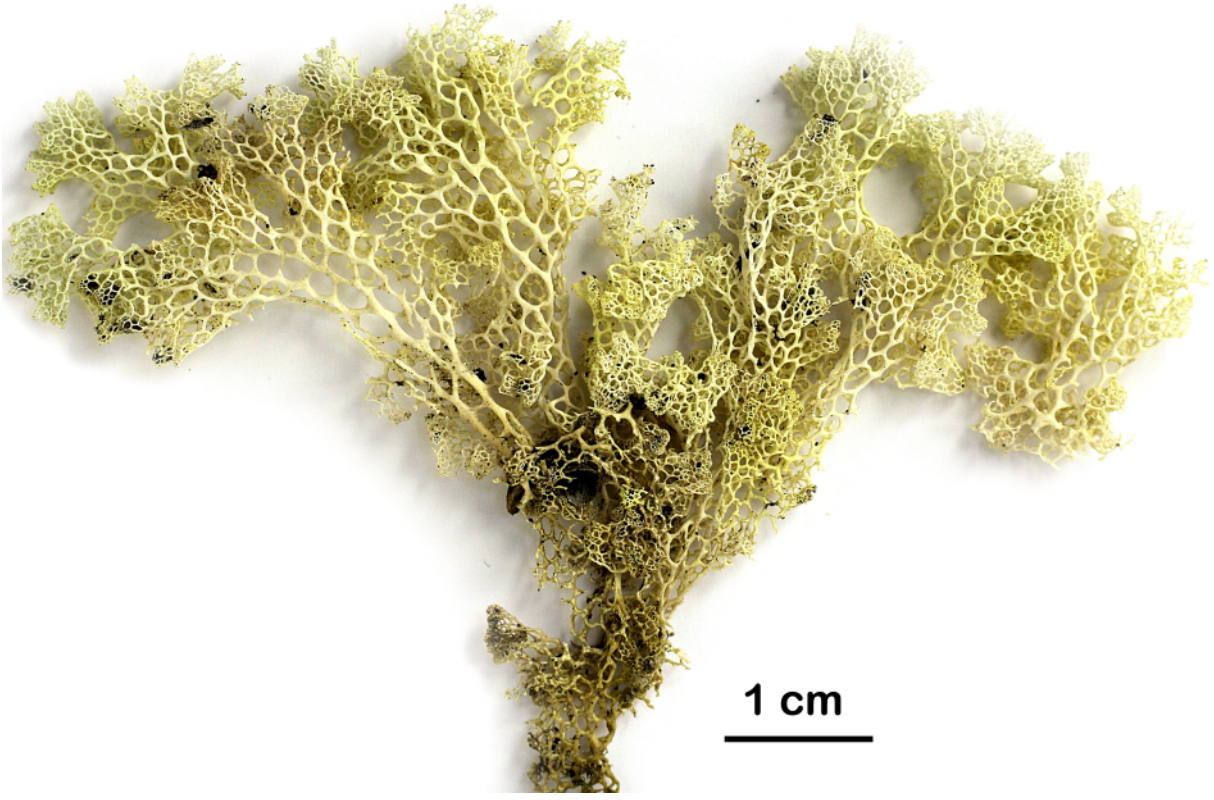
Felix Schumm & John A. Elix

Images from Lichenes Australasici Exsiccati and of other characteristic Australasian Lichens



VOLUME TWO

Felix Schumm & John A. Elix

Images from Lichenes Australasici Exsiccati and of other characteristic Australasian Lichens

VOLUME TWO

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1. Auflage 2014
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Herstellung und Verlag: Books on Demand GmbH, Norderstedt
ISBN: 978-3-7386-8387-5

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Pannoparmelia angustata (Pers.) Zahlbr.
[= ***Parmelia angustata*** Pers.]
[= ***Anzia angustata*** (Pers.) Müll.Arg.]

Thallus loosely adnate, lacking isidia and soredia. Lower surface white, with a thick, spongy, pale brown to black hypothallus. Apothecia up to 1 cm wide. Ascopores 6-6.5 x 5-6 µm, hyaline, 8/ascus. Chemistry: cortex K-, medulla K-, C-, KC-, P-; usnic acid, divaricatic acid.

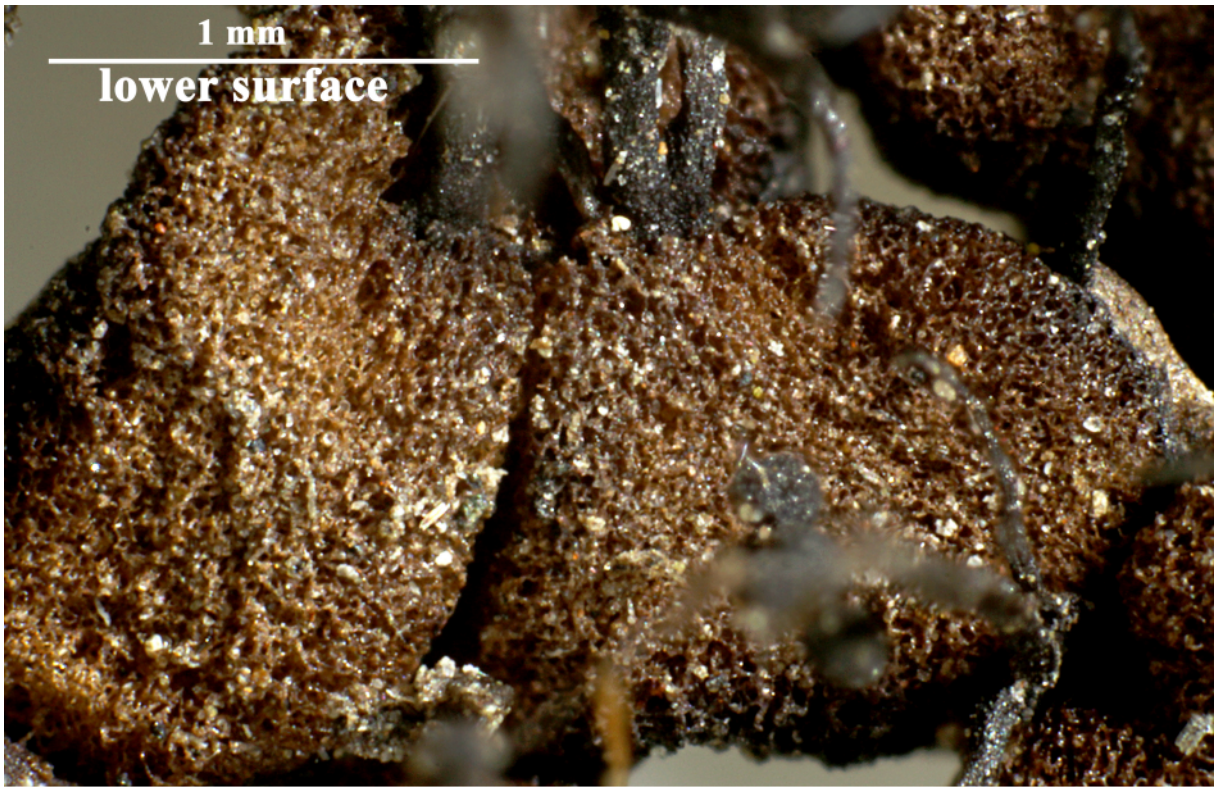
[19092], Australia, Australian Capital Territory, Molonglo Gorge Reserve, 14 km east of Canberra, 35°16' S, 149°,16' E, 650 m, growing on *Callitris endlicheri* in dry sclerophyll forest. Leg. J.A. Elix (11750) & J. Johnston 31.05.1984. LICHENES AUSTRALASICI EXSICCATI NO. 051.

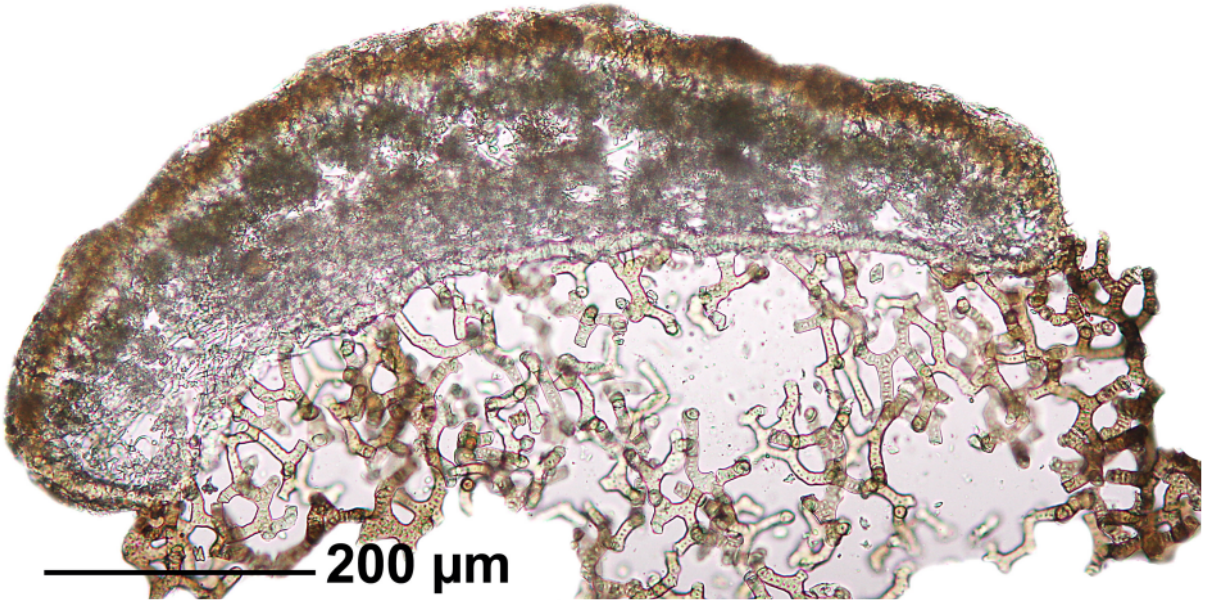


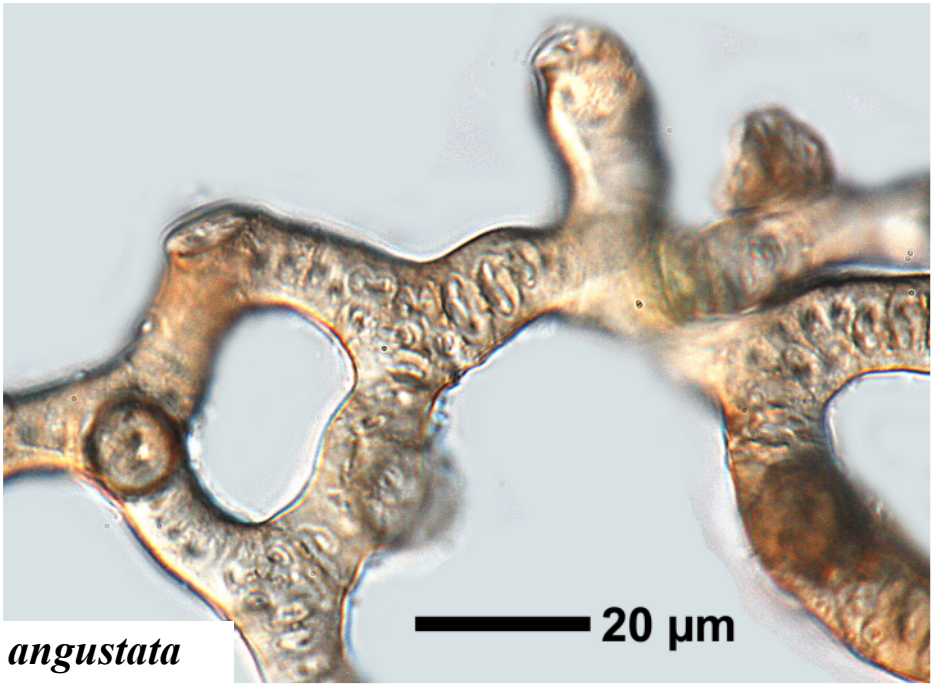




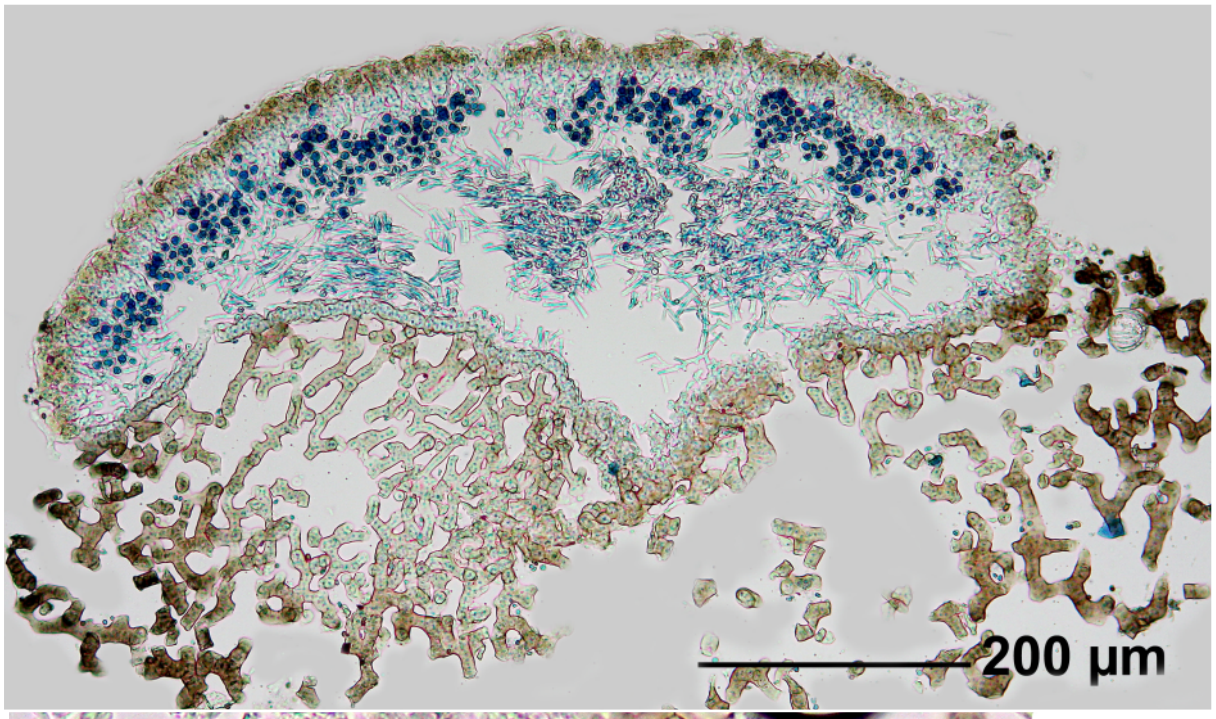
Pannoparmelia angustata

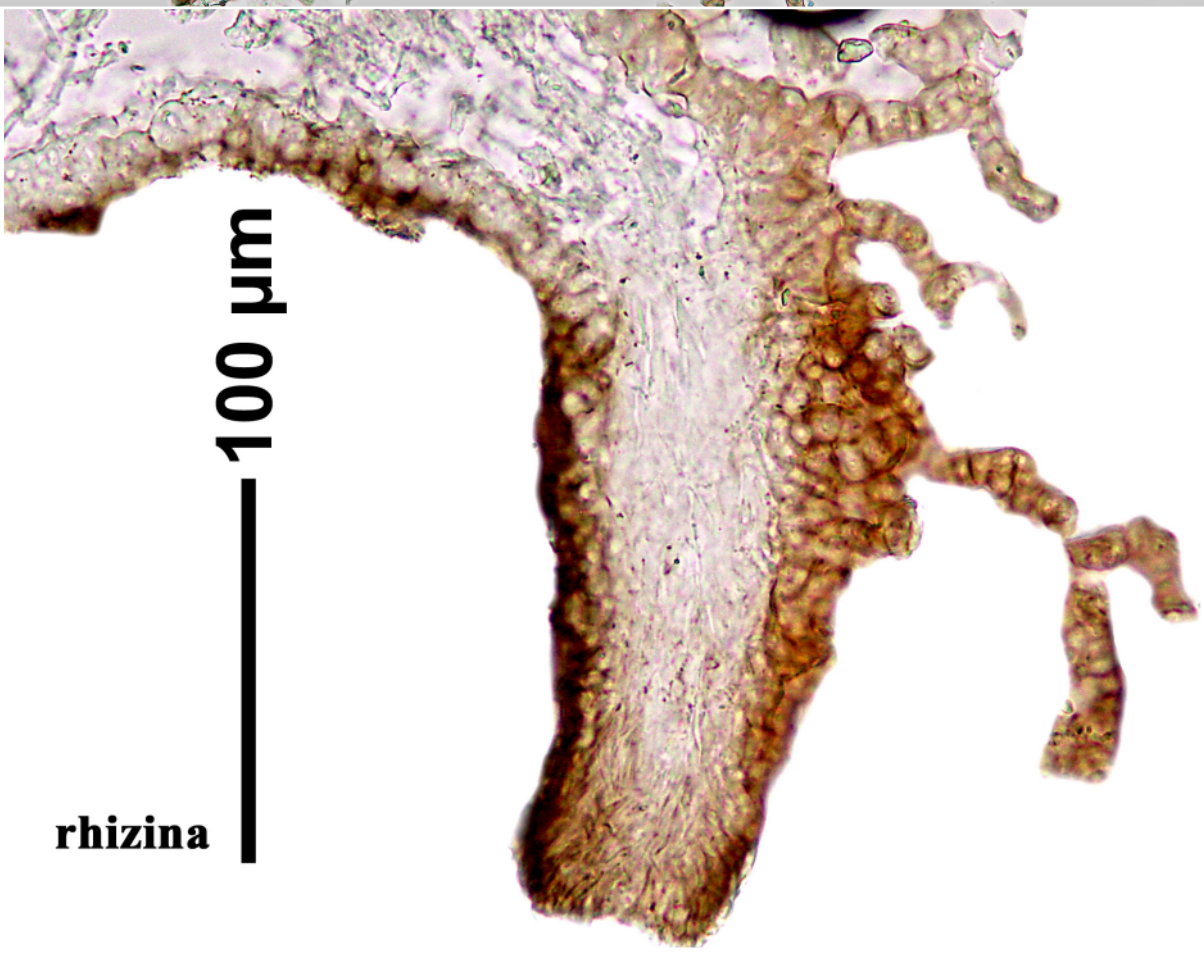




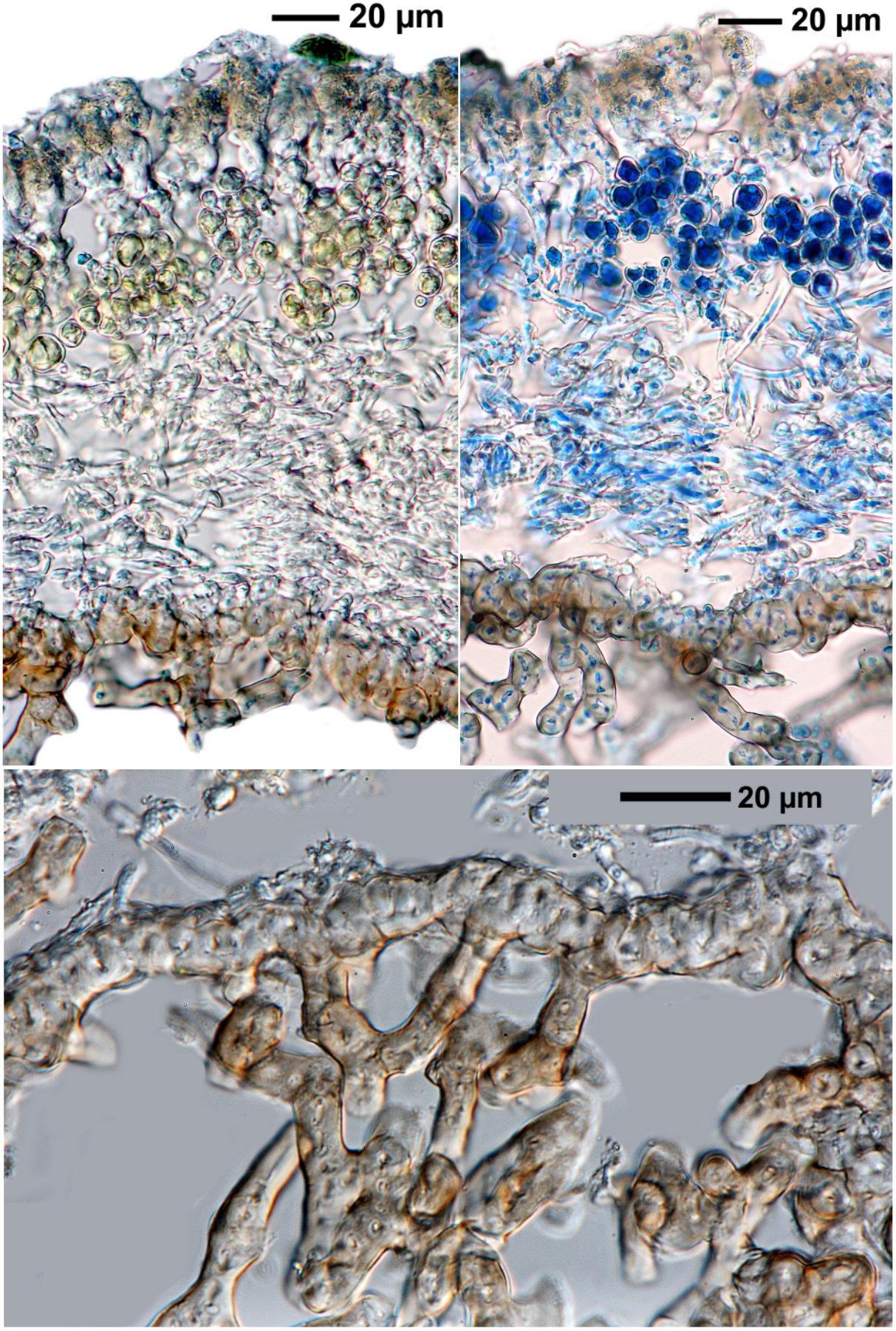


Pannoparmelia angustata

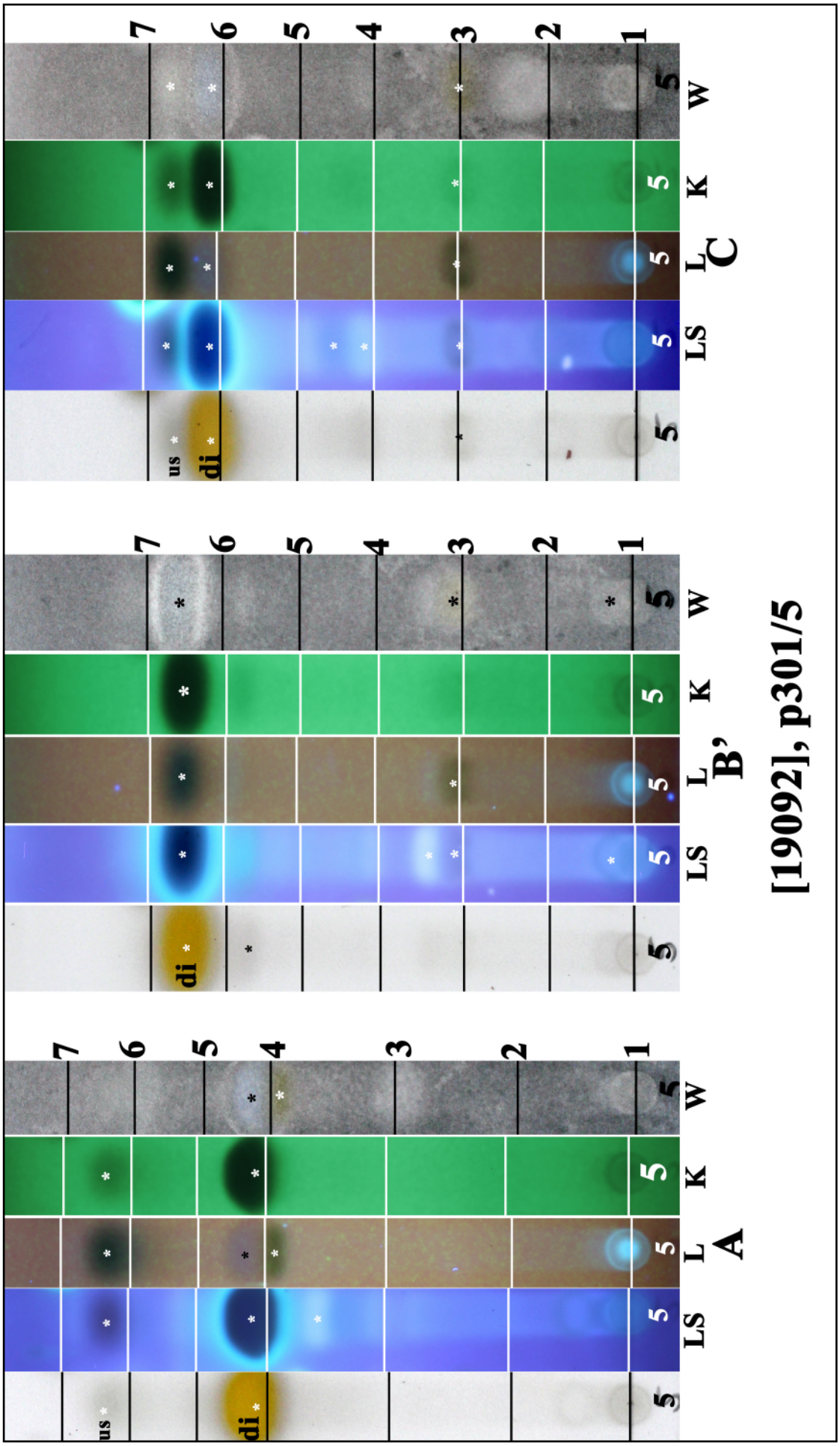




Pannoparmelia angustata



Pannoparmelia angustata



Pannoparmelia angustata

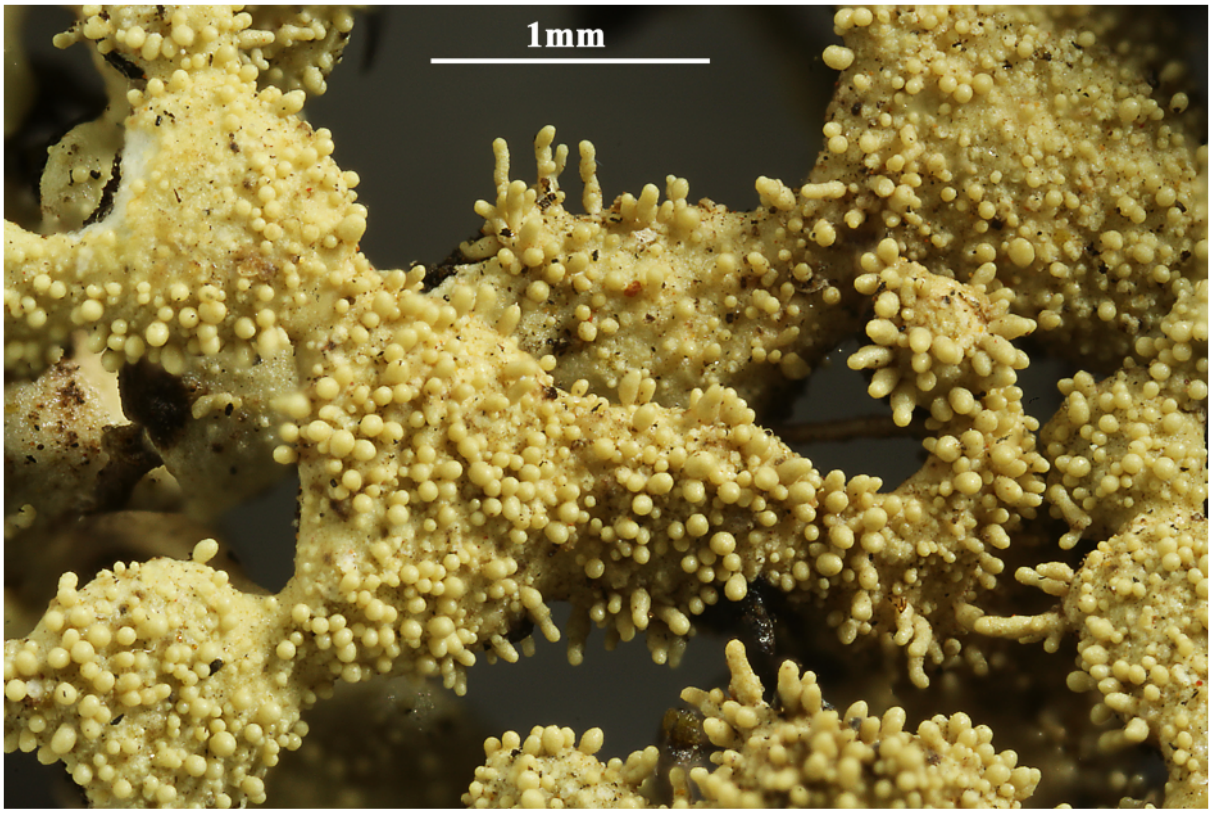
Pannoparmelia wilsonii (Räsänen) D.J.Galloway
[= ***Anzia wilsonii*** Räsänen]

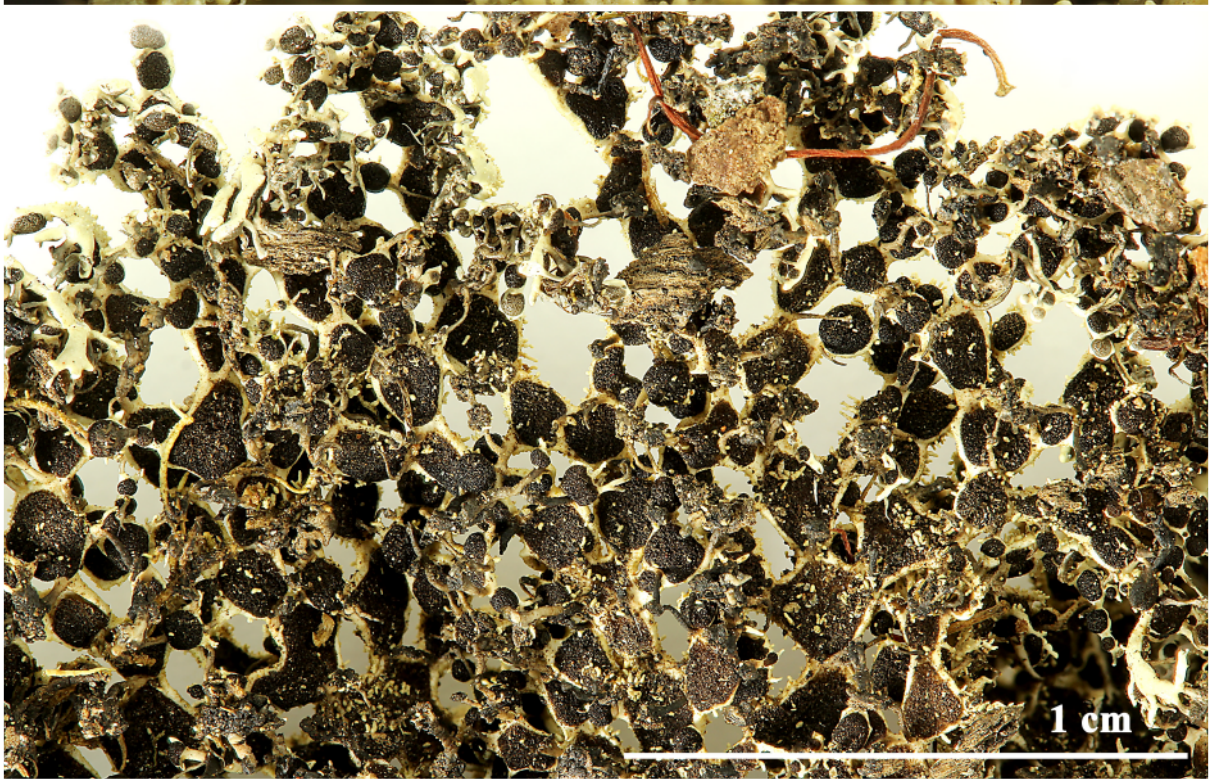
Thallus corticolous, rosette-forming, loosely adnate, 3-5 cm wide. Lobes 0.5-1 mm wide, constricted at branch points, ± imbricate at centre. Upper surface pale yellow, without soredia, maculae or pseudocyphellae. Lamina densely papillose-isidiate; isidia simple, nodular. Lower surface pale yellow, visible between the dark brown patches of the spongy, moniliform hypothallus. Rhizines simple or furcate, black. Apothecia rare. Ascospores hyaline, 8/ascus,10-15 x 4-6 µm. Chemistry: cortex K-; medulla: K-, C-, KC-, P-; usnic acid, divaricatic acid.

[15969], Australia, Western Australia, north-east of Keysbrook, 32.41° S, 116.01° E, 260 m, growing on bark. Leg. Schumm & E. Stocker-Wörgötter, 29.10.2009. Chemistry: usnic acid, divaricatic acid, by TLC, anal. F. Schumm.

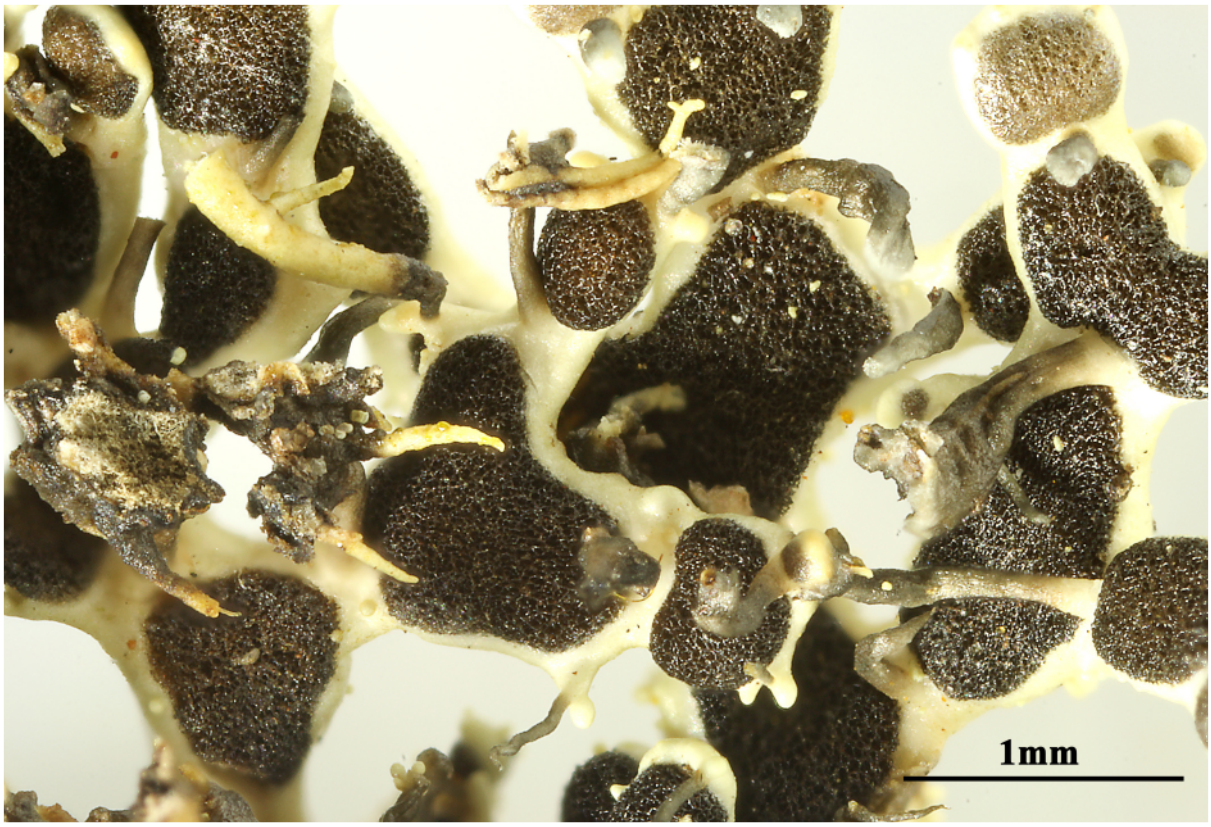






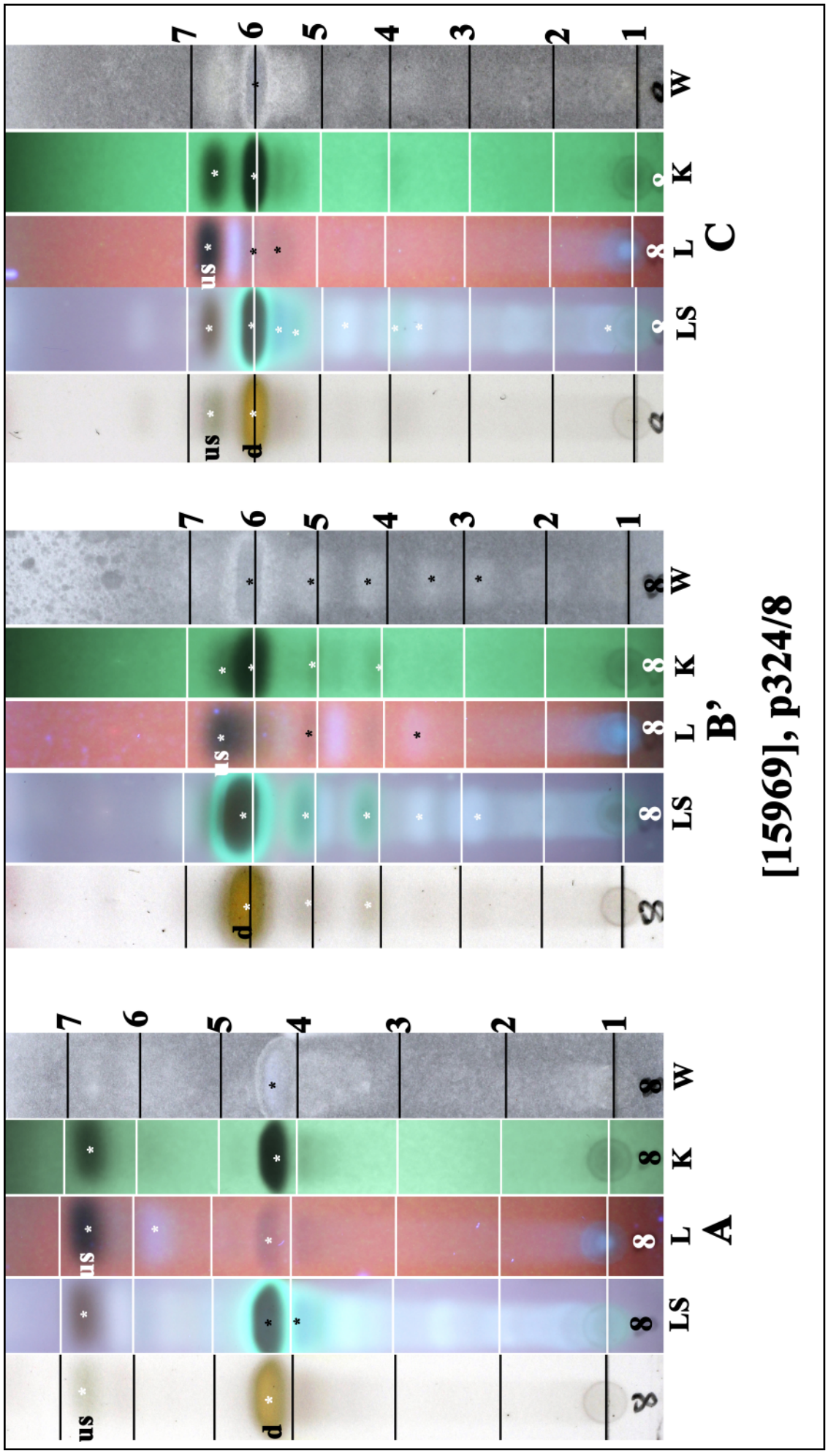


Pannoparmelia wilsonii





Pannoparmelia wilsonii



us: usnic acid, d: divaricatic acid

Pannoparmelia wilsonii

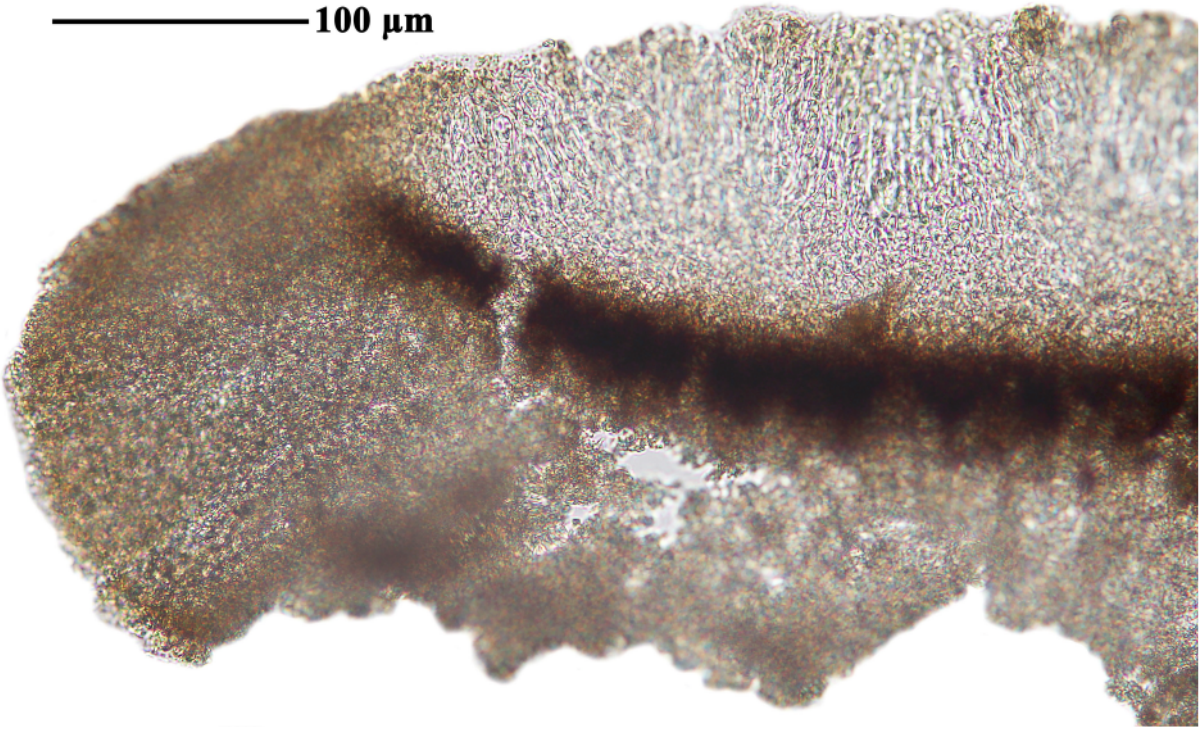
Paraporpidia glauca (Taylor) Rambold
[= ***Lecidea glauca*** Taylor]
[= ***Psora glauca*** (Taylor) Müll.Arg]
[= ***Tremolecia glauca*** (Taylor) Hertel & Schneider]
[= ***Psora psammophila*** Müll.Arg.]

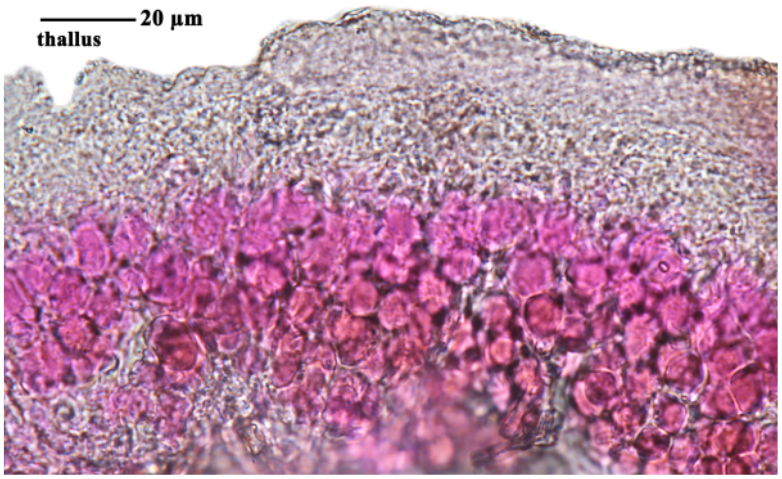
Areoles irregular, whitish to greenish, 0-1.7 mm diam. Medulla I ± violet. Apothecia roundish to irregular, 0.8-2 mm. Disc convex, grey, matt, pruinose. Hypothecium brown to dark brown, 100-200 µm thick. Hymenium 60-100 µm tall, colourless, I ± blue to red. Paraphyses branched and anastomosing. Spores hyaline, simple, 8/ascus, 10-16 x 4.5-7.5 µm. Chemistry: cortex K-, C-, P-; medulla K-, C-, P-. Two chemotypes observed I) confluentic acid (major), 2'-*O*-methylperlatolic acid, 2'-*O*-methylmicrophyllinic acid (minor), II) 2'-*O*-methylperlatolic acid.

[19095], Australia, Western Australia, Bindoola Creek, Gibb River Road, 53 km south-west of Wyndham, 15°49' S, 127°48' E, 130 m, growing on soil in *Eucalyptus* woodland with large areas of bare, flat, rocky ground. Leg. J.A. Elix (27840), H.T. Lumbsch & H. Streimann, 10.07.1991. Chemistry: 2'-*O*-methylperlatolic acid by HPLC, TLC, anal J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 263.

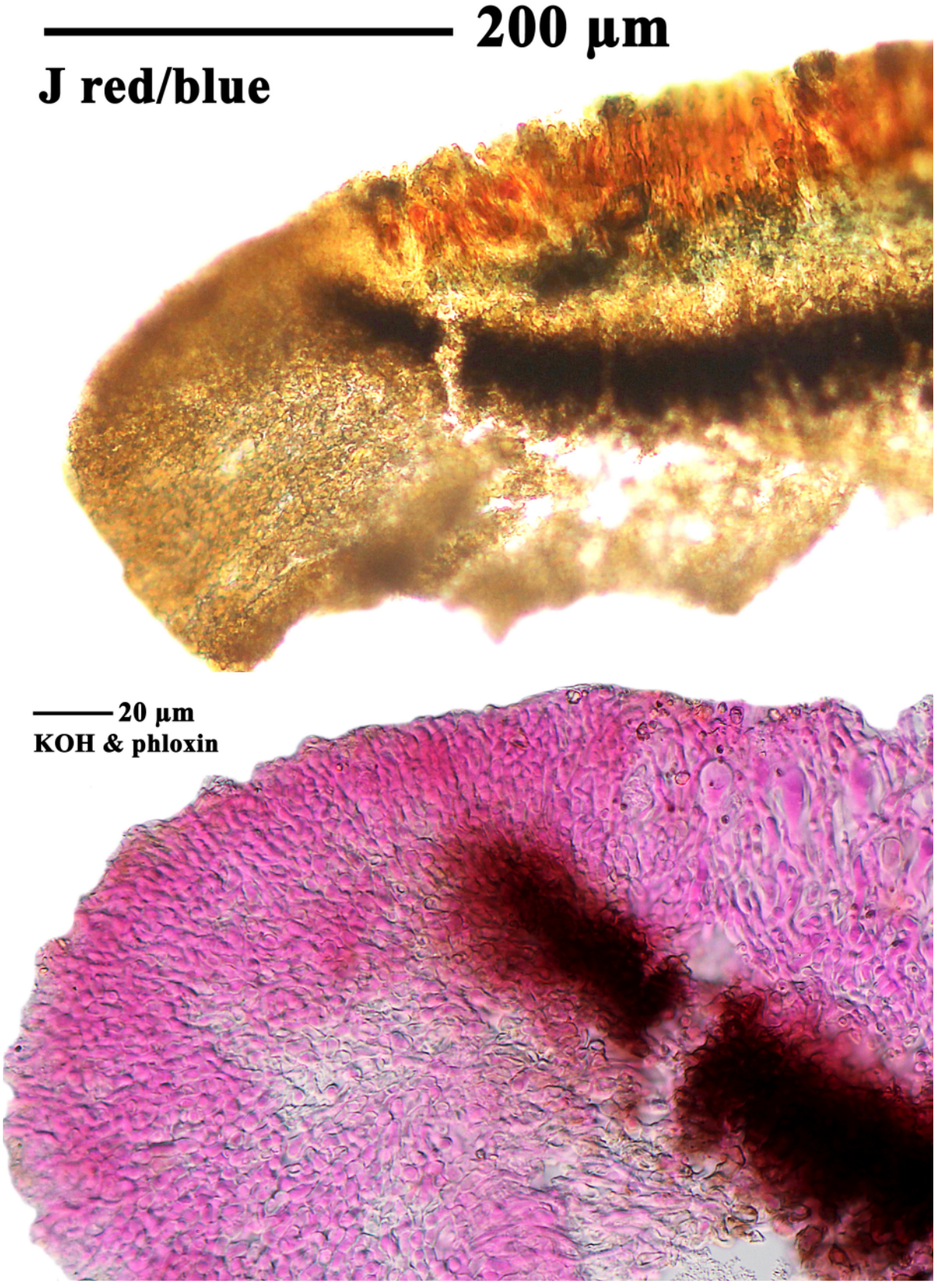




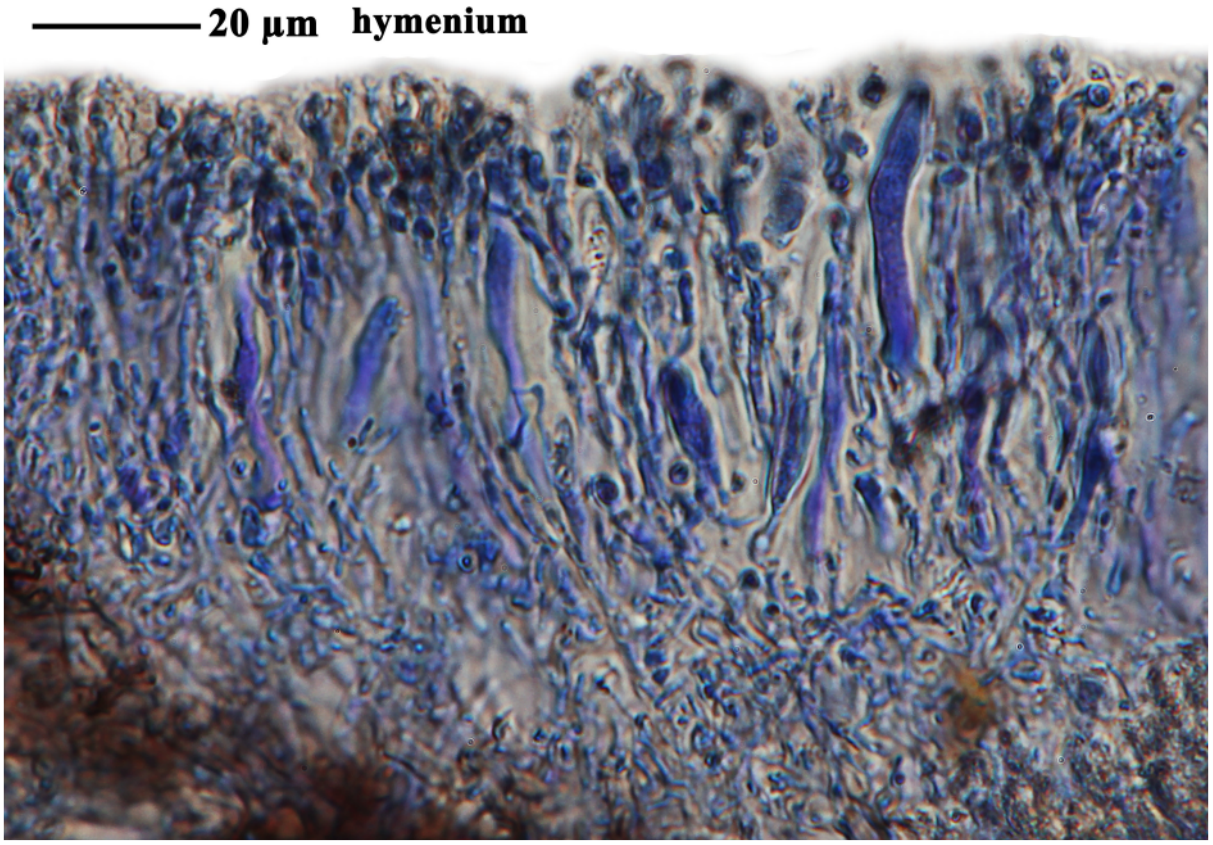


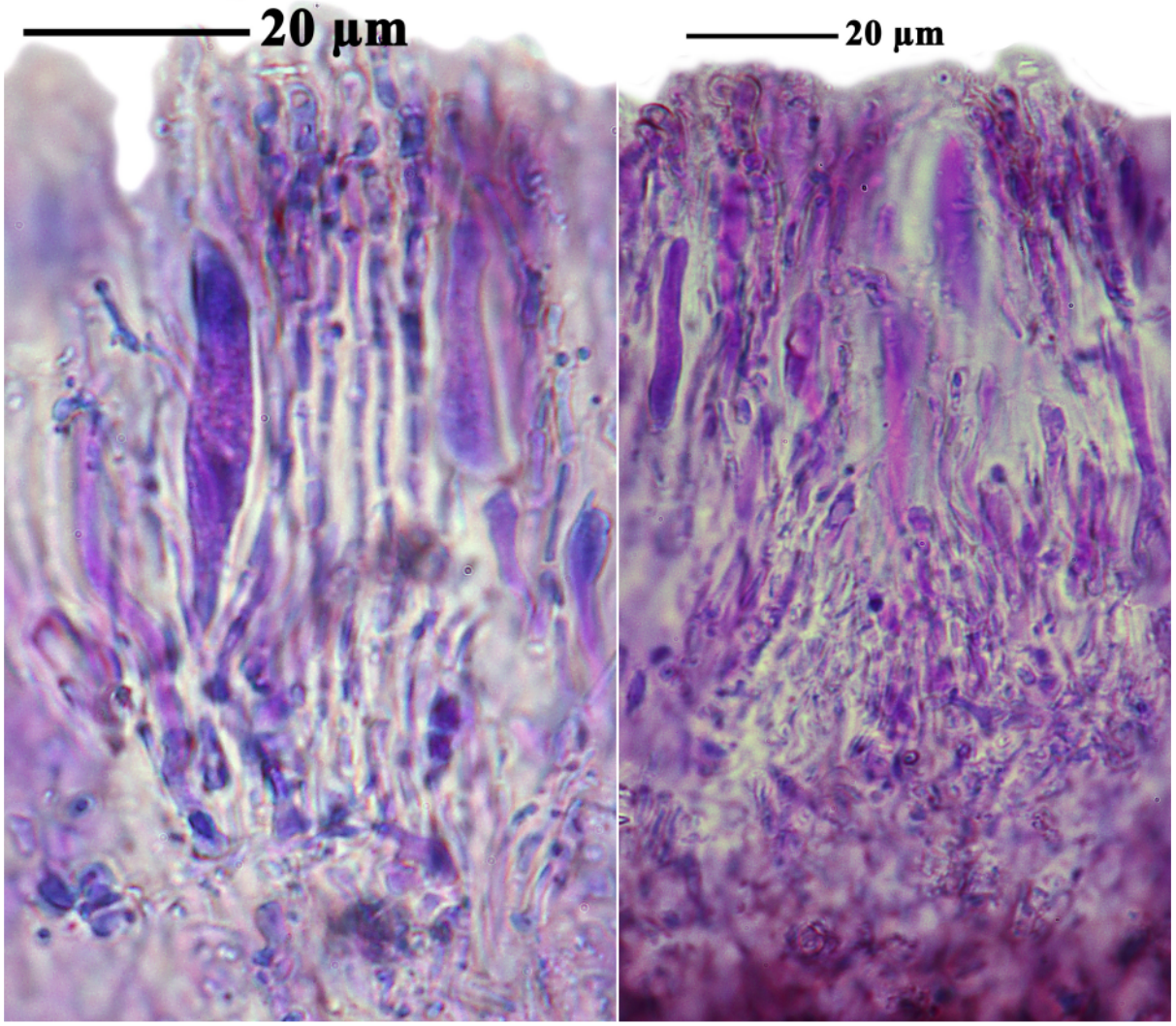


Paraporpidia glauca

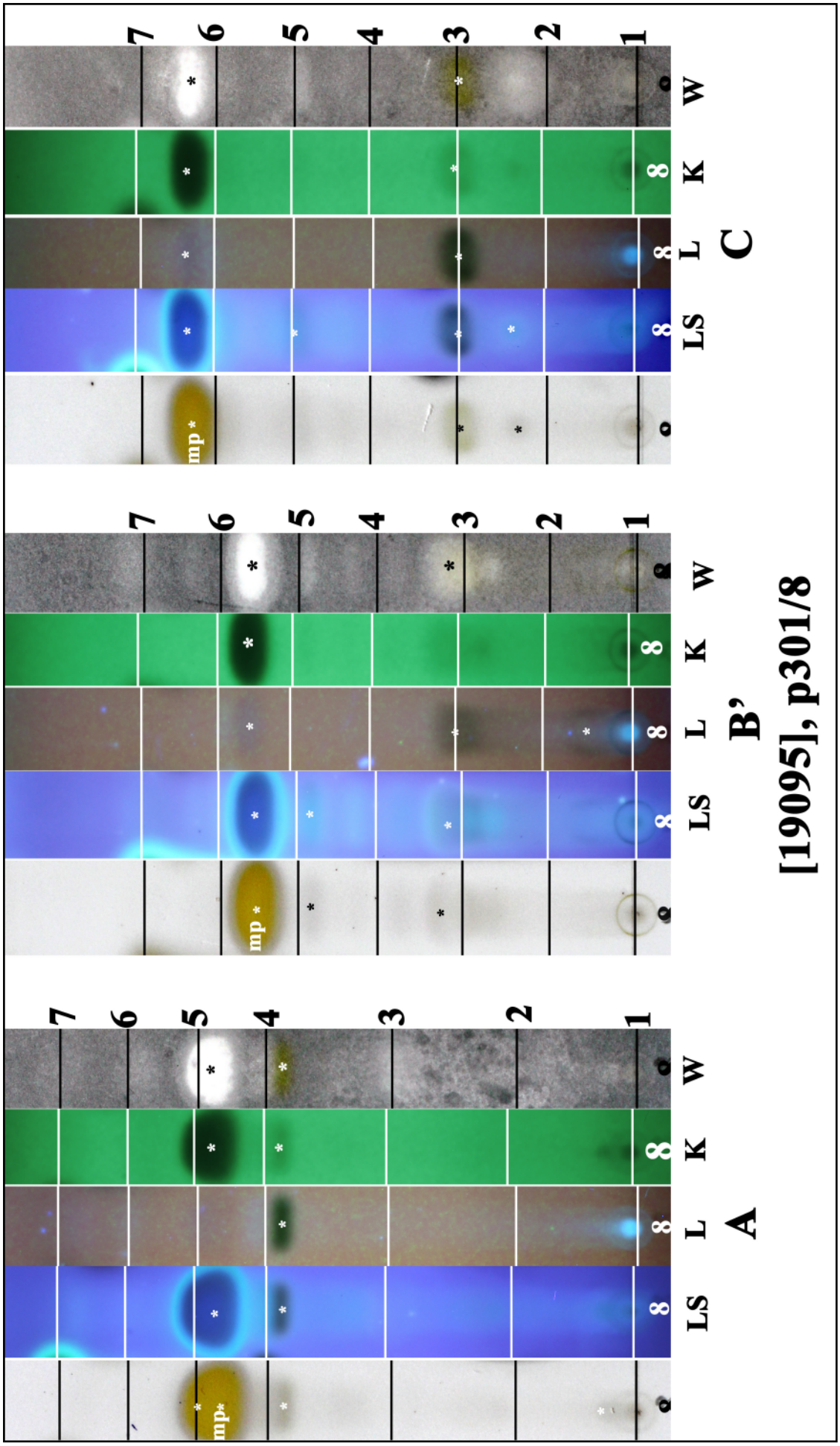


Paraporpidia glauca





Paraporpidia glauca



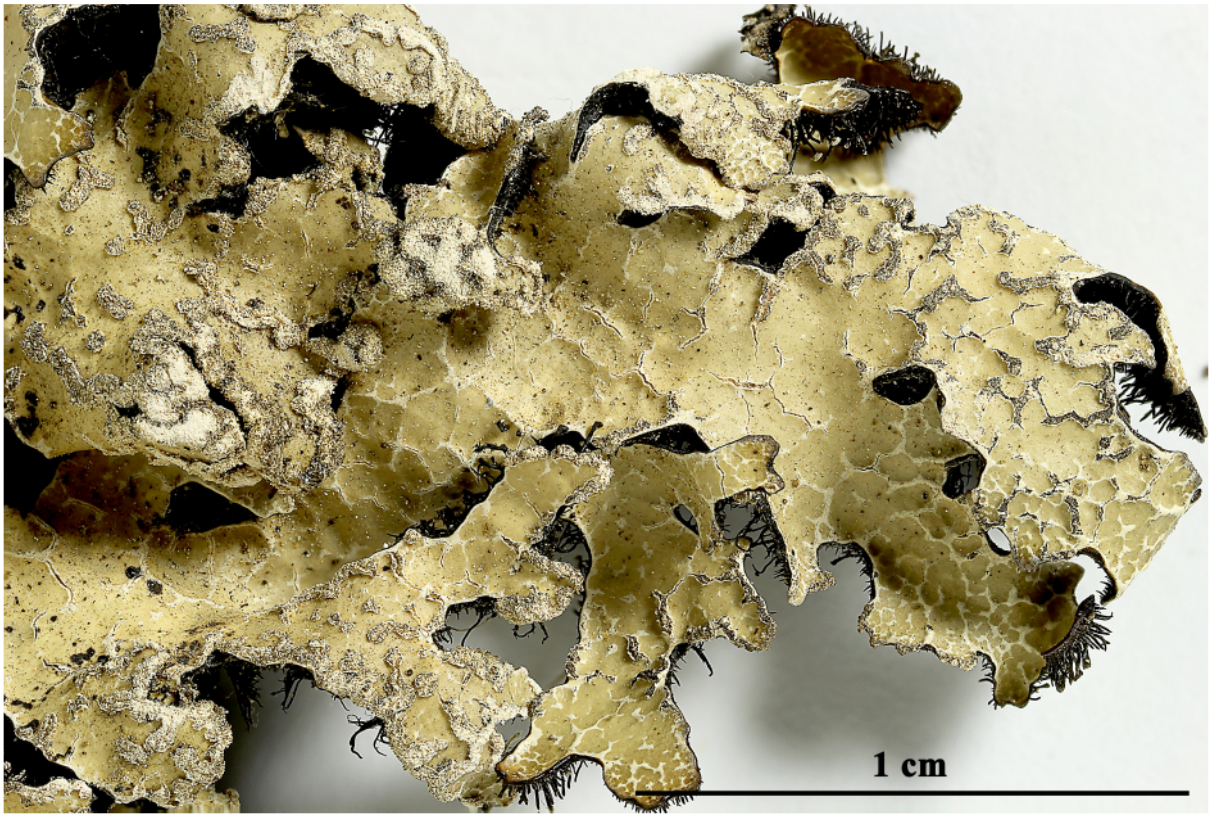
mp: 2'-*O*-methylperlatolic acid

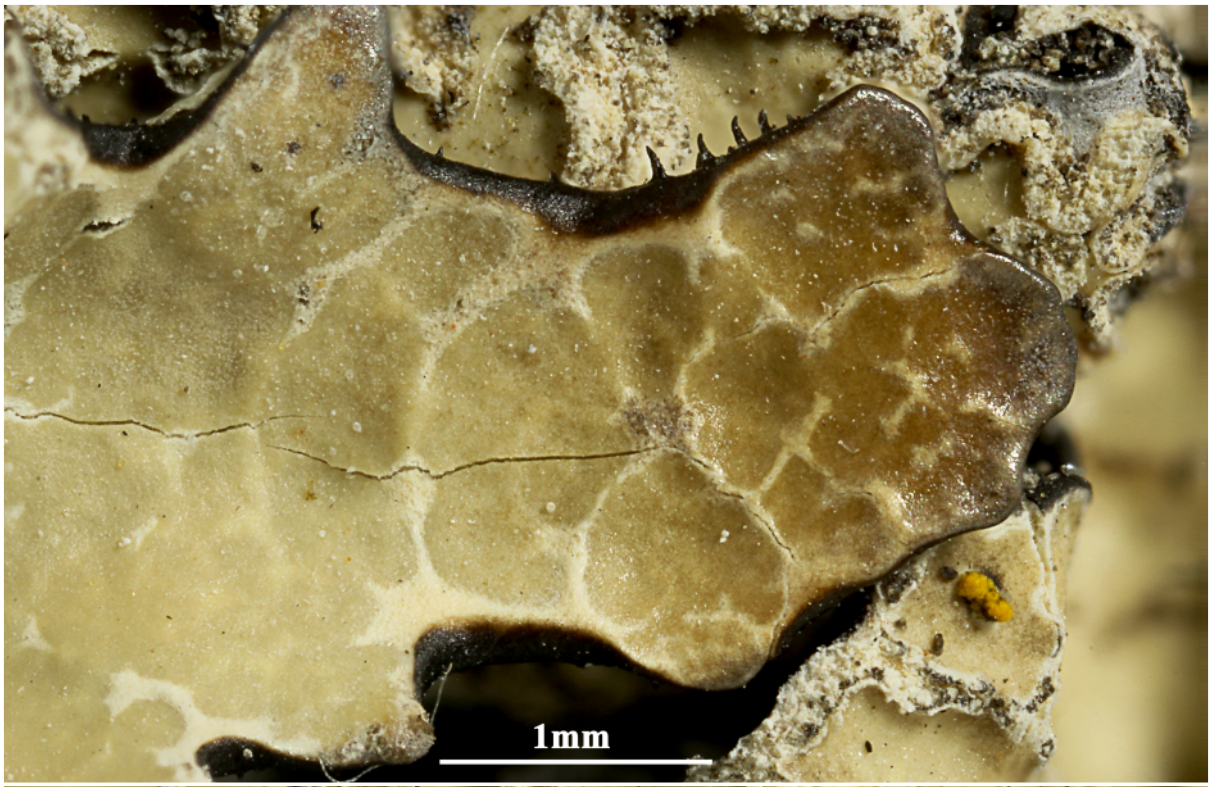
Paraporpidia glauca

Parmelia sulcata Taylor

Thallus loosely adnate to adnate. Lobes crowded to imbricate, sublinear, 2-5 mm wide. Upper surface greenish to whitish grey, maculate, becoming strongly foveolate, continuous to irregularly cracked with age, without isidia; pseudocyphellae laminal and marginal, effigurate, forming ridges, soon becoming sorediate; soralia along ridges. Lower surface black, densely rhizinate; rhizines becoming densely squarrosely branched, to 1 mm long. Apothecia rare, 2-6 mm wide. Ascospores 11-14 x 6-8 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor).

[19104], New Zealand, South Island, Canterbury, 3 km east of Te Oka Peak, Banks Peninsula, 670 m, growing on volcanic rocks and debris in pasture. Leg. J.A. Elix (18971) & J. Johnston, 03.03.1985. Chemistry: atranorin, chloroatranorin, salazinic acid, consalazinic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO: 113.



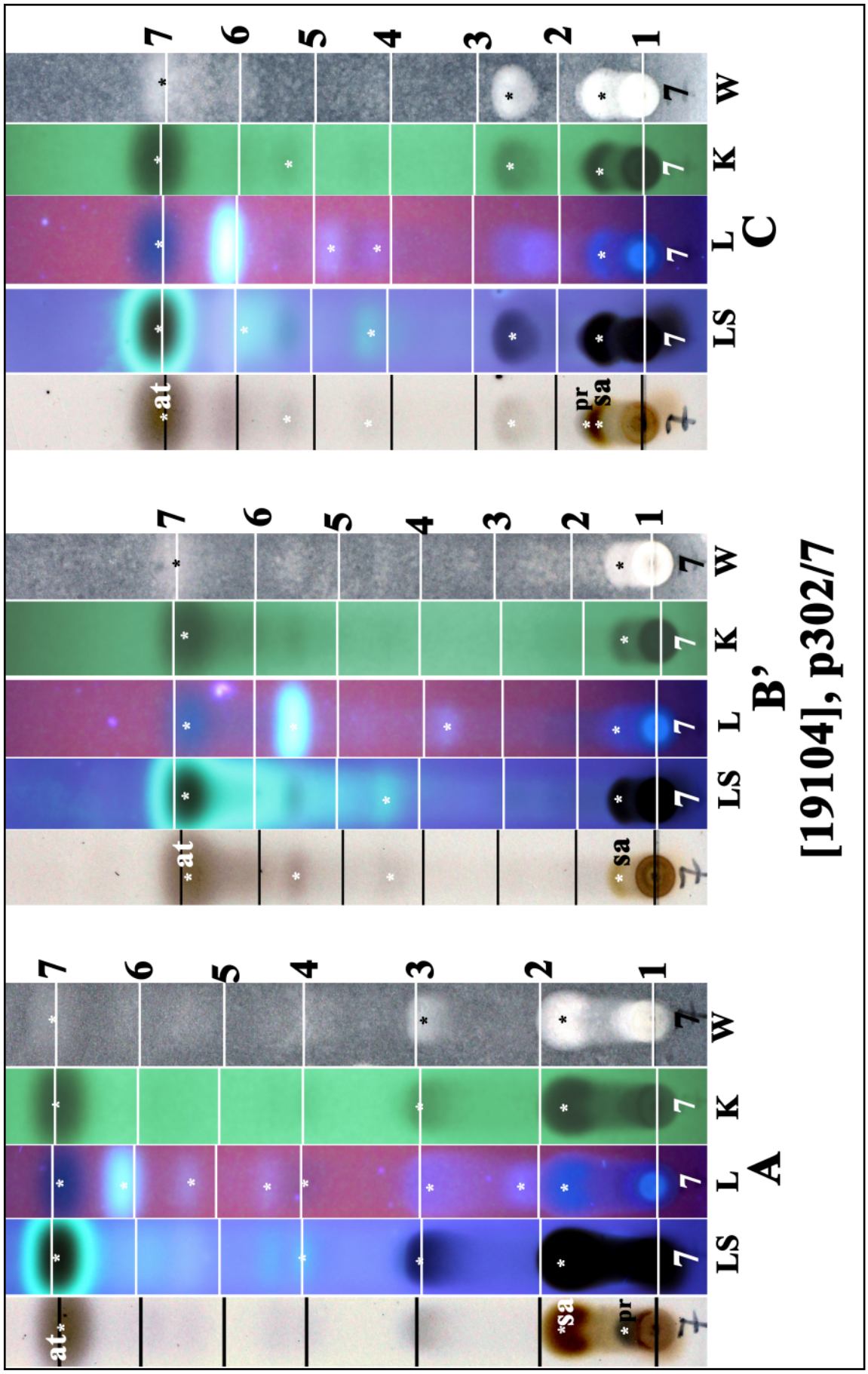




Parmelia sulcata



Parmelia sulcata

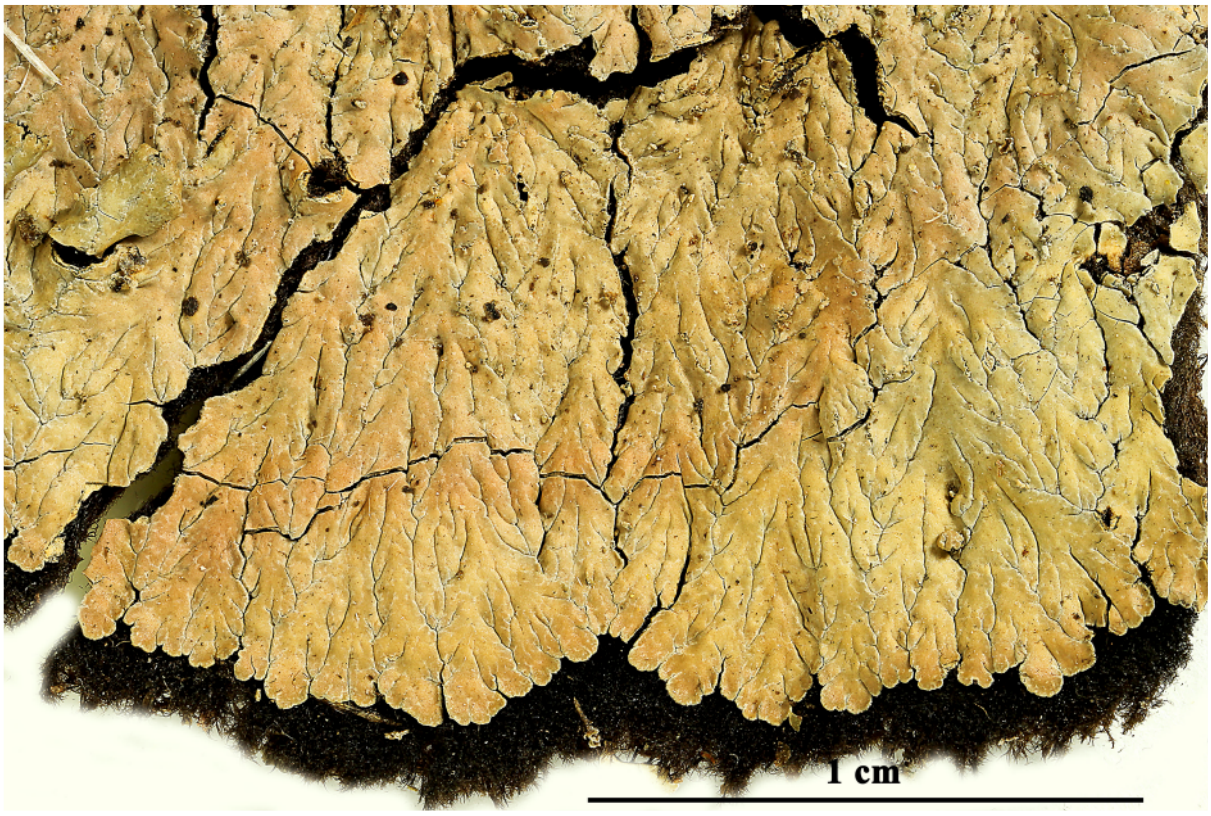


Parmelia sulcata

Parmeliella brisbanensis (C.Knight) P.M.Jørg. & D.J.Galloway

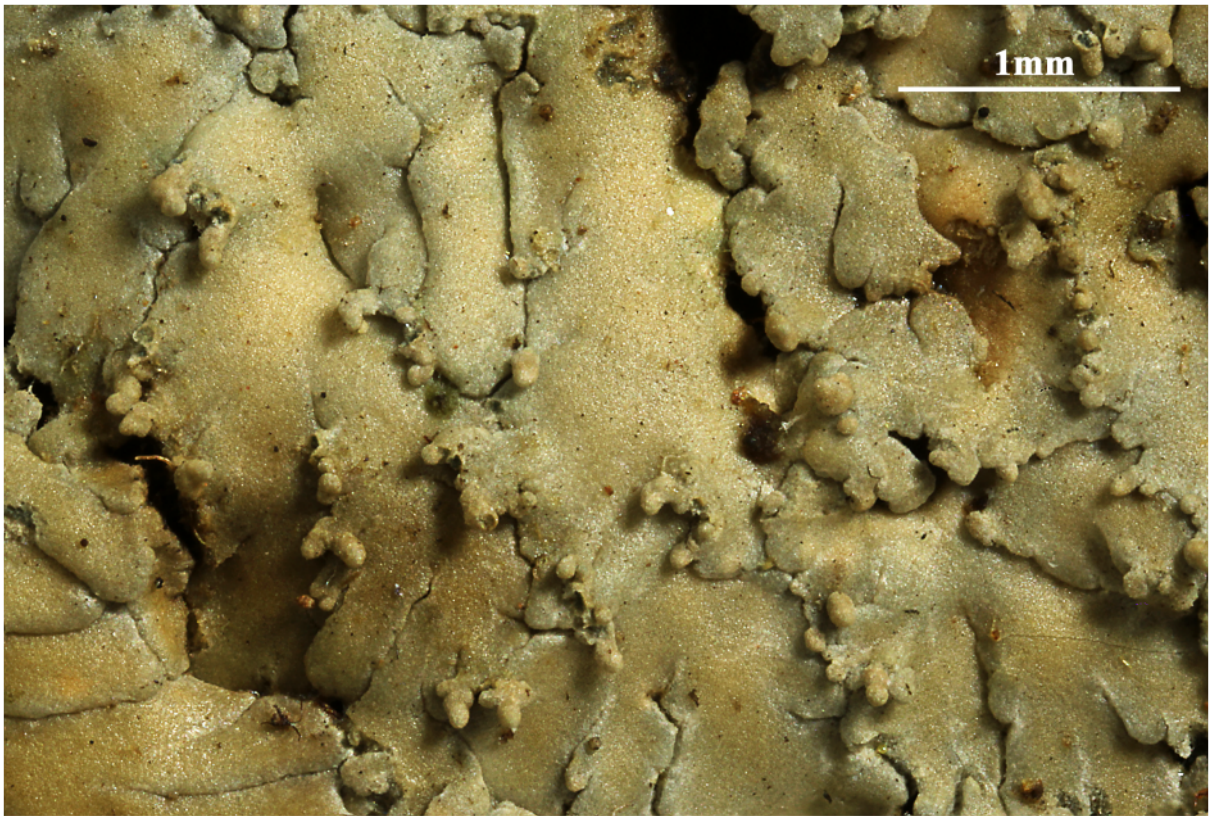
Thallus on a thick byssoid, red-brown to black prothallus projecting 1-2 mm beyond lobe apices, closely appressed to substratum. Lobes narrow, to 1.2 mm wide, discrete at margins or margins ±confluent to the centre with no visible division between lobes. Isidia delicate, finger like, to 0.5 mm tall and 0.1 mm wide, laminal and marginal. Apothecia 0.5-2.5 mm wide; exciples thick persistent, crenulate-striate, concolorous with the thallus. Disc red-brown to brown-black. Ascospores 12-16 x 8-10 µm.

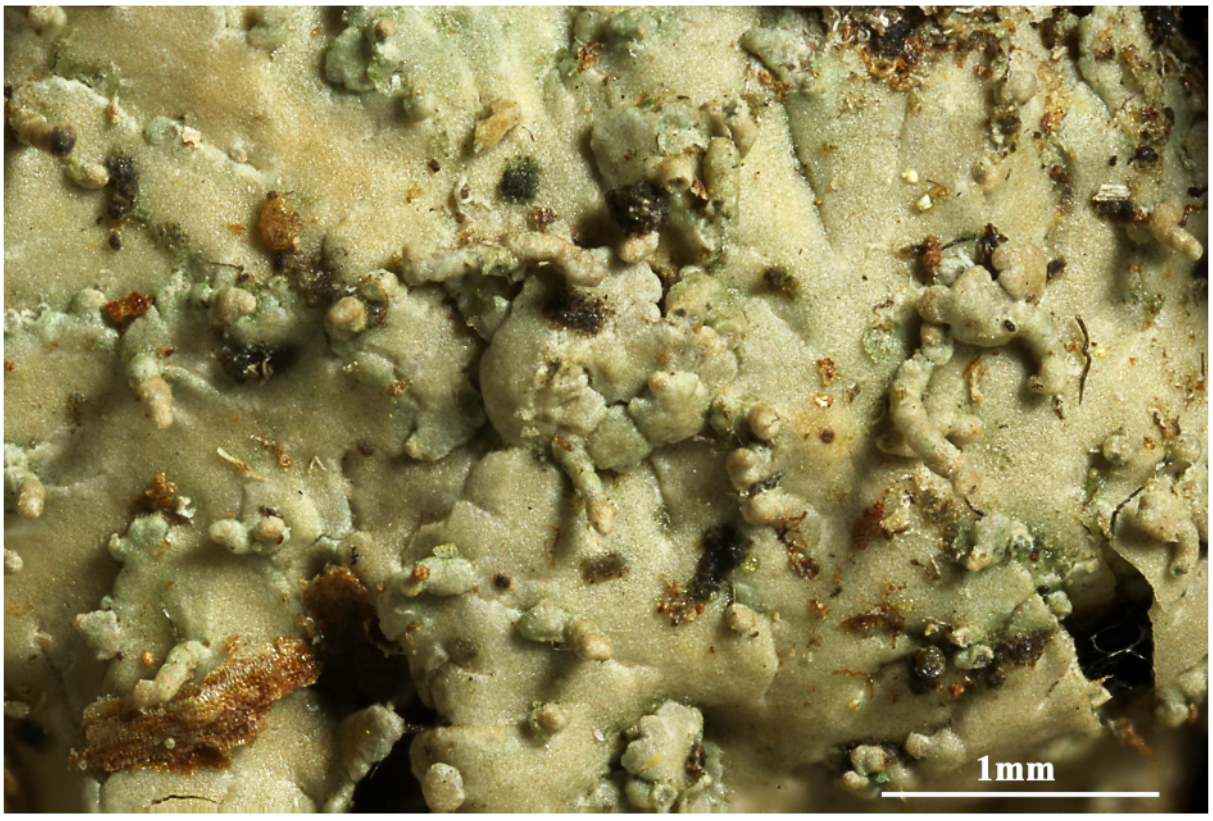
[19108], Australia, Queensland, Mt. Spec State Forest, Paluma Road, 6 km west of Paluma, 19°01' S, 149°09' E, 920 m, growing on tree trunk in Lauraceae-Syzygium dominated forest. Leg. J.A. Elix (20227) & H. Streimann, 18.06.1986. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 235.





Parmeliella brisbanensis





Parmeliella brisbanensis

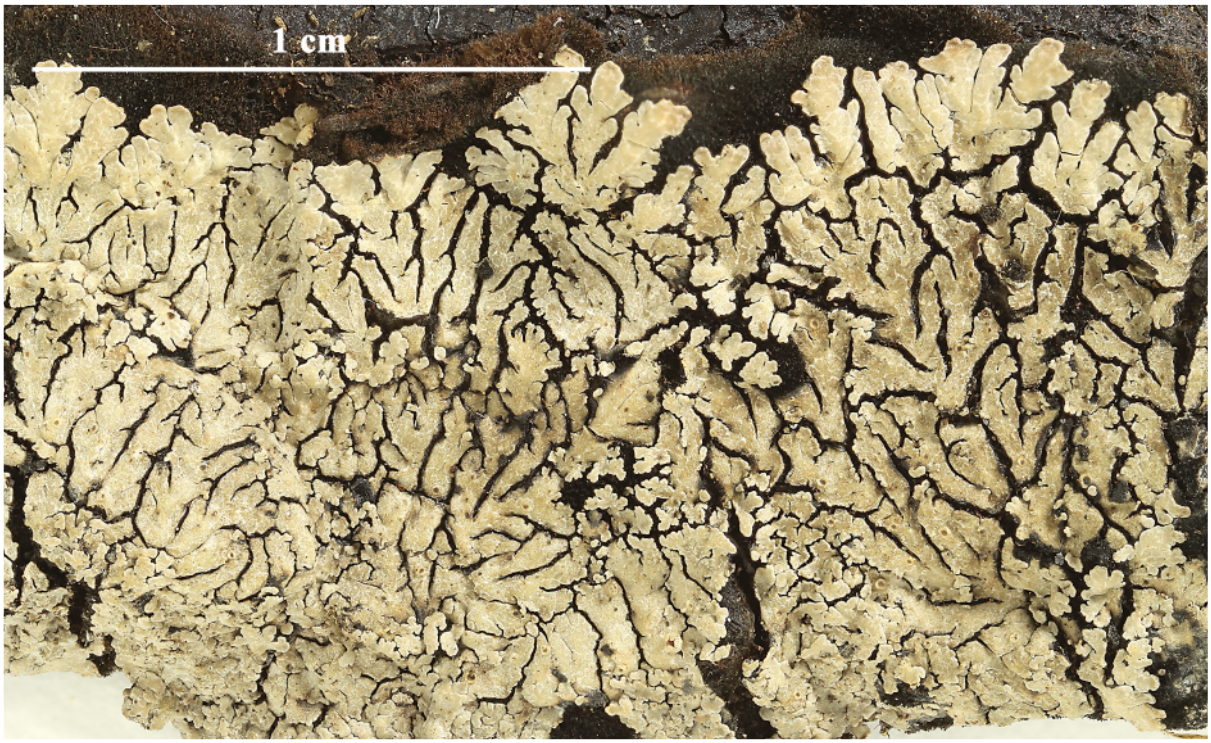


Parmeliella brisbanensis

Parmeliella mariana (Fr.) P.M.Jørg. & D.J.Galloway

Thallus on a thick, felted, cottony, brown-black prothallus projecting 2-6 mm beyond lobe apices, closely appressed to the substratum. Lobes narrow, 0.5-1.2 mm wide, discrete at margins, contiguous at margins or margins obvious to thallus centre or often ±confluent without visible division between lobes, without isidia. Apothecia 0.4-1.2 mm wide; thalline exciple thick, persistent, smooth to delicately crenulate. Ascospores 12-16 x 8-10 µm. Chemistry: rarely with ursolic acid.

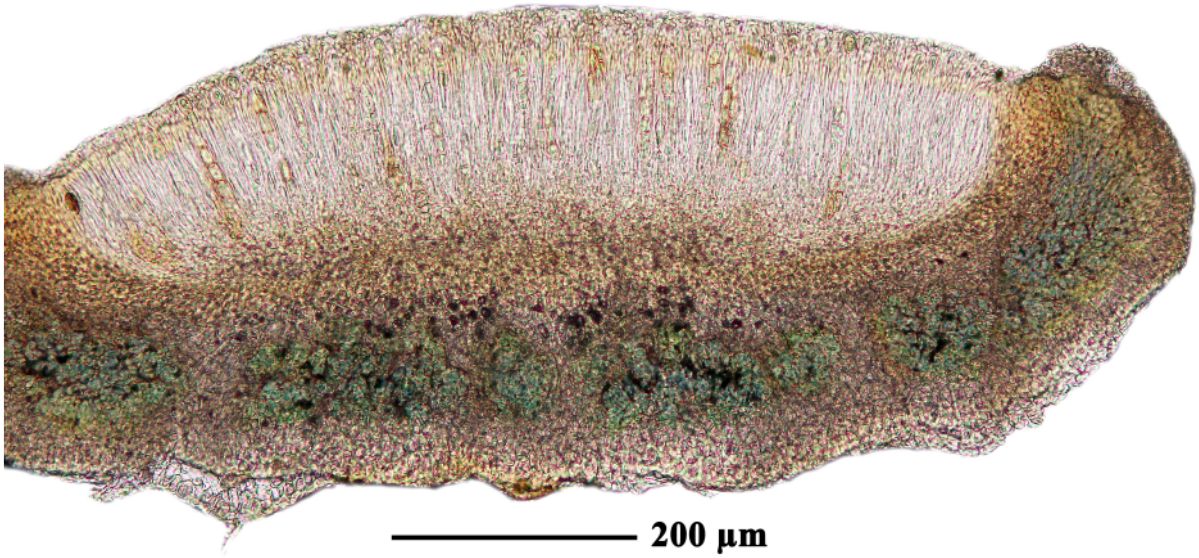
[19109], Australia, Queensland, Cow Bay, Cape Tribulation National Park, 26 km north-north-east of Mossman, 16°14' S, 145°29' E, 2 m, growing on trunk of *Calophyllum inophyllum* in strand vegetation dominated by *Calophyllum inophyllum*, *Terminalia*, *Hibiscus tiliaceus.* Leg. H. Streimann (45992) 06.12.1990. Chemistry: No lichen substances detected by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 265.

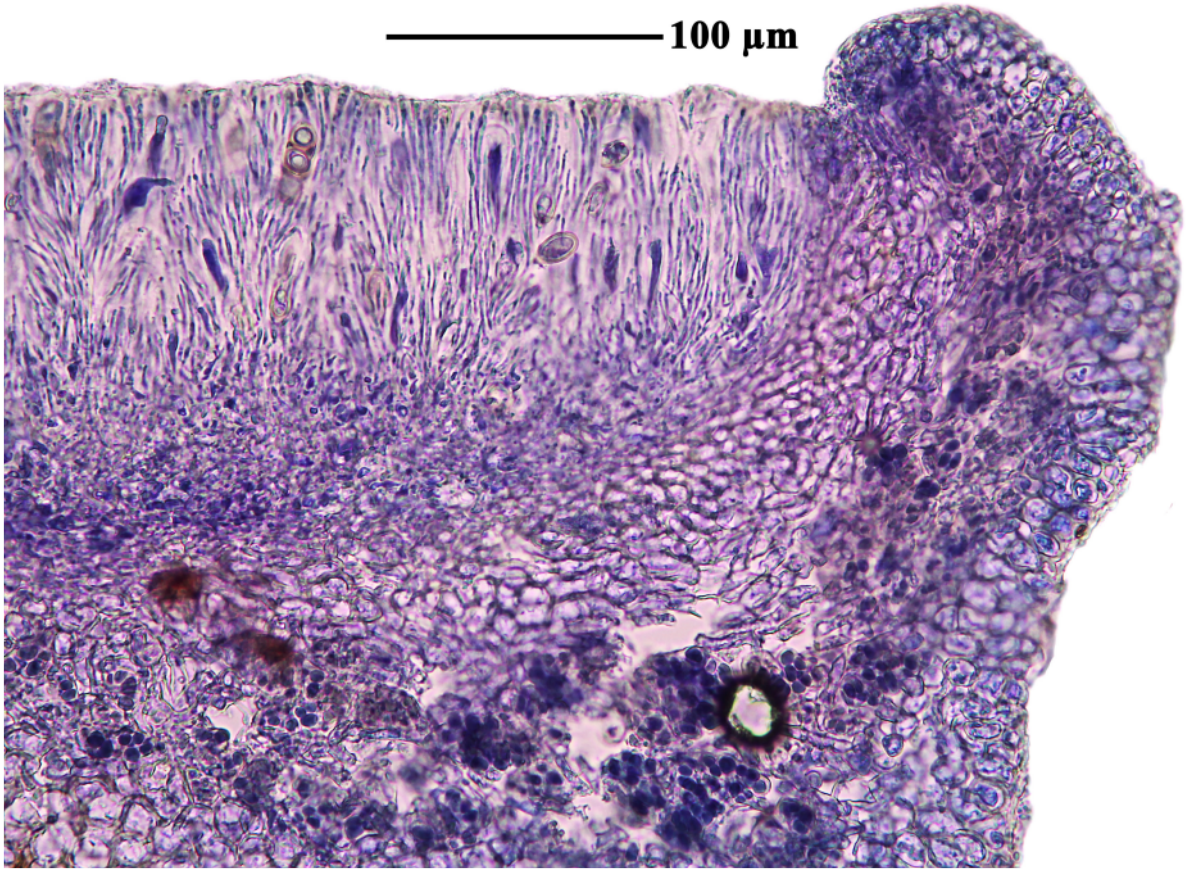


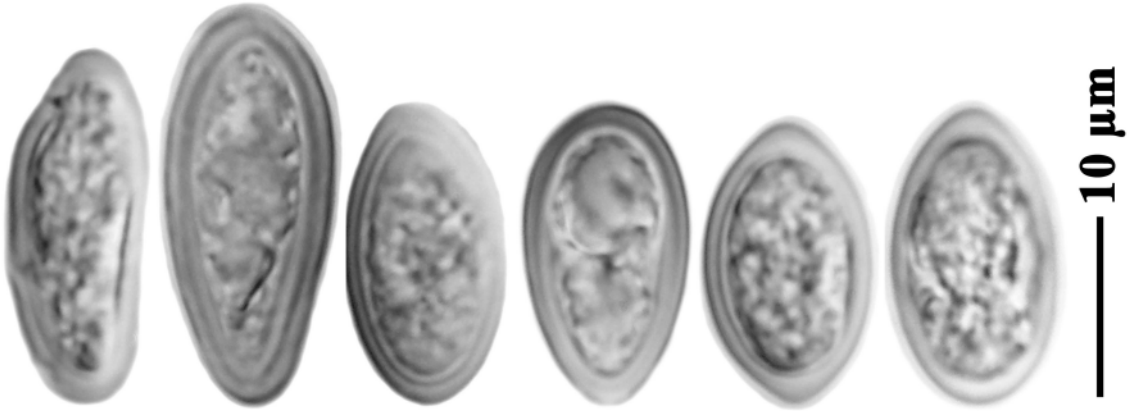




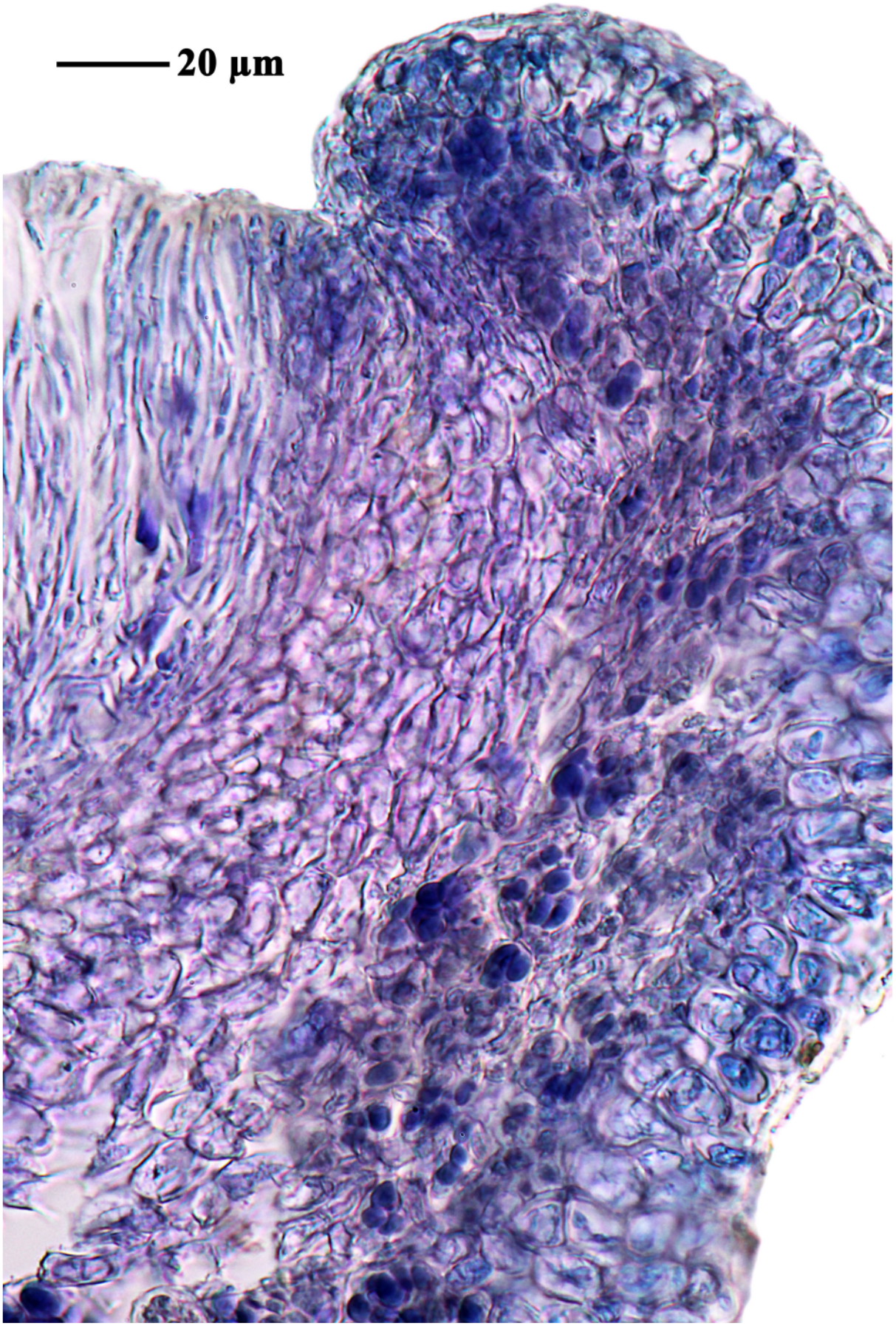
Parmeliella mariana



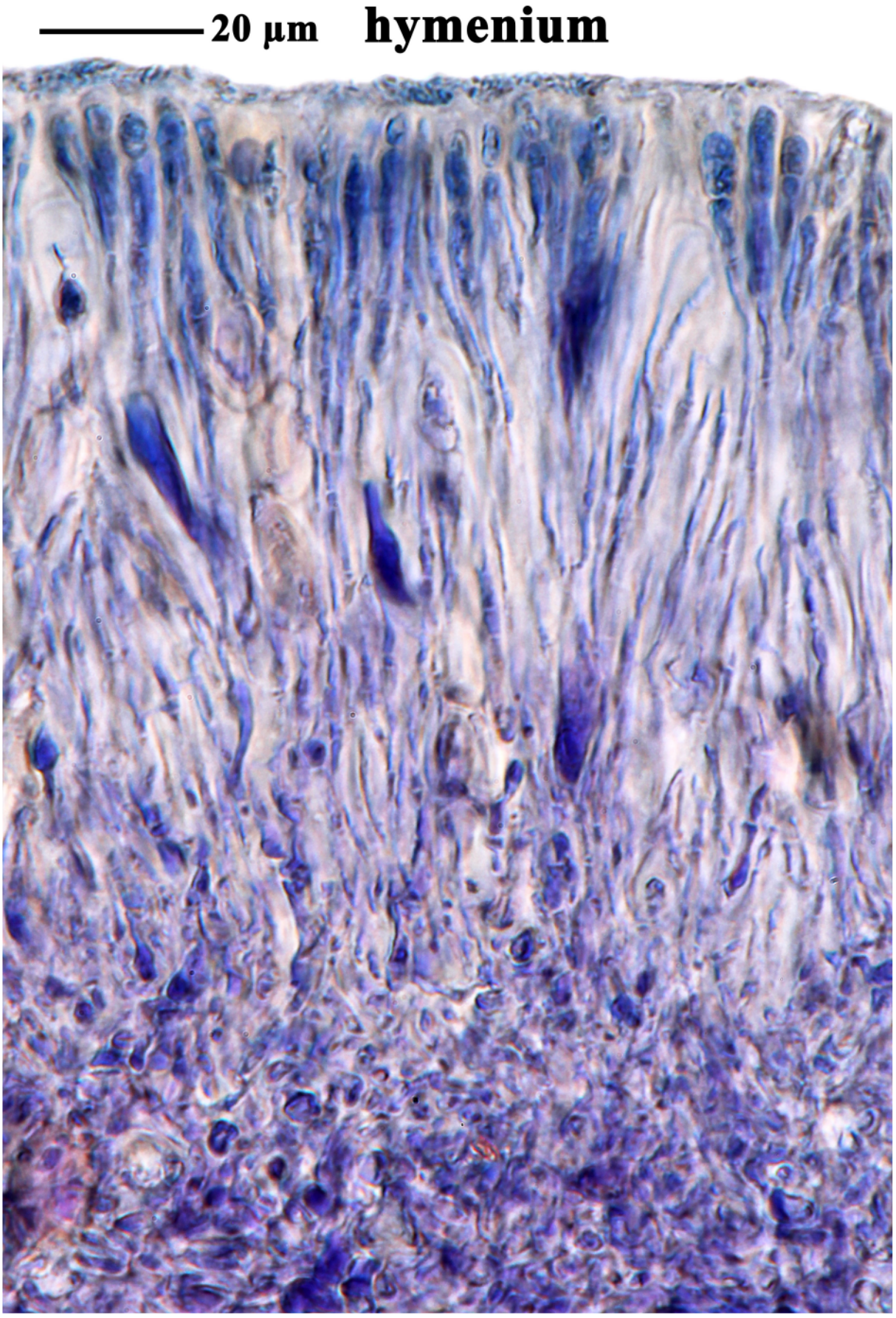




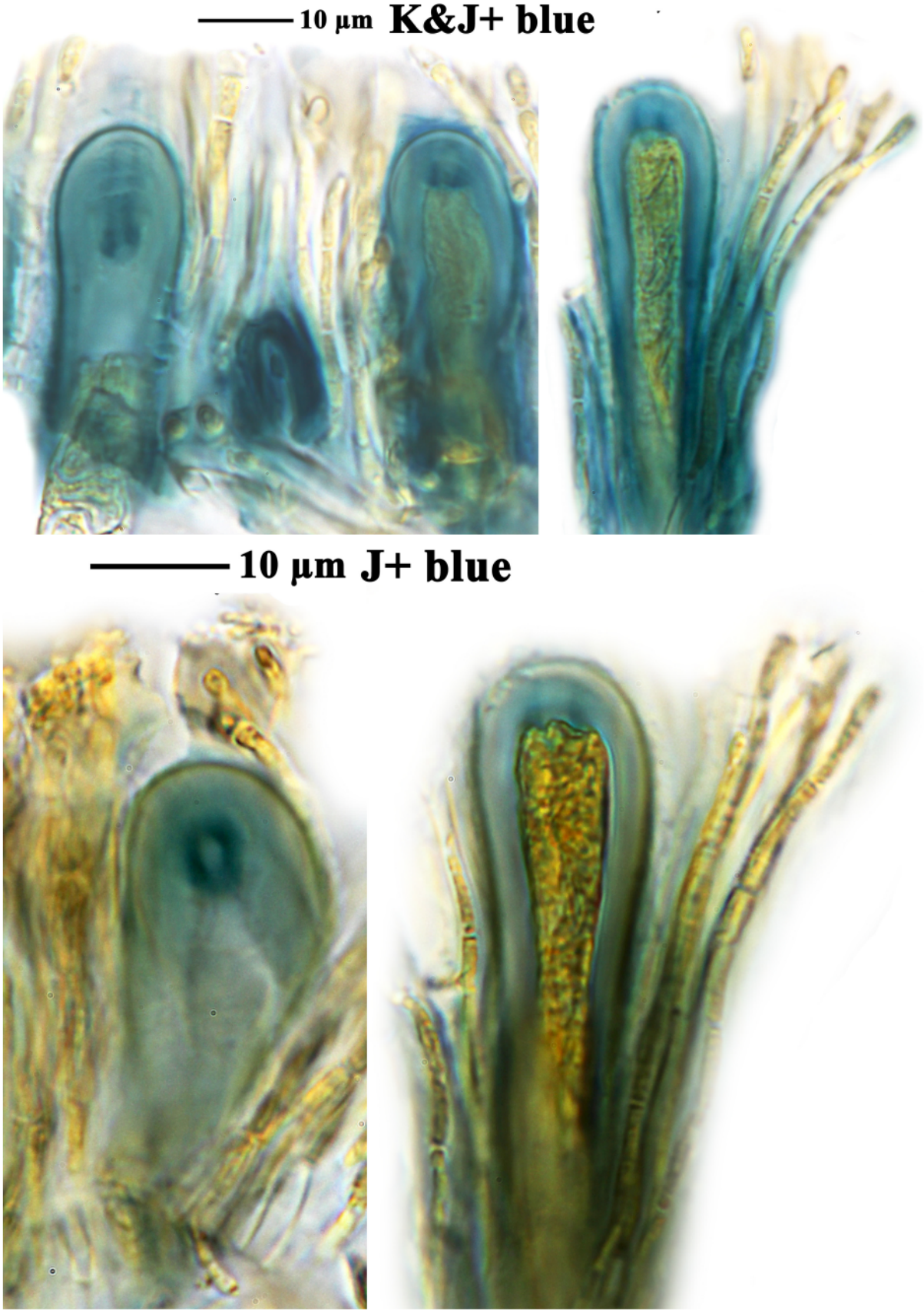
Parmeliella mariana



Parmeliella mariana



Parmeliella mariana



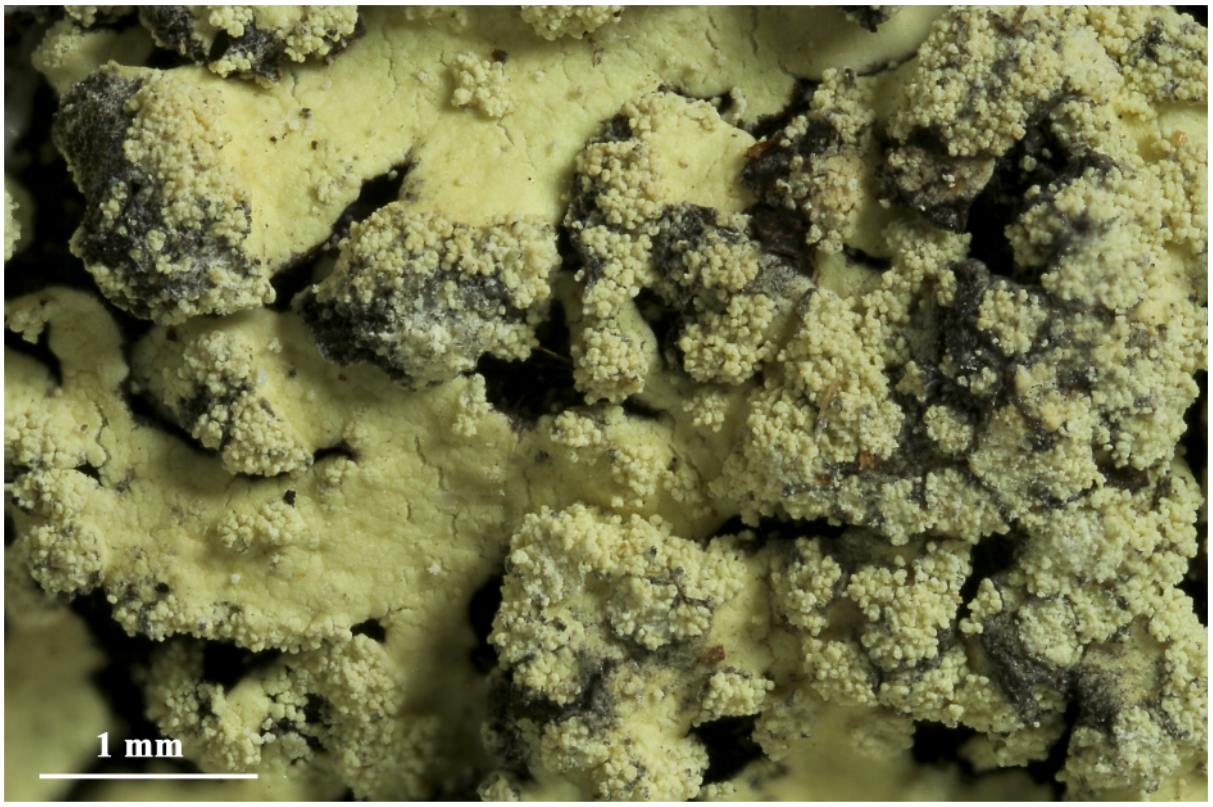
Parmeliella mariana

Parmeliopsis ambigua (Wulfen) Nyl.

Lobes congested throughout or separate at apices, sublinear-elongate, subdichotomously branched, 0.5-1.5 mm wide. Upper surface yellowish green, becoming rugose towards thallus centre, densely sorediate; soralia orbicular at first, coalescing, often occurring on ridges. Lower surface pale brown, black towards centre. Rhizines simple or sparsely branched. Apothecia 1-2 mm wide. Ascospores 7-11 x 2.5-3 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, divaricatic acid (major), nordivaricatic acid.

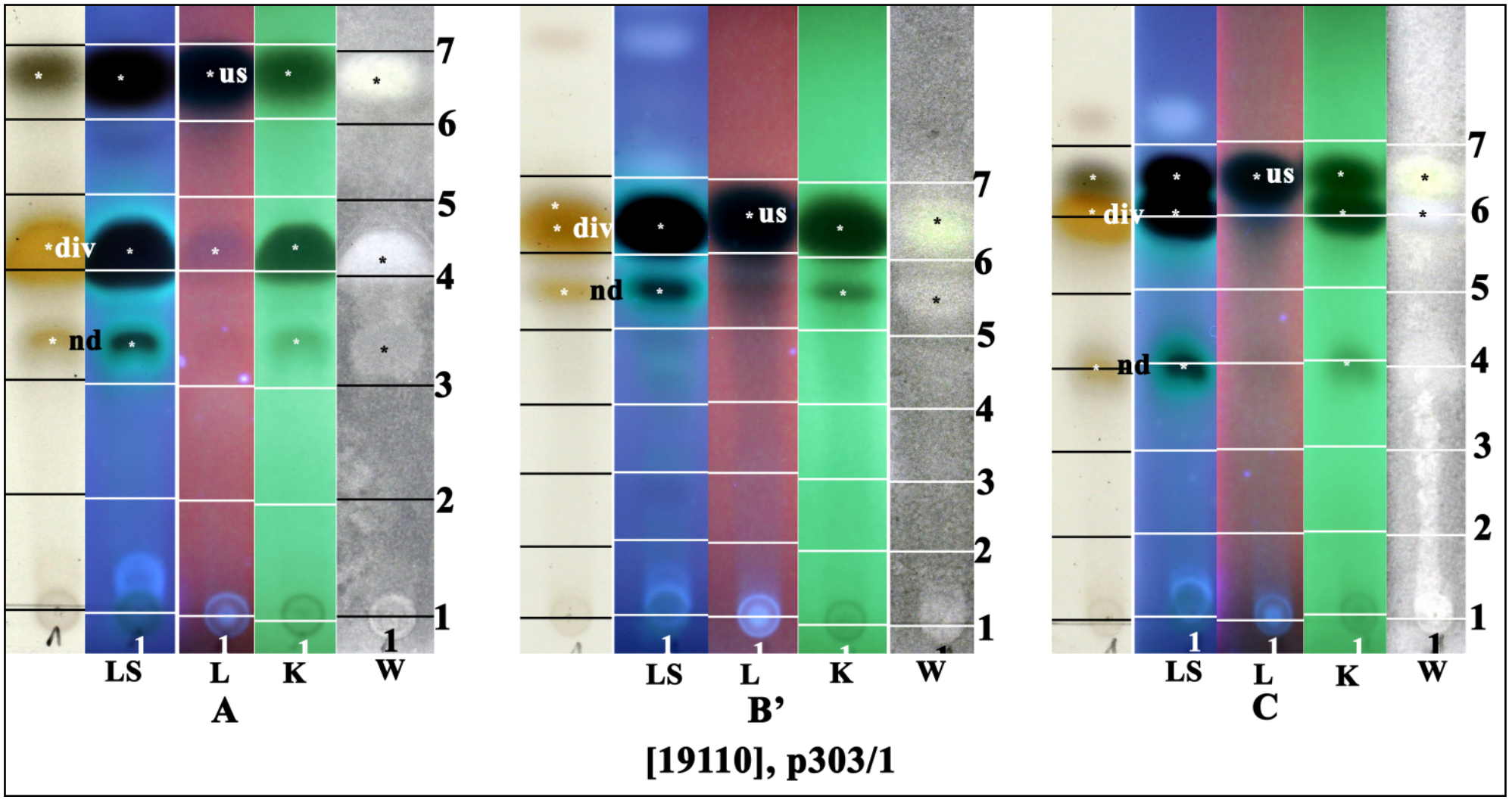
[19110], Australia, Victoria, Pretty Valley, Alpine National Park, 18 km south-south-east of Mt. Beauty, 36°53' S, 147°14' E, 1600 m, growing on base of dead *Eucalyptus* in open *Eucalyptus pauciflora* woodland with large granite outcrops. Leg. J.A. Elix (40630) & H. Streimann 18.02.1994. Chemistry: usnic acid (major), divaricatic acid (major), nordivaricatic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 288.







Parmeliopsis ambigua

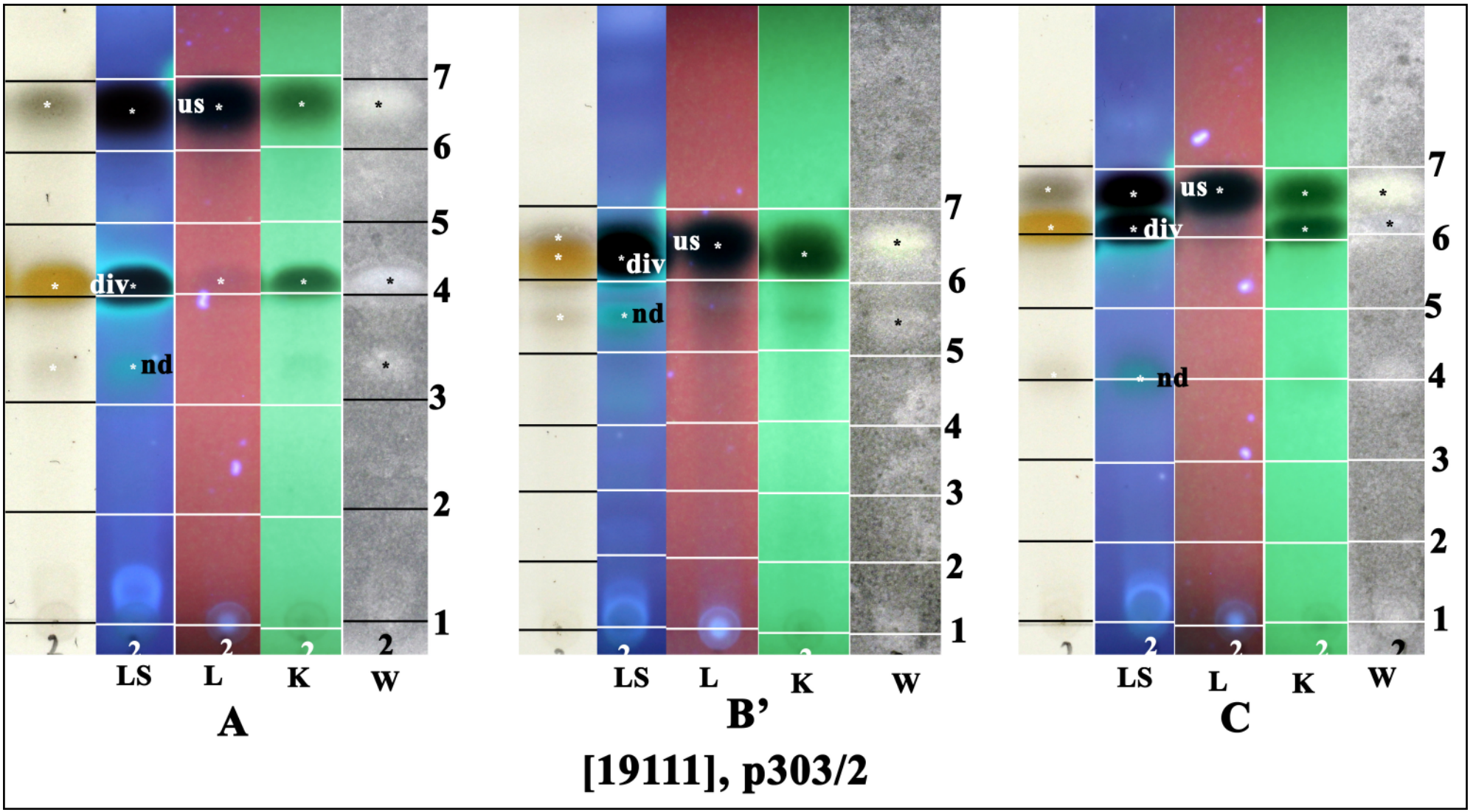


us: usnic acid, div:divaricatic acid, nd: nordivaricatic acid

Parmeliopsis ambigua (Wulfen) Nyl.
[= ***Parmelia viridosoredians*** Elix]

[19111], Australia, New South Wales, Kosciuszko National Park, Charlottes Pass, 36°25' S, 148°20' E, 1840 m, growing on dead wood in open *Eucalyptus pauciflora* woodland. Leg. J.A. Elix (9681), 22.02.1982. LICHENES AUSTRALASICI EXSICCATI NO. 025. Distributed as *Parmelia viridosoredians* Elix.





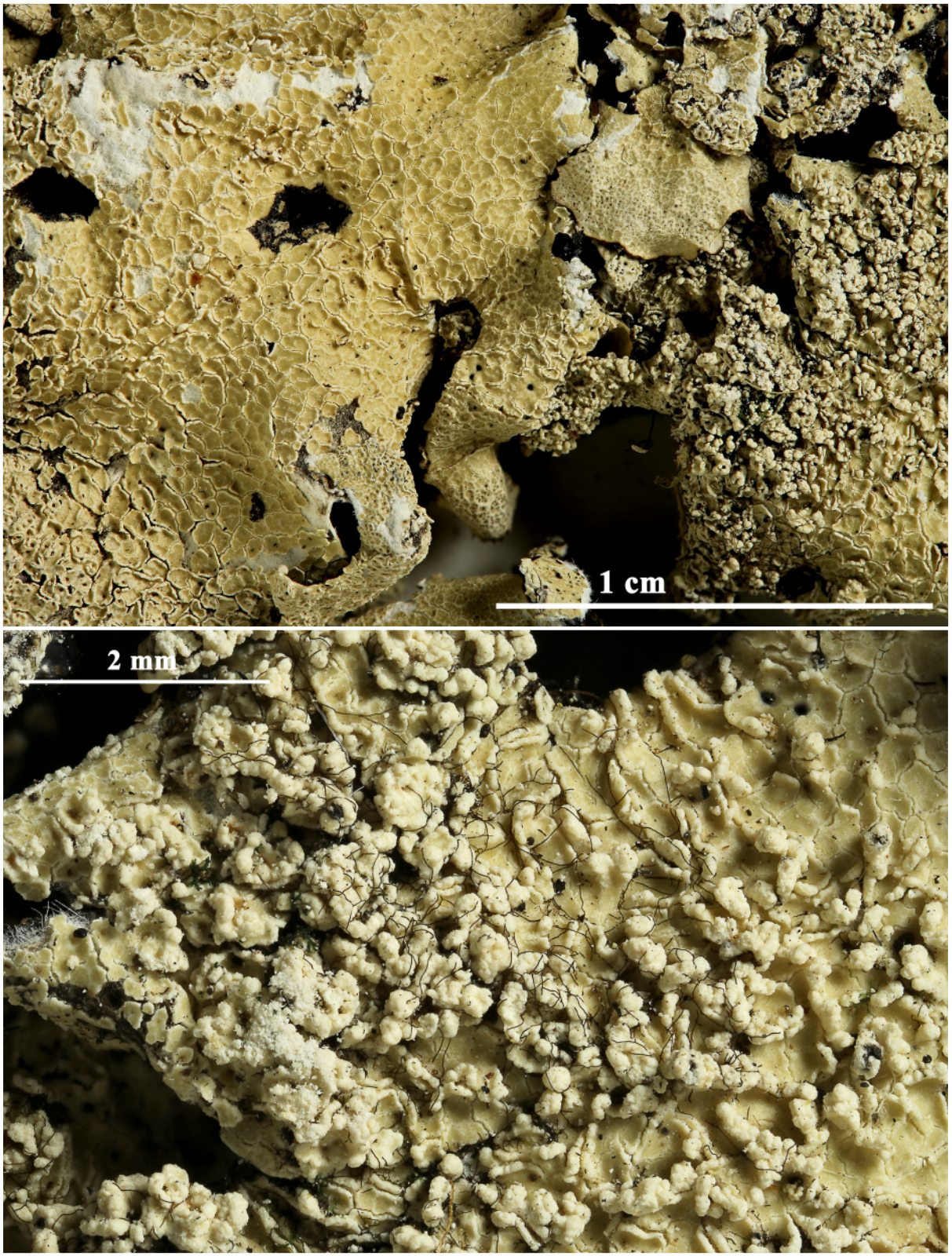
us: usnic acid, div: divaricatic acid, nd: nordivaricatic acid

Parmotrema austrocetratum Elix & J.Johnst.
[= ***Rimelia austrocetrata*** (Elix & J.Johnst.) Hale & A.Fletcher]

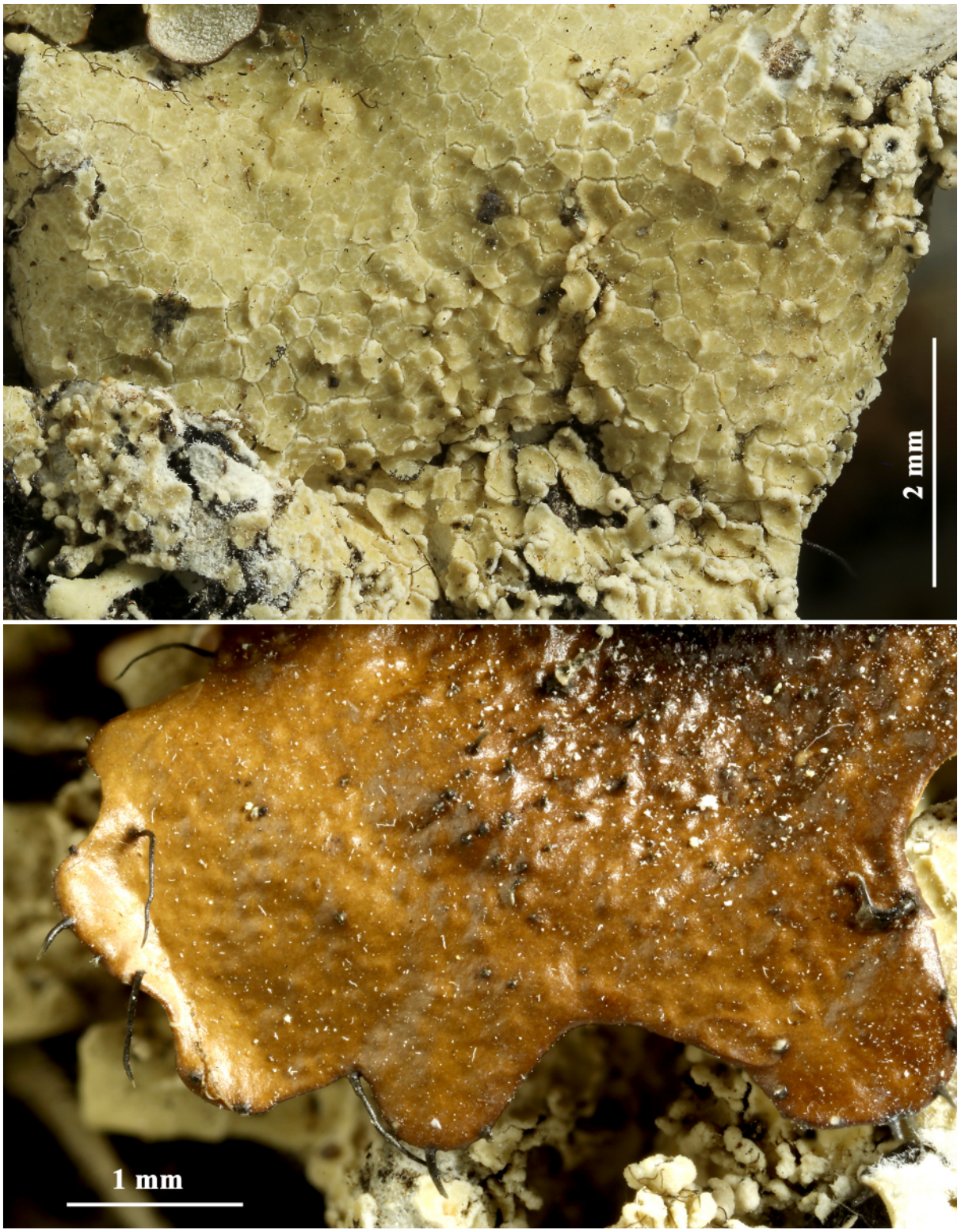
Thallus loosely adnate. Lobes imbricate or not, rotund, 10-30 mm wide; margins entire, sinuous; apices often laciniate, 1-8 mm long, 0.5-1.5 mm wide. Cilia moderately dense, simple or sparingly branched, 0.2-1.5 mm long. Upper surface pale grey, becoming rugose, white-reticulate, becoming conspicuously reticulately cracked, lacking soredia; dactyls laminal, raised, closed, becoming fused to form laminal ridges; areolae flaking off and exposing medulla. Apothecia rare, 4-10 mm wide; disc perforate. Ascospores 12-16 x 8-9 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then red, C-, P+ red-orange; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor), ±protocetraric acid (trace).

[19112], New Zealand, North Island, North Auckland, c. 2.5 km south of Kaweka on road to Thames, gully with remnant lowland forest with *Phyllocladus*, *Podocarpus*, rimu, tree ferns and *Leptospermum* (along margins), on branch. Leg. J. Johnston (2218), 18.03.1985. Chemistry: atranorin, salazinic acid (major), consalazinic acid (trace), protocetraric acid (trace), by TLC in solvent C, anal. J. Johnston.

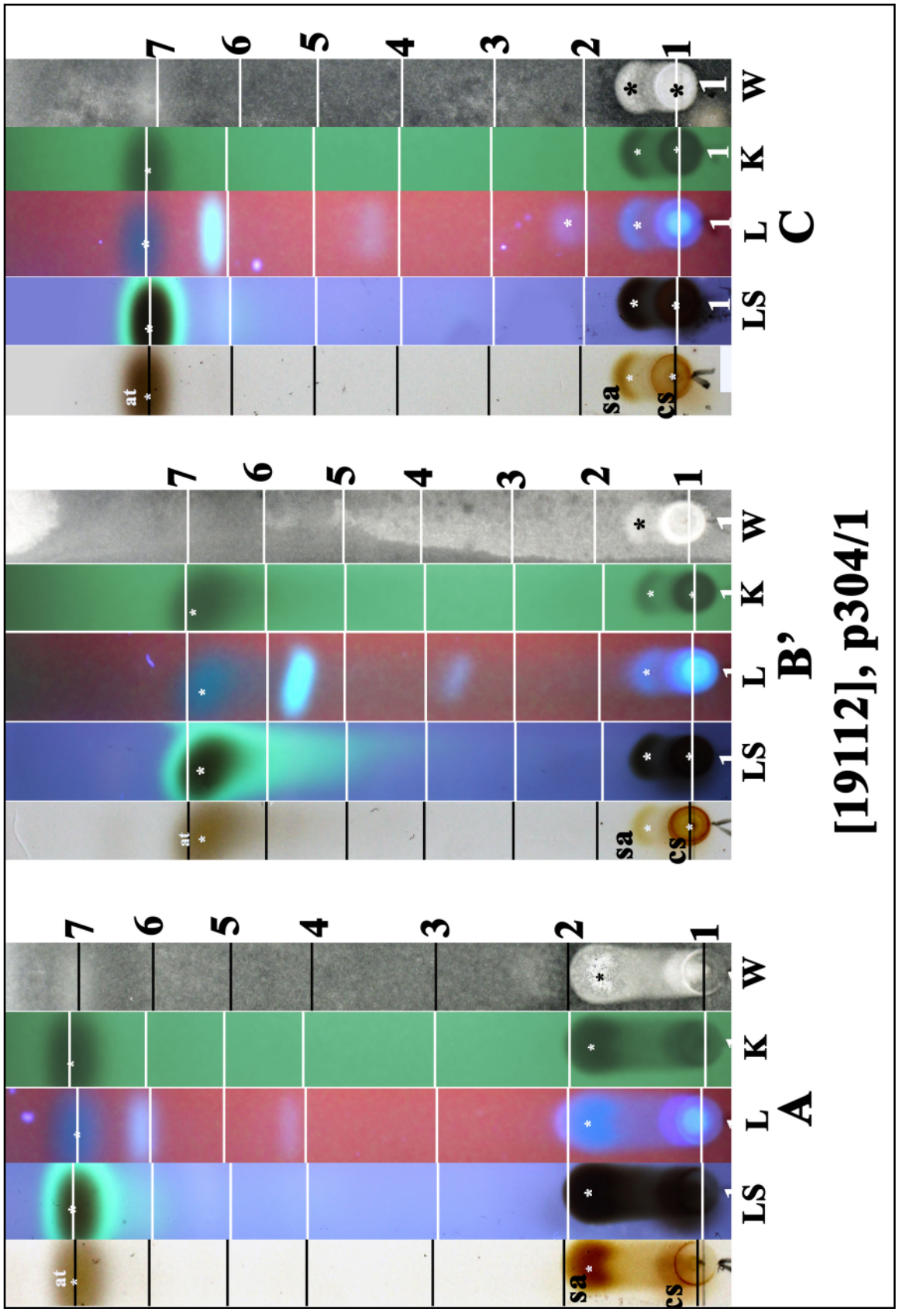




Parmotrema austrocetratum



Parmotrema austrocetratum



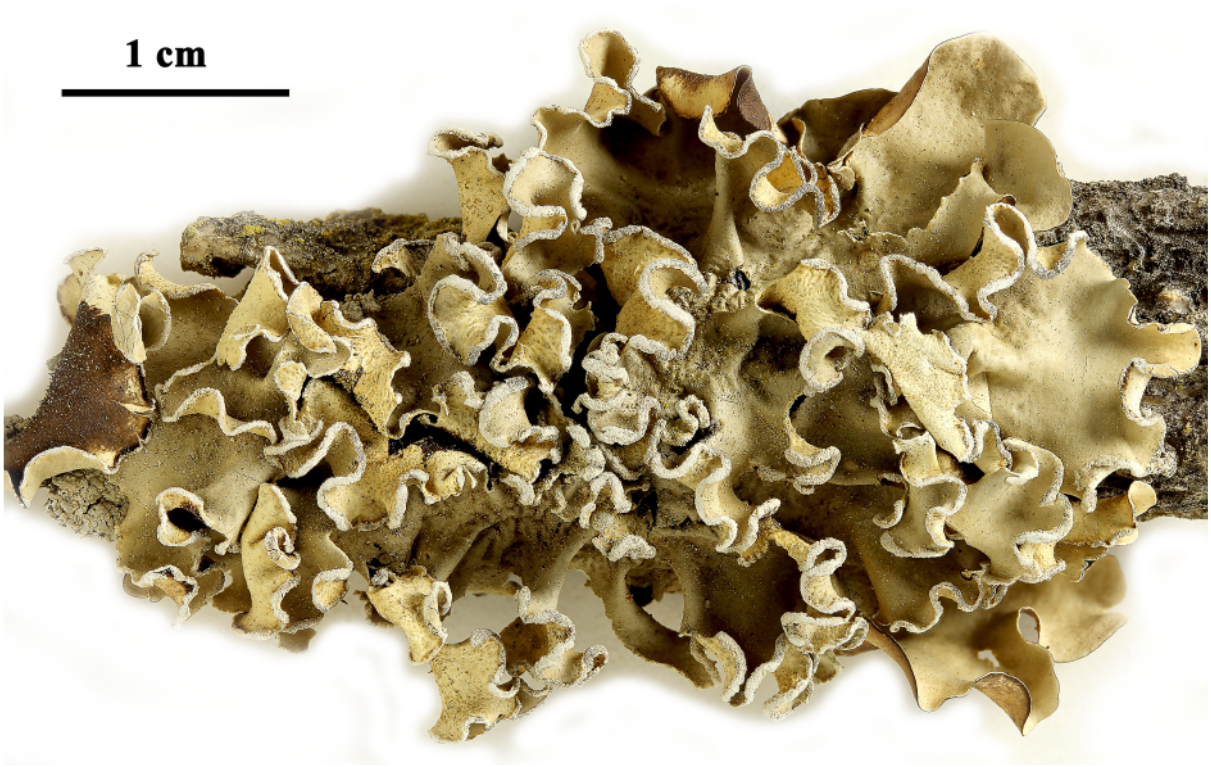
at: atranorin, sa: salazinic acid, cs: consalazinic acid

Parmotrema austrocetratum

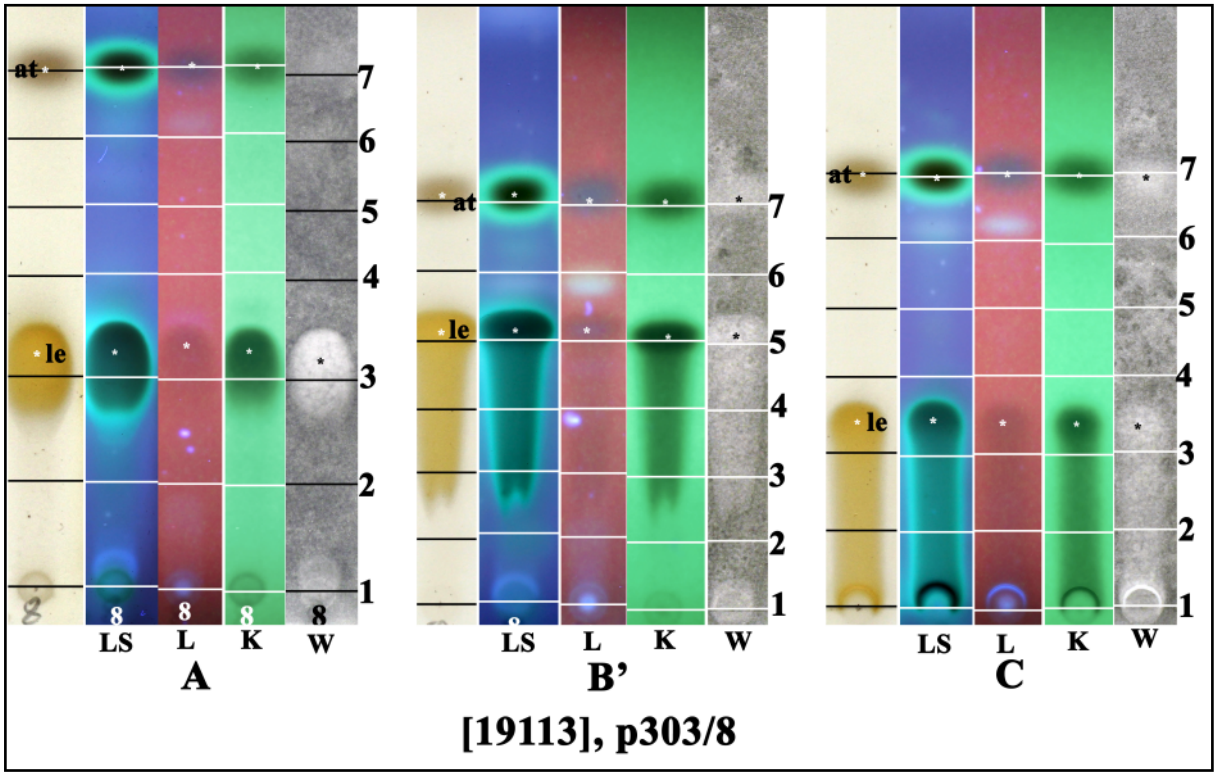
Parmotrema austrosinense (Zahlbr.) Hale
[= ***Parmelia austrosinensis*** Zahlbr.]

Thallus loosely adnate, coriaceous. Lobes rounded, 10-30 mm wide, lacking laciniae; margins entire or crenate, eciliate, sinuate, often ascending. Upper surface pale grey, weakly maculate, without isidia. Soralia marginal and submarginal, linear, soredia granular. Medulla white. Lower surface black, with a white, brown, or mottled erhizinate marginal zone. Rhizines sparse, simple, unevenly distributed, short. Apothecia rare, to 10 mm wide. Ascospores 12-20 x 7-10 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; atranorin, chloroatranorin, lecanoric acid.

[19113], Australien, Queensland, Mt. Farrenden, 26 km south-southwest of Charters Towers, 20°19' S, 146°13' E, 450 m, growing on *Cassia brewsteri* in open woodland on rocky slope. Leg. J.A. Elix (20602) & H. Streimann 22.06.1986.Chemistry: atranorin, chloroatranorin, lecanoric acid (major), orsellinic acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 163.







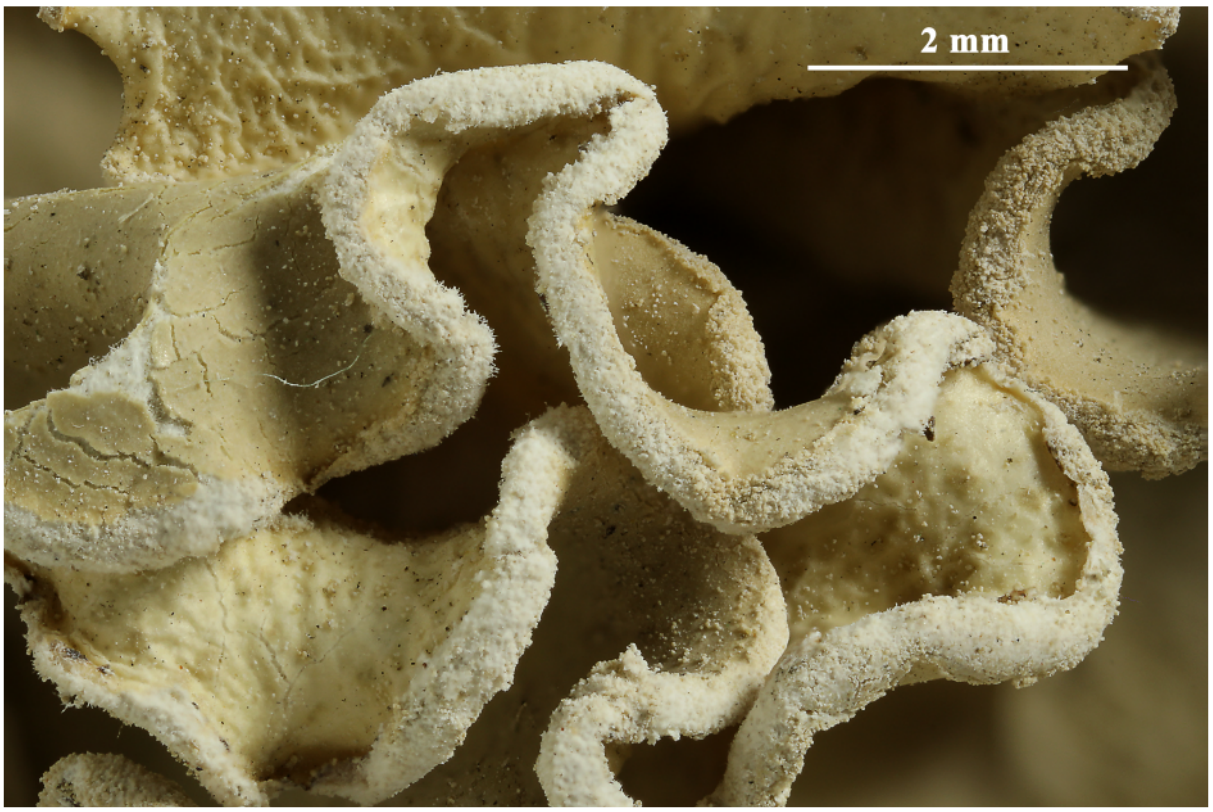
a: atranorin, le: lecanoric acid

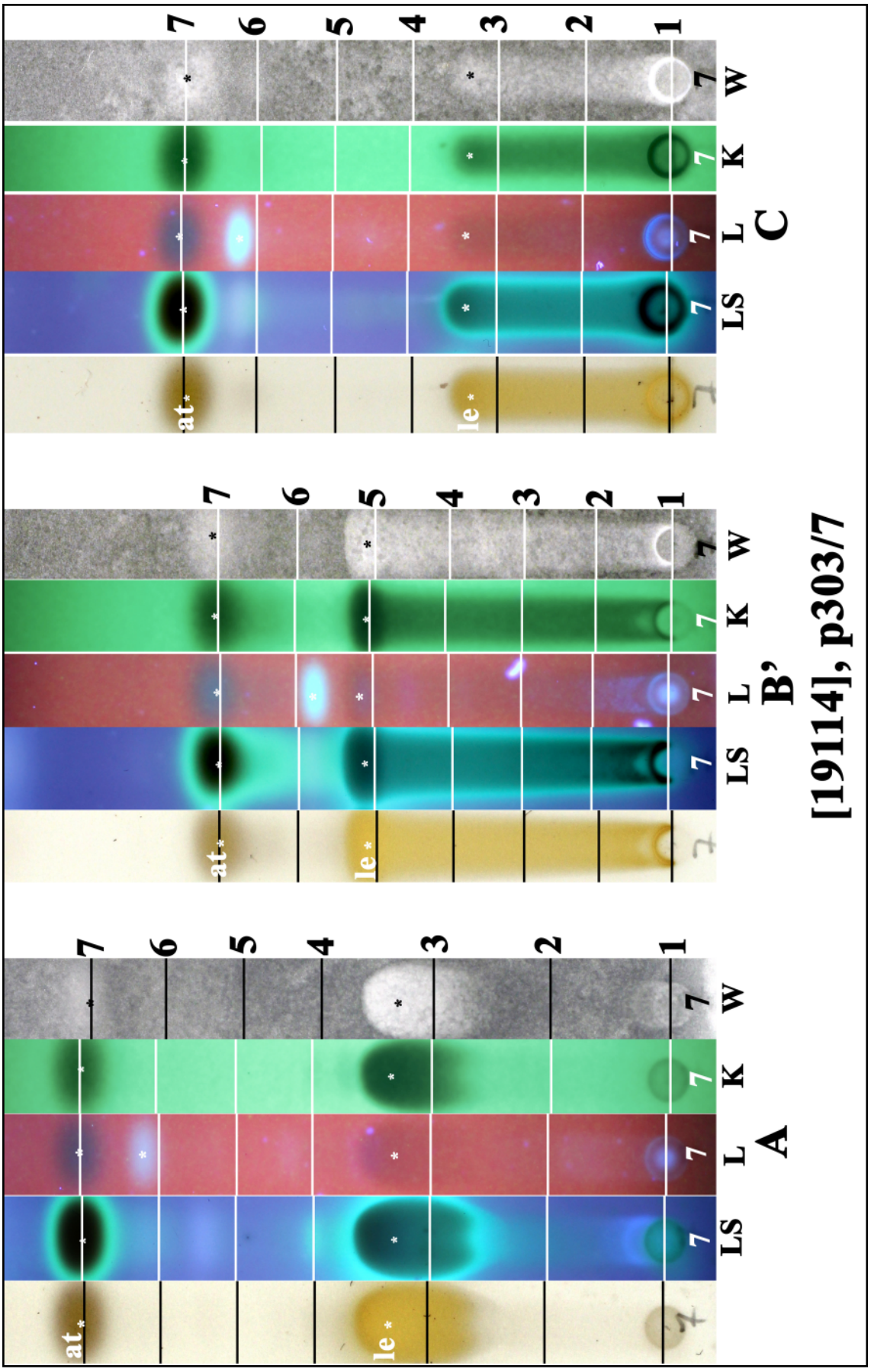
Parmotrema austrosinense

Parmotrema austrosinense (Zahlbr.) Hale
[= ***Parmelia austrosinensis*** Zahlbr.]

[19114], Australia, Queensland, along the banks of the Noosa River, Noosaville, 26°24' S, 153°01' E, 2 m, growing on exotic trees in parkland. Leg. J.A. Elix (19327), 9.9.1985. Chemistry: atranorin, chloroatranorin, lecanoric acid (major) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 140.







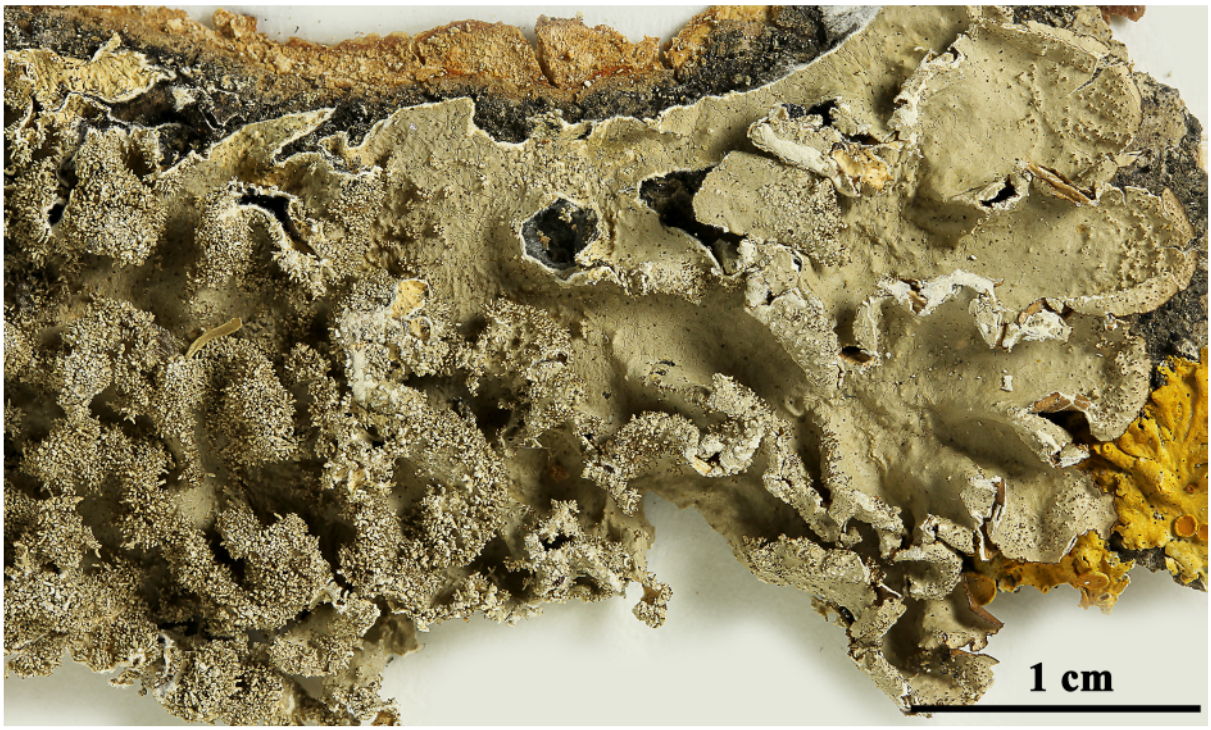
at: atranorin, le: lecanoric acid

Parmotrema austrosinense

Parmotrema crinitum (Ach.) M.Choisy
[= ***Parmelia crinita*** Ach.]

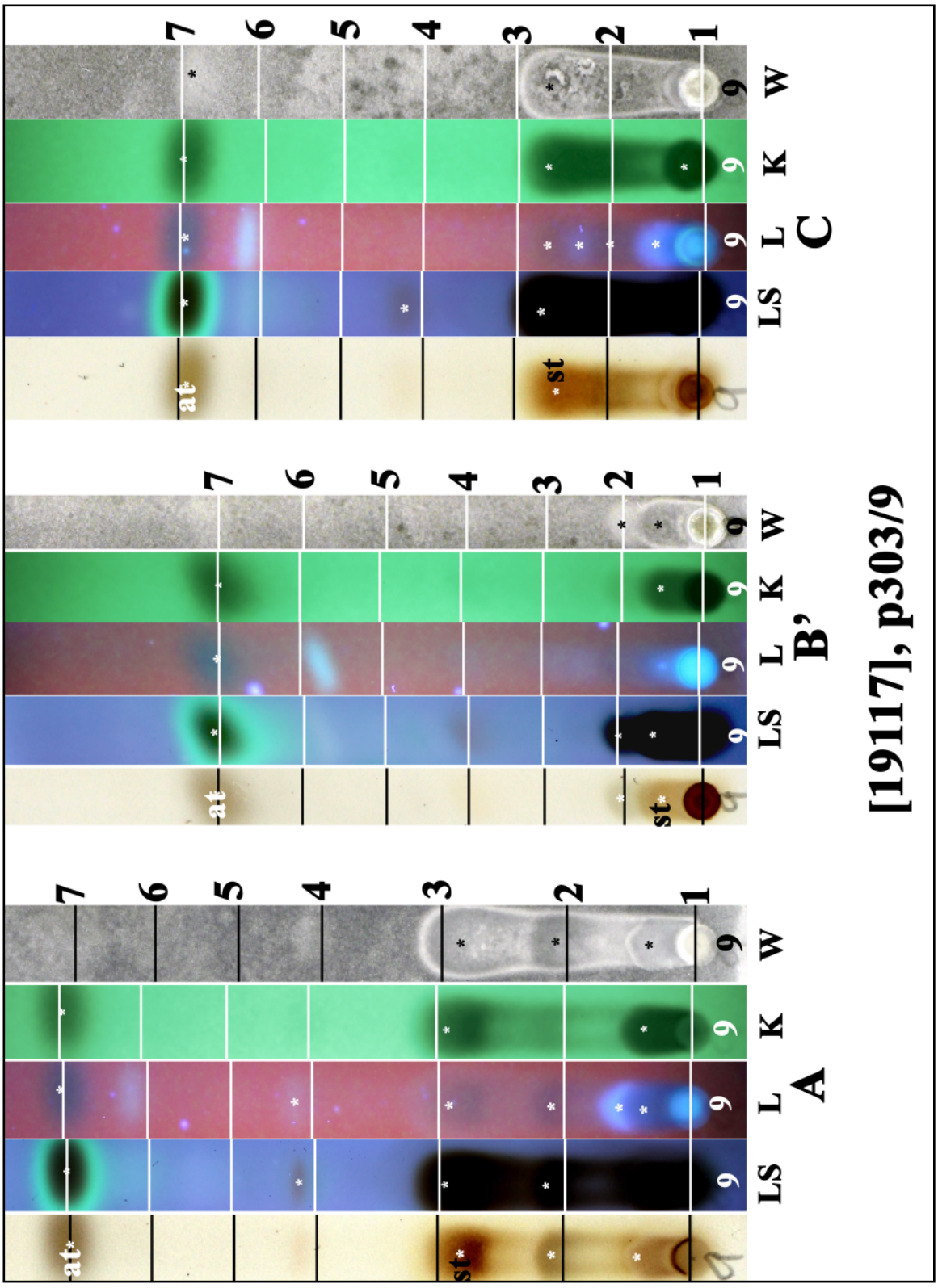
Thallus adnate, coriaceous. Lobes imbricate, subirregular, 5-20 mm wide, margins crenate or irregularly incised. Cilia simple or branched, 0.5-3 mm long. Upper surface pale grey to grey-green, emaculate. Isidia laminal and marginal, short cylindrical, becoming coralloid, granular or occasionally dissolving into soredia, often ciliate at apices. Medulla white. Lower surface black, with a brown, erhizinate marginal zone. Rhizines dense, simple, slender, to 1 mm long. Appothecia rare, 3-8 mm wide. Ascospores 25-35 x 12-18 µm. Chemistry: cortex K+ yellow; medulla K+ yellow, C-, P+ orange, UV-; atranorin, chloroatranorin, stictic acid (major), constictic acid (minor), cryptostictic acid (trace), norstictic acid (trace), ±menegazzaic acid (trace), ±connorstictic acid (trace).

[19117], New Zealand, North Island, North Auckland, c. 0.5 km south of Kaiaua, west side of Firth of Thames, small stand of mangroves, on bark. Leg. J. Johnston (2257), 18.03.1985. Chemistry: atranorin, stictic acid (major), constictic acid (minor), cryptostictic acid (trace), menegazzaic acid (trace), connorstictic acid (faint trace), hypostictic acid (faint trace) norstictic acid (very faint trace), by TLC in solvent C, anal. J. Johnston.





Parmotrema crinitum

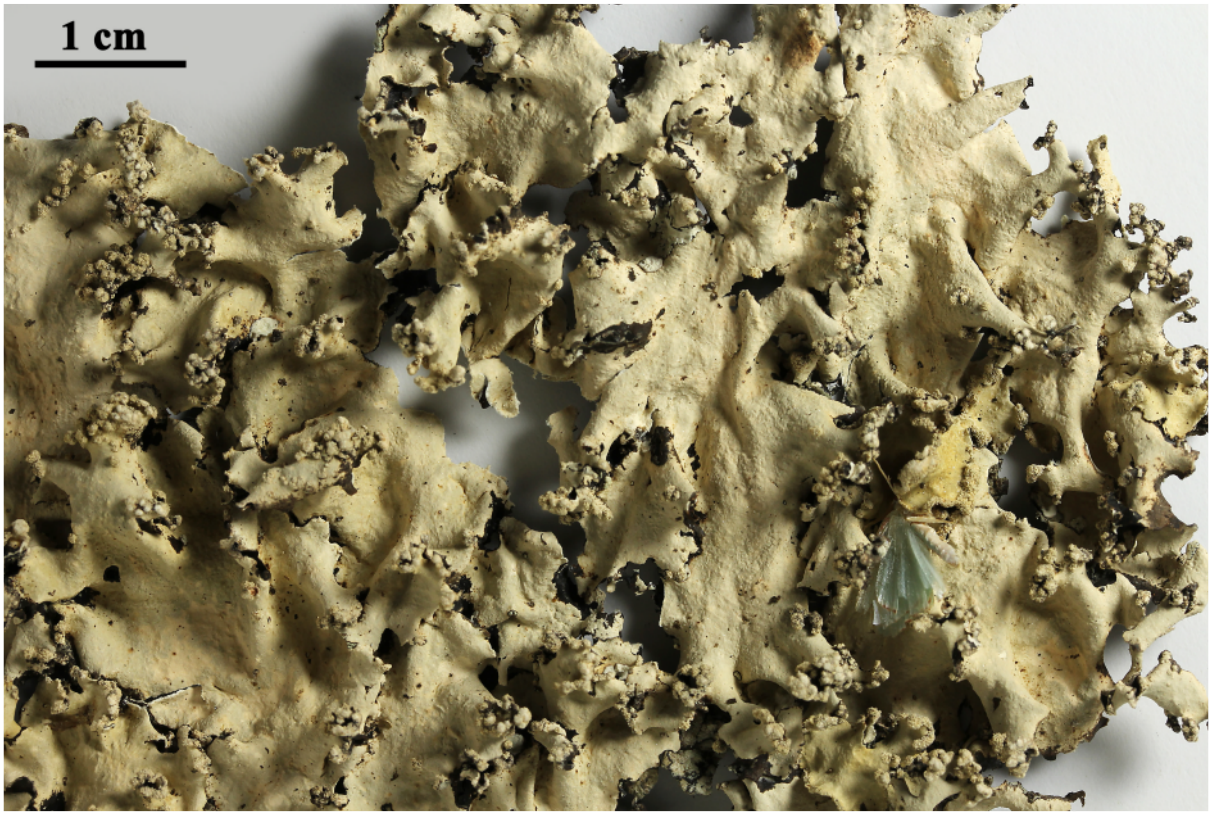


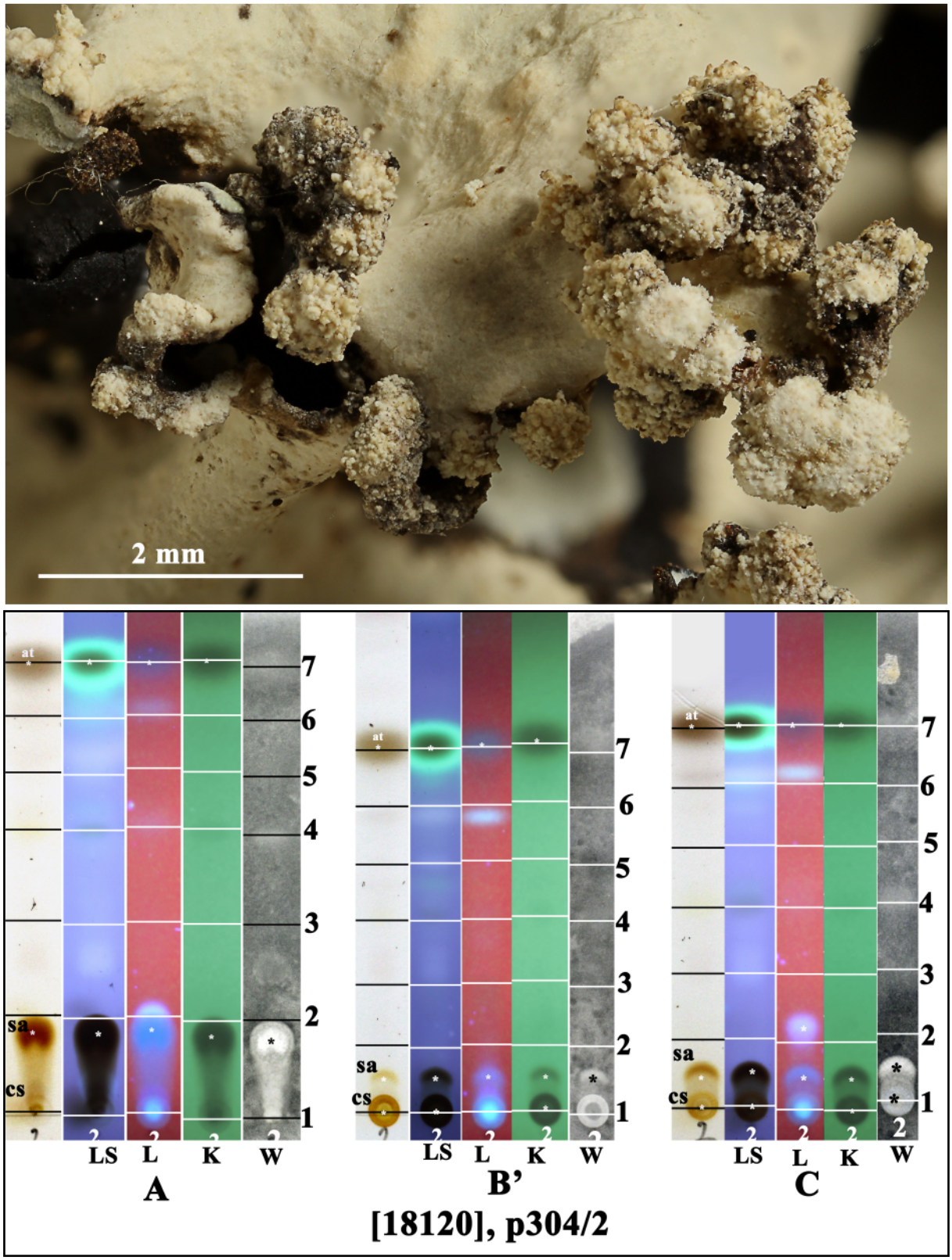
Parmotrema crinitum

Parmotrema cristiferum (Taylor) Hale
[= ***Parmelia cristifera*** Taylor]

Thallus loosely adnate to adnate, coriaceous. Lobes imbricate or subascending at margins, 5-20 mm wide; main lobes eciliate; lateral lobes and lobe axils eciliate or sparingly ciliate; cilia 0.5-1.5 mm long. Upper surface pale grey, emaculate, without isidia. Soralia mainly marginal on lateral lobes; sorediate lobes ±ascending; soredia granular. Medulla white. Lower surface black, with broad, brown, erhizinate marginal zone; rhizines sparse, simple, coarse, short, 0.1-0.2 mm long. Apothecia rare, laminal, to 3 mm wide; disc imperforate. Ascospores 25-30 x 13-15 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then dark red, C-, P+ orange-red; atranorin, chloroatranorin, salazinic acid (major), ±consalazinic acid (minor).

[19120], Norfolk Island, Mt. Pitt Reserve, Selwyn Pine Track, 29°01' S, 167°56'30" E, 200 m, growing on *Elaedendron* in open forest clearing. Leg. J.A.Elix (18735) & H. Streimann, 8.12.1984. Chemistry: atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 088.





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

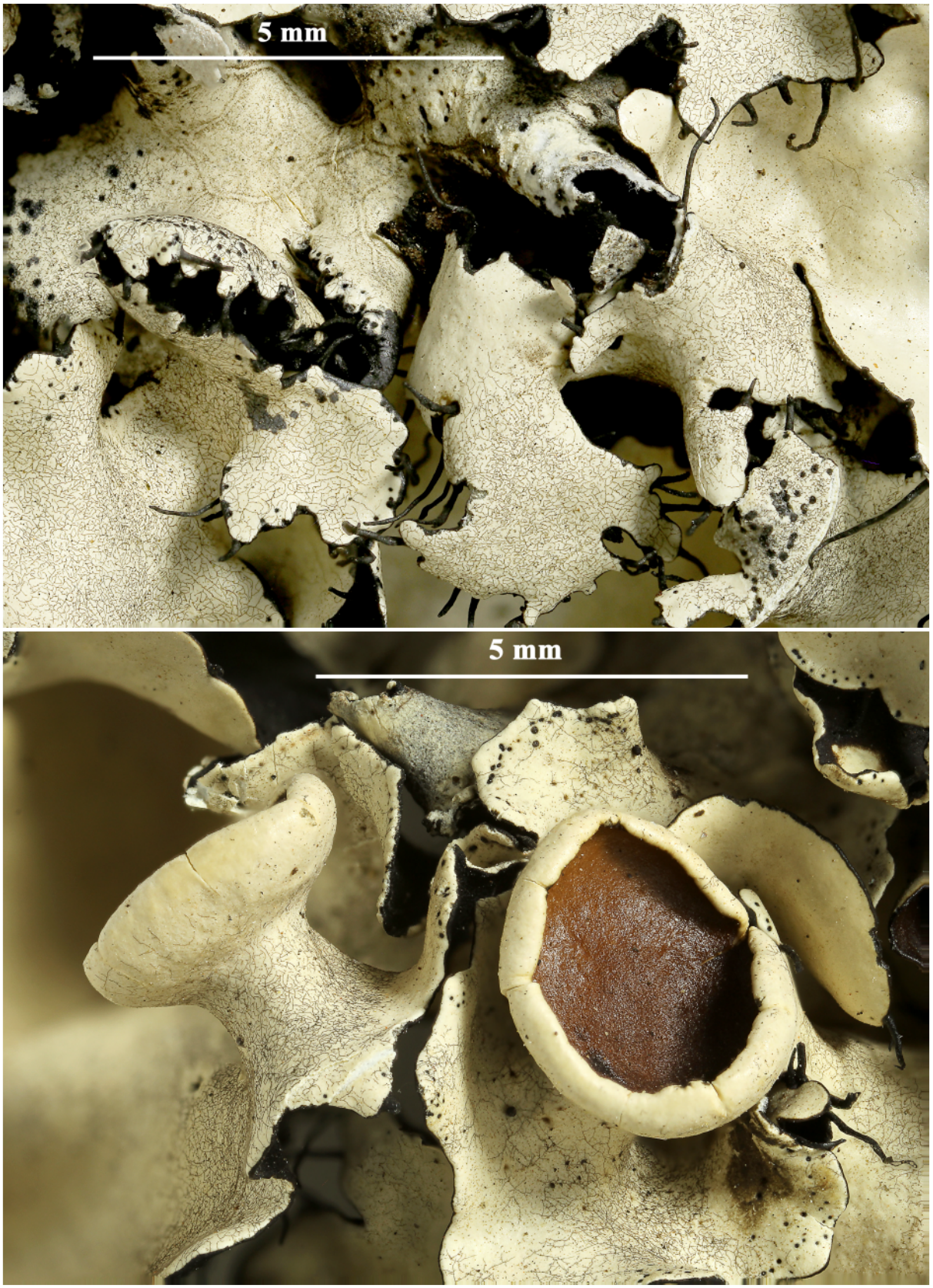
Parmotrema cristiferum

Parmotrema demethylmicrophyllinicum Elix

Thallus loosely adnate, coriaceous. Lobes irregular, 5-12 mm wide, margins lobulate-laciniate or not; apices rotund. Cilia apical, conspicuous, 1-4 mm long. Upper surface pale grey, emaculate, lacking soredia and isidia. Medulla white. Lower surface black, with a broad, erhizinate marginal zone. Rhizines sparse, simple, black. Apothecia common, 5-10 mm wide. Ascospores 12-14 x 6-8 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; atranorin, chloroatranorin, 4-*O*-demethylmicrophyllinic acid (major), olivetoric acid (trace), anziaic acid (trace).

[19115], Australia, Queensland, Hanging Pinnacle (Dempseys Peak), 7 km east of Mount Garnet, 17°41' S, 145°11' E, 700 m, growing on granitic rocks in *Eucalyptus* woodland. **ISOTYPUS**. Leg. J.A. Elix (16844) & H. Streimann 29.06.1984. Chemistry: atranorin, chloroatranorin, 4-*O*-demethylmicrophyllinic acid (major), olivetoric acid (trace), anziaic acid (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 114.

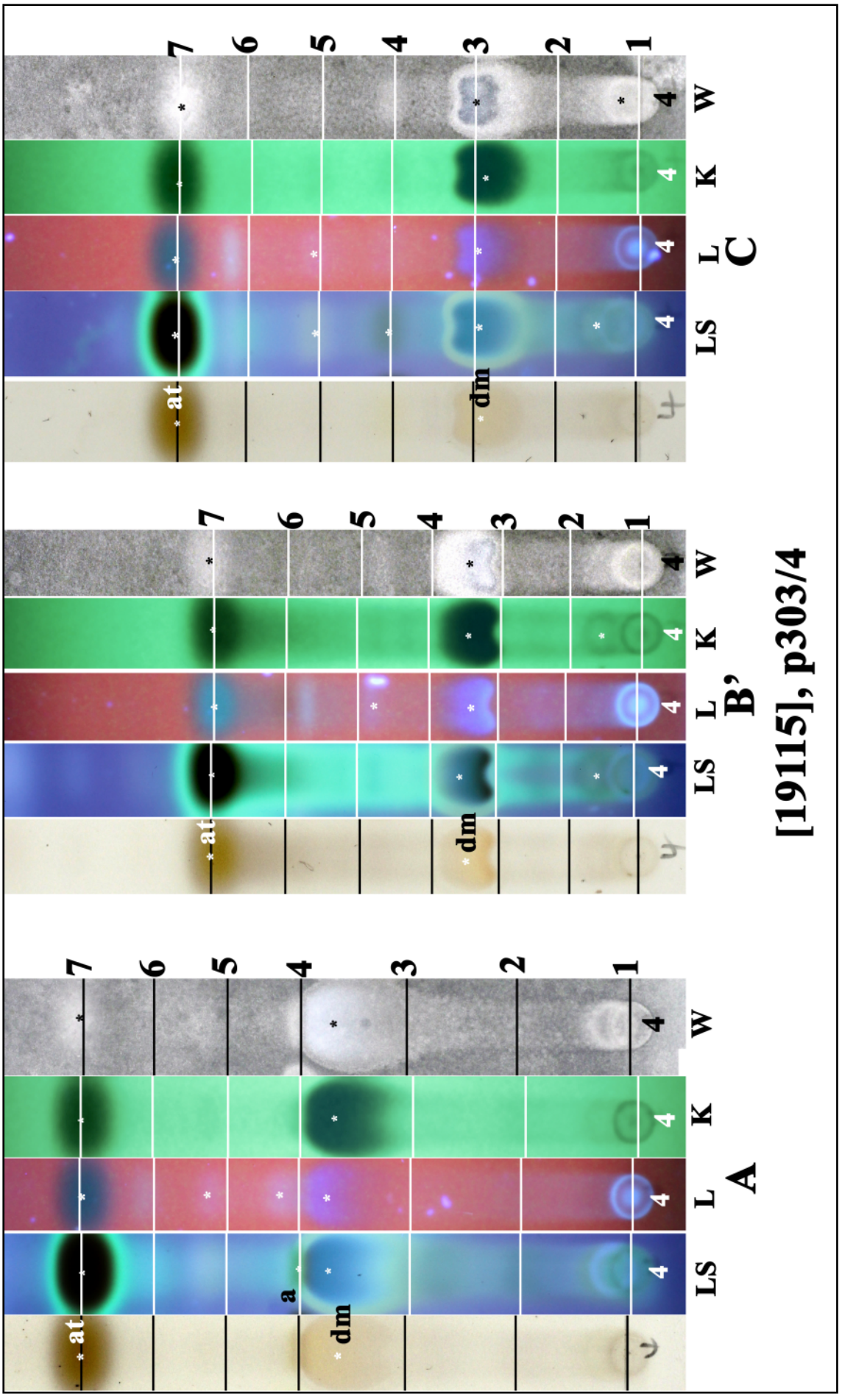




Parmotrema demethylmicrophyllinicum



Parmotrema demethylmicrophyllinicum



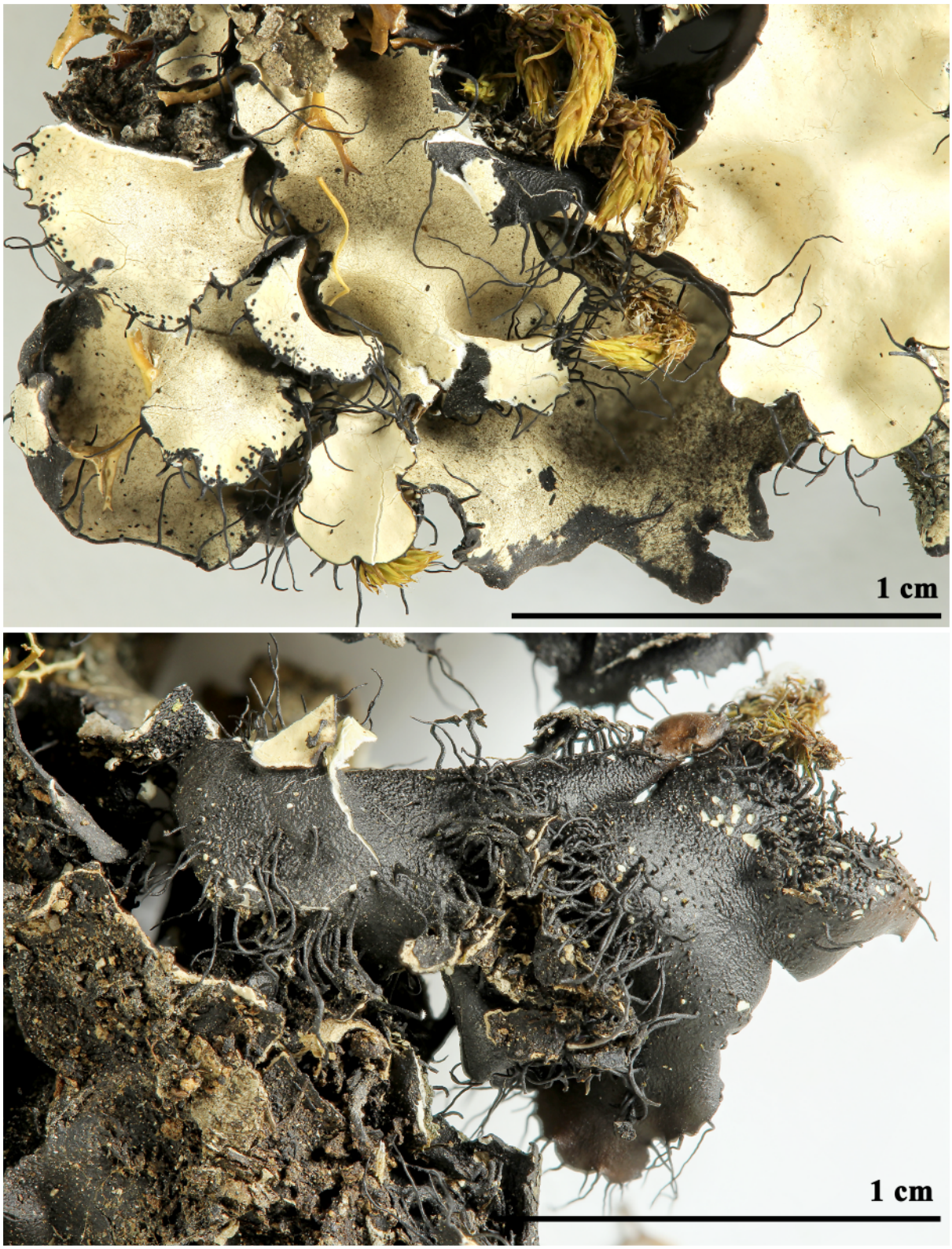
a: atranorin, dm: 4-*O*-demethylmicrophyllinic acid, a: anziaic acid

Parmotrema demethylmicrophyllinicum

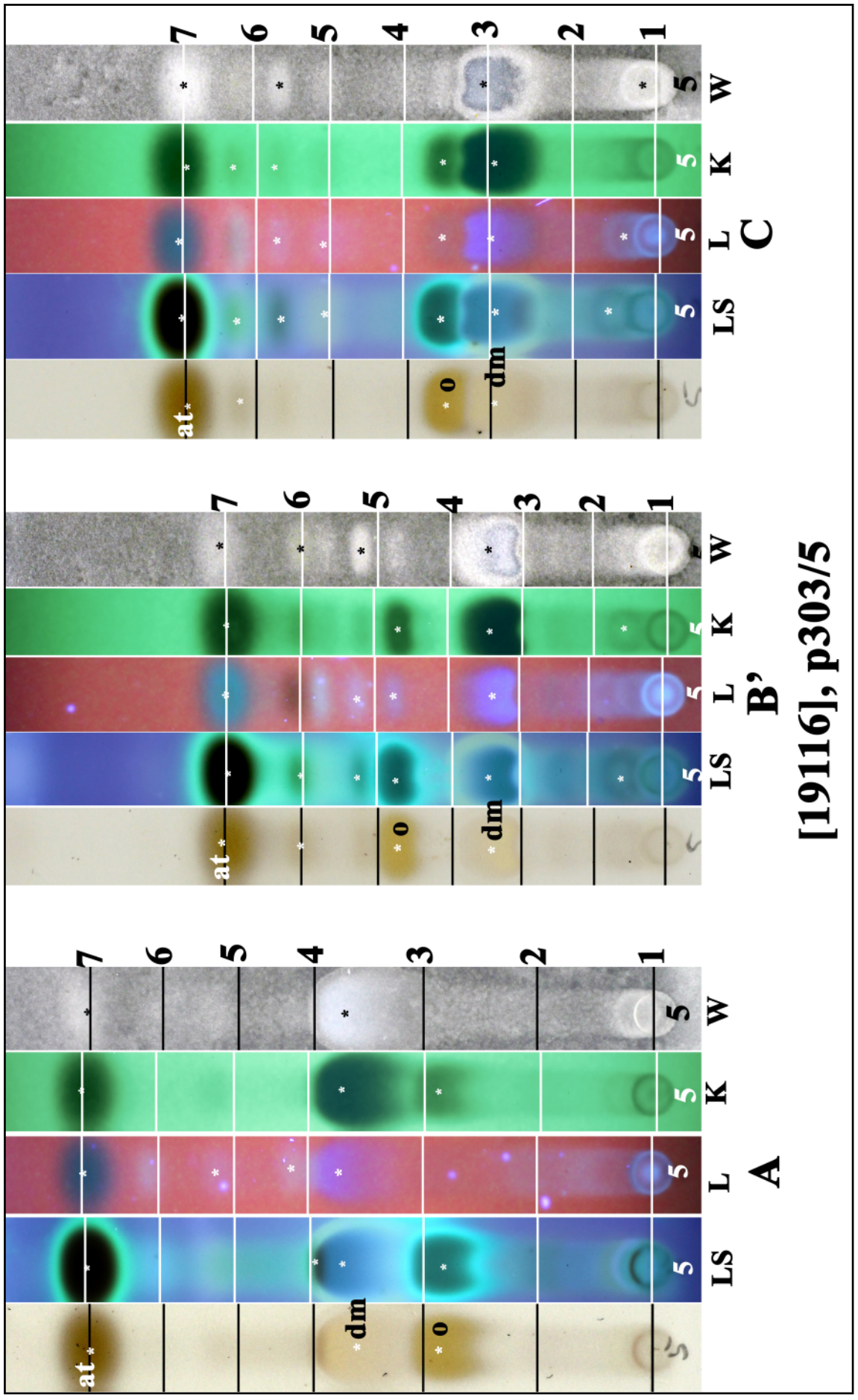
Parmotrema demethylmicrophyllinicum Elix

[19116], Australia, Queensland, Mt. Windsor Tableland, 37 km northwest of Mossman, 16°17' S, 145°05' E, 1100 m, growing on rocks on boulder strewn hillside with *Eucalyptus* and *Casuarina*. Leg. J.A. Elix (16563) & H. Streimann 26.06.1984. Chemistry: atranorin, chloroatranorin, 4-*O*-demethylmicrophyllinic acid (major), olivetoric acid (trace), anziaic (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 115.





Parmotrema demethylmicrophyllinicum



at: atranorin, dm: 4-*O*-demethylmicrophyllinic acid, o: olivetoric acid

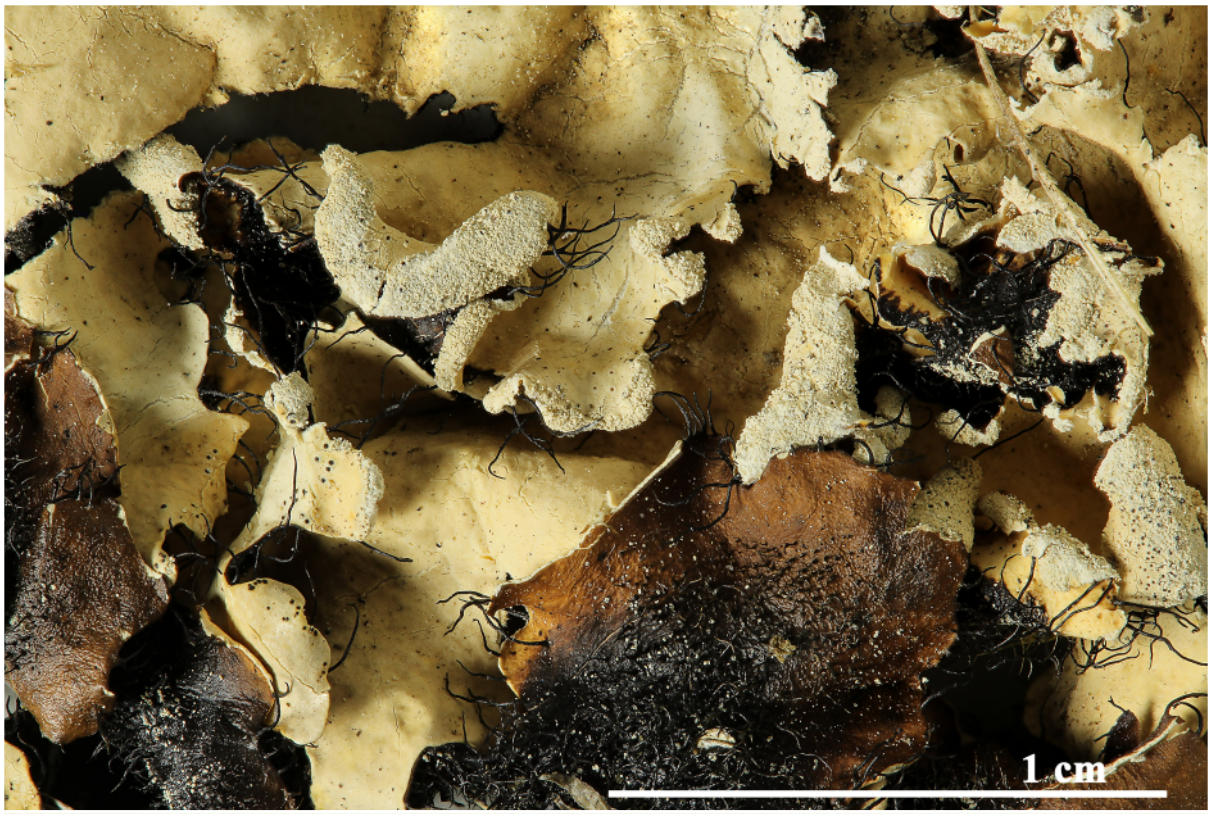
Parmotrema demethylmicrophyllinicum

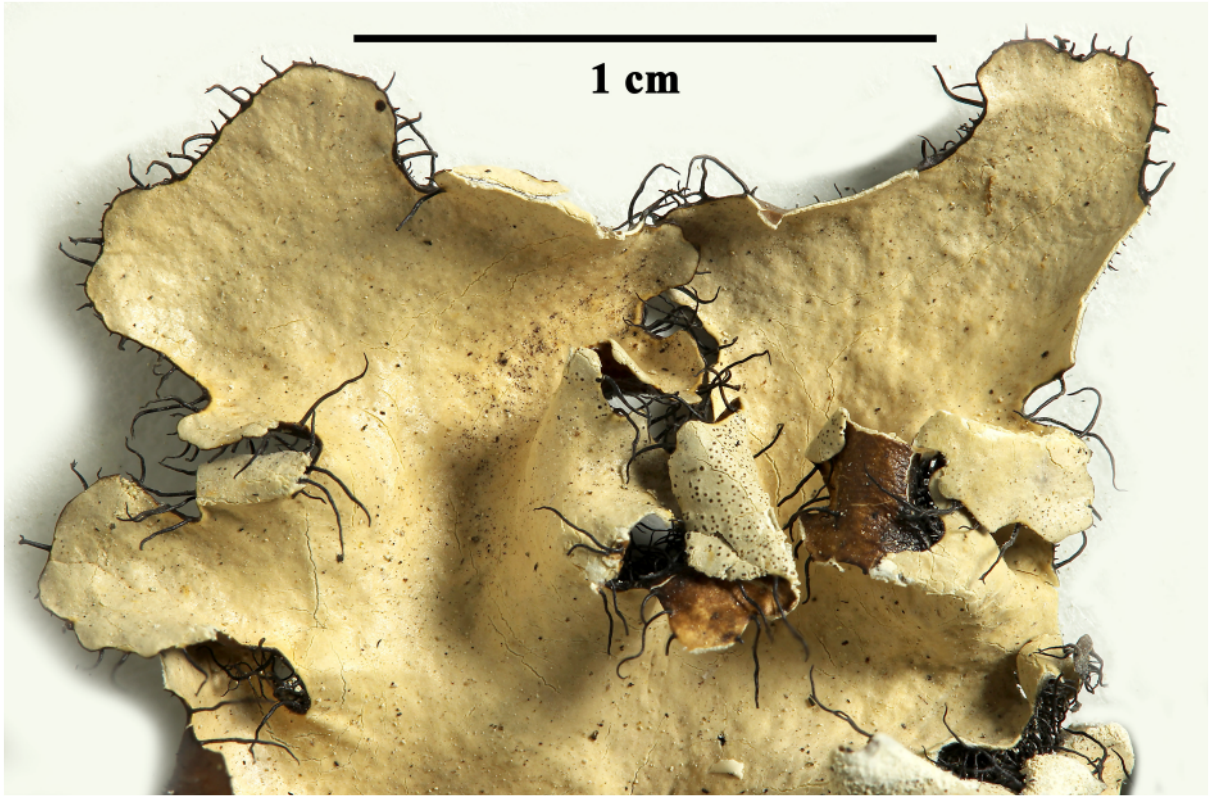
Parmotrema perlatum (Huds.) M.Choisy
[= ***Parmelia perlata*** (Huds.) Ach.]
[= ***Parmotrema chinense*** (Osbeck) Hale & Ahti]

Thallus loosely to moderate adnate, membranaceous to coriaceous. Lobes imbricate, irregular, 3-8 mm wide, in part incised and divided but lacking sublinear laciniae; cilia moderately dense to dense, branched or not, 0.2-3 mm long. Upper surface pale grey, emaculate, lacking isidia; soralia submarginal, causing lobe margins to become revolute and suberect, ultimately appearing labriform; soredia granular. Medulla white. Lower surface black, with a broad, brown, erhizinate marginal zone. Rhizines to 2 mm long. Apothecia rare. Ascospores 25-27 x 16-18 µm. Chemistry: cortex K+ yellow; medulla K+ bright yellow, C-, P+ orange-red; atranorin, chloroatranorin, stictic acid (major), constictic acid (major), cryptostictic acid (trace), menegazzaic acid (trace), norstictic acid (trace).

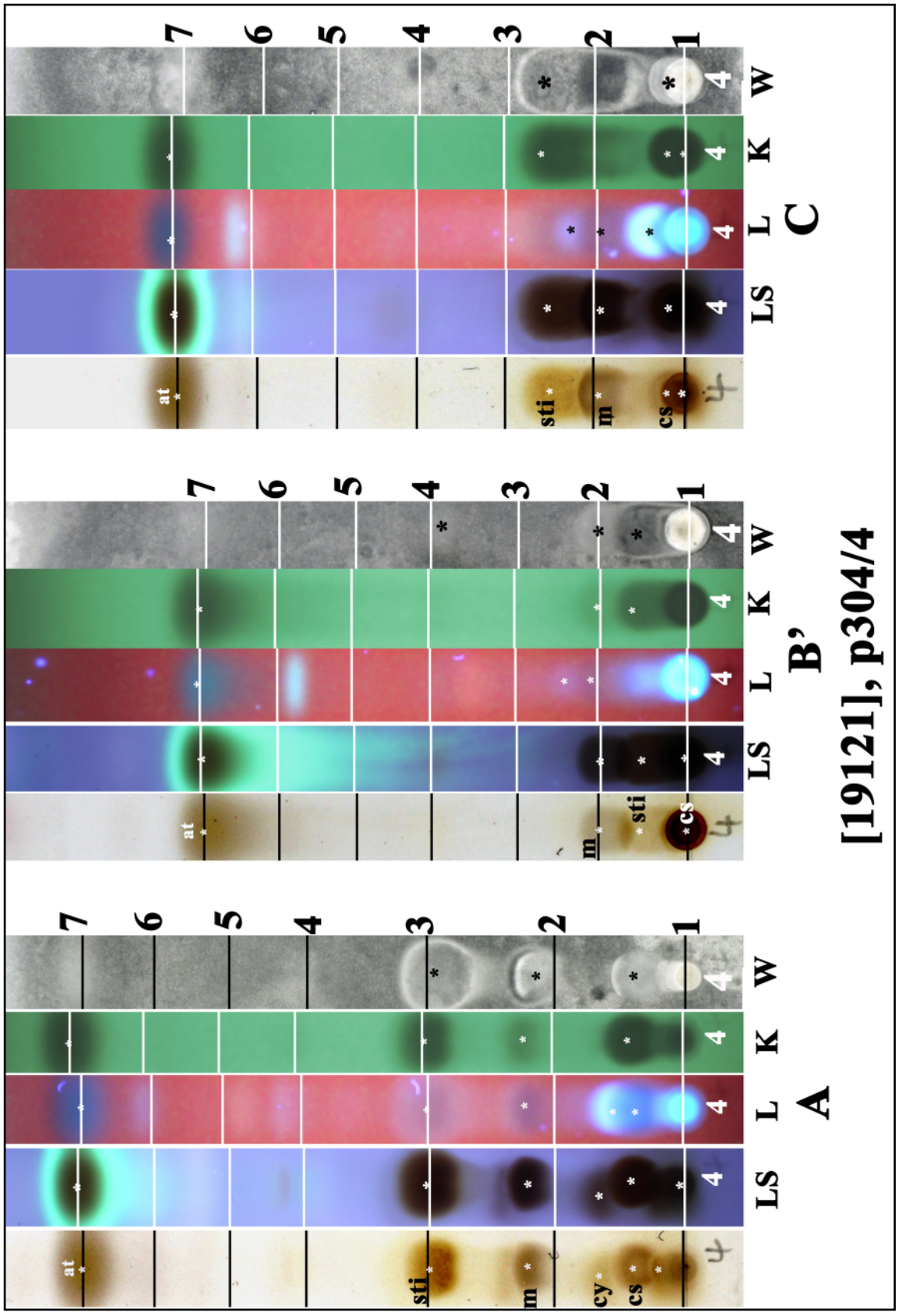
[19121], New Zealand, North Island, South Auckland, adjacent to scenic reserve overlooking Lake Taupo, 1 km south of Wharewaka, c. 38°46' S, 176°56' E, 350-400 m, open pasture, on outcrop of volcanic rock. Leg. J. Johnston (2392), 20.03.1985. Chemistry: atranorin, stictic acid (major), constictic acid (minor), cryptostictic acid (trace), menegazzaic acid (trace), connorstictic acid (faint trace), hypostictic acid (faint trace), norstictic acid (very faint trace) by TLC in solvent C, anal. J. Johnston.







Parmotrema perlatum

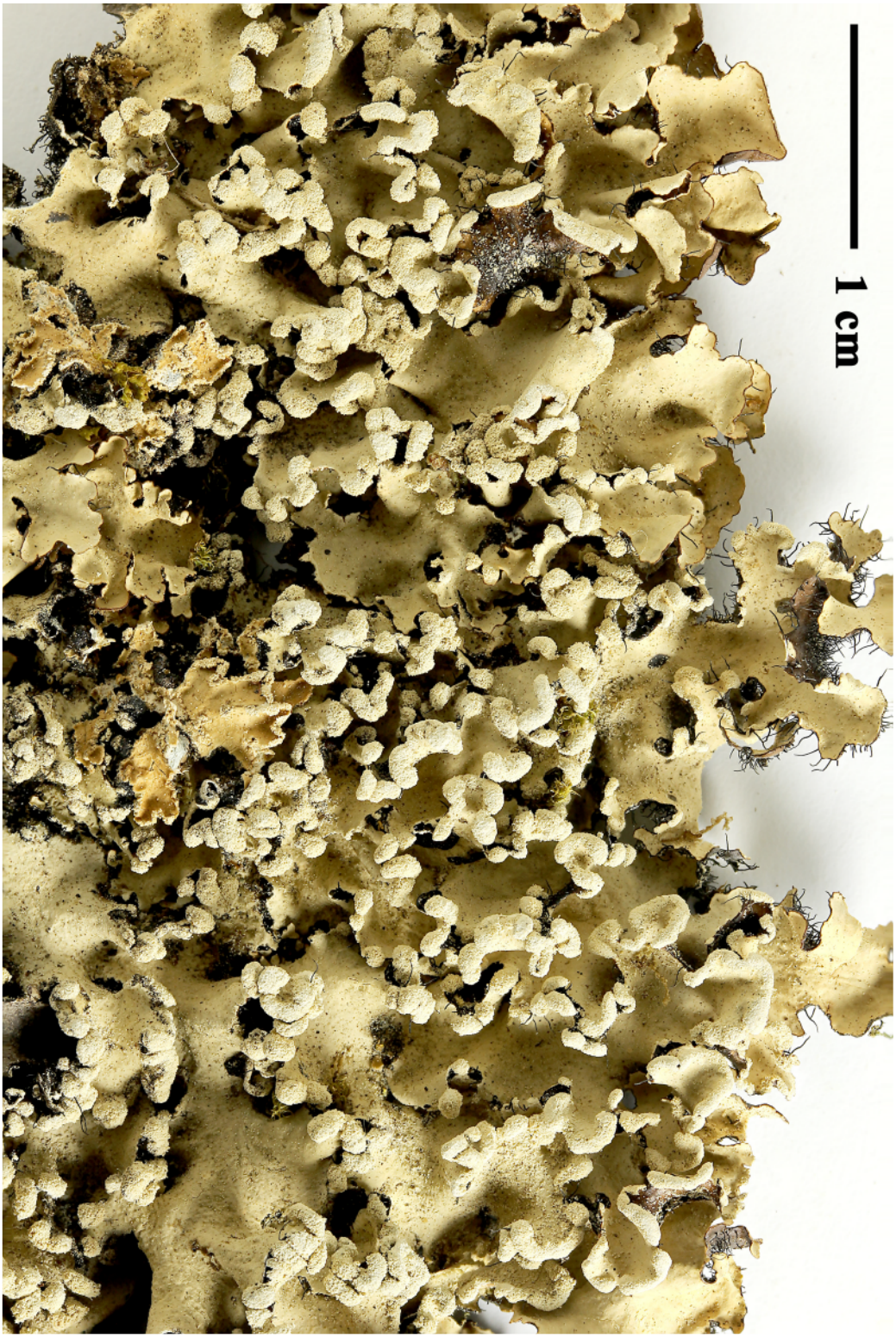


at: atranorin, sti: stictic acid, m: menegazzaic acid, cs: constictic acid, cy: cryptostictic acid

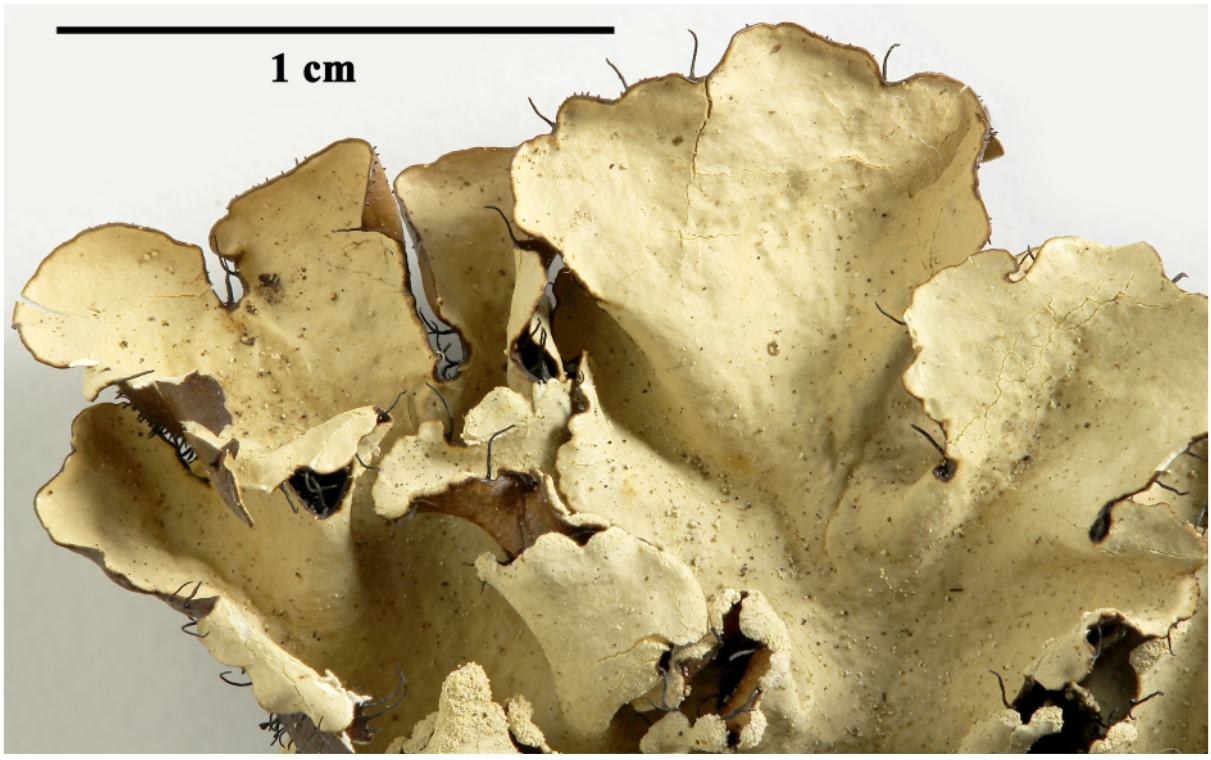
Parmotrema perlatum

Parmotrema perlatum (Huds.) M.Choisy
[= ***Parmelia perlata*** (Huds.) Ach.]
[= ***Parmotrema chinense*** (Osbeck) Hale & Ahti]

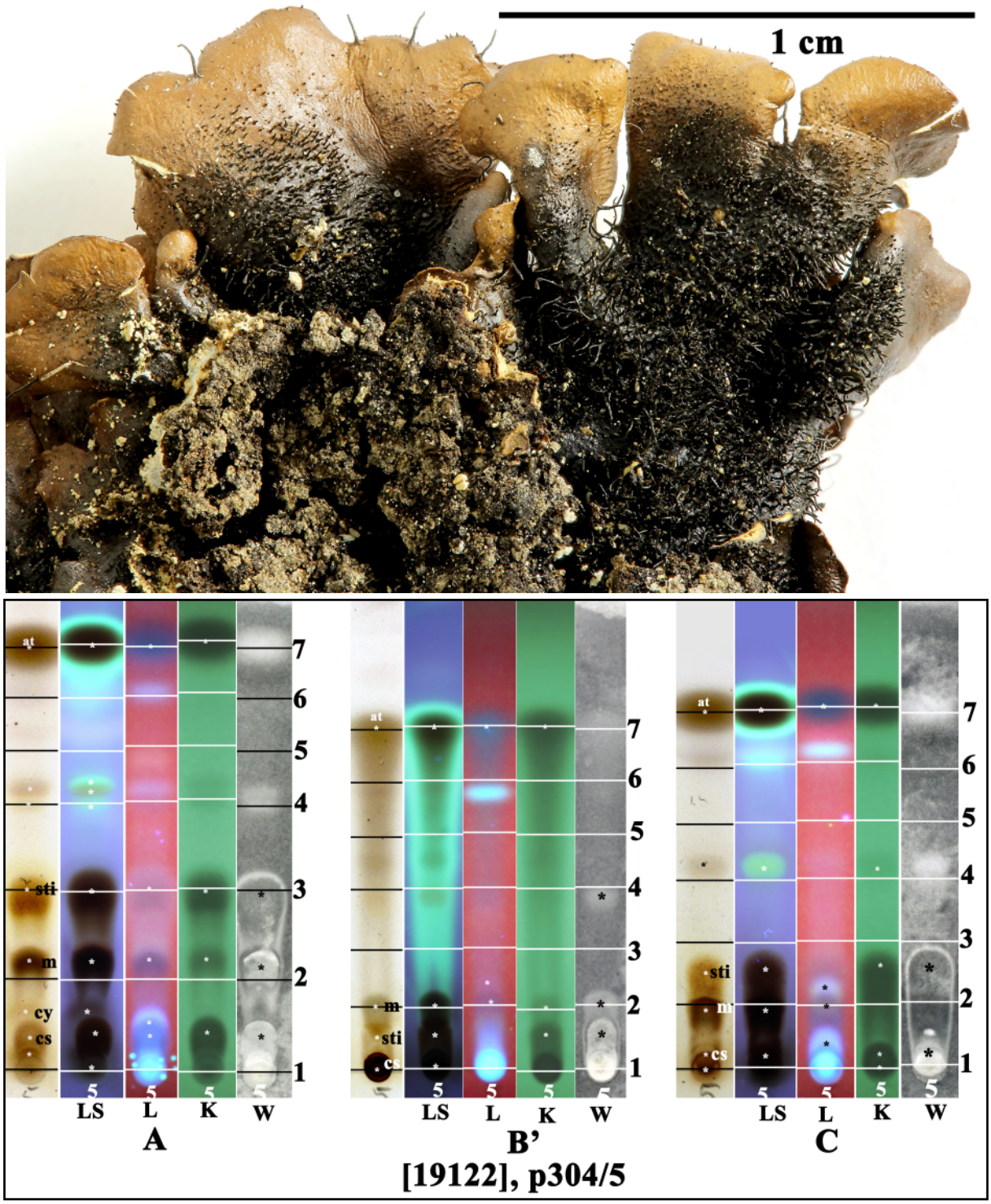
[19122], New Zealand, South Island, Canterbury, hills above Governor's Bay, Lyttelton Harbour, on shaded rockface in moist gully with remnant forest, SE aspect. Leg. J. Johnston (1796), 9.03.1985. Chemistry: atranorin, stictic acid (major), constictic acid, cryptostictic acid (trace), menegazzaic acid (trace), hypostictic acid (faint trace) by TLC, anal. J. Johnston.







Parmotrema perlatum



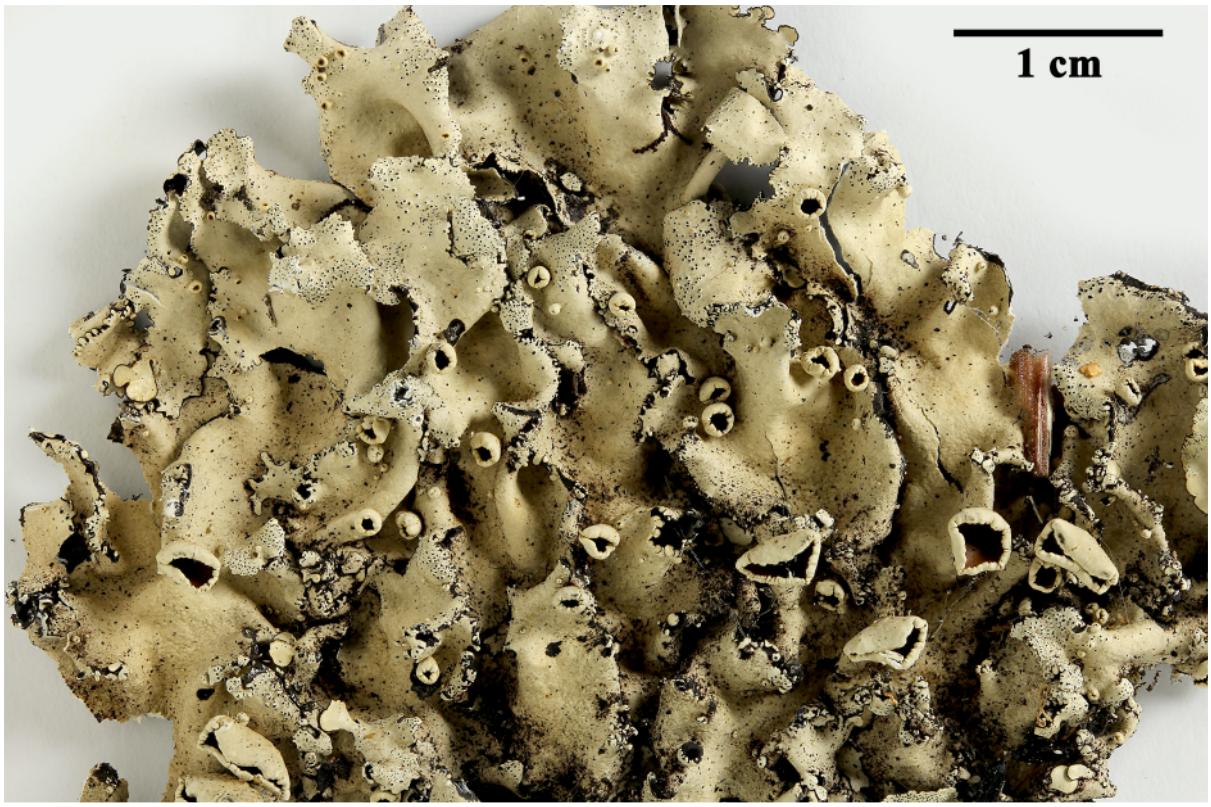
at: atranorin, sti: stictic acid, m: menegazzaic acid,
cs: constictic acid, cy: cryptostictic acid

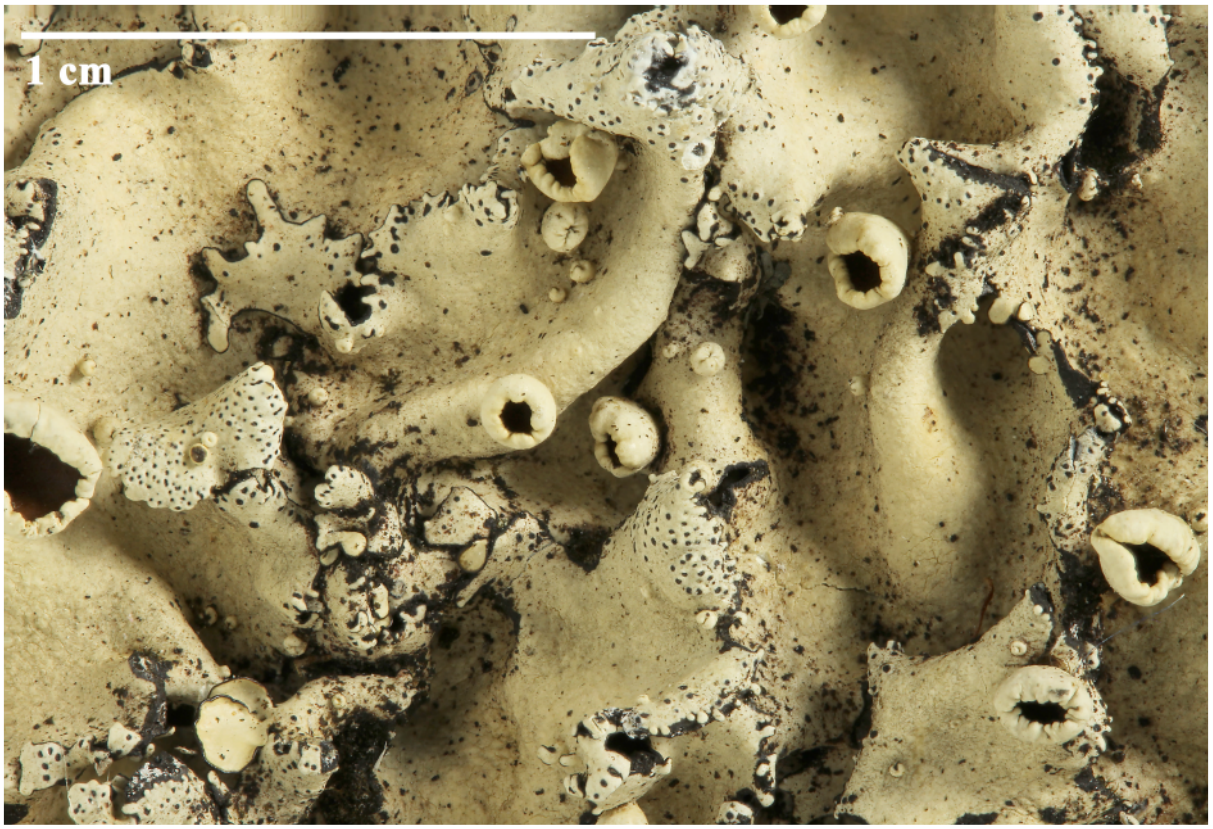
Parmotrema perlatum

Parmotrema queenslandense Elix

Thallus loosely adnate, coriaceous. Lobes irregular, 5-12 mm wide, lacking lobules; margins eciliate, apices rotund. Upper surface pale grey or darkening with age, emaculate, lacking soredia and isidia. Medulla white. Lower surface black; marginal rim broad, brown, erhizinate. Rhizines sparse, simple, black. Apothecia common, pedicellate, 5-10 mm wide; disc imperforate. Ascospores 10-17 x 5-7 µm. Chemistry:cortex K+ yellow; medulla K-, C-, KC-, P+ orange-red; atranorin, chloroatranorin, succinprotocetraric acid (major), fumarprotocetraric acid (major), protocetraric acid (trace), unidentified fatty acid.

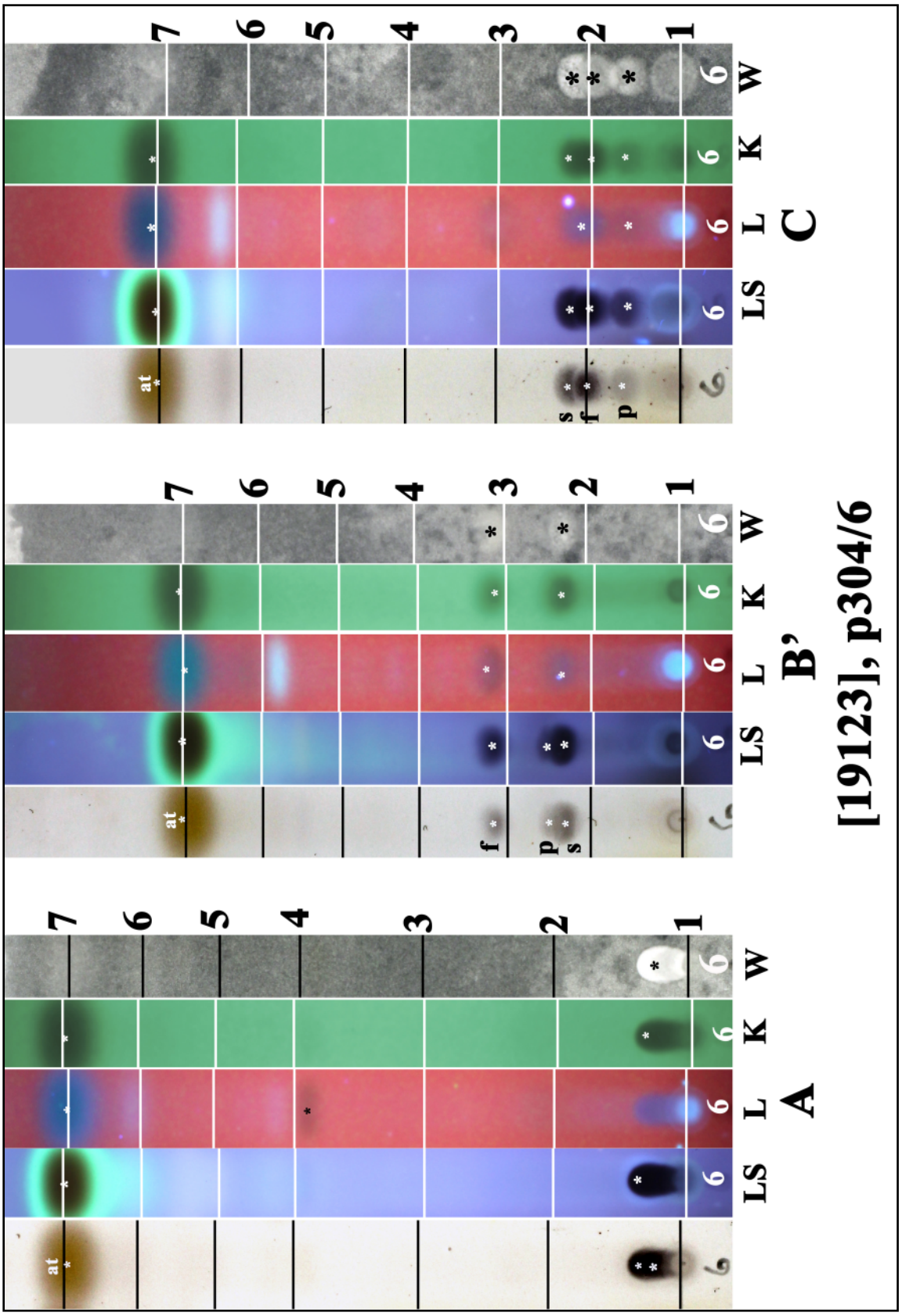
[19123], Australia, Queensland, Mt. Catharina, 10 km north-east of Ingham, 18°37' S, 146°15' E, 70 m, growing on rocks in *Eucalyptus* dominated grassland. Leg. J.A. Elix (17654) & H. Streimann, 8.7.1984. Chemistry: atranorin, chloroatranorin, succinprotocetraric acid, fumarprotocetraric acid, protocetraric acid (trace), unknown fatty acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 117.







Parmotrema queenslandense



at: atranorin, p: protocetraric acid, f:fumarprotocetraric acid, s: succinprotocetraric acid

Parmotrema queenslandense

Parmotrema queenslandense Elix

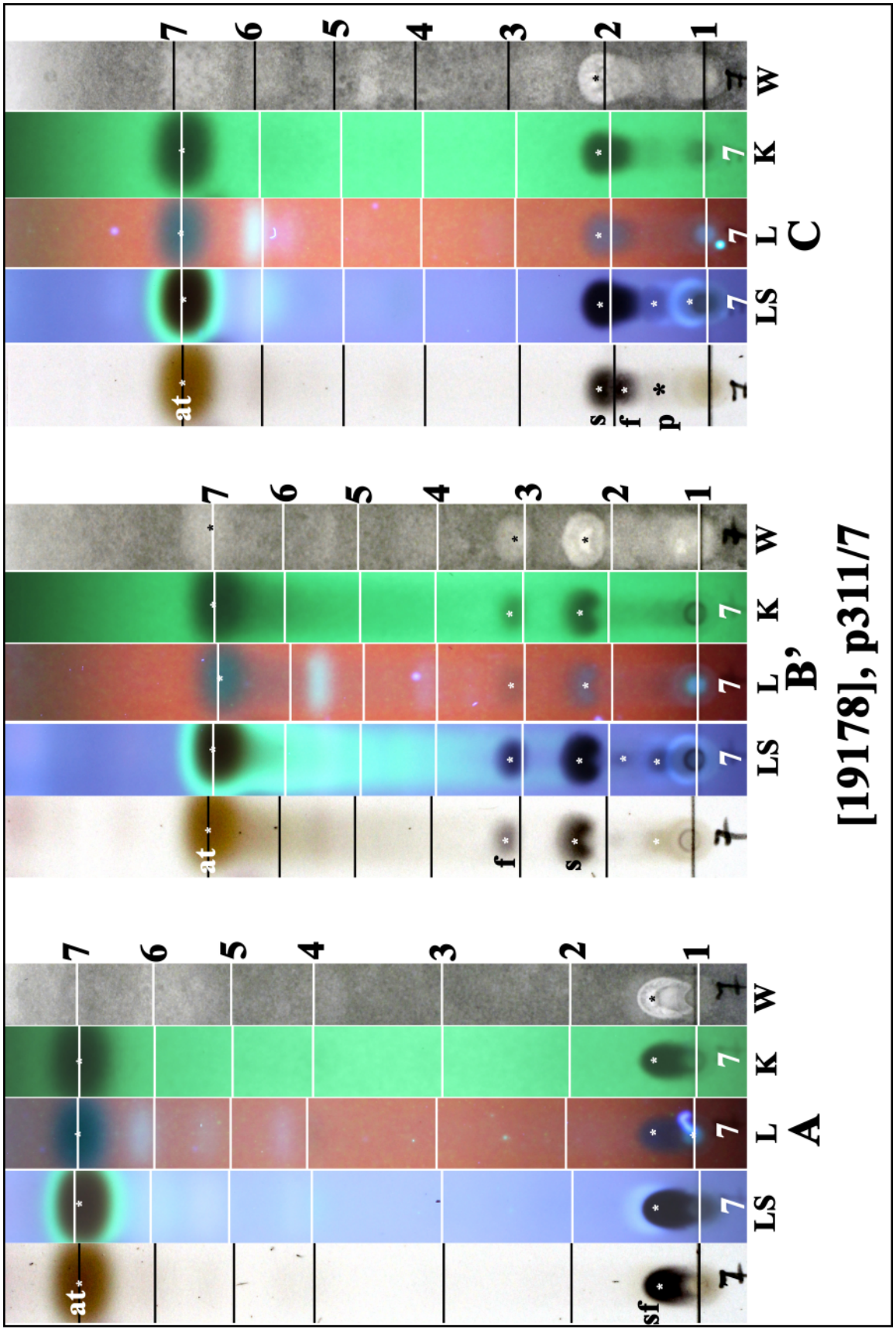
[19178], Australia, Queensland, near summit of Mount Leswell, 32 km south of Cooktown, 15°46' S, 145°15' E, 440 m, growing on granite rocks in *Eucalyptus* dominated woodland. **ISOTYPUS**. J.A. Elix (17365) & H. Streimann, 5.07.1984. Chemistry: atranorin, chloroatranorin, succinprotocetraric acid, fumarprotocetraric acid, protocetraric acid (trace), unknown fatty acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 116.







Parmotrema queenslandense



at: atranorin, s: succinprotocetraric acid, f: fumarprotocetraric acid, p: protocetraric acid

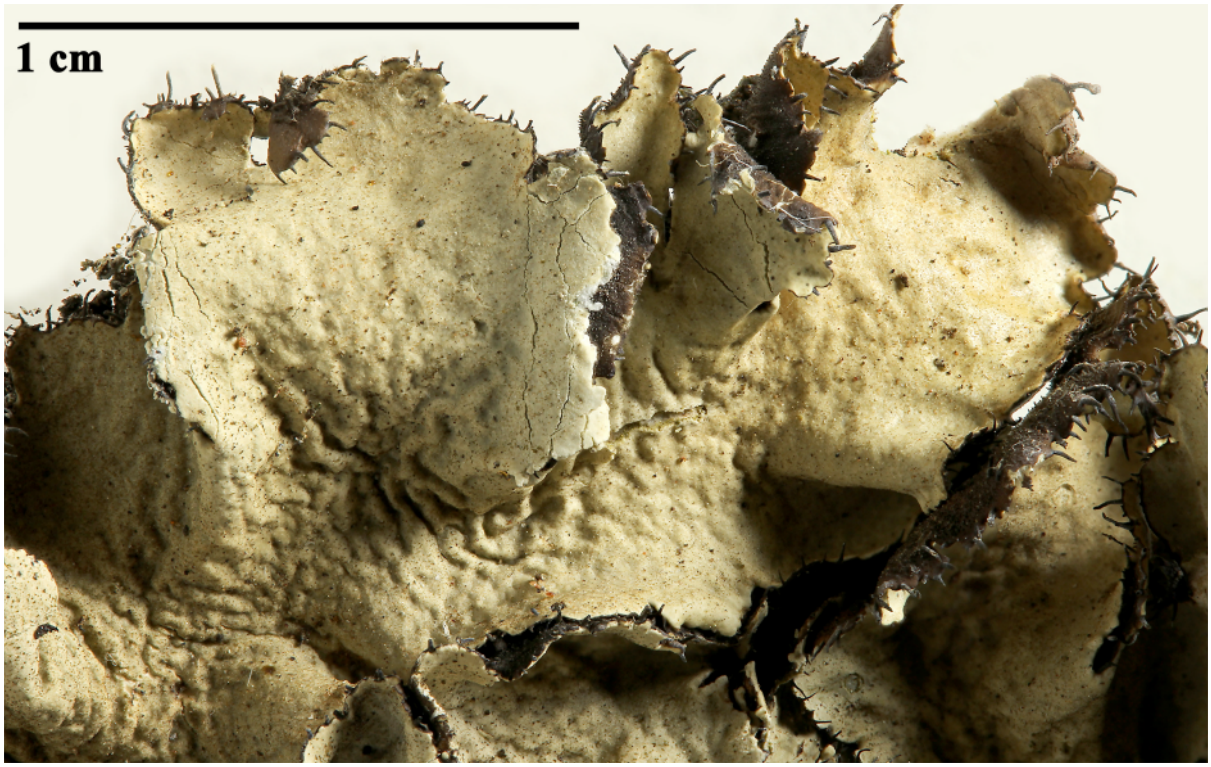
Parmotrema queenslandense

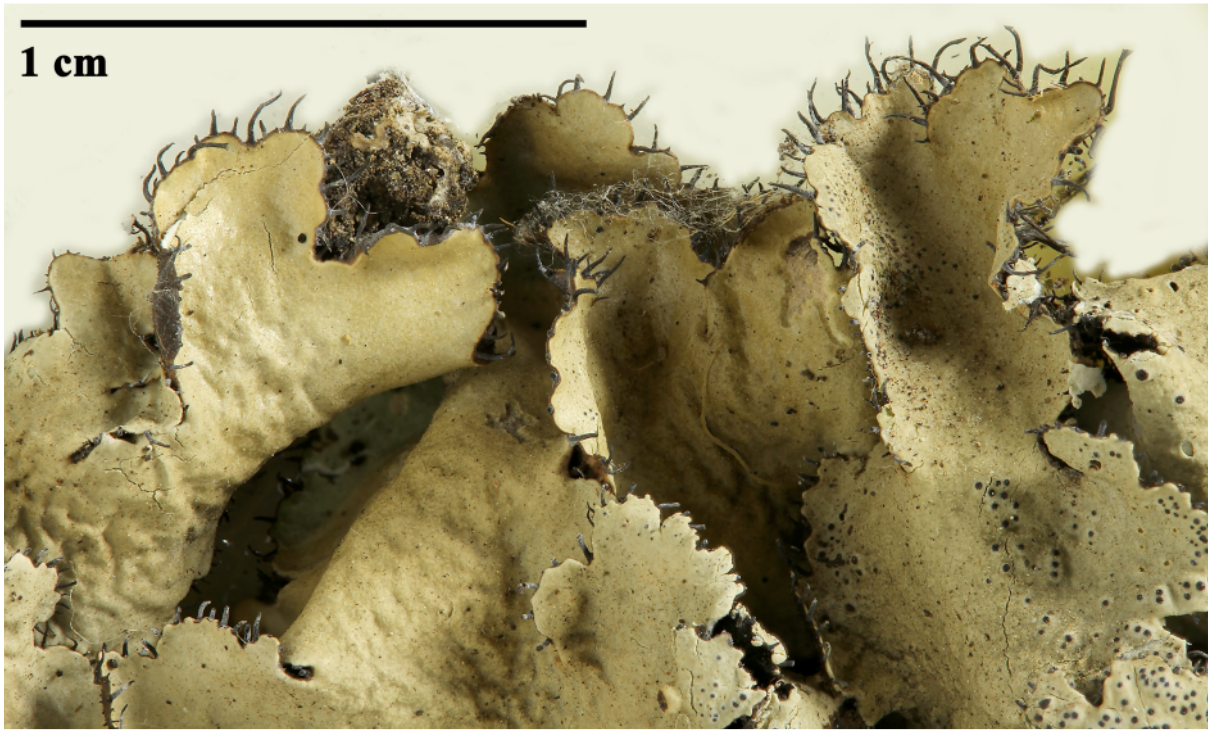
Parmotrema recipiendum (Nyl.) Hale
[= ***Rimeliella recipienda*** (Nyl.) Kurok.]
[= ***Parmelia recipienda*** Nyl.]

Thallus loosely adnate, coriaceous. Lobes rotund, 7-15 mm wide; margins crenate; cilia moderately sense to dense at apices, often branched, 1-3 mm long. Upper surface pale grey to grey, white maculate, lacking soredia and isidia. Lower surface brown, blackening near centre. Rhizines 0.2-3.5 mm long. Apothecia pedicellate, 10-30 mm wide; disc perforate. Ascospores 12-19 x 6-10 µm. Chemistry: cortex K+ yellow; medulla K-, C-, KC+ rose, P-; atranorin, chloroatranorin, norlobaridone.

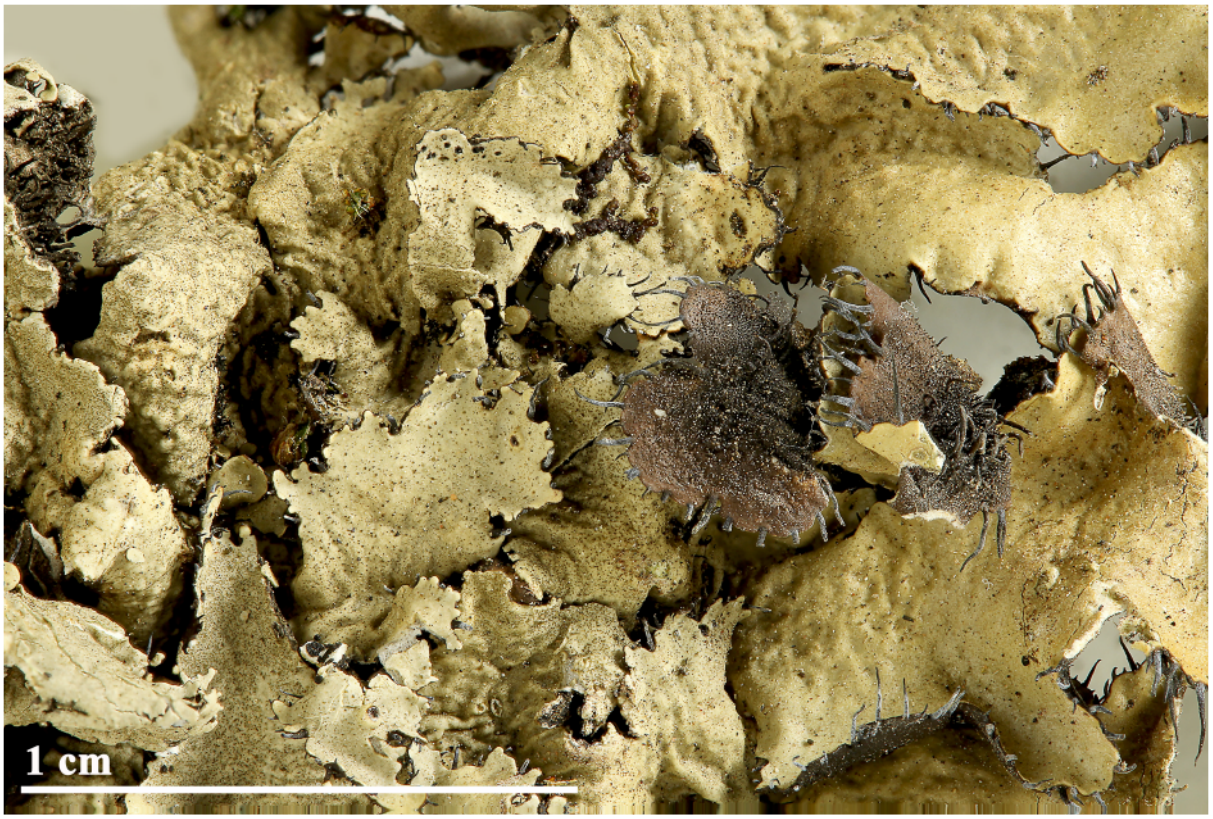
[19124], Australia, New South Wales, Bimbi State Forest, 23 km west-south-west of Grenfell, 33°57' S, 147°55' E, 280, growing on trunk of *Callitris columellaris* in *Callitris* dominated forest. Leg. J.A. Elix (23076), 31.05.1990. Chemistry: atranorin (minor) chloroatranorin (minor), norlobaridone (major) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 213.



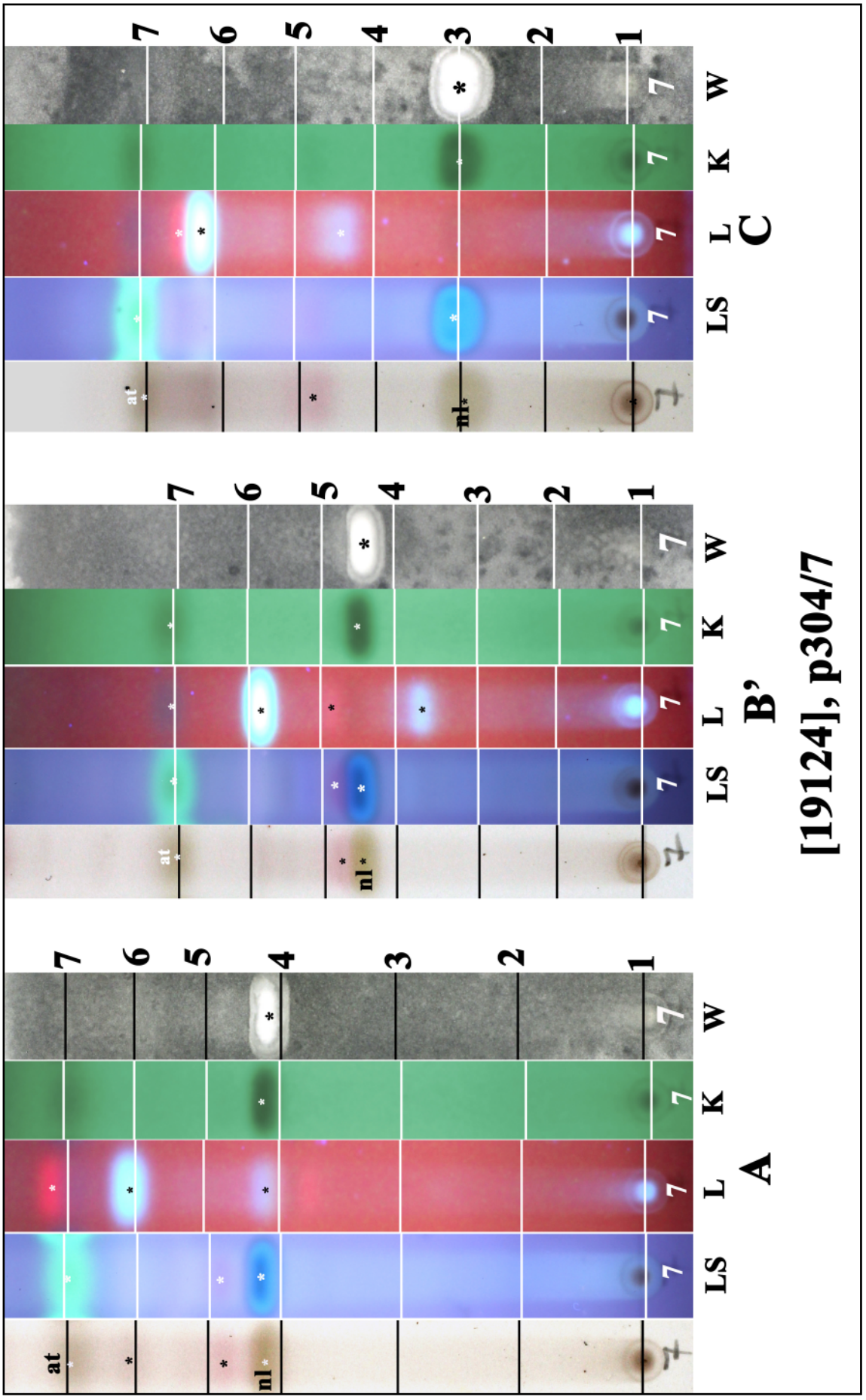




Parmotrema recipiendum



Parmotrema recipiendum

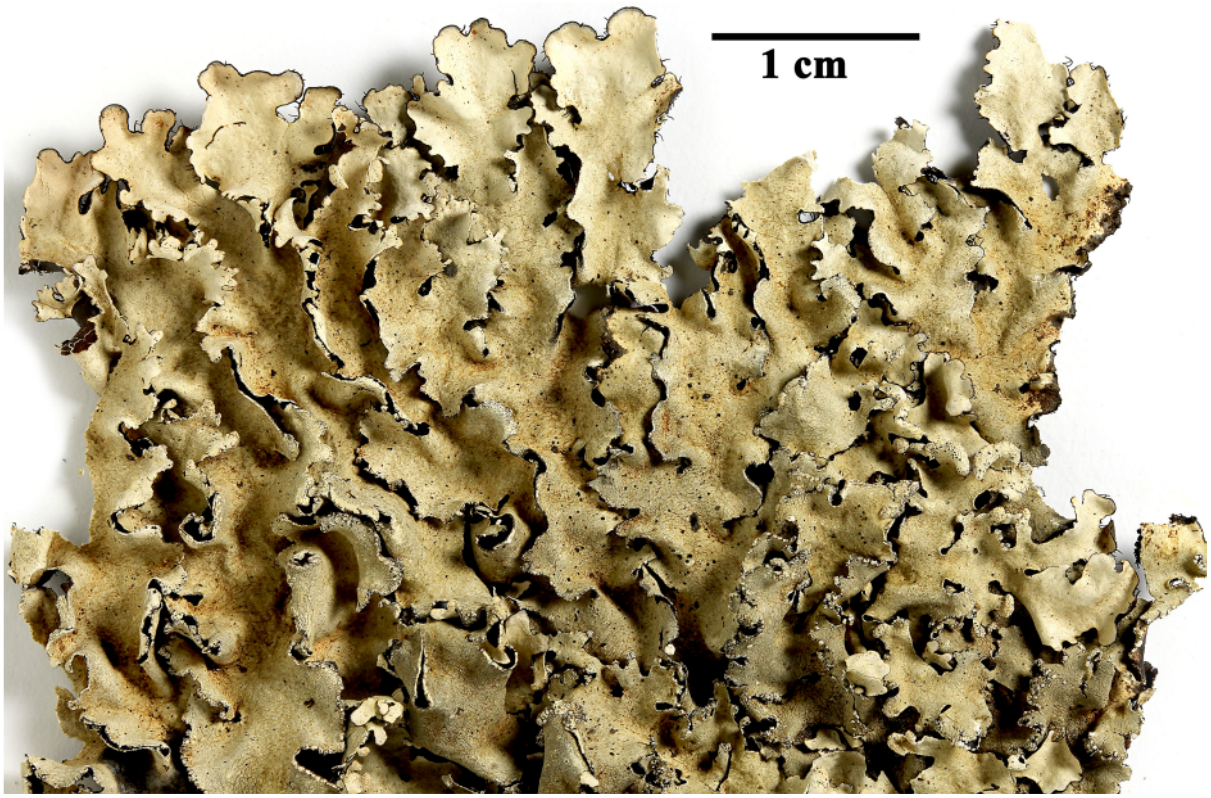


Parmotrema recipiendum

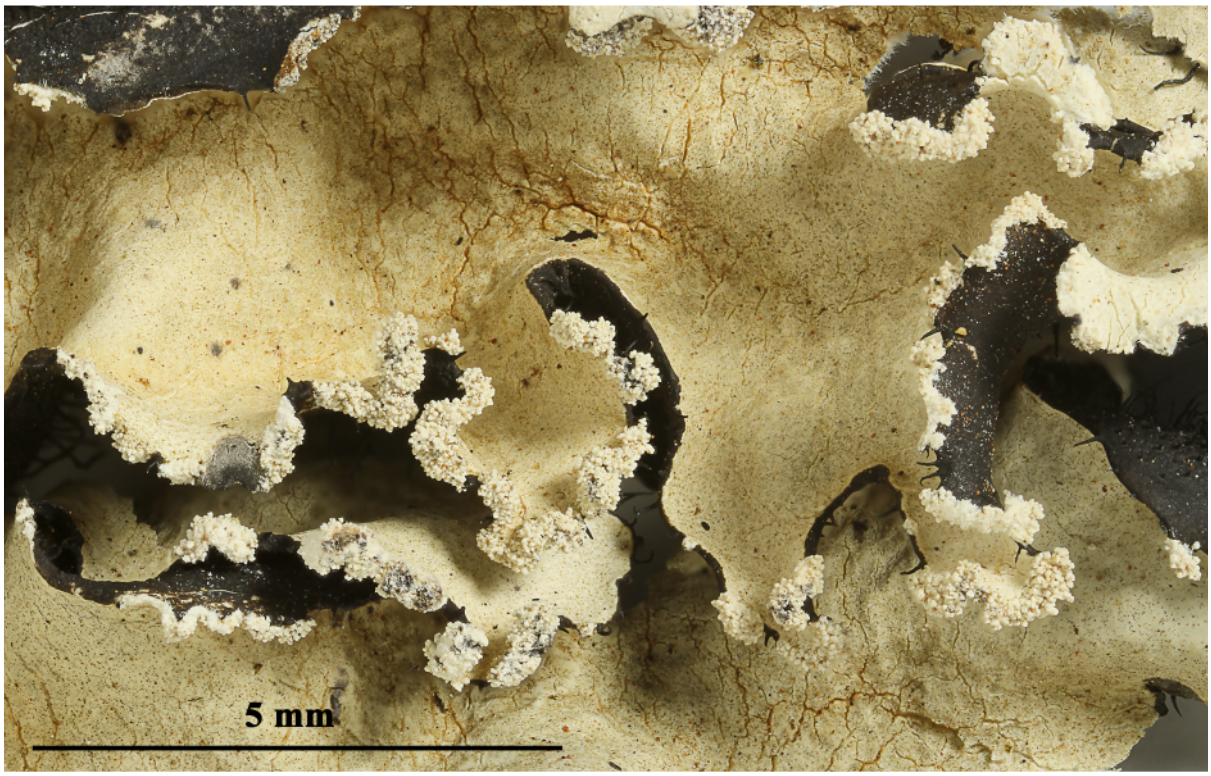
Parmotrema reticulatum (Taylor) M.Choisy
[= ***Rimelia reticulata*** (Taylor) Hale & Fletcher]
[= ***Parmelia reticulata*** Taylor]

Thallus loosely adnate, membranaceous to coriaceous. Lobes imbricate or subascending at margins, irregular, partly rounded and deeply crenate, partly laciniate, 5-15 mm wide; cilia sparse to moderately dense, simple, 0.2-3 mm long. Upper surface pale grey to grey-green, sorediate, without dactyls; soralia marginal, linear to subcapitate; soredia granular. Lower surface with rhizines or papillae to lobe margins or with an erhizinate marginal zone. Apothecia rare, 2-8 mm wide; disc imperforate. Ascospores 13-18 x 8-11 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then red, C-, P+ orange-red; atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor).

[19125], Norfolk Island, Bumboras Reserve, 29°03'30" S, 167°56'30" E, 25 m, growing on volcanic rocks in open *Araucaria* woodland. Leg. J.A. Elix (18833) & H. Streimann, 10.12.1984. Chemistry: atranorin, chloroatranorin, salazinic acid (major), consalazinic acid (minor), unknown (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 089.





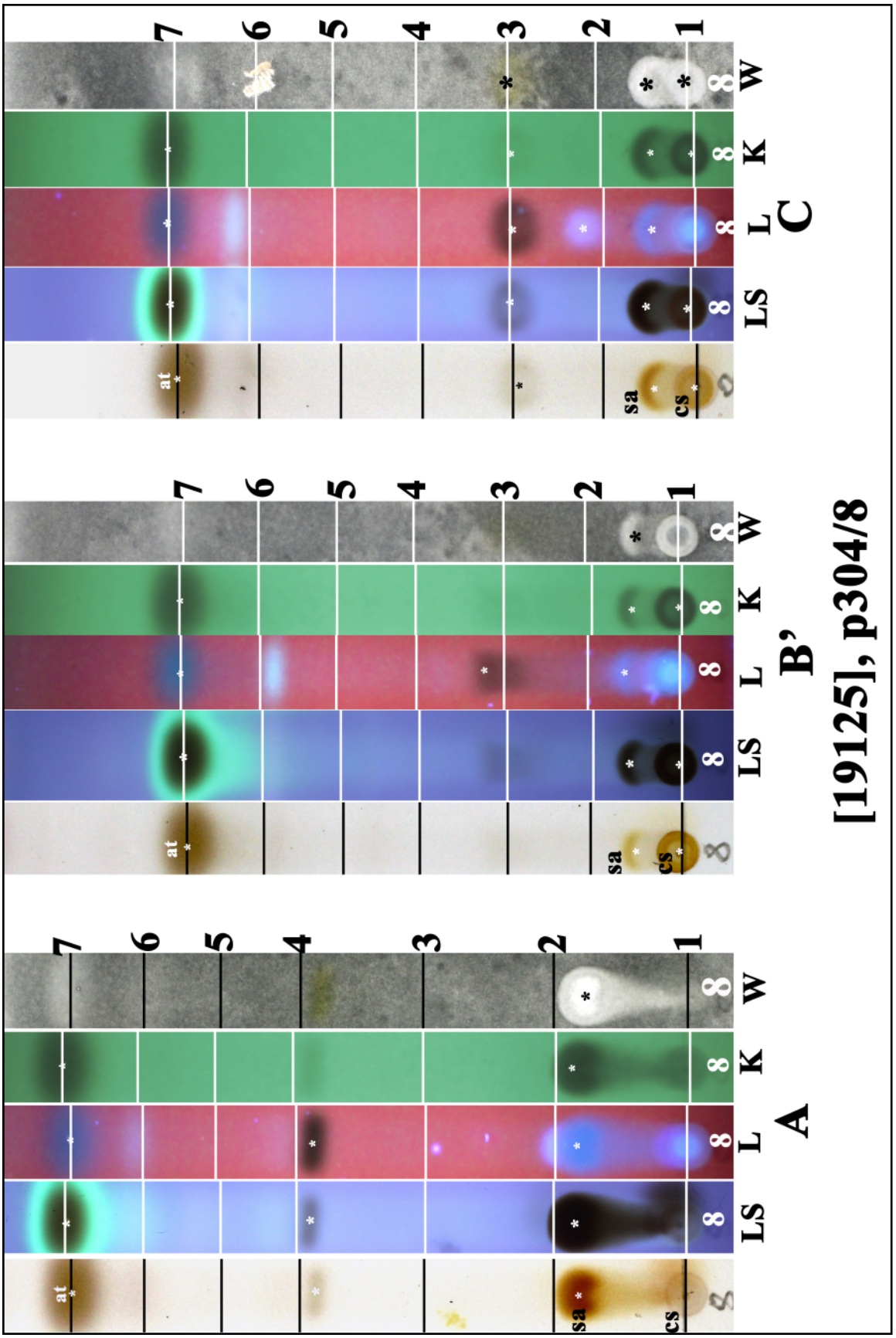


Parmotrema reticulatum





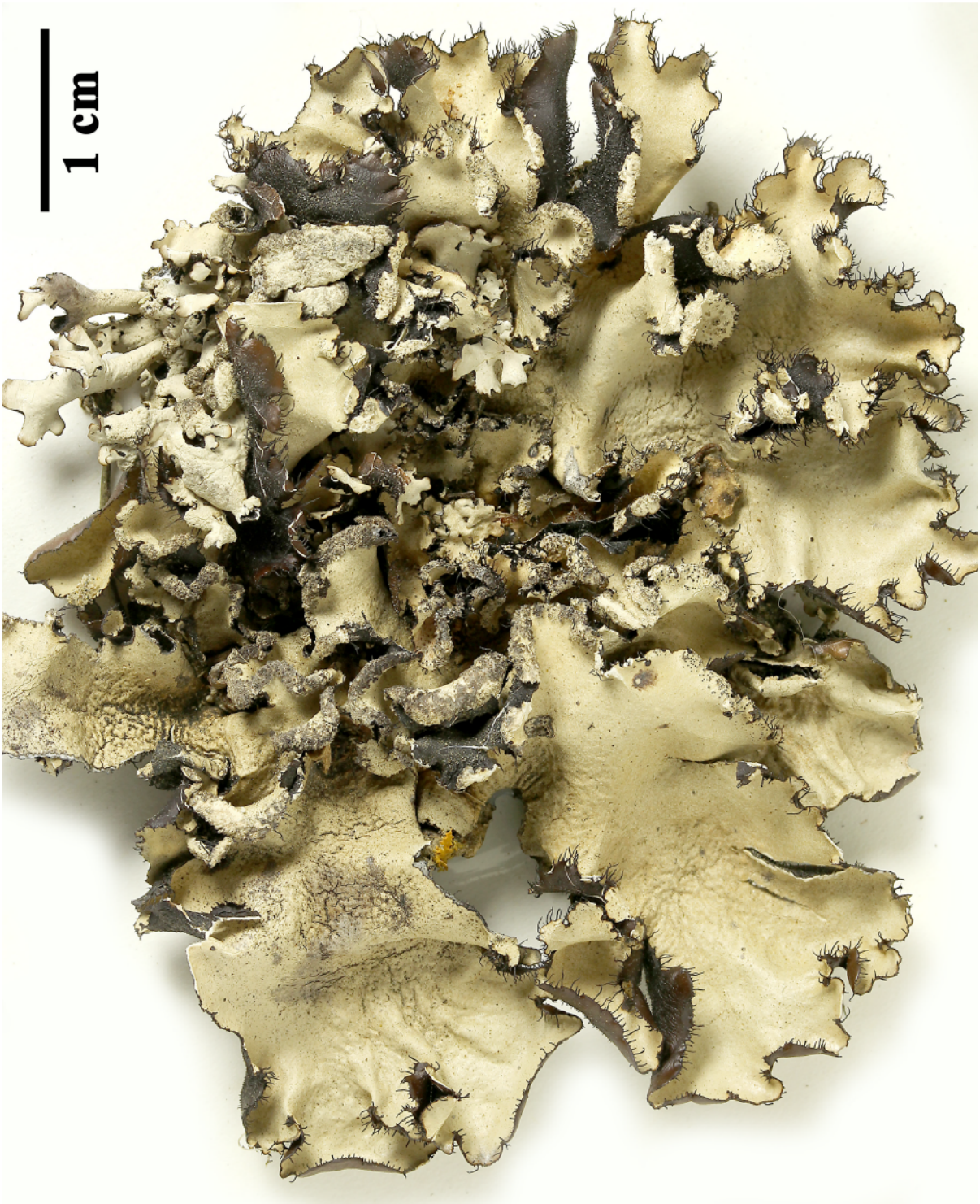
Parmotrema reticulatum

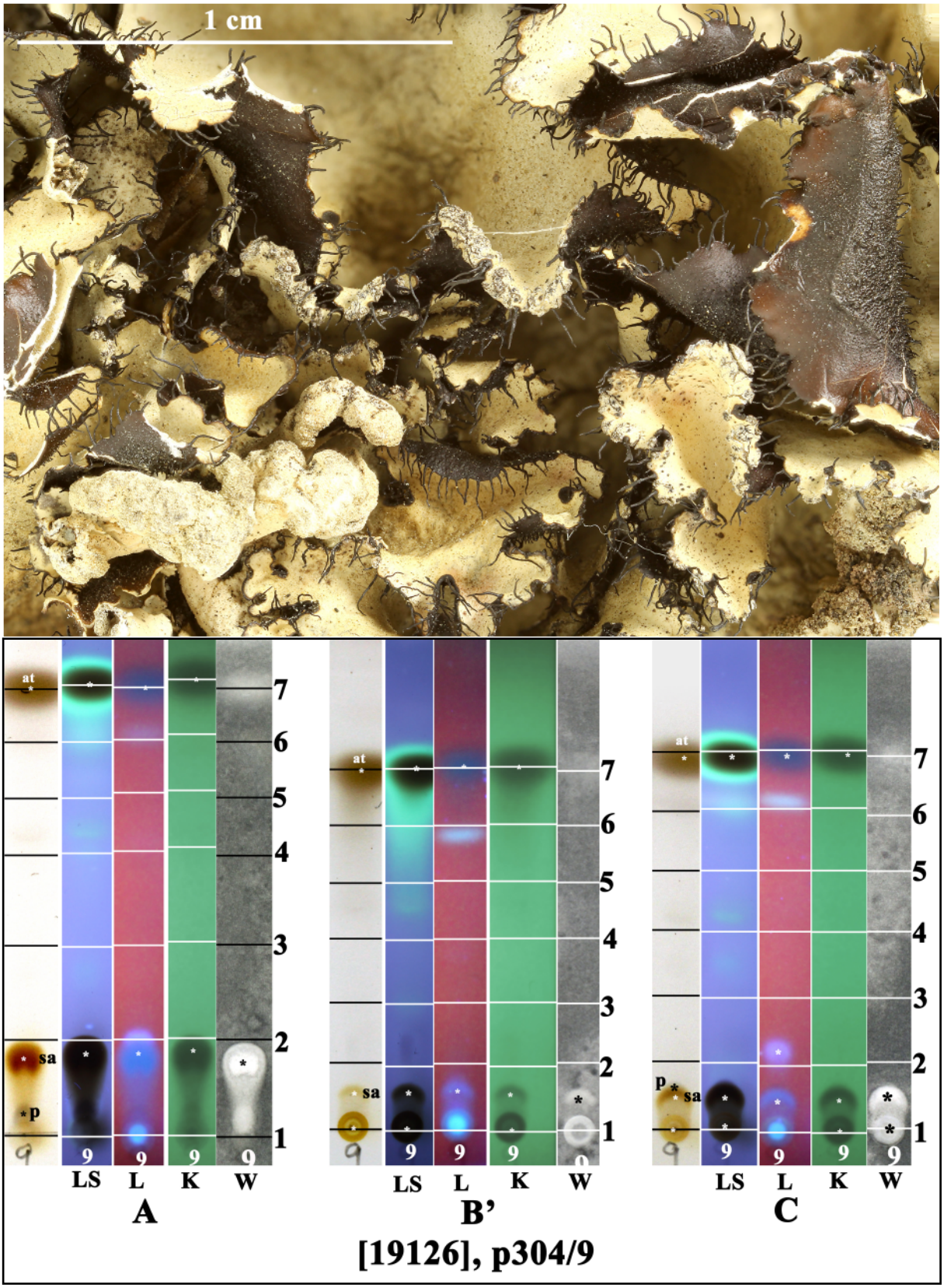


Parmotrema reticulatum

Parmotrema reticulatum (Taylor) M.Choisy
[= ***Rimelia reticulata*** (Taylor) Hale & Fletcher]
[= ***Parmelia reticulata*** Taylor]

[19126], New Zealand, South Island, Otago, rocky hillside, c. 27.5 km west-south-west of Ranfurly on Alexandra-Palmerston road, on rock outcrop with E aspect in paddock. Leg. J. Johnston (2123), 15.03.1985. Chemistry: atranorin, salazinic acid (major), consalazinic acid, protocetraric acid (trace) by TLC, anal. J. Johnston.





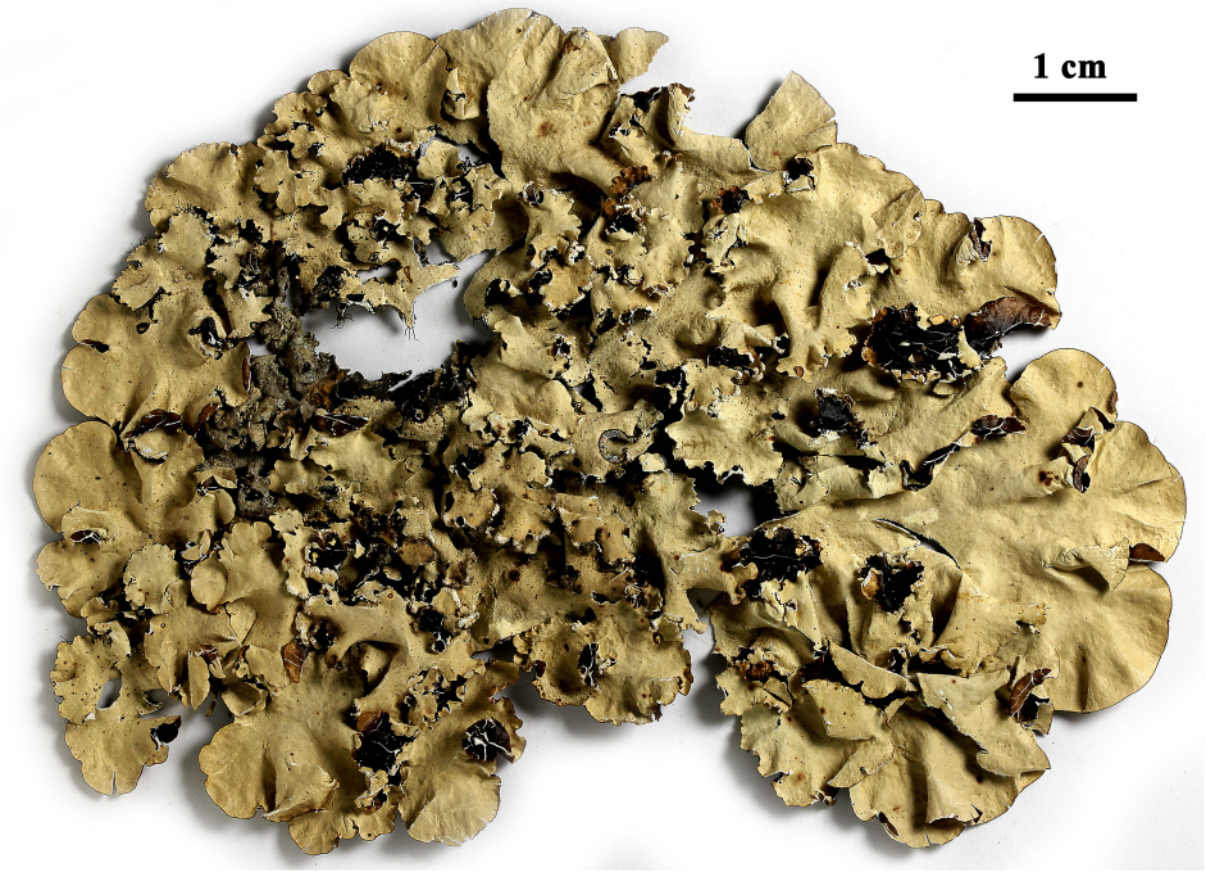
at: atranorin, sa: salazinic acid, p: protocetraric acid (trace)

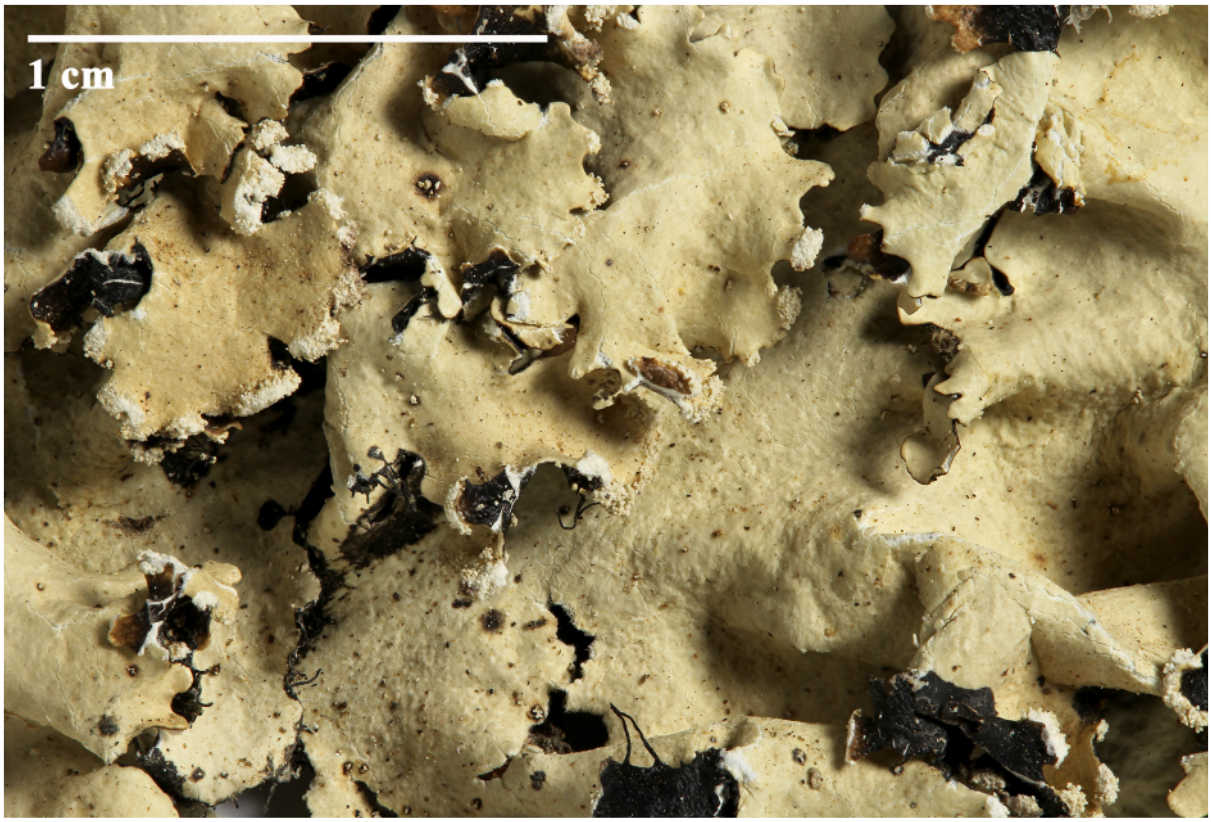
Parmotrema reticulatum

Parmotrema robustum (Degel.) Hale
[= ***Parmelia robusta*** Degel.]

Thallus loosely adnate, membranaceous. Lobes rotund, 10-15 mm wide; margins entire, ciliate; cilia sparse, 0.5-1.5 mm long, sometimes only in lobe axils. Upper surface grey faintly maculate at margins, becoming reticulate-cracked in centre with age, without isidia; soralia marginal, short, linear on small incised marginal laciniae, sorediate laciniae becoming convolute; soredia granular. Medulla white. Lower surface black, with a wide erhizinate, brown, marginal zone; rhizines sparse. Apothecia rare, disc imperforate. Ascospores 18-22 x 8-10 µm. Chemistry: cortex K+ yellow; medulla K+ dingy yellow becoming dirty brown, C-, P+ orange-red; atranorin, chloroatranorin, protocetraric acid (major), ± unidentified fatty acid.

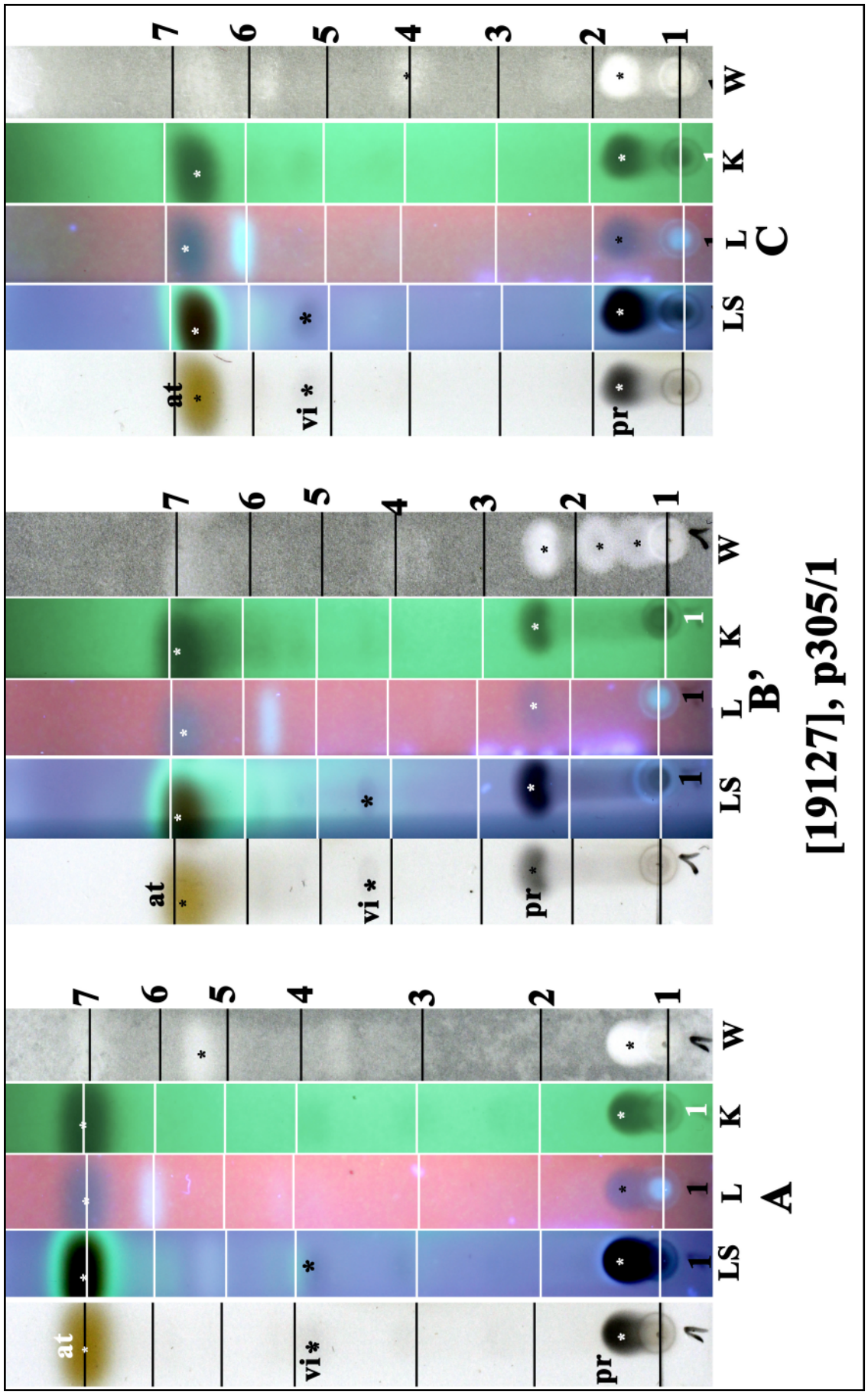
[19127], Australia, New South Wales, along the Mongarlowe River, 3.5 km south of Monga, 35°37' S, 149°55' E, 665 m, growing on *Acacia falciformis* in wet sclerophyll forest. Leg. J.A. Elix (11415) & H. Streimann, 25.10.1983. Chemistry: atranorin, chloroatranorin, protocetraric acid (major), virensic acid (trace), unknown (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 141.







Parmotrema robustum



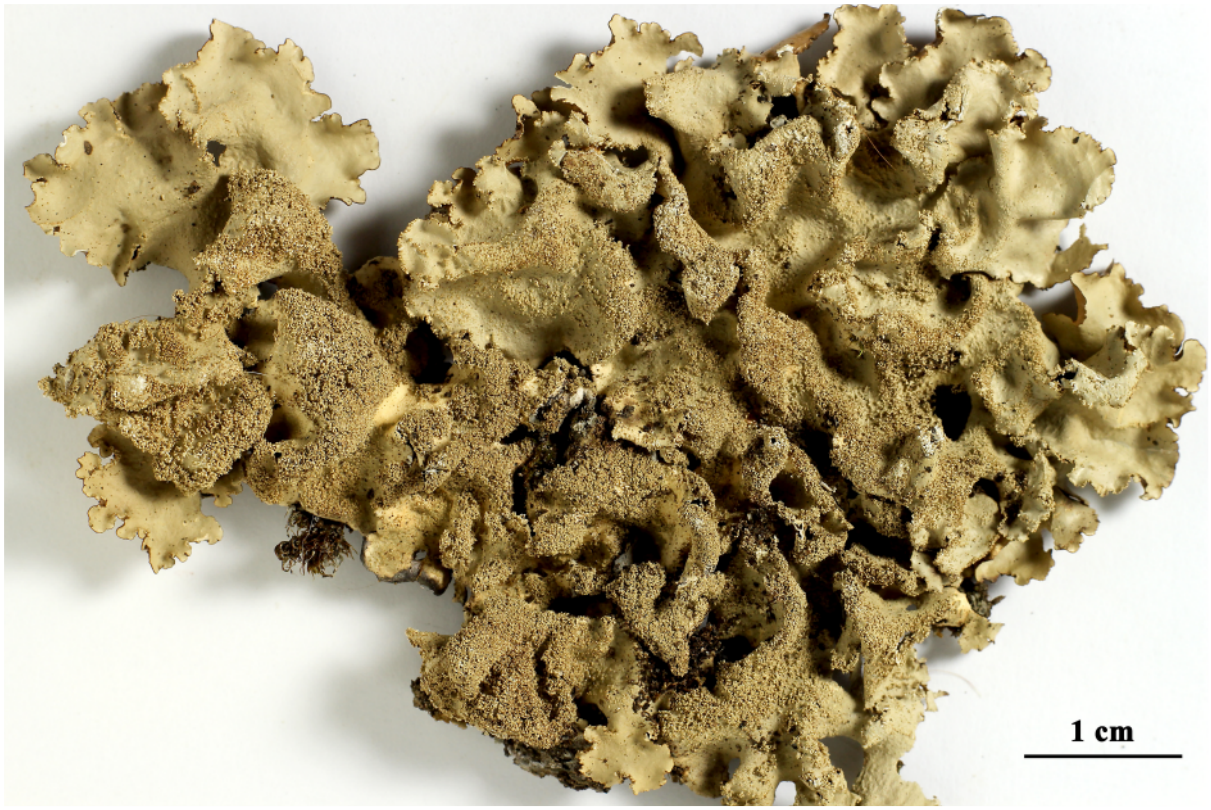
a: atranorin, pr: protocetraric acid, vi: virensic acid

Parmotrema robustum

Parmotrema tinctorum (Despr. ex Nyl.) Hale
[= ***Parmelia tinctoria*** Despr. ex Nyl.]

Thallus loosely adnate, membranaceous to coriaceous. Lobes irregular, 10-20 mm wide; margins entire or crenate, eciliate; apices rotund. Upper surface pale grey to grey-green, emaculate, without soredia; cortex sometimes cracking and flaking; isidia sparse to abundant, laminal and eventually marginal, confluent or in scattered groups, simple or branched, thin and cylindrical or coarse, brown-tipped or concolorous. Medulla white. Lower surface black, with a broad, brown, erhizinate marginal zone; rhizines sparse, simple, coarse, short. Apothecia very rare. Ascospores 13-15 x 7-8 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; atranorin, chloroatranorin, lecanoric acid (major), orsellinic acid (trace).

[19129], Australia, New South Wales, Buckenbowra River Estuary, 7.5 km west of Batemans Bay, 35°42' S, 150°06' E, sea level, growing on *Casuarina glauca* along tidal creek. Leg. J.A. Elix (10982) & H. Streimann, 29.05.1983. LICHENES AUSTRALASICI EXSICCATI NO. 071.



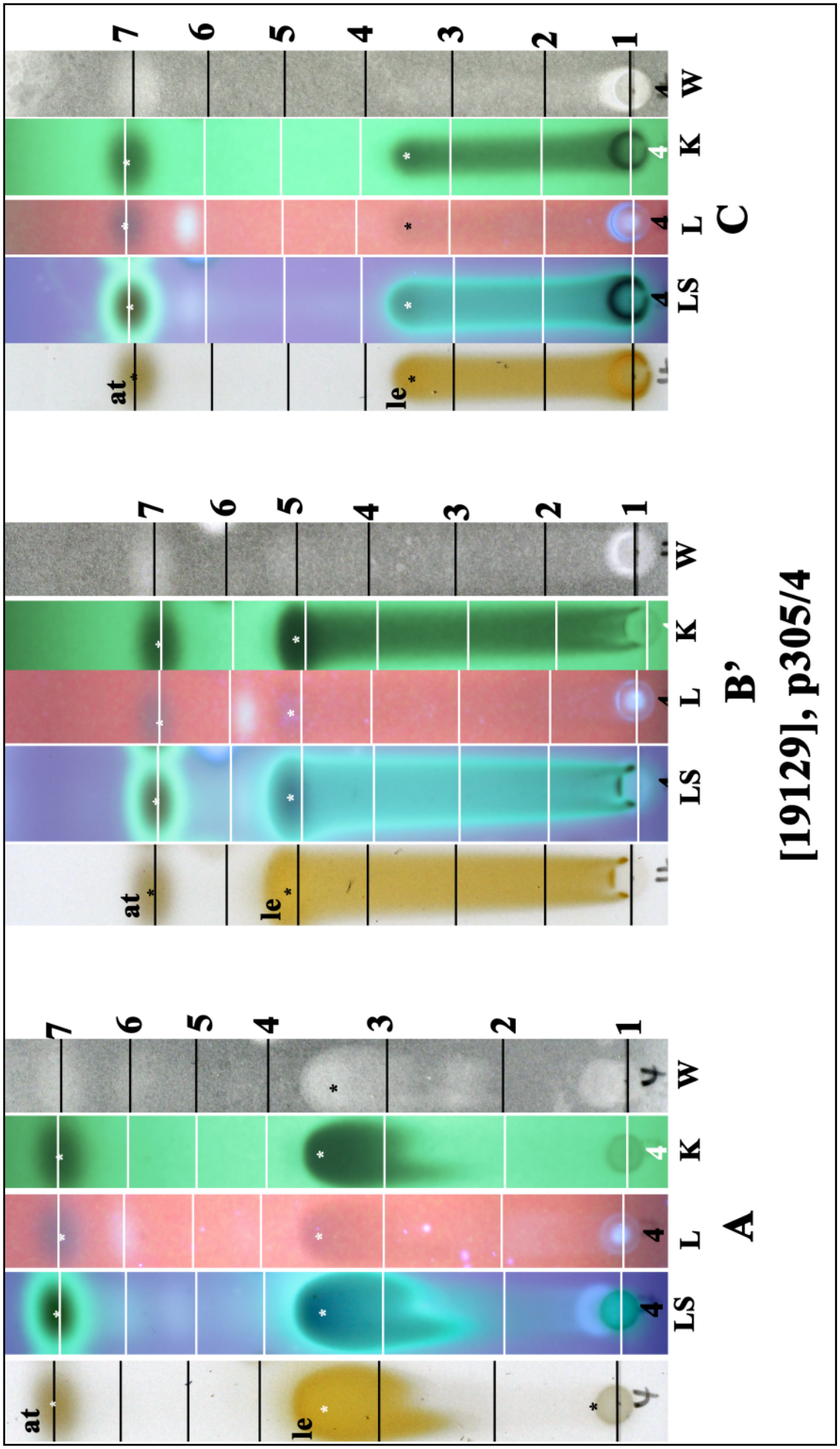


Parmotrema tinctorum





Parmotrema tinctorum



at: atranorin, le: lecanoric acid

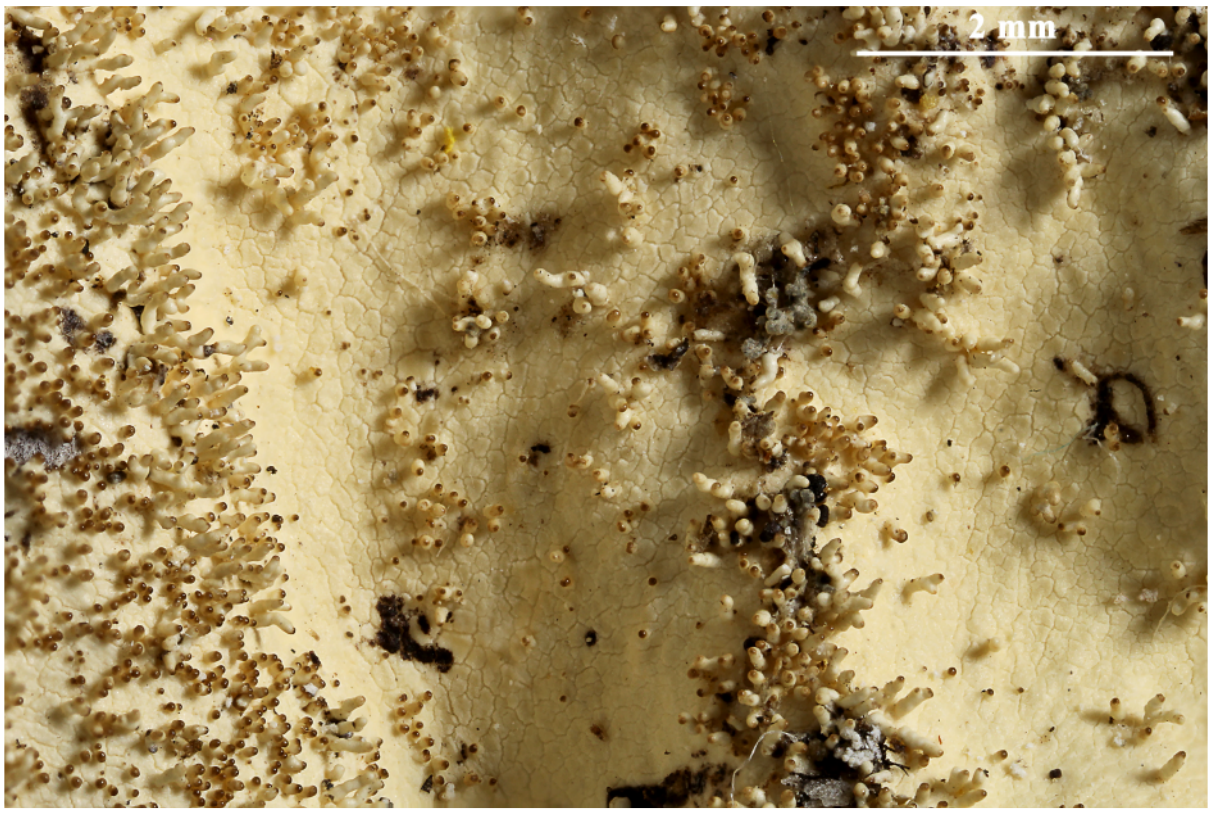
Parmotrema tinctorum

Parmotrema tinctorum (Despr. ex Nyl.) Hale
[= ***Parmelia tinctoria*** Despr. ex Nyl.]

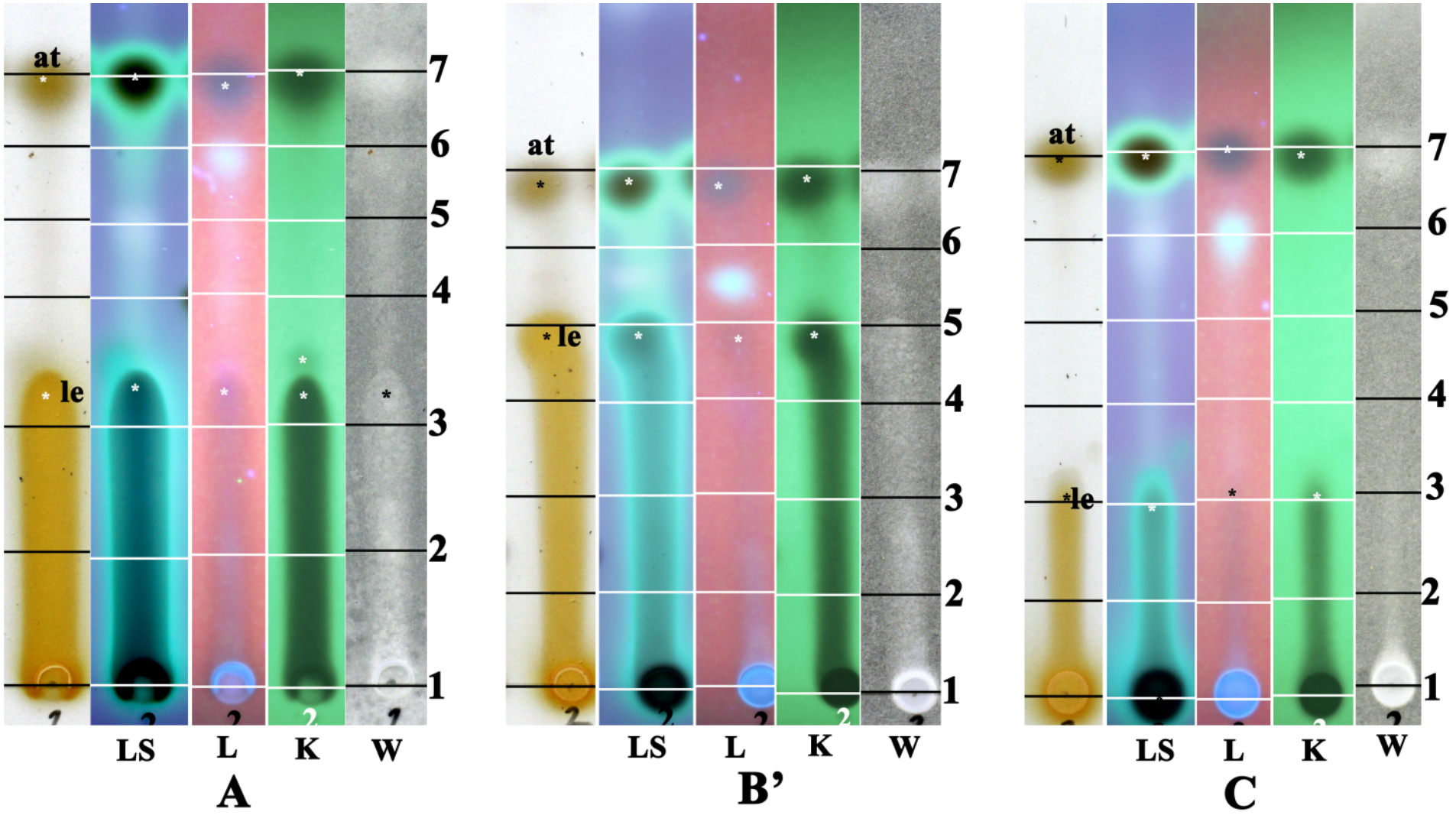
[19128], Norfolk Island. Mt. Pitt Reserve, Selwyn Pine Track, 29°01' S, 167°56'30" E, 200 m, growing on *Elaedendron* in open forest clearing. Leg. J.A. Elix (18736) & H. Streimann, 08.12.1984. Chemistry: atranorin, chloroatranorin, lecanoric acid (major), orsellinic acid by HPLC, anal. J. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 090.







Parmotrema tinctorum



[19128], 305/2

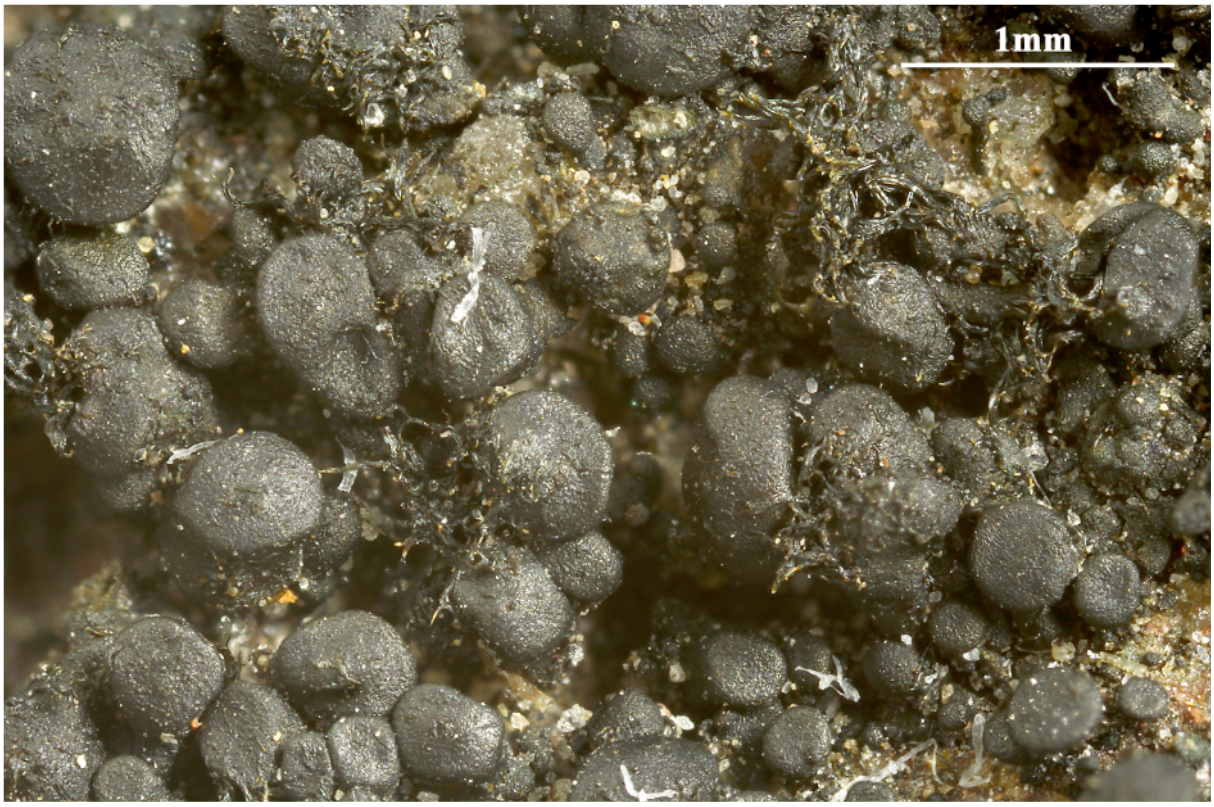
at: atranorin, le: lecanoric acid

Peltula clavata (Kremp.) Wetmore

Thallus squamules club-shaped, olive-black, sometimes isidiate, to 1.5 mm long, medulla hollow. Apothecia 1-3 per squamule, immersed; disc punctiform, to 0.2 mm diam., red-brown. Asci clavate; ascus wall wine-red in iodine, blue after pretreatment with KOH. Ascospores more than 64 per ascus, globose, 3.5-4.7 µm.

[19185], Australia, Queensland, Turtle Creek Beach, Trinity Bay, along the Cairns - Port Douglas coastal road, 7 km south of Port Douglas, growing in depressions where run-off water drains on large, exposed sandstone slabs with south-easterly aspect. Leg. B. Büdel (18047a) & H.T. Lumbsch, 17.08.1987. LICHENES AUSTRALASICI EXSICCATI NO. 164.

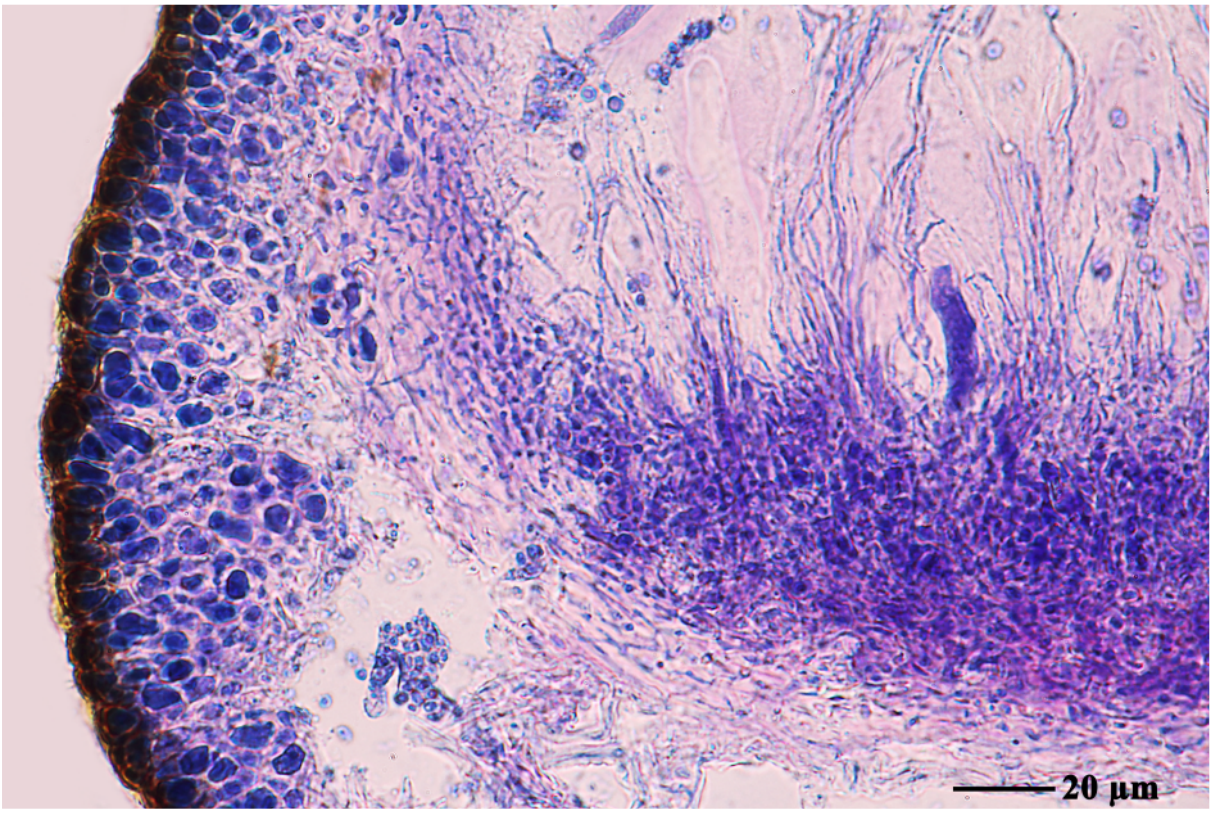


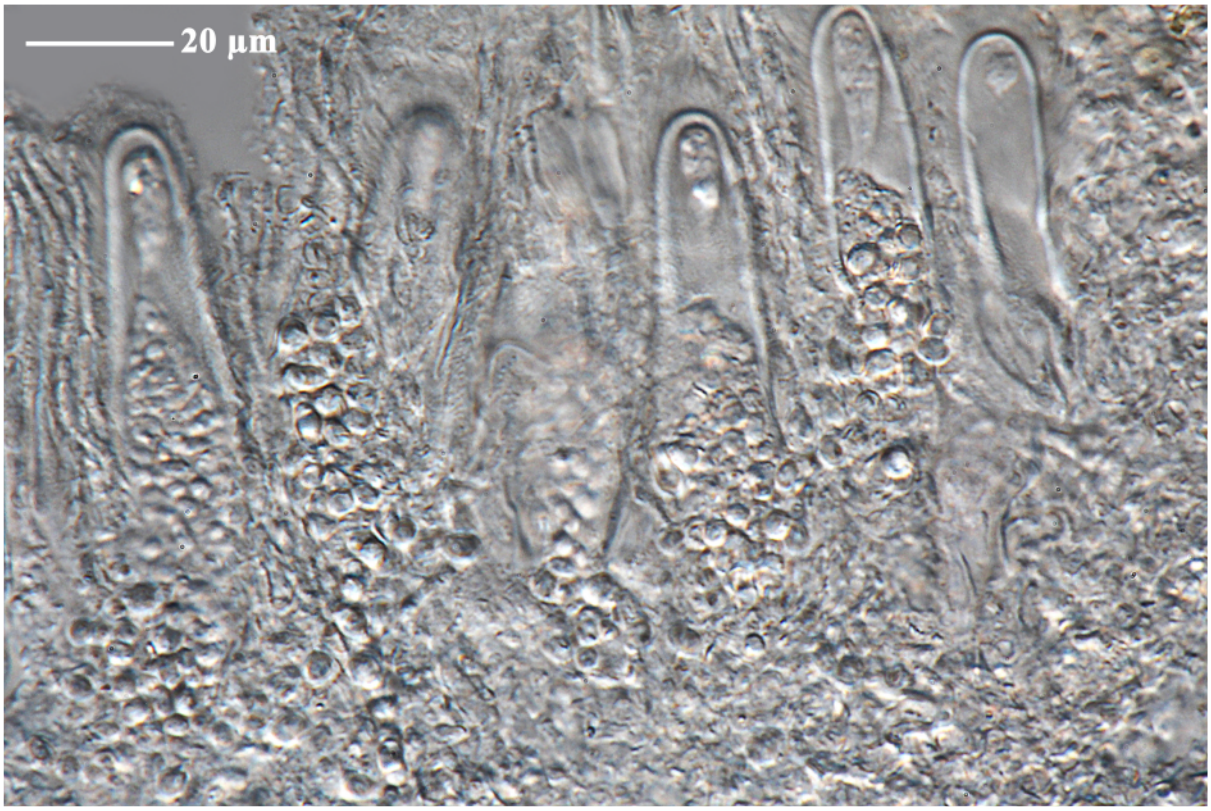






Peltula clavata

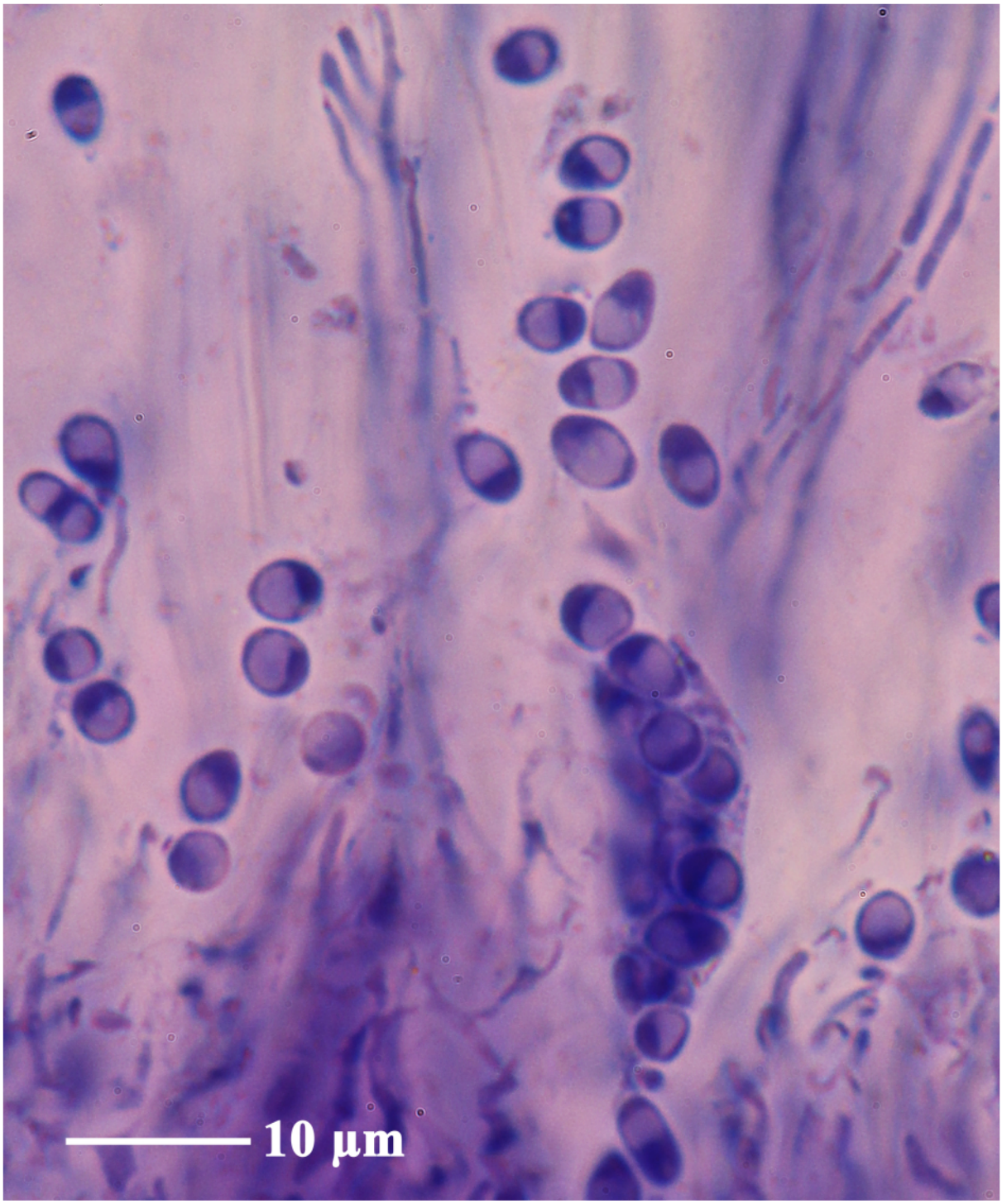


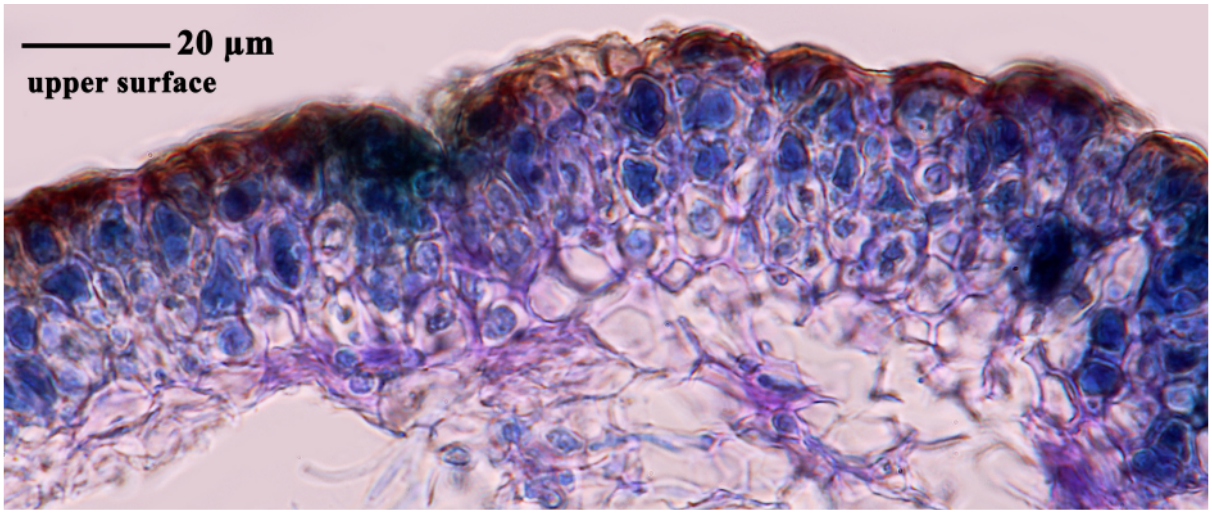


Peltula clavata



Peltula clavata





Peltula clavata

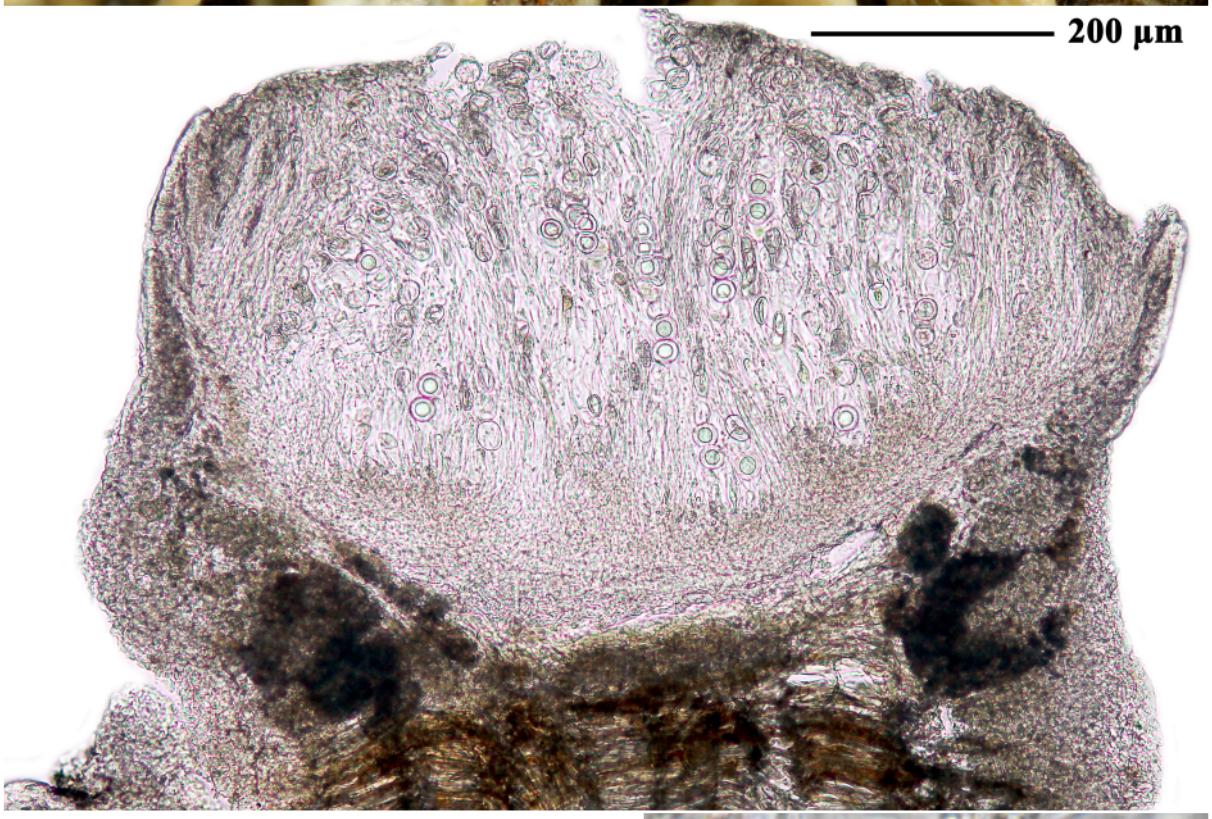
Pertusaria globospora Archer

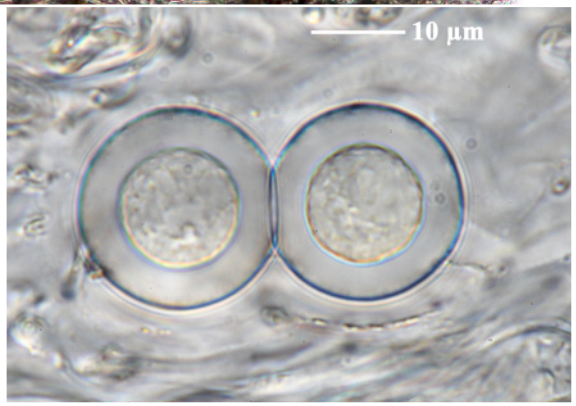
Thallus olive-green, corticolous, thin, cracked, surface smooth and shiny, lacking isidia and soredia. Apothecia verrucuriform, numerous, conspicuous, concolorous with the thallus, rarely confluent, initially subconical, becoming flattened-hemispherical, 0.5-1 mm diam. Ostiole conspicuous, black, 0.1-0.15 mm diam. Ascospores 8/ascus, globose, smooth, 17-20 µm, spore wall 4-5 mm thick. Chemistry: K+ yellow becoming red, KC-, C-, P+ yellow; norstictic acid (major), connorstictic acid (trace).

[19187], Norfolk Island, Duncombe Bay Road, near entrance to Mt. Pitt Reserve, 29°00'30" S, 167°56' E, 50 m, growing on branches of *Araucaria heterophylla*, **ISOTYPE**. Leg. J.A. Elix (18719), 7.12.1984. Chemistry: norstictic acid (major), connorstictic acid (trace), unknowns (trace) by TLC, anal. by J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 236.

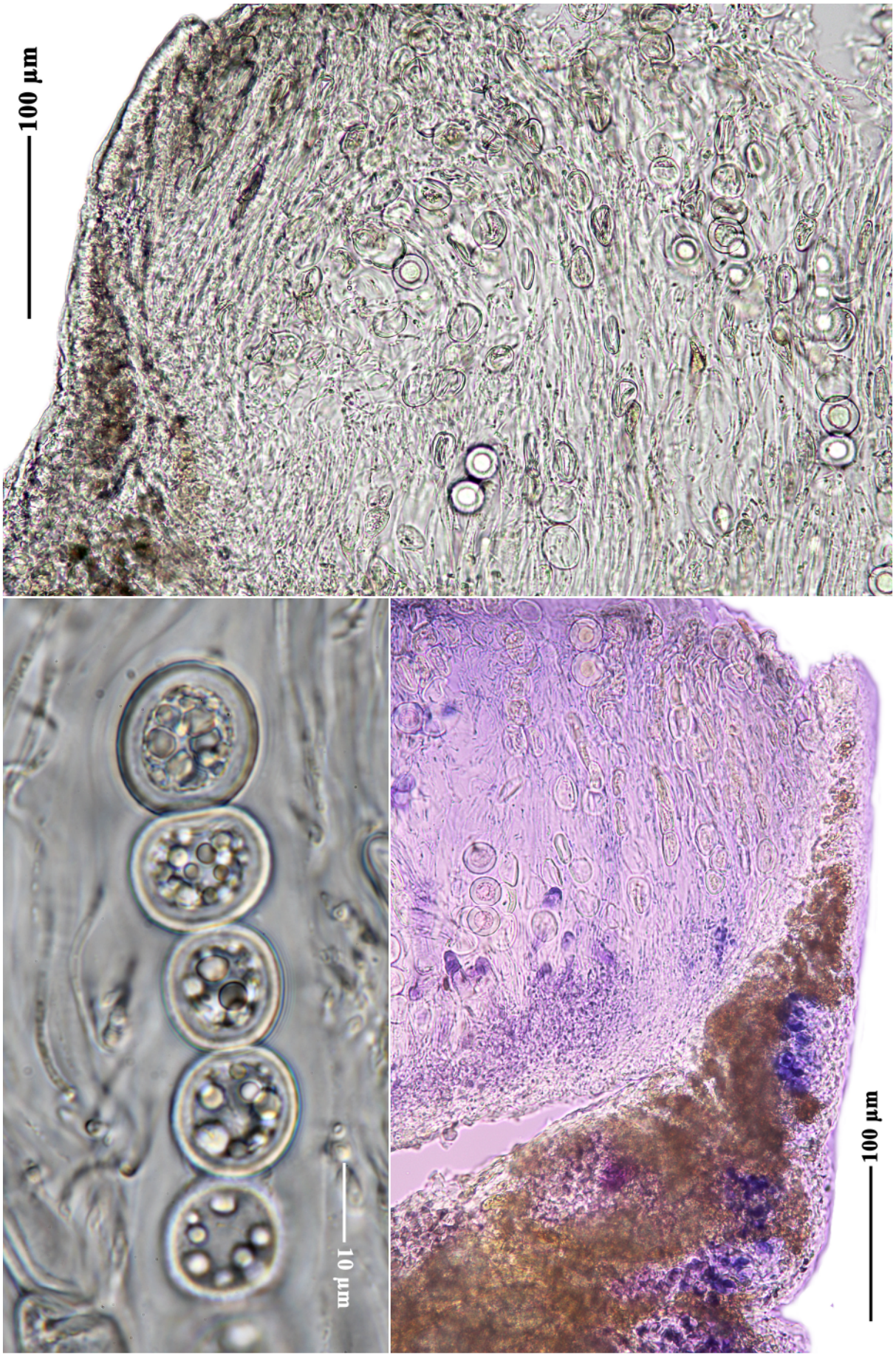






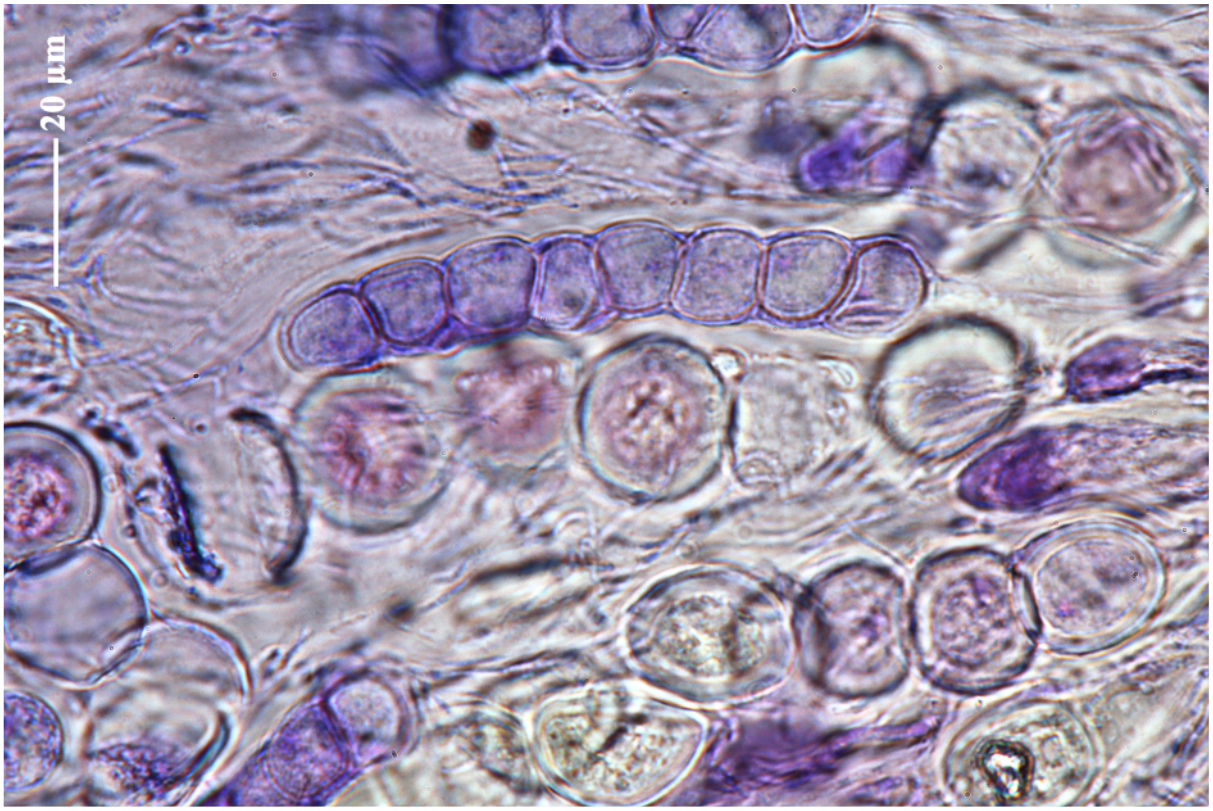


Pertusaria globospora

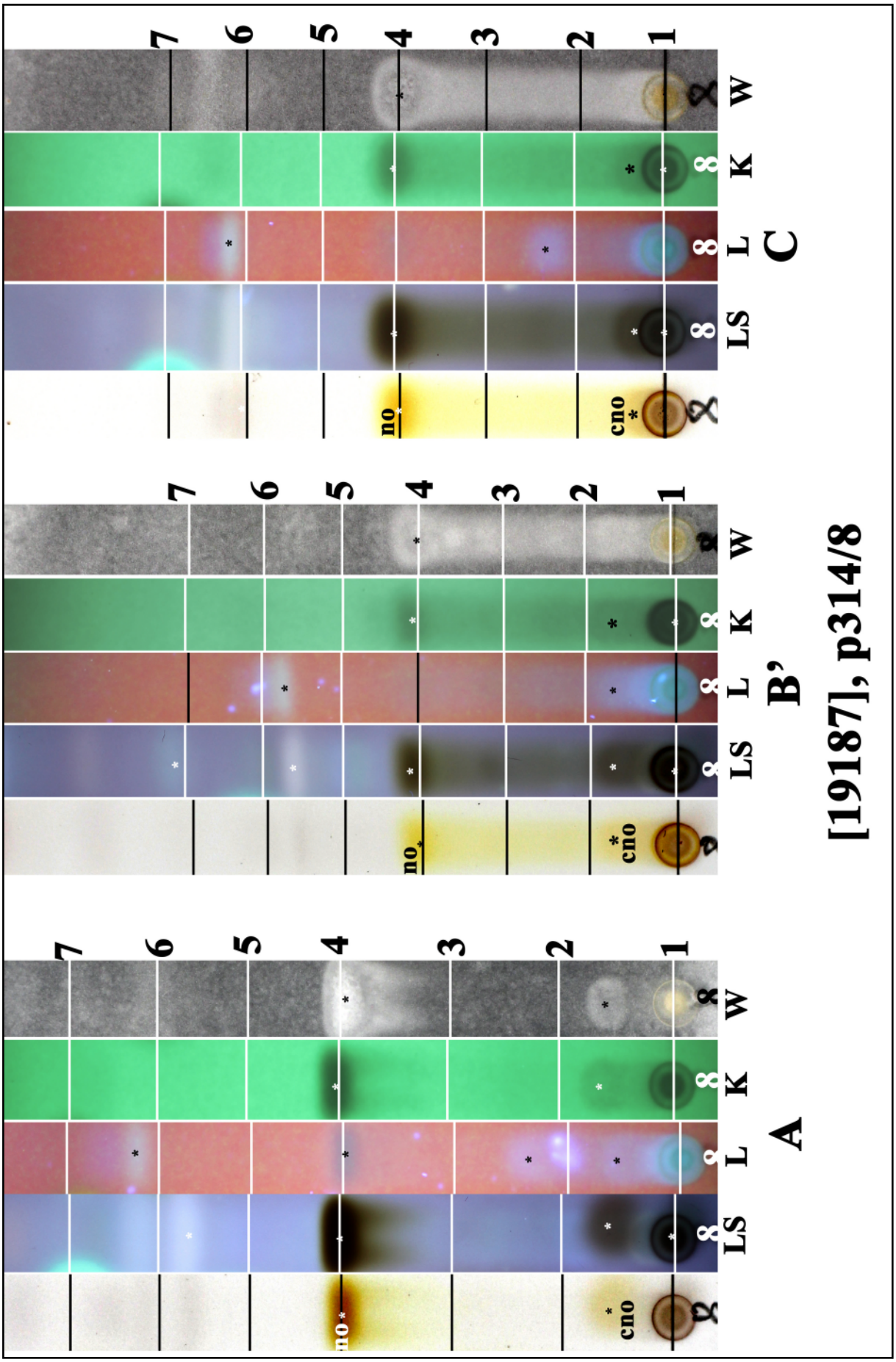


Pertusaria globospora





Pertusaria globospora



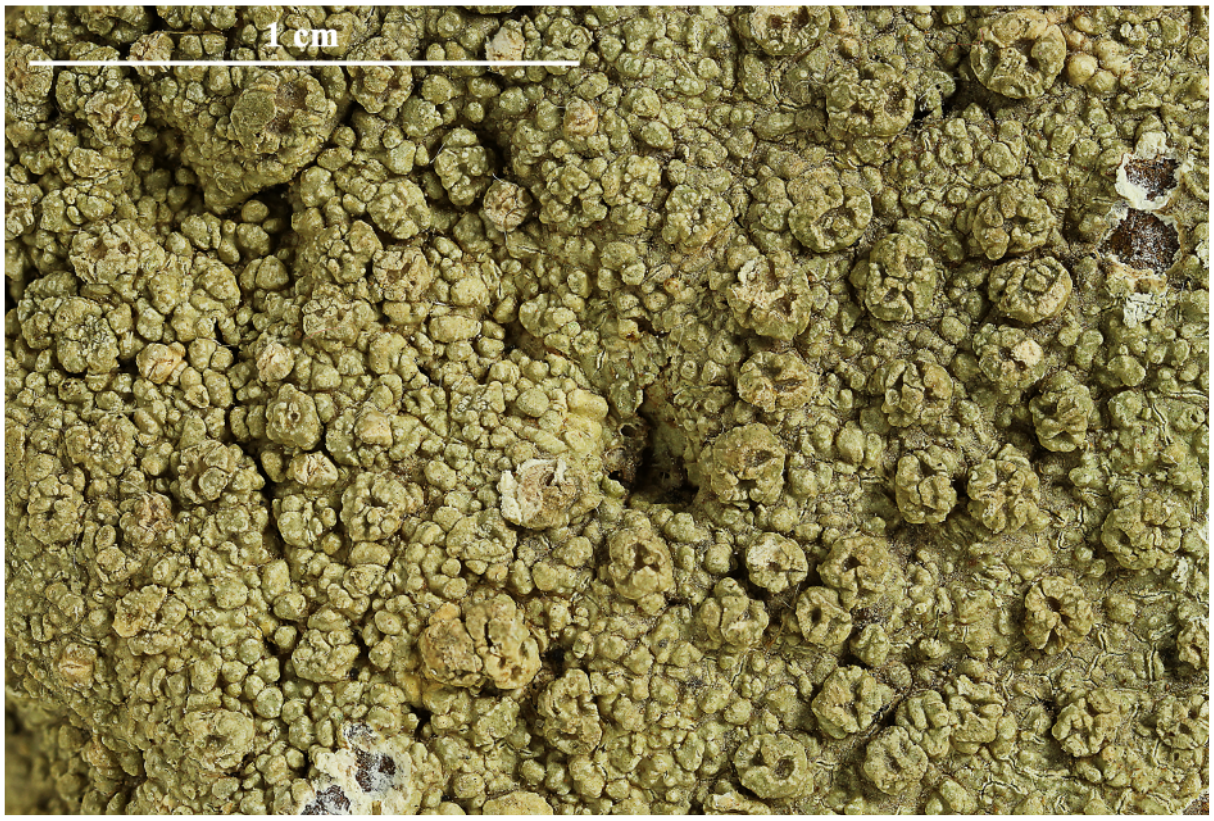
no: norstictic acid, cno: connorstictic acid

Pertusaria globospora

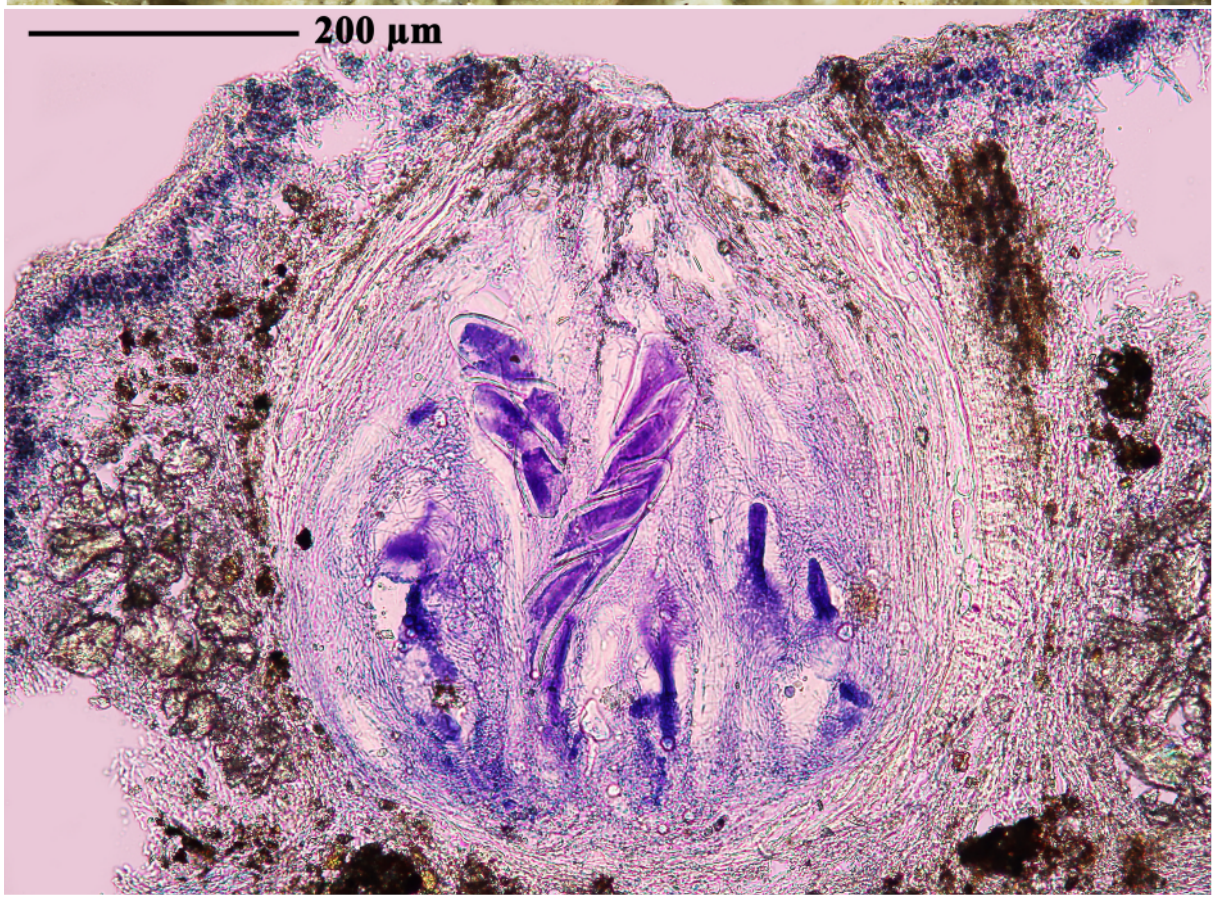
Pertusaria hadrocarpa Zahlbr.
[= ***Pertusaria asperata*** Archer]

Thallus off-white to pale greyish white, thin, cracked to areolate, subtuberculate and dull. Soredia and isidia absent. Apothecia numerous, inconspicuous, scattered, rarely confluent, verruciform, concolorous with the thallus, flattened-hemispherical or concave above and constricted at the base, 0.8–1.5 mm diam. Ostioles conspicuous, dark brown to black, 1 per verruca. Ascospores 8 per ascus, irregularly biseriate, ellipsoidal to subfusiform, smooth, 112–125 × 37–50 µm. Chemistry: Thallus K–, KC–, C–, Pd–, UV+ yellow; lichexanthone (major), stictic acid (major), constictic acid (trace), ±menegazziaic acid (trace).

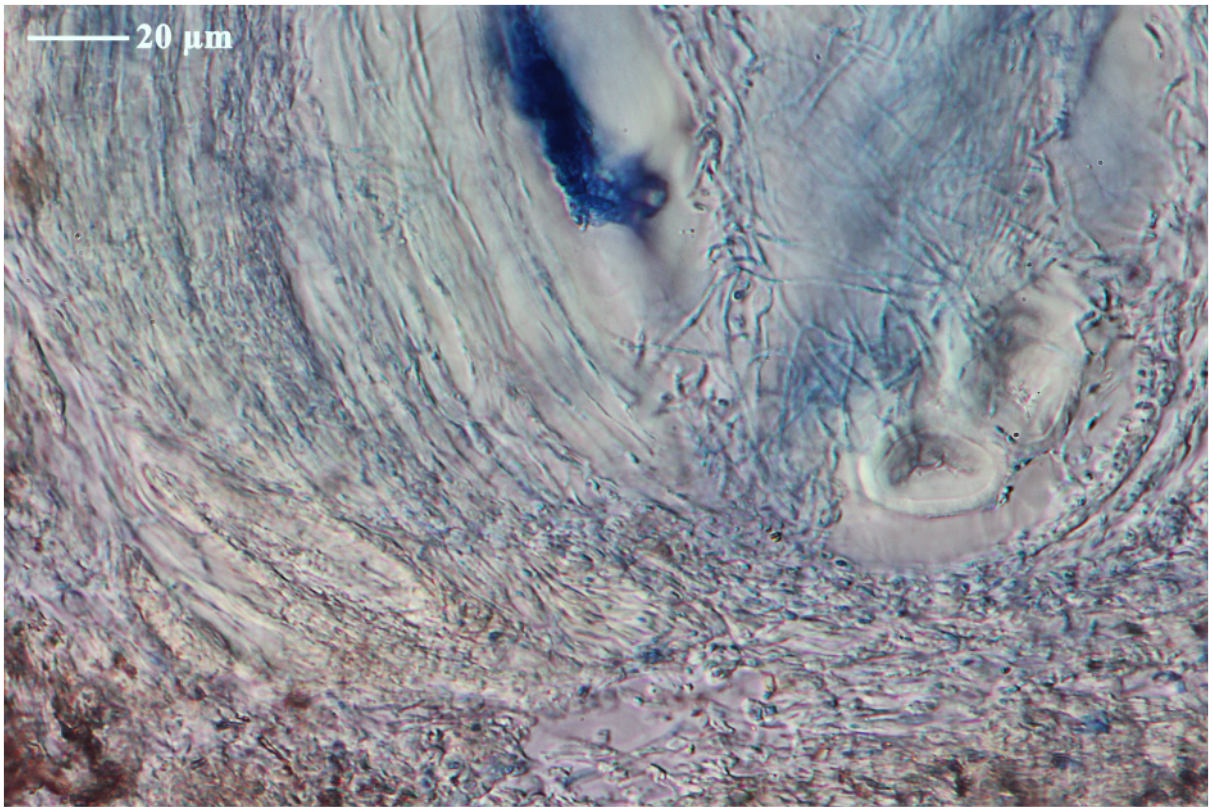
[19186], Australia, New South Wales, Lord Howe Island, Max Nicholls Track, 31°31'08" S, 159°03'03" E, 50 m, growing on basalt rocks in dry lowland forest with basalt outcrops. Leg. J.A. Elix (32720), 20.06.1992, det. A.W. Archer. Chemistry: stictic acid (major), cryptostictic acid (trace), constictic acid (minor), menegazziaic acid (trace), lichexanthone (major) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 266. Distributed as ***Pertusaria asperata*** A.W.Archer.



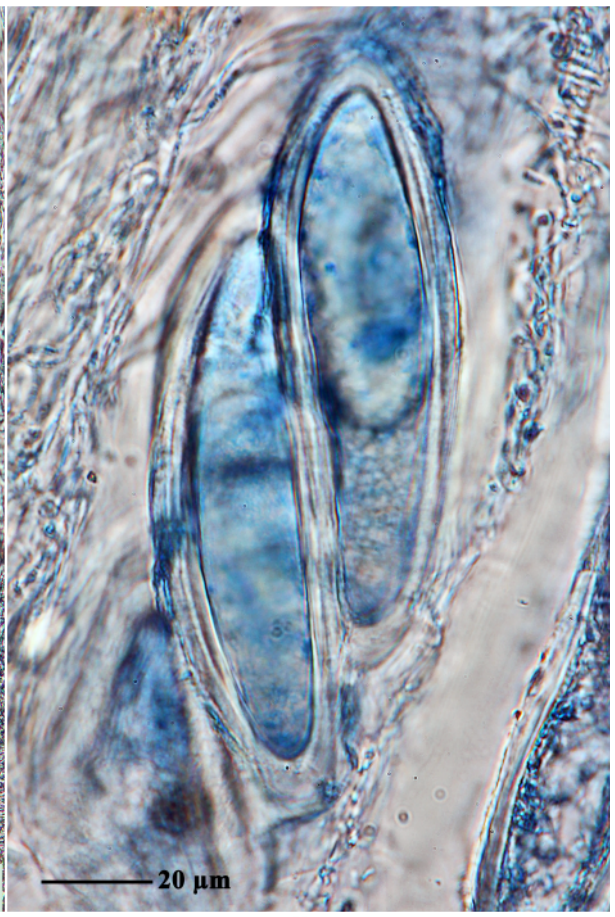


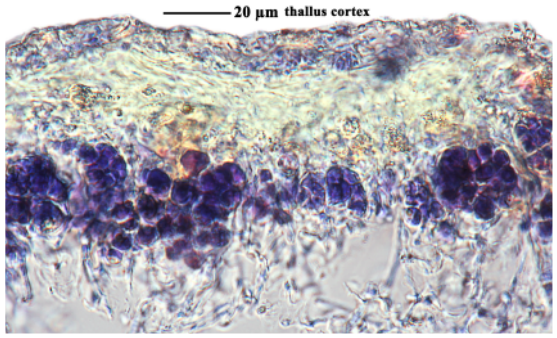


Pertusaria hadrocarpa

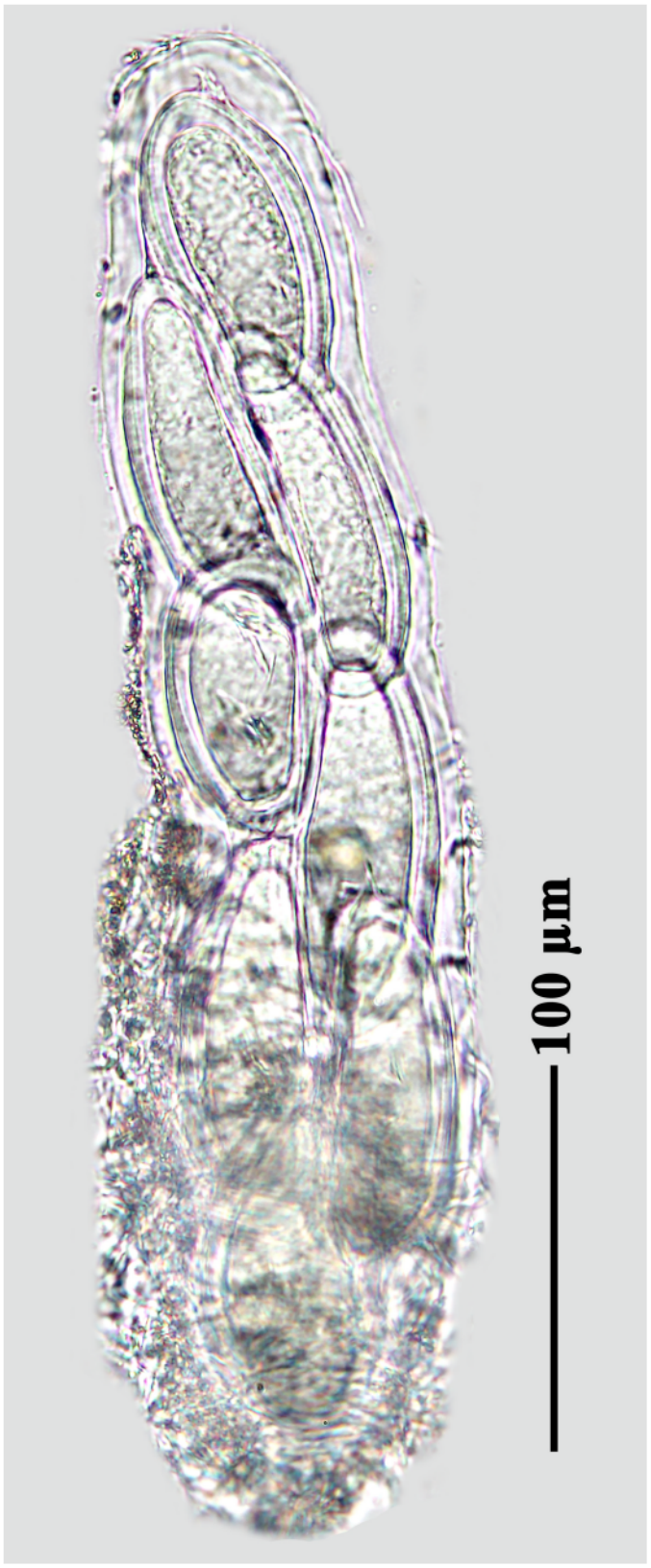








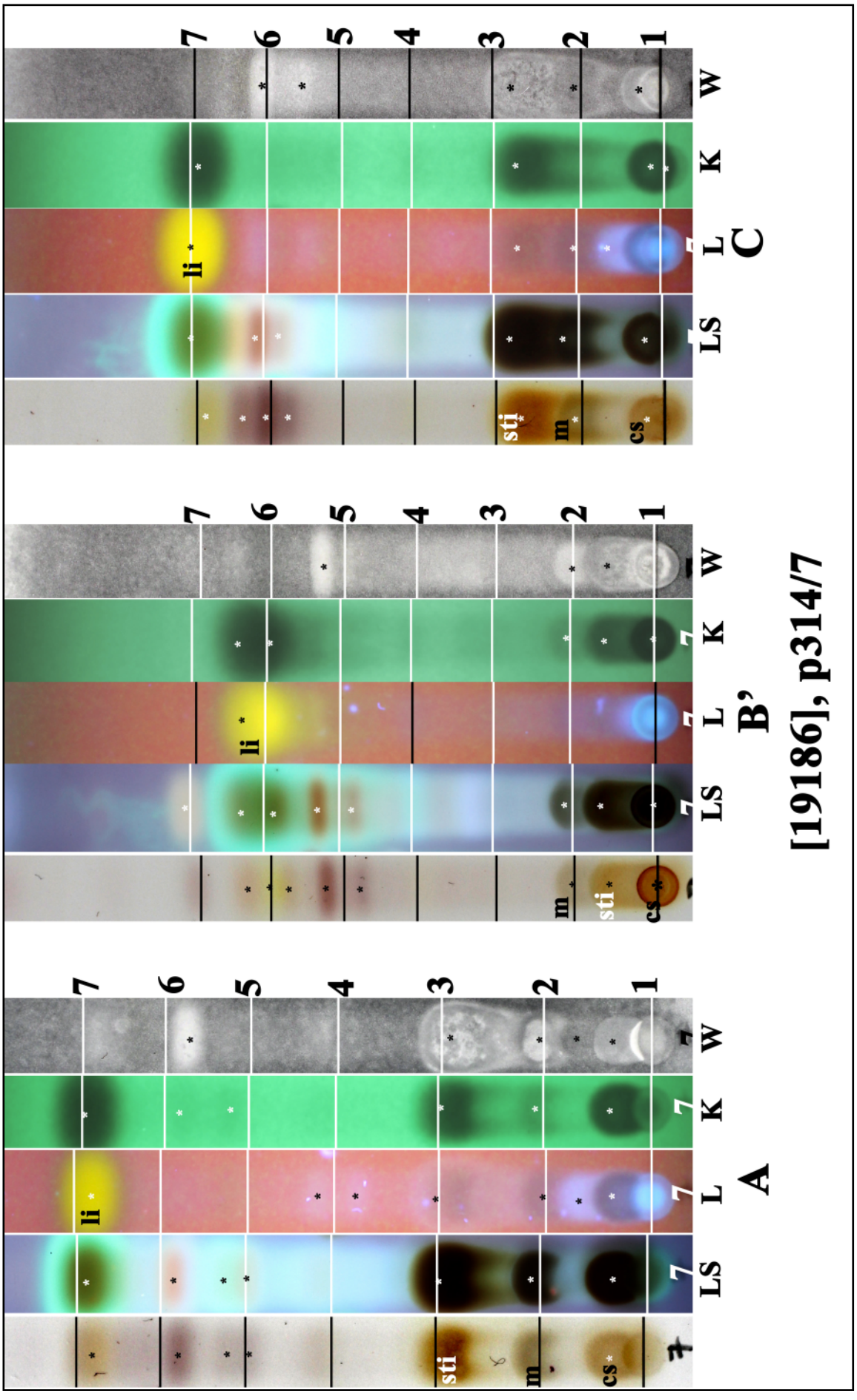
Pertusaria hadrocarpa







Pertusaria hadrocarpa



li: lichexanthone, sti: stictic acid, cs: constictic acid, m: menegazziaic acid

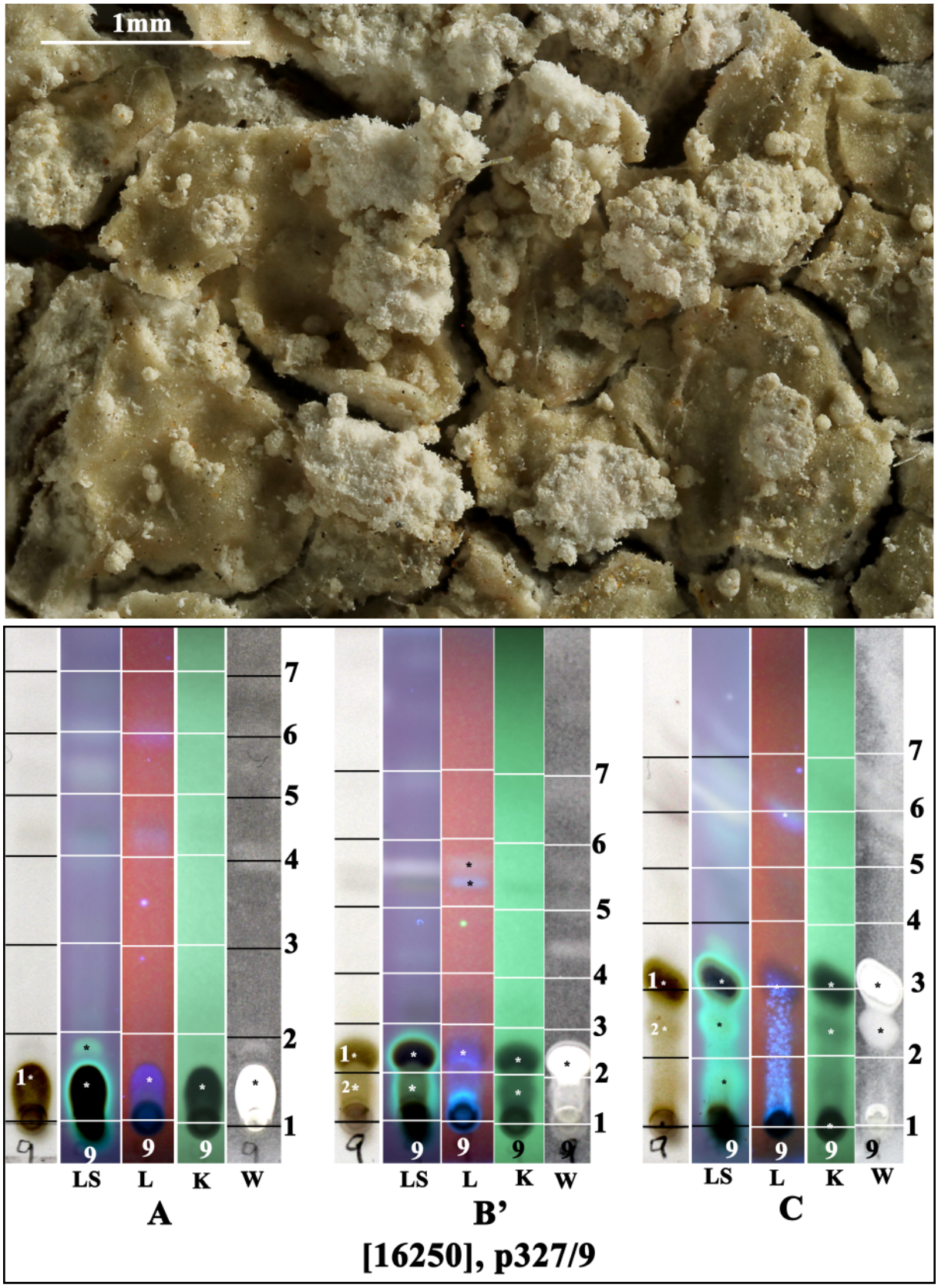
Pertusaria hadrocarpa

Pertusaria novaezelandiae Szatala

Thallus grey-white, areolate, lacking isidia. Soralia in orbicular verrucae, white, well delimited, K+ purple. No spores detected.

[16250], Australia, New South Wales, between Bermagui and Tathra, trail from Aragunnu Beach to Mimosa Rocks, 36.853° S, 150.562° E, 10 m, growing on bark. Leg. F. Schumm & E. Stocker-Wörgötter, 12.11.2009. Chemistry: soralia UV+ blue white, K+ purple, C ±orange, P± yellowish; hypothamnolic acid (major) by HPTLC, anal. F. Schumm.





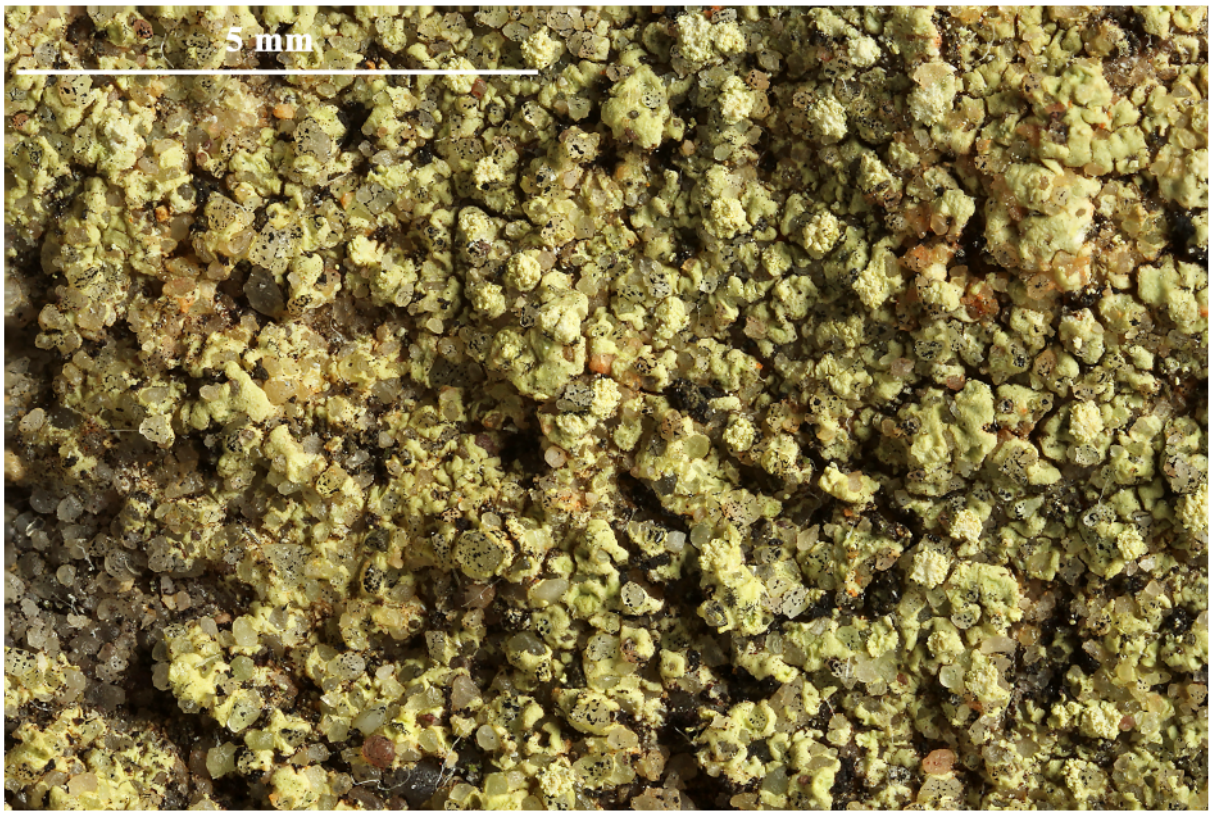
1: hypothamnolic acid, 2: thamnolic acid

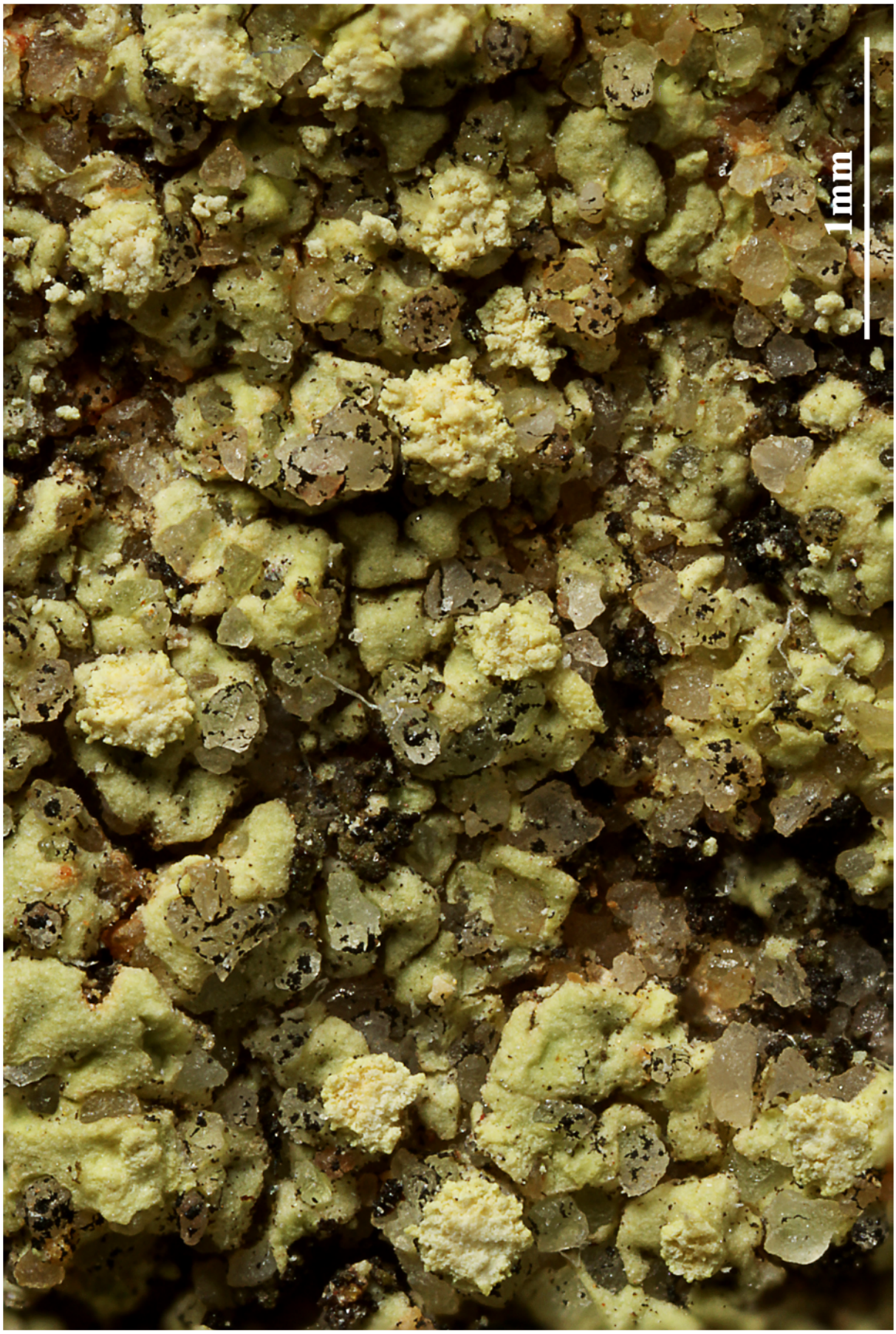
Pertusaria novaezelandiae

Pertusaria remota Archer

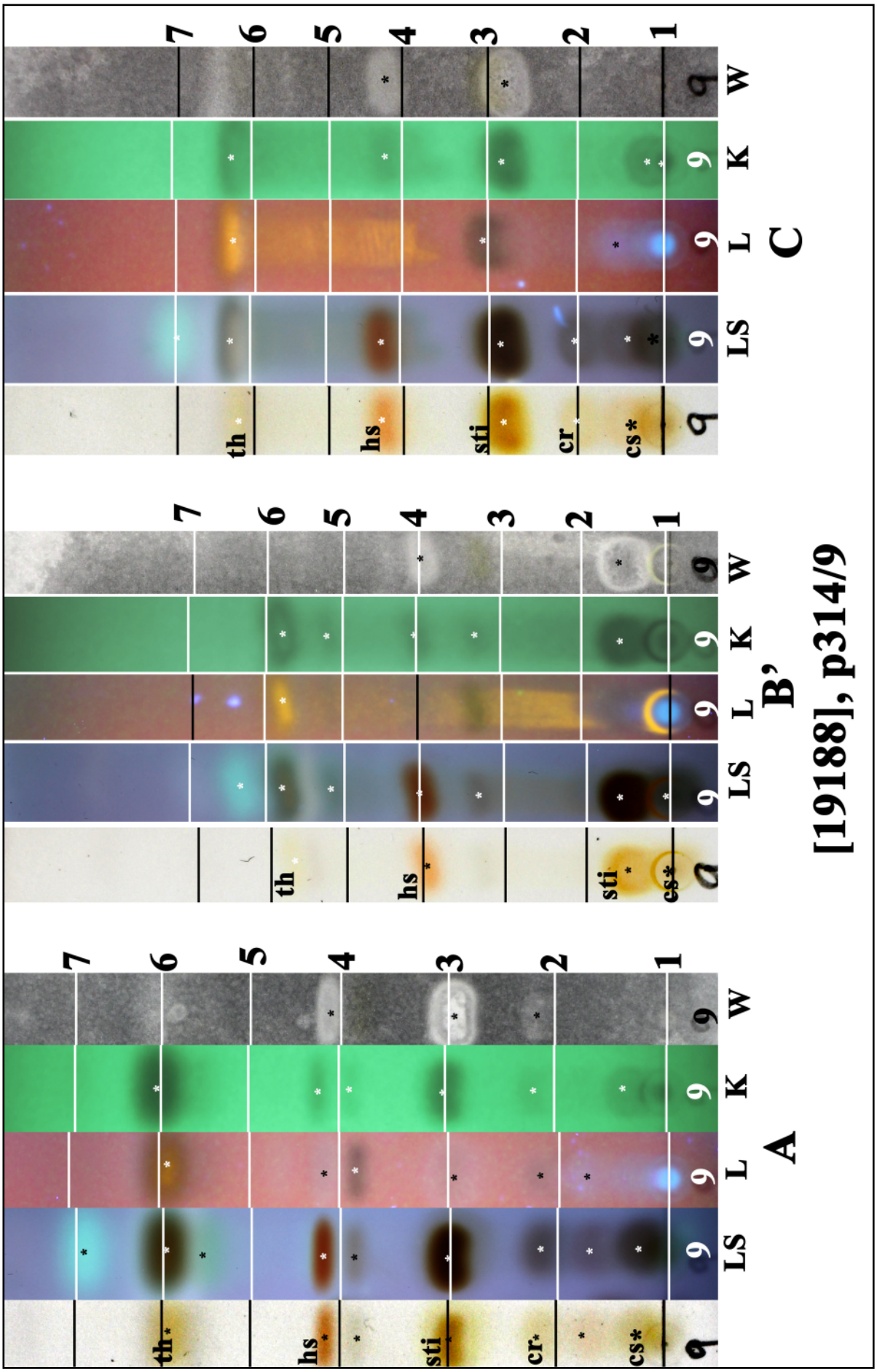
Thallus thin to diffuse, discontinuous, dull yellow to greyish yellow, areolate and cracked, smooth. Isidia absent. Soralia sparse, scattered or numerous, 0.2–0.6 mm diam., discoid to hemispherical. Apothecia not seen. Chemistry: Thallus K–, KC+ weak orange, C–, Pd–; containing thiophaninic acid (major), stictic acid (major), hypostictic acid (minor), 2-chloro-6-*O*-methylnorlichexanthone (trace) and cryptostictic acid (trace).

[19188], Australia, Western Australia, Kununurra - Timber Creek Highway, 25 km south-east of Kununurra, 15°54' S, 128°56' E, 100 m, growing on sandstone rocks in *Eucalyptus* dominated grasslands with scattered *Calytrix*, *Ficus* and *Xanthostemon*. Leg. J.A. Elix (27838), H.T. Lumbsch & H. Streimann 08.07.1991. Chemistry: thiophaninic acid (major), stictic acid (minor), cryptostictic acid (trace), constictic acid (trace), hypostictic acid (trace), norstictic acid (trace), 2-chloro-6-*O*-methylnorlichexanthone (trace), 4-chloro-6-*O*-methylnorlichexanthone (trace), lichexanthone (trace) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 268.





Pertusaria remota

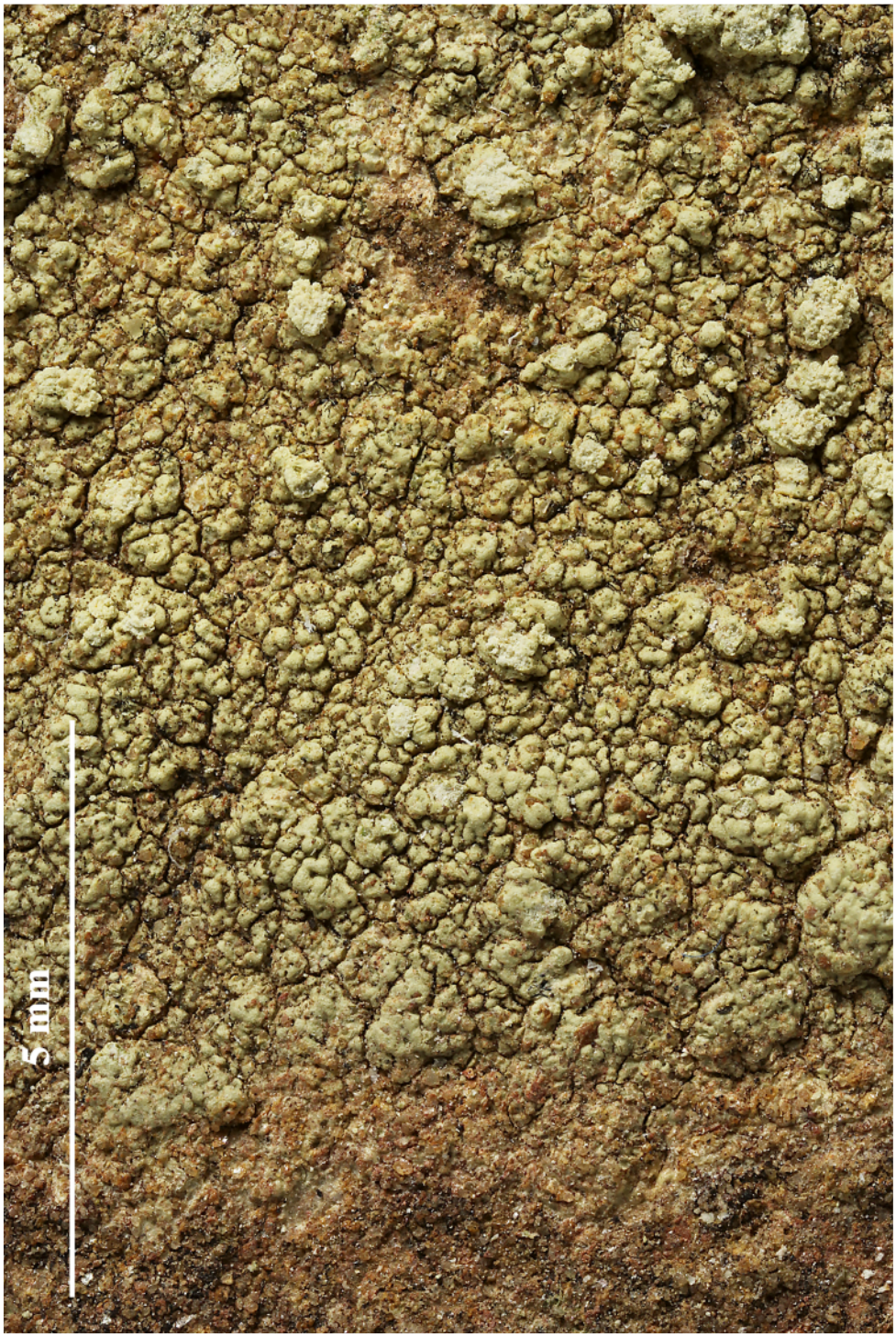


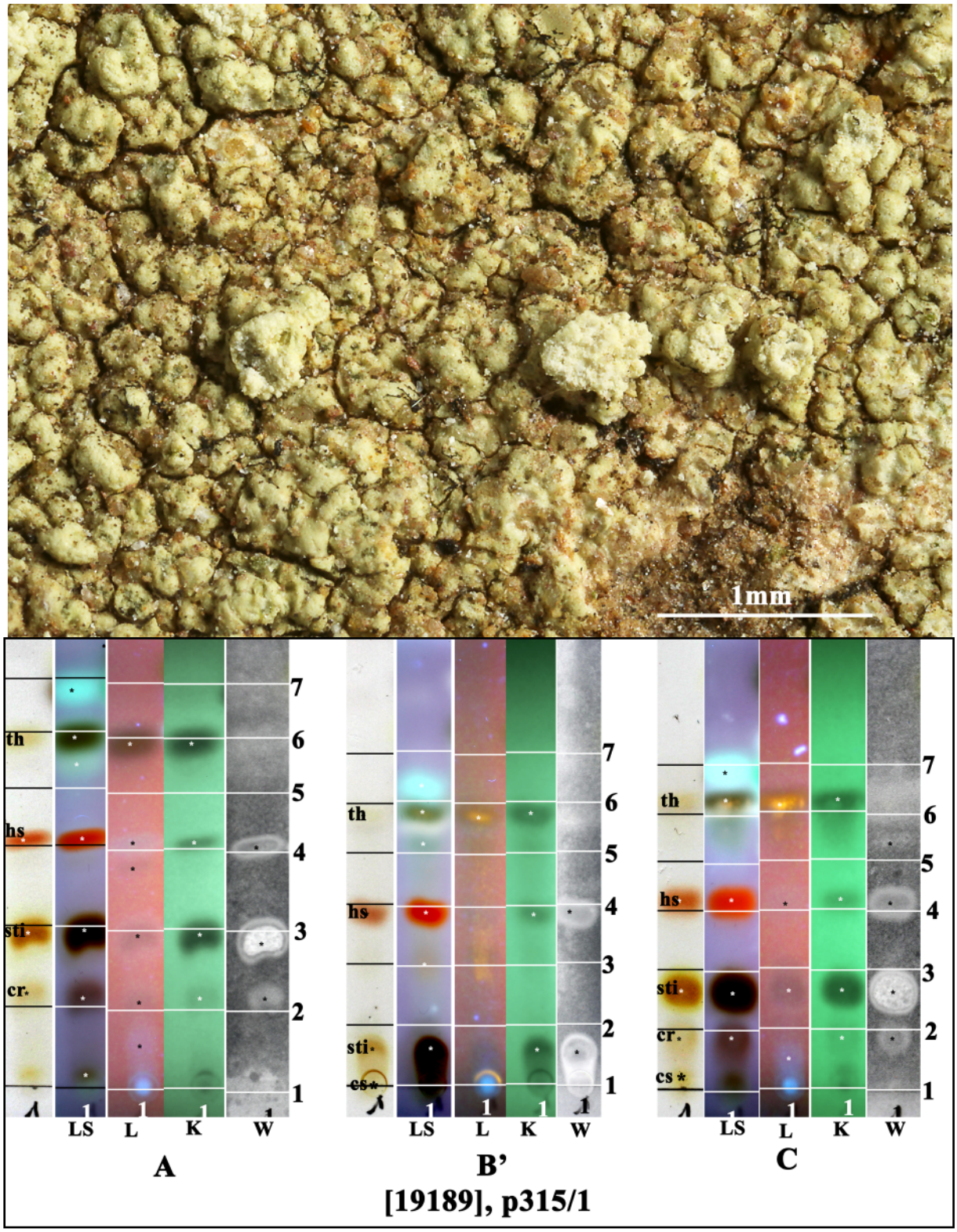
th: thiophaninic acid, sti: stictic acid, hs: hypostictic acid, cr: cryptostictic acid, cs: constictic acid.

Pertusaria remota

Pertusaria remota Archer

[19189], Australia, Northern Territory, Jasper Gorge, Victoria River Downs Road, 52 km south-east of Timber Creek, 16°02' S, 130°46' E, 140 m, growing on semi-shaded rock faces, side of southerly escarpment, savannah dominated by *Eucalyptus* and palms. Leg. H. Streimann (42050A), 12.04.1989, det. A,W. Archer. Chemistry: thiophaninic acid (major), stictic acid (minor), cryptostictic acid (trace), constictic acid (trace), hypostictic acid (trace), norstictic acid (trace), 2-chloro-6-*O*-methylnorlichexanthone (trace), 4-chloro-6-*O*-methylnorlichexanthone (trace), lichexanthone (trace) by HPLC, TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 237.





th: thiophaninic acid, hs: hypostictic acid, sti: stictic acid,
cr: cryptostictic acid, cs: constictic acid

Pertusaria remota

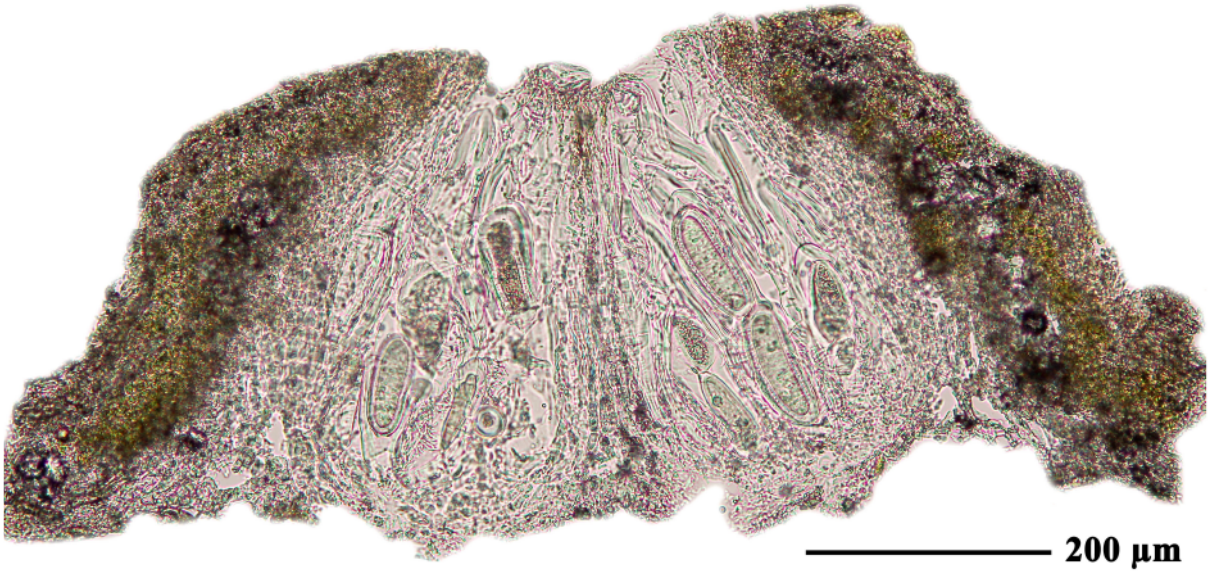
Pertusaria thiospoda C.Knight
[= ***Pertusaria schizostomella*** Müll.Arg.]

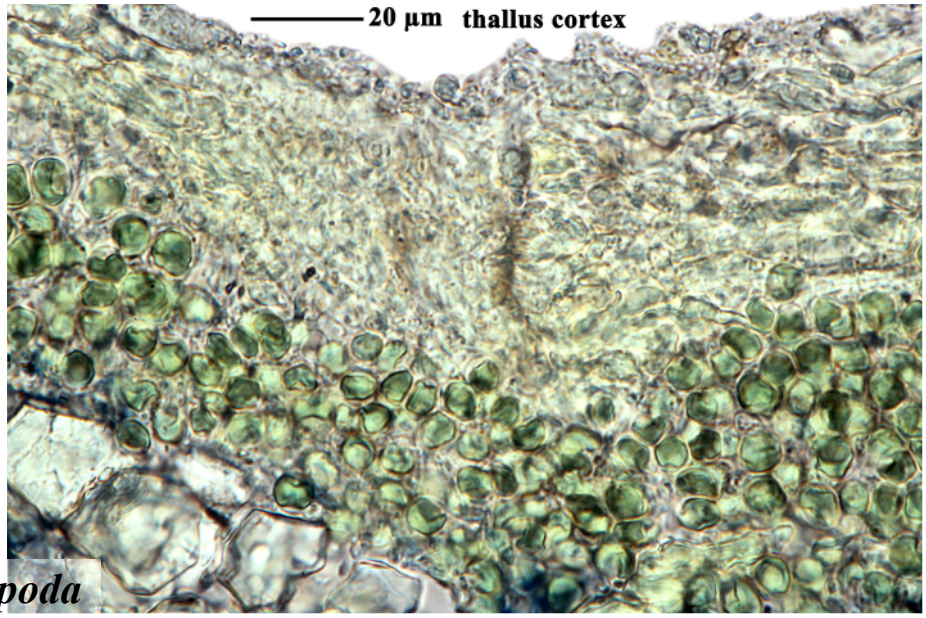
Thallus pale yellowish white to pale yellow, thin, slightly cracked, smooth and dull. Soredia and isidia absent. Apothecia inconspicuous, verruciform, scattered, sometimes confluent, flattened-hemispherical, not constricted at the base, 0.5–1.0 mm diam. Ostiole punctiform, black, sometimes surrounded by a pale yellow-brown translucent zone, plane or becoming concave, sometimes with a yellow-brown translucent zone only, 1 per verruca. Ascospores 2 per ascus, ellipsoidal, smooth, 80–110 (–120) × 30–40 µm. Chemistry: Thallus K–, KC+ yellow orange, C+ orange, Pd–; thiophaninic acid (major), stictic acid (major), constictic acid (minor to trace), 2-chloro-6-*O*-methylnorlichexanthone (trace).

[19215], Australia, New South Wales, Lord Howe Island, Valley of Shadows, 31°31'45" S, 159°04'45" E, 40 m, growing on fallen canopy branches of Cryptocarpa in dry lowland forest on gentle slope. Leg. J.A. Elix (32840), 22.06.1992, det. A.W. Archer. Chemistry: stictic acid (major), cryptostictic acid (trace), constictic acid (major), menegazziaic acid (trace), thiophaninic acid (minor), 2-chloro-6-*O*-methylnorlichexanthone (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 290. Distributed as ***Pertusaria schizostomella*** Müll.Arg.

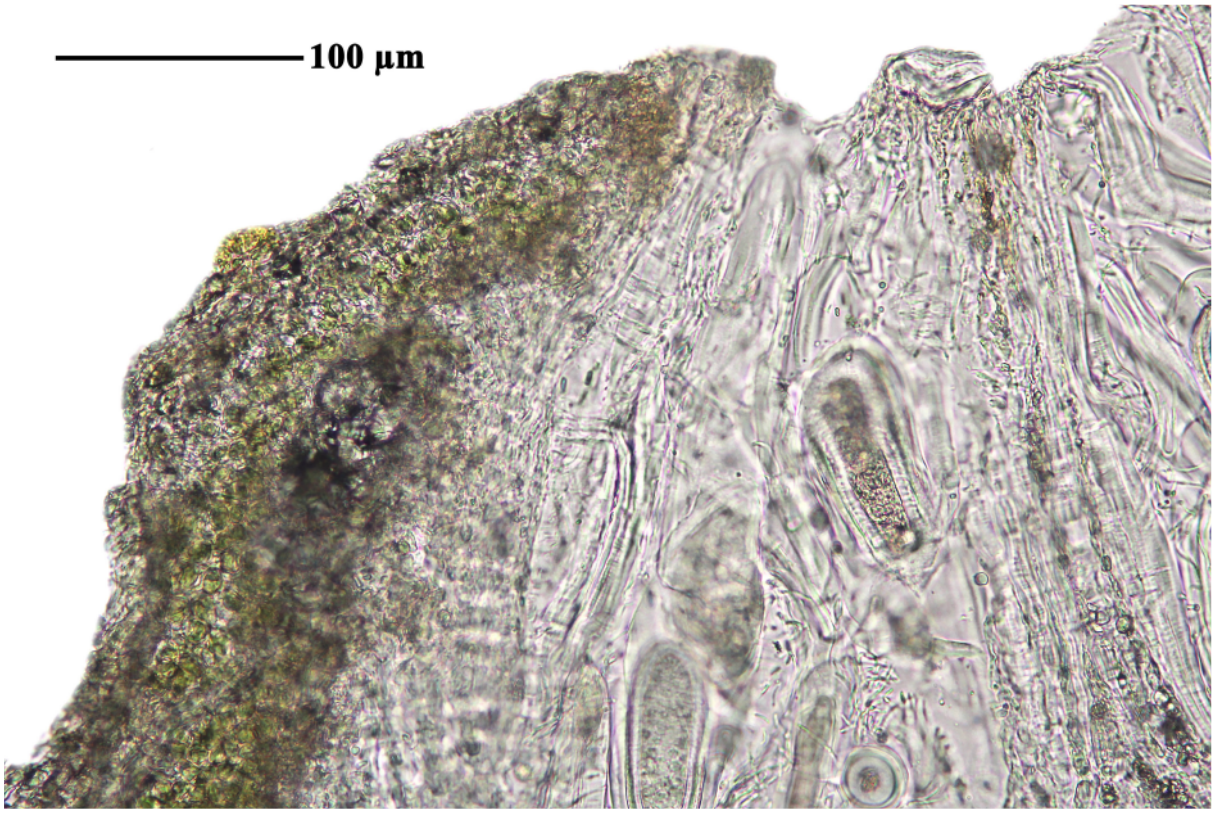


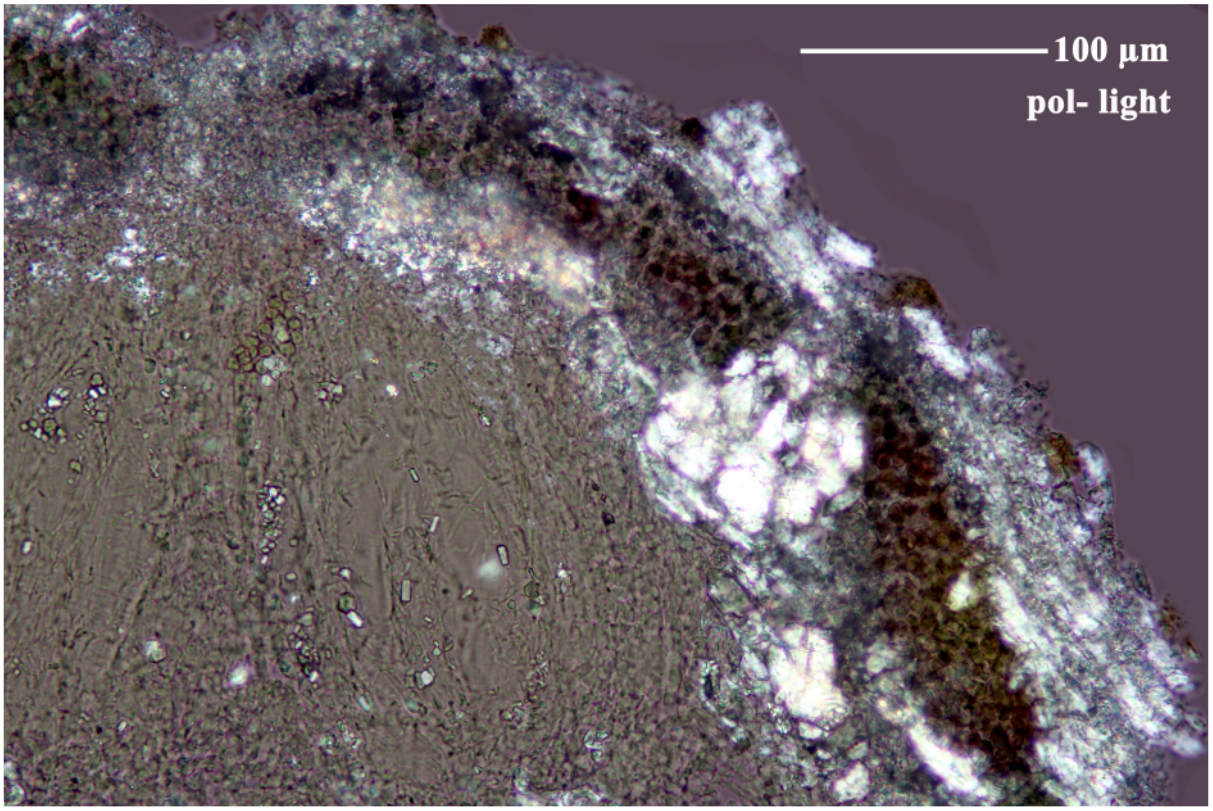




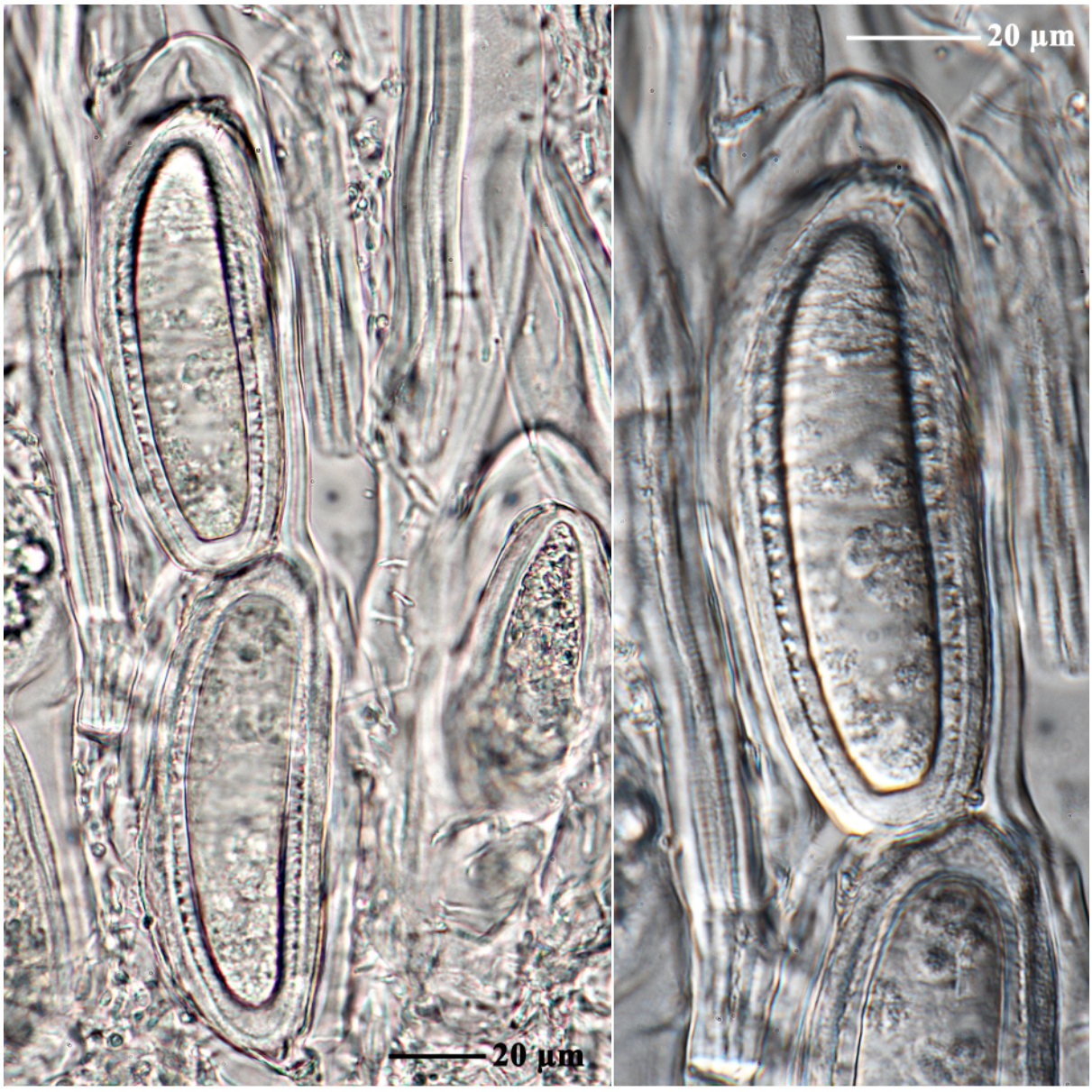


Pertusaria thiospoda

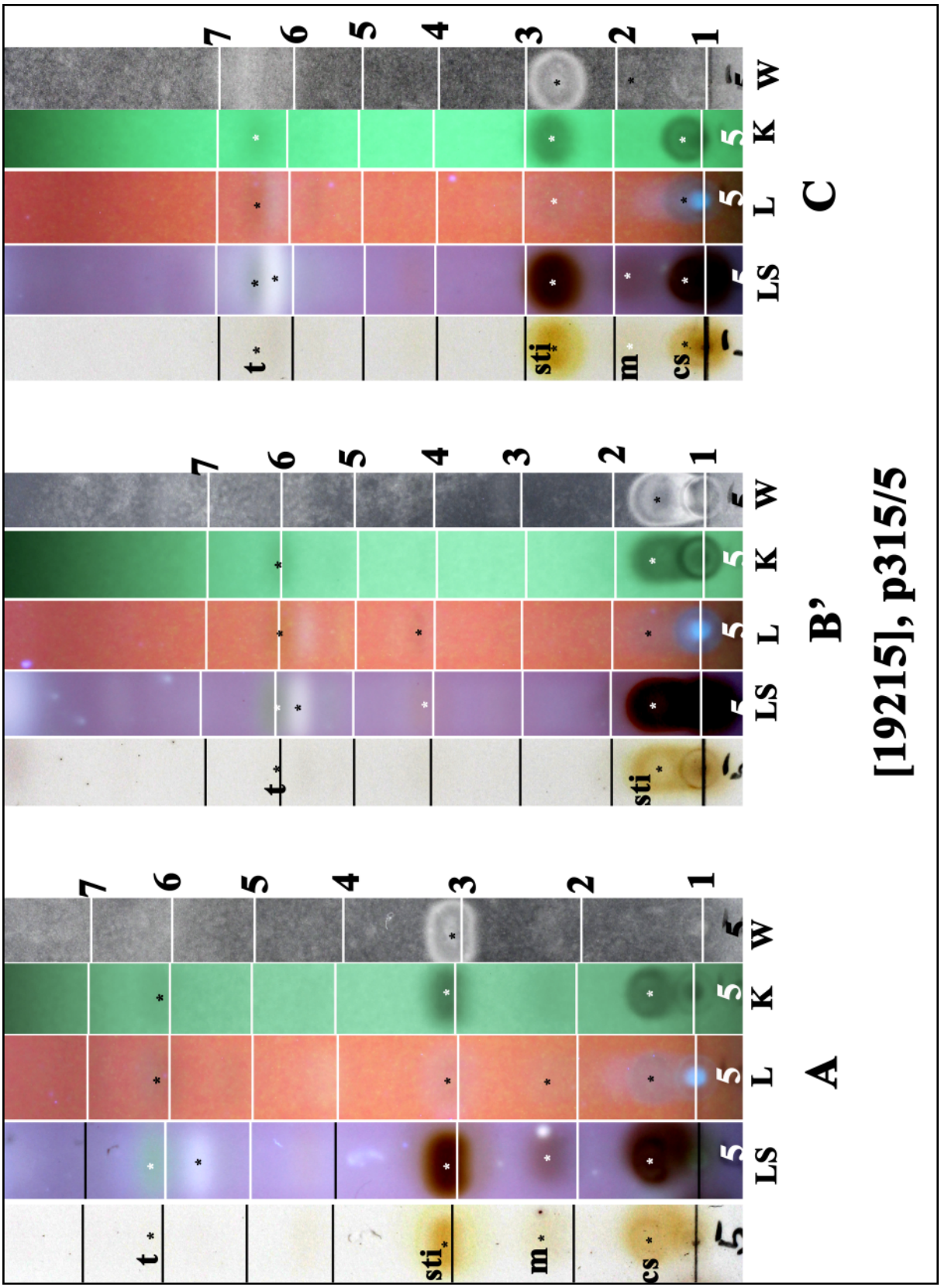




Pertusaria thiospoda



Pertusaria thiospoda



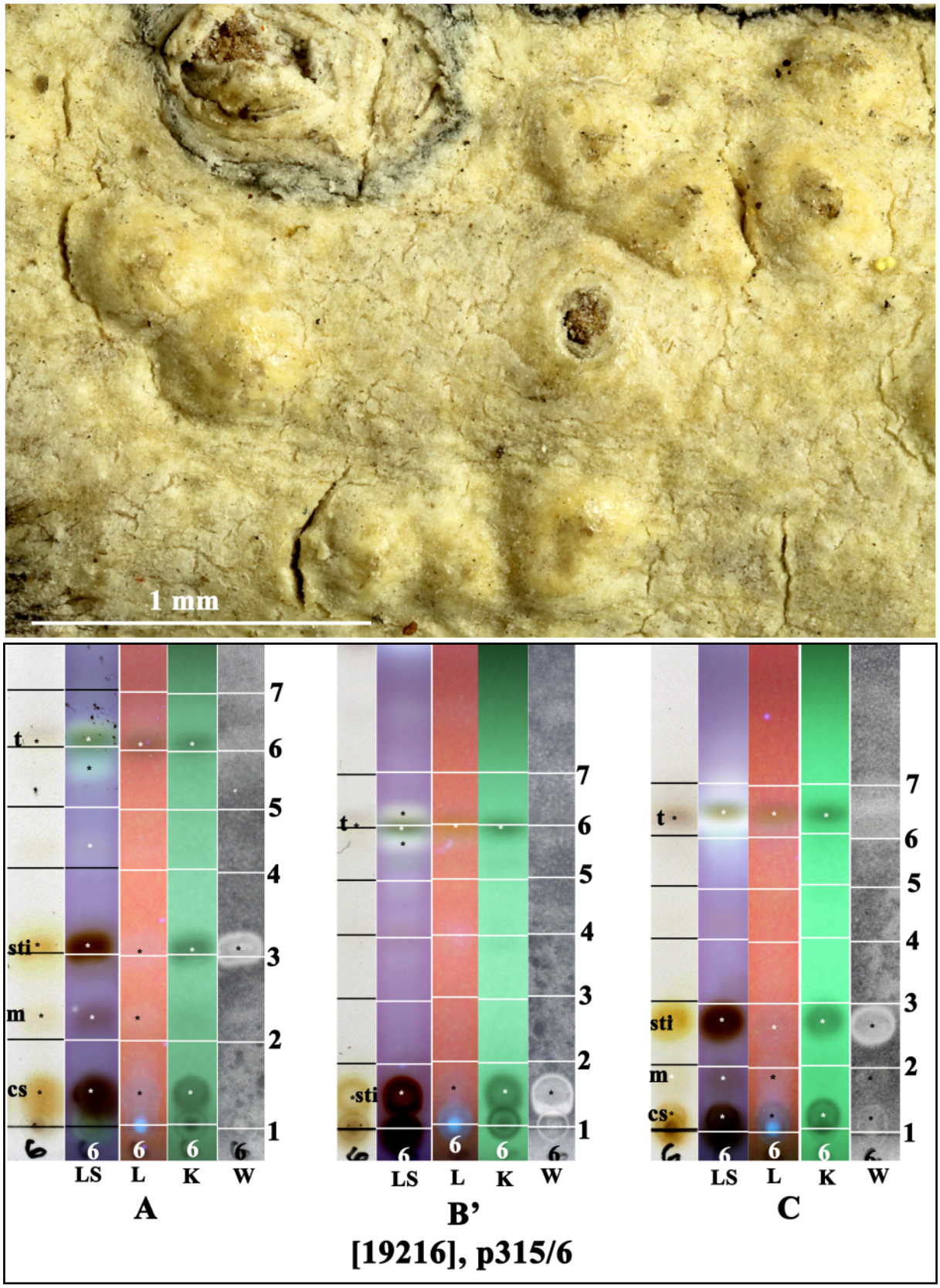
t: thiophaninic acid, sti: stictic acid, m: menegazziaic acid, cs: constictic acid

Pertusaria thiospoda

Pertusaria thiospoda C.Knight
[= ***Pertusaria schizostomella*** Müll.Arg.]

[19216], Australia, New South Wales, Hawkesbury River, ca. 1 km north of Spencer, 47 km north-north-west of Sydney, 33°27' S, 151°08' E, sea level, growing on *Avicennia marina* in mangrove swamp. Leg. A.W. Archer (P162), 11.05.1991, det. A.W. Archer. Chemistry: thiophaninic acid (major), stictic acid (major), cryptostictic acid (trace), constictic acid (minor), menegazziaic acid (trace), 2-chloro-6-*O*-methylnorlichexanthone (trace), 4-chloro-6-*O*-methylnorlichexanthone (trace) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 238. Distributed as ***Pertusaria schizostomella*** Müll.Arg.





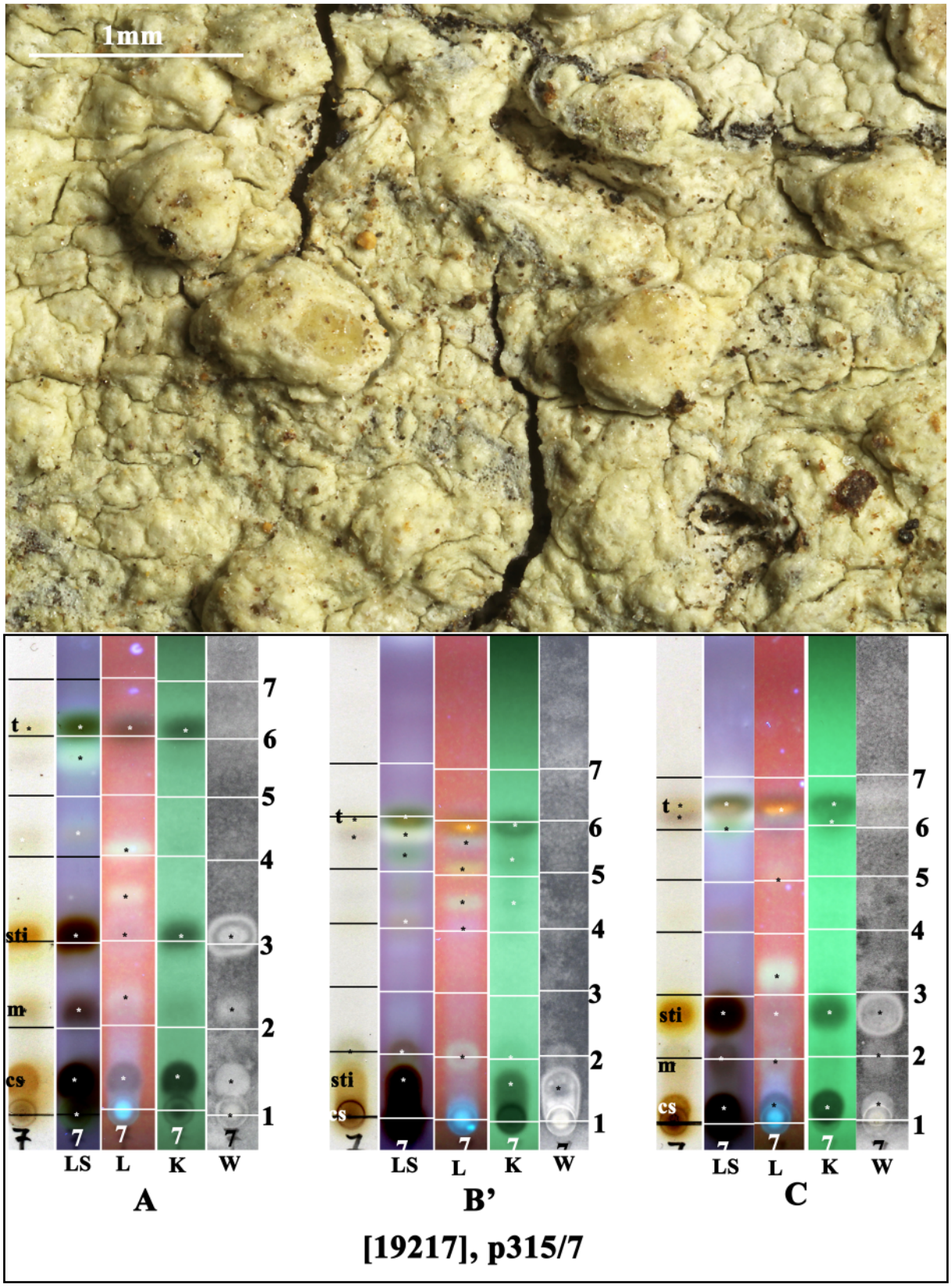
t: thiophaninic acid, sti: stictic acid, m: menegazziaic acid, cs: constictic acid

Pertusaria thiospoda

Pertusaria thiospoda C.Knight

[19217], Australia, New South Wales, Lord Howe Island, end of Andersons road, 31°31'46" S, 159°04'20" E, 25 m, growing on fallen branches of *Cryptocarya* in disturbed lowland forest. Leg. J.A. Elix (32835), 22.06.1992, det. A.W. Archer. Chemistry: stictic acid (major), constictic acid (minor), thiophaninic acid (major), 2-chloro-6-*O*-methylnorlichexanthone (minor), 4-chloro-6-*O*-methylnorlichexanthone (trace) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 292.





t: thiophaninic acid, sti: stictic acid, m: menegazzaic acid, cs: constictic acid

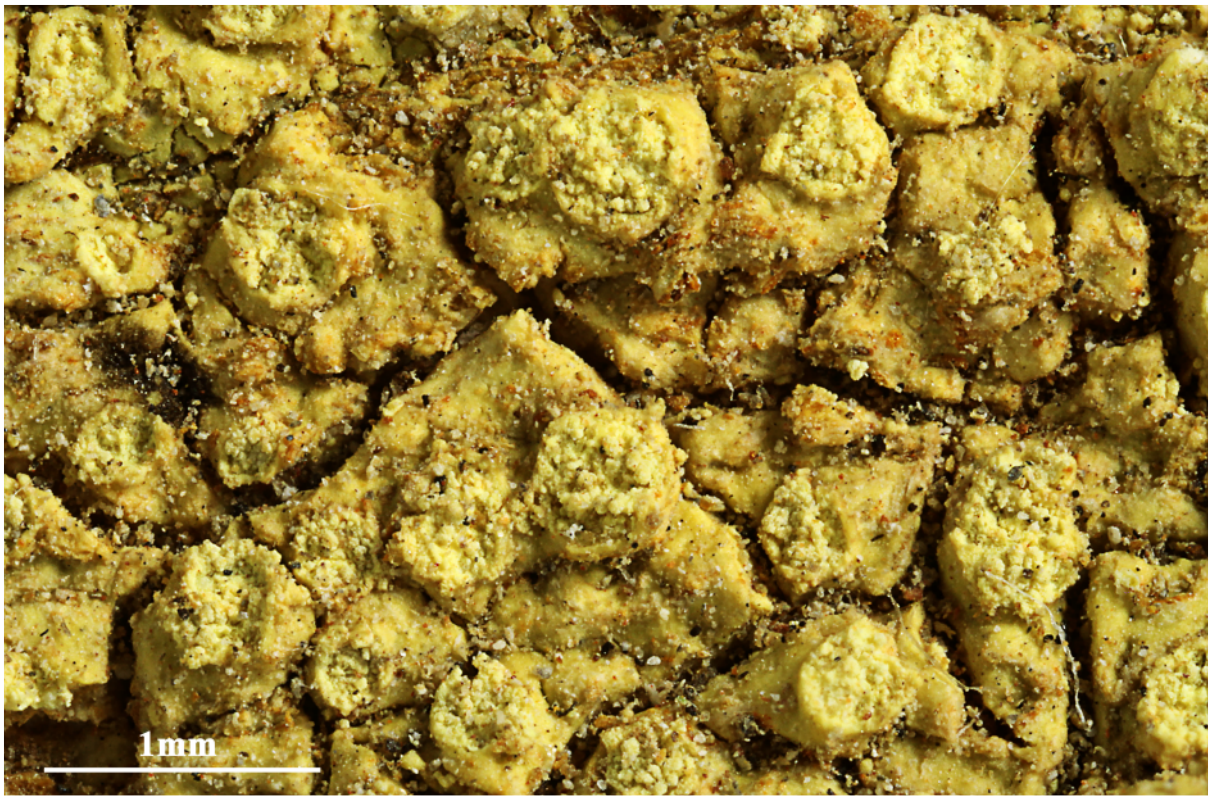
Pertusaria thiospoda

Pertusaria xanthoplaca Müll.Arg.

Thallus saxicolous, yellow (UV+ yellow-orange), areolate, isidia absent. Soralia circular, somewhat crater-like, in the centre of the areoles.

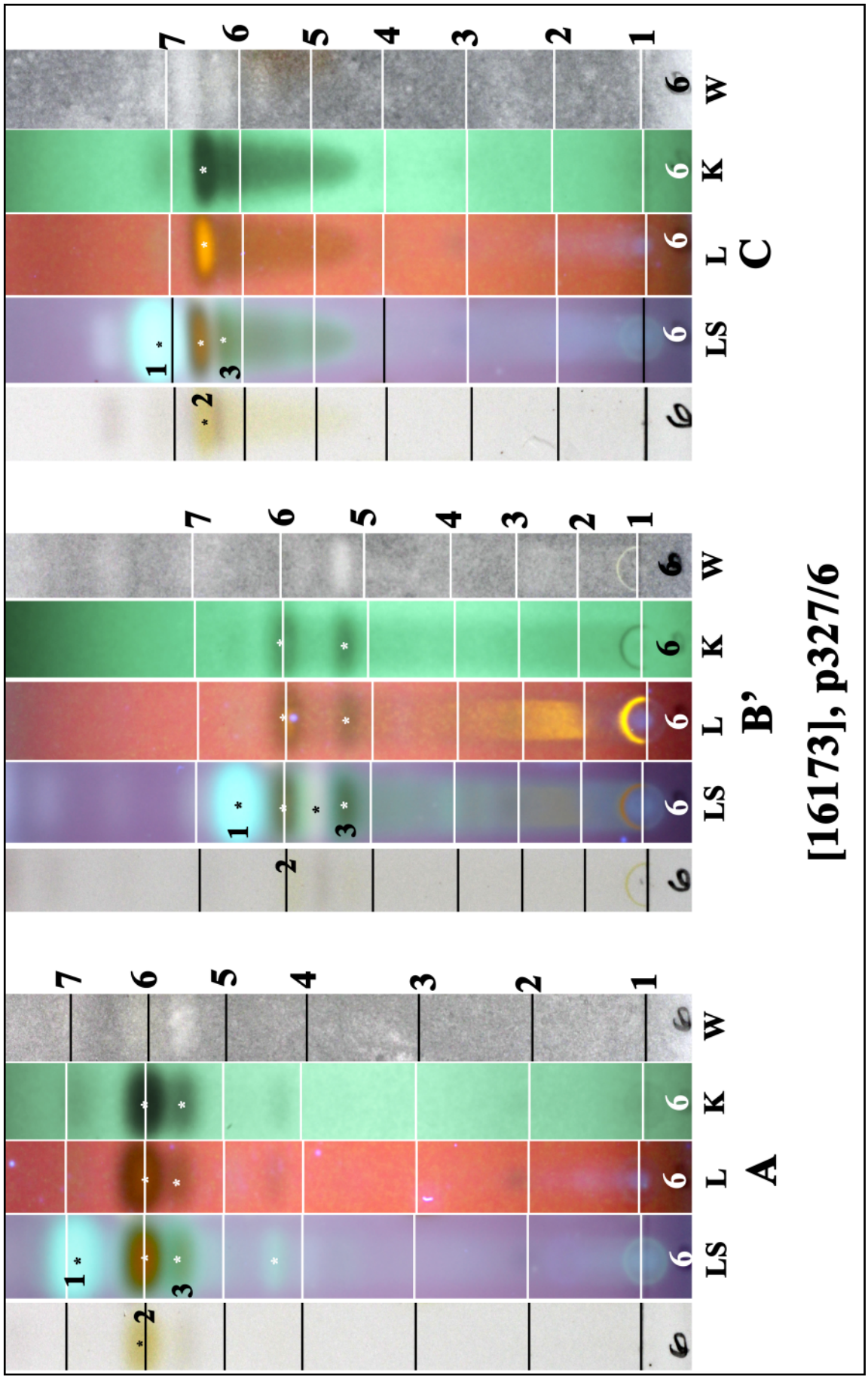
[16173], Australia, New South Wales, Tomakin, rocks near the sea, 35.830° S, 150.20554° E, 0 m. Leg. F. Schumm & E. Stocker-Wörgötter, 10.11.2009. Chemistry: thallus UV-longwave + yellow.







Pertusaria xanthoplaca



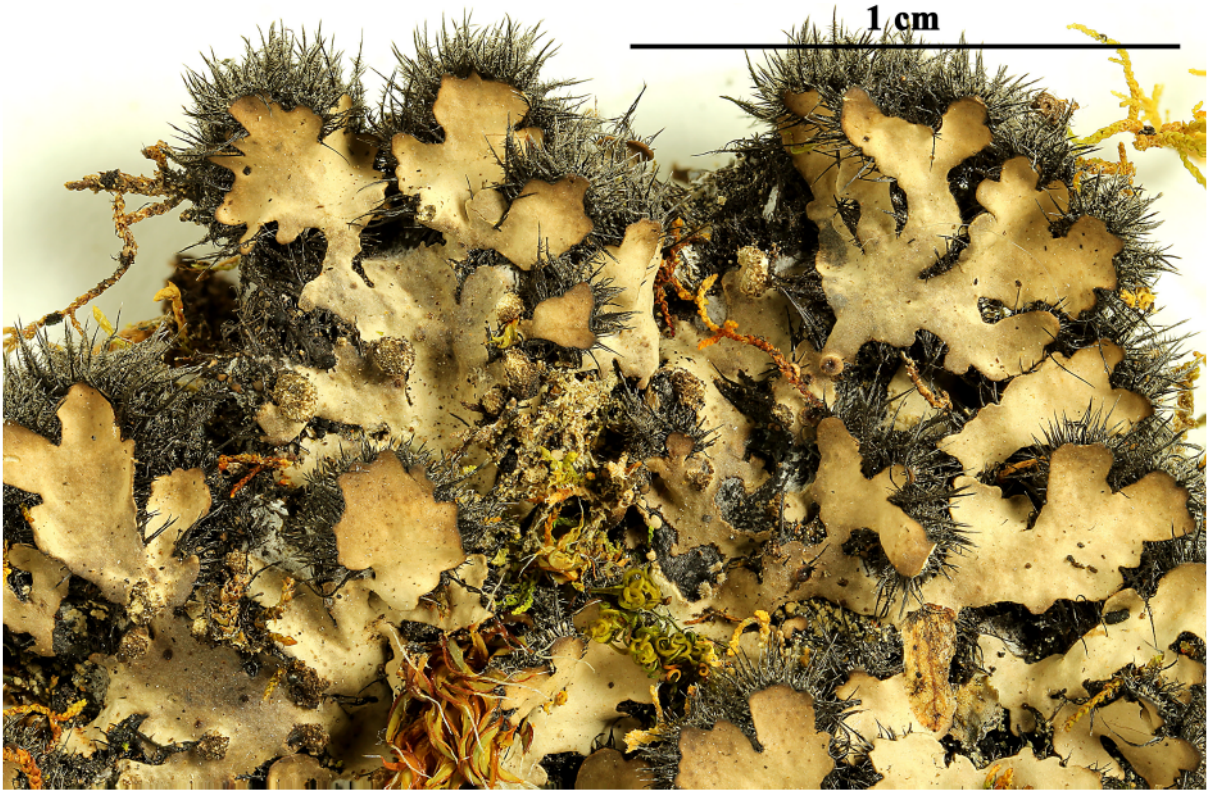
1: lichexanthone, 2: thiophaninic acid, 3: 2-chloro-6-*O*-methylnorlichexanthone

Pertusaria xanthoplaca

Phaeophyscia hispidula (Ach.) Essl.

Thallus orbicular to irregular, very variable in size, up to 10 cm in diam., loosely adnate, broad lobed with ascending lobe tips and distinctly projecting rhizines; upper surface greyish brown to brown, usually dull; lobes very variable in width, up to 4 mm wide, concave with ascending tips; soralia marginal to laminal, sometimes capitate, starting as pustules, becoming secondarily confluent; soredia farinose to granular, sometimes isidia-like, occasionally developing into lobules; lower surface black with abundant, long, black rhizines usually projecting beyond the margins; medulla white; lower cortex paraplectenchymatous, 2-3 layers of inflated cells, dark brown, 25-30 µm thick. Ascospores 8/ascus, brown, thick-walled, 10-15 x 23 -26 µm. Chemistry: Thallus K-; medulla K-, C-, KC-, P-; small amount of atranorin, zeorin, leucotylin (Kashiwadani 1975), our TLC (p315/9) shows no lichen substance.

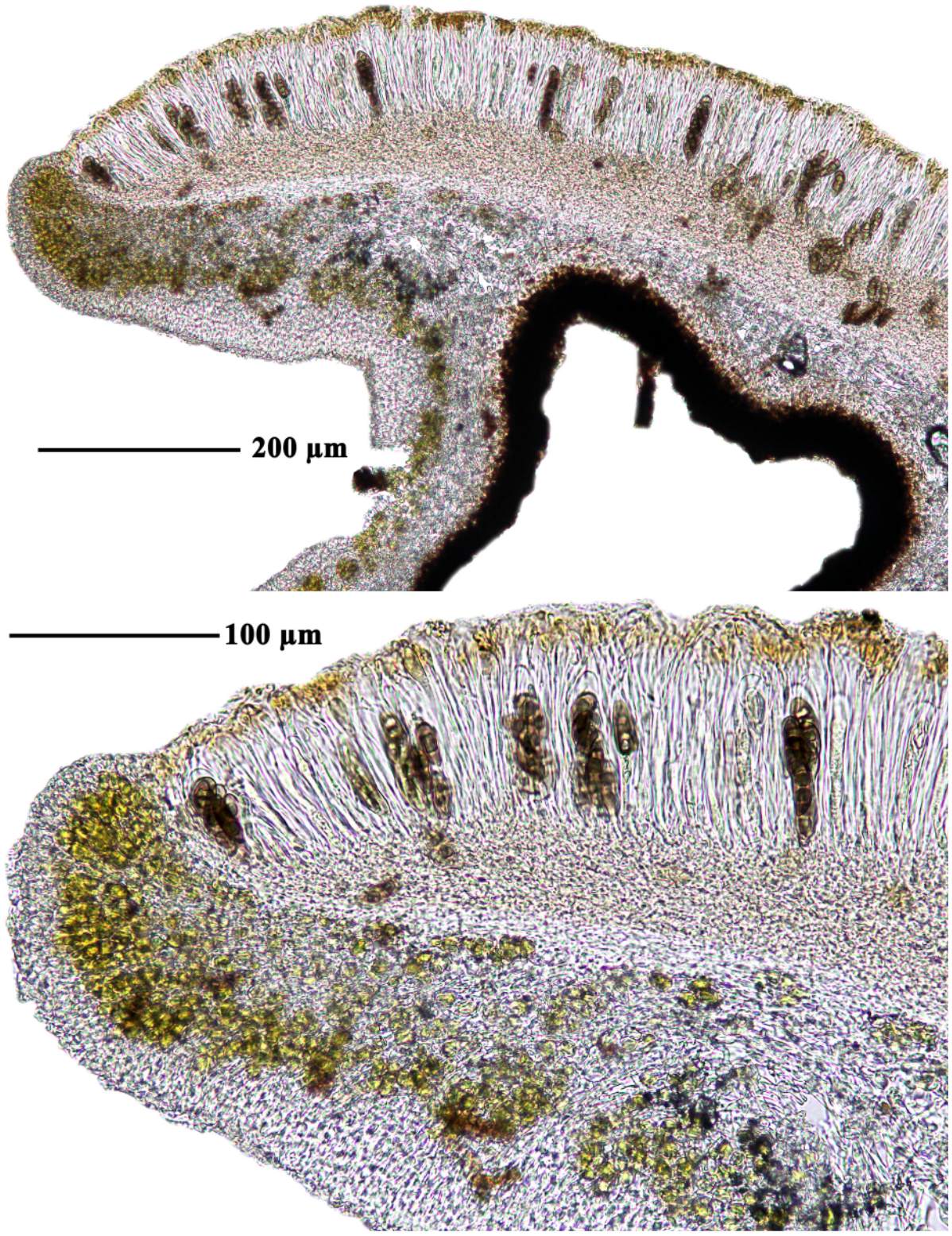
[19219], Australien, New South Wales, Abercrombie Caves, 43 km south-south-east of Blayney, 33°55' S, 149°22' E, 600 m, growing on soil and debris over limestone rocks in disturbed *Eucalyptus* dominated woodland on side of a ridge. Leg. J.A. Elix (23126), 11.09,1990. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 215.







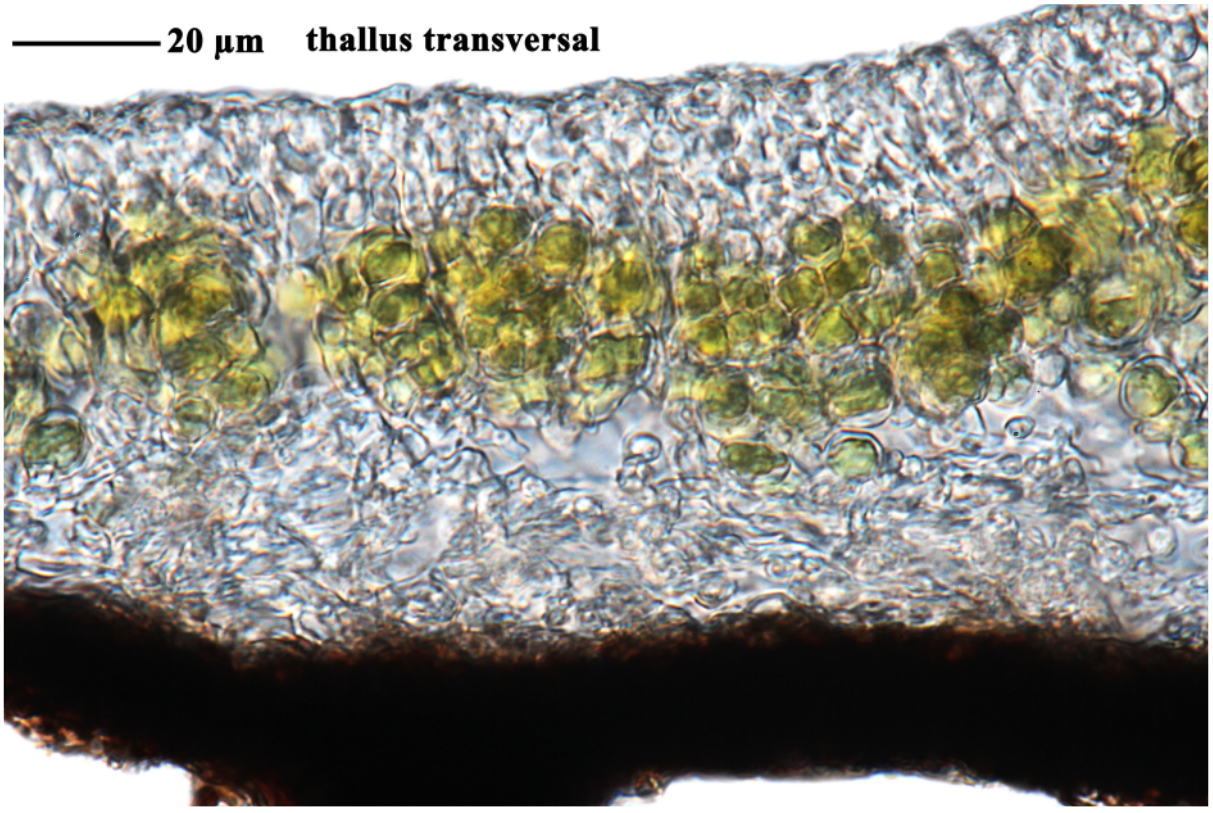
Phaeophyscia hispidula



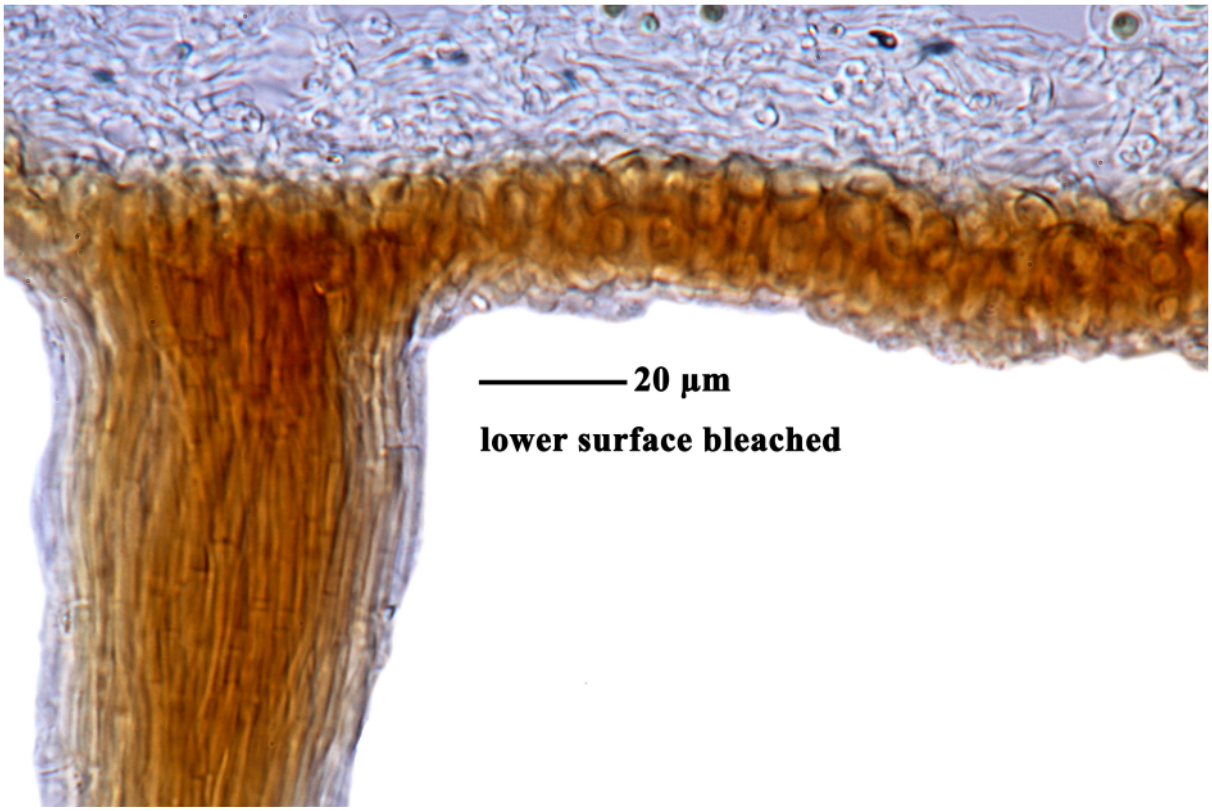
Phaeophyscia hispidula

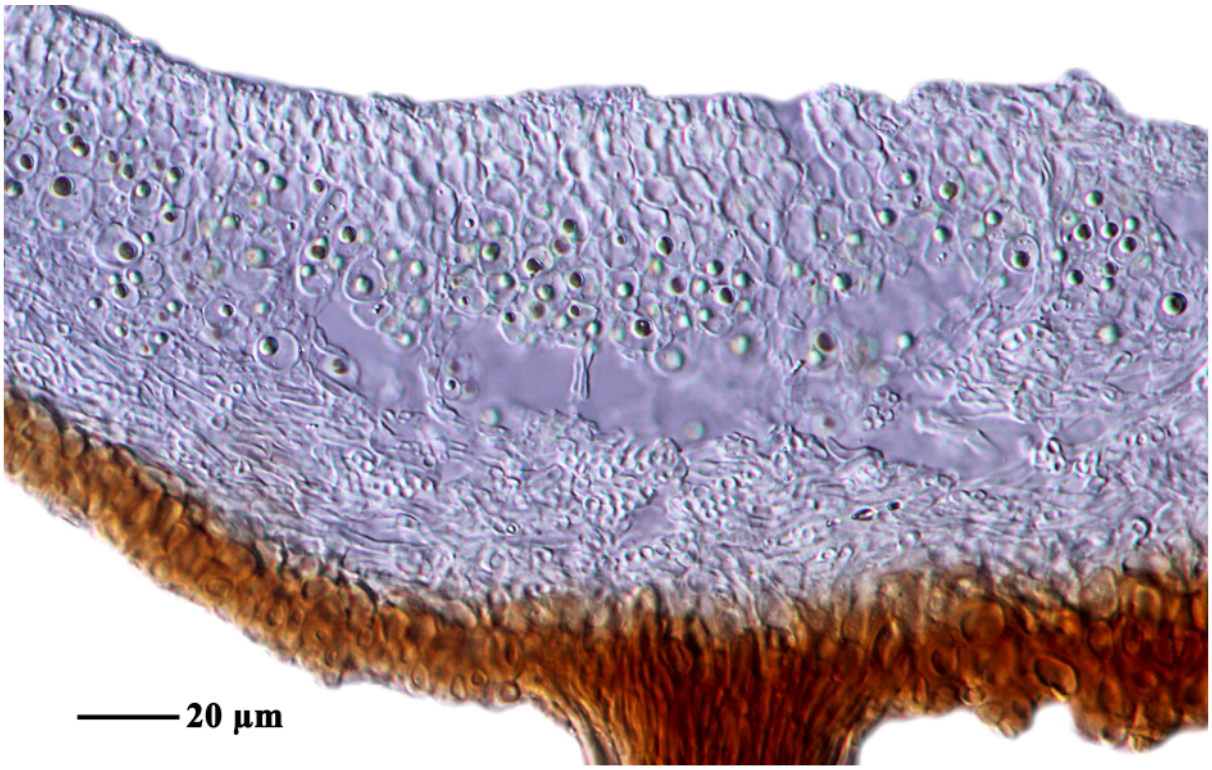




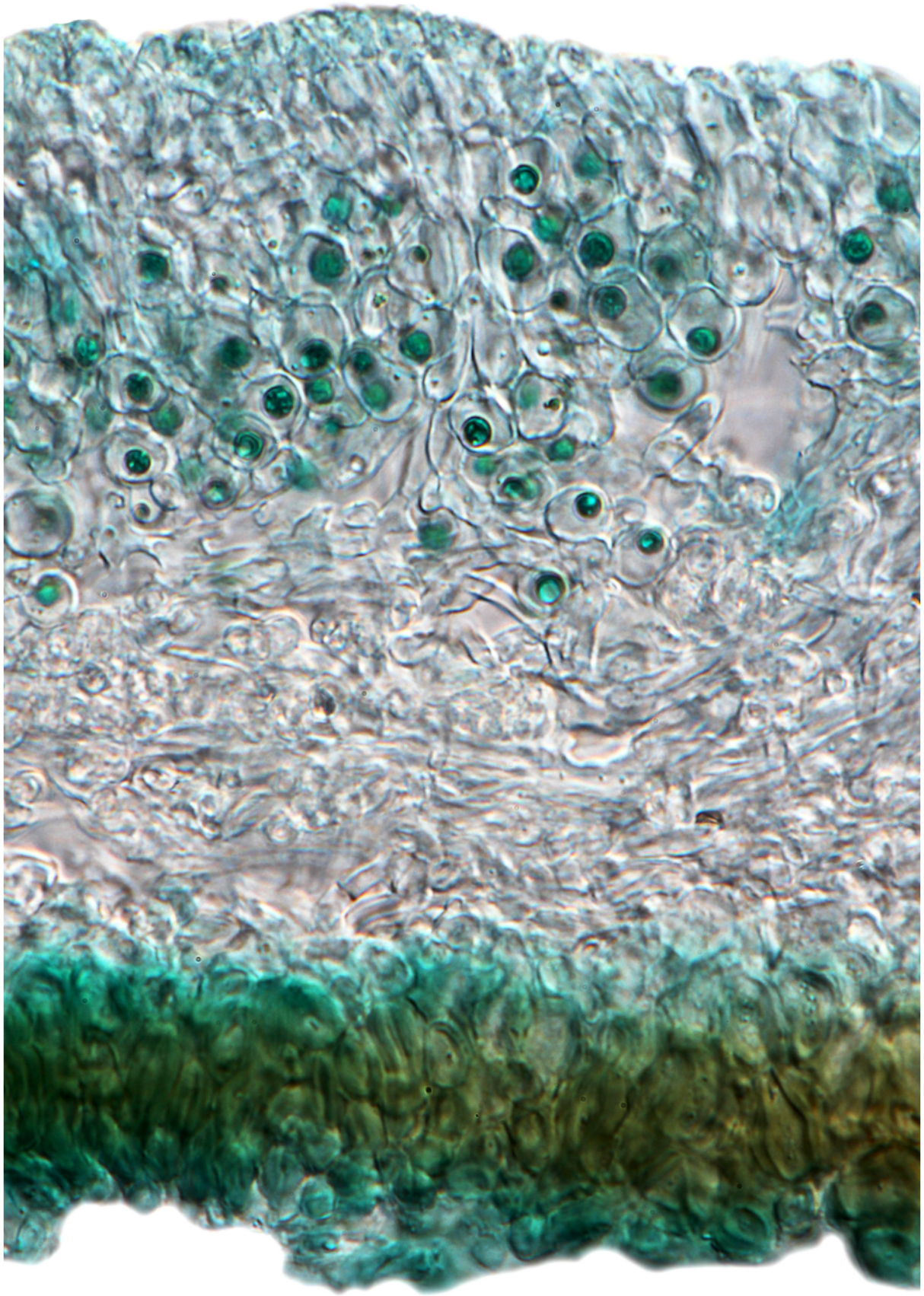


Phaeophyscia hispidula





Phaeophyscia hispidula

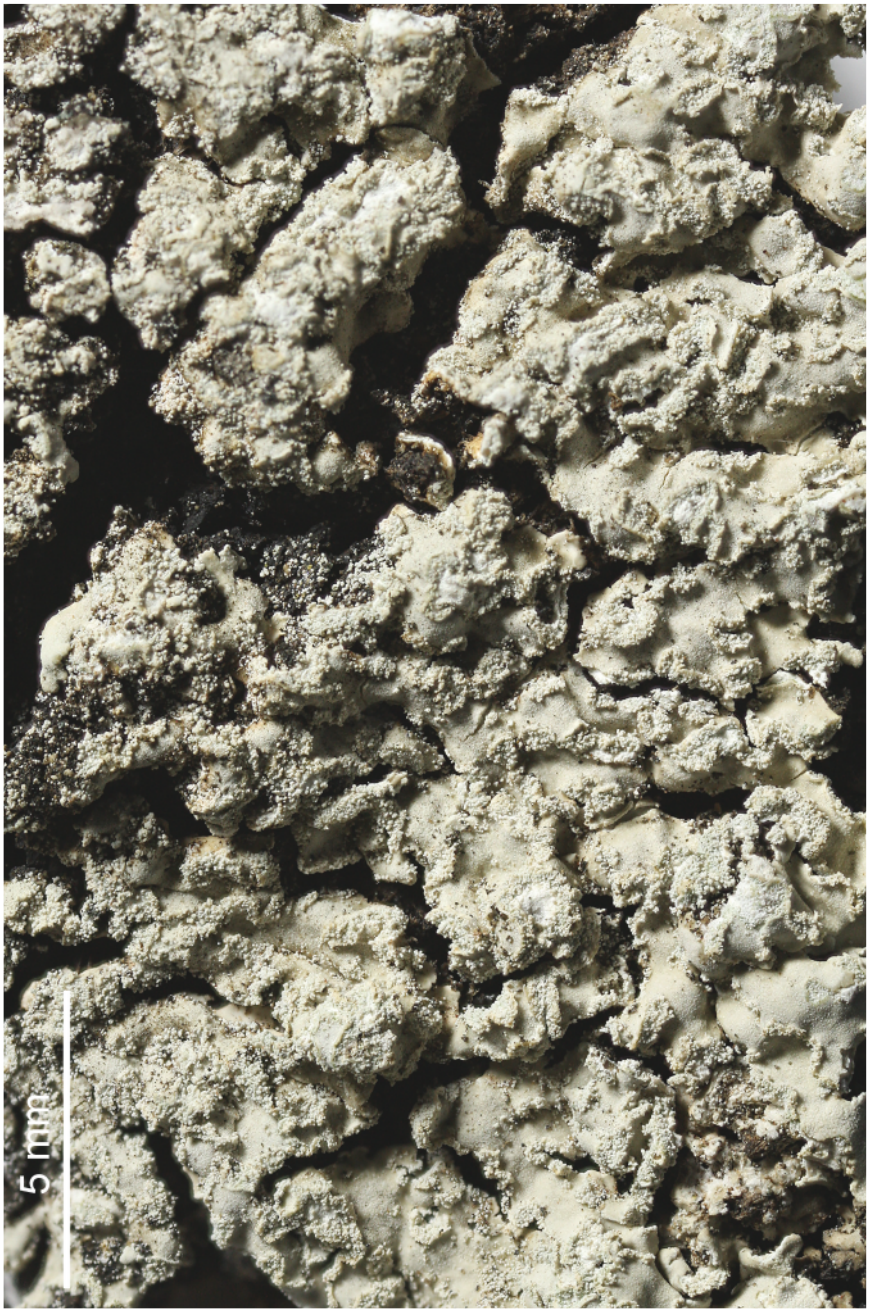


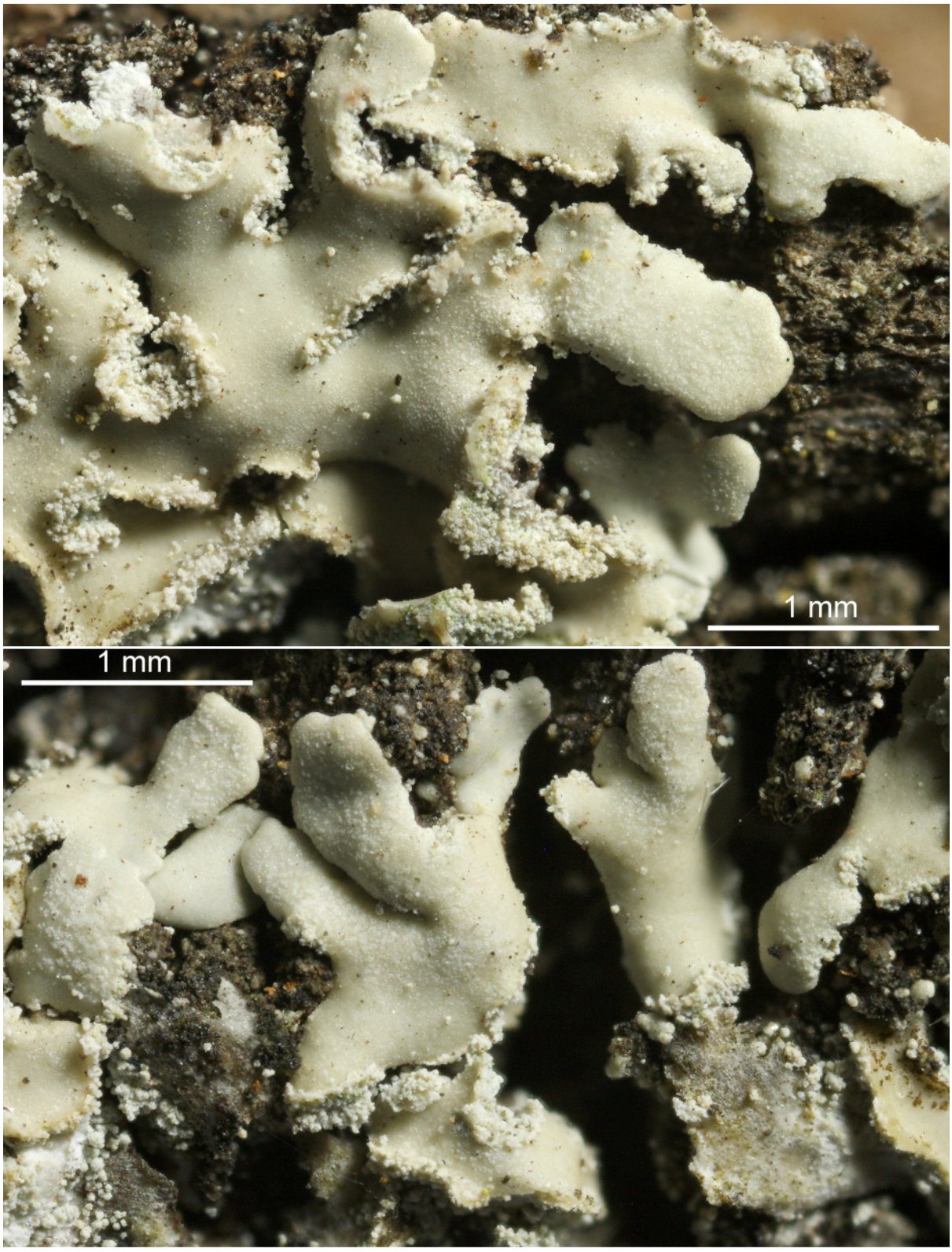
Phaeophyscia hispidula

Physcia nubila Moberg
[= ***Heterodermia desertorum*** Kalb]

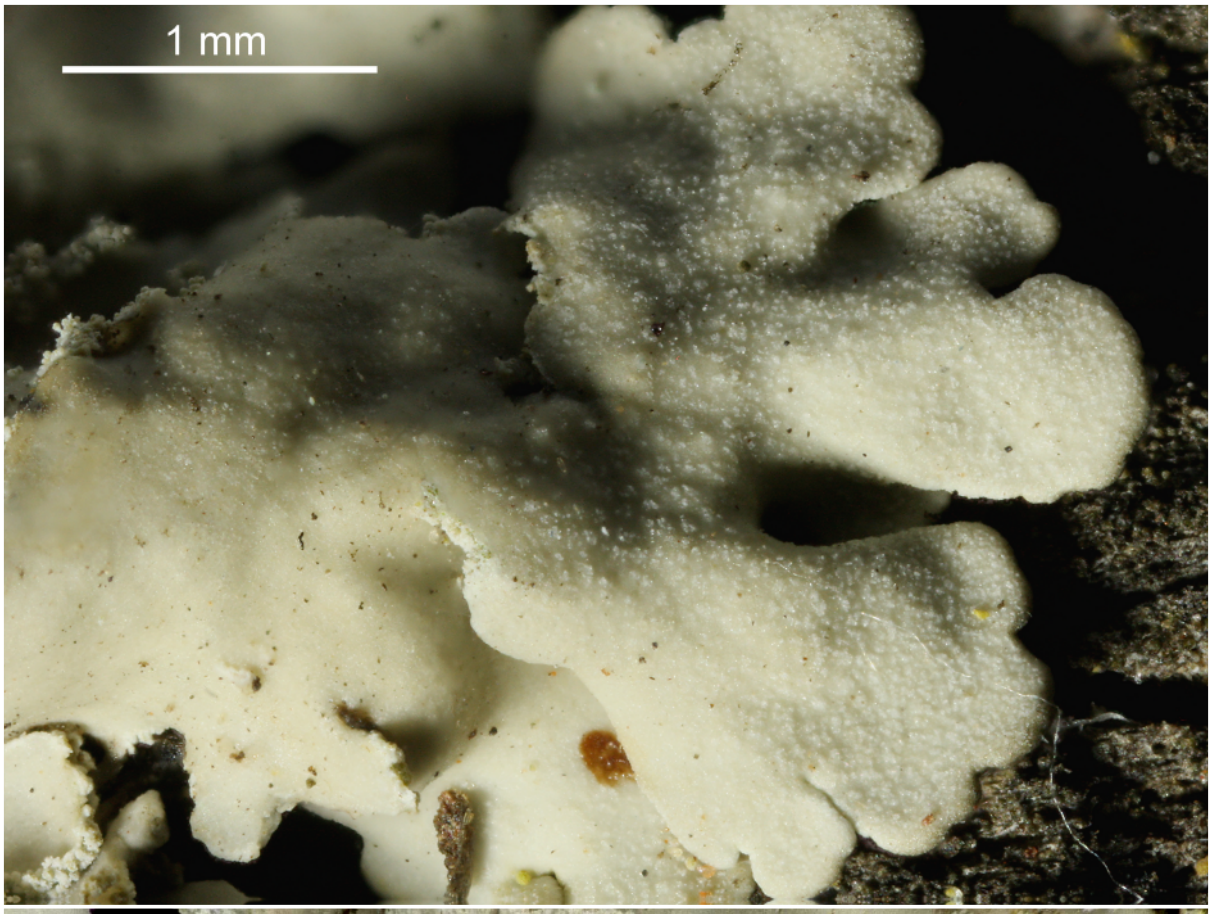
Thallus adnate, lobes 0.3-5 mm wide, irregularly branched, emaculate, densely white-pruinose in part. Soralia marginal, sometimes eroding and spreading over the upper surface. Lower surface corticate, white to brownish. Rhizines few and robust. Upper cortex paraplectenchymatous, lower cortex prosoplectenchymatous. Chemistry: cortex and medulla K+ yellow; atranorin (major), zeorin (major), 6α-acetoxyhopane-16β,22-diol (major), leucotylin (minor to trace).

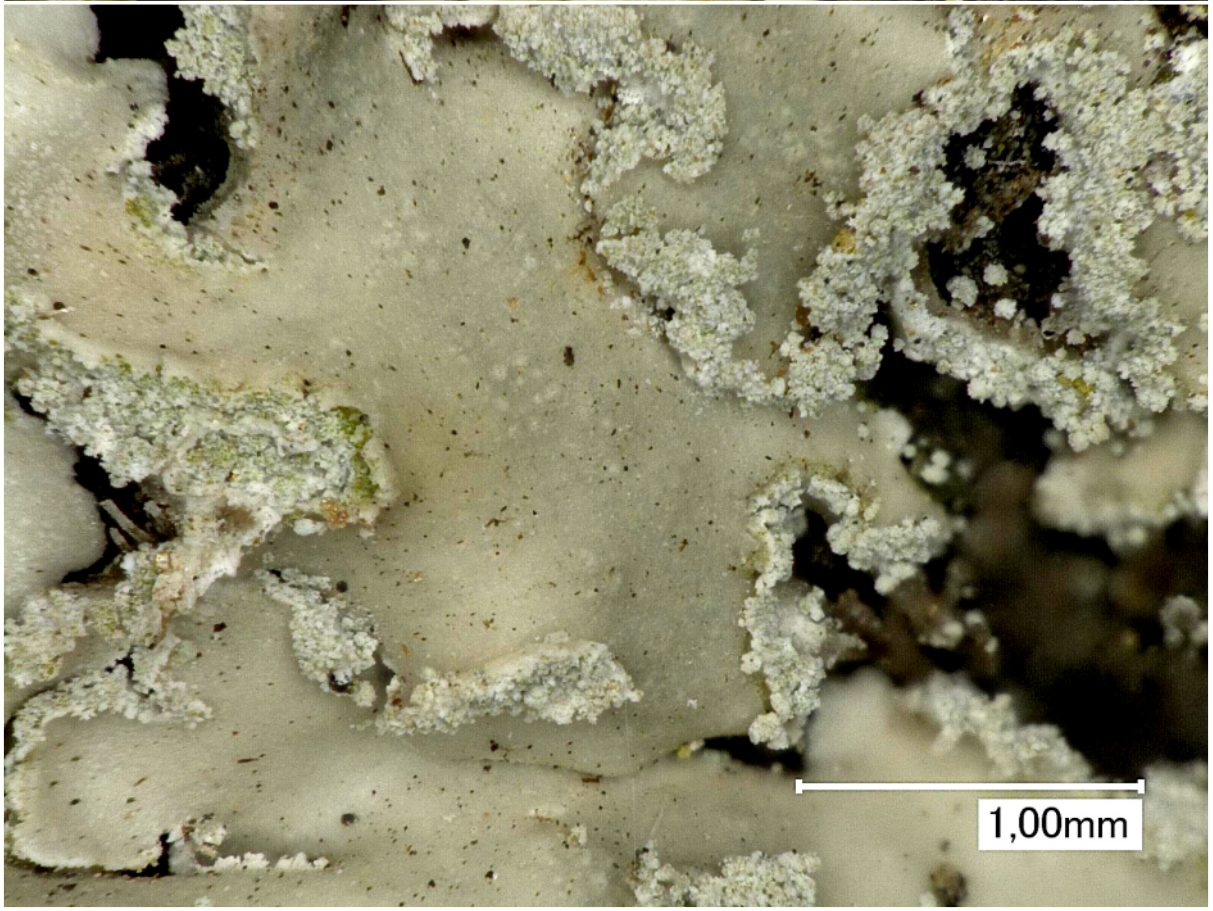
[18908], Australia, New South Wales, Golden Highway, 12 km southwest of Dunedoo, 32°03'18" S, 149°17'02" E, 350 m, remnant *Eucalyptus*-*Callitris* woodland, growing on dead wood. Leg. et det. J.A. Elix 5.08.2008.



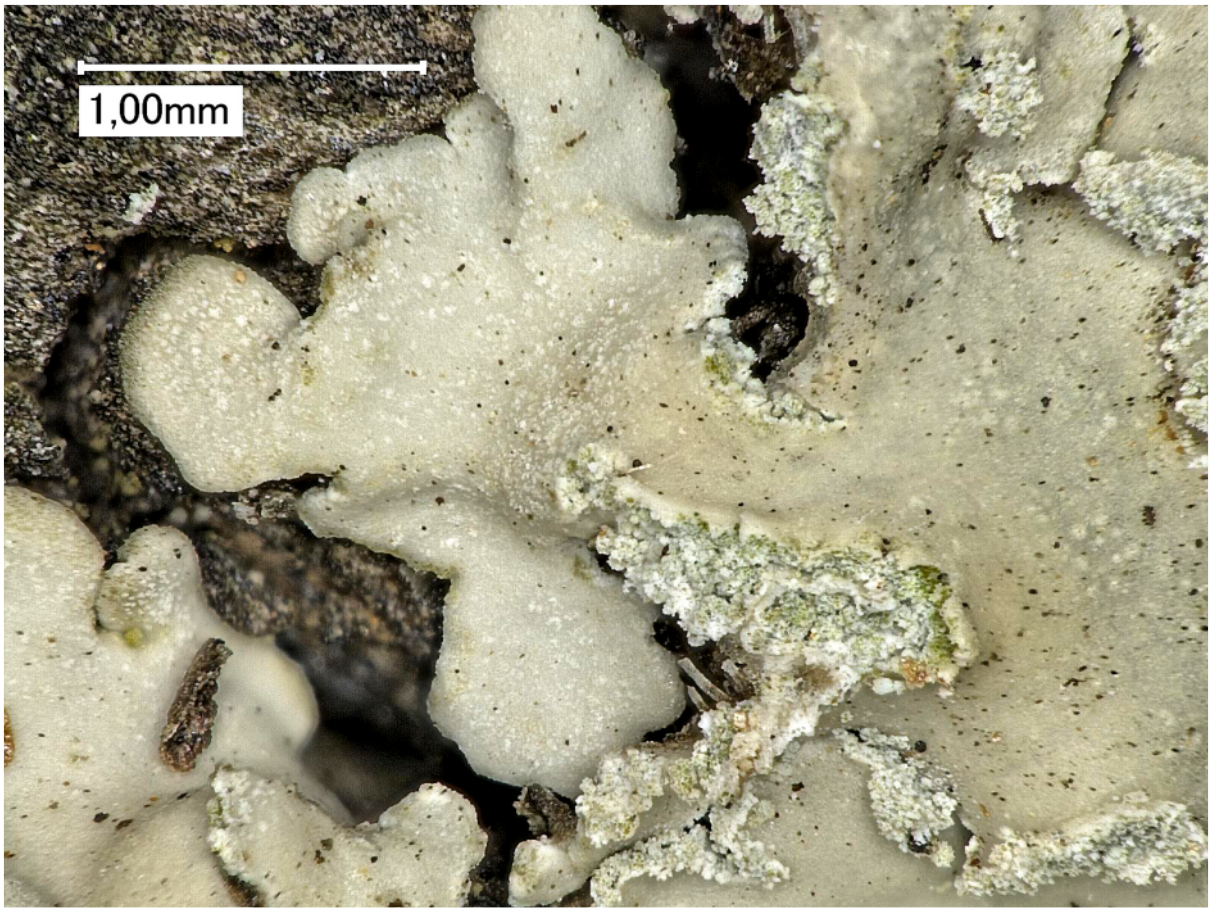


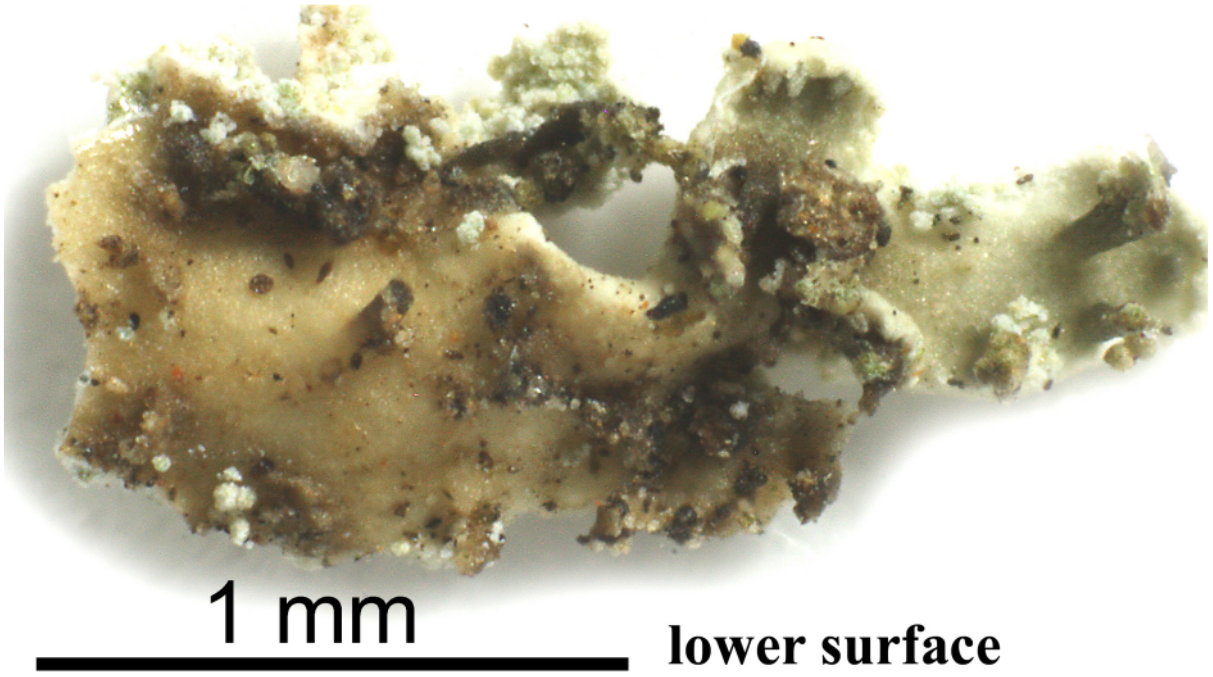
Physcia nubila





Physcia nubila





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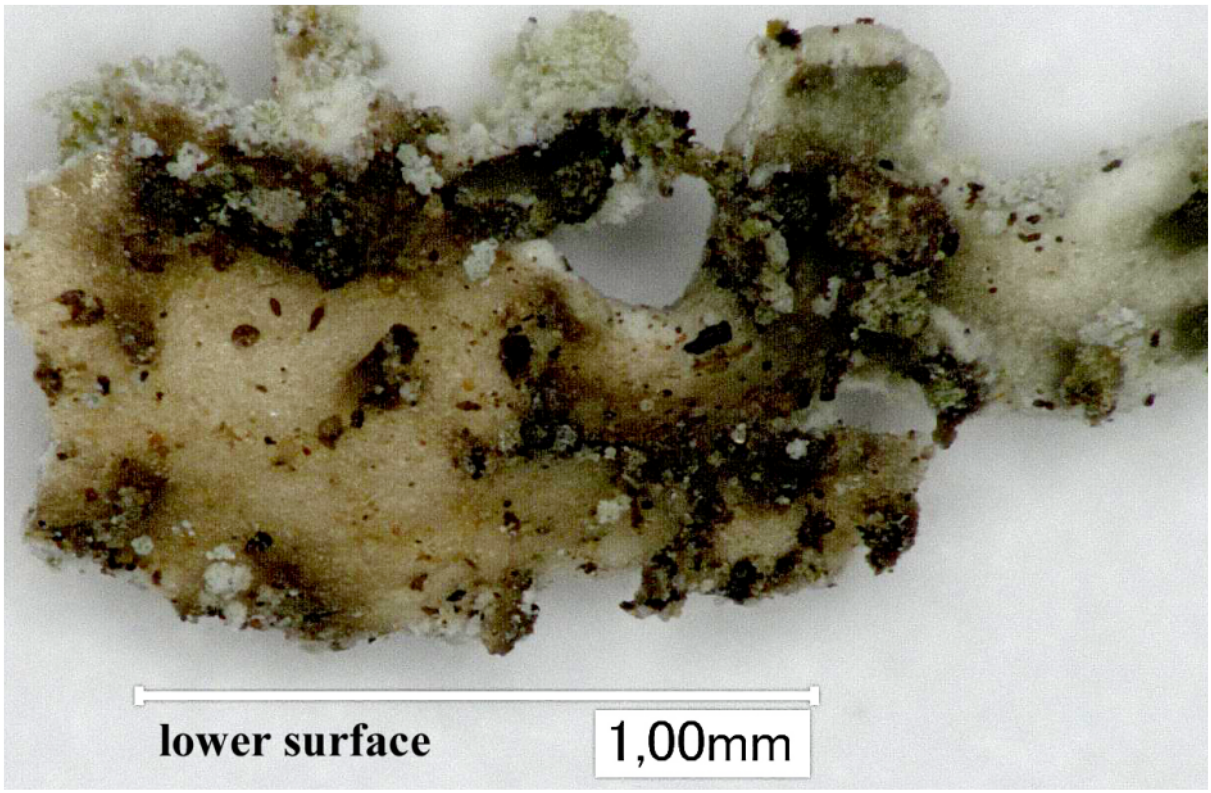
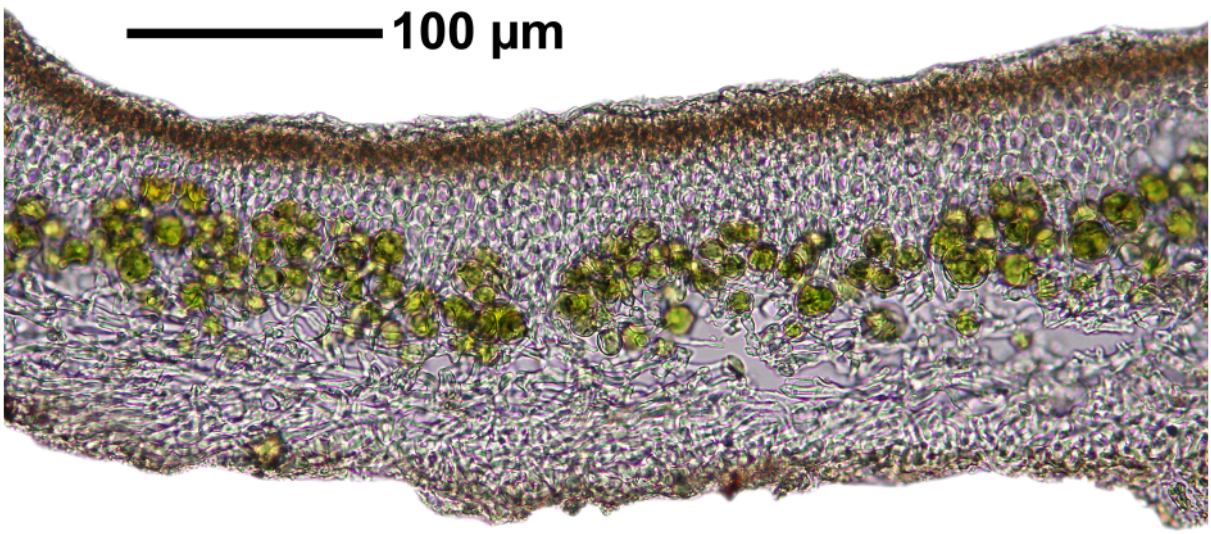
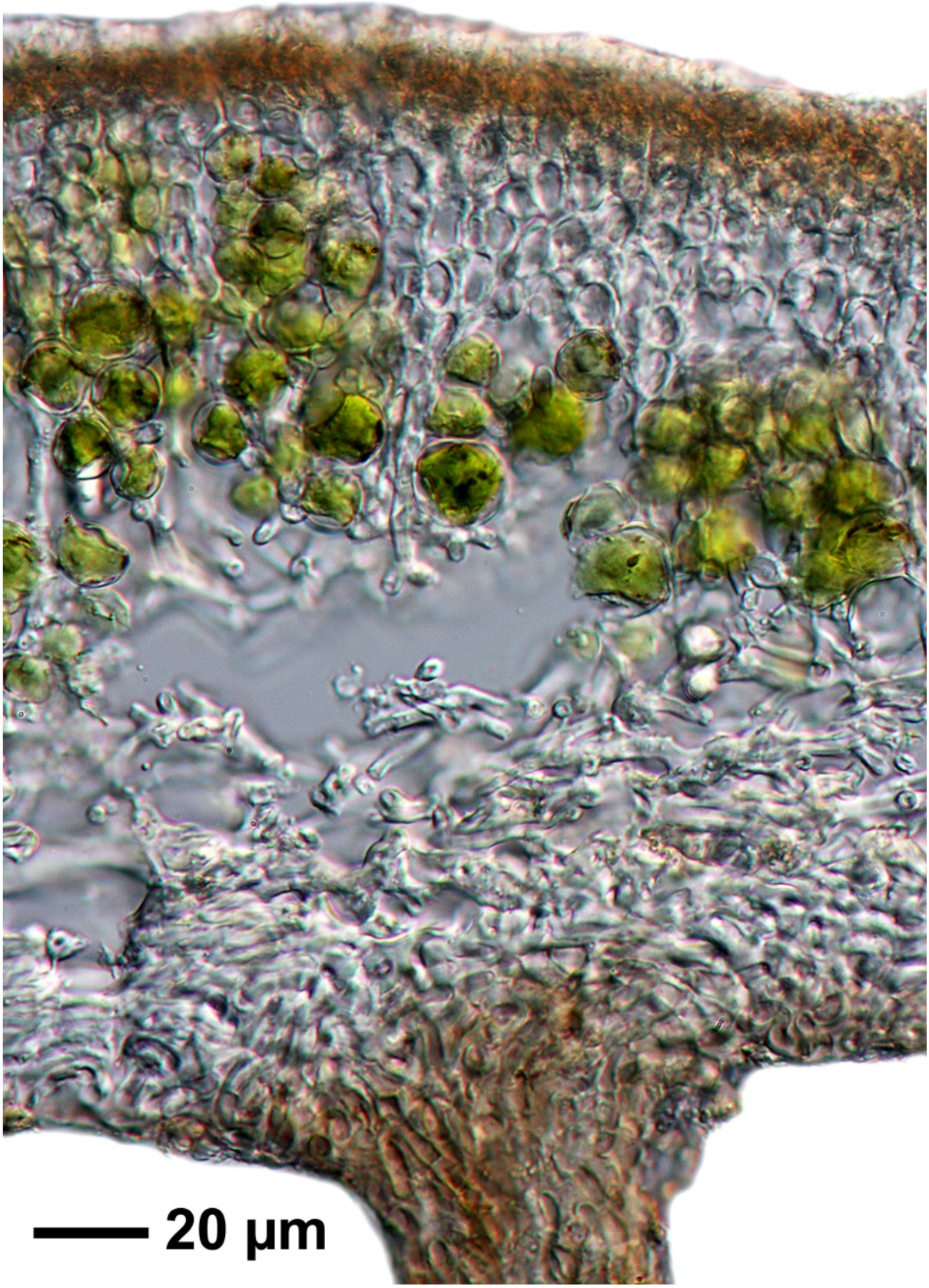


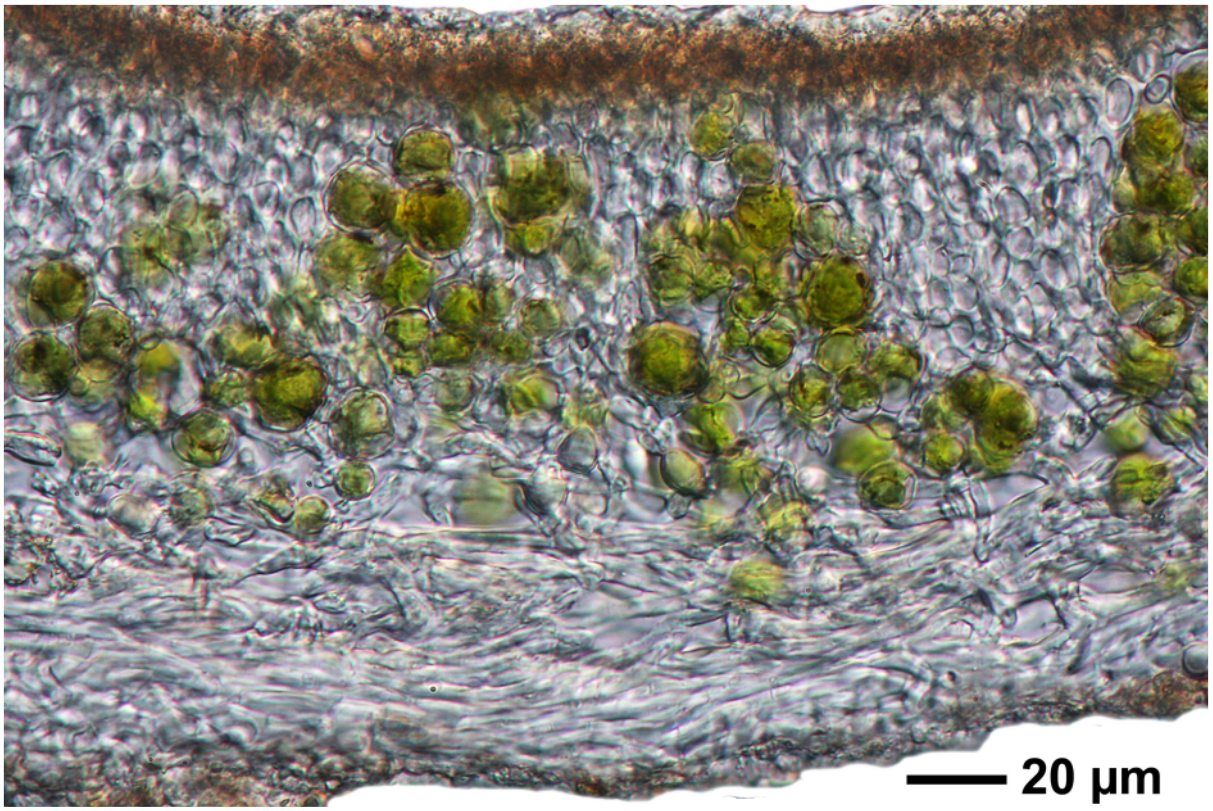


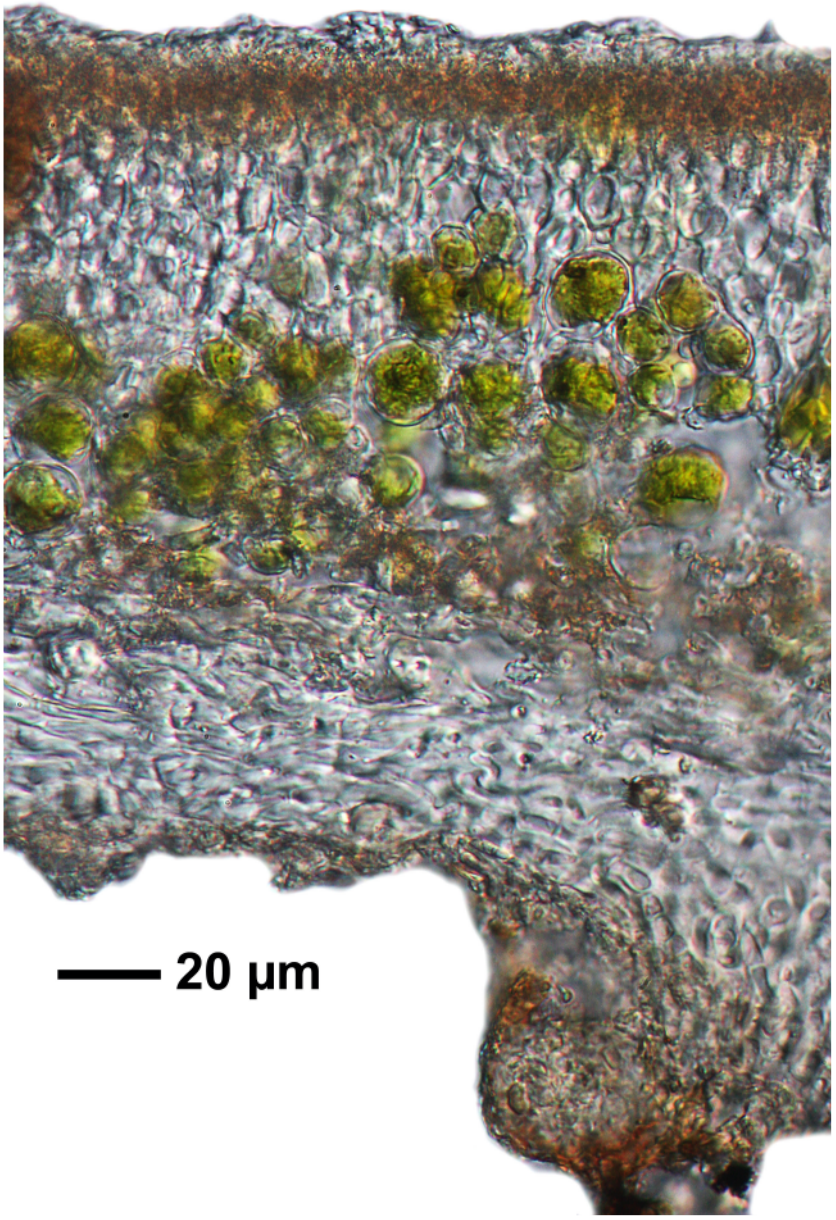
all sections: thallus longitudinal

Physcia nubila

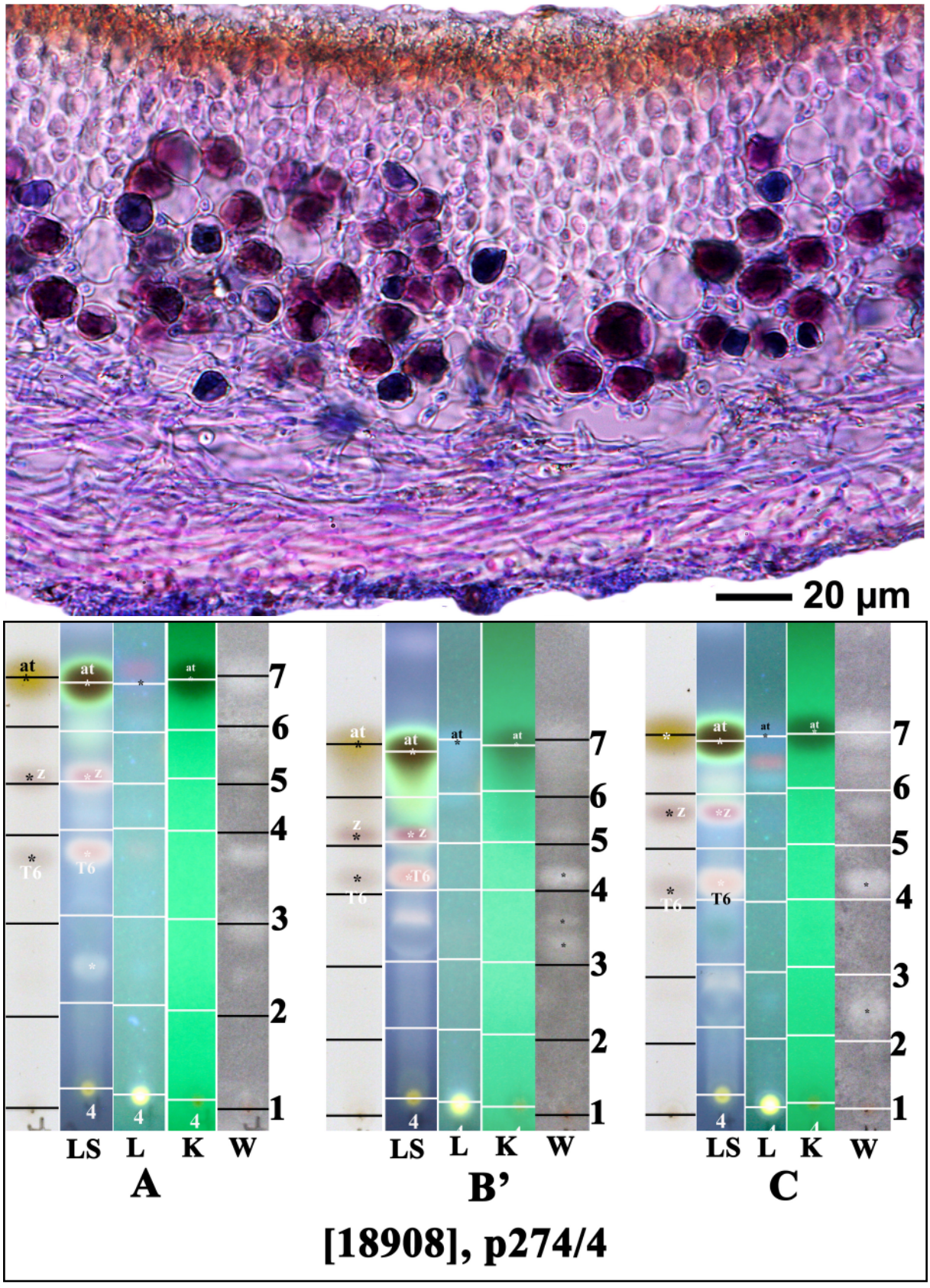


Physcia nubila





Physcia nubila



at: atranorin, z: zeorin, T6: 6α-acetoxyhopane-16β,22-diol

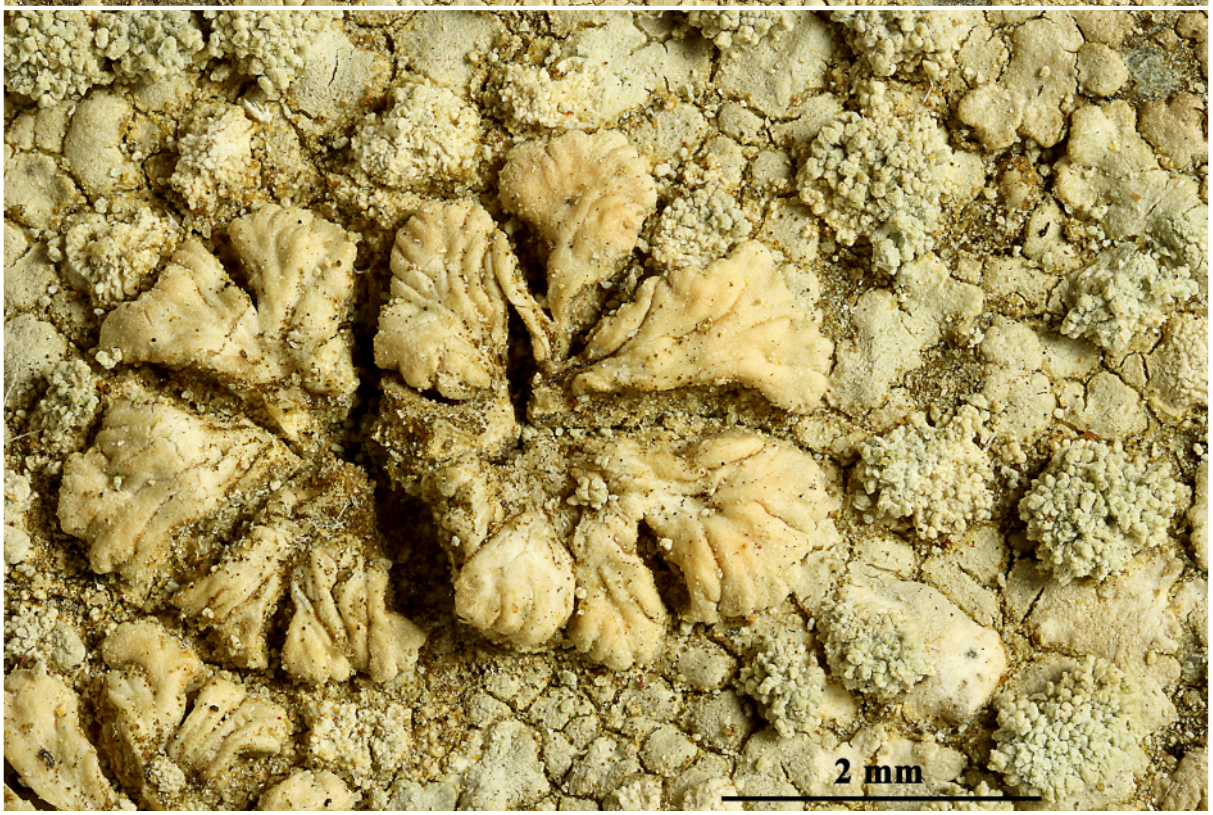
Physcia nubila

Placopsis gelida (L.) Lindsay

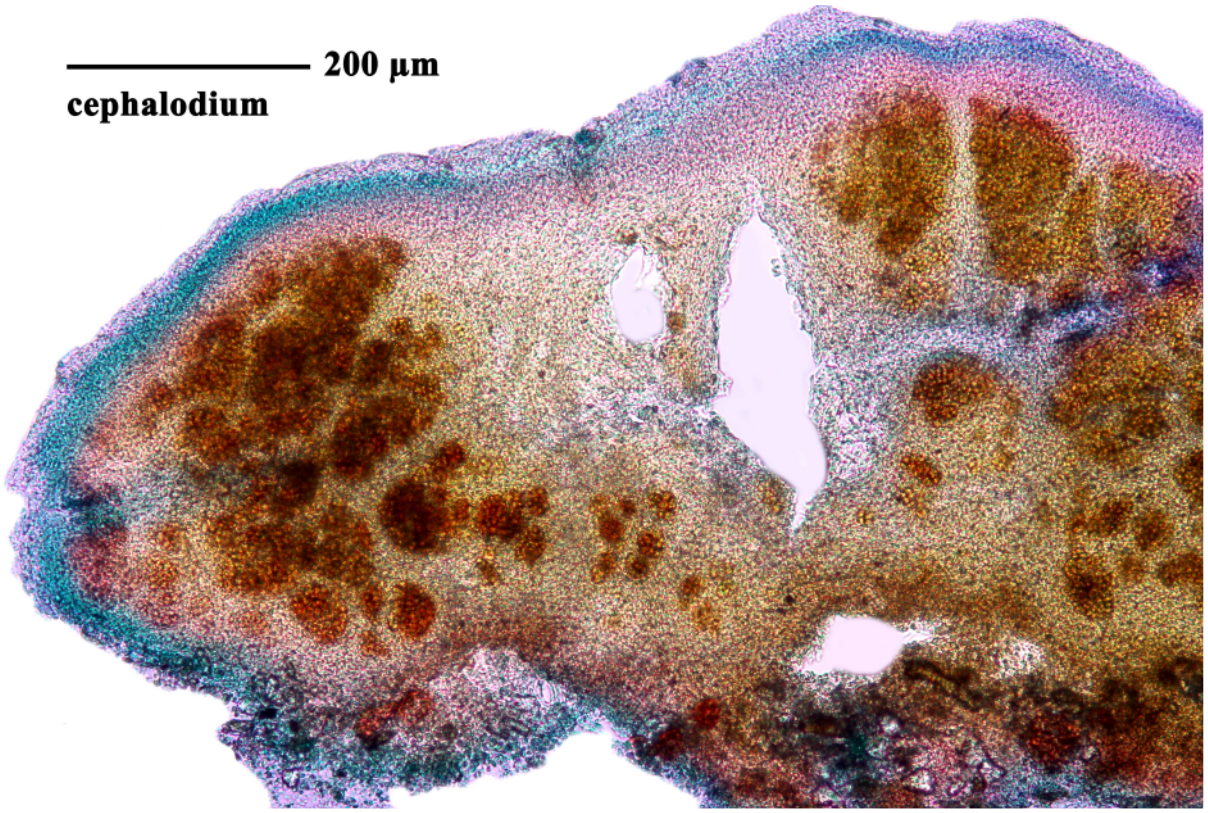
Thallus closely attached in regular, neat rosettes, (0.5–)1–4(–7) cm diam., or coalescing into spreading, composite colonies to 12(–15) cm diam., margins neatly plicate, flattened, without a projecting prothallus. Lobes well-developed, shallowly concave to flat, to distinctly convex, 0.5–2.0 mm wide, ±flabellate at periphery, radiating, separated by deep or narrow cracks from periphery to centre, or ±imbricate and pierced by irregular cracks exposing white medulla. Upper surface olive-green or greyish brown to olive-brow when moist, pale greenish white, olivaceous or pale, brown-pink to fawn, ivory or dull whitish when dry. Sorediate, but without isidia or pseudocyphellae. Soralia laminal, at first solitary, scattered, round to irregular, (0.1–)0.2–1.0(–1.5) mm diam., excavate with a prominent, raised margin, soon becoming capitate and immarginate, or often coalescing. Soredia coarsely granular. Medulla white. Photobiont green. Cephalodia sessile, spreading, slightly raised above thallus surface, central and solitary in young thalli, generally becoming larger and conspicuously lobate at maturity, 1–5(–8) mm diam. cyanobiont in chains. Apothecia often absent. Ascospores colourless, (13.5–)18–23.5(–25) × 8.5–12(–15) µm. Chemistry: gyrophoric acid (major), lecanoric acid (minor) and 5-*O*-methylhiascic acid (trace) (J.A. Elix); gyrophoric (major) and hiascic (minor) acids (Moberg & Carlin 1996).

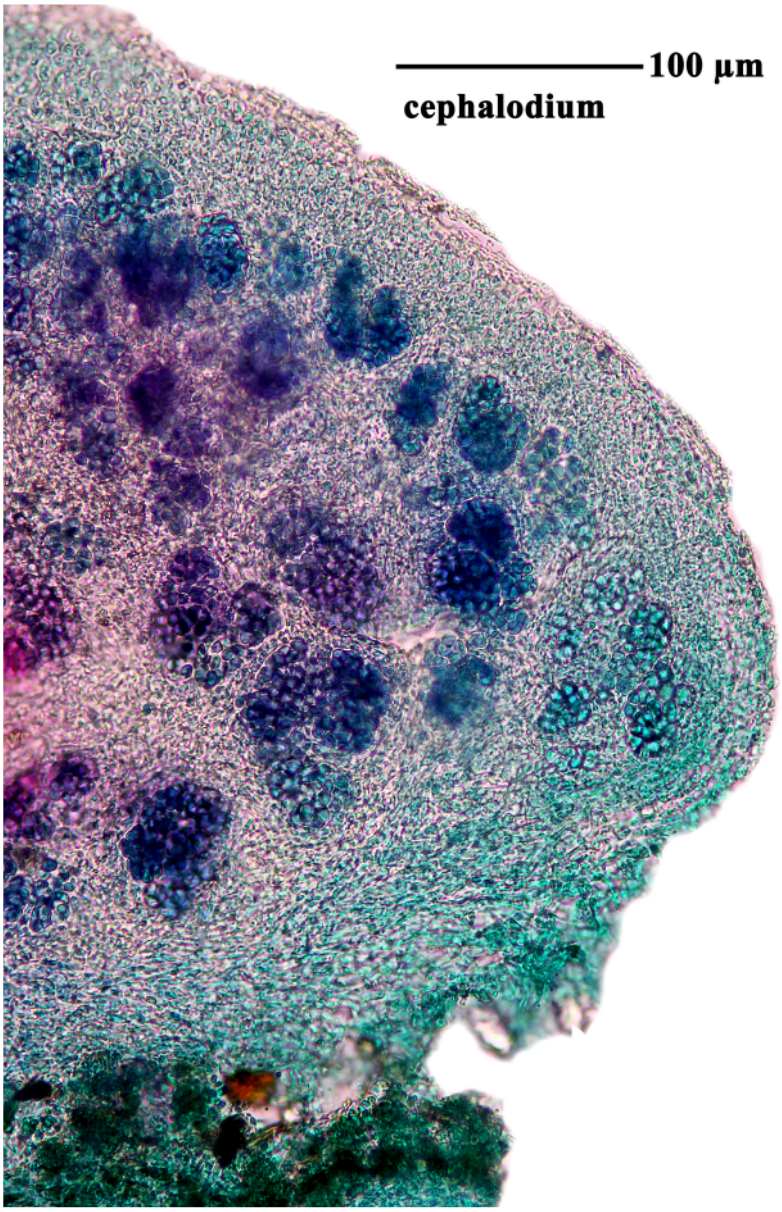
[19220], Australia, Victoria, Errinundra Road, 24 km south of Bendoc, 37°22' S, 148°53' E, 800 m, growing on rocks in road cutting, in *Atherosperma* forest. Leg. J.A. Elix (21841) & H. Streimann, 30.03.1988. Chemistry: gyrophoric acid (major), lecanoric acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI No. 165.



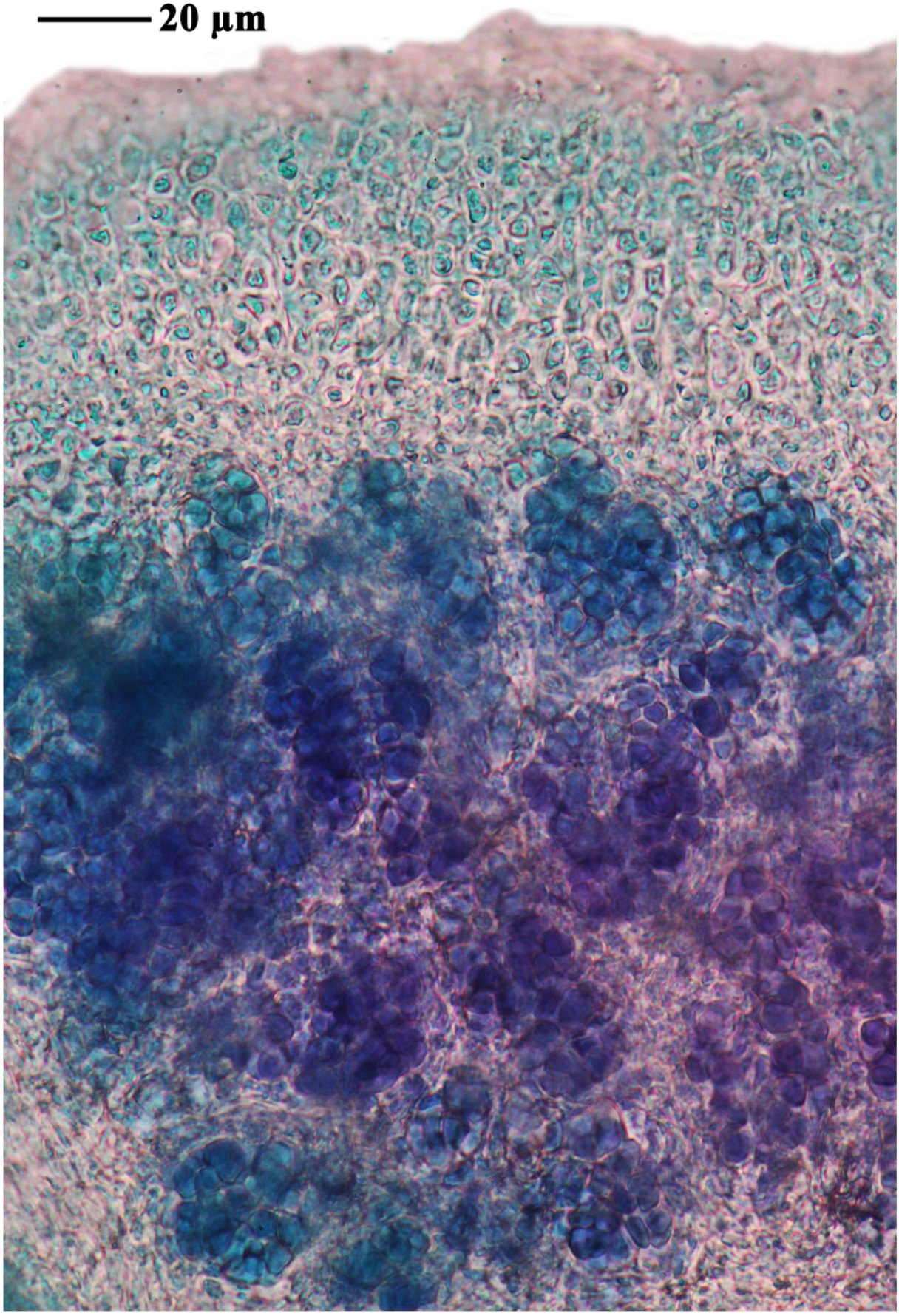


Placopsis gelida

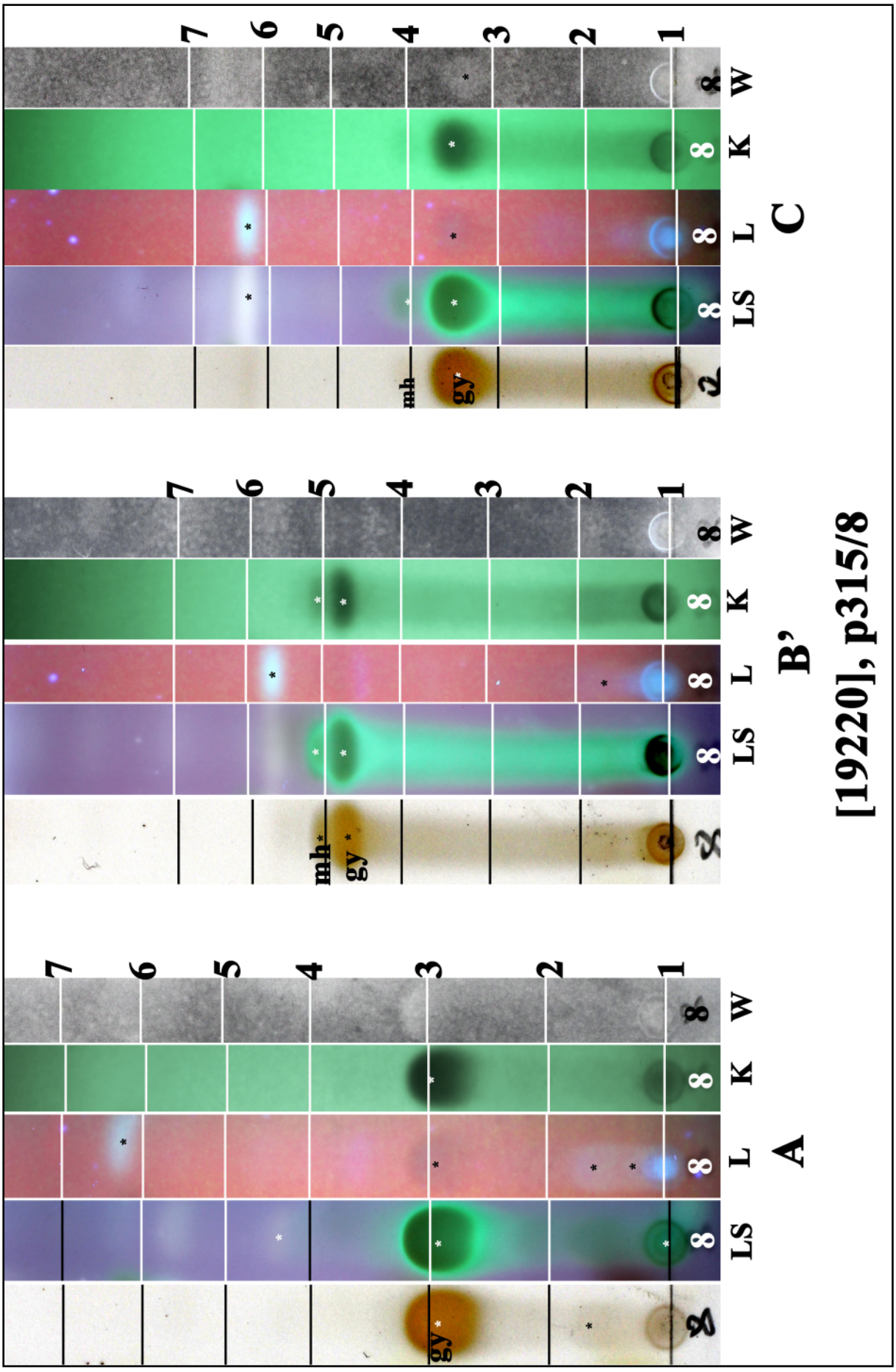




Placopsis gelida



Placopsis gelida



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

Placopsis gelida

Placopsis perrugosa (Nyl.) Nyl.

Thallus closely appressed, 1–10(–15) cm diam., generally without a marginal prothallus, red-brown to brown-black. Marginal lobes discrete often furcate or divergent, flattened, resembling snake-skin, 2–5 (8) 3mm long and 1.5 mm wide, irregularly branched, rounded to somewhat cuneate at apices. Upper surface variable in colour, grey-green to dark red-brown or brown-black, distinctively verrucose-papillate, with angular areolae to 1.2 mm diam., centrally verruculose-areolate, without isidia, or soredia. Medulla white. Cephalodia sometimes arranged in concentric lines, but more commonly scattered, sessile, projecting above thallus surface, flattened, suborbicular to 2.5 mm diam., or effigurate, radially cracked to 3 mm diam. or coalescing centrally to 5 mm diam., or warted-glomerulate and not effigurate, to 3.5 mm diam, purplish blue when moist, yellowish to rusty red-brown when dry, cyanobiont in chains. Apothecia subimmersed at first, becoming sessile, constricted at base, scattered to crowded, rounded, to irregularly contorted through mutual pressure, 0.5–1.5(–2) mm diam. Disc plane to subconcave, pink- or red-brown to dark- brown to ±black. Thalline margin prominent, persistent, swollen at first and obscuring disc, 0.1–0.4 mm wide, smooth to glossy, entire to minutely wrinkled-verrucose or puckered, concolorous with thallus. Proper margin persistent, raised above margins of disc as a narrow rim, 0.05–0.1 mm wide, pale pinkish brown to yellowish brown, contrasting with disc, often obscured by swollen thalline margin in immature fruits. Hymenium colourless (100–)120–160(–200) µm tall, not inspersed with oil droplets. Hypothecium opaque, pale yellow-brown, unchanged in K, 150–340 µm thick. Ascospores 8/ascus, ellipsoidal, apices rounded or pointed, (13–)15–19(–21.5) × (6.5–)7–9(–9.5) µm. Chemistry: gyrophoric acid (major) lecanoric acid (minor or trace), umbilicaric acid (trace). Lit. Galloway, D.J. (2013).

[19221], Australia, Victoria, Dargo High Plains, 40 km north-northwest of Dargo, 37°06' S, 147°09' E, 1620 m, growing on large, exposed basalt boulders in sub-alpine grasslands on gentle slope. Leg. H. Streimann (53215), 17.12.1993. Chemistry: gyrophoric acid (major), umbilicaric acid (minor), lecanoric acid (trace) by HPLC, TLC, anal. J.A.Elix. LICHENES AUSTRALASICI EXSICCATI NO. 294.



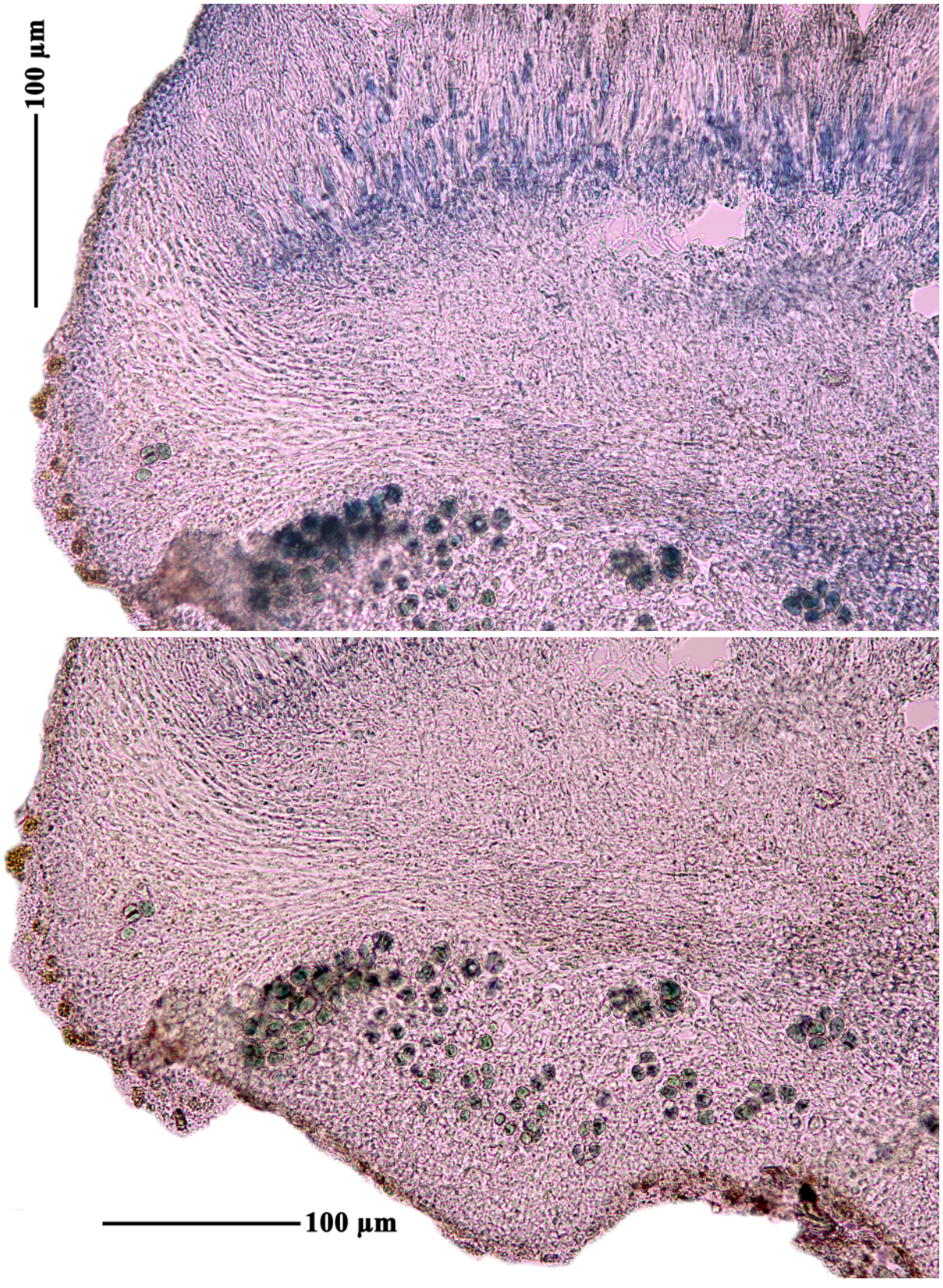


Placopsis perrugosa

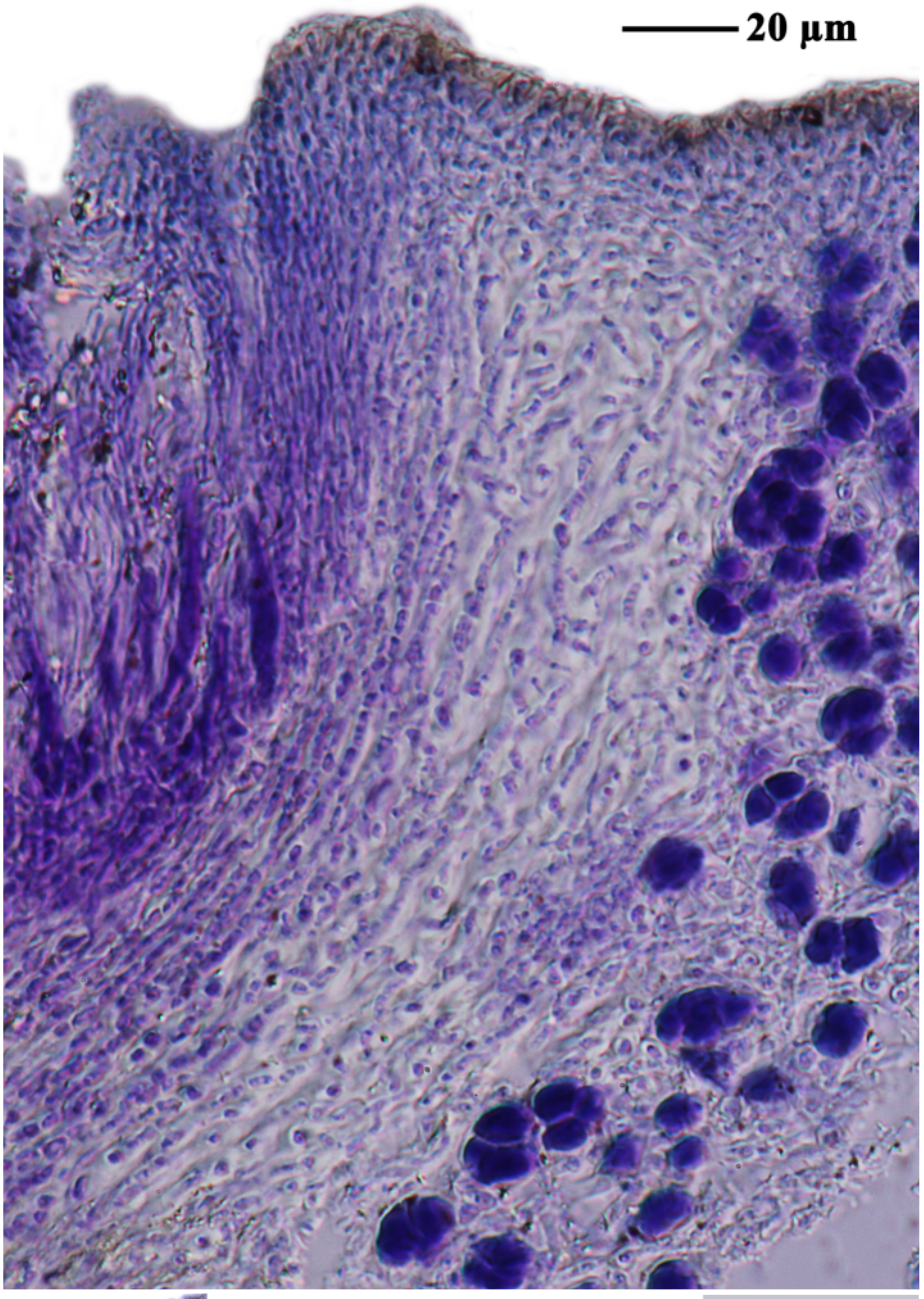


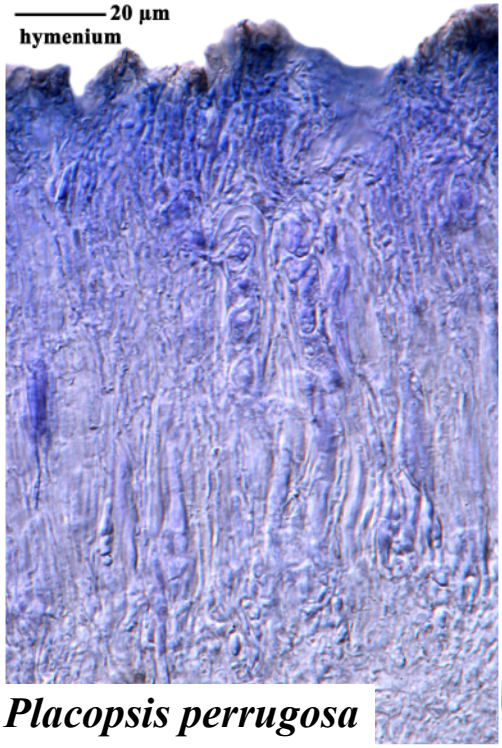


Placopsis perrugosa



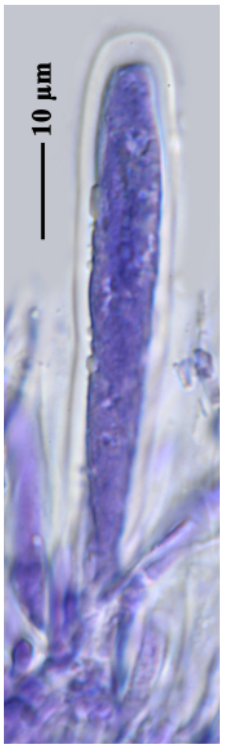
Placopsis perrugosa



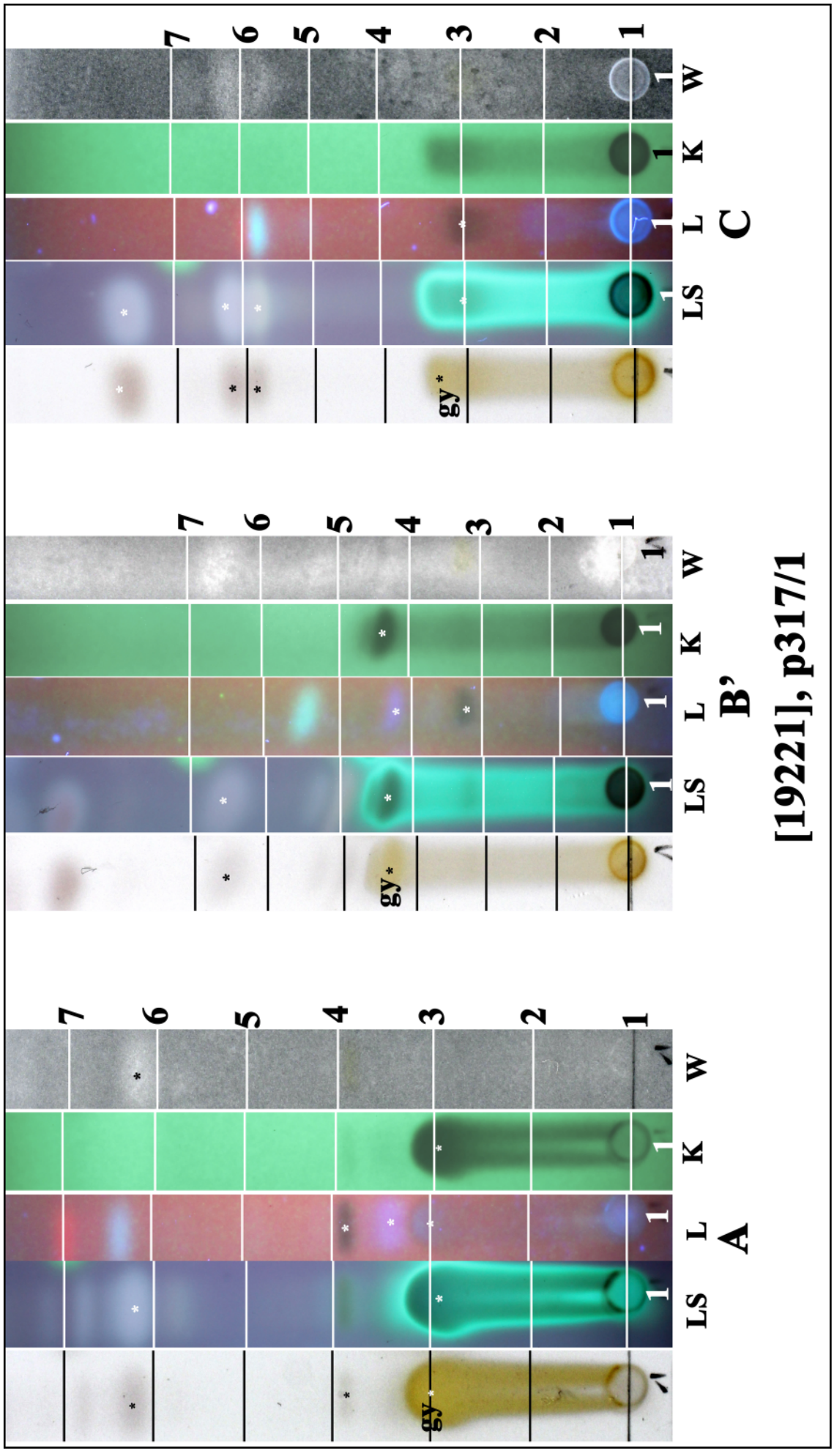








Placopsis perrugosa



Placopsis perrugosa

Pseudocyphellaria billardierei (Delise) Räsänen

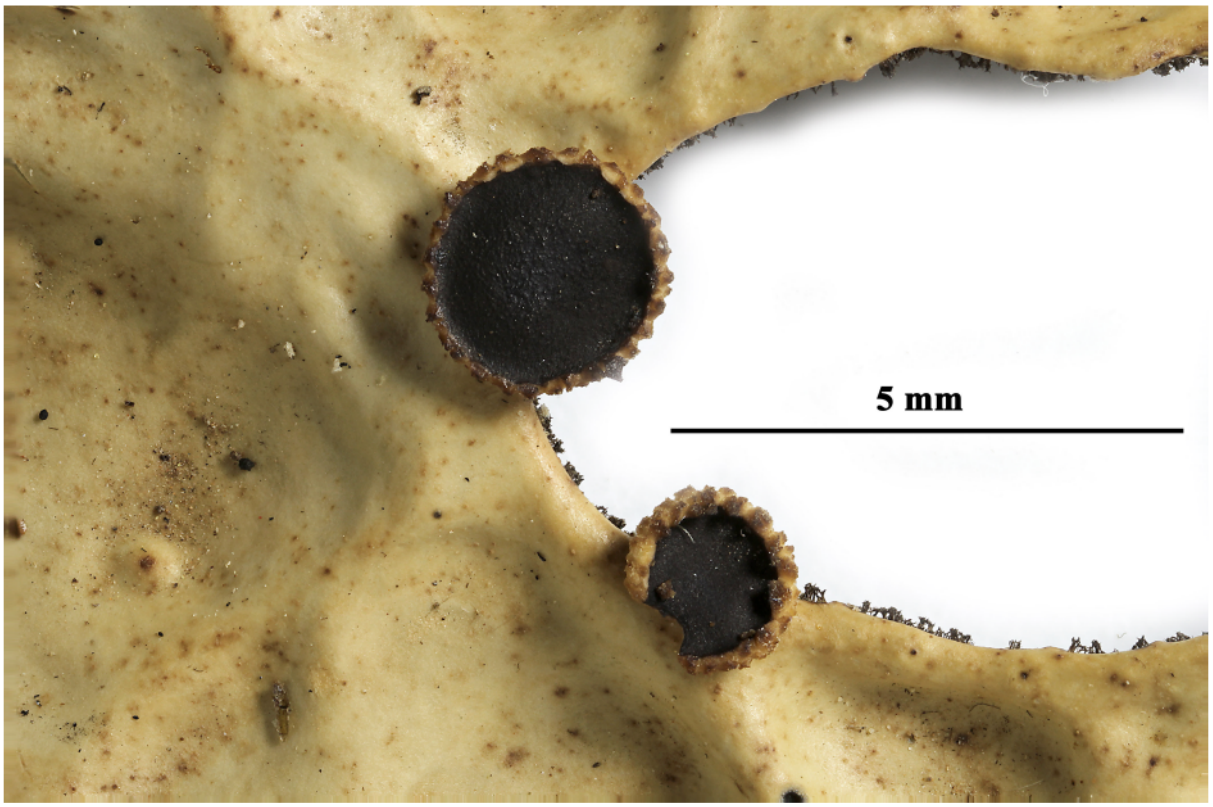
Thallus irregularly spreading, loosely attached centrally, 5-15(-30) cm wide; margins free, ±ascending. Lobes linear-elongate, dichotomously branching, often widely divergent at apices, 2-6(-10) cm long, 2-15(-30) mm wide, plane to canaliculate. Upper surface grey-green to olive-brownish when dry, lettuce green when wet, shallowly to deeply faveolate; without isidia, maculae, phyllidia or soredia. Medulla white. Photobiont green. Lower surface pale and glabrous at margins, darker centrally, with a scattered to uniform tomentum. Pseudocyphellae minute, white. Apothecia marginal, rarely laminal, sessile, 0.5-5 mm diam.; exciple corrugate-scabrid. Ascospores 1-septate, 25-32(-38) x 9-11.5 µm, brown or grey; walls thickened. Chemistry: Methyl evernate, tenuiorin, 2´´-*O*-methyltenuiorin, 2',2"-di-*O*-methyltenuiorin, methyl gyrophorate, methyl lecanorate, gyrophoric acid (trace), norstictic acid, stictic acid, cryptostictic acid (trace), 9α-acetylconstictic acid (trace), constictic acid, zeorin.

[19191], Australia, Victoria, Errinundra River (West Branch), 20 km south of Bendoc, 37°19' S, 148°50' E, 960 m, growing on dead *Atherosperma moschatum* in cool temperate forest dominated by *Atherosperma* and tree ferns. Leg. J.A. Elix (19882) & H. Streimann, 9.04.1986. Chemistry: methyl evernate, tenuiorin, 2´´-*O*-methyltenuiorin, 2',2"-di-*O*-methyltenuiorin, methyl gyrophorate, methyl lecanorate, gyrophoric acid (trace), norstictic acid (trace), stictic acid, cryptostictic acid (trace), α-acetylconstictic acid (trace), constictic acid, zeorin, unknown triterpenes (traces) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 166.



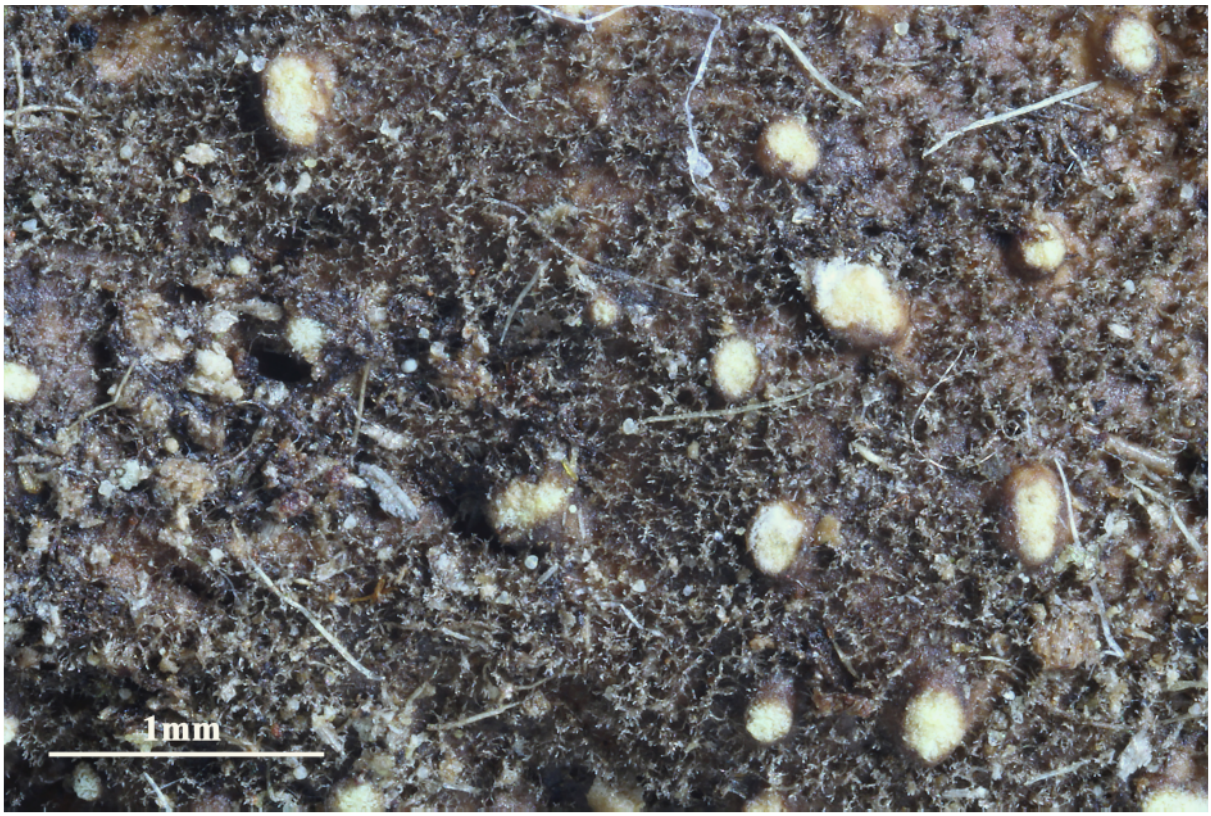
Pseudocyphellaria billardierei



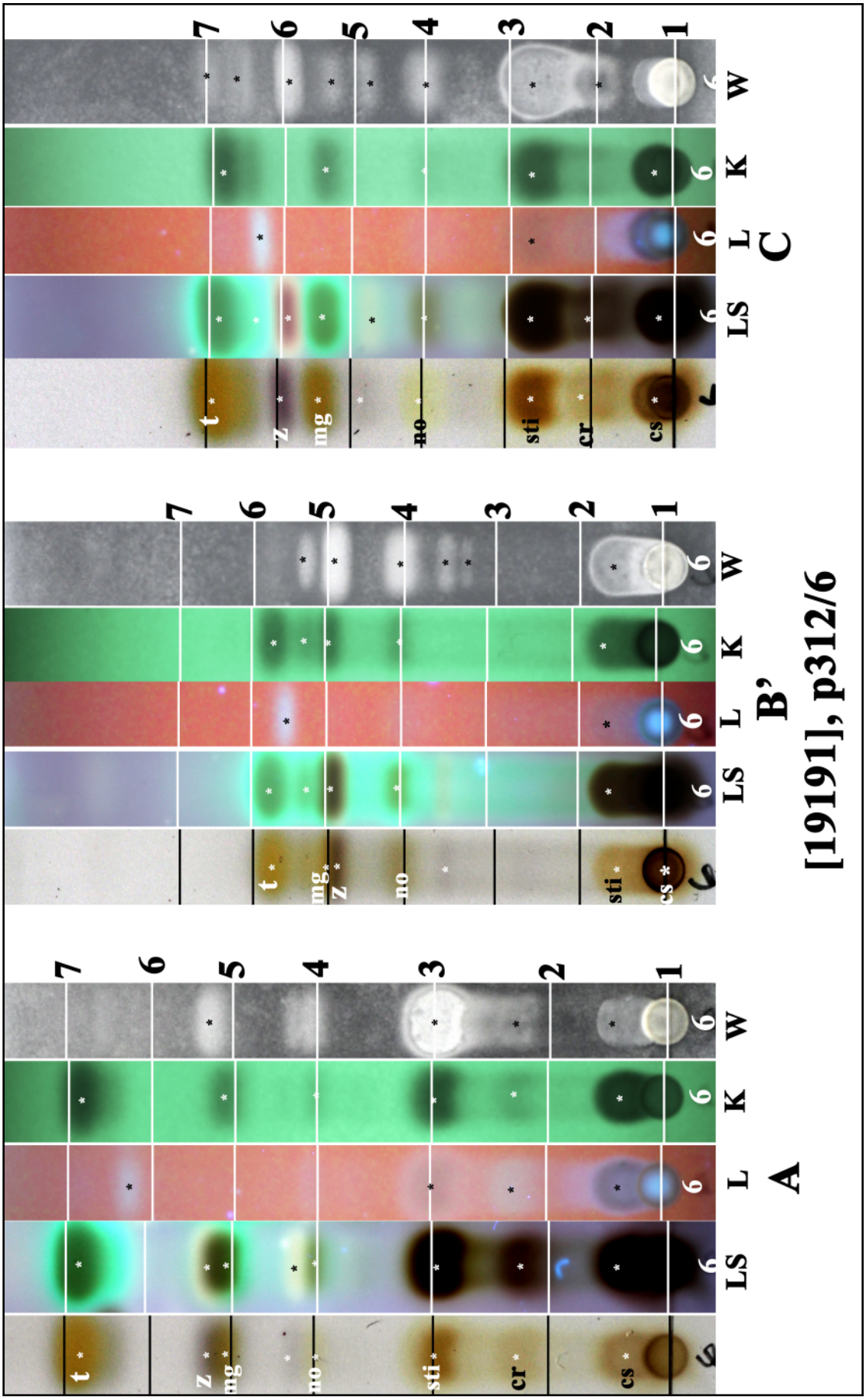


Pseudocyphellaria billardierei





Pseudocyphellaria billardierei

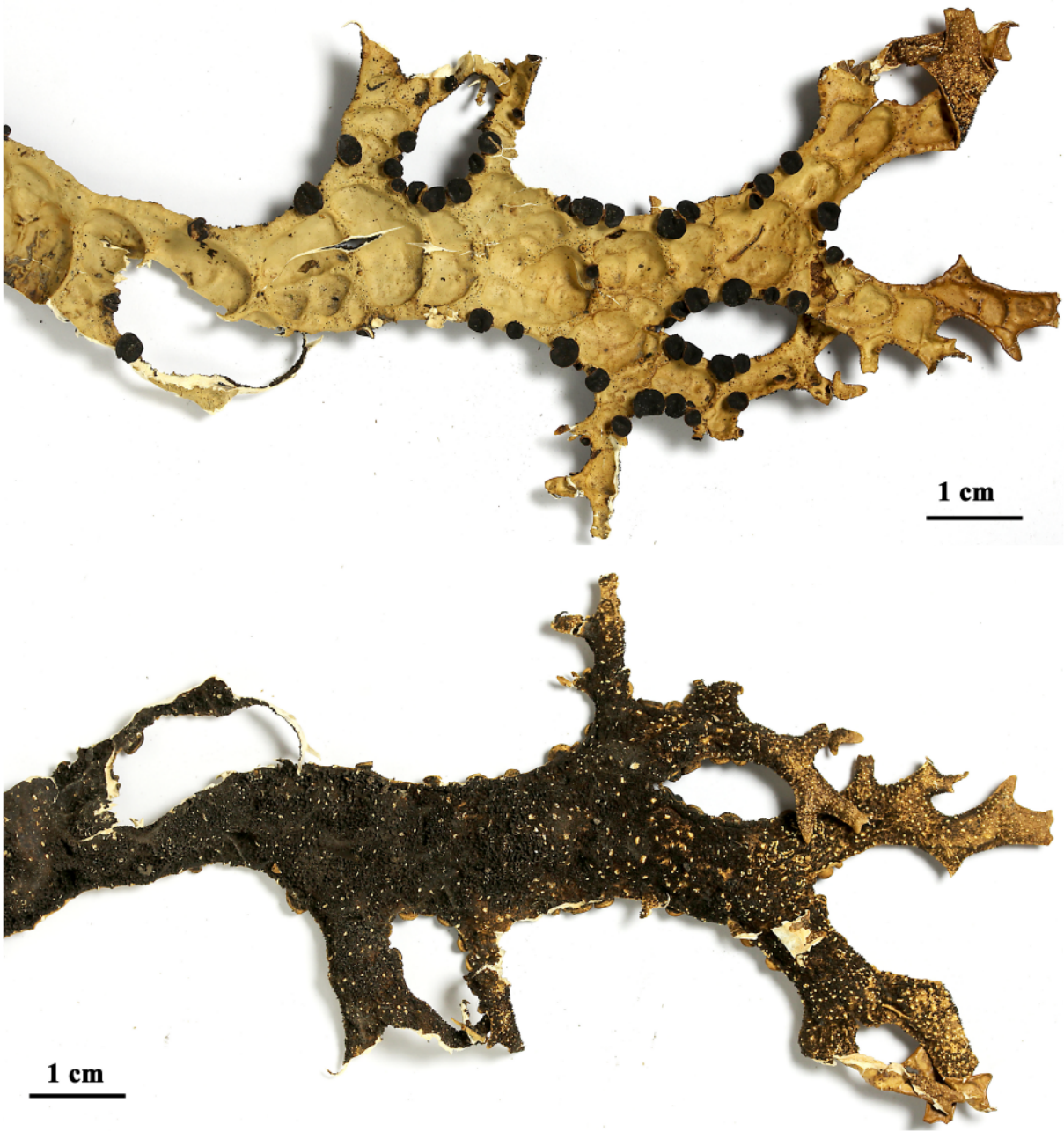


t: tenuiorin, z: zeorin, mg: methyl gyrophorate, no: norstictic acid, sti: stictic acid, cs: constictic acid, cr: α-acetylconstictic acid + cryptostictic acid

Pseudocyphellaria billardierei

Pseudocyphellaria billardierei (Del.) Räsänen

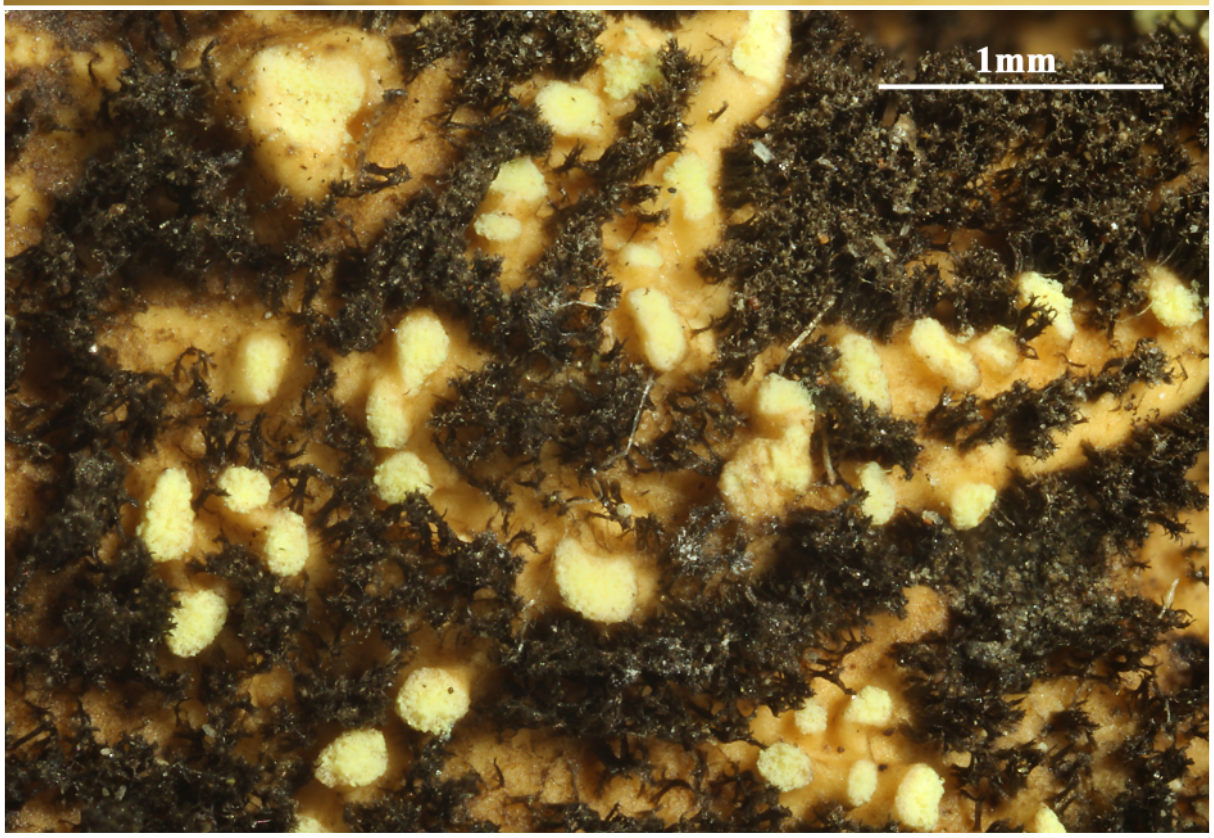
[19202], Australia, Victoria, Donna Buang - Healesville road, 7 km north-west of Warburton, 37°42' S, 145°39' E, 1000 m, growing on base of *Eucalyptus* in wet sclerophyll forest. Leg. H. Streimann (36269), 3.01.1986. Chemistry: methyl evernate, tenuiorin, 2"-*O*-methyltenuiorin, 2',2"-di-*O*-methyltenuiorin, methyl gyrophorate, methyl lecanorate, gyrophoric (trace), norstictic, stictic, cryptostictic (trace), 9-*O*-acetylconstictic, constictic, zeorin, unknown triterpenes anal. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 118.

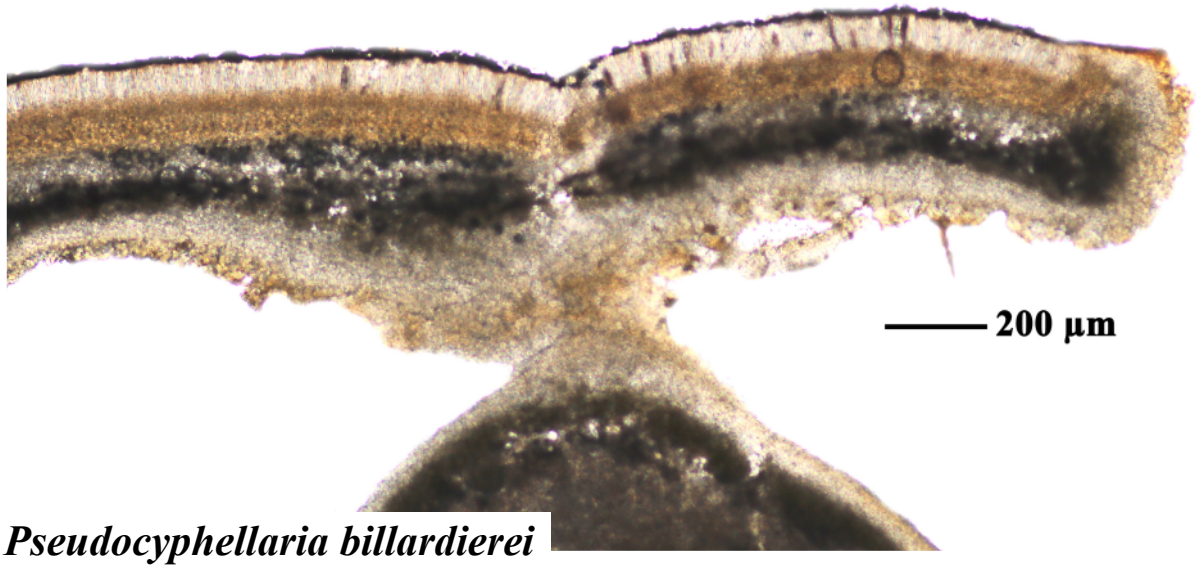




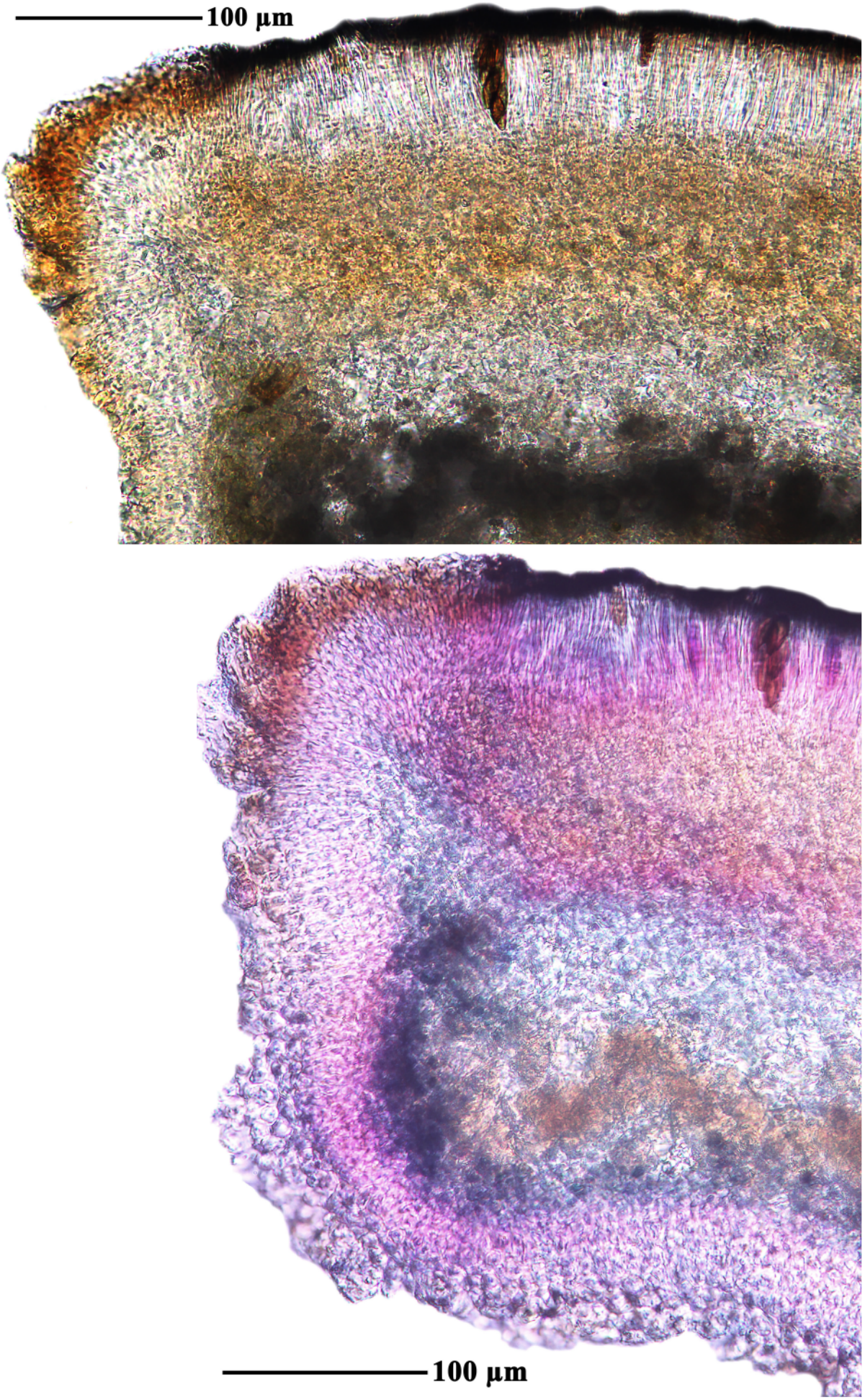
Pseudocyphellaria billardierei



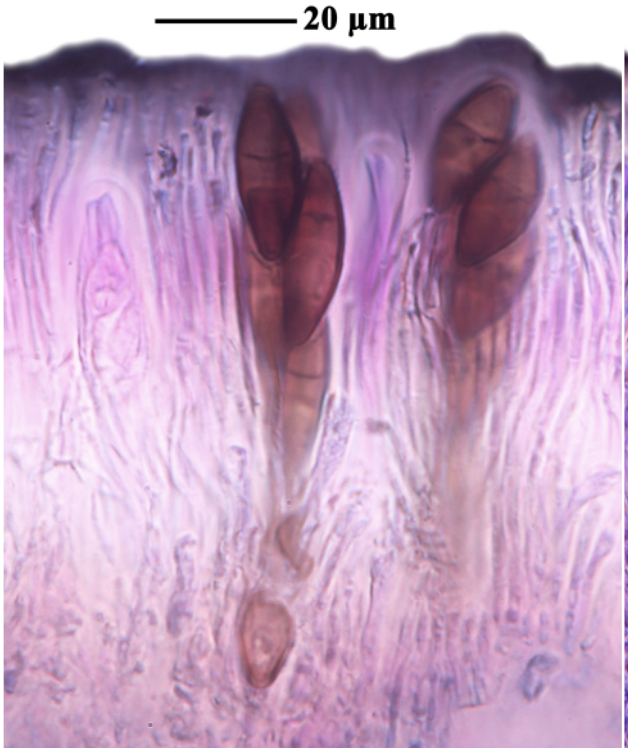




Pseudocyphellaria billardierei

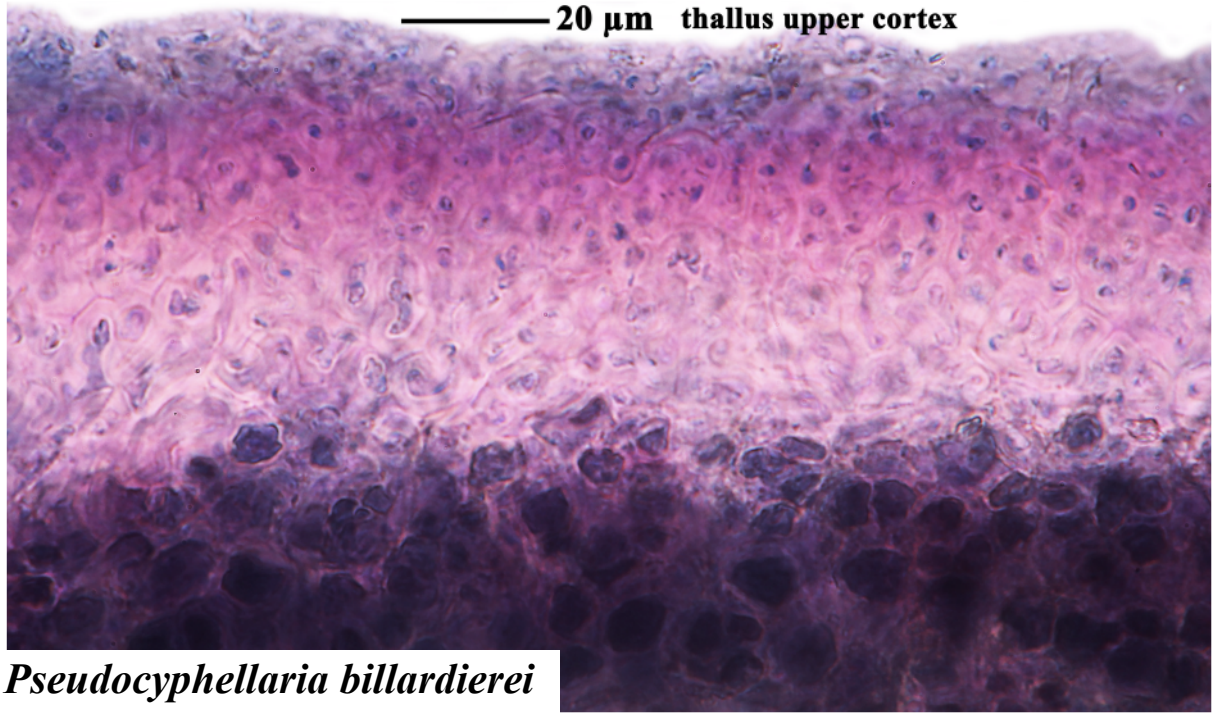


Pseudocyphellaria billardierei

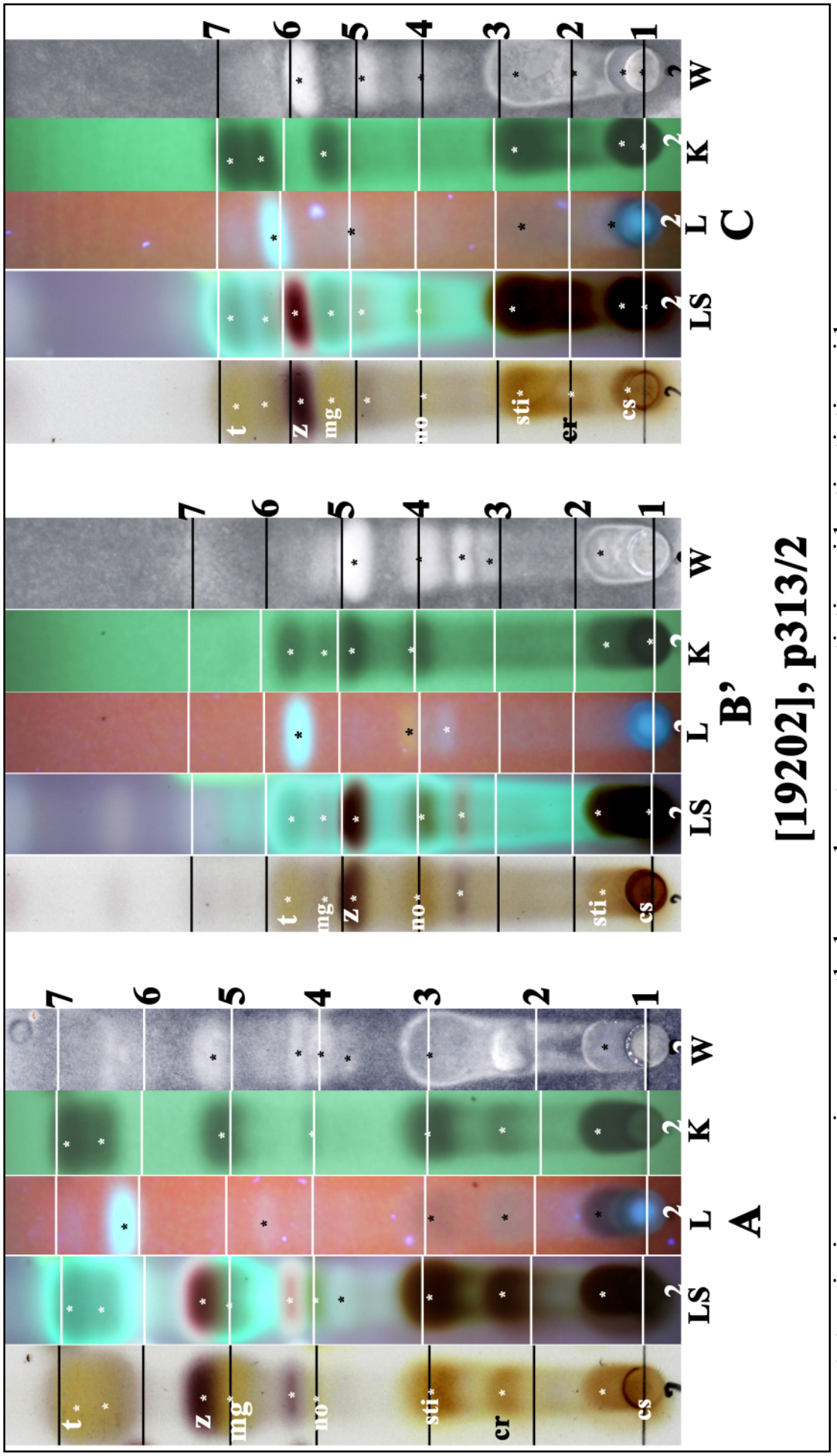








Pseudocyphellaria billardierei



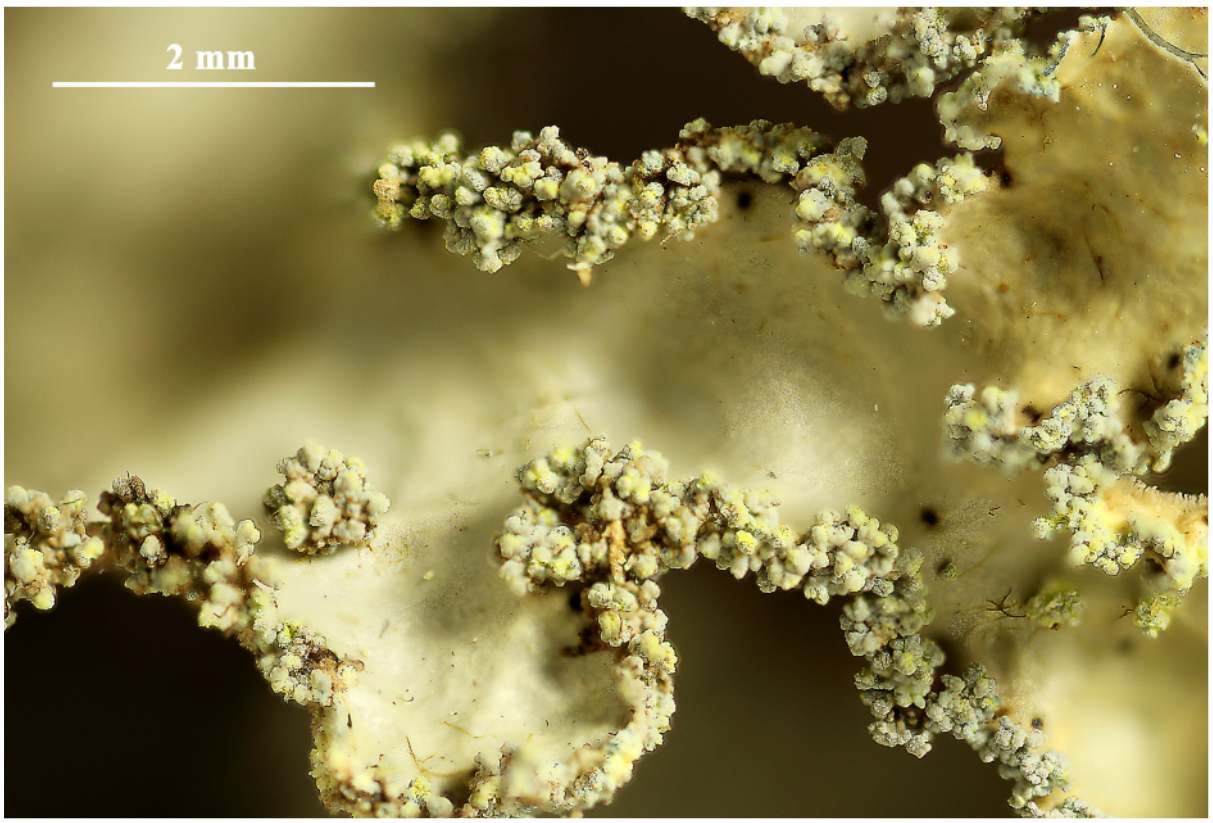
t: tenuiorin, z: zeorin, mg: methyl gyrophorate, no: norstictic acid, sti: stictic acid, cs: constictic acid, cr: a-acetylconstictic acid+cryptostictic acid

Pseudocyphellaria billardierei

Pseudocyphellaria crocata (L.) Vain.

Thallus loosely to closely attached, 5-10(-20) cm wide. Lobes broadly rounded, canaliculate, deeply laciniate and discrete from margins to centre, 1-5(-7) cm long, 5-10(-35) mm wide. Lobe margins undulate, sorediate; soralia punctiform to linear. Upper surface fawnish grey to glaucous or brownisch yellow when dry, grey bluish brown when wet, shallowly wrinkled to densely faveolate, without isidia, phyllidia or pseudocyphellae. Soredia yellow, farinose to granular, marginal and laminal. Photobiont Nostoc. Medulla white. Lower surface with yellow pseudocyphellae. Apothecia sessile, marginal and laminal, 0.3-2.5 mm diam.; Ascospores 3-septate, 22.5-72(-29.5) x 7-9 µm, olive-brown to dark brown. Chemistry: tenuiorin, methyl gyrophorate, gyrophoric acid, hopane-7β,22-diol (trace), hopane-6α,7β,22-triol, 7β-acetoxyhopane-6α,22-diol (trace), 6α-acetoxyhopane-7β,22-diol (trace), physciosporin (trace), norstictic acid (trace), cryptostictic acid (trace), constictic acid, pulvinic acid, pulvinic dilactone, calycin.

[19192], Norfolk Island. Mt. Pitt Reserve, Selwyn Pine Track, 29°01' S, 167°56'30" E, 200 m, growing over mossy rocks in dense subtropical rainforest. Leg. J.A. Elix (18734) & H. Streimann, 08.12.1984. Chemistry: pulvinic dilactone, pulvinic acid, tenuiorin, calycin, methyl gyrophorate, stictic acid, norstictic acid, constictic acid, cryptostictic (trace), hopane-6α,7β,22-triol, other unidentified triterpenes by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 092.



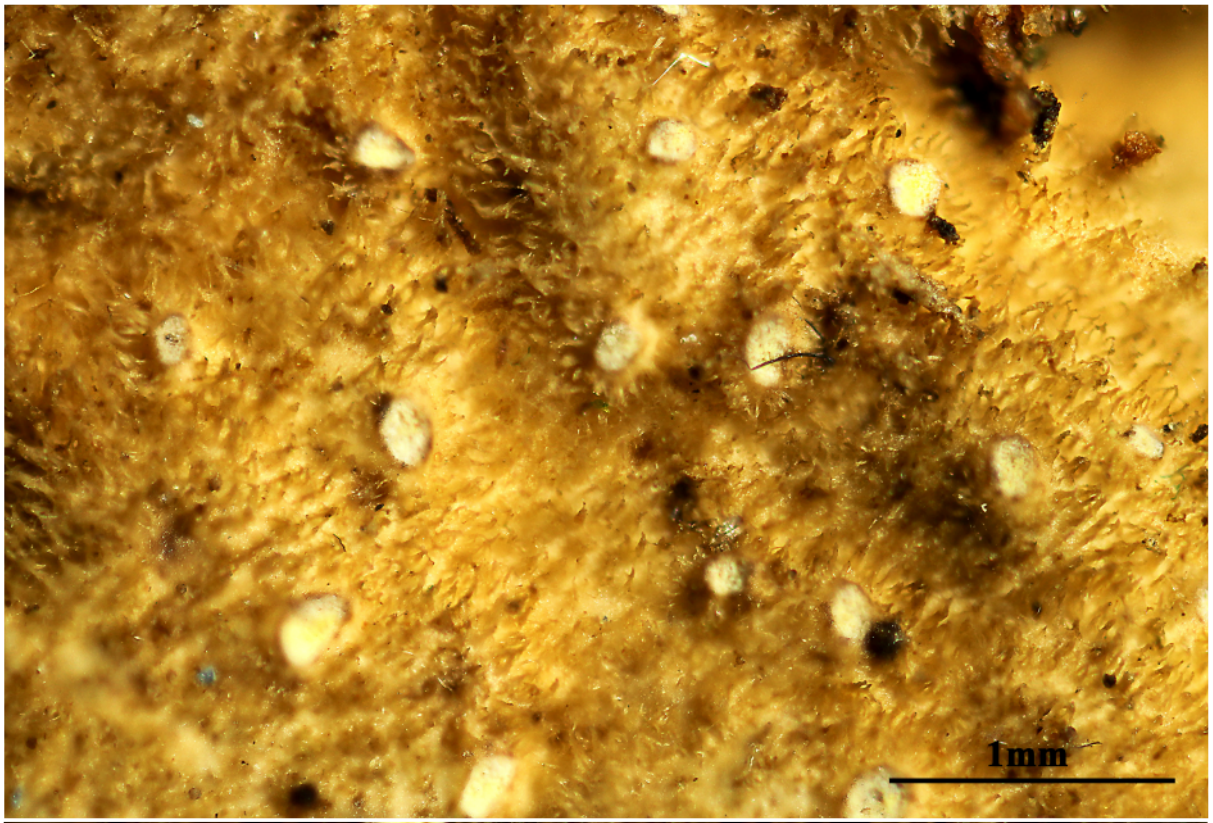


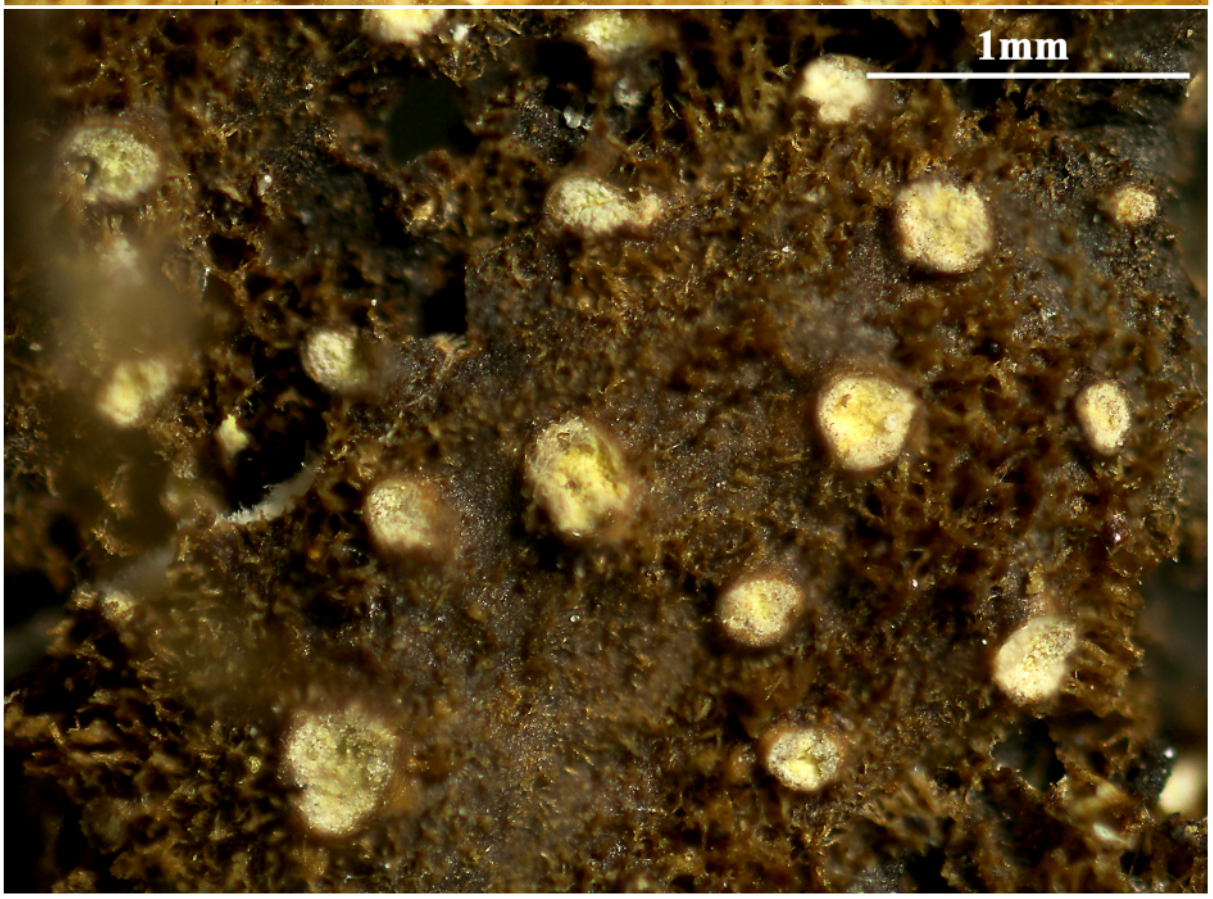
Pseudocyphellaria crocata



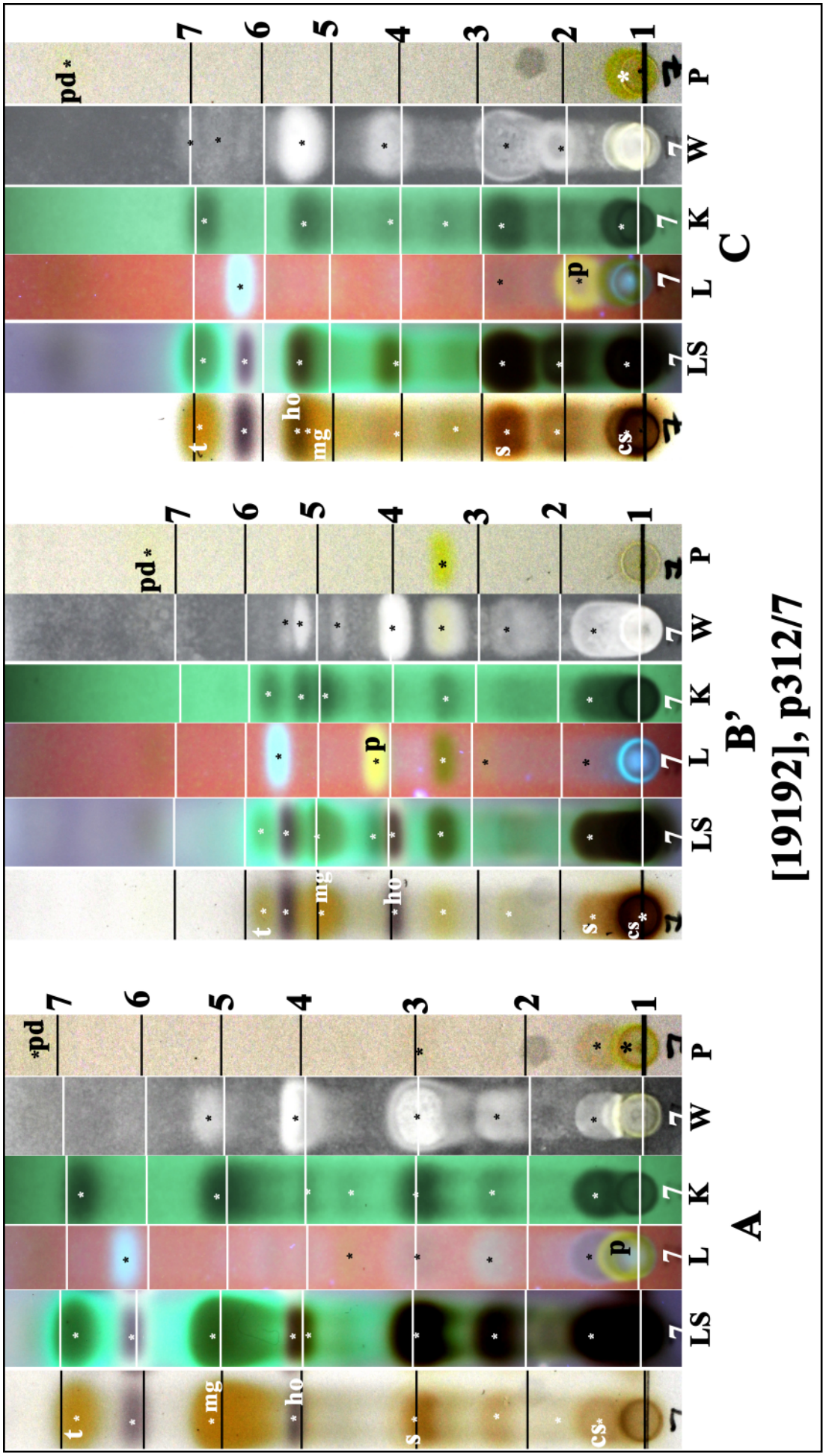


Pseudocyphellaria crocata





Pseudocyphellaria crocata



pd: pulvinic dilactone + calycin, p: pulvinic acid, t: tenuiorin, mg: methyl gyrophorate, s: stictic acid, cs: constictic acid, ho: hopane-6α,7β,22-triol

Pseudocyphellaria crocata

Pseudocyphellaria degelii D.J.Galloway & P.James

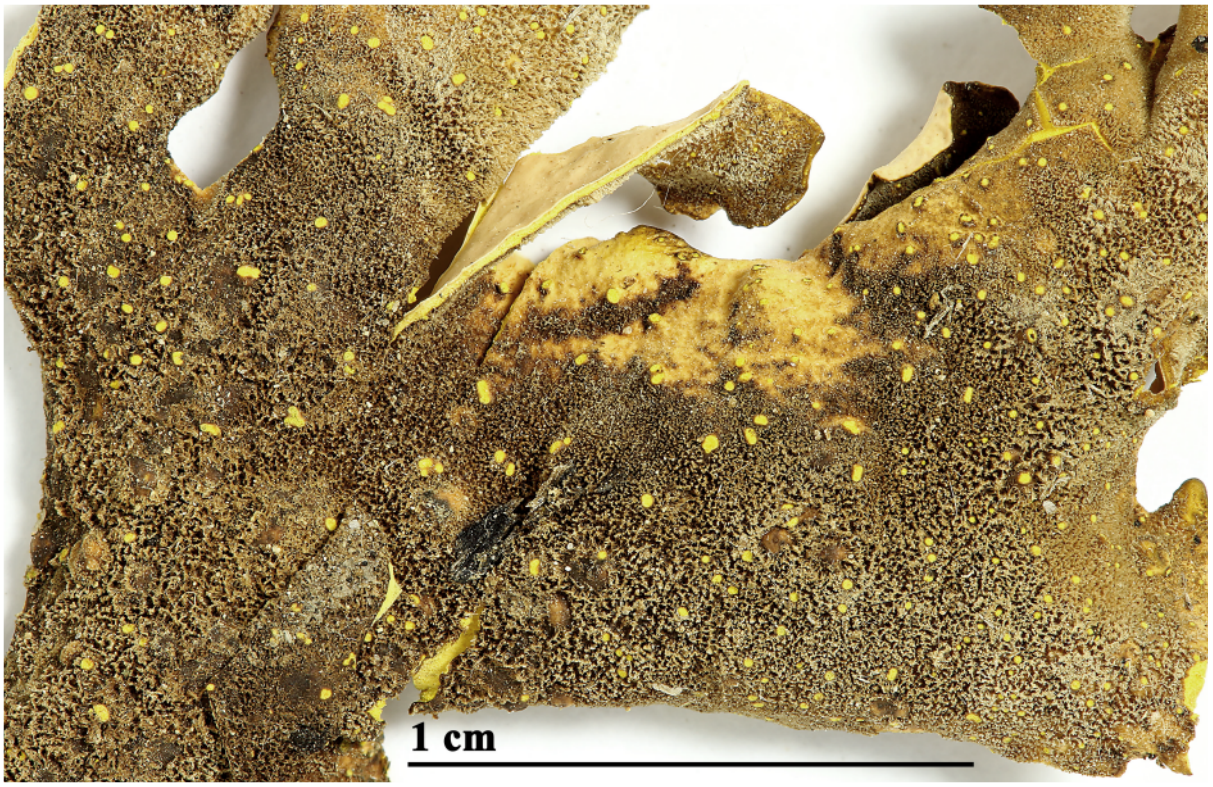
Thallus orbicular to irregularly spreading, loosely attached, margins free and ascending. Lobes 0.5-1.5(-3) cm wide and 1-3(-5) cm long. Upper surface bright green when moist, yellow-grey when dry, without soredia, isidia, phyllidia or pseudocyphellae. Medulla yellow. Photobiont green. Lower surface ochre at margins, dark brown to blackened centrally. Pseudocyphellae yellow, scattered, 0.05-0.15 mm. Apothecia sessile, becoming pedicellate at maturity, 1-5(-7) mm diam. Asospores colourless, fusuform, 1-3 septate, 27-40 x 4.5-9 µm. Chemistry: pulvinic acid, pulvinic dilactone, calycin, 22α-hydroxy-3,4-secostict-4(23)-ene-3-oic acid, 22α-hydroxy-4,4-secostict-4(23)-en-3-ol, 3-acetoxy-3,4-secostict-4(23)-22α-ol.

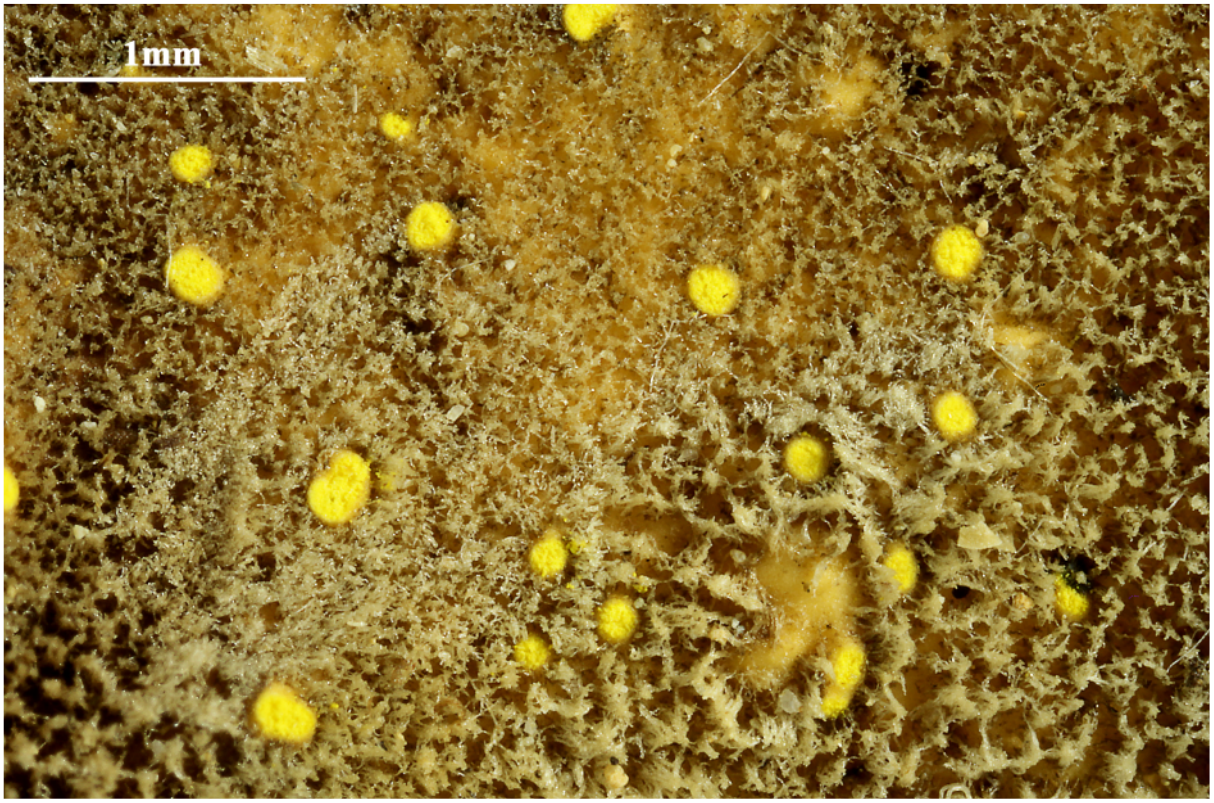
[19203], New Zealand, South Island, Canterbury, Porters Pass, southwest slopes of Foggy Peak, Torlesse Range, 1000 m, growing on soil and debris in subalpine heath. Leg. J.A. Elix (19031) & J. Johnston, 08.03.1985. Chemistry: pulvinic dilactone, pulvinic acid, calycin, pseudocyphellarin A, 2α-acetoxystictane-3β,22-diol, 3β-acetoxystictane-2,22-diol, stictane-3β,22-diol, 22α-hydroxy-3,4-secostict-4(23)-enaldehyde, 22α-hydroxy-3,4-secostict-4(23)-enoic acid, unknown triterpenes (traces) by TLC, anal. J. Johnston & A.L. Wilkins. LICHENES AUSTRALASICI EXSICCATI NO. 142.



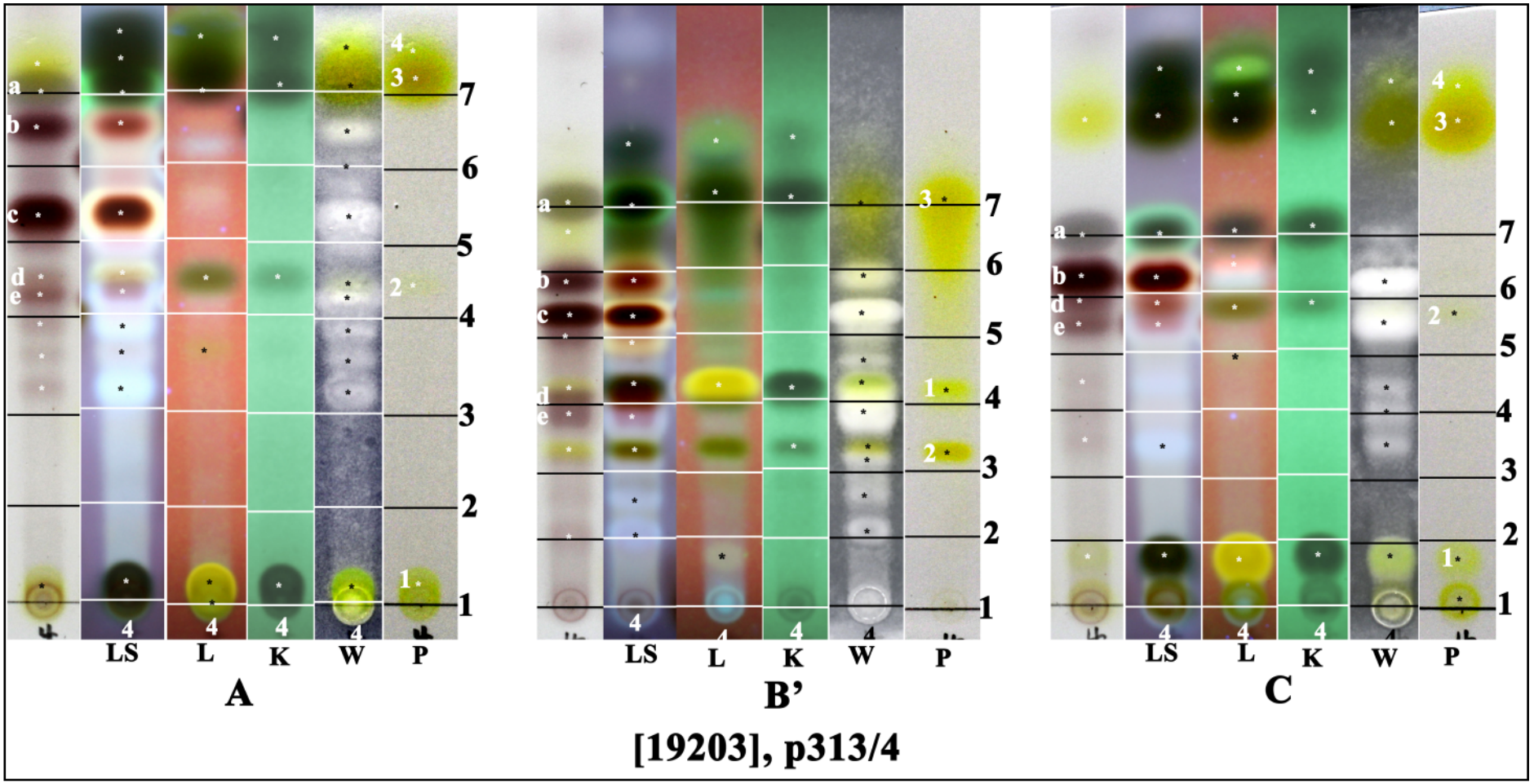


Pseudocyphellaria degelii





Pseudocyphellaria degelii



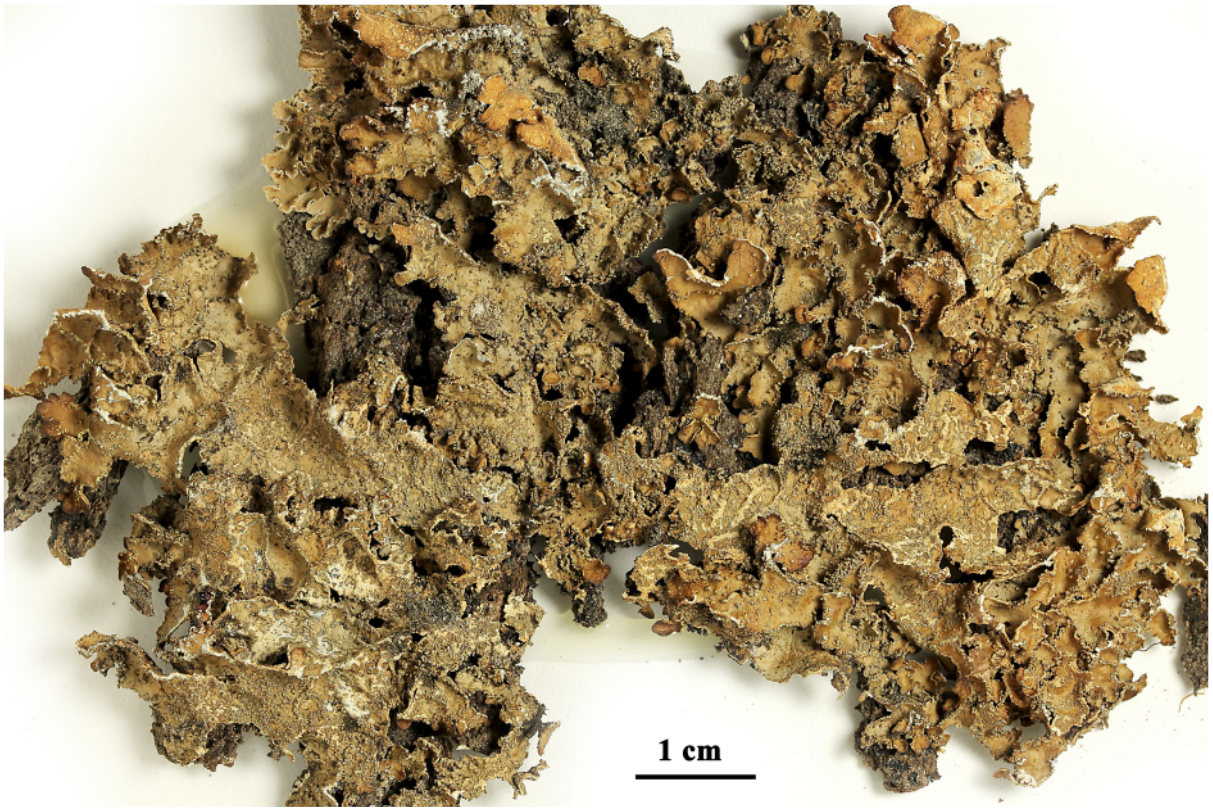
a: 22α-hydroxy-3,4-secostict-4(23)-enaldehyde
b: 22α-hydroxy-3,4-secostict-4(23)-enoic acid
c: stictane-3β,22-diol
d: 3β-acetoxystictane-2,22-diol
e: 2α-acetoxystictane-3β,22-diol

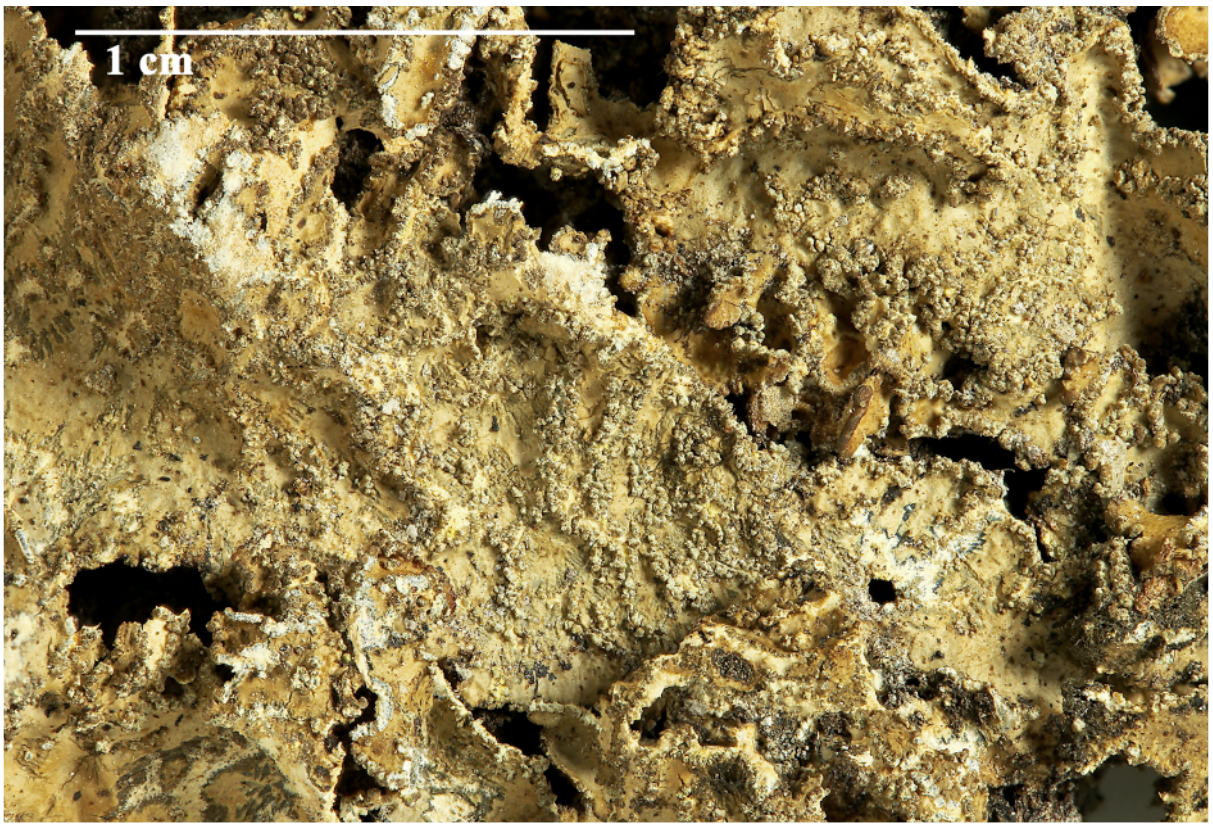
1: pulvinic acid
2: pulvinamide
3: pseudocyphellarin A
4: Pulvinic dilactone + calycin

Pseudocyphellaria desfontainii (Delise) Vain.

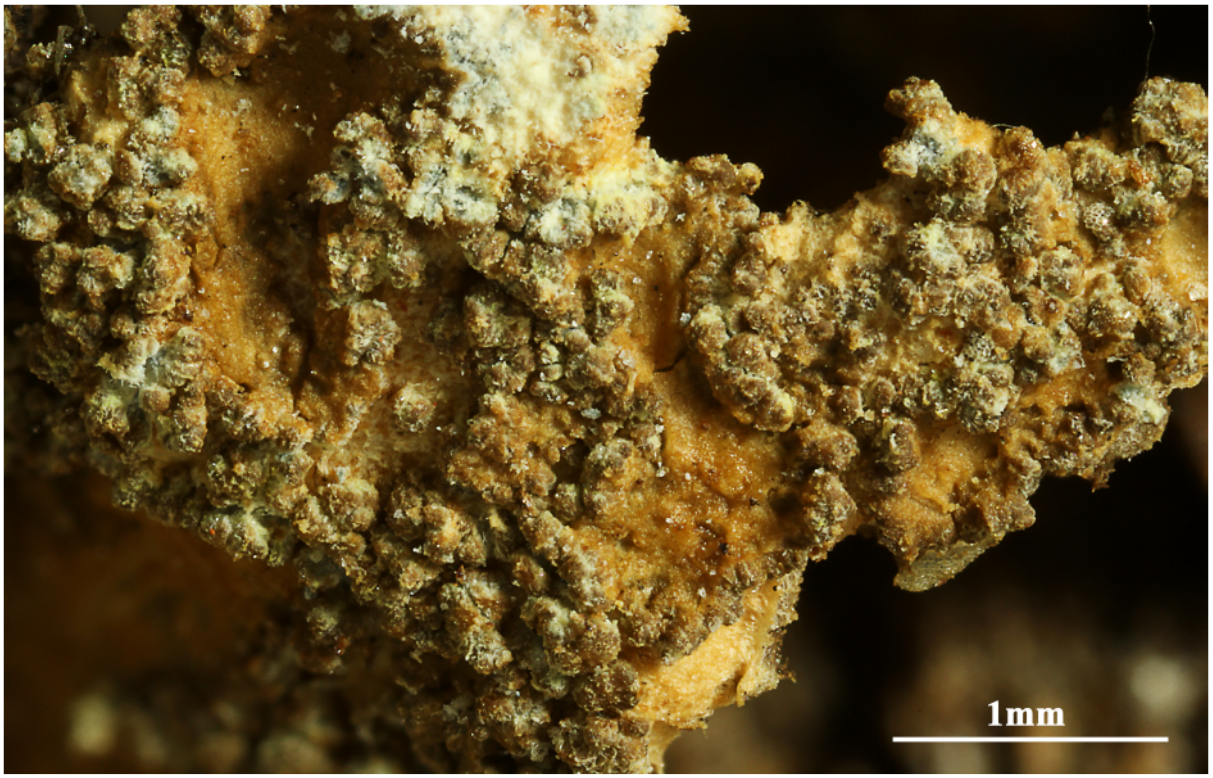
Thallus irregularly spreading, closely attached centrally, 4-8(-10) cm wide. Lobes 0.5-3(-6) cm long, 2-8(-15) cm wide. Upper surface pale grey or bluish when dry, blue-black when wet, shallowly pitted to deeply faveolate. isidia solitary to crowded, terete, simple, rarely squamiform or coralloid, 0.5-1.5 mm tall, 0.1-0,2 mm diam., eroding at apices and apearing pseudosorediate, leaving yellow scars resembling pseudocyphellae. Medulla white. Photobiont *Nostoc*. Lower surface pale yellowish to red-brown, tomentose from margins to centre. Pseudocyphellae yellow, scattered 0.2 (-0.5) mm diam. Apothecia rare, 0.5-3 mm diam. Ascospores red-brown, 1-septate, 23-28(-30) x 6.5-11 µm. Chemistry: tenuiorin (major), methyl gyrophorate (trace), gyrophoric acid (trace), hopane-6α,7β,22-triol (minor), 7β-acetoyxhopane-22-ol (trace), stictic acid (major), cryptostictic acid (trace), norstictic acid (trace), constictic acid (minor), pulvinic acid, pulvinic dilactone, calycin.

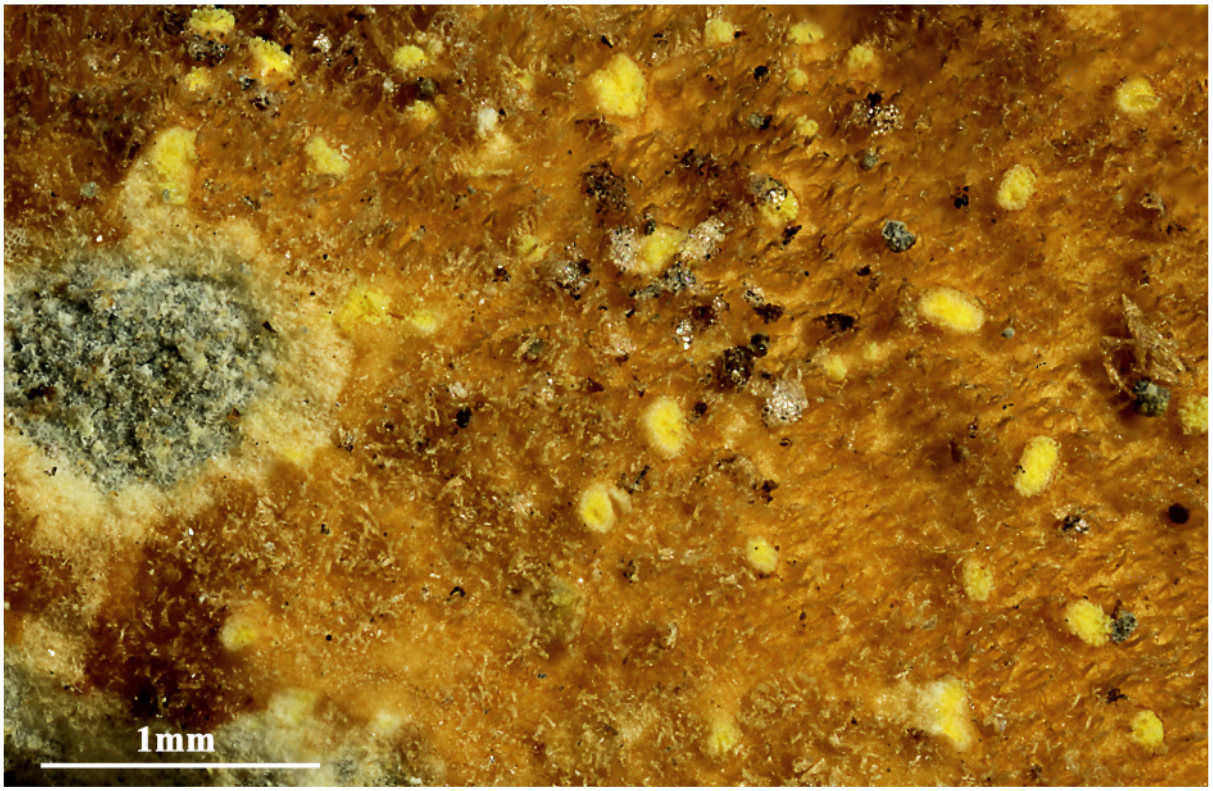
[19205], Australien, Queensland, Vine Creek, 6 km south east of Ravenshoe, 17°39' S, 145°30' E, 900 m, growing on base of *Eucalyptus grandis* in disturbed *E. grandis* woodland. Leg. J.A. Elix (16838) & H. Streimann, 29.06.1984, det. D.J. Galloway. Chemistry: stictic acid (major), constictic acid (minor), cryptostictic acid (trace), norstictic acid (trace), methyl gyrophorate (trace), tenuiorin (major), calycin (trace), pulvinic dilactone (trace), pulvinic acid (trace), 7β-acetoxyhopane-22-ol (trace), hopane-6α,7β,22-triol (minor), unknowns (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 270.



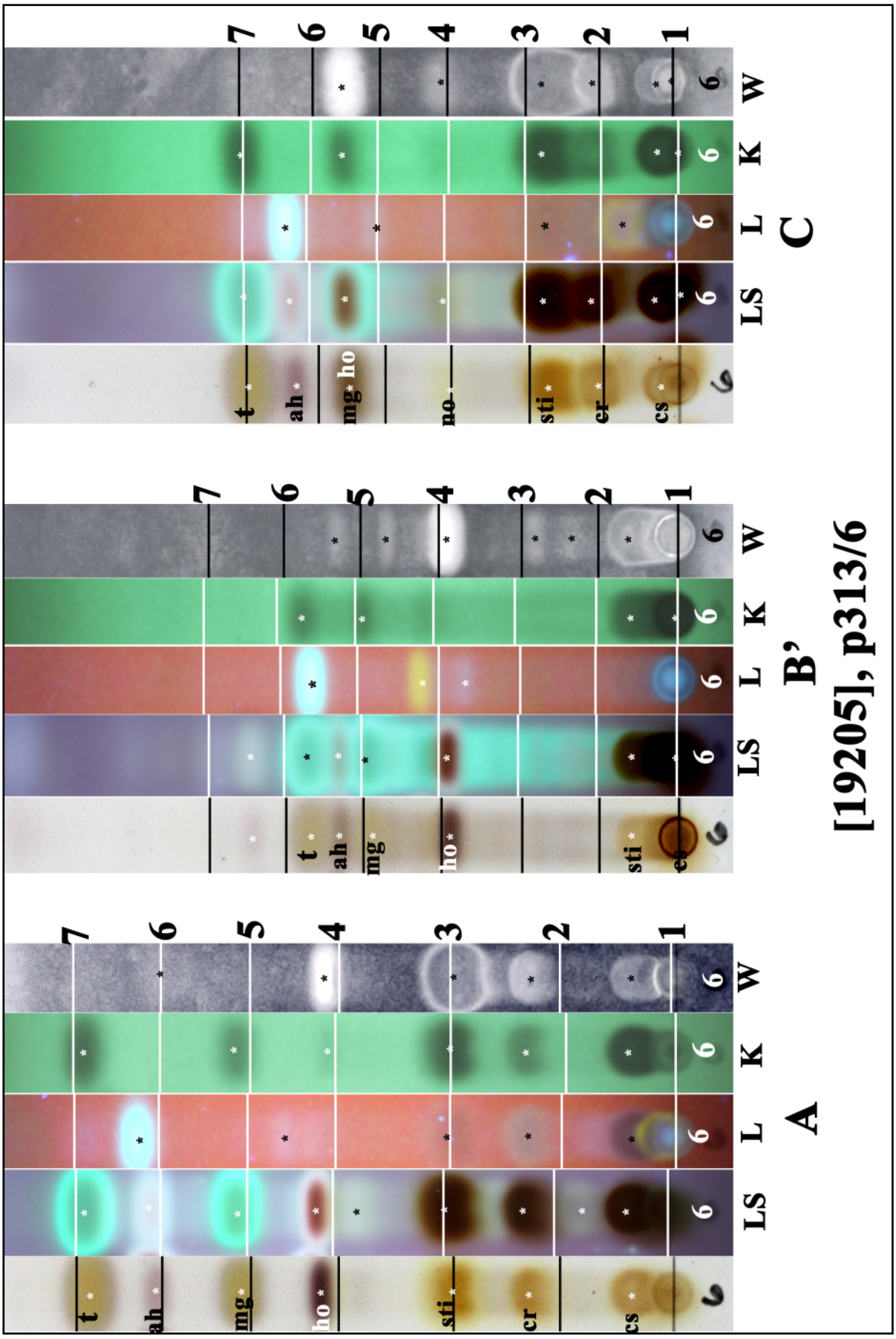


Pseudocyphellaria desfontainii





Pseudocyphellaria desfontainii



t: tenuiorin, ah: 7β-acetoxyhopane-22-ol, mg: methyl gyrophorate, ho: hopane-6α,7β,22-triol, no: norstictic acid, sti: stictic acid, cs:constictic acid, cr: cryptostictic acid

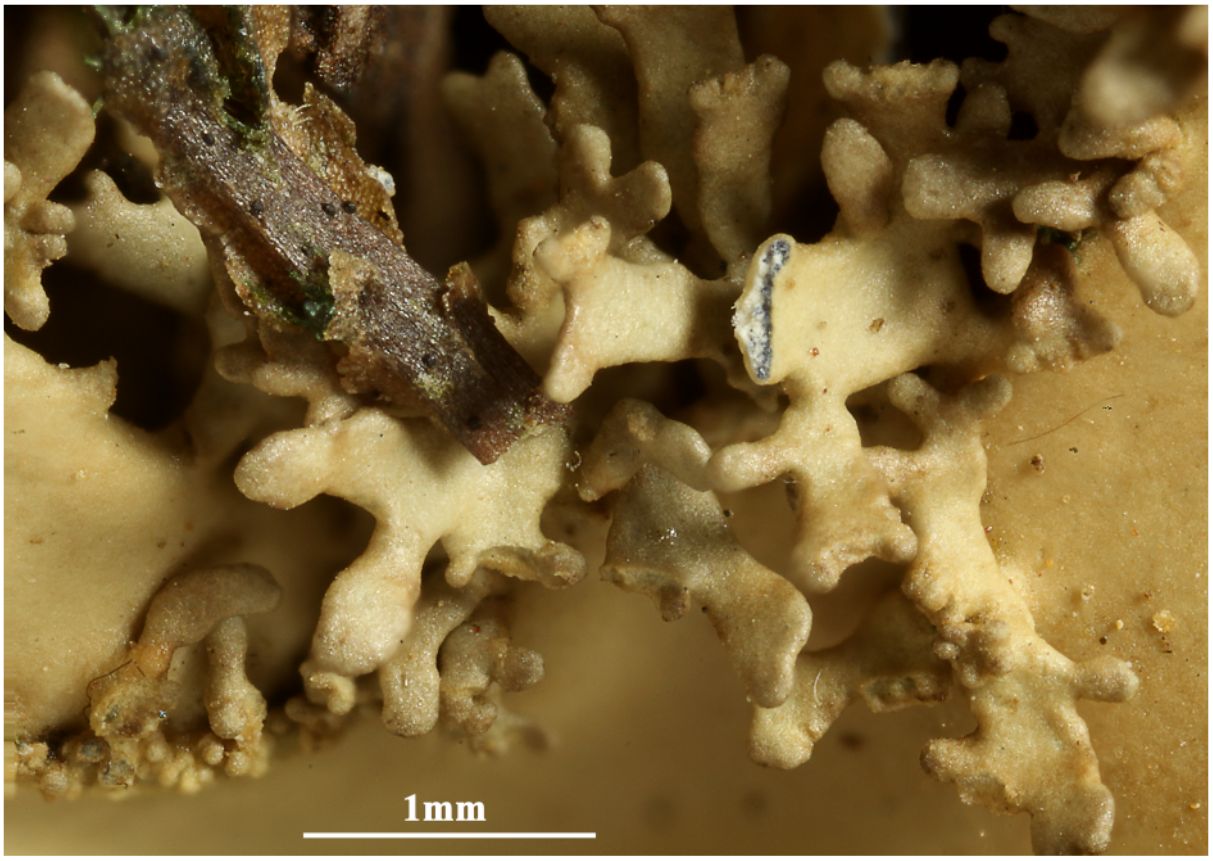
Pseudocyphellaria desfontainii

Pseudocyphellaria dissimilis (Nyl.) D.J.Galloway & P.James

Thallus loosely to closely attached centrally, margins free. Lobes (1-)2-5(-8) cm long, (1-)3-8(-10) mm wide, discrete at apices, imbricate centrally. Upper surface grey blue to glaucous brownish when dry, blue-black when wet. Isidia marginal and laminal, simple, terete, to 3 mm tall and 0.1 mm diam., becoming densely crowded-coralloid and flattened-phyllidiate. Medulla white. Photobiont *Nostoc*. Lower surface pale to brownish-tomentose. Pseudocyphellae white, punctate. Ascospores 1-3 septate, pale yellow-brown, 20.5-29.5 x 7-9 µm. Chemistry: 7β-acetoxyhopane-22-ol, 7β,15α-diacetoxyhopane-22-ol (trace), hopane-15α,22-diol, gyrophoric acid, methyl gyrophorate.

[19206], Australia, New South Wales, Moppy Lookout, Barrington Tops State Forest, 40 km west-north-west of Gloucester, 31°53' S, 151°32' E, 1200 m, growing on rocks in *Nothofagus* dominated forest on moderate slope. Leg. J.A. Elix (22925), 26.04.1990. Chemistry: 7β-acetoxyhopane-22-ol, hopane-15α,22-diol, gyrophoric acid, methyl gyrophorate by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 216.

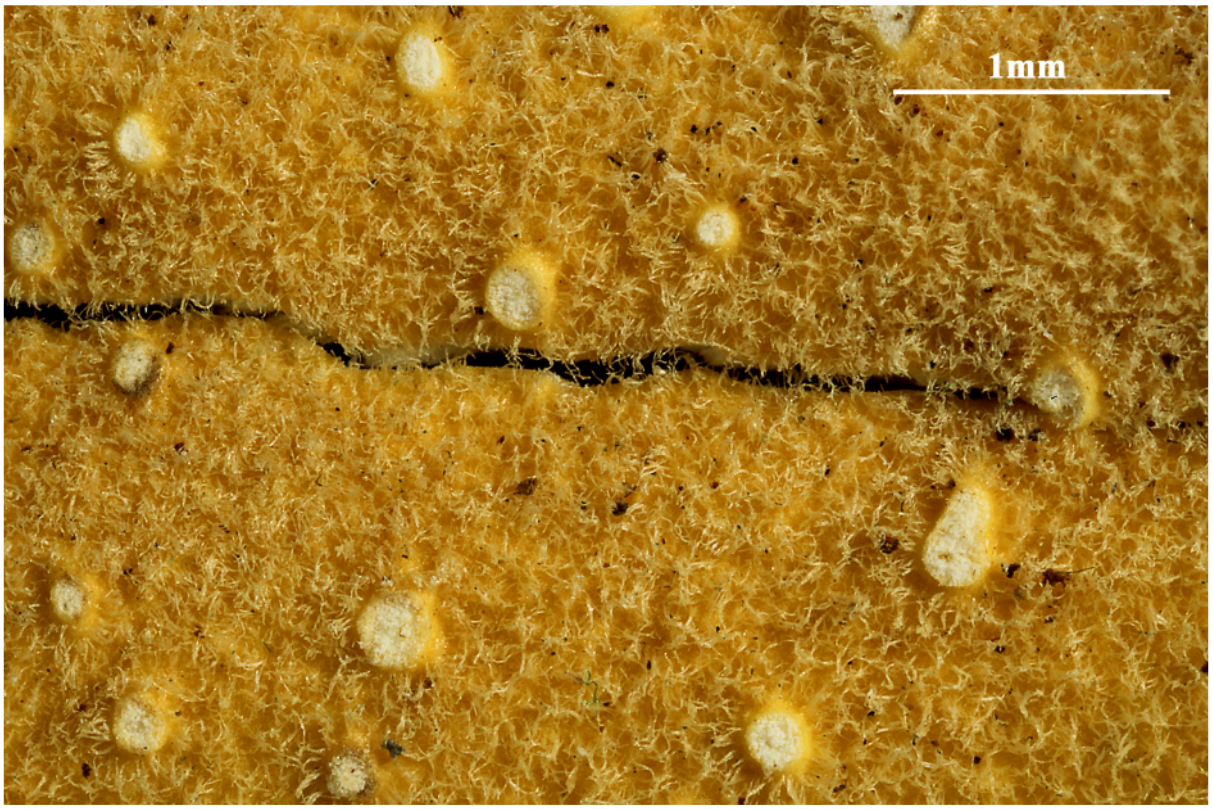




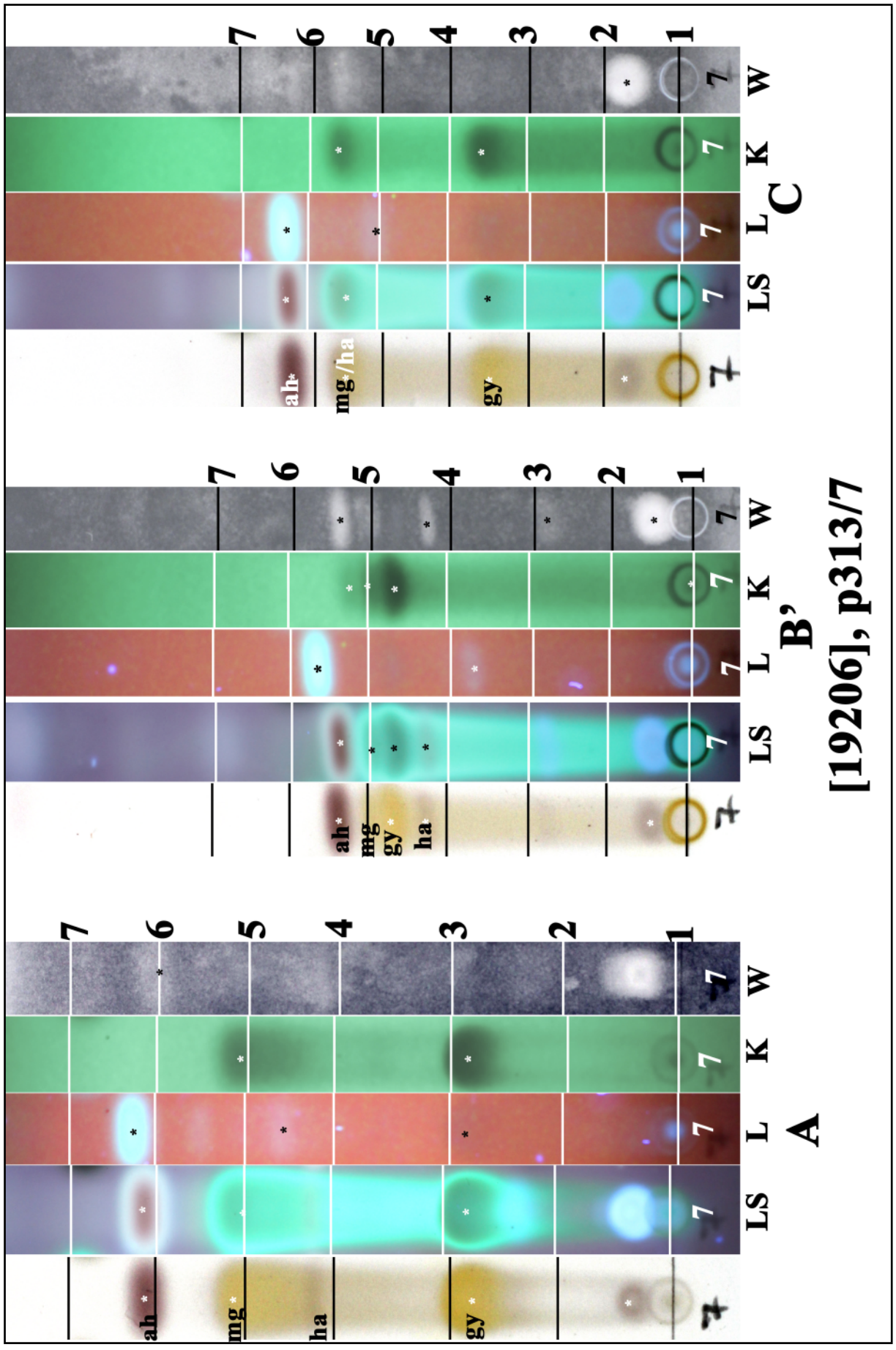


Pseudocyphellaria dissimilis





Pseudocyphellaria dissimilis



ah: 7β-acetoxyhopane-22-ol, mg: methyl gyrophorate,
ha: hopane-15α,22-diol, gy: gyrophoric acid

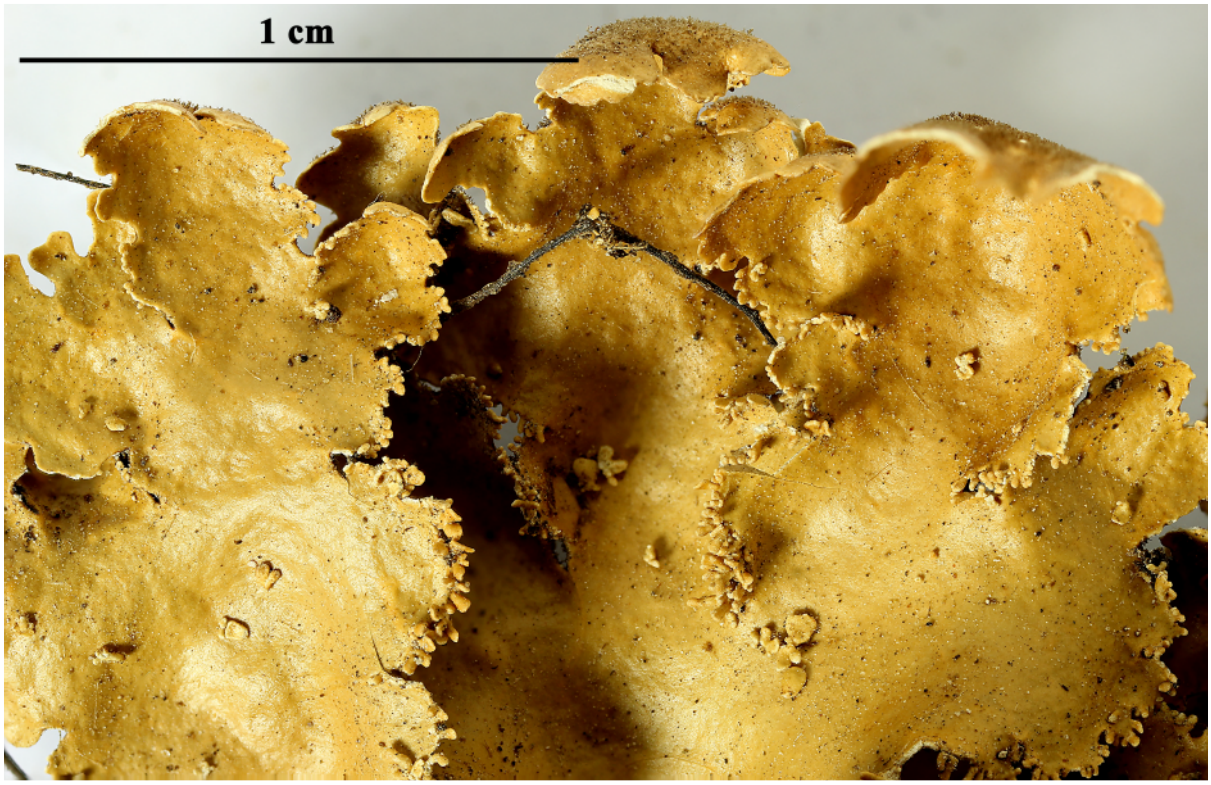
Pseudocyphellaria dissimilis

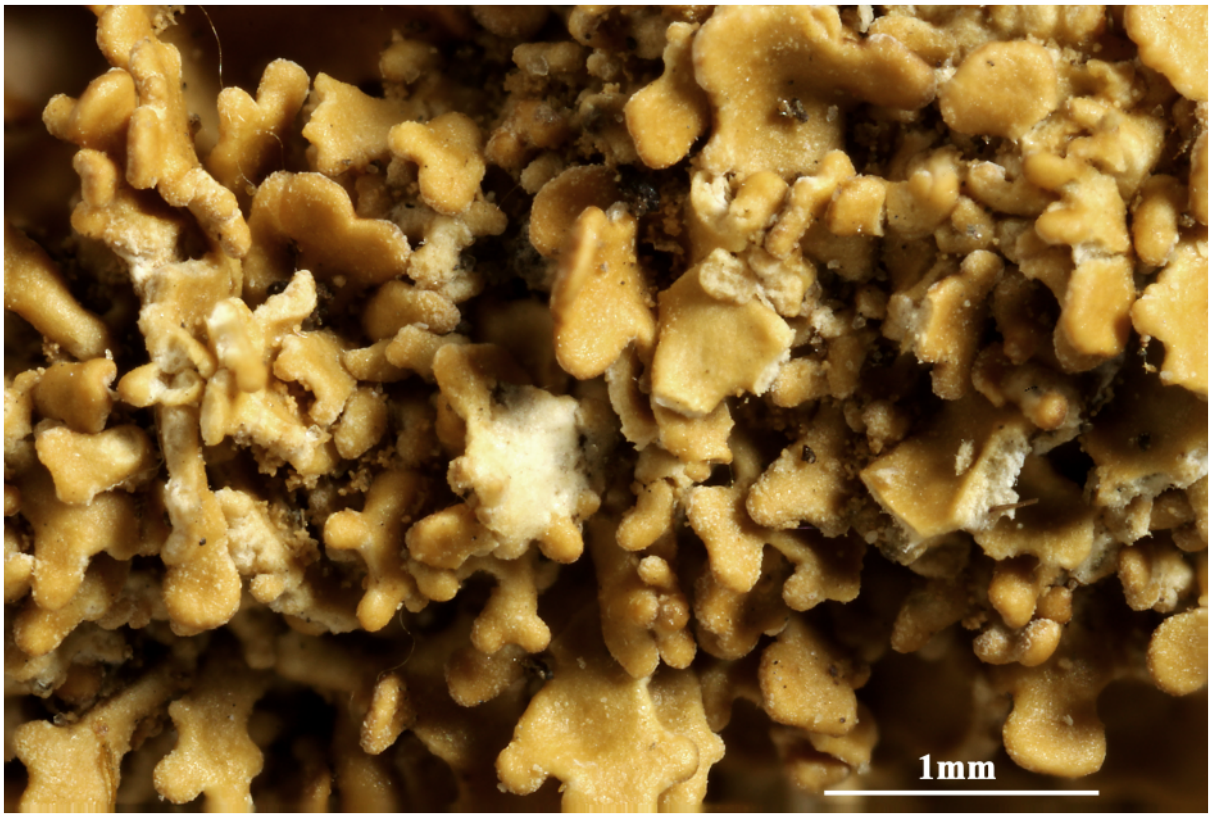
Pseudocyphellaria glabra (Hook.f. & Taylor) C.W.Dodge

Thallus loosely attached centrally, 5-10(-30) cm wide. Lobes broadly rounded (10-17 mm wide) to narrowly laciniate (2-6 mm wide), discrete from apices to centre; lobe margins becoming isidiate or eroding with age. Upper surface pale greenish to yellow-fawn when dry, lettuce-green to greenish yellow when wet, never faveolate, often deeply cracked. Isidia marginal or arising from laminal cracks, simple, terete, 0.5-1 mm tall. Medulla white. Photobiont green. Lower surface dark brown centrally, tomentose throughout. Pseudocyphellae prominent, white. Apothecia rare, 0.5-7 mm diam., Ascospores fusiform, 1-3 septate, 13.5-22.5 x 4.5-7 µm, pale yellow-brown. Chemistry: 7β-acetoxyhopane-22-ol (major), 7β,15α-diacetoxyhopane-22-ol (trace), hopane-15α,22-diol (major), norstictic acid (trace), stictic acid (major), cryptostictic acid (trace), constictic acid (major), methyl stictic acid (minor), 9α-acetoxyconstictic acid (minor), usnic acid.

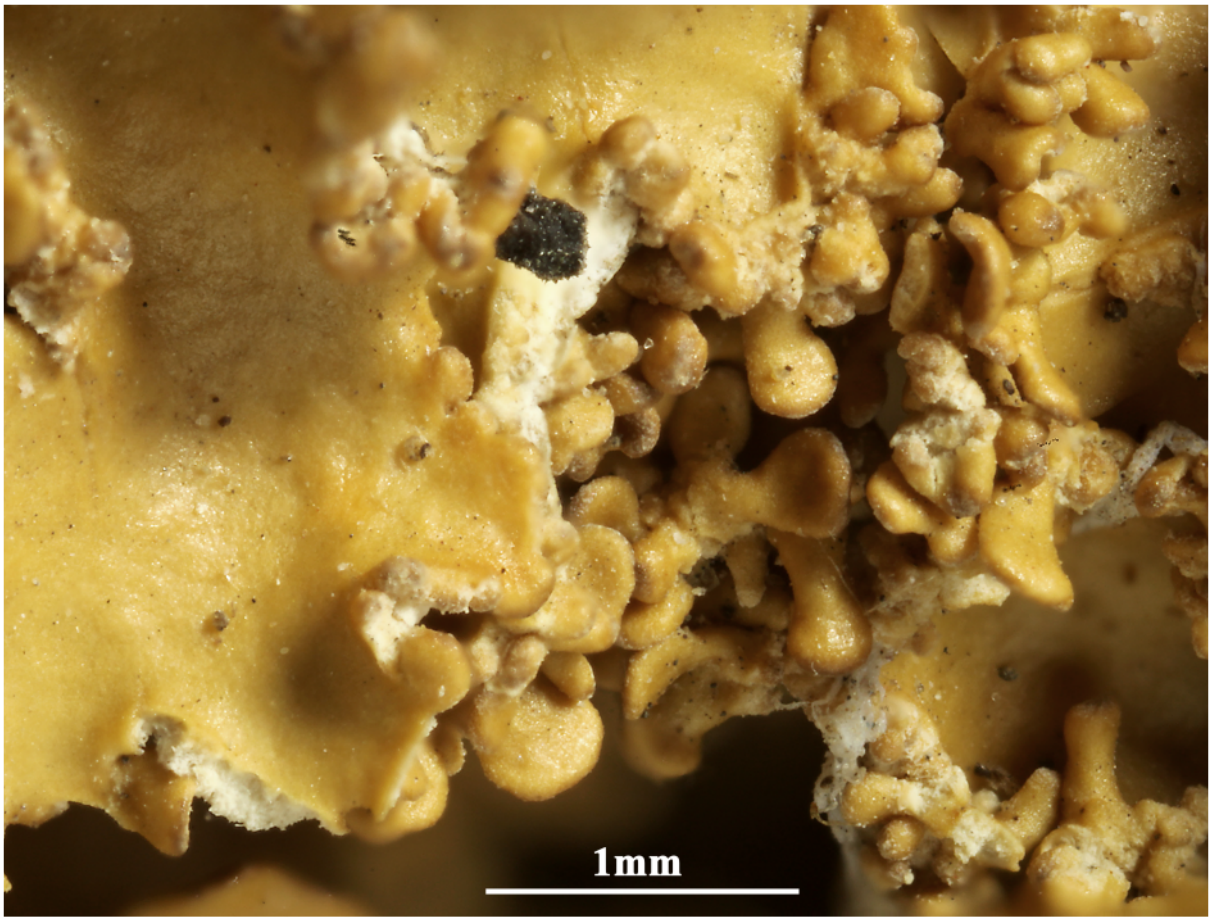
[19197], New Zealand, South Island, Canterbury, 3 km east of Te Oka Peak, Banks Peninsula, growing on moist, roadside rocks in pasture, 670 m. Leg. J.A. Elix (18792) & J. Johnston, 3.03.1985. Chemistry: stictic acid (major), constictic acid (major), cryptostictic acid (trace), norstictic acid (trace), methyl stictic (minor), 9α-acetoxyconstictic acid (minor), 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (major), unknowns (traces) by TLC, anal. J.A. Elix & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 271.

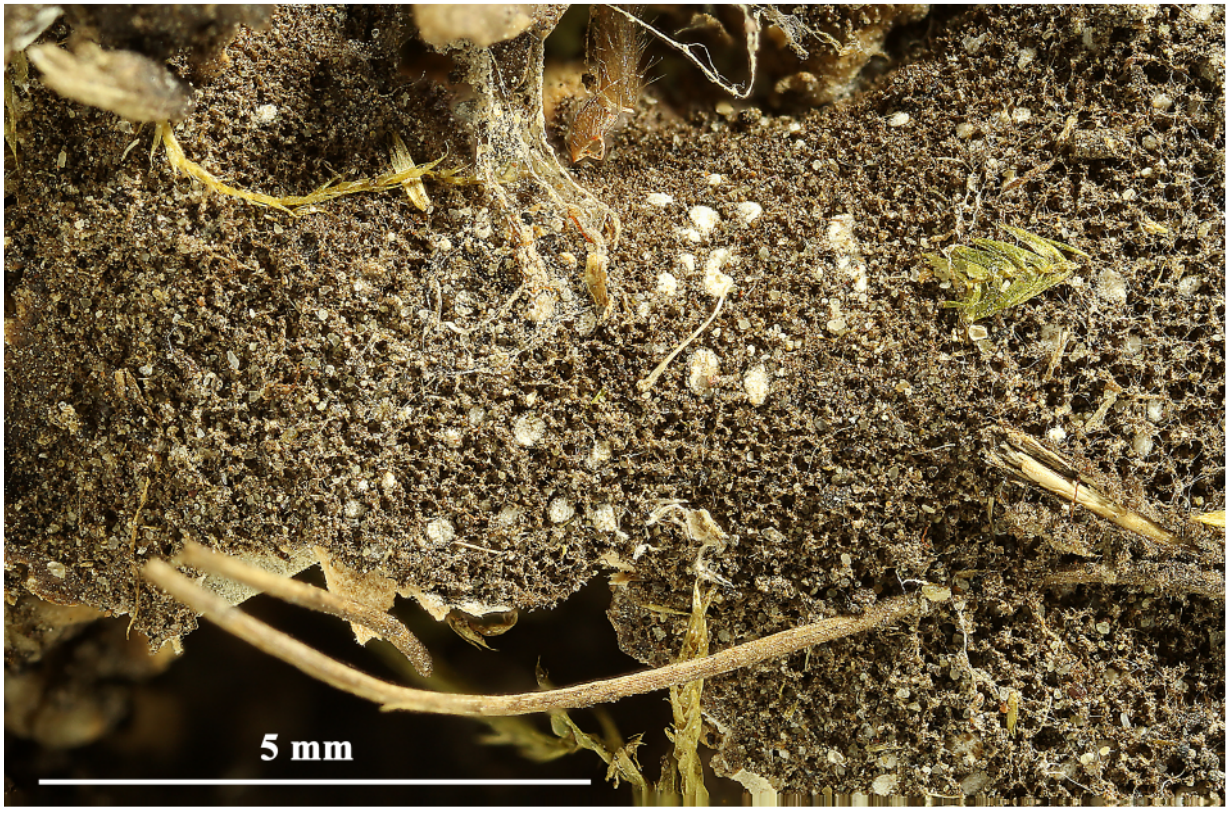




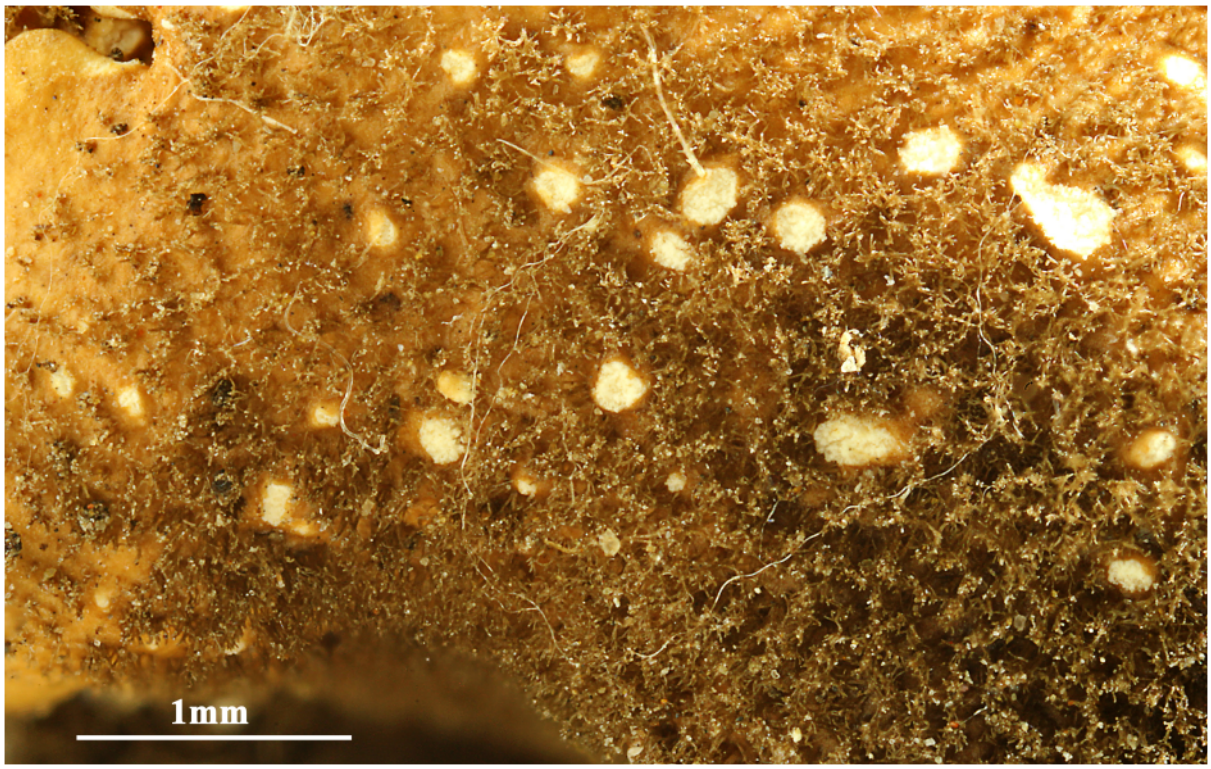


Pseudocyphellaria glabra

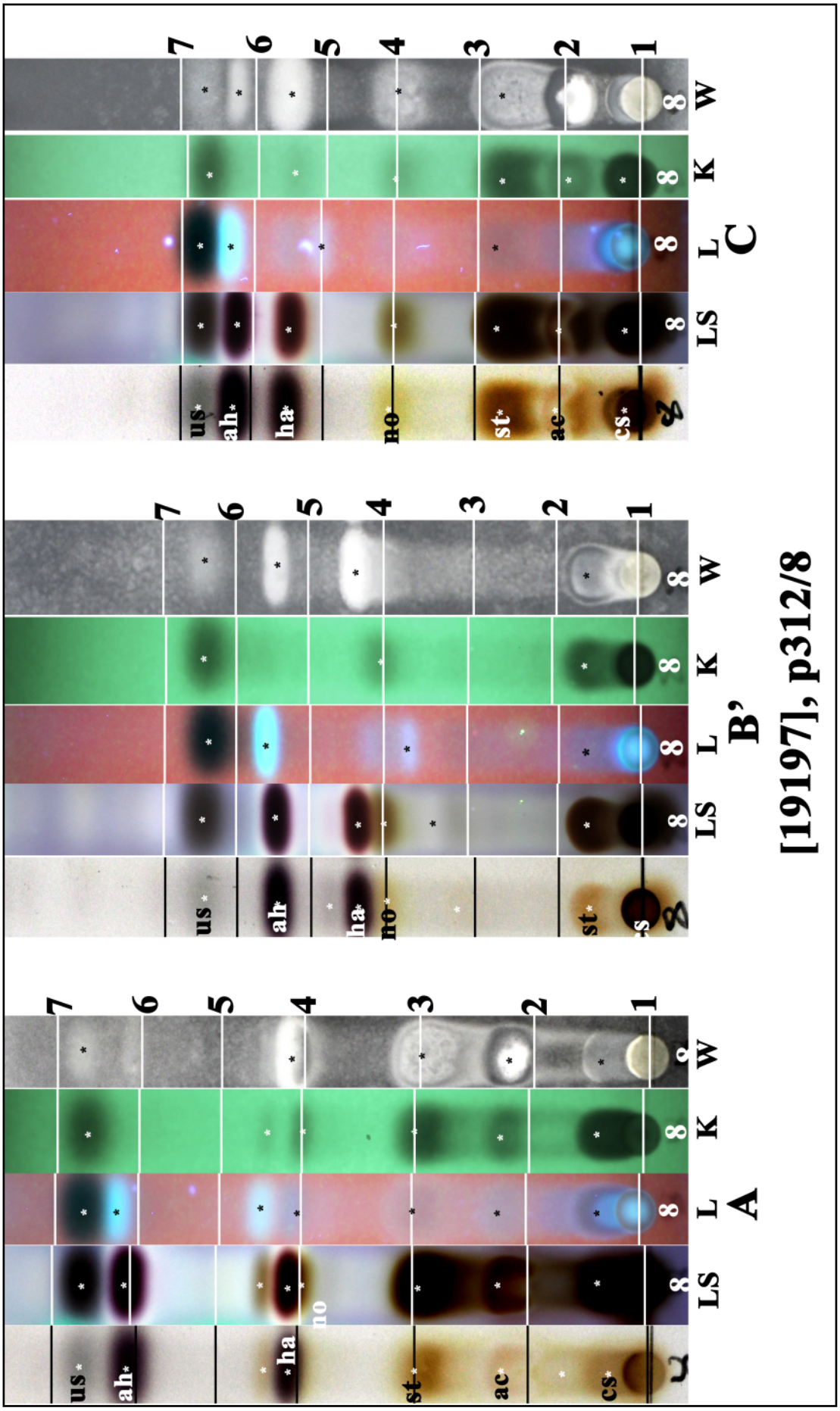




Pseudocyphellaria glabra



Pseudocyphellaria glabra



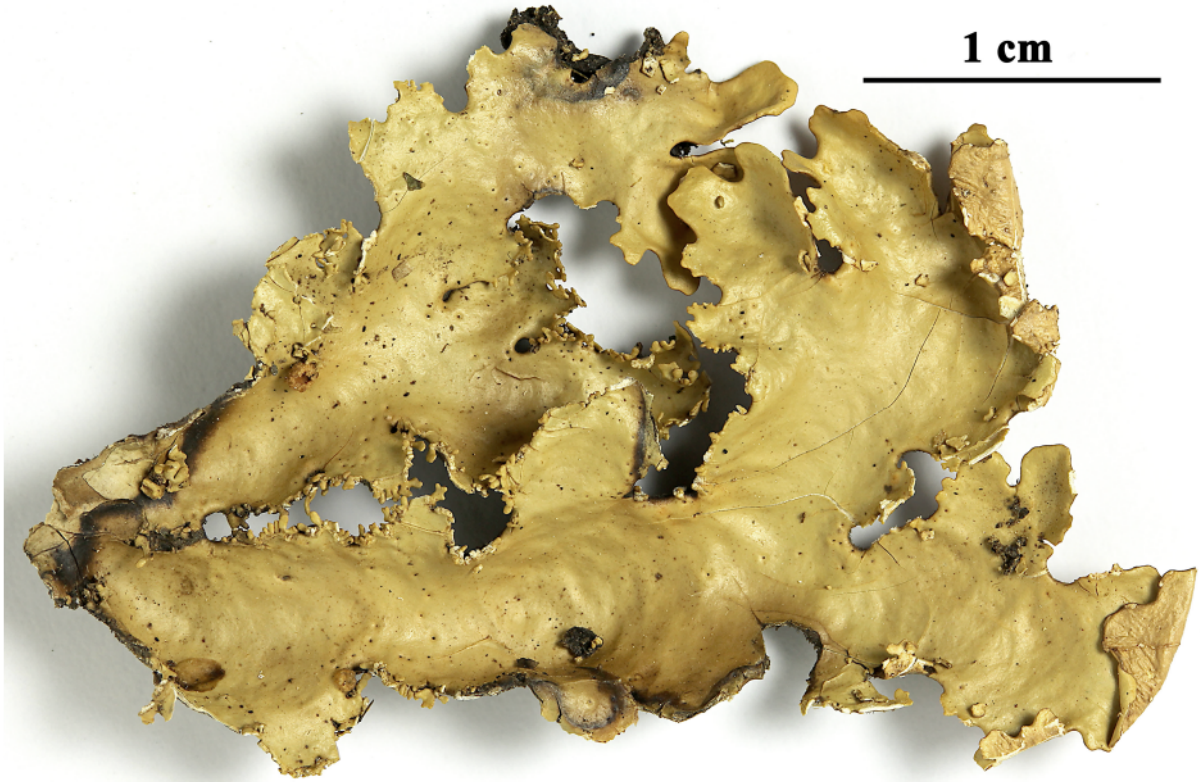
us: usnic acid, st: stictic acid, no: norstictic acid, cs: constictic acid,
ah: 7β-acetoxyhopane-22-ol. ha: hopane-15α,22-diol, ac: 9α-acetoxyconstictic acid

Pseudocyphellaria glabra

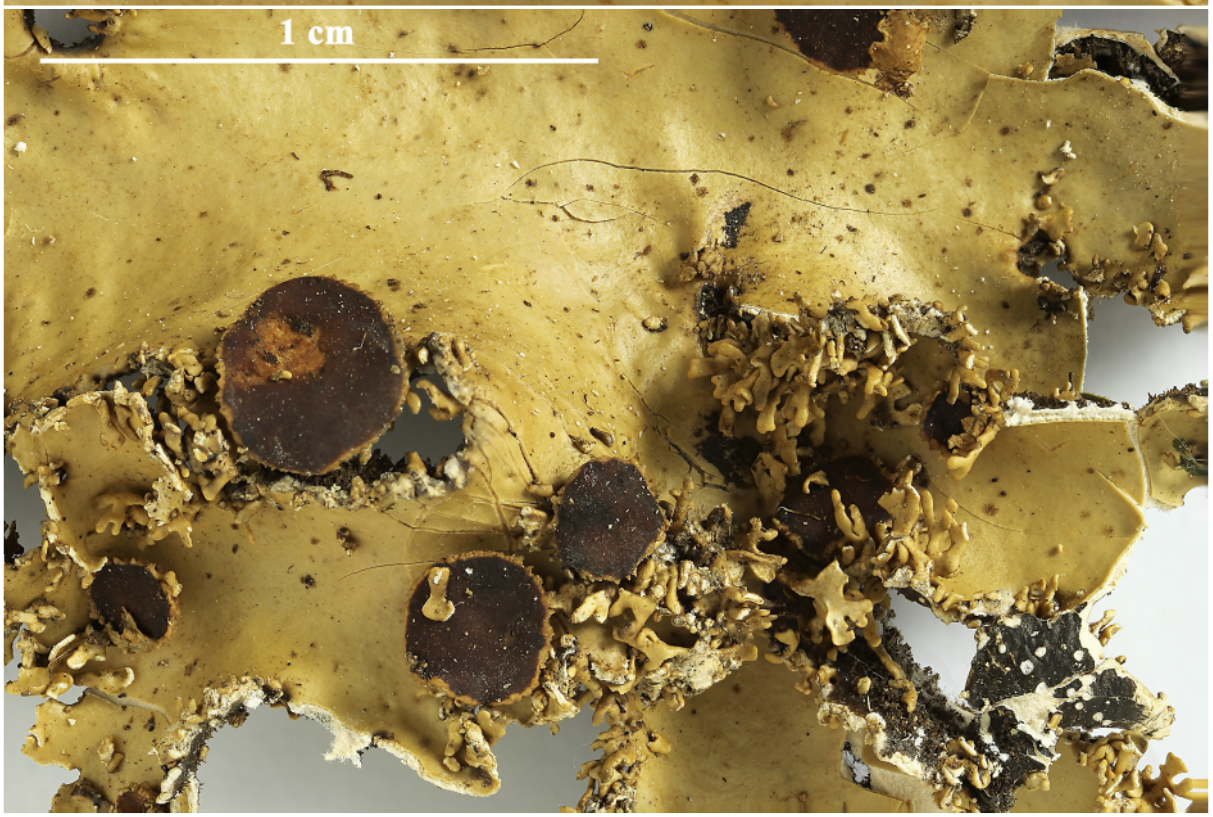
Pseudocyphellaria glabra (Hook.f. & Taylor) C.W.Dodge
[= ***Pseudocyphellaria delisea*** (Delise) D.J.Galloway & P.James]

[19204], Australia, Victoria, Donna Buang - Healesville road, 6 km north-west of Warburton, 37°42' S, 145°39' E, 1040 m, growing on *Eucalyptus* trunk in wet sclerophyll forest. Leg. H. Streimann (36267), 3.01.1986. Chemistry: usnic, norstictic acid, stictic acid , cryptostictic acid, constictic acid, 7β-acetoxyhopan-22-ol, hopane-15α,22-diol by TLC, anal. J.A.Elix. LICHENES AUSTRALASICI EXSICCATI NO. 119, distributed as ***Pseudocyphellaria delisea*** (Delise) D.J.Galloway & P.James.







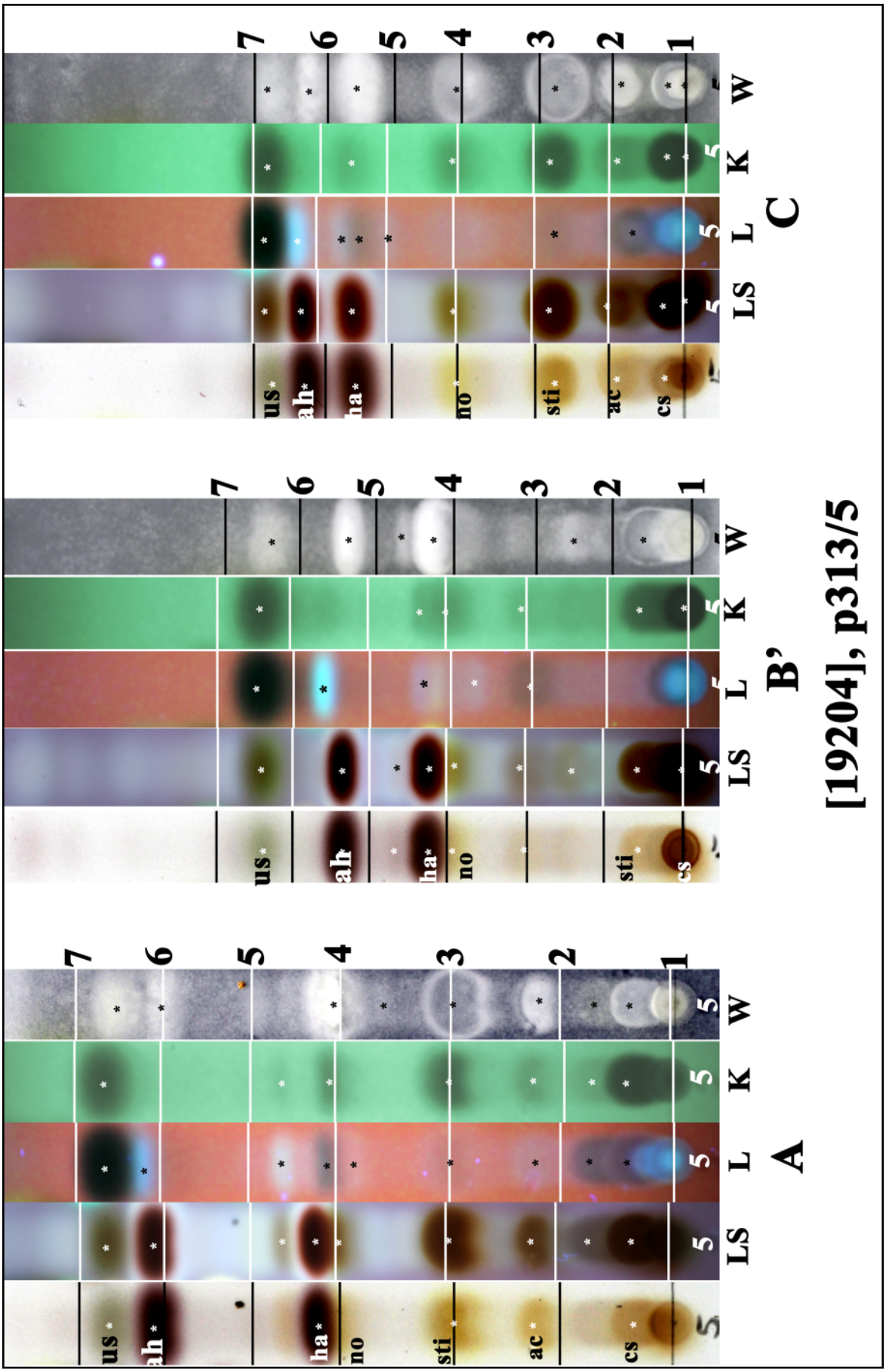


Pseudocyphellaria glabra





Pseudocyphellaria glabra



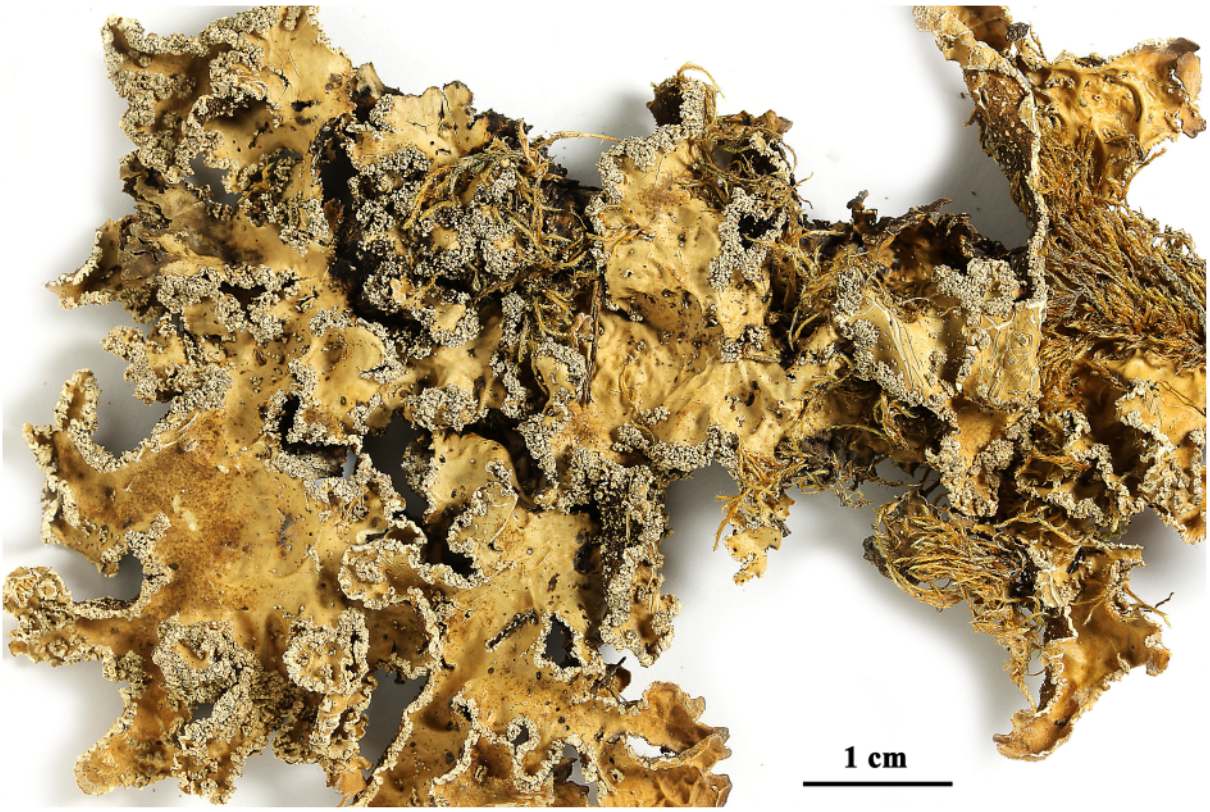
us: usnic acid, no: norstictic acid, sti: stictic acid, cs: constictic acid,
ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol,
ac: 9α-acetoxyconstictic acid

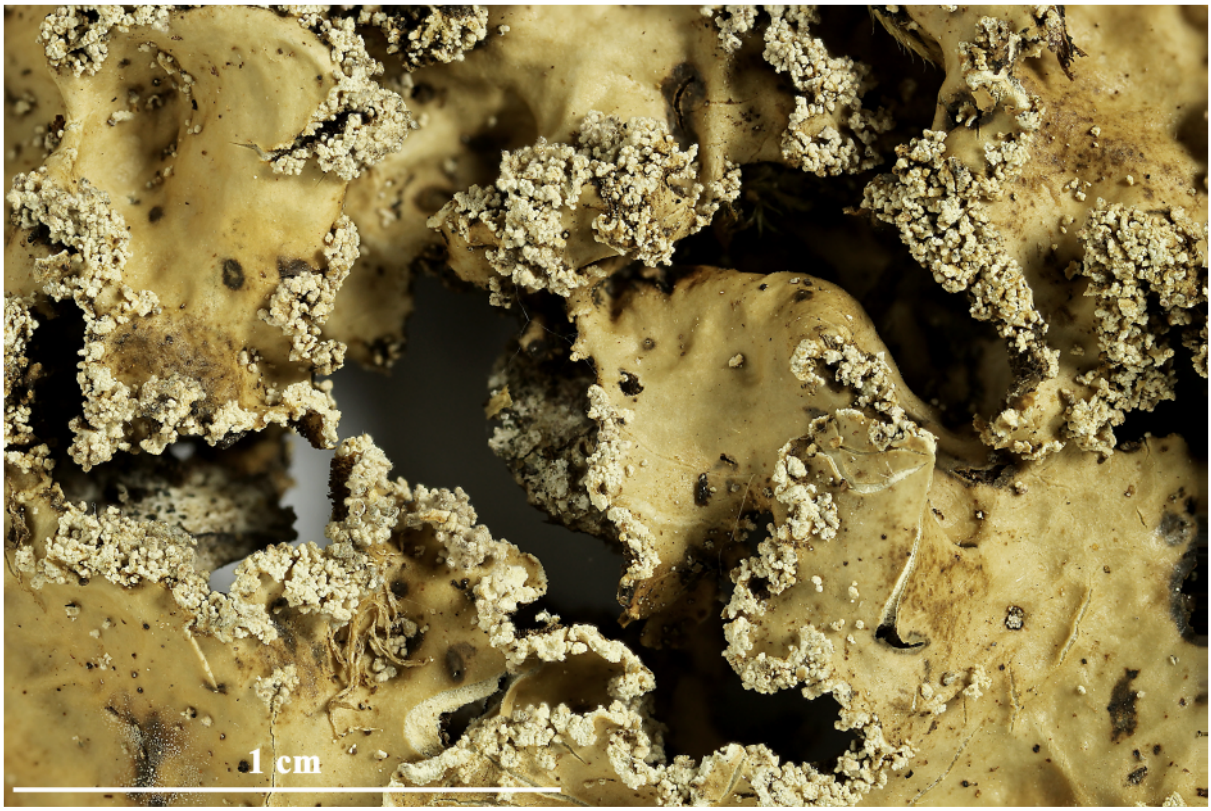
Pseudocyphellaria glabra

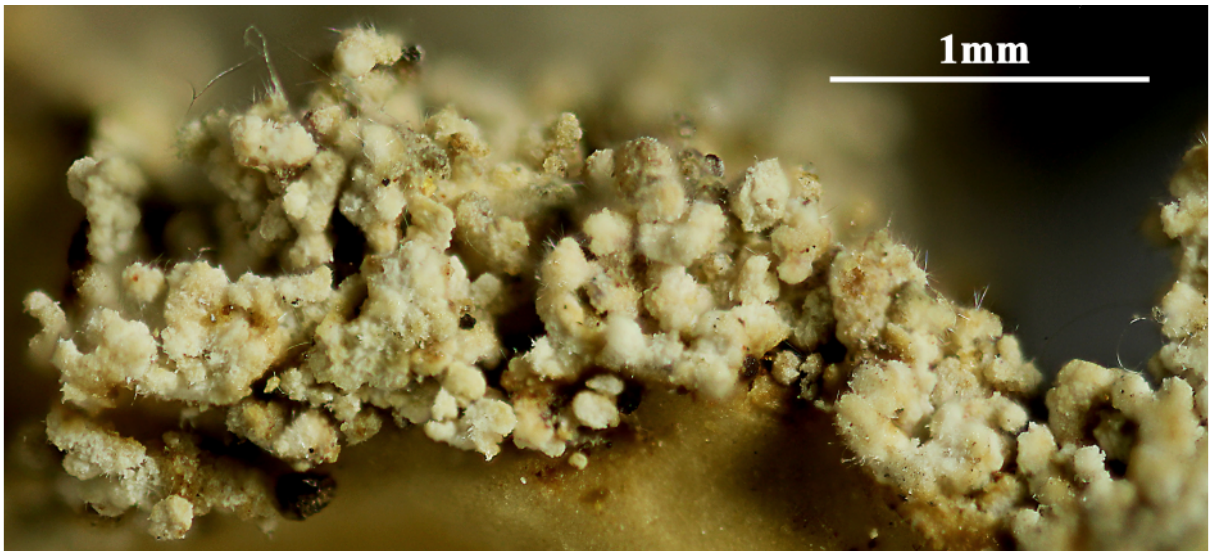
Pseudocyphellaria granulata (C.Bab.) Malme

Lobes deeply incised, linear-elongate to broadly rounded, 1-5 cm long, 5-25 mm wide. Margins densely sorediate, often eroding, white. Upper surface grey-fawn or glaucous yellow when dry, olivaceous when wet, faveolate in parts. Soredia in erose laminal or marginal soralia, coarsely granular, whitish to greenish black. Medulla white. Photobiont green. Lower surface pale at margins, black centrally. Pseudocyphellae conspicuous, white. Apothecia marginal and laminal, to 1.5 mm diam. Ascospores 1-septate, ellipsoidal, 22.5-32 x 9-11.5 µm, grey to olive-brown. Chemistry: hopane-6α,7β,22-triol (major), 6α-acetoxyhopane-7β,22-diol (minor), hopane-15α,22-diol (trace), 7β-acetoxyhopane-6α,22-diol (trace), hopane-7β,22-diol (minor), 7β-acetoxyhopane-22-ol (trace), methyl virensate (trace), physciosporin (major), norstictic acid (trace), stictic acid (major), cryptostictic acid (trace), constictic acid.

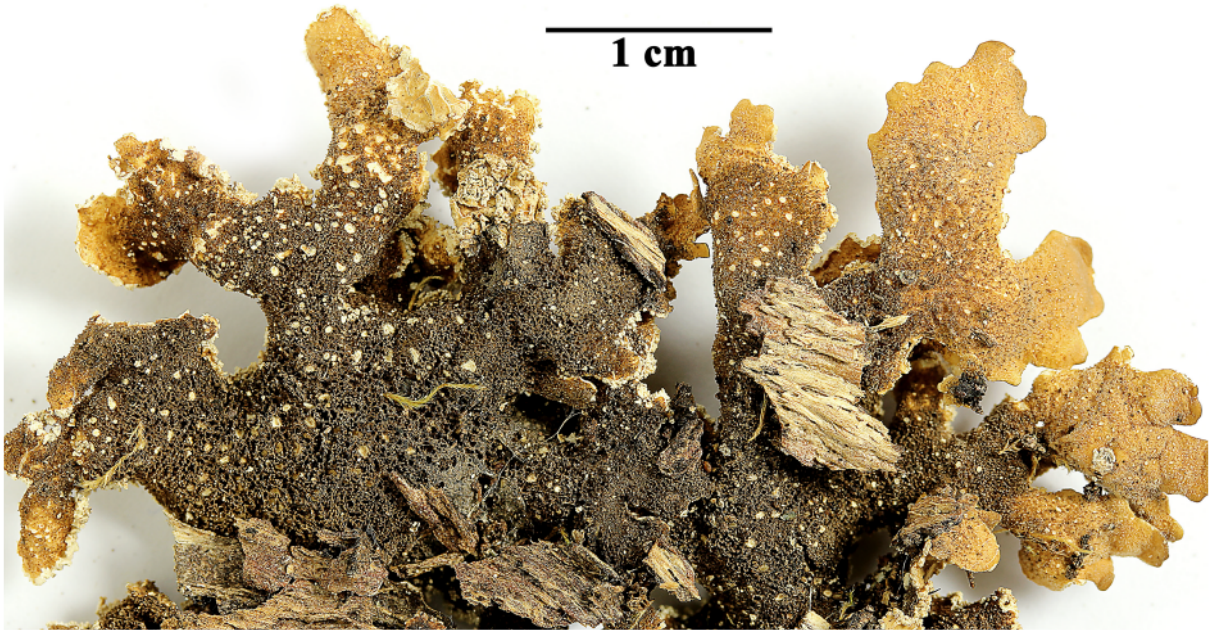
[19207], Australia, Victoria, Gunmark Road, near junction with Goonmirk Rocks Road, 13.5 km south of Bendoc, 37°16' S, 148°52' E, 1060 m, growing on base of *Eucalyptus regnans* in wet sclerophyll forest. Leg. J.A. Elix (19917) & H. Streimann, 9.04.1986. Chemistry: methyl virensate (trace), physciosporin (major), stictic acid (major), constictic acid, norstictic acid (trace), cryptostictic acid (trace), hopane-6α,7β,22-triol (major triterpene), 6α-acetoxyhopane-7β,22-diol (minor), hopane-15α,22-diol (trace), 7β-acetoxyhopane-22-ol (minor) by TLC, anal. J. Johnston & A.L.Wilkins. LICHENES AUSTRALASICI EXSICCATI NO. 144

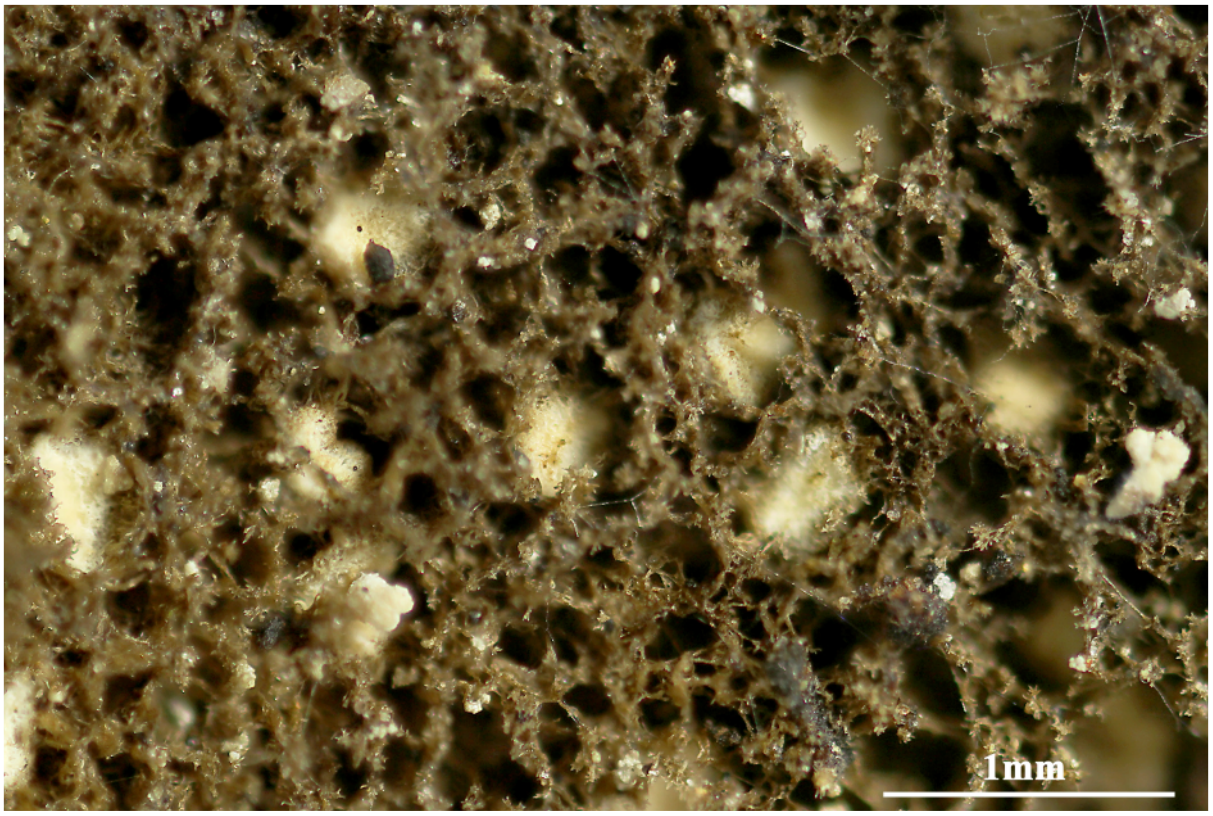




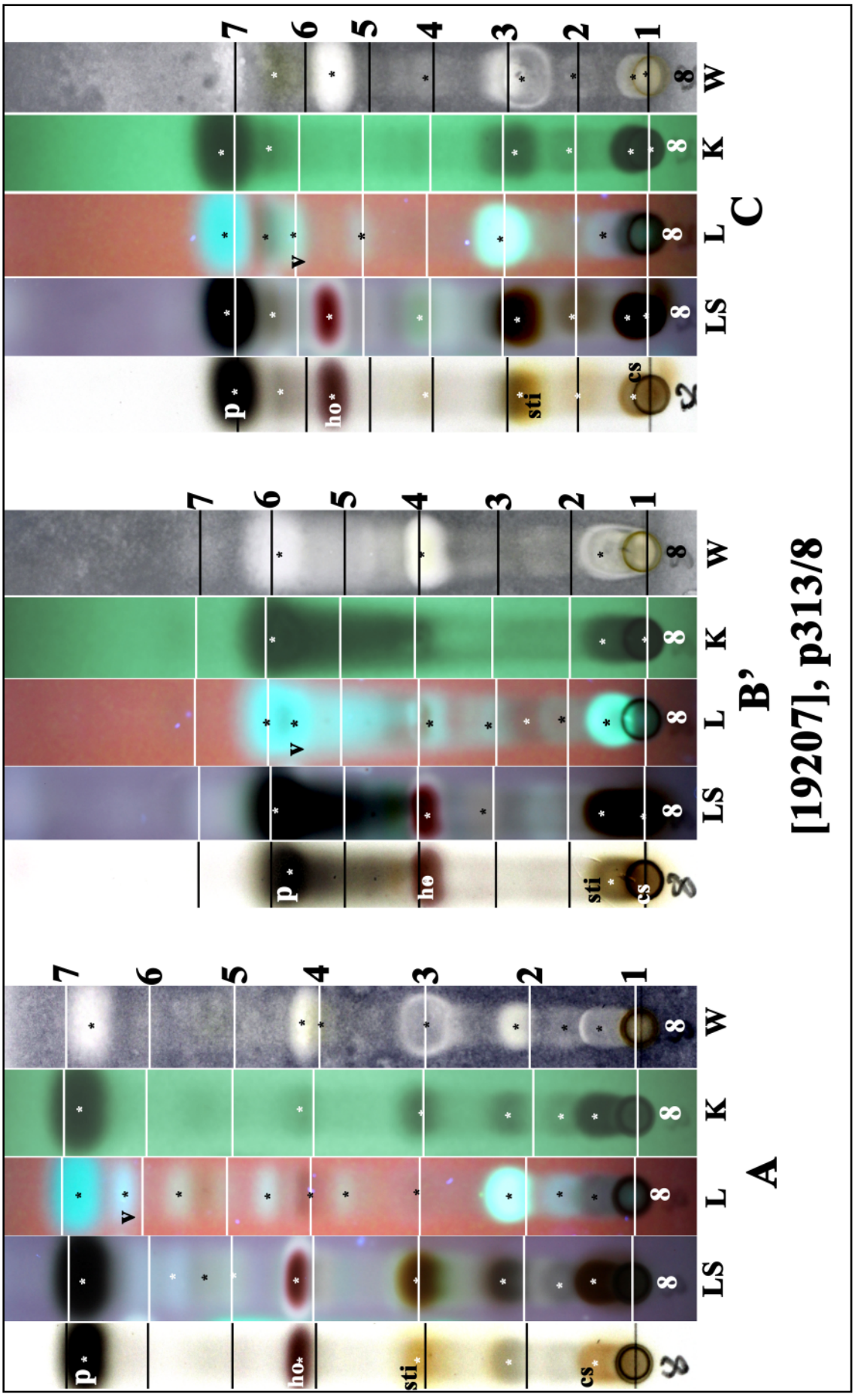


Pseudocyphellaria granulata





Pseudocyphellaria granulata

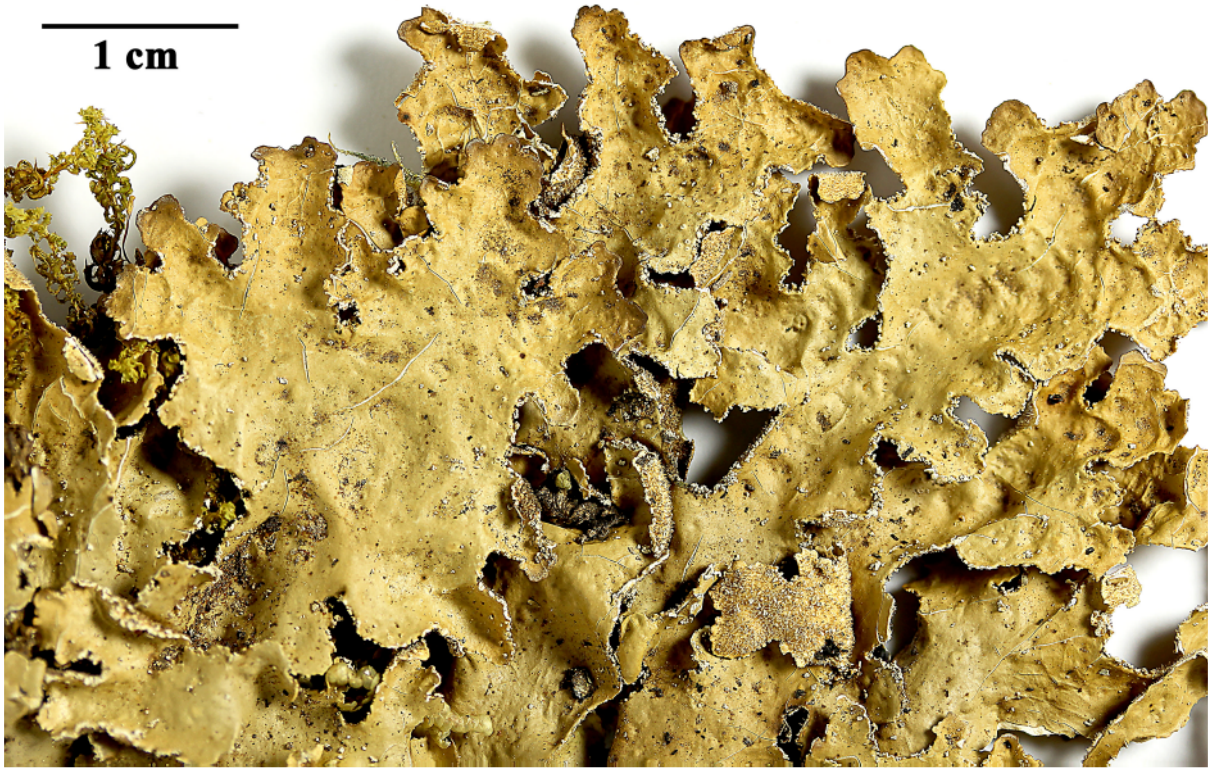


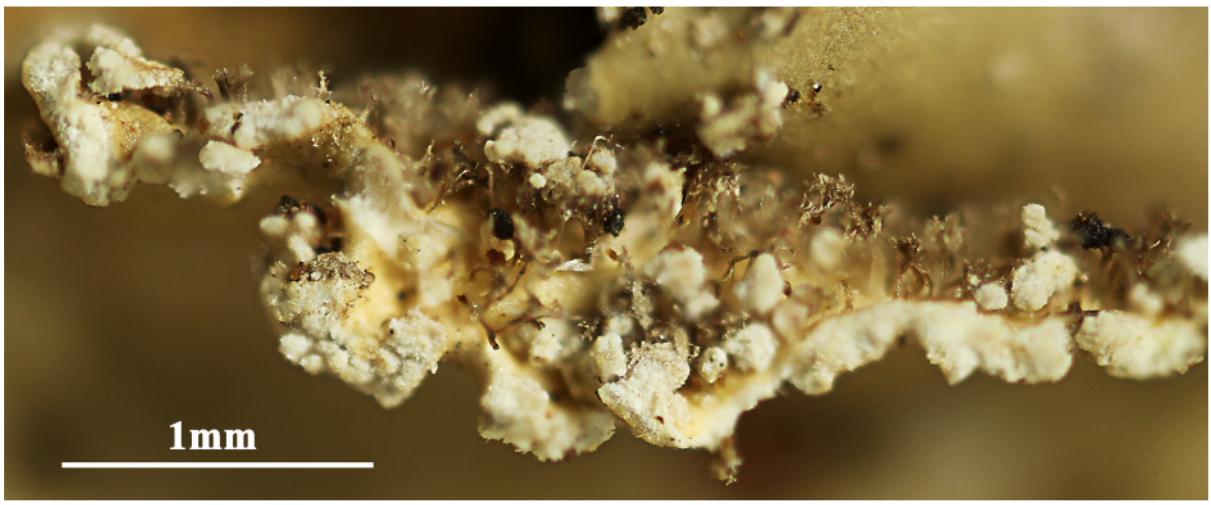
p: physciosporin, ho: hopane-6α,7β,22-triol, sti: stictic acid, cs: constictic acid, v: methyl virensate

Pseudocyphellaria granulata

Pseudocyphellaria granulata (C.Bab.) Malme

[19208], 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 trunck of dead tree in wet sclerophyll forest. Leg. J.A. Elix (19284), 9.07.1985. Chemistry: methyl virensate (trace), physciosporin (major), stictic acid (major), constictic acid, norstictic acid (trace), cryptostictic acid (trace), hopane-6α,7β,22-triol (major triterpene), 6α-acetoxyhopane-7β,22-diol (trace), hopane-15α,22-diol (trace), 7β-acetoxyhopane-22-ol (trace) by TLC, anal. J. Johnston & A.L.Wilkins. LICHENE AUSTRALASICI EXSICCATI NO. 143.

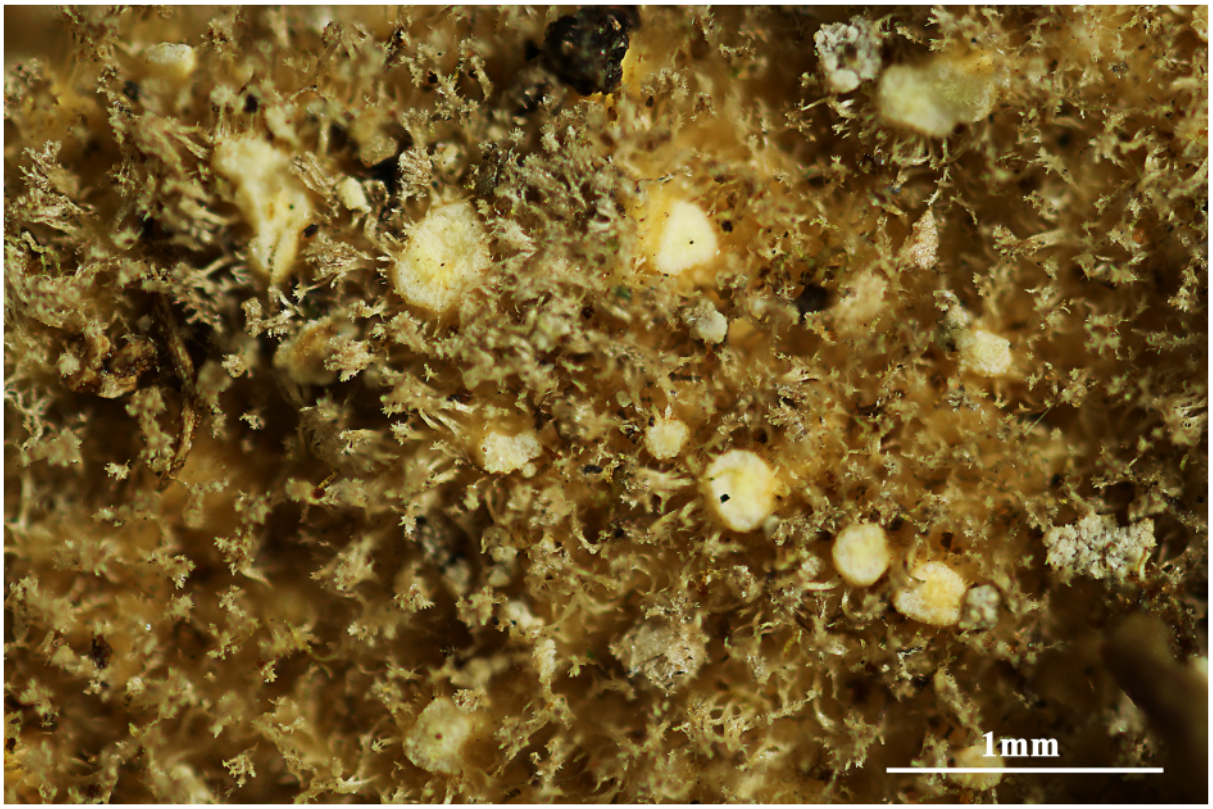




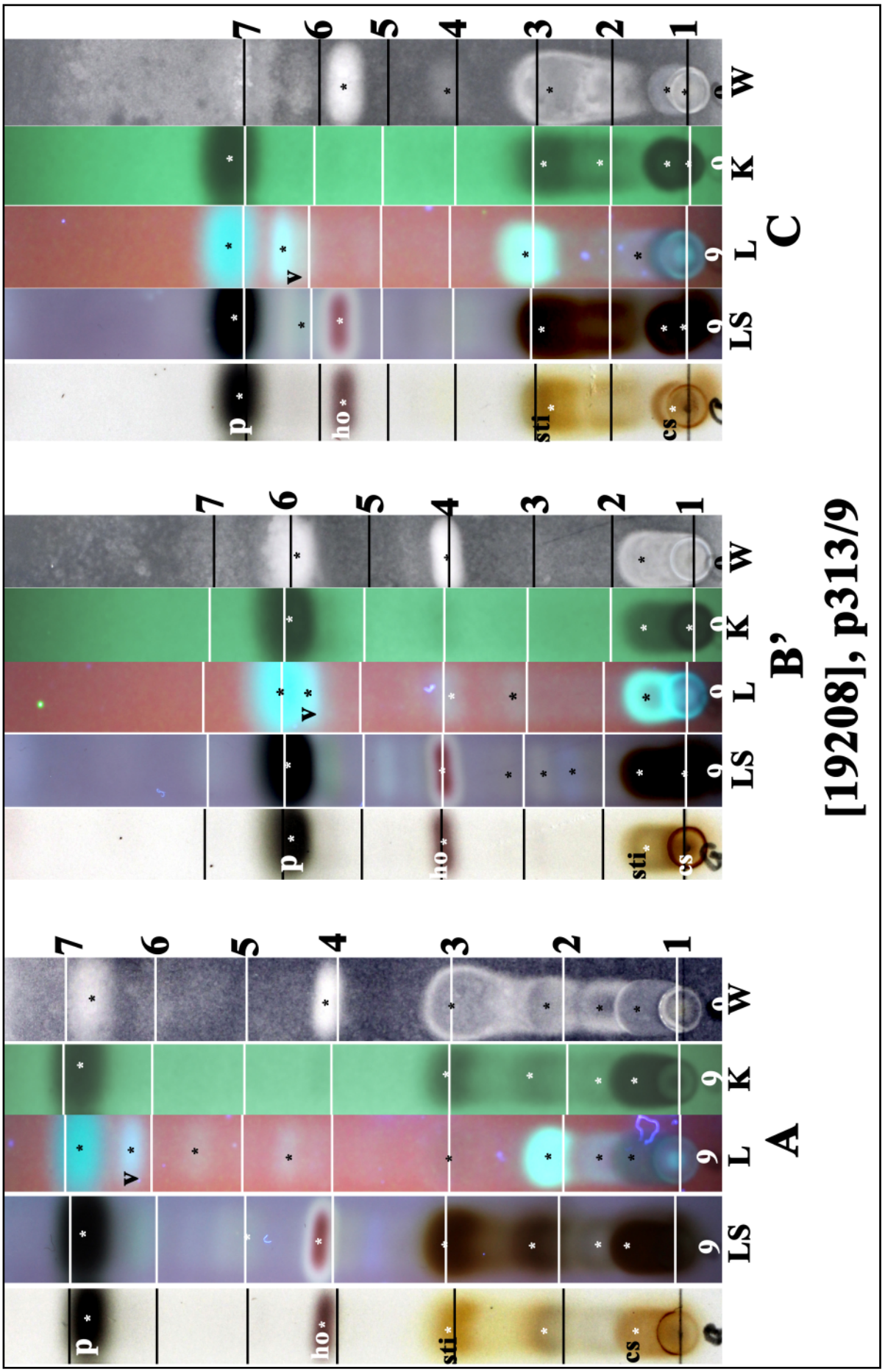




Pseudocyphellaria granulata



Pseudocyphellaria granulata



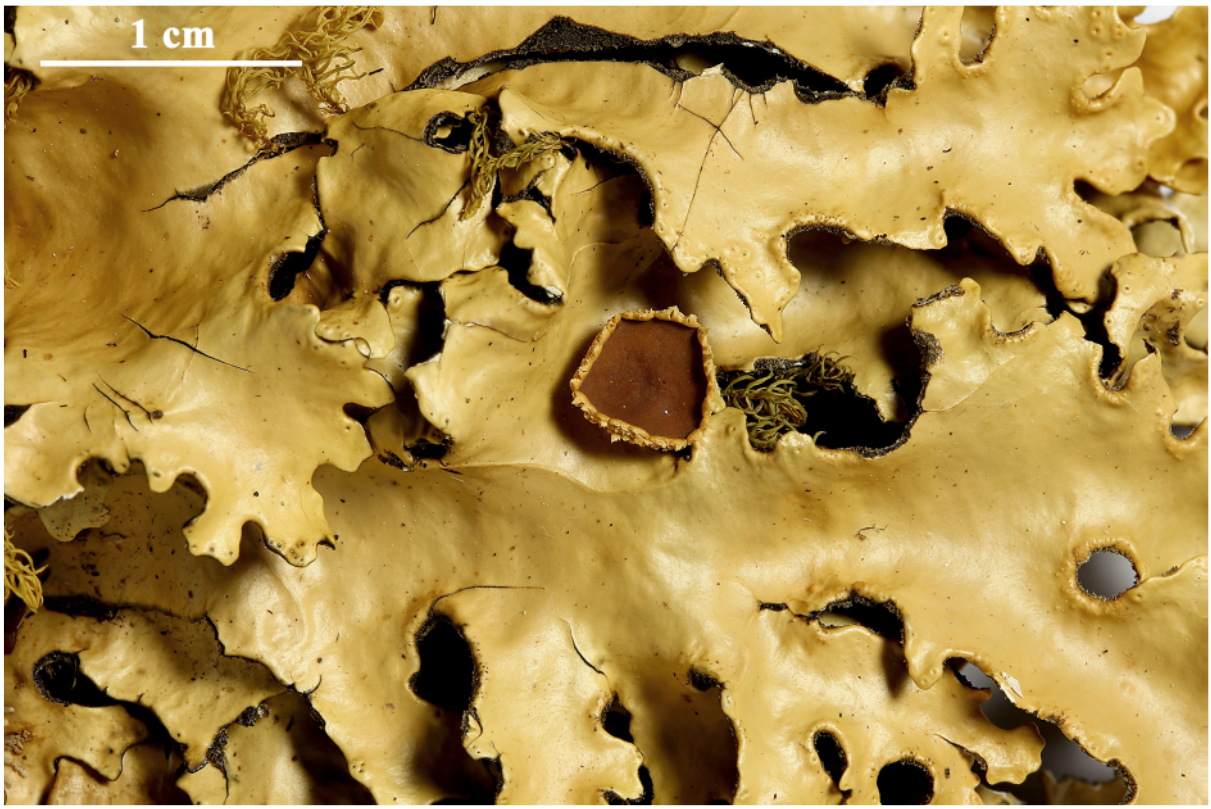
p: physciosporin, ho: hopane-6α,7β,22-triol, sti: stictic acid, cs: constictic acid, v: methyl virensate

Pseudocyphellaria granulata

Pseudocyphellaria homoephylla (Nyl.) C.W.Dodge

Thallus loosely attached. Lobes di- or trichotomously branching, linear laciniate lobes with entire, sinuous margins. Upper surface plane to undulate, not faveolate impressed, lacking isidia, maculae, phyllidia, pseudocyphellae and soredia. Medulla white. Photobiont green. Lower surface red-brown to black, with patchy tomentum and numerous, conspicuous white pseudocyphellae, 0.1-1 mm diam., crateriform with raised margins. Apothecia 1-6 mm diam. Ascospores 1-3 septate, fusiform-ellipsoid, 25-32 x 7-9 µm, pale straw-cloured. Chemistry: 7β-acetoxyhopan-22-ol, 7β,14α-diacetoxyhopane-22-ol (trace), hopane-15α,22-diol, norstictic acid, stictic acid, cryptostictic acid, constictic acid, methylstictic acid, hypostictic acid (trace), hyposalazinic acid (trace), usnic acid.

[19190], New Zealand, South Island, Canterbury, Greyneys Flat, 6 km south of Arthurs Pass, growing over mosses on floor of *Nothofagus* forest, 690 m. Leg. J.A. Elix (19006) & J.Johnston, 4.03.1985. Chemistry: usnic acid, stictic acid (major), constictic acid, norstictic acid, cryptostictic acid (trace), methylstictic acid (trace), 7β-acetoxyhopane-22-ol, hopane-15α,22-diol, hopane-7β,22-diol (trace), unknown triterpenes (traces) by TLC, HPLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO.120.

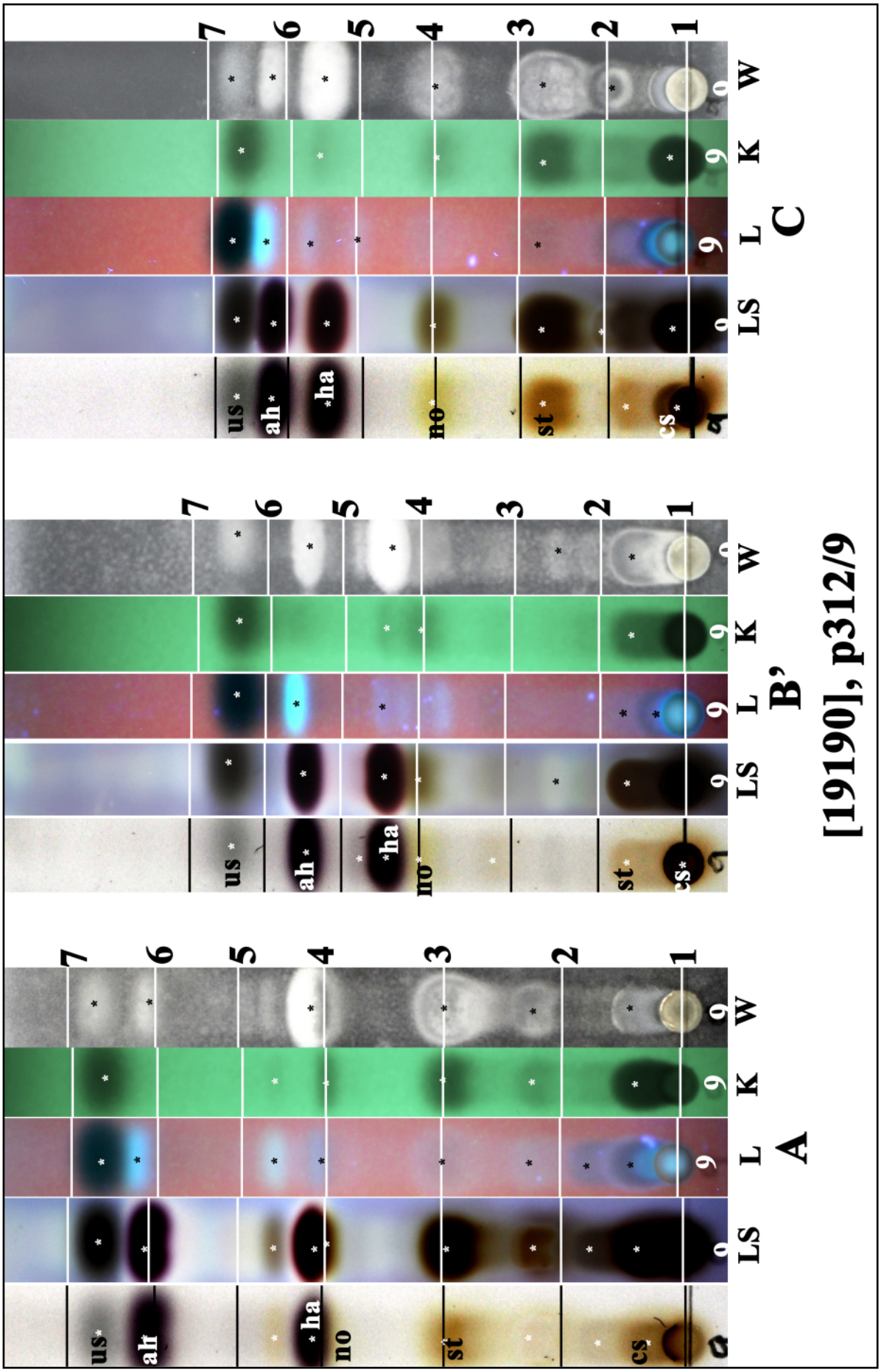




Pseudocyphellaria homoephylla



Pseudocyphellaria homoephylla



us: usnic acid, ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol, no: norstictic acid, st: stictic acid, cs: constictic acid

Pseudocyphellaria homoephylla

Pseudocyphellaria multifida (Nyl.) D.J.Galloway & P.James
[= ***Pseudocyphellaria subvariabilis*** (Nyl.) Vain.]

Lobes narrow, 0.5-3(-5) cm long, 1-5(-10) mm wide, complexly branched, ±discrete at margins, richly phyllidiate. Upper surface greenish grey to buff-brown when dry, lettuce-green to dark green when wet, minutely white papillate, occasionaly maculate, without pseudocyphellae or soredia. Phyllidia common, often obscuring thallus, marginal or regenerating from laminal cracks, simple or richly divided, squamiform to strap-like. Medulla white. Photobiont green. Lower surface whitish, darker centally. Pseudocyphellae scattered, white. Apothecia sessile, 0.5-4 mm diam. Ascospores pale yellow-brown, 1-3 septate, 23-34 x 9-11 µm. Chemistry: 7β-acetoxyhopane-22-ol, hopane-7β,22-diol (trace), hopane-15α,22-diol.

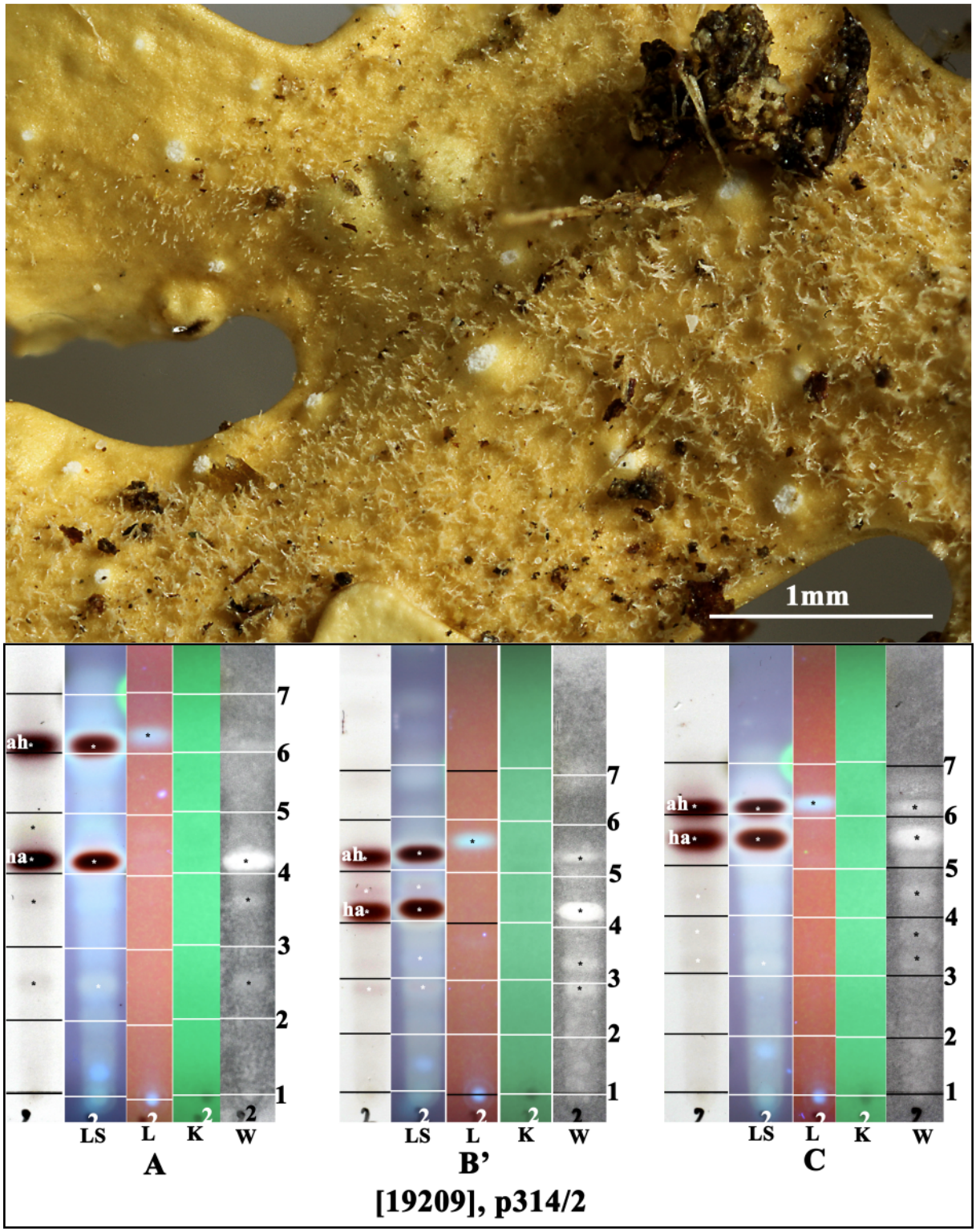
[19209], New Zealand, South Island, Canterbury, 1 km south-east of Mount Bossu, Banks Peninsula, 640 m, growing on saplings and dead wood in remnant cool temperate forest on moderate slope, dominated by *Podocarpus*. Leg. J.A. Elix (18974) & J. Johnston, 03.03.1985. Chemistry: 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (minor), hopane-7β,22-diol (trace), unknown triterpenes (traces) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 189.







Pseudocyphellaria multifida



ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol

Pseudocyphellaria multifida

Pseudocyphellaria neglecta (Müll.Arg.) H.Magn.

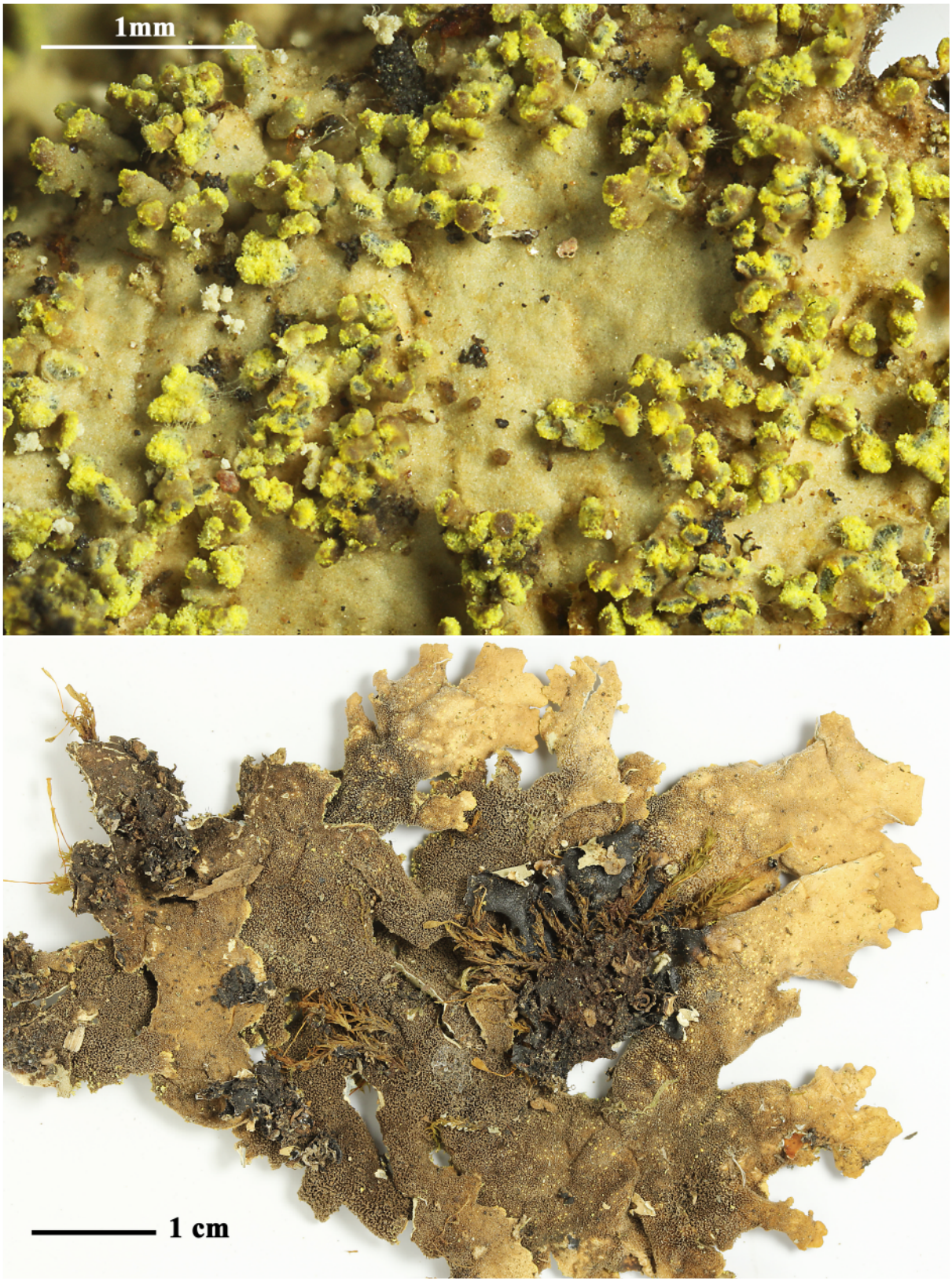
Lobes very variable, shortly linear-laciniate to broadly rounded, 1-5(-10) cm long, 2-25 mm wide, often densely phyllidiate, occasionally with minute pseudocyphellae. Upper surface olive brown, red-brown to glaucous brown when dry, blue grey when wet, wrinkled to faveolate, without isidia, maculae, pseudocyphellae and soredia, moderately to densely phyllidiate. Phyllidia mainly marginal, simple to coralloid, to 1.5 mm tall, often eroding apically and exposing medulla. Medulla yellow-white. Photobiont Nostoc. Lower surface pale buff to black, tomentose centrally. Pseudocyphellae scattered, sparse to frequent, yellow. Apothecia marginal and laminal. 0.5-3.5 mm diam. Ascospores 1-3-septate, 20-25 x 7-9 µm, yellow-brown to dark red-brown. Chemistry: retigeranic acid, pulvinic dilactone, calycin, tenuiorin, pulvinic acid, 2-*O*-acetyltenuiorin, methyl gyrophorate, hopane-6α,7β,22-triol (major), 6α-acetoxyhopane-7β,22-diol (minor), 7β-acetoxyhopane-6α,22-diol (trace), hopane-7β,22-diol (minor), 7β-acetoxyhopane-22-ol (trace), 15α-acetoxyhopane-22-ol (trace), norstictic acid (trace), stictic acid, salazinic acid (trace), constictic acid.

[19214], 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 base of *Eucalyptus viminalis* and *Bedfordia salicina* in wet sclerophyll forest. Leg. J.A. Elix (19027) & D. Verdon 22.03.1985. Chemistry: pulvinic dilactone, (trace), pulvinic acid (trace), calycin (major pigment), tenuiorin, methyl gyrophorate, stictic acid, constictic acid, norstictic acid (trace), cryptostictic acid (trace), salazinic acid (trace), 6α-acetoxyhopane-7β,22-diol (minor), 7β-acetoxyhopane-6,22-diol (trace), hopane-6α,7β,22-triol (major triterpene), hopane-7β,22-diol (minor), hopane-15α,22-diol (trace), 7β-acetoxyhopane-22-ol (trace), 15α-acetoxyhopane-22-ol (trace), retigeranic acid (minor), unknown terpenes (traces) by TLC, anal. J. Johnston & A.L. Wilkins. Lichenes Australasici Exsiccati No. 145.

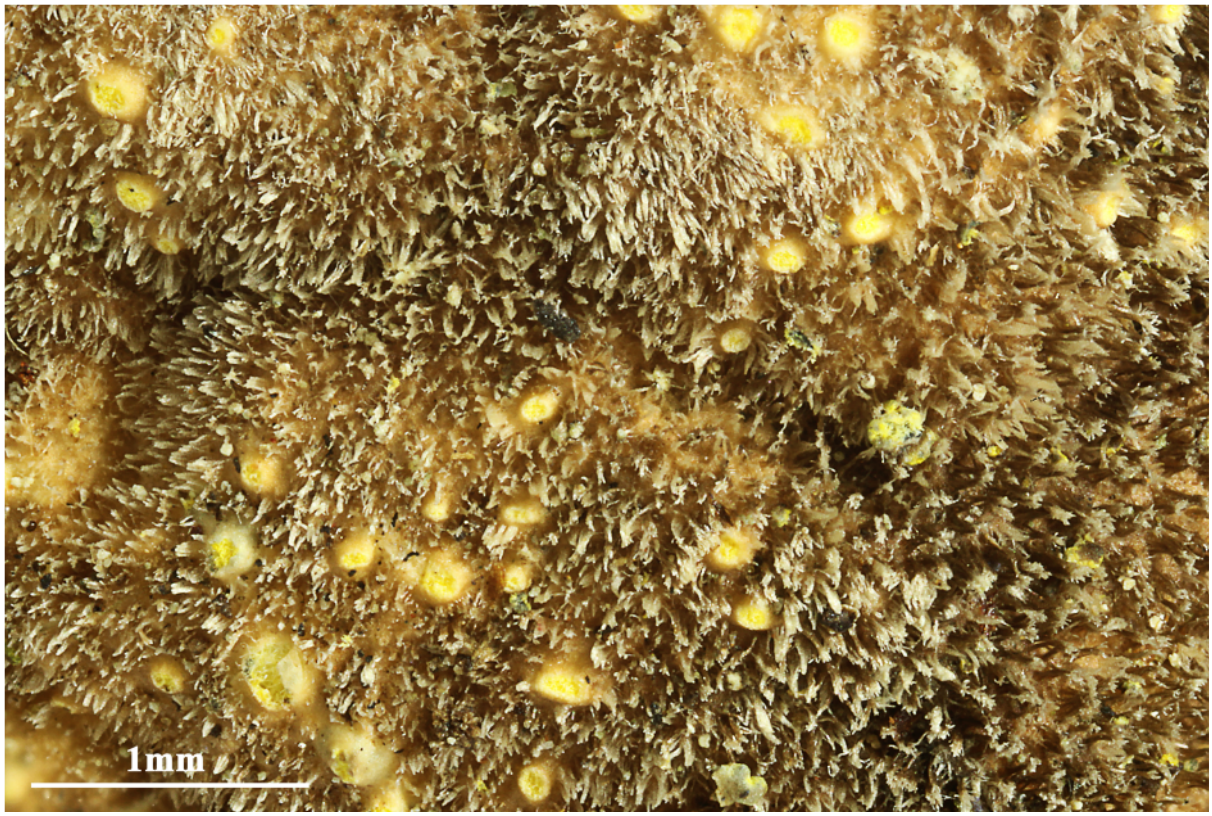




Pseudocyphellaria neglecta



Pseudocyphellaria neglecta

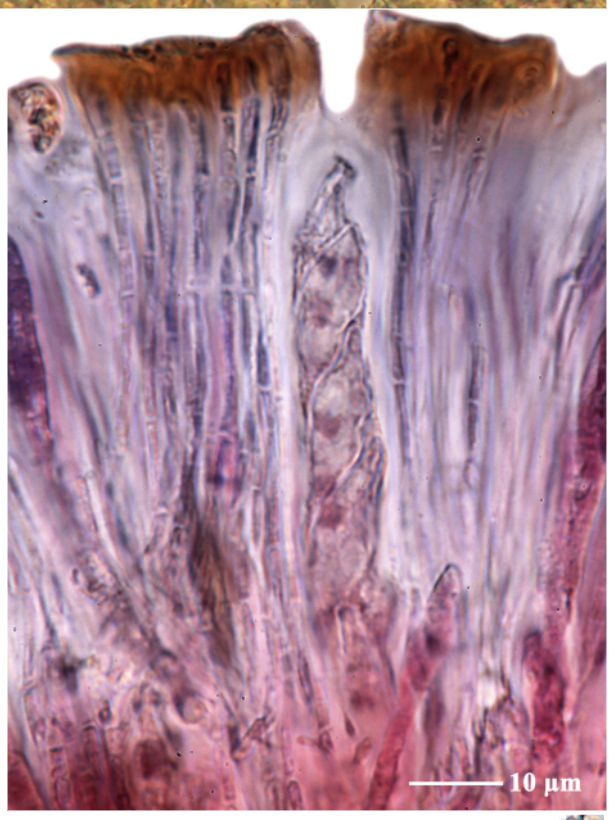


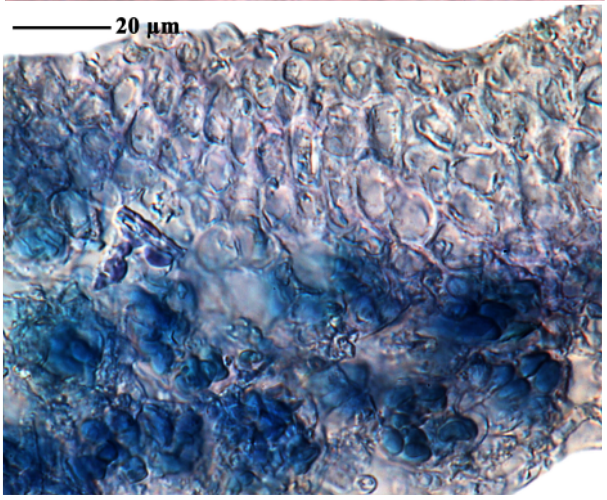


Pseudocyphellaria neglecta

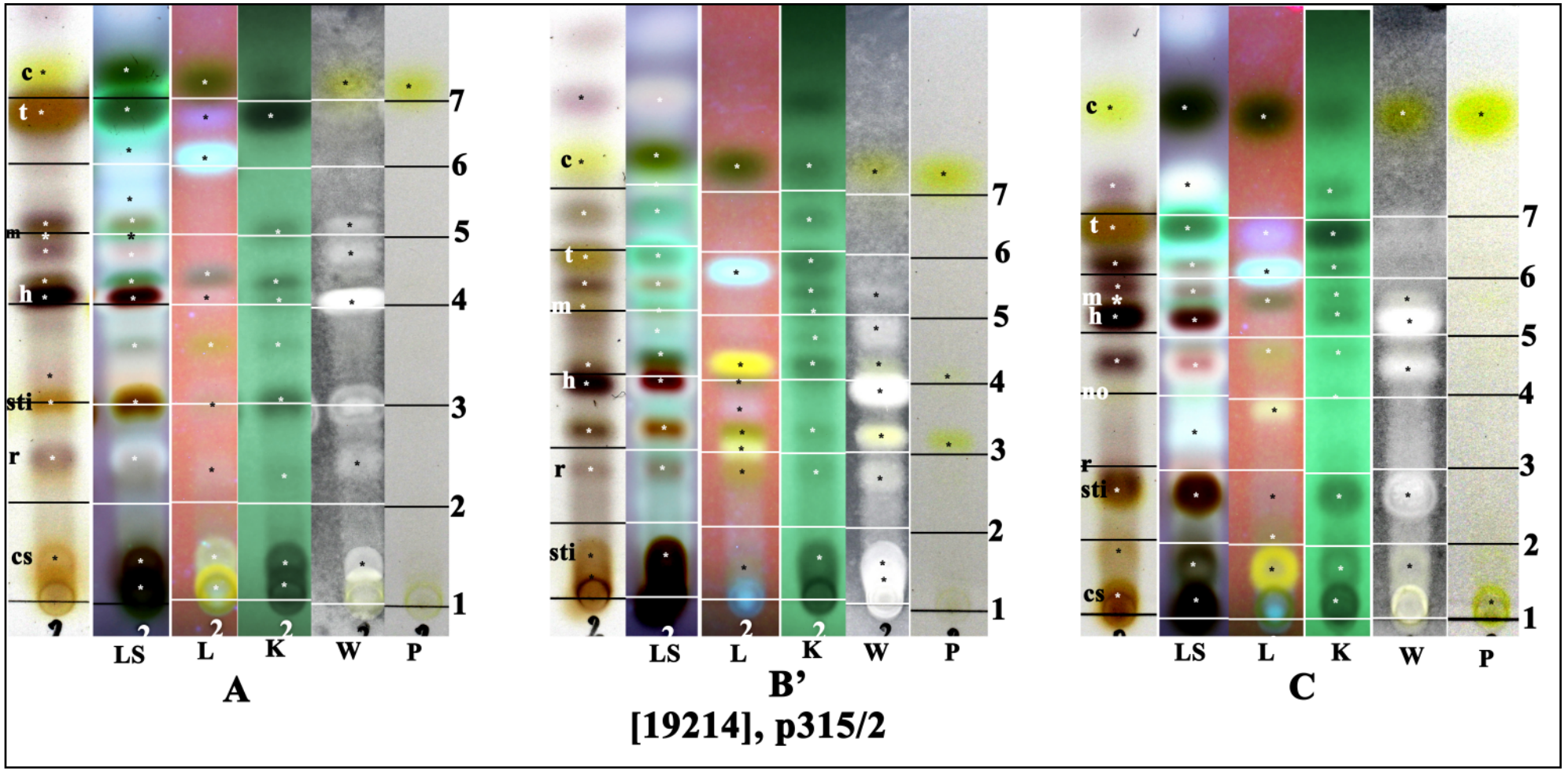








Pseudocyphellaria neglecta



c: calycin, t: tenuiorin, h: hopane-6α,7β,22-triol, sti: stictic acid, r: retigeranic acid,
cs: constictic acid, no: norstictic acid, m: methyl gyrophorate

Pseudocyphellaria pubescens (Müll.Arg.) D.J.Galloway & P.James

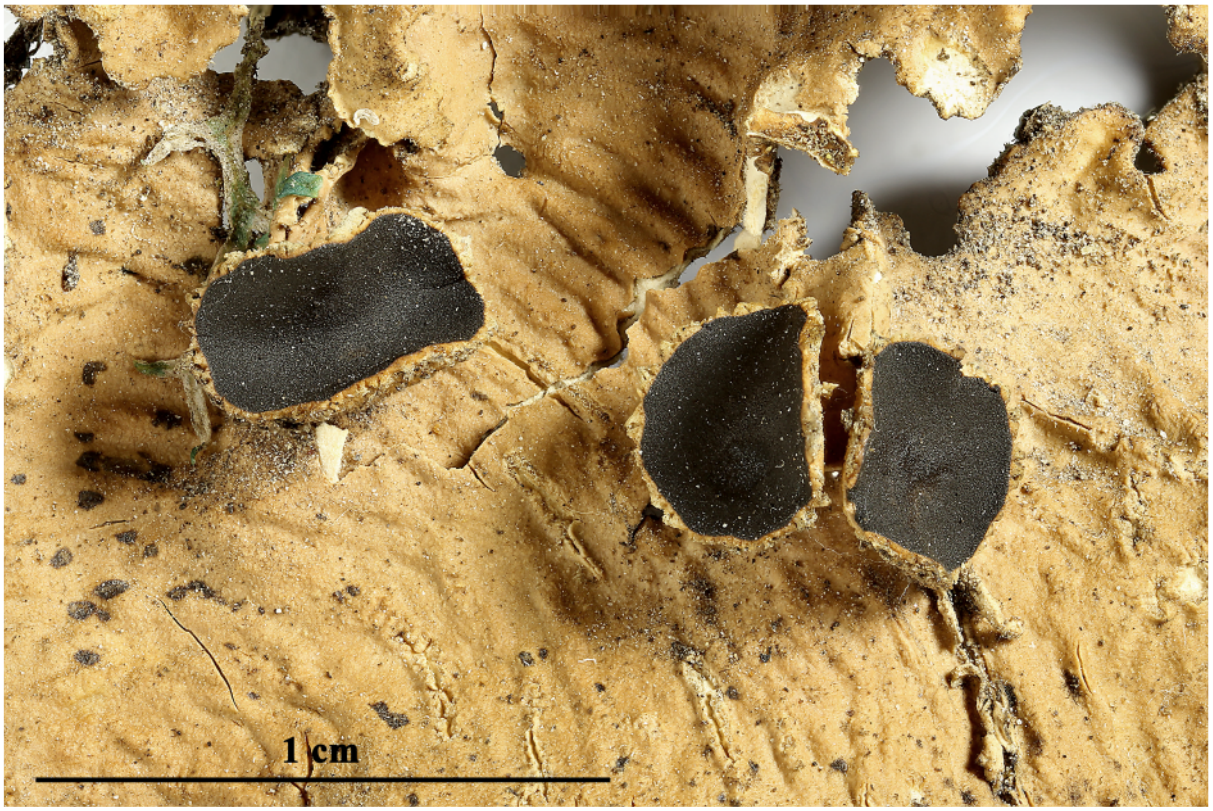
Lobes linear-elongate to rounded, 1-4 cm long, 0.5-1.5 cm wide, thick, coriaceous, margins entire to crenate and often tomentose. Upper surface scabrid areolate, wrinkled, pitted to irregularly faveolate, glabrous to tomentose. Medulla white. Photobiont green. Lower surface densely tomentose. Pseudocyphellae conspicuous, yellow, 0.05-0.2 mm diam.. Apothecia marginal to submarginal. Ascospores grey-brown, thickened 1-3-septate, septum to 2.5 µm thick, straight or curved, 23-27 x 7-9 µm. Chemistry: methyl evernate (trace), tenuiorin, methyl lecanorate (trace), methyl gyrophorate, gyrophoric acid (trace), hopane-15α,22-diol, hopane-6α,7β,22-triol, norstictic acid (trace), salazinic acid (trace), stictic acid, cryptostictic, constictic acid, pulvinic acid (trace), pulvinic dilactone (trace), calycin (trace)

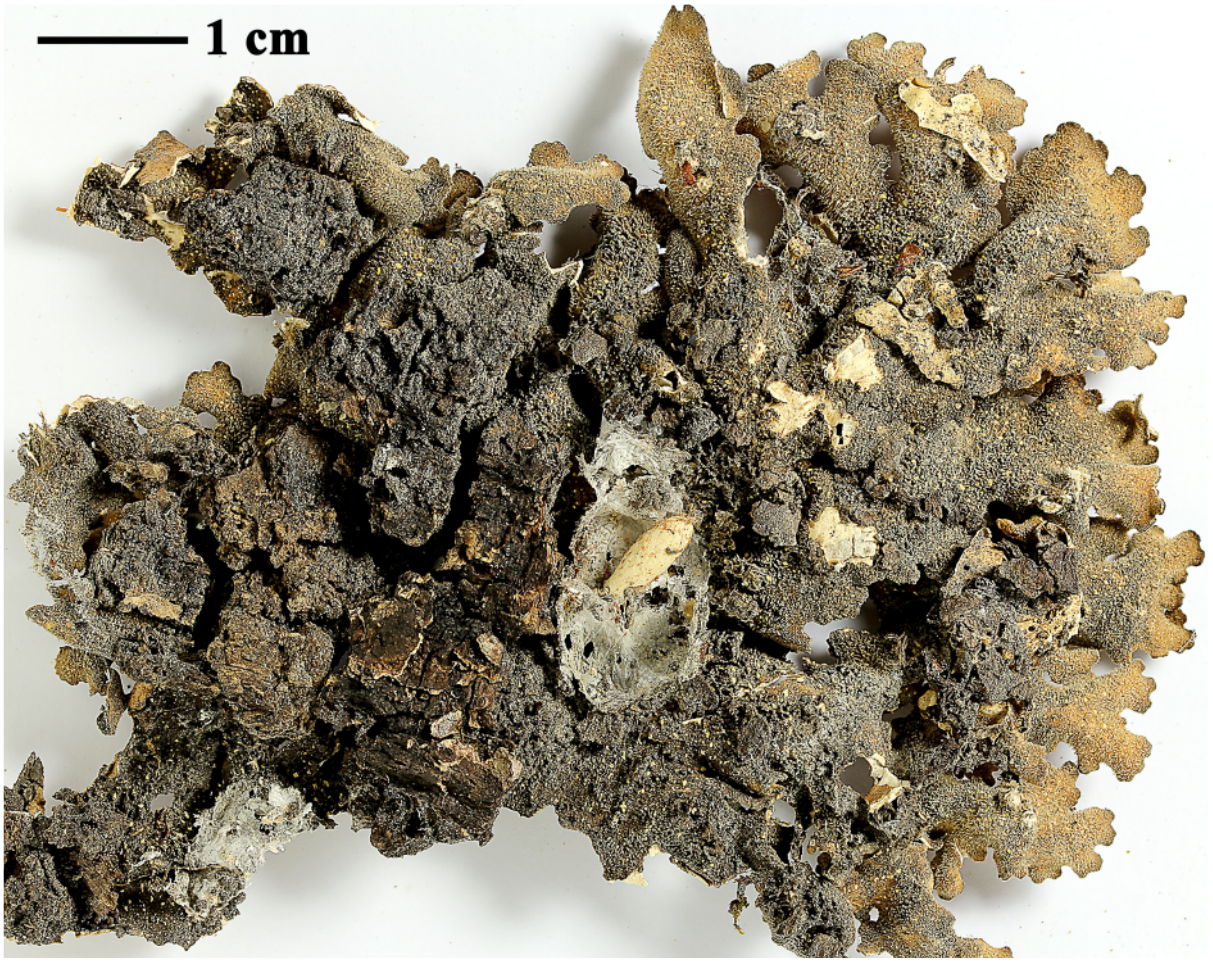
[19211], New Zealand, South Island, Canterbury, eastern entrance to Arthurs Pass National Park, growing on trunk of *Nothofagus fusca* in open *Nothofagus* woodland, 670 m. Leg. J.A. Elix (19024) & J.Johnston, 4.03.1985. Chemistry: tenuiorin (major), stictic acid (major), cryptostictic acid (trace), constictic acid (minor), menegazzaic acid (trace), norstictic acid (trace), methyl gyrophorate (trace), pulvinic dilactone (trace), calycin (trace), hopane-6α,7β,22-triol (major), hopane-15α,22-diol (major), 7β-acetoxyhopane-22-ol (minor), 15α-acetoxyhopane-22-ol (trace), unknown (traces) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 190.



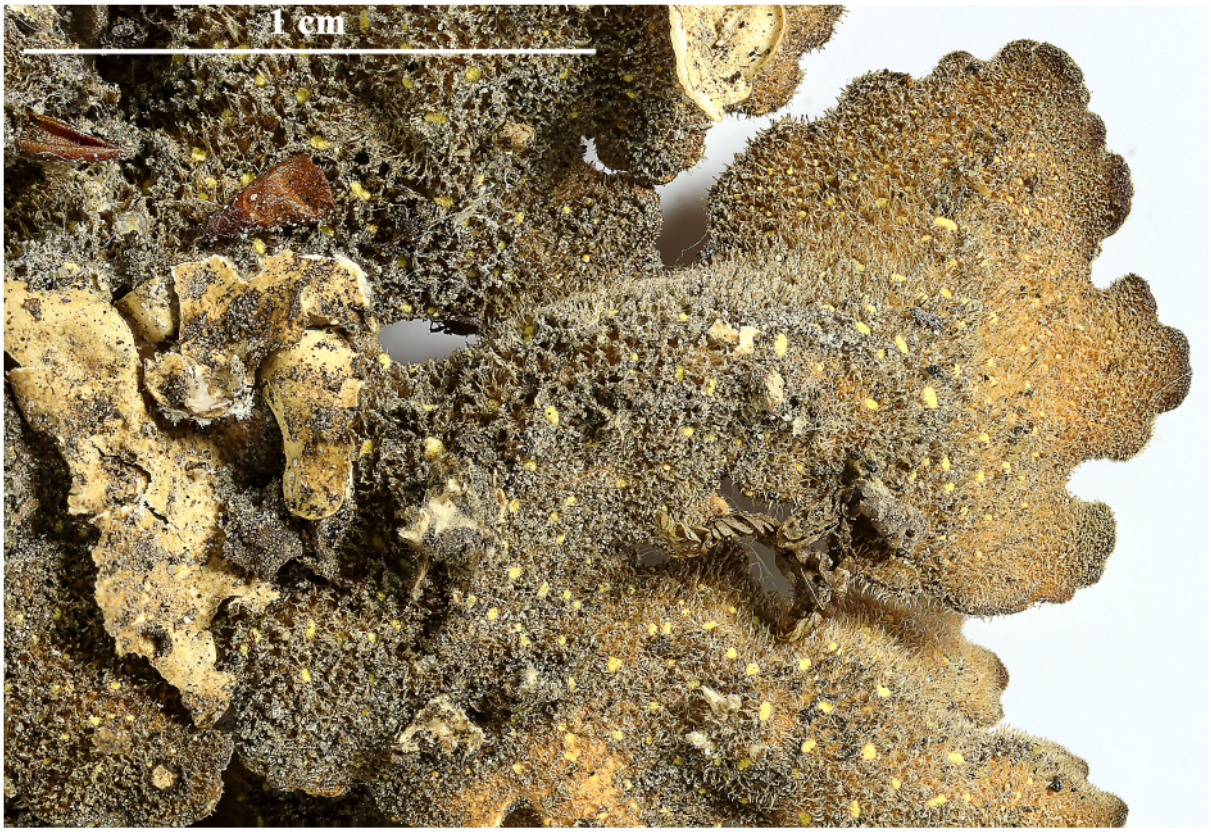


Pseudocyphellaria pubescens



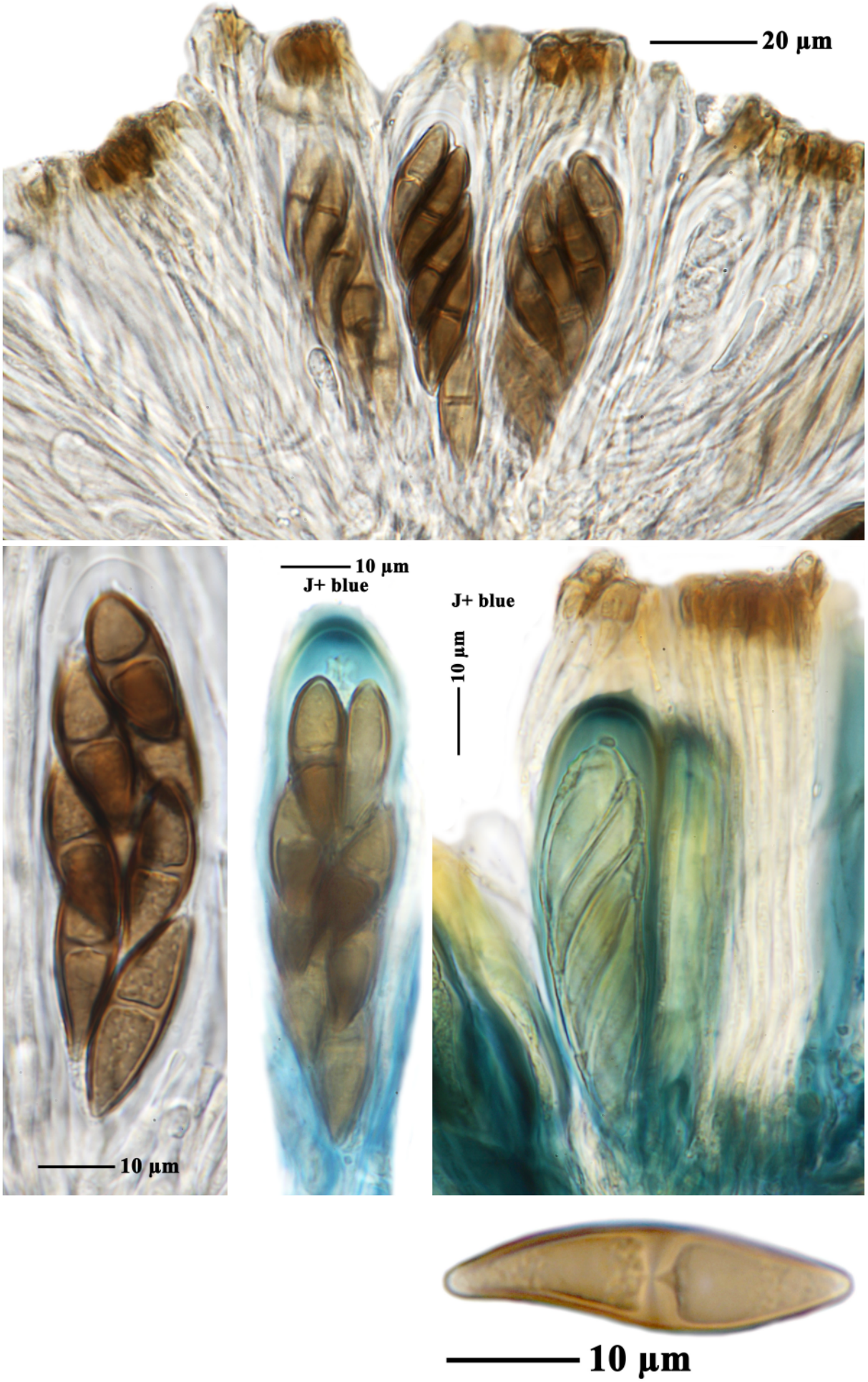


Pseudocyphellaria pubescens

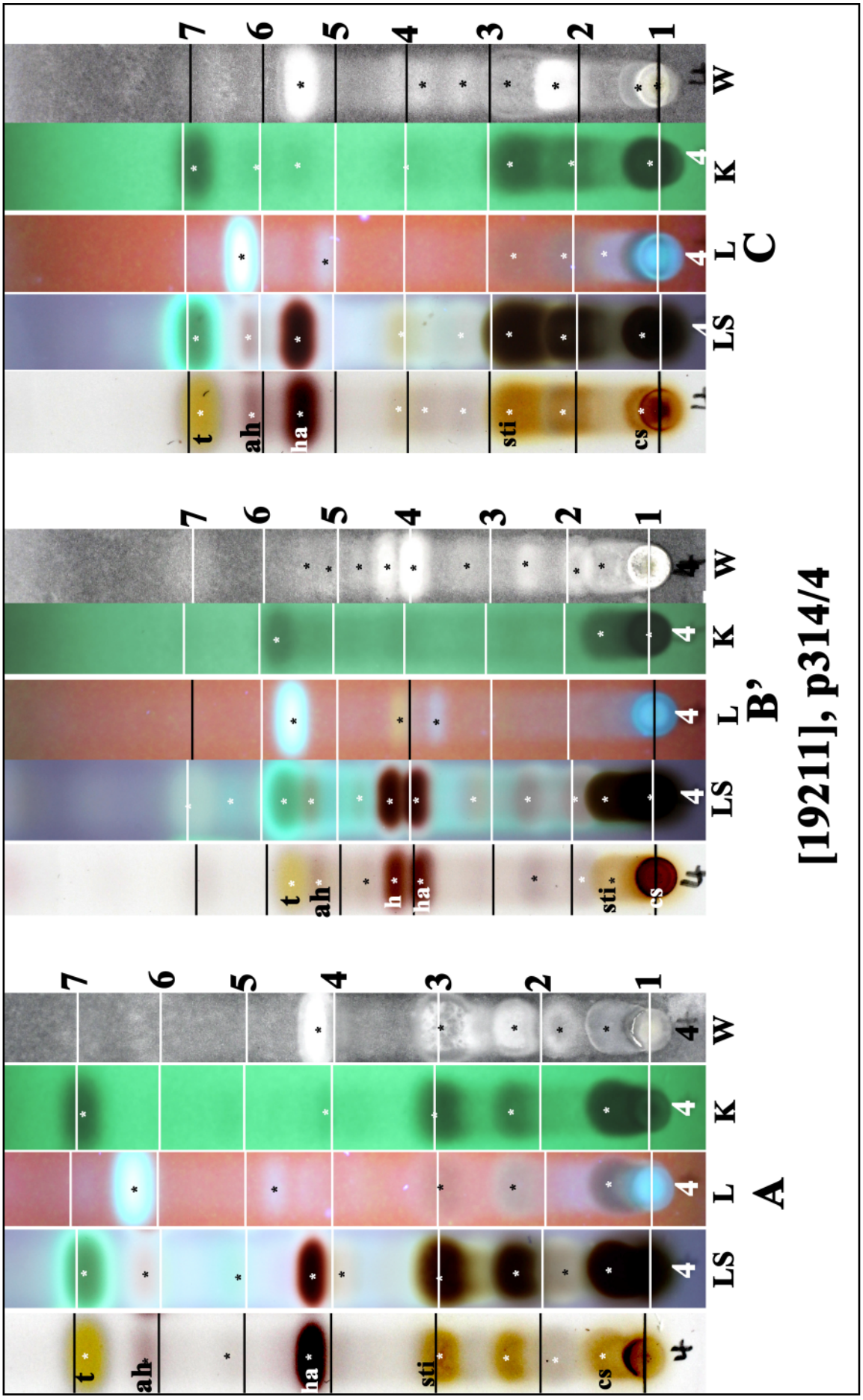




Pseudocyphellaria pubescens



Pseudocyphellaria pubescens



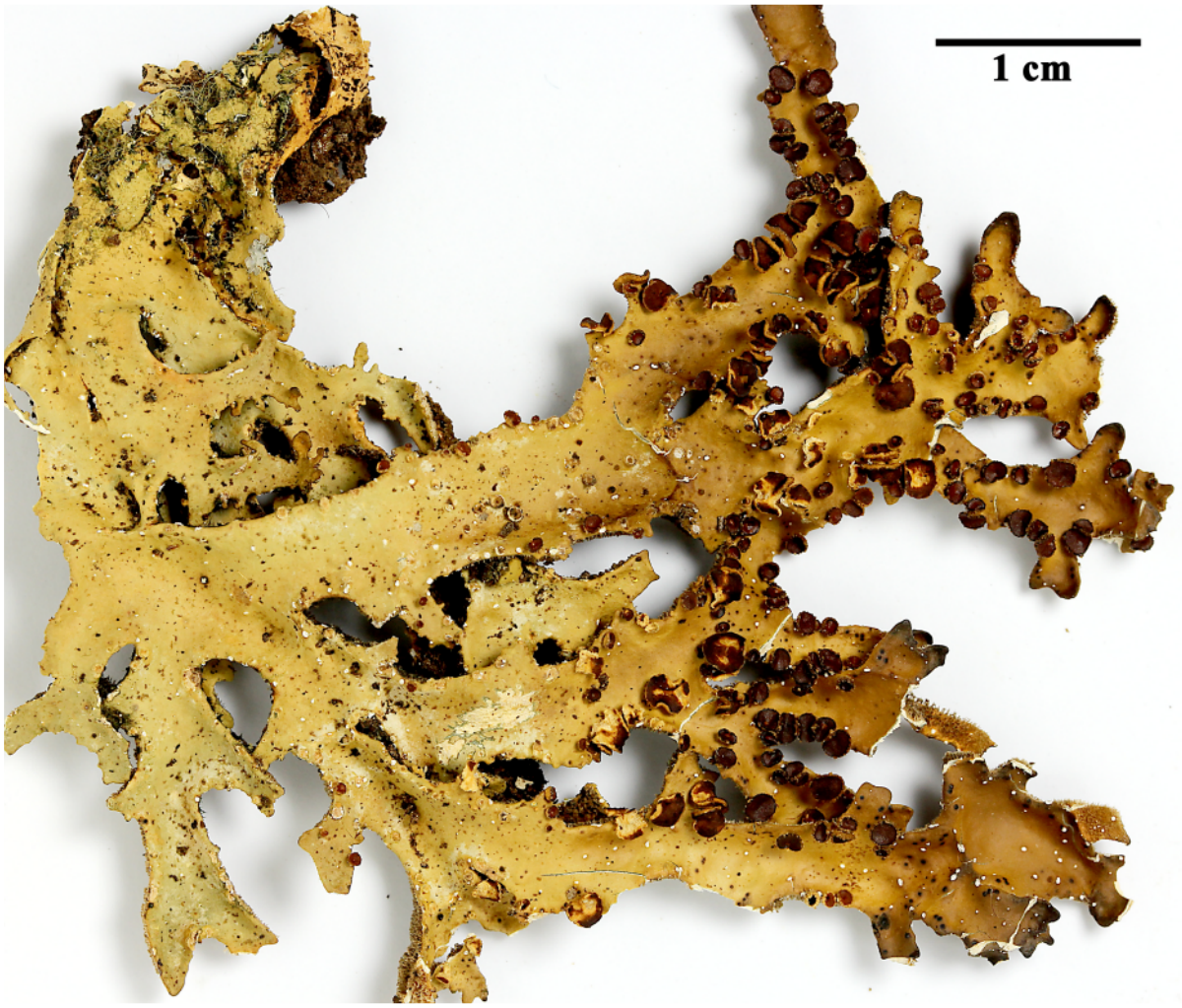
t: tenuiorin, ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol, h: hopane-6α,7β,22-triol, sti: stictic acid,, cs: constictic acid.

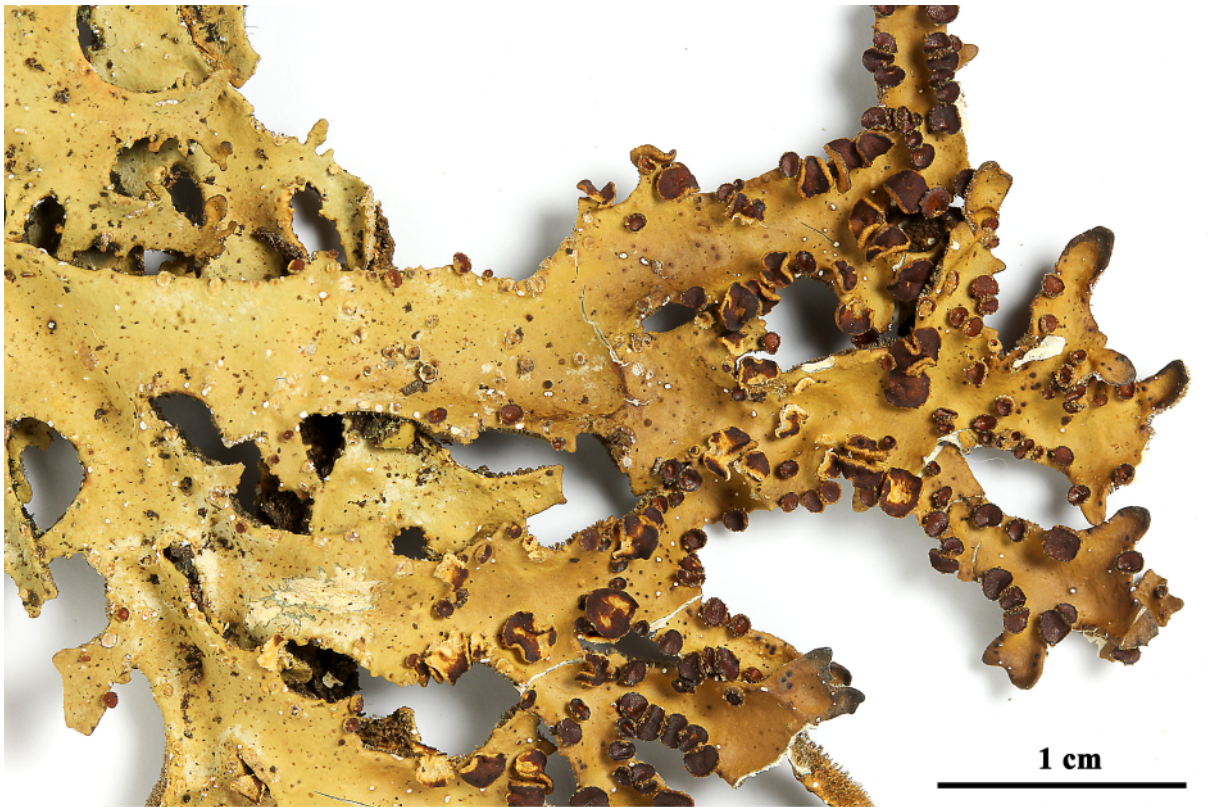
Pseudocyphellaria pubescens

Pseudocyphellaria punctillaris (Müll.Arg.) D.J.Galloway

Lobes 1-2(-3) cm long, 5-8(-12) mm wide, margins entire, becoming markedly lobulate-phyllidiate centrally. Upper surface pale yellowish fawn to pale red-brown when dry, dark malachite-green to glaucous blue when wet, without isidia, maculae or soredia. Phyllidia marginal, rarely regenerating from surface cracks, 0.2-1.5 mm diam., simple to subcoralloid, lobulate. Pseudocyphellae white, 0.1-0.5 mm diam.. Photobiont *Nostoc*. Apothecia submarginal and laminal, 1-3 mm diam.. Ascospores pale red-brown, 1-septate, 25-28 x 8.5-11 µm. Chemistry: tenuiorin, methyl gyrophorate, gyrophoric acid, 7β-acetoxyhopane-22-ol, 7β,15α-diacetoxyhopane-22-ol, (trace), hopane-15α,22-diol.

[19212], Australia, Queensland, Hugh Nelson Range, along Plath Road, 15 km south of Atherton, 17°25' S, 145°26' E, 1080 m, growing on base of *Eucalyptus grandis* in *E. grandis* woodland along the rainforest margins. Leg. J.A. Elix (16430) & H. Streimann, 25.06.1984, det. D.J. Galloway. Chemistry: 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (major), unknowns (traces) by TLC, anal. J.A. Elix & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 272.





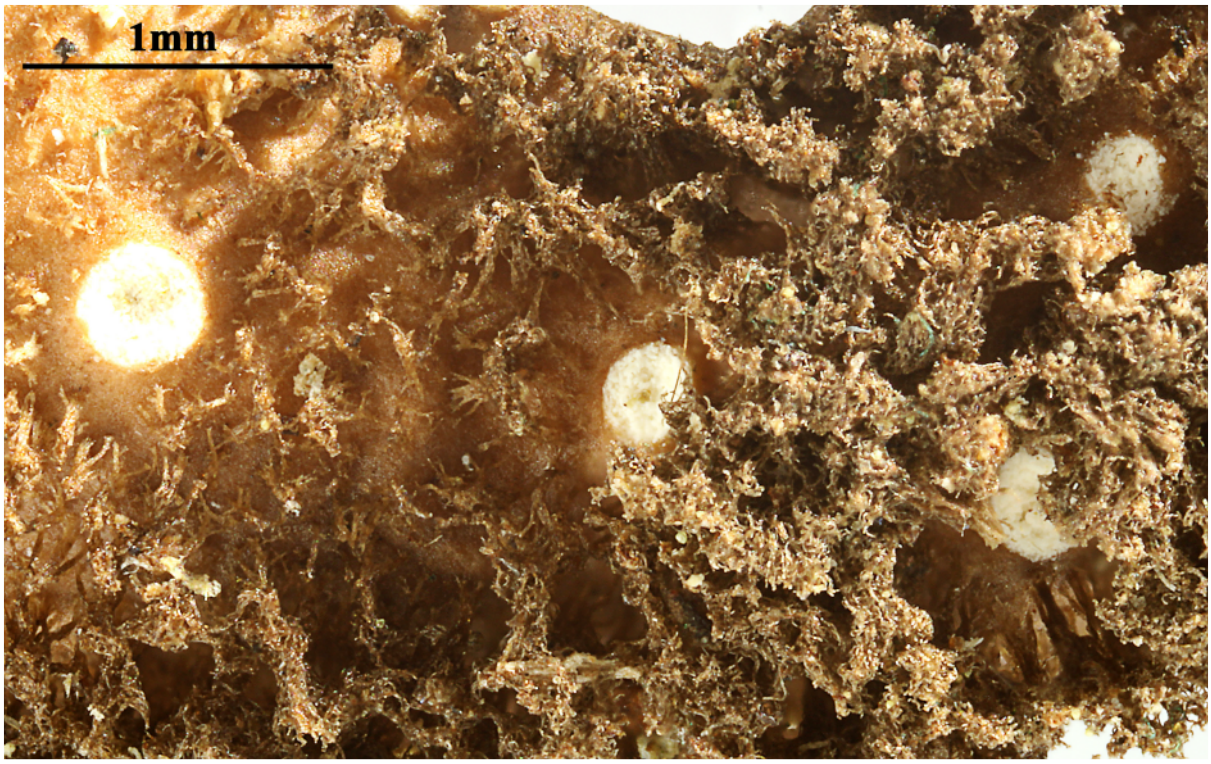


Pseudocyphellaria punctillaris





Pseudocyphellaria punctillaris

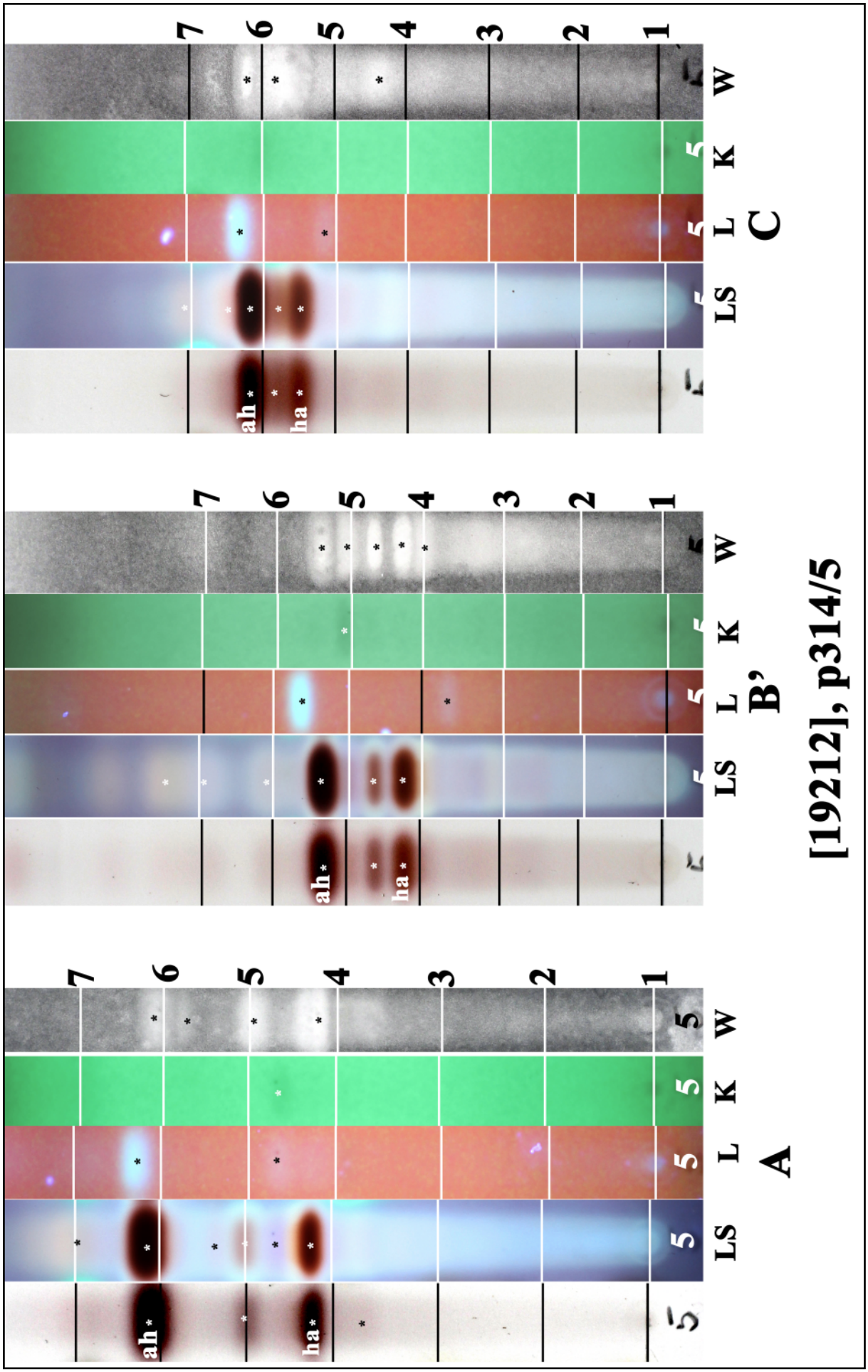








Pseudocyphellaria punctillaris



ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol

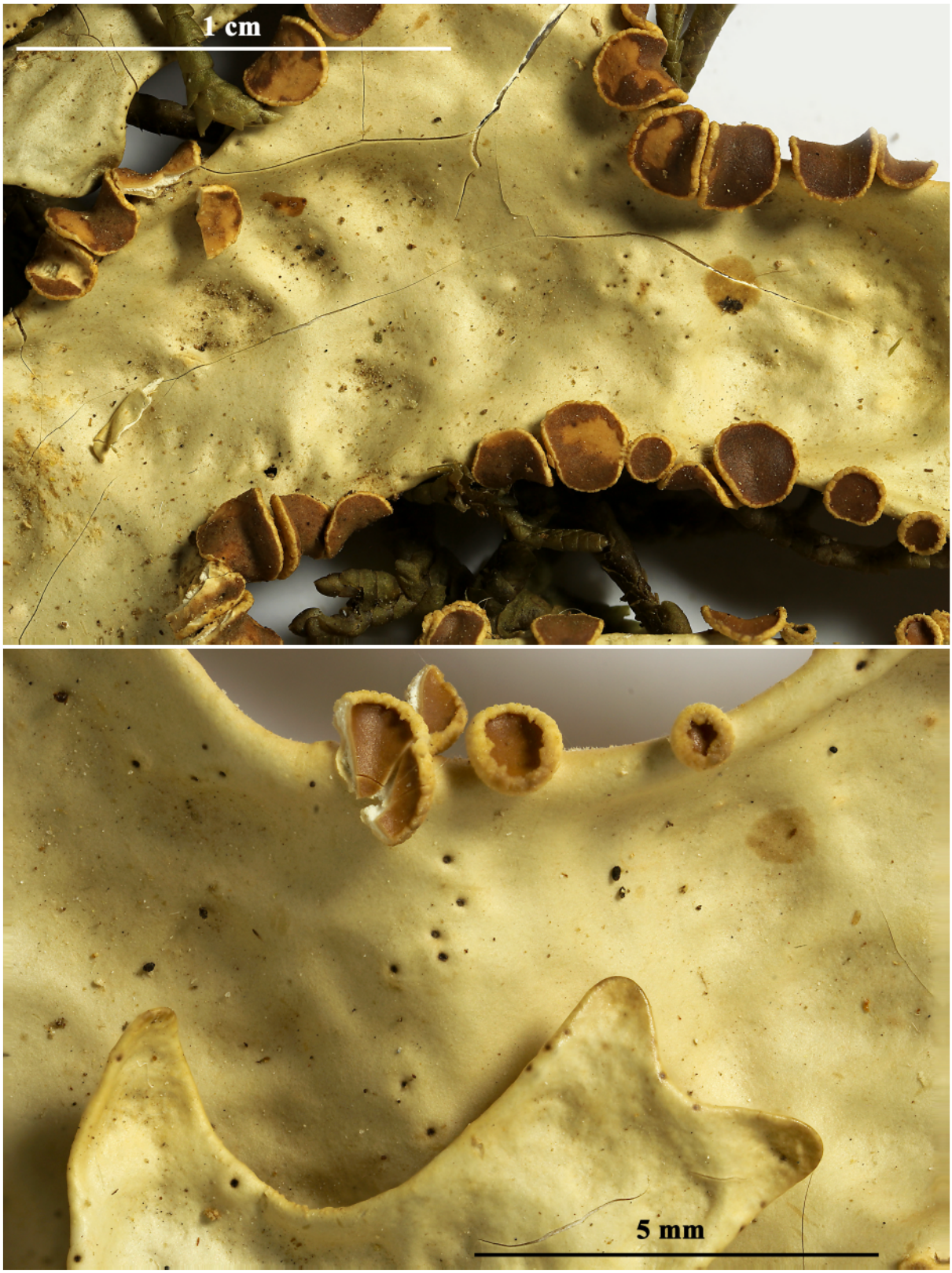
Pseudocyphellaria punctillaris

Pseudocyphellaria rufovirescens (Bab.) D.J.Galloway

Thallus irregularly spreading, 7-15(-80) cm diam, loosely attached, apices free, corticolous. Lobes linear-elongate, 5-8(-25) mm wide, 5-10(-15) cm long, ±dichotomously branching. Upper surface grey-green, pale olivaceous to red-brown when dry, bright lettuce-green when wet, without isidia, soredia, maculae, phyllidia or pseudocyphellae. Cephalodia immersed, to 2 mm diam., visible as hemispherical swellings on both upper and lower surfaces. Medulla white. Photobiont green. Lower surface pale at margins, darker centrally. Pseudocyphellae white, 0.1-1 mm diam., flat to excavate with slightly raised margins. Apothecia marginal, sessile, 1-3(-5) mm wide. Ascospores fusiform to oval-ellipsoid, 3-septate at maturity, (23-)27-36 x 7-9 µm. pale yellow-brown. Chemistry: 7β-acetoxyhopan-22-ol, 7β,15α-diacetoxyhopane-22-ol (trace), hopane-15α,22-diol.

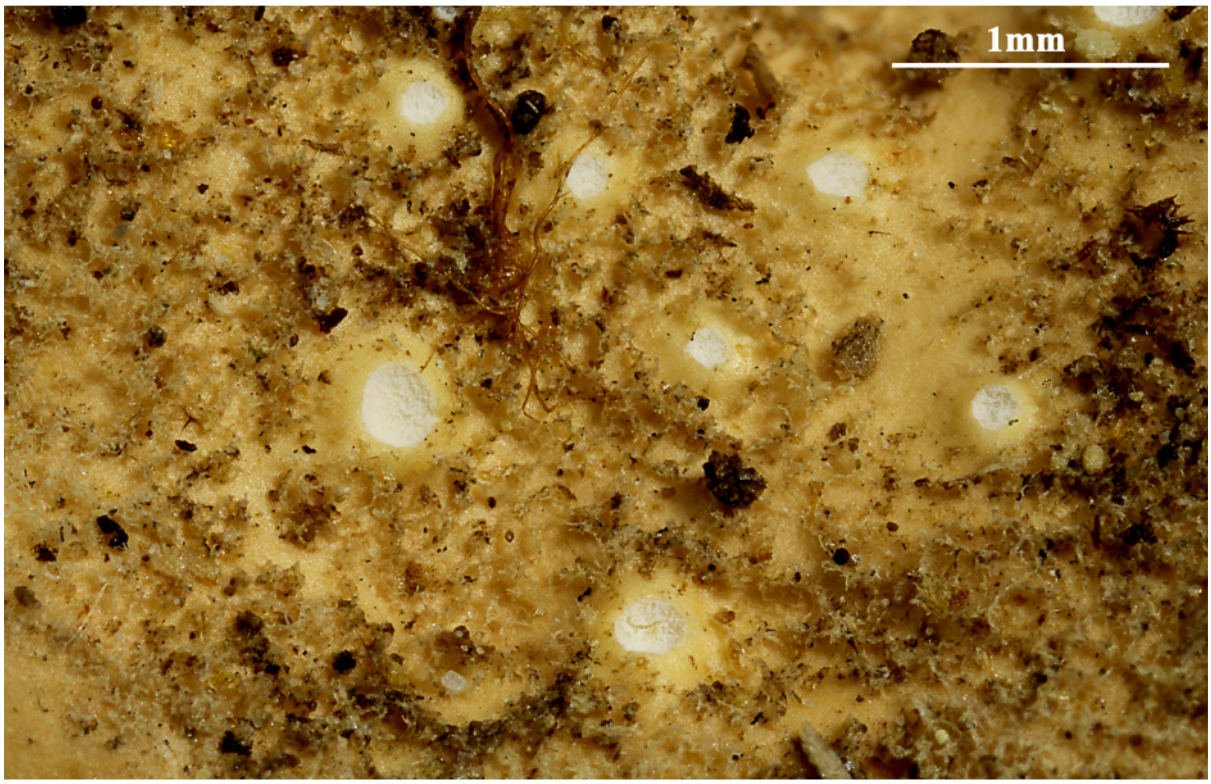
[19198], New Zealand, South Island, Canterbury, Otepatotu Scenic Reserve, summit road, Banks Peninsula, growing on base of *Podocarpus totare* in remnant cool temperate forest on moderate slope, dominated by *Podocarpus*, 720 m. Leg. J.A. Elix (18991) & J. Johnston, 3.03.1985. Chemistry: 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (minor), 7β,15α-diacetoxyhopane-22-ol (trace), unknown triterpenes (traces) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 191.



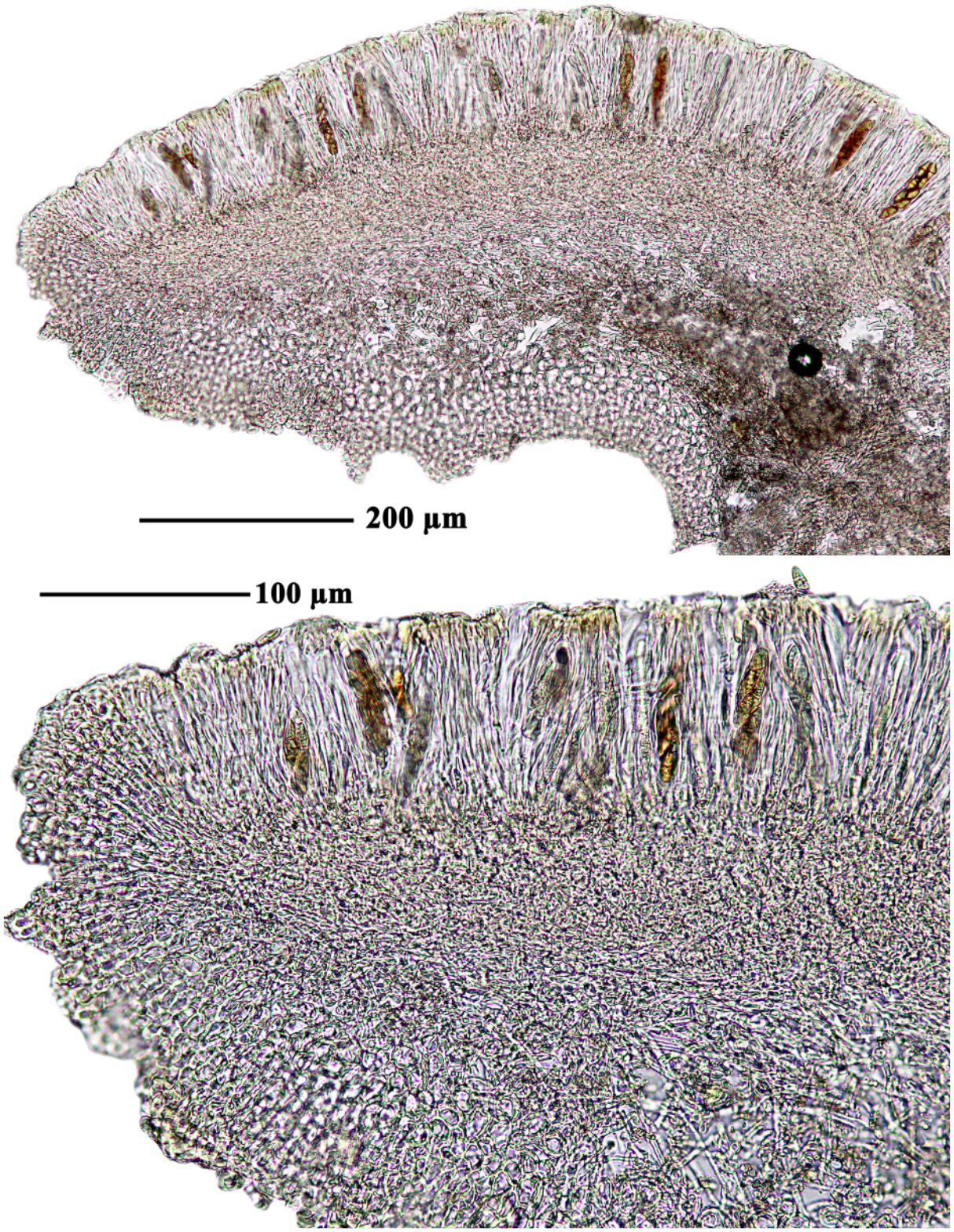


Pseudocyphellaria rufovirescens

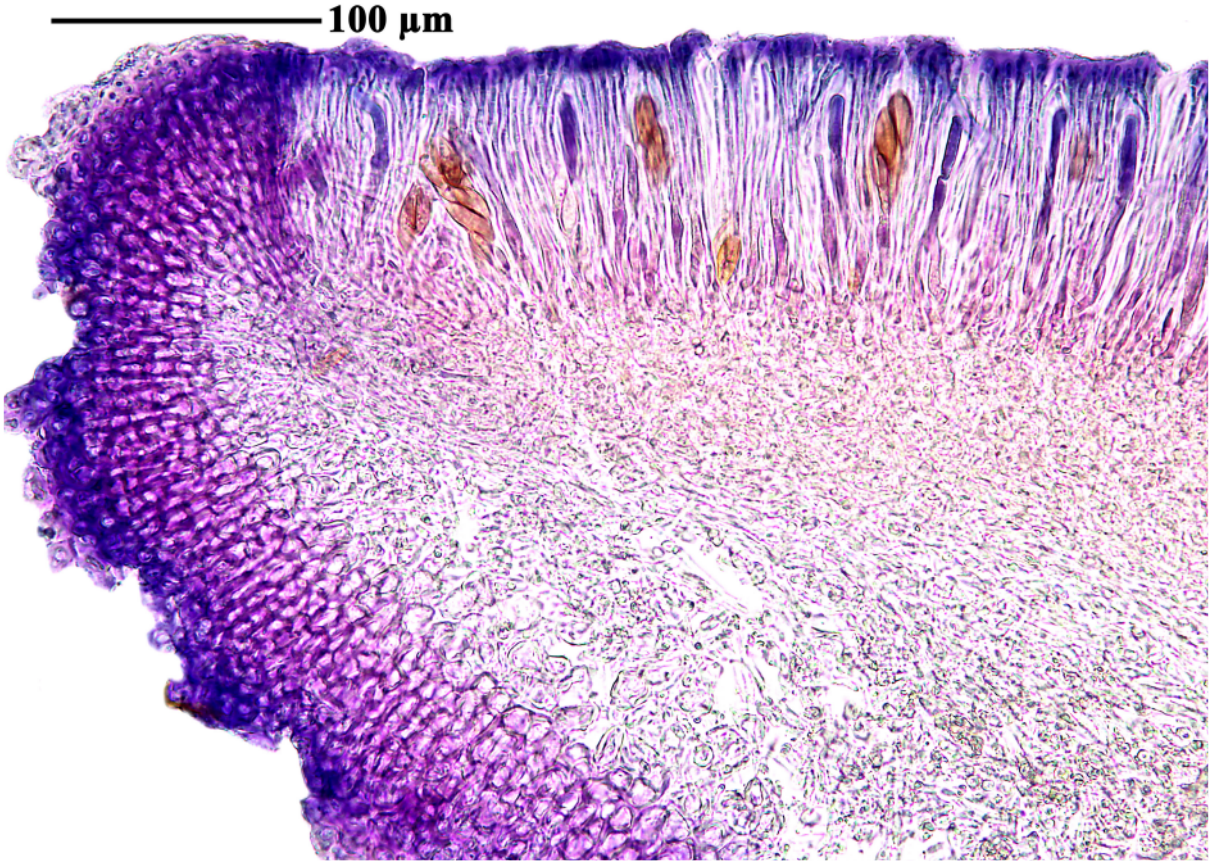


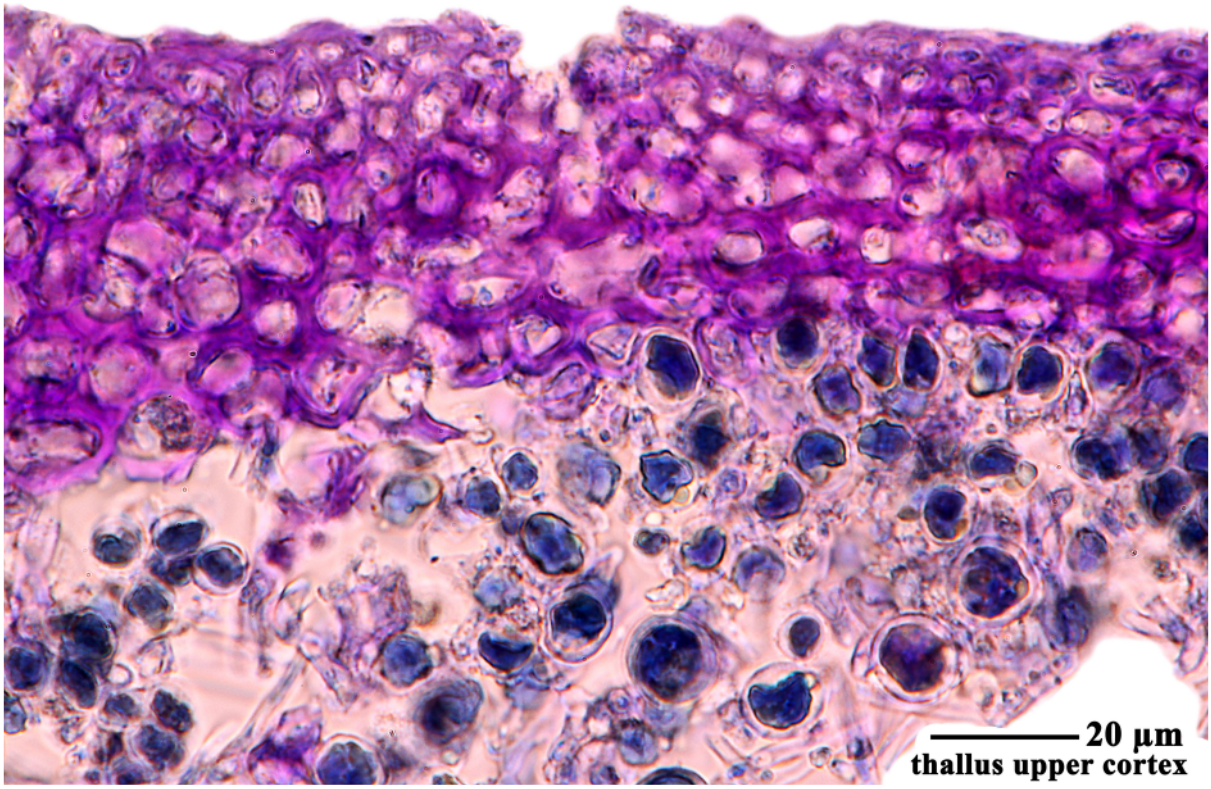


Pseudocyphellaria rufovirescens



Pseudocyphellaria rufovirescens

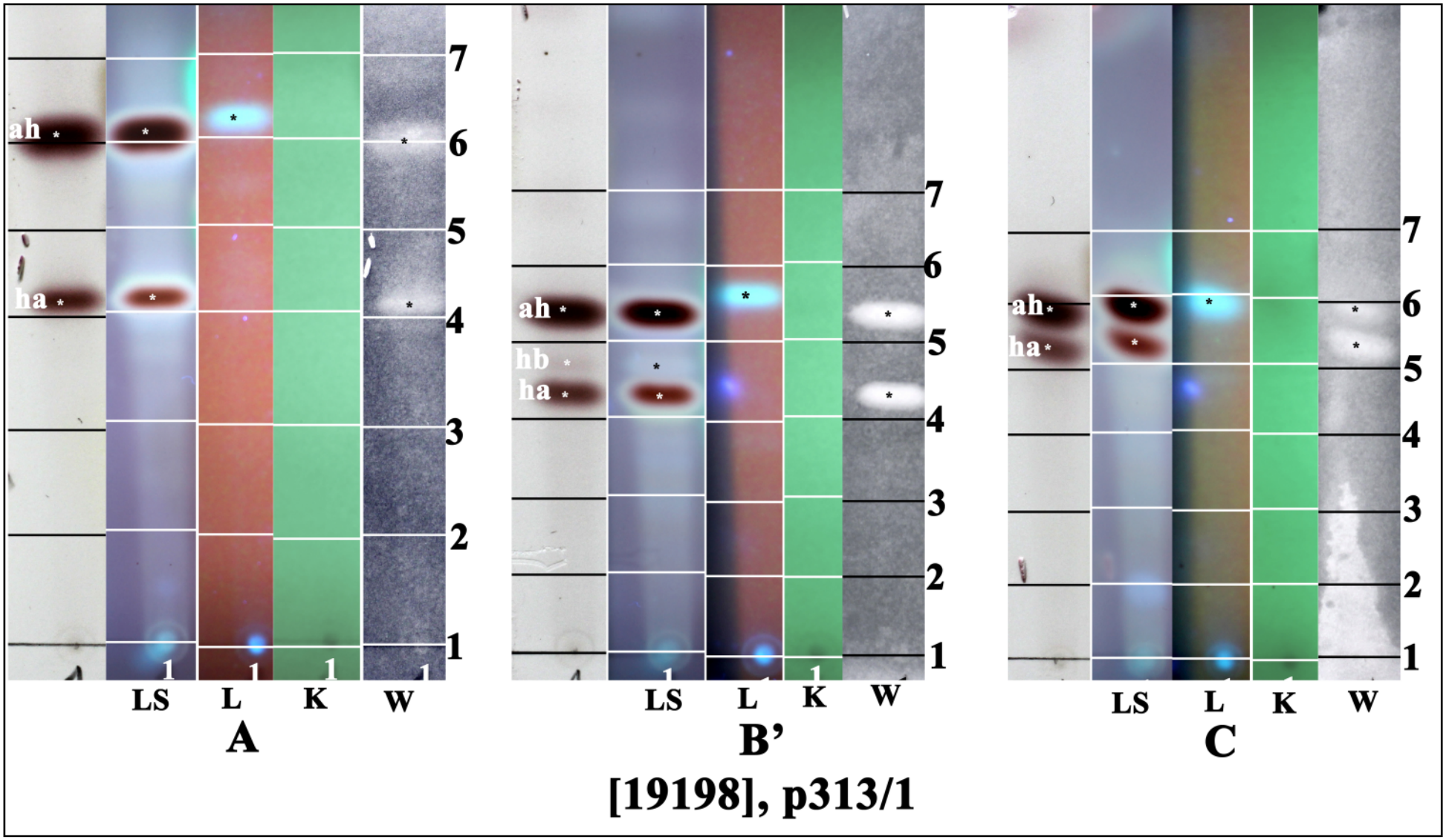




Pseudocyphellaria rufovirescens



Pseudocyphellaria rufovirescens



ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol, hb: 7β,15α-diacetoxyhopane-22-ol

Pseudocyphellaria sulphurea (Schaer.) D.J.Galloway

Lobes very variable, linear elongate, (1-)2-8(-12) cm long, (1-)3-8(-12) mm wide, contiguous or discrete. Margins with ocasionally white pseudocyphellae. Upper surface pale grey-green, olivaceous to red-brown when dry, lettuce green when wet, punctate impressed: without isidia, maculae, phyllidia, pseudocyphellae and soredia. Medulla white. Photobiont green. Lower surface pale whitish to pale yellowish, wrinkled-ridged. Pseudocyphellae scattered, white, to 0.5 mm diam. Apothecia marginal, sessile, 0.5-2.5 mm diam. Ascospores yellow-brown to red-brown, 1-septate (22-)25-28(-30.5) x 6.5-8(-11) µm. Chemistry: 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (major), 4-*O*-methylgyrophoric acid (major), gyrophoric acid (trace), methyl gyrophorate (trace), tenuiorin (trace), hopane-7β,22-diol (trace).

[19213], Australia, Queensland, Kirrima State Forest, Cardwell Range, 24 km west-north-west of Cardwell, 18°12' S, 145°48' E, 750 m, growing on rocks in rainforest along logging trail. Leg. J.A. Elix (17622) & H. Streimann 08.07.1984, det. D.J. Galloway. Chemistry: 4-*O*-methylgyrophoric acid (major), gyrophoric acid (trace), methyl gyrophorate (trace), tenuiorin (trace), 7β-acetoxyhopane-22-ol (major), hopane-15α,22-diol (major) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 273.



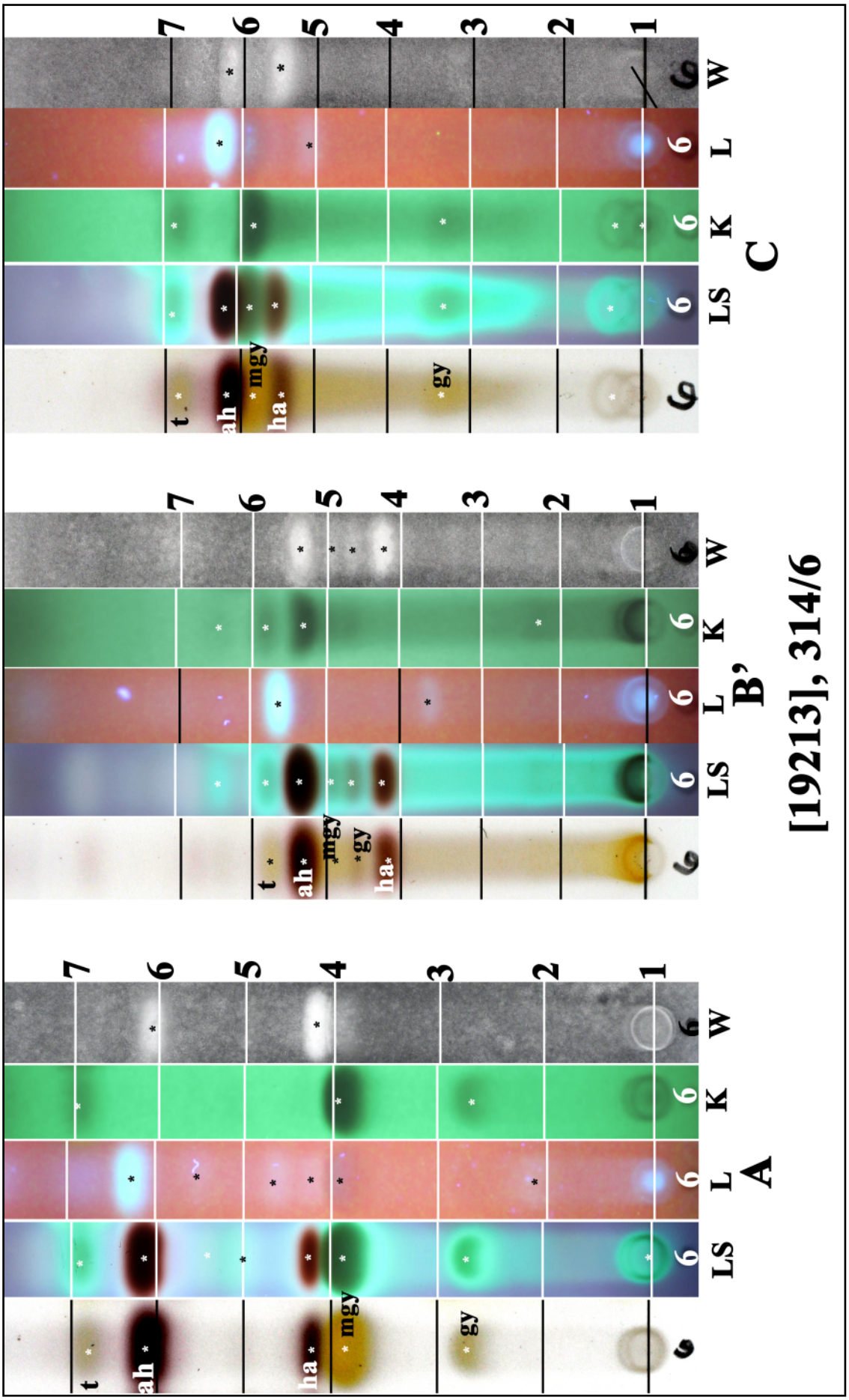


Pseudocyphellaria sulphurea





Pseudocyphellaria sulphurea



t: tenuiorin, ah: 7β-acetoxyhopane-22-ol, ha: hopane-15α,22-diol, mgy: 4-*O*-methylgyrophoric acid (major), gy: gyrophoric acid.

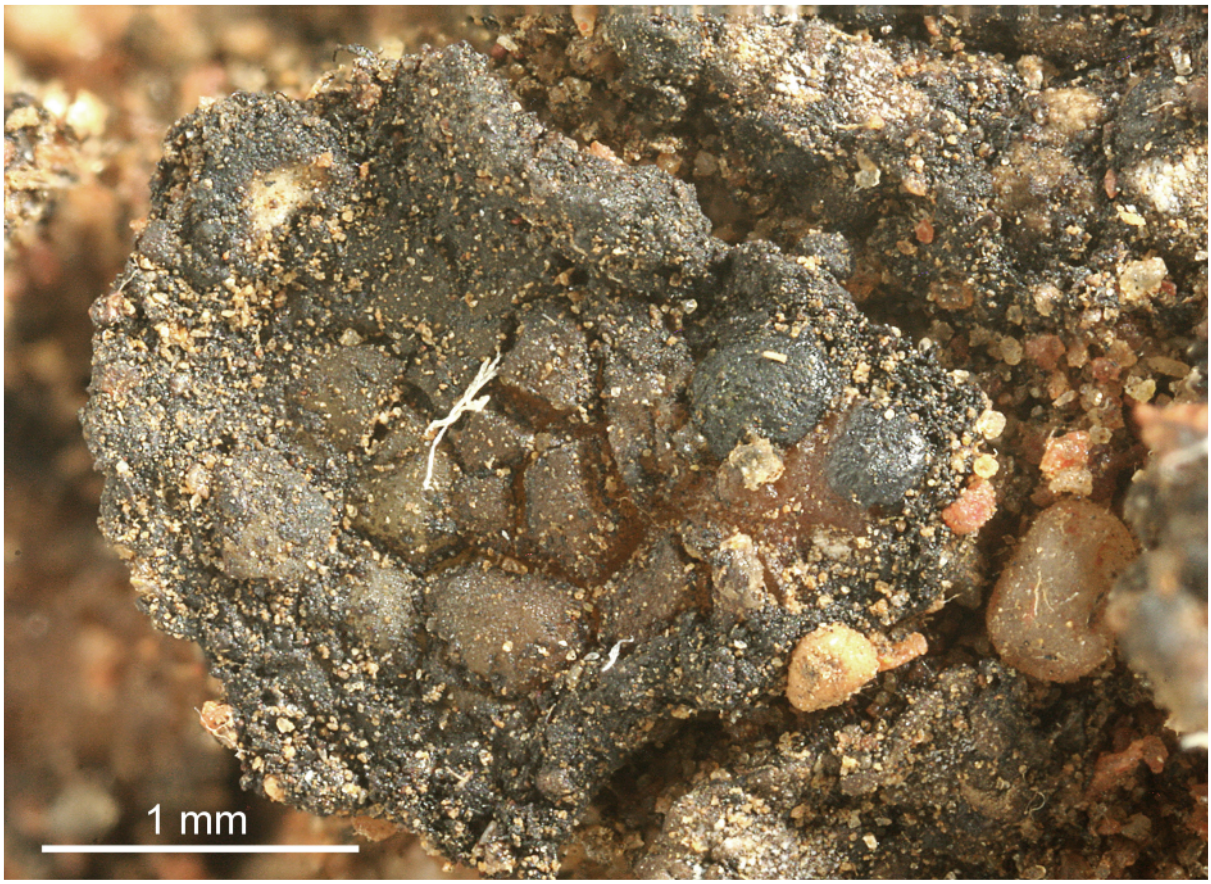
Pseudocyphellaria sulphurea

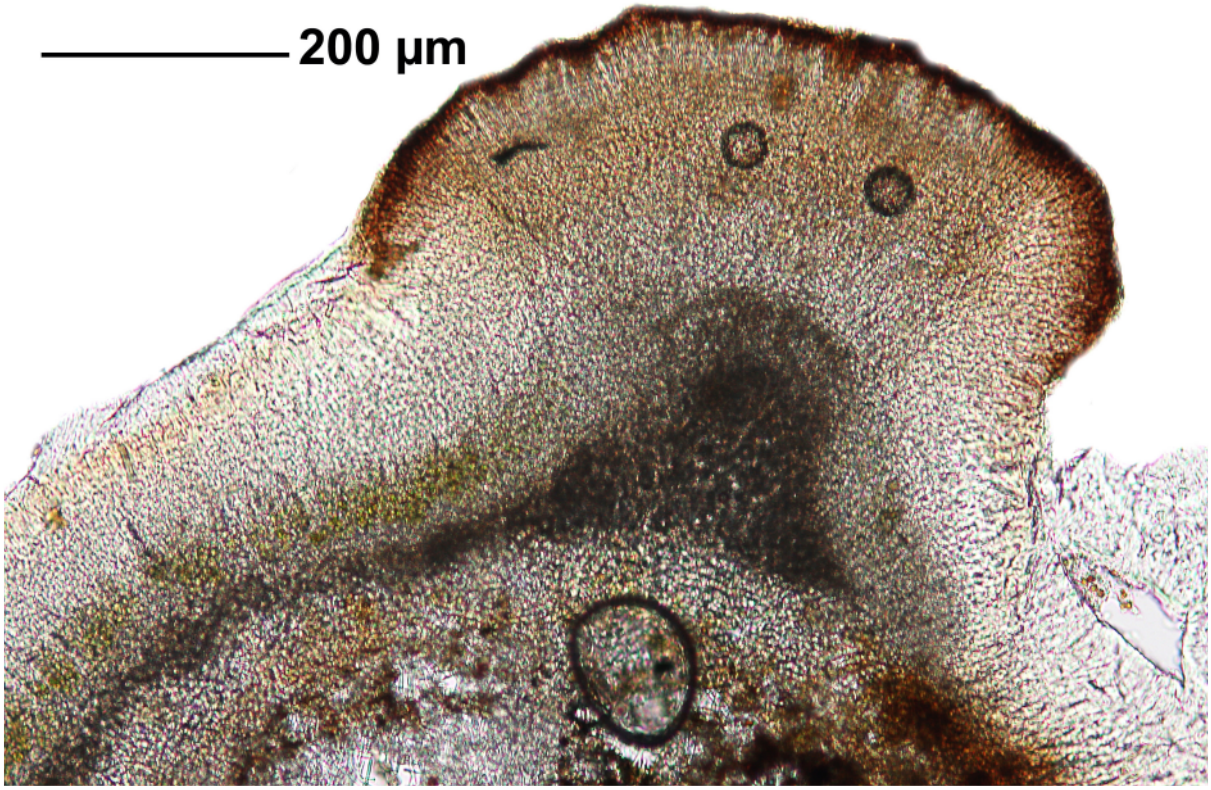
Psora crystallifera (Taylor) Müll.Arg.
[= ***Eremastrella crystallifera*** (Taylor) G. Schneider]

Thallus squamules brown, dense but not confluent. Apothecia marginal and laminal, disc black. Epithecium brown, hypothecium colourless. Ascus witrh IKI+ blue tholus. Spores 11-13(-16) x 5-6.5(-8) µm, 8/ascus, hyaline.

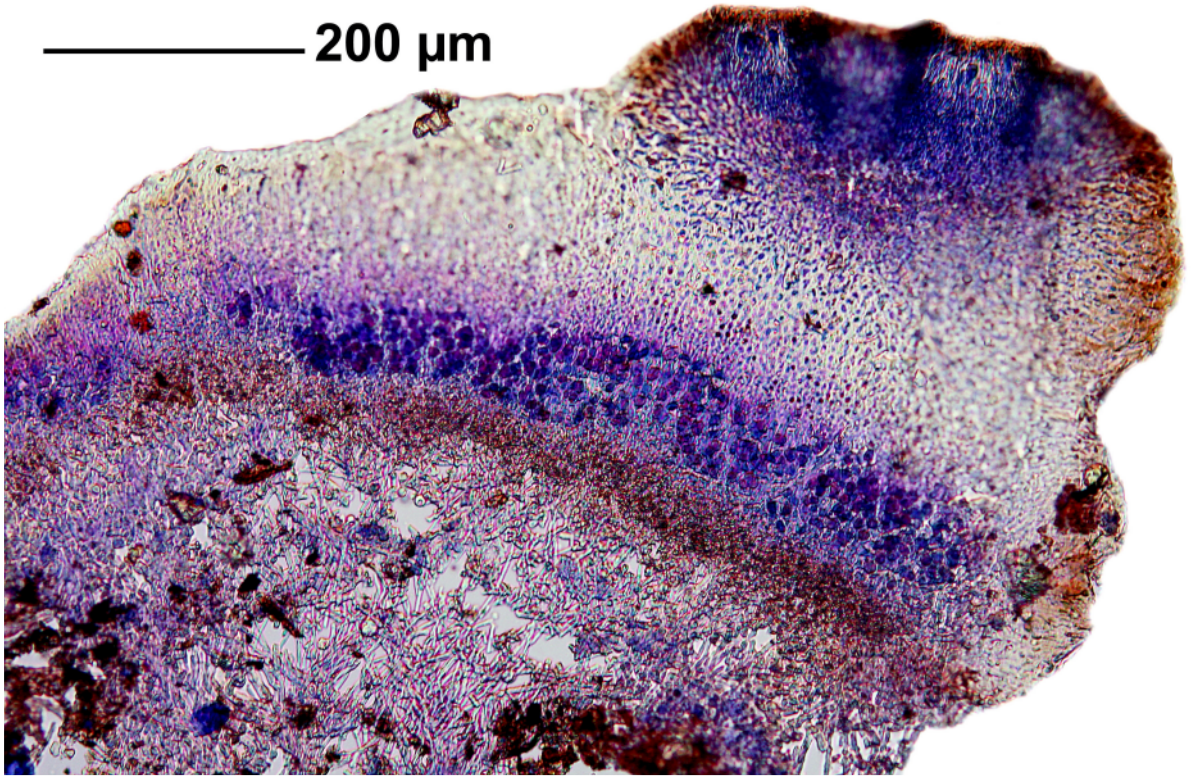
[19022], Australia, Western Australia, Kimberley Regions, 7 km north-west of Drysdale River Station, 15°40' S, 126°19' E, 390 m, growing on soil over flat rocky outcrops with easterly aspect, with *Calytrix*, *Sterulia* and *Terminalia.* Leg. J.A. Elix (27984), H.T. Lumbsch & H. Streimann 15.07.1991, det J.A. Elix. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 256, distributed as *Eremastrella crystallifera* (Taylor) G. Schneider

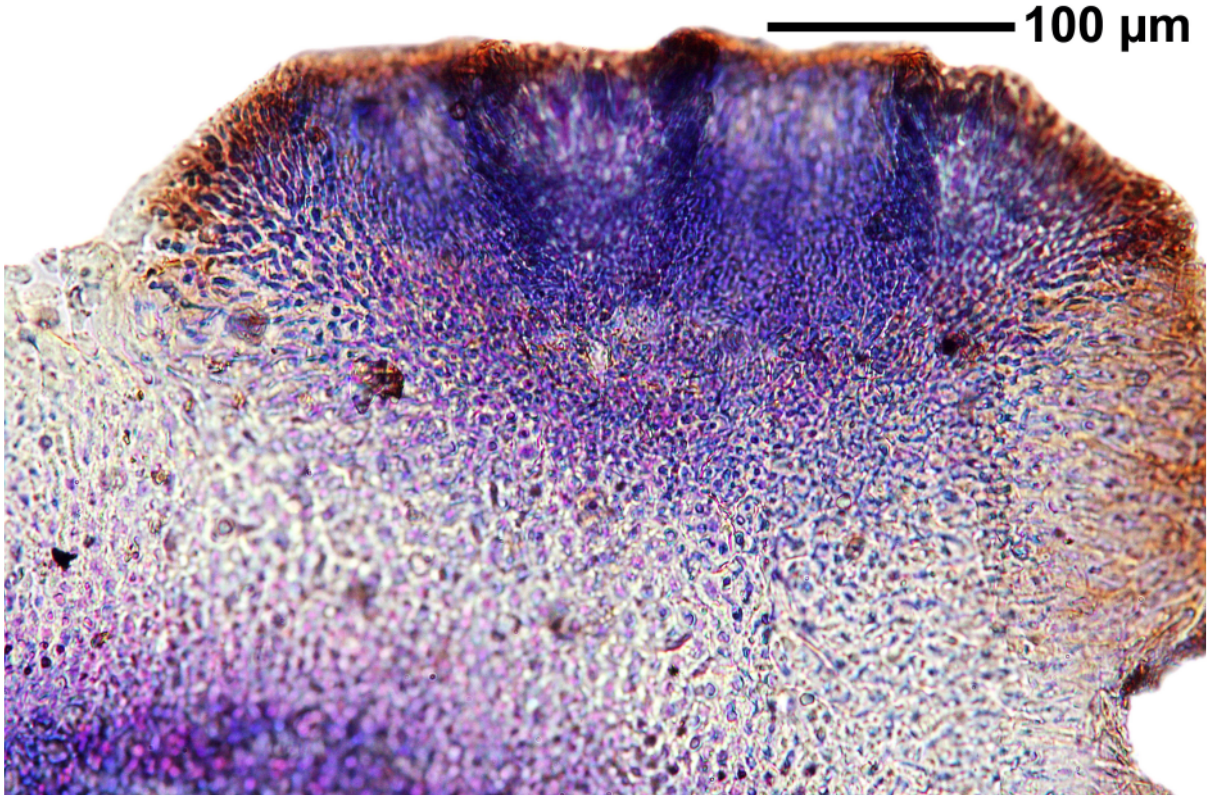




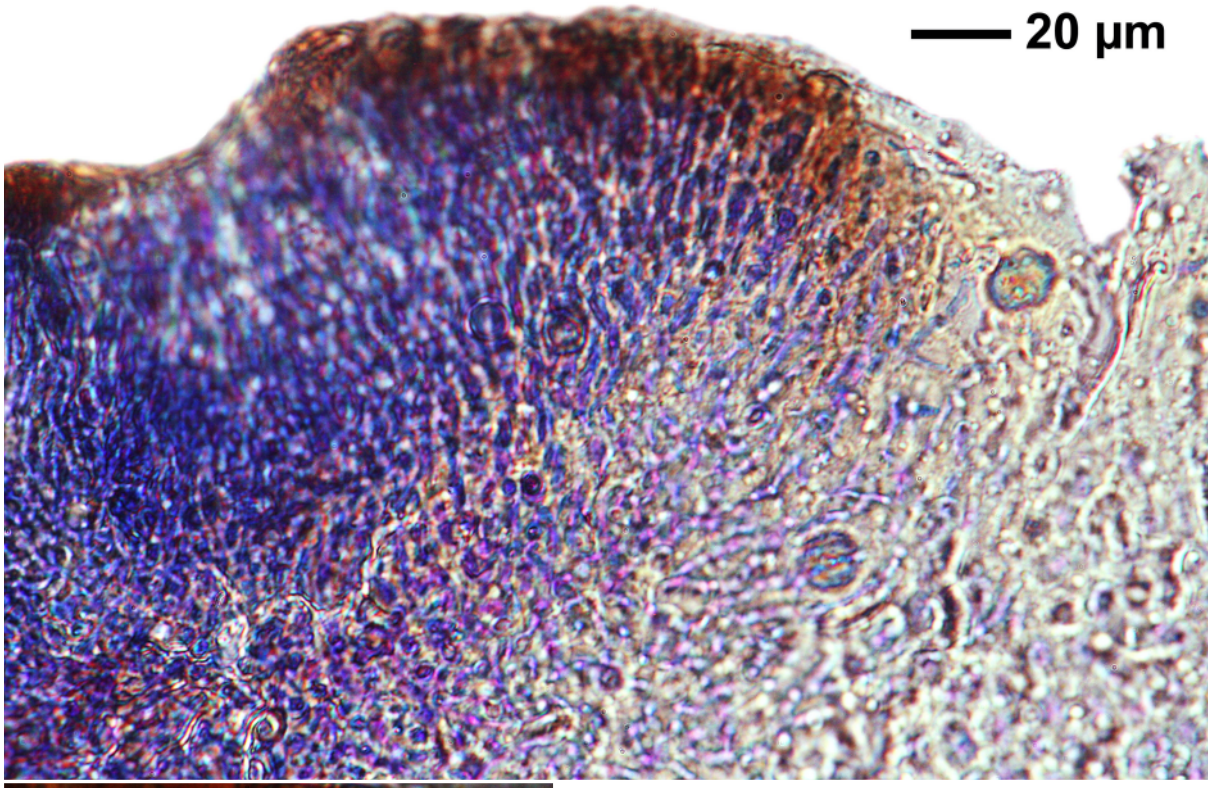


Psora crystallifera

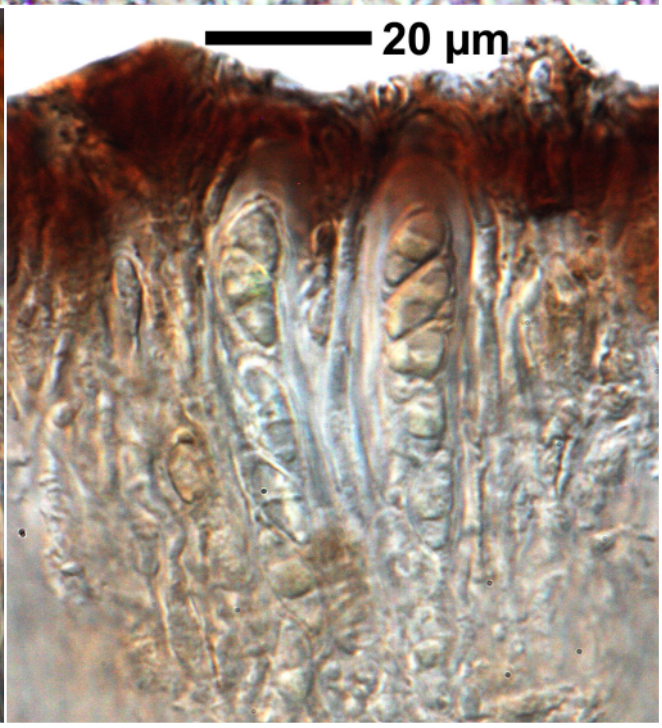


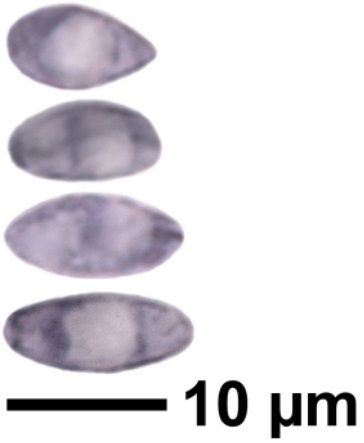


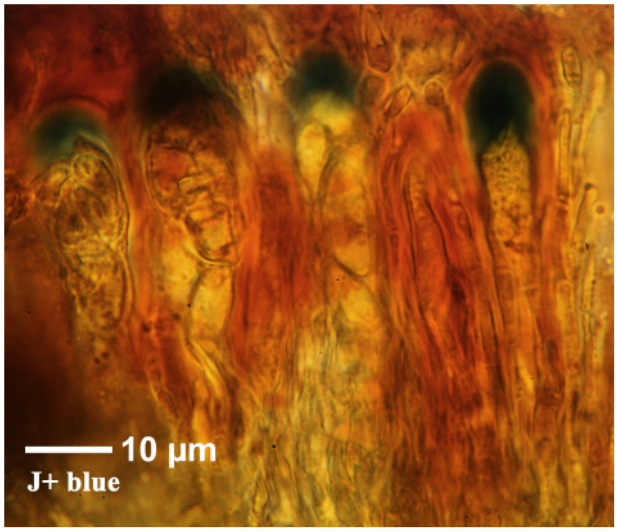
Psora crystallifera



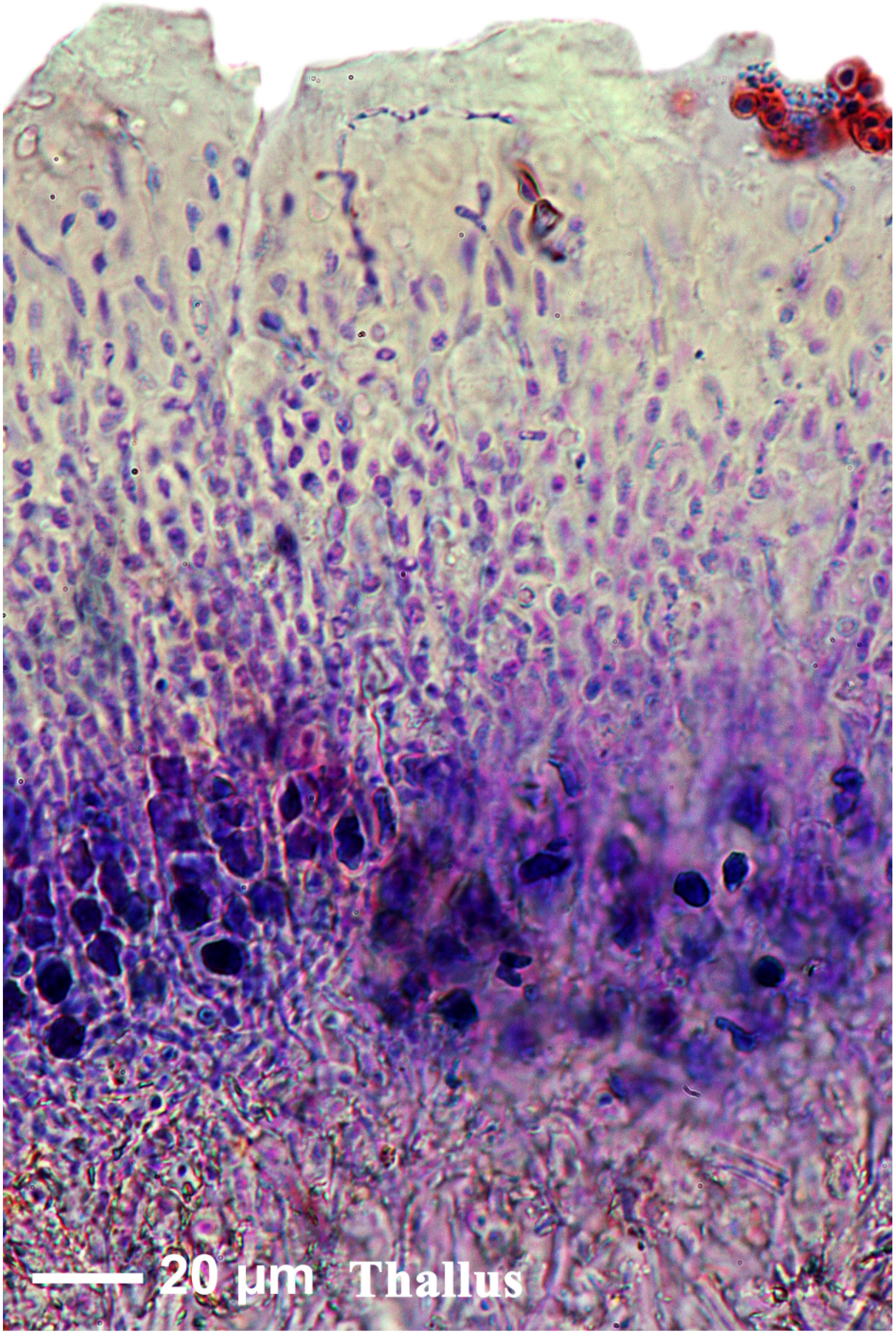








Psora crystallifera



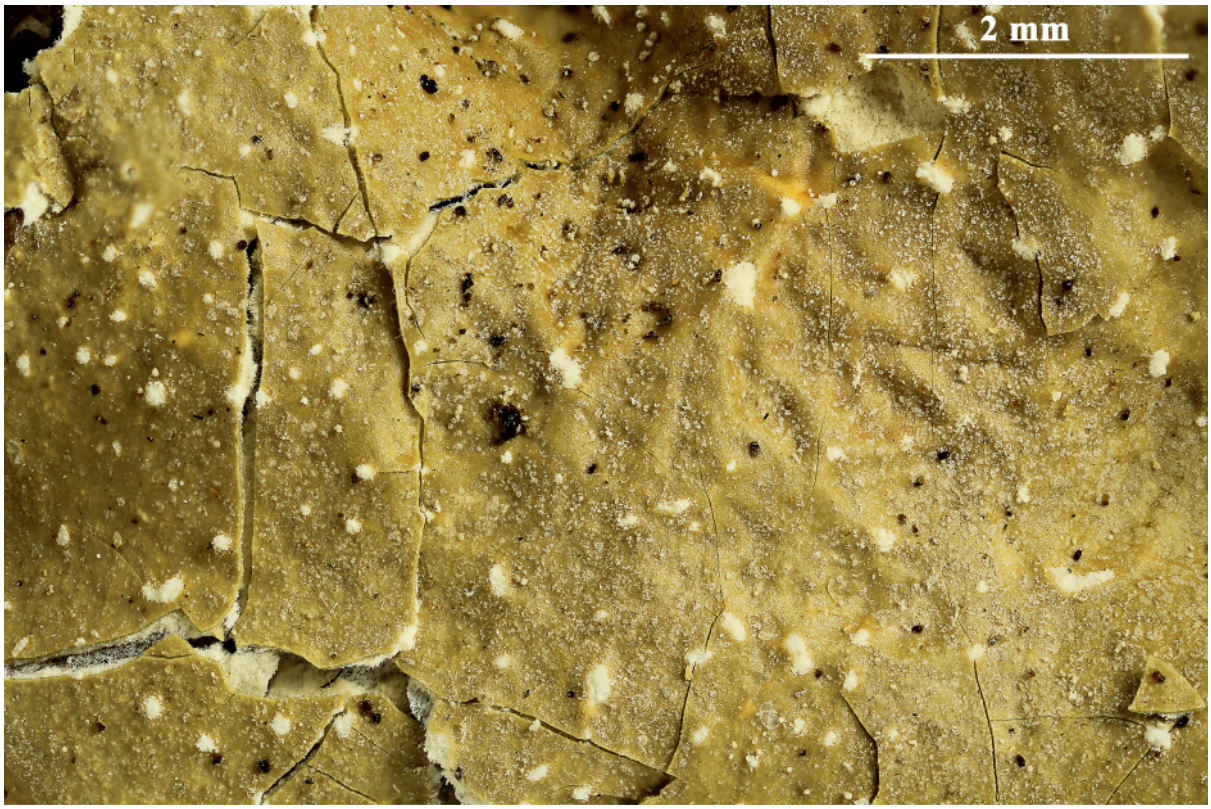
Psora crystallifera

Punctelia borreri (Sm.) Krog

Thallus adnate, without lobules. Upper surface green-grey to pale grey, smooth, rugose centrally, without isidia. Pseudocyphellae small, punctiform, most obvious near the margins, sometimes white pruinose. Soralia derived from pseudocyphellae, clustered centrally, sometimes marginal, punctiform to confluent. Soredia farinose, white to grey-white. Lower surface black, rhizines dense, black to brown. Apothecia rare, 2-8 mm wide, disc imperforate. Ascospores 15-18 x 12-15 µm. Conidia unciform, 5-7 x 1 µm. Chemistry: cortex K+ yellow, medulla K-, C+ rose, KC+ rose, P-; atranorin, chloroatranorin, gyrophoric acid (major), ±orcinyl lecanorate and with or without unidentified fatty acids.

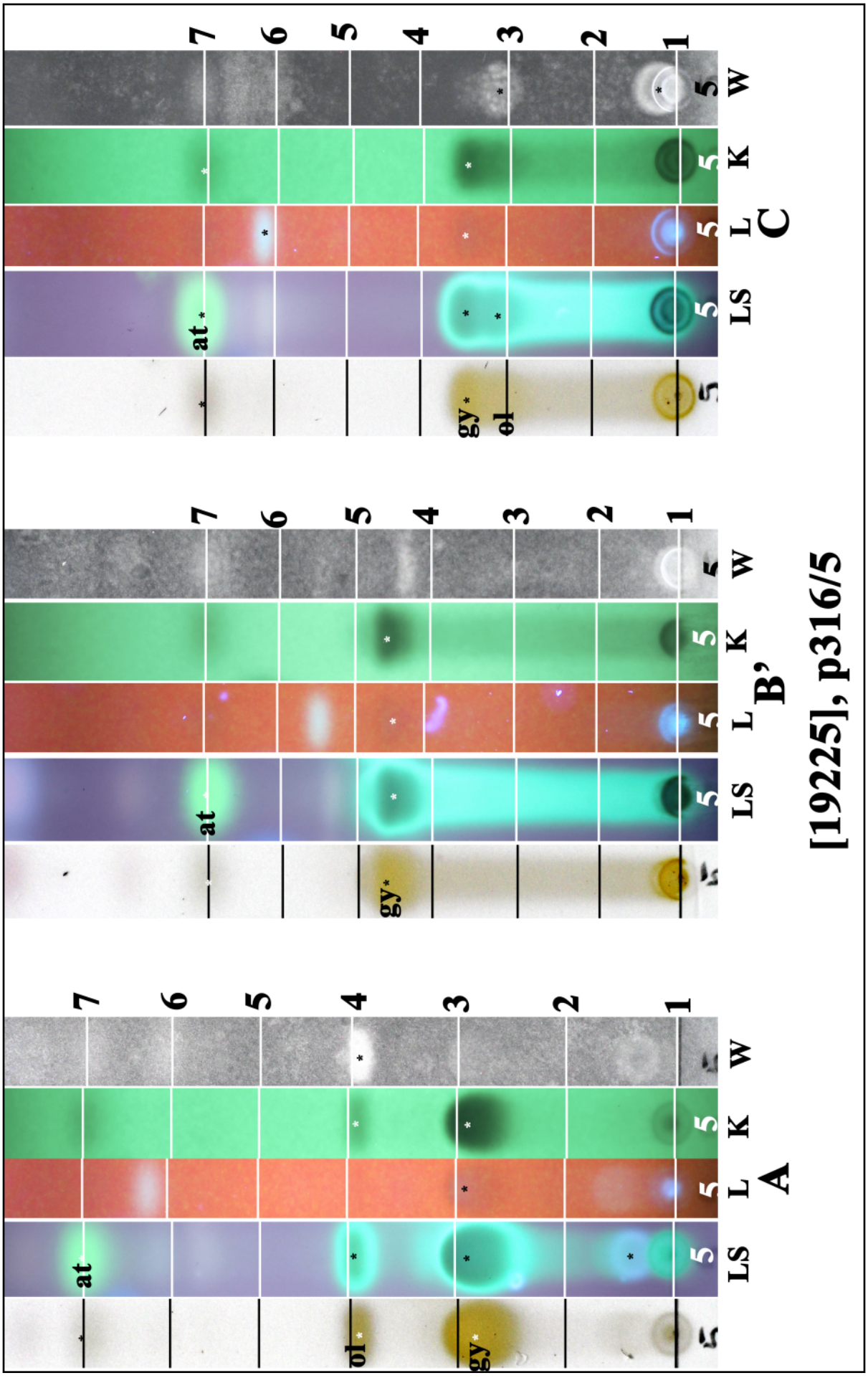
[19225], Australia, New South Wales, 36 km east-south-east of Cooma along the Countegany-Kybean road, 36°19' S, 149°30 'E, 1000 m, growing on trunks of old *Populus nigra* var. *italica* in pasture land. Leg. J.A. Elix (11451) & H. Streimann, 15.11.1983. Chemistry: atranorin, gyrophoric acid. Lichenes Australasici Exsiccati No. 072.







Punctelia borreri



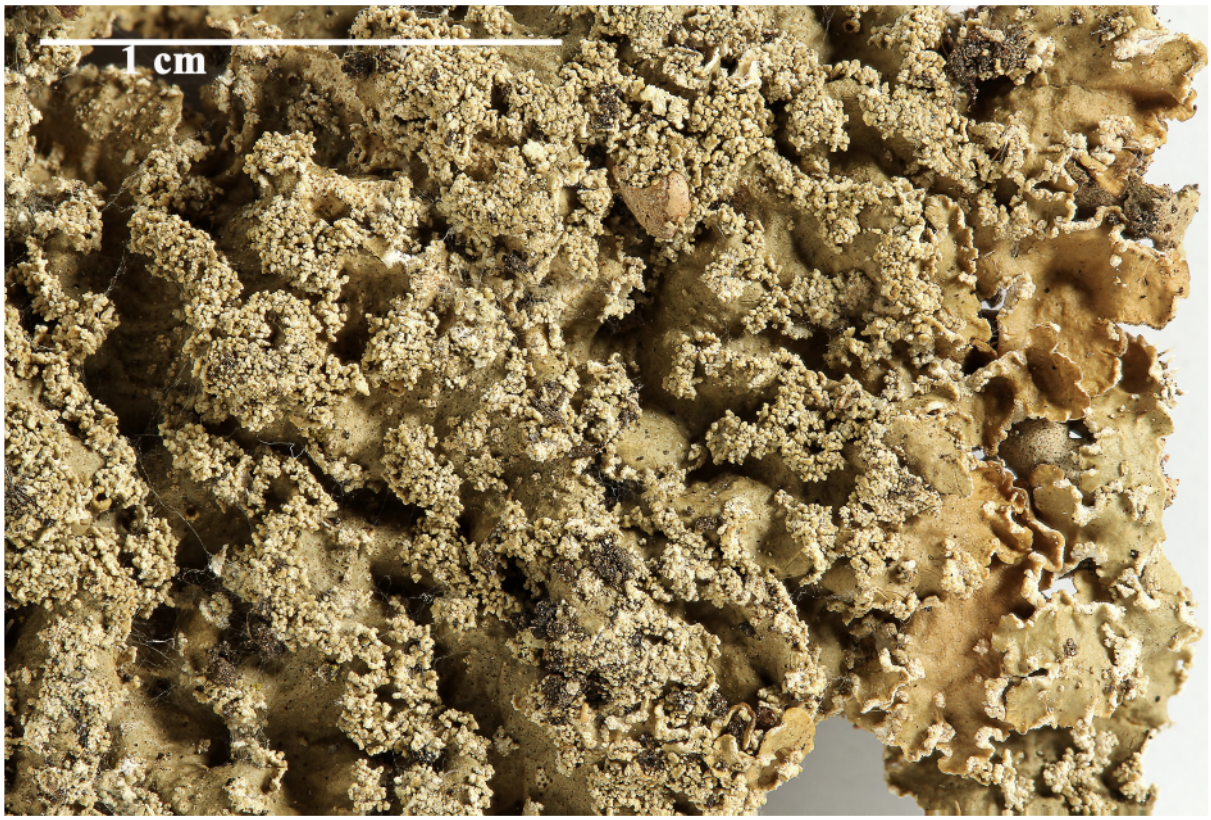
at: atranorin, gy: gyrophoric acid, ol: orcenyl lecanorate

Punctelia borreri

Punctelia pseudocoralloidea (Gyeln.) Elix & Kantvilas

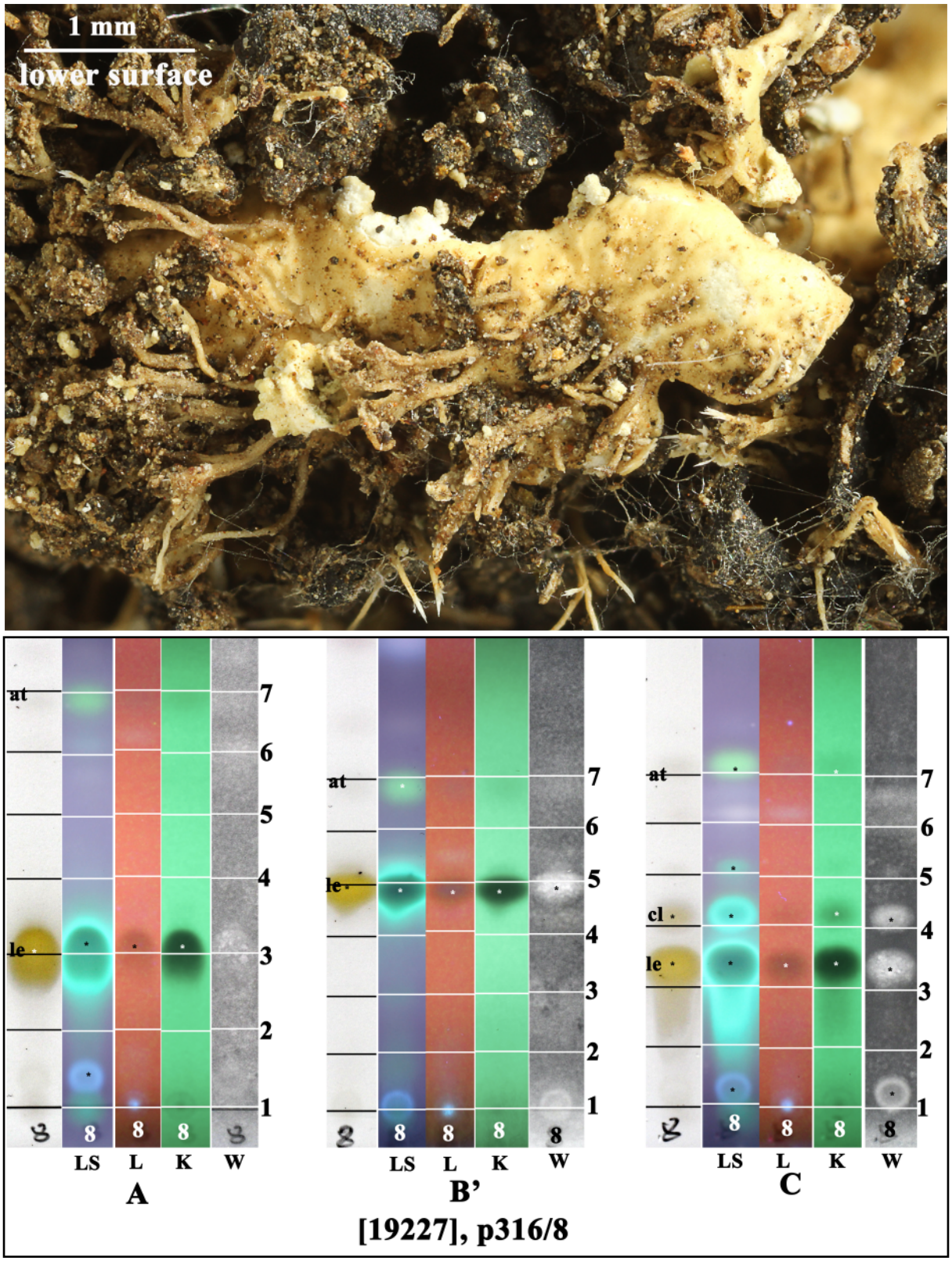
Thallus loosely adnate to adnate. Lobes 5-10 mm wide, margins sinuous becoming sorediate, darkening. Upper surface grey to greenish grey or greenish blue, becoming copiously sorediate, without isidia; soralia irregular. Soredia coarse, granular, often coralloid, sometimes becoming partly corticate and developing into pseudoisidia. Lower surface pale yellowish buff or buff-brown or whitish. Apothecia rare, 2-4 mm wide, disc imperforate, deeply concave. Ascospores 16-18 x 9-15 µm. Conidia filiform, 6-9 x 1 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; lecanoric acid (major), ±atranorin, ±chloroatranorin. Lit. Elix, J.A. & Kantvilas, G. (2001), Australasian Lichenology 49: 14.

[19227], Australia, Australian Capital Territory, 2.5 km north of Mt. Rob Roy, 21 km south of Canberra, 35°28' S, 149°07' E, 880 m, growing on sheltered porphyry rocks in pasture land. Leg. J.A. Elix (10911) & M.J. Elix, 25.04.1983. Chemistry: atranorin, lecanoric acid, 5-chlorolecanoric acid. LICHENES AUSTRALASICI EXSICCATI NO. 049. Distributed as ***Punctelia subrudecta*** (Nyl.) Krog.





Punctelia pseudocoralloidea

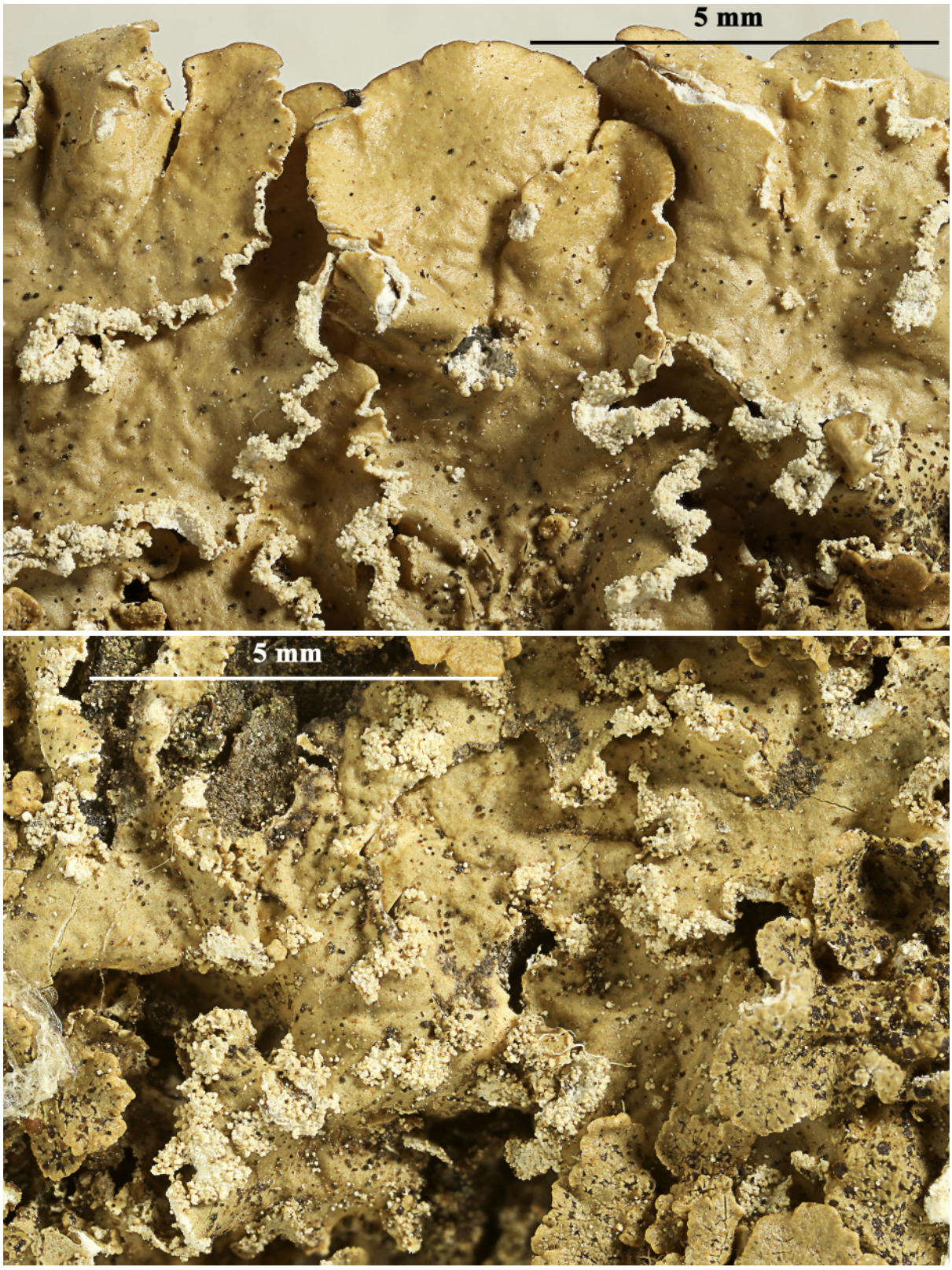


at: atranorin, le: lecanoric acid, cl: 5-chlorolecanoric acid

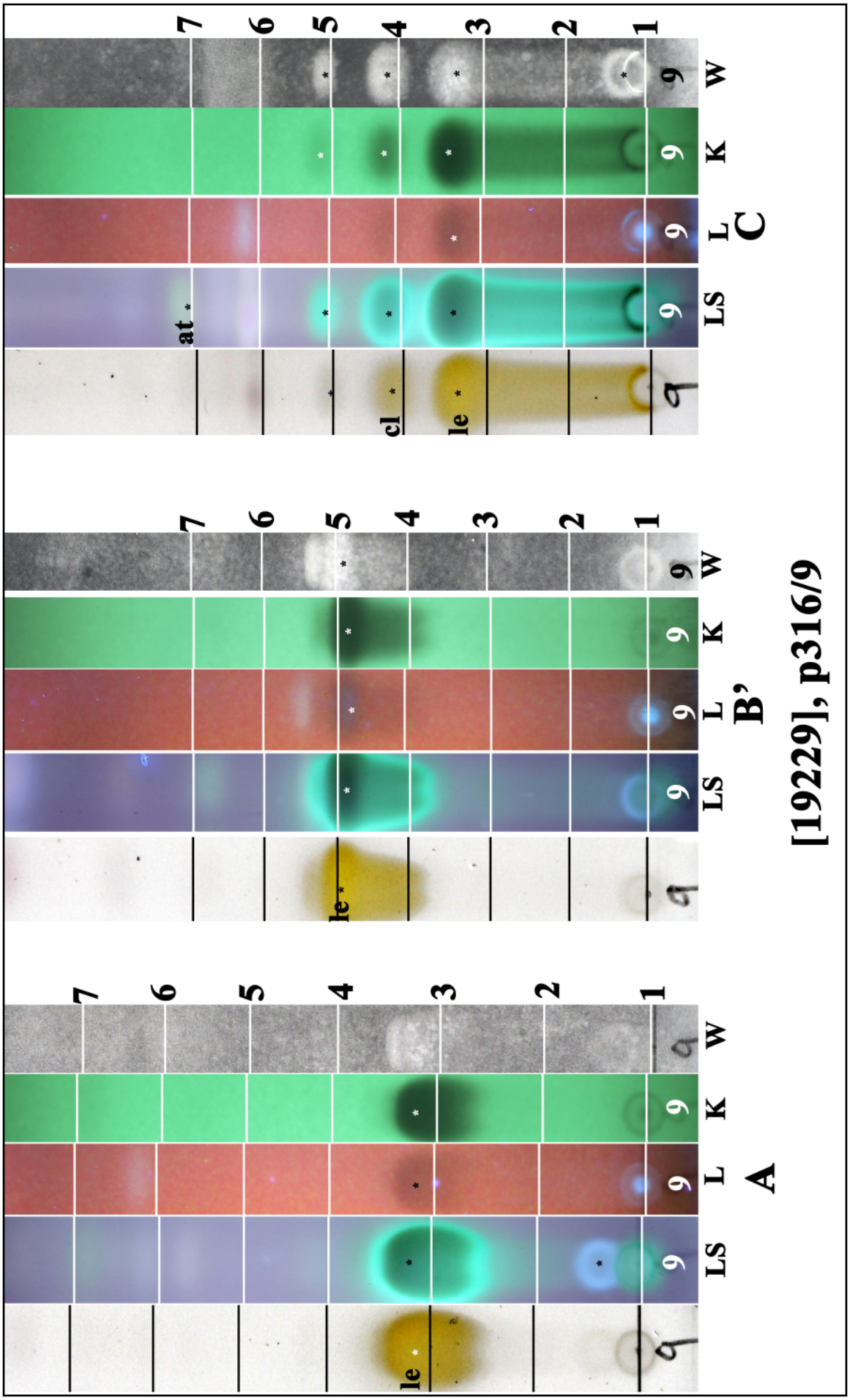
Punctelia pseudocoralloidea (Gyeln.) Elix & Kantvilas

[19229], Australia, South Australia, Mt. Crawford Pine Plantation, along the Para River just south of Mt. Crawford, 34°42' S, 138°58'E, 430 m, growing at the base of *Pinus radiata*. Leg. J.A. Elix (11491) & L.H. Elix. Chemistry: atranorin, lecanoric acid. LICHENES AUSTRALASICI EXSICCATI NO. 074. Distributed as ***Punctelia subrudecta*** (Nyl.)





Punctelia pseudocoralloidea



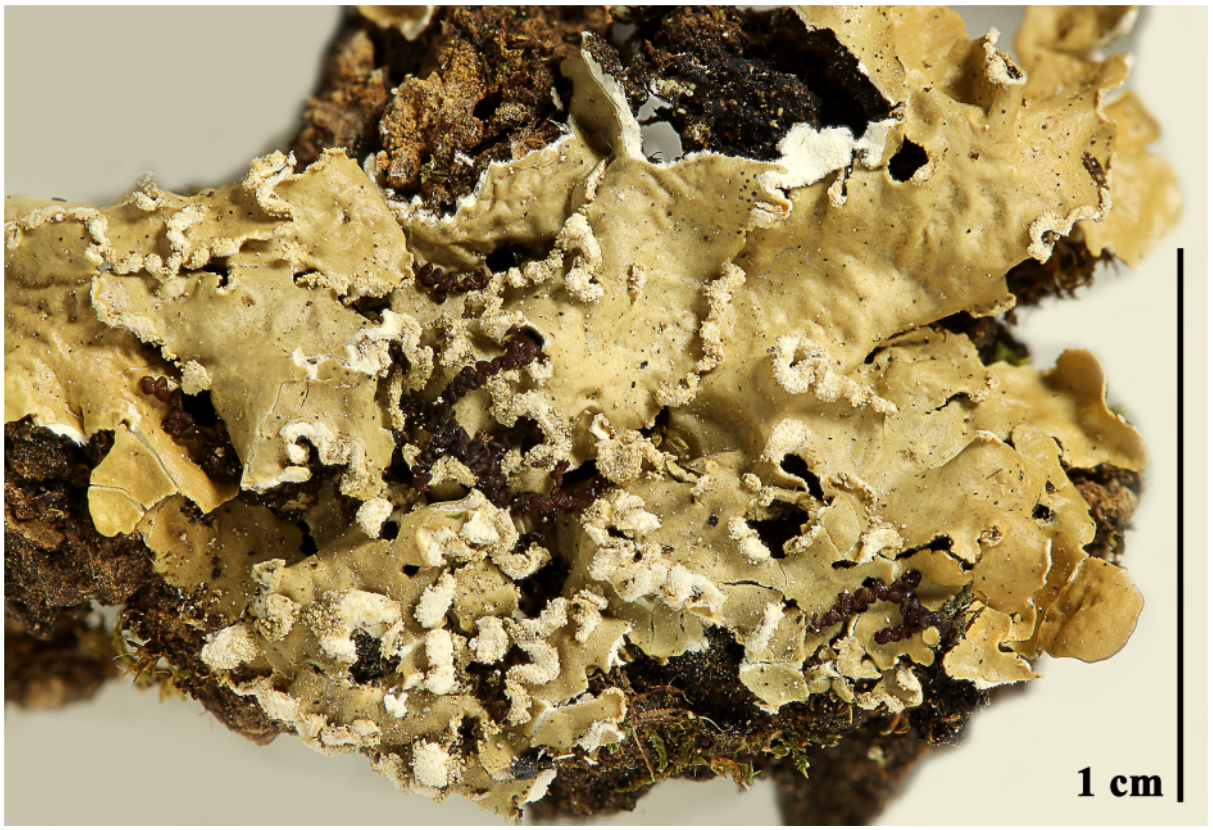
le: lecanoric acid, cl: 5-chlorolecanoric acid, at: atranorin

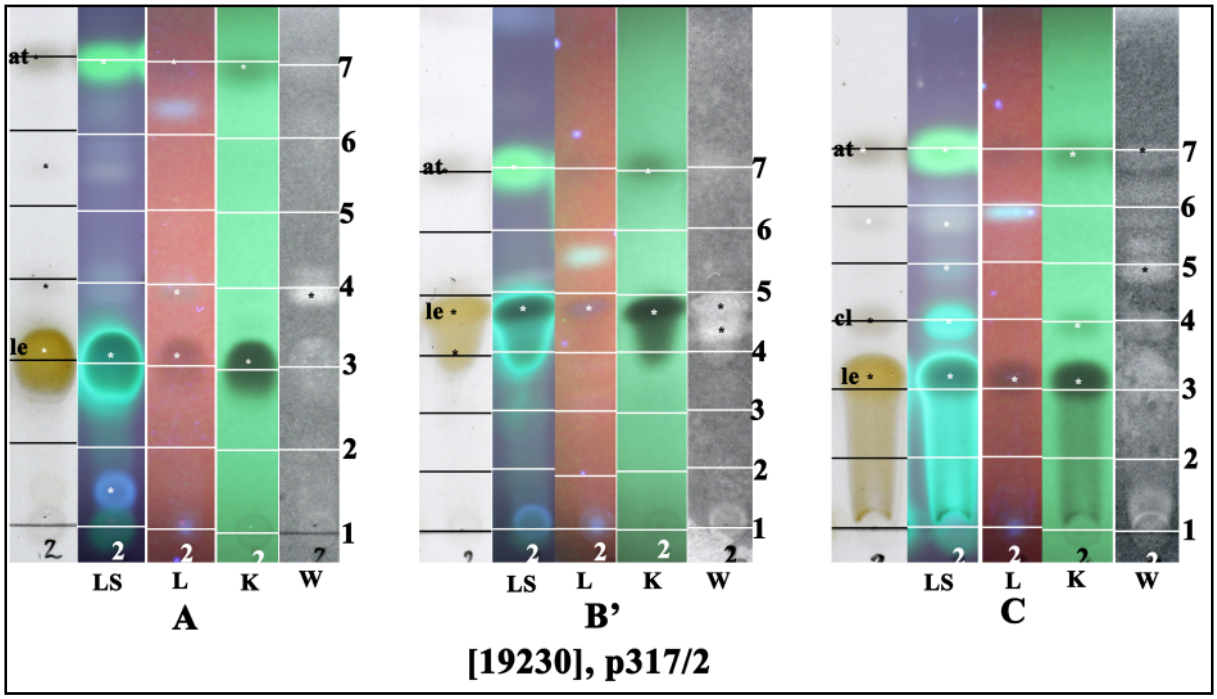
Punctelia pseudocoralloidea

Punctelia pseudocoralloidea (Gyeln.) Elix & Kantvilas

[19230], Australia, New South Wales, Southern Tablelands, Carey's Cave, 4.5 km NNE of Wee Jasper, 35°05' S, 148°39' E, 380 m, pasture with scattered *Brachychiton populneum* and *Eucalyptus goniocalyx*, hillside with numerous limestone outcrops, on *Brachychiton* trunk. Leg. J. Johnston (2565), 10.08.1988. Chemistry: atranorin, chloroatranorin, lecanoric acid (major) by TLC, HPLC, anal. J. Johnston. Distributed as ***Punctelia subrudecta*** (Nyl.) Krog.







at: atranorin, le: lecanoric acid, cl: 5-chlorolecanoric acid

Punctelia pseudocoralloidea

Punctelia subalbicans (Stirt.) D.J.Galloway & Elix

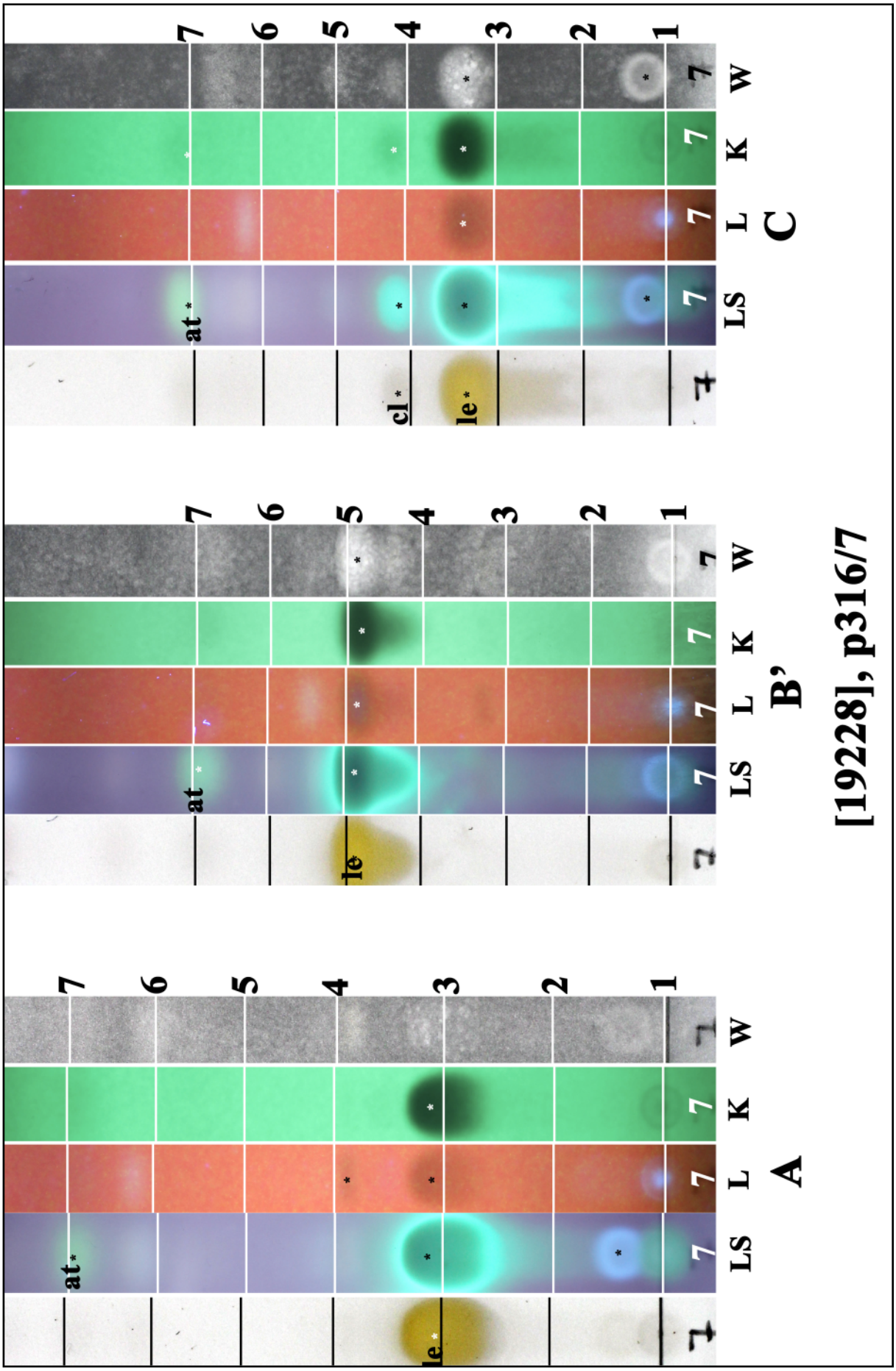
Thallus adnate. Lobes 2-8 mm wide, without lobules. Upper surface pale greenish grey to grey or grey-black, smooth to rugose-plicate in older lobes, without soredia and isidia. Pseudocyphellae punctiform, developing along lobe margins and on thalline exciple of apothecia. Lower surface pale buff or creamish. Apothecia common, 2-6 mm wide, disc imperforate. Ascospores 10-16 x 6-10 µm. Conidia filiform 7-9 x 0.8-1 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; lecanoric acid (major), ±atranorin, ±chloroatranorin.

[19228], Australia, New South Wales, Weddin State Forest, 14 km south-west of Greenfell, 33°00' S, 148°01'E, 340 m, growing on *Callitris columellaris* in *Callitris* woodland. Leg. J.A. Elix (11436) & H. Streimann, 8.11.1983. Chemistry: atranorin, chloroatranorin, lecanoric by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 094.





Punctelia subalbicans



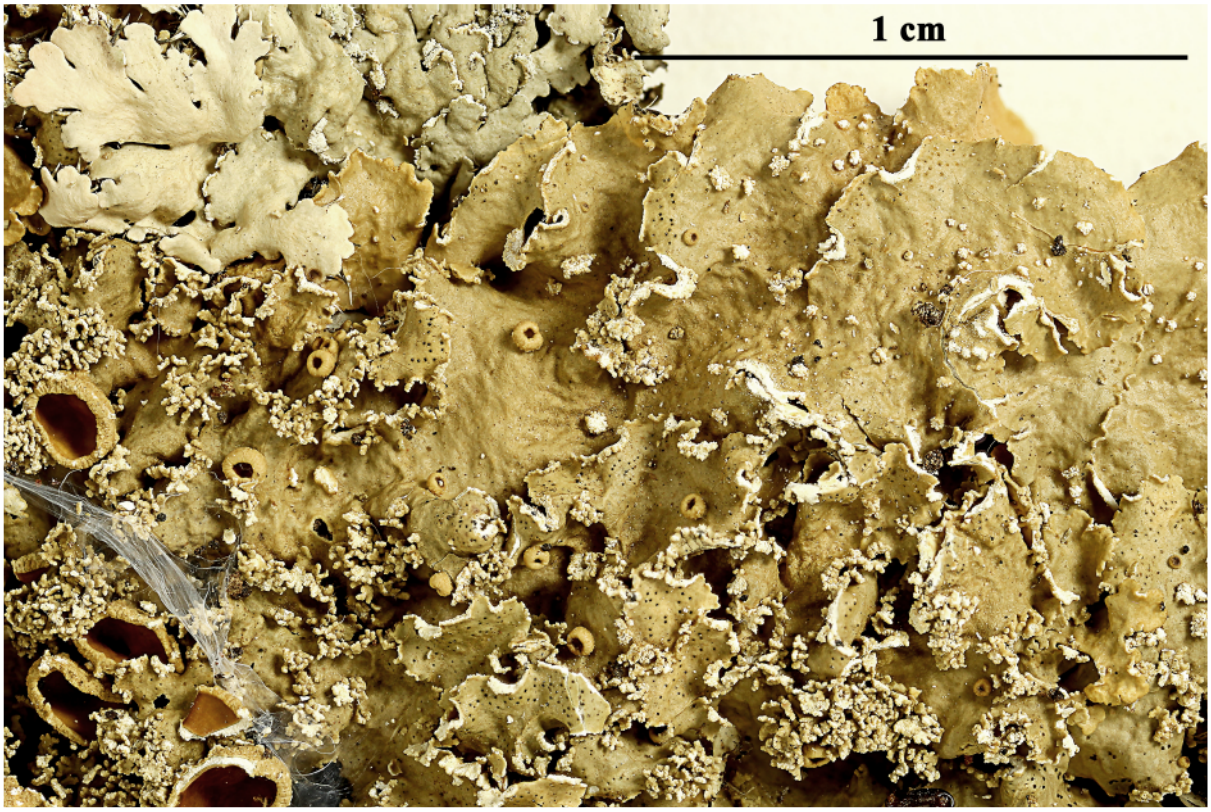
at: atranorin, le: lecanoric acid, cl: 5-chlorolecanoric acid

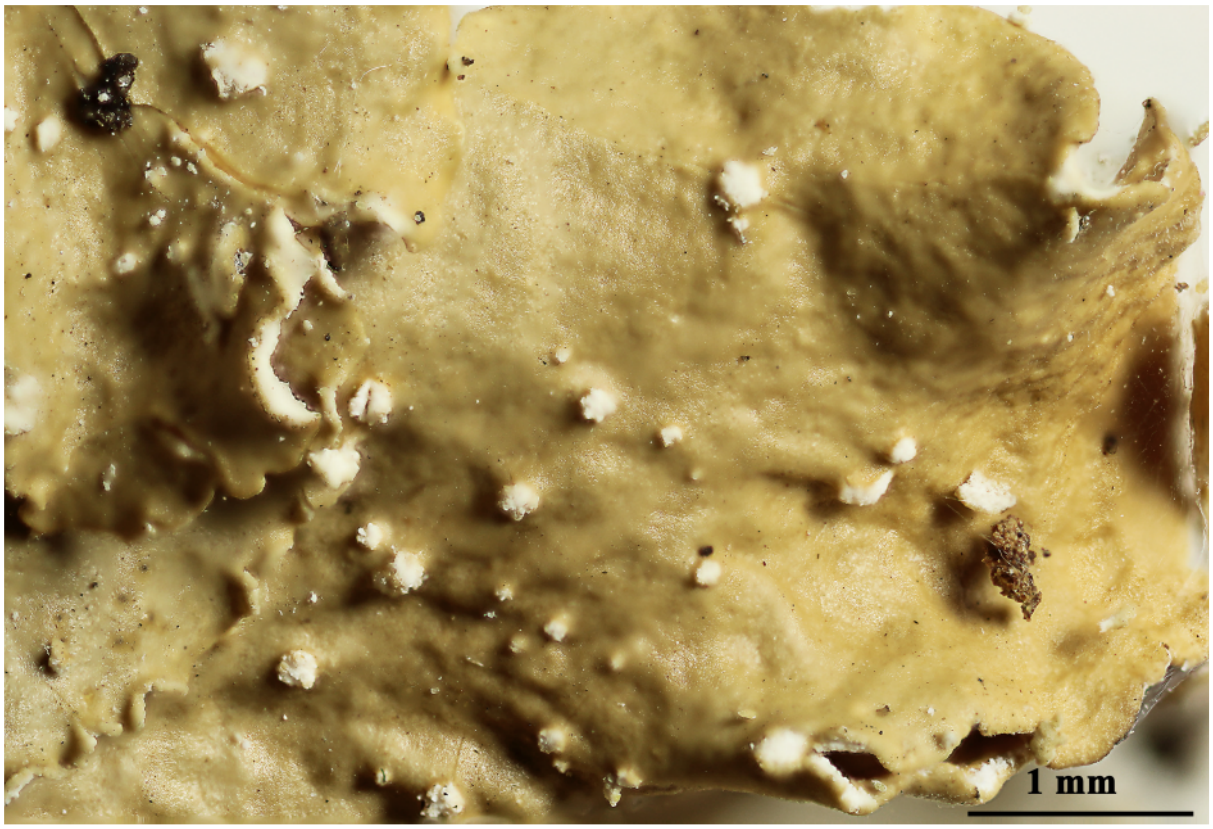
Punctelia subalbicans

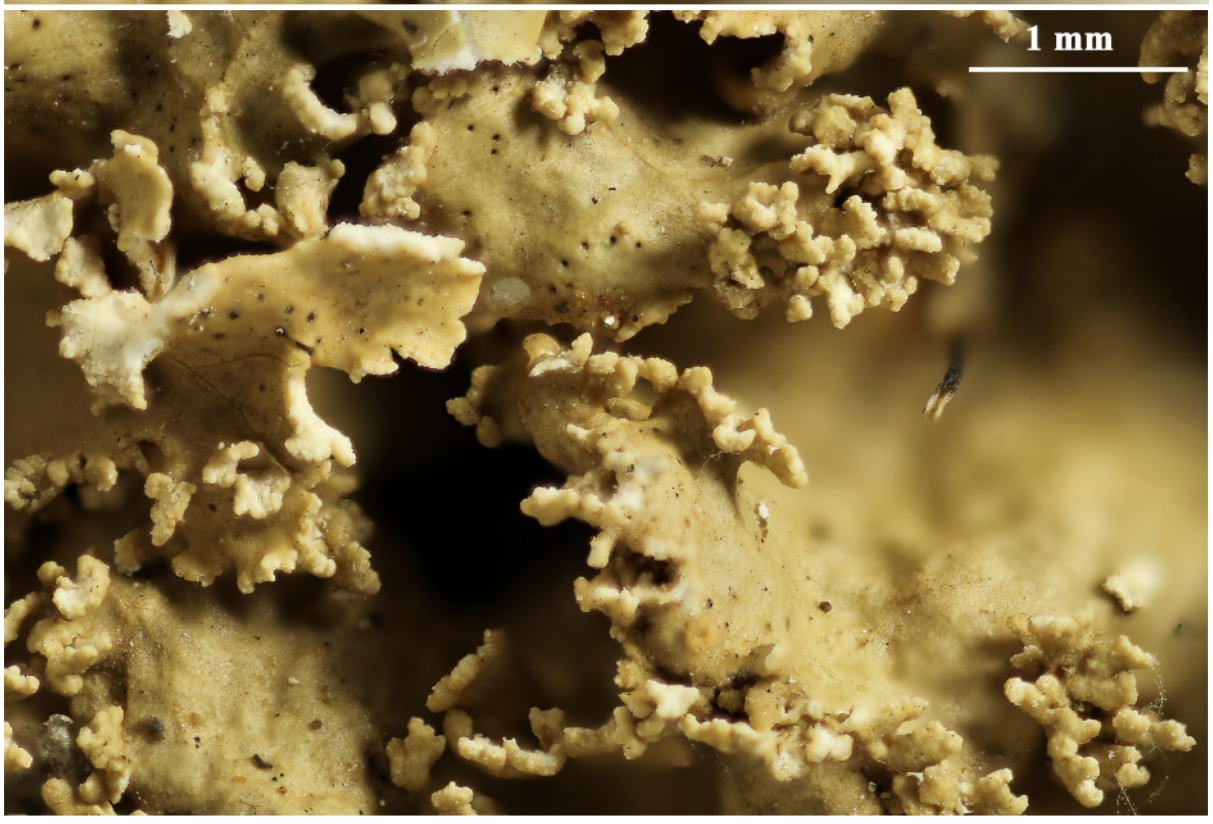
Punctelia subflava (Taylor) Elix & J.Johnst.

Thallus loosely adnate to adnate. Lobes 5-15 mm wide. Upper surface pale greenish white, greenish grey or pale bluish grey, often brownish at lobe margins, without soredia, isidiate-lobulate; pseudocyphellae small, punctiform, not becoming sorediate; isidia flattened, lobate-squamiform, becoming dorsiventral. Lower surface pale buff or tan. Apothecia 4-10 mm, disc imperforate. Ascospores 10-13 x 6-9 µm. Conidia filiform, 10-12 x 1 µm. Chemistry: cortex K+ yellow; medulla K-, C+ red, KC+ red, P-; lecanoric acid (major), atranorin, chloroatranorin.

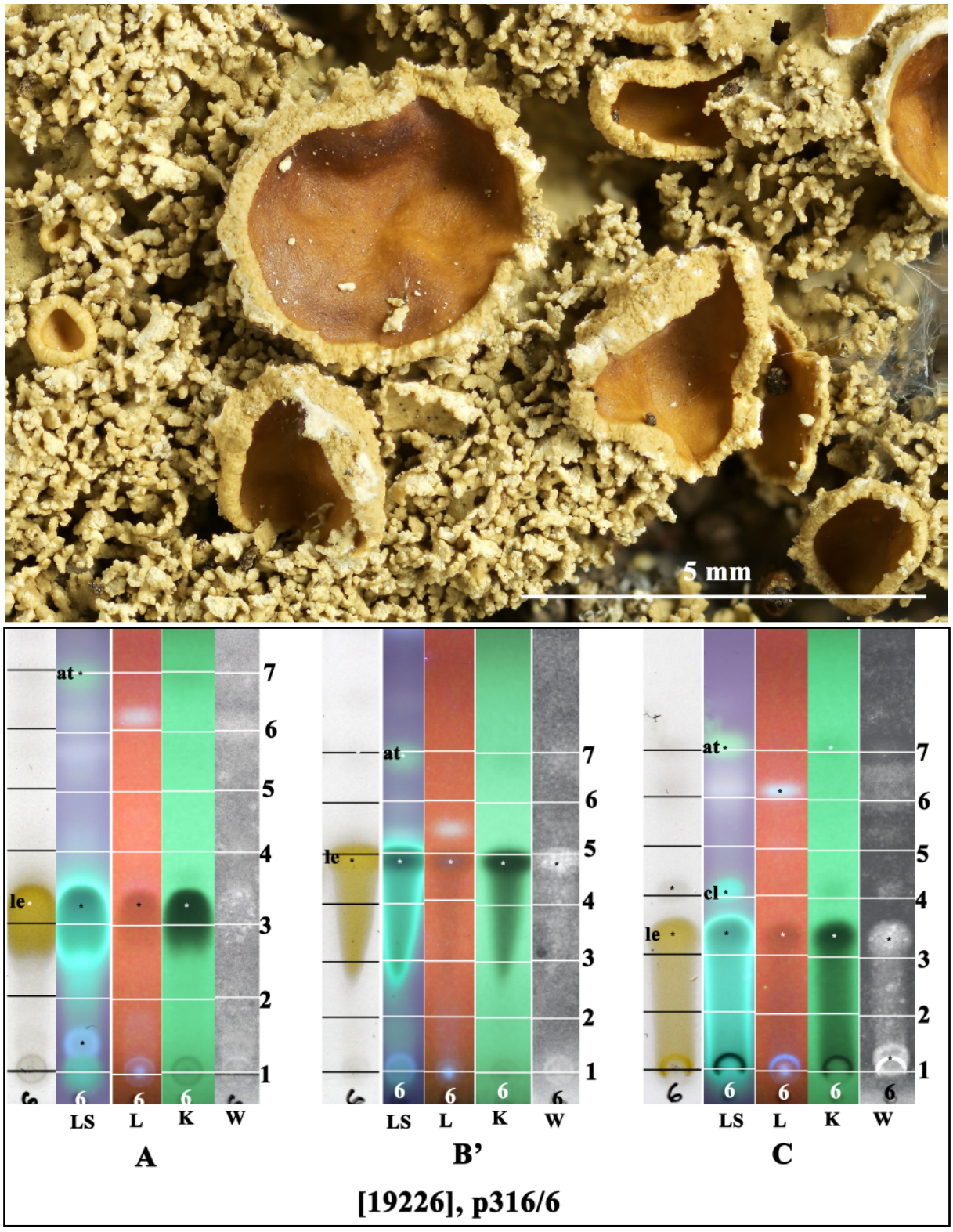
[19226], Australia, New South Wales, Guerilla Bay, 13 km south-east of Batemans Bay, 35°20' S, 150°13' E, sea level, growing on trunks of *Casuarina glauca* along foreshore. Leg. J.A. Elix (10943), 28.05.1983. Chemistry: atranorin, lecanoric acid. LICHENES AUSTRALASICI EXSICCATI NO. 073. Distributed as ***Punctelia rudecta*** (Ach.) Krog.







Punctelia subflava



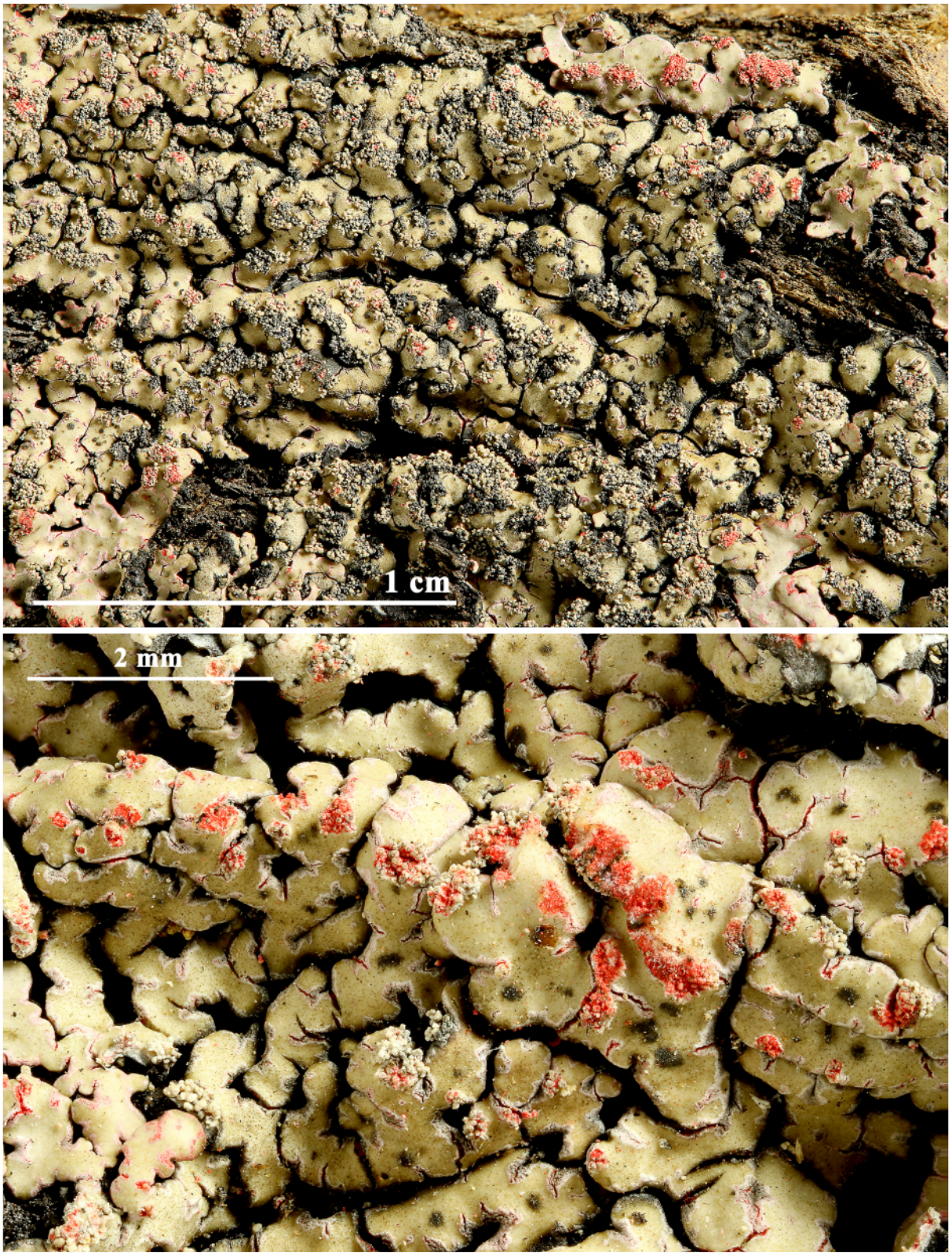
le: lecanoric acid, at: atranorin, cl: 5-chlorolecanoric acid

Punctelia subflava

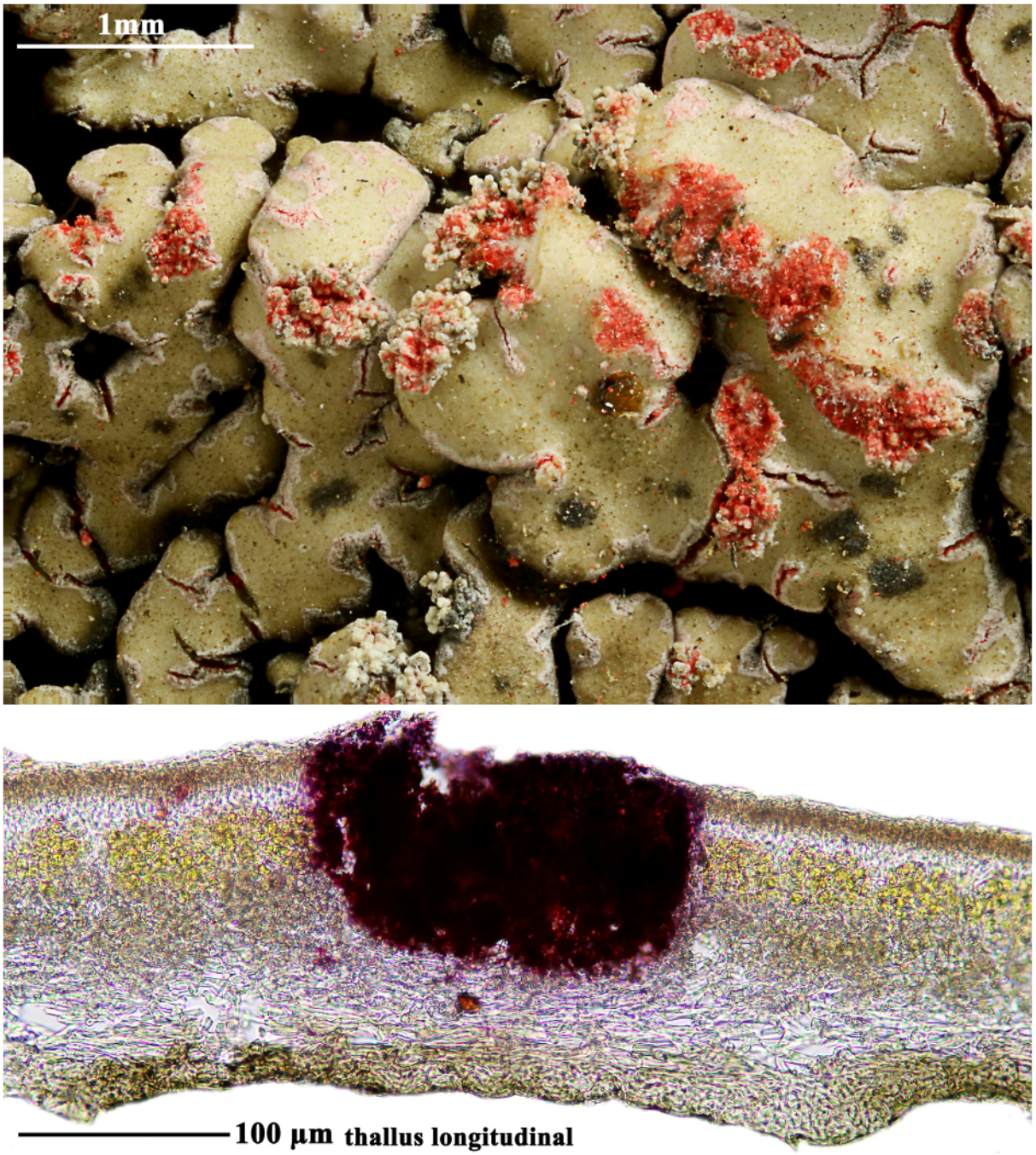
Pyxine coccifera (Fée) Nyl.

Thallus 2–6 cm wide, adnate to loosely adnate, subdichotomously lobate. Lobes radiating, discrete to ±weakly contiguous, plane to convex, but often slightly concave towards the tips, 0.4–1.2 mm wide, subrotund at the apices. Upper surface grey to yellowish grey or dull yellow, sparsely pruinose at the lobe tips or epruinose; dactyls and isidia absent. Pseudocyphellae bright red, marginal and laminal, subreticulate, often developing into soralia. Soralia marginal and laminal, orbicular to linear, ±becoming excavate, producing bright red and grey granular soredia. Medulla pale yellow in upper part; lower medulla white. Lower surface black in the centre, paler towards the margin; rhizines ±dense, furcate. Apothecia very rare, *obscurascens*-type, 0.5–1.5 mm wide; disc epruinose or weakly pale grey-pruinose. Internal stipe distinct, pale yellow in the upper part, white below, K–, P–. Ascospores 14–18 × 6–8 µm. *Chemistry:* Cortex K+ yellow, UV– medulla K– C– KC– P– red-pigmented medulla K+ purple, C+ purple-brown, KC+ violet, P–; atranorin, chloroatranorin, chiodectonic acid, methyl pyxinate, methyl 3-*O*-methylpyxinate, 25-acetoxy-20,24-epoxydammerane-3-one, 25-acetoxy-20,24-epoxydammerane-3β-ol, unknown terpenes (trace). Lit. Elix, J.A. (2011)

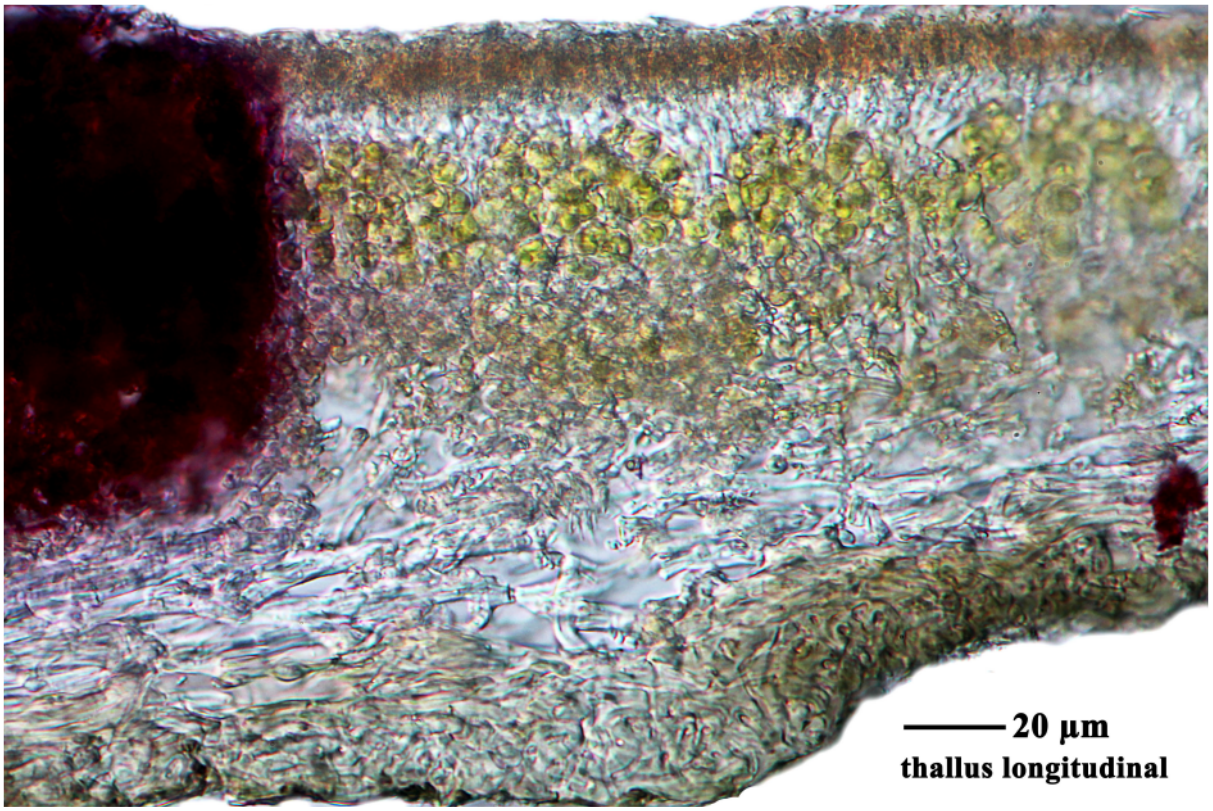
[19233], Australia, Northern Territory, Tabletop Range, Litchfield Park, 25 km south-west of Batchelor, 15°11' S, 130°50' E, 180 m, growing on dead wood in burnt *Eucalyptus* woodland with a dense understorey of *Grevillea*, *Owenia* and *Acacia*. Leg. J.A. Elix (27530), H.T. Lumbsch & H. Streimann 02.07.1991. Chemistry: atranorin, chloroatranorin, chiodectonic acid, methyl pyxinate, methyl-3-*O*-methylpyxinate, 25-acetoxy-20,24-epoxydammerane-3-one, 25-acetoxy-20,24-epoxydammarane-3β-ol by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 239.

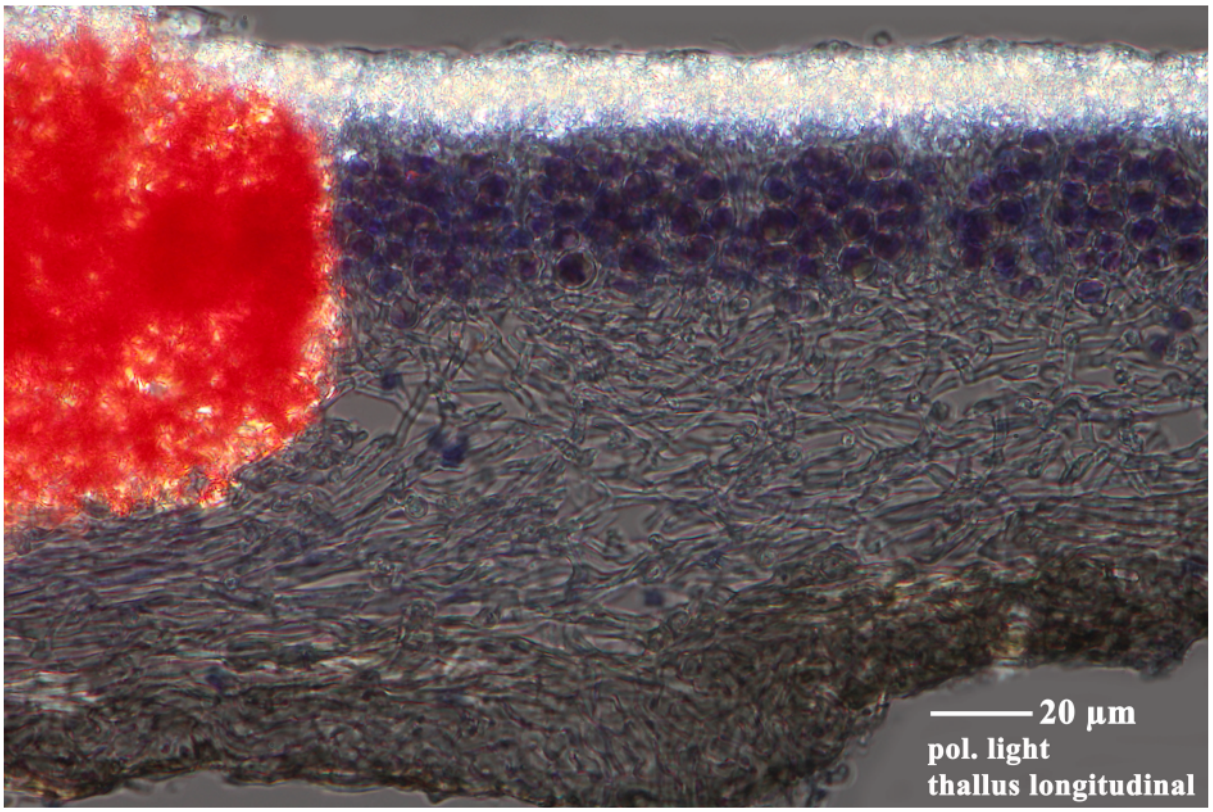


Pyxine coccifera

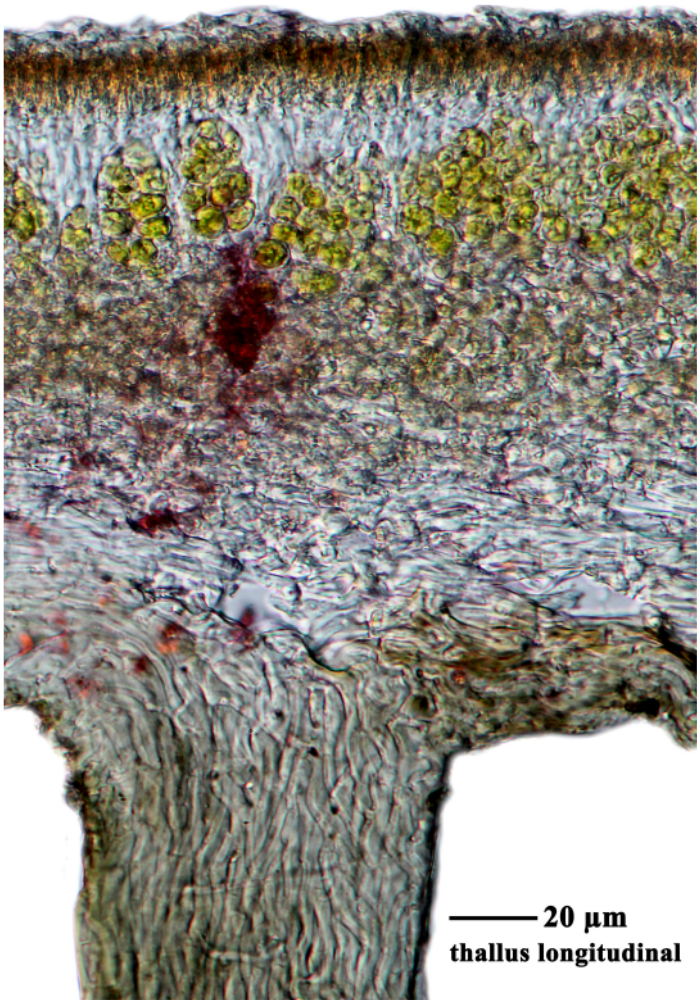


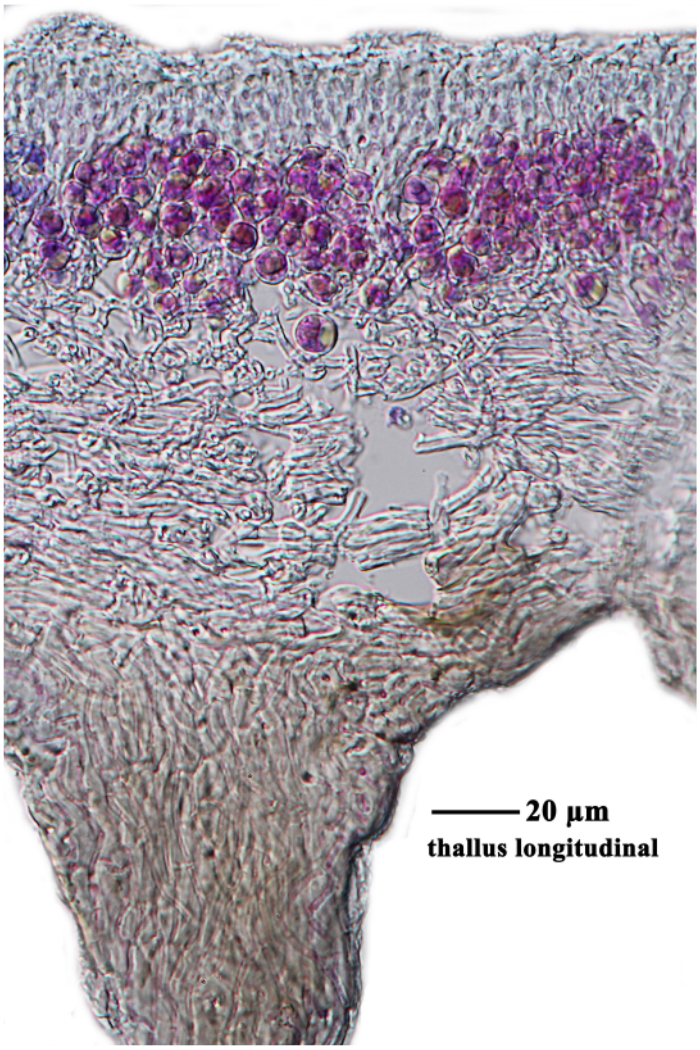
Pyxine coccifera



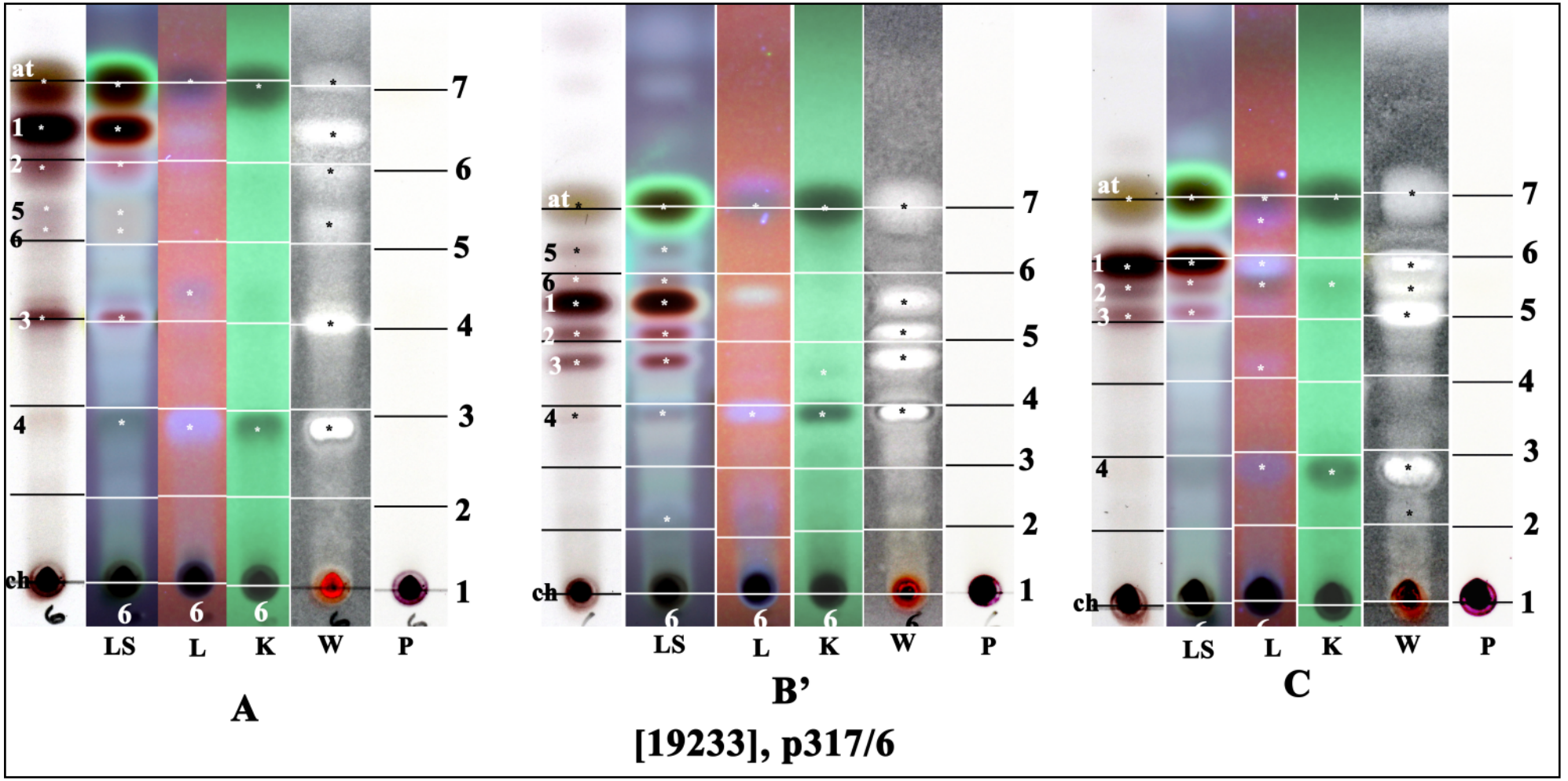


Pyxine coccifera





Pyxine coccifera



at: atranorin, ch: chiodectonic acid, 1: 25-acetoxy-20,24-epoxydammarane-3β-ol, 2: methyl 3-*O*-acetoxypyxinate, 3: 25-acetoxy-20,24-epoxydammarone-3-one, 4: pyxinic acid, 5: methyl pyxinate, 6: unknown

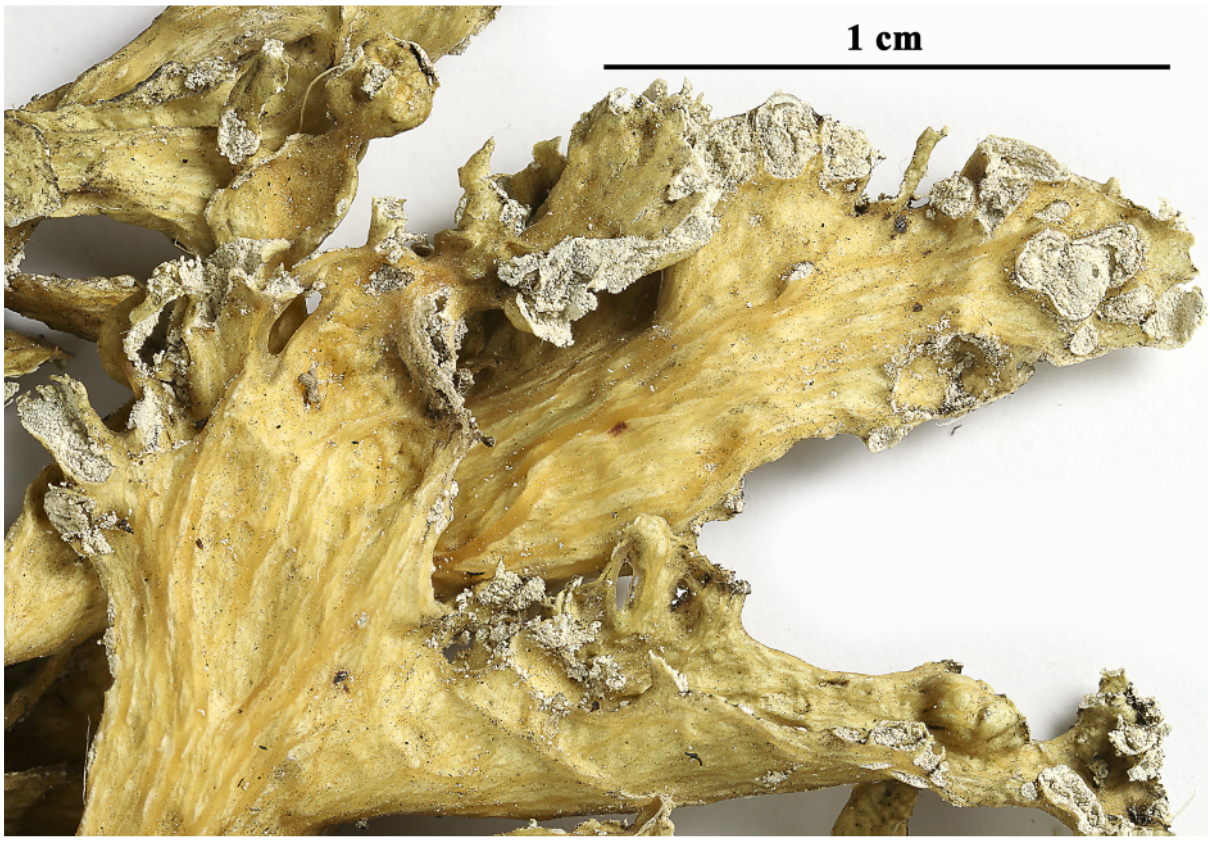
Ramalina canariensis J.Steiner

Thallus corticolous, pale green to grey green, erect to subpendulous, l-3(-5) cm long; branching palmate or irregular; branch width l-3(-10) mm, apices blunt, usually split with margins separated; surface matt, smooth to rugose, sometimes coarsely reticulately ridged by chondroid strands, pitted distally; holdfast delimited; soralia marginal and apical occurring through the separation of the upper and lower surfaces. Chemistry: divaricatic acid, usnic acid. Lit. Stevens, G.N.(1987).

[19235], Australia, New South Wales, Batemans Bay, 35°44' S, 150°13' E, sea level, growing on branches of *Avicennia marina* in mangrove swamp. Leg. H. Streimann (37918), 20.01.1987. Chemistry: usnic acid, divaricatic acid (major), nordivaricatic acid (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 147.

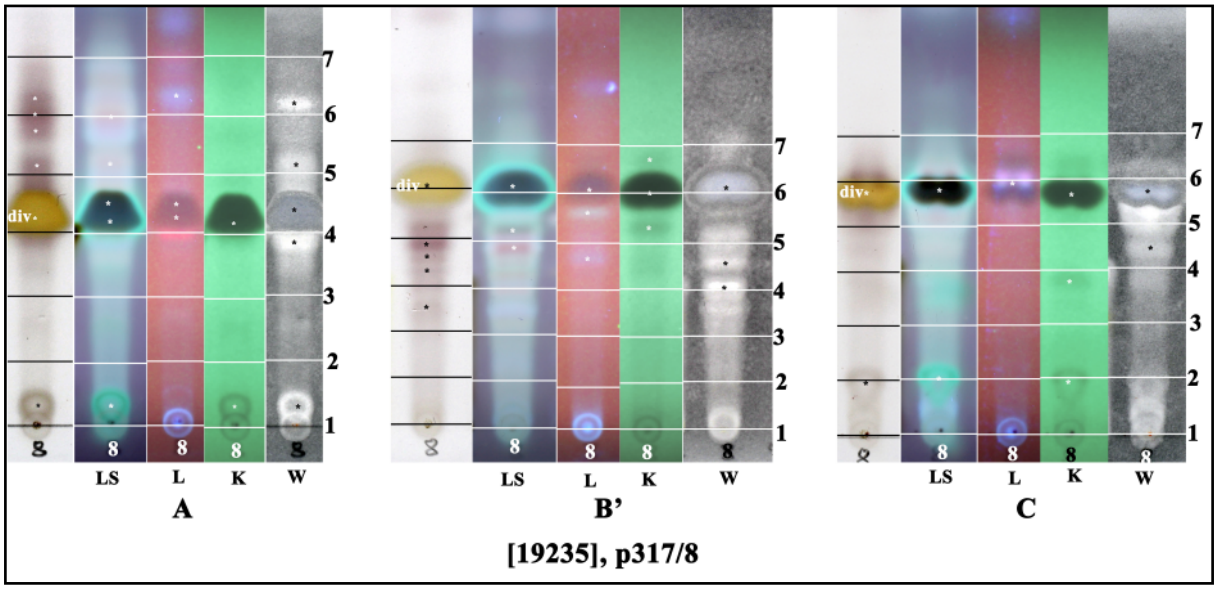






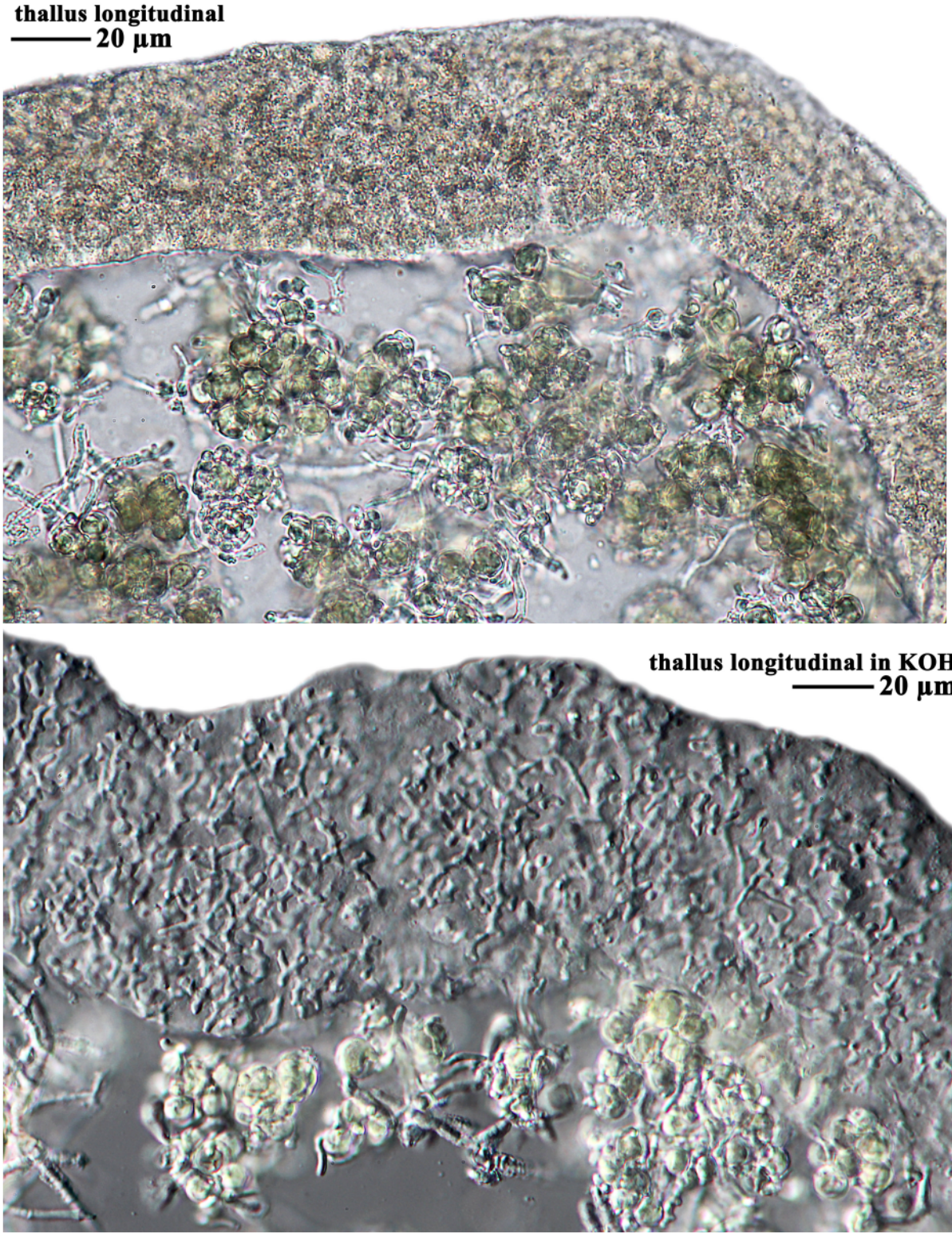
Ramalina canariensis





div: divaricatic acid

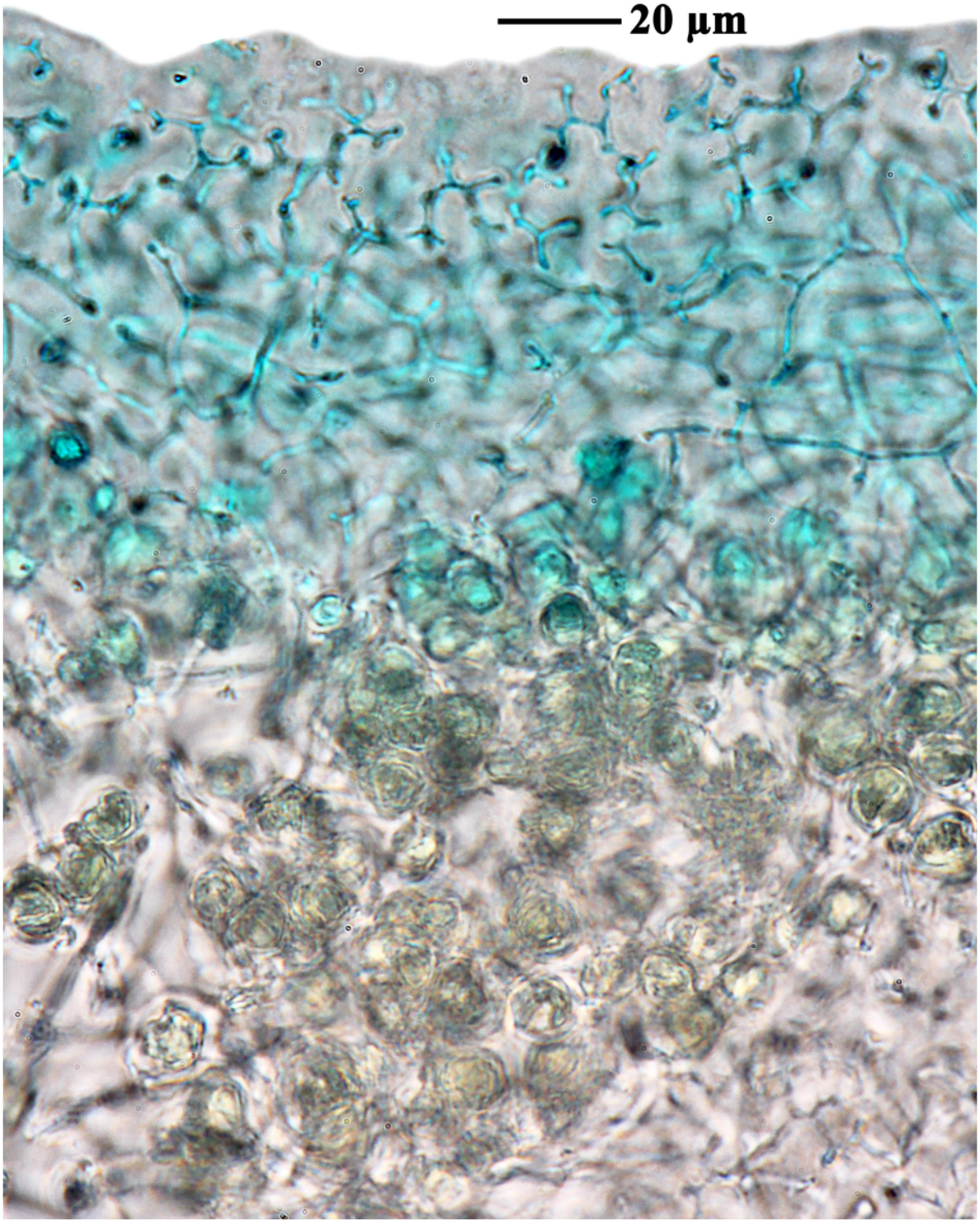
Ramalina canariensis



Ramalina canariensis

thallus longitudinal in KOH, malachitgreen

——— 20 µm



Ramalina canariensis

Ramalina celastri (Sprengel) Krog & Swinscow

Thallus corticolous, rarely saxicolous, pale green to grey-green, erect, subpendulous to pendulous, up to 12 cm long, exceptionally to 30 cm; branching initially trichotomous, either remaining as a three-lobed thallus or thereafter dividing subdichotomously or irregularly, often producing densely branched thalli, rarely producing small branchlets at right angles to the primary branches; branch width (l-)2-5 mm exceptionally to 20 mm, branches compressed ranging from narrow and canaliculate with apices attenuate to broad and flat with apices acute or blunt; surface matt, smooth to rugose, membranaceous or coarse and ridged with strands of chondroid tissue, cracks or holes may appear between these strands; pseudocyphellae usually present; holdfast delimited; soralia absent. Apothecia numerous, marginal on narrow branches, laminal and marginal on broader branches; apothecia occasionally appear on both upper and lower surfaces of the branch; disc 0.5-2.0 mm diam., plane to convex; margin narrow, entire, smooth or crennate, almost disappearing at maturity; spores oval, ellipsoid to slightly fusiform, mainly straight to slightly curved, (10-)12-16 x 4-6 µm. Chemistry: usnic acid only. Lit. Stevens, G.N.(1987).

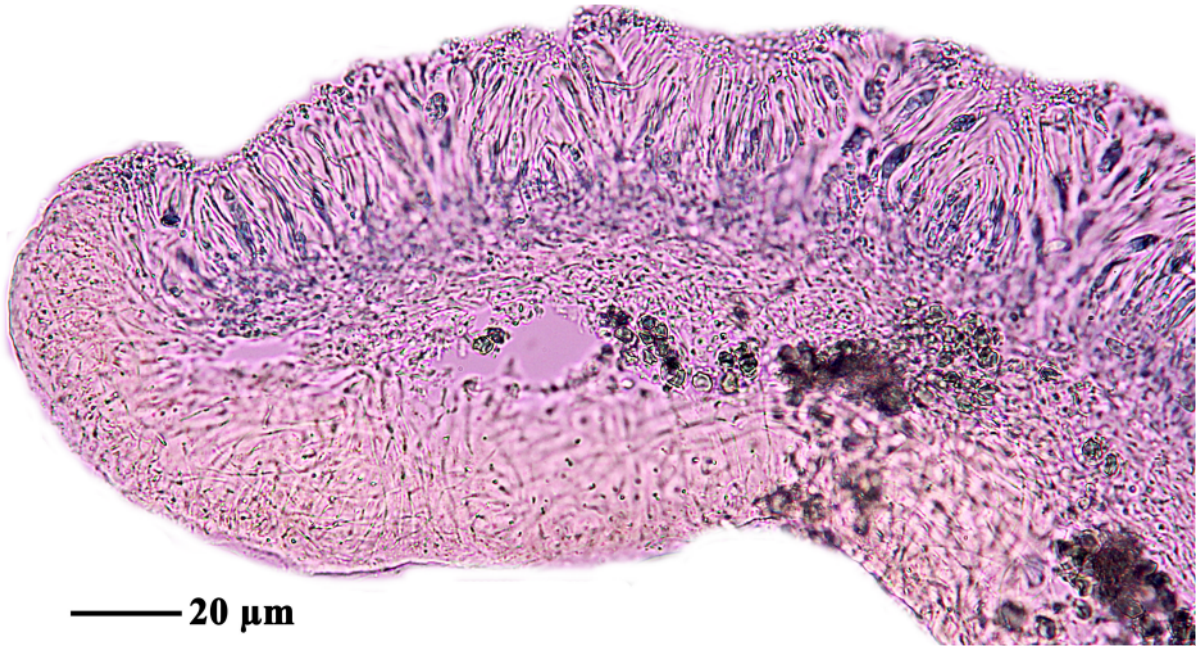
[19237], Australia, New South Wales, Burri Heights, 1 km west of Tomakin, 35°51' S, 150°11' E, 20 m, growing on *Acacia* in coastal forest dominated by *Eucalyptus maculata*. Leg. J.A. Elix (22743), 21.01.1989. Chemistry: usnic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 193.

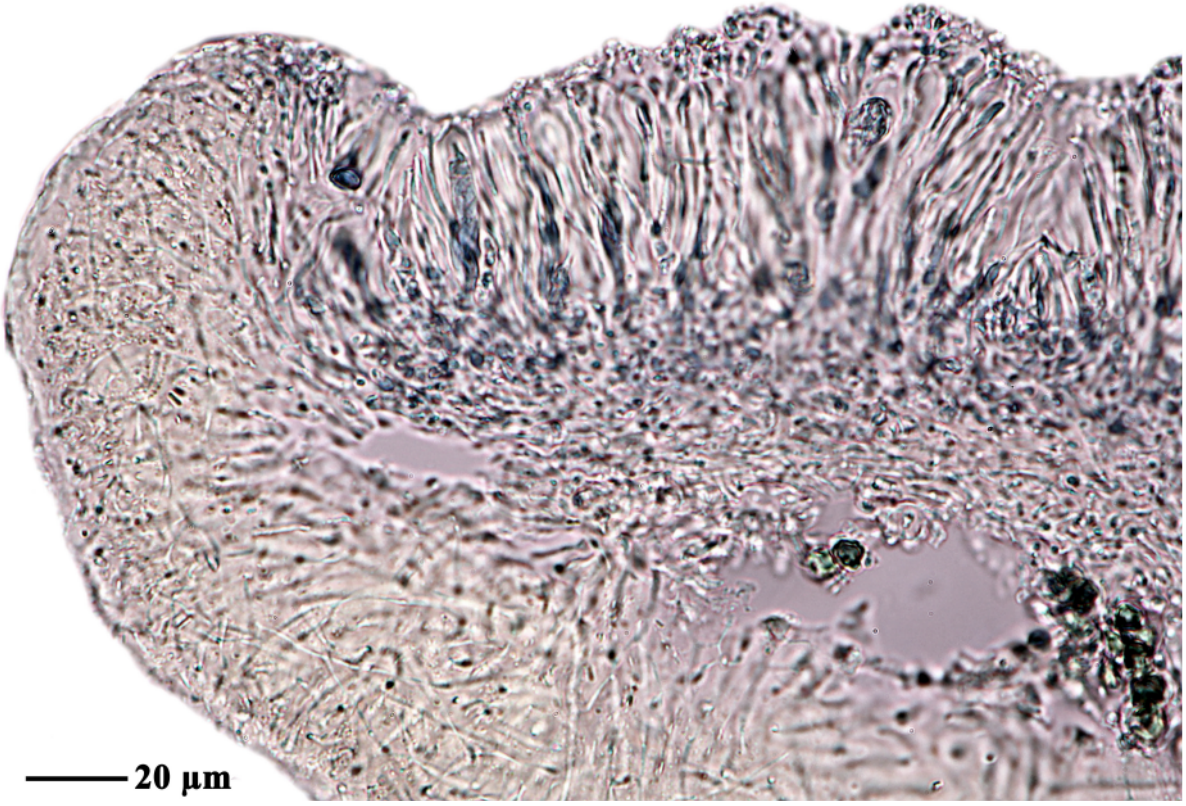


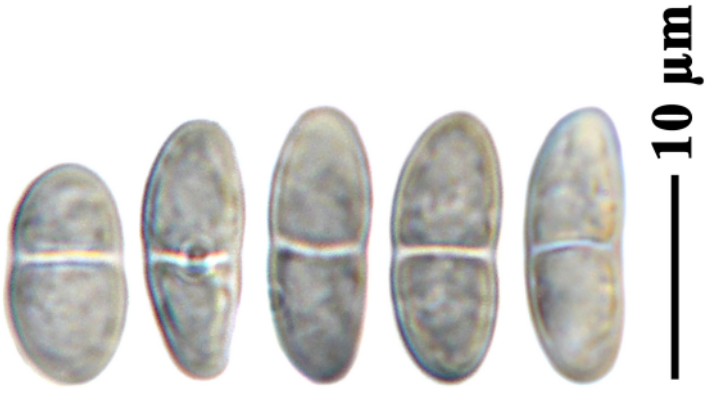




Ramalina celastri

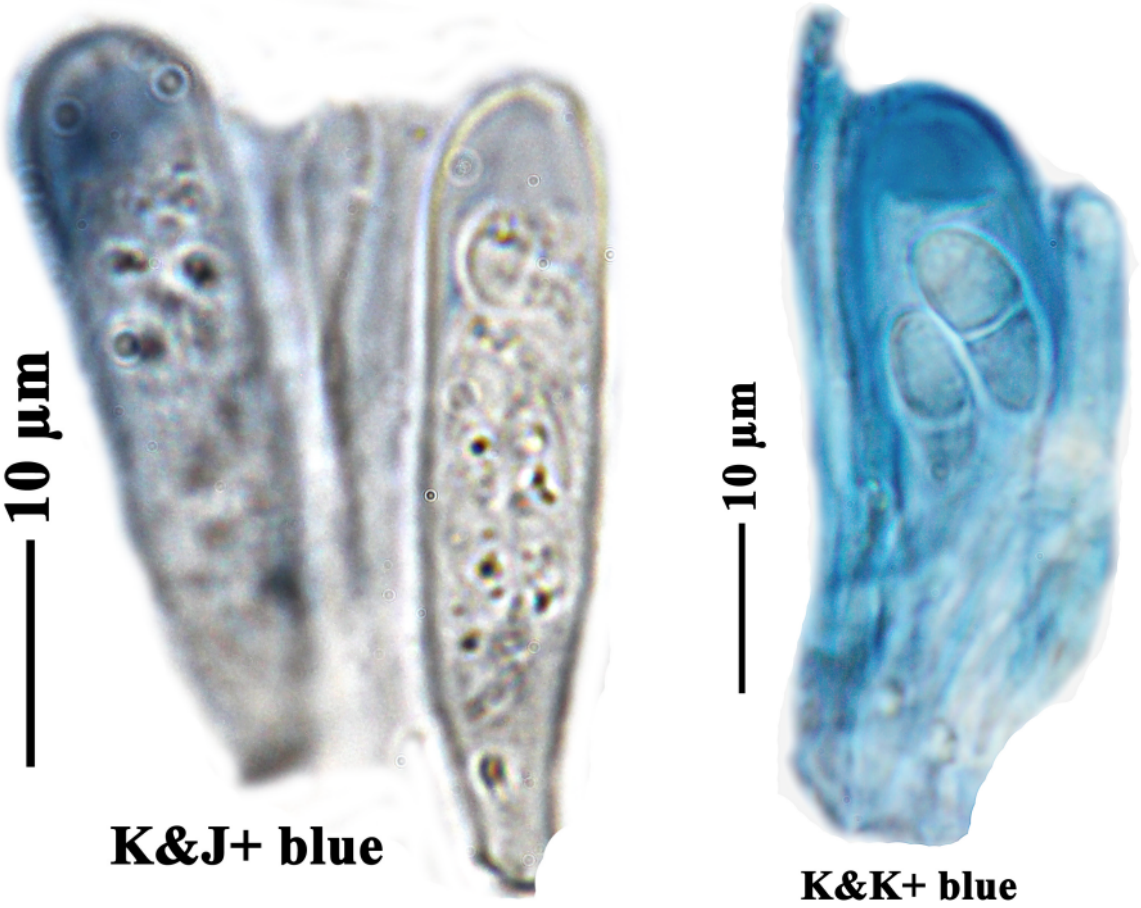




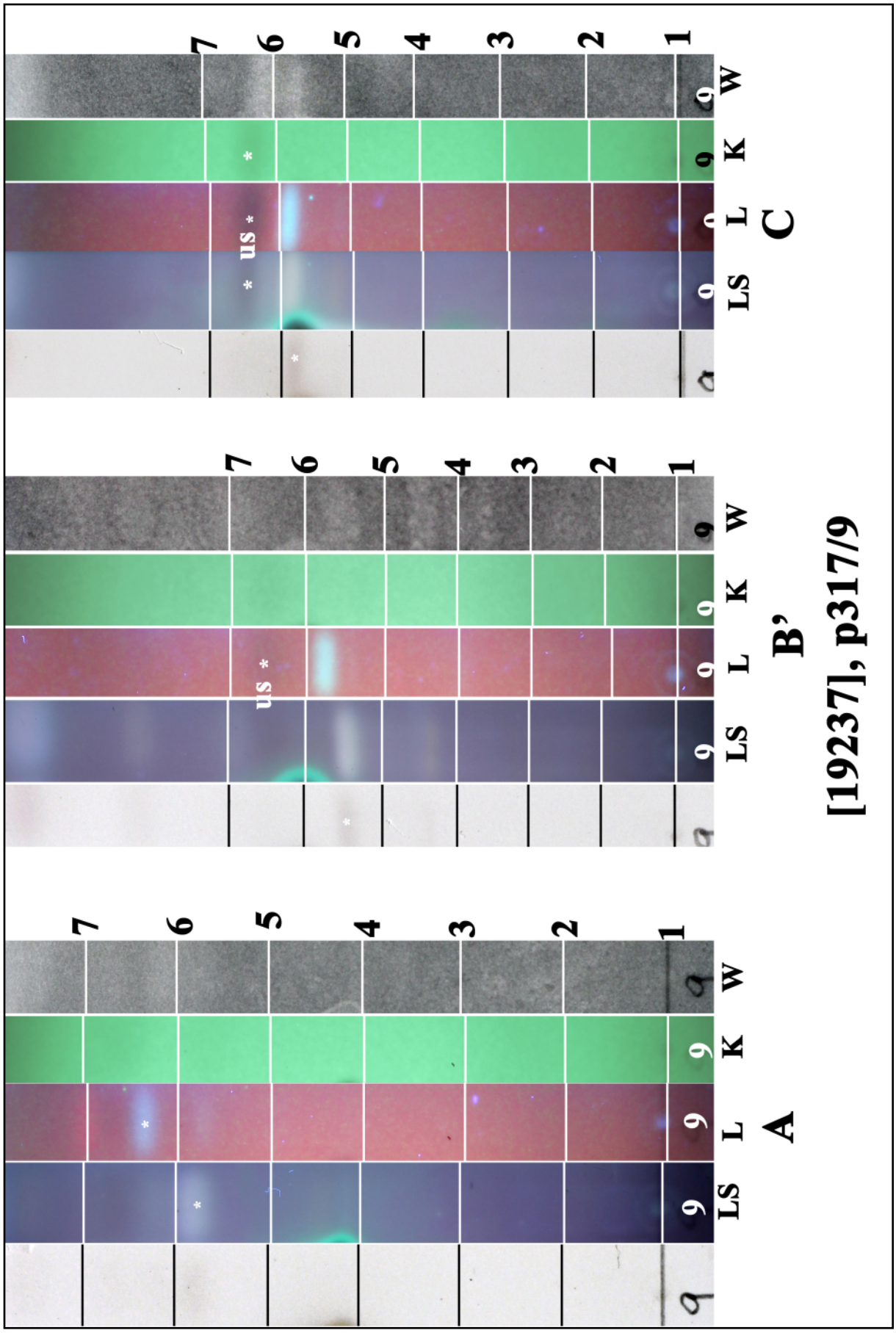


Ramalina celastri





Ramalina celastri



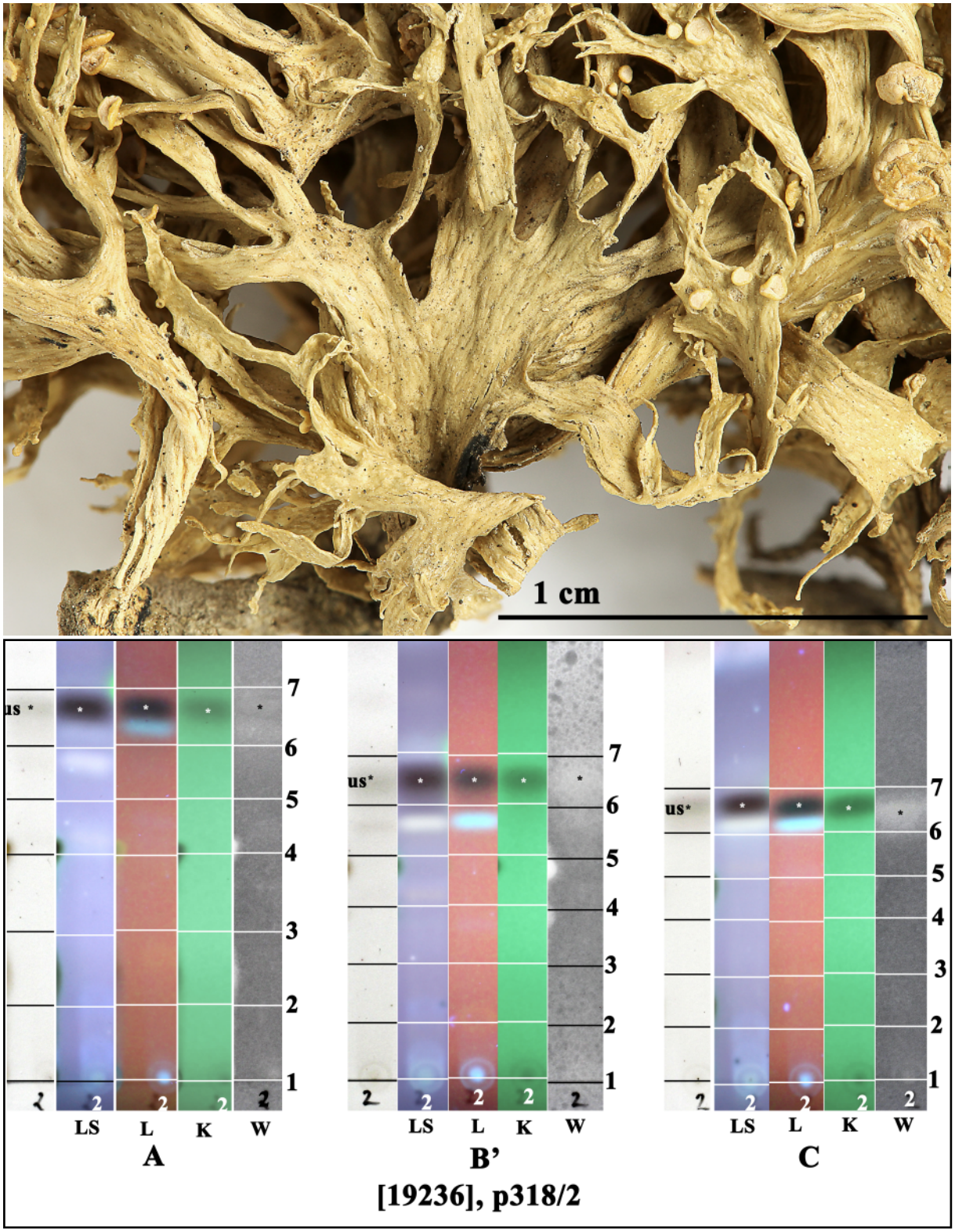
us: usnic acid (trace)

Ramalina celastri

Ramalina celastri (Sprengel) Krog & Swinscow

[19236], New Zealand, North Island, South Auckland, Kauaeranga River, Thames, Mangrove, on branch of *Avicennia resinifera*. Leg. J. Johnston (2486), 21.03.1985. Chemistry: usnic only by TLC, anal. J. Johnston.





us: usnic acid

Ramalina celastri

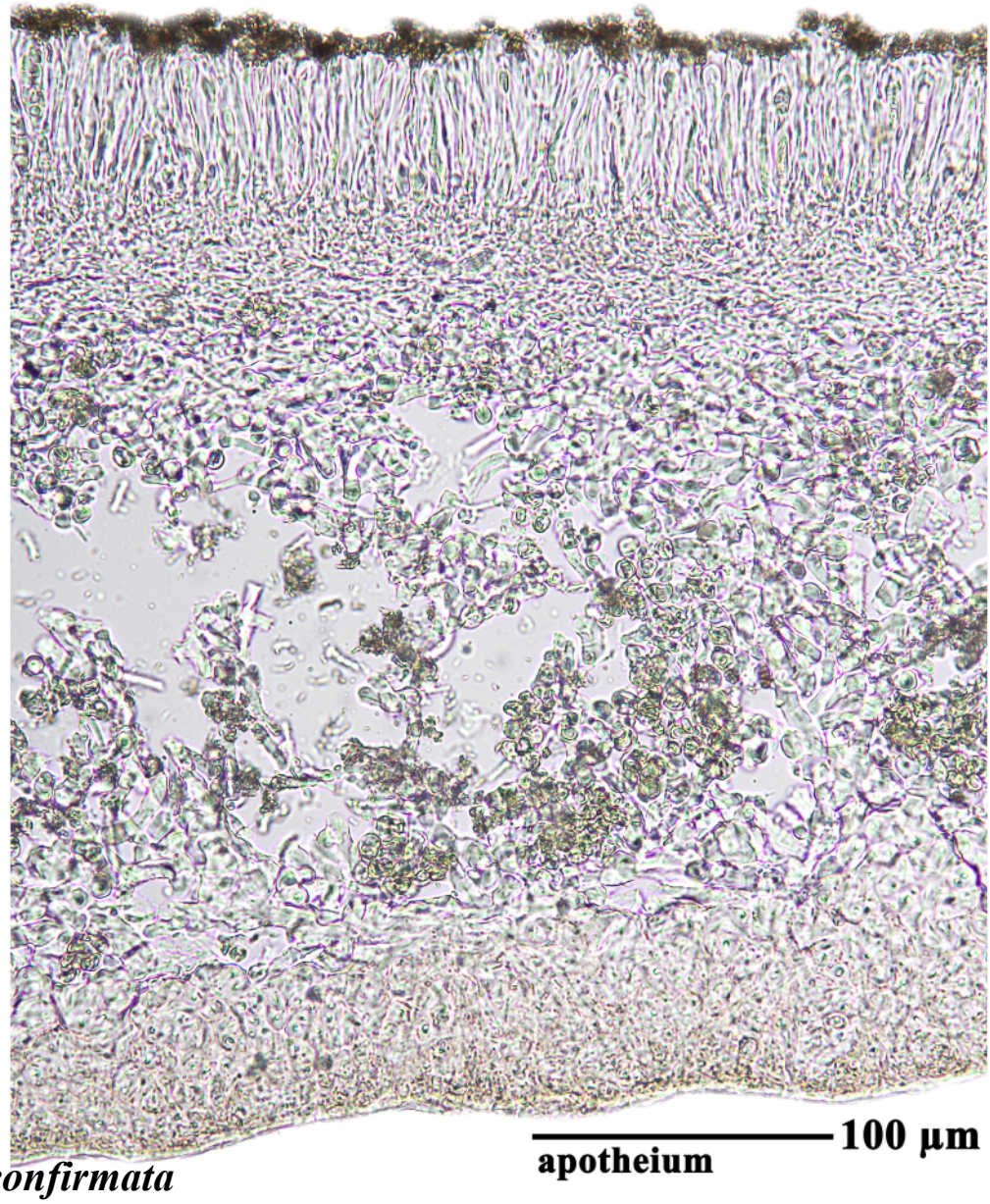
Ramalina confirmata (Nyl.) Elix
[= ***Ramalina subfraxinea*** var. ***confirmata*** (Nyl.) G.N. Stevens]

Thallus corticolous, rarely saxicolous, grey-green, rigid, erect to subpendulous, up to 4 cm long, exceptionally to 11 cm; branching subdichotomous, sparse to moderate; branch width (0-5-)2-4(-10) mm, branches compressed, narrow and canaliculate to broad and flat, apices attenuate or blunt; surface smooth to rugose, short linear pseudocyphellae along branches or basally only; holdfast delimited; soralia absent. Apothecia common, marginal and subterminal, rarely laminal, small thalli produce subterminal apothecia subtended by a spur; disc 2-3 mm diam., concave or plane; margin entire, slightly crenate, often incised at maturity; ascospores ellipsoid, straight or curved (8-)10-12(-14) x 4-5 µm. Chemistry. cryptochlorophaeic acid (major) paludosic acid (minor), 4'-*O*-methylcryptochlorophaeic acid (minor), usnic acid. Lit. Stevens, G.N. (1987).

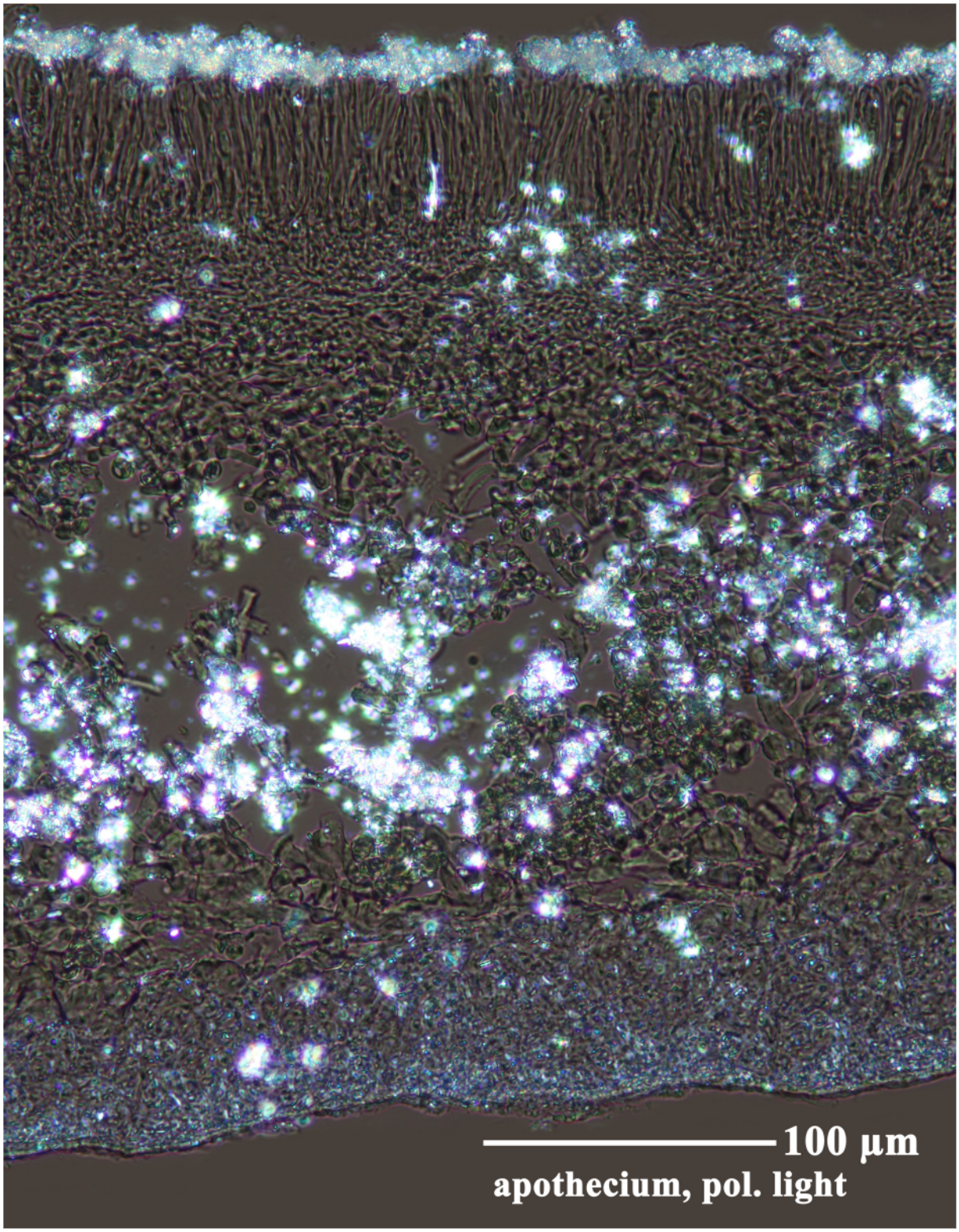
[19238], Australia, Queensland, Wilson Beach, 17 km south-east of Proserpine, 20°29' S, 148°43' E, 1 m, growing on *Hibiscus tileaceus* in strand dominated vegetation along the foreshore. Leg. J.A. Elix (20964) & H. Streimann, 30.06.1986. Chemistry: usnic acid (minor), cryptochlorophaeic acid (major), paludosic acid (trace) by TLC, anal. Q. Lin. LICHENES AUSTRALASICI EXSICCATI NO. 240.



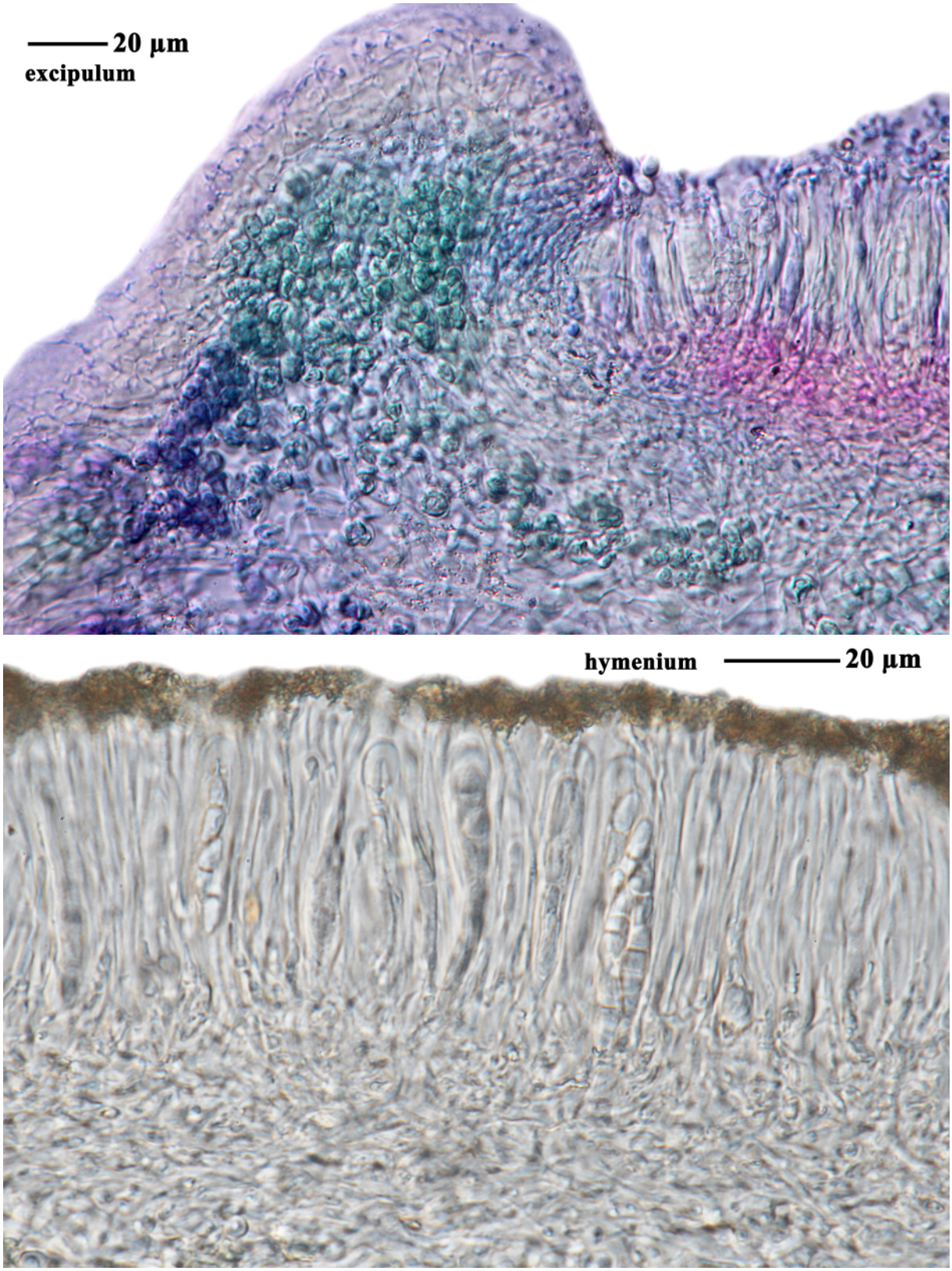




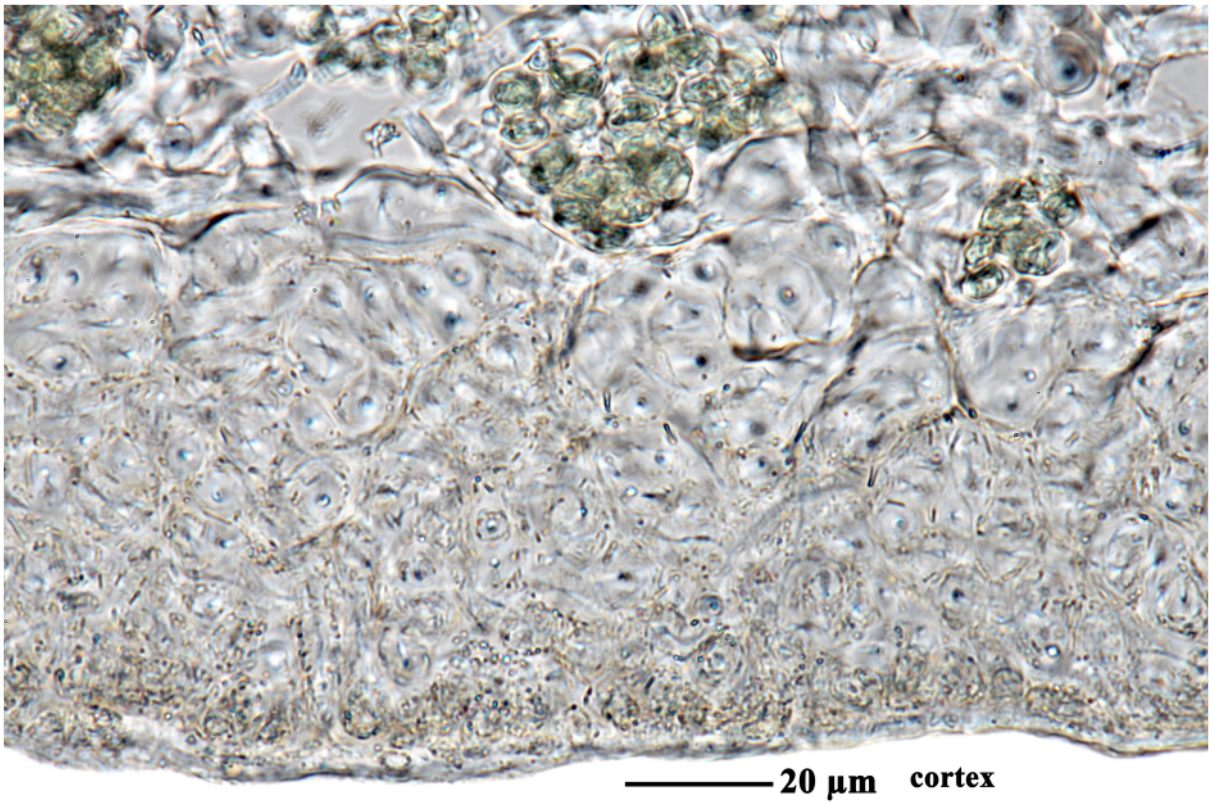
Ramalina confirmata

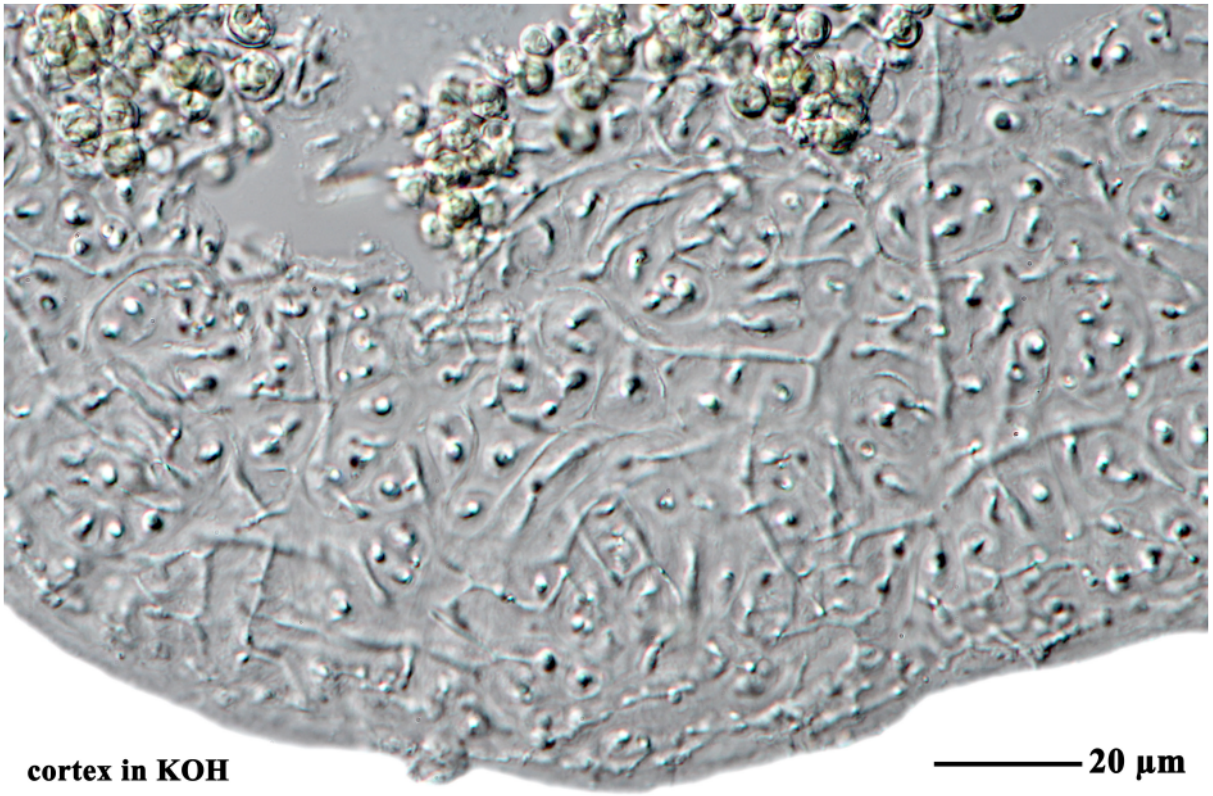


Ramalina confirmata



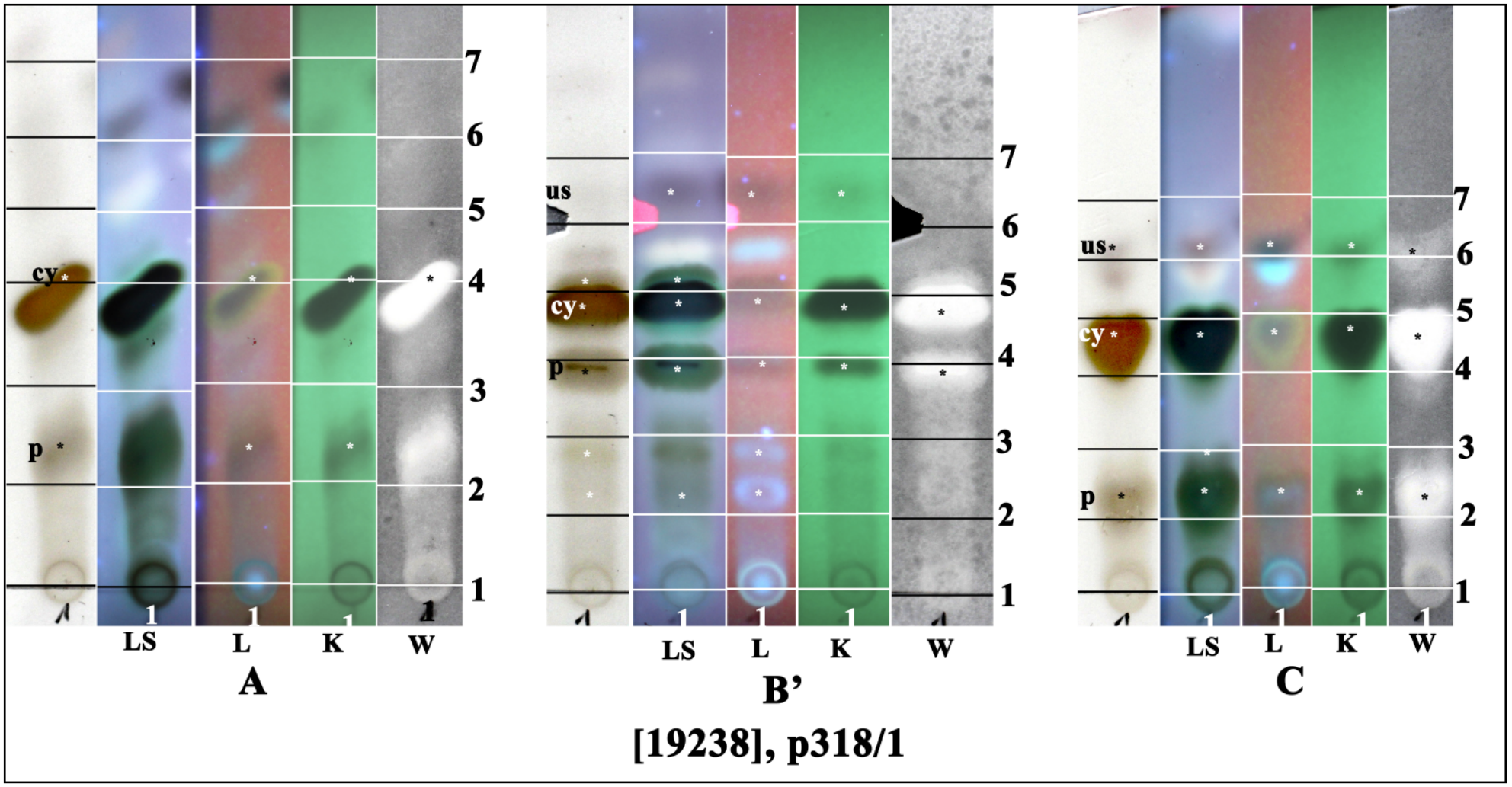
Ramalina confirmata







Ramalina confirmata



us: usnic acid, cy: cryptochlorophaeic acid, p: paludosic acid

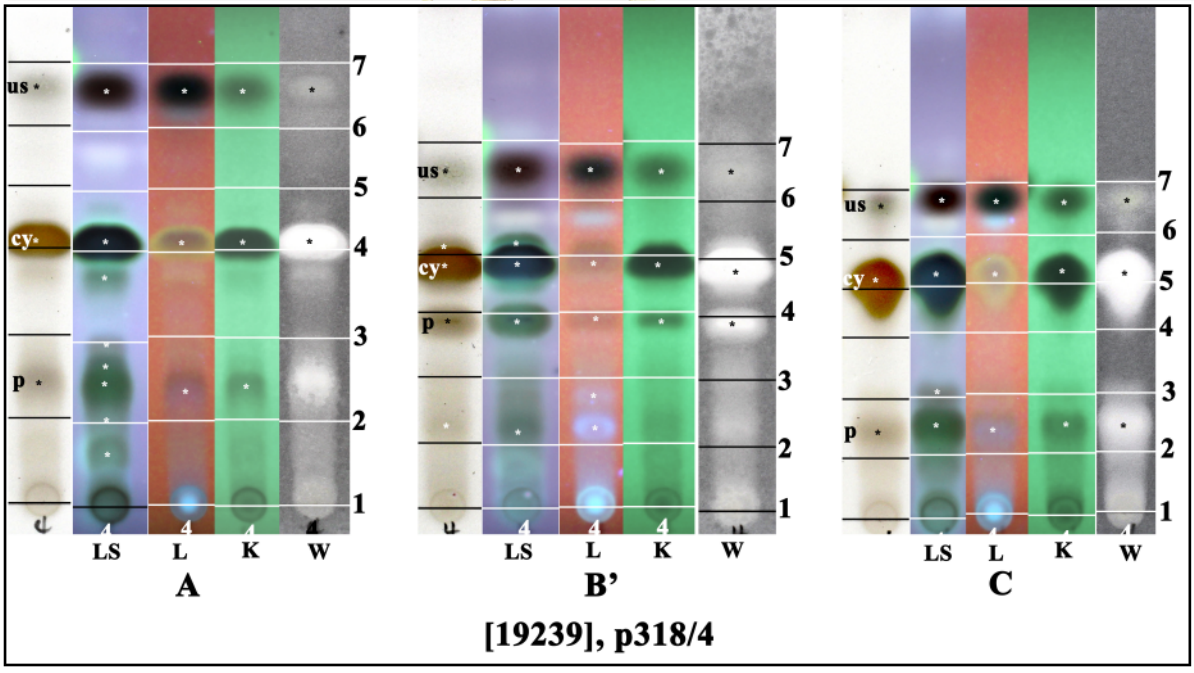
rem: A, C with Rf marginal mistakes of the columns

Ramalina confirmata (Nyl.) Elix
[= ***Ramalina subfraxinea*** var. ***confirmata*** (Nyl.) G.N. Stevens]

[19239], Australia, Queensland, Tin Can Inlet, Tin Can Bay, 25°54' S, 153°01' E, sea level, growing on *Rhizophora stylosa* in strand vegetation along foreshore. Leg. J.A. Elix (22836), 2.07.1989. Chemistry: usnic acid (minor), cryptochlorophaeic acid (major), paludosic acid (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 219.







us: usnic acid, cy: cryptochlorophaeic acid, p: paludosic acid

Ramalina confirmata

Ramalina exiguella Stirt.

Thallus corticolous, grey-green, caespitose, erect, rigid, up to 3 cm high; branching mainly from the base, squarrose branchlets sometimes present on main branches; branch width 0.3-1.0 mm, branches subterete, narrow, apices attenuate, sometimes black tipped; cortex shiny, longitudinally grooved giving a string-like appearance; pseudocyphellae linear; holdfast delimited; soralia absent. Apothecia few to many, usually marginal along the branches and/or subterminal causing the branch apex to become geniculate with a long, attenuate spur; disc. 0.2-2.0 mm diam. , concave, plane to convex; margin entire, thick on immature apothecia; spores ovoid to ellipsoid or gibbous and slightly curved, (12-)14-16 x (5-)6-8 µm. Chemistry: usnic acid only.
Lit. Stevens, G.N.(1987).

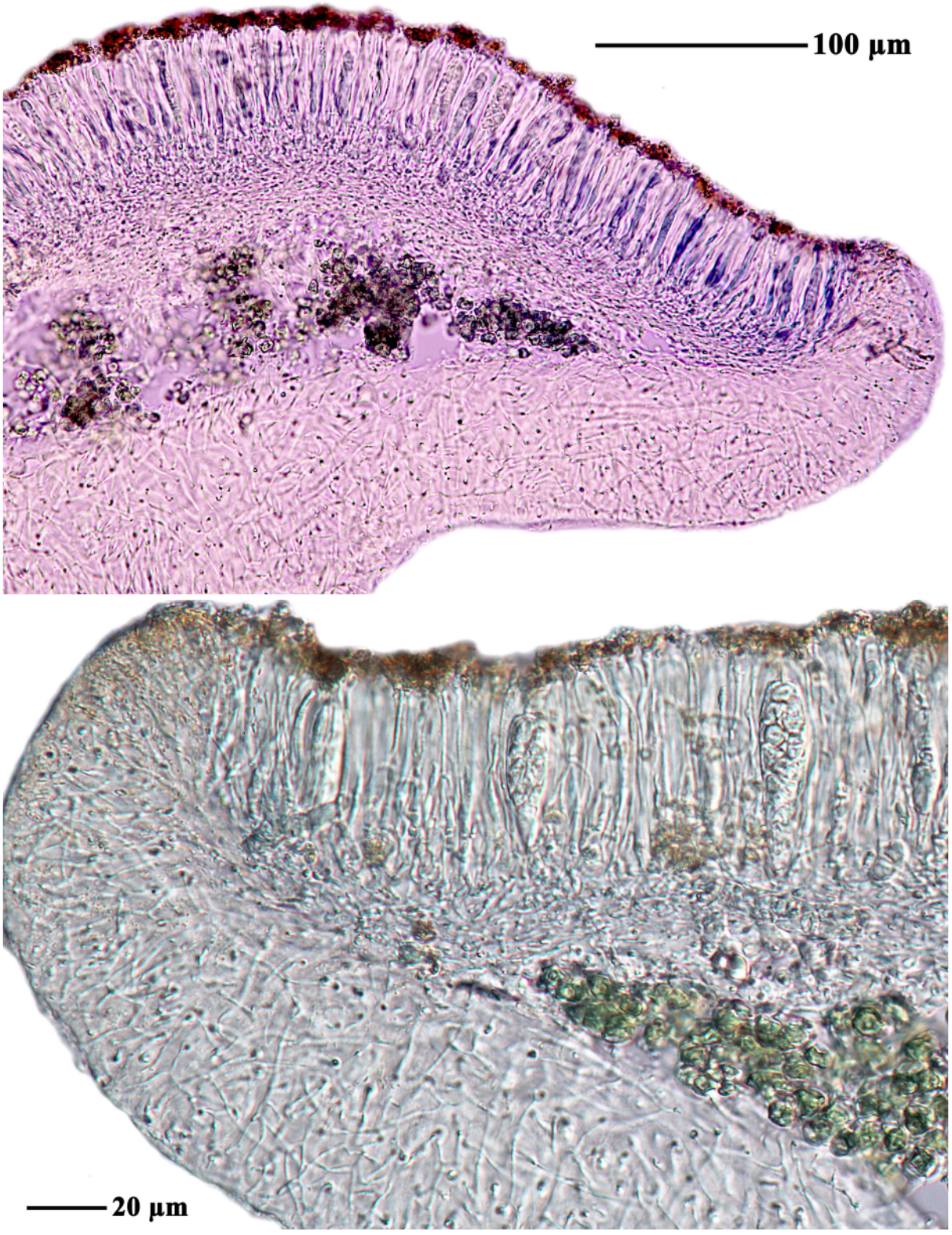
[19240], Australia, New South Wales, Old Maclay River estuary, Stuarts Point, 30°49' S, 153°00' E, sea level, growing on *Aegioras corniculatum* in mangrove swamp. Leg. J.A. Elix (21341), 16.01.1987. Chemistry: usnic acid by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 148.





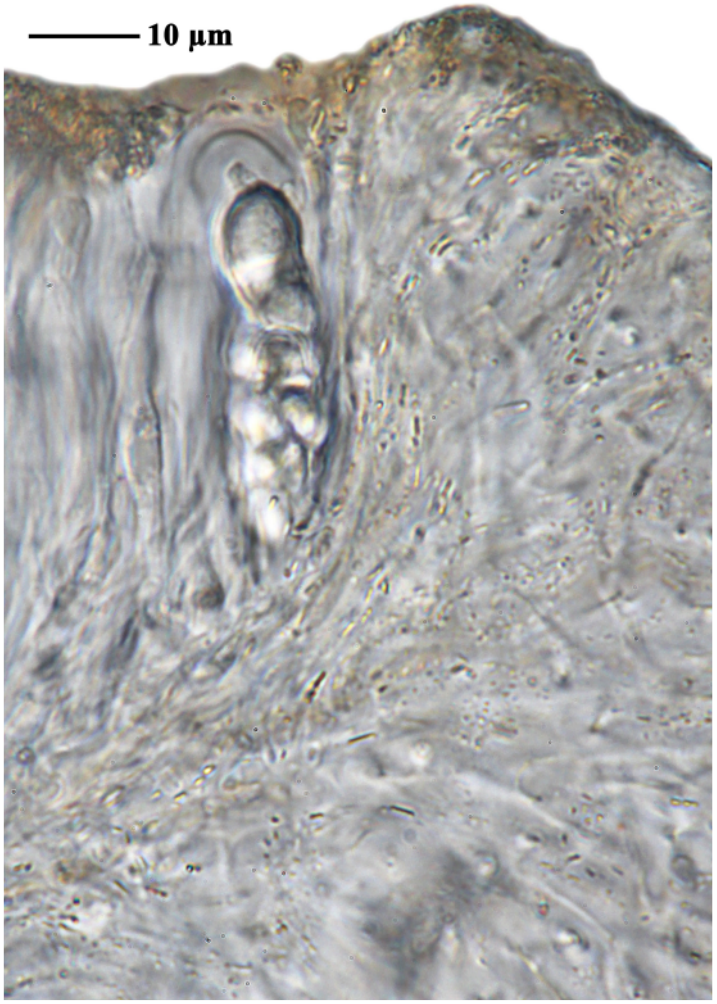
us: usnic acid

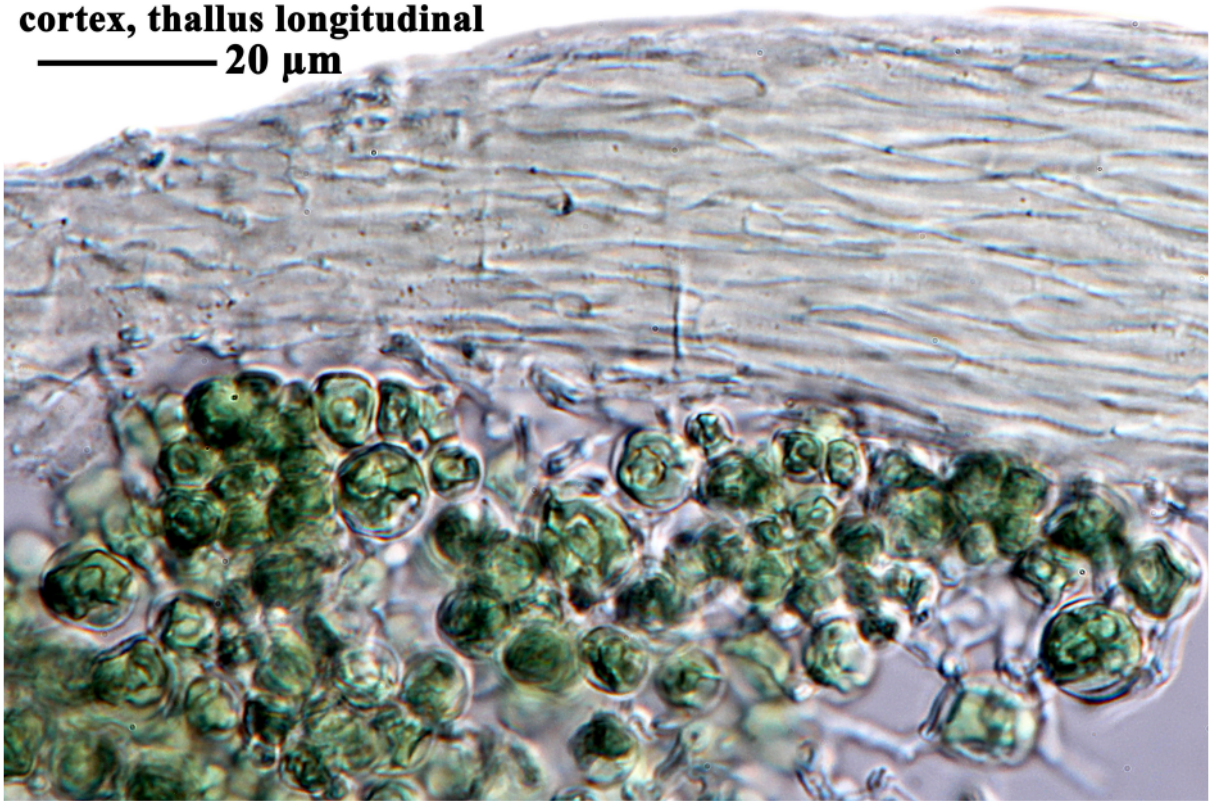
Ramalina exiguella



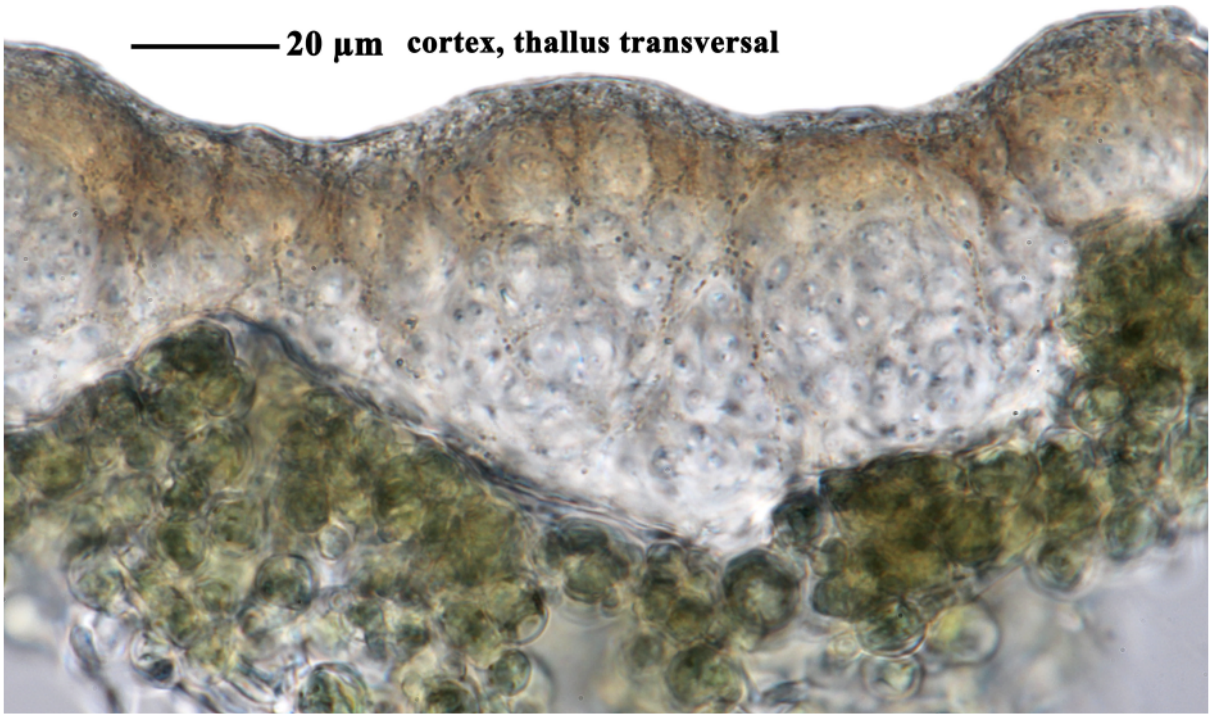
Ramalina exiguella

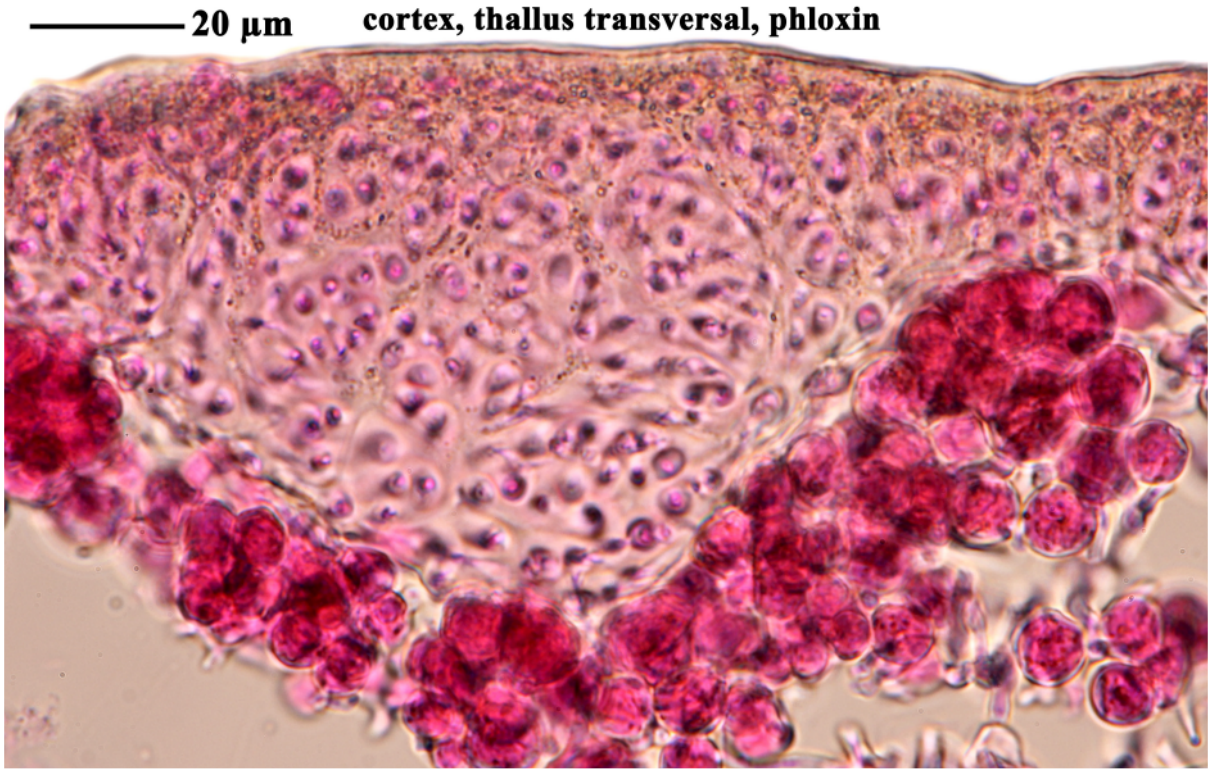




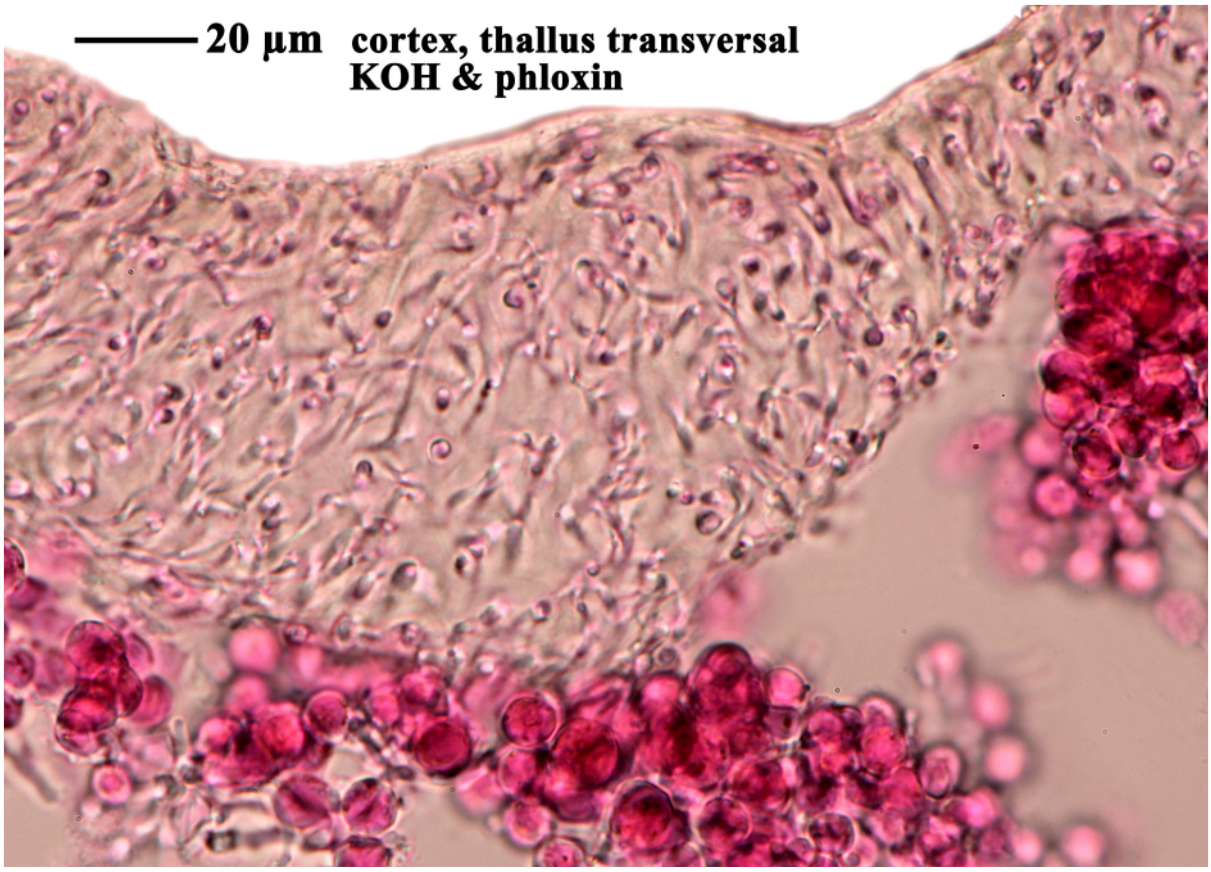


Ramalina exiguella

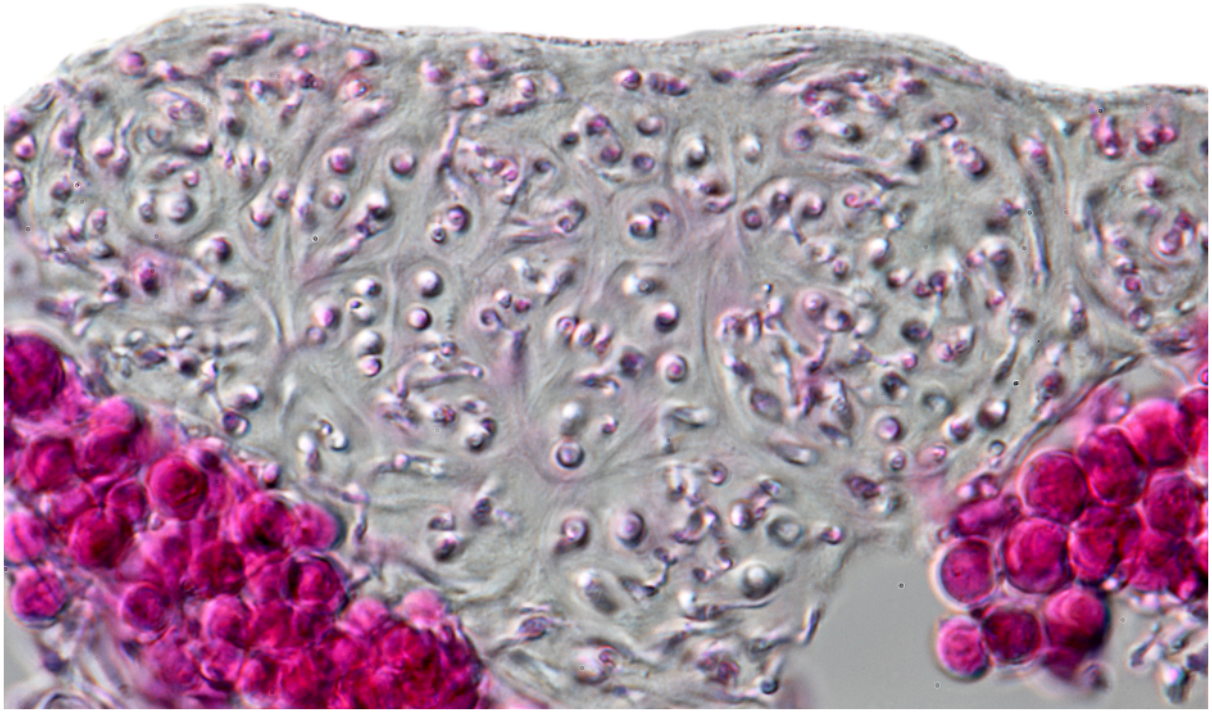




Ramalina exiguella



20 µm cortex, thallus transversal, KOH & phloxin



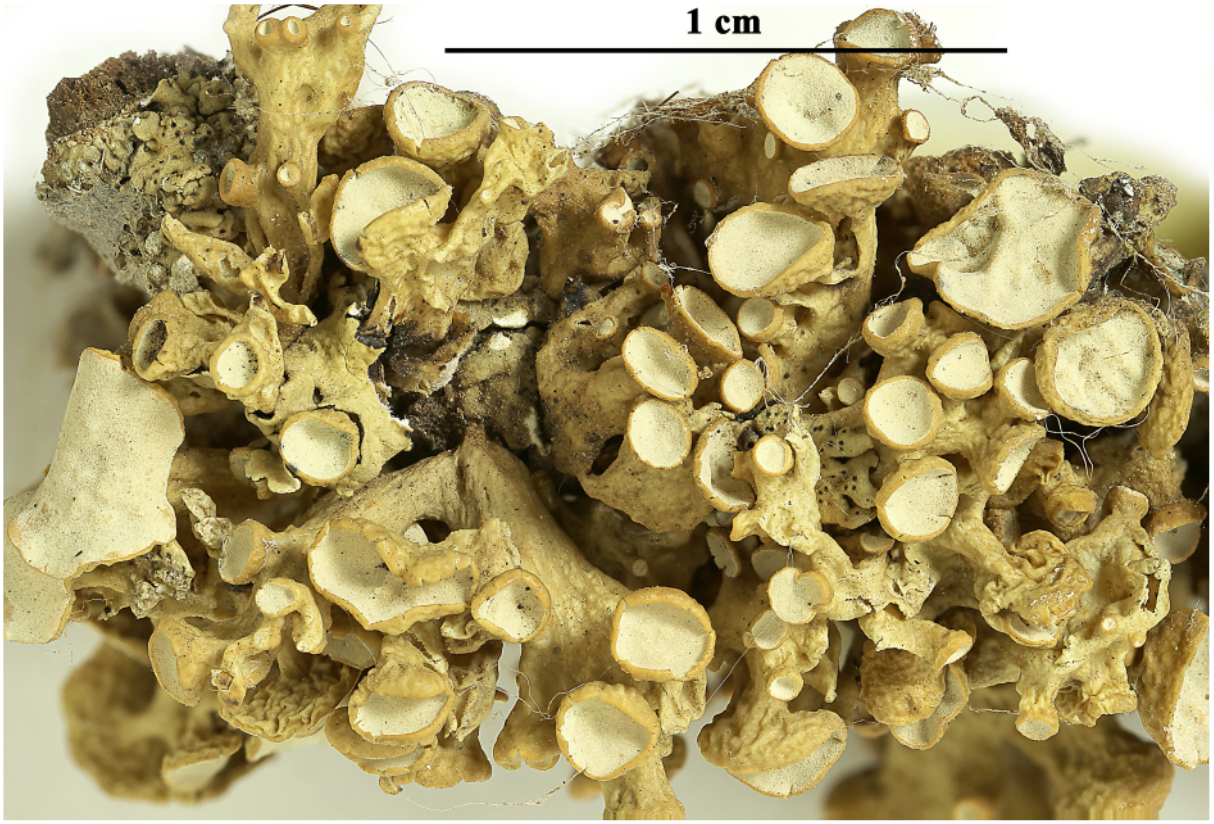
Ramalina exiguella

Ramalina fissa (Müll.Arg.) Vain.

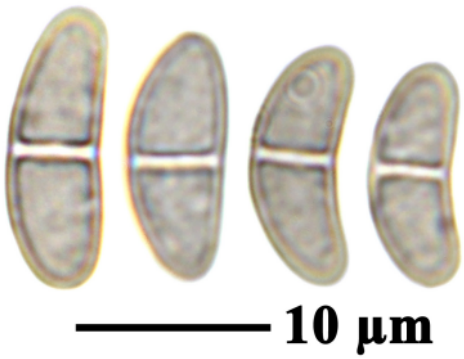
Thallus corticolous and saxicolous, greenish-grey, erect, rigid to flaccid, inflated and shrubby or flattened and almost foliose, 1-3 cm high; branching from the base only; branches variable in width, often bursting open to reveal the medulla, giving a false effect of gross inflation, with flattening of the thallus the areas directly below the apothecia remain the only part of the thallus with a central cavity; perforations when present, large, round to elongate, splitting to reveal the medulla; medulla loosely woven, sparse, adhering in patches to the inner cortex wall, the wall often marked with reticulate strands of chondroid tissue; sometimes pseudocyphellate; holdfast delimited; soralia absent. Apothecia numerous, terminal, not spurred; sometimes laminal; disc 2-5(-8) mm diam., initially concave becoming flat; margin entire, inrolled; spores ellipsoid, mainly curved, some straight, (10-)12-16 x 4-5(-6) µm. Chemistry:salazinic acid and usnic acid. Lit.: Stevens, G.N. (1987).

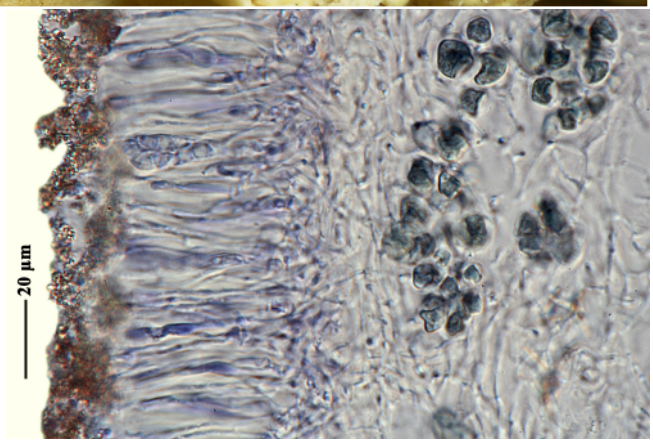
[19241], Australia, South Australia, Pine Hut Road, 4 km east of Eden Valley, 34°39' S, 139°07' E, 360 m, growing on *Casuarina stricta* in rocky pasture land. Leg. J.A. Elix (21337b), 05.01.1987. Chemistry: usnic acid (minor), salazinic acid (major), consalazinic acid (trace), scabrosin 4,4'-diacetate (minor) by TLC, anal. Q. Lin. LICHENES AUSTRALASICI EXSICCATI NO. 241.



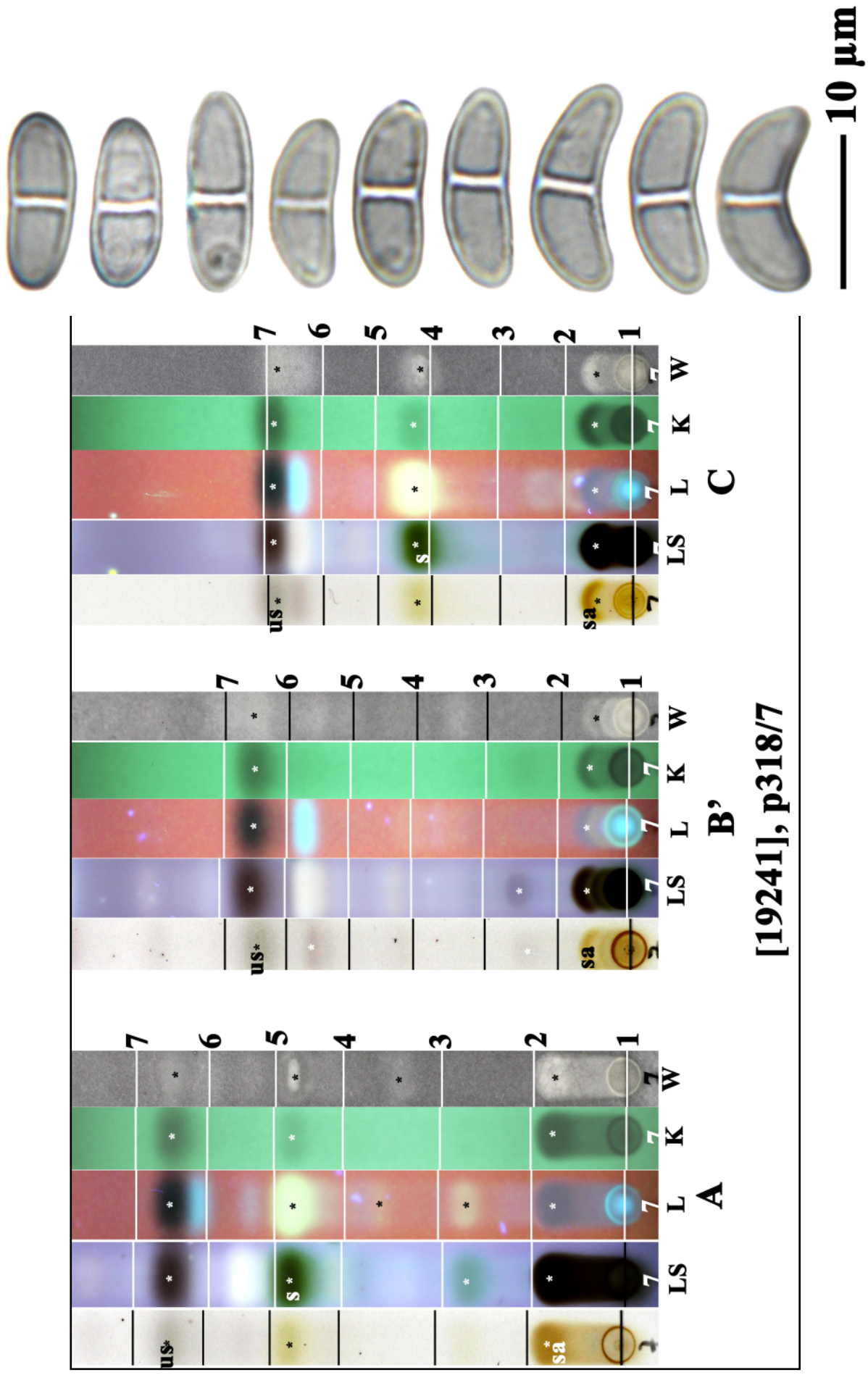








Ramalina fissa



us: usnic acid, sa: salazinic acid, s: scabrosin 4,4'diacetat

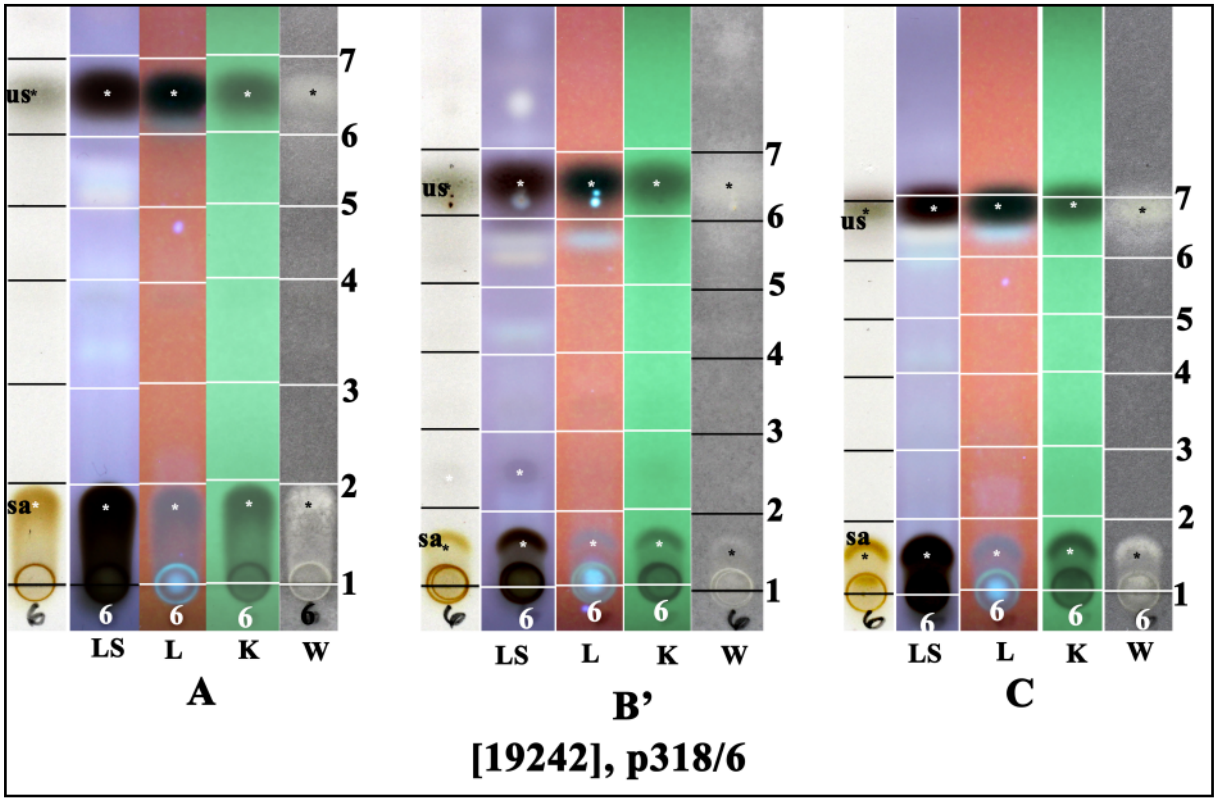
Ramalina fissa

Ramalina fissa (Müll.Arg.) Vain.

[19242], Australia, South Australia, Kangaroo Island, Playford Highway, 1 km west if Kingscote Airport, 35°43' S, 137°31' E, 15 m, growing on dead twigs in *Eucalyptus* and *Melaleuca* dominated scrub. Leg. J.A. Elix (19666) & L.H. Elix, 27.10.1985. Chemistry: usnic acid, salazinic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 121.







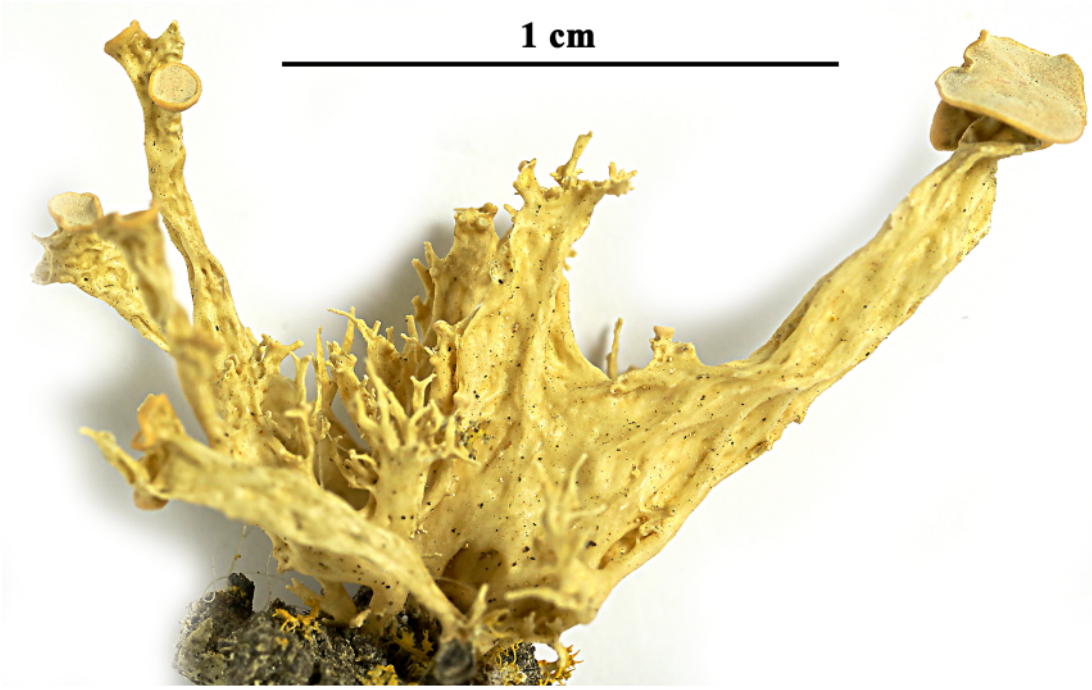
us: usnic acid, sa: salazinic acid

Ramalina fissa

Ramalina glaucescens Kremp.

Thallus corticolous, pale green, caespitose, erect to subpendulous, up to 4 cm long, exceptionally to 6 cm; branching sparse, subdichotomous to irregular, additional side branchlets occur on narrow branches; branch width (0-5-)l-5(-10) mm, branches compressed, narrow and canaliculate or broad and flat, apices usually forked, narrow branches with fine pointed apices, broader branches with dissected apices; surface shiny and smooth or matt and rugose, becoming coarse with chondroid strands showing at the surface, often horny in texture; holdfast delimited or diffuse (if growing in colonies); soralia absent. Apothecia common, laminal at the axils of bifurcating branches (to 5 mm diam.) or laminal towards the branch apices (0.5-1.0 mm diam.), marginal and subterminal on narrow canaliculate branches (0.5-1.5 mm diam.), laminal on broad branches (2-10 mm diam.) at or near the apex margin, with smaller apothecia on the same branch near the centre; disc concave becoming plane, rarely convex; margin thick to thin, persistent, often inrolled; spores ellipsoid, straight or curved, 10-12(-16) x 4-5(-6) µm. Chemistry. sekikaic acid (trace homosekikaic acid or trace divaricatic acid), or usnic acid only, or divaricatic acid and usnic acid. Lit. Stevens, G.N.(1987).

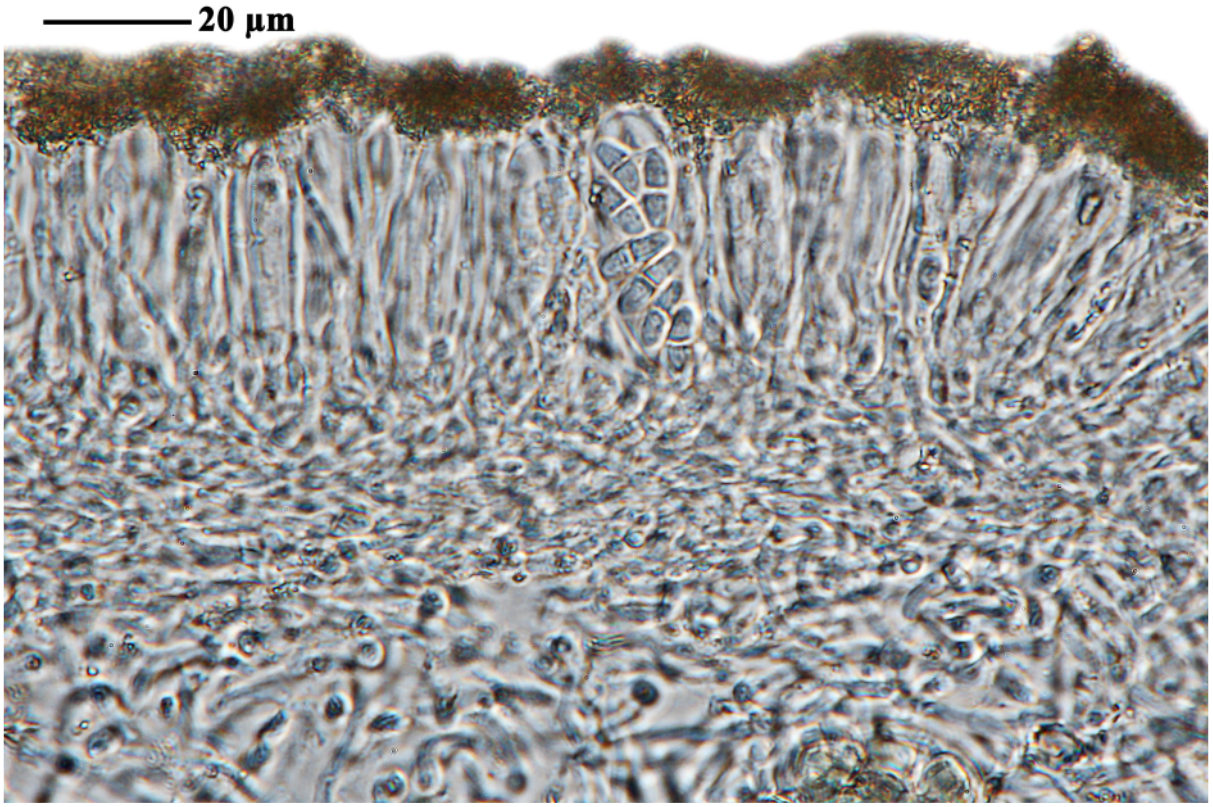
[19243], New Zealand, South Island, Otago, rocky hillside, c. 27.5 km west-south-west of Ranfurly on Alexandra-Palmerston road, on twigs of *Coprosma* in small gully in grazed paddock. Leg. J. Johnston (2136), 15.03.1985. Chemistry: sekikaic acid (major), usnic by TLC, HPLC, anal. J. Johnston.

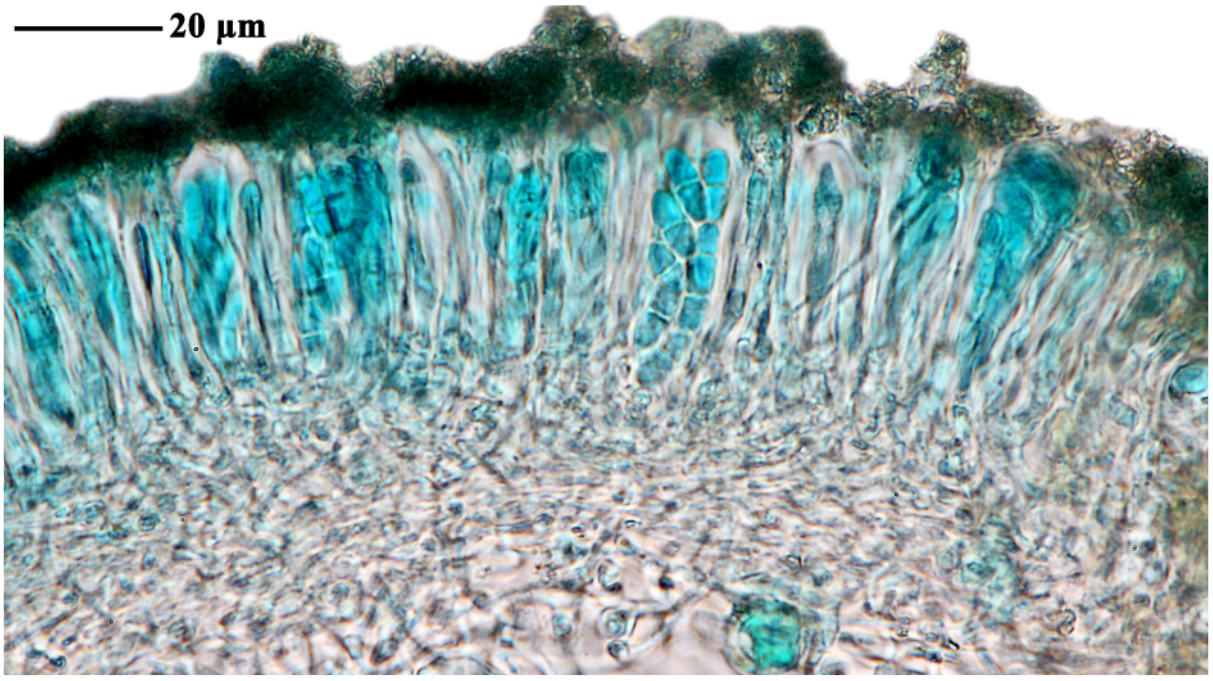


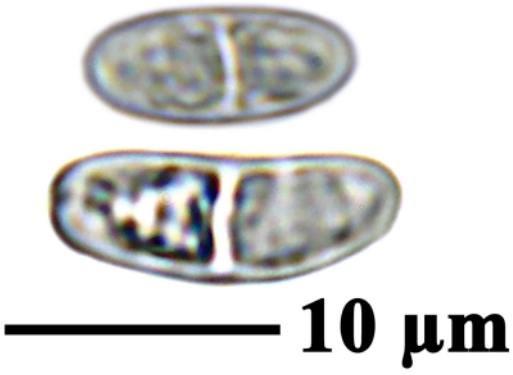




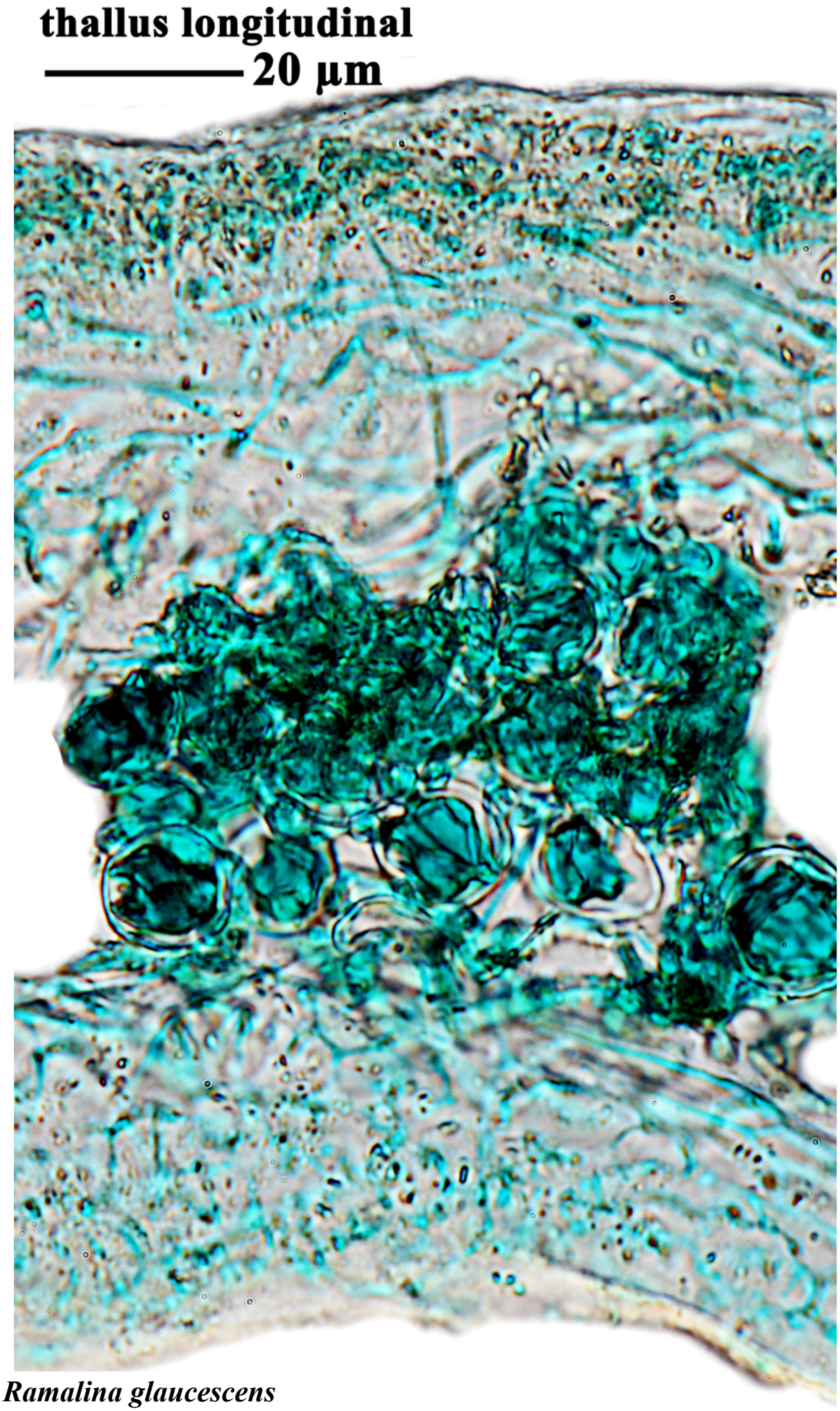
Ramalina glaucescens



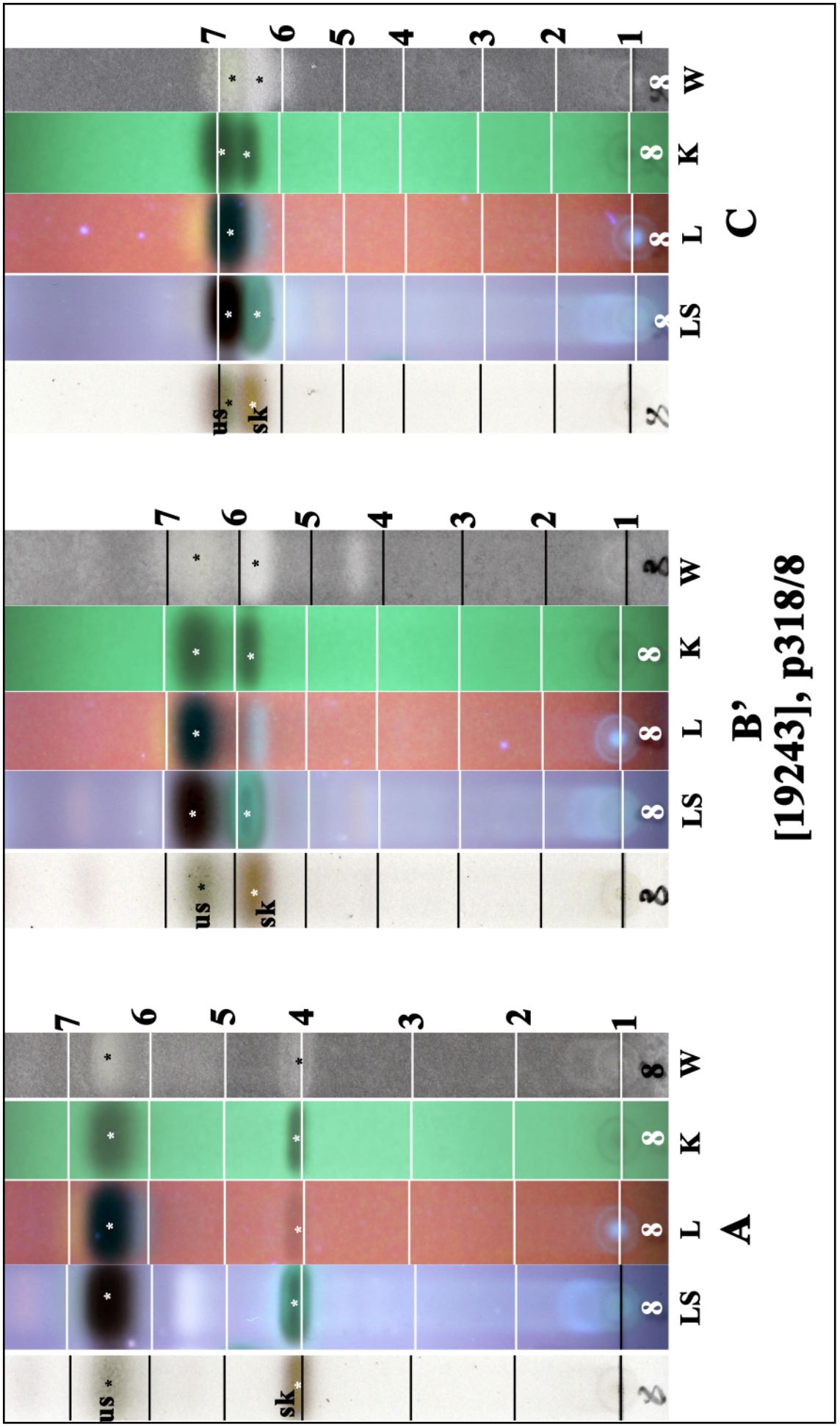




Ramalina glaucescens



Ramalina glaucescens

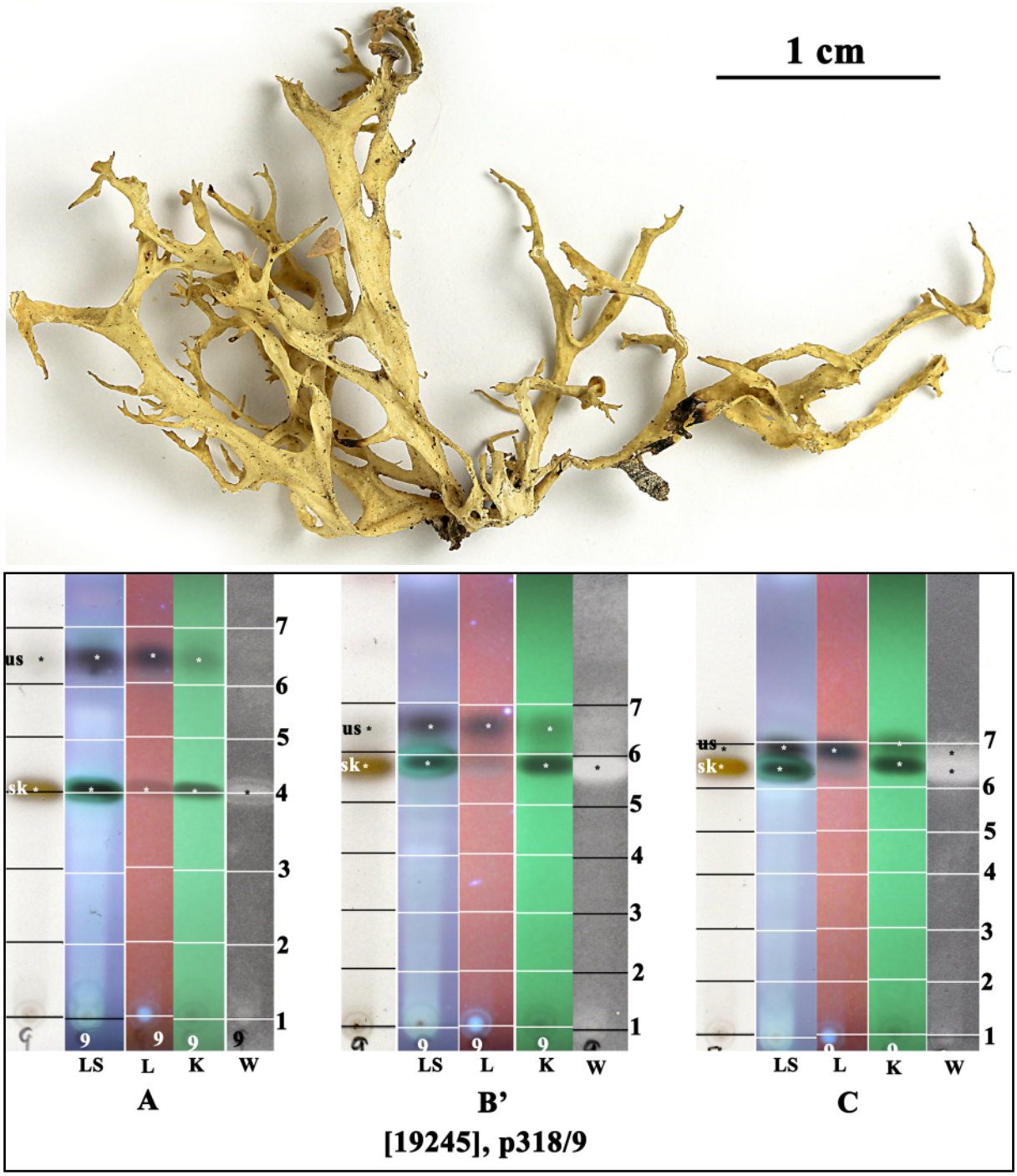


Ramalina glaucescens

Ramalina glaucescens Kremp.

[19245], New Zealand, South Island, Hanmer Forest Park, near Hanmer Springs, on *Alnus* in exotic forest. Leg. J. Johnston (1821), 10.03.1985. Chemistry: sekikaic acid, usnic acid, unknowns (trace) by TLC, HPLC anal. J. Johnston & G.A. Jenkins.





us: usnic acid, sk: sekikaic acid

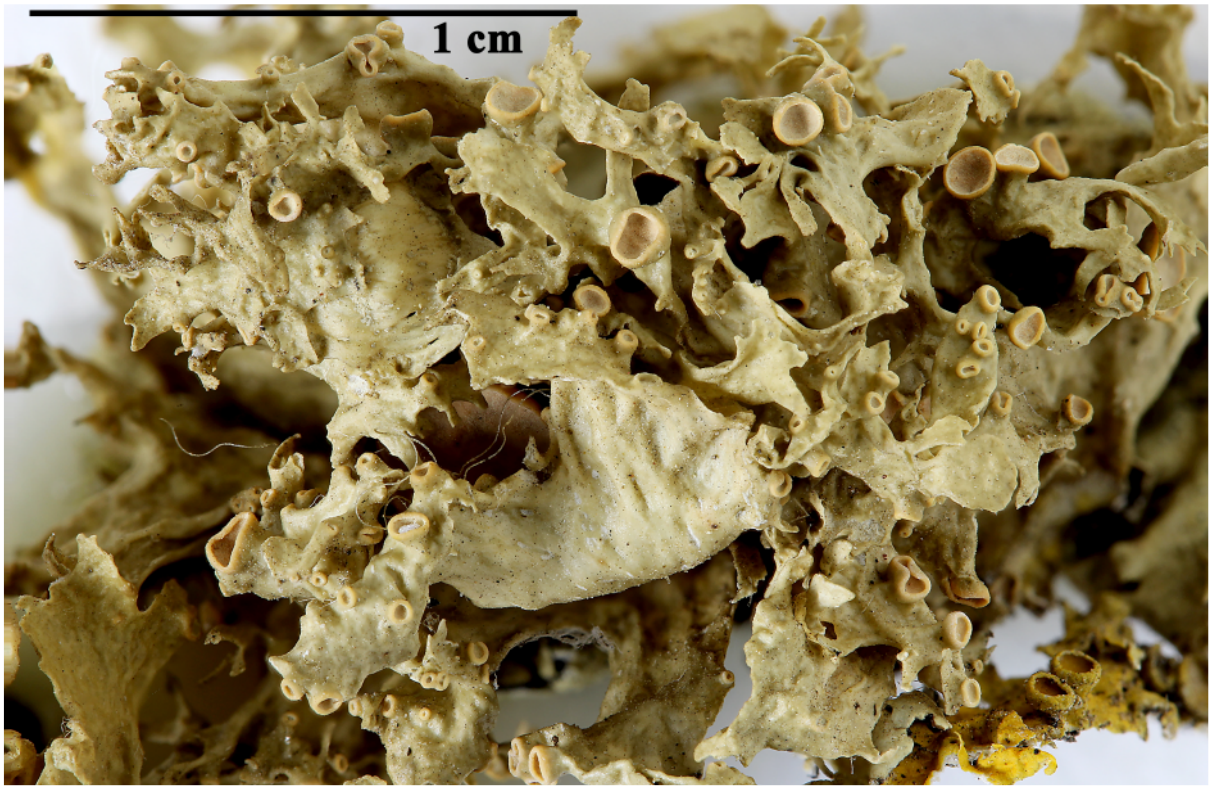
Ramalina glaucescens

Ramalina glaucescens Kremp.
[= ***Ramalina lacerata*** Müll.Arg.]

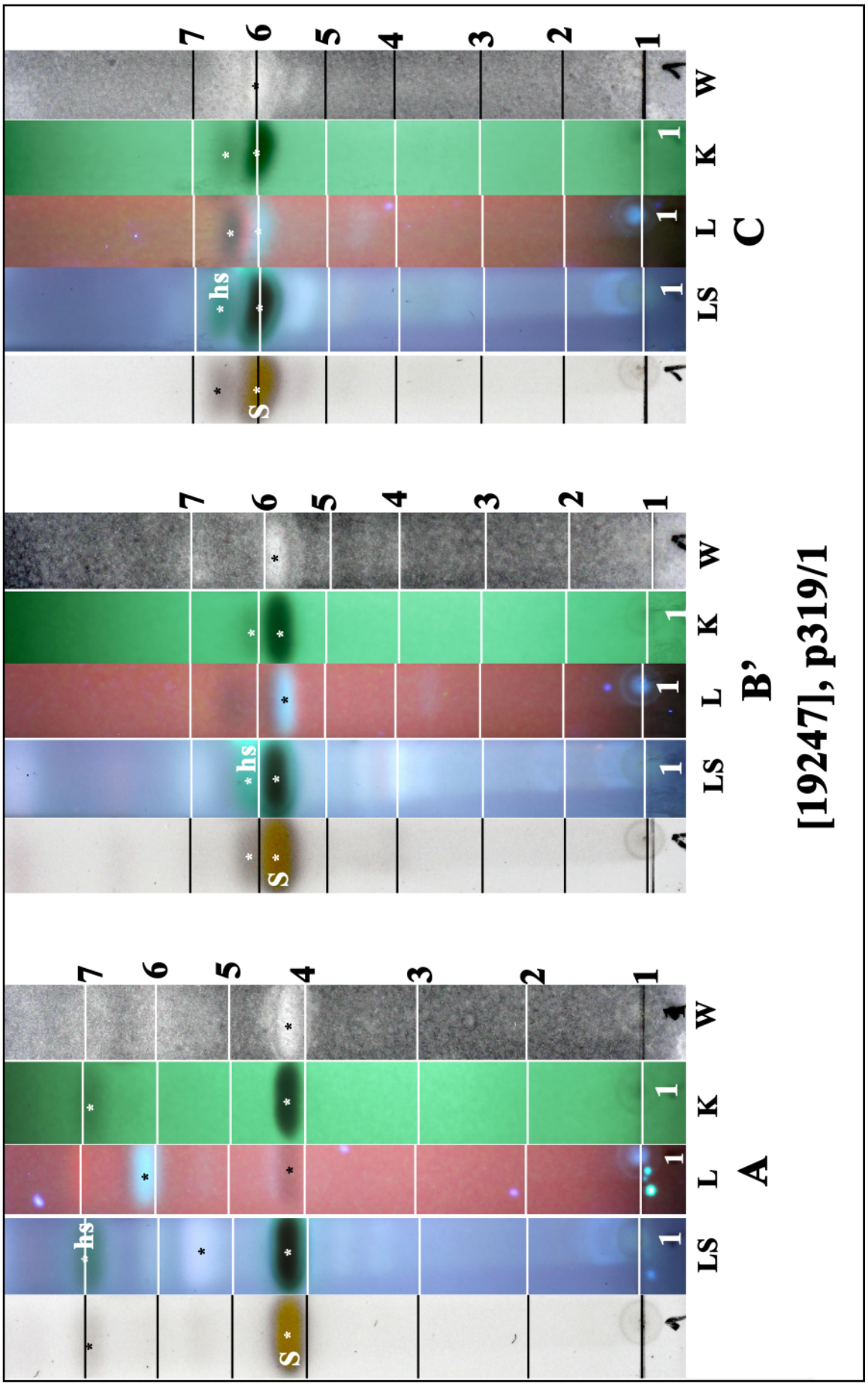
[19247], Australia, Victoria, Omeo, 37°06' S, 147°36' E, 720 m, growing on steems of planted exotic trees in town street. Leg. H. Streimann (49415), 02.05.1992. Chemistry: usnic acid by TLC, anal. J.A. Elix & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 274. Distributed as ***Ramalina lacerata*** Müll.Arg.

I think I have sekikaic acid in my TLC (in B' slower than divaricatic). The green shadow in LS (7 / 6.1 / 6.6) ?





Ramalina glaucescens



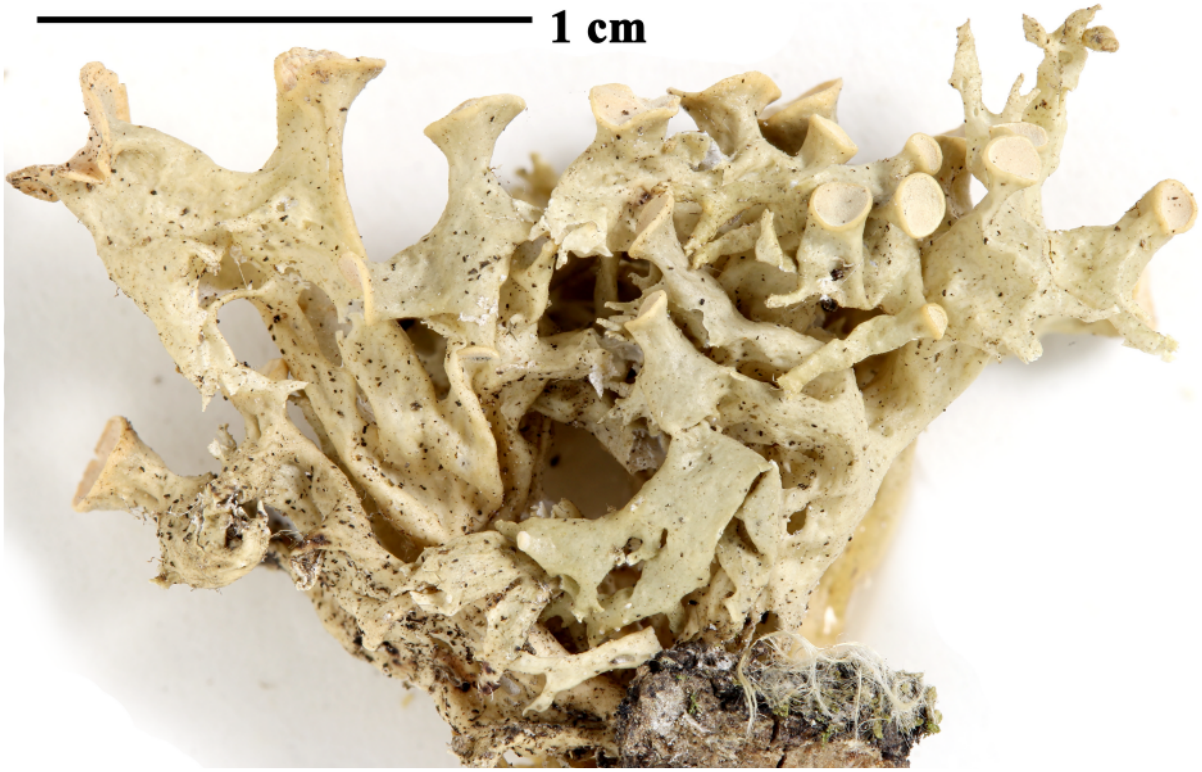
s: sekikaic acid, hs: homosekikaic acid

Ramalina glaucescens

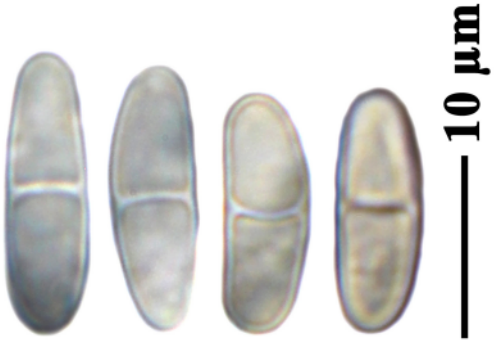
Ramalina inflata (J.D.Hook. & Taylor) J.D.Hook. & Taylor

Thallus corticolous, green to pale green, caespitose, erect l-2(-3) cm high; branching subdichotomous or irregular; branch width 1-3 mm, branches hollow, terete, inflated and perforate; perforations round to elongate, medullary hyphae continuous, loosely woven across central cavity or compressed against the inner cortex wall either loosely or densely; surface matt to shiny, smooth, rarely pseudocyphellate; holdfast delimited; soralia absent. Apothecia common, terminal on main branches and on short subapical lateral branches, often spurred; disc 2-5 mm diam. , always concave initially, innate at branch apices, becoming plane at maturity; margin entire, thin often indistinct; spores broadly ellipsoid, straight or curved, 12-16 x 4-5 (-6) µm. Chemistry: divaricatic acid, nordivaricatic acid, sekikaic acid, and usnic acid. Remarks. Sterile specimens of this taxon are usually larger than fertile thalli, occurring either as greatly inflated, pulvinate, thalli or having elongate branches with perforations evenly distributed along the lower surface and extending to the attenuate apices. Lit. Stevens, G.N.(1987).

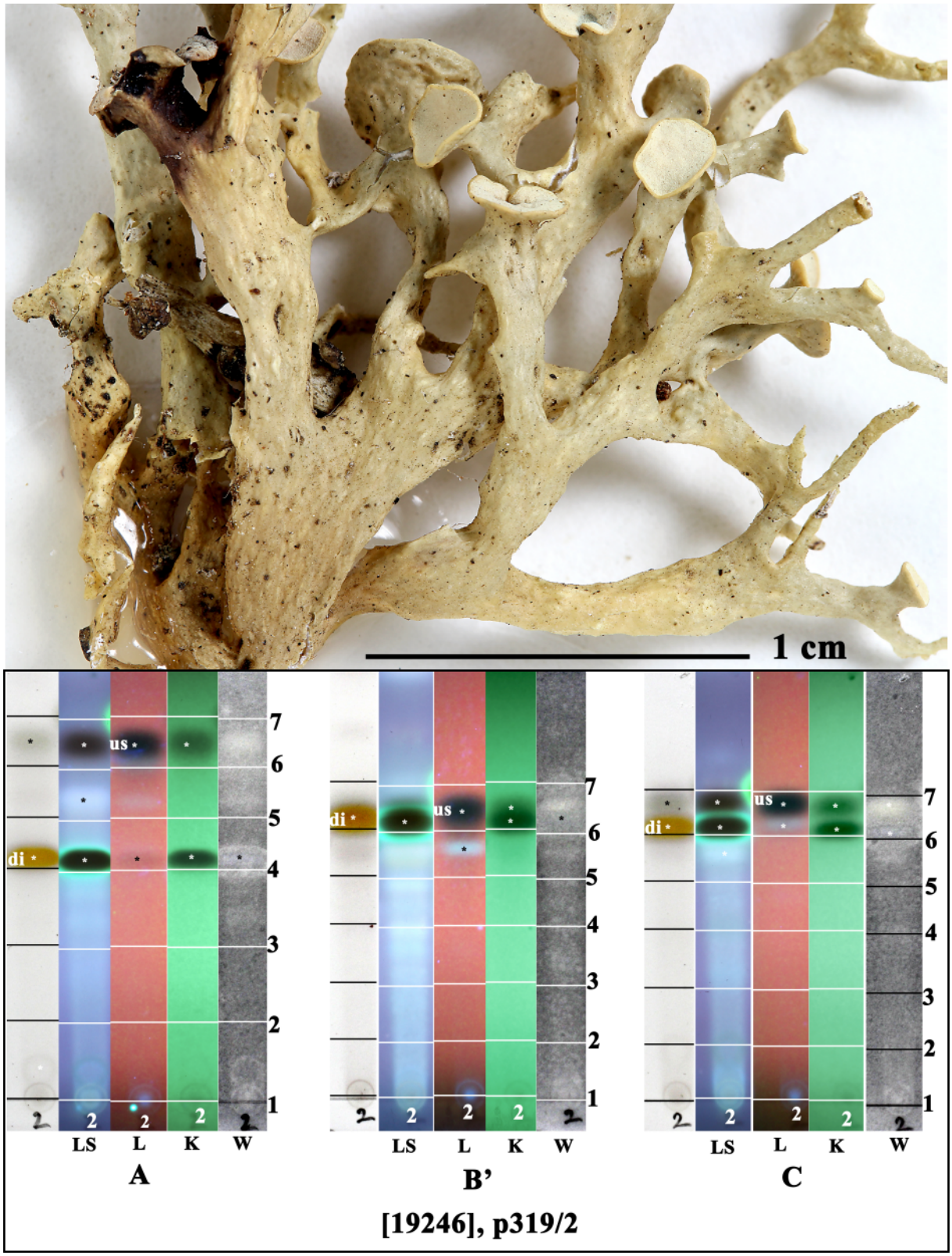
[19246], Australia, New South Wales, Burri Heights, 1 km west of Tomakin, 35°51' S, 150°11 E, 20 m, growing on Acacia in coastal forest dominated by Eucalyptus maculata. Leg. J.A. Elix (22744), 21.01.1989. Chemistry: usnic acid, divaricatic acid (major) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 194.







Ramalina inflata



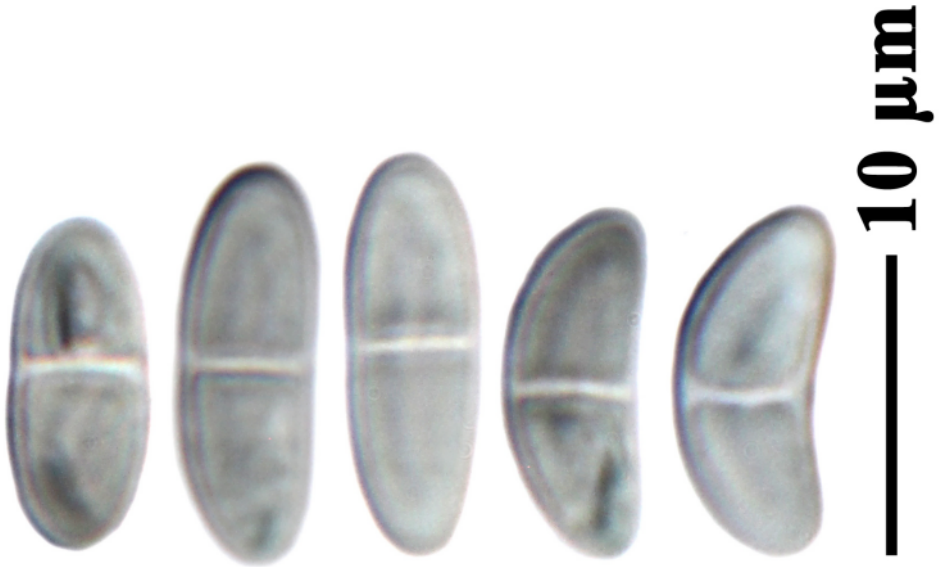
us: usnic acid, di: divaricatic acid

Ramalina inflata

Ramalina leiodea (Nyl.) Nyl.
[= ***Ramalina subfraxinea*** var. ***leiodea*** (Nyl.) N. Stevens]
[= ***Ramalina boninensis*** Asah.]

Thallus corticolous, grey-green, caespitose, rigid, erect to subpendulous, up to 4 cm high, exceptionally to 9 cm; branching subdichotomous, sparse to moderate; branch width (0-5-)2-4 mm, branches compressed, flat or canaliculate when narrow, apices attenuate; surface matt, smooth to rugose, short linear pseudocyphellae sometimes present; holdfast delimited; soralia absent. Apothecia common, marginal and subterminal, rarely laminal, small thalli produce subterminal apothecia subtended by a spur; disc 2-3 mm diam., concave to plane; margin entire or incised at maturity; spores ellipsoid, straight or slightly curved; 10-12(-16) x 4-5 µm. Chemistry: boninic acid (major), 2-*O*-methylsekikaic acid (submajor), 2,4'-di-*O*-methylnorsekikaic acid, 4'-*O*-methylpaludosic acid, 4,4'-di-*O*-methylcryptochlorophaeic acid, usnic acid. Lit. Stevens, G.N.(1987).

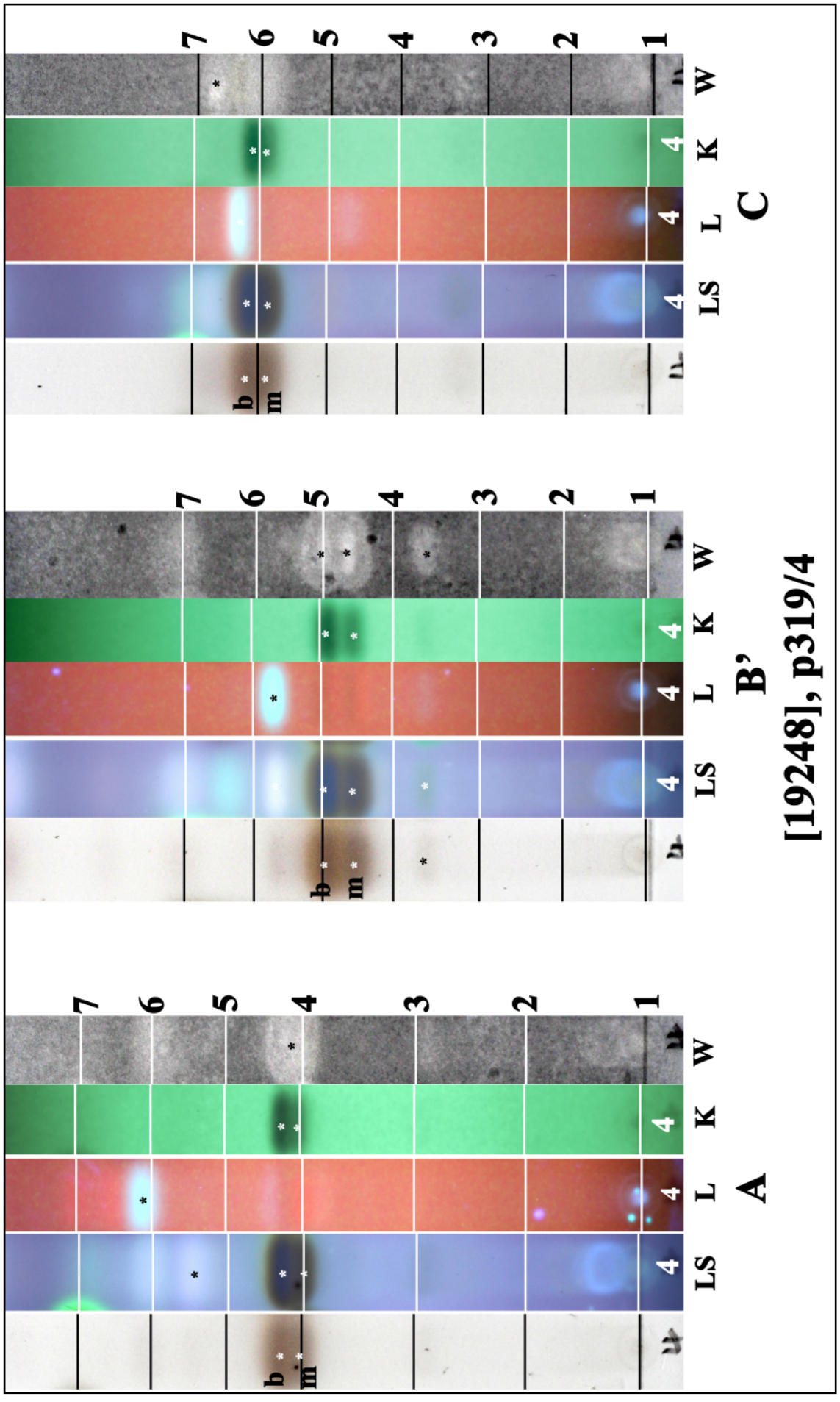
[19248], Norfolk Island, Rocky Point Reserve, 29°03' S, 167°55' E, 40 m, growing on twigs of *Eucalyptus* in mixed *Araucaria* and exotic woodland. Leg. J.A. Elix (18527) & H. Streimann, 05.12. 1984. Chemistry: boninic acid (major), 2-*O*-methylsekikaic acid (major), 4,4'-di-*O*-methylcryptochlorophaeic acid (trace), 2,4'-di-*O*-methylnorsekikaic acid (minor), 4'-*O*-methylpaludosic acid (minor), 4'-*O*-methylcryptochlorophaeic acid (trace), unknowns (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 097.







Ramalina leiodea



b: boninic acid, m: 2-*O*-methylsekikaic acid

Ramalina leiodea

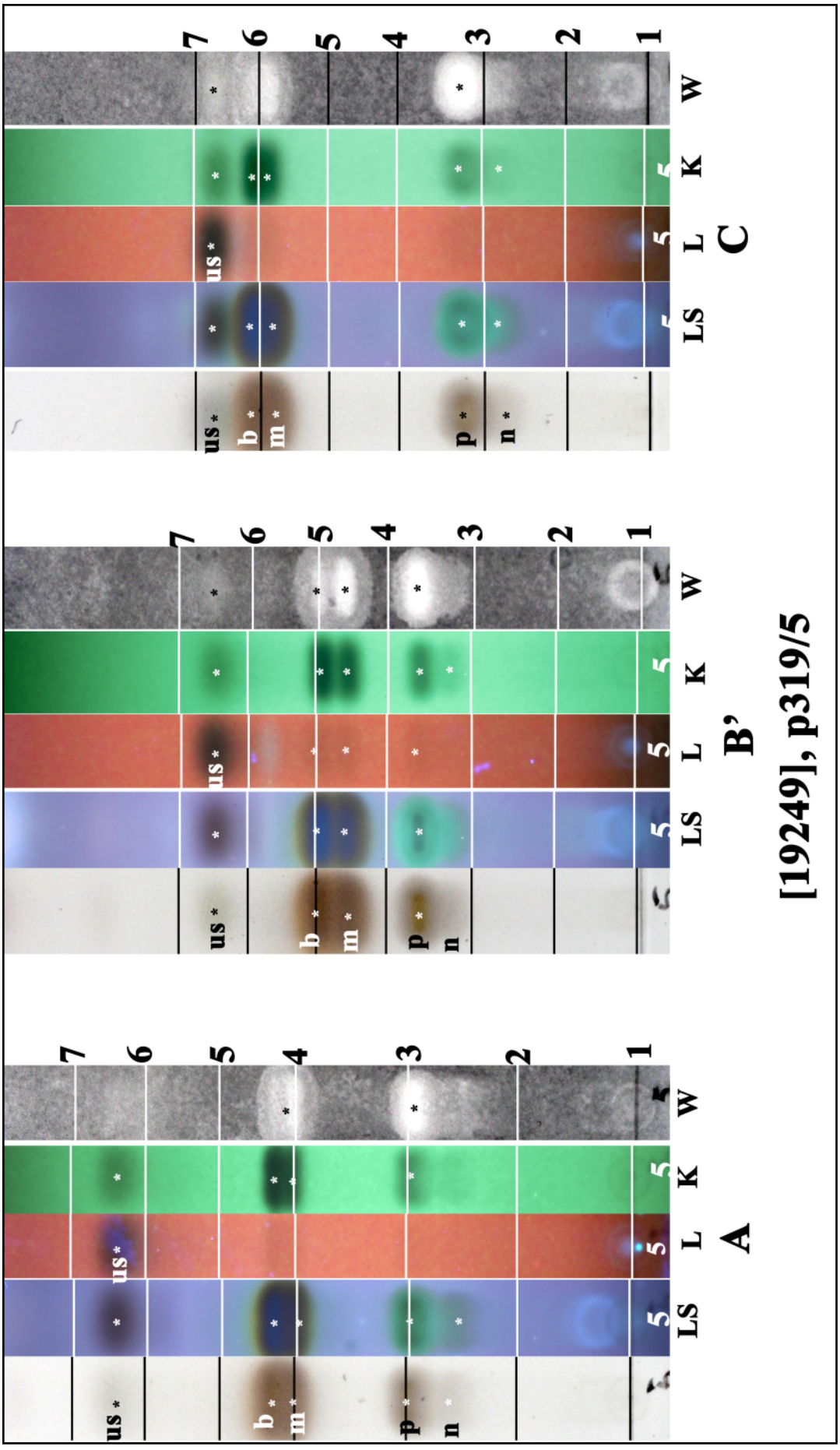
Ramalina leiodea (Nyl.) Nyl.

[19249], Australia, Queensland, Tin Can Inlet, Tin Can Bay, 25°54' S, 153°01' E, sea level, growing on *Rhizophora stylosa* in strand vegetation along the foreshore. Leg. J.A. Elix (22844), 2.07.1989. Chemistry: usnic acid (trace), boninic acid (major), 2-*O*-methylsekikaic acid (major), 4'-*O*-methylpaludosic acid (minor), 4,4'-di-*O*-methylcryptochlorophaeic (trace), 2,4'-di-*O*-methylnorsekikaic acid (minor), 4'-*O*-methylcryptochlorophaeic acid (trace), unknowns (trace) by HPLC, TLC, anal Q. Lin. LICHENES AUSTRALASICI EXSICCATI NO. 242.





Ramalina leiodea



us: usnic acid, b: boninic acid, m: 2-*O*-methylsekikaic acid,
p: 4'-*O*-methylpaludosic acid, n: 2,4'-di-*O*-methylnorsekikaic acid

Ramalina meridionalis Blanchon & Bannister

Thallus corticolous, yellow to brownish, richly branched; branches cylindrical, *Alectoria*-like, 5-40 cm long, to 3 mm diam., terete, apices pointed; pseudocyphellae linear-elongate; lacking soredia and isidia; medulla solid. Hyphae of the cortex periclinally orientated. Apothecia to 1.5 mm diam.; ascospores straight to curved, hyaline, 1-septate, 10-16(-18) x 4-8 µm. Chemistry: medulla K+ red, P+ orange-red, C-; norstictic acid.

[19234], Norfolk Island, Ducombe Bay Road, near entrance to Mt. Pitt Reserve, 29°00'30" S, 167°56' E, 50 m, growing on branches of *Araucaria heterophylla* in forest dominated by *Olea africans*. Leg. J.A. Elix (18721) & H. Streimann, 7.12.1984. Chemistry: norstictic acid (major), connorstictic acid (minor), by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 096. Distributed as ***Ramalina arabum*** (Dill. ex Ach.) Meyen & Flot.

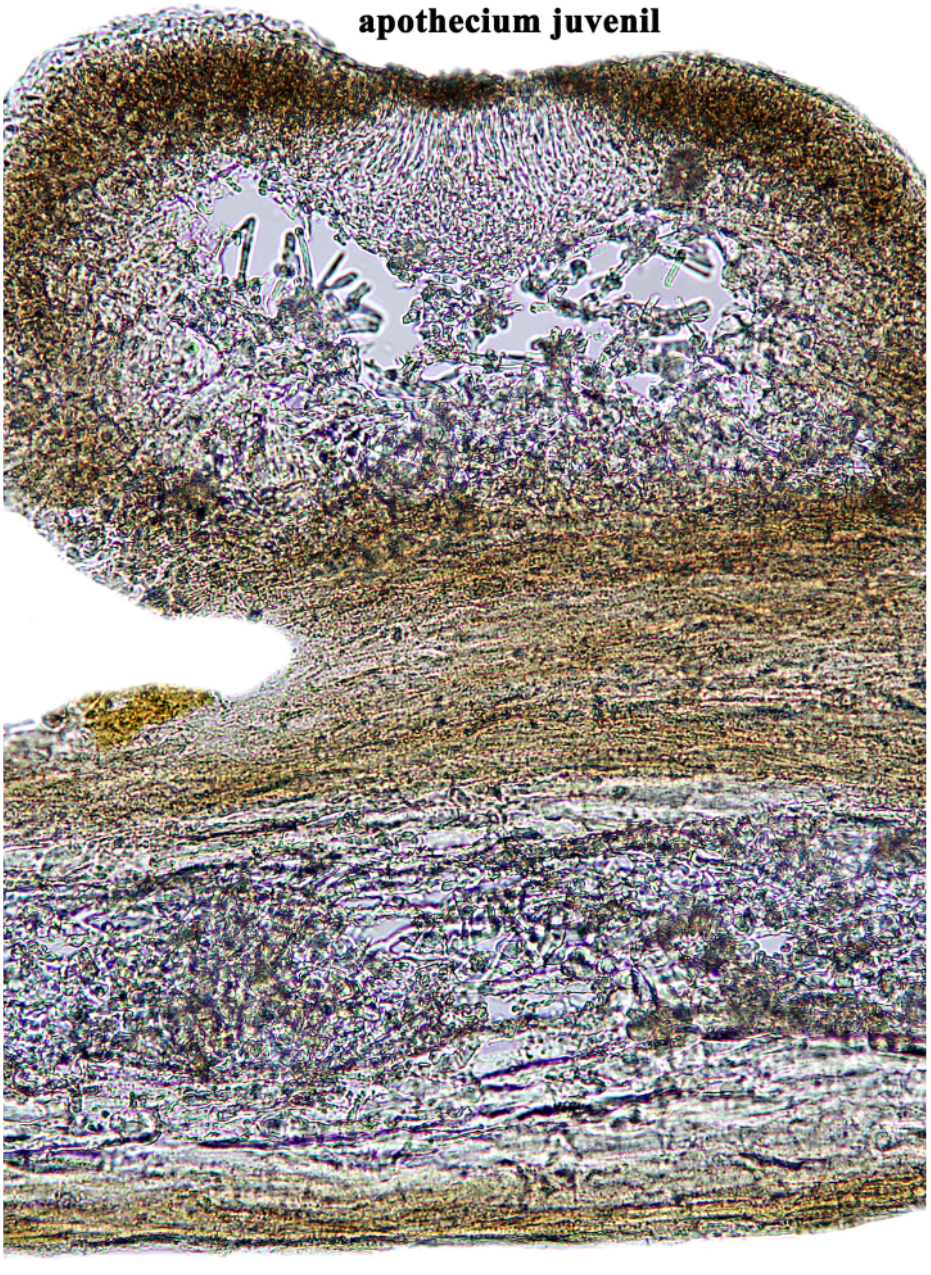




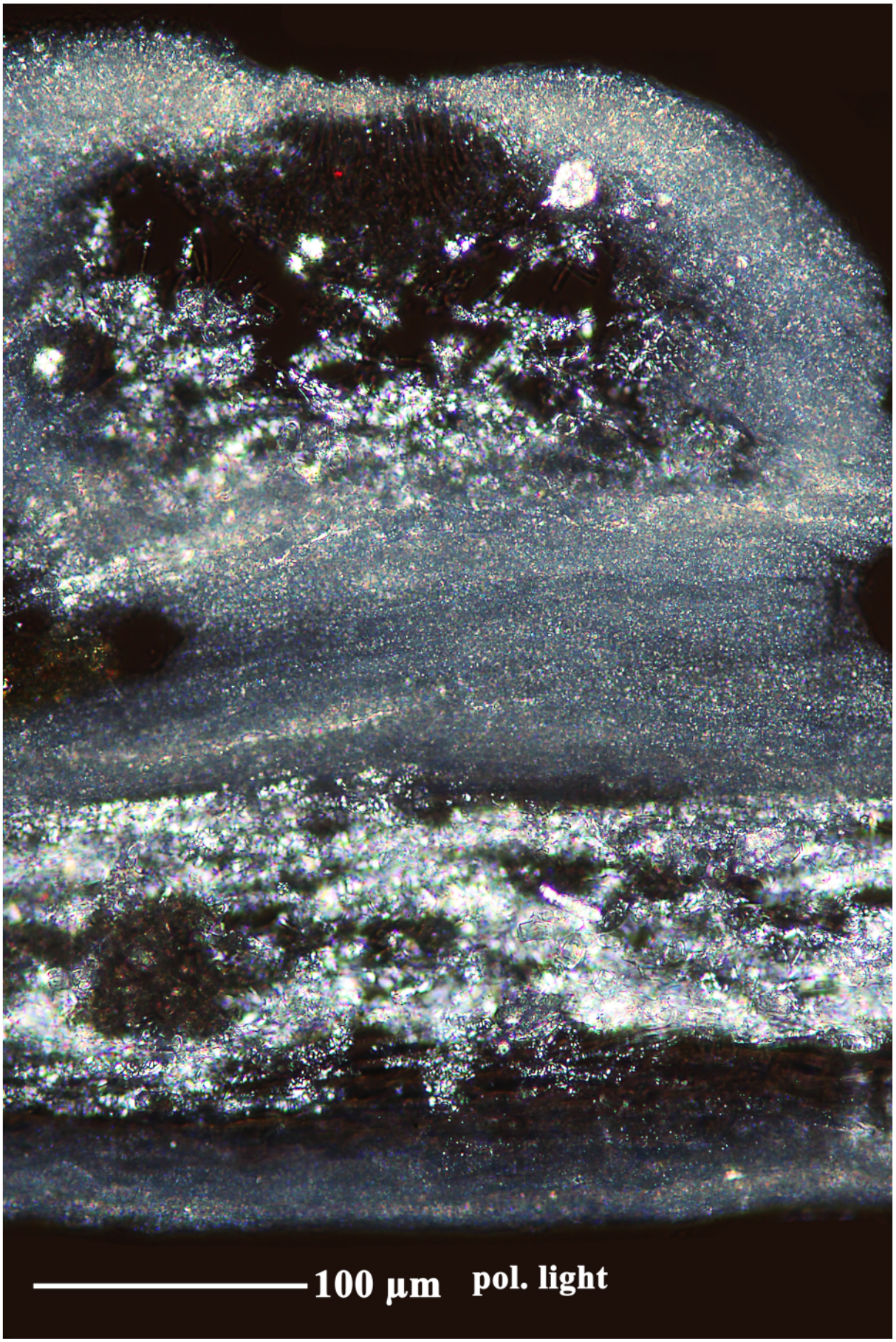


Ramalina meridionalis

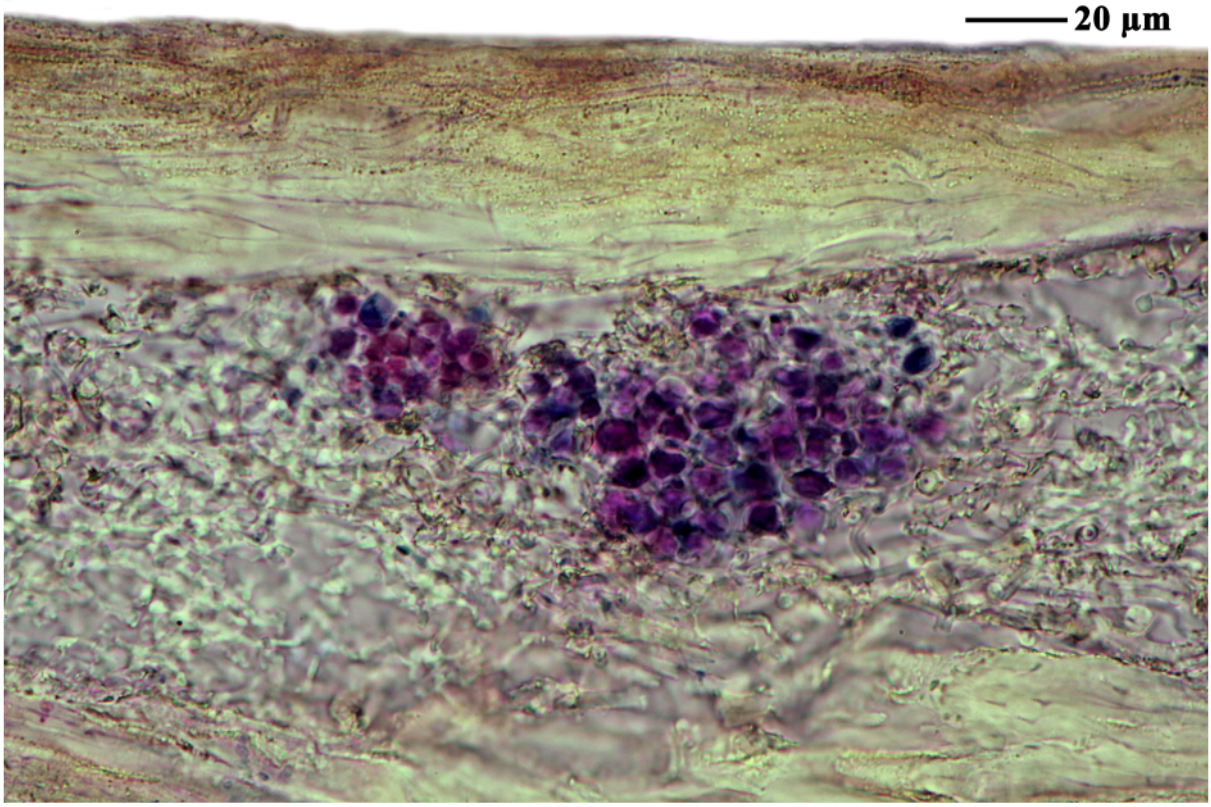




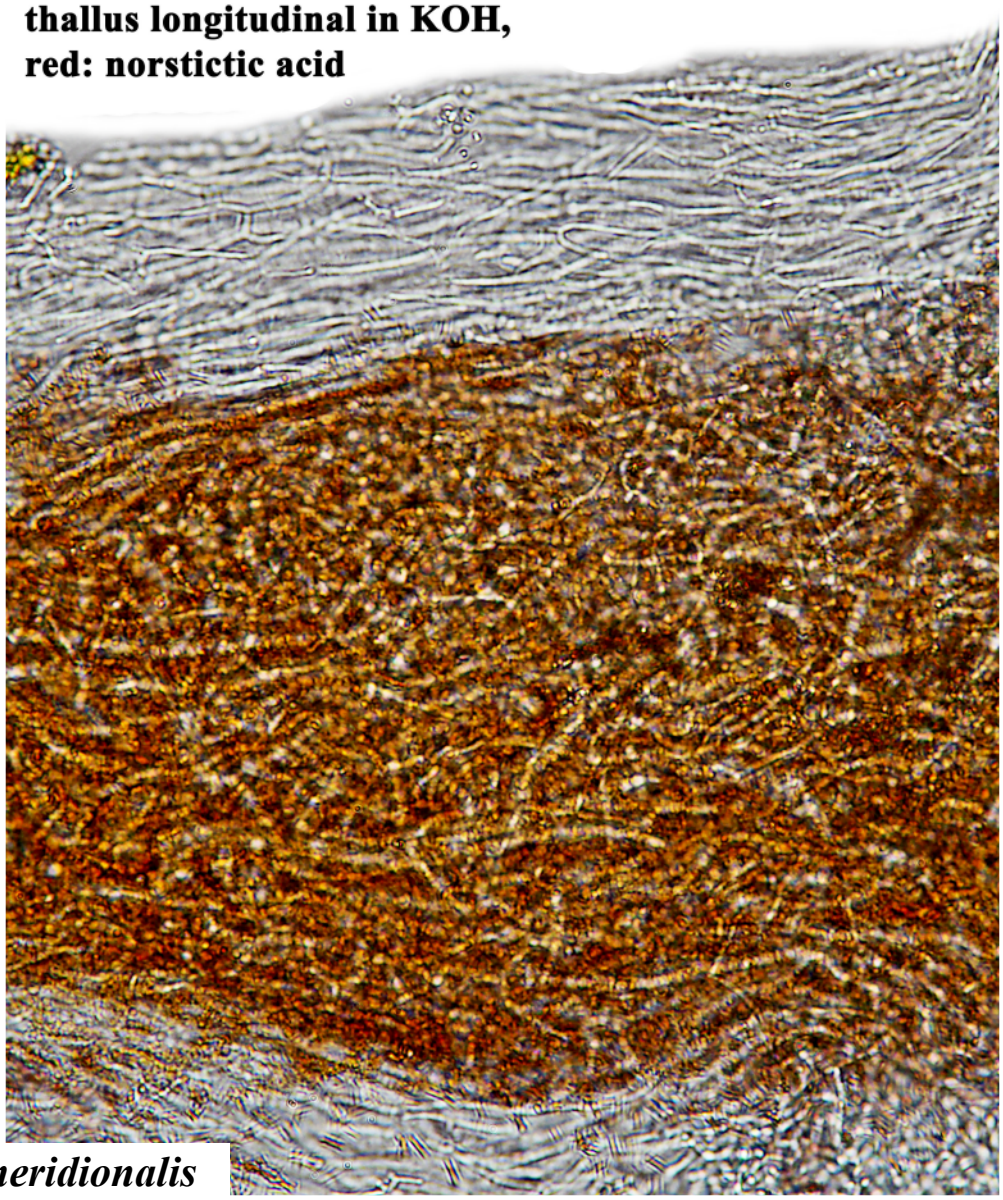
Ramalina meridionalis



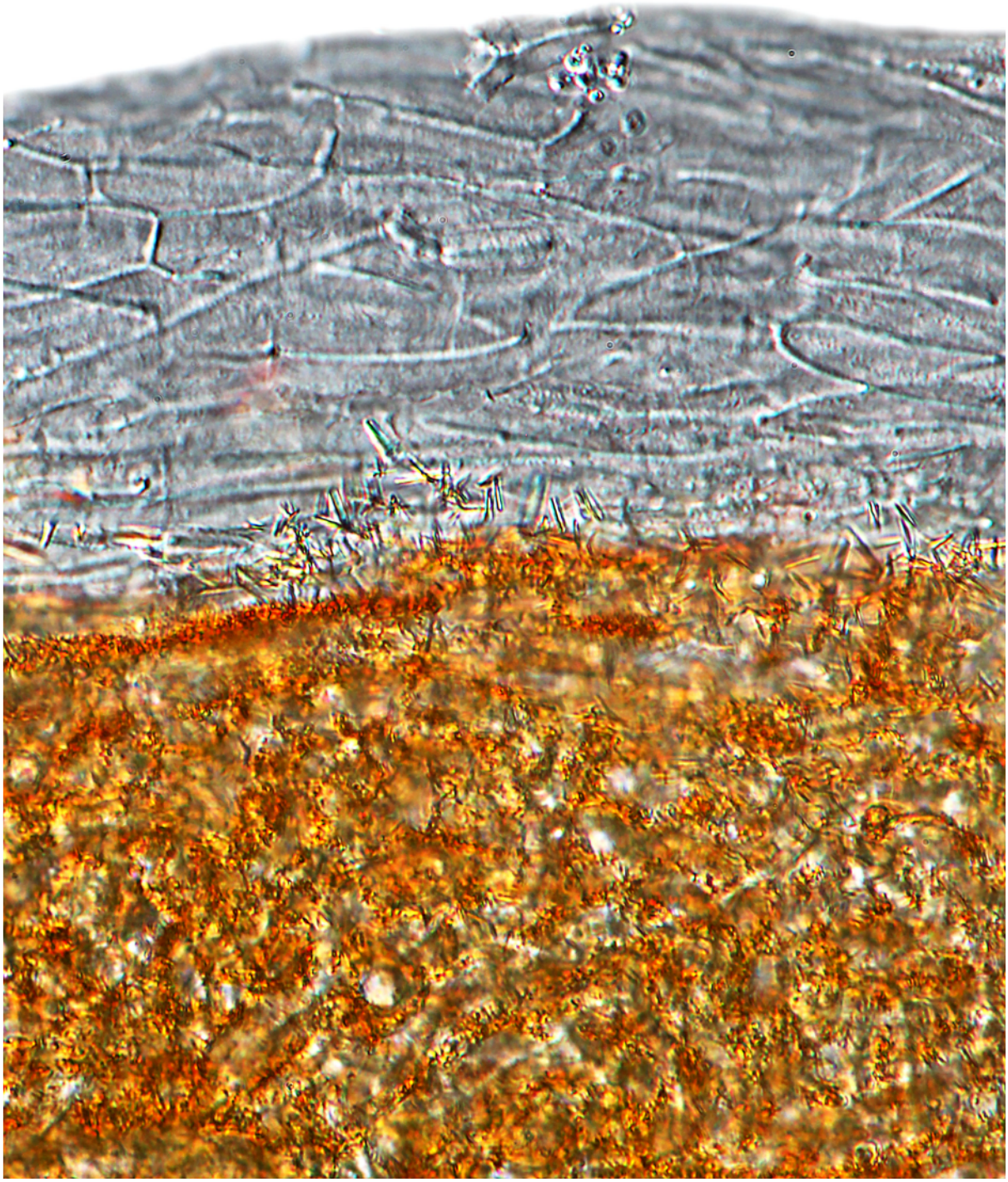
Ramalina meridionalis



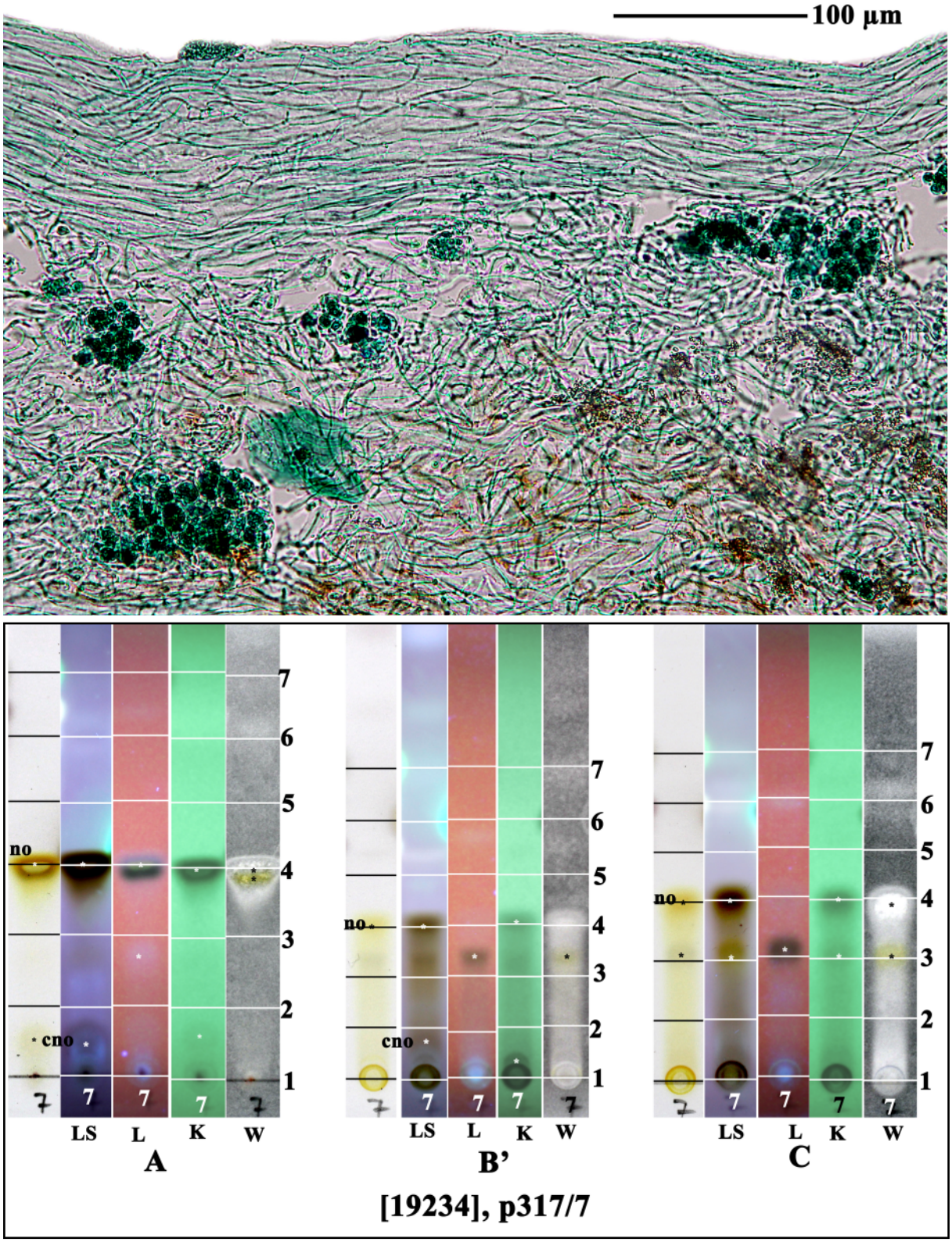
100 µm
thallus longitudinal in KOH,
red: norstictic acid



Ramalina meridionalis



Ramalina meridionalis



no: norstictic acid, cno: connorstictic acid

Ramalina meridionalis

Ramalina meridionalis Blanchon & Bannister

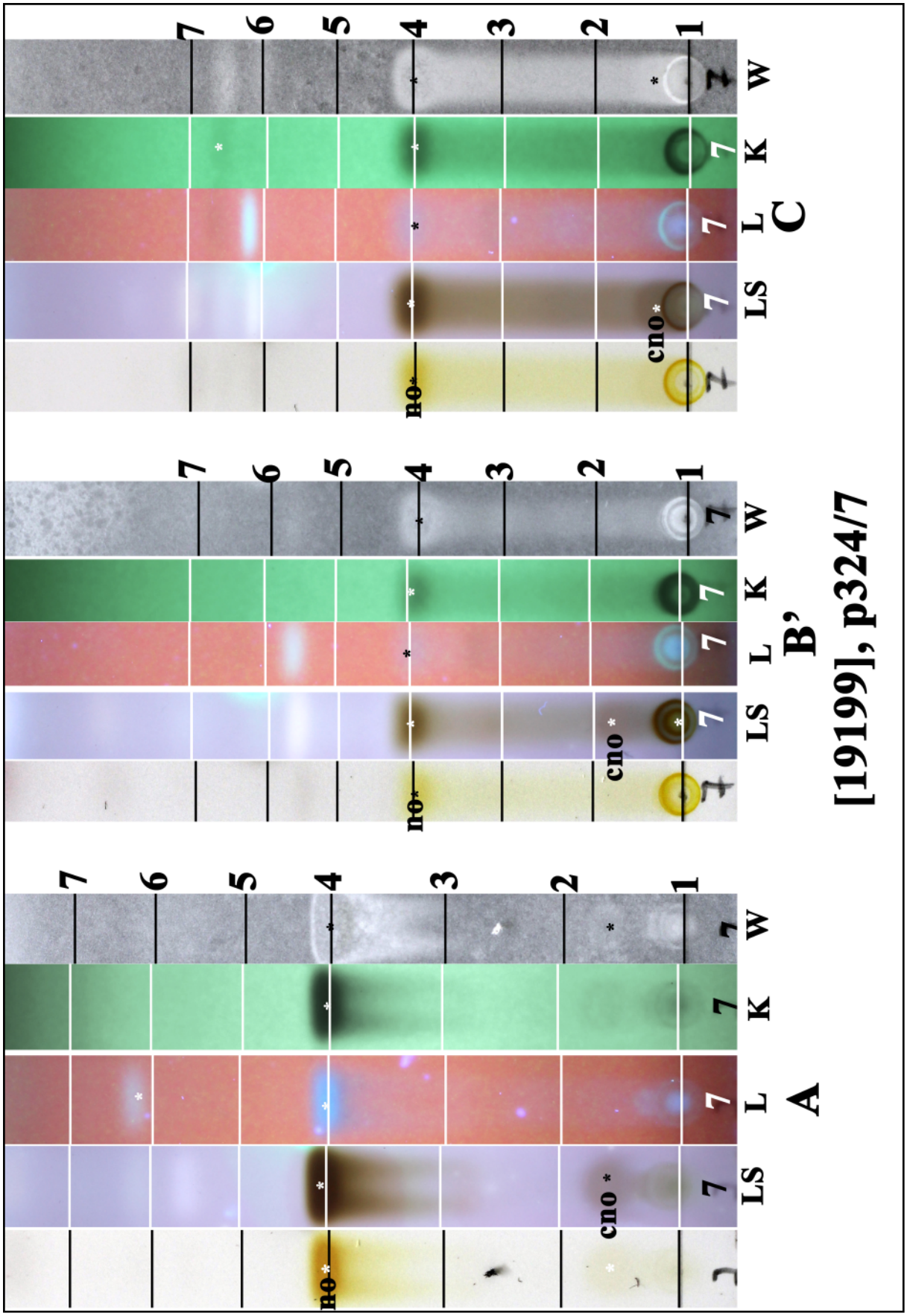
[19199], Norfolk Island, Picnic Spot at end of Martins road, 29°03' S, 167°59' E, 80 m, growing on branches of *Araucaria heterophylla* in open *Araucaria* woodland. Leg. J.A.Elix (18166) & H. Streimann, 1.12.1984. Chemistry: norstictic acid (major), connorstictic acid (minor) by HPLC, anal. G.A.Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 095. Distributed as ***Ramalina arabum*** (Dill. ex Ach.) Meyen & Flot.







Ramalina meridionalis



no: norstictic acid, cno: connorstictic acid

Ramalina meridionalis

Ramalina ovalis Hook. f. & Taylor
[= ***Ramalina celastri*** subsp. ***ovalis*** (Hook.f. & Taylor) N. Stevens]

Thallus corticolous, green-grey, erect to subpendulous, 2-4(-5) cm long, exceptionally to 8 cm long; branching sparse with one or two branches often constituting the whole thallus; branch width 8-20 mm, compressed, flat, apices blunt or rounded, small branchlets may occur at the apices; surface matt, membranaceous and thin, wrinkled, or thick and ribbed with chondroid strands; pseudocyphellae sometimes present; holdfast delimited; soralia absent. Apothecia laminal only, numerous, disc to 2 mm diam., plane to convex; margin entire, thin; spores ellipsoid or slightly fusiform, mostly curved, (10-)12-16 x 4-4.5 µm. Chemistry: usnic acid only. Lit. Stevens, G.N.(1987).

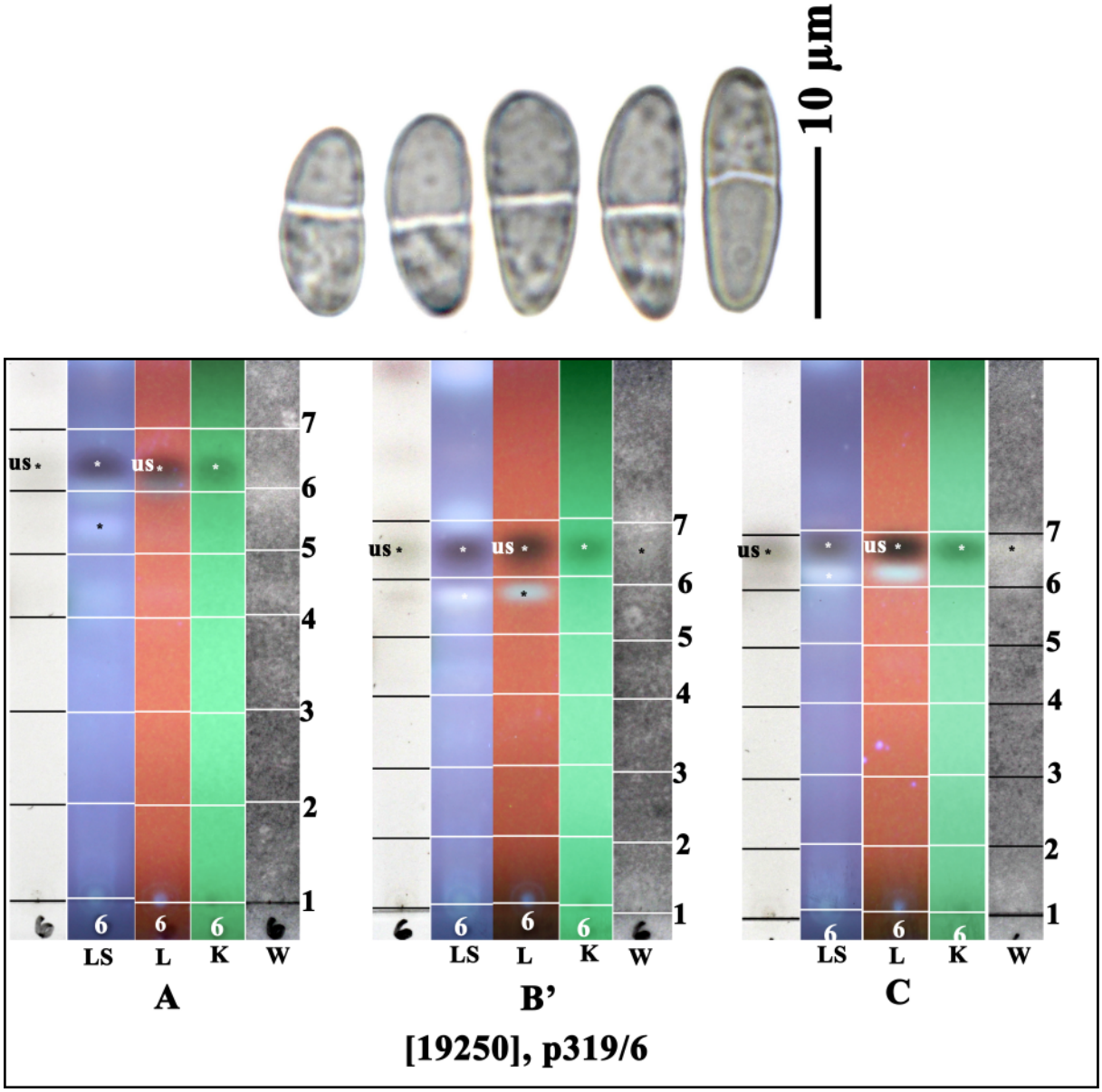
[19250], Australia, South Australia, Springton, Mount Lofty Ranges, 34°43' S, 139°05' E, 360 m, growing on *Prunus* trees in orchard. Leg. J.A. Elix (21335), 04.01.1987. Chemistry: usnic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 167.







Ramalina ovalis



us: usnic acid

Ramalina ovalis

Ramalina pacifica Asahina
[= ***Ramalina insularum*** H.Magn.]

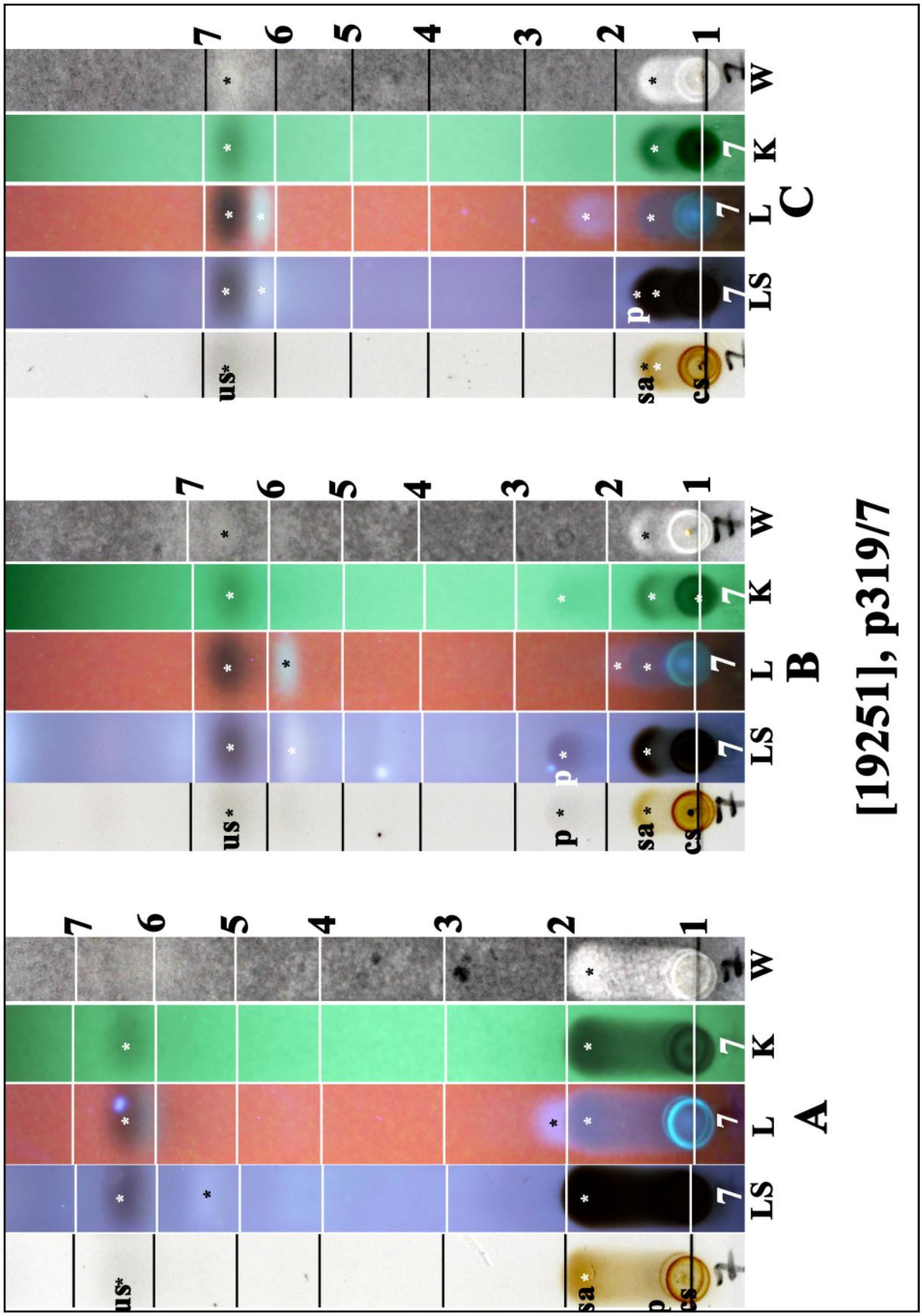
Thallus corticolous, rarely saxicolous, grey-green, tufty, subpendulous to pendulous, 4-8 cm long, exceptionally to 32 cm; branching dichotomous, sparse to moderately dense but extremely variable; branch width (0.5-)l-4 mm, branches compressed, flat, some splitting along the margins; broad in the basal region but gradually narrowing towards the apices or narrow in the basal region and continuing the same width to the apices; apices attenuate, mostly forked; cortex matt or shiny, smooth or with linear pseudocyphellae weakly or strongly developed; holdfast delimited; soralia marginal and laminal, round to ellipsoid (Plate 1, fig. 3), often coalescing, the edges revolute. Apothecia rare, marginal, disc 1-3 mm diam., concave, plane to convex, with edges sometimes incised at maturity; spores fusiform or ellipsoid, straight or very slightly curved, 12-16(-20) x 4-6 µm. Chemistry: salazinic acid, protocetraric acid, usnic acid. Lit. Stevens, G.N. (1987).

[19251], Australia, New South Wales, Old Macleay River estuary, Stuarts Point, 30°49'S, 153°00'E, sea level, growing on *Aegioras corniculatum* in mangrove swamp. Leg. J.A. Elix (21340), 16.01.1987. Chemistry: salazinic acid (major), consalazinic acid (minor), protocetraric acid (trace), usnic acid (major) by HPLC, TLC, anal. G.A. Jenkins & J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 149.





Ramalina pacifica



us: usnic acid, sa: salazinic acid, p: protocetraric acid,
cs: consalazininc acid

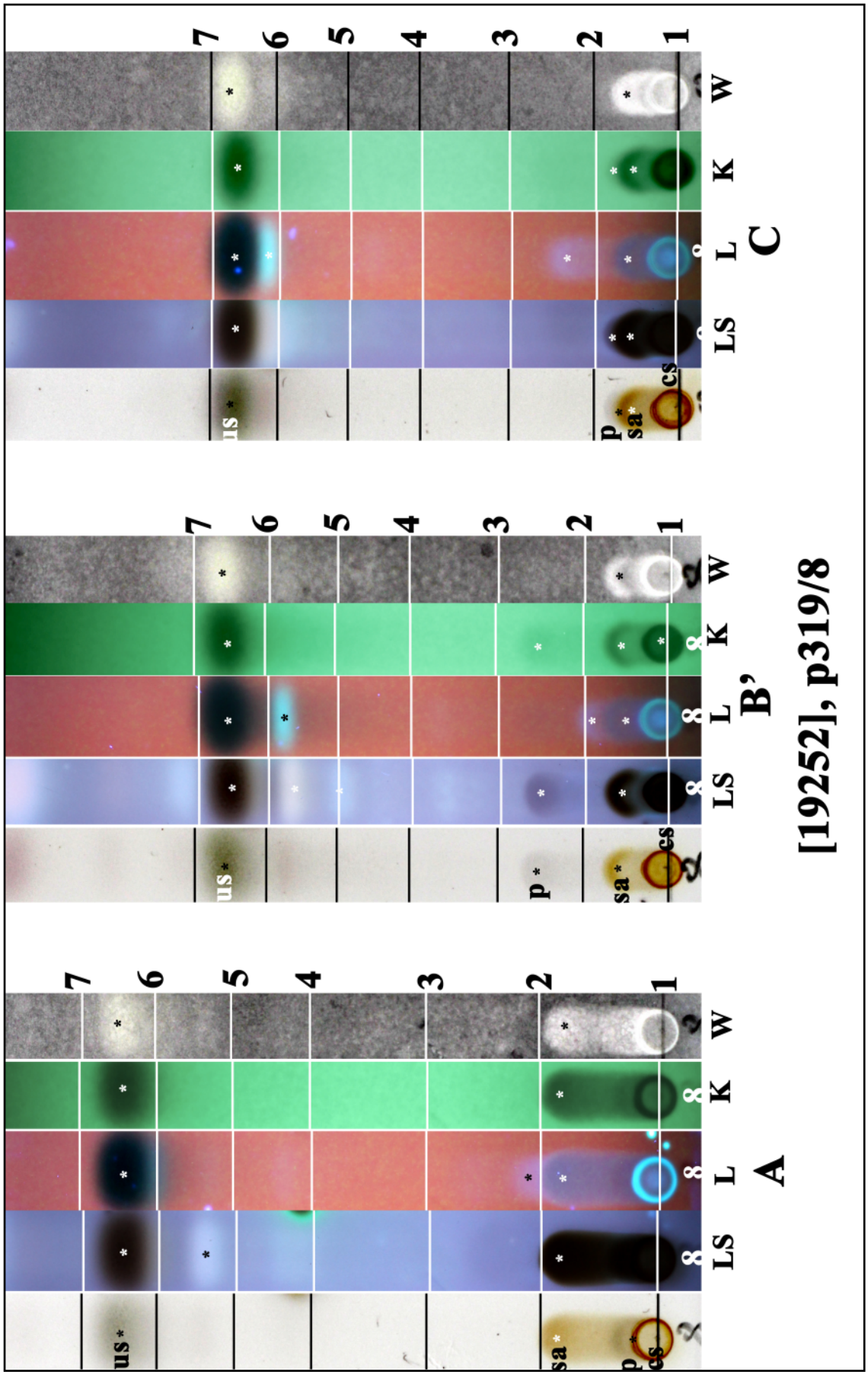
Ramalina pacifica

Ramalina pacifica Asahina

[19252], Norfolk Island, Rocky Point Reserve, 29°03' S, 167°55' E, 60 m, growing on *Melia* in mixed *Araucaria* and exotic woodland. Leg. J.A. Elix (18240) & H. Streimann, 02.12.1984. Chemistry: salazinic acid (major), consalazinic acid (minor), protocetraric acid (trace), usnic acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 098.







us: usnic acid, sa: salazinic acid, cs: consalazinic acid, p: protocetraric acid

Ramalina pacifica

Ramalina perpusilla Stirt.
[= ***Ramalina inflata*** subsp. ***perpusilla*** (Stirt.) N. Stevens]

Thallus corticolous, green to pale green, often with a white lower surface, caespitose, erect, l-2(-3) cm high; branching subdichotomous, branch width 0.5-2.0 mm, varying in the amount of inflation, terete to almost flat, sparingly to moderately perforate, the perforations on the lower surface only, small and round, extending to the apices on sterile branches; medullary hyphae sparse and adhering to the inner cortex wall, either loosely or densely compacted in totally inflated specimens or thick and felty in compressed thalli; surface matt or shiny, smooth to rugose; very rarely pseudocyphellate; holdfast delimited or diffuse; soralia absent. Apothecia sparse to numerous, subterminal on geniculate branches or terminal on main and short lateral branches, spurred, or in the axils of bifurcating branches, disc usually less than 2.0 mm diam., plane to convex; margin entire, well defined, rarely indistinct; spores ellipsoid, straight, rarely curved, (8-)10-14(-16) x 4-5 µm. Chemistry: divaricatic acid, ±sekikaic acid (trace), ±nordivaricatic acid or sekikaic acid only, or rarely sekikaic acid, 4'-*O*-demethylsekikaic acid, an unknown and usnic acid. Lit. Stevens, G.N. (1987).

[19254], Australia, Queensland, Mt. Farrenden, 26 km south-south-west of Charters Towers, 20°19' S, 146°13' E, 450 m, growing on twigs of *Drypetes lasiogyna* var. *australasica* in open woodland on rocky slope. Leg. J.A. Elix (20601) & H. Streimann 22.06.1986. Chemistry: usnic acid (minor), divaricatic acid (major), nordivaricatic acid (trace), stenosporic acid (trace), unknowns (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 168
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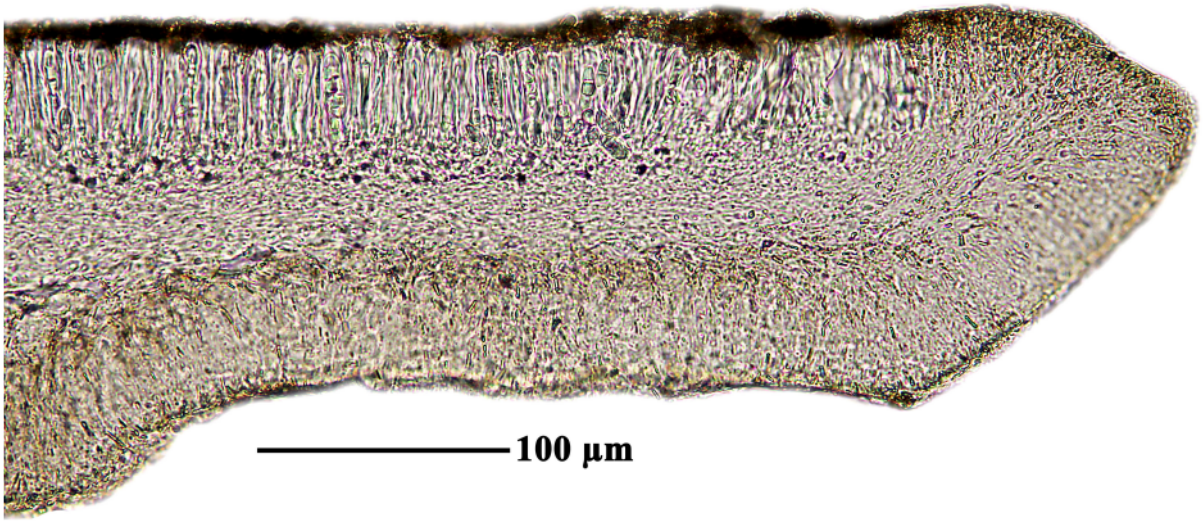
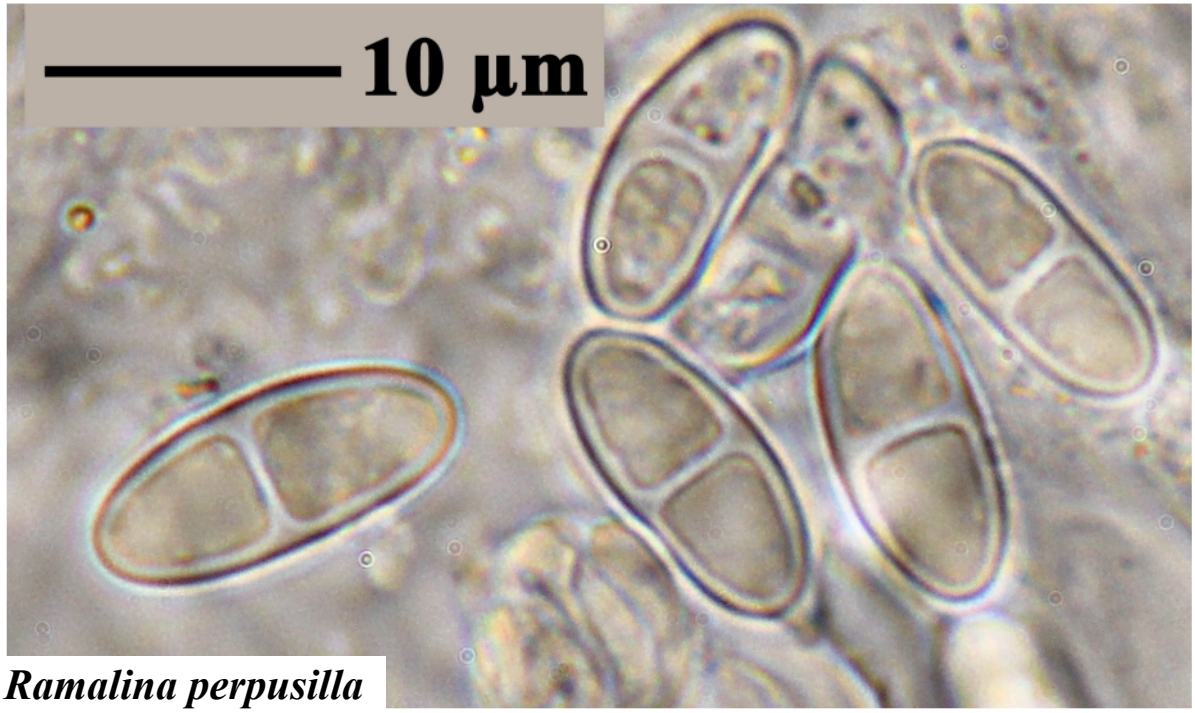
Ramalina perpusilla



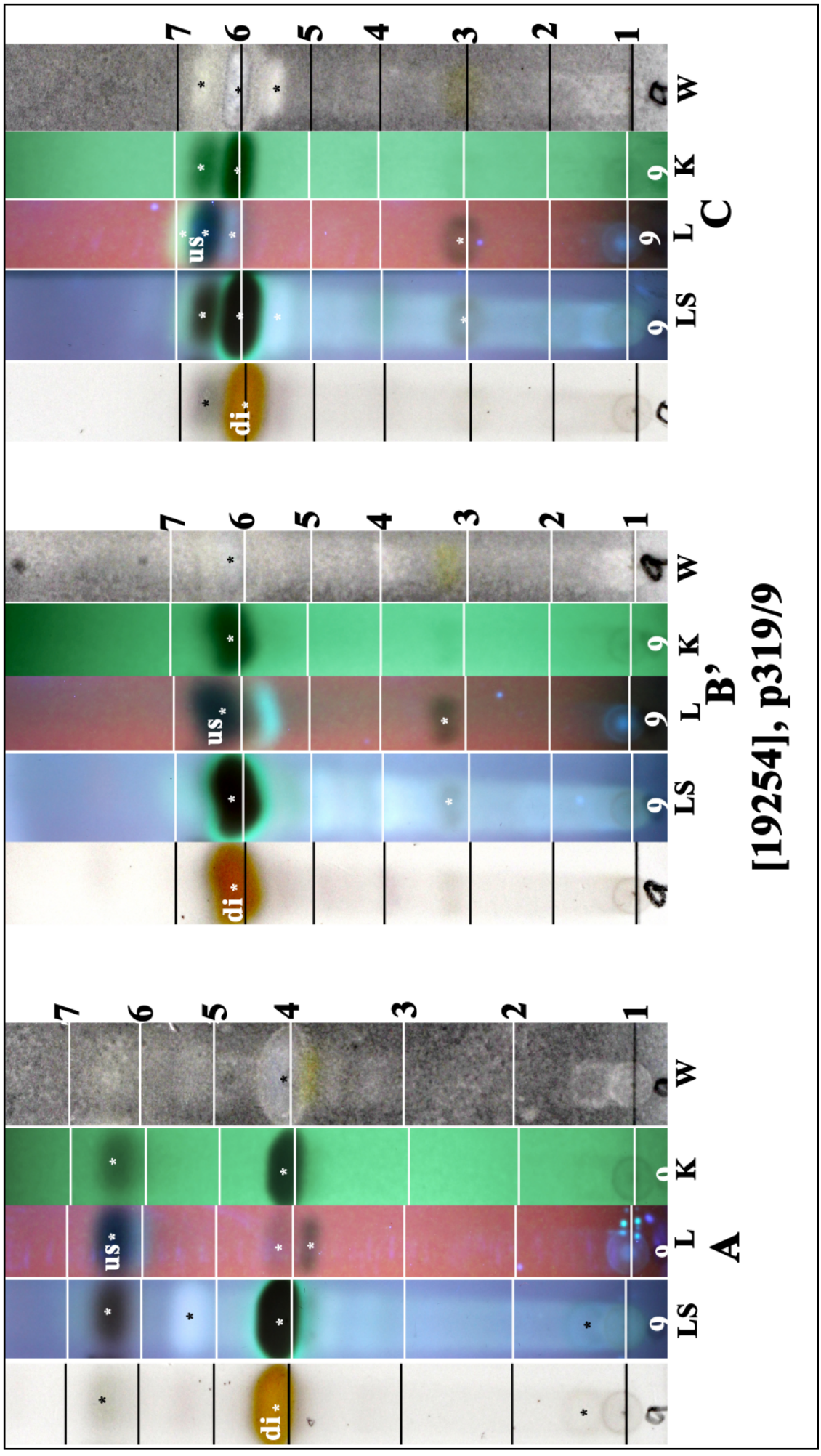




Ramalina perpusilla



Ramalina perpusilla



us: usnic acid, di: divaricatic acid

Ramalina perpusilla

Ramalina peruviana Ach.

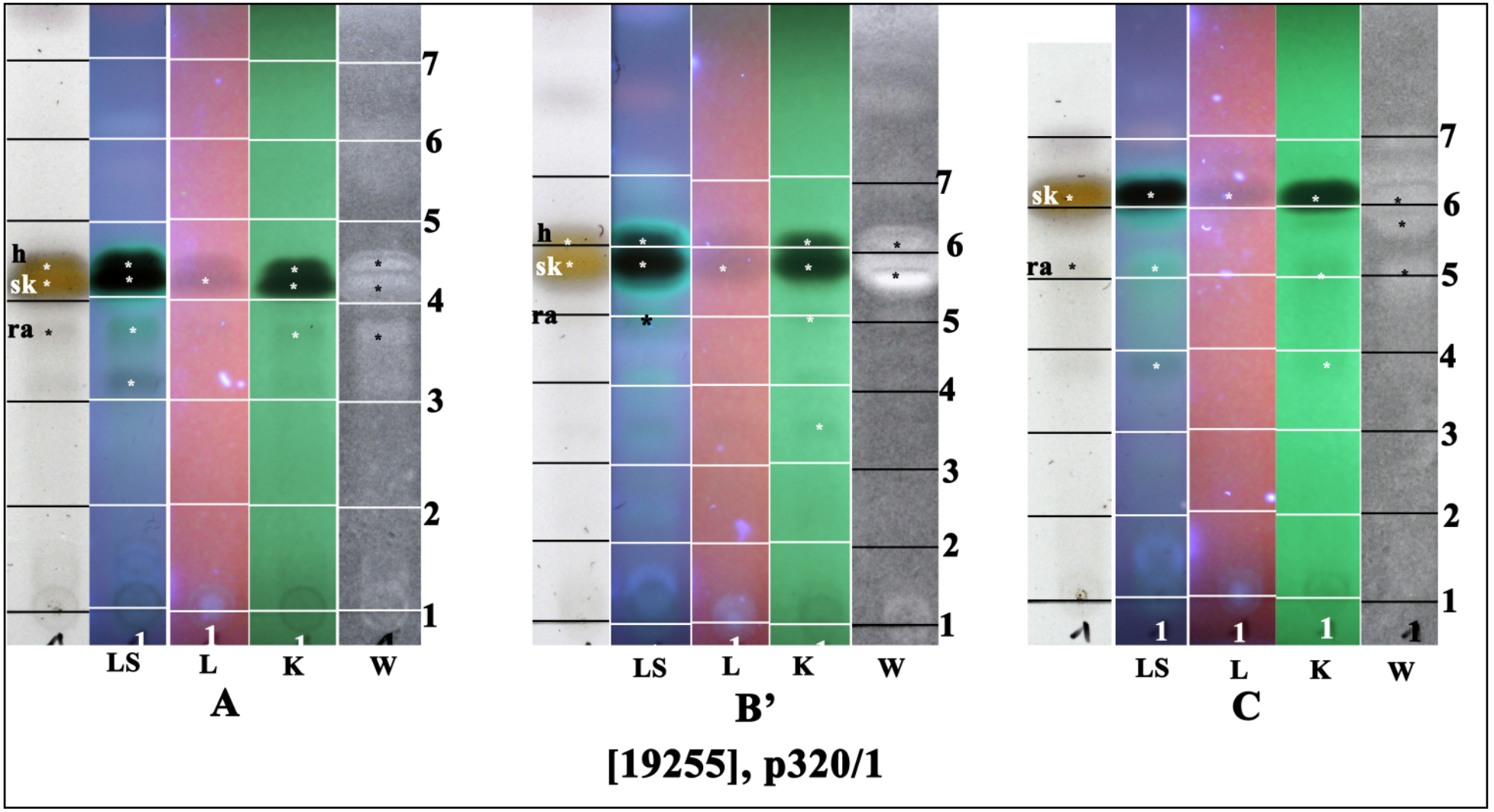
Thallus corticolous, pale green to grey-green, tufty, resilient, erect to subpendulous, up to 6 cm long; branching subdichotomous to irregular, often intricate with the production of dense fragile branchlets; branch width up to 1 mm, branches flat, compressed becoming angularly subterete to terete distally, branches often slightly twisted, apices sharp to blunt, often broken; surface matt, rarely shiny, smooth to rugose, weakly pseudocyphellate either basally or along the entire length; holdfast delimited or diffuse; soralia punctiform, numerous, marginal or lateral, sometimes apical mounds of soredia often produce small fibrils. Apothecia rare, marginal, lateral, disc 2 mm diam., concave, margin thick, often crenate; spores narrow, fusiform, straight or rarely curved, 14-16(-18) x 3.5-4.5 µm. Chemistry: homosekikaic acid (major), sekikaic acid (maior), ramalinolic acid (minor/trace), 4'-*O*-demethylsekikaic acid (minor/trace), 4'-*O*-methylnorsekikaic acid (minor/trace). Lit. Stevens, G.N. (1987).

[19255], Norfolk Island, Rocky Point Reserve, 29°03' S, 167°55' E, 60 m, growing on *Pinus* tree in mixed *Araucaria* and exotic woodland. Leg. J.A.Elix (18252) & H. Streimann, 02.12.1984. Chemistry: sekikaic acid (major), homosekikaic acid (minor), 4'-*O*-demethylsekikaic (trace), ramalinolic acid (minor), unknown (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 099.





Ramalina peruviana



h: homosekikaic acid, sk: sekikaic acid, ra: ramalinolic acid

Ramalina tropica G.N.Stevens

Thallus corticolous, or saxicolous, pale green, caespitose, rigid, erect, usually to 2 cm high, exceptionally to 4 cm; branching subdichotomous, sparse to moderate, branches arising from the base with lateral branchlets common; branch width 0.5-1.0 mm, subterete to almost terete, rarely flat, never canaliculate, some marginal splitting of the branches between the upper and lower surfaces, apices tapering distally, often recurved; surface matt or shiny, smooth to rugose, fine linear pseudocyphellae and tuberculate pseudocyphellae sometimes present; holdfast delimited; soralia absent. Apothecia rare to common, marginal on flexuous branches or subterminal with the branch continuing to grow forming a long curved spur up to 10 mm, disc (1-)1.5-3.0 mm diam., plane to convex, some assuming a helmet shape; margin entire; spores fusiform, rarely ellipsoid, straight, rarely bent, some appearing as 3-celled; 12-18(-22) x 3.8-5(-6) µm. Chemistry: salazinic acid, protocetraric acid, usnic acid. Lit. Stevens, G.N.(1987).

[19256], Australia, Queensland, Mourilan Harbour, 13 km south-east of Innisfail, 17°36' S, 146°08' E, sea level, growing on *Avicennia marina* in mangrove swamp. Leg. J.A. Elix (16710) & H. Streimann, 28.06.1984. Chemistry: usnic acid, salazinic acid (major), consalazinic acid (minor), protocetraric acid (minor/trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 195
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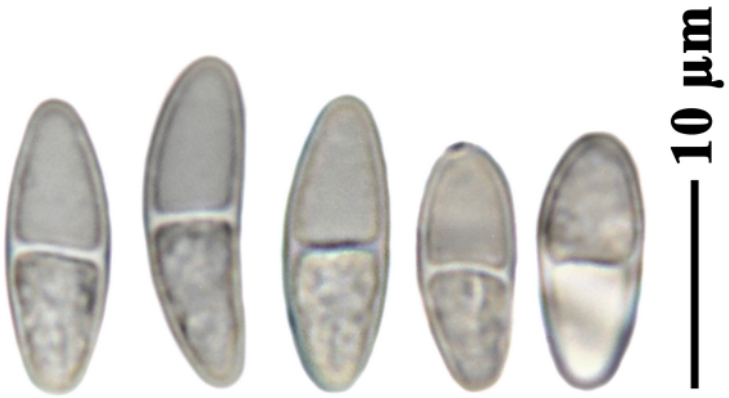
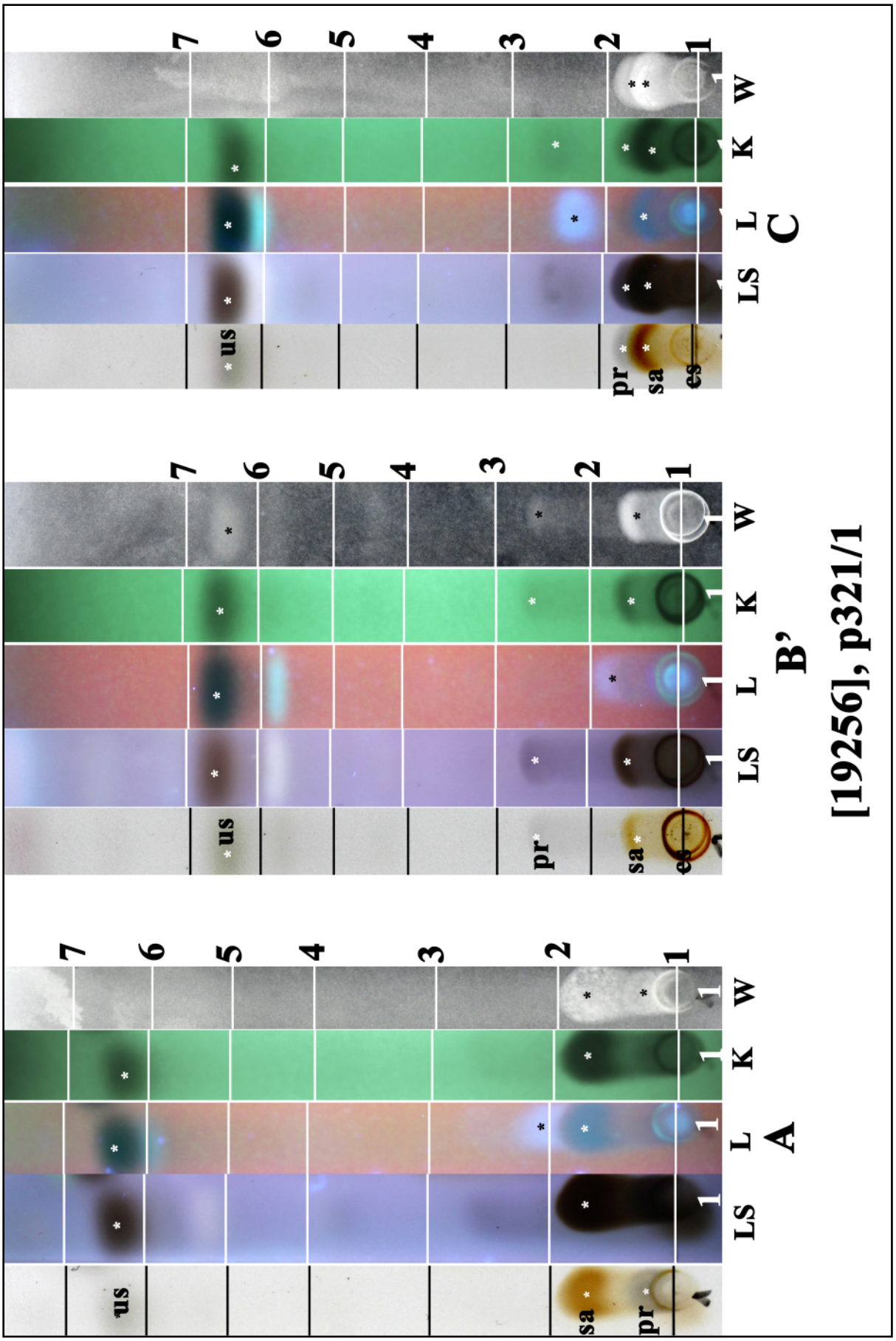






Ramalina tropica



us: usnic acid, sa: salazinic acid, cs: consalazinic acid,
pr: protocetraric acid

Ramalina tropica

Ramalina stevensiae Elix

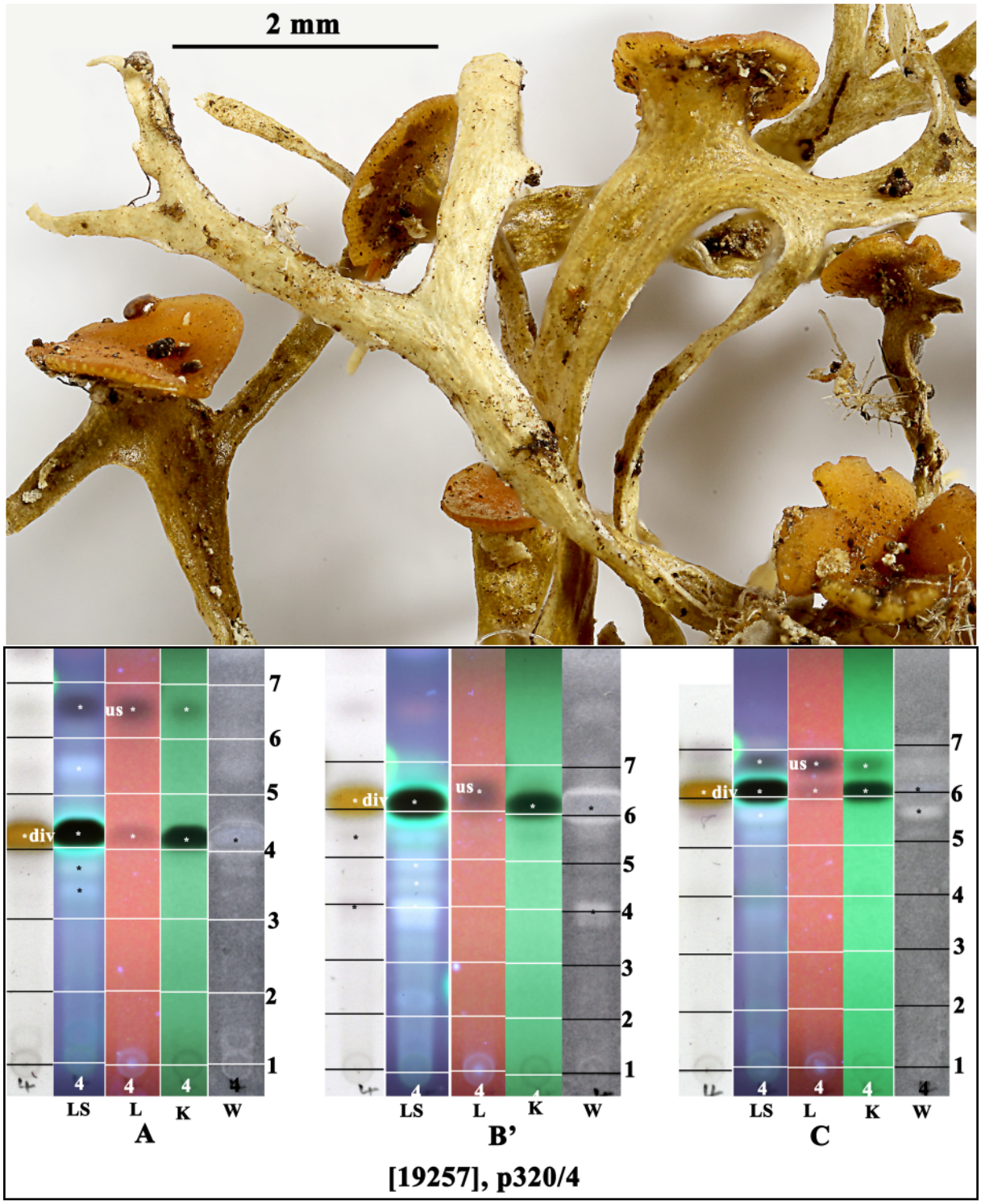
Thallus fruticose, corticolous, caespitose, erect or subpendulous, pale grey-green to pale yellow, often with a paler lower surface, 2-8 cm high, lacking soredia; branching subdichotomous to irregular, moderate to dense, with fragile branchlets towards the apices; branches (0.2-)0.5-1.0(-3.0) mm wide, compressed, flat to subcaniculate, with attenuate apices, rarely with rounded laminal perforations to 0.5 mm diam.; cortex shiny, smooth; holdfast delimited or diffuse. Apothecia sparse to common, subterminal on geniculate branches or terminal on main and short lateral branches, spurred, or in the axils of bifurcating branches; disc 1.0-2.5 mm diam., concave to plane; margin entire; ascospores colourless, 1-septate, 8/ascus, ellipsoid, straight or often slightly curved, 10-13(-15) x 4-5 µm. Chemistry. Thallus K-, KC-, P-; usnic acid, divaricatic acid (major), nordivaricatic acid (minor/trace), unknown terpenes (trace). Lit. Elix et al. (1991), Mycotaxon 40: 42.

[19257], Norfolk Island. Summit trail to Mt. Bates, 29°00'30" S, 167°56'30" E, 300 m. growing on *Citrus limon* in subtropical rainforest. ISOTYPE. Leg. J.A.Elix (18582) & H. Streimann, 06.12.1984. Chemistry: usnic acid (minor), divaricatic acid (major), nordivaricatic acid (trace), unknown (trace) by HPLC, TLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 243.





Ramalina stevensiae



us: usnic acid, div: divaricatic acid

Ramalina stevensiae

Ramboldia laeta (Stirt.) Kalb, Lumbsch & Elix
[= ***Pyrrhospora laeta*** (Stirt.) Hafellner]

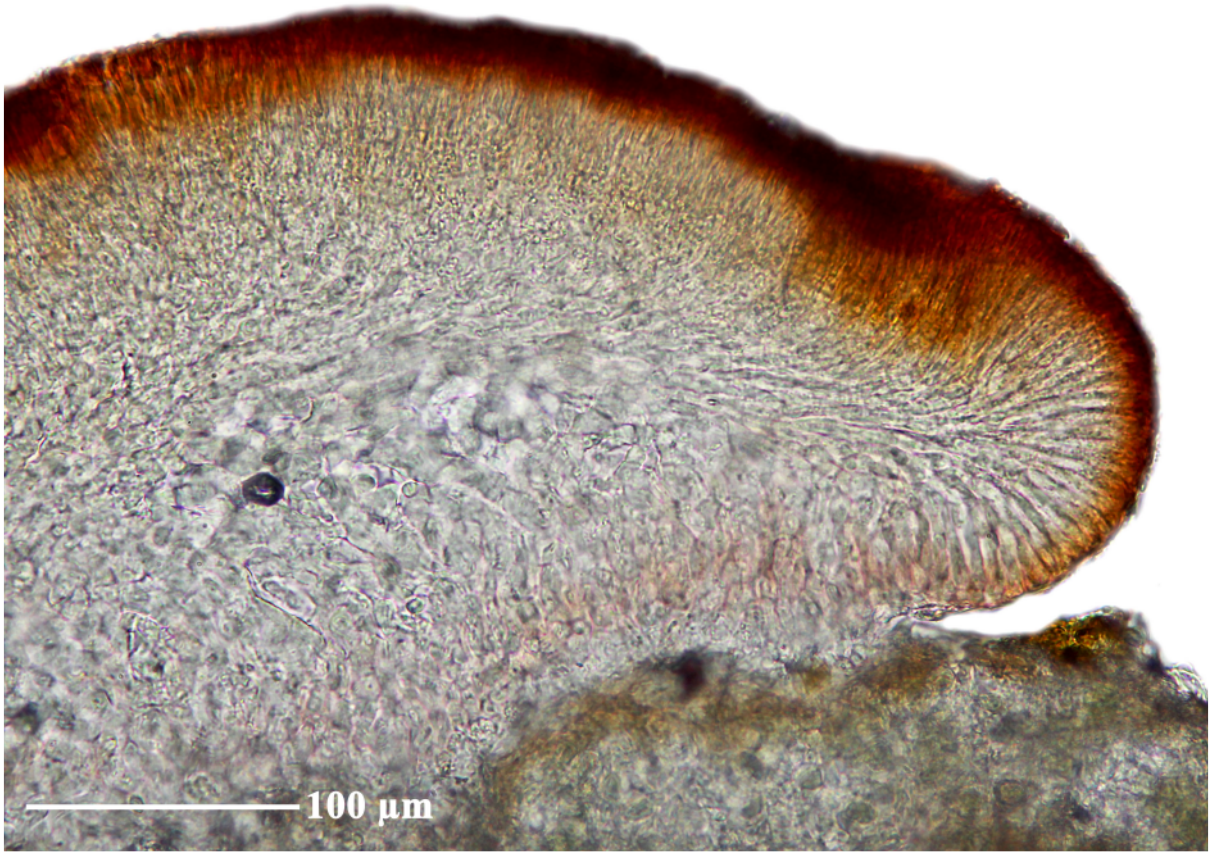
Thallus effuse or not apparent, grey-white to glaucous greyish, granular-papillate to areolate, often eroded or lacking, not sorediate. Prothallus absent. Apothecia scattered to crowded, biatorine, sessile, (0.1-)0.5-1(-2) mm diam., rounded to contorted-conglomerate, disc orange red to cinnabar-red, proper margin thin, concolourous with the disc or slightly paler. Epithecium with orange-red pigment, with K+ purple red and small crystals (russulone). Ascospores 8/ascus, narrowly cylindrical, with a very thin pseudoseptum, developing towards one end of the spore, 10-19 x 1.5-4(-7) µm, Chemistry: Thallus K-: apothecia K+ reddish purple. Lit. Kalb, K. et al. (2008).

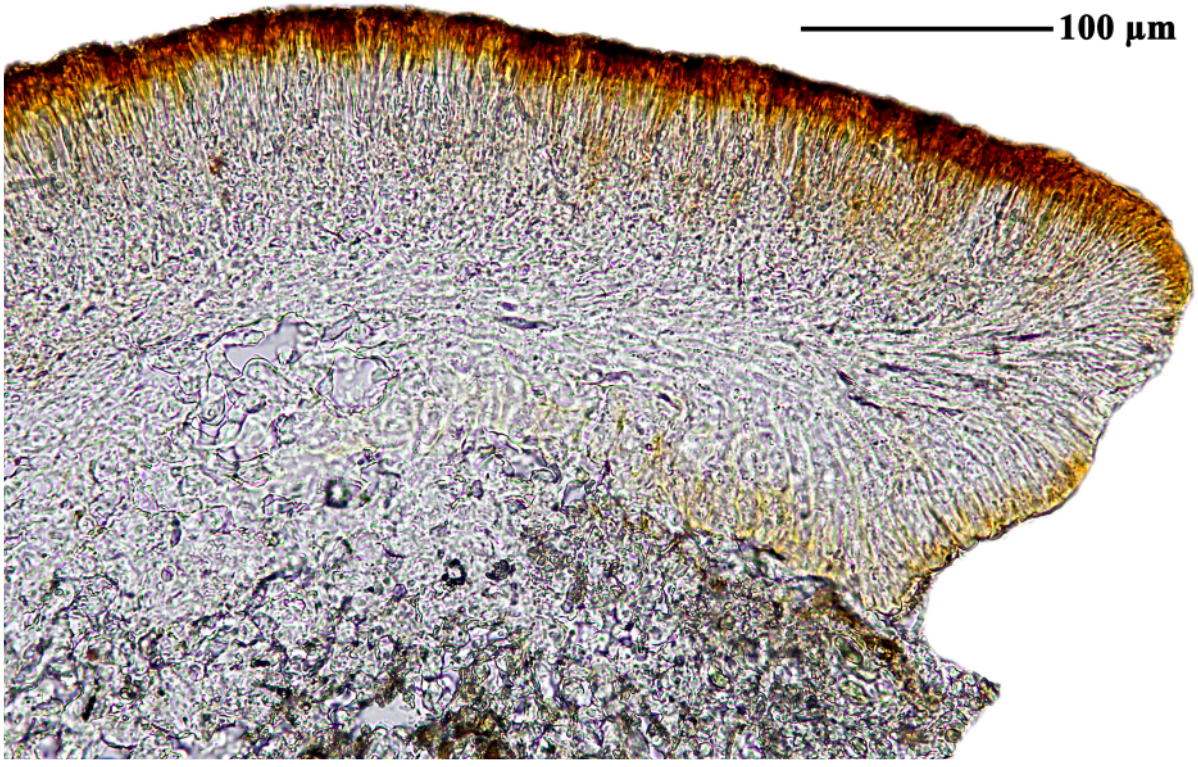
[19231], Australia, New South Wales, Koszciusko National Park, Johnnies Plain, 1 km east of Charlottes Pass, 36°25' S, 148°21' E, 1750 m, growing on dead shrub in alpine grassland with scattered *Eucalyptus pauciflora* and large granite boulders. Leg. J.A. Elix (33252) & G. Kantvilas 2.12.1992. Chemistry: russulone (major) by HPLC, TLC, LMS, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 295. Distributed as ***Pyrrhospora laeta*** (Stirt.) Hafellner.



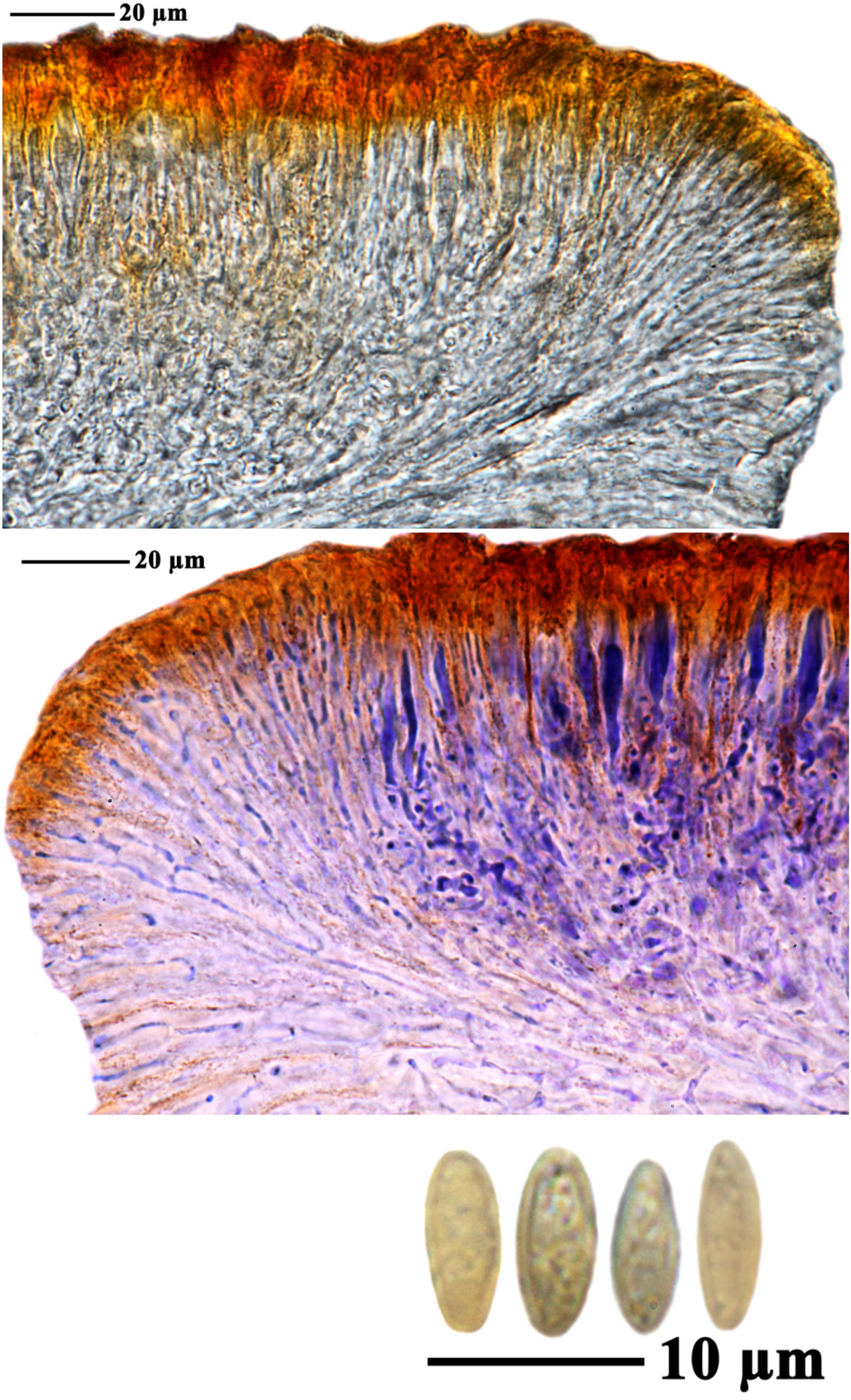


Ramboldia laeta

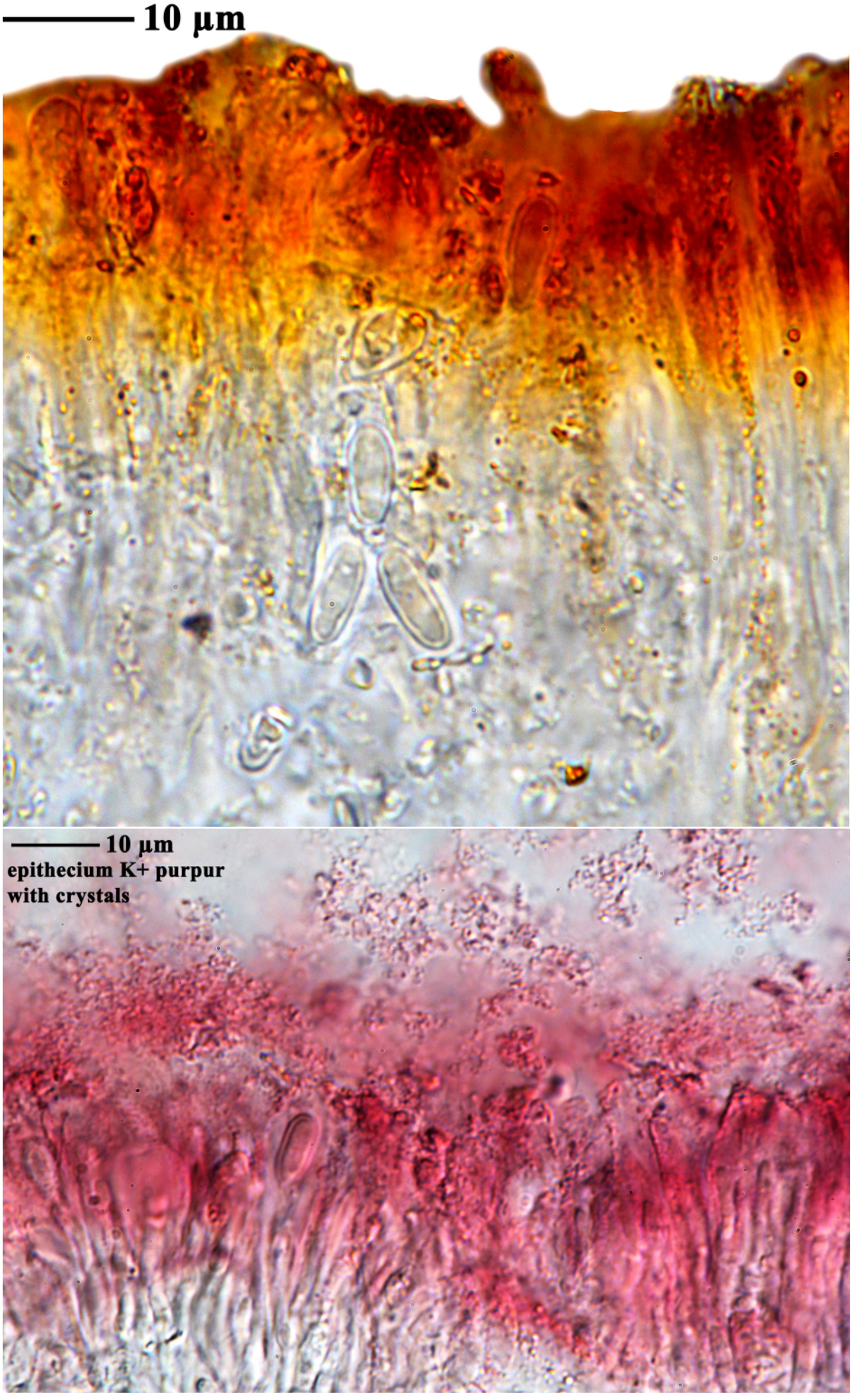




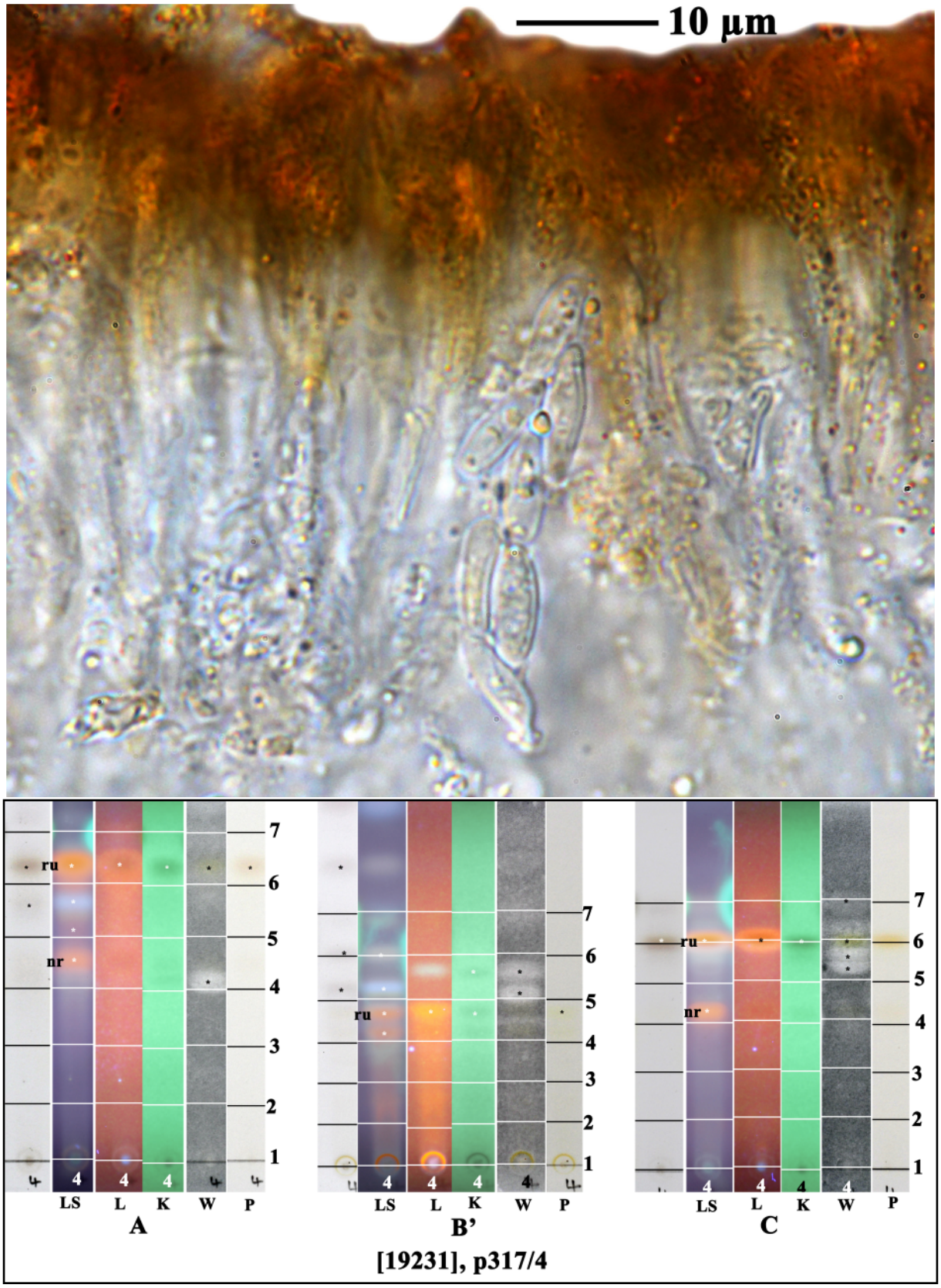
Ramboldia laeta



Ramboldia laeta



Ramboldia laeta



ru: russulone, nr: norrussulone

Ramboldia laeta

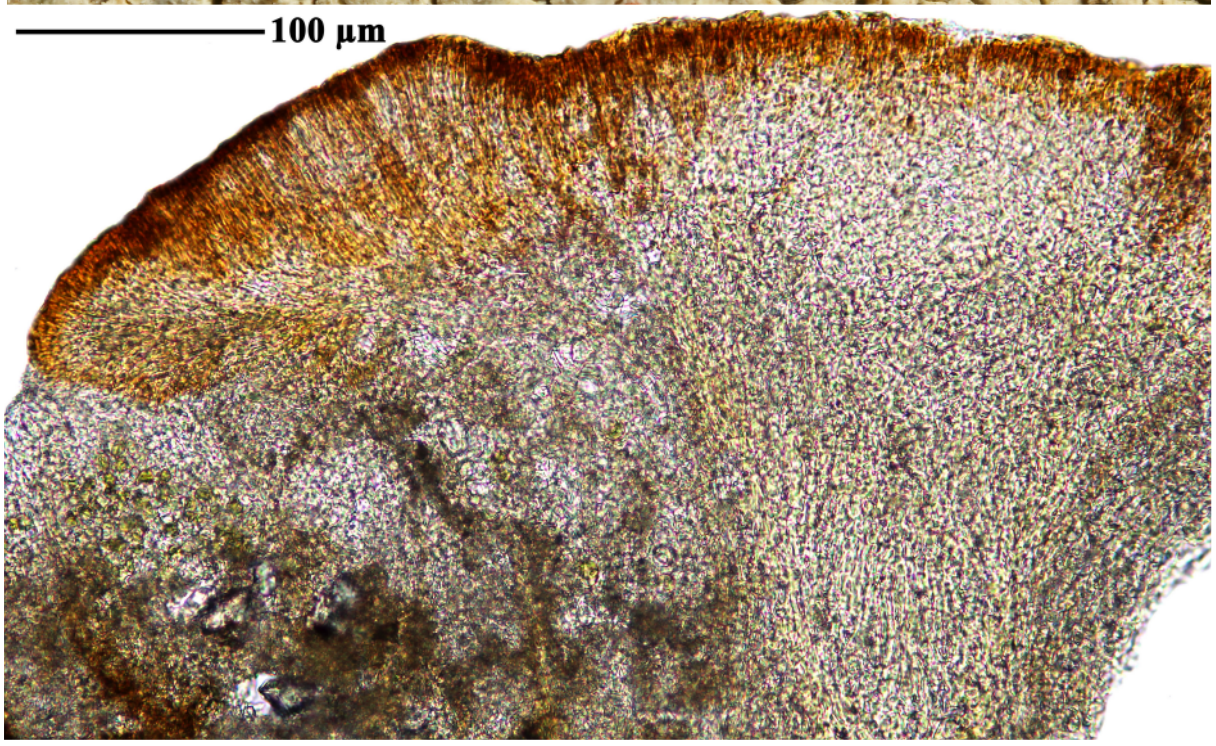
Ramboldia sanguinolenta (Kremp.) Kalb, Lumbsch & Elix
[= ***Pyrrhospora sanguinolenta*** (Kremp.) Rambold & Hafellner]

Thallus areolate to rimose, pale creamy yellow, to brownish. Prothallus not apparent. Apothecia scattered to crowded, rounded to auriculate, 0.5-1.5(-2) mm diam.; disc plane to convex, red, epruinose, margins distinct at first, becoming excluded at maturity. Ascospores 8-9 x 3-4.5 µm, simple, ellipsoidal. Conidia filiform, curved, 20-25 x 0.8-1 µm. Chemistry: Cortex K-, C-, KC-, P-; medulla K+ red, C-, P+yellow; norstictic acid, connorstictic acid, lichexanthone, russulone.

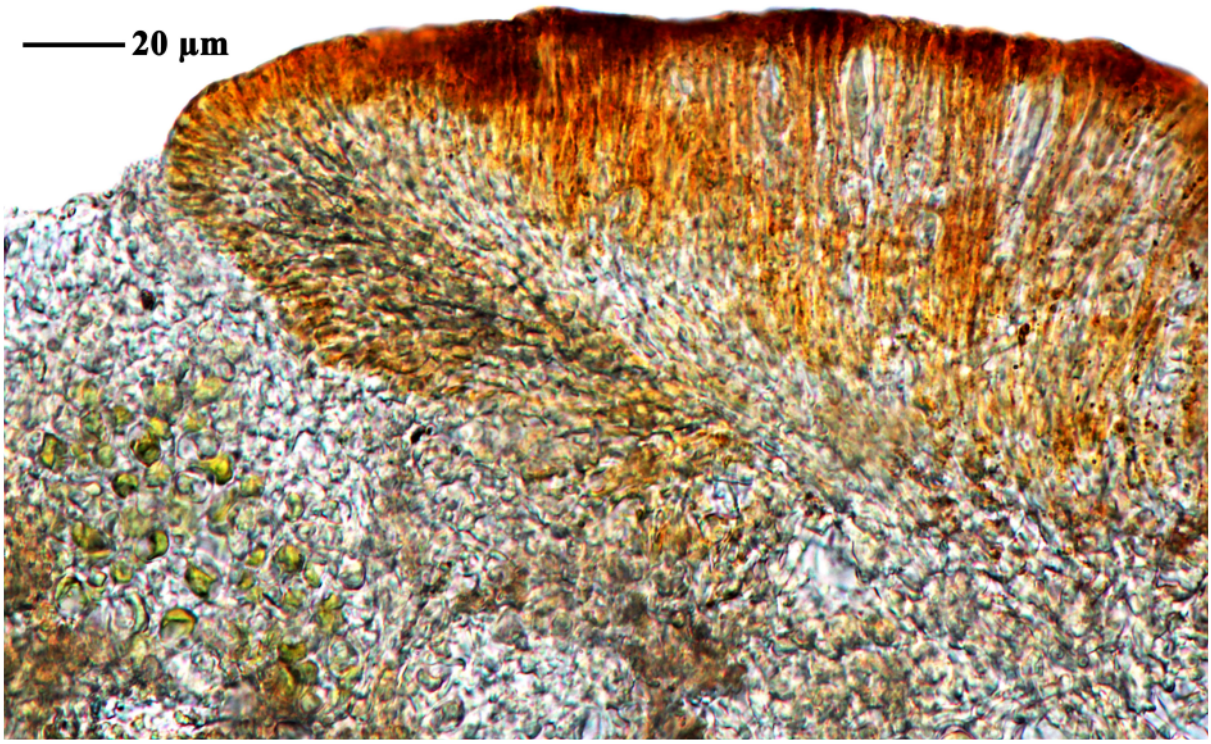
[19232], Australia, New South Wales, Stroud-Gloucester Road, 37 km south of Gloucester, 32°20' S, 151°55' E, 80 m, growing on volcanic rocks in dry sclerophyll forest on steep rocky westerly slope. Leg. J.A. Elix (22875) & H. Streimann, 22.04.1990. Chemistry: lichexanthone (major), norstictic acid (major), connorstictic acid (minor), unknown pigments by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 218. Distributed as ***Pyrrhospora sanguinolenta*** (Kremp.) Rambold & Hafellner.

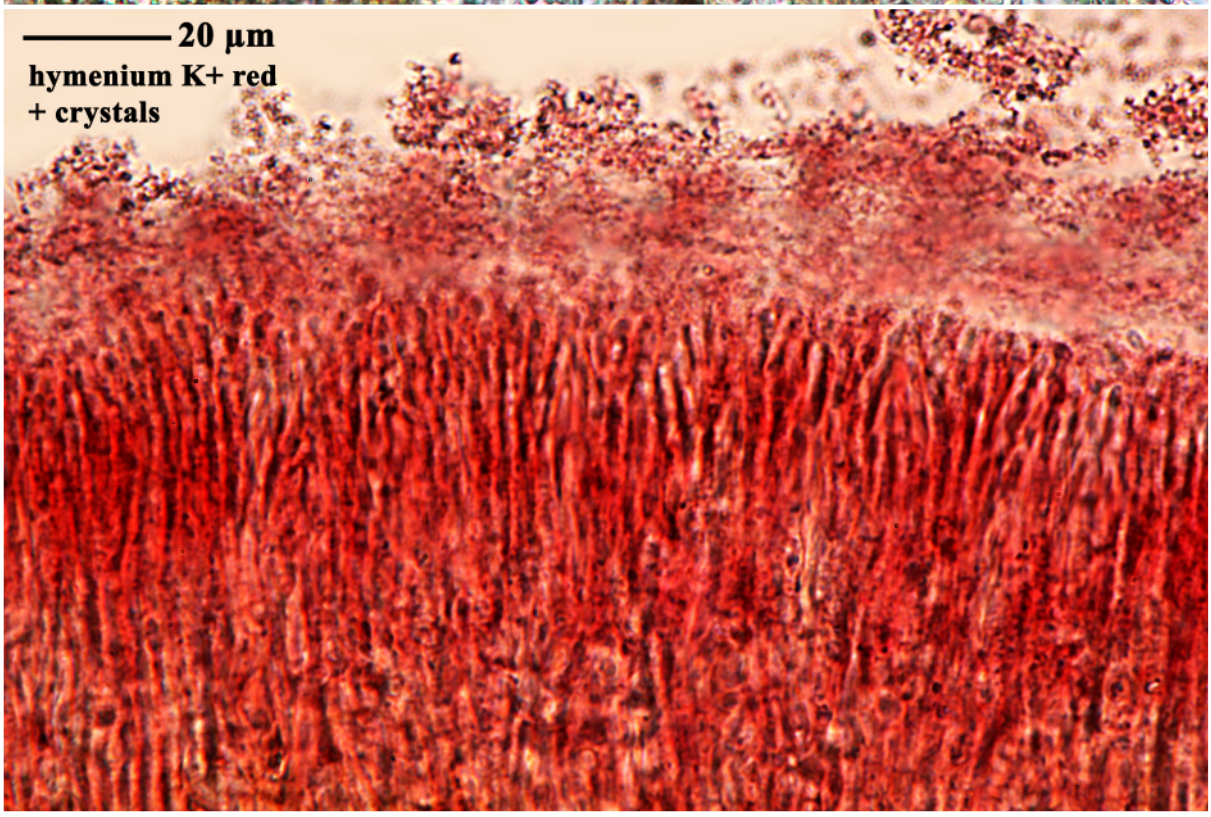




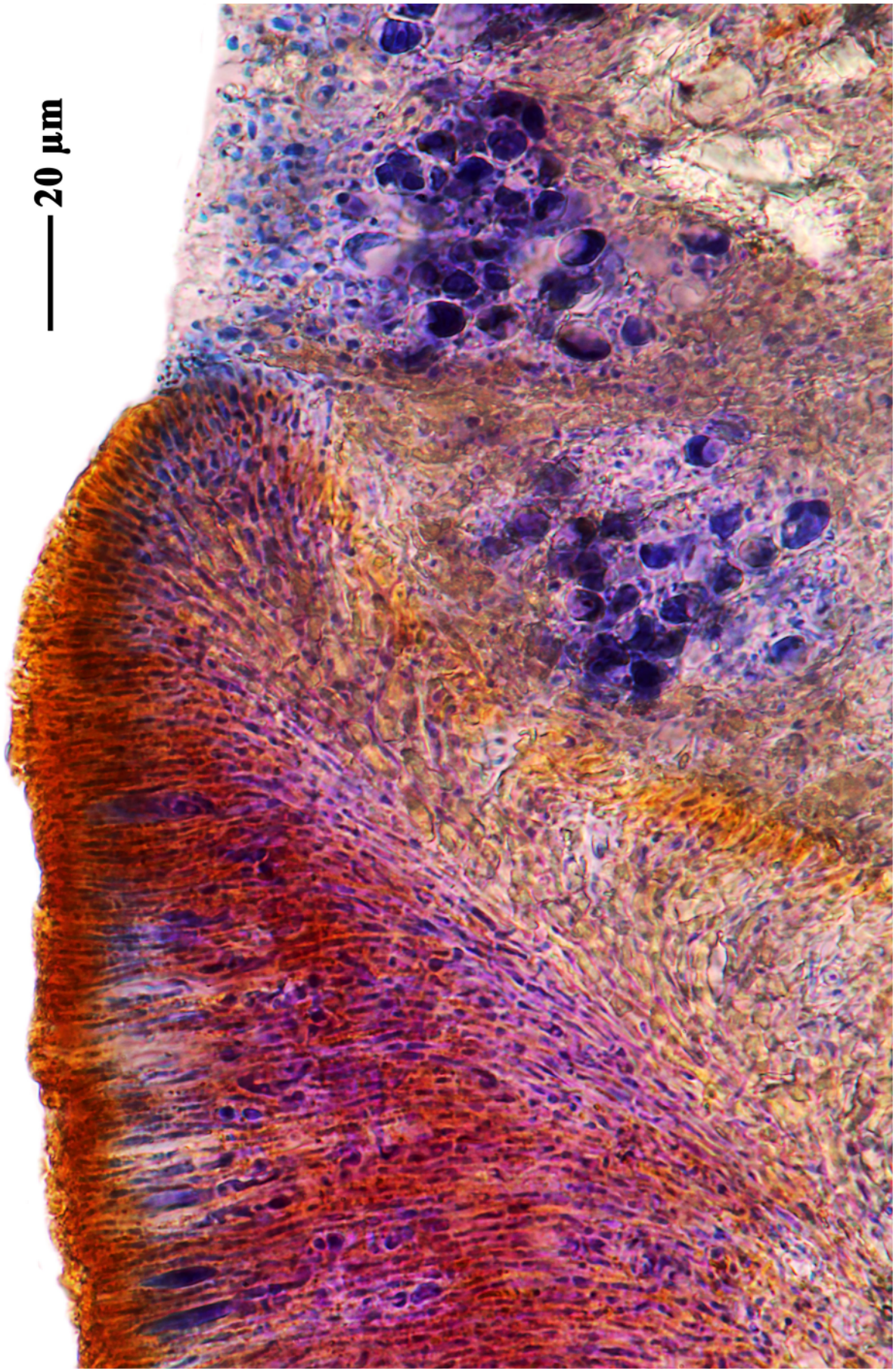


Ramboldia sanguinolenta

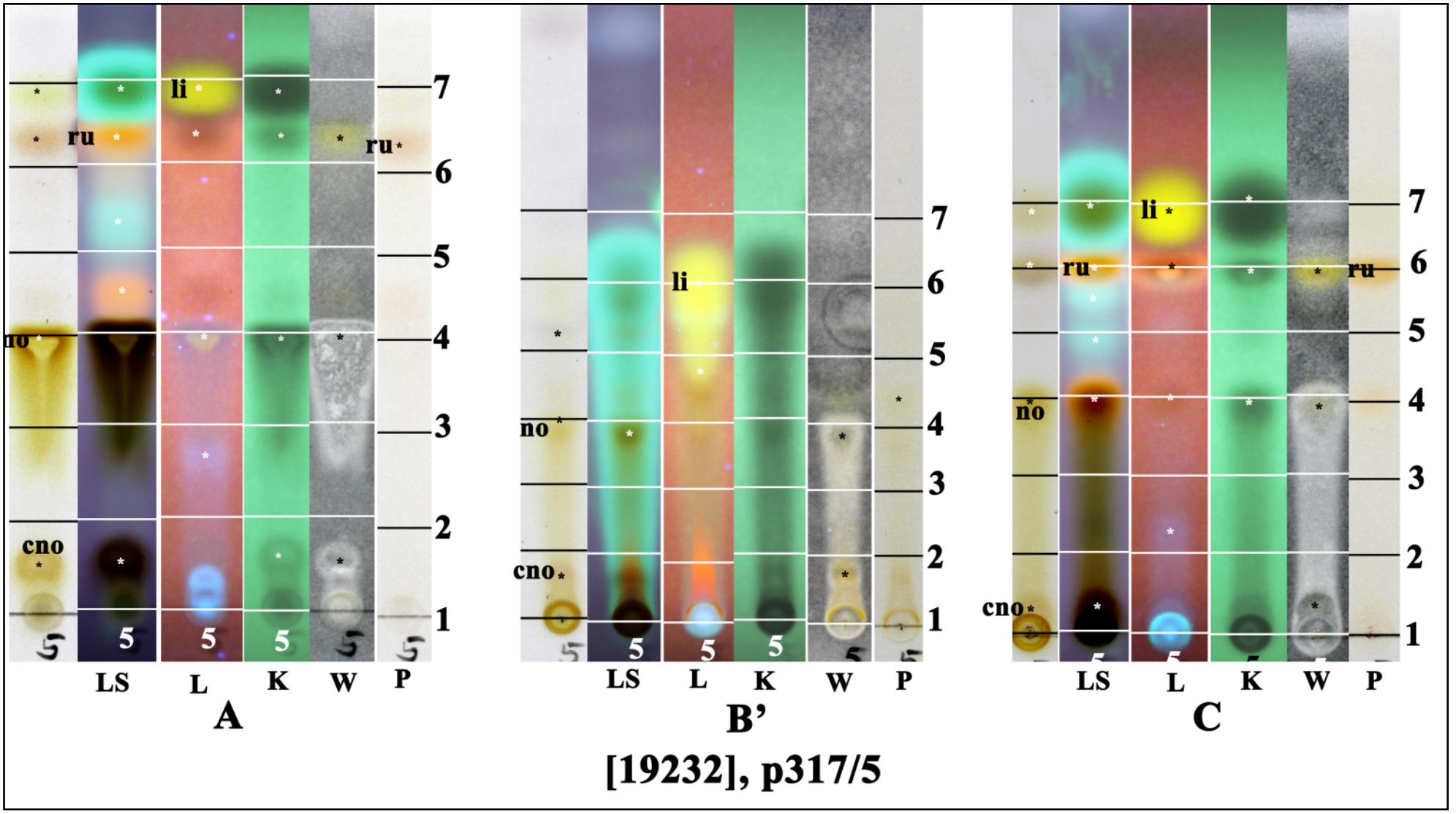




Ramboldia sanguinolenta



Ramboldia sanguinolenta

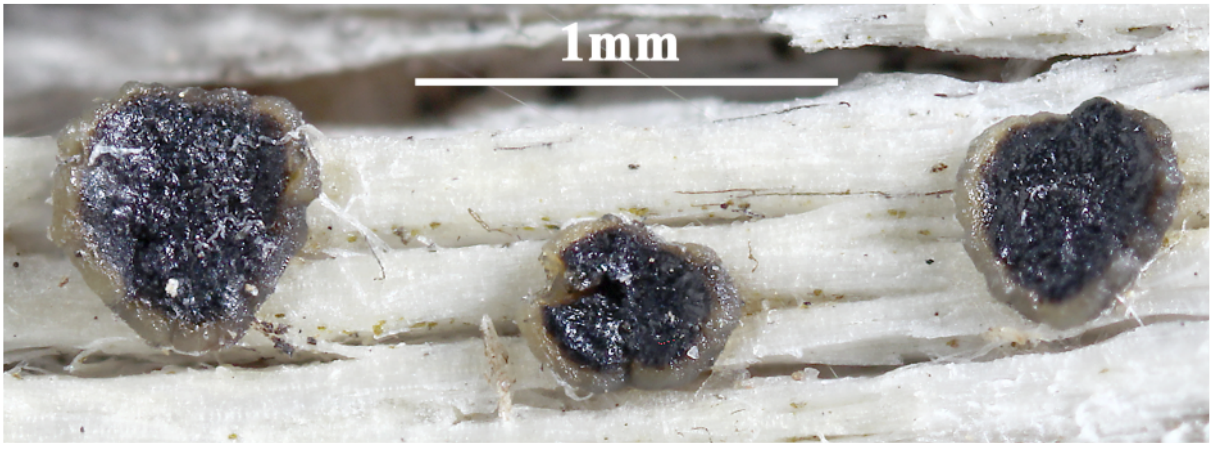


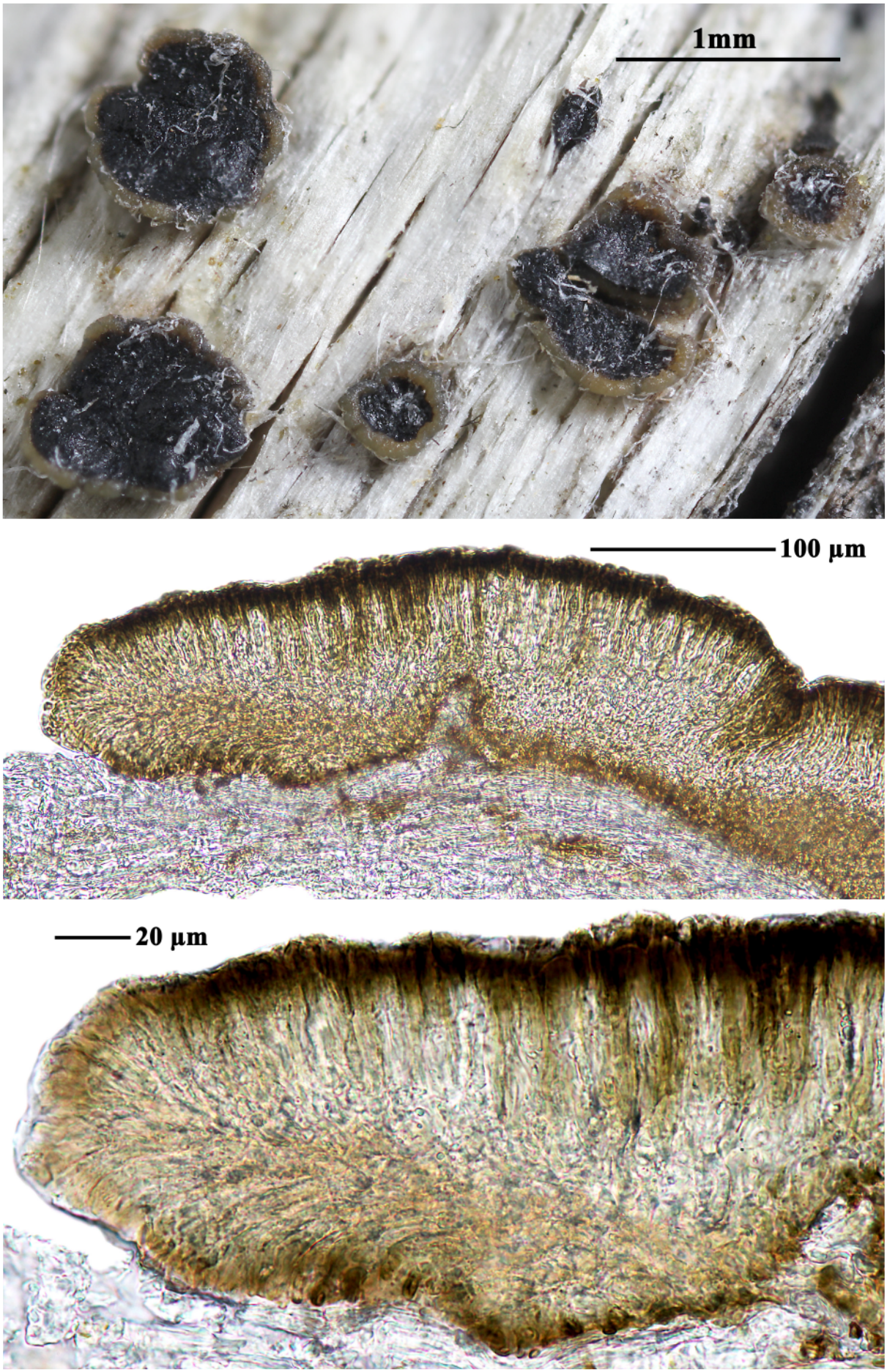
li: lichexanthone, ru: russulone, no: norstictic acid, con: connorstictic acid

Ramboldia stuartii (Hampe) Kantvilas & Elix

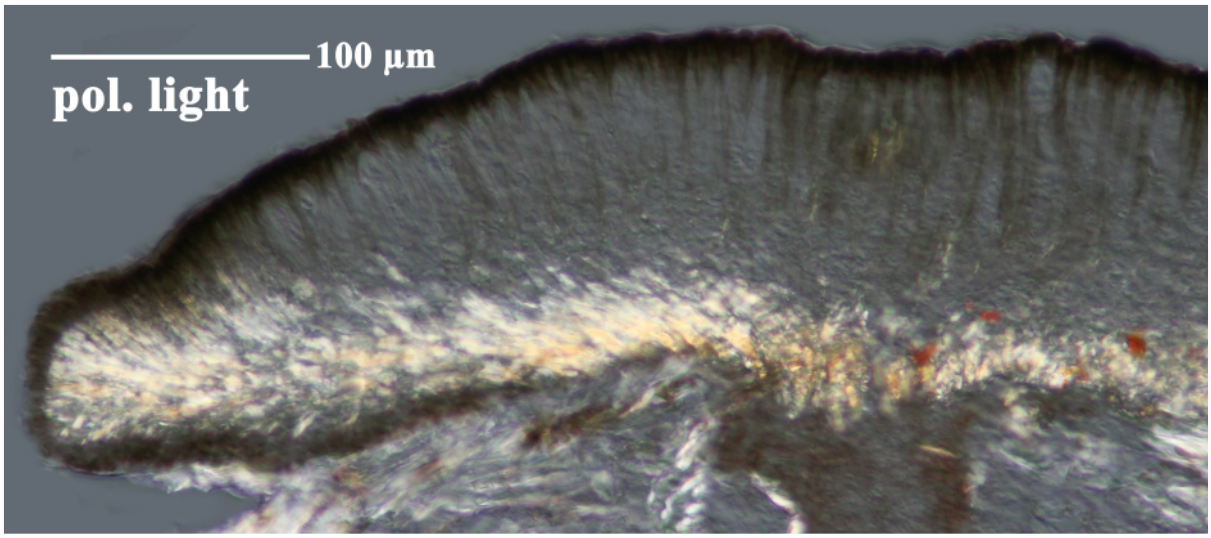
Thallus endophloeodal, not apparent. Photobiont cells 10-12 µm diam., concentrated near base of apothecia. Apothecia round or irregularly angular and deformed by mutual pressure, to 1.5 mm diam., mostly ca. 0.2-0.4 mm thick, broadly adnate, disc jet black, glossy to mat, plane, becoming undulate to convex in very old apothecia; margin thin, occasionally flexuose, persistent except in the very oldest apothecia, glossy and concolourous with disc at upper edge, outer edges sometimes brownish; epithecium 8-12 µm thick, dark orange-brown to olive-brown, becoming pale dingy grayish-brown in KOH; excipulum similarly coloured at outer edge, pale orange and becoming colourless in KOH within; hymenium 32-50 µm thick, pale orange-brown to olive-brown, sometimes darkly discoloured in older specimens, + colourless in KOH; paraphyses conglutinate, sparsely branched and anastomosing, regularly tapered, 1-1.5(-2) µm thick, septate with rather short cells; apices colourless, not expanded; asci 25-40 x 9-12 µm; ascospores narrowly ellipsoid, 7.5-12 x (2-)2.5-5 µm, usually with 1-3 plasma bridges; hypothecium 60-80 µm thick, pale orange-brown to colourless; subhypothecium colourless to pale orange-brown, becoming colourless in KOH except for a central band, KOH+ vivid purple. Pycnidia not seen. Chemistry: hypothamnolic acid. Lit. Kantvilas, G. & Elix, J.A. (1994, Bryologist 97: 299).

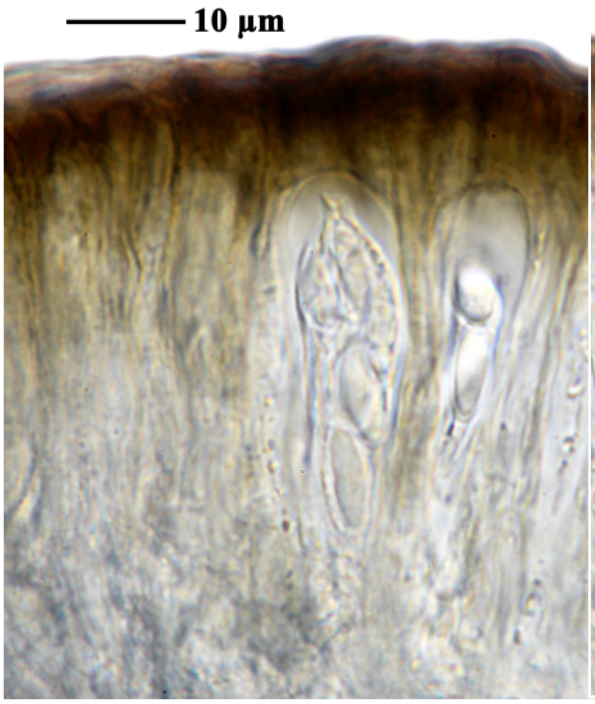
[19258], Australia, Tasmania, Lake Emmet, 42°37' S, 146°33' E, 980 m, growing on dead, decorticated Eucalyptus coccifera. Leg. G. Kantvilas (9/93), 30.01.1993. Chemistry: hypothamnolic acid by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 296.

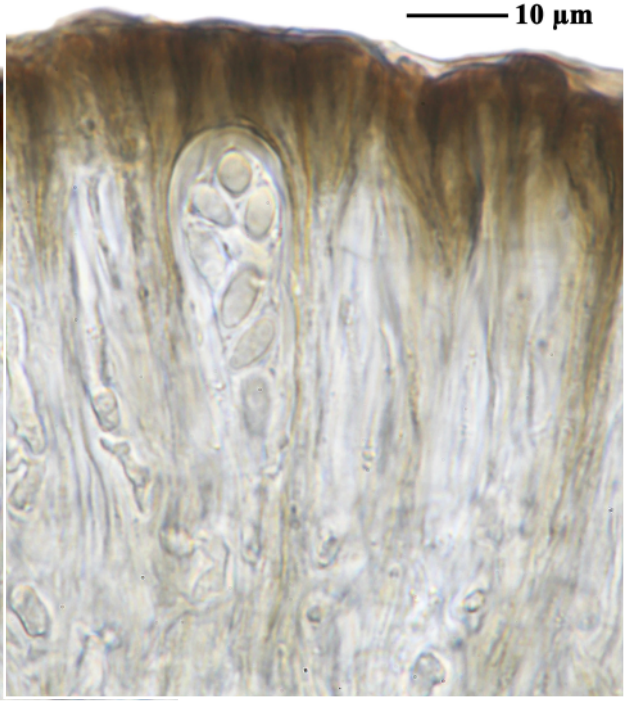




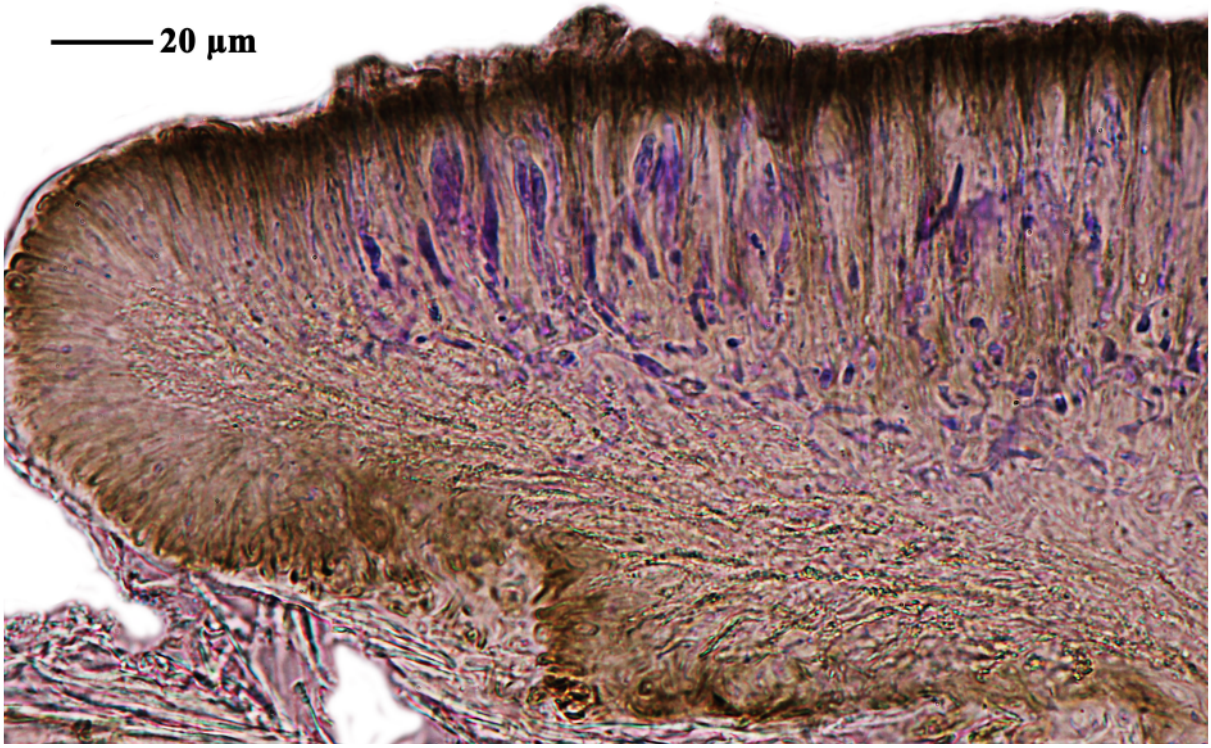
Ramboldia stuartii

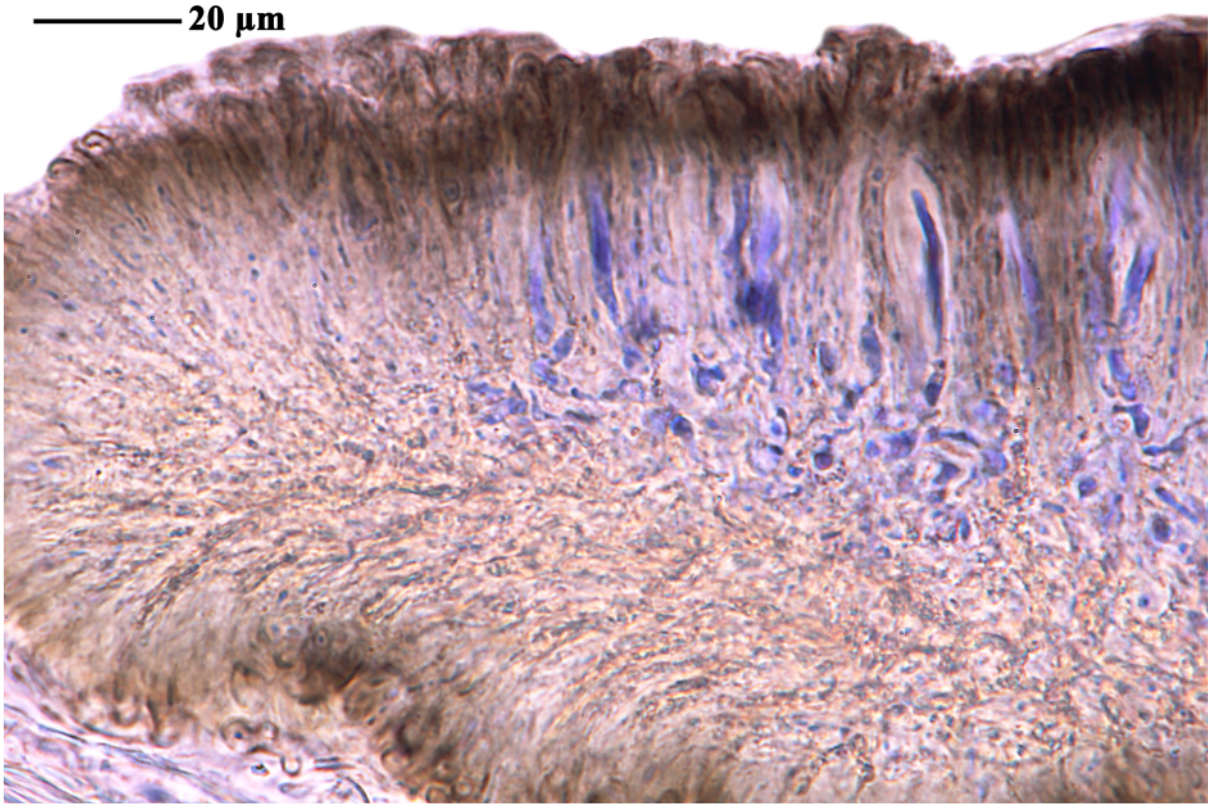




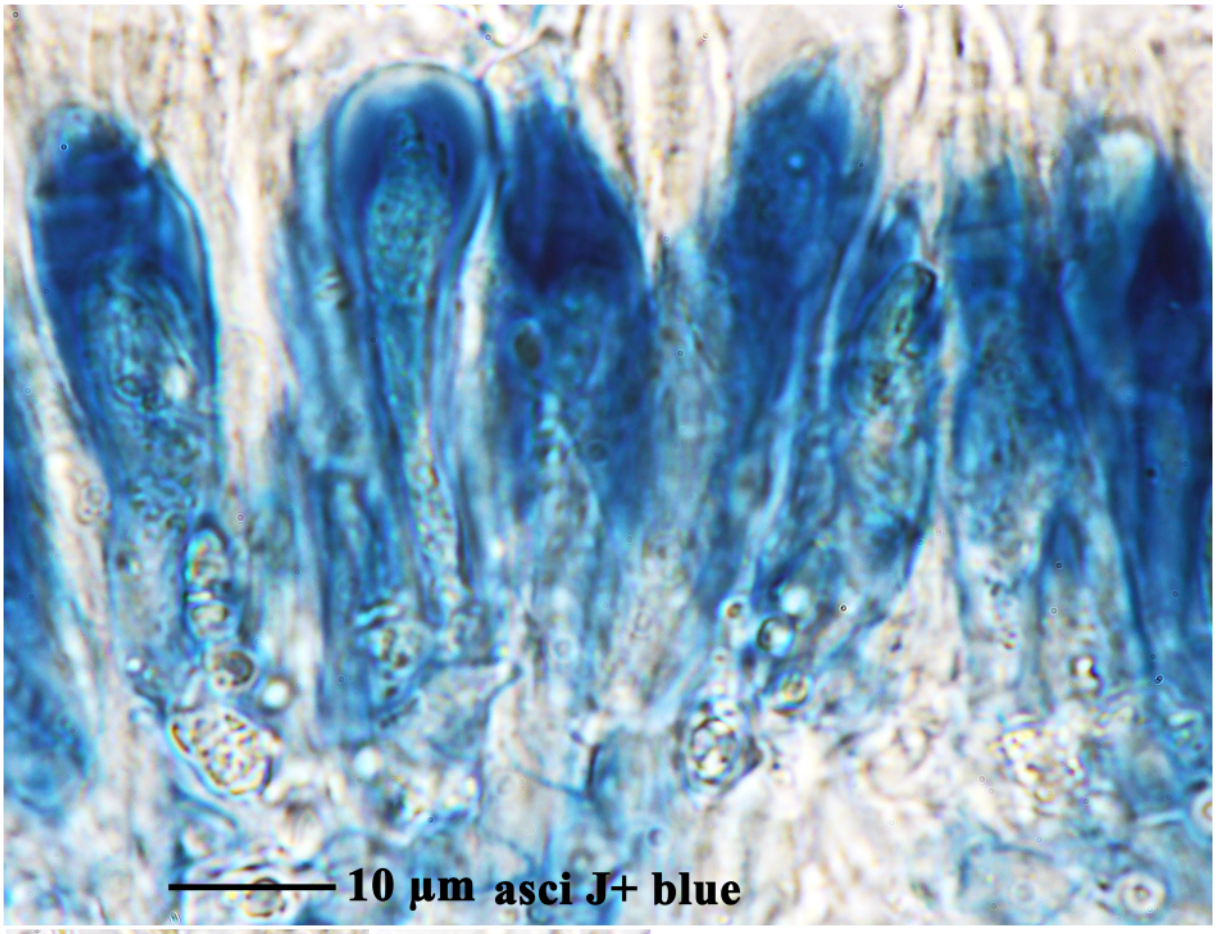


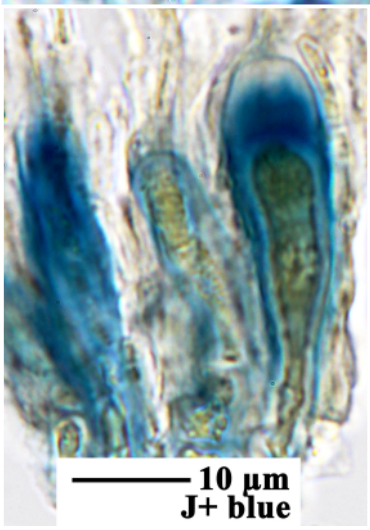
Ramboldia stuartii

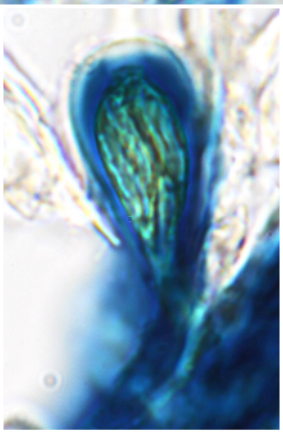


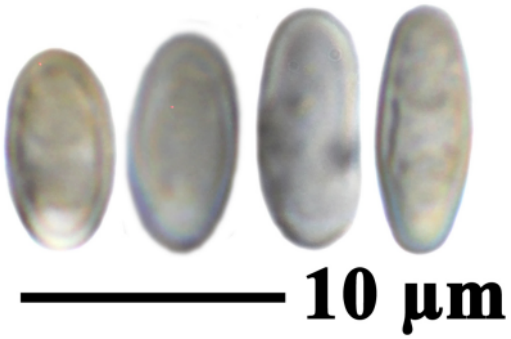


Ramboldia stuartii

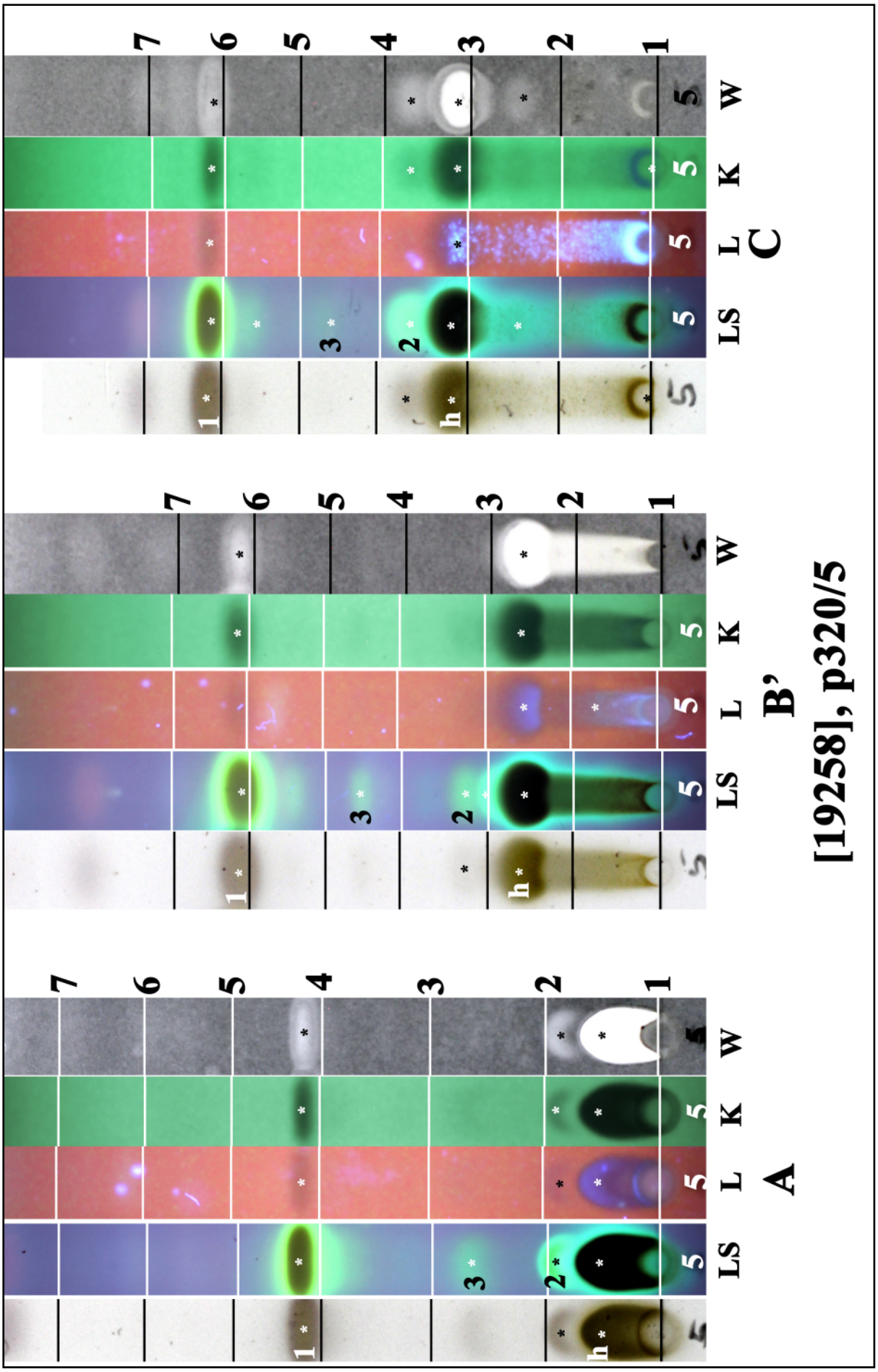








Ramboldia stuartii



h: hypothamnolic acid, 1, 2, 3: unknown

Ramboldia stuartii

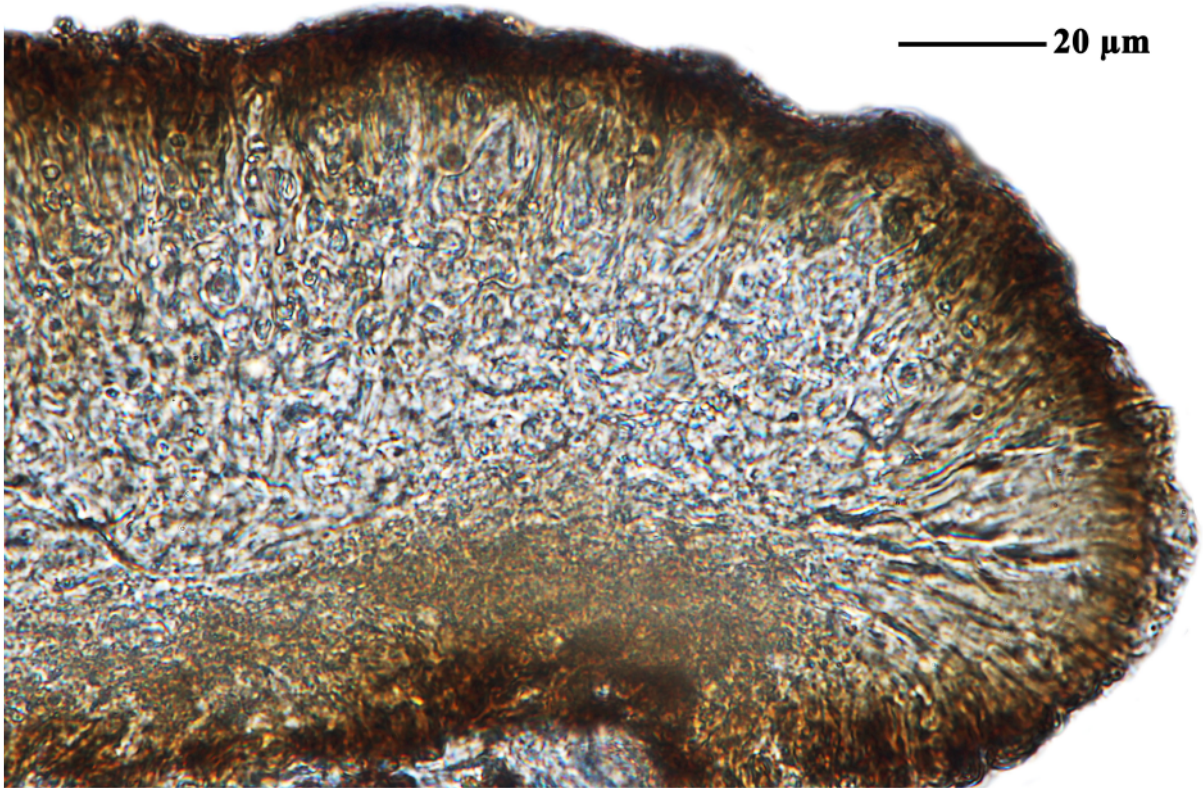
Ramboldia subnexa (Stirt.) Kantvilas & Elix

Thallus pale tan, composed of dispersed or contiguous convex areoles ca. 0.25 mm wide, often evident only around the apothecia, KOH+ yellow. Photobiont cells to 15 ,m diam. Apothecia round or irregularly roundish, to 1.5(-2) mm diam., 0.15- 0.4 mm thick, broadly adnate; disc jet black, glossy to mat, plane at first, soon becoming undulate and convex in old apothecia; margin thin, translucent brownish when very young, soon black and glossy, occasionally flexuose, persistent or becoming excluded in old apothecia; epithecium 8-10 µm thick, olive-brown to deep golden-brown, colourless or pale dingy-brown in KOH; excipulum similarly coloured; hymenium 35-50 µm thick, pale yellow-brown to colourless, occasionally discoloured brown in old specimens, colourless in KOH; paraphyses conglutinate, sparsely branched, septate with short irregularly swollen cells to 5 µm wide, containing large, conspicuous vacuoles; apices colourless, not expanded; asci (20-)32-40 x 12-16 µm; ascospores narrowly ellipsoid, 7-11(-13) x (2-)2.5-5 µm, occasionally with plasma bridges; hypothecium 50-70(-90) µm thick, pale yellow-brown to colourless, colourless in KOH; subhypothecium golden brown, KOH+ bright yellow. Chemistry: thamnolic acid. Lit. Kantvilas, G. & Elix, J.A. (1994, Bryologist 97(3): 296-304)

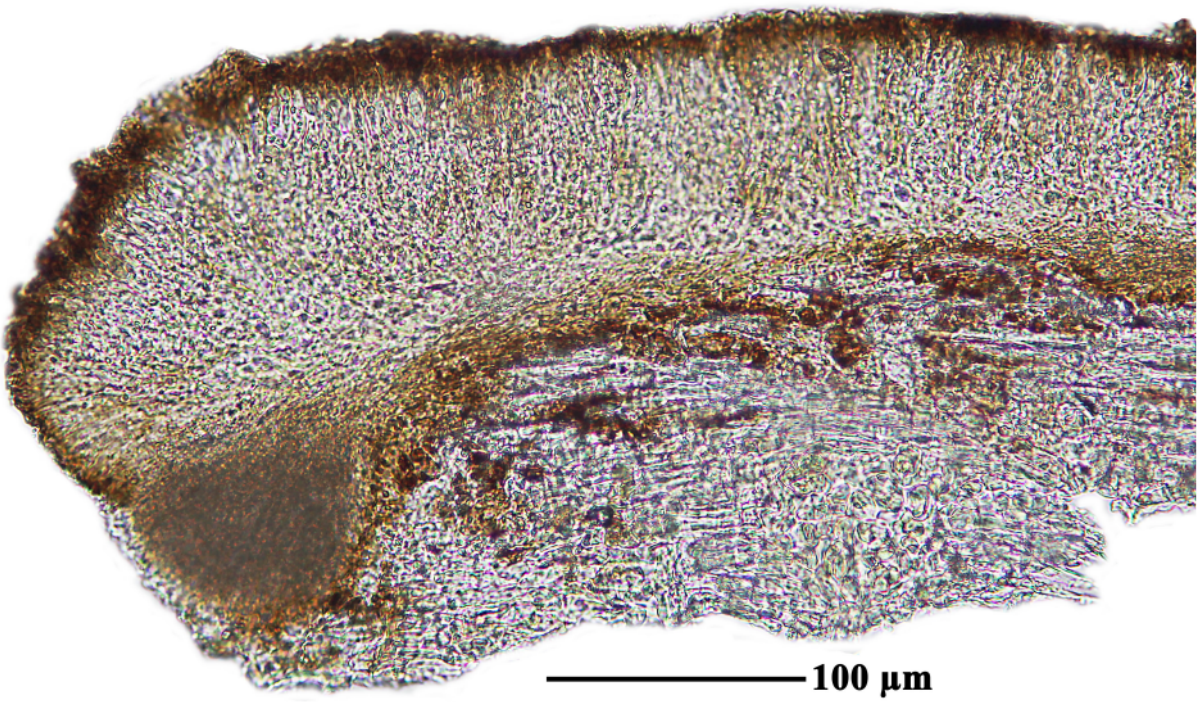
[19259], Australia, Australian Capital Territory, Summit of Mt. Clear, Clear Range, 65 km S of Canberra, 35°16' S, 149°17' E, 1600 m, growing on dead wood in dry *Eucalyptus pauciflora* woodland. Leg. J.A. Elix (9005), 01.10.1980. Herbarium J.A. Elix.

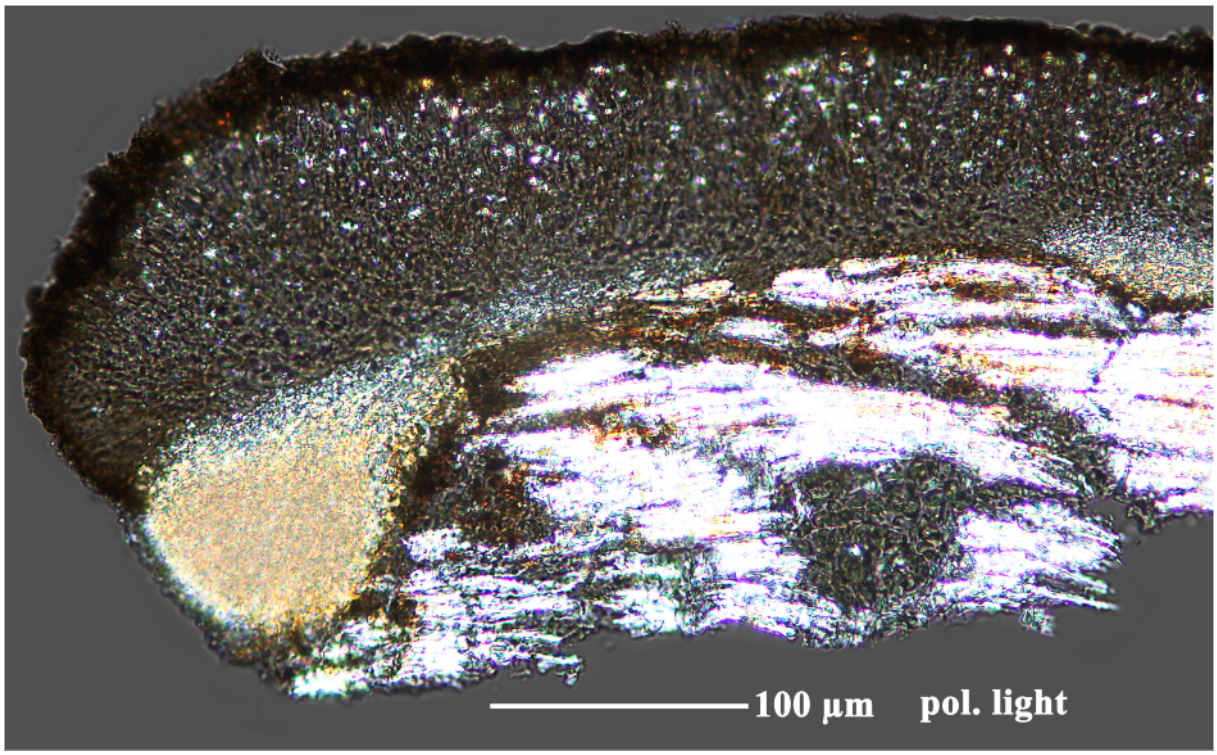


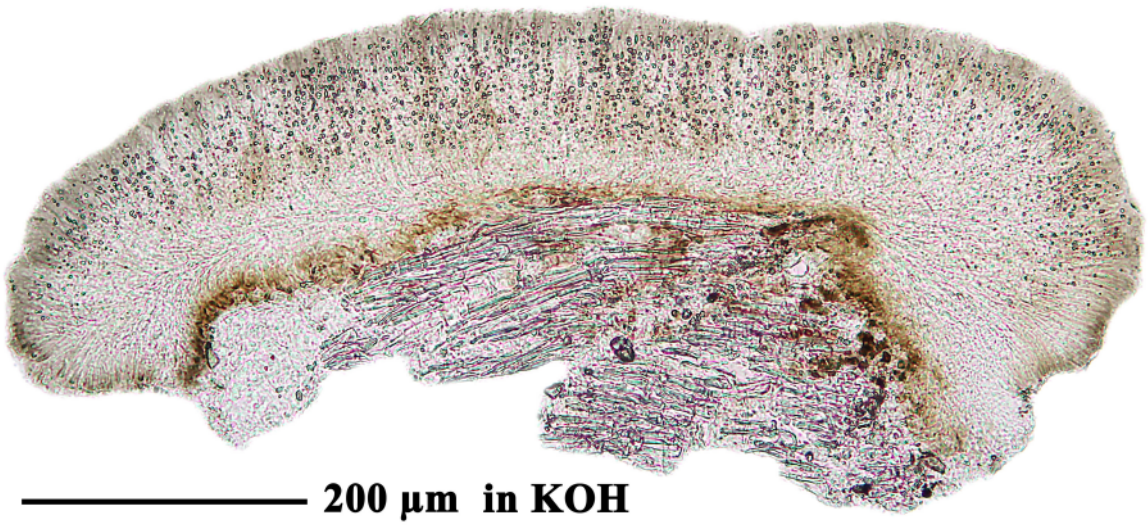




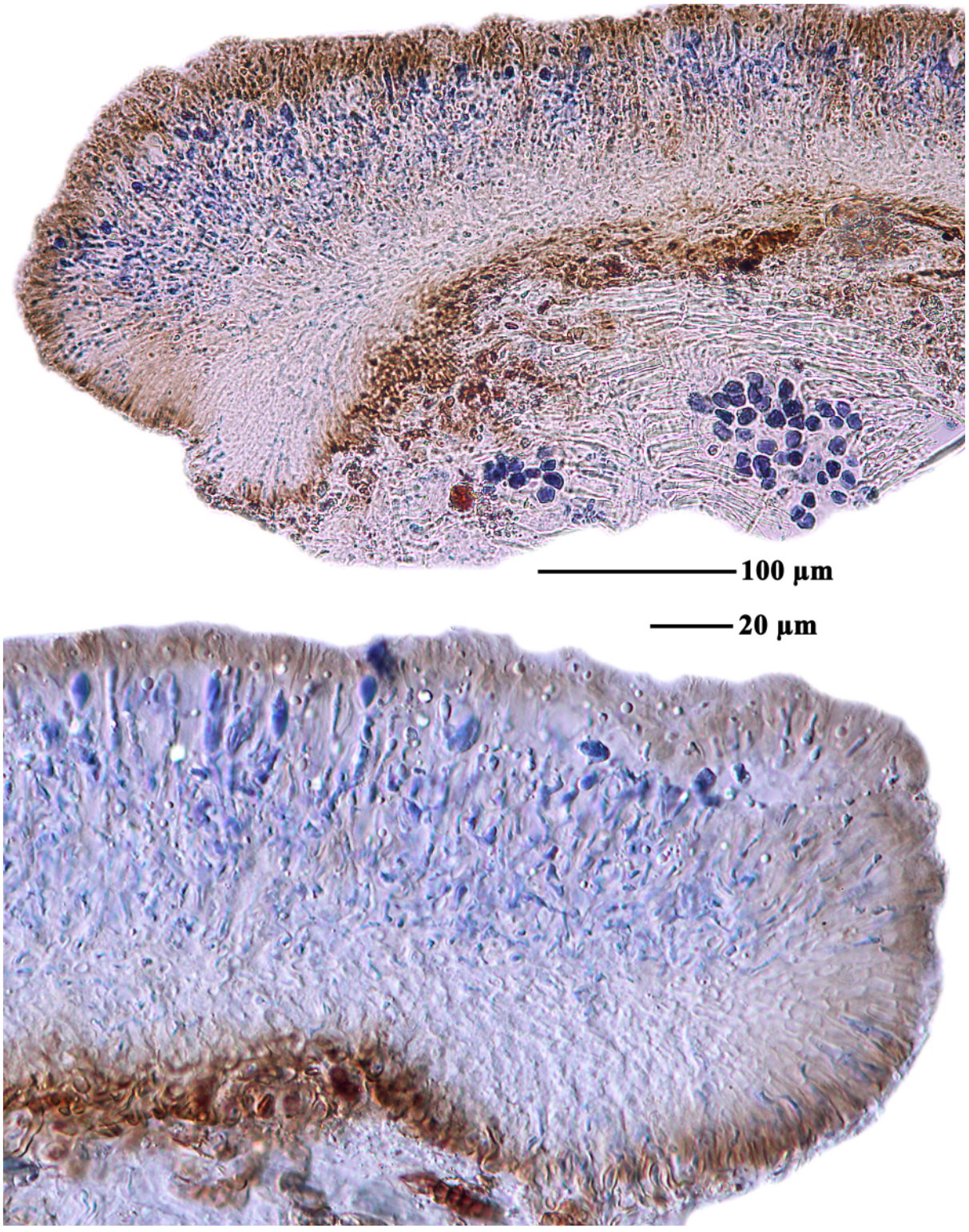
Ramboldia subnexa



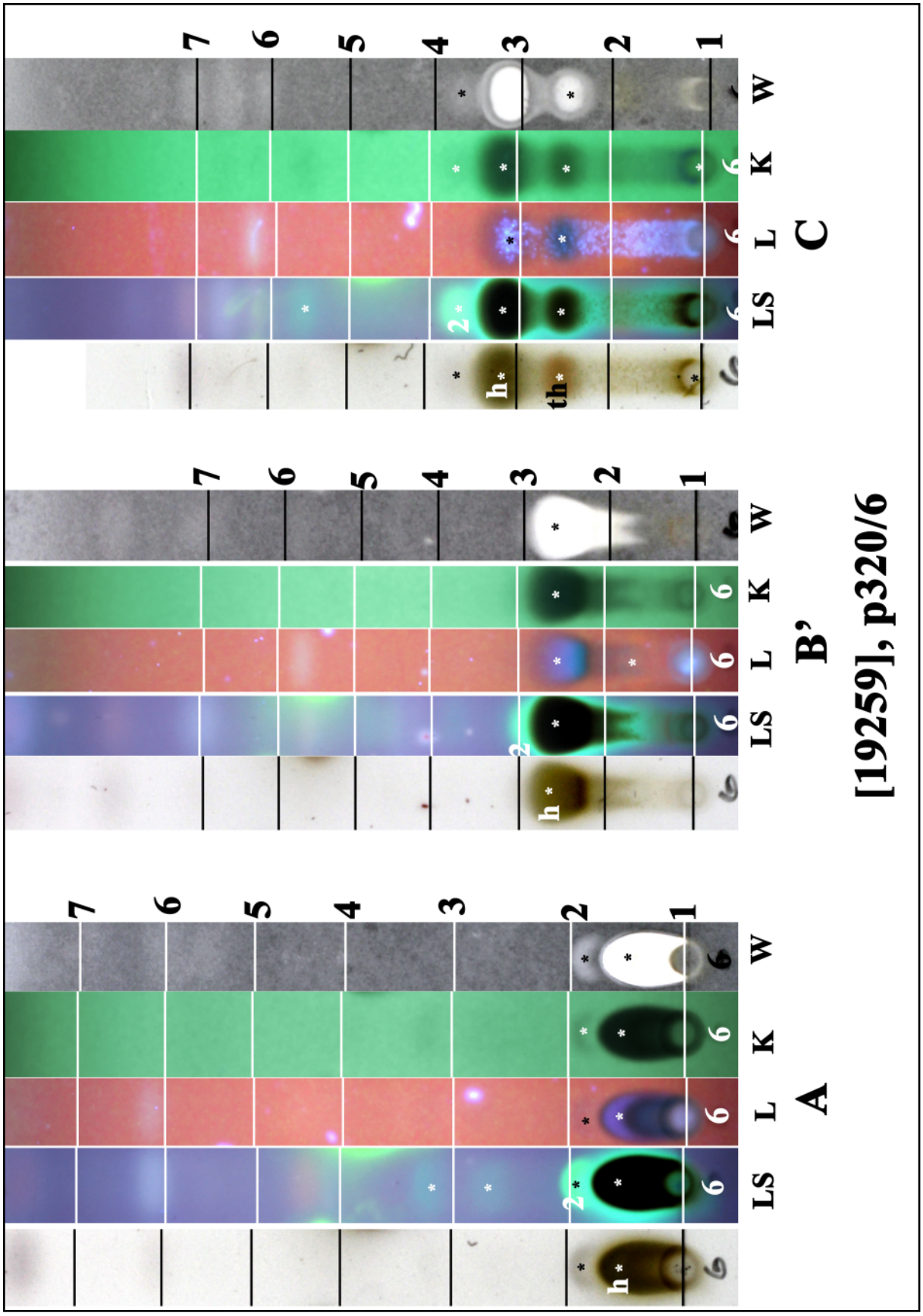




Ramboldia subnexa



Ramboldia subnexa



h: hypothamnolic acid, th: thamnolic acid, 2: unknown
the TLC sample is a mix of Ramboldia stuartii and R. subnexa

Ramboldia subnexa

Relicina demethylbarbatica Elix & Johnston

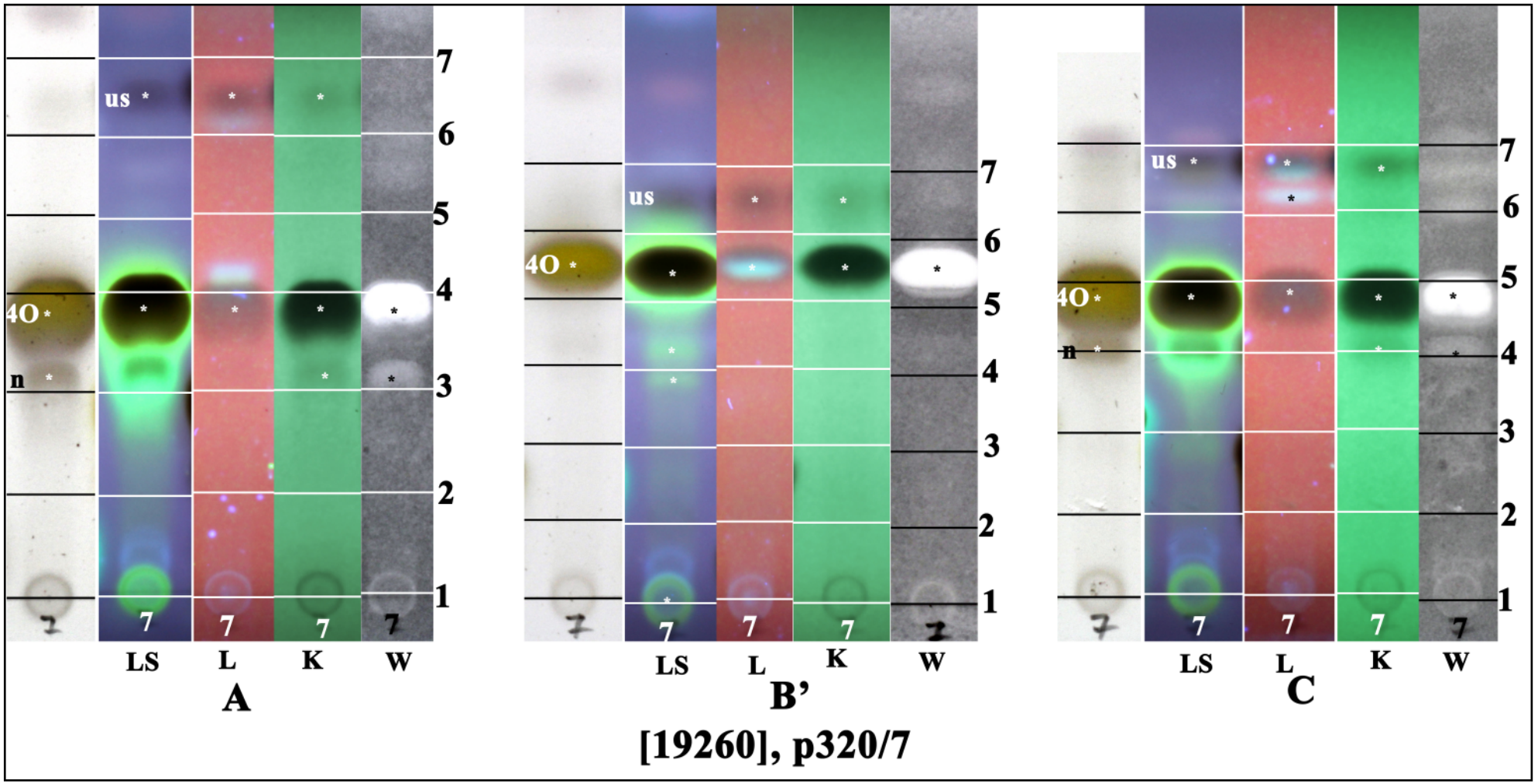
Thallus foliose, adnate. Lobes crowded but sparringly imbricate, sublinear-elongate, subdichotomously branched, short, 0.3-1.5 mm wide, elobulate; cilia numerous, moderately inflated, to 0.3 mm long. Upper surface yellow-green, flat, shiny, smooth, emaculate; isidia moderately dense to dense, cylindrical, simple or sparingly branched, short. Lower surface jet black; rhizines dense, simple, black. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ yellow, P-; usnic acid, 4-*O*-demethylbarbatic acid (major), barbatic acid (minor).

[19260], Australia, Queensland, Conway State Forest, 18 km east-north-east of Proserpine, 20°21' S, 148°45' E, 180 m, growing on *Albizzia* in lowland rainforest. Leg. J.A. Elix (20782) & H. Streimann, 28.06.1986. Chemistry: usnic acid (minor), 4-*O*-demethylbarbatic acid (major), barbatic acid (trace) by TLC, HPLC, anal. J.A. Elix & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 196.





Relicina demethylbarbatica

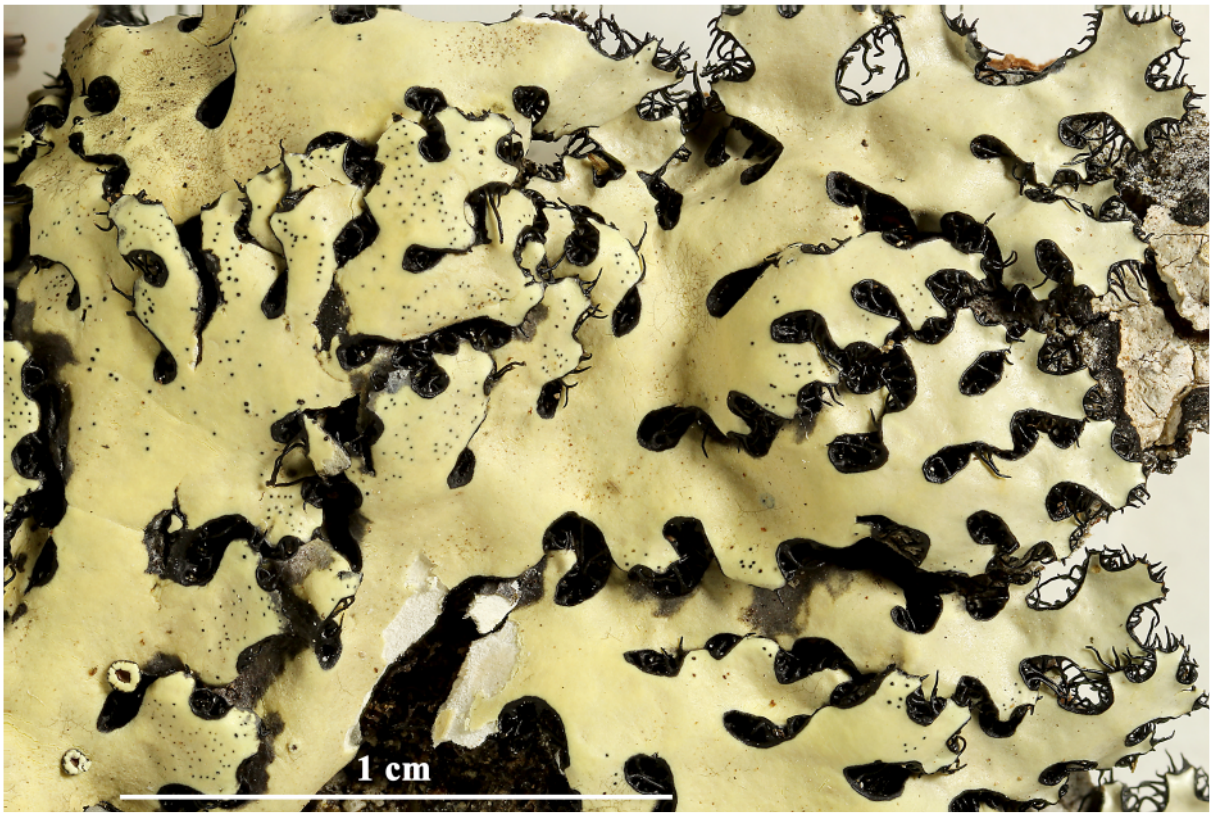


us: usnic acid, 4O: 4-*O*-demethylbarbatic acid, n: norobtusatic acid

Relicina limbata (Laur.) Hale

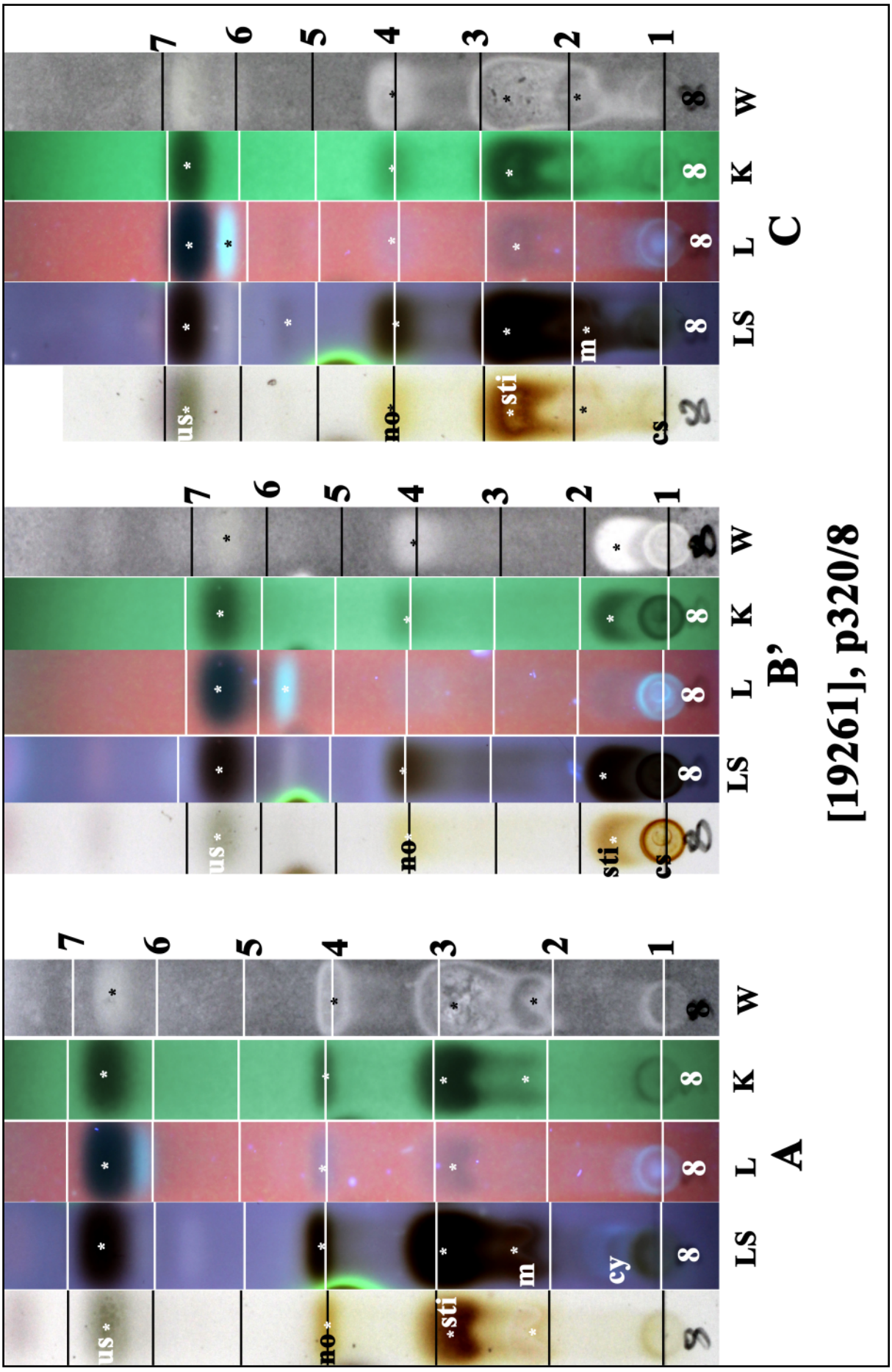
Thallus foliose, adnate. Lobes contiguous centrally, separate at periphery. not imbricate, linear-elongate, subdichotomously branched, 0.8-3 mm wide, without lobules; cilia dense, to 2.5 mm long, black. Upper surface yellow-green, flat to weakly convex, smooth, cracked on older lobes, maculate, without isidia. Lower surface brown to dark brown; rhizines moderately dense, simple or ocasionally dichotomously branched, coarse, brown to black. Apothecia common, to 6 mm wide. Ascospores 7-10 x 4-6 µm. Conidida bifusiform, 6-8 x 1 µm. Chemistry: cortex K-, UV-; medulla K+ yellow, C-, P+ orange; usnic acid, norstictic acid (trace), stictic acid (major), constictic acid (minor), cryptostictic acid (trace), ±menegazziaic acid (trace), ±hypostictic acid (trace), ±atranorin.

[19261], Australia, Queensland, Mount Windsor Tableland, 45 km north-west of Mossman, 16°15' S, 145°01' E, 1200 m, growing on *Flindersia pimenteliana* on ridge in stunted, open rainforest. Leg. J.A. Elix (15582) & H. Streimann, 26.06.1984. LICHENES AUSTRALASICI EXSICCATI NO. 075.





Relicina limbata



us: usnic acid, no: norstictic acid, sti: stictic acid,
cy: cryptostioctic acid, cs: constictic acid, m: menegaziaic acid

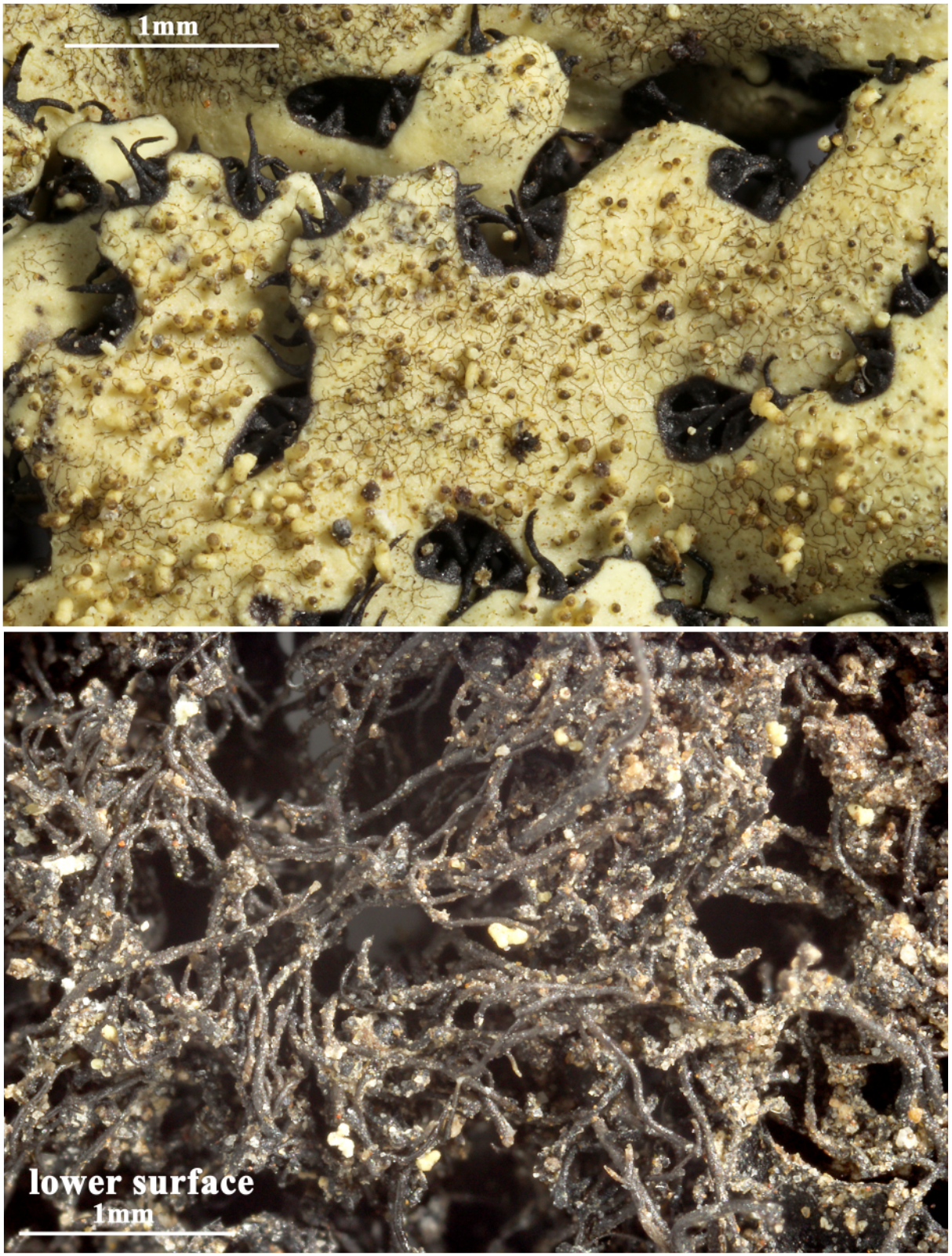
Relicina limbata

Relicina subnigra Elix & Johnston

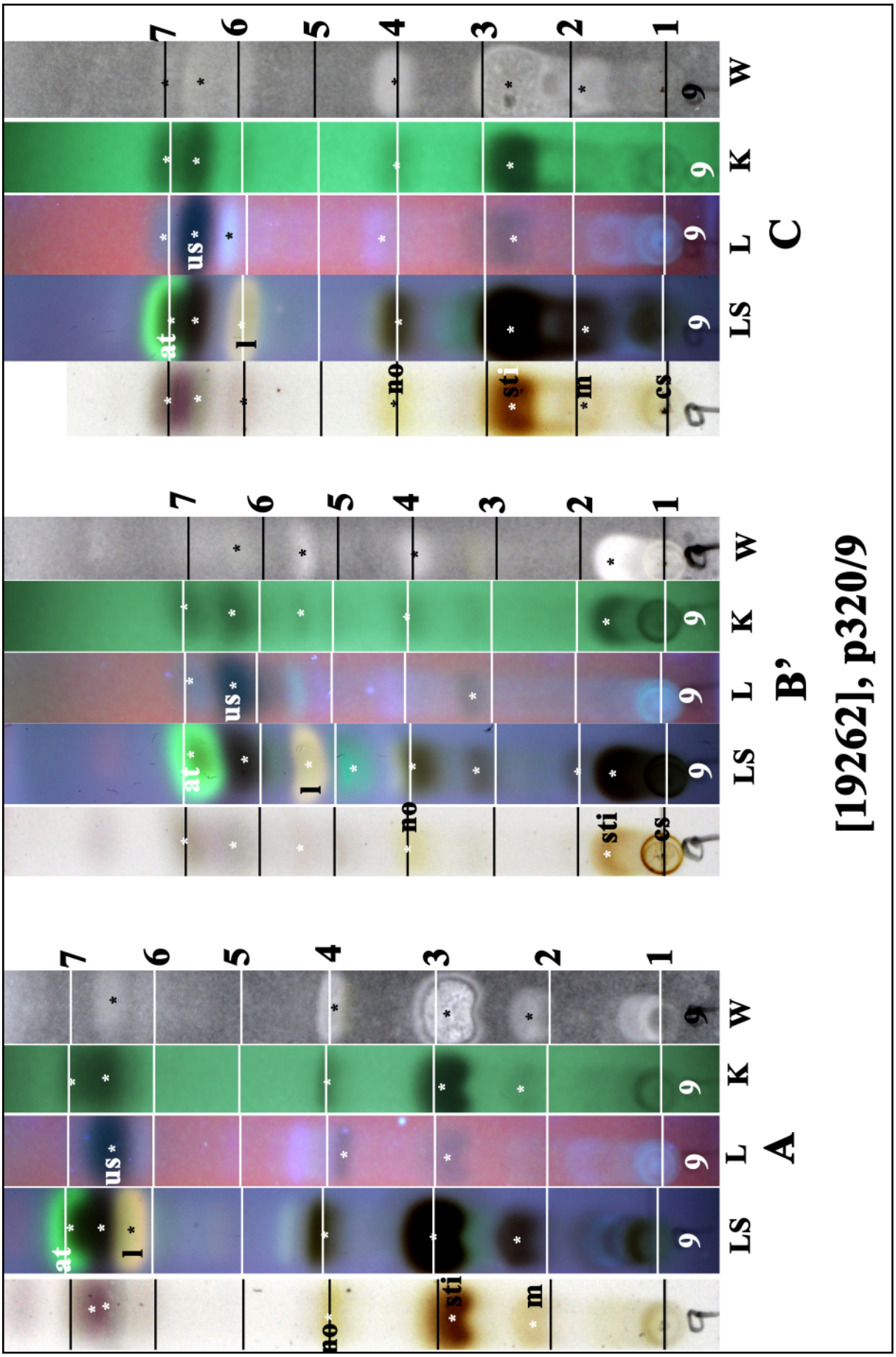
Thallus foliose, adnate. Lobes contiguous centrally, separate at periphery, ±imbricate, linear-elongate, dichotomously branched, 1-3 mm wide, elobulate; cilia dense, conspicuous, tapering to markedly inflated, to 1 mm long, black. Upper surface yellow-green to yellow brown after storage, flat to convex, smooth , emaculate. Isidia cylindrical, sparingly branched, rarely becoming coralloid. Lower surface black; rhizines dense, long, black. Ascospores 6-8 x 4-5 µm. Conidia 7-9 x 1 µm, weakly bifusiform. Chemistry: cortex K-, UV-; medulla K+ intense yellow, C-, P+ orange; usnic acid, stictic acid (major), constictic acid (minor), norstictic acid (minor), cryptostictic acid (trace), ±menegazziaic acid (trace).

[19262], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing over other *Parmelia* and *Hypogymnia* lichens on mossy granite rocks along the river bank. Leg. J.A. Elix (10907), 10.04.1983. Chemistry: usnic acid (minor), stictic acid (major), constictic acid (minor), norstictic acid (minor), cryptostictic acid (trace), menegazziaic acid (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 050.





Relicina subnigra



at: atranorin, us: usnic acid, no: norstictic acid, m: menegazziaic acid, cs: constictic acid, l: unknown.

Relicina subnigra

Relicina sydneyensis (Gyeln.) Hale

Thallus foliose, adnate. Lobes contiguous, sparingly imbricate, sublinear-elongate, dichotomously to subdichotomously branched, 0.8-1.5 mm wide, elobulate; cilia moderately dense, tapered to strongly inflated, black. Upper surface yellow-green, flat, weakly maculate, irregularly cracked on older lobes; isidia dense, cylindrical, sparingly branched or rarely becoming coralloid. Lower surface brown to dark brown; rhizines moderately dense, brown to black. Apothecia rare, 1.5-3.5 mm wide. Ascospores 7-8 x 4-5 µm. Conidia weakly bifusiform, 7-9 x 1 µm. Chemistry: cortex K-, UV-; medulla K+ yellow, C-, P+ orange; usnic acid, norstictic acid (trace), stictic acid (major), constictic acid (minor), cryptostictic acid (trace), ±menegazziaic acid (trace), ±hypostictic acid (trace), ±atranorin.

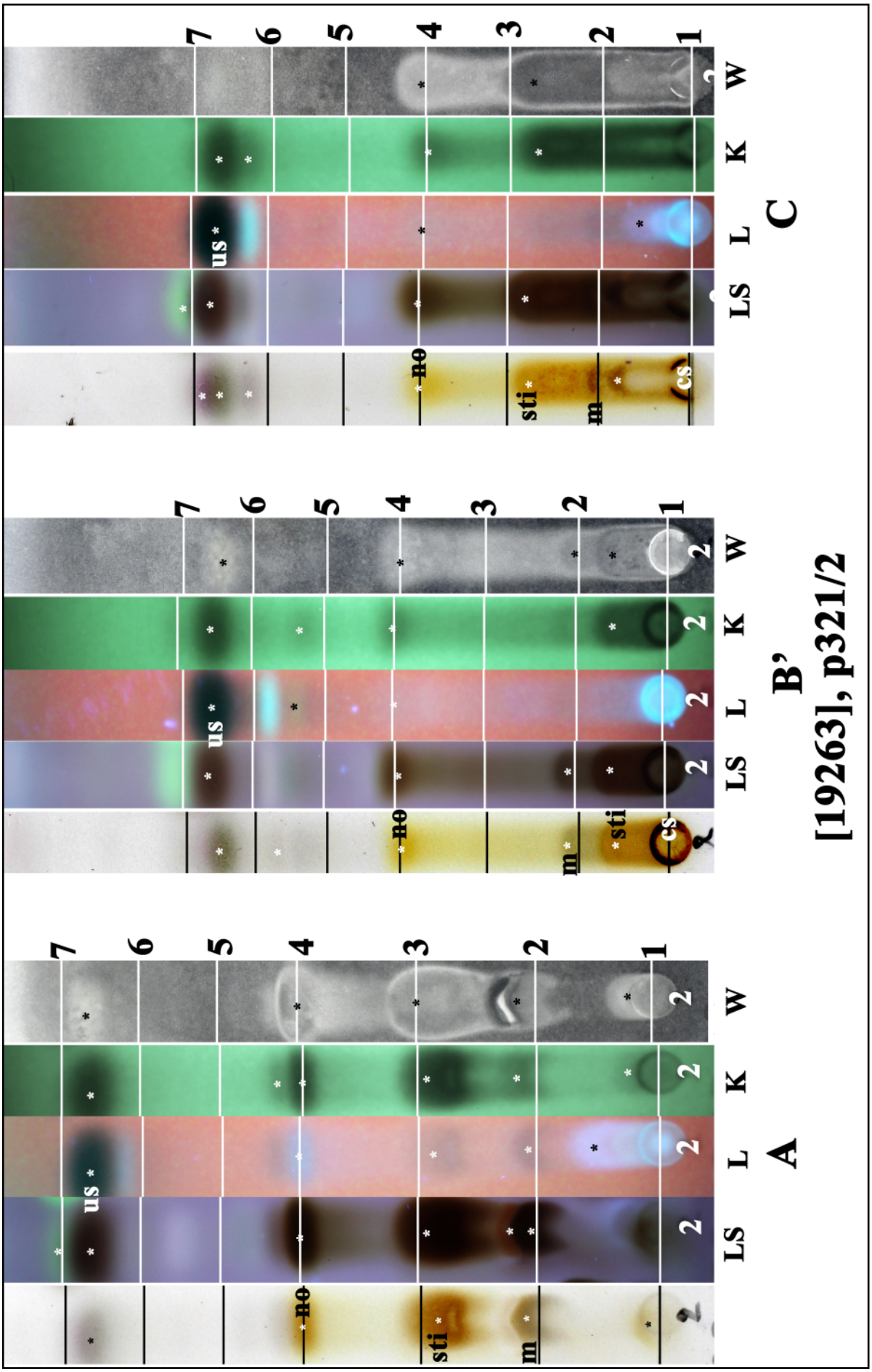
[19263], Australia, Queensland, Weyba River Estuary, Noosa Heads, 26°24' S, 153°04' E, sea level, growing on *Rhizophora stylosa* in mangrove swamp. Leg. J.A. Elix (19287) & M.J. Elix. Chemistry: usnic acid, stictic acid (major), constictic acid (minor), norstictic acid (minor), menegazziaic acid (trace), cryptostictic acid (trace) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 122.







Relicina sydneyensis



us: usnic acid, no: norstictic acid, sti: stictic acid,
me: menegazziaic acid, cs: constictic acid

Relicina sydneyensis

Relicina sydneyensis (Gyeln.) Hale

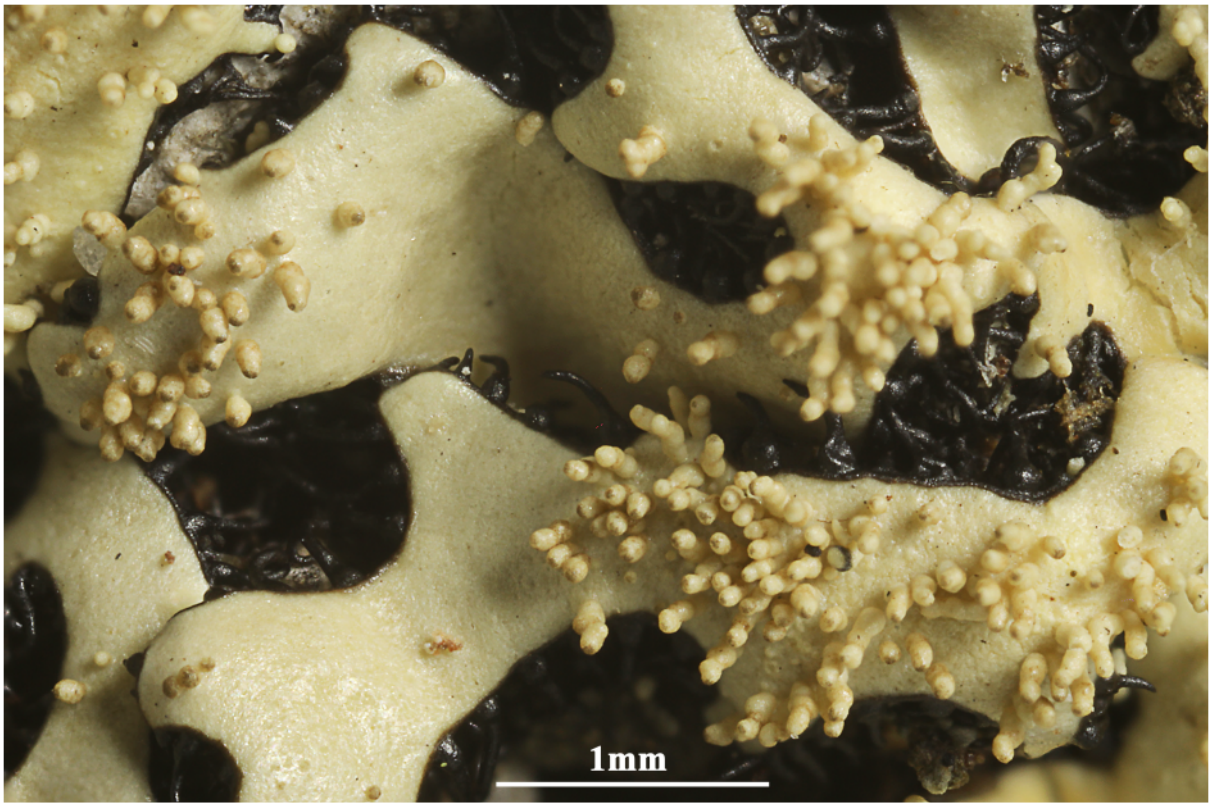
[19264], Australia, Queensland, along the forshore of Tin Can Inlet, Tin Can Bay, 25°54' S, 153°01' E, 1 m, strand vegetation, growing on *Rhizophora stylosa*. Leg. J.A. Elix (22854), 03.07.1989. Herbarium J.A. Elix.

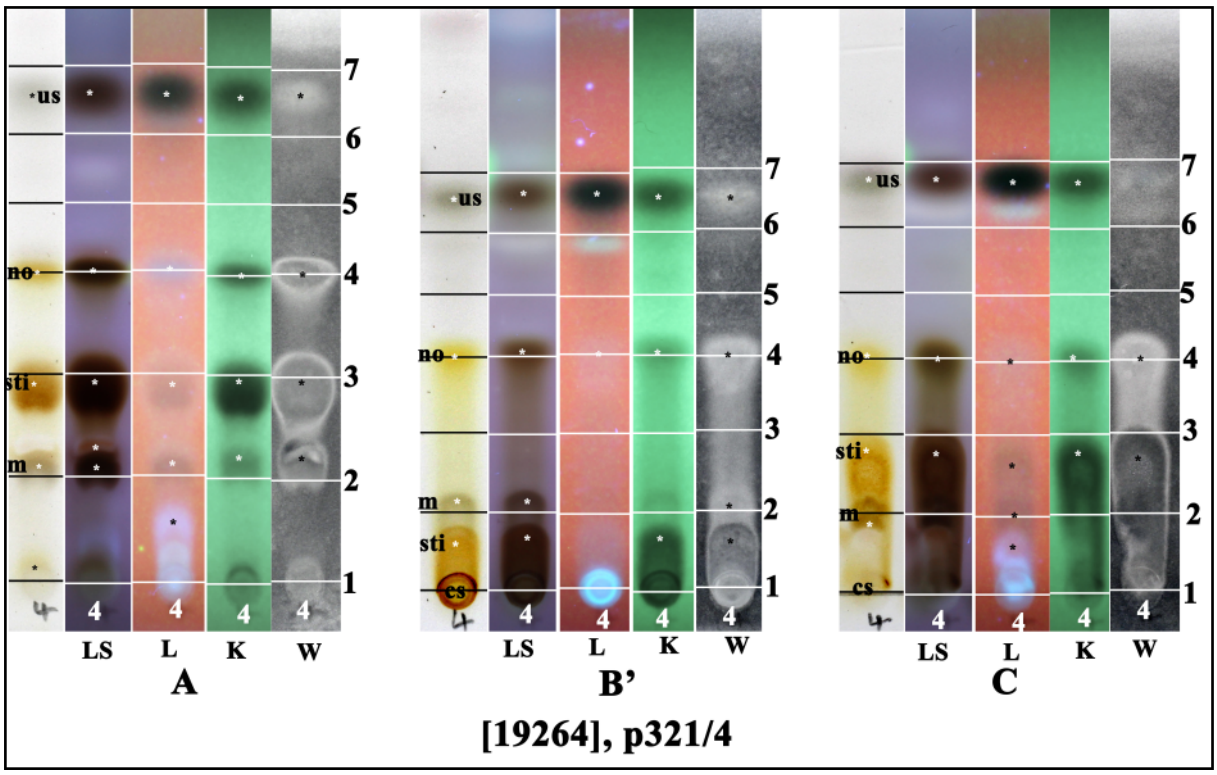






Relicina sydneyensis





us: usnic acid, no: norstictic acid, sti stictic acid,
m: menegazziaic acid, cs: constictic acid

Relicina sydneyensis

Relicinopsis malaccensis (Nyl.) Elix & Verdon

Thallus foliose, tightly adnate. Lobes contiguous centrally to ±separate at periphery, imbricate, sublinear, dichotomously to subdichotomously branched, short, 0.5-1.5 mm wide; eciliate or with simple cilia. Upper surface flat to slightly convex, white maculate at lobe apices, transversely cracked with age; isidia simple, cylindrical, 0.1-0.5 mm high. Lower surface pale brown; rhizines dense, becoming dark brown. Apothecia to 2 mm wide. Ascospores 6-7 x 4-5 µm. Chemistry: cortex K-, UV-; medulla K- or K+ pale brown, C-, KC+ pale brown, P+ orange-red; usnic acid, ±atranorin, protocetraric acid.

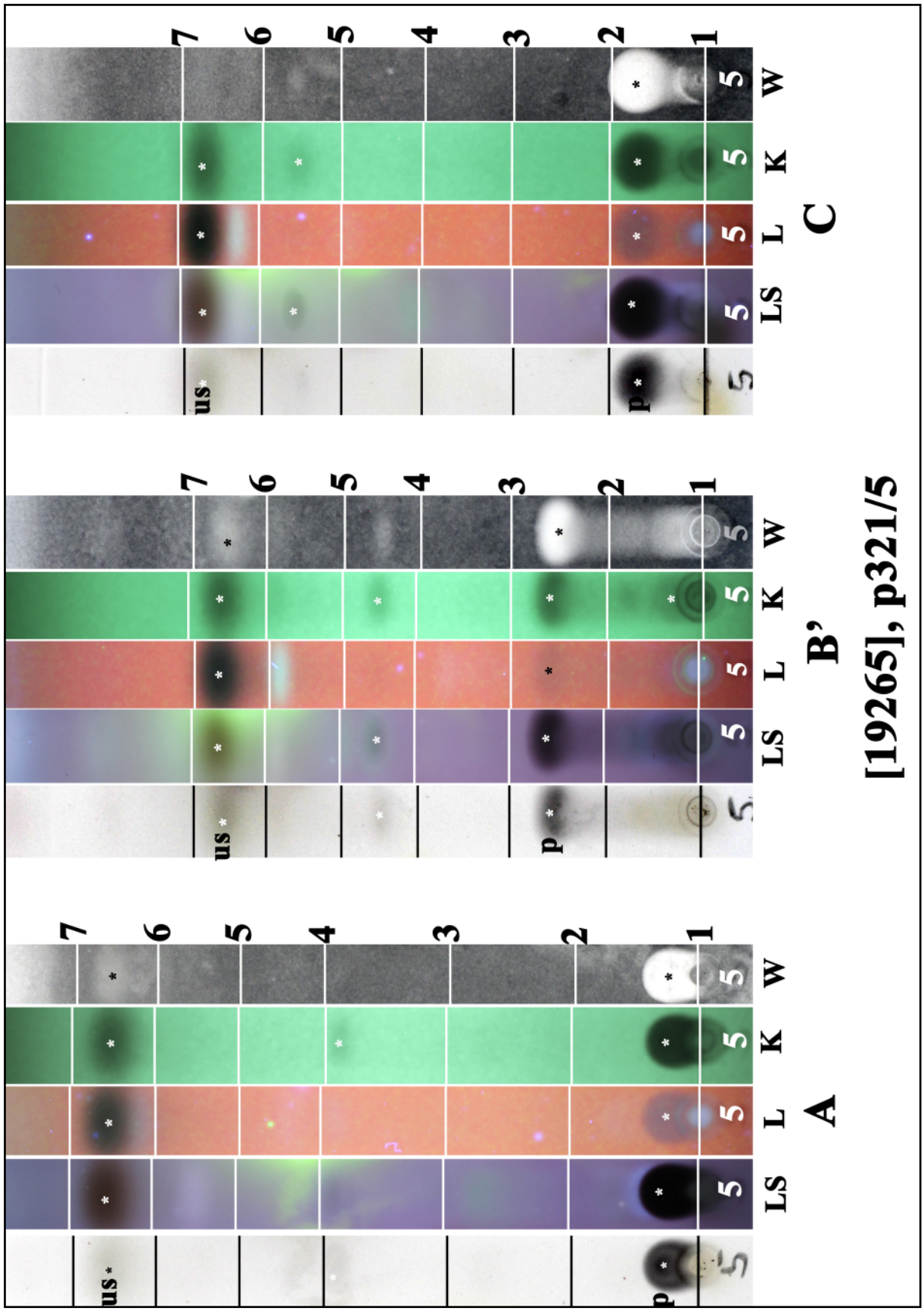
[19265], Australia, Queensland, Conway State Forest, 18 km east-north-east of Proserpine, 20°21' S, 148°45' E, 180 m, growing on *Albizzia* in lowland rainforest. Leg. J.A. Elix (20752) & H. Streimann, 28.06.1986. Chemistry: usnic acid (minor), protocetraric acid (major) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 198.







Relicinopsis malaccensis



us: usnic acid, p: protocetraric acid

Relicinopsis malaccensis

Relicinopsis rahengensis (Vain.) Elix & Verdon

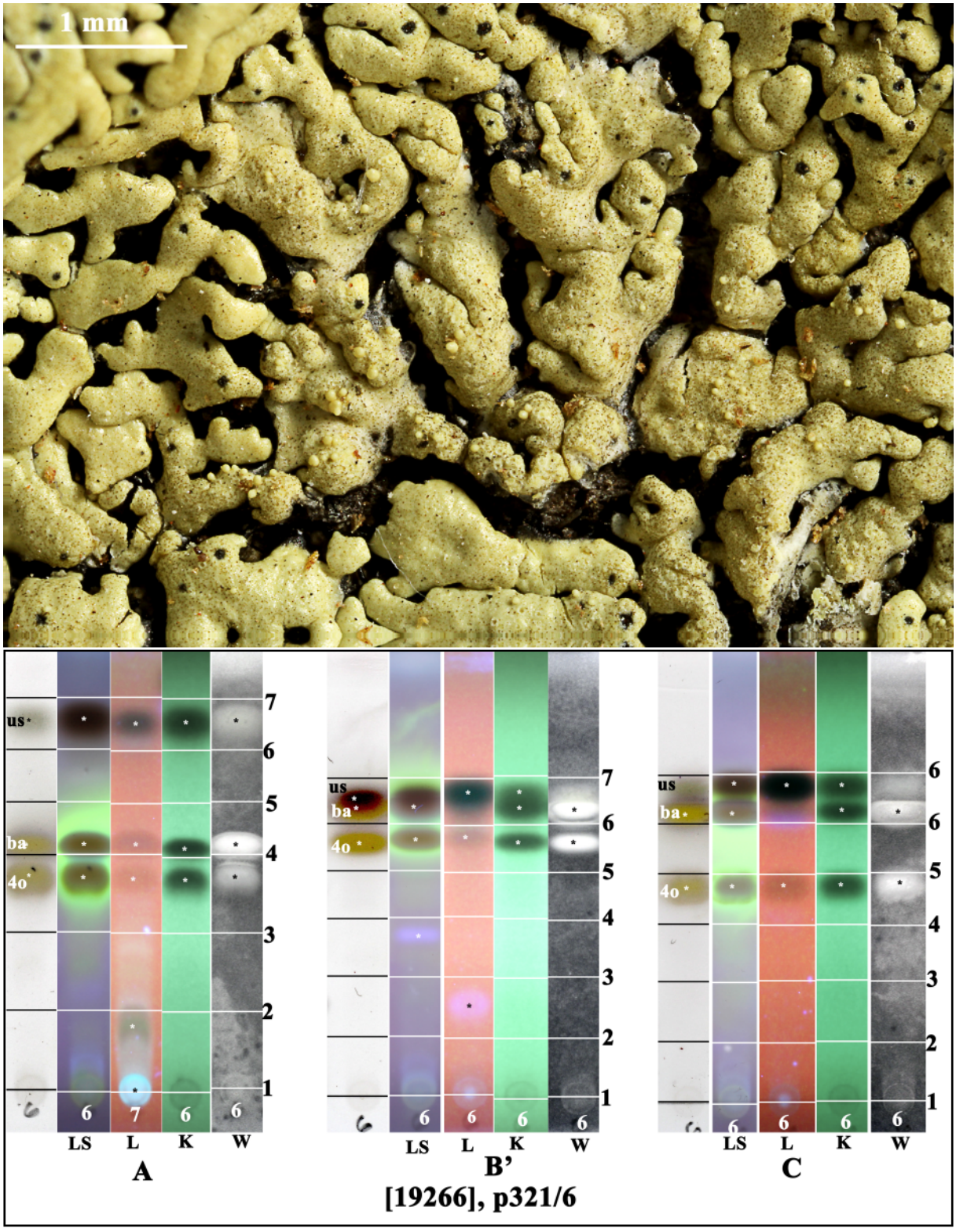
Thallus foliose, tightly adnate. Lobes contiguous centrally to ±separate at periphery, imbricate, sublinear-elongate, dichotomously to subdichotomously branched, 0.5-2 mm wide, eciliate or with simple cilia. Upper surface flat to convex, emaculate, continuous; isidia sparse to dense, mainly simple, cylindrical, to 0.2 mm high. Lower surface pale brown to brown; rhizines moderately dense, simple to sparsely branched. Apothecia rare, to 3 mm wide. Ascospores 5-6 x 3-4 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ yellow, P- or P+ pale orange; usnic acid, ±atranorin, barbatic acid (major), 4-*O*-demethylbarbatic acid (minor), ±echinocarpic acid (minor), ±conechinocarpic acid (trace), obtusatic acid (trace), ±3-α-hydroxybarbatic acid (trace), ±norobtusatic acid (trace).

[19266], Australia, Northern Territory, Wangi Falls, Litchfield Park, 40 km south-west of Batchelor, 13°10' S, 130°41' E, 180 m, growing on dead wood in vine dominated forest with *Corallia* and *Calophyllum* in rocky area. Leg. J.A. Elix, H.T. Lumbsch & H. Streimann, 03.07.1991. Chemistry: usnic acid, barbatic acid (major), 4-*O*-demethylbarbatic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 244.





Relicinopsis rahengensis



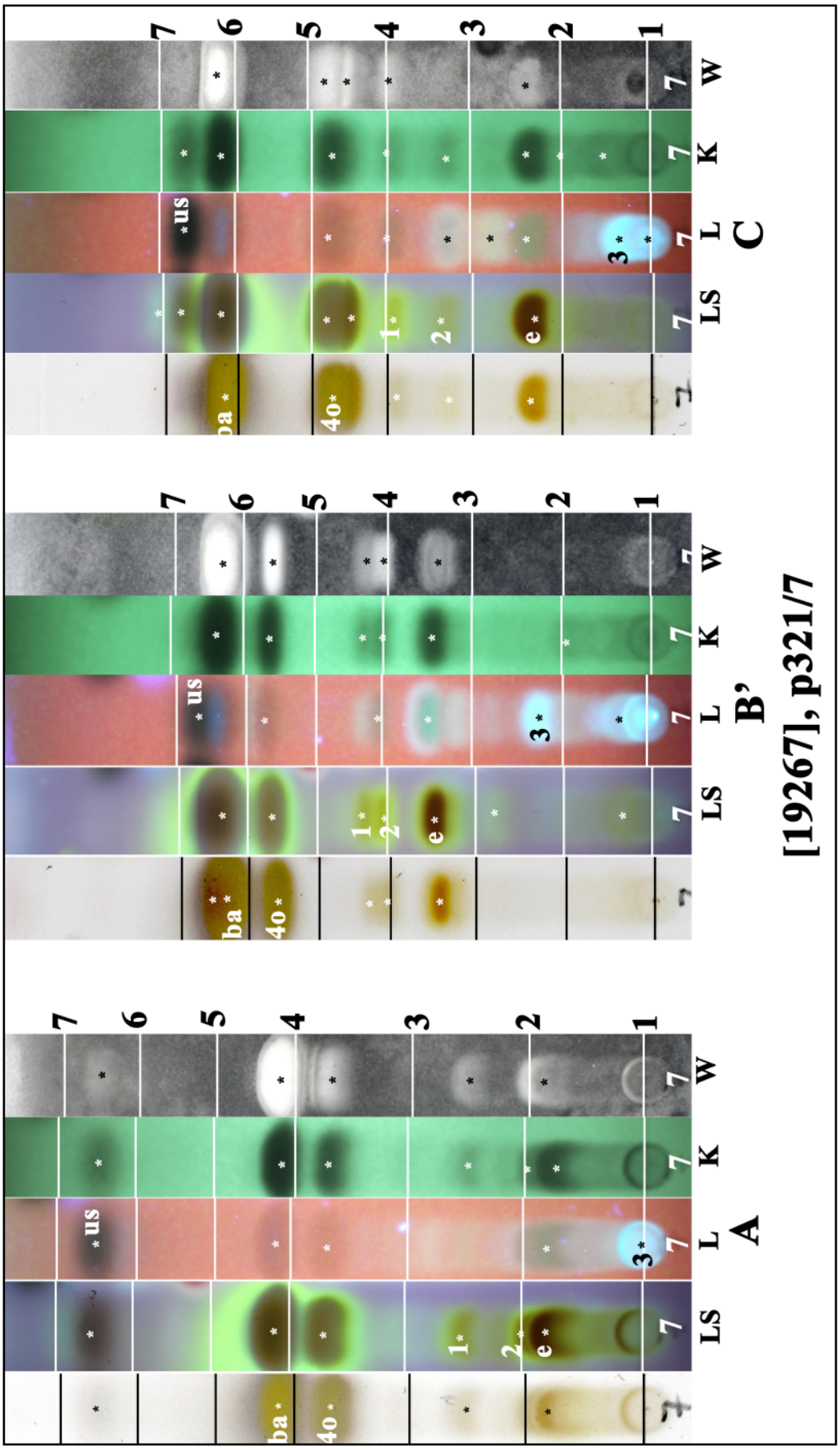
us: usnic acid, ba: barbatic acid, 4o: 4-*O*-demethylbarbatic acid

Relicinopsis rahengensis

Relicinopsis rahengensis (Vain.) Elix & Verdon

[19267], Australia, Queensland, Conway State Forest, 18 km east-north-east of Proserpine, 20°21' S, 148°45' E, 180 m, growing on *Albizzia* in lowland rainforest. Leg. J.A. Elix (22751) & H. Streimann, 28.06.1986. Chemistry: usnic acid (minor), 4-*O*-demethylbarbatic acid (major), barbatic acid (trace), echinocarpic acid (minor), conechinocarpic acid (trace), obtusatic acid (trace), norobtusatic acid (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 197.





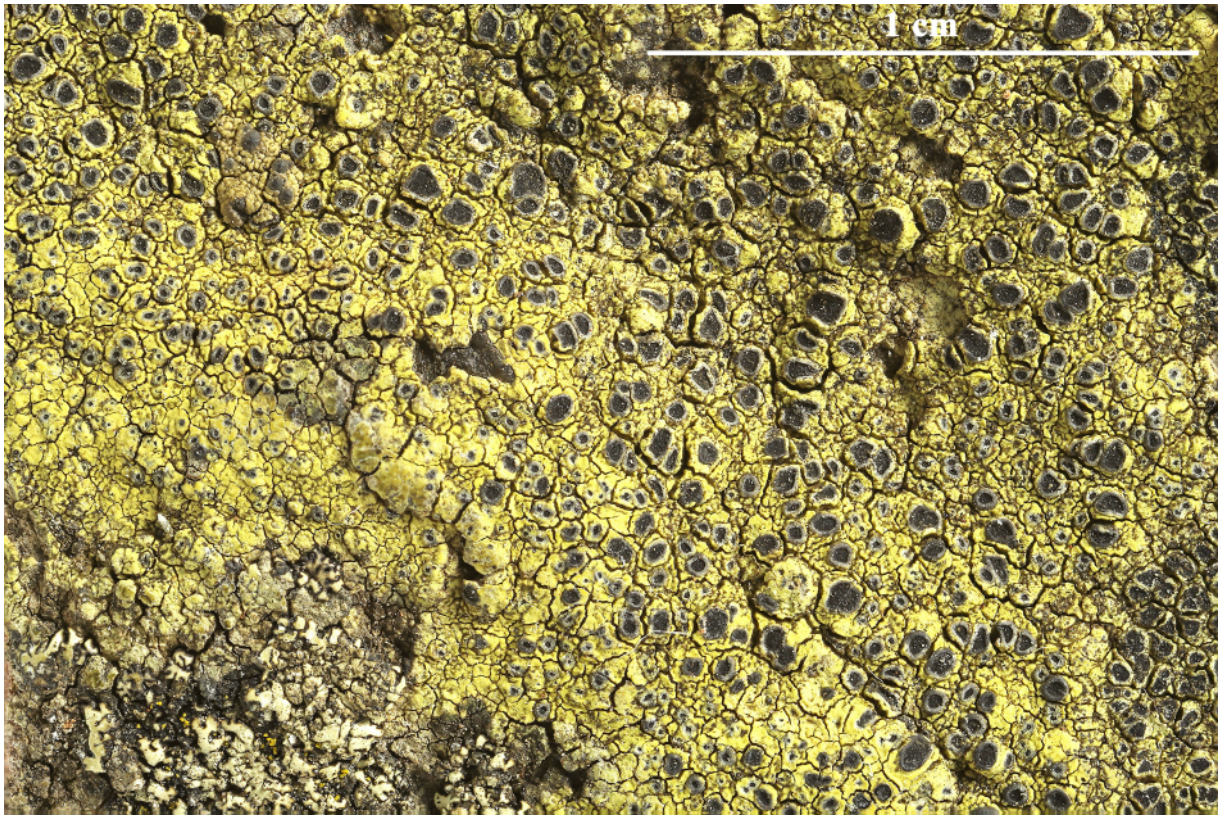
us: usnic acid, ba: barbatic acid, 4o: 4-*O*-demethylbarbatic acid, e: echinocarpic acid, 1: conechinocarpic acid, 2: subechinocarpic acid, 3: unknown

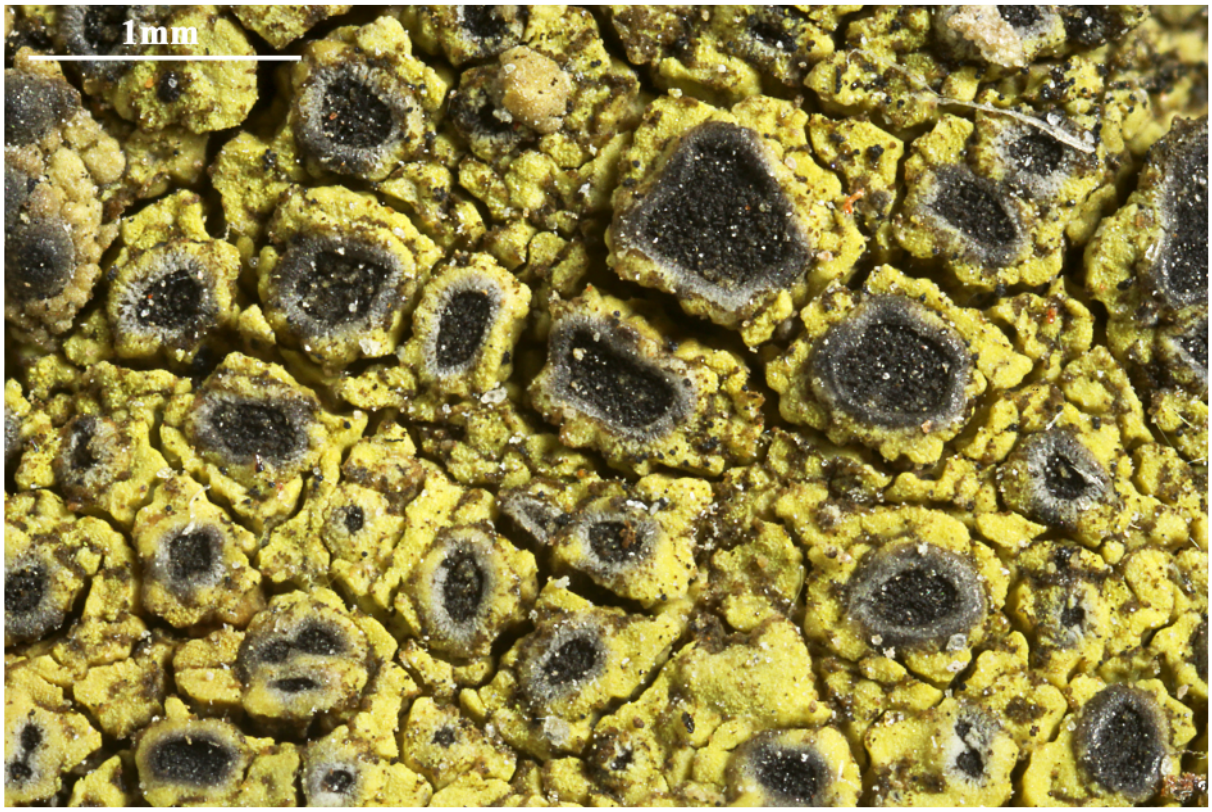
Relicinopsis rahengensis

Rinodina thiomela (Nyl.) Müll.Arg.
[= ***Buellia citrina*** H.Magn.]

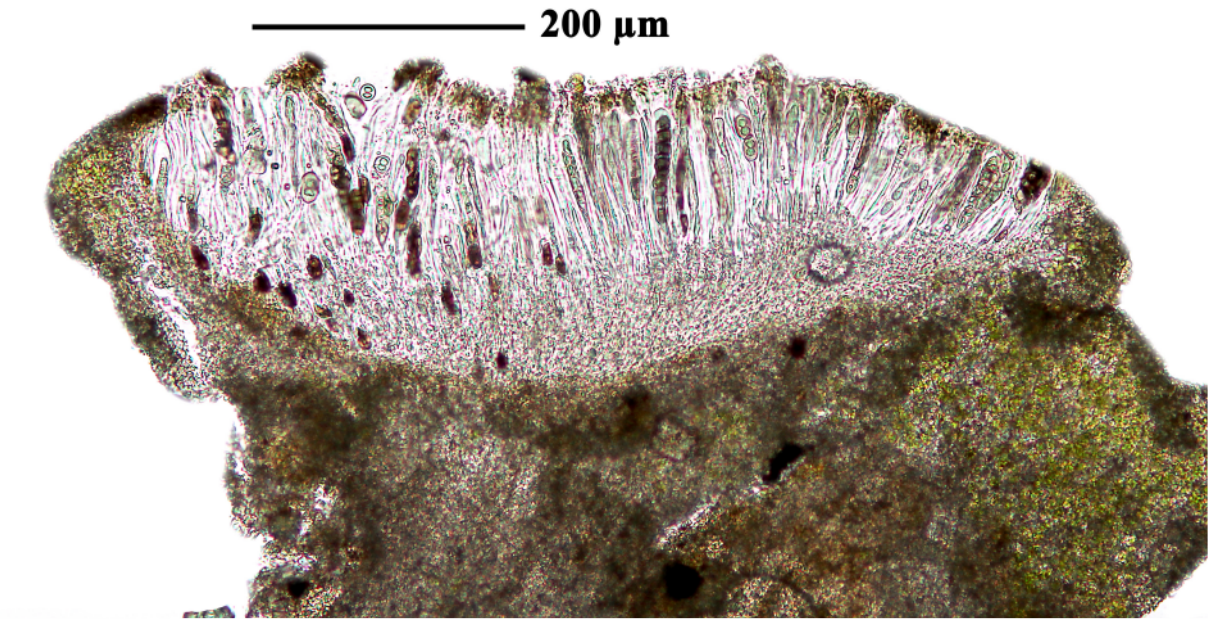
Thallus crustose, epilithic, thick, continuous, granular, rimose-areolate; areolae 0.1–0.4 mm wide; prothallus blackish. Upper surface sulfur-yellow to yellow-green. Apothecia 0.2–0.5 mm wide, lecanorine or cryptolecanorine, immersed to adnate or sessile, uncommon to frequent; thalline margin entire, concolorous with the thallus, persistent; disc dark brown to blackish brown or black, weakly concave to plane, epruinose. Epihymenium 10–20 µm thick, reddish brown; hymenium 120–150 µm thick, colourless, not inspersed; hypothecium 120–200 µm thick, colourless, K–. Paraphyses 1.0–1.5 µm wide, unbranched or sparingly branched subapically, with apices 2−4 µm wide and pale brown caps. Asci with 8 (occasionally 4 or 6) spores. Ascospores *Pachysporaria*-type, 1-septate, brown, ellipsoidal, 20–34 × 11–17 µm; outer wall smooth; torus weakly developed. Pycnidia immersed; conidia bacilliform, 5–6 × 1 µm. *Chemistry:* Thallus K–, C+ yellow-orange, P–, UV+ orange; zeorin, thiomelin, 8-*O*-methylthiomelin, 2-dechlorothiomelin, 4-dechlorothiomelin, 2-dechloro-8-*O*-methyl thiomelin, 4-dechloro-8-*O*-methylthiomelin, northiomelin, 5,7-dichloro-2,8-dihydroxy-1,3-dimethylxanthene. Common on siliceous rocks throughout Australia.
Lit: J.A. Elix, *Rinodina*, *Australian Physciaceae (Lichenised Ascomycota);* http://www.anbg.gov.au/abrs/ lichenlist/Rinodina.pdf (2011).

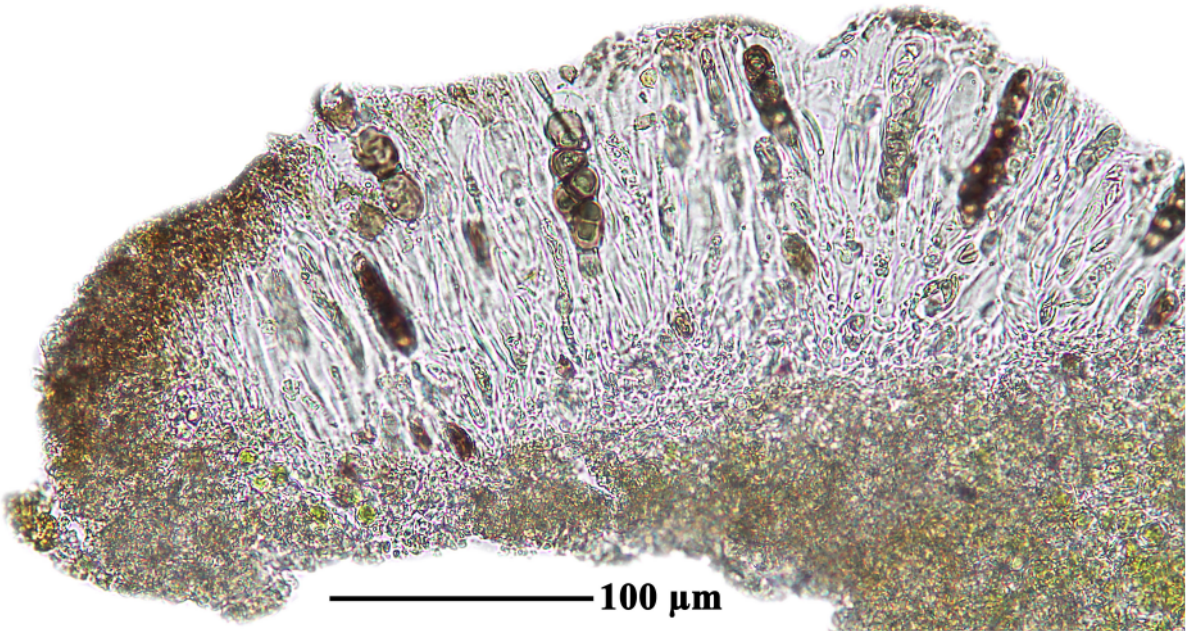
[19268], Australia, Australian Capital Territory, Mongolo Gorge Reserve, 15 km east of Canberra, 35°16' S, 149° 16' E, 650 m, growing on shale rocks in dry *Eucalyptus*-*Callitris* woodland. Leg. J.A. Elix, 26.07.1992. Herbarium J.A. Elix.

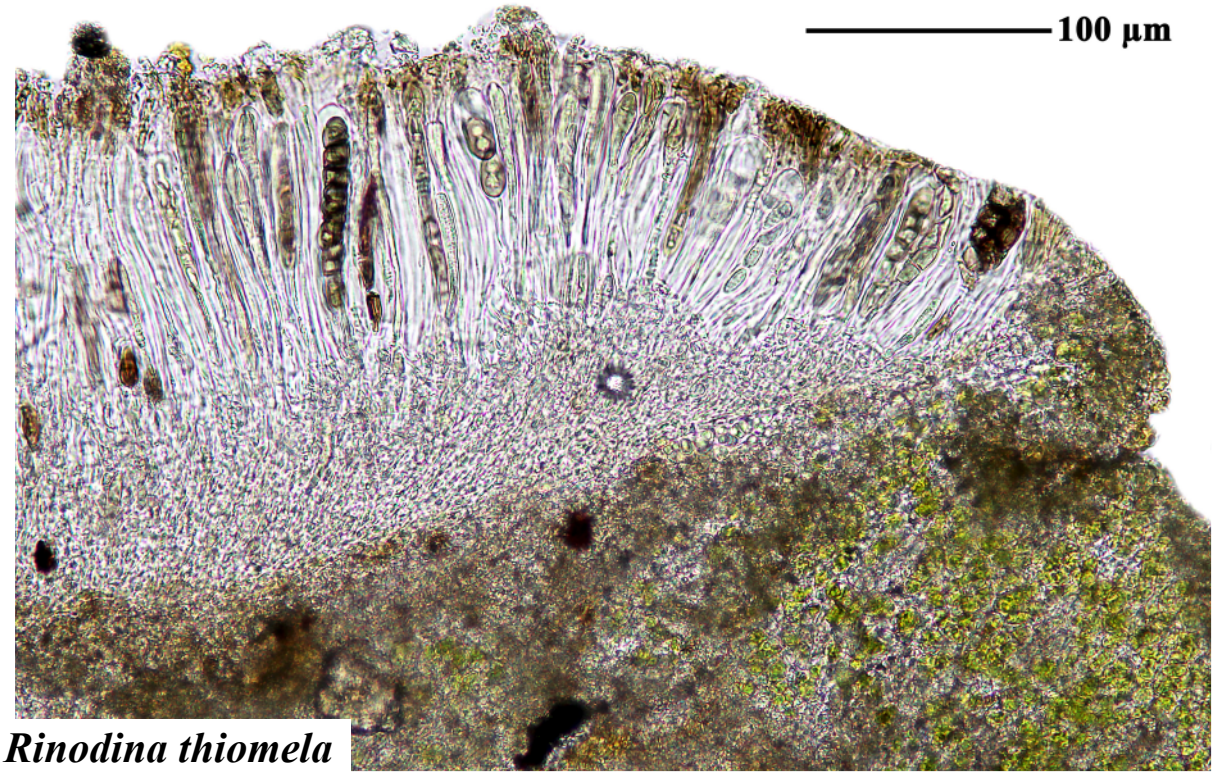




Rinodina thiomela

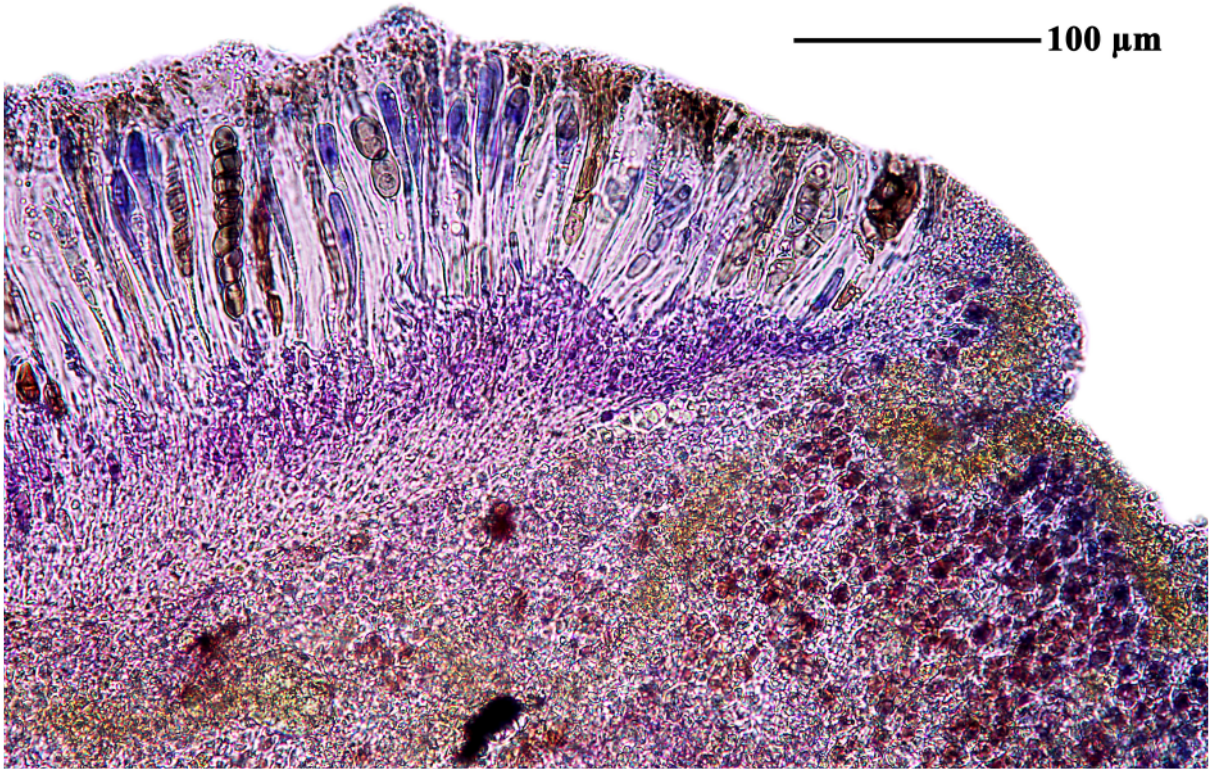






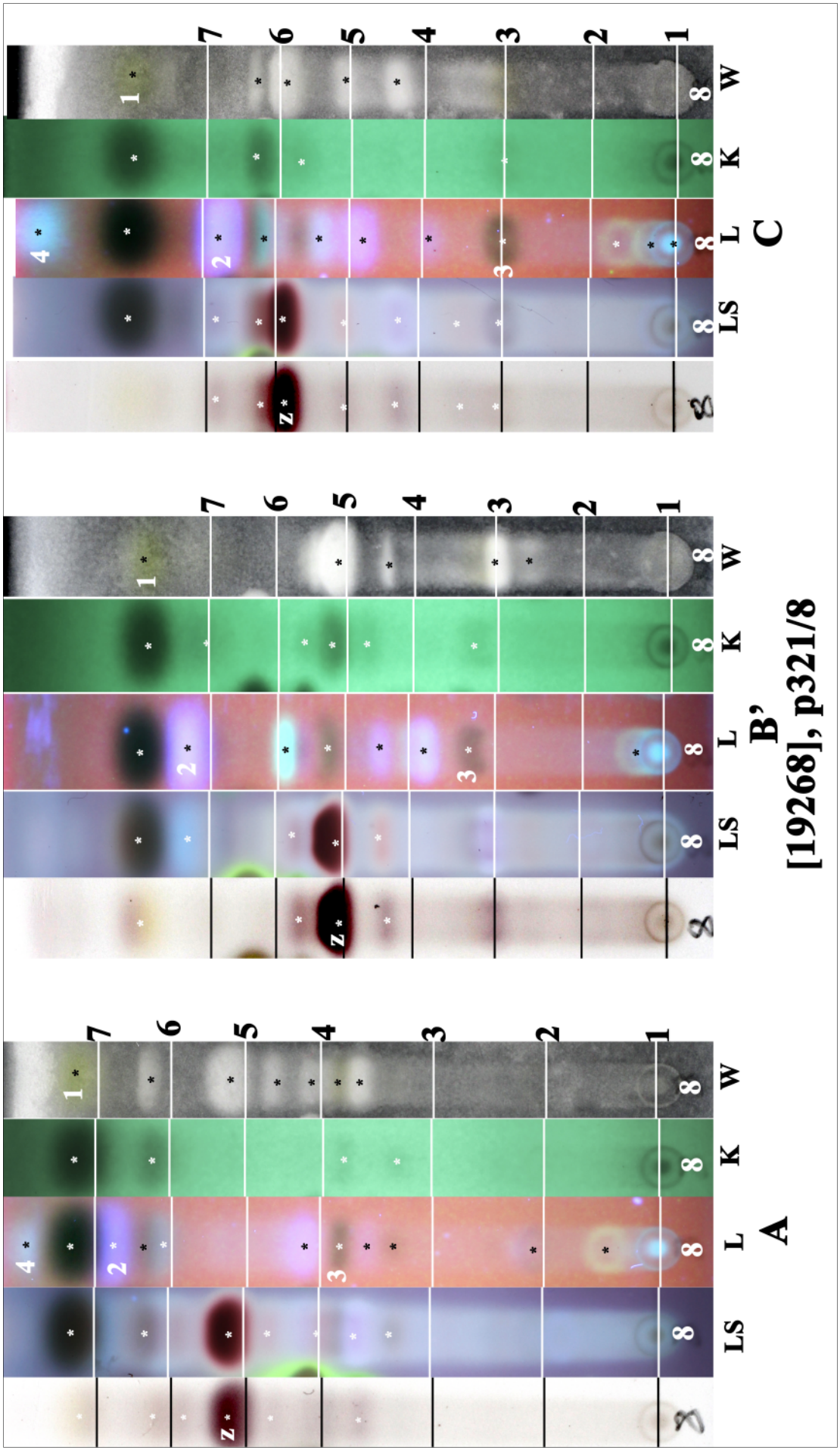
Rinodina thiomela







Rinodina thiomela



z: zeorin, 1: thiomelin (yellow pigment), 2: 5,7-dichloro-2,8-dihydroxy-1,3-dimethylxanthone,
3: unknown, 4: 5,7-dichloro-8-hydroxy-2-methoxy-1,3-dimethylxanthone

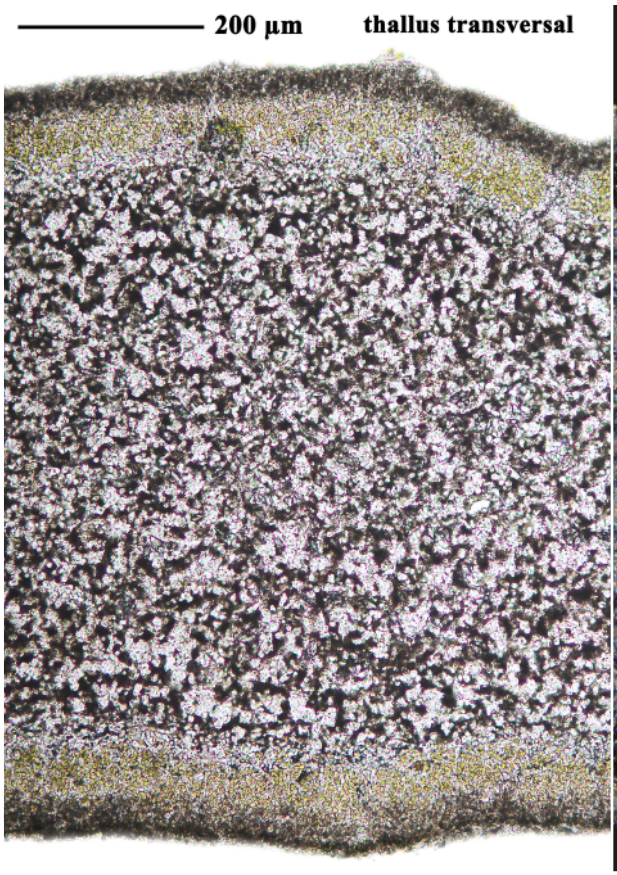
Siphula coriacea Nyl.

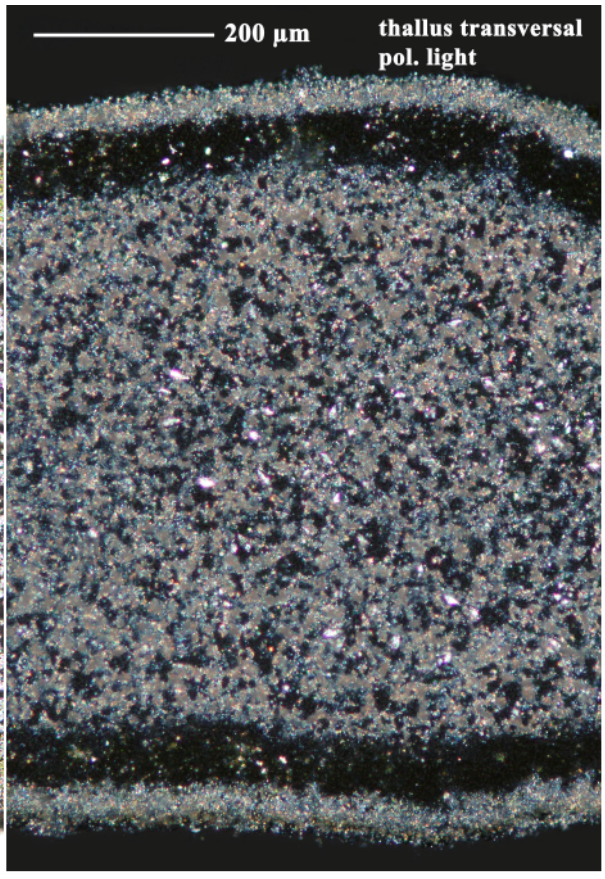
Thallus dorsiventral, grey-white, K-, UV+ bluish white. Lobes thick, coriaceous, apices bluish-white. Chemistry: barbatic acid

[15830], Australia, Western Australia, North Boundary Rock, c. 20 km NNE of Manjimup off North Boundary Road, granite outcrop, associated with *Allocasuarina huegeliana* and *Corymbia calophylla;* 34.072° S, 116.325° E, 320 m. Leg. F. Schumm & E. Stocker-Wörgötter, 25.10.2009. Chemistry: barbatic acid by TLC, anal. F. Schumm

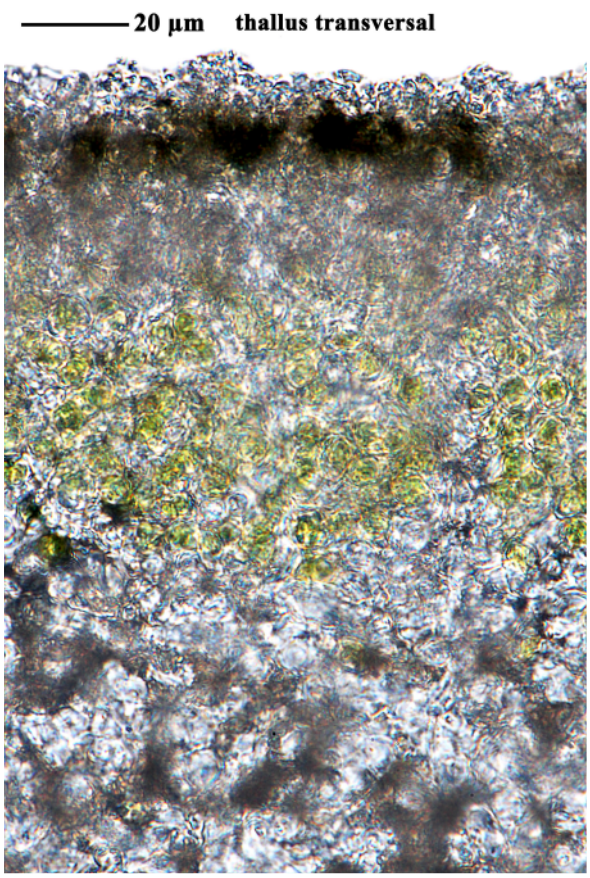


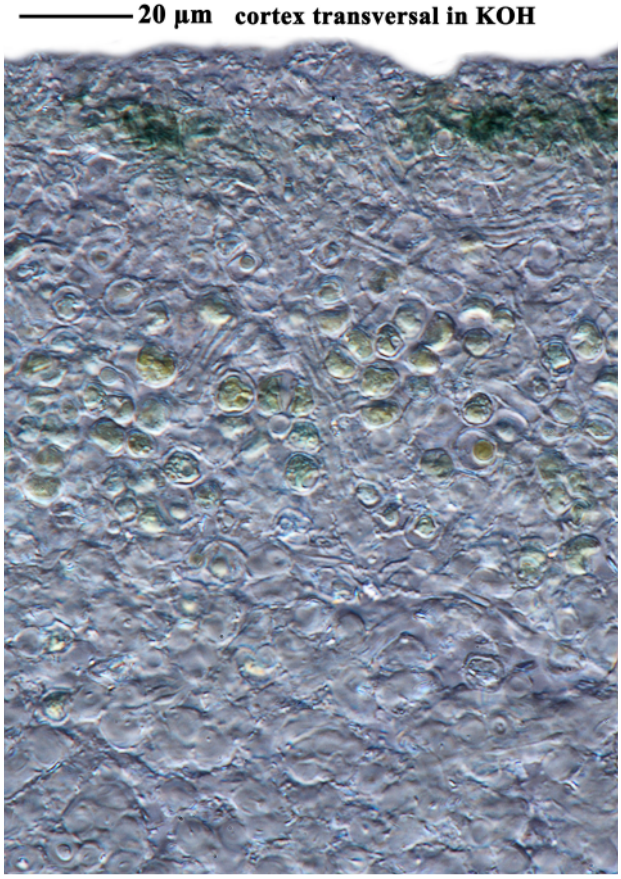


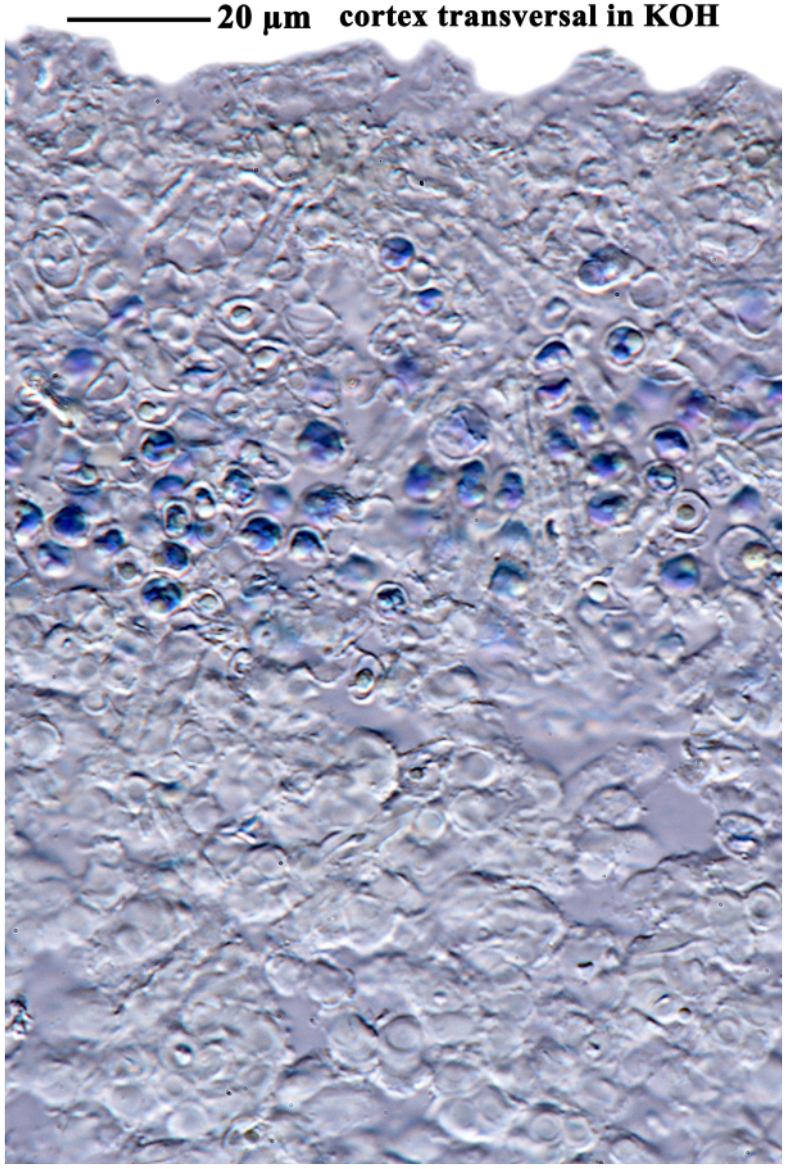




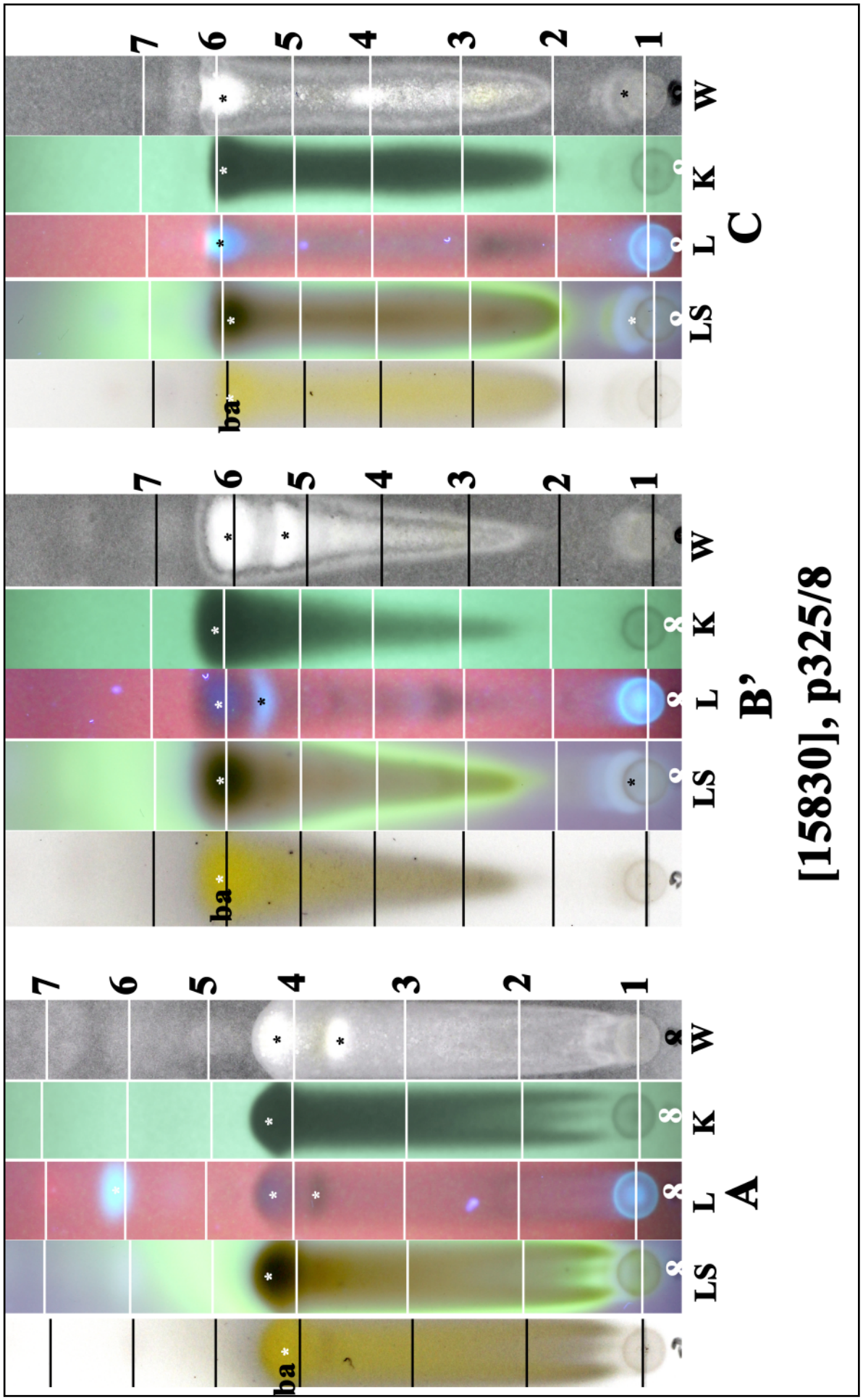
Siphula coriacea







Siphula coriacea



ba: barbatic acid

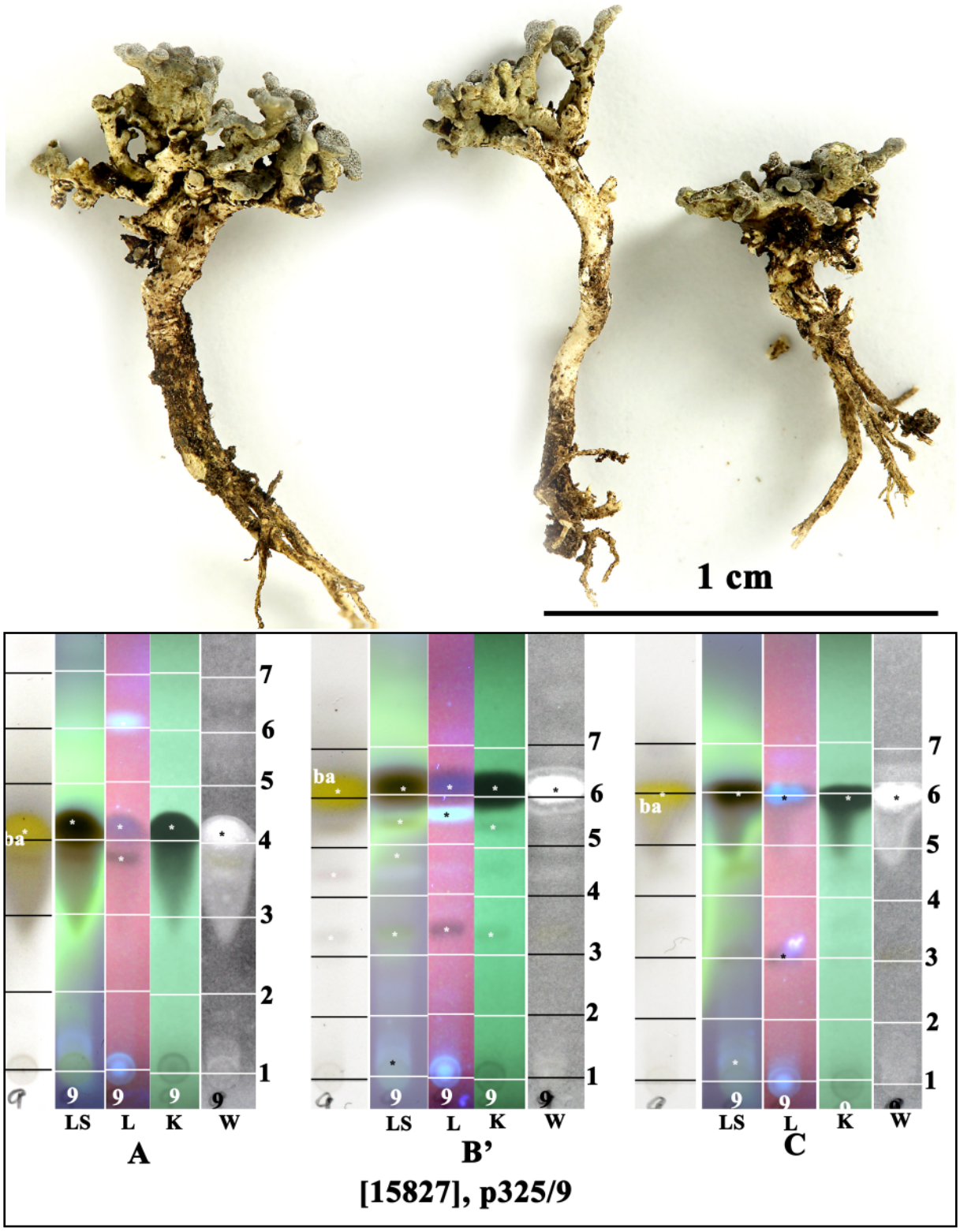
Siphula coriacea

Siphula coriacea Nyl.

A narrow growth form. Thallus in lower parts terete and white, in higher parts somewhat flattened and grey. Thallus UV- but medulla UV+ white. Medulla K+ yellowish.

[15827], Australia, Western Australia, North Boundary Rock, c. 20 km NNE of Manjimup off North Boundary Road, granite outcrop, associated with *Allocasuarina huegeliana* and *Corymbia calophylla;* 34.072° S, 116.325° E, 320 m. Leg. F. Schumm & E. Stocker-Wörgötter, 25.10.2009, det. J.A. Elix. Chemistry: barbatic acid by TLC, anal. F. Schumm.





ba: barbatic acid

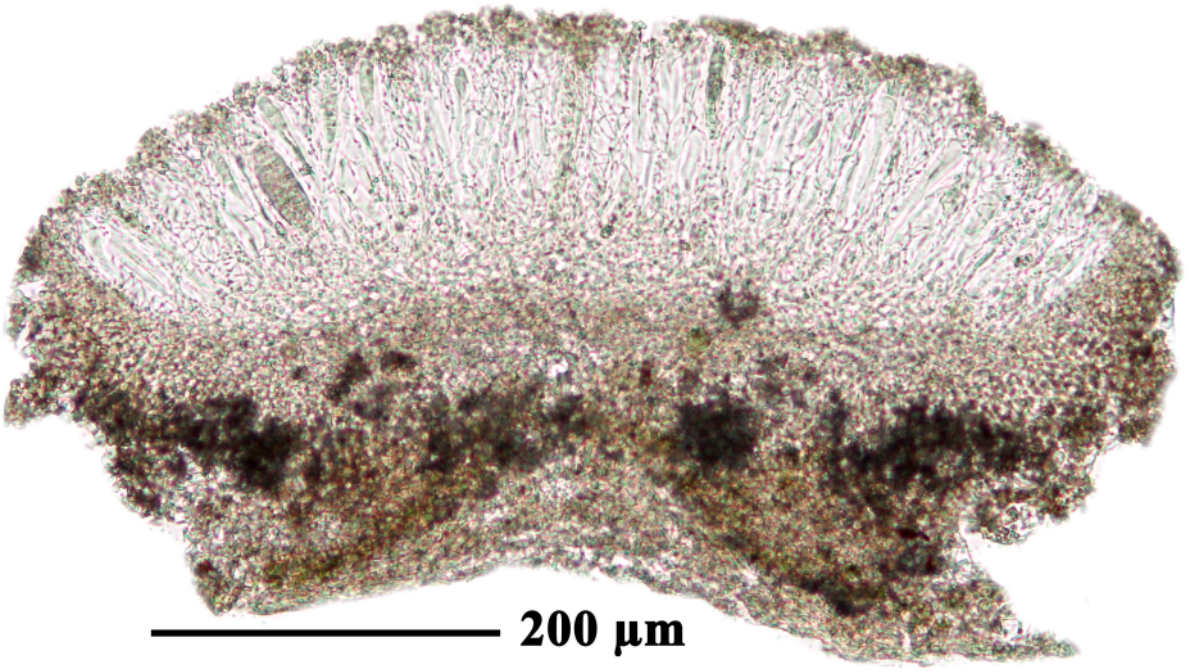
Siphula coriacea

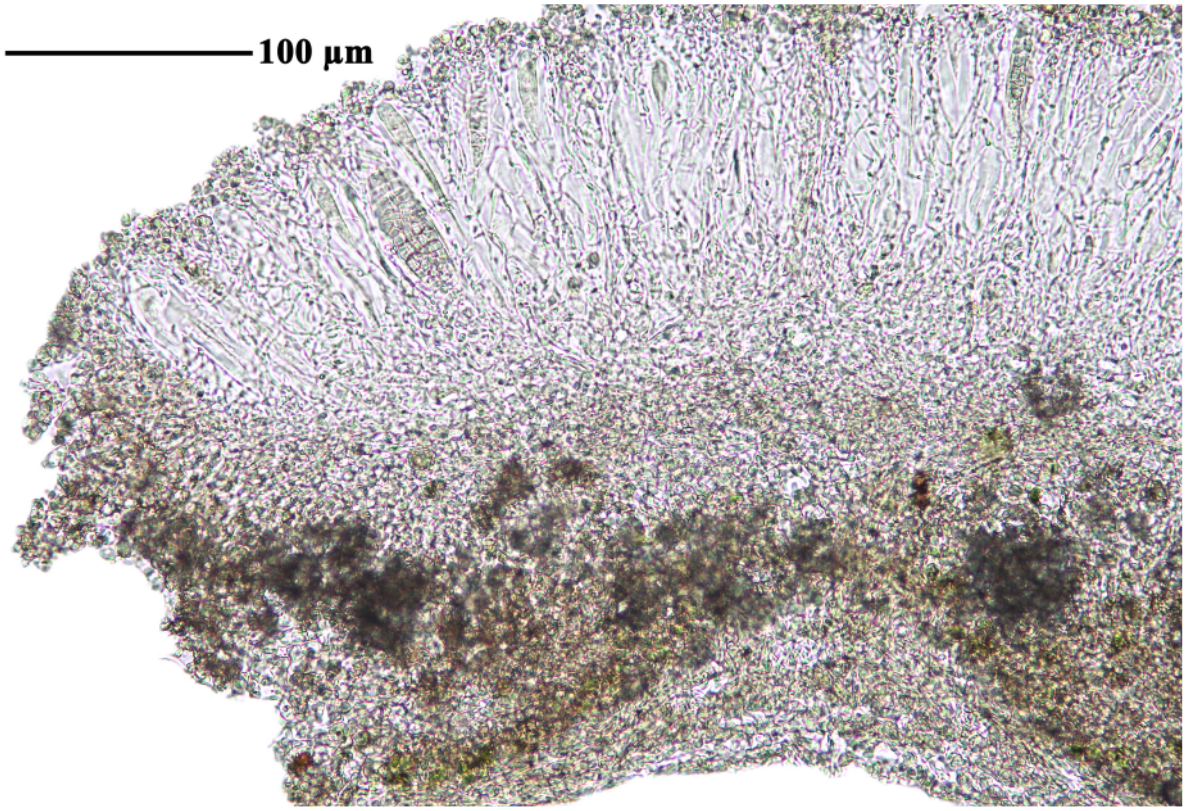
Sporopodium vezdeanum Lumbsch & Elix
[= ***Sporopodium flavescens*** (R.Santesson) Vězda]

Thallus slightly verrucose, greenish grey, UV+ yellowish. Apothecia pruniose, margins not prominent, yellowish, UV+ yellow. Excipulum c. 133 µm, uncoloured, with crystals, basal parts c. 130 µm. Hypothecium pale 60-90 µm, IKI+ blue. Epithecium 20-30 µm, with algae, yellowish green. Paraphyses 1-1.5 µm thick, strongly branched and anastomosing. Ascospores 1/ascus, hyaline, muriform, 55-90 x 15-20 µm. Photobiont of the thallus green, globose, 8-9 µm. Chemistry: see below.

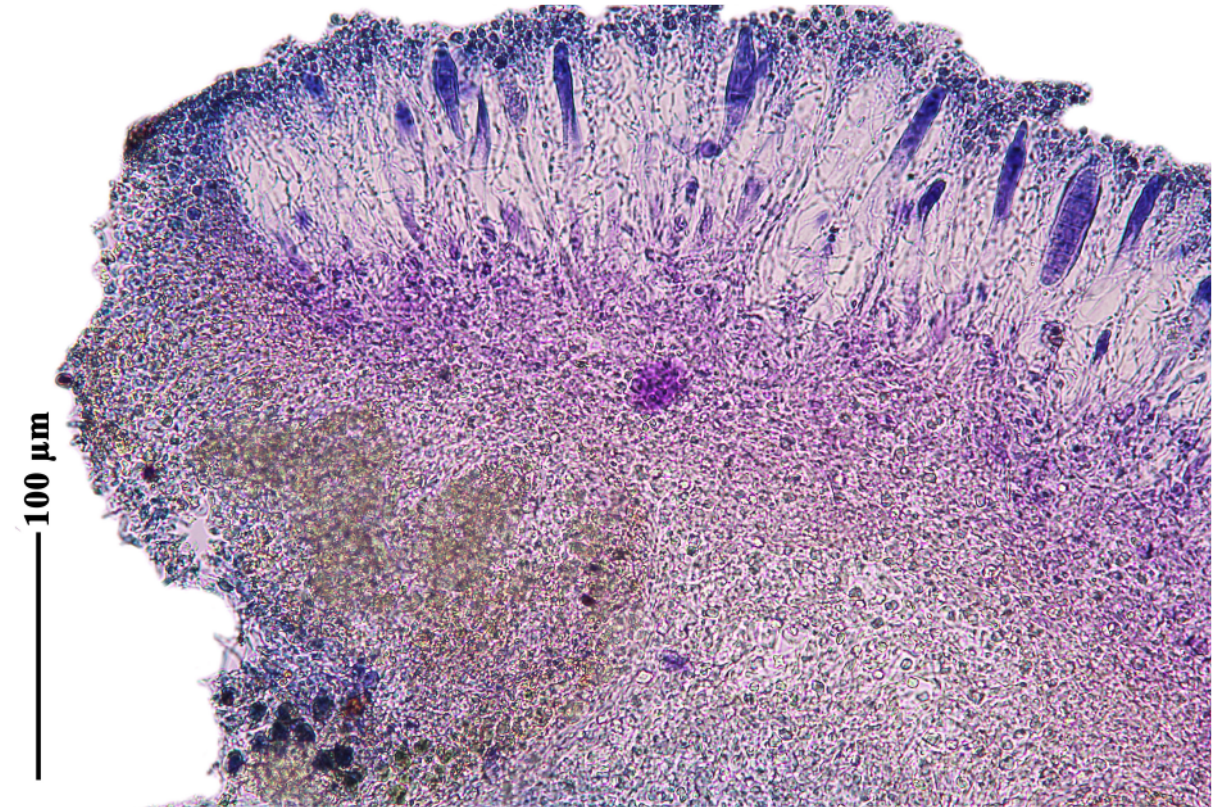
[19272], Australia, New South Wales, Yatteyattar, Currowar Creek, 35°16' S, 150°25' E, 30-60 m, growing on leaves in remnant rainforest. Leg. H.T. Lumbsch & T.S. Henshell, 8.08.1991. Chemistry: pannarin (major), zeorin, 2,5,7-trichloro-3-*O*-methylnorlichexanthone, 5,7-dichloro-3-*O*-methylnorlichexanthone, 2,5,7-trichlorolichexanthone, asemone, isoarthothelin, 5,7-dichlorolichexanthone, 5,7-dichloronorlichexanthone, 2,7-dichlorolichexanthone, arthothelin by TLC, HPLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 245. Lit. Elix & Crook (1992, Mycotaxon 44: 409-415)

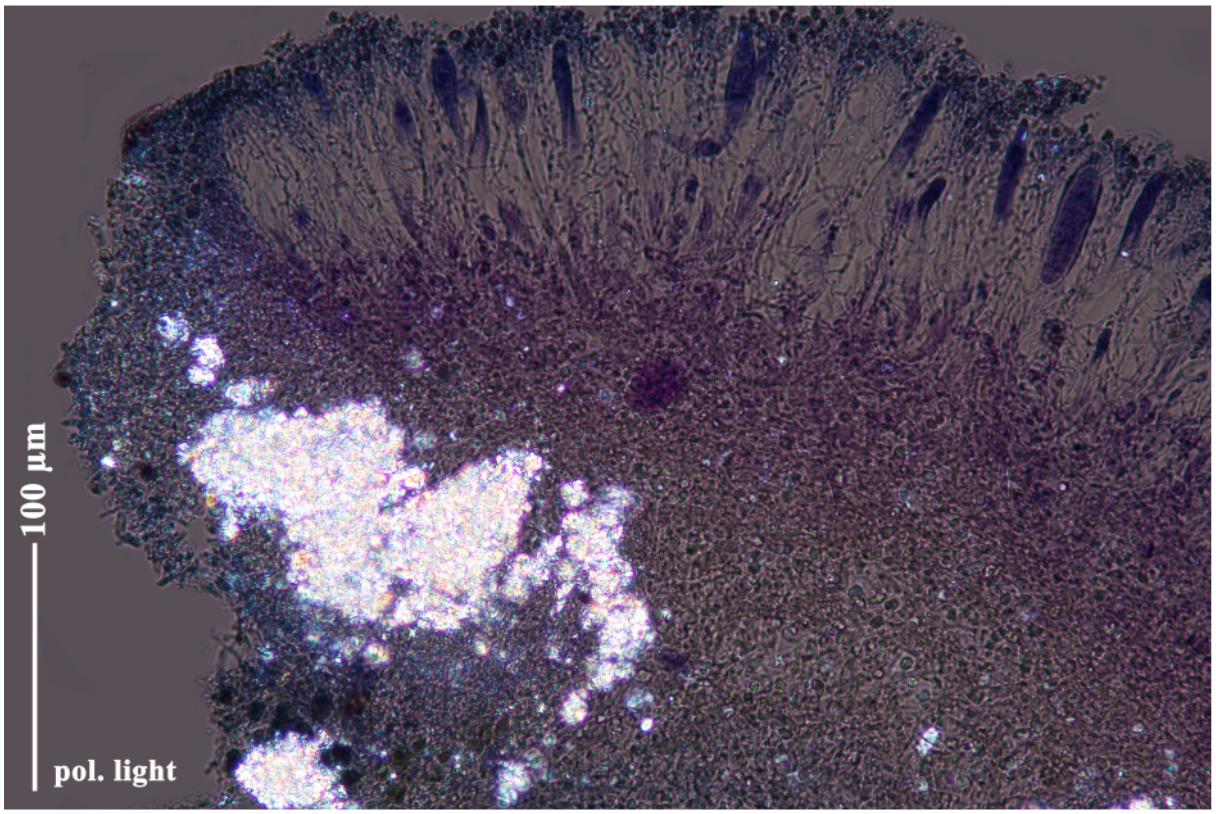




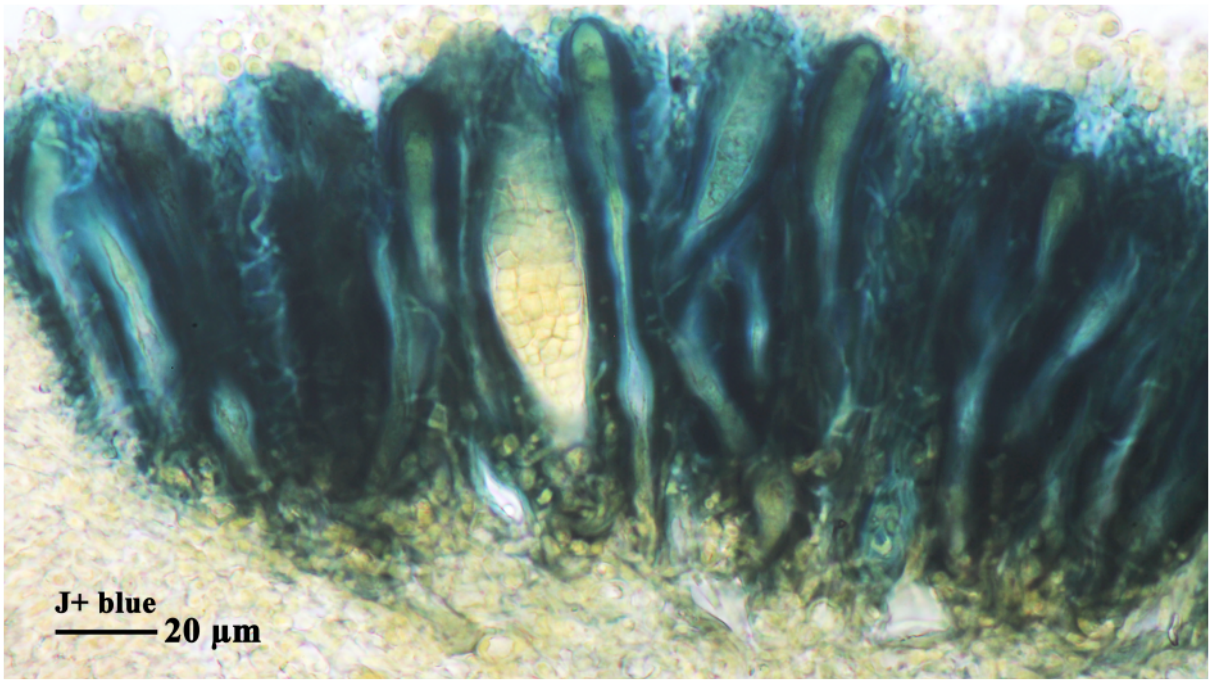


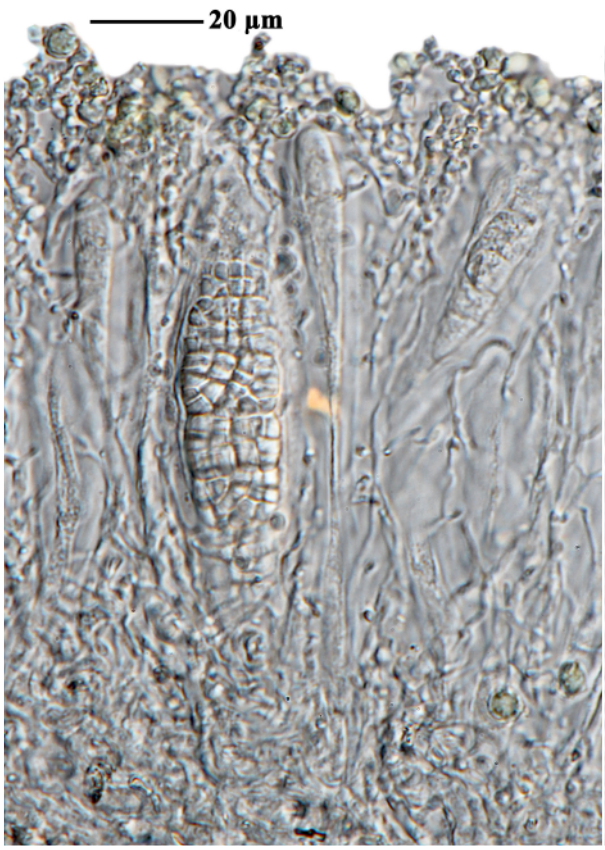
Sporopodium vezdeanum

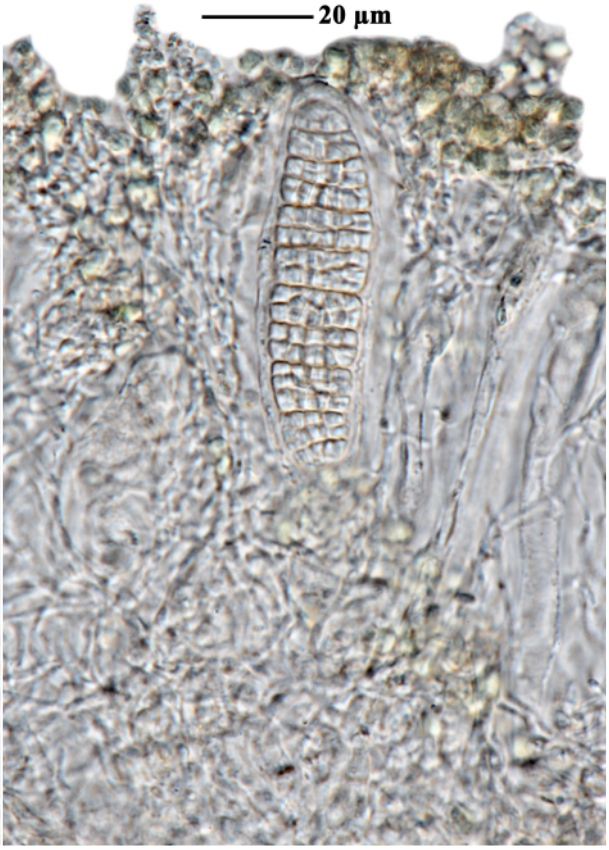




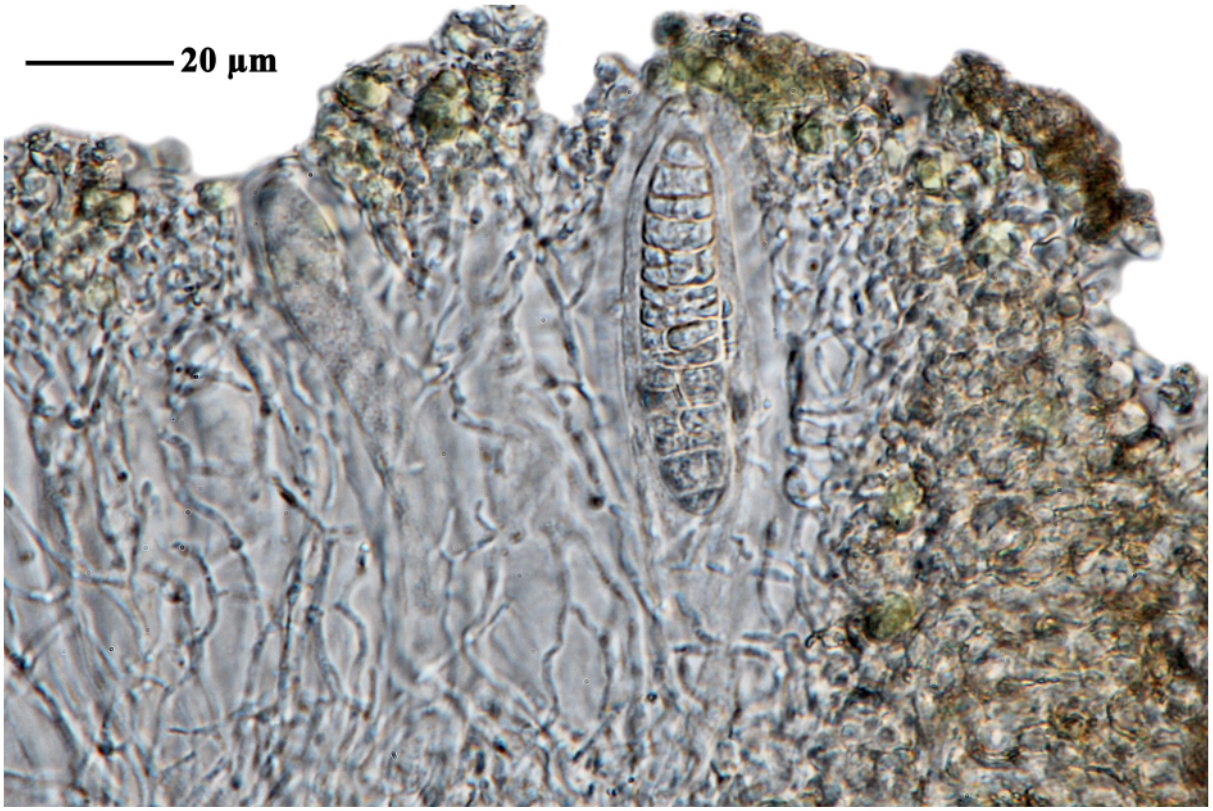
Sporopodium vezdeanum







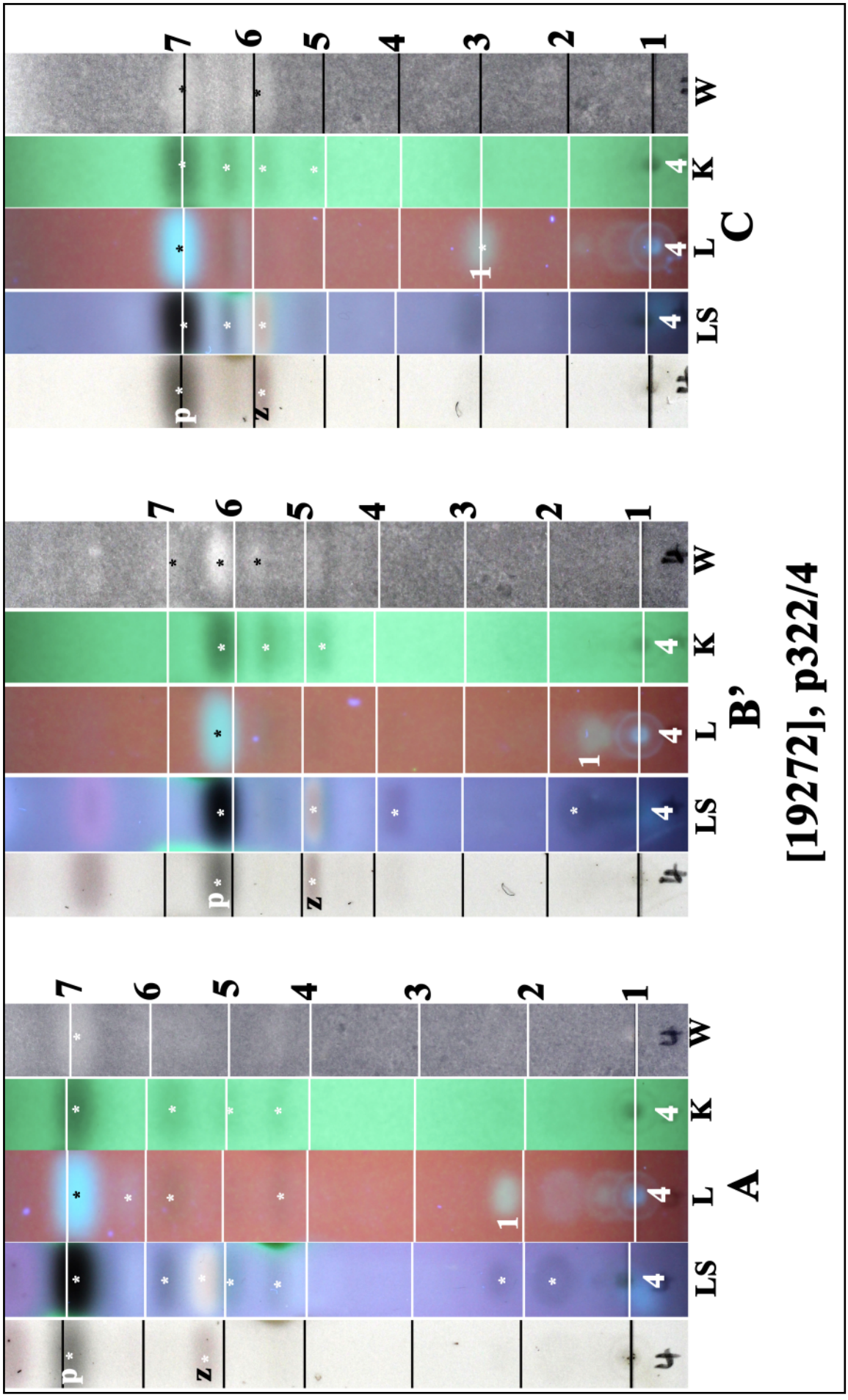
Sporopodium vezdeanum







Sporopodium vezdeanum



Sporopodium vezdeanum

Stereocaulon ramulosum (Sw.) Räusch.

Pseudopodetia up to 12 cm tall. Soredia and soredium-like granules absent. Phyllocladia cylindrical (= phyllocladoid branchlets). Cephalodia uniformly grey-coloured, opaque, clavate to globose, with differentiated cortex and aereated tissue (=sacculate). Apothecia common. Ascospores 7-septate, 40-90 x 4-5 µm. Chemistry: Thallus P- or P+ yellowish, protocetraric and stictic acids acid absent; containing atranorin, perlatolic acid (major), anziaic acid (trace).

[19273], Australia, Victoria, Genoa Creek Falls, 2 km west-south-west of Genoa, 37°29' S, 149°34' E, 35 m, growing on rocks along *Melaleuca-Telopea* dominated rocky creek side. Leg. H. Streiman (38161), 18.04.1987. Chemistry: atranorin (minor), stenosporic acid (major), perlatolic acid (major), by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 199.

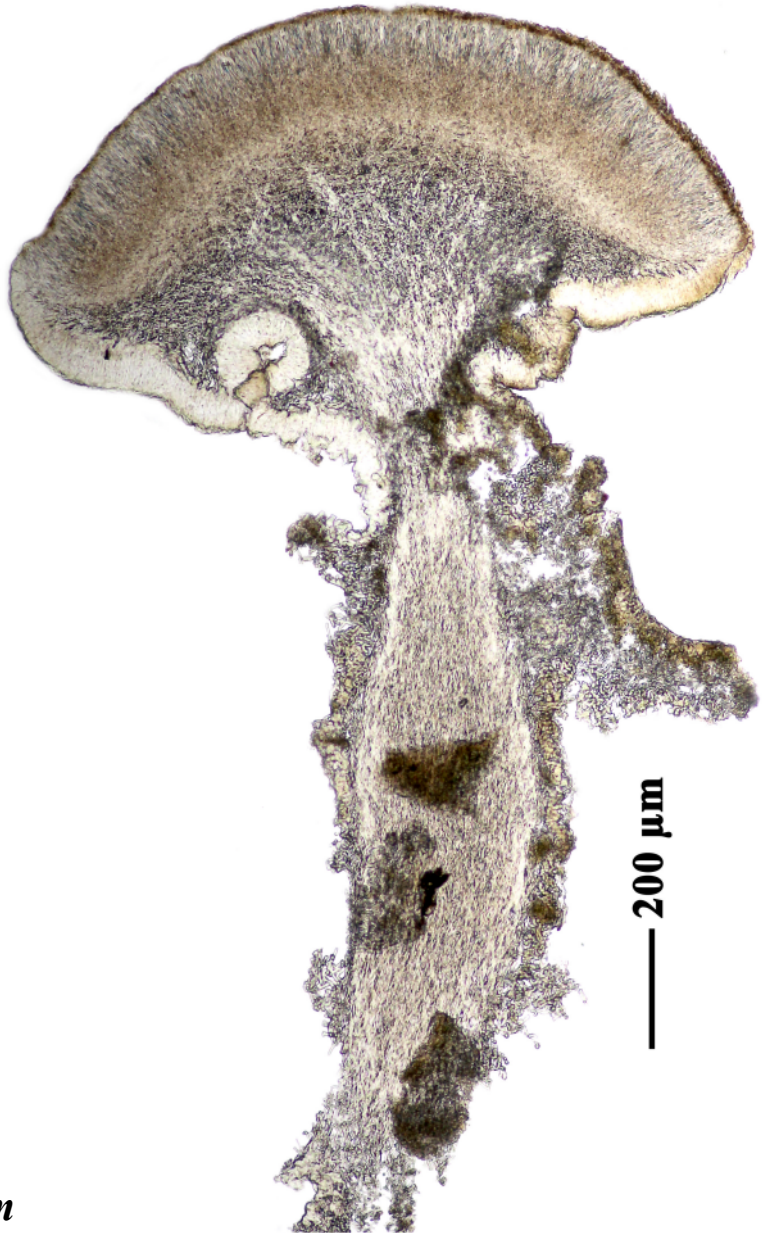




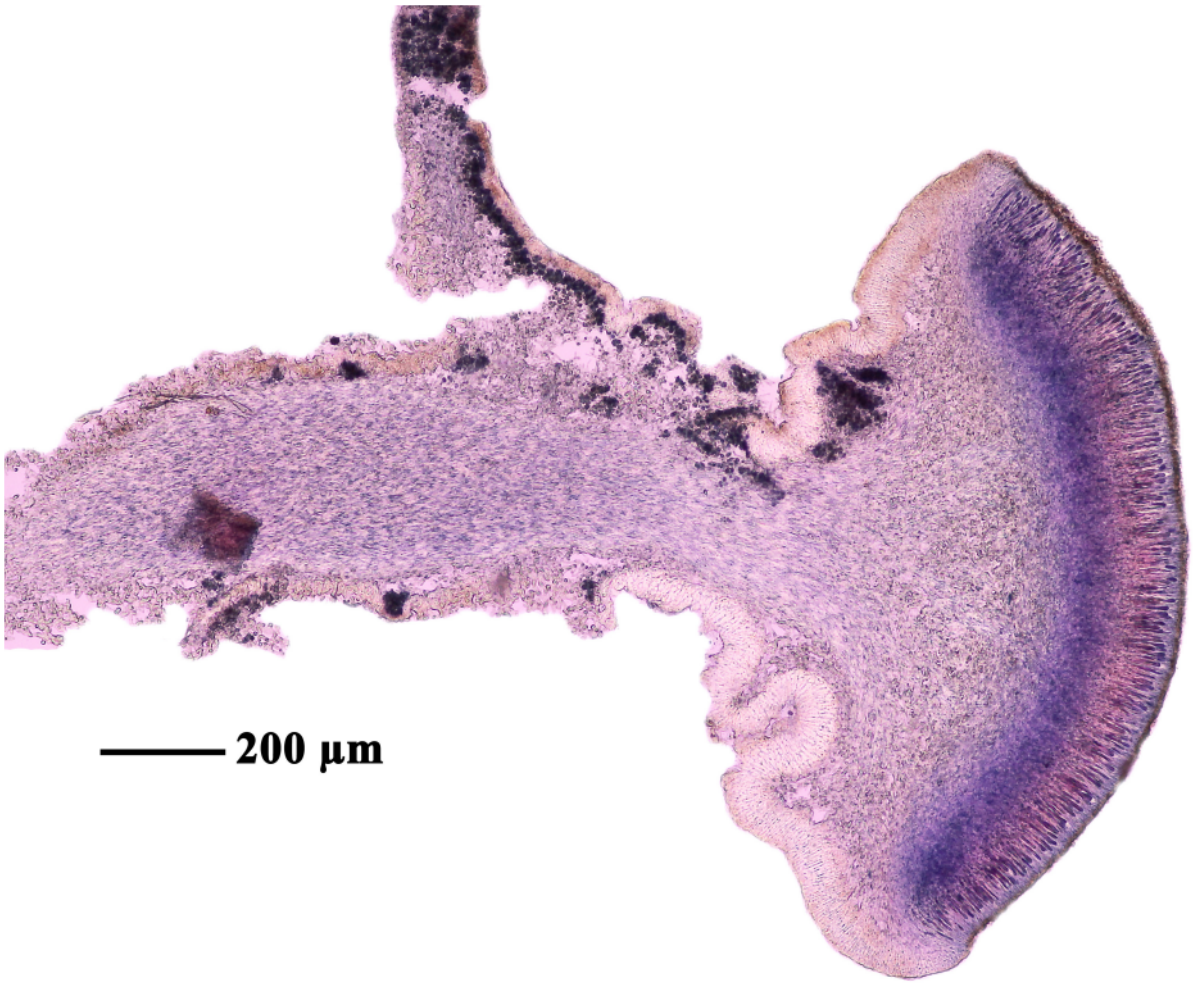


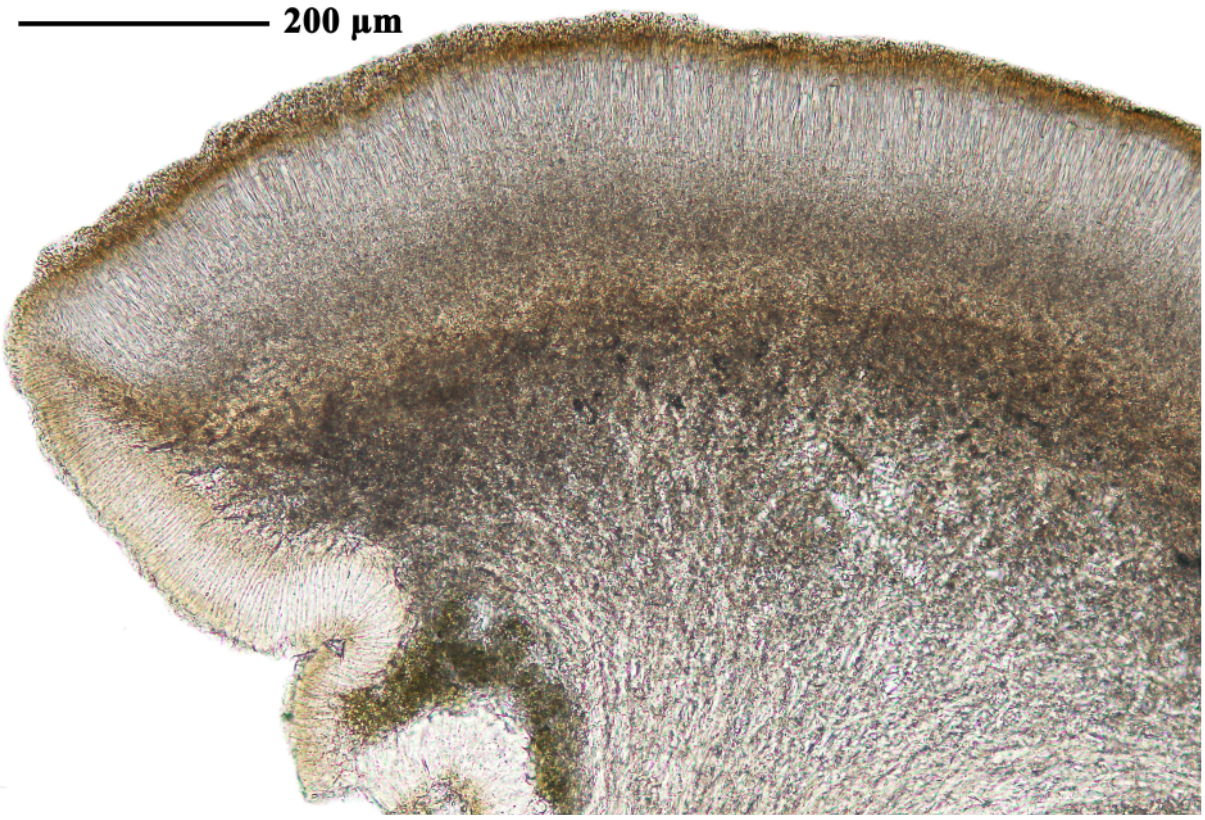
Stereocaulon ramulosum



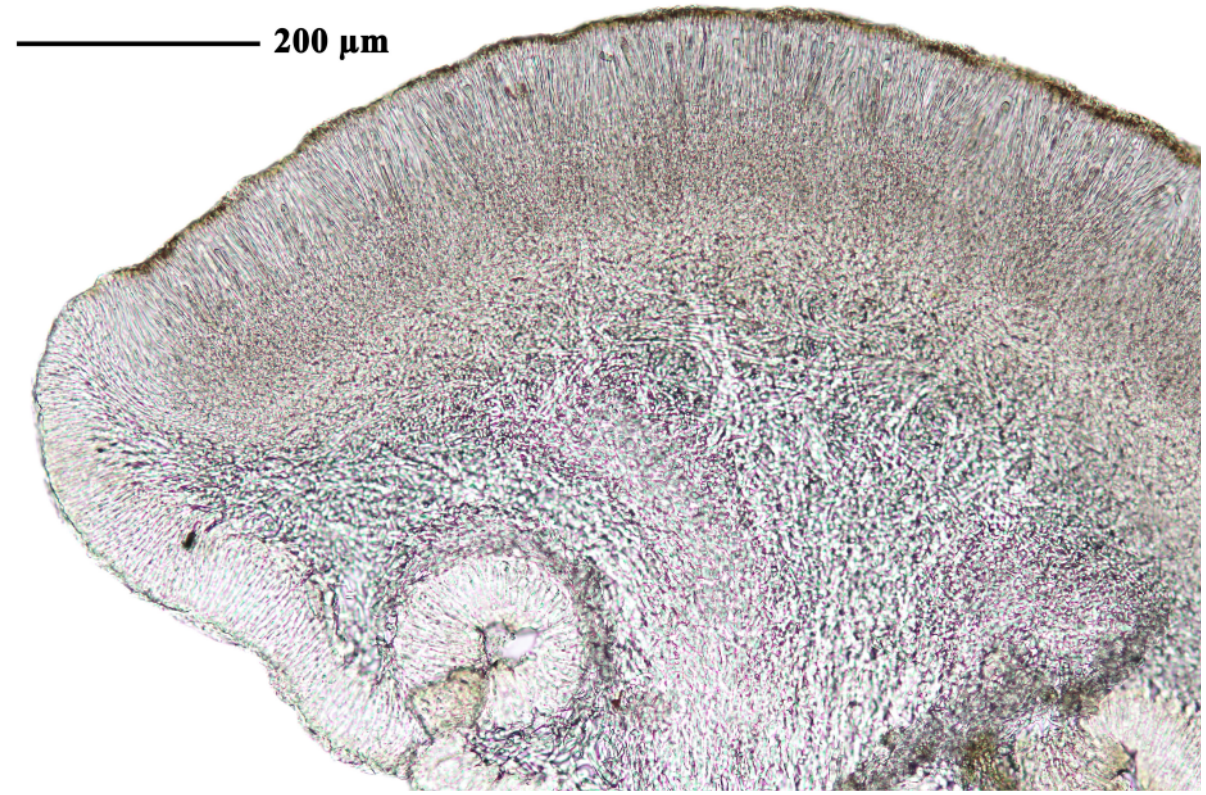


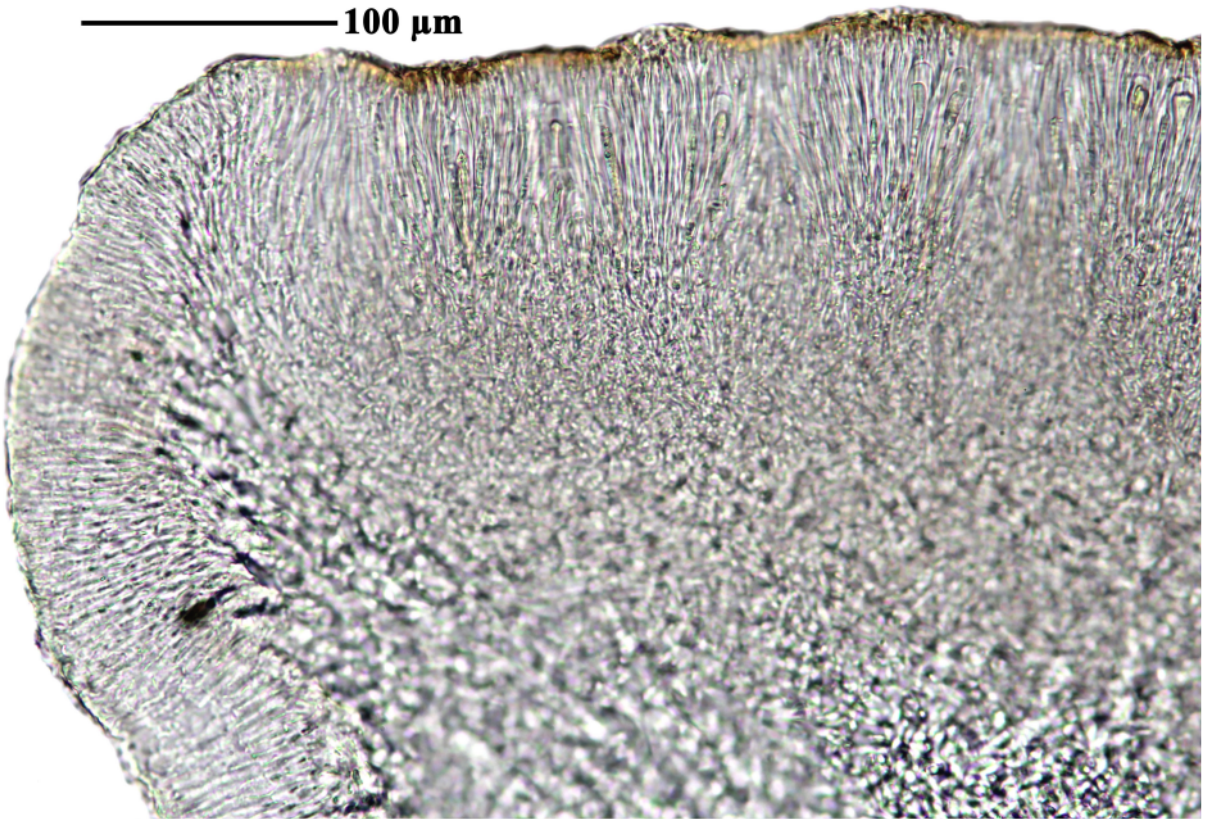
Stereocaulon ramulosum





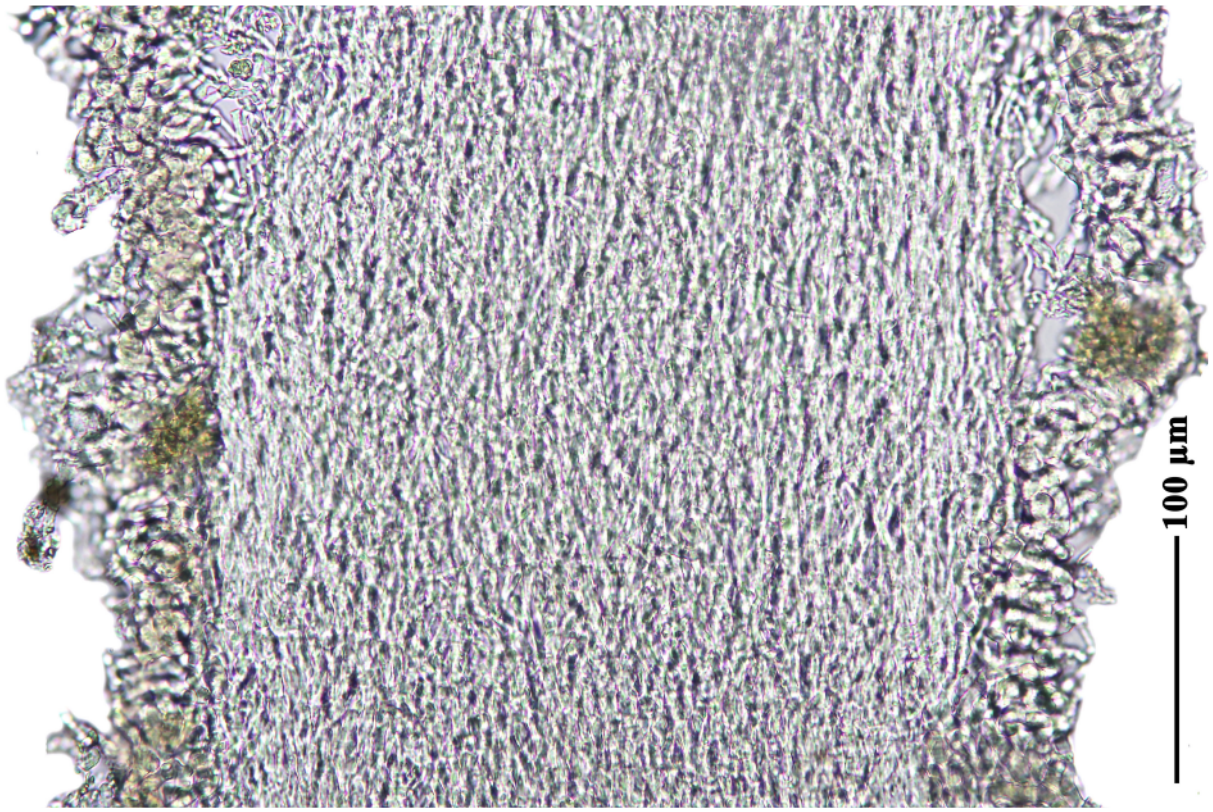
Stereocaulon ramulosum



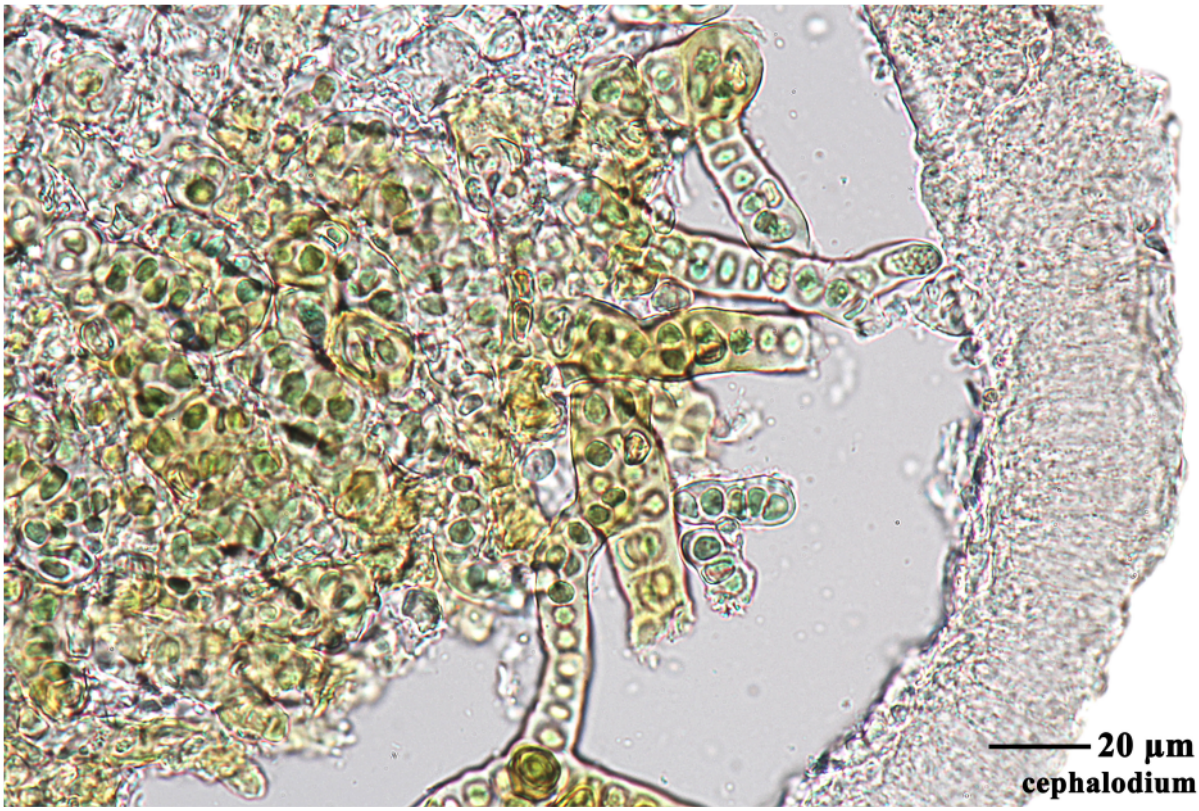


Stereocaulon ramulosum

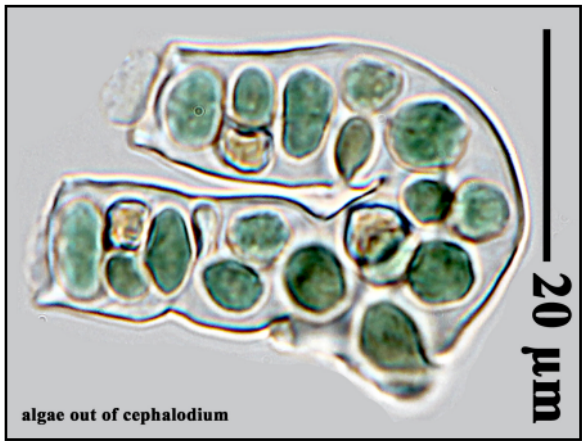




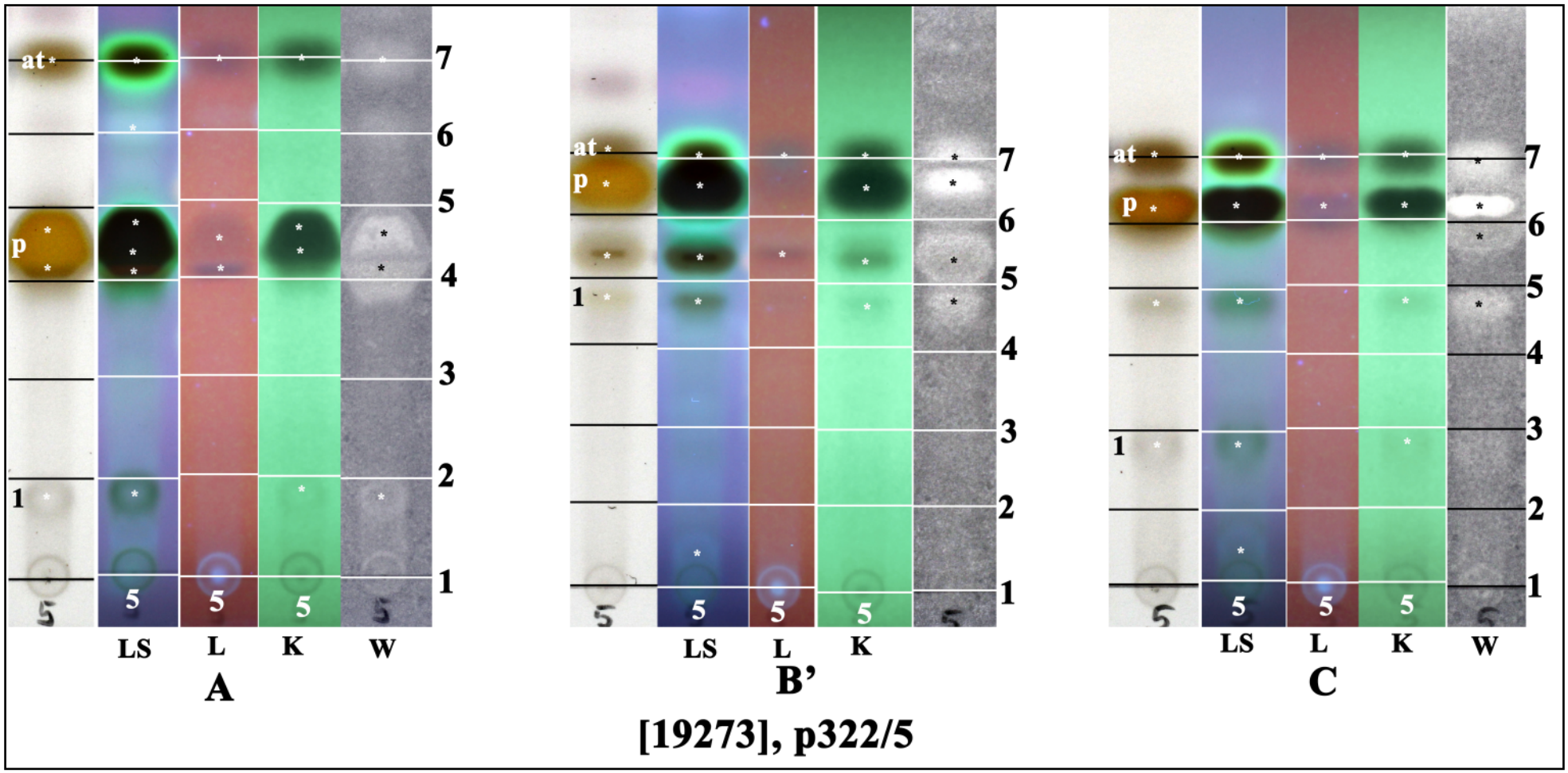
Stereocaulon ramulosum







Stereocaulon ramulosum



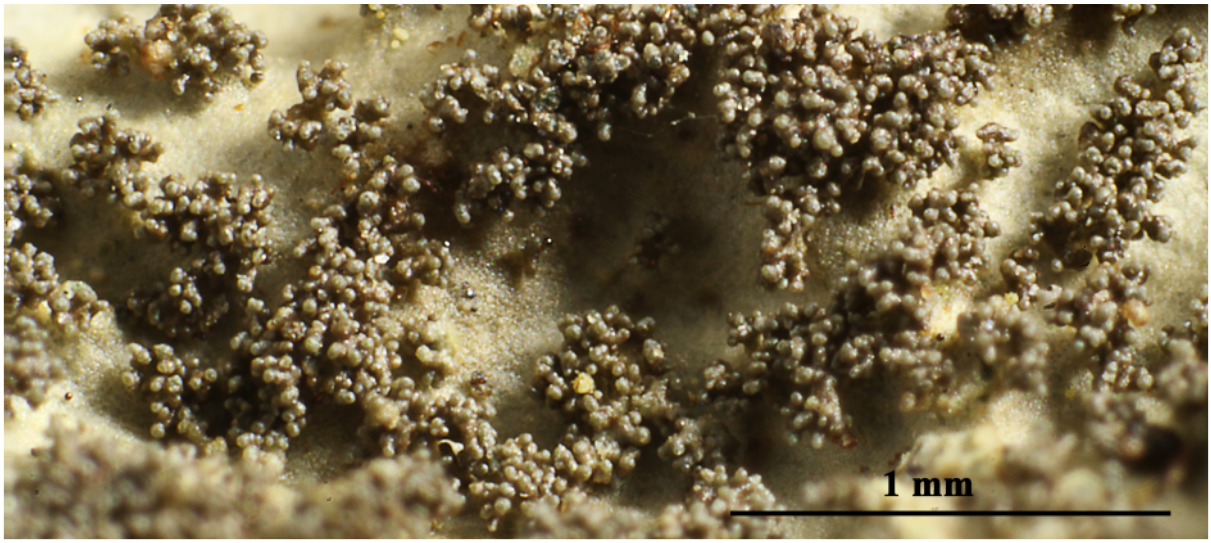
at: atranorin, p: perlatolic acid and stenosporic acid move as a single spot in all three solvents on small plates;
1: unknown

Sticta fuliginosa (Hoffm.) Ach.

Thallus ±monophyllous but often deeply indented and appearing polyphyllous, rather loosely attached centrally but without a basal holdfast. Lobes broadly rounded, 0.5-8 cm wide. Upper surface grey to brownish, densely isidiate. Lower surface pale, densely tomentose, pseudocypellae large, 0.5-5 mm diam.; Photobiont: Nostoc, Medulla K-.

[19274], 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 *Euycalyptus* in open *Eucalyptus pauciflora*, *Leptospermum* and Epacridaceae fringed swampy area. Leg. J.A. Elix (22902), 25.04.1990. No lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 223.

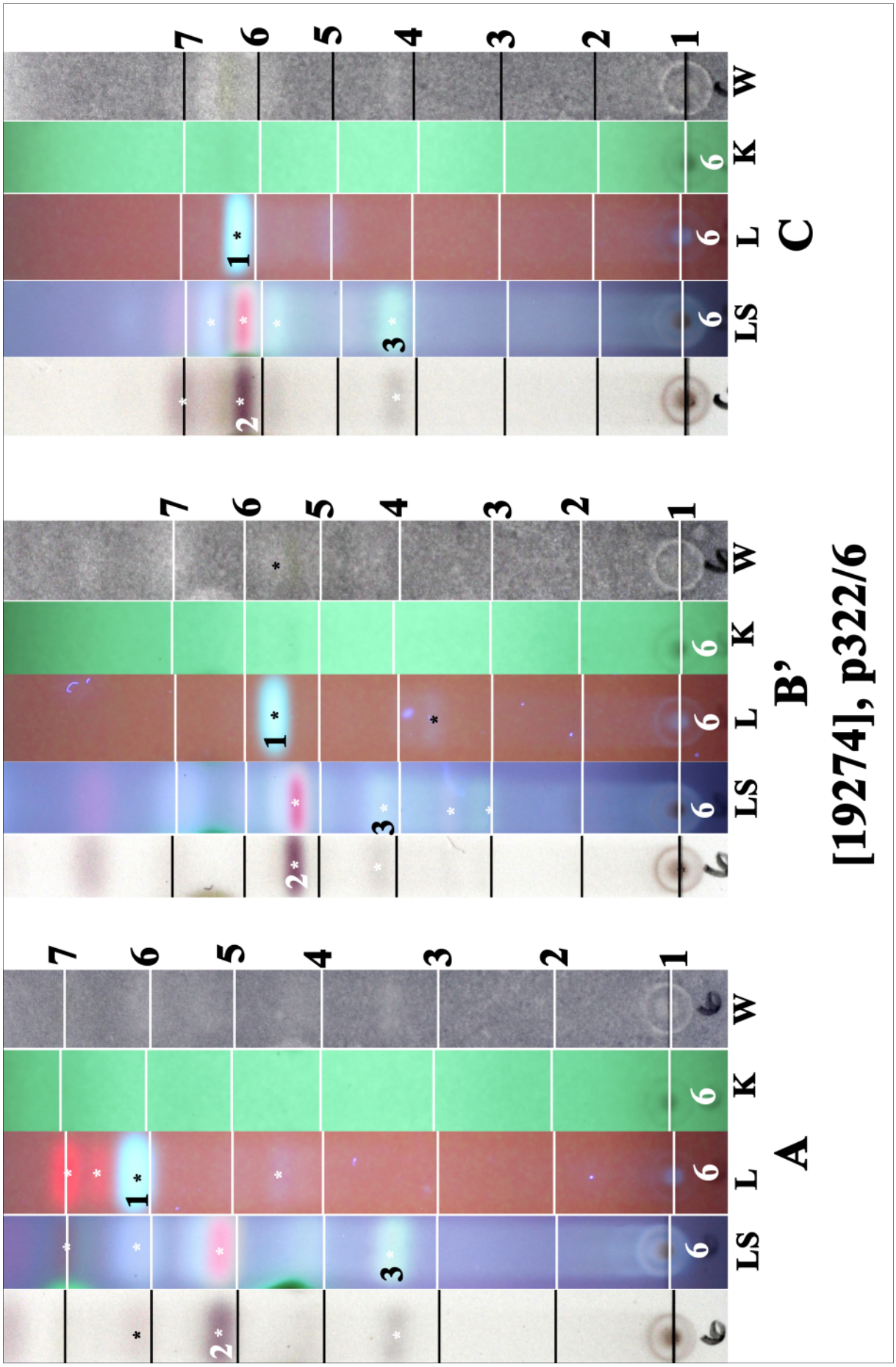








Sticta fuliginosa



1, 2, 3: unknowns

Sticta fuliginosa

Streimannia variseptata Thor

Thallus grey, effuse. built from loosely woven hyphae (byssoid) without a cortex, lacking isidia and soredia. Upper medulla white, lower medulla brown to black. Ascocarps perithecioid, aggregated into distinctly elevated stroma like structures with a constricted base. Excipulum hyaline. Ascospores hyaline, 8-15 septate, 73-100 x 3-4 µm. Chemistry: K-, C-, P-; perlatolic acid. The genus is similar to ***Dichosporidium*** which has 4-10 septate Ascospores, brown excipulum and reacts P+ red.
Lit. Thor, G. (1990, Op. Botanica)

[19275], Australia, Queensland, Blencoe Creek, Cardwell Range, 48 km north-west of Cardwell, 18°03' S, 145°39' E, 740 m, growing on base of felled tree in Lauraceae-Syzygium dominated forest. Leg. J.A. Elix (20067) & H. Streimann 17.06.1986. Chemistry: perlatolic acid by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 248.

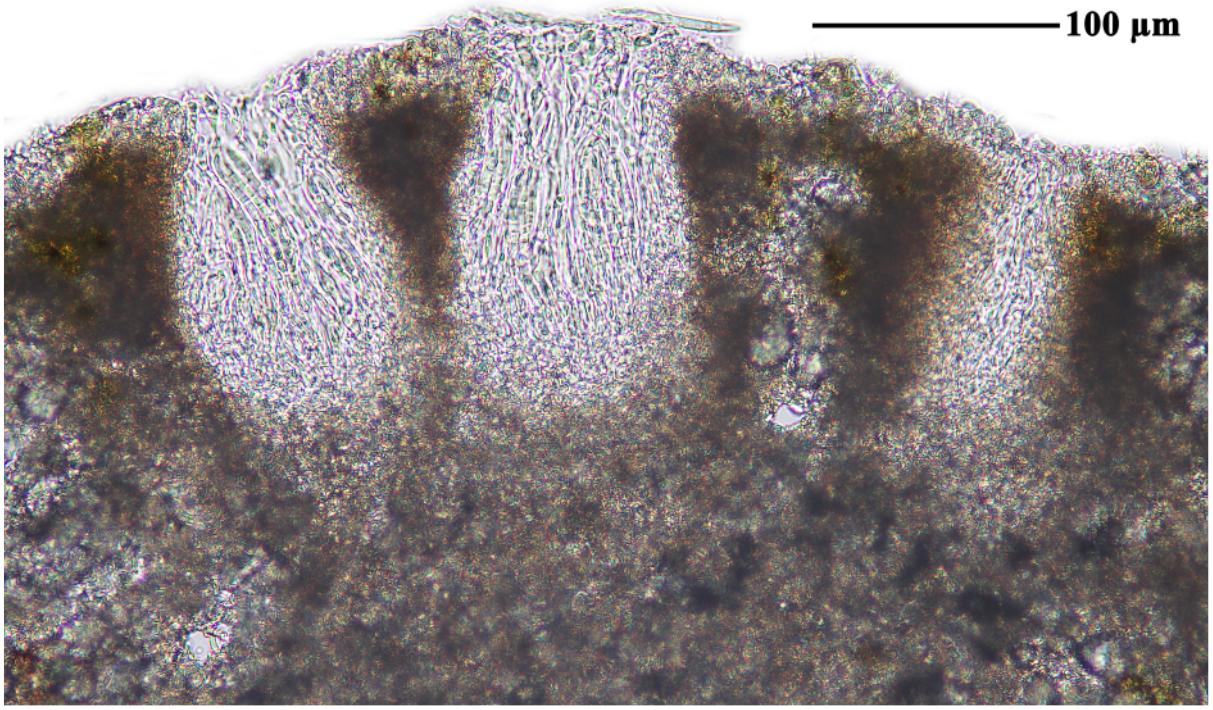




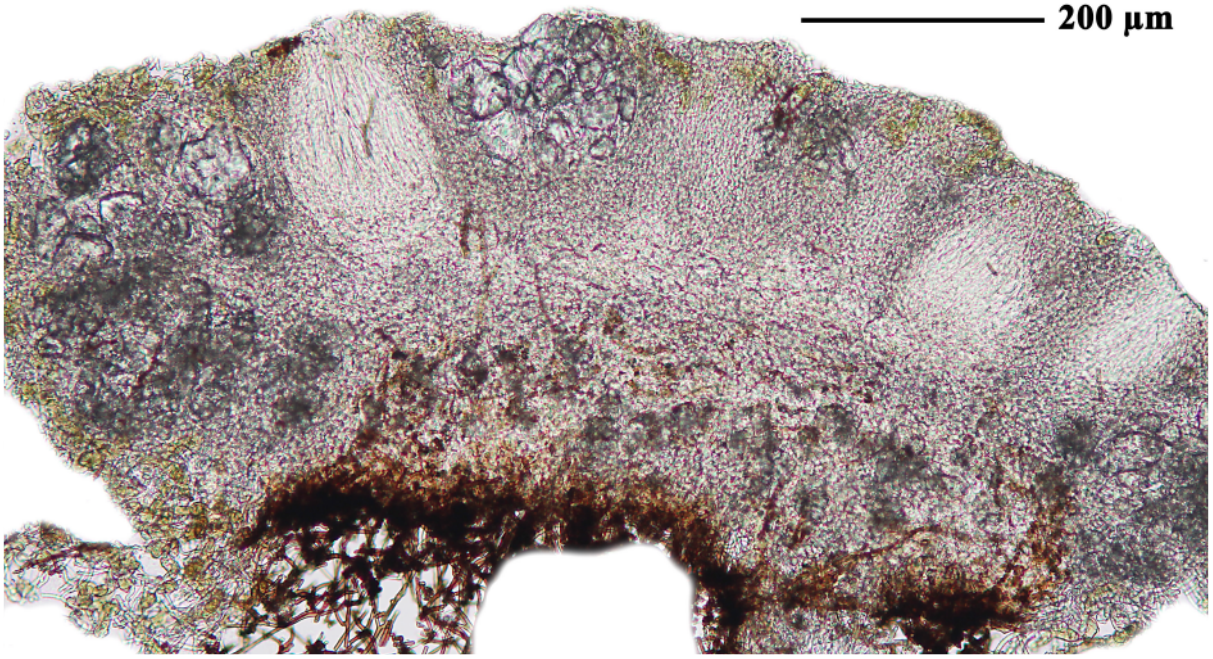


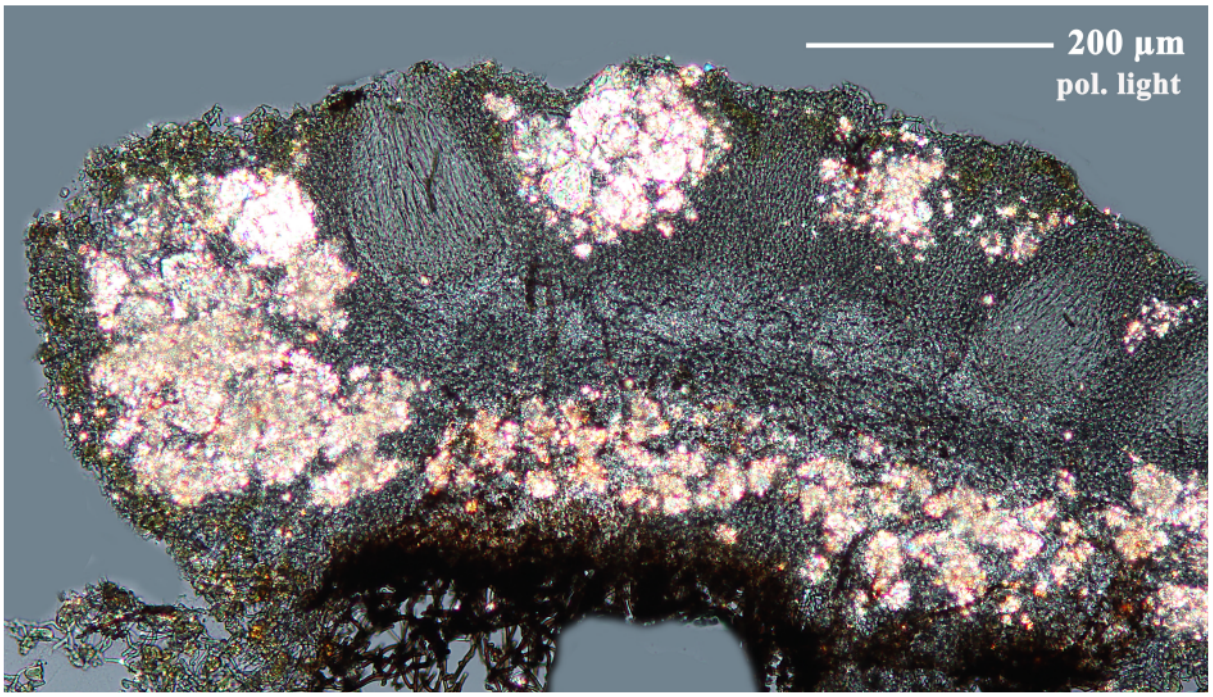
Streimannia variseptata

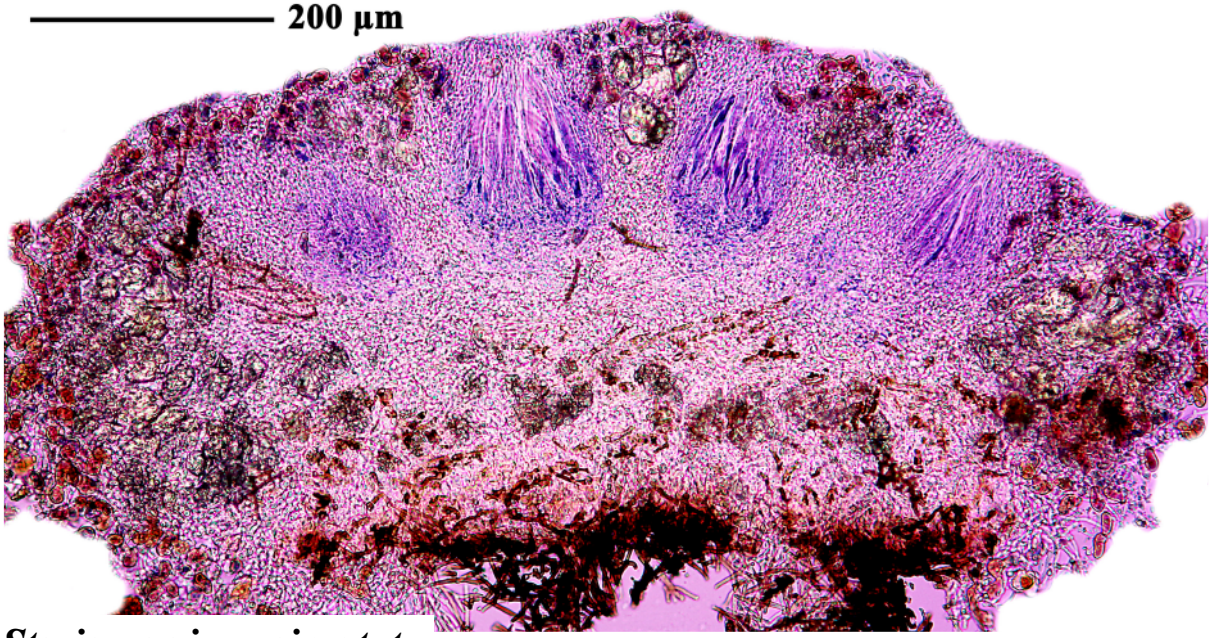




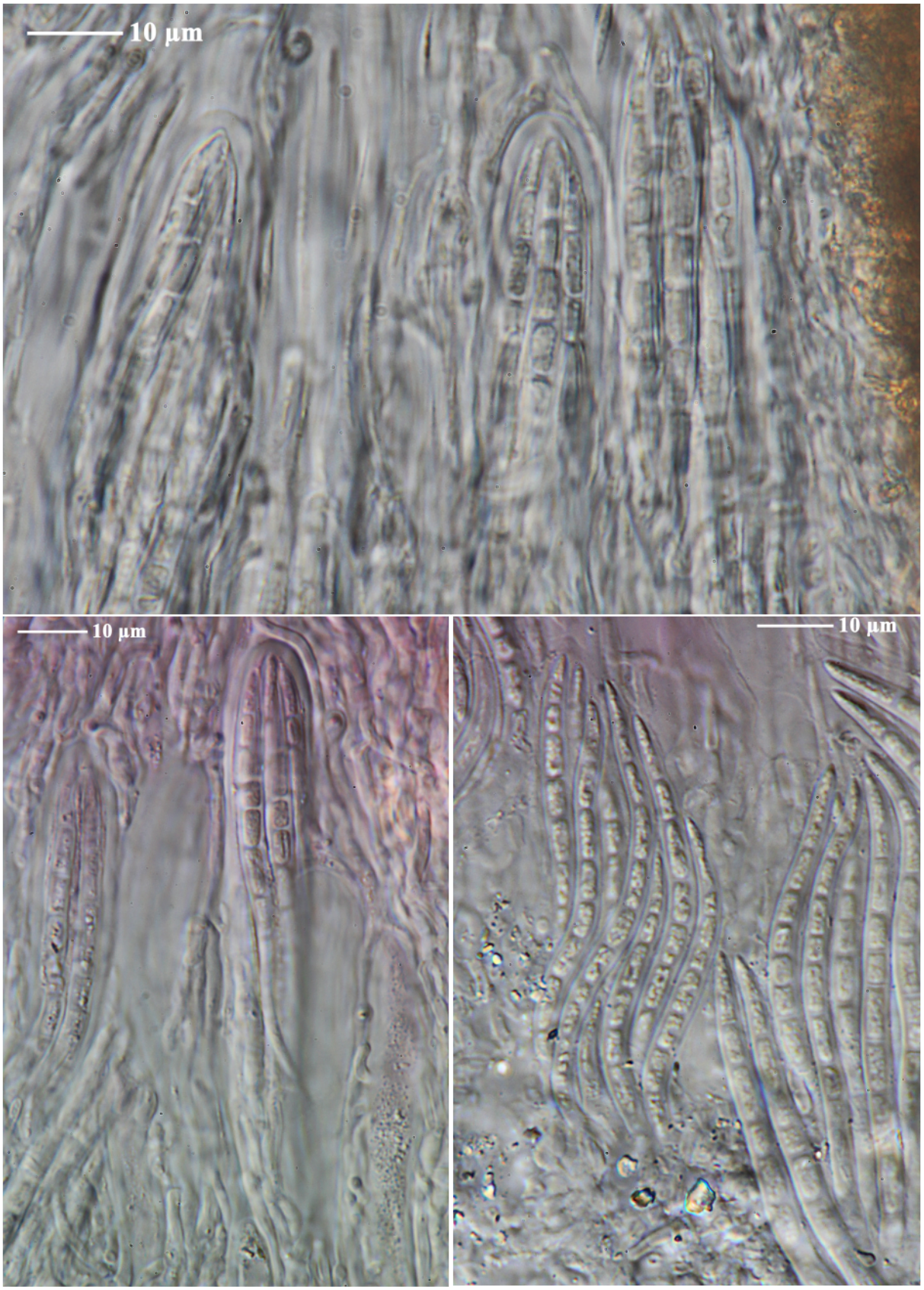
Streimannia variseptata



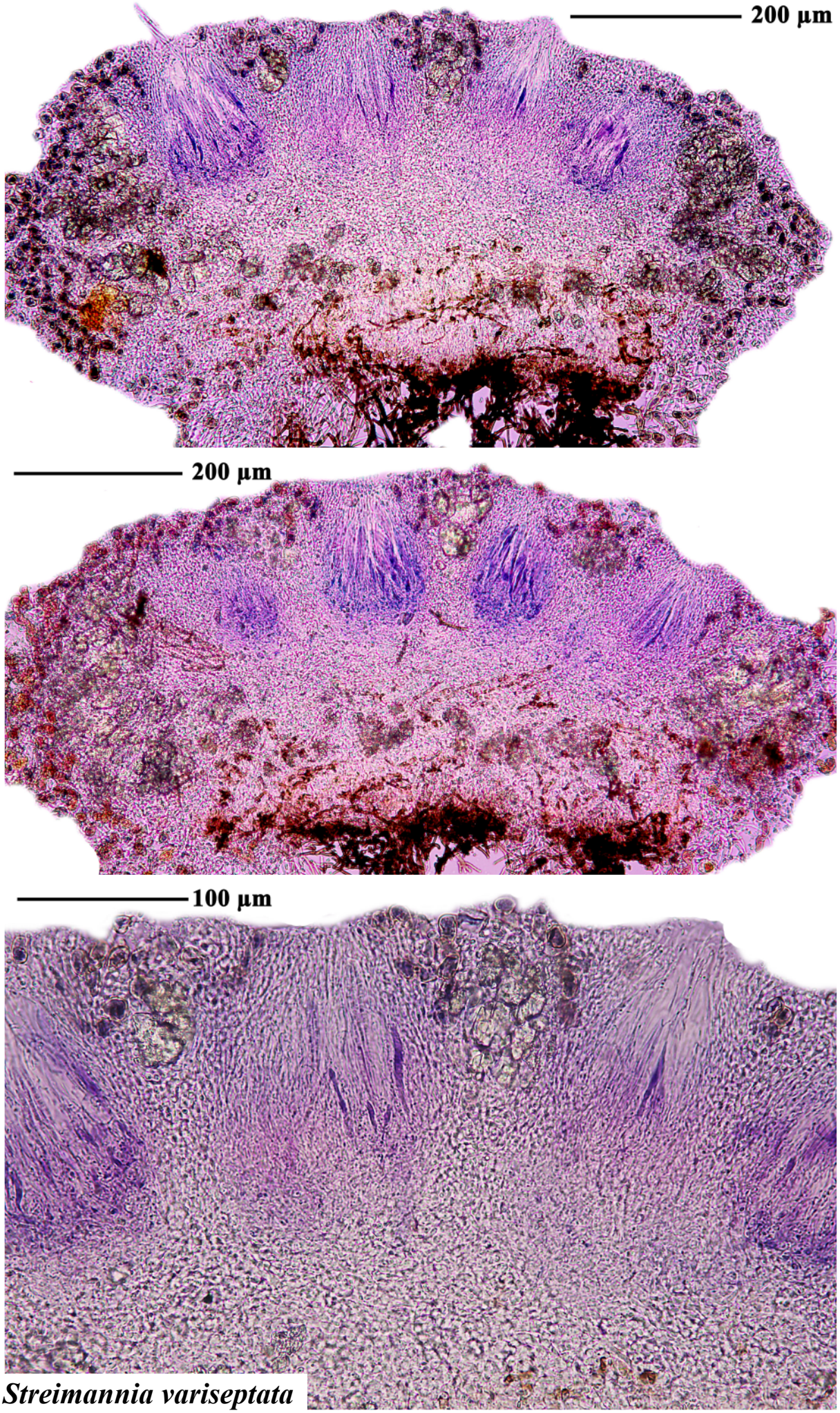




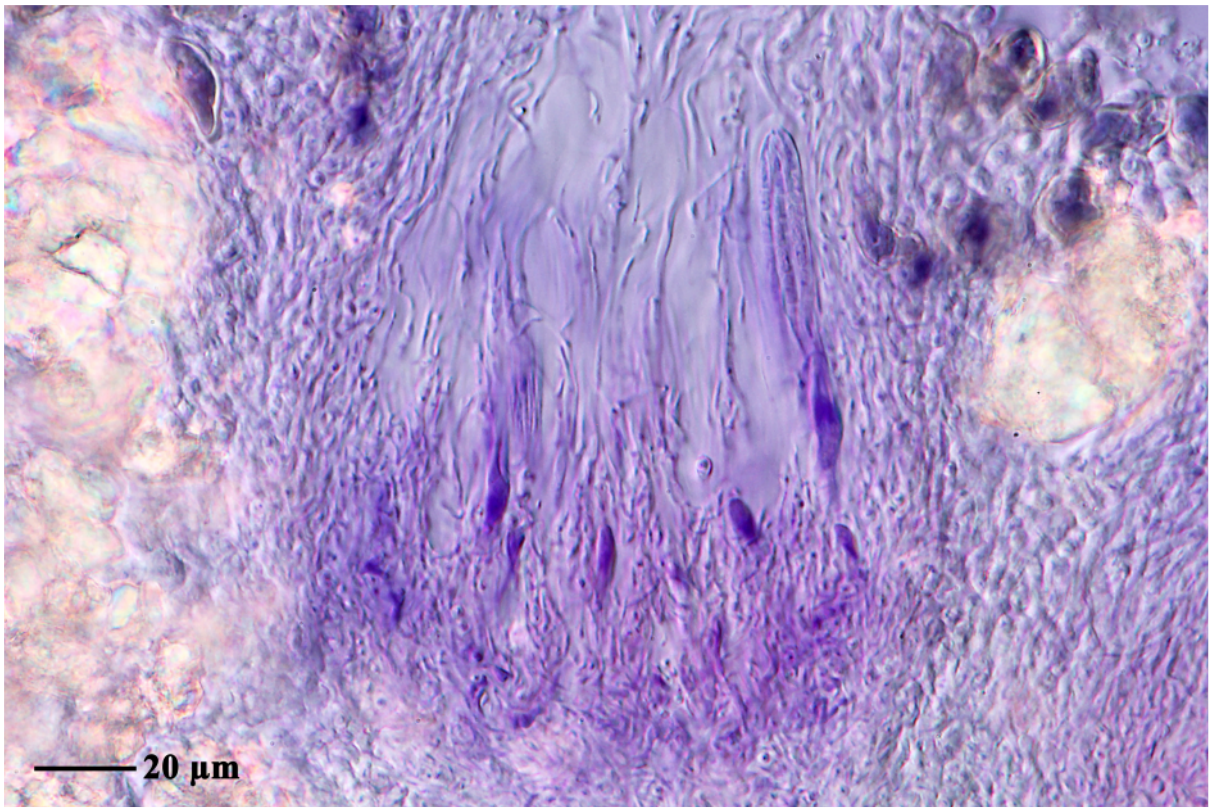
Streimannia variseptata

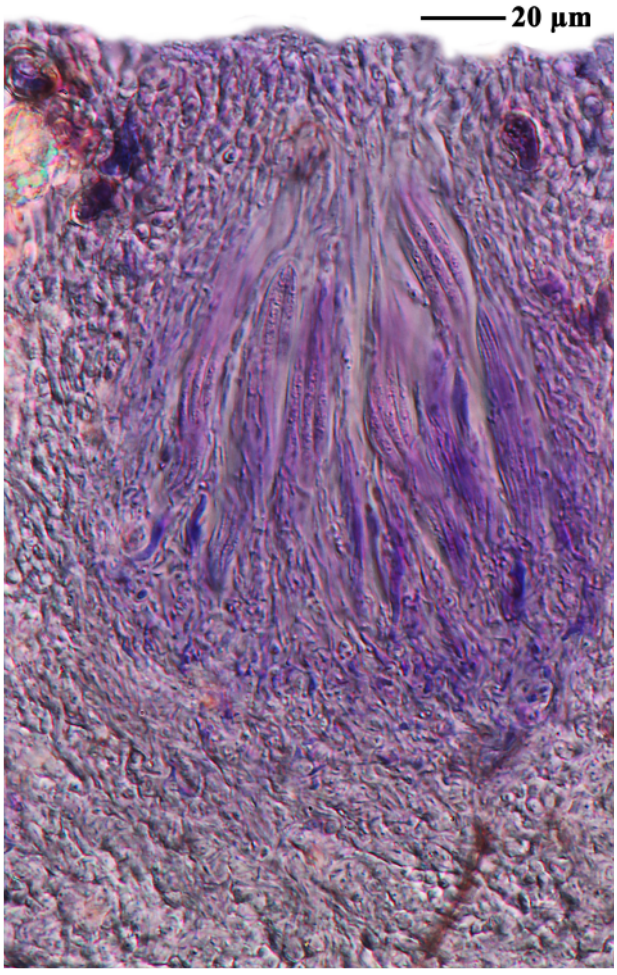


Streimannia variseptata

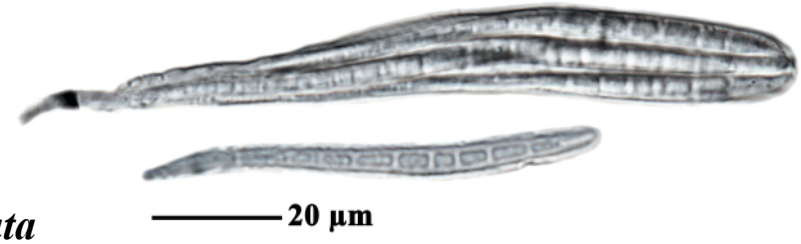


Streimannia variseptata

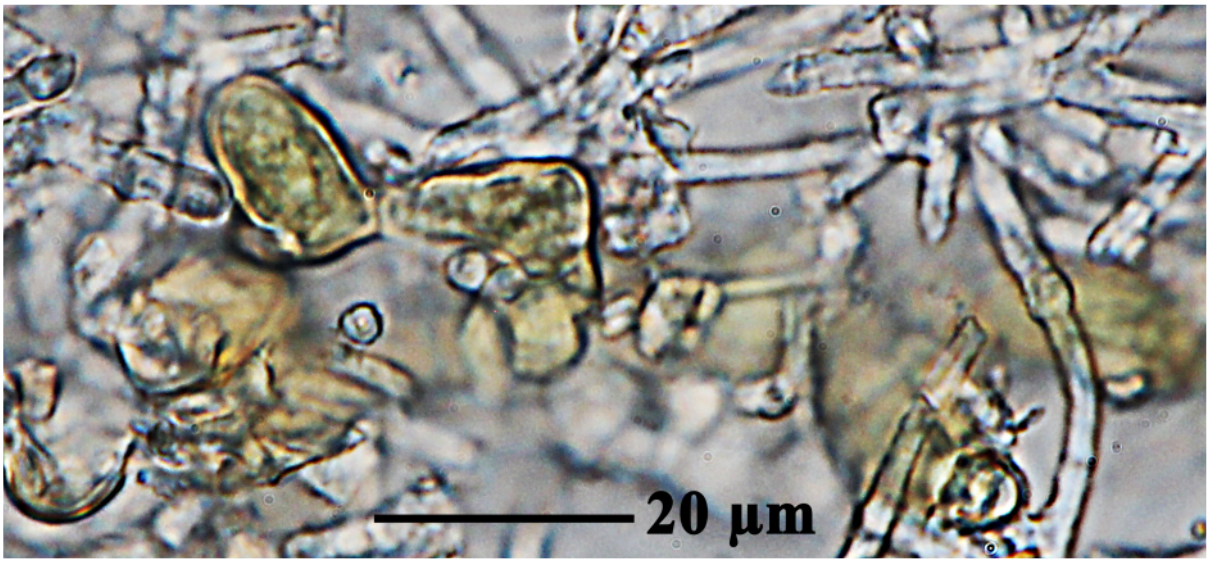


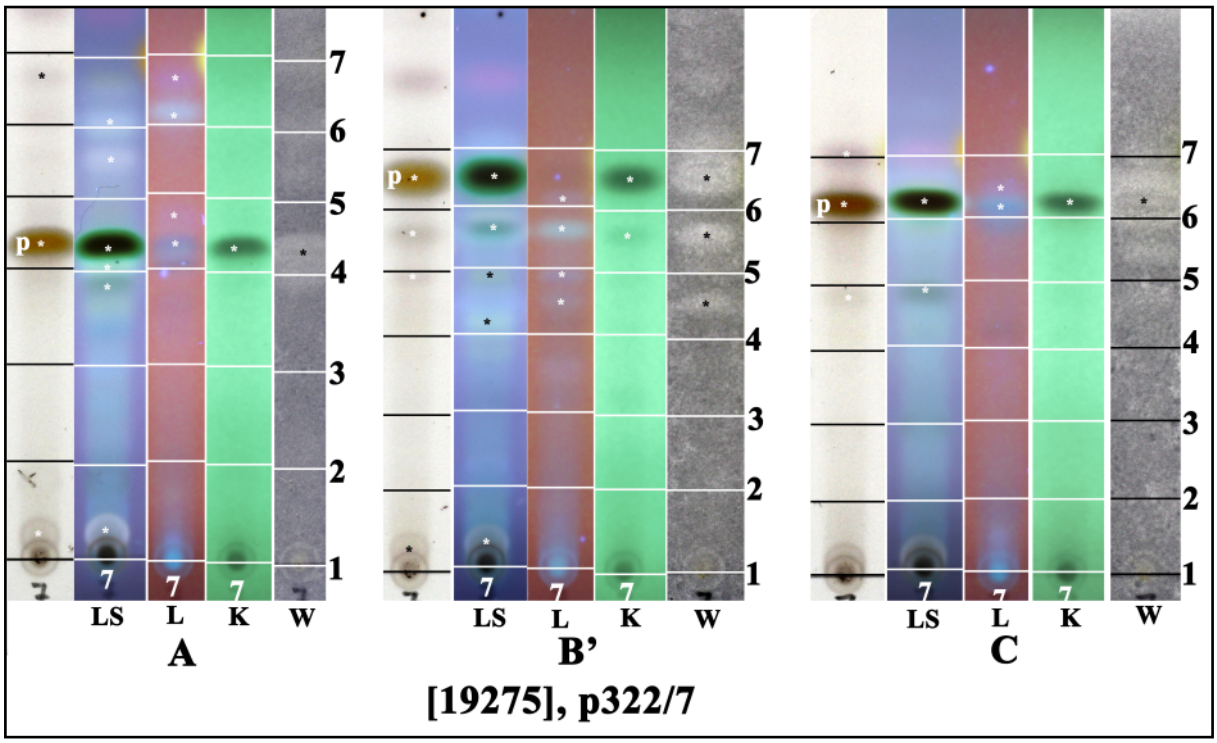






Streimannia variseptata





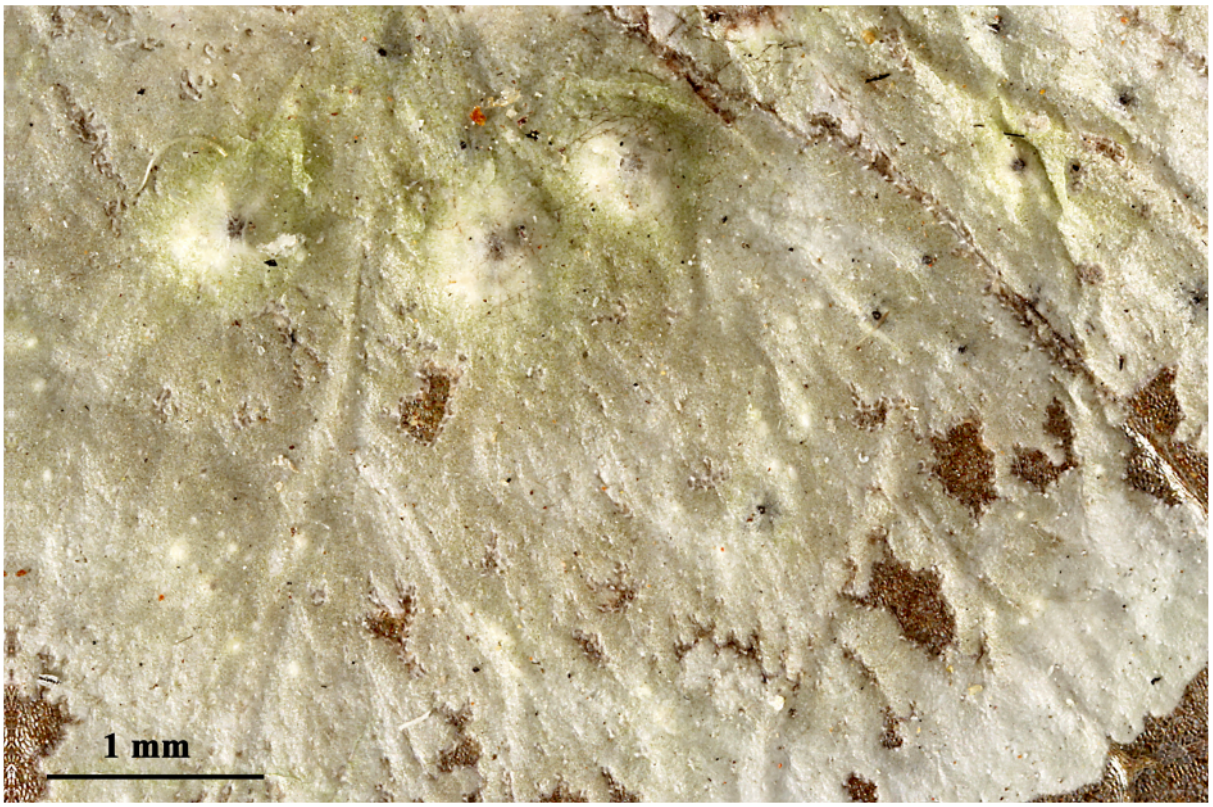
p: perlatolic acid

Streimannia variseptata

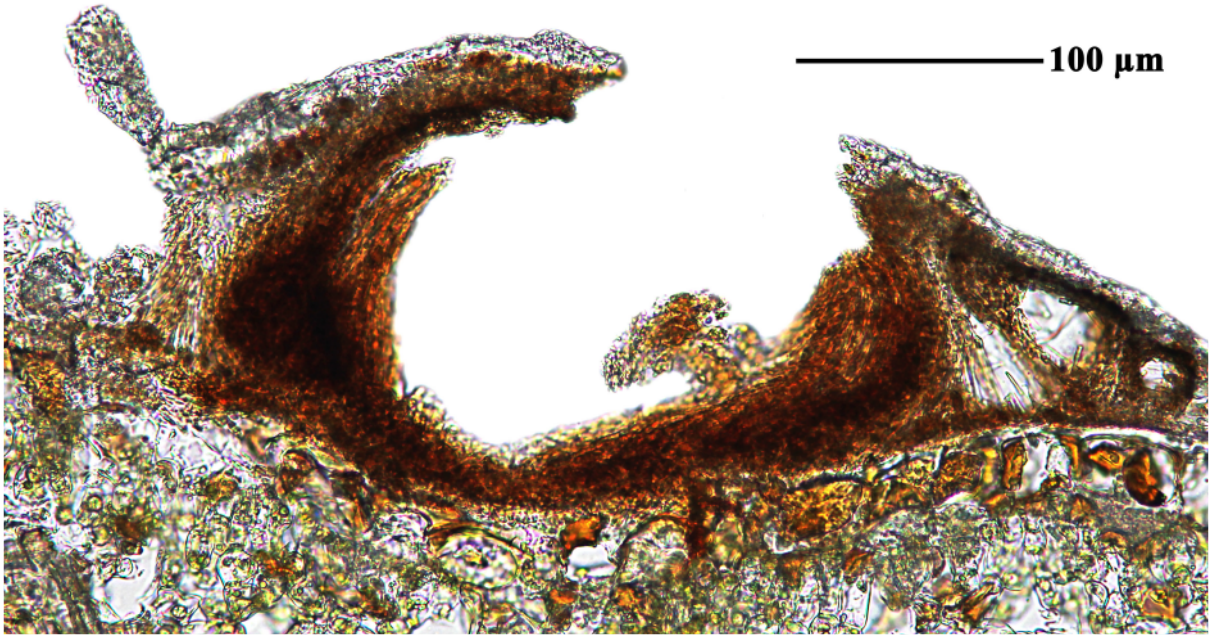
Strigula nemathora Mont.

Thallus greenish grey, subcuticular, 5-25 mm across, 25-50 µm thick, minutely papillose. Perithecia semi-immersed, wart-shaped, 0.4-0.7 diam. Paraphyses unbranched. Ascospores 1-septate and pseudosepta, constricted at the septum, 15-22 x 4-6 µm. Lit. Lücking, R. (2008, Flora Neotropica Monograph 103)

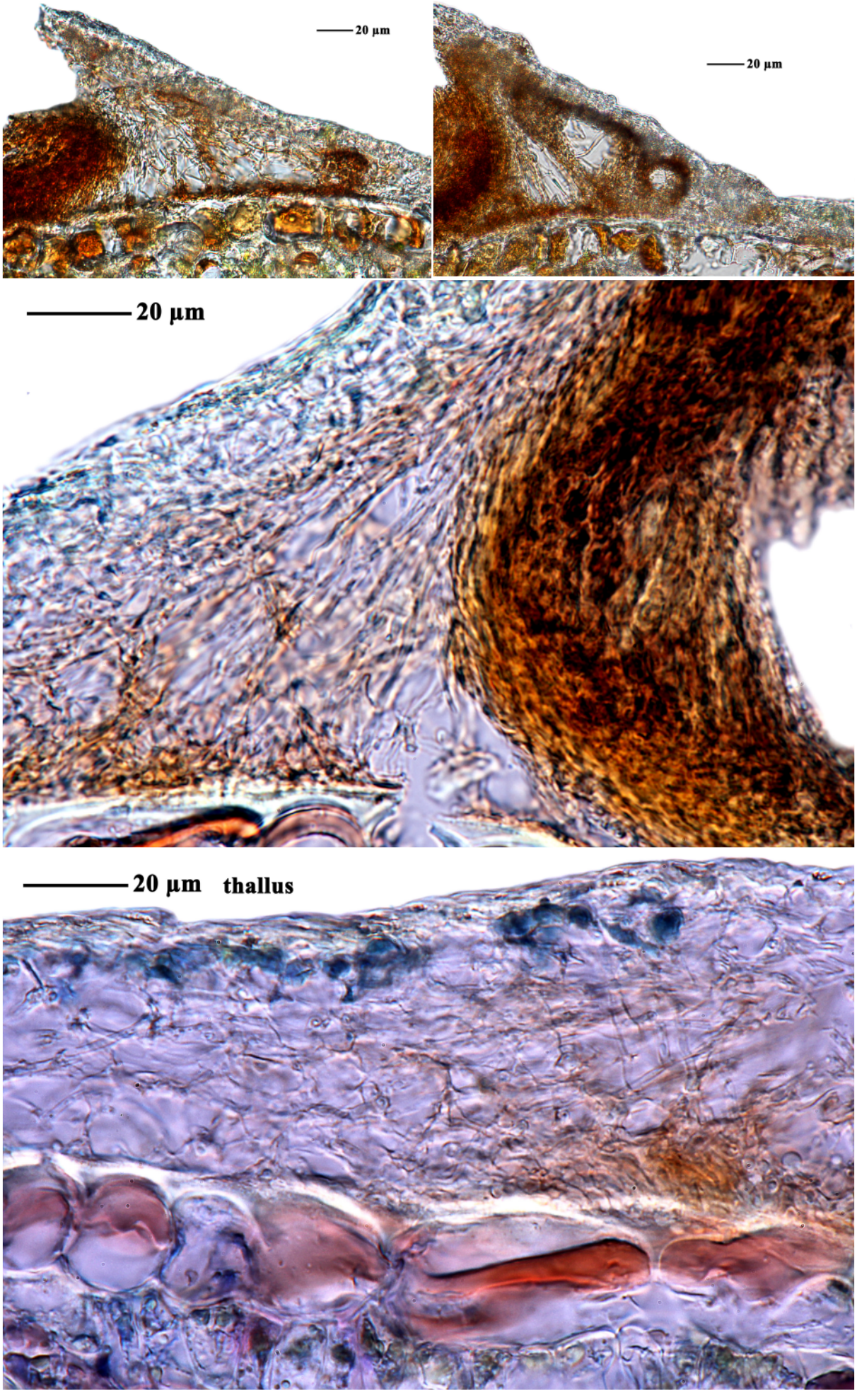
[19276], Australia, Northern Territory, Pethericks Rainforest, Litchfield Park, 39 km west-south-west of Batchelor, 13°08' S, 130°49' E, 60 m, growing on leaves in disturbed lowland forest with *Ficus* and *Gmelina* on moderate slope. Leg. J.A. Elix (27564), H.T. Lumbsch & H. Streimann 03.07.1991, det.R. Lücking. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 246.



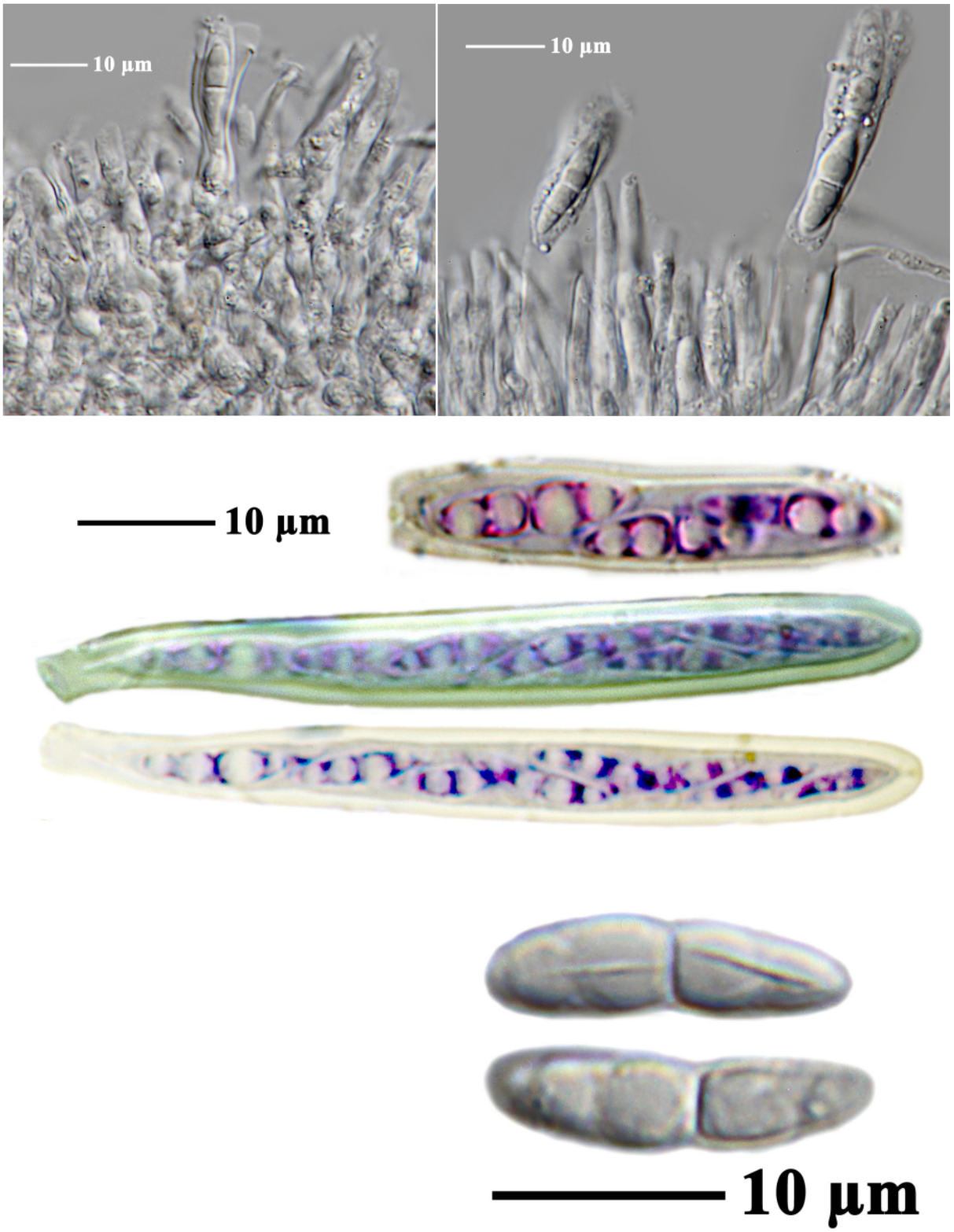




Strigula nemathora



Strigula nemathora



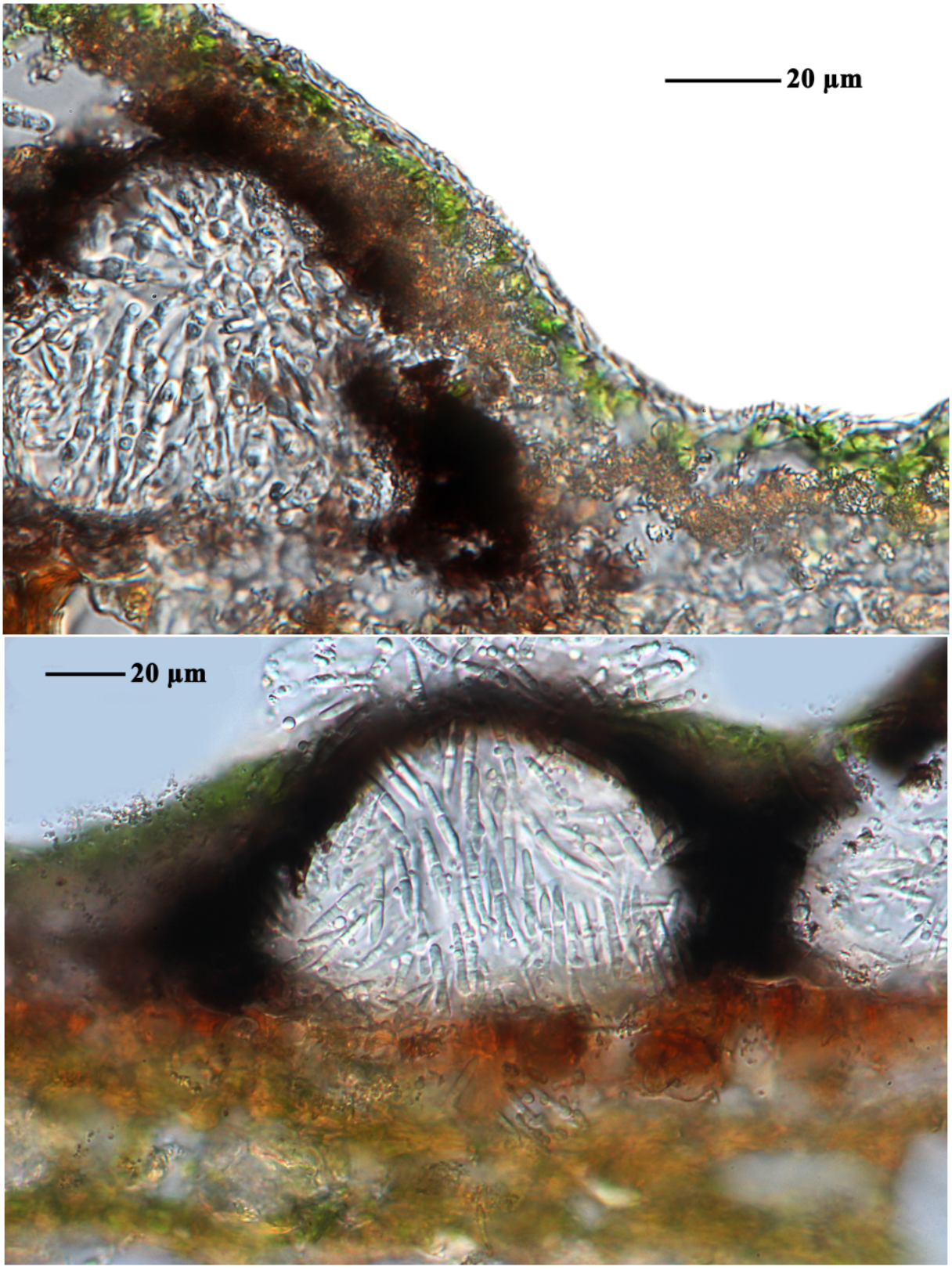
Strigula nemathora

Strigula smaragdula Fr.
[= ***Strigula elegans*** (Fée) Müll.Arg.]

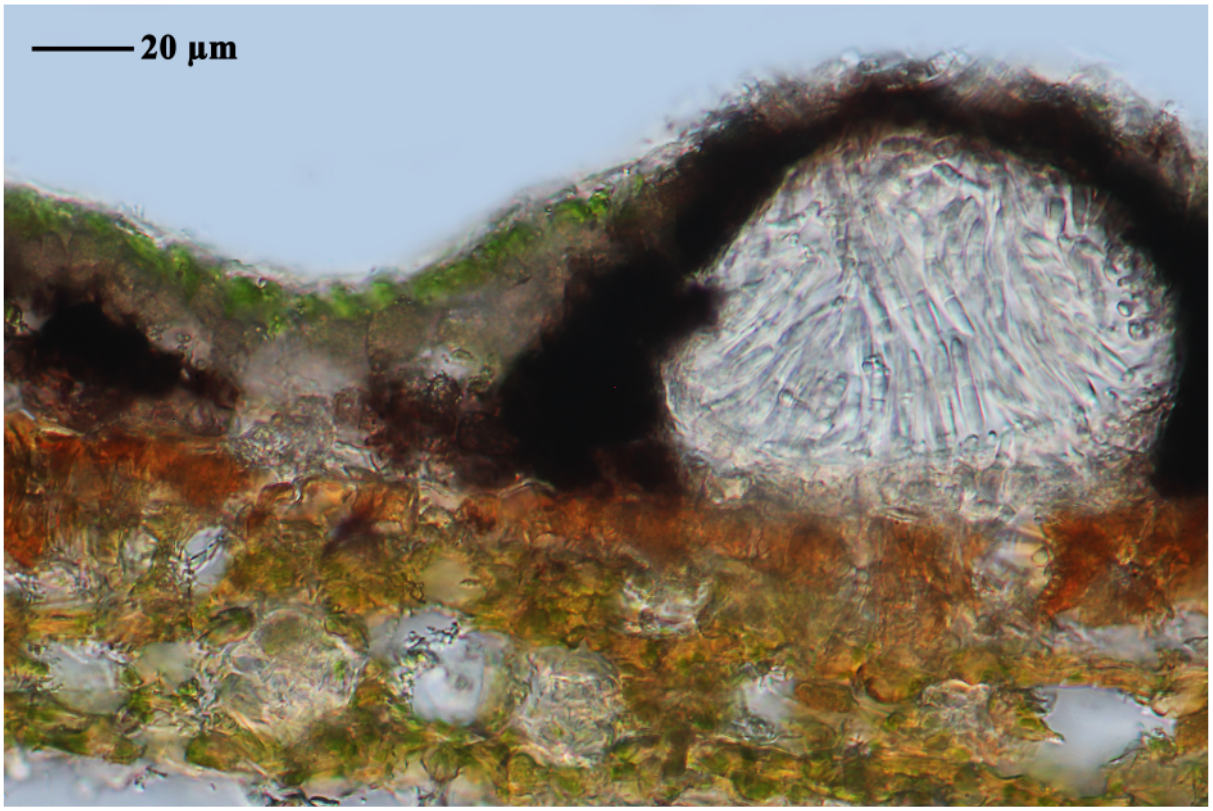
Thallus bright green, subcuticular, continuous or dispersed into rounded, partly confluent patches, 5-25 mm across. Perithecia 0.3-0.5 mm, half immersed, covered by thallus tissue, only uppermost part black. Excipulum black. Ascospores hyaline, 1-septate but with additional pseudoseptae, 14-24 x 4-6 µm.

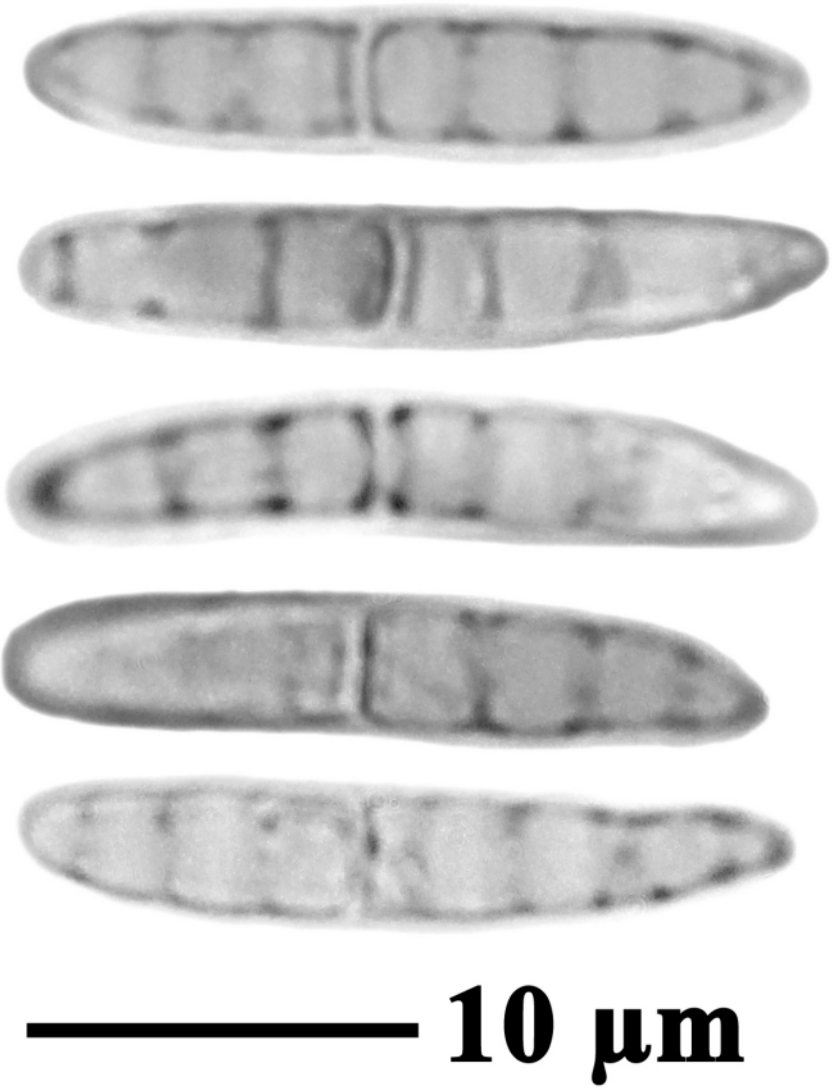
[19277], Australia, Northern Territory, Channell Point, 23 north-northwest of Daly River, 13°07' S, 130°31' E, 10 m, growing on leaves in monsoon forest on seasonal and spring-fed flats with palms, *Acacia*, *Corallia* and *Canorium*. Leg. J.A. Elix (27686), H.T. Lumbsch & H. Streimann 05.07.1991, det. H.T. Lumbsch. Chemistry: no lichen substances detected by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 247.





Strigula smaragdula





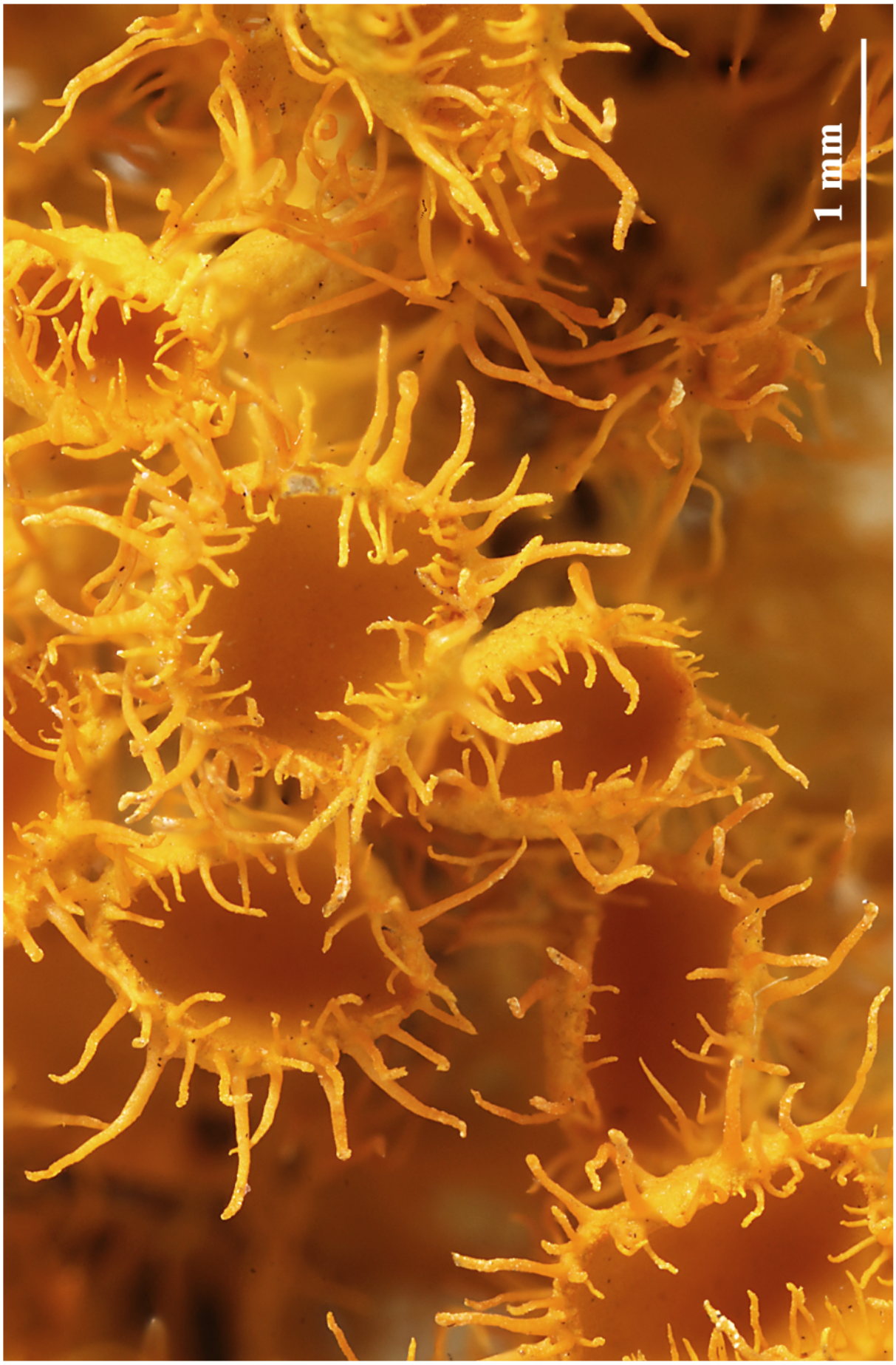
Strigula smaragdula

Teloschistes chrysophthalmus (L.) Th.Fr.

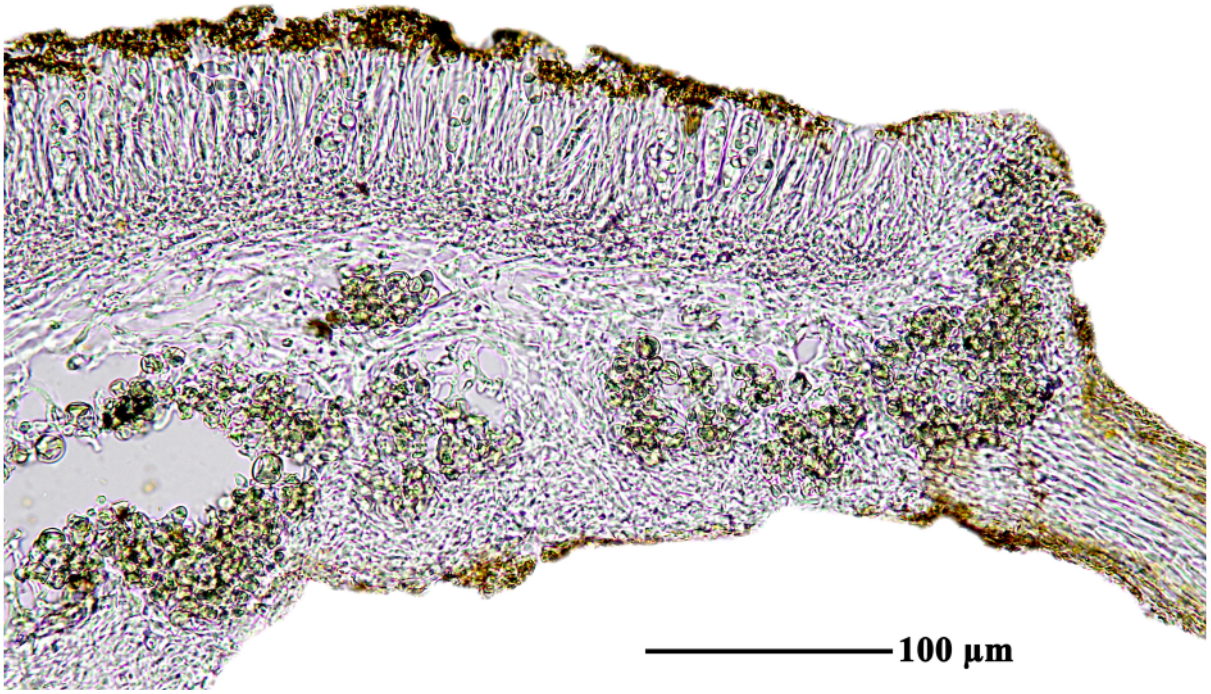
Thallus yellowish orange to gray, forming globular tufts, 1-3 cm broad; lobes 0.5-3 mm wide, with numerous cilia, radiating from a holdfast. Apothecia numerous, orange, sessile or stalked, mostly termina, with numerous marginal cilia. Ascospores hyline, 10-15 x 5-8 µm, polari-diblastic, 8/ascus.

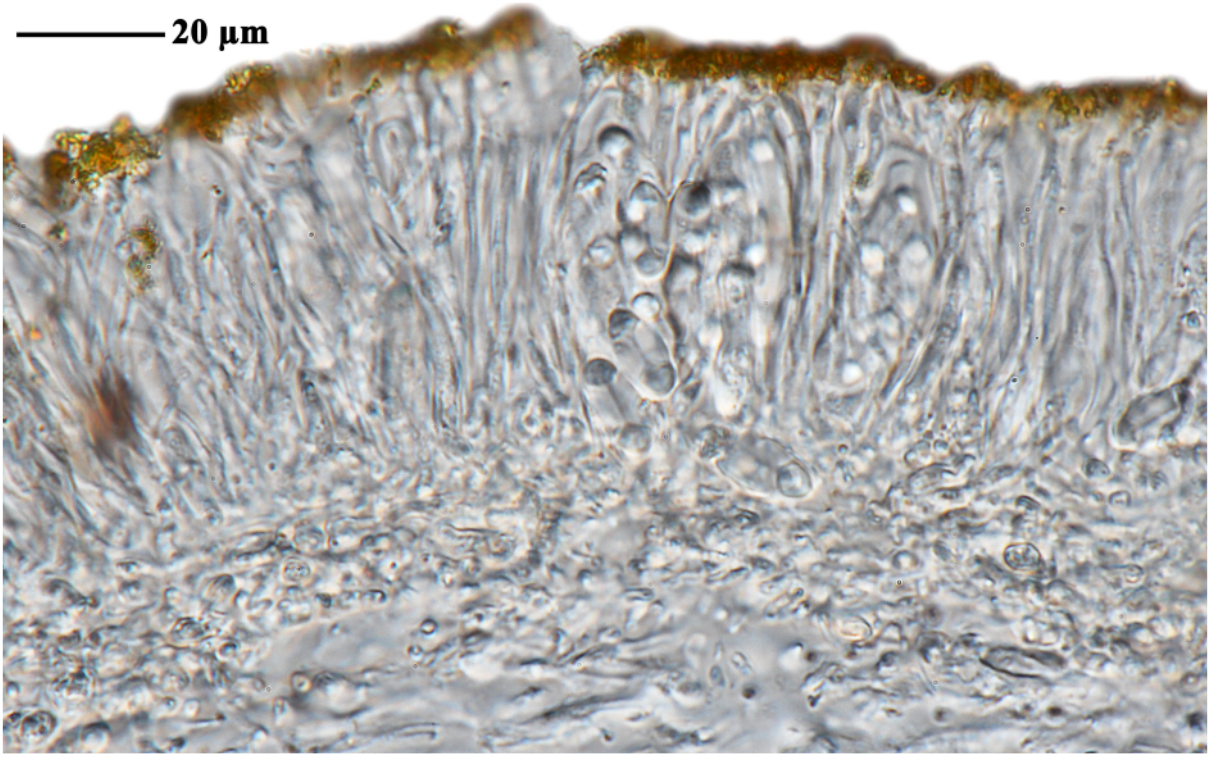
[19279], Australia, South Australia, Kangaroo Island, King George Beach, 35°40' S, 137°04' E, 2 m, growing on dead *Epacris* along the foreshore. Leg. J.A. Elix (19757) & L.H. Elix, 30.10.1985. Chemistry: parietin (major), teloschistin, fallacinal, parietinic acid by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 124.

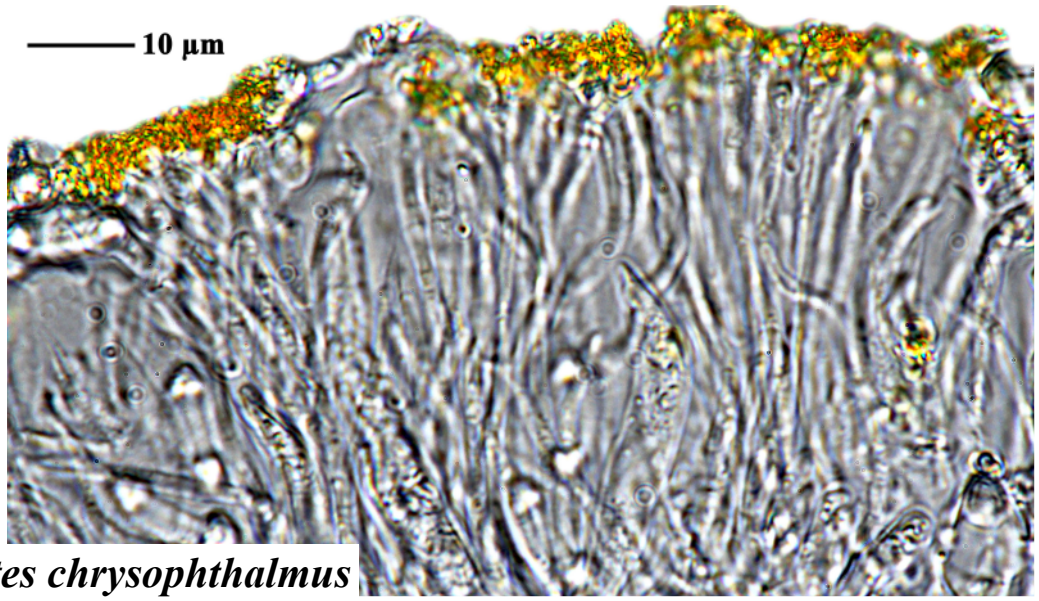




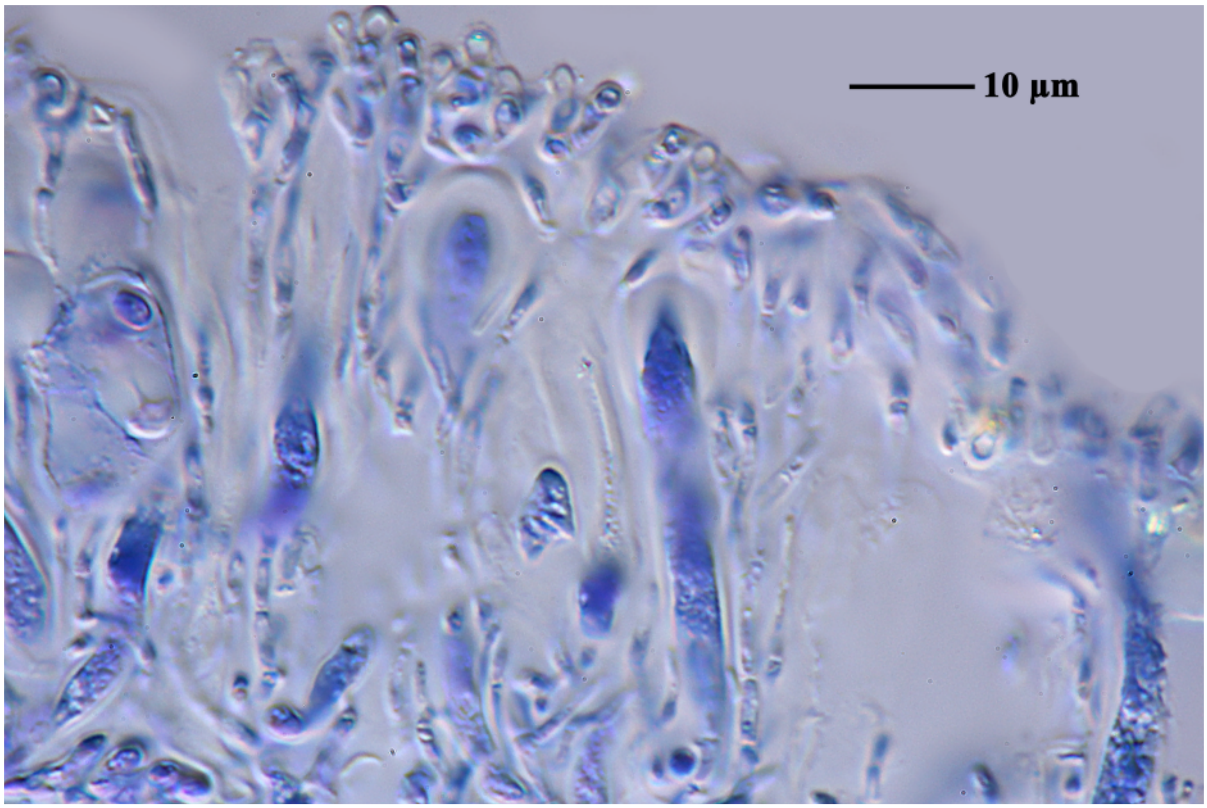
Teloschistes chrysophthalmus

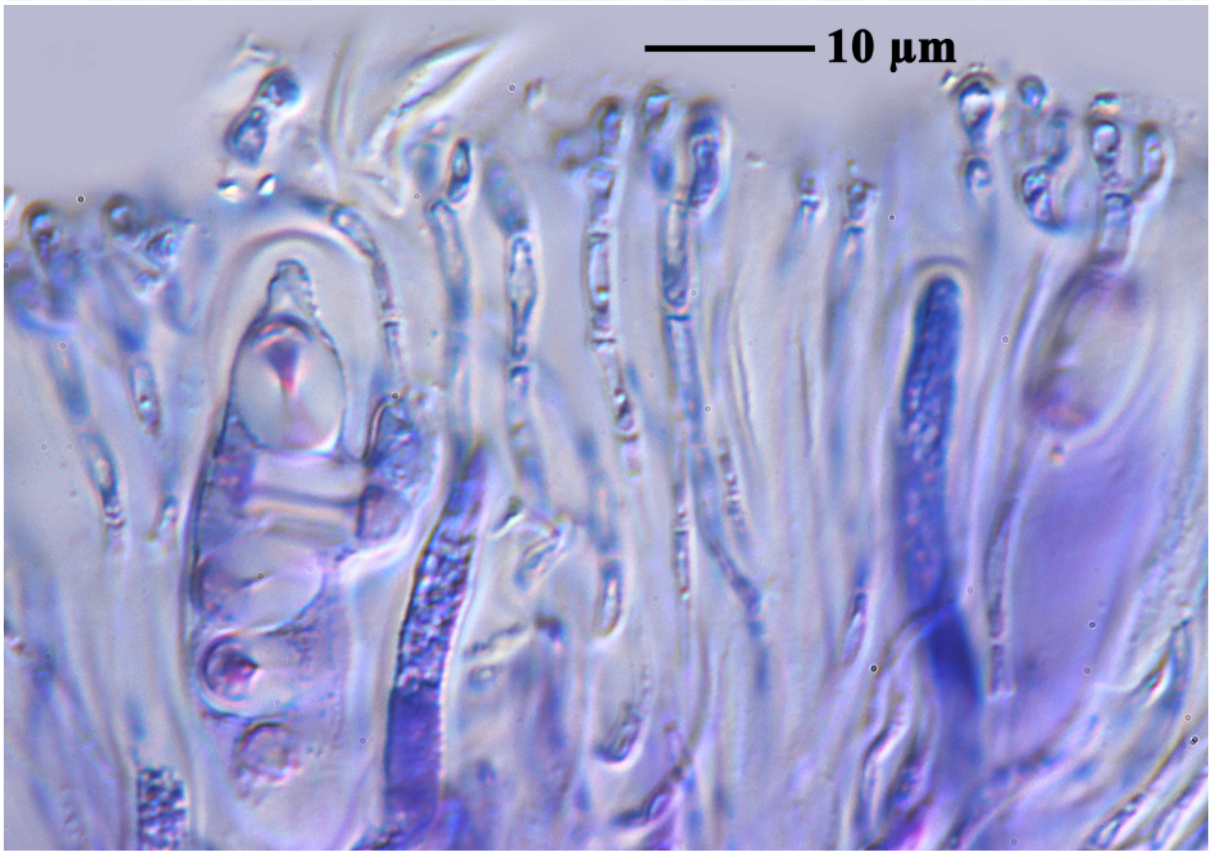






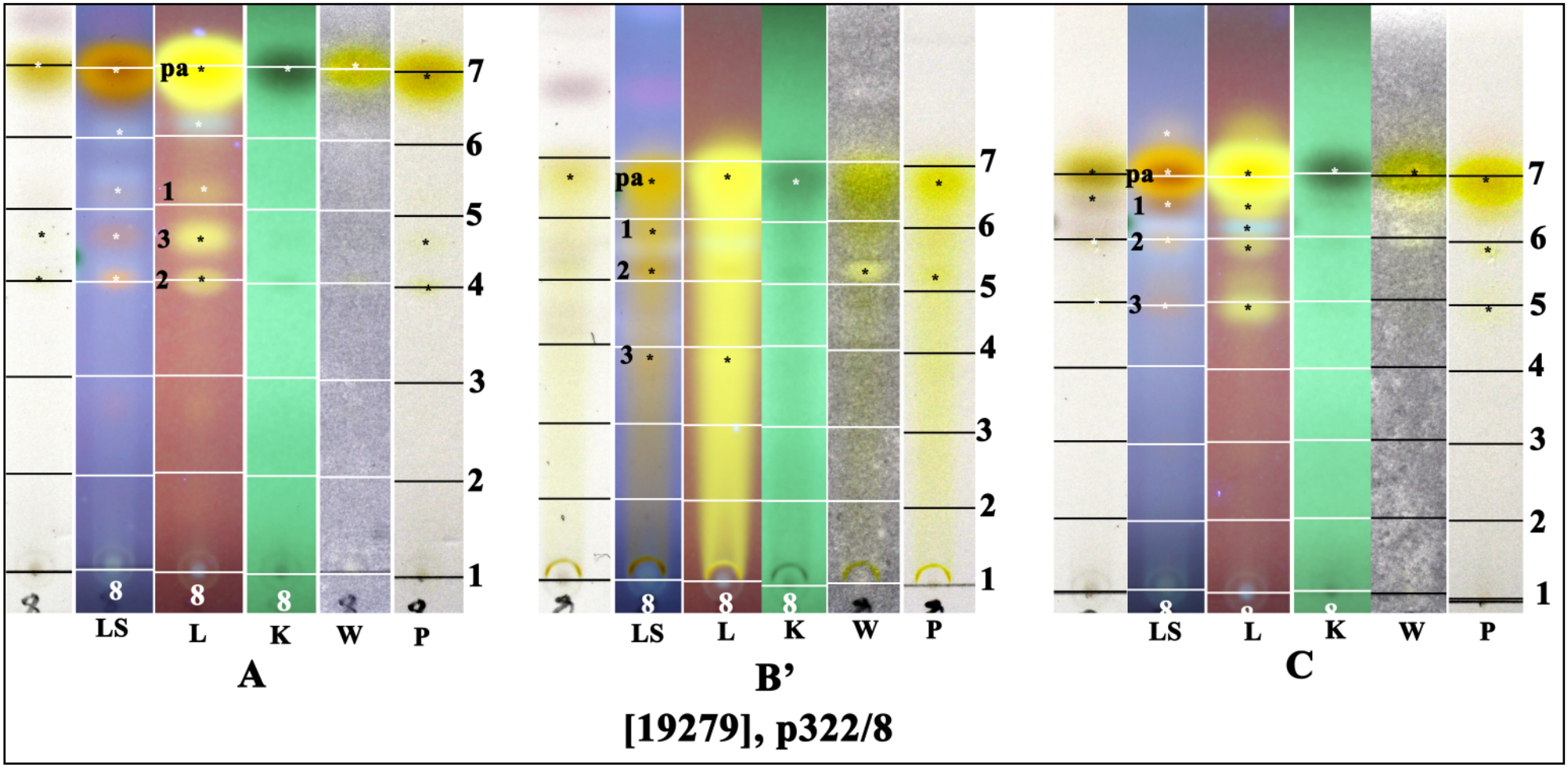
Teloschistes chrysophthalmus







Teloschistes chrysophthalmus

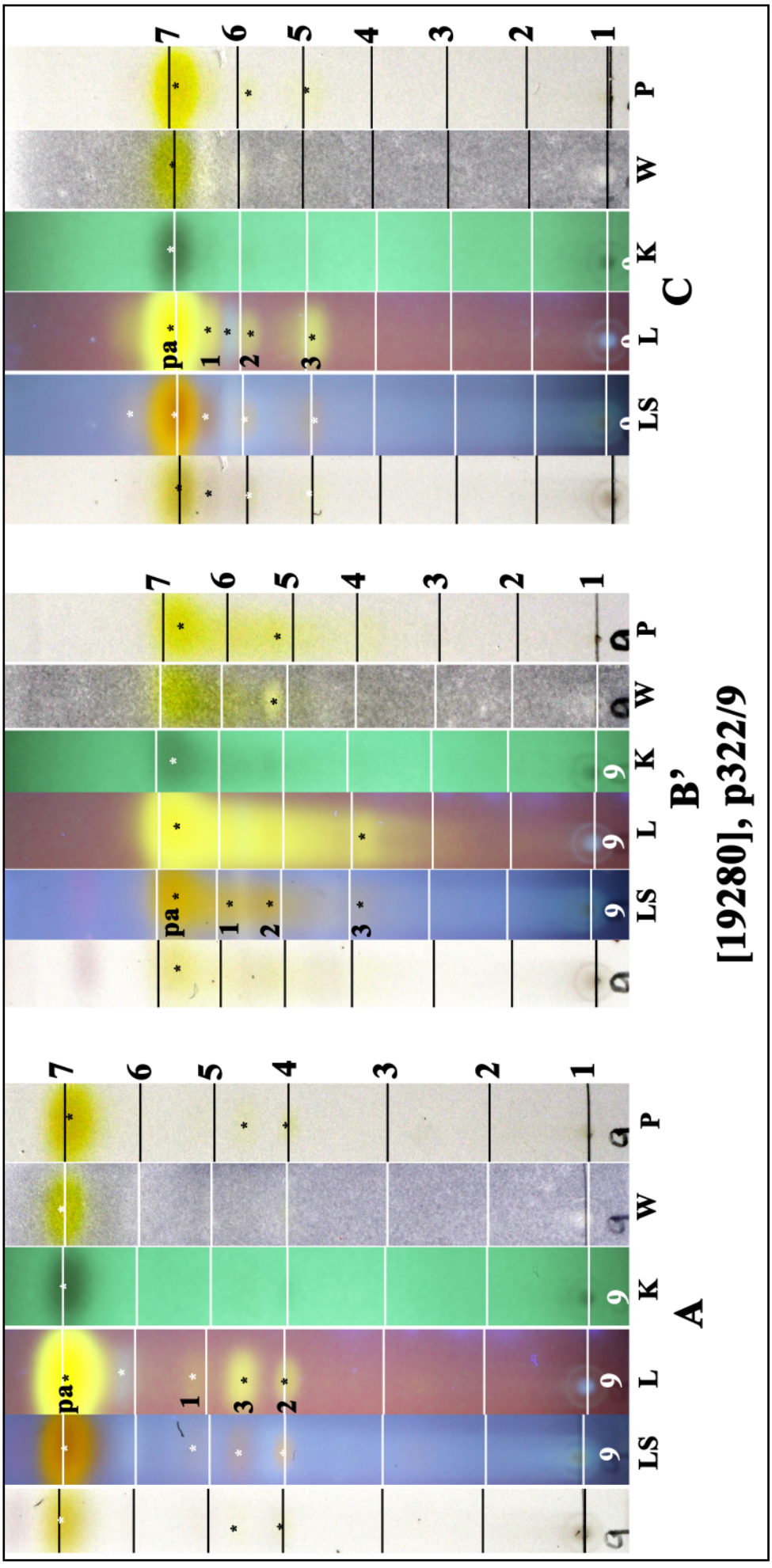


pa: parietin, 1: fallacinal, 2: parietinic acid, 3: teloschistin

Teloschistes chrysophthalmus (L.) Th.Fr.

[19280], Australia, South Australia, Kangaroo Island, Playford Highway, 1 km west of Kingscote Airport, 35°43' S, 137°31' E, 15 m, growing on dead twigs in *Eucalyptus* and *Melaleuca* dominated scrub. Leg. J.A. Elix (19667) & L.H. Elix, 27.10.1985. Chemistry: parietin (major), teloschistin, fallacinal, parietinic acid by HPLC, anal. J.A. Jenikins. LICHENES AUSTRALASICI EXSICCATI NO. 123.





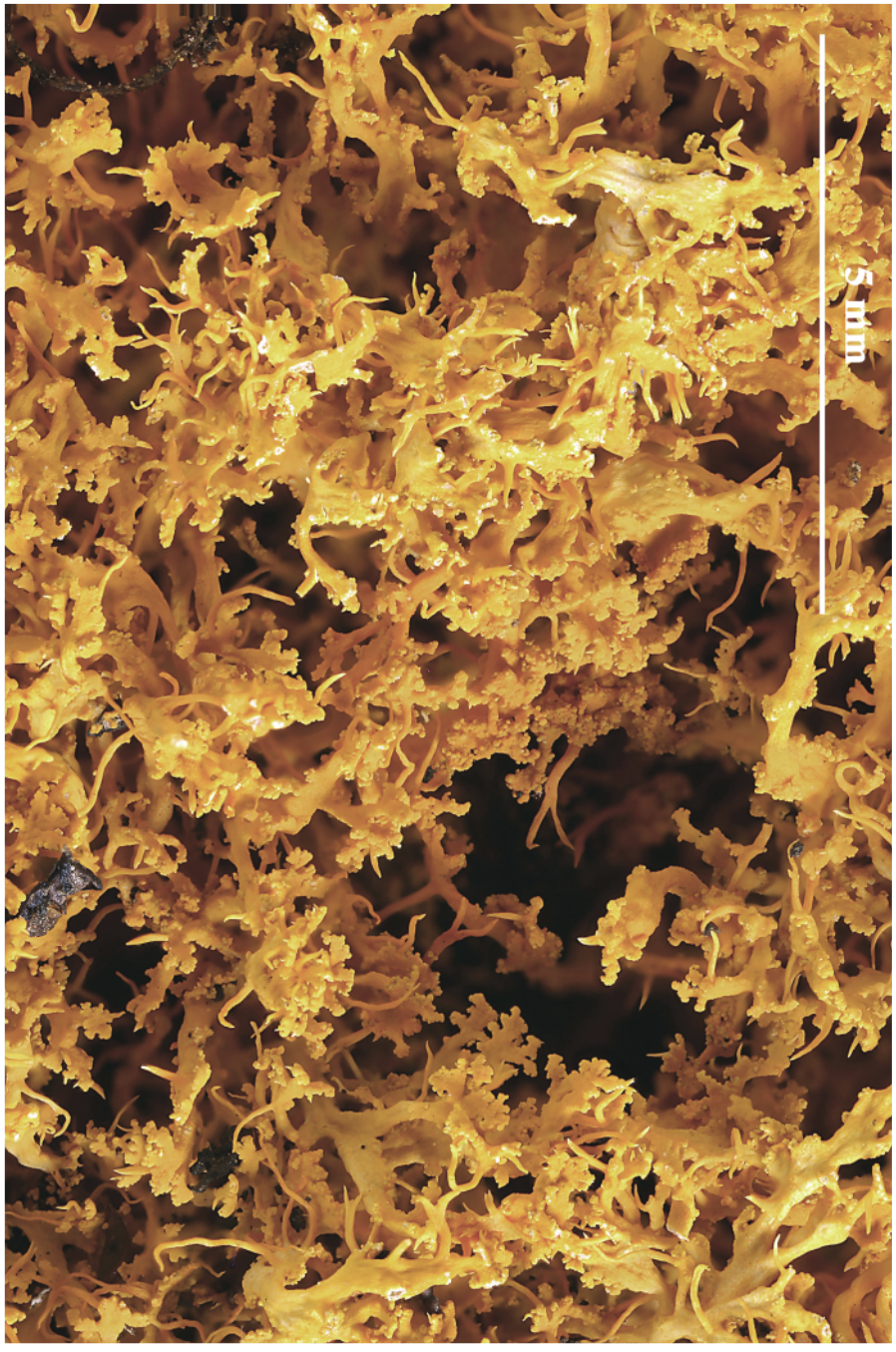
pa: parietin, 1: fallacinal, 2: parietinic acid, 3: teloschistin

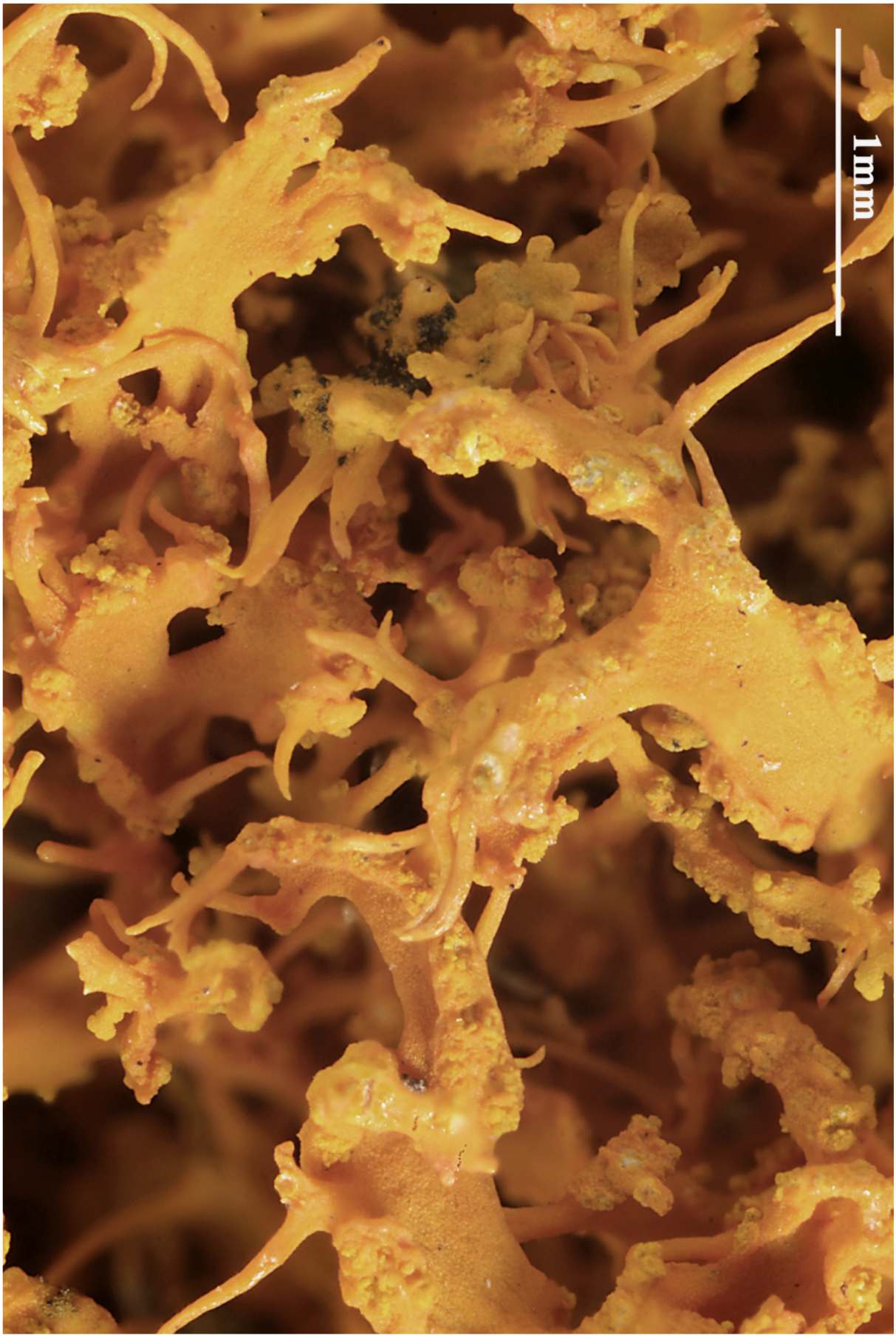
Teloschistes chrysophthalmus

Teloschistes fasciculatus Hillmann

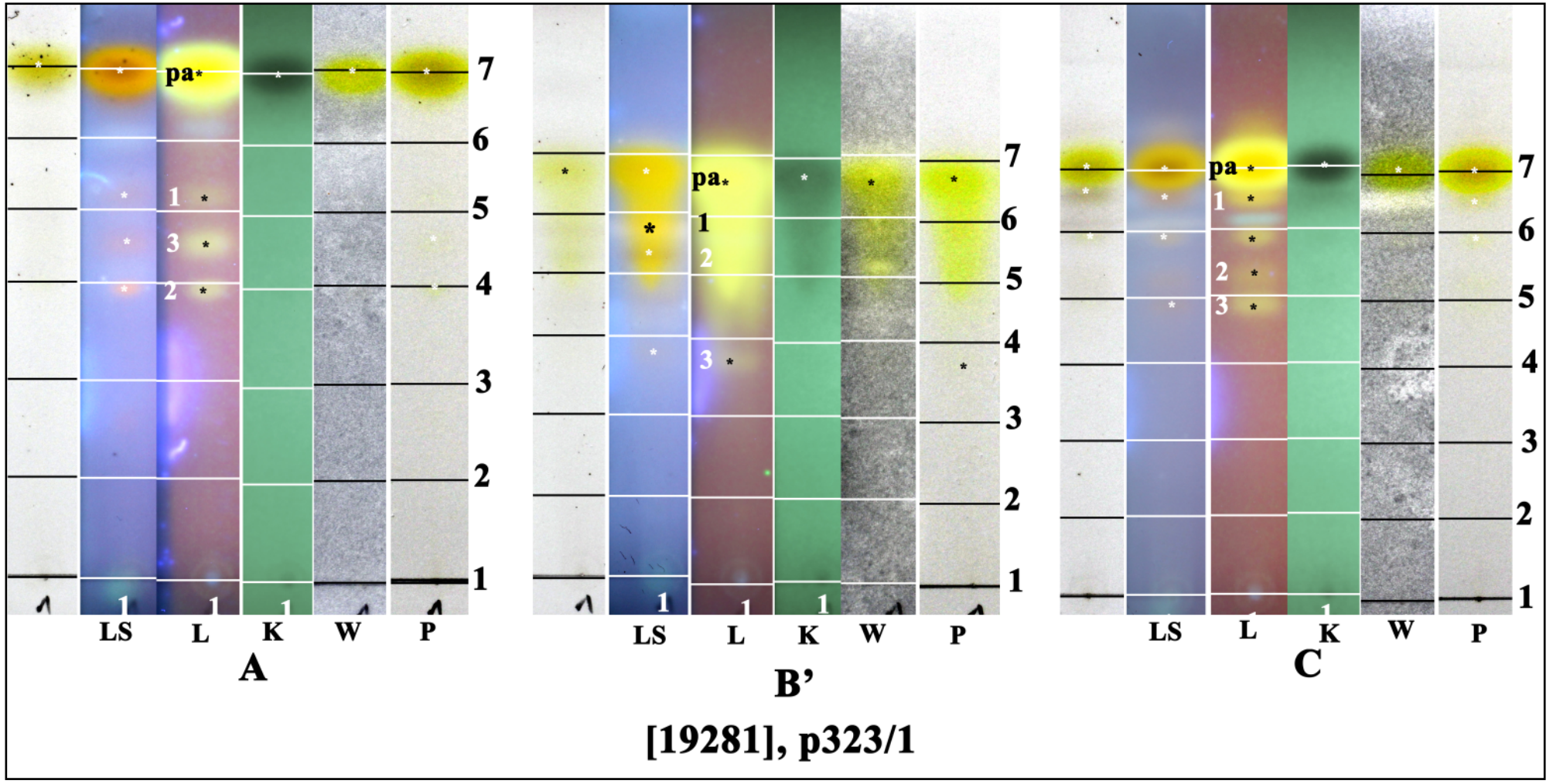
Thallus pulvinate clumps, 0.5-10 cm diam. Lobes 0,2-1 mm, flattened, laterally compressed to ±subterete to terete, with marginal and terminal cilia. Soralia marginal or submarginal, concave, with orange blastidiate soredia. Saxicolous. Chemistry: Thallus K+ purple; parietin (major) teloschistin, fallacinal, emodin, erythroglaucin.

[19281], 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 rock crevices in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg.J.A. Elix (40388) & H. Streimann 17.02.1994. Chemistry: parietin by TLC, anal. J.A. & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 297.





Teloschistes fasciculatus



pa: parietin, 1: fallacinal, 2: parietinic acid, 3: teloschistin

Teloschistes sieberianus (Laurer) Hillmann

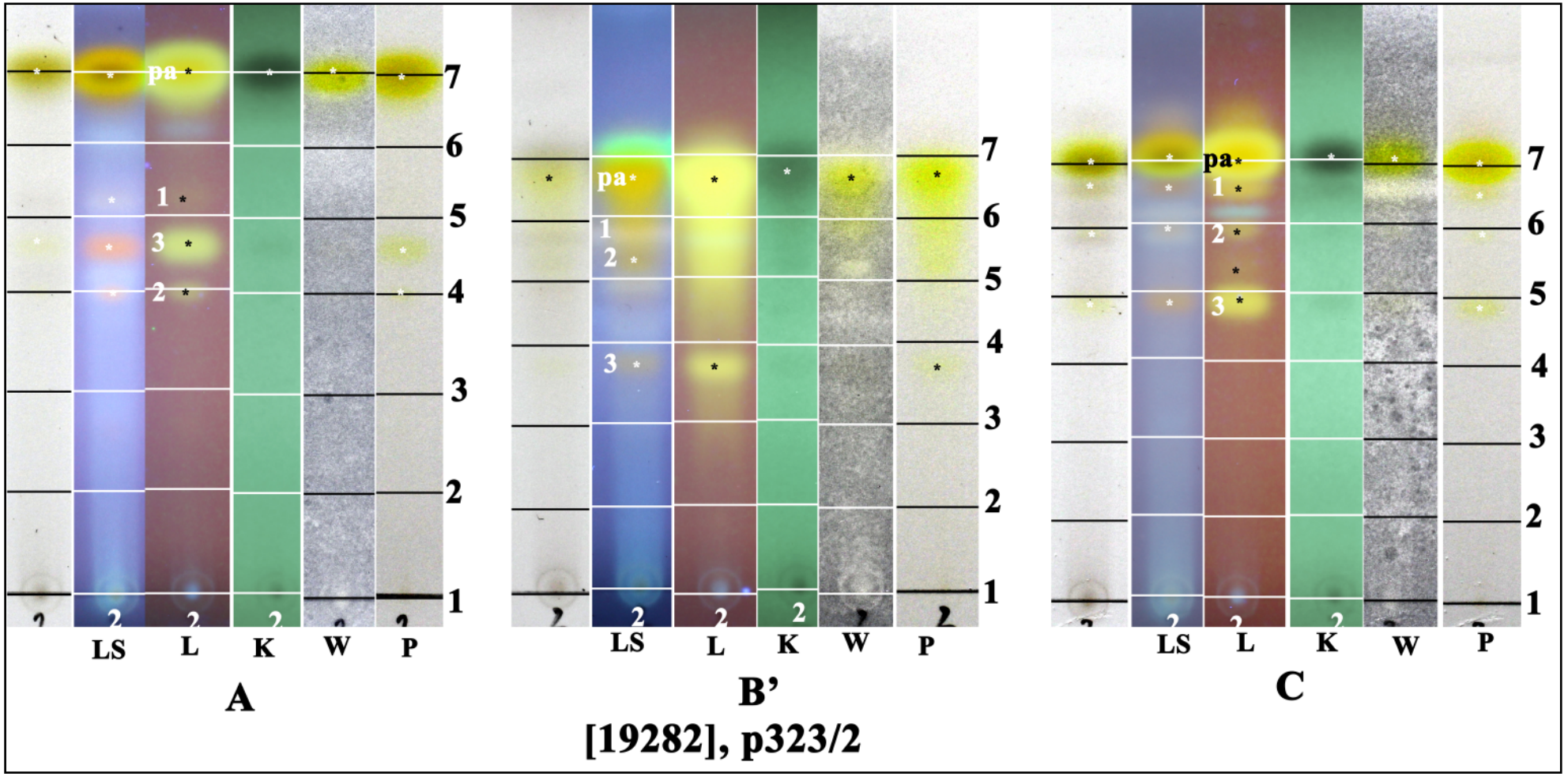
Thallus forming caespitose clumps, 1-5 cm diam. Lobes flattened, 1-5 mm long, 0.3-0.8 mm wide, sparingly branched, upper side yellow to orange red, lower side white, with marginal and some laminal cilia, lacking soredia. Apothecia 0.5-4 mm diam, marginal cilia absent or rare. Ascospores 12-16 x 7-9 µm. Chemistry: Thallus K+ purple; parietin (major), emodin, parietinic acid, fallacinal, erythroglaucin.

[19282], Australia, New South Wales, Weddin State Forest, 14 km south-west of Grenfell, 34°00' S, 148°01' E, 300 m, growing on *Callitris* in *Callitris* woodland. Leg. J.A. Elix (17672) & H. Streimann, 17.11.1984. LICHENES AUSTRALASICI EXSICCATI NO. 100.





Teloschistes sieberianus



pa: parietin, 1: fallacinal, 2: parietinic acid, 3: teloschistin

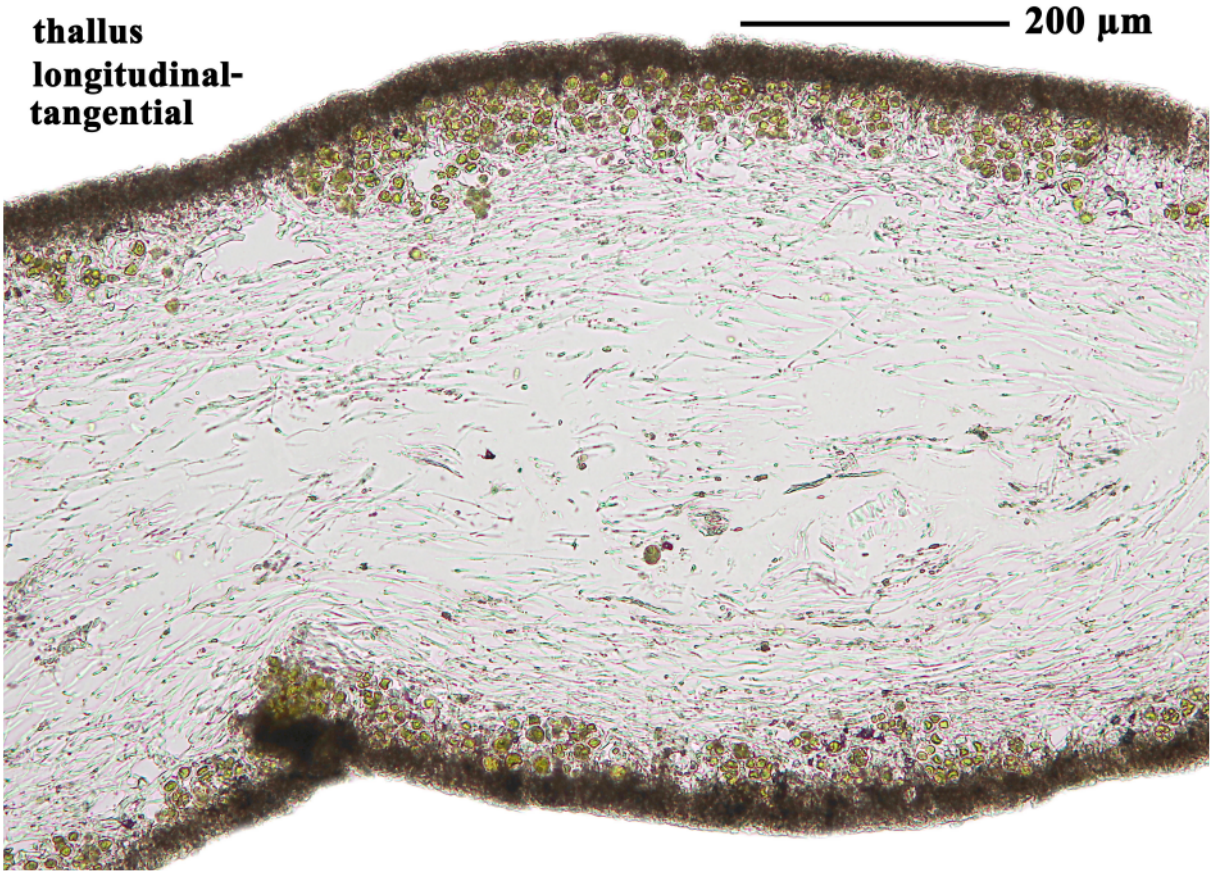
Thamnolia vermicularis (Sw.) Schaer.

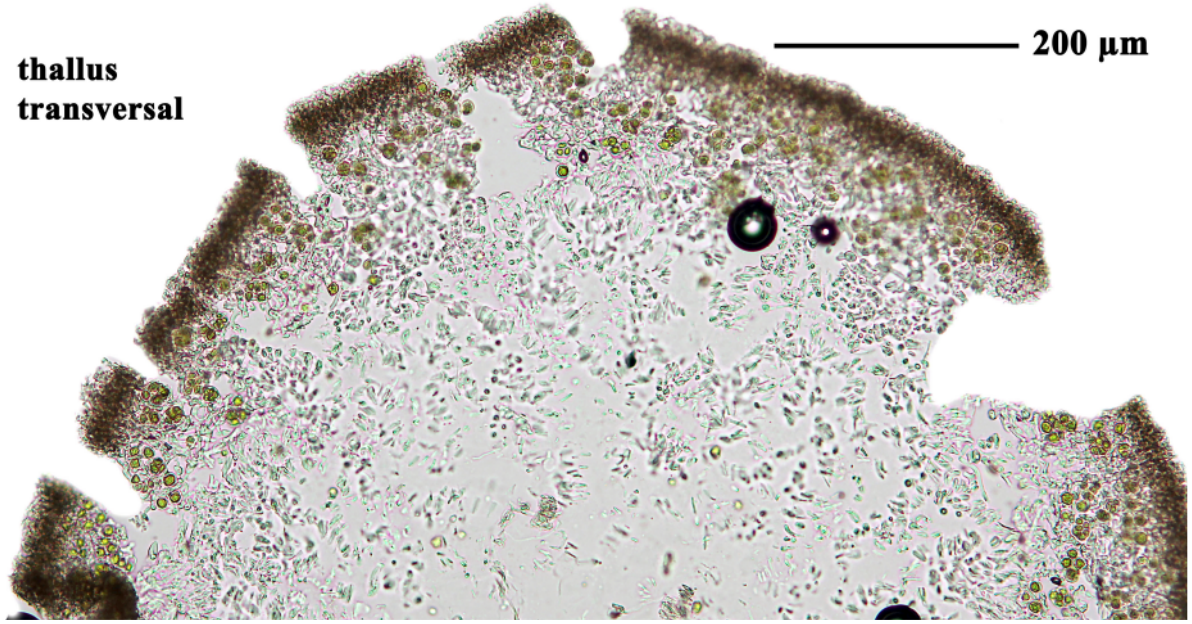
Thallus white, cylindrical hollow, apices pointed, simple or sparingly branched, decumbent or erect. Soredia and isidia absent. Chemistry: K+ yellow, P+ yellow, C-, KC-,UV±; thamnolic acid.

[19283], 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 (40391) & H. Streimann 17.02.1994. Chemistry: thamnolic acid, decarboxythamnolic acid, by TLC, anal. J.A. Elix & S.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 298.

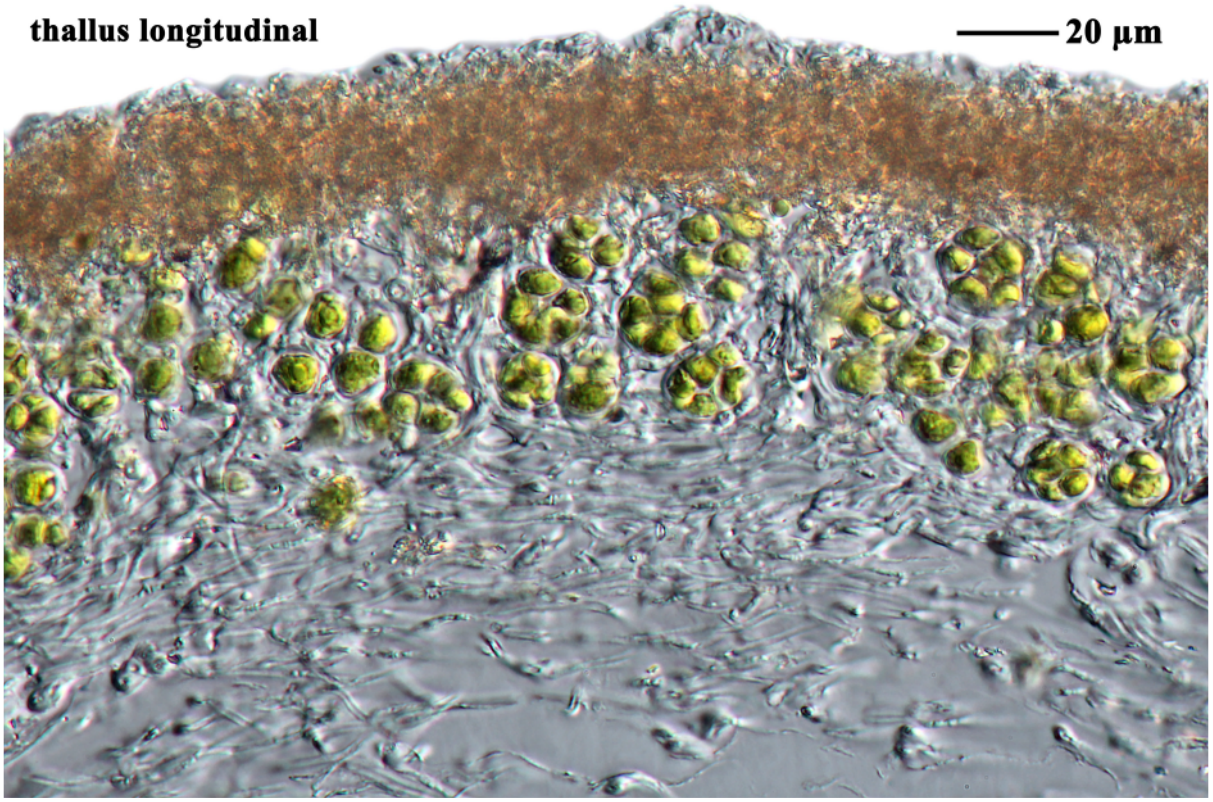


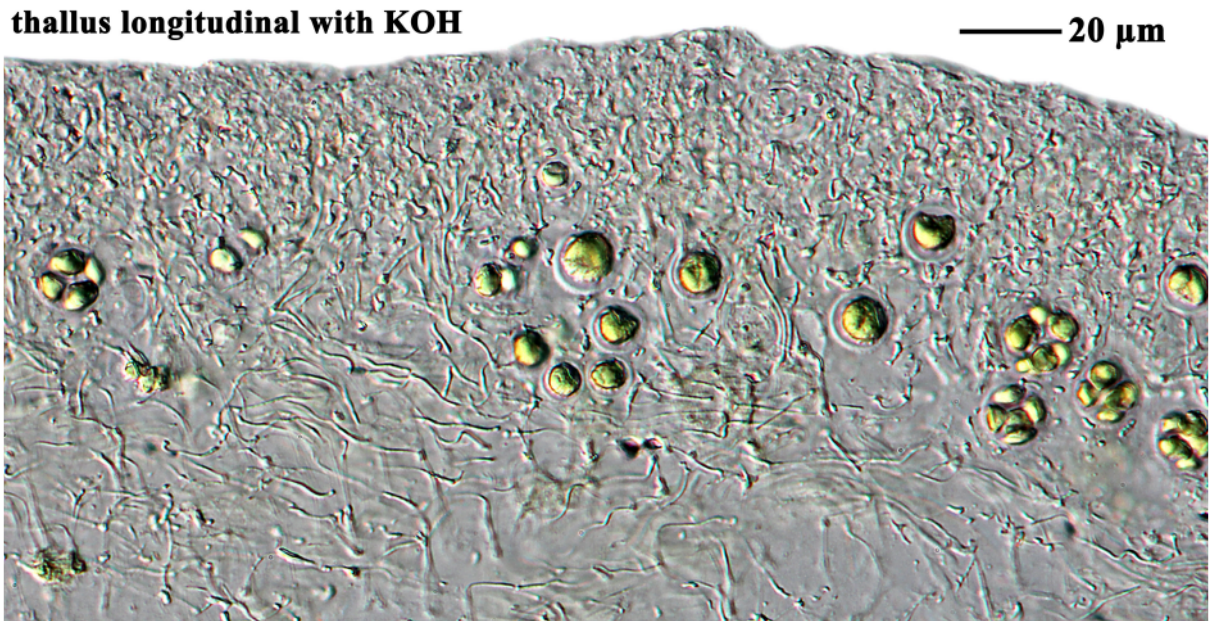


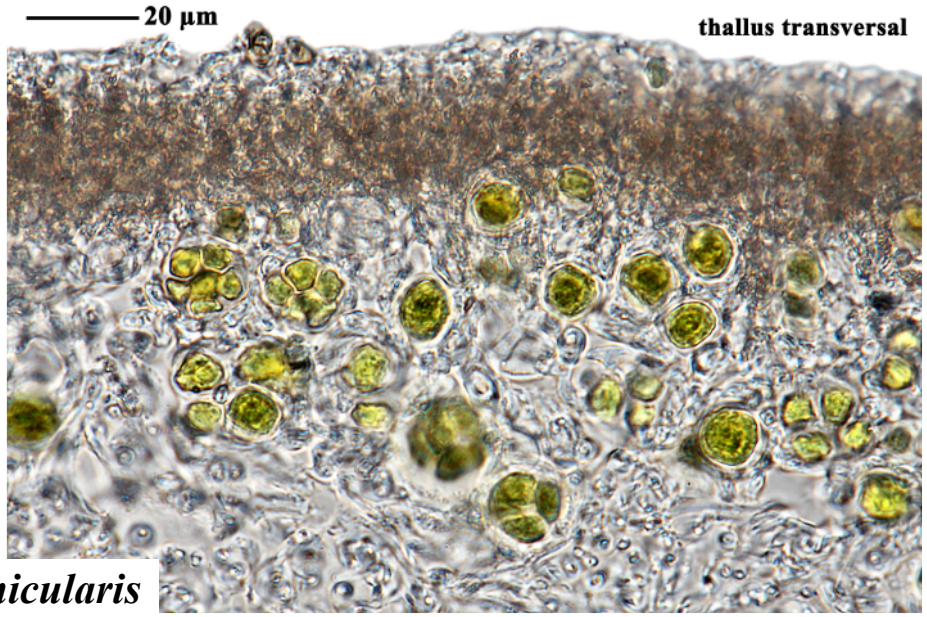




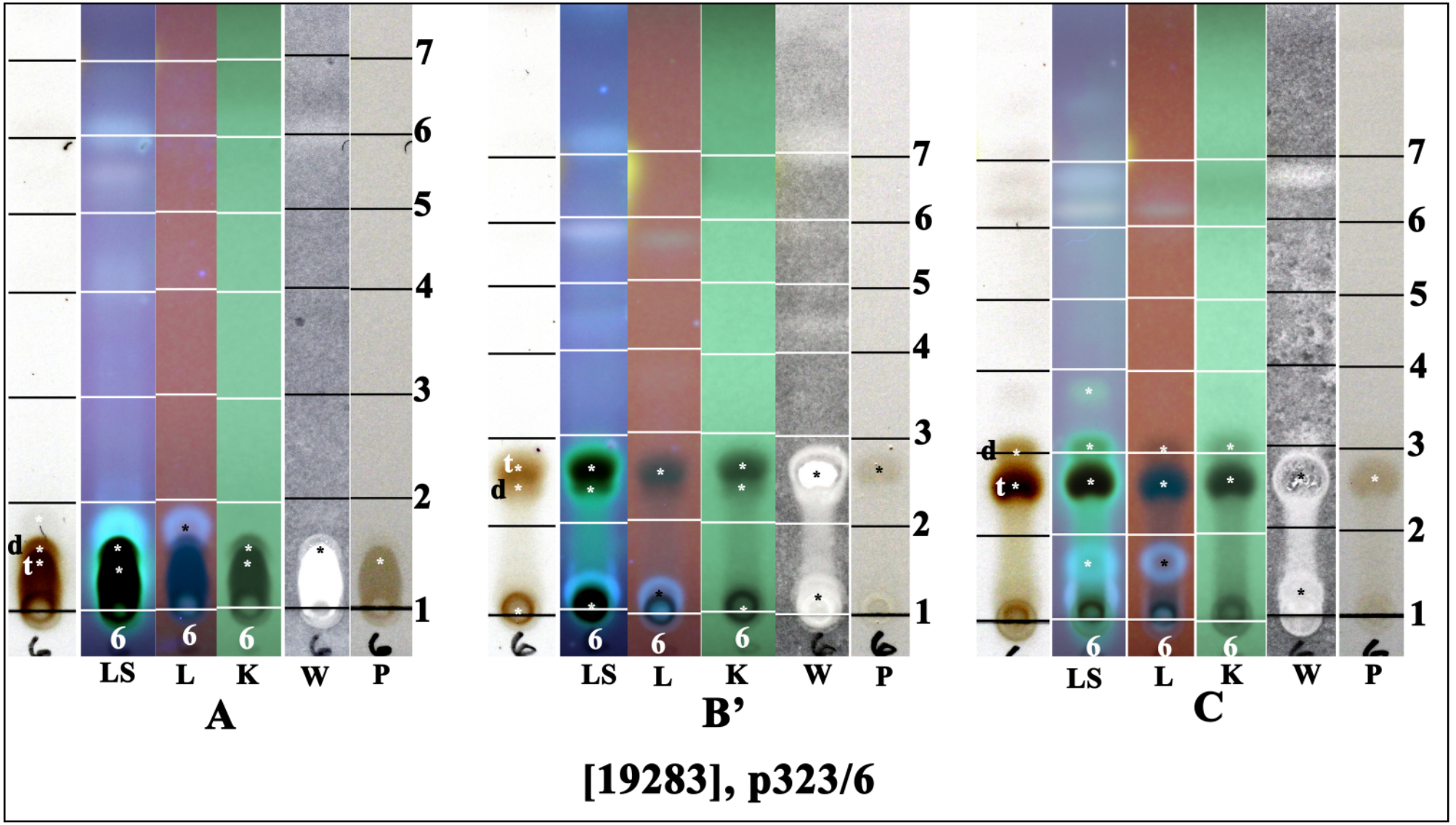
Thamnolia vermicularis







Thamnolia vermicularis

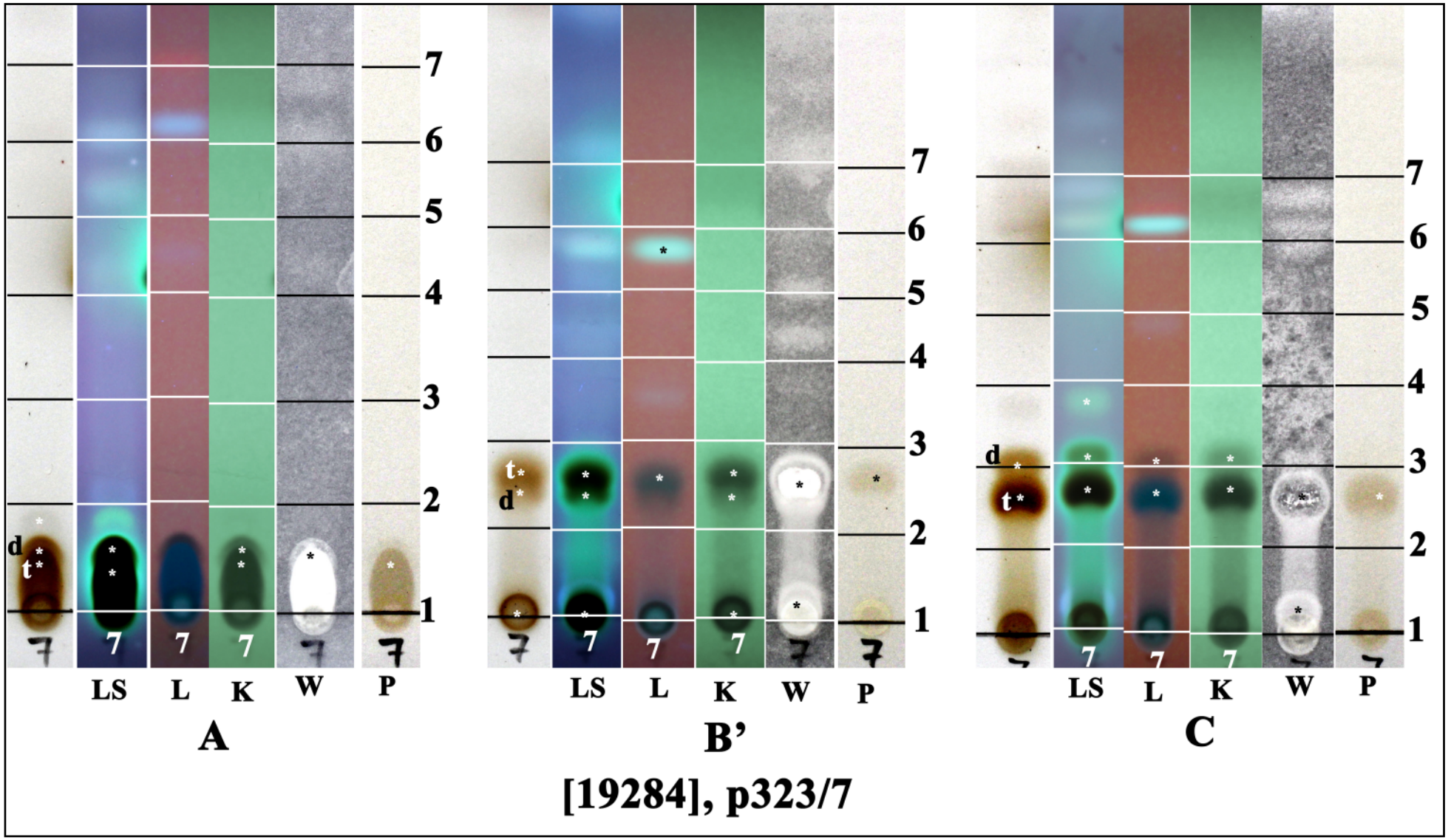


t: thamnolic acid, d: decarboxythamnolic acid

Thamnolia vermicularis (Sw.) Schaer.

[19284], Australia, Australian Capital Territory, Brindabella Range, summit of Mount Aggie, 43 km west-south-west of Canberra, 35°28' S, 148°46' E, 1485 m, growing on debris and soil in subalpine heath on exposed summit. Leg. J.A. Elix (22852), 22.11.1989. Chemistry: thamnolic acid (major), decarboxythamnolic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 224.





t: thamnolic acid, d: decarboxythamnolic acid

Thysanothecium scutellatum (Fr.) D.J.Galloway

Primary squamules forming a spreading areolate- , pale green to green-yellow crust. Pseudopodetia 1-2 mm wide at base expanding to 2-6 mm wide at apex, 0.1-10 mm high, becoming fissured, with grooved striate cortex and corticate granules, ±canaliculate or partly hollow. Apothecia terminal to lateral, simple becoming compound or proliferating; disc pale yellow to pinkish brown. Ascospores hyaline, simple, 8/ascus, straight or curved, 5-8 x 2-3 µm. Chemistry: usnic acid, divaricatic acid, nordivaricatic acid (trace), stenosporic acid (trace).

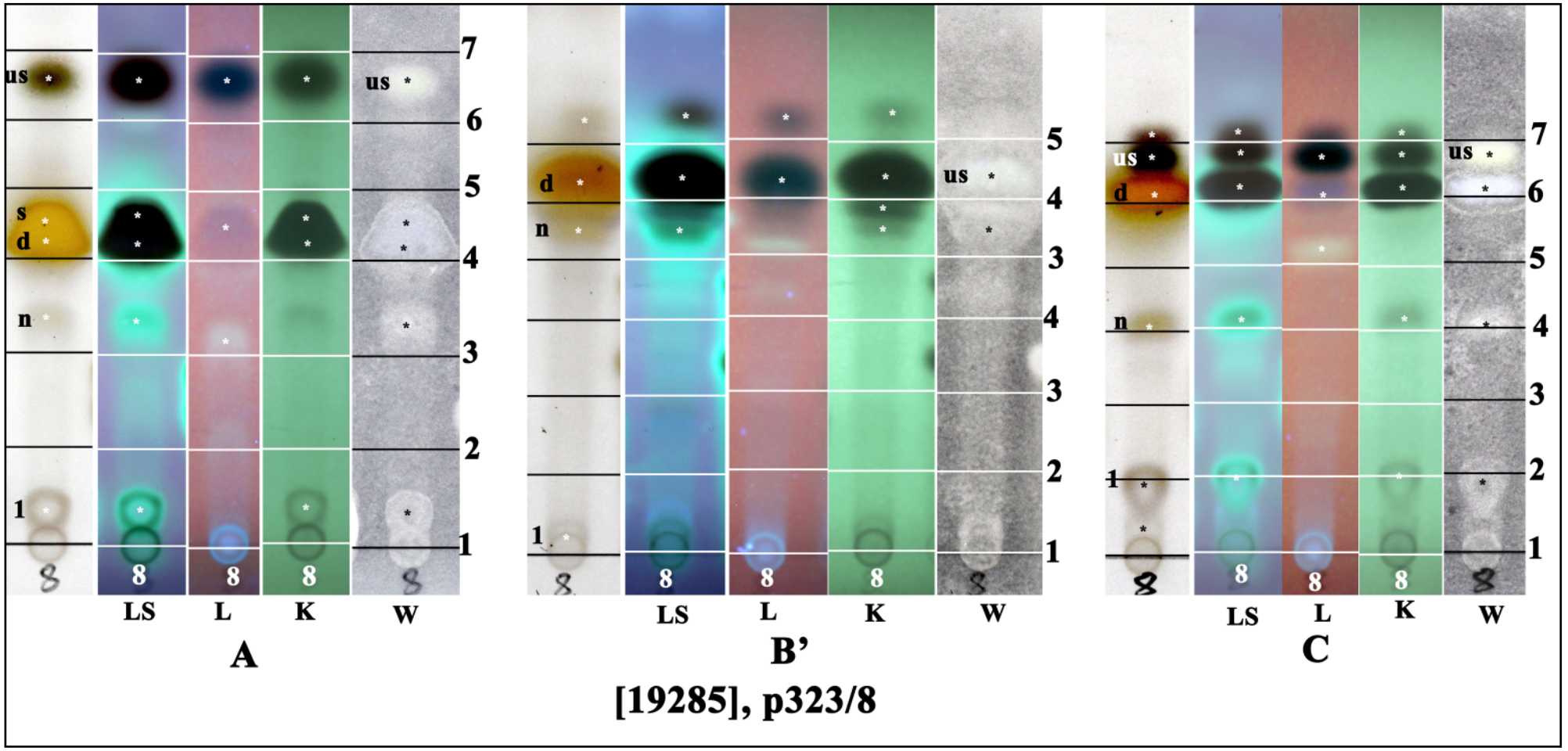
[19285], Australia, Queensland, Big Tableland, 26 km south of Cooktown, 15°43' S, 145°17' E, 610 m, growing on charred stump along the margin of stunted rainforest. Leg. J.A. Elix (17266) & H. Streimann, 04.07.1984. Chemistry: usnic acid, divaricatic acid (major), nordivaricatic acid (trace), stenosporic acid (trace) by TLC, HPLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 125.





Thysanothecium scutellatum

Thysanothecium scutellatum



us: usnic acid, d: divaricatic acid, n: nordivaricatic acid, s: stenosporic acid, 1: hydrolysis product, an artifact

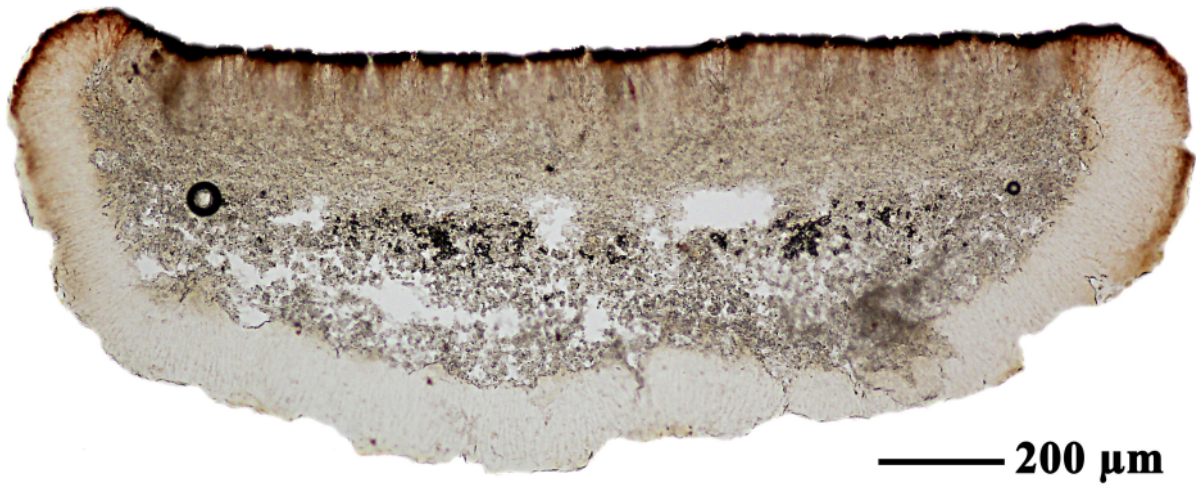
Toninia bullata (Meyen & Flotow) Zahlbr.

Thallus brown to reddish brown, squamulose. Squamules bullate to columnar, simple or branched, epruinose, with punctiform pseudocyphellae. Apothecia up to 4 mm diam., black, epruinose. Hypothecium colourless, epithecium dark brown. Ascospores acicular, 3-7 septate, 37-56 x 3-4 µm. Chemistry: terpenoids or no lichen substances.

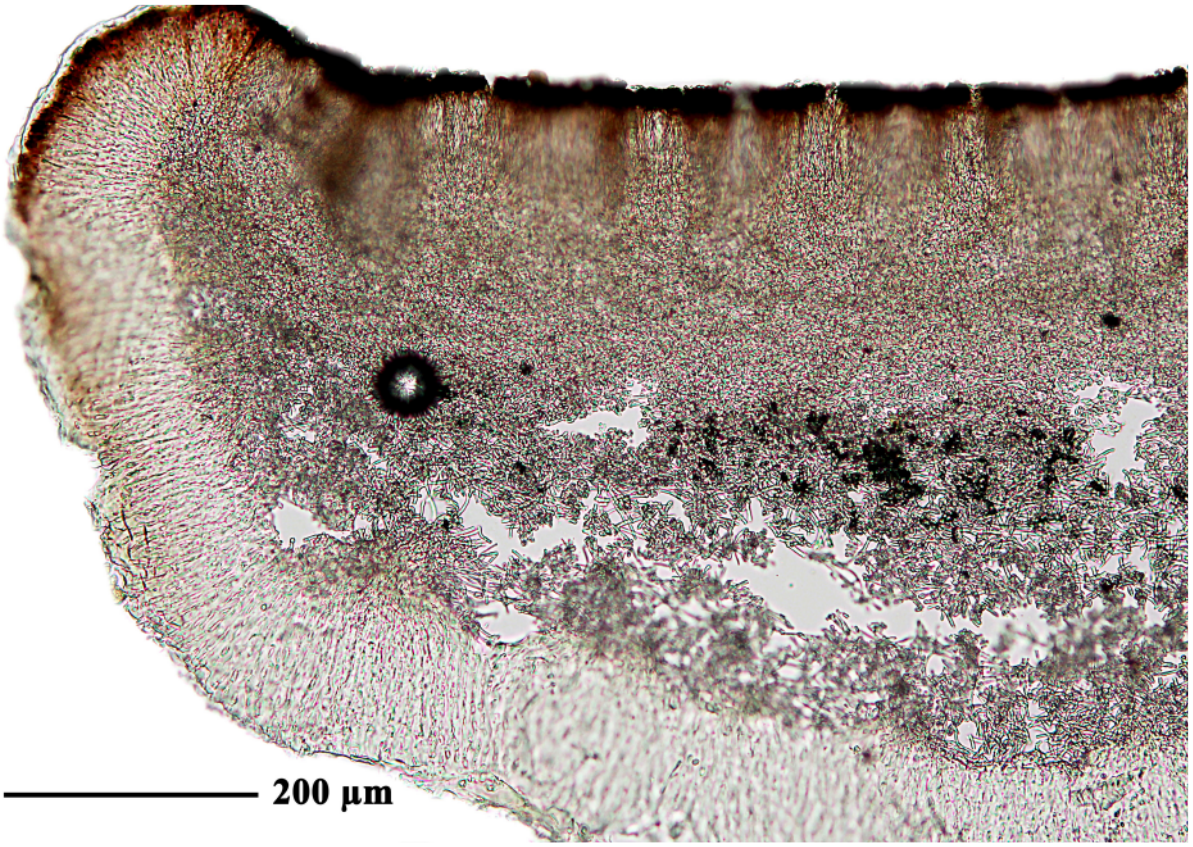
[19286], Australia, New South Wales, Ridge between Mt Kelly and Mt Scabby, 31 km east-north-east of Adaminaby, 35°43' S, 148°52' E, 1680 m, growing on semi-shaded rock face, with stunted snow gums (*Eucalyptus pauciflora*) and shrubs. Leg. H. Streimann (40168), 22.01.1992. Chemistry: no lichen substances detected by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 275.

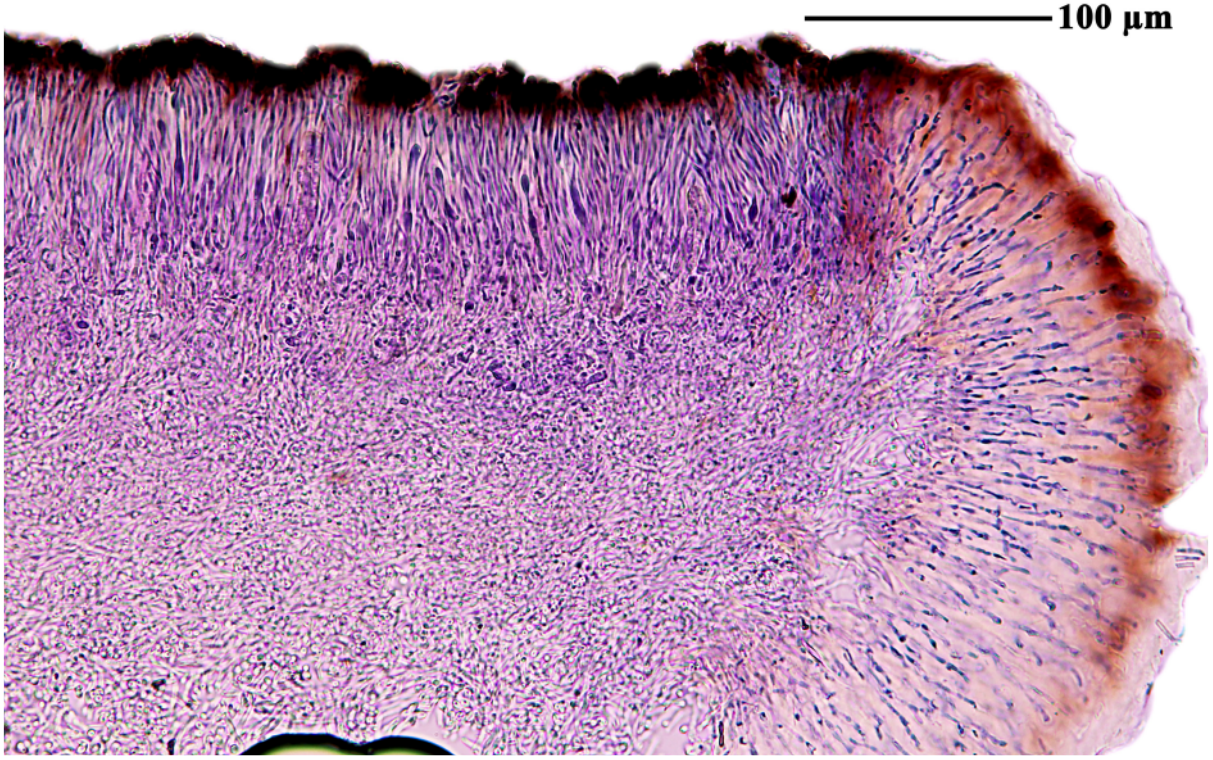




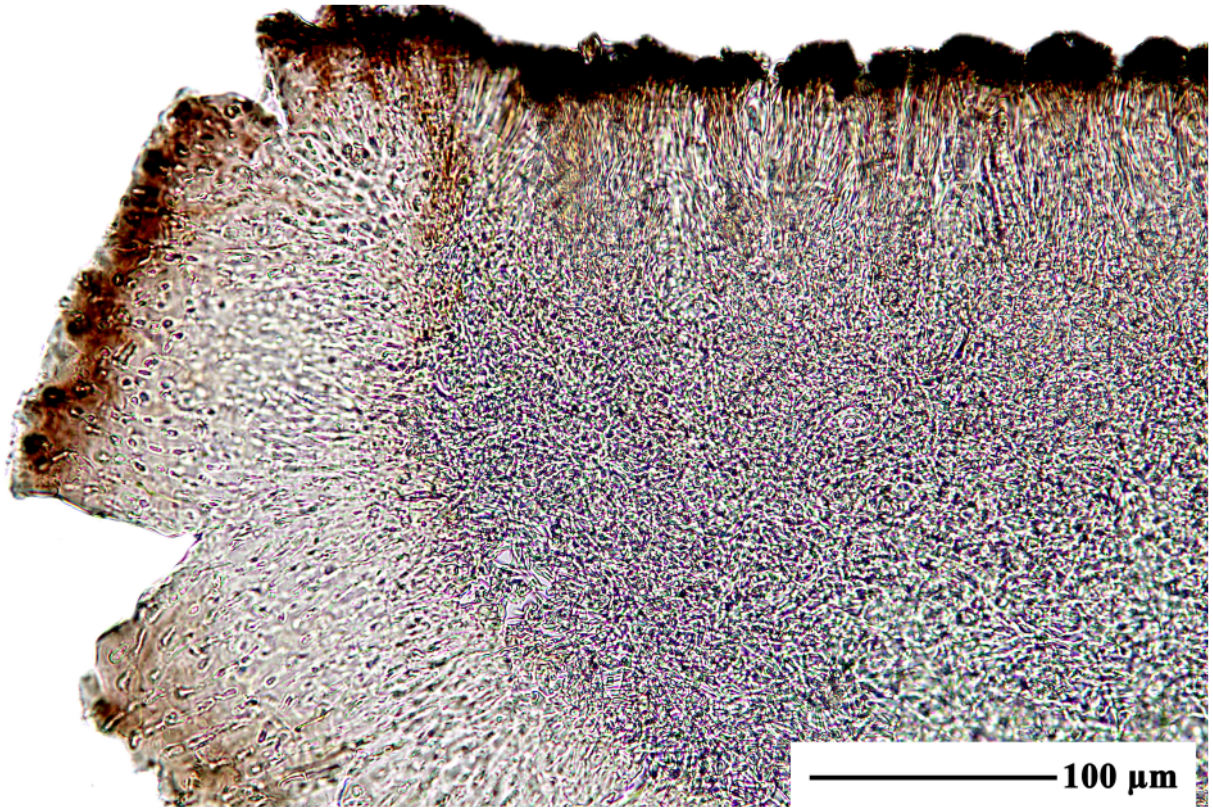


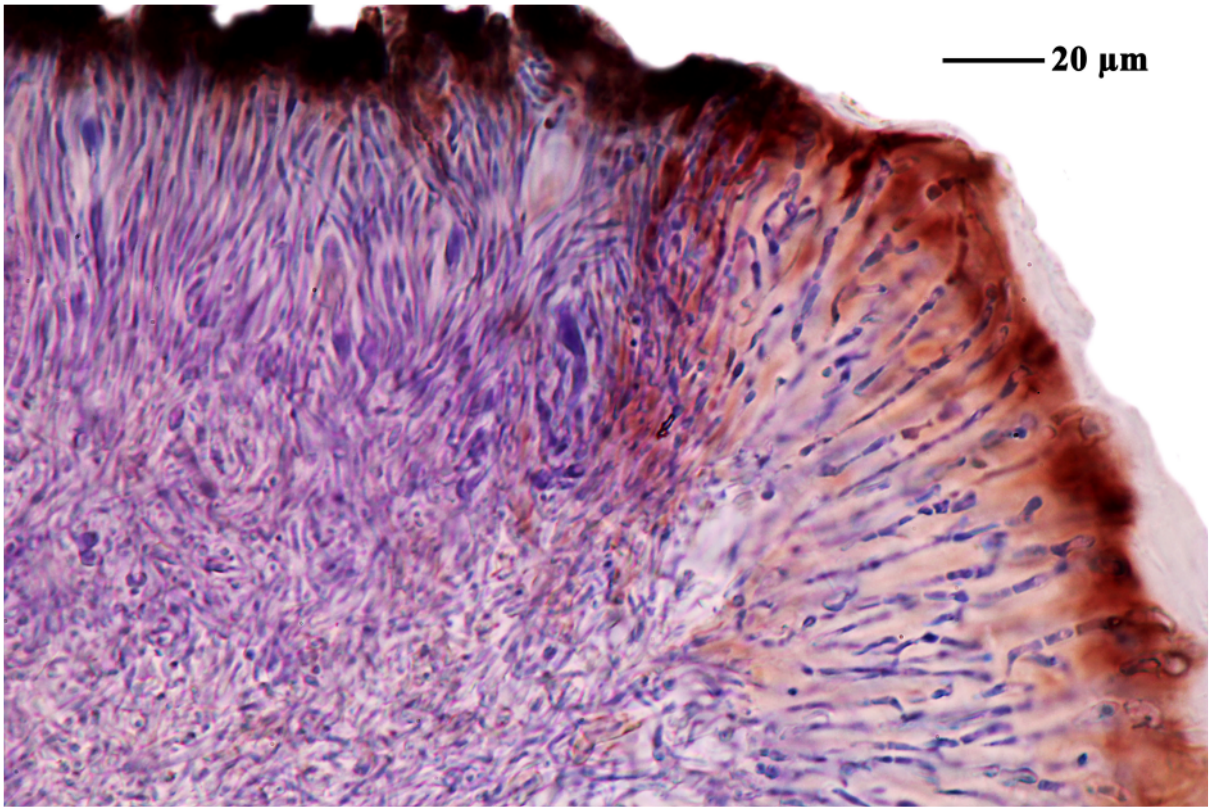
Toninia bullata



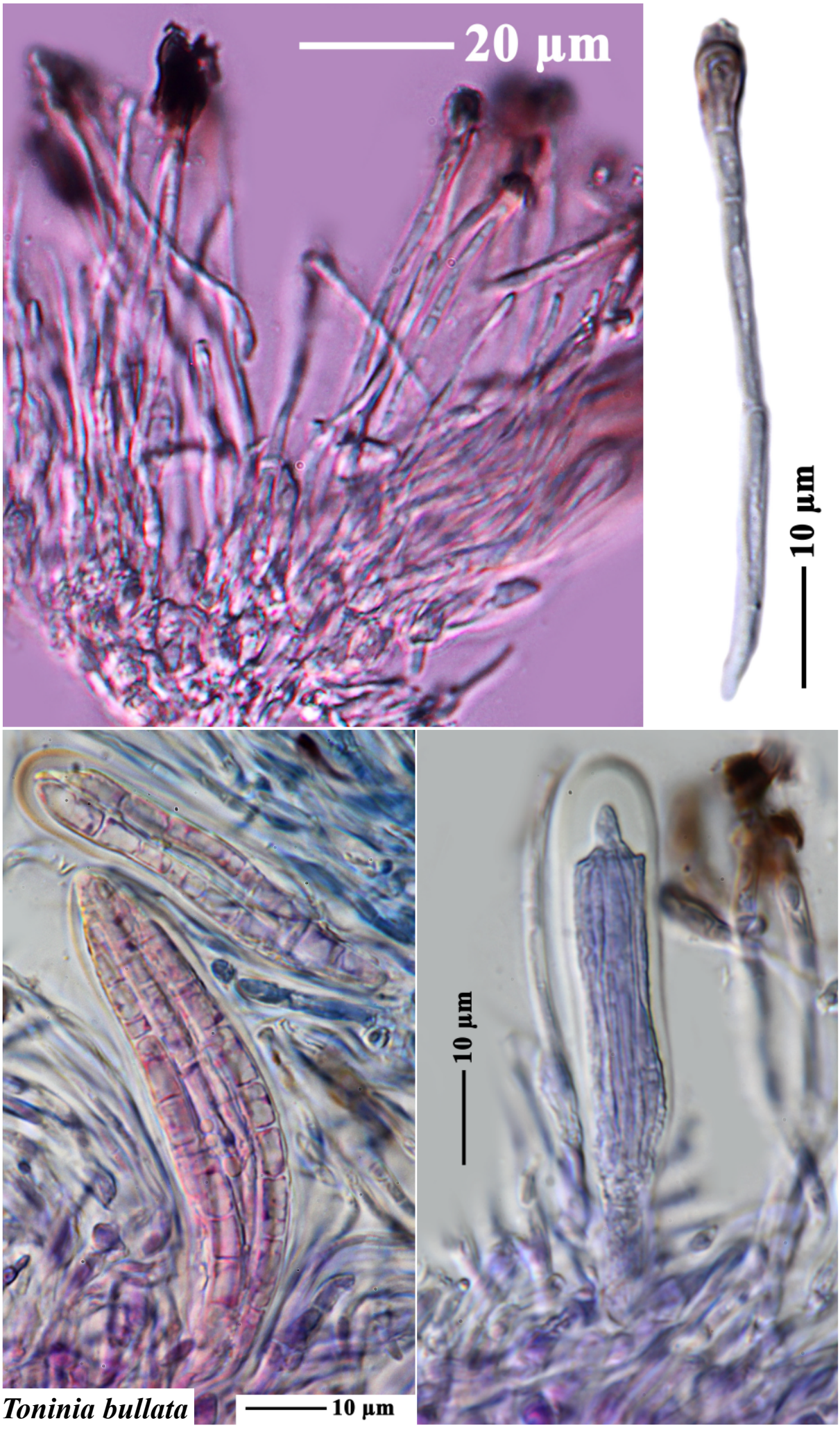


Toninia bullata

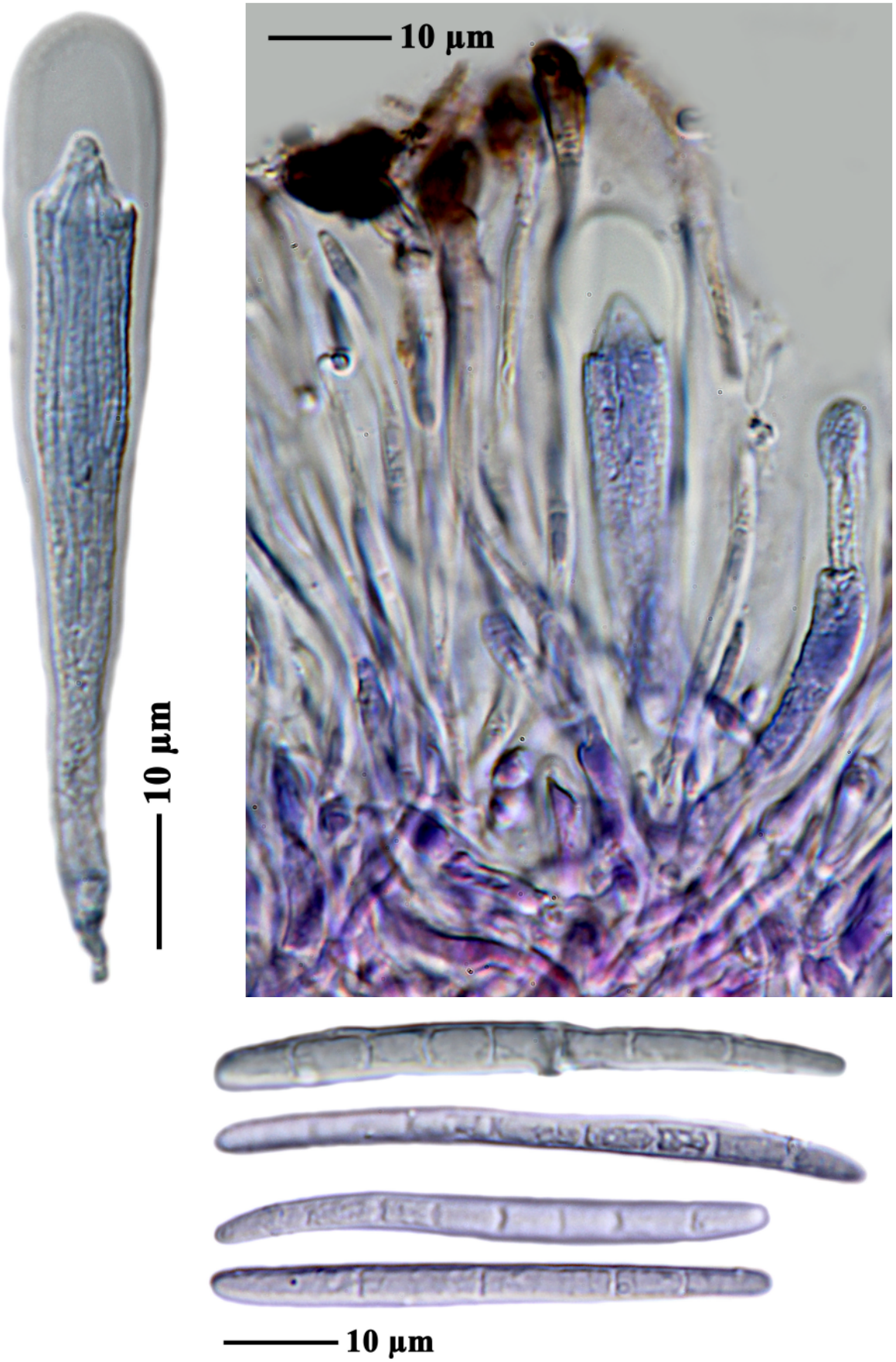




Toninia bullata



Toninia bullata



Toninia bullata

Toninia bullata (Meyen & Flotow) Zahlbr.

[19287], 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 in rock depressions in exposed alpine grasslands with basalt outcrops and southerly aspect. Leg. J.A. Elix (40393) & H. Streimann 17.02.1994. Chemistry: no lichen substances detected by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 299.





Umbilicaria hyperborea (Ach.) Hoffm.

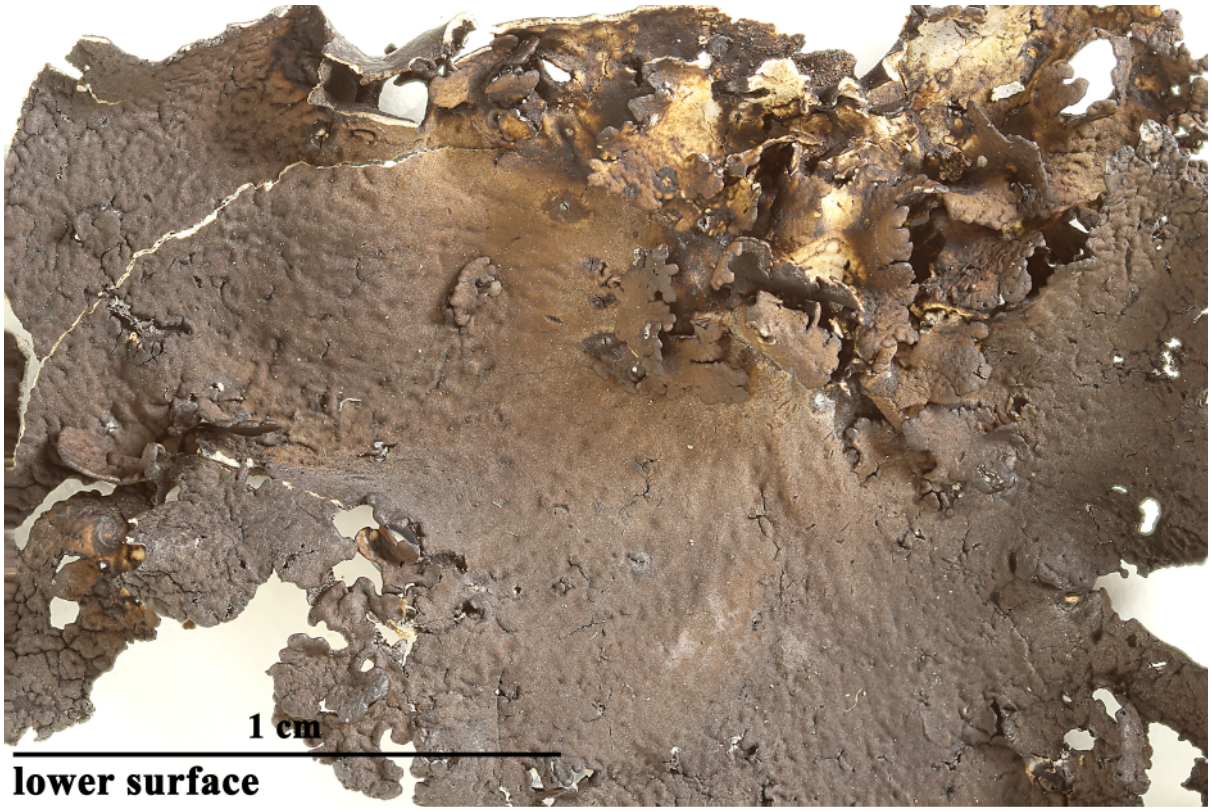
Thallus single-lobed, 2-4 cm diam.Upper surface grey to dark-brown, wrinkled or warted-granular, isidia and soredia absent. Lower surface brown-black, thalloconidia absent. Apothecia 1-2 mm diam., sessile, gyrose. Ascospores simple, hyaline, 7-20 x 3-8 µm. Chemistry: medulla C+ red, K-, KC+ red, P-; gyrophoric acid.

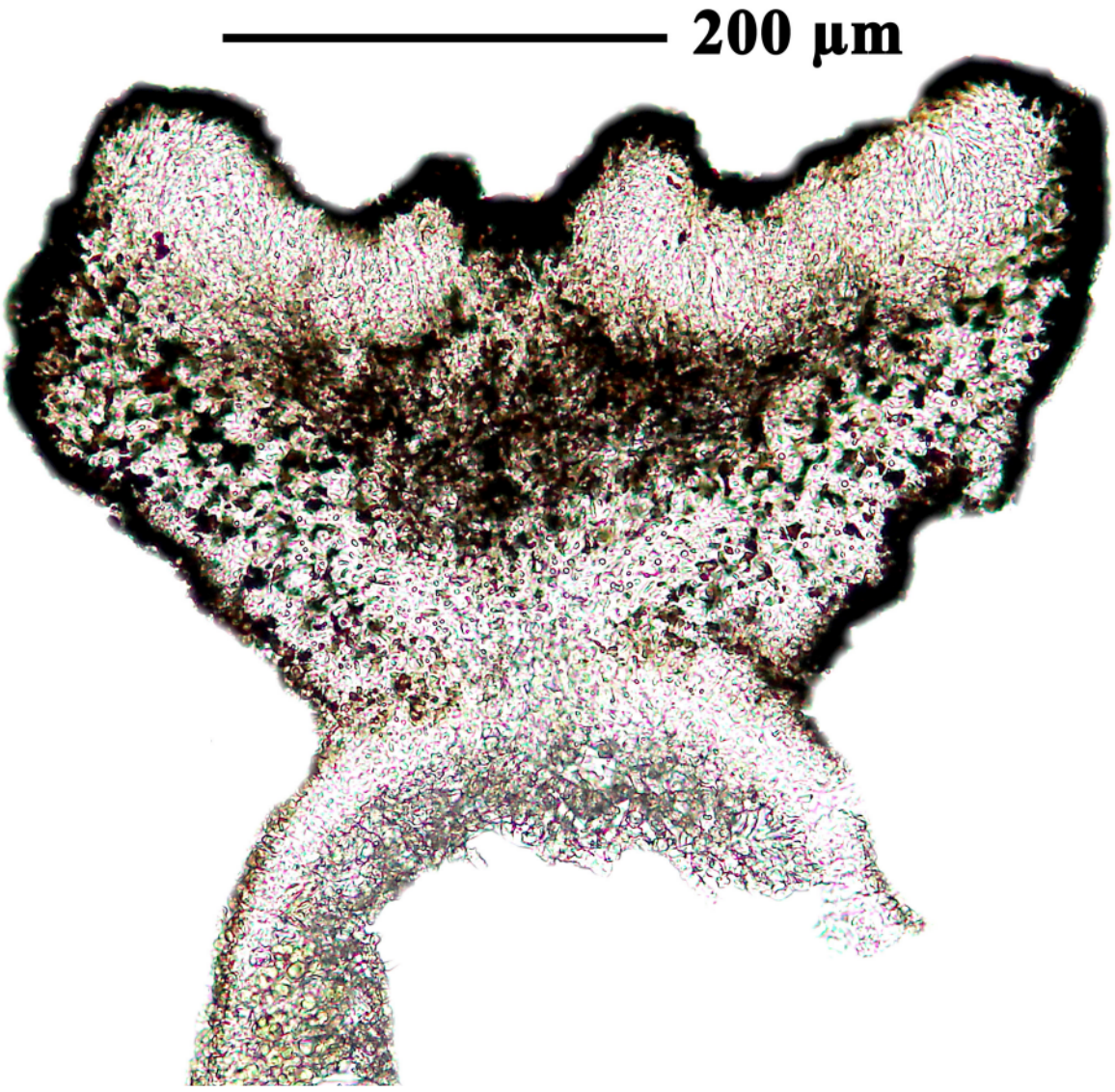
[19288], Australia, Victoria, Mt. McKay, Alpine National Park, Bogong High Plains, 16 km south-east of Mt. Beauty, 36°52' S, 147°14' E, 1840 m, growing on rocks in exposed alpine grasslands with granitic outcrops. Leg. J.A. Elix (40558) & H. Streimann 18.02.1994. Chemistry: gyrophoric acid (major), umbilicaric acid (trace), lecanoric acid (trace) by HPLC, TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 300.



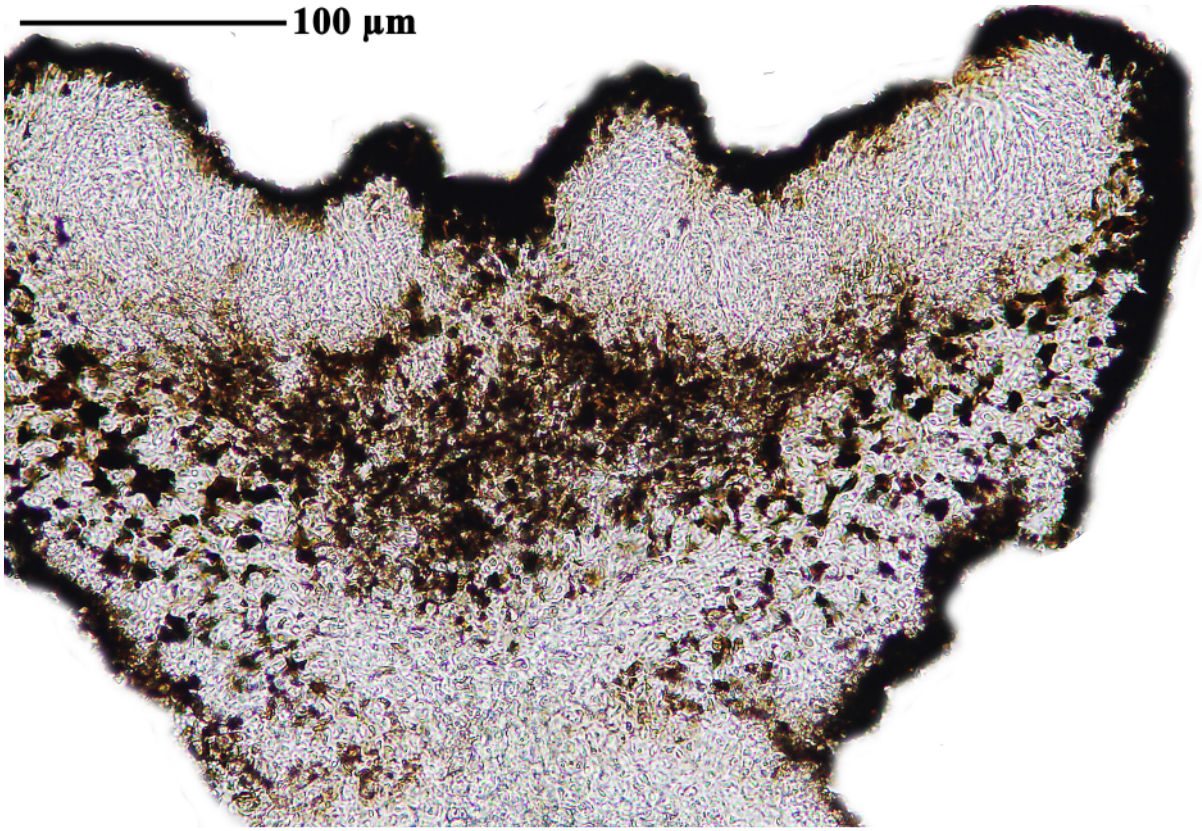


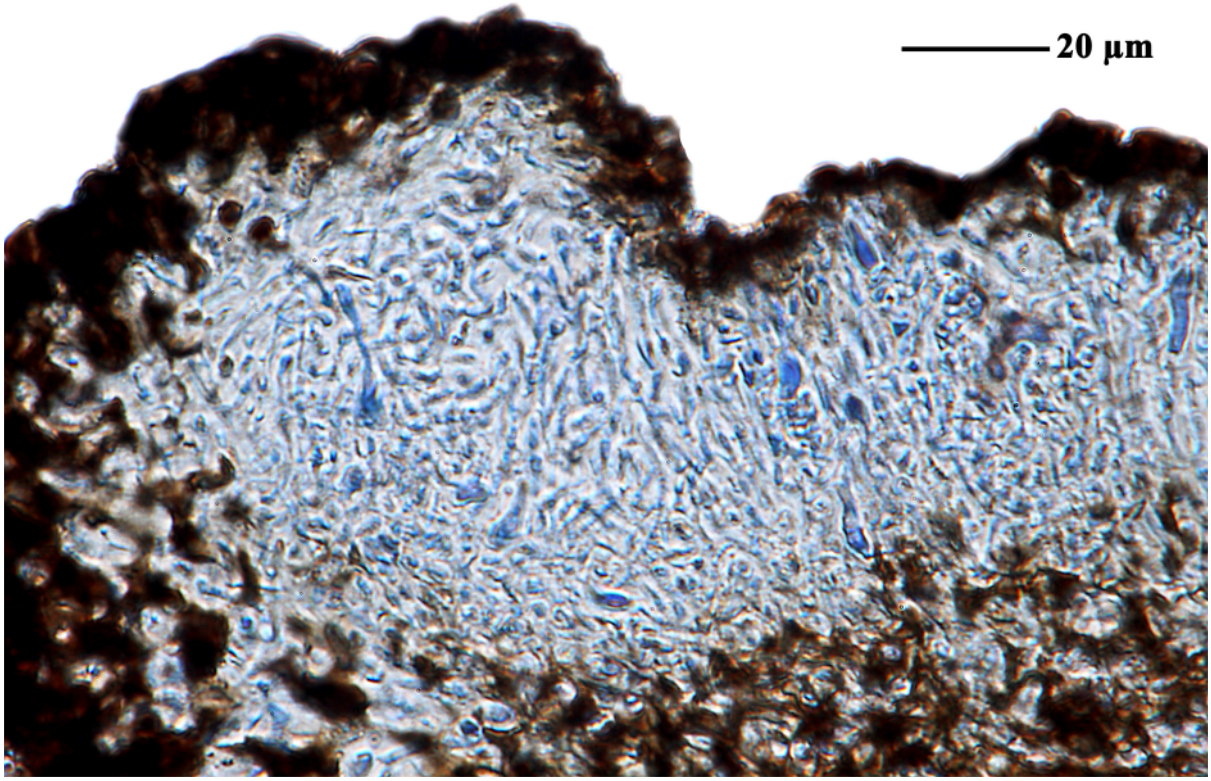
Umbilicaria hyperborea

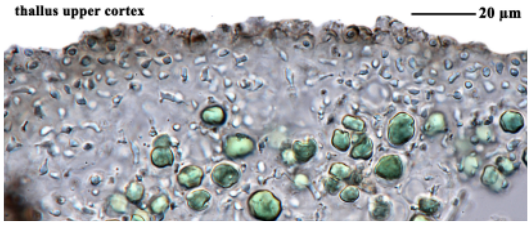


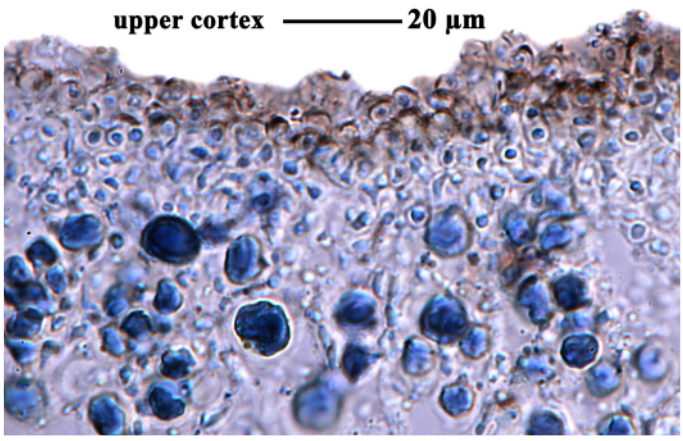


Umbilicaria hyperborea

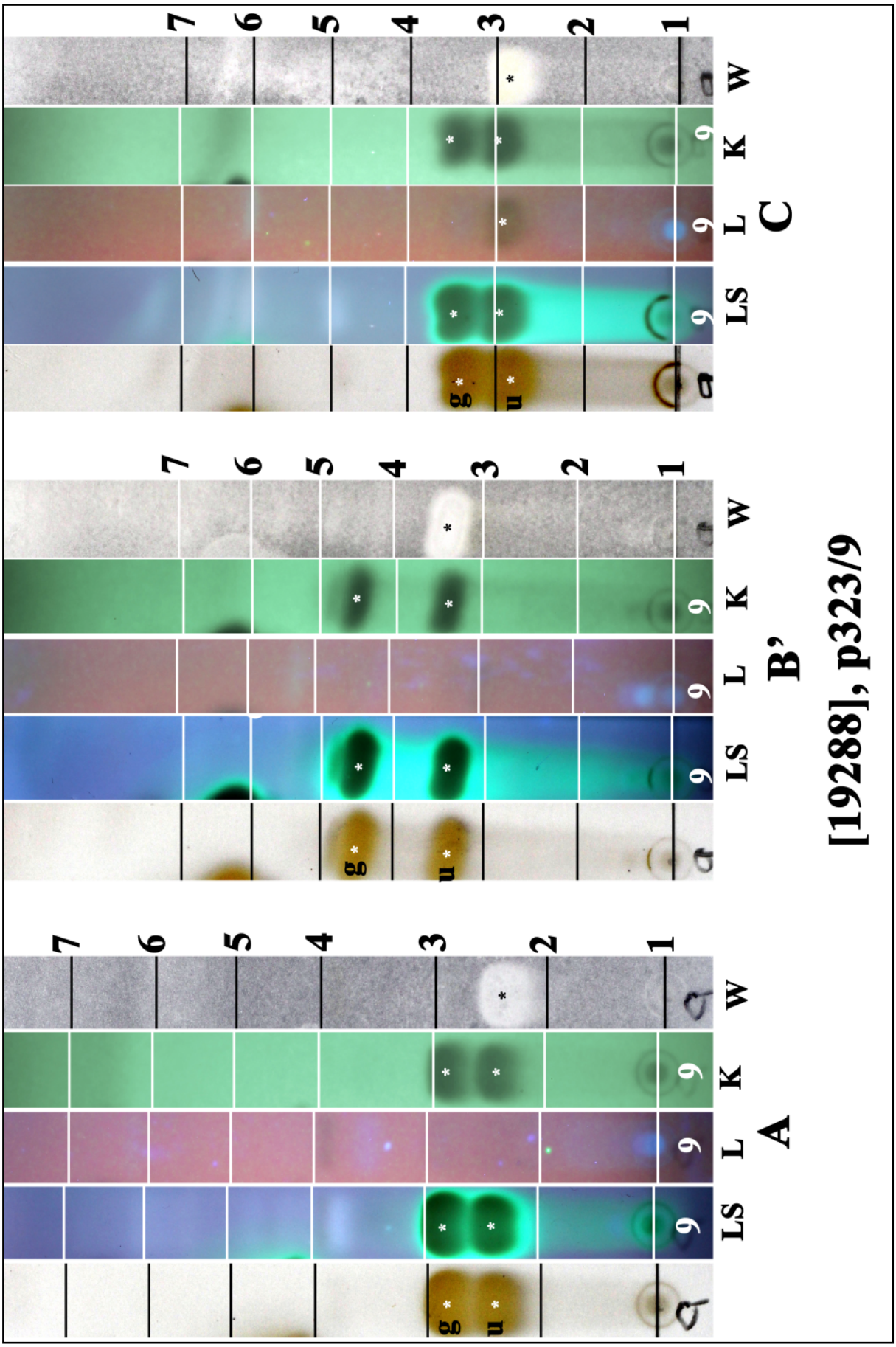








Umbilicaria hyperborea



g: gyrophoric acid, u: umbilicaric acid

Umbilicaria hyperborea

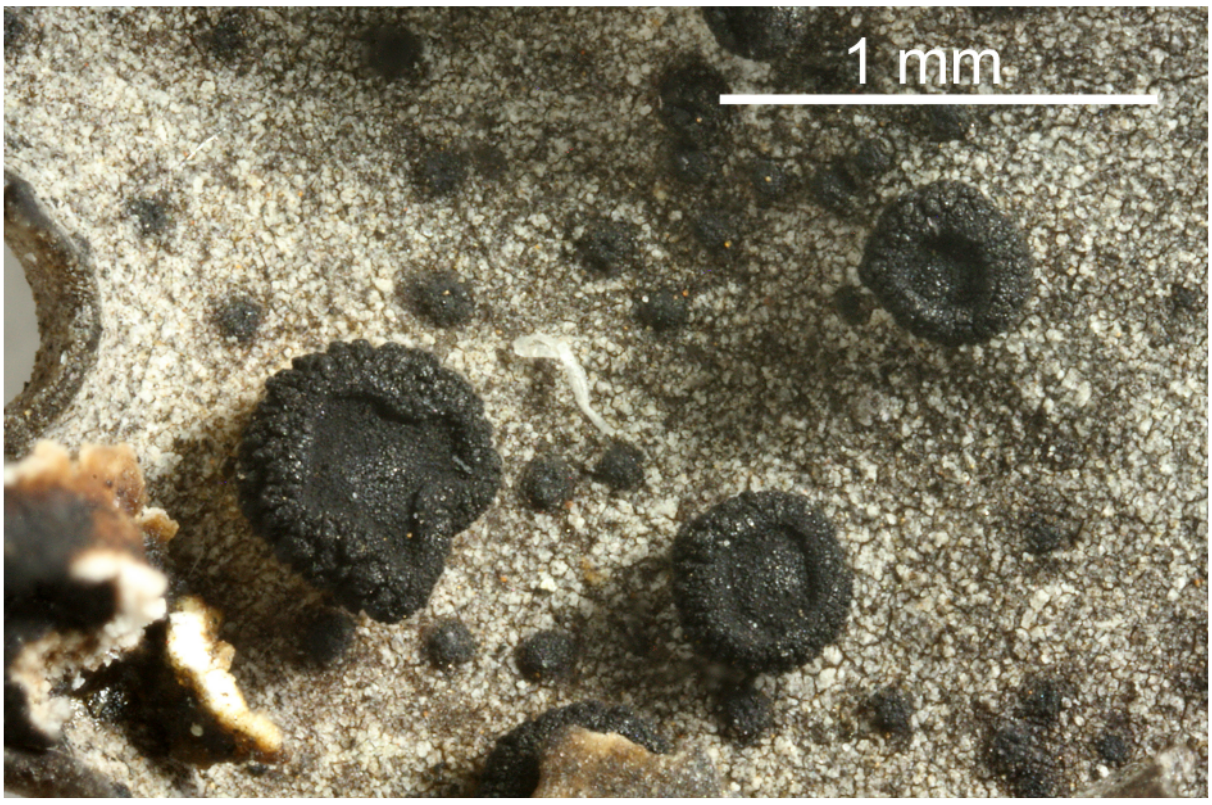
Umbilicaria subglabra (Nyl.) Harm.
[= ***Agyrophora subglabra*** (Nyl.) Llano]

Thallus mostly monophyllous, margins undulate to upturned. Apothecial disc smooth, not gyrose. Rhizomorphs absent. Upper surface predominantly smooth not folded or wrinkled. Thalloconidia 6-8 µm, 1-celled. Conidia fusiform, 2.5-5 x 0.8-1 µm. Ascospores 1-celled, hyaline, 10-15(-20) x (3-)5-9 µm.

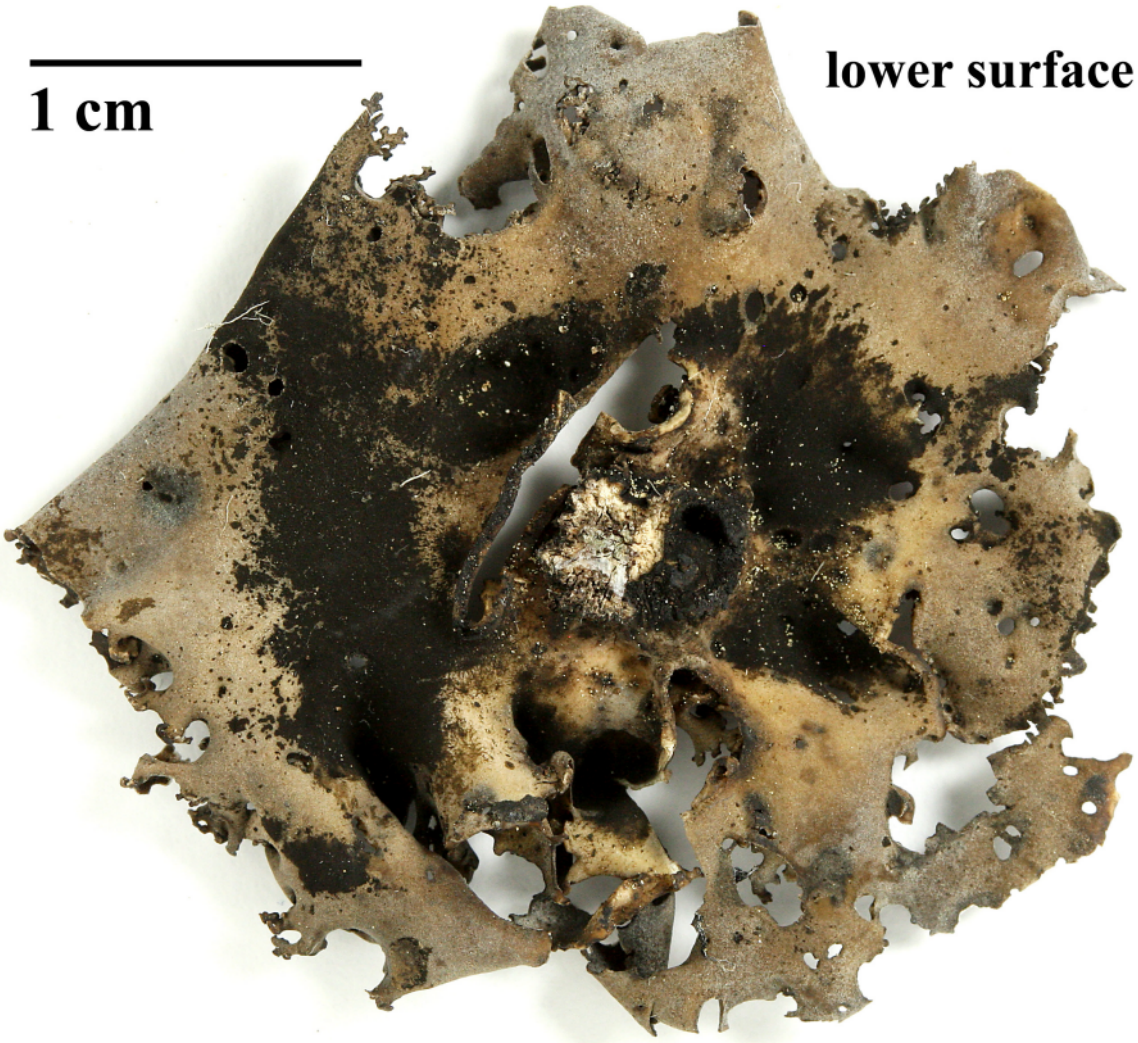
[18945], Australia, Australian Capital Territory, Sentry Box, Scabby Range, 60 km south-west of Canberra, 35°49' S, 148° 54' E, 1670 m, growing on exposed rocks on summit. Leg. J.A. Curnow, H. Lepp and M. Brenan, 22.12. 1085. Chemistry: gyrophoric acid (major), umbilicaric acid (minor) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 126, distributed as *Agyrophora subglabra* (Nyl.). Llano

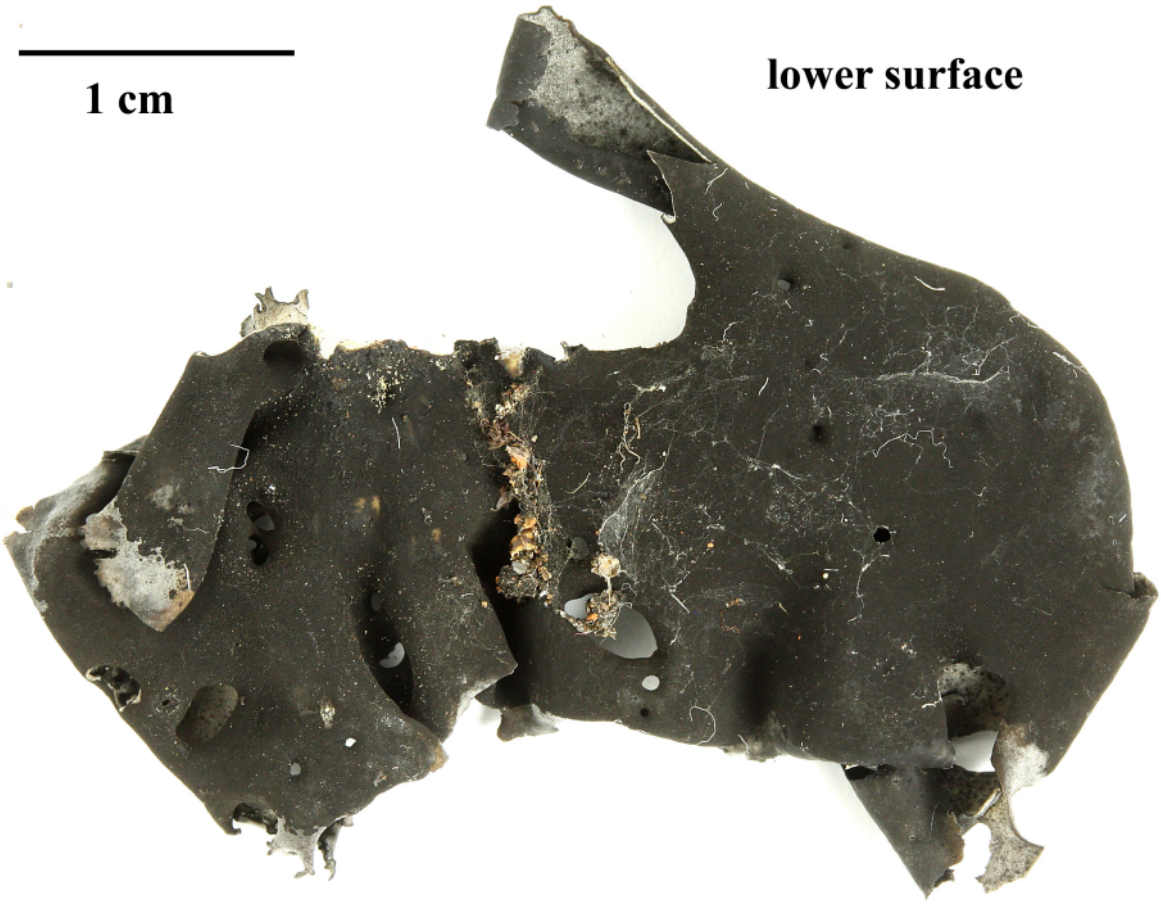




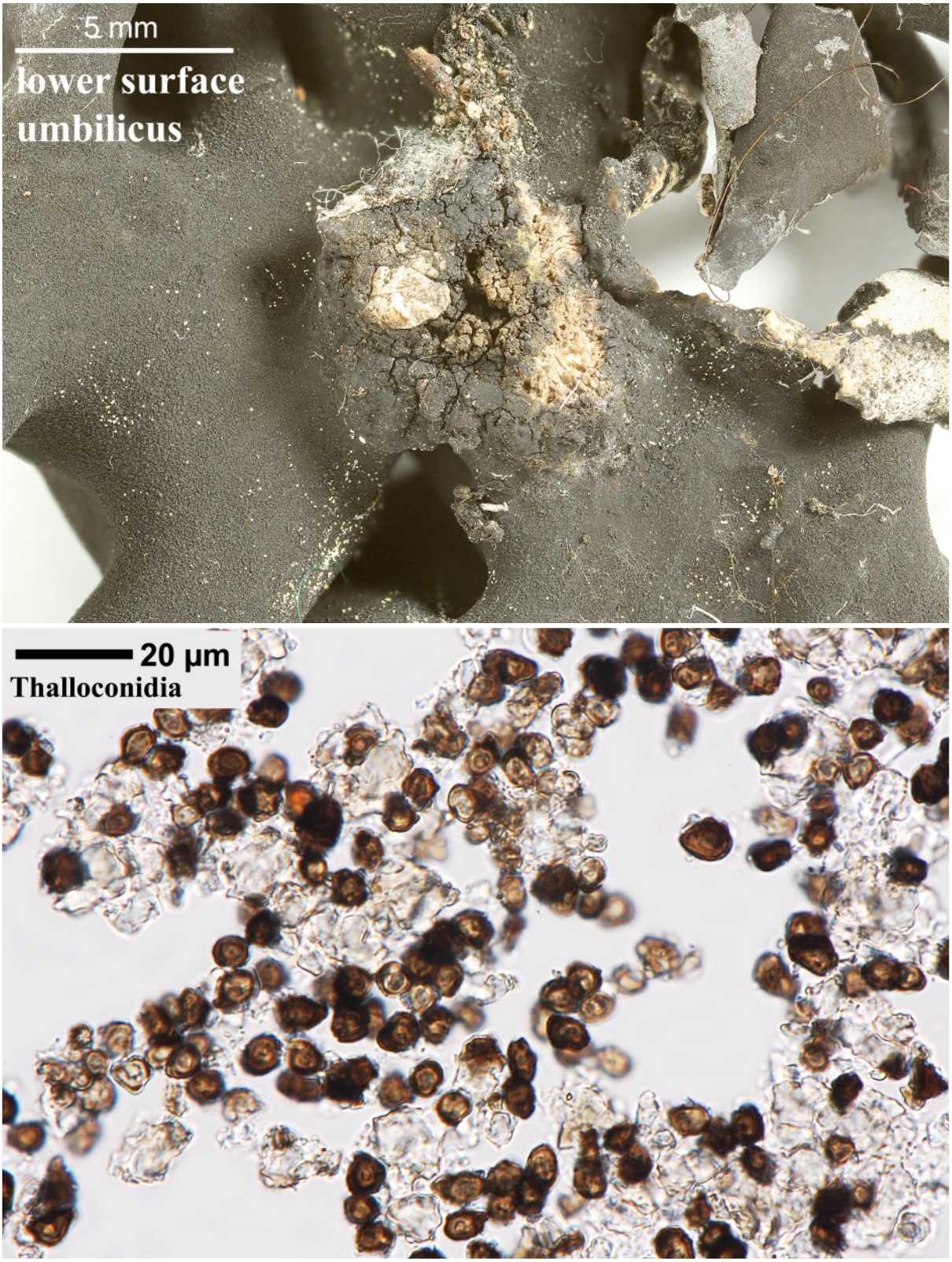


Umbilicaria subglabra

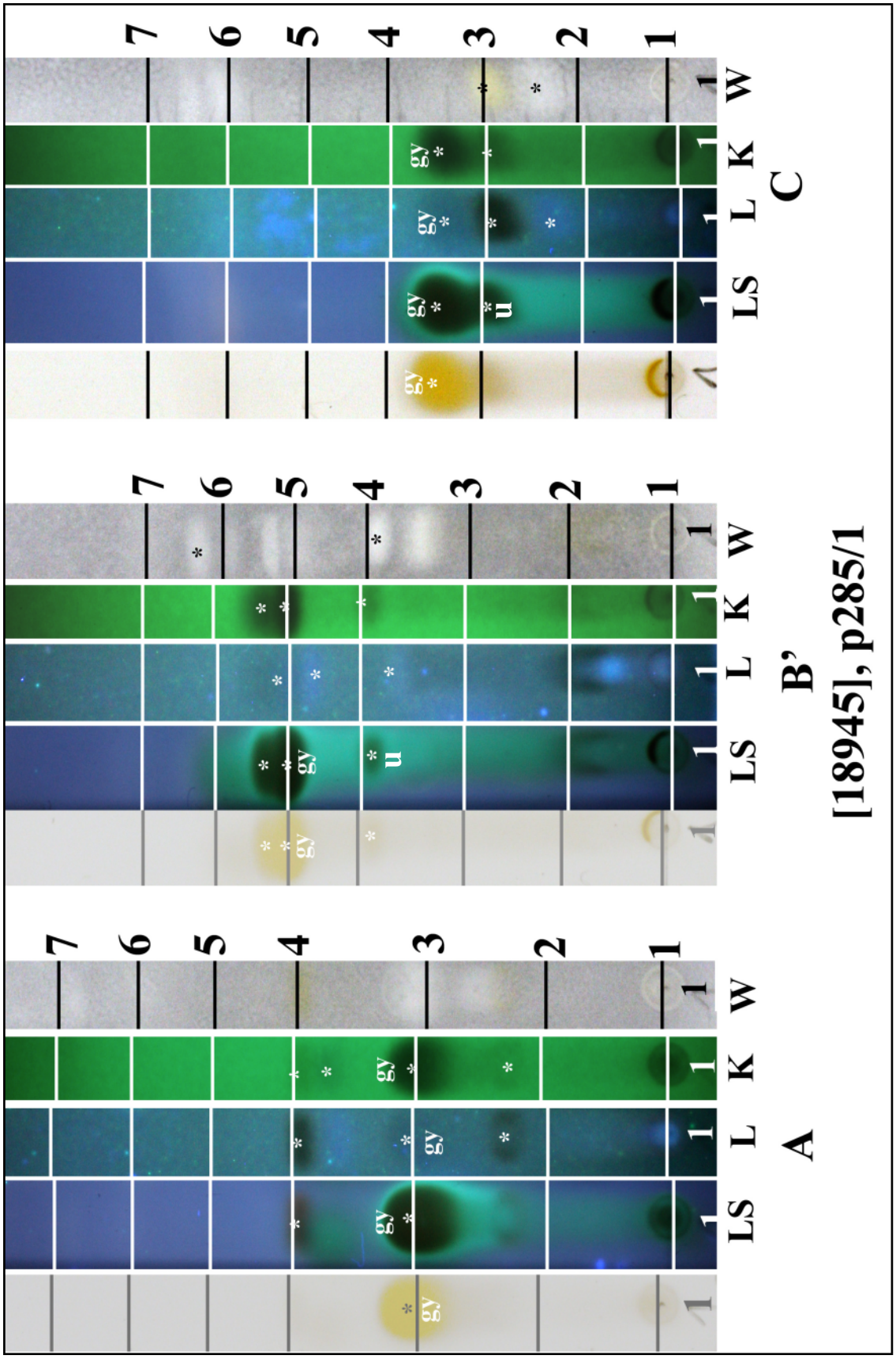




Umbilicaria subglabra



Umbilicaria subglabra


A
B'
C
LS
L
K
W
[18945], p285/1
gy: gyrophoric acid, u: umbilicaric acid

Usnea angulata Ach.
[= ***Usnea torquescens*** Stirt.]

Thallus pendulous, to 100 cm, long, grey-green; trunk pale; branches 5-sided, 0.5-1 mm wide, ridged, alate, with surfaces cracked into uneven plates; secondary branches subparallel; branchlets may arise from secondary branches, to 2 cm long; fibrils dense on all branches, to 1 cm long; papillae absent; isidia and soredia usually absent; pseudocyphellae absent or present on fibrils. Medulla dense, thin; axis ¾ width of branch, hyaline. Apothecia uncommon, lateral or terminal on lateral branches, 2-5 mm wide, lower side smooth. Ascospores 6-9 x 5 µm. Chemistry: usnic acid, norstictic acid (major), salazinic acid (minor), consalazinic acid (trace), connorstictic acid (trace). Lit. G.N. Stevens (1999, Bibl. Lich. 72).

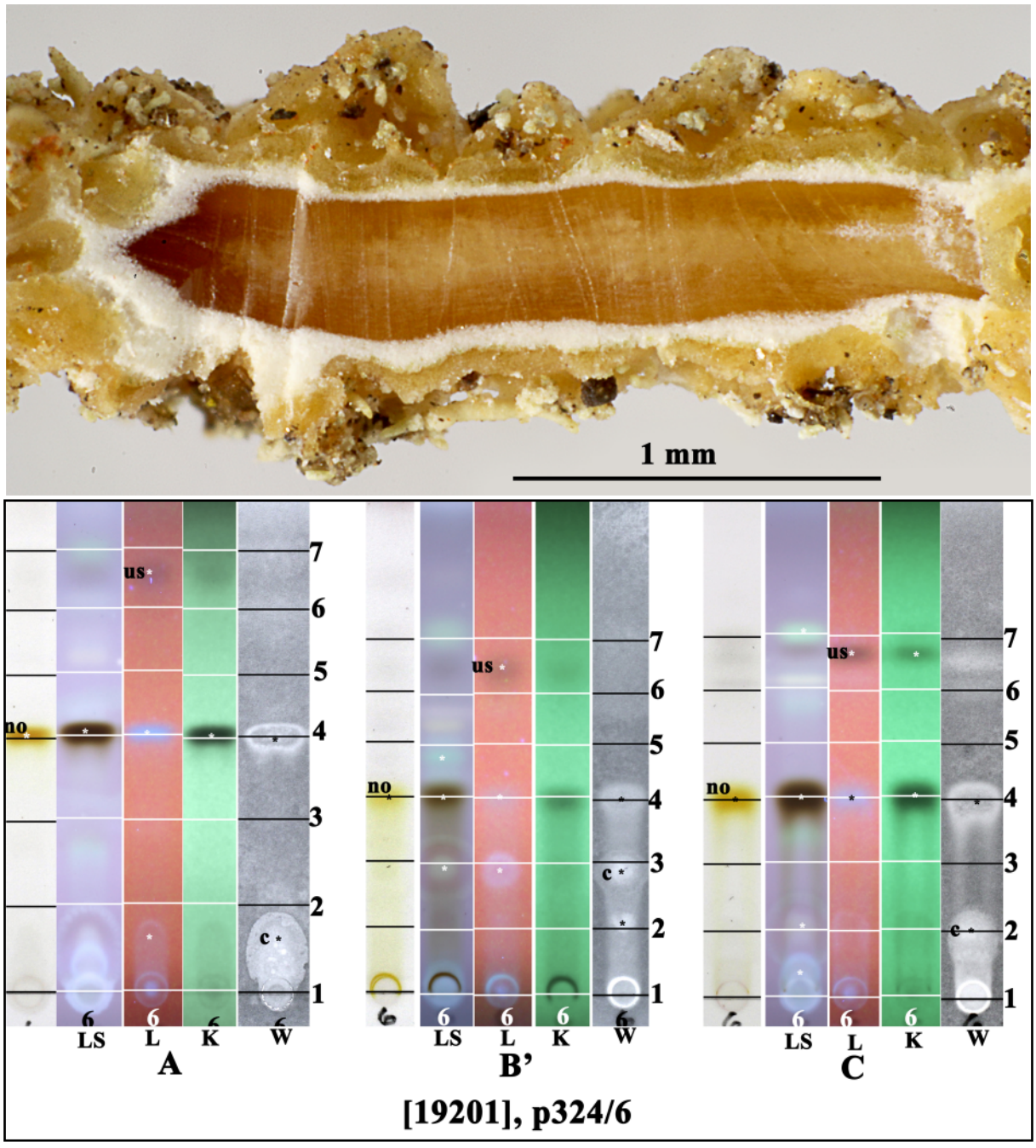
[19201], Australia, Victoria, Fairy Dell, 7 km north-west of Bruthen, 37°41' S, 147°45' E, 180 m, growing on crown of *Acmena smithii* in *Acmena* and treefern dominated gully. Leg. H. Streimann (39850), 18.04.1988. Chemistry: usnic acid (minor), norstictic acid (major), connorstictic acid (trace) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 200. Distributed as ***Usnea torquescens*** Stirt.







Usnea angulata



us: usnic acid, no: norstictic acid, c: caperatic acid

Usnea articulata (L.) Hoffm.
[= ***Usnea capillacea*** Mot.]

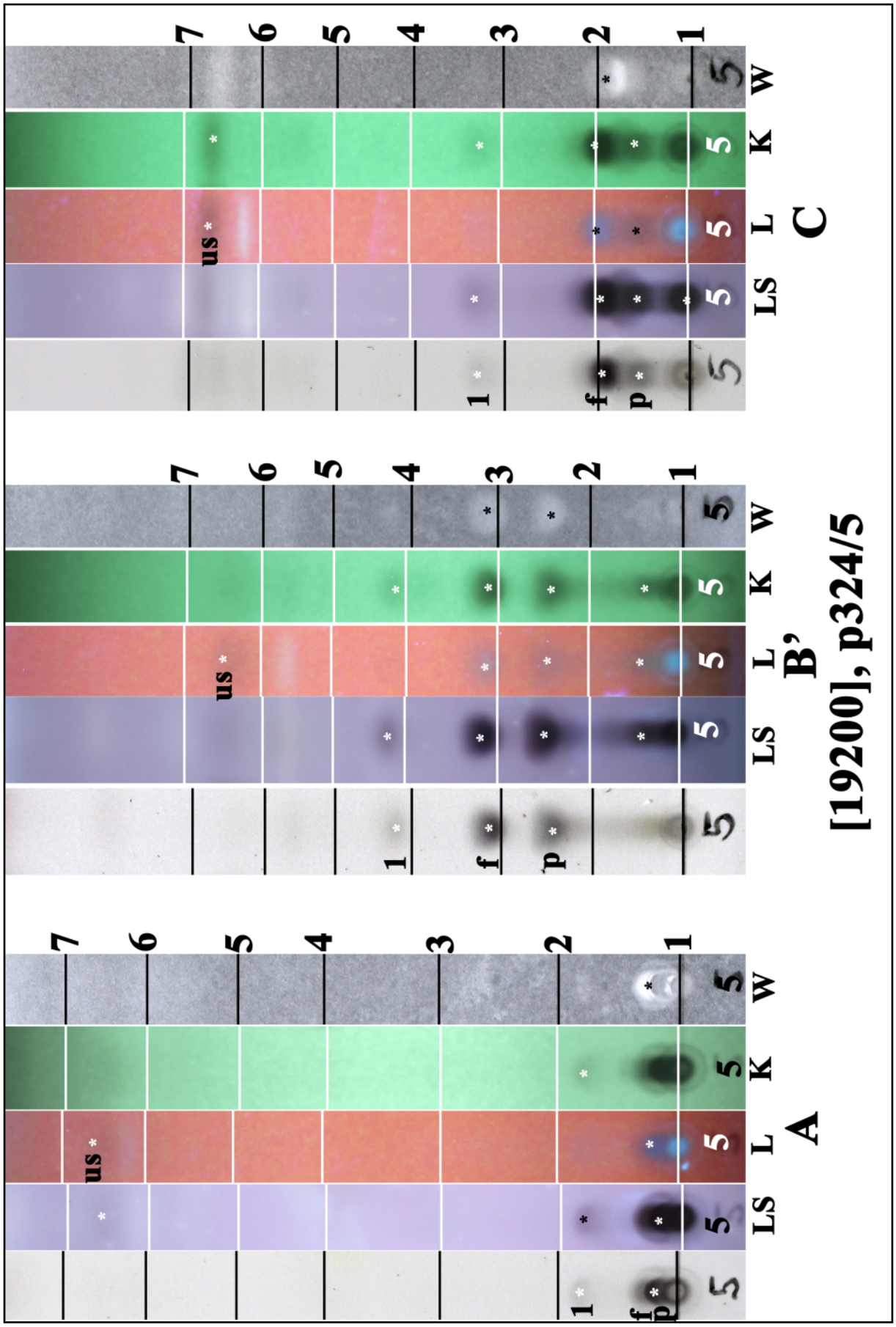
Thallus pale green or pale stramineous, long and pendulus, to 15 cm long. Main branches ± parallel, branching dichotomous. Branches with solid, non-coloured axis. Branches ± inflated, articulate, neither ridged and angular nor with alate plates, apices capillaceous. Papillae, isidia, pseudocyphellae and soredia absent. Medulla sparse, arachnoid. Axis 1/5 width of branch, hyaline. Apothecia rare or absent. Chemistry: Medulla K-; usnic acid, fumarprotocetraric acid (major), protocetraric acid, succinprotocetraric acid (trace), conprotocetraric acid (trace). Lit. G.N. Stevens (1999, Bibl. Lich. 72)

[19200], Australia, Victoria, Goonmirk Rocks, Errinundra Flora Reserve, 14 km south of Bendoc, 37°17' S, 148°53' E, 1200 m, growing on dead *Podocarpus* in cool temperate forest on moderate slope dominated by *Podocarpus*, *Pittosporum* and *Telopea*. Leg. J.A. Elix (21810) & H. Streimann, 29.03.1988. Chemistry: fumarprotocetraric acid (major), usnic acid, protocetraric acid (trace), succinprotocetraric acid (trace), virensic acid (trace), unknown (trace) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 170. Distributed as ***Usnea capillacea*** Mot.





Usnea articulata



us: usnic acid, f: fumarprotocetraric acid, p: protocetraric acid, 1: virensic acid

Usnea articulata

Usnea baileyi (Stirt.) Zahlbr.

Thallus erect to subpendulous, 5-15 cm long, grey to greenish grey; trunk usually black; branches terete or somewhat ridged, 1-1.5 mm wide; fibrils sparse to dense on main branches, to 5 mm long; papillae like projections are young isidia; isidia sparse to dense, solitary or clustered, cylindrical, easily dislodged, eroding to leave pseudocyphellae; pseudocyphellae punctiform, scattered; soredia absent. Medulla dense, with yellow, pink or brown layer around axis; axis ¾ width of branch. Apothecia rare. Ascospores 8-10 x 5-6 µm. Chemistry usnic acid, eumitrin A, ±eumitrin B, norstictic acid (major), ±salazinic acid (minor/trace), connorstictic acid (trace), galbinic acid (trace), hyposalazinic acid (trace); zeorin and secalonic acid A may also be present. Lit. G.N. Stevens (1999, Bibl. Lich. 72)

[19289], Australia, Queensland, Crediton State Forest, 16 km southwest of Finch Hatton, 21°15' S, 148°31' E, 700 m, growing on dead logs in *Eucalyptus grandis* dominated woodland. Leg. J.A. Elix (21074) & H. Streimann, 01.07.1986. Chemistry: norstictic acid (major), eumitrin A (major), usnic acid (major), secalonic acid A (minor), eumitrin B (trace), salazinic acid (trace), connorstictic acid (trace), consalazinic acid (trace) by TLC, HPLC, anal. J. Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 169.



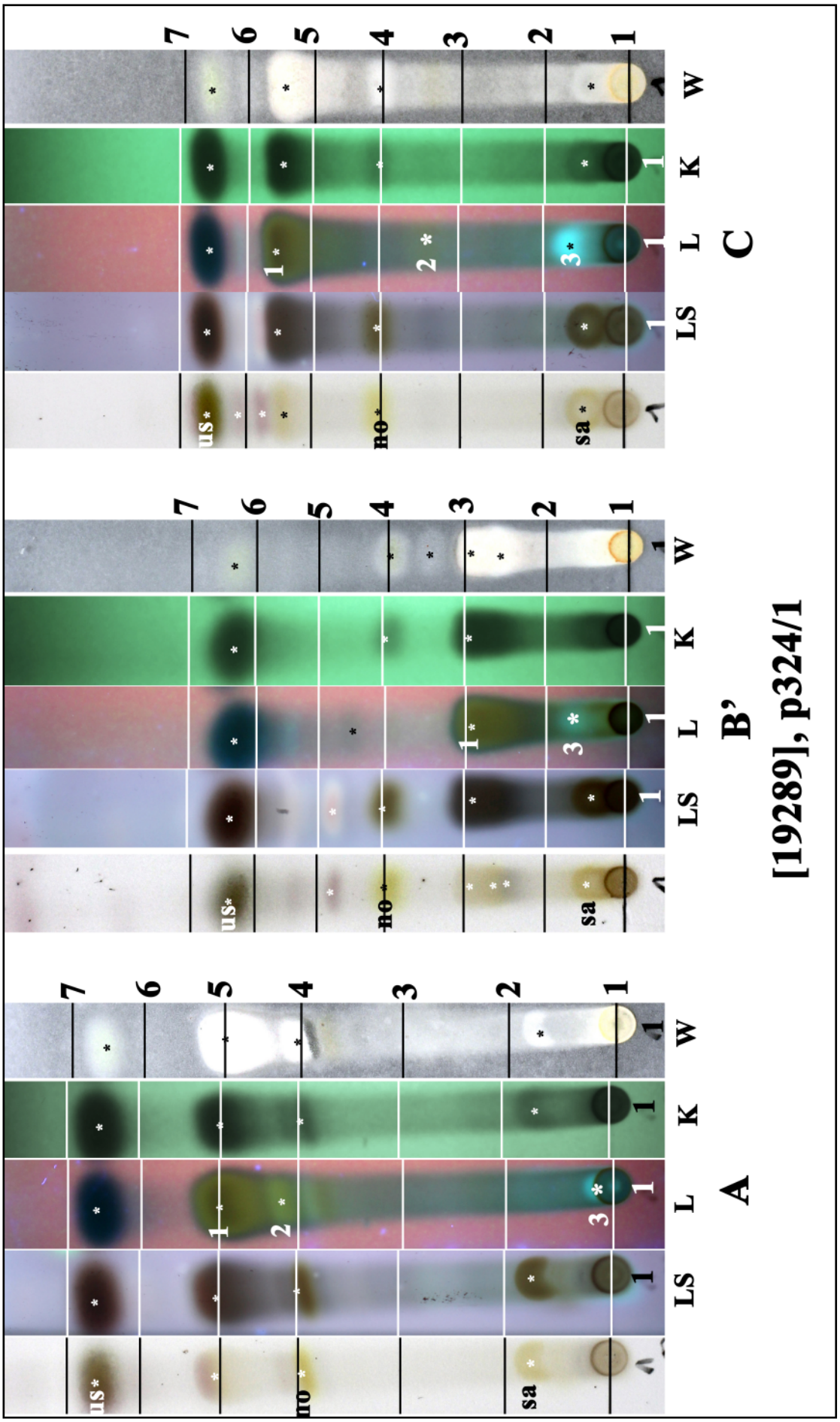




Usnea baileyi



Usnea baileyi



us: usnic acid, no: norstictic acid, sa: salazinic acid, 1: eumitrin A, 2:secalonic acid A, 3: unknown

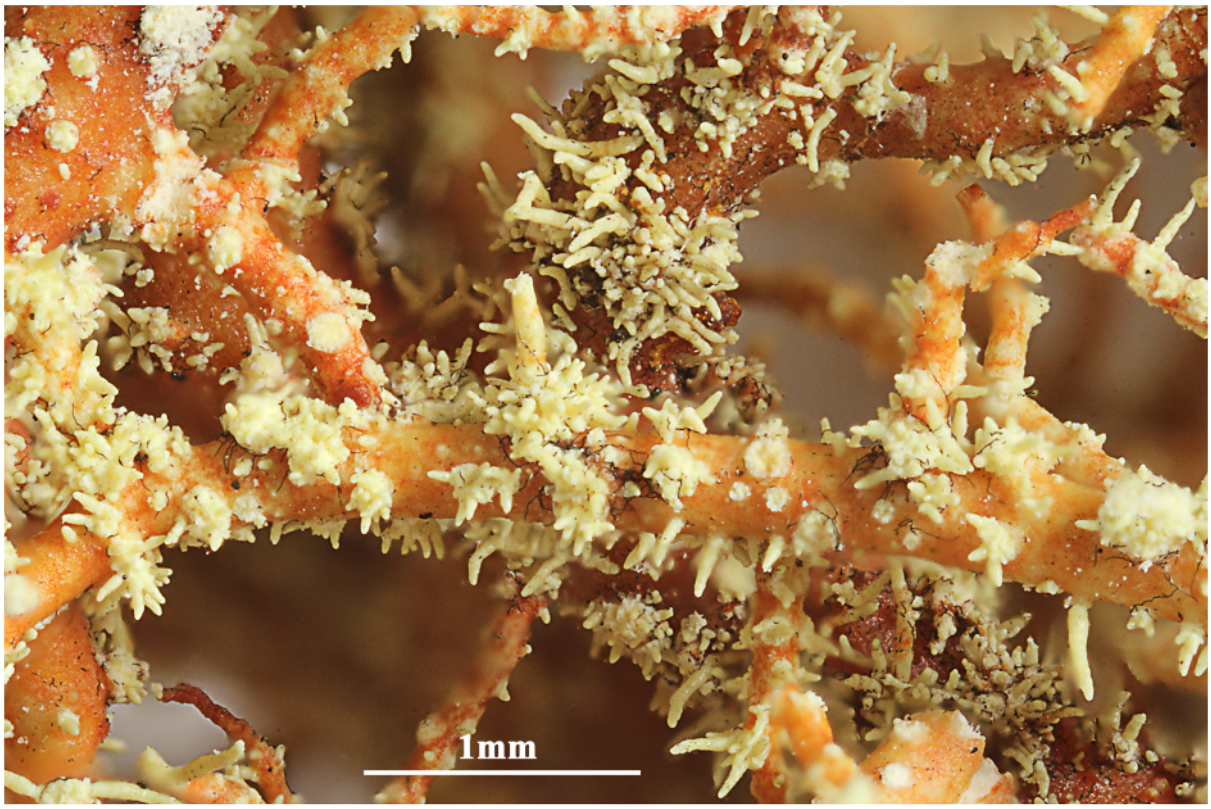
Usnea baileyi

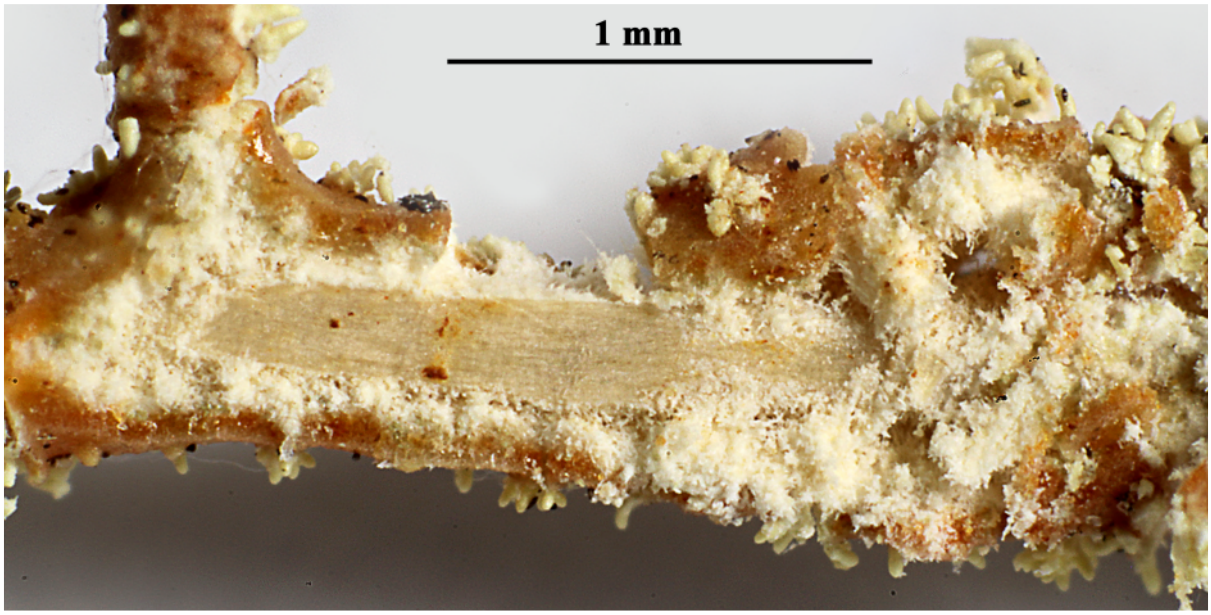
Usnea rubicunda Stirt.

Thallus shrubby, erect to subpendulous, 6-15(-30) cm long, mottled green and red to shades of red only; base black; trunk cracked, pale to red; branches terete, 0.5-1 mm wide; branchlets numerous; fibrils dense, 3-5 mm long, with or without pseudocyphellae; papillae, if present, usually on primary and/or secondary branches only, numerous, small; isidia arising directly from cortex or erupting from pseudocyphellae; pseudocyphellae small, flat or punctiform and raised, becoming large with eruption of isidia; soredia absent. Medulla dense; axis 0.5-0.75 width of branches, hyaline. Apothecia rare. Ascospores 8-10 x 5-6 µm. Chemistry: stictic acid (major), constictic acid (minor), norstictic acid (minor), menegazziaic acid (trace), cryptostictic acid (trace), ±gyrophoric acid (trace), usnic acid.

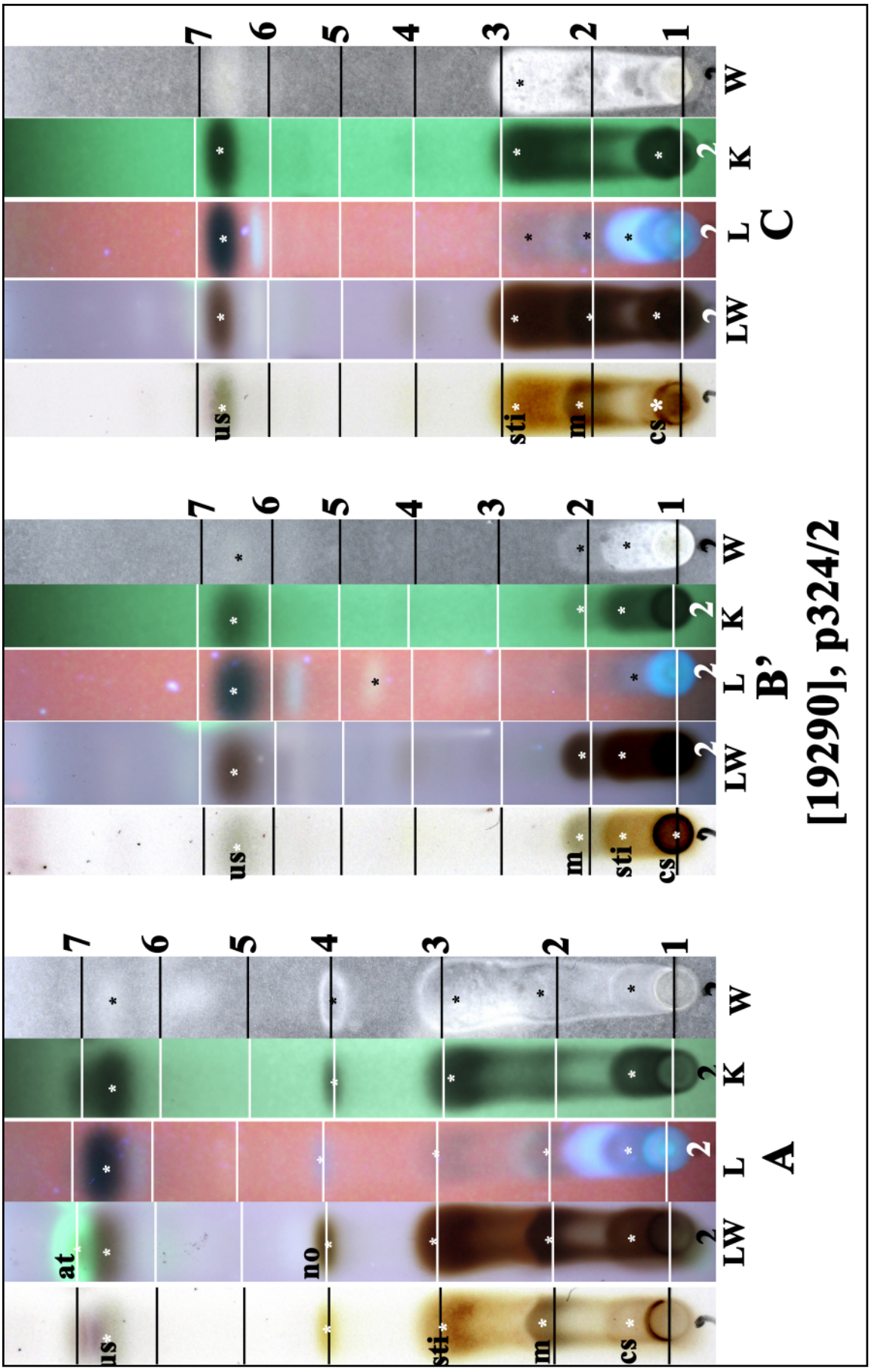
[19290], Australia, Queensland, Crediton State Forest, 16 km southwest of Finch Hatton, 21°15' S, 148°31' E, 700 m, growing on dead logs in *Eucalyptus grandis* dominated woodland. Leg. J.A. Elix (21063) & H. Streimann, 01.07.1986. Chemistry: usnic acid, stictic acid (major), constictic acid (minor), cryptostictic acid (trace), menegazziaic acid (trace), norstictic acid (trace), hypostictic acid (trace), by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 171.







Usnea rubicunda



us: usnic acid, sti: stictic acid, m: menegazziaic acid, cs: constictic acid, no: norstictic acid.

Rem.: atranorin (at) and strong no in solvent A is a mistake

Usnea rubicunda

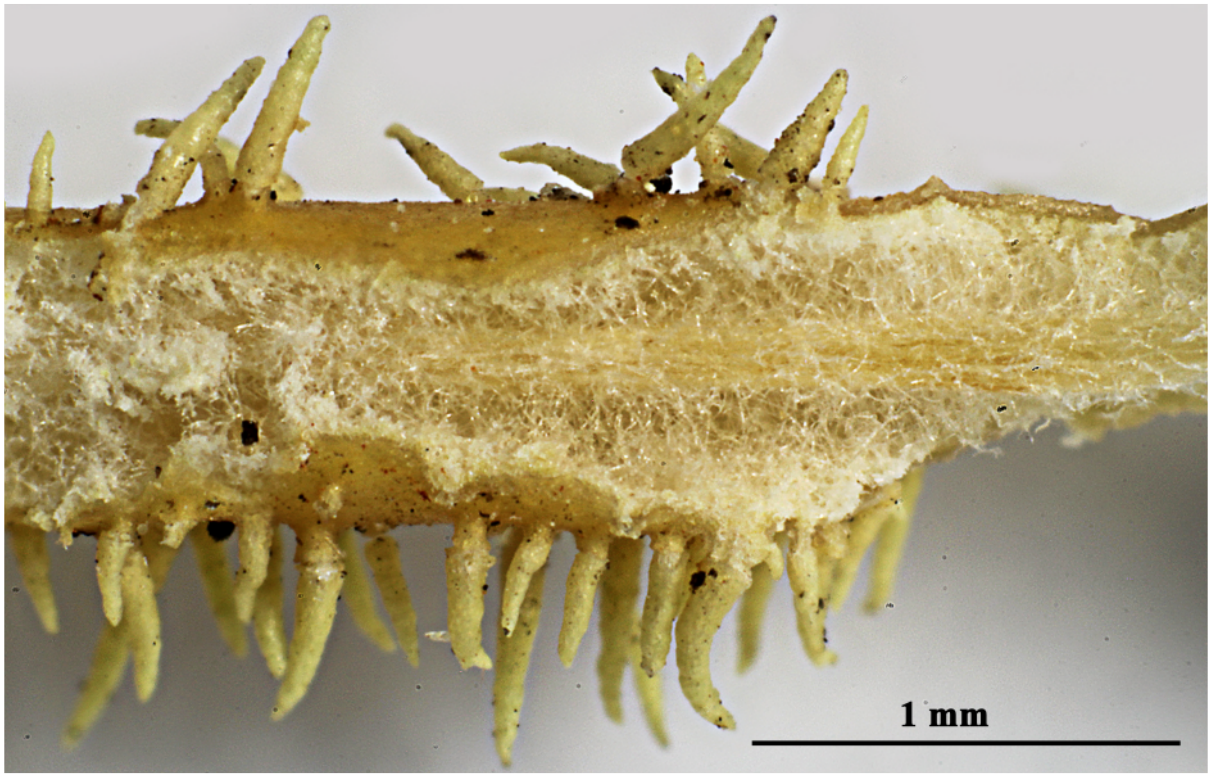
Usnea scabrida Taylor

Thallus shrubby, erect, rigid, to 5 cm long, grey-green to pale green; branchiung sparse; trunc pale; branches terete to slightly irregular, to 2 mm wide, partly angular; branchlets absent; fibrils dense, two types, 0.5-1 mm or 2-6 mm long; papillae absent or very few; isidia, pseudocyphellae and soredia absent. Medulla loosely to moderately dense; axis 1/3-3/5 width of branch, hyaline. Apothecia common, terminal or subterminal, 3-10 mm wide, lower surface densely fibrillate. Ascospores 8-9.5 x 5.5-6.5 µm. Chemistry: I: usnic acid, scabrosins; II: usnic acid, norstictic acid, scabrosins, ±salazinic acid (trace); III: usnic acid, norstictic acid; IV: usnic acid, scabrosins; V: usnic acid, salazinic acid (trace); VI: usnic acid only. Lit. G.N. Stevens (1999, Bibl. Lich. 72).

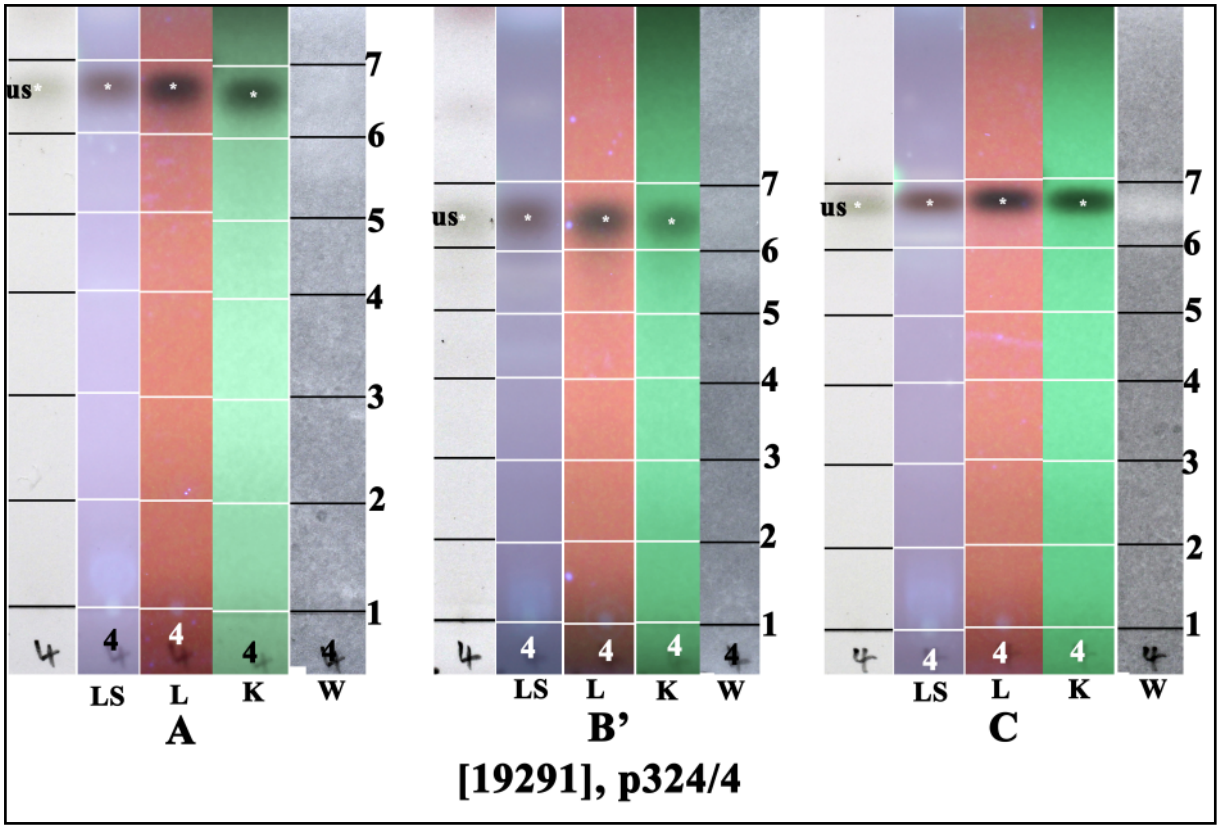
[19291], Australia, Australian Capital Territory, Black Mountain Reserve, Aranda, Canberra, 35°16' S, 149°05' E, 680 m, growing on *Exocarpus cupressiformis* in dry sclerophyll forest. Leg. J.A. Elix (22849), 25.06.1989. Chemistry: usnic acid (major), norstictic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 225.







Usnea scabrida



us: usnic acid

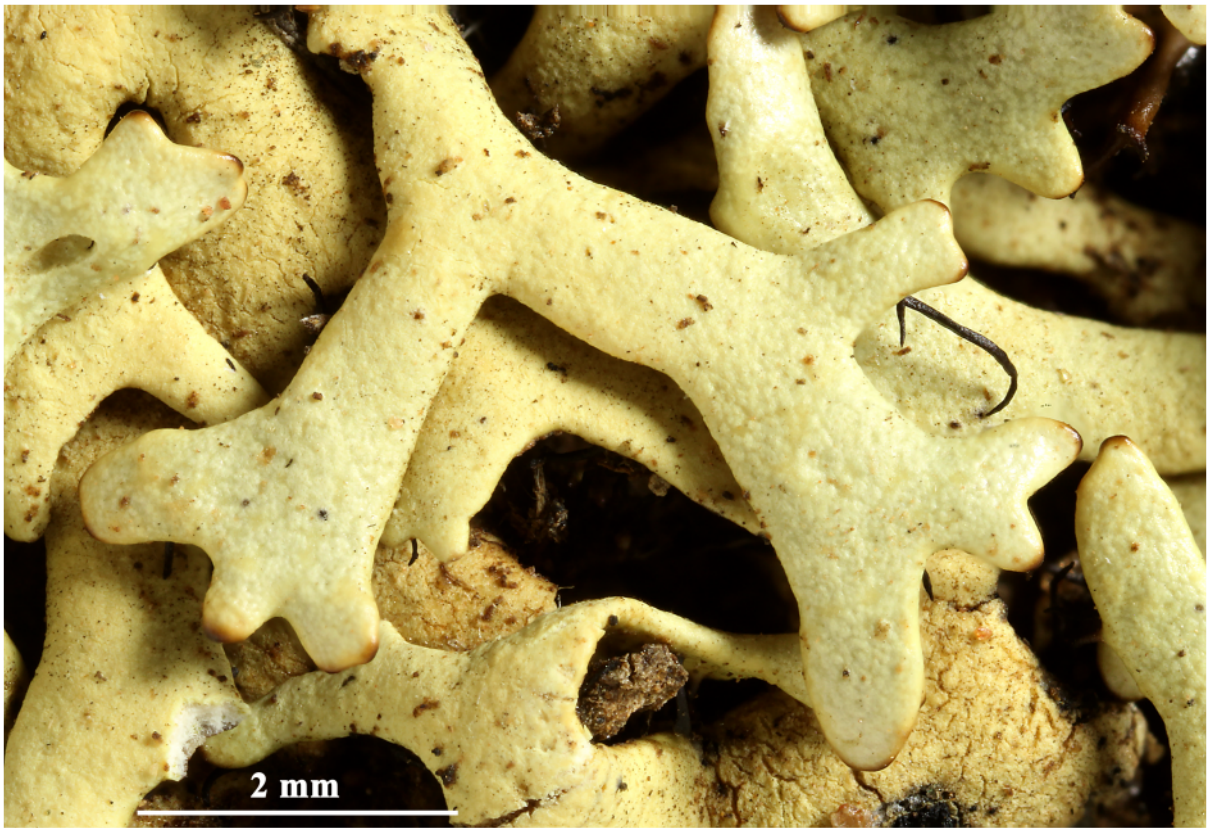
Usnea scabrida

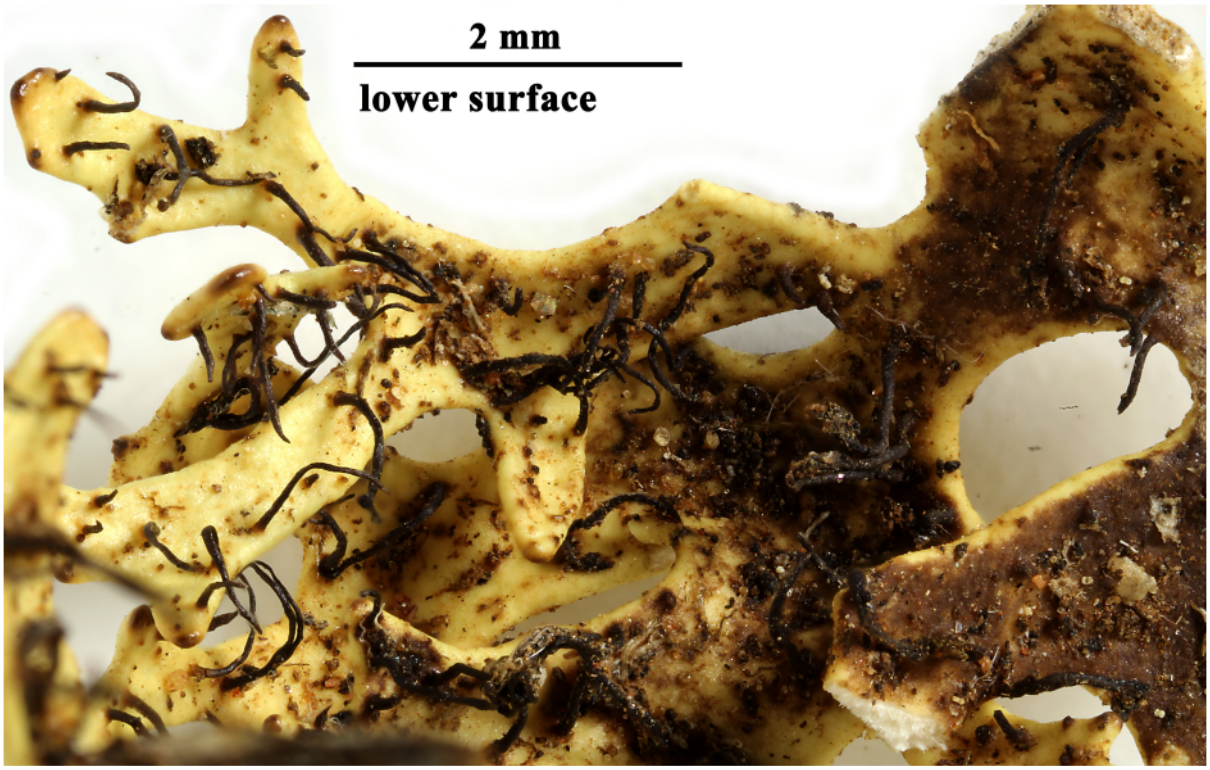
Xanthoparmelia amphixantha (Müll.Arg.) Hale
[= ***Parmelia amphixantha*** Müll.Arg.]

Thallus foliose, loosely adnate. Lobes often imbricate, ±discrete and separated near margins of thallus, sublinear elongate, dichotomously branched, 0.5-2 mm wide, lacking lobules. Upper surface pale yellow, maculate especially toward lobe apices, lacking soredia and isidia; lobe margins not black. Medulla white. Lower surface partly canaliculate, yellow-brown to dark brown, yellow rimmed; rhizines sparse to moderately dense, simple or sparsely branched, 1-3 mm long, black. Apothecia very rare. Ascospores 9-10 x 6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow, C-, KC-, P+ orange; usnic acid, stictic acid (major), constictic acid, norstictic acid (minor), cryptostictic acid (trace), ±unidentified compound.

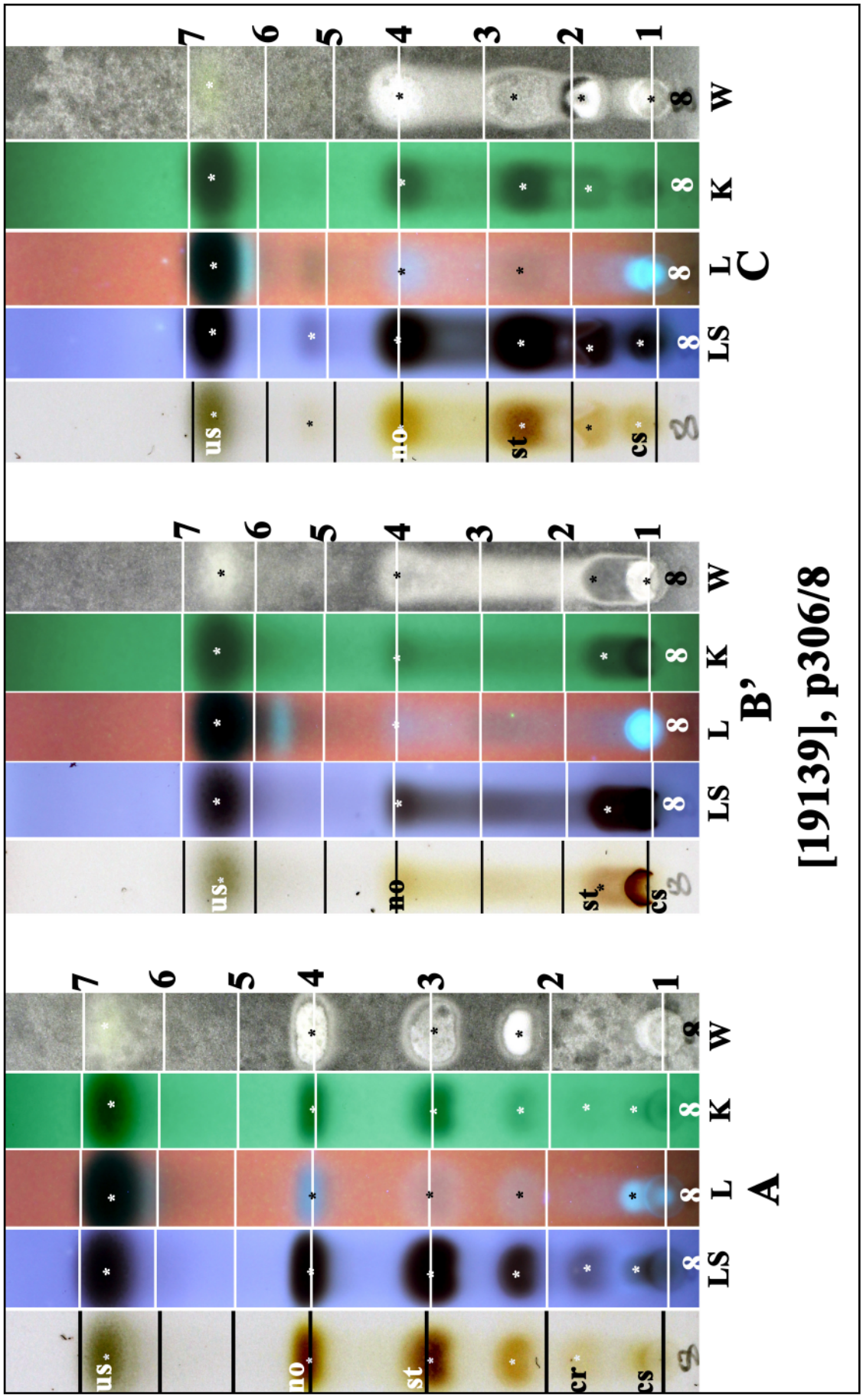
[19139], Australia, South Australia, Mount Lofty Ranges, Guthries Steep Gully, 10 km east of Springton, 34°43' S, 139°12' E, 350 m, growing on soil in pasture land. Leg. J.A. Elix (11490) & L.H. Elix, 2.1.1984. LICHENES AUSTRALASICI EXSICCATI NO. 052. Distributed as ***Parmelia amphixantha*** Müll.Arg.







Xanthoparmelia amphixantha



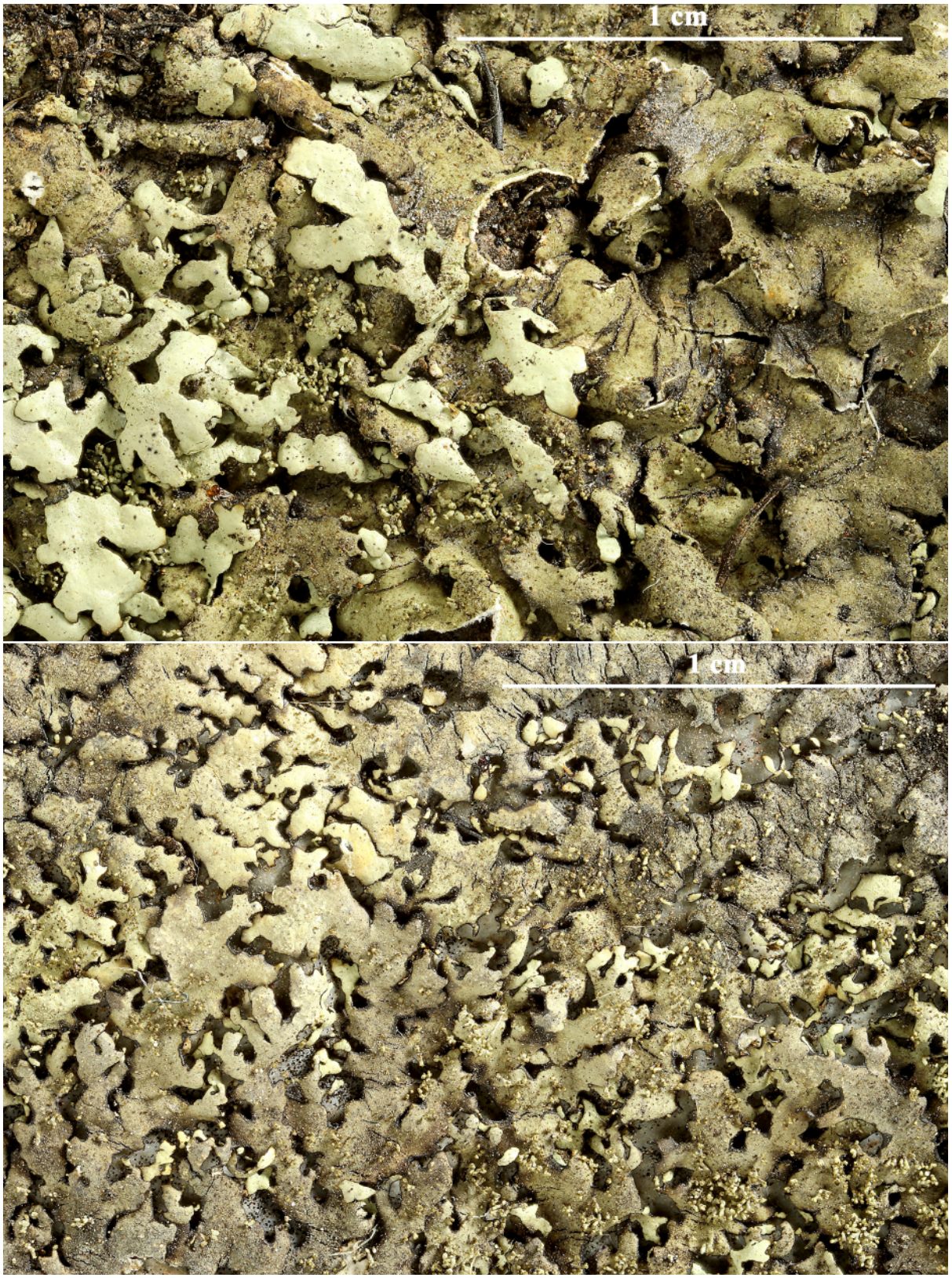
us: usnic acid, no: norstictic acid, st: stictic acid, cr: cryptostictic acid, cs: constictic acid

Xanthoparmelia amplexula (Stirton) Elix & J.Johnst.
[= ***Parmelia amplexula*** Stirt.]

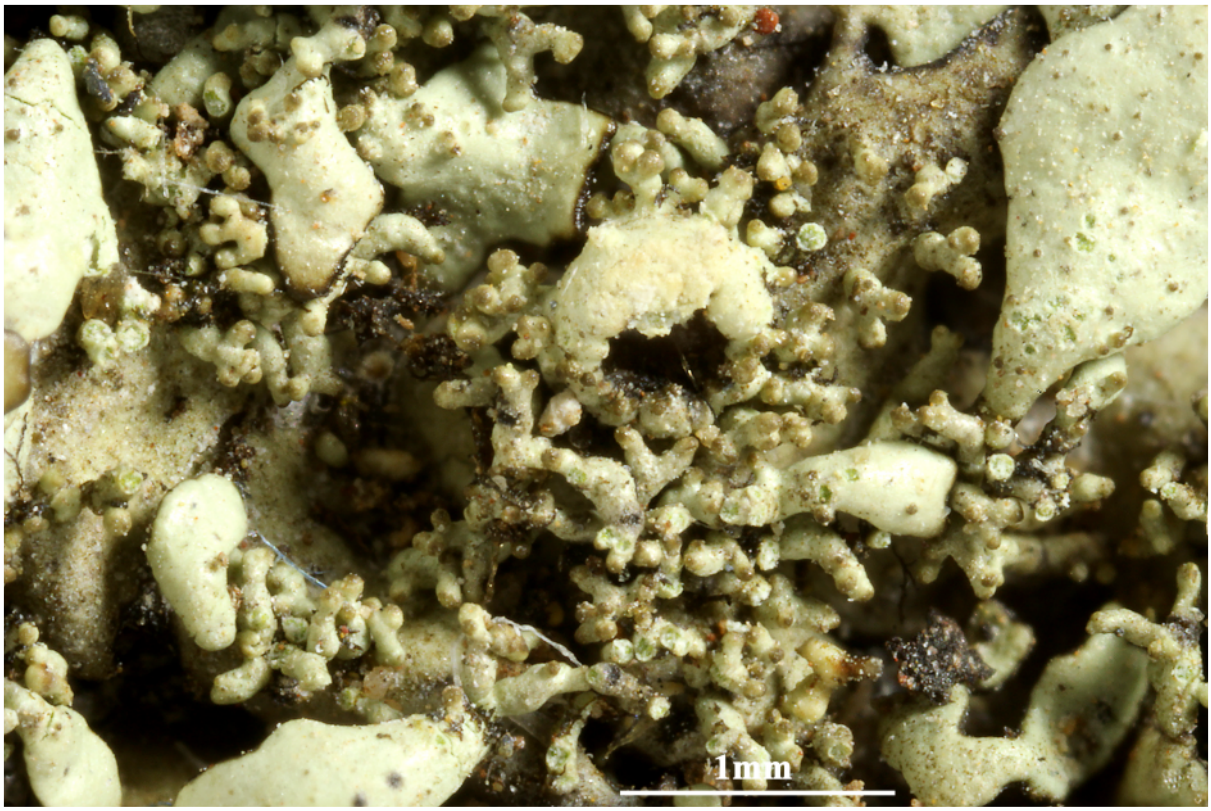
Thallus foliose, moderately adnate to adnate. Lobes sparingly imbricate or not, subirregular to sublinear elongate, irregularly branched, 0.8-2(-3) mm wide; central laciniae flat or absent. Upper surface yellow-green, commonly blackening towards centre as a result of dark-tipped isidia, emaculate, without soredia. Isidia sparse to dense, cylindrical, simple or branched and coralloid, to 2 mm high. Medulla white. Lower surface pale brown to dark brown; rhizines sparse to moderately dense, simple. Apothecia rare, 1.5-6 mm wide; thalline exciple isidiate. Ascospores 7-12 x 5-6 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, ±loxodin, norlobaridone (major), ±scabrosin 4,4'-diacetate, ±scabrosin 4-acetate 4'-butyrate, ± scabrosin 4,4'-dibutyrate, ±scabrosin 4-acetate 4'-hexanoate; rarely contains traces of norlobariol, isonorlobaridone, norlobaridol methyl ester, conorlobaridone, constipatic acid, protoconstipatic acid.

[19138], Australia, Queensland, Tumouline State Forest, 6 km north of Ravenshoe, 17°33' S, 145°28' E, 1000 m, growing on exposed rock outcrop, along rocky creekside with *Melaleuca* and *Leucopogon* surrounded by dry sclerophyll forest. Leg. H. Streimann (46129), 8.12.1990. Chemistry: usnic acid (major), norlobaridone (major), loxodin (minor), constipatic acid, protoconstipatic acid, dehydroconstipatic acid by TLC, anal. Q. Lin. Lichenes Australasici Exsiccati No. 249.





Xanthoparmelia amplexula





Xanthoparmelia amplexula

us: usnic acid, nl: norlobaridone, lo: loxodin

Xanthoparmelia amplexula

Xanthoparmelia antleriformis (Elix) Elix & J.Johnst.
[= ***Parmelia antleriformis*** Elix]

Thallus small-foliose, adnate to tightly adnate. Lobes imbricate or not, sublinear-elongate, irregularly branched, 0.3-1 mm wide. Upper surface yellow-green, occasionally darkening, emaculate, without soredia; isidia dense, cylindrical, becoming extensively branched, coralloid or antler-like, to 0.5-3 mm high and 0.3 mm wide. Medulla white. Lower surface pale brown; rhizines moderately dense, simple, brown. Apothecia 2-5 mm wide. Ascospores 6-8 x 3.5-4.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, P+ intense yellow; usnic acid, salazinic acid (major), consalazinic acid, norstictic acid (trace).

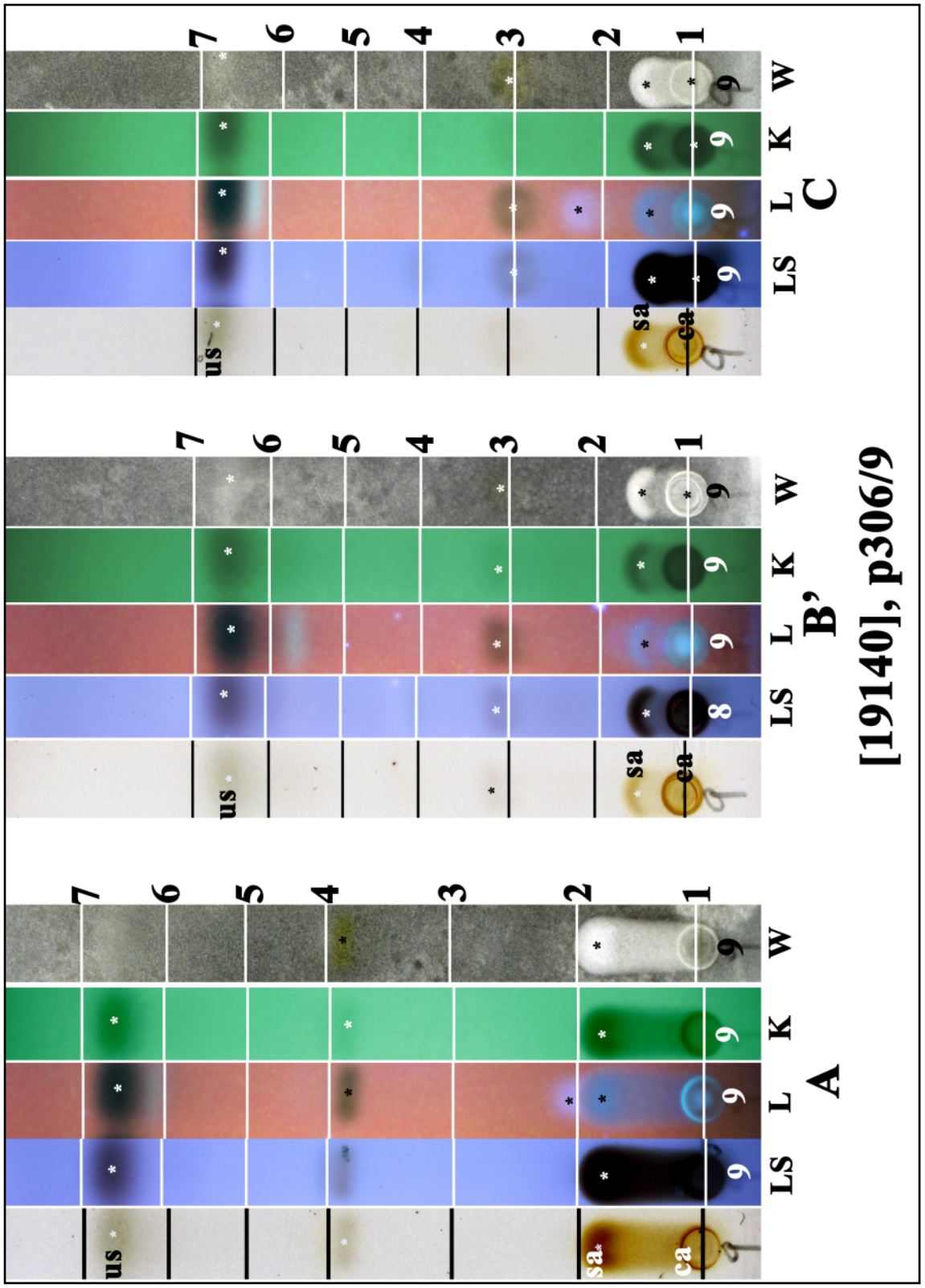
[19140], Australia, New South Wales, Morton National Park, 8 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on flat, exposed sandstone rocks in open *Eucalyptus* woodland. Leg. J.A. Elix (11381) & H. Streimann, 6.10.1983. LICHENES AUSTRALASICI EXSICCATI NO. 053. Distributed as ***Parmelia antleriformis*** Elix.







Xanthoparmelia antleriformis



us: usnic acid, sa: salazinic acid, ca: consalazinic acid

Xanthoparmelia antleriformis

Xanthoparmelia arapilensis (Elix & P.M.Armstr.) Filson
[= ***Parmelia arapilensis*** Elix & P.M.Armstr.]

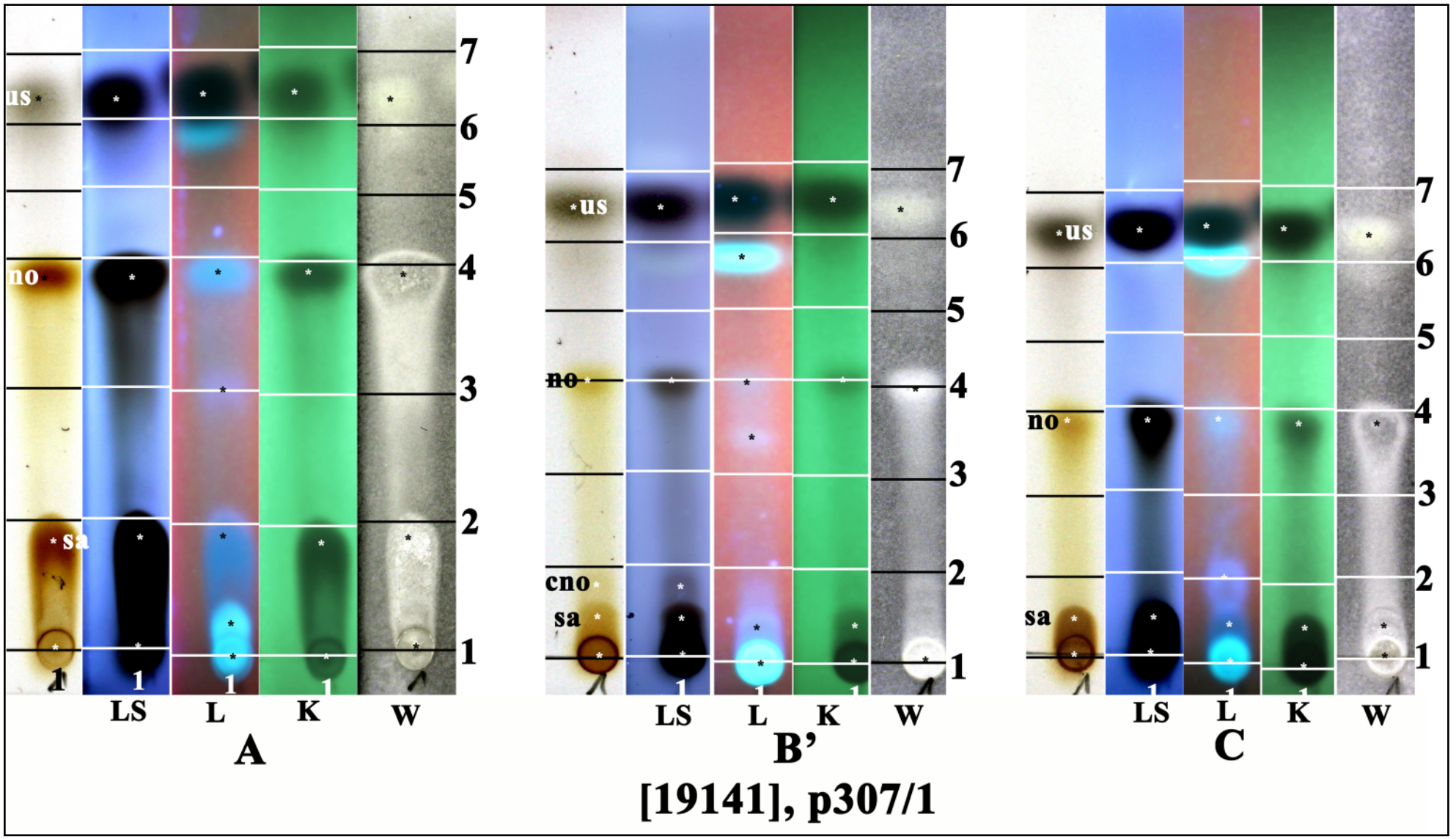
Thallus foliose, loosely adnate. Lobes sparingly imbricate or not, irregularly branched, 2-5(-8) mm wide, elobulate. Upper surface yellow-green, weakly maculate or not, becoming rugose and cracked, lacking isidia and soredia. Medulla white. Lower surface pale ivory to brown; rhizines moderately dense. Apothecia sessile, 2-5 mm wide. Ascospores 9-10 x 5-6 µm. Chemistry: cortex K-, UV-; medulla: k+ yellow then deep red, C-, P+ intense yellow: usnic acid, norstictic acid (major), connorstictic acid, ±salazinic acid.

[19141], Australia, South Australia, near caves along River Marne, 7 km north-east of Springton, 34°40' S, 139°08' E, 350 m, growing on schist rocks in pasture land. Leg. J.A. Elix (18141) & L.H. Elix, 13.05.1983. LICHENES AUSTRALASICI EXSICCATI NO. 054. Distributed as ***Parmelia arapilensis*** Elix & P.M.Armstr.





Xanthoparmelia arapilensis

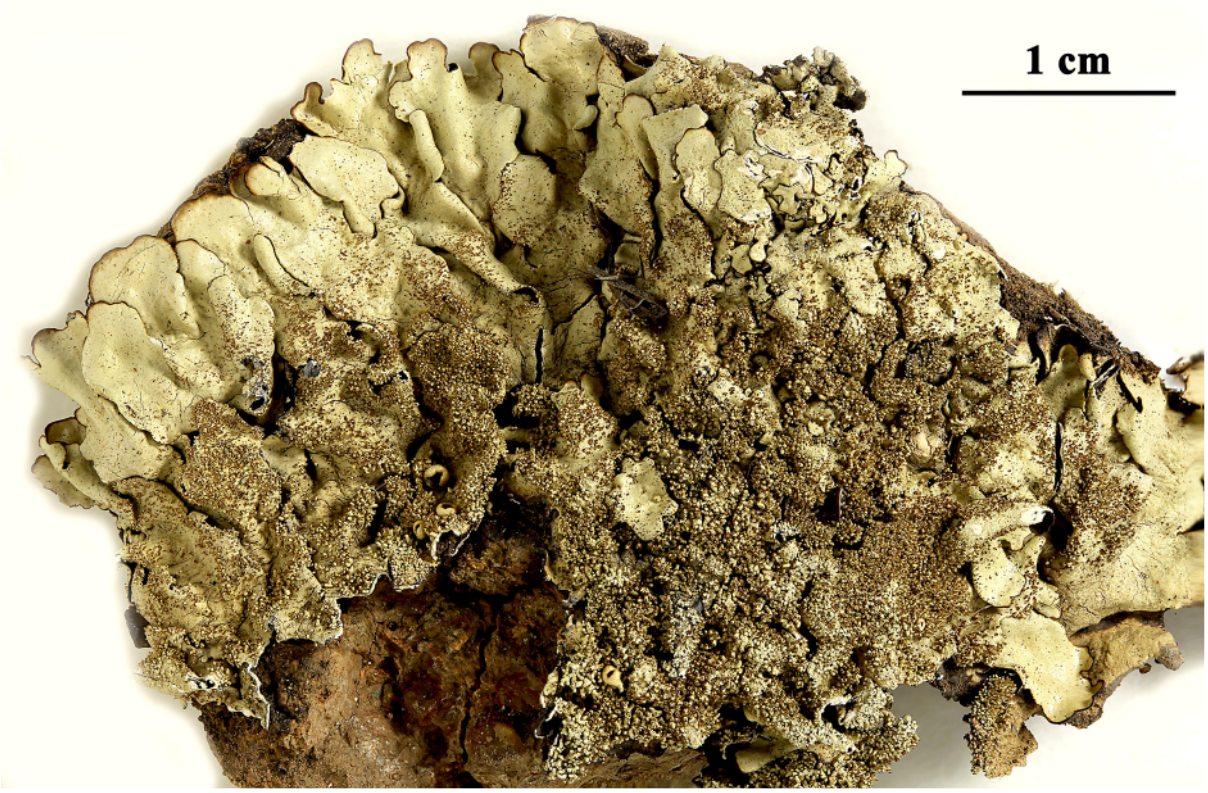


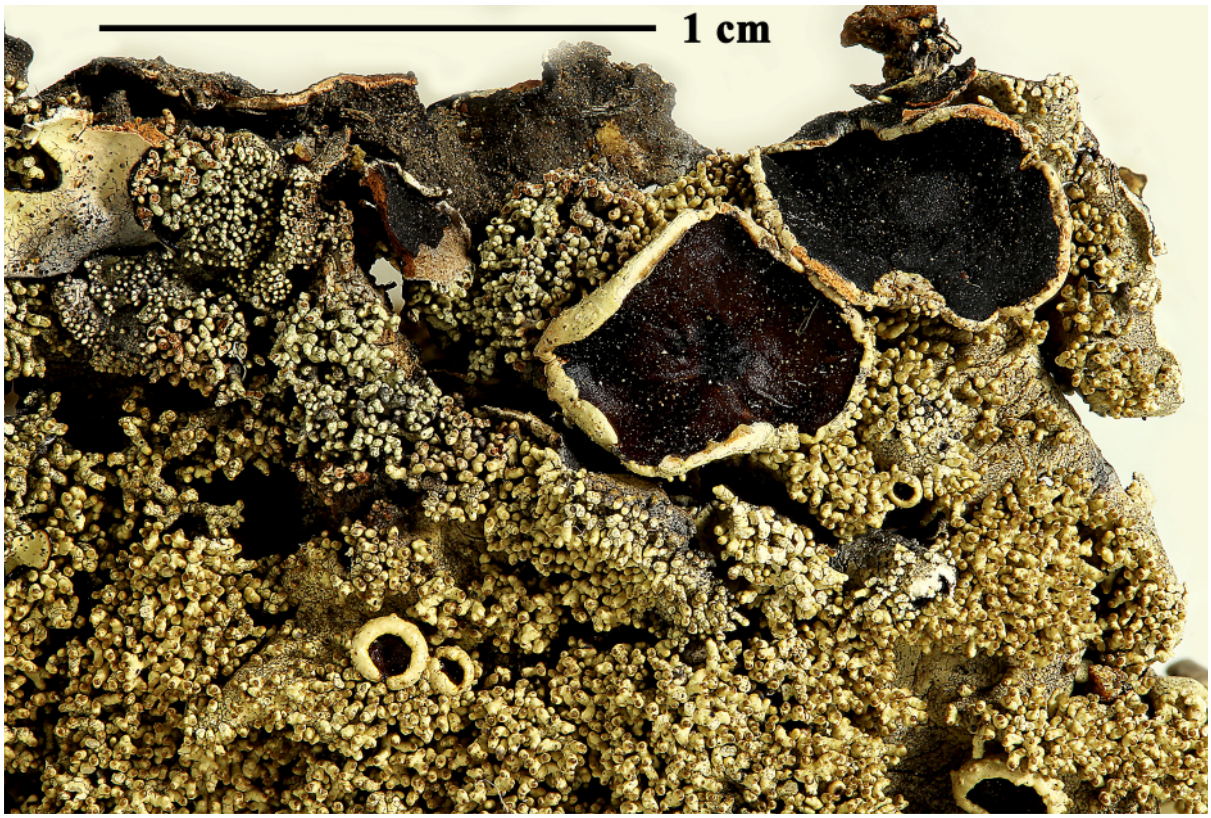
us: usnic acid, no: norstictic acid, sa: salazinic acid, cno: connorstictic acid

Xanthoparmelia australasica D.J.Galloway
[= ***Parmelia australasica*** (D.J.Galloway) Filson]

Thallus foliose, adnate. Lobes often markedly imbricate, irregularly branched, 2-3.5(-5) mm wide; laciniae similar to marginal lobes. Upper surface yellow-green, emaculate, rugose and cracked in centre, without soredia.; isidia moderately dense to dense, often forming a dense areolate crust, cylindrical, extensively coralloid-branched, to 2.5 mm tall, 0.1-0.3 mm wide. Medulla white. Lower surface black with a narrow brown naked marginal zone; rhizines sparse, simple, black. Apothecia 2-6(-8) mm wide. Ascospores 8-11 x 4-6 µm. Chemistry: cortex K-, UV-; medulkla: K+ yellow then dark red, C-, KC+ red, P+ orange; usnic acid, salazinic acid (major), consalazinic acid.

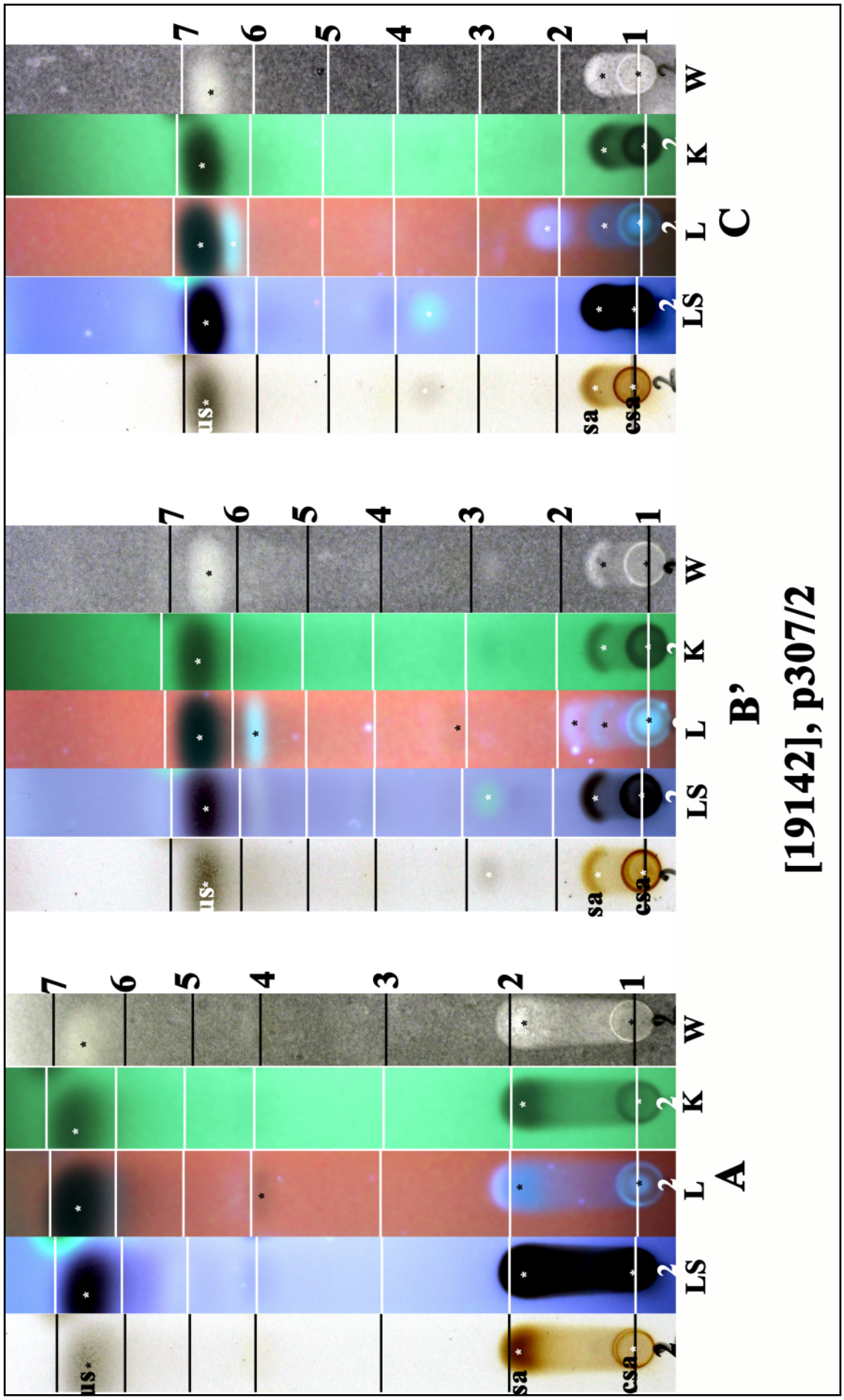
[19142], Australia, Australian Capital Territory, 0.8 km west of Coppins Crossing, 8 km west of Canberra, 35°17' S, 149°03' E, 520 m, growing over porphyry rocks in open grassland. Leg. J.A. Elix (10159) 28.03.1982. LICHENES AUSTRALASICI EXSICCATI NO. 031. Distributed as ***Parmelia australasica*** (D.J.Galloway) Filson.







Xanthoparmelia australasica



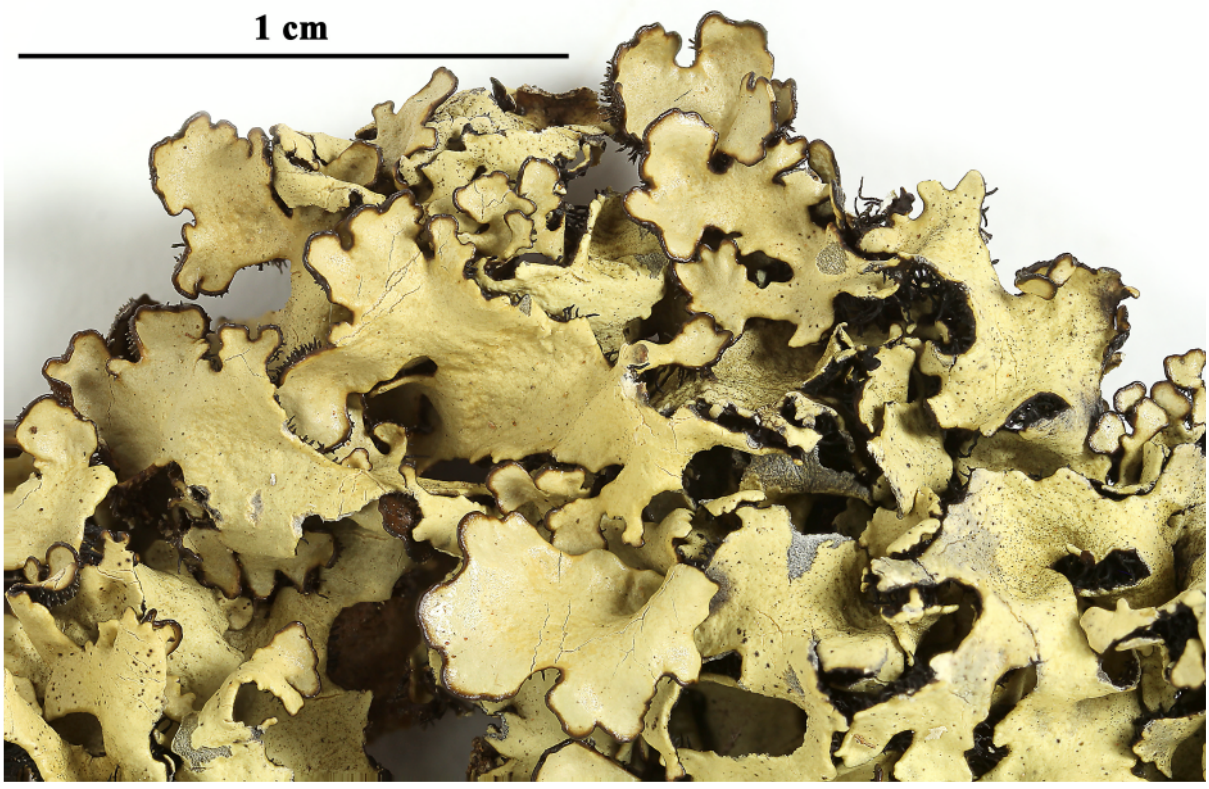
us: usnic acid, sa: salazinic acid, csa: consalazinic acid

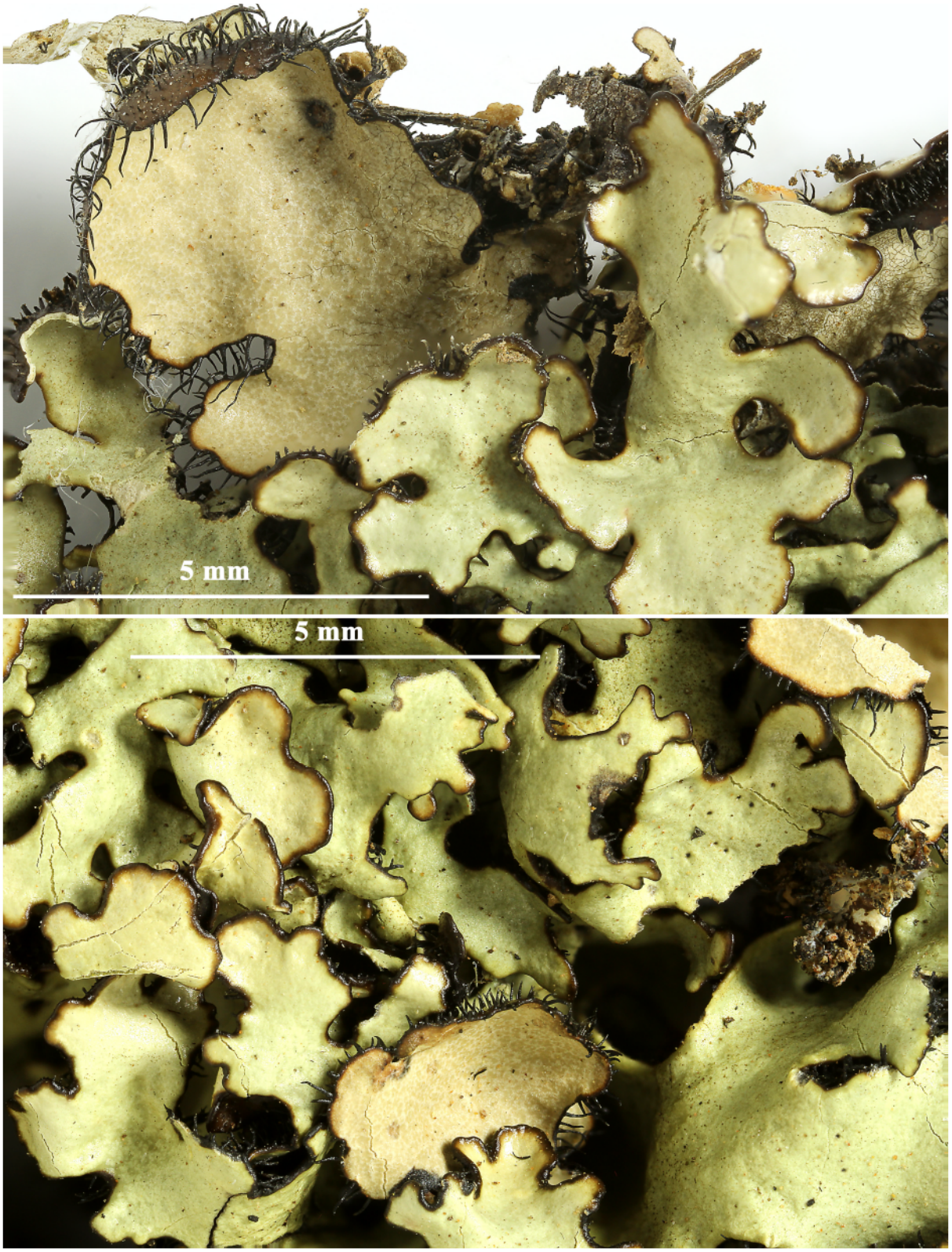
Xanthoparmelia australasica

Xanthoparmelia barbellata (Kurok.) Hale
[= ***Parmelia barbellata*** Kurok.]

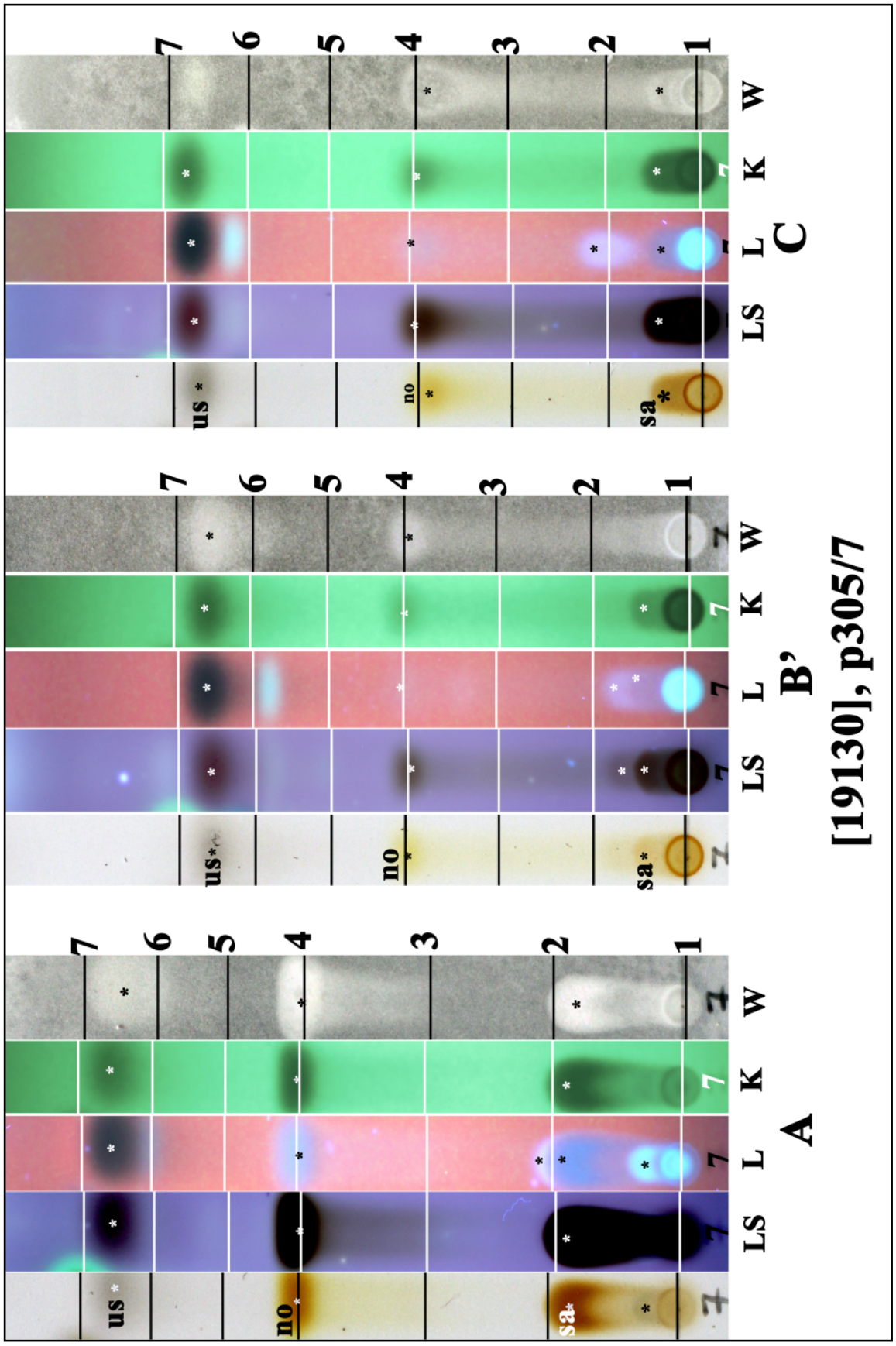
Thallus foliose, loosely adnate to adnate or subpulvinate. Lobes imbricate or not, flat, irregularly branched, becoming laciniate, 1-3 mm wide, lacking lobules; laciniae 0.7-1.5 mm wide; apices subrotund. Upper surface yellow-green, darkening, emaculate, lacking soredia and isidia; lobe margins commonly blackened. Medulla white, intermittendly yellow or orange adjacent to lower cortex. Lower surface pale brown to brown-black, occasionally orange; rhizines sparse to moderately dense, simple or dichtomously branched, 0.5-1.5 mm long. Apothecia 2-8 mm wide. Ascospores 6-7 x 3.5-5.5 µm. Chemistry: cortex K-, UV-; white medulla K+ yellow then dark red, C-, P+ intense orange; pigmented medulla K+ violet; usnic acid, norstictic acid, salazinic acid, connorstictic acid, consalazinic acid, skyrin (in pigmented medulla).

[19130], Australia, New South Wales, Rock Flat Creek, Cooma-Numeralla road, 10 km north-east of Cooma, 36°12' S, 149°13' E, 840 m, growing on rocks, pebbles and spreading on to soil in pasture land. Leg. J.A. Elix (11440) & H. Streimann, 15.11.1983. LICHENES AUSTRALASICI EXSICCATI NO. 055. Distributed as ***Parmelia barbellata*** Kurok.





Xanthoparmelia barbellata

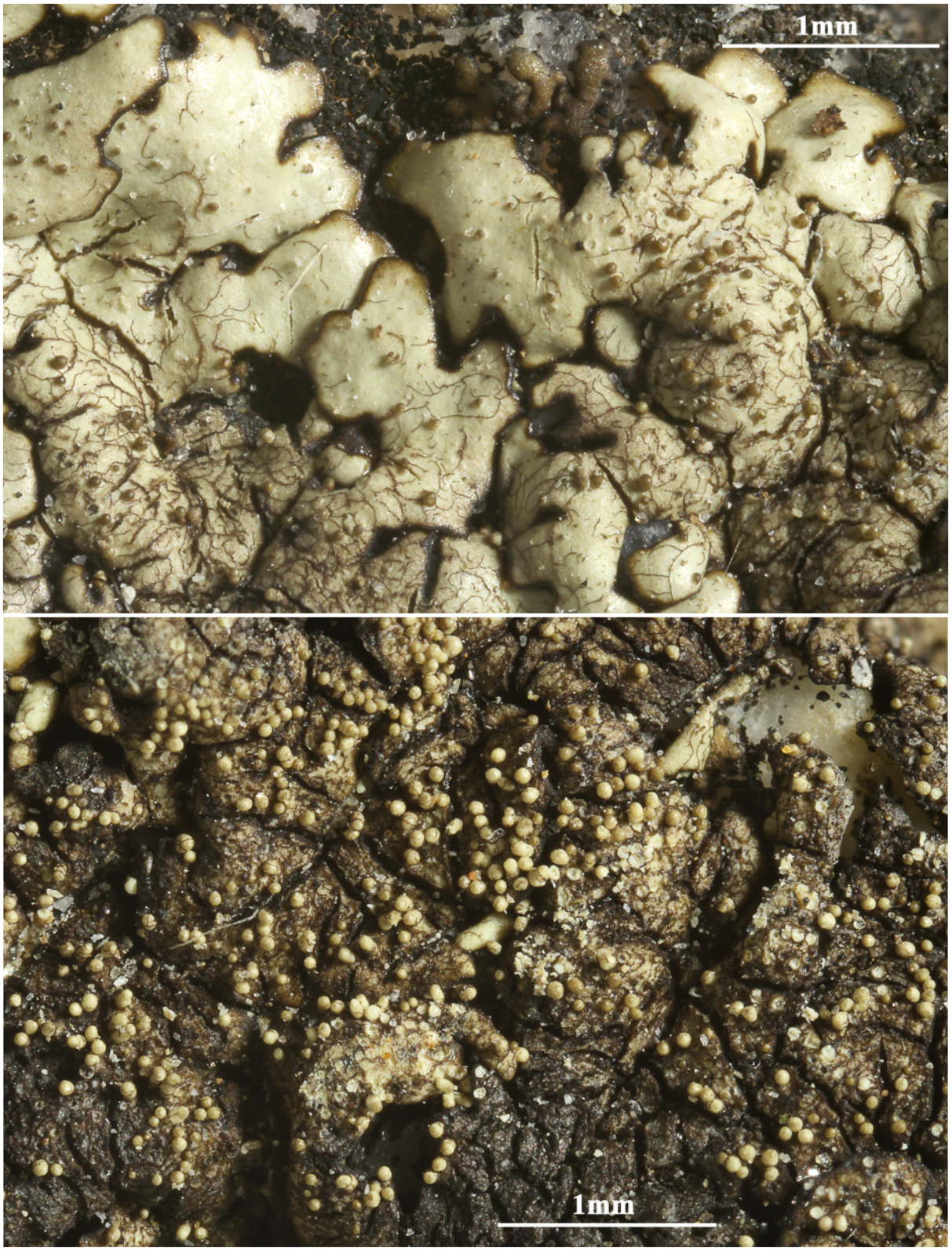

A
B'
C
[19130], p305/7
LS
L
K
W
us
no
sa
us: usnic acid, no: norstictic acid, sa: salazinic acid

Xanthoparmelia consociata (Elix) Elix & J.Johnst.
[= ***Parmelia consociata*** Elix]

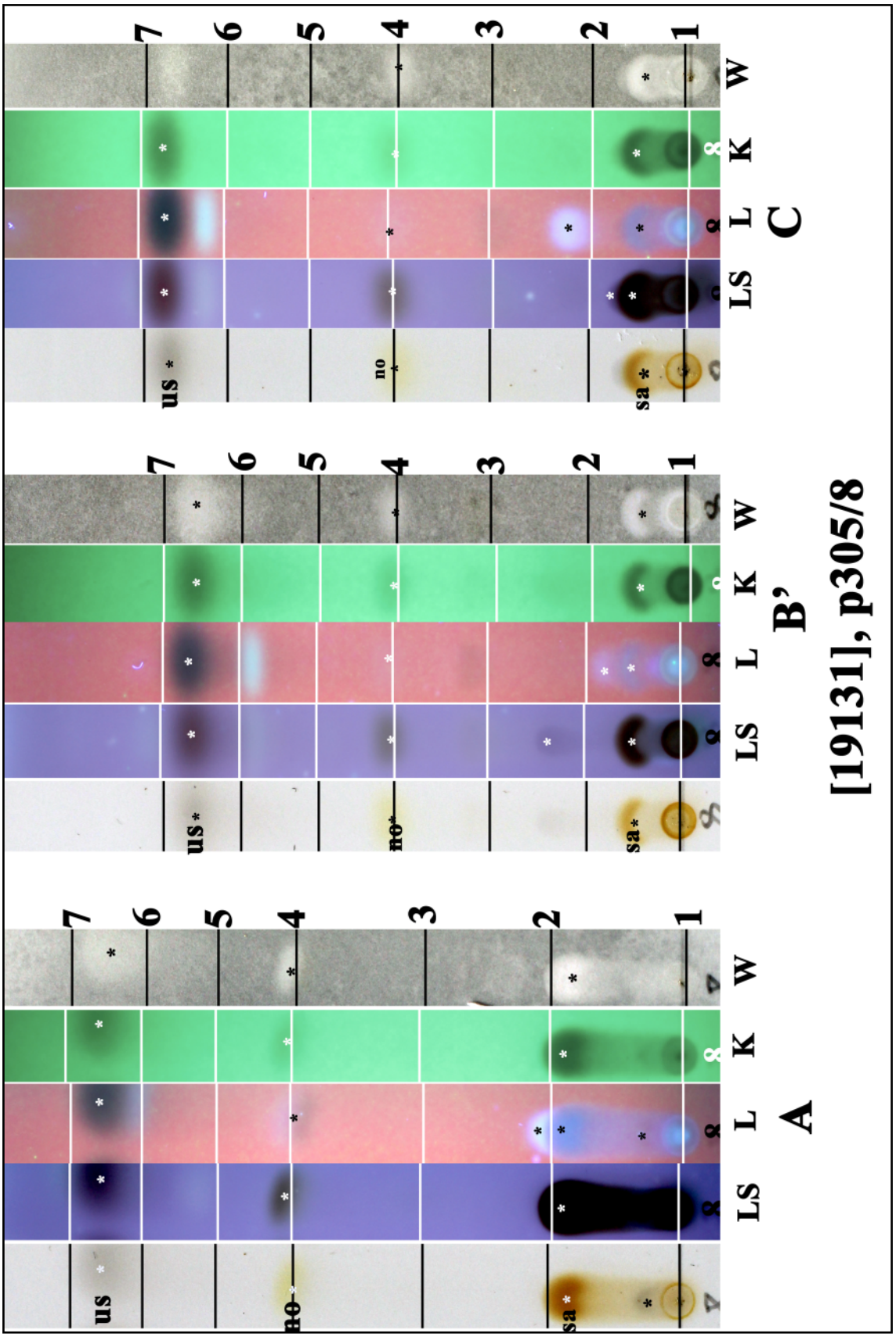
Thallus small-foliose to subcrustose, tightly adnate. Lobes contiguous, sublinear, irregularly branched, 0.3-1 mm wide, without lobules. Upper surface greenish yellow, emaculate, without soredia; older lobes irregularly fractured and areolae commonly formed; isidia sparse to moderately dense, cylindrical, mainly simple, short, up to 0.2 mm high; isidia apices syncorticate. Medulla white. Lower surface pale brown to brown, often straw-yellow near lobe apices; rhizines moderately dense, simple pale brown. Apothecia sessile, 0.5-1 mm wide. Ascospores 6-9 x 3.5-5.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, CK-, P+ intense yellow; usnic acid, salazinic acid (major), norstictic acid (minor), ±consalazinic acid.

[19131], Australia, Australian Capital Territory, 1.5 km south-west of Glendale Crossing, 15 km west of Michelago, 35°44' S, 149°00' E, 1100 m, growing on granite rocks in open eucalypt woodland. Leg. J.A. Elix (9041), 4.4.1981. LICHENES AUSTRALASICI EXSICCATI NO. 012. Distributed as ***Parmelia consociata*** Elix.





Xanthoparmelia consociata



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

Xanthoparmelia consociata

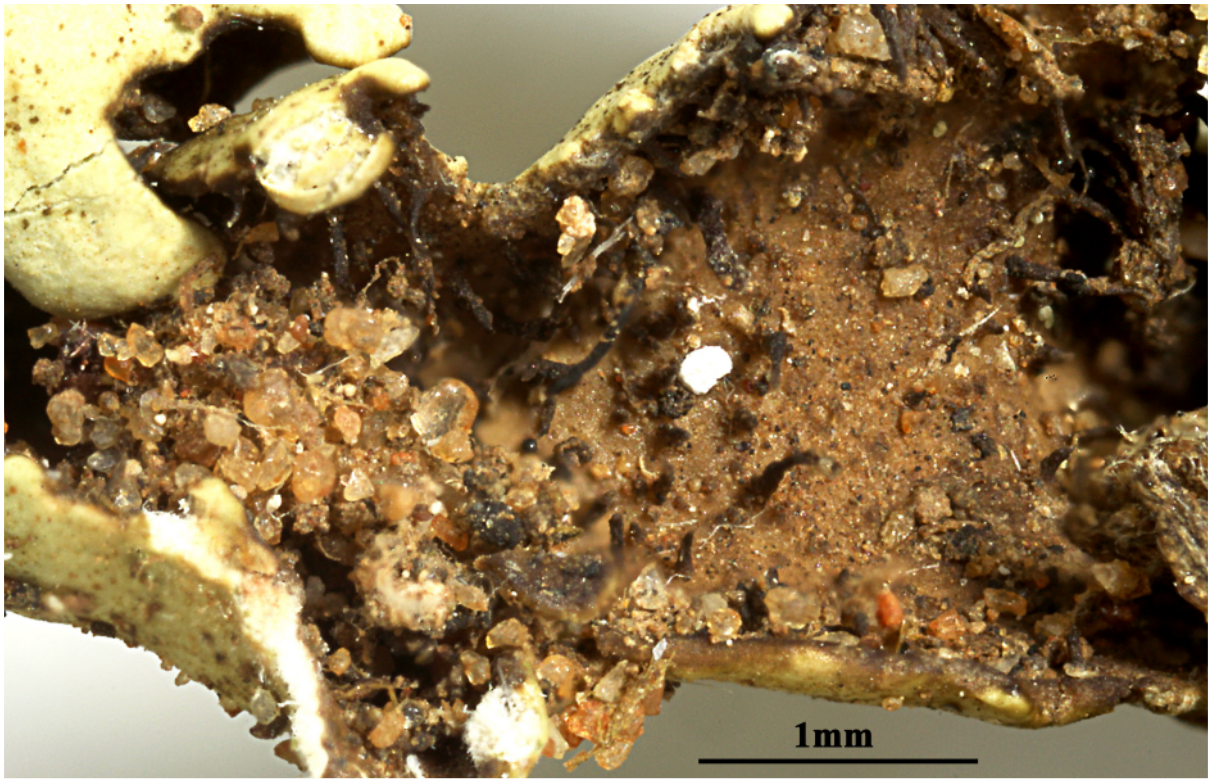
Xanthoparmelia convoluta (Kremp.) Hale
[= ***Parmelia convoluta*** Kremp.]

Thallus foliose, unattached. Lobes strongly convolute, contorted, elongate, sublinear, sparsely dichtomously branched, 3.5-8 mm wide when flattened, 1-4 mm wide when dry and convoluted. Upper surface pale yellow-green, emaculate, becoming rugulose and cracked in older lobes, without soredia and isidia. Medulla white. Lower surface pale brown to dark brown; rhizines very sparse, simple. Apothecia rare, to 4 mm wide. Ascospores 10-11 x 6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then red, C-, P+ orange; usnic acid, salazinic acid, consalazinic acid.

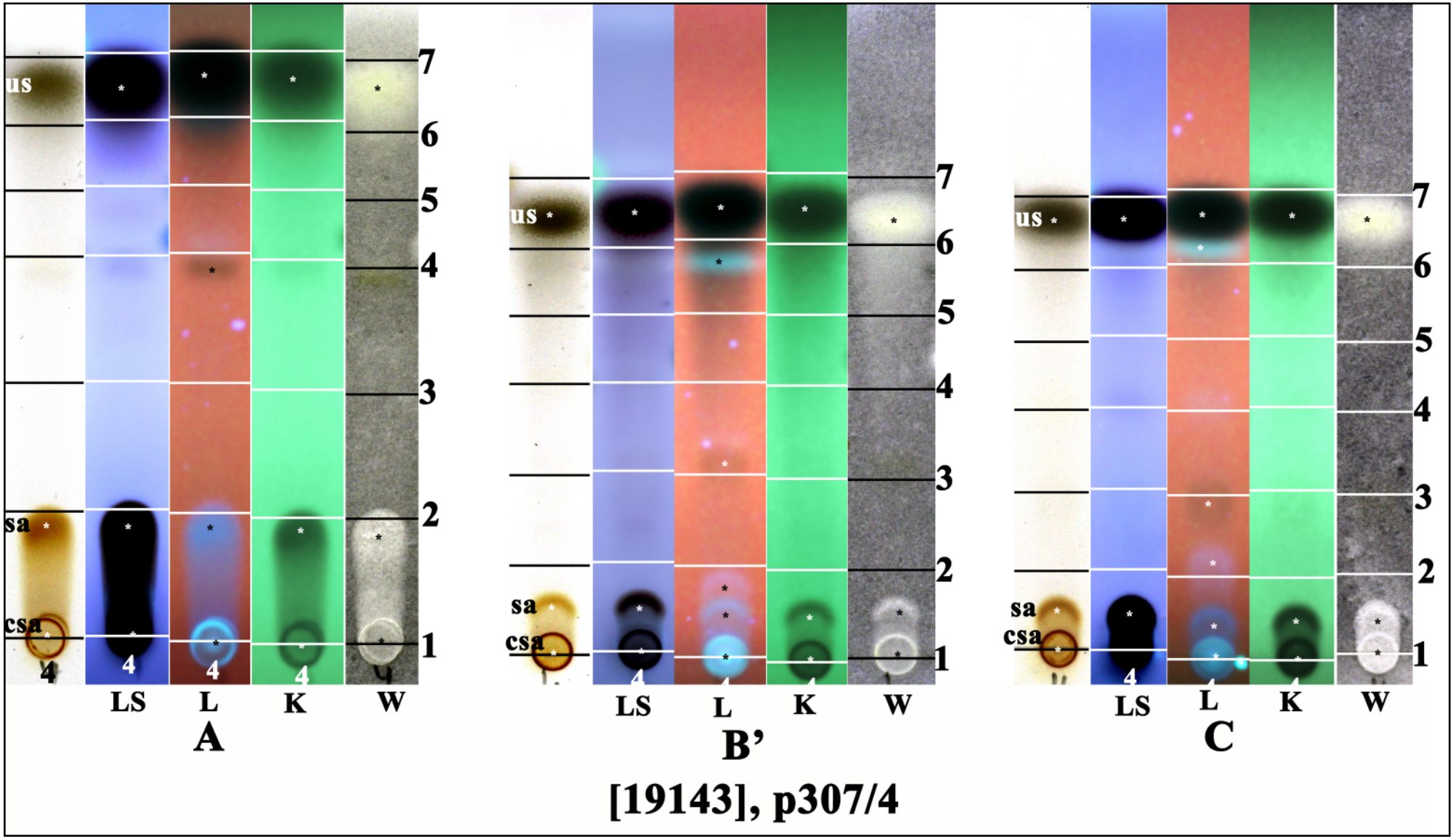
[19143], Australia, South Australia, Ridley National Park, 18 km south of Swan Reach, 34°39' S, 139°34' E, 30 m, growing on soil in mallee scrub. Leg. J.A. Elix (10913) & L.H. Elix, 12.05.1983. LICHENES AUSTRALASICI EXSICCATI NO. 057. Distributed as ***Parmelia convoluta*** Kremp.







Xanthoparmelia convoluta



us: usnic acid, sa: salazinic acid, csa: consalazinic acid

Xanthoparmelia dichotoma (Müll.Arg.) Hale
[= ***Parmelia dichotoma*** Müll.Arg.]

Thallus foliose, loosely adnate. Lobes loosely imbricate, linear-elongate, divaricate, with irregular dichotomous branching, to 15 mm long, 1-2.5 mm wide: apices often subascending, exposing lower surface. Upper surface pale yellow-green, emaculate, lacking soredia and isidia. Medulla white. Lower surface rugose, black or rarely partly brown; rhizines very sparse, simple. Apothecia rare, to 5 mm wide. Ascospores 5-8 x 3.5-5 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, loxodin, norlobaridone.

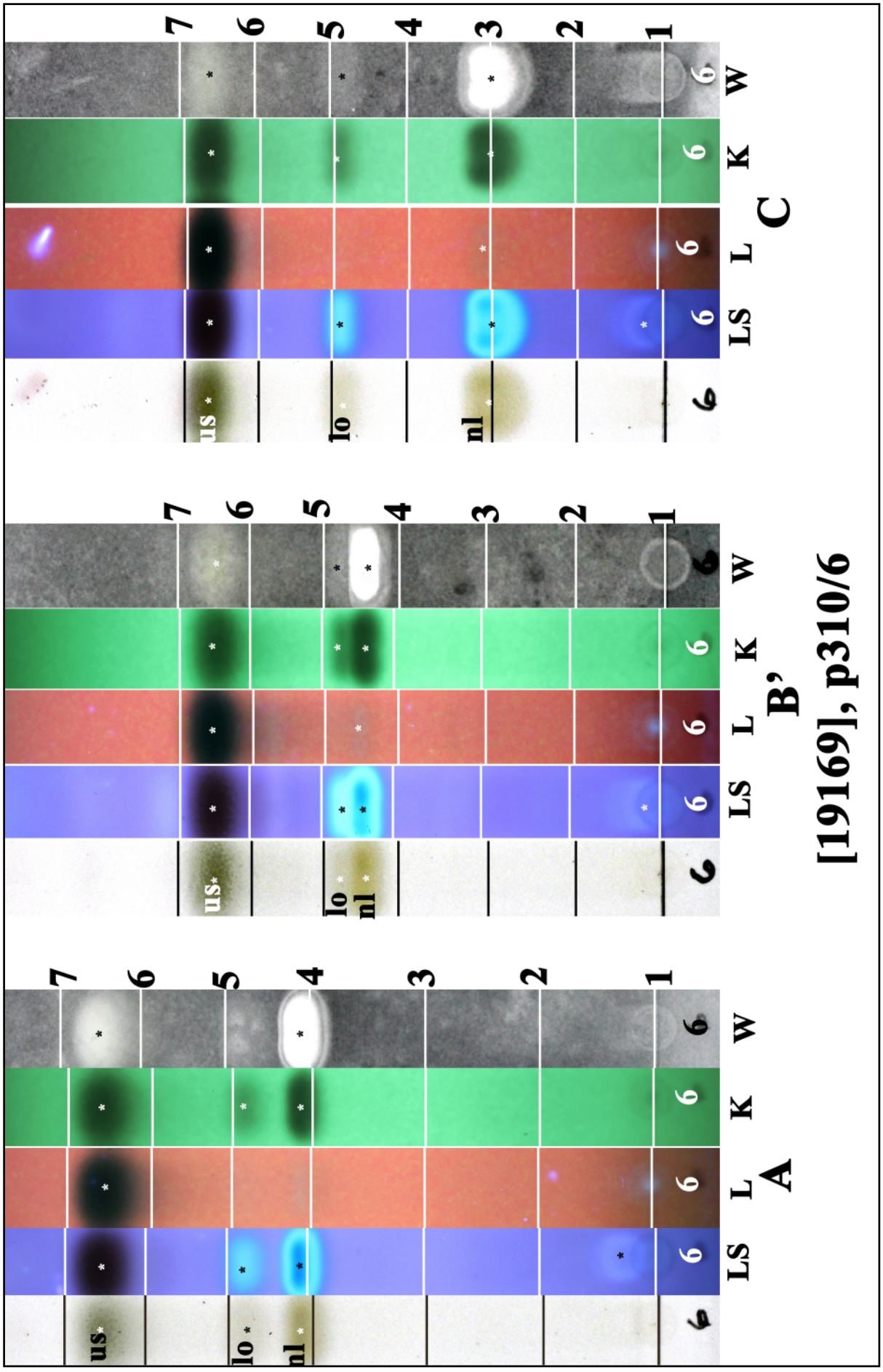
[19169], Australia, New South Wales, Black Flat, Currowan State Forest, 6 km north-west of Nelligen, 35°36' S, 150°05' E, 120 m, growing on mossy granite rocks in wet sclerophyll forest. Leg. J.A. Elix (10446), 02.10.1982. LICHENES AUSTRALASICI EXSICCATI No. 032. Distributed as ***Parmelia dichotoma*** Müll.Arg.







Xanthoparmelia dichotoma



us: usnic acid, lo: loxodin, nl: norlobaridone

Xanthoparmelia dichotoma

Xanthoparmelia flavescentireagens (Gyeln.) D.J.Galloway
[= ***Parmelia flavescentireagens*** Gyeln.]

Thallus foliose, loosely to moderate adnate. Lobes very variable, flat or weakly convolute, subirregular with round apices to sublinear, subirregularly branched, 1-5-2.5(-10) mm wide, without lobules; laciniae imbricate, 0.8-1 mm wide. Upper surface pale yellow to yellow-green, emaculate, lacking soredia and isidia; lobes often with black margins. Medulla white. Lower surface pale ivory to brown. Ascospores 11-14 x 5-7 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-: usnic acid, loxodin, norlobaridone, ±constipatic acid, ±protoconstipatic acid, ±scabrosin, 4,4'-dibutyrate, ±conloxodin, ±connorlobaridone.

[19132], 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 granitic rocks in subalpine eucalypt forest. Leg. J.A. Elix (9694), 24.02.1982. LICHENES AUSTRALASICI EXSICCATI NO. 015 . Distributed as ***Parmelia flavescentireagens*** Gyeln.



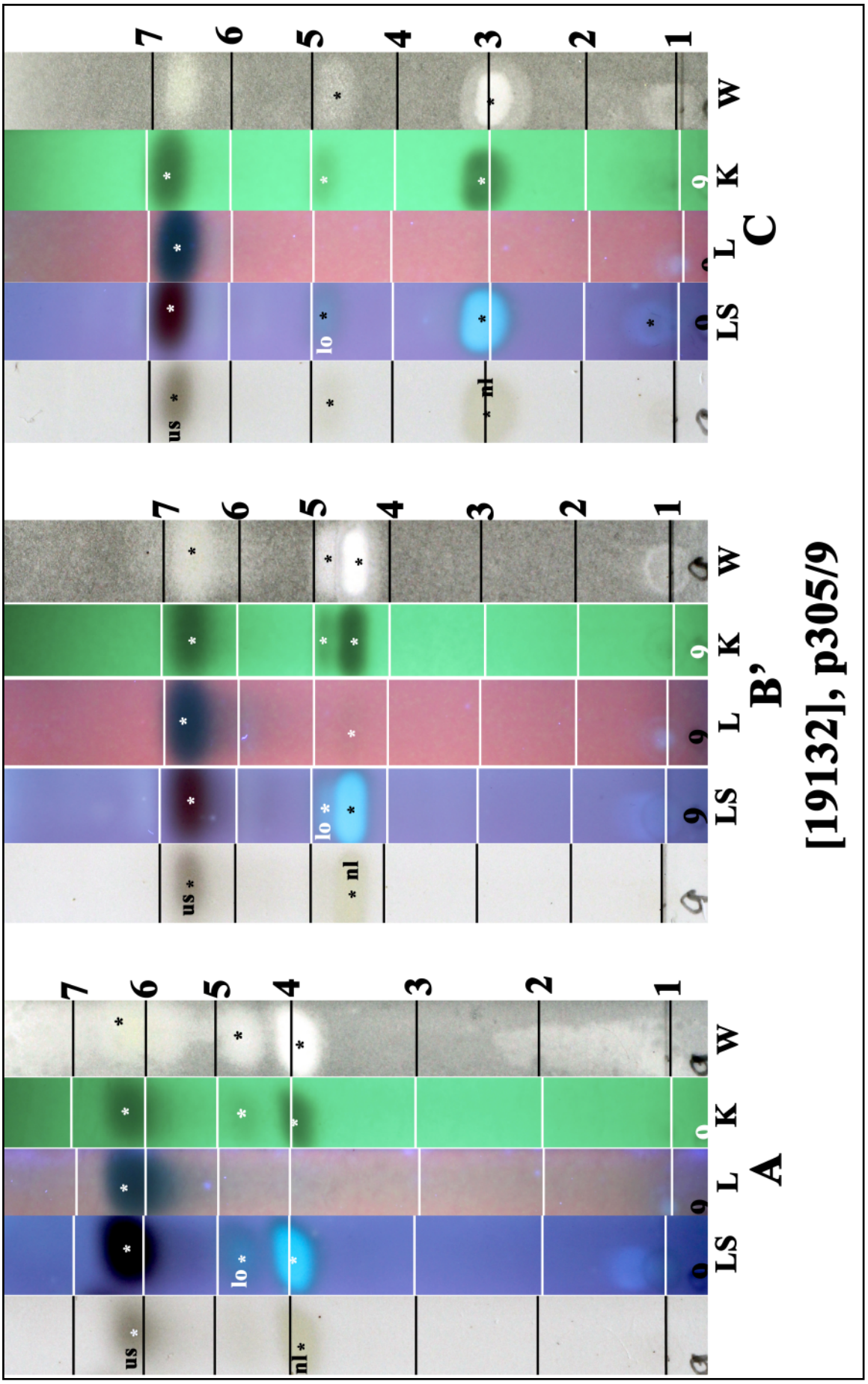




Xanthoparmelia flavescentireagens



Xanthoparmelia flavescentireagens

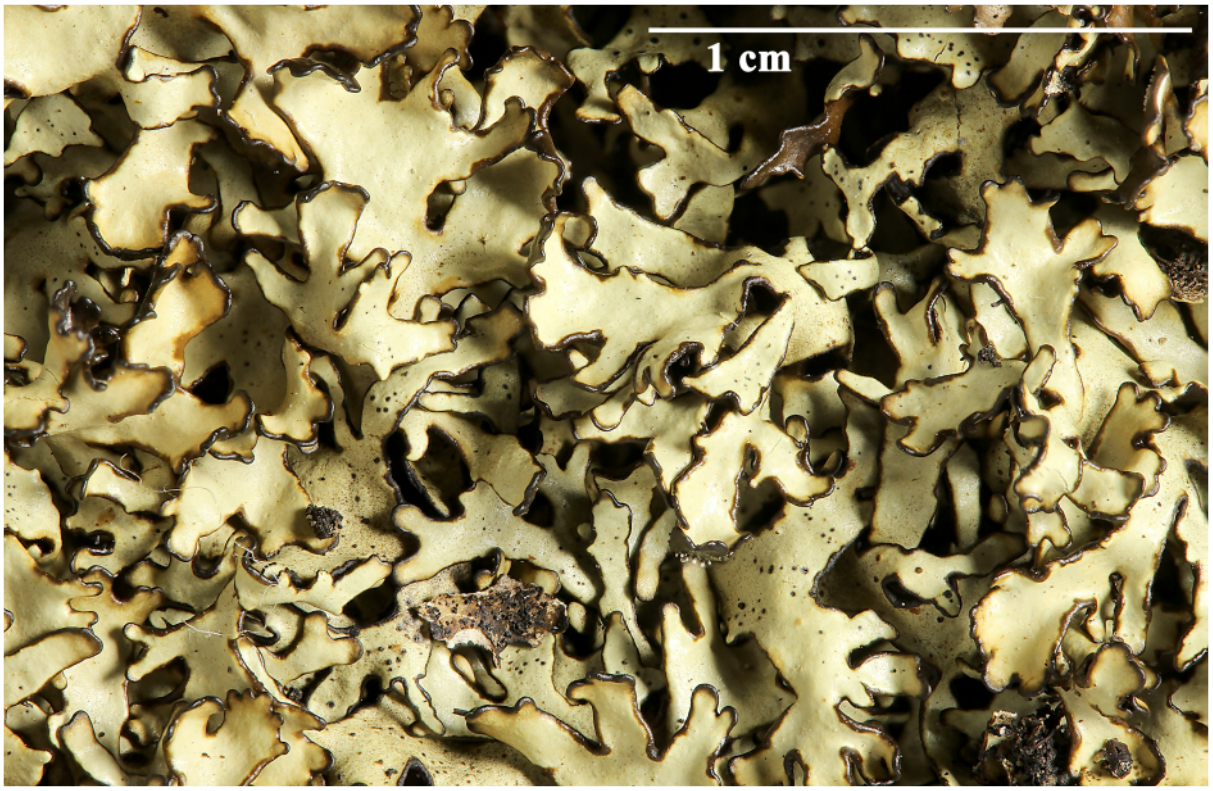


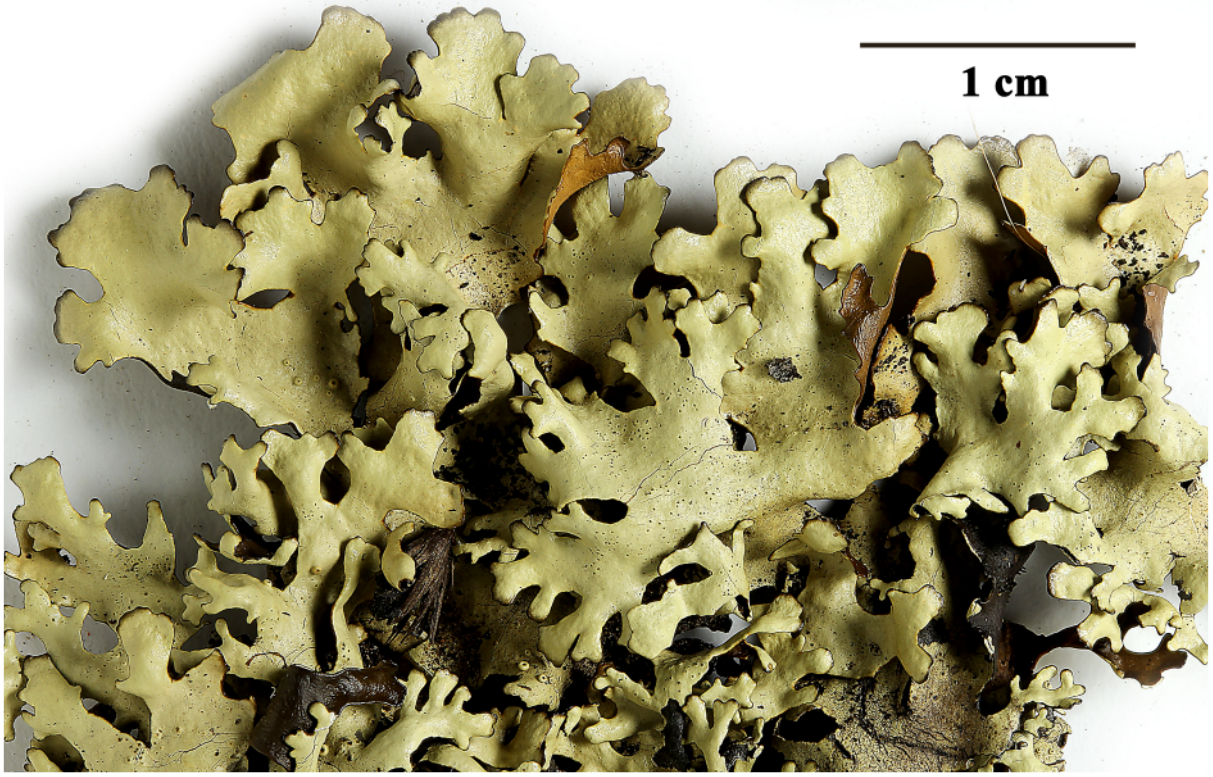
Xanthoparmelia flavescentireagens

Xanthoparmelia flavescentireagens (Gyeln.) D.J.Galloway
[= ***Parmelia flavescentireagens*** Gyeln.]

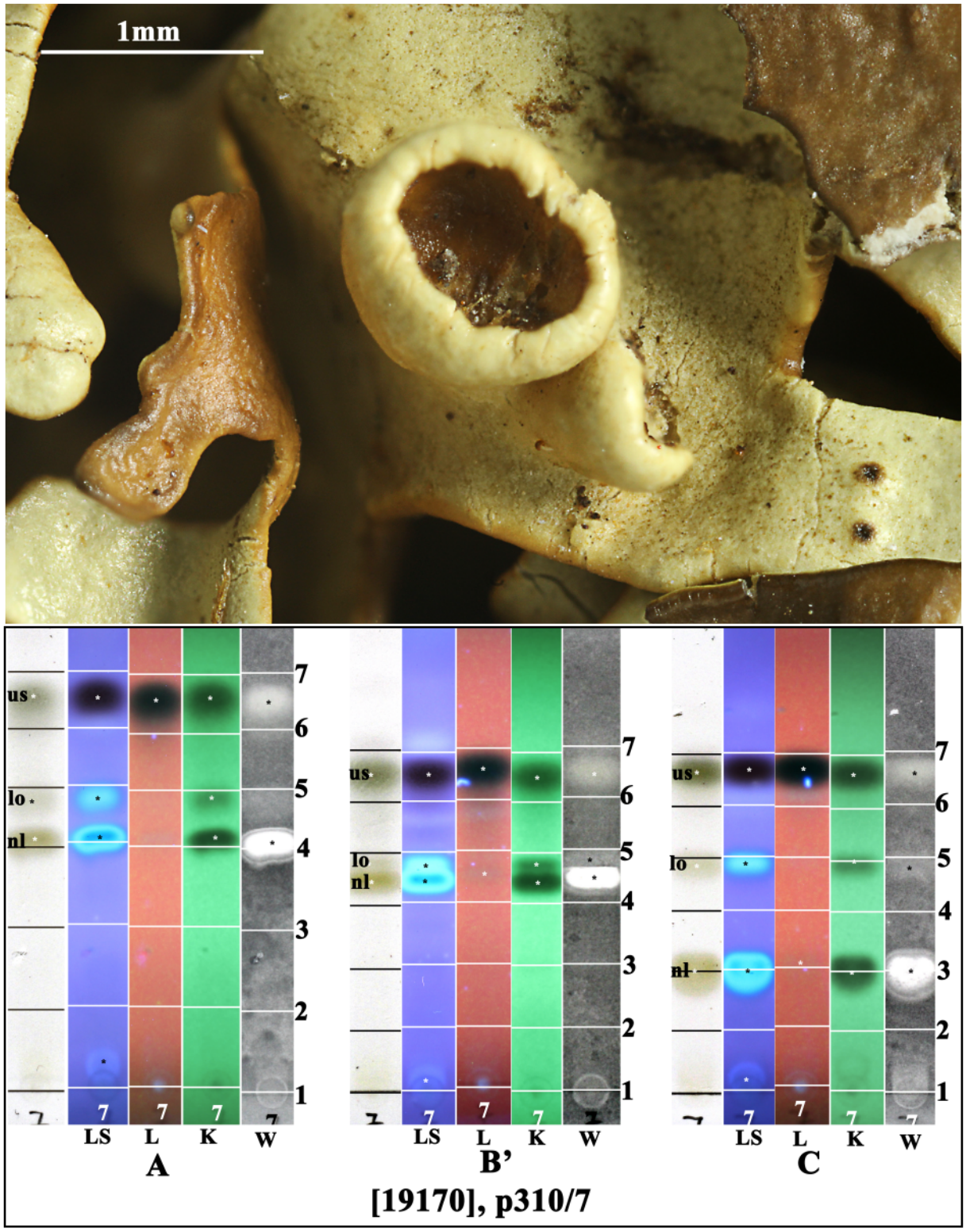
[19170], Australia, Australian Capital Territory, Honeysuckle Creek, 30 km south-south-west of Canberra, 35°36' S, 148°39' E, 1200 m, growing on granite rocks in open *Eucalyptus* woodland. Leg. J.A. Elix (10282), 13.06.1982. LICHENES AUSTRALASICI EXSICCATI NO. 016. Distributed as ***Parmelia flavescentireagens*** Gyeln.







Xanthoparmelia flavescentireagens



us: usnic acid, lo: loxodin, nl: norlobaridone

Xanthoparmelia flavescentireagens

Xanthoparmelia furcata (Müll.Arg.) Hale
[= ***Parmelia furcata*** Müll.Arg.]

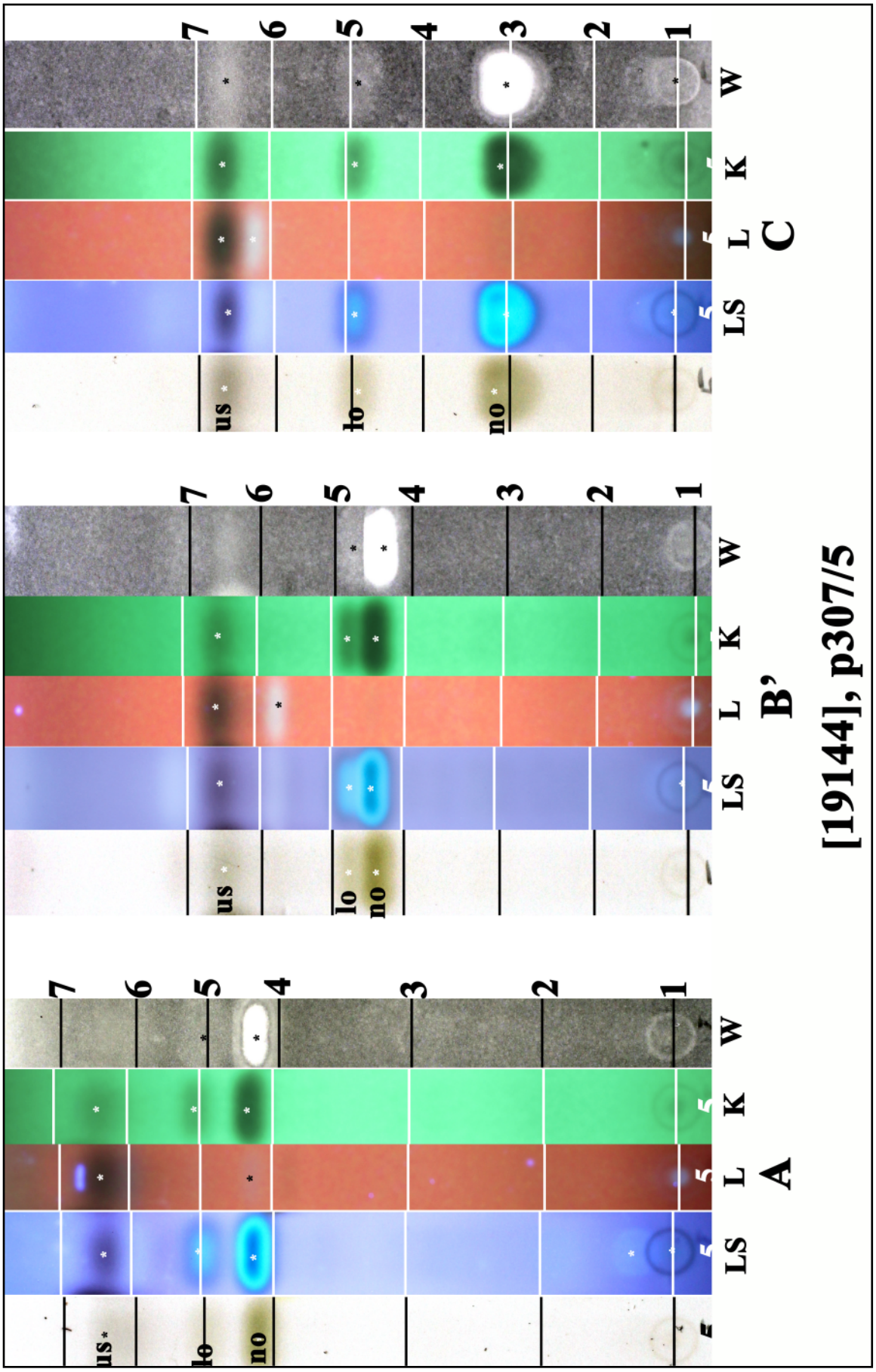
Thallus foliose, loosely adnate. Lobes loosely imbricate, flat, linear-elongate, divaricate, with subirregular dichotomous branching, to 8 mm long, 0.5-1.5 mm wide; margins often subascending to apices exposing lower surface. Upper surface yellow-green, emaculate, lacking soredia and isidia. Medulla white. Lower surface pale brown to chocolate brown, to almost black near apices; rhizines very sparse, simple. Apothecia to 5 mm wide. Ascospores 6-8 x 4.5-5.5 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, loxodin, norlobaridone, rarely connorlobaridone (trace) and rarely norlobariol methyl ester (trace).

[19144], Australia, South Australia, Mount Lofty Ranges, Borthwick road, 6.5 km east of Tungkillo, 34°50' S, 139°09' E, 470 m, growing on exposed granite rocks in pasture land. Leg. J.A. Elix (10916) & L.H. Elix, 14.05.1983. LICHENES AUSTRALASICI EXSICCATI NO. 033. Distributed as ***Parmelia furcata*** Müll.Arg.





Xanthoparmelia furcata



Xanthoparmelia furcata

Xanthoparmelia glareosa (Kurok. & Filson) Elix & J.Johnst.
[= ***Parmelia glareosa*** Kurok. & Filson]

Thallus foliose, loosely to moderately adnate. Lobes imbricate, flat, subirregular, elongate, irregularly branched, 1-3 mm wide; laciniae numerous, developing in the thallus centre, subdichtomously branched, 0.4-1 mm wide. Upper surface yellow-green, emaculate, lacking soredia and isidia. Medulla white. Lower surface black, with a broad, brown-black to brown zone near lobe apices; rhizines sparse to moderately dense, simple or dichtomously branched. Apothecia 2-6 mm wide. Ascospores 10-12 x 5-6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ yellow-orange; usnic acid, norstictic acid (major), connorstictic acid, salazinic acid (major).

[19145], Australia, Australian Capital Territory, 0.8 km west of Coppins Crossing, 8 km west of Canberra, 35°17' S, 149°03' E, 520 m, growing over porphyry rocks and spreading on to soil in open grassland. Leg. J.A. Elix (10158) 28.03.1982. LICHENES AUSTRALASICI EXSICCATI NO. 034. Distributed as ***Parmelia glareosa*** Kurok. & Filson.



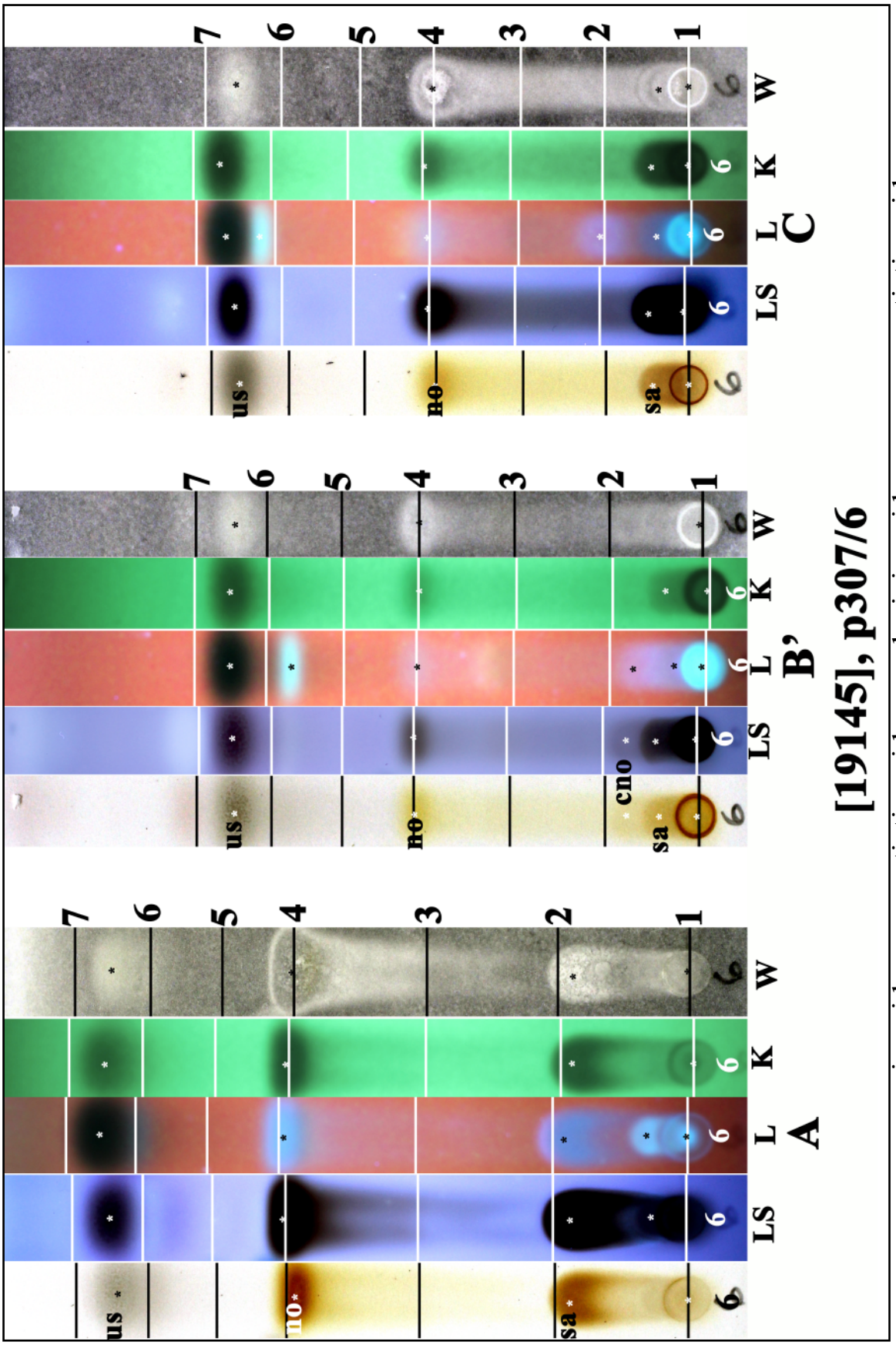




Xanthoparmelia glareosa



Xanthoparmelia glareosa



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

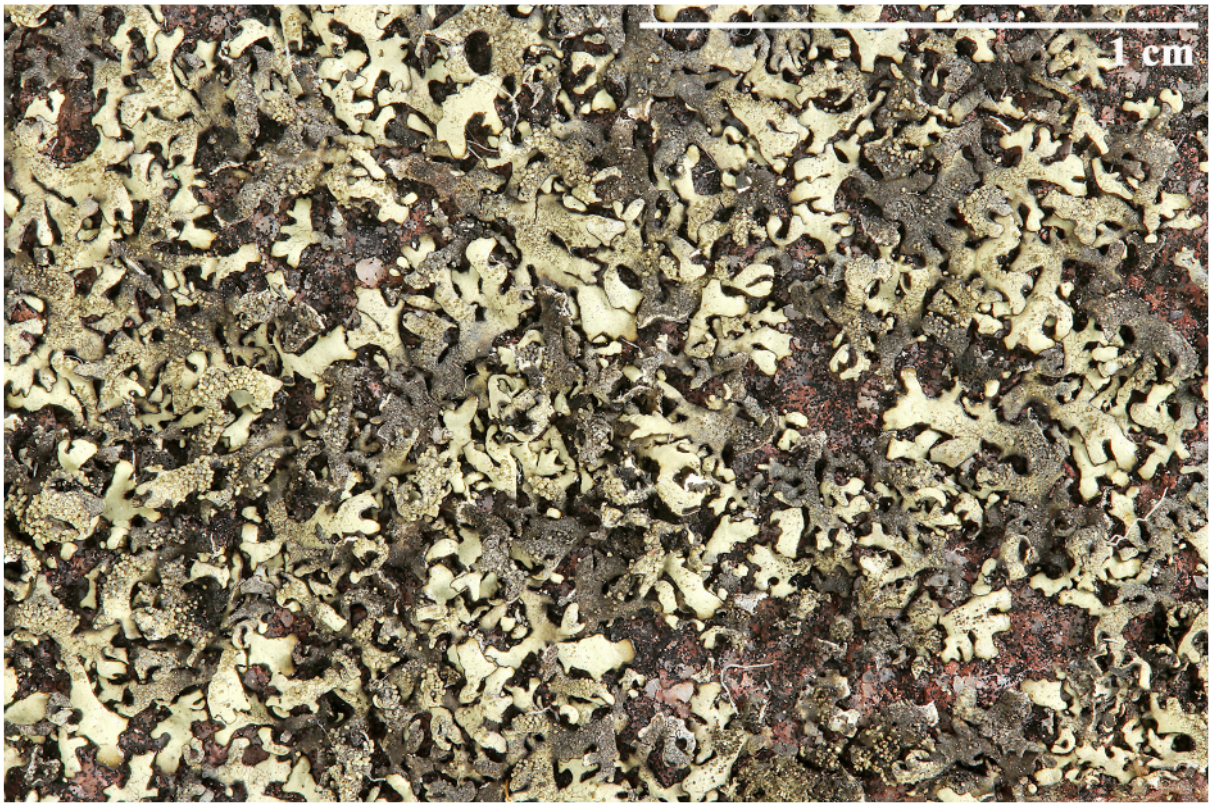
Xanthoparmelia glareosa

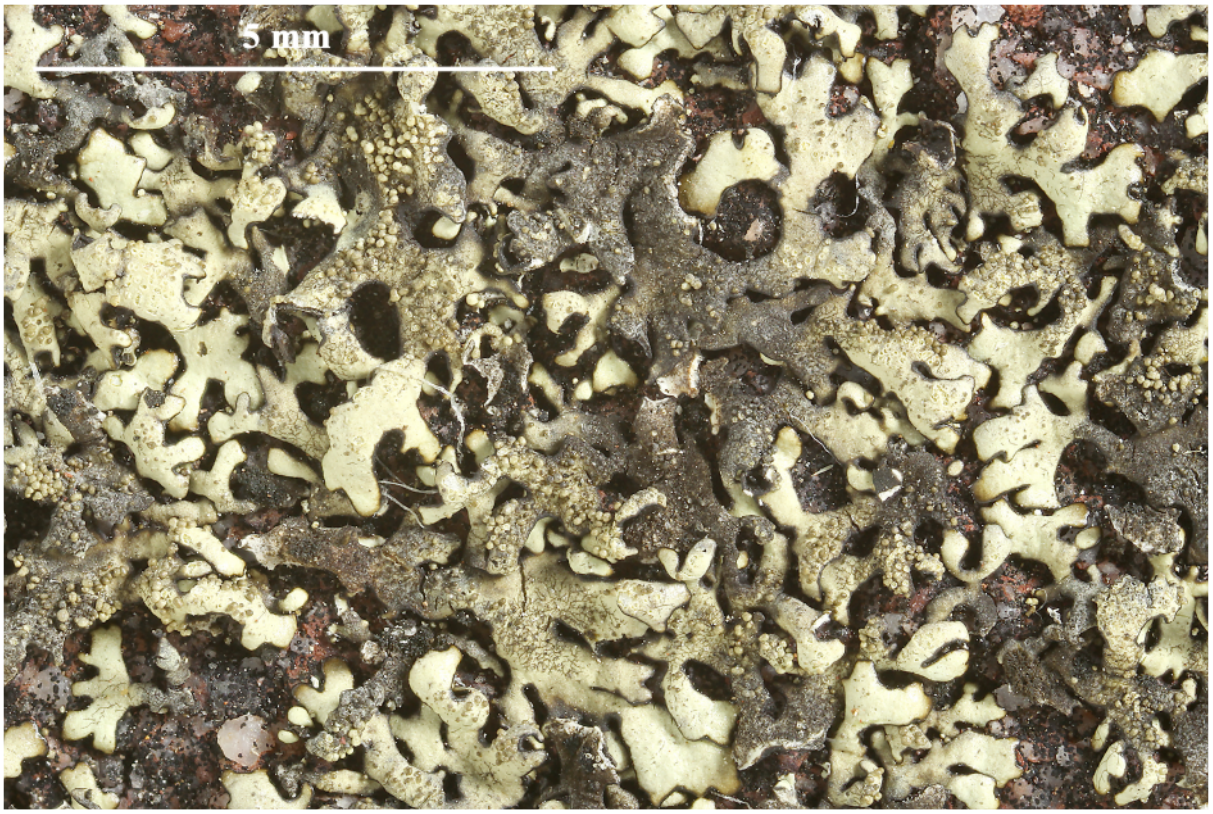
Xanthoparmelia heinarii Elix & J.Johnst.

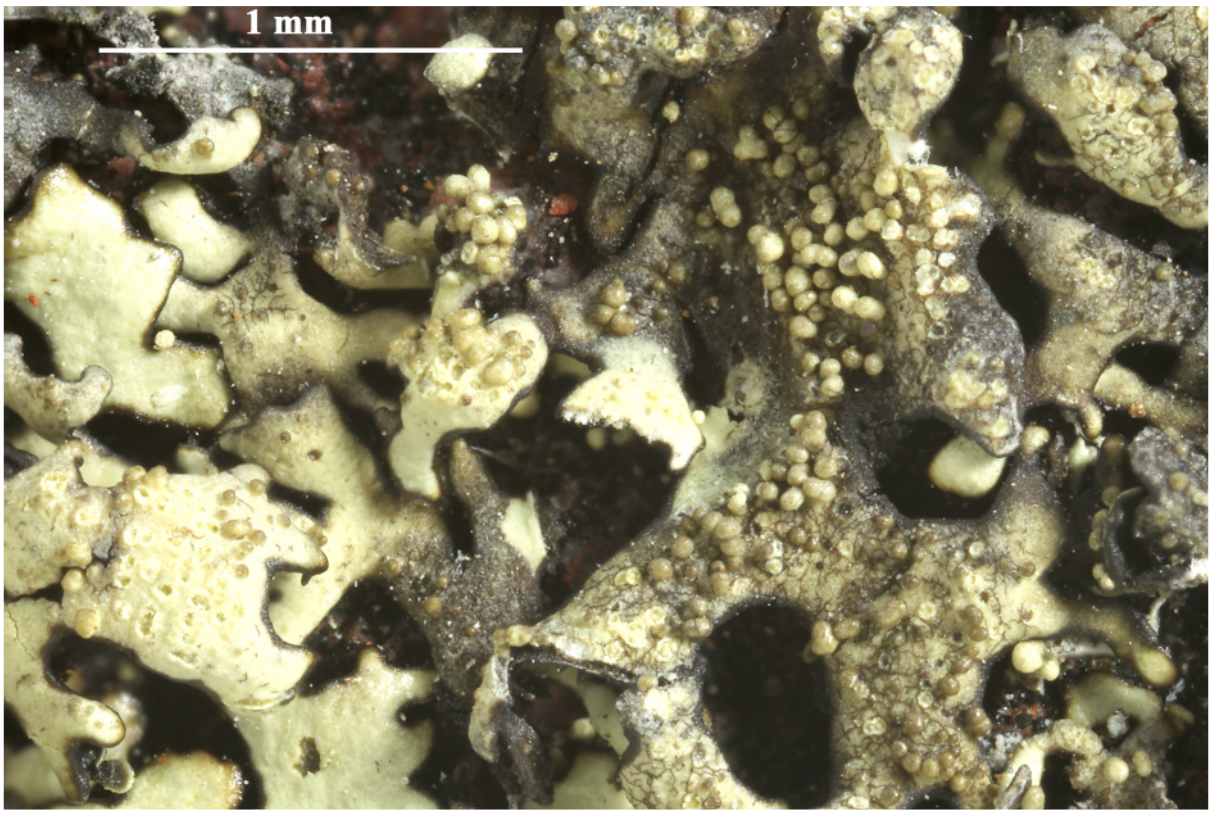
Thallus small-foliose to subcrustose, tightly adnate. Lobes moderately imbricate, sublinear, irregularly branched, 0.3-0.8(-1) mm wide. Upper surface yellow-green, emaculate, without soredia; isidia in thallus centre, simple, subglobose, then subcylindrical or expanding laterally, rarely branching. Medulla white. Lower surface black; rhizines sparse to moderately dense, simple, black, 0.1-0.2 mm long. Chemistry: cortex K-, UV-; medulla: K+ yellow then dark red, C-, P+ yellow; usnic acid, norstictic acid (major), connorstictic acid (minor).

This species resembles ***Xanthoparmelia filsonii*** in both morphology and chemistry. However ***X. heinarii*** has simple isidia that are subglobose to shortly cylindrical with epicorticate apices, while ***X. filsonii*** has isidia which are cylindrical, often densely coralloid branched and have syncorticate apices.

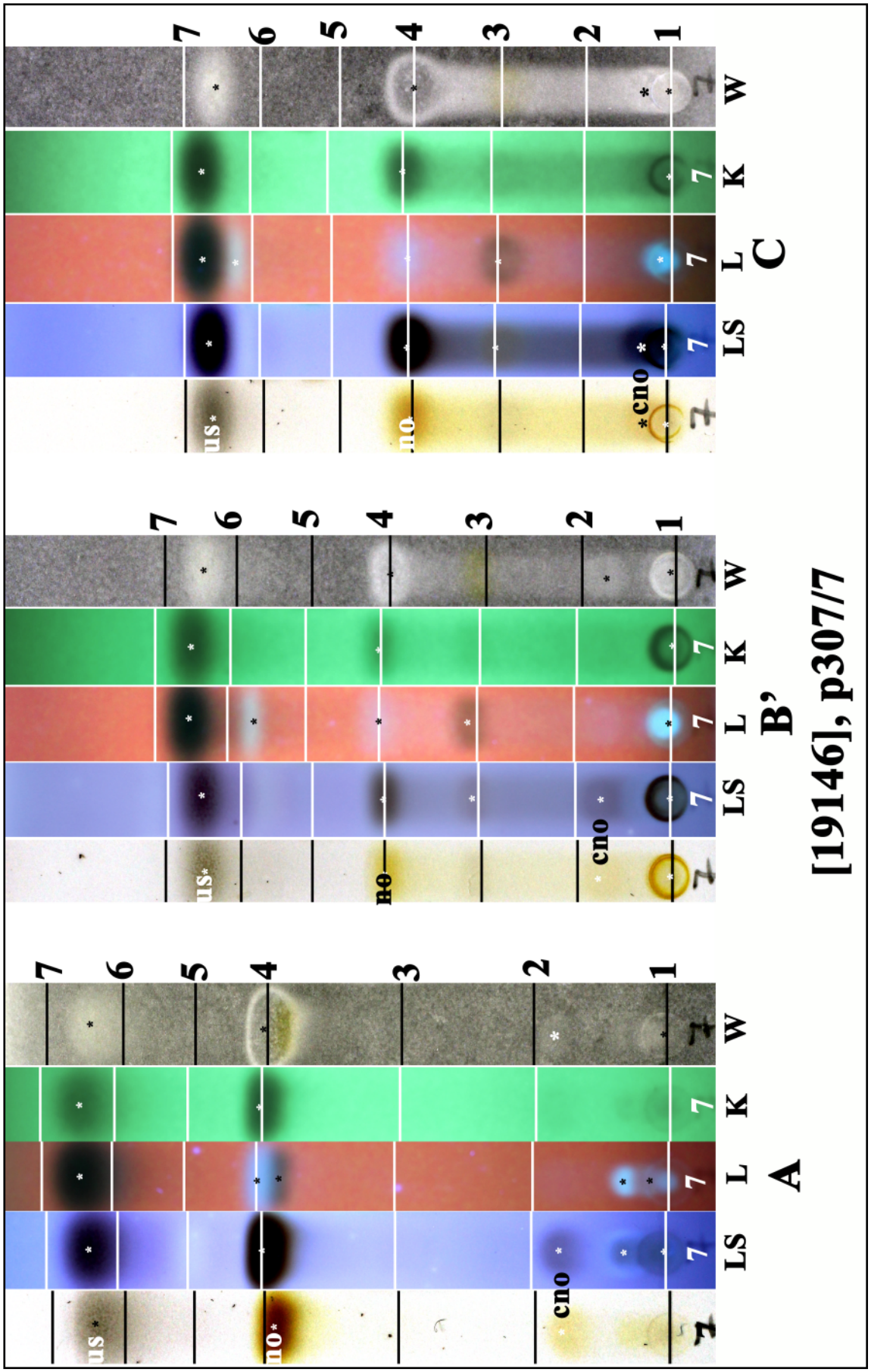
[19146], Australia, New South Wales, Wauchope Trig, Broken Bago Range, Broken Bago State Forest, 6 km south of Wauchope, 31°31'S, 152°44'E, 350 m, growing on semi-exposed sandstone rocks in dry sclerophyll forest on very rocky ridge. ISOTYPE. Leg. H. Streimann (38549), 31.08.1987. Chemistry: usnic acid (minor), norstictic acid (major), connorstictic acid (minor) by TLC, anal. J. Johnston. LICHENES AUSTRALASICI EXSICCATI NO. 172.







Xanthoparmelia heinarii



us: usnic acid, no: norstictic acid, cno: connorstictic acid

Xanthoparmelia heinarii

Xanthoparmelia hypoconstictica (Elix & J.Johnst.) Elix
[= ***Paraparmelia hypoconstictica*** Elix & J.Johnst.]

Thallus loosely to moderately adnate, pale grey to dark grey. Lobes 1-3 mm wide, eciliate, lacking soredia, with isidia. Isidia dense in thallus centre, scattered on marginal lobes, cylindrical, not inflated. Lower surface pale brown to chocolate-brown. Apothecia to 5 mm wide. Ascospores 10-12 x 4-6 µm. Chemistry: cortex K+ yellow, medulla K yellow then pale red, C- P-; atranorin, hypoconstictic acid (major), hypostictic acid (trace), ±hyposalazinic acid (trace).

[19093], Australia, Queensland, Slopes of Mt. Timbeerwah, 5 km west of Tewantin, 26°24' S, 153°01' E, 250 m, growing on volcanic rocks in heath scrub. **TOPOTYPE**. Leg. J.A. Elix (19286) & M.J. Elix, 29.08.1985. Chemistry: atranorin, hypoconstictic acid (major), hypostictic acid (trace), hyposalazinic acid (trace) by TLC, HPLC, anal. Jen Johnston & G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 137. Distributed as ***Paraparmelia hypoconstictica*** Elix & J.Johnst.

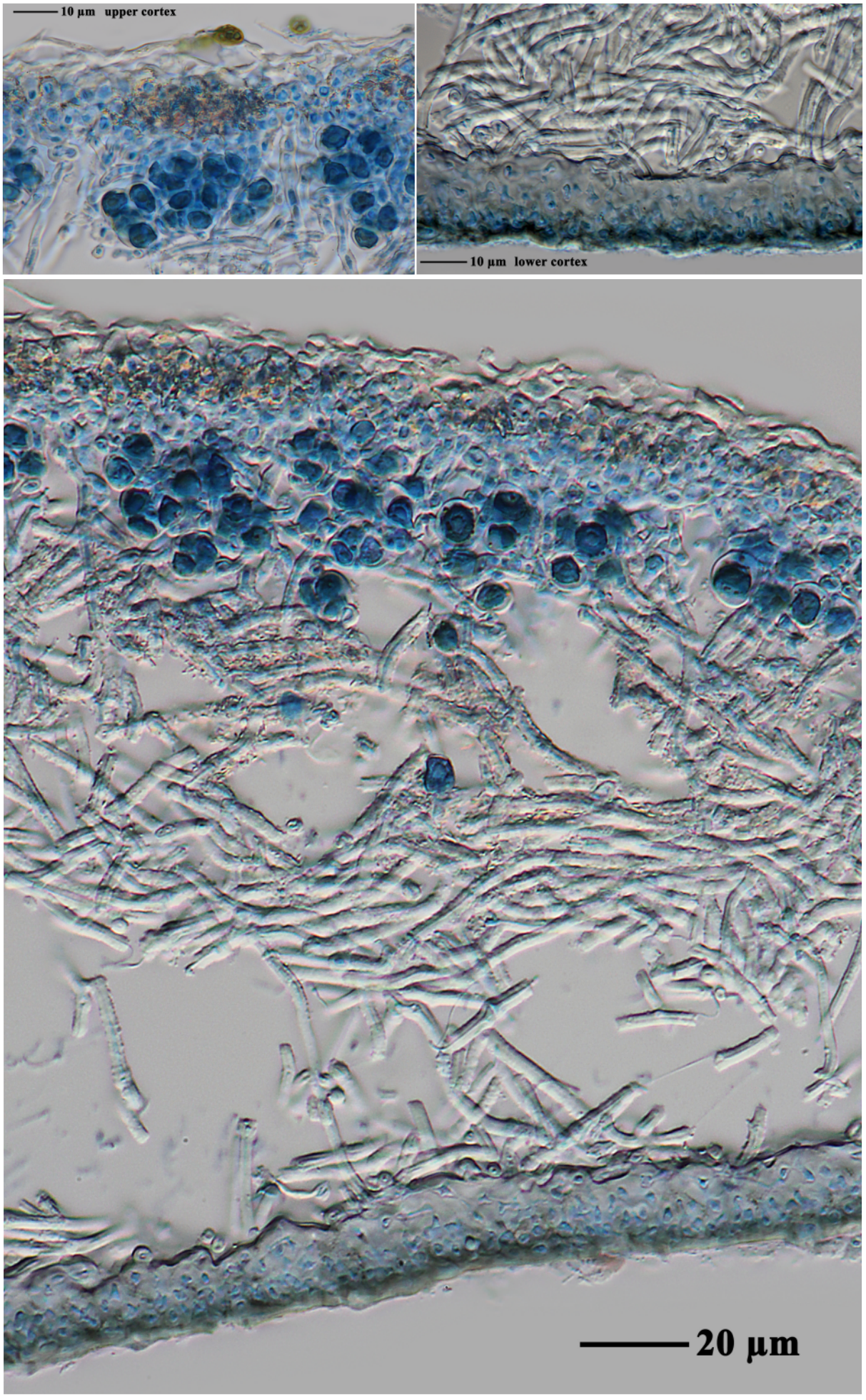




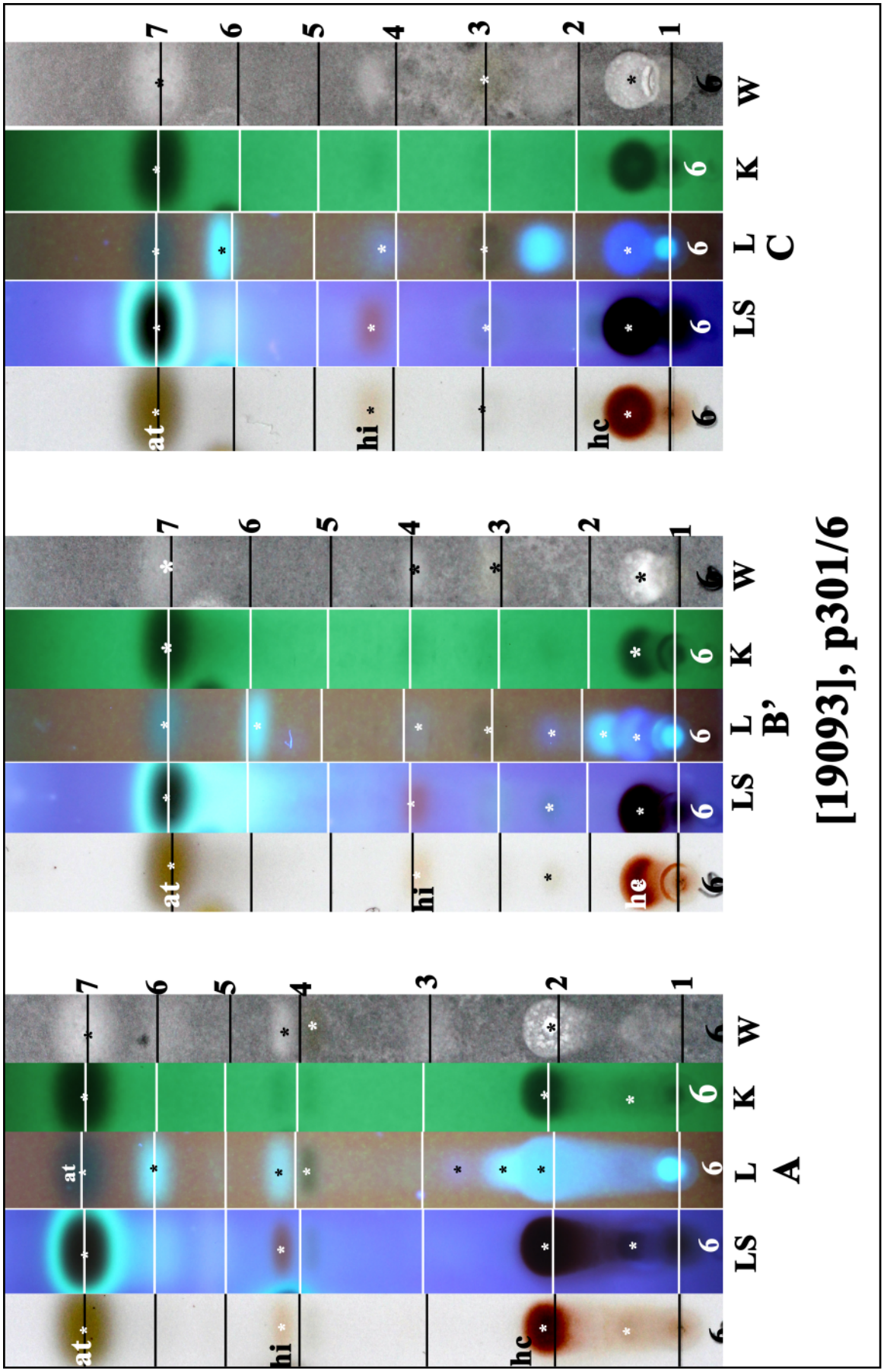
Xanthoparmelia hypoconstictica



Xanthoparmelia hypoconstictica



Xanthoparmelia hypoconstictica



at: atranorin, hc: hypoconstictic acid, hi: hypostictic acid

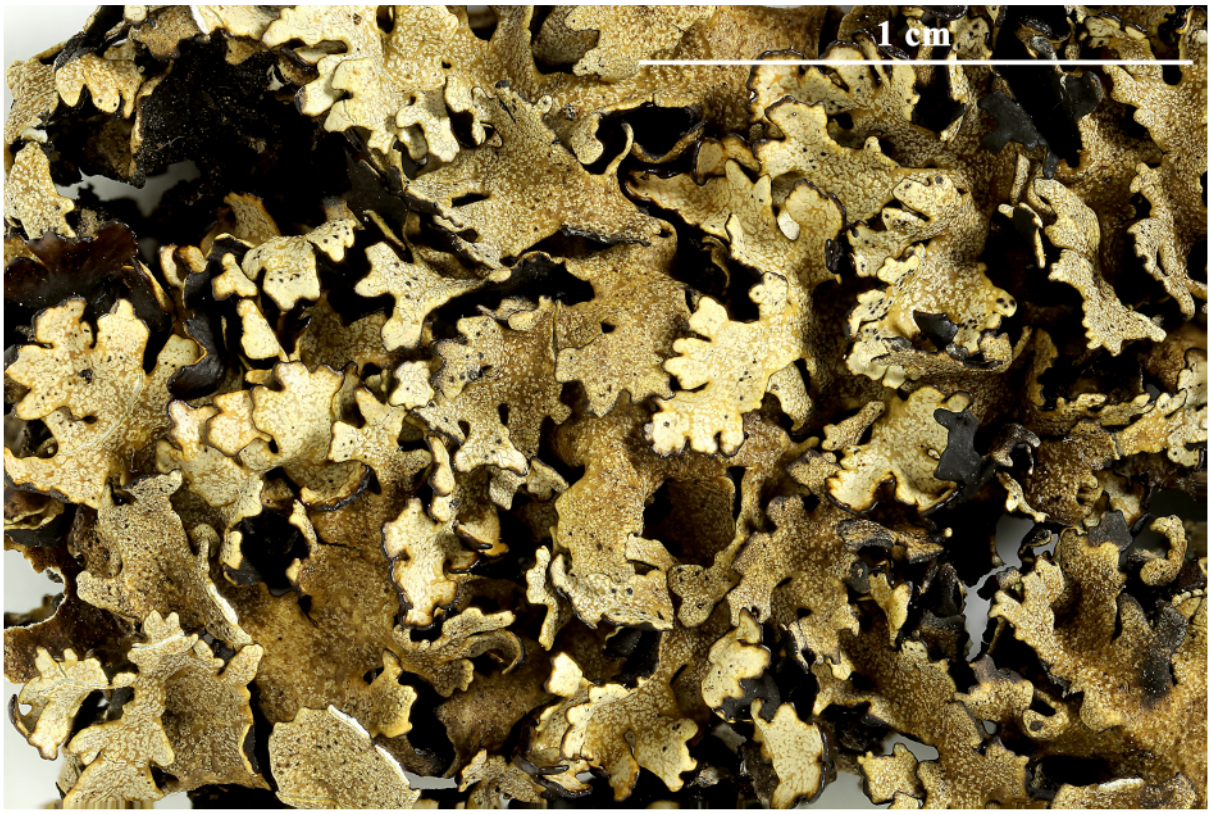
Xanthoparmelia hypoconstictica

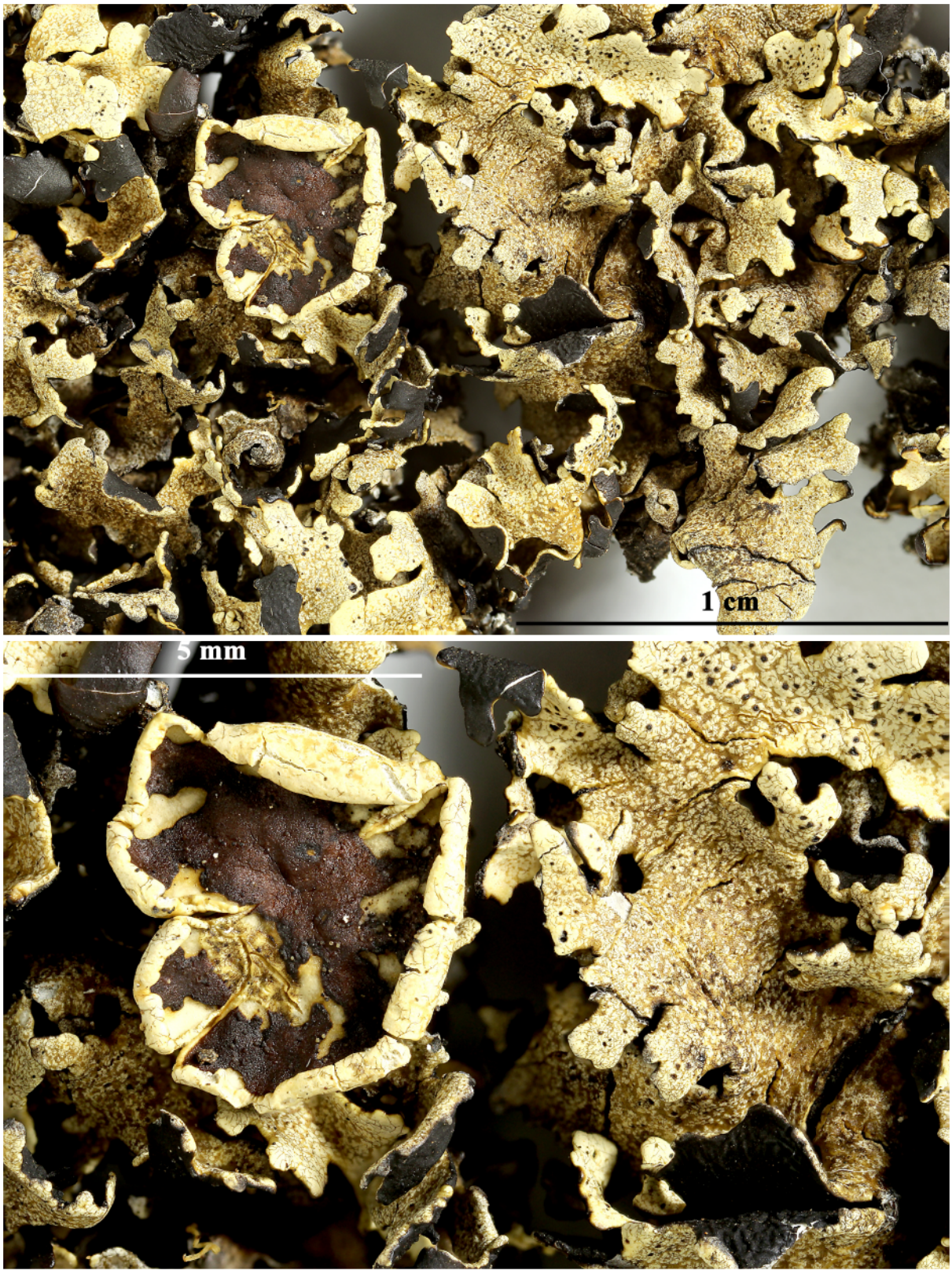
Xanthoparmelia hypoprotocetrarica (Kurok. & Elix) Hale
[= ***Parmelia hypoprotocetrarica*** Kurok. & Elix]

Thallus foliose, loosely adnate. Lobes imbricate, sublinear, subdichotomously branched, 1-2.5 mm wide; laciniae sublinear-elongate, sometimes dominating thallus, 0.5-1mm wide; apices often subascending. Upper surface yellow-green, with distinct or effigurate maculae, becoming rugulose, lacking isidia and soredia; lobes often black margined. Medulla white. Lower surface black; rhizines sparse, simple, robust, black. Apothecia 3-7 mm wide. Ascospores 6-8 x 4-5 µm wide. Chemistry: cortex K-, UV-; medulla: K-, C-, KC-, P-; usnic acid, hypoprotocetraric acid, ±4-*O*-demethylnotatic acid (trace).

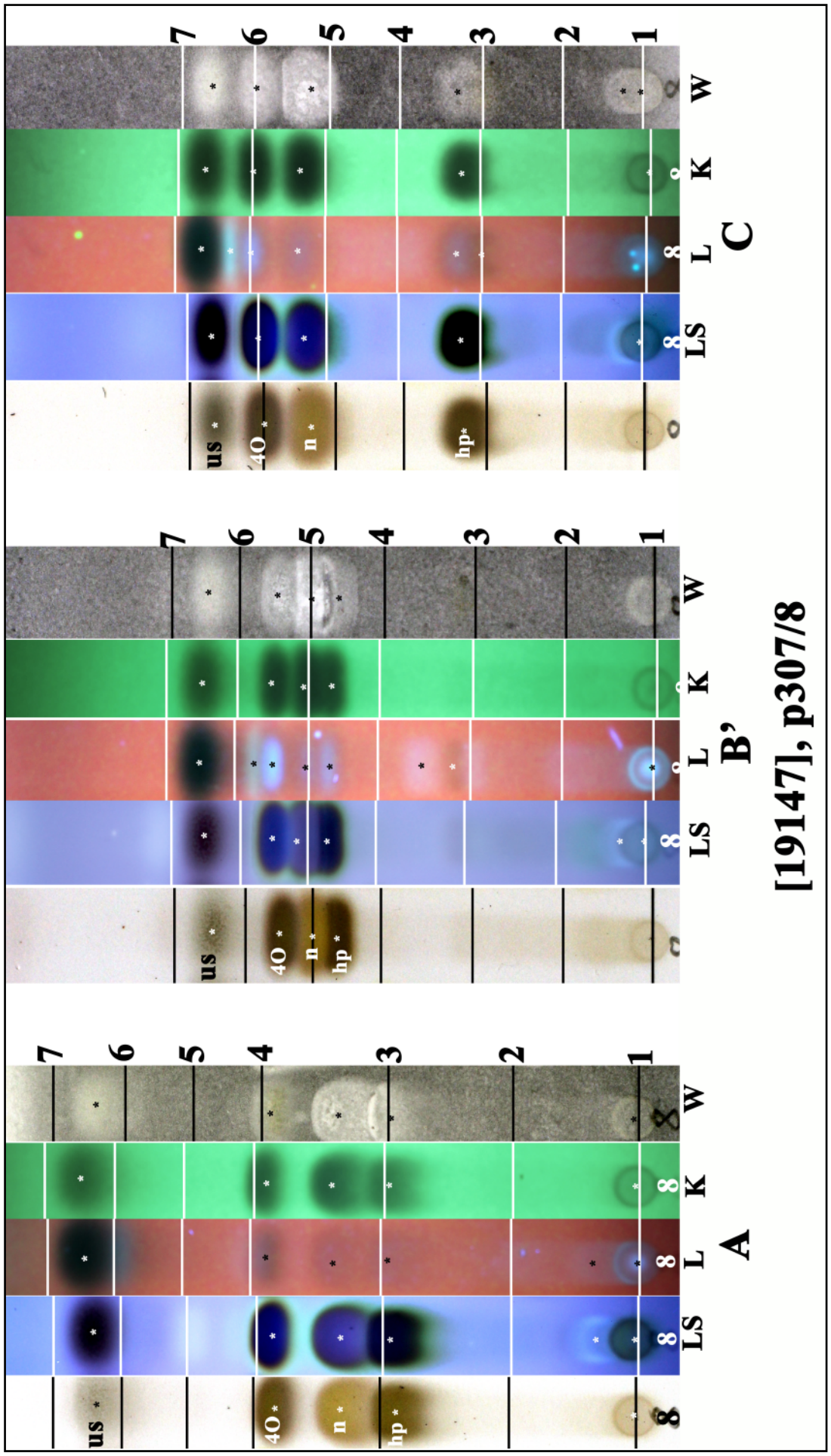
[19147], Australia, Australian Capital Territory, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 670 m, growing on exposed granite rocks in open pasture land. Leg. J.A. Elix (10910) & M.J. Elix, 25.04.1983. LICHENES AUSTRALASICI EXSICCATI NO. 036. Distributed as ***Parmelia hypoprotocetrarica*** Kurok. & Elix.

This collection is obviously a mix of ***Xanthoparmelia notata*** and ***Xanthoparmelia hypoprotocetrarica***.





Xanthoparmelia hypoprotocetrarica



us: usnic acid, 4O: 4-*O*-methylhypoprotocetrariuc acid (3,8/5,5/6), n: notatic acid (3,3/5/5,3), hp: hypoprotocetraric acid (2,9/4,6/3,25)

Xanthoparmelia imitatricoides (Elix) O.Blanco et al.
[= ***Neofuscelia imitatricoides*** Elix]

Lobes not imbricate, becoming strongly convex towards thallus centre, sublinear elongate, lower surface black, 0.1-1.2 mm wide. Laciniae subfruticose to fruticose, terete to subterete, mostly unattached to substratum, 0.1-0.4 mm wide. Chemistry: cortex N+ dark blue-green; medulla K-, C-, KC+ rose-red, P-, UV+ blue white; alectoronic acid (major), α-collatolic acid (major), 4-*O*-methylphysodic acid (major), physodic acid (minor).

[19084], Australia, New South Wales, Morton National Park, 8 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on sandstone rocks in open *Eucalyptus* woodland. TOPOTYPE. Leg. J.A. Elix (33026) & K. Kalb, 12.06.1992. Chemistry: alectoronic acid (major), α-collatolic acid (major), 4-*O*-methylphysodic acid (major), physodic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 262. Distributed as ***Neofuscelia imitatricoides*** Elix.

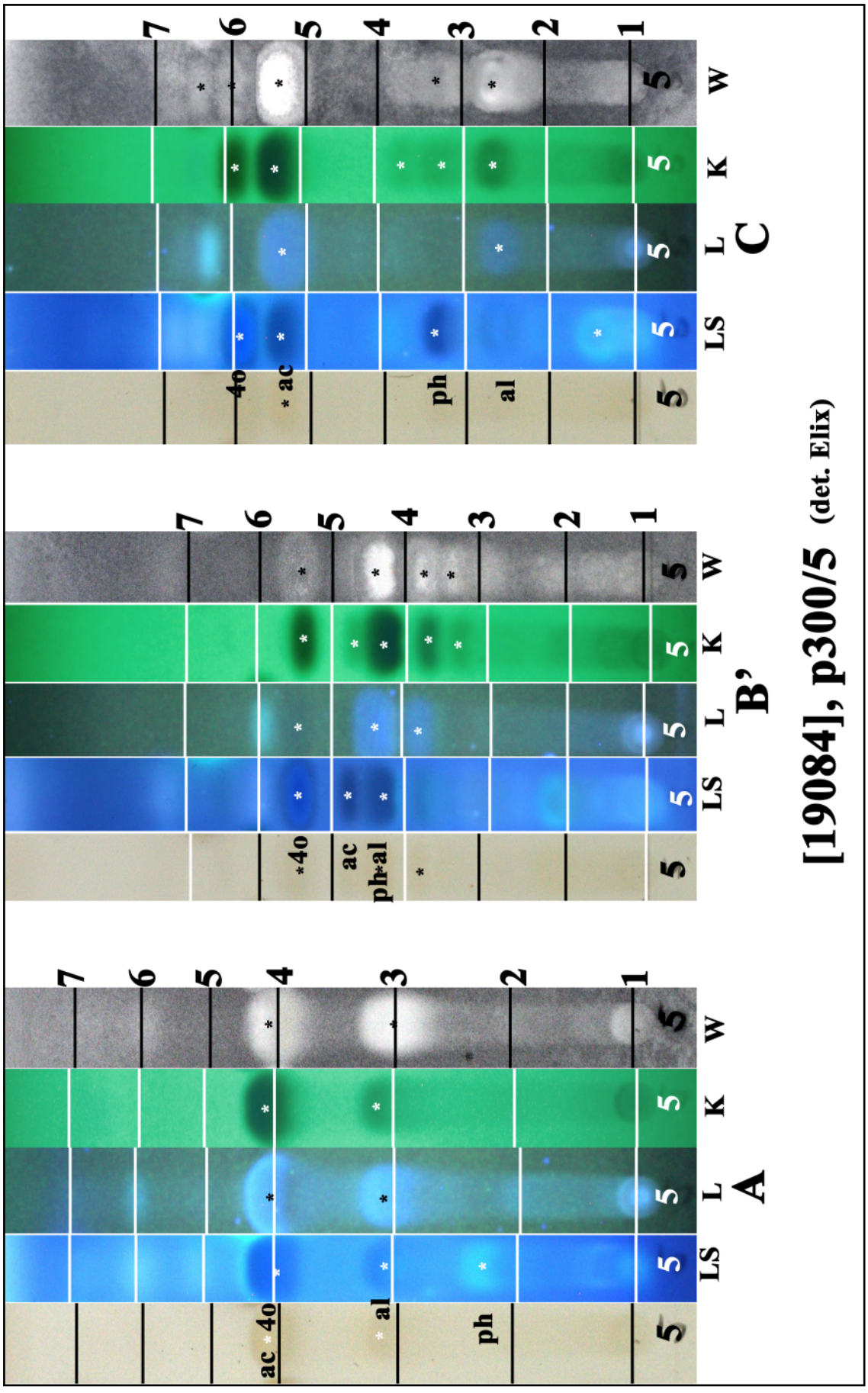




Xanthoparmelia imitatricoides



Xanthoparmelia imitatricoides



ac: α-collatolic acid, al: alectoronic acid, 4o: 4-*O*-methylphysodic acid, ph: physodic acid

Xanthoparmelia imitatricoides

Xanthoparmelia lithophiloides (Kurok.) Elix
[= ***Paraparmelia lithophiloides*** (Kurok.) Elix & J.Johnst.]

Thallus foliose, adnate to tightly adnate. Lobes becoming crowded and imbricate, flat, irregularly branched, 1-2 mm wide, often with laciniae, 0.5-1 mm wide. Upper surface pale grey, to dark grey, sometimes blackening, emaculate, lacking isidia and soredia. Lobes black margined. Lower surface black. Rhizines moderately dense, simple, black. Apothecia subpedicellate, 2-5 mm wide. Ascospores 10-11 x 4-5 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then dark red, C-, P+ yellow-orange; atranorin, norstictic acid (major), salazinic acid (submajor), connorstictic acid (trace), consalazinic acid (trace), ±protoconstipatic acid, ±constipatic acid.

[19094], Australia, Australian Capital Territory, Kowen Forest, 14 km east of Canberra, 35°15' S, 149°16' E, 650 m, growing on sandstone rocks in *Eucalyptus* woodland. Leg, J.A. Elix (20037), 08.06.1986. Chemistry: atranorin, salazinic acid (major), norstictic acid (major), consalazinic acid (minor), connorstictic acid (minor) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 138. Distributed as ***Paraparmelia lithophiloides*** (Kurok.) Elix & J.Johnst.





Xanthoparmelia lithophiloides

A
B'
C
LS
L
K
W
at
no
sa
[19094], p301/7
at: atranorin, no: norstictic acid, sa: salazinic acid

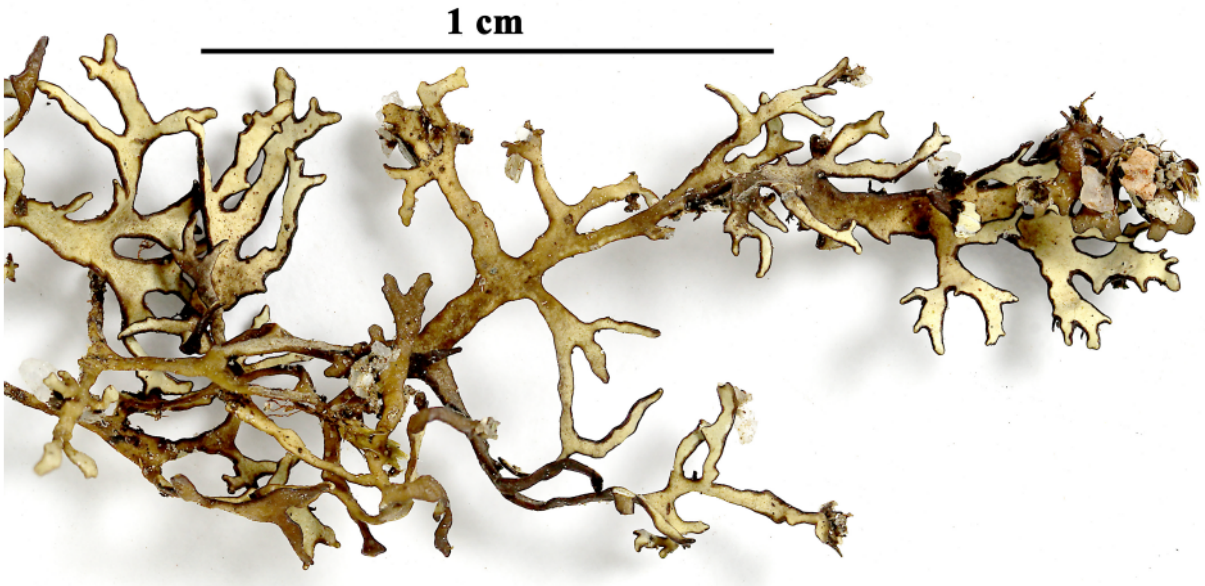
Xanthoparmelia metamorphosa (Gyeln.) Hale
[= ***Parmelia metamorphosa*** Gyeln.]

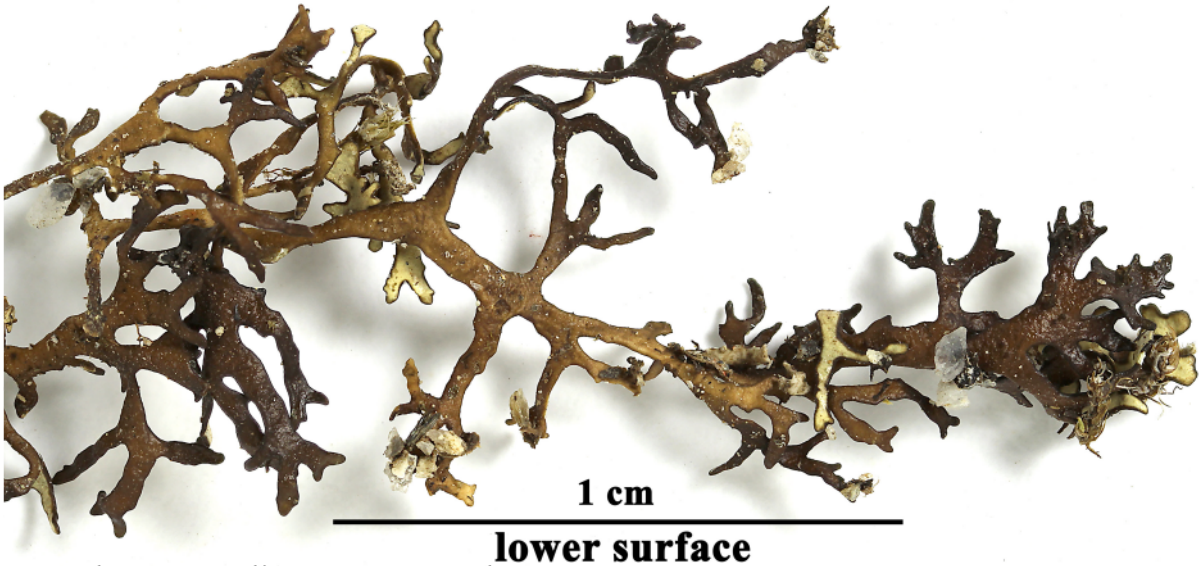
Thallus foliose, loosely adnate. Lobes imbricate, linear-elongate, dichotomously branched, 0.2-0.6 mm wide; margins often subascending at apices exposing lower surface. Upper surface yellow-green, white-maculate, lacking soredia and isidia. Medulla white. Lower surface ivory to pale brown, darker towards apices; rhizines very sparse,simple, concolorous. Apothecia 1.5-8 mm wide. Ascospores 8-10 x 4-5.5 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, loxodin, norlobaridone.

[19148], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing on mossy granite rocks along the river bank. Leg. J.A. Elix (10904), 10.04.1983. LICHENES AU STRALASICI EXSICCATI NO. 038. Distributed as ***Parmelia metamorphosa*** Gyeln.

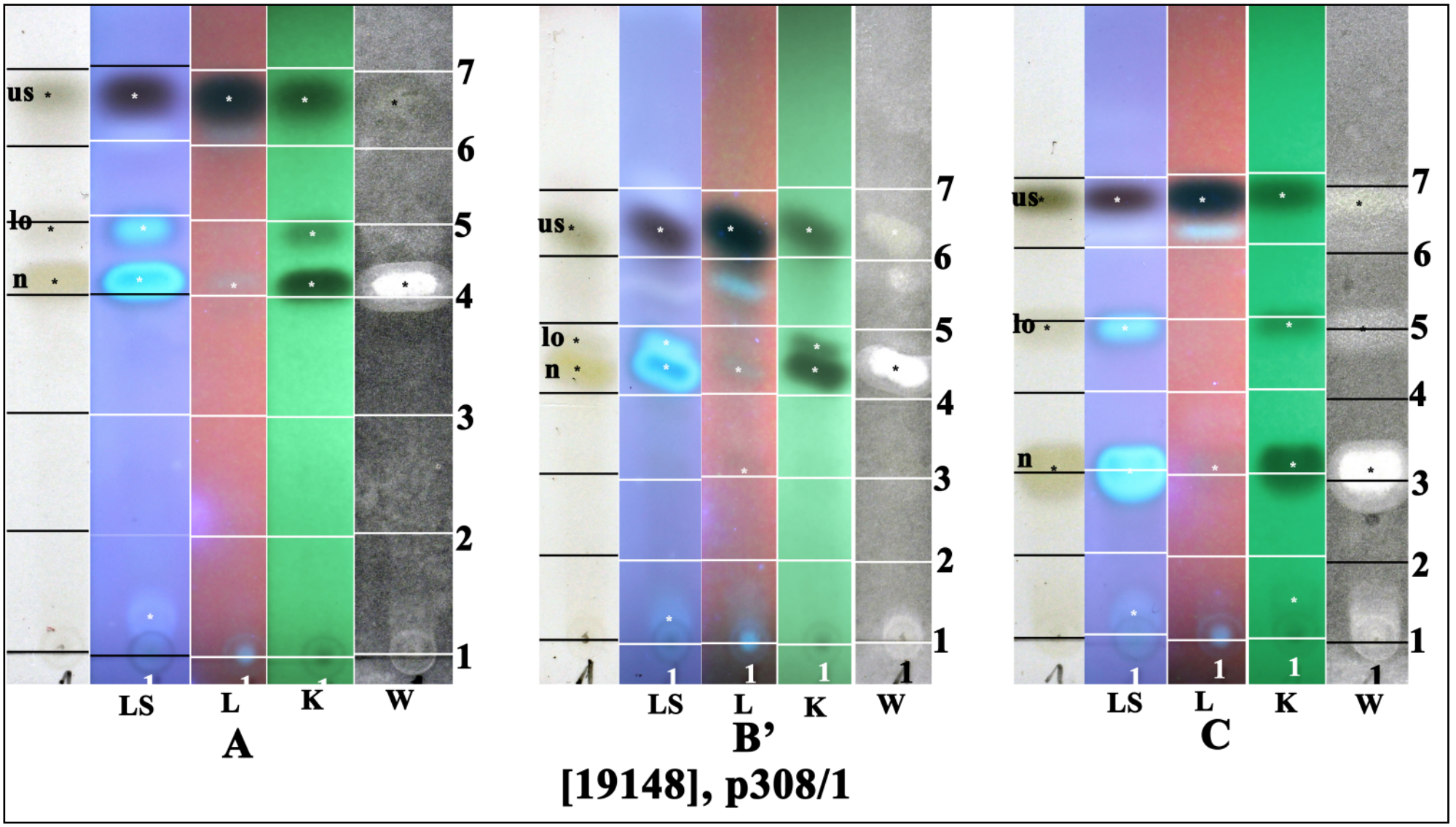








Xanthoparmelia metamorphosa



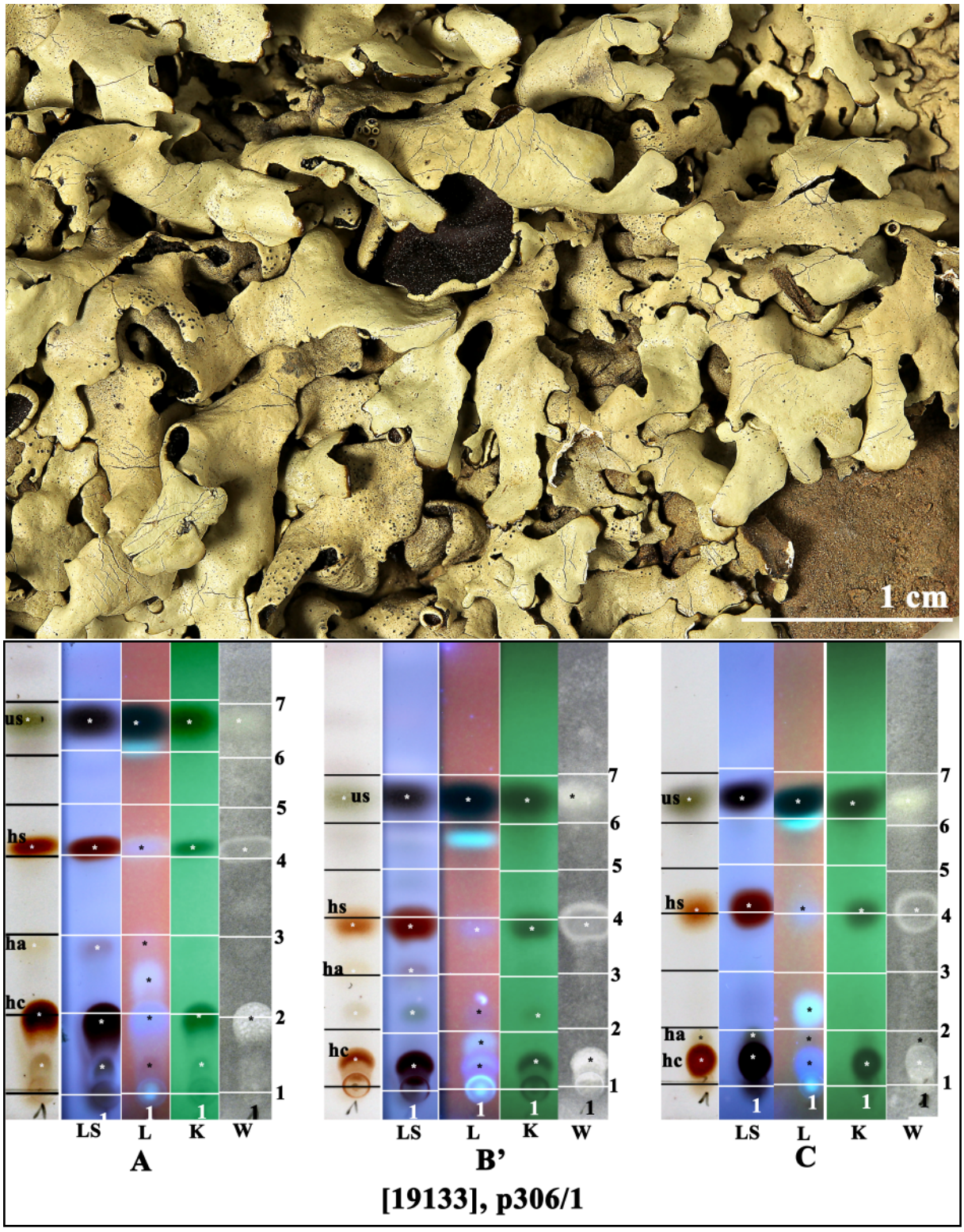
us: usnic acid, lo: loxodin, n: norlobaridone

Xanthoparmelia metastrigosa (Elix) Hale
[= ***Parmelia metastrigosa*** Elix]

Thallus foliose, loosely adnate. Lobes very rarely or not imbricate, linear elongate, dichotomously or irregularly branched, subascending or not, 1.5-4(-5) mm wide; margins broadly sinuate. Upper surface yellow-green, emaculate, lacking soredia and isidia; lobe margins commonly black. Medulla white. Lower surface pale brown to dark blackish brown; rhizines very dense, simple or often dichotomously branched.Ascospores 8.5-10.5 x 4.5-5.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow or yellow then pale red, C-, P-; usnic acid, hypostictic acid, hyposalazinic acid, hypoconstictic acid.

[19133], Australia, New South Wales, northern slopes of Mount Canobolas, 13 km south-west of Orange, 33°23' S, 149°00' E, 1420 m, growing on rocks and soil in open eucalypt woodland. Leg. J.A. Elix (9636), 2.2.1982. LICHENES AUSTRALASICI EXSICCATI NO. 017. Distributed as ***Parmelia metastrigosa*** Elix.





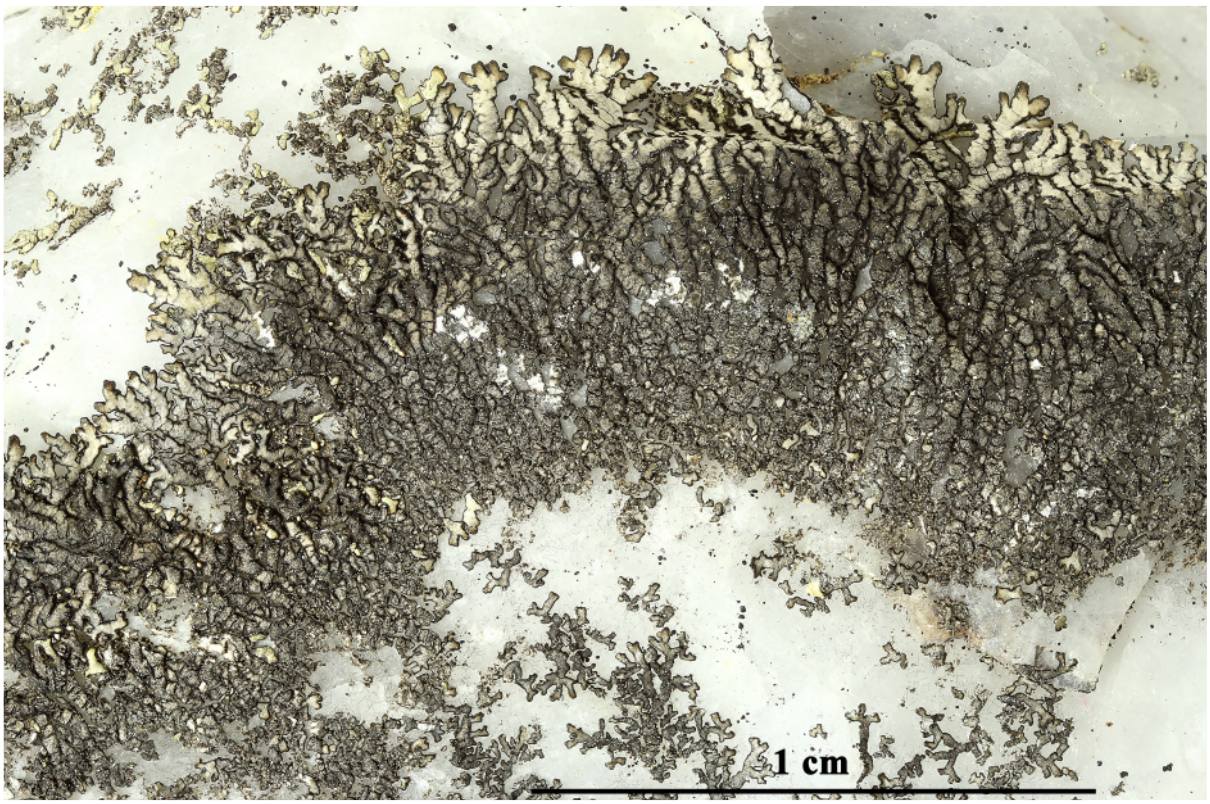
us: usnic acid, hs: hypostictic acid, ha: hyposalazinic acid, hc: hypoconstictic acid

Xanthoparmelia metastrigosa

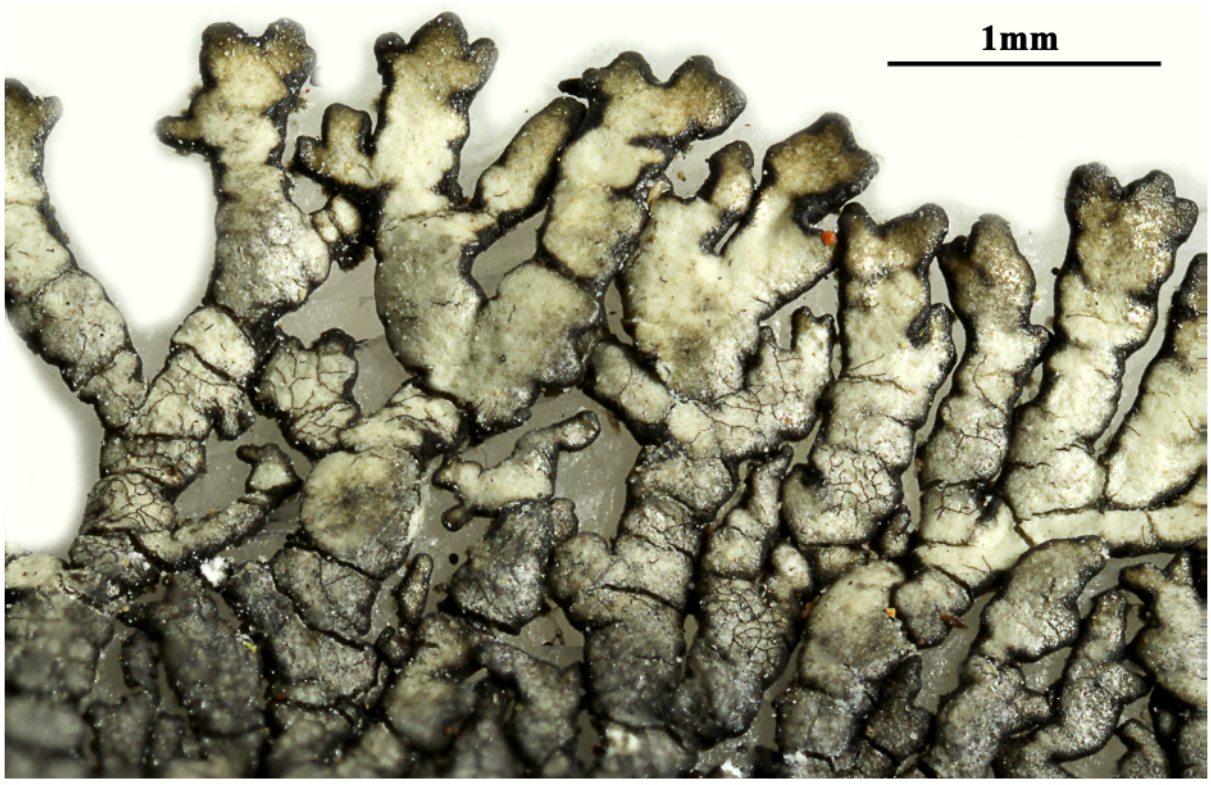
Xanthoparmelia mongaensis (Elix) Elix
[= ***Pseudoparmelia mongaensis*** (Elix) Elix]
[= ***Paraparmelia mongaensis*** (Elix) Elix & J.Johnst.]
[= ***Parmelia mongaensis*** Elix]

Thallus small-foliose, subcrustose in centre, tightly adnate, 1-3 cm wide, coalescing into larger patches. Lobes imbricate or not, sublinear-elongate, dichotomously branched, 0.2-0.8 mm wide. Upper surface pale grey, darkening at thallus centre, emaculate, becoming fissured and eventually areolate in thallus centre, lacking soredia and isidia. Lower surface black, brown at lobe apices; rhizines moderately dense, simple, black. Apothecia sessile, 0.3-0.6 mm wide, disc dark brown. Ascospores 11-13 x 7-10 µm. Chemistry: cortex K+ yellow; medulla K-, C-, KC-, P-; atranorin, chloroatranorin, colensoic acid (minor), stenosporonic acid (major), divaronic acid (trace).

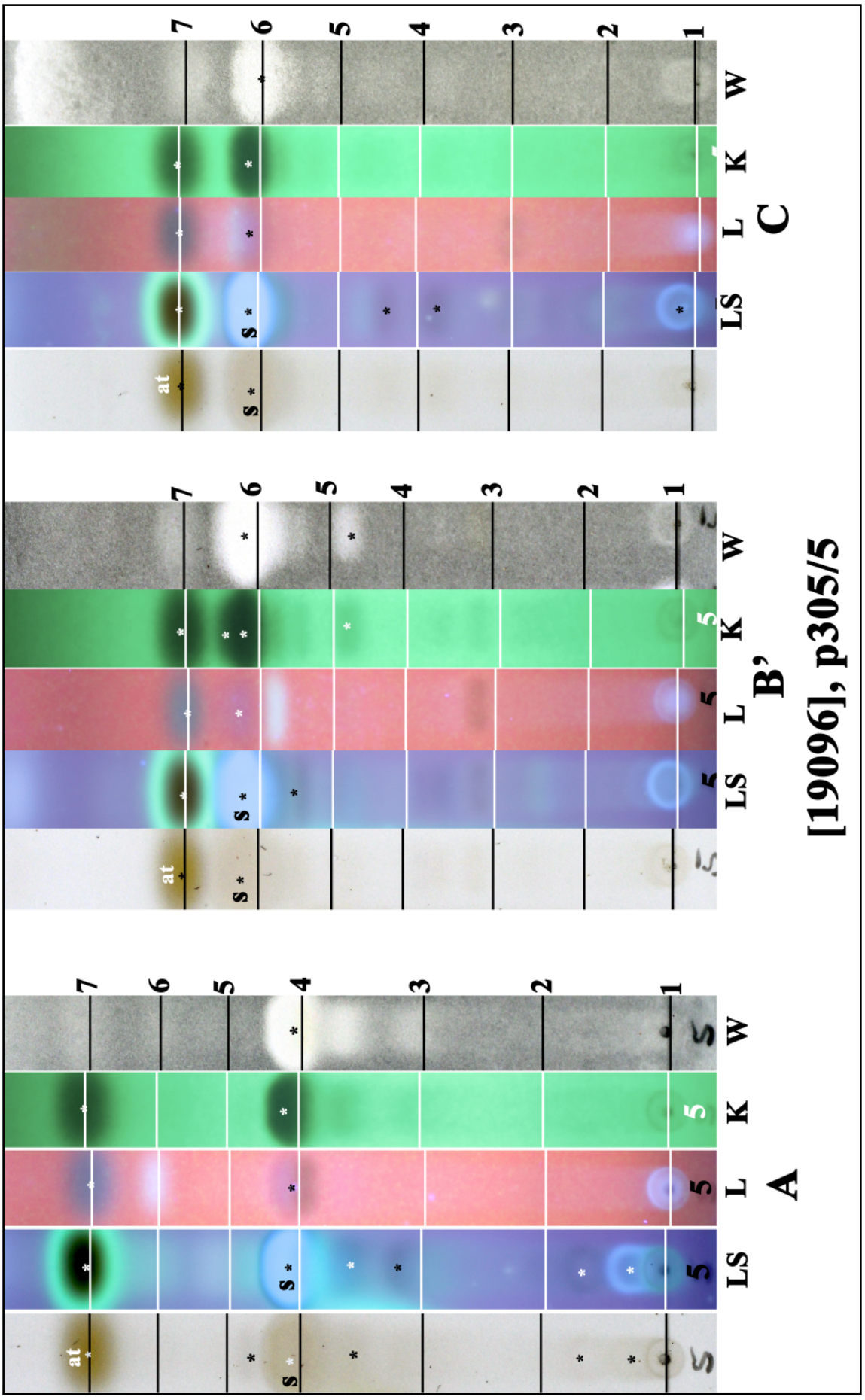
[19096], Australia, Queensland, Herberton-Petford road, 1 km southwest of Herberton, 17°23' S, 145°21' E, 100 m, growing on quartz rocks in old mullock heaps of tin workings, in open *Eucalyptus* woodland. Leg. J.A. Elix (16998) & H. Streimann, 30.06.1984. Chemistry: atranorin, chloroatranorin, stenosporonic acid, colensoic by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 093. Distributed as ***Pseudoparmelia mongaensis*** (Elix) Elix.







Xanthoparmelia mongaensis



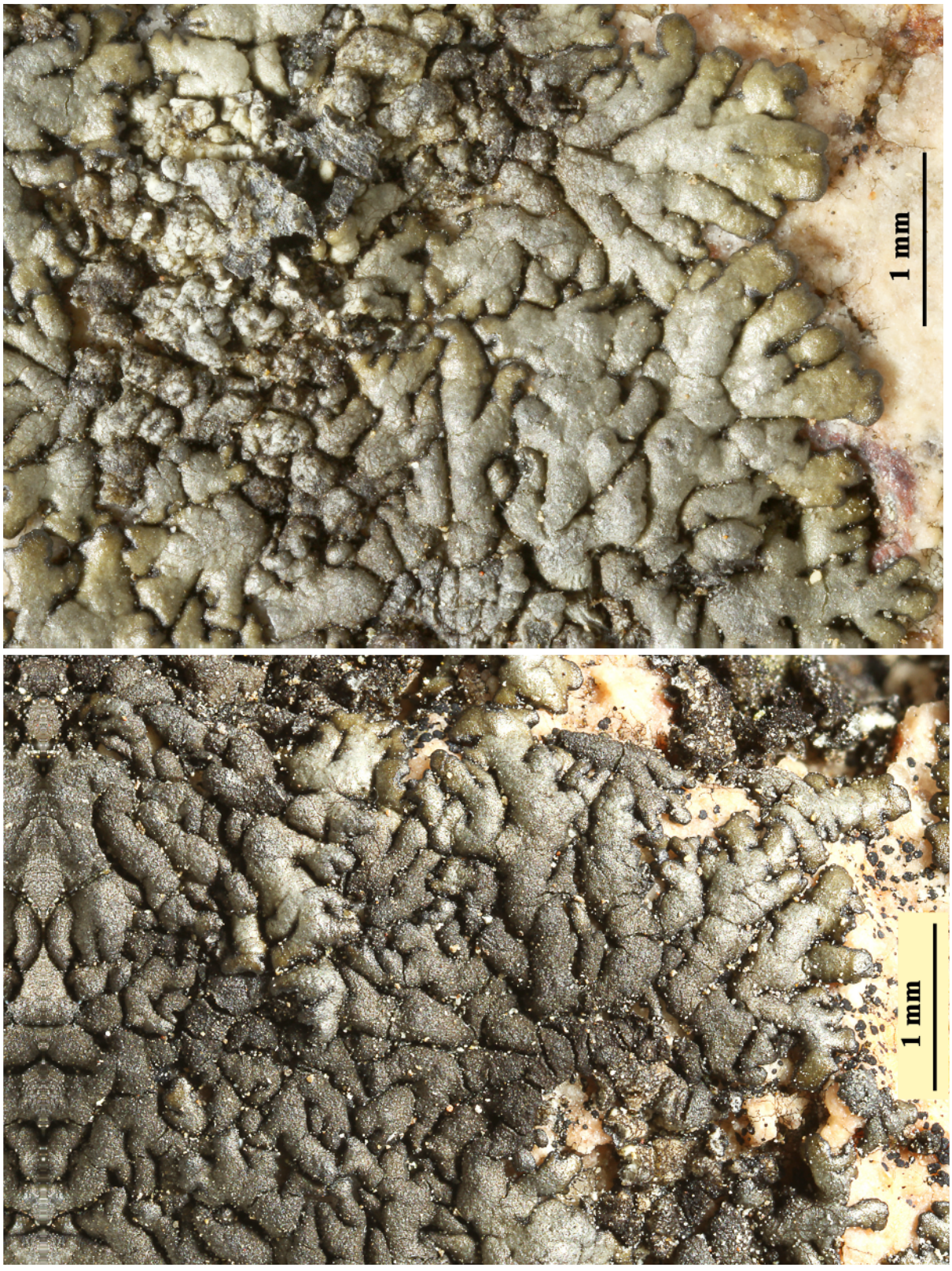
at: atranorin, s: stenosporonic acid

Xanthoparmelia mongaensis

Xanthoparmelia mongaensis (Elix) Elix
[= ***Pseudoparmelia mongaensis*** (Elix) Elix]
[= ***Parmelia mongaensis*** Elix]

[19097], Australia, New South Wales, head of Merricumbene Creek, 11 km south of Monga, 35°40' S, 149°55' E, 820 m, growing on metamorphic rocks on an open rocky ridge. TOPOTYPE. Leg. J.A. Elix (11410) & J. Johnston, 25.10.1983. LICHENES AUSTRALASICI EXSICCATI NO. 059. Distributed as ***Parmelia mongaensis*** Elix.





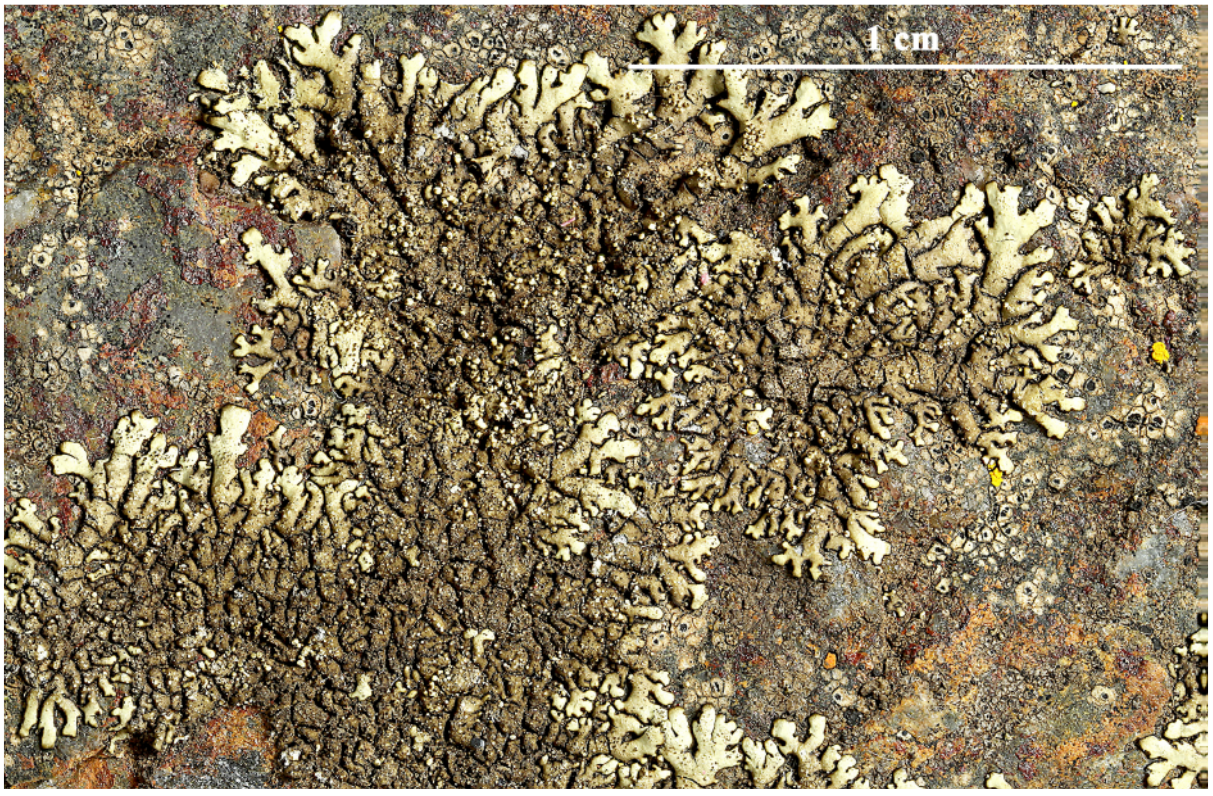
Xanthoparmelia mongaensis

Xanthoparmelia mongaensis

Xanthoparmelia mougeotina (Nyl.) D.J.Galloway
[= ***Parmelia mougeotina*** Nyl.]

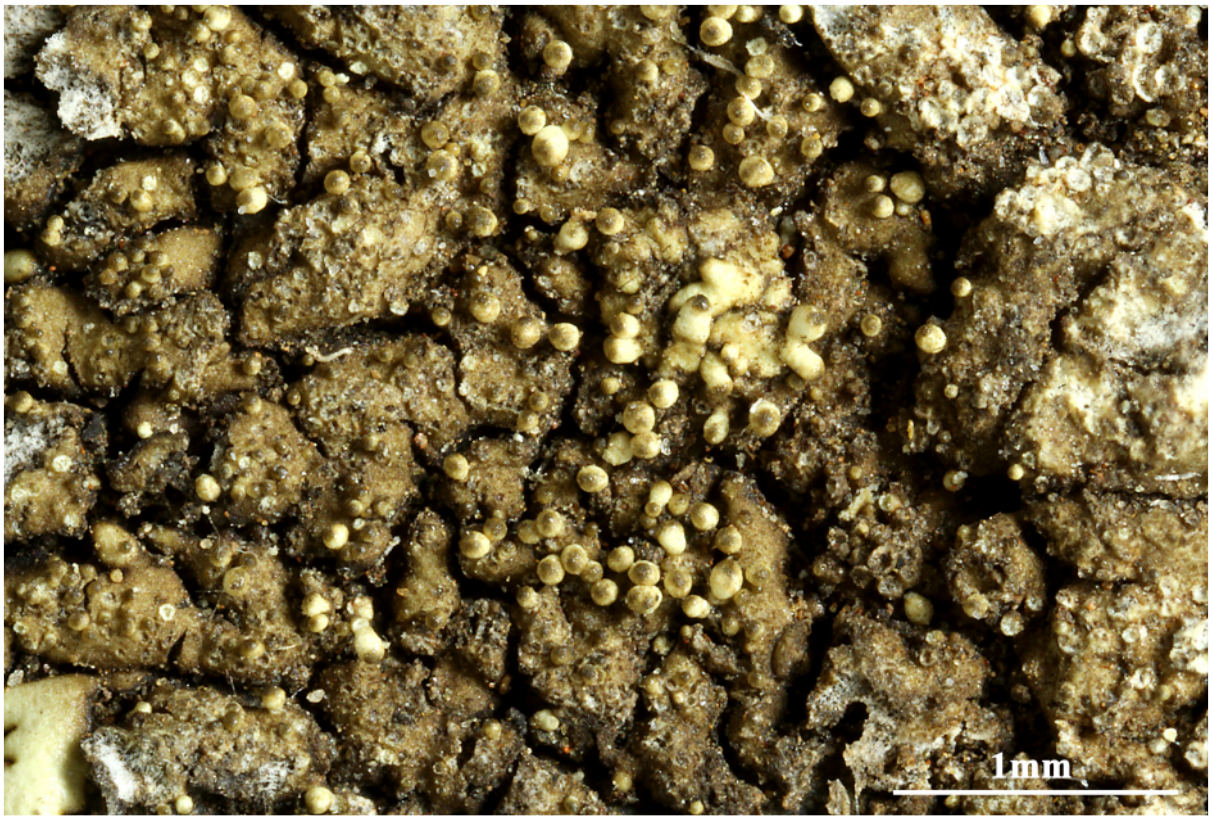
Thallus foliose to subcrustose, very tightly adnate. Lobes not imbricate, widely separate or rarely contiguous, sublinear-elongate, dichotomously branched, 0.5-1(-1.5) mm wide, apices markedly incised. Upper surface pale yellow-green, darkening to yellow-brown or black in thallus centre, thallus centre becoming crustose-areolate, lacking maculae and soredia; isidia at thallus centre and on marginal lobes, subglobose, simple, 0.04-0.08 mm wide, 0.1-0.2 mm high, isidia apices brown. Medulla white. Lower surface black or partly black brown; rhizines sparse, simple, black. Apothecia to 1 mm wide. Ascospores 7-9 x 5-6.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow, C-, KC-, P+ orange; usnic acid, stictic acid, constictic acid, norstictic acid (minor), cryptostictic acid (trace), ±menegazzaic acid (trace).

[19172], Australia, Australian Capital Territory, Brindabella Range, just below the summit of Mount Aggie, 43 km west-south-west of Canberra, 35°28' S, 148°46' E, 1480 m, growing on schist rocks in subalpine heath. Leg. J.A. Elix (9529), 1411.1981. LICHENES AUSTRALASICI EXSICCATI NO. 018. Distributed as ***Parmelia mougeotina*** Nyl.

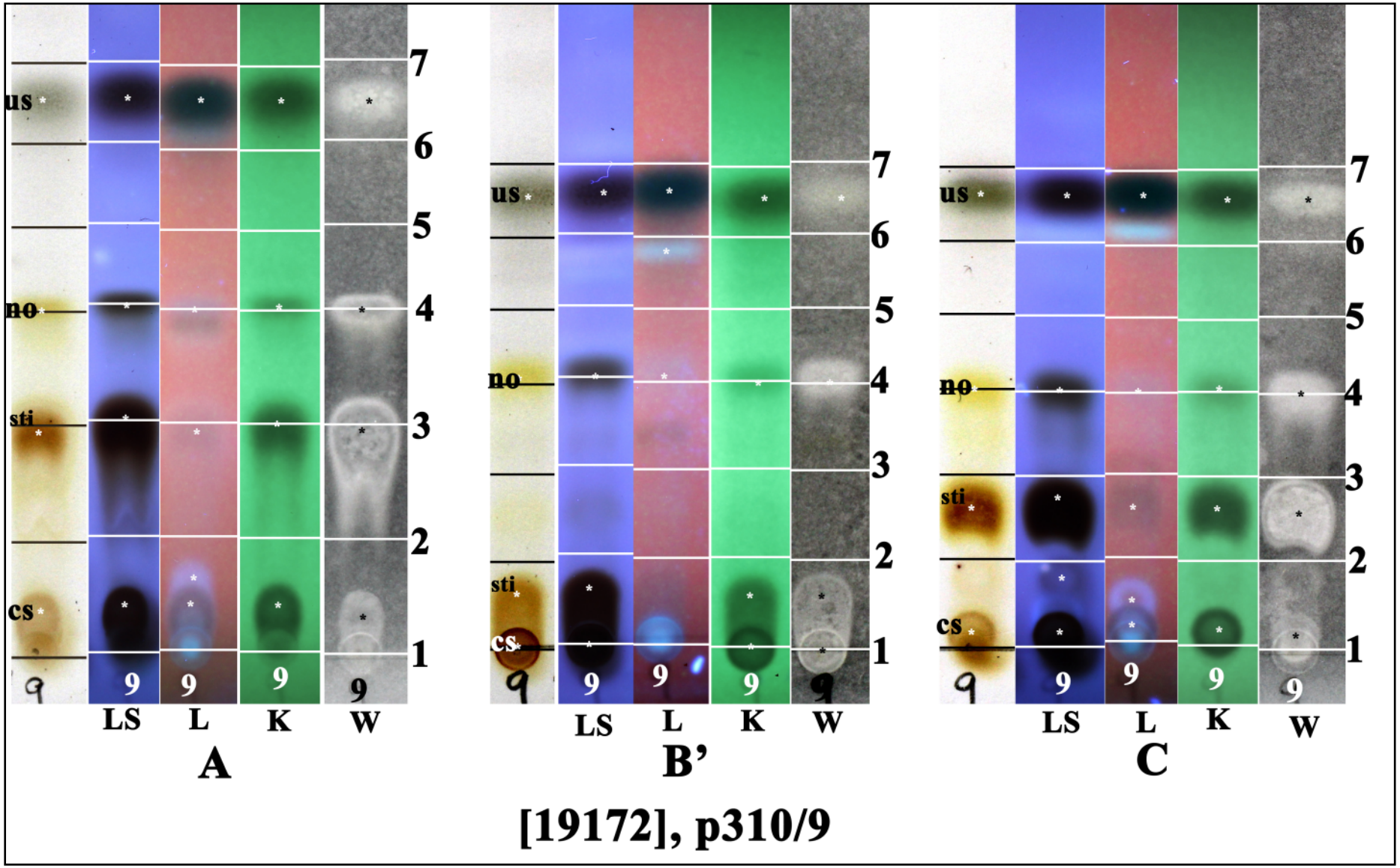




Xanthoparmelia mougeotina



Xanthoparmelia mougeotina

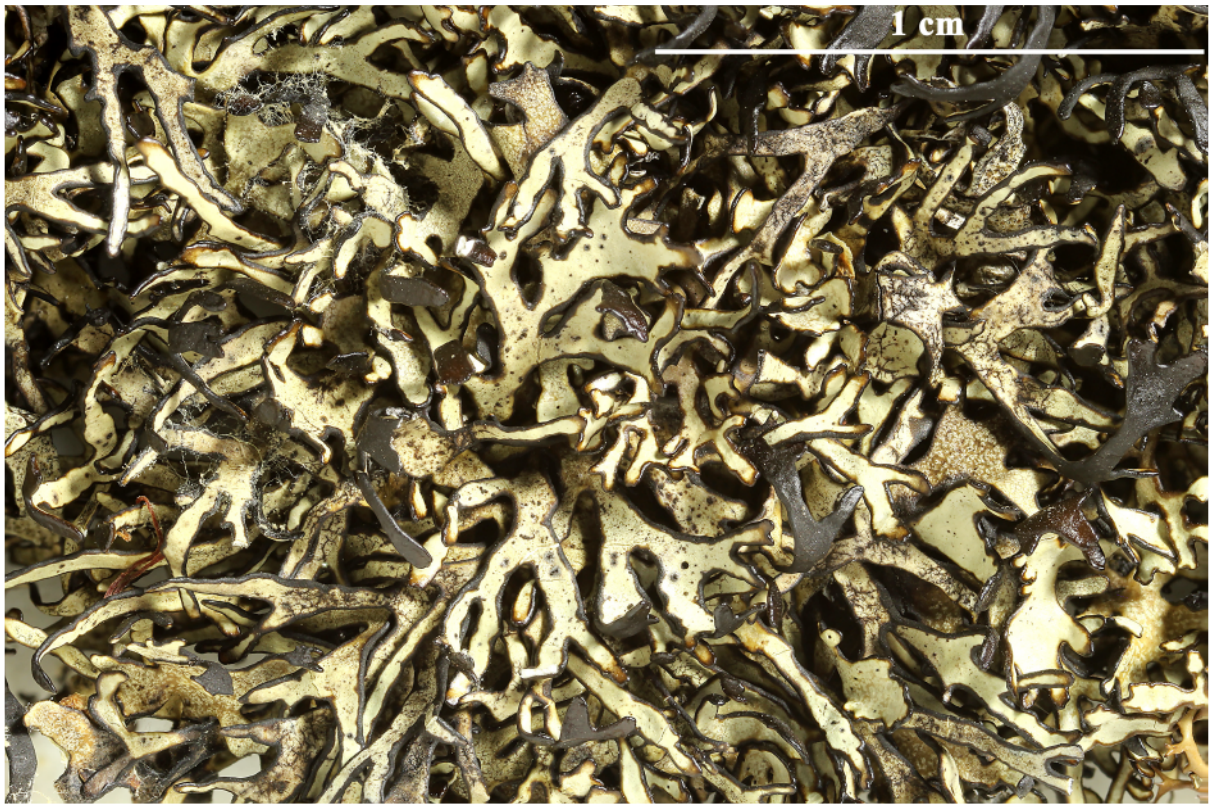


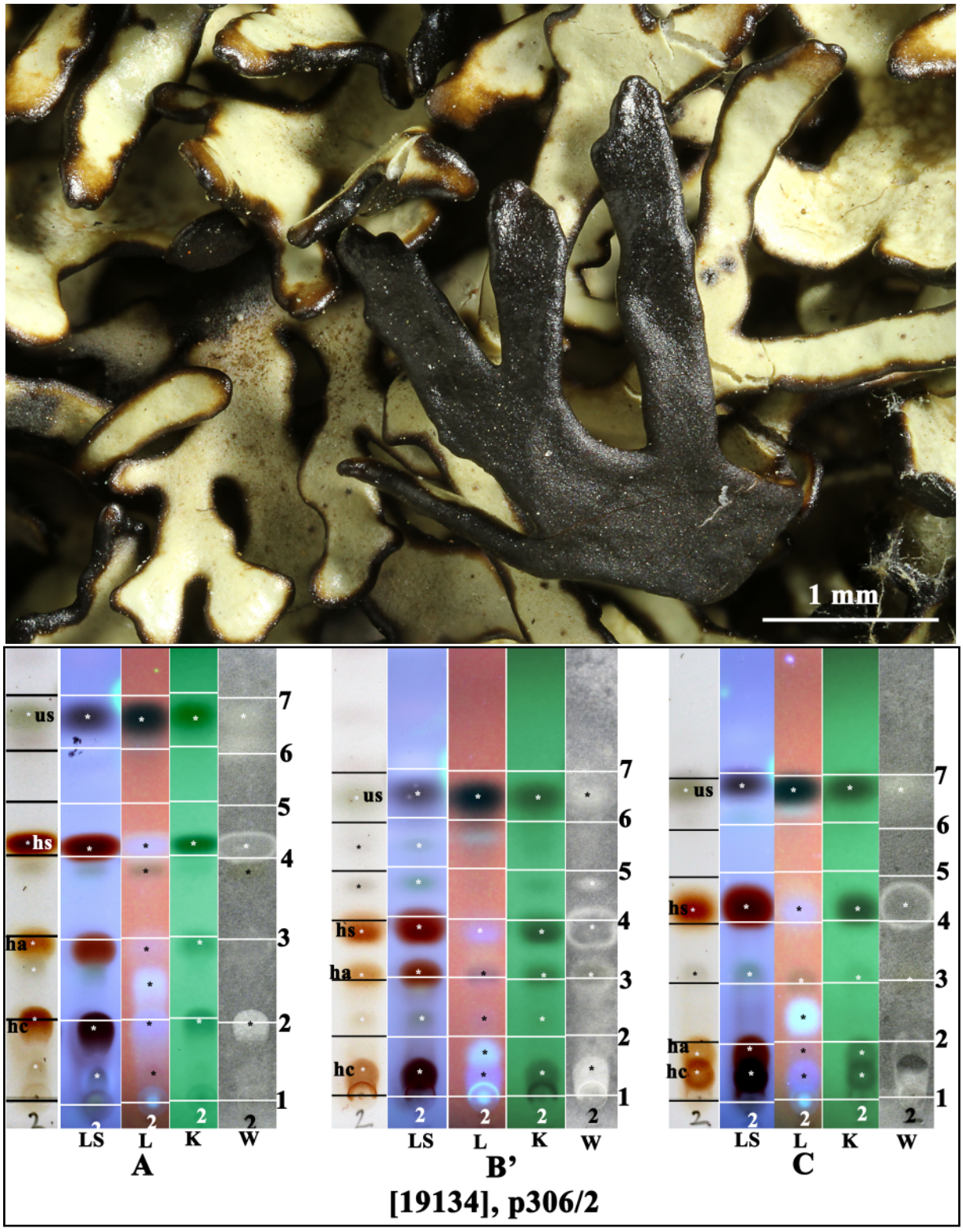
us: usnic acid, no: norstictic acid, sti: stictic acid, cs: constictic acid

Xanthoparmelia multipartita (R.Br. ex Cromb.) Hale
[= ***Parmelia multipartita*** (R.Br. ex Cromb.) Elix]

Thallus foliose, very loosely adnate. Lobes densely imbricate, flat, linear elongate, subdichotomously branched, becoming suberect and exposing black lower surface, 0.5-1 mm wide. Upper surface yellow to yellow-green, emaculate, lacking soredia and isidia; lobe margins black. Medulla white. Rhizines absent or very sparse, simple, robust, short. Apothecia sessile, 1-3 mm wide. Ascospores 6-10 x 3.5-5.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then pale reddish, C-, KC-, P-; usnic acid, hypostictic acid (major), hyposalazinic acid (minor).

[19134], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing on granite rocks in open woodland. Leg. J.A. Elix (10165), 12.04.1982. LICHENES AUSTRALASICI EXSICCATI NO. 019. Distributed as ***Parmelia multipartita*** (R.Br. ex Cromb.) Elix.





us: usnic acid, hs: hypostictic acid, ha: hyposalazinic acid, hc: hypoconstictic acid

Xanthoparmelia multipartita

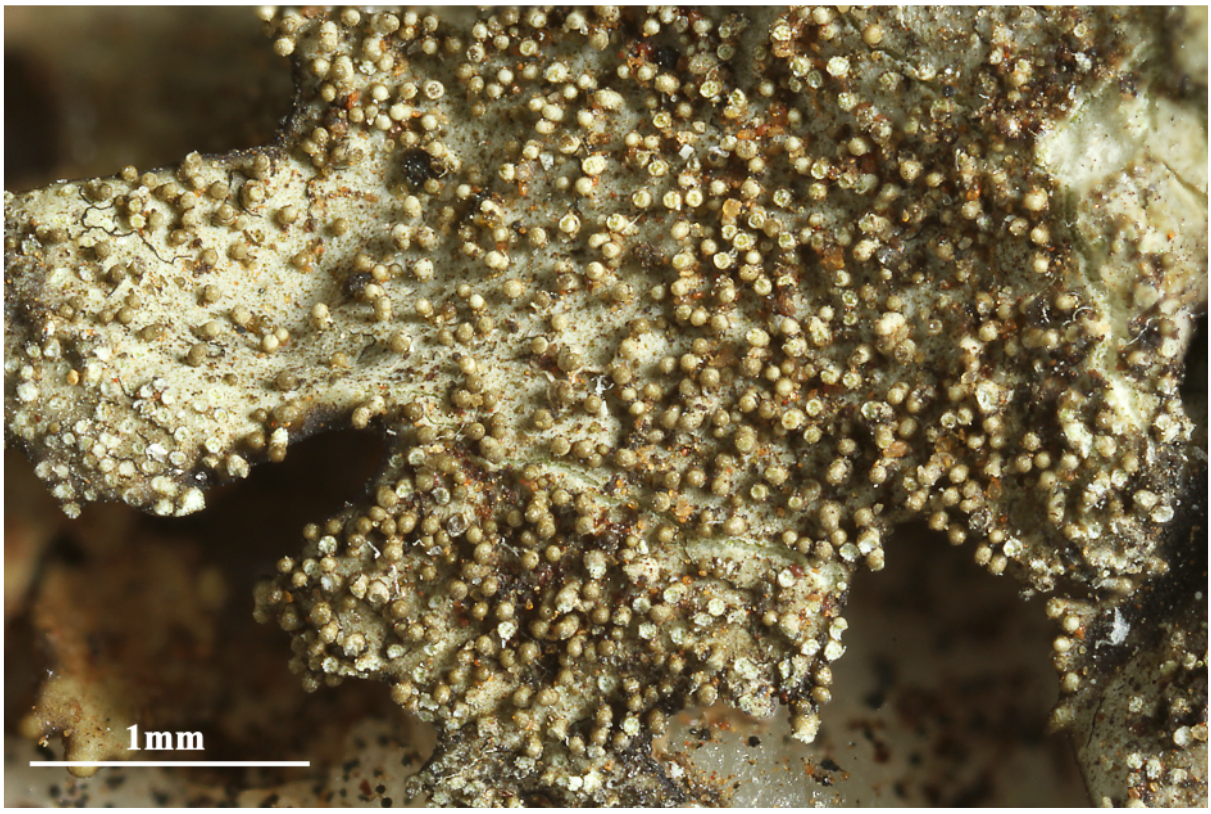
Xanthoparmelia neoquintaria (Hale) Elix
[= ***Paraparmelia neoquintaria*** (Hale) Elix & J.Johnst.]
[= ***Pseudoparmelia neoquintaria*** Hale]

Thallus foliose, loosely to moderately adnate. Lobes imbricate or not, subirregularly branched, 1-3 mm wide; occasionally developing laciniae towards thallus centre, 0.5-1 mm wide. Upper surface pale grey to dark grey, emaculate, without soredia; isidia dense in thallus centre, cylindrical, becoming coralloid branched. Lower surface pale brown to chocolate-brown; rhizines very sparse to scattered, simple. Apothecia to 5 mm wide. Ascospores 6-8 x 4-5 µm. Chemistry: cortex K+ yellow; medulla K+ yellow then pale red, C-, P-; atranorin, hypoconstictic acid (minor), hypostictic acid (major), ±hyposalazinic acid (trace).

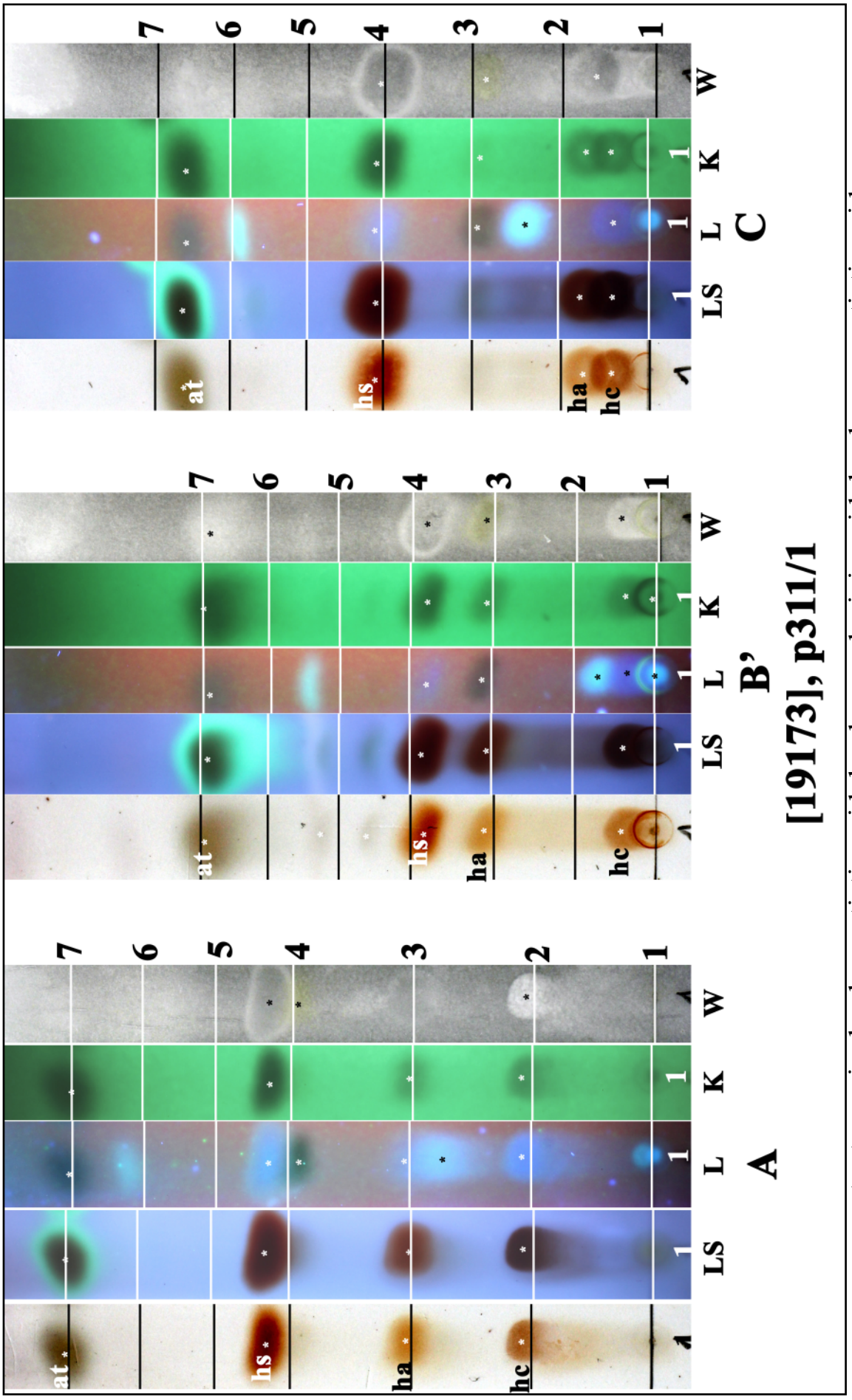
[19173], Australia, New South Wales, Merungie Gap Road, 20 km west-south-west of Rankins Springs, 33°52' S, 146°02' E, 280 m, growing on rocks in *Eucalyptus-Acacia* dominated rocky side of a ridge.Leg. J.A. Elix (23125) & H. Streimann, 12.06.1990. Chemistry: atranorin (minor), hypostictic acid (major), hypoconstictic acid (minor), hyposalazinic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI No. 212. Distributed as ***Paraparmelia neoquintaria*** (Hale) Elix & J.Johnst.







Xanthoparmelia neoquintaria



at: atranorin, hs: hypostictic acid, ha: hyposalazinic acid, hc: hypoconstictic acid

Xanthoparmelia neoquintaria

Xanthoparmelia neorimalis (Elix & P.M.Armstr.) Elix & T.H.Nash
[= ***Parmelia neorimalis*** Elix & P.M.Armstr.]

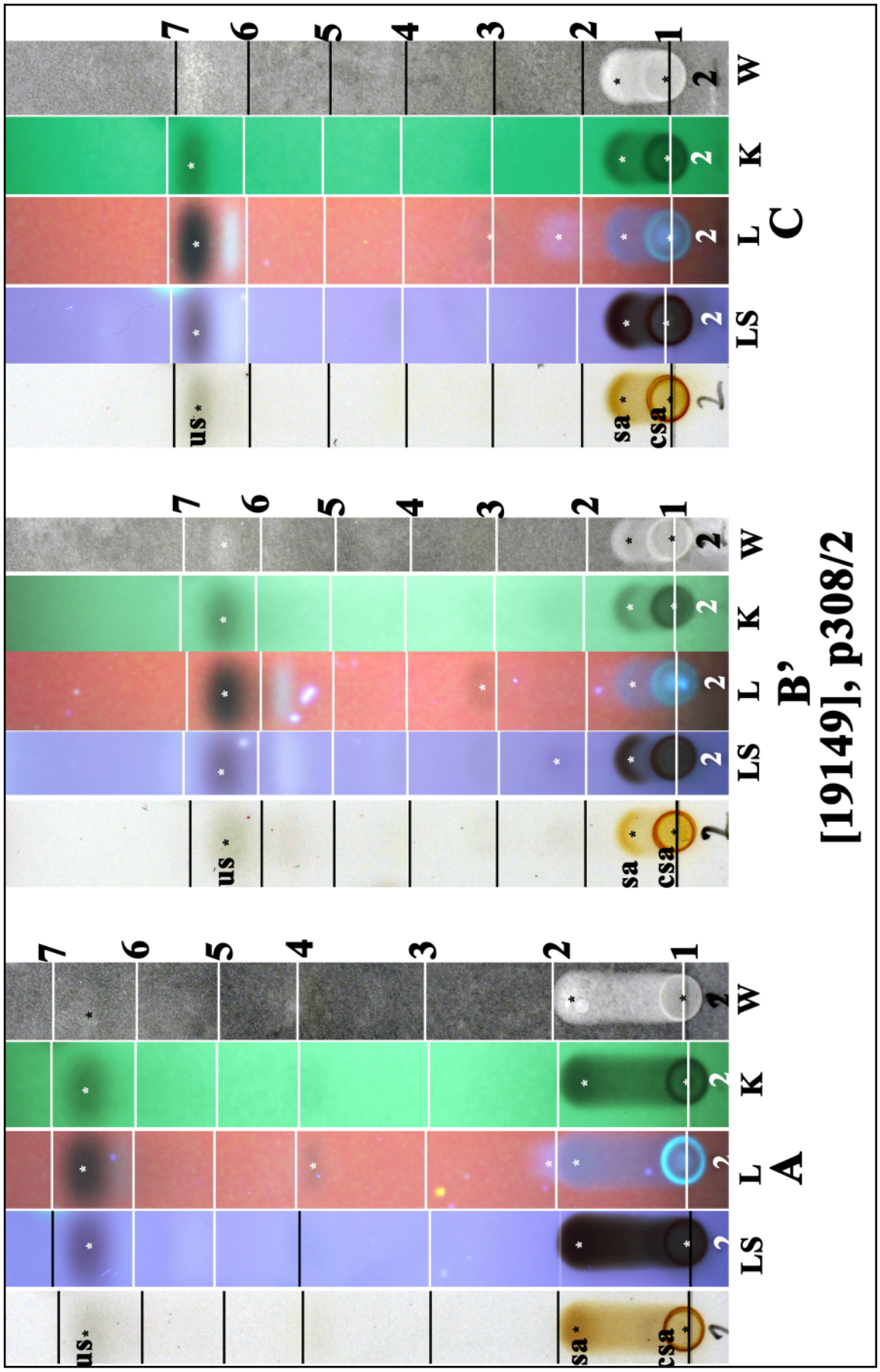
Thallus small-foliose becoming almost subcrustose in the centre, very tightly adnate, ±forming small rosettes. Lobes contiguous or ±radiating at periphery, not imbricate, sublinear-elongate, irregularly branched, 0.3-0.6(-0.8) mm wide. Upper surface greenish yellow, emaculate, lacking soredia and isidia; older lobes irregularly or transversely fractured. Medulla white. Lower surface tan to brown, often straw-yellow near apices; rhizines moderately dense, simple, short, pale brown. Apothecia 0.5-1 mm wide. Ascospores 7-9 x 3.5-5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then deep red, C-, KC-, P+ yellow-orange; usnic acid, salazinic acid, consalazinic acid.

[19149], Australia, Australian Capital Territory, Black Mountain Reserve, Aranda, Canberra, 35°16' S, 149°13' E, 680 m, growing on sandstone rocks in dry sclerophyll forest. Leg. J. A. Elix (11377), 29.09.1983. LICHENES AUSTRALASICI EXSICCATI NO. 060. Distributed as ***Parmelia neorimalis*** Elix & P.M. Armstr.





Xanthoparmelia neorimalis



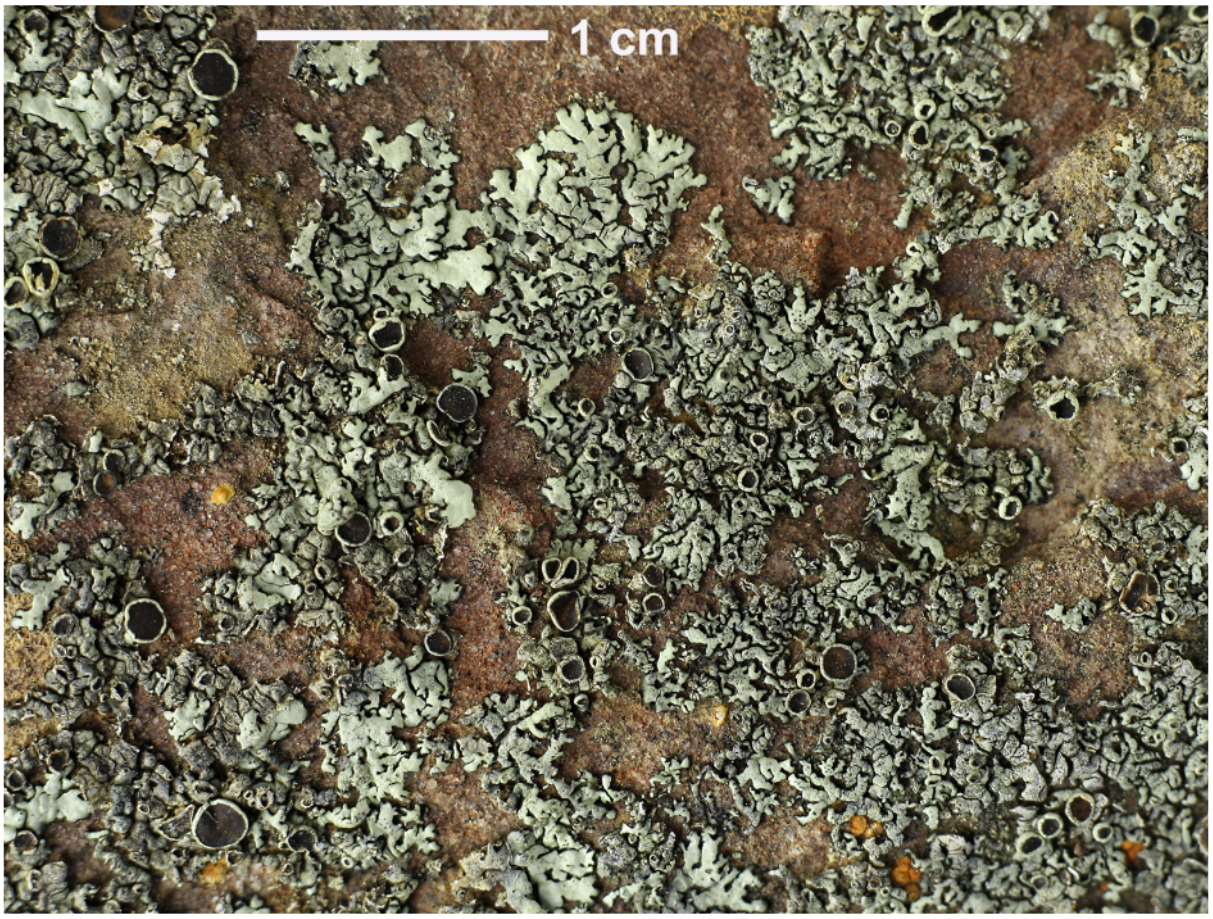
us: usnic acid, sa: salazinic acid, csa: consalazinic acid

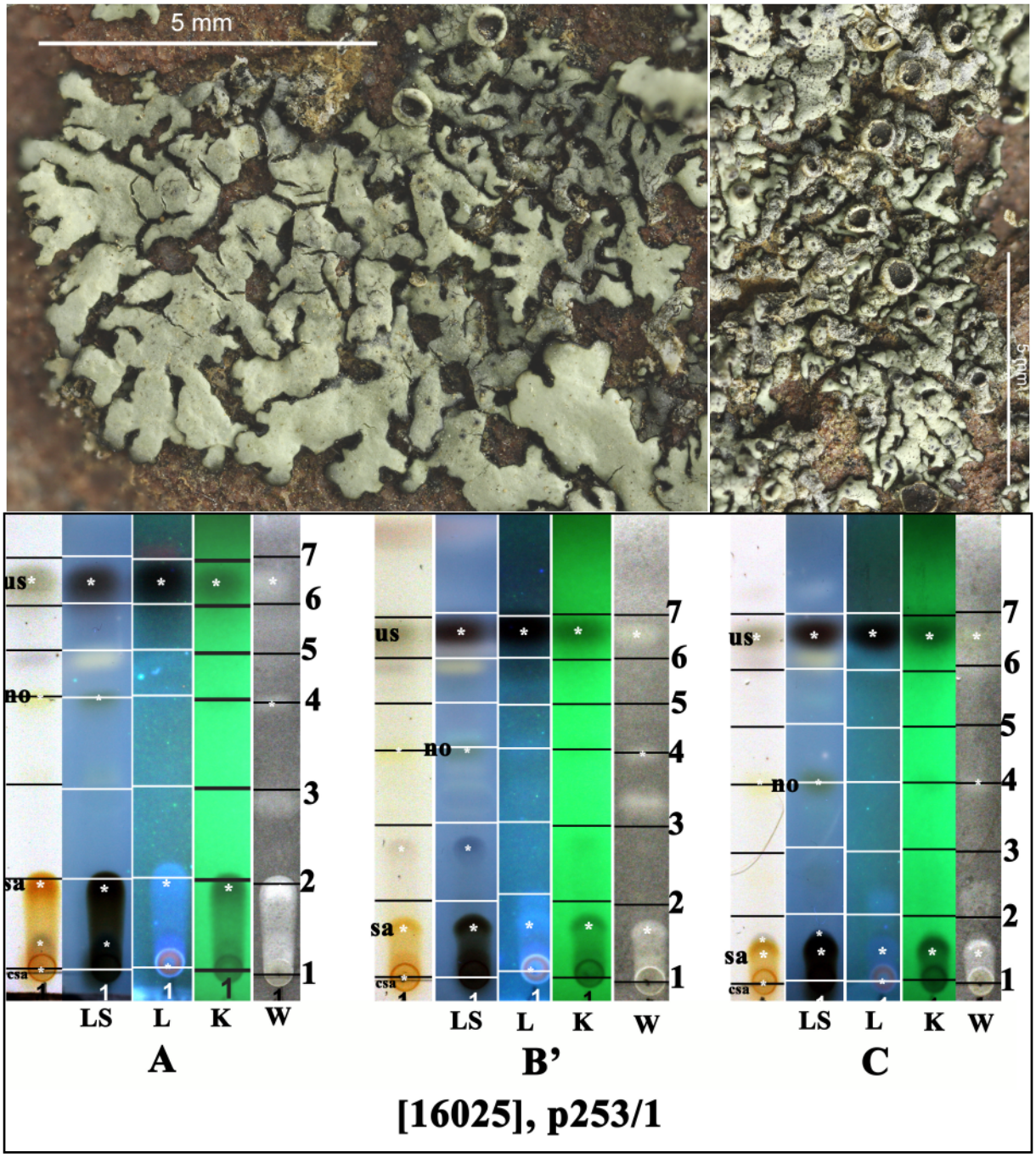
Xanthoparmelia neorimalis

Xanthoparmelia neorimalis (Elix & P.M.Armstr.) Elix & T.H.Nash
[= ***Parmelia neorimalis*** Elix & P.M.Armstr.]

Thallus tightly adnate, in the centrum nearly crustose, marginal lobes flat, lower surface pale-brown, lacking soredia and isidia. Chemistry: medulla K+ yellow the red, C-, KC-, P+ yellow-orange, usnic acid, salazinic acid (major), consalazinic acid.

[16025], Australia, Australian Capital Territory, Black Mountains Reserve. 35,276° S, 149,094° E, 760 m. Leg. J.A. Elix, F. Schumm & E. Stocker-Wörgötter, 07.11.2009. Chemistry: usnic acid, salazinic acid (major), consalazinc acid, norstictic acid (trace) by TLC, anal. F. Schumm.





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

Xanthoparmelia neorimalis

Xanthoparmelia neorimalis (Elix & P.M.Armstr.) Elix & T.H.Nash
[= ***Parmelia neorimalis*** Elix & P.M.Armstr.]

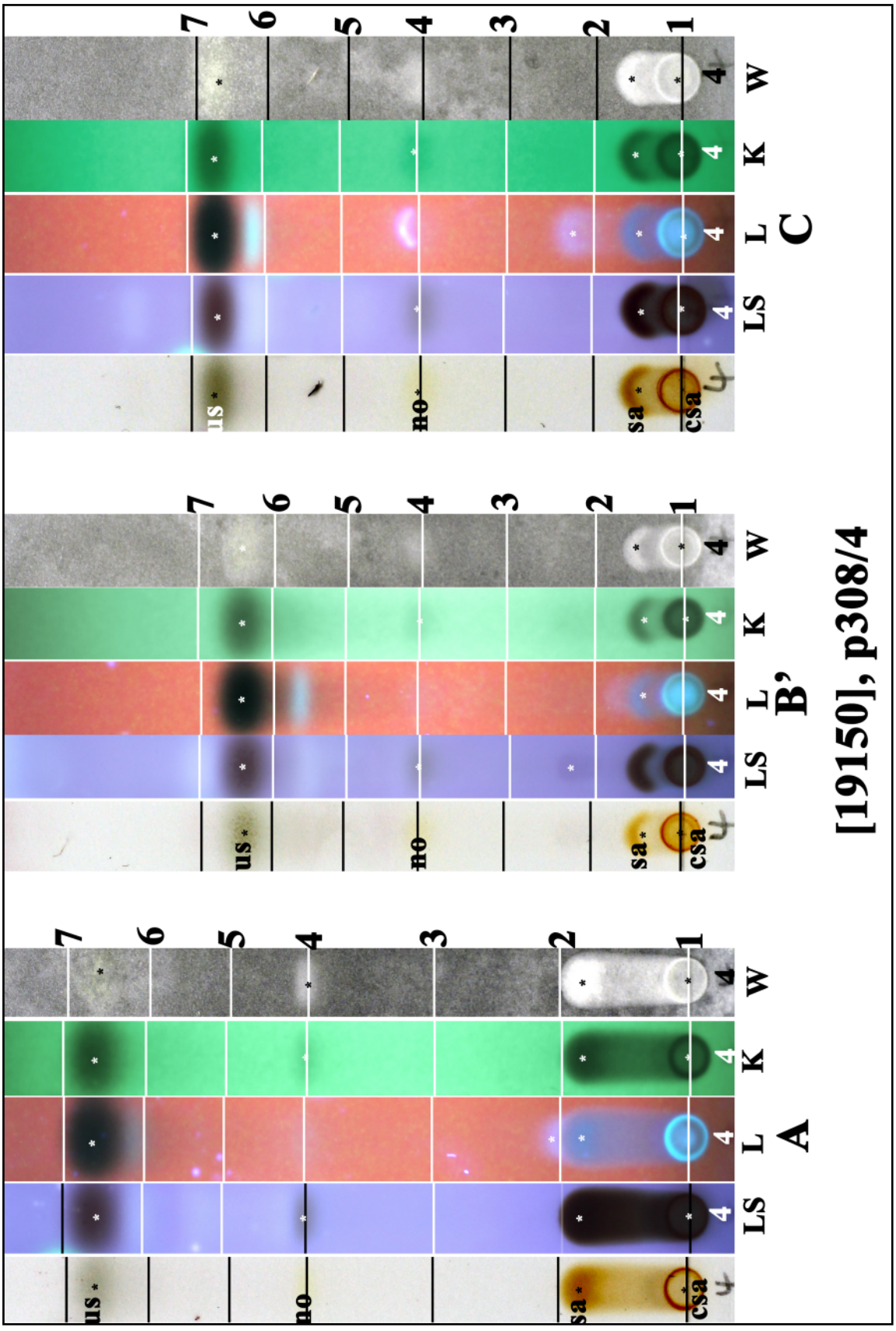
[19150], Australia, New South Wales, Weddin State Forest, 25 km west-.south-west of Greenfell, 35°54' S, 148°00'E, 340 m, growing on quarzite rocks in *Callitris* woodland. Leg. J.A. Elix (11429) & H. Streimann, 0.11.1983. LICHENES AUSTRALASICI EXSICCATI NO. 061. Distributed as ***Parmelia neorimalis*** Elix & P.M.Armstr.







Xanthoparmelia neorimalis



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

Xanthoparmelia neorimalis

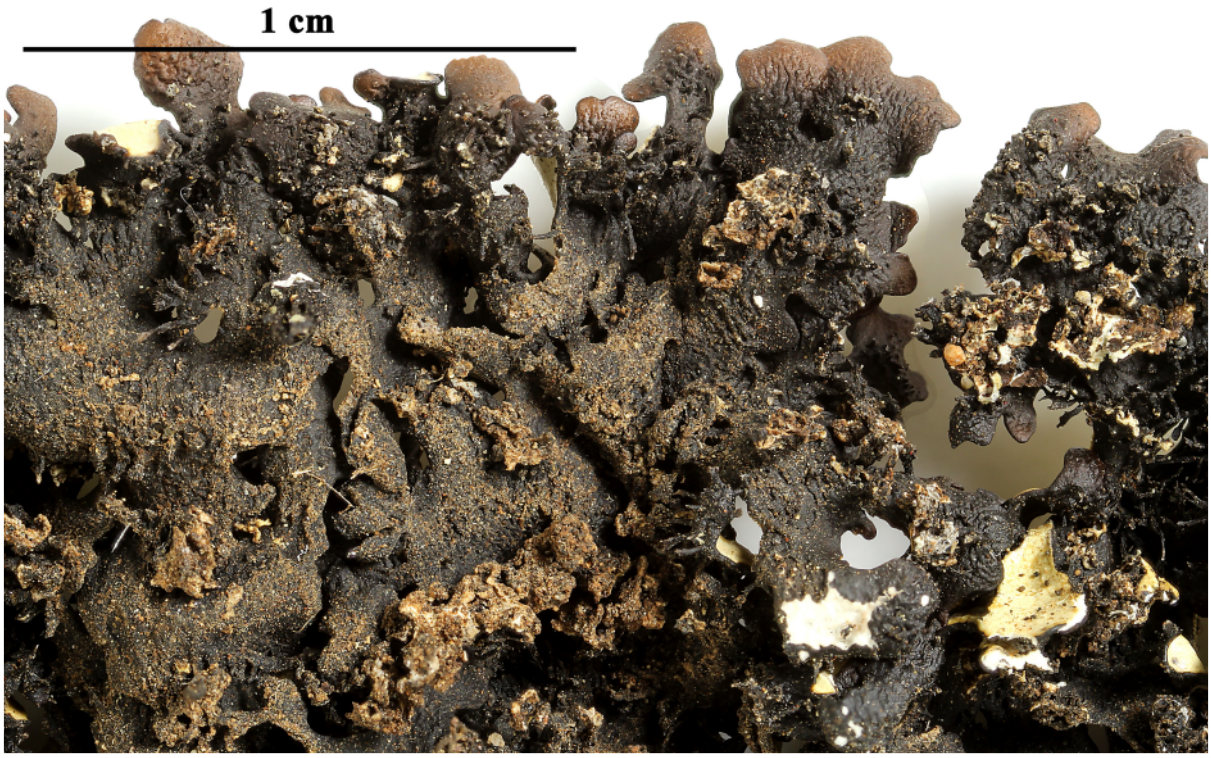
Xanthoparmelia notata (Kurok.) Hale
[= ***Parmelia notata*** Kurok.]

Thallus foliose, loosely adnate to adnate. Lobes commonly imbricate, irregular to sublinear-elongate, di- or trichotomously or irregularly branched, 0.7-2 mm wide, apices ascending or not. Upper surface yellow-green, with distinct effigurate maculae, lacking soredia and isidia. Medulla white. Lower surface black; rhiszines sparse. simple, black, 0.5-1.2 mm long. Apothecia 4-10 mm wide. Ascospores 6-8 x 3-4 µm. Chemistry: cortex K-, UV-; medulla K-, C-, KC-, P-; usnic acid, 4-*O*-methylhypoprotocetraric acid, notatic acid, ±hypoprotocetraric acid (trace), ±isonotatic acid (trace), ±subnotatic acid (trace), ±4-*O*-demethylnotatic acid (trace).

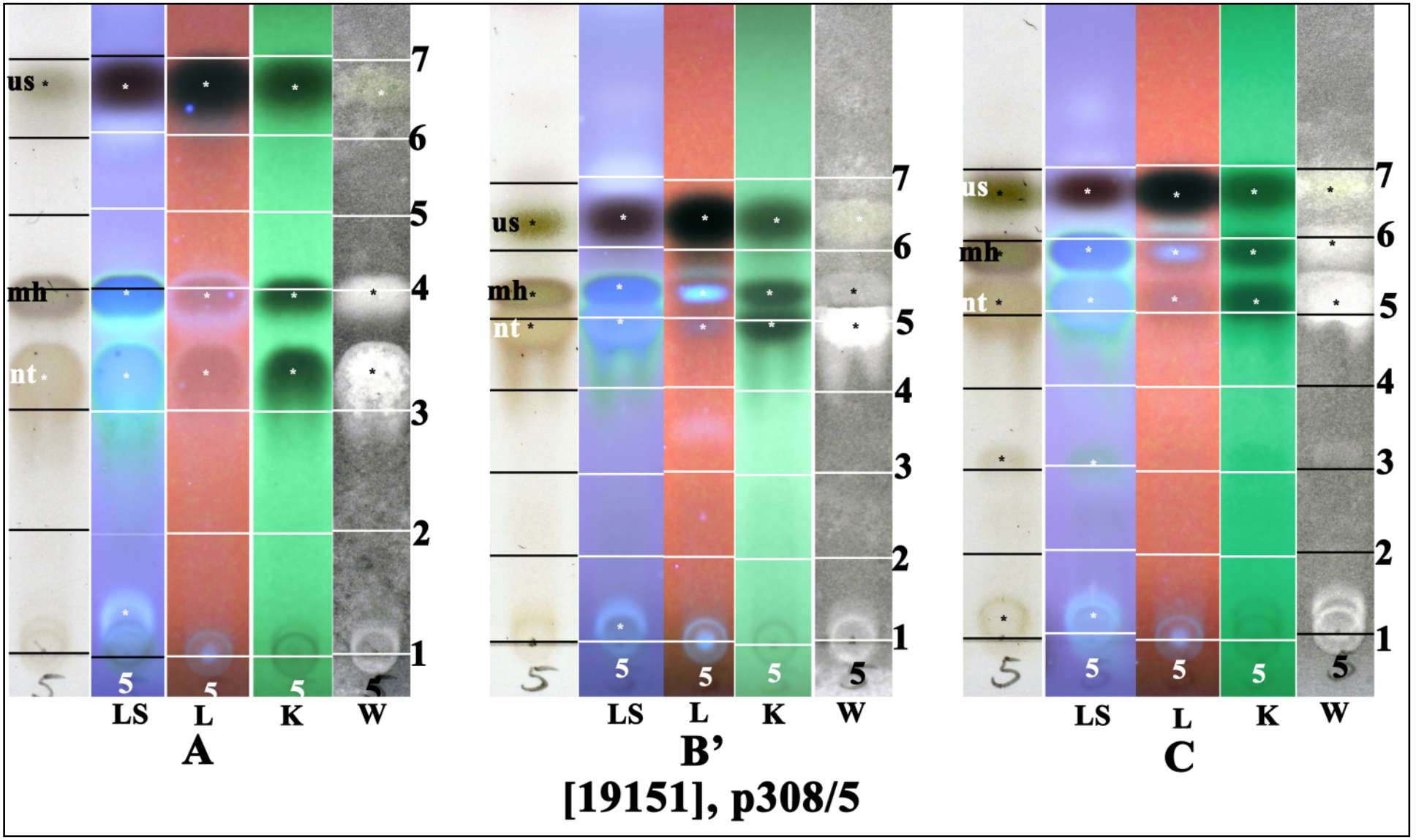
[19151], Australia, South Australia, Mt. Lofty Ranges, Borthwick road, 6.5 km east of Tungkillo, 34°50' S, 139°09'E, 470 m, growing on exposed granite rocks in pasture land. Leg. J.A. Elix (10816) & L.H. Elix, 31.12.1982. LICHENES AUSTRALASICI EXSICCATI NO. 039. Distributed as ***Parmelia notata*** Kurok.







Xanthoparmelia notata



us: usnic acid, nt: notatic acid (3.33|4.98|5.18), mh: 4-*O*-methylhypoprotocetraric acid (3.96|5.41|5.88)

Xanthoparmelia pseudoamphixantha (Elix) & J.Johnst.
[= ***Parmelia pseudoamphixantha*** Elix]

Thallus foliose, loosely adnate, forming rosettes. Lobes often imbricate, ±separated near thallus margin, sublinear-elongate, dichotomously branched, 0.7-2(-3) mm wide, lacking lobules. Upper surface yellow, distinctly machulate, lacking isidia and soredia. Medulla white. Lower surface pale yellow to chesnut-brown; rhizines sparse to moderately dense, simple or rarely branched, 1-2 mm long, black. Apothecia sub-pedicellate, 0.8-1.5 mm wide. Ascospores 5.5-7 x 4-5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ yellow; usnic acid, norstictic acid (major), connorstictic acid, ±salazinic acid (trace), ±hyposalazinic acid (trace).

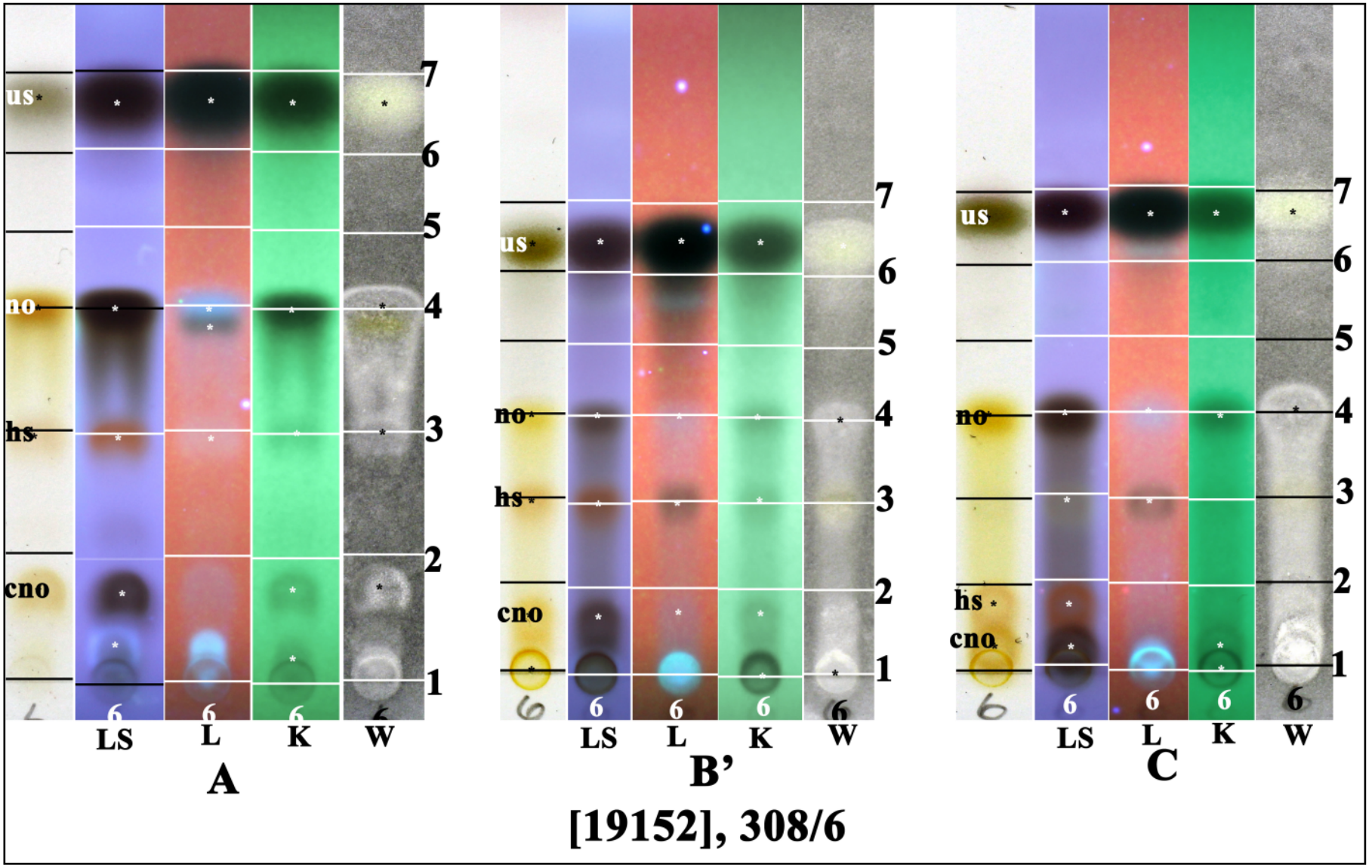
[19152], Australia, New South Wales, Weddin State Forest, 25 km west-.south-west of Grenfell, 33°54' S, 148°00'E, 340 m, growing on soil in *Callitris* woodland. Leg. J.A. Elix (11431) & H. Streimann, 0.11.1983. LICHENES AUSTRALASICI EXSICCATI NO. 062. Distributed as ***Parmelia pseudoamphixantha*** Elix.







Xanthoparmelia pseudoamphixantha

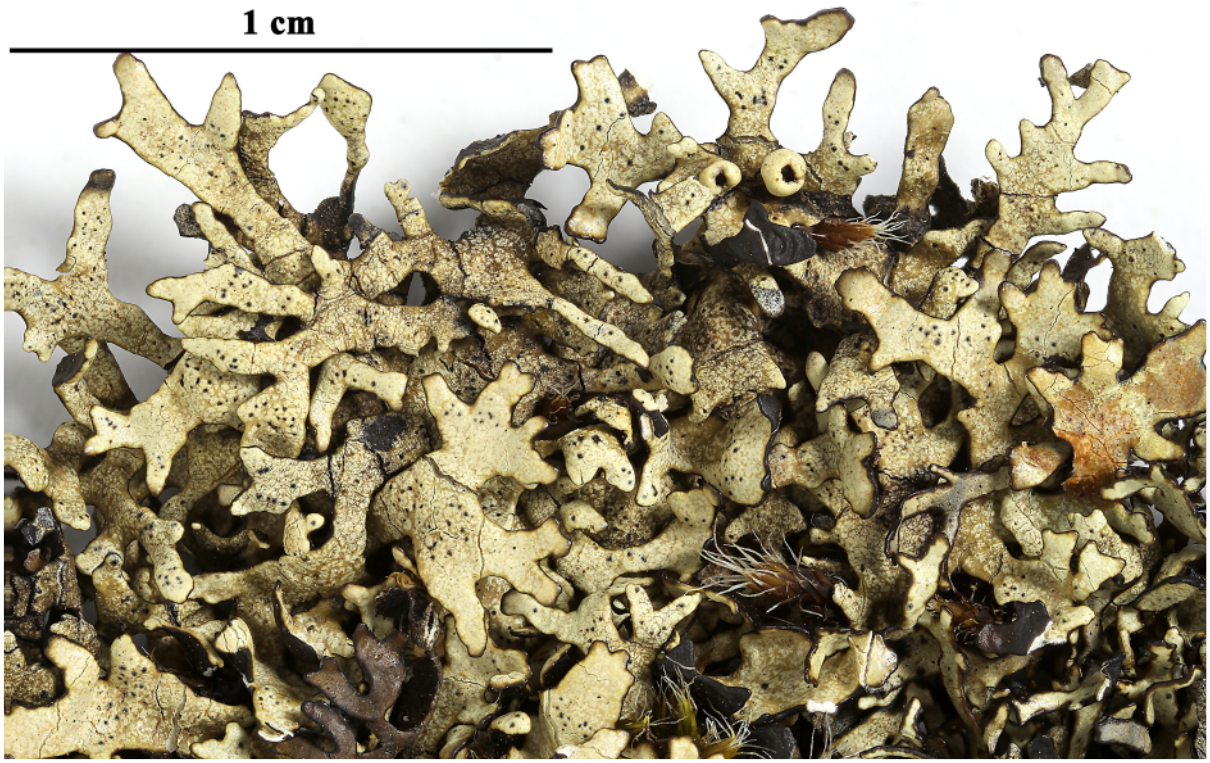


us: usnic acid, no: norstictic acid (major), hs: hyposalazinic acid, cno: connostictic acid

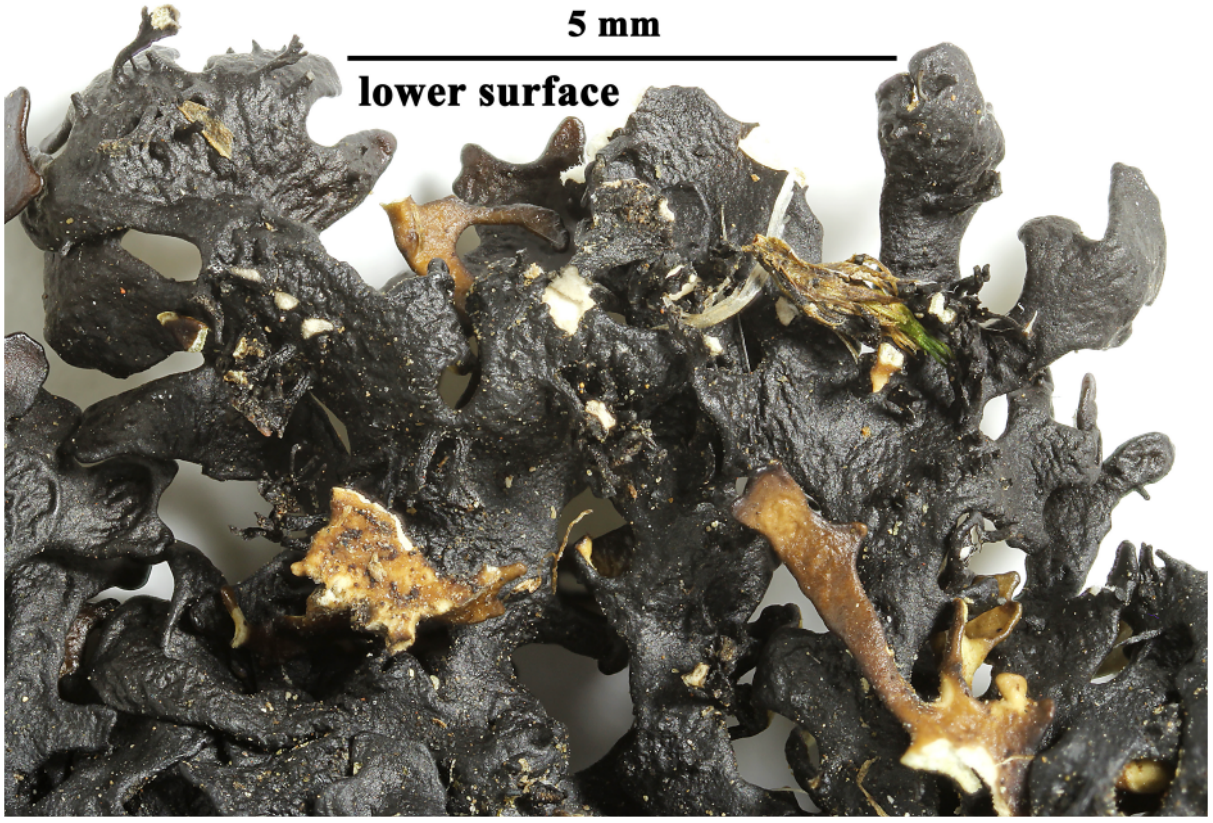
Xanthoparmelia pseudohypoleia (Elix) Elix & J.Johnst.
[= ***Parmelia pseudohypoleia*** Elix]

Thallus foliose, loosely adnate. Lobes often imbricate, sublinear-elongate, di- or trichotomously branched, 0.5-1(-2) mm wide. Upper surface yellow-green, with distinct or effigurate maculae, lacking isidia and soredia. Medulla white. Lower surface rugulose or not, black; rhizines sparse to moderately dense, simple, robust. Apothecia 3-6 mm wide. Ascospores 6-8 x 4-5 µm. Chemistry: cortex K-, UV-; medulla K+ pale yellow then brownish, C-, P+ orange-red; usnic acid, fumarprotocetraric acid, ±protocetraric acid (trace), ±succinprotocetraric acid (trace).

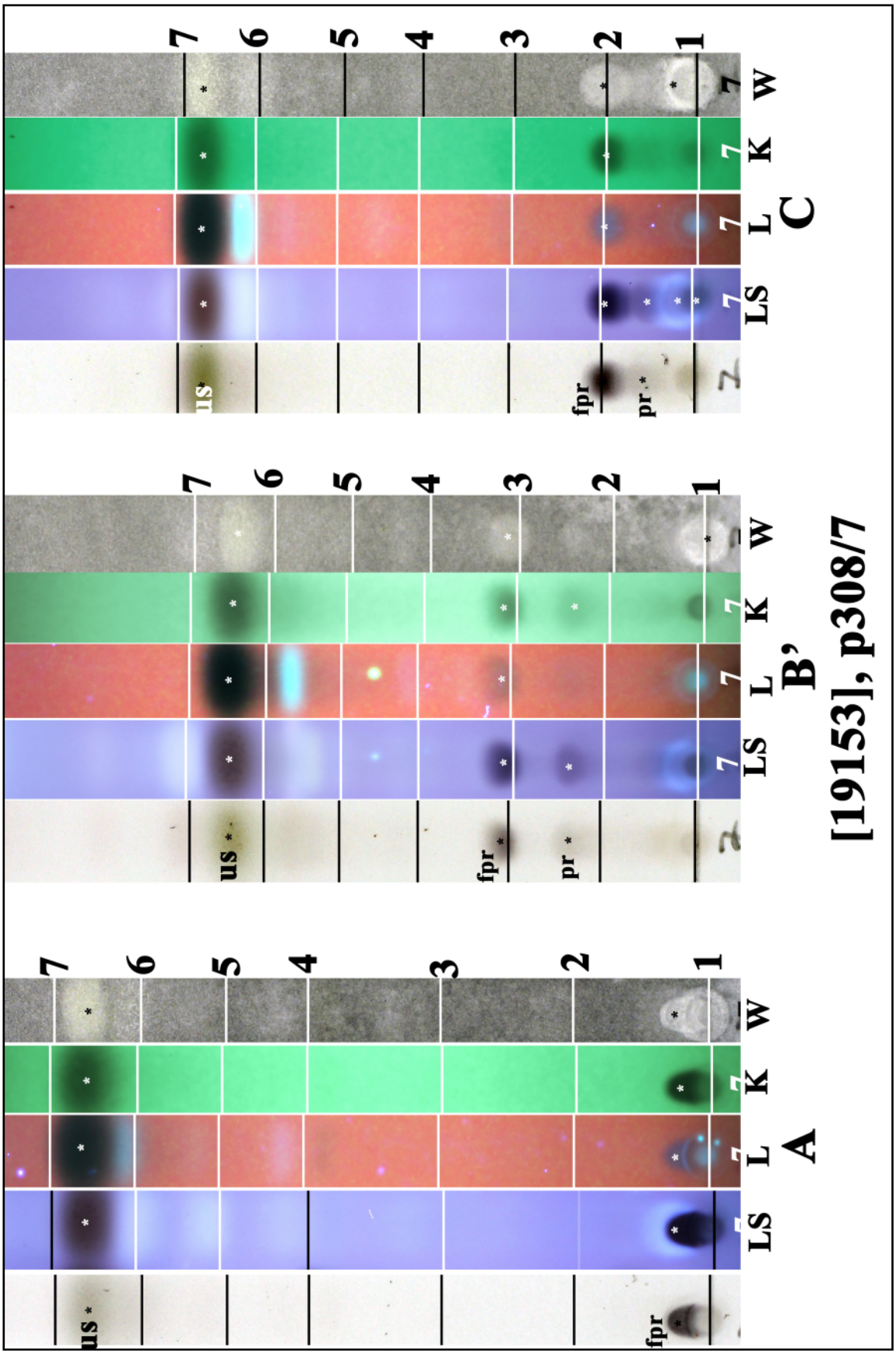
[19153], Australia, Victoria, Bullock Creek, 16 km south of Bendigo along Calder Highway, 37°52' S, 144°13'E, 270 m, growing on large granite boulders with a southerly aspect, on creek bank in light shade, in remnant eucalypt woodland. Leg. J. Johnston (1169), 12.12.1983. LICHENES AUSTRALASICI EXSICCATI NO. 063. Distributed as ***Parmelia pseudohypoleia*** Elix.







Xanthoparmelia pseudohypoleia



us: usnic acid, fpr: fumarprotocetraric acid, pr: protocetraric acid.

Xanthoparmelia pulla (Ach.) O.Blanco et al.
[= ***Neofuscelia pulla*** (Ach.) Essl.]
[= ***Parmelia pulla*** Ach.]

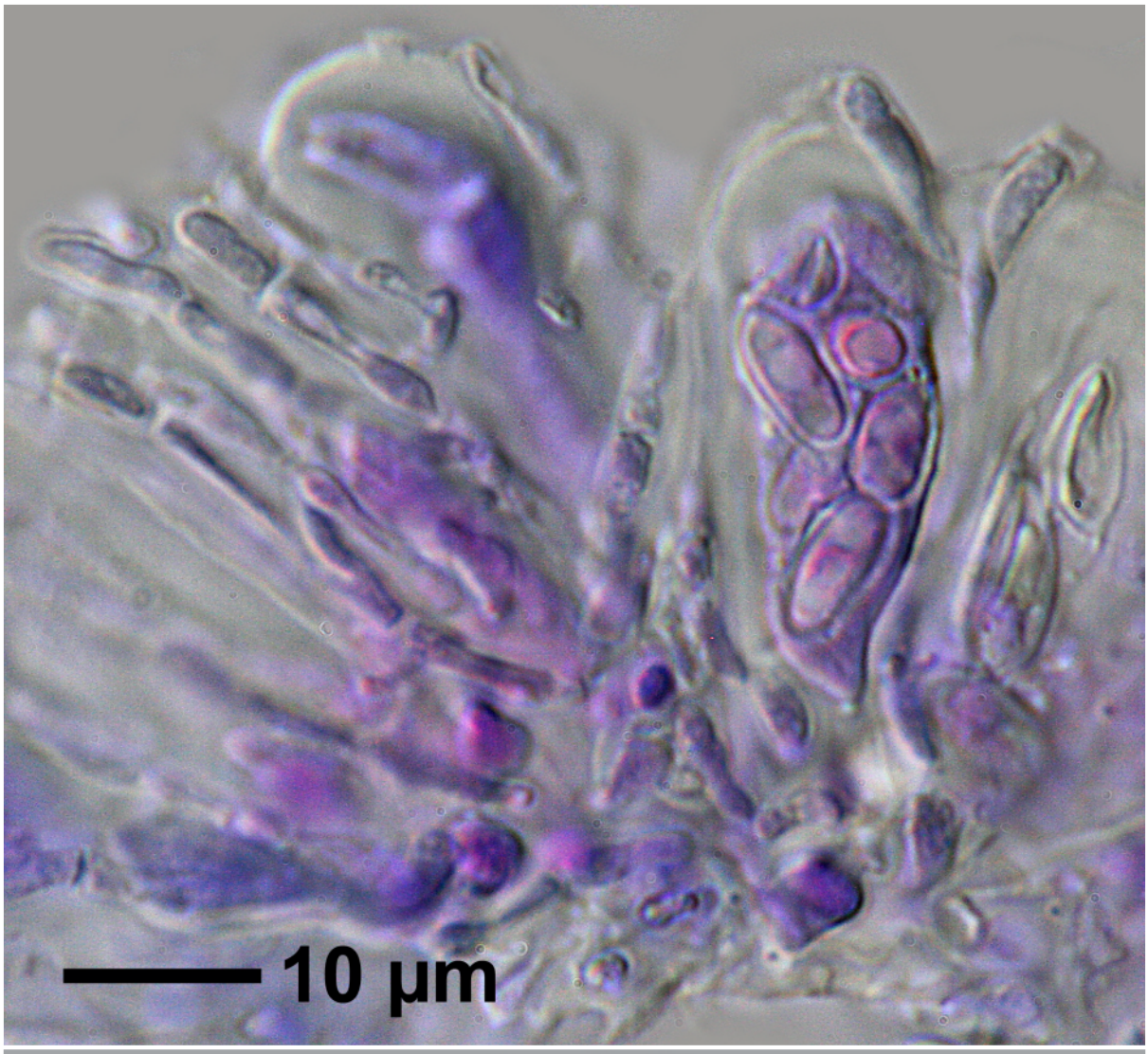
Thallus loosely to tightly adnate, lacking isidia and soredia. Lobes discrete to imbricate, flat, sublinear, 1-3 (-5) ,, wide, lacking laciniae. Lower surface dark brown to black. Apothecia common, to 11 mm wide. Ascospores 9-11 x 5-6 µm. Chemistry: cortex K-, N+ pale to dark blue-green; medulla K-, C-, KC-, P-, UV-; stenosporic acid or divaricatic acid.

[19085], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing over mosses and on sheltered granite rocks along the river bank. Leg. J.A. Elix (10906), 10.04.1983. LICHENES AUSTRALASICI EXSICCATI NO. 040. Distributed as ***Parmelia pulla*** Ach.



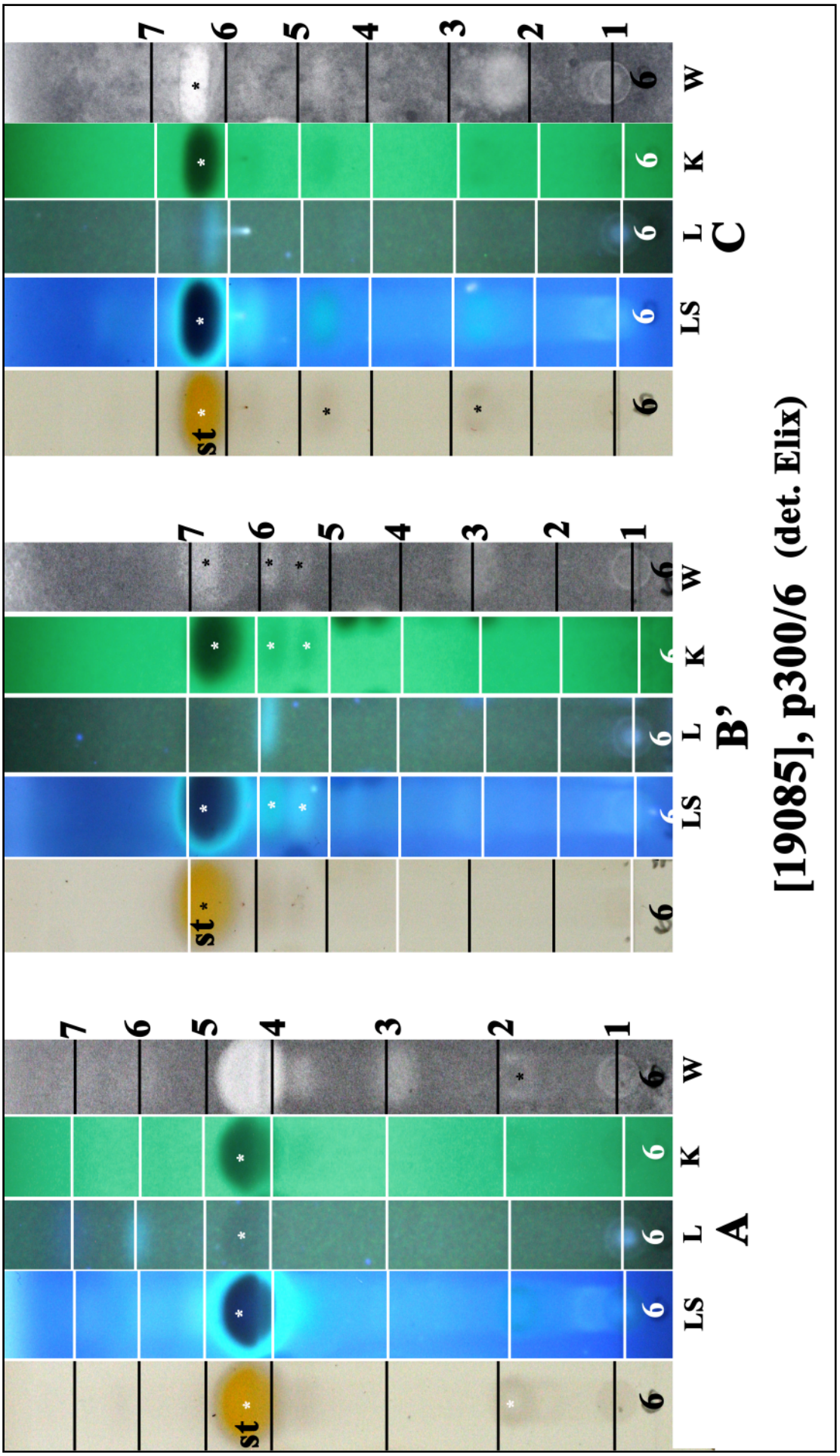


Xanthoparmelia pulla





Xanthoparmelia pulla

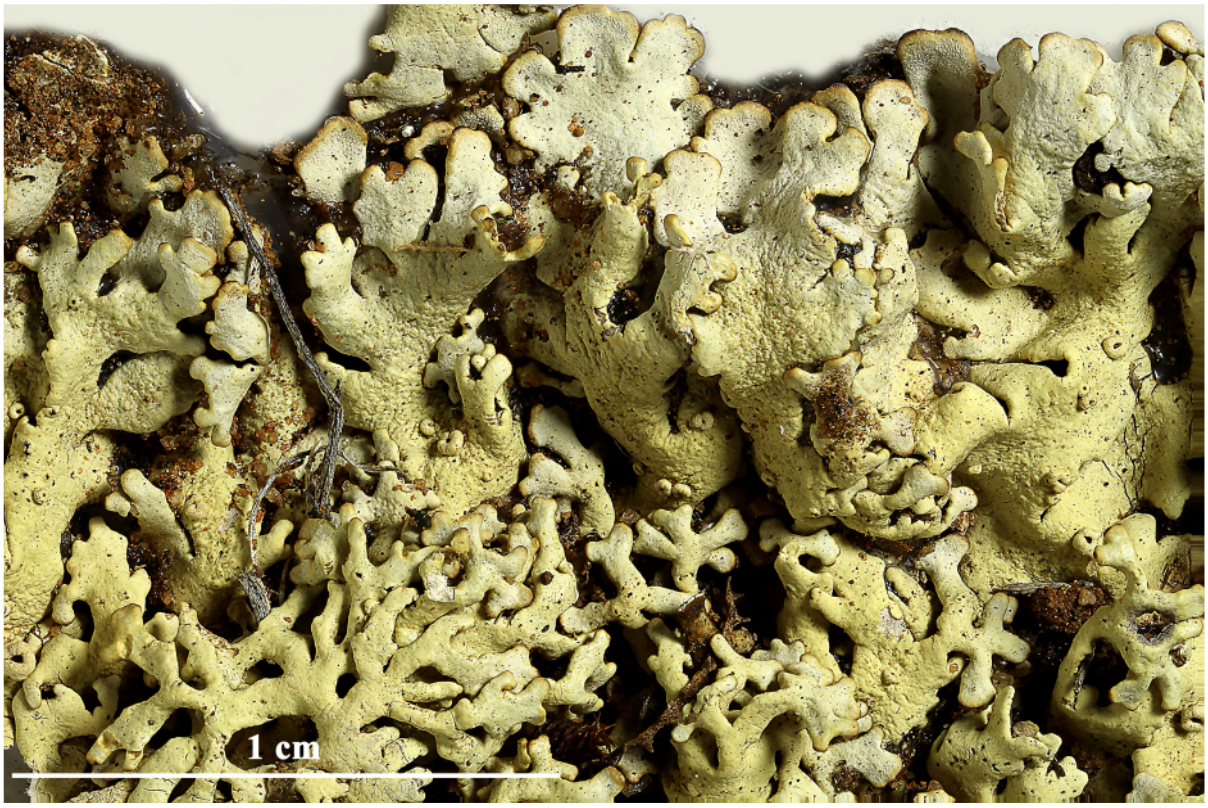


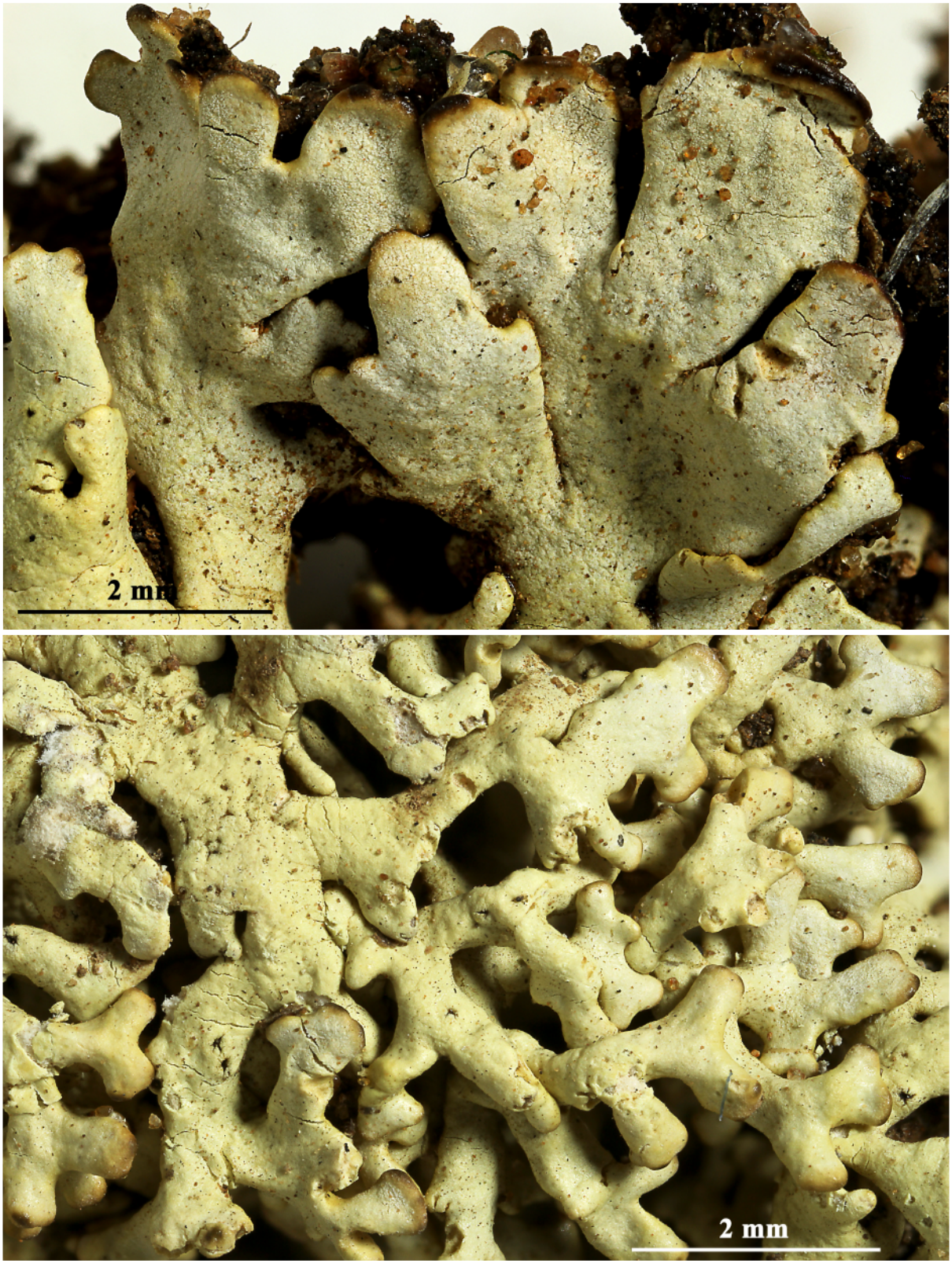
Xanthoparmelia pulla

Xanthoparmelia pumila (Kurok. & Filson) Elix & J.Johnst.
[= ***Parmelia pumila*** Kurok. & Filson]

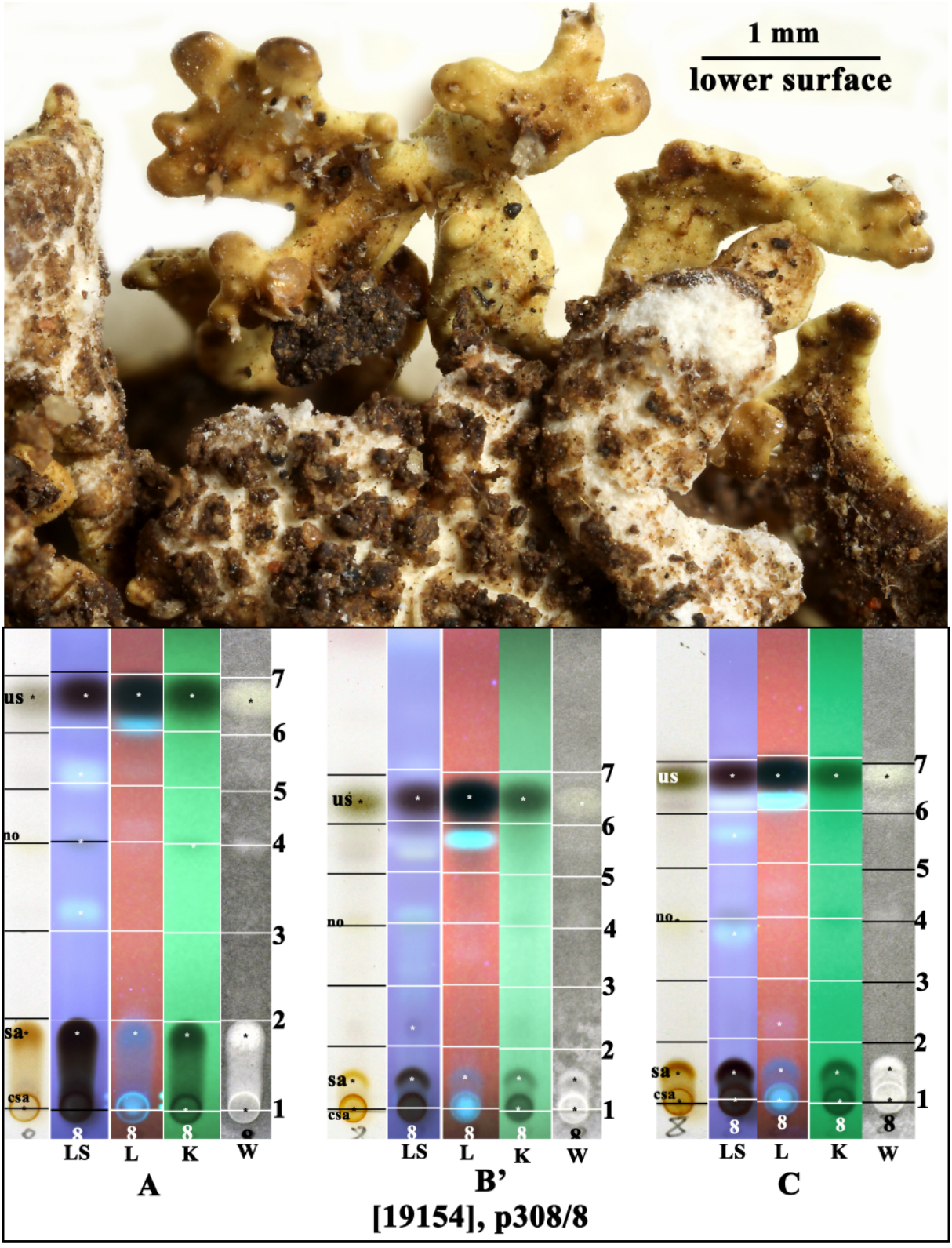
Thallus foliose, adnate. Lobes imbricate, not ascending, irregularly branched, 0.7-1.5 mm wide; lobules subterete to terete, branched, ascending, 0.2-0.4 mm wide, often blackened at apices. Upper surface pale yellow, often whitish yellow pruinose at lobe apices, emaculate, lacking soredia and isidia. Medulla white. Lower surface black, becoming brown to yellow near apices of marginal lobes; rhizines sparse to moderately dense, simple, 0.2-0.4 mm long, black. Apothecia to 2.5 mm wide. Ascospores 10-11 x 5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then red, C-, KC-, P+ intense yellow; usnic acid, salazinic acid, consalazinic acid, ±norstictic acid (trace).

[19154], Australia, South Australia, Ridley National Park, 18 km south of Swan Reach, 34°39' S, 139°34' E, 30 m, growing on soil in mallee scrub. Leg. J.A. Elix (10914) & L.H. Elix, 12.05.1983. LICHENES AUSTRALASICI EXSICCATI NO. 041. Distributed as ***Parmelia pumila*** Kurok. & Filson.





Xanthoparmelia pumila



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

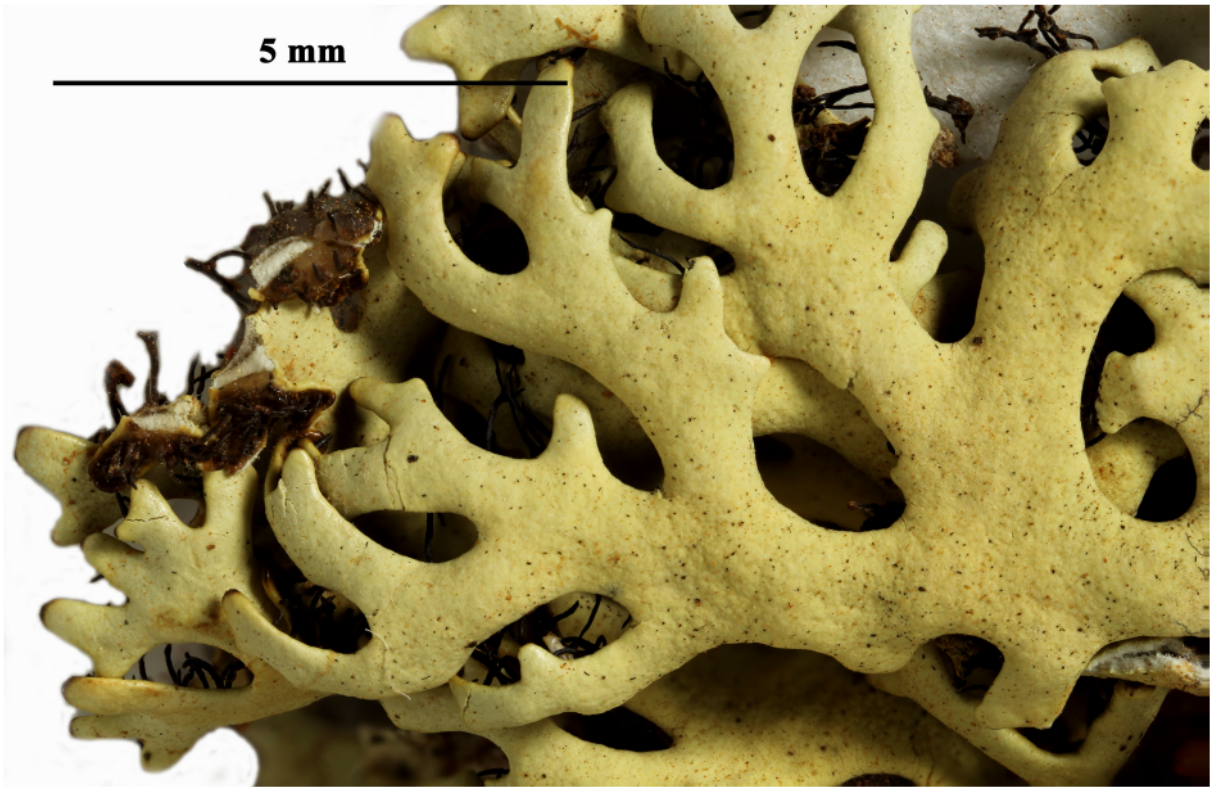
Xanthoparmelia pumila

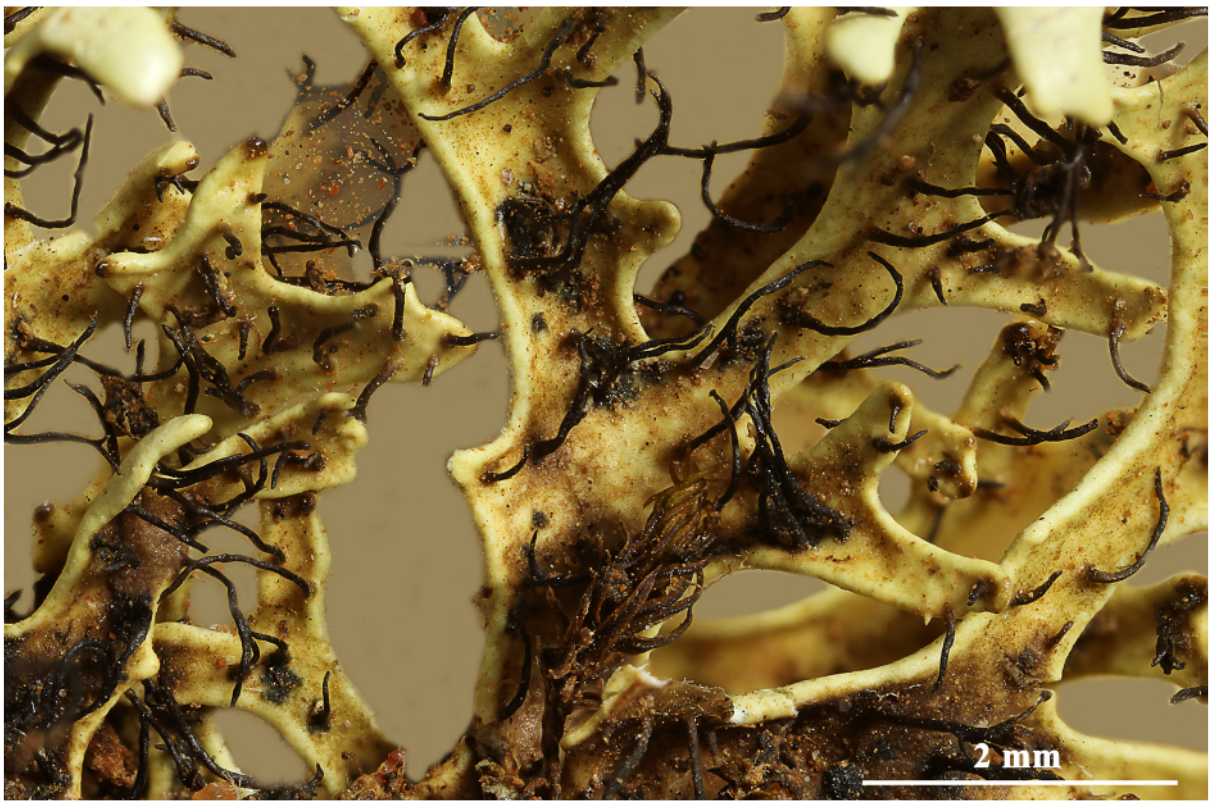
Xanthoparmelia reptans (Kurok.) Elix & J.Johnst.
[= ***Parmelia reptans*** Kurok.]

Thallus foliose, loosely adnate. Lobes often imbricate, ±separate near thallus margin, sublinear-elongate, dichotomously branched, 0.7-2 mm wide, without lobules. Upper surface pale yellow, maculate, particularly towards lobe apices, lacking isidia and soredia. Medulla white. Lower surface partly canaliculate, brownish yellow or grey-brown; rhizines simple or sparsely branched, 1-2 mm long, black. Apothecia 0.5-1.5 mm wide. Ascospores 6-7 x 4-5 µm. Chemistry: cortex K-, UV-; medulla K+ brown, C-, P+ orange-red; usnic acid, fumarprotocetraric acid, ±succinprotocetraric acid, ±protocetraric acid (trace), ±physodalic acid (trace).

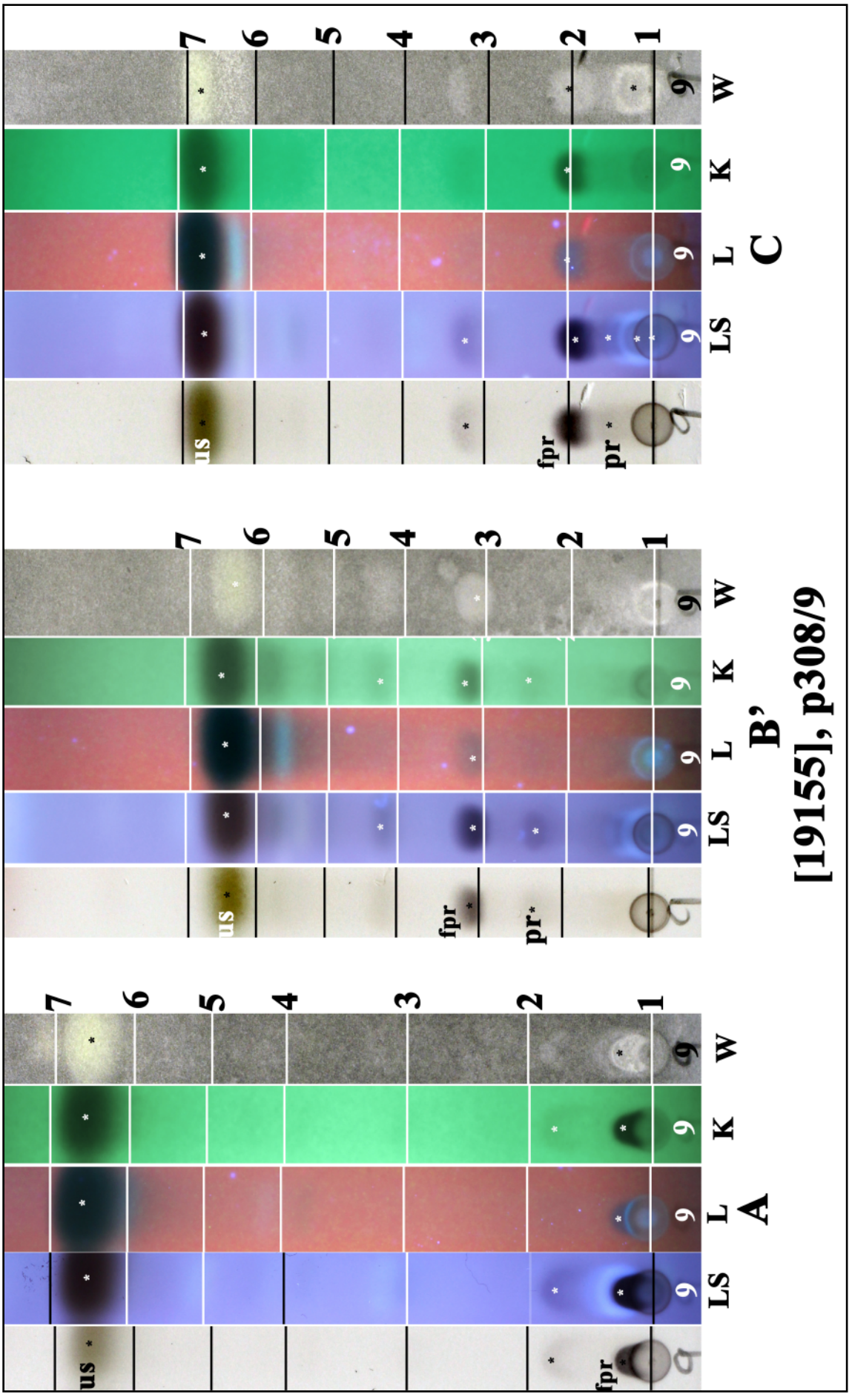
[19155], Australia, New South Wales, 11 km east of Mildura along Sturt Highway, 34°17' S, 142°15' E, 40 m, growing on soil in mallee scrub. Leg. J.A. Elix (11482) & S.A. Elix, 22.12.1983. LICHENES AUSTRALASICI EXSICCATI NO. 065. Distributed as ***Parmelia reptans*** Kurok.







Xanthoparmelia reptans



us: usnic acid, fpr: fumarprotocetraric acid, pr: protocetraric acid.

Xanthoparmelia reptans

Xanthoparmelia reptans (Kurok.) Elix & J.Johnst.
[= ***Parmelia reptans*** Kurok.]

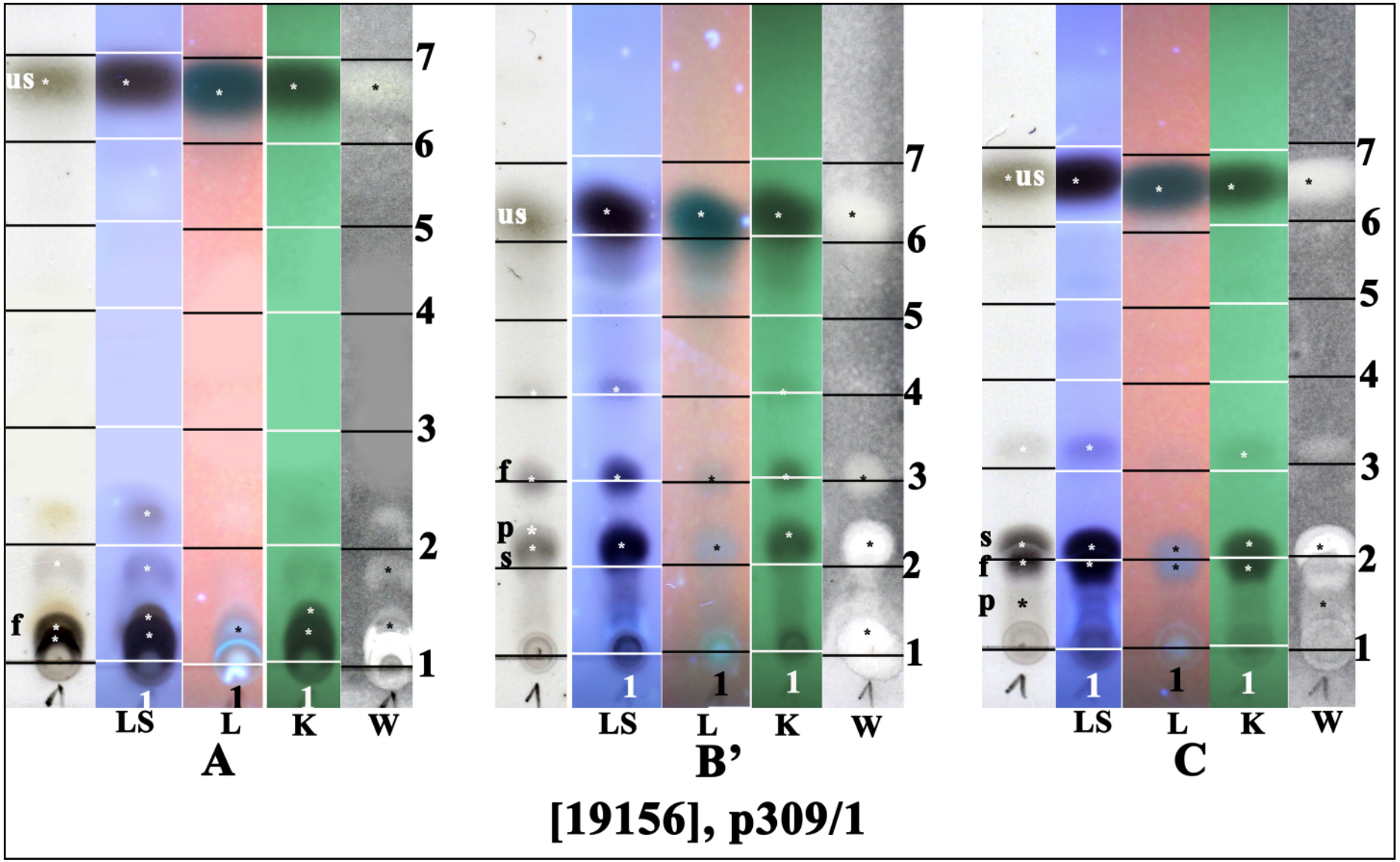
[19156], Australia, New South Wales, 2 km north of Bredbo, 35°55' S, 149°09' E, 760 m, growing on soil in open pasture land. Leg. J.A. Elix (9698), 24.02.1982. LICHENES AUSTRALASICI EXSICCATI No. 020. Distributed as ***Parmelia reptans*** Kurok.







Xanthoparmelia reptans

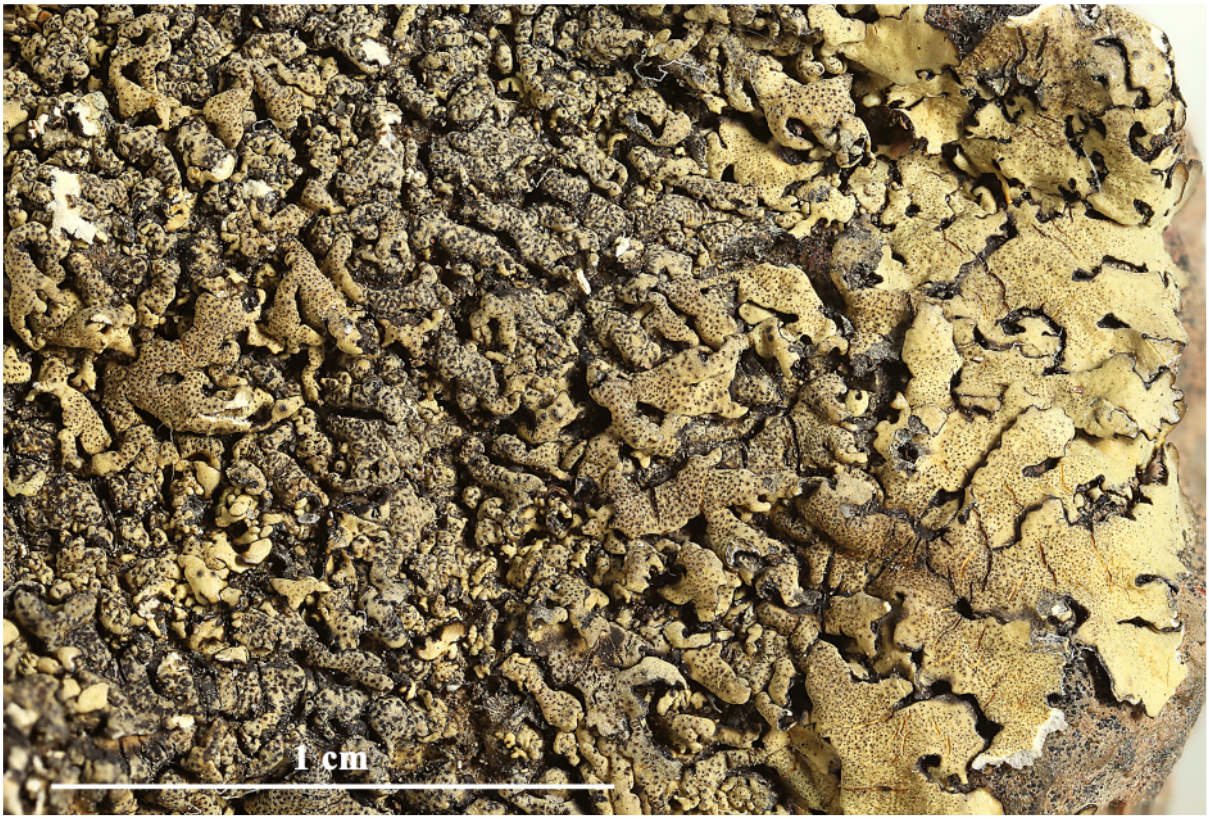


us: usnic acid, f: fumarprotocetraric acid, p: protocetraric acid, s: succinprotocetraric acid

Xanthoparmelia rimalis (Kurok.) Elix, A.Thell & Søchting

Thallus foliose, adnate to tightly adnate. Lobes barely imbricate or not, sublinear, irregularly branched, 1-2.5 mm wide. Upper surface pale yellow to yellow-green, darkening, emaculate, lacking soredia and isidia. Older lobes becoming rugulose, traversely or irregularly cracked. Medulla white. Lower surface pale brown to brown, often darker towards lobe apices; rhizines sparse to moderately dense, simple, 0.2-0.3 mm long, dark brown. Apothecia 1-5 mm wide. Ascospores 12-13 x 6-7 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ intense yellow; usnic acid, salazinic acid, ±constipatic acid, ±protoconstipatic acid.

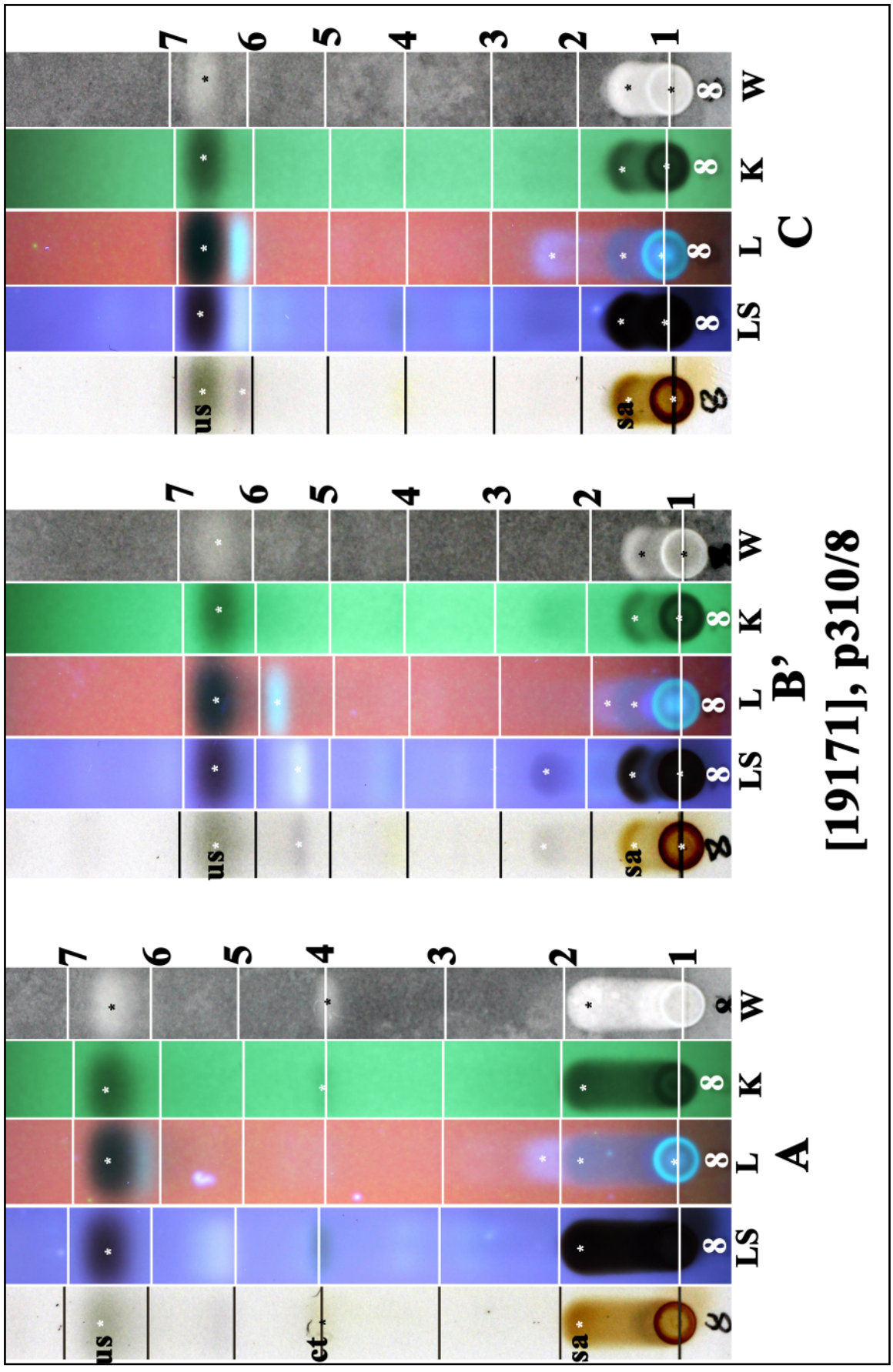
[19171], Australia, Australian Capital Territory, Black Mountain Reserve, Bruce, Canberra, 35°15' S, 149°05' E, 640 m, growing on quartzite rocks in open eucalypt woodland. J.A. Elix (10844) & M.J. Elix, 18.01.1983. LICHENES AUSTRALASICI EXSICCATI NO. 037. Distributed as ***Parmelia lineola*** E.C.Berry. DNA investigations showed that ***Xanthoparmelia rimalis*** and ***Xanthoparmelia lineola*** (E.C.Berry) Hale were distinct and unrelated species.







Xanthoparmelia rimalis



Xanthoparmelia rimalis

Xanthoparmelia rubrireagens (Gyeln.) Hale
[= ***Parmelia rubrireagens*** Gyeln.]

Thallus foliose, very loosely adnate. Lobes moderately imbricate, linear-elongate, subdichotomously branched, becoming suberect, exposing lower surface,, 0.5-1(-1.5) mm wide, margins black. Upper surface yellow-green, emaculate, lacking soredia and isidia. Medulla white. Lower surface mostly jet black; rhizines absent or very sparse, simple, black, short. Apothecia 1-3 mm wide. Ascospores 7-8 x 5-6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, P+ orange red; usnic acid, salazinic acid, consalazinic acid, norstictic acid (trace).

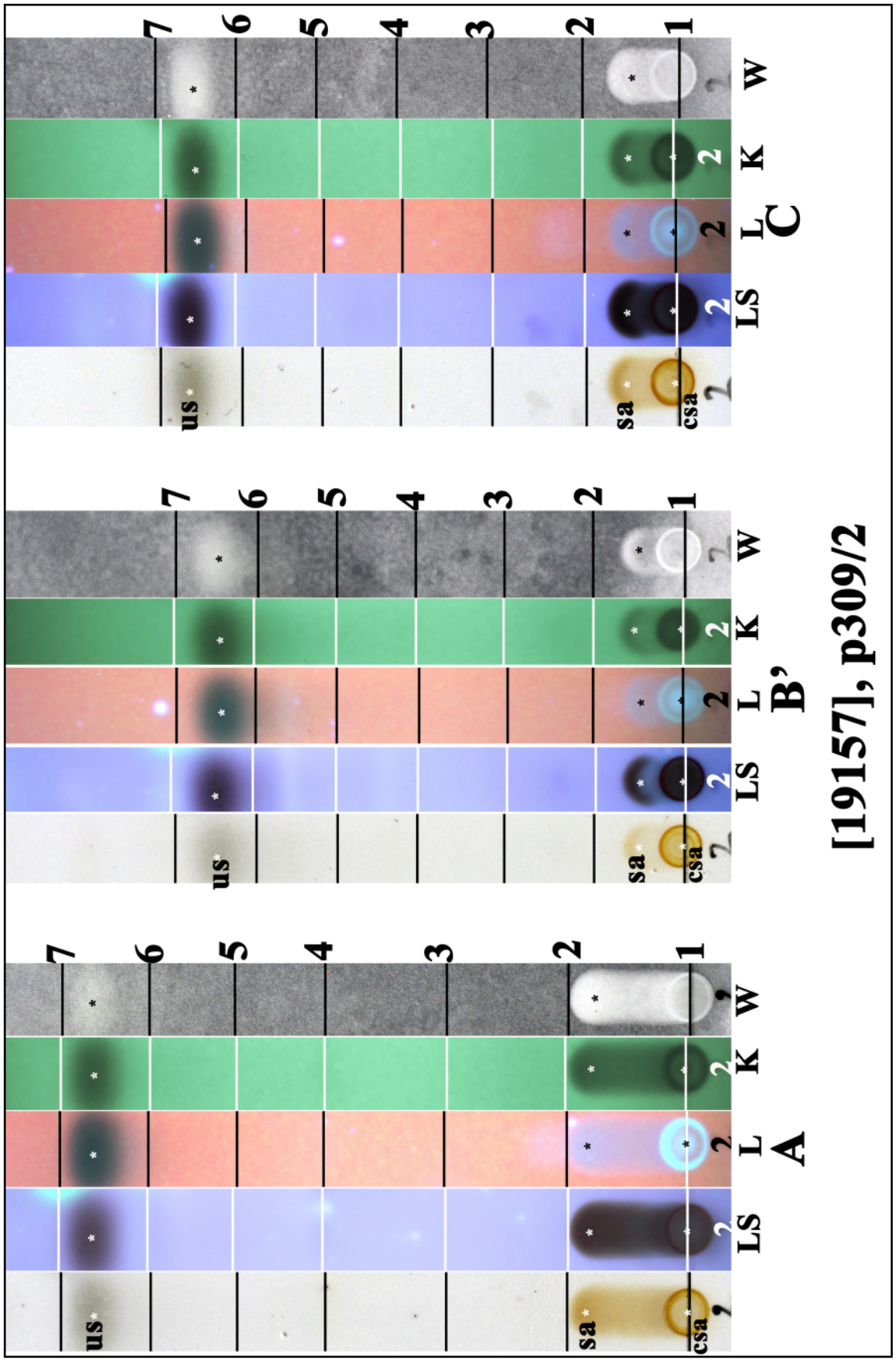
[19157], Australia, Australian Capital Territory, Gudgenby River Gorge, 4.5 km south of Tharwa, 35°34' S, 149°04' E, 620 m, growing on granite rocks in open woodland. Leg. J.A. Elix (10166), 12.04.1982. LICHENES AUSTRALASICI EXSICCATI NO. 042. Distributed as ***Parmelia rubrireagens*** Gyeln.







Xanthoparmelia rubrireagens



us: usnic acid, sa: salazinic acid, csa: consalazinic acid

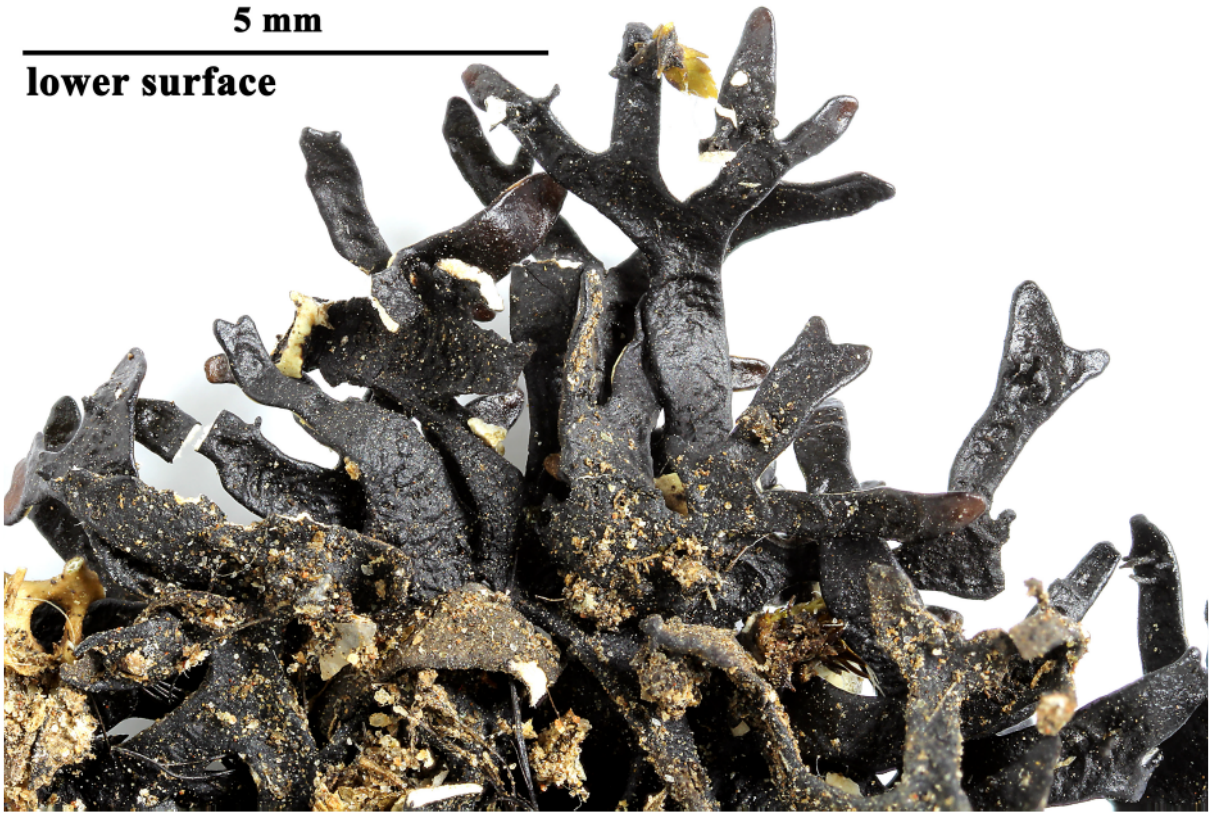
Xanthoparmelia rubrireagens

Xanthoparmelia rubrireagens (Gyeln.) Hale
[= ***Parmelia rubrireagens*** Gyeln.]

[19158], Australia, Victoria, Bullock Creek, 16 km south of Bendigo along Calder Highway, 37°52' S, 144°13'E, 270 m, growing on exposed granite boulders in remnant eucalypt woodland. Leg. J. Johnston (1162), 12.12.1983. ‚LICHENES AUSTRALASICI EXSICCATI NO. 066. Distributed as ***Parmelia rubrireagens*** Gyeln.







Xanthoparmelia rubrireagens

us: usnic acid, sa: salazinic acid, csa: consalazinic acid,
f: fumarprotocetraric acid, obviously from some contaminating species

Xanthoparmelia rubrireagens

Xanthoparmelia semiviridis (F. Muell. ex Nyl.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch
[= ***Chondropsis semiviridis*** (F.Muell. ex Nyl.) Nyl.]

Lobes linear-elongate, 1-3 mm wide, curling inwards when dry. Upper surface pale yellow to pale yellow-green. Lower surface rugulose, rarely partly canaliculate. Chemistry: usnic acid, fumarprotocetraric acid, succinprotocetraric acid and ±protocetraric acid; cortex K-, UV-; medulla K+ pale brown, C-, P+ orange-red.

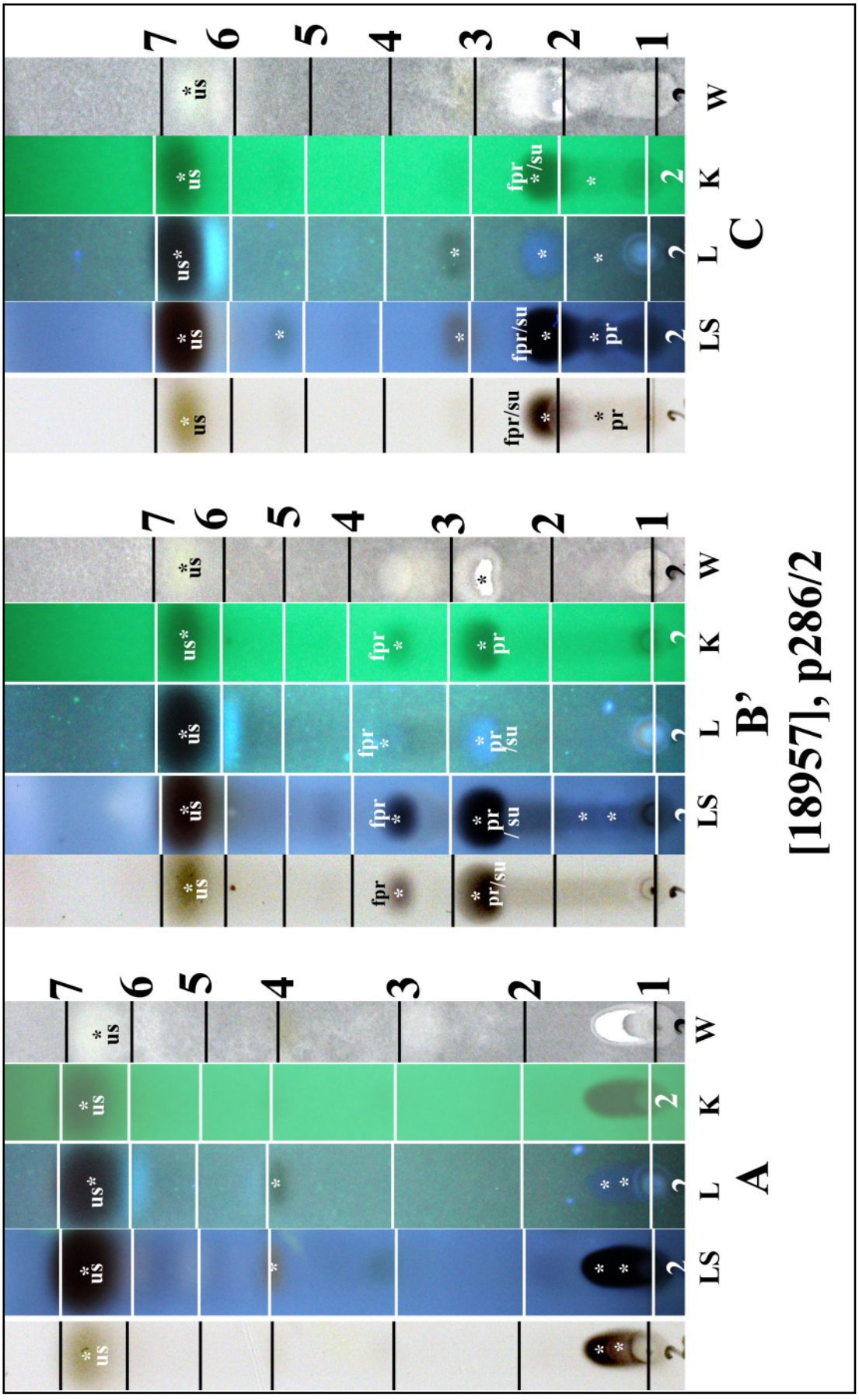
[18957], Australia, New South Wales, 2 km north of Bredbo, 35°55' S, 149°09' E, 760 m, growing loose on soil in open pasture land. Leg. J.A. Elix (10883) & J. Johnston, 24.02.1983. LICHENES AUSTRALASICI EXSICCATI NO. 026, distributed as *Chondropsis semiviridis* (Nyl.) Nyl.







Xanthoparmelia semiviridis



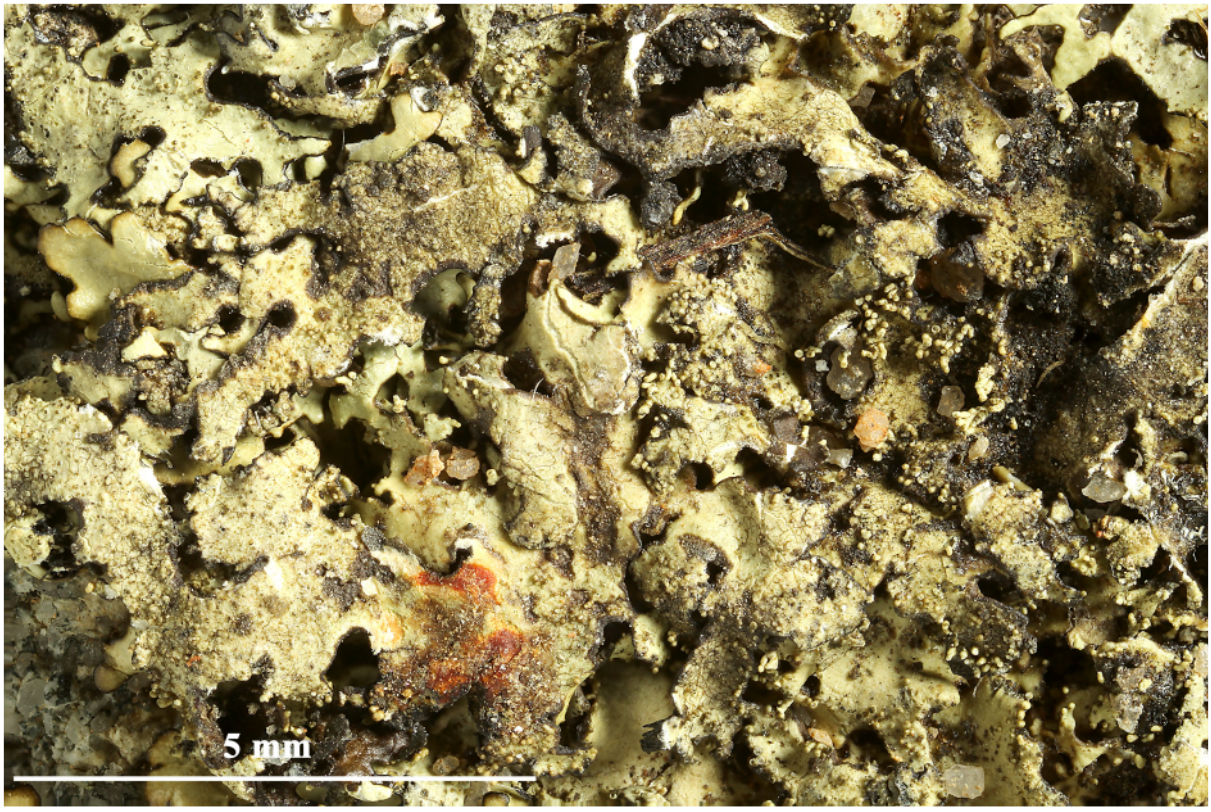
us: usnic acid, pr: protocetraric acid, fpr: fumarprotocetraric acid, su: succinprotocetraric acid;
in B composit spot of pr & su; in C composit spot of fpr & su

Xanthoparmelia semiviridis

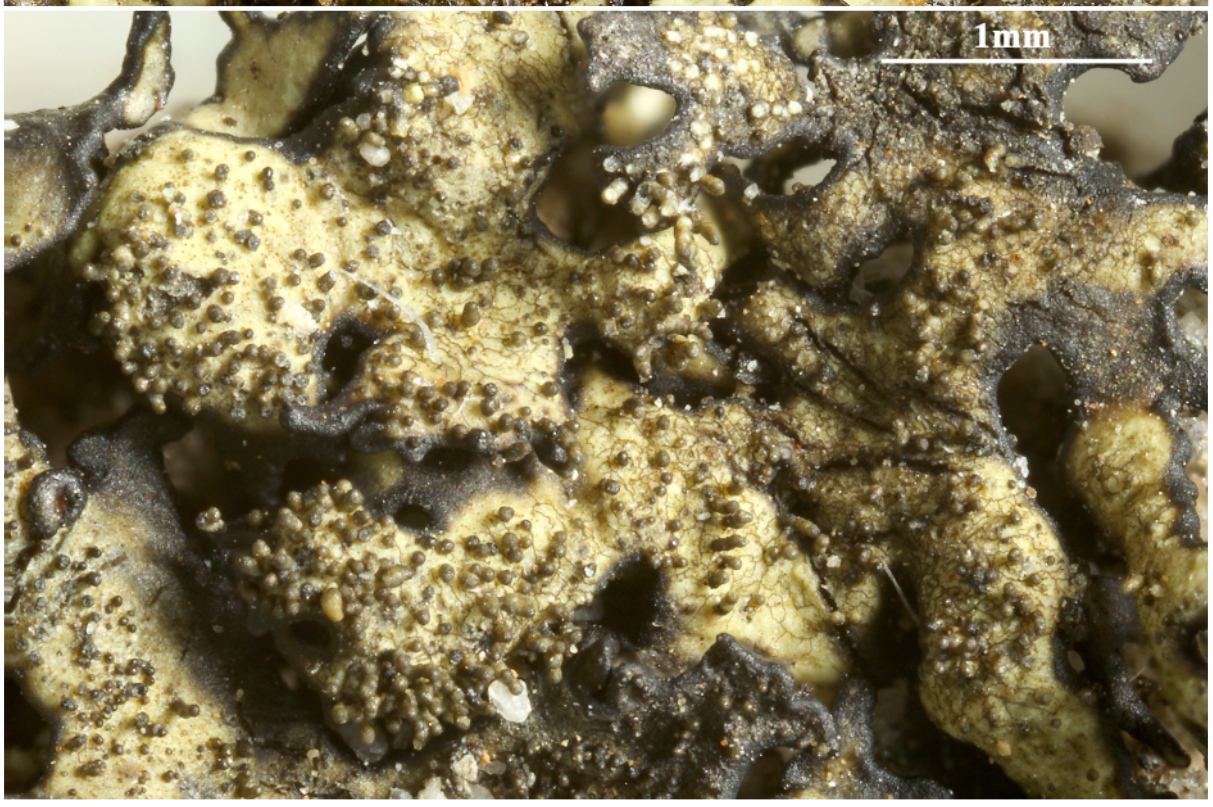
Xanthoparmelia streimannii (Elix & P.M.Armstr.) Elix & J.Johnst.
[= ***Parmelia streimannii*** Elix & P.M.Armstr.]

Thallus foliose, loosely adnate to adnate. Lobes radiating, imbricate or not, sublinear-elongate, irregularly branched, 0.5-1.5(-2) mm wide. Upper surface yellow-green, darkening with age, emaculate, without soredia; isidia dense, cylindrical, becoming extensively branched and coralloid. Medulla white. Lower surface pale brown. Apothecia 7-9 x 5-6 µm. Ascospores 7-9 x 5-6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ yellow; usnic acid, norstictic acid, connorstictic acid, ±salazinic acid.

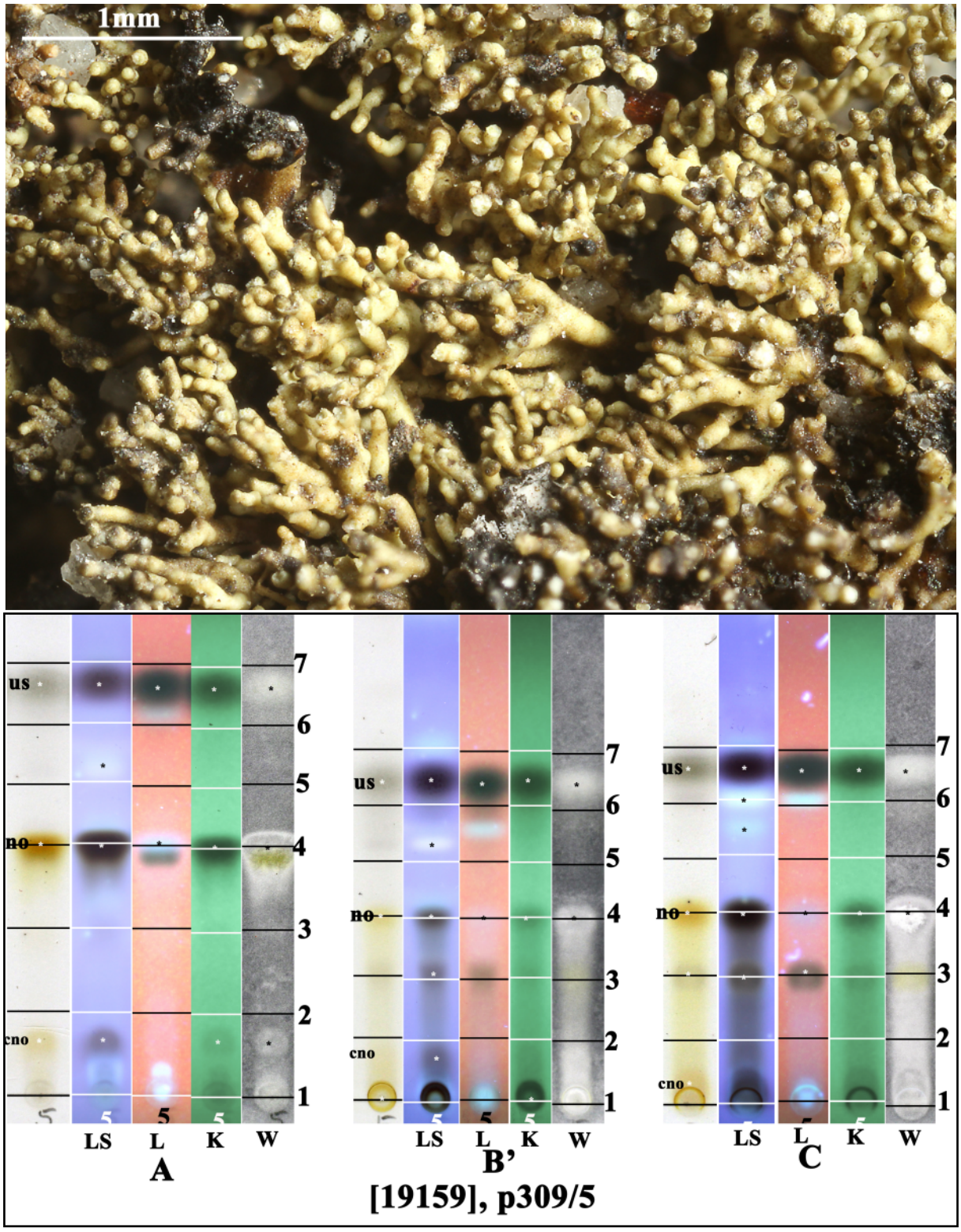
[19159], Australia, New South Wales, Morton National Park, 8 km north-east of Nerriga, 35°07' S, 150°08' E, 760 m, growing on flat exposed sandstone rocks in open Eucalyptus woodland. Leg. J.A. Elix (11380) & J. Johnston, 06.10.1983. LICHENES AUSTRALASICI EXSICCATI No. 067. Distributed as ***Parmelia streimannii*** Elix & P.M.Armstr.







Xanthoparmelia streimannii



us: usnic acid, no: norstictic acid, cno: connorstictic acid

Xanthoparmelia streimannii

Xanthoparmelia subdistorta (Kurok.) Hale
[= ***Parmelia subdistorta*** Kurok.]

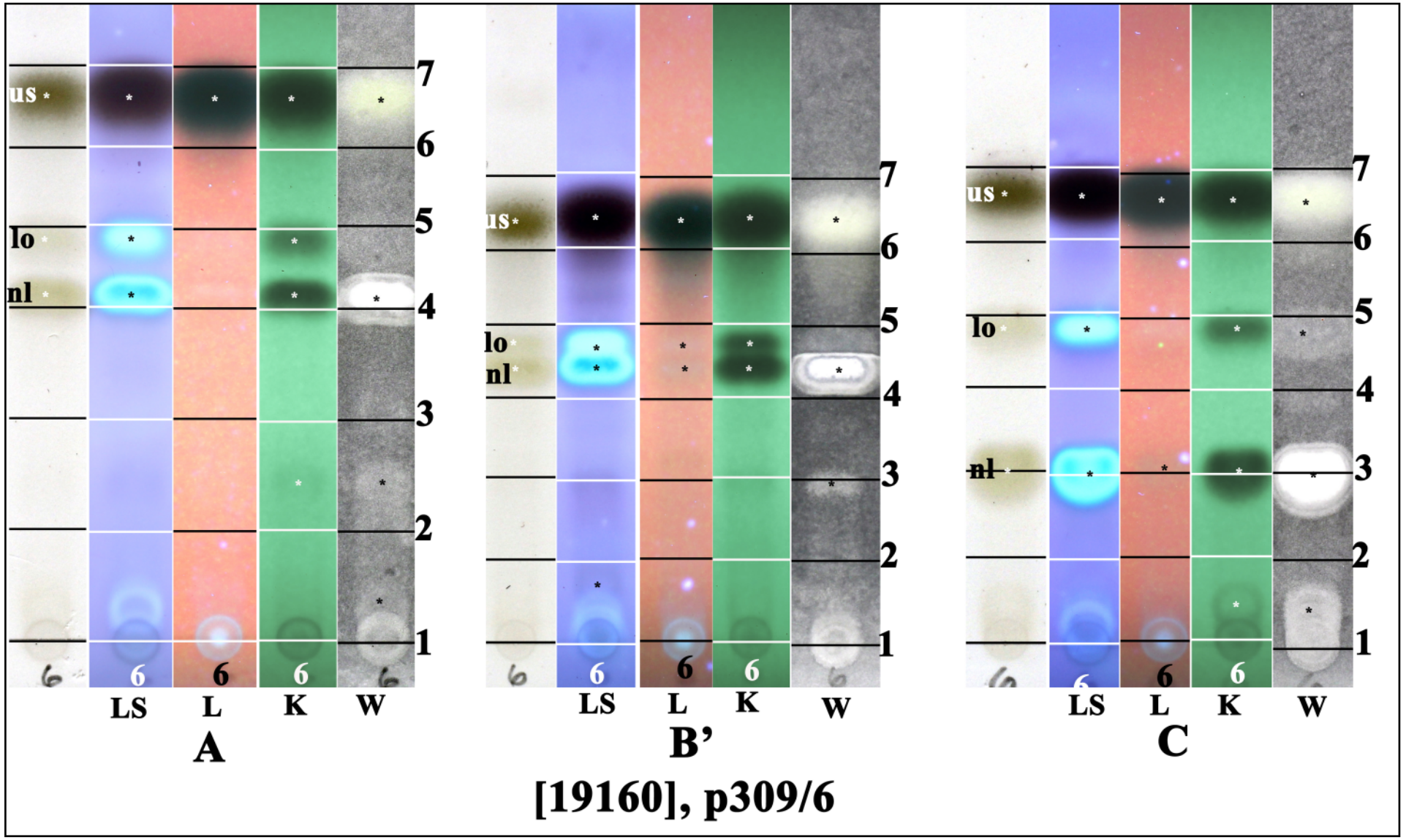
Thallus foliose, loosely to moderately adnate. Lobes imbricate, strongly convoluted. sublinear-elongate, dichotomously branched, 0.,3-0.5(-0.7) mm wide. Upper surface pale yellow-green, strongly convex, emaculate, lacking soredia and isidia; lobe apices often blackened. Medulla white. Lower surface brown to dark brown; rhizines sparse, simple, brown. Apothecia 2-5 mm wide. Ascospores 10 x 7 mm. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, loxodin, norlobaridone.

[19160], Australia, South Australia, 6 km east of Sedan along the Swan Reach road, 34°34' S, 139°22' E, 80 m, growing on soil in mallee scrub. Leg. J.A. Elix (9321) & L.H. Elix, 28.10.1981. LICHENES AUSTRALASICI EXSICCATI NO. 045. Distributed as ***Parmelia subdistorta*** Kurok.





Xanthoparmelia subdistorta

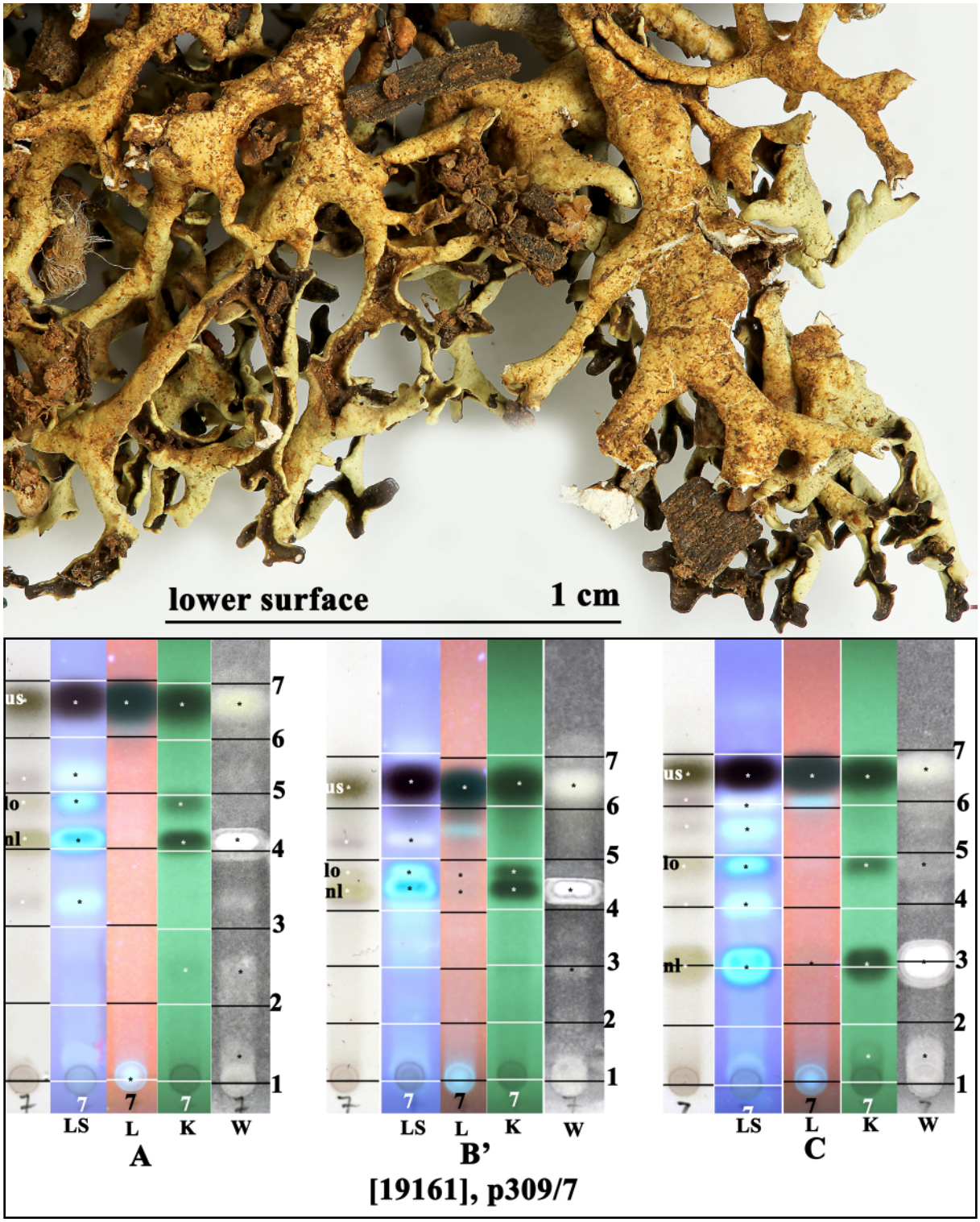


us: usnic acid, lo: loxodin, nl: norlobaridone

Xanthoparmelia subdistorta (Kurok.) Hale
[= ***Parmelia subdistorta*** Kurok.]

[19161], Australia, Victoria, 10 km west of Red Cliffs along the Werrimull road, 34°20' S, 142°00' E, 50 m, growing on soil in mallee scrub. Leg. J.A. Elix (11487) & M.J. Elix, 23.12.1983. LICHENES AUSTRALASICI EXSICCATI NO. 068. Distributed as ***Parmelia subdistorta*** Kurok.





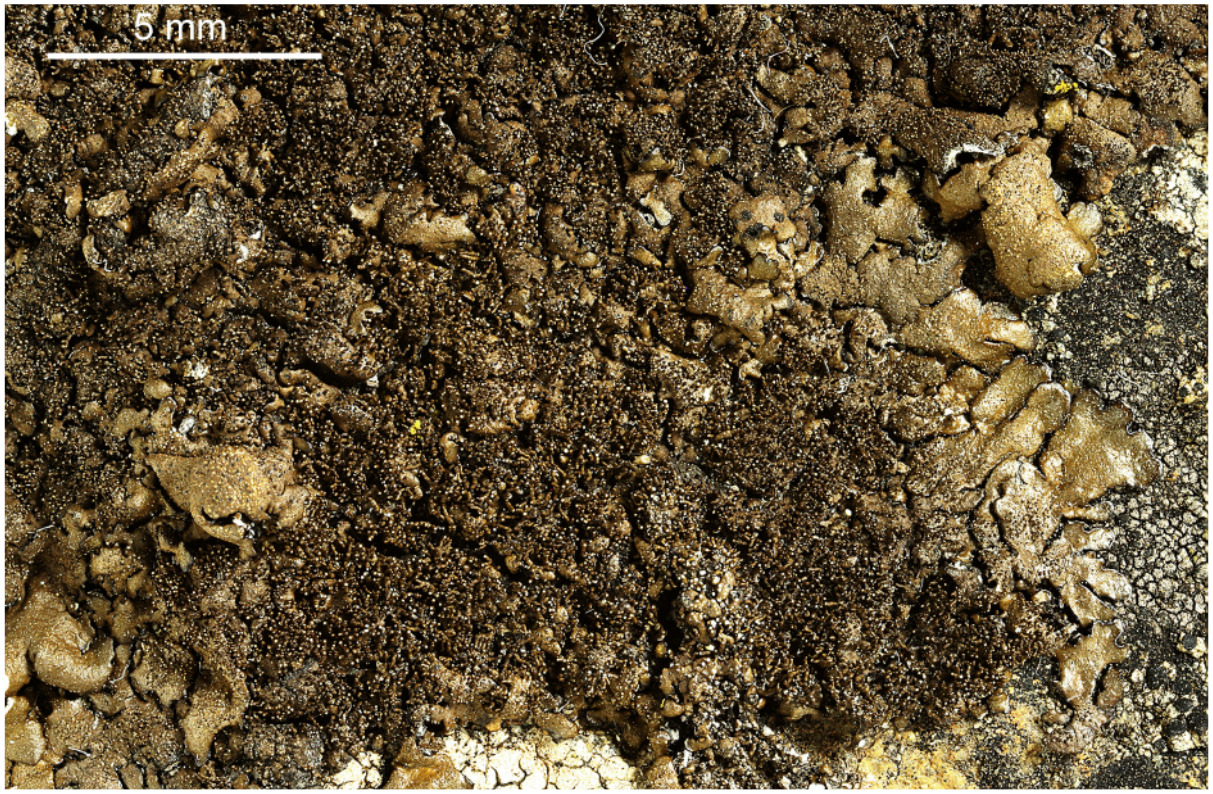
us: usnic acid, nl: norlobaridone, lo: loxodin

Xanthoparmelia subdistorta

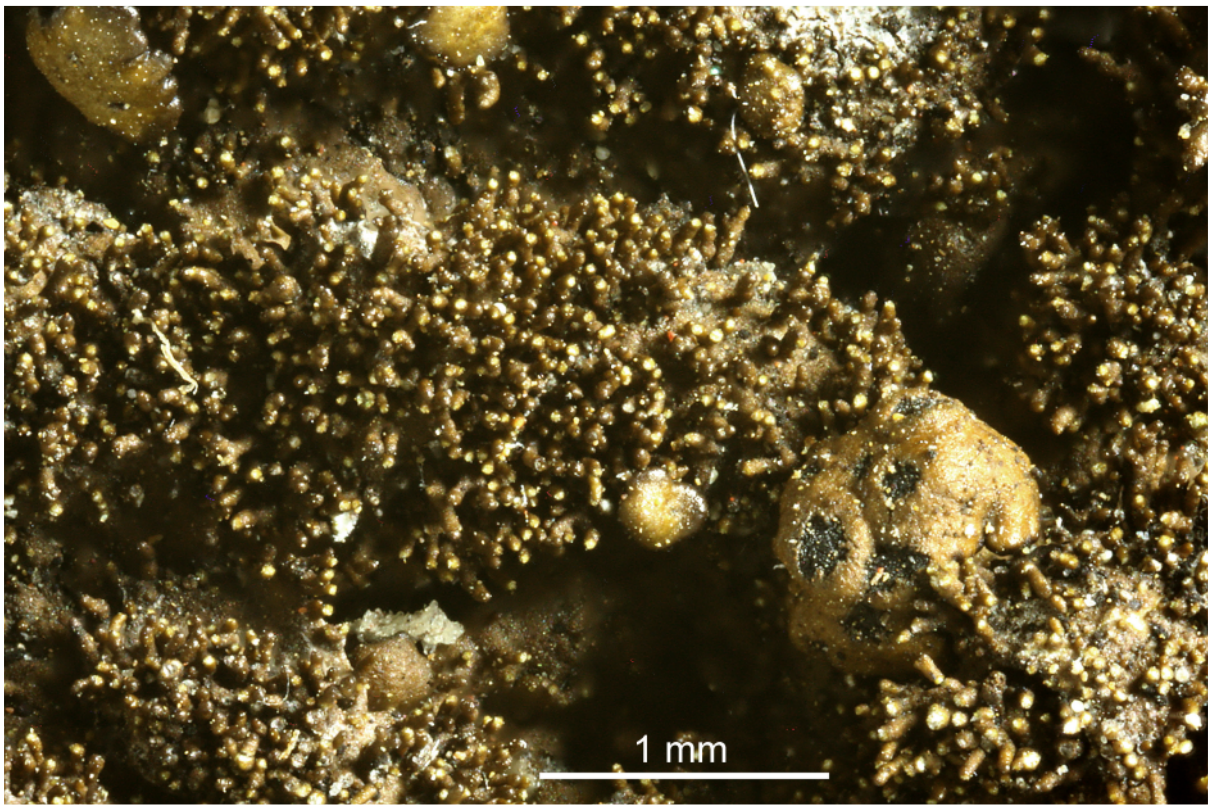
Xanthoparmelia subincerta (Essl.) Blanco et al.
[= ***Neofuscelia subincerta*** (Essl.) Essl.]
[= ***Parmelia subincerta*** Essl.]

Thallus adnate. Lobes ±imbricate, flat, sublinear, 0.5 -1 mm wide, somtimes sparsely lobulate. Isidia cylindrical, simple or densely branched, 0.08-0.5 mm high. Lower surface black. Rhizines moderately dense, black, simple, to 0.3 mm long. Chemistry: cortex K-, N+ darl blue green; medulla K-, C-, KC+ rose or rose-red, P-, UV-; glomelliferonic acid (major), loxodellonic acid (minor), glomellonic acid (minor).

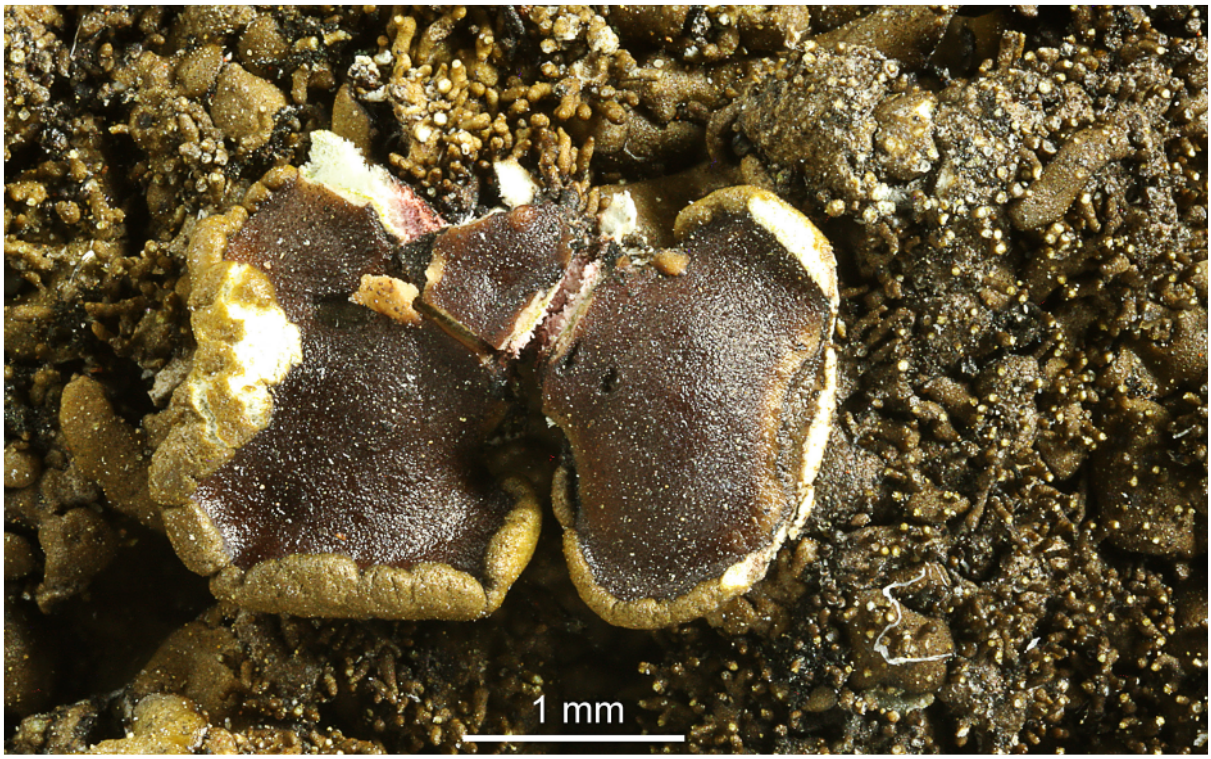
[19086], Australia, Australian Capital Territory, Kowen Forest, 16 km east of Canberra, 35°15' S, 149°16' E, 650 m, growing on sandstone rocks in open *Eucalyptus* woodland. Leg. J.A. Elix (21807), 25.10.1987. LICHENES AUSTRALASICI EXSICCATI NO. 186. Distributed as ***Neofuscelia verrucella*** (Essl.) Essl., but that species contains divaricatic acid and may be found in other collections of this exsiccata.

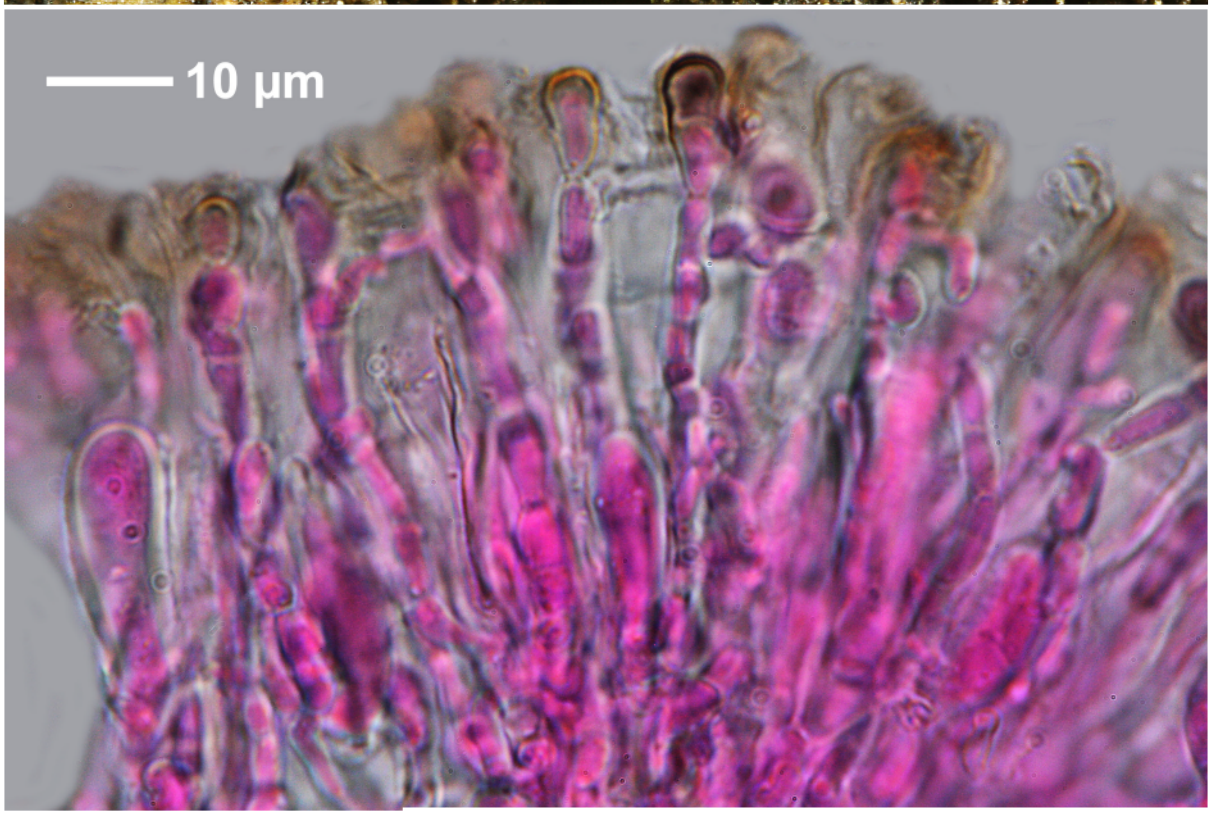


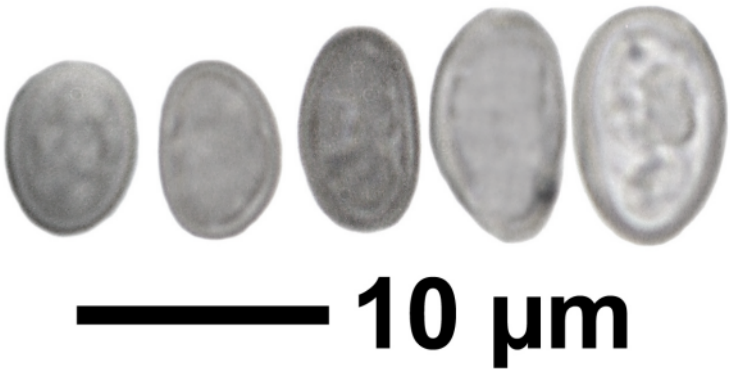




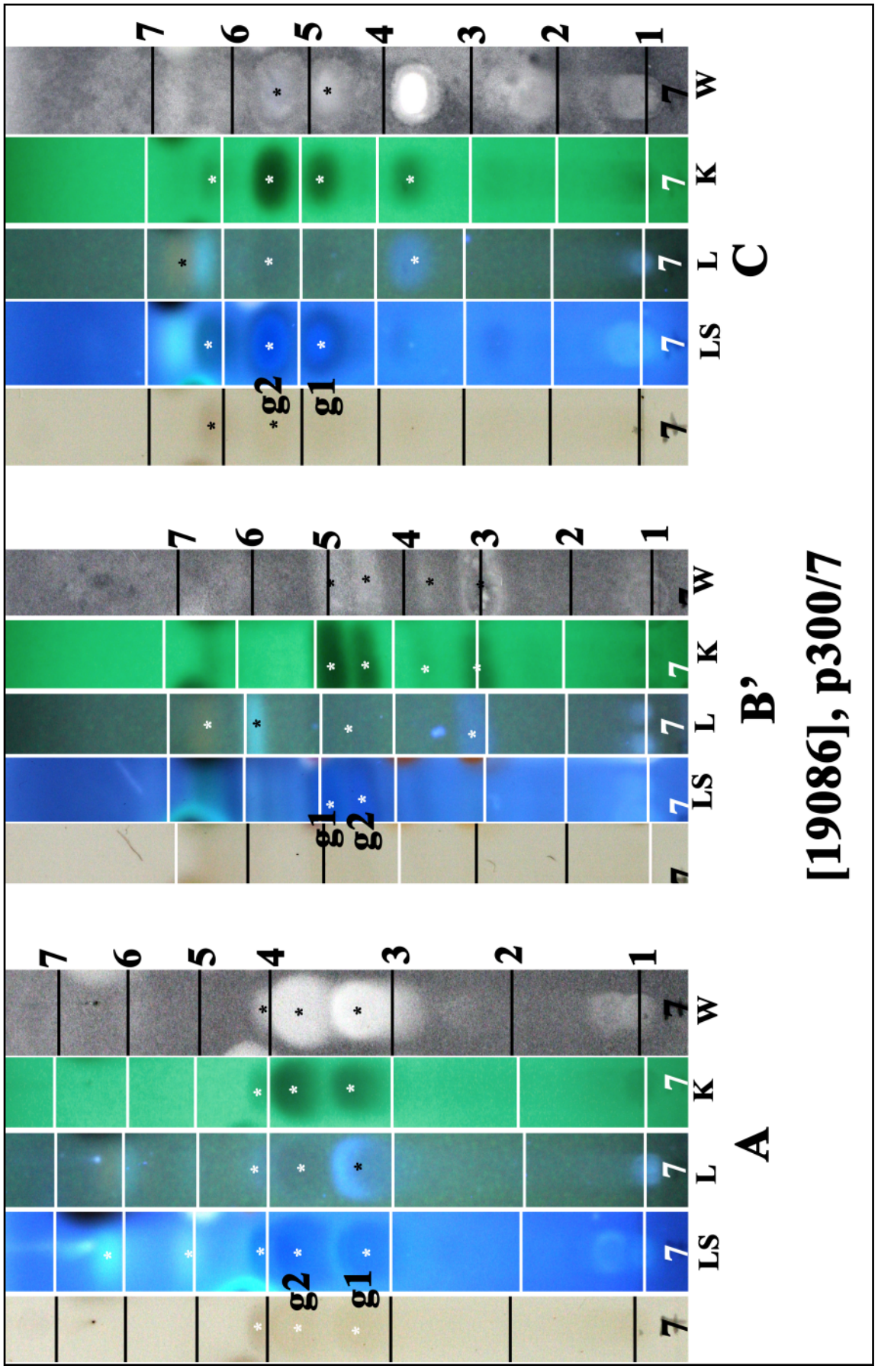
Xanthoparmelia subincerta





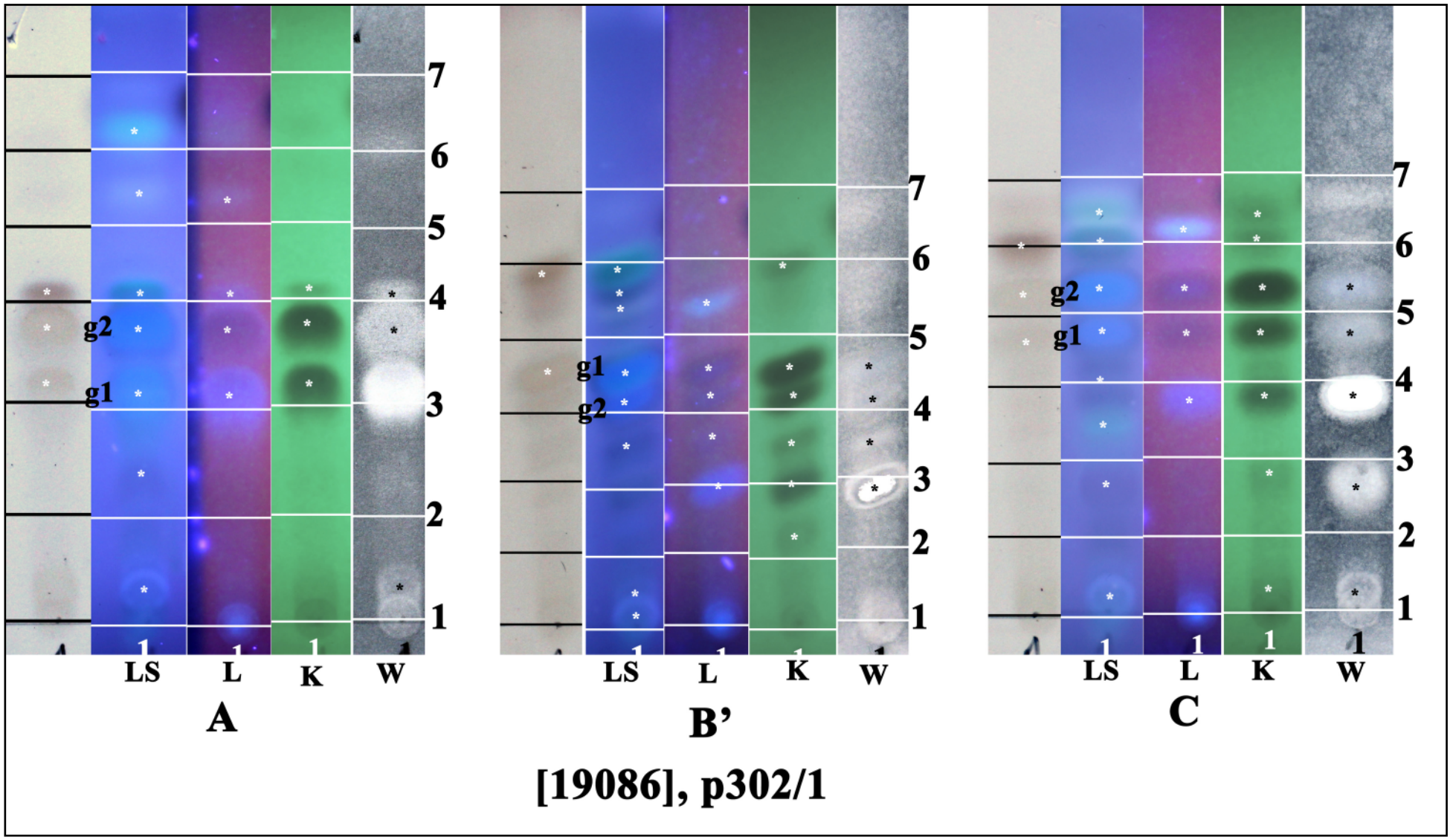


Xanthoparmelia subincerta



g1: loxodellonic acid, g2: glomelliferonic acid

Xanthoparmelia subincerta



g1: loxodellonic acid, g2: glomelliferonic acid

Xanthoparmelia subnuda (Kurok.) Hale
[= ***Parmelia subnuda*** Kurok.]

Thallus foliose, loosely adnate. Lobes imbricate, sublinear to linear-elongate, di- to trichotomously branched, 0.3-1 mm wide; apices often ascending. Upper surface yellowish green, emaculate, lacking soredia and isidia; lobe margins often blackened. Medulla white. Lower surface black. Rhizines absent or very sparse, simple, black, 0.2-1 mm long. Apothecia 2-10 mm wide. Ascospores 7-8 x 5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ yellow-orange; usnic acid, norstictic acid (major), connorstictic acid, ±salazinic acid.

[19162], Australia, South Australia, Mt. Lofty Ranges, 6.5 km west of Springton along High Eden road, 34°42' S, 139°02'E, 480 m, growing over schist rocks in pasture land. Leg. J.A. Elix (10817) & L.H. Elix, 02.01.1983. LICHENES AUSTRALASICI EXSICCATI NO. 046. Distributed as ***Parmelia subnuda*** Kurok.



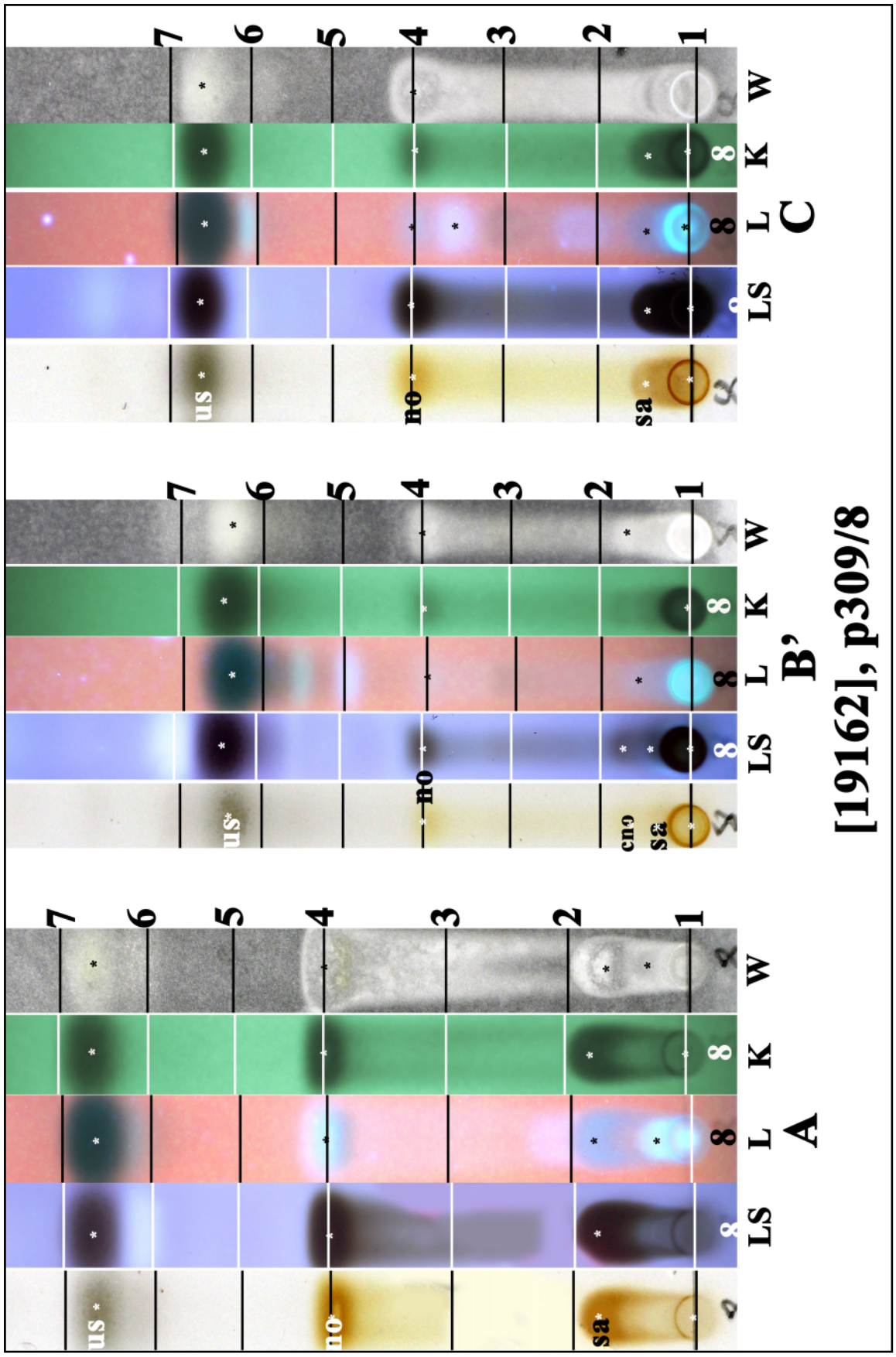




Xanthoparmelia subnuda



Xanthoparmelia subnuda



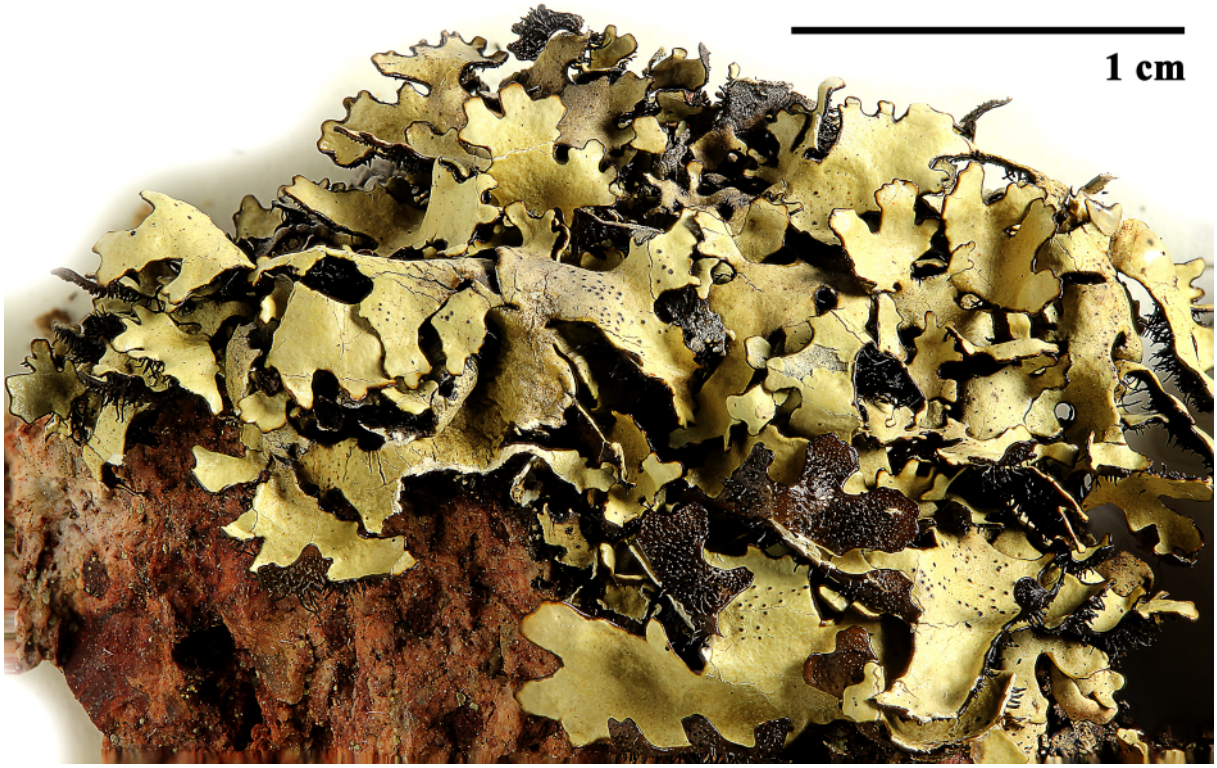
us: usnic acid, no: norstictic acid, sa: salazinic acid, cno: connorstictic acid

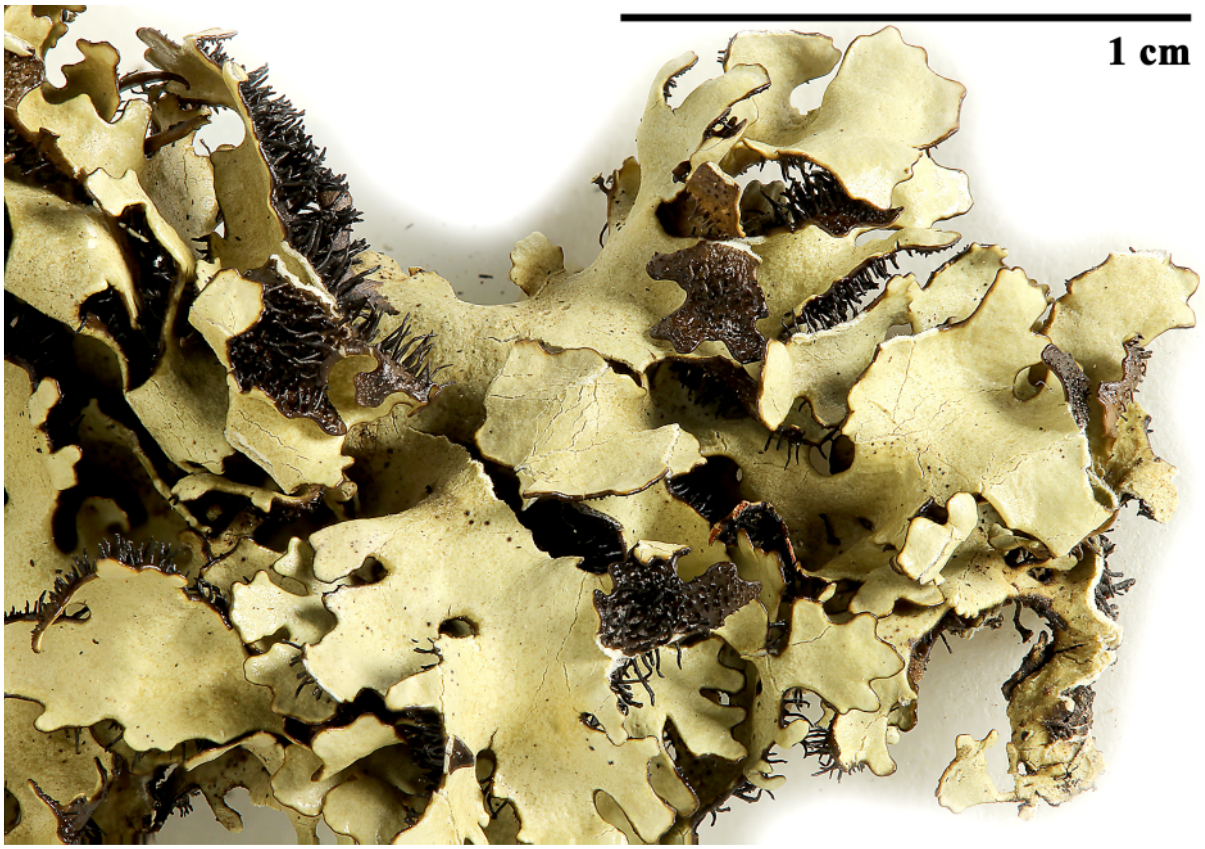
Xanthoparmelia subnuda

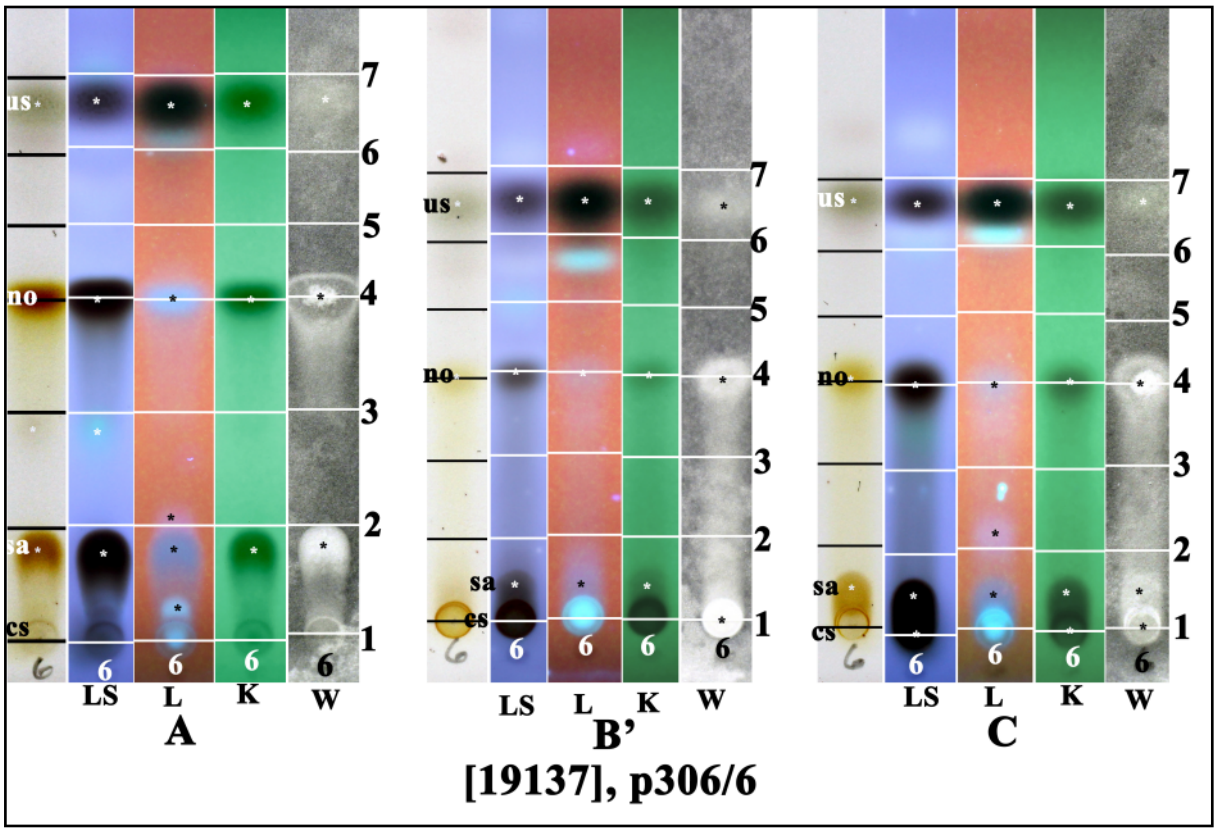
Xanthoparmelia substrigosa (Hale) Hale
[= ***Parmelia substrigosa*** Hale]

Thallus foliose, loosely adnate. Lobes rarely imbricate, irregular to linear-elongate, subdichotomously or irregularly branched, ascending or not, 1.5-4 mm wide, lacking lobules; margins broadly sinuate. Upper surface yellow-green, emaculate, lacking soredia and isidia; lobe margins commonly black. Medulla white. Lower surface pale brown to dark blackish brown; rhizines very dense, fasciculate to simple or often dichotomously branched, dark brown. Apothecia 8-12 mm wide. Ascospores 8-10 x 4-6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, P+ orange; usnic acid, norstictic acid (major), connorstictic acid, ±salazinic acid, ±consalazinic acid.

[19137], Australia, New South Wales, Blue Range, 29 km west of Canberra, 35°13' S, 148°51' E, 1220 m, growing on granite rocks on exposed, open summit. Leg. J.A. Elix (10160) 21.03.1982. LICHENES AUSTRALASICI EXSICCATI NO. 022. Distributed as ***Parmelia substrigosa*** Hale.







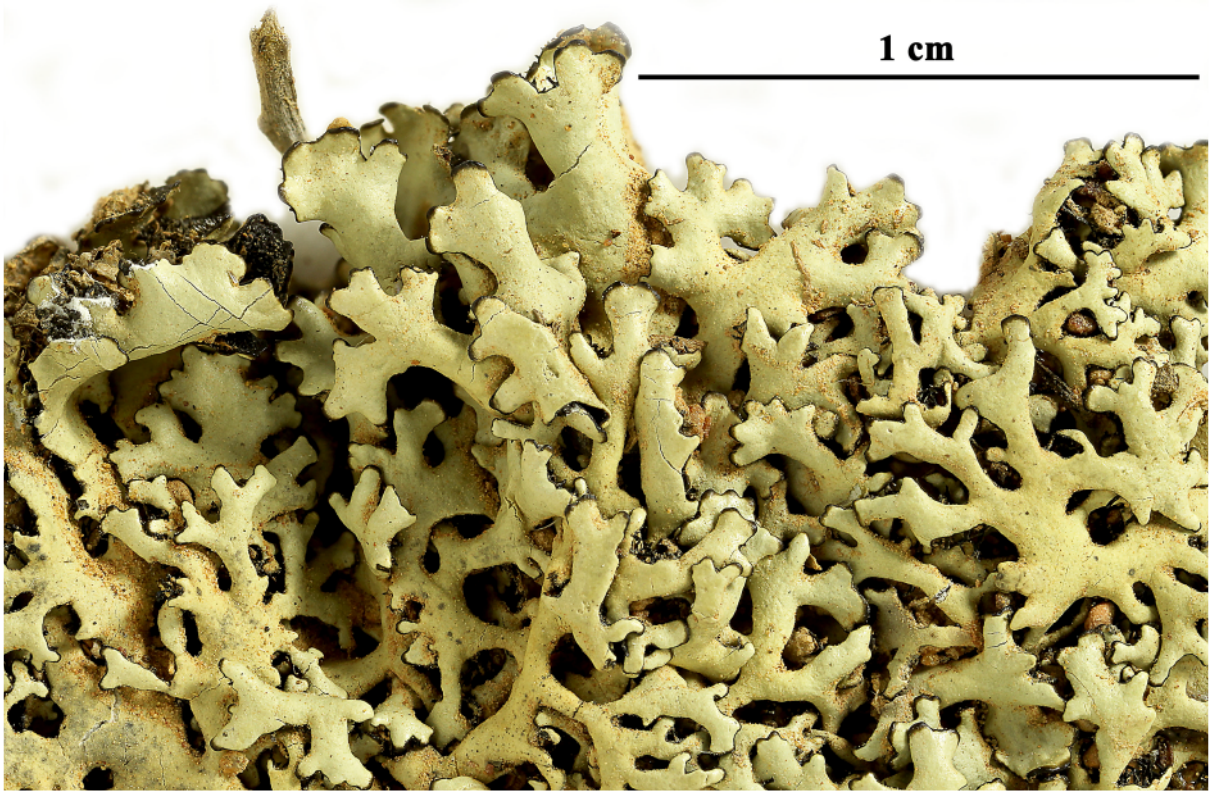
us: usnic acid, no: norstictic acid, sa: salazinic acid,
cs: consalazinic acid

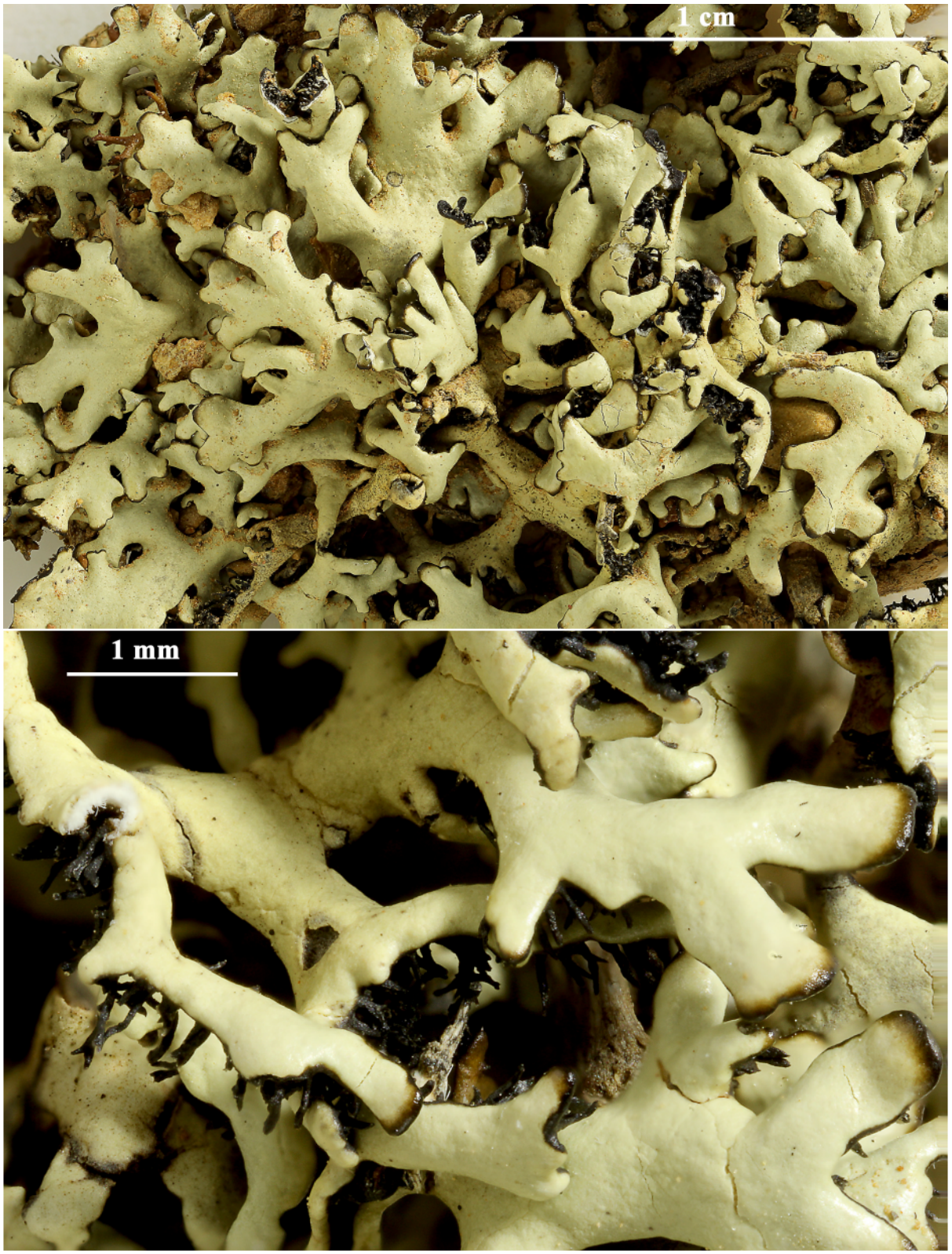
Xanthoparmelia substrigosa

Xanthoparmelia sulcifera (Kurok.) Hale
[= ***Parmelia sulcifera*** Kurok.]

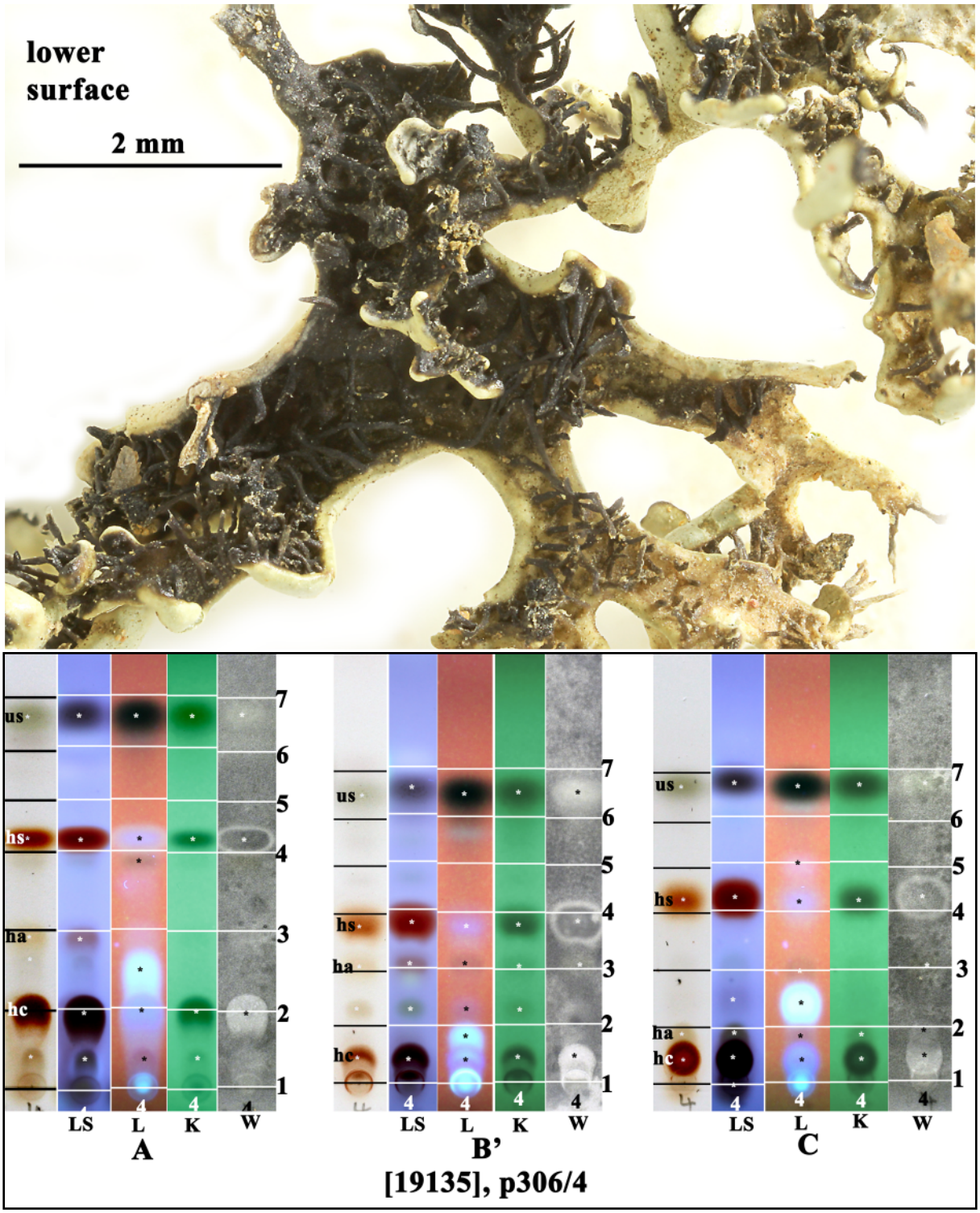
Thallus foliose, loosely adnate to unattached but remaining intact, becoming pulvinate. Primary lobes imbricate or not, sublinear, irregularly branched, 0.7-2 mm wide; primary lobes and laciniae revolute to convolute; laciniae subdichotomously branched, growing over primary lobes, 0.3-0.5 mm wide. Upper surface pale yellow-green, emaculate, lacking soredia and isidia; lobe margins often blackened towards apices. Medulla white. Apothecia rare, 1-3 mm wide. Ascospores 10-11 x 4-6 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then pale reddish, C-, P-; usnic acid, hypostictic acid, hyposalazinic acid, ±hypoconstictic acid.

[19135], Australia, New South Wales, Rock Flat Creek, Cooma-Numeralla road, 10 km north-east of Cooma, 36°12' S, 149°13' E, 840 m, growing on pebbles and over soil in pasture land. Leg. J.A. Elix (11438) & H. Streimann, 15.11.1983. LICHENES AUSTRALASICI EXSICCATI NO. 069. Distributed as ***Parmelia sulcifera*** Kurok.





Xanthoparmelia sulcifera



us: usnic acid, hs: hypostictic acid, ha: hyposalazinic acid, hc: hypoconstictic acid

Xanthoparmelia sulcifera

Xanthoparmelia taractica (Kremp.) Hale
[***Parmelia taractica*** Kremp.]

Thallus foliose, loosely to moderately adnate. Lobes variable, often forming a dense, imbricate mat, subirregular to linear elongate; primary and marginal lobes subdichotomously branched, 2-4(-8) mm wide. Upper surface yellow-green, emaculate, becoming ±rugose and developing traverse cracks in older lobes, lacking soredia and isidia. Medulla white. Lower surface rugose, papillate, pale brown to brown; rhizines moderately dense, especially near lobe margins. Apothecia 3-6 mm wide. Ascospores 8-10 x 6 µm. Chemistry:cortex K-, UV-; medulla K+ yellow then dark red, C-, KC+ dark red, P+ orange; usnic acid, salazinic acid, consalazinic acid.

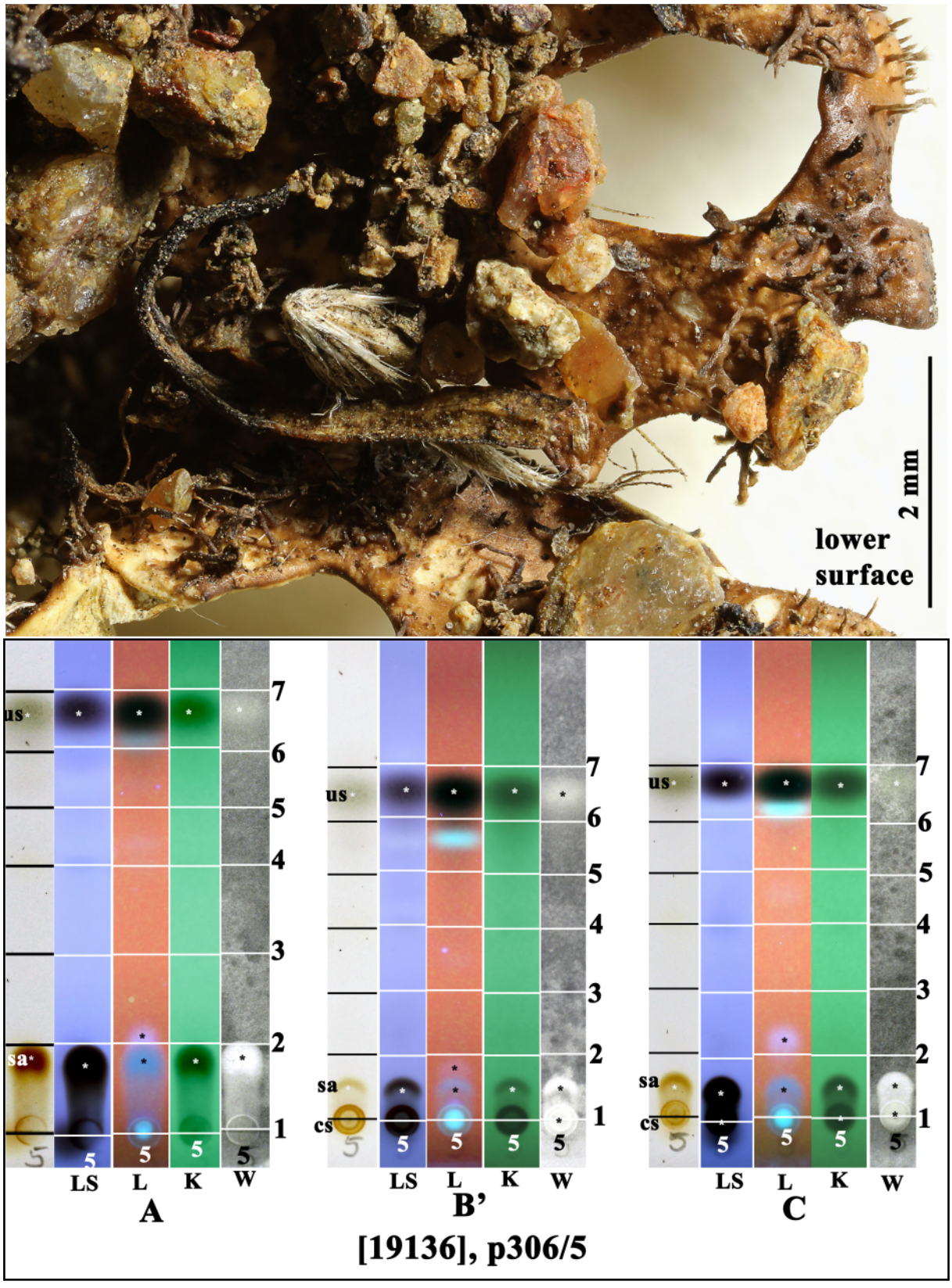
[19136], Australia, Australian Capital Territory, 0.8 km west of Coppins Crossing, 8 km west of Canberra, 35°15' S, 149°03' E, 520 m, growing over porphyry rocks and onto soil in open grassland. Leg. J.A. Elix (10161) 28.03.1982. LICHENES AUSTRALASICI EXSICCATI NO. 023. Distributed as ***Parmelia taractica*** Kremp.







Xanthoparmelia taractica



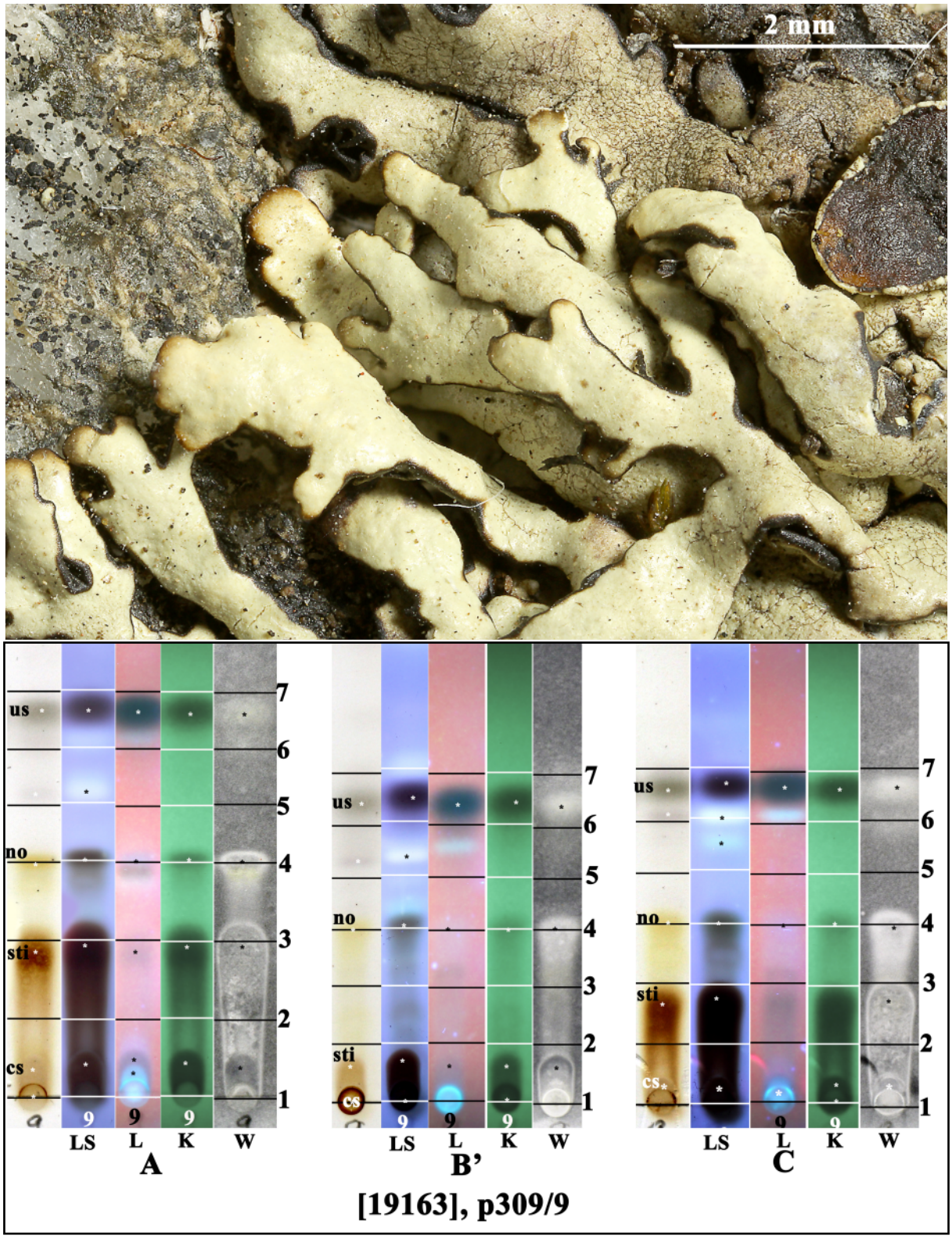
us: usnic acid, sa: salazinic acid, cs: consalazinic acid

Xanthoparmelia tegeta Elix & J.Johnst.

Thallus foliose, loosely to moderate adnate. Lobes contiguous to imbricate, linear-elongate, dichotomously to irreglarly branched, 0.3-1(-1.5) mm wide; laciniae often densely imbricate. Upper surface yellow-green, darkening with age, emaculate, lacking soredia and isidia. Medulla white. Lower surface black; rhizines moderately dense, ± projecting beyond margins, black, to 23 mm long. Apothecia 0.5-1.5 mm wide. Ascospores 6-9.5 x 3.5-5.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow, C-, P+ orange; usnic acid, stictic acid (major), constictic acid, norstictic acid (trace), cryptostictic acid (trace).

[19163], Australia, New South Wales, Kosciuszko National Park, along Diggers Creek, 4 km south of Island Bend, 36°24' S, 148°22' E, 1540 m, growing on granite rocks in *Eucalyptus pauciflora* woodland. TOPOTYPE. Leg. J.A. Elix (9685) & M.F. Day, 23.02.1982. Chemistry: usnic acid, stictic acid (major), constictic acid, norstictic acid, cryptostictic acid (trace), ursolic acid, unknown by TLC, anal. P.M. Armstrong. LICHENES AUSTRALASICI EXSICCATI NO. 150.





us: usnic acid, no: norstictic acid, sti: stictic acid, cs: constictic acid

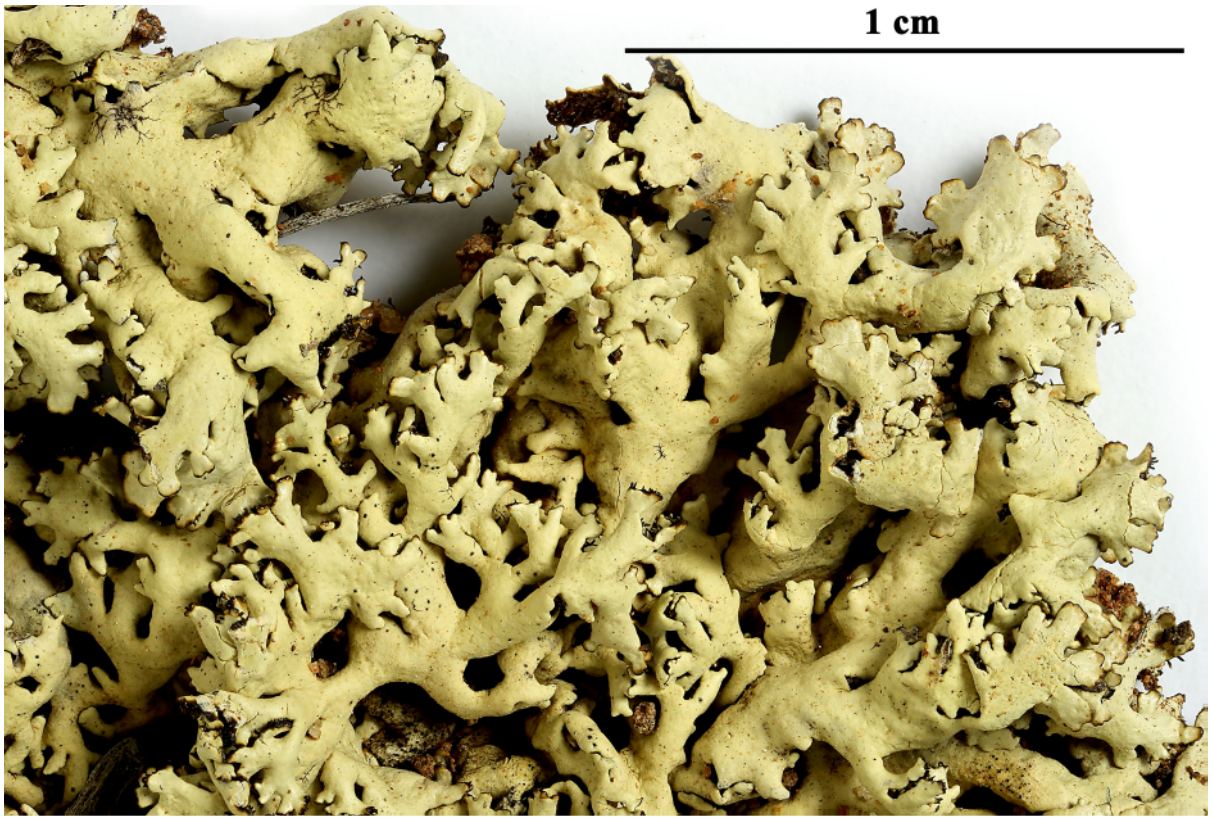
Xanthoparmelia tegeta

Xanthoparmelia terrestris (Kurok. & Filson) Elix & J.Johnst.
[= ***Parmelia terrestris*** Kurok. & Filson]

Thallus foliose, loosely adnate, forming irregular, subpulvinate patches or rosettes. Lobes revolute to convolute, elongate, subdichotomously branched, 1-2 mm wide; often with laciniae growing over primary lobes, 0.3-0.5 mm wide, occasionally becoming subterete, coralloid, isidia-like, growing up from lobules in thallus centre. Upper surface yellow-green, emaculate, lacking soredia and isidia. Medulla white. Lower surface pale tan to light brown; rhizines sparse to moderately dense, simple, concolorous. Apothecia to 2 mm wide. Ascospores 8-10 x 6-7 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, P+ yellow then orange; usnic acid, norstictic acid (major), salazinic acid, connorstictic acid.

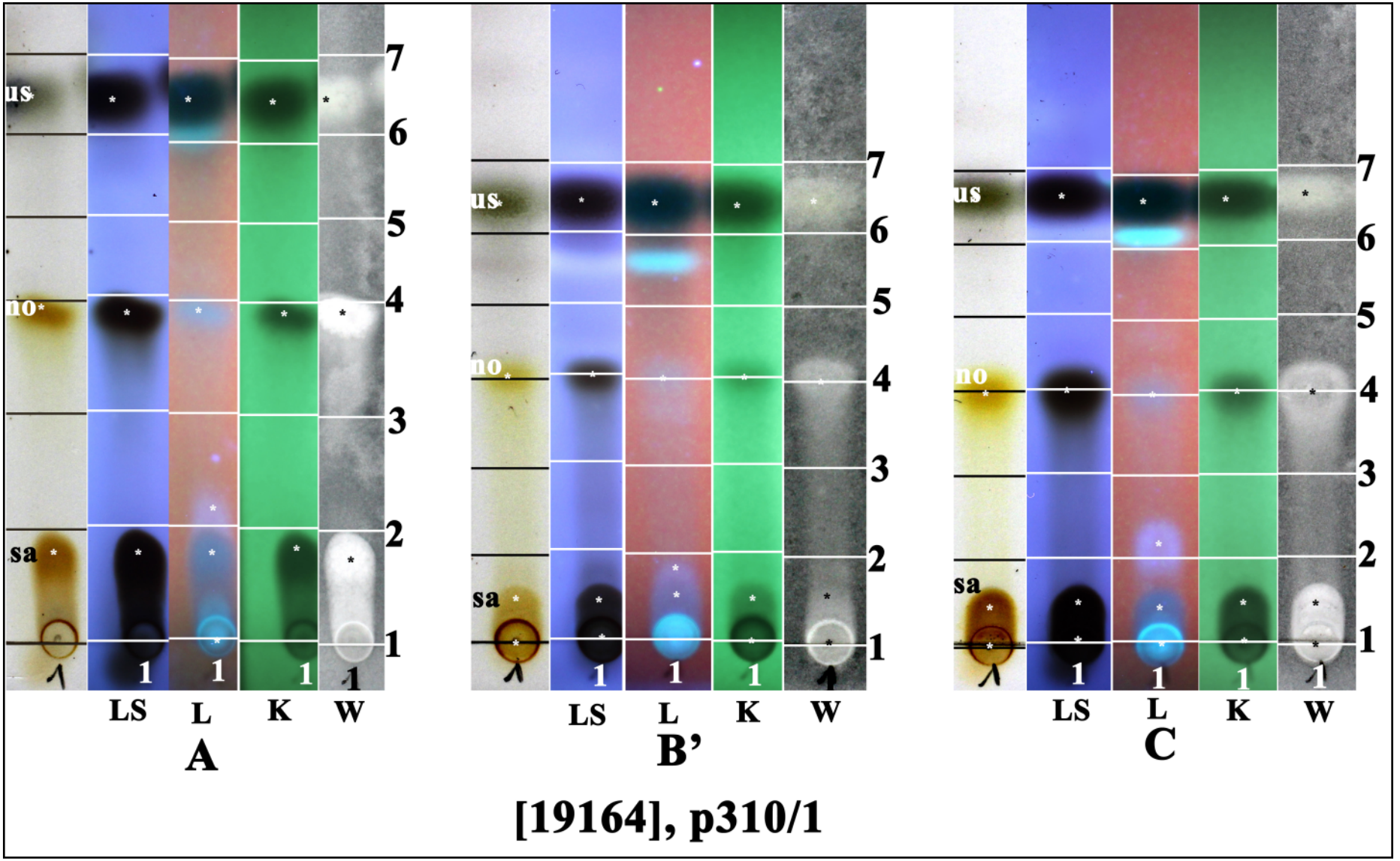
[19164], Australia, South Australia, 6 km east of Sedan along the Swan Reach road, 34°34' S, 139°22' E, 80 m, growing on soil in mallee scrub. Leg. J.A. Elix (9288) & L.H. Elix, 28.10.1981. LICHENES AUSTRALASICI EXSICCATI NO. 048. Distributed as ***Parmelia terrestris*** Kurok. & Filson.







Xanthoparmelia terrestris



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

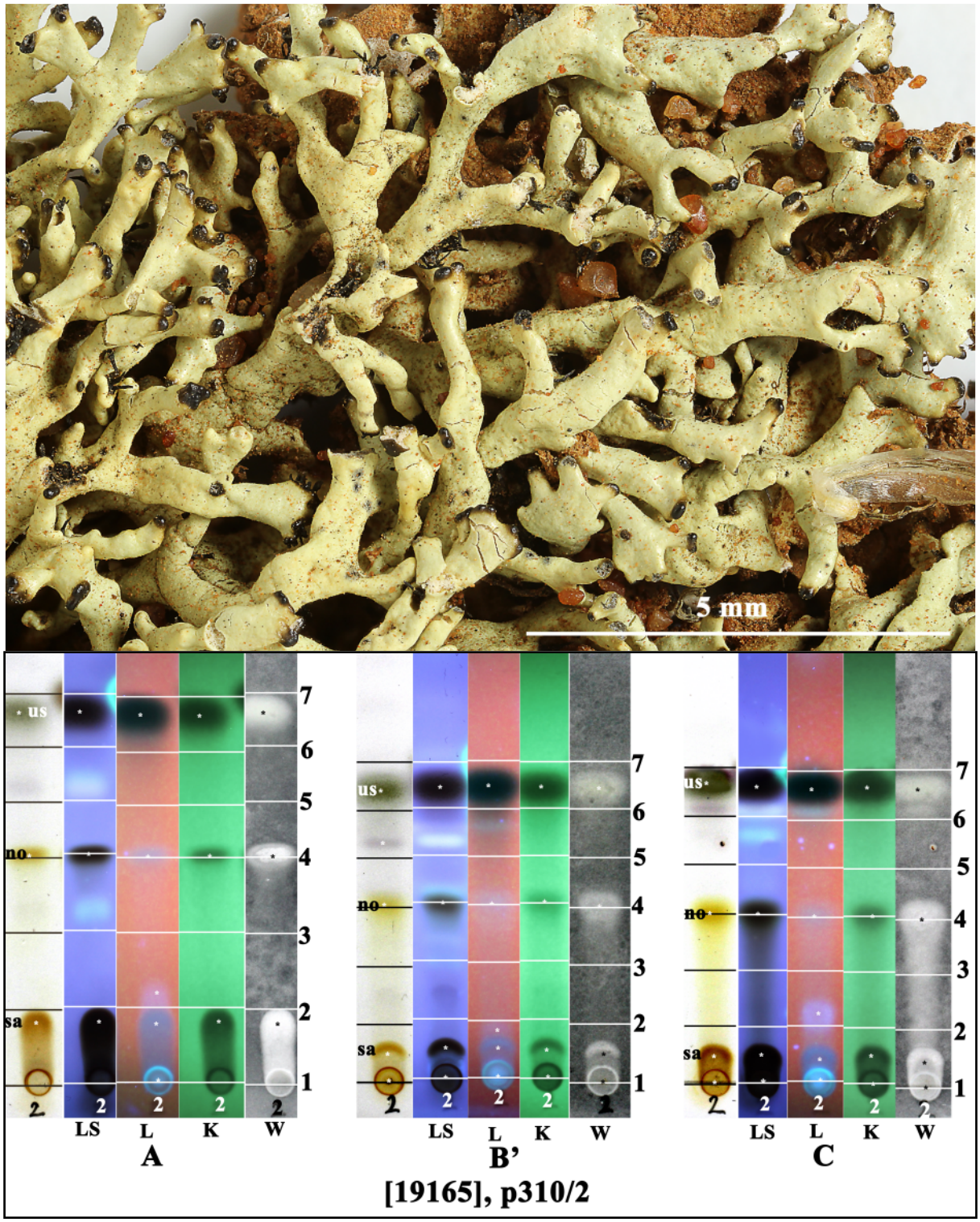
Xanthoparmelia terrestris (Kurok. & Filson) Elix & J.Johnst.
[= ***Parmelia terrestris*** Kurok. & Filson]

[19165], Australia, Victoria, 10 km west of Red Cliffs along the Werrimull road, 34°20' S, 142°00' E, 50 m, growing on soil in mallee scrub. Leg. J.A. Elix (11488) & M.J. Elix, 23.12.1983. LICHENES AUSTRALASICI EXSICCATI NO. 070. Distributed as ***Parmelia terrestris*** Kurok. & Filson.





Xanthoparmelia terrestris



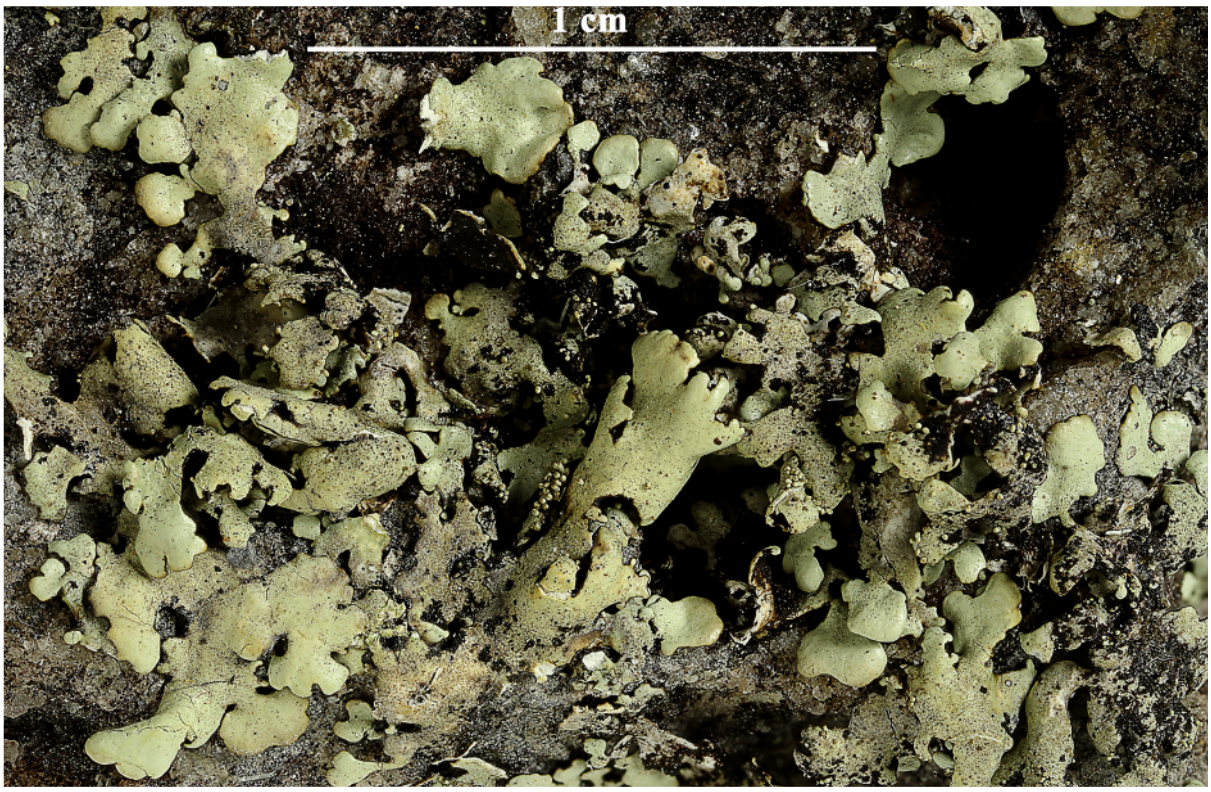
us: usnic acid, no: norstictic acid, sa: salazinic acid

Xanthoparmelia terrestris

Xanthoparmelia thamnoides (Kurok.) Hale
[= ***Parmelia thamnoides*** Kurok.]

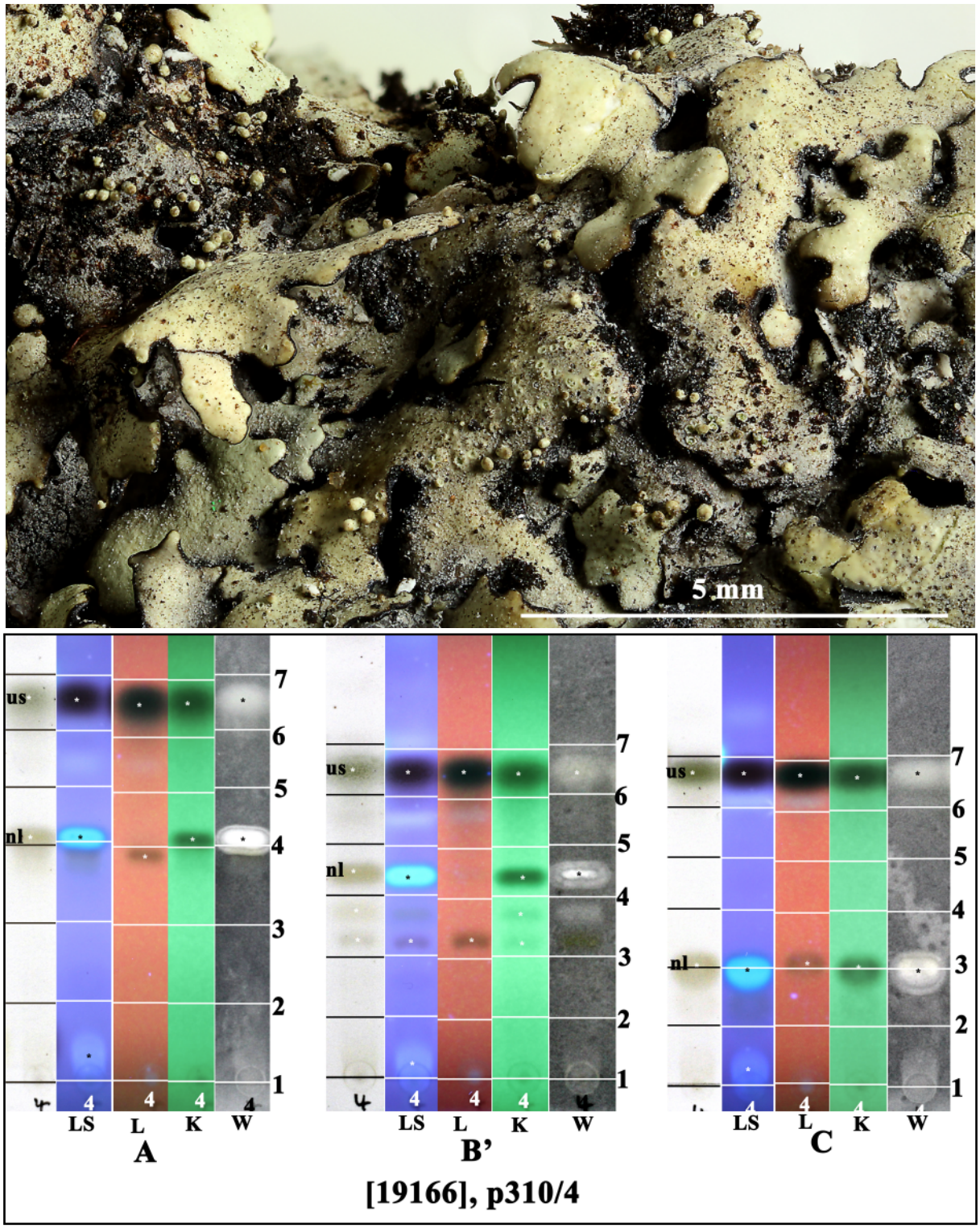
Thallus foliose, adnate. Lobes imbricate or not, sublinear-elongate, irregularly branched, 2-4 mm wide; margins incised. Upper surface yellow-green, often blackened towards centre, lacking soredia. Isidia laminal, rarely at lobe apices, cylindrical becoming coralloid-branched. Medulla white. Lower surface black; rhizines simple, black. Chemistry: cortex K-, UV-; medulla K-, C-, KC+ rose, P-; usnic acid, ±loxodin, norlobaridone, ±conorlobaridone, ±scabrosin 4-acetate 4'-butyrate, ±scabrosin 4-acetate 4'-hexanotate, ±scabrosin 4,4'-dibutyrate.

[19166], Australia, Queensland, Lugger Bay, 17 km east-south-east of Tully, 17°58'S, 146°05'E, 1 m, growing on flat boulder exposed to sea spray with strand vegetation dominated by *Calophyllum inophyllum* and *Hibiscus tiliaceus*. Leg. H. Streimann (45457), 01.12.1990. Chemistry: usnic acid (major), norlobaridone (major) by TLC, HPLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 250.





Xanthoparmelia thamnoides



us: usnic acid, nl: norlobaridone

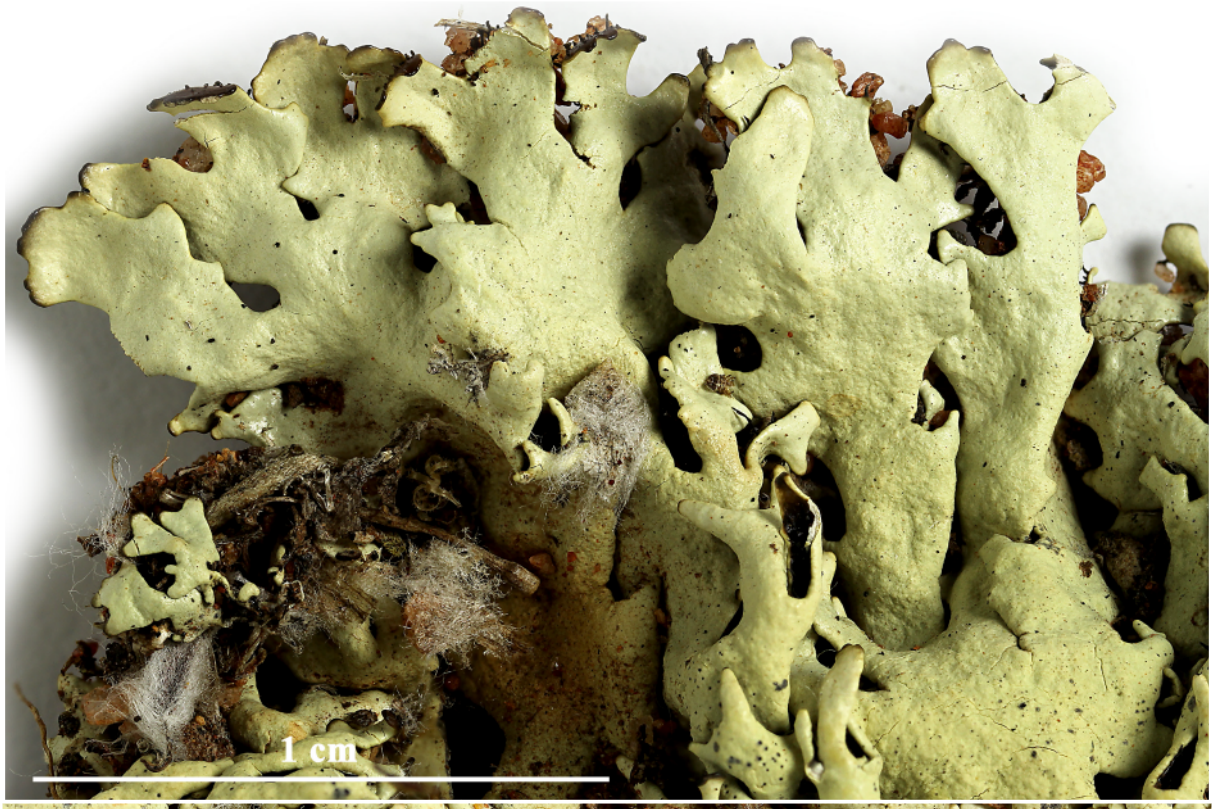
Xanthoparmelia thamnoides

Xanthoparmelia versicolor Hale

Thallus foliose, loosely adnate. Lobes at margin imbricate, free, sublinear, irregularly branched, 1.5-3 mm wide; laciniae growing out from lobules on margins of older lobes, flat to convolute, irregularly branched, to 1.5 mm wide; apices crenulate. Upper surface pale yellow-green,sometimes slightly maculate, older portions becoming rugulose and cracked, lacking soredia and isidia. Medulla white. Lower surface black to brown black, brown in a broad zone near apices; rhizines moderately dense to dense, simple, concolorous. Apothecia rare, to 4 mm wide. Ascospores 7-9 x 4-6.5 µm. Chemistry: cortex K-, UV-; medulla K+ yellow then dark red, C-, KC-, P+ yellow then orange; usnic acid, salazinic acid, ±consalazinic acid.

[19167], Australia, Western Australia, Bulla Bulling, 31°01' S, 120°52' E, growing on soil in open scrubland, with *Acacia* and *Eucalyptus* dominant. Leg. J.A. Elix (21734) & M.V. Sargent, 20.08.1987. Chemistry: usnic acid (minor), salazinic acid (major), consalazinic acid (minor) by TLC, anal. J.A. Elix. LICHENES AUSTRALASICI EXSICCATI NO. 173.

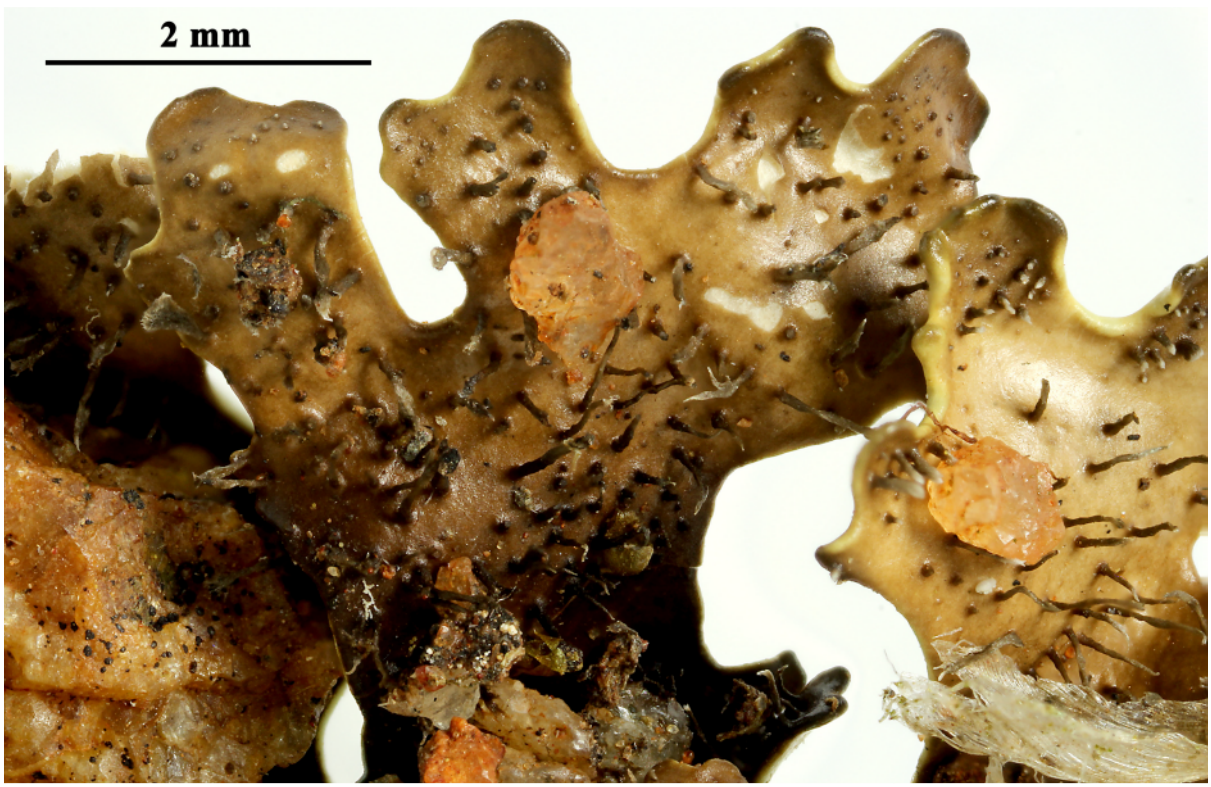




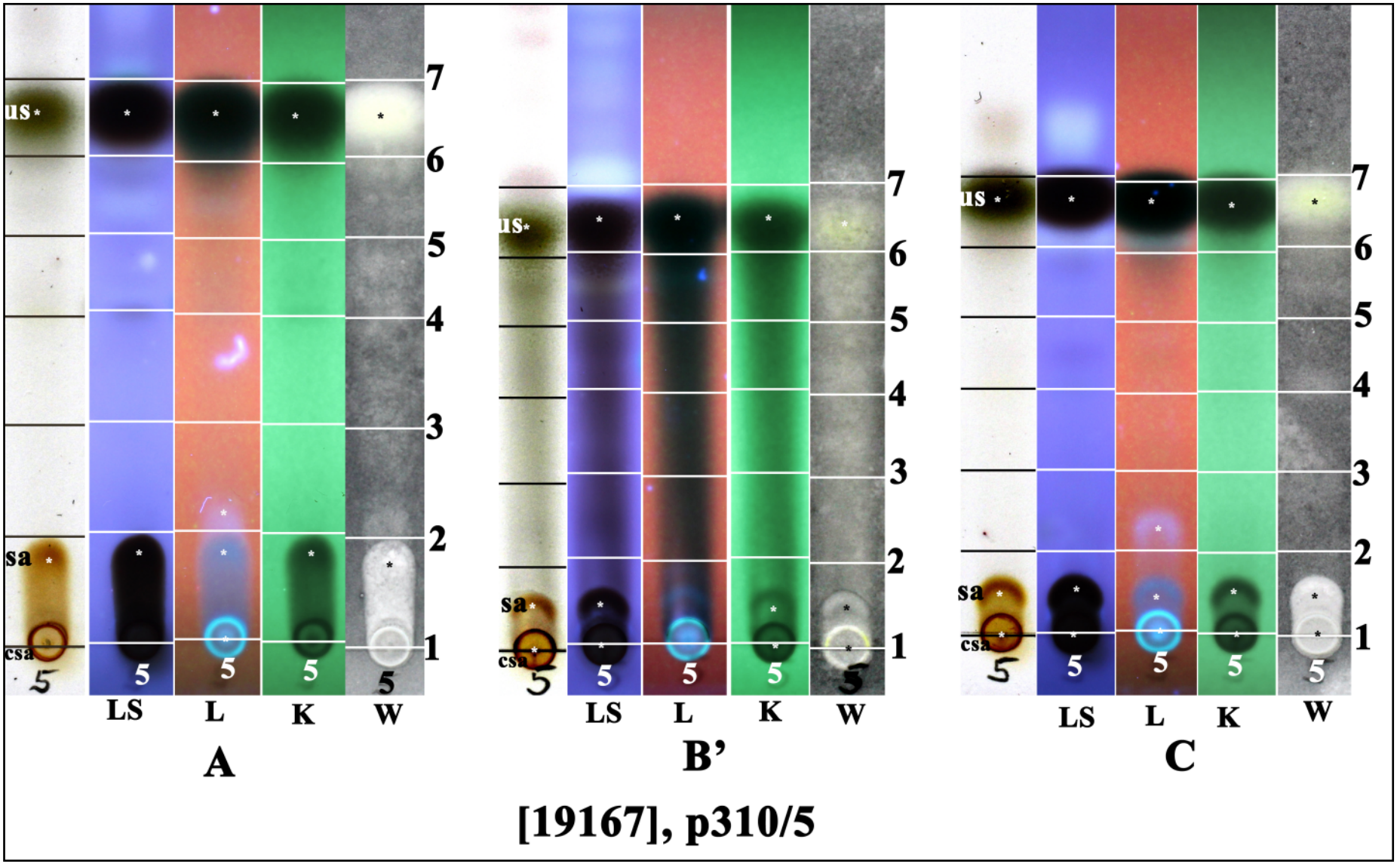


Xanthoparmelia versicolor





Xanthoparmelia versicolor



us: usnic acid, sa: salazinic acid, csa: consalazinic acid

Xanthoria filsonii Elix

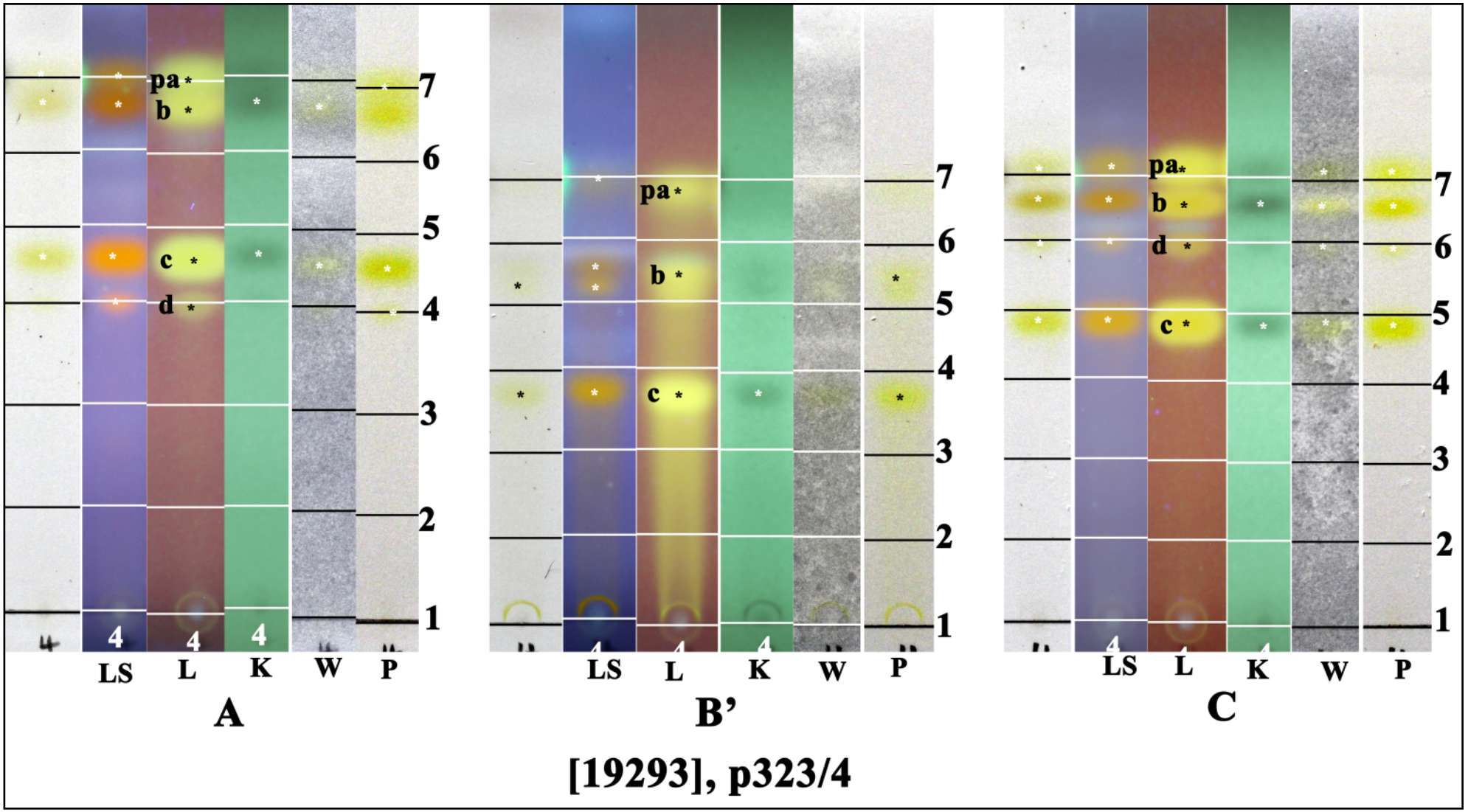
The species is similar to *Xanthoria ligulata* but the thallus is smaller, with narrower lobes and it is corticolous. *X. filsonii* contains teloschistin as major component.

[19293], Australia, Victoria, Hopetoun, Patchewollock Road, 5 km north-east of Hopetoun, 80 m, growing on *Rhagodia* along grazed roadside verge with *Rhagodia* and *Eucalyptus*. J.A. Curnow & H. Lepp (1422), 14.03.1987. Chemistry: teloschistin (major), parietin (minor), parietinic acid (minor) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 174.





Xanthoria filsonii



pa: parietin, b: fallacinal, c: teloschistin, d: parietinic acid

Xanthoria parietina (L.) Th.Fr.

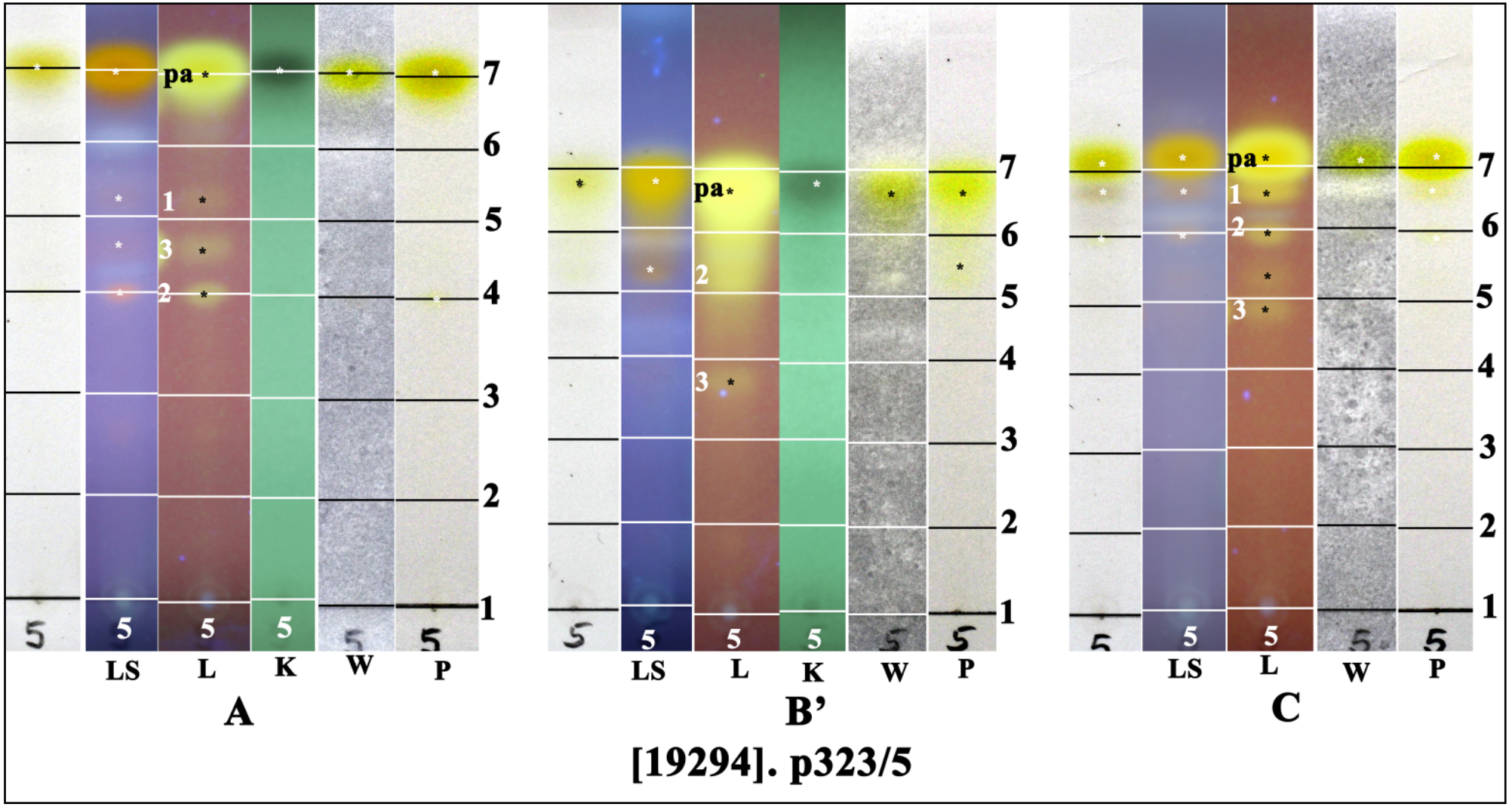
Thallus rather tightly adnate, forming medium-sized to large rosettes. Lobes concave to flattened, 0.7-3.5 mm wide. Upper surface yellow to orange or pale yellow to greenish in the shadow, somewhat wrinkled, lacking soredia and isidia. Lower surface white to yellow, wrinkled, with short white rhizines. Apothecia common, laminal, stipitate, up to 8 mm diam.. Ascospores hyaline, polarilocular, 12-16 x 5-9 µm; septum 3-8 µm long. Chemistry: upper surface K+ purple, C-, KC-, P-; parietin (major), fallacinal, emodin, teloschistin, parietinic acid.

[19294], Australia, South Australia, Mt. Lofty Ranges, the "Swingbridge", 15 km east of Springton along the Marne River, 34°40' S, 139°14'E, 360 m, growing on almond trees in abondoned orchard. Leg. J.A. Elix (21336), 04.01.1987. Chemistry: parietin (major), parietinic acid (minor) by HPLC, anal. G.A. Jenkins. LICHENES AUSTRALASICI EXSICCATI NO. 175.





Xanthoria parietina



pa: parietin, 1: fallacinal, 2: parietinic acid, 3: teloschistin

Numbers of LICHENES AUSTRALASICI EXSICCATI examined

002; 003; 007; 010; 012; 013; 015; 016; 017; 018; 019; 020; 022; 023; 025; 026; 027; 028; 029; 030; 031; 032; 033; 034; 036; 037; 038; 039; 040; 041; 042; 043; 044; 045; 046; 047; 048; 049; 050; 051; 052; 053; 054; 056; 057; 058; 059; 060; 062; 063; 064; 065; 066; 067; 068; 069; 070; 071; 072; 073; 074; 075; 076; 077; 078; 079; 080; 081; 082; 083; 084; 085; 086; 087; 088; 089; 090; 091; 092; 093; 094; 095; 096; 097; 098; 099; 100; 101; 102; 103; 104; 105; 106; 107; 108; 109; 110; 111; 114; 115; 116; 117; 118; 119; 120; 121; 122; 123; 124; 125; 126; 127; 128; 129; 130; 132; 133; 134; 135; 136; 137; 138; 139; 140; 141; 142; 143; 144; 145; 146; 147; 148; 149; 150; 151; 152; 153; 154; 155; 156; 157; 158; 159; 160; 161; 163; 164; 165; 166; 167; 168; 169; 170; 171; 172; 173; 174; 175; 176; 177; 178; 179; 180; 182; 183; 185; 186; 187; 188; 189; 190; 191; 192; 193; 194; 195; 196; 197; 198; 199; 200; 201; 202; 203; 204; 205; 206; 207; 208; 209; 211; 212; 213; 214; 215; 216; 217; 218; 219; 220; 221; 223; 224; 225; 226; 227; 228; 229; 230; 231; 232; 233; 234; 235; 236; 237; 238; 239; 240; 241; 242; 243; 244; 245; 246; 247; 248; 249; 250; 251; 252; 253; 254; 255; 256; 257; 258; 259; 260; 261; 262; 263; 265; 266; 268; 270; 271; 272; 273; 274; 275; 276; 277; 278; 279; 280; 281; 282; 283; 284; 285; 286; 287; 288; 290; 292; 294; 295; 296; 297; 298; 299; 300.

Additional specimens from the Herbarium Felix Schumm

[12168]; [14439]; [15664]; [15675]; [15738]; [15755]; [15803]; [15821]; [15826]; [15827]; [15840]; [15873]; [15928]; [15969]; [16025]; [16027]; [16127]; [16143]; [16151]; [16173]; [16236]; [16239]; [16244]; [16245]; [16250]; [16263]; [16282]; [16289]; [17222]; [18027]; [18908]; [18949]; [18961]; [18962]; [18966]; [18970]; [19023]; [19026]; [19047]; [19050]; [19069]; [19112]; [19117]; [19121]; [19122]; [19126]; [19243]; [19245]; [19259]; [19264]; [19268]; [5782].

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Of most importance were the volumes in the „Flora of Australia“ series, written by multible authors:

Flora of Australia Volume 54, Lichens. Introduction, Lecanorales 1 - 1992
Flora of Australia Volume 55, Lichens-Lecanorales 2, Parmeliaceae - 1994.
Flora of Australia Volume 56A, Lichens 4 - 2004
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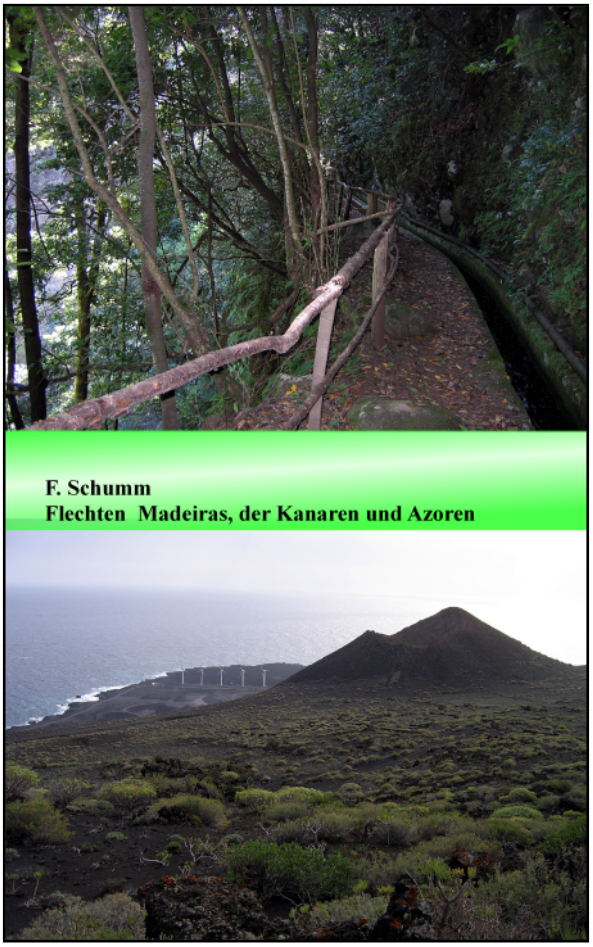

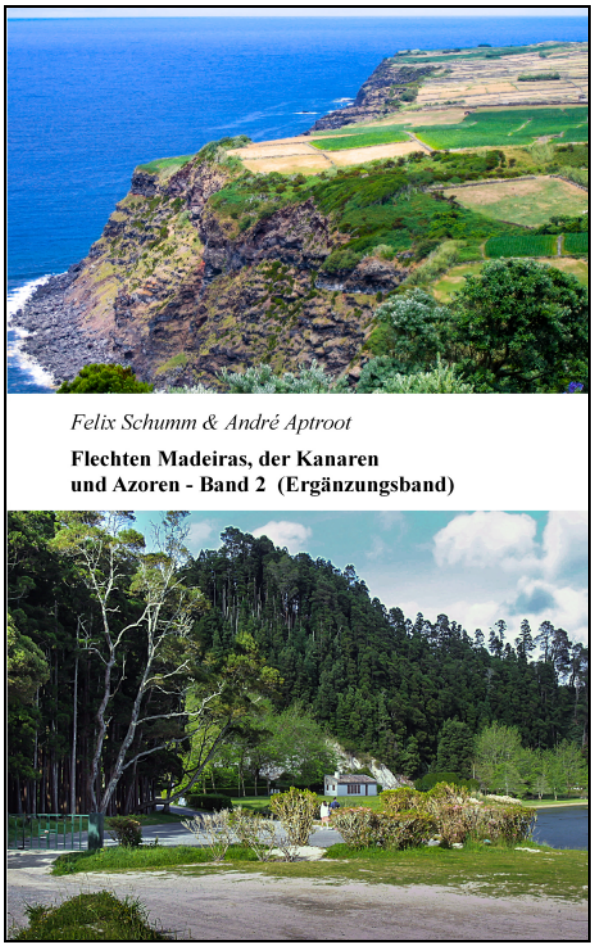

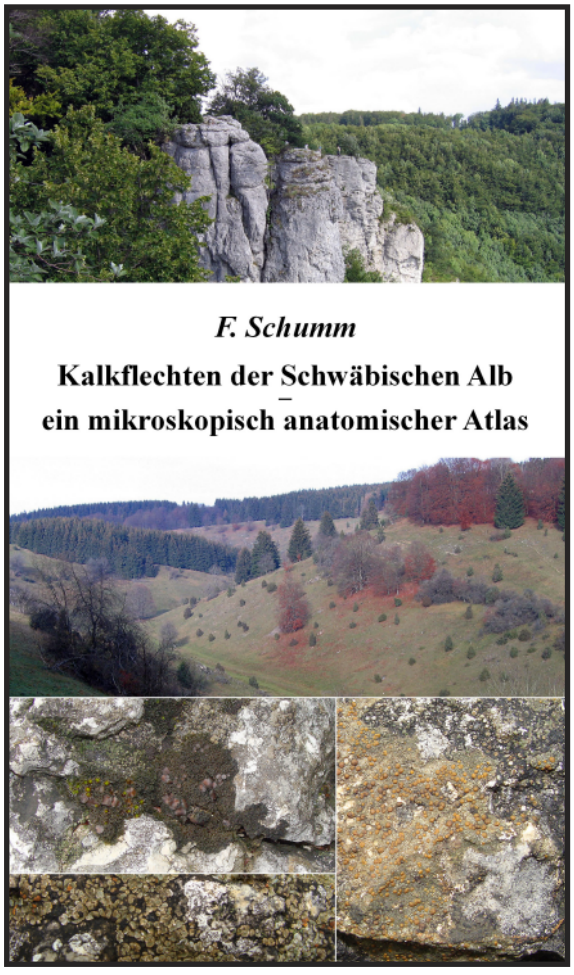

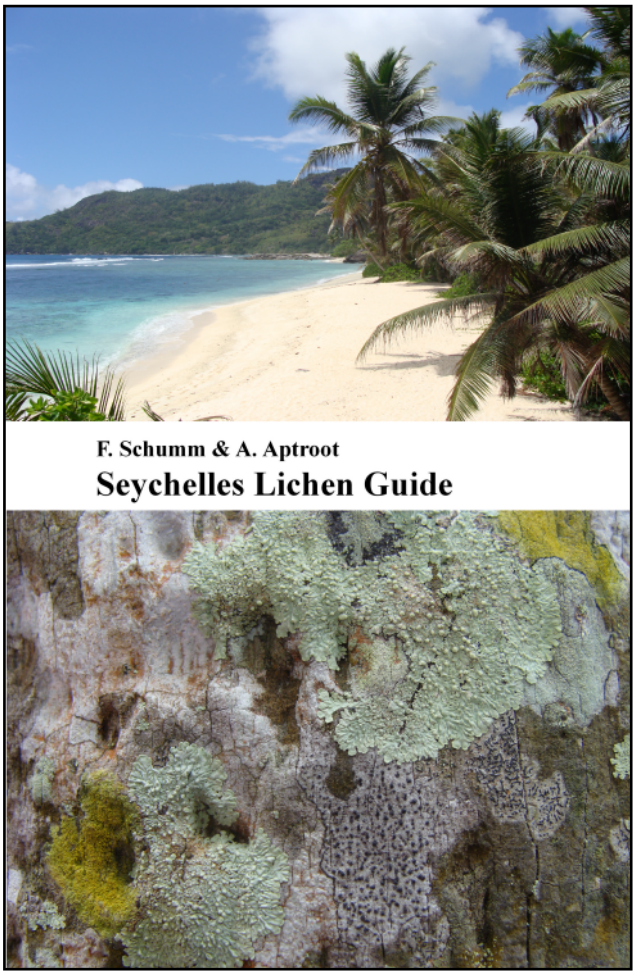



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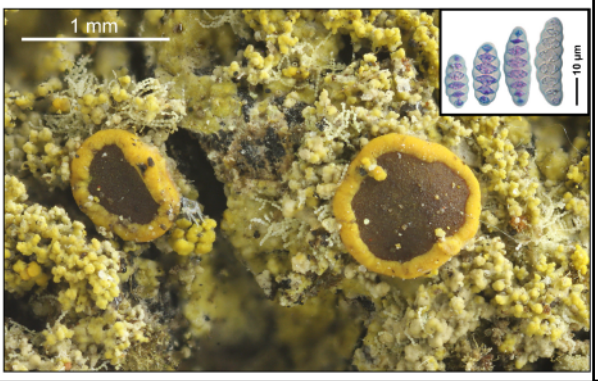



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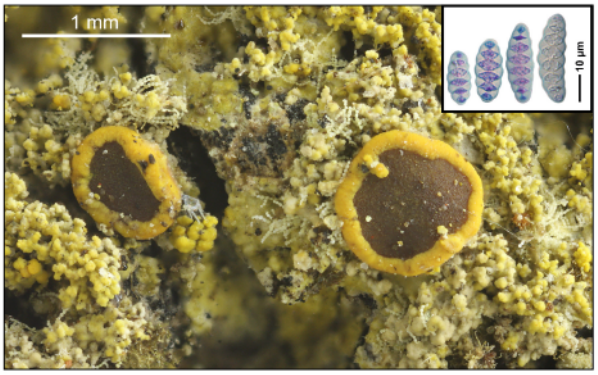

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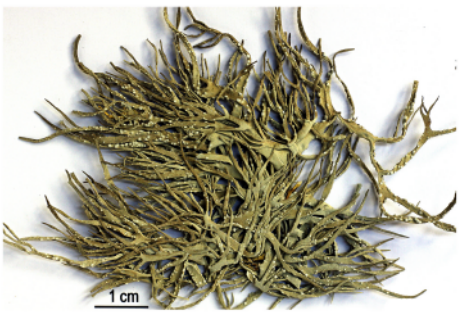

This book includes photographs of a selection of typical Australasian lichens, many of which have been distributed in the LICHENES AUSTRALASICI EXSICCATI (issued by J.A. Elix 1982-1994) as well as some additional species. In addition to the overall images, photographs of selected stained and unstained 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.

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