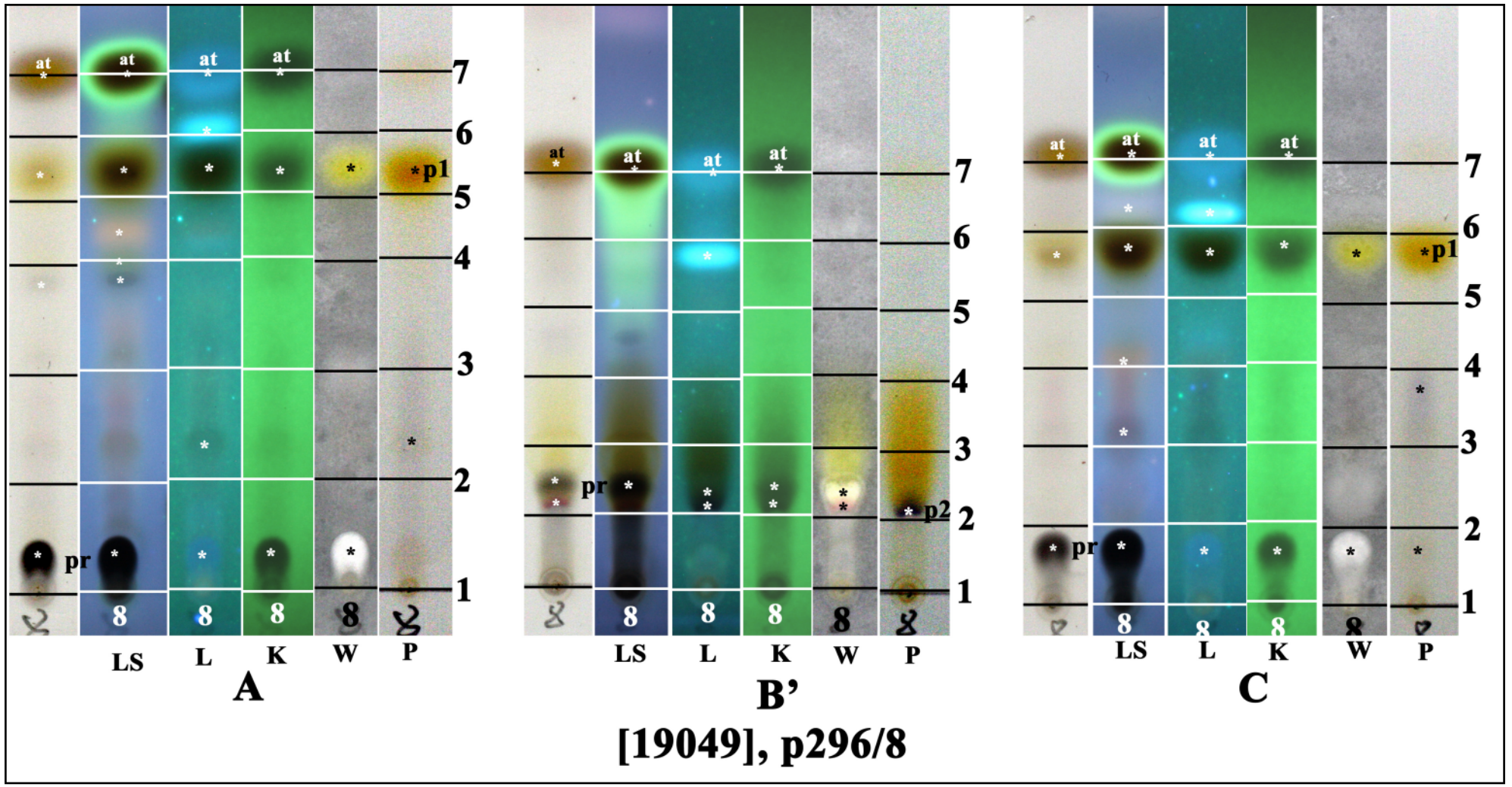
[19049], Australia, Queensland, Mt. Mee State Forest, area being cleared about 5 km north of Forest Office, 500 m, growing on canopy branches in rainforest. Leg. M.E. Hale (65804), 06.08.1983, det. M.E. Hale. Chemistry: atranorin, chloroatranorin, protocetraric acid, unknown pigment by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 082.







Hypotrachyna heterochroa

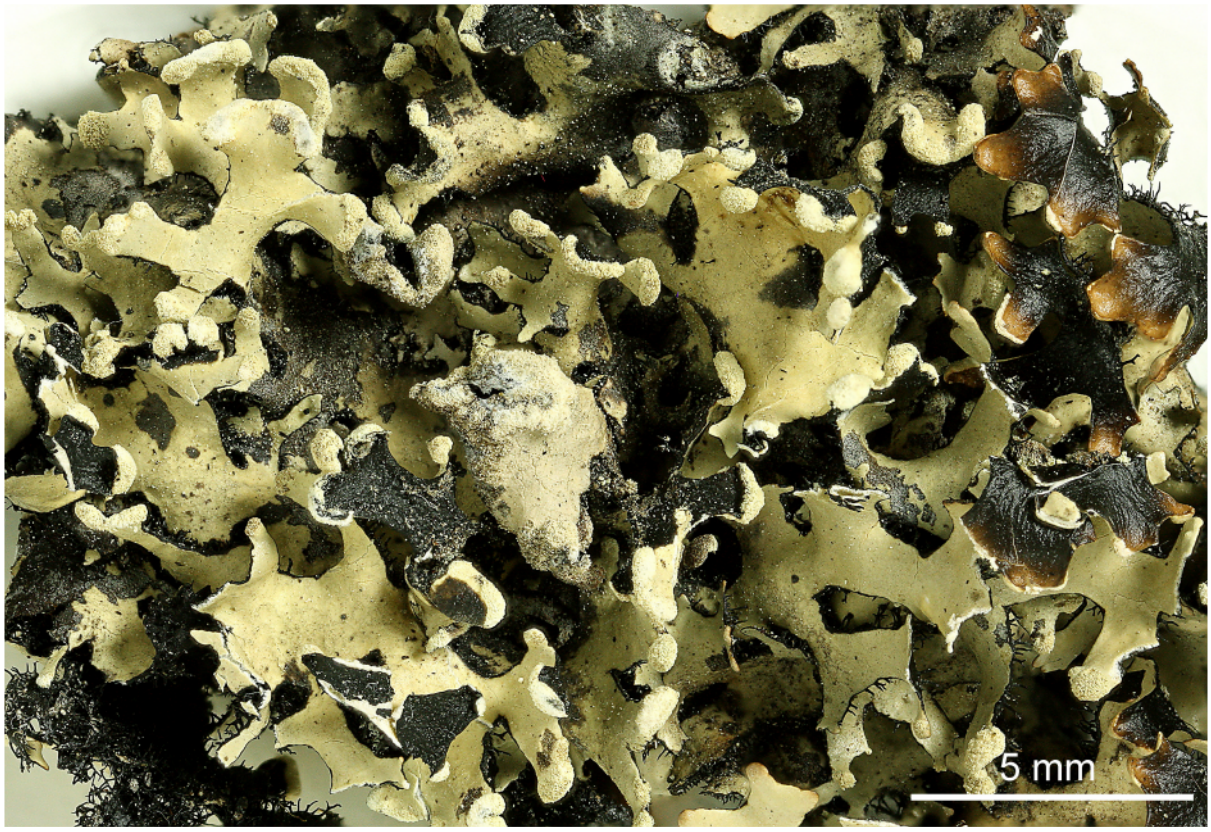


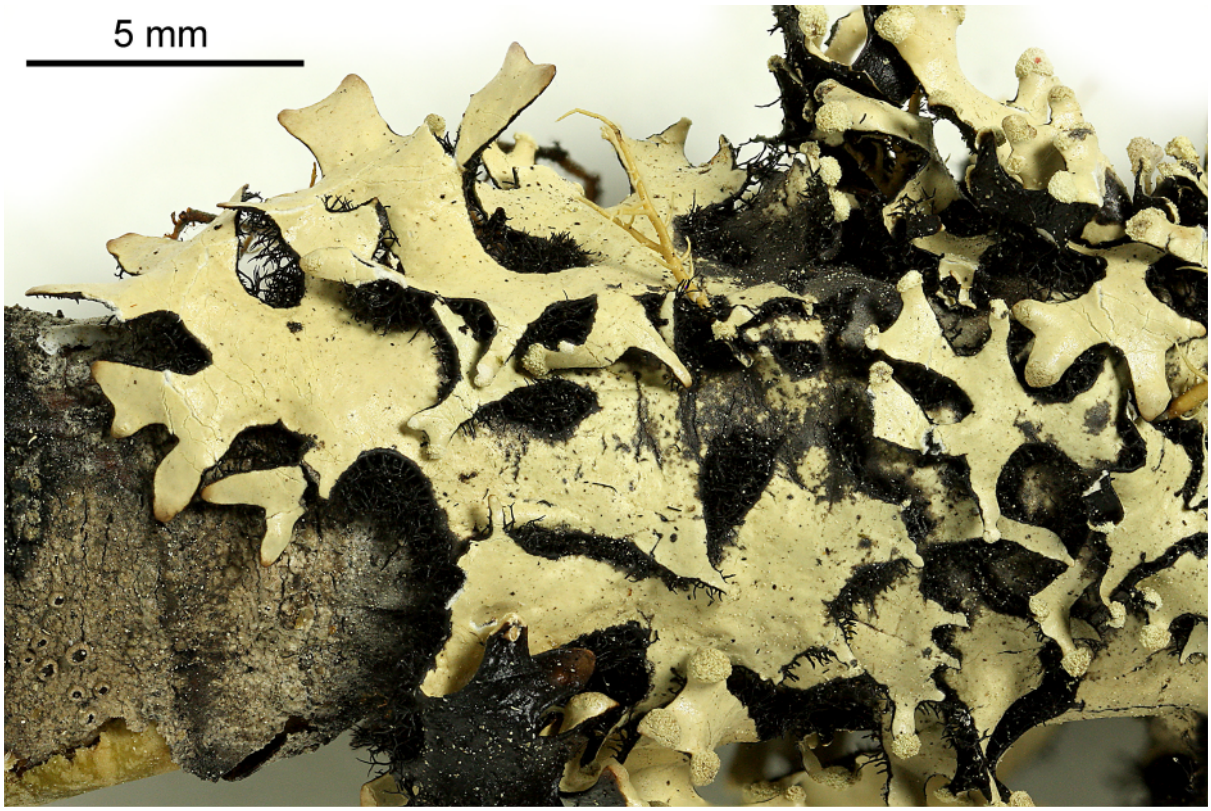
at: atranorin, pr: protocetraric acid, p1: euplectin (yellow pigment), p2: red pigment

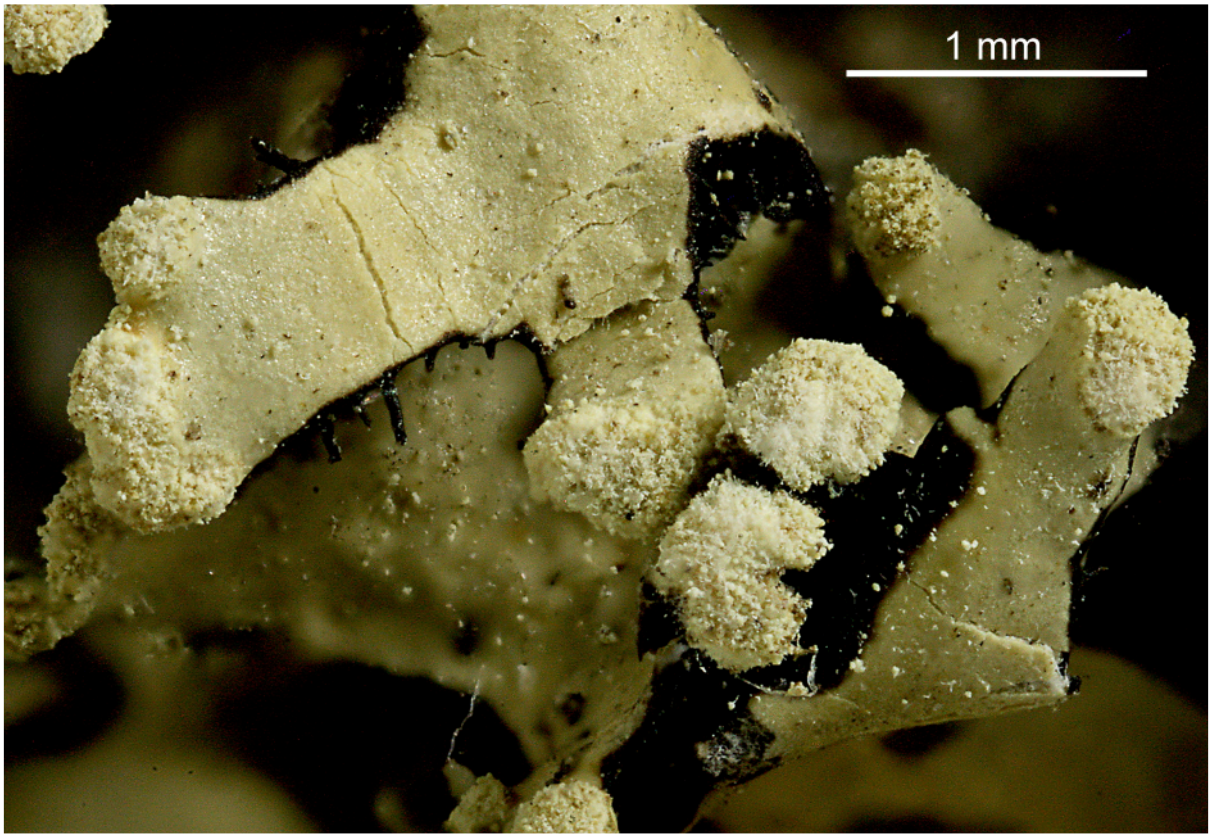
Hypotrachyna sinuosa (Sm.) Hale
[= ***Parmelia sinuosa*** (Sm.) Ach.]

Upper surface yellow-green, containing usnic acid. Lobes separate or loosely imbricate, sublinear, 1-3 mm wide, subascending apically. Soralia terminal or subterminal, capitate. Medulla white. Chemistry: cortex K-, KC+ yellow, UV-; medulla K+ then red, C-, P+ orange; usnic acid (major), salazinic acid (major), consalazinic acid, ± norstictic acid (trace).

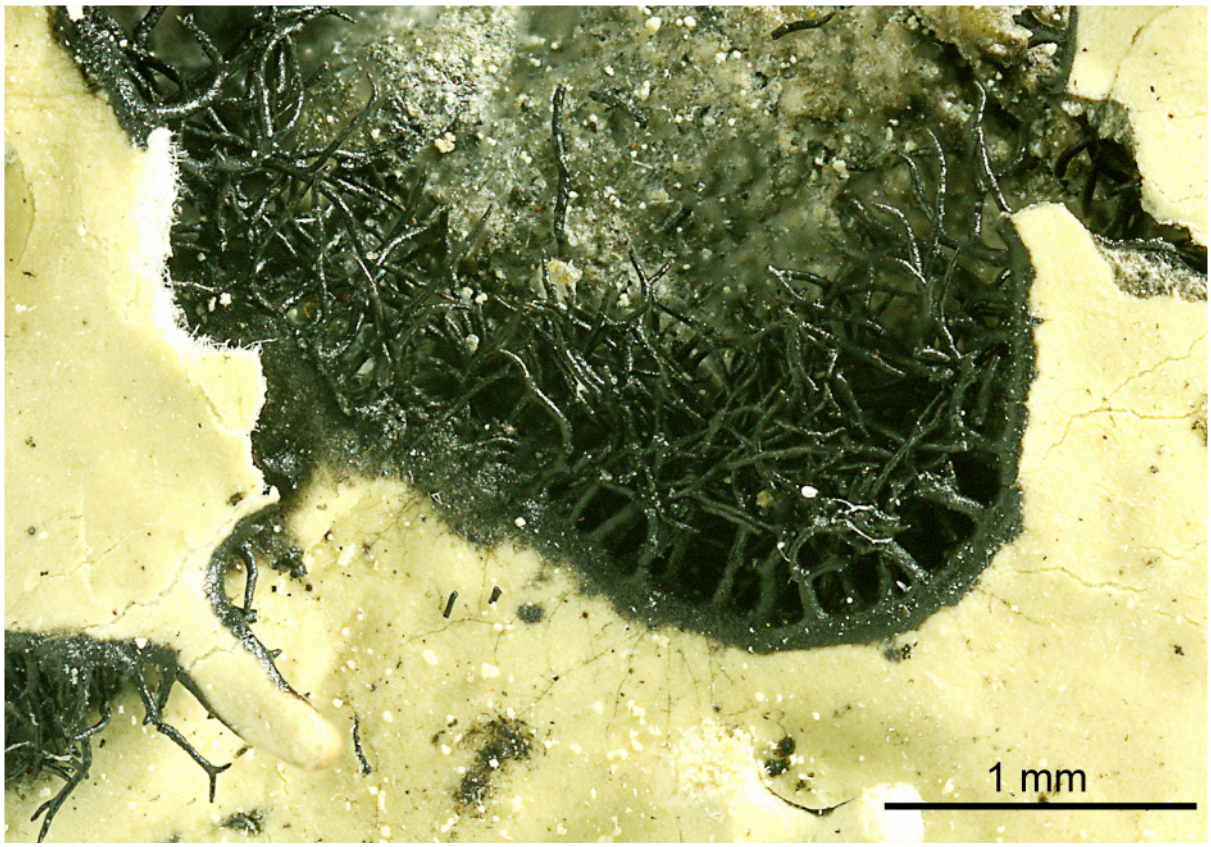
[19050], New Zealand, North Island, Wellington, Tongariro National Park, Lake Ropounamu walking track, 39°01' S, 175° 44' E, 700 m, forest, on small branches and twigs. Leg. J. Johnston (2305), 19.03.1985. Chemistry: salazinic acid (major), consalazinic acid, protocetraric acid (trace), norstictic acid (trace), usnic acid, by TLC in C, anal. J. Johnston 27.07.1989.

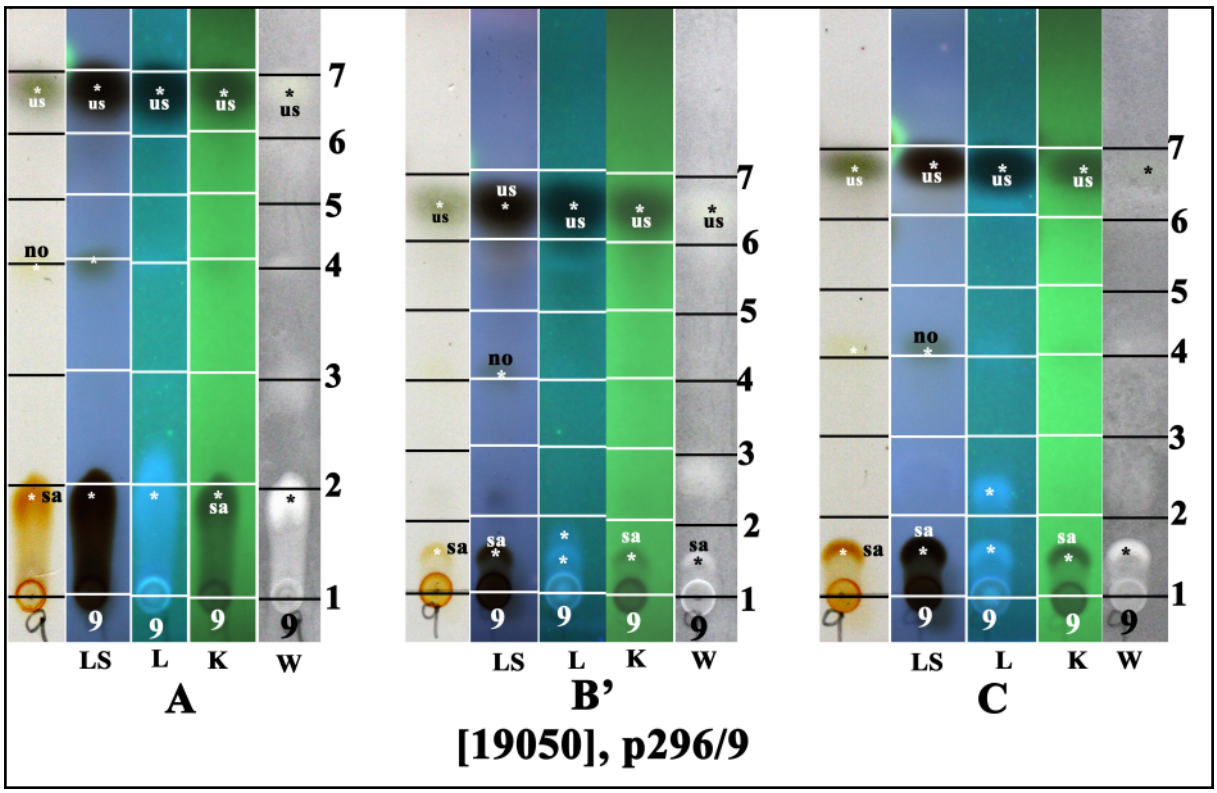






Hypotrachyna sinuosa





us: usnic acid, sa: salazinic acid, no: norstictic acid (trace)

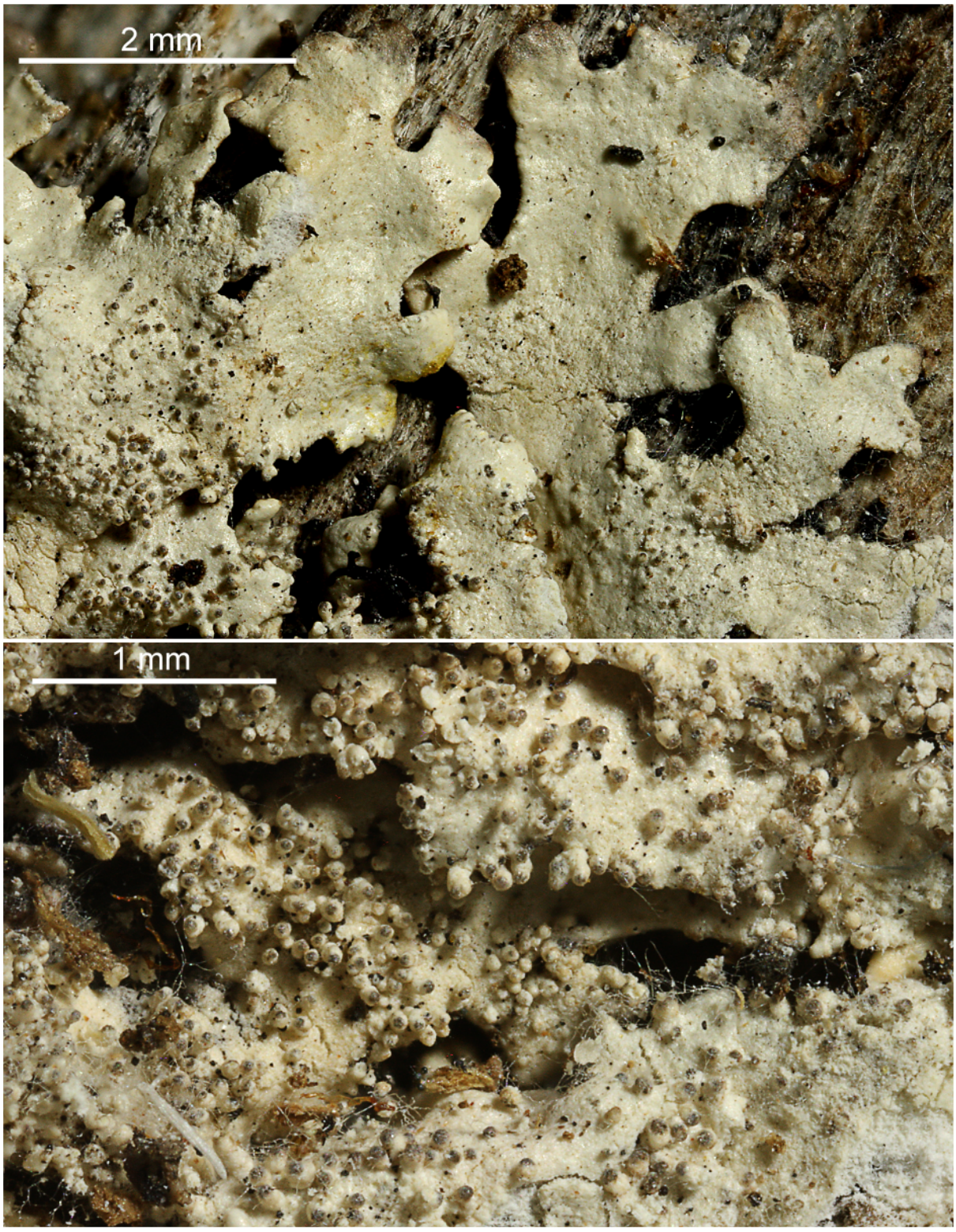
Hypotrachyna sinuosa

Imshaugia aleurites (Ach.) S.L.F.Meyer
[= ***Parmeliopsis aleurites*** (Ach.) Nyl.]

Thallus on dead wood and bark. Lobes sublinear, irregulatly branched, 0.8-1.5 mm wide. Upper surface pale ash-grey, emaculate. Isidia cylindrical, corticate, tips somtimes brown. Lower surface ivory to pale brown. Rhizines simple, concolorous. Chemistry: cortex K+ yellow; medulla K+ yellow, C-, P+ yellow-orange; atranorin, chloroatranorin, thamnolic acid (major), decarboxythamnolic acid (trace).

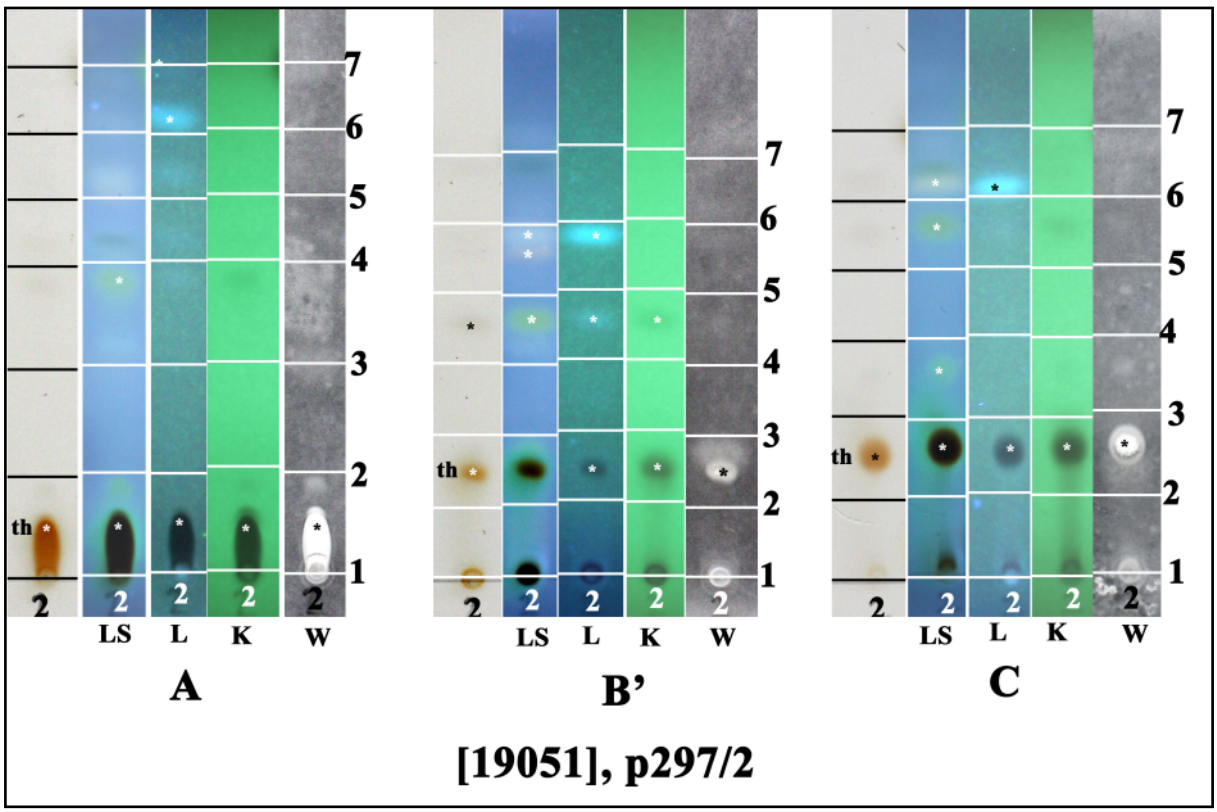
[19051], Australia, Victoria, Mount Delegate, 8 km south-south-west of Delegate (NSW), 37°07' S, 148°54' E, 1300 m , growing on dead wood in *Eucalyptus pauciflora* dominated woodland. Leg. J.A. Elix (20019) & H. Streimann, 10.04.1985. Atranorin, thamnolic acid (major), decarboxythamnolic acid (minor) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 183.





Imshaugia aleurites





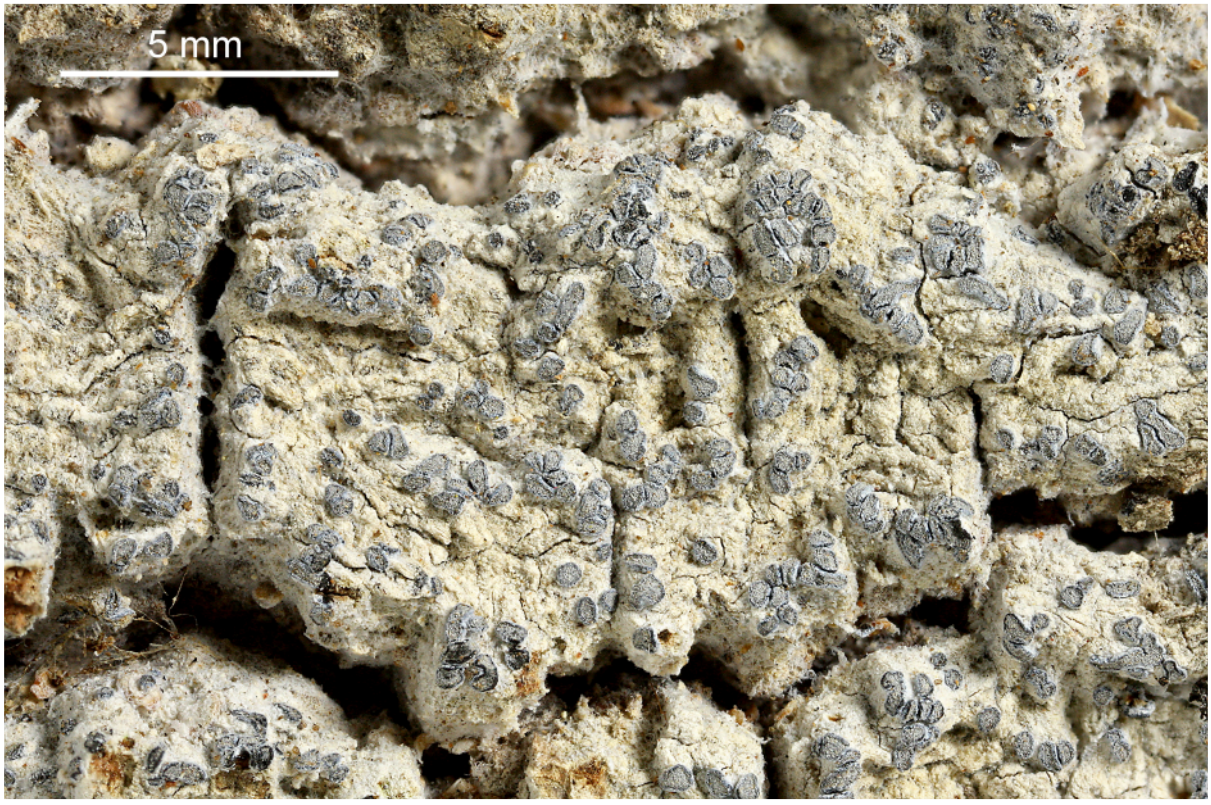
th: thamnolic acid

Imshaugia aleurites

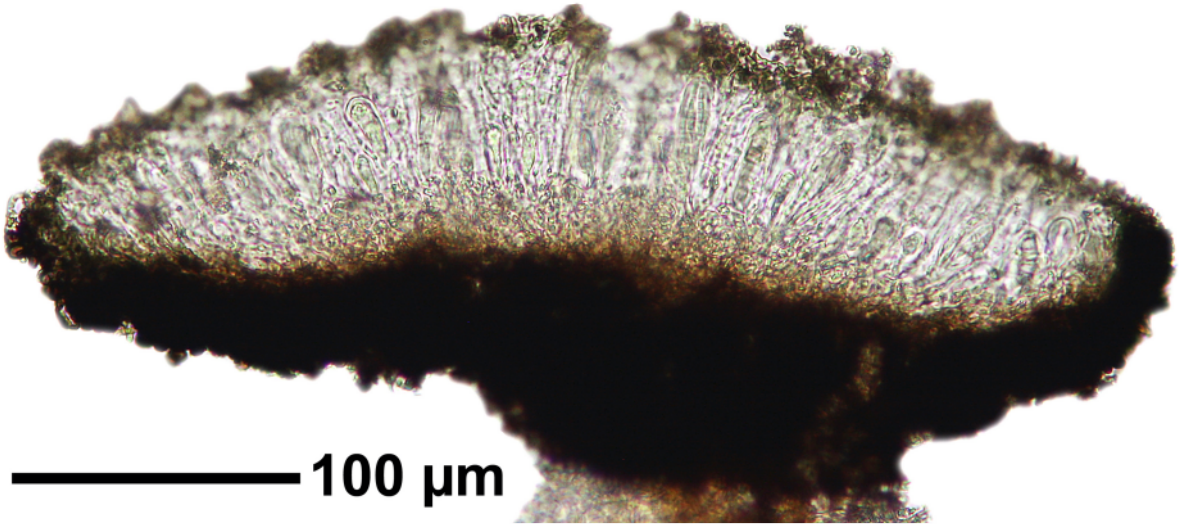
Lecanactis microcarpella (Müll.Arg.) Zahlbr.
[= ***Lecanographa microcarpella*** (Müll.Arg.) Egea & Torrente]
[= ***Opegrapha microcarpella*** Müll.Arg.]

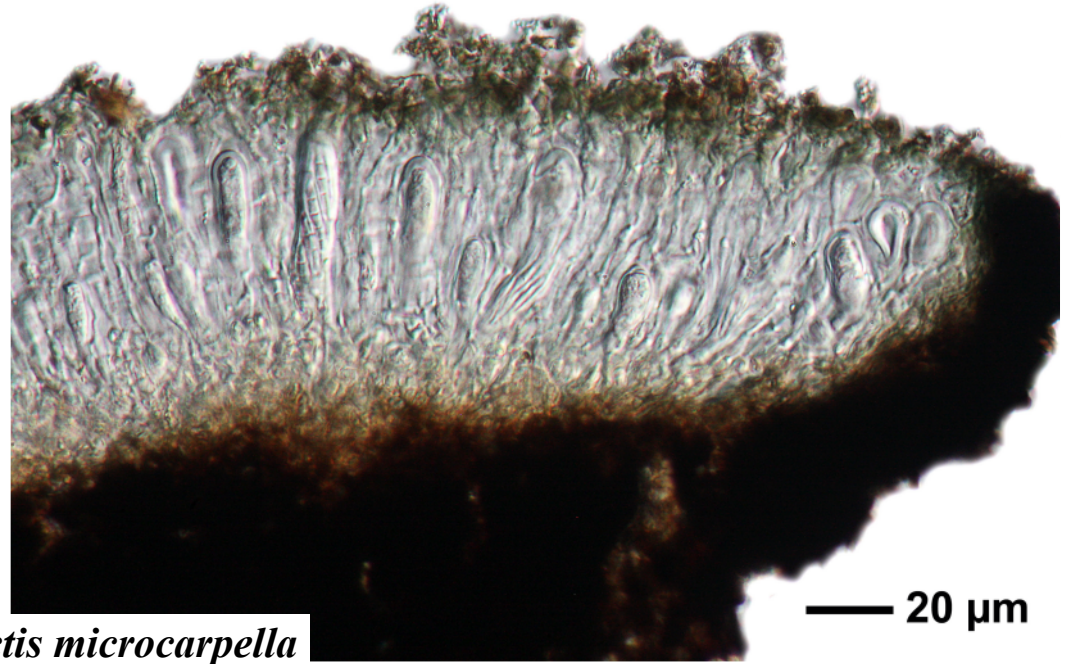
Thallus grey-white. Hymenium 60-70 µm high, I+ red. Paraphyses branched, anastomosing, 0.7-1.0 µm wide. Asci 50-52 x 11-12 µm. Ascospores hyaline, 3(-4)-septate, 16-19 x 3-4 µm, 8/ascus. Thallus K-, C-, KC-, P-.

[19052], Australia, New South Wales, Buckenbowra River Estuary, 7.5 km west of Batemans Bay, 35°42' S, 150°06' E, 5 m, growing on *Casuarina glauca* along tidal stream. Leg. J.A. Elix (22626) & K. Kalb, 04.08.1988, det. J.M. Egea & P. Torrente. Chemistry: 2'-*O*-methyl-microphyllinic (major), confluentic (major) unknown (trace) by HPLC, TLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 257. This specimen is mentioned in Egea & Torrente (Bibl. Lichenol. 54, 1994). Our description and photographs differs from the descriptons given in this book.

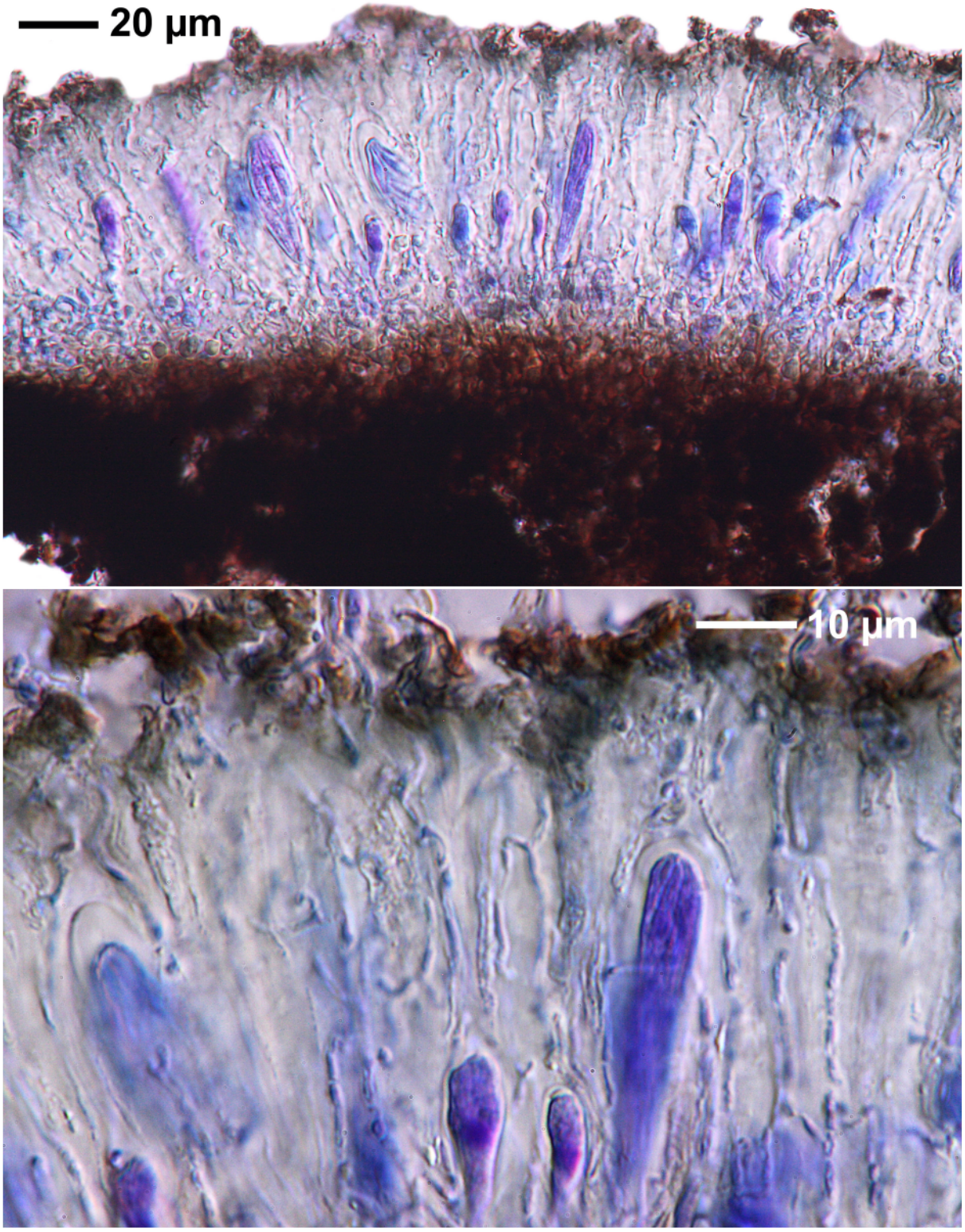








Lecanactis microcarpella

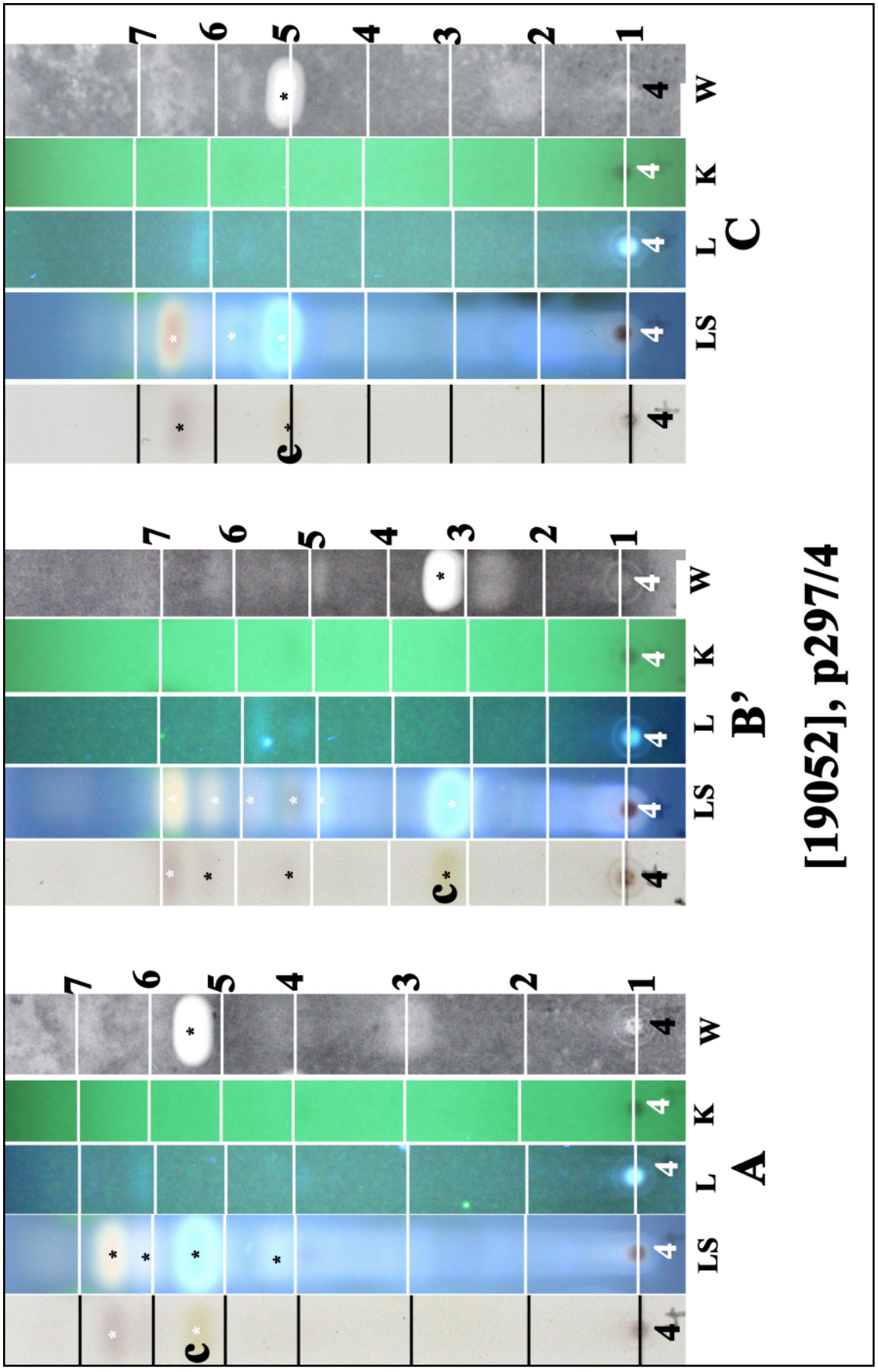


Lecanactis microcarpella





Lecanactis microcarpella



Lecanactis microcarpella

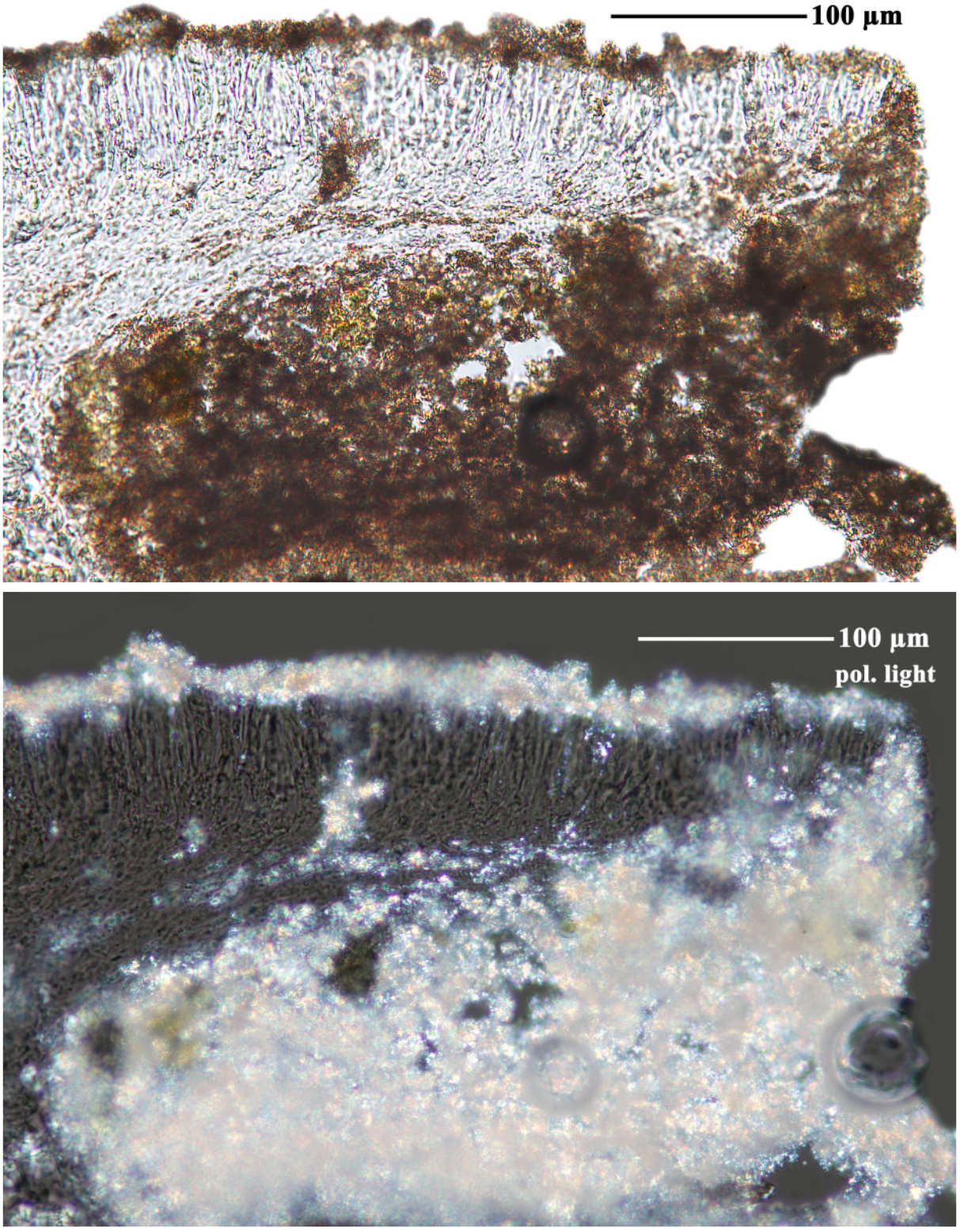
Lecanora caesiorubella Ach.

Thallus whitish grey, rimose-areolate, lacking soredia. Apothecia sessile, 0.8-3 mm wide, disc whitish pruinose; margin prominent, concolorous with the thallus, cortex absent. Amphithecium and hymenium with numerous small crystals that are soluble in KOH. Hymenium and hypothecium hyaline. Ascospores hyaline, simple, 8/ascus, 8-15 x 5.5-9.5 µm.

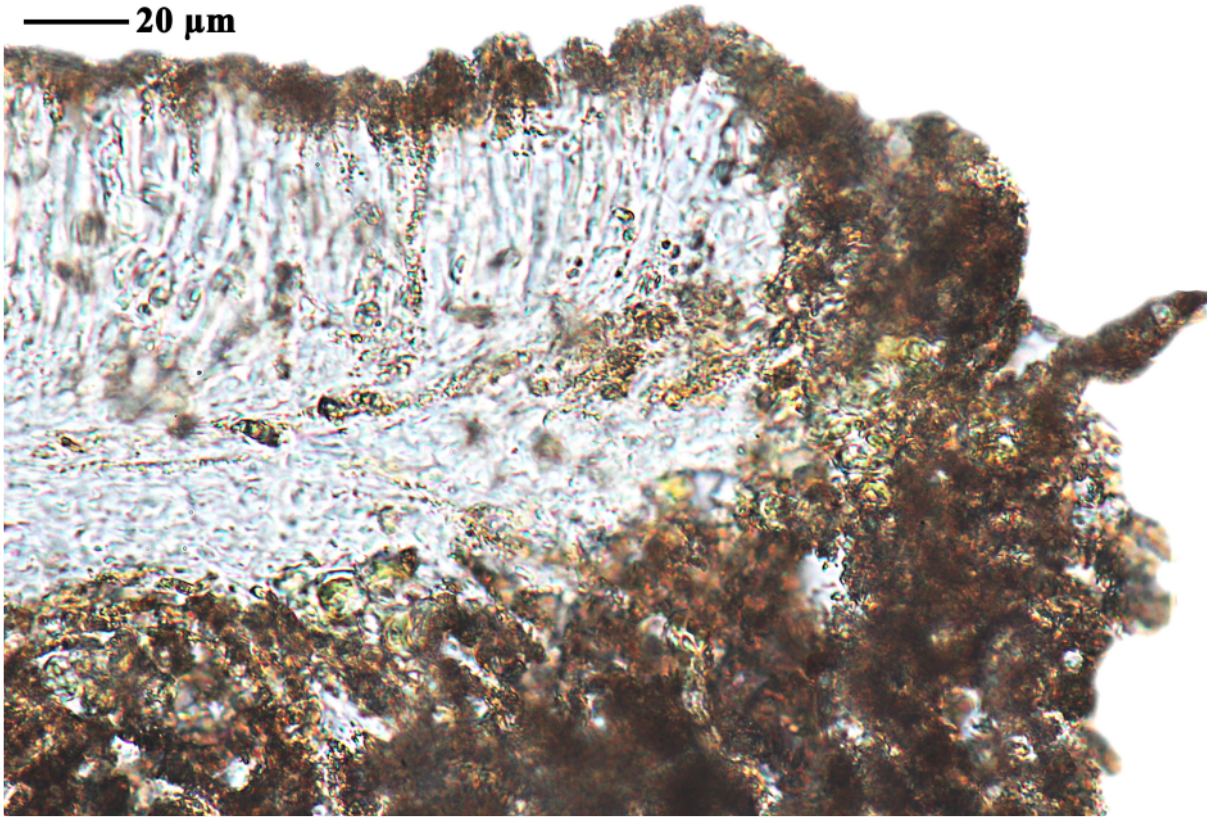
[16143], Australia, New South Wales, north of Batemans Bay, Cullendulla Creek Nature Reserve, on *Avicennia marina*, 35.701° S, 150,199° E, 3 m. Leg. F. Schumm & E. Stocker-Wörgötter, 10.11.2009. Chemistry: atranorin, protocetraric acid by HPTLC, anal. F. Schumm.

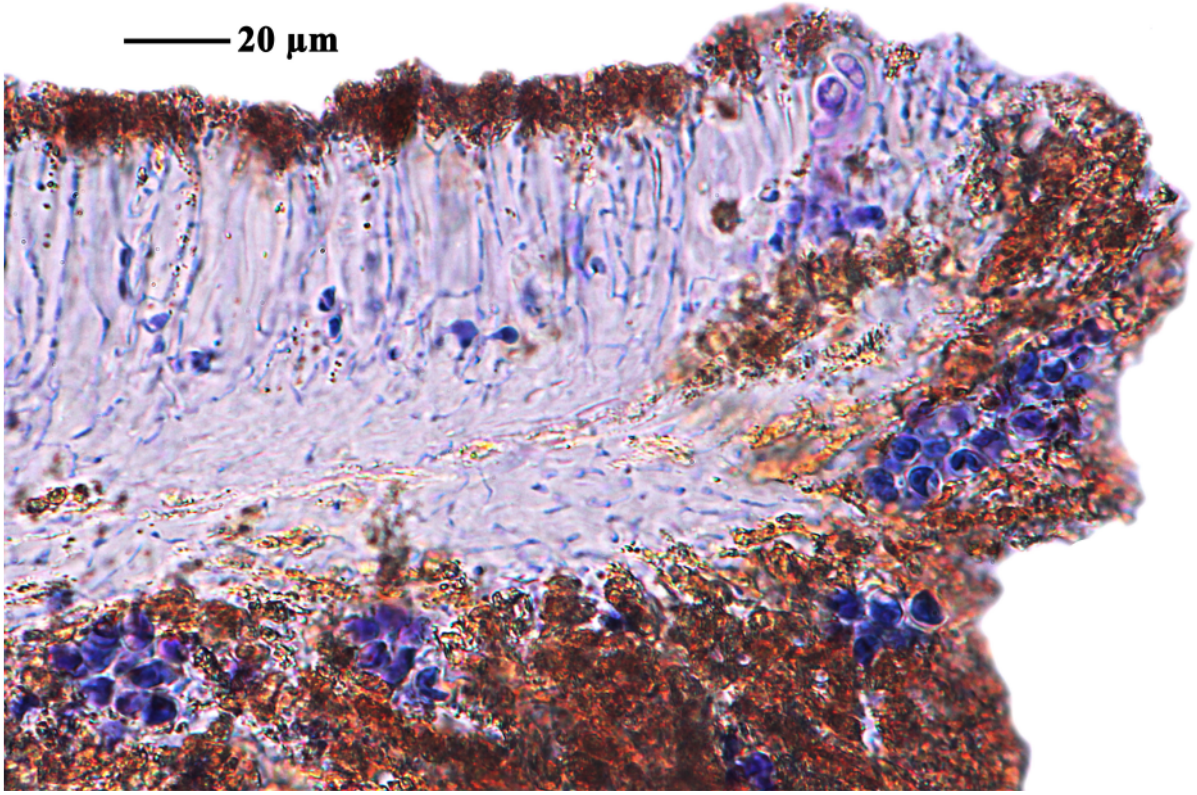




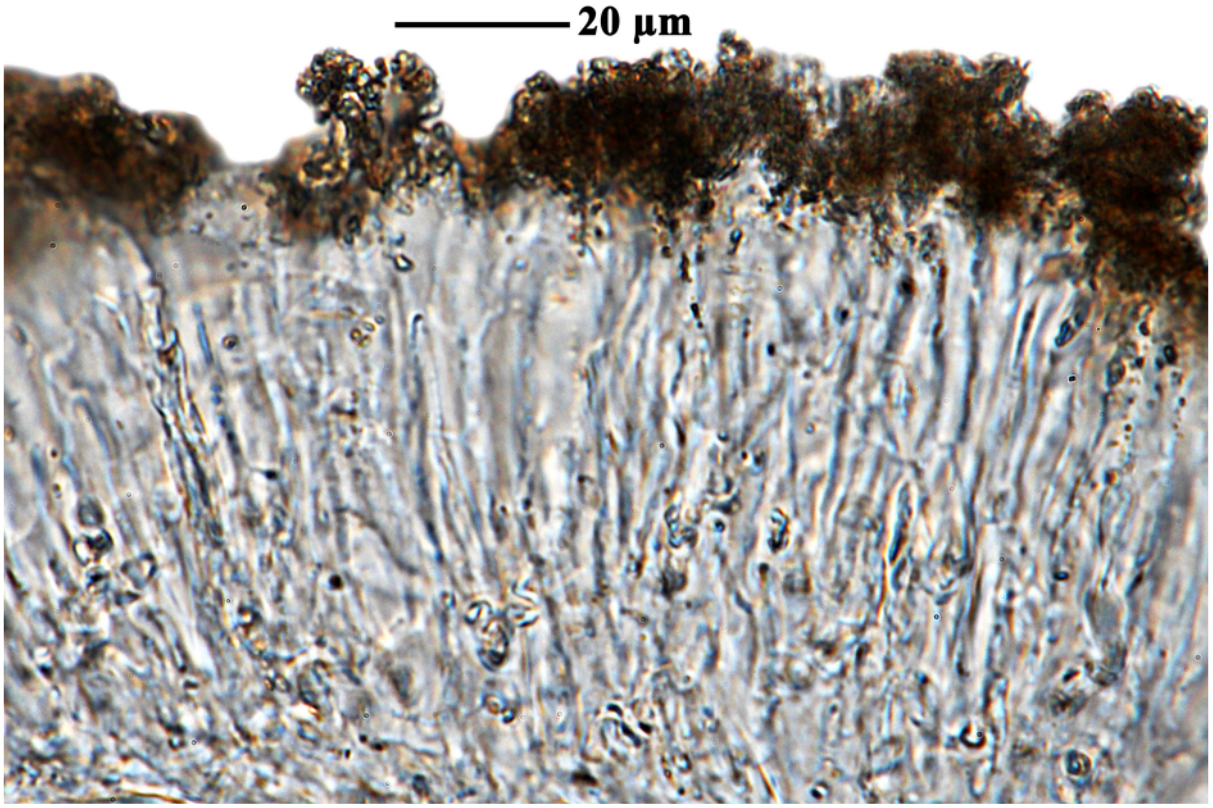


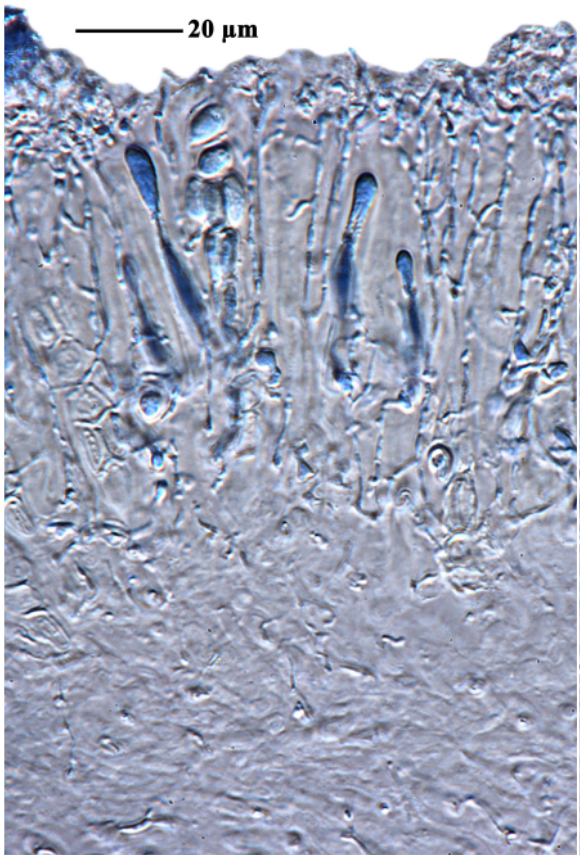
Lecanora caesiorubella

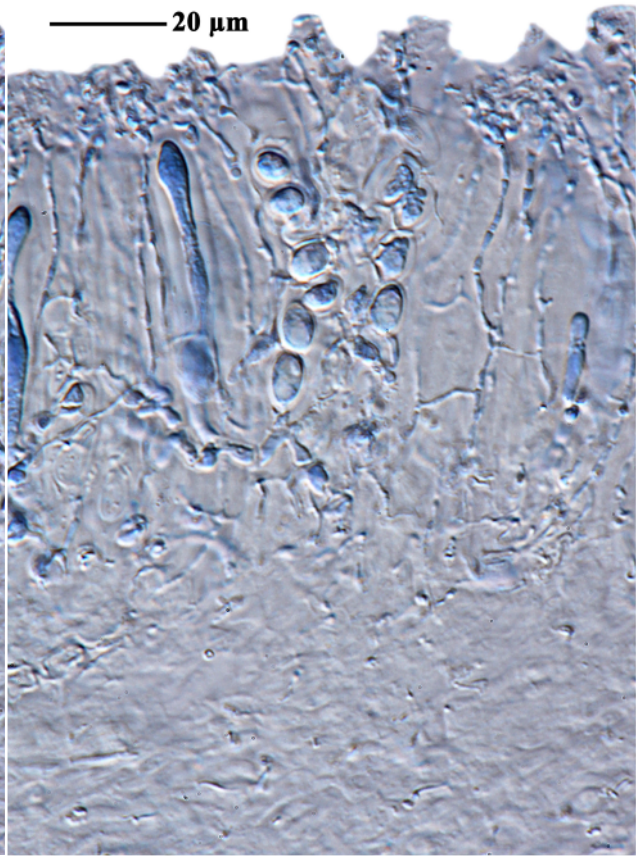




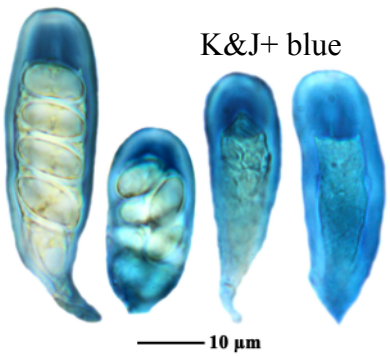
Lecanora caesiorubella



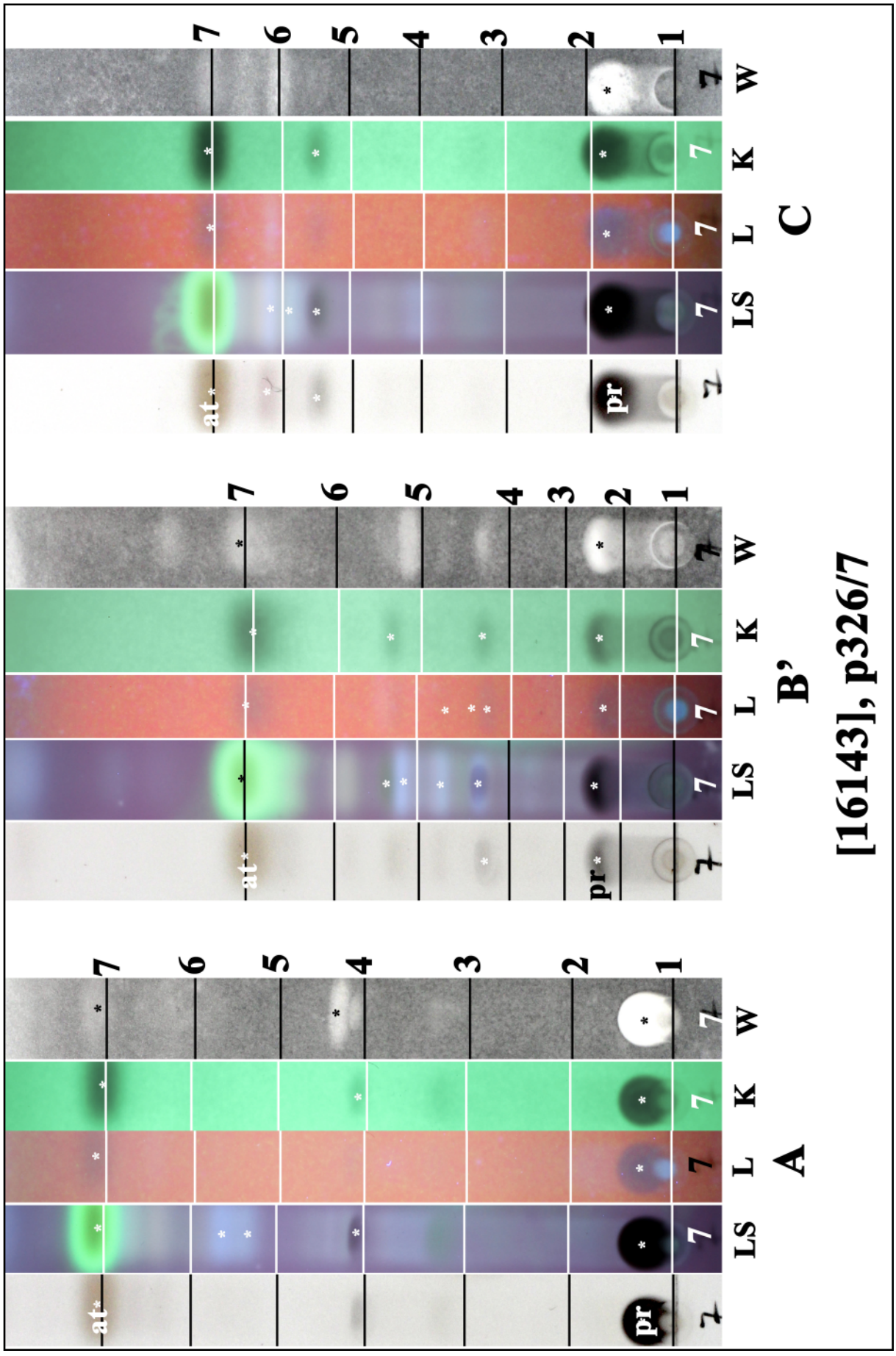








Lecanora caesiorubella



at: atranorin, pr: protocetraric acid

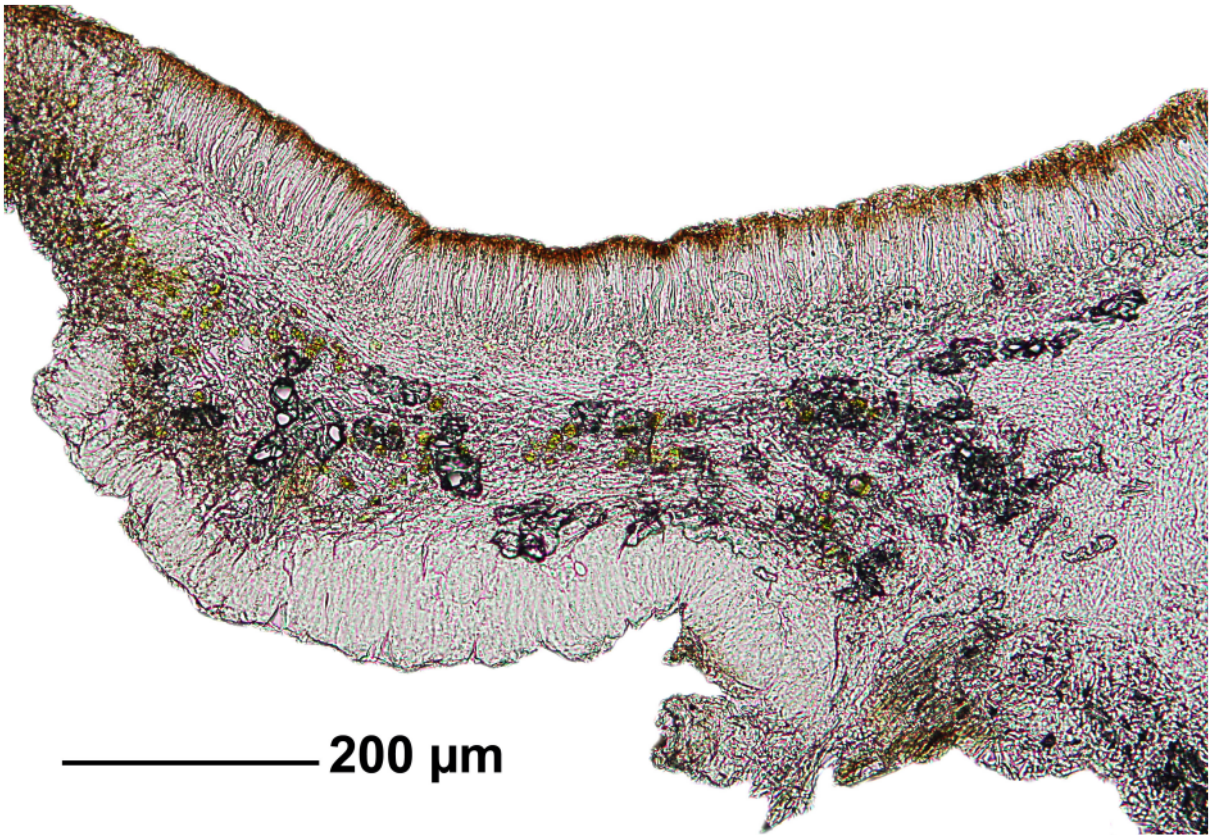
Lecanora caesiorubella

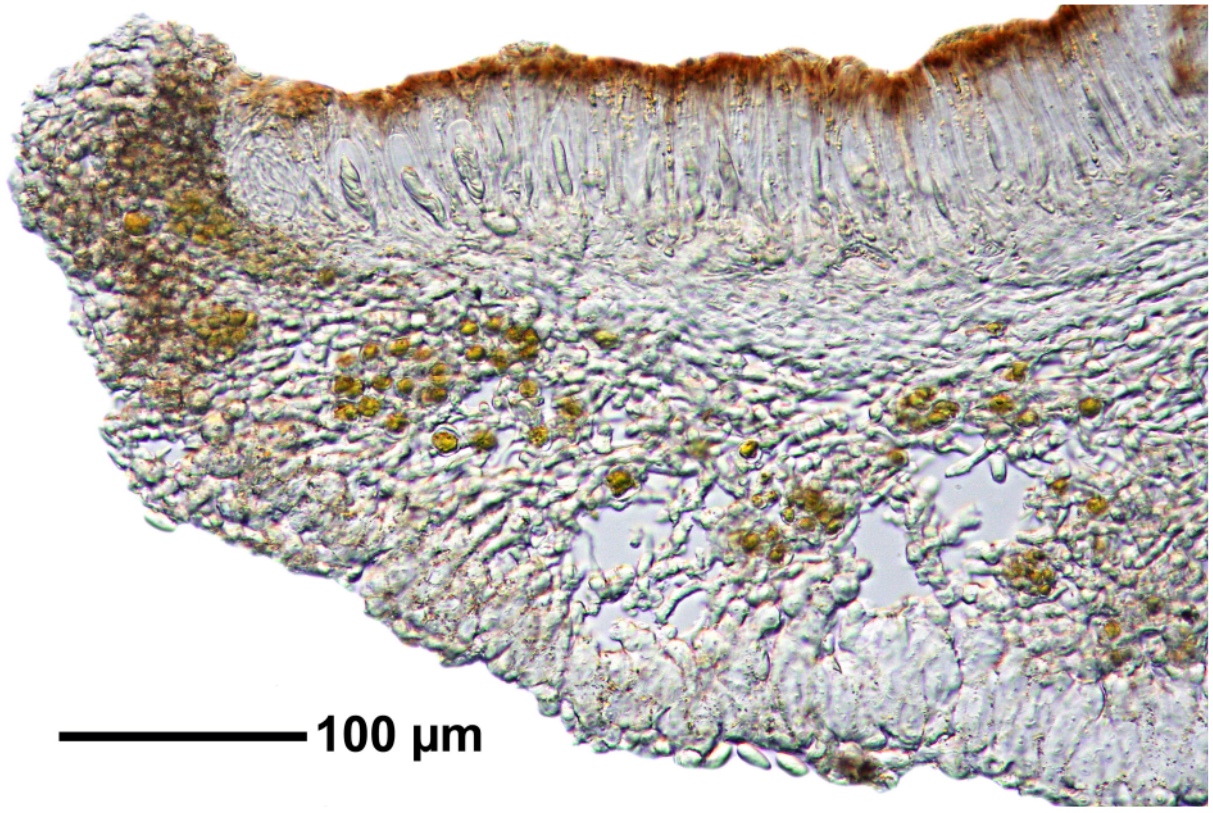
Lecanora epibryon (Ach.) Ach. subsp. ***xanthophora*** Lumbsch

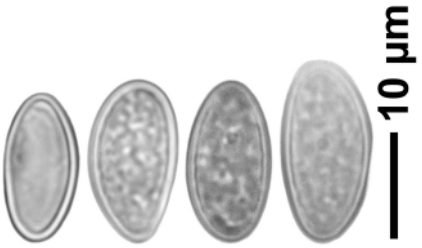
Thallus crustose, esorediate, growing on decaying grass or mosses. Apothecia lecanorine, apothecial disc usualy red-brown, rarely almost black, epruinose. Amphithecium with small crystals, epithecium lacking crystals. Thallus lacking stictic acid (with stictic acid => ***Lecanora epibryon*** (Ach.) Ach. subsp. ***broccha*** (Nyl.) Lumbsch). Thallus and apothecial margin K+ yellow to reddish, C+ orange to reddish, P+ yellowish orange.

[19053], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°53' S, 147°, 18' E, 165 m, growing on soil and debris in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40390) & H. Streimann, 17.02.1994. Chemistry: atranorin (major), 2,5,7-trichloro-3-*O*-methylnorlichexanthone (major), 5,7-dichloro-3-*O*-methylnorlichexanthone (minor), chloroatranorin (minor), isoarthothelin (minor), 5,7-dichloronorlichexanthone (trace) by HPLC, TLC, anal. J.A.Elix & J.H. Wardlaw. LICHENES AUSTRALASICI EXSICCATI NO. 282.

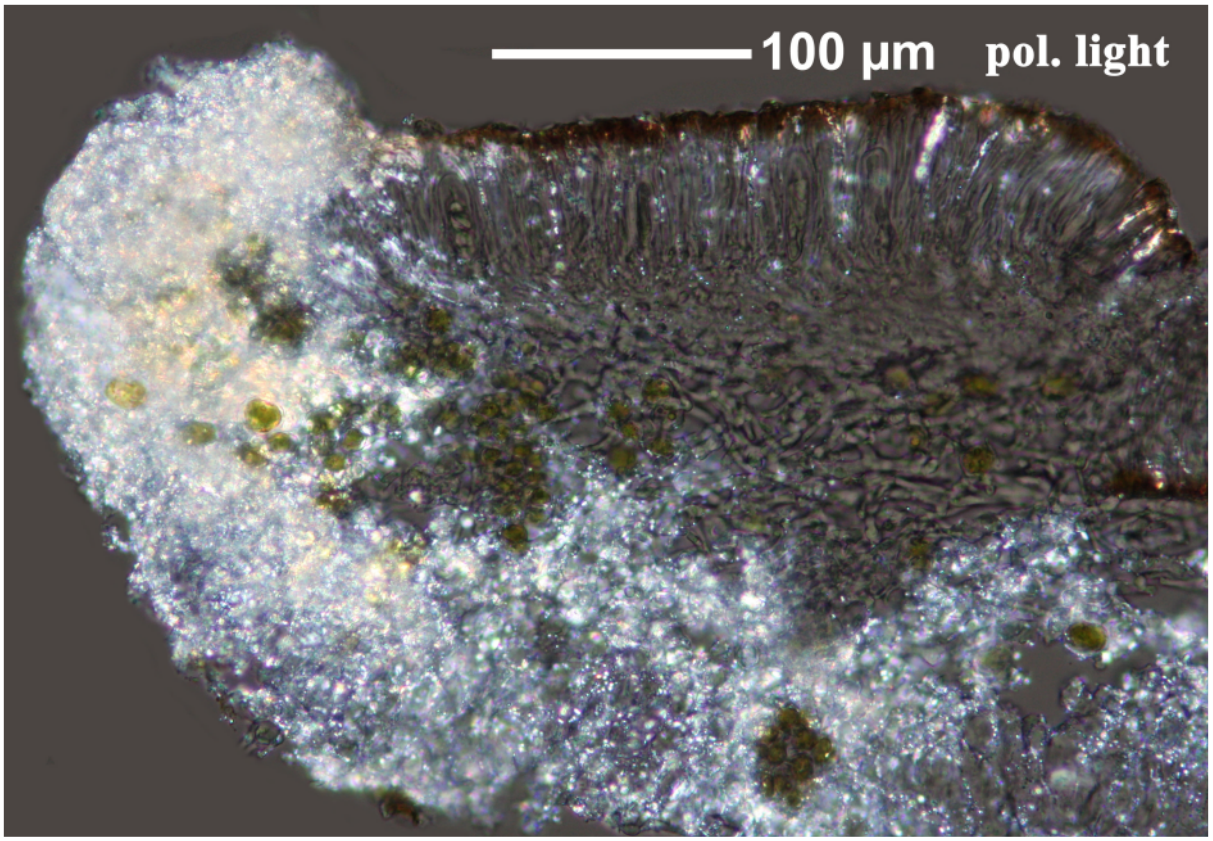


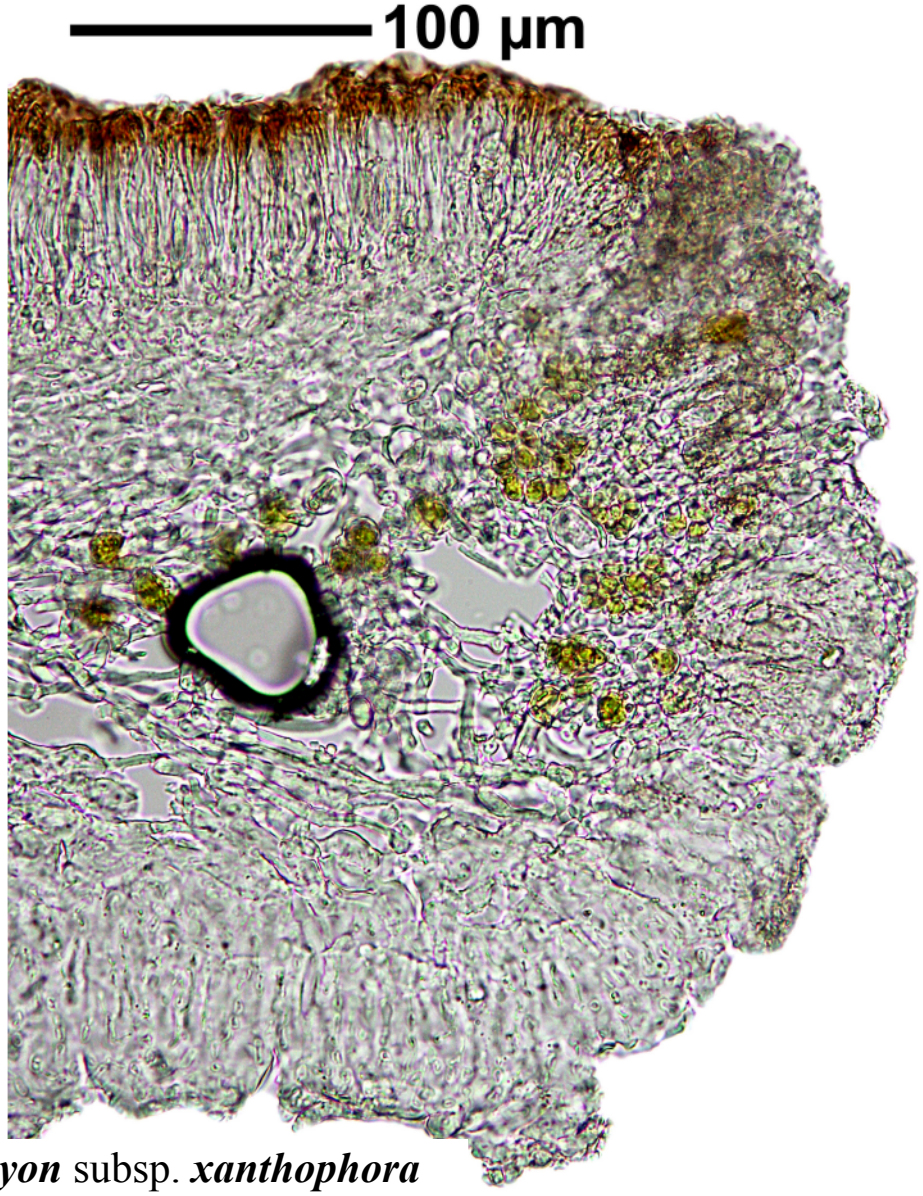




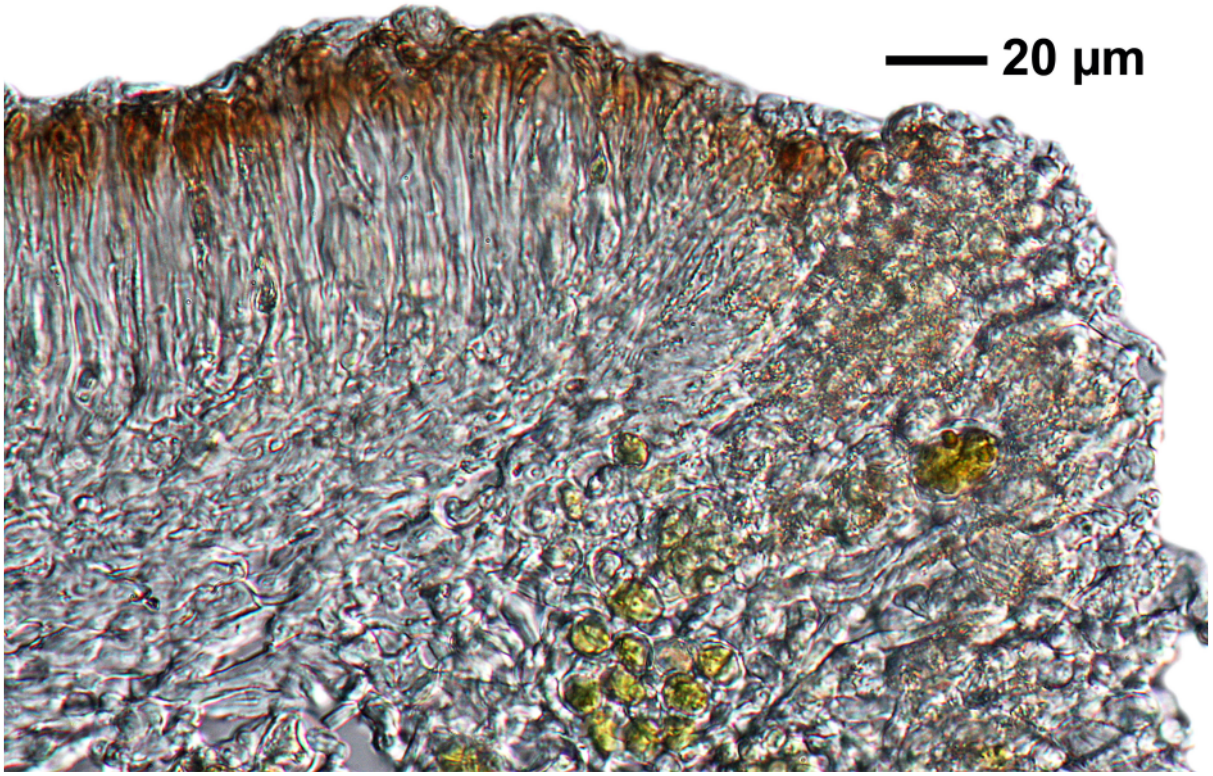


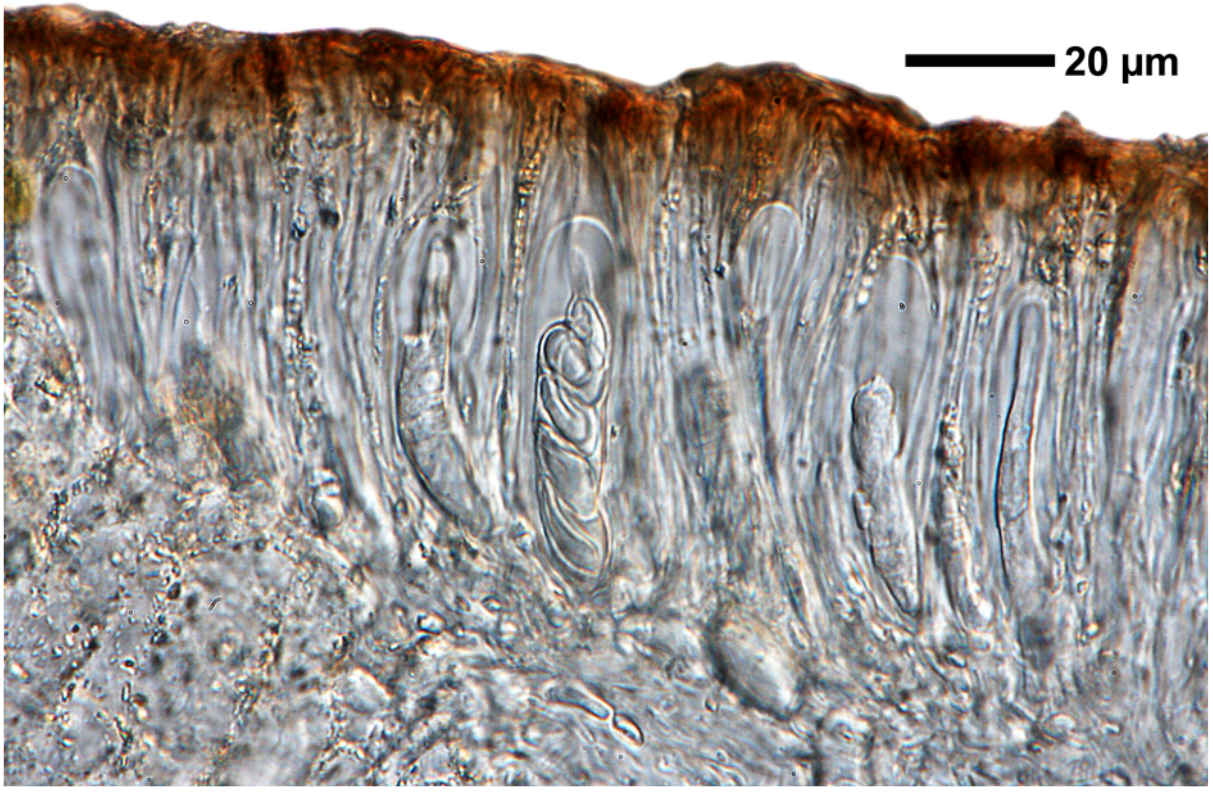
Lecanora epibryon subsp. ***xanthophora***



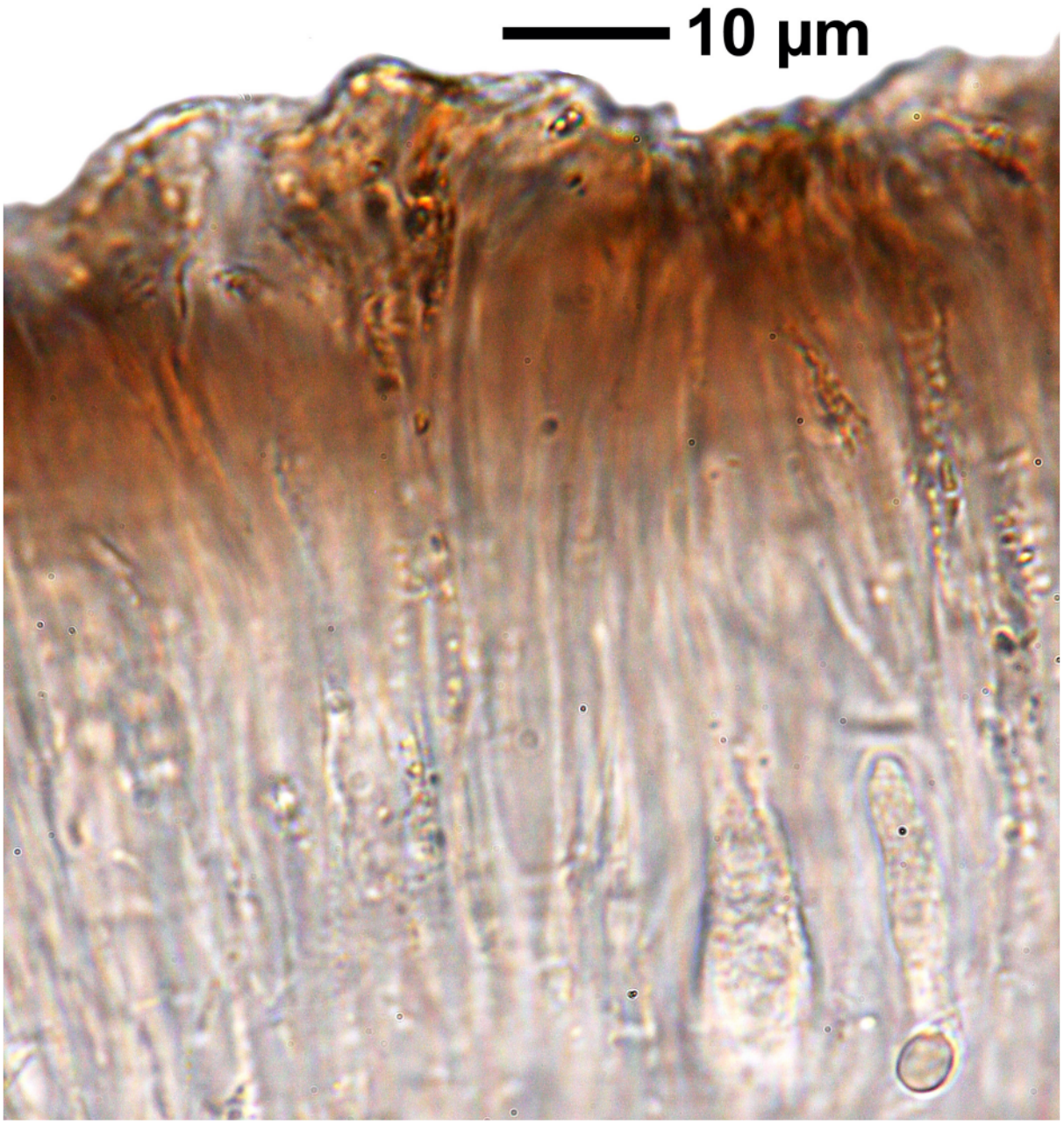


Lecanora epibryon subsp. ***xanthophora***

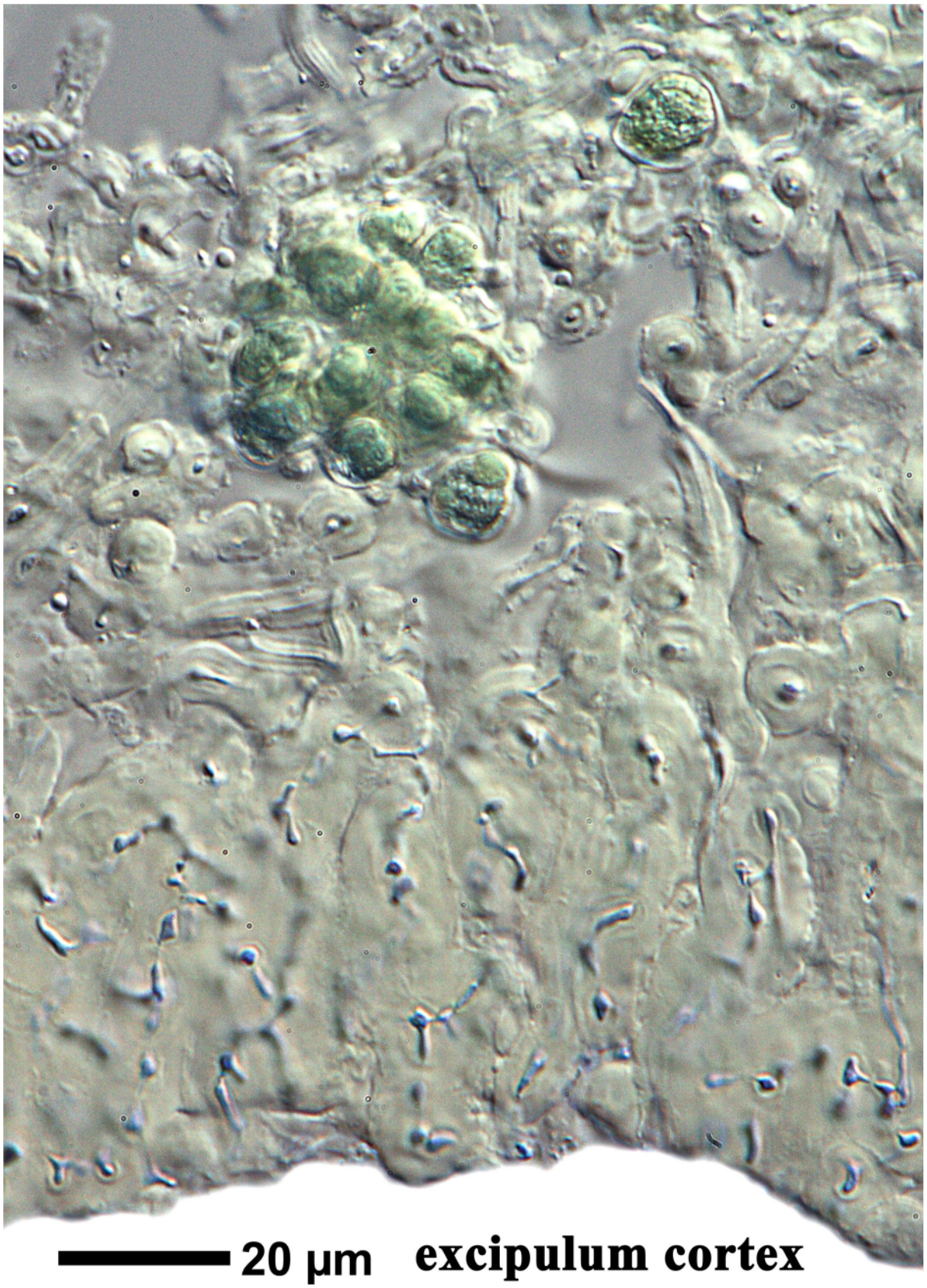




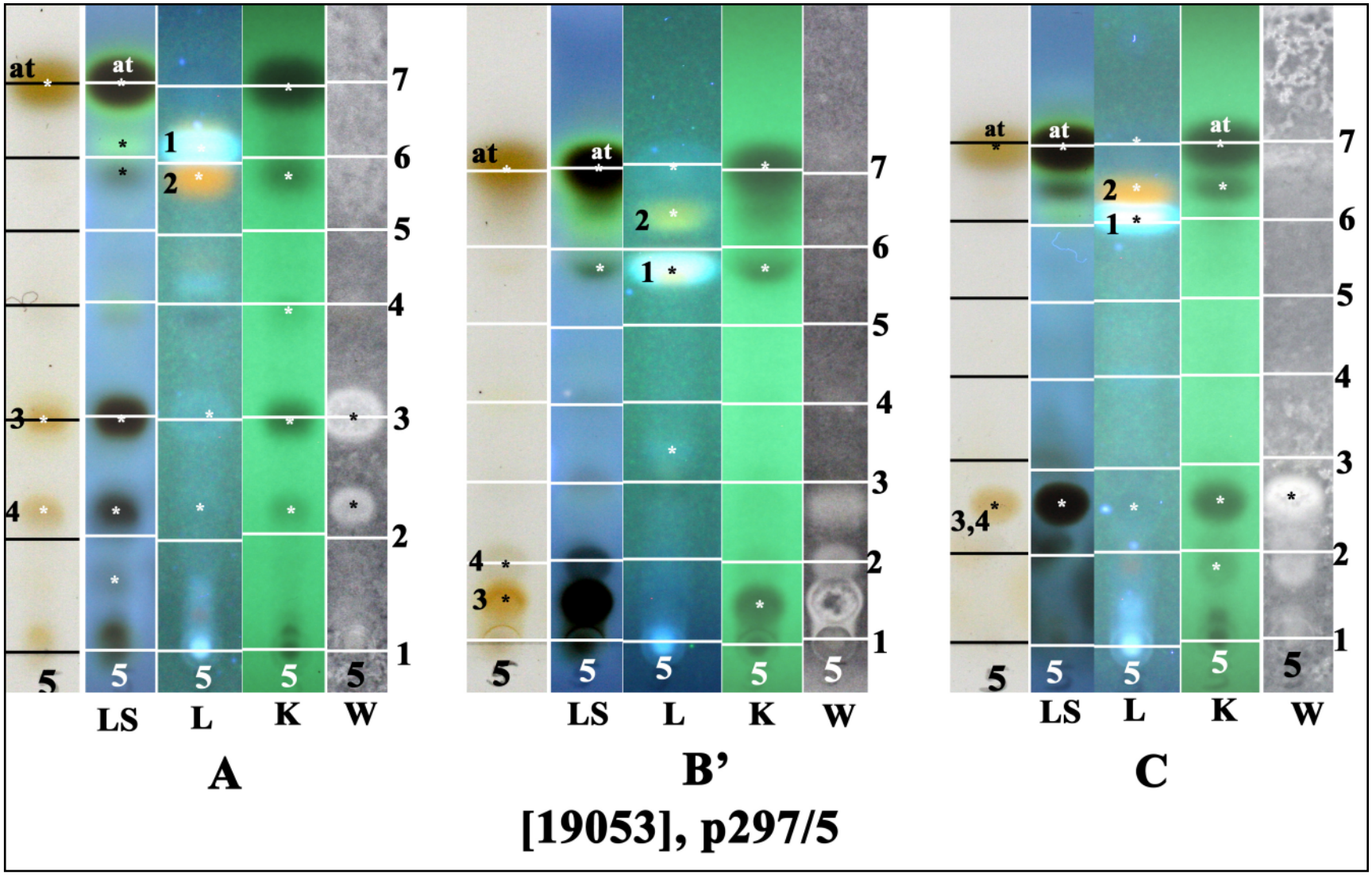
Lecanora epibryon subsp. ***xanthophora***



Lecanora epibryon subsp. ***xanthophora***



Lecanora epibryon subsp. ***xanthophora***



1: 2,5,7-trichloro-3-*O*-methylnorlichexanthone (blue inL), 2: 5,7-dichloro-3-*O*-methylnorlichexanthone (orange in L), 3: isoarthothelin, 4: 5,7-dichloronorlichexanthone

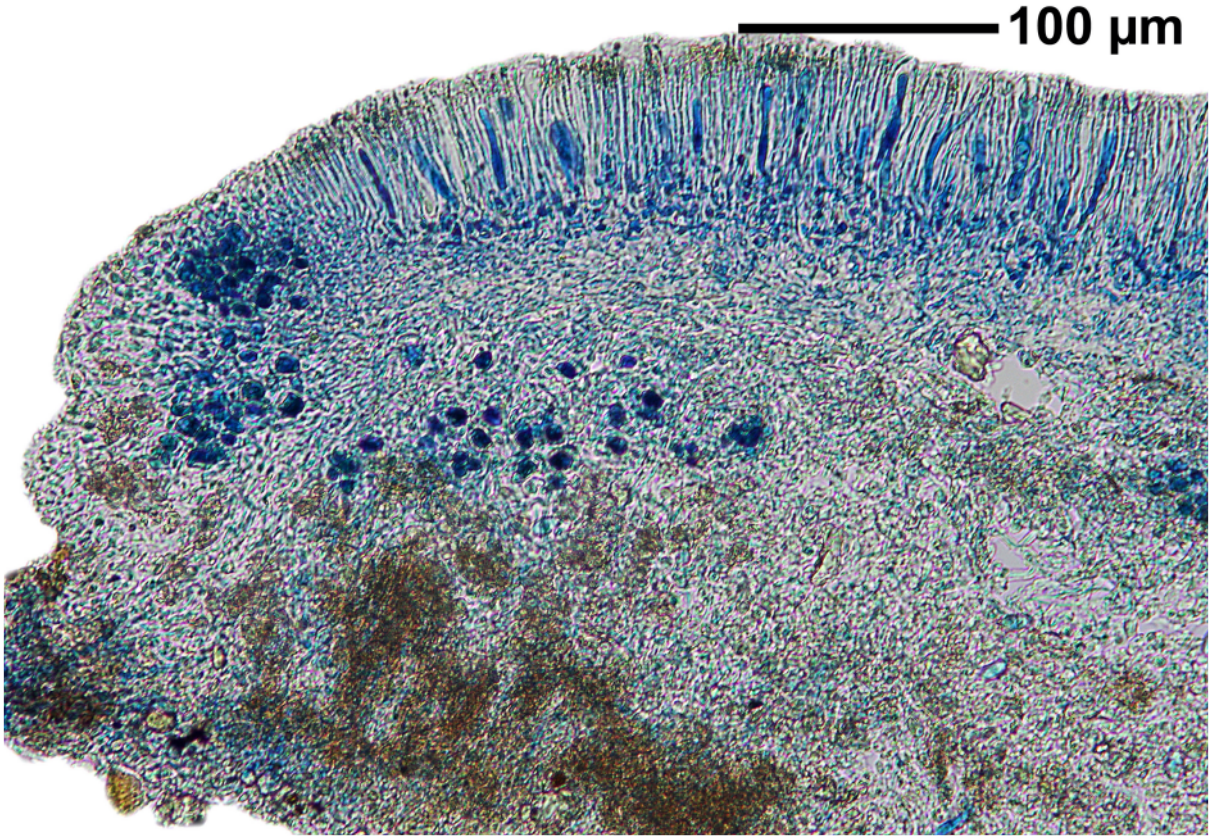
Lecanora farinacea Fée

Thallus crustose, esorediate, sometimes farinaceous, growing on siliceous rock. Prothallus whitish or not visible. Apothecia adnate to sessile, 0.2-2.5 mm diam., disc flesh-coloured to pinkish, densely whitish grey-pruinose. Ampithecium with small crystals slowly dissolving in KOH. Ascospores 12-15 x 7-11 µm. Chemistry: Thallus and apothecial margin K+ yellow or K+ yellow then red, P+ yellow or P+ red; atranorin (major), chloroatranorin (minor), ± connorstictic acid (minor), ± norstictic acid (major), ± protocetraric acid (major), ± salazinic acid (minor).

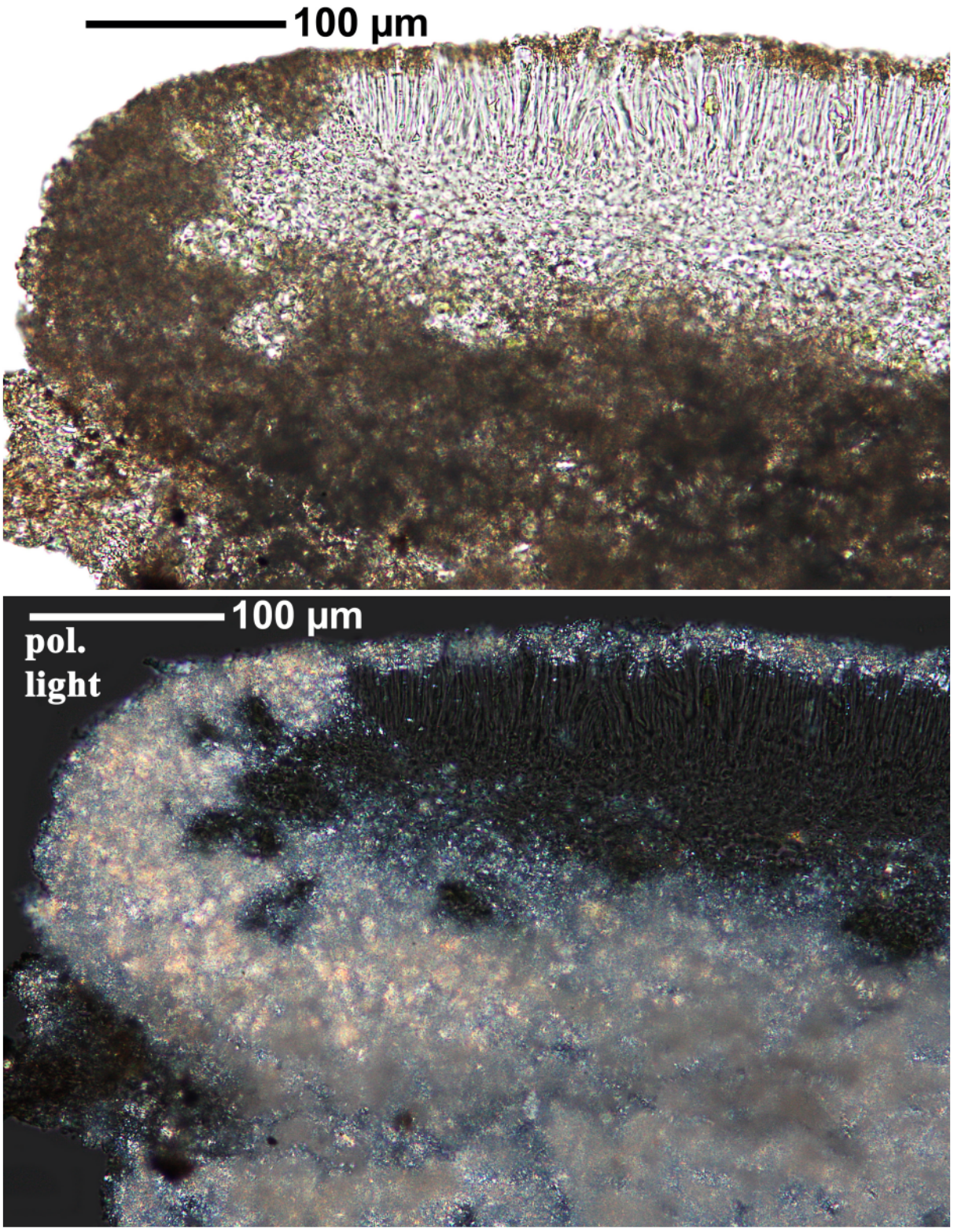
[19054], Australia, South Australia, Southern Flinders Ranges, Mount Remarkable National Park, Gibraltar Rock, 32°51' S, 138° 09' E, 590 m, growing on siliceous rocks in grazing land with large *Eucalyptus*, *Bursaria*, *Solanum*, *Dodonaea* and grasses on south facing slope. Leg. E. & H.T. Lumbsch (10731a) & J.A. Curnow, 4.09.1994. Chemistry: atranorin (major), norstictic acid (major), connorstictic acid (minor), unknown (trace) by HPLC, TLC anal. J.A. Elix & J.H. Wardlaw. LICHENES AUSTRALASICI EXSICCATI NO. 283.



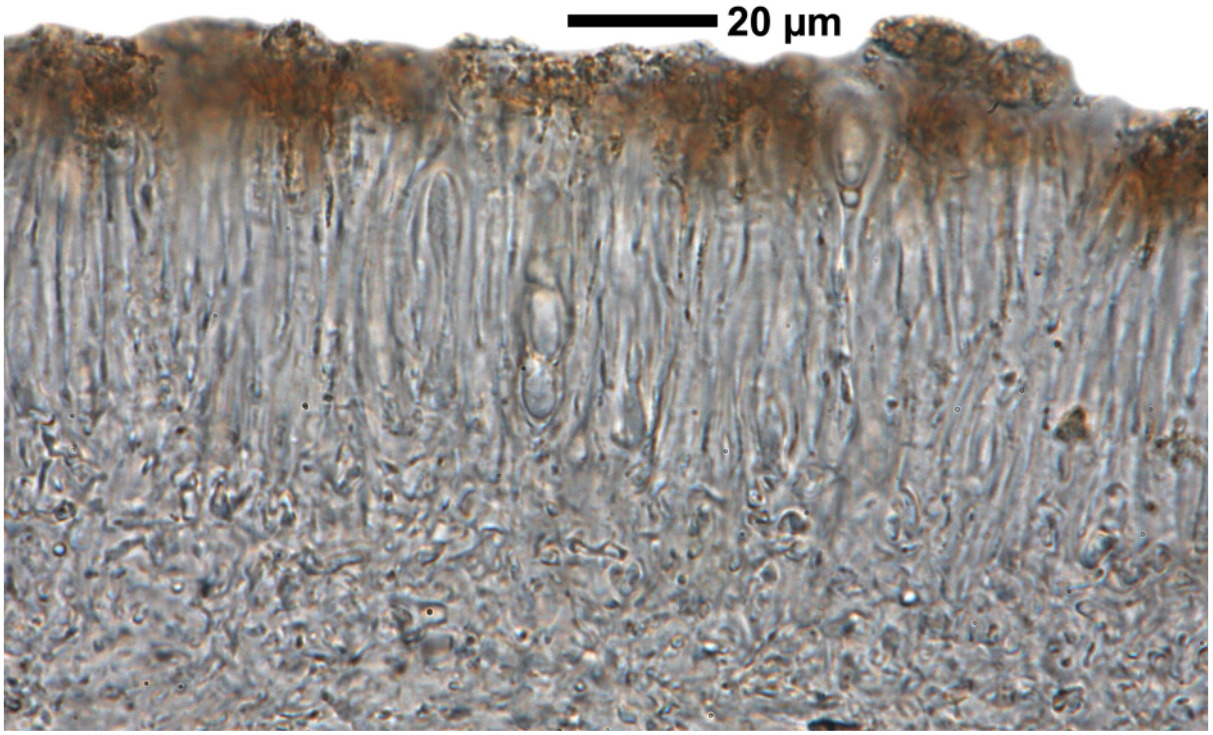


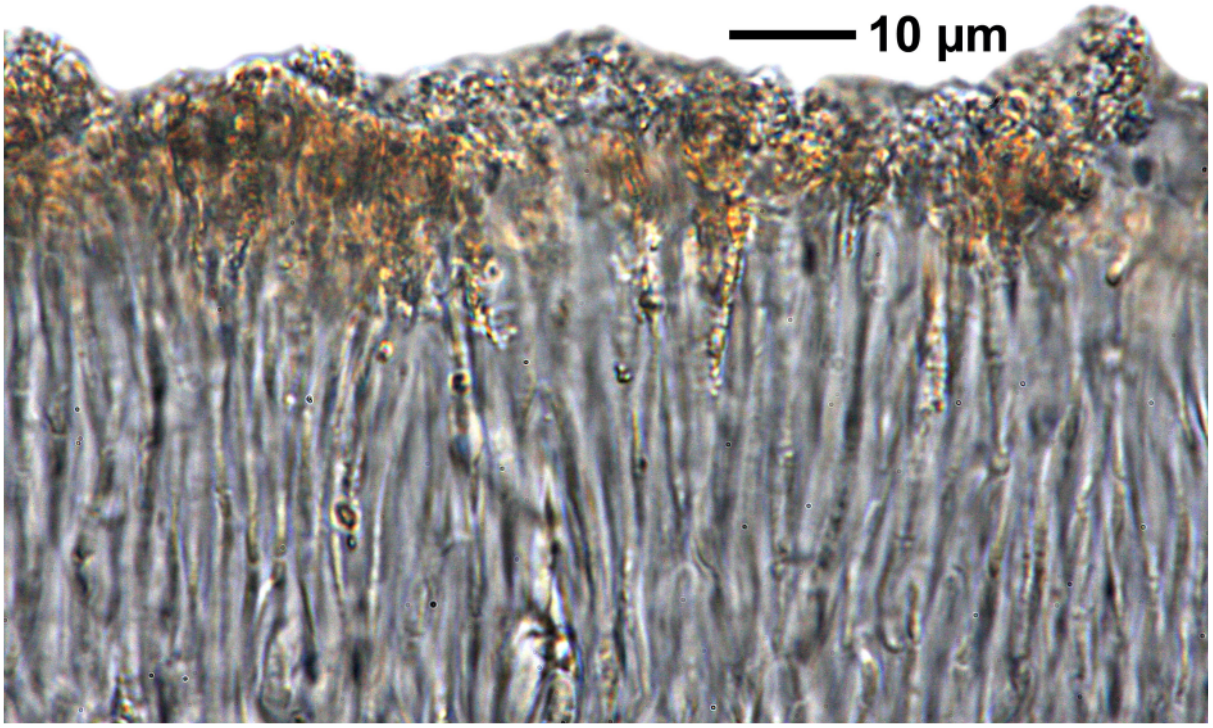


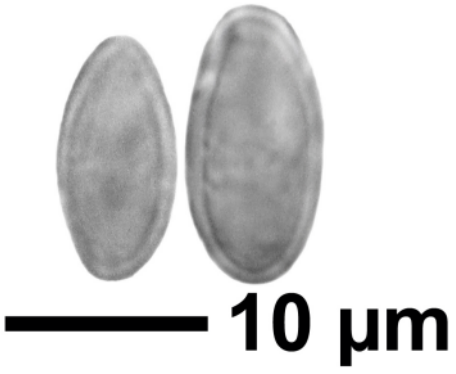
Lecanora farinacea



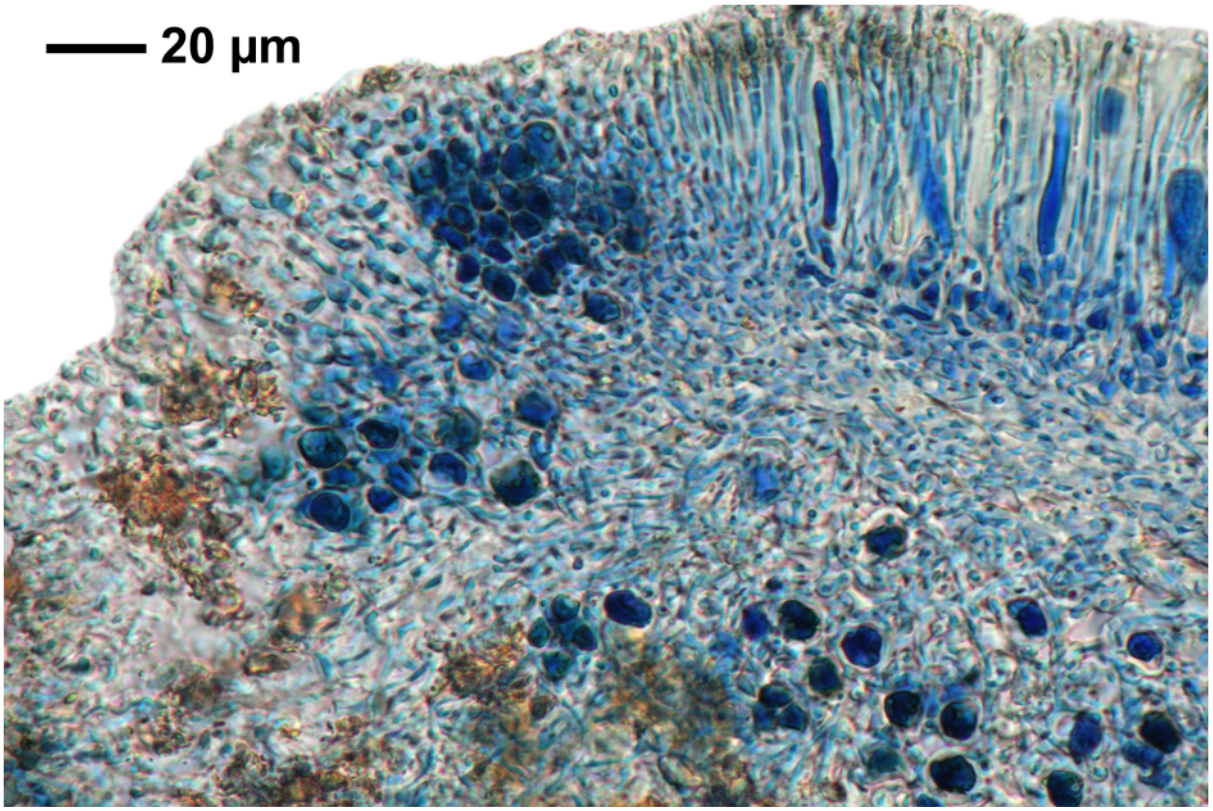
Lecanora farinacea

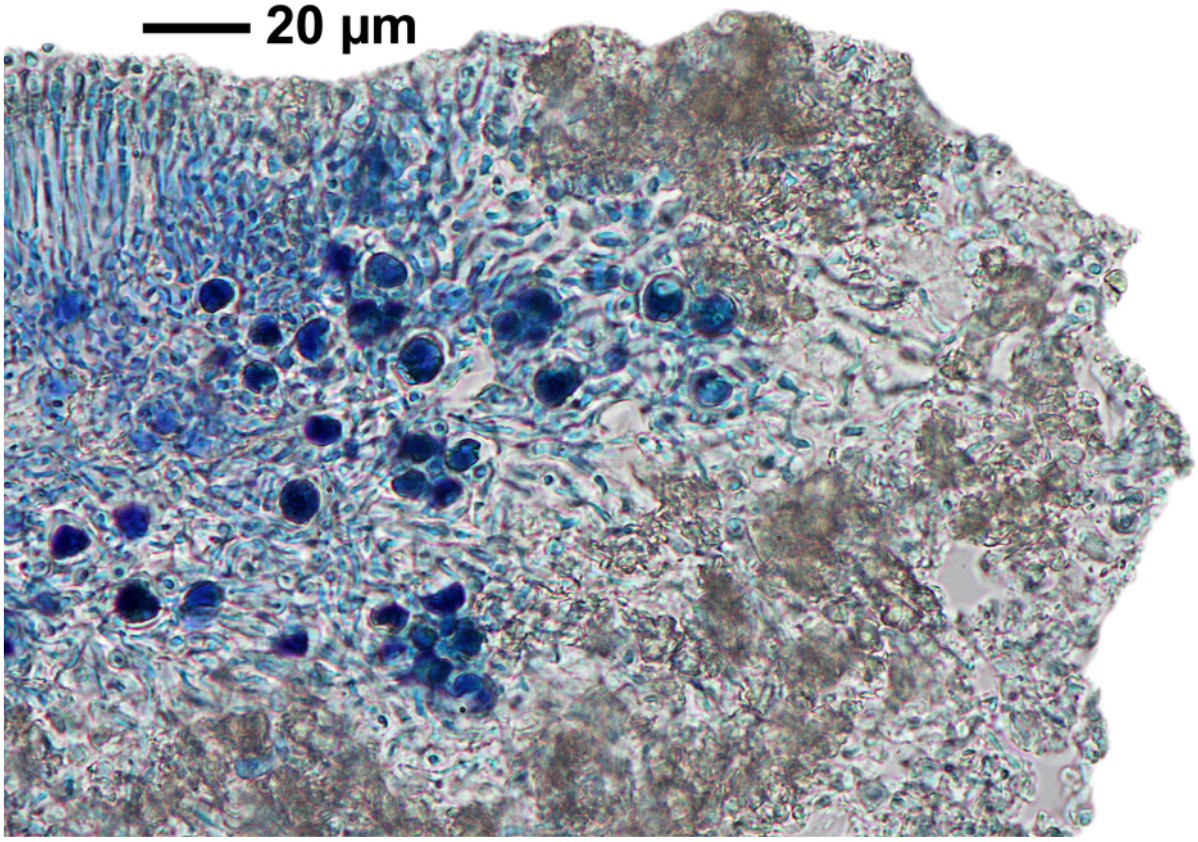




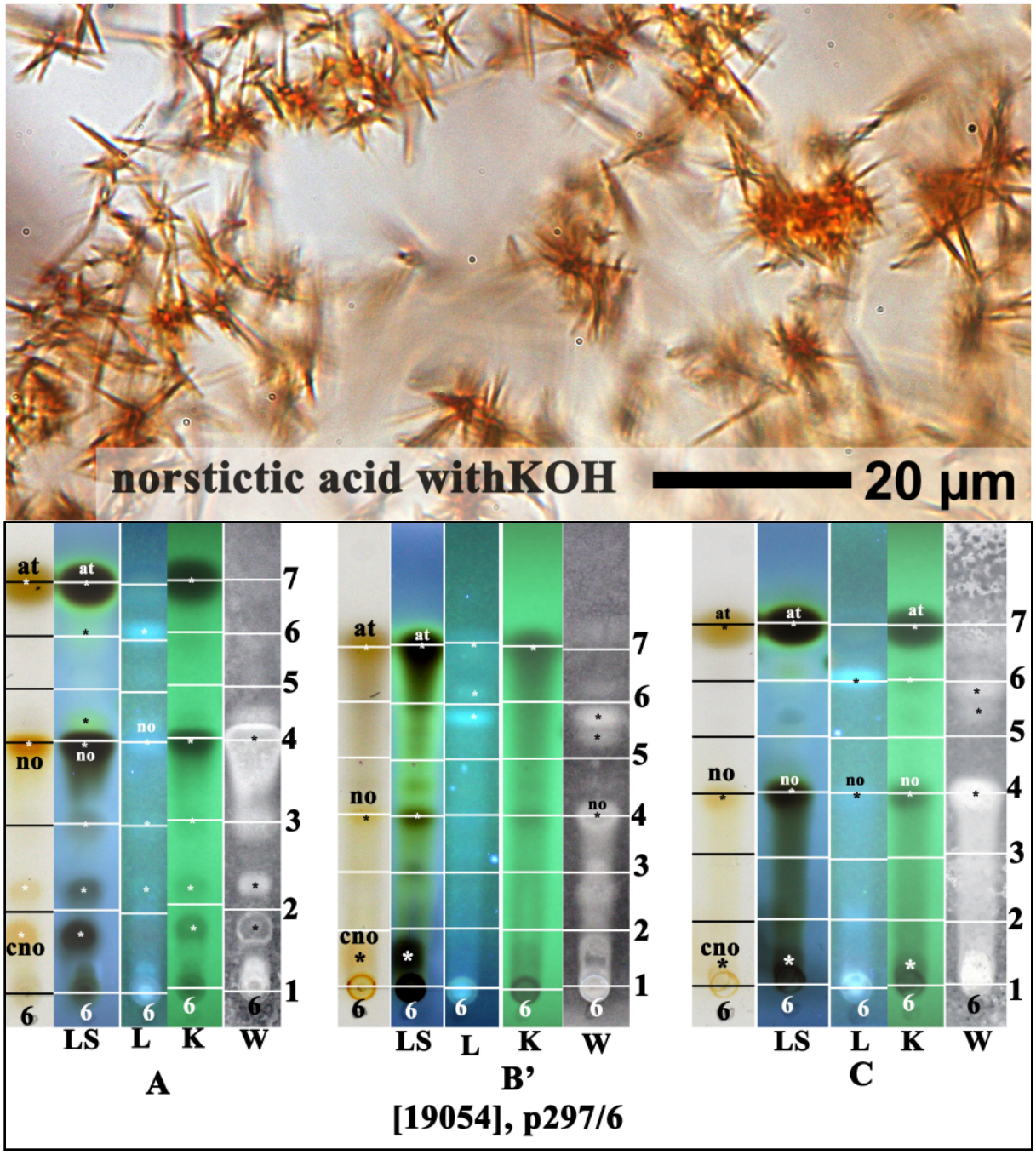


Lecanora farinacea





Lecanora farinacea



at: atranorin, no: norstictic acid, cno: connorstictic acid

Lecanora farinacea

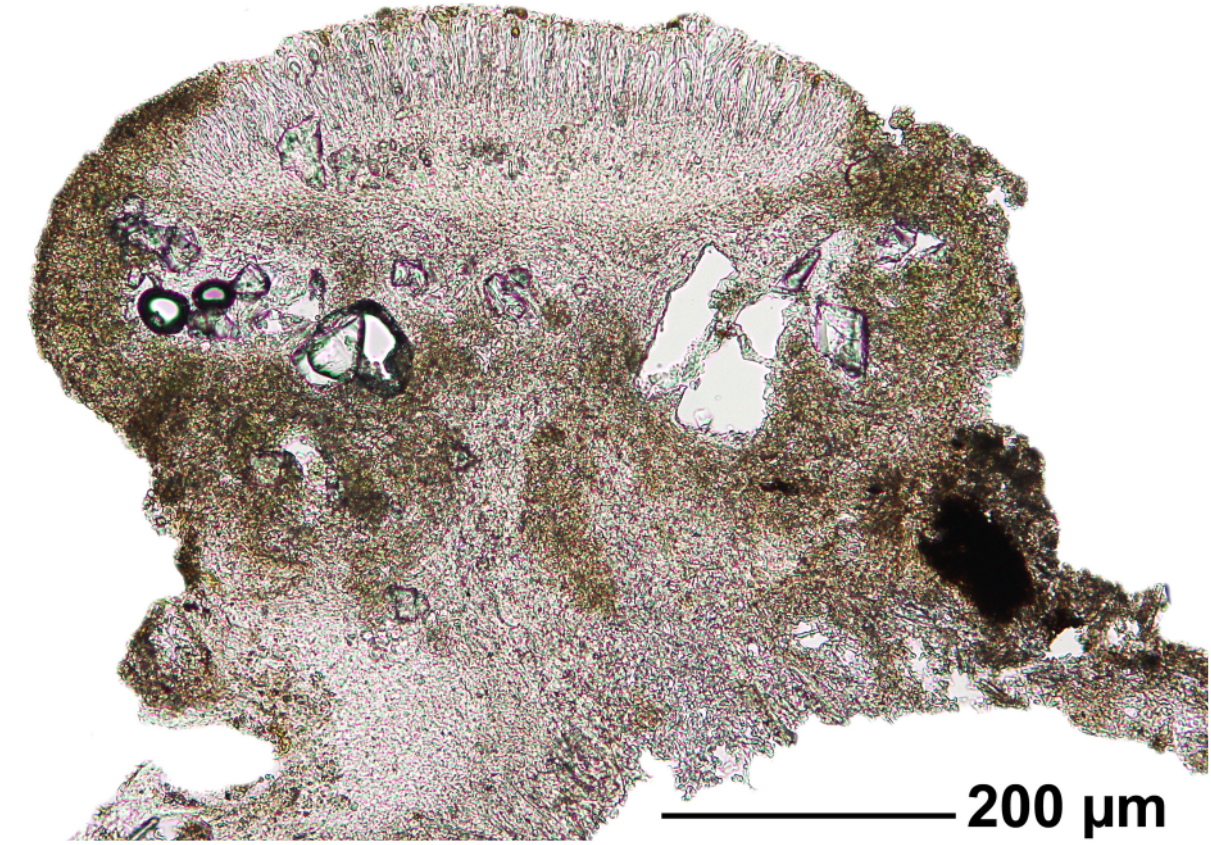
Lecanora helva Stizenb.

Thallus crustose, yellowish white to greenish grey, usually esorediate but sometimes with granular soredia in roundish patches, containing 2'-O-methylperlatolic acid, growing on bark. Apothecia lecanorine, immersed when immature, becoming sessile, 0.3-0.8 mm wide, with a well developed thalline margin. Apothecial disc pale brown to orange or pale greenish brown, epruinose or only slightly greyish-pruinose. Amphithecium containing large crystals insoluble in KOH. Epihymenium yellowish brown, pigment soluble in KOH, with crystals. Hypothecium hyaline. Ascospores 8.5-14.0 x 4.5-7.0 µm. Chemistry: thallus and apothecial margin K+ yellow, C-, P+ pale orange; atranorin (major), 2'-*O*-methylperlatolic acid (major), arthothelin (minor), chloroatranorin (minor), 2'-*O*-methylisohyperlatolic acid (trace), 2'-*O*-methylsuperlatolic acid (trace).

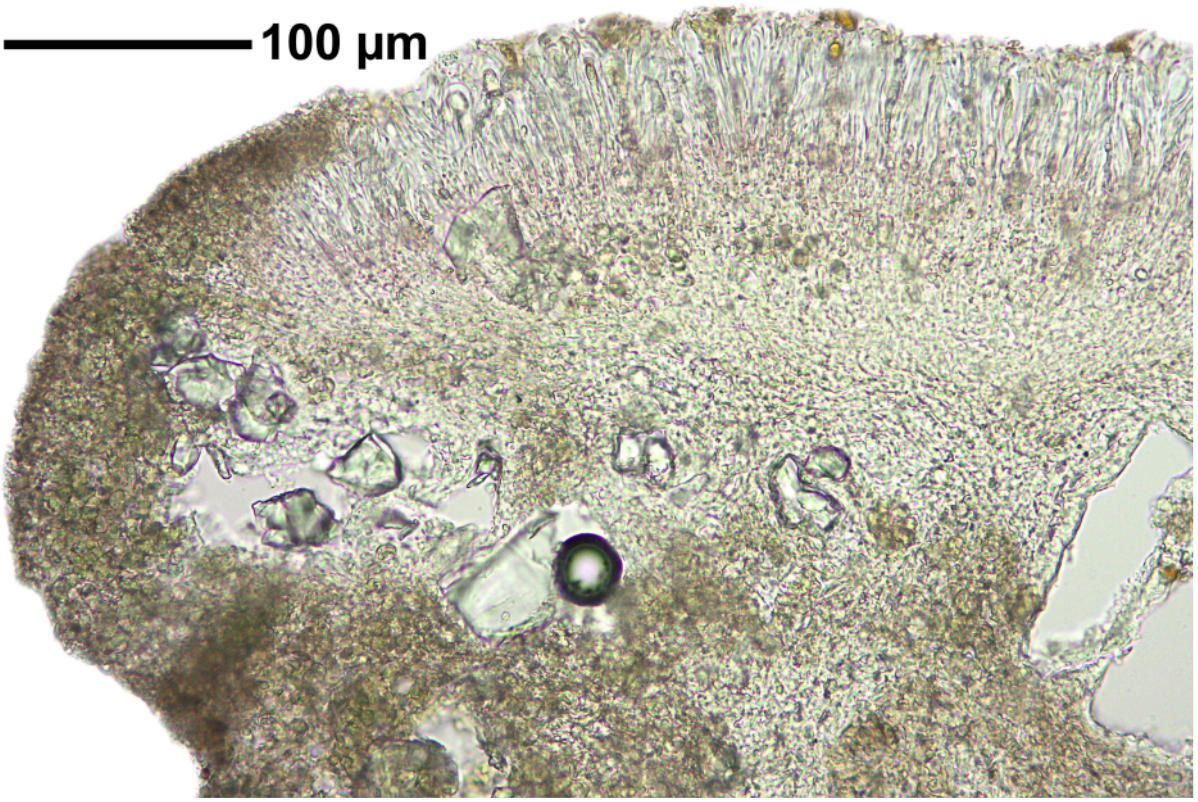
[19055], Norfolk Island, Flat Rock Bay Picnic Area, 29°01'30" S, 167°55' E, 40 m, growing on old fence posts in open *Auraucaria* grassland. Leg. J.A. Elix (18707) & H. Streimann, 07.12.1984. Chemistry: atranorin (minor), chloroatranorin (minor), 2'-*O*-methylperlatolic acid (major) by HPLC, TLC, anal. J.A. Elix & C.E. Barclay. LICHENES AUSTRALASICI EXSICCATI NO. 258.

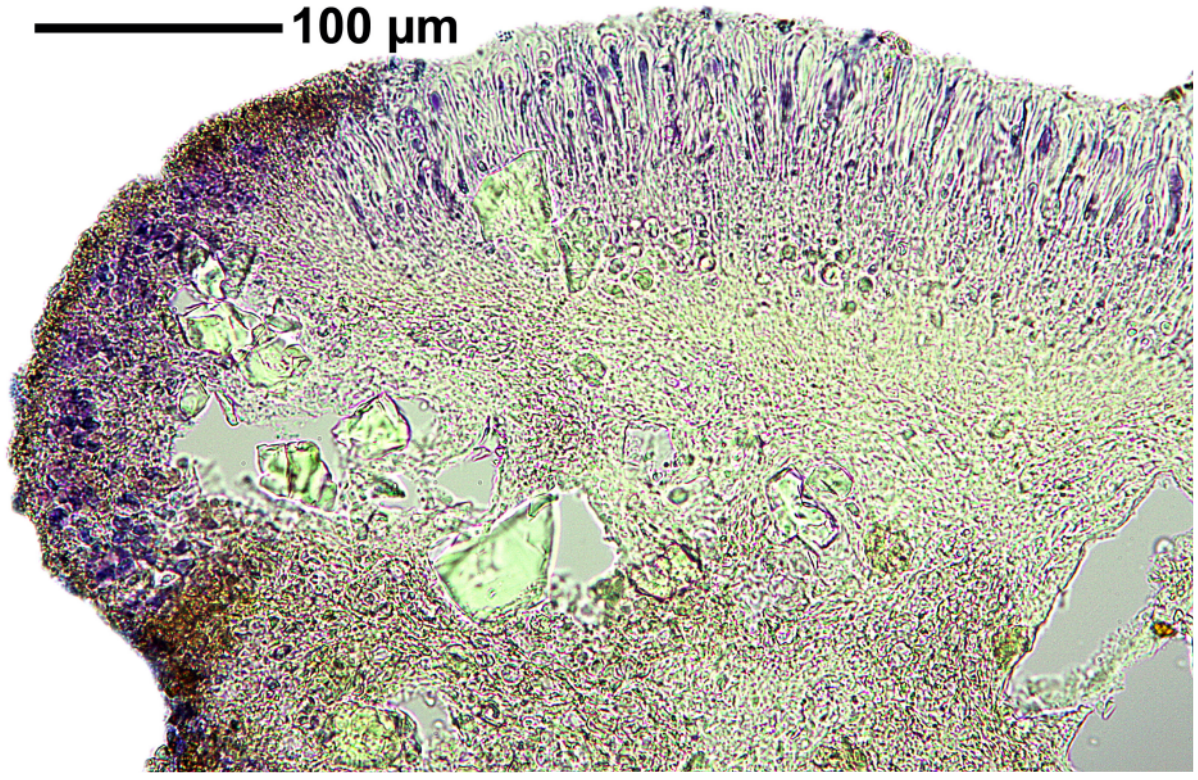


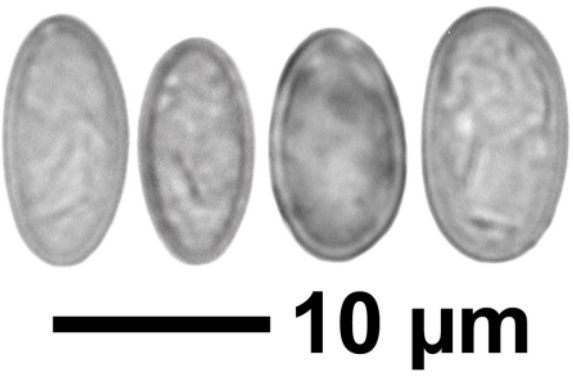




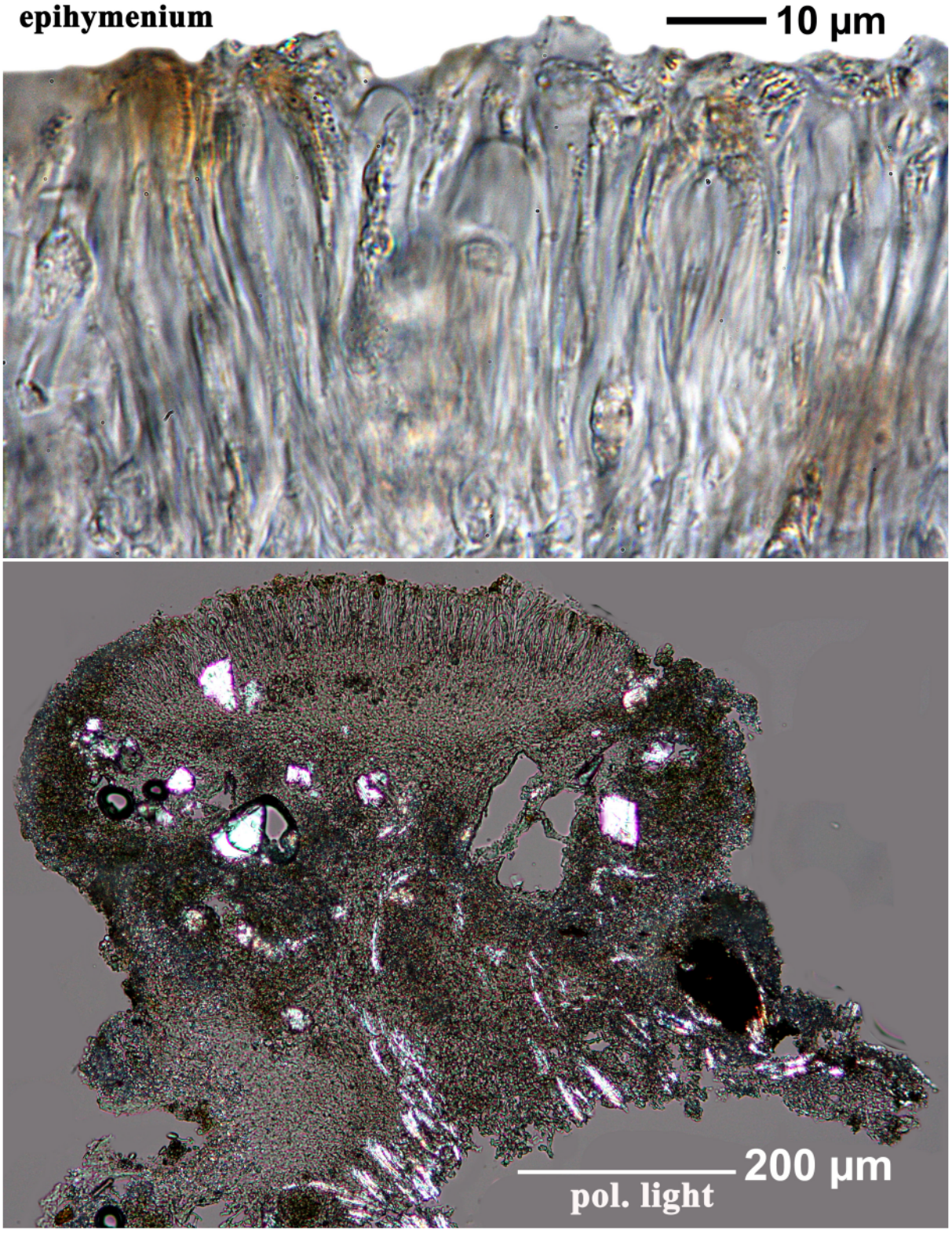
Lecanora helva



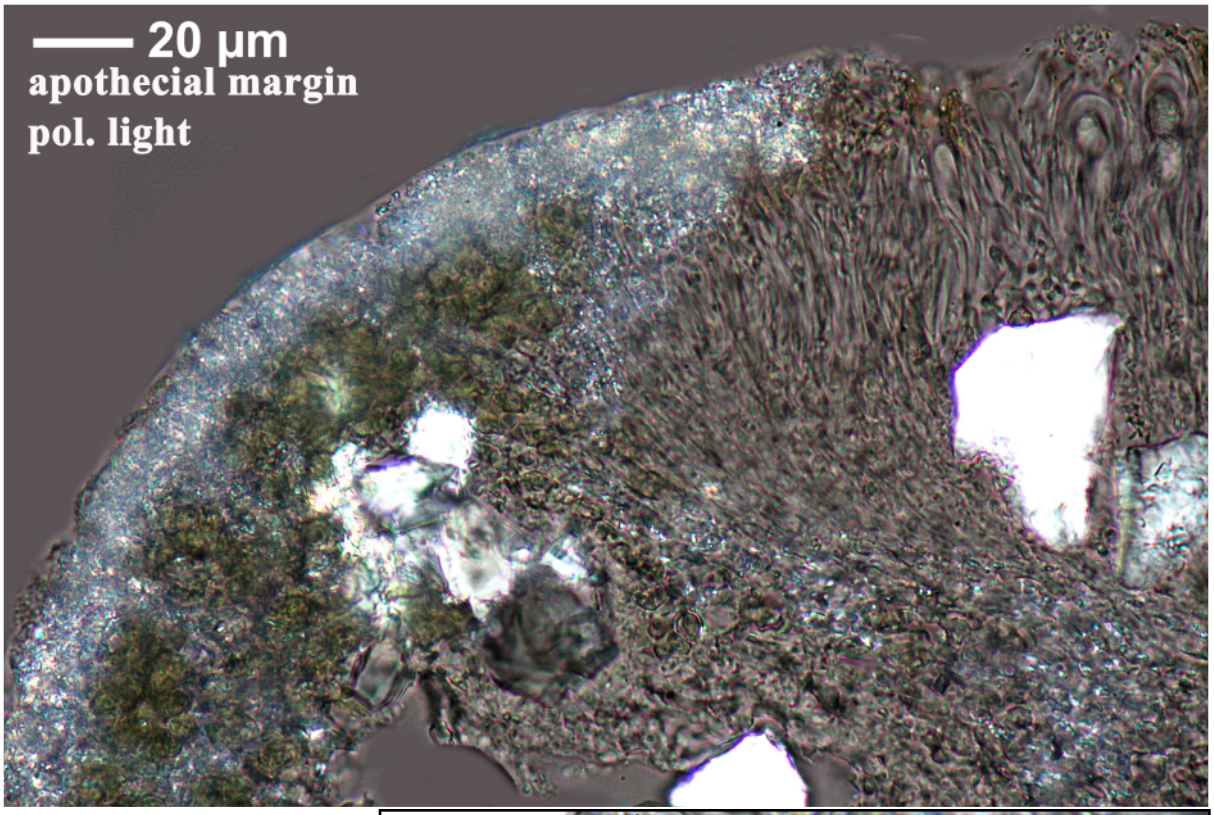


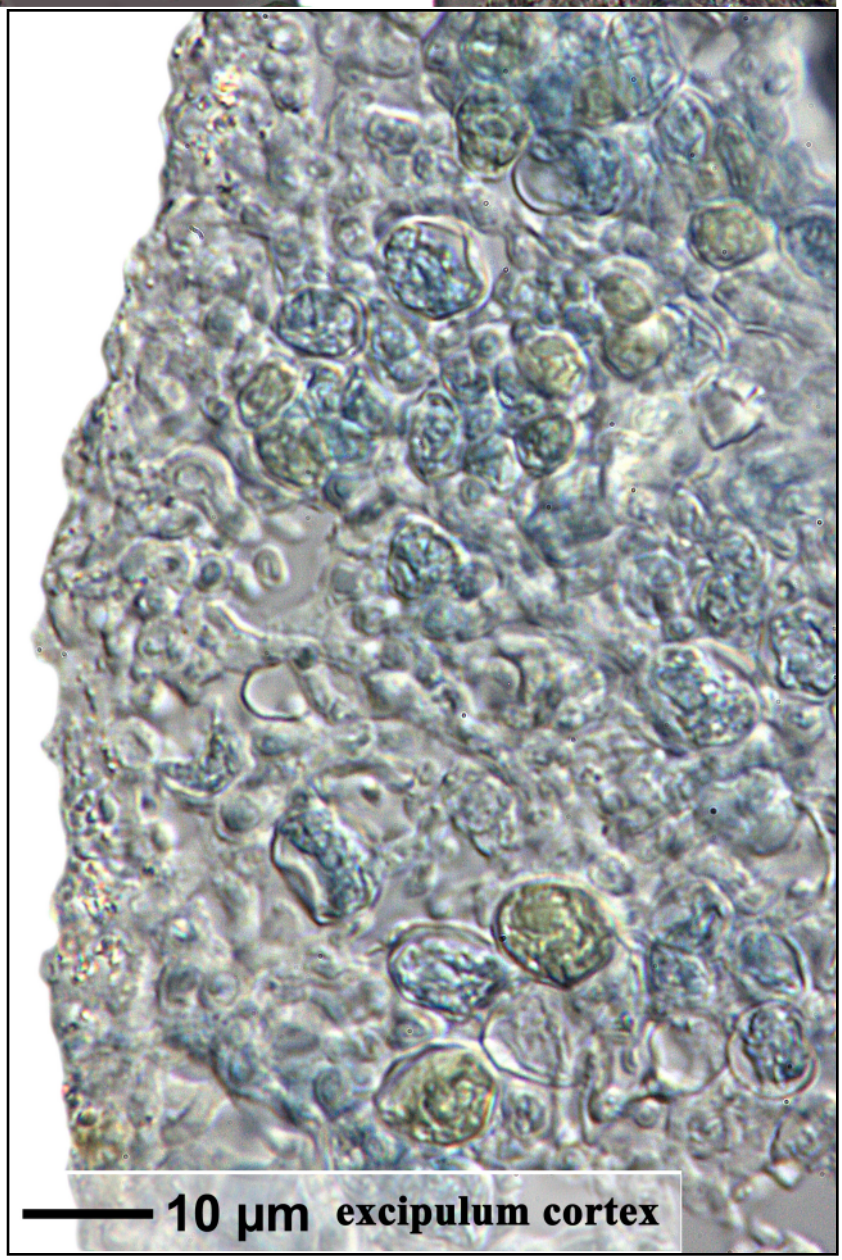


Lecanora helva

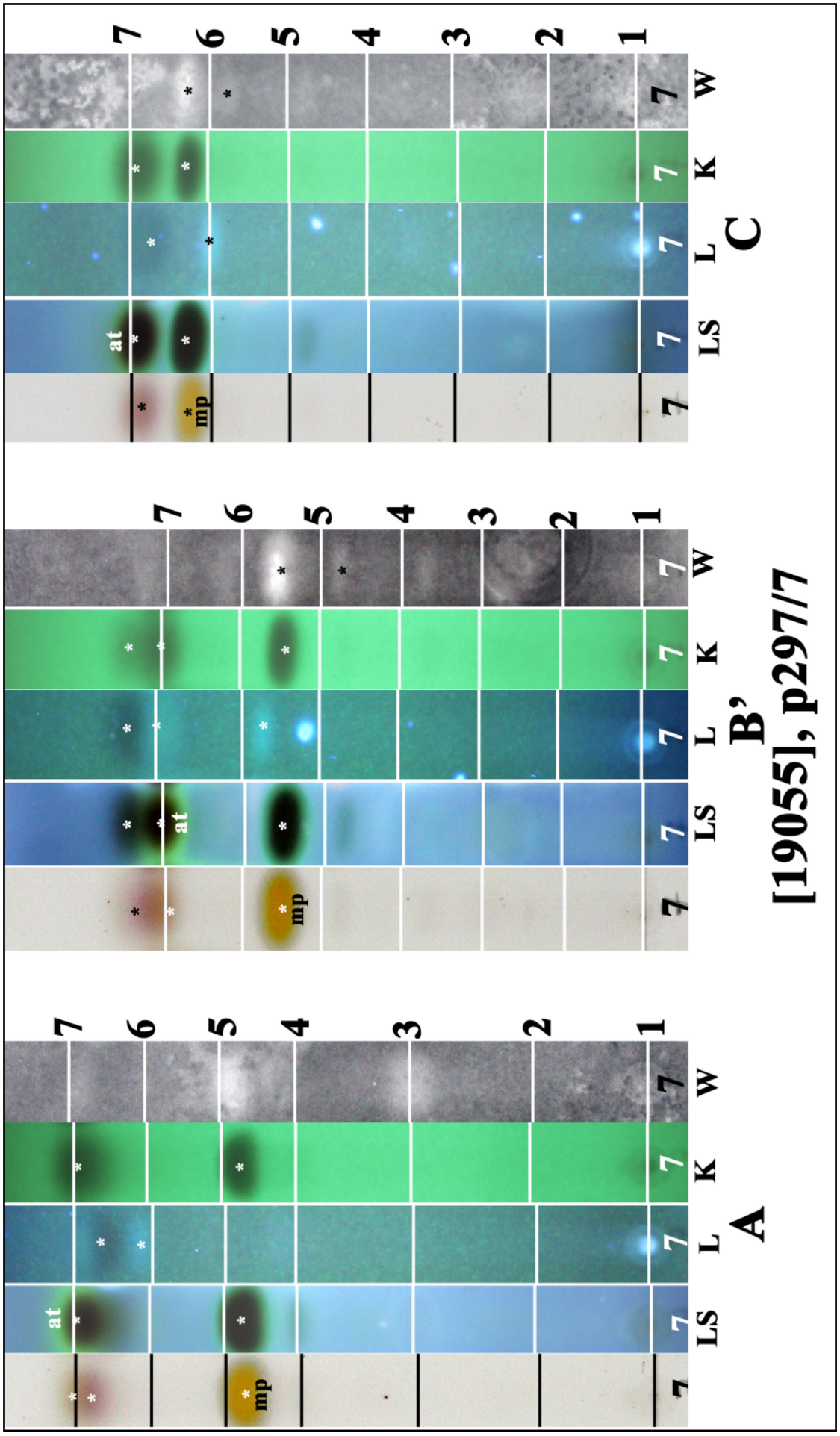


Lecanora helva





Lecanora helva



at: atranorin, mp: 2'-*O*-methylperlatolic acid

Lecanora helva

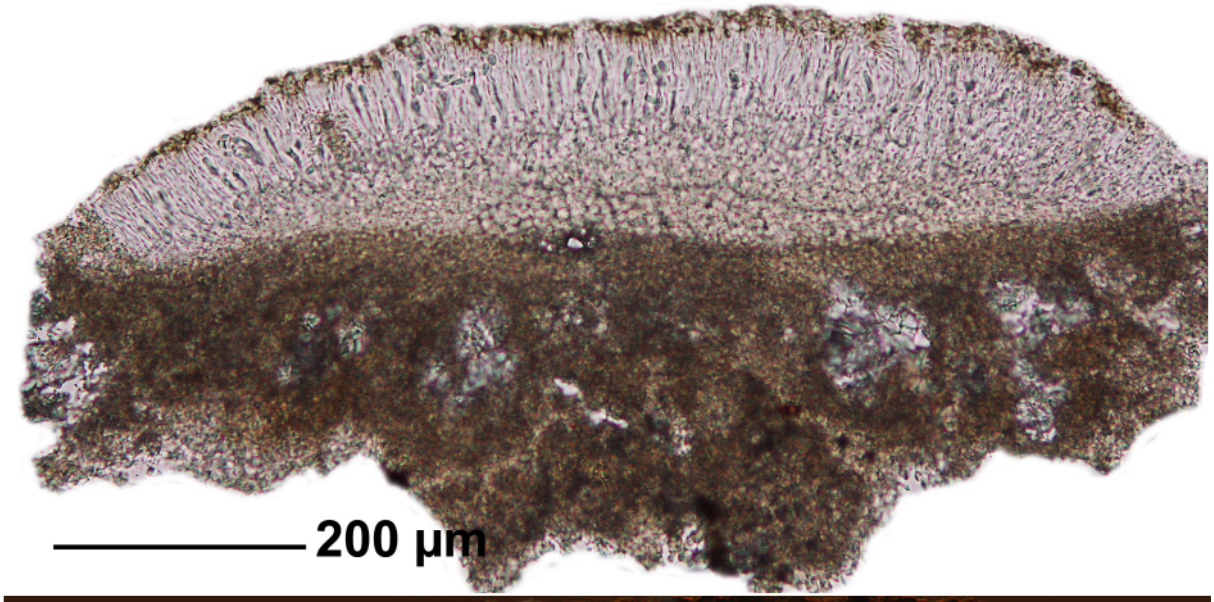
Lecanora melacarpella Müll.Arg.

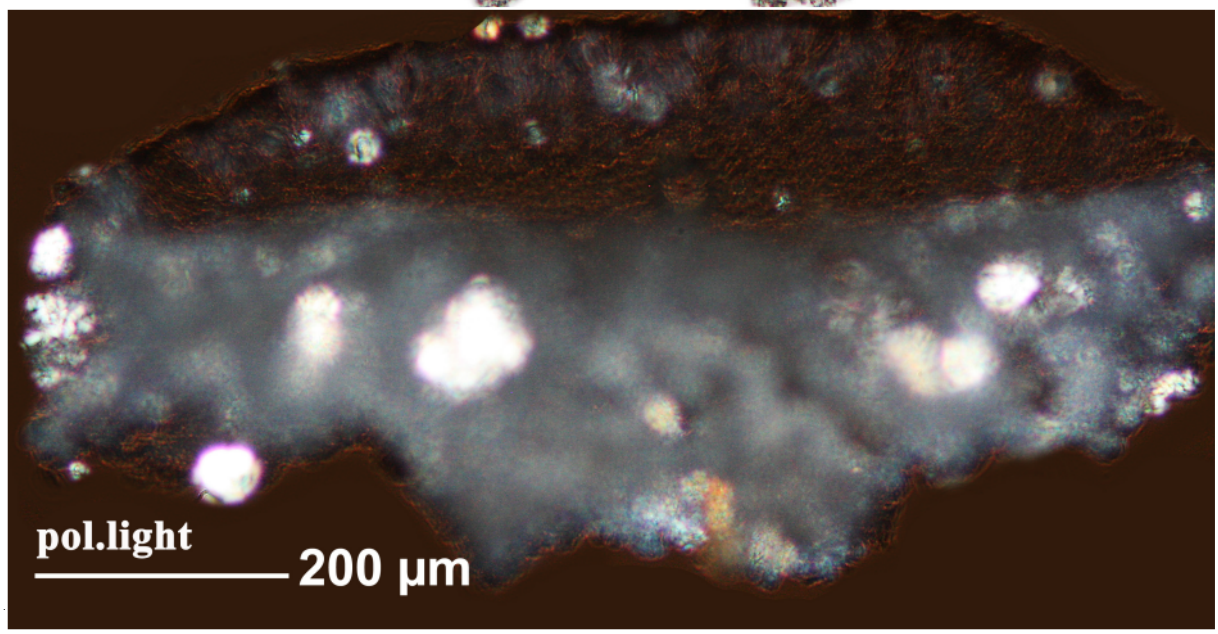
Thallus thin, whitish or whitish grey, esorediate, growing on siliceous rocks, containing atranorin and zeorin. Prothallus whitish. Apothecia lecanorine, sessile to slightly constricted at base, 0.6-1.8 mm wide. Apothecial disc blackish brown, epruinose, C-; margin thick, entire to verrucose. Amphithecium with large crystals and small crystals, only small crystals soluble in KOH. Epihymenium dark brown, K-, pigment unchanged in KOH, lacking crystals. Hypothecium hyaline. Ascospores 9.5-15.5 x 5.5-8.5 µm. Chemistry: thallus and apothecial margin K+ yellow, C-, P+ pale orange; atranorin (major), zeorin (major), ±chloroatranorin (minor), unidentified terpenes (traces)

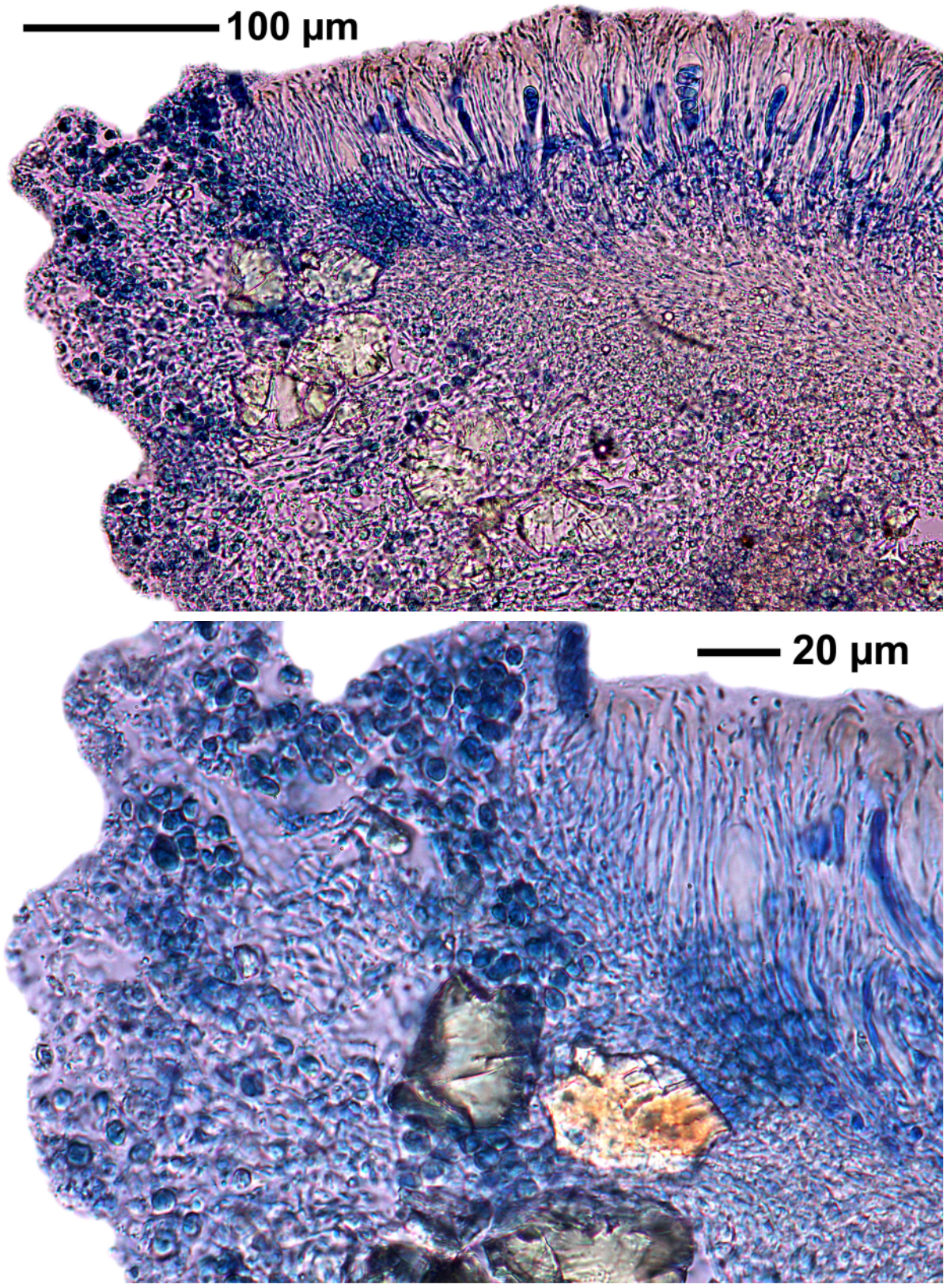
[19056], Australia, New South Wales, Lord Howe Island, near junction of tracks to Mutton Bird Point and Intermediate Hill, 31°32'43" S, 159°04'48" E, 60 m, growing on basalt rocks in dry lowland forest on ridge. Leg. J.A. Elix (32755), 21.06.1992, det. H.T. Lumbsch. Chemistry: atranorin (major), zeorin (major), chloroatranorin (trace), unknown triterpene (trace) by HPLC, TLC anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 259.



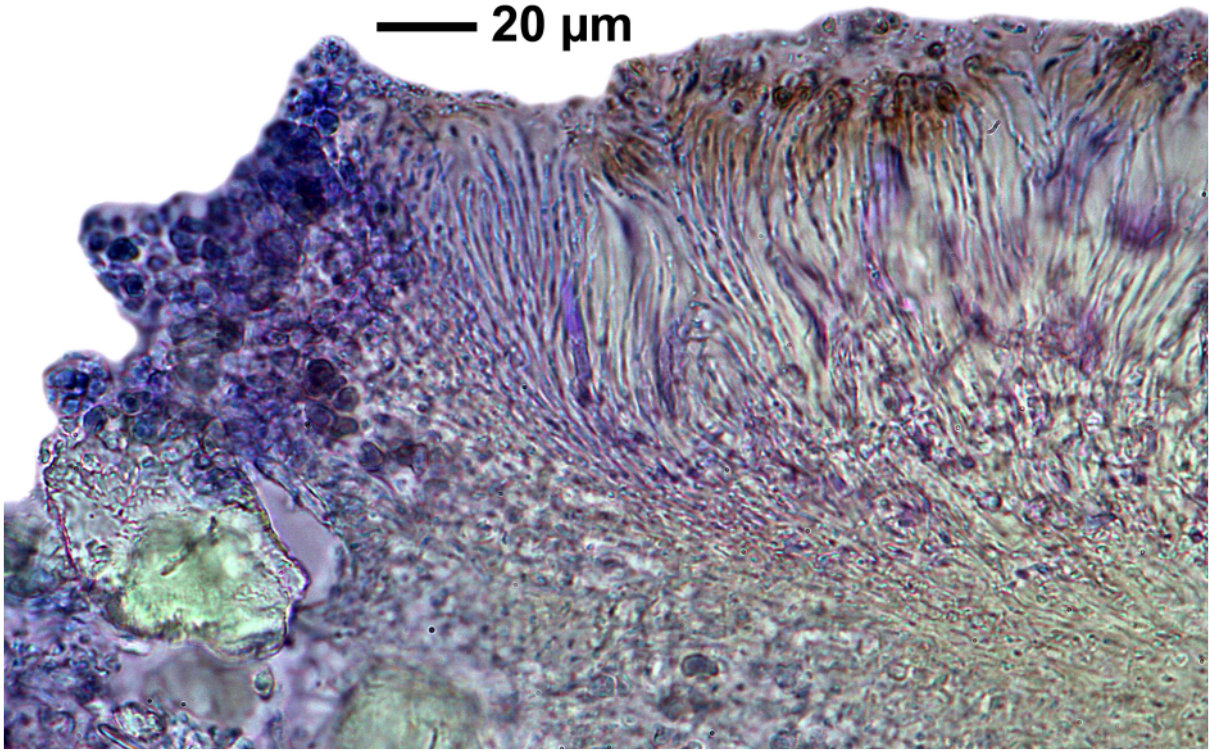

1 mm


200 µm

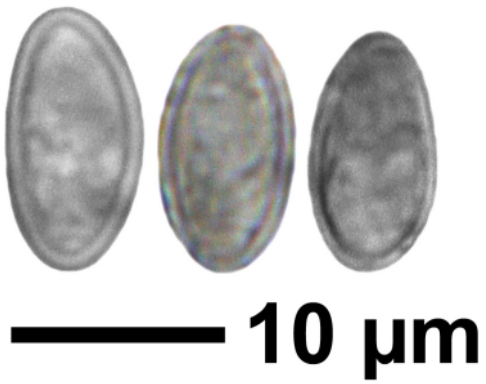

pol.light
200 µm



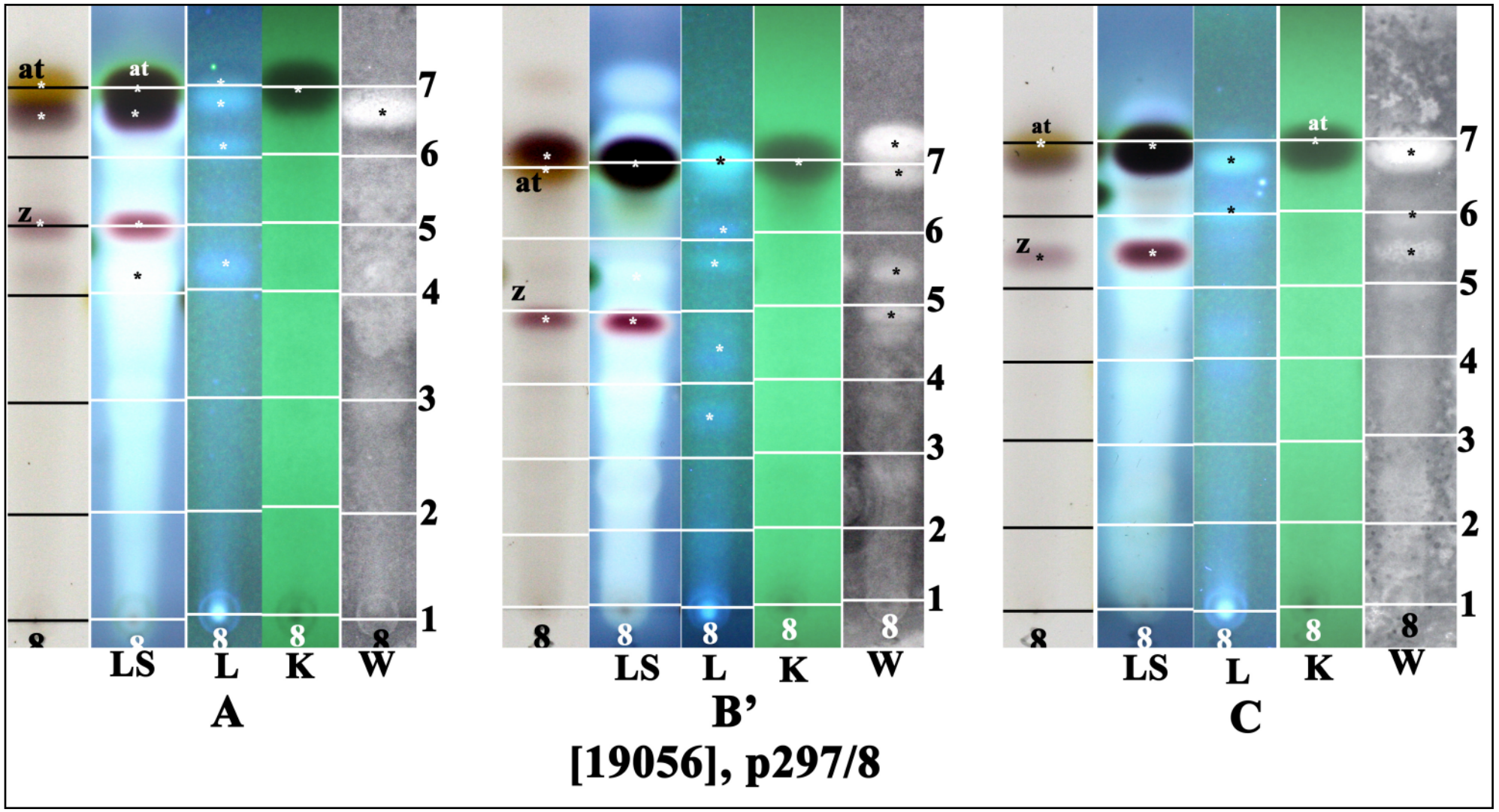
Lecanora melacarpella







Lecanora melacarpella

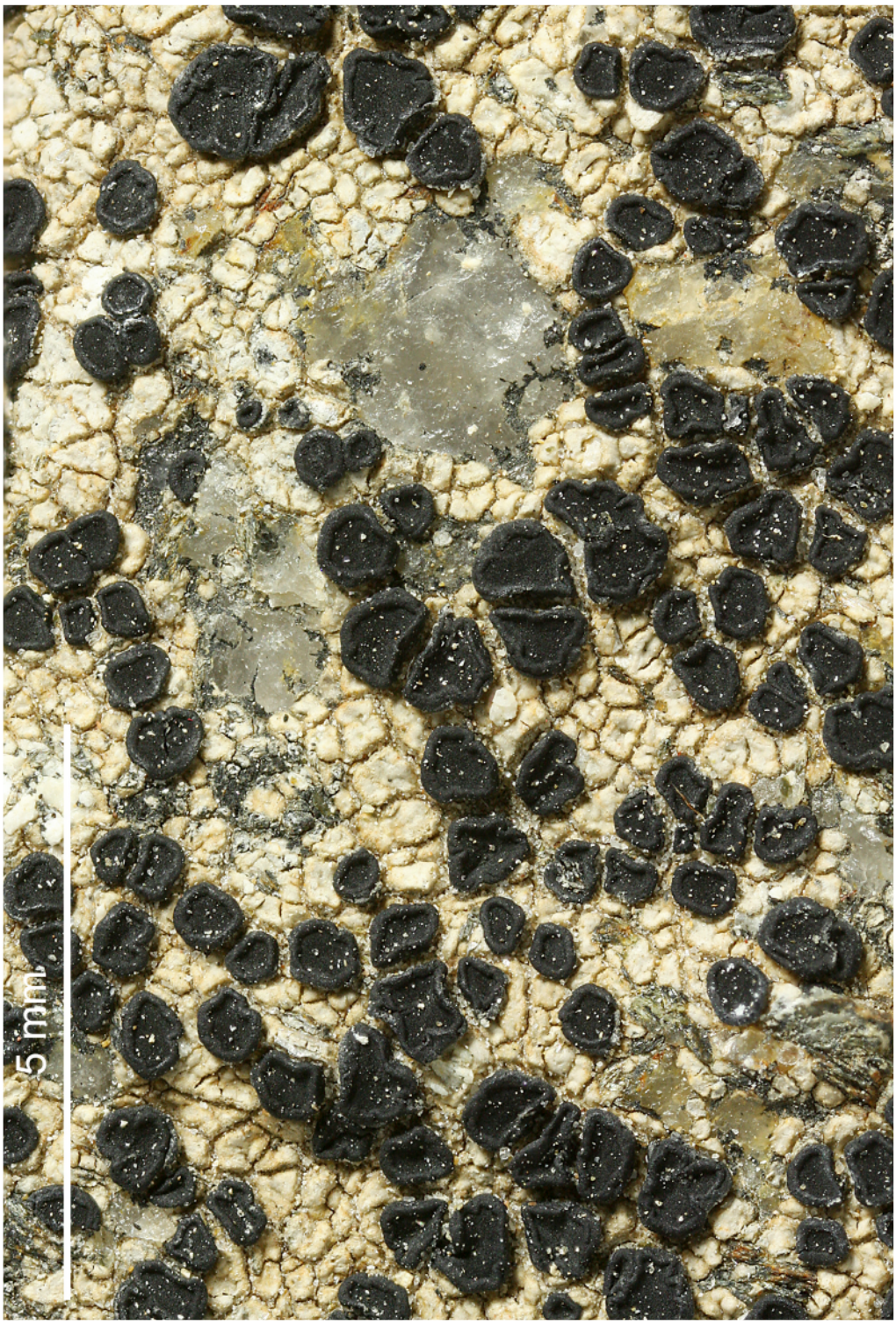


at: atranorin, z: zeorin

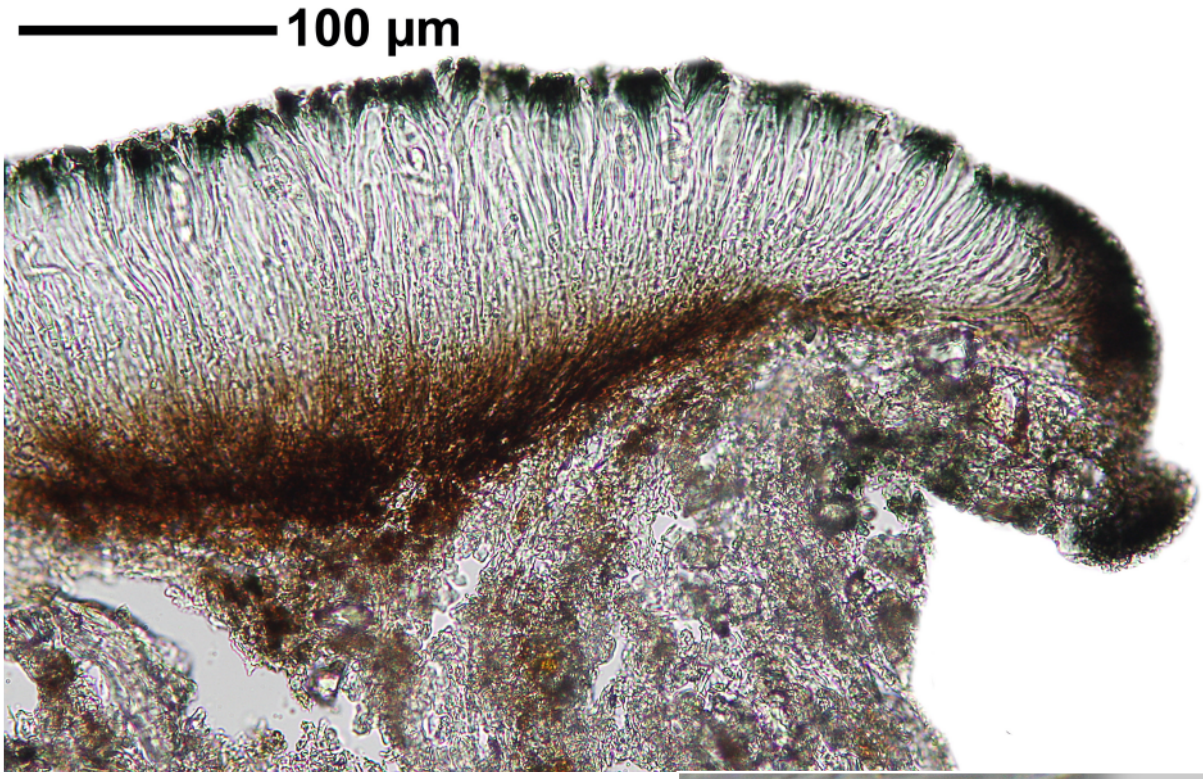
Lecidea lygomma Nyl.

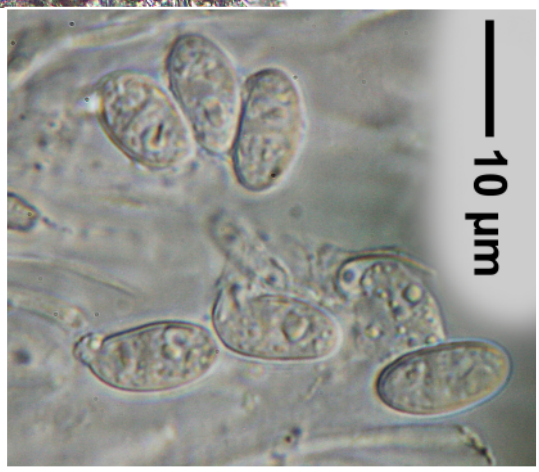
Morphologically very similar to *Lecidea lygommella* Elix but containing norstictic acid and connorstictic acid.

[19058], Australia, Victoria, Alpine National Park, High Plains Road, 20 km south-east of Mt. Beauty, 36°53' S, 147°18' E, 1620 m, growing on granite rocks in exposed subalpine herbfield with granite outcrops. Leg. J.A. Elix (40472) & H. Streimann 17.02.1994, det. G. Rambold. Chemistry: norstictic acid (major), connorstictic acid (minor) by TLC anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 285.

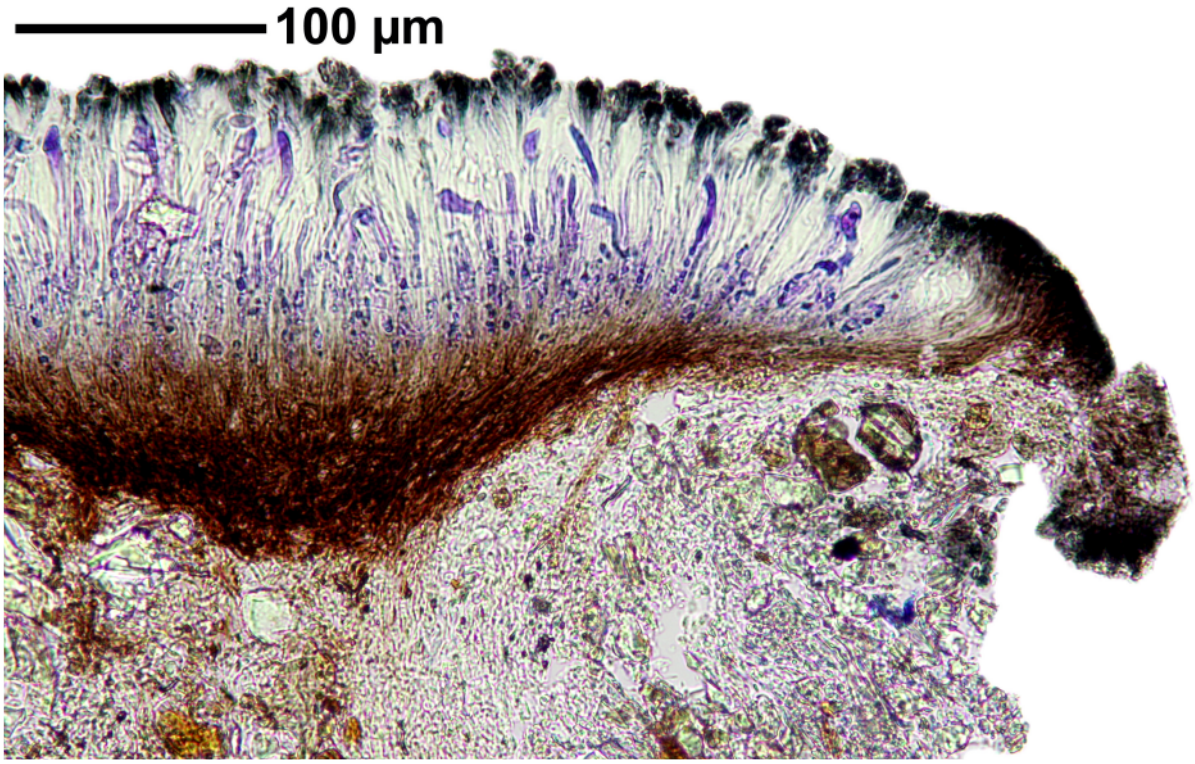


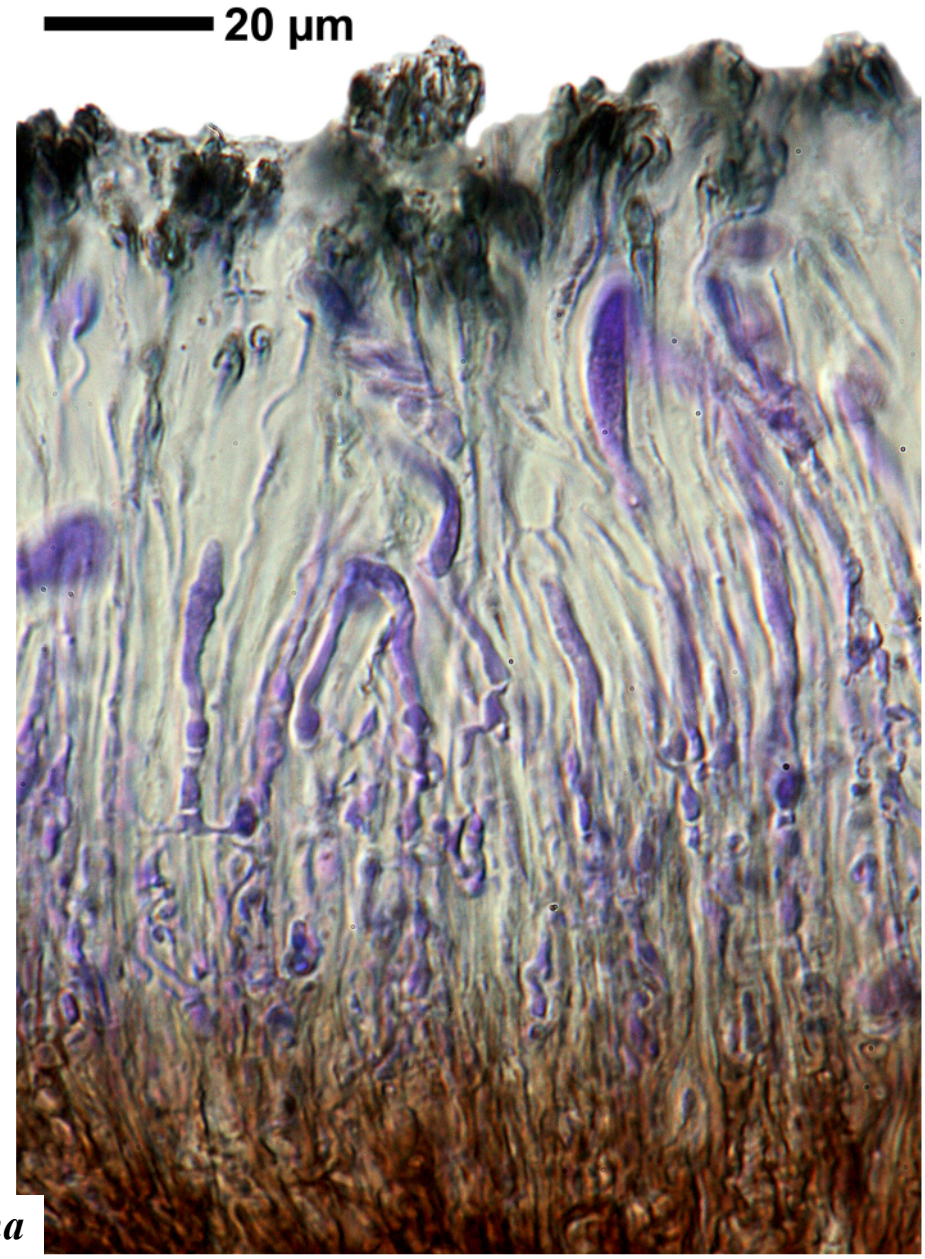




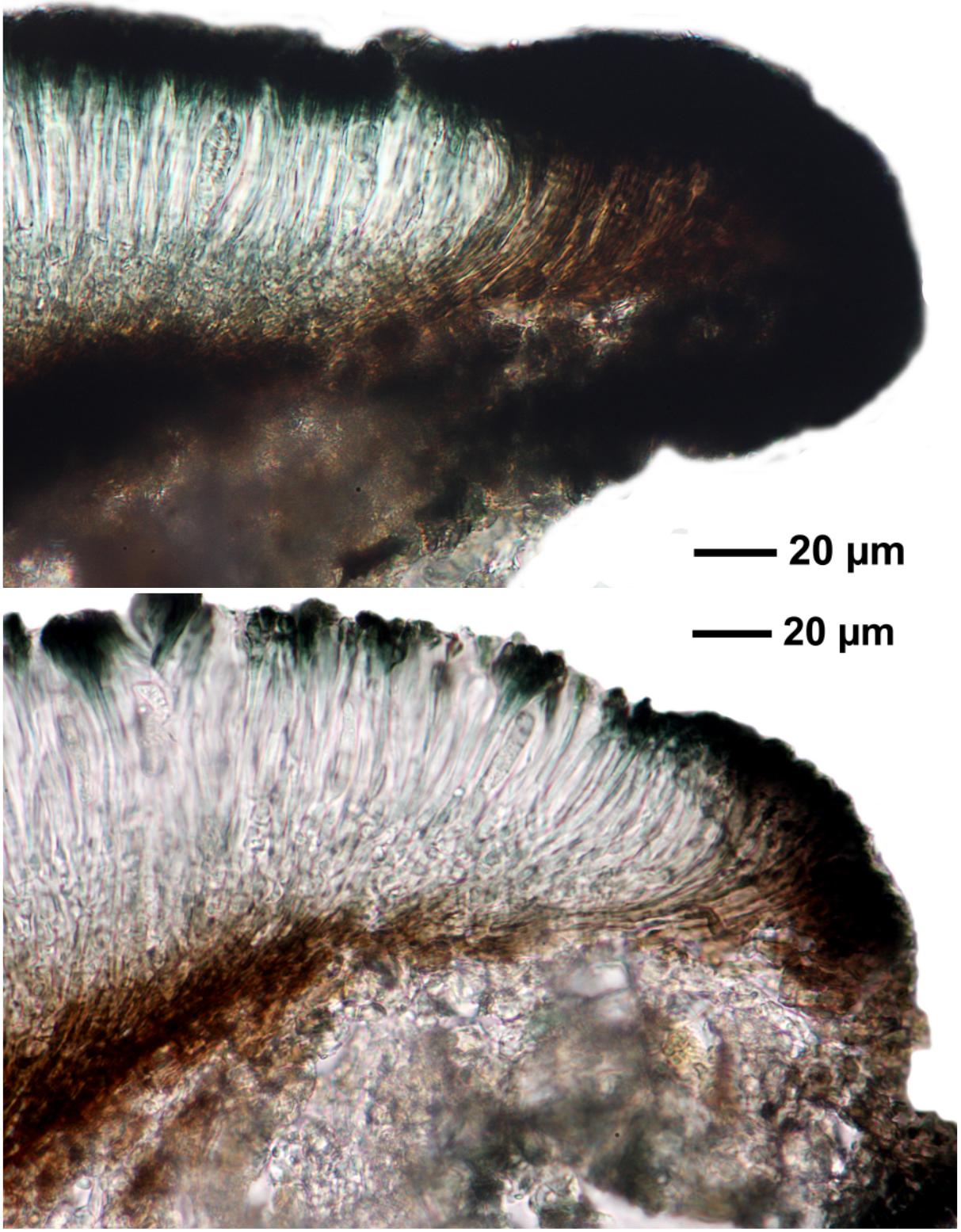


Lecidea lygomma

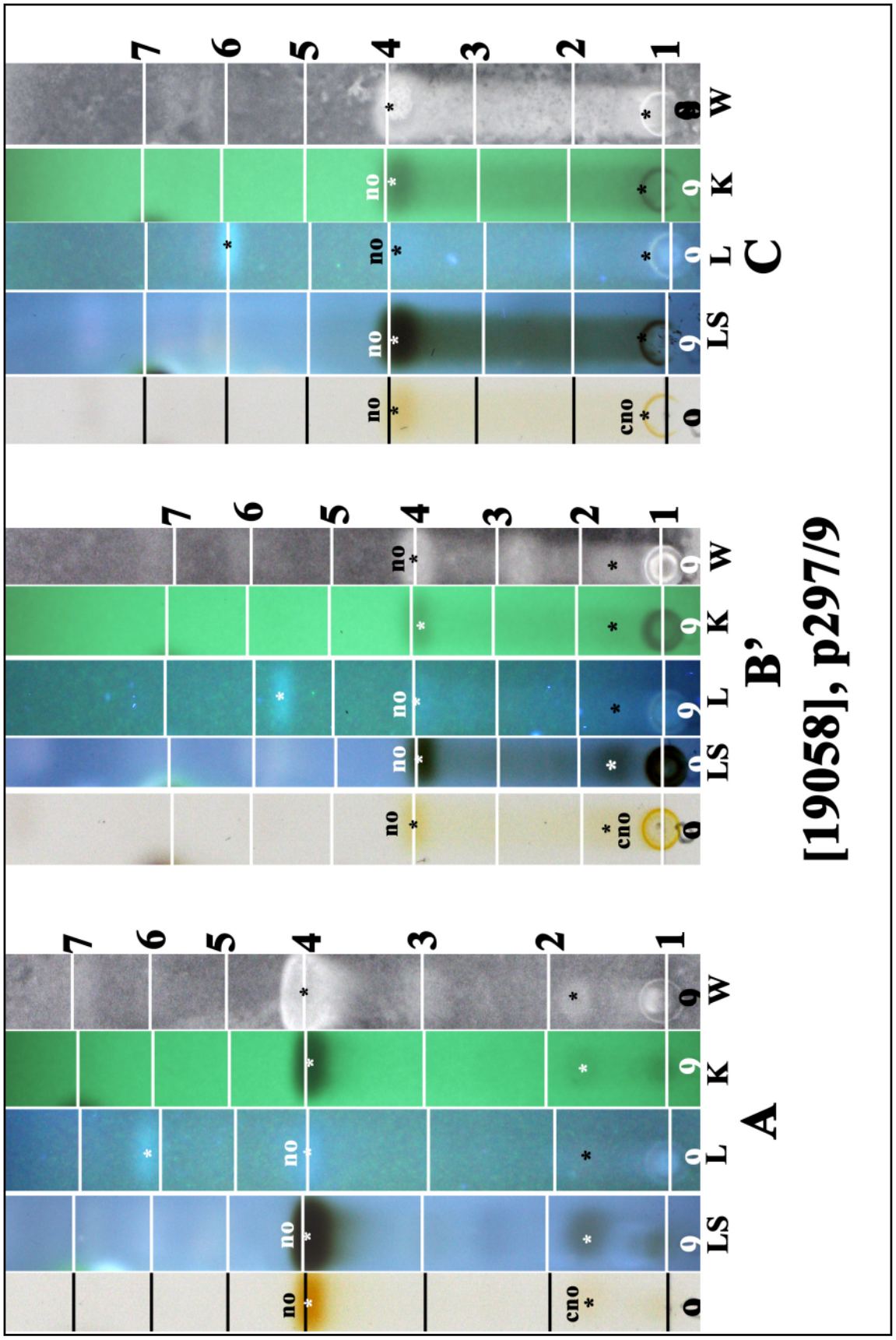




Lecidea lygomma



Lecidea lygomma



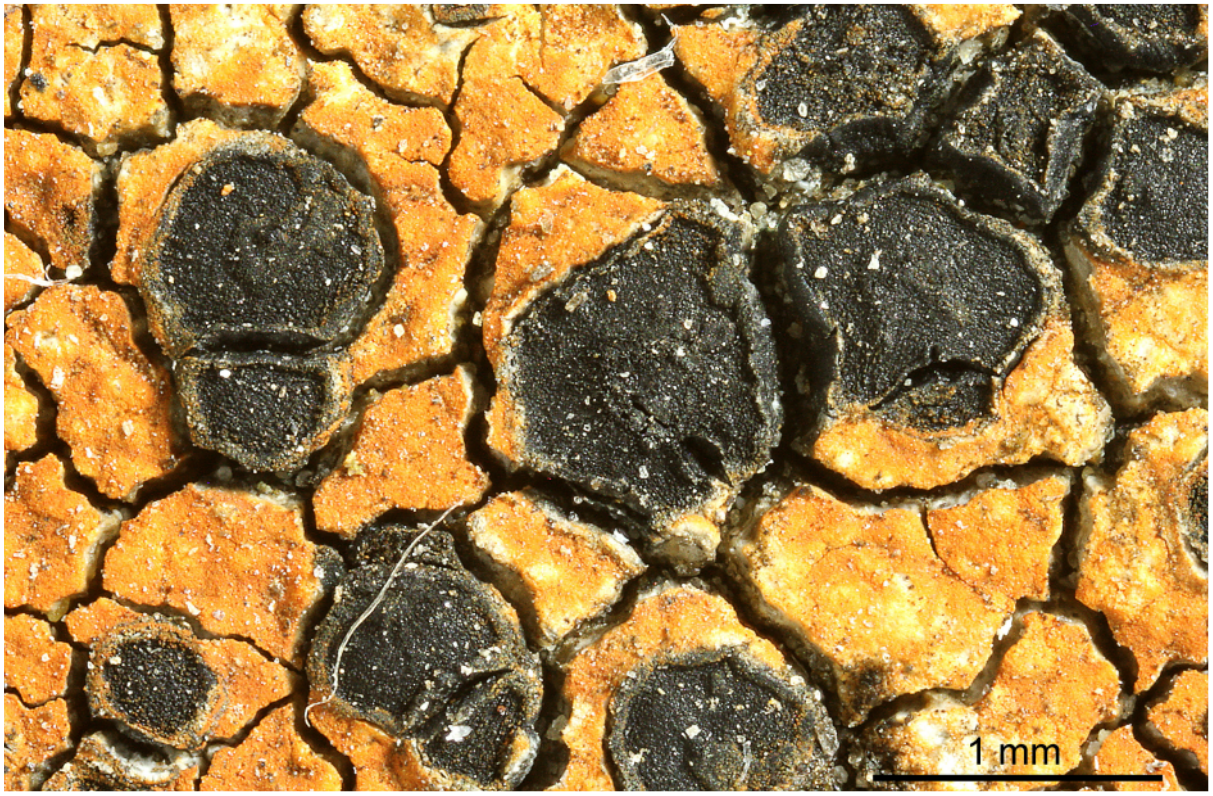
no: norstictic acid, cno: connorstictic acid

Lecidea lygomma

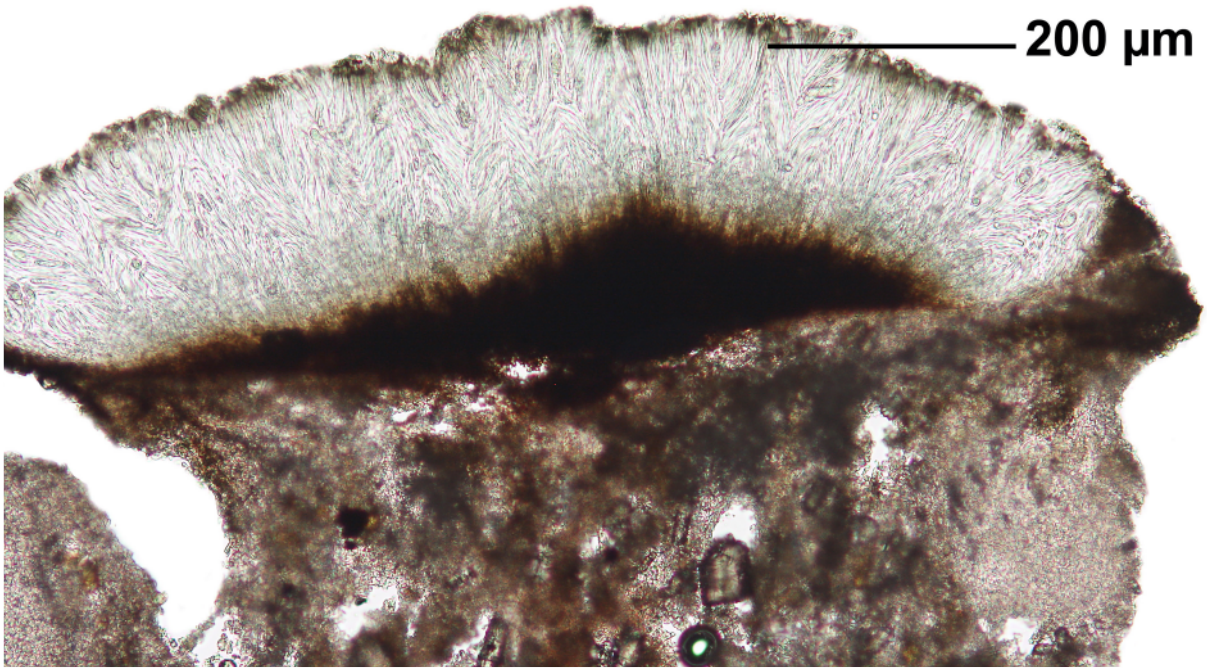
Lecidea lygommella Elix

Thallus areolate, 0.2-0.7 mm thick. Areoles angular, white, pale grey or pale creamy, often more or less rusty coloured, plane, 0.5-0.8(-2 mm) diam. Medulla I-, hyphae 3-5 µm thick. Apothecia roundish to angular, mostly crowded, sessile and more or less constricted at the base or immersed, c. 0.5-1(-2.5) mm diam. Disc plane to slightly convex, black, sometimes with rusty pruina. Excipulum lateral of hymenium 60-130 µm thick. Ectal zone dark grey, brown to brown-black; pigmented zone 13-20 µm thick. Inner zone colourless, pale brown, grey, to brown black. Hypothecium dark brown, 130-450 µm thick; K± violet-brown. Hymenium 60-100 µm tall, colourless. Epihymenium green, olivaceous to pale brown, 12-15 µm tall. Paraphyses at the tips branched and anastomosing, apices 3-4 µm thick. Ascospores 11-15(-17) x 5-8.5 µm. Chemistry: cortex K- C-, P-.

[19057], Australia, Victoria, Basalt Hill, Alpine National Park, Bogong High Plains, 20 km south-east of Mt. Beauty, 36°53' S, 147°18' E, 1650 m, growing on basalt rocks in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40407) & H. Streimann 17.02.1994, det. J.A. Elix. Chemistry: no lichen substances detected by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 284. Distributed as *Lecidea lygomma* Nyl. sens. str. Isotype of *Lecidea lygommella* Elix, in Lumbsch et al., Phytotaxa 18: 78 (2011).

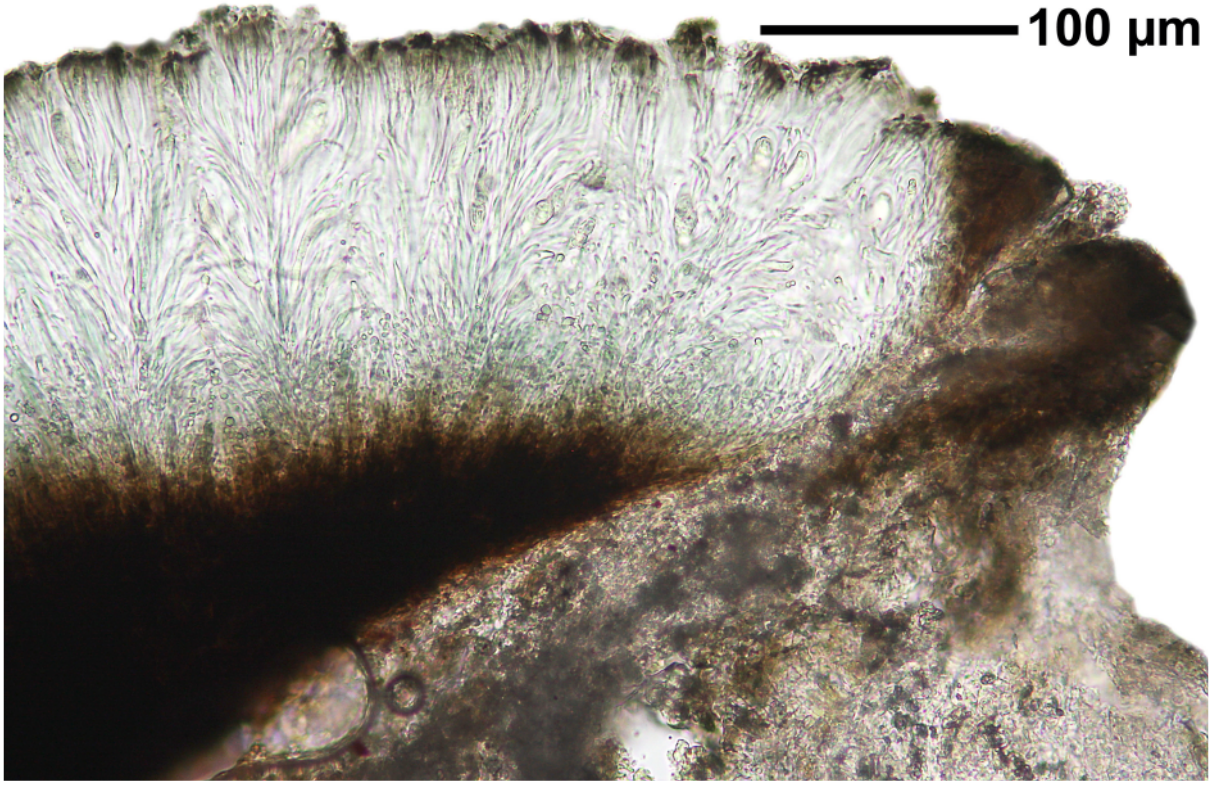


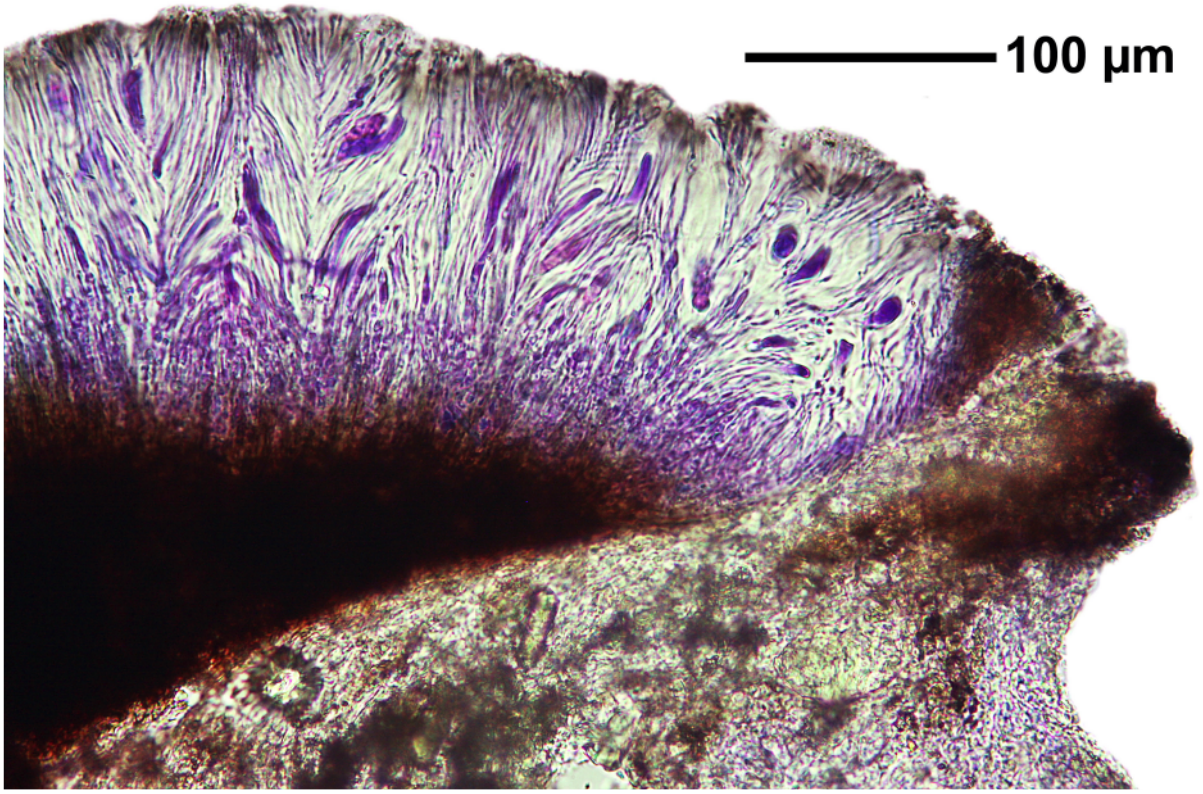




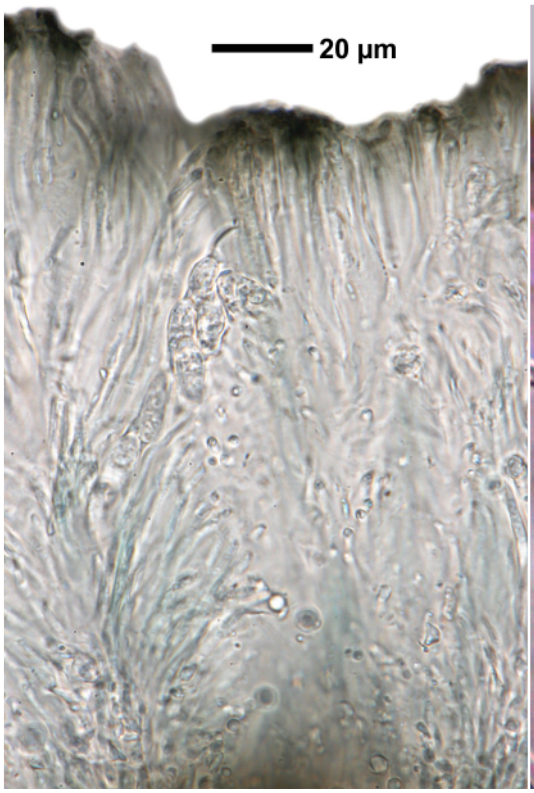


Lecidea lygommella



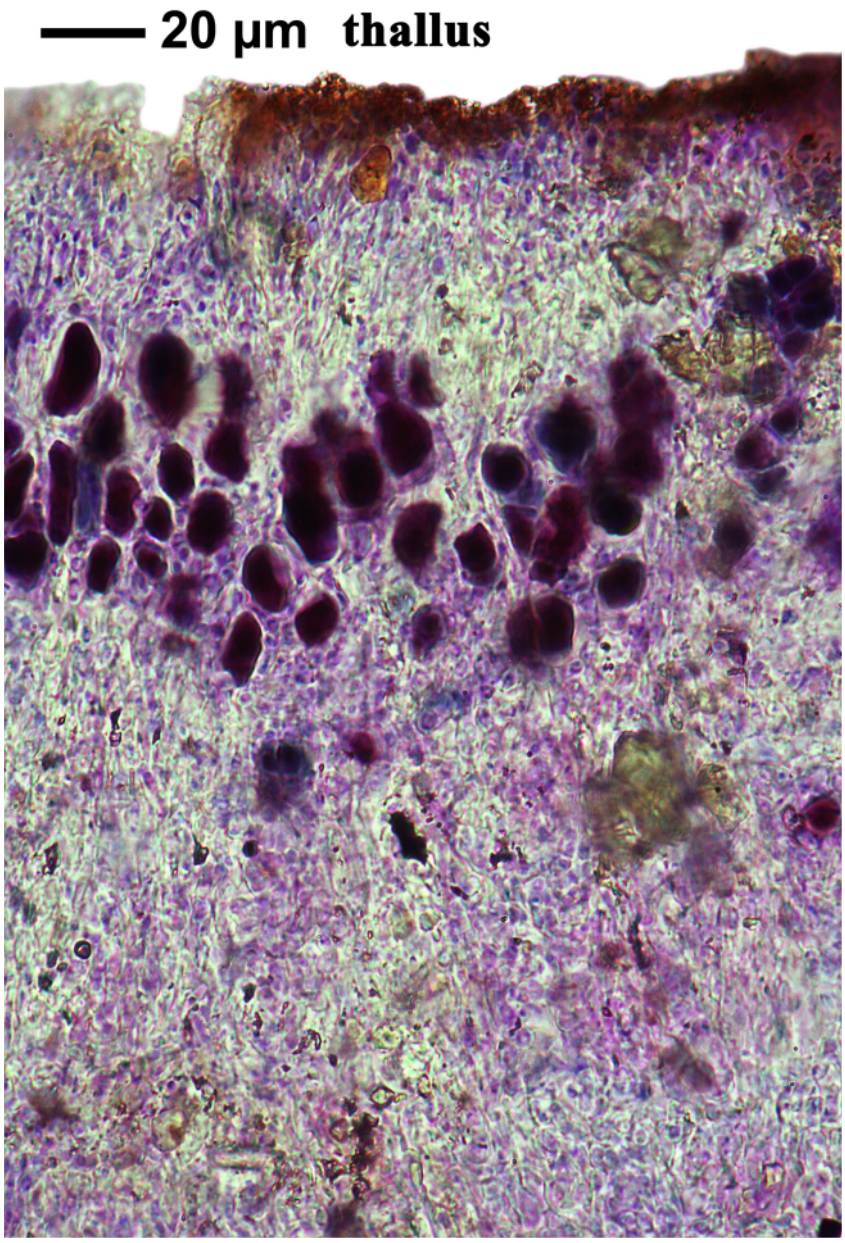


Lecidea lygommella







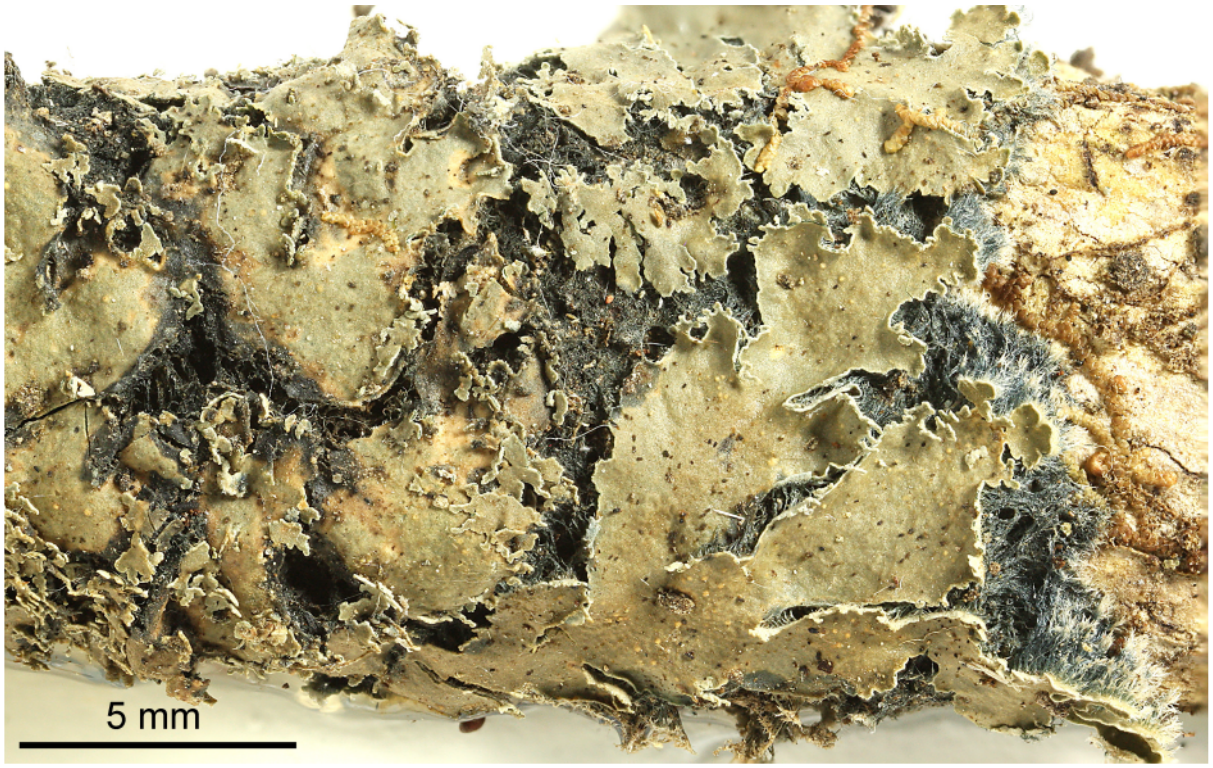


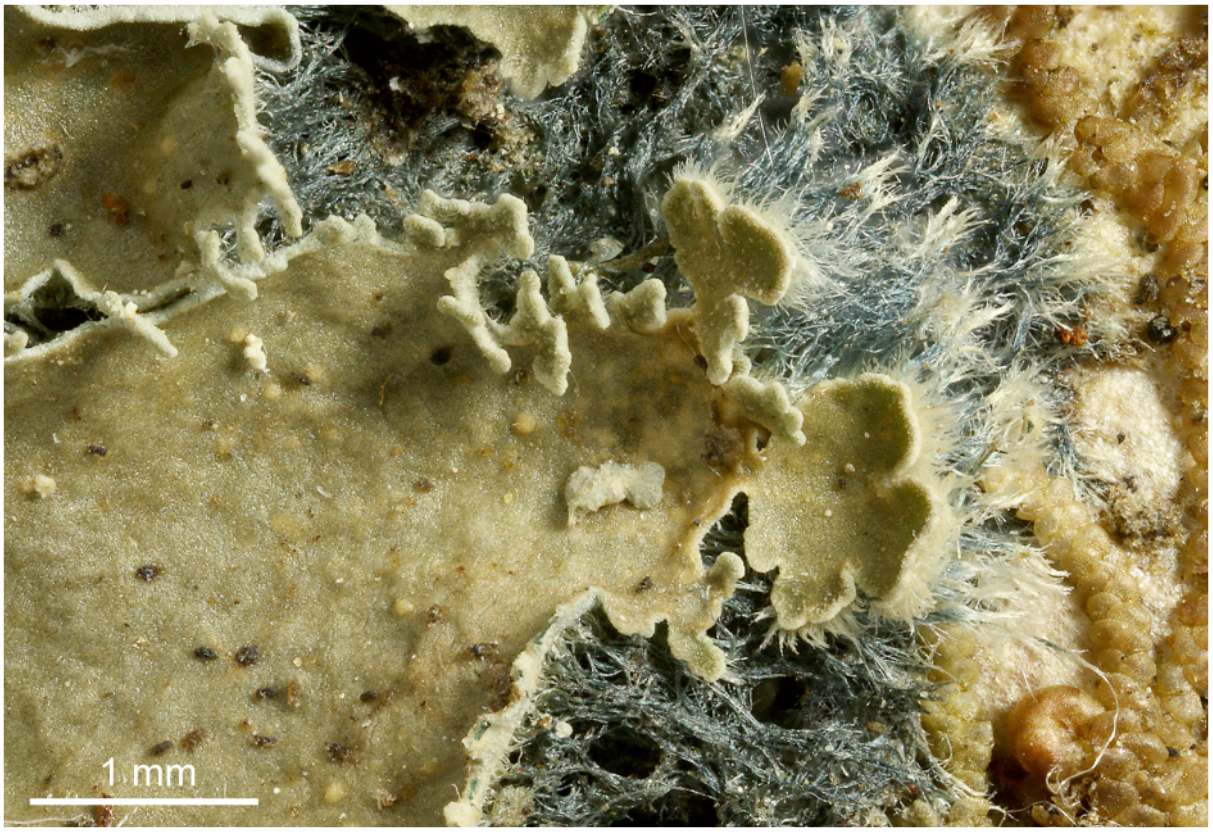
Lecidea lygommella

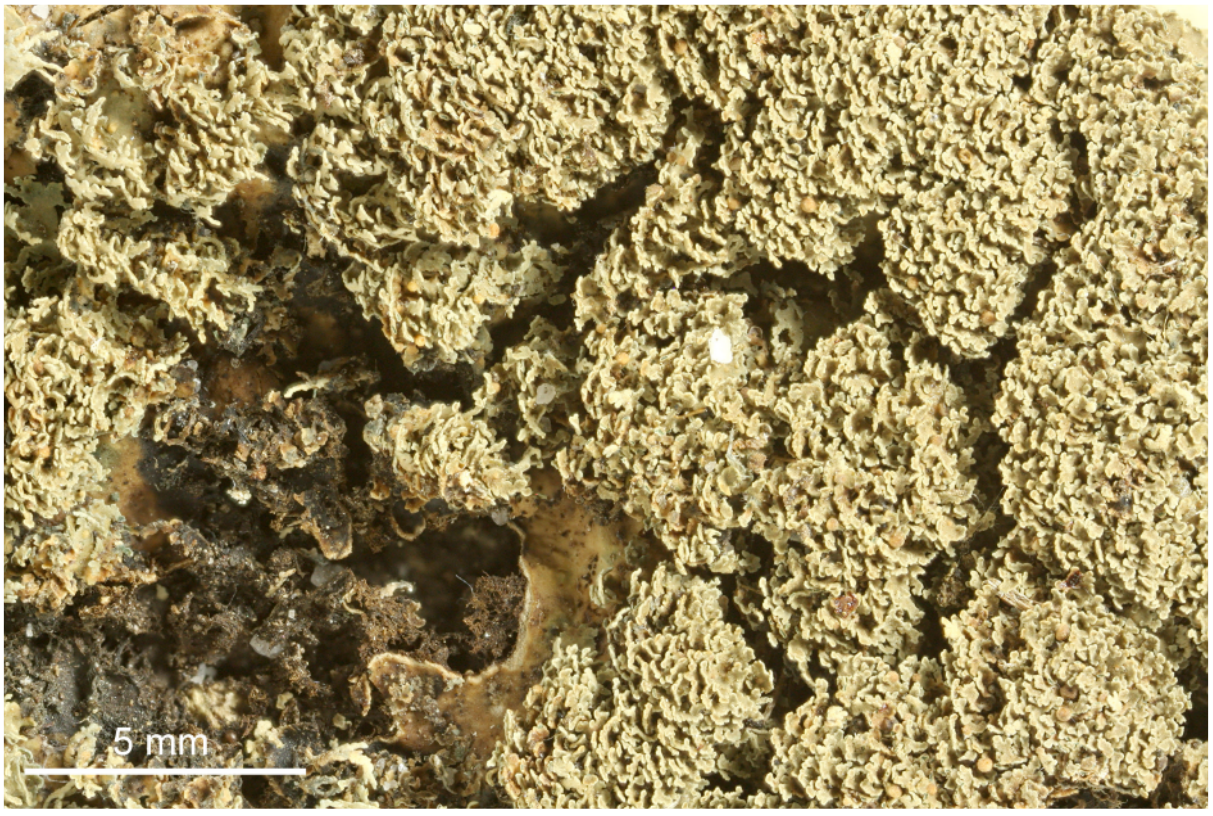
Leioderma duplicatum (Müll.Arg.) D.J. Galloway & P.M.Jørgensen

Lobes usually 1-3 mm wide, margins raised, slightly thickened, sometimes frosted-pruinose, glaucous-olivaceous when wet, with numerous phyllidia. Lower surface white at margins, brownish centrally, with densely clustered bundles of silky-white to blue-black rhizohyphae, normally projecting beyond lobe margins. Photobiont: Scytonema, in small chains. Apothecia rare, 0.1-1.5 mm wide. Hymenium I+ persistent blue. Ascospores 12-20 x 6-10 µm.

[19059], Australia, New South Wales, Coal Mine Falls, Morton National Park, 2.5 km south-south-east of Bundanoon, 34°41' S, 150°17' E, 500 m, growing on stem of leaning *Tristaniopsis* on side of creek in remnant rainforest in deep narrow valley dominated by *Eucryphia* and *Ceratopetalum*. Leg. H. Streimann (47032), 24.02.1991. Chemistry: ursolic acid (major), unknown terpene (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 260.

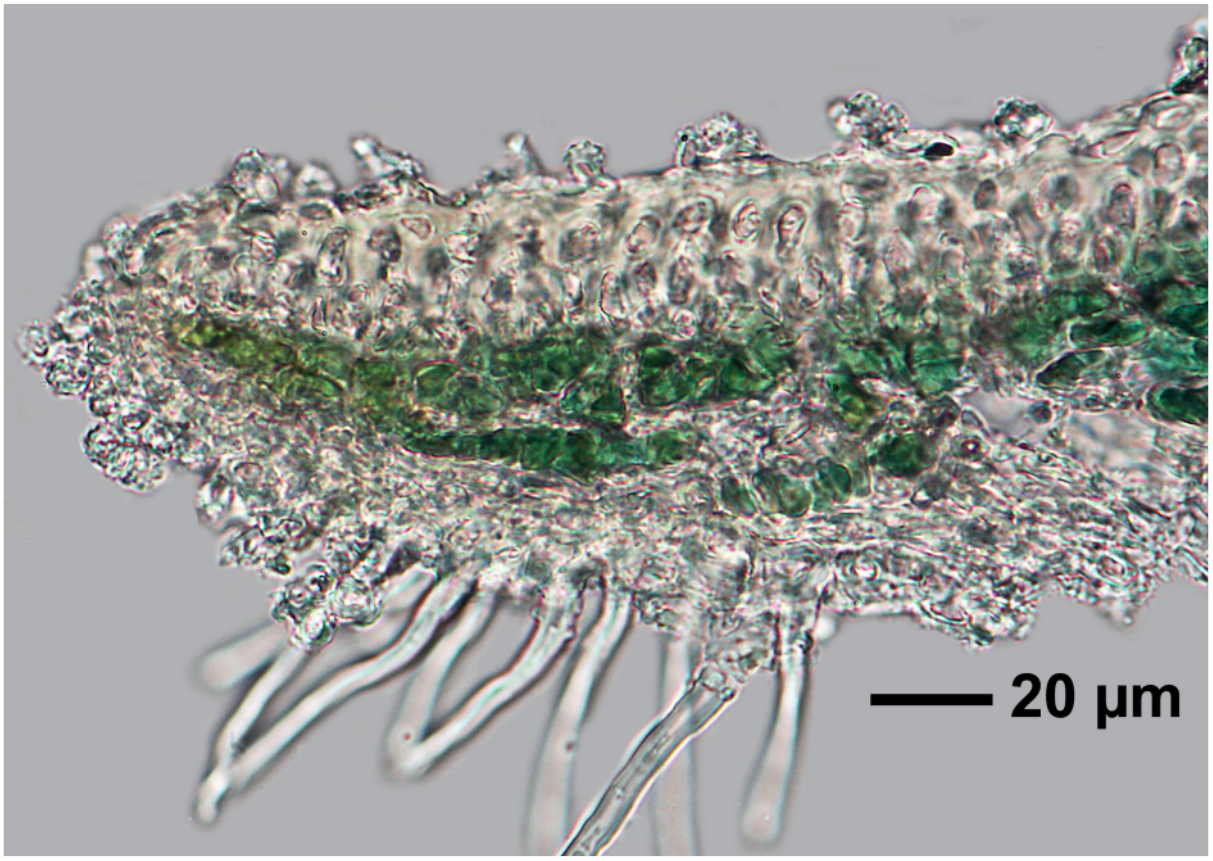




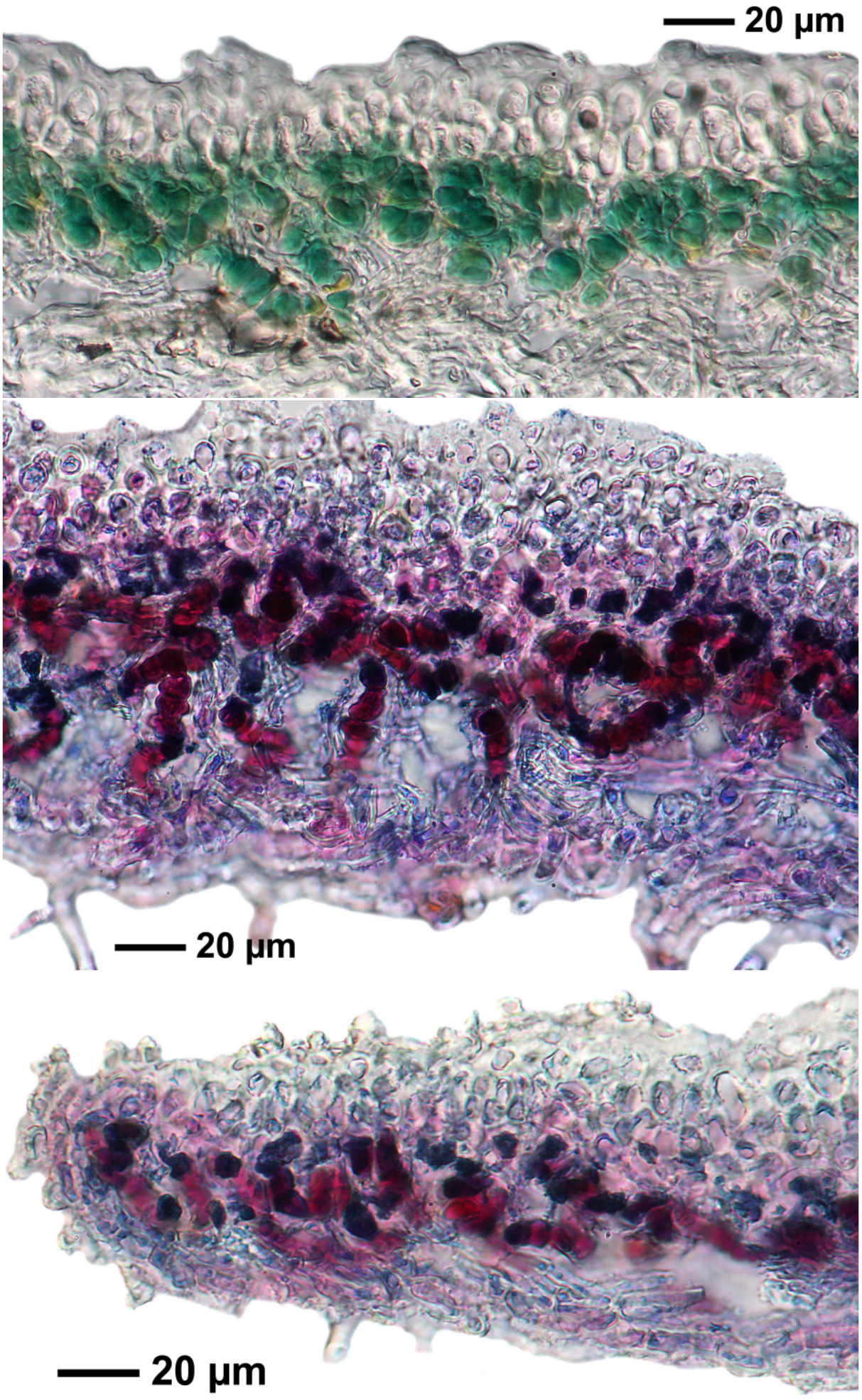


Leioderma duplicatum

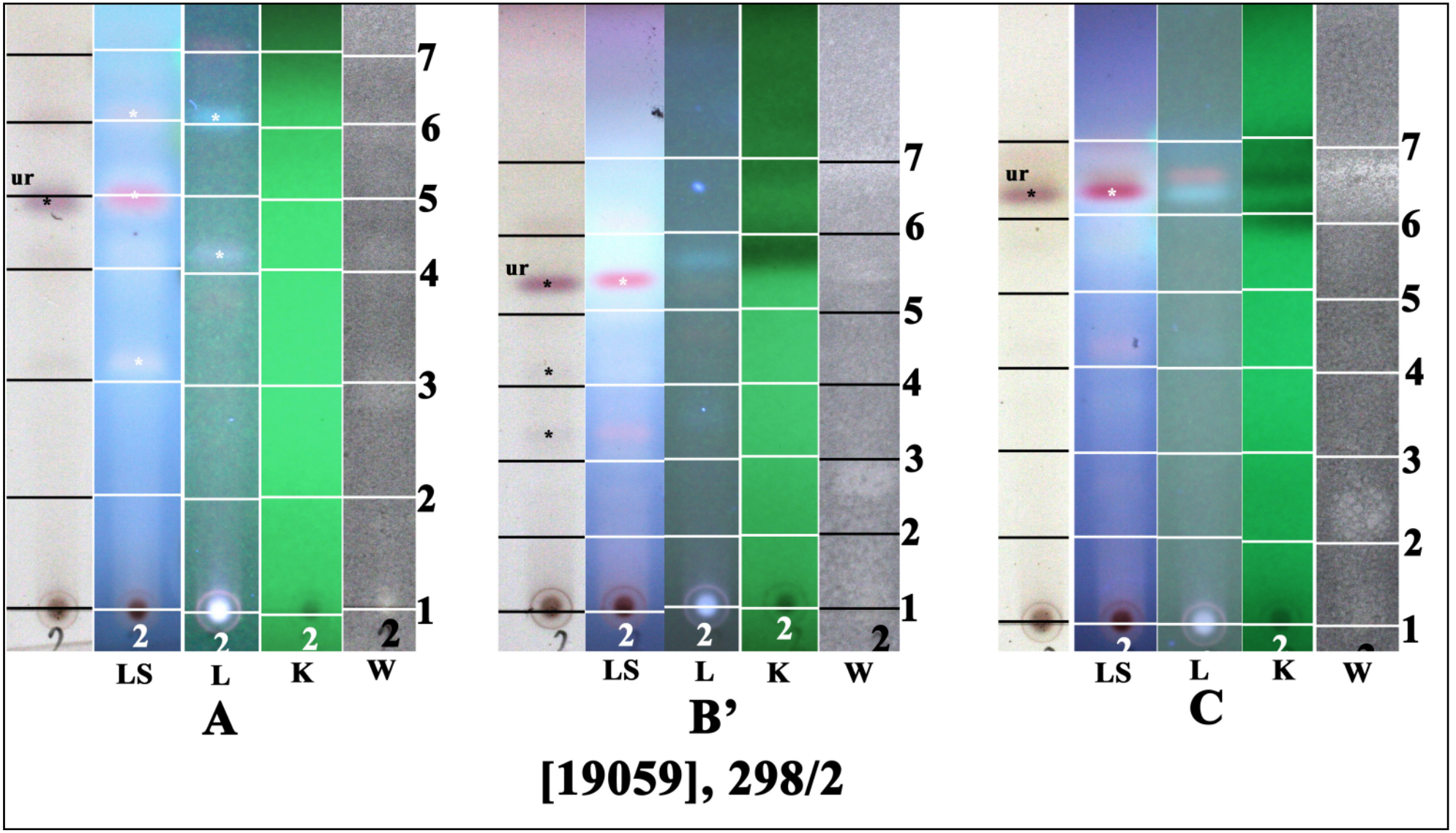




Leioderma duplicatum



Leioderma duplicatum



ur: ursolic acid

Leptogium azureum (Sw. ex Ach.) Mont.

Thallus leaden grey to bluish, 50-100 µm thick, isidia absent, surfaces smooth to roughened. Apothecia laminal, sessile to shortly pedicellate, 1.5-2.5 mm wide, disc concave or finally strongly convex and obscuring the exciple. Pedicel ± half apothecial width. Ascospores submuriform, apices acute, 14-26 x 6-9 µm. Conidia 2-3 µm long. Similar to *Leptogium moluccanum* with thallus 30-60 µm thick and conidia 4-5 µm long.

[19060], Australia, New South Wales, Minnamurra National Park, 11 km north-west of Kiama, 34°36' S, 150°43' E, 180 m, growing on shaded rocks and boulders in remnant temperate forest beside stream. Leg. H. Streimann (49352), 13.03.1992, det. D. Verdon. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 234.



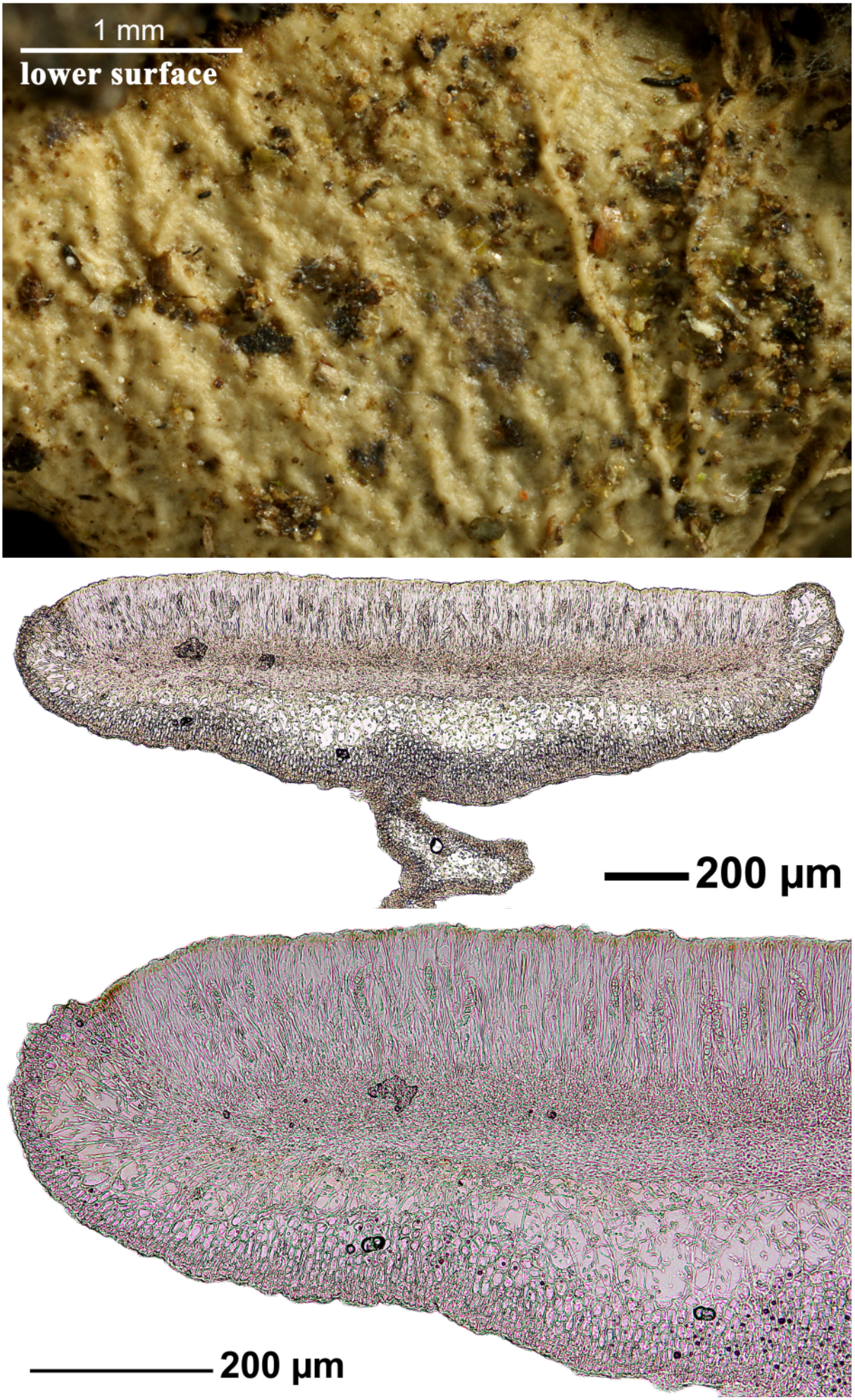




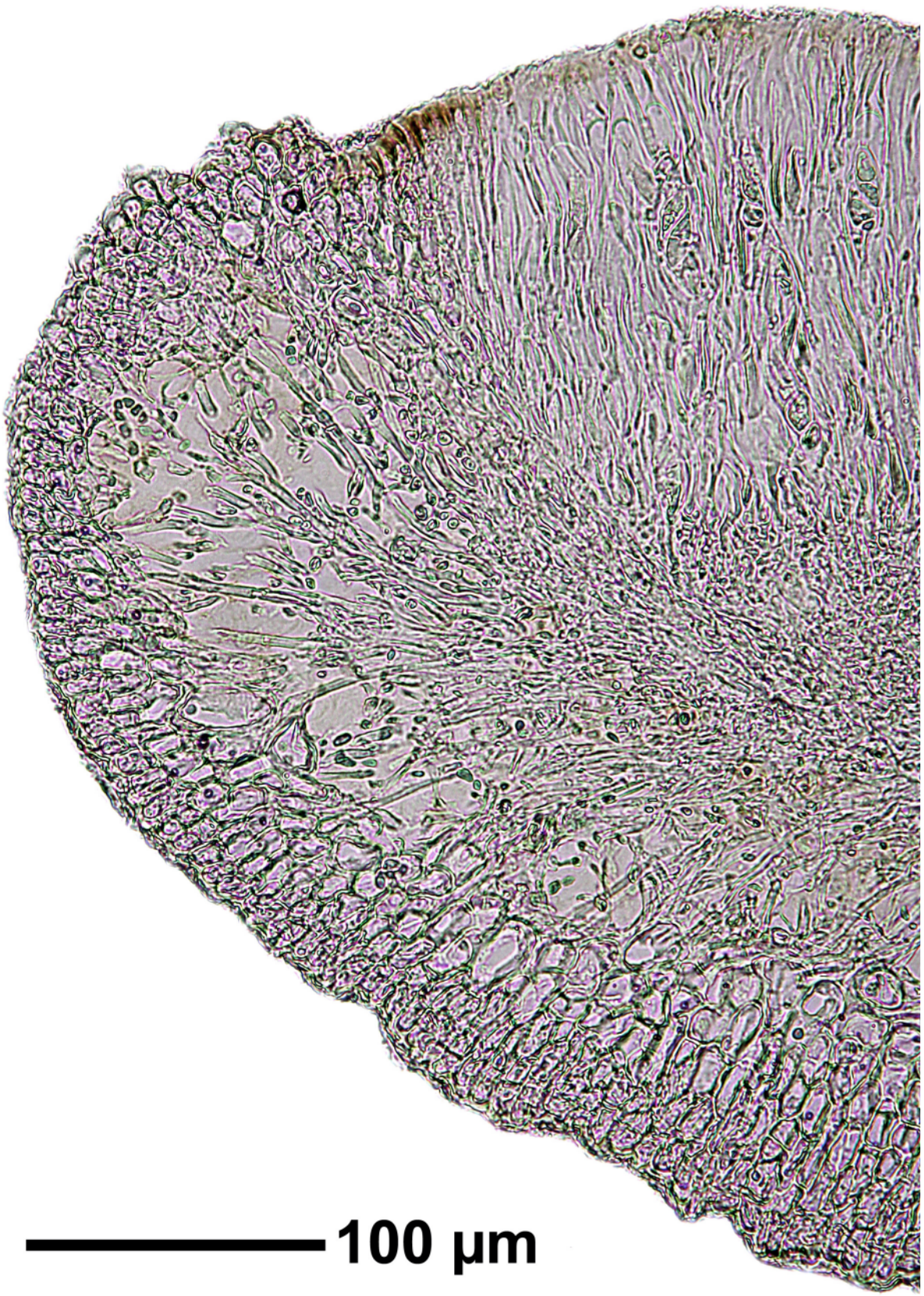
Leptogium azureum



Leptogium azureum



Leptogium azureum



Leptogium azureum

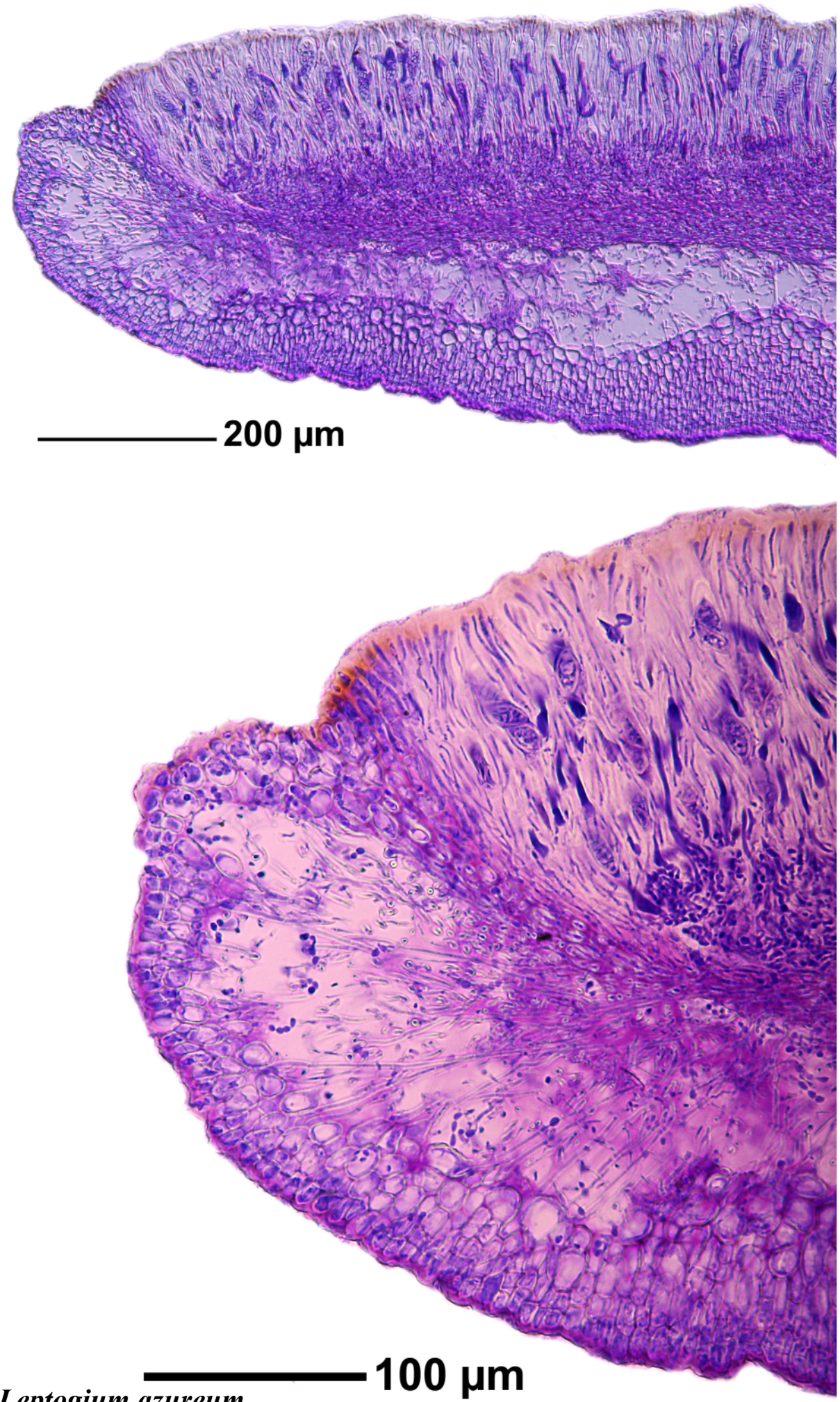




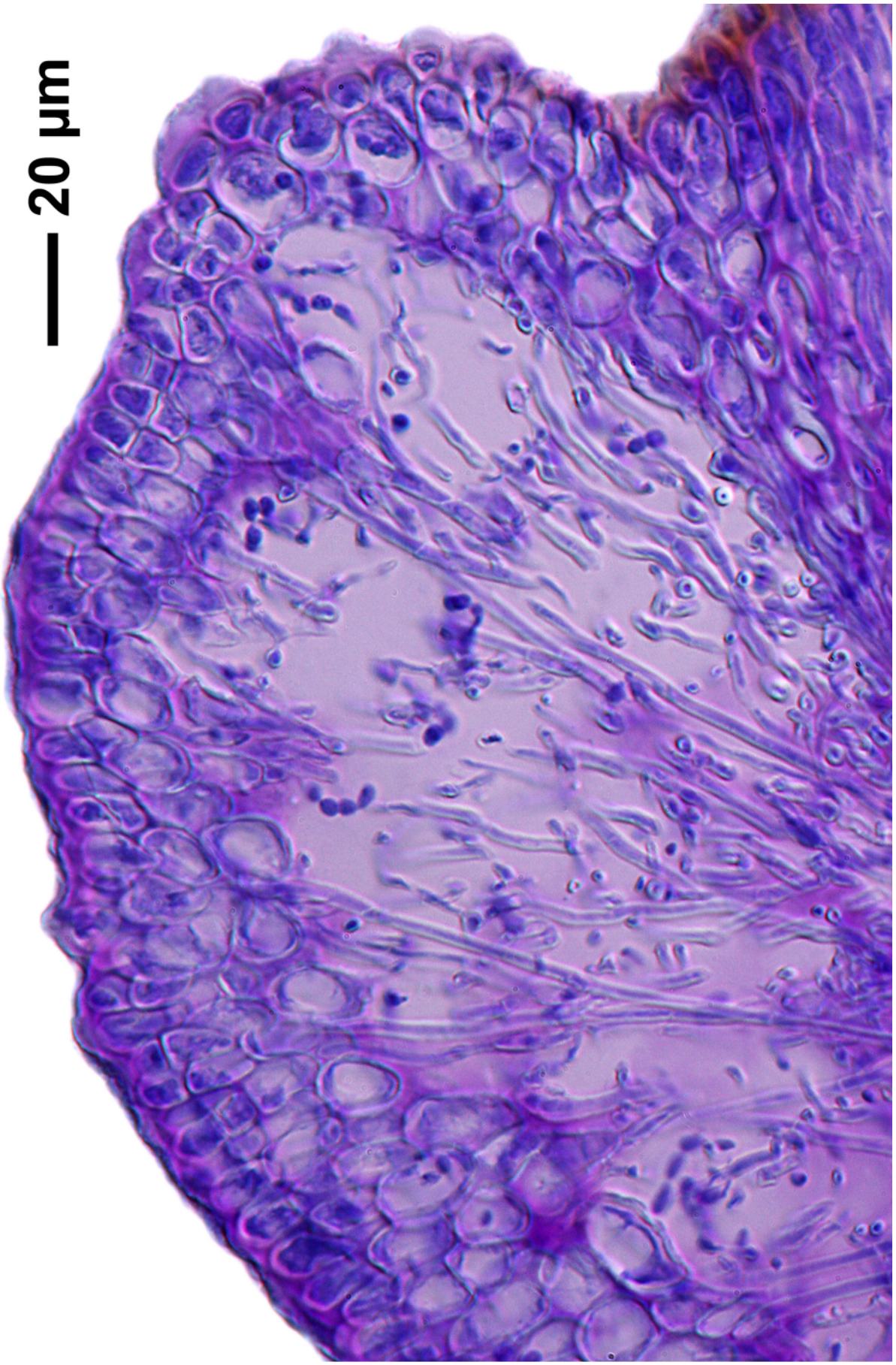
Leptogium azureum



Leptogium azureum



Leptogium azureum



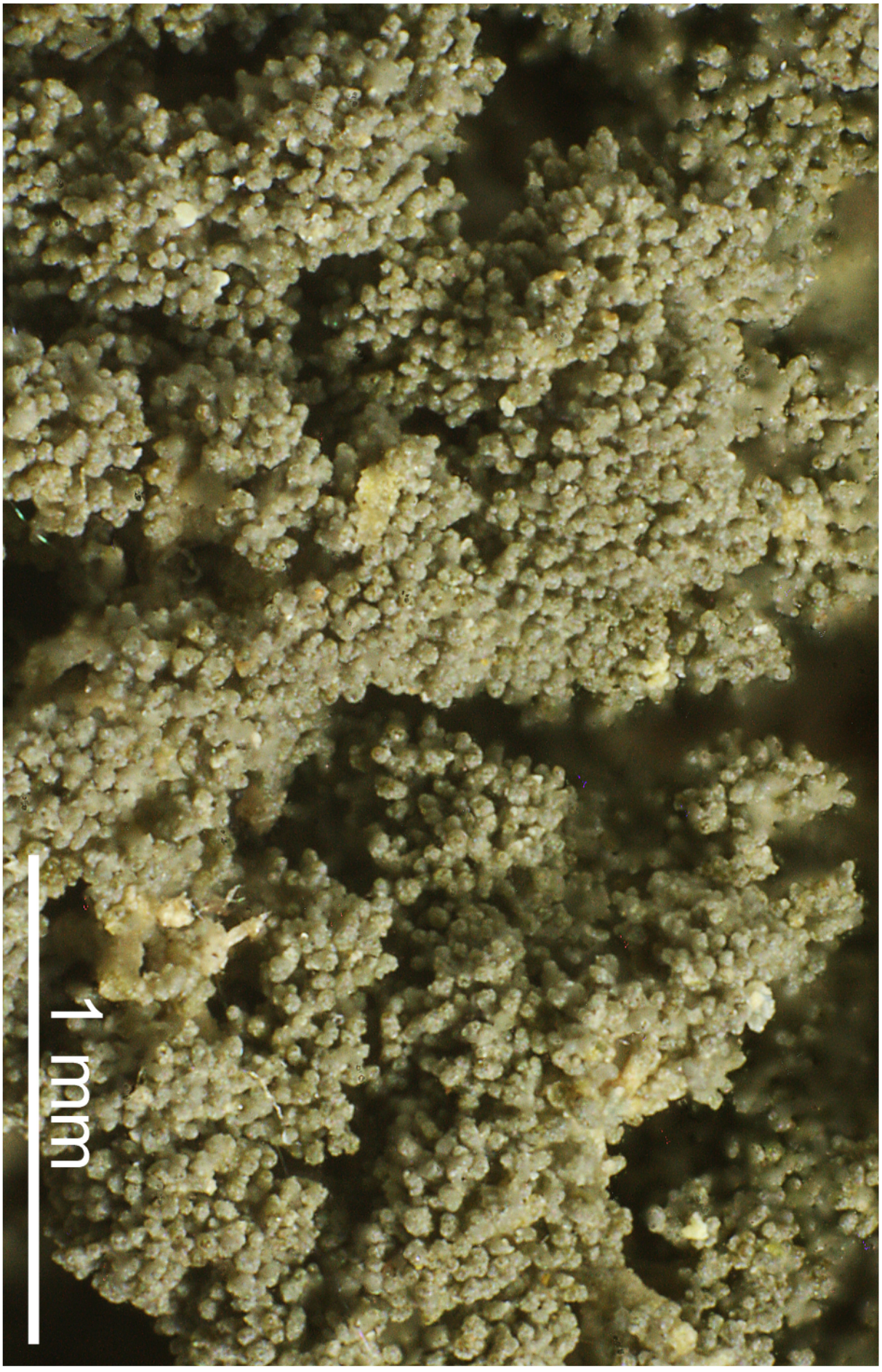
Leptogium azureum

Leptogium coralloideum (Meyen & Flot.) Vain.

Thallus 150-500 µm thick, leaden grey or blackened, surfaces wrinkled (at 10 x magnification) Isidia cylindrical, becoming coralloid, to 70 µm thick. Apothecia rare, submarginal, pedicellate. Ascospores muriform, 30-40 x 10-17 µm, apices acute to acuminate. Similar to *Leptogium faciifictum,* which has isidia 80-150 µm thick.

[19061], Australia, New South Wales, Marble Arch, Deua National Park, 18 km south-south-west of Majors Creek, 35°44' S, 149°42' E, 650 m, growing on branches of *Bursaria spinosa* in deep, limestone-dominated creek surrounded by dry sclerophyll forest. Leg. H. Streimann (38810A), 20.09.1987, det. D. Verdon. LICHENES AUSTRALASICI EXSICCATI NO. 158.





Leptogium coralloideum

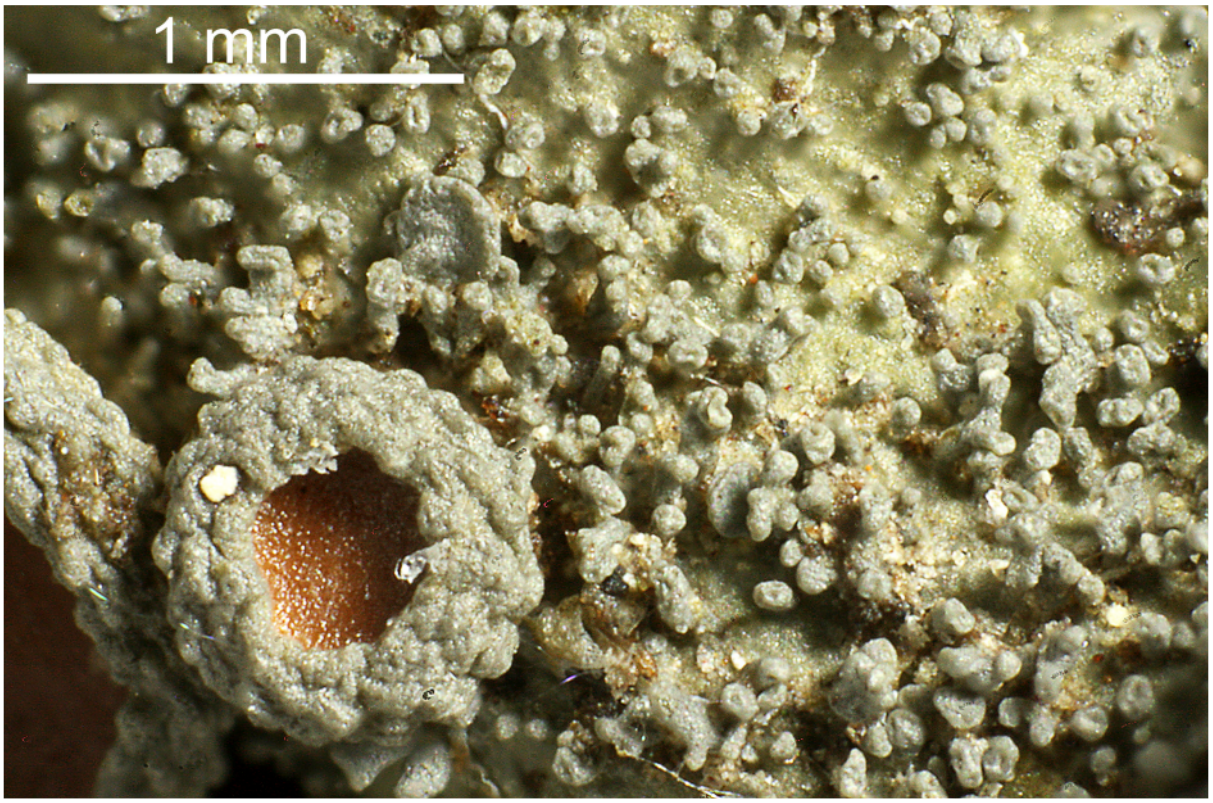
Leptogium cyanescens (Rabenh.) Körb.

Thallus leaden grey to bluish, 70-100 µm thick. Upper surface lacking significant wrinkles. Isidia cylindrical, clavate or ±flattened. Apothecia sessile or subpedicellate. Ascospores submuriform, 18-27 x 6-10 µm, apices acute.

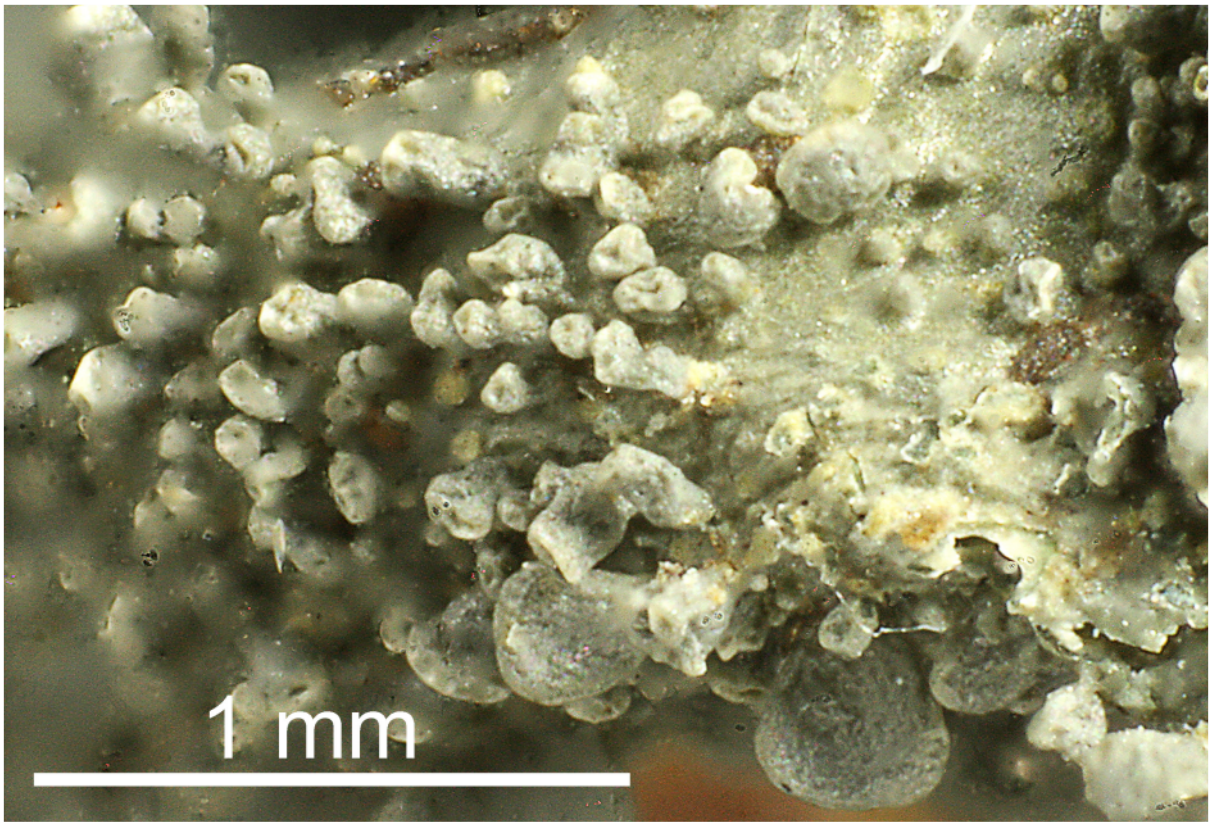
[19062], Norfolk Island. Mt. Pitt Reserve, Selwyn Pine Track, 29°01' S, 167°56'30" E, 200 m, growing on Elaedendron in mixed subtropical rainforest. Leg. J.A. Elix (18725) & H. Streimann, 08.12.1984. LICHENES AUSTRALASICI EXSICCATI NO. 083.

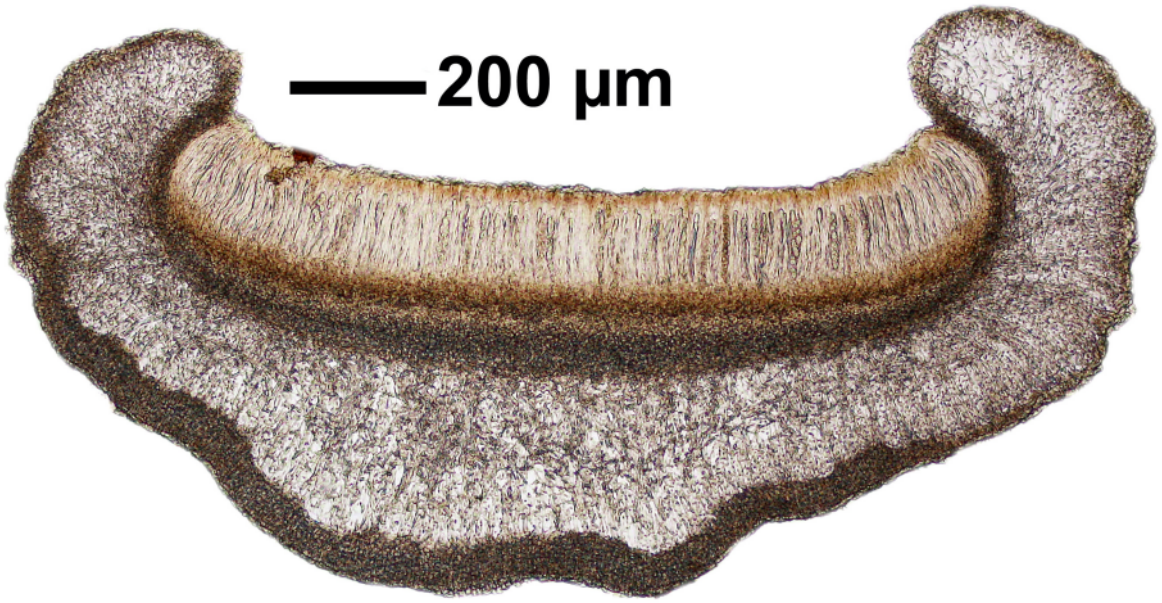




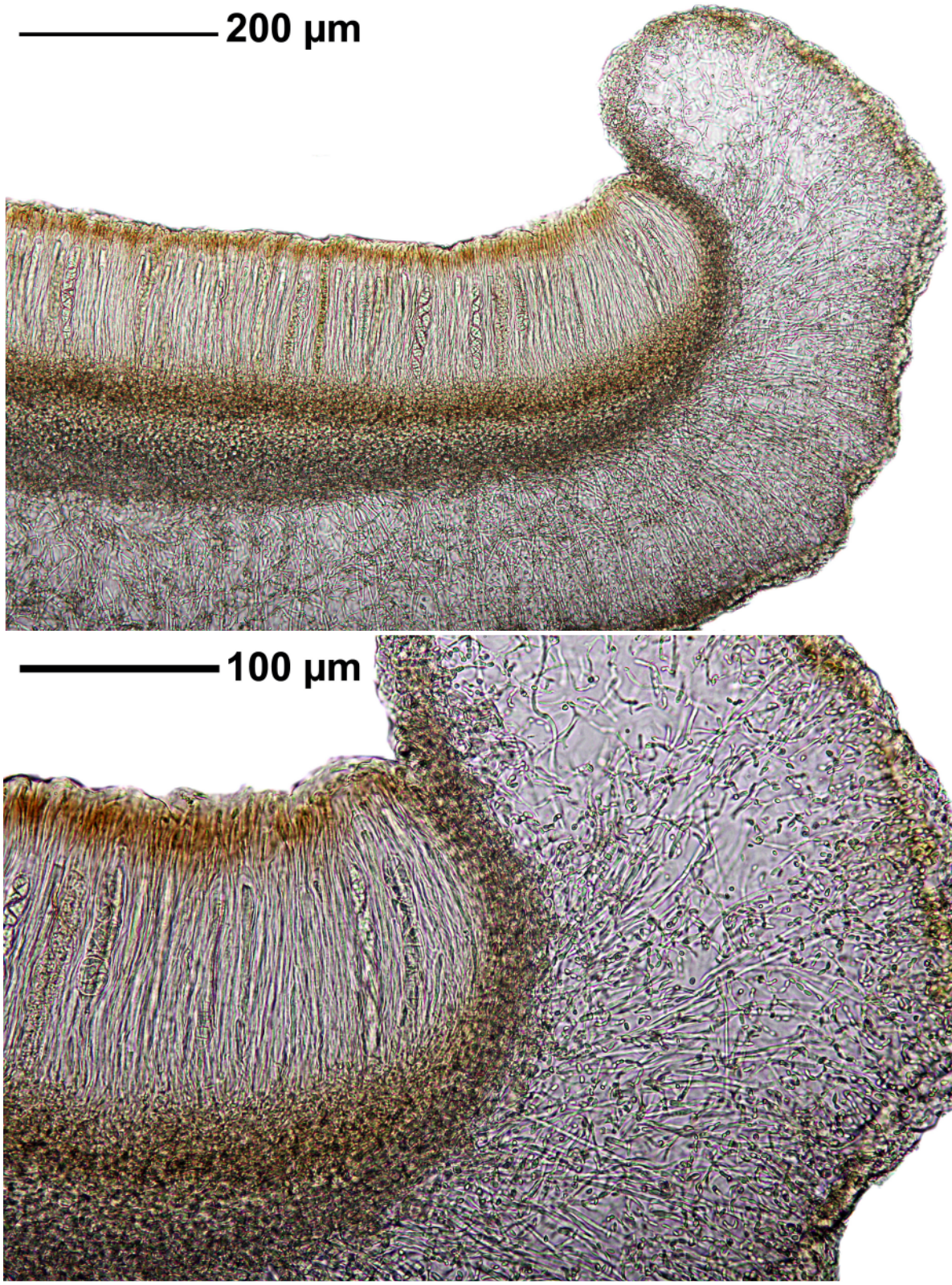


Leptogium cyanescens

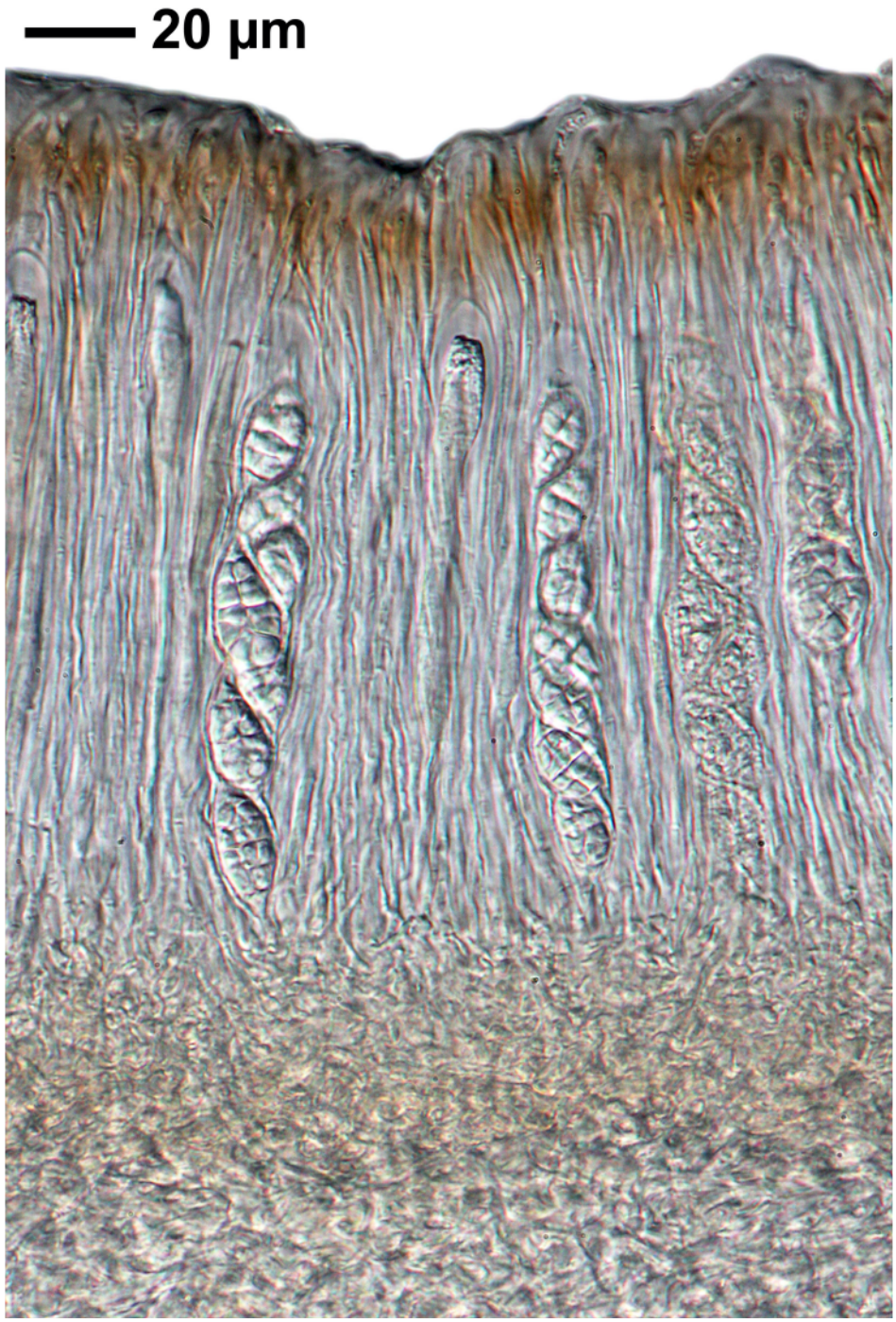




Leptogium cyanescens

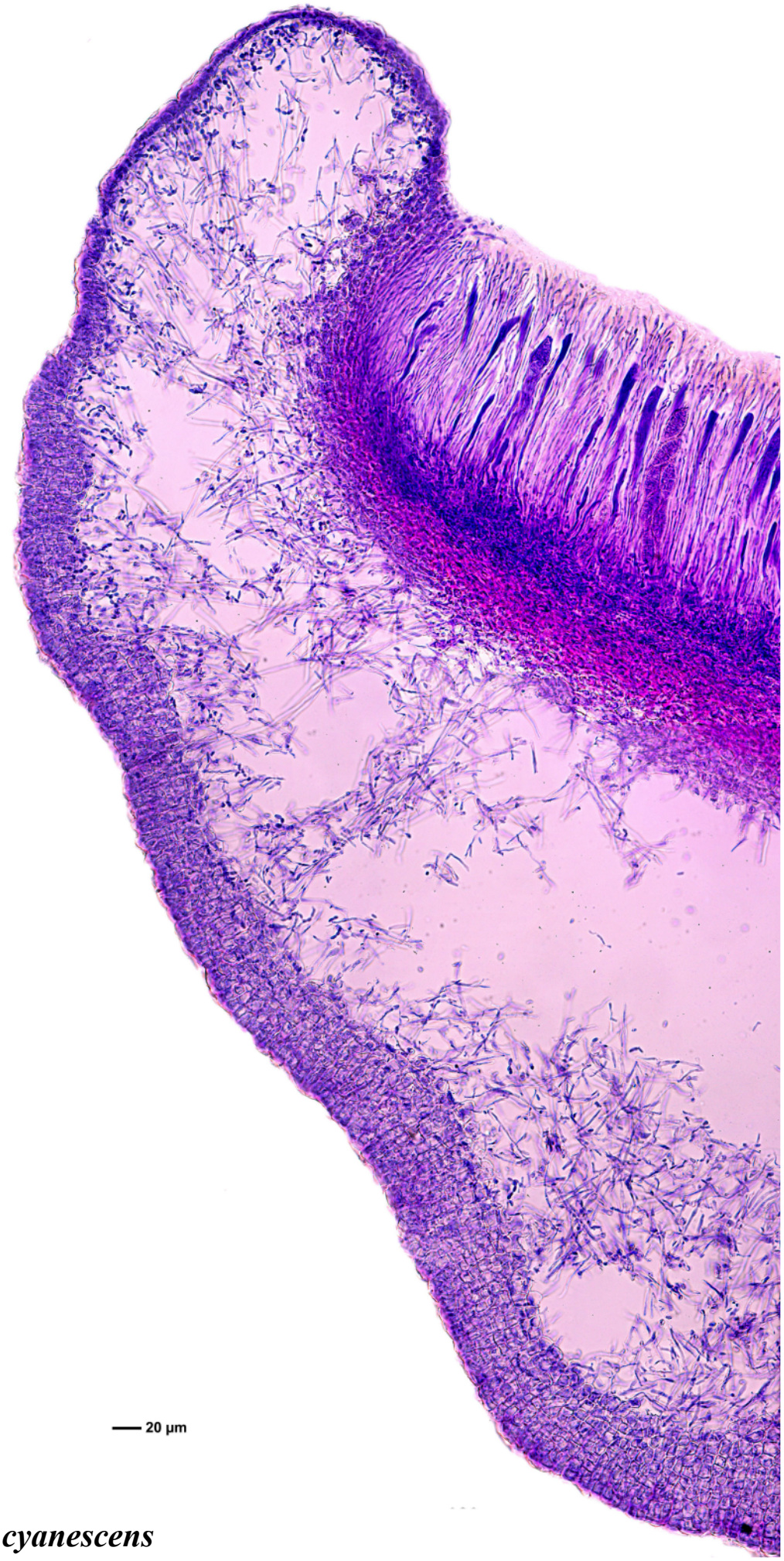


Leptogium cyanescens





Leptogium cyanescens

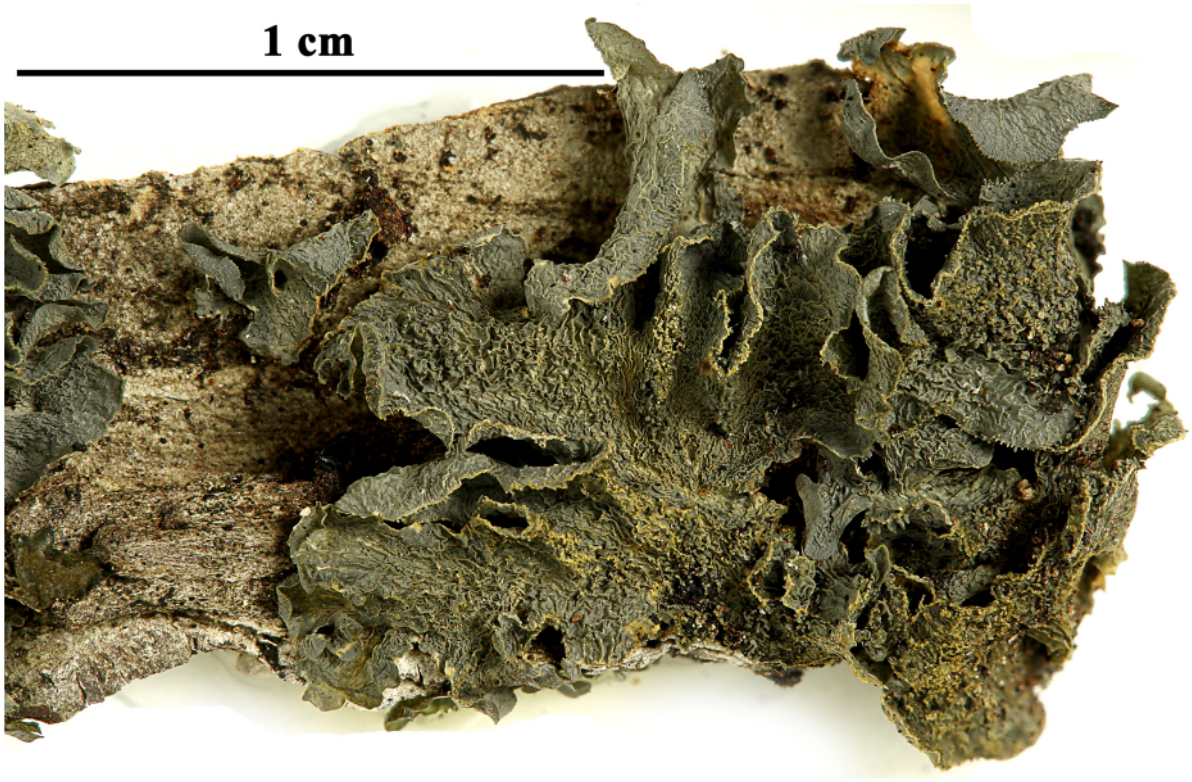


Leptogium cyanescens

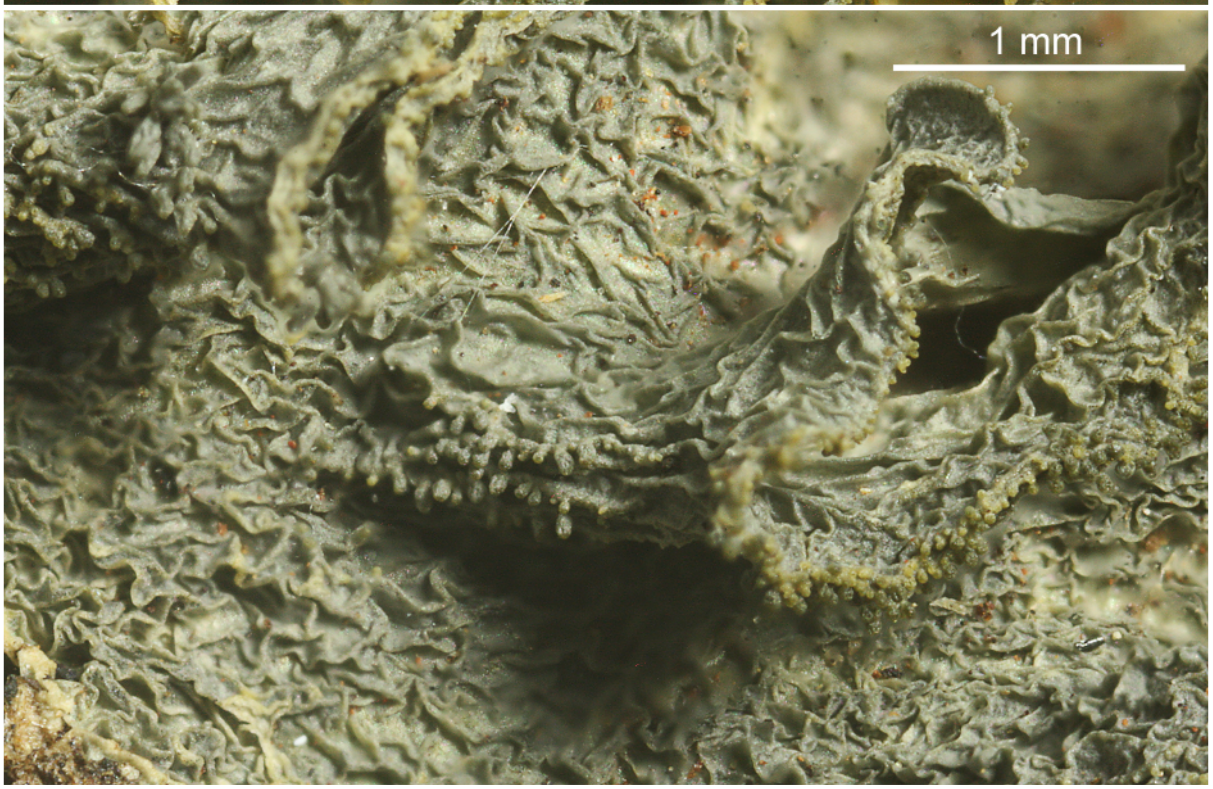
Leptogium faciifictum D.Verdon

Thallus leaden grey or blackened, 90 - 300 µm thick. Margins of lobes undulate to plicate. Upper surface prominently wrinkled, isidiate; wrinkles ±anastomosing, rarely lamelloid; isidia sparse to dense, cylindrical, branched, ±coralloid, 80-150 µm thick. Apothecia laminal to submarginal. Ascospores ±muriform, 25-30 x 10-13 µm, apices usually acute. Similar to *Leptogium coralloideum*, which has much finer isidia.

[19063], Australia, Queensland, Forty Mile Scrub National Park, 53 km east of Mt. Surprise, 18°18' S, 144°49' E, 770 m, growing on trunk of large *Pleiogonium timorense* in *Brachychiton* and *Pleiogonium* dominated scrub on basalt flow. Leg. H. Streimann (46716), 17.12. 1990, det. D. Verdon. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 233.







Leptogium faciifictum





Leptogium faciifictum

Leptogium moluccanum (Pers.) Vain.

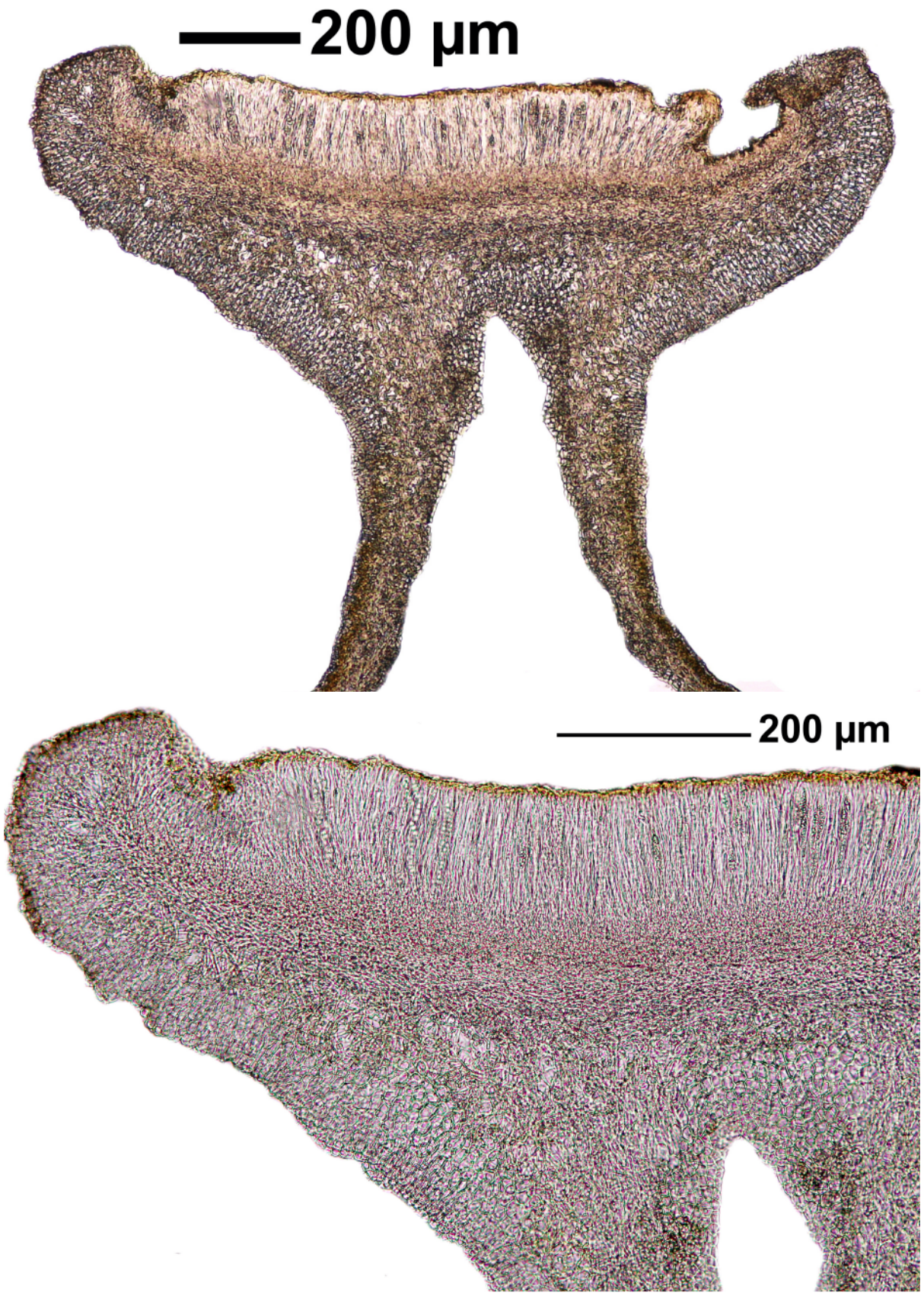
Thallus leaden grey to olivaceous, 30-60 µm thick. Surfaces smooth or roughened, matt, not isidiate. Apothecia laminal, sessile to shortly pedicellate, 0.5-2 mm wide. Ascospores submuriform, 28-36 x 7-10 µm, apices subobtuse to acute. Conidia 4-5 µm long. Similar to *Leptogium azureum* which is 50-100 µm thick and has conidia 2-3 µm long.

[19064], Australia, Queensland, Crediton State Forest, 20 km south-south-west of Finch Hatton, 21°19' S, 148°33' E, 840 m, growing on base of *Argyrodendron trifoliatum* in rainforest dominated by *Agyrodendron* and *Syzygium*. Leg. J.A. Elix (21052) & H. Streimann, 01.07.1986, det. D. Verdon. LICHENES AUSTRALASICI EXSICCATI NO. 159.

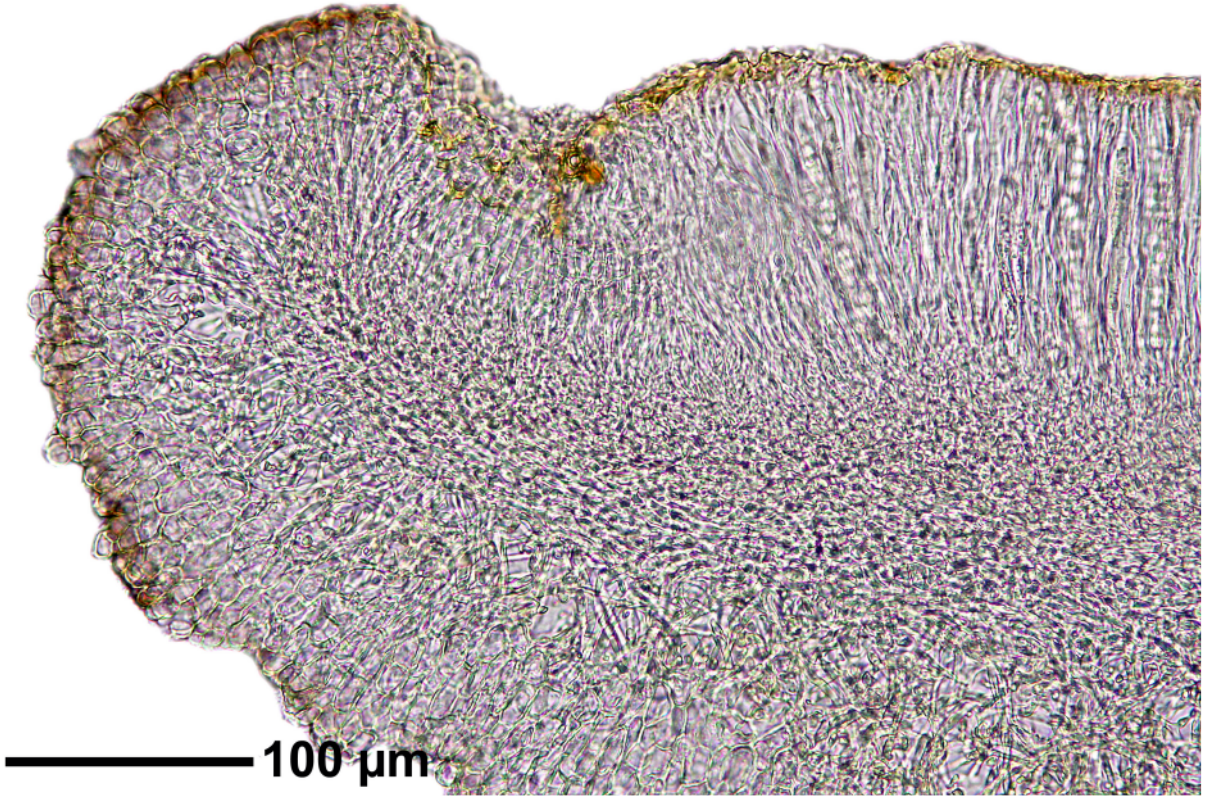


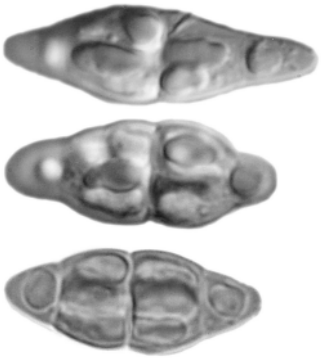


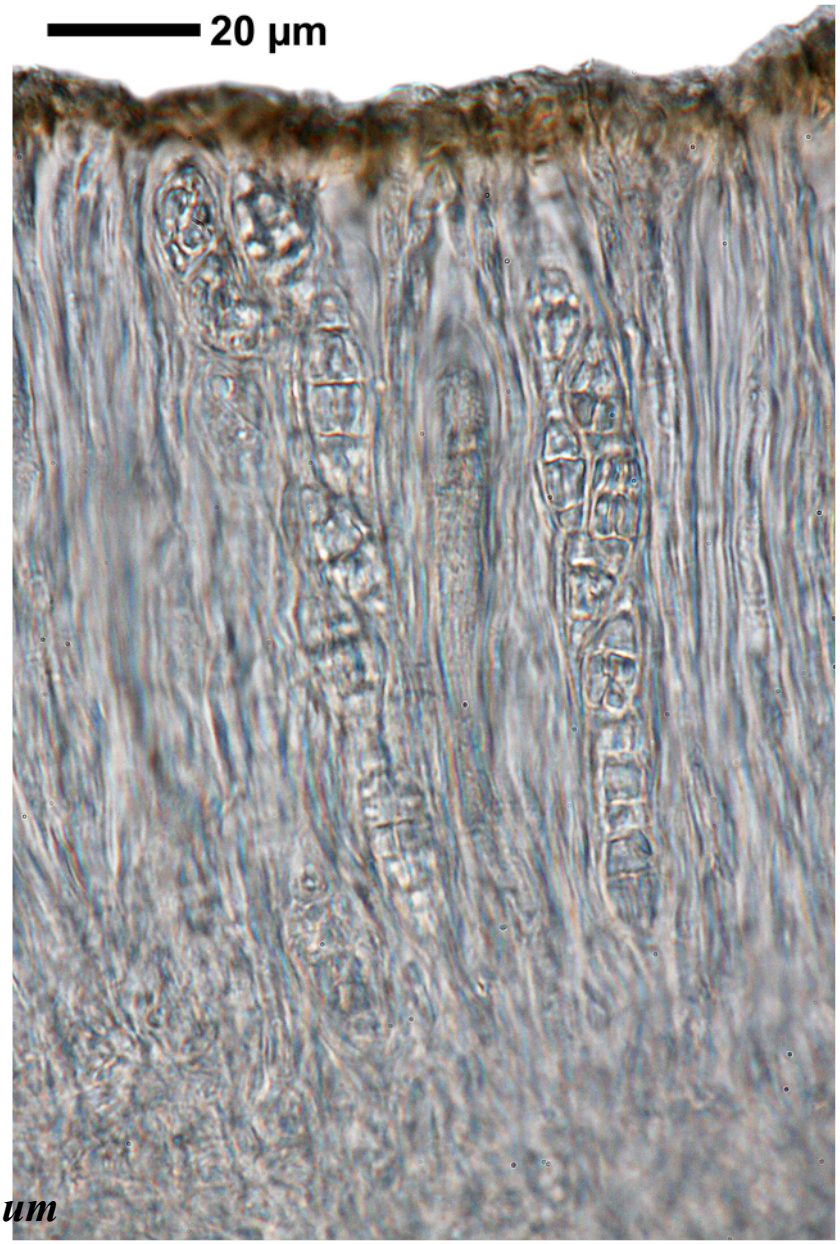
Leptogium moluccanum



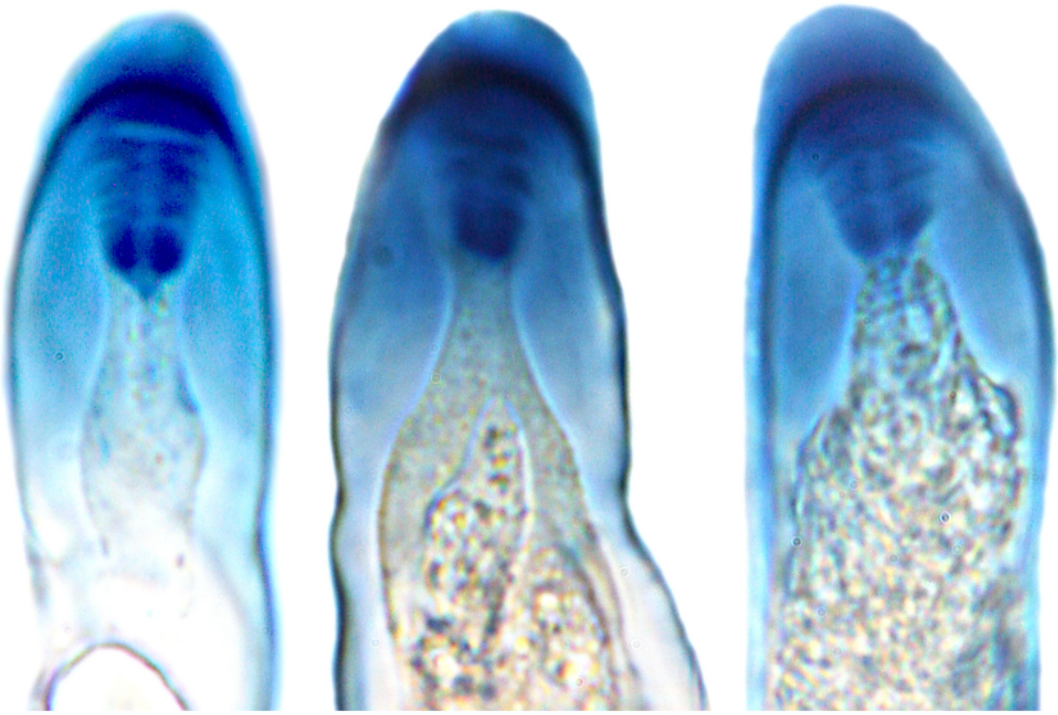
Leptogium moluccanum





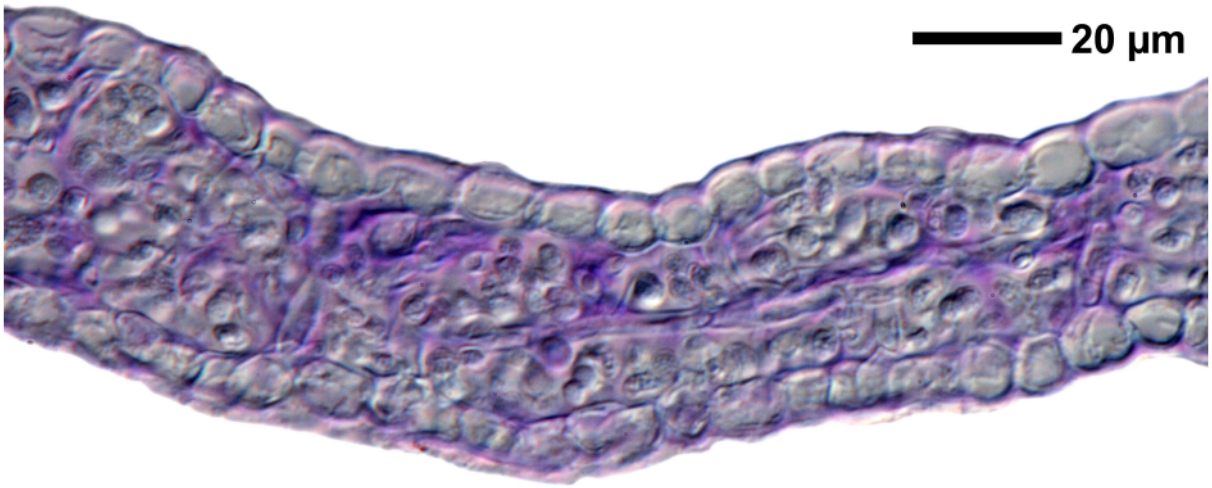


Leptogium moluccanum

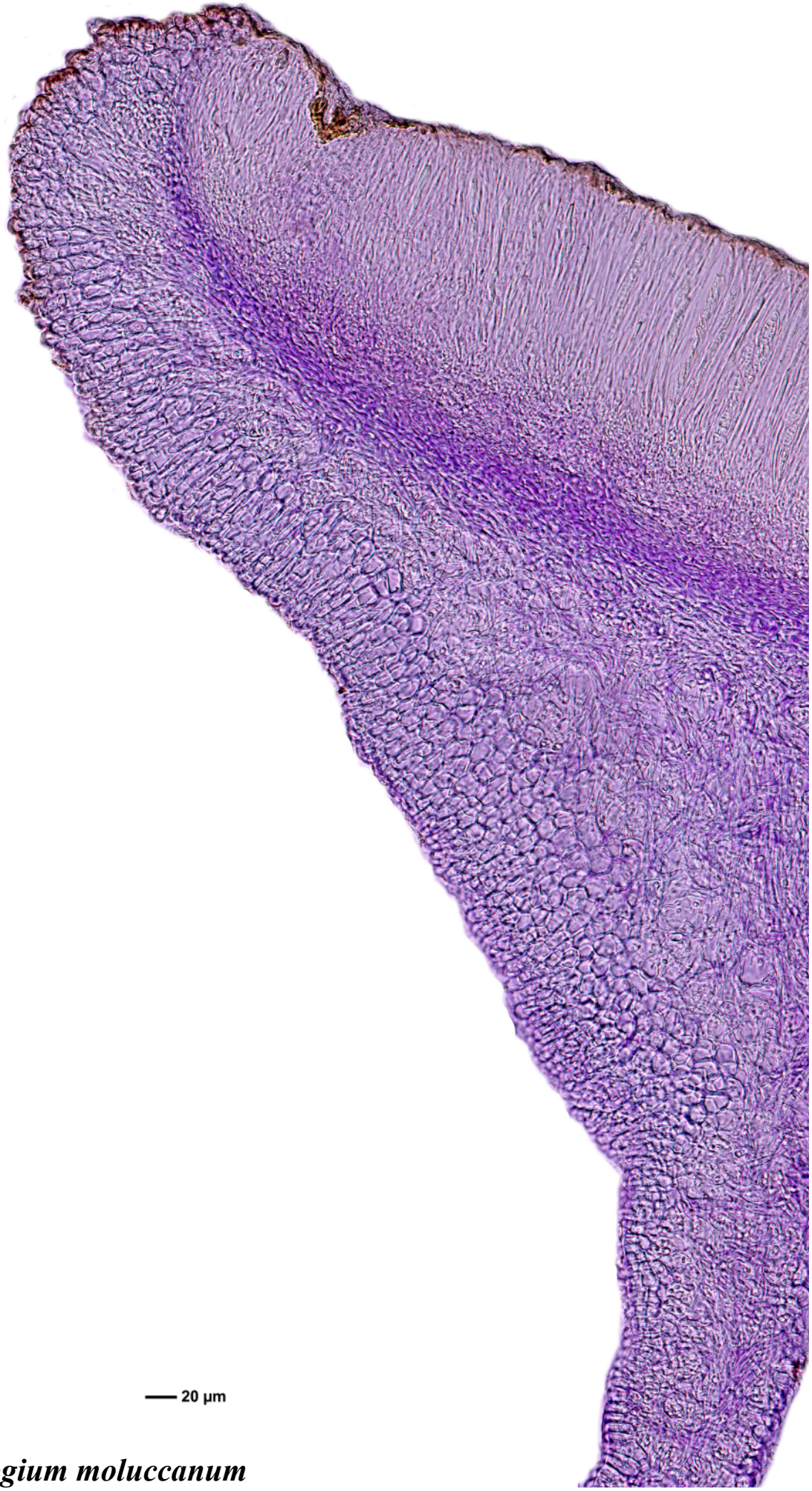


10 µm asci K&J+ blue





Leptogium moluccanum



Leptogium moluccanum

Leptogium pecten F.Wilson

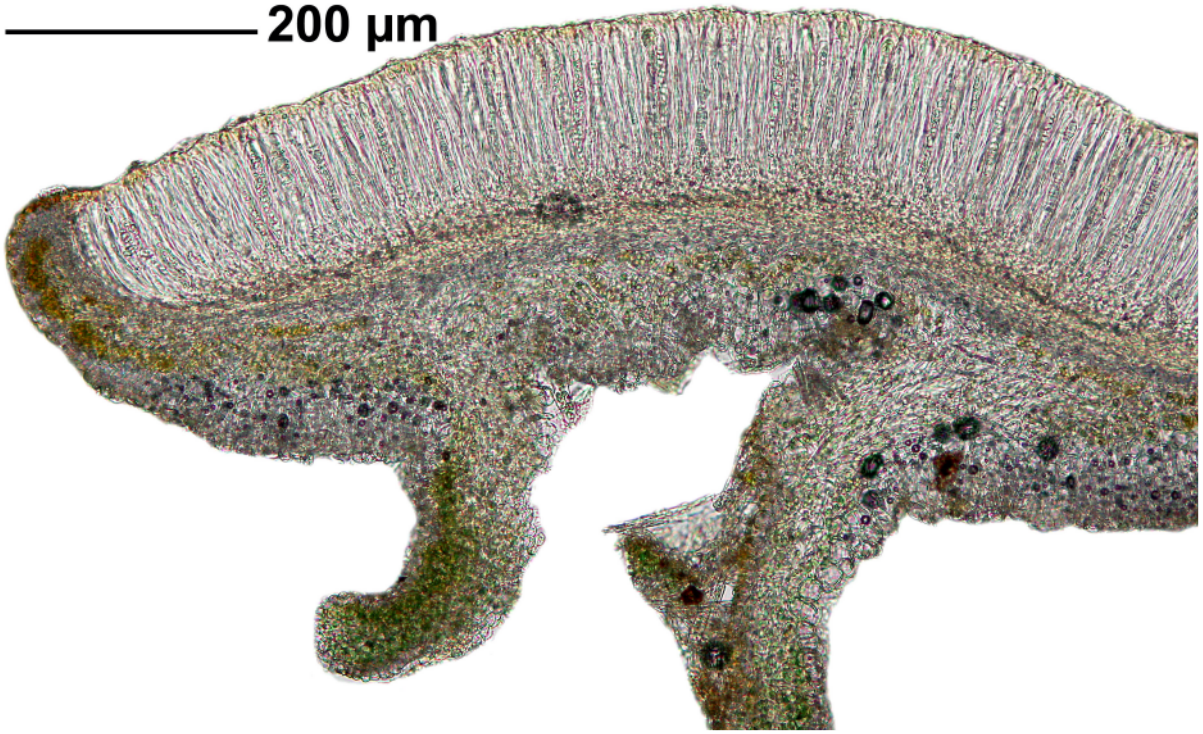
Thallus leaden grey or becoming brown, 35-75 µm thick, ±subsquamulose, ±closely adnate. Lobules usually narrowly linear to subterete, ±branched; surfaces smooth to roughened. Apothecia laminal, sessile, 0.5-2 mm wide, thalline exciple finally recurved. Ascospores submuriform, 20-33 x 7-10 µm, apices obtuse, 8/ascus.

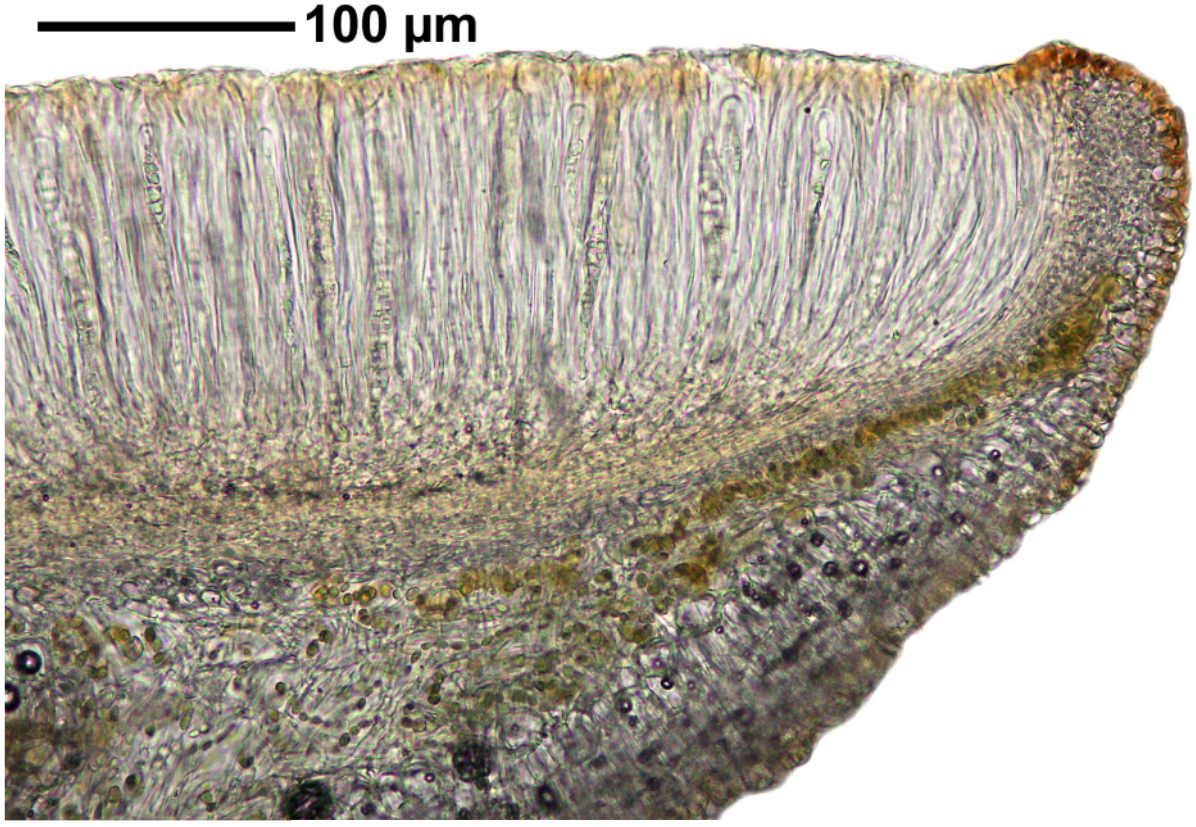
[19065], Australia, New South Wales, Wog Wog property, 26 km southwest of Bombala, 37°04' S, 149°28' E, 360 m, growing on base of large Eucalyptus trunk in dry sclerophyll forest on moderate slope. Leg. H. Streimann (36440), 27.02.1986, det. D. Verdon. Chemistry: no lichen substance detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 211.

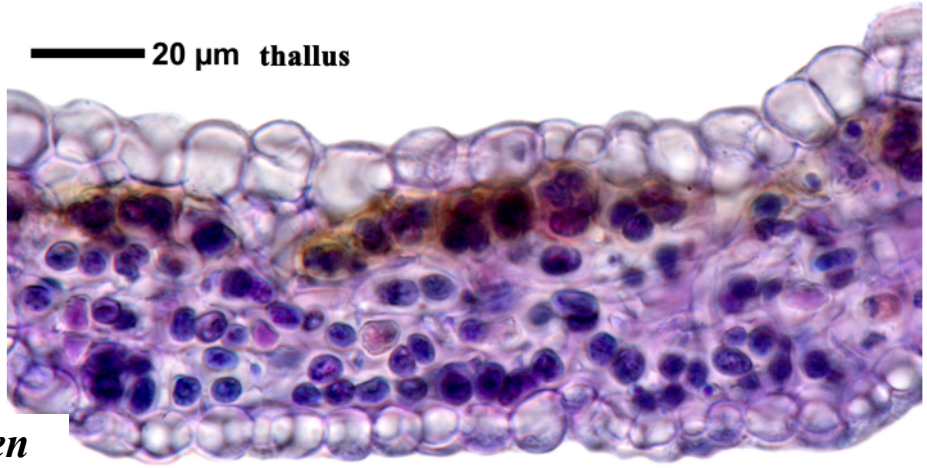




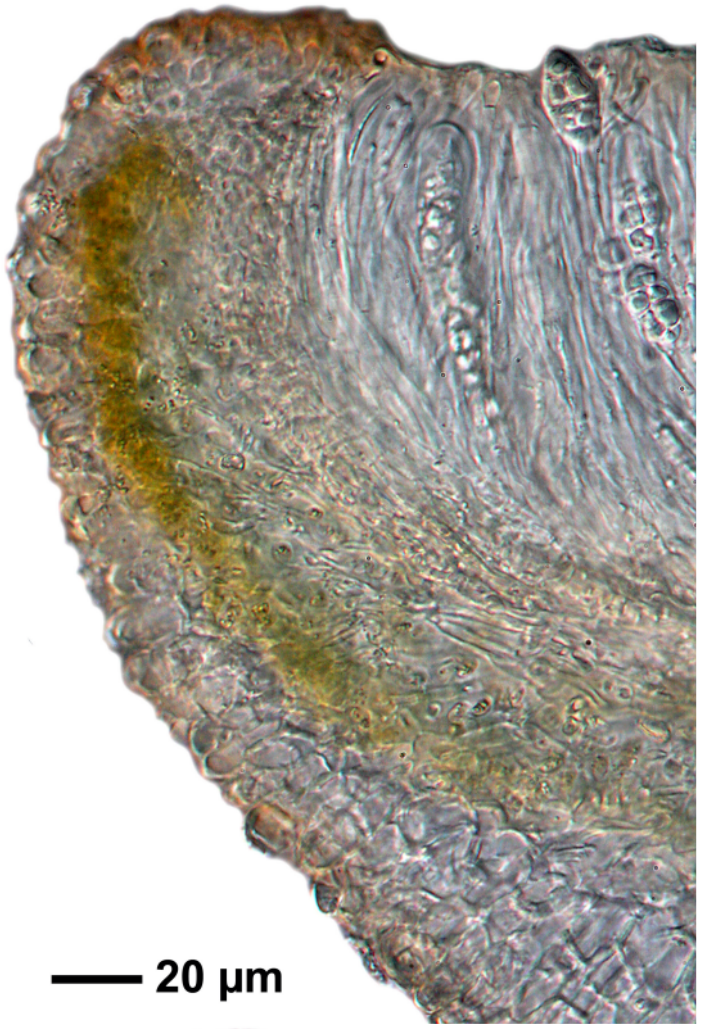
Leptogium pecten

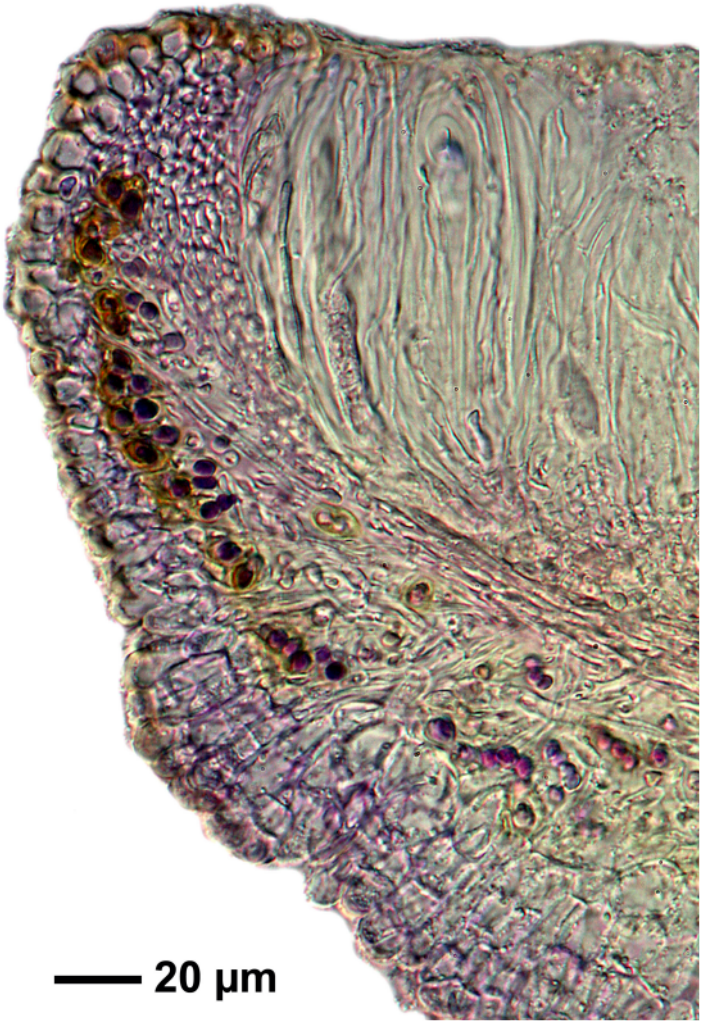




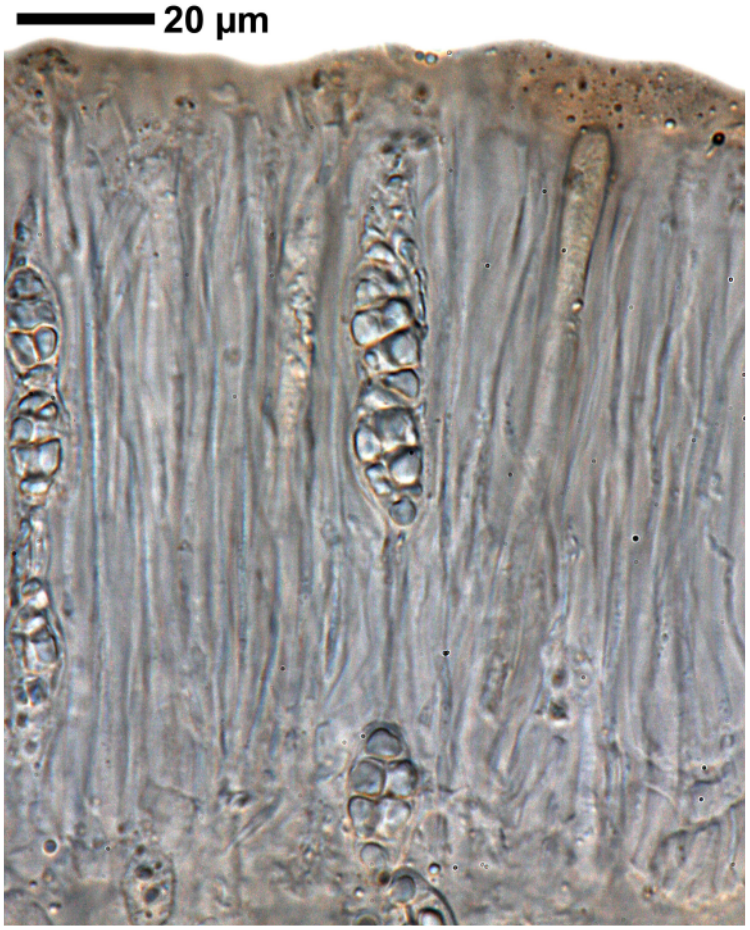


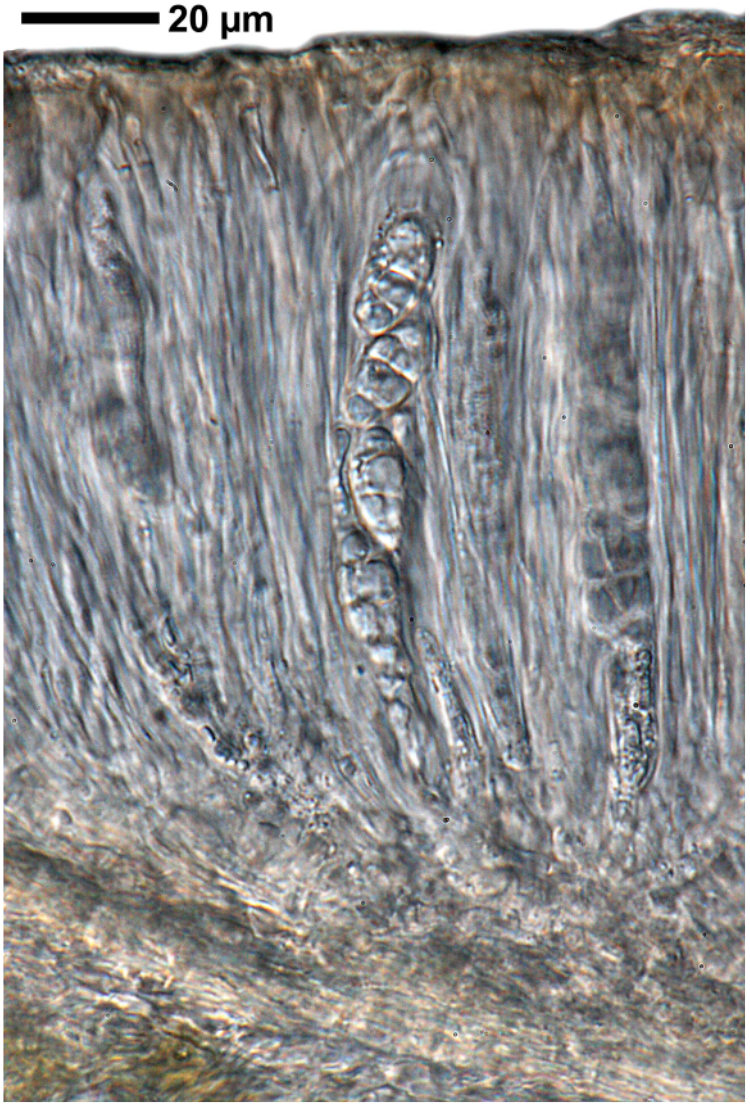
Leptogium pecten





Leptogium pecten



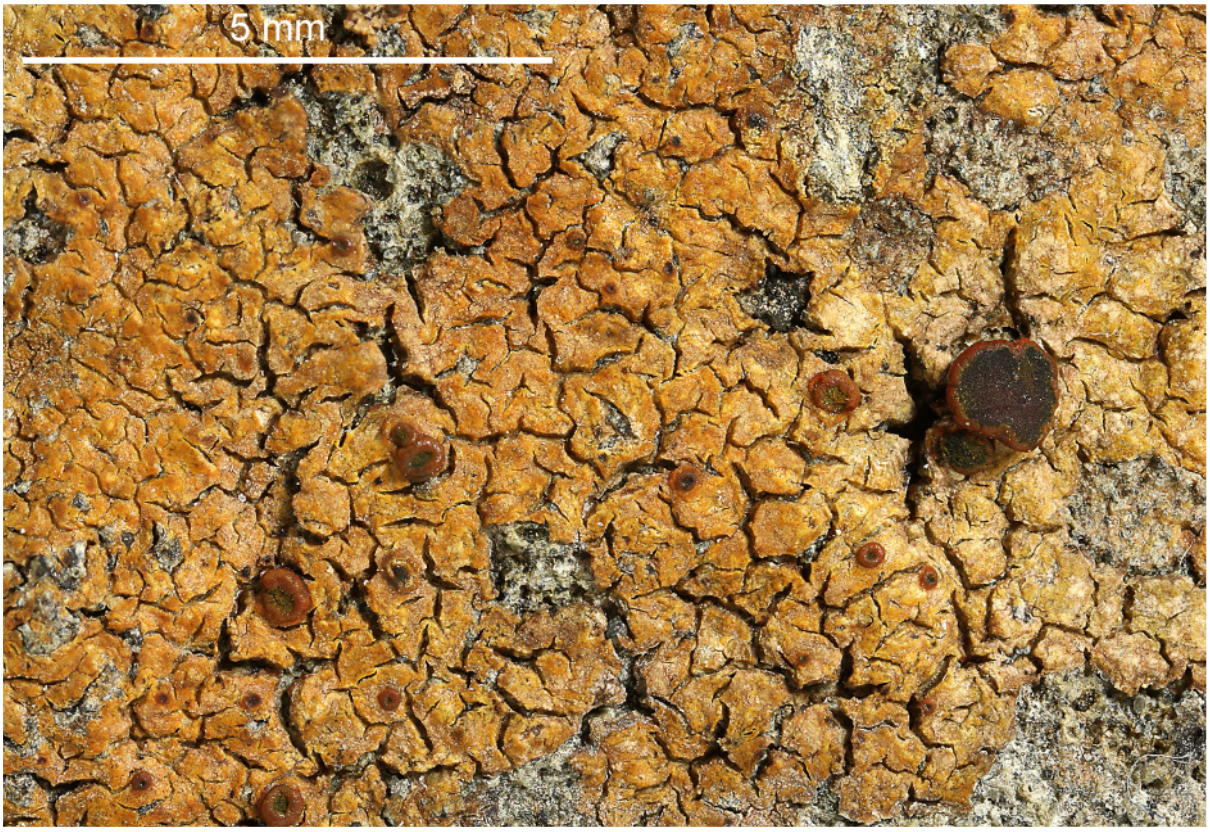


Leptogium pecten

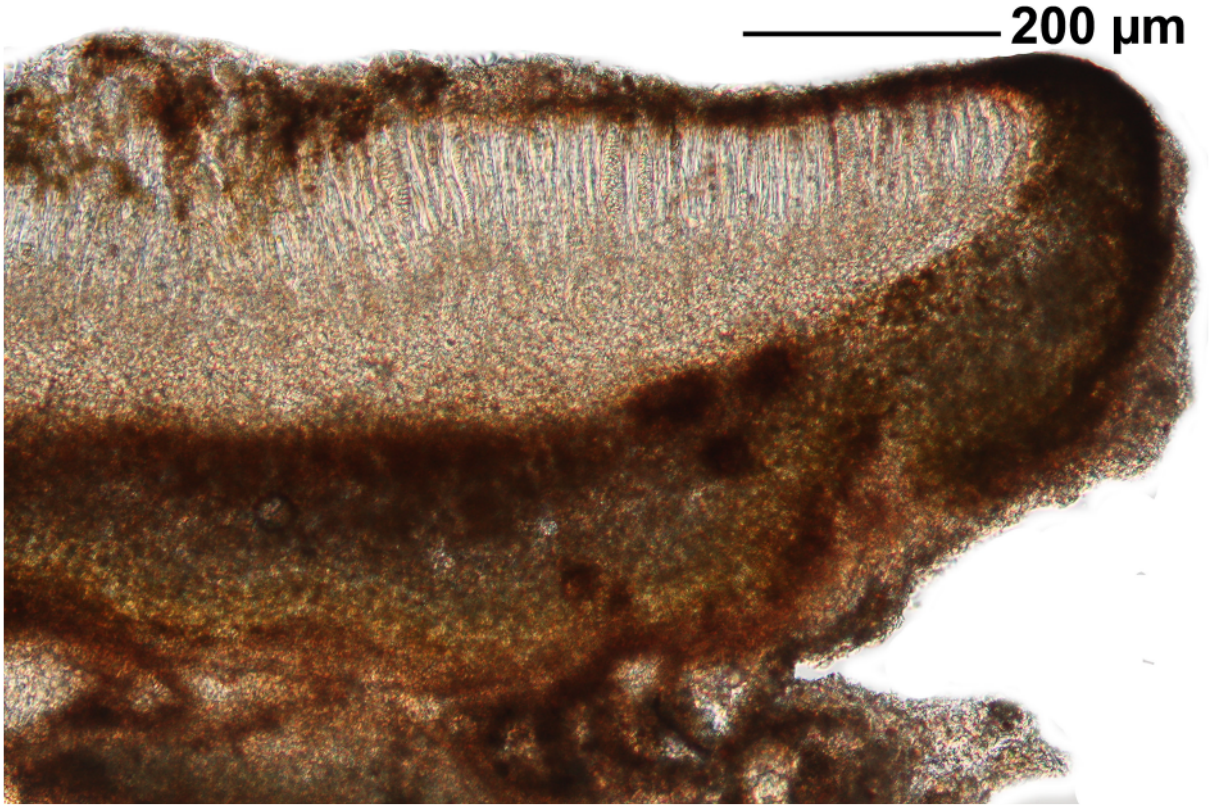
Letrouitia bifera (Nyl.) Hafellner

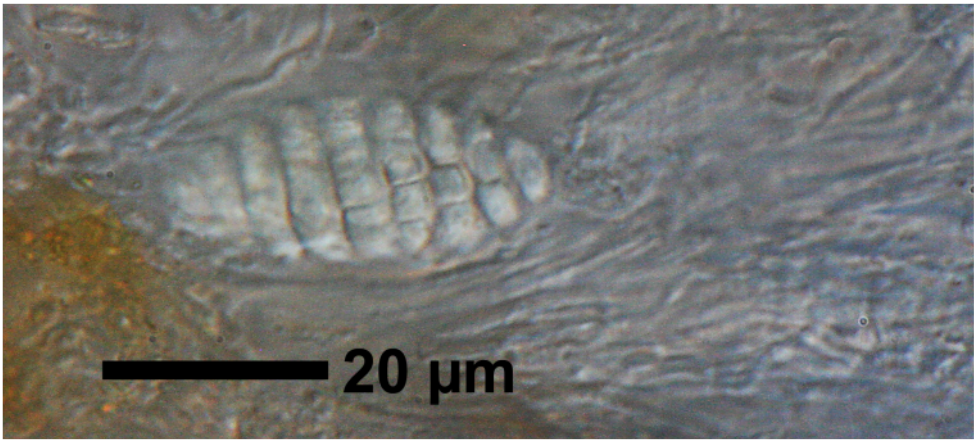
Thallus olive-greenish to pale orange, thin, smooth, glossy; soredia and isidia absent. Apothecia sessile, constricted at the base, 0.5-1.3 mm wide; disc red-brown; margin prominent, orange. Ascospores 32-49 x 14-21 µm, 2-3(-4)/ascus, spiral-type, primarius loculus with 8-10 windings, with 1-4 septa to be seen in the upper or lower optical section. Chemistry: thallus and apothecia K+ purple; parietin (minor), fragilin (minor), fragilin bisanthrone (minor), physcoin bisanthrone (minor), exuviatic acid B (minor), ±emodin (trace), ±7-chloroemodinal (trace), ±7-chloroparietinic acid (trace).

[19068], Australia, New South Wales, Lord Howe Island, near junction of tracks to Mutton Bird Point and Intermediate Hill, 31°32'43" S, 159°04'48" E, 60 m, growing on basalt rocks in dry lowland forest with basalt outcrops. Leg. J.A. Elix (32755) & H. Streimann 21.06.1992. Chemistry: parietin (major), exuviatic acid B (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 286.

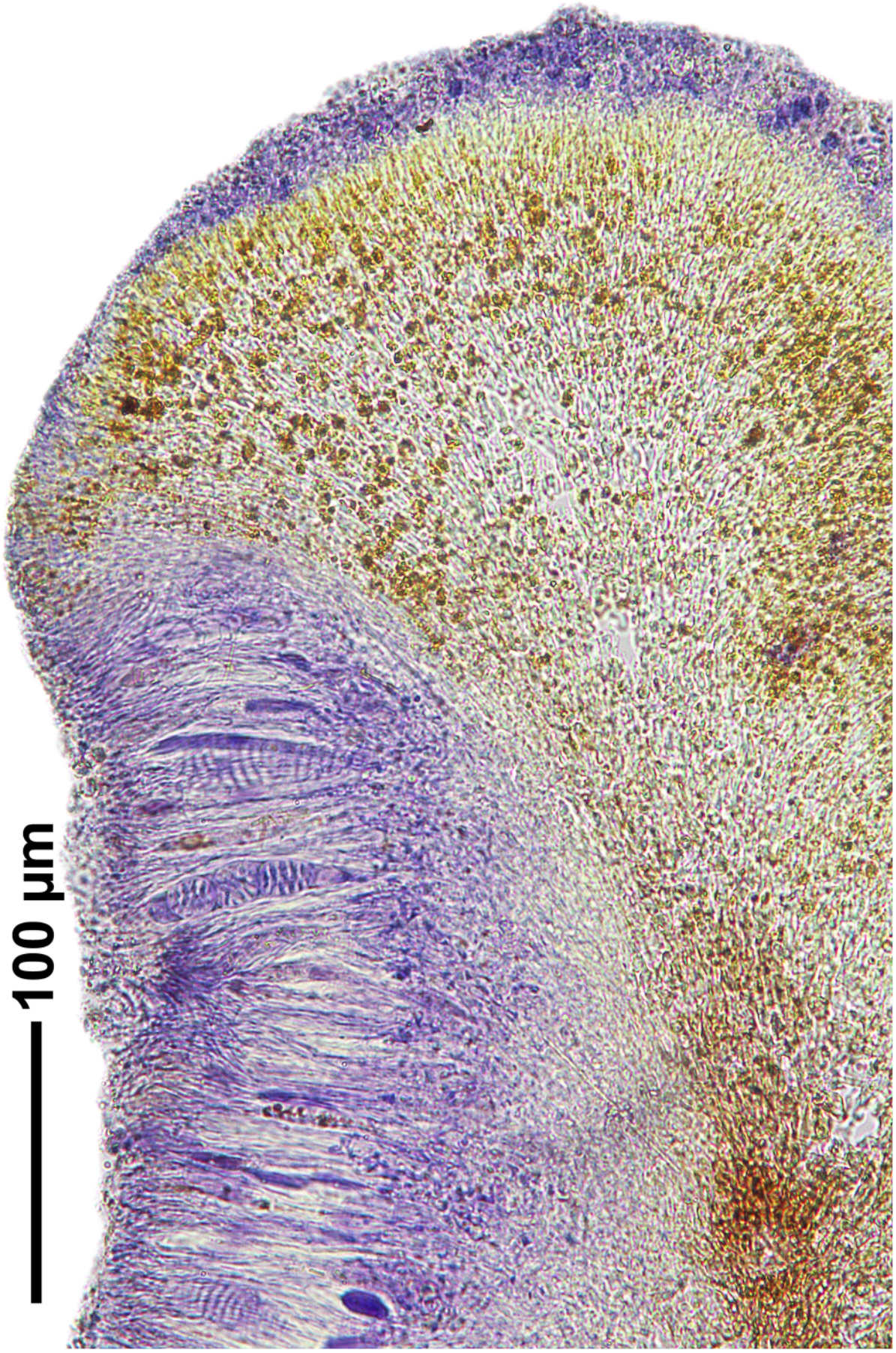




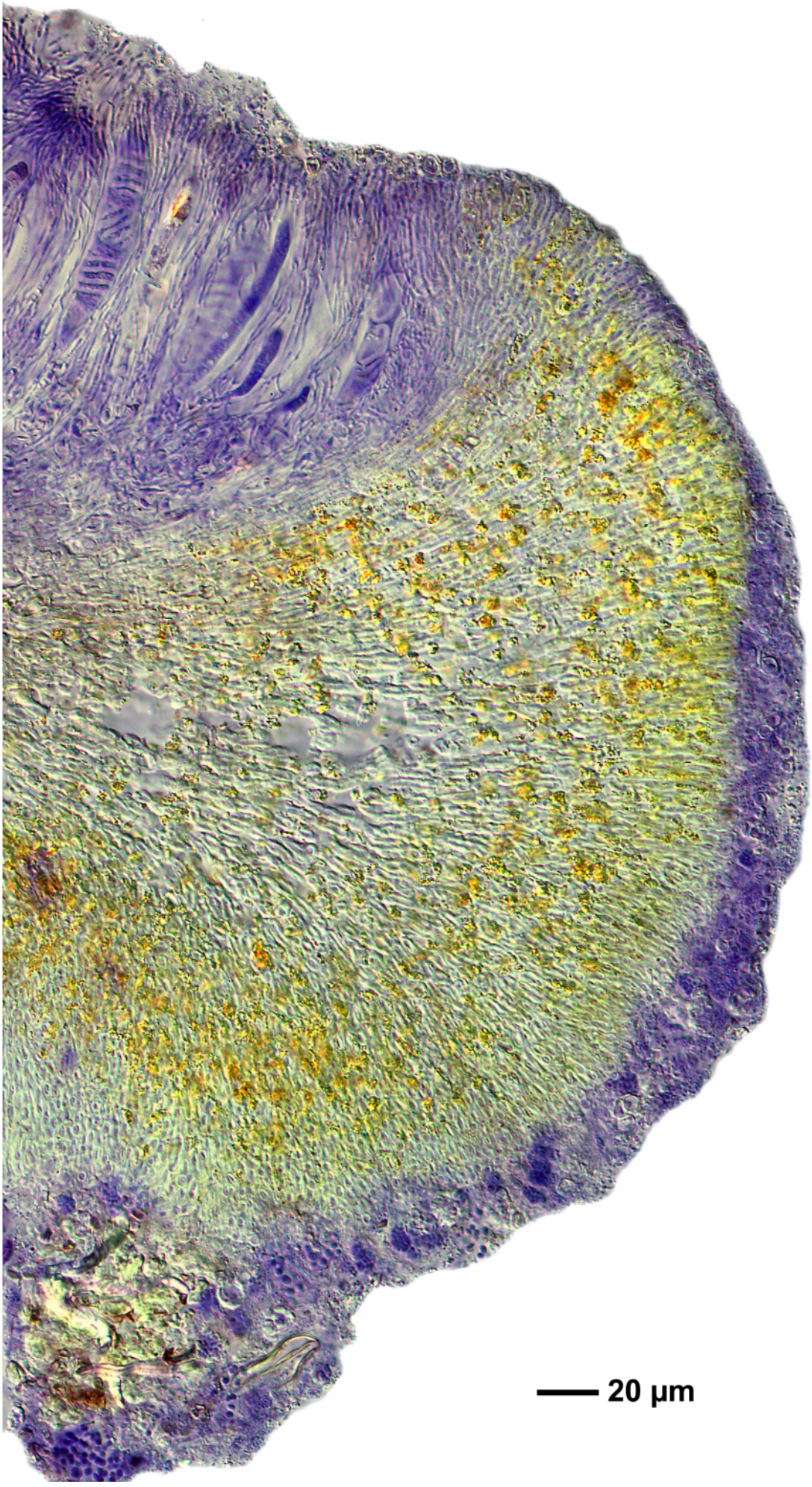




Letrouitia bifera



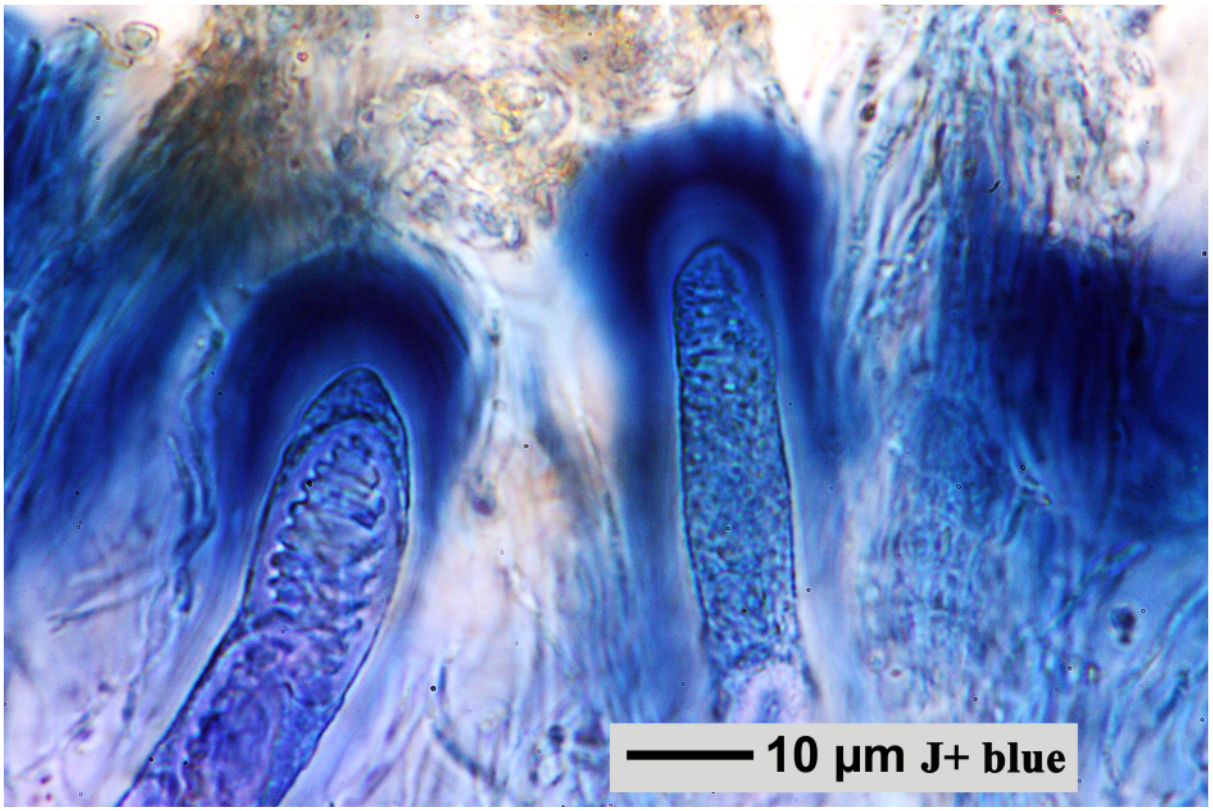
Letrouitia bifera

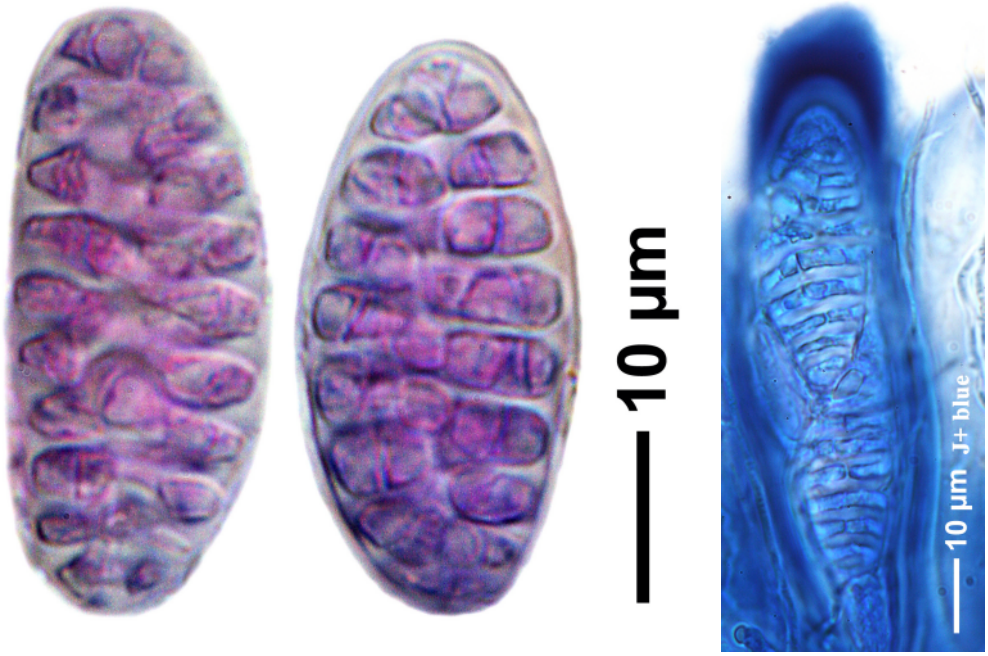


Letrouitia bifera

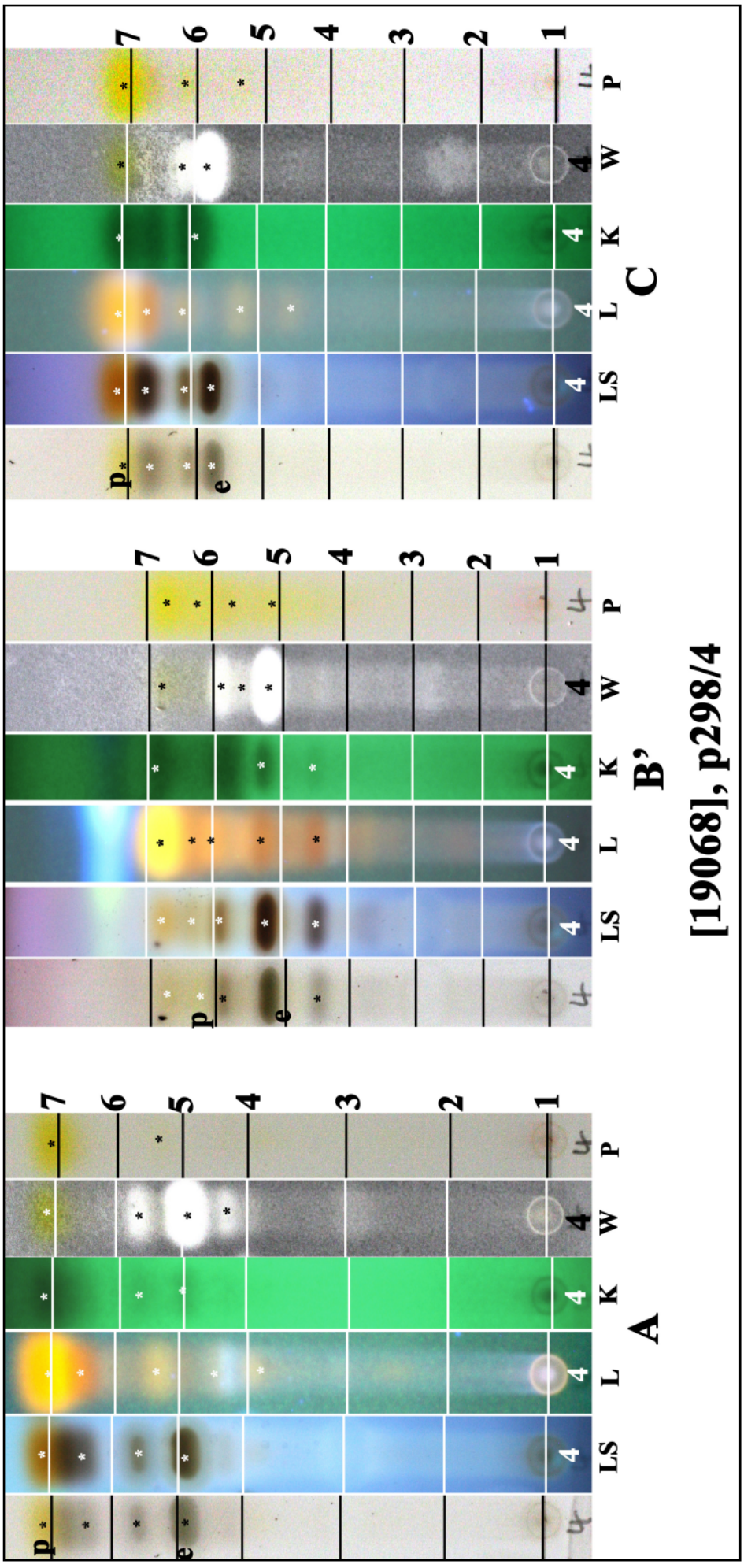


Letrouitia bifera





Letrouitia bifera



p: parietin; e: exuviatic acid B

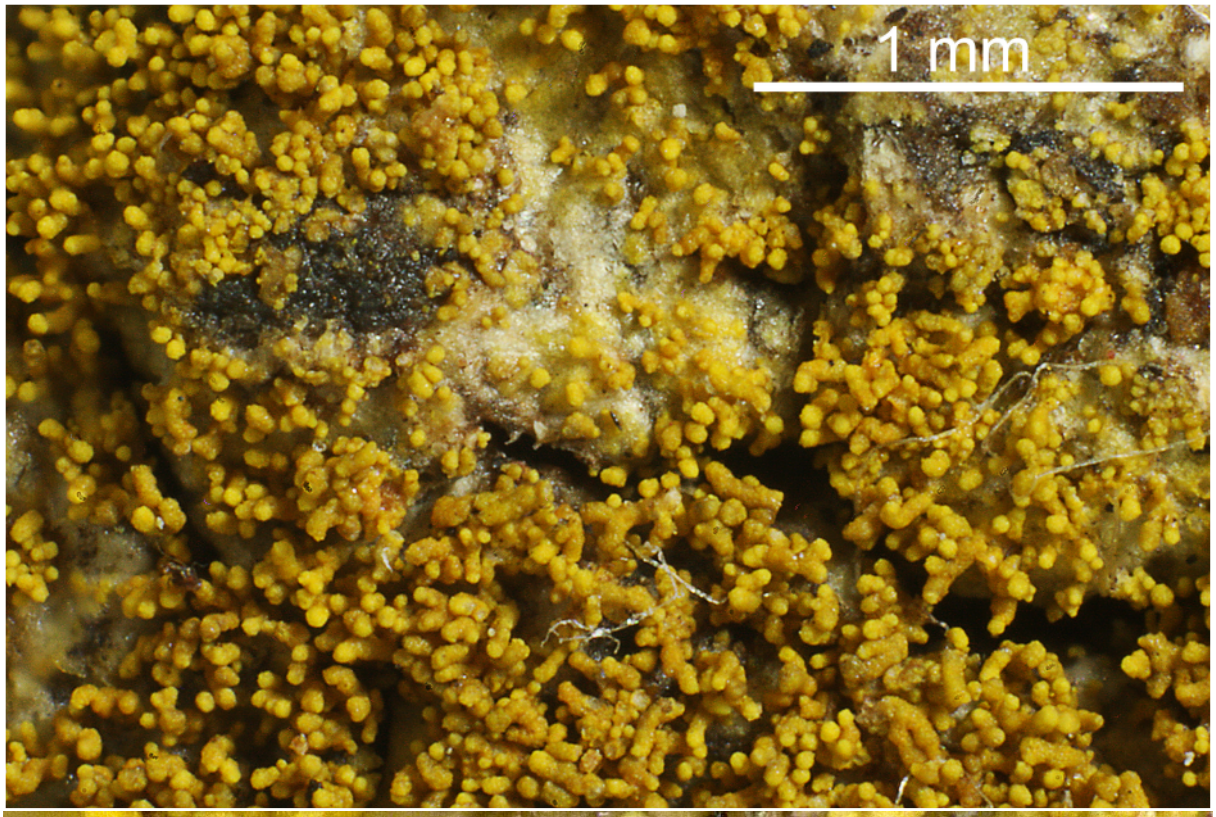
Letrouitia bifera

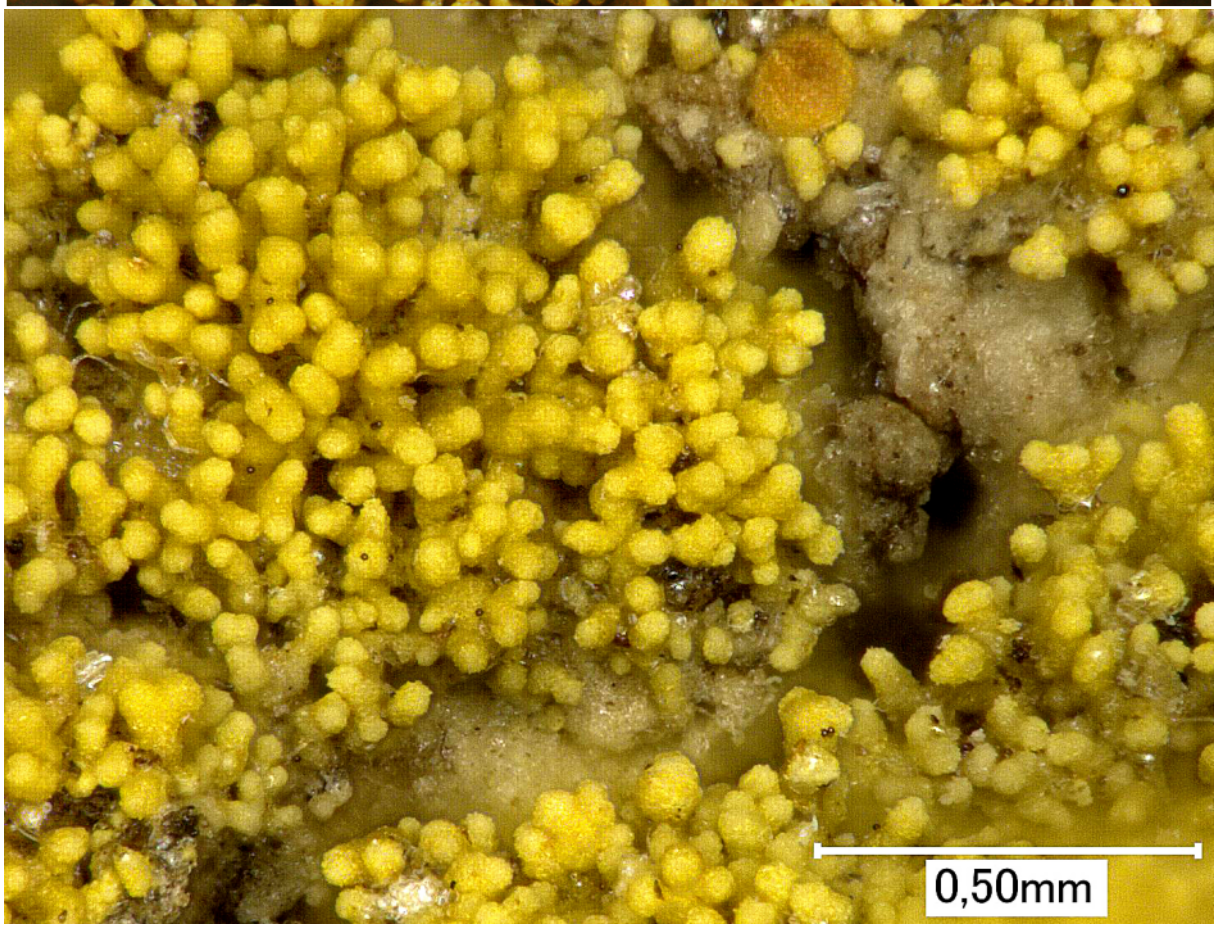
Letrouitia leprolytoides S.Y.Kondr. & Elix

Thallus yellow (K+ red), isidiate, soredia absent. Ascospores 20-34 x 9-10(-12) µm, 5-7-septate. Chemistry: fragilin (major), parietin (minor), ±chloroemodin (trace), ±7-chloroparietinic acid (trace), ±7-chlorofallacinal (trace), ±7-chloroteloschistin (trace), ± exuviatic acid B (major or minor), ±flavo-obscurin A (trace), ±physcoin bisanthrone (trace).

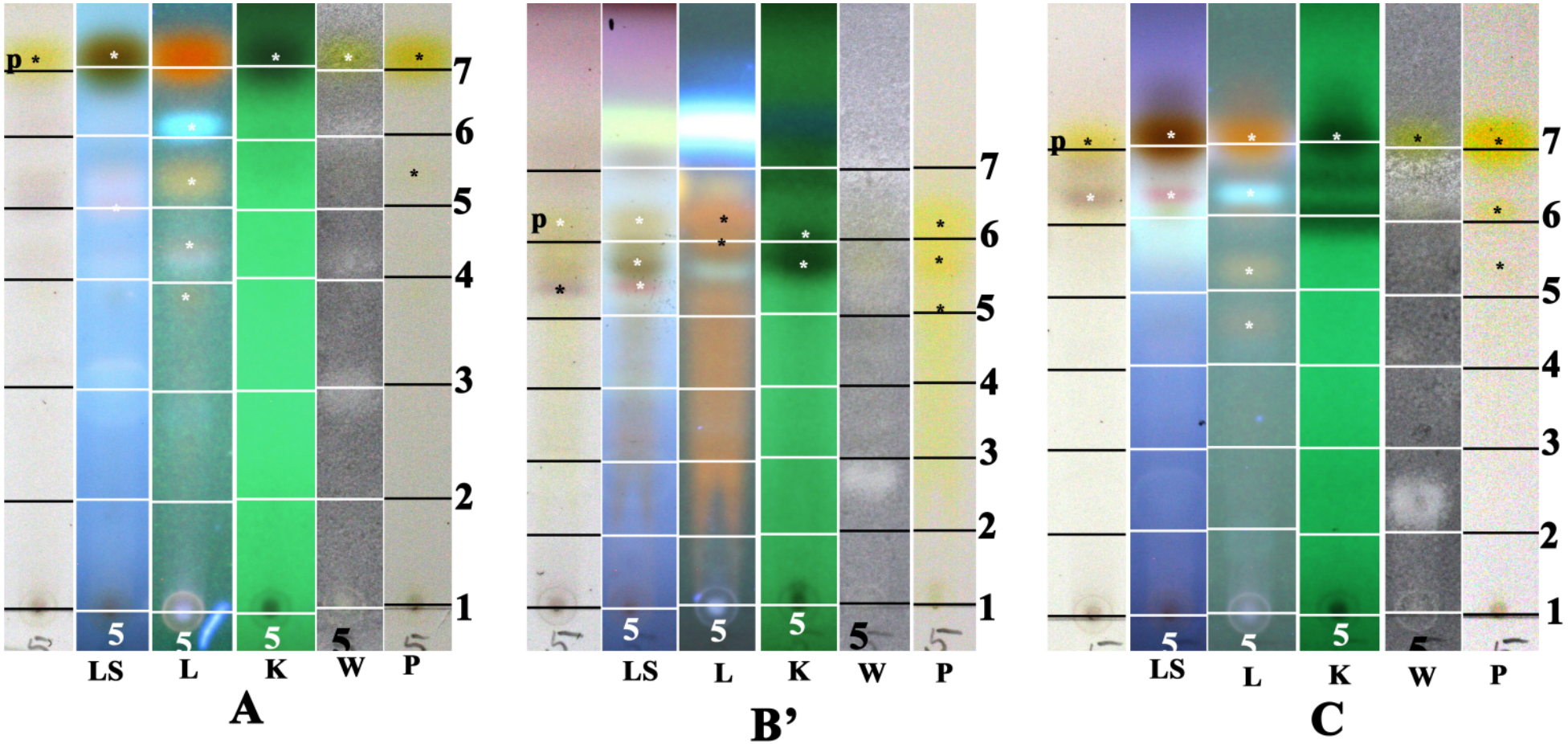
[19069], Australia, Queensland, along the foreshore of Tin Can Inlet, Tin Can Bay, 25°54'S, 153°01' E, 1 m, strand vegetation, on base of Eucalyptus. Leg. J.A. Elix (22872), 4.07.1989.







Letrouitia leprolytoides



[19069], p298/5

p: parietin

Lobaria pseudoretigera Sipman

Lobes irregularly to dichotomously branched, 3-5 mm wide. Upper surface olive brown to tan, distintly reticulate-faveolate, lacking soredia and phyllidia. Isidia sparse to moderately dense, erect, cylindrical, fragile, becomming coralloid-branched, mainly on reticulate ridges and margins. Photobiont blue-green. Lower surface with a network of blue-black tomentum. Chemistry: Medulla K-, C-, KC-, P-; retigeric acid A (minor), retigeric acid B (major), retigeric acid C (minor), retigeric acid D (trace), thelophoric acid (in dark tomentum).

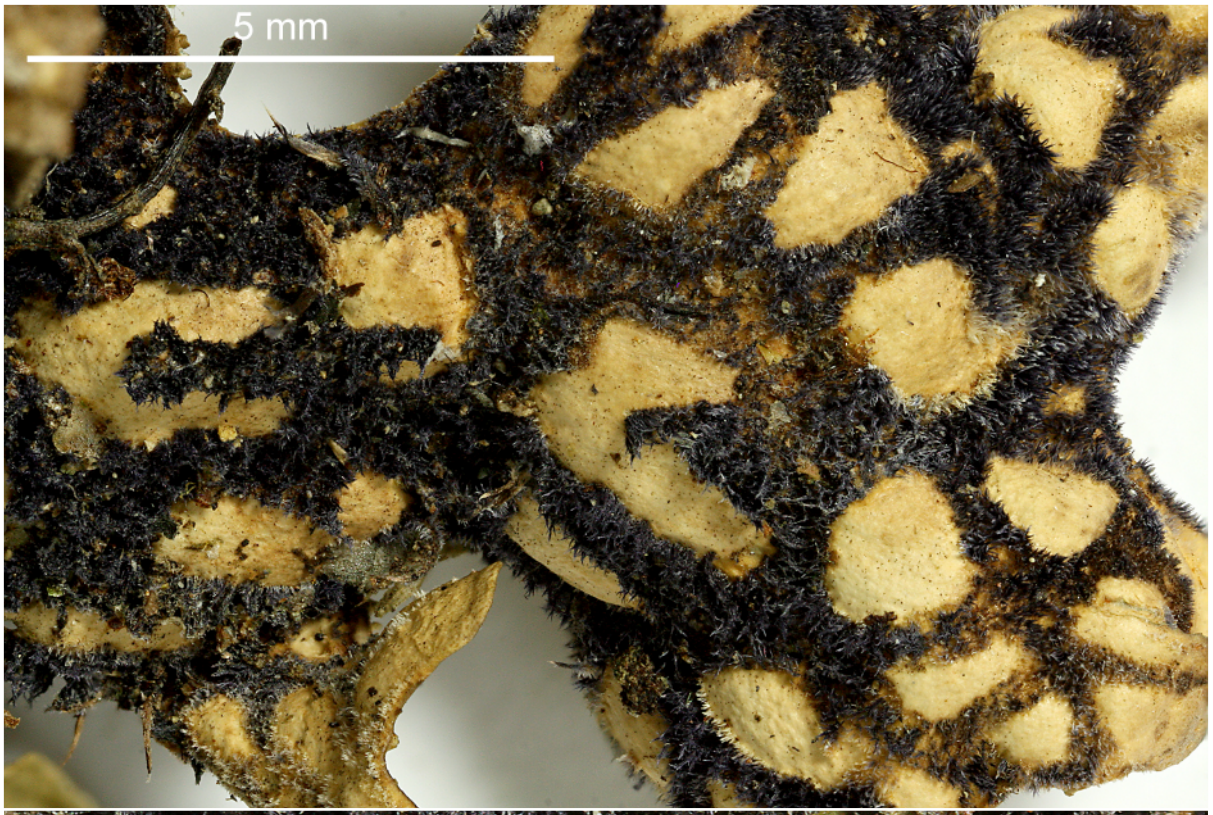
[19070], Australia, Queensland, Crediton State Forest, 20 km south-south-west of Finch Hatton, 21°19' S, 148°33' E, 840 m, growing in canopy of *Agyrodentron trifoliatum* in rainforest dominated by *Agyrodendron* and *Syzygium*. Leg. J.A. Elix (21051) & H. Streimann, 01.07.1986. Chemistry: thelephoric acid, retigeric acid A, retigeric acid B, unknown triterpenes (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 160. Distributed as ***Lobaria retigera*** (Bory) Trevis. var ***retigera***





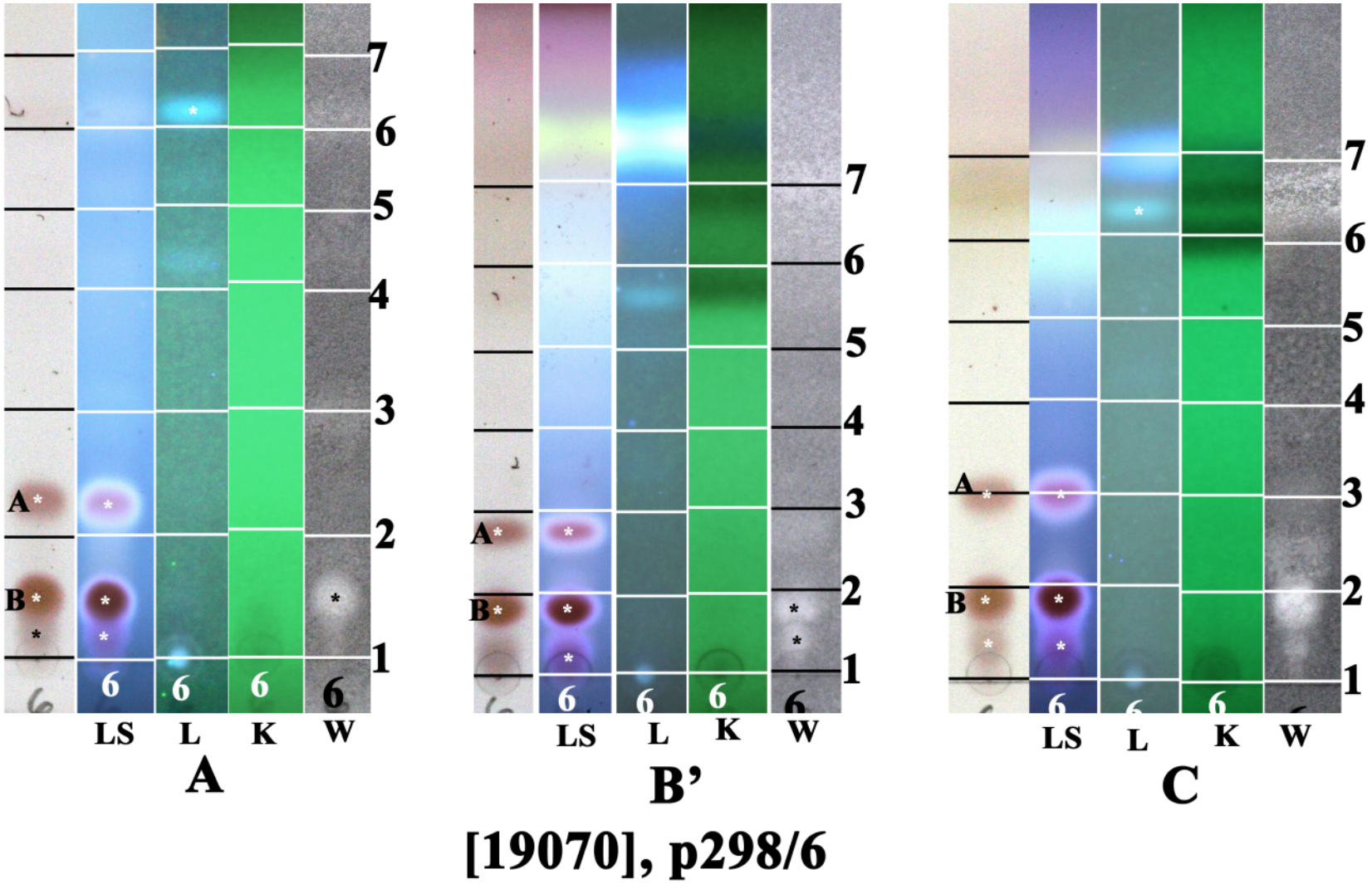


Lobaria pseudoretigera





Lobaria pseudoretigera

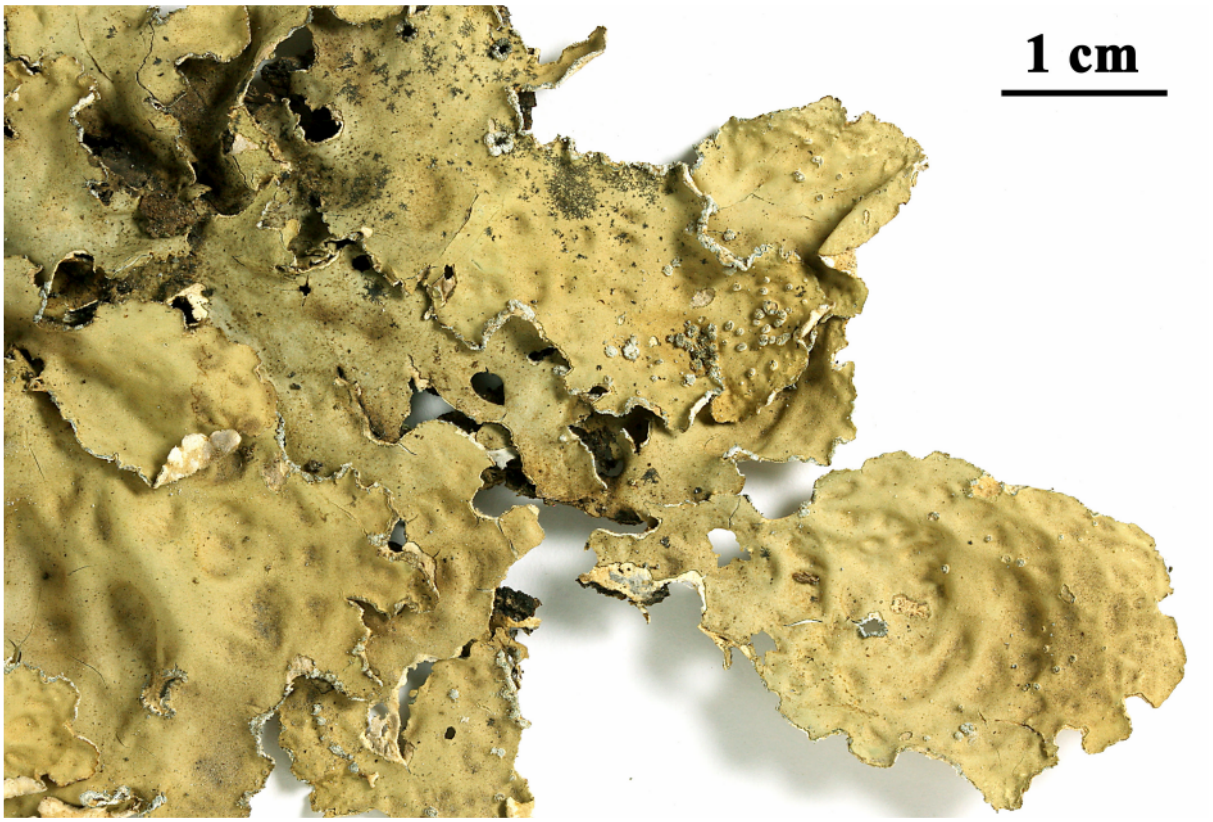


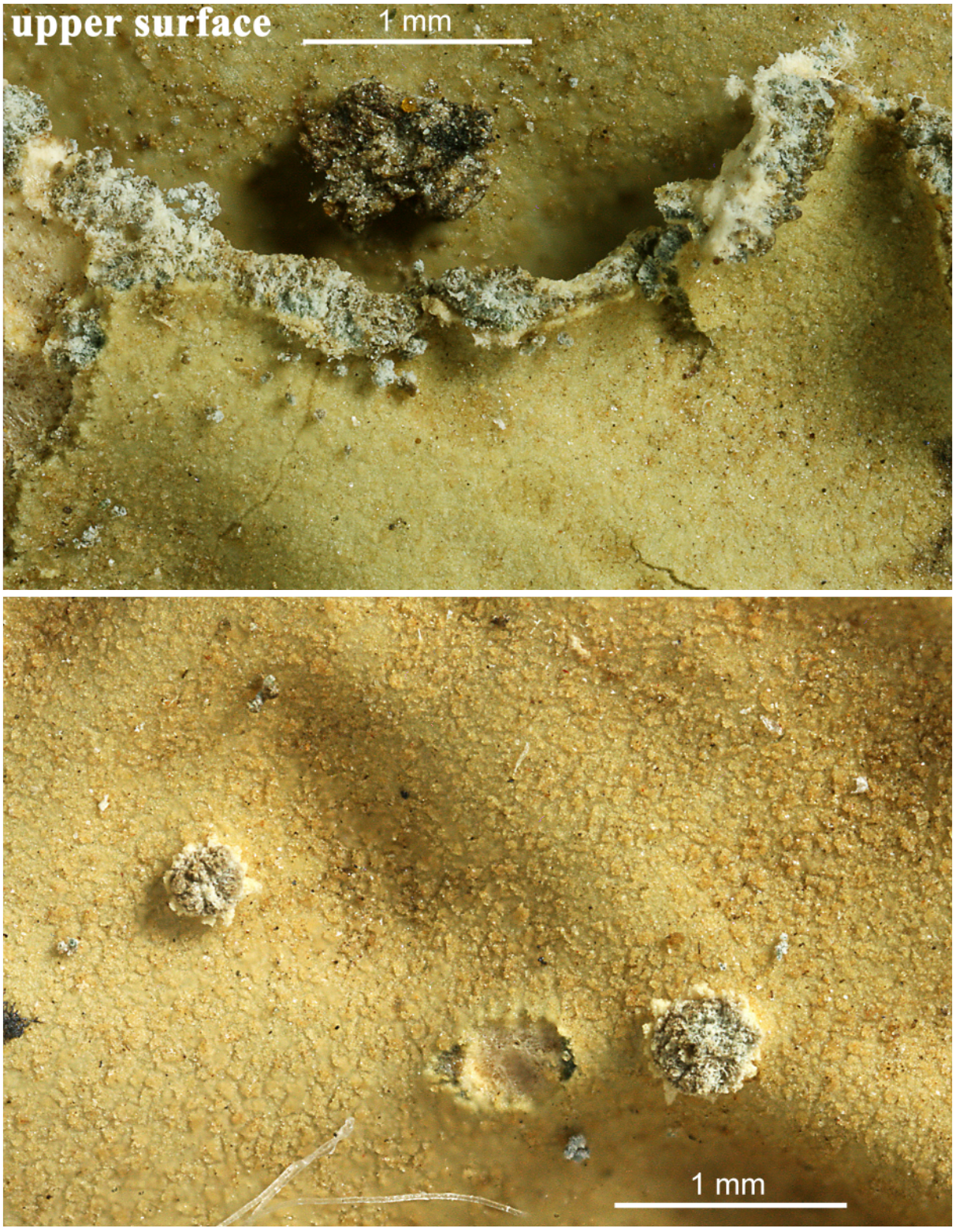
A: retigeric acid A; B. retigeric acid B

Lobaria scrobiculata (Scop.) DC.

Thallus loosely adnate. Lobes rounded, imbricate, 10-20 mm wide. Upper surface yellowish-grey, coarsely reticulate but without defined interconnecting ridges, lacking phyllidia and isidia, sorediate; soralia laminal and marginal. Photobiont blue-green. Ascospores acicular, 3-7 septate, 60-65 x 4-5 µm, colourless. Chemistry: medulla K+ orange-red, C+ rose, P+ orange; usnic acid (minor), stictic acid (major), scrobiculin (major), constictic acid (minor), norstictic acid (minor), cryptostictic acid (trace9:

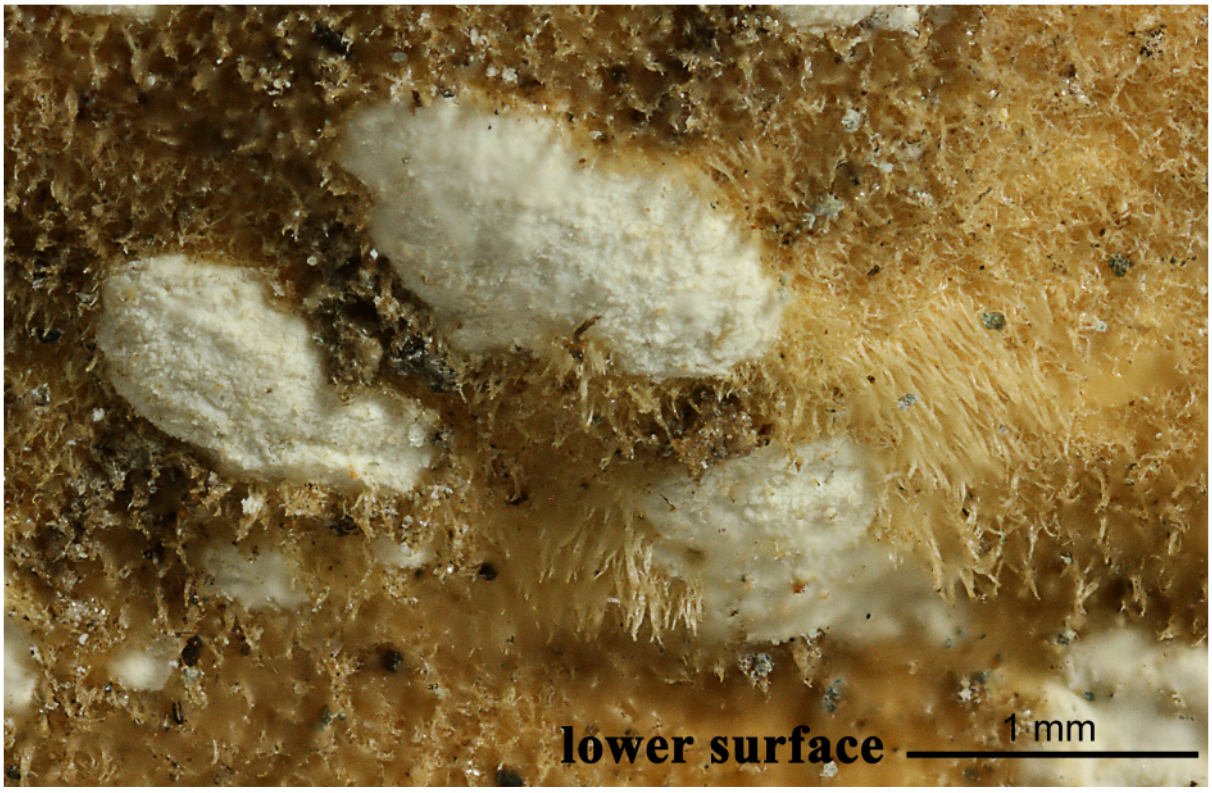
[19071], Australia, New South Wales, Great Dividing Range, Tallaganda State Forest, 10 km east of Captains Flat, 35°38' S, 149°31' E, 1240 m, growing on base of *Eucalyptus viminalis* in wet sclerophyll forest. Leg. J.A. Elix (19028) & D. Verdon, 22.03.1985. Chemistry: usnic acid, scrobiculin, stictic acid, constictic acid, norstictic acid, cryptostictic acid (trace), ergosterol, ergosterol peroxide by TLC, anal. K. Gaul. LICHENES AUSTRALASICI EXSICCATI NO. 133.



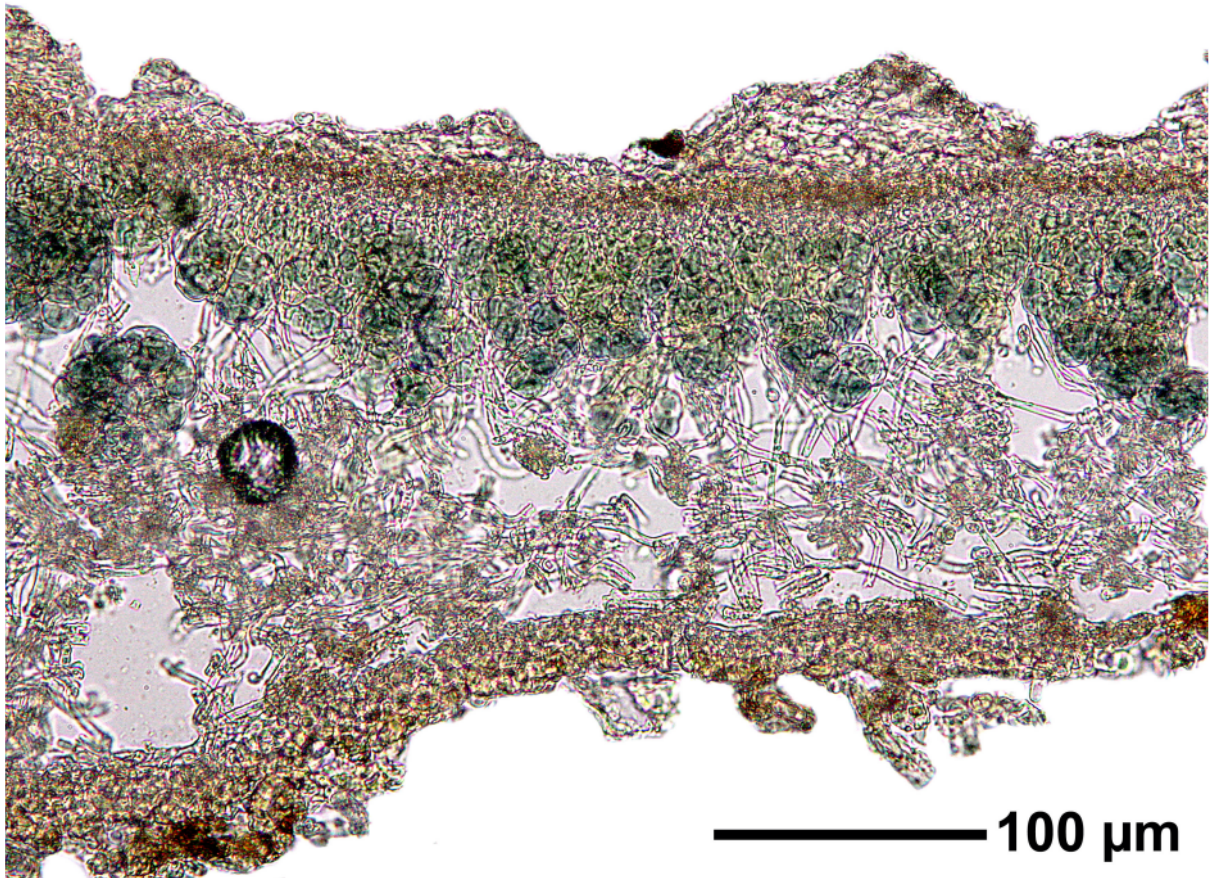


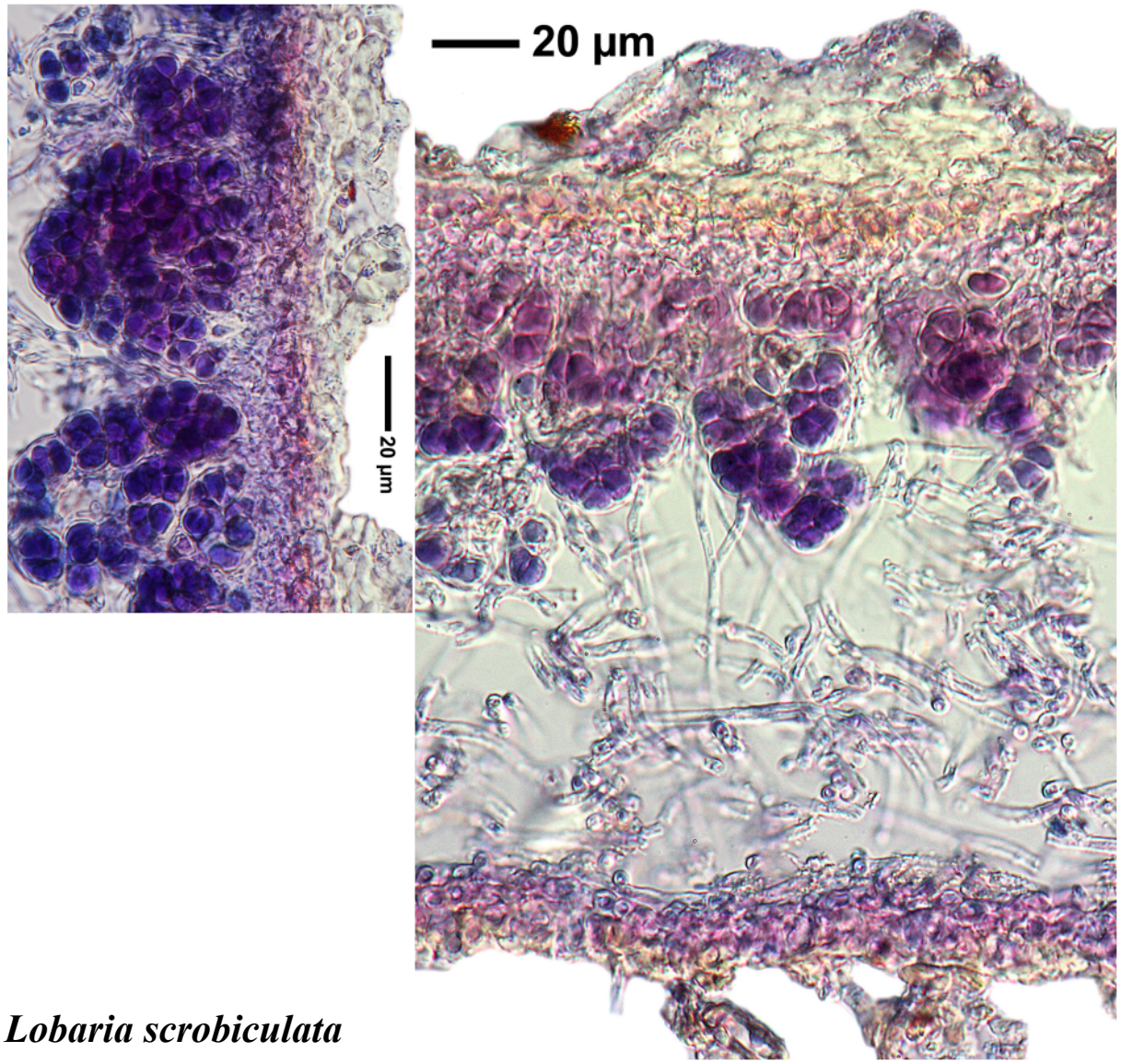
Lobaria scrobiculata



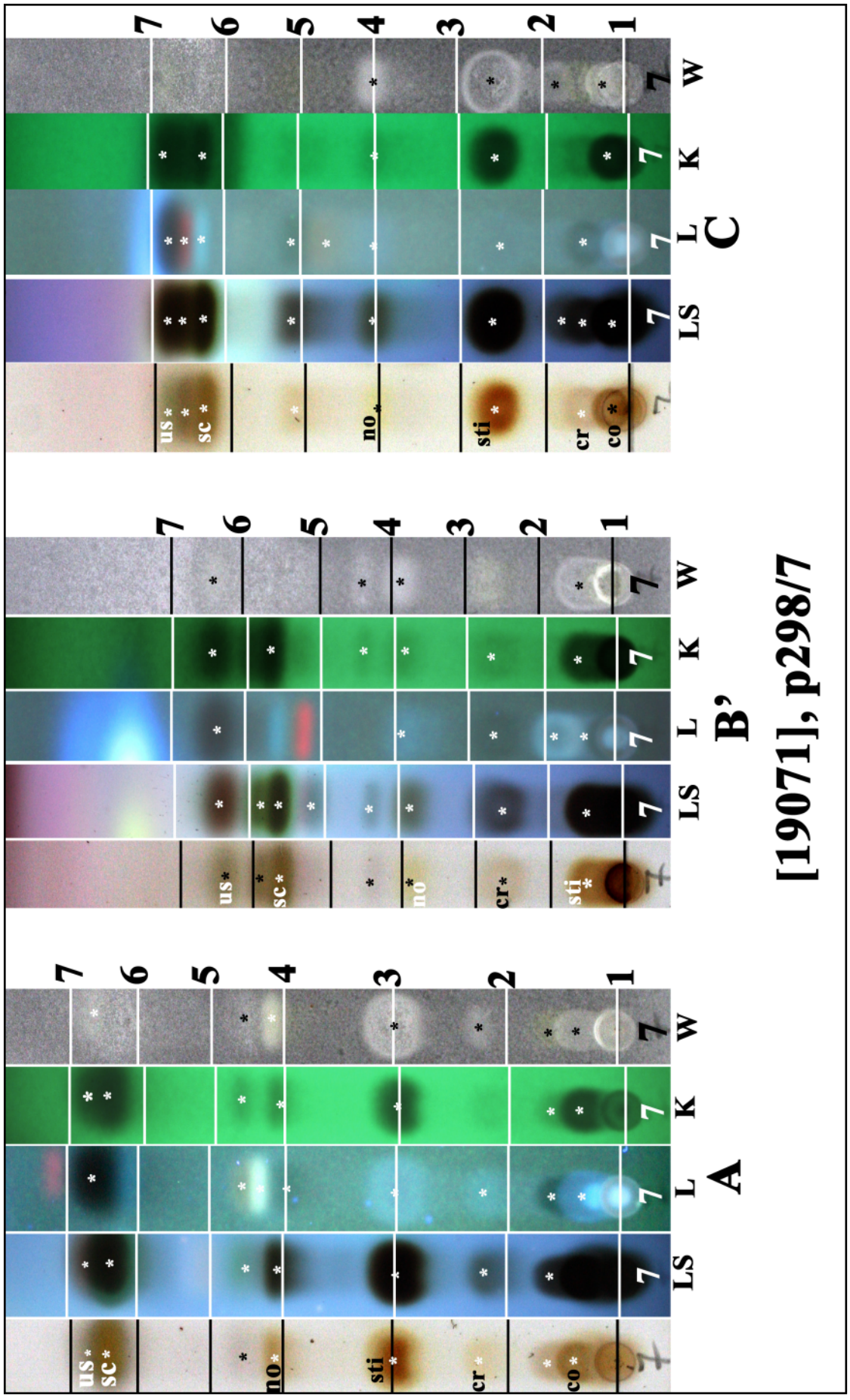


Lobaria scrobiculata





Lobaria scrobiculata



us: usnic acid, sc: scrobiculin, no: norstictic acid, sti: stictic acid, cr: cryptostictic acid, co: constictic acid

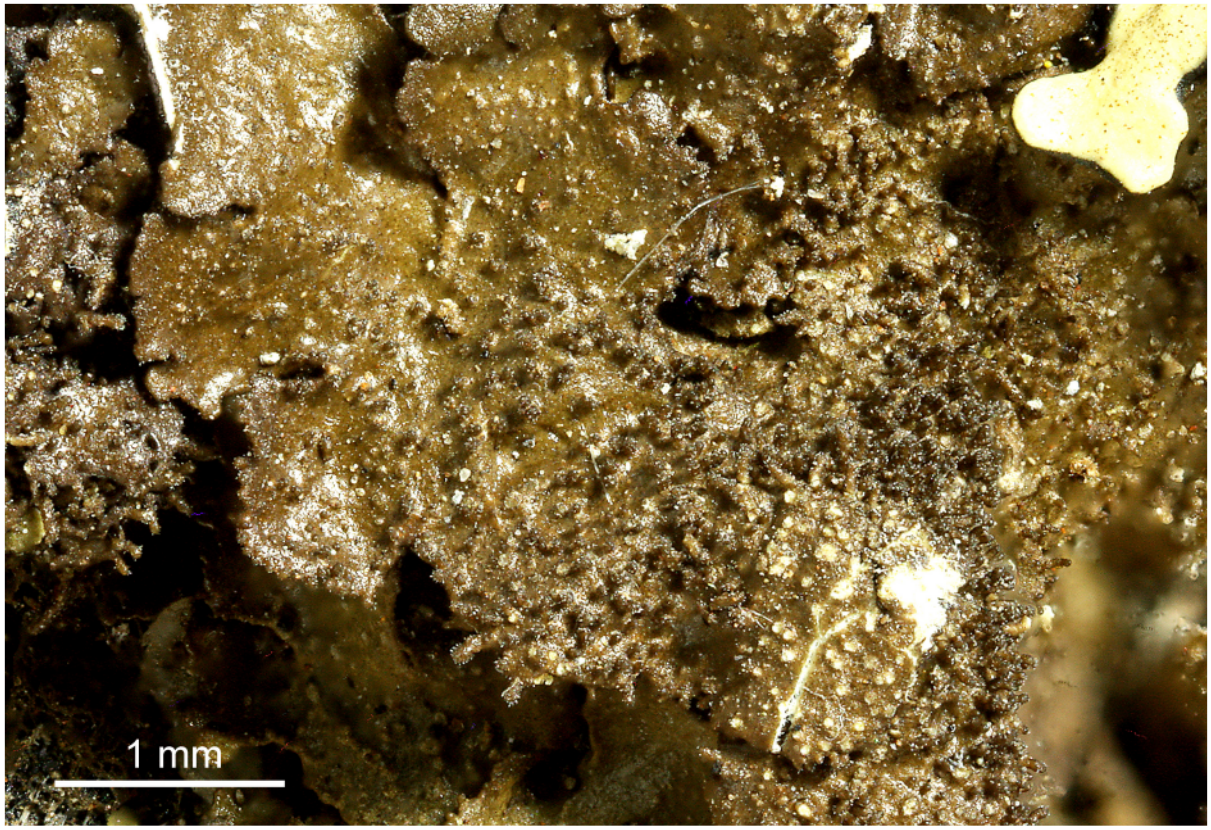
Lobaria scrobiculata

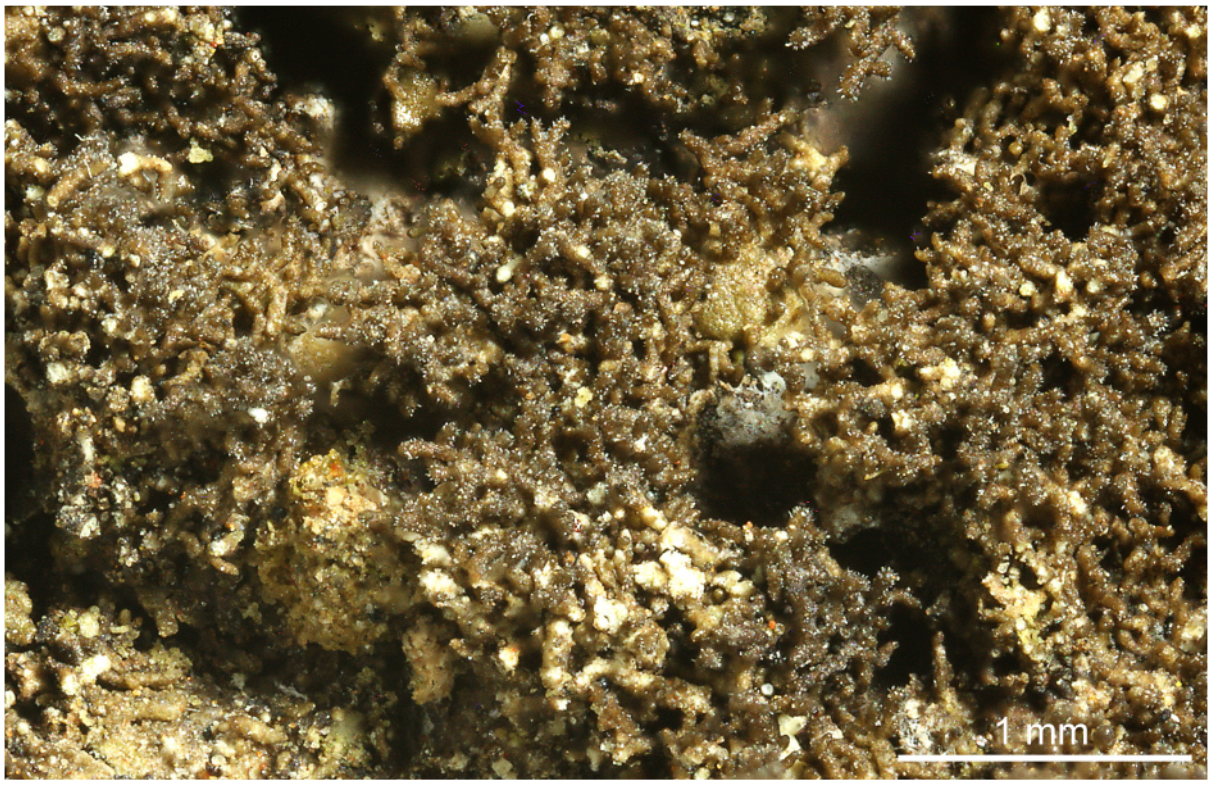
Melanelixia piliferella (Essl.) A.Crespo, Divakar & Elix
[= ***Melanelia piliferella*** (Essl.) Essl.]
[= ***Parmelia piliferella*** Essl.]

Thallus tightly adnate. Lobes discrete to subimbricate, 0.5-2 mm wide. Upper surface olive-green to olive-brown, lacking soredia, with isidia. Isidia cylindrical, simple or branched. Lobe apices and isidia partly with 20-30 µm long, hyaline, cortical hairs. Lower surface dark brown or black. Chemistry: cortex K–, HNO_3–; medulla K+ faint yellow or faint violet, C+ rose, KC+ rose-red; gyrophoric acid (major), 5-*O*-methylhiascic acid (major).

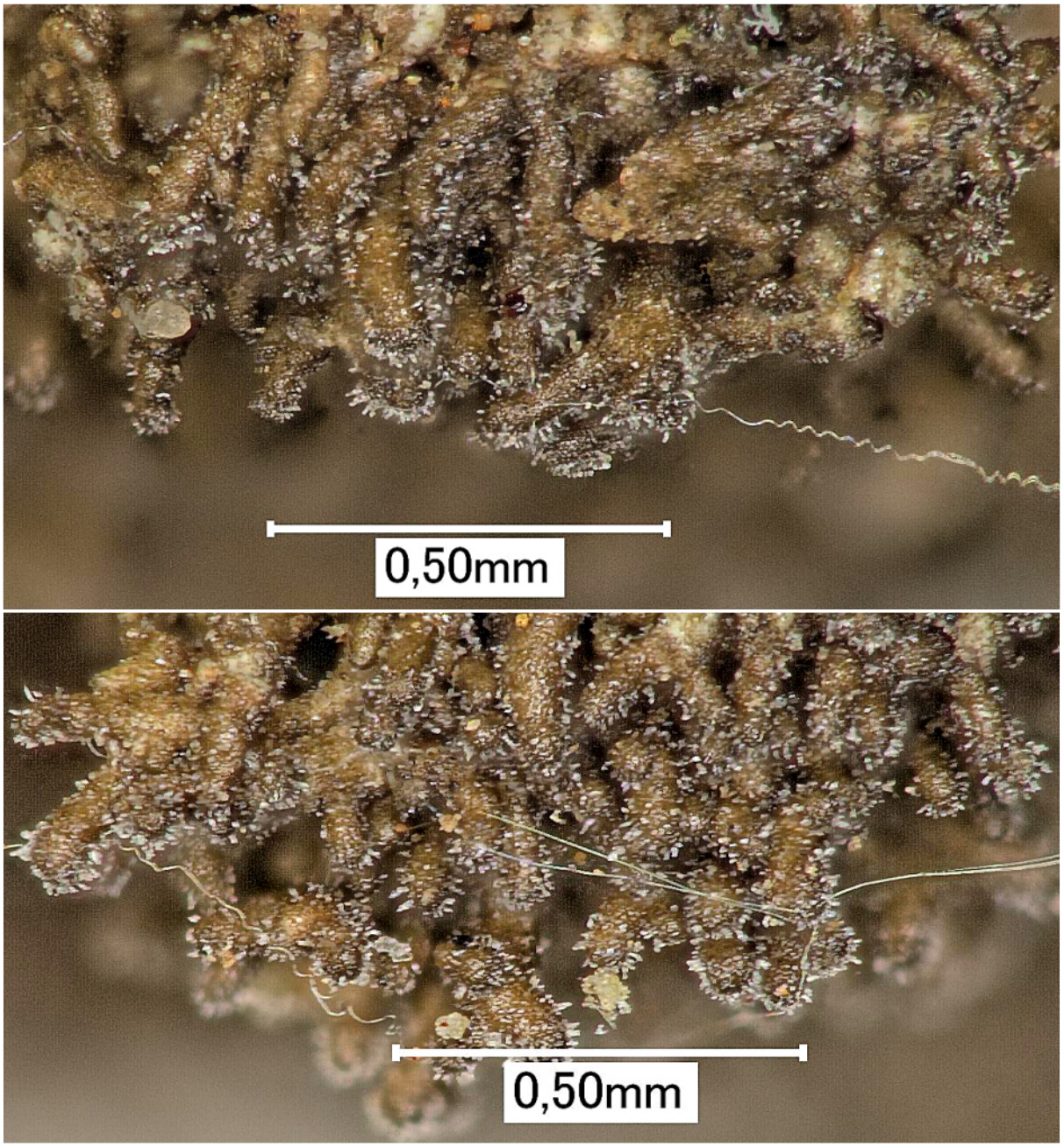
[19072], Australia, New South Wales, Warranderry Range, Warranderry State Forest, 23 km north of Grenfell, 33°41' S, 148°12' E, 380 m, growing on *Callitris columellaris* in *Callitris* woodland. Leg. J.A. Elix (17705) & H. Streimann, 17.10.1984. Chemistry: gyrophoric acid (major), 5-*O*-methylhiascic acid (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 084. Distributed as *Melanelia piliferella* **.**



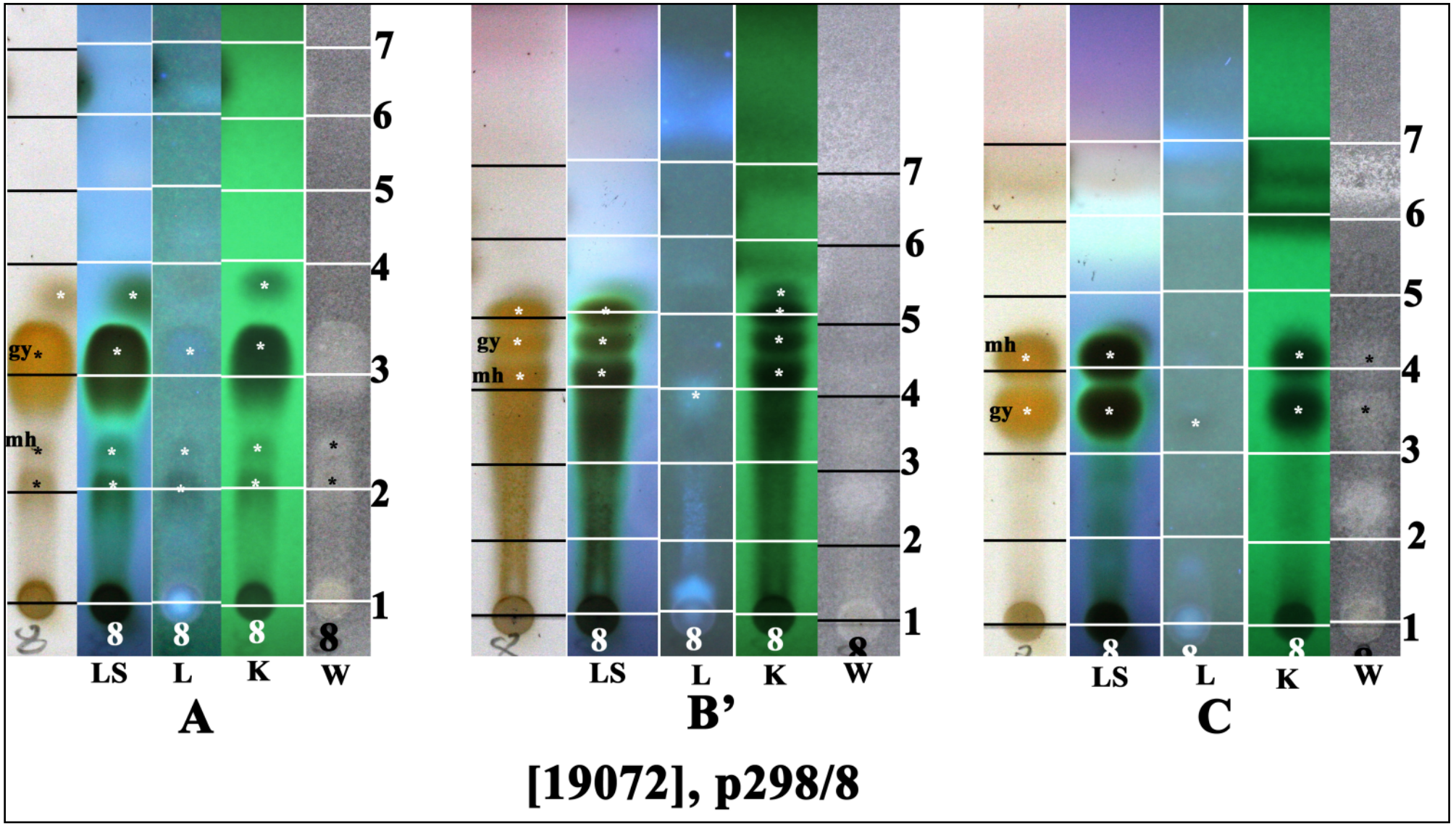




Melanelixia piliferella



Melanelixia piliferella

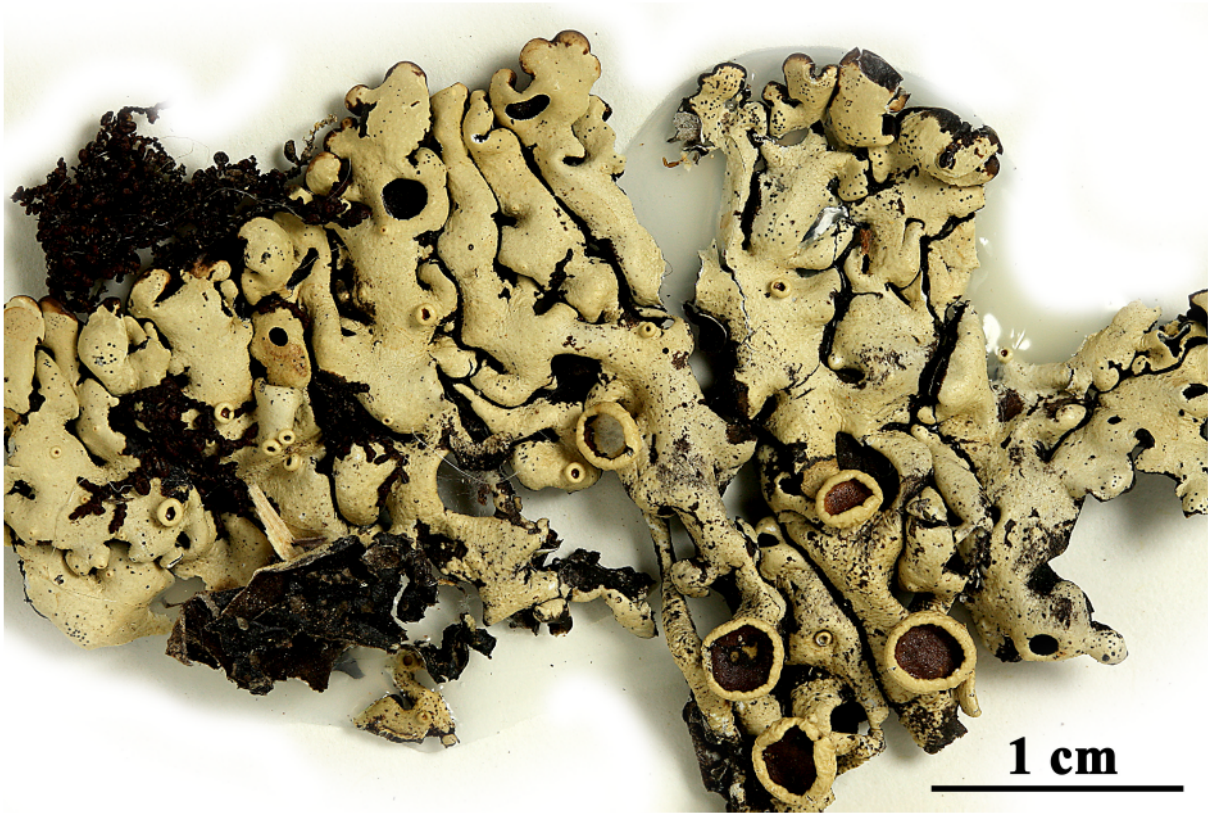


gy: gyrophoric acid, mh: 5-*O*-methylhiascic acid

Menegazzia confusa P.James

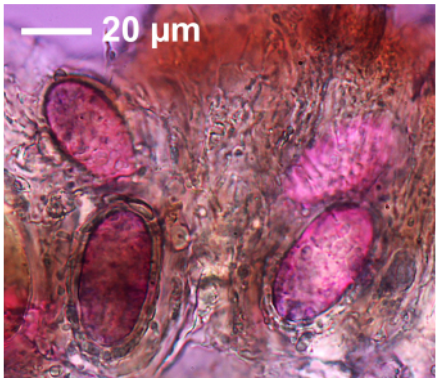
Lobes at margins short, inflated, 1.5-3.5 mm wide, contiguous, irregularly dichotomously branched, at centre congested, folded, convex. Upper surface pale grey to grey, rarely blackened laterally. Cavity purplish brown-black. Perforations frequent, to 2 mm wide. Apothecia frequent, 2-5 mm wide, laminal, sissile to subpedicellate. Ascospores 2/ascus, 40-52 x 26-31 µm, wall 2.5-4.5 µm. Chemistry: cortex K+ yellow; medulla K-, KC-, C-, P-; caperatic acid.

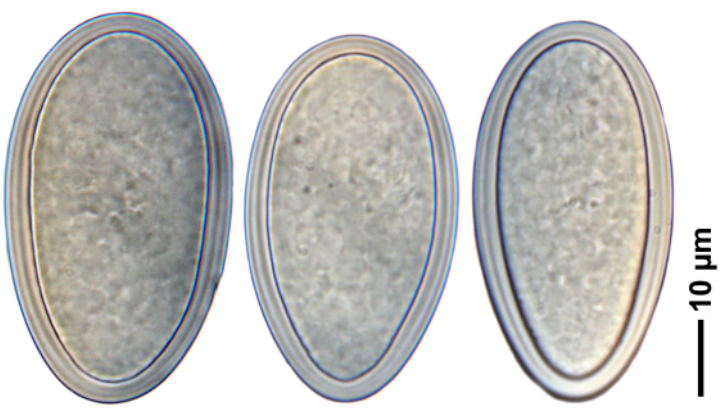
[19073], Australia, Victoria, Goomirk Rocks, Errinundra Flora Reserve, 14 km south of Bendoc, 37°17' S, 148°53' E, 1200 m, growing on dead Acacia in cool temperate forest on moderate slope dominated by Podocarpus, Pittosporum and Telopea. Leg. J.A. Elix (21840) & H. Streimann, 29.03.1988. Chemistry: atranorin, chloroatranorin, caperatic acid by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 161.



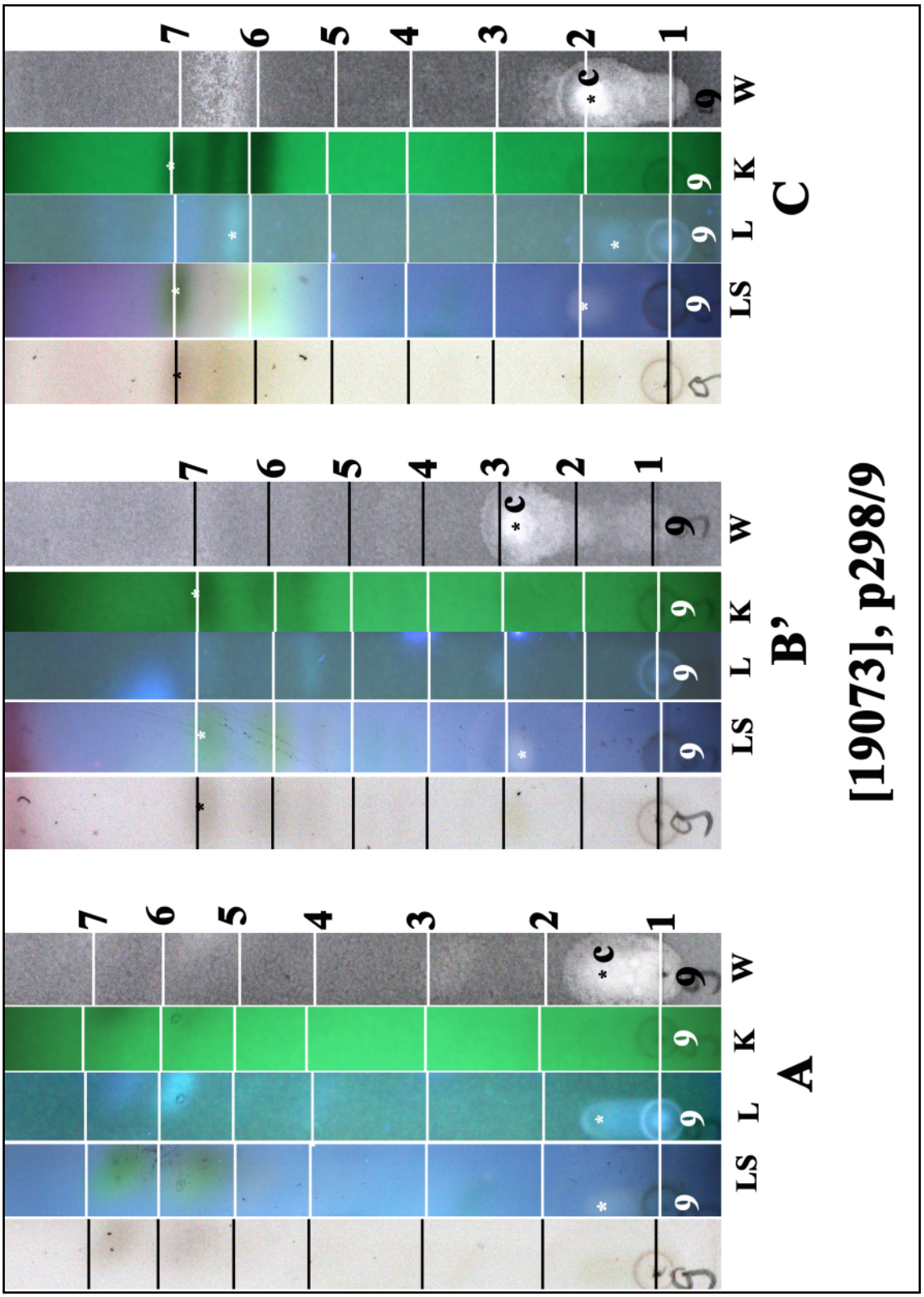








Menegazzia confusa



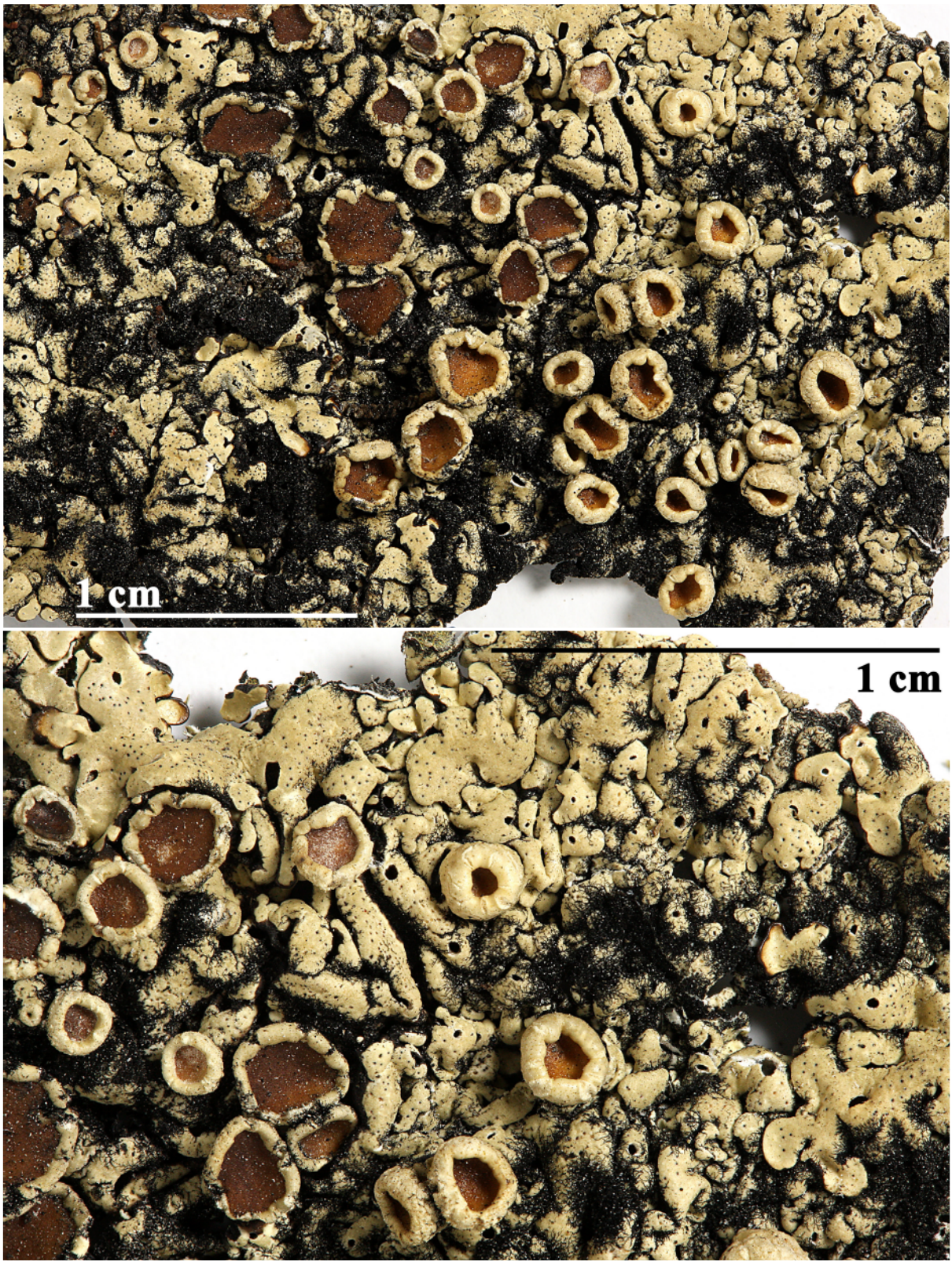
Menegazzia confusa

Menegazzia foraminulosa (Kremp.) Bitter
[= ***Parmelia foraminulosa*** Kremp.]

Lobes 2-3.5 mm wide, marginal lobes irregularly branched, rarely subpalmate, contiguous, without interthalline spaces. Upper side of medullary cavity with an ochre-yellow tomentum; UV+ yellow or orange; lobe apices faintly white maculate. Ascospores 8/ascus, 34-39 x 21-23 mm, wall 2 µm thick. Chemistry: medulla K+ orange, C-, KC+ orange, P+ orange; atranorin, chloroatranorin, stictic acid (major), ±constictic acid, menegazzaic acid (trace), norstictic acid (trace), echinocarpic acid (minor), conechinocarpic acid (trace), with four or more UV+ orange-yellow pigments and one UV+ orange-red pigment.

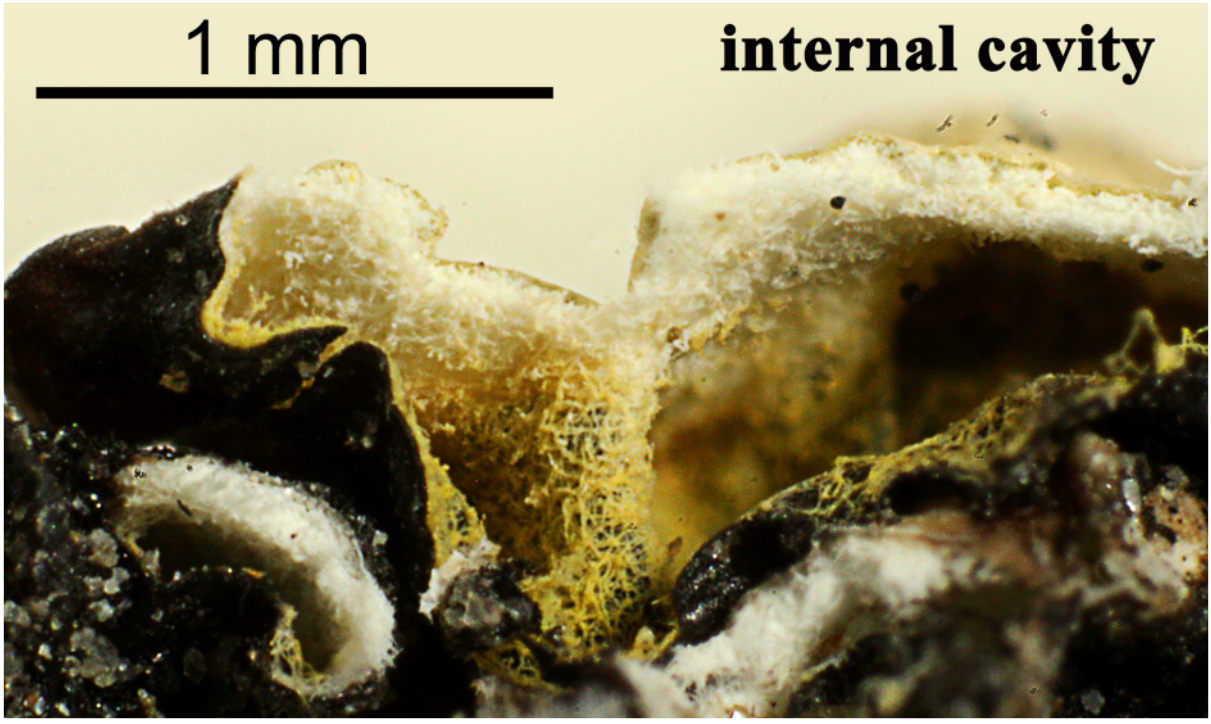
[19074], New Zealand, South Island, Canterbury, eastern entrance to Arthurs Pass National Park, growing on trunk of Nothofagus fusca in open Nothofagus woodland, 670 m. Leg. J.A. Elix (19023) & J.Johnston, 4.03.1985. Chemistry: atranorin, chloroatranorin, stictic acid (major), echinocarpic acid (minor), constictic acid (minor), menegazzaic acid (trace), norstictic acid(trace), conechinocarpic acid (trace), unknown pigments (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 185.



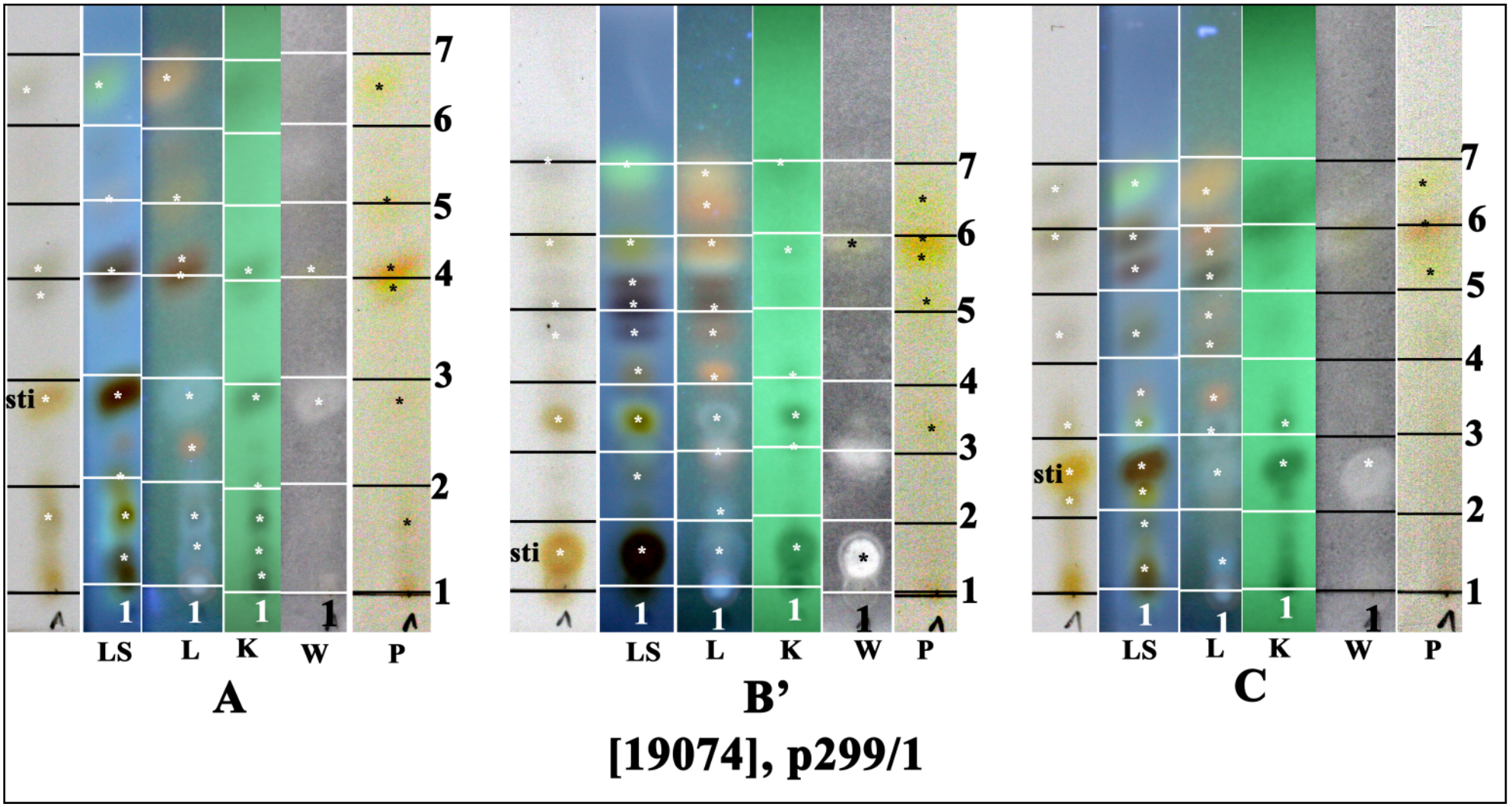


Menegazzia foraminulosa





Menegazzia foraminulosa



sti: stictic acid

Menegazzia pertransita (Stirt.) R.Sant.
[= ***Parmelia pertransita*** Stirt.]

Very similar to *Menegazzia foraminulosa* but the pigments in the internal cavity are not the same and the species are distinguished by their alternative medullary chemistry.

[19075], New Zealand, South Island, Canterbury, Greyneys Flat, 6 km south of Arthurs Pass, growing on trunk of Nothofagus cliffortioides in Nothofagus forest, 690 m. Leg. J.A. Elix (19007) & J. Johnston, 4.03.1985. Chemistry: atranorin, chloroatranorin, unknown pigment, lichesterinic acid, protolichesterinic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 109.

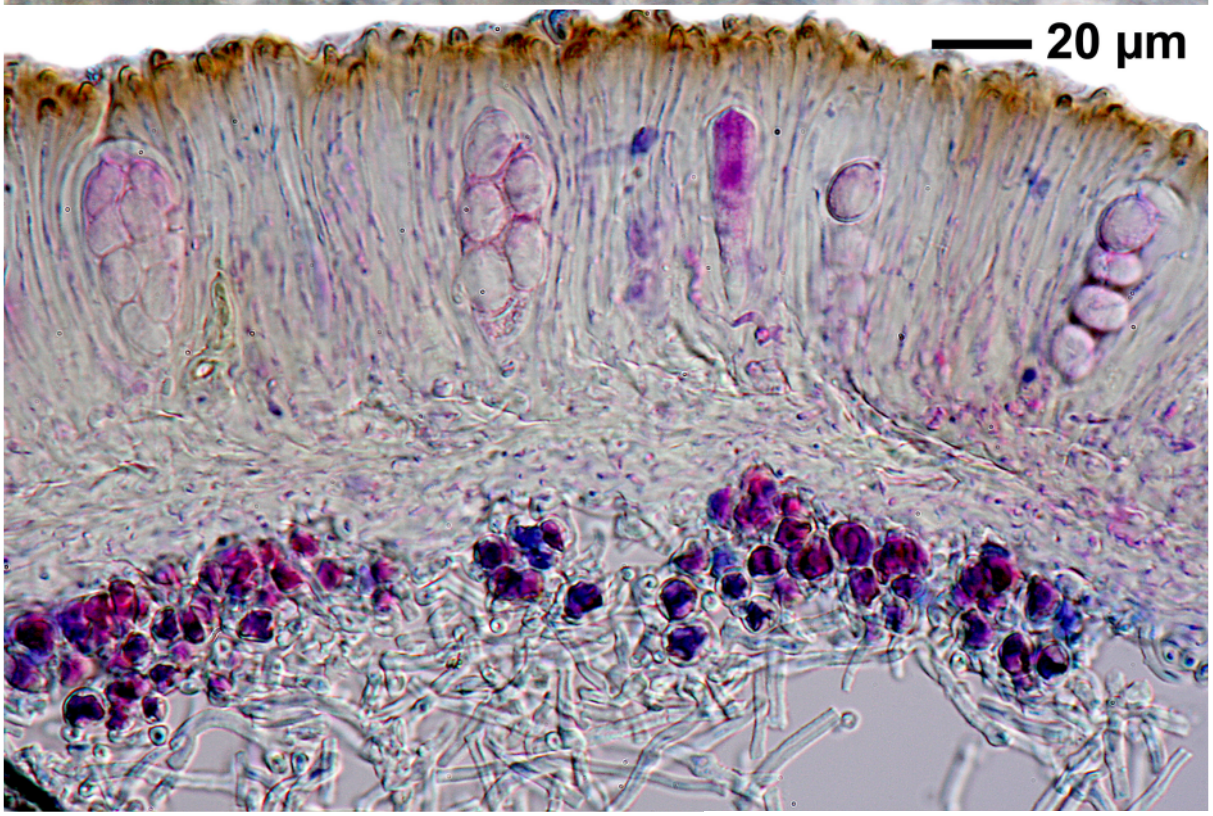






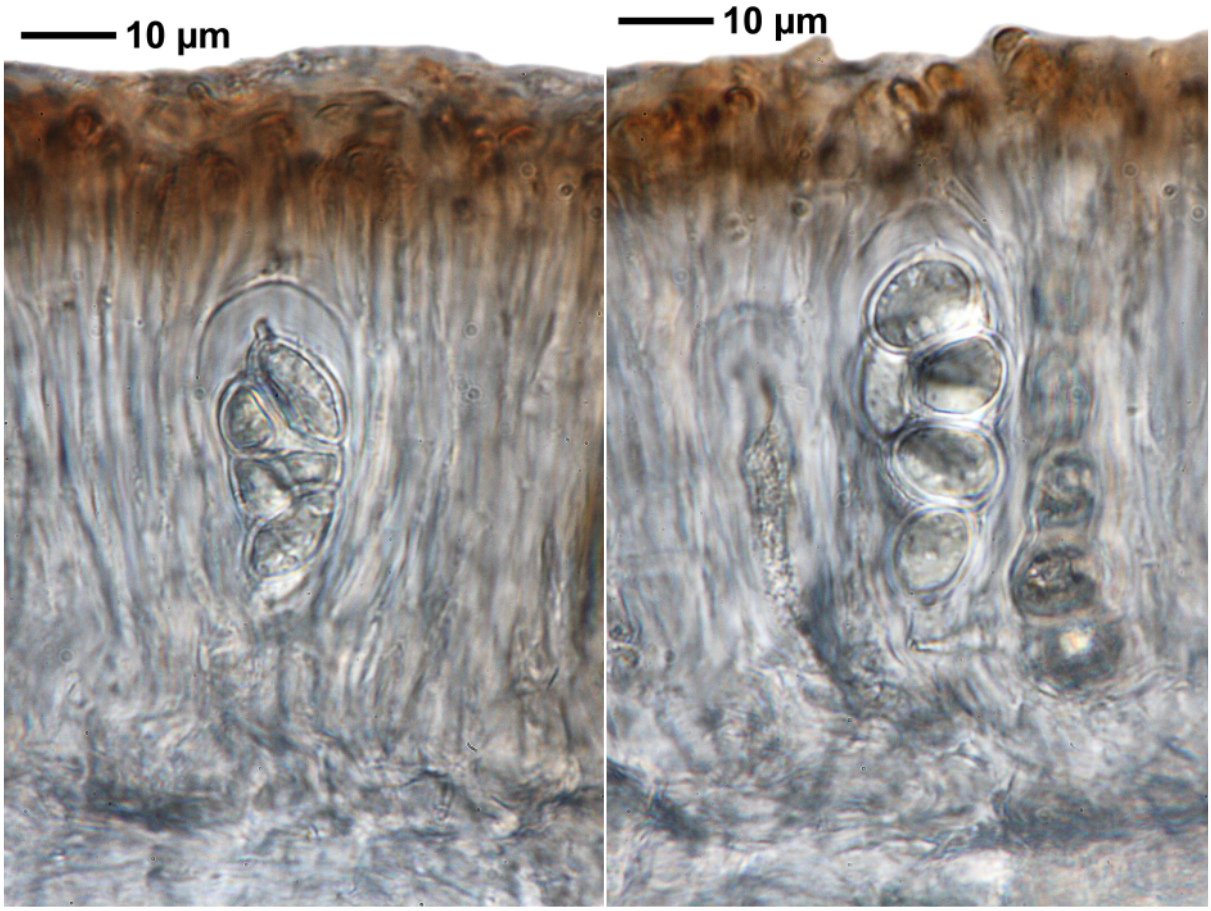
Menegazzia pertransita



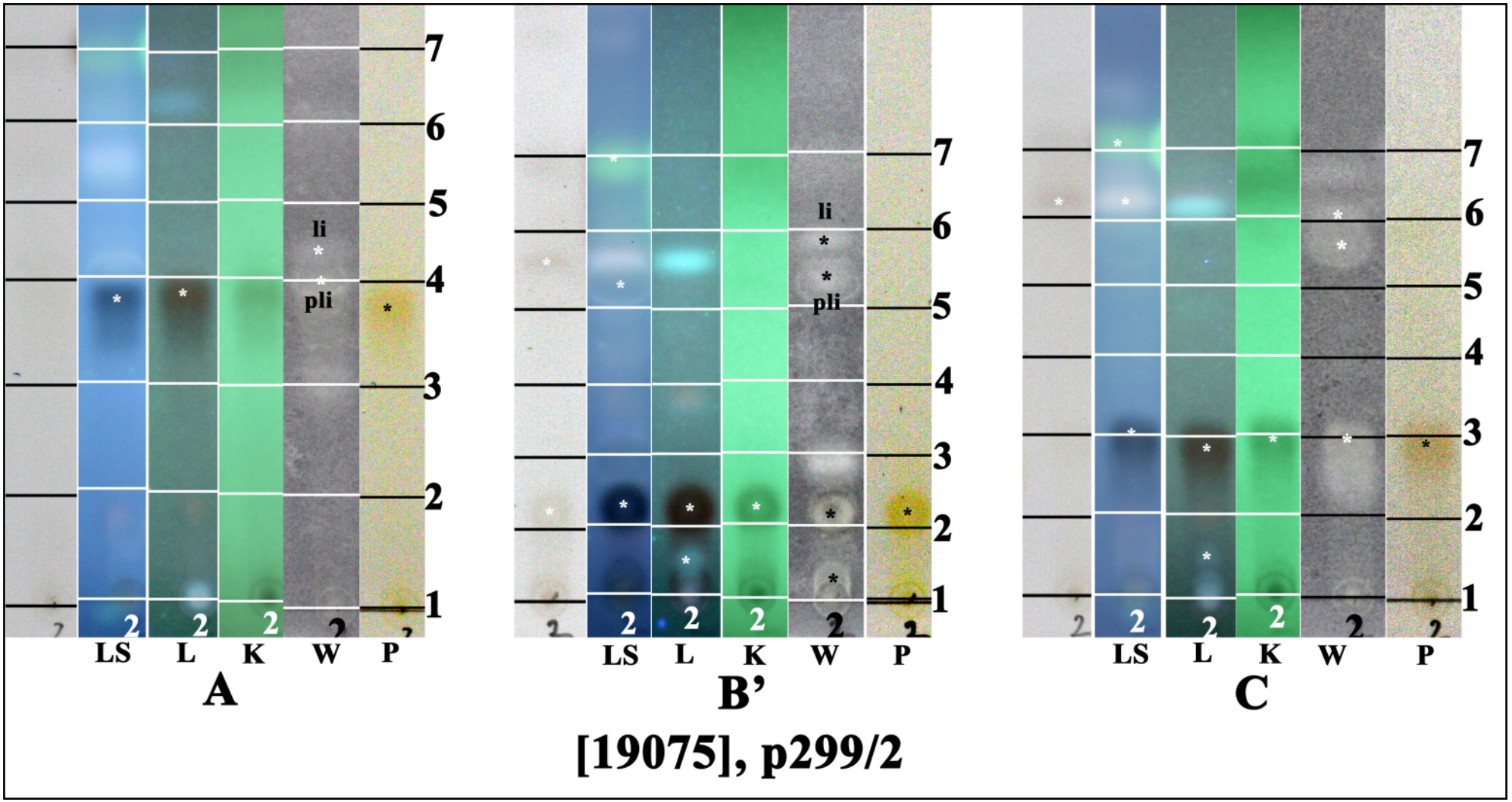




Menegazzia pertransita



Menegazzia pertransita



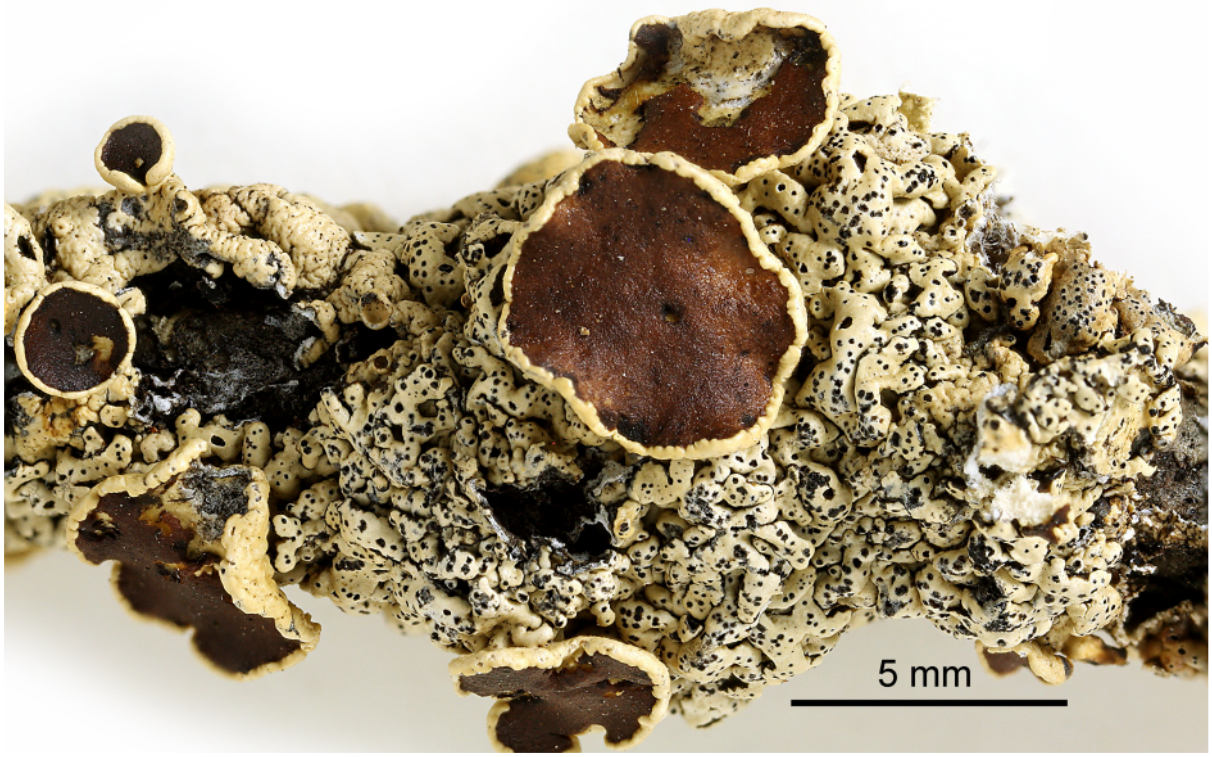
li: ichesterinic acid, pli: protolichesterinic acid

Menegazzia platytrema (Müll.Arg.) R.Sant.
[= ***Parmelia platytrema*** Müll.Arg.]

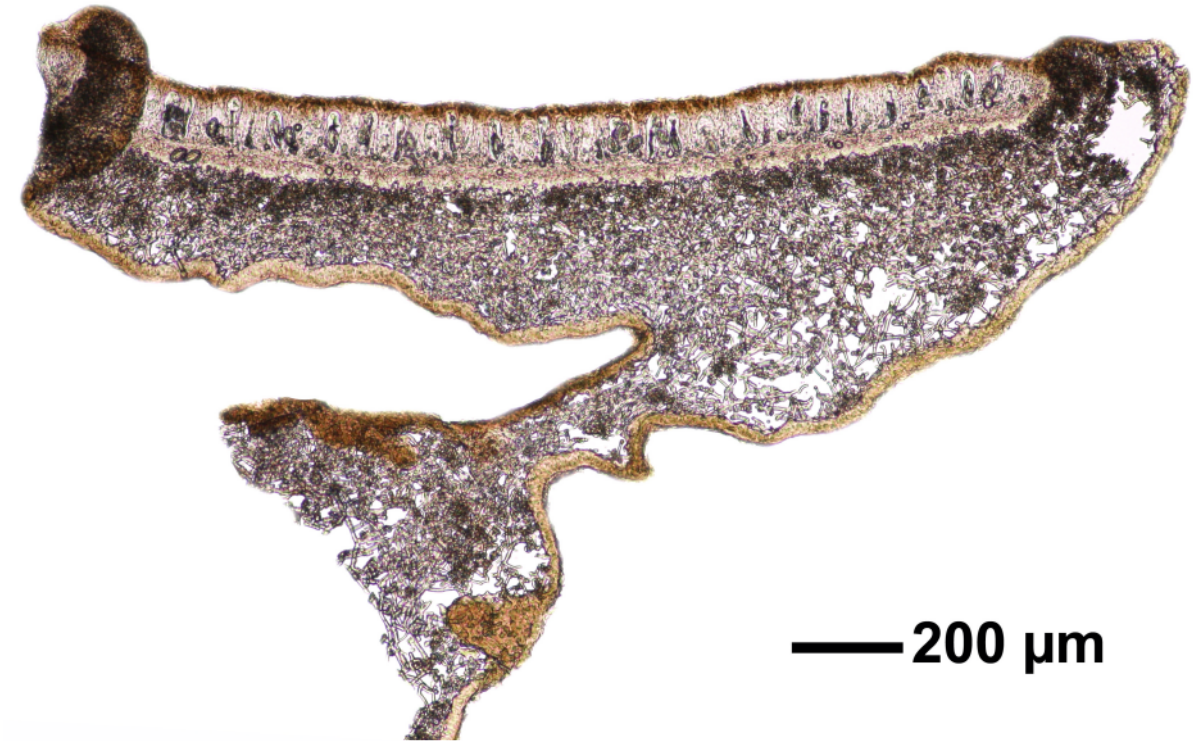
Thallus closely appressed. Lobes inflated, creamy grey, convex, 1-4 mm wide, contiguous to margins, irregularly dichotomously branched, at centre congested-imbricate. Cavity pale to purplish black above, uniformly black below. Perforations 1-1.5 mm wide. Apothecia 3-6 mm wide, laminal. Ascospores 2/ascus, 45-57 x 25-32 µm, wall 2.5-3.5 µm thick. Chemistry: medulla K+ orange-red, C-, P+ orange; stictic acid, cryptostictic acid, menegazzaic acid, norstictic acid (trace) and accessory compounds.

[19076], Australia, New South Wales, Kosciuszko National Park, northern face of Mount Stilwell, 36°26' S, 148°19' E, 2000 m, growing on twigs of Podocarpus lawrencii in alpine herbfield. Leg. J.A. Elix (9682), 27.02.1982. LICHENES AUSTRALASICI EXSICCATI NO. 010.



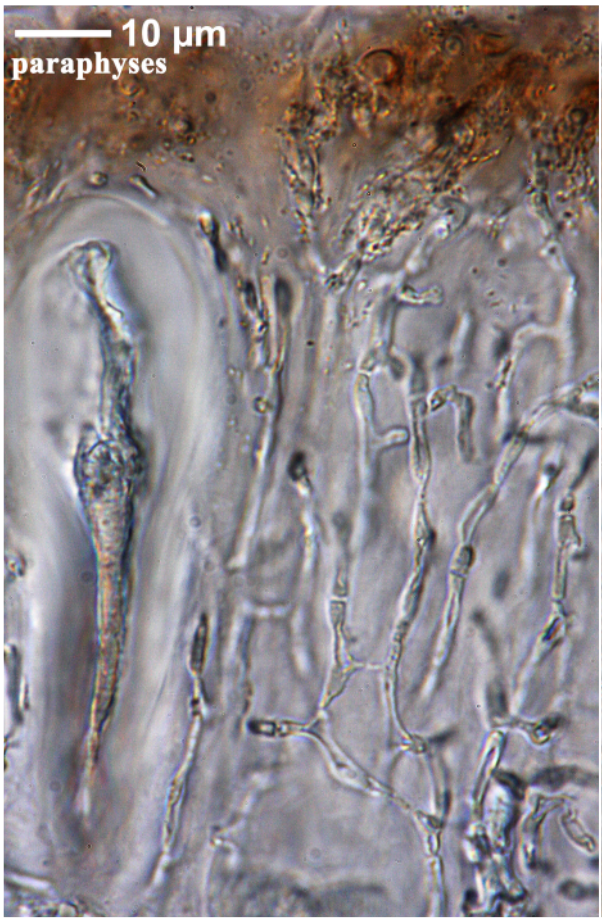






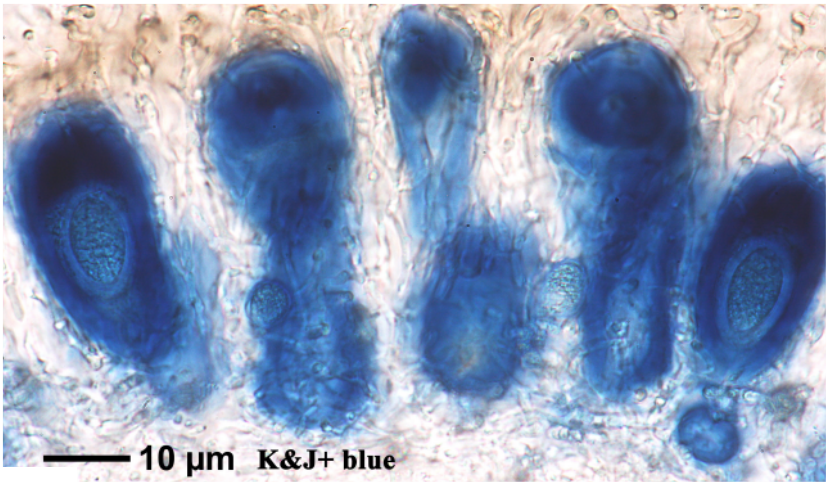
Menegazzia platytrema



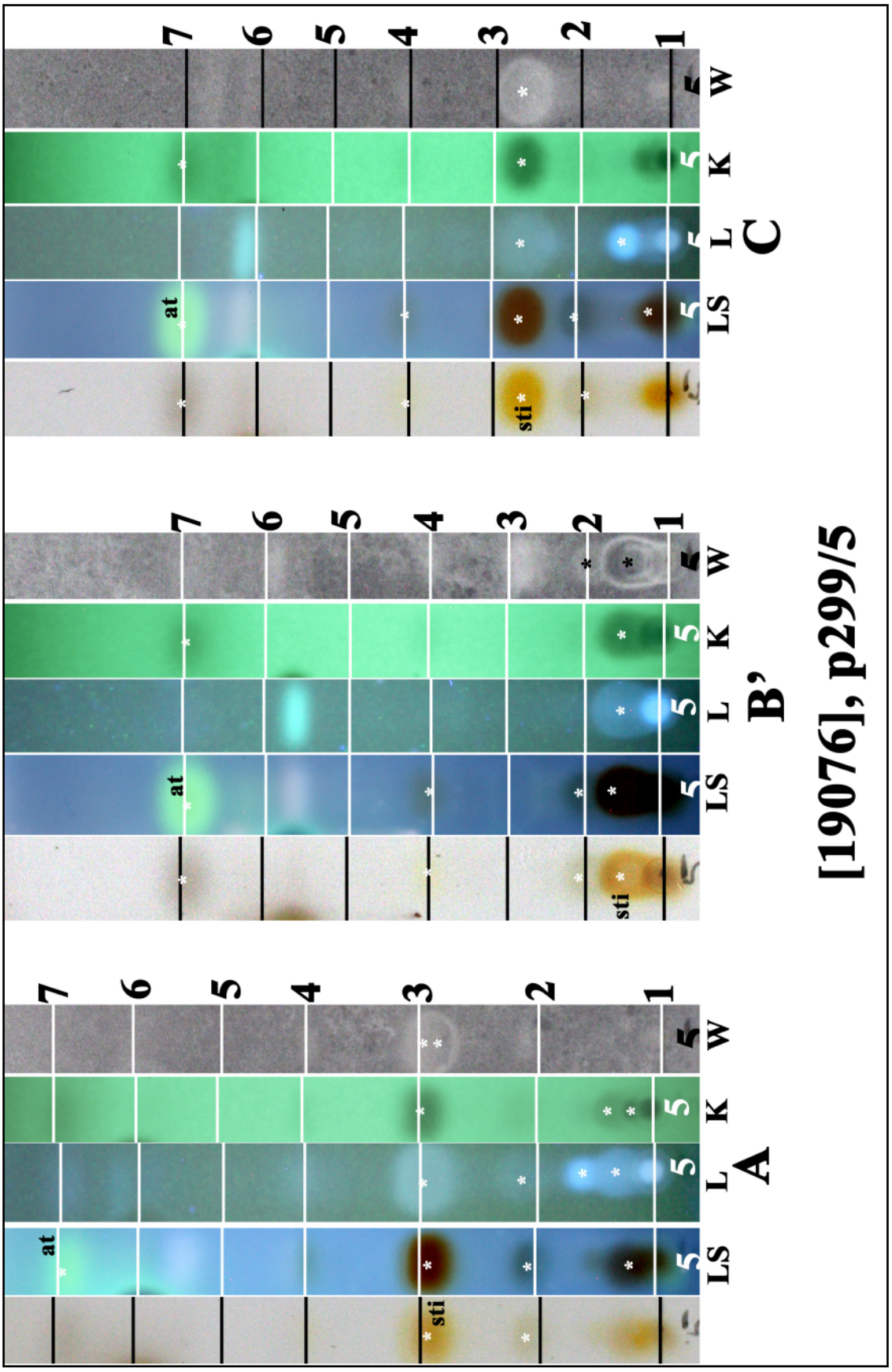








Menegazzia platytrema



at: atranorin, sti: stictic acid

Menegazzia platytrema

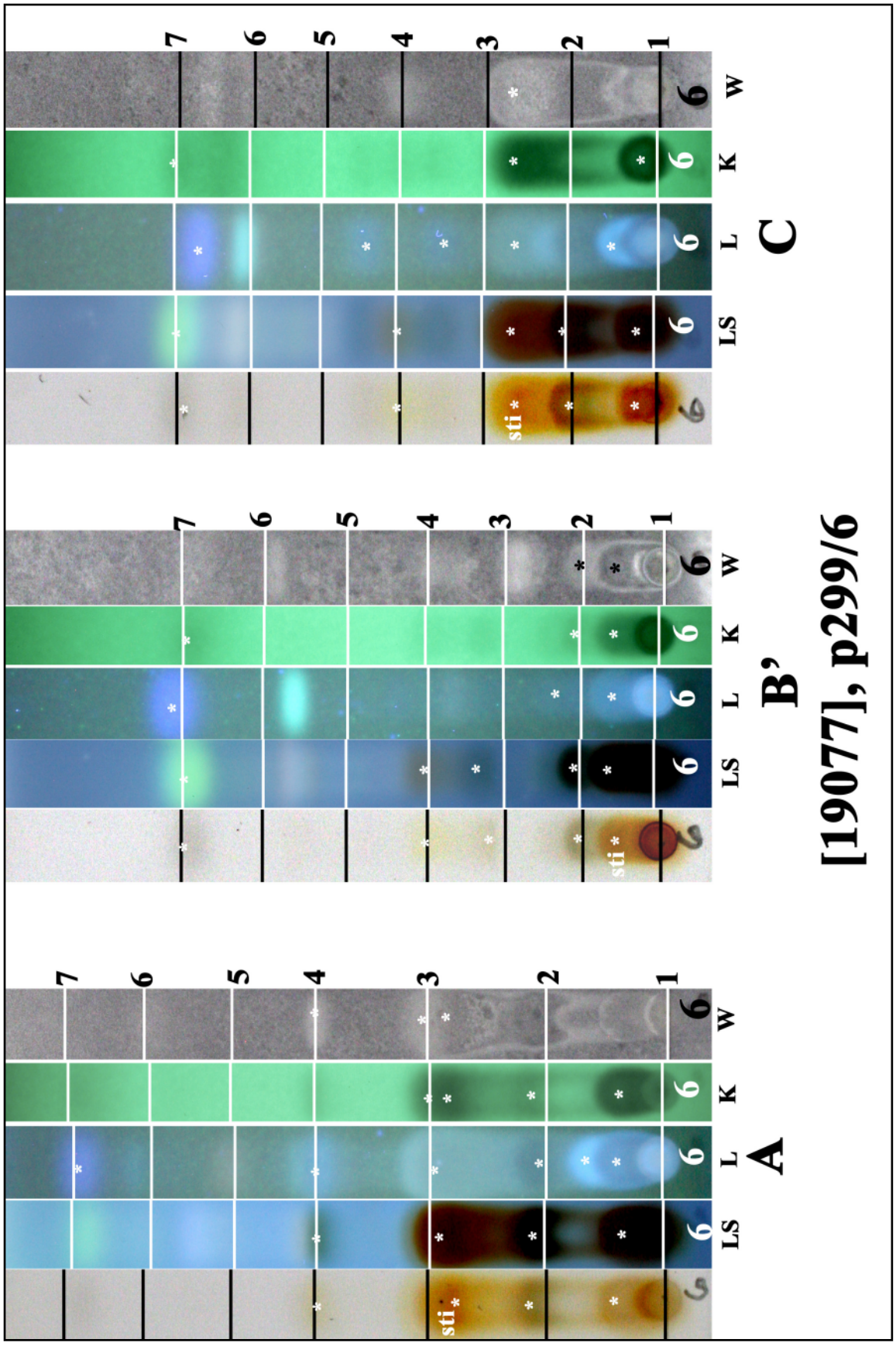
Menegazzia platytrema (Müll.Arg.) R.Sant.
[= ***Parmelia platytrema*** Müll.Arg.]

[19077], Australia, New South Wales, Great dividing Range, 2 km north of Parkers Gap, 10 km east of Captains Flat, 35°37' S, 149°30' E, 1260 m, growing on Acacia melanoxylon in wet sclerophyll forest dominated by *Eucalyptus*, *Acacia* and *Bedfordia*. Leg. J.A. Elix (10982) & J. Johnston. Chemistry: atranorin (major), chloroatranorin (minor), stictic acid (major), cryptostictic acid (trace), constictic acid (minor), menegazzaic acid (trace), unknown (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 261.





Menegazzia platytrema



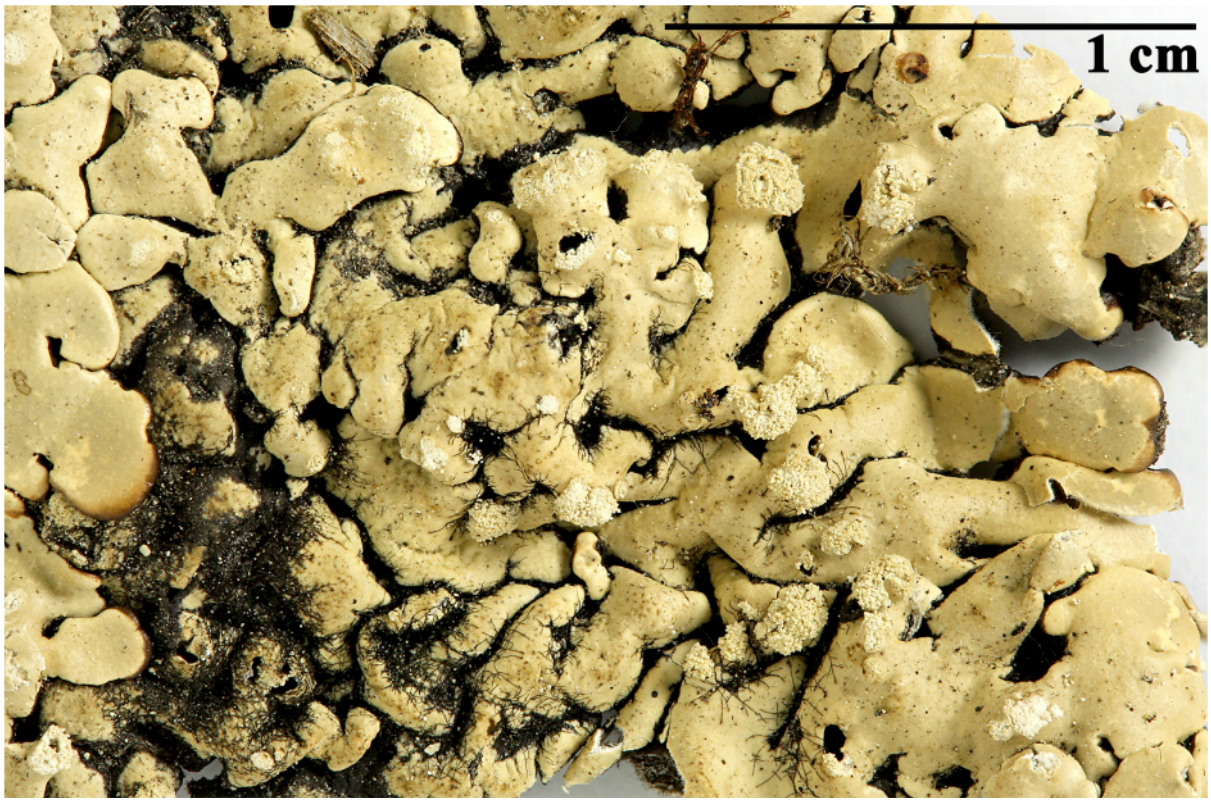
Menegazzia platytrema

Menegazzia subpertusa P.James & D.J.Galloway

Thallus closely attached. Lobes numerous, often radiating and contiguous at margins, 1-2.5 mm wide, hollow, with lower side of cavity brown-black. Perforations 0.5-0.8 mm wide. Upper surface sorediate. Soredia laminal, not associated with perforations, convex, coarsely granular, white. Apothecia 2-6 mm wide. Ascospores 2/ascus, 48-60 x 25-30 µm. Chemistry: medulla K+ orange, C-, KC+ orange, P+ orange; stictic acid, norstictic acid (trace), menegazzaic acid and accessory compounds.

[19078], New Zealand, South Island, Canterbury, eastern entrance to Arthurs Pass National Park, growing on trunk of *Nothofagus fusca* in open *Nothofagus* woodland, 670 m. Leg. J.A. Elix (19022) & J. Johnston, 4.03.1985. Chemistry: atranorin, chloroatranorin, stictic acid (major), constictic acid (minor), norstictic acid (tace), cryptostictic acid (trace), unknown (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 110.







Menegazzia subpertusa

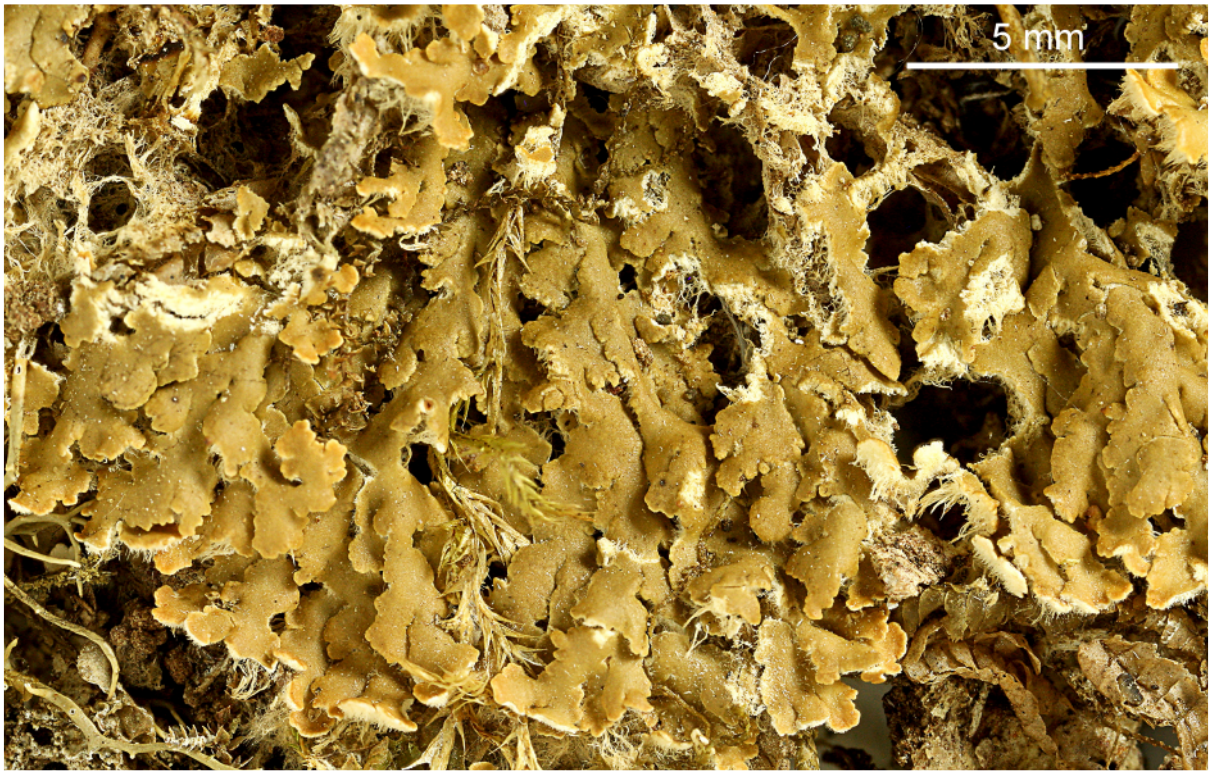
at: atranorin, sti: stictic acid

Menegazzia subpertusa

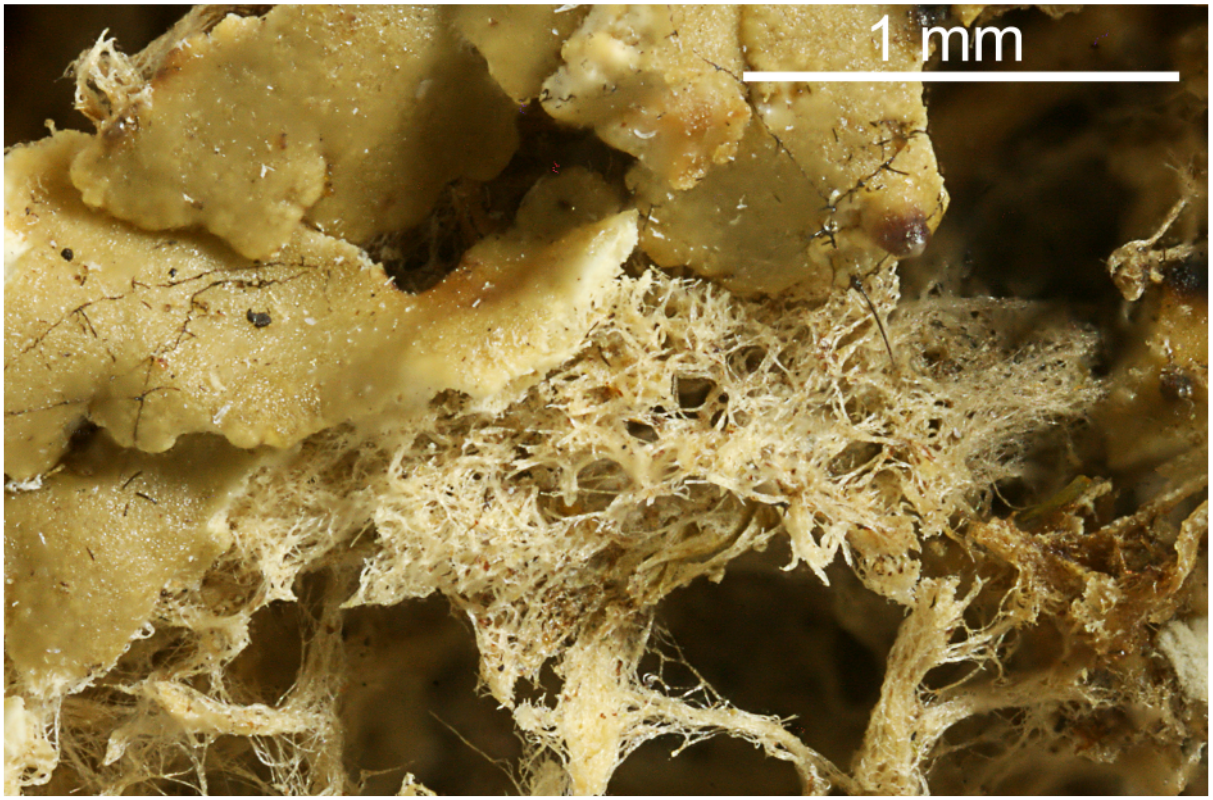
Myelorrhiza jenjiana Verdon & Elix

Thallus forming rosettes, 1-6 cm wide, usually 250-350 µm thick, on bark. Upper surface pale grey-green to green. Medulla of loosely interwoven, very thick walled hyphae. Apothecia lecideine, laminal, very shortly podetiate. Ascospores simple, ovoid, false septum present unless viewed in KOH, 10-15 x 5-7 µm. Chemistry: cortex and medulla K-, C-, KC-, P-; lobaric acid, unknown compound (trace).

[19080], Australia, Queensland, Mount Windsor Tableland, 45 km north-west of Mossman, 16°15' S, 145°01' E, 1200 m, growing on trunk of felled *Syzygium* on ridge in stunted, open rainforest. Leg. J.A. Elix (16431) & H. Streimann, 26.06.1984. Chemistry: lobaric acid (major), unknown compounds (traces) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. Lichenes AUSTRALASICI EXSICCATI NO. 134.

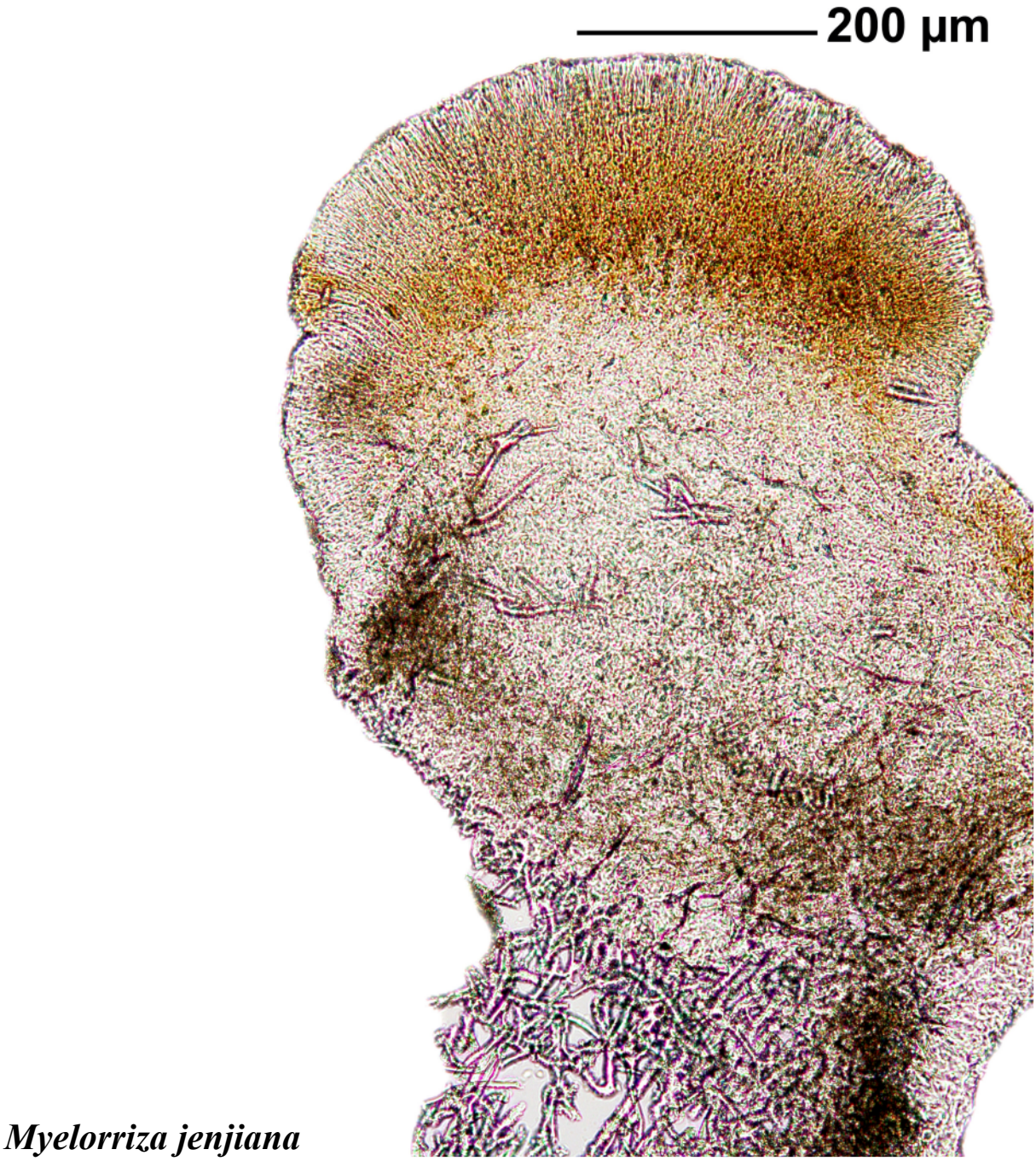




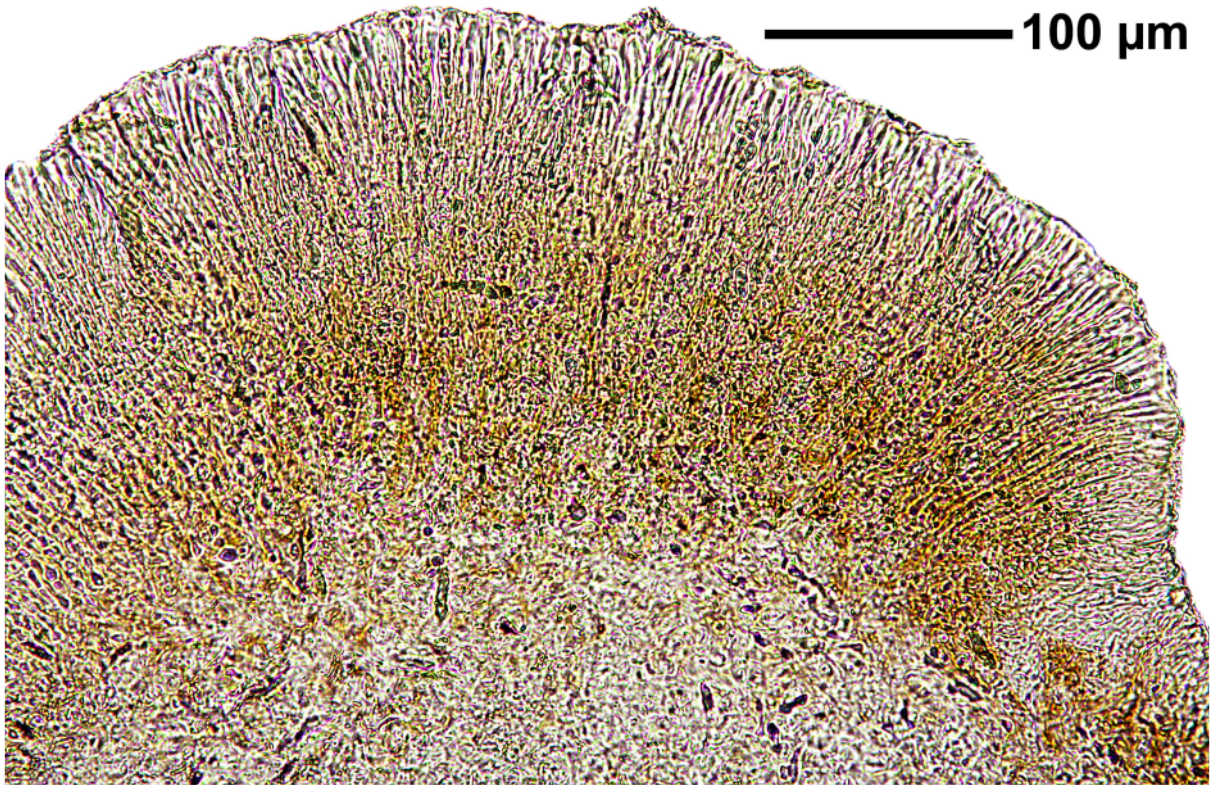


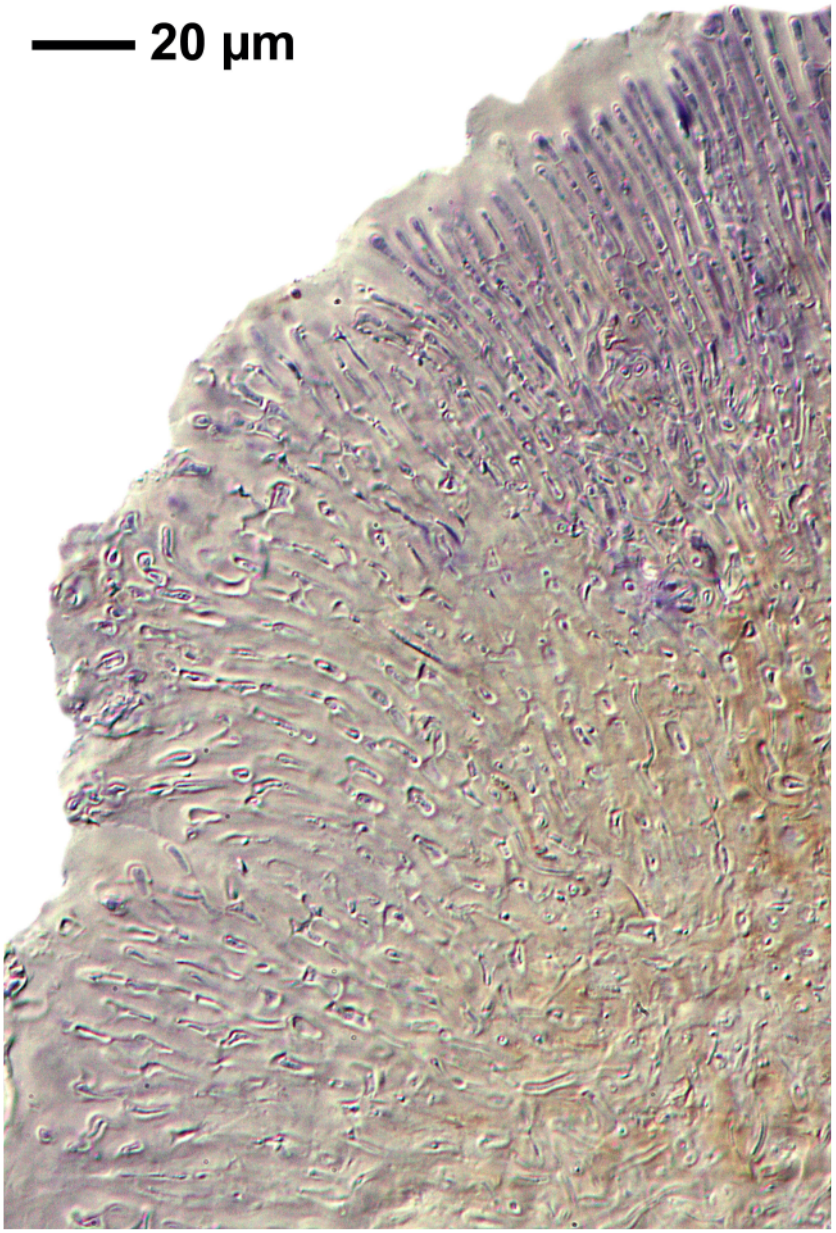
Myelorriza jenjiana



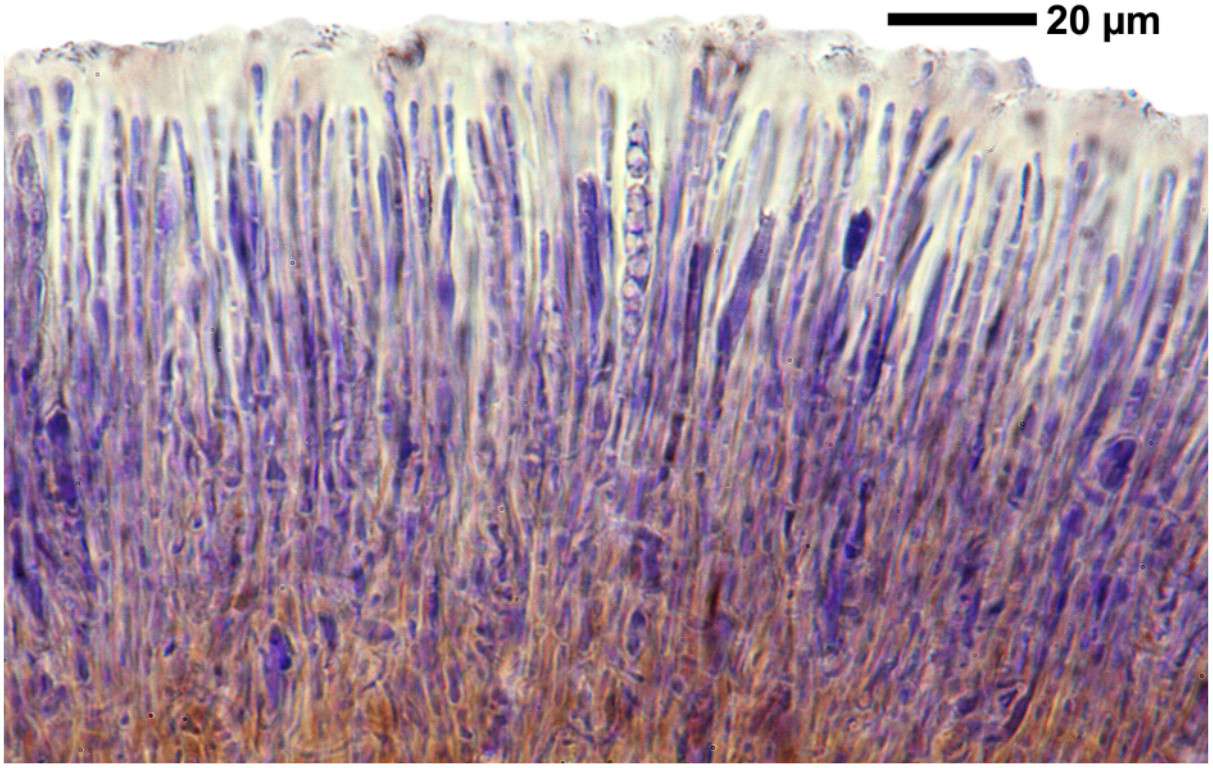


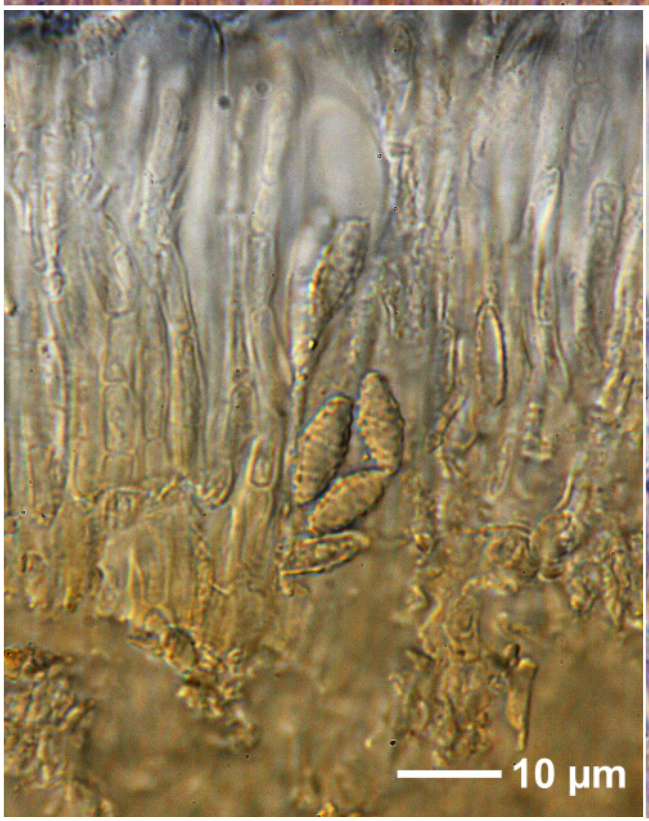
Myelorriza jenjiana

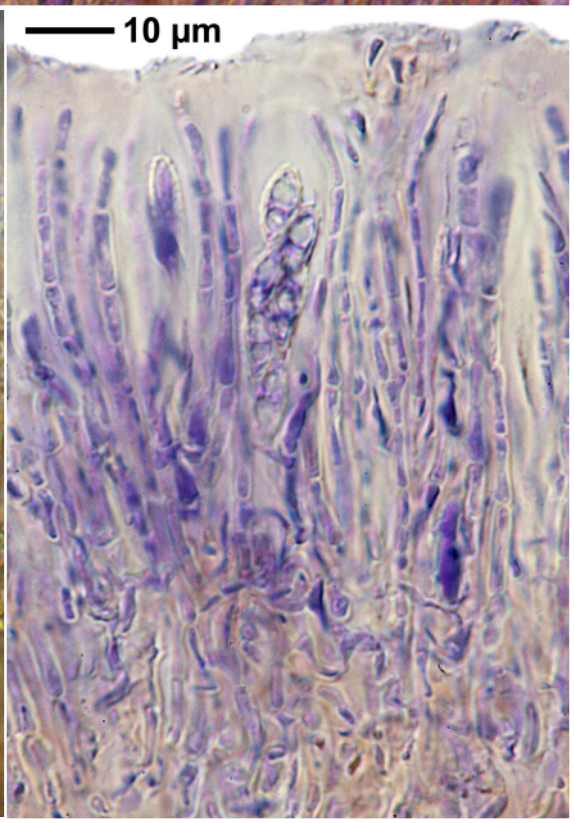


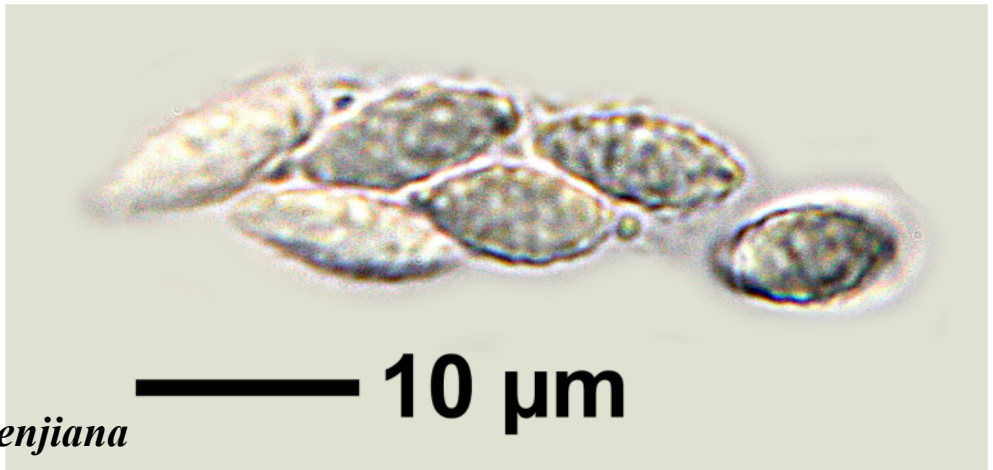


Myelorriza jenjiana

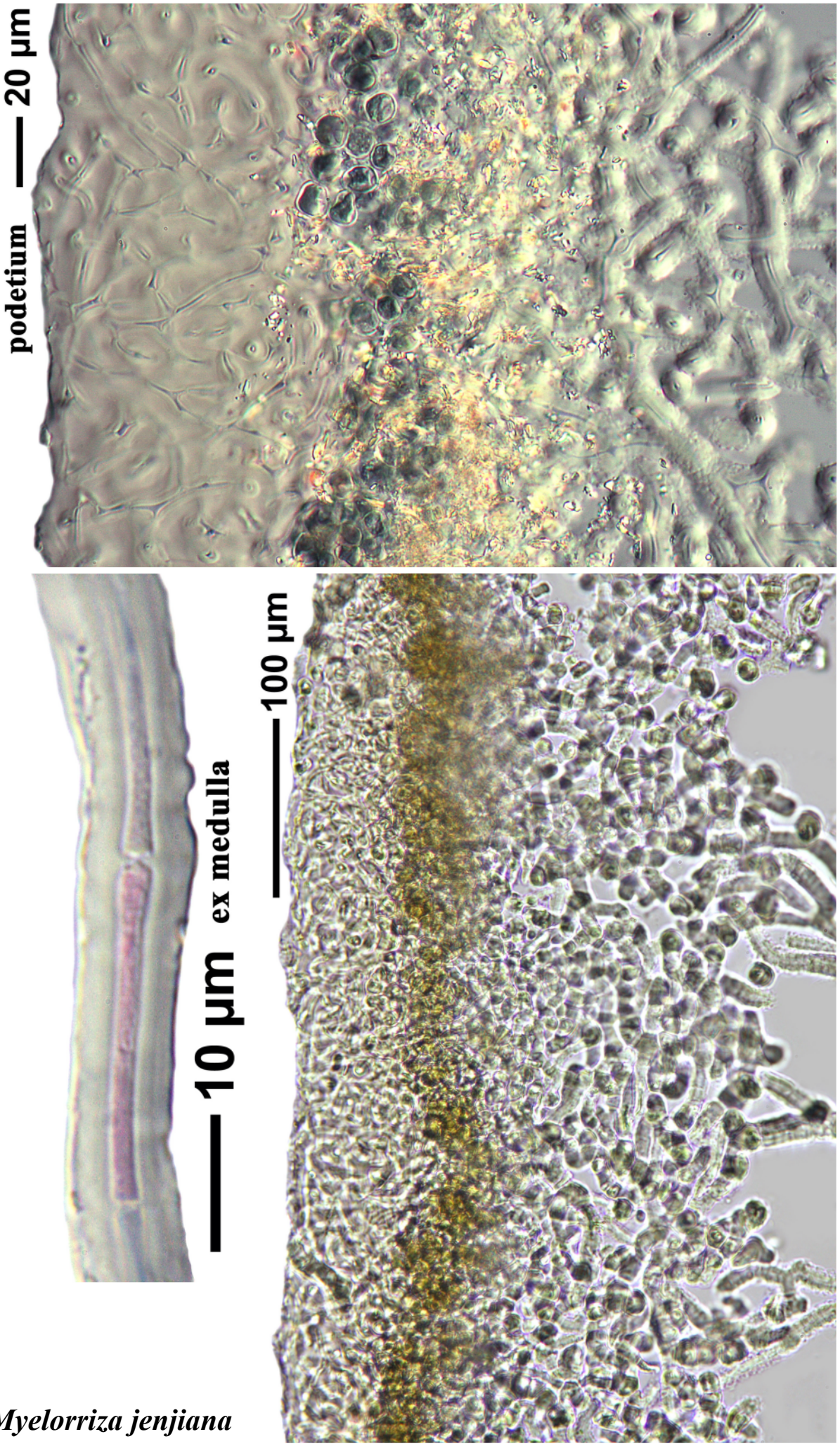




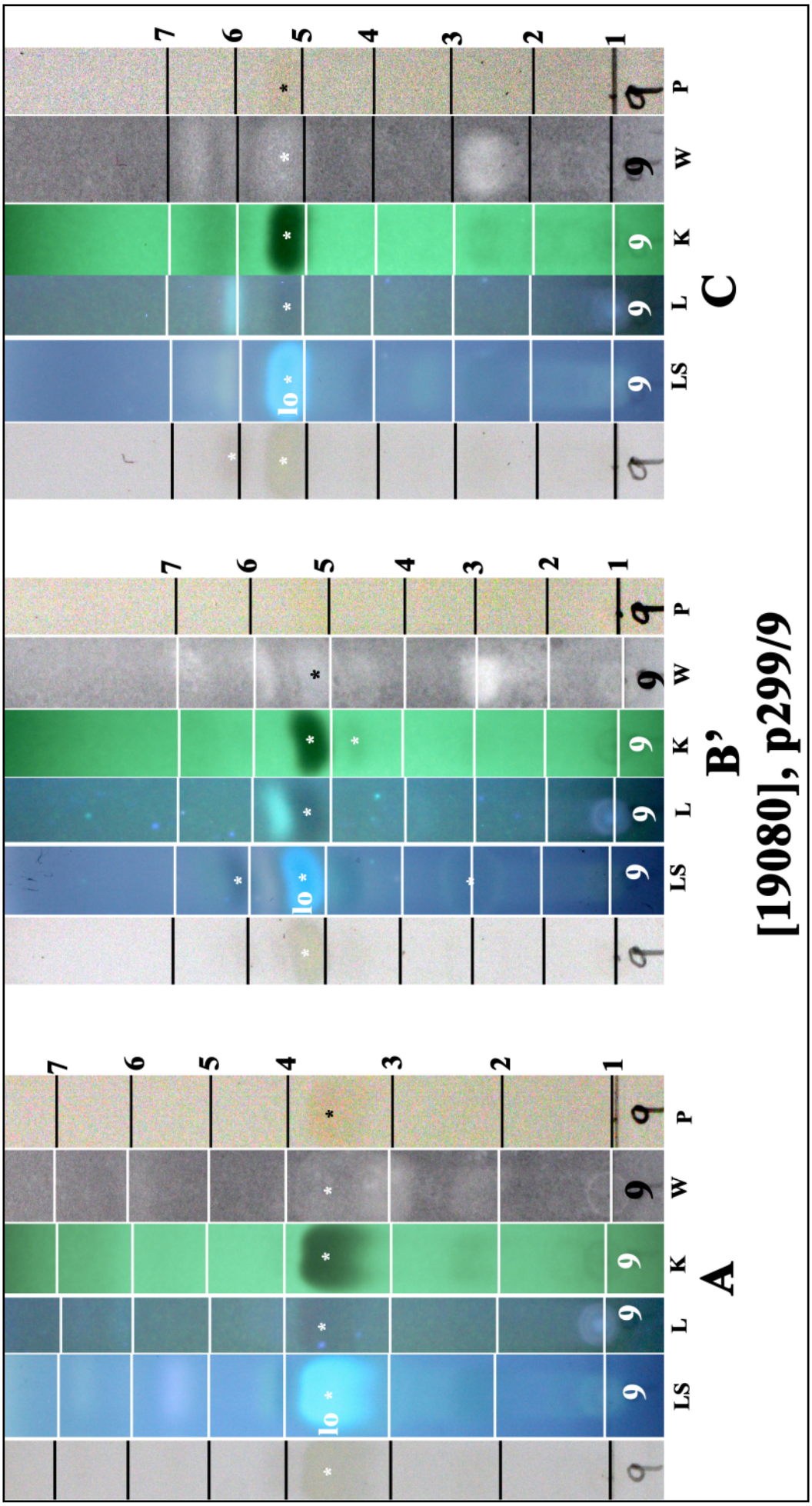




Myelorriza jenjiana



Myelorriza jenjiana



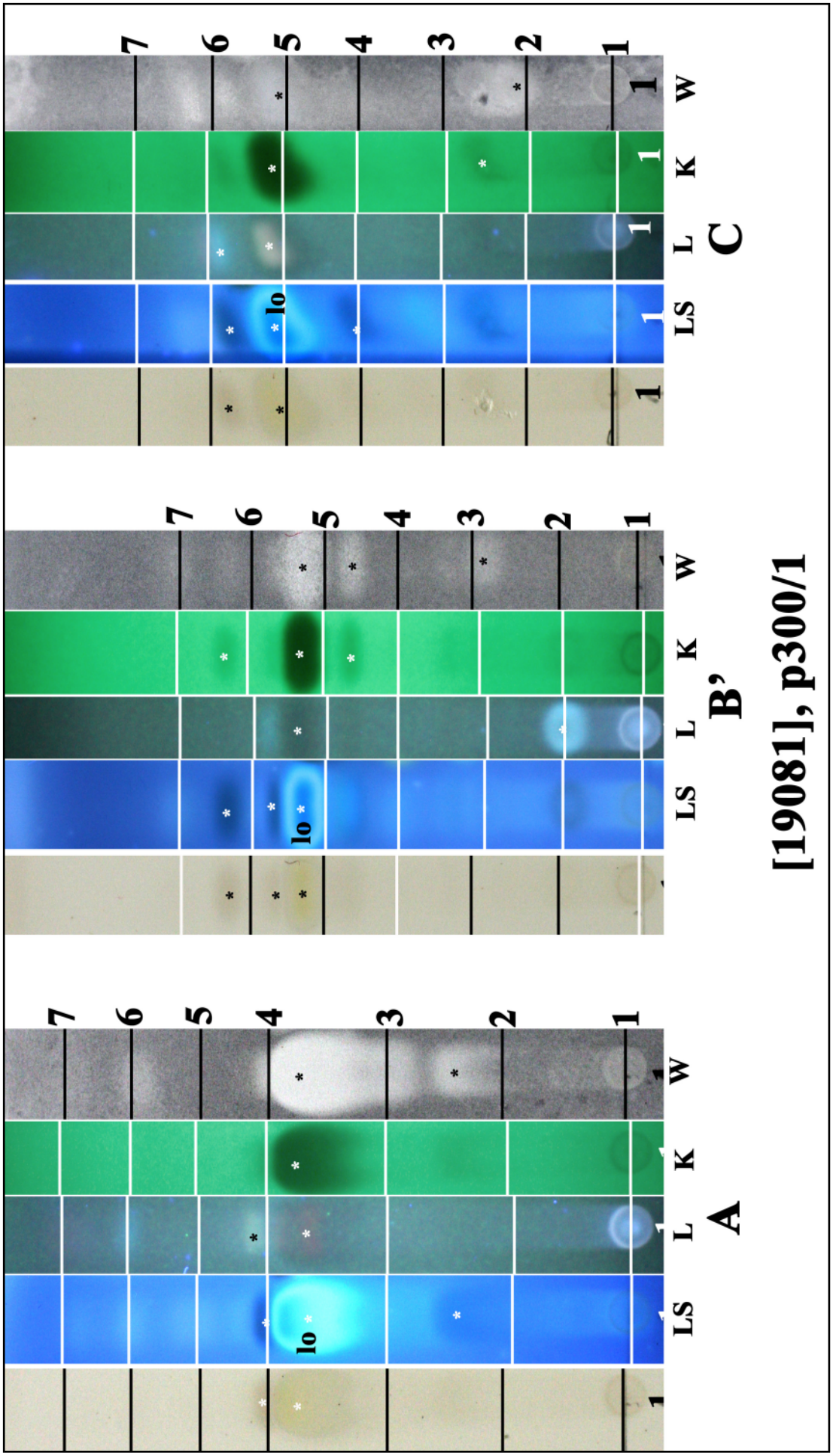
lo: lobaric acid

Myelorriza jenjiana

Myelorrhiza jenjiana Verdon & Elix

[19081], Australia, Queensland, Blencoe Creek, Cardwell Range, 48 km north-west of Cardwell, 18°03' S, 145°39' E, 740 m, growing on trunk of felled tree in Lauraceae-*Syzygium*-*Prunus* dominated forest. Leg. J.A. Elix (20069) & H. Streimann 17.06.1986. Chemistry: lobaric acid (major), unknowns (traces) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 135.



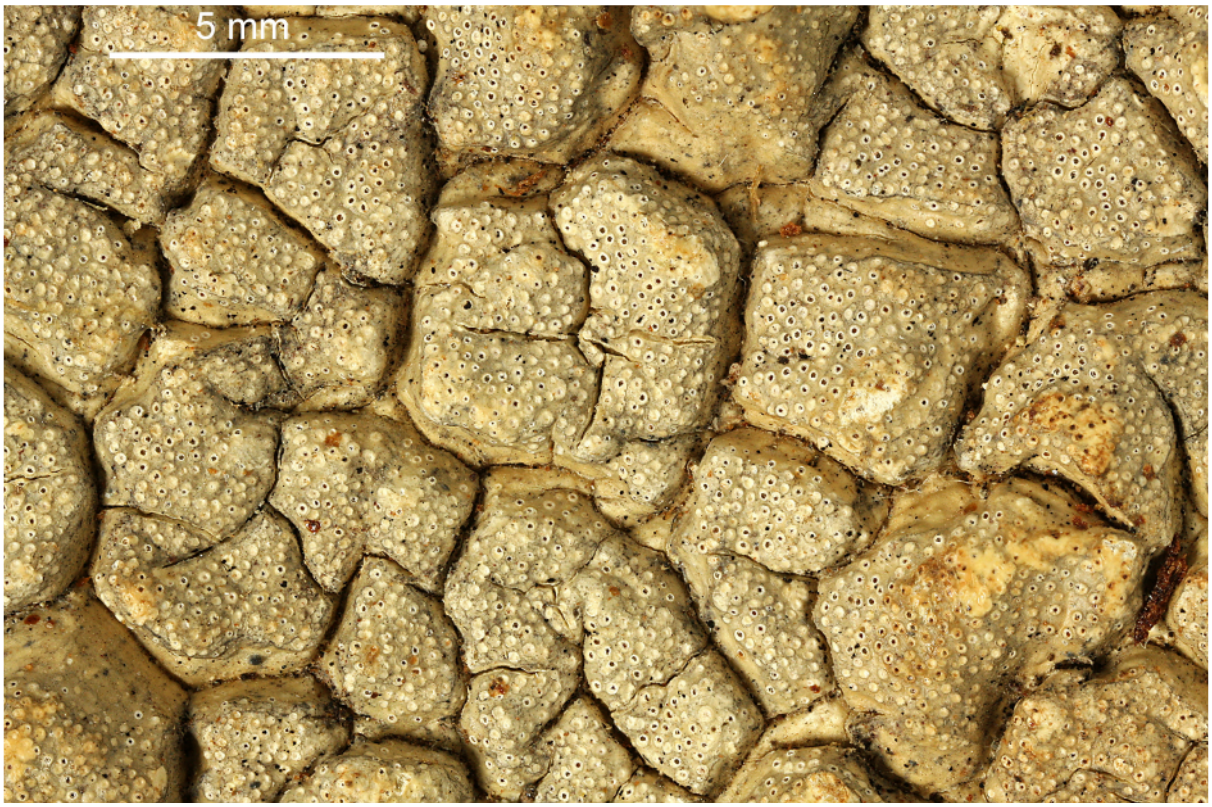


Myelorrhiza jenjiana

Myriotrema microporum (Mont.) Hale

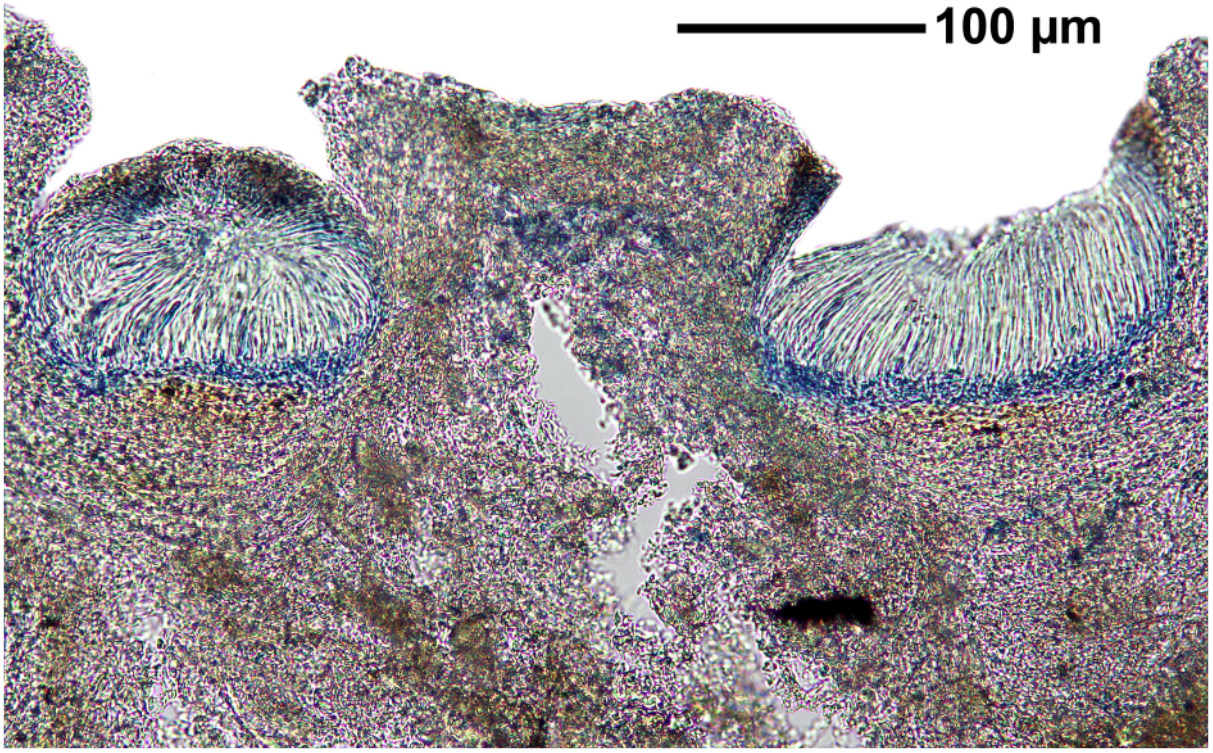
Thallus epiphloeodal, to 800 µm thick, without isidia or soredia. Ascomata immersed to slightly raised, to c. 0.25 mm diam. Proper exciple distinctly free in upper parts, at least in older stages. Hymenium not inspersed, columella absent. Ascospores 8/ascus, strongly amyloid, traversely septate, with 3-4(-5) locules, 10-16(-18) x 5-8 µm, non halonate. Chemistry: Thallus K+ yellowish, C-, P+ yellow; psoromic acid (major), 2'-*O*-demethylpsoromic acid (minor to trace), sub-psoromic acid (trace).

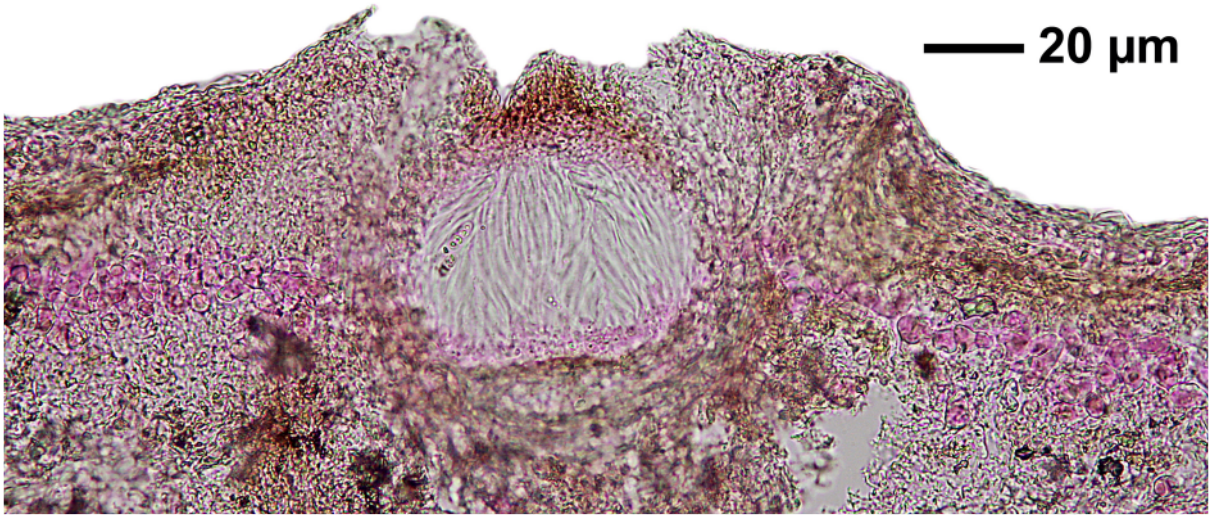
[19082], Australia, Queensland, Davies Creek Road c. 17 km south of Kennedy Highway, south of Davies Creek Falls National Park, east of Mareeba, on trunk in rainforest logging area, 600 m. Leg. M.E. Hale (64024), 7.07.1983, det. M.E. Hale. Chemistry: psoromic acid (major), 2'-*O*-demethylpsoromic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 085.

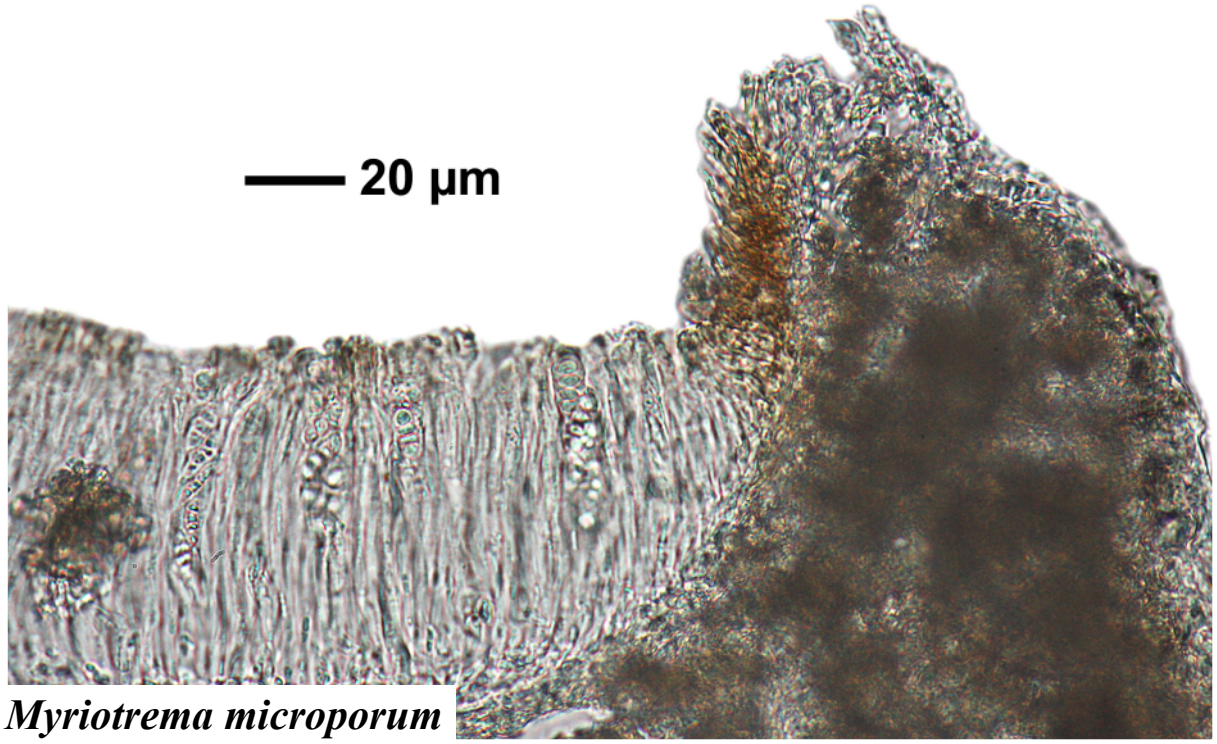




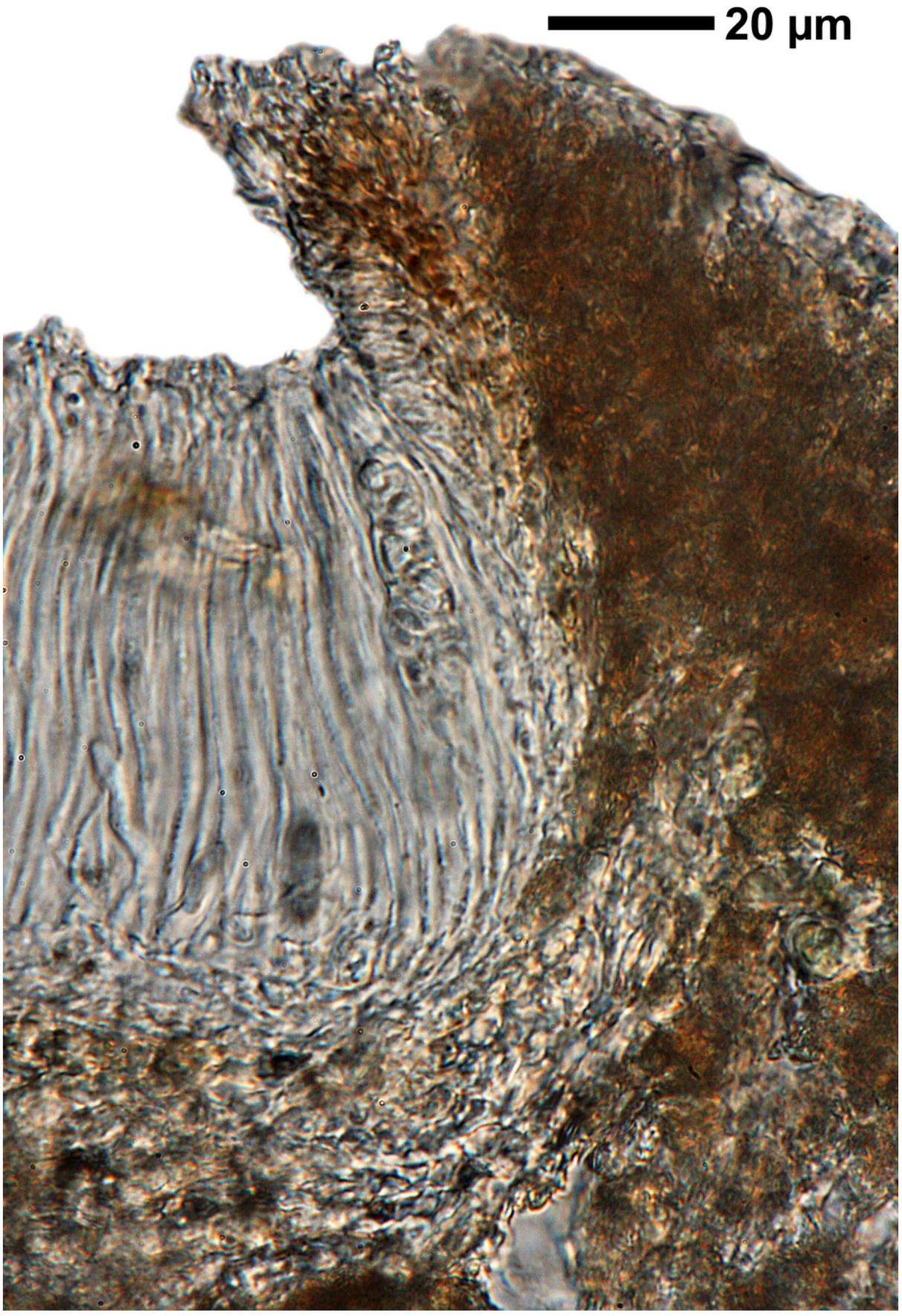
Myriotrema microporum



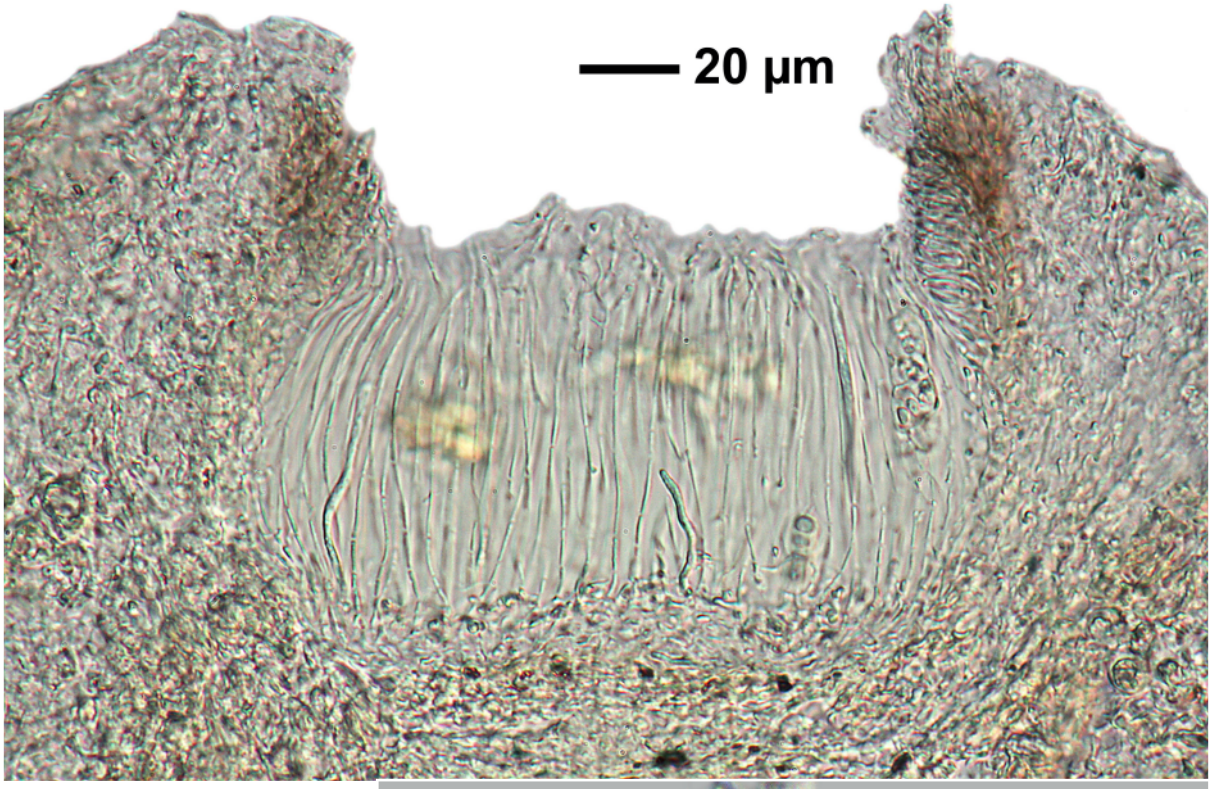


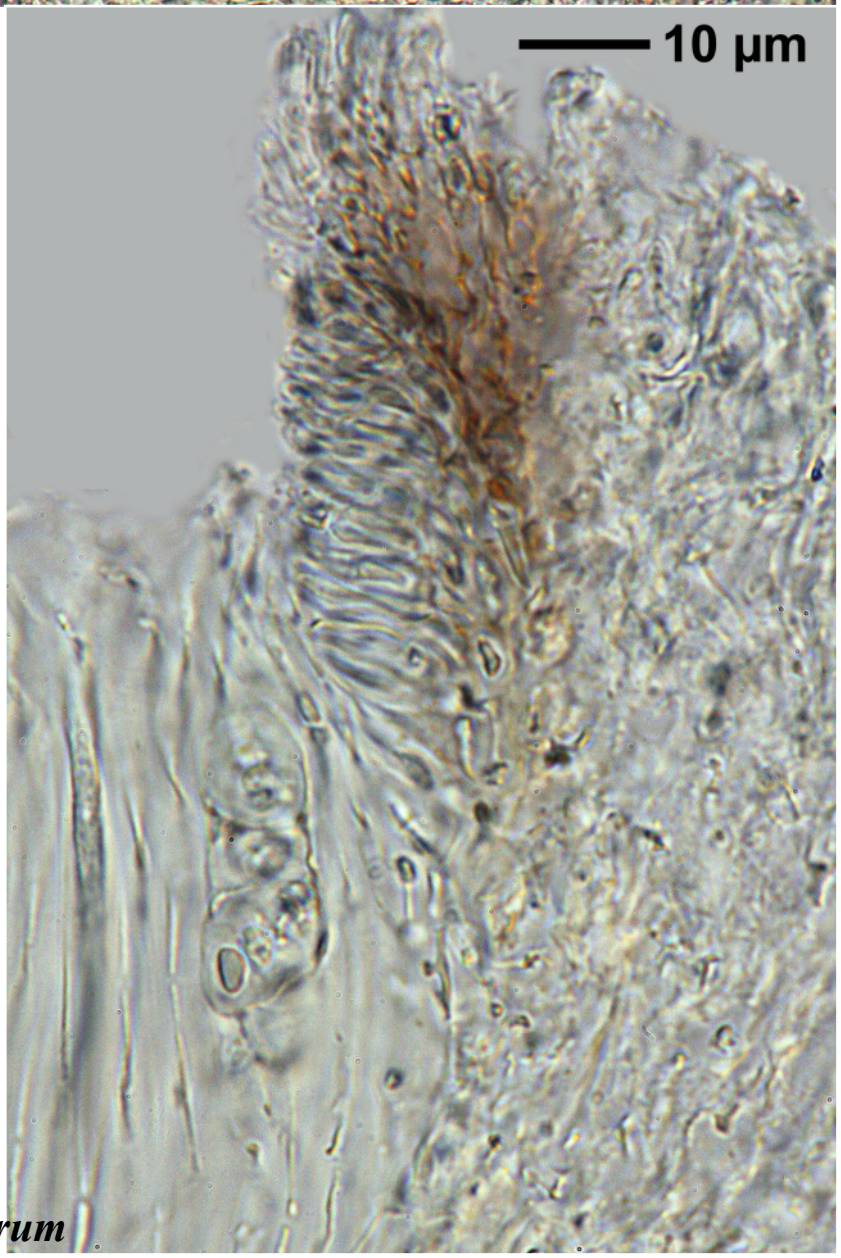


Myriotrema microporum

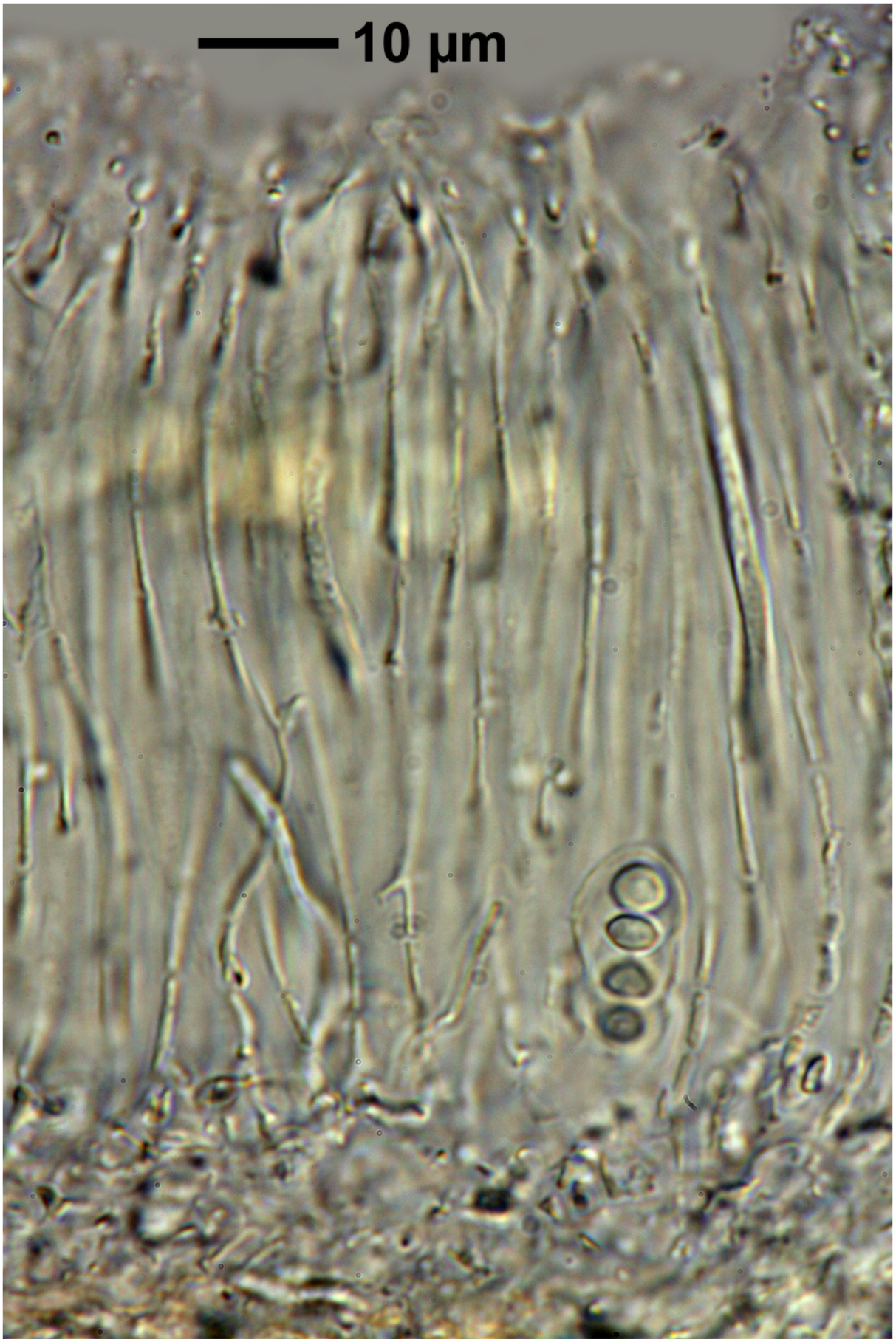


Myriotrema microporum





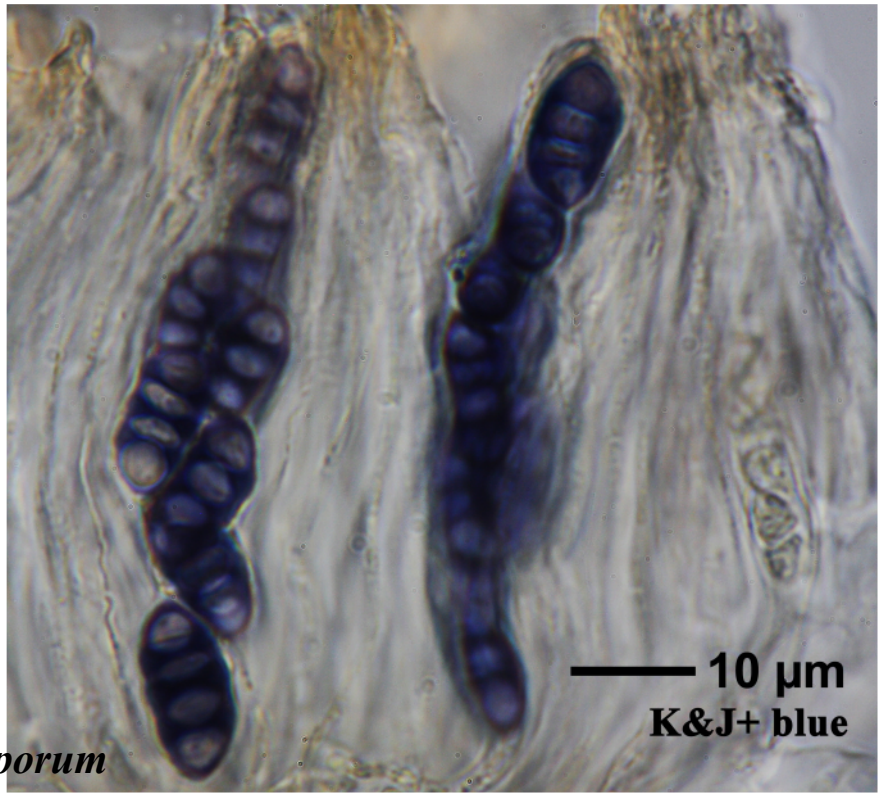
Myriotrema microporum



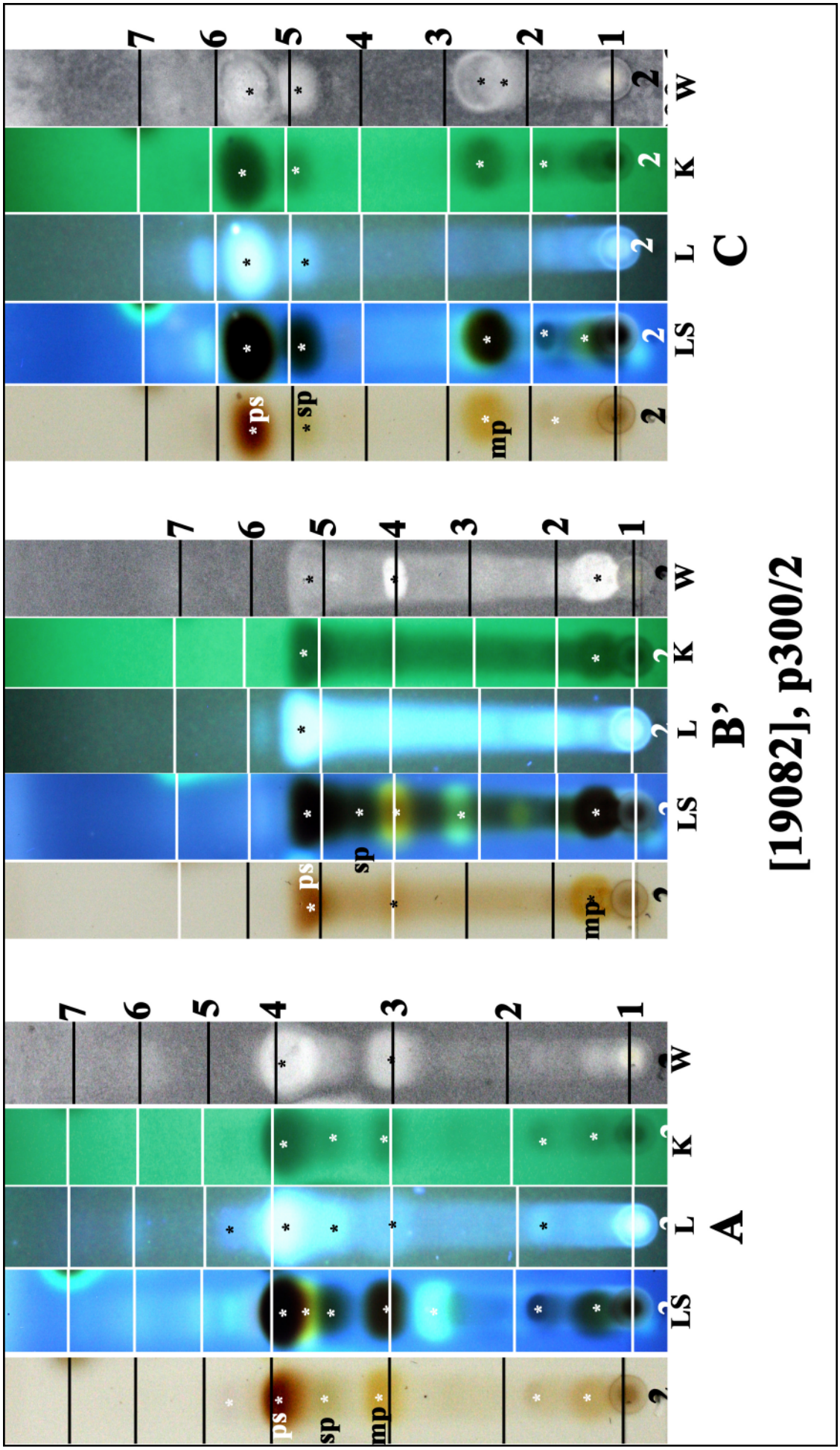
Myriotrema microporum







Myriotrema microporum



ps: psoromic acid, mp: 2'-*O*-demethylpsoromic acid, sp: subpsoromic acid

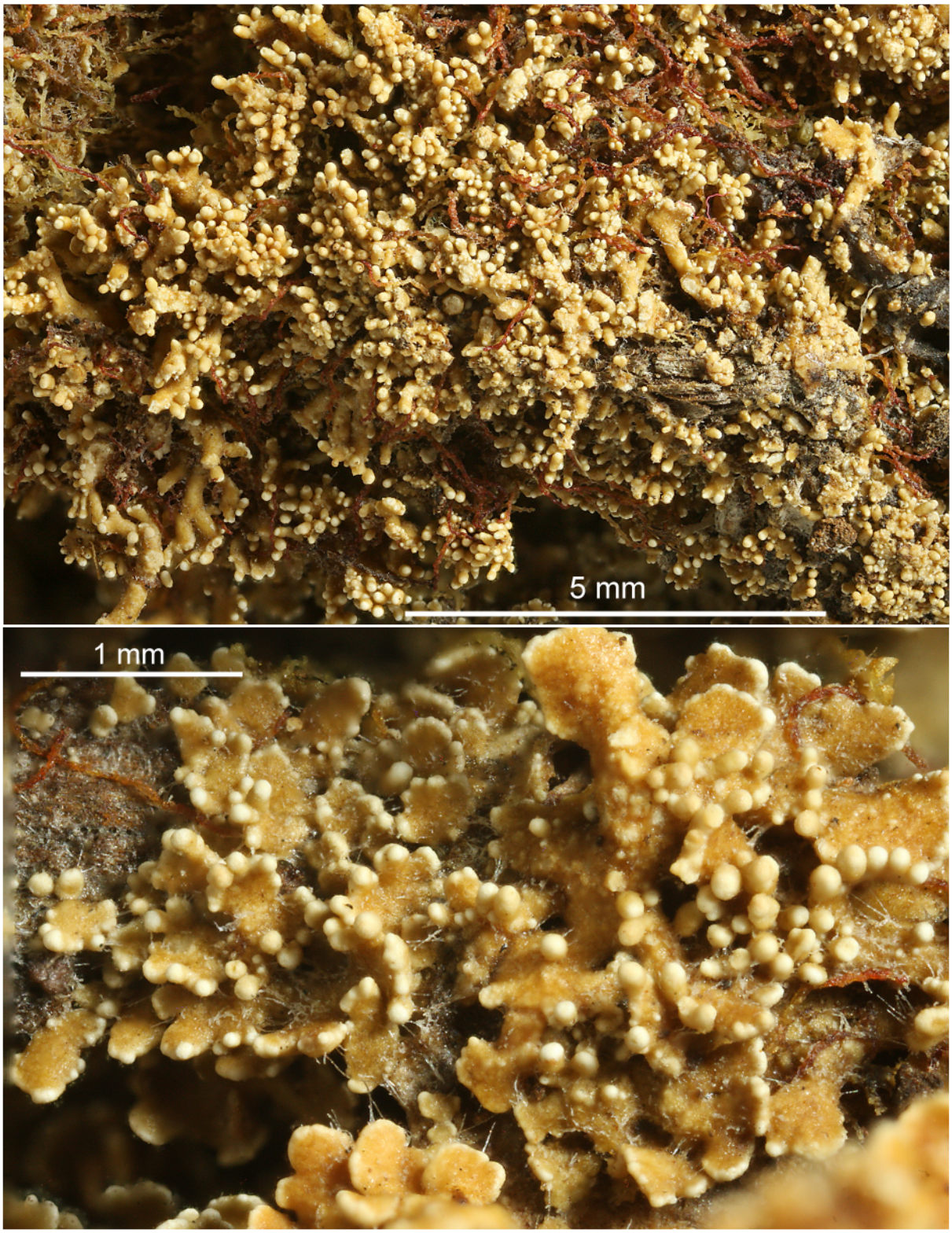
Myriotrema microporum

Neophyllis melacarpa (F.Wilson) F.Wilson

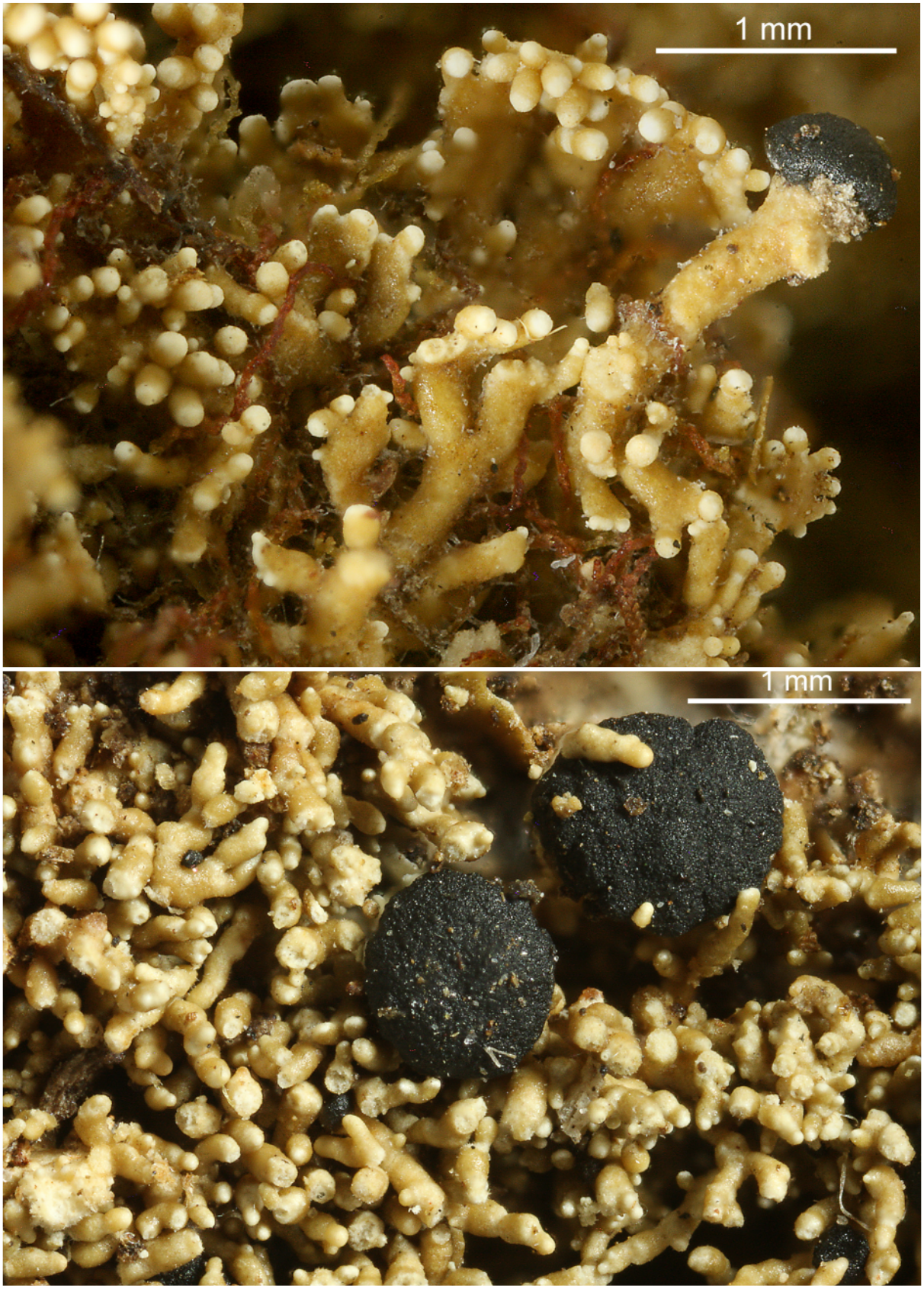
Primary thallus squamulose, sublinear, irrgularly to pinnately lobed. Podetia on primary squamules, to 3 mm tall, simple, solide, cylindrical. Apothecia to 1 mm wide, on podetial tips, somtimes sunk below level of clustered primary thalli. Disc convex to hemispheric, blackish brown to black. Ascospores hyaline, 8/ascus, 5-13 x 4-7 µm. Chemistry: K-, KC-, P± red. Grayanic acid (major), 4-*O*-demethylgrayanic acid (minor), congrayanic acid, melacarpic acid, fumarprotocetraric acid.

[19083], Australia, New South Wales, Great dividing Range, 6 km east of Captains Flat, 2 km north of Parkers Gap, 35°37' S, 149°30' E, 1260 m, growing on rotting logs in wet sclerophyll forest. Leg. D. Verdon (5618), 22.03.1985. Chemistry: fumarprotocetraric acid (major), grayanic acid (major), melacarpic acid (minor), congrayanic acid (trace), 4-*O*-demethylgrayanic acid (trace), by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 111.

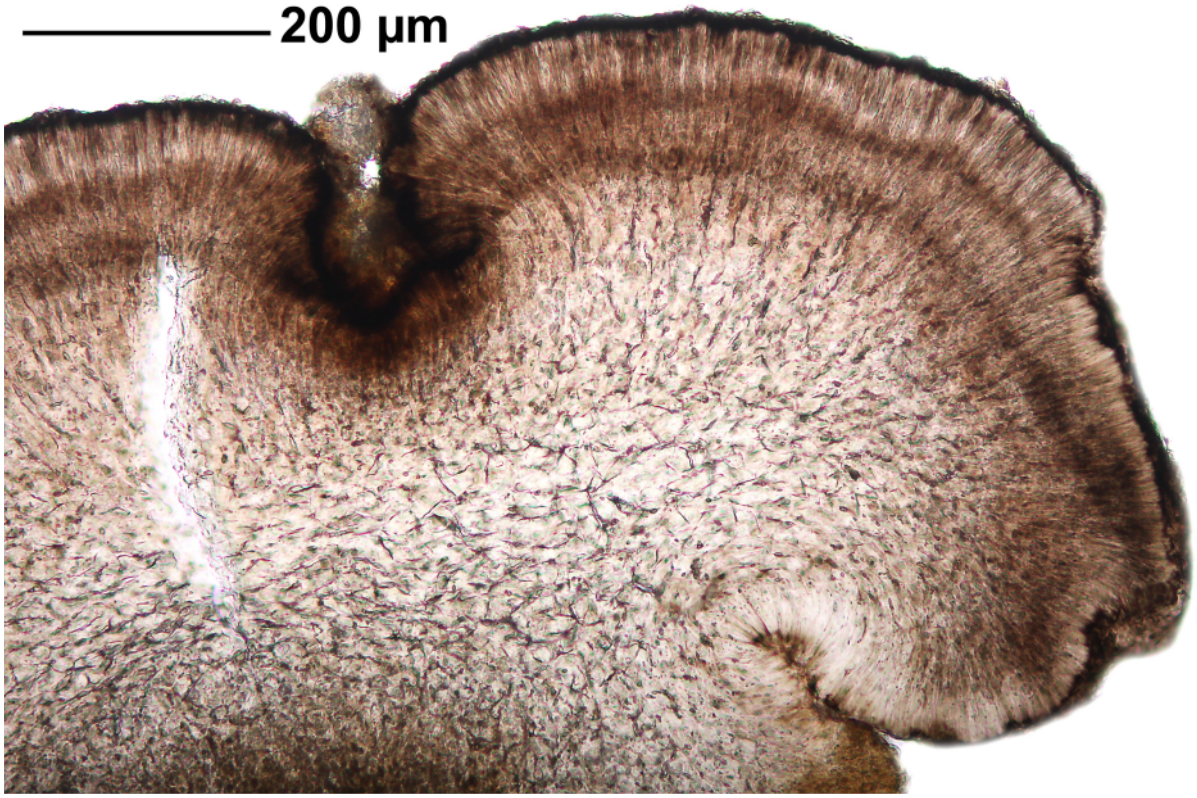


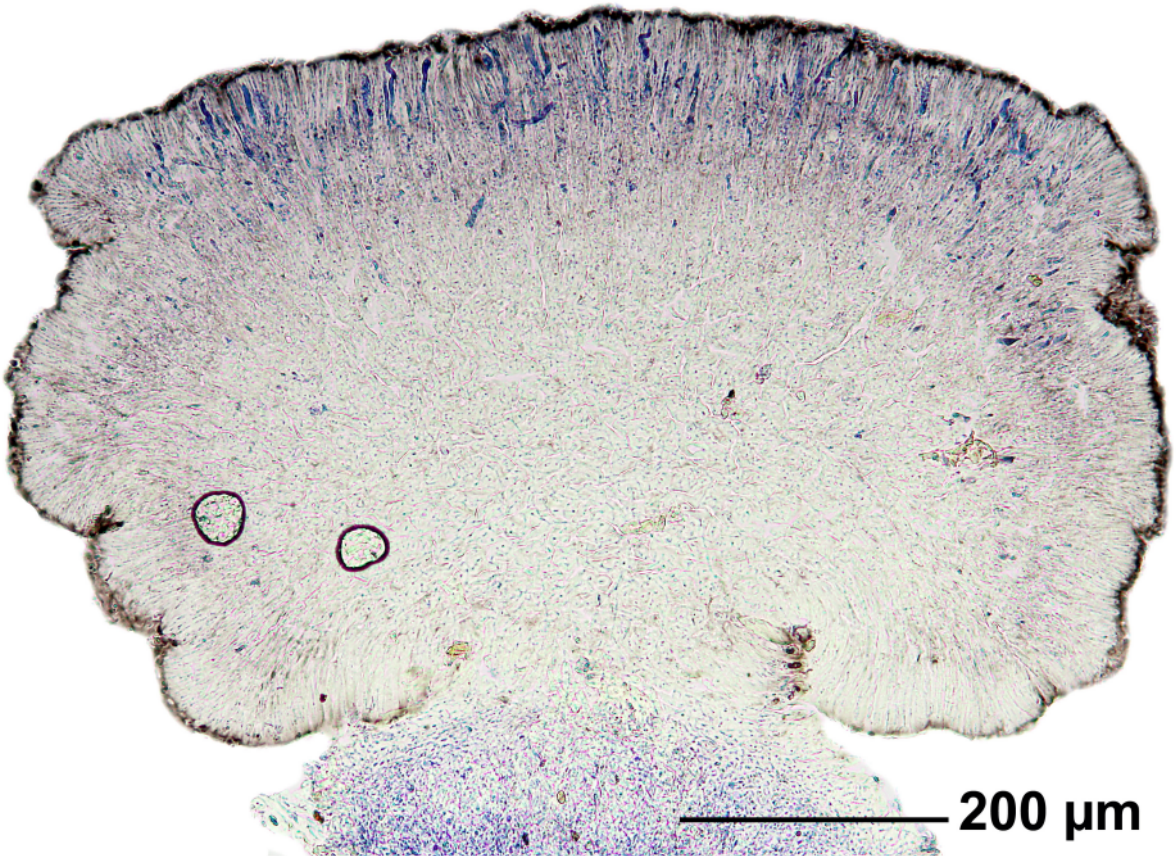


Neophyllis melacarpa

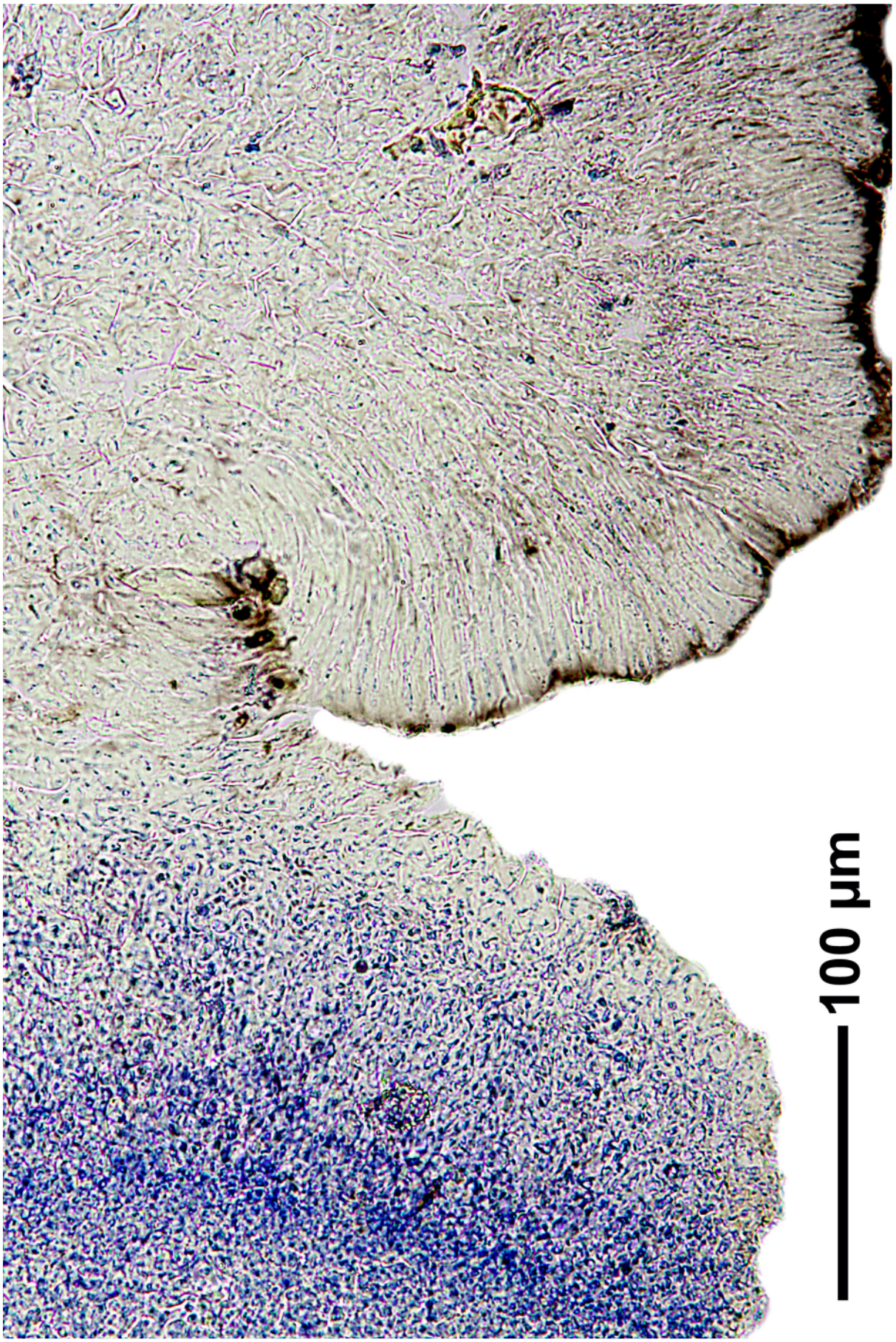


Neophyllis melacarpa

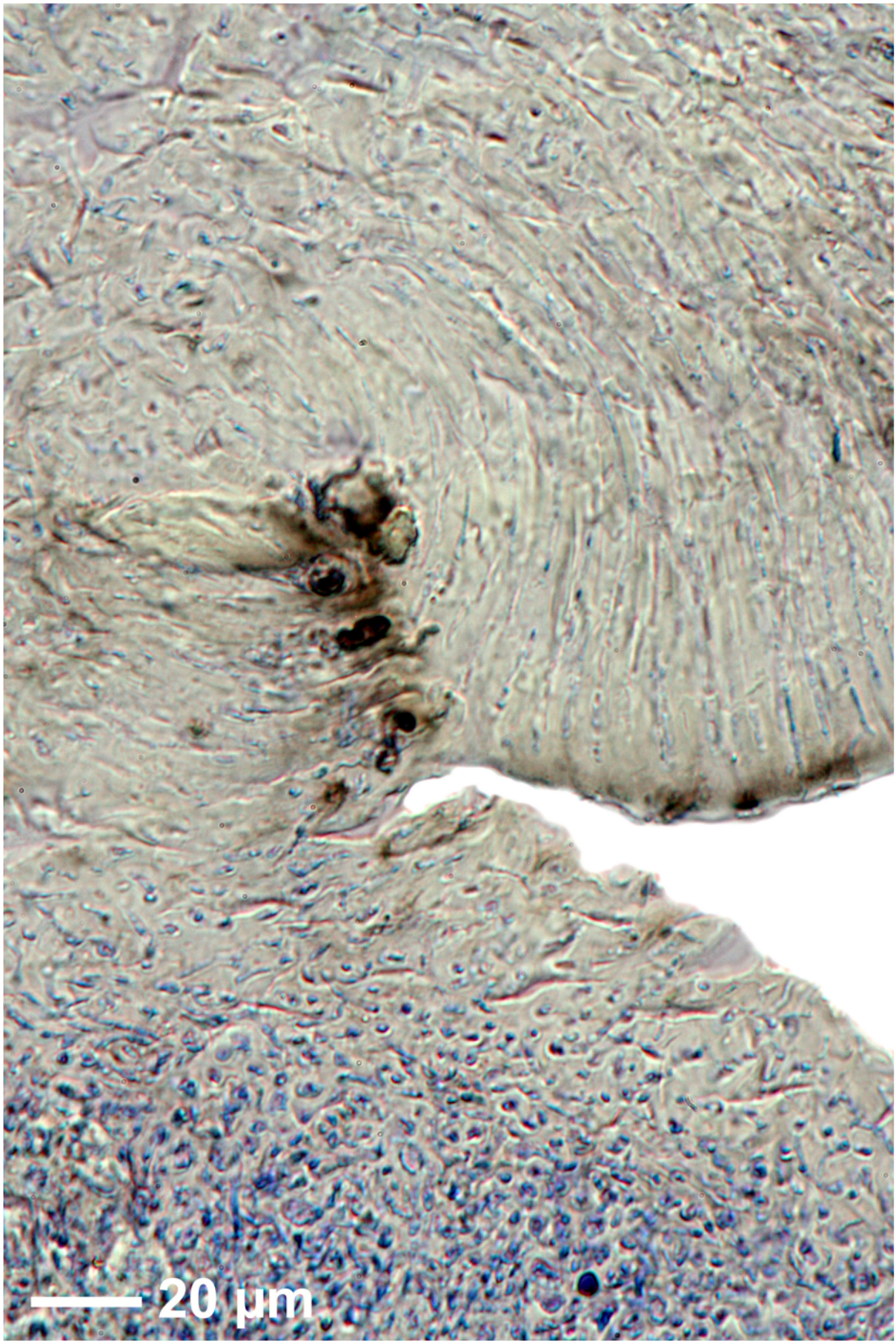




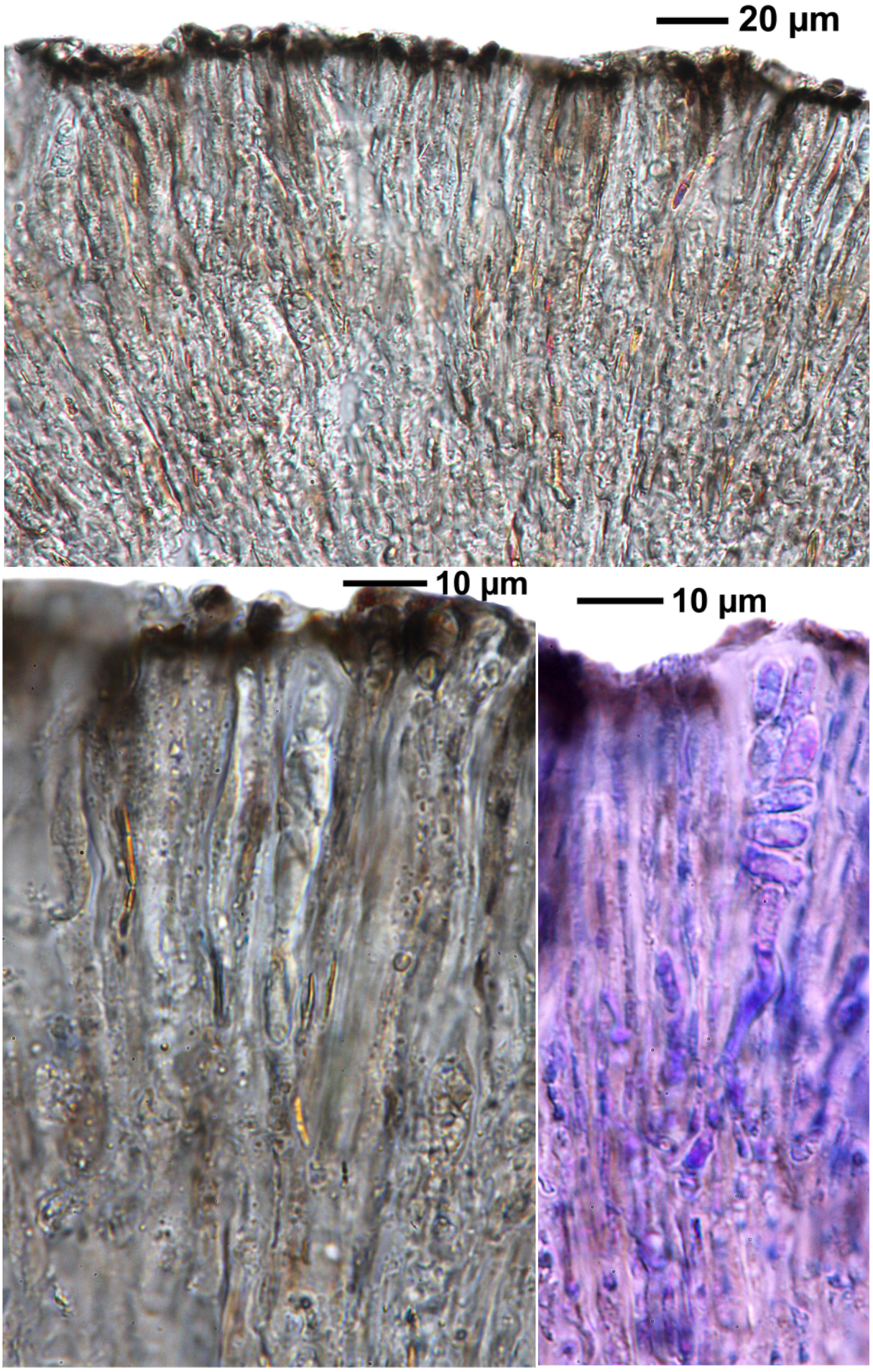
Neophyllis melacarpa



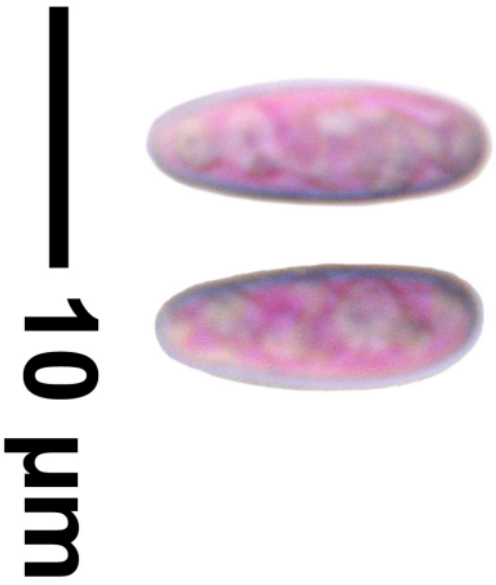
Neophyllis melacarpa



Neophyllis melacarpa



Neophyllis melacarpa



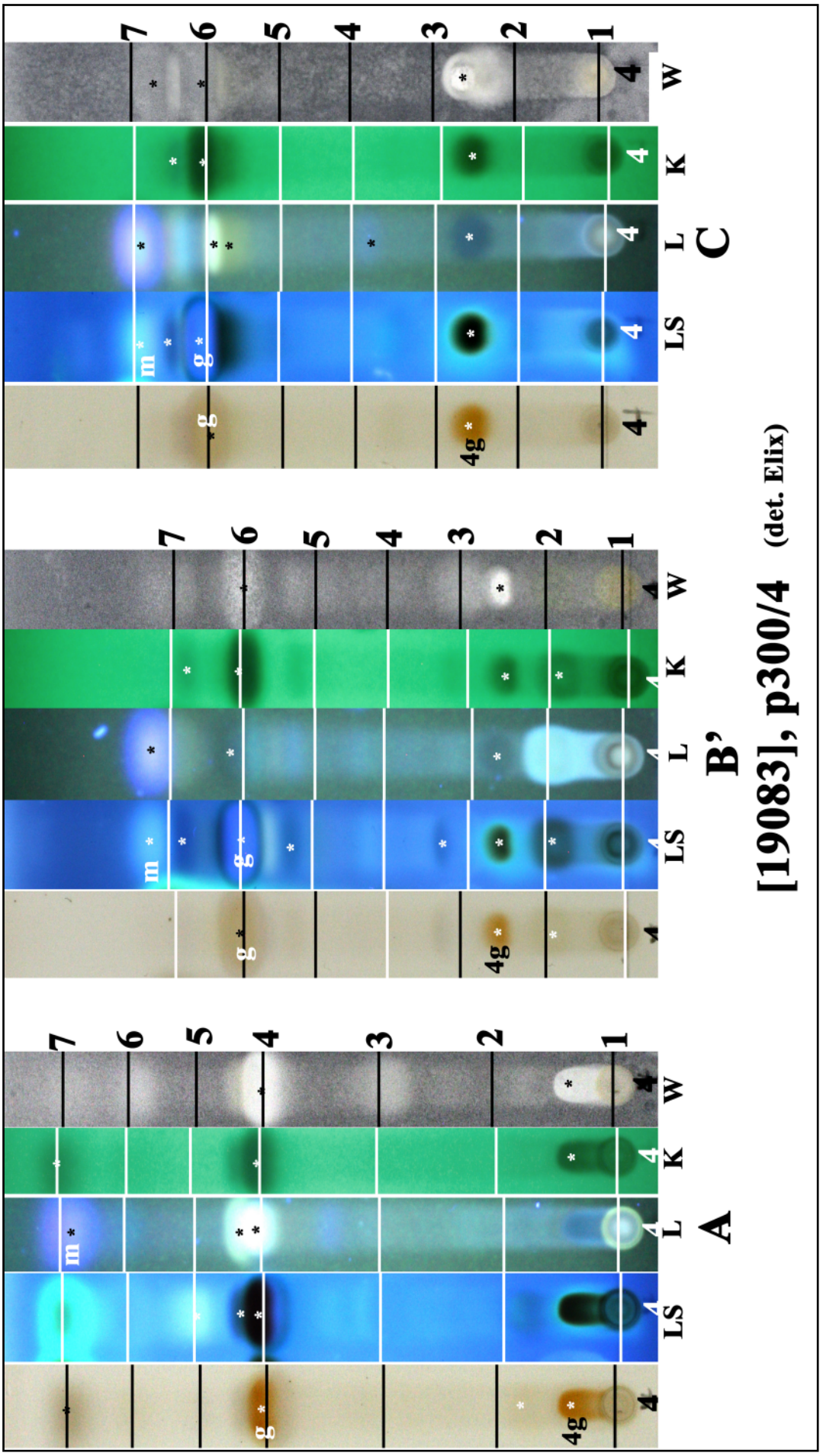


K&J+ blue

10 µm



Neophyllis melacarpa



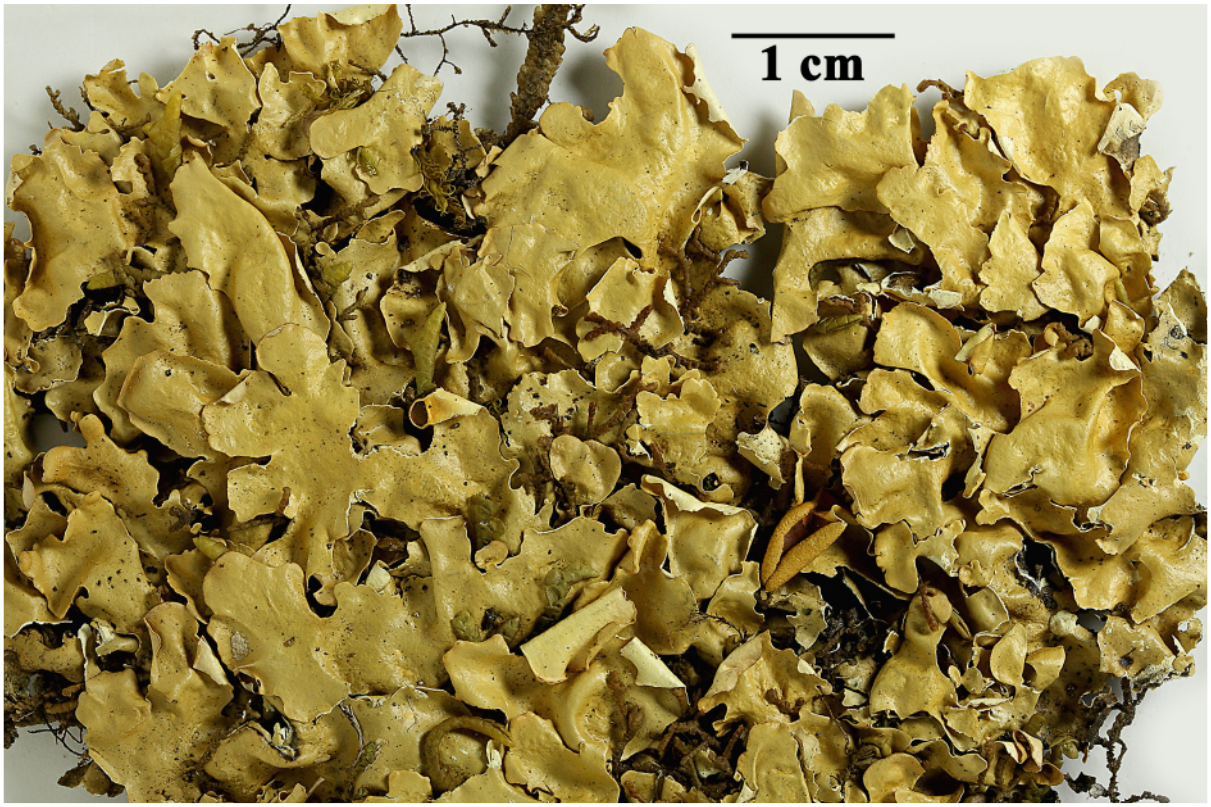
g: grayanic acid, 4g: 4-*O*-demethylgrayanic acid, m: melacarpic acid

Neophyllis melacarpa

Nephroma australe A.Rich.

Upper surface yellowish green or greenish brown, lacking isidia, soredia and maculae. Lower surface brown, creamish whitish to the margins. Medulla white. Photobiont a green alga (*Coccomyxa*). Ascospores 3-septate, pale brownish, 17-22 x 5-7.5 µm. Chemistry: Race 1 (this specimen) usnic acid, hopane-6α,22-diol (major), hypostictic acid (minor), hyposalazinic acid (minor); Race 2 (next specimen) usnic acid, hopane-6α,22-diol (major), two unidentified terpinoids with low Rf.

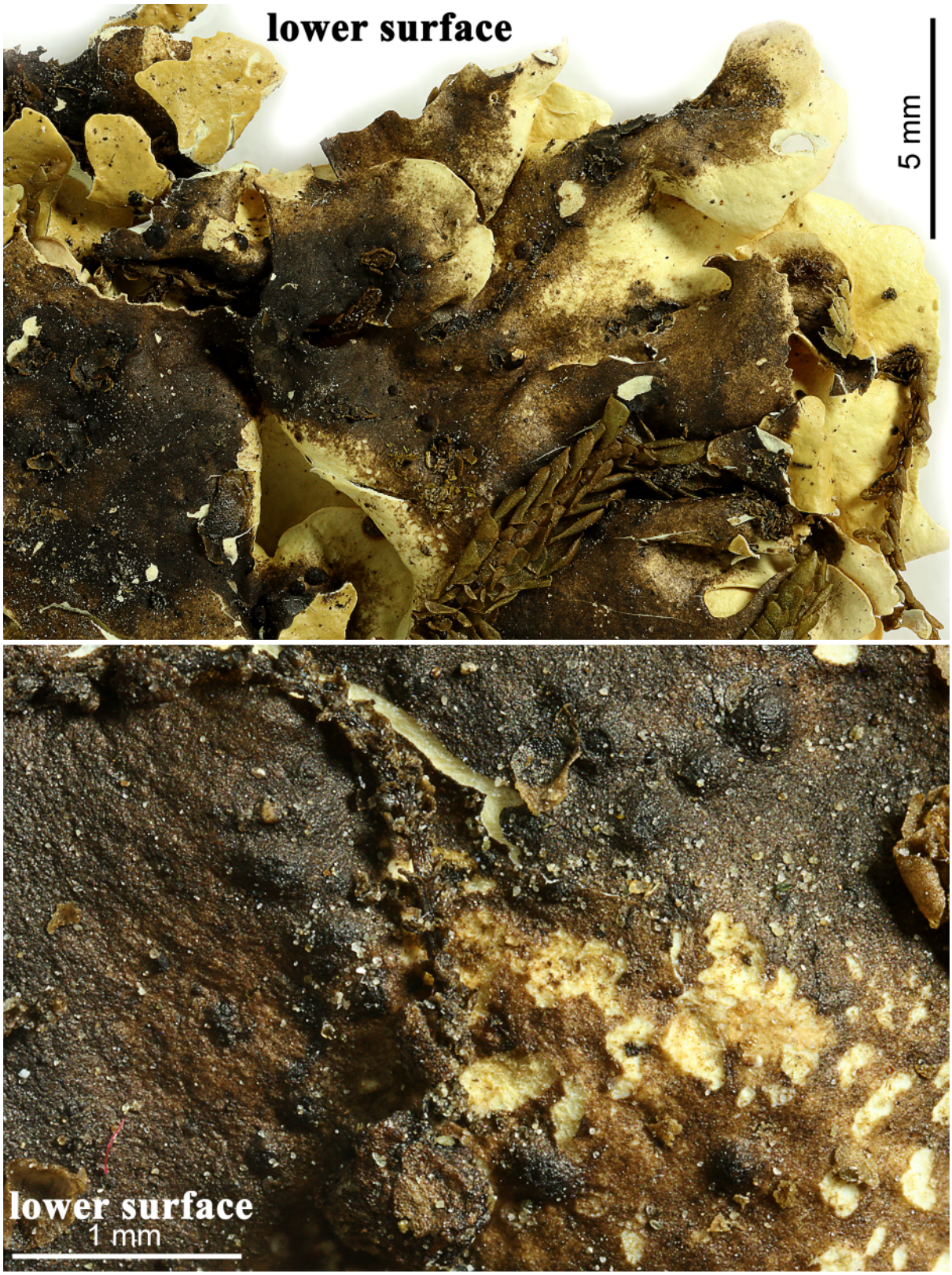
[19087], New Zealand, South Island, Fiordland, Mackay Creek, 21.6 km north of Te Anau Downs, growing in open silver beech forest along the road. Leg. M.E. Hale (63253), 29.01.1984. Chemistry: usnic acid, hypostictic acid, hyposalazinic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 086.



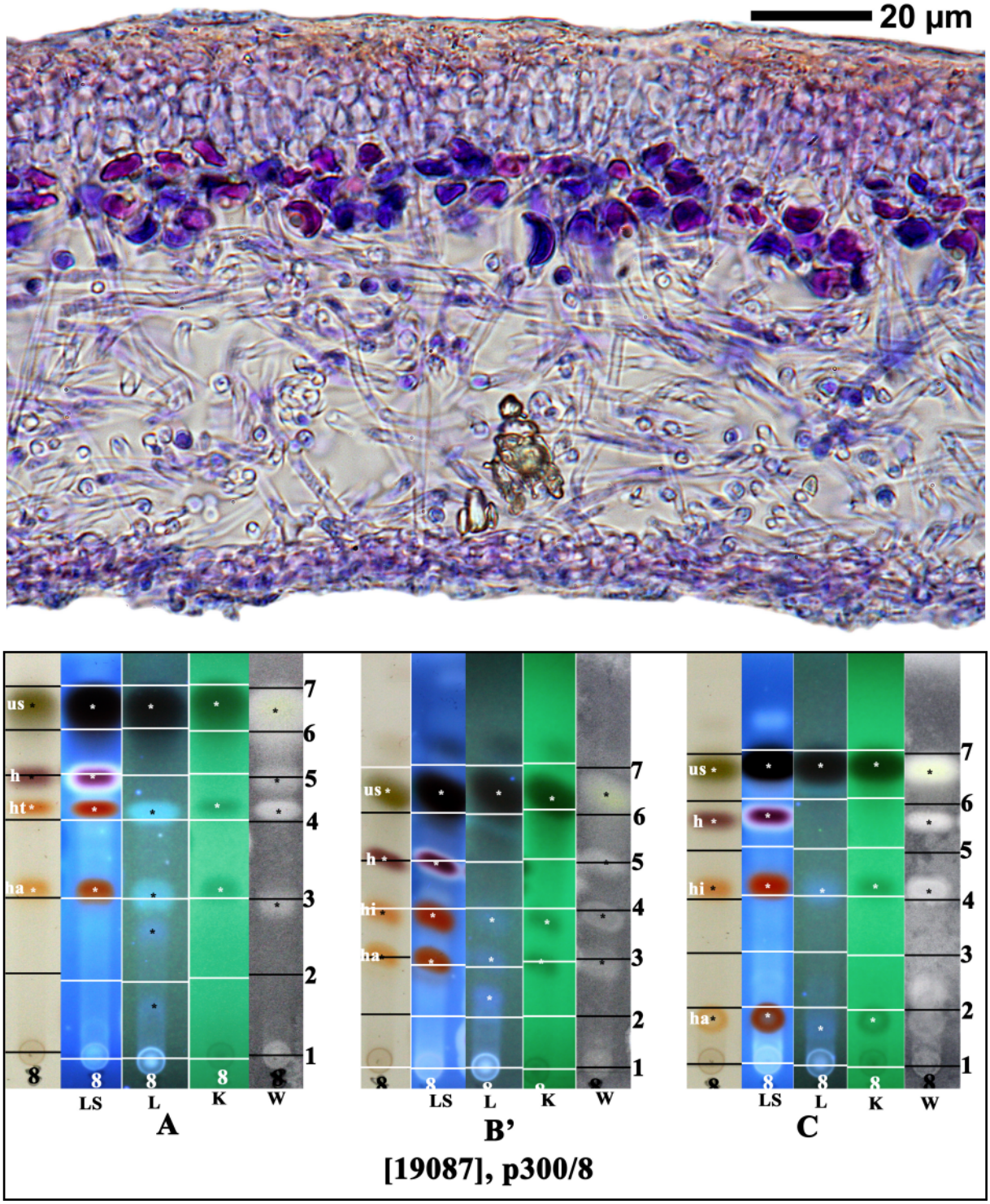




Nephroma australe



Nephroma australe



us: usnic acid, h:hopane-6α,22-diol,
hi: hypostictic acid, ha: hyposalazinic acid

Nephroma australe

Nephroma cellulosum (J.E. Smith in Ach.) Ach.

Upper surface grey to olive-brown, foveolate-reticulate, isidia absent. Lower surface dark brown centrally, creamish at the margins. Medulla white. Ascospores 3-septate, pale brownish, 8/ascus, 14-25 x 5-8.5 µm. Chemistry: zeorin (= hopane-6α,22-diol, major), perlatolic acid (major), stenosporic acid (minor), glomelliferic acid (major), ±traces of glomellic, anziaic and loxodellic acids.

[19089], Australia, New South Wales, Great Dividing Range, 6 km east of Captains Flat, 2 km north of Parkers Gap, 35°37' S, 149°30' E, 1260 m, growing on dead branches in wet sclerophyll forest. Leg. J.A. Elix (19026) & D. Verdon 22.03.1985. Chemistry: perlatolic acid (major), glomelliferic acid (major), stenosporic acid (minor), loxodellic acid (trace), anziaic acid (trace), zeorin (minor), 6α-acetoxyhopane-16β,22-diol (trace), unknowns (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 136.







Nephroma cellulosum

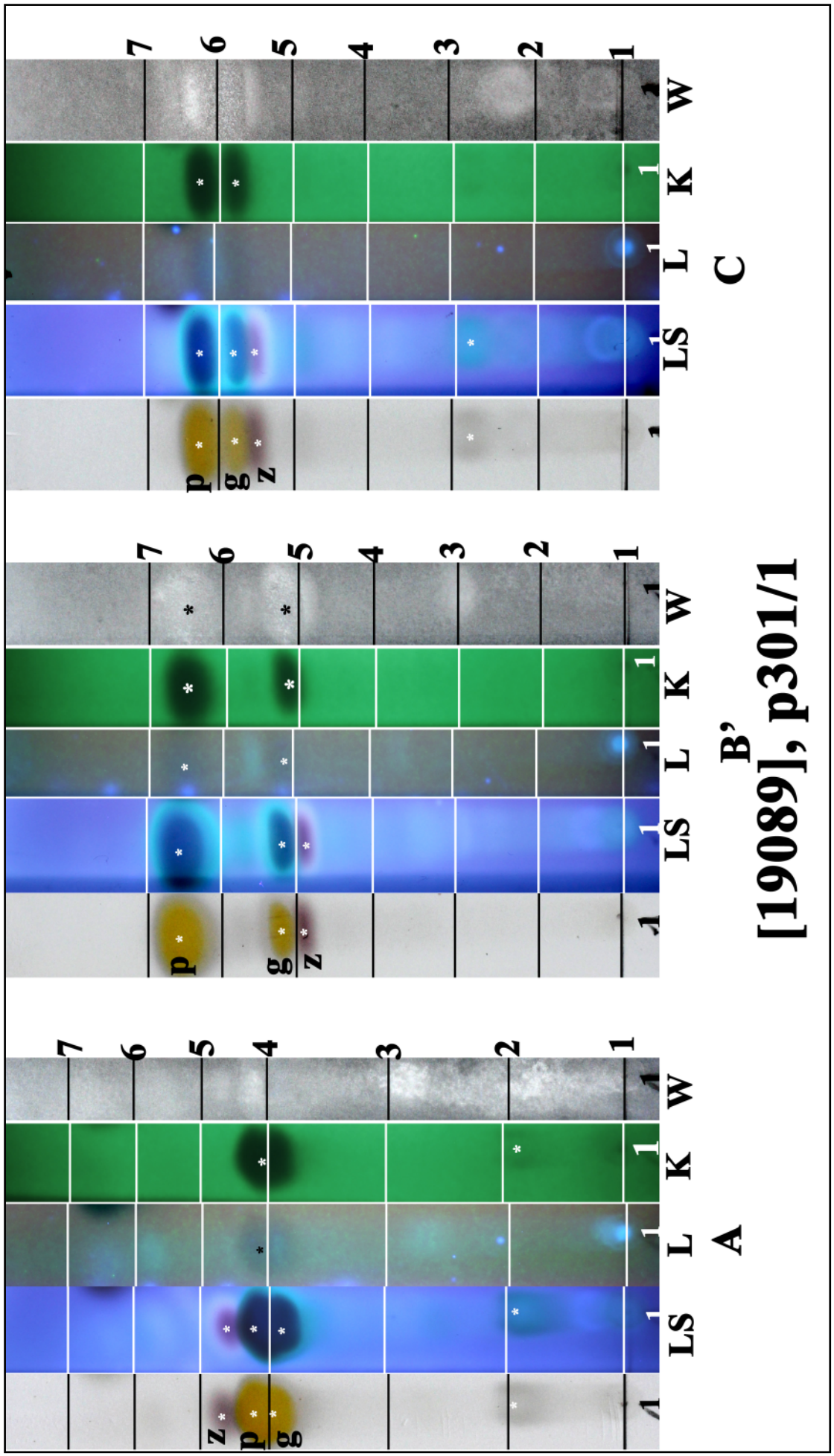








Nephroma cellulosum



Nephroma cellulosum

Nephroma australe A.Rich.

[19088], Australia, Victoria, Goonmirk Rocks, Errinundra Flora Reserve, 14 km south of Bendoc, 37°17' S, 148°53' E, 1200 m, growing on *Podocarpus lawrencii* in cold temperate forest on moderate slope, dominated by *Podocarpus*, *Pittosporum* and *Telopea*. Leg. J.A. Elix (21890) & H. Streimann, 29.03.1988. Chemistry (Race 2): usnic acid, zeorin (= hopane-6α,22-diol, major), unknown triterpenes (minor, trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 187.





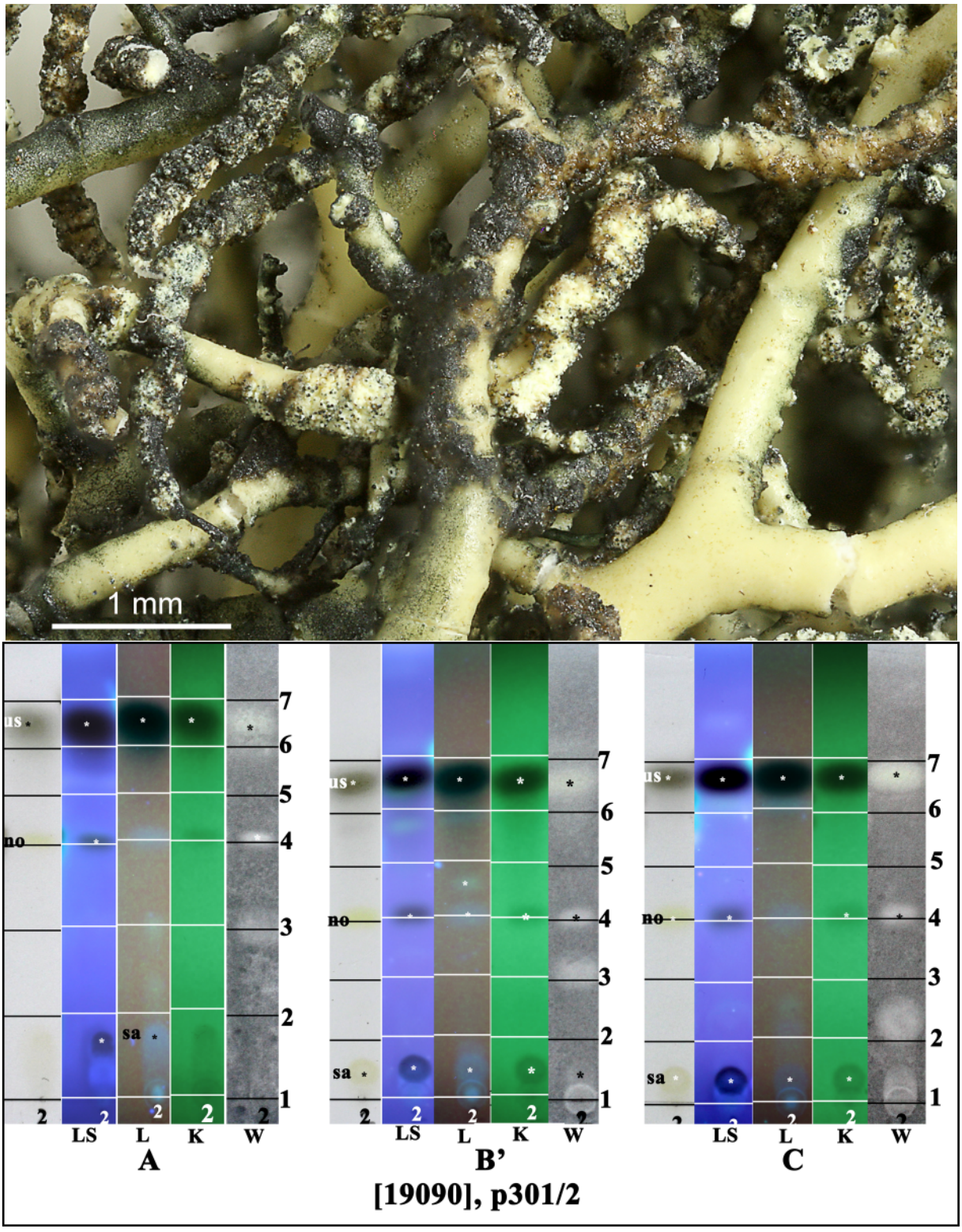
Nephroma australe

Neuropogon acromelanus (Stirt.) Lamb

Thallus erect, fasciculate to 5 cm tall, yellow-green or yellow, black towards branch apices. Fibrils few or absent; papillae absent; soralia numerous alon branches, clustered especially at apices; soredia granular. Chemistry 3 races: I) usnic acid, norstictic acid, salazinic acid, ±protocetraric acid, II) usnic acid, psoromic acid, subpsoromic acid, 2'-*O*-demethylpsoromic acid, III) lacking lichen substances.

[19090], Australia, Tasmania, Central Plateau, 4.5 km west of Liawenee, 41°54' S, 146°37' E, 1140 m, growing on dolorite rock wall in subalpine health. Leg. J.A. Elix (40036) & G. Kantvilas, 07.12.1993. Chemistry: usnic acid, norstictic acid (major), salazinic acid (minor), protocetraric acid (trace) by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 287.





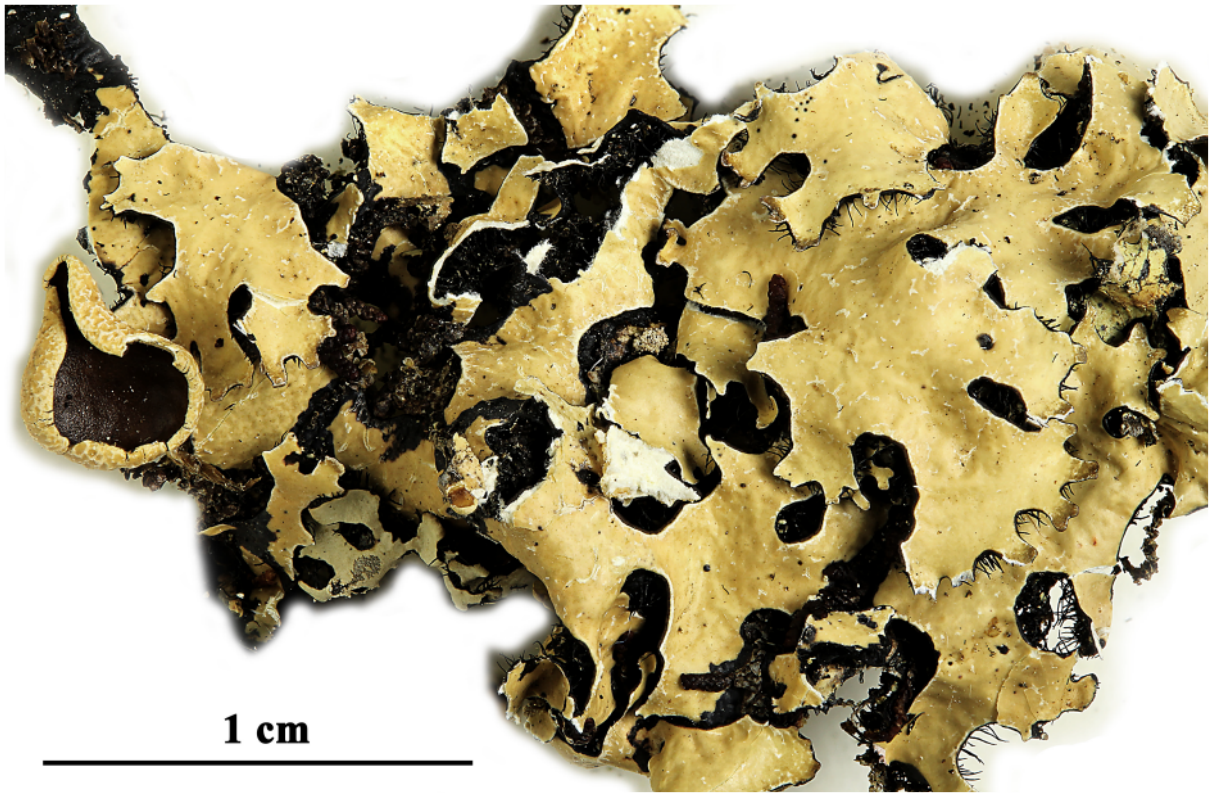
us: usnic acid, no: norstictic acid, sa: salazinic acid

Neuropogon acromelanus

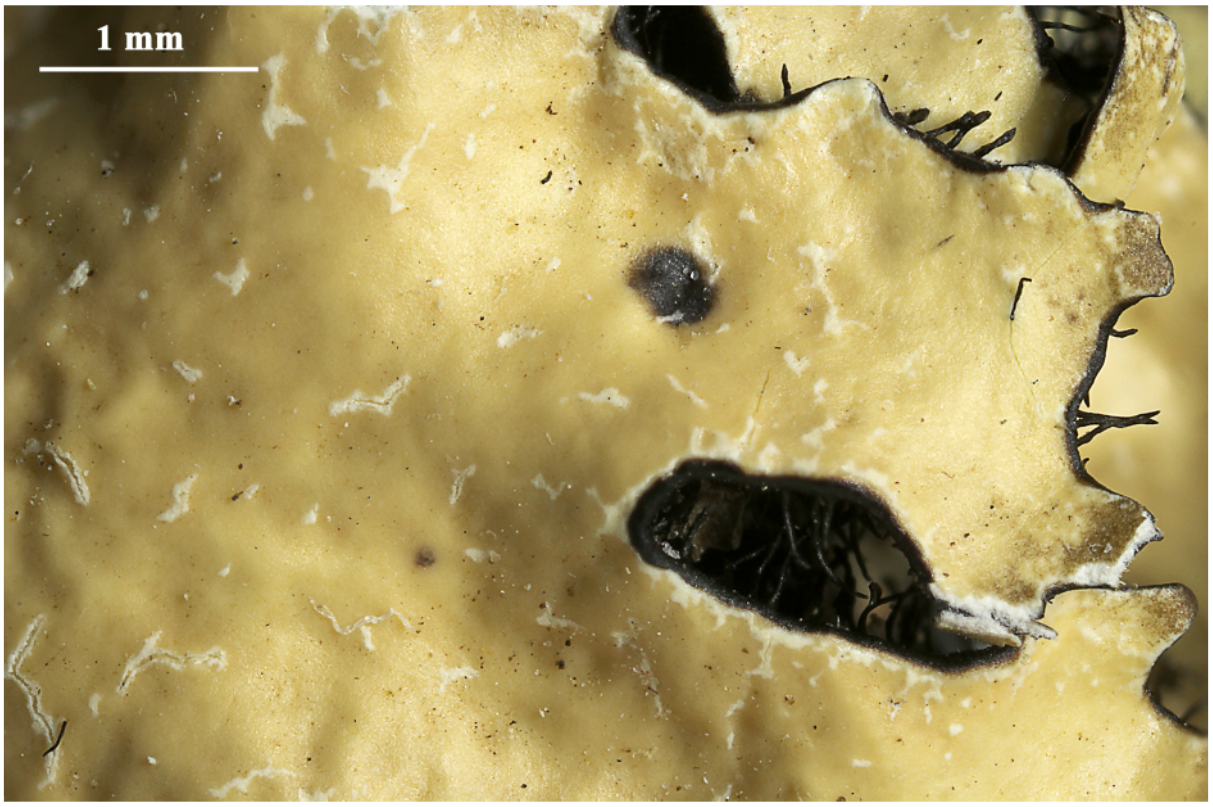
Notoparmelia crambidiocarpa (Zahlbr.) A.Crespo, Ferencova & Divakar
[= ***Parmelia crambidiocarpa*** Zahlbr.]

Thallus adnate to loosely adnate, firm, whitish or pale greenish grey. Lobes sublinear. often little branched, subdivaricate, browning at apices, 1-4 mm wide. Upper surface continuous or transversely cracked with age, pseudocyphellate, without isidia or soredia. Pseudocyphellae forming an irregular but nearly continuous rim around lobe margins, 0.1-0.3 mm wide, also laminal and effigurate, 0.2-0.8 mm long, discrete, fissuring with age. Lower surface black, moderately to densely rhizinate. Rhizines simple or furcate to squarrosely branched, 1-2 mm long, often projecting as a mat beyond lobe margins. Apothecia splitting radially with age, to 20 mm diam. Ascospores 17-21 x 0-15 µm. Chemistry: cortex K+ yellow; medulla K- or + yellow, C-, P+ orange-red; atranorin, chloroatranorin, protocetraric acid, ±echinocarpic acid.

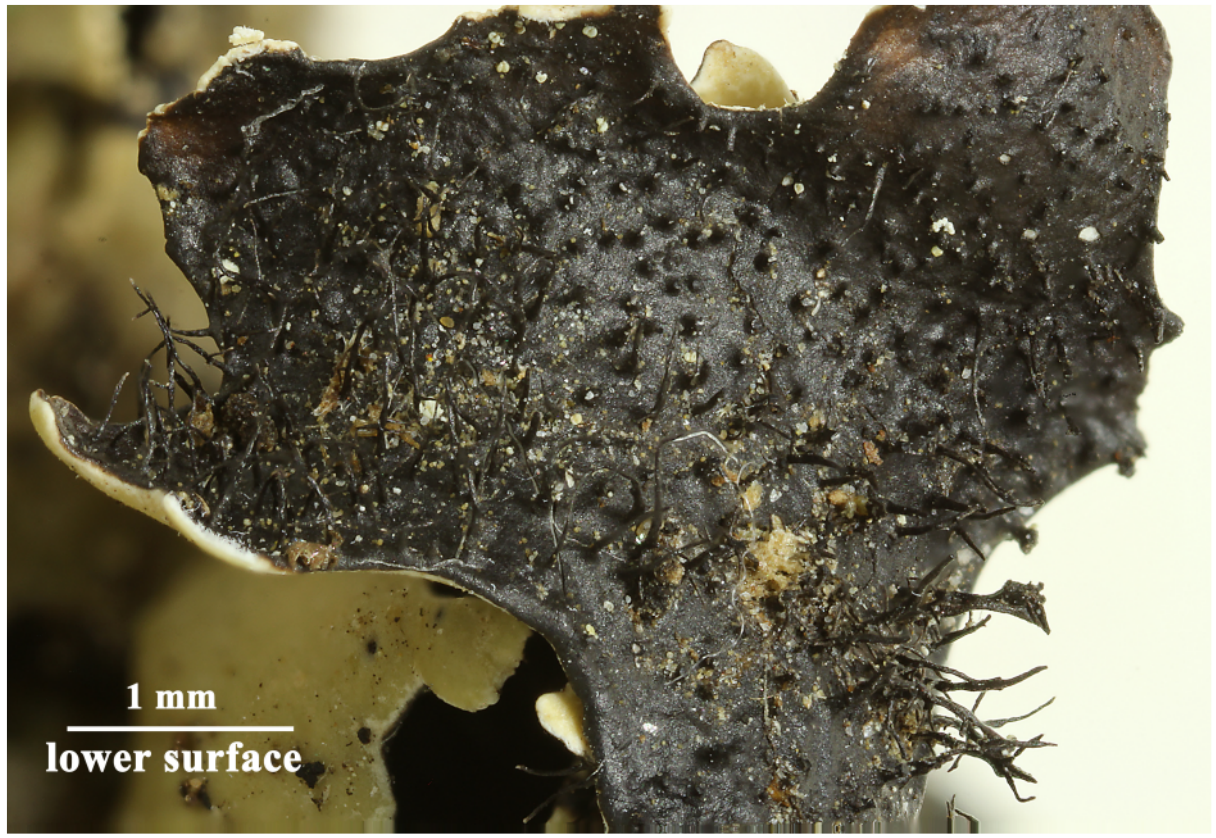
[19176], New Zealand, South Island, Canterbury, north-eastern boundary of Otepatotu Scenic Reserve, Summit Road, outer Banks Peninsula, 720 m, growing on twigs of *Discaria* in pasture. Leg. J.A. Elix (19004) & J. Johnston, 03.03.1985. Chemistry: atranorin, chloroatranorin, protocetraric acid by TLC, anal. K.L.Gaul. LICHENES AUSTRALASICI EXSICCATI No. 112. Distributed as ***Parmelia crambidiocarpa*** Zahlbr.

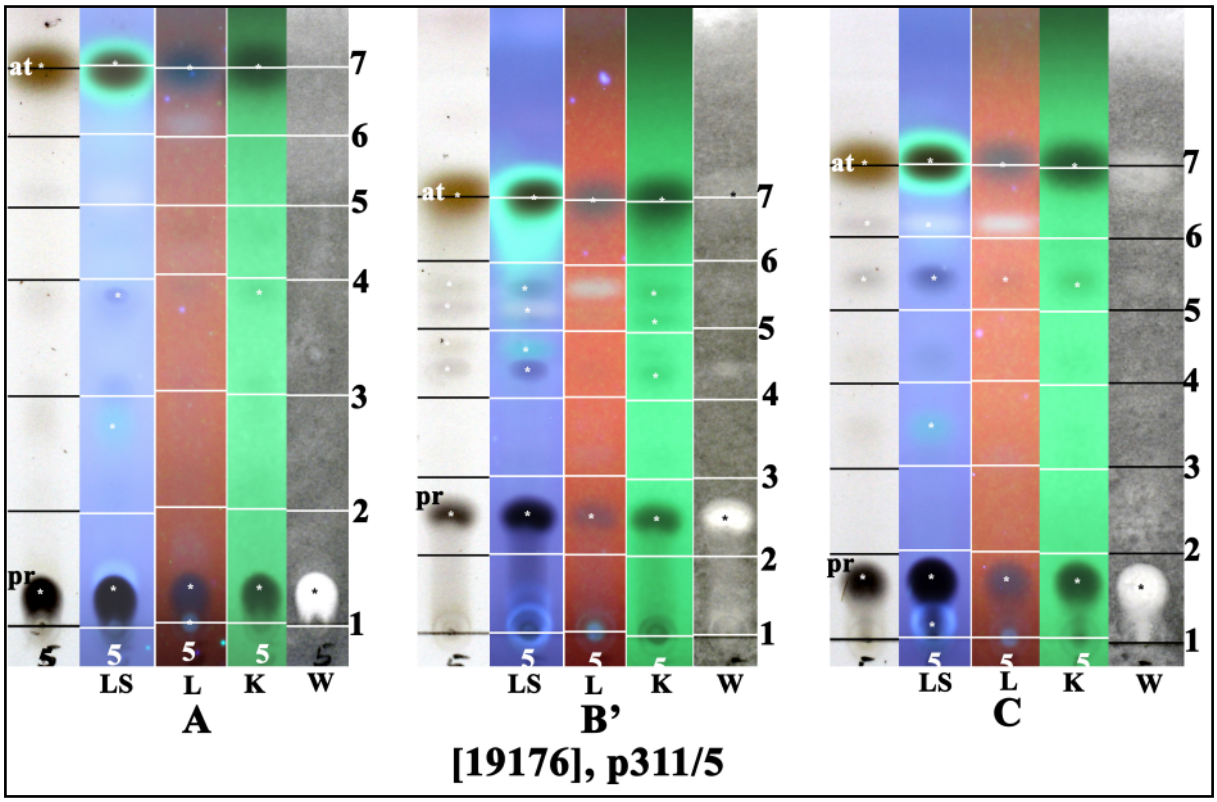






Notoparmelia crambidiocarpa



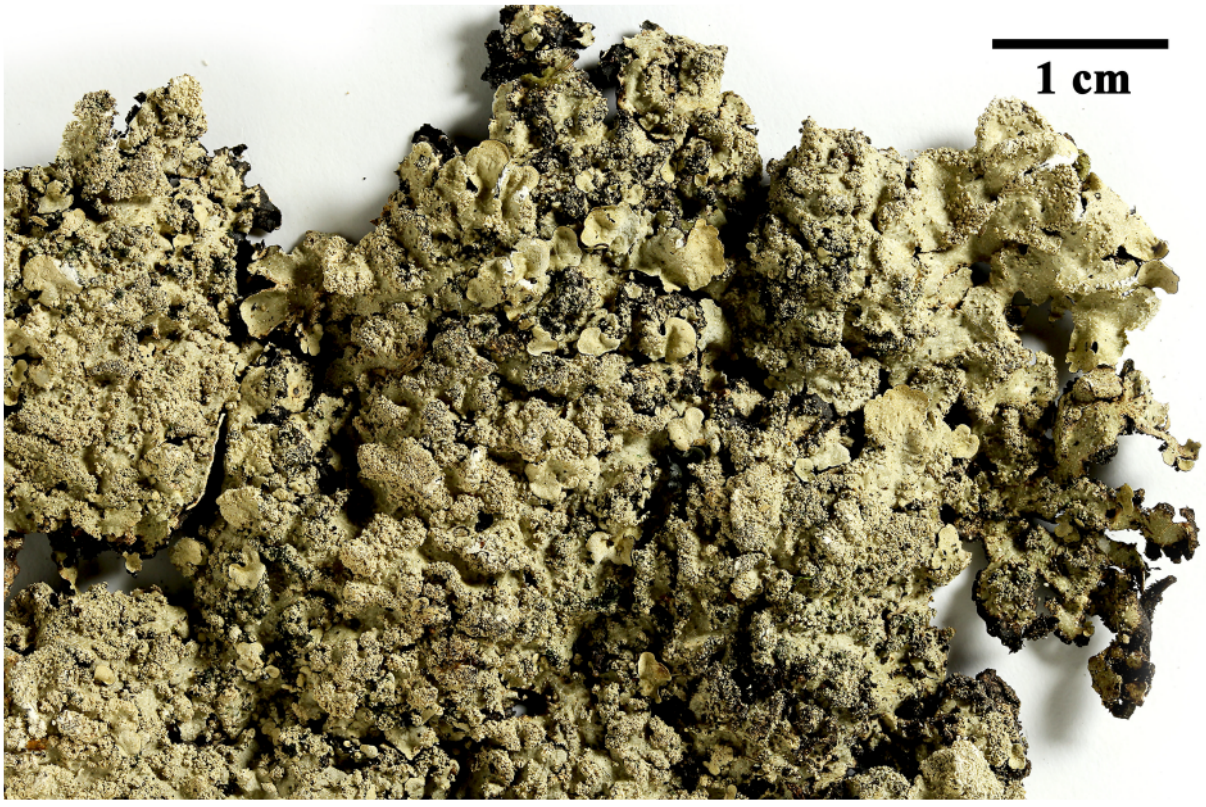


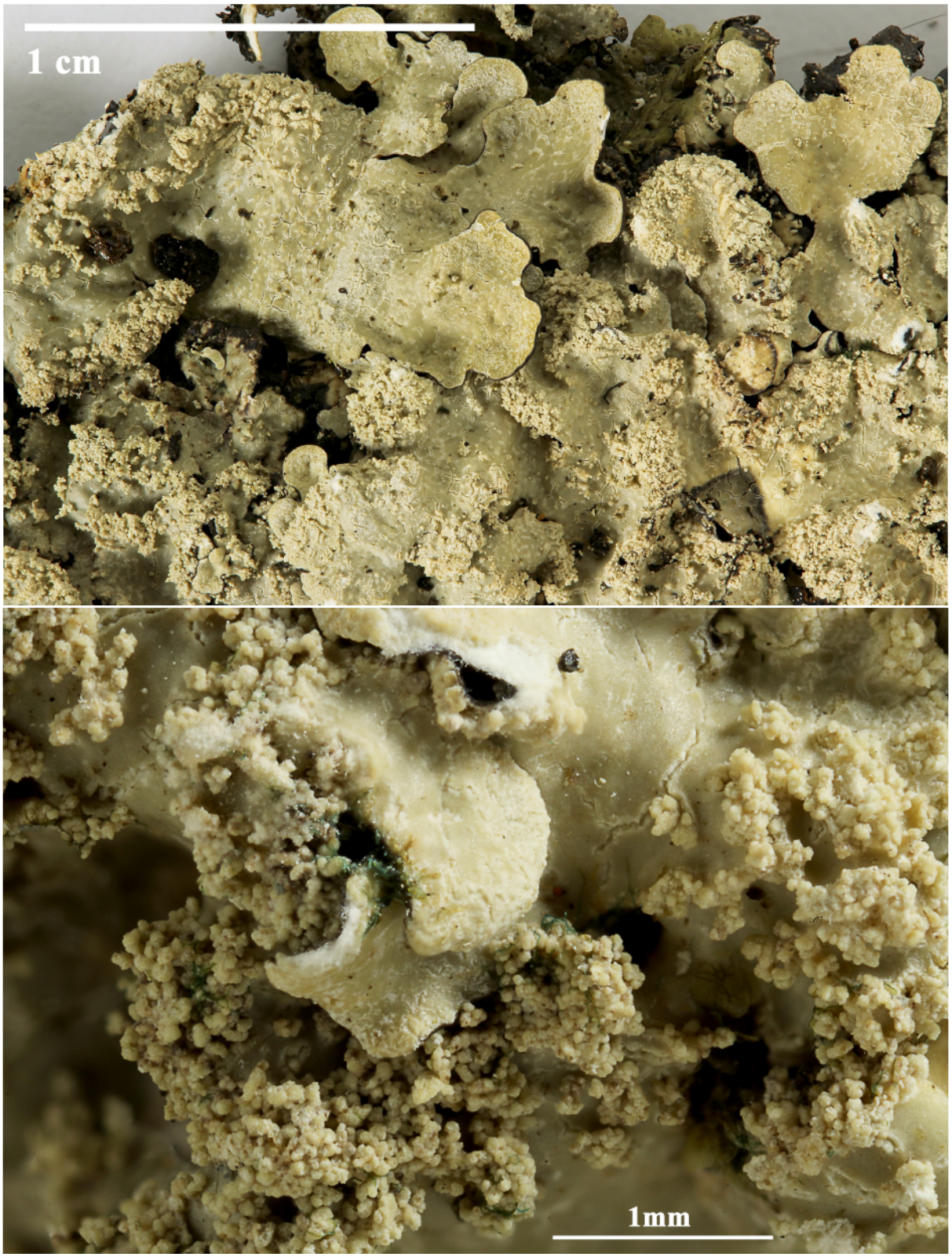
at: atranorin, pr: protocetraric acid

Notoparmelia erumpens (Kurok.) A.Crespo, Ferencova & Divakar
[= ***Parmelia erumpens*** Kurok.]

Thallus loosely adnate to adnate. Lobes imbricate, subirregular, apically rotund, short, 2-8 mm wide. Upper surface pale greenish grey to pale grey, white reticulate becoming conspicuously cracked and pseudocyphellate. Dactyls (pustular isidia) developing from pseudocyphellae, erumpent apically. Soredia derived from cracks or dactyls, coarse and becoming corticate in part, forming dense laminal and rarely marginal soralia and/or extended, granular, coralloid-isidioid outgrowths. Lower surface black, moderately densely rhizinate. Apothecia rare, 5-15 mm wide. Ascospores 10-12 x 6-8 µm. Chemistry: cortex K+ yellow; medulla K+ yellow the dark red, C-, P+ red-orange; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor), lobaric acid (minor), ±protocetraric acid (trace).

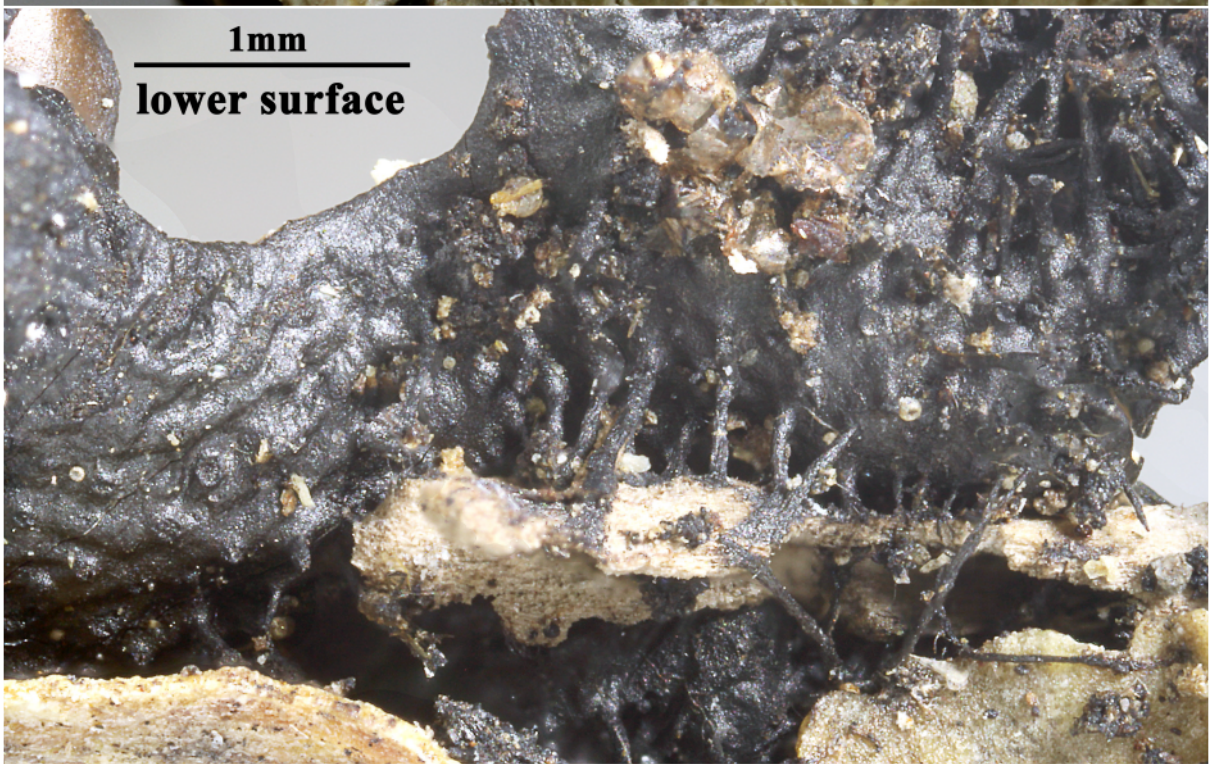
[19101], Australia, New South Wales, Lord Howe Island, along ridge to Malabar Hill, 31°31'16" S, 159°03'50" E, 80 m, growing on moist, sheltered basalt ledges in dense, shrubby vegetation. Leg. J.A. Elix (32935), 23.06.1992. Chemistry: atranorin, chloroatranorin, salazinic acid (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 264. Distributed as ***Parmelia erumpens*** Kurok.



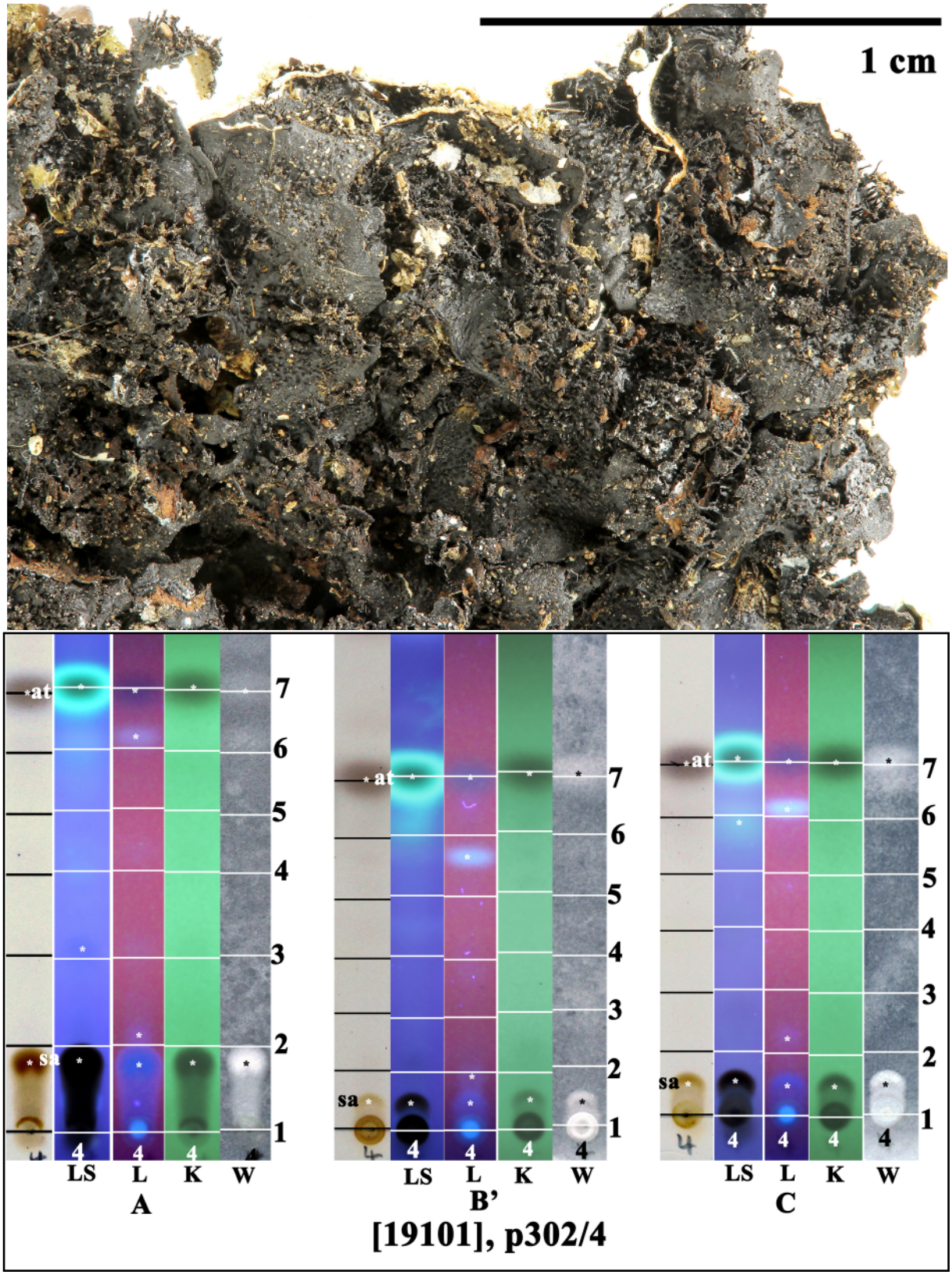


Notoparmelia erumpens





Notoparmelia erumpens



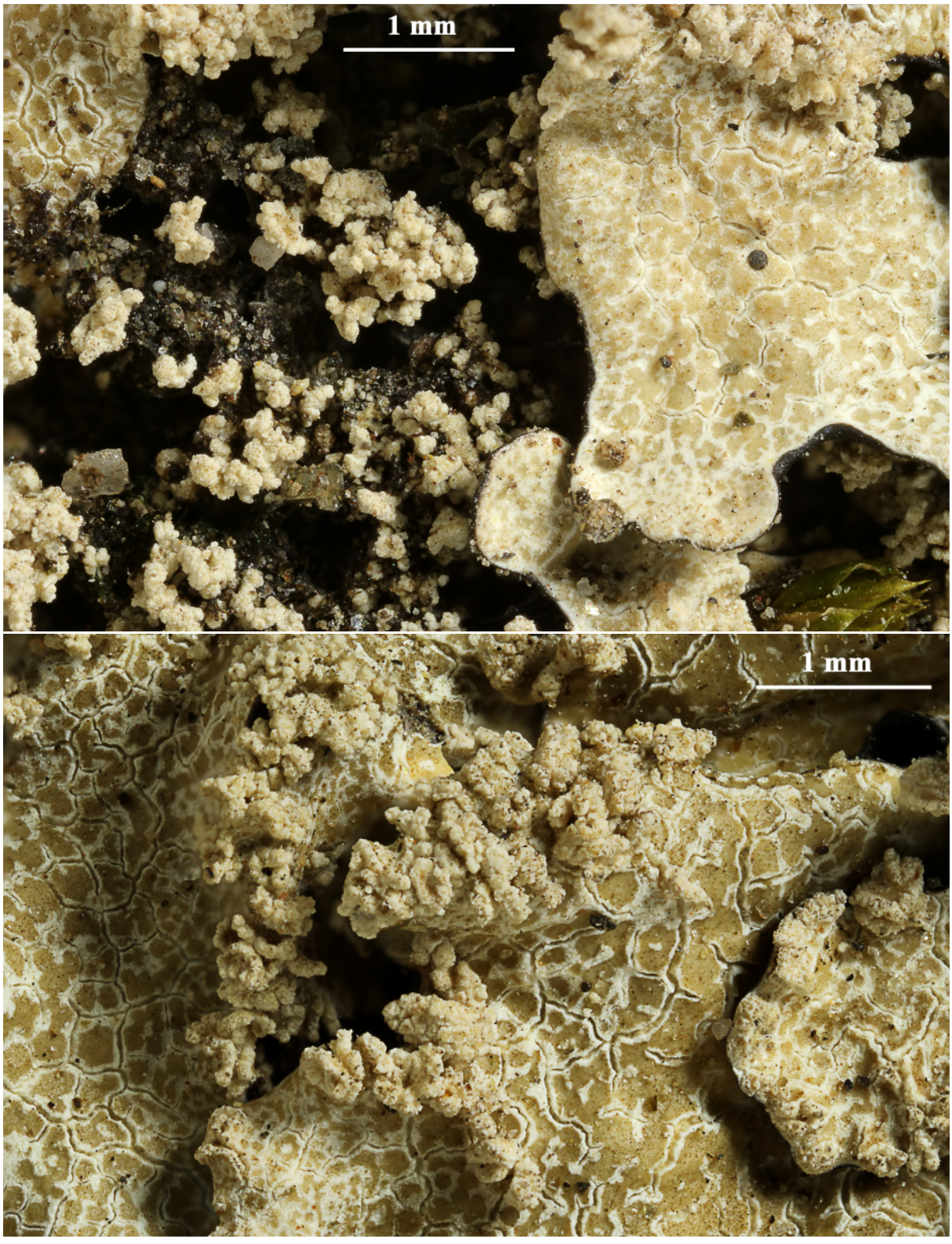
at: atranorin, sa: salazinic acid

Notoparmelia erumpens

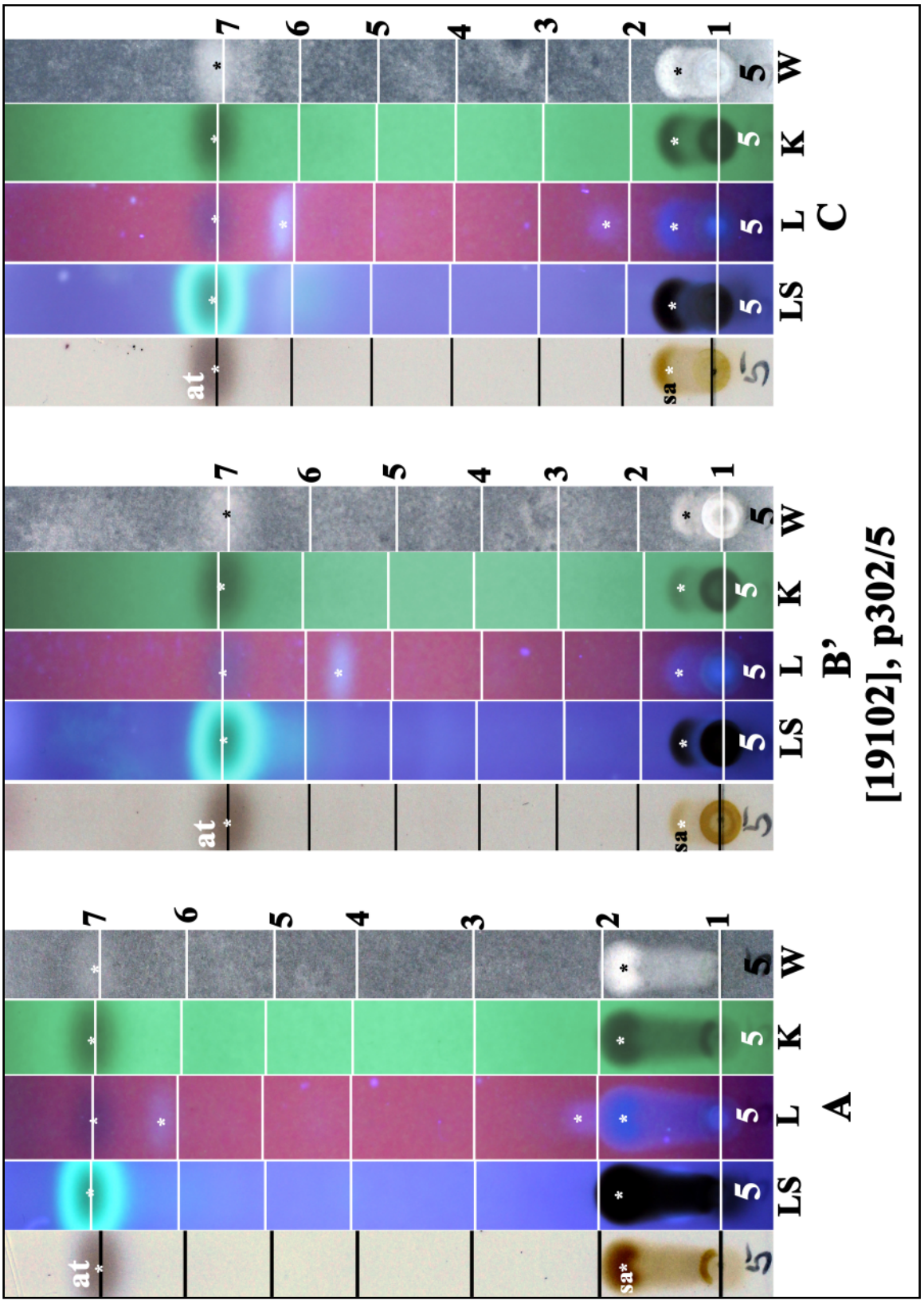
Notoparmelia erumpens (Kurok.) A.Crespo, Ferencova & Divakar
[= ***Parmelia erumpens*** Kurok.]

[19102], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing on shaded granite rocks in open woodland. J.A. Elix (10161), 12.04.1982. LICHENES AUSTRALASICI EXSICCATI NO. 013. Distributed as ***Parmelia erumpens*** Kurok.





Notoparmelia erumpens



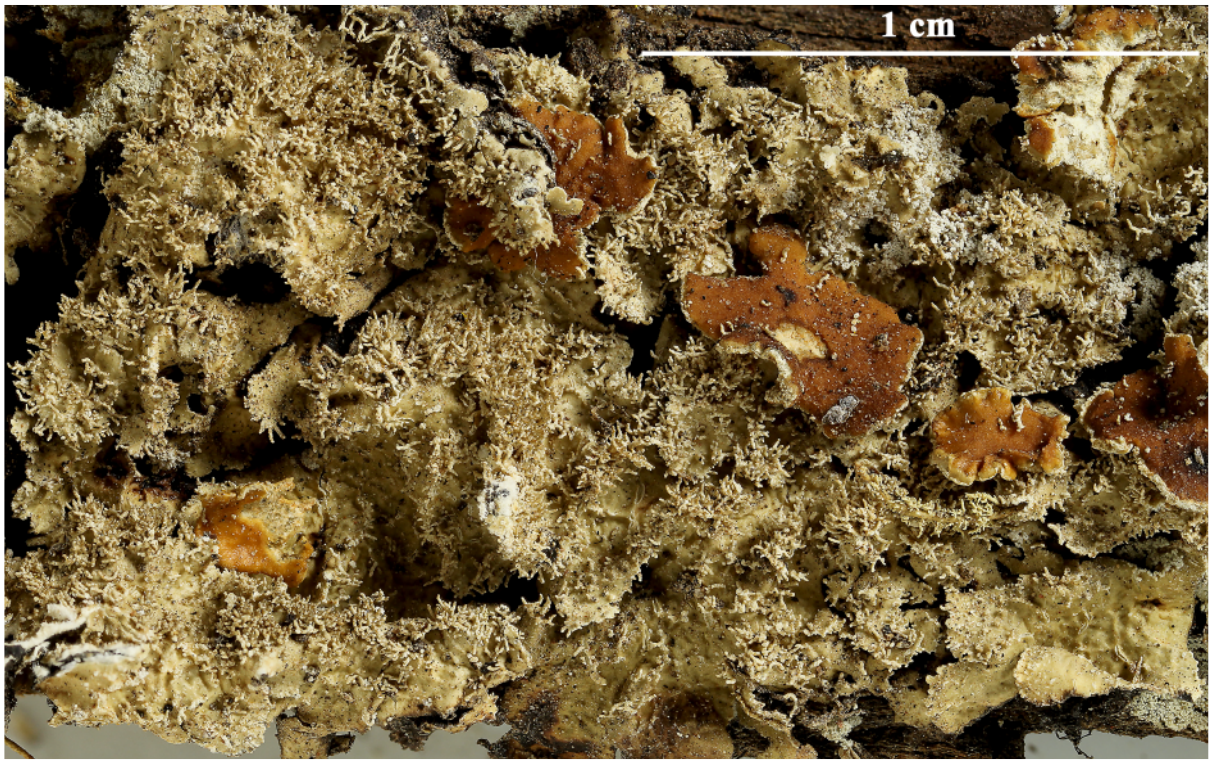
at: atranorin, sa: salazinic acid

Notoparmelia erumpens

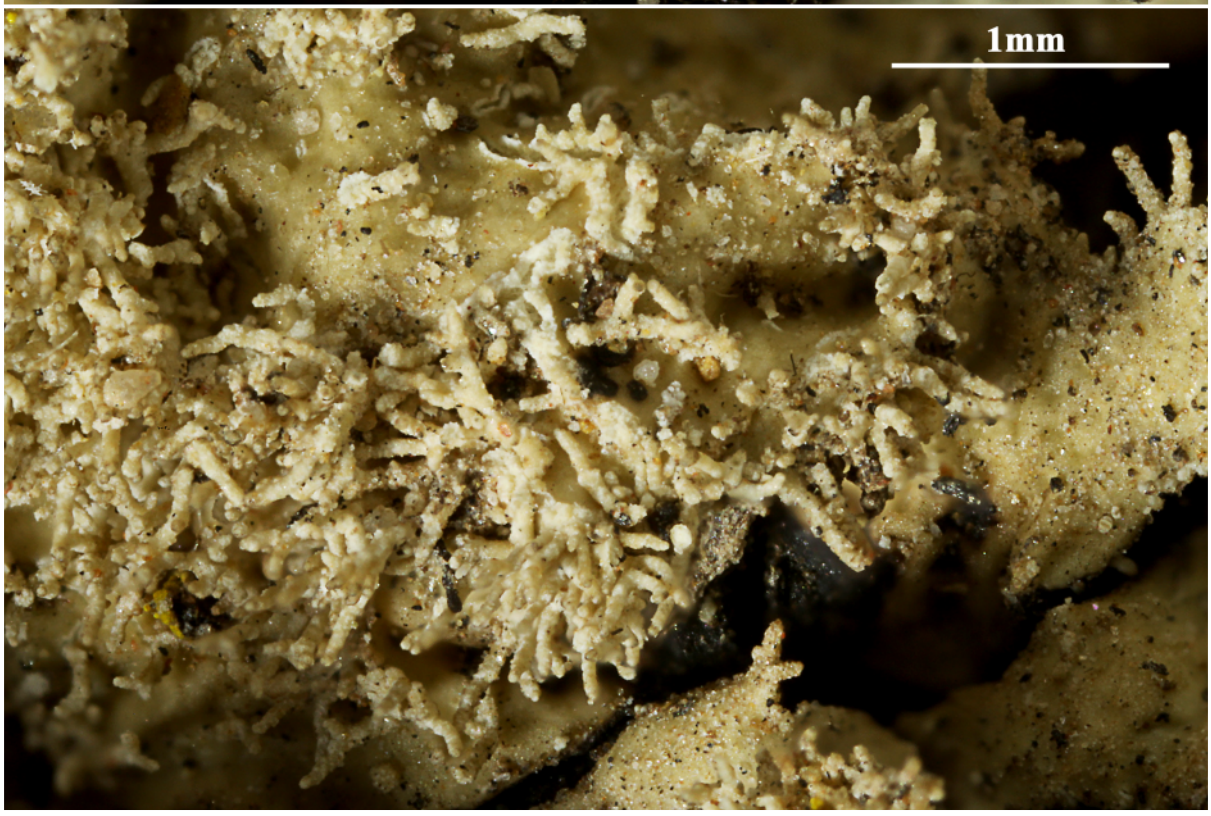
Notoparmelia pseudotenuirima (Gyeln.) A.Crespo, Ferencova & Divakar
[= ***Parmelia pseudotenuirima*** Gyeln.]

Thallus adnate to tightly adnate. Lobes contiguous, sublinear to subirregular, short, 1-2 mm wide. Upper surface pale greenish grey to whitish grey, white-maculate, finely foveolate, becoming reticulately cracked, without soredia; pseudocyphellae mostly laminal, numerous, effigurate, small. Isidia very dense on older parts of thallus and obscuring lobes, cylindrical, simple to branched, to 0.3 mm tall, less than 0.05 mm wide, syncorticate. Lower surface black, moderately rhizinate; rhizines simple to squarrosely branched. Apothecia 3-6 mm wide. Ascospores 11-13 x 7-9 µm. Chemistry cortex K+ yellow; medulla K+ yellow then red, C-, P+ red-orange; atranorin, chloroatranorin, lobaric acid (minor), salazinic acid (major), consalazinic acid (minor).

[19103], Australia, Australian Capital Territory, Molonglo Gorge Reserve, 14 km east of Canberra, 35°16' S, 149°16' E, 650 m, growing on *Callitris endlicheri* in dry sclerophyll forest. J.A. Elix (11751) & J. Johnston, 31.05.1984. LICHENES AUSTRALASICI EXSICCATI NO. 064. Distributed as ***Parmelia pseudotenuirima*** Gyeln.







Notoparmelia pseudotenuirima

Notoparmelia pseudotenuirima

Notoparmelia signifera (Nyl.) A.Crespo, Ferencova & Divakar
[= ***Parmelia signifera*** Nyl.]

Thallus loosely adnate to adnate, thick, rather firm to brittle. Lobes crowded and imbricate, sublinear, 2-8 mm wide, sometimes becoming lobulate in thallus centre; lobules marginal, suberect, sometimes forming dense, pulvinate mats. Upper surface dark green-grey to brownish grey, maculate, without soredia and isidia; pseudocyphellae laminal and marginal, effigurate, separate or partly fusing into a loose white network, extensively fissured with age. Lower surface rather densely rhizinate; rhizines simple to sparsely squarrosely branched, c. 1 mm long. Apothecia 6-12 mm wide. Ascospores 13-15 x 6-8 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor), ±lobaric acid (minor).

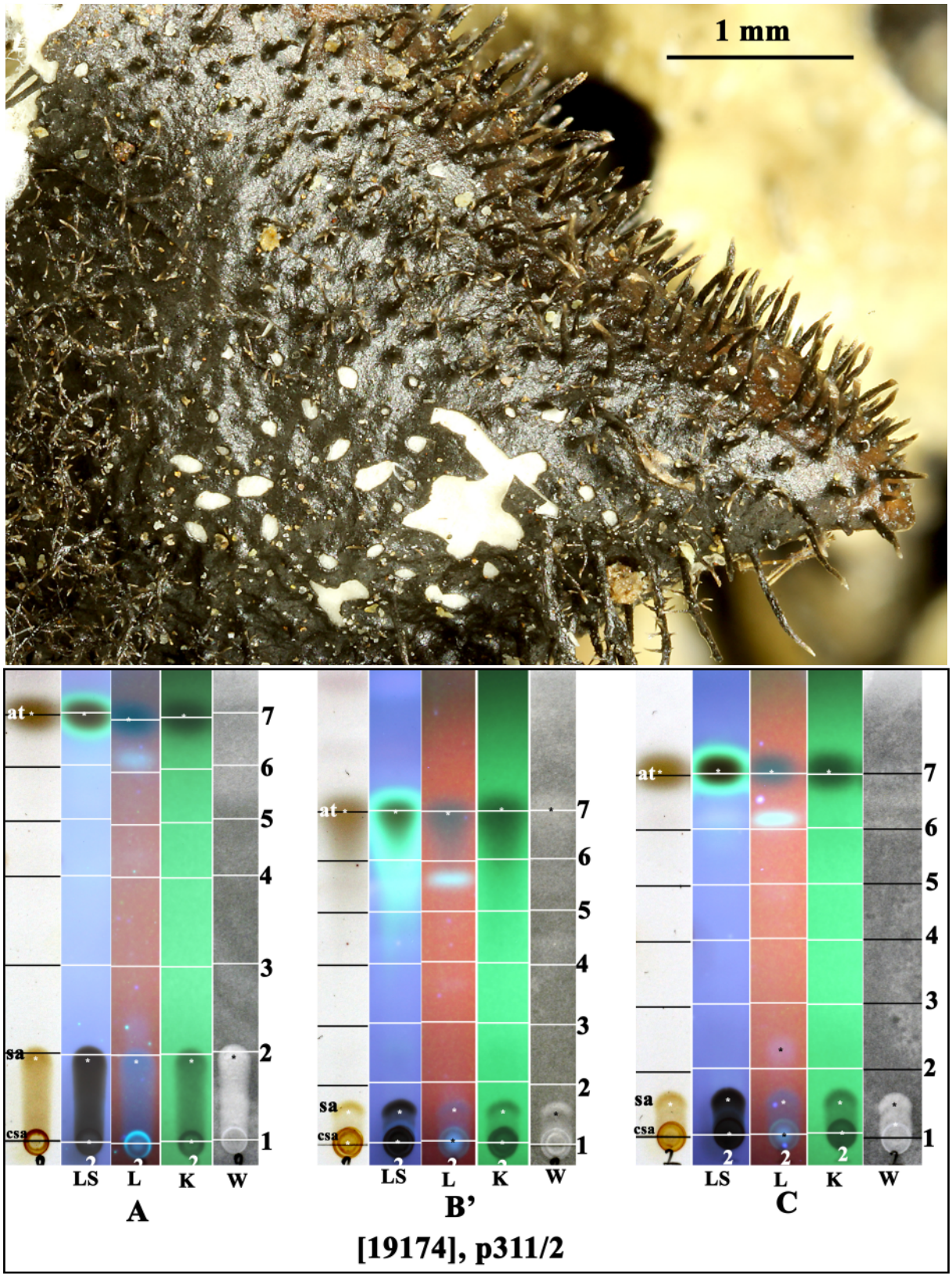
[19174], Australia, Australian Capital Territory, Glendale Crossing, 15 km west of Michelago, 35°44' S, 149°00' E, 900 m, growing on granite rocks in open eucalypt woodland. Leg. J.A. Elix (10898), 17.02.1983. LICHENES AUSTRALASICI EXSICCATI NO. 044. Distributed as ***Parmelia signifera*** Nyl.







Notoparmelia signifera



at: atranorin, sa: salazinic acid, csa: consalazinic acid

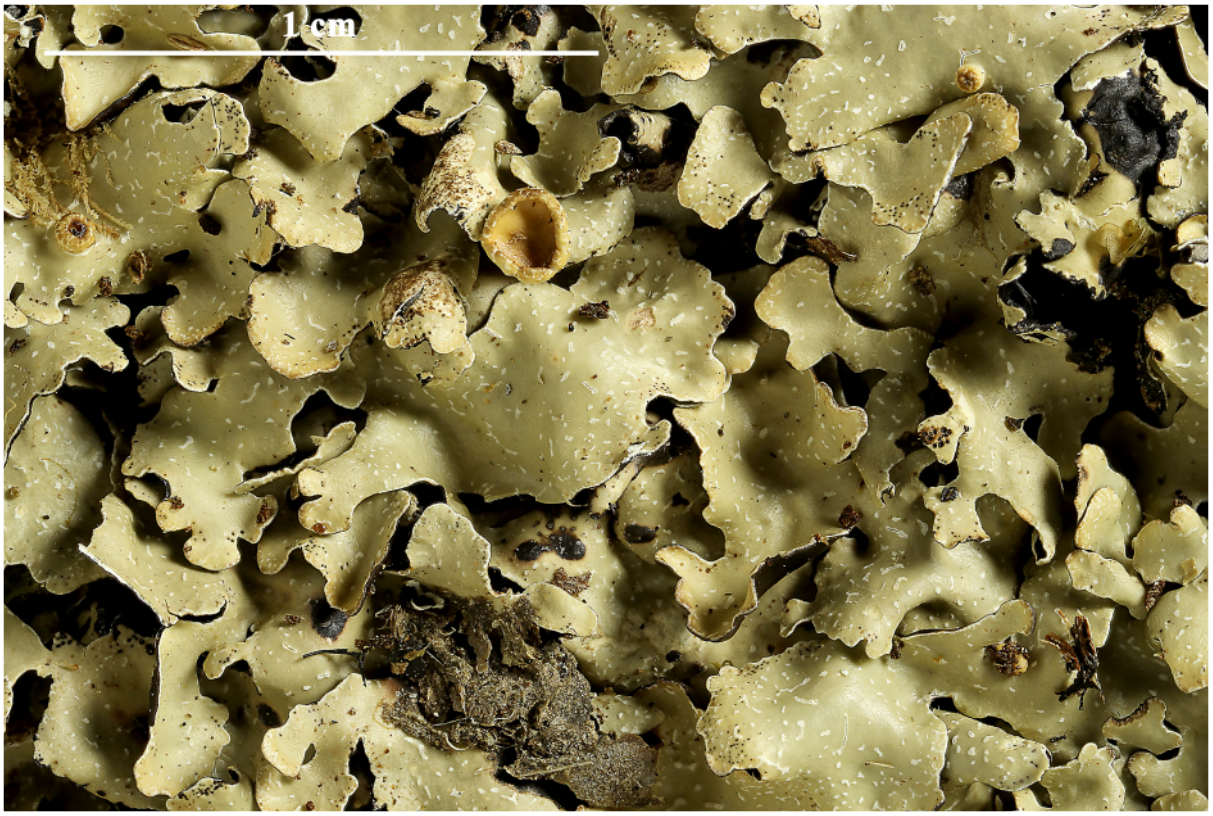
Notoparmelia signifera

Notoparmelia tenuirima (Hook.f. & Taylor) A.Crespo, Ferencova & Divakar
[= ***Parmelia tenuirima*** Hook.f. & Taylor]

Thallus loosely adnate to adnate. Lobes imbricate, subirregular, 4-25 mm wide. Upper surface pale to dark greenish grey, somtimes coarsely white maculate, continuous but cracking along old pseudocyphellae, lacking soredia and isidia; pseudocyphellae mainly laminal, uniformly scattered, effigurate, separate. Lower surface black, sparsely to moderately rhizinate; rhizines simple to densely squarrose branched, 1-1.5 mm long. Apothecia 5-15 mm wide. Ascospores 12-15 x 8-10 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor).

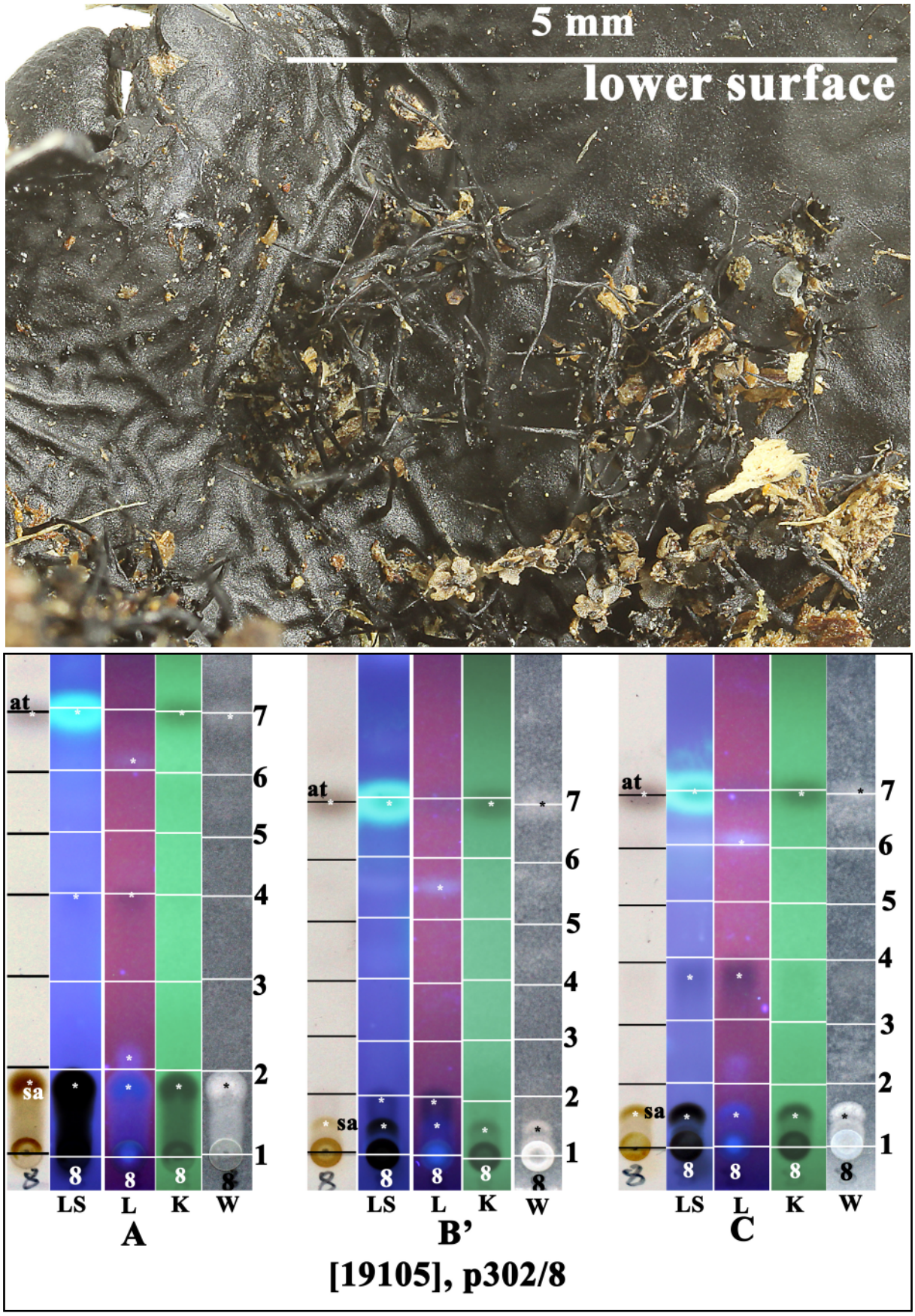
[19105], New Zealand, South Island, Canterbury, 3 km south-east of Mount Bossu, Banks Peninsula, 640 m, growing on *Podocarpus totare* in remnant cool temperate forest on moderate slope, dominated by *Podocarpus*. Leg. J.A. Elix (18975) & J. Johnston, 03.03.1985. Chemistry: atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor), secalonic acid A (minor) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 188. Distributed as ***Parmelia tenuirima*** Hook.f. & Taylor.







Notoparmelia tenuirima



at: atranorin, sa: salazinic acid

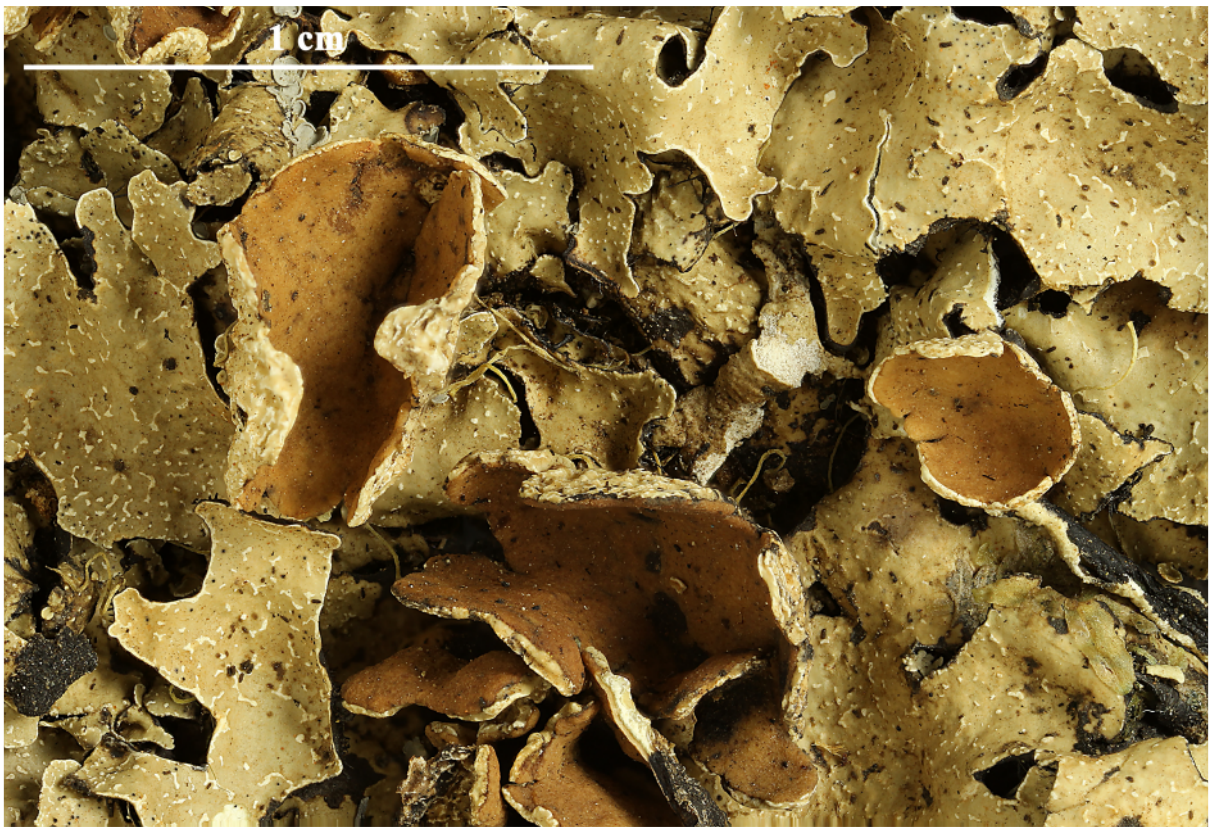
Notoparmelia tenuirima

Notoparmelia tenuirima (Hook.f. & Taylor) A.Crespo, Ferencova & Divakar
[= ***Parmelia tenuirima*** Hook.f. & Taylor]

[19175], Australia, New South Wales, Great Dividing Range, 6 km east of Captains Flat, 2 km north of Parkers Gap, 35°37' S, 149°30' E, 1260 m, growing on *Prostanthera sp*. in wet sclerophyll forest. Leg. J.A. Elix (10891) & J. Johnston, 03.03.1983. LICHENES AUSTRALASICI EXSICCATI No. 047. Distributed as ***Parmelia tenuirima*** Hook.f. & Taylor.

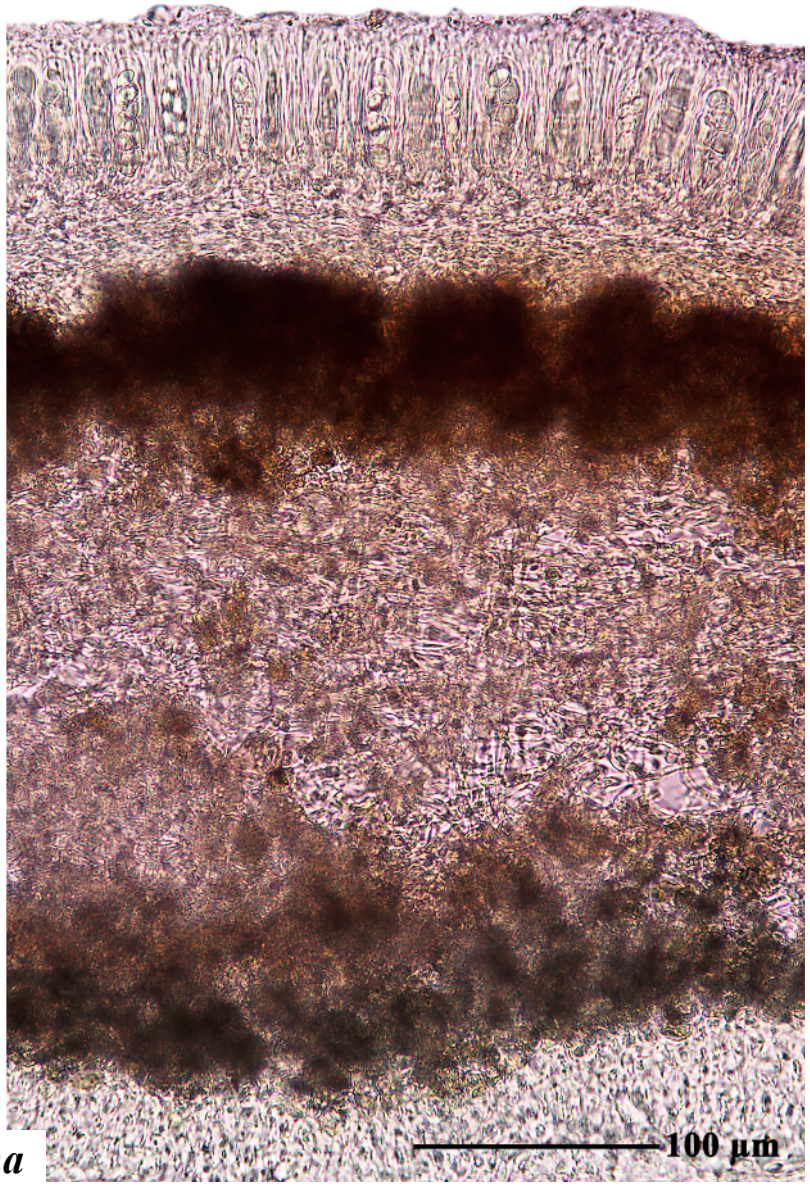




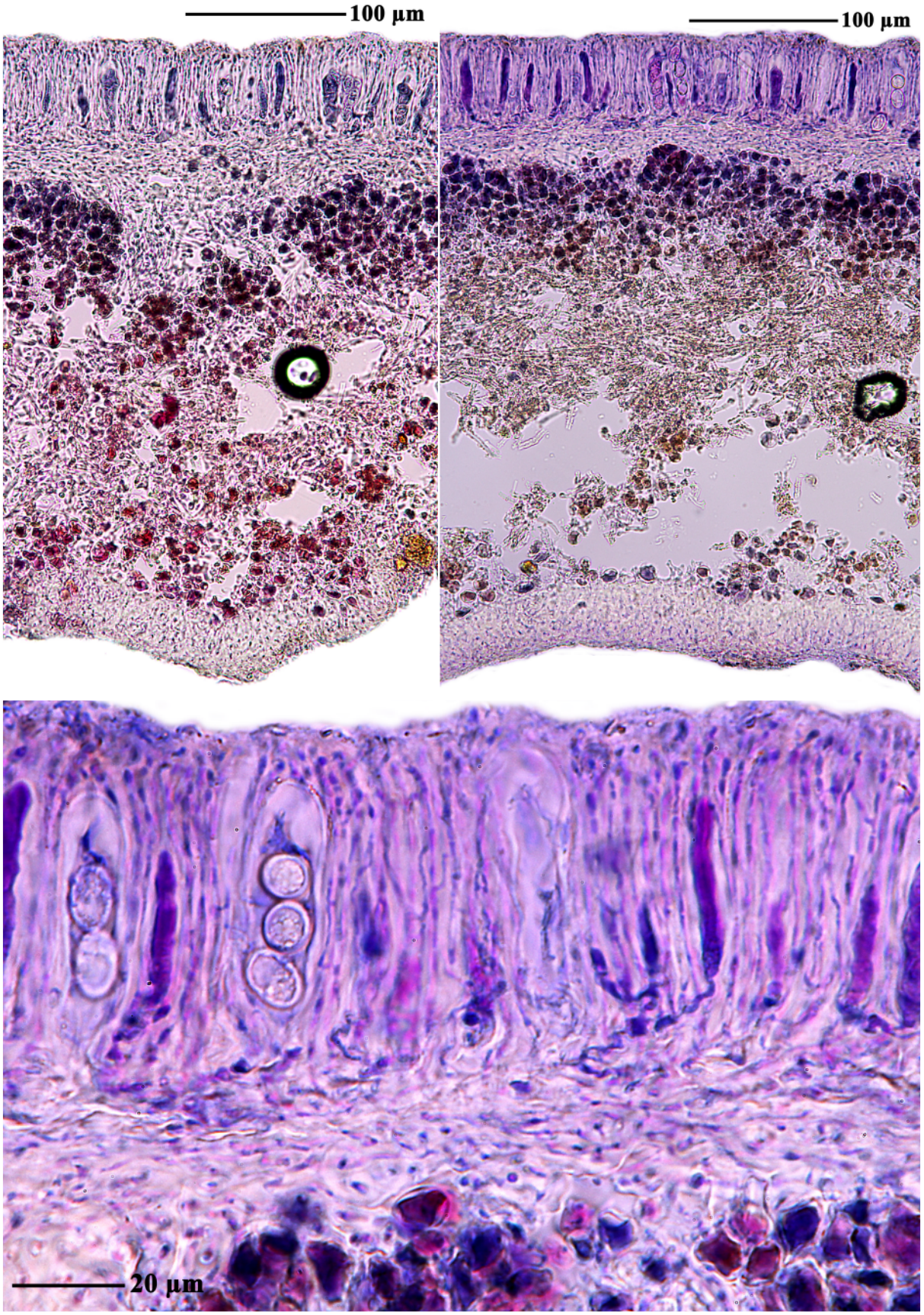


Notoparmelia tenuirima



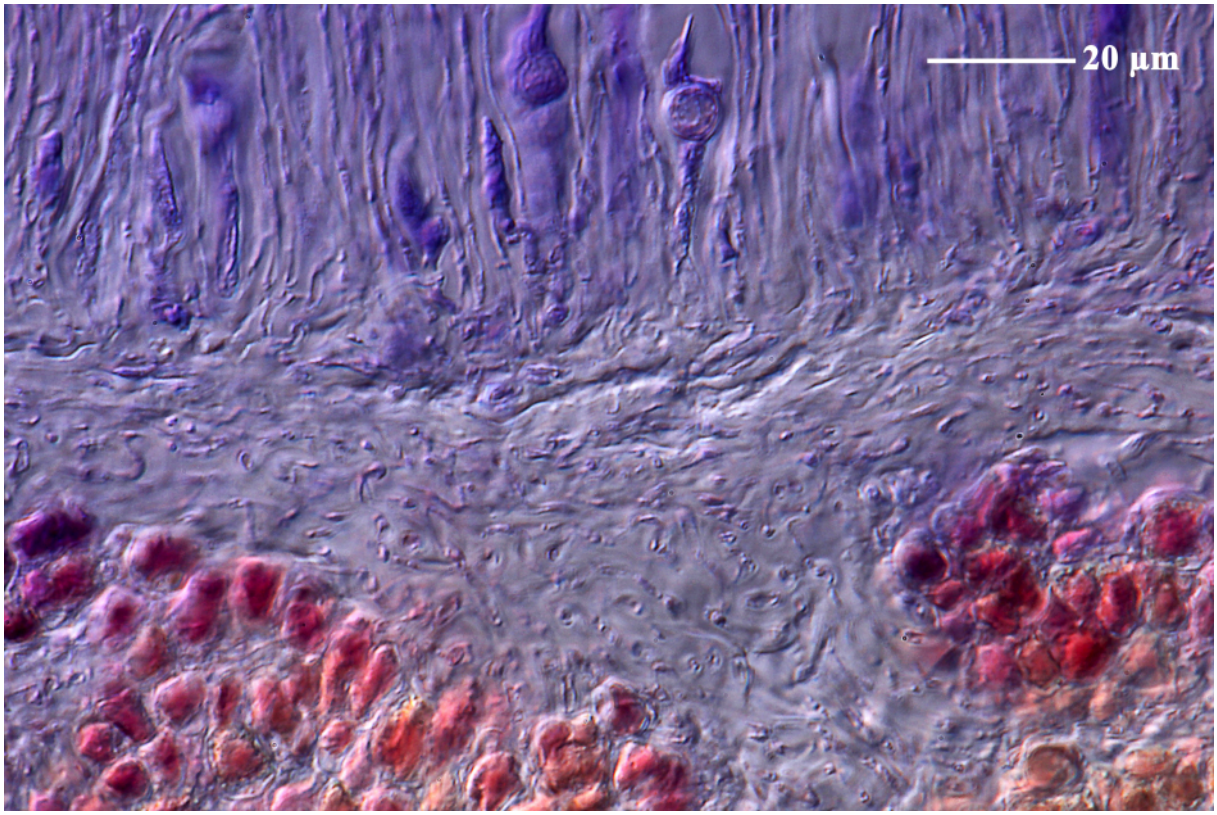


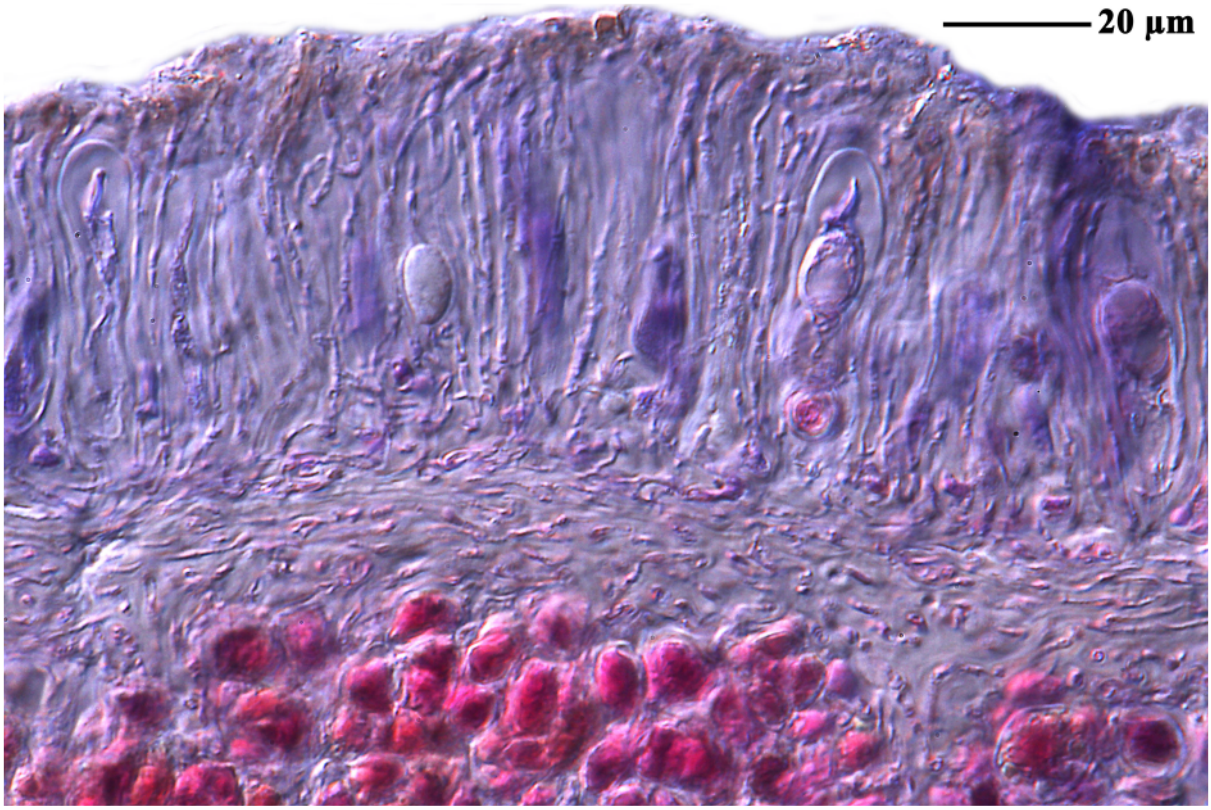
Notoparmelia tenuirima



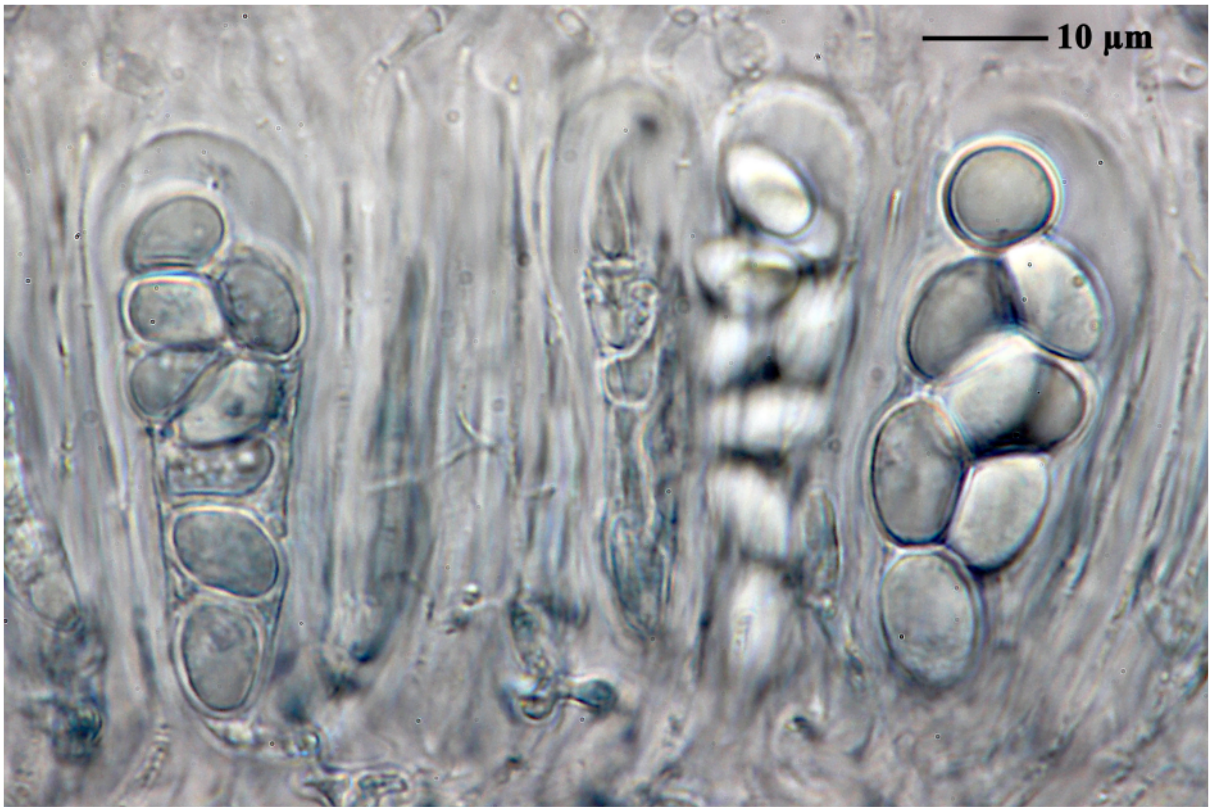
Excipulum with only one layer

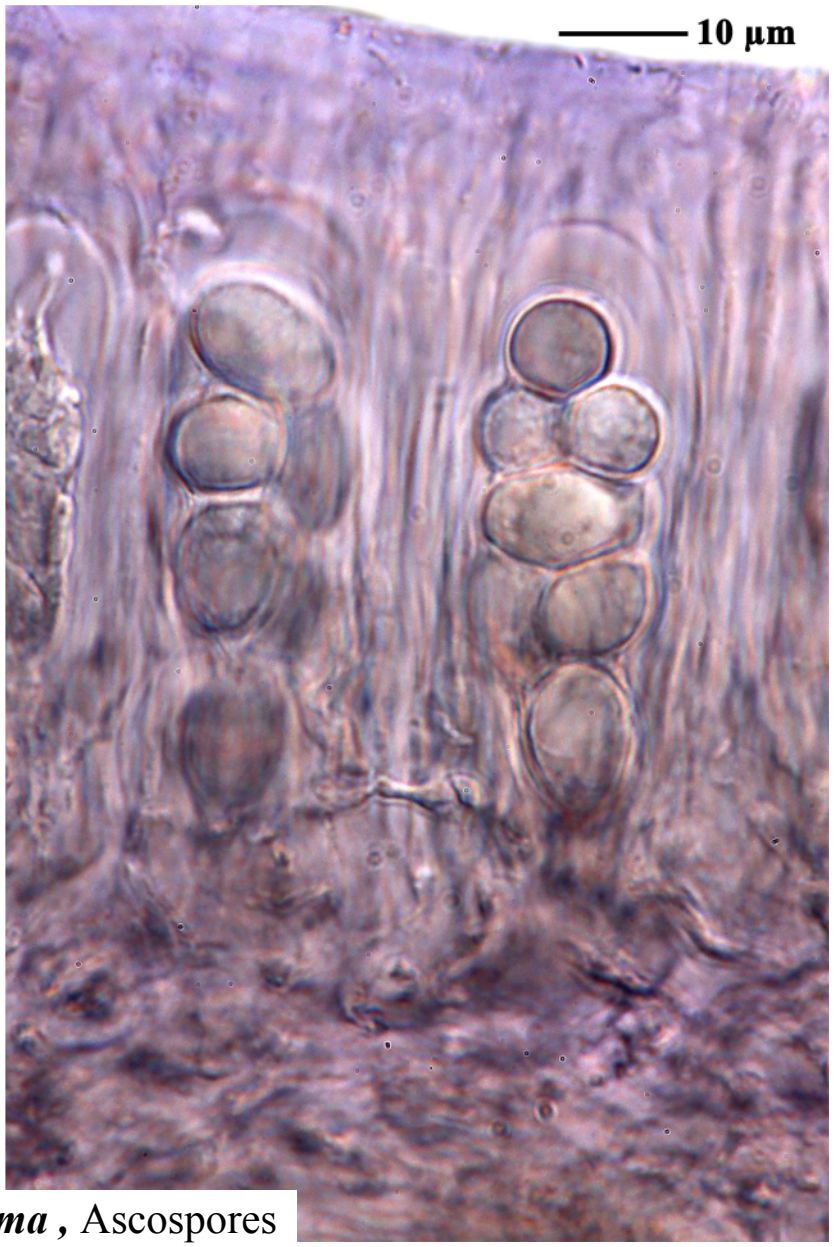
Notoparmelia tenuirima



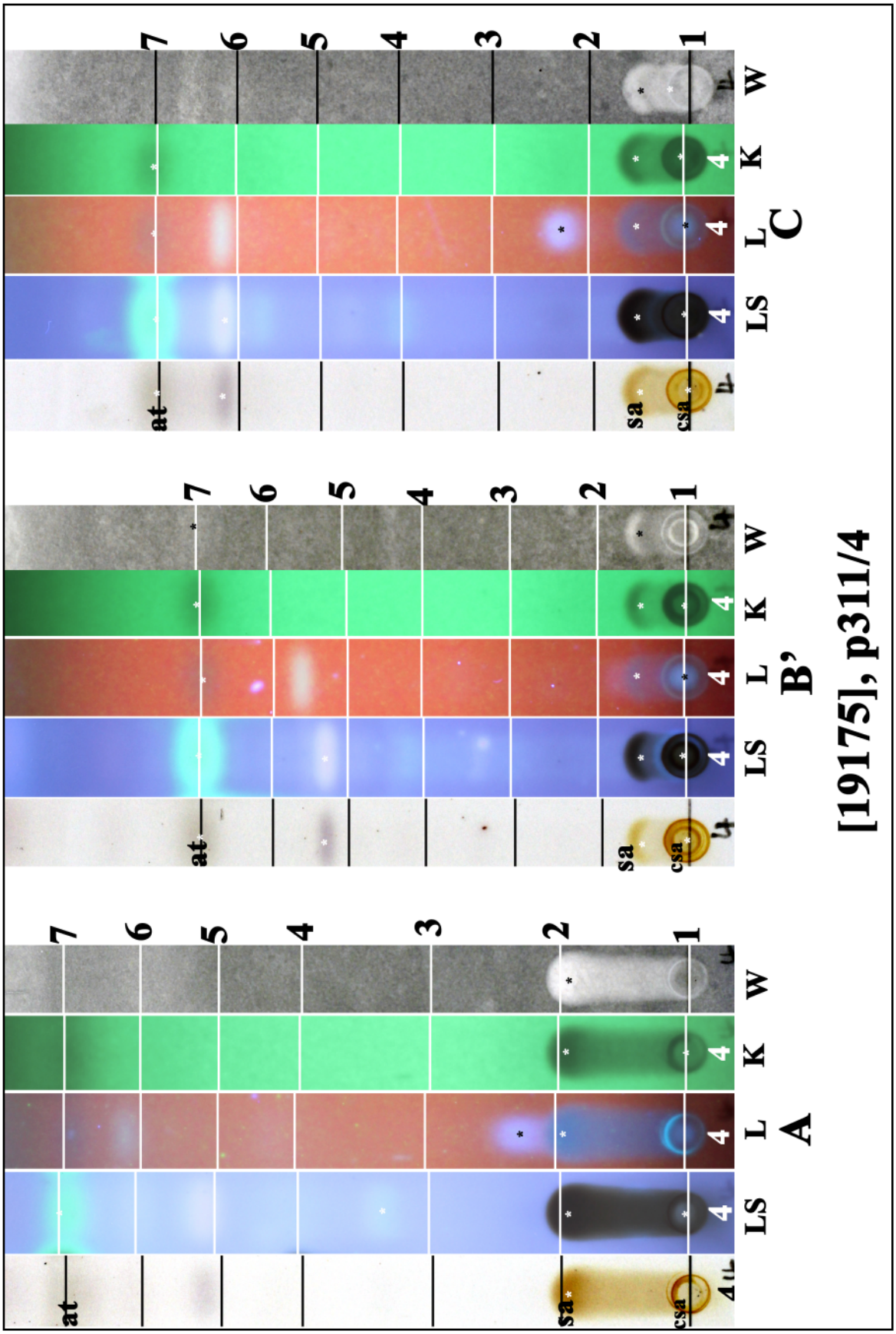


Notoparmelia tenuirima





***Notoparmelia tenuirima* ,** Ascospores

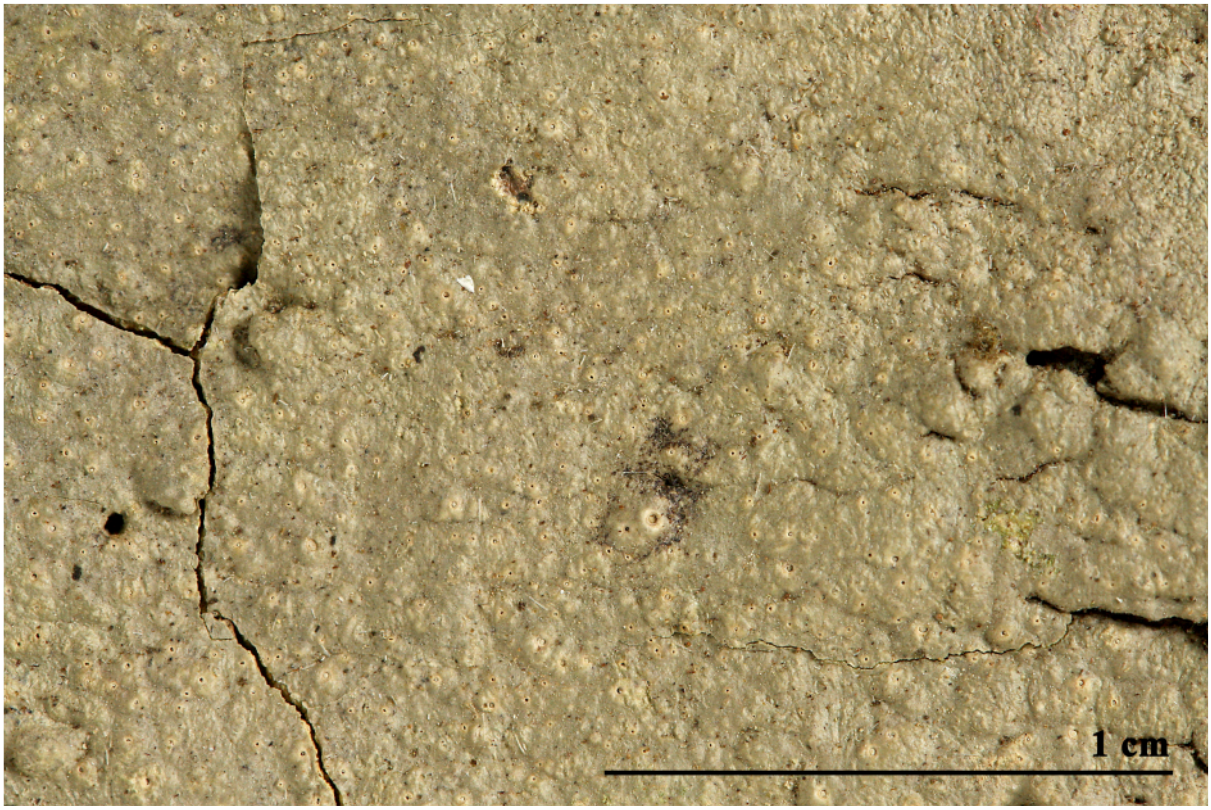


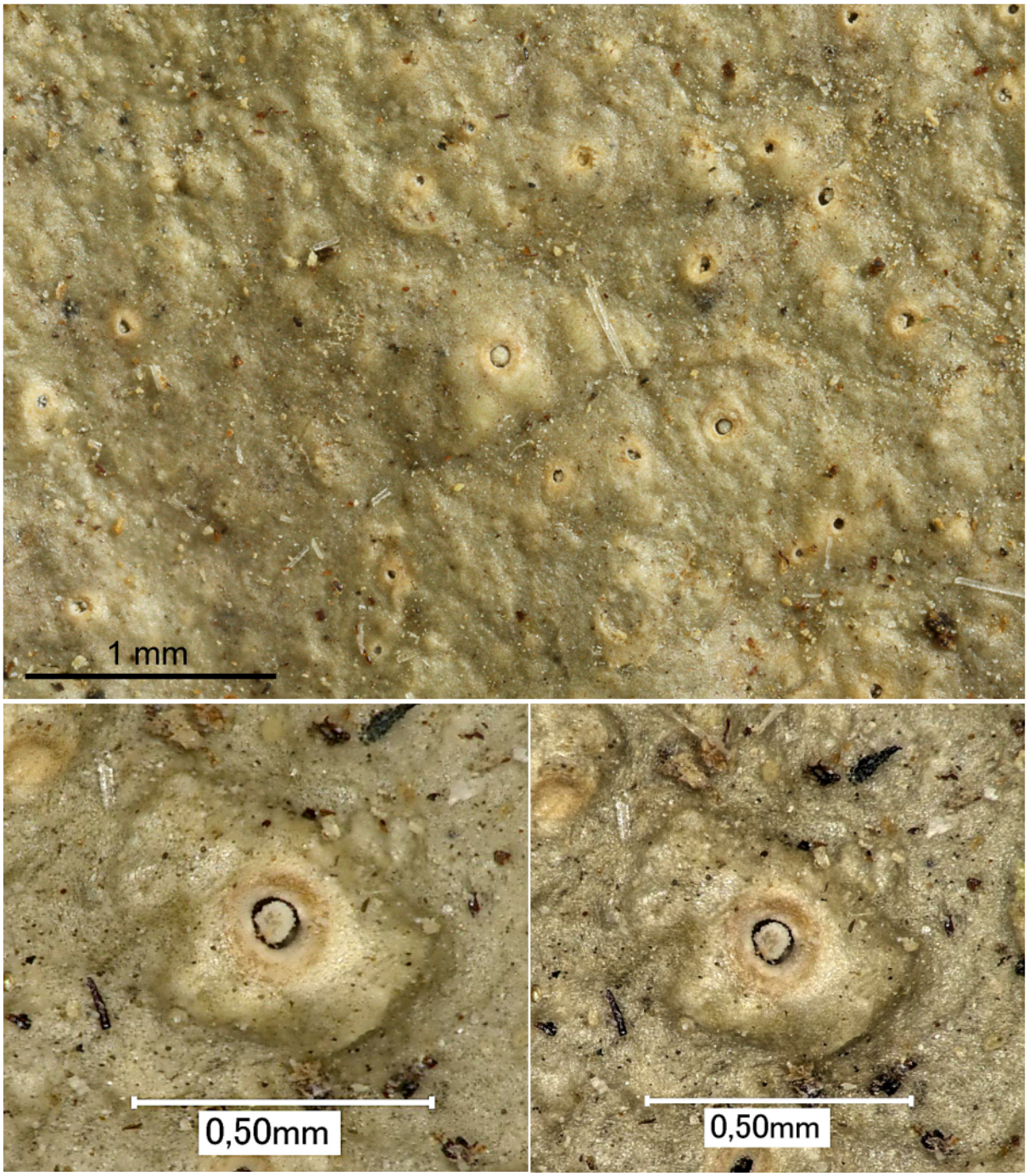
Notoparmelia tenuirima

Ocellularia papillata (Leight.) Zahlbr.

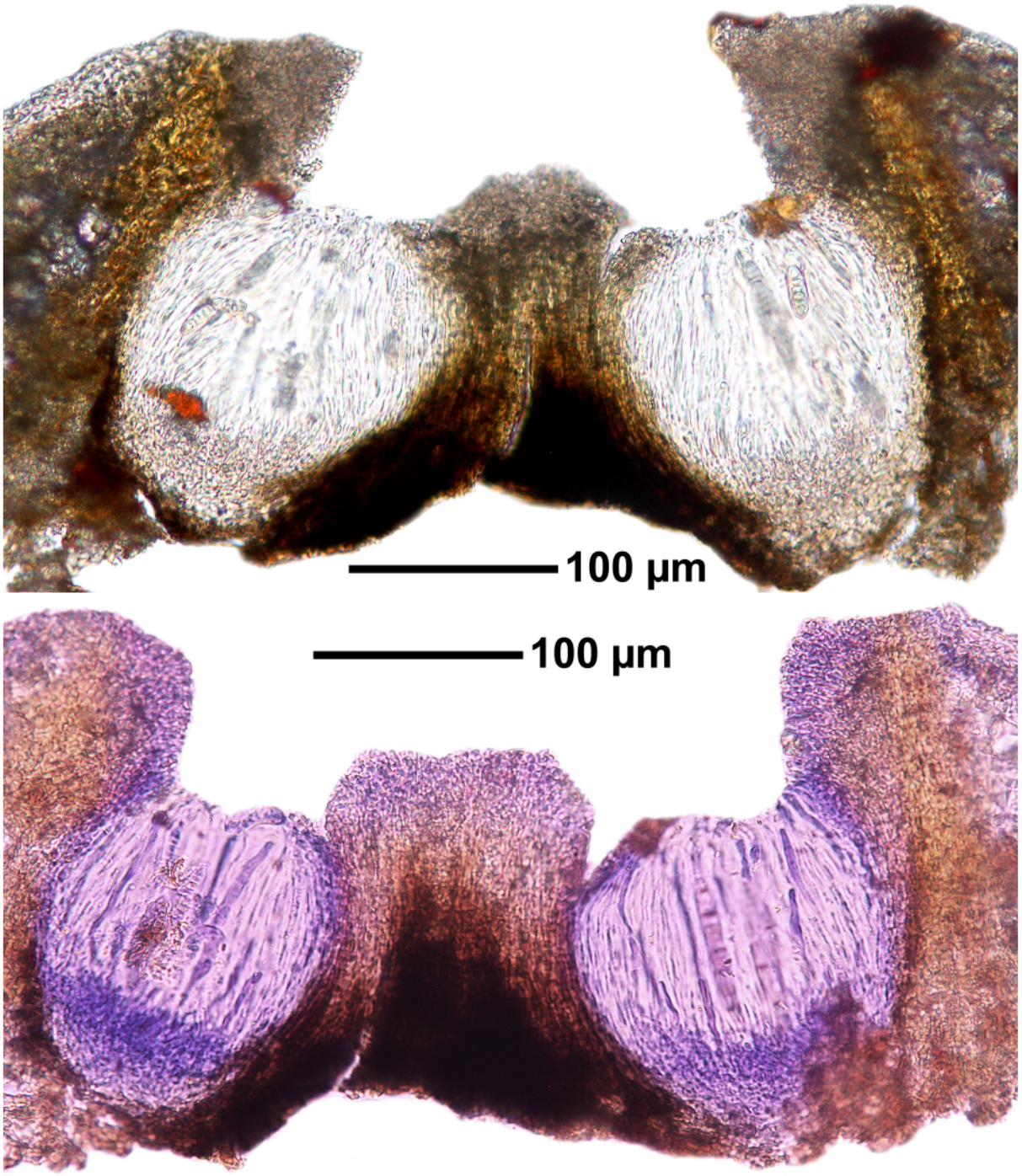
Thallus to 200 µm thick, corticate, vegetative propagules absent. Medulla not pigmented. Ascomata to 0.8 mm diam, immersed to indistinctly emergent and weakly carbonised, with simple, partly carbonised columella; thallus rim becoming distictly darkened with age. Proper exciple carbonised. Hymenium not inspersed. Ascospores traversely 7-8-septate, hyaline, 4(-8)/ascus, (10-)28-33(-45) x (6-)7-8(-10) µm, strongly amyloid. Chemistry: Thallus K-, C-, P-, no lichen substances detectable by TLC.

[19091], Australia, Queensland, Mount Windsor logging area, just east of old Forestry Camp, north-west of Mossman, 1200 m, growing on old logged area in rainforest. Leg. et det. M.E. Hale (65804), 06.07.1983. LICHENES AUSTRALASICI EXSICCATI NO. 087.

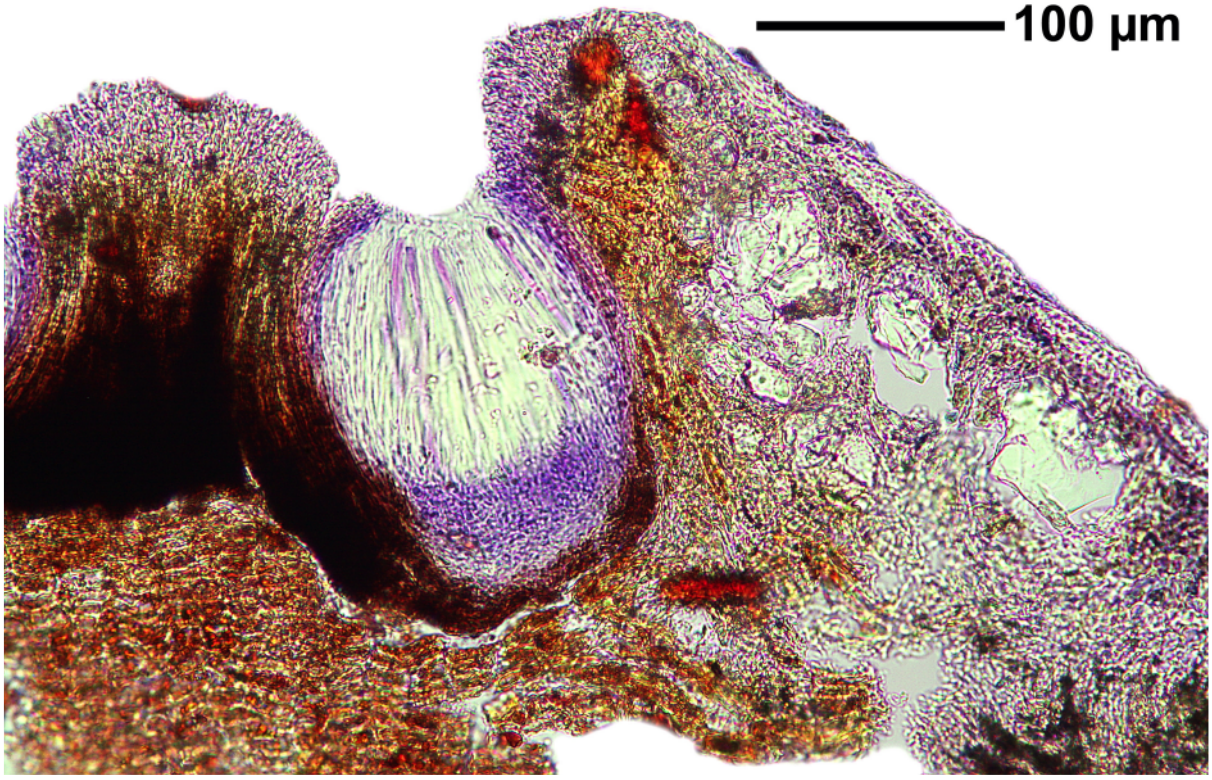


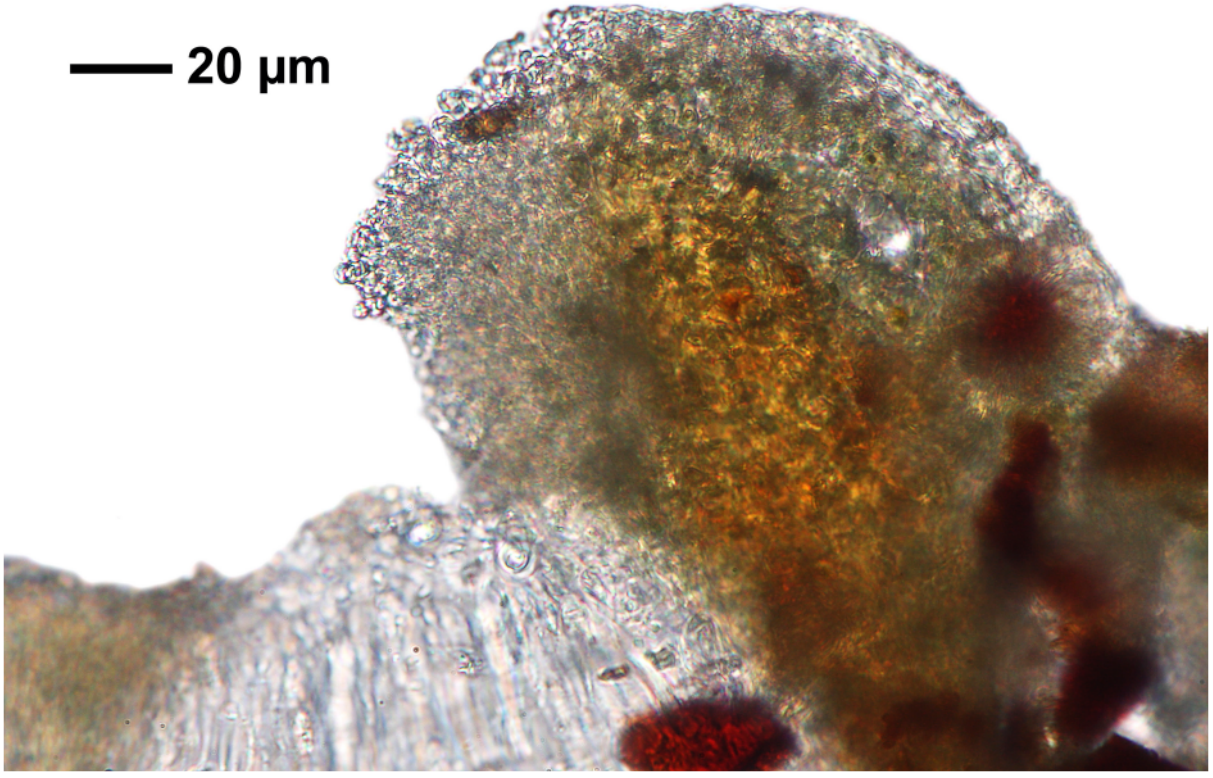


Ocellularia papillata

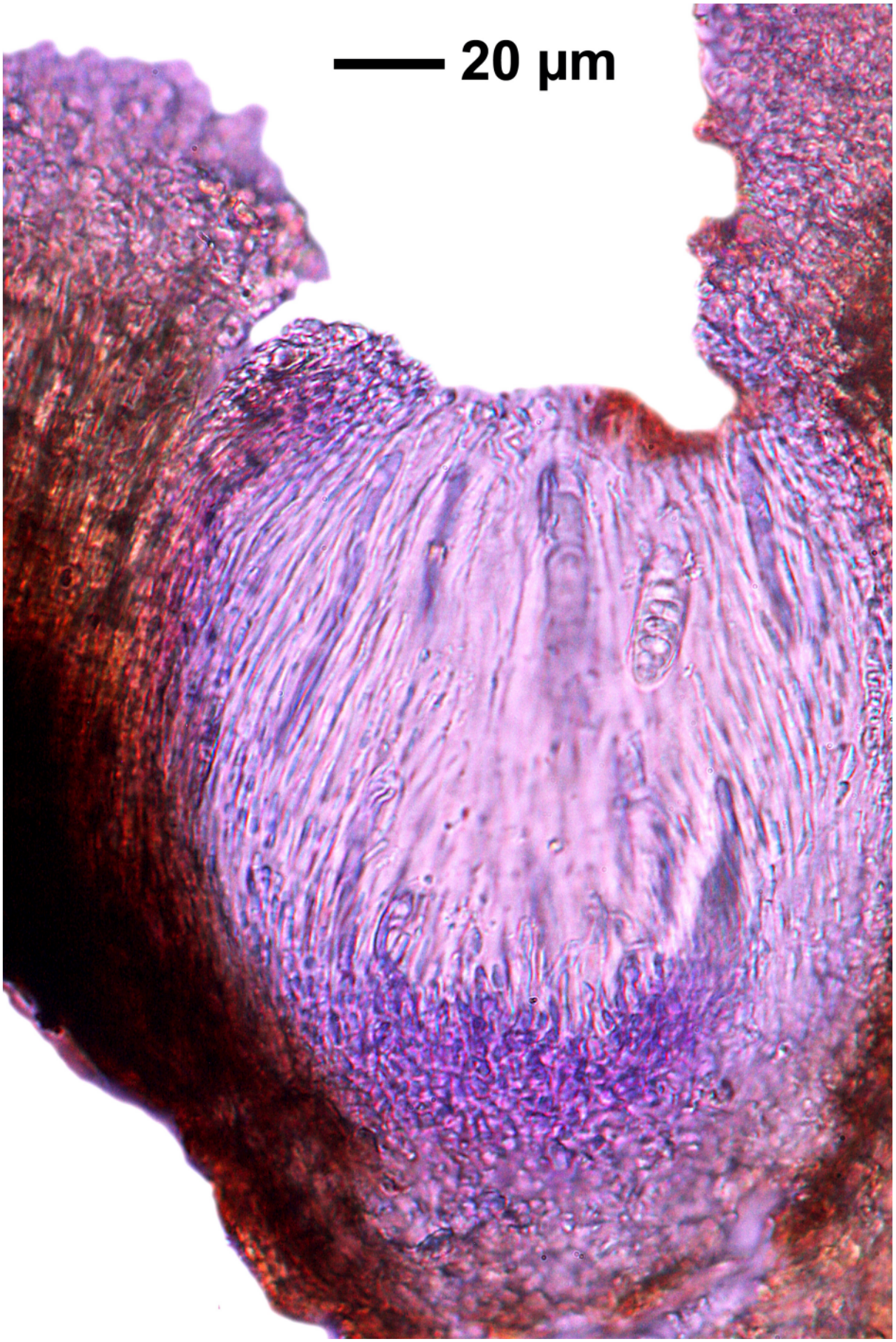


Ocellularia papillata



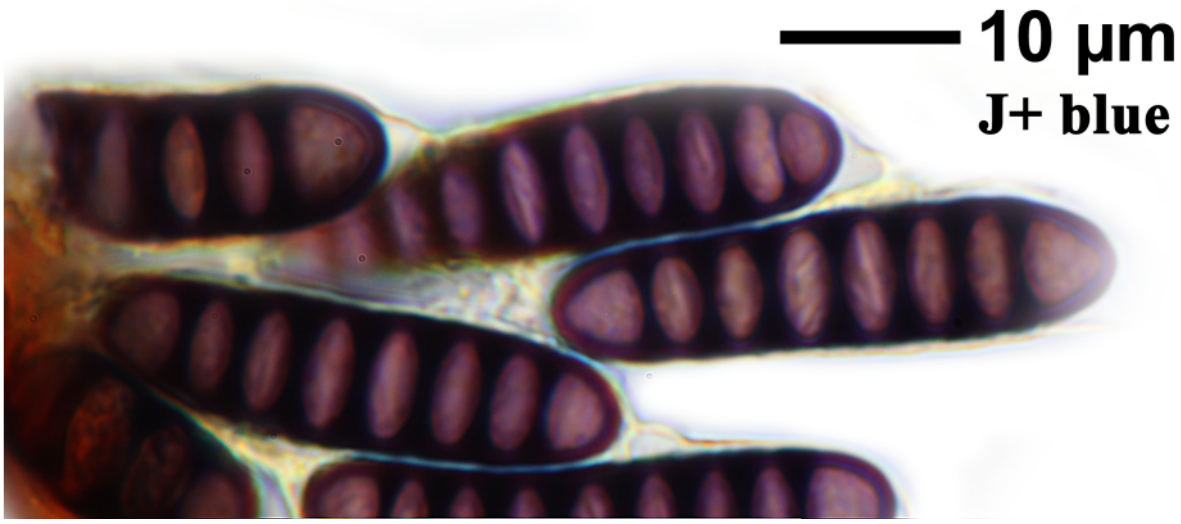


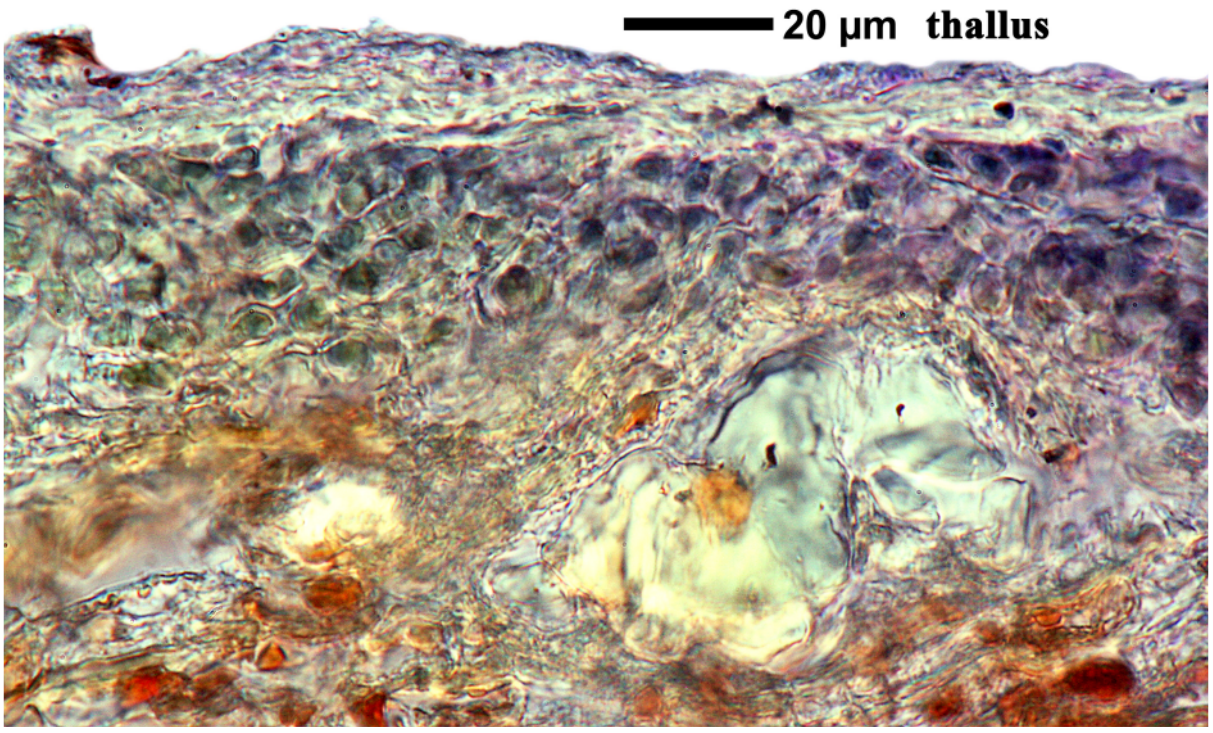
Ocellularia papillata



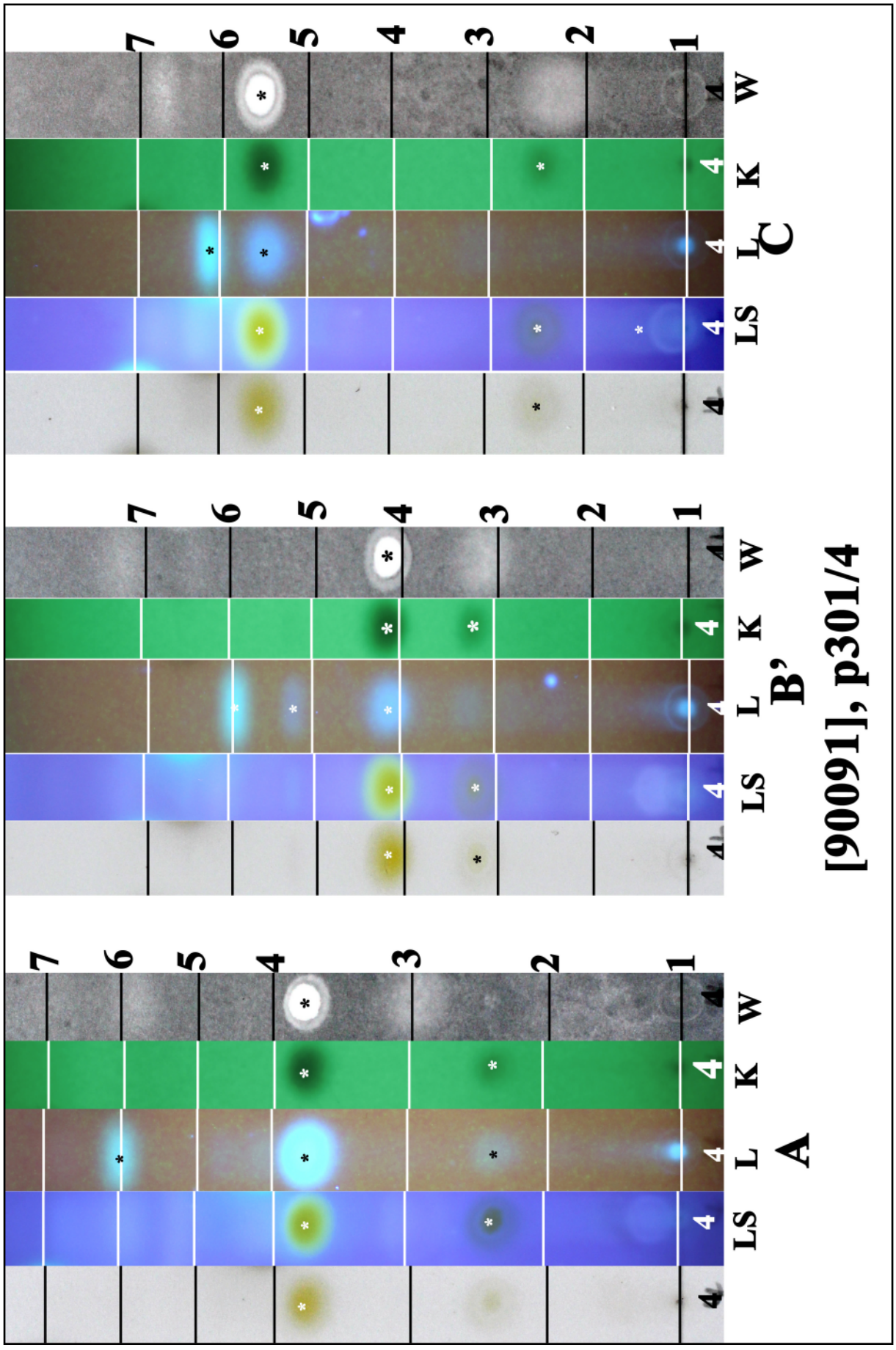
Ocellularia papillata







Ocellularia papillata



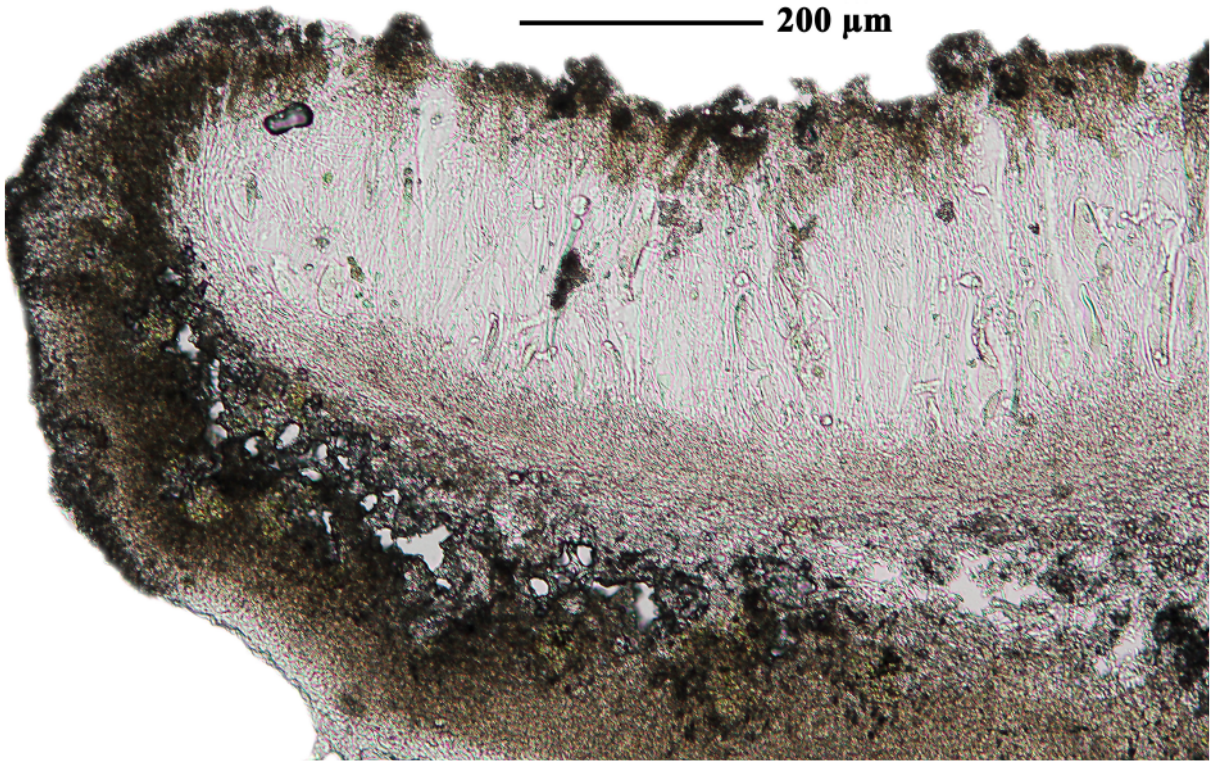
Ocellularia papillata

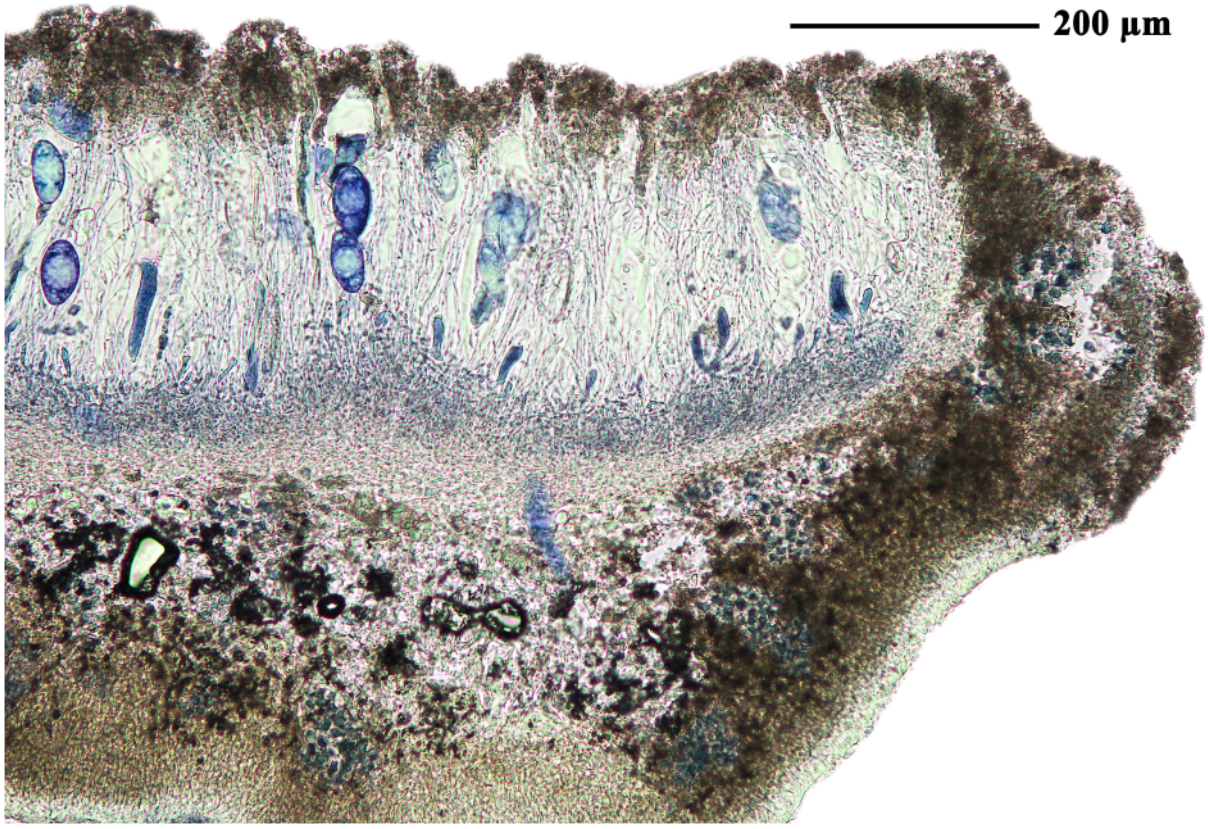
Ochrolechia africana Vain.

Thallus whitish, lacking soredia and isidia, continuous. Disc of apothecia white pruinose. Ascospores hyaline, 8/ascus, non-septate, c. 56 x 19 µm.

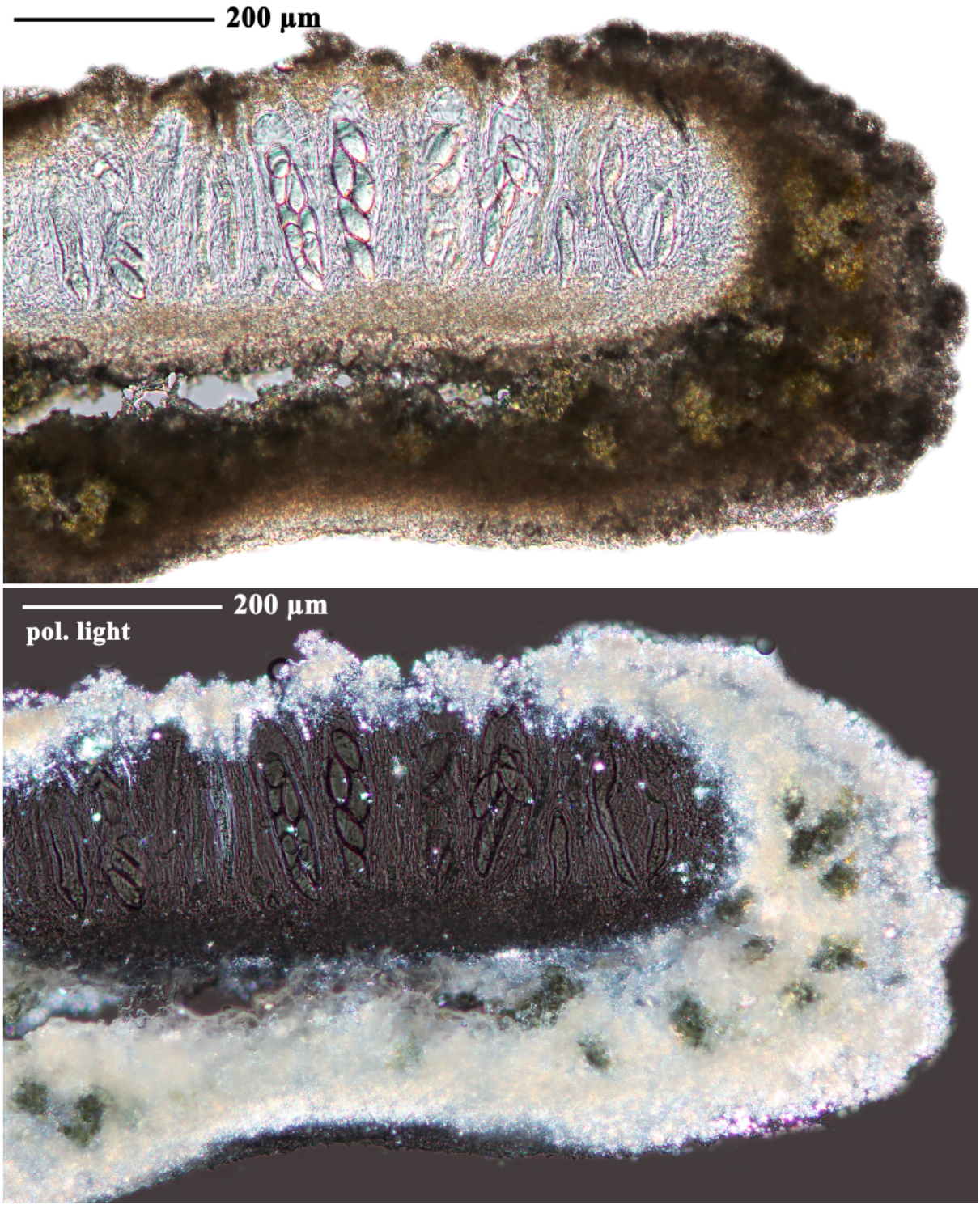
[15738], Australia, Western Australia, south of Yornup, 34.102° S, 116.232° E, 280 m, growing on shrubs. Leg. F. Schumm & E. Stocker-Wörgötter, 23.10.2009. Chemistry: thallus and medulla P-, K± yellowish, KC± pink, UV+ bluish-white; margins of apothecia C+ red, KC+ red; disc of apothecia C-, KC+ red; gyrophoric acid, lecanoric acid.



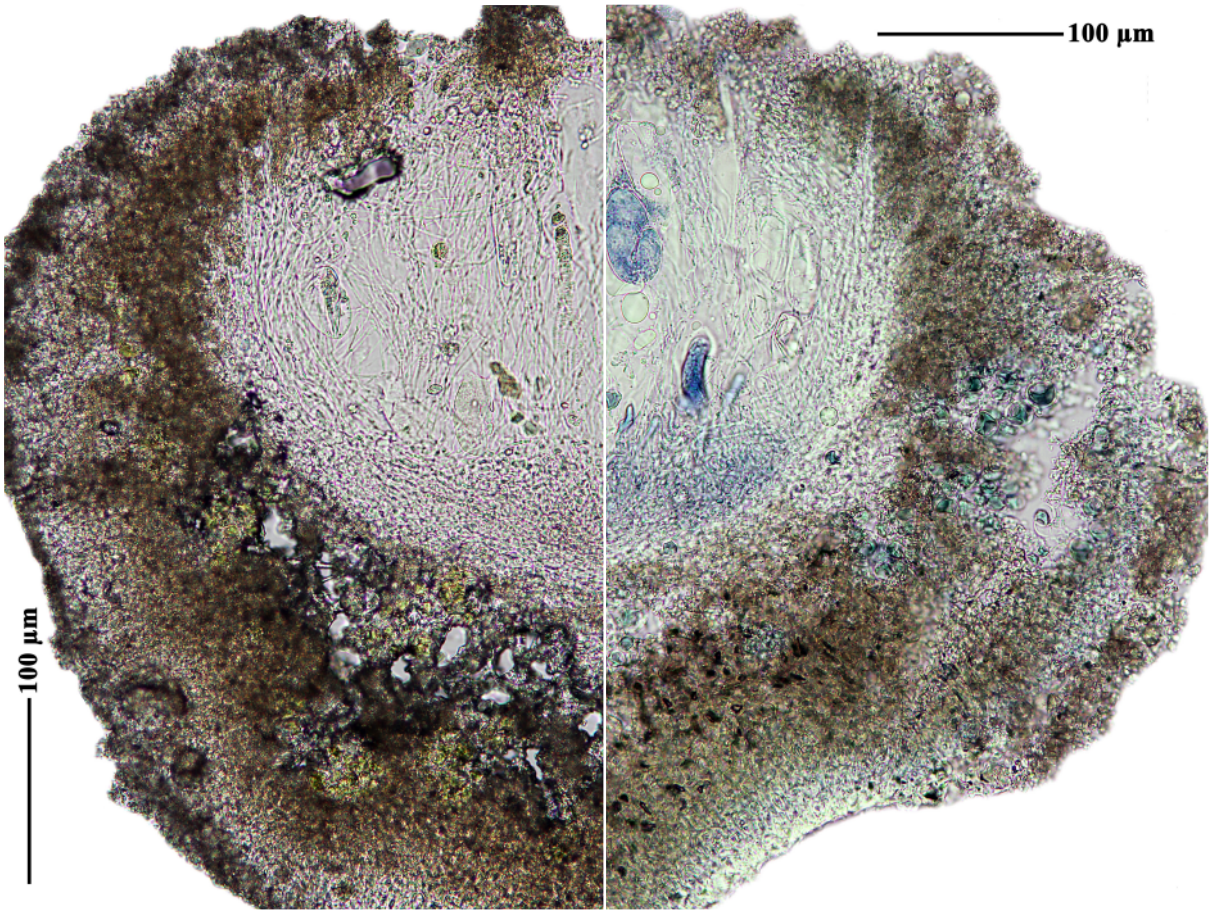


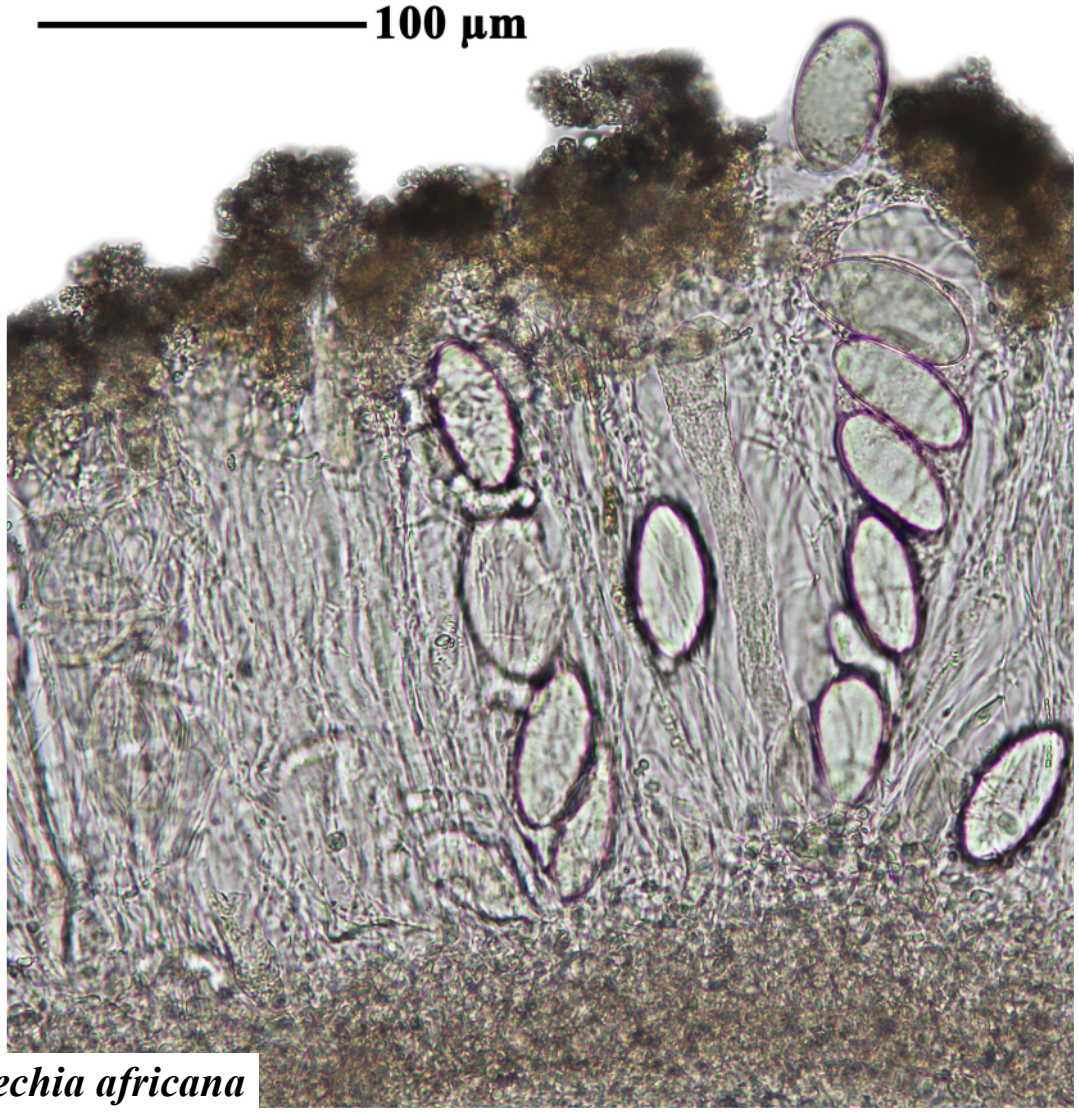


Ochrolechia africana



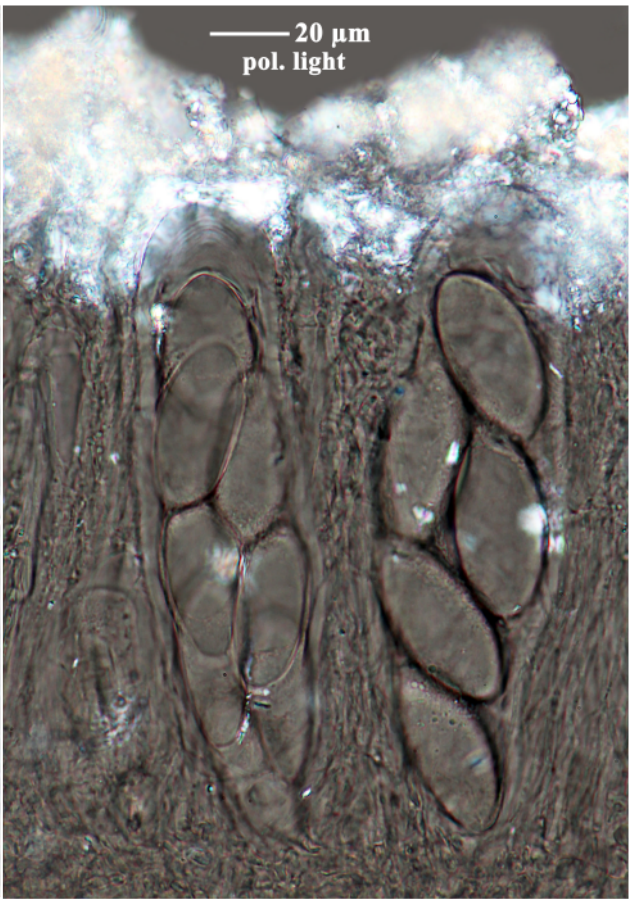
Ochrolechia africana

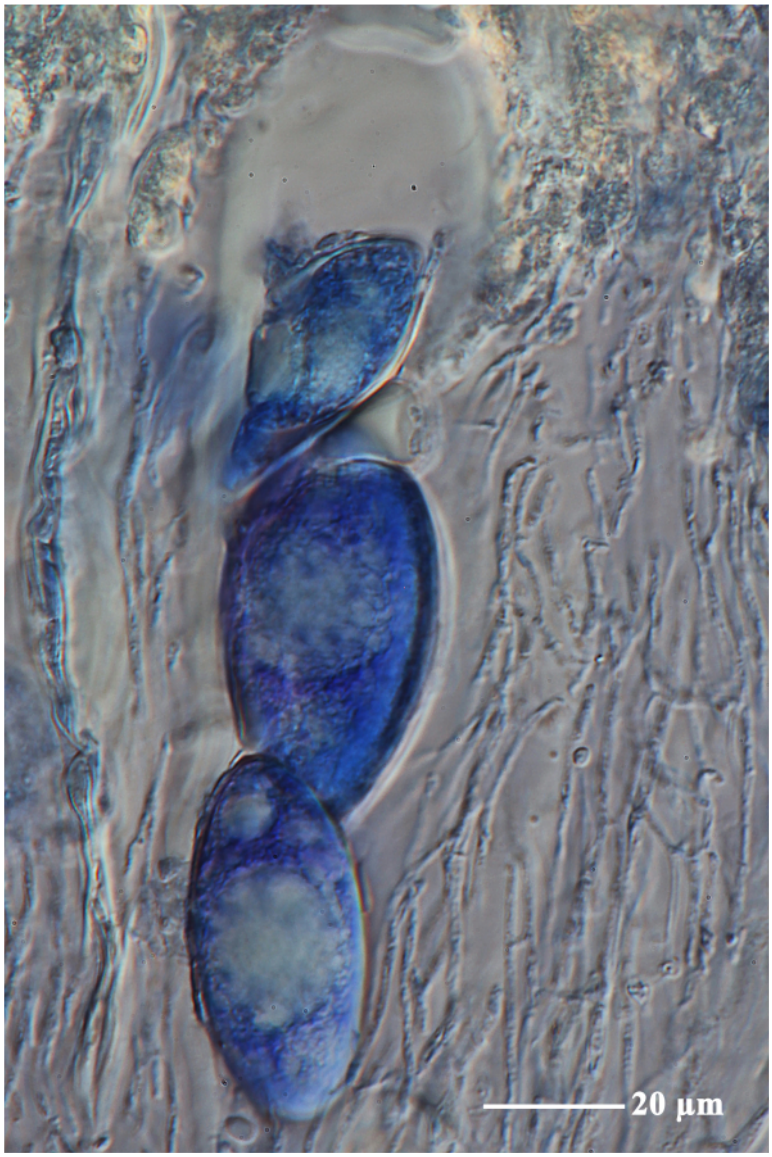




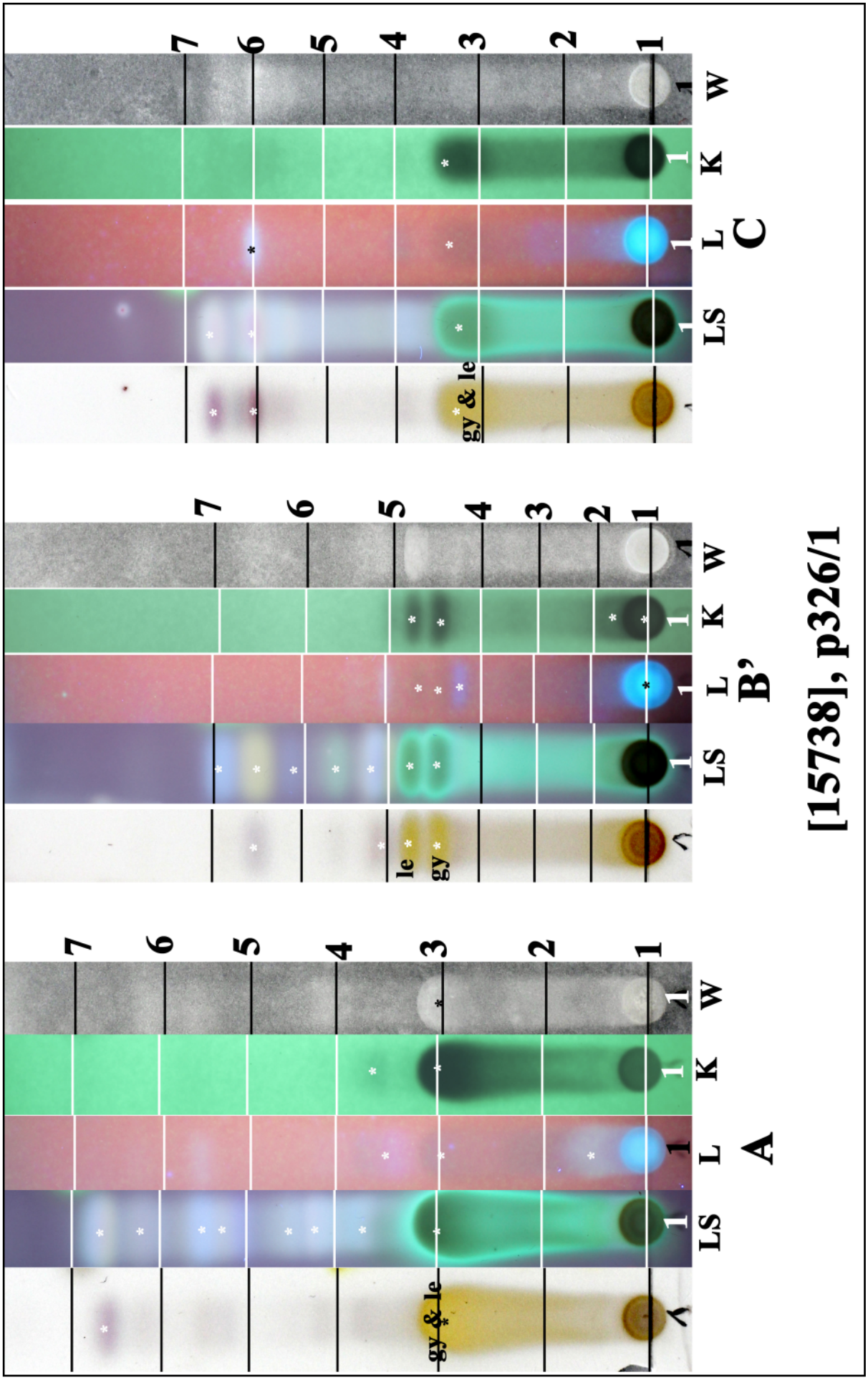
Ochrolechia africana







Ochrolechia africana



gy: gyrophoric acid, le: lecanoric acid

Ochrolechia africana

Ochrolechia xanthostoma (Sommerf.) K. Schmitz & Lumbsch
[= ***Pertusaria xanthostoma*** (Sommerf.) Fries]

Thallus ash-gray, white, or yellow-white, episubstratal to hypophloedal. Surface smooth to weakly rugose-plicate, continuous or finely fissured. Isidia and soredia absent. Apothecia less than 2 mm diam., *Pertusaria*-like, with 1-4(-8) ostioles per verruca. Paraphyses strongly branched. Ascospores (2-)4(-8)/ascus, thin-walled, (32-)40-87(-100) x (17-)35-60(-75) µm. Chemistry: thallus: K-, K-, KC-, P-. Apothecia: alectoronic acid (major), lichesterinic acid (major), protolichesterinic acid (major, -); KC+ pink red.

[19218], New Zealand, South Island, Canterbury, Porters Pass, southwest slopes of Foggy Peak, Torlesse Range, growing on debris in subalpine heath, 1000 m. Leg. J.A. Elix (19034) & J. Johnston, 8.03.1985. Chemistry: alectoronic acid (major), ursolic acid (trace), unknowns (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 214. Distributed as ***Pertusaria xanthostoma*** (Sommerf.) Fries.

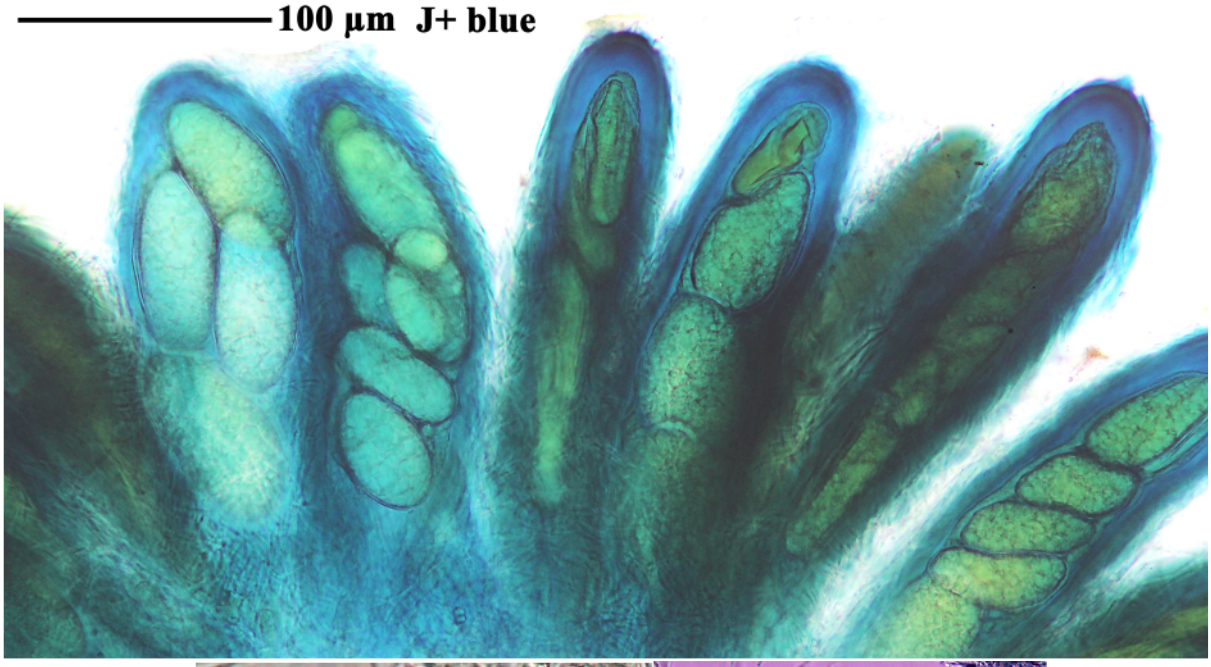






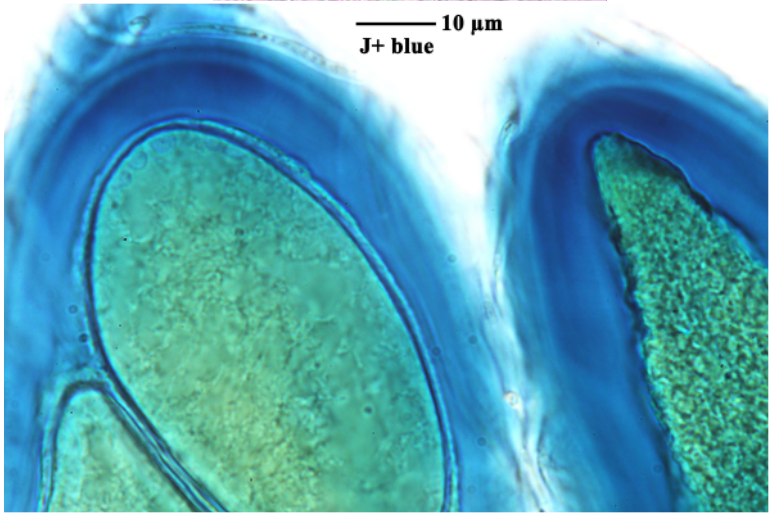


Pertusaria xanthostoma

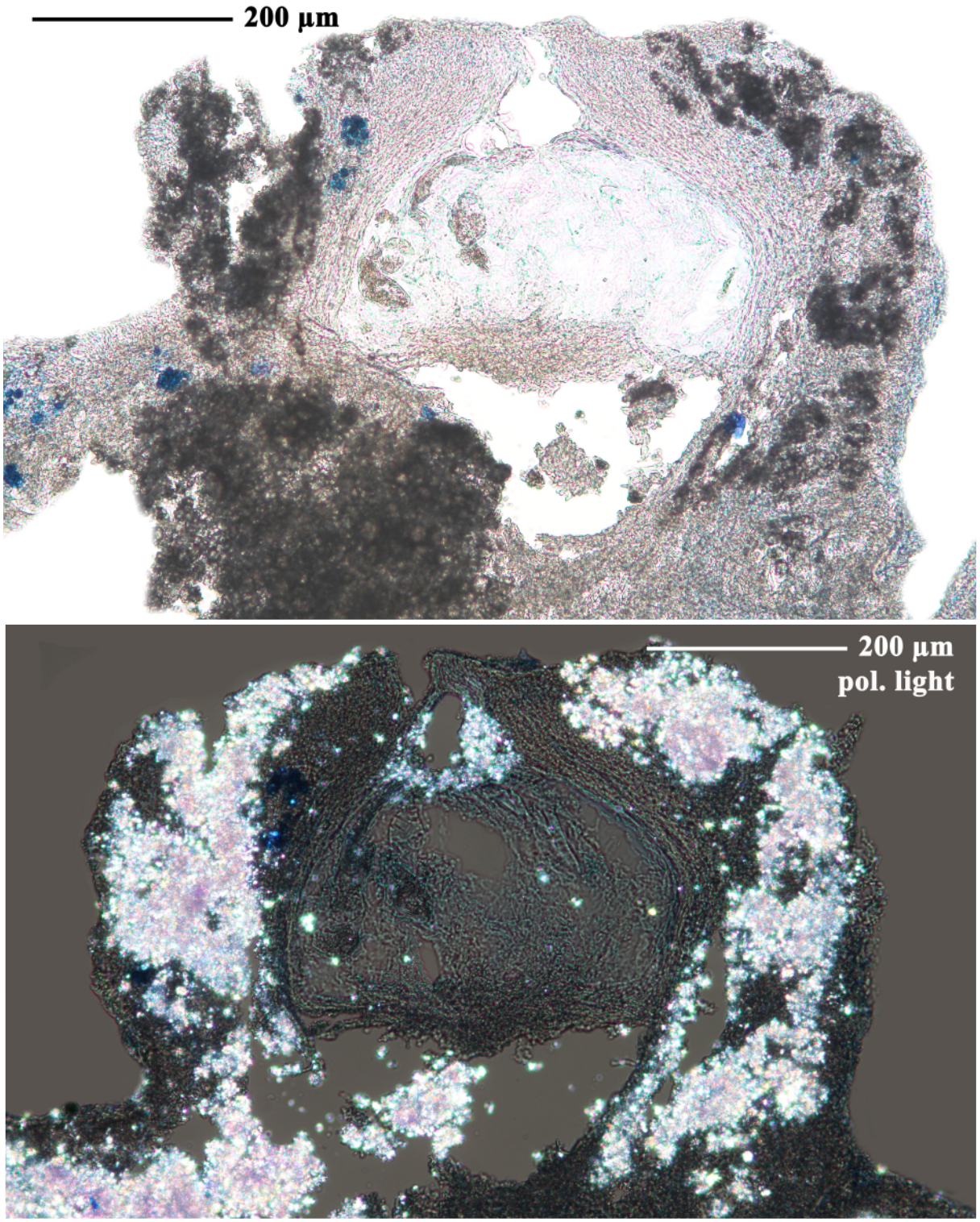




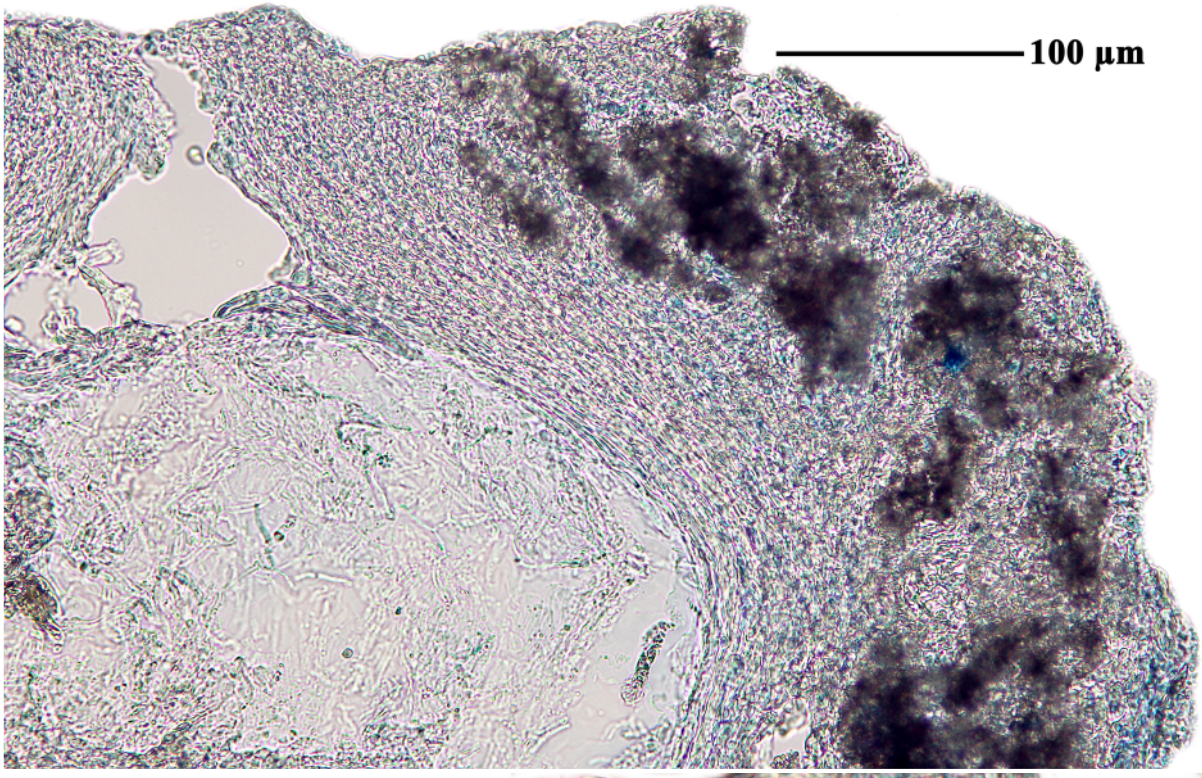


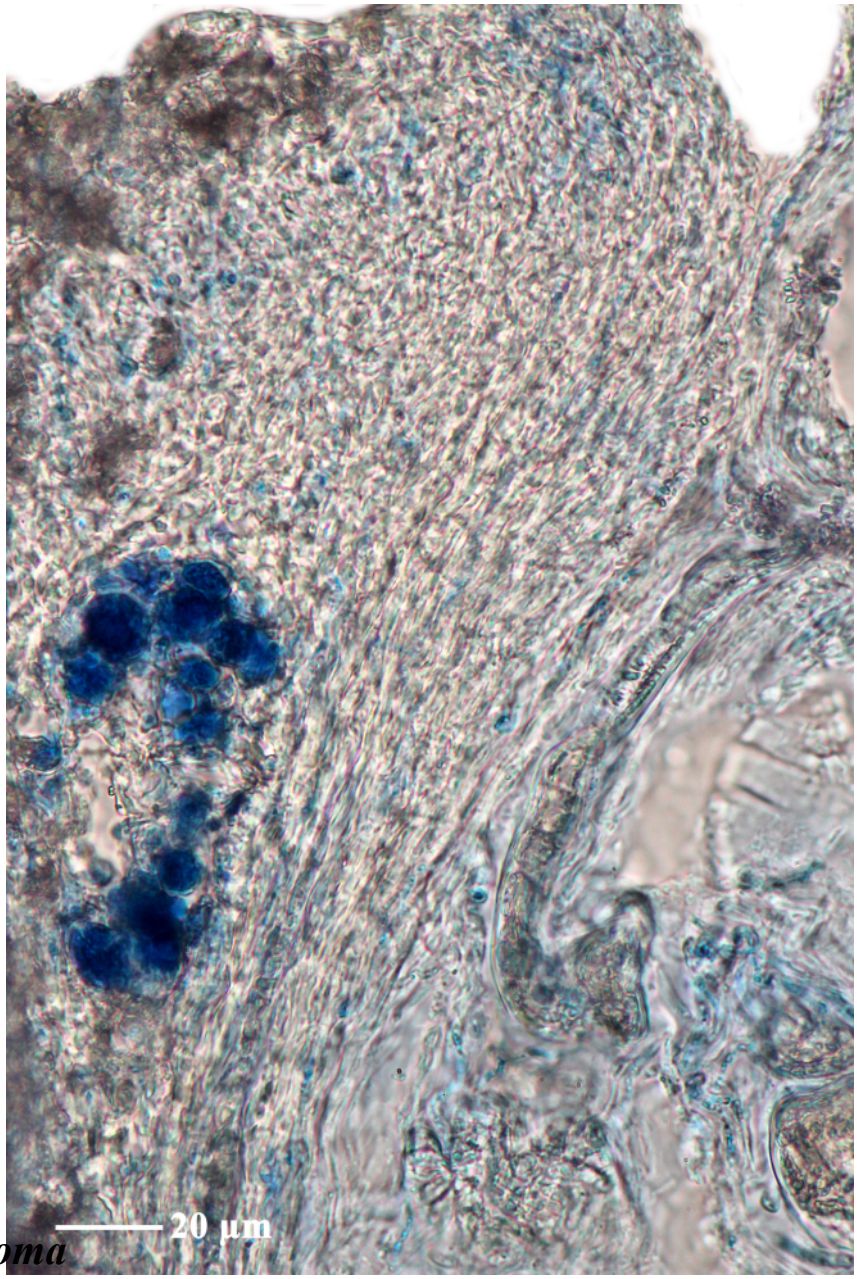


Pertusaria xanthostoma

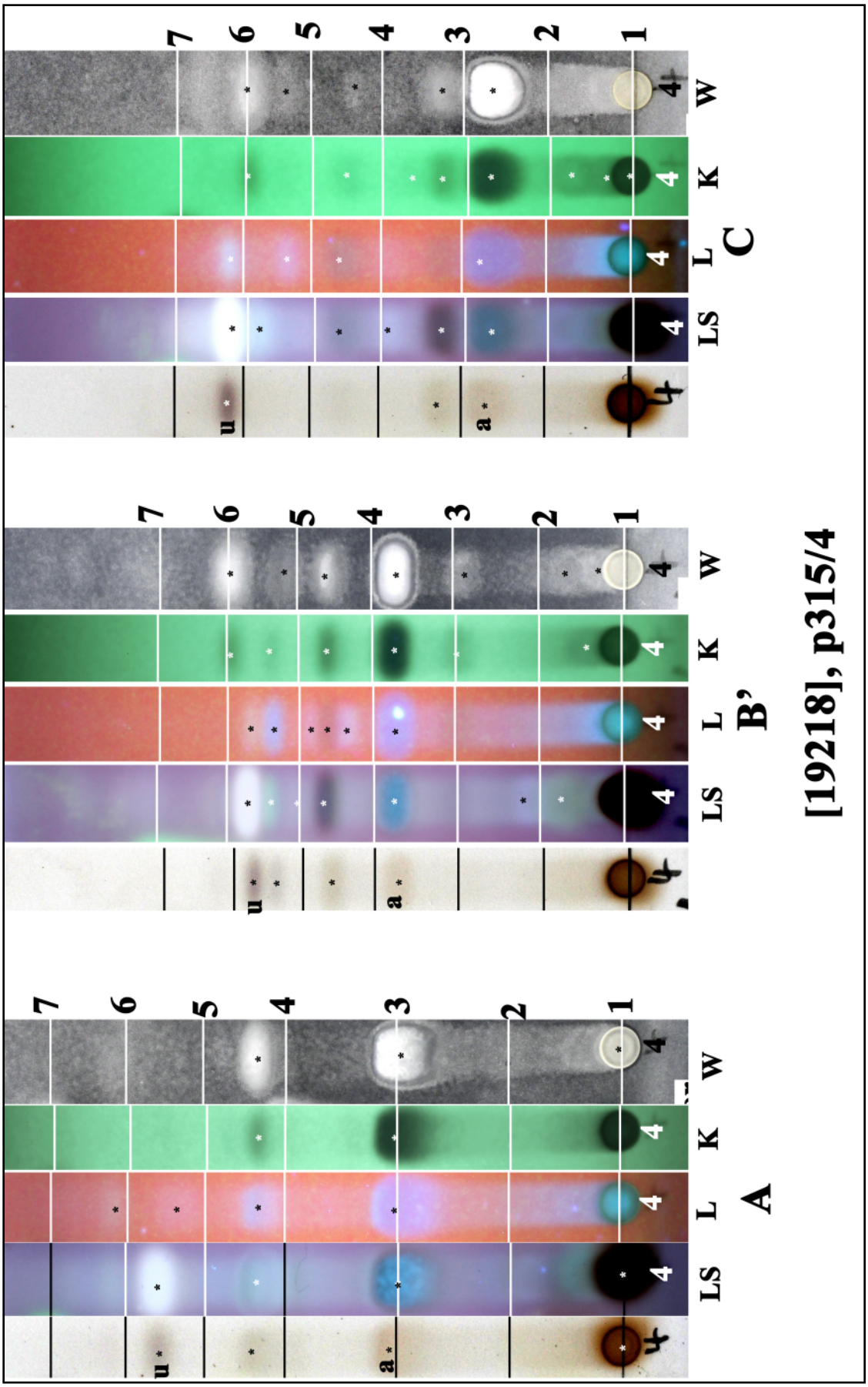


Pertusaria xanthostoma





Pertusaria xanthostoma



Pertusaria xanthostoma

Pannaria farinosa Elvebakk & J.Fritt-Rasm.

Thallus closely attached, ±free at margins. Lobes 10-25 mm long, 1-3 mm wide. Upper surface sorediate, scabrid-areolate in parts, ±tomentose at apices, green or olive when wet yellow-brown when dry. Photobiont green, unicellular. Soredia granular, mainly in marginal, labriform soralia. Cephalodia (*Nostoc*) on both surfaces, to 1.5 mm wide, grey or black. Apothecia sessile or subpedicellate, 1-3 mm wide. Ascospores 8/ascus, 12-18 x 9-12 µm. Lit. Elvebakk et al. (2007).

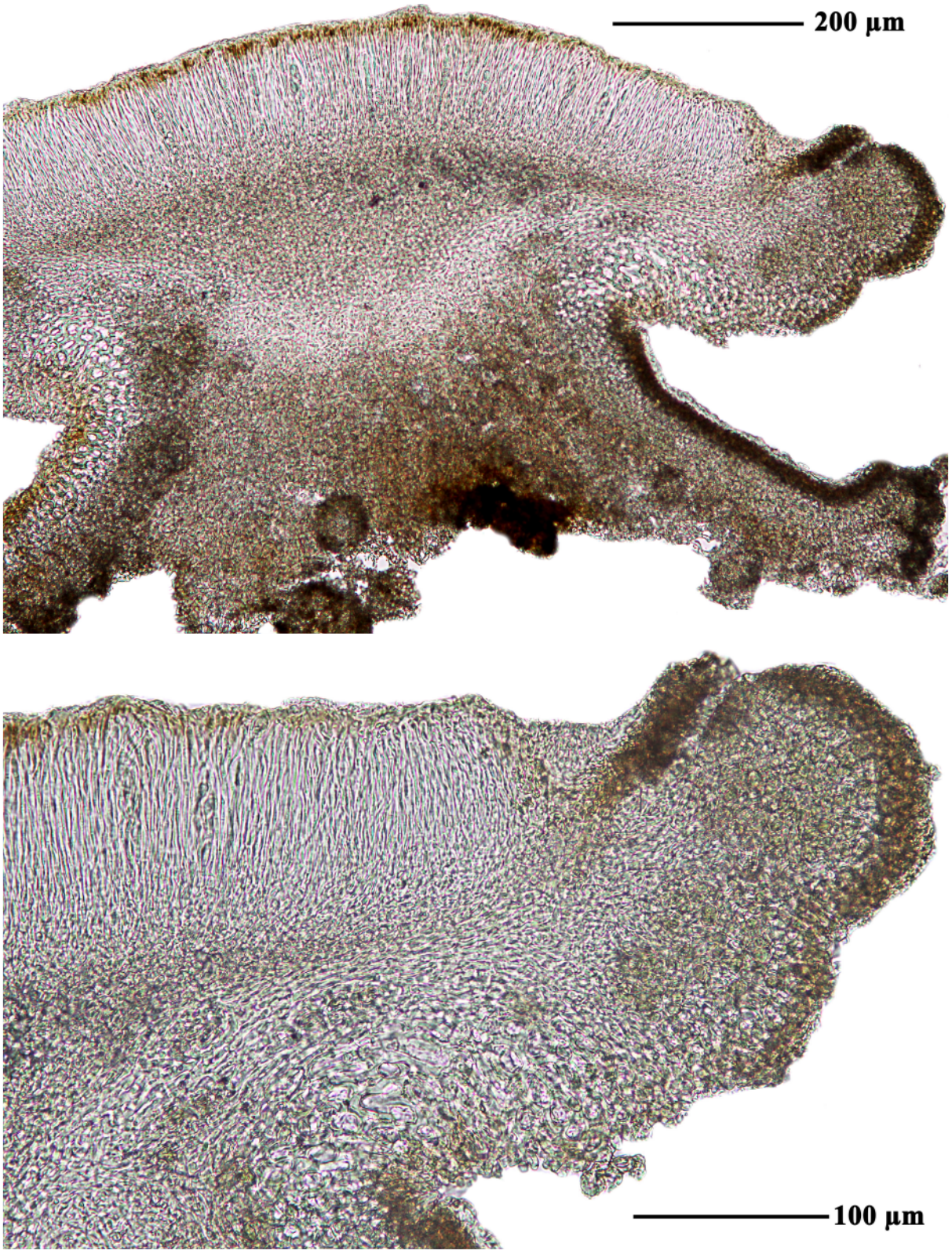
[19223], Australia, New South Wales, Big Badja Hill, 44 km south-west of Araluen, 36°00' S, 149°34' E, 1250 m, growing on lower trunk of *Eucalyptus* in wet sclerophyll forest on moderate slope. Leg. H. Streimann (39881), 25.09.1988. Chemistry: leprolomin (major), vicanicin (major), by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 192. Distributed as ***Psoroma leprolomum*** (Nyl.) Räsänen



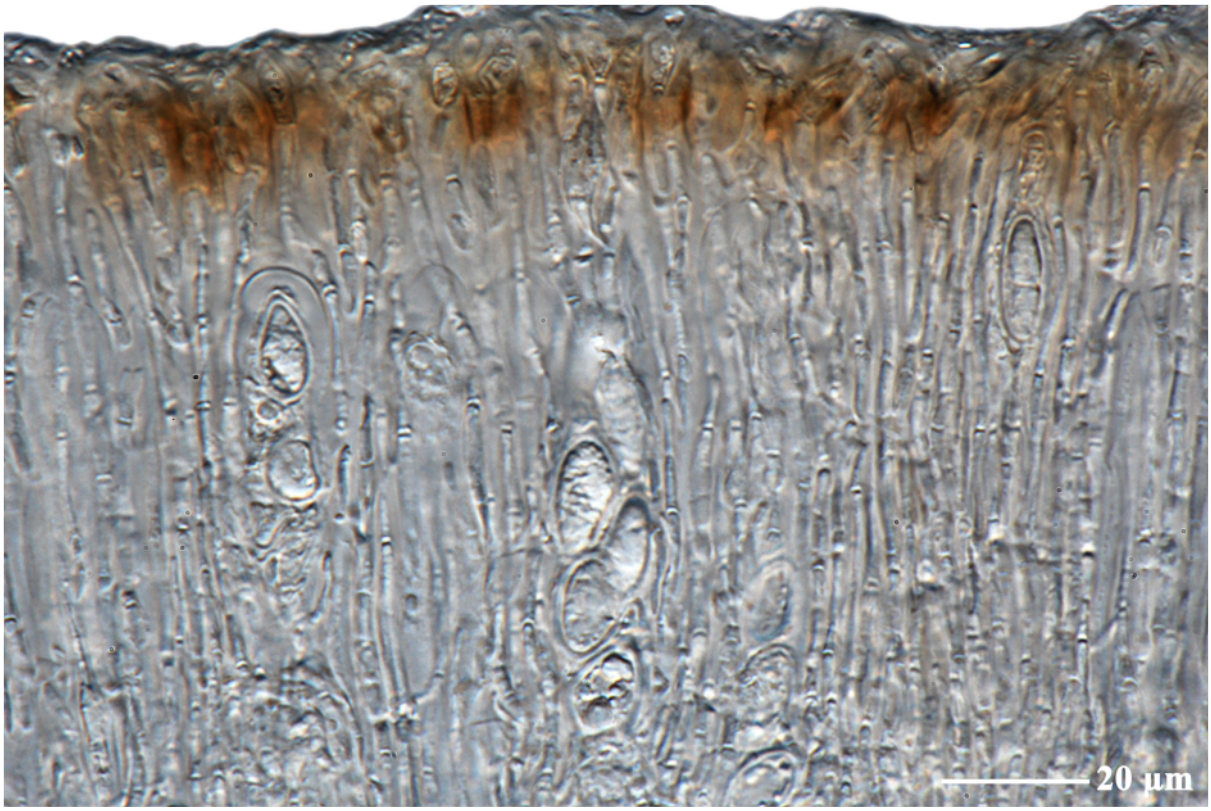




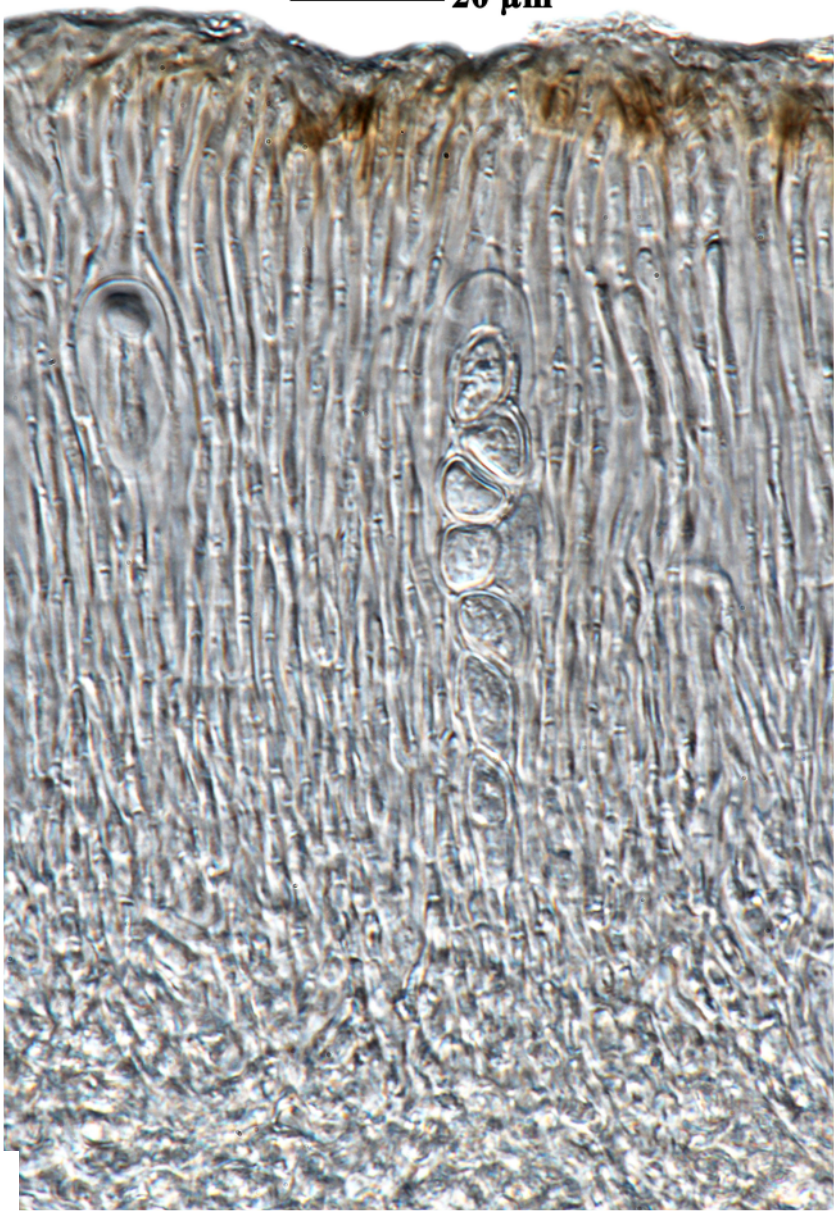
Pannaria farinosa



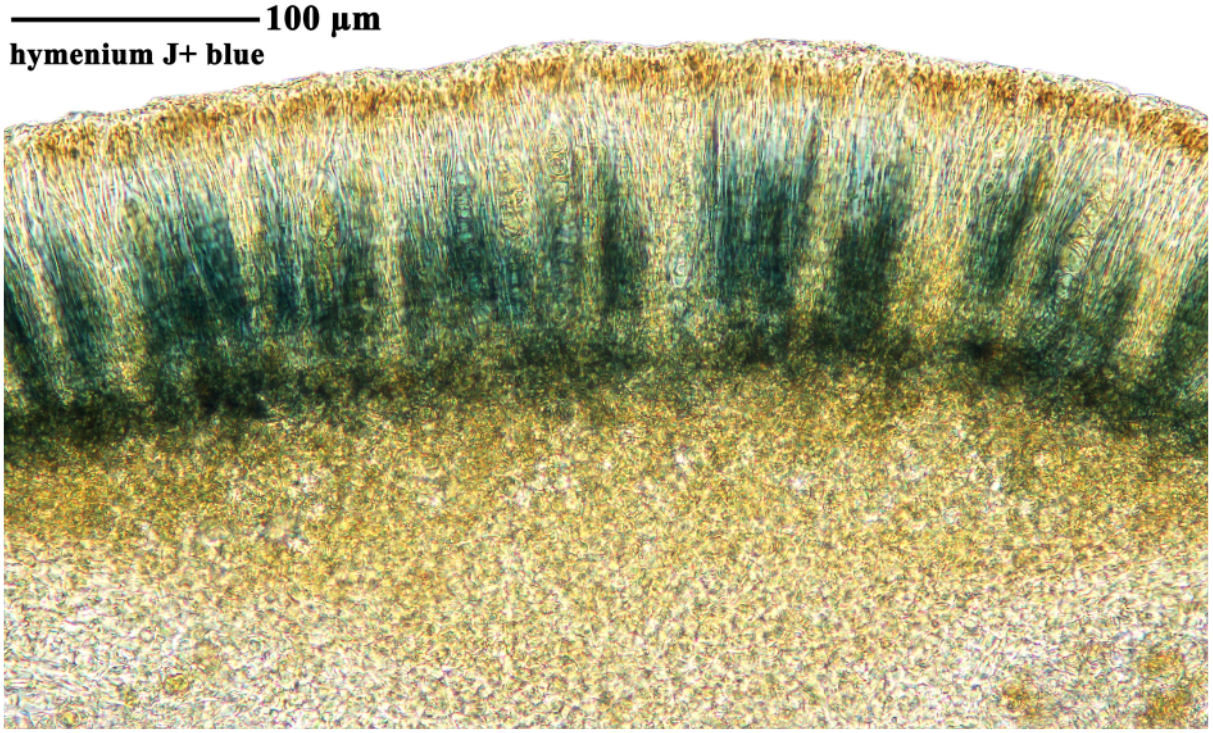
Pannaria farinosa

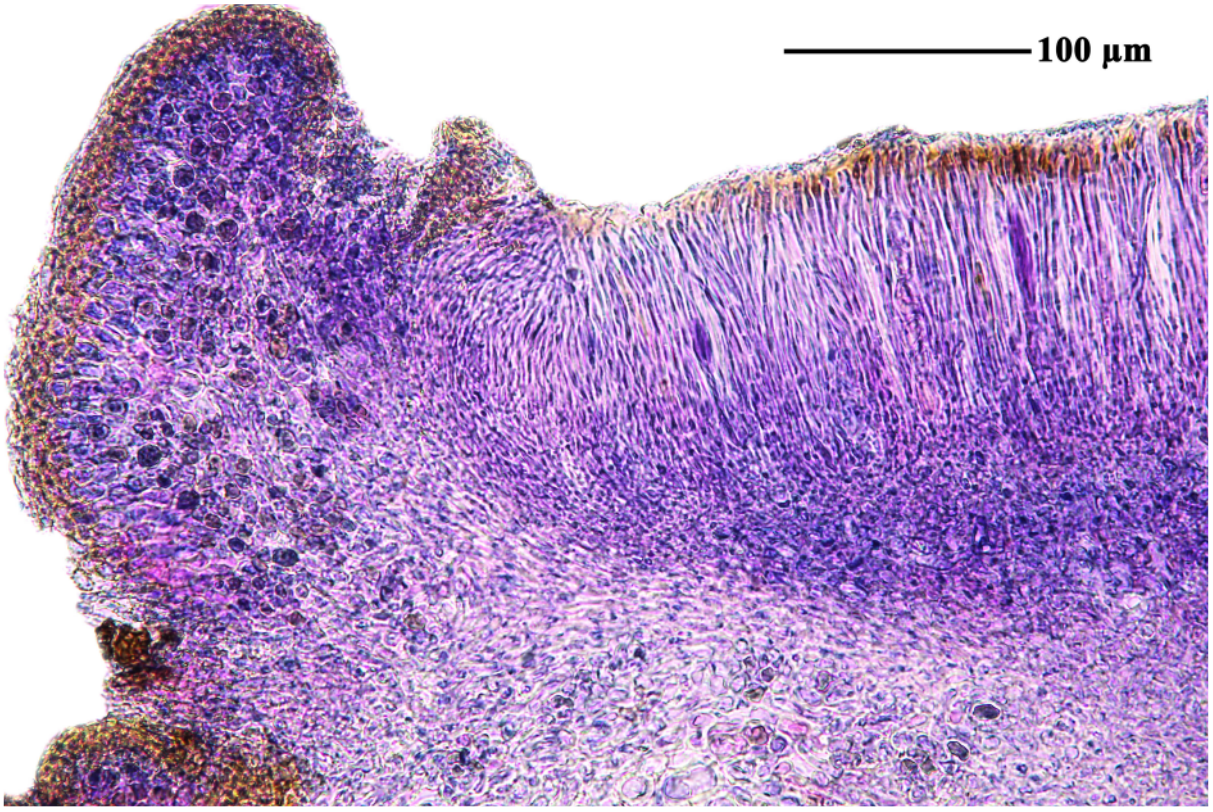


20 µm

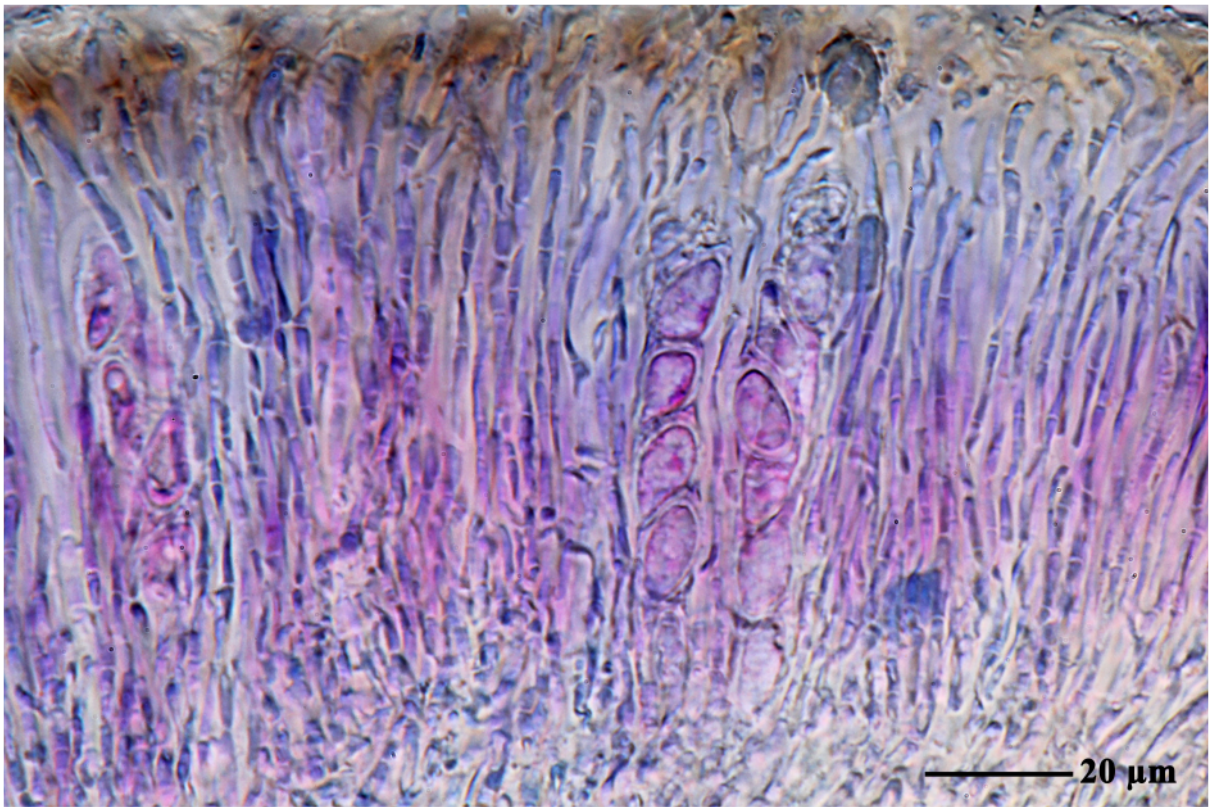


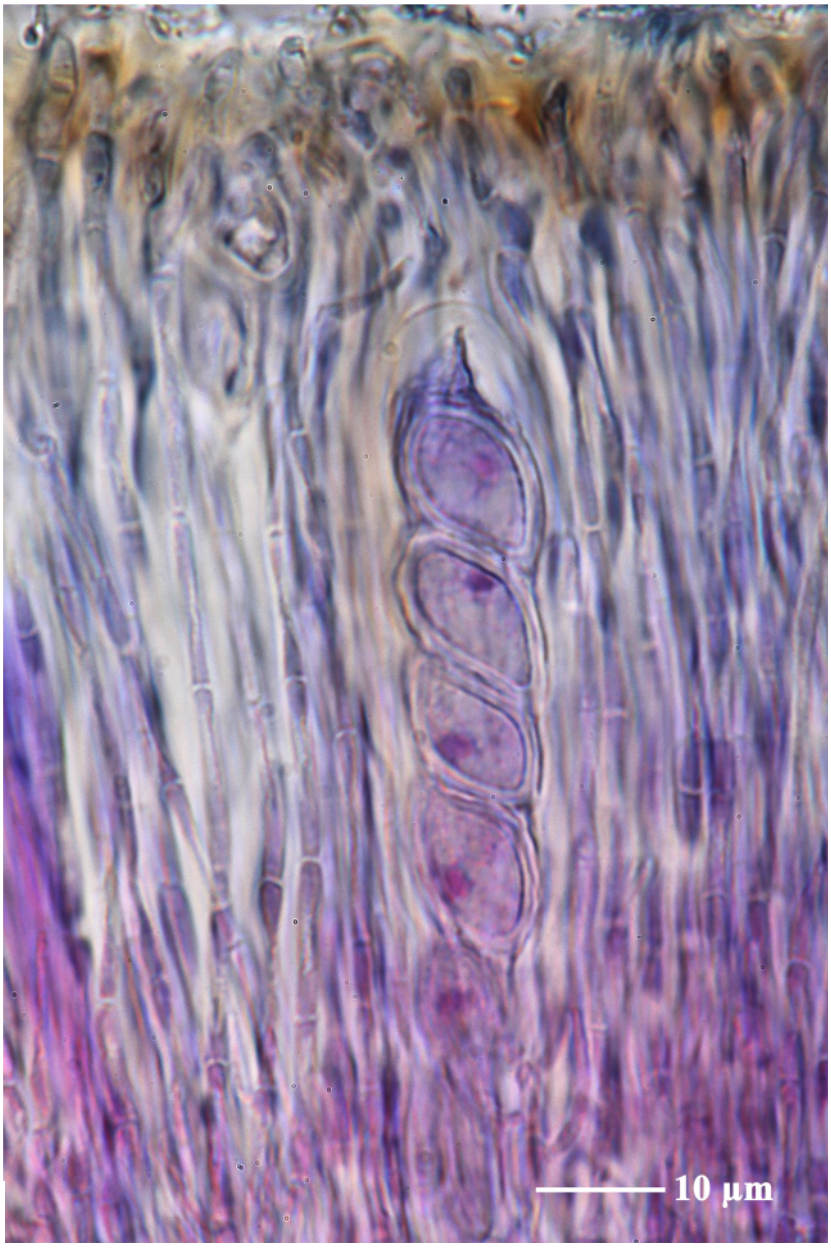
Pannaria farinosa



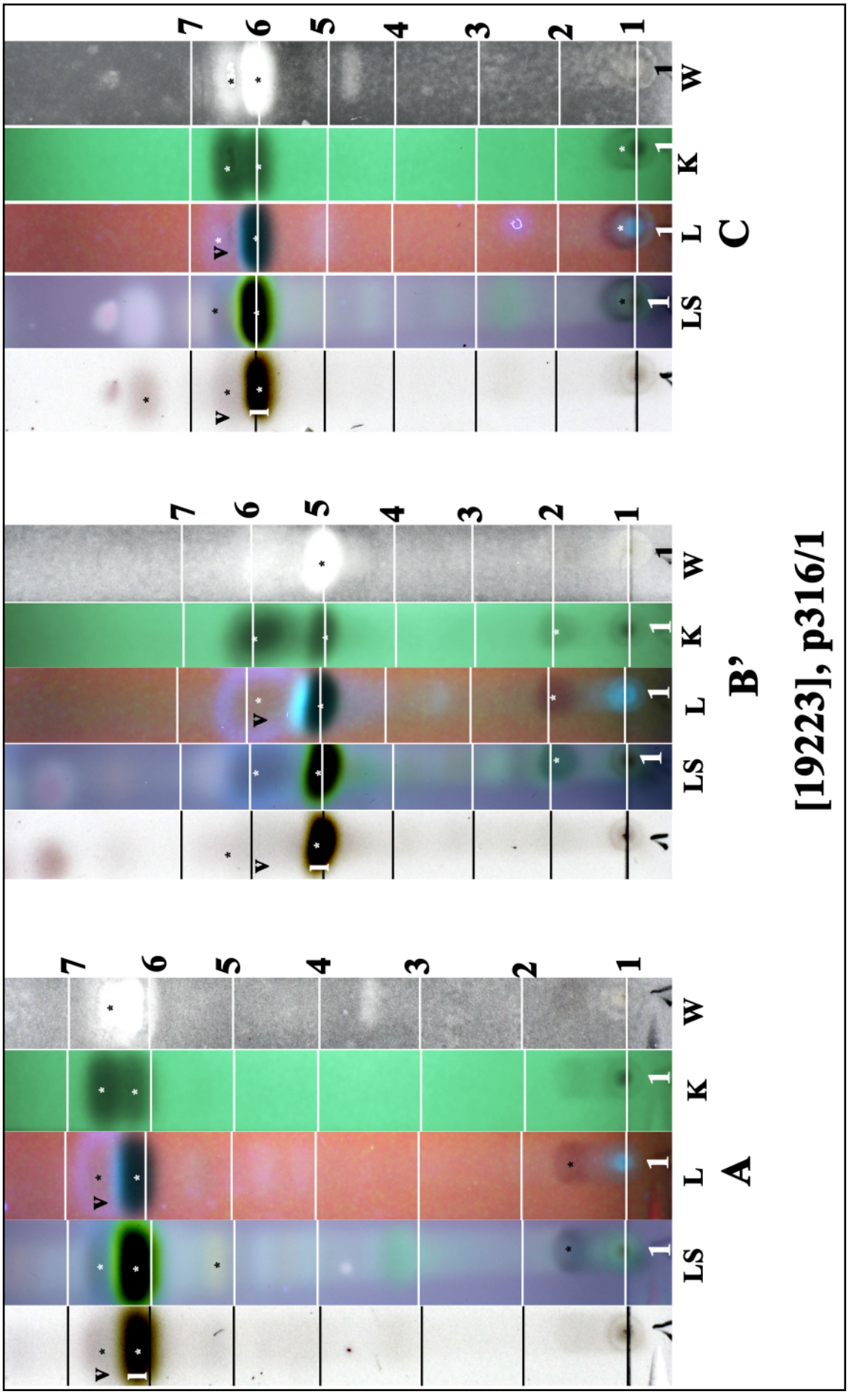


Pannaria farinosa





Pannaria farinosa



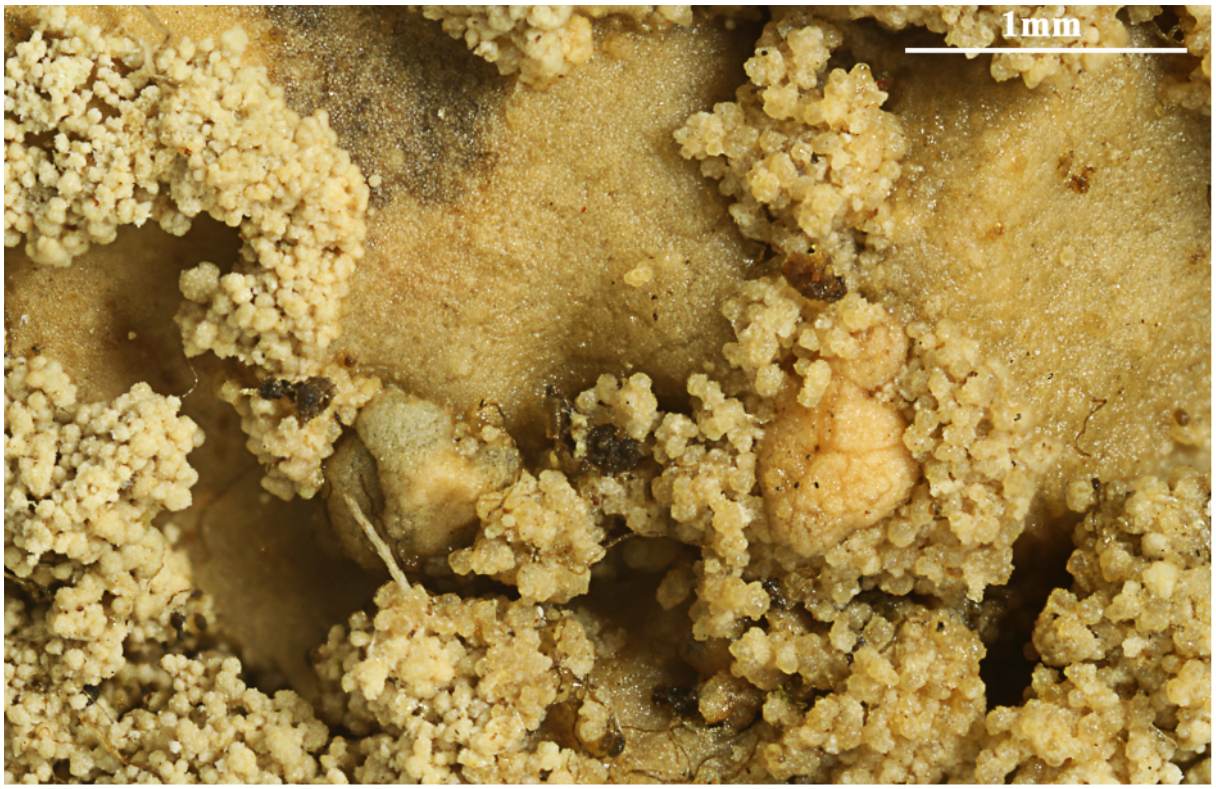
Pannaria farinosa

Pannaria farinosa Elvebakk & J.Fritt-Rasm.

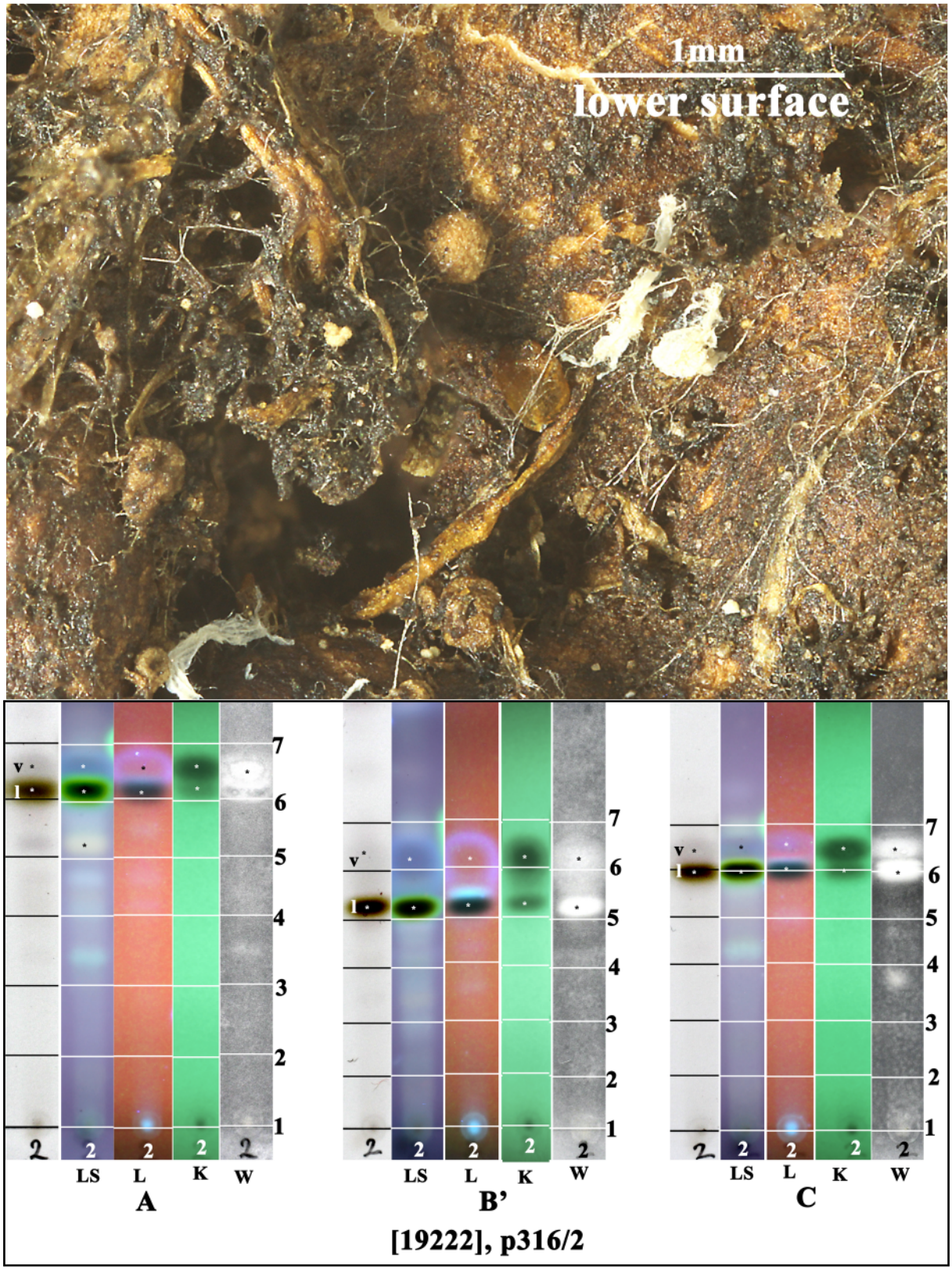
[19222], Australia, New South Wales, Great Dividing Range, 6 km east of Captains Flat, 2 km north of Parkers Gap, 35°37' S, 149°30' E, 1260 m, growing on *Bedfordia salicina* in wet sclerophyll forest. Leg. J.A. Elix (19283) 9.07.1985. Chemistry: leprolomin (major), vicanicin (major), by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 146. Distributed as ***Psoroma leprolomum*** (Nyl.) Räsänen.







Pannaria farinosa



l: leprolomin, v:vicanicin

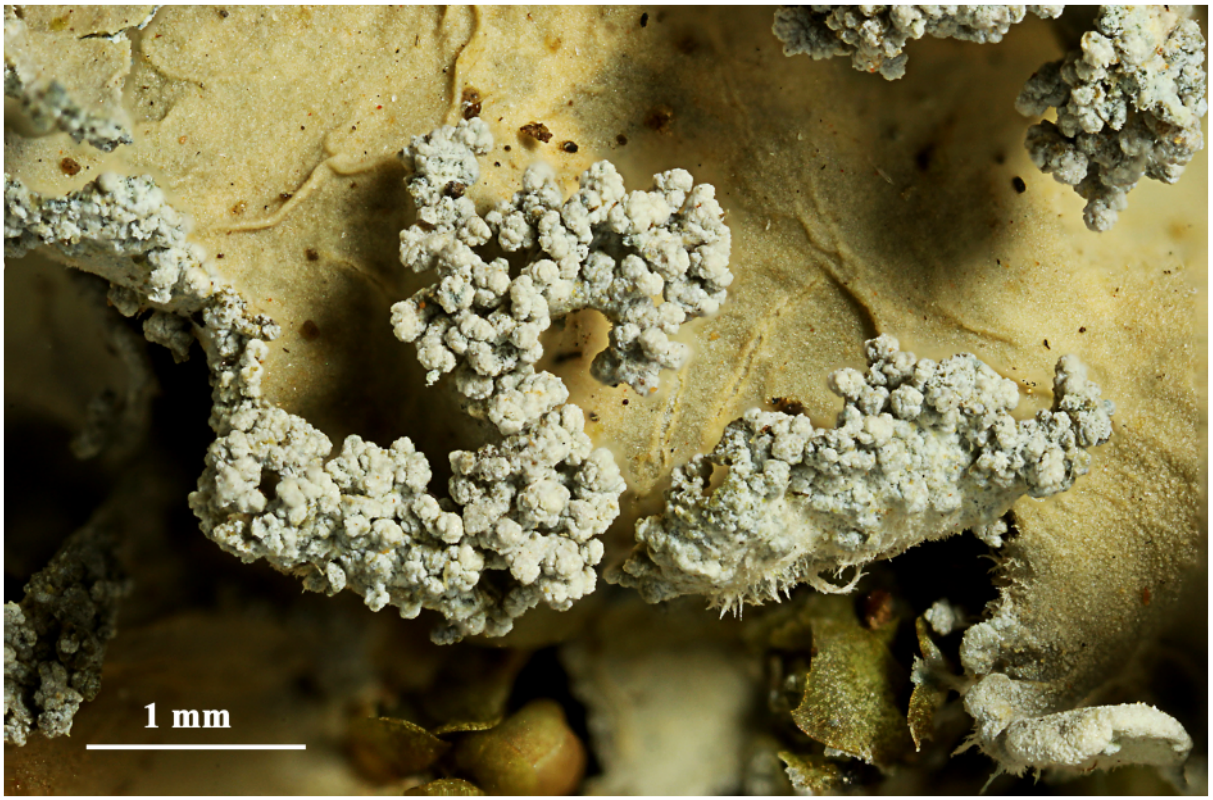
Pannaria farinosa

Pannaria fulvescens (Mont.) Nyl.

Thallus foliose, rather loosely attached. Lobes 1-4 mm wide, 8-15 mm long. Upper surface often markedly ridged, fawn-brown to greyish; margins sinuose, ±ascending, sorediate below; soralia bluish, soredia coarse, granular. Photobiont: *Nostoc*. Chemistry: P+ orange; pannarin, ±ursolic acid.

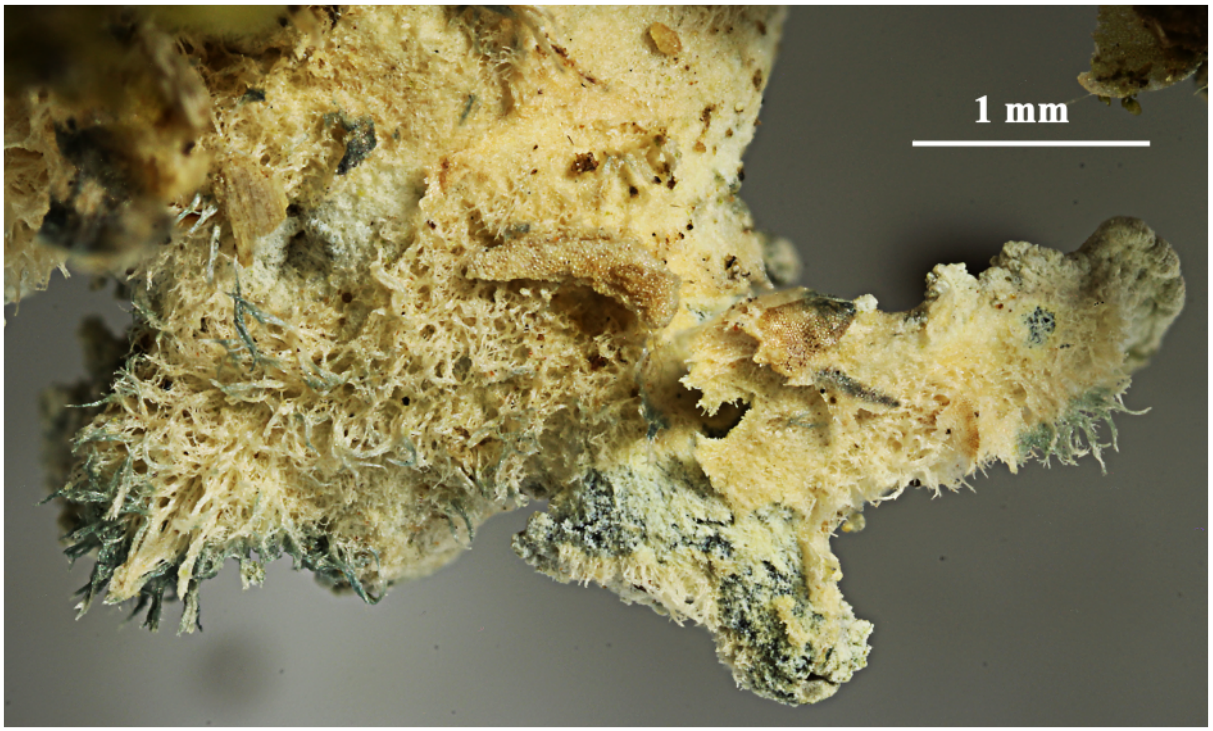
[16236], Australia, New South Wales, between Bermagui and Tathra, trail from Aragunnu Beach to Mimosa Rocks, 36.585° S, 150.056° E, 10 m, growing on bark. Leg. F. Schumm & E. Stocker-Wörgötter, 12.11.2009.

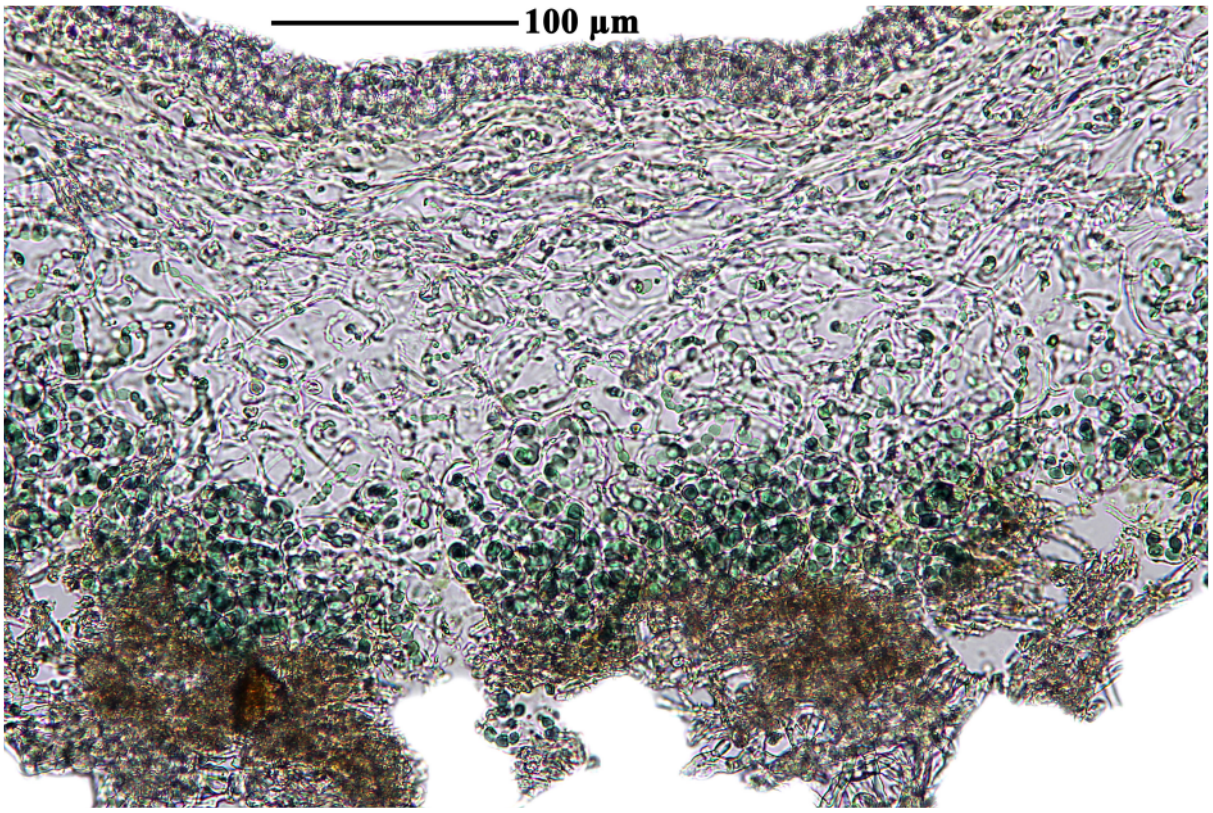




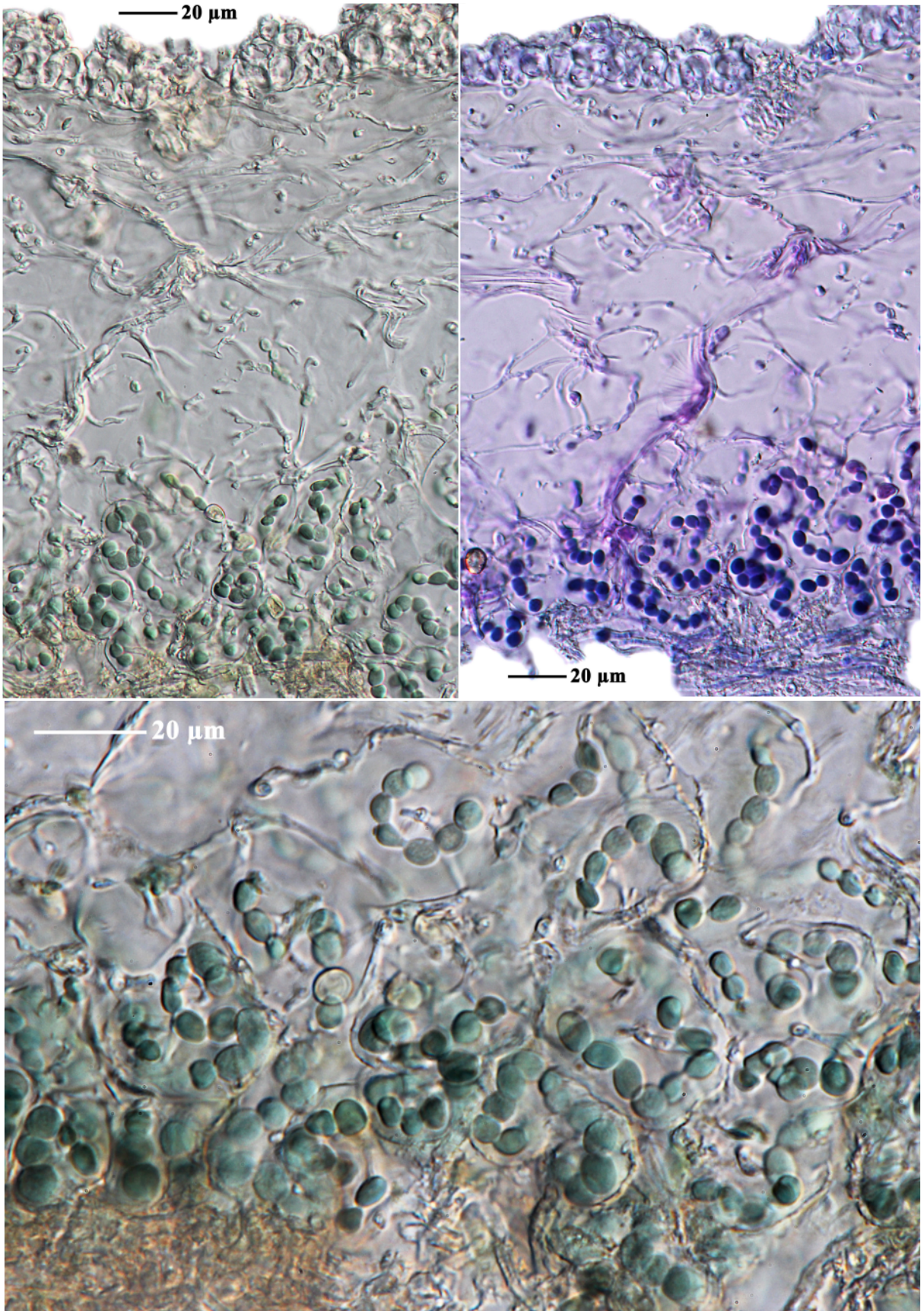


Pannaria fulvescens

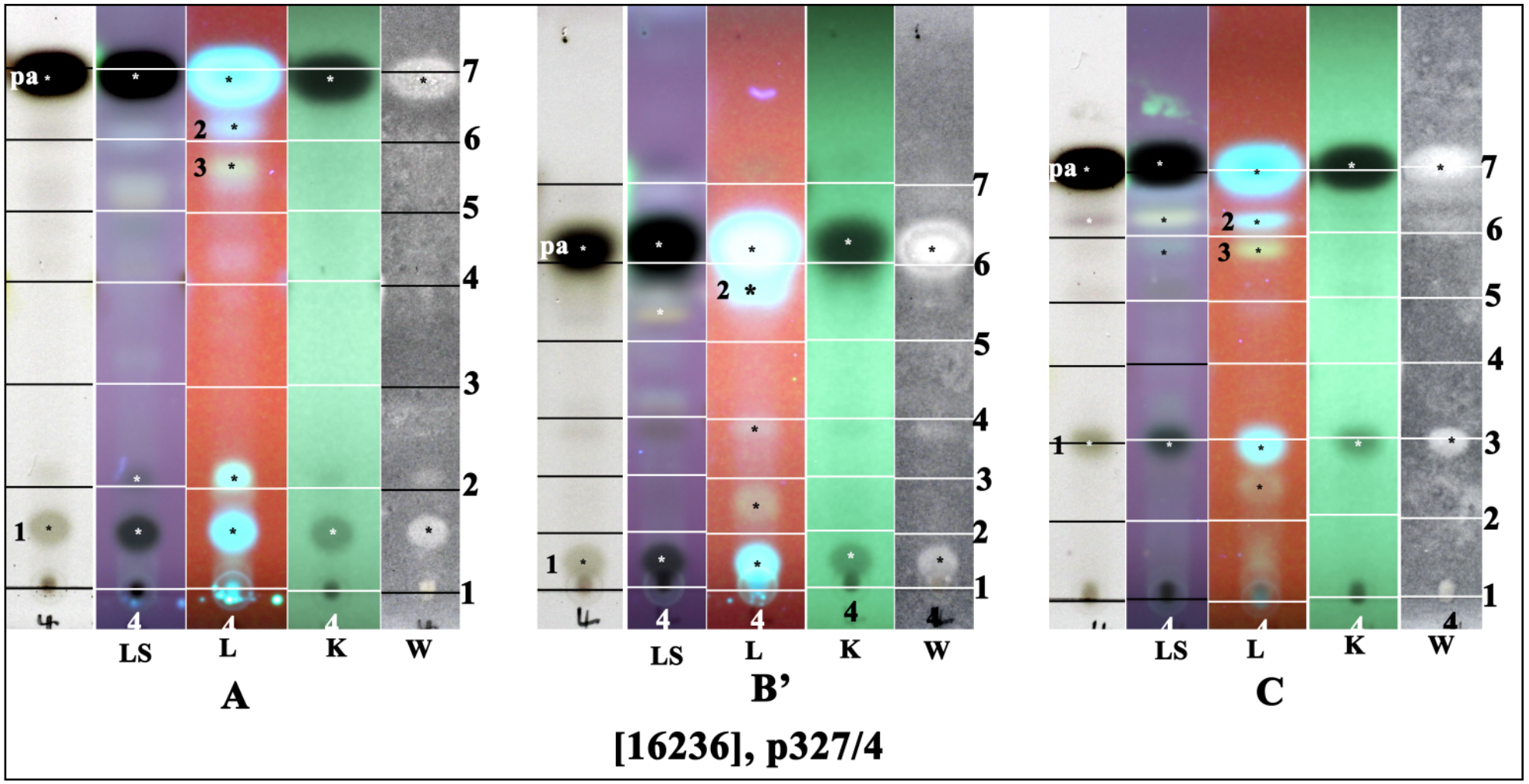




Pannaria fulvescens



Pannaria fulvescens

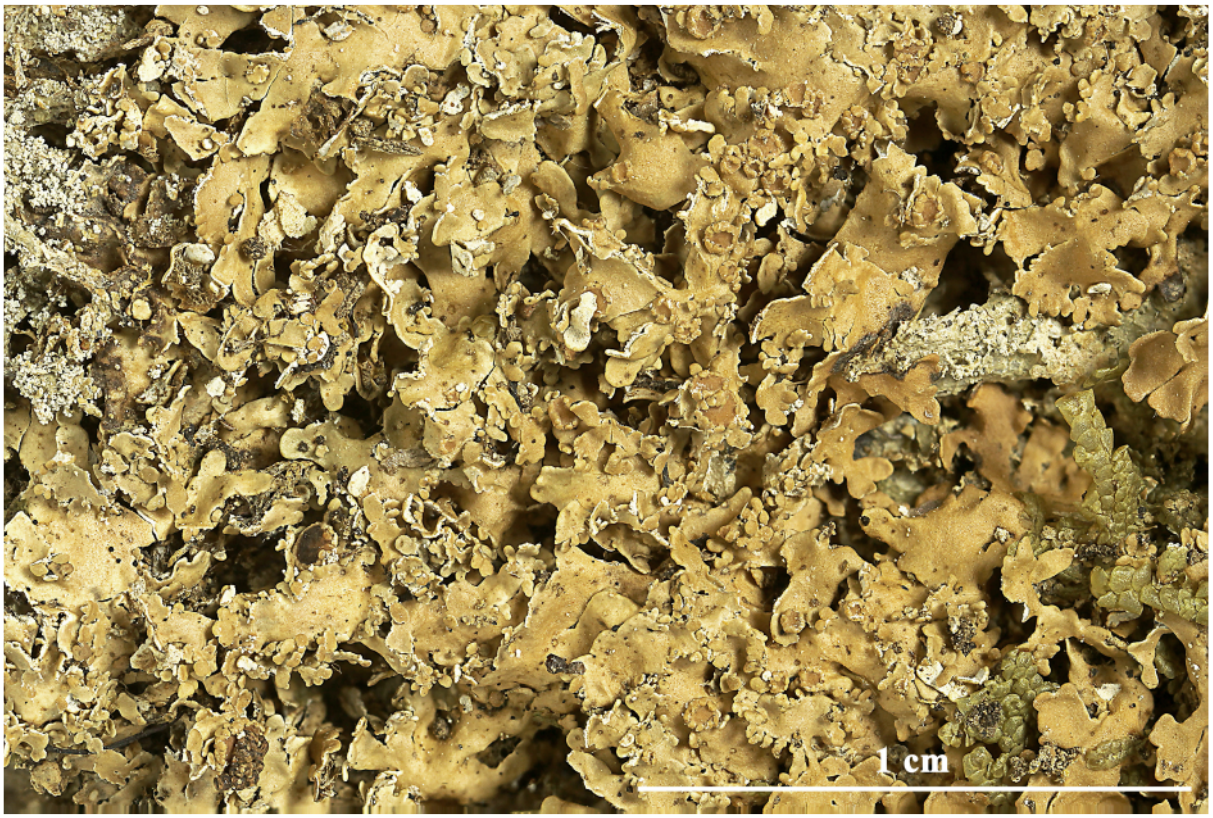


pa: pannarin, 1: norpannarin, 2: dechloropannarin, 3: unknown

Pannaria phyllidiata Elvebakk

Lobes 6-10 mm long, to 2 mm wide, discrete or imbricate centrally. Thallus with marginal and laminal phyllidia. Phyllidia simple, delicately granular to lobulate at first, ±terete, globose, uniformly corticate, becoming flattened, ±dorsiventral with age, with a white, ecorticate lower surface, ±squamiform at maturity. Ascospores hyaline, non-septate, ellipsoid to weakly citriform, 14-19 x 8-11 µm. Perispores distinctly verrucose when mature. Chemistry: vicanicin, pannarin or vicanicin alone. Lit. Lumbsch et al (2011): Phytotaxa 18:

[19224], Australia, New South Wales, Big Badja Hill, 44 km south-west of Araluen, 36°00' S, 149°34' E, 1250 m, growing on lower trunk of *Eucalyptus* in wet sclerophyll forest on moderate slope. Leg. H. Streimann (39881A), 25.09.1988. Chemistry: vicanicin (major), by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 217. Distributed as ***Psoroma microphyllizans*** (Nyl.) D.J.Galloway

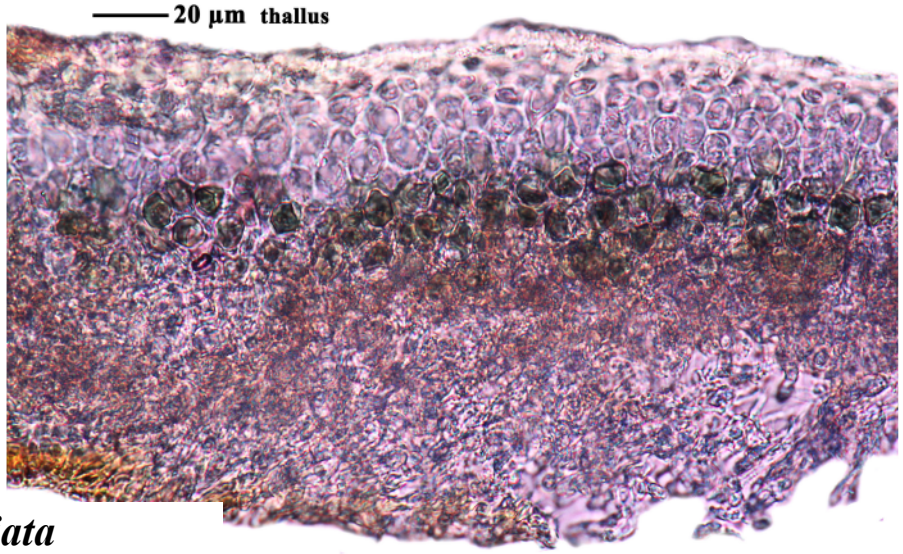




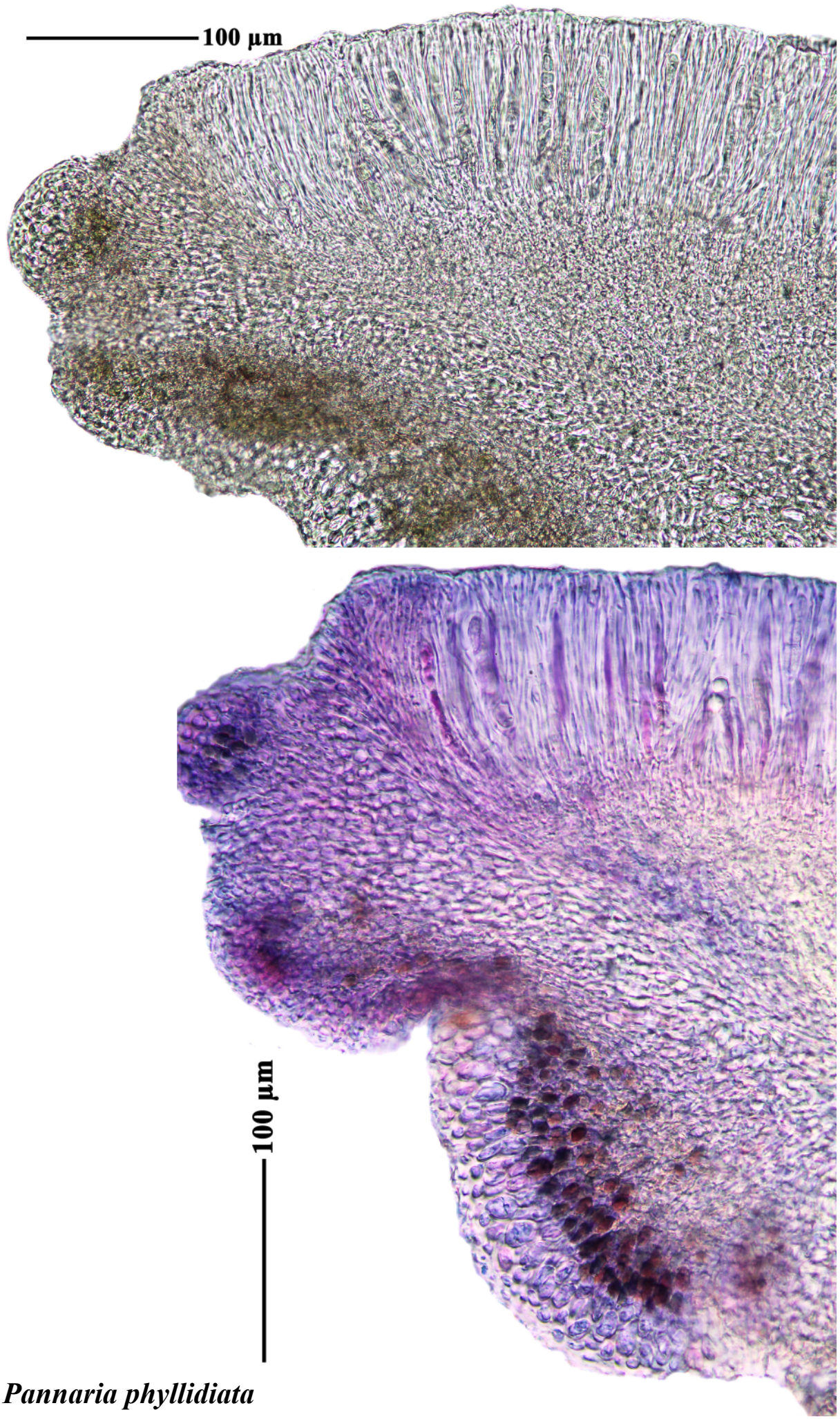
Pannaria phyllidiata







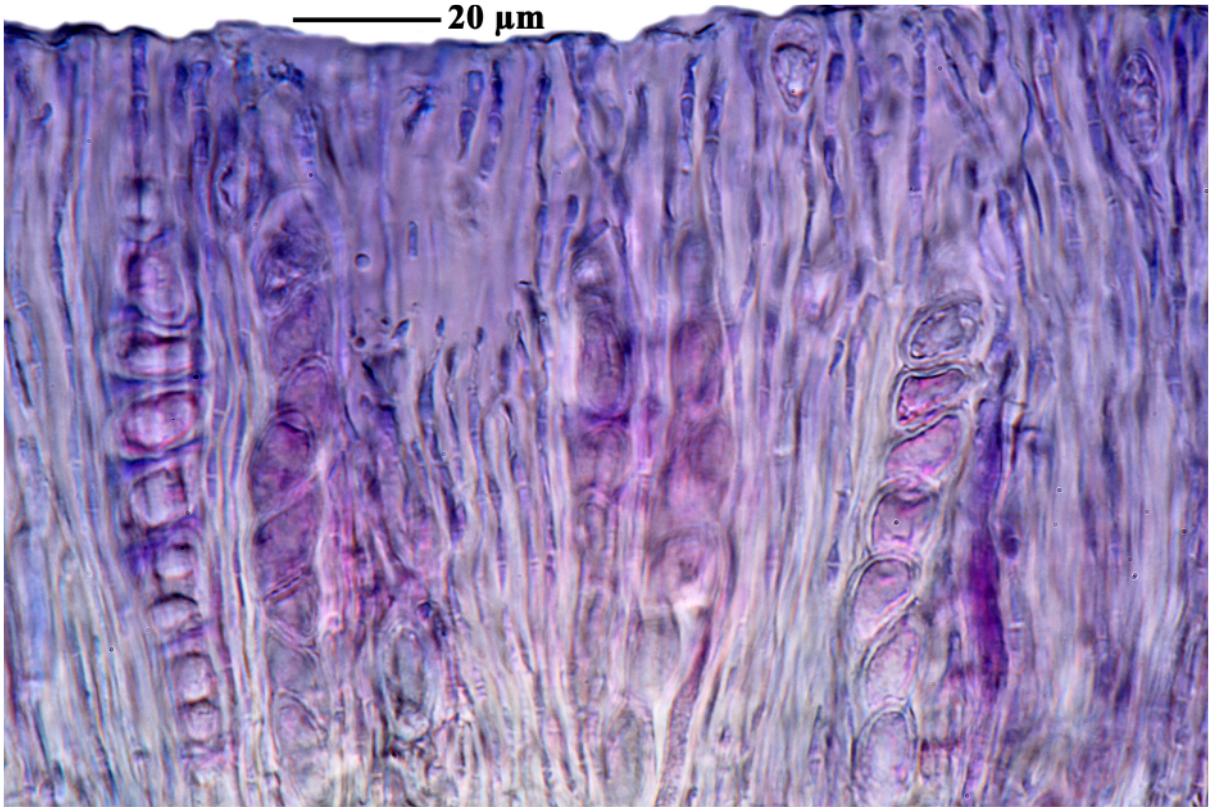
Pannaria phyllidiata

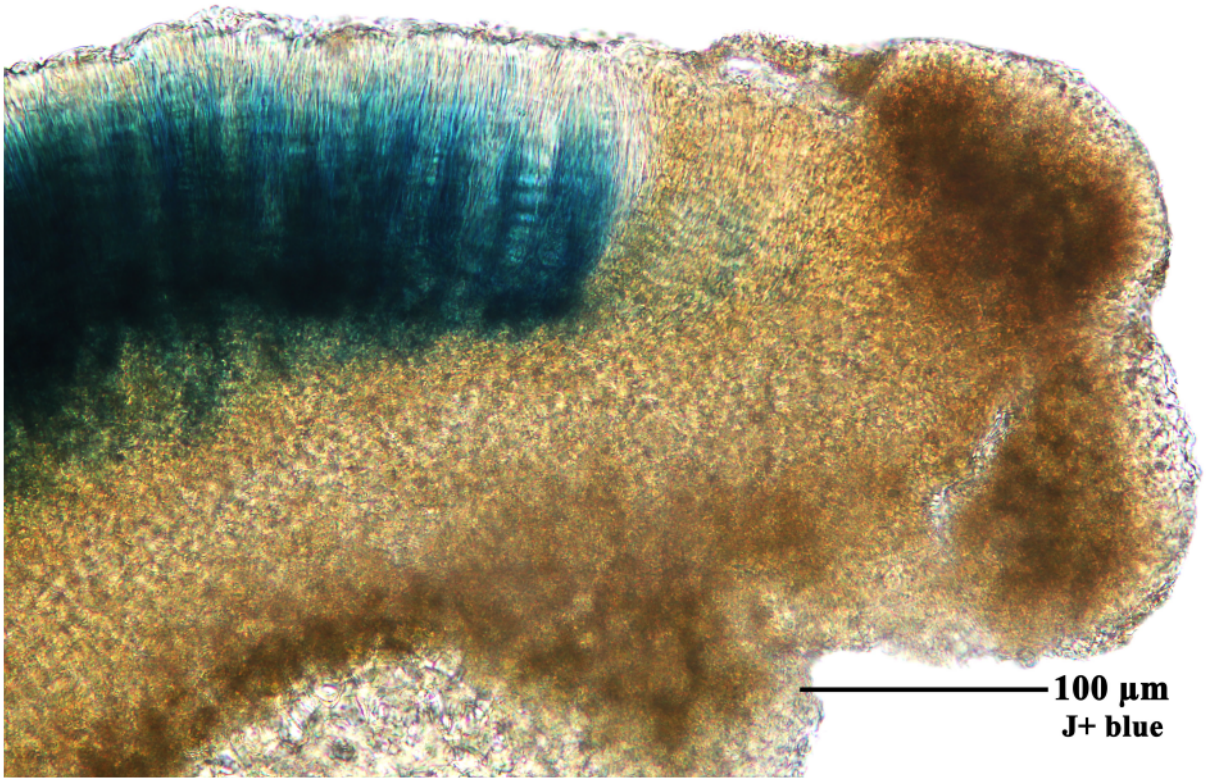


Pannaria phyllidiata

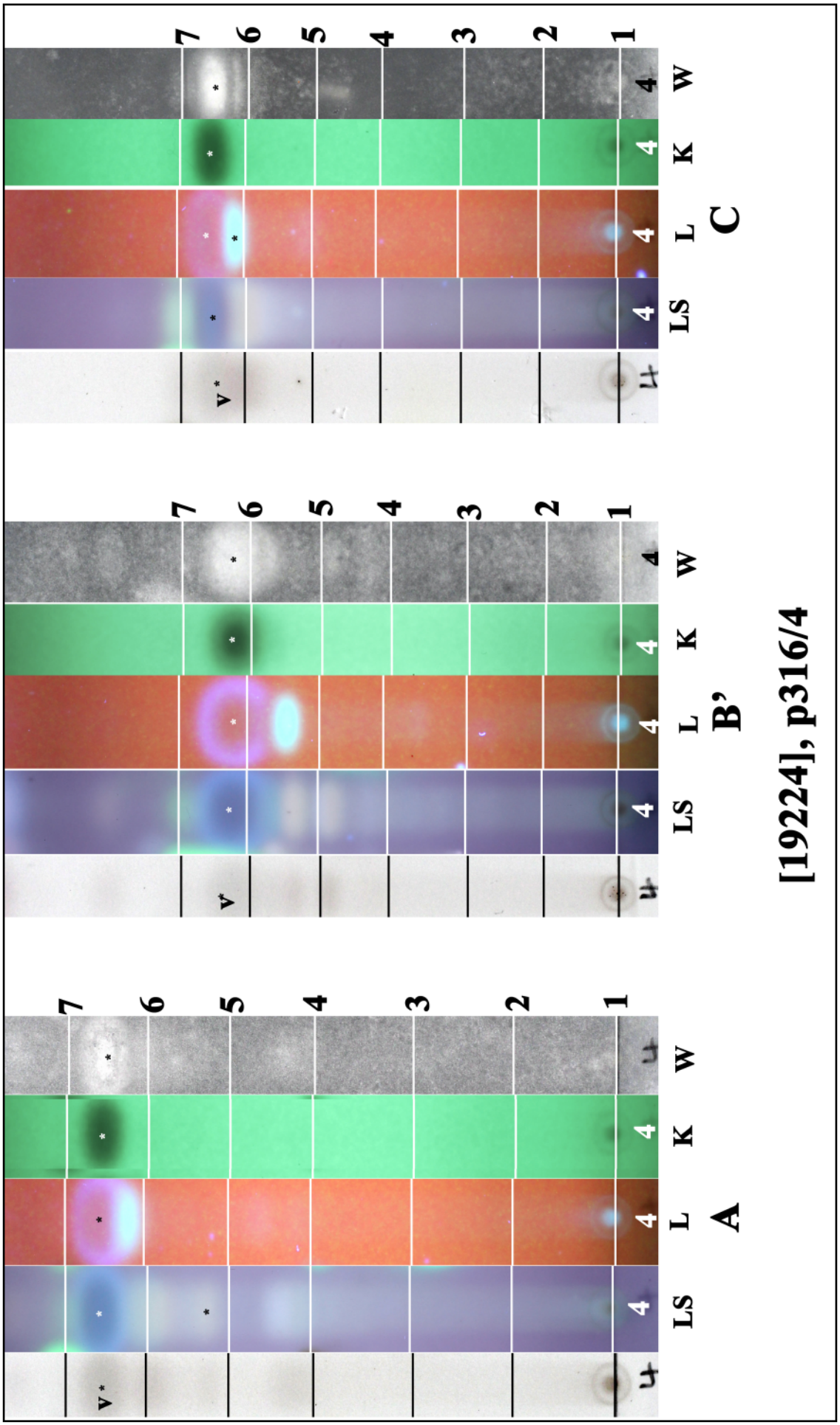


Pannaria phyllidiata





Pannaria phyllidiata



Pannaria phyllidiata

This book includes photographs of a selection of typical Australasian lichens, many of which have been distributed in the LICHENES AUSTRALASICI EXSICCATI (issued by J.A. Elix 1982-1994) as well as some additional species. In addition to the overall images, photographs of selected stained and unstained sections, spores and HPTLC-plates are included. The goal was to make images of these lichenological treasures available to a wider circle of interested people. We hope that the images will complement the literature and aid in the determination of Australasian lichen species.

CONTENTS

VOLUME ONE
Preface..... 1 - 3
Acarospora - Pannaria..... 4 - 665
ISBN: 978-3-7386-8386-9

VOLUME TWO
Pannoparmelia-Xanthoria ..... 666 - 1311
Herbarnumbers 1312
Literature.....1313 - 1316
Index to species and synonyms .....1317 - 1327
ISBN: 978-3-7386-8387-5