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The cosmopolitan *Ochrolechia pallescens* grows throughout Australia and New Zealand on the bark of forest trees. In the past, species of the genus in Europe were bulk-harvested for the dyeing industry.

CONTENTS

ADDITIONAL LICHEN RECORDS FROM SUBANTARCTICA Øvstedal, DO; Gremmen, NJM (1). The Kerguelen Islands.....	3
ADDITIONAL LICHEN RECORDS FROM AUSTRALIA Elix, JA; McCarthy, PM; Kantvilas, G (69). Miscellaneous taxa.....	10
Aptroot, A (70). Species of <i>Anisomeridium</i> and <i>Mycomicrothelia</i> , with a note on <i>Arthopyrenia</i>	22
ARTICLES	
Elix, JA—Two new taxa of <i>Thysanothecium</i> (Cladoniaceae, Ascomycota) from Australia.....	26
Elix, JA—New crustose lichens (lichenized Ascomycota) from Australia.....	30
Elix, JA—The chemical diversity of <i>Pseudocyphellaria gilva</i> (lichenized Ascomy- cota).....	38
BOOK REVIEWS	
Galloway, DJ— <i>Nordic Lichen Flora. Vol. 3 Cyanolichens</i> , by P.M. Jørgensen, and <i>Hongos liquenícolas del Sur de Sudamérica, especialmente de Isla Navarino (Chile)</i> by J. Etayo and L.G. Sancho.....	41
RECENT LITERATURE ON AUSTRALASIAN LICHENS	44
NEWS	
David Galloway is awarded the Acharius Medal at IAL 6	45

Additional lichen records from Subantarctica 1. The Kerguelen Islands

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Abstract: 14 lichen taxa are reported as new to the Kerguelen Islands; one of them, *Hymenelia macrospora* Øvstedal, is new to science.

Although several collections of lichens have been made on the Kerguelen Islands over the years, and many of them described as new (Crombie 1876), no modern comprehensive account of the islands' lichens is available. In 1948, Dodge described a number of the species and included a checklist, but because his taxonomic principles are not accepted today, many of his species have been reduced to synonyms. Another problem is that much of his material can not be found in herbaria.

A few lichen species from the islands have been treated in later works (Hertel 1984; Fryday 2004, 2007). An account of more recent collections is found in Fryday (2007). Here we present 14 taxa which to the best of our knowledge have not been reported before from the islands.

The Kerguelen Islands (49°S, 70°E) are the largest of the Subantarctic islands in the southern Indian Ocean, with a land surface of about 7000 km², and consist of a main island closely surrounded by numerous small islands and islets. The archipelago is very isolated. The nearest land, Heard Island, lies 500 km to the south, while the Crozet Islands are situated some 1400 km to the west. The climate is cold and oceanic. Mean annual temperature is *c.* 4.5°C, with monthly means ranging from 2°C to 8°C. Precipitation ranges from *c.* 800 mm in the eastern part of the island to over 3000 mm in the western part, and is mostly in the form of rain. On average, snow occurs on 120 days annually. Winds are strong and mostly from the west. During the Quaternary, the archipelago was heavily glaciated. At present, some 10% of the area is covered by ice.

Material and methods

During December 2003–January 2004, the junior author collected some 250 lichen specimens which were subsequently studied by the senior author. Collections were made on the main island, mostly in the areas around Port-aux-Français, and in Val Studer and the slopes leading up to Mt Amery. In addition, collections were made on Australia Island and Mayes Island in the Golfe du Morbihan. They represent mostly lowland areas, with only some 50 specimens from sites above 150 m altitude.

The collections were examined using a Zeiss Stemi 2000C microscope and a Zeiss Axiolab compound microscope. Chemical constituents were identified by thin-layer chromatography (Elix & Ernst-Russell 1993). All specimens are deposited in BG. Species with good descriptions in recent literature are not described here again in detail.

The species

Aspicilia aff. **cinerea** (L.) Körb., *Syst. Lich. Germ.*, 164 (1855)
= *Lichen cinerea* L., *Mantissa* 1, 132 (1797)

Thallus crustose, grey, up to 13 mm wide, rimose in the inner part, zonate towards the margin, with a very thin black prothallus. Fertile warts in inner part of thallus, disc black, non-pruinose, sunk in wart, irregular-elongate, up to 0.6 mm × 0.4 mm. Hymenium *c.* 240 µm high. Ascospores 4–8 per ascus, 28–32 × 13–15 µm. Paraphyses anastomosing, end cells not enlarged, not moniliform.
TLC: norstictic acid.

Ecology: on rock.

Distribution: Europe, Kerguelen Islands.

Notes: In habitus, fairly similar to N. European specimens of *A. cinerea*, but differs in having non-moniliform paraphyses and somewhat larger ascospores.

SPECIMENS EXAMINED

Australia Island: • on a rock in *Festuca* grassland on exposed lowland plateau, 49°28'44"S, 69°53'30"E, alt. 16 m, N.J.M. *Gremmen K-308A*, 19.xii.2003; • on rock face in *Blechnum*-dominated slope, 49°29'01"S, 69°53'25"E, alt. 41 m, N.J.M. *Gremmen K-51A*, 21.xii.2003.

Bacidia scopulicola (Nyl.) A.L.Smith, *Monogr. Brit. Lich.* **II**, 156 (1911)

= *Lecidea scopulicola* Nyl., *Flora* **VII**, 312 (1887)

TLC: negative.

Ecology: on rocks.

Distribution: Europe (Coppins 1992), Kerguelen Islands.

Notes: Morphologically and anatomically, the specimens are similar to NW European ones (BG), but they differ in their ecology. In NW Europe, *B. scopulicola* is found on maritime rocks, but on the Kerguelen Islands it was found in the mountains, far from any influence of salt spray.

SPECIMENS EXAMINED

Val Studer: • lower slopes of Mt Amery, on rocks in exposed feldmark, alt. 438 m, N.J.M. *Gremmen K-110, K-112*, 13.i.2004.

Catillaria impolita D.C.Lindsay, *Nova Hedwigia* **28**, 668 (1977)

TLC: negative

Ecology: on rocks

Distribution: Marion & Prince Edward Is (Øvstedal & Gremmen 2001), Kerguelen Islands.

Notes: This species was previously found on maritime rocks on the Prince Edward Islands, but on the Kerguelen Islands it was found at an altitude of over 100 m. The common occurrence of the halophilous moss *Muelleriella crassifolia* at the plateaux on Australia Island, however, suggests that even at this altitude salt spray could be affecting it.

SPECIMEN EXAMINED

Australia Island: • stone run on plateau, in *Usnea*-dominated feldmark, 49°28'10"S, 69°52'41"E, alt. 106 m, N.J.M. *Gremmen K-880*, 26.xii.2003.

Cladonia anseris Ahti, *Ann. Bot. Fennici* **29**, 68 (1992)

TLC: fumarprotocetraric and stictic acids.

Ecology: over bryophytes.

Distribution: Falkland Islands (Islas Malvinas) (Stenroos & Ahti 1992), Kerguelen Islands.

Note: Determined by T. Ahti.

SPECIMENS EXAMINED

Mayes Island: • on mat of bryophytes in *Vulpia-Poa pratensis* grassland on dry lowland slope, 49°28'24"S, 69°56'15"E, alt. 30 m, N.J.M. *Gremmen K-146*, 23.i.2004.

Australia Island: • on mat of moss in *Azorella-Acaena-Festuca* upland slope community, 49°28'21"S, 69°52'43"E, alt. 81 m, N.J.M. *Gremmen K-900*, 26.xii.2003; • on mosses in *Poa pratensis* grassland, 49°28'23"S, 69°53'29"E, alt. 45 m, N.J.M. *Gremmen K-638*, 31.xii.2003.

Collema flaccidum (Ach.) Ach., *Lich. Univ.*, 647 (1810)

= *Lichen flaccidus* Ach., *K. Vet. Akad. Nya Handl.*, 14 (1795)

TLC: negative.

Ecology: On soil.

Distribution: Europe, N. America, Asia, N. Africa (Degelius 1974), Kerguelen Islands.

Notes: New to the Southern Hemisphere, but Degelius (1974: 142) writes "Numerous specimens from the Southern Hemisphere (Tanzania, Chile, Argentina, Australia with Tasmania, New Zealand) probably belong to *C. flaccidum*. Unfortunately, they are all ster. or with very young apoth." The specimens on the Kerguelen Islands are typical, with well-developed apothecia and ascospores.

SPECIMENS EXAMINED

Australia Island: • on damp soil in open feldmark plateau, 49°28'57"S, 69°53'17"E, alt. 61 m, N.J.M. *Gremmen K-16*, 20.xii.2003; • on damp loamy soil in open lowland feldmark, 49°29'16"S, 69°53'24"E, alt. 37 m, N.J.M. *Gremmen K-471*, 4.i.2004; • in moss mat on sandy soil along coast, 49°29'23"S, 69°53'59"E, alt. 3 m, N.J.M. *Gremmen K-552*, 28.xii.2003; • in feldmark on lowland plateau, 49°29'24"S, 69°53'44"E, alt. 42 m, N.J.M. *Gremmen K-576*, 28.xii.2003.

Fellhaneropsis subantarctica Øvstedal, *South African J. Bot.* **72**, 356 (2006)

Apothecia rare (found for the first time), up to 0.4 mm broad, with constricted base, pale grey-brown, with distinct true margin, disc flat, dark brown, with spiderweb-like greyish tissue on top. Hymenium 50–55 µm high, uppermost part brownish. Hypothecium brown, K-. Exciple colourless or yellowish, composed of a textura intricata. Ascospores 8 per ascus, colourless, 3-septate, 16–20 × 2–2.5 µm, Paraphyses 0.5–1 µm diam, strongly ramified, end cell not enlarged.

TLC: negative.

Ecology: on dead *Azorella selago* (on Heard Island on soil).

Distribution: Heard Island (Øvstedal & Gremmen 2006), Kerguelen Islands.

Notes: This species was described on the basis of its peculiar pycnidia. The characters of the apothecia confirm that it differs from *F. vezdae*.

SPECIMEN EXAMINED

Australia Island: • on dead *Azorella selago* cushion in *Poa pratensis* grassland, 49°28'23"S, 69°53'29"E, alt. 45 m, N.J.M. *Gremmen K-744*, 31.xii.2003.

Fuscopannaria praetermissa (Nyl.) P.M.Jørg., *Journ. Hattori Bot. Lab* **76**, 205 (1994)

= *Pannaria praetermissa* Nyl., in Chydenius & Furuhielm, *Not. Sällsk. Flora & Fauna Fenn.* **4**, 97 (1858)

TLC: undetermined fatty acid.

Ecology: over bryophytes.

Distribution: Europe, North America, Himalaya, Antarctica (Øvstedal & Lewis Smith 2001), Kerguelen Islands.

SPECIMEN EXAMINED

Australia Island: • on *Jamesoniella*, *Brachythecium*, *Grimmia* and other bryophytes on lowland rockface, 49°28'23"S, 69°53'29"E, alt. 45 m, N.J.M. *Gremmen K-785*, 31.xii.2003.

Hymenelia macrospora Øvstedal sp. nov.

Figure 1

Hymenelia rhodopis (Sommerf.) Luzoni similis, sed ascosporae grandioribus.

Holotypus: Kerguelen Islands, Mayes Island, on rock in open *Festuca-Azorella* community on dry, terraced coastal slope, 49°28'27", 69°56'21", alt. 24 m, N.J.M. *Gremmen K-2019*, 23.i.2004 (BG).

Thallus crustose, c. 20 mm wide, medium thick, rimose, pale grey with pale orange parts, ecorticate. Apothecia aspicilioid, up to 0.2 mm diam., margin not thalline, disc strongly concave, dark brown, often 2–3 apothecia in row so as to appear lirelliform. Hymenium expanding and becoming convex when wet. Alga *Trentepohlia*. Hymenium 100–160 μm high, K/I + blue, uppermost part pale yellowish, N+ red. Ascospores simple, 8 per ascus, 28–32 \times 13–15 μm , with a large oil droplet. Paraphyses c. 1 μm wide, ramified to anastomosing, not moniliform, end cell not enlarged. True exciple colourless, 6–10 μm wide, composed of long, strongly agglutinated hyphae running parallel with the paraphyses. Hypothecium colourless. Pycnidia not seen.

TLC: negative.

Ecology: on rock.

Distribution: endemic.

Notes: This species has the characters of the genus *Hymenelia* as outlined in Luzoni & Brodo (1995). It has a general appearance of *H. rhodopis*, but that species differs in having more regular and roundish apothecia, a pinkish disc, pale grey-green thallus, and above all much smaller ascospores (Scandinavian material in O and BG studied). Dodge (1948) described two *Ionaspis* species from the Kerguelen Islands, viz. *I. kerguelensis* C.W.Dodge and *I. mawsonii* C.W.Dodge, both with *Trentepohlia* and most probably belonging to *Hymenelia*. However, both species have ascospores much smaller than those of the present species, and obviously are not conspecific. Type material of those species has not been available.

SPECIMENS EXAMINED

Australia Island: • on rocks in wet *Azorella* feldmark, 49°28'10"S, 69°52'41"E, alt. 111 m, N.J.M. *Gremmen* K-868, 26.xii.2003; • on rocks in cryoturbatic feldmark, 49°28'20"S, 69°52'40"E, alt. 107 m, N.J.M. *Gremmen* K-292, 26.xii.2003; • on stones in *Azorella* feldmark on lowland plateau, 49°29'23"S, 69°53'37"E, alt. 50 m, N.J.M. *Gremmen* K-396, 28.xii.2003; • on rocks in open *Azorella* feldmark on rocky plateau, 49°28'08"S, 69°53'04"E, alt. 135 m, N.J.M. *Gremmen* K-592, 31.xii.2003; • on rocks in stone run on plateau, 49°28'10"S, 69°52'41"E, alt. 106 m, N.J.M. *Gremmen* K-879, 26.xii.2003.

Lecanora zosteræ Nyl., *Flora* **59**, 577 (1876)

= *Lecanora subfusca* var. *zosteræ* Ach., *Syn. Meth. Lich.*, 158 (1814)

TLC: negative.

Ecology: on rock.

Distribution: Europe, North America, Antarctica (Øvstedal & Lewis Smith 2001, Sliwa 2007), Kerguelen Islands.

SPECIMEN EXAMINED

Australia Island: • on dead *Acaena magellanica* stem in grassland at the edge of coastal rocks, 49°29'14"S, 69°53'02"E, alt. 6 m, N.J.M. *Gremmen* K-500, 6.i.2004.

Lepraria eburnea Laundon, *Lichenologist* **24**, 332 (1992)

TLC: Alectorialic and protocetraric acids.

Distribution: Europe, North America, Australia (Orange 1997, Elix 2006), Kerguelen Islands.

SPECIMEN EXAMINED

Australia Island: • in small rock crevice on N side of large rock, damp, sheltered, in shade, 49°28'23"S, 69°53'29"E, alt. 43 m, N.J.M. *Gremmen* K-790, 1.i.2004.

Note: Determined by T.Tønsberg.

Lepraria neglecta (Nyl.) Lettau s. lat., *Repert. Nov. spec. Regni*. **61**, 127 (1958)

= *Lecidea neglecta* Nyl., *Notis. Sällsk. Fauna Fl. Fennica Förh.* **4**, 233 (1859)

TLC: atranorin, psoromic and roccellic acids.

Distribution: Europe, North America, Antarctica (Øvstedal & Lewis Smith 2001), Kerguelen Islands.

Notes: The type specimen of *L. neglecta* contains alectorialic and roccellic acids (Laundon 1989) but not atranorin. The present taxon is uniform throughout the Antarctic and Subantarctic area, and probably represents a distinct species.

SPECIMENS EXAMINED

Australia Island: • on moss in *Blechnum penna-marina* fernbrake slope, 49°29'01"S, 69°53'25"E, alt. 41 m, N.J.M. *Gremmen* K-371, 21.xii.2003; • in moss cushions on rock in *Usnea*-dominated feldmark on exposed plateau, 49°28'53"S, 69°53'12"E, alt. 72 m, N.J.M. *Gremmen* K-834, 21.xii.2003.

Menegazzia castanea P.James & D.J.Galloway, *New Zealand Journ. Bot.* **21**, 194 (1983)

TLC: atranorin, stictic and menegazziaic acids.

Ecology: among bryophytes.

Distribution: New Zealand (Galloway 1985), Macquarie Island, Kerguelen Islands.

SPECIMENS EXAMINED

Australia Island: • on moss cushions (*Andreaea* and *Grimmia*) on large rock in *Poa pratensis*-dominated grassland, 49°28'23"S, 69°53'29"E, alt. 45 m, N.J.M. *Gremmen* K-783, K-784, 31.xii.2003.

Placynthiella icmalea (Ach.) Coppins & P.James, *Lichenologist* **16**, 244 (1984)

= *Lecidea icmalea* Nyl., *K. Sv. Vitensk.- Akad. Handl.*, 267 (1808).

TLC: gyrophoric acid.

Distribution: Europe, North America, Antarctica (Øvstedal & Lewis Smith 2001), Kerguelen Islands.

SPECIMEN EXAMINED

Australia Island: • on bryophytes in *Blechnum penna-marina* fernbrake on lowland slope, 49°29'01"S, 69°53'25"E, alt. 41 m, N.J.M. *Gremmen* K-52, 21.xii.2003.

Tremolecia sp.

Thallus crustose, 3–4 cm wide, grey, sometimes with small rust-coloured spots, rimose-areolate; areolae 0.2–0.3 mm wide. Prothallus very narrow, black. Photobiont trebouxoid. Apothecia completely sunk in thallus, roundish, 0.1–0.2 mm diam., true margin dull black, slightly raised, disc concave, black, glossy. Hymenium 80–90 μm high, uppermost part aeruginose to blue-black. True exciple dark brown, composed of thick, radiating hyphae. Hypothecium dark brown. Paraphyses thick, strongly anastomosing. Ascospores 8 per ascus, subglobose, 13–15 \times 10–12 μm . Medulla K/I–. TLC: norstictic acid.

Ecology: on rock.

Notes: This specimen is similar to the widespread *T. atrata* (Ach.) Hertel, but differs in the grey thallus, the aeruginose epithecium (green-brown in *T. atrata*), and the presence of norstictic acid (no compounds or very rarely stictic acid in *T. atrata*; Hertel 1984). We have not yet seen any true *T. atrata* in the Kerguelen Islands material. The present species could be undescribed, but considering the number of small "*Lecidea*" species described from the Kerguelen Islands (Crombie 1876) which are not sufficiently known, more studies are necessary.

SPECIMENS EXAMINED

Australia Island: • on rocks in wet feldmark on sheltered spot on plateau, 49°28'11"S, 69°52'47"E, alt. 136 m, N.J.M. *Gremmen* K-607B, 26.xii.2003; • on rock on open feldmark plateau, 49°28'57"S, 69°53'16"E, alt. 61 m, N.J.M. *Gremmen* K-344, 20.xii.2003; • on

rocks in exposed plateau feldmark, 49°28'10"S, 69°52'41"E, alt. 111 m, N.J.M. Gremmen K-603 p.p., 26.xii.2003; • on rocks in open feldmark plateau, 49°28'57"S, 69°53'16"E, alt. 61 m, N.J.M. Gremmen K-339, 20.xii.2003.

Conclusions

In total, c. 60 lichen species were found during this expedition (not all have been determined yet). The number of lichen species on the Kerguelen Islands is difficult to assess; there are many species described by Dodge of which the types are not accessible, and with Dodge's poor reputation as a taxonomist one is reluctant to accept them. There are 118 lichen species recorded from the Prince Edward Islands (Øvstedal & Gremmen 2007), which have an area of 380 km², and 90 on Heard Island (Øvstedal & Gremmen submitted), which has an area of 368 km²; thus the Kerguelen Islands, which have a total area of 7215 km² (Fryday 2007), should have a substantially higher number of species.

Kerguelia (Prince Edward Islands, Kerguelen Islands, Crozet Island, and Heard Island) should be regarded as a floristic province, with some lichen genera and many species found only there. Van de Wouw *et al.* (2008) studied the patterns of genetic variance in *Deschampsia antarctica* Desv., a species found from the southernmost South America via Antarctica to Kerguelia, by means of amplified fragment length polymorphism and chloroplast sequences. They found that the populations on Heard and Crozet Islands and the Kerguelen Islands constitute a separate genotype. Also, these islands share with Marion and the Prince Edward Islands five endemic vascular plant species (Hennion & Walton 1997). However, a majority of the lichen species appear to be cosmopolitan or circumaustral, and some have an affinity to New Zealand as well.

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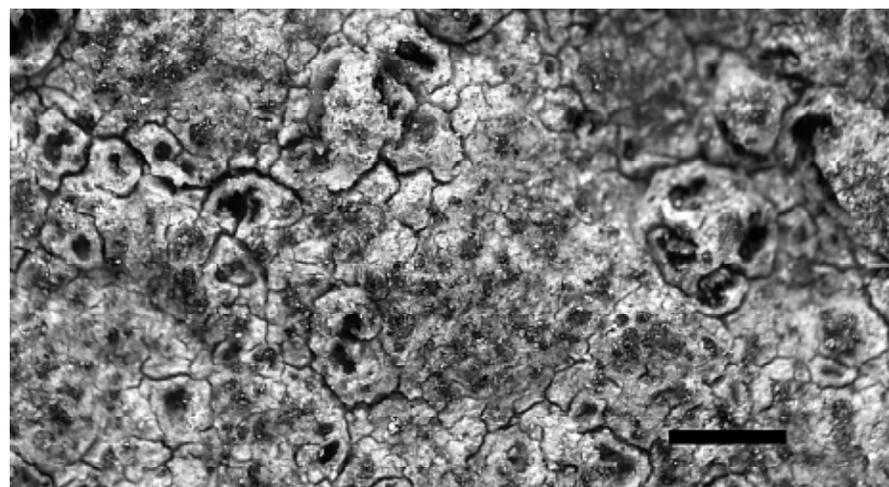


Figure 1. *Hymenelia macrospora* Øvstedal sp. nov. Holotypus. Bar = 1 mm.

Additional lichen records from Australia 69. Miscellaneous taxa

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Abstract: *Phyllopsora kiiensis*, *Porina rubescens*, *Pyxine coralligera* and *Thelopsis byssoidea* are reported for the first time from Australia. *Porina tasmanica* has been collected for only the second time, and new State and Territory records are listed for 45 other species.

NEW RECORDS FOR AUSTRALIA

1. *Phyllopsora kiiensis* (Vain.) Gotth.Schneider, *Biblioth. Lichenol.* **13**, 177 (1980)

This species was known previously from Japan and East Africa (Timdal & Krog 2001). It is characterized by the squamulose thallus with comparatively small to medium-sized squamules (0.1–0.5 mm wide), marginal, cylindrical, simple to branched isidia and the presence of furfuraceic acid. A detailed description is given in Timdal & Krog (2001).

SPECIMENS EXAMINED

New South Wales: • Long Beach, 3 km E of Batemans Bay, 34°42'S, 150°14'E, 6 m alt., on tree in remnant rainforest, *J.A. Elix* 2939, 19.iii.1977 (CANB).

Queensland: • Lannercost State Forest, Wallaman Falls Road, 30 km W of Ingham, 18°37'19"S, 145°54'27"E, 100 m alt., on tree trunk in lowland regrowth forest, *J.A. Elix* 38255, 38259, 25.vii.2006 (CANB); • Girringun National Park, Yamanie Section, 14 km WNW of Abergowrie, 18°24'49"S, 145°46'18"E, 55 m alt., on tree trunk in remnant rainforest along Herbert River, *J.A. Elix* 38481, 26.vii.2006 (CANB).

2. *Porina rubescens* (Lücking) Hafellner & Kalb, *Biblioth. Lichenol.* **57**, 171 (1995)

This lichen has been reported from the Neotropics and West Africa (Lücking, 2008). The Australian specimen has small, rounded, dull green thalli that coalesce into colonies several millimetres wide. The photobiont (*Phycopeltis*) forms radiating plates of elongate-rectangular cells. The perithecia are subglobose, 0.15–0.20 mm diam., yellowish brown, orange-brown to red-brown (intense orange-red in K), and most have an irregular, subapical ring of soft, off-white to pale yellowish brown setae. The ascospores are oblong, 7-septate and 24–38 × 3.0–4.5 µm.

The pantropical *P. octomera* (Müll.Arg.) F.Schill. is broadly similar, but it lacks setae (McCarthy 2001; Lücking 2008). Lücking *et al.* (2001) included *P. dwesica* Brusse in their checklist of mainland Australian foliicolous lichens, but they did not provide any locality information. That South African species has larger perithecia, c. 0.3 mm diam., and a more dense and uniform covering of setae (Brusse 1991).

SPECIMEN EXAMINED

Queensland: • Josephine Falls, Wooroonooran Natl Park, 20 km NW of Innisfail, 17°26'16"S, 145°51'33"E, 80 m alt., on leaves in lowland tropical rainforest, *J.A. Elix* 38765, 31.vii.2006 (CANB).

3. *Pyxine coralligera* Malme, *Bih. K. Svenska Vetensk Akad. Handl.* **23**, 40 (1897)

This lichen was known previously from South America and Africa (Kalb 1987; Swinscow & Krog 1975). It is characterized by the adnate thallus, pustulate dactyls, cortical atranorin, the pale yellow to yellow-brown medulla, and *obscurascens*-type apothecia with a cream, yellow or pale yellow-brown internal stipe and the presence of medullary testacein and a characteristic array of triterpenes. It is morphologically very similar to *P. retirugella* Nyl., but the latter differs in containing additional norstictic acid and a different suite of triterpenes. Detailed descriptions are provided by Kalb (1987) and Swinscow & Krog (1975).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, below Florence Falls, 42 km SW of Batchelor, 13°05'58"S, 130°47'05"E, 15 m alt., on fallen branch in monsoon forest with *Syzygium* and *Gordenia* along stream, *J.A. Elix* 37688, 6.viii.2005 (CANB).

4. *Thelopsis byssoidea* Diederich, in A. Aptroot *et al.*, *Biblioth. Lichenol.* **64**, 197 (1997)

Thelopsis byssoidea has a greenish, greenish grey to brownish green byssoid thallus with a white prothallus and medulla, subimmersed, pale brown to brownish orange perithecioid ascomata with multispored asci (c. 128 spores per ascus) and hyaline, ellipsoid, often slightly curved 1-septate ascospores, 8–13 × 4.5–5.5 µm. No lichen substances were detected. This species was known previously from Papua New Guinea (see Aptroot *et al.* 1997 for description and illustrations).

SPECIMENS EXAMINED

Queensland: • Girringun National Park, Jinda Track to Wallaman Falls, 50 km W of Ingham, 18°35'21"S, 145°48'20"E, 540 m alt., on base of tree in rainforest in river gorge, *J.A. Elix* 38060, 38069, 38076, 25.vii.2006 (CANB); • Broadwater State Forest Park, 45 km NW of Ingham, 18°25'01"S, 145°56'38"E, 50 m alt., on treelet in rainforest margins along the Herbert River, *J.A. Elix* 38611, 26.vii.2006 (CANB).

STATE AND TERRITORY RECORDS

1. *Arthonia cyanea* Müll.Arg., *Flora* **64**, 233 (1881)

This is a common foliicolous lichen in Tasmania (McCarthy *et al.* 2001); it is also found in eastern Queensland and throughout the tropics.

SPECIMEN EXAMINED

Victoria: • Gippsland, Tarra-Bulga National Park, above Tarra Falls, 38°27'17"S, 146°32'27"E, 225 m alt., on pinnules of *Polystichum* sp., *P.M. McCarthy* 2681, 14.iv.2008 (MEL).

2. *Arthonia trilocularis* Müll.Arg., *Flora* **64**, 233 (1881)

A very common foliicolous lichen in Tasmania (McCarthy *et al.* 2001), this mainly pantropical species also occurs in eastern Queensland and New South Wales.

SELECTED SPECIMENS EXAMINED

Victoria: • Gippsland, Tarra-Bulga National Park, Cyathea Falls Track, 38°26'47"S, 146°32'19"E, 252 m alt., on pinnae of *Blechnum wattsi* in deeply shaded rainforest, *P. M. McCarthy* 2649 (part), 14.iv.2008 (MEL); • Errinundra National Park, Errinundra Saddle Rainforest Walk, 37°19'03"S, 148°50'19"E, 910 m alt., on leaves of *Elaeocarpus reticulatus* in rainforest, *P.M. McCarthy* 2663, 16.iv.2008 (MEL).

3. *Aspidothelium cinerascens* Vain., *Acta Soc. Fauna Fl. Fenn.* **7**, 189 (1890)

This foliicolous pyrenolichen is already known from Tasmania, New Zealand and the Neotropics (McCarthy *et al.* 2001; Lücking 2008).

SPECIMEN EXAMINED

New South Wales: • Stockyard Creek Rest Area, Cotta-Bimbang Natl Park, c. 83 km E of Walcha, 31°24'10"S, 152°07'25"E, 685 m alt., on leaves in rainforest with isolated *Eucalyptus*, *J.A. Elix 39014*, 6.viii.2008 (CANB).

4. *Belonia uncinata* P.M. McCarthy & Kantvilas, *Lichenologist* 29, 489 (1997)

This inconspicuous crustose lichen is occasional in wet forests in Tasmania, and it has also been reported from Argentina. It is characterized by an effuse thallus that is faintly orange when fresh and moist, tiny perithecia-like fruiting bodies, and filiform ascospores with distinctly hooked apices (see McCarthy & Kantvilas 1997).

SPECIMEN EXAMINED

Victoria: • Errinundra Plateau, Goonmirk Road, 37°16'29"S, 148°53'06"E, 1125 m alt., on the bark of an epacridaceous shrub in open forest, *G. Kantvilas 148/08*, 16.iv.2008 (CANB, HO, MEL).

5. *Byssoloma leucoblepharum* (Nyl.) Vain., *Dansk Bot. Ark.* 4, 23 (1926)

Rare on leaves of *Atherosperma moschatum* in Tasmania (McCarthy *et al.* 2001), this lichen is also known from Queensland, New South Wales, Christmas Island and in tropical and temperate areas throughout the world where it is also corticolous.

SPECIMEN EXAMINED

Victoria: • Gippsland, Bemm River Scenic Reserve, 45 km E of Orbost, 37°37'30"S, 148°53'12"E, 65 m alt., on pinnae of *Blechnum watsii* in rainforest, *P.M. McCarthy 2682*, 15.iv.2008 (MEL).

6. *Byssoloma subdiscordans* (Nyl.) P. James, *Lichenologist* 5, 126 (1971)

Almost cosmopolitan in its distribution, *B. subdiscordans* also grows on bark and siliceous rocks. Apparently exclusively foliicolous in Australia, it is known from Queensland, Victoria, Tasmania, Christmas Island and Lord Howe Island.

SPECIMEN EXAMINED

New South Wales: • Rutherford Creek, Brown Mountain, 18 km SE of Nimmitabel, 36°35'22"S, 149°26'44"E, 815 m alt., on pinnae of *Dicksonia antarctica* in rainforest, *P.M. McCarthy 2631*, 17.iv.2008 (CANB).

7. *Byssoloma subundulatum* (Stirt.) Vězda, *Folia Geobot. Phytotax.* 21, 216 (1986)

This foliicolous lichen is very common and abundant in Tasmania (McCarthy *et al.* 2001); it is also known from eastern Queensland, New South Wales and New Zealand (Santesson 1952, as *Bacidia subundulata*).

SPECIMENS EXAMINED

Victoria: • Gippsland, Tarra-Bulga National Park, Cyathea Falls Track, 38°26'47"S, 146°32'19"E, 252 m alt., on pinnae of *Blechnum watsii* in deeply shaded rainforest, *P. M. McCarthy 2652, 2653*, 14.iv.2008 (MEL); • *loc. id.*, on fronds of *Blechnum pattersonii*, *P.M. McCarthy 2675*, 14.iv.2008 (MEL).

8. *Calenia aspidota* (Vain.) Vězda, *Folia Geobot. Phytotax.* 19, 195 (1984)

The known distribution of this pantropical foliicolous lichen already includes eastern Queensland (see Santesson 2008).

SPECIMENS EXAMINED

New South Wales: • Bucca Creek Picnic Area, Bruxner Park, 10 km NW of Coffs Harbour, 30°14'25"S, 153°05'42"E, 175 m alt., on leaves in subtropical rainforest, *J.A. Elix 39026*, 9.viii.2008 (CANB); • Sherwood Nature Reserve, 3 km W of Woolgoolga, 30°07'12"S, 153°09'03"E, 55 m alt., on leaves in subtropical rainforest, *J.A. Elix 39037*, 10.viii.2008 (CANB).

9. *Dirinaria aegialita* (Ach.) B. Moore, *Bryologist* 71, 248 (1968)

In Australia this pantropical-subtropical species was previously known from New South Wales, the Northern Territory, Western Australia and Queensland (McCarthy 2008).

SPECIMENS EXAMINED

Norfolk Island: • Norfolk Island National Park, Mt Pitt, near Hollow Pine, 29°00'57"S, 167°56'08"E, 220 m alt., on *Elaeodendron* in mixed subtropical rainforest, *J.A. Elix 18123 & H. Streimann*, 1.xii.1984 (CANB); • Picnic Area, end of Martins Road, 29°03'S, 167°59'E, 80 m alt., on trunk of *Araucaria heterophylla* in open *Araucaria* woodland, *J.A. Elix 18152 & H. Streimann*, 1.xii.1984 (CANB); • just S of Captain Cook Monument, Duncombe Bay, 29°00'15"S, 167°56'30"E, 100 m alt., on *Elaeodendron* in regrowth forest margins, *J.A. Elix 18381 & H. Streimann*, 3.xii.1984 (CANB).

10. *Eschatogonia marivelensis* (Vain.) Kalb, *Biblioth. Lichenol.* 88, 310 (2004)

This species was known previously from East Asia and Queensland (Kalb 2004).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, below Florence Falls, 42 km SW of Batchelor, 13°05'58"S, 130°47'05"E, 15 m alt., on log in monsoon forest with *Syzygium* and *Gordenia* along stream, *J.A. Elix 37749*, 6.viii.2005 (CANB). Det.: K. Kalb.

11. *Fellhanera bouteillei* (Desm.) Vězda, *Folia Geobot. Phytotax.* 21, 214 (1986)

A common foliicolous lichen in Tasmania (McCarthy *et al.* 2001), *F. bouteillei* also grows on bark and siliceous rocks in many temperate and tropical regions. In Australia, it is known from the Northern Territory, Queensland and the Australian Capital Territory, as well as Christmas Island.

SELECTED SPECIMENS EXAMINED

New South Wales: • Rutherford Creek, Brown Mountain, 18 km SE of Nimmitabel, 36°35'22"S, 149°26'44"E, 815 m alt., on pinnae of *Blechnum watsii* in rainforest, *P.M. McCarthy 2645*, 17.iv.2008 (CANB).

Victoria: • Gippsland, Tarra-Bulga National Park, Cyathea Falls Track, 38°26'47"S, 146°32'19"E, 252 m alt., on pinnae of *Blechnum watsii* in deeply shaded rainforest, *P. M. McCarthy 2650*, 14.iv.2008 (MEL); • Tarra-Bulga National Park, above Tarra Falls, 38°27'17"S, 146°32'27"E, 225 m alt., on pinnules of *Polystichum* sp., *P.M. McCarthy 2657*, 14.iv.2008 (MEL); • Errinundra National Park, Errinundra Road, Bonang River Picnic Area, 37°17'02"S, 148°48'25"E, 810 m alt., on pinnae of *Blechnum watsii* in cool-temperate rainforest, *P.M. McCarthy 2672*, 16.iv.2008 (MEL).

12. *Fellhaneropsis australiana* Lücking, in R. Lücking *et al.*, *Lichenologist* 33, 205 (2001)

This foliicolous lichen is reported for the first time since it was described from coastal Gippsland, Victoria (Lücking *et al.* 2001). The recent collection closely matches the type specimen (in CANB) in all respects, including ascomatal habit and anatomy, proximally tapering, (3–)7-septate ascospores and barrel-shaped conidiomata with acicular, multiseptate conidia.

SPECIMEN EXAMINED

New South Wales: • Rutherford Creek, Brown Mountain, 18 km SE of Nimmitabel, 36°35'22"S, 149°26'44"E, 815 m alt., on pinnae of *Blechnum watsii* in rainforest, *P. M. McCarthy 26375*, 17.iv.2008 (CANB, HO).

13. *Gyalectidium microcarpum* (Vězda) Lücking, Sérus. & Vězda, in L.I. Ferraro *et al.*, *Bot. J. Linn. Soc.* 137, 339 (2001)

A Palaeotropical and austral foliicolous species, *G. microcarpum* is very common in Tasmania (McCarthy *et al.* 2001, as *Bullatina microcarpa*), and is also known from eastern Queensland and New South Wales.

SELECTED SPECIMENS EXAMINED

Victoria: • Gippsland, Tarra-Bulga National Park, Cyathea Falls Track, 38°26'47"S, 146°32'19"E, 252 m alt., on pinnae of *Blechnum wattsii* in deeply shaded rainforest, P. M. McCarthy 2649 (part), 14.iv.2008 (MEL); • Bemm River Scenic Reserve, 45 km E of Orbost, 37°37'30"S, 148°53'12"E, 65 m alt., on pinnae of *Blechnum wattsii* in rainforest, P.M. McCarthy 2683, 15.iv.2008 (MEL).

14. Hypogymnia pulverata (Nyl.) Elix, *Brunonia* 2, 217 (1980)

This lichen was known previously from Asia, New Zealand and, in Australia, from Western Australia, South Australia, Victoria, Tasmania, the Australian Capital Territory and New South Wales (Elix 1992; McCarthy 2008).

SPECIMEN EXAMINED

Queensland: • Bunya Mountains State Forest, Nanango Road, 64 km NE of Dalby, 26°51'49"S, 151°38'51"E, 670 m alt., on dead branch in mixed *Eucalyptus-Araucaria* forest, J.A. Elix 37933, 7.v.2005 (CANB).

15. Jarmania scoliosporoides Kantvilas, *Lichenologist* 40, 214 (2008)

This inconspicuous lichen is characterized by a pale grey, ±bysoid thallus containing lobaric acid, tiny pinkish, immarginate apothecia and filiform, multiseptate ascospores (see Kantvilas 2008). This species (and genus) was previously considered endemic to Tasmania.

SPECIMEN EXAMINED

Victoria: • Errinundra Saddle, Rainforest Walk, 37°19'03"S, 148°50'19"E, 910 m alt., on *Atherosperma moschatum* in rainforest, G. Kantvilas 104/08, 16.iv.2008 (HO, MEL).

16. Jarmania tristis Kantvilas, *Lichenologist* 28, 230 (1996)

Characterized by a yellowish, byssoid thallus containing grayanic acid, yellowish-pruinose, immarginate apothecia, and filiform, multiseptate ascospores (Kantvilas 1996), this species was previously considered endemic to Tasmania. It typically grows on the undersides of inclined trunks and large limbs in deep shade wet forests.

SPECIMEN EXAMINED

Victoria: • Errinundra Saddle, Rainforest Walk, 37°19'03"S, 148°50'19"E, 910 m alt., on *Lomatia* in rainforest, G. Kantvilas 104/08, 16.iv.2008 (HO, MEL).

17. Lecanora dissoluta Nyl., *Flora* 4, 131 (1866)

This species is already known from Java, Queensland and Norfolk Island (Elix 2006c, 2007).

SPECIMENS EXAMINED

Northern Territory: • Litchfield National Park, Greenant Creek, trail to Tjaetaba Falls, 60 km SW of Batchelor, 13°12'04"S, 130°42'03"E, 60 m alt., on dead wood in monsoon forest with *Corallia* and *Calophyllum* along stream, J.A. Elix 38405, 38408, 38410, 5.viii.2005 (CANB).

18. Lepraria aurescens Orange & Wolseley, *Lichenologist* 37, 247 (2005)

This lichen occurs in Thailand (Orange & Wolseley 2005) and the Northern Territory (Elix 2008).

SPECIMEN EXAMINED

Queensland: • Girringun National Park, Jinda Track to Wallaman Falls, 50 km W of Ingham, 18°35'21"S, 145°48'20"E, 540 m alt., on base of *Eucalyptus* in rainforest in river gorge, J.A. Elix 38083, 25.vii.2006 (CANB).

19. Lepraria lobata Elix & Kalb, *Mycotaxon* 94, 220 ('2005') [2006]

This endemic species was known previously from Western Australia, Tasmania and

the Northern Territory (Elix 2006a, 2008).

SPECIMEN EXAMINED

New South Wales: • Boonoo Boonoo National Park, 34.5 km NE of Tenterfield, 28°51'19"S, 152°09'09"E, 960 m alt., on granite outcrops in *Eucalyptus* woodland, J.A. Elix 38290, 4.v.2005 (CANB).

20. Micarea flagellispora Coppins & Kantvilas, *Lichenologist* 22, 281 (1990)

Previously known only from Tasmania, this species has a bright green, areolate thallus, black, immarginate apothecia, and filiform ascospores (Coppins & Kantvilas 1990). It grows as an epiphyte on bark, usually at the bases of trees and shrubs or, at higher altitudes, on peaty soil, litter and stones.

SPECIMEN EXAMINED

Victoria: • Baw Baw Natl Park, Mushroom Rocks, 37°53'S, 146°21'E, 1200 m alt., on base of eucalypt in wet forest, G. Kantvilas 141/08, 13.iv.2008 (HO, MEL).

21. Micarea mutabilis Coppins & Kantvilas, *Lichenologist* 22, 286 (1990)

This species is recognized by its effuse to areolate thallus, piebald immarginate apothecia and acicular, sigmoid, multiseptate ascospores. Both the thallus and apothecia contain gyrophoric acid, detectable in the latter by the C+ red reaction of anatomical sections (see Coppins & Kantvilas 1990). It was previously considered endemic to Tasmania where it grows on the mature trunks of *Nothofagus cunninghamii* in cool temperate rainforest.

SPECIMEN EXAMINED

Victoria: • Errinundra Saddle, Rainforest Walk, 37°19'03"S, 148°50'19"E, 910 m alt., on *Lomatia* in rainforest, G. Kantvilas 178/08, 16.iv.2008 (HO, MEL).

22. Micarea peliocarpa (Anzi) Coppins & R.Sant., in B.J. Coppins & P.W. James, *Lichenologist* 11, 155 (1979)

This is a widely distributed, pantemperate species that contains gyrophoric acid (thallus and apothecia C+ red) and has whitish to black or piebald apothecia and 3-septate ascospores (see Coppins 1983). It is usually found on bark or wood.

SPECIMENS EXAMINED

New South Wales: • Brown Mountain, Rutherford's Creek, 18 km SE of Nimmitabel, 36°35'22"S, 149°26'44"E, 815 m alt., on dead wood in rainforest, G. Kantvilas 120/08, 17.iv.2008 (HO).

Victoria: • Errinundra Plateau, Goonmirk Road, 37°16'29"S, 148°53'06"E, 1125 m alt., on rotting eucalypt log, G. Kantvilas 149/08, 16.iv.2008 (HO, MEL); • Morewell Natl Park, Fosters Gully, 38°21'S, 146°23'E, 200–300 m alt., on rotting charred eucalypt log in wet sclerophyll forest, G. Kantvilas 163/08, 12.iv.2008 (HO, MEL); • Baw Baw Natl Park, Mushroom Rocks, 37°53'S, 146°21'E, 1200 m alt., on *Nothofagus cunninghamii* in rainforest, G. Kantvilas 141/08, 13.iv.2008 (HO, MEL).

23. Parmotrema pseudonilgherrense (Asahina) Hale, *Mycotaxon* 5, 441 (1977)

This species was known previously from Asia, East, South and West Africa and Western Australia (Elix 1994a).

SPECIMEN EXAMINED

Queensland: • Girringun National Park, Stoner Creek, above Wallaman Falls, 51 km W of Ingham, 18°35'54"S, 145°47'51"E, 545 m alt., on fallen twigs in rainforest margin along creek, J.A. Elix 3813, 25.vii.2006 (CANB).

24. Pertusaria follmanniana A.W.Archer & Elix, in J.A.Elix et al., *Flechten Follmann* 22 (1995)

This endemic lichen is also known from New South Wales (Archer 2004).

SPECIMEN EXAMINED

Queensland: • Tully Gorge, Kareeya Power Station, 49 km NW of Tully, 17°46'03"S, 147°34'48"E, 220 m alt., on fallen canopy branch, *J.A. Elix 37425*, 28.vii.2006 (CANB). Det.: A.W. Archer

25. *Pertusaria jamesii* Kantvilas, *Lichenologist* **22**, 296 (1990)

This lichen is widespread in the austral zone where it occurs as an epiphyte in wet forests. It is an unusual member of the genus in that it has very distinctive, urceolate, *Gyalecta*-type fruiting bodies with an inrolled margin and a ±translucent, flesh-coloured disc (Kantvilas 1990).

SPECIMENS EXAMINED

Victoria: • Errinundra Plateau, Goonmirk Road, 37°16'29"S, 148°53'06"E, 1125 m alt., on rotting eucalypt log, *G. Kantvilas 150/08*, 16.iv.2008 (HO, MEL); • Baw Baw NP, Mt Erica car park, 37°53'S, 146°21'E, 1050 m alt., on *Acacia* in cool temperate rainforest, *G. Kantvilas 182/08*, 13.iv.2008 (HO, MEL).

26. *Pertusaria leiocarpella* Müll.Arg., *Bull. Herb. Boissier* **3**, 638 (1895)

This species was known previously from Queensland and Papua New Guinea (Archer 2004).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, below Florence Falls, 42 km SW of Batchelor, 13°05'58"S, 130°47'05"E, 15 m alt., on fallen branch in monsoon forest with *Syzygium* and *Gordenia* along stream, *J.A. Elix 37713*, 6.viii.2005 (CANB). Det.: A.W. Archer

27. *Pertusaria lordhowensis* A.W.Archer & Elix, *Telopea* **6**, 19 (1994)

This species is already known from Lord Howe Island (Archer 2004).

SPECIMEN EXAMINED

Queensland: • Bunya Mountains National Park, Burtons Well walking track to Mt Kiangarow, 68 km N of Dalby, 26°50'17"S, 151°33'12"E, 1100 m alt., on fallen branch along margin of rainforest, *J.A. Elix 37653*, 6.v.2005 (CANB). Det.: A.W. Archer

28. *Pertusaria pseudococcodes* Müll.Arg., *Flora* **67**, 287 (1884)

This species was known previously from India, Sri Lanka and Papua New Guinea and Queensland (Archer 2004).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, below Florence Falls, 42 km SW of Batchelor, 13°05'58"S, 130°47'05"E, 15 m alt., on fallen branch in monsoon forest with *Syzygium* and *Gordenia* along stream, *J.A. Elix 37711*, 6.viii.2005 (CANB). Det.: A.W. Archer

29. *Pertusaria puffina* A.W.Archer & Elix, *Telopea* **6**, 22 (1994)

This species was known previously from New South Wales, Lord Howe Island and Papua New Guinea (Archer 2004).

SPECIMEN EXAMINED

Queensland: • Bunya Mountains National Park, summit of Mt Kiangarow, 68 km N of Dalby, 26°50'17"S, 151°33'12"E, 1146 m alt., on fallen branch along margin of rainforest, *J.A. Elix 37645*, 6.v.2005 (CANB). Det.: A.W. Archer

30. *Pertusaria scaberula* A.W.Archer, *Mycotaxon* **41**, 22 (1994)

This species was known previously from Western Australia, Queensland, New South Wales, Victoria, Papua New Guinea and Norfolk Island (Archer 2004).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, Greenant Creek, trail to Tjaetaba Falls, 60 km SW of Batchelor, 13°12'04"S, 130°42'03"E, 60 m alt., on dead wood in monsoon forest with *Corallia* and *Calophyllum* along stream, *J.A. Elix 38409*, 5.viii.2005 (CANB).

31. *Phyllopsora foliatella* Elix, *Australas. Lichenol.* **58**, 11 (2006)

This lichen was known previously from Queensland, New South Wales, Lord Howe Island and Norfolk Island (Elix 2006b, 2008a).

SPECIMENS EXAMINED

Northern Territory: • Litchfield National Park, Wangi Falls, 74 km by road SW of Batchelor, 13°09'48"S, 130°41'00"E, 60 m alt., on tree trunk in monsoon forest at foot of falls with *Corallia* and *Calophyllum*, *J.A. Elix 38044, 38047*, 5.viii.2005 (CANB).

32. *Porina impolita* P.M.McCarthy, *Nova Hedwigia* **58**, 394 (1994)

This endemic Australian species is also known from Queensland, New South Wales and Tasmania, where it occurs on twigs and trunks in rainforest. It is characterized by its prominent orange perithecia and 7-septate ascospores (McCarthy 2001a).

SPECIMEN EXAMINED

Victoria: • Tarra-Bulga Natl Park, Cyathea Falls, 38°26'47"S, 146°32'19"E, 250 m alt., on old *Nothofagus cunninghamii* trunk in rainforest, *G. Kantvilas 96/08*, 14.iv.2008 (HO).

33. *Porina leptosperma* Müll.Arg., *Flora* **66**, 333 (1883)

In Australia, this pantropical, foliicolous species is known from Tasmania where, as in Victoria, it appears to be rare, but possibly is merely overlooked, on *Blechnum watsii* (McCarthy 2001a).

SPECIMEN EXAMINED

Victoria: • Gippsland, Errinundra National Park, Errinundra Saddle Rainforest Walk, 37°19'03"S, 148°50'19"E, 910 m alt., on pinnae of *Blechnum watsii* in rainforest, *P.M. McCarthy 2662*, 16.iv.2008 (MEL).

34. *Porina rubentior* (Stirt.) Müll.Arg., *Flora* **66**, 334 (1883)

This pantropical foliicolous species is already known from eastern Queensland (see Lücking 2008).

SPECIMEN EXAMINED

New South Wales: • Sherwood Nature Reserve, 3 km W of Woolgoolga, 30°07'12"S, 153°09'03"E, 55 m alt., on leaves in subtropical rainforest, *J.A. Elix 39035*, 10.viii.2008 (CANB).

35. *Porina tasmanica* P.M.McCarthy, *Biblioth. Lichenol.* **52**, 105 (1993)

This lichen was described from quartz at a single alpine locality in western Tasmania (McCarthy 1993, 2001a). It was seen for only the second time when several very small, immature thalli were collected fortuitously from a similar habitat. Remarkably, both collections of *P. tasmanica* grew adjacent to another endemic Tasmanian pyrenolichen, *Pyrenocollema montanum* P.M.McCarthy & Kantvilas.

SPECIMEN EXAMINED

Tasmania: • Lake Cygnus, 43°08'S, 146°14'E, 880 m, on quartzite rocks submerged at the margins of an alpine lake, *G. Kantvilas 499/06*, 6.xii.2006 (HO 543178).

36. *Ramboldia aurea* (Kalb & Elix) Kalb, Lumbsch & Elix, in K. Kalb *et al.*, *Nova Hedwigia* **86**, 31 (2008)

This species was previously known from the Northern Territory (Kalb *et al.* 2008). The thallus and medulla contain russulone (major), norrussulone (minor or trace), ±O-methylhaematommone (minor or trace) and haematommone (minor or trace). An

earlier report of the occurrence of xanthone was erroneous (Kalb *et al.* 2008).

SPECIMENS EXAMINED

Queensland: • Rocky Point, 13 km NE of Mossman, 16°23'06"S, 145°21'01"E, 3 m alt., on fallen branch in rocky coastal area with *Acacia*, *J.A. Elix* 37995, 1.viii.2006 (CANB); • Atherton Tableland, Little Dinner Creek, 6 km E of Mt Garnet, 17°41'40"S, 145°09'54"E, 680 m alt., on treelet in open *Acacia-Eucalyptus* savannah, *J.A. Elix* 37996, 8.viii.2006 (CANB); • Atherton Tableland, Sandridge Road, 10 km W of Herberton on Irvinebank road, 17°22'42"S, 145°18'20"E, 880 m alt., on treelet in open *Eucalyptus* woodland, *J.A. Elix* 37997, 9.viii.2006 (CANB); • Atherton Tableland, Silver Valley Road, 4.4 km SW of Herberton, 17°24'18"S, 145°21'42"E, 900 m alt., on treelet in *Eucalyptus-Allocasuarina* woodland, *J.A. Elix* 37798, 9.viii.2006 (CANB); • *loc. id.*, on dead shrub, *J.A. Elix* 37799 (CANB, Herb. Kalb).

37. *Relicinopsis intertexta* (Mont. & Bosch) Elix & Verdon, *Mycotaxon* 27, 281 (1986)

This species was previously known from South-east Asia, Papua New Guinea and Queensland (Elix 1994b).

SPECIMEN EXAMINED

Northern Territory: • Litchfield National Park, below Florence Falls, 42 km SW of Batchelor, 13°05'58"S, 130°47'05"E, 15 m alt., on log in monsoon forest with *Syzygium* and *Gordenia* along stream, *J.A. Elix* 37748, 6.viii.2005 (CANB).

38. *Strigula decipiens* (Malme) P.M. McCarthy, *Lichenologist* 29, 513 (1997)

The doubtfully placed *Strigula sychnogonoides* (Nitschke) R.C. Harris, the only species of *Strigula* previously known from soil, is found in Europe and North America (Harris 1995; Roux *et al.* 2004). A recent collection from siliceous soil in Tasmania matches the otherwise saxicolous *S. decipiens*, and although its perithecia are slightly larger and its ascospores are a little longer than previously seen, these differences are not considered to be taxonomically significant.

Strigula decipiens is known from sheltered siliceous rocks in southern Brazil (the type locality), Macaronesia, Queensland, New South Wales, Lord Howe Island, southern New Zealand and the Cook Islands (McCarthy 1997; Roux *et al.* 2004).

SPECIMEN EXAMINED

Tasmania: • Bluff River Gorge, 42°31'S, 147°40'E, 200–250 m alt., on soil in dry sheltered overhang on sandstone bluff in eucalypt forest, *G. Kantvilas* 131/05, 30.v.2005 (HO 531684).

39. *Tapellaria phyllophila* (Stirt.) R. Sant., in C.A. Thorold, *J. Ecol.* 40, 129 (1952)

This lichen is common and locally abundant on leaves of *Atherosperma moschatum* in Tasmania (McCarthy *et al.* 2001). It also occurs in eastern Queensland, New South Wales, Tasmania and the Neotropics.

SELECTED SPECIMENS EXAMINED

Victoria: • Gippsland, Morwell National Park, Fosters Gully Nature Walk, 38°21'24"S, 146°23'27"E, 230 m alt., on leaves of *Lepidosperma elatius*, *V. Stajsic*, 12.iv.2008 (MEL); • Tarra-Bulga National Park, Cyathea Falls Track, 38°26'47"S, 146°32'19"E, 252 m alt., on fronds of *Blechnum pattersonii* in deeply shaded rainforest, *P.M. McCarthy* 2652 (part), 14.iv.2008 (MEL); • Tarra-Bulga National Park, above Tarra Falls, 38°27'17"S, 146°32'27"E, 225 m alt., on leaves of *Atherosperma moschatum*, *A. Elvebakk* & *P.M. McCarthy* 2658, 14.iv.2008 (MEL); • *loc. id.*, on pinnules of *Polystichum* sp., *P.M. McCarthy* 2659 (part), 14.iv.2008 (MEL); • Bemm River Scenic Reserve, 45 km E of Orbost, 37°37'30"S, 148°53'12"E, 65 m alt., on pinnae of *Blechnum watsii* in rainforest, *P.M. McCarthy* 2684, 15.iv.2008 (MEL); • Errinundra National Park, Errinundra Road, Bonang River Picnic Area, 37°17'02"S, 148°48'25"E, 810 m alt., on leaves of *Elaeocarpus reticulatus* in cool-temperate rainforest, *P.M. McCarthy* 2669, 16.iv.2008 (MEL).

40. *Tibellia dimerelloides* Vězda & Hafellner, in J. Hafellner & A. Vězda, *Nova Hedwigia* 55, 186 (1992)

This unusual byssoid lichen with distinctive orange, *Coenogonium*-like apothecia was previously known only from Queensland (see Hafellner & Vězda 1992).

SPECIMEN EXAMINED

New South Wales: • Waiho State Forest, Plum Pudding Road, 30°05'11"S, 153°01'30"E, epiphytic in relic patch of subtropical rainforest, *G. Kantvilas* 85/98, 19.iv.1998 (HO).

41. *Vainionora aemulans* Kalb, *Lich. Neotrop.* 12, 3 (1991)

This species was previously known from South America and New South Wales (Kalb 2004).

SPECIMEN EXAMINED

Queensland: • Bunya Mountains National Park, summit of Mt Kiangarow, 68 km N of Dalby, 26°50'17"S, 151°33'12"E, 1146 m alt., on base of *Xanthorrhoea* along margin of rainforest, *J.A. Elix* 37650, 6.v.2005 (CANB).

42. *Verrucaria austroalpina* P.M. McCarthy, *Lichenologist* 27, 107 (1995)

This Australian endemic was previously known from aquatic rocks at an altitude of c. 2000 m in Mount Kosciuszko National Park, south-eastern New South Wales (McCarthy 1995, 2001b).

SPECIMEN EXAMINED

Victoria: • Bogong High Plains, Langford West Aqueduct, Middle Creek, 36°54'30"–55°30"S, 147°18'E, c. 1600 m alt., on granite, *H. Mayrhofer* 15484, *H. Hertel* & *R. Filson*, 26.ii.1985 (GZU).

43. *Verrucaria lecideoides* (A. Massal.) Trevis. var. *minuta* Hepp, *Lich. Europ.* 683 (1860)

This lichen is known from central and southern Europe, New South Wales and South Australia (McCarthy 1994, 2001b).

SPECIMEN EXAMINED

Tasmania: • Pontville Small Arms Range Complex, 42°41'S, 147°17'E, 50 m alt., on basalt boulders in grassland-herbfield, *G. Kantvilas* 162/03, 12.vi.2003 (HO 521997).

44. *Verrucaria muralis* Ach., *Methodus* 115 (1803)

This very common, mainly temperate to boreal lichen is known from calcareous rocks in New South Wales, Victoria and Tasmania (McCarthy 2001b).

SPECIMEN EXAMINED

South Australia: • Newland Head, 35°37'S, 138°31'E, 10 m alt., on calcarenite stones in coastal heathland, *G. Kantvilas* 320/07, 14.x.2007 (HO 545877).

45. *Verrucaria solicola* P.M. McCarthy, *Mycotaxon* 59, 475 (1996)

An Australian endemic, *V. solicola* was known previously from the type locality in alpine New South Wales (McCarthy 1996, 2001b).

SPECIMEN EXAMINED

Tasmania: • Pontville Small Arms Range Complex, 42°41'S, 147°17'E, 55 m alt., on basalt soil in grassland-herbfield, *G. Kantvilas* 154/03, 12.vi.2003 (HO 521989).

46. *Xanthoparmelia hypoconstictica* (Elix & J. Johnst.) Elix, *Mycotaxon* 87, 399 (2003)

This Australian endemic was previously known from Queensland (Elix 2001).

SPECIMEN EXAMINED

New South Wales: • Boonoo Boonoo National Park, 34.5 km NE of Tenterfield, 28°51'19"S, 152°09'09"E, 960 m alt., on granite outcrops in *Eucalyptus* woodland, *J.A. Elix* 38290, 4.v.2005 (CANB).

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Additional lichen records from Australia 70.
Species of *Anisomeridium* and *Mycomicrothelia*, with a note on *Arthopyrenia*

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Abstract: New records of pyrenocarpous lichens of the genera *Anisomeridium* and *Mycomicrothelia* are reported from Australia, including four new national records. The type of *Arthopyrenia picea* Shirley (1889) is conspecific with the non-lichenized fungus *Astrosphaeriella mauritiae* K.D. Hyde & J. Fröhl. (1998), and therefore the new combination *Astrosphaeriella picea* (Shirley) Aptroot is made.

Introduction

During revisions of Pyrenulaceae and Trypetheliaceae for the *Flora of Australia*, additional specimens belonging to other genera of pyrenocarpous lichens and non-lichenized fungi were also examined. Many are referable to *Anisomeridium* and *Mycomicrothelia*, and a few to *Arthopyrenia* s.l. At present, the knowledge of those genera in Australia is far from complete. Based on the experience of the Pyrenulaceae and Trypetheliaceae, it can be predicted that the actual number of species will be lower than currently accepted, especially after examination of species reported during the 19th century, most of which are only known from the type collections. Species new to Australia are marked with *, and a short description of them is provided.

The genera and species

Anisomeridium (Müll.Arg.) M.Choisy

At present, 13 species of this genus are known from Australia (McCarthy 2009). Three more are reported below, and additional records are provided for several other species. In the material studied, several further *Anisomeridium* specimens remained unidentifiable. For a key to most species known in the genus, including all species known from Australia, see Harris (1995).

****Anisomeridium adnexum*** (Müll.Arg.) R.C.Harris, *More Florida Lichens*: 143 (1995)

Thallus ecorticate, white, UV-. Perithecia solitary. Ostiole apical. Hamathecium filaments thin, anastomosing above the asci. Ascospores 8/ascus, hyaline, 1-septate, ovoid, 20–30 × 12–17 µm, granular ornamented, septum strongly submedian.
Distribution. Pantropical.

SPECIMENS EXAMINED

Queensland: • Mossman-Cape Tribulation road, at heights of Alexandra Range, K.R.Thiele 890, 26.vi.1985 (CANB); uncertain records: • Little Rocky Point-Jacobs Well, G.N.Stevens 1478, 17.i.1977 (BRI); • Keppel Sands, Fitzroy Estuary, R.Rogers 780, 10.vi.1975 (BRI).

****Anisomeridium albisedum*** (Nyl.) R.C.Harris, *in Egan, Bryologist* 90, 163 (1987)

Thallus ecorticate, white, UV-. Perithecia solitary. Ostiole apical. Hamathecium filaments thin, anastomosing above the asci. Ascospores 8/ascus, hyaline, 1-septate, ovoid, 9–15 × 4–5 µm, not ornamented, septum mostly median.
Distribution. Pantropical.

SPECIMENS EXAMINED

Northern Territory: • Rapid Creek, 9 km ENE of Darwin, J.A.Elix 28225, H.T.Lumbsch & H.Streimann, 20.vii.1991 (CANB). *Queensland:* • Fitzroy Island, A.&M.Aptroot 22285, iii.1988 (ABL, CANB).

Anisomeridium anislobum (Müll.Arg.) Aptroot, *Biblioth. Lichenol.* 57, 21 (1995)

SPECIMENS EXAMINED

Victoria: • Arte River, 30 km NE of Orbost, J.A.Elix 24224, 14.ii.1990 (CANB); • Coochiemudlo Island, G.N.Stevens 1690, 9.x.1977 (BRI).

Anisomeridium australiense (P.M.McCarthy) R.C.Harris, *More Florida Lichens*: 144 (1995)

SPECIMEN EXAMINED

Queensland: • Bellenden Ker National Park, Bora-Ground-Mt Bartle Frere, H.Mayrhofer 11915 & E.Hierzer, 13.viii.1993 (CANB).

Anisomeridium bifforme (Borrer) R.C.Harris, *in Vězda, Lich. Sel. Exsicc.* 61, [1305] (1978)

SPECIMEN EXAMINED

Tasmania: • Maria Island, Fossil Cliff area, 65 km ENE of Hobart, A.&M.Aptroot 23515, vi.1988 (ABL, CANB).

Anisomeridium subnectendum (Nyl.) R.C.Harris, *More Florida Lichens*: 150 (1995)

SPECIMEN EXAMINED

Queensland: • Mount Chalmynia logging area, 15 km from Bruce Highway, W of Innisfail, M.E.Hale 69178, 9.vii.1983 (CANB).

Anisomeridium subnexum (Nyl.) R.C.Harris, *More Florida Lichens*: 150 (1995)

SPECIMENS EXAMINED

Northern Territory: • Wangi Falls, Litchfield Park, 40 km SW of Batchelor, J.A.Elix 27617, H.T.Lumbsch & H.Streimann, 3.vii.1991 (CANB). *Queensland:* • Cairns, Mount Whitfield, A.&M.Aptroot 22259, iii.1988 (ABL, CANB); • Cairns, Centenary Lakes, Botanical Garden, A.&M.Aptroot 22218, iii.1988 (ABL, CANB); • Burrum Heads, G.N.Stevens 1019, 18.viii.1975 (BRI).

Anisomeridium subprostans (Nyl.) R.C.Harris, *in Tucker & Harris, Bryologist* 83, 4 (1980)

SPECIMENS EXAMINED

Northern Territory: • Howard Springs Road, 34.5 km SE of Darwin, J.A.Elix 37115, 3.viii.2005 (CANB); • Melville Island, Pickertaramoor, H.Streimann 42512, 28.vi.1989 (CANB). *Queensland:* • Andromache River, 25 km SW of Proserpine, H.Streimann 37758 p.p., 2.vii.1986 (CANB); • Bellenden Ker Landing, 40 km SSE of Cairns, A.&M.Aptroot 22479, iii.1988 (ABL, CANB); • Turkey near Gladstone, G.N.Stevens 1249, 20.vii.1975 (BRI); • Cardwell, C.Scarlett & C.Bell, 14.vii.1975 (BRI); • Three Mile Creek, 5 km N of Townsville, J.A.Elix 20063, 16.vi.1986 (CANB); • Tozers Gap, Iron Range National Park, 29 km SW of Cape Weymouth, H.Streimann 56392, 12.x.1995 (CANB).

****Anisomeridium tamarindi*** (Fée) R.C.Harris, *in Tucker & Harris, Bryologist* 83, 4 (1980)

Thallus ecorticate, white, UV-. Perithecia solitary. Ostiole apical. Hamathecium filaments thin, anastomosing above the asci. Ascospores 8/ascus, hyaline, 1-septate, fusiform, 12–18 × 5–6 µm, often bent, not ornamented, septum mostly median.
Distribution. Pantropical.

SPECIMEN EXAMINED

Queensland: • Town Hall, Bald Hills, R.Rogers 4157 & C.Scarlett, 8.viii.1975 (BRI).

Anisomeridium terminatum (Nyl.) R.C.Harris, *More Florida Lichens*: 130 (1995)

SPECIMENS EXAMINED

Queensland: • Kennedy South District, Finch Hatton Gorge, Eungella Range, D.Verdon 5266, 28.i.1983 (CANB); • Cairns, mangrove near the airport, A.&M.Aptroot 22166,

iii.1988 (ABL, CANB); • Etty Bay, 7 km SE of Innisfail, *H.Streimann* 61785, 25.vii.1998 (CANB).

Arthopyrenia A.Massal.

The genus is taken up in a wide sense in the Australian checklist, and 15 species are currently accepted (McCarthy 2009). Six are known only from their 19th century types, and have never been reported or treated since. Among the specimens examined, several unidentifiable species of *Arthopyrenia* were found, mostly belonging to the *A. punctiformis*-group, also known as *Naetrocymbe* Körb. (Harris 1995). Whether or not some represent undescribed species, or are conspecific with known taxa, will require a reassessment of type specimens. One 19th century type of an *Arthopyrenia* was studied, because it was glued to a herbarium sheet that was borrowed for an investigation of Australian Trypetheliaceae.

Arthopyrenia picea Shirley

SPECIMEN EXAMINED

Queensland: • Caboolture, on logs (palm wood) near river, *C.D.Wild*, iso BRI AQ 721401.

This fungus is identical to *Astrosphaeriella mauritiae* K.D. Hyde & J. Fröhl. (Hyde & Fröhlich, 1998), with hyaline ascospores of $28 \times 5 \mu\text{m}$. The Shirley name predates this epithet by more than a century, and the following new combination is required: *Astrosphaeriella picea* (Shirley) Aptroot, comb. nov.; basionym: *Arthopyrenia picea* Shirley, *Lich. Fl. Queensland* 4, 174 (1889).

Mycomicrothelia Keissl.

At present, seven species have been reported from Australia (McCarthy 2009). An additional one is listed below, as well as some additional records of this rather rarely reported genus. The most surprising record is a specimen of the very distinctive *M. lateralis* from Queensland, which was only recently described from Norfolk Island (Sipman & Aptroot 2005). For a key to all species known in the genus see Sipman (2005).

Mycomicrothelia lateralis Sipman, in Sipman & Aptroot, *Lichenologist* 37, 309 (2005)

SPECIMEN EXAMINED

Queensland: • Paluma Village, 40 km S of Ingham, *H.Streimann* 57905, 22.vii.1995 (CANB).

Mycomicrothelia miculiformis (Nyl. ex Müll.Arg.) D.Hawksw., *Bull. Brit. Mus. (Nat. Hist.), Bot.* 14, 99 (1985)

SPECIMEN EXAMINED

Northern Territory: • Berry Springs Nature Park, 47 km S of Darwin, *J.A.Elix* 37364, 4.viii.2005 (CANB).

***Mycomicrothelia minutula** (Zahlbr.) D.Hawksw., *Bull. Brit. Mus. (Nat. Hist.), Bot.* 14, 102 (1985)

Thallus ecorticate, brownish, UV-. Perithecia solitary. Ostiole apical. Hamathecium filaments thin, sparse, branching above the asci. Ascospores 8/ascus, grey brown, 1-septate, clavate, $12\text{--}16 \times 5.5\text{--}7 \mu\text{m}$, ornamented, septum median to slightly submedian, upper cell somewhat wider than lower cell. Conidiomata absent.

Distribution. Palaeotropical.

SPECIMEN EXAMINED

Tasmania: • Cascades, South Hobart, *G.Kantvilas* 462/02, 25.viii.2002 (HO).

Mycomicrothelia queenslandica (Müll.Arg.) Sipman, in Sipman & Aptroot, *Lichenologist* 37, 309 (2005)

SPECIMEN EXAMINED

Tasmania • Balt's Spur, Tasman Peninsula, *G.Kantvilas* 148/83, vii.1983 (HO).

Mycomicrothelia subfallens (Müll.Arg.) D.Hawksw., *Bull. Brit. Mus. (Nat. Hist.), Bot.* 14, 111 (1985)

SPECIMENS EXAMINED

Northern Territory: • Black Jungle, 42 km ESE of Darwin, *H.Streimann* 48632, 22.vii.1991 (CANB). Queensland: • Garners Beach, 23 km NE of Tully, *H.Streimann* 45497, I.xii.1990 (CANB); • Llankelly Ck, McIlwraith Ra., 9 km NE of Coen, *H.Streimann* 56905, 18.x.1995 (CANB); • Bloomfield River, 55 km SSE of Cooktown, *H.Streimann* 57294, 21.x.1995 (CANB).

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Two new taxa of *Thysanothecium* (Cladoniaceae: Ascomycota) from Australia

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Abstract: *Thysanothecium hookeri* subsp. *xanthonicum* Elix and *T. solediatum* Elix are described as new to science and compared with known taxa.

Thysanothecium Mont. & Berkeley is a genus of two species found in tropical to temperate areas of Australasia and the eastern Pacific rim (Indonesia, Malaysia, Vietnam and Japan), where they grow on soil, old anthills, termite mounds, charred and decorticated wood and rarely on rocks. The distinguishing characters of *Thysanothecium* include the dimorphic thallus, with a squamulose, areolate or nodular-papillate primary thallus and the erect or more rarely decumbent pseudopodetia. The apothecia which develop terminally or subterminally on the pseudopodetia can be solitary or clustered, and often develop ventrally on the supporting pseudopodetium. The clavate (*Porpidia*-type), 8-spored asci produce simple, colourless, ellipsoid ascospores ($7\text{--}10 \times 2\text{--}3 \mu\text{m}$), and the cylindrical or bottle-shaped pycnidia which develop on the margins of the primary squamules produce sickle-shaped or rarely straight, colourless conidia ($3\text{--}10 \times 0.5\text{--}1.0 \mu\text{m}$) (Galloway 1985, 2008; Sammy 1994). Two new taxa of *Thysanothecium*, namely *T. hookeri* subsp. *xanthonicum* Elix and *T. solediatum* Elix are described in the present paper. Chemical constituents were identified by high-performance liquid chromatography (Elix *et al.* 2003) and comparison with authentic samples.

Thysanothecium hookeri subsp. *xanthonicum* Elix, subsp. nov. Fig. 1

Sicut *Thysanothecium hookeri* sed 5,7-dichloro-3-*O*-methylnorlichexanthone et 3-*O*-methylasemonum continente differt.

Type: Australia. *Western Australia*: road to Mt. Gibson Homestead, 7.5 km E of Great Northern Highway, $29^{\circ}38'10''\text{S}$, $117^{\circ}12'32''\text{E}$, 320 m, on soil in open scrub with *Acacia*, *Eucalyptus*, *Callitris* and *Santalum* with exposed red-brown clay, *J.A. Elix* 33467, 30.iv.2004 (PERTH – holotypus).

Primary thallus squamulose, squamules decidedly convex, 0.3–1.5 mm wide, scattered, singly or 2–6 confluent, adnate to \pm subascending, margins entire, crenate or slightly incised or subascending, often noticeably thickened, coriaceous, yellow-green to yellow-brown, matt or shining, markedly white-maculate and becoming grey-white pruinose, whitish below. Photobiont *Trebouxia*-like; cells solitary, 12–15 μm wide. *Pseudopodetia* arising from extension of whole primary squamule, squamules not ascending the base of the pseudopodetia, 1–1.5 mm wide at the base to 2 mm wide at the apices, \pm terete at the base, flaring and flattening towards the apices, often branched, to 5.0 mm tall. Cortex \pm continuous, yellowish-green to olive, matt or glossy, conspicuously rugose. Mature apothecia not seen. *Apothecial* initials terminal, clustered, 0.05–0.2 mm wide, convex, immarginate, pale to dark brown or purplish-brown, no asci or ascospores seen. *Pycnidia* marginal on squamules, black, hemispherical, 0.2–0.3 mm wide. *Conidia* filiform, straight or curved, $7\text{--}10 \times 0.7\text{--}1.0 \mu\text{m}$. *Chemistry*: Thallus K–, C+ orange, KC–, P–, UV+ dull orange; containing usnic acid (major), 5,7-dichloro-3-*O*-methylnorlichexanthone (major), 3-*O*-methylasemonum (minor).

Etymology: The name derives from the presence of xanthones in this taxon.

Remarks

This terricolous taxon is characterized by its yellow-green to yellow-brown, markedly white-maculate, \pm grey-white pruinose primary squamules, by its small, distorted pseudopodetia, mostly *c.* 5 mm tall, the clustered apothecial initials and the presence of usnic acid, 5,7-dichloro-3-*O*-methylnorlichexanthone and 3-*O*-methylasemonum. In overall morphology, the new species closely resembles the common *T. hookeri* Mont. & Berk. subsp. *hookeri*, but can be distinguished by the diminutive pseudopodetia, markedly white-maculate squamules and the distinctive chemistry. *Thysanothecium hookeri* has emaculate or weakly maculate squamules and contains usnic acid (major), barbatic acid (major or minor) and 4-*O*-demethylbarbatic acid (trace).

The new subspecies has been collected on soil in two localities in subarid Western Australia. Associated terricolous lichens include *Buellia dijiana* Trinkaus, *Diploschistes henseniae* Lumbsch & Elix, *D. occellatus* (Vill.) Norman, *Heterodea muelleri* (Hampe) Nyl., *Psora crystallifera* (Taylor) Müll.Arg., *Toninia sedifolia* (Scop.) Timdal, *Xanthoparmelia alternata* Elix & J. Johnst., *X. convolutoides* Elix, *X. reptans* (Kurok.) Hale and *X. subverrucella* (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch.

ADDITIONAL SPECIMEN EXAMINED

Western Australia: • Jingaring Nature Reserve, $32^{\circ}25'\text{S}$, $117^{\circ}21'\text{E}$, on soil, *F. Obbens* 10, vii.2000 (PERTH).

Thysanothecium solediatum Elix, sp. nov. Fig. 2

Sicut *Thysanothecium scutellatum* sed thallo primo granuloso-solediatum, pseudopodetia minuta et acidum usnicum deficiens differt.

Type: Australia. *Queensland*: Broadwater State Forest Park, 45 km NW of Ingham, $18^{\circ}25'01''\text{S}$, $145^{\circ}56'38''\text{E}$, 50 m, on base of *Eucalyptus* at margins of rainforest along the Herbert River, *J.A. Elix* 38595, 26.vii.2006 (BRI – holotypus; CANB – isotypus).

Primary thallus crustose and granular-solediate or with scattered squamules which soon become solediate at the margins and then dissolve into a leprose mass of soredia, whitish grey to grey or pale greenish, diffuse, forming \pm irregular patches up to 12 cm wide, loosely adnate to adnate, the base of the pseudopodetia often solediate; soredia coarse, granules 50–75 μm wide or agglomerated into granules 125–200 μm wide, sometimes extending vertically to form irregular, ecorticate pseudoisidia to 0.05 mm tall; hypothallus not apparent. Photobiont *Trebouxia*-like; cells solitary, 6–10 μm wide. *Pseudopodetia* arising from the solediate mass or from the margins of primary squamules, simple or very rarely branched, terete and \pm corticate, at maturity fissured, grooved, becoming \pm decumbent, 0.2–0.9 mm wide, 0.5–4 mm tall. Cortex grey-white to whitish green, distinctly grooved-striate, discontinuous, glossy at first but soon erupting into a mass of soredia. *Apothecia* terminal, disc \pm plane, rotund at first, becoming irregularly undulate and distorted with age, margins entire at first, becoming sinuous, crenate, persistent, distinctly raised, concolorous with the thallus or paler; surface of disc smooth or very minutely scabrid, pale pinkish brown, not or rarely minutely white-pruinose. *Ascospores* simple, colourless, ellipsoid, straight, $6\text{--}8 \times 2.5\text{--}3.0 \mu\text{m}$. *Pycnidia* terminal on the pseudoisidia or at the base of the pseudopodetia, black, cylindrical to nipple-shaped, 0.05–0.08 mm wide. *Conidia* filiform, usually curved, $5\text{--}10 \times 0.5 \mu\text{m}$. *Chemistry*: Thallus K–, C–, KC–, P–, UV+ blue-white; containing divaricatic acid (major), sekikaic acid (minor), stenosporic acid (trace), \pm gyrophoric acid (minor), \pm atranorin (trace), \pm usnic acid (trace).

Etymology: The specific epithet derives from the morphology of the primary thallus.

Remarks

This corticolous or lignicolous species is characterized by its whitish grey to grey or pale greenish, granular-sorediate thallus containing divaricatic and sekikaic acids, by the rare diminutive pseudopodetia, mostly *c.* 0.5–2.0 mm high [cf. 3–15 mm high in *T. scutellatum*]. In the absence of pseudopodetia, the leprose-sorediate primary thallus of *T. sorediatum* could be confused with the chemically similar *Lepraria yunnaniana* (Hue) Zahlbr., but it can be readily distinguished by the absence of a hypothallus and the presence of black pycnidia which develop on the apices of the pseudoisidia. This new species appears to be the sorediate counterpart of the very common *T. scutellatum* (Fr.) D.J.Galloway. Although the latter usually has a distinctly squamulose primary thallus, at times this can form a more or less nodular-papillate, cracked areolate crust, and although the nodules can be very small they are nevertheless corticate and contain substantial quantities of usnic acid. In *T. sorediatum*, however, the granular-sorediate crust and pseudoisidia are ecorticate and lack usnic acid. Traces of usnic acid were only detected in the partially corticate pseudopodetia of this new species.

Most specimens of *T. sorediatum* have been found on the base of *Eucalyptus* trees at the margins of rainforest, but is also known from charred wood in dry sclerophyll forest. In Queensland, commonly associated species include *Chiodecton mycelioides* Vain., *Cladonia fruticulosa* Kremp., *C. macilenta* Hoffm., *Lecanora dissoluta* Nyl., *Lepraria aurescens* Orange & Wolseley, *Pertusaria psoromica* A.W.Archer & Elix, *Phyllopsora breviuscula* (Nyl.) Müll.Arg., *P. corallina* (Eschw.) Müll.Arg. and *P. foliata* (Stirt.) Zahlbr.

ADDITIONAL SPECIMENS EXAMINED

Queensland: • Girringun National Park, Jinda Track to Wallaman Falls, 50 km W of Ingham, 18°35'21"S, 145°48'20"E, 540 m, on base of *Eucalyptus* in rainforest in river gorge, J.A. Elix 38083, 25.vii.2006 (CANB); • type locality, on base of *Eucalyptus*, J.A. Elix 38594, 38597, 38602, 26.vii.2006 (BRI, CANB, HO).

New South Wales: • Bouddi National Park, near Mt. Bouddi, 33°35'S, 151°24'E, on charred wood in dry sclerophyll forest, J.A. Elix 4680, 7.v.1978 (CANB); • Caincross State Forest, 3.5 km SW of Telegraph Point, 31°20'45"S, 152°46'55"E, on charred stump in *Eucalyptus* forest, J.A. Elix 39018, 6.viii.2008 (CANB, HO).

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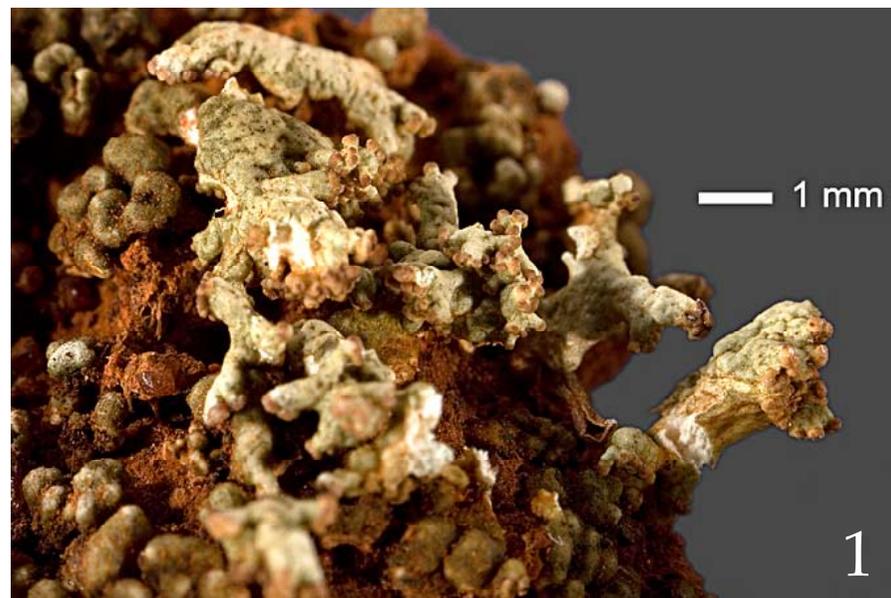


Figure 1. *Thysanothecium hookeri* subsp. *xanthonicum* (holotype in PERTH);
Figure 2. *Thysanothecium sorediatum* (holotype in BRI).

New crustose lichens (lichenized Ascomycota) from Australia

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Abstract: *Bacidia johnstoniae* Elix, *Buellia polyxanthonica* Elix, *B. vioxanthina* Elix, and *Sagenidiopsis subconfluentica* Elix are described as new to science.

In an ongoing effort to describe and document the biodiversity of Australian lichens (George 1992; Orchard 1994; McCarthy 2001, 2008; McCarthy & Mallett 2004), we have encountered a number of new species, four of which are described in the present paper. Chemical constituents were identified by thin-layer chromatography (Elix & Ernst-Russell 1993), high performance liquid chromatography (Elix *et al.* 2003), and comparison with authentic samples.

The New Species

Bacidia johnstoniae Elix, sp. nov.

Fig. 1

Sicut *Bacidia rubella* sed ascosporis 12–20-septatis et acidum dioxocondidymicum, acidum dioxoisodidymicum, acidum dioxodidymicum, acidum oxodidymicum, 4-chlorolichexanthoneum et 4,5-dichlorolichexanthoneum continente differt.

Type: Australia. New South Wales, South Coast, Buckenbowra River estuary, 7.5 km W of Batemans Bay, 34°42'S, 150°06'E, 2 m, on root butt of *Casuarina littoralis* bordering mangroves, 29.xi.1989, J. Johnston 11992 (CANB – holotype; Herb. Kalb – isotype).

Thallus crustose, dull yellow to pale yellow-green, dominated by granular isidia, areolate or not, spreading in patches, 2–5 cm wide. *Prothallus* poorly developed, white or not apparent. *Photobiont* green, cells globose to broadly ellipsoid, solitary or a few cells aggregated, 6–12 µm wide. *Granular isidia* abundant, subcylindrical, 60–200 µm long, 15–20 µm wide, densely coralloid or forming an intricate, isidioid mass. *Apothecia* lecideine or biatorine, common, 0.5–2.0 mm wide, roundish to irregular in shape, solitary or confluent, sessile and constricted at the base or becoming substipitate, disc plane to weakly convex, pale yellow-orange to pale tan, orange-brown or dark brown, with a thick proper margin that is paler than the disc. True exciple pale yellow-orange to pale brown, 100–150 µm thick, composed of radiating hyphae; hypothecium dark brown in the lower part, ochre to pale brown in the upper part, 50–65 µm thick, K–; epihymenium pale yellow-brown, 5–7 µm thick, K–; hymenium colourless, 70–100 µm thick. *Asci* 8-spored, clavate, 50–65 × 12–15 µm. Paraphyses 1–1.5 µm thick, simple or forked above, the apices often slightly swollen to 2.5 µm. *Ascospores* colourless, acicular, 12–20-septate, 50–75 × 2.5–5 µm; cell walls not thickened at septa. *Pycnidia* not seen.

Chemistry: Thallus K–, C–, KC–, PD–; UV+ blue-white; dioxocondidymic acid (major), dioxodidymic acid (minor), dioxoisodidymic acid (minor), oxodidymic acid (minor), 4-chlorolichexanthone (minor), 4,5-dichlorolichexanthone (minor), 4,5-dichloro-3-O-methylnorlichexanthone (trace).

Etymology: The species is named in honour of the type's collector, my colleague and friend Jen Johnston.

Remarks: In overall morphology and anatomy, this new species closely resembles *Bacidia rubella* (Hoffm.) A.Massal., but it is distinguished in having multiseptate ascospores (12–20-septate versus 3–7-septate) and in its very complex chemistry (*B. rubella* contains only atranorin). The very rare oxodidymic acid chemosyndrome present in *Bacidia*

johnstoniae was previously reported from the genus *Letrouitia* (Johansson *et al.* 2005), but has also been detected in several undescribed species of *Phyllopsora*.

The type collection was corticolous in moist strand vegetation adjacent to a mangrove swamp. Commonly associated species included *Caloplaca pulcherrima* (Müll.Arg.) S.Y.Kondr. & Kärnefelt, *Chrysothrix xanthina* (Vain.) Kalb, *Dirinaria applanata* (Fée) D.D.Awasthi, *Lecanographa microcarpella* (Müll.Arg.) Egea & Torrente, *Pannaria elixii* P.M.Jørg. & D.J.Galloway, *Parmelina conlabrosa* (Hale) Elix & J.Johnst., *Parmotrema crinitum* (Ach.) M.Choisy, *P. reticulatum* (Taylor) M.Choisy, *P. tinctorum* (Nyl.) Hale, and *Relicina sydneyensis* (Gyeln.) Hale. The Victorian material was found growing over mosses at the base of *Eucalyptus regnans* in montane wet forest. Associated species included *Baeomyces heteromorphus* Nyl. ex C.Bab. & Mitt., *Lepraria lobificans* Nyl., *Mycoblastus* sp., *Ramboldia laeta* (Stirt.) Kalb, Lumbsch & Elix and *R. stuartii* (Hampe) Kantvilas & Elix

SPECIMEN EXAMINED

Victoria: • Baw Baw National Park, Mt Erica Trail, 34 km N or Morwell, 37°53'35"S, 146°21'18"E, 1050 m, on mosses at base of *Eucalyptus regnans* in montane wet forest, 13.iv.2008, J.A. Elix 39161 (CANB).

Buellia polyxanthonica Elix, sp. nov.

Fig. 2

Sicut *Buellia molonglo* sed epihymenium K+ auratus, pigmento medulloribus K+ violaceo et thuringionum et acidum di-O-methylthiophanicum continente differt.

Type: Northern Territory, Umbrawarra Gorge, 22 km SW of Pine Creek, 13°57'56"S, 131°41'05"E, 210 m, on sheltered sandstone rock in steep-sided rocky gorge with *Melaleuca*, *Ilex*, and *Ficus*, 8.viii.2005, J.A. Elix 38860 (CANB – holotype).

Thallus yellow to dull or bright yellow-green, rimose to areolate, areolae 0.1–0.4 mm wide, surface dull and matt to smooth and glossy, usually with a black prothallus visible at margins and between areoles. Upper cortex 20–40 µm thick; algal layer 50–75 µm thick, medulla white, up to 250 µm thick, with intermittent patches of deep red pigment especially in lower parts, the pigment dissolving in K to give a pale purple solution (the ultraviolet spectrum of this pigment resembles that of fusarubin).

Apothecia numerous, lecideine, single or in groups, sessile, up to 0.5 mm wide, disc black, epruinose, more or less flat and with a distinct proper margin, becoming convex with age and the margin excluded; proper exciple 35–50 µm thick, outer part dark brown, inner part paler brown. Epihymenium 5–10 µm thick, dark brown due to the pigmented caps of paraphyses, K+ forming a deep yellow solution (*leptoclinoides*-brown) [Meyer & Printzen 2000]; hymenium colourless, 35–50 µm high; hypothecium dark brown, 50–100 µm high; paraphyses up to 2.5 µm thick, slightly branched, apical cells brown-pigmented, up to 5 µm wide. *Asci* 8-spored, *Bacidia*-type. *Ascospores* brown, 1-septate, ellipsoid, 12–20 × 6–8 µm, with median thickenings (*Physconia*-type), perispore faintly verruculose. *Pycnidia* not seen.

Chemistry: Cortex K–, P–, C+ orange, UV+ yellow or orange; medulla K–, P–, C–, UV–; containing di-O-methylthiophanic acid (major), ±thuringione (major or minor), ±thiophanic acid (major or minor), ±3-O-methylthiophanic acid (major), ±arthothelin (trace), ±isoarthothelin (trace), ±asemone (trace), ±2,7-dichlorolichexanthone (trace), ±3-O-methylasemone (trace), ±6-O-methylarthothelin (minor or trace), unknown red pigment (minor or trace).

Etymology: The specific epithet refers to the presence of numerous xanthonnes in this species.

Remarks: Like *B. molonglo* U.Grube & Elix (Grube *et al.* 2004), this new species is characterized by the yellow to yellow-green thallus, the presence of numerous xanthonnes and a red-pigmented lower medulla. *Buellia molonglo* differs in having a

more continuous thallus, larger apothecia (0.5–1.25 mm *versus* 0.1–0.5 mm wide), in containing a different red medullary pigment (eumitrin U which dissolves in K to give a deep yellow solution – the red pigment in *B. polyxanthonica* dissolves in K to give a pale purple solution) and a different array of xanthenes. Thus *B. molonglo* contains only norlichexanthone derivatives, namely isoarthothelin (major) and traces of thiophanic acid, 2,5-dichloronorlichexanthone, 2,7-dichloronorlichexanthone and 5,7-dichloronorlichexanthone, whereas *B. polyxanthonica* contains major quantities of *O*-methylxanthenes including di-*O*-methylthiophanic acid, 3-*O*-methylthiophanic acid, thuringione and 2,7-dichloro-*O*-methylthiophanic acid, a major metabolite of *B. polyxanthonica*, is apparently very rare in nature and only known previously as a minor constituent of *Phyllopsora chodatina* Elix (Elix 2006).

At present this new species is known from a number of localities in the Northern Territory and the Kimberley region in Western Australia, where it is relatively common on sheltered sandstone rocks. Commonly associated species include *Australiaena streimannii* Matzer, H. Mayrhofer & Elix, *Caloplaca leptozona* (Nyl.) Zahlbr., *Dimelaena elevata* Elix, Kalb & Wippel, *D. tenuis* (Müll. Arg.) H. Mayrhofer & Wippel, *Diploschistes actinostomus* (Pers.) Zahlbr., *Lecanora austrosorediosa* (Rambold) Lumbsch, *Lepraria coriensis* (Hue) Sipman, *Parmotrema praesorediosum* (Nyl.) Hale, *Pertusaria remota* A.W. Archer and *Tephromela arafurensis* Rambold.

SPECIMENS EXAMINED

Northern Territory: • Litchfield National Park, Tabletop Range, 56 km SW of Batchelor, 13°11'54"S, 130°42'48"E, 140 m, on sheltered sandstone in rocky sandstone plateau with *Eucalyptus*, *Terminalia*, *Calytrix* and *Ficus*, 6.viii.2005, J.A. Elix 38707, 38712, 38716 (CANB, DNA); • Robin Falls, 15 km S of Adelaide River township, 13°21'08"S, 131°08'02"E, 140 m, on sandstone rocks in remnant monsoon forest along stream, 7.viii.2005, J.A. Elix 37852 (CANB); • type locality, on sheltered sandstone rock, 8.viii.2005, J.A. Elix 38858, 38869 (CANB, DNA).

Western Australia: • Lake Argyle Road, 31 km SE of Kununurra, 15°59'S, 128°56'E, 160 m, on sandstone rocks along escarpment with *Eucalyptus*, *Xanthostemon*, and *Buchanania*, 8.vii.1991, J.A. Elix 27792, 27807, H.T. Lumbsch & H. Streimann (CANB); • Gibb River Road, 54 km NNE of Karunjie Station, 15°05'S, 127°25'E, 270 m, on sandstone rocks in *Eucalyptus* woodland, 10.vii.1991, J.A. Elix 27864, H.T. Lumbsch & H. Streimann (CANB); • King Edward River, 54 km NNW of King Edward River Station (Doongan Station), 14°54'S, 126°12'E, 280 m, on sandstone rocks in *Eucalyptus*-dominated grassland, 14.vii.1991, J.A. Elix 27961, 27969, H.T. Lumbsch & H. Streimann (CANB); • Gibb River Road, 45 km SSE of Wyndham, 15°53'S, 128°14'E, 140 m, on sandstone rocks in *Eucalyptus*-dominated grassland, 16.vii.1991, J.A. Elix 28071, H.T. Lumbsch & H. Streimann (B, CANB).

Buellia vioxanthina Elix, sp. nov.

Sicut *Buellia cinnabarina* sed medulla inferiore et subhypothecio pigmento flavovirens vel aurantiacus ad rubiginosus et vioxanthinum, *O*-demethylvioxanthinum, acidum norsticticum et acidum connorsticticum continente differt.

Type: Australia. Queensland, near summit of Mt Leswell, 32 km S of Cooktown, 15°46'S, 145°15'E, 440 m, on granite in *Eucalyptus*-dominated woodland, 5.vii.1984, J.A. Elix 17356 & H. Streimann (BRI – holotype).

Thallus crustose, thin, ±continuous, epilithic, areolate, whitish to grey-white or grey to yellowish or greenish grey, up to 5 cm wide and 0.4 mm thick; upper surface glossy or matt, rarely becoming eroded and somewhat granular; areoles 0.1–0.5 mm wide, angular, ±flat to convex; hypothallus conspicuous, black, surrounding the thallus, c. 0.2 mm wide, also ±growing between the areoles; phenocortex 20–25 µm thick, algal layer 50–75 µm thick, algal cells 5–10 µm wide, upper medulla colourless to pale yellow, 100–150 µm thick, lower medulla dark yellow-green to orange or dark red-

brown, 125–150 µm thick, K–. **Apothecia** lecideine, up to 1.0 mm in diameter, numerous, round, adnate, solitary or rarely in groups of 2–4; proper margin thick, persistent, rarely excluded with age; disc black, epruinose or rarely slightly pruinose, flat, rarely becoming slightly convex with age. **Excipulum** 50–80 µm thick, outermost layer dark brown, thin, due to pigmented caps of the outermost hyphal cells, inside paler brown. **Epihymenium** 10–12 µm thick, dark brown due to the pigmented caps of paraphyses, 10–12 µm thick, K–, N–; hymenium colourless, 70–90 µm high; hypothecium c. 50 µm high, greenish yellow to pale reddish brown, subhypothecium dark red-brown (80–100 µm thick). Paraphyses slightly branched from the base, irregular, 2–3 µm wide, with distinctly broadened and pigmented caps to 5 µm wide. **Asci** usually 8-spored, *Bacidia*-type. **Ascospores** brown, with apical and septal wall thickenings when young, torus usually distinct, 12–16 × 5–8 µm. **Pycnidia** not seen.

Chemistry: Cortex K+ yellow, P+ yellow, C–, UV–; medulla K+ yellow then red, P+ orange-red, C–, UV–; containing norstictic acid (major), atranorin (major or minor), chloroatranorin (minor), connorstictic acid (minor), vioxanthin (minor), *O*-demethylvioxanthin (minor).

Etymology: The specific epithet refers to the presence of the pigment vioxanthin in this species.

Remarks: Both *B. cinnabarina* U.Grube (Grube *et al.* 2004) and *B. vioxanthina* are characterized by the whitish to grey-white thallus, the presence of atranorin, and a yellow-green to orange or red-pigmented lower medulla and/or subhypothecium. *Buellia cinnabarina* differs in having a more continuous thallus, larger apothecia (0.5–1.5 mm *versus* 0.1–1.0 mm wide), in containing a different medullary pigment (eumitrin U rather than vioxanthin and *O*-demethylvioxanthin) and in lacking norstictic and connorstictic acids. The pigment vioxanthin was initially isolated from the microfungi *Trichophyton violaceum* Sabouraud ex Bodin (Blank *et al.* 1966) and *Penicillium citreoviride* Biourge (Zeek *et al.* 1979) and subsequently detected in the lichen *Hypotrachyna osseoalba* (Vain.) Park & Hale (Elix 2004). *O*-demethylvioxanthin lacks one of the two *O*-methyl groups present in vioxanthin.

At present this new species is known from localities in the Northern Territory and north Queensland, where it is relatively common on sheltered sandstone and granite rocks. Commonly associated species include *Australiaena streimannii* Matzer, H. Mayrhofer & Elix, *Caloplaca leptozona* (Nyl.) Zahlbr., *Dimelaena elevata* Elix, Kalb & Wippel, *D. tenuis* (Müll. Arg.) H. Mayrhofer & Wippel, *Diploschistes actinostomus* (Pers.) Zahlbr., *Lecanora austrosorediosa* (Rambold) Lumbsch, *Lepraria coriensis* (Hue) Sipman, *Parmotrema praesorediosum* (Nyl.) Hale, *Pertusaria remota* A.W. Archer and *Tephromela arafurensis* Rambold.

SPECIMENS EXAMINED

Northern Territory: • Litchfield National Park, Wangi Falls, 74 km SW of Batchelor, 13°09'48"S, 130°41'00"E, 60 m, on sandstone in monsoon forest at foot of falls, 5.viii.2005, J.A. Elix 38027 (CANB); • Robin Falls, 15 km S of Adelaide River township, 13°21'08"S, 131°08'02"E, 140 m, on sandstone rocks in remnant monsoon forest in gorge with *Melaleuca*, *Carallia* and Proteaceae and numerous sandstone boulders, 7.viii.2005, J.A. Elix 37840, 37851 (CANB); • Umbrawarra Gorge, 22 km SW of Pine Creek, 13°57'56"S, 131°41'52"E, 210 m, on sheltered sandstone rock in steep-sided rocky gorge with *Melaleuca*, *Ilex* and *Ficus*, 8.viii.2005, J.A. Elix 38850, 38853 (CANB). • Robin Falls, 15 km S of Adelaide River township, 13°21'08"S, 131°08'02"E, 140 m, on sandstone rocks in remnant monsoon forest in gorge with *Melaleuca*, *Carallia* and Proteaceae and numerous sandstone boulders, 7.viii.2005, J.A. Elix 37851 (CANB).

Queensland: • Paluma Range National Park, Jourama Falls, 23 km S of Ingham, 18°51'50"S, 146°07'40"E, 130 m, on granite at margin of rainforest along gorge, 24.vii.2006, J.A. Elix 37211 (CANB).

Sagenidiopsis subconfluentica Elix, sp. nov.

Fig. 4

Sicut *Sagenidiopsis merrotsyi* sed isidiatis, ascosporis brevioribus et acidum subconfluentium continente differt.

Type: Australia. Queensland: Wooroonooran National Park, Tchupala Falls, 34 km W of Innisfail, 17°36'25"S, 145°46'44"E, 360 m, on sheltered rocks below falls, in tropical rainforest, 29.vii.2006, J.A. Elix 36692 (BRI – holotype).

Thallus saxicolous or corticolous, crustose, byssoid, ecorticate, of loosely woven hyphae forming an extensive, rather thick spongy crust, continuous or patchy, up to 8 cm wide; differentiated into an upper layer of hyphae including well-developed algal filaments, and a lower layer without algae; hypothallus prominent at margins, white, up to 4 mm wide. *Upper surface* whitish, greyish-green to whitish grey; isidia present. *Isidia* concolorous with the thallus, subglobose to cylindrical, often becoming procumbent when elongate, simple or very rarely branched, scattered, 0.15–1.3 mm tall, 0.1–0.3 mm diam. Photobiont *Trentepohlia*-like; cells solitary, 7–14 µm wide, a few cells aggregated, or forming chains to 40 µm long. Hyphae in the upper part of the thallus colourless, 2.0–2.5 µm thick; in the lower part of the thallus brown or purple-pigmented, 2.5–4.0 µm thick; lower cortex absent. *Apothecia* initially globular and closed but then opening and developing pale brown to reddish brown discs, well differentiated from the thallus in elevated verrucae 100–150 µm high, solitary or aggregated, ±roundish to 0.3 mm diam. or ±linear to 1.3 mm long; margin covered in free hyphae like those of the thallus, concealing the proper exciple; excipulum composed of dark, red-brown prosenchyma. Epithymenium ±indistinct, brown to dark brown, 15–25 µm thick; hymenium colourless, 80–100 µm tall; hypothecium colourless in the upper part (not easily distinguished from the hymenium) but dark red-brown below, c. 25–50 µm tall. Paraphyses septate and anastomosing, c. 1.5 µm wide below, swelling to 3 µm at the apices. Asci *Arthonia*-type, 4–8 spored, 36–40 × 12–14 µm, subglobose to pyriform, with a dome-shaped extension of the endoascus. *Ascospores* transversely 1–3-septate, colourless, clavate, upper cell or cells at both extremes are often larger, middle cell narrower, 11–13 × 2.5–4.0 µm. Pycnidia not seen. *Chemistry*: Thallus K–, C–, KC–, P–, UV–; containing subconfluent acid (major), confluent acid (minor), ±arthoniaic acid (trace), ±atranorin (trace).

Etymology: The epithet refers to the presence of subconfluent acid in this species.

Remarks: In overall morphology and anatomy, this new species closely resembles the only other known species of *Sagenidiopsis*, *S. merrotsyi* R.W. Rogers & Hafellner (Rogers & Hafellner 1987). The latter differs in having a non-isidiate thallus, a black or dark brown hypothallus at the periphery (white in *S. subconfluentica*), longer ascospores, (24–29 × 2.5–3.5 µm versus 11–13 × 2.5–4.0 µm) and in containing protocetraric acid (major), virensic acid (trace) and subvirensic acid (trace). In addition, the mature, 3-septate ascospores of *S. merrotsyi* are weakly fusiform to bacilliform with cells of similar dimensions, whereas those of *S. subconfluentica* are clavate with a larger cell at either end, and a narrower middle cell. This is only the third species known to contain the rare depside subconfluent acid, previously reported as a minor metabolite of *Pseudobaomyces pachycarpa* (Müll. Arg.) Sato and *Lecidella* cf. *cyanosarca* (Culberson et al. 1987; Elix et al. 1996).

In Australia, this new species is known only from the type locality, where it co-occurs with *Porina crassa* P.M. McCarthy and *Chrysothrix tchupalensis* Elix & Kantvilas on sheltered, humid rocks in tropical rainforest. Interestingly, *S. merrotsyi* inhabits very similar ecological niches in south-east Queensland. The corticolous specimens of *S. subconfluentica* from Papua New Guinea are sterile, but their thallus morphology and chemistry are identical to those of the type specimen.

SPECIMENS EXAMINED

Papua New Guinea. *New Britain*: • Soi River, 23 km SW of Mt Ulawan (The Father), 5°08'S, 150°09'E, 30 m, on buttress of large *Pometia* in lowland forest on river flats, 23.ii.1989, H. Streimann 41523 (B, CANB, H). *Morobe Province*: • Situm Logging Area, 23 km ENE of Lae, 6°39'S, 147°11'E, 420 m, on trunk of large *Mangifera* in lowland forest on moderate slope, 2.iii.1989, H. Streimann 41713 (B, CANB).

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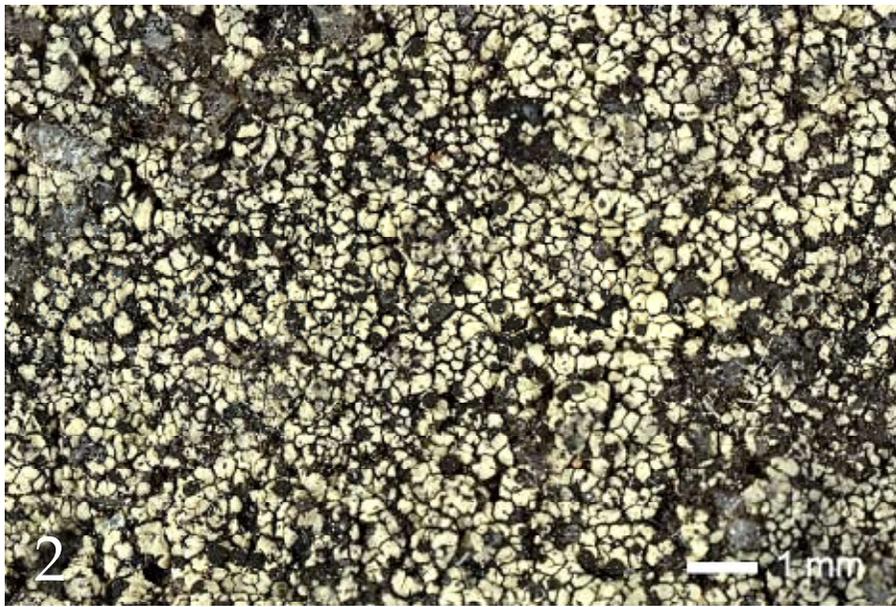


Fig. 1. *Bacidia johnstoniae* (holotype in CANB). Fig. 2. *Buellia polyxanthonica* (holotype in CANB).

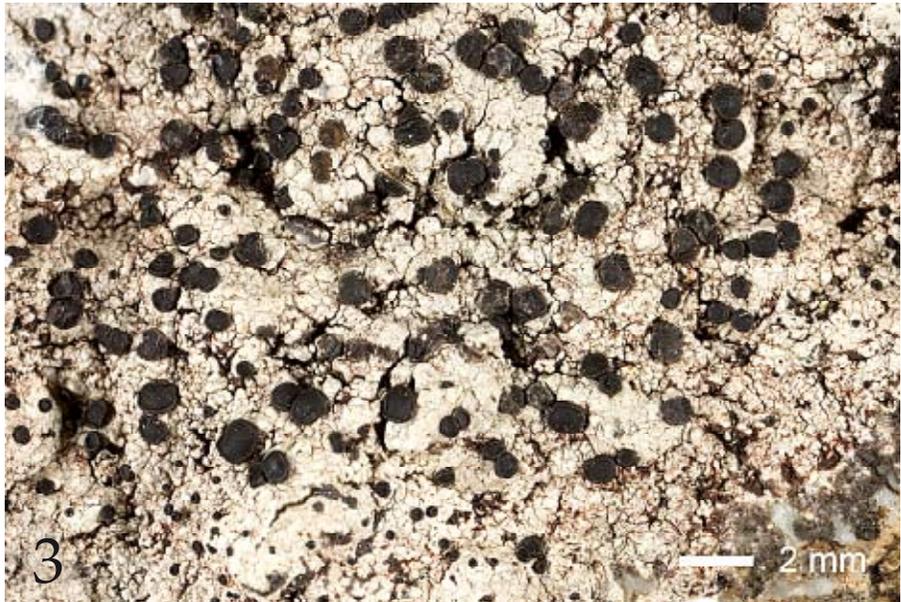


Fig. 3. *Buellia vioxanthina* (holotype in BRI). Fig. 4. *Sagenidiopsis subconfluenta* (holotype in BRI).

The chemical diversity of *Pseudocyphellaria gilva* (lichenized Ascomycota)

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Abstract: In Australasia, *Pseudocyphellaria gilva* has been shown to comprise five chemotypes, all of which contain the tenuiorin and stictic acid chemosyndromes. The chemotypes differ in the array of triterpenes present.

The widespread lichen *Pseudocyphellaria gilva* (Ach.) Malme occurs in Australia, South Africa, Mauritius, South-east Asia (Malaysia, Indonesia, Philippines), Papua New Guinea, southern South America, Juan Fernandez and the Falkland Islands (Galloway 1992, 1994; Galloway *et al.* 2001). It is characterized by the prominent, yellow pseudocyphellae on the lower surface, the white medulla, the *Nostoc* photobiont and the absence of vegetative propagules. As such it differs from the very common *P. crocata* (L.) Vain. in lacking soredia; from *P. crocatoides* D.J.Galloway in lacking marginal and laminal lobulate proliferations; from *P. desfontainii* (Delise) Vain. in lacking isidia; and from *P. neglecta* (Müll. Arg.) H.Magn. in lacking phyllidia (Galloway *et al.* 2001). In Australia, *P. gilva* is quite common in southern Queensland, northern New South Wales and Tasmania (Galloway *et al.* 2001). A detailed description of this species is given in Galloway *et al.* (2001). *Pseudocyphellaria gilva* occurs on trees and shrubs, over wood, amongst mosses and overgrowing rocks in scrub, humid montane forests or cloud forest.

In the present work, representatives of *P. gilva* were shown to occur in five distinct chemical races which differ in the array of hopane triterpenes present. Chemical constituents were identified by thin-layer chromatography (Culberson 1972; Culberson & Johnson 1982; Elix & Ernst-Russell 1993), high performance liquid chromatography (Elix *et al.* 2003) and comparison with authentic samples.

Pseudocyphellaria gilva (Ach.) Malme, *Bih. Kongl. Svenska Vetensk-Akad. Handl.* **25(3/6)**, 32 (1899)
= *Lichen gilvus* Ach., *Lich. Suec. Prodr.* 157 (1799).

All five chemotypes contain calycin (minor), pulvinic dilactone (major), pulvinic acid (minor), tenuiorin (major), methyl evernate (major or minor), methyl gyrophorate (minor), methyl lecanorate (trace), stictic acid (minor), norstictic acid (minor), constictic acid (minor), cryptostictic acid (minor) and $\pm\alpha$ -acetylconstictic acid (minor or trace).

Triterpenes present in the chemical races:

Chemotype 1 [as in the lectotype specimen]: contains hopane-6 α ,7 β ,22-triol (major), hopane-7 β ,22-diol (trace), 7 β -acetoxyhopane-22-ol (trace). This chemotype is found in mainland Australia, South Africa, Papua New Guinea, Juan Fernandez and the Falkland Islands.

Chemotype 2: contains hopane-6 α ,7 β ,22-triol (major), hopane-7 β ,22-diol (trace), 7 β -acetoxyhopane-22-ol (trace), unknown triterpenes #22, #23 (major/minor) [Wilkins & James 1986]. This chemotype is found in Tasmania.

Chemotype 3: contains hopane-6 α ,7 β ,22-triol (major), 7 β -acetoxyhopane-22-ol (major), hopane-7 β ,22-diol (minor or trace). This chemotype is found in the Falkland Islands and Papua New Guinea.

Chemotype 4: contains 7 β -acetoxyhopane-22-ol (major), hopane-7 β ,22-diol (trace). This chemotype is found in Malaysia (Sabah) and Papua New Guinea.

Chemotype 5: contains 6 α ,7 β -diacetoxyhopane-22-ol (major)*, 7 β ,15 α -diacetoxyhopane-22-ol (minor), 15 α -acetoxyhopane-7 β ,22-diol (minor)*, hopane-6 α ,7 β ,22-triol (trace), hopane-7 β ,22-diol (trace), 15 α -acetoxyhopane-22-ol (trace), 7 β -acetoxyhopane (trace)*. The chemical structures of the new triterpenes (*) are tentative at this time, and their full structural elucidation will be published elsewhere. This chemotype has been found in northern New South Wales and southern Queensland.

SELECTED SPECIMENS EXAMINED

Chemotype 1 [the type race]

Australia. *New South Wales*: • Blue Mountains, Giant Cathedral of Tree Ferns, 1 km NE of Mt Wilson, 33°30'S, 150°23'E, 890 m, on bark in wet sclerophyll forest, *G. Rambold* 4190, 2.ii.1986 (CANB, M).

Chile. *Juan Fernandez*: • Mas Afuera, Cordón del Barril, ridge with grassland and scattered *Lophosoria*, 750 m, 3.xii.1965, *H.A. Imshaug* 37262 (CANB); • Mas a Tierra, Porto de Villagra, S side of ridge to El Pirámide, rock outcrops with dwarf *Pernettya*, 600 m, *H.A. Imshaug* 38289, 18.xii.1965 (CANB).

Falkland Islands. *East Falkland*: • Darwin Settlement, Boca House on Brenton Lock, UTM Grid 21F UC 6359, in heath, *H.A. Imshaug* 40265 & *R.C. Harris*, 11.i.1968 (CANB).

Papua New Guinea. *Southern Highlands Province*: • Andawe River, Lama sawmill logging area, 6 km SE of Ialibu, 6°20'S, 144°01'E, 1840 m, on *Nothofagus* in *Nothofagus-Podocarpus* forest, *J.A. Elix* 12575 & *H. Streimann*, 11.xii.1982 (CANB). *Eastern Highlands Province*: • Track to Mt Michael, 5 km SW of Lufa, 6°21'S, 145°17'E, 2000 m, on *Nothofagus* in disturbed, *Castanopsis* dominated montane forest, *H. Streimann* 18475, 12.iv.1982 (CANB).

South Africa. *Cape Province*: • Cap. B. Spei., *Thunberg* (UPS-THUNBERG 26186—lectotype).

Chemotype 2

Australia. *Tasmania*: • South Sister, 4.2 km NNW of St. Marys, 41°32'S, 148°10'E, 750 m, on soil and detritus in open *Eucalyptus-Bedfordia* woodland, *J.A. Elix* 28718, 28750 & *G. Kantvilas*, 10.xi.2004 (CANB); • N slopes of Byatts Razorback, 41°34'S, 147°49'E, 850 m, on dolerite boulders in open *Eucalyptus* forest, *G. Kantvilas* 200/02, 4.v.2002 (HO); • Bruny Island, track to Mt Mangana, 43°22'S, 147°17'E, 500 m, on stones in wet forest, *G. Kantvilas* 481/03, 10.viii.2003 (HO); • summit of Mt Murray, 42°28'S, 147°59'E, 315 m, on dolerite boulders in dry sclerophyll woodland, *G. Kantvilas* 194/06, 14.iv.2006 (HO); • Mt Koonya, 43°06'S, 147°48'E, 440 m, on boulders, *A. Moscal* 5233, 1.i.1984 (HO).

Chemotype 3

Falkland Islands. *East Falkland*: • Mt Osborne, stone run below the Gap, UTM Grid 21F UC 7069, at edge of stone run, *H.A. Imshaug* 40013 & *R.C. Harris*, 8.i.1968 (CANB). Papua New Guinea. *Eastern Highlands Province*: • Aseki-Menyamy Road, 6 km NW of Aseki, 7°19'S, 146°09'E, 1950 m, on dead twigs in disturbed montane forest, *J.A. Elix* 12144 & *M. Toia*, 5.xii.1982 (B, CANB).

Chemotype 4

Malaysia. *Sabah*: • Maliau Basin, Eucalyptus Camp, 4°52'18"N, 106°49'35"E, c. 1000 m, on tree in submontane rainforest, *L.B. Din* MBS 10, 23, 31, ix.2006 (CANB, UKM). Papua New Guinea. *Morobe Province*: • Bismarck Ranges, Mt Wilhelm, Pindaunde Valley, just below the outlet of Lake Aunde, 3350 m, *W.A. Weber s.n.*, 29.vi.1968 (Lichenes Exsiccati no. 373, CANB).

Chemotype 5

Australia. *Queensland*: • Bunya Mountains National Park, Burtons Well walking track to Mt Kiangarow, 68 km N of Dalby, 26°50'17"S, 151°33'12"E, 1100 m, on treelet at rainforest margin, J.A. Elix 37669, 6.v.2005 (CANB).

New South Wales: • New England National Park, Point Lookout, 30°29'S, 152°24'30"E, 1530 m, on *Eucalyptus* in dry sclerophyll forest, G. Rambold 4320, 6.ii.1986 (CANB, M); • New England National Park, Lyrebird Track, 30°30'S, 152°24'E, 1300 m, on bark in temperate rainforest with *Nothofagus moorei*, G. Rambold 4359, 6.ii.1986 (CANB, M).

Whether or not some of the above chemotypes of *P. gilva* warrant taxonomic recognition must await the results of molecular investigations of their respective DNA. Chemotype 5 is certainly the most distinctive chemically, in that the other four all exhibit some overlap with the chemistry observed in the lectotype material.

Interestingly, many species of *Pseudocyphellaria* with the so-called "two-terpene chemistry" [e.g. *P. multifida* (Nyl.) D.J. Galloway & P. James] have been reported to contain traces of hopane-7 β ,22-diol in addition to the major components, 7 β -acetoxyhopane-22-ol and hopane-15 α ,22-diol. However, this is incorrect, because the trace substance present has been shown to be 7 β ,15 α -diacetoxyhopane-22-ol.

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I thank Professor Roland Moberg and Dr Stefan Eckman (UPS), for providing fragments of lectotype of *Pseudocyphellaria gilva* for chemical determination, Dr Christine Cargill and Ms Judith Curnow (CANB) and Dr G. Kantvilas (HO) for the loan of specimens, and Prof. Laily bin Din (UKM) for supplying duplicates from Sabah.

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Nordic Lichen Flora. Vol. 3 Cyanolichens, by Per Magnus Jørgensen, with contributions from Tor Tønsberg and Orvo Vitikainen. 219 pages, 1 figure, 217 distribution maps and colour plates of all taxa, plus a separate CD of the images. Published by Museum of Evolution, Uppsala University on behalf of Nordic Lichen Society, Uddevalla. 2007. ISBN 978-91-85221-14-1. Price: 60 Eur. [= NZ\$146.40].

This is the third volume published by the Nordic Lichen Society under the editorship of Teuvo Ahti, Per Magnus Jørgensen, Hörður Kristinnsson, Roland Moberg, Ulrik Søchting and Göran Thor, and is almost entirely the work of Per Magnus Jørgensen, with some assistance from Tor Tønsberg and Orvo Vitikainen. In his Preface, Per Magnus states "...This volume differs from the others hitherto published in that it does not concentrate on taxonomically closely related genera, but includes all lichens which have cyanobiontic partners (cyanobacteria or blue-green algae), which is not a taxonomic approach...". The present survey of cyanobacterial lichens from Scandinavia is the first comprehensive modern compilation of these in the form of an accurate identification guide since Forssell's pioneering work of the late nineteenth century [*Nova Acta regiae Societatis Scientiarum Upsalienses*, ser. 3, **13** (6), 1–118 (1885)], and it conveniently fills a conspicuous gap in knowledge that has for far too long been cloaked in mystery, obscurity, and ignorance. The appearance of this volume then is helpful, relevant, and timely for studies both in Scandinavia and indeed far beyond those northern shores. Concluding his Preface, Per Magnus graciously acknowledges his indebtedness to Prof. Aino Henssen of Marburg, who has spent a productive lifetime of work on "the little black ones" as she affectionately dubbed the smaller cyanophilic taxa, and also to his teacher and friend, Prof. Rolf Santesson of Uppsala, to whom the volume is dedicated as a 90th birthday offering.

In this volume, after a brief key to families, Per Magnus provides accounts of the families Arctomiaceae, Coccocarpiaceae, Collemataceae, Heppiaceae, Lichinaceae, Massalongiaceae, Pannariaceae, Peltulaceae, and Placynthiaceae, while Per Magnus and Tor Tønsberg discuss Lobariaceae, and Orvo Vitikainen treats Nephromataceae and Peltigeraceae—in all, 52 genera [in the order treated: *Arctomia*, *Gregorella*, *Spilonema*, *Collema*, *Leciophysma*, *Leptogium*, *Staurolemma*, *Epiphloea*, *Heppia*, *Anema*, *Cryptothele*, *Ephebe*, *Euopsis*, *Lemmopsis*, *Lempholemma*, *Lichina*, *Lichinodium*, *Metamelaena*, *Phylliscum*, *Porocyphus*, *Psorotichia*, *Pterygiopsis*, *Pyrenocarpon*, *Pyrenopsis*, *Synalissa*, *Thallinocarpon*, *Thelignya*, *Thermutis*, *Thyrea*, *Zahlbrucknerella*, *Lobaria*, *Pseudocyphellaria*, *Sticta*, *Leptochidium*, *Massalonia*, *Polychidium*, *Nephroma*, *Degelia*, *Erioderma*, *Fuscopannaria*, *Moelleropsis*, *Pannaria*, *Parmeliella*, *Protopannaria*, *Psoroma*, *Santessoniella*, *Peltigera*, *Solorina*, *Peltula*, *Collechia*, *Placynthium*, and *Vestergrenopsis*], comprising 218 taxa.

The book proceeds alphabetically by family, and alphabetically by genus within each family. Each family and genus are given succinct descriptions, and short citations of relevant literature. A similar arrangement pertains for species within genera. Dichotomous keys are provided to genera within families, and to species within genera. Details of chemistry (when known), habitat, and distribution are given for every species or subspecific taxon, and informative notes are added for most taxa treated. Excluded taxa are mentioned where necessary, all names are typified, and a concluding Appendix details nomenclatural novelties—mainly designation of holotypes, lectotypes and epitypes—a particularly rigorous and useful service to lichenology. Besides good generic and species descriptions, the volume contains distribution maps and excellent colour illustrations to all taxa, though unfortunately it

lacks both a bibliography and an index, oversights in an otherwise largely exemplary production. It is a fine achievement and a splendid addition to this authoritative series. Congratulations to both authors and photographers (Gunnar Carlin, Roland Moberg and Jan Berge), and to the Nordic Lichen Society for their continuing support of this excellent lichen flora project.

Since a surprising number of taxa in this volume are known also in Australasia, including several that are not yet widely known here, such as *Euopsis granatina* for example (though shortly to be included in the updated, on-line version of *Flora of New Zealand Lichens*), it is a compilation that is warmly recommended to Australasian lichenologists.

Hongos liquenícolas del Sur de Sudamérica, especialmente de Isla Navarino (Chile) [Lichenicolous fungi from southern South America, especially from Isla Navarino (Chile)], by Javier Etayo & Leopoldo García Sancho. 302 pages and 132 figures, including 2 maps. *Bibliotheca Lichenologica* 98, J. Cramer, Berlin, Stuttgart. 2008. ISBN 978-3-443-58077-3. Price: 74 Eur. [= NZ\$180.56]

In recent years, Northern Hemisphere lichenologists with strong interests in the systematics of lichenicolous fungi have turned their attention to the potential riches of the Southern Hemisphere following advances in knowledge of the macrolichens of southern regions. Recently, Ertz *et al.* [*Bibliotheca Lichenologica* 91, 1–155 (2005)] contributed a substantial account to our knowledge of Southern Hemisphere lichenicolous fungi with their taxonomic revision of *Plectocarpon*, following on from earlier work of Mats Wedin and Josef Hafellner [*Lichenologist* 25, 301–303 (1993); *Lichenologist* 26, 301–310; *Lichenologist* 30, 59–91 (1998)]. The present volume raises the stakes and the horizons dramatically for lichenicolous fungi in the Southern Hemisphere, convincingly placing them centre stage as a diverse, complex, and fascinating new research agenda and drawing attention to the great possibilities for future work in this area. Although written in Spanish, this should be no impediment to comprehension and appreciation of the treasure house of information that this substantial account represents. The writing is simple, direct, and clear, and a nodding acquaintance with Spanish and a dictionary should easily overcome any difficulties.

This book is one outcome of a collaborative research programme undertaken by Spanish and Danish lichenologists (Javier Etayo, Leo Sancho, Ulrik Søchting and colleagues from Madrid and Copenhagen) investigating problems of Southern Hemisphere–Antarctic lichenology. Two visits were made (2005, 2008) to 60 collecting sites in southern Chile and Argentina, with the bulk of the collections coming from Isla Navarino in the Beagle Channel. From these collections, 696 collections of parasitised lichens were made, representing some 240 taxa of lichenicolous fungi. From this expertly collected and thoroughly studied material, 189 taxa are commented on (often in great detail) in the present work. Introductory chapters set the work in its correct, geographical, climatological and lichenological perspectives, and introduce the concept of “fungal capacity” of lichen hosts, that is, the ability of different lichens to select greater or lesser numbers of lichenicolous fungi as co-evolved partners in their symbiotic systems. Some lichen hosts are wondrously diverse with respect to numbers of lichenicolous fungi with which they may be associated throughout their geographical range. For example, *Nephroma antarcticum* hosts 26 different lichenicolous fungi, and *Pseudocyphellaria freycinetii* 13 different lichenicolous taxa. And *Pseudocyphellaria coriifolia*, at one particular site, hosted 4 different lichenicolous fungi (*Arthonia coriifoliae*, *Atronectria magellanica*, *Endococcus pseudocyphellariae* and *Toninia ualae*), all on the same thallus! Other hosts have much more specific requirements, being associated with only one or a few lichenicolous species. This question of co-evolution of host and parasite species is discussed in some detail, but quite obviously, from the data presented and the hypotheses suggested, it is still a “work in progress”. We await further developments in this area with considerable anticipation!

The main part of the book is an alphabetical catalogue of species, and deals with taxa in the following genera: *Abrothallus*, *Acremonium*, *Arthonia* [a particularly useful and comprehensive account with three new species described], *Arthrorhaphis*, *Atronectria*, *Bachmanniomyces*, *Biatoropsis*, *Buellia*, *Capronia* [2 new species and a key to species], *Carbonea*, *Chaenotheca*, *Chalara*, *Chroodiscus*, *Cornutispora*, *Corticifraga* [1 new species and a key to species], *Corticiraptor*, *Cystobasidium*, *Dactylospora* [1 new species and a key to species], *Diederimyces*, *Endococcus* [4 new species and a key to species], *Epicladonia*, *Hemigrapha*, *Illosporium*, *Intralichen*, *Lasiosphaeriopsis*, *Leptosphaeria*, *Libertiella*, *Lichenochora*, *Lichenocodium*, *Lichenodiplis*, *Lichenopeltella*, *Lichenostigma*, *Macrographa*, *Marchandiomyces*, *Merismatium*, *Microsphaeropsis*, *Minutoexcipula*, *Muellerella*, *Myxophora*, *Nanostictis* [1 new species and a key to species], *Nectria*, *Nectropsis*, *Neobarya* [1 new species and a key to species], *Niesslia* [1 new species and a key to species], *Odontotrema*, *Opegrapha*, *Phacopsis*, *Phaeospora*, *Phaeosporobolus*, [1 new species and a key to species], *Phoma* [1 new species and a key to species], *Plectocarpon*, *Polycoccum*, *Pronectria* [3 new species and a key to species], *Protothelenella*, *Pseudostigmidium* [in effect a mini-monograph, describing a new genus and four new species, with a key to known species], *Pyrenidium*, *Raffaella*, *Refractohilum*, *Rhagadostoma*, *Rhymocarpus*, *Rimularia*, *Rinodina*, *Roselliniella*, *Sagediopsis*, *Sarcoexcipula*, *Sclerococcum*, *Scoliciosporum*, *Scutula*, *Skyttea*, *Sphaerellothecium*, *Spirographa*, *Stigmidium*, *Strigula*, *Subhysteropycnis*, *Taeniolella*, *Thamnogalla*, *Toninia*, *Trichonectria*, *Umbilithecium*, *Umushamyces*, *Unguiculariopsis*, *Vouauxiomyces*, and *Xenonectriella*. Of these, Javier Etayo is the sole author of 6 new genera (*Atronectria*, *Macrographa*, *Pseudostigmidium*, *Sarcoexcipula*, *Umbilithecium*, and *Umushamyces*) and 60 new species, all carefully and accurately circumscribed. With this richly extensive body of new taxa now in print, Javier Etayo has now confidently established himself as a notable authority on Southern Hemisphere lichenicolous fungi.

The book concludes with an alphabetical list of lichen hosts with their known lichenicolous fungi (which dramatically shows the extreme richness of lichenicolous taxa associated with *Nephroma antarcticum* and species of *Pseudocyphellaria*—surely now a springboard for comparative work on Australasian taxa of these lichen host genera and an exciting avenue for fruitful biogeographical studies too), and an exhaustively comprehensive bibliography. My only reservation is that no key to lichenicolous genera was included. However, it is quite obvious that the present work is only part, albeit a substantial one, of an eventual full treatment of the lichenicolous fungi of southern South America, a field in which the present authors must now be regarded as major players. I for one look forward with great anticipation to their future contributions to this exciting field of study. As it stands, the present volume is a signal contribution to Southern Hemisphere lichenology, and one that sets new and high standards of clarity, accuracy, and interest. In my opinion, it is an important and major resource for Southern Hemisphere lichenologists. It deserves a wide and appreciative audience, and its authors our warmest thanks and congratulations. Further, it underlines yet again the lichenological riches still awaiting discovery in temperate regions of the Southern Hemisphere.

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NEWS

DAVID GALLOWAY IS AWARDED THE ACHARIUS MEDAL

David Galloway FRSNZ (Honorary Research Associate, Landcare Research, Dunedin) was awarded the Acharius Medal by the International Association for Lichenology at its Sixth Congress held at Asilomar on California's Monterey Peninsula.

The medal is awarded every four years for “outstanding contributions to lichenology”. He is only the second Southern Hemisphere recipient. He joins some 25 other Acharius Medalists worldwide. In 2007, Volume 95 of *Bibliotheca Lichenologica* was issued in his honour.

He has studied lichens of the temperate Southern Hemisphere for the past 45 years, and is the author of numerous papers on austral lichens as well as the *Flora of New Zealand Lichens*. The first edition of the *Flora* was published in 1985. The revised second edition was published last December by Manaaki Whenua Press (Lincoln) as a two-volume hard-copy plus an electronic on-line version. The on-line version will integrate the two editions and post additional records of New Zealand lichens.

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Australasian Lichenology is the official publication of the Australasian Lichen Society, and formerly was named the *Australasian Lichenological Newsletter*. Its Editorial Board is W.M. Malcolm, J.A. Elix, G. Kantvilas, S.H.J.J. Louwhoff, and P.M. McCarthy.